



# Master Selector Guide



# ON Semiconductor Master Selector Guide

---

AC–DC Controllers and Regulators; Amplifiers and Comparators; Analog Switches; Audio/Video ASSP; Bipolar Transistors; Clock and Data Distribution; Clock Generation; Custom; DC–DC Controllers, Converters, and Regulators; Digital Potentiometers; Diodes and Rectifiers; Drivers; ESD and EMI Protection; Diodes and Filters; IGBTs and FETs; Interfaces; Memory; Microcontrollers; Optical, Image and Touch Sensors; Standard Logic; Thermal Management; Thyristors; Tunable Components; Voltage and Current Management

SG388/D  
Rev. 13, July–2014




**ON Semiconductor®**

© SCILLC, 2014  
Previous Edition © 2011  
“All Rights Reserved”

AnyLevel, ARKbase, ARKfit, ARDsdk, AYRE†, Ayre, CONSOLIDATOR, ECLinPS, ECLinPS Lite, ECLinPS MAX, ECLinPS Plus, ecoSwitch, EasyPRO, EVOKE, EVOKE LITE, FLEXMOS, FOUNDRYPLUS, FPGASIC, FULLPAK, GigaComm, GUIDE, HRX, iLog, INSPERIA, iSceneDetect, MECL, MicroLeadless, MiniGate, MiniMOSORB, NETTRANS, NOCAP, ON-Demand, ORELA, POWERAP, PureEdge, RHYTHM†, Rhythm (Optional), SIGNAKLARA, SiPArray, Soft-Skip, SOUNDFIT, SOUNDFIT & Design, ThermalTrak, Thermopad, Thermowatt, thinSTAX, TIMING SAFE, Toccata Plus,  $\mu$ Cool, uCool, VENTURE, VOYAGEUR and WOLVERINE are trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries.

ARKonline, AVISS, BELASIGNA, CCB, ECoP, EMH, ExPD, EZAIRO†, Ezairo (Optional), FOUNDATION, FRONTWAVE, GreenPoint, GreenPoint & Design, IMST, MOSORB, Pico-MOS, SENSEFET, SOUND DESIGN, SURMETIC and WAVEFET are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries.

*All brand names and product names appearing in this document are registered trademarks or trademarks of their respective holders.*

ON Semiconductor and the  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

# Table of Contents

	Page		Page
<b>AC–DC Controllers and Regulators</b> . . . . .	<b>5</b>	<b>Custom</b> . . . . .	<b>81</b>
Off–Line Controllers . . . . .	6	Digital ASICs . . . . .	82
Off–Line Regulators . . . . .	9	Custom Foundry Services . . . . .	82
Power Factor Controllers . . . . .	10	<b>DC–DC Controllers, Converters, and</b>	
Secondary Side Controllers . . . . .	11	<b>Regulators</b> . . . . .	<b>83</b>
<b>Amplifiers and Comparators</b> . . . . .	<b>13</b>	Battery Charge Controllers . . . . .	84
Audio Amplifiers . . . . .	14	Charge Pumps . . . . .	82
Compondors . . . . .	15	DC–DC Controllers . . . . .	84
Comparators . . . . .	15	DC–DC Converters . . . . .	87
Operational Amplifiers . . . . .	16	DDR Termination Regulators . . . . .	90
Video Amplifier . . . . .	18	Linear Voltage Regulators . . . . .	91
<b>Analog Switches</b> . . . . .	<b>19</b>	<b>Digital Potentiometers</b> . . . . .	<b>103</b>
Audio Switches . . . . .	20	Digital POTs . . . . .	104
Data Switches . . . . .	20	<b>Diodes and Rectifiers</b> . . . . .	<b>107</b>
Signal Switches . . . . .	22	PIN Diodes . . . . .	108
Video sSwitches . . . . .	23	Standard Recovery Rectifiers . . . . .	108
<b>Audio/Video ASSP</b> . . . . .	<b>25</b>	Fast Recovery Rectifiers . . . . .	109
Audio ASSP . . . . .	26	Ultrafast Rectifiers . . . . .	109
Audio DSP Systems . . . . .	26	Ultrasoft Rectifiers . . . . .	111
Audiology DSP Systems . . . . .	27	Schottky Diodes . . . . .	112
Display Controllers . . . . .	28	Schottky Rectifiers . . . . .	115
MMICs . . . . .	28	Small Signal Switching Diodes . . . . .	120
Modulators/Demodulators . . . . .	28	Tuning Diodes . . . . .	122
<b>Bipolar Transistors</b> . . . . .	<b>29</b>	Zener Diodes . . . . .	122
Audio Transistors . . . . .	30	<b>Drivers</b> . . . . .	<b>135</b>
Digital Transistors (BRTs) . . . . .	31	Integrated Driver and MOSFET . . . . .	136
Darlington Transistors . . . . .	33	LCD Drivers . . . . .	136
General Purpose BJTs >100 V . . . . .	37	LED Drivers . . . . .	138
General Purpose BJTs . . . . .	39	Load/Relay Drivers . . . . .	141
General Purpose BJTs – Dual . . . . .	49	MOSFET/IGBT Drivers . . . . .	142
Low $V_{CE(sat)}$ Transistors . . . . .	50	Motor Drivers . . . . .	144
Mixed Element Arrays (MEAs) . . . . .	51	<b>ESD and EMI Protection Diodes</b>	
<b>Clock and Data Distribution</b> . . . . .	<b>55</b>	<b>and Filters</b> . . . . .	<b>159</b>
Arithmetic Functions . . . . .	56	ESD Protection Diodes and Arrays . . . . .	160
Drivers and Fanout Buffers . . . . .	57	EMI Filters . . . . .	164
Flip–Flops, Latches and Registers . . . . .	57	TVS – Unidirectional . . . . .	167
Logic Gates . . . . .	67	TVS – Bidirectional . . . . .	175
Multiplexers and Crosspoint Switches . . . . .	68	<b>IGBTs and FETs</b> . . . . .	<b>179</b>
Serial/Parallel Converters . . . . .	70	IGBTs . . . . .	180
Skew Management . . . . .	71	JFETs . . . . .	181
Translators . . . . .	71	MOSFETs . . . . .	183
<b>Clock Generation</b> . . . . .	<b>73</b>	Protected MOSFETs . . . . .	204
Crystal Oscillators . . . . .	74	<b>Interfaces</b> . . . . .	<b>205</b>
Phase/Frequency Detectors . . . . .	75	Analog–to–Digital Converters (ADC) . . . . .	206
PLL Clock Generators . . . . .	75	I/O Expanders . . . . .	206
Spread Spectrum EMI Reduction Clocks . . . . .	77	Modems and Transceivers . . . . .	206
Voltage Controlled Oscillators (VCOs) . . . . .	78	Sensor Interfaces . . . . .	207
Zero Delay Buffers . . . . .	79	SMART Card and SIM Card Interfaces . . . . .	207

	Page		Page
<b>Memory</b> .....	<b>209</b>	<b>Thermal Management</b> .....	<b>251</b>
EEPROM Memory .....	210	Fan Controllers .....	252
Flash Memory .....	215	Temperature Sensors .....	252
SRAM Memory .....	215	<b>Thyristors</b> .....	<b>253</b>
<b>Microcontrollers</b> .....	<b>217</b>	Programmable Unijunction Transistors (PUTs) . . . .	254
Application Specific Microcontrollers .....	218	SIDACs .....	254
General Purpose Microcontrollers .....	219	Silicon Controlled Rectifiers (SCRs) .....	254
<b>Optical, Image and Touch Sensors</b> .	<b>221</b>	Thyristor Surge Protection Devices (TSPDs) . . . . .	255
Ambient Light Sensors .....	222	Triacs .....	255
CMOS Image Sensors .....	222	<b>Tunable Components</b> .....	<b>259</b>
Contact Image Sensor Modules .....	223	Passive Tunable Integrated Circuits (PTICs) . . . . .	260
Touch Sensors .....	223	PTIC Controllers .....	260
<b>Standard Logic</b> .....	<b>225</b>	<b>Voltage and Current Management</b> ..	<b>261</b>
Arithmetic Functions .....	226	Battery Fuel Gauges .....	262
Buffers .....	227	Current Protection .....	262
Flip-Flops .....	232	Load Switches .....	262
Latches and Registers .....	233	Voltage Protection .....	263
Logic Gates .....	235	Voltage References .....	263
Multiplexers .....	244	Voltage Supervisors .....	265
Multivibrators .....	247	<b>Index</b> .....	<b>269</b>
Bus Transceivers .....	247		
Translators .....	248		

# AC-DC Controllers and Regulators

---

## Table of Contents

	Page
Off-Line Controllers .....	6
Off-Line Regulators .....	9
Power Factor Controllers .....	10
Secondary Side Controllers .....	11

## ON Semiconductor Selector Guide – AC–DC Controllers and Regulators

### OFF-LINE CONTROLLERS

Device	Topology	Control Mode	f <sub>sw</sub> Typ (kHz)	Stand-by Mode	UVLO (V)	Short-Circuit Protection	Latch	Soft Start	V <sub>CC</sub> Max (V)	Drive Cap. (mA)	Package
CS5124	Flyback	Current Mode	400	No	Yes	No	No	Yes	75	200	SOIC–8
MC33060A	Flyback	Voltage Mode	200	No	Yes	No	No	Yes	42	200	SOIC–14
MC33067	Flyback	Voltage Mode	1000	No	Yes	Yes	No	Yes	20	200 / 200	PDIP–16; SOIC–16W
MC33364	Flyback	Current Mode	Up to 150	Yes	Yes	No	No	No	16	220 / 600	SOIC–16; SOIC–8
NCL30000	Flyback		Up to 300						20	500 / 800	SOIC–8
NCL30001	Flyback	Current Mode	Up to 150						20	1000 / 1000	SOIC–16
NCL30080	Flyback	Current Mode	Up to 150	Yes		Yes	No; Yes	Yes	35	300 / 500	TSOP–6
NCL30081	Flyback	Current Mode	Up to 150	Yes	4.5	Yes	No; Yes	Yes	35	300 / 500	TSOP–6
NCL30082	Flyback	Current Mode	Up to 150	Yes	4.5	Yes	No; Yes	Yes	35	300 / 500	Micro8™
NCL30083	Flyback	Current Mode	Up to 150	Yes	4.5	Yes	No	Yes	35	300 / 500	Micro8
NCP1070	Flyback	Current Mode	65; 100; 130	Yes	6.3	Yes	No	Yes	10	250	PDIP–8; SOT–223–4 / TO–261–4
NCP1071	Flyback	Current Mode	65; 100; 130	Yes	6.3	Yes	No	Yes	10	350	PDIP–8; SOT–223–4 / TO–261–4
NCP1200	Flyback	Current Mode	40; 60; 100	Yes	No	Yes	No	No	16	250 / 250	PDIP–8; SOIC–8
NCP1203	Flyback	Current Mode	40; 60; 100	Yes	Yes	Yes	No	No	16	250	PDIP–8; SOIC–8
NCP1207A	Flyback	Current Mode	Up to 1000	Yes	yes	Yes	Yes	Yes	16	500 / 500	PDIP–8; SOIC–8
NCP1207B	Flyback	Current Mode	Up to 1000	Yes	Yes	Yes	Yes	Yes	18	500 / 500	SOIC–8
NCP1216	Flyback	Current Mode	65; 100; 133	Yes	No	Yes	No	No	16	500	PDIP–8; SOIC–8
NCP1216A	Flyback	Current Mode	65; 100; 133	Yes	No	Yes	No	Yes	16	500	PDIP–8; SOIC–8
NCP1217	Flyback	Current Mode	65; 100; 133	Yes	Yes	Yes	Yes	No	16	500	PDIP–8; SOIC–8
NCP1217A	Flyback	Current Mode	65; 100; 133	Yes	Yes	Yes	Yes	Yes	16	500	PDIP–8; SOIC–8
NCP1218	Flyback	Current Mode	65	Yes	9.4	Yes	Yes	Yes	20	500 / 800	SOIC–8
NCP1219	Flyback	Current Mode	65; 100	Yes	9.4	Yes	Yes	Yes	20	500 / 800	SOIC–8
NCP1230	Flyback	Current Mode	65; 100; 133	Yes	Yes	Yes	Yes	Yes	18	500 / 800	PDIP–8; SOIC–8
NCP1234	Flyback	Current Mode	65; 100	Yes	9.5	Yes	Yes	Yes	28	500 / 500	SOIC–8
NCP1236	Flyback	Current Mode	65; 100	Yes	9.5	Yes	Yes	Yes	28	500 / 500	SOIC–8
NCP1237	Flyback	Current Mode	65	Yes	9.5	Yes	Yes	Yes	28	1000 / 1000	SOIC–8
NCP1238	Flyback	Current Mode	65	Yes	9.5	Yes	Yes	Yes	28	1000 / 1000	SOIC–8

## ON Semiconductor Selector Guide – AC–DC Controllers and Regulators

### OFF-LINE CONTROLLERS (continued)

Device	Topology	Control Mode	f <sub>sw</sub> Typ (kHz)	Stand-by Mode	UVLO (V)	Short-Circuit Protection	Latch	Soft Start	V <sub>CC</sub> Max (V)	Drive Cap. (mA)	Package
NCP1244	Flyback	Current Mode	65; 100	Yes	8.9	Yes	Yes	Yes	28	500 / 800	SOIC–8
NCP1246	Flyback	Current Mode	65; 100	Yes	8.9	Yes	Yes	Yes	28	500 / 800	SOIC–8
NCP1247	Flyback	Current Mode	65; 100	Yes	8.9	Yes	Yes	Yes	28	500 / 800	SOIC–8
NCP1249	Flyback	Current Mode	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	Small Outline Integrated
NCP1249CD	Flyback	Current Mode	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	Small Outline Integrated
NCP1250	Flyback	Current Mode	65; 100	Yes	8.8	Yes	Yes	Yes	28	300 / 500	TSOP–6
NCP1251	Flyback	Current Mode	65; 100	Yes	8.8	Yes	NO; OVP; Yes	Yes	28	300 / 500	TSOP–6
NCP1253	Flyback	Current Mode	65; 100	Yes	8.8	Yes	No; Yes	Yes	28	300 / 500	TSOP–6
NCP1254	Flyback	Current Mode	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	TSOP–6
NCP1255	Flyback	Current Mode	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	SOIC–8
NCP1271	Flyback	Current Mode	65; 100	Yes	Yes	Yes	Yes	Yes	20	500 / 800	PDIP–8; SOIC–8
NCP1288	Flyback	Current Mode	65	Yes	10	Yes	Yes	Yes	28	1000 / 1000	SOIC–8
NCP1308	Flyback	Current Mode	Variable	Yes	Yes	Yes	Yes	Yes	16	500 / 500	SOIC–8
NCP1336	Flyback	Current Mode	Variable	Yes	9 – 15	Yes	Yes	Yes	28	500 / 800	Small Outline Integrated
NCP1337	Flyback	Current Mode	Variable	Yes	Yes	Yes	Yes	Yes	20	500 / 500	PDIP–8; SOIC–8
NCP1338	Flyback	Current Mode	Variable	Yes	Yes	Yes	Yes	Yes	20	500 / 500	SOIC–8
NCP1351	Flyback	Current Mode	Variable	No	Yes	Yes	Yes	No	28	400 / 400	SOIC–8
NCP1377	Flyback	Current Mode	Variable	Yes	Yes	No	Yes	Yes	16	500 / 500	PDIP–8; SOIC–8
NCP1379	Flyback	Current Mode	Variable	Yes	9	Yes	Yes	Yes	28	500 / 800	SOIC–8
NCP1380	Flyback	Current Mode	Variable	Yes	9	Yes	No Yes	Yes	28	500 / 800	SOIC–8
NCP1562	Flyback	Voltage Mode	Up to 500	No	Yes	Yes	Yes	Yes	20	2500 / 2500	SOIC–16; TSSOP–16
NCP1927	Flyback	Current Mode	0.065	Yes	Yes	Yes	No	Yes	30	800 / 800	SOIC–16
NCP1937	Flyback	Current Mode	Variable	Yes	Yes	Yes	Yes	Yes	30	0.5	Small Outline Integrated
NCV3843B	Flyback	Current Mode	52	No	Yes	Yes	No	Yes	30	200 / 200	SOIC–14 SOIC–8
UC2842B	Flyback	Current Mode	52	No	Yes	Yes	No	No	30	200 / 200	PDIP–8; SOIC–14; SOIC–8
UC2843B	Flyback	Current Mode	52	No	Yes	Yes	No	No	30	200 / 200	PDIP–8; SOIC–14; SOIC–8
UC2844B	Flyback	Current Mode	52	No	Yes	Yes	No	No	30	200 / 200	PDIP–8; SOIC–14; SOIC–8



## ON Semiconductor Selector Guide – AC–DC Controllers and Regulators

### OFF-LINE CONTROLLERS (continued)

Device	Topology	Control Mode	f <sub>sw</sub> Typ (kHz)	Stand-by Mode	UVLO (V)	Short-Circuit Protection	Latch	Soft Start	V <sub>CC</sub> Max (V)	Drive Cap. (mA)	Package
UC2845B	Flyback	Current Mode	52	No	Yes	Yes	No	No	30	200 / 200	PDIP–8; SOIC–14; SOIC–8
UC3842B	Flyback	Current Mode	52	No	Yes	Yes	No	No; Yes	30	200 / 200	PDIP–8; SOIC–14; SOIC–8
UC3843B	Flyback	Current Mode	52	No	Yes	Yes	No	No; Yes	30	200 / 200	PDIP–8; SOIC–14; SOIC–8
NCP1252	Flyback Forward	Current Mode	Up to 500	Yes	9 to 10	Yes	Yes	Yes	28	500 / 800	PDIP–8; SOIC–8
NCP1294	Flyback; Forward; Half-Bridge; Step-Down; Step-Up	Current Mode	Up to 1000	No	Adj	Yes	No	Yes	100	1000 / 1000	TSSOP–16
UC3844B	Flyback; Forward; Step-Down; Step-Up	Current Mode	52	No	Yes	Yes	No	No; Yes	25	200 / 200	PDIP–8; SOIC–14; SOIC–8
UC3845B	Flyback; Forward; Step-Down; Step-Up	Current Mode	52	No	Yes	Yes	No	No; Yes	25	200 / 200	PDIP–8; SOIC–14; SOIC–8
CS51221	Forward	Voltage Mode	Up to 1000	No	Yes	No	Yes	Yes	15	1000	SOIC–16
NCP1392	Half-Bridge	Current Mode	250	No	9	No	No	Yes	16	500 / 1000	SOIC–8
NCP1397	Half-Bridge	Current/Voltage Mode	Up to 500	No	9.5/10.5	Yes	Yes	Yes	20	500 / 1000	SOIC–16
NCP1398	Half-Bridge	Current/Voltage Mode	Up to 750	No	9.5/10.5	Yes	Yes	Yes	20	500 / 1000	SOIC–16
NCP1910	Half-Bridge	Current Mode	Up to 500	Yes	9/10.4	Yes	Yes	Yes	20	500 / 1000	SOIC–24
MC33025	Push-Pull	Current/Voltage Mode	1000	No	Yes	Yes	No	Yes	30	200 / 200	PDIP–16; SOIC–16W
NCP1395	Push-Pull	Voltage Mode	1000	Yes	Yes	Yes	Yes	Yes	20	180 / 180	SOIC–16
NCP1396	Push-Pull	Voltage Mode	Up to 500	Yes	Yes	Yes	Yes	Yes	20	500 / 1000	SOIC–16
NCL30002	Step-Down	Voltage Mode	Up to 250						20	500 / 800	SOIC–8
MC34060A	Step-Up/Step-Down	Voltage Mode	200	No	Yes	No	No	No	42	200	SOIC–14
NCL30051		Voltage Mode	Variable				No				SOIC–16

OFF-LINE REGULATORS

Device	Control Mode	f <sub>sw</sub> Typ (kHz)	f <sub>Jitter</sub> Typ (%)	Stand-by Mode	R <sub>DS(on)</sub> Typ (Ω)	V <sub>(BR)DSS</sub> Max (V)	I <sub>peak</sub> (mA)	HV Start-up Min (V)	DSS (mA)	UVLO	Short Circuit Protection	Over Power Comp.	Brown-out	Latch	Package
NCP1010	Current Mode	65; 100; 130	Yes	Yes	25	700	100	Yes	8.5	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1011	Current Mode	65; 100; 130	Yes	Yes	25	700	250	Yes	8.5	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1012	Current Mode	65; 100; 130; 133	Yes	Yes	11	700	250	Yes	8	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1013	Current Mode	65; 100; 130; 133	Yes	Yes	11	700	350	Yes	8	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1014	Current Mode	65; 100	Yes	Yes	11	700	450	Yes	8	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1015	Current Mode	65; 100	Yes	Yes	11	700	450	Yes	8	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1027	Current Mode	65; 100	Yes	Yes	5.6	700	800	Yes		Yes	Yes	Yes	Yes	Yes	PDIP-8
NCP1028	Current Mode	65; 100	Yes	Yes	5.6	700	800	Yes		Yes	Yes	Yes	Yes	No	PDIP-8
NCP1072	Current Mode	65; 100	Yes	Yes	11	700	250	Yes	8	6.4	Yes	No	No	No	PDIP-8; SOT-223-4 / TO-261-4
NCP1075	Current Mode	65; 100; 130	Yes	Yes	11	700	450	No	8	6.4	Yes	No	No	No	PDIP-8; SOT-223-4 / TO-261-4
NCP1076	Current Mode	65; 100; 130	Yes	Yes	4	700	650	Yes	8	6.4	Yes	No	No	No	PDIP-8; SOT-223-4 / TO-261-4
NCP1077	Current Mode	65; 100; 130	Yes	Yes	4	700	800	Yes	8	6.4	Yes	No	No	No	PDIP-8; SOT-223-4 / TO-261-4
NCP1126	Current Mode	65; 100	Yes	Yes	6	650	0	Yes	0	8.8	Yes	No	No	No; Yes	PDIP-8
NCP1129	Current Mode	65; 100	Yes	Yes	2	650	0	Yes	0	8.8	Yes	No	No	No; Yes	PDIP-8
NCP1050	Gated Oscillator	44; 100; 136	Yes	Yes	30	700	100	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1051	Gated Oscillator	44; 100; 136	Yes	Yes	30	700	200	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1052	Gated Oscillator	44; 100; 136	Yes	Yes	30	700	300	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1053	Gated Oscillator	44; 100; 136	Yes	Yes	15	700	400	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1054	Gated Oscillator	44; 100; 136	Yes	Yes	15	700	530	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4
NCP1055	Gated Oscillator	45.5; 100; 140	Yes	Yes	15	700	680	Yes	6.3	Yes	Yes	No	No	Yes	PDIP-8; SOT-223-4 / TO-261-4

## ON Semiconductor Selector Guide – AC–DC Controllers and Regulators

### OFF-LINE REGULATORS (continued)

Device	Control Mode	f <sub>sw</sub> Typ (kHz)	f <sub>Jitter</sub> Typ (%)	Stand-by Mode	R <sub>DS(on)</sub> Typ (Ω)	V <sub>(BR)DSS</sub> Max (V)	I <sub>peak</sub> (mA)	HV Start-up Min (V)	DSS (mA)	UVLO	Short Circuit Protection	Over Power Comp.	Brown-out	Latch	Package
MC33363A	Voltage Mode	285	No	No	14	700	400	Yes		Yes	No	No	No	No	SOIC–16W
MC33363B	Voltage Mode	285	No	No	14	700	400	Yes		Yes	No	No	No	No	SOIC–16W
NCP1030	Voltage Mode	300	No	No	4.1	200	515	Yes	12.5	Yes	No	No	No	Yes	Micro8
NCP1031	Voltage Mode	Up to 1000	No	No	2.1	200	1050	Yes	16	Yes	No	No	No	Yes	DFN–8; SOIC–8
NCP1124															PDIP–8
NCP1032															WDFN–8
NCP1136															PDIP–8

### POWER FACTOR CONTROLLERS

Device	PFC Mode	Frequency Operation	Control Mode	Topology	f <sub>sw</sub> Typ (kHz)	V <sub>CC</sub> Max (V)	Drive Cap. (mA)	UVLO	Latch	UVP	Inhibition	Package
MC34262	CCM	Variable	Current Mode	Boost	50	30	500 / 500	Yes	Fixed	No	Yes	PDIP–8; SOIC–8
NCL30001	CCM	Fixed	Current Mode	Flyback	Up to 150	20	1000 / 1000				Yes	SOIC–16
NCP1650	CCM	Fixed	Current Mode	Step–Up	25 – 250	20	1500 / 1500	10 – 10.5	Yes	No	Yes	SOIC–16
NCP1653	CCM	Fixed	Current Mode	Step–Up	67; 100	18	1000 / 1000	8.7 – 13.25	Yes	Fixed	Yes	PDIP–8; SOIC–8
NCP1654	CCM	Fixed	Current Mode	Step–Up	65; 133; 200	20	1500 / 1500	10.5 – 13.75	No	Yes	Yes	SOIC–8
NCP1910	CCM	Variable	Current Mode	Half–Bridge	Up to 500	20	500 / 1000	9/10.4	Yes	Yes	Yes	SOIC–24
STK760–213A–E	CCM	Fixed	Current Mode	Step–Up	25000	20		10	No	Yes	–	SIP–22
STK760–216–E	CCM	Fixed	Current Mode	Step–Up	25000	20		10	No	Yes	–	Hybrid Integrated Module
NCP1652	CCM; DCM	Fixed	Current Mode	Step–Down	100	20	1	9.3 – 11.3	Yes	Yes	YES	SOIC–16; SOIC–20W
MC33262	CRM	Variable	Current Mode	Step–Up	Variable	30	500 / 500	8 – 13	Yes	No	Yes	PDIP–8; SOIC–8
MC33368	CRM	Variable	Current Mode	Step–Up	Variable	16	1000 / 1000	8.5 – 13	Yes	No	Yes	SOIC–16
NCL30000	CRM	Variable		Flyback	Up to 300	20	500 / 800			Yes	Yes	SOIC–8
NCL30002	CRM	Variable	Voltage Mode	Step–Down	Up to 250	20	500 / 800				Yes	SOIC–8
NCL30051	CRM	Variable	Voltage Mode		Variable				No			SOIC–16
NCP1607	CRM	Variable	Voltage Mode	Step–Up	Variable	20	500 / 800	9.5 – 12	Yes	Yes	Yes	SOIC–8
NCP1608	CRM	Variable	Voltage Mode	Step–Up	Variable	20	500 / 800	9.5 – 12	No	Yes	No	SOIC–8
NCP1611	CRM	Variable	Current Mode	Step–Up	Variable	35	500 / 800	9	No	Yes	Yes	SOIC–8
NCP1631	CRM	Variable	Voltage Mode	Step–Up	Up to 500	20	500 / 500	9.5 – 12	Yes	Yes	YES	SOIC–16
NCP1927	CRM	Fixed	Current Mode	Flyback	65	30	800 / 800	Yes	No	Yes	Yes	SOIC–16

## ON Semiconductor Selector Guide – AC–DC Controllers and Regulators

### POWER FACTOR CONTROLLERS (continued)

Device	PFC Mode	Frequency Operation	Control Mode	Topology	f <sub>sw</sub> Typ (kHz)	V <sub>CC</sub> Max (V)	Drive Cap. (mA)	UVLO	Latch	UVP	Inhibition	Package
NCP1937	CRM	Variable	Current Mode	Flyback	Variable	30	0.5	Yes	Yes	Yes	Yes	Small Outline Integrated
NCP1612	CRM; DCM	Variable	Current Mode	Step-Up	Variable	35	500 / 800	9	Yes	Yes	Yes	Small Outline Integrated
NCP1615	CRM; DCM	Variable	Current Mode	Step-Up	Variable	28	500 / 800	9	Yes	Yes	Yes	Small Outline Integrated
NCP1605	DCM	Fixed	Voltage Mode	Step-Up	Up to 250	20	500 / 800	9 – 15	Yes	Yes	Yes	SOIC–16

### SECONDARY SIDE CONTROLLERS

Device	Description	V <sub>CC</sub> Max (V)	V <sub>ref</sub> Typ (V)	I <sub>CC</sub> Max (A)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NCP4304	Secondary Side Controller, Synchronous Rectification, for High Efficiency SMPS Topologies	30	0	0.0062; 0.0066	–40	125	DFN–8; SOIC–8
NCP4328	Secondary Side Controller, Constant Voltage / Constant Current (CV / CC)	36	0.0625	0.0001	–40	125	TSOP–5 / SOT–23–5; TSOP–6
NCP4353	Secondary Side Sleep Mode Controller for Low Standby Power Adapters	36	1.25	0.00015	0	125	TSOP–6
NCP4354	Secondary Side Sleep mode Controller for Low Standby Power Adapters	36	1.25	0.00015	0	125	SOIC–8
NCP4355	Secondary Side Controller, SMPS Off Mode, for Low Standby Power Adapters	36	1.25	135; 155	–40	125	SOIC–8



# Amplifiers and Comparators

---

## Table of Contents

	Page
Audio Amplifiers .....	14
Companors .....	15
Comparators .....	15
Operational Amplifiers .....	16
Video Amplifiers .....	18

**AUDIO AMPLIFIERS**

Device	Class	Output Power Typ (W)	V <sub>CC</sub> Max (V)	Output Type	Efficiency Typ (%)	t <sub>on</sub> Typ (ms)	THD + N Typ (%)	I <sub>Q</sub> Typ (mA)	I <sub>SD</sub> Typ (nA)	Package
LA4425A	AB	5	16	Single			0.1	65		SIP-5
LA4425PV	AB	5	16	Single			0.1	65		SSOP-44K EP
LA4450	AB	12	30	Dual			0.07	80	1000	SIP-14
LA4535MC	AB	0.008	4	Dual			0.8	3.5	1000	
LA4537MC	AB	0.008	4	Dual			0.5	3.5	1000	
LA4625	AB	13.5	20	BTL			0.06	120	10000	SIP-14
LA4631VC	AB	4.5	22	Dual			0.15	35	1000	SIP-12
LA4708N	AB	20	16	BTL			0.07	150	10000	SIP-18; SIP-18/ SIP-18HD
LA4814JA	AB	0.35	7	Dual			0.35	8.6	100	SSOP-20
LA4815VH	AB	1.84	16	Single			0.125	5.3		HSSOP-14
LV47004P	AB	41	16	BTL			0.03	200	10000	HZIP-25
LV47009P	AB	41	16	BTL			0.03	200	10000	HZIP-25
LV47011P	AB	50	16	BTL			0.03	200	10000	HZIP-25
LV47017P	AB	48	16	BTL			0.03	200	10000	HSOP-36B
LV47022P	AB	48	16	BTL			0.02	200	3000	HZIP-25
LV49821VH	AB	1.4	5.5	BTL			0.3	7.1	10	HSSOP-13
NCP2809	AB	0.135	5.5	Multiple Analog	63	285	0.003	1.5	10	Micro10; UDFN-10
NCP2811	AB	0.11	5	Multiple Analog	60	1	0.01	6	10	Flip-Chip-12; TSSOP-14
NCP2815	AB	0.03	3.6	Differential	60	1	0.01	1.6	10	Flip-Chip-12
NCP2817	AB	0.042	5.5	BTL	65	1	0.02	2.3	1000	Flip-Chip-12
NCP2890	AB	1	5.5	BTL	63	285	0.02	1.5	10	Flip-Chip-9; Micro8
NCP2892	AB	1.3	5.5	BTL	63	90	0.01	1.5	10	Flip-Chip-9
NCP2892B	AB	1.3	5.5	BTL	63	90	0.01	1.5	10	Flip-Chip-9
NCP2990	AB	1.3	5.5	BTL	63	70	0.01	1.7	10	Flip-Chip-9
NCP2991	AB	1.35	5.5	BTL	64	30	0.015	1.8	20	Flip-Chip-9
NCP2993	AB	1.3	5.5	BTL	64	30	0.015	1.8	20	Flip Chip-9
NCP4894	AB	1.8	5.5	Differential	64	140	0.01	1.9	20	DFN-10; Flip-Chip-9; Micro10
NCS2211	AB	1.5	5.5	BTL	63	0.001	0.2	20	1000	DFN-8; SOIC-8
NCS2632	AB		5.5	Differential		0.55	0.001	7		TSSOP-14
STK404-070N-E	AB	60	±39	Analog	-	-	0.4	14	-	SIP-10
STK404-120N-E	AB	120	±59	Analog	-	-	1	60	-	SIP-12
STK404-140N-E	AB	180	±73	Analog	-	-	1	60	-	SIP-13
STK433-040N-E	AB	40	±36	Analog	-	-	0.02	30	-	SIP-15
STK433-060N-E	AB	50	±40	Analog	-	-	0.02	30	-	SIP-15
STK433-130N-E	AB	150	±63	Analog	-	-	0.01	80	-	SIP-15
STK433-330N-E	AB	150	±63	Analog	-	-	0.01	120	-	SIP-19
STK433-840N-E	AB	40	±36	Analog	-	-	0.02	60	-	SIP-23
STK433-890N-E	AB	80	±47	Analog	-	-	0.02	150	-	SIP-23
LV4904V	D	10	20	BTL	85		0.1	16	1000	SSOP-44J EP
LV49152V	D	15	18	BTL	93		0.08	45	1000	SSOP-44J EP
LV49157V	D	15	18	BTL	93		0.08	45	1000	

**AUDIO AMPLIFIERS** (continued)

Device	Class	Output Power Typ (W)	V <sub>CC</sub> Max (V)	Output Type	Efficiency Typ (%)	t <sub>on</sub> Typ (ms)	THD + N Typ (%)	I <sub>Q</sub> Typ (mA)	I <sub>SD</sub> Typ (nA)	Package
LV4924VH	D	10	20	BTL	89		0.1	38	10000	HSSOP-36
NCP2704	D	1.4	5.5	Differential	87	1	0.1	3.6	100	Flip-Chip-20
NCP2820	D	2.12; 2.19	5.5	Differential	87; 90	0.001; 9	0.05	2.2	300	DFN-8; Flip-Chip-9
NCP2823	D	1.5 3	5.5	BTL	90; 92	7.4	0.08	1.8 2.6	10	Flip-Chip-9
NCP2824	D	1.2	5.5	BTL	86	7.4	0.06	2.2	10	Flip-Chip-9
NCS8353	D	20	26	BTL	83	450	0.03	33	0.1	QFN-32
LA4628										SIP-14
LA4725										SIP-14
LA74309FA										Micro10
LV4910T										TSSOP-30

**COMPANDORS**

Device	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>CC</sub> Max (mA)	THD Typ (%)	e <sub>n</sub> Typ (μV)	V <sub>ref</sub> (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NE570	2	6	24	4.3	0.3	20	1.8	0	70	SOIC-16W
SA571	2	6	18	4.3	0.5	20	1.8	-40	85	SOIC-16W
SA572	2	6	22	6.3	0.05	6	2.5	-40	85	SOIC-16W; TSSOP-16
SA575	2	3	7	4.2	0.12	6	2.5	-40	85	SOIC-20W; TSSOP-20

**COMPARATORS**

Device	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Typ (mA)	I <sub>CC</sub> Typ (mA)	t <sub>res</sub> Typ (ns)	V <sub>IO</sub> Max (mV)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LM211	1	5	36	8	2.4	200	3	-25	85	SOIC-8
LM311	1	5	36	8	2.4	200	7.5	0	70	SOIC-8
LMV331	1	2.7	5	84	0.06	800	9	-40	85	SC-88A-5/ SC-70-5/ SOT-323-5 TSOP-5/ SOT-23-5
NCS2200	1	0.85	6	70	0.01	1100	5	-40	105	DFN-6; SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NCS2200A	1	0.85	6	60	0.01	1100	5	-40	105	UDFN-6
NCS2202	1	0.85	6	70	0.01	1100	5	-40	105	SC-88A-5/ SC-70-5/ SOT-323-5 TSOP-5/ SOT-23-5
NCV331	1	2.7	5	84	0.06	800	9	-40	125	TSOP-5/ SOT-23-5
TS391	1	2	36		0.5	620	5	-40	125	TSOP-5/ SOT-23-5
LM2903	2	2	36	16	0.7	1500	7	-40	105	Micro8; PDIP-8; SOIC-8
LM2903V	2	2	36	16	0.7	1500	7	-40	125	SOIC-8
LM293	2	2	36	16	0.7	1300	5	-25	85	Micro8; SOIC-8
LM393	2	2	36	16	0.7	1300	5	0	70	Micro8; PDIP-8; SOIC-8
LMV393	2	2.7	5.5	84	0.1	800	9	-40	85	Micro8; SOIC-8; UDFN-8
MC10E1651	2	-5.2	5	50	55	0.925	25	0	85	PLLCC-20
MC10E1652	2	-5.2	5	50	50	0.925		0	85	PLLCC-20
NCS2220	2	0.85	6	60	0.075	500	5	-40	105	UDFN-8
NCS3402	2	2.7	16	0.00000005	0.00047	5000	3.6	-40	125	SOIC-8
NCV2393	2	2.7	16		0.006			-40	125	SOIC-8
NCV2903	2	2	36	16	0.7	1500	7	-40	125	Micro8; SOIC-8
NE521	2	-7	7	-100	27	9.6	7.5	0	70	SOIC-14



## ON Semiconductor Selector Guide – Amplifiers and Comparators

### COMPARATORS (continued)

Device	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Typ (mA)	I <sub>CC</sub> Typ (mA)	t <sub>res</sub> Typ (ns)	V <sub>IO</sub> Max (mV)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LM239	4	3	36	16	1	1300	5	-25	85	PDIP-14; SOIC-14; TSSOP-14
LM2901	4	3	36	16	1	1300	7	-40	105; 125	PDIP-14; SOIC-14; TSSOP-14
LM339	4	3	36	16	1	1300	5	0	70	PDIP-14; SOIC-14; TSSOP-14
LMV339	4	2.7	5	84	0.17	800	9	-40	85	SOIC-14; TSSOP-14
MC3302	4	3	30	16	1	1300	20	-40	85	SOIC-14; TSSOP-14
NCV2901	4	3	36	16	1	1300	7	-40	125; 150	NA-Bare Die; SOIC-14; TSSOP-14
NCS2300										UDFN-6

### OPERATIONAL AMPLIFIERS

Device	Channels	Rail to Rail	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Min (mA)	I <sub>O</sub> Typ (mA)	I <sub>D</sub> Typ (mA)	GBW Typ (MHz)	SR Typ (V/μS)	V <sub>IO</sub> Max (mV)	Package
LA6500	1	No	4.5	18	-1000	1000	6		0.15		TO-220-5
LM201A	1	No	3	22	7.5	10	1.8	1	0.5	2	SOIC-8
LM301A	1	No	3	18	7.5	10	1.2	1	0.5	7.5	SOIC-8
LMV301	1	Yes	1.8	5.5	10	60	0.2	1	1	9	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
LMV321	1	Yes	2.5	5.5	10	160	0.25	1	1	9	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
LMV821	1	Yes	2.5	5.5	12	26	0.3	5	2	3.5	SC-88A-5/ SC-70-5/ SOT-323-5
LMV931	1	Yes	1.8	5	68	80	0.21	1.4	0.48	6	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
LMV981	1	Yes	1.8	5	58	80	0.21	1.5	0.48	6	ULLGA-8
MC33071	1	No	3	44	10	30	1.9	4.5	10	5	SOIC-8
MC33171	1	No	3	44	3	5	0.22	1.8	2.1	4.5	SOIC-8
MC33201	1	Yes	1.8	12	50	80	0.9	2.2	1	6	SOIC-8
MC34071	1	No	3	44	10	30	1.9	4.5	10	5	SOIC-8
MC34071A	1	No	3	44	10	30	1.9	4.5	10	3	SOIC-8
NCS2001	1	Yes	0.9	7	40	76	0.82	1.4	1.6	6	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NCS2002	1	Yes	0.9	7	65	86	0.002	1	1.2	6	TSOP-6
NCS2003	1	Output	1.7	5.5	5; 40		300	5 7	6	5	TSOP-5/ SOT-23-5
NCS2004	1	Output	2.5	16	0	4	0.39	3.5	2.6	5	SC-88A-5/ SC-70-5/ SOT-323-5; UDFN-6
NCS325	1	Input/ Output	1.8	5.5		5	21	0.35	0.16	0.05	TSOP-5/ SOT-23-5
NCS36000	1		3	5.5							SOIC-14

OPERATIONAL AMPLIFIERS (continued)

Device	Channels	Rail to Rail	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Min (mA)	I <sub>O</sub> Typ (mA)	I <sub>D</sub> Typ (mA)	GBW Typ (MHz)	SR Typ (V/μS)	V <sub>IO</sub> Max (mV)	Package
NCS7101	1	Yes	1.8	10	50	72	1.13	1	1.2	7	TSOP-5/ SOT-23-5
NCV2002	1	Input/Output	0.9	7	0	86	0.002	1	1.2	6	TSOP-6
NE5230	1	Yes	1.8	15	4	6	0.11	0.25	0.09	3	SOIC-8
NE5534	1	No	3	20		38	8	10	13	4	PDIP-8; SOIC-8
TLV271	1	Yes	2.7	16	5	13	0.56	3	2.6	5	TSOP-5/ SOT-23-5
LM258	2	No	3	32	20	40	1.5	1	0.6	5	Micro8; PDIP-8; SOIC-8
LM2904	2	No	3	32	20	40	1.5	1	0.6	7	Micro8; PDIP-8; SOIC-8
LM2904V	2	No	3	32	20	40	1.5	1	0.6	7	Micro8; PDIP-8; SOIC-8
LM358	2	No	3	32	20	40	1.5	1	0.6	3 7	Micro8; PDIP-8; SOIC-8
LM392	2	No	3	30	20	40	60	1	0.1	5	SOIC-8
LM833	2	No	10	36	10	29	4	15	7	5	PDIP-8; SOIC-8
LMV358	2	Yes	2.5	5.5	10	160	0.44	1	1	9	Micro8; SOIC-8; UDFN-8
LMV932	2	Yes	1.8	5.5	4; 7; 18; 20; 55; 58	30; 60; 65; 75; 80	0.075	1.4; 1.5	0.35	6	Micro8; SOIC-8
LMV982	2	Yes	1.8	5	58	80	0.42	1.5	0.48	7.5	UQFN-10
MC33072	2	No	3	44	10	30	3.8	4.5	10	3 5	PDIP-8; SOIC-8
MC33077	2	No	2.5	18	10	26	3.5	37	11	1	SOIC-8
MC33078	2	No	5	18	15	29	4	16	7	2	PDIP-8; SOIC-8
MC33172	2	No	3	44	0	5	0.44	1.8	2.1	4.5	SOIC-8
MC33178	2	No	4	36	50	80	0.9	5	2	3	Micro8; SOIC-8
MC33202	2	Yes	1.8	12	50	80	1.8	2	1	8	Micro8; SOIC-8
MC33272A	2	No	3	36	25	37	4.3	24	10	1 2.5	SOIC-8
MC34072	2	No	3	44	10	30	3.8	4.5	10	5	PDIP-8; SOIC-8
MC34072A	2	No	3	44	10	30	3.8	4.5	10	3 5	PDIP-8; SOIC-8; WQFN-10
NCS2372	2		5	40			0.005	1.4	1.4	0.015	SOIC-16W
NCS5650	2	Input/Output	6; +3,-3	12; +6,-6	0	1500	20	60; 80	80	10	QFN-20
NCV2904	2	No	3	32	20	40	1.5	1	0.6	7	Micro8; SOIC-8
NCV33072	2	No	3	44	10	30	3.8	4.5	10	5	SOIC-8
NCV33202	2	Yes	1.8	12	50	80	1.8	2	1	8	Micro8; SOIC-8
NE5517	2	No	-18	18		0.005	2.6	2	50	5	SOIC-16
NE5532	2	No	3	20	10	38	8	10	9	2 4	SOIC-16W; SOIC-8
TCA0372	2	No	5	40	0	1000	5	1.4	1.4	15	PDIP-8; SOEIAJ-16; SOIC-16W
LM224	4	No	3	32	20	40	1.4	1	0.6	5	PDIP-14; L5; SOIC-14; TSSOP-14
LM2902	4	No	3	32	20	40	1.4	1	0.6	7	PDIP-14; L5; SOIC-14; TSSOP-14

# ON Semiconductor Selector Guide – Amplifiers and Comparators

## OPERATIONAL AMPLIFIERS (continued)

Device	Channels	Rail to Rail	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Min (mA)	I <sub>O</sub> Typ (mA)	I <sub>D</sub> Typ (mA)	GBW Typ (MHz)	SR Typ (V/μs)	V <sub>IO</sub> Max (mV)	Package
LM2902V	4	No	3	32	20	40	1.4	1	0.6	7	SOIC-14; TSSOP-14
LM324	4	No	3	32	20	40	1.4	1	0.6	7	PDIP-14; L5; SOIC-14; TSSOP-14
LM324A	4	No	3	32	20	40	1.4	1	0.6	3	SOIC-14; TSSOP-14
LMV324	4	Yes	2.5	5.5	10	160	0.83	1	1	9	SOIC-14; TSSOP-14
LMV824	4	Yes	2.5	5.5	12	26	1.3	5	2	3.5	SOIC-14; TSSOP-14
MC3303	4	No	3	36	10	30	2.8	1	0.6	8	SOIC-14
MC33074	4	No	3	44	10	30	7.6	4.5	10	3	PDIP-14; L5; SOIC-14; TSSOP-14
MC33079	4	No	5	18	15	29	8.4	16	7	2	PDIP-14; SOIC-14
MC33174	4	No	3	44	3	5	0.88; 880	1.8	2.1	4.5; 4500	SOIC-14; TSSOP-14
MC33179	4	No	4	36	50	80	1.7	5	2	3	SOIC-14; TSSOP-14
MC33204	4	Yes	1.8	12	50	80	3.6	2.2	1	10	SOIC-14; TSSOP-14
MC33274A	4	No	3	36	25	37	8.6	24	10	1	SOIC-14; TSSOP-14
MC3403	4	No	3	36	10	20	2.8	1	0.6	10	SOIC-14
MC34074	4	No	3	44	10	30	7.6	4.5	10	3 5	PDIP-14; SOIC-14
MC34074A	4	No	3	44	10	30	7.6	4.5	10	3	PDIP-14; SOIC-14
NCV2902	4	No	3	32	20	40	1.4	1	0.6	7	SOIC-14; TSSOP-14
NCV33204	4	Yes	1.8	12	50	80	3.6	2	1	10	SOIC-14; TSSOP-14
NCV33274A	4	No	3	36	25	37	8.6	24	10	1	SOIC-14; TSSOP-14
LA6571	5										HSOP-36B

## VIDEO AMPLIFIERS

Device	Channels	GBW Typ (MHz)	V <sub>CC</sub> Max (V)	I <sub>D</sub> Typ (mA)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LA73076V	1		3.6	37	-20	80	SSOP-16
NCS2561	1	8	3.3	6	-40	125	SC-88-6/ SC-70-6/ SOT-363-6
NE592	1	40; 90	8	18	0	70	SOIC-14; SOIC-8
NCS2553	3	8	5.5	23	-40	85	SOIC-8
NCS2563	3	30	5.5	22	-40	85	SOIC-8
NCS2564	4	8; 34	5.3	40	-40	85	TSSOP-14
NCS2584	4	8; 34	5.5	40	-40	85	TSSOP-14
NCS2566	6	8; 34	5.3	65	-40	85	TSSOP-20

# Analog Switches

---

## Table of Contents

	<b>Page</b>
Audio Switches .....	20
Data Switches .....	20
Signal Switches .....	22
Video Switches .....	23

## ON Semiconductor Selector Guide – Analog Switches

### AUDIO SWITCHES

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
NS5B1G385	1	1	SPST	1	7	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NLAS4157	2	1	SPDT	1	1	1.65	5.5	SC-88-6/ SC-70-6/ SOT-363-6
NLAS5123	2	1	SPDT	1	1	1.65	5.5	UDFN-6; WDFN-6
NLAS5157	2	1	SPDT	1	0.5	1.65	4.3	UDFN-6
NLAS5213	2	2	DPST; SPST	1	1.3	1.65	4.5	UDFN-8; US8
NLAS2750	4	2	SPDT	2	0.5	1.65	4.5	UQFN-10
NLAS4684	4	2	SPDT	0.2	0.5	1.8	5.5	DFN-10; Flip-Chip-10; Micro10
NLAS5223	4	2	SPDT	2	0.5	1.65	3.6	WQFN-10
NLAS52231	4	2	SPDT	2	0.5	1.65	4.5	UQFN-10
NLAS5223B	4	2	SPDT	2	0.5	1.65	4.5	UQFN-10; WQFN-10
NLAS5223C	4	2	SPDT	2	0.35	1.65	4.5	UQFN-10
NS5A4684S	4	2	SPDT	2	0.6	0.65	5.5	WQFN-10
NS5S1153	4	2	DPDT	35	4.6	2.7	5	UQFN-10
NLAS4783	6	3	SPDT	2	1.2	1.65	3.6	QFN-16
NLAS4783B	6	3	SPDT	2	1.2	1.65	4.5	QFN-16
NLAS3699	8	4	DPDT	2	0.5	1.65	3.6	QFN-16
NLAS3699B	8	4	DPDT	2	0.75	1.65	4.5	QFN-16
NLAS3799	8	4	DPDT	2	0.5	1.65	3.6	QFN-16
NLAS3799B	8	4	DPDT	2	0.4	1.65	4.5	QFN-16; UQFN-16
NLAS3899	8	4	DPDT	2	4	1.65	4.3; 4.4	QFN-16
LC78211								PDIP42/ DIP42S (600 mil)

### DATA SWITCHES

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
7SB3125	1	1	SPST	2.5	6	4	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5; UDFN-6; ULLGA-6
7SB3126	1	1	SPST	1	6	4	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5; UDFN-6; ULLGA-6
7SB3257	1	1	SPST	1	6	4	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5; UDFN-6; ULLGA-6
7SB384	1	1	SPST	1	6	4	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5; UDFN-6; ULLGA-6

## ON Semiconductor Selector Guide – Analog Switches

### DATA SWITCHES (continued)

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
7SB385	1	1	SPST	1	6	4	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5; UDFN-6; ULLGA-6
NS5B1G384	1	1	SPST	1	7	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5 TSOP-5/ SOT-23-5
NS5B1G385	1	1	SPST	1	7	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5 TSOP-5/ SOT-23-5
7WB3125	2	2	SPST	1	6	4	5.5	UDFN-8; ULLGA-8
7WB3126	2	2	SPST	1	6	4	5.5	UDFN-8; ULLGA-8
7WB3305	2	2	SPST	1	6	4	5.5	UDFN-8; ULLGA-8
7WB3306	2	2	SPST	1	6	4	5.5	TSSOP-8; UDFN-8; ULLGA-8
7WB383	2	2	SPDT	1	6	4	5.5	UDFN-8; ULLGA-8
7WBD3125	2	2	SPST	1	15	4	5.5	UDFN-8; ULLGA-8; UQFN-8; US8
7WBD3126	2	2	SPST	1	15	4	5.5	UDFN-8; ULLGA-8; UQFN-8; US8
7WBD3305	2	2	SPST	1	15	4	5.5	UDFN-8; ULLGA-8; UQFN-8; US8
7WBD3306	2	2	SPST	1	15	4	5.5	TSSOP-8; UDFN-8; ULLGA-8; UQFN-8; US8
7WBD383	2	2	SPDT	1	15	4	5.5	UDFN-8; ULLGA-8; UQFN-8; US8
NLAS7213	2	2	DPST	1	9	1.65	4.5	UQFN-8
74FST3257	4	4	SPDT	3	4	4	5.5	QFN-16; SOIC-16; TSSOP-16
NLAS4717	4	2	SPDT	1	4.5	1.8	5.5	Flip-Chip-10; Micro10
NLAS4717EP	4	2	SPDT	1	4.5	1.8	5.5	Flip-Chip-10; WQFN-10
NLAS7222A	4	2	DPDT	4	9	3	3.6	UQFN-10; WQFN-10
NLAS7222B	4	2	DPDT	1	8	1.65	4.5	UQFN-10
NLAS7222C	4	2	DPDT	1	8	1.65	4.5	UQFN-10
NLAS7242	4	2	DPDT	1	7.5	1.65	4.5	UQFN-10
NS5S1153	4	2	DPDT	35	4.6	2.7	5	UQFN-10
NCN1154	6	2	DP3T	35	7.5	2.7	5	UQFN-12
NCN1188	6	2	DP3T	35	7.5	2.7	5.5	UQFN-12
NCN9252	6	2	DP3T	1	6	1.65	4.5	UQFN-12
NLAS8252	6	2	DP3T	1	6	1.65	4.5	UQFN-12
LC824204-13YB	8	2	DP4T		5	3	3.6	
NLAS3899	8	4	DPDT	2	4	1.65	4.3; 4.4	QFN-16
LC824206XA	10	2	DP5T		5	3.1	4.6	
NCN2411	16	8	8PDT	300	13	1.5	2	WQFN-42
NCN3411	16	8	8PDT	300	13	1.5	2	WQFN-42
NCN7200	22	11	11PDT	1500	16	3	3.6	WQFN-42
NCN7201	22	11	11PDT	450	6	3	3.6	WQFN-42
NS3L500	22	11	11PDT	600	7	3	3.6	WQFN-56

## ON Semiconductor Selector Guide – Analog Switches

### DATA SWITCHES (continued)

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
NCN2612	24	12	12PDT	500	13	3	3.6	WQFN-56
NCN2612B	24	12	12PDT	350	13	3	3.6	WQFN-56
NCN3612B	24	12	12PDT	350	13	3	3.6	WQFN-56

### SIGNAL SWITCHES

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
MC74VHC1G66	1	1	SPST	40	45	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
MC74VHC1GT66	1	1	SPST	40	45	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NLAS4501	1	1	SPST	1	30	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NLAST4501	1	1	SPST	2	30	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NS5B1G385	1	1	SPST	1	7	2	5.5	SC-88A-5/ SC-70-5/ SOT-323-5; TSOP-5/ SOT-23-5
NLAS1053	2	1	SPDT	2	28	2	5.5	US8
NLAS4599	2	1	SPDT	2	30	2	5.5	SC-88-6/ SC-70-6/ SOT-363-6; TSOP-6
NLAS5123	2	1	SPDT	1	1	1.65	5.5	UDFN-6; WDFN-6
NLASB3157	2	1	SPDT	10	50	1.65	5.5	SC-88-6/ SC-70-6/ SOT-363-6; WDFN-6
NLAST4599	2	1	SPDT	2	105	2	5.5	SC-88-6/ SC-70-6/ SOT-363-6; TSOP-6
MC74HC4052A	2	2	DP4T	80	190	2	12	SOIC-16; SOIC-16W; TSSOP-16
NL7WB66	2	2	SPST	2	11	1.65	5.5	US8
NLAS2066	2	2	SPST	2	11	1.65	5.5	US8
NLAS323	2	2	SPST	2	30	2	5.5	US8
NLAS324	2	2	SPST	2	30	2	5.5	US8
NLAS325	2	2	SPST	8	30	2	5.5	US8
NLX2G66	2	2	SPST	10	5	1.65	5.5	UDFN-8
MC14052B	2	2; 4	DP4T	600	500	3	18	SOIC-16; TSSOP-16
MC74HC4053A	3	3	SPDT	80	190	2	12	SOIC-16; SOIC-16W; TSSOP-16
MC74HC4852A	3	8	SP8T	40	550	2	6	SOIC-16; TSSOP-16
MC74HC4066A	4	1	SPST	4	120	2	12	SOIC-14; TSSOP-14
NLAS9431	4	2	DPDT	8	30	2	5.5	QFN-16
NLAS3158	4	2	SPDT	10	6	1.65	5.5	DFN-12
NLAS4717EP	4	2	SPDT	1	4.5	1.8	5.5	Flip-Chip-10; WQFN-10
NLAS5223	4	2	SPDT	2	0.5	1.65	3.6	WQFN-10
MC74HCT4066A	4	4	SPST	2	120	4.5	5.5	SOIC-14; TSSOP-14
MC74LVX4066	4	4	SPST	160	25	2	6	SOIC-14; TSSOP-14
MC74LVXT4066	4	4	SPST	160	25	2	5.5	SOIC-14; TSSOP-14

**SIGNAL SWITCHES** (continued)

Device	Number of Switches	Channels	Configuration	I <sub>CC</sub> Max (μA)	r <sub>on</sub> Max (Ω)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Package
MC74VHC4066	4	4	SPST	160	120	2	12	SOIC-14; TSSOP-14
MC14016B	4	1; 4	SPST	30	660	3	18	SOIC-14
MC14066B	4	1; 4	SPST	30	500	3	18	SOIC-14; TSSOP-14
MC74HC4316A	4	1; 4	SPST	160	160	2	6	SOIC-16
MC74LVX8053	6	3	SPDT	160	30	2	6	SOIC-16; TSSOP-16
MC74LVXT8053	6	3	SPDT	80	30	2	6	SOIC-16; TSSOP-16
NLAS4053	6	3	SPDT	80	0.037; 37	2.5	5.5	SOIC-16; TSSOP-16
MC74HC4051A	8	1	SP8T	80	190	2	12	SOIC-16; SOIC-16W; TSSOP-16
MC74HC4851A	8	1	SP8T	40	550	2	6	SOIC-16; SOIC-16W; TSSOP-16
MC74LVX8051	8	1	SP8T	160	30	2	6	SOIC-16; TSSOP-16
MC74LVXT8051	8	1	SP8T	80	30	2	6	SOIC-16; TSSOP-16
MC74VHC4051	8	1	SP8T	80	160	2	6	SOIC-16; TSSOP-16
NLAS4051	8	1	SP8T	80	37	2.5	5.5	SOIC-16; TSSOP-16
NLAST4051	8	1	SP8T	80	37	2.5	5.5	TSSOP-16
NLAS3799	8	4	DPDT	2	0.5	1.65	3.6	QFN-16
NLAS3899	8	4	DPDT	2	4	1.65	4.3; 4.4	QFN-16
NLAS44599	8	4	DPDT	8	30	2	5.5	QFN-16; TSSOP-16
NLAST44599	8	4	DPDT	8	30	2	5.5	QFN-16; TSSOP-16
NLAST9431	8	4	DPDT	8	30	2	5.5	QFN-16
MC14067B	16	1	SP16T	600	500	3	18	SOIC-24
MC14051B	1; 8	1; 8	SP8T	600	500	3	18	SOIC-16; TSSOP-16
MC14053B	3; 6	2; 3	SPDT	600	500	3	18	SOIC-16; TSSOP-16
MC14551B	4; 8	2; 4	4PDT	600	500	3	18	SOIC-16

**VIDEO SWITCHES**

Device	Number of Inputs	Number of Outputs	I <sub>CC</sub> Typ (mA)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LV7109E	3	6	104	4.5; 11.1	5.3; 12.5	-20	75	PQFP-64/ QIP-64E
LA72730	4	2	18	4.5	5.5	-20	70	PDIP-28
LA73031V	6		75	4.75	5.25	-20	75	SSOP-44
LV71081E	6	6	160	4.5; 11.1	5.3; 12.5	-20	75	PQFP-100/ QIP-100EK





# Audio/Video ASSP

---

## Table of Contents

	<b>Page</b>
Audio ASSP .....	26
Audio DSP Systems .....	26
Audiology DSP Systems .....	27
Display Controllers .....	28
MMICs .....	28
Modulators/Demodulators .....	28

**AUDIO ASSP**

Device	Function	Control Type	f <sub>s</sub> Max (kHz)	Power Dissipation Max (mW)	Supply Voltage Min (V)	Supply Voltage Max (V)	Operating Temp Min (°C)	Operating Temp Max (°C)	Package
LA1225MC	FM IF			100	1.8	8	-20	85	SOIC-10 NB
LA1787M	Tuner			950	7.5	9	-40	85	PQFP-64/ QIP-64E
LA1837M				550	7	11	-20	70	MFP-30SDJ
LA72702NV	MTS Decoder			290	4.5	5.5	-20	85	SSOP-24
LA72715NV	MTS Decoder			203	4.5	5.5	-20	80	SSOP-24
LC01707PLF	PLL Frequency Synthesizer			700	3	3.6	-40	85	QFN-44/ VQFN-44K
LC72121MA	PLL Frequency Synthesizer			200	2.7	3.6	-40	85	SOIC-24 W/ MFP-24SJ
LC72131KMA	Mobile FM Multi Broadcast Demodulator			180	4.5	5.5	-40	85	SOIC-20 W/ MFP-20J
LC72717PW	Mobile FM Multi Broadcast Demodulator				2.7	3.6	-40	85	SPQFP-64/ SQFP-64
LC72720YV	RDS/RBDS Signal Processor			150	3	3.6	-40	85	SSOP-30
LC72720YVS	RDS/RBDS Signal Processor			150	3	3.6	-40	85	SSOP-30
LC72722PM	RDS/RBDS Signal Processor			100	3	5.5	-40	85	SOIC-24 W/ MFP-24
LC72725KV	RDS Demodulator			100	3	5.5	-40	85	SSOP-16
LC72725KVS	RDS Demodulator			100	3	5.5	-40	85	SSOP-16
LC75106V	Digital Echo			500	8	10	-20	70	SSOP-36
LC89057W-VF4A	S/PDIF Modulator/ Demodulator	4-wire	195	140	3	3.6	-30	70	SPQFP-48/ SQFP-48
LC89058W	S/PDIF Demodulator	4-wire	195	144	3	3.6	-30	70	SPQFP-48/ SQFP-48
LC89075WA	S/PDIF Demodulator	SPI	195	400	4.5, 3.0	5.5, 3.6	-30	85	SPQFP-64/ SQFP-64
LC89091JA	S/PDIF Demodulator	I2C	195	72	3	3.6	-30	70	SSOP-16
LV24250LS									VQLP-24J
LV25500PQA	Tuner	I2C		1300	4.5	5.5	-40	85	WQFN56 7x7, 0.4P
LV3313PM	Electronic Volume				7	9	-40	85	PQFP-44/ QIP-44M
LV3319PM	Electronic Volume			600	7	9.5	-40	85	PQFP-44/ QIP-44M
LV3327PV	Electronic Volume				3	5.5	-40	85	SSOP-16

**AUDIO DSP SYSTEMS**

Device	DSP Core (bits)	Coprocessor Type	MIPS	Dynamic Range (dB)	RAM (kB)	I <sub>standby</sub> Typ (µA)	Audio Inputs	Audio Outputs	Package
BELASIGNA 200	16	WOLA	40	83	42	250	2	2	NQFP-52; WLCSP-40
BELASIGNA 250	16	WOLA	60	88	42	50	2	2	LFBGA-57; LFBGA-64
LC70310KBG	16		50			10			LFBGA64 5x5/ FBGA64K
BELASIGNA 300	24	HEAR	240	110	110	40	4	1	DFN-44; WLCSP-35
LC703200AW	32		68	88		10	2	2	SPQFP-64/ SQFP-64
LC823430TA	32		60				2	2	TQFP-128/ TQFP-128L

**AUDIOLOGY DSP SYSTEMS**

Device	Description	WDRC Channels	Graphic EQ Bands	Program Modes	Advanced Algorithms	Acoustic Indicators	Other Features	Package
RHYTHM SB3229	Preconfigured DSP System for Hearing Aids, with up to 4 WDRC channels	1; 2; 4	8	4	Adaptive Feedback Cancellation	EVOKE	Digital Volume Control; Software Configurable; Trimmer Support	
RHYTHM SB3231	Preconfigured DSP System for Hearing Aids, with up to 4 WDRC channels	1; 2; 4	8	4	Adaptive Feedback Cancellation; Adaptive Noise Reduction; FrontWave Directional Microphone	EVOKE	Digital Volume Control; Software Configurable; Trimmer Support	
AYRE SA3291	Preconfigured Wireless DSP System for Hearing Aids, with up to 8 WDRC channels	1; 2; 4; 6; 8	16	6	Adaptive Feedback Cancellation; Adaptive Noise Reduction; Automatic Adaptive Directionality; Binaural Synchronization; Binaural Telecoil; Environmental Classification; FrontWave Directional Microphone Static Feedback Management Stereo Audio Streaming	EVOKE	Datalogging; Digital Volume Control; NFMI Wireless Transceiver; Software Configurable	
RHYTHM R3710	Preconfigured DSP system for hearing aids, with up to 8 WDRC Channels	1; 2; 4; 6; 8	16	4	Adaptive Feedback Cancellation; Adaptive Noise Reduction; Environmental Classification; Static Feedback Management	EVOKE	Datalogging; Digital Volume Control; Software Configurable	
RHYTHM R3910	Preconfigured DSP System for Hearing Aids, with up to 8 WDRC channels	1; 2; 4; 6; 8	16	6	Adaptive Feedback Cancellation; Adaptive Noise Reduction; Automatic Adaptive Directionality; Environmental Classification; FrontWave Directional Microphone; Static Feedback Management	EVOKE	Datalogging; Digital Volume Control; Software Configurable	
RHYTHM R3110	Pre-Fit DSP Solution for Hearing Aids	2			Adaptive Feedback Cancellation; FrontWave Directional Microphone			SIP21, 3.10x5.08
RHYTHM R3920	Preconfigured DSP System for Hearing Aids	16	16	6	Adaptive Feedback Cancellation; Adaptive Noise Reduction; Automatic Adaptive Directionality; Environmental Classification; FrontWave Directional Microphone; Impulse Noise Reduction	EVOKE	Datalogging; Digital Volume Control; Software Configurable	Case outline for SDT parts

## ON Semiconductor Selector Guide – Audio/Video ASSP

### DISPLAY CONTROLLERS

Device	Description	Character Format	Number of Characters Supported (Internal)	Number of Colors	Control Input	Supply Voltage Min (V)	Supply Voltage Max (V)	Operating Drain Current Max (A)	Package
LA7784	Down-Converter for Digital CATV					4.5	5.5	0.002	HSOP-28
LA8153QA	Down Converter IC for Digital CATV								VQFN-28/ VQFN28-U
LC74731W	Display Controller, Video On-Screen	16 x 16	256	8	Serial, 8-bit	4.5	5.5	0.04	SPQFP-64/ SQFP-64
LC74732W	Display Controller, Video On-Screen	16 x 16	512	8	Serial, 8-bit	4.5	5.5	0.04	SPQFP-64/ SQFP-64
LC74772V	Display Controller, Video On-Screen	12 x 18	256	8	Serial, 8-bit	2.7	5.5	0.01	SSOP-24
LC749000AT	LCD Processor for Small Size Display	16 x 20	512	8	I2C; SPI	1.4; 3.15	1.6; 3.45		TQFP-120
LC749000PT	LCD Processor for Small Size Display for Automotive Applications	16 x 20	512	8	I2C; SPI	1.4; 3.15	1.6; 3.45		TQFP-120
LC749402BG	LCD Picture Quality Improvement Controller				I2C	1; 1.7; 2.6	1.3; 1.9; 3.6		LFBGA-96/ ISB-96
LC749402PT	LCD Picture Quality Improvement Controller				I2C	1.1; 1.7; 2.6	1.3; 1.9; 3.6		TQFP-100

### MMICs

Device	I <sub>cc</sub> Min (mA)	I <sub>cc</sub> Max (mA)	Power Gain Min (dB)	Power Gain Max (dB)	Isolation Max (dB)	Input Return Loss Min (dB)	Output Return Loss Min (dB)	Noise Figure Max (dB)	PO(1 dB Compression) Min (dBm)	Upper Freq (3 dB) (GHz)	I <sub>E</sub> Cutoff Max (μA)	Conversion Gain Typ (dB)	Input Intercept (3 dB) Typ (dBm)	V <sub>cc</sub> Min (V)	V <sub>cc</sub> Max (V)	Package
SMA3101	7.1	12.6	21.5	28.5	31; 33	11; 12	8; 10	5.3	-7; -5	3				4.5	5.5	SC-88FL/ MCPH-6
SMA3103	14	25	24	29; 30	31	10; 12	10; 12	5.3	4; 6	3.3				4.5	5.5	SC-88FL/ MCPH-6
SMA3107	4.3	7.7	21; 22	26; 27	33; 40	10; 18	10; 27	4.3	-11.5; -8.5	2.8				2.7	3.3	SC-88FL/ MCPH-6
SMA3109	11.5	20.5	21; 22	26; 27	27	10; 16	10; 15	5	2; 4	3.6				2.7	3.3	SC-88FL/ MCPH-6
SMA3117	18.5	28	29.5	32.5	35	9	11	5	7.5	3				4.5	5.5	SC-88FL/ MCPH-6
SMA4306	29	39	4.5	8.5					4.5					3	5.5	SC-88FL/ MCPH-6
SMA5101		50									1	-0.5	15	1.2	6	SC-88FL/ MCPH-6

### MODULATORS/DEMODULATORS

Device	Description	Supply Voltage	Operating Temp Min (°C)	Operating Temp Max (°C)	Package
LA72910V	FM Modulator and Demodulator for Video Signals	5	-30	70	SSOP-16
LA72912V	FM Modulator and Demodulator for Video Signals Plus ASK Communication	5	-30	70	SSOP-24
LA72914V	FM Modulator and Demodulator for Audio Signals	5	-20	70	SSOP-16
MC1496	Balanced Modulator and Demodulator	15	0	70	SOIC-14
MC1496B	Balanced Modulator and Demodulator	15	-40	125	SOIC-14

# Bipolar Transistors


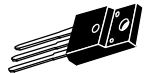
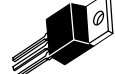


---

## Table of Contents







	Page
Audio Transistors .....	30
Digital Transistors (BRTs) .....	31
Darlington Transistors .....	33
General Purpose BJTs >100 V .....	37
General Purpose BJTs .....	39
General Purpose BJTs – Dual .....	49
Low $V_{CE(sat)}$ Transistors .....	50
Mixed Element Arrays (MEAs) .....	51

# ON Semiconductor Selector Guide – Bipolar Transistors

## AUDIO TRANSISTORS

						TO-3P	TO-220 FULLPAK	TO-220	TO-225AA	DPAK	
<b>I<sub>C</sub> Continuous (A)</b>	<b>V<sub>CEO</sub> (V)</b>	<b>h<sub>FE</sub> Min</b>	<b>h<sub>FE</sub> Max</b>	<b>f<sub>T</sub> Min (MHz)</b>	<b>Polarity</b>						
4	100	40	180	40	NPN					MJD243	
					PNP					MJD253	
					NPN				MJE243		
					PNP				MJE253		
	350	100	-	-	30	NPN			MJE15034		
						PNP				MJE15035	
8	80	60	-	-	NPN					MJD44H11	
					PNP						MJD45H11
	120	40	-	-	30	NPN			MJE15028		
						PNP				MJE15029	
	150	40	-	-	30	NPN			MJE15030		
						PNP				MJE15031	
						NPN			MJF15030		
						PNP			MJF15031		
	250	50	-	-	30	NPN			MJE15032		
						PNP				MJE15033	
10	80	100	400	-	NPN	NJW44H11					
		40	-	-	NPN				D44H11		
					PNP				D45H11		





DIGITAL TRANSISTORS (BRTs)

Single Digital Transistors					Package	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-723	SOT-1123
					Size (mm)	2.9 x 2.8 x 1.15	2.9 x 2.4 x 1.0	2.1 x 2.1 0.9	1.6 x 1.6 x 0.8	1.2 x 1.2 x 0.5	1.0 x 0.6 x 0.37
I <sub>c</sub> Continuous (A)	V <sub>CEO</sub> (V)	R <sub>1</sub> (kΩ)	R <sub>2</sub> (kΩ)	hFE Min	Polarity						
						Case 318D	Case 318	Case 419	Case 463	Case 631AA	Case 524AA
0.1	50	1	1	3	NPN	MUN2230	MMUN2230L	MUN5230	DTC113EE	DTC113EM3	NSBC113EF3
					PNP	MUN2130	MMUN2130L	MUN5130	DTA113EE	DTA113EM3	NSBA113EF3
		2.2	2.2	8	NPN	MUN2231	MMUN2231L	MUN5231	DTC123EE	DTC123EM3	NSBC123EF3
					PNP	MUN2131	MMUN2131L	MUN5131	DTA123EE	DTA123EM3	NSBA123EF3
			47	80	NPN	MUN2235	MMUN2235L	MUN5235	DTC123JE	DTC123JM3	NSBC123JF3
					PNP	MUN2135	MMUN2135L	MUN5135	DTA123JE	DTA123JM3	NSBA123JF3
		Infinity	160	NPN	MUN2238	MMUN2238L	MUN5238	DTC123TE	DTC123TM3	NSBC123TF3	
				PNP	MUN2138	MMUN2138L	MUN5138	DTA123TE	DTA123TM3	NSBA123TF3	
		4.7	4.7	15	NPN	MUN2232	MMUN2232L	MUN5232	DTC143EE	DTC143EM3	NSBC143EF3
					PNP	MUN2132	MMUN2132L	MUN5132	DTA143EE	DTA143EM3	NSBA143EF3
			10	35	NPN		MMUN2217L				
					PNP						
			47	80	NPN	MUN2233	MMUN2233L	MUN5233	DTC143ZE	DTC143ZM3	NSBC143ZF3
					PNP	MUN2133	MMUN2133L	MUN5133	DTA143ZE	DTA143ZM3	NSBA143ZF3
			Infinity	160	NPN	MUN2216	MMUN2216L	MUN5216	DTC143TE	DTC143TM3	NSBC143TF3
					PNP	MUN2116	MMUN2116L	MUN5116	DTA143TE	DTA143TM3	NSBA143TF3
		10	10	35	NPN	MUN2211	MMUN2211L	MUN5211	DTC114EE	DTC114EM3	NSBC114EF3
					PNP	MUN2111	MMUN2111L	MUN5111	DTA114EE	DTA114EM3	NSBA114EF3
			47	80	NPN	MUN2214	MMUN2214L	MUN5214	DTC114YE	DTC114YM3	NSBC114YF3
					PNP	MUN2114	MMUN2114L	MUN5114	DTA114YE	DTA114YM3	NSBA114YF3
			Infinity	160	NPN	MUN2215	MMUN2215L	MUN5215	DTC114TE	DTC114TM3	NSBC114TF3
					PNP	MUN2115	MMUN2115L	MUN5115	DTA114TE	DTA114TM3	NSBA114TF3
		22	22	60	NPN	MUN2212	MMUN2212L	MUN5212	DTC124EE	DTC124EM3	NSBC124EF3
					PNP	MUN2112	MMUN2112L	MUN5112	DTA124EE	DTA124EM3	NSBA124EF3
			47	80	NPN	MUN2234	MMUN2234L	MUN5234	DTC124XE	DTC124XM3	NSBC124XF3
					PNP	MUN2134	MMUN2134L	MUN5134	DTA124XE	DTA124XM3	NSBA124XF3
		47	22	80	NPN	MUN2237	MMUN2237L	MUN5237	DTC144WE	DTC144WM3	NSBC144WF3
					PNP	MUN2137	MMUN2137L	MUN5137	DTA144WE	DTA144WM3	NSBA144WF3
			47	80	NPN	MUN2213	MMUN2213L	MUN5213	DTC144EE	DTC144EM3	NSBC144EF3
					PNP	MUN2113	MMUN2113L	MUN5113	DTA144EE	DTA144EM3	NSBA144EF3
			Infinity	120	NPN	MUN2240	MMUN2240L	MUN5240	DTC144TE	DTC144TM3	NSBC144TF3
					PNP	MUN2140	MMUN2140L	MUN5140	DTA144TE	DTA144TM3	NSBA144TF3
		100	100	80	NPN	MUN2236	MMUN2236L	MUN5236	DTC115EE	DTC115EM3	
					PNP	MUN2136	MMUN2136L	MUN5136	DTA115EE	DTA115EM3	
			Infinity	160	NPN	MUN2241	MMUN2241L	MUN5241	DTC115TE	DTC115TM3	NSBC115TF3
					PNP	MUN2141	MMUN2141L	MUN5141	DTA115TE	DTA115TM3	NSBA115TF3

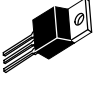







# ON Semiconductor Selector Guide – Bipolar Transistors

## DIGITAL TRANSISTORS (BRTs) (continued)

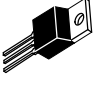





Dual Digital Transistors					Package	SC-74	SC-88, SOT-363	SOT-563	SOT-963	
					Size (mm)	3.0 x 2.75 x 1.0	2.1 x 2.0 x 0.95	1.6 x 1.6 x 0.55	1.0 x 1.0 x 0.37	
I <sub>C</sub> Continuous (A)	V <sub>CEO</sub> (V)	R <sub>1</sub> (kΩ)	R <sub>2</sub> (kΩ)	hFE Min	Polarity					
						Case 318	Case 419B	Case 463A	Case 527AD	
0.1	50	1	1	3	Dual NPN		MUN5230DW1	NSBC113EDXV6		
					Dual PNP		MUN5130DW1	NSBA113EDXV6		
					Complementary		MUN5330DW1	NSBC113EPDXV6		
			2.2	2.2	8	Dual NPN		MUN5231DW1	NSBC123EDXV6	
						Dual PNP		MUN5131DW1	NSBA123EDXV6	
						Complementary		MUN5331DW1	NSBC123JPD XV6	
				47	80	Dual NPN		MUN5235DW1	NSBC123JDXV6	NSBC123JDP6
						Dual PNP		MUN5135DW1	NSBA123JDXV6	NSBA123JDP6
						Complementary		MUN5335DW1		NSBC123JPD P6
		Dual NPN							NSBC123TDP6	
		Dual PNP							NSBA123TDP6	
		Complementary							NSBC123TPDP6	
		Infinity	160	Dual NPN						
				Dual PNP						
				Complementary						
				Dual NPN		MUN5232DW1	NSBC143EDXV6	NSBC143EDP6		
				Dual PNP		MUN5132DW1	NSBA143EDXV6	NSBA143EDP6		
				Complementary		MUN5332DW1	NSBC143EPDXV6	NSBC143EPDP6		
				47	80	Dual NPN		MUN5233DW1	NSBC143ZDXV6	NSBC143ZDP6
						Dual PNP		MUN5133DW1	NSBA143ZDXV6	NSBA143ZDP6
						Complementary		MUN5333DW1	NSBC143ZPD XV6	NSBC143ZPDP6
		Dual NPN				MUN5216DW1	NSBC143TDXV6			
		Dual PNP				MUN5116DW1	NSBA143TDXV6			
		Complementary				MUN5316DW1	NSBC143TPDXV6			
		10	10	35	Dual NPN		MUN5211DW1	NSBC114EDXV6	NSBC114EDP6	
					Dual PNP		MUN5111DW1	NSBA114EDXV6	NSBA114EDP6	
					Complementary		MUN5311DW1	NSBC114EPDXV6	NSBC114EPDP6	
			47	80	Dual NPN		MUN5214DW1	NSBC114YDXV6	NSBC114YDP6	
					Dual PNP		MUN5114DW1	NSBA114YDXV6	NSBA114YDP6	
					Complementary		MUN5314DW1	NSBC114YPD XV6	NSBC114YDPDP6	
					Dual NPN		MUN5215DW1	NSBC114TDXV6	NSBC114TDP6	
					Dual PNP		MUN5115DW1	NSBA114TDXV6	NSBA114TDP6	
					Complementary		MUN5315DW1	NSBC114TPDXV6		
			22	22	60	Dual NPN		MUN5212DW1	NSBC124EDXV6	NSBC124EDP6
						Dual PNP		MUN5112DW1	NSBA124EDXV6	NSBA124EDP6
						Complementary		MUN5312DW1	NSBC124EPDXV6	NSBC124EPDP6
				47	80	Dual NPN		MUN5234DW1	NSBC124XDXV6	
						Dual PNP		MUN5134DW1	NSBA124XDXV6	
						Complementary		MUN5334DW1	NSBC124XPDXV6	
		47	22	80	Dual NPN		MUN5237DW1	NSBC144WDXV6	NSBC144WDP6	
					Dual PNP		MUN5137DW1	NSBA144WDXV6	NSBA144WDP6	
					Complementary				NSBC144WPD P6	
			47	80	Dual NPN		MUN5213DW1	NSBC144EDXV6	NSBC144EDP6	
					Dual PNP		MUN5113DW1	NSBA144EDXV6	NSBA144EDP6	
					Complementary		MUN5313DW1	NSBC144EPDXV6	NSBC144EPDP6	
				47	80	Complementary		NSB4904DW1		
						Dual NPN		MUN5236DW1	NSBC115EDXV6	
						Dual PNP		MUN5136DW1	NSBA115EDXV6	
100	80	Complementary		MUN5336DW1	NSBC123EPDXV6					
		Dual NPN				NSBC115TDP6				
		Dual PNP				NSBA115TDP6				
Infinity	160	Complementary				NSBC115TPDP6				
		Dual NPN								
		Dual PNP								
0.6	15	2.2	-	100	Dual NPN	IMH20TR1				

**DARLINGTON TRANSISTORS**








					Package	TO-220	TO-225AA	TO-92	PAK	SOT-223-4	SOT-23	
I <sub>c</sub> Continuous (A)	V <sub>CEO</sub> (V)	h <sub>FE</sub> Min (k)	h <sub>FE</sub> Max (k)	f <sub>T</sub> Min (MHz)	Polarity							
						Case 221A-09	Case 77-09	Case 29-11	Case 369C	Case 318E-04	Case 318-08	
0.3	30	10	-	125	NPN						MMBTA13L	
					PNP						MMBTA63L	
		20	-	125	NPN							MMBTA14L
					PNP						MMBTA64L	
0.5	30	10	-	125	NPN			MPSA13				
		20	-	125	NPN			MPSA14				
	40	20	200	130	NPN			2N6427			MMBT6427L	
		30	300	150	NPN			2N6426				
	60	10	-	125	NPN			MPSA27				
	100	10	-	125	NPN			MPSA29				
1	30	30	-	200	NPN			BC517				
	40	25	150	100	NPN			MPSW45				
	50	25	150	100	NPN			MPSW45A				
	80	10	160	100	NPN			BC373				
		2	-	-	NPN					BSP52		
2	60	0.5	-	25	NPN	TIP110						
					PNP	TIP115						
	80	0.5	-	25	NPN	TIP111						
					PNP	TIP116						
	100	0.5	-	25	NPN	TIP112						
					PNP	TIP117						
		1.5	-	6	NPN		MJE270					
					PNP		MJE271					
		1	12	25	NPN				MJD112			
					PNP				MJD117			

# ON Semiconductor Selector Guide – Bipolar Transistors

## DARLINGTON TRANSISTORS (continued)







					Package	TO-220	TO-225AA	TO-92	PAK	SOT-223-4	SOT-23	
I <sub>c</sub> Continuous (A)	V <sub>CEO</sub> (V)	h <sub>FE</sub> Min (k)	h <sub>FE</sub> Max (k)	f <sub>T</sub> Min (MHz)	Polarity							
						Case 221A-09	Case 77-09	Case 29-11	Case 369C	Case 318E-04	Case 318-08	
4	40	0.75	15	25	PNP		2N6034					
	45	0.75	-	1	NPN		BD675					
					PNP		BD676					
					NPN		BD675A					
					PNP		BD676A					
	60	0.75	-	-	NPN		BD677					
					PNP		BD678					
					NPN		BD677A					
					PNP		BD678A					
					NPN		MJE800					
					PNP		MJE700					
		15	25	-	-	NPN		2N6038				
						PNP		2N6035				
						NPN		BD679				
						PNP		BD680				
	80	0.75	-	-	NPN		BD679A					
					PNP		BD680A					
					NPN		MJE802					
					PNP		MJE702					
					NPN		2N6039					
					PNP		2N6036					
		1	-	-	-	NPN				MJD6039		
		100	0.75	-	-	NPN		BD681				
	PNP						BD682					
	350	2	-	-	90	NPN				NJD35N04		

DARLINGTON TRANSISTORS (continued)









					Package	TO-3 (TO-204AE)	TO-3 (TO-204AA)	TO-247	TO-220 FULLPAK	TO-220	D2PAK	DPAK	
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min (k)	$h_{FE}$ Max (k)	$f_T$ Min (MHz)	Polarity	 Case 197A-05	 Case 1-07	 Case 340L	 Case 221D	 Case 221A-09	 Case 418B-04	 Case 369C	
5	60	1	-	4	NPN					TIP120			
					PNP					TIP125			
	80	1	-	4	NPN					TIP121			
					PNP					TIP126			
	100	1	-	4	NPN					TIP122			
					PNP					TIP127			
	2	-	-	NPN				MJF122					
				PNP				MJF127					
8	60	1	20	4	NPN					2N6043			
					PNP					2N6040			
					NPN					TIP100			
	80	0.75	-	-	NPN					BDX53B			
					PNP					BDX54B			
	1	20	20	4	NPN					TIP101			
					PNP					TIP106			
	100	0.75	-	-	NPN					BDX53C			
					PNP					BDX54C			
		1	12	20	4	NPN							MJD122
						PNP							
			20	20	4	NPN					2N6045		
						PNP					2N6042		
					NPN					TIP102			
				PNP					TIP107				
120	1	12	12	4	PNP						MJD128		
400	0.2	-	-	-	NPN					MJE5742	MJB5742		

# ON Semiconductor Selector Guide – Bipolar Transistors

## DARLINGTON TRANSISTORS (continued)








					Package	TO-3 (TO-204AE)	TO-3 (TO-204AA)	TO-247	TO-220 FULLPAK	TO-220	D2PAK	DDPAK
I <sub>c</sub> Contin- uous (A)	V <sub>CE0</sub> (V)	h <sub>FE</sub> Min (k)	h <sub>FE</sub> Max (k)	f <sub>T</sub> Min (MHz)	Polarity							
						Case 197A-05	Case 1-07	Case 340L	Case 221D	Case 221A-09	Case 418B-04	Case 369C
10	60	1	20	20	NPN					2N6387		
					PNP				2N6667			
		0.5	–	4	NPN			TIP140				
	80	0.75	–	–	NPN					BDX33B		
					PNP				BDX34B			
		1	20	20	NPN					2N6388		
		0.5	–	4	NPN			TIP141				
		1	–	–	NPN							MJD44E3
	100	0.5	–	4	NPN			TIP142				
					PNP			TIP147				
		0.75	–	–	NPN					BDX33C		
					PNP				BDX34C			
		1	–	–	NPN			BDV65B				
	PNP			BDV64B								
3	15	20	NPN				MJF6388					
350	0.5	3.4	2	NPN			BU323Z				BUB323Z	
12	100	0.75	18	4	PNP		2N6052					
15	80	1	–	4	PNP					BDW46		
	100	1	–	4	NPN					BDW42		
					PNP				BDW47			
	150	0.4	15	3	PNP			MJH11017				
	200	0.4	15	3	NPN			MJH11020				
					PNP			MJH11019				
250	0.4	15	3	NPN		MJ11022	MJH11022					
				PNP		MJ11021	MJH11021					
20	80	0.75	18	4	PNP		2N6286					
					NPN		2N6284	MJH6284				
	100	0.75	18	4	PNP		2N6287	MJH6287				
30	60	1	–	4	NPN		MJ11012					
	120	1	–	4	NPN		MJ11016					
					PNP		MJ11015					
50	60	1	18	–	NPN	MJ11028						
	120	1	18	–	NPN	MJ11032						
					PNP	MJ11033						

GENERAL PURPOSE BJTs >100 V








					Package	TO-225	TO-92	DPAK	SOT-223	SC-59	SOT-23	SC-70, SOT-323	SOT-723	
$I_C$ Con- tinuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 77-09	 Case 29-11	 Case 369C	 Case 318E	 Case 318D	 Case 318-08	 Case 419-04	 Case 631AA	
0.05	300	50	-	60	PNP				BF721					
0.06	160	80	250	-	NPN								MMBT5551M3	
0.1	300	30	120	15	PNP				BSP16					
		50	-	60	NPN				BF720					
	350	30	200	40	NPN						MMBT6517L			
		40	-	70	NPN				BSP19A					
0.15	300	25	-	50	PNP					MSB92				
			200	-	NPN							MSD42SW		
		40	-	-	NPN							MSD42W		
0.3	350	15	200	15	NPN	MJE3439								
0.5	150	60	240	100	PNP						MMBT5401L	MMBT5401W		
		200	30	300	15	NPN	MJE344							
	250	30	250	10	NPN	2N5655								
		50	-	60	PNP		BF423							
	300	120	200	50	PNP							MSB92A		
					NPN						MSB92AW			
		25	-	50	PNP		MPSA92			MMBTA92L	MSB92W			
					NPN		MPSW92							
		30	240	-	-	NPN	MJE340		MJD340					
						PNP	MJE350		MJD350	MMJT350				
	40	-	50	-	NPN		MPSA42		PZTA42	MSD42	MMBTA42L			
					PNP				PZTA92					
					NPN		MPSW42							
	350	30	200	40	PNP		2N6520				MMBT6520L			
			240	-	NPN	BD159								
			250	10	NPN	2N5657								
40		-	50	PNP		BF493S								
450	50	150	-	PNP				PZTA96S						
0.6	140	60	250	-	NPN		2N5550				MMBT5550L			
	150	60	240	100	PNP		2N5401							
	160	80	250	-	NPN						MMBT5551L			
100				NPN		2N5551								

# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs >100 V (continued)

					Package	TO-3 (TO-204AE)	TO-3 (TO-204AA)	TO-3P	TO-247	TO-220 FULLPAK	TO-220	DPAK	
I <sub>C</sub> Con- tinuous (A)	V <sub>CEO</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity								
						Case 197A	Case 1-07	Case 340AB	Case 340L	Case 221D	Case 221A-09	Case 369C	
1	250	30	150	10	NPN					MJF47	TIP47	MJD47	
	300	30	150	10	NPN						TIP48		
					PNP					MJE5730			
	350	30	150	10	PNP						MJE5731		
			175	10	PNP							MJD5731	
375	30	150	10	PNP						MJE5731A			
400	30	150	10	NPN						TIP50	MJD50		
2	450	30	-	4	NPN						BUX85		
4	350	10	-	-	NPN							BUD42D	
5	400	22	-	-	NPN						BUL45D2		
7	200	-	-	10	NPN						BU406		
8	150	40	-	30	NPN					MJF15030			
					PNP					MJF15031			
	250	50	-	30	PNP						MJE15033		
	300	15	-	-	PNP						MJE5850		
	350	15	-	-	PNP							MJE5851	
					PNP						MJE5852		
					5	30	4	NPN					MJE13007
450	14	34	-	NPN					MJF18008				
			13	NPN						MJE18008			
10	140	20	70	0.08	NPN		2N3442						
12	120	-	-	-	NPN						BUV27		
15	250	75	150	30	NPN			NJW0281					
					PNP			NJW0302					
					NPN			NJW3281					
					PNP			NJW1302					
16	140	15	60	4	NPN		2N3773						
	160	15	-	1	NPN				MJE4343				
	250	20	70	4	NPN			NJW21194					
					PNP			NJW21193					
25	150	30	120	40	NPN		2N6341						
30	450	14	34	-	NPN				MJW18020				
	500	7	-	4	NPN						BUH50		
40	200	20	60	8	NPN	BUV21							
	250	20	60	8	NPN	BUV22							
	450	14	34	-	NPN					MJF18004	MJE18004		








GENERAL PURPOSE BJTs








					Package	TO-92	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-723	SOT-1123		
I <sub>C</sub> Con- tinuous (A)	V <sub>CEO</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity									
						Case 29-11	Case 318D-04	Case 318-08	Case 419	Case 463	Case 631AA	Case 524AA		
-	25	60	-	650	NPN	MPSH10		MMBTH10L			MMBTH10M3			
		120	240	800	NPN			MMBTH10-4L						
0.05	15	20	-	600	NPN			MMBT918L						
	25	400	1200	50	NPN	2N5089		MMBT5089L						
	30	300	900	50	NPN	2N5088		MMBT5088L						
	40	250	-	-	PNP	MPS4250								
	50	250	800	40	PNP	2N5087		MMBT5087L						
0.1	12	40	120	400	NPN			BSV52L						
	25	100	500	-	NPN	MPS5172								
		300	600	-	NPN			MMBT6521L						
	30	110	220	100	NPN			BC848AL						
		125	250	100	PNP			BC858AL	BC858AW					
		200	450	100	NPN			BC848BL	BC848BW				NST848BF3	
					NPN			BC849BL						
		420	800	100	NPN			BC848CL						
					PNP			BC858CL						
				150	NPN	BC548B								
					NPN	BC549C								
		32	200	450	-	NPN			BCW32L					
			215	500	-	PNP			BCW30L					
	420		800	-	NPN			BCW33L						
	40	40	400	125	PNP			MMBTA70L						
		75	225	-	NPN			MMBT3416L						
	45	110	220	100	NPN			BC847AL	BC847AW					
		125	250	100	PNP			BC857AL						
		180	460	180	PNP	BC557B								
		200	450	100	-	NPN			BCW72L					
					NPN			BC847BL	BC847BW	BC847BT	BC847BM3	NST847BF3		
				NPN			BC850BL							
				150	NPN	BC547B								
		460	150	NPN	BC237B									
		210	340	-	PNP				MSB1218A-R					
215		500	-	PNP			BCW70L							
220	475	100	PNP			BC857BL	BC857BW	BC857BT			NST857BF3			
380	800	-	PNP	BC560C										










# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs (continued)

					Package	TO-92	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-723	SOT-1123			
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 29-11	 Case 318D-04	 Case 318-08	 Case 419	 Case 463	 Case 631AA	 Case 524AA			
0.1	45	420	800	420	PNP	BC557C									
				100	NPN		BC847CL	BC847CW							
					PNP		BC857CL	BC857CW							
					NPN		BC850CL								
				150	NPN	BC547C									
					NPN	BC550C									
	-	PNP					2SA1774	2SA2029M3							
	50	120	560	-	PNP										
				PNP						NS2029M3					
				180	NPN				2SC4617	2SC5658M3					
		200	400	50	NPN		MSC2712G								
				80	PNP		MSA1162								
				210	340	-	NPN		MSD601-R		MSD1819A-R				
	215	375	180	NPN						2SC5658RM3					
	60	250	800	-	NPN			MMBT2484L							
	65	110	220	100	NPN			BC846AL							
					125	250	100	PNP			BC856AL				
					180	460	180	PNP	BC556B						
					200	450	100	NPN			BC846BL	BC846BW		BC846BM3	NST846BF3
					150	NPN	BC546B								
220	475	100	PNP			BC856BL	BC856BW		BC856BM3	NST856BF3					
80	20	-	60	NPN			BSS64L								
100	30	-	50	PNP			BSS63L								








					Package	TO-92	SOT-223	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-1123
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 29-11	 Case 318E-04	 Case 318D	 Case 318-08	 Case 419	 Case 463	 Case 524AA
0.2	15	40	120	-	NPN				MMBT2369AL			
				NPN			MMBT2369L					
	25	120	300	250	PNP				MMBT4126L			
				170	NPN	MPS4124						
				300	NPN	2N4124			MMBT4124L			
	40	100	300	300	NPN		PZT3904		MMBT3904L	MMBT3904W	MMBT3904T	NST3904F3
				250	PNP			MMBT3906L	MMBT3906W	MMBT3906T	NST3906F3	
	45	500	1250	100	NPN				MMBT6429L			
				1500	100	NPN	MPSA18					
	50	250	650	100	NPN				MMBT6428L			







GENERAL PURPOSE BJTs (continued)

					Package	TO-92	SOT-223	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-1123	
I <sub>C</sub> Con- tinuous (A)	V <sub>CE0</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity								
						Case 29-11	Case 318E-04	Case 318D	Case 318-08	Case 419	Case 463	CASE 631AA	
0.5	25	160	400	100	PNP				BC808-24L				
		250	600	100	NPN				BC818-40L				
	45	100	250	100	NPN				BC817-16L				
					PNP				BC807-16L				
		600	-	NPN					BCX19L				
			-	PNP					BCX17L				
		160	400	100	NPN					BC817-25L			
					PNP					BC807-25L	BC807-25W		
	250	600	100	NPN					BC817-40L				
				PNP					BC807-40L	BC807-40W			
	50	120	240	-	NPN			MSD602-R					
	60	50	-	50	PNP	MPSW55							
					NPN	MPSW05							
		100	-	100	NPN	MPSA05				MMBTA05L			
				150	PNP	MPSA55							
				50	PNP					MMBTA55L			
	80	50	-	50	PNP	MPSW56							
					NPN	MPSW06							
		100	-	100	NPN	MPSA06				MMBTA06L	MMBTA06W		
					PNP	MPSA56							
50					PNP					MMBTA56L	MMBTA56W		
250					-	PNP	BC640						
300	150	NPN						MMBT8099L					
		NPN	MPS8099										
0.6	30	100	300	250	NPN	MPS2222			MMBT2222L				
	40	100	300	-	300	NPN					MMBT2222AT		
				200	PNP					MMBT4403L	MMBT4403W		MMBT4403M3
				250	NPN	2N4401				MMBT4401L	MMBT4401W		MMBT4401M3
				300	NPN	MPS2222A	PZT2222A			MMBT2222AL	MMBT2222AW		MMBT2222AM3
					NPN	P2N2222A							
					NPN	PN2222A							
	60	100	-	200	PNP					MMBT2907AW			
300			200	PNP	MPS2907A	PZT2907A			MMBT2907AL		MMBT2907AM3		







# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs (continued)

					Package	TO-92	SOT-223	SC-74	SOT-23	SC-70, SOT-323	SC-75	SOT-723		
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 29-11	 Case 318E-04	 Case 318F	 Case 318-08	 Case 419	 Case 463	 CASE 631AA		
0.7	30	150	-	-	NPN			NSS30071MR6						
					PNP			NSS30070MR6						
					PNP			MMBT2131						
0.8	32	100	250	100	NPN				BCW65AL					
		250	630	100	NPN				BCW65CL					
	45	100	630	210	NPN	BC337								
			120	400	100	PNP				BCW68GL				
		160	400	100	NPN					BCW66L				
				210	NPN	BC337-025								
				210	NPN	BC337-25								
				260	PNP	BC327-025								
		250	630	210	NPN	BC337-040								
					NPN	BC337-40								
	260			PNP	BC327									

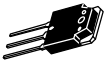


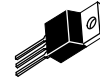


					Package	TO-3P	TO-247	TO-220 FULLPAK	TO-220	TO-225	TO-92		
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 340AB	 Case 340L	 Case 221D	 Case 221A-09	 Case 77-09	 Case 29-11		
1	20	85	375	65	PNP						BC369		
	30	50	-	50	NPN							MPSW01	
				50	PNP							MPSW51	
			250	PNP								MPS6726	
	40	30	150	3	NPN					2N4921			
					PNP					2N4918			
	50	-	50	NPN								MPSW01A	
				PNP									MPSW51A
	60	15	75	3	NPN				TIP29A				
					PNP					2N4922			
		30	150	3	NPN					2N4919			
	80	40	160	-	NPN							BC637	
					NPN								BC639
		100	250	-	NPN							BC639-16Z	
					NPN					TIP29B			
		30	150	3	NPN						2N4923		
					PNP						2N4920		
	40	250	3	PNP						BD180			
	60	400	150	PNP								BC490	
	100	15	75	3	NPN					TIP29C			
PNP									TIP30C				

GENERAL PURPOSE BJTs (continued)

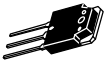





					Package	TO-3P	TO-247	TO-220 FULLPAK	TO-220	TO-225	TO-92		
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 340AB	 Case 340L	 Case 221D	 Case 221A-09	 Case 77-09	 Case 29-11		
1.5	45	40	250	-	NPN					BD135			
					PNP					BD136			
	60	40	250	-	NPN					BD137			
					PNP					BD138			
	80	40	250	-	NPN					BD139			
					PNP					BD140			
2	40	40	-	75	NPN						MPS650		
					PNP						MPS750		
	45	40	-	3	PNP				BD234				
	50	70	240	100	PNP						2SA1020		
	60	40	-	75	NPN							MPS651	
					PNP						MPS751		
80	40	-	3	NPN					BD237				
3	40	10	50	3	NPN				TIP31				
					PNP				TIP32				
		50	250	50	NPN					MJE180			
					PNP					MJE170			
	60	10	50	3	NPN				TIP31A				
					PNP				TIP32A				
		50	250	50	NPN					MJE181			
					PNP					MJE171			
	80	10	50	3	NPN				TIP31B				
					PNP				TIP32B				
		25	-	3	PNP				BD242B				
					NPN					MJE182			
		50	250	50	NPN					MJE172			
					PNP					MJE172			
	63	160	3	NPN					BD179				
	100	10	50	3	NPN			MJF31C					
					PNP			MJF32C					
					NPN				TIP31C				
PNP								TIP32C					
25					-	3	NPN					BD241C	
							PNP					BD242C	




# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs (continued)

					Package	TO-3P	TO-247	TO-220 FULLPAK	TO-220	TO-225	TO-92	
I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity							
						Case 340AB	Case 340L	Case 221D	Case 221A-09	Case 77-09	Case 29-11	
4	32	85	475	3	NPN						BD435	
					PNP							
	40	25	100	2	NPN						2N5190	
					PNP							MJE371
	45	85	375	3	NPN						BD437	
					PNP							BD438
	60	25	100	2	NPN							2N5191
					PNP							
		40	250	50	NPN							BD787
					PNP							
	40	475	3	NPN								BD439
				PNP								
	80	20	80	2	NPN							2N5192
					PNP							
	40	475	3	NPN								BD441
				PNP								
100	40	180	40	NPN							MJE243	
				PNP								
5	25	45	180	65	NPN						MJE200	
					PNP							
6	40	15	75	3	PNP						TIP42	
					NPN							
	60	15	75	3	PNP						TIP42A	
					NPN							
	80	15	75	3	PNP						TIP42B	
					NPN							
	100	15	75	3	NPN							TIP41C
					PNP							
30		-	3	NPN							BD243C	
				PNP								
7	30	30	150	10	PNP						2N6111	
				4	NPN							
	50	30	150	10	PNP						2N6109	
				4	NPN							
	70	30	150	4	NPN							2N6107
				PNP								




GENERAL PURPOSE BJTs (continued)

					Package	TO-3P	TO-247	TO-220 FULLPAK	TO-220	TO-225	TO-92	
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 340AB	 Case 340L	 Case 221D	 Case 221A-09	 Case 77-09	 Case 29-11	
10	60	20	100	2	NPN				MJE3055T			
					PNP				MJE2955T			
		40	-	-	NPN				D44H8			
					PNP				D45H8			
	80	30	-	1.5	NPN				BD809			
					PNP				BD810			
		40	-	-	NPN				D44H11			
					PNP				D45H11			
		60	-	-	NPN				MJF44H11			
					PNP				MJF45H11			
		100	420	-	-	NPN	NJW44H11					
	90	20	100	2	NPN				MJF3055			
					PNP				MJF2955			
100	20	100	3	NPN		TIP33C						






					Package	D2PAK	DPAK	SOT-223
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 418B-04	 Case 369C	 Case 318E-04
1	20	85	375	-	NPN			BCP68
					PNP			BCP69
	80	40	250	-	NPN			BCP56
					PNP			BCP53
		63	160	-	NPN			BCP56-10
					PNP			BCP53-10
	100	250	-	NPN			BCP56-16	
				PNP			BCP53-16	
2	50	120	360	65	NPN		NJD2873	
					PNP		NJD1718	
	60	40	-	75	NPN			PZT651
					PNP			PZT751
	100	120	360	100	NPN			NSS1C201MZ4
					PNP			NSS1C200MZ4





# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs (continued)

					Package	D2PAK	PAK	SOT-223	
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 418B-04	 Case 369C	 Case 318E-04	
3	40	10	50	3	NPN		MJD31		
					PNP		MJD32		
		200	175	350	100	PNP			NSS40300MZ4
						PNP			NJT4030P
			500	400	100	NPN			NSS40301MZ4
						NPN			NJT4031N
	100	10	50	3	NPN		MJD31C		
					PNP		MJD32C		
		120	360	-	NPN		NSS1C301E		
					PNP		NSS1C300E		
4	45	85	375	3	NPN		MJD148		
					PNP		MJD243		
	100	40	180	40	NPN		MJD253		
					PNP		MJD200		
5	25	45	180	65	NPN		MJD210		
					PNP		MJD210		
	60	120	360	100	NPN			NSS60601MZ4	
					PNP			NSS60600MZ4	
		100	15	75	3	NPN	MJB41C		
						PNP	MJB42C		
100	15	75	3	NPN		MJD41C			
				PNP		MJD42C			
8	80	60	-	-	NPN		MJD44H11		
					PNP		MJD45H11		
	100	60	100	2	NPN		MJD3055		
					PNP		MJD2955		
100	80	60	-	-	NPN	MJB44H11			
					PNP	MJB45H11			

GENERAL PURPOSE BJTs (continued)


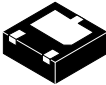


					Package	TSOP-6	ChipFET	SC-88, SOT-363	WDFN-6	SOT-563
I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity	 Case 318G	 Case 1206A	 Case 419B	 Case 506AS	 Case 463A
1	12	100	-	-	PNP					NSS12100XV6
2	12	100	300	-	PNP			NSL12AW		
								NSS12200W		
	20	300	-	200	NPN	NSS20201MR6				
	30	300	900	200	NPN	NSS30201MR6				
						NST489AM				
	35	100	400	100	PNP	NSS35200MR6	NSS35200CF8			
MBT35200MR6										
40	150	-	140	PNP				NSS40200UW6		
3	20	100	400	100	PNP	NSS20300MR6				
6	12	200	-	140	NPN		NSS12601CF8			
	20	200	-	140	NPN		NSS20601CF8			
	40	200	-	140	NPN		NSS40601CF8			
							NSS40600CF8			





					Package	SOT-23	WDFN-3	SC-89	SOT-723				
I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity	 Case 318	 Case 506AU	 Case 463A	 Case 631AA				
1	12	120	-	-	PNP				NSS12100M3				
		200	400	200	PNP		NSS12100UW						
	20	200	500	350	NPN			NSS20101J					
						30	100	300	100	PNP	MMBT589L		
											NSS30100L		
30	300	900	100	NPN	MMBT489L								
					NSS30101L								
2	12	200	-	150	NPN	NSS12201L							
		250	-	100	PNP	NSS12200L							
	20	200	-	150	NPN	NSS20201L							
						250	-	100	PNP	NSS20200L			
	40	200	-	150	NPN	NSS40201L							
						250	-	100	PNP	NSS40200L			
	60	150	-	100	PNP	NSS60200L							
						350	100	NPN	NSS60201L				
	100	120	360	-	NPN	NSS1C201L							
						PNP	NSS1C200L						








# ON Semiconductor Selector Guide – Bipolar Transistors

## GENERAL PURPOSE BJTs (continued)

					Package	SOT-23	WDFN-3	SC-89	SOT-723
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 318	 Case 506AU	 Case 463A	 Case 631AA
5	12	250	-	100	PNP		NSS12500UW3		
				150	NPN		NSS12501UW3		
	20	250	-	100	PNP		NSS20500UW3		
				150	NPN		NSS20501UW3		
	40	250	-	100	PNP		NSS40500UW3		
				150	NPN		NSS40501UW3		








					Package	TO-3 (TO-204AE)	TO-3 (TO-204AA)	TO-247	TO-220
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	$f_T$ Min (MHz)	Polarity	 Case 197A-05	 Case 1-07	 Case 340L	 Case 221A-09
15	60	20	10	70	2.5	NPN		2N3055A	
				150	5	NPN			2N6487
			70	2.5	NPN		2N3055	TIP3055	
					PNP		MJ2955	TIP2955	
	80	20	-	-	NPN				D44VH
					PNP				D45VH
			150	5	NPN				2N6488
					PNP				2N6491
	20	60	15	60	0.2	NPN		2N3772	
						PNP			
90		-	-	-	-	NPN		2N5038	
25	60	15	75	3	NPN			TIP35A	
					PNP			TIP36A	
		20	100	4	NPN		2N5885		
					PNP		2N5883		
	80	20	100	4	NPN		2N5886		
					PNP		2N5884		
	100	15	75	3	NPN			TIP35C	
					PNP			TIP36C	
30	30	120	40	40	NPN		2N6338		
30	40	15	60	0.2	NPN		2N3771		
					PNP		2N5302		
					NPN		MJ802		
					PNP		MJ4502		
50	80	15	60	2	NPN	2N5686			
					PNP	2N5684			
60	80	15	100	-	NPN	MJ14002			

GENERAL PURPOSE BJTs – DUAL

					Package	SOIC-8	SC-74	SC-88-6 / SC-70-6 / SOT-363-6	SOT-563	SOT-963	
					Size (mm)	6.0 x 4.9 x 1.55	3.0 x 2.75 x 1.0	2.1 x 2.0 x 0.95	1.6 x 1.6 x 0.55	1.0 x 1.0 x 0.37	
I <sub>C</sub> Continuous (A)	V <sub>CEO</sub> (V)	h <sub>FE</sub> Min	h <sub>FE</sub> Max	f <sub>T</sub> Min (MHz)	Polarity						
						Case 751	Case 318F	Case 419B	Case 463A	Case 527AD	
0.1	30	420	800	100	Complementary			BC848CPDW1			
					Dual NPN			BC848CDW1			
					Dual PNP				BC858CDXV6	NST30010MXV6	
	45	200	450	100	Complementary					NST847BPD6	
					Dual NPN			BC847BDW1		NST847BDP6	
					475	100	Complementary			BC847BPDW1	BC847BPD6
					500	100	Dual NPN			NST45011MW6	
		220	475	100	Dual PNP			BC857BDW1		NST857BDP6	
								NST45010			
	420	800	100	Dual NPN			BC847CDW1	BC847CDXV6			
				Dual PNP			BC857CDW1				
	50	120	560	-	Dual NPN				EMX1DXV6		
					Dual PNP				EMX2DXV6		
	65	200	450	100	Dual NPN			BC846BDW1			
			475	100	Complementary			BC846BPDW1			
			220	475	100	Dual PNP			BC856BDW1		
0.2	40	100	300	200	Complementary				NST3946DXV6	NST3946DP6	
					Dual NPN					NST3904DP6	
				250	Complementary			MBT3946DW1			
					Dual PNP			MBT3906DW1	NST3906DXV6	NST3906DP6	
	300	Dual NPN			MBT3904DW1	NST3904DXV6					
45	500	1250	100	Dual NPN			MBT6429DW1				
50	200	400	-	Complementary		HN1B01FDW1	UMZ1N				
0.6	40	100	300	300	Dual NPN			MBT2222ADW1			
3	30	180	-	100	Complementary	NJX1675P					
					Complementary	NSS40302PD					
						Dual NPN	NSS40301MD				
					220	-	100	Dual PNP	NSS40300DD		
NSS40300MD											

# ON Semiconductor Selector Guide – Bipolar Transistors

## LOW $V_{CE(sat)}$ TRANSISTORS

					Package	SOIC-8	DPAK	SOT-223	SOT-23	WDFN-3	SC-89	SOT-723	
					Size (mm)	6.0 x 4.9 x 1.55	9.9 x 6.5 x 2.28	7.0 x 6.5 x 1.63	2.9 x 2.4 x 1.0	2.0 x 2.0 x 0.75	1.6 x 1.6 x 0.7	1.2 x 1.2 x 0.5	
$I_C$ Continuous (A)	$V_{CE0}$ (V)	$V_{CE(sat)}$ (V)	$h_{FE}$ Min	$h_{FE}$ Max	Polarity	 Case 751	 Case 369C	 Case 318E-04	 Case 318	 Case 506AU	 Case 463C	 Case 631AA	
1	12	0.06	120	-	PNP							NSS12100M3	
		0.44	200	400	PNP					NSS12100UW			
	20	0.22	200	500	NPN						NSS20101J		
		30	0.2	300	900	NPN				MMBT489L			
						NPN				NSS30101L			
		0.25	100	300	PNP				NSS30100L				
0.3	100	300	PNP				MMBT589L						
2	12	0.05	200	-	NPN					NSS12201L			
		0.09	250	-	PNP					NSS12200L			
	20	0.05	200	-	NPN					NSS20201L			
		0.09	250	-	PNP					NSS20200L			
	40	0.06	200	-	NPN					NSS40201L			
		0.095	250	-	PNP					NSS40200L			
	50	0.5	70	240	PNP		NJD1718						
	60	0.14	150	350	NPN					NSS60201L			
		0.22	150	-	PNP					NSS60200L			
	100	0.09	120	360	NPN					NSS1C201L			
			0.1	120	360	NPN			NSS1C201MZ4				
		0.115	120	360	PNP				NSS1C200L				
0.125		120	360	PNP				NSS1C200MZ4					
3	40	0.2	200	500	NPN				NSS40301MZ4				
		0.4	175	350	PNP				NSS40300MZ4				
		0.06	200	-	Dual NPN	NSS40301MD							
	0.06	200	-	Comp	NSS40302PD								
	0.095	220	-	Dual PNP	NSS40300DD								
	0.095	220	-	Dual PNP	NSS40300MD								
100	0.25	120	360	NPN			NSS1C301E						
	0.4	120	360	PNP			NSS1C300E						
5	12	0.035	250	-	NPN					NSS12501UW3			
		0.26	250	-	PNP					NSS12500UW3			
	20	0.04	250	-	NPN					NSS20501UW3			
		0.26	250	-	PNP					NSS20500UW3			
	40	0.045	250	-	NPN					NSS40501UW3			
		0.22	250	-	PNP					NSS40500UW3			
6	60	0.3	120	360	NPN			NSS60601MZ4					
		0.35	120	360	PNP			NSS60600MZ4					

MIXED ELEMENT ARRAYS (MEAs)

Configuration	Device	I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	R1 (kΩ) (Q1/Q2/Q3)	R2 (kΩ) (Q1/Q2/Q3)	Package
	NUS2401	0.2	50	0.175/0.175/10	∞/∞/1	SC-74
	IMD10A	0.5	50	0.1/10	10/∞	
	NSTB60	150	50	0/22	∞/47	SC-88, SOT-363
	NSB1706DMW5	0.1	50	4.7/4.7	47/47	
	UMC2	0.1	50	22/22	22/22	SC-88, SOT-363
	UMC3	0.1	50	10/10	10/10	
	UMC5	0.1	50	4.7/47	10/47	

# ON Semiconductor Selector Guide – Bipolar Transistors

## MIXED ELEMENT ARRAYS (MEAs) (continued)

Configuration	Device	I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	R1 (kΩ) (Q1/Q2/Q3)	R2 (kΩ) (Q1/Q2/Q3)	Package
	NSB9435	3	30	–	10	SOT-223
	EMC2DXV5	0.1	50	22/22	22/22	SOT-553
	EMC3DXV5	0.1	50	10/10	10/10	
	EMC4DXV5	0.1	50	10/47	47/47	
	EMC5DXV5	0.1	50	4.7/47	10/47	
	NSTB1005DXV5	0.1	50	47/47	47/47	
	NSTB1002DXV5	0.1	40	0/47	∞/47	SOT-553
	EMD4DXV6	0.1	50	10/47	47/47	SOT-563
	EMD5DXV6	0.1	50	4.7/47	10/47	
	EMF18XV6	0.1	50	47	47	
	EMF5XV6	0.1	50	47	47	

MIXED ELEMENT ARRAYS (MEAs) (continued)

Configuration	Device	I <sub>C</sub> Continuous (A)	V <sub>CE0</sub> (V)	Polarity	Diode	Package
	NSM6056M	0.6	40	NPN	Zener Diode V <sub>Z</sub> = 5.6 V	SC-74
	NSM80100M	0.5	80	PNP	2 - 100 V Switching Diodes	SC-74
	NSM80101M			NPN	2 - 100 V Switching Diodes	SC-74



# Clock and Data Distribution

---

## Table of Contents

	<b>Page</b>
Arithmetic Functions .....	56
Drivers and Fanout Buffers .....	57
Flip-Flops, Latches and Registers .....	57
Logic Gates .....	67
Multiplexers and Crosspoint Switches .....	68
Serial/Parallel Converters .....	70
Skew Management .....	71
Translators .....	71



## ON Semiconductor Selector Guide – Clock and Data Distribution

### ARITHMETIC FUNCTIONS

Device	Type	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC100E016	Counter	ECL	ECL	5	900	0.775	700	PLCC-28
MC100E136	Counter	ECL	ECL	5	650	1.15	600	PLCC-28
MC100E137	Counter	ECL	ECL	5	2200	2.9	600	PLCC-28
MC100EP016A	Counter	CML; ECL	ECL	3.3	1400	0.55	320	LQFP-32; QFN-32
MC10E016	Counter	ECL	ECL	5	900	0.775	800	PLCC-28
MC10E136	Counter	ECL	ECL	5	650	1.15	600	PLCC-28
MC10E137	Counter	ECL	ECL	5	2200	2.9	600	PLCC-28
MC10EP016	Counter	CML; ECL	ECL	3.3 5	900	0.5	220	LQFP-32
MC10H016	Counter	ECL	ECL	-5.2	200	1.8	21	PDIP-16; PLCC-20
MC10H136	Counter	ECL	ECL	-5.2	250	1.5	2400	PDIP-16; PLCC-20
MC100EL32	Divider	ECL	ECL	5	3000	0.51	350	DFN-8; SOIC-8; TSSOP-8
MC100EL33	Divider	ECL	ECL	5	4200	0.65	350	SOIC-8; TSSOP-8
MC100EL34	Divider	ECL	ECL	5	1100	1	52.5	SOIC-16
MC100EL38	Divider	ECL	ECL	5	1200	0.9	550	SOIC-20W
MC100EL39	Divider	ECL	ECL	5	1200	0.9	550	SOIC-20W
MC100EP139	Divider	CML; ECL	ECL	3.3 5	1000	0.75	275	QFN-20; SOIC-20W; TSSOP-20
MC100EP32	Divider	CML; ECL	ECL	3.3 5	4000	0.35	170	DFN-8; SOIC-8; TSSOP-8
MC100EP33	Divider	CML; ECL	ECL	3.3 5	4000	0.32	180	DFN-8; SOIC-8; TSSOP-8
MC100LVEL32	Divider	ECL; LVDS	ECL	3.3	2600	0.51	320	DFN-8; SOIC-8; TSSOP-8
MC100LVEL33	Divider	ECL; LVDS	ECL	3.3	4000	0.63	320	DFN-8; SOIC-8; TSSOP-8
MC100LVEL34	Divider	ECL; LVDS	ECL	3.3	1500	0.7	400	SOIC-16; TSSOP-16
MC100LVEL37	Divider	ECL; LVDS	ECL	3.3	1000	0.7	550	SOIC-20W
MC100LVEL38	Divider	ECL; HSTL	ECL	3.3	1000	0.9	550	SOIC-20W
MC100LVEL39	Divider	ECL; LVDS	ECL	3.3	1000	0.9	550	SOIC-20W
MC100LVEP34	Divider	CML; ECL; LVDS	ECL	2.5; 3.3	2800	0.7	250	SOIC-16; TSSOP-16
MC10EL32	Divider	ECL	ECL	5	3000	0.51	350	SOIC-8; TSSOP-8
MC10EL33	Divider	ECL	ECL	5	4000	0.65	350	SOIC-8; TSSOP-8
MC10EL34	Divider	ECL	ECL	5	1100	1	52.5	SOIC-16
MC10EP139	Divider	CML; ECL	ECL	3.3; 5	1000	0.75	275	SOIC-20W; TSSOP-20
MC10EP32	Divider	CML; ECL	ECL	3.3; 5	400 4000	0.35	17 170	DFN-8; SOIC-8; TSSOP-8

**ARITHMETIC FUNCTIONS** (continued)

Device	Type	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC10EP33	Divider	CML; ECL	ECL	3.3; 5	4000	0.32	180	DFN-8; SOIC-8; TSSOP-8
NB4L339	Divider	CML; ECL; LVDS	ECL	2.5; 3.3	700	1.3	250	QFN-32
NB6L239	Divider	CML; CMOS; ECL; LVDS	ECL	2.5; 3.3	3000	0.47	120	QFN-16
NB6N239S	Divider	CML; CMOS; ECL; LVDS	LVDS	3.3	3000	0.665	190	QFN-16
NB7L32M	Divider	CML; ECL; LVDS	CML	2.5; 3.3	14000	0.155	45	QFN-16
NB7N017M	Divider	CML; CMOS; ECL; LVDS	CML	3.3	3500	0.5	65	QFN-52
NB7V32M	Divider	CML; ECL; LVDS	CML	1.8; 2.5	10000	0.2	60	QFN-16
NB7V33M	Divider	CML; ECL; LVDS	CML	1.8; 2.5	11000	0.26	60	QFN-16
MC12026A	Prescaler	ECL	ECL	5	1100			SOIC-8
MC12080	Prescaler	ECL	ECL	5	1100			SOIC-8
MC12093	Prescaler	ECL	ECL	3.3	1100			DFN-8; SOIC-8

**DRIVERS AND FANOUT BUFFERS**

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
ASM2I9940L	Buffer	1	1:18	CMOS; ECL	CMOS	2.5; 3.3		200	2.5		250		LQFP-32
MC100E111	Buffer	1	1:9	ECL	ECL	5	0.2	50	0.53	600	800		PLCC-28
MC100E211	Buffer	1	1:6	ECL	ECL	5	0.2	75	0.94	400	700		PLCC-28
MC100E310	Buffer	1	2:8	ECL	ECL	5	0.2	50	0.65	600	900		PLCC-28
MC100EL11	Buffer	1	1:2	ECL	ECL	5	0.2	5	0.265	350	2000		SOIC-8; TSSOP-8
MC100EL14	Buffer	1	1:5	ECL	ECL	5	0.2	50	0.68	500	1000		SOIC-20W
MC100EL15	Buffer	1	1:4	ECL	ECL	5	0.2	50	0.57	575	1000		SOIC-16
MC100EP11	Buffer	1	1:2	CML; ECL	ECL	3.3; 5	0.2	20	0.22	180	3000		DFN-8; SOIC-8; TSSOP-8
MC100EP14	Buffer	1	1:5	CML; ECL; HSTL; LVDS	ECL	3.3; 5	0.2	45	0.375	270	2000		TSSOP-20
MC100EP809	Buffer	1	1:9	CML; ECL; HSTL; LVDS	HSTL	3.3	1.4	15	0.85	600	750		LQFP-32; QFN-32
MC100H642	Buffer	1	2:8	ECL	TTL	5		500	5.25	2500	100		PLCC-28
MC100H643	Buffer	1	1:8	ECL	TTL	5		500		1200	80		PLCC-28
MC100H646	Buffer	1	1:8	ECL	TTL	5		350		1500	80		PLCC-28
MC100LVE111	Buffer	1	1:9	ECL	ECL	3.3	0.2	20	0.53	600	1500		PLCC-28
MC100LVE210	Buffer	1	1:4; 1:5	ECL	ECL	3.3	0.2	75	0.6	600	700		PLCC-28
MC100LVE310	Buffer	1	2:8	ECL	ECL	3.3	1.5	50	0.65	600	1000		PLCC-28

# ON Semiconductor Selector Guide – Clock and Data Distribution

## DRIVERS AND FANOUT BUFFERS (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
MC100LVEL11	Buffer	1	1:2	ECL; LVDS	ECL	3.3	0.2	20	0.33	180	1000		DFN-8; SOIC-8; TSSOP-8
MC100LVEL14	Buffer	1	1:5	ECL; LVDS	ECL	3.3	0.2	50	0.68	500	1000		SOIC-20W
MC100LVEP11	Buffer	1	1:2	CML; ECL; LVDS	ECL	2.5; 3.3	0.2	20	0.24; 24	180	3000		DFN-8; SOIC-8; TSSOP-8
MC100LVEP111	Buffer	1	1:10	CML; ECL; HSTL; LVDS	ECL	2.5; 3.3	0.2	25	0.5	200	3000		LQFP-32; QFN-32
MC100LVEP14	Buffer	1	1:5	CML; ECL; HSTL; LVDS	ECL	2.5; 3.3	0.2	25	0.4	250	2000		TSSOP-20
MC10E111	Buffer	1	1:9	ECL	ECL	5	0.2	50	0.53	600	800		PLCC-28
MC10E211	Buffer	1	1:6	ECL	ECL	5	0.2	75	0.94	400	700		PLCC-28
MC10EL11	Buffer	1	1:2	ECL	ECL	5	0.2	5	0.265	350	2000		SOIC-8; TSSOP-8
MC10EL15	Buffer	1	1:4	ECL	ECL	5	0.2	50	0.57	575	1000		SOIC-16
MC10EP11	Buffer	1	1:2	ECL	ECL	3.3; 5	0.2	20	0.22	180	3000		SOIC-8; TSSOP-8
MC10H640	Buffer	1	2:6	ECL	TTL	5		500	5.4	2500	135		PLCC-28
MC10H641	Buffer	1	1:9	ECL	ECL	5		350	5.36	1700	65		PLCC-28
MC10H643	Buffer	1	1:8	ECL	TTL	5		500	5.36	1200	80		PLCC-28
MC10H645	Buffer	1	1:9	TTL	TTL	5		650	5.36	2500			PLCC-28
MC10H646	Buffer	1	1:8	ECL	TTL	5		350	5.36	1500	80		PLCC-28
MC10LVEP11	Buffer	1	1:2	CML; ECL; LVDS	ECL	2.5; 3.3	0.2	20	0.24	180	3000		SOIC-8; TSSOP-8
NB100EP223	Buffer	1	1:22	CML; ECL; HSTL; LVDS	HSTL	3.3	0.2	25	1	700	500		QFP-64 / LQFP-64
NB100LVEP221	Buffer	1	1:20	CML; ECL; HSTL; LVDS	ECL	2.5; 3.3	1	20	0.54	300	1000		LQFP-52; QFN-52
NB100LVEP222	Buffer	1	1:15	CML; ECL; LVDS	ECL	2.5; 3.3	0.2	20	0.875	160	1000		LQFP-52; QFN-52
NB100LVEP224	Buffer	1	1:24	CML; ECL; LVDS	ECL	2.5; 3.3	5	40	0.75	300	1000		QFP-64 / LQFP-64
NB3F8L3005C	Buffer	1	1:5	LVPECL, LVDS, HCSSL, SSTL, LVCMOS, LVTTTL	LVCMOS	3.3V, 2.5V, 1.8V, 1.5V	0.03	25		600	200		QFN24 4x4, 0.5P
NB3F8L3010C	Buffer	1	2:1	ECL; HCSSL; LVDS; SSTL	CMOS	2.5; 3.3	0.03	55		350	200		QFN-32

**DRIVERS AND FANOUT BUFFERS** (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
NB3H83905C	Buffer	1	1:6	Crystal	CMOS	1.8; 3.3	0.14	80		800	40		QFN-20; SOIC-16; TSSOP-16
NB3L02	Buffer	1				2.8		30	4	800	52		WLCSP
NB3L553	Buffer	1	1:4	CMOS	CMOS	2.5; 3.3; 5		50	4	1000	200		DFN-8; SOIC-8
NB3L83948C	Buffer	1	2:1	CMOS; ECL; HCSL; HSTL; LVDS; TTL	CMOS	2.5; 3.3; 3.3 2.5		25	2.2	150	350		LQFP-32
NB3N106K	Buffer	1	1:6	CMOS; ECL; HCSL; LVDS; TTL	HCSL	3.3	0.1	100	0.8	400	400	400	QFN-24
NB3N108K	Buffer	1	1:8	CMOS; ECL; HCSL; LVDS; TTL	HCSL	3.3	0.1	100	0.8	400	400	400	QFN-32
NB3N111K	Buffer	1	1:1	CMOS; ECL; HCSL; LVDS; TTL	HCSL	3.3	0.1	100	0.8	400	400	400	QFN-32
NB3N121K	Buffer	1	1:21	CMOS; ECL; HCSL; LVDS; TTL	HCSL	3.3	0.1	100	0.8	340	400		QFN-52
NB3N200S	Buffer	1		CMOS; LVDS	LVDS	3.3	2		1.5	1300	200	200	SOIC-8
NB3N201S	Buffer	1		CMOS; LVDS	LVDS	3.6	2		1.5	1300	200	200	SOIC-8
NB3N206S	Buffer	1		CMOS; LVDS	LVDS	3.3	2		1.5	1300	200	200	SOIC-8
NB3N2304NZ	Buffer	1	1:4	CMOS	CMOS	3.3		100	3.5	1500	140		DFN-8; TSSOP-8
NB3N551	Buffer	1	1:4	CMOS	CMOS	3.3; 5	2	160	3	1000	180		DFN-8; SOIC-8
NB3N853501E	Buffer	1	2:1	CMOS; TTL	ECL	3.3	0.023	30	1.9	470	266		TSSOP-20
NB3N853531E	Buffer	1	2:1	CMOS; TTL	ECL	3.3	0.053	30	1.4	400	266		TSSOP-20
NB4N111K	Buffer	1	1:10	CML; ECL; LVDS	HCSL	3.3	1	100	0.1	700	400		QFN-32
NB4N11M	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	CML	3.3	1	25	600	300	2500	2500	TSSOP-8
NB4N121K	Buffer	1	1:21	CML; CMOS; ECL; LVDS; TTL	HCSL	3.3	1	50	0.8	340	200		QFN-52

## ON Semiconductor Selector Guide – Clock and Data Distribution

### DRIVERS AND FANOUT BUFFERS (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
NB6HQ14M	Buffer	1	1:4	CML; ECL; LVDS	CML	2.5	0.2	3	0.22	30	5000	6500	QFN-16
NB6L11	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.2	15	0.15	120	6000	6000	SOIC-8; TSSOP-8
NB6L11M	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.15	15	200	120	4000		QFN-16
NB6L11S	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	LVDS	2.5	0.5	25	0.38	170	2000	2500	QFN-16
NB6L14	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.2	20	350	225	3000	2500	QFN-16
NB6L14M	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.2	20	350	150	3000	2500	QFN-16
NB6L14S	Buffer	1	1:4	CML; CMOS; ECL; HCSL; HSTL; LVDS; TTL	LVDS	2.5	0.5	20	0.45	225	2000	2500	QFN-16
NB6L611	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.2	15	0.2	200	4000		QFN-16
NB6N11S	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	LVDS	3.3	0.5	30	470	120	2000	2500	QFN-16
NB6N14S	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	LVDS	3.3	0.5	20	0.38	190	2000	2500	QFN-16
NB7HQ14M	Buffer	1	1:4	CML; ECL; LVDS	CML	2.5	0.2	15	0.17	45	7000	10000	QFN-16
NB7L1008M	Buffer	1	1:8	CML; ECL; LVDS	CML	2.5; 3.3	0.2	25	0.16	70	6000	10700	QFN-32
NB7L111M	Buffer	1	1:10	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.2	20	0.28	75	5500	6125	QFN-52

DRIVERS AND FANOUT BUFFERS (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
NB7L11M	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.2	15	0.11	60	8000	12000	QFN-16
NB7L14	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.5	15	165	60	7000	10700	QFN-16
NB7L14M	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.5	15	0.11	60	8000	12000	QFN-16
NB7L585	Buffer	1	2:6	CML; ECL; LVDS	ECL	2.5; 3.3	0.2	20	0.175	85			QFN-32
NB7L585R	Buffer	1	2:6	CML; ECL; LVDS	RSECL	2.5	0.2	20	0.160–0.200	70			QFN-32
NB7VQ14M	Buffer	1	1:4	CML; ECL; LVDS	CML	1.8; 3.3	0.2	15	0.175	45	8000	14000	QFN-16
NB7VQ572M	Buffer	1	4:2	CML; ECL; LVDS	CML	1.8; 3.3	0.2	15	175	65	7000	11000	QFN-32
NBSG11	Buffer	1	1:2	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.5	15	0.125	30	12000	12000	QFN-16
NBSG14	Buffer	1	1:4	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.5	15	0.125	55	12000	12000	QFN-16
P2I2305NZ	Buffer	1	1:5	CMOS	CMOS	3.3		250	4	2000	133.33		SOIC-8
PCS2P2309NZ	Buffer	1	1:9	CMOS	CMOS	3.3		250	4	2000			SOIC-16
MC100E210	Buffer	2	1:4; 1:5	ECL	ECL	5	0.2	75	0.6	600	700		PLCC-28
MC100EL13	Buffer	2	1:3	ECL	ECL	5	0.2	50	0.5	500	1000		SOIC-20W
MC100EP210S	Buffer	2	1:5	CML; ECL; LVDS	LVDS	2.5	0.2	20	0.55	225	1000		LQFP-32; QFN-32
MC100LVE222	Buffer	2	1:15	ECL	ECL	3.3	0.2	50	1.18	600	1500		QFP-52 / LQFP-52
MC100LVEL13	Buffer	2	1:3	ECL; LVDS	ECL	3.3	0.2	50	0.5	500	1000		SOIC-20W
MC100LVEP210	Buffer	2	1:5	CML; ECL; HSTL; LVDS	ECL	2.5; 3.3	0.2	20	0.35	270	3000		LQFP-32; QFN-32
NB3RL02	Buffer	2		CMOS; TTL	CMOS	2.5 5		500	12	5000	52		WLCSP-8
MC10EL89	Coaxial Cable Driver	1	1:2	ECL	2X ECL	5		20	0.35	455	1500		SOIC-8; TSSOP-8

## ON Semiconductor Selector Guide – Clock and Data Distribution

### DRIVERS AND FANOUT BUFFERS (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
MC10EP89	Coaxial Cable Driver	1	1:2	CML; ECL	2X ECL	3.3; 5	0.5	20	0.31	350	2000		DFN-8; SOIC-8; TSSOP-8
MC10SX1189	Fibre Channel Coaxial Cable Driver	1	1:2	ECL	2X ECL	5			0.425	250	2500		SOIC-16
MC10SX1190	Fibre Channel Coaxial Cable Driver	1	1:2	ECL	2X ECL	3.3; 5			0.425	250	2500	2500	TSSOP-20
MC10SX1130	LED Driver	1	1:1	ECL	ECL	5			1.4	1260	300		SOIC-16
MC100EL12	Signal Driver	1	1:1	ECL	ECL	5			0.29	550	1000		SOIC-8; TSSOP-8
MC100EL16	Signal Driver	1	1:1	ECL	ECL	5	0.2		0.25	350	1000		SOIC-8; TSSOP-8
MC100EP16	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	180	4000		DFN-8; SOIC-8; TSSOP-8
MC100EP16F	Signal Driver	1	1:1	CML; ECL	RSECL	3.3; 5	0.2		0.3	100	4000		SOIC-8; TSSOP-8
MC100EP16T	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	180	3000		DFN-8; SOIC-8; TSSOP-8
MC100EP16VA	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.27	180	3000		DFN-8; SOIC-8; TSSOP-8
MC100EP16VB	Signal Driver	1	1:2	CML; ECL	ECL	3.3; 5	0.2		0.3	240	3000		SOIC-8; TSSOP-8
MC100EP16VC	Signal Driver	1	1:2	ECL	ECL	3.3; 5	0.2		0.38	240	3000		DFN-8; SOIC-8; TSSOP-8
MC100EP16VS	Signal Driver	1	1:1	ECL	ECL	3.3; 5	0.2		0.22	180	4000		SOIC-8; TSSOP-8
MC100EP16VT	Signal Driver	1	1:1	ECL	ECL	3.3; 5	0.2		0.3	180	4000		DFN-8; SOIC-8; TSSOP-8
MC100LVEL12	Signal Driver	1	1:2	ECL	ECL	3.3			0.445	550	1000		DFN-8; SOIC-8; TSSOP-8
MC100LVEL16	Signal Driver	1	1:1	ECL; LVDS	ECL	3.3	0.2		0.3	320	1000		DFN-8; SOIC-8; TSSOP-8
MC100LVEP16	Signal Driver	1	1:1	CML; ECL; LVDS	ECL	2.5; 3.3	0.2		0.24	180	4000		DFN-8; SOIC-8; TSSOP-8
MC10EL12	Signal Driver	1	1:2	ECL	ECL	5			0.29	550			SOIC-8; TSSOP-8
MC10EL16	Signal Driver	1	1:1	ECL	ECL	5	0.2		0.25	350	1750		SOIC-8; TSSOP-8
MC10EP16	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	180	4000		SOIC-8; TSSOP-8
MC10EP16T	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	180	3000		DFN-8; SOIC-8; TSSOP-8

**DRIVERS AND FANOUT BUFFERS** (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
MC10EP16VA	Signal Driver	1	1:1	CML; ECL	ECL	3.3; 5	0.2		0.27	180	3000		DFN-8; SOIC-8; TSSOP-8
MC10LVEP16	Signal Driver	1	1:1	CML; ECL; LVDS	ECL	2.5; 3.3	0.2		0.24	180	4000		SOIC-8; TSSOP-8
NB4L16M	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.2		0.265	90	3500	5000	QFN-16
NB4N316M	Signal Driver	1	1:1	CML; CMOS; ECL; HSTL; LVDS; TTL	CML	3.3	1	20	0.55	300	2000	2500	TSSOP-8
NB6L16	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.2		0.13	120	6000	6000	SOIC-8; TSSOP-8
NB7L216	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	ECL	2.5; 3.3	0.1		0.18	45	8500	12000	QFN-16
NB7VPQ16M	Signal Driver	1	1:1	CML; ECL; LVDS	CML	1.8; 2.5	0.1		0.2	50	8000	12500	QFN-16
NB7VQ1006M	Signal Driver	1	1:6	CML; ECL; LVDS	CML	1.8; 2.5	0.2	1	0.225	65	7500	10000	QFN-24
NBSG16	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	RSECL	2.5; 3.3	0.3		0.12	65	12000	12000	QFN-16
NBSG16M	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	0.2		0.12	53	10000	10000	QFN-16
NBSG16VS	Signal Driver	1	1:1	CML; CMOS; ECL; LVDS; TTL	RSECL	2.5; 3.3	0.8		0.125	55	12000	12000	QFN-16
NB4N1158	Signal Driver	2	2:1	ECL TTL	ECL	3.3	10		0.375	150		1500	TSSOP-28
NB4N527S	Signal Driver	2	1:1	CML; CMOS; ECL; HSTL; LVDS	LVDS	3.3	1	50	0.275	300	1500	2500	QFN-16
NB4N855S	Signal Driver	2	1:1	CML; CMOS; ECL; HSTL; LVDS; SSTL; TTL	LVDS	3.3	1	25	0.47	140	1500	2500	Micro10



## ON Semiconductor Selector Guide – Clock and Data Distribution

### DRIVERS AND FANOUT BUFFERS (continued)

Device	Type	Channels	Input / Output Ratio	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>jitter</sub> RMS Typ (ps)	t <sub>skew(o-o)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	t <sub>r</sub> & t <sub>f</sub> Max (ps)	f <sub>max</sub> Clock Typ (MHz)	f <sub>max</sub> Data Typ (Mbps)	Package
MC10H116	Signal Driver	3	1:1	ECL; HSTL	ECL	-5.2			1	1600			PDIP-16; PLLC-20; SOIC-16
MC10H123	Signal Driver	3	4:1	ECL	ECL	-5.2			1.5	1700			PDIP-16; PLLC-20
MC100E112	Signal Driver	4	1:1	ECL	ECL	5		40	0.4	700	700		PLCC-28
MC100EL17	Signal Driver	4	1:1	ECL; LVDS	ECL	5	0.2		0.425	550	1000		SOIC-20W
MC100EP17	Signal Driver	4	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	230	3000		QFN-20; SOIC-20W; TSSOP-20
MC100H680	Signal Driver	4	1:1	ECL	TTL	5			3.2	3400			PLCC-28
MC100LVEL17	Signal Driver	4	1:1	ECL; LVDS	ECL	3.3	0.2		0.425	550	1750		SOIC-20W
MC10E112	Signal Driver	4	1:2	ECL	ECL	5		40	0.4	700	700		PLCC-28
MC10EP17	Signal Driver	4	1:1	CML; ECL	ECL	3.3; 5	0.2		0.22	230	3000		QFN-20; SOIC-20W; TSSOP-20
MC10H115	Signal Driver	4	1:1	ECL	ECL	-5.2			1	1500			PDIP-16; PLLC-20
NB100LVEP17	Signal Driver	4	1:1	CML; ECL; LVDS	ECL	2.5; 3.3; 5	0.5		0.25	240	2500	2500	QFN-24; TSSOP-20
MC100E116	Signal Driver	5	1:1	ECL	ECL	5	0.2		0.3	575	800		PLCC-28
MC10E116	Signal Driver	5	1:1	ECL	ECL	5	0.2		0.3	575	800		PLCC-28
MC10E416	Signal Driver	5	1:1	ECL	ECL	5	0.2		0.35	350	2000		PLCC-28
MC100EP116	Signal Driver	6	1:1	ECL	ECL	3.3; 5	0.2		0.26	240	3000		LQFP-32; QFN-32
MC10EP116	Signal Driver	6	1:1	CML; ECL	ECL	3.3; 5	0.2		0.26	240	3000		LQFP-32
MC10E122	Signal Driver	9	1:1	ECL	ECL	5		75	0.35	800	800		PLCC-28
NB3N1200K													QFN64 9x9, 0.5P (Punch & Sawn)
NB3L853141	Buffer		2:1	CMOS; ECL; HCSL; HSTL; LVDS; TTL	ECL	2.5; 3.3		30	1	700	700		TSSOP-20
NB3U23C	Buffer/Translator		1:1	CMOS	CMOS	1.2	0.15		5	2000	52		SC-88-6 / SC-70-6 / SOT-363-6
NB3V8312C	Buffer			CMOS; TTL	CMOS; TTL	1.8; 3.3	0.03	150	1.5	700	250		LQFP-32; QFN-32
NB3W1200L													QFN64 9x9, 0.5P (Punch & Sawn)

FLIP-FLOPS, LATCHES AND REGISTERS

Device	Type	Bits	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>Jitter</sub> Typ (ps)	t <sub>pd</sub> Typ (ns)	t <sub>su</sub> Min (ns)	t <sub>h</sub> Min (ns)	t <sub>rec</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	f <sub>Toggle</sub> Typ (MHz)	Package
MC100EL31	D-Type	1	ECL	ECL	5	1	0.475	0.15	0.25	0.4	350	2800	SOIC-8; TSSOP-8
MC100EL51	D-Type	1	ECL	ECL	5	1	0.475	0.15	0.25	0.4	350	2800	SOIC-8; TSSOP-8
MC100EL52	D-Type	1	ECL	ECL	5	1	0.365	0.125	0.15		350	2800	SOIC-8; TSSOP-8
MC100EP31	D-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.34	0.1	0.15	0.225	200	3000	DFN-8; SOIC-8; TSSOP-8
MC100EP51	D-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.37	0.1	0.1	0.15	180	3000	DFN-8; SOIC-8; TSSOP-8
MC100EP52	D-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.33	0.05	0		180	4000	DFN-8; SOIC-8; TSSOP-8
MC100LVEL31	D-Type	1	ECL	ECL	3.3	1	0.475	0.15	0.25	0.4	320	2900	SOIC-8; TSSOP-8
MC100LVEL51	D-Type	1	ECL	ECL	3.3	1	0.475	0.15	0.25	0.35	320	2800	DFN-8; SOIC-8; TSSOP-8
MC10EL31	D-Type	1	ECL	ECL	5	1	0.475	0.15	0.25	0.4	350	2800	SOIC-8; TSSOP-8
MC10EL51	D-Type	1	ECL	ECL	5	1	0.475	0.15	0.25	0.4	350	2800	SOIC-8; TSSOP-8
MC10EL52	D-Type	1	ECL	ECL	5	1	0.365	0.125	0.15		350	2800	SOIC-8; TSSOP-8
MC10EP31	D-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.34	0.1	0.15	0.225	200	3000	DFN-8; SOIC-8; TSSOP-8
MC10EP51	D-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.375	0.1	0.1	0.15	180	3000	DFN-8; SOIC-8; TSSOP-8
MC10EP52	D-Type	1	CML; ECL	ECL	3.3; 5	1	0.33	0.05	0		180	4000	DFN-8; SOIC-8; TSSOP-8
NB4L52	D-Type	1	CML; CMOS; ECL; LVDS	ECL	2.5; 3.3; 5	1	0.33	0.1	0.05	0.4	200	4000	QFN-16
NB7V52M	D-Type	1	CML; ECL; LVDS	CML	1.8; 2.5	0.2	0.2	0.04	0.05		35	10000	QFN-16
NBSG53A	D-Type	1	CML; CMOS; ECL; LVDS	ECL	2.5; 3.3	0.5	0.215	0.03	0.025	0.009	60	10000	QFN-16
MC100EL29	D-Type	2	ECL LVDS	ECL	5	1	0.58	0	0.1	0.1	550	1100	SOIC-20W
MC100EP29	D-Type	2	CML; ECL	ECL	3.3; 5	0.2	0.42	0.1	0.1	0.15	300	3000	QFN-20; TSSOP-20
MC100LVEL29	D-Type	2	ECL; LVDS	ECL	3.3	1	0.58	0	0.1	0.1	550	1100	SOIC-20W
MC10EP29	D-Type	2	CML; ECL	ECL	3.3; 5	0.2	0.42	0.1	0.1	0.15	300	3000	QFN-20; TSSOP-20
MC10H131	D-Type	2	ECL	ECL	-5.2		1	0.7	0.8		2000	250	PDIP-16; PLLC-20
MC100E431	D-Type	3	ECL	ECL	5	1	0.6	0.2	0.2	0.4	650	1100	PLCC-28
MC100EL30	D-Type	3	ECL	ECL	5	1	0.45	0.15	0.2	0.4	550	1200	SOIC-20W
MC100LVEL30	D-Type	3	ECL	ECL	3.3	1	0.45	0.15	0.2	0.4	550	1200	SOIC-20W
MC10E431	D-Type	3	CML; ECL	ECL	5	1	0.6	0.2	0.2	0.4	650	1100	PLCC-28

## ON Semiconductor Selector Guide – Clock and Data Distribution

### FLIP-FLOPS, LATCHES AND REGISTERS (continued)

Device	Type	Bits	Input Level	Output Level	V <sub>CC</sub> Typ (V)	t <sub>Jitter</sub> Typ (ps)	t <sub>pd</sub> Typ (ns)	t <sub>su</sub> Min (ns)	t <sub>h</sub> Min (ns)	t <sub>rec</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	f <sub>Toggle</sub> Typ (MHz)	Package
MC100E131	D-Type	4	ECL	ECL	5	1	0.5	0.15	0.175	0.4	480	1100	PLCC-28
MC100EP131	D-Type	4	CML; ECL	ECL	3.3; 5	0.2	0.46	0.12	0.12	0.29	290	3000	LQFP-32; QFN-32
MC10E131	D-Type	4	ECL	ECL	5	1	0.5	0.15	0.175	0.4	480	1100	PLCC-28
MC10EP131	D-Type	4	CML; ECL	ECL	3.3; 5	0.2	0.46	0.12	0.12	0.29	290	3000	LQFP-32; QFN-32
MC10H176	D-Type	6	ECL	ECL	-5.2		1.7	1.5	0.9		1900	250	PDIP-16; PLLC-20
MC100EL35	JK-Type	1	ECL	ECL	5	1	0.252; 0.525	0.15	0.25	0.4	350	2200	DFN-8; SOIC-8; TSSOP-8
MC100EP35	JK-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.41	0.15	0.15	0.15	180	3000	DFN-8; SOIC-8; TSSOP-8
MC10EL35	JK-Type	1	ECL	ECL	5	1	0.525	0.15	0.25	0.4	350	2200	SOIC-8; TSSOP-8
MC10EP35	JK-Type	1	CML; ECL	ECL	3.3; 5	0.2	0.41	0.15	0.15	0.15	180	3000	SOIC-8; TSSOP-8
MC10H135	JK-Type	2	ECL	ECL	-5.2		1.5	1.5	1		2200	250	PDIP-16; PLLC-20
MC100E150	Latch	6	ECL	ECL	5	1	0.8	0.2	0.2	0.75	450	1000	PLCC-28
MC10E150	Latch	6	ECL	ECL	-5.2	1	0.8	0.2	0.2	0.75	450	900	PLCC-28
MC100E175	Latch	9	ECL	ECL	5	1	0.6	0.275	0.175	0.85	800	1000	PLCC-28
MC10E175	Latch	9	ECL	ECL	-5.2	1	0.6	0.275	0.175	0.85	800	1100	PLCC-28
MC100E452	Register	5	ECL	ECL	5	1	0.6	0.175	0.225	0.75	650		PLCC-28
MC10E452	Register	5	ECL	ECL	5	1	0.6	0.175	0.225	0.75	650		PLCC-28
MC100E151	Register	6	ECL	ECL	5	1	0.65	0.15	0.35	0.75	450	1100	PLCC-28
MC100E451	Register	6	ECL	ECL	5	1	0.65	0.15	0.35	0.75	800		PLCC-28
MC100EP451	Register	6	CML; ECL	ECL	3.3; 5	0.2	0.45	0.08	0.08	0.25	260	3000	LQFP-32; QFN-32
MC10E151	Register	6	ECL	ECL	5	1	0.65	0.15	0.35	0.75	450	1100	PLCC-28
MC10E451	Register	6	ECL	ECL	5	1	0.65	0.15	0.35	0.75	800		PLCC-28
MC10EP451	Register	6	CML; ECL	ECL	3.3; 5	0.2	0.45	0.08	0.08	0.25	260	3000	LQFP-32; QFN-32
MC100E143	Register	9	ECL	ECL	5	1	0.8	0.05	0.3	0.9	800		PLCC-28
MC10E143	Register	9	ECL	ECL	5	1	0.8	0.05	0.3	0.9	800		PLCC-28
MC10H141	Shift Register	4	ECL	ECL	-5.2		1.5	1.5	1		2400	250	PDIP-16; PLLC-20
MC10E141	Shift Register	8	ECL	ECL	5	1	0.75	0.175	0.2	0.9	800	700	PLCC-28
MC100EP142	Shift Register	9	CML; ECL	ECL	3.3; 5	1	0.675	0.05	0.1	0.8	275	2800	LQFP-32; QFN-32
MC10E142	Shift Register	9	ECL	ECL	5	1	0.8	0.05	0.3	0.9	800		PLCC-28
MC10EP142	Shift Register	9	CML; ECL	ECL	3.3; 5	1	0.675	0.05	0.1	0.8	275	2800	LQFP-32; QFN-32

LOGIC GATES

Device	Type	Channels	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Toggle</sub> Max (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>Jitter</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC10H104	AND	4	ECL	ECL	-5.2		1		1700	PDIP-16; PLLC-20
MC100EL04	AND/NAND	1	ECL	ECL	5	2000	0.24	1	350	SOIC-8; TSSOP-8
MC100EL05	AND/NAND	1	ECL	ECL	5	2000	0.275	1	350	SOIC-8; TSSOP-8
MC100EP05	AND/NAND	1	CML; ECL	ECL	3.3 5	3000	0.22	0.2	180	DFN-8; SOIC-8; TSSOP-8
MC100EP105	AND/NAND	1	CML; ECL	ECL	3.3 5	3000	0.22	0.2	180	LQFP-32; QFN-32
MC100LVEL05	AND/NAND	1	ECL; LVDS	ECL	3.3	2000	0.34	1	320	SOIC-8; TSSOP-8
MC100LVEP05	AND/NAND	1	CML; ECL; LVDS	ECL	2.5; 3.3	3000	0.22	0.2	200	DFN-8; SOIC-8; TSSOP-8
MC10EL04	AND/NAND	1	ECL	ECL	5	2000	0.24	1	350	SOIC-8; TSSOP-8
MC10EL05	AND/NAND	1	ECL	ECL	5	2000	0.275	1	350	SOIC-8; TSSOP-8
MC10EP05	AND/NAND	1	CML; ECL	ECL	3.3 5	3000	0.22	0.2	180	SOIC-8; TSSOP-8
MC10EP105	AND/NAND	1	CML; ECL	ECL	3.3 5	3000	0.22	0.2	180	LQFP-32; QFN-32
MC100E404	AND/NAND	4	ECL	ECL	5	2000	0.475	1	400	PLCC-28
MC10E404	AND/NAND	4	ECL	ECL	5	700	0.475	1	400	PLCC-28
MC100E104	AND/NAND	5	ECL	ECL	5	2000	0.385	1	700	PLCC-28
MC10E104	AND/NAND	5	ECL	ECL	5	700	0.385	1	700	PLCC-28
MC10H102	NOR	4	ECL	ECL	-5.2		1		1600	PDIP-16; PLLC-20
MC10H103	OR	4	ECL	ECL	-5.2		1		1800	PDIP-16; PLLC-20
MC100EL01	OR/NOR	1	ECL	ECL	5	2000	0.23	1	235	SOIC-8; TSSOP-8
MC100EP01	OR/NOR	1	CML; ECL	ECL	3.3 5	3000	0.27	0.2	180	DFN-8; SOIC-8; TSSOP-8
MC100LVEL01	OR/NOR	1	ECL	ECL	3.3	2000	0.37	1	320	SOIC-8; TSSOP-8
MC10EL01	OR/NOR	1	ECL	ECL	5	2000	0.23	1	235	SOIC-8; TSSOP-8
MC10EP01	OR/NOR	1	CML; ECL	ECL	3.3 5	3000	0.27	0.2	180	DFN-8; SOIC-8; TSSOP-8
MC10H105	OR/NOR	3	ECL	ECL	-5.2		1		1600	PDIP-16; PLLC-20
MC100E101	OR/NOR	4	ECL	ECL	5	2000	0.35	1	575	PLCC-28
MC100EP101	OR/NOR	4	CML; ECL	ECL	3.3 5	3000	0.3	0.2	220	LQFP-32; QFN-32
MC10E101	OR/NOR	4	ECL	ECL	5	700	0.35	1	575	PLCC-28
MC10EP101	OR/NOR	4	CML; ECL	ECL	3.3 5	3000	0.3	0.2	220	LQFP-32; QFN-32
MC10H101	OR/NOR	4	ECL	ECL	-5.2		1		2200	PDIP-16; PLLC-20
NB7L86M	SmartGate	1	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	8000	0.09	0.2	60	QFN-16

## ON Semiconductor Selector Guide – Clock and Data Distribution

### LOGIC GATES (continued)

Device	Type	Channels	Input Level	Output Level	V <sub>cc</sub> Typ (V)	f <sub>Toggle Max</sub> (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>Jitter</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
NBSG86A	SmartGate	1	CML; CMOS; ECL; LVDS; TTL	RSECL	2.5; 3.3	8000	0.165	0.5	65	QFN-16
MC100EL07	XOR/XNOR	1	ECL	ECL	5	2000	0.26	1	225	DFN-8; SOIC-8; TSSOP-8
MC100EP08	XOR/XNOR	1	CML; ECL	ECL	3.3 5	3000	0.25	0.2	180	SOIC-8; TSSOP-8
MC10EL07	XOR/XNOR	1	ECL	ECL	5	2000	0.26	1	225	SOIC-8; TSSOP-8
MC10EP08	XOR/XNOR	1	CML; ECL	ECL	3.3 5	3000	0.25	0.2	180	SOIC-8; TSSOP-8
MC10H107	XOR/XNOR	3	ECL	ECL	-5.2		1		1600	PDIP-16; PLLC-20
MC100E107	XOR/XNOR	5	ECL	ECL	5	2000	0.41	1	700	PLCC-28
MC10E107	XOR/XNOR	5	ECL	ECL	5	700	0.41	1	700	PLCC-28

### MULTIPLEXERS AND CROSSPOINT SWITCHES

Device	Input / Output Ratio	Channels	Input Level	Output Level	V <sub>cc</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>Jitter</sub> Typ (ps)	t <sub>skew(O-O)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	Package
MC100E158	2:1	5	ECL	ECL	5	1000	1	60	0.385	PLCC-28
MC100E457	2:1	3	CML; ECL	ECL	5	1000	1	40	0.475	PLCC-28
MC100EL56	2:1	2	ECL; LVDS	ECL	5	1000	1	80	0.58	SOIC-20W
MC100EL58	2:1	1	ECL	ECL	5	1500	1		0.23	DFN-8; SOIC-8; TSSOP-8
MC100EL59	2:1	3	ECL	ECL	5	1000	1	100	0.5	SOIC-20W
MC100EP56	2:1	2	CML; ECL	ECL	3.3; 5	3000	0.2	100	0.36	QFN-20; SOIC-20W; TSSOP-20
MC100EP58	2:1	1	CML; ECL	ECL	3.3; 5	3000	0.2		0.31	SOIC-8; TSSOP-8
MC100LVEL56	2:1	2	ECL; LVDS	ECL	3.3	1000	3	80	0.44	SOIC-20W
MC100LVEL58	2:1	1	ECL	ECL	3.3	1500	1		0.44	SOIC-8; TSSOP-8
MC100LVEL59	2:1	3	ECL	ECL	3.3	1000	1	100	0.5	SOIC-20W
MC10E154	2:1	5	ECL	ECL	5	1100	1	50	0.5	PLCC-28
MC10E155	2:1	6	ECL	ECL	5	1100	1	75	0.5	PLCC-28
MC10E157	2:1	4	ECL	ECL	5	1100	1	70	0.38	PLCC-28
MC10E158	2:1	5	ECL	ECL	5	1100	1	60	0.385	PLCC-28
MC10E167	2:1	6	ECL	ECL	5	1400	1	75	0.65	PLCC-28
MC10E457	2:1	3	CML; ECL	ECL	5	1000	1	40	0.475	PLCC-28
MC10EL58	2:1	1	ECL	ECL	5	1500	1		0.23	SOIC-8; TSSOP-8
MC10EP56	2:1	2	CML; ECL	ECL	3.3; 5	3000	0.2	100	0.475	QFN-20; TSSOP-20
MC10EP58	2:1	1	CML; ECL	ECL	3.3; 5	3000	0.2		0.31	SOIC-8; TSSOP-8
MC10H158	2:1	4	ECL	ECL	-5.2				1.5	PDIP-16; PLLC-20

MULTIPLEXERS AND CROSSPOINT SWITCHES (continued)

Device	Input / Output Ratio	Channels	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>Jitter</sub> Typ (ps)	t <sub>skew(O<sup>-</sup>)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	Package
NB100LVEP56	2:1	2	CML; ECL; LVDS	ECL	2.5; 3.3	2500	0.2	50	0.7	QFN-24; TSSOP-20
NB4L6254	2:1	2	CML; CMOS; ECL; LVDS	ECL	2.5	3000	0.3	50	485	LQFP-32; QFN-32
NB4L858M	2:1	4	CML; ECL	CML	2.5			12	350	LQFP-32
NB4N1158	2:1	2	ECL; TTL	ECL	3.3	1000	10		0.375	TSSOP-28
NB4N7132	2:1	1	CML; ECL; LVDS	ECL	3.3	750	25		0.375	TSSOP-28
NB4N840M	2:1	2	CML	CML	2.5	8000	0.2	20	0.12	QFN-32
NB6L56	2:1	2	CML; ECL; LVDS	ECL	2.5; 3.3	2500	0.5	12	0.25	QFN-32
NB7L72M	2:1	2	CML; ECL; LVDS	CML	2.5; 3.3	8500	0.2	10	150	QFN-16
NB7L86M	2:1	1	CML; CMOS; ECL; LVDS; TTL	CML	2.5; 3.3	8000	0.2		0.09	QFN-16
NB7V585M	2:1	1	CML; ECL; LVDS	CML	1.8; 2.5	7000	0.2	30	175	QFN-32
NB7V586M	2:1	1	CML; ECL; LVDS	CML	1.8	6000	0.2	30	0.175	QFN-32
NB7V58M	2:1	1	CML; ECL; LVDS	CML	1.8; 2.5; 3.3	8000	0.2	50	0.00018	QFN-16
NB7VQ58M	2:1	1	CML; ECL; LVDS	CML	1.8; 3.3	8000	0.2	0	0.18	QFN-16
NBSG72A	2:1	2	CML; CMOS; ECL; LVDS	ECL	2.5	7000		25		QFN-16
NBSG86A	2:1	1	CML; CMOS; ECL; LVDS; TTL	RSECL	2.5; 3.3	8000	0.5	20	0.165	QFN-16
NB6L72	2:2	1	CML; CMOS; ECL; LVDS	ECL	2.5	3000	0.2	15	0.425	QFN-16
NB6L72M	2:2	1	CML; CMOS; ECL; LVDS	CML	2.5	3000	0.2	20	0.36	QFN-16
NB7V72M	2:2	2	LVDS	CML	1.8; 2.5	6000	0.5	30	150	QFN-16
NB7L585	2:6	1	CML; ECL; LVDS	ECL	2.5; 3.3	7000	0.2	20	0.175	QFN-32
NB7L585R	2:6	1	CML; ECL; LVDS	RSECL	2.5	7000	0.2	20	0.160-0.200	QFN-32
NB4L7210	2:10	1	CML; CMOS; ECL; LVDS; TTL	ECL	3.3	1000	100	35	725	QFN-52
MC100EL57	4:1	1	ECL	ECL	5	1000	1	100	0.56	SOIC-16
MC100EP57	4:1	1	CML; ECL	ECL	3.3; 5	3000	0.2	200	0.475	QFN-20; TSSOP-20
MC10E156	4:1	3	ECL	ECL	5	1100	1	50	0.6	PLCC-28
MC10E171	4:1	3	ECL	ECL	5	1400	1	60	0.48	PLCC-28
MC10EL57	4:1	1	ECL	ECL	5	1000	1	100	0.56	SOIC-16
MC10EP57	4:1	1	CML; ECL	ECL	3.3; 5	3000	0.2	200	0.475	QFN-20; TSSOP-20
NB6L572M	4:1	1	CML; ECL; LVDS	CML	2.5; 3.3	6000	0.2	15	200	QFN-32

## ON Semiconductor Selector Guide – Clock and Data Distribution

### MULTIPLEXERS AND CROSSPOINT SWITCHES (continued)

Device	Input / Output Ratio	Channels	Input Level	Output Level	V <sub>cc</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>Jitter</sub> Typ (ps)	t <sub>skew(O<sup>-</sup>)</sub> Max (ps)	t <sub>pd</sub> Typ (ns)	Package
NB6LQ572M	4:1	1	CML; ECL; LVDS	CML	2.5; 3.3	6000	0.2	15	0.2	QFN-32
NB7LQ572	4:1	1	CML; ECL; LVDS	ECL	2.5; 3.3	7000	0.2	15	160	QFN-32
NB6LQ572	4:2	1	CML; ECL; LVDS	ECL	2.5; 3.3	6000	0.2	15	0.175	QFN-32
NB6VQ572M	4:2	1	CML; ECL; LVDS	CML	1.8; 2.5	5000	0.2	15	0.175	QFN-32
NB7L572	4:2	1	CML; ECL; LVDS	ECL	2.5; 3.3	7000	0.5	15	0.175	QFN-32
NB7VQ572M	4:2	1	CML; ECL; LVDS	CML	1.8; 3.3	7000	0.2	15	175	QFN-32
MC100E163	8:1	2	ECL	ECL	5	1000	1	40	0.55	PLCC-28
MC10E163	8:1	2	ECL	ECL	5	1100	1	40	0.55	PLCC-28
MC10H164	8:1	1	ECL	ECL	-5.2				1	PDIP-16; PLLC-20
MC100E164	16:1	1	ECL	ECL	5	1000	1	50	0.6	PLCC-28
MC100LVE164	16:1	1	ECL	ECL	3.3	1000	1	50	0.6	LQFP-32
MC10E164	16:1	1	ECL	ECL	5	1100	1	50	0.6	PLCC-28

### SERIAL/PARALLEL CONVERTERS

Device	Type	Bits	Input Level	Output Level	V <sub>cc</sub> Typ (V)	f <sub>dr</sub> Typ (Gb/sec)	t <sub>pd</sub> Typ (ns)	t <sub>su</sub> Min (ns)	t <sub>h</sub> Min (ns)	t <sub>Jitter</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC100E446	Parallel / Serial	4	ECL	ECL	5	1.6	1.2	-0.45	0.65	1	350	PLCC-28
MC100EP446	Parallel / Serial	8	CML; ECL	ECL	3.3; 5	3.4	0.8	-0.45	-0.6	0.2	170	LQFP-32; QFN-32
MC10EP446	Parallel / Serial	8	CML; ECL	ECL	3.3; 5	3.4	0.8	-0.45	-0.6	0.2	170	LQFP-32; QFN-32
MC10E446	Serial / Parallel	4	ECL	ECL	5	2	1.8	-0.25	0.3	1	350	PLCC-28
MC100EP445	Serial / Parallel	8	CML; ECL	ECL	3.3; 5	2.5	1.3	-0.4	0.6	0.2	300	LQFP-32; QFN-32
MC10EP445	Serial / Parallel	8	CML; ECL	ECL	3.3; 5	2.5	1.3	-0.4	0.6	0.2	300	LQFP-32

**SKEW MANAGEMENT**

Device	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>d(prog)</sub> Min (ns)	t <sub>d(prog)</sub> Max (ns)	t <sub>d(step)</sub> Typ (ps)	t <sub>Jitter</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC100E195	ECL	ECL	5	1000	2.05	2.6	20	5	325	PLCC-28
MC100E196	ECL	ECL	5	1000	2.05	2.6	20	5	325	PLCC-28
MC100EP195	CML; ECL	ECL	3.3	1200	2.2	12.2	10	1	300	LQFP-32; QFN-32
MC100EP195B	CML; ECL; LVDS	ECL	3.3	1200	2.2	12	10	3	300	LQFP-32; QFN-32
MC100EP196	CML; ECL	ECL	3.3	1200	2.2	12.2	10	3	210	LQFP-32
MC100EP196B	CML; ECL; LVDS	ECL	3.3	1200	8.95	12.11	11	1.2	165	LQFP-32; QFN-32
MC10E195	ECL	ECL	3.3	1000	2.05	2.6	20	5	325	PLCC-28
MC10E196	ECL	ECL	3.3	1000	2.05	2.6	20	5	325	PLCC-28
MC10EP195	CML; ECL	ECL	3.3	1200	2.2	12.2	10	3	300	LQFP-32; QFN-32
NB6L295	CML; ECL; LVDS	ECL	2.5; 3.3	1500	6.2	6.2	11	3	150	QFN-24
NB6L295M	CML; CMOS; ECL; LVDS	CML	2.5; 3.3	1500	6.2	6.2	11	2.4	150	QFN-24

**TRANSLATORS**

Device	Channels	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC100ELT20	1	TTL	ECL	5	100	1.2	1500	SOIC-8; TSSOP-8
MC100ELT21	1	ECL	TTL	5	100	3.5	750	SOIC-8; TSSOP-8
MC100ELT24	1	TTL	ECL	5	400	0.95	1250	DFN-8; SOIC-8; TSSOP-8
MC100ELT25	1	ECL	TTL	5	100	2.6	2300	DFN-8; SOIC-8; TSSOP-8
MC100EPT20	1	CMOS; TTL	ECL	3.3	1000	0.37	180	DFN-8; SOIC-8; TSSOP-8
MC100EPT21	1	CML; ECL; LVDS	TTL	3.3	350	1.4	500	DFN-8; SOIC-8; TSSOP-8
MC100EPT24	1	CMOS; TTL	ECL	3.3	1000	0.53	180	DFN-8; SOIC-8; TSSOP-8
MC100EPT25	1	ECL	TTL	3.3	275	1.1	1100	DFN-8; SOIC-8; TSSOP-8
MC100EPT26	1	ECL	TTL	3.3	275	1.5	900	DFN-8; SOIC-8; TSSOP-8
MC100LVELT20	1	CMOS; TTL	ECL	3.3	1000	0.37	180	SOIC-8
MC10ELT20	1	TTL	ECL	5	100	1.2	1500	SOIC-8; TSSOP-8
MC10ELT21	1	ECL	TTL	5	100	3.5	750	SOIC-8; TSSOP-8
MC10ELT24	1	TTL	ECL	5	400	0.95	1250	SOIC-8; TSSOP-8
MC10ELT25	1	ECL	TTL	5	100	2.6	2300	SOIC-8; TSSOP-8
MC10EPT20	1	CMOS; TTL	ECL	3.3	1000	0.37	180	DFN-8; SOIC-8; TSSOP-8
MC10H600	1	TTL	ECL	5			1500	PLCC-28
MC10H601	1	ECL	TTL	5		3.45	1500; 3000	PLCC-28



## ON Semiconductor Selector Guide – Clock and Data Distribution

### TRANSLATORS (continued)

Device	Channels	Input Level	Output Level	V <sub>CC</sub> Typ (V)	f <sub>Max</sub> Typ (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC10H602	1	TTL	ECL	5			1500	PLCC-28
MC100ELT22	2	TTL	ECL	5	100	1.2	1600	SOIC-8; TSSOP-8
MC100ELT23	2	ECL	TTL	5	100	3.5	1600	SOIC-8; TSSOP-8
MC100ELT28	2	ECL; TTL	ECL; TTL	5	100	1.2	1500	SOIC-8; TSSOP-8
MC100EPT22	2	CMOS; TTL	ECL	3.3	1100	0.42	220	DFN-8; SOIC-8; TSSOP-8
MC100EPT23	2	CML; ECL; LVDS	TTL	3.3	350	1.5	600	DFN-8; SOIC-8; TSSOP-8
MC100LVELT22	2	CMOS; TTL	ECL	3.3	2000	0.35	500	DFN-8; SOIC-8; TSSOP-8
MC100LVELT23	2	ECL	TTL	3.3	180	1.7	600	DFN-8; SOIC-8; TSSOP-8
MC10ELT22	2	TTL	ECL	5	100	1.2	1600	SOIC-8; TSSOP-8
MC10ELT28	2	ECL; TTL	ECL; TTL	5	100	1.2	1500	SOIC-8; TSSOP-8
NB100ELT23L	2	ECL	TTL	3.3	275	2.1	1300	SOIC-8; TSSOP-8
NLSX4302E	2	CMOS	CMOS	3.3	25	4	10	UQFN-8
MC100EL90	3	ECL	ECL	5	650	0.5	500	SOIC-20W
MC100EL91	3	ECL	ECL	5	700	0.67	400	SOIC-20W
MC100EP90	3	ECL	ECL	3.3; 5	3000	0.26	180	TSSOP-20
MC100EP91	3	CML; CMOS; ECL; LVDS; TTL	ECL	3.3	2	0.55	150	QFN-24; SOIC-20W
MC100LVEL90	3	ECL	ECL	3.3	650	0.5	500	SOIC-20W
MC100LVEL91	3	ECL	ECL	3.3; 5	600	0.62	580	SOIC-20W
MC100LVEL92	3	ECL	ECL	3.3	600	0.61	580	SOIC-20W
MC10EP90	3	ECL	ECL	3.3; 5	3000	0.26	180	TSSOP-20
NB100LVEP91	3	CML; HSTL; LVDS	ECL	2.5; 3.3	2500	0.43	250	QFN-24; SOIC-20W
MC10H124	4	TTL	ECL	5	50	1.6	1600	PDIP-16; PLLC-20
MC10H125	4	ECL	TTL	5	50		1200	PDIP-16; PLLC-20
MC10H350	4	ECL	TTL	5	50	3.5	1600	PDIP-16; PLLC-20
MC10H351	4	TTL	ECL	5		1.3	2000	PLLC-20
MC10H604	6	TTL	ECL	5			2000	PLCC-28
MC10H605	6	ECL	TTL	5		5.2	1500	PLCC-28
MC100EPT622	10	CMOS; TTL	ECL	3.3	1500	0.45	250	LQFP-32; QFN-32

# Clock Generation

---

## Table of Contents

	<b>Page</b>
Crystal Oscillators .....	74
Phase/Frequency Detectors .....	75
PLL Clock Generators .....	75
Spread Spectrum EMI Reduction Clocks .....	77
Voltage Controlled Oscillators (VCOs) .....	78
Zero Delay Buffers .....	79

# ON Semiconductor Selector Guide – Clock Management

## CRYSTAL OSCILLATORS

Device	Input Level	Output Level	V <sub>DD</sub> Typ (V)	f <sub>CLKOUT1</sub> Typ (MHz)	f <sub>CLKOUT2</sub> Typ (MHz)	D <sub>f</sub> (±PPM)	t <sub>Jitter</sub> (Φ) Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Duty Cycle Min (%)	Duty Cycle Typ (%)	Duty Cycle Max (%)	Package
NBVSBA011	CMOS	ECL	2.5–3.3	122.88		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA015	CMOS	ECL	2.5–3.3	200		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA017	CMOS	ECL	2.5–3.3	156.25		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA018	CMOS	ECL	2.5–3.3	155.52		50	0.5	250	400	45	50	55	CLCC–6
NBVSBA024	CMOS	ECL	2.5–3.3	622.08		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA026	CMOS	ECL	2.5–3.3	644.43		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA027	CMOS	ECL	2.5–3.3	148.5		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA037	CMOS	ECL	2.5–3.3	707.35		50	0.5	245	400	45	50	55	CLCC–6
NBVSBA041	CMOS	ECL	2.5–3.3	693.48		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA013	CMOS	LVDS	2.5	212		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA015	CMOS	LVDS	3.3	200		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA017	CMOS	LVDS	3.3	156.25		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA018	CMOS	LVDS	3.3	155.52		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA019	CMOS	LVDS	3.3	125		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA024	CMOS	LVDS	3.3	160		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA027	CMOS	LVDS	3.3	148.5		50	0.5	245	400	45	50	55	CLCC–6
NBVSPA042	CMOS	LVDS	3.3	74.25		50	0.5	245	400	45	50	55	CLCC–6
NBXDBA009	CMOS	ECL	3.3	75	150	50	0.4	250	400	48	50	52	CLCC–6
NBXDBA012	CMOS	ECL	3.3	106.25	212.5	50	0.4	250	400	48	50	52	CLCC–6
NBXDBA014	CMOS	ECL	3.3	62.5	125	50	0.4	380	620	48	50	52	CLCC–6
NBXDBA015	CMOS	ECL	3.3	200	206.9	50	0.4	250	400	48	50	52	CLCC–6
NBXDBA017	CMOS	ECL	3.3	156.25	312.5	50	0.4	250	400	48	50	52	CLCC–6
NBXDBA018	CMOS	ECL	3.3	155.52	311.04	50	0.4	250	400	48	50	52	CLCC–6
NBXDBA019	CMOS	ECL	3.3	125	250	50	0.4	250	400	48	50	52	CLCC–6
NBXDBB017	CMOS	ECL	3.3	156.25	312.5	20	0.4	250	400	48	50	52	CLCC–6
NBXDBB018	CMOS	ECL	3.3	155.52	311.04	20	0.4	250	400	48	50	52	CLCC–6
NBXDDA016	CMOS	ECL	3.3	133.33	137.93	50	0.4	160	300	48	50	52	CLCC–6
NBXDPA012	CMOS	LVDS	2.5–3.3	106.25	212.5	50	0.4	115	400	48	50	52	CLCC–6
NBXDPA017	CMOS	LVDS	2.5–3.3	156.25	312.5	50	0.4	115	400	48	50	52	CLCC–6
NBXDPA018	CMOS	LVDS	2.5–3.3	155.52	311.04	50	0.5	115	400	48	50	52	CLCC–6
NBXDPA019	CMOS	LVDS	2.5–3.3	125	250	50	0.5	115	400	48	50	52	CLCC–6
NBXHBA017	CMOS	ECL	3.3	156.25		50	0.4	250	400	48	50	52	CLCC–6
NBXHBA019	CMOS	ECL	3.3	125		50	0.4	250	400	48	50	52	CLCC–6
NBXHGA017	CMOS	ECL	2.5–3.3	156.25		50	0.5	250	400	45	50	55	CLCC–6
NBXHGA019	CMOS	ECL	2.5–3.3	125		50	0.5	250	400	48	50	52	CLCC–6
NBXHGA053	CMOS	ECL	3.3	50		50	0.5	250	400	48	50	52	CLCC–6
NBXMBB024	CMOS	ECL	2.5–3.3	622.08		20	0.5	250	400	45	50	55	CLCC–6
NBXSBA007	CMOS	ECL	3.3	240		50	0.4	250	400	48	50	52	CLCC–6
NBXSBA008	CMOS	ECL	3.3	161.1328		50	0.4	250	400	48	50	52	CLCC–6
NBXSBA010	CMOS	ECL	3.3	100		50	0.4	250	400	48	50	52	CLCC–6
NBXSBA017	CMOS	ECL	3.3	312.5		50	0.4	250	400	48	50	52	CLCC–6

**CRYSTAL OSCILLATORS** (continued)

Device	Input Level	Output Level	V <sub>DD</sub> Typ (V)	f <sub>CLKOUT1</sub> Typ (MHz)	f <sub>CLKOUT2</sub> Typ (MHz)	D <sub>f</sub> (±PPM)	t <sub>Jitter(Φ)</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Duty Cycle Min (%)	Duty Cycle Typ (%)	Duty Cycle Max (%)	Package
NBXSBA019	CMOS	ECL	3.3	250		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA020	CMOS	ECL	3.3	280		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA021	CMOS	ECL	3.3	266.667		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA022	CMOS	ECL	3.3	187.5		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA023	CMOS	ECL	3.3	400		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA024	CMOS	ECL	2.5-3.3	622.08		50	0.5	250	400	45	50	55	CLCC-6
NBXSBA025	CMOS	ECL	2.5-3.3	425		50	0.5	250	400	48	50	52	CLCC-6
NBXSBA030	CMOS	ECL	2.5-3.3	175		50	0.5	250	400	48	50	52	CLCC-6
NBXSBA031	CMOS	ECL	2.5-3.3	340		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA045	CMOS	ECL	2.5-3.3	345		50	0.4	250	400	48	50	52	CLCC-6
NBXSBA046	CMOS	ECL	2.5-3.3	172.5		50	0.5	250	400	48	50	52	CLCC-6
NBXSBA051	CMOS	ECL		533.3333		50	0.5	250	400	48	50	52	CLCC-6
NBXSBB024	CMOS	ECL	2.5-3.3	622.08		20	0.5	250	400	45	50	55	CLCC-6
NBXSBA008	CMOS	ECL	2.5-3.3	161.1328		50	0.5	250	400	48	50	52	CLCC-6
NBXSBA008	CMOS	LVDS	2.5-3.3	161.1328		50	0.5	115	400	48	50	52	CLCC-6
NBXSBA022	CMOS	LVDS	2.5-3.3	187.5		50	0.4	115	400	48	50	52	CLCC-6

**PHASE/FREQUENCY DETECTORS**

Device	Input Level	Output Level	V <sub>CC</sub> Typ (V)	Transfer Gain Typ (mV/degree)	CMRR Max (V)	f <sub>Toggle</sub> Max (MHz)	t <sub>pd</sub> Typ (ns)	t <sub>Jitter</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	Package
MC100EP140	CML; ECL	ECL	3.3	1.2073		2000	0.475	0.2	200	SOIC-8
MC100EP40	CML; ECL	ECL	3.3; 5	0.93	2	2000	0.55	0.2	150	TSSOP-20
MC100LVEL40	CML; ECL; LVDS	ECL	3.3; 5	2	1.2	250	1.35	0.2	475	SOIC-20W
MCH12140	ECL	ECL	5			800	0.44	0.2	350	SOIC-8
MCK12140	ECL	ECL	5			800	0.44	0.2	350	SOIC-8

**PLL CLOCK GENERATORS**

Device	Input Level	Output Level	V <sub>S</sub> Typ (V)	f <sub>in</sub> Typ (MHz)	f <sub>out</sub> Typ (MHz)	t <sub>Jitter(Cy-Cy)</sub> Typ (ps)	t <sub>Jitter(Period)</sub> Typ (ps)	t <sub>Jitter(Φ)</sub> Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Min (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NB3N3020	CML; CMOS; ECL	ECL; TTL	3.3	5-27	8-210	20	15		340	700	-40	85	TSSOP-16
FS6128-04	CMOS	CMOS; TTL	3.3	13.5	27	100	200		1700	1700	0	70	SOIC-8
FS6128-07	CMOS	CMOS; TTL	3.3	13.5	27	100	200		1700	1700	0	70	SOIC-8
FS7140	CMOS	ECL; TTL	3.3	0-80	0-300	300	75		1000	1000	0	70	SOIC-16; SSOP-16
FS7145	CMOS	ECL; TTL	3.3	0-80	0-300	300	75		1000	1000	0	70	SOIC-16; SSOP-16
NB3N508S	CMOS	LVDS	3.3	27	216	88			300	500	0	70	TSSOP-16
NB4N441	CMOS	CMOS	3.3	10; 27; 28; 50	12.5-425		25		300	425	-40	85	QFN-24
NBC12429	CMOS	ECL	3.3; 5	10-20	25-400		25	20	175	425	0	70	LQFP-32; PLCC-28; QFN-32

## ON Semiconductor Selector Guide – Clock Management

### PLL CLOCK GENERATORS (continued)

Device	Input Level	Output Level	V <sub>S</sub> Typ (V)	f <sub>in</sub> Typ (MHz)	f <sub>out</sub> Typ (MHz)	t <sub>Jitter</sub> (Cy-Cy) Typ (ps)	t <sub>Jitter</sub> (Period) Typ (ps)	t <sub>Jitter</sub> ( $\Phi$ ) Typ (ps)	t <sub>R</sub> & t <sub>F</sub> Min (ps)	t <sub>R</sub> & t <sub>F</sub> Max (ps)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NBC12430	CMOS	ECL	3.3; 5	10–100	50–800	±20	5		175	425	0	70	LQFP–32; PLCC–28; QFN–32
NBC12439	CMOS	ECL	3.3; 5	10–20	50–800	±20	5		175	425	0	70	LQFP–32; PLCC–28; QFN–32
P1P3800A	CMOS	CMOS	5	120–240	60–120					10	–40	85	WQFN–12
P2084A	CMOS	CMOS	3.3	3–78	12–312	±200			1000		0	70	SOIC–8
PCS1P2192A	CMOS	CMOS	3.3	20	25; 27; 33.25; 40; 45; 65; 85; 108		±150		800	2500	0	85	SOIC–8
NB3N501	CMOS; Crystal	CMOS; TTL	3.3; 5	2–50 5–27	13–160	70	25		1000		–40	85	SOIC–8
NB3N502	CMOS; Crystal	CMOS	3; 5.5	2–50 5–27	14–190	±40	15		1000	1000	–40	85	SOIC–8
NB3N51034	CMOS; Crystal	HCSL; LVDS	3.3	25	100; 200			0.4	340 / 400	700	–40	85	TSSOP–20
NB3N511	CMOS; Crystal	CMOS; TTL	3.3; 5	1–50 5–32	200		25		1000	1500	–40	85	SOIC–8
NB3N65027	CMOS; Crystal; TTL	CMOS; TTL	0	12.5	133.333					1500	–40	85	QSOP–20
FS6370	CMOS; TTL	TTL	3.3; 5	5–27	0.8–150	165	390		1800	2100	0	70	SOIC–16
FS6377	CMOS; TTL	TTL	3.3; 5	5–27	0.8–150	165	390		1800	2100	0	70	SOIC–16
NB3N3002	CMOS; TTL	HCSL	3.135; 3.465	25	25; 100; 125; 200		3	1.5	340	700	–40	85	TSSOP–16
NB3N3010B	CMOS; TTL	CMOS; TTL	3.3	0.004	12.288					4000	0	85	SOIC–8
NB4N507A	CMOS; TTL	ECL	3.3; 5	5–52	50–200		20		270	500	–40	85	SOIC–16
NB3N5573	Crystal	HCSL	2.97; 3.3; 3.63	25	25–200	20		20	340	700	–40	85	TSSOP–16
NB3N15552		ECL	3.3		155.52	2	1	0.5	245	400	–40	85	QFN–20
NB3N15625		ECL	3.3		156.25	2	1	0.5	245	400	–40	85	QFN–20
NB3N49152		ECL	3.3		491.52	2	1	0.5	250	400	–40	85	QFN–20
NB3N62208		ECL	3.3		622.08	2	1	0.5	245	400	–40	85	QFN–20

**SPREAD SPECTRUM EMI REDUCTION CLOCKS**

Device	V <sub>DD</sub> Typ (V)	f <sub>in</sub> Typ (MHz)	f <sub>out</sub> Typ (MHz)	Deviation Type	Features	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
ASM3P18S19B	3.3	20–40	20–40	–1.25% to –1.75%	Spread Deviation Selection	0	70	SOIC–8
ASM3P2107A	5	12–22	12–22	Down		0	70	SOIC–8
ASM3P2108A	5	25–45	25–45	–1.3		0	70	SOIC–8
ASM3P2111B	3.3	25	48; 66	–1.7		0	70	SOIC–8
ASM3P2180A	3.3	6–30	6–30	Selectable Down		0	70	SOIC–8
ASM3P2182A	3.3	25–210	25–210	±0.13 to ±1.24		0	70	SOIC–8
ASM3P2274A	2.5; 3.3	12–30	48–120	–1.5	PDB	0	70	TSOP–6
ASM3P2474A	3.3	13–30	13–30; 26–60	–1.5		0	70	TSOP–6
ASM3P2579A	3.3	13	30	±1	SSON	–40	85	TSOP–6
ASM3P2598A	2.5; 3.3	60–120	60–120	±1.5	SSON	0	70	TSOP–6
ASM3P2669A	2.5; 3.3	6–12; 6–13	6–12; 6–13	±1	PDB	–40 0	70 85	TSOP–6
ASM3P2760A	2.5; 3.3	6–12; 6–13	6–12; 6–13	±0.65	PDB	0	70	TSOP–6
ASM3P2775A	3.3	13–30	13–30	±1.8	PDB	0	70	TSOP–6
ASM3P2779A	2.5; 3.3	13–30	13–30	±1	PDB	–40 0	70 85	TSOP–6
ASM3P2811A	3.3	10–40	10–40	–2.5 to –3.8 ±1.2 to ±1.9	ModOUT=1x Input Clock	0	70	SOIC–8
ASM3P2812A	3.3	10–40	20–80	–2.5 to –3.8 ±1.2 to ±1.9	ModOUT=2x Input Clock	0	70	SOIC–8; TSSOP–8
ASM3P2814A	3.3	10–40	40–160	–2.5 to –3.8 ±1.2 to ±1.9	ModOUT=4x Input Clock	0	70	SOIC–8
ASM3P2853A	2.5	25	48; 50	±1		0	70	SOIC–8
ASM3P2863A	2.5; 3.3	6–12; 6–13	6–12; 6–13	±0.5	REFOUT	0	70	TSOP–6
ASM3P2872A	2.5; 3.3	13–30	13–30	–1.25	REFOUT	0	70	TSOP–6
ASM3P623S05B	3.3	20–50	20–50	±0.25 ±0.5		0	70	TSSOP–8
P1708C	3.3	50–110	50–110	Selectable Center Spread	SSON/OFF	0	70	SOIC–8; TSSOP–8
P1727A	3.3	20–40	20–40	Selectable ±0.625% to –3.50%		0	70	SOIC–8
P1817A	2.7–5.5	20–32	20–32	Center		–40	85	SOIC–8
P1817B	2.7–5.5	10–20	10–20	Center		–40	85	SOIC–8
P1819B	3.3	20–40	20–40	–1.25 & –1.75	PD with SSON/OFF	–40	85	SOIC–8
P1819G	3.3	20–40	20–40	±0.875 & –1.75	PD with SSON/OFF	–40	85	SOIC–8
P1P8160A	3.3	27	27; 100	Selectable Down Spread		–10	85	WDFN–10
P2042A	3.3	30–110	30–110	±0.23 to ±1.89	SSON/OFF	0	70	TSSOP–8
P2781A	3.3	3–78	3–78	±0.25 to ±5	External loop filter for deviation setting	0	70	SOIC–8
P2782A	3.3	3–78	6–156	±0.25 to ±5	External Loop Filter For Deviation Setting	0	70	SOIC–8
P2784	3.3	3–78	12–312	±0.25 to ±5	External Loop Filter For Deviation Setting	0	70	SOIC–8
P2811B	3.3	10–40	10–40	±0.625 to –3.5		0	70	SOIC–8

## ON Semiconductor Selector Guide – Clock Management

### SPREAD SPECTRUM EMI REDUCTION CLOCKS (continued)

Device	V <sub>DD</sub> Typ (V)	f <sub>in</sub> Typ (MHz)	f <sub>out</sub> Typ (MHz)	Deviation Type	Features	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
P2814B	3.3	10–40	40–160	±0.625 to –3.5		0	70	SOIC–8
P312005A	3.3; 5	10–30; 30–100	10–30; 30–100	Selectable center & Down		–40	85	SOIC–8
P3MS650100H	1.8; 2.5; 3.3	15–30; 15–60	15–30; 15–60	±1.4% @ 24MHz	Power Down	–20	85	WDFN–4
P3MS650103H	1.8; 2.5; 3.3	15–30; 15–60	15–30; 15–60	±0.45% @ 24MHz	Power Down	–20	85	WDFN–4
P3P2043B	3.3	30–110	30–110	±0.4 to ±3	SSON/OFF	0	70	SOIC–8
P3P25812A	3.3	4–32	8–64	–0.5 to –3.0 ±0.3 to ±1.4	ModOUT=2x Input Clock	0	70	SOIC–8
P3P25814	3.3	4–32	16–128	–0.5 to –3.0 ±0.3 to ±1.4	ModOUT=4x Input Clock	0	70	SOIC–8
P3P623S00BG	3.3	20–50	20–50	±0.25 & ±0.50		0	70	SOIC–8; TSSOP–8
P3P76Z11DH	1.8	15–75	15–75	Analog	Analog Input–Output Delay control	0	70	WDFN–8
P3P8163A	3.3	12	12	±0.4	SEL pin to Turn Off CLK2	0	70	SOIC–8
P3P816711A	3.3	30	30	±0.3%		0	70	TSOP–6
P3P8203A	3.3	18–36	18–36	Analog	Analog Deviation	0	70	WDFN–8
P3P8220A	1.8; 2.5; 3.3	0–60	0–60	7.5nS	Supports Non–continuous Input Clock	0	70	WDFN–8
P3P85R01A	3.3	75–200	75–200	Analog Deviation	Analog Input–Output Delay control	0	70	WDFN–8
P3PS550AH	2.3–3.6	18–36	18–36	±0.4 to ±2.5	High Drive, PDB	–20	85	WDFN–8
P3PS850BH	2.3–3.6	18–72	18–72	Analog	PDB	–20	85	WDFN–8
P3PSL450AH	1.8	15–60	15–60	Analog	PDB	–20	85	WDFN–8
P6P82PS01A	3.3	5	5	Analog	External or Internal MR selection	0	70	WDFN–8
PCS3I8504AG–08–CR	3.3	15 – 50	15 – 50	Analog ±25%		–40	85	WDFN–8
PCS3P2537A	3.3	18–36	18–36	–0.25	SSON/OFF	0	70	WDFN–8
PCS3P25811A	3.3	4–32	4–32	–0.5 to –3.0 ±0.3 to ±1.4	ModOUT=1x Input Clock	0	70	SOIC–8
PCS3P7100A	2.5; 3.3	20–130; 30–130	20–130; 30–130	±0.75, ±1, ±1.25, ±1.5		–40	85	TSOT–23–6
PCS3P7303A	2.5; 3.3	10–70; 10–80	10–70; 10–80	Analog		0	70	TSSOP–8; WDFN–8
PCS3P8504A	3.3	15–50	15–50	Analog	MR Selection	0	70	WDFN–8
PCS3PS550A	2.3–3.6	18–36	18–36	±0.4 to ±2.5	PDB	–20	85	WDFN–8

### VOLTAGE CONTROLLED OSCILLATORS VCOs

Device	Description	Input Level	Output Level	f <sub>Max</sub> Typ (MHz)	V <sub>CC</sub> Typ (V)	Duty Cycle (%)	Package
MC100EL1648	Voltage Controlled Oscillator, ECL, 5.0 V	ECL	ECL	1100	5.5	50	DFN–8; SOIC–8; TSSOP–8
MC14046B	Phase Locked Loop	CMOS	CMOS	1.9	18	50	SOIC–16W
MC74HC4046A	Phase Locked Loop	CMOS	CMOS	3	6	50	SOIC–16; TSSOP–16

**ZERO DELAY BUFFERS**

Device	Input Level	Output Level	Outputs Per Channel	V <sub>DD</sub> Typ (V)	t <sub>skew(O-O)</sub> Max (ps)	F Max (MHz)	t <sub>jitter</sub> Max (ps)	Package
NB3N1200K	HCSL	HCSL	12	3.3	50	133	50	QFN64 9x9, 0.5P (Punch & Sawn)
NB3W1200L	HCSL	HCSL	12	3.3	50	133	50	QFN64 9x9, 0.5P (Punch & Sawn)
NB2304A	CMOS	CMOS	4	3.3	200	133.3	100	SOIC-8
NB2305A	CMOS	CMOS	5	3.3	250	133.3	200	SOIC-8; TSSOP-8
NB2308A	CMOS	CMOS	8	3.3	200	133.3	100	SOIC-16; TSSOP-16
NB2309A	CMOS	CMOS	9	3.3	250	133.3	200	SOIC-16; TSSOP-16
NB3N2302	CMOS; TTL	CMOS; TTL	2	3.3 5	250	133	300	SOIC-8





## Table of Contents

	<b>Page</b>
Digital ASICs .....	82
Custom Foundry Services .....	82

## ON Semiconductor Selector Guide – Custom Devices

### DIGITAL ASICs

Family	Core Voltage	I/O Voltage	I/O Types	System Performance	Special Features	FPGA Conversion Targets
SC5 (0.5 μm)	5 V	5 V; 3.3 V	PCI33, TTL, LVTTTL, LVCMOS	75 MHz	Long-Term 5V Support, High Temp	Legacy FPGAs & PLDs
SC3 (0.35 μm)	3.3 V; 2.5 V	5 V; 3.3 V	PCI33/66, GTL, HSTL, SSTL, LVTTTL, LVCMOS, LVPECL	100 MHz	Freeprom, High Temp	Virtex®-1, Spartan2®, APEX® 20K, Acex®, ProASIC Plus/500K®
ONC18 (0.18 μm)	5.0 V; 3.3 V; 1.8 V; 1.5 V	5.0 V; 3.3 V; 2.5 V; 1.8 V	PCI33/66 HSTL, SSTL, LVTTTL, LVCMOS, LVPECL, LVDS, DCI	266 MHz	NVM, OTP, High Vt, High Temp	Virtex®-E, Virtex II®, Spartan-IIE®, APEX 20KE®, Stratix®, APEX II®, Cyclone®, Axcelerator® ProASIC3®
SP110 (0.11 μm)	1.2 V	3.3 V; 2.5 V; 1.8 V; 1.5 V; 1.2 V	PCI33/66, PCIX, HSTL, SSTL, LVTTTL, LVCMOS, LVPECL, LVDS, DCI, CML	450 MHz	OTP, Dual-Source Capability, Future Mil Temp	Virtex®-4, Spartan-3/6®, APEX®-II, Stratix -II®, Cyclone II/III/IV®, Arria®, IGLOO®
SP65 (65 nm)	1.0 V; 1.2 V	3.3 V; 2.5 V; 1.8 V; 1.5 V; 1.2 V	PCI33/66, PCIX, HSTL, SSTL, LVTTTL, LVCMOS, LVPECL, LVDS, DCI, CML	600 MHz	Extensive IP Portfolio	Virtex®-6, Virtex®-7, Artix-7®, Kintex-7®, Stratix III/IV®, Arria II®
SP40 (40 nm)	0.9 V; 1.1 V	3.3 V; 2.5 V; 1.8 V; 1.5 V; 1.2 V	PCI33/66, PCIX, HSTL, SSTL, LVTTTL, LVCMOS, LVPECL, LVDS, DCI, CML	850 MHz	Extensive IP Portfolio	Virtex-7®, Artix-7®, Kintex-7®, Stratix V®

### CUSTOM FOUNDRY SERVICES

Process Name	Min Drawn Poly (μ)	No. Metal Layers	Wafer Size (in)	Operating Voltage (Vgs)	Metal 1 Pitch	NVM	Linear Cap	HV Devices (Vds)	N-Ch DMOS	P-Ch DMOS	Bi-polars	Trans Char	Other Devices
I4T 45V75V	0.18	4-6	8	1.8/3.3	0.46	Yes	MIM	75	Yes	Yes	No	Salicide	Resistors
ONC18 18V18V	0.18	4-6	8	5/18	0.46	Yes	MIM	18	Yes	Yes	No	Salicide	Resistors
ONC18 5V30V	0.18	4-6	8	1.8/5	0.46	Yes	MIM	30	Yes	Yes	No	Salicide	Resistors
ONC18G/MS	0.18	4-6	8	1.8/3.3	0.46	Yes	MIM	15	Yes	Yes	No	Salicide	Resistors
ONC25	0.25	2-5	8	2.5/3.3/5	0.64	Yes	MIM	5	No	No	Yes	Salicide	Misc.
ONBCD25	0.25	2-5	8	5/12	0.64	Yes	MIM	40	Yes	Yes	Yes	Salicide	Misc.
C3/D3	0.35	3-5	8	3.3/5	1.10	Yes	PIP	5	No	No	No	Salicide	Resistors
I3T25	0.35	3-5	8	3.3/12	1.00	Yes	MIM	18	Yes	Yes	Yes	Salicide	Resistors
I3T50	0.35	3-5	6 & 8	3.3	1.00	Yes	MIM	40	Yes	Yes	Yes	Salicide	Misc.
I3T80	0.35	3-5	6 & 8	3.3	1.00	Yes	MIM	70	Yes	Yes	Yes	Salicide	Misc.
CS	0.6	2-3	8	5/12	1.50	Yes	PIP	20	Yes	Yes	No	Poly	Misc.
I2T30 (E)	0.7	2-3	6	5	2.80	No	PIP	30	Yes	Yes	Yes	Poly	Misc.
I2T100	0.7	2-3	6	5	2.80	No	PIP	100	Yes	Yes	Yes	Poly	Misc.

# DC-DC Controllers, Converters, and Regulators

---

## Table of Contents

	Page
Battery Charge Controllers .....	84
Charge Pumps .....	84
DC-DC Controllers .....	84
DC-DC Converters .....	87
DDR Termination Regulators .....	90
Linear Voltage Regulators .....	91

**BATTERY CHARGE CONTROLLER**

Device	Description	Type	Number of Cells Charged	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>D</sub> Max (μA)	Package
NCP1850	Switching Battery Charger, 1.5 A	Li-Ion / Polymer	1	3.6	7	5	WLCSP–25
NCP1851	Switching Battery Charger, 1.6 A, with Power Path Management	Li-Ion / Polymer	1	3.6	28	5	Flip–Chip–25
NCP1852	Switching Battery Charger, 1.8 A, with Overvoltage Protection	Li-Ion / Polymer	1	3.6	7	5	Flip–Chip–25
NCP1854	Switching Battery Charger, 2.5 A, with Power Path Management	Li-Ion / Polymer	1	4	28		Flip–Chip–25

**CHARGE PUMPS**

Device	V <sub>in</sub> Typ (V)	V <sub>out</sub> Typ (V)	I <sub>out</sub> Typ (mA)	I <sub>CC</sub> Max (μA)	f <sub>osc</sub> Typ (kHz)	Shutdown Pin	Package
CAT3200	2.7 to 4.5	5; 2.7 to 6 (adj)	100	4000	2000	Yes	MSOP–8; TSOT–23–6
CAT3200HU2	2.2 to 4.5	2.7 to 6 (adj)	100	4000	2000	Yes	UDFN–8
CAT660	3.0 to 5.5	–Vin or 2Vin	100	3000	80	No	SOIC–8
CAT661	3.0 to 5.5	–Vin or 2Vin	100	3000	135	No	SOIC–8
LA5797MC	7.5	28	5	2.6	140	Yes	SOIC–8
MAX1720	1.15 to 5.5	–Vin or 2Vin	90	90	12	Yes	TSOP–6
NCP1729	1.15 to 5.5	–Vin or 2Vin	50	20	35	Yes	TSOP–6

**DC–DC CONTROLLERS**

Device	Topology	Phases	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	f <sub>sw</sub> Typ (kHz)	t <sub>res</sub> Typ (ns)	Package
CS51022A	Buck	1	Current Mode	8.2	20	Up to 1000	60	SOIC–16; TSSOP–16
NCP5386	Buck	1/2	Current/Voltage Mode	4.75	7	100 – 1000		QFN–32
NCP1081	Flyback	1	Current Mode	0	57	250	37	TSSOP–20
NCP1082	Flyback	1	Current Mode	0	57	250	37	TSSOP–20
NCP1083	Flyback	1	Current Mode	0	57	250	37	TSSOP–20
SG3525A	Flyback; Forward; Half–Bridge; Push–Pull; Step–Down; Step–Up	1	Voltage Mode	8	35	400	100	PDIP–16; SOIC–16W
TL494	Flyback; Forward; Half–Bridge; Push–Pull; Step–Down; Step–Up	1	Voltage Mode	7	40	Up to 200	100	SOIC–16
NCP1294	Flyback; Forward; Half–Bridge; Step–Down; Step–Up	1	Current Mode	4.7	100	Up to 1000	60	TSSOP–16
CS51021A	Flyback; Forward; Push–Pull	1	Current Mode	8.2	20	Up to 1000	60	SOIC–16
TL594	Flyback; Forward; Push–Pull	1	Voltage Mode	6	42	Up to 300	100	SOIC–16; TSSOP–16
CS5124	Flyback; Forward; Step–Down	1	Current Mode	7.6	75	400	35	SOIC–8
NCV8872	Flyback; Forward; Step–Up	1	Current Mode	4.8	44	100 – 1000		SOIC–8
NCV8873	Flyback; Forward; Step–Up; Step–Up/Step–Down	1	Current Mode	3.2	45	1000000		SOIC–8
NCV898031	Flyback; Forward; Step–Up; Step–Up/Step–Down	1	Current Mode	3.2	45	Up to 2200		SOIC–8

DC–DC CONTROLLERS (continued)

Device	Topology	Phases	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	f <sub>sw</sub> Typ (kHz)	t <sub>res</sub> Typ (ns)	Package
NCV494	Flyback; Half-Bridge; Push-Pull; Step-Down	1	Voltage Mode	7	40	200	100	SOIC-16
NCP1080	Multimode	1	Current Mode	0	57	250	37	TSSOP-20
ADP3210	Step-Down	1/2/3		3.3	22	1000		QFN-40
ADP3211	Step-Down	1		3.3	22			QFN-32
ADP3212	Step-Down	1/2/3		3.3	22			QFN-48
ADP4100	Step-Down	4/5/6	Current/Voltage Mode	4.7	5.75	250 – 9000		LFCSP-48
CS51031	Step-Down	1	Hysteretic	4.5	16	200		SOIC-8
LV5044V	Step-Down	2	Current Mode	4.5	16	330		SSOP-30
LV5050NV	Step-Down	1	Voltage Mode	4.5	16	330		SSOP-20
LV5052V	Step-Down	2	Current Mode	9.4	16	330		SSOP-30
LV5061V	Step-Down	1	Current Mode	4.5	18	Variable		SSOP-16
LV5068V	Step-Down	1	Current Mode	4.5	40	Variable		SSOP-16
LV5069JA	Step-Down	1	Current Mode	4.5	23	Variable		SSOP-16
LV5725JA	Step-Down	1	Current Mode	4.5	50	360		SSOP-16
LV5744V	Step-Down	2	Current Mode	8	33	400		SSOP-16
LV5749NV	Step-Down	1	Current Mode	8.5	42	125		SSOP-16
LV5761V	Step-Down	1	Current Mode	8.5	42	125		SSOP-16
LV5768V	Step-Down	1	Current Mode	8.5	42	Variable		SSOP-16
LV5771QA	Step-Down	1	Current Mode	8	42	1000000		
NCL30100	Step-Down		Hysteretic	6.35		Up to 700		TSOP-6
NCP1034	Step-Down	1	Voltage Mode	8	40; 42; 57; 75; 100	Up to 500	17	SOIC-16
NCP1579	Step-Down	1		4.5	13.2	275		SOIC-8
NCP1581	Step-Down	1	Voltage Mode	7	20	400	20	SOIC-14
NCP1587	Step-Down	1	Voltage Mode	4.5	13.2	250 – 300		SOIC-8
NCP1587A	Step-Down	1	Voltage Mode	4.5	13.2	180 – 220		SOIC-8
NCP1589A	Step-Down	1	Voltage Mode	4.5	13.2			DFN-10
NCP1589D	Step-Down			4.5	13.2			DFN-10
NCP1589L	Step-Down			4.5	13.2			DFN-10
NCP3011	Step-Down	1	Voltage Mode	4.7; 4.75; 6; 7; 7.6	12.6; 13.2; 14; 14.5; 16; 20; 27; 28	400	85	TSSOP-14
NCP3012	Step-Down	1	Voltage Mode	4.7	28	Up to 200	85	TSSOP-14
NCP3020	Step-Down	1	Voltage Mode	4.7	5; 5.75; 7; 13.2; 14; 14.5; 16; 20; 27; 28	300; 600	85	SOIC-8
NCP3030	Step-Down	1	Voltage Mode	4.7	13.2; 14.5; 16; 20; 28	1200; 2400	80	SOIC-8
NCP4200	Step-Down	2/3/4		1.7	24	1500		QFN-40
NCP4208	Step-Down	1/2/3/4/5/6/7/8				1500		QFN-48
NCP5212	Step-Down	1	Current/Voltage Mode	4.5	27	300		QFN-16
NCP5212T	Step-Down	1	Current/Voltage Mode	4.5	27	300		QFN-16
NCP5217	Step-Down	1	Current/Voltage Mode	4.5	27	300		QFN-14

# ON Semiconductor Selector Guide – DC–DC Controllers, Converters, and Regulators

## DC–DC CONTROLLERS (continued)

Device	Topology	Phases	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	f <sub>sw</sub> Typ (kHz)	t <sub>res</sub> Typ (ns)	Package
NCP5222	Step–Down	2	Current/Voltage Mode	4.5	27	300		QFN–28
NCP5230	Step–Down	1		4.5	13.2			QFN–16
NCP5378	Step–Down	1						QFN–32
NCP5380	Step–Down	1						QFN–32
NCP5392	Step–Down	2/3/4	Current/Voltage Mode	4.75	5.25	100 – 1000	10	QFN–40
NCP5392P	Step–Down	2/3/4	Current/Voltage Mode	4.75	5.25	100 – 1000	10	QFN–40
NCP5392Q	Step–Down	2/3/4	Current/Voltage Mode	4.75	5.25	100 – 1000	10	QFN–40
NCP5392T	Step–Down	2/3/4	Current/Voltage Mode	4.75	5.25	100 – 1000	10	QFN–40
NCP5393B	Step–Down	2/3/4	Current/Voltage Mode	4.75	5.25	100 – 1000		QFN–48
NCP5395	Step–Down	2/3/4						QFN–48
NCP5395T	Step–Down	2/3/4						QFN–48
NCP5422A	Step–Down	1	V <sup>2</sup>	10.8	13.2	Up to 600	150	SOIC–16
NCP5425	Step–Down	1	V <sup>2</sup>	4.75	13.2	750	200	TSSOP–20
NCP81044	Step–Down	1	Voltage Mode	4.5	13.2	275		SOIC–8
NCP81045	Step–Down	1	Current/Voltage Mode	4.5	27	300		QFN–16
NCP81046	Step–Down	1	Voltage Mode	5	12	300		DFN–10
NCV8851–1	Step–Down		Current Mode	4.5	40	Up to 500		TSSOP–20
NCV8852	Step–Down	1	Current Mode	3.1	44	Variable		SOIC–8
NCV8853	Step–Down	1	Current Mode	3.1	44	340		SOIC–8
NCV8871	Step–Up	1	Current Mode	3.2	44	170; 340; 1000		SOIC–8
NCV8876	Step–Up	1	Current Mode	3.6	45	Up to 500		SOIC–8
NCV8870	Step–Up; Step–Up/Step–Down	1	Current Mode	3.2	45	50; 100		SOIC–8
NCL30161								DFN–10
NCP1090				36	57		0.6	SOIC–8; TSSOP–8
NCP1091				36	57			SOIC–8; TSSOP–8
NCP1092								SOIC–8; TSSOP–8
NCP1093								DFN–10
NCP1094								DFN–10
NCP5228				5.5	28			QFN–28
NCP5269		1						QFN–20
NCP6131								QFN–52
NCP6132								QFN–60
NCP6151								QFN–52

DC–DC CONVERTERS

Device	Topology	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	V <sub>O</sub> Typ (V)	I <sub>O</sub> Typ (A)	Efficiency (%)	f <sub>sw</sub> Typ (kHz)	Package
CS5171	Flyback; Step–Down; Step–Up	Current Mode	2.7	30	3–39	1.5	90	275	SOIC–8
NCP1030	Flyback; Step–Down; Step–Up	Voltage Mode	8	200		0.5	85	300	Micro8
NCP1031	Flyback; Step–Down; Step–Up	Voltage Mode	8	200	12	1	85	Up to 1000	DFN–8; SOIC–8
LV56351HA	Linear; Step–Up	Voltage Mode	8	23	15	0.52	88.4	400	HSSOP–14
LV56351JA	Linear; Step–Up	Voltage Mode	8	23	15	0.52	88.4	400	SSOP–20
LV5636VH	Linear; Step–Up	Voltage Mode	8	23	15 / 11	0.62	88.4	1000	HSSOP–14
CS51411	Step–Down	V2	4.5	40		1.5		260	DFN–18; SOIC–8
CS51412	Step–Down	V2	4.5	40		1.5		260	SOIC–8
CS51413	Step–Down	V2	4.5	40		1.5		520	DFN–18; SOIC–8
CS51414	Step–Down	V2	4.5	40		1.5		520	SOIC–8
LA5724MC	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	0.7	92	160	SOIC–8
LA5735MC	Step–Down	Voltage Mode	4.5	32	12, 5, 3.3	0.7	92	300	SOIC–8
LA5744	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	1	83	300	TO–220–5
LA5744MP	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	1	83	300	DPAK–5 / SMP–5
LA5744TP	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	1	83	300	IPAK–5 / TP–5H
LA5756	Step–Down	Voltage Mode	4.5	32	12, 5, 3.3	3.5	78	80	TO–220–5
LA5757TP	Step–Down	Voltage Mode	4.5	32	12, 5, 3.3	1	83	300	IPAK–5 / TP–5H
LA5759	Step–Down	Voltage Mode	4.5	32	12, 5, 3.3	3.5	78	80	TO–220–5
LA5771MP	Step–Down	Voltage Mode	5.5	28	3.3	1	79	160	DPAK–5 / SMP–5
LA5774	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	3	78	160	TO–220–5
LA5774MC	Step–Down	Voltage Mode	4.5	28	3.3	3	78	160	D2PAK5 / SMP5J
LA5774MP	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	3	78	160	DPAK–5 / SMP–5
LA5779	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	3	84	160	TO–220–5
LA5779MP	Step–Down	Voltage Mode	4.5	28	12, 5, 3.3	3	84	160	DPAK–5 / SMP–5
LM2574	Step–Down	Voltage Mode	7	40	5; 12; 1.23 to 37	0.5	85	52	PDIP–8; SOIC–16W
LM2575	Step–Down	Voltage Mode	7	40	3.3; 5; 12; 15; 1.23 to 37	1	85	52	D2PAK–5; TO–220–5
LM2576	Step–Down	Voltage Mode	7	40	3.3; 5; 12; 15; 1.23 to 37	3	85	52	D2PAK–5; TO–220–5
LM2594	Step–Down	Voltage Mode	4.5	40	1.23 to 37	0.5	85	150	SOIC–8
LM2595	Step–Down	Voltage Mode	4.5	40	1.25 to 37	1	85	150	D2PAK–5; TO–220–5
LM2596	Step–Down	Voltage Mode	4.5	40	1.25 to 37	3	85	150	D2PAK–5; TO–220–5
LV5768M	Step–Down	Current Mode	4.7	5.7	12, 5, 3.3	0.24	95	125	
LV58063MC	Step–Down	Current Mode	8	28	5	1	90	370	SOIC–8 N EP / SOP–8L
LV5980MC	Step–Down	Current Mode	4.5	23	5, 3.3	3	80	370	SOIC–8
MC33167	Step–Down	Voltage Mode	7.5	40	5.0 to 40	5	80	72	D2PAK–5; TO–220–5
MC34167	Step–Down	Voltage Mode	7.5	40	5.0 to 40	5	80	72	D2PAK–5; TO–220–5
NCP1521B	Step–Down	Current Mode	2.7	5.5	0.9 to 3.3	0.6	96	1500	TSOP–5 / SOT–23–5



# ON Semiconductor Selector Guide – DC-DC Controllers, Converters, and Regulators

## DC-DC CONVERTERS (continued)

Device	Topology	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	V <sub>O</sub> Typ (V)	I <sub>O</sub> Typ (A)	Efficiency (%)	f <sub>sw</sub> Typ (kHz)	Package
NCP1522B	Step-Down	Voltage Mode	2.7	5.5	0.9 to 3.3	0.6	95	3000	TSOP-5 / SOT-23-5; UDFN-6
NCP1523B	Step-Down	Voltage Mode	2.7	5.5	0.9 to 3.3	0.6	93	3000	Flip-Chip-8
NCP1529	Step-Down	Current Mode	2.7	5.5	1.2; 0.9 to 3.9	1	86; 96	1700	TSOP-5 / SOT-23-5; UDFN-6
NCP1532	Step-Down	Current Mode	2.7	5.5	0.9 to 3.3	1.6	97	2250	UDFN-10
NCP1547	Step-Down	V2	4	40	1.5 to 24	1.5	82	Up to 700	DFN-18; SOIC-8
NCP1592	Step-Down	Voltage Mode	3	6	0.891 to 5.4	6	95	Up to 700	TSSOP-28 EP
NCP1593	Step-Down	Current Mode	4	5.5	0.6 to 5.0	3	90	1000	DFN-10
NCP1595	Step-Down	Current Mode	4	5.5	0.8 to 4.95	1.5	95	Up to 1200	DFN-6
NCP1597	Step-Down	Voltage Mode	4	5.5		2		1000	DFN-6
NCP1597B	Step-Down	Voltage Mode	4	5.5	0.8 to 4.95	2	90	1000	QFN-10
NCP1599	Step-Down	Voltage Mode	3	5.5		3		1000	DFN-6
NCP3121	Step-Down	Voltage Mode	4.5	15	0.8 to 5.0	3	80	Up to 1000	QFN-32
NCP3123	Step-Down	Voltage Mode	4.5	15	0.8 to 5.0	3	80	Up to 2200	QFN-32
NCP3170	Step-Down	Current Mode	4.5	13.2; 18	1.25 to 5.0	3	92	500; 1000	SOIC-8
NCP3231	Step-Down	Voltage Mode	4.5	18	1.5	20	90	500	Quad Flatpack No Leads
NCP5252	Step-Down		4.5	13.2		2		Up to 1000	QFN-16
NCP6332	Step-Down	Voltage Mode	2.3	5.5	0.6 to 5.0	1.2	96	3000	WDFN-8
NCP6334	Step-Down	Voltage Mode	2.3	5.5	0.6 to 5.0	2	96	3000	WDFN-8
NCP6335	Step-Down	Voltage Mode	2.3	5.5	1.1; 1.15	3; 4	93	3000	WLCSP-20
NCP6338	Step-Down	Voltage Mode	2.3	5.5	1.2	6	95	3000	WLCSP-30
NCP6343	Step-Down	Voltage Mode	2.3	5.5	1.225	3	93	3000	Wafer Level Chip Scale Pa
NCP6354	Step-Down	Voltage Mode	2.3	5.5	0.6 to 5.0	2	96	3000	WDFN-8
NCP6360	Step-Down	Voltage Mode	2.7	5.5	0.6 to 3.4	0.8	95	6000	WLCSP-6
NCP6361	Step-Down	Voltage Mode	2.5	5.5	0.4 to 3.5	0.8	95	3429 or 6000	WLCSP-9
NCP6914	Step-Down	Voltage Mode	2.3	5.5	1.2	0.8	95	3000	WLCSP-20
NCP6922C	Step-Down	Voltage Mode	2.3	5.5	1.2	0.8	95	3000	WQFN-20
NCP6924	Step-Down	Voltage Mode	2.3	5.5	1.2	0.8	95	3000	WLCSP-30
NCV2575	Step-Down	Current/Voltage Mode	4.75	40	5; 12; 1.25 to 37	1	85	52	D2PAK-5
NCV51411	Step-Down	V2	4.5	40		1.5		260	DFN-18; SOIC-16W; SOIC-8
NCV6334	Step-Down	Voltage Mode	2.3	5.5	0.6 to 5.0	2	96	3000	WDFN-8
NCV6354	Step-Down	Voltage Mode	2.3	5.5	0.6 to 5.0	2	96	3000	WDFN-8
NCV8842	Step-Down	V2	4	40		1.5		Up to 200	DFN-18; SOIC-16W; SOIC-8
NCV8843	Step-Down	V2	4	40		1.5		Up to 700	DFN-18; SOIC-16W; SOIC-8
NCV8855	Step-Down	Voltage Mode	9	18				Up to 200	QFN-40
NCV8881	Step-Down	Voltage Mode	5	40	5, 8.5	1.5		275	SOIC-16W EP
NCV890100	Step-Down		4.5	40	Adjustable	1.2		2250	DFN-8; SOIC-8 EP
NCV890101	Step-Down	Current Mode	4.5	40	Adjustable	1.2		2200	DFN-10

DC–DC CONVERTERS (continued)

Device	Topology	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	V <sub>O</sub> Typ (V)	I <sub>O</sub> Typ (A)	Efficiency (%)	f <sub>sw</sub> Typ (kHz)	Package
NCV890130	Step–Down	Current Mode	4.5	45	Adjustable	1.2		2200	DFN–8; SOIC–8 EP
NCV890131	Step–Down	Current Mode	4.5	45	Adjustable	1.2		2200	DFN–10
NCV890200	Step–Down	Current Mode	4.5	40	Adjustable	2		Up to 2200	SOIC–8 EP
NCV890201	Step–Down	Current Mode	4.5	40	Adjustable	2		2250	DFN–10
NCV890230	Step–Down	Current Mode	4.5	45	Adjustable	2		2250	SOIC–8 EP
NCV896530	Step–Down	Current Mode	2.7	5.5	Adjustable	1.6		2200	DFN–10
MC33063A	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	80	100	PDIP–8; SOIC–8
MC34063A	Step–Down; Step–Up; Step–Up/ Step–Down	Voltage Mode	3	40	1.25 to 40	1.5		100	PDIP–8; SOIC–8
NCP3063	Step–Down; Step–Up; Step–Up/Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	150	DFN–8; SOIC–8
NCP3064	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	150	DFN–8; SOIC–8
NCP3065	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	250	DFN–8; SOIC–8
NCP3066	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	250; Up to 300	DFN–8; SOIC–8
NCP3163	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	2.5	40	1.25 to 40	3	85	Up to 300	DFN–18; SOIC–16W EP
NCV3063	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	Up to 200	DFN–8; SOIC–8
NCV3064	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5	85	Up to 300	DFN–8; PDIP–8; SOIC–8
NCV3163	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	2.5	40	1.25 to 40	3	80	Up to 300	DFN–18; SOIC–16W EP
NCV33063AV	Step–Down; Step–Up; Step–Up/ Step–Down	Hysteretic	3	40	1.25 to 40	1.5		100	PDIP–8; SOIC–8
CS5172	Step–Up	Current Mode	2.7	30		1.5		Up to 500	SOIC–8
CS5173	Step–Up	Current Mode	2.7	30		1.5		Up to 1000	SOIC–8
NCP1400A	Step–Up	Voltage Mode	0.8	5.5	1.9; 2.2; 2.5; 2.7; 3; 3.3; 3.8; 4.5; 5	Up to 0.1	88	180	TSOP–5 / SOT–23–5
NCP1402	Step–Up	Voltage Mode	0.8	5.5	1.9; 2.7; 3; 3.3; 4; 5	Up to 0.2	85	Up to 200	TSOP–5 / SOT–23–5
NCP1403	Step–Up		1.2	5.5	Up to 15	0.05	72		TSOP–5 / SOT–23–5
NCP1406	Step–Up	Current Mode	1.4	5.5	Up to 25	0.025	85	Up to 1000	TSOP–5 / SOT–23–5

## ON Semiconductor Selector Guide – DC–DC Controllers, Converters, and Regulators

### DC–DC CONVERTERS (continued)

Device	Topology	Control Mode	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	V <sub>O</sub> Typ (V)	I <sub>O</sub> Typ (A)	Efficiency (%)	f <sub>sw</sub> Typ (kHz)	Package
NCP1421	Step–Up	Current/Voltage Mode	1	5.5	1.5 to 5.0	0.6	Up to 94	Up to 1200	Micro8
NCP1422	Step–Up	Current/Voltage Mode	1	5.5	1.5 to 5.0	0.8	Up to 94	Up to 1200	DFN–10
NCP1423	Step–Up	Current/Voltage Mode	0.8	6	1.8 to 3.3	0.4	92	Up to 600	Micro10
NCP1450A	Step–Up		0.6	5.5	1.9; 2.7; 3; 3.3; 5	1	88		TSOP–5 / SOT–23–5
NCP5005	Step–Up	Current Mode	2.7	5.5	22	0.05	90	1200	TSOP–5 / SOT–23–5
NCP5006	Step–Up	Current Mode	2.7	5.5	22	0.05	Up to 90	1200	TSOP–5 / SOT–23–5
NCP5007	Step–Up	Current Mode	2.7	5.5	22	0.05	90	1200	TSOP–5 / SOT–23–5
NCV5171	Step–Up	Current Mode	2.7	30	Up to 30	1.5	80	Up to 600	SOIC–8
NCV5173	Step–Up	Current Mode	2.7	30	Up to 30	1.5	80	Up to 600	SOIC–8
LV5256GP	Step–Up/ Step–Down	Voltage Mode	2.9	3.1	1 – 14	0.5	93	1000	Very–Thin Castellated Structure Terminal–20
MC33163	Step–Up/ Step–Down	Voltage Mode	2.5	40	1.25 to 40	3.4			SOIC–16W
MC33166	Step–Up/ Step–Down	Voltage Mode	7.5	40	1.5 to 40	3			D2PAK–5; TO–220–5
NCV33163	Step–Up/ Step–Down	Voltage Mode	2.5	60	1.25 to 40	3.4	80	Up to 250	SOIC–16W
LV5980MD									Small Outline Integrated
NCP1032									WDFN–8
NCP1080		Current Mode	0	57				250	TSSOP–20
NCP1081		Current Mode	0	57				250	TSSOP–20
NCP1082		Current Mode	0	57				250	TSSOP–20
NCP1083		Current Mode	0	57				250	TSSOP–20
NCP1090			36	57					SOIC–8; TSSOP–8
NCP1091			36	57					SOIC–8; TSSOP–8
NCP1092									SOIC–8; TSSOP–8
NCP1093									DFN–10
NCP1094									DFN–10
NCV890231		Current Mode	4.5	45	Adjustable	2		Up to 2200	DFN–10

### DDR TERMINATION REGULATORS

Device	I <sub>OUT</sub> V <sub>TT</sub> Max (A)	I <sub>Q</sub> Typ (μA)	V <sub>CC</sub> Bias Min (V)	V <sub>CC</sub> Bias Max (V)	Remote Sense	Power Good	Package
NCP51190	1.5	380	2.2	5.5	Yes	No	DFN–8
NCP51198	1.5	380	2.2	5.5	Yes	No	SOIC8–NB EP
NCP51199	2	800	4.75	5.25	No	No	SOIC8–NB EP
NCP51200	3	700	2.375	3.5	Yes	Yes	DFN–10
NCP51510	3	700	2.7	3.6	Yes	Yes	DFN–10

**LINEAR VOLTAGE REGULATORS**

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
MC79L05	Negative	0.1	-5	-30; -5	1.7	6	49	40	SOIC-8; TO-92
MC79L12	Negative	0.1	-12	-35	1.7	6	49	40	SOIC-8; TO-92
MC79L15	Negative	0.1	-15	-35	1.7	6	49	40	SOIC-8; TO-92
MC79L18	Negative	0.1	-18	-35	1.7	6	49	40	TO-92
MC79L24	Negative	0.1	-24	-40	1.7	6	49	40	TO-92
MC79M05	Negative	0.5	-5	-35	1.1	4.3	66	40	DPAK-3; TO-220-3
MC79M08	Negative	0.5	-8	-35	1.1	4.3	66	40	DPAK-3; TO-220-3
MC79M12	Negative	0.5	-12	-35	1.1	4.3	66	40	DPAK-3; TO-220-3
MC79M15	Negative	0.5	-15	-35	1.1	4.3	66	40	DPAK-3; TO-220-3
MC7905	Negative	1	-5	-35	1.3				D2PAK-3; TO-220-3
MC7905.2	Negative	1	-5.2	-35	1.3				TO-220-3
MC7905A	Negative	1	-5	-35	1.3				D2PAK-3; TO-220-3
MC7906	Negative	1	-6	-35	1.3				D2PAK-3; TO-220-3
MC7908	Negative	1	-8	-35	1.3				D2PAK-3; TO-220-3
MC7908A	Negative	1	-8	-35	1.3				TO-220-3
MC7912	Negative	1	-12; 1.3	-35	1.3				D2PAK-3; TO-220-3
MC7915	Negative	1	-15	-35	1.3				D2PAK-3; TO-220-3
MC7918	Negative	1	-18	-35	1.3				TO-220-3
MC7924	Negative	1	-24	-40	1.3				D2PAK-3; TO-220-3
LM337	Negative	1.5	Adjustable	-40	2.5; 2.7		77		D2PAK-3; TO-220-3
NCP102	Positive	0.005	9.75	13	0.8	0.3	50	N/A	TSOP-6
NCP51460	Positive	0.02	3.3	30	0.9	0.14	70	18	SOT-23-3
NCP4640	Positive	0.05	2; 3; 3.3; 8; 12	50	0.2	0.009	30	80	SOT-89-5
NCP508	Positive	0.05	1.5; 1.8; 2.5; 2.8; 3; 3.3	13	0.155	0.3	70	39	SC-88A-5 / SC-70-5 / SOT-323-5; WDFN-6
NCV8184	Positive	0.07	Tracking	26	0.35	0.05	60		DPAK-5; SOIC-8; SOIC-8 EP
MC33761	Positive	0.08	2.5; 2.8; 2.9; 3; 5	12	0.16	0.18	70	35	TSOP-5 / SOT-23-5
MC33762	Positive	0.08	2.5; 2.5; 2.8; 2.8; 3.0; 3.0	7; 12	0.16	0.18	70	35	Micro8
MC78LC	Positive	0.08	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 4; 5	12	1				SOT-89-3; TSOP-5 / SOT-23-5
NCP4672	Positive	0.08	1.8; 3.5	18	0.15	1	70	80	SOIC-8
NCP502	Positive	0.08	1.5; 1.8; 2.5; 2.7; 2.8; 2.9; 3; 3.1; 3.3; 3.4; 3.5; 3.6; 3.7; 5	12	0.6; 0.85; 1; 1.3; 1.5	0.04	55	180	SC-88A-5 / SC-70-5 / SOT-323-5; TSOP-5 / SOT-23-5

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCP512	Positive	0.08	1.3; 1.5; 1.8; 2.2; 2.5; 2.7; 2.8; 3; 3.1; 3.3; 5	6	0.12; 0.16; 0.17; 0.18; 0.2; 0.22; 0.24 0.35; 0.45; 0.52	0.04	50	180	SC–88A–5 / SC–70–5 / SOT–323–5
NCP553	Positive	0.08	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	12	0.7				SC–82AB–4
NCP562	Positive	0.08	1.5; 1.8; 2.1; 2.5; 2.7; 2.8; 3; 3.3; 3.5; 5	6	0.14; 0.19; 0.2; 0.23; 0.25; 0.4; 0.55				SC–82AB–4
NCP563	Positive	0.08	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.14; 0.19; 0.2; 0.23; 0.25; 0.4; 0.55				SC–82AB–4
NCV553	Positive	0.08	1.5; 5	12	0.7	0.0028		90	SC–82AB–4
CS8101	Positive	0.1	5	60	0.4	0.07	75		SOIC–20W; SOIC–8
CS8363	Positive	0.1	3.3	12.5	0.4	0.145	70		D2PAK–7
LM2931	Positive	0.1	5; Adjustable	40	0.16	0.4	90	700	D2PAK–3; D2PAK–5; DPAK–3; SOIC–8; TO–220–3; TO–220–5; TO–92
LM317L	Positive	0.1	Adjustable	40	1.9		80		SOIC–8; TO–92
LP2950	Positive	0.1	3; 3.3; 5	30	0.35	0.093	48	56	DPAK–3; TO–92
LP2951	Positive	0.1	3; 3.3; Adjustable	30	0.35	0.093	48	56	Micro8; PDIP–8; SOIC–8
MC78L05A	Positive	0.1	5	30	1.7	3	49	40	SOIC–8; TO–92
MC78L08A	Positive	0.1	8	30	1.7				SOIC–8; TO–92
MC78L09A	Positive	0.1	9	30	1.7				SOIC–8; TO–92
MC78L12A	Positive	0.1	12	35	1.7				SOIC–8; TO–92
MC78L15A	Positive	0.1	15	35	1.7				SOIC–8; TO–92
MC78L18A	Positive	0.1	18	35	1.7				TO–92
MC78L24A	Positive	0.1	24	40	1.7				TO–92
NCP612	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.1; 3.3; 3.7; 5	6	0.16; 0.18; 0.2; 0.21; 0.23; 0.25; 0.27; 0.42; 0.53	0.04		100	SC–88A–5 / SC–70–5 / SOT–323–5
NCP662	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.17; 0.23; 0.25; 0.28; 0.3; 0.5; 0.68				SC–82AB–4
NCP663	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.17; 0.23; 0.25; 0.28; 0.3; 0.5; 0.68				SC–82AB–4
NCV2931	Positive	0.1	5; Adjustable	40	0.16		90		D2PAK–3; DPAK–3; SOIC–8; SOT–223–4 / TO–261–4; TO–92
NCV2951	Positive	0.1	Adjustable	30	0.35	0.093		56	SOIC–8
NCV4264	Positive	0.1	5	45	0.275	0.1	67		SOIC–8
NCV4264–2	Positive	0.1	3.3 5	45	0.27	0.033	67		SOT–223–4 / TO–261–4
NCV47411	Positive	0.1	Adjustable	40	0.25	0.235	75	130	Thin Shrink Small Outline

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>o</sub> Typ (A)	V <sub>o</sub> (V)	V <sub>I</sub> Max (V)	V <sub>Do</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCV4949A	Positive	0.1	5	28	0.3	0.15			SOIC–20W; SOIC–8; SOIC–8 EP
NCV612	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.1; 3.3; 3.7; 5	6	0.16; 0.18; 0.2; 0.21; 0.23; 0.25; 0.27; 0.42; 0.53	0.04		100	SC–88A–5 / SC–70–5 / SOT–323–5
NCV662	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.17; 0.23; 0.28; 0.3; 0.5; 0.68	0.0025		100	SC–82AB–4
NCV663	Positive	0.1	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.17; 0.23; 0.25; 0.28; 0.3; 0.5; 0.68	0.0025		100	SC–82AB–4
NCV78L05A	Positive	0.1	5	30	1.7	3	49	40	SOIC–8; TO–92
NCV78L08	Positive	0.1	8	30	1.7				SOIC–8
NCV78L12A	Positive	0.1	12	35	1.7	3	49	40	SOIC–8; TO–92
NCV8509	Positive	0.1	1.8; 3.3; 2.5; 5.0	50	0.6	0.125			SOIC–16W EP
NCV8614B	Positive	0.1	3.3; 5; Adjustable	40	0.5	0.034	60		DFN–20
MC78FC30	Positive	0.12	3	10	0.5				SOT–89–3
MC78FC33	Positive	0.12	3.3	10	0.5				SOT–89–3
MC78FC40	Positive	0.12	4	10	0.5				SOT–89–3
MC78FC50	Positive	0.12	5	10	0.5				SOT–89–3
CAT6217	Positive	0.15	1.8; 2.8; 2.85; 3.3	5.5	0.09	0.08	64	45	TSOT–23–5
MC78PC18	Positive	0.15	1.8	9	0.6	0.035	70	30	SOT–23–5
MC78PC25	Positive	0.15	2.5	9	0.24	0.035	70	30	SOT–23–5
MC78PC28	Positive	0.15	2.8	9	0.2	0.035	70	30	SOT–23–5
MC78PC30	Positive	0.15	3	9	0.2	0.035	70	30	SOT–23–5
MC78PC33	Positive	0.15	3.3	9	0.2	0.035	70	30	SOT–23–5
MC78PC50	Positive	0.15	5	9	0.17	0.035	70	30	SOT–23–5
NCP4586	Positive	0.15	1.2; 1.4; 1.5; 1.8; 2.5; 2.8; 3; 3.3; 5	6.5	0.24; 0.32; 0.46; 0.51; 0.54; 0.67	0.038	80	30	SC–82AB–4; SOT–23–5; UDFN–4
NCP4587	Positive	0.15	1.2; 1.8; 2.8; 3; 3.1; 3.3	6	0.12; 0.19; 0.24	0.055	70	115	XDFN–6
NCP4620	Positive	0.15	1.2; 1.5; 1.8; 2.5; 3; 3.3; 5	12	0.4	0.023	70	90	SC–88A–5 / SC–70–5 / SOT–323–5; SOT–23–5
NCP4623	Positive	0.15	3.3; 4.5; 4.8; 5; 10; 12; Adjustable	24	0.2	0.005	40	80	SOT–23–5; XDFN–6
NCP4624	Positive	0.15	1.2; 1.8; 3; 3.3; 5	12	0.39; 0.61; 1.48; 1.68	0.002	27	150	SC–88A–5 / SC–70–5 / SOT–323–5; SOT–23–5 UDFN–4
NCP4641	Positive	0.15	3; 5; 8	35	0.2	0.009	27	112	SOT–89–5
NCP4680	Positive	0.15	0.8; 0.9; 1; 1.2; 1.5; 1.8; 2.3; 2.5; 2.8; 3; 3.3	6	0.25	0.05	75	60	SC–88A–5 / SC–70–5 / SOT–323–5; XDFN–4

# ON Semiconductor Selector Guide – DC–DC Controllers, Converters, and Regulators

## LINEAR VOLTAGE REGULATORS (continued)

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCP4681	Positive	0.15	1.5; 2.5; 2.8; 2.9; 3.3; 3.5	6	0.28	0.001	25	100	SC–88A–5 / SC–70–5 / SOT–323–5; XDFN–4
NCP4682	Positive	0.15	1.2; 1.5; 1.8; 1.9; 2.5; 2.8; 3; 3.3	6	0.24	0.001	30	70	SOT–23–5; UDFN–4
NCP4684	Positive	0.15	2.5; 3.3	6	0.28	0.001	25	100	XDFN–4
NCP4688	Positive	0.15	1.2; 1.5; 1.8; 2.5; 2.8; 3; 3.3	6	0.2; 0.22; 0.29; 0.32; 0.39	0.1	75	10	SOT–23–5; UDFN–4
NCP500	Positive	0.15	1.8; 1.85; 2.5; 2.6; 2.7; 2.8; 3; 3.3; 5	6	0.12; 0.15; 0.165; 0.17; 0.18; 0.19; 0.27	0.175; 0.18; 0.185; 0.195; 0.21	62		DFN–6; TSOP–5 / SOT–23–5
NCP511	Positive	0.15	1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.3; 5	6	0.075; 0.09; 0.1; 0.11; 0.16; 0.245				TSOP–5 / SOT–23–5
NCP551	Positive	0.15	1.5; 1.8; 2.5; 2.7; 2.8; 2.9; 3; 3.1; 3.2; 3.3; 5	12	0.04; 0.13				TSOP–5 / SOT–23–5
NCP571	Positive	0.15	0.8; 0.9; 1; 1.2	12	0.35; 0.55; 0.65; 0.73	0.004			DFN–6; TSOP–5 / SOT–23–5
NCP582	Positive	0.15	1.5; 1.8; 2.5; 2.8; 2.9; 3; 3.3	6.5	0.22; 0.28; 0.32; 0.38	0.075			SC–82AB–4; SOT–563
NCP583	Positive	0.15	1.5; 1.8; 2.5; 2.6; 2.8; 2.9; 3; 3.1; 3.3	6.5	0.25; 0.35; 0.5; 0.6	0.001			SC–82AB–4; SOT–563
NCP600	Positive	0.15	1.3; 1.5; 1.8; 2.5; 2.8; 3; 3.3; 3.5; 5; Adjustable	6	0.075; 0.085; 0.125; 0.175	0.1; 0.135; 0.14; 0.145	55	50	DFN–6; TSOP–5 / SOT–23–5
NCP623	Positive	0.15	2.5; 2.8; 3; 3.3; 4; 5	12	0.18	0.17	70	25	DFN–6
NCP698	Positive	0.15	1.3; 1.5; 1.8; 2.5; 2.8; 3; 3.3; 3.5; 5	6	0.28; 0.36; 0.37; 0.42; 0.52; 0.7; 0.87; 1.03	0.0025		100	SC–82AB–4
NCP699	Positive	0.15	1.3; 1.4; 1.5; 1.8; 2.5; 2.8; 2.9; 3; 3.1; 3.3; 3.4; 4.5; 5	6	0.24; 0.3; 0.32; 0.33; 0.34; 0.35; 0.36; 0.4; 0.57; 0.64; 0.75; 0.8	0.09			TSOP–5 / SOT–23–5
NCV4266	Positive	0.15	3.3 5	45	0.25	0.13	70		SOT–223–4 / TO–261–4
NCV4269A	Positive	0.15	3.3 5	45	0.25	0.19			SOIC–14; SOIC–20W; SOIC–8; SOIC–8 EP
NCV4279A	Positive	0.15	5	45	0.25	0.19			SOIC–14; SOIC–8
NCV4299	Positive	0.15	5	45	0.22	0.086	66		SOIC–8
NCV4299AD	Positive	0.15	3.3 5	45	0.22	0.065	66		SOIC–14; Thin Shrink Small Outline
NCV551	Positive	0.15	1.4; 1.5; 1.8; 2.5; 2.7; 2.8; 3; 3.1; 3.2; 3.3; 5	12	0.04; 0.13; 0.17	0.004			TSOP–5 / SOT–23–5
NCV8501	Positive	0.15	3.3; 5; 8; 10; Adjustable	45	0.4	0.05; 0.09; 0.1	55		SOIC–16W EP; SOIC–8

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>o</sub> Typ (A)	V <sub>o</sub> (V)	V <sub>I</sub> Max (V)	V <sub>Do</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCV8502	Positive	0.15	3.3; 5; 10; Adjustable	45	0.4	0.05; 0.09; 0.1			SOIC–16W EP; SOIC–8
NCV8560	Positive	0.15	1.3; 1.5; 1.8; 2.5; 2.8; 3; 3.3; 3.5; 5; Adjustable	6	0.075; 0.1; 0.125; 0.15; 0.175	0.1; 0.13; 0.14; 0.145	55	50	DFN–6; TSOP–5 / SOT–23–5
NCV8660B	Positive	0.15	3.3; 5	40	0.3	0.025	60		DPAK–5; SOIC–8
NCV8664	Positive	0.15	3.3; 5	45	0.315	0.021	67		DPAK–3; SOIC–8; SOT–223–4 / TO–261–4
NCV8665	Positive	0.15	5	45	0.25	0.03	69		D2PAK–5; SOIC–8
NCV8667	Positive	0.15	5	40	0.225	0.028; 0.042	60		SOIC–14; SOIC–8
NCV8668	Positive	0.15	3.3; 5	40	0.225	0.038	60		SOIC–14; SOIC–8; SOIC–8 EP
NCV8669	Positive	0.15	5	40	0.225	0.042	60		SOIC–14
NCV8768	Positive	0.15	5	40	0.225	0.031	60		SOIC–14
NCV8769	Positive	0.15	5	40	0.225	0.025	60		SOIC–14
CS8182	Positive	0.2	Tracking	26	0.35	0.075	60		D2PAK–5; DPAK–5; SOIC–8
CS8183	Positive	0.2	Tracking	45	0.4; 1.2	0.075	60		SOIC–20W
NCP4588	Positive	0.2	1; 1.5; 2.5	5.3	0.27	0.0095	70	80	SC–88A–5 / SC–70–5 / SOT–323–5; XDFN–6
NCP584	Positive	0.2	0.9; 1.2; 1.5; 1.8; 2.5; 2.6; 2.8; 3; 3.1; 3.3	6	0.1; 0.2; 0.3; 0.4	0.0045			SOT–23–5
NCP700B	Positive	0.2	1.8; 2.5; 2.8; 3; 3.3	6	0.11; 0.115; 0.12; 0.14	0.07	82	10	TSOP–5 / SOT–23–5; WDFN–6
NCP702	Positive	0.2	1.8; 2.8; 3; 3.1; 3.3	5.5		0.01	70	11	TSOP–5 / SOT–23–5; XDFN–6
NCP707	Positive	0.2	1.5; 1.8; 1.85; 2.5; 2.8; 2.85; 3; 3.1; 3.2; 3.3	5.5	0.1; 0.105; 0.107; 0.111; 0.114; 0.118; 0.135; 0.218; 0.221; 0.415	0.025	70	22	XDFN–4
NCP729	Positive	0.2	0.8; 1.8; 2.5; 2.6; 2.8; 2.85; 3; 3.3	6	0.086	0.035	72	10	CSP–4
NCP752	Positive	0.2	1.8; 2.8; 3; 3.3	6	135; 190	0.012	68	11.5	TSOP–5 / SOT–23–5; XDFN–6
NCV8570B	Positive	0.2	1.8; 2.5; 2.8; 3; 3.3	6	0.14; 0.185; 0.19; 0.205	0.075	82	10	DFN–6; TSOP–5 / SOT–23–5
NCV8702	Positive	0.2	1.8; 2.8; 3; 3.3	5.5		0.01	68	11	TSOP–5 / SOT–23–5; XDFN–6
NCV8752	Positive	0.2	1.8; 2.8; 3; 3.3	5.5	0.102; 0.118; 0.124; 0.205	0.012	68	11.5	TSOP–5 / SOT–23–5; XDFN–6
CS8361	Positive	0.25	5	60	0.4	0.14	70		D2PAK–7; SOIC–16W
NCP5504	Positive	0.25	3.3, Adjustable	18	0.25	0.37	60	90	DPAK–5
NCV5504	Positive	0.25	3.3, 1.25	18	0.25	0.37	60	90	DPAK–5



# ON Semiconductor Selector Guide – DC–DC Controllers, Converters, and Regulators

## LINEAR VOLTAGE REGULATORS (continued)

Device	Polarity	I <sub>o</sub> Typ (A)	V <sub>o</sub> (V)	V <sub>I</sub> Max (V)	V <sub>Do</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCV8508B	Positive	0.25	3.3; 5	45	0.45	0.1	55		D2PAK–7; SOIC–8 EP
NCV8518B	Positive	0.25	5	45	0.425	0.1	70		SOIC–16W EP; SOIC–8 EP
CAT6201	Positive	0.3	Adjustable	13	0.25	0.16	52		TDFN–8
CAT6218	Positive	0.3	1.8; 2.5; 2.7; 2.85; 3.2; 3.3	5.5	0.18	0.08	64	45	TSOT–23–5
CAT6220	Positive	0.3	Adjustable	6.5	0.27	0.04	62	150	TDFN–6; TSOT–23–5
CAT6221	Positive	0.3	1.5, 2.5; 1.5, 2.8; 1.5, 3.0; 1.5, 3.3; 1.8, 2.8; 1.8, 3.0; 1.8, 3.3; 2.5, 3.0; 2.7, 2.8; 2.7, 3.0; 2.7, 3.3; 3.0, 2.8; 3.0, 3.0	5.5	0.2	0.16	64	45	TSOT–23–6
MC33275	Positive	0.3	2.5; 3; 3.3; 5	13	0.26	0.125	75	46	DFN–8; DPAK–3; SOIC–8; SOT–223–4 / TO–261–4
MC33375	Positive	0.3	1.8; 2.5; 3; 3.3; 5	12	0.26	0.125	75	46	SOIC–8; SOT–223–4 / TO–261–4
NCP114	Positive	0.3	1.05; 1.1; 1.2; 1.5; 1.8; 2.1; 2.2; 2.6; 2.8; 3; 3.3	5.5	0.135; 0.145; 0.155; 245; 365	0.05	75	70	
NCP2860	Positive	0.3	2.77; Adjustable	6	0.15; 0.155		60; 69	60	Micro8
NCP4589	Positive	0.3	1.2; 1.8; 2.5; 2.8; 3; 3.3	5.3	0.23	0.055	70	90	SOT–23–5; XDFN–6
NCP4625	Positive	0.3	1.2; 1.8; 2.8; 3; 3.3; 5	10	0.2	0.023	70	85	SOT–23–5
NCP4626	Positive	0.3	3; 3.3; 4.5; 5	18	0.75	0.006	70	90	SOT–23–5; XDFN–6
NCP4683	Positive	0.3	1.2; 1.8; 1.85; 2.8; 2.85; 3.1; 3.3	6	0.25	0.05	65	65	SC–88A–5 / SC–70–5 / SOT–323–5; UDFN–4
NCP585	Positive	0.3	0.9; 1; 1.2; 1.25; 1.5; 1.8; 2.5; 2.8; 3; 3.3	6	0.31; 0.4; 0.48; 0.55	0.0045			SOT–23–5
NCP603	Positive	0.3	1.3; 1.5; 1.8; 2.5; 2.8; 3; 3.3; 3.5; 5; Adjustable	6.5	0.157; 0.187; 0.245; 0.35; 0.375	0.145	55	50	TSOP–5 / SOT–23–5
NCP703	Positive	0.3	1.8; 1.9; 2.8; 3; 3.3; 3.5	5.5	0.18	0.012	68	13	TSOP–5 / SOT–23–5; XDFN–6
NCP717	Positive	0.3	1.5; 1.8; 1.85; 1.9; 2.2; 2.5; 2.8; 2.85; 3; 3.1; 3.2; 3.3	5.5	0.155; 0.165; 0.17; 0.175; 0.19	0.025	70	22	XDFN–4
NCV33275	Positive	0.3	3.3 5	13	0.26	0.125	75	46	SOT–223–4 / TO–261–4
NCV33375	Positive	0.3	1.8; 2.5; 3.3	13	0.26	0.125		46	SOIC–8; SOT–223–4 / TO–261–4
NCV8603	Positive	0.3	3.3	6.5	0.157	0.145	55	50	TSOP–5 / SOT–23–5

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCV8703	Positive	0.3	1.8; 2.8; 3; 3.3	5.5		0.012	68	13	TSOP–5 / SOT–23–5; XDFN–6
NCV47700	Positive	0.35	Adjustable	40	0.25	0.15	70	100	SOIC–8; SOIC–8 EP
NCV47701	Positive	0.35	Adjustable	40	0.25	0.15	70	100	SOIC–8; SOIC–8 EP
NCV47710	Positive	0.35	Adjustable	40	0.25	0.15	70	100	SOIC–8; SOIC–8 EP
NCV47711	Positive	0.35	Adjustable	40	0.25	0.15	70	100	SOIC–8; SOIC–8 EP
NCV8674	Positive	0.35	5; 12	45	0.3	0.027; 0.031	67		D2PAK–3
NCV8675	Positive	0.35	3.3; 5	45	0.31	0.034	70		D2PAK–5; DPAK–5
NCV8770	Positive	0.35	5	45	0.44	0.021	54		D2PAK–5; DPAK–5
NCV8772	Positive	0.35	3.3; 5	45	0.44	0.024	60		D2PAK–5; D2PAK–7; DPAK–5
NCV8774	Positive	0.35	3.3; 5	45	0.44	0.018	54		DPAK–3
NCP4671	Positive	0.4	0.6; 0.9; 1; 1.2; 1.3; 1.5	6	0.18	0.028	80	70	SOT–23–5; XDFN–6
NCP4686	Positive	0.4	0.8; 1; 1.2; 1.8	4	0.22; 0.28; 0.32; 0.4	0.045	60	30	SOT–23–5
NCV4274	Positive	0.4	2.5; 3.3; 5; 8.5	45	0.25; 1.2; 2	0.14; 0.145; 0.19; 0.195	60		D2PAK–3; DPAK–3; SOT–223–4 / TO–261–4
NCV4276B	Positive	0.4	3.3; 5; Adjustable	45	0.25	0.13	70		D2PAK–5; DPAK–5
NCV8503	Positive	0.4	3.3; 5; Adjustable	45	0.4	0.2			SOIC–16W EP
NCV8504	Positive	0.4	3.3; 5	45	0.4	0.1			SOIC–16W EP
NCV8505	Positive	0.4	3.3; 5; Adjustable	45	0.4	0.2			D2PAK–7
NCV8506	Positive	0.4	3.3; 5; Adjustable	45	0.4	0.1			D2PAK–7
NCV4275A	Positive	0.45	3.3; 5	45	0.25	0.15	60		D2PAK–5; DPAK–5
NCV4290	Positive	0.45	5	45	0.25	0.17	60		D2PAK–5; DPAK–5
CAT6202	Positive	0.5	Adjustable	13	0.25	0.16	52		TDFN–8
CAT6219	Positive	0.5	1.25; 1.8; 2.5; 2.8; 2.85; 3; 3.3; Adjustable	5.5	0.3	0.085	64	45	TDFN–6; TSOT–23–5; WDFN–6
LM317M	Positive	0.5	Adjustable	40	2.1		80		DPAK–3; SOT–223–4 / TO–261–4; TO–220–3
MC78M05	Positive	0.5	5	35	2				DPAK–3; TO–220–3
MC78M05A	Positive	0.5	5	35	2				DPAK–3; TO–220–3
MC78M06	Positive	0.5	6	35	2				DPAK–3; TO–220–3
MC78M08	Positive	0.5	8	35	2				DPAK–3; TO–220–3

# ON Semiconductor Selector Guide – DC–DC Controllers, Converters, and Regulators

## LINEAR VOLTAGE REGULATORS (continued)

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
MC78M09	Positive	0.5	9	35	2				DPAK–3; TO–220–3
MC78M12	Positive	0.5	12	35	2				DPAK–3; TO–220–3
MC78M12A	Positive	0.5	12	35	2				DPAK–3; TO–220–3
MC78M15	Positive	0.5	15	35	2				DPAK–3; TO–220–3
MC78M15A	Positive	0.5	15	35	2				DPAK–3; TO–220–3
MC78M18	Positive	0.5	18	35	2				DPAK–3; TO–220–3
MC78M20	Positive	0.5	20	40	2				TO–220–3
MC78M24	Positive	0.5	24	40	2				TO–220–3
NCP3334	Positive	0.5	Adjustable	12	0.34	0.19	55	38	SOIC–8
NCP3335A	Positive	0.5	1.5; 1.8; 2.5; 2.8; 2.85; 3; 3.3; 5; Adjustable	12	0.34; 1.13; 1.43	0.8	55	31	DFN–10; Micro8
NCP3337	Positive	0.5	1.8; 2.5; 3.3; 5; Adjustable	12	0.23	0.22	40	33; 35; 46; 58	DFN–10
NCP4687	Positive	0.5	1.2; 1.5; 1.8; 2.5; 2.8; 3.3	6	0.22; 0.23; 0.27; 0.31; 0.35	0.075	75	40	SOT–23–5; SOT–89–5
NCP5500	Positive	0.5	1.5; 3.3; 5; Adjustable	18	0.23 1	0.03	75		DPAK–5; SOIC–8
NCP5501	Positive	0.5	1.5; 3.3; 5	18	0.3 1	0.3	75	35	DPAK–3
NCP605	Positive	0.5	1.5; 1.8; 2.5; 2.8; 3; 3.3; 5; Adjustable	6	0.15; 0.17; 0.18; 0.19; 0.2; 0.25; 0.29; 0.45	0.145	62	50	DFN–6
NCP705	Positive	0.5	1.8; 2.8; 3; 3.3	5.5	0.23	0.013	71	12	SOT–223 6–Lead; WDFN–6
NCV5500	Positive	0.5	1.5; 3.3; 5; Adjustable	18	0.3		75		DPAK–5; SOIC–8
NCV5501	Positive	0.5	1.5; 3.3; 5	18	0.3	0.3	75	35	DPAK–3
NCV8141	Positive	0.5	5	60	1.25	7	75		D2PAK–7
NCV8535	Positive	0.5	1.5; 1.8; 1.9; 2.5; 2.8; 2.85; 3; 3.3; 3.5; 5; Adjustable	12	0.34; 1.13; 1.43	0.19	55	26; 31; 33; 35; 36; 37; 40; 46; 47; 58	DFN–10
NCV8537	Positive	0.5	1.8; 2.5; 3.3; 5; Adjustable	12	0.23	0.22	40	33; 35; 46; 58	DFN–10
NCV8605	Positive	0.5	1.5; 1.8; 2.5; 2.8; 3; 3.3; 5; Adjustable	6	0.15; 0.17; 0.18; 0.19; 0.2; 0.25; 0.29; 0.45	0.145	62	50	DFN–6
NCV8705	Positive	0.5	1.2; 1.8; 2.8; 3; 3.3	5.5	0.23	0.013	71	12	WDFN–6
CS8126	Positive	0.75	5	60	0.35	2	75		D2PAK–7
MC33269	Positive	0.8	3.3; 5; 12; Adjustable	20	1.1	5.5	55		DPAK–3; SOIC–8; SOT–223–4 / TO–261–4; TO–220–3
MC34268	Positive	0.8	2.85	15	1.1				SOIC–8
NCP6924	Positive	0.8	1.2	5.5	0.2	0.035	60	55	WLCSP–30

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>O</sub> Typ (A)	V <sub>O</sub> (V)	V <sub>I</sub> Max (V)	V <sub>DO</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCV33269	Positive	0.8	3.3; 5; 12; Adjustable	20	1.1				DPAK–3; SOIC–8
CAT6243	Positive	1	0.8, 1.2, 2.5, 3.3, 5.5	5.5	0.25	0.14	67	45	DPAK–5; TDFN–8; WDFN–6
LA59700MC	Positive	1	Adjustable	15	0.84	3.5	65	560	SOIC–8 N EP / SOP–8L
MC7805	Positive	1	5	35	2	3.2	68	10	D2PAK–3; DPAK–3; TO–220–3
MC7806	Positive	1	6	35	2				D2PAK–3; TO–220–3
MC7806A	Positive	1	6	35	2				TO–220–3
MC7808	Positive	1	8	35	2				D2PAK–3; DPAK–3; TO–220–3
MC7808A	Positive	1	8	35	2				D2PAK–3; TO–220–3
MC7809	Positive	1	9	35	2				D2PAK–3; TO–220–3
MC7809A	Positive	1	9	35	2				TO–220–3
MC7812	Positive	1	12	35	2				D2PAK–3; DPAK–3; TO–220–3
MC7812A	Positive	1	12	35	2				D2PAK–3; TO–220–3
MC7815	Positive	1	15	35	2				D2PAK–3; DPAK–3; TO–220–3
MC7815A	Positive	1	15	35	2				D2PAK–3; TO–220–3
MC7818	Positive	1	18	35	2				D2PAK–3; TO–220–3
MC7818A	Positive	1	18	35	2				TO–220–3
MC7824	Positive	1	24	40	2				D2PAK–3; TO–220–3
MC7824A	Positive	1	24	40	2				TO–220–3
NCP1117	Positive	1	1.5; 1.8; 2; 2.5; 2.85; 3.3; 5; 12; Adjustable	20	1.2	3.6; 4.3; 4.5; 5.2; 5.5; 6	54; 61; 64; 68; 70; 72; 73		DPAK–3; SOT–223–4 / TO–261–4
NCP1117LP	Positive	1	1.5; 2.5; 3.3; 5; Adjustable	18	1.3	0.55	60		SOT–223–4 / TO–261–4
NCP5661	Positive	1	1.2; 1.5; 1.8; 2.5; 2.8; 3; 3.3; Adjustable	9	1	1.3	65	26	DFN–6; DPAK–5
NCP690	Positive	1	1.25; 1.5; 1.8; 2.5; 3.3; 5	6	0.12; 0.18; 0.19; 0.24; 0.29; 0.45	0.145	62	50	DFN–6
NCP691	Positive	1	1.25; 1.5; 1.8; 2.5; 5	6	0.12; 0.19; 0.24; 0.29	0.145	62	50	DFN–6
NCP692	Positive	1	1.25; 1.5; 1.8; 2.5; 3.3; 5	6	0.12; 0.18; 0.19; 0.24; 0.29; 0.45	0.145	62	50	DFN–6
NCP693	Positive	1	0.8; 1; 1.2; 2.5; 3.3	7	0.45; 0.7; 0.9; 1; 1.1	0.065	70	45	UDFN–6
NCP694	Positive	1	0.8; 1; 1.2; 2.5; 3.3; Adjustable	6	0.18; 0.32; 0.56; 0.72	0.06	70	30	SON–6 / HSON–6 SOT–89–5

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>o</sub> Typ (A)	V <sub>o</sub> (V)	V <sub>I</sub> Max (V)	V <sub>Do</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
NCP706	Positive	1	2.1	6	0.3	0.18	60	280	Xtremely Small Dual Flatpack N
NCP7800	Positive	1	5; 8; 12; 15	35	2	3	70; 71; 72; 75	34; 54.4; 81.6; 102	TO–220–3
NCV1117	Positive	1	1.5; 1.8; 2; 2.5; 3.3; 5; 12; Adjustable	20	1.07	3.6; 4.2; 4.5; 5.2; 6	54; 61; 64; 68; 70; 72; 73	45; 54; 60; 75; 99; 150	DPAK–3; SOT–223–4 / TO–261–4
NCV7805	Positive	1	5	35	2				D2PAK–3; DPAK–3; TO–220–3
NCV7808	Positive	1	8	35	2				D2PAK–3; DPAK–3; TO–220–3
NCV7809	Positive	1	9	35	2				D2PAK–3
NCV7812	Positive	1	12	35	2				D2PAK–3; TO–220–3
LM317	Positive	1.5	Adjustable	40	2.25		80		D2PAK–3; TO–220–3
NCP565	Positive	1.5	1.2; 1.5; 2.8; 3; 3.3; Adjustable	9	0.9	1.5	75	28	D2PAK–3; D2PAK–5; DFN–6; SOT–223–4 / TO–261–4
NCP566	Positive	1.5	1.2; 1.8; 2.5	9	0.9				SOT–223–4 / TO–261–4
NCP57152	Positive	1.5	Adjustable	18	0.33	40	65		D2PAK–5; DFN–8
NCP59150	Positive	1.5	1.8; 2.5; 2.8; 3; 3.3; 5; Adjustable	18	0.3	40	64		D2PAK–5; DFN–8
NCV317	Positive	1.5	Adjustable	40	2.25				D2PAK–3; TO–220–3
NCV565	Positive	1.5	1.2; Adjustable	9	0.9		75	28	D2PAK–3; D2PAK–5; SOT–223–4 / TO–261–4
NCV8881	Positive	1.5	5, 8.5			2	60		SOIC–16W EP
NCP5662	Positive	2	1.2; 1.5; 1.8; 2.5; 2.8; 3; 3.3; Adjustable	9	1	1.3	65	26	D2PAK–5; DFN–8
NCP4632	Positive	3	0.8; 1.5; 2.8; 3.3; Adjustable	6	0.48; 0.51; 0.63; 0.91	0.35	55	60	DPAK–5
NCP5663	Positive	3	1.5; 1.8; Adjustable	9	1	1.3	65	28	D2PAK–5
NCP57302	Positive	3	Adjustable	18	0.3	60	70		D2PAK–5
NCP58300	Positive	3	Adjustable	18	0.37	50		400	D2PAK–5
NCP59300	Positive	3	1.8; 2.5; 2.8; 3; 3.3; 5	18	0.3	60	70		D2PAK–5
NCP59302	Positive	3	Adjustable	18	0.3	60	70		D2PAK–5
NCP630	Positive	3	3.47; Adjustable	12	1.25				D2PAK–5
LV56801P	Positive		3.3, 8.0, 8–12, 8–9	16			50		HZIP–15J
LV5680P	Positive			16			50		HZIP–15J
LV5680NPVC	Positive	0.2; 0.3	5, 8	16		0.4	50		HZIP–15J
LV5681P	Positive	0.2; 0.3	5.7, 7	16		0.4	50		HZIP–15J
LV5696P	Positive	0.2; 0.5; 1	3.3or5, 3.3, 5	16		0.05	50		HZIP–15J

**LINEAR VOLTAGE REGULATORS** (continued)

Device	Polarity	I <sub>o</sub> Typ (A)	V <sub>o</sub> (V)	V <sub>I</sub> Max (V)	V <sub>Do</sub> Typ (V)	I <sub>q</sub> Typ (mA)	PSRR (dB)	Noise (μVrms)	Package
LV5684NPVD	Positive	0.3; 0.35; 1.3	3.3, 3.3, 5or8	16		0.05	50		HZIP–15
LV5684PVD	Positive	0.3; 0.35; 1.3	3.3,3.3,5or8,	16		0.05	50		HZIP–15
LV56841PVD	Positive	0.3; 0.35; 1.5	3.3, 3.3, 6	16		0.05	50		HZIP–15
LV56831P	Positive	0.3; 0.4	3.3 or 5; 3.3 or 5	16		0.05	50		HZIP–15
LV5692P	Positive	0.3; 0.5; 1.3	3.3, 3.3, 8	16			50		HZIP–15J
LV5693P	Positive	0.3; 0.5; 1.3	5.7, 3.3, 8	16		0.05	50		HZIP–15J
LV5694P	Positive	0.3; 0.5; 2	3.3 or 5, 5, 7.6 or 8.1	16		0.05	50		HZIP–15J
LV5695P	Positive	0.3; 0.5; 2	3.3 or 5, 5, 8	16		0.05	50		HZIP–15J
LV5686PVC	Positive	0.35; 0.5	5, 9, 9.85	16		0.06	50		HZIP–15
CAT6241									UDFN–8; WDFN–6
LV5682P									HZIP–25
LV5683P		0.3; 1.1	8.5, 5.0, 5.0, 3.3	16		0.05	50		HZIP–15
LV5684PVC						0.05			HZIP–15J
NCP6922C		0.8	1.2						WQFN–20
NCV7462			5		0.3		80		SSOP–36 EP
SCP51460									SOT–23–3



# Digital Potentiometers

---

## Table of Contents

	Page
Digital Pots .....	104



## ON Semiconductor Selector Guide – Digital Potentiometers

### DIGITAL POTS

Device	Type	# of Pots	# of Taps	Control Interface	Resistance Typ (k $\Omega$ )	V <sub>H</sub> Max (V)	Wiper Position Memory	V <sub>DD</sub> Max (V)	Package
CAT5120	Potentiometer	1	16	Up/Down	10; 50	VCC	No	5.5	SC-88-6/ SC-70-6; SOT-23-6
CAT5110	Potentiometer	1	32	Up/Down	10; 50; 100	VCC	No	5.5	SC-88-6/ SC-70-6; SOT-23-6
CAT5112	Potentiometer	1	32	Up/Down	10; 50; 100	VCC	Yes	6	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT5114	Potentiometer	1	32	Up/Down	10; 50; 100	VCC	Yes	6	MSOP-8; PDIP-8; SOIC-8; TDFN-8; TSSOP-8
CAT5115	Potentiometer	1	32	Up/Down	10; 50; 100	VCC	No	6	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT5126	Potentiometer	1	32	Up/Down	10	VCC	OTP	5.5	MSOP-8; TDFN-8
CAT5128	Potentiometer	1	32	Up/Down	10; 50	VCC	No	5.5	SOT-23-8
CAT5111	Potentiometer	1	100	Up/Down	10; 50; 100	VCC	Yes	6	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT5113	Potentiometer	1	100	Up/Down	1; 10; 50; 100	VCC	Yes	6	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT5116	Potentiometer	1	100	Up/Down	32	VCC	Yes	5.5	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT5132	Potentiometer	1	128	I2C	10; 50; 100	16	Yes	5.5	MSOP-10
CAT5133	Potentiometer	1	128	Up/Down	10	16	Yes	5.5	MSOP-10
CAT5137	Potentiometer	1	128	I2C	50	VCC	No	5.5	SC-88-6/ SC-70-6
CAT5138	Potentiometer	1	128	I2C	10	VCC	No	5.5	SC-88-6/ SC-70-6
CAT5140	Potentiometer	1	256	I2C	50; 100	VCC	Yes	5.5	MSOP-8
CAT5171	Potentiometer	1	256	I2C	50; 100	VCC	No	5.5	SOT-23-8
CAT5172	Potentiometer	1	256	SPI	50	VCC	No	5.5	SOT-23-8
CAT5221	Potentiometer	2	64	I2C	2.5; 10; 50; 100	VCC	Yes	6	SOIC-20W; TSSOP-20
CAT5411	Potentiometer	2	64	SPI	2.5; 10; 50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5419	Potentiometer	2	64	I2C	2.5; 10; 50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5261	Potentiometer	2	256	SPI	50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5269	Potentiometer	2	256	I2C	50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5271	Potentiometer	2	256	I2C	50; 100	VCC	No	6.5	MSOP-10
CAT5273	Potentiometer	2	256	I2C	50	VCC	No	6.5	MSOP-10
CAT5241	Potentiometer	4	64	I2C	2.5; 10; 50; 100	VCC	Yes	6	SOIC-20W; TSSOP-20
CAT5401	Potentiometer	4	64	SPI	2.5; 10; 50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5409	Potentiometer	4	64	I2C	2.5; 10; 50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24

## ON Semiconductor Selector Guide – Digital Potentiometers

### DIGITAL POTS (continued)

Device	Type	# of Pots	# of Taps	Control Interface	Resistance Typ (k $\Omega$ )	V <sub>H</sub> Max (V)	Wiper Position Memory	V <sub>DD</sub> Max (V)	Package
CAT5251	Potentiometer	4	256	SPI	50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5259	Potentiometer	4	256	I2C	50; 100	VCC	Yes	6	SOIC-24W; TSSOP-24
CAT5121	Rheostat	1	16	Up/Down	10; 50	VCC	No	5.5	SC-88-6/ SC-70-6; SOT-23-6
CAT5122	Rheostat	1	16	Up/Down	10; 50	VCC	No	5.5	SC-88A-5/ SC-70-5; SOT-23-8
CAT5118	Rheostat	1	32	Up/Down	10; 50; 100	VCC	No	5.5	SC-88A-5/ SC-70-5; SOT-23-8
CAT5119	Rheostat	1	32	Up/Down	10; 50; 100	VCC	No	5.5	SC-88-6/ SC-70-6; SOT-23-6
CAT5123	Rheostat	1	32	Up/Down	10	VCC	No	5.5	SOT-23-8
CAT5124	Rheostat	1	32	Up/Down	50	VCC	No	5.5	SOT-23-6
CAT5125	Rheostat	1	32	Up/Down	10	VCC	No	5.5	SOT-23-6
CAT5127	Rheostat	1	32	Up/Down	10	VCC	Yes	5.5	MSOP-8



# Diodes and Rectifiers

---

## Table of Contents

	<b>Page</b>
PIN Diodes .....	108
Standard Recovery Rectifiers .....	108
Fast Recovery Rectifiers .....	109
Ultrafast Rectifiers .....	109
Ultrasoft Rectifiers .....	111
Schottky Diodes .....	112
Schottky Rectifiers .....	115
Small Signal Switching Diodes .....	120
Tuning Diodes .....	122
Zener Diodes .....	122

## ON Semiconductor Selector Guide – Diodes and Rectifiers

### PIN DIODES

Device	Number of Diodes	Reverse Voltage	Reverse Current	Forward Voltage	Package
1SV233	1	50	0.1	0.95	SC-59 / CP
1SV263	1	50	0.1	0.95	SC-70FL / MCPH-3
1SV234	2	50	0.1	0.95	SC-59 / CP
1SV246	2	50	0.1	0.95	SC-70FL / MCPH-3
1SV249	2	50	0.1	0.92	SC-70FL / MCPH-3
1SV251	2	50	0.1	0.92	SC-59 / CP
1SV264	2	50	0.1	0.95	SC-70FL / MCPH-3
1SV267	2	50	0.1	0.91	SC-59 / CP
1SV315	2	50	0.1	1	SC-70FL / MCPH-3
CPH5512	2	50	0.1	0.95	CPH-5

### STANDARD RECOVERY RECTIFIERS

Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
1N4001	50	1	1.1	30	0.01	Axial Leads-2
1N5400	50	3	1	200	0.01	Axial Lead-2
1N4002	100	1	1.1	30	0.01	Axial Lead-2
1N5401	100	3	1	200	0.01	Axial Lead-2
1N4003	200	1	1.1	30	0.01	Axial Lead-2
1N5402	200	3	1	200	0.01	Axial Lead-2
MRA4003T3	300	1	1.1	30	0.01	SMA-2
1N4004	400	1	1.1	30	0.01	Axial Lead-2
MRA4004	400	1	1.1	30	0.01	SMA-2
MRS1504	400	1.5	1.04	50	0.001; 1	SMB-2
1N5404	400	3	1	200	0.01	Axial Lead-2
1N4005	600	1	1.1	30	0.01	Axial Lead-2
DSM10G	600	1	1.1	25	0.01	SMA
MRA4005	600	1	1.1	30	0.01	SMA-2
1N5406	600	3	1	200	0.01	Axial Lead-2
1N4006	800	1	1.1	30	0.01	Axial Lead-2
MRA4006	800	1	1.1	30	0.01	SMA-2
1N5407	800	3	1	200	0.01	Axial Lead-2
1N4007	1000	1	1.1	30	0.01	Axial Lead-2
MRA4007	1000	1	1.1	30	0.01	SMA-2
1N5408	1000	3	1	200	0.01	Axial Lead-2

**FAST RECOVERY RECTIFIERS**

Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	t <sub>rr</sub> Max (ns)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
1N4933	50	1	200	1.2	30	0.005	Axial Lead-2
1N4934	100	1	200	1.2	30	0.005	Axial Lead-2
MR851	100	3	200	1.25	100	0.01	Axial Lead-2
1N4935	200	1	200	1.2	30	0.005	Axial Lead-2
MR852	200	3	200	1.25	100	0.01	Axial Lead-2
1N4936	400	1	200	1.2	30	0.005	Axial Lead-2
MR854	400	3	200	1.25	100	0.01	Axial Lead-2
1N4937	600	1	200	1.2	30	0.005	Axial Lead-2
MR856	600	3	200	1.25	100	0.01	Axial Lead-2

**ULTRAFAST RECTIFIERS**

Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	t <sub>rr</sub> Max (ns)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
MUR105	50	1	35	0.875	35	0.002	Axial Lead-2
MURS105	50	1	35	0.875	40	0.002	SMB-2
MURS205	50	2	30	0.94	50	0.05	SMB-2
MUR405	50	4	35	0.89	125	0.005	Axial Lead-2
MUR805	50	8	35	0.975	100	0.005	TO-220-2
MUR110	100	1	35	0.875	35	0.002	Axial Lead-2
MURS110	100	1	35	0.875	40	0.002	SMB-2
MUR210	100	2	30	0.94	35	0.002	Axial Lead-2
MURS210	100	2	30	0.94	50	0.05	SMB-2
MUR410	100	4	35	0.89	125	0.005	Axial Lead-2
MUR810	100	8	35	0.975	100	0.005	TO-220-2
MUR1610CT	100	16	35	0.975	100	0.005	TO-220-3
MUR115	150	1	35	0.875	35	0.002	Axial Lead-2
MURS115	150	1	35	0.875	40	0.002	SMB-2
MUR415	150	4	35	0.89	125	0.005	Axial Lead-2
MUR815	150	8	35	0.975	100	0.005	TO-220-2
MUR1615CT	150	16	35	0.975	100	0.005	TO-220-3
MUR120	200	1	35	0.875	35	0.002	Axial Lead-2
MURS120	200	1	35	0.875	40	0.002	SMB-2
MUR220	200	2	35	0.95	35	0.002	Axial Lead-2
MURS220	200	2	25	0.95	40	0.002	SMB-2
MURD320	200	3	35	0.95	75	0.005	DPAK-3
MURS320	200	3	35	0.875	75	0.005	SMC-2
MUR420	200	4	35	0.89	125	0.005	Axial Lead-2
MUR620CT	200	6	35	0.975	75	0.005	TO-220-3
MURD620CT	200	6	35	1.2	63	0.005	DPAK-3
BYW29	200	8	35	0.85	100	0.6	TO-220-2
BYW80	200	8	35	0.85	100	0.01	TO-220-2
MUR820	200	8	35	0.975	100	0.005	TO-220-2
BYV32	200	16	35	0.85	100	0.05	TO-220-3
BYW51	200	16	35	0.97	100	0.01	TO-220-3
MUR1620CT	200	16	35	0.975	100	0.005	TO-220-3
MUR1620CTR	200	16	85	1.2	100	0.005	D <sup>2</sup> PAK-3; TO-220-3

# ON Semiconductor Selector Guide – Diodes and Rectifiers

## ULTRAFAST RECTIFIERS (continued)

Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	t <sub>tr</sub> Max (ns)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
MURB1620CT	200	16	35	0.975	100	0.005	D <sup>2</sup> PAK-3
MURF1620CT	200	16	25	0.975	100	0.005	TO-220 FULLPAK-3
MUR2020R	200	20	95	1.1	250	0.05	TO-220-2
MUR3020WT	200	30	35	1.05	150	0.01	TO-247-3
MUR130	300	1	75	1.25	35	0.005	Axial Lead-2
MURA130	300	1	65	1.1	35	0.005	SMA-2
MURA230T3	300	2	65	1.3	35	0.005	SMA-2
MURS230	300	2	50	1.15	35	0.005	SMB-2
MURD330	300	3	50	1.15	75	0.005	DPAK-3
MURD530	300	5	50	1.05	75	0.15	DPAK-3
MUR140	400	1	75	1.25	35	0.005	Axial Lead-2
MURA140	400	1	65	1.1	35	0.005	SMA-2
MURS140	400	1	75	1.25	35	0.005	SMB-2
MUR240	400	2	65	1.15	35	0.005	Axial Lead-2
MURA240T3	400	2	65	1.3	35	0.005	SMA-2
MURS240	400	2	50	1.15	35	0.005	SMB-2
MURD340	400	3	50	1.15	75	0.005	DPAK-3
MURS340	400	3	75	1.25	75	0.01	SMC-2
MUR440	400	4	35	1.28	70	0.01	Axial Lead-2
MUR840	400	8	60	1.3	100	0.01	TO-220-2
MURH840CT	400	8	28	2	100	0.5	TO-220-3
MURHB840CT	400	8	28	2.2	100	0.5	D <sup>2</sup> PAK-3
MUR1540	400	15	60	1.25	150	0.01	TO-220-2
MUR1640CT	400	16	60	1.3	100	0.25	TO-220-3
MUR550PF	520	5	95	1.15	75; 85; 100	0.005	Axial Lead-2; DPAK-3; TO-220-2
MUR160	600	1	75	1.25	35	0.005	Axial Lead-2
MURA160	600	1	75	1.25	35	0.005	SMA-2
MURHS160T3	600	1	35	2.4	15	0.02	SMB-2
MURS160	600	1	75	1.25	35	0.005	SMB-2
MUR260	600	2	75	1.35	35	0.005	Axial Lead-2
MURA260T3	600	2	75	1.45	35	0.005	SMA-2
MURS260	600	2	50	1.45	35	0.005	SMB-2
MURS360	600	3	75	1.25	75	0.01	SMC-2
MURS360BT3G	600	3	75	1.25	100	0.003	SMB-2
MUR460	600	4	75	0.89; 1.28	70	0.01	Axial Lead-2
MURHD560	600	5	30	2.7	50	0.01	DPAK-3
MURHD560W1	600	5	30	2.7	50	0.01	DPAK-3
MUR860	600	8	60	1.5	100	0.01	TO-220-2
MURH860CT	600	8	35	2.8	100	0.5	TO-220-3
MURHB860CT	600	8	35	2.8	100	0.01	D <sup>2</sup> PAK-3
MURHF860CT	600	8	35	2.8	100	0.5	TO-220 FULLPAK-3
NHPV08S600	600	8	50	2.9	80	0.03	TO-220 FULLPAK-2; TO-220-2
MUR1560	600	15	60	1.5	150	0.01	TO-220-2

**ULTRAFAST RECTIFIERS** (continued)






Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	t <sub>rr</sub> Max (ns)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
NHPV15S600	600	15	50	2.9	150	0.06	TO-220 FULLPAK-2; TO-220-2
MUR1660CT	600	16	60	1.5	100	0.5	TO-220-3
MURB1660CT	600	16	60	1.5	100	0.5	D <sup>2</sup> PAK-3
MURF1660CT	600	16	60	1.5	100	0.5	TO-220 FULLPAK-3
MUR3060WT	600	30	60	1.7	150	0.01	TO-247-3
MUR180E	800	1	75	1.75	35	0.01	Axial Lead-2
MUR480E	800	4	75	1.85	70	0.025	Axial Lead-2
MURS480E	800	4	100	1.85	70	0.025	SMC-2
MUR880E	800	8	100	1.8	100	0.01	TO-220-2
MUR1100E	1000	1	100	1.75	35	0.01	Axial Lead-2
MUR2100E	1000	2	75	2.2	35	0.01	Axial Lead-2
MUR4100E	1000	4	75	1.85	70	0.9	Axial Lead-2
MUR8100E	1000	8	75	1.8	100	0.5	TO-220-2
MURJ1660CTG		16	60	1.5	100	500	TO-220 FULLPAK-3
MUR3040WTG							TO-247-3
MUR1520	100; 150; 200	15	35	1.05	200	0.01	TO-220-2
MURA115	150; 200	1	35	0.875; 0.876	40	0.002	SMA-2
MURA215T3	150; 200	2	35	0.95	40	0.002	SMA-2
MURA105	50; 100	1	30	0.875	50	0.002	SMA-2
MURA205	50; 100	2	30	0.94	50	0.002	SMA-2

**ULTRASOFT RECTIFIERS**


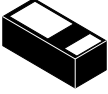



Device	V <sub>RRM</sub> Max (V)	I <sub>O(rec)</sub> Max (A)	t <sub>rr</sub> Max (ns)	V <sub>FM</sub> Max (V)	I <sub>FSM</sub> Max (A)	I <sub>R</sub> Max (mA)	Package
MSRD620CT	200	6	55	1.35	50	0.005	DPAK-3
MSRD620CTR	200	6	75	1.3	45	0.001	DPAK-3
MSR860	600	8	120	1.7	100	0.01	TO-220-2
MSR1560	600	15	45	1.8	100	0.015	TO-220-2







**SCHOTTKY DIODES**

Single 2-Lead			Package	SOD-123	SOD-323	SOD-523	SOD-723	SOD-923
			Size (mm)	3.7 x 1.6 x 1.17	2.5 x 1.25 x 0.9	1.6 x 0.8 x 0.6	1.4 x 0.6 x 0.52	1.0 x 0.6 x 0.39
$I_F$ (A)	$V_R$ (A)	$V_F$ (A)	$I_R$ ( $\mu$ A)	 Case 631AA	 Case 477-02	 Case 502	 Case 509AA	 Case 514AA
-	7	0.6	0.25		MMDL101			
	30	0.45	0.2		MMDL301			
	70	1	0.2		MMDL770			
0.03	30	0.37	0.5		RB751V40	RB751S40		
0.07	30	0.35	0.5					NSR0140P2
	70	0.64	3					NSR0170P2
0.1	30	0.385	0.35					NSR0130P2
0.2	30	0.32	2	BAT54	BAT54H	BAT54XV2		
		0.325	10				NSR0230M2	NSR0230P2
		0.45	0.2	MMSD301				
		0.5	30			RB521S30		
		0.6	1			NSRLL30XV2		
	40	0.5	5			RB520S30		
		0.56	5					NSR0240P2
		0.5	0.2	MMSD701				NSR0340P2
0.25	40	0.51	1			NSR0340V2		
		0.59	1		NSR0340H			
		0.7	0.55			NSR0240V2		
		0.71	0.55		NSR0240H			
0.5	20	0.48	30			NSR0520V2		
		0.52	10					NSR0620P2
	30	0.46	200					NSR0530P2
1	20	0.44	40		NSR1020MW2			
	23	0.27	50		NSR0320MW2			






SCHOTTKY DIODES (continued)



Single DFN/DSN2			Package	DSN2 (0603)	DSN2 (0502)	DSN2 (0402)	DSN2 (0201)	X3DFN
			Size (mm)	1.6 x 0.8 x 0.27	1.4 x 0.6 x 0.27	1.0 x 0.6 x 0.27	0.6 x 0.3 x 0.27	0.62 x 0.32 x 0.29
$I_F$ (A)	$V_R$ (V)	$V_F$ (V)	$I_R$ ( $\mu$ A)	 Case 514AA	 Case 152AB	 DSN2 (0402) Case 152AC	 Case 152AA	 Case 152AF
0.1	30	0.35	5					NSR01F30MX
		0.46	0.5					NSR01L30MX
		0.37	7				NSR01F30NX	
		0.4	0.2				NSR01L30NX	
0.2	30	0.37	7				NSR02F30NX	
		0.4	0.2				NSR02L30NX	
0.5	20	0.43	15			NSR05F20NX		
	30	0.43	15			NSR05F30NX		
	40	0.46	15			NSR05F40NX		
1	20	0.43	20		NSR10F20NX			
	30	0.45	20		NSR10F30NX			
	40	0.49	10		NSR10F40NX			
2	20	0.47	30	NSR20F20NX				
	30	0.48	20	NSR20F30NX				
	40	0.55	150	NSR20F40NX				

Single 3-Lead			Package	SOT-23	SC-70, SOT-323	SOT-563	SOT-723
			Size (mm)	2.9 x 2.4 x 1.0	2.1 x 2.1 0.9	1.6 x 1.6 x 0.55	1.2 x 1.2 x 0.5
$I_F$ (A)	$V_R$ (V)	$V_F$ (V)	$I_R$ ( $\mu$ A)	 Case 318-08	 Case 419-04	 Case 463A	 Case 631AA
-	7	0.6	2.5	MMBD101L			
	30	0.45	0.2	MMBD301L			MMBD301M3
	70	0.5	0.2	MMBD701L			
0.07	70	0.41	0.1	BAS70L			
0.12	40	0.38	1	BAS40L			
0.2	30	0.32	2	BAT54L	BAT54W		BAT54M3
		0.45	0.2		MMBD330		
	70	0.5	0.2		MMBD770		
1	23	0.27	50			NSR0320XV6	

# ON Semiconductor Selector Guide – Diodes and Rectifiers

## SCHOTTKY DIODES (continued)

Complex 3-Lead				Package	SOT-23	SC-70, SOT-323	SC-75	SC-89	SOT-723
				Size (mm)	2.9 x 2.4 x 1.0	2.1 x 2.1 x 0.9	1.6 x 1.6 x 0.8	1.6 x 1.6 x 0.7	1.2 x 1.2 x 0.5
Configuration	$I_F$ (A)	$V_R$ (V)	$V_F$ (V)	$I_R$ ( $\mu$ A)	 Case 318-08	 Case 419-04	 Case 463	 Case 463C-03	 Case 631AA
Common Anode	-	7	0.6	0.25	MMBD355L				
		20	0.37	1		MMBD717L			
	0.12	40	0.38	1	BAS40-06L				
	0.2	30	0.32	2	BAT54AL	BAT54AW			
Common Cathode	-	7	0.6	0.25	MMBD354L				
	0.2	30	0.32	2	BAT54CL	BAT54CW	BAT54CT	BAT54CXV3	NSR30CM3
Series	-	30	0.45	0.2	MMBD452L				
		7	0.6	0.25	MMBD352L	MMBD352W			
					MMBD353L				
	0.12	40	0.38	1	BAS40-04L				
	0.2	30	0.32	2	BAT54SL	BAT54SW			

Complex 6-Lead				Package	SC-88, SOT-363	SOT-963
				Size (mm)	2.1 x 2.0 x 0.95	1.0 x 1.0 x 0.37
Configuration	$I_F$ (A)	$V_R$ (V)	$V_F$ (V)	$I_R$ ( $\mu$ A)	 Case 419B-02	 Case 527AD
Dual	0.2	30	0.32	2	MBD54DW	
			0.45	0.2	MBD330DW	
			0.5	0.2	MBD770DW	
Dual Common Cathode	0.1	15	0.4	15		NSR0115CQP6

## SCHOTTKY RECTIFIERS

Device	V <sub>RRM</sub> Min (V)	V <sub>F</sub> Max (V)	I <sub>RM</sub> Max (μA)	I <sub>O(ree)</sub> Max (A)	I <sub>FSM</sub> Max (A)	t <sub>rr</sub> Max (ns)	C <sub>j</sub> Max (pF)	Package
MBRA210ET3	10	0.5	15	2	150			SMA-2
MBRA210LT3	10	0.35	700	2	230			SMA-2
MBRM110E	10	0.53	1	1	50			POWERMITE-2
MBRM110L	10	0.365	500	1	50			POWERMITE-2
MBRS410ET3	10	0.5	150	4	250			SMC-2
MBRS410LT3	10	0.33	5000	4	150			SMC-2
MBR2515L	15	0.45	15000	25	150			TO-220-2
MBR4015CTL	15	0.54	10000	40	150			TO-220-3
MBR4015LWT	15	0.5	5000	40	120			TO-247-3
MBRB2515L	15	0.45	15000	25	150			D <sup>2</sup> PAK-3
1N5817	20	0.45	1000	1	25			Axial Lead-2
1N5820	20	0.475	2000	3	80			Axial Lead-2
MBR0520L	20	0.385	250	0.5	5.5	-	-	SOD-123
MBR120ESF	20	0.53	10	1	40	-	-	SOD123-2
MBR120LSF	20	0.45	40	1	50	-	-	SOD123-2
MBR120VLSF	20	0.34	600	1	45			SOD123-2
MBRA120ET3	20	0.53	10	1	40			SMA-2
MBRA320T3G	20	0.5	2000	3	80			SMA-2
MBRD320	20	0.6	200	3	75	-	-	DPAK-3
MBRD620CT	20	0.9	100	6	75			DPAK-3
MBRM120E	20	0.53	10	1	50			POWERMITE-2
MBRM120L	20	0.45	40	1	50	-	-	POWERMITE-2
MBRS120	20	0.6	1000	1	40			SMB-2
1N5818	30	0.55	1000	1	25			Axial Lead-2
1N5821	30	0.5	2000	3	80			Axial Lead-2
MBR0530	30	0.43	130	0.5	5.5	-	-	SOD-123
MBR130	30	0.45	60	1	5.5	-	-	SOD-123
MBR130LSF	30	0.38	1000	1	40			SOD123-2
MBR2030CTL	30	0.58	5000	20	150			TO-220-3
MBR230LSFT1G	30	0.43	1000	2	40			SOD123-2
MBR7030WT	30	0.72	5000	70	500			TO-247-3
MBRA130L	30	0.41	1000	1	25			SMA-2
MBRB3030CT	30	0.67	600	30	200			D <sup>2</sup> PAK-3
MBRB3030CTL	30	0.51	2000	30	300	-	-	D <sup>2</sup> PAK-3
MBRB30H30CT-1	30	0.55	800	30	260	-	-	I <sup>2</sup> PAK-3; TO-220-3
MBRB4030	30	0.55	350	40	300	-	-	D <sup>2</sup> PAK-3
MBRD330	30	0.6	200	3	75	-	-	DPAK-3
MBRD630CT	30	0.9	100	6	75			DPAK-3
MBRM130L	30	0.38	410	1	50	-	-	POWERMITE-2
MBRS130	30	0.6	1000	1	40			SMB-2
MBRS130L	30	0.395	1000	1	40			SMB-2
MBRS230L	30	0.49	1000	2	40			SMB-2
MBR1035	35	0.84	100	10	150			TO-220-2
MBR1535CT	35	0.84	100	15	150			TO-220-3

# ON Semiconductor Selector Guide – Diodes and Rectifiers

## SCHOTTKY RECTIFIERS (continued)

Device	V <sub>RRM</sub> Min (V)	V <sub>F</sub> Max (V)	I <sub>RM</sub> Max (μA)	I <sub>O(rec)</sub> Max (A)	I <sub>FSM</sub> Max (A)	t <sub>rr</sub> Max (ns)	C <sub>j</sub> Max (pF)	Package
MBR1635	35	0.63	200	16	150			TO-220-2
MBR2535CT	35	0.82	200	30	150			TO-220-3
MBR2535CTL	35	0.47	5000	25	150			TO-220-3
MBR735	35	0.84	10	7.5	150			TO-220-2
MBRB2535CTL	35	0.55	10000	12.5	150	–	–	D <sup>2</sup> PAK-3
MBRD1035CTL	35	0.56	2000	10	50	–	–	DPAK-3
MBRD835L	35	0.51	1400	8	75	–	–	DPAK-3
NRVBD1035CTL	35	0.56	2000	10	50			DPAK-3
1N5819	40	0.6	1000	1	25			Axial Lead-2
1N5822	40	0.525	2000	3	80			Axial Lead-2
MBR0540	40	0.51	20	0.5	5.5	–	–	SOD-123
MBR140ESF	40	0.51		1	30			SOD123-2
MBR140SF	40	0.55	500	1	30	–	–	SOD123-2
MBR340	40	0.6	600	3	80			Axial Lead-2
MBR440MFS	40	0.65	800	4	40			SO-8FL / DFN-5
MBR540MFS	40	0.58	2000	5	150			SO-8FL / DFN-5
MBRA140	40	0.55	500	1	30			SMA-2
MBRA340	40	0.45	300	3	100			SMA-2
MBRAF1540	40	0.46	80	1.5	40	–	–	SMA-FL
MBRAF440	40	0.45	300	4	100	–	–	SMA-FL
MBRD340	40	0.6	200	3	75	–	–	DPAK-3
MBRD640CT	40	0.9	15	6	75	–	–	DPAK-3
MBRM140	40	0.55	500	1	50	–	–	POWERMITE-2
MBRS140	40	0.6	1000	1	40			SMB-2
MBRS1540	40	0.46	80	1.5	40			SMB-2
MBRS2040L	40	0.43	80	2	70			SMB-2
MBRS240L	40	0.43	2000	2	25			SMB-2
MBRS540	40	0.5	0.3; 300	5	190			SMC-2
80SQ045N	45	0.55	1000	8	140			Axial Lead-2
MBR1045	45	0.84	100	10	150			TO-220-2
MBR1545CT	45	0.84	100	15	150			TO-220-3
MBR1645	45	0.63	200	16	150			D <sup>2</sup> PAK-3; TO-220-2
MBR20L45	45	0.63	500	20	180			TO-220 FULLPAK-3; TO-220-3
MBR2545CT	45	0.82	20	30	150	–	–	TO-220-3
MBR3045ST	45	0.76	200	30	150			I <sup>2</sup> PAK-3; TO-220-3
MBR3045WT	45	0.76	1000	30	200			TO-247-3
MBR30L45	45	0.61	650	30	190			TO-220 FULLPAK-3
MBR4045WT	45	0.8	1000	40	400			TO-247-3
MBR40L45	45	0.63	1200	40	200			TO-220-3
MBR6045WT	45	0.75	1000	60	500			TO-247-3
MBR60L45	45	0.73	1200	60	200			TO-220-3; TO-247-3
MBR745	45	0.84	10	7.5	150			TO-220-2
MBRB1045	45	0.84	100	10	70; 150	–	–	D <sup>2</sup> PAK-3; DPAK-3
MBRB1545CT	45	0.84	100	15	150	–	–	D <sup>2</sup> PAK-3

## SCHOTTKY RECTIFIERS (continued)

Device	V <sub>RRM</sub> Min (V)	V <sub>F</sub> Max (V)	I <sub>RM</sub> Max (μA)	I <sub>O(Reg)</sub> Max (A)	I <sub>FSM</sub> Max (A)	t <sub>rr</sub> Max (ns)	C <sub>j</sub> Max (pF)	Package
MBRB2545CT	45	0.82	200	30	150	–	–	D <sup>2</sup> PAK–3
MBRF2045CTG	45	0.84	100	20	150			TO–220 FULLPAK–3
MBRF2545CT	45	0.7	200	25	150			TO–220 FULLPAK–3
MBR150	50	0.75	500	1	25			Axial Lead–2
MBR350	50	0.74	600	3	80			Axial Lead–2
MBRD350	50	0.6	200	3	75	–	–	DPAK–3
MBRD650CT	50	0.9	100	6	75	–	–	DPAK–3
MBR1060	60	0.8	6000	10	150			TO–220–2
MBR10L60CTG	60	0.66	220	10	200			TO–220–3
MBR160	60	0.75	500	1	25			Axial Lead–2
MBR20L60CTG	60	0.73	380	20	240			TO–220–3
MBR30L60CTG	60	0.81	350	30	240			TO–220–3
MBR360	60	0.74	600	3	80			Axial Lead–2
MBR40L60CTG	60	0.81	550	40	240			TO–220–3
MBR460MFS	60	0.74	200	4	40			SO–8FL / DFN–5
MBR560MFS	60	0.78	150	5	100			SO–8FL / DFN–5
MBRA160T3	60	0.51	20	1	30			SMA–2
MBRAF260	60	0.63	20	2	40	–	–	SMA–FL
MBRAF360	60	0.74	150	3	125	–	–	SMA–FL
MBRB2060CT	60	0.95	10; 150	20	150	–	–	D <sup>2</sup> PAK–3; TO–220–3
MBRB30H60CT–1	60	0.78	300	30	260	–	–	D <sup>2</sup> PAK–3; I <sup>2</sup> PAK–3
MBRD360	60	0.6	200	3	75	–	–	DPAK–3
MBRD660CT	60	0.9	100	6	75	–	–	DPAK–3
MBRF10L60CTG	60	0.66	220	10	200			TO–220 FULLPAK–3
MBRF2060CT	60	0.95	150	20	150			TO–220 FULLPAK–3
MBRF20L60CTG	60	0.73	380	20	240			TO–220 FULLPAK–3
MBRF30L60CTG	60	0.81	350	30	240			TO–220 FULLPAK–3
MBRS260T3	60	0.63	20	2	40			SMB–2
MBRS360	60	0.74	150	3	125			SMB–2; SMC–2
NRVBB1060	60	0.8	100	10	150			D <sup>2</sup> PAK–3
SS16	60	0.51	20	1	30			SMA–2
SS26	60	0.63	20	2	40			SMB–2
MBR1080	80	0.8	6000	10	150			TO–220–2
MBR2080CT	80	0.95	10	20	150			TO–220–3
NTSJ2080CTG	80	0.83	600	20	150			TO–220 FULLPAK–3
NTSJ3080CTG	80	0.85	700	30	160			TO–220 FULLPAK–3
NTSJ30U80CTG	80	0.8	200	30	160			TO–220 FULLPAK–3
NTSV2080CTG	80	0.98	600	20	100			TO–220–3
NTSV20U80CTG	80	0.98	600	20	100			TO–220–3
NTSV3080CTG	80	1.05	700	30	100			TO–220–3
MBR1090	90	0.8	6000	10	150			TO–220–2
MBR2090CT	90	0.95	10	20	150			TO–220–3
MBRS190	90	0.75	500	1	50	–	–	SMB–2
MBR10100	100	0.8	100	10	150	–	–	TO–220–2

# ON Semiconductor Selector Guide – Diodes and Rectifiers

## SCHOTTKY RECTIFIERS (continued)





Device	V <sub>RRM</sub> Min (V)	V <sub>F</sub> Max (V)	I <sub>RM</sub> Max (μA)	I <sub>O(rec)</sub> Max (A)	I <sub>FSM</sub> Max (A)	t <sub>rr</sub> Max (ns)	C <sub>j</sub> Max (pF)	Package
MBR1100	100	0.79	500	1	50			Axial Lead-2
MBR16100CT	100	0.84	100	16	150			TO-220-3
MBR1H100SF	100	0.76	40	1	50			SOD123-2
MBR20H100CT	100	0.88	4.5	20	250	-	-	D <sup>2</sup> PAK-3
MBR2H100SF	100	0.84	40	2	50			SOD123-2
MBR30H100CT	100	0.8	4.5	30	250			TO-220-3
MBR3100	100	0.79	600	3	150			Axial Lead-2
MBR40H100WT	100	0.8	10	40	200			TO-247-3
MBR41H100CT	100	0.9	10	40	350			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220-3
MBR5100MFS	100	0.98	10	5	100			SO-8FL / DFN-5
MBR5H100MFS	100	0.73	100	5				SO-8FL / DFN-5
MBR60H100CT	100	0.98	10	60	350			D <sup>2</sup> PAK-3; TO-220-3
MBRA1H100	100	0.76	40	1	50	-	-	SMA-2
MBRA2H100	100	0.79	8	2	130			SMA-2
MBRAF1100	100	0.75	500	1	50	-	-	SMA-FL
MBRAF2H100	100	0.79	8	2	130	-	-	SMA-FL
MBRB20100CT	100	0.95	100	20	150	-	-	D <sup>2</sup> PAK-3
MBRB8H100T4G	100	0.71	4.5	8	250	-	-	D <sup>2</sup> PAK-3
MBRD5H100T4G	100	0.71	3.5	5	105	-	-	DPAK-3
MBRF20100CT	100	0.95	150	20	150			TO-220 FULLPAK-3
MBRF30H100CTG	100	0.93	4.5	30	250			TO-220 FULLPAK-3
MBRM1H100	100	0.76	20	1	50			POWERMITE-2
MBRM2H100	100	0.84	20	2	50			POWERMITE-2
MBRS1100	100	0.75	500	1	50	-	-	SMB-2
MBRS2H100T3G	100	0.79	8	2	130			SMB-2
MBRS3100T3	100	0.79	50	3	130			SMC-2
NTS8100MFS	100	0.73	70	8	150			SO-8FL / DFN-5
NTST20100CTG	100	0.79	800	20	150			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST20U100CTG	100	0.79	800	20	150			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST30100CTG	100	0.85	500	30	160			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST30100SG	100	0.95	1000	30	250			I <sup>2</sup> PAK-3; TO-220-3
NTST30U100CTG	100	0.8	675	30	160			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST40100CTG	100	0.8	1000	40	250			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST60100CTG	100	0.81	1000	60	250			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTSV20100CTG	100	0.98	800	20	100			TO-220-3
NTSV20U100CTG	100	0.98	800	20	100			TO-220-3
NTSV30100CTG	100	1.05	500	30	100			TO-220-3

**SCHOTTKY RECTIFIERS** (continued)

Device	V <sub>RRM</sub> Min (V)	V <sub>F</sub> Max (V)	I <sub>RM</sub> Max (μA)	I <sub>O(Reg)</sub> Max (A)	I <sub>FSM</sub> Max (A)	t <sub>rr</sub> Max (ns)	C <sub>j</sub> Max (pF)	Package
NTSV30100SG	100	1.1	1000	30	100			TO-220-3
NTST20120CTG	120	1.1	700	20	120			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST30120CTG	120	1.08	800	30	150			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTST40120CTG	120	0.91	500	40	250			D <sup>2</sup> PAK-3; I <sup>2</sup> PAK-3; TO-220 FULLPAK-3; TO-220-3
NTSV20120CTG	120	1.12	700	20	100			TO-220-3
NTSV30120CTG	120	1.18	800	30	100			TO-220-3
MBRF10H150CTG	150	0.69	45	10	150			TO-220 FULLPAK-3
MBRF20H150CTG	150	0.68	50	20	180			TO-220 FULLPAK-3; TO-220-3
MBRF30H150CTG	150	0.73	60	30	200			TO-220 FULLPAK-3; TO-220-3
MBR20200CT	200	1	10	20	150			TO-220-3
MBRAF3200	200	0.84	1000	3	100	-	-	SMA-FL
MBRB20200CT	200	1	1000	20	150	-	-	D <sup>2</sup> PAK-3
MBRF20200CT	200	1	1000	20	150			TO-220 FULLPAK-3
MBRS3200	200	0.84	1000	3	100			SMB-2
MBRS3201	200	0.84	1000	3	100	35		SMC-2
MBRS4201	200	0.8	0.35	4	100	35		SMC-2
MBR40250	250	0.97	30	40	150	35	500	TO-220-2
MBR40250T	250	0.97	30	40	150	35	500	TO-220-3
MBRB40250TG	250	0.97		40	150			D <sup>2</sup> PAK-3
MBRF40250T	250	0.97	30	40	150	35	500	TO-220 FULLPAK-3
MBRS340	20; 30; 40	0.5	2000	3	80			SMC-2
SS24	20; 40	0.5	400	2	75			SMB-2












**SMALL SIGNAL SWITCHING DIODES**

Single 2-Lead					Package	SOD-123	SOD-323	SOD-523	SOD-923
					Size (mm)	3.7 x 1.6 x 1.17	2.5 x 1.25 x 0.9	1.6 x 0.8 x 0.6	1.0 x 0.6 x 0.39
I <sub>F</sub> (A)	V <sub>R</sub> (V)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	C <sub>T</sub> (pF)	t <sub>rr</sub> (ns)	 Case 425-04	 Case 477-02	 Case 502	 Case 514AA
0.2	70	0.7	0.1	2.5	4		MMDL6050		
	100	1	1	2	6		BAS16H	BAS16XV2	BAS16P2
			5	4	4	MMSD914	MMDL914	NSD914XV2	
		1.2	0.1	3	4			1SS400	
	200	1	0.1	5	50		BAS20H		
	250	1	0.04	5	50		BAS21AH		
			1	5	50	MMSD103	BAS21H		

Single 3-Lead					Package	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-723	SOT-1123	
					Size (mm)	2.9 x 2.8 x 1.15	2.9 x 2.4 x 1.0	2.1 x 2.1 0.9	1.6 x 1.6 x 0.8	1.2 x 1.2 x 0.5	1.0 x 0.6 x 0.37	
I <sub>F</sub> (A)	V <sub>R</sub> (V)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	C <sub>T</sub> (pF)	t <sub>rr</sub> (ns)	 Case 318D-04	 Case 318-08	 Case 419-04	 Case 463	 Case 631AA	 Case 524AA	
0.1	40	1.2	0.1	2	3	M1MA151K		M1MA141K				
	70	1	2.4	1.5	6		BAL99L					
	80	1.2	0.1	2	3	M1MA152K						
0.2	70	1.1	0.1	2.5	4		MMBD6050L					
	75	1	1	2	6						NSD16F3	
		1.25	0.005	2	3000			BAS116L		BAS116T		
	80	1	1	2	6				DA121T			
	100	1	1	2	6			BAS16L	BAS16W	BAS16T	BAS16M3	
			5	4	4			MMBD914L				NSD914F3
	120	1	0.1	5	50			BAS19L				
200	1	0.1	5	50			BAS20L					
250	1	0.1	5	50						BAS21M3		

**SMALL SIGNAL SWITCHING DIODES** (continued)

Complex 3-Lead							Package	SC-59	SOT-23	SC-70, SOT-323	SC-75	SOT-723
							Size (mm)	2.9 x 2.8 x 1.15	2.9 x 2.4 x 1.0	2.1 x 2.1 0.9	1.6 x 1.6 x 0.8	1.2 x 1.2 x 0.5
Configuration	I <sub>F</sub> (A)	V <sub>R</sub> (V)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	C <sub>T</sub> (pF)	t <sub>rr</sub> (ns)	 Case 318D-04	 Case 318-08	 Case 419-04	 Case 463	 Case 631AA	
Common Anode	0.1	35	1	0.1	4	4		MMBD2835L				
		40	1.2	0.1	15	10	M1MA151WA		M1MA141WA			
		75	1	0.1	4	4		MMBD2836L				
		80	1.2	0.1	15	10	M1MA152WA		M1MA142WA			
					3.5	4				DAP222	DAP222M3	
	0.2	70	1	2.5	2	6		BAW56L	BAW56W	BAW56T	BAW56M3	
Common Cathode	0.1	35	1	0.1	4	4		MMBD2837L				
		40	1.2	0.1	2	3	M1MA151WK					
		75	1	0.1	4	4		MMBD2838L				
		80	1.2	0.1	2	3	M1MA152WK		M1MA142WK			
					3.5	4				DAN222		
	0.2	50	1	0.1	2	4		BAV74L				
		70	1.1	0.1	2.5	4		MMBD6100L				
		100	1	2.5	1.5	6		BAV70L	BAV70W	BAV70T	BAV70M3	
250		1	0.1	5	150		BAV23CL					
Dual Common Cathode	0.1	80	1.2	0.1	3.5	4					DAN222M3	
Dual Series	0.2	100	1.1	1	1.5	4		MMBD7000L				
	0.215	70	1	0.005	2	3000		BAV199L				
		100	1	2.4	1.5	6		BAV99L				
									BAV99W			
				2.5	1.5	6			BAV99RW			
	0.225	250	1	1	5	50		BAS21SL				

Complex 5/6-Lead							Package	SC-74	SC-88, SOT-363	SC-88A	SOT-563
							Size (mm)	3.0 x 2.75 x 1.0	2.1 x 2.0 x 0.95	2.1 x 2.0 x 0.95	1.6 x 1.6 x 0.55
Configuration	I <sub>F</sub> (A)	V <sub>R</sub> (V)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	C <sub>T</sub> (pF)	t <sub>rr</sub> (ns)	 Case 318F	 Case 419B-02	 Case 419A-02	 Case 463A	
Dual	0.2	100	1	0.02	2	6				BAS16DXV6	
		250	1	0.1	5	50			BAS21DW5		
Triple	0.1	80	1.2	0.1	2	3		HN2D02FUTW1			
	0.2	250	1.25	0.1	5	50	BAS21TMR6				
Dual Common Anode	0.1	80	1.2	0.1	3.5	4				NSDEMP11XV6	
Dual Common Cathode	0.2	100	0.715	60	1.5	6				BAV70DXV6	

**TUNING DIODES**

Device	V <sub>RRM</sub> Min (V)	C <sub>t1</sub> Min	C <sub>t1</sub> Max	Q Min	Q Typ	Package
SVC272	14	14.07	18.55	150		SC-70FL / MCPH-3
SVC710	15	3.5	4.8			SC-70FL / MCPH-3
SVC203C	16	18.72	25.11	60		SC-59 / CP
SVC230	16	25.1	28.2	100		SC-59 / CP
SVC236	16	35.14	41.98	70		SC-59 / CP
SVC270	16	25.1	28.2	100		SC-70FL / MCPH-3
SVC276	16	25.5	33.61	100		SC-70FL / MCPH-3
SVC704	16	3.4	4.6			SC-70FL / MCPH-3

**ZENER DIODES**

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMSZ4678	1.8	0.5	SOD-123
MMSZ4679	2	0.5	SOD-123
MMSZ4680	2.2	0.5	SOD-123
MMSZ4680E	2.2	0.5	SOD-123
BZX84C2V4E	2.4	0.225	SOT-23-3
BZX84C2V4L	2.4	0.225	SOT-23-3
MM3Z2V4	2.4	0.2	SOD-323
MM5Z2V4	2.4	0.2	SOD-523-2
MM5Z2V4S	2.4	0.2	SOD-523-2
MMBZ5221B	2.4	0.225	SOT-23-3
MMSZ2V4	2.4	0.5	SOD-123
MMSZ4681	2.4	0.5	SOD-123
NZ9F2V4	2.4	0.2	SOD-923-2
NZ9F2V4S	2.4	0.2	SOD-923-2
MMBZ5222B	2.5	0.225	SOT-23-3
BZX84C2V7E	2.7	0.225	SOT-23-3
BZX84C2V7L	2.7	0.225	SOT-23-3
MM3Z2V7	2.7	0.2	SOD-323
MM5Z2V7	2.7	0.2	SOD-523-2
MMBZ5223B	2.7	0.225	SOT-23-3
MMSZ2V7	2.7	0.5	SOD-123
MMSZ2V7E	2.7	0.5	SOD-123
MMSZ4682	2.7	0.5	SOD-123
NZ9F2V7	2.7	0.2	SOD-923-2
NZ9F2V7S	2.7	0.2	SOD-923-2
BZX84C3V0E	3	0.225	SOT-23-3
BZX84C3V0L	3	0.225	SOT-23-3
MM3Z3V0	3	0.2	SOD-323
MM5Z3V0	3	0.2	SOD-523-2
MMBZ5225B	3	0.225	SOT-23-3
MMBZ5225BL	3	0.225	SOT-23-3
MMSZ3V0	3	0.5	SOD-123
MMSZ4683	3	0.5	SOD-123
NZ9F3V0	3	0.2	SOD-923-2

**ZENER DIODES** (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
NZ9F3V0S	3	0.2	SOD-923-2
1N5913B	3.3	3	Axial Lead-2
1SMA5913B	3.3	1.5	SMA-2
1SMB5913B	3.3	3	SMB-2
BZX84C3V3E	3.3	0.225	SOT-23-3
BZX84C3V3L	3.3	0.225	SOT-23-3
MM3Z3V3	3.3	0.2	SOD-323
MM3Z3V3S	3.3	0.2	SOD-323
MM5Z3V3	3.3	0.2	SOD-523-2
MMBZ5226B	3.3	0.225	SOT-23-3
MMSZ3V3	3.3	0.5	SOD-123
MMSZ4684	3.3	0.5	SOD-123
NZ9F3V3	3.3	0.2	SOD-923-2
NZ9F3V3S	3.3	0.2	SOD-923-2
SZBZX84C3V3LT1	3.3	0.225	SOT-23-3
1SMA5914B	3.6	1.5	SMA-2
1SMB5914B	3.6	3	SMB-2
BZX84C3V6E	3.6	0.225	SOT-23-3
BZX84C3V6L	3.6	0.225	SOT-23-3
MM3Z3V6	3.6	0.2	SOD-323
MM5Z3V6	3.6	0.2	SOD-523-2
MMBZ5227B	3.6	0.225	SOT-23-3
MMSZ3V6	3.6	0.5	SOD-123
MMSZ4685	3.6	0.5	SOD-123
NZ9F3V6	3.6	0.2	SOD-923-2
NZ9F3V6S	3.6	0.2	SOD-923-2
1N5335B	3.9	5	Surmetic 40
1SMA5915B	3.9	1.5	SMA-2
1SMB5915B	3.9	3	SMB-2
BZX84C3V9E	3.9	0.225	SOT-23-3
BZX84C3V9L	3.9	0.225	SOT-23-3
MM3Z3V9	3.9	0.2	SOD-323
MM3Z3V9S	3.9	0.2	SOD-323
MMBZ5228B	3.9	0.225	SOT-23-3
MMSZ3V9	3.9	0.5	SOD-123
MMSZ4686	3.9	0.5	SOD-123
NZ9F3V9	3.9	0.2	SOD-923-2
NZ9F3V9S	3.9	0.2	SOD-923-2
1SMA5916B	4.3	1.5	SMA-2
1SMB5916B	4.3	3	SMB-2
BZX84C4V3E	4.3	0.225	SOT-23-3
BZX84C4V3L	4.3	0.225	SOT-23-3
MM3Z4V3	4.3	0.2	SOD-323
MM3Z4V3S	4.3	0.2	SOD-323
MM5Z4V3	4.3	0.2	SOD-523-2
MMBZ5229B	4.3	0.225	SOT-23-3

## ON Semiconductor Selector Guide – Diodes and Rectifiers

### ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMSZ4687	4.3	0.5	SOD-123
MMSZ4V3	4.3	0.5	SOD-123
NZ9F4V3	4.3	0.2	SOD-923-2
NZ9F4V3S	4.3	0.2	SOD-923-2
1N5917B	4.7	3	Axial Lead-2
1SMA5917B	4.7	1.5	SMA-2
1SMB5917B	4.7	3	SMB-2
BZX84C4V7E	4.7	0.225	SOT-23-3
BZX84C4V7L	4.7	0.225	SOT-23-3
MM3Z4V7	4.7	0.2	SOD-323
MM3Z4V7S	4.7	0.2	SOD-323
MM5Z4V7	4.7	0.2	SOD-523-2
MM5Z4V7S	4.7	0.2	SOD-523-2
MMBZ5230B	4.7	0.225	SOT-23-3
MMSZ4688	4.7	0.5	SOD-123
MMSZ4V7	4.7	0.5	SOD-123
NZ9F4V7	4.7	0.2	SOD-923-2
NZ9F4V7S	4.7	0.2	SOD-923-2
SMF5.0A	5	0.385	SOD123-2
1SMA5918B	5.1	1.5	SMA-2
1SMB5918B	5.1	3	SMB-2
BZX84B5V1	5.1	0.225	SOT-23-3
BZX84C5V1E	5.1	0.225	SOT-23-3
BZX84C5V1L	5.1	0.225	SOT-23-3
MM3Z5V1	5.1	0.2	SOD-323
MM3Z5V1S	5.1	0.2	SOD-323
MM5Z5V1	5.1	0.2	SOD-523-2
MM5Z5V1S	5.1	0.2	SOD-523-2
MMBZ5231B	5.1	0.225	SOT-23-3
MMBZ5231BL	5.1	0.225	SOT-23-3
MMBZ5231E	5.1	0.225	SOT-23-3
MMSZ4689	5.1	0.5	SOD-123
MMSZ4689E	5.1	0.5	SOD-123
MMSZ5V1	5.1	0.5	SOD-123
NZ9F5V1	5.1	0.2	SOD-923-2
NZ9F5V1S	5.1	0.2	SOD-923-2
1N5919B	5.6	3	Axial Lead-2
1SMA5919B	5.6	1.5	SMA-2
1SMB5919B	5.6	3	SMB-2
BZX84B5V6	5.6	0.225	SOT-23-3
BZX84C5V6E	5.6	0.225	SOT-23-3
BZX84C5V6L	5.6	0.225	SOT-23-3
MM3Z5V6	5.6	0.2	SOD-323
MM3Z5V6S	5.6	0.2	SOD-323
MM5Z5V6	5.6	0.2	SOD-523-2
MM5Z5V6S	5.6	0.2	SOD-523-2

## ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMBZ5232B	5.6	0.225	SOT-23-3
MMBZ5V6A	5.6	0.225	SOT-23-3
MMSZ4690	5.6	0.5	SOD-123
MMSZ4690E	5.6	0.5	SOD-123
MMSZ5232E	5.6	0.5	SOD-123
MMSZ5V6	5.6	0.5	SOD-123
NSZ5V6V2	5.6	0.2	SOD-523-2
NZ23C5V6	5.6	0.225	SOT-23-3
NZ9F5V6	5.6	0.2	SOD-923-2
NZ9F5V6S	5.6	0.2	SOD-923-2
NZQA5V6A	5.6	0.38	SOT-553
MMBZ5233B	6	0.225	SOT-23-3
1N5920B	6.2	3	Axial Lead-2
1PMT5920B	6.2	3.2	POWERMITE-2
1SMA5920B	6.2	1.5	SMA-2
1SMB5920B	6.2	3	SMB-2
3EZ6.2D5	6.2	3	Axial Lead-2
BZX84B6V2	6.2	0.225	SOT-23-3
BZX84C6V2E	6.2	0.225	SOT-23-3
BZX84C6V2L	6.2	0.225	SOT-23-3
MM3Z6V2	6.2	0.2	SOD-323
MM3Z6V2S	6.2	0.2	SOD-323
MM5Z6V2	6.2	0.2	SOD-523-2
MM5Z6V2S	6.2	0.2	SOD-523-2
MMBZ5234B	6.2	0.225	SOT-23-3
MMBZ6V2A	6.2	0.225	SOT-23-3
MMSZ4691	6.2	0.5	SOD-123
MMSZ6V2	6.2	0.5	SOD-123
NZ9F6V2	6.2	0.2	SOD-923-2
NZ9F6V2S	6.2	0.2	SOD-923-2
NZQA6V2	6.2	0.3	SOT-553
SMF5920	6.2	3.2	SOD123-2
MSQA6V1W5	6.6	0.385	SC-88A-5 / SC-70-5 / SOT-323-5
1N5921B	6.8	3	Axial Lead-2
1PMT5921B	6.8	3.2	POWERMITE-2
1SMA5921B	6.8	1.5	SMA-2
1SMB5921B	6.8	3	SMB-2
BZX84B6V8	6.8	0.225	SOT-23-3
BZX84C6V8E	6.8	0.225	SOT-23-3
BZX84C6V8L	6.8	0.225	SOT-23-3
DF6A6.8	6.8	0.385	SC-88-6 / SC-70-6 / SOT-363-6
MM3Z6V8	6.8	0.2	SOD-323
MM3Z6V8S	6.8	0.2	SOD-323
MM5Z6V8	6.8	0.2	SOD-523-2
MM5Z6V8S	6.8	0.2	SOD-523-2
MMBZ5235B	6.8	0.225	SOT-23-3

## ON Semiconductor Selector Guide – Diodes and Rectifiers

### ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMSZ4692	6.8	0.5	SOD-123
MMSZ5235E	6.8	0.5	SOD-123
MMSZ6V8	6.8	0.5	SOD-123
NZ9F6V8	6.8	0.2	SOD-923-2
NZ9F6V8S	6.8	0.2	SOD-923-2
NZQA6V8	6.8	0.3	SOT-553
NZQA6V8A	6.8	0.38	SOT-553
1SMA5922B	7.5	1.5	SMA-2
1SMB5922B	7.5	3	SMB-2
BZX84B7V5	7.5	0.225	SOT-23-3
BZX84C7V5E	7.5	0.225	SOT-23-3
BZX84C7V5L	7.5	0.225	SOT-23-3
MM3Z7V5	7.5	0.2	SOD-323
MM3Z7V5S	7.5	0.2	SOD-323
MM5Z7V5	7.5	0.2	SOD-523-2
MMBZ5236B	7.5	0.225	SOT-23-3
MMSZ4693	7.5	0.5	SOD-123
MMSZ7V5	7.5	0.5	SOD-123
NZ9F7V5	7.5	0.2	SOD-923-2
NZ9F7V5S	7.5	0.2	SOD-923-2
SZBZX84C7V5	7.5	0.225	SOT-23-3
1N5923B	8.2	3	Axial Lead-2
1SMA5923B	8.2	1.5	SMA-2
1SMB5923B	8.2	3	SMB-2
BZX84B8V2	8.2	0.225	SOT-23-3
BZX84C8V2E	8.2	0.225	SOT-23-3
BZX84C8V2L	8.2	0.225	SOT-23-3
MM3Z8V2	8.2	0.2	SOD-323
MM3Z8V2S	8.2	0.2	SOD-323
MM5Z8V2	8.2	0.2	SOD-523-2
MM5Z8V2S	8.2	0.2	SOD-523-2
MMBZ5237B	8.2	0.225	SOT-23-3
MMSZ4694	8.2	0.5	SOD-123
MMSZ5237E	8.2	0.5	SOD-123
MMSZ8V2	8.2	0.5	SOD-123
MMSZ8V2E	8.2	0.5	SOD-123
NZ9F8V2	8.2	0.2	SOD-923-2
NZ9F8V2S	8.2	0.2	SOD-923-2
MMBZ5238B	8.7	0.225	SOT-23-3
1N5924B	9.1	3	Axial Lead-2
1PMT5924B	9.1	3.2	POWERMITE-2
1SMA5924B	9.1	1.5	SMA-2
1SMB5924B	9.1	3	SMB-2
BZX84B9V1	9.1	0.225	SOT-23-3
BZX84C9V1E	9.1	0.225	SOT-23-3
BZX84C9V1L	9.1	0.225	SOT-23-3

**ZENER DIODES** (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MM3Z9V1	9.1	0.2	SOD-323
MM3Z9V1S	9.1	0.2	SOD-323
MM5Z9V1	9.1	0.2	SOD-523-2
MM5Z9V1S	9.1	0.2	SOD-523-2
MMBZ5239B	9.1	0.225	SOT-23-3
MMBZ5239E	9.1	0.225	SOT-23-3
MMBZ9V1A	9.1	0.225	SOT-23-3
MMSZ4696	9.1	0.5	SOD-123
MMSZ9V1	9.1	0.5	SOD-123
NZ9F9V1	9.1	0.2	SOD-923-2
NZ9F9V1S	9.1	0.2	SOD-923-2
1N5925B	10	3	Axial Lead-2
1SMA5925B	10	1.5	SMA-2
1SMB5925B	10	3	SMB-2
BZX84C10E	10	0.225	SOT-23-3
BZX84C10L	10	0.225	SOT-23-3
MM3Z10V	10	0.2	SOD-323
MM3Z10VS	10	0.2	SOD-323
MM5Z10V	10	0.2	SOD-523-2
MMBZ5240B	10	0.225	SOT-23-3
MMBZ5240E	10	0.225	SOT-23-3
MMSZ10	10	0.5	SOD-123
MMSZ4697	10	0.5	SOD-123
NZ9F10V	10	0.2	SOD-923-2
NZ9F10VS	10	0.2	SOD-923-2
1SMA5926B	11	1.5	SMA-2
1SMB5926B	11	3	SMB-2
BZX84C11E	11	0.225	SOT-23-3
BZX84C11L	11	0.225	SOT-23-3
MM3Z11V	11	0.2	SOD-323
MMBZ5241B	11	0.225	SOT-23-3
MMSZ11	11	0.5	SOD-123
MMSZ4698	11	0.5	SOD-123
NZ9F11V	11	0.2	SOD-923-2
NZ9F11VS	11	0.2	SOD-923-2
1N5927B	12	3	Axial Lead-2
1PMT5927B	12	3.2	POWERMITE-2
1SMA5927B	12	1.5	SMA-2
1SMB5927B	12	3	SMB-2
BZX84B12	12	0.225	SOT-23-3
BZX84C12E	12	0.225	SOT-23-3
BZX84C12L	12	0.225	SOT-23-3
MM3Z12V	12	0.2	SOD-323
MM3Z12VS	12	0.2	SOD-323
MM5Z12V	12	0.2	SOD-523-2
MMBZ5242B	12	0.225	SOT-23-3



## ON Semiconductor Selector Guide – Diodes and Rectifiers

### ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMBZ5242E	12	0.225	SOT-23-3
MMSZ12	12	0.5	SOD-123
MMSZ4699	12	0.5	SOD-123
MMSZ5242E	12	225	SOD-123
NZ9F12V	12	0.2	SOD-923-2
NZ9F12VS	12	0.2	SOD-923-2
1SMA5928B	13	1.5	SMA-2
1SMB5928B	13	3	SMB-2
3EZ13D5	13	3	Axial Lead-2
BZX84C13E	13	0.225	SOT-23-3
BZX84C13L	13	0.225	SOT-23-3
MM3Z13V	13	0.2	SOD-323
MMBZ5243B	13	0.225	SOT-23-3
MMSZ13	13	0.5	SOD-123
MMSZ13E	13	0.5	SOD-123
MMSZ4700	13	0.5	SOD-123
NZ9F13V	13	0.2	SOD-923-2
NZ9F13VS	13	0.2	SOD-923-2
MMBZ5244B	14	0.225	SOT-23-3
MMSZ4701	14	0.5	SOD-123
MMSZ4701E	14	225	SOD-123
MMSZ5244E	14	225	SOD-123
1N5929B	15	3	Axial Lead-2
1N5929BRNG	15	3	AXIAL LEAD
1PMT5929B	15	3.2	POWERMITE-2
1SMA5929B	15	1.5	SMA-2
1SMB5929B	15	3	SMB-2
BZG03C15	15	1.5	SMA-2
BZX84B15	15	0.225	SOT-23-3
BZX84C15E	15	0.225	SOT-23-3
BZX84C15L	15	0.225	SOT-23-3
MM3Z15V	15	0.2	SOD-323
MM3Z15VS	15	0.2	SOD-323
MM5Z15V	15	0.2	SOD-523-2
MMBZ15VD	15	0.225	SOT-23-3
MMBZ5245B	15	0.225	SOT-23-3
MMBZ5245E	15	0.225	SOT-23-3
MMSZ15	15	0.5	SOD-123
MMSZ15E	15	0.5	SOD-123
MMSZ4702	15	0.5	SOD-123
MMSZ5245E	15	225	SOD-123
NZ9F15V	15	0.2	SOD-923-2
NZ9F15VS	15	0.2	SOD-923-2
1SMA5930B	16	1.5	SMA-2
1SMB5930B	16	3	SMB-2
BZX84B16	16	0.225	SOT-23-3

## ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
BZX84C16E	16	0.225	SOT-23-3
BZX84C16L	16	0.225	SOT-23-3
MM3Z16V	16	0.2	SOD-323
MM3Z16VS	16	0.2	SOD-323
MM5Z16V	16	0.2	SOD-523-2
MMBZ5246B	16	0.225	SOT-23-3
MMSZ16	16	0.5	SOD-123
MMSZ4703	16	0.5	SOD-123
MMSZ5246E	16	225	SOD-123
NZ9F16V	16	0.2	SOD-923-2
NZ9F16VS	16	0.2	SOD-923-2
MMBZ5247B	17	0.225	SOT-23-3
MMSZ4704	17	0.5	SOD-123
1N5931B	18	3	Axial Lead-2
1SMA5931B	18	1.5	SMA-2
1SMB5931B	18	3	SMB-2
3EZ18D11	18	3	Axial Lead-2
BZX84B18	18	0.225	SOT-23-3
BZX84C18E	18	0.225	SOT-23-3
BZX84C18L	18	0.225	SOT-23-3
MM3Z18V	18	0.2	SOD-323
MM3Z18VS	18	0.2	SOD-323
MM5Z18V	18	0.2	SOD-523-2
MMBZ5248B	18	0.225	SOT-23-3
MMBZ5248E	18	0.225	SOT-23-3
MMSZ18	18	0.5	SOD-123
MMSZ18E	18	225	SOD-123
MMSZ4705	18	0.5	SOD-123
MMSZ5248E	18	0.5	SOD-123
NZ9F18V	18	0.2	SOD-923-2
NZ9F18VS	18	0.2	SOD-923-2
MMBZ5249B	19	0.225	SOT-23-3
MMSZ4706	19	0.5	SOD-123
1N5932B	20	3	Axial Lead-2
1N5932BRNG	20	3	AXIAL LEAD
1SMA5932B	20	1.5	SMA-2
1SMB5932B	20	3	SMB-2
BZX84C20E	20	0.225	SOT-23-3
BZX84C20L	20	0.225	SOT-23-3
MM3Z20V	20	0.2	SOD-323
MM5Z20V	20	0.2	SOD-523-2
MMBZ5250B	20	0.225	SOT-23-3
MMBZ5250E	20	0.225	SOT-23-3
MMSZ20	20	0.5	SOD-123
MMSZ4707	20	0.5	SOD-123
MMSZ5250E	20	0.5	SOD-123

## ON Semiconductor Selector Guide – Diodes and Rectifiers

### ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
NZ9F20V	20	0.2	SOD-923-2
1PMT5933B	22	3.2	POWERMITE-2
1SMA5933B	22	1.5	SMA-2
1SMB5933B	22	3	SMB-2
BZX84B22	22	0.225	SOT-23-3
BZX84C22E	22	0.225	SOT-23-3
BZX84C22L	22	0.225	SOT-23-3
MM3Z22V	22	0.2	SOD-323
MM3Z22VS	22	0.2	SOD-323
MMBZ5251B	22	0.225	SOT-23-3
MMSZ22	22	0.5	SOD-123
MMSZ4708	22	0.5	SOD-123
MMSZ5251E	22	0.5	SOD-123
NZ9F22V	22	0.2	SOD-923-2
1N5934B	24	3	Axial Lead-2
1N5934BRNG	24	3	AXIAL LEAD
1SMA5934B	24	1.5	SMA-2
1SMB5934B	24	3	SMB-2
BZX84B24	24	0.255	SOT-23-3
BZX84C24E	24	0.225	SOT-23-3
BZX84C24L	24	0.225	SOT-23-3
MM3Z24V	24	0.2	SOD-323
MM3Z24VS	24	0.2	SOD-323
MM5Z24V	24	0.2	SOD-523-2
MMBZ5252B	24	0.225	SOT-23-3
MMBZ5252E	24	0.225	SOT-23-3
MMSZ24	24	0.5	SOD-123
MMSZ4709	24	0.5	SOD-123
MMSZ5252E	24	225	SOD-123
NZ9F24V	24	0.2	SOD-923-2
MMBZ5253B	25	0.225	SOT-23-3
MMBZ5253E	25	0.225	SOT-23-3
MMSZ4710	25	0.5	SOD-123
MMSZ5253E	25	0.5	SOD-123
1N5935B	27	3	Axial Lead-2
1PMT5935B	27	3.2	POWERMITE-2
1SMA5935B	27	1.5	SMA-2
1SMB5935B	27	3	SMB-2
BZX84C27E	27	0.225	SOT-23-3
BZX84C27L	27	0.225	SOT-23-3
MM3Z27V	27	0.2	SOD-323
MM3Z27VS	27	0.2	SOD-323
MM5Z27V	27	0.2	SOD-523-2
MMBZ27VC	27	0.225	SOT-23-3
MMBZ5254B	27	0.225	SOT-23-3
MMSZ27	27	0.5	SOD-123

## ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MMSZ27E	27	0.5	SOD-123
MMSZ4711	27	0.5	SOD-123
MMSZ5254E	27	225	SOD-123
MMBZ5255B	28	0.225	SOT-23-3
MMSZ5255E	28	225	SOD-123
1SMA5936B	30	1.5	SMA-2
1SMB5936B	30	3	SMB-2
BZX84C30E	30	0.225	SOT-23-3
BZX84C30L	30	0.225	SOT-23-3
MM3Z30V	30	0.2	SOD-323
MMBZ5256B	30	0.225	SOT-23-3
MMBZ5256E	30	0.225	SOT-23-3
MMSZ30	30	0.5	SOD-123
MMSZ4713	30	0.5	SOD-123
MMSZ5256E	30	225	SOD-123
1N5937B	33	3	Axial Lead-2
1SMA5937B	33	1.5	SMA-2
1SMB5937B	33	3	SMB-2
BZX84C33E	33	0.225	SOT-23-3
BZX84C33L	33	0.225	SOT-23-3
MM3Z33V	33	0.2	SOD-323
MM3Z33VS	33	0.2	SOD-323
MM5Z33V	33	0.2	SOD-523-2
MMBZ5257B	33	0.225	SOT-23-3
MMBZ5257E	33	0.225	SOT-23-3
MMSZ33	33	0.5	SOD-123
MMSZ33E	33	0.5	SOD-123
MMSZ4714	33	0.5	SOD-123
MMSZ5257E	33	225	SOD-123
1N5938B	36	3	Axial Lead-2
1SMA5938B	36	1.5	SMA-2
1SMB5938B	36	3	SMB-2
BZX84C36E	36	0.225	SOT-23-3
BZX84C36L	36	0.225	SOT-23-3
MM3Z36V	36	0.2	SOD-323
MM3Z36VS	36	0.2	SOD-323
MM5Z36V	36	0.2	SOD-523-2
MMBZ5258B	36	0.225	SOT-23-3
MMBZ5258E	36	0.225	SOT-23-3
MMSZ36	36	0.5	SOD-123
MMSZ4715	36	0.5	SOD-123
MMSZ5258E	36	0.5	SOD-123
1SMA5939B	39	1.5	SMA-2
1SMB5939B	39	3	SMB-2
BZX84C39E	39	0.225	SOT-23-3
BZX84C39L	39	0.225	SOT-23-3

## ON Semiconductor Selector Guide – Diodes and Rectifiers

### ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
MM3Z39V	39	0.2	SOD-323
MMBZ5259B	39	0.225	SOT-23-3
MMBZ5259BL	39	0.225	SOT-23-3
MMSZ39	39	0.5	SOD-123
1N5940B	43	3	Axial Lead-2
1SMA5940B	43	1.5	SMA-2
1SMB5940B	43	3	SMB-2
BZX84C43E	43	0.225	SOT-23-3
BZX84C43L	43	0.225	SOT-23-3
MM3Z43V	43	0.2	SOD-323
MMBZ5260B	43	0.225	SOT-23-3
MMBZ5260E	43	0.225	SOT-23-3
MMSZ43	43	0.5	SOD-123
MMSZ4717	43	0.5	SOD-123
1N5941B	47	3	Axial Lead-2
1PMT5941B	47	3.2	POWERMITE-2
1SMA5941B	47	1.5	SMA-2
1SMB5941B	47	3	SMB-2
BZX84C47E	47	0.225	SOT-23-3
BZX84C47L	47	0.225	SOT-23-3
MM5Z47V	47	0.2	SOD-523-2
MMBZ5261B	47	0.225	SOT-23-3
MMBZ5261E	47	0.225	SOT-23-3
MMSZ47	47	0.5	SOD-123
1N5942B	51	3	Axial Lead-2
1SMA5942B	51	1.5	SMA-2
1SMB5942B	51	3	SMB-2
BZX84C51E	51	0.225	SOT-23-3
BZX84C51L	51	0.225	SOT-23-3
MMBZ5262E	51	0.225	SOT-23-3
MMSZ51	51	0.5	SOD-123
1SMA5943B	56	1.5	SMA-2
1SMB5943B	56	3	SMB-2
BZX84C56E	56	0.225	SOT-23-3
BZX84C56L	56	0.225	SOT-23-3
MMBZ5263B	56	0.225	SOT-23-3
MMBZ5263BL	56	0.225	SOT-23-3
MMBZ5263E	56	0.225	SOT-23-3
MMSZ56	56	0.5	SOD-123
MMBZ5264B	60	0.225	SOT-23-3
1SMB5944B	62	3	SMB-2
BZX84C62E	62	0.225	SOT-23-3
BZX84C62L	62	0.225	SOT-23-3
1SMA5945B	68	1.5	SMA-2
1SMB5945B	68	3	SMB-2
BZX84C68E	68	0.225	SOT-23-3

## ZENER DIODES (continued)

Device	V <sub>Z</sub> Typ (V)	P Max (W)	Package
BZX84C68L	68	0.225	SOT-23-3
1N5946B	75	3	Axial Lead-2
1SMB5946B	75	3	SMB-2
BZX84C75E	75	0.225	SOT-23-3
BZX84C75L	75	0.225	SOT-23-3
1SMB5947B	82	3	SMB-2
MMBZ5268B	82	0.225	SOT-23-3
1N5948B	91	3	Axial Lead-2
1SMB5948B	91	3	SMB-2
MMBZ5270B	91	0.225	SOT-23-3
1SMB5949B	100	3	SMB-2
1SMB5951B	120	3	SMB-2
1N5952B	130	3	Axial Lead-2
1SMB5952B	130	3	SMB-2
1N5953B	150	3	Axial Lead-2
1SMB5953B	150	3	SMB-2
BZG03C150	150	1.5	SMA-2
1SMB5954B	160	3	SMB-2
1N5955B	180	3	Axial Lead-2
1SMB5955B	180	3	SMB-2
1N5956B	200	3	Axial Lead-2
1SMB5956B	200	3	SMB-2
MMSZ52	2.4 ; 2.5; 2.7; 3; 3.3; 3.6; 3.9; 4.3; 4.7; 5.1; 5.6; 6; 6.2; 6.8; 7.5; 8.2; 8.7; 9.1; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 22; 24; 25; 27; 28; 30; 33; 36; 39; 43; 47; 51; 56; 60; 62; 68; 75; 82; 91; 110	0.5	SOD-123
SZMMSZ52	2.4 ; 2.5; 2.7; 3; 3.3; 3.6; 3.9; 4.3; 4.7; 5.1; 5.6; 6; 6.2; 6.8; 7.5; 8.2; 8.7; 9.1; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 22; 24; 27; 28; 30; 33; 36; 39; 43; 47; 51; 62; 68; 75; 91	0.5	SOD-123
1N53	3.3 ; 3.6; 4.3; 4.7 ; 5.1; 5.6; 6; 6.2; 6.8; 7.5; 8.2; 8.7; 9.1; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 22; 24; 25; 27; 28; 30; 33; 36; 39; 43; 47; 51; 56; 60; 62; 68; 75; 82; 91; 100; 120; 130; 150; 160; 180; 190; 200	5	Surmetic 40
NSQA6V8A	6.8 ; 12	0.3; 0.38	SC-88A-5 / SC-70-5 / SOT-323-5
BZX84B27			SOT-23-3
MM5Z13V			SOD-523-2
MM5Z30V			SOD-523-2



# Drivers

---

## Table of Contents

	<b>Page</b>
Integrated Driver and MOSFET .....	136
LCD Drivers .....	136
LED Drivers .....	138
Load/Relay Drivers .....	141
MOSFET/IGBT Drivers .....	142
Motor Drivers .....	144



**INTEGRATED DRIVER AND MOSFET**

Device	V <sub>CIN</sub> (V) Typ	V <sub>IN</sub> (V) Typ	PWM Level	I <sub>O</sub> (A) Max	f <sub>max</sub> (MHz) Max	Package
NCP5338	5	12	5V tri-state	40	1.5	QFN-40
NCP5369	5	12	5V tri-state	40	1	QFN-40
NCP81081	5	12		35	1	QFN-40

**LCD DRIVERS**

Device	Segments	Key Detection	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	V <sub>LCD</sub> Min (V)	V <sub>LCD</sub> Max (V)	V <sub>I</sub> for Interface (V)	Output Ports	PWM Outputs	Character Generator	Reset	Contrast Adjustment	Control Command	Package
LC75878W	1/10 Duty: 730; 1/8 Duty: 600; 1/9 Duty: 666		2.7	6	4.5	11	VDD	4				Yes		SPQFP-100/ SQFP-100
LC75810E	1/10 Duty: Dot matrix (5x9)x15+78; 1/8 Duty: Dot matrix (5x7)x16+80; 1/9 Duty: Dot matrix (5x8)x15+79		2.7	6	4.5	10	VDD			ROM 240; RAM 16		Yes	Yes	PQFP-100/ QIP-100E
LC75810T	1/10 Duty: Dot matrix (5x9)x15+78; 1/8 Duty: Dot matrix (5x7)x16+80; 1/9 Duty: Dot matrix (5x8)x15+79		2.7	6	4.5	10	VDD			ROM 240; RAM 16		Yes	Yes	TQFP-100
LC75818PT	1/10 Duty: Dot matrix (5x9)x16+80; 1/8 Duty: Dot matrix (5x7)x16+80; 1/9 Duty: Dot matrix (5x8)x16+80	30	2.7	3.6	4.5	10	3.3 or 5.0	4		ROM 240; RAM 16	Yes	Yes	Yes	TQFP-120
LC75832E	1/2 Duty: 108 (100); Static: 54 (50)		2.7	6	2.7	6	VDD	4						PQFP-64/ QIP-64E
LC75832W	1/2 Duty: 108 (100); Static: 54 (50)		2.7	6	2.7	6	VDD	4						SPQFP-64/ SQFP-64
LC75843UGA	1/2 Duty: 54 (46); 1/3 Duty: 78 (66); 1/4 Duty: 100 (84); Static: 28 (24)		4.5	6.3	VDD	VDD	3.3 or 5.0	4	3					TSSOP-36
LC75805PE	1/2 Duty: 74; 1/3 Duty: 108; 1/4 Duty: 140; Static: 38		4.5	5.5	VDD	VDD	5	48	7					PQFP-100/ QIP-100E
LC75852E	1/2 Duty: 86 (78) to 90 (82)	20 to 30	4.5	6	VDD	VDD	VDD	4						PQFP-64/ QIP-64E
LC75852W	1/2 Duty: 86 (78) to 90 (82)	20 to 30	4.5	6	VDD	VDD	VDD	4						SPQFP-64/ SQFP-64
LC75833E	1/3 Duty: 105 (81)		2.7	6	2.7	6	VDD	8						PQFP-48/ QIP-48E
LC75833W	1/3 Duty: 105 (81)		2.7	6	2.7	6	VDD	8						SPQFP-48/ SQFP-48

LCD DRIVERS (continued)

Device	Segments	Key Detection	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	V <sub>LCD</sub> Min (V)	V <sub>LCD</sub> Max (V)	V <sub>I</sub> for Interface (V)	Output Ports	PWM Outputs	Character Generator	Reset	Contrast Adjustment	Control Command	Package
LC75857W	1/3 Duty: 117 (105) to 126 (114); 1/4 Duty: 152 (136) to 164 (148)	15 to 30	2.7	6	2.7	6	VDD	4			Yes			SPQFP-64/ SQFP-64
LC75829PE	1/3 Duty: 159 (147); 1/4 Duty: 208 (192)		4.5	6	VDD	VDD	3.3 or 5.0	4						PQFP-64/ QIP-64E
LC75829PW	1/3 Duty: 159 (147); 1/4 Duty: 208 (192)		4.5	6	VDD	VDD	3.3 or 5.0	4						SPQFP-64/ SQFP-64
LC75839PW	1/3 Duty: 159 (147); 1/4 Duty: 208 (192)		4.5	6	VDD	VDD	3.3 or 5.0	4	3					SPQFP-64/ SQFP-64
LC450029PKB	1/3 Duty: 159; 1/4 Duty: 208		4.5	6	VDD	VDD	VDD							NA-Wafer
LC75886PW	1/3 Duty: 165 (150) to 171 (156); 1/4 Duty: 216 (196) to 224 (204)	20 to 30	4.5	6	VDD	VDD	3.3 or 5.0	5			Yes			SPQFP-80/ SQFP-80
LC75879PT	1/3 Duty: 207 (183); 1/4 Duty: 272 (240)		4.5	6.3	VDD	VDD	3.3 or 5.0	8	3			Yes		TQFP-80/ TQFP-80J
LC75806PT	1/3 Duty: 225 (198) to 231 (204); 1/4 Duty: 296 (260) to 304 (268)	20 to 30	4.5	6	VDD	VDD	3.3 or 5.0	9			Yes	Yes		TQFP-100
LC75813E	1/3 Duty: 261 (237); 1/4 Duty: 344 (312)		2.7	6	2.7	6	VDD	8						PQFP-100/ QIP-100E
LC75813T	1/3 Duty: 261 (237); 1/4 Duty: 344 (312)		2.7	6	2.7	6	VDD	8						TQFP-100
LC75809PT	1/3 Duty: 267 (231); 1/4 Duty: 352 (304)		4.5	6.3	VDD	VDD	3.3 or 5.0	12	6			Yes		TQFP-100
LC75847T	1/3 Duty: 318 (294); 1/4 Duty: 420 (388)		2.7	6	2.7	6	VDD	8				Yes		TQFP-120
LC75897PW	1/3 Duty: 387 (363); 1/4 Duty: 512 (480)		2.7	6	2.7	6	VDD	8	3			Yes		SPQFP-144/ SQFP-144
LC75863W	1/3 Duty: 69 (57) to 75 (63)	20 to 30	4.5	6	VDD-0.5	6	VDD	4			Yes			SPQFP-48/ SQFP-48
LC75836W	1/4 Duty: 140 (124)		4.5	6	VDD	VDD	3.3 or 5.0	4						SPQFP-48/ SQFP-48
LC75890W	1/4 Duty: 148 (100); Static: 37 (25)		2.7	3.6	2.7	5.5	VDD	12	3					SPQFP-48/ SQFP-48

## ON Semiconductor Selector Guide – Drivers

### LCD DRIVERS (continued)

Device	Segments	Key Detection	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	V <sub>LCD</sub> Min (V)	V <sub>LCD</sub> Max (V)	V <sub>I</sub> for Interface (V)	Output Ports	PWM Outputs	Character Generator	Reset	Contrast Adjustment	Control Command	Package
LC75814V	1/4 Duty: 64 (48)		2.7	6	2.7	6	VDD	4						SSOP-30
LC75844M	1/4 Duty: 88 (72)		2.7	6	2.7	6	VDD	4						SOIC-36 W/ MFP-36SDJ
LC75812PT	1/8 Duty: Dot matrix (5x7)x13+65; 1/9 Duty: Dot matrix (5x8)x12+64	35 (20)	2.7	3.6	4.5	10	3.3 or 5.0	3	3	ROM 240; RAM 16	Yes	Yes	Yes	TQFP-100
LC75700T		30 (15)	2.7	5.5			VDD	4						TSSOP-20
LC79401KNE			2.7	5.5	12	32								PQFP-100/ QIP-100E
LC79430KNE			2.7	5.5	12	32								PQFP-100/ QIP-100E
LC79431KNE			2.7	5.5	12	32								PQFP-100/ QIP-100E
LC79451KB			1.6	3.6	-15	15					Yes			

### LED DRIVERS

Device	Topology	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	V <sub>O</sub> Max (V)	I <sub>O</sub> Max (mA)	f <sub>sw</sub> Typ (kHz)	LEDs in Series, Max #	LEDs in Parallel, Max #	Package
CAT3224	Charge Pump	2.5	5.5	5.5	4000	800	1	2	TQFN-16
CAT3604A	Charge Pump	3	5.5	6	30	1000	1	4	TQFN-16
CAT3604V	Charge Pump	2.5	5.5	6	120	1000	1	4	TQFN-16
CAT3606	Charge Pump	3	5.5	6	180	1000		6	TQFN-16
CAT3612	Charge Pump	3	5.5	6	300	1000	1	2	TDFN-12
CAT3626	Charge Pump	3	5.5	6	192	1000	1	6	TQFN-16
CAT3636	Charge Pump	2.5	5.5	6	192	1000	1	6	TQFN-16
CAT3643	Charge Pump	2.5	5.5	6	90	1000	1	3	TDFN-12
CAT3644	Charge Pump	2.5	5.5	6	100	1000	1	4	TQFN-16
CAT3648	Charge Pump	2.5	5.5	6	100	1000	1	4	TQFN-16
CAT3649	Charge Pump	2.4	5.5	6	25	1000	1	6	TQFN-16
CAT3661	Charge Pump	2	5.5	6	6	100	1	1	TQFN-16
LV5207LP	Charge Pump	3	4.5	4.7	19.4	500	1	1	VCT-24
LV5216CS	Charge Pump	3	4.5	5	38.4	500	1	6	
NCP1840	Charge Pump	3.3	5.5	5 V	30		4	8	QFN-20
NCP5603	Charge Pump	2.7	5.5	5.5	350	650	1	10	DFN-10
NCP5612	Charge Pump	2.7	5.5	5.5	60	1000	1	2	LLGA-12
NCP5623B	Charge Pump	2.7	5.5	5.5	80	1000	1	3	LLGA-12
NCP5623C	Charge Pump	2.7	5.5	5.7	90	1000	1	3	LLGA-12
NCL30000	Flyback					Up to 300	72		SOIC-8
NCL30001	Flyback					Up to 150			SOIC-16
NCL30080	Flyback					Up to 150			TSOP-6
NCL30081	Flyback	20		300	3000	Up to 150	100		TSOP-6
NCL30082	Flyback	20		300	3000	Up to 150	100		Micro8

LED DRIVERS (continued)

Device	Topology	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	V <sub>O</sub> Max (V)	I <sub>O</sub> Max (mA)	f <sub>sw</sub> Typ (kHz)	LEDs in Series, Max #	LEDs in Parallel, Max #	Package
NCL30083	Flyback	20		300	3000	Up to 150	100		Micro8
LV5011MD	Flyback; Step-Down; Step-Up/Step-Down	8.5	24	100	500	67	15		Small Outline Integrated
LV5012MD	Flyback; Step-Down; Step-Up/Step-Down	8.5	24	220	3000	67	72		SOIC-14W/ MFP-14S
CAT310	Linear	3	5.5	40	500		10	10	SOIC-20W
CAT4002A	Linear	2.4	5.5	6	40		1	2	SC-88-6/ SC-70-6; TSOT-23-6
CAT4003B	Linear	2.4	5.5	6	75		1	3	SC-88-6/ SC-70-6; TSOP-6; TSOT-23-6
CAT4004	Linear	2.4	5.5	-	100		4	4	TDFN-8
CAT4004A	Linear	2.4	5.5	6	40		1	4	UDFN-8
CAT4004B	Linear	2.4	5.5	6	50		1	4	UDFN-8
CAT4008	Linear	3	5.5	-	800		8	8	SOIC-16; SOIC-16W; TSSOP-16
CAT4016	Linear	3	5.5	-	1600		16	16	QSOP-24; SOIC-24W; TQFN-24; TSSOP-24
CAT4026	Linear	4.5	5.5	-	-		80	6	SOIC-28W
CAT4101	Linear	3	5.5	-	1000		8	1	D2PAK-5
CAT4103	Linear	3	5.5	-	525		8	3	SOIC-16
CAT4104	Linear	3	5.5	-	700		8	4	SOIC-8 TDFN-8
CAT4109	Linear	3	25	-	525		7	3	SOIC-16
LV5217GP	Linear	3	4.5	0	25.48	Variable	1	3	VCT-16
NCP5623T	Linear	2.7	5.5	5.5	120	1000000	1	3	TSSOP-14
NCV7430	Linear				100	Variable			SOIC-14
NCV7462	Linear				250			4	SSOP-36 EP
NCV7680	Linear	6	45	45	75	1000		16	SOIC-16W EP
NLSF595	Linear	1.8	7	5.5	12	1000	1	8	QFN-16; TSSOP-16
NSI45015W	Linear		45		15		80		SOD-123
NSI45020	Linear		45		20		80		SOD-123
NSI45020A	Linear		45		20		80		SOD-123
NSI45020J	Linear		45		40		80		SOT-223-4/ TO-261-4
NSI45025	Linear		45		25		80		SOD-123
NSI45025A	Linear		45		25		80		SOD-123
NSI45025AZ	Linear		45		25		80		SOT-223-4/ TO-261-4
NSI45025Z	Linear		45		25		80		SOT-223-4/ TO-261-4
NSI45030	Linear		45		30		80		SOD-123
NSI45030A	Linear		45		30		80		SOD-123

## ON Semiconductor Selector Guide – Drivers

### LED DRIVERS (continued)

Device	Topology	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	V <sub>O</sub> Max (V)	I <sub>O</sub> Max (mA)	f <sub>sw</sub> Typ (kHz)	LEDs in Series, Max #	LEDs in Parallel, Max #	Package
NSI45030AZ	Linear		45		30		80		SOT-223-4/ TO-261-4
NSI45030Z	Linear		45		30		80		SOT-223-4/ TO-261-4
NSI45035J	Linear		45		70		80		SOT-223-4/ TO-261-4
NSI45060JD	Linear		45		100		80		DPAK-3
NSI45090JD	Linear		45		160		80		DPAK-3
NSI50010YT1G	Linear		50		10		80		SOD-123
NSI50150AD	Linear		50		350		80		DPAK-3
NSI50350AD	Linear		50		350		80		DPAK-3
NSI50350AS	Linear		50		350		80		SMC-2
NSIC2020B	Linear		120		20		80		SMB-2
NSIC2030B	Linear		120		30		80		SMB-2
NSIC2050B	Linear		120		50		80		SMB-2
NUD4001	Linear	3.6	30	28	500		8		SOIC-8
NUD4011	Linear	3.6		200	70		100		SOIC-8
CAT4201	Step-Down	7	36	32	350	1000	7	1	SOIC-8 TSOT-23-5
CAV4201	Step-Down	7		32	350	1000		1	TSOT-23-5
LV5026MC	Step-Down	8.5	24	42	1000	50	10	10	Small Outline Integrated
LV5029MD	Step-Down	8.5	24	42	1000	50	10	10	Small Outline Integrated
NCL30002	Step-Down					Up to 250	100		SOIC-8
NCL30100	Step-Down				1200	Up to 700			TSOP-6
NCL30105	Step-Down					100 – 400	80		SOIC-8
NCL30160	Step-Down	6.5	40	40	1	Up to 1400	10	10	SOIC-8
NCP3063	Step-Down; Step-Up; Step-Up/Step-Down	3	40	40	1500	150	10	10	DFN-8; SOIC-8
NCP3065	Step-Down; Step-Up; Step-Up/Step-Down	3	40	40	1500	250	8	10	DFN-8; SOIC-8
NCP3066	Step-Down; Step-Up; Step-Up/Step-Down	3	40	40	1500	250 Up to 300	8	10	DFN-8; SOIC-8
CAT32	Step-Up	2	5.5	20	25	1200	4	1	TSOT-23-6
CAT4106	Step-Up	3	5.5	40	175	1000	10	4	TQFN-16; TSSOP-16
CAT4137	Step-Up	2.2	5.5	24	30	1000	5	1	TSOT-23-5
CAT4139	Step-Up	2.2	5.5	24	350	1000	5	1	TSOT-23-5
CAT4237	Step-Up	2.8	5.5	30	100	1000	8	1	TSOT-23-5
CAT4238	Step-Up	2	5.5	38	100	1000	10	1	TSOT-23-5
CAT4240	Step-Up	2	5.5	38	350	1000	10	1	TSOT-23-5
LV52204MT	Step-Up	2.7	5.5	37	20	600	10	1	WDFN-6
LV52204MU	Step-Up	2.7	5.5	37	20	600	10	1	UDFN-6
LV52205MU	Step-Up	2.7	5.5	40	20	600	10	1	UDFN-6
LV52206XA	Step-Up	2.7	5.5	40	27	600	10	2	

LED DRIVERS (continued)

Device	Topology	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	V <sub>O</sub> Max (V)	I <sub>O</sub> Max (mA)	f <sub>sw</sub> Typ (kHz)	LEDs in Series, Max #	LEDs in Parallel, Max #	Package
NCP5005	Step-Up	2.7	20	22	50	1200	5		TSOP-5/ SOT-23-5
NCP5006	Step-Up	2.7	20	22	50	1200	5		TSOP-5/ SOT-23-5
NCP5007	Step-Up	2.7	20	22	50	1200	5		TSOP-5/ SOT-23-5
NCS29001	Step-Up	8.5	18	240		200	72	1	SOIC-14
LV5232VH	Step-Up/Step-Down	3	5.5	42	100	Variable	10	10	HSOP-28
NCP5030	Step-Up/Step-Down	2.7	5.5	5.5	1200	700	1		WDFN-12
NCV78663	Step-Up/Step-Down	5	40	68	1200; 1400	1000000	15	2	SSOP-36 EP
NCL30051						Variable			SOIC-16
NCV7707									SSOP-36 EP
NCV7710									SSOP-36 EP

LOAD/RELAY DRIVERS

Device	Number of Drivers	V <sub>CC</sub> Max (V)	V <sub>(BR)GSS</sub> Max (V)	V <sub>(BR)DSS</sub> Max (V)	I <sub>D</sub> Max (A)	R <sub>DS(on)</sub> Max (Ω)	T <sub>j</sub> Max (°C)	Package
NUD3105	1	6	6	6	0.5	0.9	150	SOT-23-3
NUS2401	1	50	7	50	0.2		150	SC-74
UAA2016	1	-10	6.5	10	0.15	7.7	85	PDIP-8; SOIC-8
NCV7710	2	28				0.3	150	SSOP-36 EP
NUD3105D	2	6	6	6	0.5	0.9	150	SC-74
NCV7703B	3	5.25		40	1.8	1.7	150	SOIC-14
NCV7702B	4	16					150	SOIC-24
LV5609LP	5	5.5		24	0.1	45	125	VCT-24
LV5609V	5	5.5		24	0.01	45	125	SSOP-20
MC1413	7	50	30	50	0.5	4.6	150	PDIP-16; SOIC-16
NCV1413	7	50	30	50	0.5	4.6	150	SOIC-16
NCV7462	7	28			0.000008		170	SSOP-36 EP
ULN2003	7	50			0.0001	4.6	150	SOIC-16
AMIS-39100	8	16	6.3	35	0.35	1	175	SOIC-28W
AMIS-39101	8	28	6.3	35	0.85	3	175	SOIC-28W
NCV7240	8	5.5		36	0.6	3	150	SSOP-24
NCV7608	8	5.5	16	34	0.35	2.8	150	SOIC-28W; SSOP-36 EP
NCV7720	10							Shrink Small Outline Pack
NCV7708B	12	5.25		40	0.5	1.8	150	SOIC-28W
NCV7718	12					2.25		SSOP-24
NCV7751	12	5.5		36	0.6	2.5	150	Shrink Small Outline Pack
MDC3105	1; 2	6	6	6.6	0.4	0.64	150	SC-74; SOT-23-3
NUD3112	1; 2	14	6	14	0.5	0.9	150	SC-74; SOT-23-3

## ON Semiconductor Selector Guide – Drivers

### LOAD/RELAY DRIVERS (continued)

Device	Number of Drivers	V <sub>CC</sub> Max (V)	V <sub>(BR)DSS</sub> Max (V)	V <sub>(BR)DSS</sub> Max (V)	I <sub>D</sub> Max (A)	R <sub>DS(on)</sub> Max (Ω)	T <sub>j</sub> Max (°C)	Package
NUD3124	1; 2	28	12	28	0.15	0.8	150	SC-74; SOT-23-3
NUD3160	1; 2	60	12	60	0.15	1.8	150	SC-74; SOT-23-3
NCV7708E								SOIC-28W
NCV7518								Quad Flatpack No Leads
NCV7707								SSOP-36 EP
NCV7719								Shrink Small Outline Pack

### MOSFET/IGBT DRIVERS

Device	Type	Number of Drivers	V <sub>CC</sub> Max (V)	Drive Source/ Sink Typ (mA)	Rise Time (ns)	Fall Time (ns)	t <sub>p</sub> Max (ns)	Package
MC33153	IGBT	1	20	1000/ 2000	17	17	300	PDIP-8; SOIC-8
ADP3110A	MOSFET	2	13.2	1000/ 1000	40	20	65	DFN-8; SOIC-8
ADP3120A	MOSFET	2	13.2	1500/ 1500	20	16	70	DFN-8; SOIC-8
ADP3611	MOSFET	2	5.5				40	Micro10
MC33151	MOSFET	2	18	1500/ 1500	14	16	100	PDIP-8; SOIC-8
MC33152	MOSFET	2	18	1500/ 1500	14	15	120	PDIP-8; SOIC-8
NCP1392	MOSFET	2	16	500/ 1000	40	20	500	SOIC-8
NCP1393	MOSFET	2	16	500/ 1000	40	20	500	SOIC-8
NCP3420	MOSFET	2	13.2		16	11	45	SOIC-8
NCP5181	MOSFET	2	20	1400/ 2200	20; 40	20; 40	170	PDIP-8; SOIC-8
NCP5338	MOSFET	1						Quad Flatpack No Leads
NCP5351	MOSFET	2	6.3	1400/ 2200	10	14	80	DFN-10; SOIC-8
NCP5359	MOSFET	2	15	1500/ 1500	16	11	35	DFN-10; SOIC-8
NCP5359A	MOSFET	2	13.2	1500/ 1500	16	15	30	DFN-8; SOIC-8
NCP5369	MOSFET	1	5.5					QFN-40
NCP5901	MOSFET	2	13.2	2000/ 1000	16	11		DFN-8
NCP5901B	MOSFET	2	13.2		16	11	30	DFN-8; SOIC-8
NCP5911	MOSFET	2	5.5					DFN-8
NCP81081	MOSFET	1	5.5					QFN-40
NCP81161	MOSFET	1	13.2		16	11		DFN-8
NCV33152	MOSFET	2	18	1500/ 1500	15	36	120	SOIC-8
NCV7518	MOSFET	6	5.25	18	277	277	1000	Quad Flatpack No Leads
NCP5104	MOSFET or IGBT	2	20	250/ 500	85	35	170	PDIP-8; SOIC-8
NCP5106	MOSFET or IGBT	2	23	250/ 500	85	35	170	PDIP-8; SOIC-8
NCP5109	MOSFET or IGBT	2	23	250/ 500	85	35	170	SOIC-8
NCP5111	MOSFET or IGBT	2	23	250/ 500	85	35	170	PDIP-8; SOIC-8
NCP5304	MOSFET or IGBT	2	23	250/ 500	85	35	170	PDIP-8; SOIC-8
NCV7513B	MOSFET or IGBT	6	5.25	1	1400	1400	1000	LQFP-32
NCV7517B	MOSFET or IGBT	6	5.25		277	277	1000	LQFP-32

**MOSFET/IGBT DRIVERS** (continued)

Device	Type	Number of Drivers	V <sub>CC</sub> Max (V)	Drive Source/ Sink Typ (mA)	Rise Time (ns)	Fall Time (ns)	t <sub>p</sub> Max (ns)	Package
TND314S	MOSFET or IGBT	1	25		30	30		
TND315S	MOSFET or IGBT	1	25		30	30		
TND316S	MOSFET or IGBT	1	25		30	30		
TND321VD	MOSFET or IGBT	1	25		35	30		SOT-28FL/ VEC-8
TND322VD	MOSFET or IGBT	1	25		35	30		SOT-28FL/ VEC-8
TND323VD	MOSFET or IGBT	2	25		35	30	60	SOT-28FL/ VEC-8
TND523SS	MOSFET or IGBT	1	25		80	35		
TND524VS	MOSFET or IGBT	1	25		80	35	120	SOT-28FL/ VEC-8
TND525SS	MOSFET or IGBT	1	25		80	35	130	
EFC4619R								
EFC4621R								WLCSP-4



# ON Semiconductor Selector Guide – Drivers

## MOTOR DRIVERS

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LB11650	Brush DC	8	30	3	7	1.5	2		Parallel		External Resistor	No	Over-Current Thermal; UVLO	Integrated Active	SIP-14
LB11651	Brush DC	8	30	3	7	3	4		Parallel		External Resistor	No	Over-Current Thermal; UVLO	Integrated Active	SIP-14
LB1830MC	Brush DC	3	9	3	9	0.5	0.5		Parallel		None	Yes		Integrated Active	Small Outline Integrated
LB1843V	Brush DC	2.2	10.5	3	10.5	0.8	0.8		Parallel	None	External Resistor	No	Lock; Thermal	Integrated Active	SSOP-20
LB1930MC	Brush DC	2.2	11			1			Parallel		None	No	Thermal	Integrated Active	Small Outline Integrated
LB1938FA	Brush DC	2.2	10			0.8			Parallel		None	No	Thermal	Integrated Active	Micro8
LV8011V	Brush DC	2	7.5	4.5	6	1	5		Parallel	None	None	No	Thermal; UVLO	Integrated Active	SSOP-20
LV8013T	Brush DC	2	16	2.7	6	1.2	3.8		Parallel	None	None	No	Thermal; UVLO	Integrated Active	TSSOP-24
LV8018W	Brush DC	1.2	5.5	2	3.6	0.5			Parallel	None	None	No	Thermal	Integrated Active	SPQFP-48/ SQFP-48
LV8019LP	Brush DC	3	8.4	2.7	7	1.2	5		Parallel	None	None	No	Thermal; UVLO	Integrated Active	VQLP-24
LV8019V	Brush DC	3	8.4	2.7	7	1.2	5		Parallel	None	None	No	Thermal; UVLO	Integrated Active	SSOP-16
LV8075LP	Brush DC	2.5	6	2.5	6	0.5	-		Parallel	None	None	No	Thermal; UVLO	Integrated Active	VCT-16
LV8400V	Brush DC	4	16	2.7	6	1.2	3.8		Parallel	None	None	No	Thermal; UVLO	Integrated Active	SSOP-16
LV8401V	Brush DC	4	16	2.7	6	1.2	3.8		Parallel	None	None	No	Thermal; UVLO	Integrated Active	SSOP-16
LV8417CS	Brush DC	12.6	2	2.7	6	1	3.8		Parallel		None	No	Thermal; UVLO	Integrated Active	WLCSP-9/ WLP-9
LV8760T	Brush DC	9	38	3	6	3	4		Parallel	None	External Resistor	Yes	Over-Current Thermal; UVLO	Integrated Active	TSSOP-20/ TSSOP-20J
LV8761V	Brush DC	9	38	3	6	3	4		Parallel	None	External Resistor	Yes	Over-Current Thermal; UVLO	Integrated Active	SSOP-36J EP
LV8762T	Brush DC	9	36	-	-	1	1.5		Parallel	None	External Resistor	Yes	Over-Current Thermal; UVLO	Integrated Active	TSSOP-24
NCV7703B	Brush DC	5.5	40	3	5.25	3	5		SPI			No	Over-Current; Thermal		SOIC-14
STK681-300	Brush DC	-	52	4.75	5.25	2.9	5		Parallel	None	Fully Integrated	No	Over-Current; Thermal		SIP-19
STK681-310	Brush DC	-	52	4.75	5.25	4.2	8		Parallel	None	Fully Integrated	No	Over-Current; Thermal		SIP-19

## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
STK681-320	Brush DC	-	52	4.75	5.25	5.2	8		Parallel	None	Fully Integrated	No	Over-Current; Thermal		SIP-19
STK681-332-E	Brush DC	-	52	4.75	5.25	8.5	12		Parallel	None	External Resistor	No	Over-Current Thermal; UVLO		SIP-19
STK681-352-E	Brush DC	-	38	-	-	6.4	12		Parallel; PWM	None	External Resistor	No	Over-Current Thermal; UVLO		SIP-19
STK681-360-E	Brush DC	10	52	4.75	5.25	5.8	8		Parallel	None	Fully Integrated	No	Over-Current; Thermal		SIP-19
LA6581MC	Brushless DC	2.2	16			0.4	0.5		DC	None	None	No	Thermal	Integrated Active	SOIC-8
LA6581T	Brushless DC			2.5	16	0.3			LIN			No	Thermal		HMSOP-8
LA6583MC	Brushless DC			2.8	15	0.8			None		None	No	Lock; Thermal	Integrated Active	SOIC-10 W/ MFP-10SK
LA6584JA	Brushless DC			2.8	15	1.2			None		None	No	Lock; Thermal	Integrated Active	SSOP-20
LA6584M	Brushless DC			2.8	15	1.6			None		None	No	Lock; Thermal	Integrated Active	SOIC-16-TL/ MFP-16FS
LA6585MC	Brushless DC	2.2	14			0.7			DC	None	None	No	Lock; Thermal	Integrated Active	Small Outline Integrated
LA6586FA	Brushless DC	2.2	14			0.6			DC	None	None	No	Lock; Thermal	Integrated Active	Micro10
LA6587FA	Brushless DC	2.2	14			0.6			DC	None	None	No	Lock; Thermal	Integrated Active	Micro10
LA6588MC	Brushless DC			8	28	0.8			None		None	No	Lock; Thermal	Integrated Active	SOIC-10 W/ MFP-10SK
LA6595T	Brushless DC			2.2	15	0.5			None		None	No	Lock; Thermal	Integrated Active	HMSOP-8
LB11600JV	Brushless DC			4.5	14.5	0.04			DC; PWM		External Resistor	No	Lock; Over-Current; Thermal	External	SSOP-30
LB11620GP	Brushless DC			8	18	0.03			PWM		External Resistor	Yes	Lock; Over-Current	External	VCT-24
LB11620T	Brushless DC			8	18	0.03			PWM		External Resistor	Yes	Lock; Over-Current	External	TSSOP-24
LB11660FV	Brushless DC	4	18			1.5			DC	None	External Resistor	Yes	Lock; Thermal	Integrated Active	SSOP-16
LB11660RV	Brushless DC	3	20	4	20	1.5			DC		External Resistor	Yes	Lock; Over-Current; Thermal	Integrated Active	SSOP-16
LB11683H	Brushless DC	5.5	14.5	5.5	14.5	1.5	1.5	1	DC	None	External Resistor	No	Lock; Thermal	Integrated Active	HSOP-28HC
LB11685AV	Brushless DC	4.5	19	4.5	19	1.2			DC		External Resistor	Yes	Lock; Thermal	Integrated Active	SSOP-24J
LB11685VH	Brushless DC														HSOP-28

## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LB11693H	Brushless DC			9.5	30	1.8			DC; PWM		External Resistor	Yes	Lock; Thermal	Integrated Active	HSOP-36B
LB11693JH	Brushless DC			8	30	1.8			DC; PWM		External Resistor	Yes	Lock; Thermal	Integrated Active	HSOP-36B
LB11696V	Brushless DC			4.5	18	0.03			DC; PWM	None	External Resistor	Yes	Lock; Over- Current; Thermal	Integrated Active	SSOP-30
LB11697V	Brushless DC			8	18	0.03			PWM		External Resistor	Yes	Lock; Over- Current	External	SSOP-30
LB11822	Brushless DC			9.5	30	3.1			Clock	PLL+ Discriminator	External Resistor	Yes	Lock; Thermal	External	PDIP-30
LB11826	Brushless DC			9.5	30	2.5			Clock	PLL+ Discriminator	External Resistor	Yes	Lock; Thermal	External	PDIP-30
LB11850VA	Brushless DC			5.5	18	0.02			PWM		External Resistor	Yes	Lock; Over- Current	External	SSOP-24
LB11852FV	Brushless DC			5.5	18	0.02			PWM		External Resistor	Yes	Lock; Over- Current	External	SSOP-20J
LB11852RV	Brushless DC			5.5	18	0.02			PWM		External Resistor	Yes	Lock; Over- Current	External	SSOP-20J
LB11861MC	Brushless DC			4.5	18	1.2			PWM		None	No	Lock; Thermal	Integrated Active	SOIC-10 W/ MFP-10SK
LB11867FV	Brushless DC			5.5	18	0.02			DC	None	External Resistor	Yes	Lock; Thermal	External	SSOP-16
LB11867RV	Brushless DC			5.5	18	0.02			DC	None	External Resistor	Yes	Lock; Thermal	External	SSOP-16
LB11868V	Brushless DC	4	18	4	18	0.03			DC		External Resistor	Yes	Lock; Over-Cur- rent; Thermal	Integrated Active	SSOP-20J
LB11870	Brushless DC			9.5	30	2.3			Clock	PLL	External Resistor	Yes	Lock; Thermal	External	HSSOP-48
LB11872H	Brushless DC			10	30	1.2			Clock	PLL	External Resistor	Yes	Lock; Thermal		HSOP-28H
LB11873	Brushless DC			9.5	30	1.8			Clock	PLL	External Resistor	Yes	Lock; Thermal	External	HSOP-36
LB11876	Brushless DC			8	18	0.03			Clock	PLL	External Resistor	Yes	Lock; Thermal; UVLO	External	SSOP-36
LB11920	Brushless DC	9.5	35	4.5	7	3.5			DC; PWM		External Resistor	Yes	Lock; Thermal	Integrated Active	PDIP-30
LB11921T	Brushless DC			4.4	8	0.01			Clock	PLL + Discriminator	External Resistor	No	Lock; Thermal	External	TSSOP-36
LB11922	Brushless DC			4.4	8	0.03			Clock	PLL + Discriminator	External Resistor	No	Lock; Thermal	External	SSOP-36
LB11923V	Brushless DC			4.4	8	0.03			Clock	PLL + Discriminator	External Resistor	No	Lock; Thermal	External	SSOP-44
LB11961	Brushless DC			4.5	18	1			DC		None	Yes	Lock; Thermal	Integrated Active	HSSOP-14
LB11961V	Brushless DC	4.5	18			1			DC	None	External Resistor	Yes	Lock; Thermal	Integrated Active	SSOP-16

MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LB11967V	Brushless DC			6	18	0.05			DC		External Resistor	Yes	Lock; Over-Current	External	SSOP-20
LB11970FV	Brushless DC			4.5	17	1.2			DC; PWM		External Resistor	Yes	Lock; Over-Current; Thermal	Integrated Active	SSOP-18
LB11970RV	Brushless DC			4.5	17	1.2			DC; PWM		External Resistor	Yes	Lock; Over-Current; Thermal	Integrated Active	SSOP-18
LB11988V	Brushless DC	5	24	7	24	1.3	1.3	1	DC	None	External Resistor	No	Thermal	Integrated Active	SSOP-24J
LB1860M	Brushless DC					1.5									SOIC-14W/MFP-14S
LB1861M	Brushless DC					1.5			DC		None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1863M	Brushless DC					1.5			None		None	No	Thermal	External	SOIC-14W/MFP-14S
LB1867M	Brushless DC					1			None		None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1868M	Brushless DC					1			None		None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1876	Brushless DC			9.5	30	2.5			Clock	PLL	External Resistor	Yes	Lock; Thermal	External	HSOP-36
LB1927	Brushless DC			9.5	30	2.5			Clock	PLL + Discriminator	External Resistor	Yes	Lock; Thermal	External	PDIP-30
LB1928	Brushless DC			9.5	30	3.1			Clock	PLL + Discriminator	External Resistor	Yes	Lock; Thermal	External	PDIP-30
LB1929	Brushless DC			9.5	30	3.5			Clock	PLL + Discriminator	External Resistor	Yes	Lock; Thermal	External	PDIP-30
LB1975	Brushless DC	20	46	4.5	7	2.5			DC	None	External Resistor	Yes	Thermal; UVLO	External	PDIP-30
LB1976	Brushless DC	20	60	4.5	7	2.5			DC	None	External Resistor	Yes	Thermal; UVLO	External	PDIP-30
LB1980H	Brushless DC	5	24	4.5	7	1.3					External Resistor	No	Thermal	Integrated Active	HSOP-28H
LB1980JH	Brushless DC	5	24	4.5	7	1.3					External Resistor	No	Thermal	Integrated Active	HSOP-28H
LB8503V	Brushless DC	7.5	17	6.5	5.5	0.003			DC; PWM						SSOP-16
LV8068V	Brushless DC			6	16	1.2			DC; PWM		External Resistor	Yes	Lock; Over-Current; Thermal; UVLO	Integrated Active	SSOP-16
LV8104V	Brushless DC			16	28	0.015			Clock	PLL+Discriminator	External Resistor	Yes	Lock; Thermal; UVLO	External	SSOP-44
LV8112V	Brushless DC			10	37	3			Clock	PLL	External Resistor	Yes	Lock; Thermal	External	SSOP-44K EP
LV8136V	Brushless DC			9.5	18	0.15			DC		External Resistor	Yes	Lock; Over-Current; Thermal; UVLO	Integrated Active	SSOP-30

# ON Semiconductor Selector Guide – Drivers

## MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LV8800V	Brushless DC			2.2	6.5	0.7			PWM		External Resistor	No	Lock; Over-Current; Thermal; UVLO	Integrated Active	SSOP-16
LV8804FV	Brushless DC	6	16	6	16	1.2			DC		External Resistor	Yes	Lock; Over-Current; Thermal	Integrated Active	SSOP-20J
LV8804V	Brushless DC			6	16	1.2			DC		External Resistor	Yes	Lock; Over-Current; Thermal; UVLO	Integrated Active	SSOP-36J EP
LV8805SV	Brushless DC	6	16	6	16	1.2			PWM	None	External Resistor	Yes	Lock; Over-Current; Thermal	Integrated Active	SSOP-20J
LV8805V	Brushless DC			6	16	1.2			PWM		External Resistor	Yes	Lock; Over-Current; Thermal; UVLO	Integrated Active	SSOP-36J EP
LV8806QA	Brushless DC			7	2	0.7			PWM		External Resistor	No	Lock; Over-Current; Thermal; UVLO	Integrated Active	UQFN16 2.6x2.6, 0.5P
LV8824QA	Brushless DC			7	34	0.05			DC; PWM		External Resistor	Yes	Lock; Thermal	External	WQFN-32/ VQFN-32U
LV8850GA	Brushless DC			4	18	0.03			DC; PWM		External Resistor	Yes	Lock; Thermal	External	TSSOP-36
LV8860V	Brushless DC	6	34	6	34	0.7			PWM	None	External Resistor	Yes	Lock; Over-Current; Thermal; UVLO		SSOP-16
MC33033	Brushless DC	10	40	10	30	0.1	0.1				External Resistor	Yes			SOIC-20W
MC33035	Brushless DC	10	40	10	30	0.1	0.1				External Resistor	Yes	Thermal		SOIC-24
MC33039	Brushless DC	5.5	7.5	5.5	9	0.02	0.02				None	No			SOIC-8
NCV33035	Brushless DC	10	40	10	30	0.1	0.1				External Resistor		Thermal		SOIC-24
STK984-091A-E	Brushless DC	8	18	8	18	20	180		Parallel	None	Fully Integrated	No	Over-Current; Thermal; UVLO		SIP-23
LC898119XC	Driver	2.6	3.6	2.6	3.6	0.22			I2C						WLCSP
LB11988H	Drivers	7	22	7	22	1	1	1	DC	None	External Resistor	No	Over-Current; Thermal		HSOP-28HC
LB11988HR	Drivers	7	22	7	22	1	1	1	DC	None	External Resistor	No	Over-Current; Thermal		HSOP-28H
LB1205M	Drivers		62	3.5	7	1.5			Parallel		None	No		Integrated Active	SOIC-16-TL/ MFP-16FS
LC898111AXB	Drivers	2.6	3.6	2.6	3.6	220	300		I2C; SPI						Wafer Level Chip Scale Pa

MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LC898113	Drivers	2.5	5.5	2.7	3.6	0.4	0.6		I2C; SPI						LFLGA-49/ FLGA-49
LC898122XA	Drivers	2.6	3.6	2.6	3.6	0.22			I2C						Wafer Level Chip Scale Pa
LC898215XA	Drivers	2.6	3.6			0.1	0.13		I2C						
LC898300XA	Drivers	2.7	3.3			0.15			I2C		None				WLCSP-9/ WLP-9
LV8094CT	Drivers			2.2	5	0.3			I2C		None	No	Thermal; UVLO	Integrated Active	WLCSP-8/ WLP-8
LV8491CT	Drivers			2.2	5	0.3			I2C		None	No	Thermal; UVLO	Integrated Active	WLCSP-10/ WLP-10
NCV7708B	Drivers	5.1	40	3	5.25	1.8	2		SPI			No	Over- Current; Thermal		SOIC-28W
NCV7708E	Drivers	5.1	40	3	5.25	1.8	2		SPI			No	Over- Current Thermal		SOIC-28W
STK544UC62K-E	Inverter	-	600	-	20	10	20		PWM	None	External Resistor	No	Over- Current Thermal; UVLO	External	SIP-23
STK551U362A-E	Inverter	-	600	-	20	10	20		PWM	None	Fully Integrated	No	Over- Current Thermal; UVLO	External	SIP-29
STK551U392A-E	Inverter	-	600	-0.3	20	15	30		PWM	None	Fully Integrated	No	Over- Current Thermal; UVLO	External	SIP-29
STK551U3A2A-E	Inverter	-	600	-0.3	20	20	40		PWM	None	Fully Integrated	No	Over- Current Thermal; UVLO	External	SIP-29
STK554U362A-E	Inverter	-	600	-	20	10	20		PWM	None	External Resistor	No	Over- Current Thermal; UVLO	External	SIP-29
STK554U362C-E	Inverter	-	600	-	20	10	20		PWM	None	External Resistor	No	Over- Current Thermal; UVLO	External	SIP-29
STK554U392A-E	Inverter	-	600	-	20	15	30		PWM	None	External resistor	No	Over- Current Thermal; UVLO	External	SIP-29
STK5F1U3E2D-E	Inverter	-	600	-	20	50	76		PWM	None	Fully Integrated	No	Over- Current Thermal; UVLO	External	Hybrid Integrated Module
STK611-721-E	Inverter	0	450	12.5	20	2	4		PWM	None	External Resistor	No	Over- Current Thermal; UVLO	External	SIP-19
STK621-061-E	Inverter	0	450	12.5	20	30	45		PWM	None	Fully Integrated	No	Over- Current Thermal; UVLO	External	SIP-22

## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
STK5F4U3E2D-E	Inverter	-	600	-	20	50	100		PWM	None	External resistor	No	Over-Current Thermal; UVLO	External	Hybrid Integrated Module
STK57FU391A-E	PFC + Inverter	-	600	-	20	15	30	N/A	PWM	None	External Resistor	No	Over-Current Thermal; UVLO	External	SIP
CS3351	Regulator		27	9	27						None	No			SOIC-14
CS3361	Regulator		27	9	27						None	No			SOIC-14
AMIS-30421	Stepper	6	40			10	10	1/64	SPI	Back EMF/Sensorless	External Resistor	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	QFN-44
AMIS-30422	Stepper	6	40			15	20	1/128		Back EMF/Sensorless	External Resistor	Yes	Open Coil; Over-Current; Thermal	Integrated Active	QFN-48
AMIS-30512	Stepper	6	40			0.8	0.8	1/32	SPI	Back EMF/Sensorless	Fully Integrated	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	SOIC-24
AMIS-30521	Stepper	6	40	4.75	5.25	1.6	1.6	1/32	SPI	Back EMF/Sensorless	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32
AMIS-30522	Stepper	6	40			1.6	1.6	1/32	SPI	Back EMF/Sensorless	Fully Integrated	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32
AMIS-30523	Stepper	6	40			1.6	1.6	1/32	SPI	Back EMF/Sensorless	Fully Integrated	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	QFN-52
AMIS-30532	Stepper	6	40			3.2	3.2	1/32	SPI	Back EMF/Sensorless	Fully Integrated	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32
AMIS-30543	Stepper	6	40			3	3	1/128	SPI	Back EMF/Sensorless	Fully Integrated	Yes	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	QFN-32
AMIS-30621	Stepper	6	40			0.8	0.8	1/16	LIN	Back EMF/Sensorless	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32; SOIC-20W

MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
AMIS-30622	Stepper	6	40			0.8	0.8	1/16	I2C	Back EMF/Sensorless	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32; SOIC-20W
AMIS-30623	Stepper	6	40			0.8	0.8	1/16	LIN	Back EMF/Sensorless	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32; SOIC-20W
AMIS-30624	Stepper	6	40			0.8	0.8	1/16	I2C	Back EMF/Sensorless	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO	Integrated Active	NQFP-32; SOIC-20W
LB11847	Stepper	10	50	4.75	7	1.5	1.75	1/16; 1/8; 1/4; 1/2	Parallel	None	External Resistor	No	Thermal; UVLO	External	PDIP-30
LB11946	Stepper	10	50	3	7	1	1.2	1; 1/16; 1/8; 1/4; 1/2	SPI	None	External Resistor	No	Thermal; UVLO	Integrated Active	PDIP-30
LB11948T	Stepper	3	18	3	18	0.4	0.5	1; 1/2	Parallel	None	External Resistor	Yes	Thermal	Integrated Active	TSSOP-30
LB1838JM	Stepper	1.8	10.5	2.5	10.5	1		1; 1/2	Parallel		None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1838M	Stepper	1.8	10.5	2.5	10.5	1		1; 1/2	Parallel	None	None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1845	Stepper	10	45	4.75	7	1.5	1.75	1; 1/4; 1/2	Parallel	None	External Resistor	No	Thermal	External	PDIP-30
LB1846MC	Stepper	2.5	8			0.8		1; 1/2	Parallel		None	No		Integrated Active	SOIC-10 W/MFP-10SK
LB1847	Stepper	10	50	4.75	7	1.5	1.75	1/16; 1/8; 1/4; 1/2	Parallel	None	External Resistor	No	Thermal; UVLO	External	PDIP-30
LB1848MC	Stepper	2.5	8			0.8		1	Parallel		None	No	Thermal	Integrated Active	Small Outline Integrated
LB1909MC	Stepper	2.5	20			0.8		1	Parallel		None	No	Thermal	Integrated Active	Small Outline Integrated
LB1933M	Stepper	1.8	10.5	2.2	10.5	1		1; 1/2	Parallel		None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1937T	Stepper	2.5	10.5	2.5	10.5	0.8		1; 1/2	Parallel		None	No	Thermal	Integrated Active	TSSOP-24
LB1939T	Stepper	1.6	10.5	1.9	10.5	0.4		1; 1/2	Parallel	None	External Resistor	Yes	Thermal	Integrated Active	TSSOP-20
LB1940T	Stepper	1.6	10.5	1.9	10.5	0.4		1; 1/2	Parallel	None	External Resistor	No	Thermal	Integrated Active	TSSOP-20
LB1945D	Stepper	10	30	4.75	6	0.8	1	1; 1/4; 1/2	Parallel		External Resistor	No	Thermal	Integrated Active	PDIP-30
LB1945H	Stepper	10	30	4.75	6	0.8	1	1; 1/4; 1/2	Parallel	None	External Resistor	No	Thermal	Integrated Active	HSOP-28H
LB1973JA	Stepper	1.8	8					1; 1/2	Parallel		None	No	Thermal	Integrated Active	SSOP-16
LV8044LP	Stepper	2.7	6	2.7	6	0.4	0.6		Serial		External Resistor	No	Thermal; UVLO	Integrated Active	VQLP-40
LV8414CS	Stepper	2.5	6	2.5	6	0.4	0.6	1; 1/256; 1/2	I2C	None	External Resistor	No	Thermal; UVLO	Integrated Active	WLCSP-32/WLP-32J



## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LV8548MC	Stepper	4	20			1		1; 1/2	Parallel		None	No	Thermal; UVLO	Integrated Active	Small Outline Integrated
LV8549MC	Stepper	4	20			1		1	Parallel		None	No	Thermal; UVLO	Integrated Active	Small Outline Integrated
LV8702V	Stepper	9	36			2.5	3	1; 1/4; 1/2	Clock	Back EMF/ Sensorless	External Resistor	Yes	Over- Current Thermal; UVLO	Integrated Active	SSOP-44J EP
LV8712T	Stepper	4	18	2.7	6	0.8	1	1; 1/8; 1/4; 1/2	Clock	None	External Resistor	Yes	Thermal; UVLO	Integrated Active	TSSOP-24
LV8713T	Stepper	4	18	2.7	6	0.8	1	1; 1/16; 1/32; 1/2	Clock	None	External Resistor	Yes	Thermal; UVLO	Integrated Active	TSSOP-24
LV8727	Stepper	9	50			4	4.6	1/128; 1/32; 1/64; 1/8; 1/2	Clock	None	External Resistor	Yes	Thermal		HSOP-36B
LV8729V	Stepper	9	36			1.8	-	1; 1/128; 1/16; 1/32; 1/64; 1/8; 1/4; 1/2	Clock	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44K EP
LV8746V	Stepper	9	38			1	1.2	1; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44K EP
LV8771VH	Stepper	9	36			1.5	1.75	1; 1/4; 1/2	Parallel		External Resistor	Yes	Thermal	Integrated Active	HSOP-28
LV8772	Stepper	9	36			2.5	3	1; 1/16; 1/4; 1/2	Clock		External Resistor	Yes	Over- Current; Thermal	Integrated Active	PDIP-30
LV8773	Stepper	9	36			2	2.5	1; 1/2	Parallel		External Resistor	Yes	Over- Current; Thermal	Integrated Active	PDIP-28
NCV70521	Stepper			6	40	1.5									NQFP-32
NCV70522	Stepper														NQFP-32
NCV70627	Stepper	5.5	29			0.8	1.1	1/16	LIN	Back EMF/ Sensorless	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO	Integrated Active	SSOP-36 EP
STK672-040-E	Stepper	10	45	4.75	5.25	2.2	-	1/16	Clock	None	Fully Integrated	No			SIP-16
STK672-050-E	Stepper	10	45	4.75	5.25	4	-	1/16	Clock	None	Fully Integrated	No			SIP-22
STK672-060-E	Stepper	10	45	4.75	5.25	1.6	-	1/16	Clock	None	Fully Integrated	No			SIP-16
STK672-070-E	Stepper	10	45	4.75	5.25	2	-	1/16	Clock	None	Fully Integrated	No			SIP-12
STK672-080-E	Stepper	10	45	4.75	5.25	3.3	-	1/16	Clock	None	Fully Integrated	No			SIP-12
STK672-110-E	Stepper	10	42	4.75	5.25	2.65	-	1/2	Clock	None	Fully Integrated	No			SIP-12
STK672-110-SL-E	Stepper	10	42	4.75	5.25	2.65	-	1/2	Clock	None	Fully Integrated	No			SIP-12
STK672-120-E	Stepper	10	42	4.75	5.25	4	-	1/2	Clock	None	Fully Integrated	No			SIP-12
STK672-210-E	Stepper	10	45	4.75	5.25	2.2	-	1/2	Parallel	None	Fully Integrated	No			SIP-12

**MOTOR DRIVERS** (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
STK672-220-E	Stepper	10	45	4.75	5.25	3.3	-	1/2	Parallel	None	Fully Integrated	No			SIP-12
STK672-340-E	Stepper	10	42	4.75	5.25	3.6	-	1/2	Clock	None	Fully Integrated	No			SIP-12
STK672-400	Stepper	10	45	4.75	5.25	2.2	-	1/16	Clock	None	Fully Integrated	No			SIP-19
STK672-400C-E	Stepper	10	45	4.75	5.25	2.2	-	1/16	Clock	None	Fully Integrated	No			SIP-19
STK672-401C-E	Stepper	10	45	4.75	5.25	2.2	-	1/16	Clock	None	Fully Integrated	No			SIP-19
STK672-410	Stepper	10	45	4.75	5.25	3.2	-	1/16	Clock	None	Fully Integrated	No			SIP-19
STK672-410C-E	Stepper	10	45	4.75	5.25	3.2	-	1/16	Clock	None	Fully Integrated	No			SIP-19
STK672-430A-E	Stepper	10	42	4.75	5.25	2.5	10	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-430AN-E	Stepper	10	52	4.75	5.25	2.5	10	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-432A-E	Stepper	10	42	4.75	5.25	2.5	10	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-432B-E	Stepper	0	46	4.75	5.25	2.5	10	1/16	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		SIP-19
STK672-440A-E	Stepper	10	42	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-440AN-E	Stepper	10	52	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-440B-E	Stepper	0	46	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		SIP-19
STK672-440BN-E	Stepper	10	50	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		
STK672-442A-E	Stepper	10	42	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-442AN-E	Stepper	20	52	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Thermal		SIP-19

## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
STK672-442B-E	Stepper	0	46	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		SIP-19
STK672-442BN-E	Stepper	10	50	4.75	5.25	3.5	20	1/16	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		
STK672-520	Stepper	10	42	4.75	5.25	1.4	5	1/2	Clock	None	Fully Integrated	No			
STK672-523-E	Stepper	10	42	4.75	5.25	1.4	5	1/2	Clock	None	Fully Integrated	No			
STK672-532	Stepper	10	42	4.75	5.25	2.65	5	1/2	Clock	None	Fully Integrated	No			
STK672-533-E	Stepper	10	42	4.75	5.25	2.65	5	1/2	Clock	None	Fully Integrated	No			SIP-12
STK672-540	Stepper	10	42	4.75	5.25	4	10	1/2	Clock	None	Fully Integrated	No			SIP-10
STK672-543-E	Stepper	10	42	4.75	5.25	4	10	1/2	Clock	None	Fully Integrated	No			SIP-10
STK672-600	Stepper	10	42	4.75	5.25	2.65	-	1/2	Clock	None	Fully Integrated	No			SIP-19
STK672-610	Stepper	10	42	4.75	5.25	4	-	1/2	Clock	None	Fully Integrated	No			SIP-19
STK672-612B-E	Stepper	10	46	4.75	5.25	1	10	1/2	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		SIP-19
STK672-622A-E	Stepper	0	46	4.75	5.25	1.6	10	1/2	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-630A-E	Stepper	10	42	4.75	5.25	2.65	10	1/2	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-630C-E	Stepper	0	46	4.75	5.25	2.65	10	1/2	Clock	None	Fully Integrated	No	Open Coil; Over- Current; Thermal; UVLO		SIP-19
STK672-632A-E	Stepper	10	42	4.75	5.25	2.65	10	1/2	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-640A-E	Stepper	10	42	4.75	5.25	4	20	1/2	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19
STK672-640AN-E	Stepper	10	52	4.75	5.25	4	20	1/2	Clock	None	Fully Integrated	No	Over- Current Thermal; UVLO		SIP-19

MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
STK672-640C-E	Stepper	10	46	4.75	5.25	4	20	1/2	Clock	None	Fully Integrated	No	Open Coil; Over-Current; Thermal; UVLO		SIP-19
STK672-642A-E	Stepper	10	42	4.75	5.25	4	20	1/2	Clock	None	Fully Integrated	No	Over-Current Thermal; UVLO		SIP-19
STK672-642AN-E	Stepper	10	52	4.75	5.25	4	20	1/2	Clock	None	Fully Integrated	No	Over-Current Thermal; UVLO		SIP-19
STK672-732A-E	Stepper	10	42	4.75	5.25	2.65	10	1/2	Parallel	None	Fully Integrated	No	Over-Current Thermal; UVLO		SIP-19
STK672-740A-E	Stepper	10	42	4.75	5.25	4	20	1/2	Parallel	None	Fully Integrated	No	Over-Current Thermal; UVLO		SIP-19
STK672-740AN-E	Stepper	10	52	4.75	5.25	4	20	1/2	Parallel	None	Fully Integrated	No	Over-Current Thermal; UVLO		SIP-19
STK673-010-E	Stepper	16	36	4.75	5.25	4	-	1/8	Clock	None	Fully Integrated	No			SIP-25
STK673-011-E	Stepper	16	36	4.75	5.25	4	-	1/8	Clock	None	Fully Integrated	No			SIP-25
STK682-010-E	Stepper	0	36	4.75	5.25	3	3	1/128	Clock	None	External Resistor	No	Over-Current Thermal; UVLO		
LB1836M	Stepper/Brush DC	1.8	10.5	2.5	10.5	1		1; 1/2	Parallel	None	None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1837M	Stepper/Brush DC	3	10.5			0.25		1; 1/2	Parallel	None	None	No	Thermal	Integrated Active	SOIC-14W/MFP-14S
LB1936V	Stepper/Brush DC	2.5	10.5	2.5	10.5	0.8	-	1; 1/2	Parallel	None	None	No	Thermal	Integrated Active	SSOP-16
LB1948MC	Stepper/Brush DC	2.5	20			0.8		1; 1/2	Parallel		None	No	Thermal	Integrated Active	SOIC-10 W/MFP-10SK
LB8649W	Stepper/Brush DC	1.9	10.5	1.9	10.5	0.6		1; 1/2	Parallel		External Resistor	No	Thermal	Integrated Active	SPQFP-48/SQFP-48
LV8012T	Stepper/Brush DC	2	7	2.7	6	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	TSSOP-24
LV8014T	Stepper/Brush DC	2	7	2.7	6	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	TSSOP-24
LV8080LP	Stepper/Brush DC	2.5	6.5			0.4	0.7	1; 1/2	Parallel	None	External Resistor	No	Thermal; UVLO	Integrated Active	VCT-16
LV8086T	Stepper/Brush DC	2	7	2.7	6	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	TSSOP-24
LV8402GP	Stepper/Brush DC	1.5	16	2.8	6	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	VCT-24
LV8402V	Stepper/Brush DC	1.5	16	2.8	6	1.4	2.5	1	Parallel		None	No	Thermal; UVLO	Integrated Active	SSOP-16
LV8405V	Stepper/Brush DC	1.5	16	2.8	5.5	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	SSOP-16

# ON Semiconductor Selector Guide – Drivers

## MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LV8406T	Stepper/ Brush DC	1.5	16	2.8	5.5	1.4	2.5	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	TSSOP-20/ TSSOP-20J
LV8411GR	Stepper/ Brush DC	2.5	6	2.5	6	0.4	0.6	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	VCT-24
LV8413GP	Stepper/ Brush DC	2.5	6	2.5	6	0.4	0.6	1; 1/2	Parallel	None	None	No	Thermal; UVLO	Integrated Active	VCT-16
LV8711T	Stepper/ Brush DC	4	18	2.7	6	0.8	1	1; 1/2		None	External Resistor	Yes	Over- Current Thermal; UVLO	Integrated Active	TSSOP-24
LV8731V	Stepper/ Brush DC	9	36			2	2.5	1; 1/16; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44K EP
LV8732V	Stepper/ Brush DC	9	36			2	2.5	1; 1/8; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44K EP
LV8734V	Stepper/ Brush DC	9	36			1.5	1.75	1; 1/8; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44K EP
LV8735V	Stepper/ Brush DC	9	36	-	-	1	1.5	1; 1/16; 1/8; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current Thermal; UVLO	Integrated Active	SSOP-44K EP
LV8736V	Stepper/ Brush DC	9	36			1	1.5	1; 1/8; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current Thermal; UVLO	Integrated Active	SSOP-44K EP
LV8740V	Stepper/ Brush DC	9	38	-	-	2.5	3	1; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current; Thermal	Integrated Active	SSOP-44J EP
LV8741V	Stepper/ Brush DC	9.5	38	2.7	6	1.5	1.75	1; 1/4; 1/2	Clock; Parallel	None	External Resistor	Yes	Over- Current Thermal; UVLO	Integrated Active	SSOP-36J EP; SSOP-44K EP
CAT3211															UQFN-12
CS8190		8.5	24	8.5	15	0.01	0.042			None	None	Yes			SOIC-20W
LA6581DM															Micro8
LA6585FA															Micro8
LA6595DM															Micro8
LA6597FMC															Small Outline Integrated
LA6681MC															SOIC-8
LB11668MC															Small Outline Integrated
LB11669MC															Small Outline Integrated
LB11851FA															Micro10
LB11851MC															Small Outline Integrated
LB11862MC															Small Outline Integrated
LB11899J															SSOP-44J EP
LB11964FA															Micro8

MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
LB11983		7	13.8	7	13.8	1	1	1	DC	None	External Resistor	No			
LB1638MC															Small Outline Integrated
LB1862MC															SOIC-10 W/ MFP-10SK
LB1935FA															Micro10
LB1947VC															HSOP-28H
LB1960MC															SOIC-8
LB1962MC															Small Outline Integrated
LC898121XA															Wafer Level Chip Scale Pa
LC898212XC		2.6	3.6	2.6	3.6	0.13	0.195								WLCSP-12/ WLP-12
LC898212XD		2.6	3.6	2.6	3.6	0.13	0.195								Wafer Level Chip Scale Pa
LC898301AXA		3	5.5			0.2			I2C		None		Thermal		Wafer Level Chip Scale Package
LC898301XA		3.3	5.5			0.2			I2C		none		Open-Short Thermal		Wafer Level Chip Scale Package
LV8062FA															Micro10
LV8063FA															Micro10
LV8111V															SSOP-44K EP
LV8121V															SSOP-44K EP
LV8127T		18	190	12	23	0.05			DC		External Resistor	Yes	Lock; Over-Current; Thermal; UVLO	External	TSSOP-36
LV8139JA															
LV8163QA															UDFN-10
LV8415CB		2.7	6	2.7	6	0.35	0.6		Serial	None	None	No	Thermal; UVLO	Integrated Active	WLCSP-32/ WLP-32
LV8415XA															WLCSP
LV8498CT		2.2	5			0.15			I2C		Fully Integrated	No	Thermal; UVLO	Integrated Active	WLCSP-6/ WLP-6K
LV8716QA															QFN-16
LV8747TA															TQFP-64/ TQFP-64L
LV8774Q															QFN-44
LV8827LFQA															WQFN-24/ VQFN-24N
LV8829LFQA															WQFN-24/ VQFN-24N

## ON Semiconductor Selector Guide – Drivers

### MOTOR DRIVERS (continued)

Device	Type	V <sub>M</sub> Min (V)	V <sub>M</sub> Max (V)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>O</sub> Max (A)	I <sub>O</sub> Peak Max (A)	Step Resolution	Control Type	Feedback Method	Current Sense	Regulator Output	Fault Detection	Flyback Protection	Package
NCV70501							0.3		Parallel; SPI	Back EMF/ Sensorless	Fully Integrated		Open Coil; Over- Current; Thermal; UVLO	Integrated Active	SOIC-16
NCV70522DQ															SSOP-36 EP
NCV7518															Quad Flatpack No Leads
NCV7702B		7	30	7	16	0.001	1.6		Parallel			No	Over- Current; Thermal		SOIC-24
NCV7707															SSOP-36 EP
NCV7710															SSOP-36 EP
NCV7718									SPI				Open Coil; Over- Current; Thermal; UVLO	Integrated Active	SSOP-24
NCV7719							0.55		SPI				Open Coil; Over- Current; Thermal; UVLO	Integrated Active	Shrink Small Outline Pack
NCV7720							0.55		SPI				Open Coil; Over- Current; Thermal; UVLO	Integrated Active	Shrink Small Outline Pack
SS30															Very-Thin Castellation Structure Terminal-20

# ESD and EMI Protection Diodes and Filters

---

## Table of Contents

	<b>Page</b>
ESD Protection Diodes and Arrays .....	160
EMI Filters .....	164
TVS – Unidirectional .....	167
TVS – Bidirectional .....	175



## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### ESD PROTECTION DIODES AND ARRAYS

Device	Direction	Interface	Number of Lines	C Max (pF)	V <sub>(BR)</sub> Min (V)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (uA)	P <sub>PK</sub> Max (W)	Package
CM1242-07	Bidirectional	General I/O	1	7	4.6	5	0.5	–	WLCSP-2
CM1242-33	Bidirectional	General I/O	1	66	6	5	0.5	–	WLCSP-2
ESD11B	Bidirectional	General I/O	1	13.5	5.8	5	1	52.5	DSN-2
ESD11N5	Bidirectional	USB 2.0	1	0.9	5.8	5	1	21.2	DSN-2
ESD5481	Bidirectional	General I/O	1	15	5.7	5	1	10.7	X3DFN-2
ESD5482	Bidirectional	General I/O	1	7	5	3.3	0.05	16.4	X3DFN-2
ESD5484	Bidirectional	General I/O	1	45	6	5	0.1	0.3	WLCSP-2
ESD5B	Bidirectional	General I/O	1	32	5.8	5	1	50	SOD-523-2
ESD7181	Bidirectional	RF Signal ESD Protection	1	0.6	20.5	18.5	0.05		X3DFN-2
ESD7481	Bidirectional	General I/O; HDMI 1.3/1.4; USB 3.0	1	0.4	5	3.3	0.05	35	X3DFN-2
ESD7951	Bidirectional	USB 2.0	1	0.5	5.4	5	1	7.2	SOD-923-2
ESD8472	Bidirectional	USB 2.0; USB 3.0	1	0.3	7	5.3	0.05	12.2	X3DFN-2
ESD9B	Bidirectional	General I/O	1	15	5 5.8	3.3 5	1	0.3	SOD-923-2
HBL21000	Bidirectional	General I/O	1	4.7	–9	4	0.3	5.3	Wafer
NUP1105L	Bidirectional	General I/O	1	30	25.7	24	0.1	350	SOT-23-3
NUP1301	Bidirectional	T1/E1,T3/E3	1	3	70	70	2.5	–	SOT-23-3
CM1231-02SO	Bidirectional	USB 2.0	2	0.02	–		1	0.225	SOT-23-6
NUP2105	Bidirectional	General I/O	2	30	26.2	22	0.1	350	SOT-23-3
NUP2115L	Bidirectional	General I/O	2	10	26.2	–	0.1	200	SOT-23-3
NUP2201	Bidirectional	DVI; USB 2.0	2	3	6	5	5	300	TSOP-6
NUP2202	Bidirectional	DVI; HDMI 1.2; USB 2.0	2	3	6	5	5	500	SC-88-6/ SC-70-6/ SOT-363-6
NUP2301	Bidirectional	T1/E1,T3/E3	2	3	70	70	2.5	–	SC-88-6/ SC-70-6/ SOT-363-6
ESD7383	Bidirectional	USB 2.0	3	1.5	6	3	0.1	50	WLCSP-4
ESD1014	Bidirectional	DVI; Ethernet (10/100, Gigabit); T1/E1, T3/E3	4	3	5	3.3	5	275	UDFN-10
ESD7104	Bidirectional	eSATA 2.0; HDMI 1.3/1.4; USB 3.0	4	0.35	5.5	5	1	21.3	UDFN-10
ESD7484	Bidirectional	HDMI 1.3/1.4	4	1.75	6	3	0.1	56.6	WLCSP-10
NUP3115UP	Bidirectional	USB 2.0	4	1	6.4	5.5	1	294.4	UDFN-6
NUP4004M5	Bidirectional	General I/O	4	23	7	5	1	–	TSOP-5/ SOT-23-5
NUP4202W1	Bidirectional	DVI; HDMI 1.2; USB 2.0	4	3	6	5	5	500	SC-88-6/ SC-70-6/ SOT-363-6
NUP4301	Bidirectional	USB 2.0	4	3	70	–	2.5	–	SC-74
NUP4302	Bidirectional	DVI; USB 2.0	4	28	30	25	30	0.225	TSOP-6
NUP4304MR6	Bidirectional	USB 2.0	4	1.5	70	2.5	2.5	–	SC-74
SRDA05-4	Bidirectional	T1/E1,T3/E3	4	8	6	5	10	500	SOIC-8
ESD5205	Bidirectional	General I/O	5	9	5.5	5	1	18	SOT-963

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### ESD PROTECTION DIODES AND ARRAYS (continued)

Device	Direction	Interface	Number of Lines	C Max (pF)	V <sub>(BR)</sub> Min (V)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (uA)	P <sub>PK</sub> Max (W)	Package
ESD7016	Bidirectional	USB 3.0	6	0.2	5.5	5	1	9.6	UDFN-8
ESD7008	Bidirectional	HDMI 1.3/1.4; USB 3.0	8	0.15	5.5	5	1	–	UDFN-18
NUP4000	Bidirectional	General I/O	8	75	16.7	15	1	400	SOIC-8
SMDA05CDR2G	Bidirectional	General I/O	8	350	6	5	20	300	SOIC-8
SMDA12CDR	Bidirectional	General I/O	8	120	13.3	12	1	300	SOIC-8
SMDA15CDR2G	Bidirectional	General I/O	8	75	16.7	15	1	300	SOIC-8
SMDA24	Bidirectional	General I/O	8	50	26.7	24	1	300	SOIC-8
CM1214A	Bidirectional	Ethernet (10/100, Gigabit)	2; 4	0.8	–	5.5	1	0.225; 0.4	Micro8; SOT-23-3
ESD5381	Unidirectional	General I/O	1	6; 13	6.1; 14.2	3	0.05; 0.1	7.8; 50.2	X3DFN-2
ESD5Z	Unidirectional	General I/O	1	55; 65; 70; 80; 105; 145	4; 5; 6.2; 6.8; 7.5; 14.1	2.5; 3.3; 5; 6; 7; 12	0.01; 0.05; 6	120; 158; 174; 181; 200; 240	SOD-523-2
ESD7381	Unidirectional	General I/O; HDMI 1.3/1.4; USB 3.0	1	0.55	5	3.3	0.05	27	X3DFN-2
ESD9C	Unidirectional	General I/O	1	6.2; 13	5; 11	3.3; 5	0.5; 1	0.15	SOD-923-2
ESD9L	Unidirectional	USB 2.0	1	0.9	4.8; 5.4	3.3; 5	1	0.15	SOD-923-2
ESD9M	Unidirectional	USB 2.0	1	2.5	5.8	5	1	0.15	SOD-923-2
ESD9P	Unidirectional	USB 2.0	1	1.3	5.8	5	1	0.15	SOD-923-2
ESD9R3	Unidirectional	USB 2.0	1	0.9	4.8	3.3	0.001	0.15	SOD-923-2
ESD9X12S	Unidirectional	General I/O	1	30	13.5	12	1	140	SOD-923-2
ESD9X3.3S	Unidirectional	General I/O	1	80	5	3.3	2.5	102	SOD-923-2
ESD9X5.0S	Unidirectional	General I/O; Thunderbolt; USB 2.0	1	65	6.2	5	1	107	SOD-923-2
ESD9X7.0	Unidirectional	General I/O	1	65	7.5	7	0.1	100	SOD-923-2
SL05	Unidirectional	General I/O	1	5	6	5	20	300	SOT-23-3
SL12	Unidirectional	General I/O	1	5	13.3	12	1	300	SOT-23-3
SL15	Unidirectional	General I/O	1	5	16.7	15	1	300	SOT-23-3
SL24	Unidirectional	General I/O	1	5	26.7	24	1	300	SOT-23-3
CM1223	Unidirectional	DVI; HDMI 1.2; USB 2.0	2	1.5	6	5.5	1	0.225	SOT-123-4; SOT-23-8
CM1263-02SE	Unidirectional	General I/O	2	1.2	–	5.5	1	–	SOT-553
CM1293A	Unidirectional	DVI; HDMI 1.2; USB 2.0	2	2	6	5.5	1	0.225	SC-74; SOT-123-4
DF3A6.8FU	Unidirectional	General I/O	2	–	6.4	5	0.5	20	SC-70-3/ SOT-323-3
ESD11A3.3	Unidirectional	General I/O	2	30	5.2	3.3	1	23	SOT-1123-3
ESD11A5	Unidirectional	General I/O	2	25	6.2	5	1	24.9	SOT-1123-3
ESD11L	Unidirectional	USB 2.0	2	0.9	5.4	5	1	10	SOT-1123-3
ESD7002	Unidirectional	USB 3.0	2	0.5	16.5	16	1	–	SC-70-3/ SOT-323-3
ESD7C	Unidirectional	General I/O	2	6.2; 13	5; 11	3.3; 5	0.5; 1	5.1	SOT-723-3
ESD7L	Unidirectional	DVI; eSATA 2.0; USB 2.0; USB 3.0	2	0.9	5.4	5	1	12	SOT-723-3
ESD7M5.0DT5G	Unidirectional	USB 2.0	2	2.5	5.4	5	1	0.15	SOT-723-3

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### ESD PROTECTION DIODES AND ARRAYS (continued)

Device	Direction	Interface	Number of Lines	C Max (pF)	V <sub>(BR)</sub> Min (V)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (uA)	P <sub>PK</sub> Max (W)	Package
ESDR0502B	Unidirectional	USB 2.0	2	0.45	5.8	5	1	20	SC-75-3
NUP2114	Unidirectional	DVI; HDMI 1.2; USB 2.0	2	1	6	5	1	–	SOT-553; TSOP-6
NZL5V6AXV3	Unidirectional	General I/O	2	–	5.32	3	5	50	SC-89-3
NZL6V8AXV3	Unidirectional	General I/O	2	–	6.46	4.5	1	73	SC-89-3
NZL7V5AXV3	Unidirectional	General I/O	2	32.6	7.12	5	1	75	SC-89-3
PACDN004	Unidirectional	VGA	2	5	–	5.5	1	0.225	SOT-143-4
PACDN042	Unidirectional	USB 2.0	2	30	6.2	5	0.1	0.225	SOT-23-3
UESD3.3D	Unidirectional	General I/O	2	47	5	3.3	1	0.24	SOT-723-3
UESD5.0D	Unidirectional	General I/O	2	38	6.2	5	0.1	0.24	SOT-723-3
UESD6.0D	Unidirectional	General I/O	2	34	7	6	0.1	31.7	SOT-723-3
CM1213A-04SO	Unidirectional	DVI; HDMI 1.2; USB 2.0	4	2	6	3.3	1	0.225	SC-74
CM1241	Unidirectional	General I/O	4	1.5	6.8	3.3	1	1	WDFN-8
CM1248-04QG	Unidirectional	General I/O	4	13	–	5	0.75	–	UDFN-6
CM1250	Unidirectional	General I/O	4	7	6.1	3.5	0.1	–	UDFN-6
CM1293A-04SO	Unidirectional	General I/O; USB 2.0	4	2	7.3	5.5	1	0.225	SC-74
CM1641	Unidirectional	General I/O	4	1.5	6.8	5	0.1	–	UDFN-8
DF6A6.8	Unidirectional	General I/O	4	40	6.4	5	1	75	SC-88-6/ SC-70-6/ SOT-363-6
ESD7004	Unidirectional	eSATA 2.0; HDMI 1.3/1.4; USB 3.0	4	0.5	5.5	5	1	11.3	UDFN-10
ESD7554	Unidirectional	USB 2.0	4	1.5	–	3.3	0.1	–	UDFN-8
ESD8004	Unidirectional	Display Port; eSATA 3.0; USB 3.0	4	0.35	5.5	3.3	1	–	UDFN-10
ESD8104	Unidirectional	Display Port; eSATA 3.0; HDMI 1.3/1.4; USB 3.0	4	0.37	4	3.3	1	–	UDFN-10
ESDR0502N	Unidirectional	Ethernet (10/100, Gigabit); USB 2.0	4	0.6	6	5.5	1	100	UDFN-6
ESDR0524P	Unidirectional	Display Port; DVI; eSATA 2.0; HDMI 1.3/1.4	4	0.4	6	5	1	11.1	UDFN-10
MMQA12V	Unidirectional	General I/O	4	–	11.4	–	0.075	150	SC-74
MMQA15V	Unidirectional	General I/O	4	–	14.3	11	0.075	150	SC-74
MMQA18V	Unidirectional	General I/O	4	–	17.1	–	0.075	150	SC-74
MMQA20V	Unidirectional	General I/O	4	–	19	–	0.075	150	SC-74
MMQA22V	Unidirectional	General I/O	4	–	20.9	–	0.075	150	SC-74
MMQA24V	Unidirectional	General I/O	4	–	22.8	–	0.075	150	SC-74
MMQA27V	Unidirectional	General I/O	4	–	25.7	–	0.075	150	SC-74
MMQA33V	Unidirectional	General I/O	4	–	31.4	25	0.075	150	SC-74
MMQA5V6T1	Unidirectional	General I/O	4	–	5.32	–	2	150	SC-74
MMQA6V2	Unidirectional	General I/O	4	–	5.89	4	0.7	150	SC-74
MMQA6V8	Unidirectional	General I/O	4	250	6.46	4.3	0.5	150	SC-74

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### ESD PROTECTION DIODES AND ARRAYS (continued)

Device	Direction	Interface	Number of Lines	C Max (pF)	V <sub>(BR)</sub> Min (V)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (uA)	P <sub>PK</sub> Max (W)	Package
MSQA6V1W5	Unidirectional	General I/O	4	90	6.1	3	11	150	SC-88A-5/ SC-70-5/ SOT-323-5
NSQA6V8A	Unidirectional	General I/O	4	15	6.4; 11.4	5; 9	0.05; 1	20	SC-88A-5/ SC-70-5/ SOT-323-5
NUP3112UPMUTAG	Unidirectional	USB 2.0	4	0.9	5.2	4	1	–	UDFN-6
NUP4016	Unidirectional	Ethernet (10/100, Gigabit); HDMI 1.2; MIPI; USB 2.0	4	0.8	6	5	1	13.5	SOT-953
NUP4060AXV6T1G	Unidirectional	General I/O	4	10	6.2	5	0.5	20	SOT-563
NUP4103	Unidirectional	General I/O	4	30	6	5.5	0.1	–	Flip-Chip CSP-5
NUP4106	Unidirectional	T1/E1,T3/E3	4	15	5	3.3	5	500	SOIC-8
NUP4114	Unidirectional	DVI; HDMI 1.2; HDMI 1.3/1.4; USB 2.0	4	0.3 1	6	5 5.5	1	–	SC-88-6/ SC-70-6/ SOT-363-6; SOT-563; TSOP-6
NUP412V	Unidirectional	General I/O	4	5	11.4	9	1	65	SOT-953
NUP4201	Unidirectional	USB 2.0	4	10	6	5	10	500	SOIC-8
NUP4201MR6	Unidirectional	USB 2.0	4	3	6	5	5	500	TSOP-6
NUP45V6	Unidirectional	General I/O	4	11.5	5.3	3	1	14	SOT-953
NUP46V8	Unidirectional	General I/O	4	9.5	6.47	4.3	1	30	SOT-953
NZQA5V6	Unidirectional	General I/O	4	90	5.32	3	1	100	SOT-553
NZQA5V6A	Unidirectional	General I/O	4	11.5	5.3	3	1	20	SOT-553
NZQA6V2	Unidirectional	General I/O	4	80	5.89	4	0.5	100	SOT-553
NZQA6V8	Unidirectional	General I/O	4	70	6.46	4.3	0.1	100	SOT-553
NZQA6V8A	Unidirectional	General I/O	4	9.5	6.47	3	1	20	SOT-553
PACDN1404	Unidirectional	General I/O	4	47	5.6	3.3	0.1	–	WLCSP-6
SMF05	Unidirectional	General I/O	4	90	6	5	5	200	SC-88A-5/ SC-70-5/ SOT-323-5
SMS05	Unidirectional	General I/O	4	75; 125;150; 400	6; 13.3; 16.7; 26.7	5; 12; 15; 24	1; 20	350	SC-74
SRDA3.3-4	Unidirectional	T1/E1,T3/E3	4	15	5	3.3	5	500	SOIC-8
ESD5384	Unidirectional	HDMI 1.3/1.4	5	12	6	3	32	–	WLCSP-9
NUP5120X6	Unidirectional	General I/O	5	70	6.2	5	0.5	90	SOT-563
NUP5150	Unidirectional	General I/O	5	15	6.2	5	0.1	–	UDFN-6
PACDN009	Unidirectional	VGA	5	5	–	5.5	1	0.2	Micro8
SMS05C	Unidirectional	General I/O	5	75; 125; 150; 400	6.2; 13.3; 17; 26.7	5; 12; 15; 24	1; 5	350	TSOP-6
CM1263-06DE	Unidirectional	General I/O	6	1.2	–	5.5	1	–	UDFN-12
ESD8006	Unidirectional	eSATA 3.0; Thunderbolt; USB 3.0	6	0.32	5.5	3.3	1	–	UDFN-8
NUP4212	Unidirectional	USB 2.0	6	0.9	5.2	4	1	–	UDFN-6
PACDN006	Unidirectional	VGA	6	5	–	5.5	1	0.2	Micro8
CM2006	Unidirectional	DVI	7	3	–	5.5	10	0.5	QSOP-16
CM2009	Unidirectional	DVI	7	4.5	–	6	10	0.5	QSOP-16

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### ESD PROTECTION DIODES AND ARRAYS (continued)

Device	Direction	Interface	Number of Lines	C Max (pF)	V <sub>(BR)</sub> Min (V)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	P <sub>PK</sub> Max (W)	Package
PACVGA105	Unidirectional	VGA	7	10	1.7		10	0.75	QSOP-16
PACVGA200	Unidirectional	VGA	7	5		5.5	10	1	QSOP-24
PACVGA201	Unidirectional	VGA	7	4.5		5.5	10	0.75	QSOP-16
CM1205	Unidirectional	General I/O; MIPI	8	47	5.6	3.3	0.1	–	WLCSP-10
CM1233	Unidirectional	DVI; HDMI 1.2	8	–	6	5.5	1	–	WDFN-16
CM1234	Unidirectional	DVI; HDMI 1.2	8	–	6	5.5	1	–	WDFN-16
CM1235	Unidirectional	DVI; HDMI 1.2	8	–	6	5.5	1	–	WDFN-16
CM1236	Unidirectional	DVI; HDMI 1.2	8	–	6	5	1	–	WDFN-16
CM1248-08DE	Unidirectional	General I/O	8	15	–	5.5	0.25	–	UDFN-8
ESD4238	Unidirectional	DVI; HDMI 1.2	8	–	5	5.5	1	–	WDFN-16
ESD8008	Unidirectional	Display Port	8	0.3	5.5	3.3	0.5	–	UDFN-14
NUP8011	Unidirectional	General I/O	8	14	6.47	4.3	1	0.38	UDFN-8
PACDN1408	Unidirectional	General I/O	8	47	5.6	3.3	0.1	–	WLCSP-10
ESD8040	Unidirectional	HDMI 1.3/1.4	14	0.35	5.5	3.3	1	–	UDFN-18
MG2040	Unidirectional	Display Port; HDMI 1.3/1.4	14	0.42	5.5	5	1	10.7	UDFN-18
CM2020-00TR	Unidirectional	HDMI 1.2	19	1.2	6	5.5	1		TSSOP-38
CM2020-01TR	Unidirectional	HDMI 1.2	19	1.2	6	5.5	1		TSSOP-38
LC03-6	Unidirectional	Ethernet (10/100, Gigabit); T1/E1, T3/E3		25	6	5	20	2000	SOIC-8
CM1213A	Unidirectional	DVI; HDMI 1.2; USB 2.0	1; 2; 4	1.2	6	3.3	1	0.225; 0.4	MSOP-10; SC-74; SC-88-6/ SC-70-6; SOT-143-4; SOT-23-3
CM1224	Unidirectional	DVI; HDMI 1.2; USB 2.0	2; 4	0.8	6	5.5	1	0.225; 0.4	MSOP-10; SOT-143-4; SOT-23-6
CM1230	Unidirectional	USB 2.0	2; 4; 8	1.2	–	5.5	1	–	WLCSP-10; WLCSP-4; WLCSP-6
CM1213	Unidirectional	DVI; HDMI 1.2; USB 2.0	6; 8	1.5	6	3.3	1	0.4	Micro8; MSOP-10
CM1216	Unidirectional	DVI; HDMI 1.2	6; 8	2	6	5.5	1	0.4	Micro8; MSOP-10
SSESD11B									DSN2, 0.6x0.3, 0.4P, (0201)

### EMI FILTERS

Device	Filter Type	Interface	Number of Lines	R Typ (Ω)	C Typ (pF)	I <sub>R</sub> Max (μA)	V <sub>(BR)</sub> Typ (V)	V <sub>RWM</sub> Max (V)	Package
EMI2180	Common Mode	Display Port; HDMI 1.3/1.4	2	3.5	2	1	7.8	9	WDFN-6
EMI2121	Common Mode	USB 2.0	3	8	0.8	1	7.25	5	WDFN-8
EMI4172	Common Mode	DVI; HDMI 1.3/1.4; MIPI	4	8	0.9	1	5	6.8	WDFN-10
EMI4182	Common Mode	DVI; HDMI 1.3/1.4; MIPI	4	8	0.9	1	6.8	5	WDFN-10
EMI4192MTTAG	Common Mode	DVI; HDMI 1.3/1.4; MIPI	4	4	0.9	1	6.8	5	WDFN-10

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### EMI FILTERS (continued)

Device	Filter Type	Interface	Number of Lines	R Typ (Ω)	C Typ (pF)	I <sub>R</sub> Max (μA)	V <sub>(BR)</sub> Typ (V)	V <sub>RWM</sub> Max (V)	Package
EMI4182MU	Common Mode	DVI; MIPI	4	8	0.8	1	7.3	5	UDFN-10
EMI4162	Common Mode	MIPI	4	8	0.8	1	7.3	5	UDFN-10
EMI2124	Common Mode	USB 2.0	4	8	0.8	1	7.25	5	WDFN-8
EMI4183	Common Mode	DVI; HDMI 1.3/1.4; MIPI	6	8	0.9	1	6.8	5	WDFN-16
EMI4183MU	Common Mode	MIPI	6	8	0.8	1	7.3	5	UDFN-16
EMI4193	Common Mode	MIPI	6	3.5	0.8	1	7.3	5	WDFN-16
EMI4184	Common Mode	DVI; MIPI	8	8	0.8	1	7.3	5	UDFN-20
NUF2441	L-C	Audio	2	0.28	250	0.1	15	12	Flip-Chip-6
NUF2450	L-C	Audio	2	1.3	240	0.1	7	5	UDFN-8
NUF4220	L-C	Audio	4	0.85	205	0.1	7	5	DFN-8
EMI7204MU	L-C	Display Port; General I/O	4	10	24.2	1	6.8	5	UDFN-8
CM1451	L-C	Display Port; General I/O	6	3	28.5	1	6.8	3.3	WLCSP-15
EMI7206MU	L-C	Display Port; General I/O	6	10	24.2	1	6.8	5	UDFN-12
EMI7208MU	L-C	Display Port; General I/O	8	10	24.2	1	6.8	5	UDFN-16
NUF8152	L-C	Display Port; General I/O	8	28	20	0.1	7	5	UDFN-16
CM1624	L-C	SIM Card	8	40	12	0.5	6.8	3	UDFN-16
CM1457	L-C	Display Port; General I/O	4; 6; 8	45	12.5	0.5	6.8	3.3	WLCSP-10; WLCSP-15; WLCSP-20
CM1693	L-C	Display Port	4; 8	2.3	22	1	6.8	3.3	UDFN-16; UDFN-8
NZF220TT1	R-C	General I/O	1	100	22	1	7	3	SC-75-3
NUF2114	R-C	Audio	2	8.4	60	0.1	15.7	12	DFN-8
NUF2116	R-C	Audio	2	64	50	0.1	15.7	12	DFN-8
CSPEMI201A	R-C	General I/O	2	10	200	1	6.8	5	WLCSP-5
CSPEMI202A	R-C	General I/O	2	68	94	1	6.8	5	WLCSP-5
NUF2230	R-C	General I/O	2	100	16	1	7	5	SOT-563
NZF220DFT1	R-C	General I/O	2	100	8.5	1	7	3	SC-88A-5/ SC-70-5/ SOT-323-5
CSPEMI205	R-C	General I/O	3	10	200	1	6.8	5	WLCSP-8
NUF2042XV6	R-C	General I/O	3	22	42	0.01	6.8	5.25	SOT-563
NUF2101	R-C	General I/O	3	30	55	0.1	7	5.25	TSOP-6
NUF2221	R-C	General I/O	3	22	42	0.1	6.8	5.25	SC-88-6/ SC-70-6/ SOT-363-6
STF202	R-C	General I/O	3	22	68	1	7	5.25	TSOP-6
NUF4001MU	R-C	Display Port; General I/O	4	100	13	0.1	7	5	UDFN-8

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### EMI FILTERS (continued)

Device	Filter Type	Interface	Number of Lines	R Typ ( $\Omega$ )	C Typ (pF)	I <sub>R</sub> Max ( $\mu$ A)	V <sub>(BR)</sub> Typ (V)	V <sub>RWM</sub> Max (V)	Package
NUF4211	R-C	Display Port; General I/O	4	100	8.5	0.1	7	5	DFN-8
NUF4310	R-C	Display Port; General I/O	4	100	18	0.1	7	5	WDFN-8
NUF4401MN	R-C	Display Port; General I/O	4	200	15	0.1	7	5	DFN-8
NUF4402MN	R-C	Display Port; General I/O	4	100	12	0.1	7	5	DFN-8
NUF4403MN	R-C	Display Port; General I/O	4	100	17	0.1	7	5	DFN-8
NUF6402	R-C	Display Port; General I/O	4	100	17	1	7	5	DFN-12
CM1443-04	R-C	General I/O	4	100	17	1	6.8	3.3	WLCSP-10
NUF3102	R-C	General I/O	4	100	13	1	7	5	UDFN-8
CM1402	R-C	SIM Card	4	100	20	1	6.8	3.3	WLCSP-10
CM6305	R-C	SIM Card	4	100	10	0.1	7	3	WLCSP-8
CSPEMI400	R-C	SIM Card	4	100	20	0.3	6.8	3.3	WLCSP-10
NUF6001MU	R-C	Display Port; General I/O	6	100	17	0.1	7	5	UDFN-12
NUF6010	R-C	Display Port; General I/O	6	100	7	0.1	6.8	5	UDFN-12
NUF6400	R-C	Display Port; General I/O	6	100	50	0.1	7	5	DFN-12
NUF6401MN	R-C	Display Port; General I/O	6	100	17	1	7	5	DFN-12
NUF6406	R-C	Display Port; General I/O	6	100	13	1	7	5	DFN-12
NUF6410	R-C	Display Port; General I/O	6	100	7	0.1	6.8	5	DFN-12
CSPEMI307A	R-C	General I/O	6	100	30	0.1	6.8	3.3	WLCSP-15
NUF6105	R-C	General I/O	6	100	27	0.1	7	5	Flip-Chip-15
EMI6316	R-C	SIM Card	7	40	8	0.1	7	3	WLCSP-15
CM1422	R-C	Display Port; General I/O	8	16	15	0.2	6.8	3.3	WLCSP-20
NUF8001MU	R-C	Display Port; General I/O	8	100	12	0.1	7	5	UDFN-16
NUF8010	R-C	Display Port; General I/O	8	100	7	0.1	7	5	UDFN-16
NUF8401	R-C	Display Port; General I/O	8	100	12	0.1	7	5	DFN-16
NUF8402	R-C	Display Port; General I/O	8	100	17	0.1	7	5	DFN-16
NUF8410	R-C	Display Port; General I/O	8	100	8.5	0.1	7	5	DFN-16
NUF8600	R-C	Display Port; General I/O	8	50	17	0.1	7	5	DFN-16
NUF8610	R-C	Display Port; General I/O	8	50	8.5	0.1	7	5	DFN-16
CM1443-08	R-C	General I/O	16	100	17	1	6.8	3.3	WLCSP-20
EMI520	R-C	Display Port; General I/O	4; 6; 8	100	7	0.1	7	5	UDFN-12; UDFN-16; UDFN-8

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### EMI FILTERS (continued)

Device	Filter Type	Interface	Number of Lines	R Typ ( $\Omega$ )	C Typ (pF)	I <sub>R</sub> Max ( $\mu$ A)	V <sub>(BR)</sub> Typ (V)	V <sub>RWM</sub> Max (V)	Package
CM1442	R-C	Display Port; General I/O	6; 8	100	30	1	6.8	3.3	WLCSP-15
NCP4810			1	560000	0	15	700	700	SOIC-8
EMI9106									UDFN-16

### TVS – UNIDIRECTIONAL

Device	V <sub>(BR)</sub> Typ (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max ( $\mu$ A)	V <sub>C</sub> Max (V)	Package
ESD9X3.3S	5.6	102	3.3	2.5	10.4	SOD-923-2
MMBZ5V6A	5.6	24	3	5	8	SOT-23-3
MMQA5V6T1	5.6	150	-	2	8	SC-74
NZL5V6AT	5.6	0.15	3	1	9.97	SC-75-3
NZQA5V6	5.6	100	3	1	10.5	SOT-553
NZQA5V6A	5.6	20	3	1	13	SOT-553
SRV05-4	6	300	5	5	17.5	TSOP-6
ESD9L	6.1	0.15	3.3; 5	1	7.8; 9.8	SOD-923-2
PACDN042	6.1	0.225	5	0.1	8	SOT-23-3
1N5908	6.2	1500	5	300	8.5	Axial Lead-2
MMBZ6V2A	6.2	24	3	0.5	8.7	SOT-23-3
MMQA6V2	6.2	150	4	0.7	9	SC-74
NZQA6V2	6.2	100	4	0.5	11.5	SOT-553
1N6373	6.3	1500	5	300	9.4	Axial Lead-2
1PMT5.0A	6.7	175	5	80	9.2	POWERMITE-2
1SMA5.0A	6.7	400	5	400	9.3	SMA-2
1SMB5.0A	6.7	600	5	800	9.2	SMB-2
1SMC5.0A	6.7	1500	5	1000	9.2	SMC-2
NS6A5.0AF	6.7	600	5	800	9.2	SMA-FL
NS6A5.0AT	6.7	600	5	800	9.2	SMA-2
NSA5.0AFT3G	6.7	400	5	400	9.2	SMA-FL
NSA5.0AT3G	6.7	400	5	400	9.2	SMA-2
SA5.0A	6.7	500	5	600	9.2	Axial Lead-2
SMF5.0A	6.7	200	5	400	9.2	SOD123-2
SD05	6.75	350	5	10	14.5	SOD-323
1.5SMC6.8A	6.8	1500	5.8	1000	10.5	SMC-2
1N6267A	6.8	1500	5.8	1000	10.5	Axial Lead-2
DF3A6.8FU	6.8	20	5	0.5	9.6	SC-70-3/ SOT-323-3
ESD9X5.0S	6.8	107	5	1	12.3	SOD-923-2
LC03-6	6.8	2000	5	20	20	SOIC-8
MMBZ6V8A	6.8	24	4.5	0.5	9.6	SOT-23-3
MMQA6V8	6.8	150	4.3	0.5	9.8	SC-74
NZL6V8AXV3	6.8	73	4.5	1	11.9	SC-89-3
NZQA6V8	6.8	100	4.3	0.1	12.5	SOT-553
NZQA6V8A	6.8	20	3	1	13	SOT-553
P6KE6.8A	6.8	600	5.8	1000	10.5	Surmetic 40



## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – UNIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
P6SMB6.8A	6.8	600	5.8	1000	10.5	SMB-2
SM05	6.8	300	5	1	9.8	SOT-23-3
SL05	7	300	5	20	11	SOT-23-3
1SMA6.0A	7.02	400	6	400	10.3	SMA-2
1SMB6.0A	7.02	600	6	800	10.3	SMB-2
1SMC6.0A	7.02	1500	6	1000	10.3	SMC-2
SA6.0A	7.02	500	6	600	10.3	Axial Lead-2
SMF6.0A	7.02	200	6	400	10.3	SOD123-2
1.5SMC7.5A	7.5	1500	6.4	500	11.3	SMC-2
MA3075	7.5	15	6.5	60		SOT-23-3
P6KE7.5A	7.5	600	6.4	500	11.3	Surmetic 40
P6SMB7.5A	7.5	600	6.4	500	11.3	SMB-2
1SMA6.5A	7.6	400	6.5	250	11.2	SMA-2
1SMB6.5A	7.6	600	6.5	500	11.2	SMB-2
1SMC6.5A	7.6	1500	6.5	500	11.2	SMC-2
SMF6.5A	7.6	200	6.5	250	11.2	SOD123-2
ESDR7534	8	300	5	3	30	SC-88-6/ SC-70-6/ SOT-363-6
1SMB7.0A	8.19	600	7	200	12	SMB-2
SA7.0A	8.19	500	7	150	12	Axial Lead-2
SMF7.0A	8.19	200	7	100	12	SOD123-2
ESD9X7.0	8.2	100	7	0.1	25	SOD-923-2
P6SMB8.2A	8.2	600	7.02	20	12.1	SMB-2
1SMB7.5A	8.77	600	7.5	100	12.9	SMB-2
1SMC7.5A	8.77	1500	7.5	100	12.9	SMC-2
SMF7.5A	8.77	200	7.5	50	12.9	SOD123-2
1N6270A	9.1	1500	7.78	50	13.4	Axial Lead-2
P6SMB9.1A	9.1	600	7.78	50	13.4	SMB-2
1SMB8.0A	9.36	600	8	50	13.6	SMB-2
1SMC8.0A	9.36	1500	8	50	13.6	SMC-2
SMF8.0A	9.36	200	8	1	13.6	SOD123-2
1SMA8.0A	9.4	400	8	25	13.6	SMA-2
1SMA8.5A	9.9	400	8.5	5	14.4	SMA-2
1SMB8.5A	9.92	600	8.5	10	14.4	SMB-2
1.5SMC10A	10	1500	8.55	10	14.5	SMC-2
1N6271A	10	1500	8.55	10	14.5	Axial Lead-2
P6KE10A	10	600	8.55	10	14.5	Surmetic 40
P6SMB10A	10	600	8.55	10	14.5	SMB-2
1SMB9.0A	10.55	600	9	5	15.4	SMB-2
1SMC9.0A	10.55	1500	9	10	15.4	SMC-2
SMF9.0A	10.55	200	9	1	15.4	SOD123-2
1SMA9.0A	10.6	400	9	2.5	15.4	SMA-2
1N6272A	11	1500	9.4	5	15.6	Axial Lead-2

**ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters**

**TVS – UNIDIRECTIONAL** (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1N6273A	11.4	1500	10.2	5	16.7	Axial Lead-2
1SMA10A	11.7	400	10	2.5	17	SMA-2
1SMB10A	11.7	600	10	5	17	SMB-2
1SMC10A	11.7	1500	10	5	17	SMC-2
SA10A	11.7	500	10	1	17	Axial Lead-2
SMF10A	11.7	200	10	2.5	17	SOD123-2
1.5SMC12A	12	1500	10.2	5	16.7	SMC-2
MMBZ12V	12	40	8.5	0.2	17	SOT-23-3
MMQA12V	12	150		0.075	17.3	SC-74
P6KE12A	12	600	10.2	5	16.7	Surmetic 40
P6SMB12A	12	600	10.2	5	16.7	SMB-2
1SMA11A	12.85	400	11	2.5	18.2	SMA-2
1SMB11A	12.85	600	11	5	18.2	SMB-2
SMF11A	12.85	200	11	2.5	18.2	SOD123-2
1.5SMC13A	13	1500	11.1	5	18.2	SMC-2
1N6274A	13	1500	11.1	5	18.2	Axial Lead-2
P6KE13A	13	600	11.1	5	18.2	Surmetic 40
P6SMB13A	13	600	11.1	5	18.2	SMB-2
NSB12ANT3G	13.75	600	12	5	19.9	SMB-2
1PMT12A	14	200	12	1	19.9	POWERMITE-2
1SMA12A	14	400	12	2.5	19.9	SMA-2
1SMB12A	14	600	12	5	19.9	SMB-2
1SMC12A	14	1500	12	5	19.9	SMC-2
NS6A12AF	14	600	12	0.5	19.5	SMA-FL
SA12A	14	500	12	1	19.9	Axial Lead-2
SMF12A	14	200	12	2.4	19.9	SOD123-2
SD12	14.5	350	12	1	25	SOD-323
SM12	14.5	300	12	1	19	SOT-23-3
1.5SMC15A	15	1500	12.8	5	21.2	SMC-2
1N6275A	15	1500	12.8	5	21.2	Axial Lead-2
BZG03C15	15	600	11	1	21.5	SMA-2
ESD9X12S	15	140	12	1	23.7	SOD-923-2
MMBZ15V	15	40	12	0.05	21	SOT-23-3
MMQA15V	15	150	11	0.075	21.7	SC-74
P6KE15A	15	600	12.8	5	21.2	Surmetic 40
P6SMB15A	15	600	12.8	5	21.2	SMB-2
1SMA13A	15.15	400	13	2.5	21.5	SMA-2
1SMB13A	15.15	600	13	5	21.5	SMB-2
1SMC13A	15.15	1500	13	5	21.5	SMC-2
NS6A13AF	15.15	600	13	5	21.5	SMA-FL
NS6A13AT	15.15	600	13	5	21.5	SMA-2
SA13A	15.15	500	13	1	21.5	Axial Lead-2
SMF13A	15.15	200	13	1	21.5	SOD123-2

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – UNIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
CM6136	15.5	–	–		19.5	WLCSP-4
1SMB14A	15.6	600	14	5	23.2	SMB-2
1.5SMC16A	16	1500	13.6	5	22.5	SMC-2
1N6276A	16	1500	13.6	5	22.5	Axial Lead-2
P6KE16A	16	600	13.6	5	22.5	Surmetic 40
P6SMB16A	16	600	13.6	5	22.5	SMB-2
1SMA14A	16.4	400	14	2.5	23.2	SMA-2
1SMC14A	16.4	1500	14	5	23.2	SMC-2
SMF14A	16.4	200	14	1	23.2	SOD123-2
SM15T1G	16.7	300	15	1	24	SOT-23-3
1SMA15A	17.6	400	15	2.5	24.4	SMA-2
1SMB15A	17.6	600	15	5	24.4	SMB-2
1SMC15A	17.6	1500	15	5	24.4	SMC-2
SA15A	17.6	500	15	1	24.4	Axial Lead-2
SL15	17.6	300	15	1	30	SOT-23-3
SMF15A	17.6	200	15	1	24.4	SOD123-2
1.5SMC18A	18	1500	15.3	5	25.2	SMC-2
1N6277A	18	1500	15.3	5	25.2	Axial Lead-2
MMBZ18V	18	40	14.5	0.05	25	SOT-23-3
MMQA18V	18	150		0.075	26	SC-74
P6KE18A	18	600	15.3	5	25.2	Surmetic 40
P6SMB18A	18	600	15.3	5	25.2	SMB-2
1PMT16A	18.75	200	16	1	26	POWERMITE-2
1SMA16A	18.75	400	16	2.5	26	SMA-2
1SMC16A	18.75	1500	16	5	26	SMC-2
SA16A	18.75	500	16	1	26	Axial Lead-2
1SMB16A	19.7	600	16	5	26	SMB-2; SMC-2
1SMA17A	19.9	400	17	2.5	27.6	SMA-2
1SMB17A	19.9	600	17	5	27.6	SMB-2
1SMC17A	19.9	1500	17	5	27.6	SMC-2
SA17A	19.9	500	17	1	27.6	Axial Lead-2
1.5SMC20A	20	1500	17.1	5	27.7	SMC-2
1N6278A	20	1500	17.1	5	27.7	Axial Lead-2
MMBZ20V	20	40	17	0.05	28	SOT-23-3
MMQA20V	20	150		0.075	28.6	SC-74
P6KE20A	20	600	17.1	5	27.7	Surmetic 40
P6SMB20A	20	600	17.1	5	27.7	SMB-2
SMF18A	21	200	18	1	29.2	SOD123-2
1SMA18A	21.05	400	18	2.5	29.2	SMA-2
1SMB18A	21.05	600	18	5	29.2	SMB-2
1SMC18A	21.05	1500	18	5	29.2	SMC-2
SA18A	21.05	500	18	1	29.2	Axial Lead-2
1.5SMC22A	22	1500	18.8	5	30.6	SMC-2

**ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters**

**TVS – UNIDIRECTIONAL** (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1N6279A	22	1500	18.8	5	30.6	Axial Lead-2
MMQA22V	22	150		0.075	31.7	SC-74
P6KE22A	22	600	18.8	5	30.6	Surmetic 40
P6SMB22A	22	600	18.8	5	30.6	SMB-2
ESD7002	23		16	1		SC-70-3/ SOT-323-3
1SMA20A	23.35	400	20	2.5	32.4	SMA-2
1SMB20A	23.35	600	20	5	32.4	SMB-2
1SMC20A	23.35	1500	20	5	32.4	SMC-2
SA20A	23.35	500	20	1	32.4	Axial Lead-2
SMF20A	23.35	200	20	1	32.4	SOD123-2
1.5SMC24A	24	1500	20.5	5	33.2	SMC-2
1N6280A	24	1500	20.5	5	33.2	Axial Lead-2
MMQA24V	24	150		0.075	34.6	SC-74
P6KE24A	24	600	20.5	5	33.2	Surmetic 40
P6SMB24A	24	600	20.5	5	33.2	SMB-2
SMF22A	25.6	200	22	1	35.5	SOD123-2
1SMA22A	25.65	400	22	2.5	35.5	SMA-2
1SMB22A	25.65	600	22	5	35.5	SMB-2
1SMC22A	25.65	1500	22	5	35.5	SMC-2
SM24T1G	26.7	300	24	1	43	SOT-23-3
1.5SMC27A	27	1500	23.1	5	37.5	SMC-2
1N6281A	27	1500	23.1	5	37.5	Axial Lead-2
MMBZ27V	27	40	22	0.05	40	SOT-23-3
MMBZ27VAW	27	40	22	0.05	40	SC-70-3/ SOT-323-3
MMBZ27VCW	27	40	22	0.05	38	SC-70-3/ SOT-323-3
MMQA27V	27	150		0.075	39	SC-74
P6KE27A	27	600	23.1	5	37.5	Surmetic 40
P6SMB27A	27	600	23.1	5	37.5	SMB-2
SL24	27.85	300	24	1	55	SOT-23-3
1SMA24A	28.1	400	24	2.5	38.9	SMA-2
1SMB24A	28.1	600	24	5	38.9	SMB-2
1SMC24A	28.1	1500	24	5	38.9	SMC-2
SA24A	28.1	500	24	1	38.9	Axial Lead-2
SMF24A	28.1	200	24	1	38.9	SOD123-2
1.5SMC30A	30	1500	25.6	5	41.4	SMC-2
1N6282A	30	1500	25.6	5	41.4	Axial Lead-2
P6KE30A	30	600	25.6	5	41.4	Surmetic 40
P6SMB30A	30	600	25.6	5	41.4	SMB-2
1SMA26A	30.4	400	26	2.5	42.1	SMA-2
1SMB26A	30.4	600	26	5	42.1	SMB-2
1SMC26A	30.4	1500	26	5	42.1	SMC-2
SA26A	30.4	500	26	1	42.1	Axial Lead-2
SMF26A	30.4	200	26	1	42.1	SOD123-2

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – UNIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1SMA28A	32.75	400	28	2.5	45.4	SMA-2
1SMB28A	32.75	600	28	5	45.4	SMB-2
1SMC28A	32.75	1500	28	5	45.4	SMC-2
SA28A	32.75	500	28	1	45.4	Axial Lead-2
SMF28A	32.8	200	28	1	45.4	SOD123-2
1.5SMC33A	33	1500	28.2	5	45.7	SMC-2
1N6283A	33	1500	28.2	5	45.7	Axial Lead-2
MMBZ33V	33	40	26	0.05	46	SOT-23-3
MMQA33V	33	150	25	0.075	48.6	SC-74
P6KE33A	33	600	28.2	5	45.7	Surmetic 40
P6SMB33A	33	600	28.2	5	45.7	SMB-2
1SMA30A	35.05	400	30	2.5	48.4	SMA-2
1SMB30A	35.05	600	30	5	48.4	SMB-2
1SMC30A	35.05	1500	30	5	48.4	SMC-2
SA30A	35.05	500	30	1	48.4	Axial Lead-2
SMF30A	35.1	200	30	1	48.4	SOD123-2
1.5SMC36A	36	1500	30.8	5	49.9	SMC-2
1N6284A	36	1500	30.8	5	49.9	Axial Lead-2
P6KE36A	36	600	30.8	5	49.9	Surmetic 40
P6SMB36A	36	600	30.8	5	49.9	SMB-2
1SMA33A	38.65	400	33	2.5	53.3	SMA-2
1SMB33A	38.65	600	33	5	53.3	SMB-2
1SMC33A	38.65	1500	33	5	53.3	SMC-2
SA33A	38.65	500	33	1	53.3	Axial Lead-2
1PMT33A	38.7	200	33	1	53.3	POWERMITE-2
SMF33A	38.7	200	33	1	53.3	SOD123-2
1.5SMC39A	39	1500	33.3	5	53.9	SMC-2
1N6285A	39	1500	33.3	5	53.9	Axial Lead-2
P6KE39A	39	600	33.3	5	53.9	Surmetic 40
P6SMB39A	39	600	33.3	5	53.9	SMB-2
1SMA36A	42.1	400	36	2.5	58.1	SMA-2
1SMB36A	42.1	600	36	5	58.1	SMB-2
1SMC36A	42.1	1500	36	5	58.1	SMC-2
SA36A	42.1	500	36	1	58.1	Axial Lead-2
SMF36A	42.1	200	36	1	58.1	SOD123-2
1.5SMC43A	43	1500	36.8	5	59.3	SMC-2
1N6286A	43	1500	36.8	5	59.3	Axial Lead-2
P6KE43A	43	600	36.8	5	59.3	Surmetic 40
P6SMB43A	43	600	36.8	5	59.3	SMB-2
1SMA40A	46.75	400	40	2.5	64.5	SMA-2
1SMB40A	46.75	600	40	5	64.5	SMB-2
1SMC40A	46.75	1500	40	5	64.5	SMC-2
1.5SMC47A	47	1500	40.2	5	64.8	SMC-2

**ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters**

**TVS – UNIDIRECTIONAL** (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1N6287A	47	1500	40.2	5	64.8	Axial Lead-2
P6KE47A	47	600	40.2	5	64.8	Surmetic 40
1SMA43A	50.3	400	43	2.5	69.4	SMA-2
1SMB43A	50.3	600	43	5	69.4	SMB-2
1SMC43A	50.3	1500	43	5	69.4	SMC-2
1.5SMC51A	51	1500	43.6	5	70.1	SMC-2
1N6288A	51	1500	43.6	5	70.1	Axial Lead-2
P6KE51A	51	600	43.6	5	70.1	Surmetic 40
P6SMB51A	51	600	43.6	5	70.1	SMB-2
1SMA45A	52.65	400	45	2.5	72.2	SMA-2
1SMB45A	52.65	600	45	5	72.7	SMB-2
1.5SMC56A	56	1500	47.8	5	77	SMC-2
1N6289A	56	1500	47.8	5	77	Axial Lead-2
P6KE56A	56	600	47.8	5	77	Surmetic 40
P6SMB56A	56	600	47.8	5	77	SMB-2
1SMA48A	56.1	400	48	2.5	77.4	SMA-2
1SMB48A	56.1	600	48	5	77.4	SMB-2
1SMC48A	56.1	1500	48	5	77.4	SMC-2
SMF48A	56.1	200	48	1	77.4	SOD123-2
1SMB51A	59.7	600	51	5	82.4	SMB-2
1.5SMC62A	62	1500	53	5	85	SMC-2
1N6290A	62	1500	53	5	85	Axial Lead-2
P6KE62A	62	600	53	5	85	Surmetic 40
P6SMB62A	62	600	53	5	85	SMB-2
1SMA54A	63.15	400	54	2.5	87.1	SMA-2
1SMB54A	63.15	600	54	5	87.1	SMB-2
1SMC54A	63.15	1500	54	5	87.1	SMC-2
1SMA58A	67.8	400	58	2.5	93.6	SMA-2
1SMB58A	67.8	600	58	5	93.6	SMB-2
1SMC58A	67.8	1500	58	5	93.6	SMC-2
SMF58A	67.8	200	58	1	93.6	SOD123-2
1.5SMC68A	68	1500	58.1	5	92	SMC-2
1N6291A	68	1500	58.1	5	92	Axial Lead-2
P6KE68A	68	600	58.1	5	92	Surmetic 40
P6SMB68A	68	600	58.1	5	92	SMB-2
1SMB60A	70.2	600	60	5	96.8	SMB-2
1SMC60A	70.2	1500	60	5	96.8	SMC-2
1SMB64A	74.85	600	64	5	103	SMB-2
1SMC64A	74.85	1500	64	5	103	SMC-2
1.5SMC75A	75	1500	64.1	5	103	SMC-2
1N6292A	75	1500	64.1	5	103	Axial Lead-2
P6KE75A	75	600	64.1	5	103	Surmetic 40
P6SMB75A	75	600	64.1	5	103	SMB-2

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – UNIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> TYP (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1SMA70A	81.9	400	70	2.5	113	SMA-2
1SMB70A	81.9	600	70	5	113	SMB-2
1SMC70A	81.9	1500	70	5	113	SMC-2
1.5SMC82A	82	1500	70.1	5	113	SMC-2
1N6293A	82	1500	70.1	5	113	Axial Lead-2
P6KE82A	82	600	70.1	5	113	Surmetic 40
P6SMB82A	82	600	70.1	5	113	SMB-2
1SMB75A	87.7	600	75	5	121	SMB-2
1SMC75A	87.7	1500	75	5	121	SMC-2
1.5SMC91A	91	1500	77.8	5	125	SMC-2
1N6294A	91	1500	77.8	5	125	Axial Lead-2
P6KE91A	91	600	77.8	5	125	Surmetic 40
P6SMB91A	91	600	77.8	5	125	SMB-2
1SMC78A	91.25	1500	78	5	126	SMC-2
1SMB85A	99.2	600	85	55	137	SMB-2
P6KE100A	100	600	85.5	5	137	Surmetic 40
P6SMB100A	100	600	85.5	5	137	SMB-2
1SMB90A	105.5	600	90	5	146	SMB-2
1SMB100A	117	600	100	5	162	SMB-2
P6SMB120A	120	600	102	5	165	SMB-2
1SMB110A	128.5	600	110	5	177	SMB-2
P6KE130A	130	600	111	5	179	Surmetic 40
P6SMB130A	130	600	111	5	179	SMB-2
1SMB120A	140	600	120	5	193	SMB-2
BZG03C150	150	600	110	1	-	SMA-2
P6KE150A	150	600	128	5	207	Surmetic 40
P6SMB150A	150	600	128	5	207	SMB-2
1SMB130A	151.5	600	130	5	209	SMB-2
P6KE160A	160	600	136	5	219	Surmetic 40
P6SMB160A	160	600	136	5	219	SMB-2
1SMB150A	176	600	150	5	243	SMB-2
P6KE180A	180	600	154	5	246	Surmetic 40
P6SMB180A	180	600	154	5	246	SMB-2
1SMB160A	187.5	600	160	5	259	SMB-2
1SMB170A	199	600	170	5	275	SMB-2
P6KE200A	200	600	171	5	274	Surmetic 40
P6SMB200A	200	600	171	5	274	SMB-2
1N6376		1500	12	2	21.2	Axial Lead-2
1N6377		1500	15	2	25	Axial Lead-2
1N6380		1500	36	2	65.2	Axial Lead-2
ESD7L		12	5	1	10.4	SOT-723-3
ESD7M5.0DT5G		0.15	5	1	10.4	SOT-723-3

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – UNIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> Typ (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
ESD5Z	–	120; 158; 174; 181; 200; 240	2.5; 3.3; 5; 6; 7; 12	0.01; 0.05; 6	6.5; 8.4; 11.6; 12.4; 13.5; 17	SOD-523-2
ESD9M	–	0.15	5	1	9.8	SOD-923-2
ESD9R3	–	0.15	3.3	0.001	7.8	SOD-923-2
NUP4106	–	500	3.3	5	15	SOIC-8
NUP4201	–	500	5	10	9.8	SOIC-8
SL12	–	300	12	1	24	SOT-23-3
SMS05C	–	350	5; 12; 15; 24	1; 5	14.5; 23; 29; 44	TSOP-6
SRDA3.3-4	–	500	3.3	5	15	SOIC-8
SMS05	6.6; 14.15; 17.6; 29.35	350	5; 12; 15; 24	1; 20	15.5; 23; 29; 44	SC-74
NSQA6V8A	6.8; 12	20	5; 9	0.05; 1	13; 23	SC-88A-5/ SC-70-5/ SOT-323-5
SMF05C	6.8; 14; 18; 29	100	5; 12; 15; 24	0.1; 1; 5	12.5; 23; 29; 44	SC-88-6/ SC-70-6/ SOT-363-6

### TVS – BIDIRECTIONAL

Device	V <sub>(BR)</sub> Typ (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
ESD1014	5.3	275	3.3	5	11	UDFN-10
ESD5B	6.8	50	5	1	–	SOD-523-2
ESD9B	6.8	0.3	3.3; 5	1	10.5; 12.5	SOD-923-2
P6SMB11CA	11	600	9.4	5	15.6	SMB-2
1SMB10CA	11.69	600	10	5	17	SMB-2
1SMA10CA	11.7	400	10	2.5	17	SMA-2
P6SMB12CA	12	600	10.2	5	16.7	SMB-2
1SMB11CA	12.85	600	11	5	18.2	SMB-2
1SMA12CA	14	400	12	2.5	19.9	SMA-2
1SMB12CA	14	600	12	5	19.9	SMB-2
P6SMB15CA	15	600	12.8	5	21.2	SMB-2
1SMA13CA	15.15	400	13	2.5	21.5	SMA-2
1SMB13CA	15.15	600	13	5	21.5	SMB-2
P6SMB16CA	16	600	13.6	5	22.5	SMB-2
1SMB14CA	16.4	600	14	5	23.2	SMB-2
1SMA15CA	17.6	400	15	2.5	24.4	SMA-2
1SMB15CA	17.6	600	15	5	24.4	SMB-2
P6SMB18CA	18	600	15.3	5	25.2	SMB-2
1SMA16CA	18.75	400	16	2.5	26	SMA-2
1SMB16CA	18.75	600	16	5	26	SMB-2
1SMB17CA	19.9	600	17	5	27.6	SMB-2
P6SMB20CA	20	600	17.1	5	27.7	SMB-2
1SMA18CA	21.05	400	18	2.5	29.2	SMA-2
1SMB18CA	21.05	600	18	5	29.2	SMB-2
P6SMB22CA	22	600	18.8	5	30.6	SMB-2
1SMA20CA	23.35	400	20	2.5	32.4	SMA-2
1SMB20CA	23.35	600	20	5	32.4	SMB-2



## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – BIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> Typ (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
P6SMB24CA	24	600	20.5	5	33.2	SMB-2
1SMB22CA	25.65	600	22	5	35.5	SMB-2
NUP1105L	27	350	24	0.1	40	SOT-23-3
NUP2105	27	350	22	0.1	40	SOT-23-3
P6SMB27CA	27	600	23.1	5	37.5	SMB-2
1SMA24CA	28.1	400	24	2.5	38.9	SMA-2
1SMB24CA	28.1	600	24	5	38.9	SMB-2
P6SMB30CA	30	600	25.6	5	41.4	SMB-2
1SMA26CA	30.4	400	26	2.5	42.1	SMA-2
1SMB26CA	30.4	600	26	5	42.1	SMB-2
1SMA28CA	32.75	400	28	2.5	45.4	SMA-2
1SMB28CA	32.75	600	28	5	45.4	SMB-2
P6SMB33CA	33	600	28.2	5	45.7	SMB-2
1SMA30CA	35.05	400	30	2.5	48.4	SMA-2
1SMB30CA	35.05	600	30	5	48.4	SMB-2
P6SMB36CA	36	600	30.8	5	49.9	SMB-2
1SMA33CA	38.65	400	33	2.5	53.3	SMA-2
1SMB33CA	38.65	600	33	5	53.3	SMB-2
P6SMB39CA	39	600	33.3	5	53.9	SMB-2
SM36T1G	40	300	36	1	60	SOT-23-3
1SMA36CA	42.1	400	36	2.5	58.1	SMA-2
1SMB36CA	42.1	600	36	5	58.1	SMB-2
P6SMB43CA	43	600	36.8	5	59.3	SMB-2
1SMA40CA	46.75	400	40	2.5	64.5	SMA-2
1SMB40CA	46.75	600	40	5	64.5	SMB-2
P6SMB47CA	47	600	40.2	5	64.8	SMB-2
1SMB43CA	50.3	600	43	5	69.4	SMB-2
P6SMB51CA	51	600	43.6	5	70.1	SMB-2
1SMB45CA	52.65	600	45	5	72.7	SMB-2
P6SMB56CA	56	600	47.8	5	77	SMB-2
1SMA48CA	56.1	400	48	2.5	77.4	SMA-2
1SMB48CA	56.1	600	48	5	77.4	SMB-2
1SMB51CA	59.7	600	51	5	82.4	SMB-2
P6SMB62CA	62	600	53	5	85	SMB-2
1SMB54CA	63.15	600	54	5	87.1	SMB-2
1SMA58CA	67.8	400	58	2.5	93.6	SMA-2
1SMB58CA	67.8	600	58	5	93.6	SMB-2
P6SMB68CA	68	600	58.1	5	92	SMB-2
1SMA60CA	70.2	400	60	2.5	96.8	SMA-2
1SMB60CA	70.2	600	60	5	96.8	SMB-2
1SMB64CA	74.85	600	64	5	103	SMB-2
1SMA70CA	81.9	400	70	2.5	113	SMA-2
P6SMB75CA	82	600	70.1	5	113	SMB-2

## ON Semiconductor Selector Guide – ESD and EMI Protection Diodes and Filters

### TVS – BIDIRECTIONAL (continued)

Device	V <sub>(BR)</sub> Typ (V)	P <sub>PK</sub> Max (W)	V <sub>RWM</sub> Max (V)	I <sub>R</sub> Max (μA)	V <sub>C</sub> Max (V)	Package
1SMB75CA	87.7	600	75	5	121	SMB-2
1SMA78CA	91.25	400	78	2.5	126	SMA-2
ESD5481	–	10.7	5	1	12.5	X3DFN-2
ESD5484	–	0.3	5	0.1	9.2	WLCSP-2
NUP2115L	–	200	–	0.1	50	SOT-23-3
NUP4000	–	400	15	1	30	SOIC-8
SMDA05CDR2G	–	300	5	20	11	SOIC-8
SMDA12CDR	–	300	12	1	24	SOIC-8
SMDA15CDR2G	–	300	15	1	30	SOIC-8
SMDA24	–	300	24	1	55	SOIC-8
SRDA05-4	–	500	5	10	12	SOIC-8
SSESD11B						DSN2, 0.6x0.3, 0.4P, (0201)



# IGBTs and FETs

---

## Table of Contents

	<b>Page</b>
IGBTs .....	180
JFETs .....	181
MOSFETs .....	183
Protected MOSFETs .....	204

## ON Semiconductor Selector Guide – IGBTs and FETs

### IGBTs

Device	V <sub>(BR)CES</sub> Typ (V)	V <sub>CE(sat)</sub> Typ (V)	I <sub>C</sub> Max (A)	E <sub>AS</sub> Typ (mJ)	P <sub>D</sub> Max (W)	Package
NGB8206A	350	1.3	20	250	150	D <sup>2</sup> PAK-3
NGD8205A	350	1.3	20	250	125	DPAK-3
NGB8207AB	365	1.75	20	500	165	D <sup>2</sup> PAK-3
NGB8207B	365	1.5	20	500	165	D <sup>2</sup> PAK-3
NGB18N40A	400	1.8	18	400	115	D <sup>2</sup> PAK-3
NGB8202A	400	1.3	20	250	150	D <sup>2</sup> PAK-3
NGB8204A	400	1.8	18	400	115	D <sup>2</sup> PAK-3
NGD18N40A	400	1.8	18	400	115	DPAK-3
NGD8201A	400	1.3	20	250	125	DPAK-3
TIG058E8	400	4	150			SOT-28 FL / ECH-8
TIG065E8	400	4.2	150			SOT-28 FL / ECH-8
TIG067SS	400	3.8	150		1.2	
TIG074E8	400	3.8	150			SOT-28 FL / ECH-8
NGB15N41A	410	1.9	15	250	107	D <sup>2</sup> PAK-3
NGD15N41A	410	1.9	15	250	107	DPAK-3
TIG056BF	430	3.6	240		30	TO-220F-3FS
NGB8245	450	1.1	20	158	150	D <sup>2</sup> PAK-3
NGD18N45	450	2.07	18	360	115	DPAK-3
NGTB10N60FG	600	1.5	20		40	
NGTB15N60EG	600	1.7	15		117	TO-220-3
NGTB15N60S1	600	1.5	15		117	TO-220-3
NGTB20N60L2TF1G	600	1.45	40		64	
NGTB30N60FLWG	600	1.65	30		167	TO-247-3
NGTB30N60FWG	600	1.45	30		167	TO-247-3
NGTB30N60IHLWG	600	1.8	30		250	TO-247-3
NGTB40N60FLWG	600	1.85	40		257	TO-247-3
NGTB40N60IHLWG	600	2	40		250	TO-247-3
NGTB50N60FLWG	600	1.65	50		223	TO-247-3
NGTB50N60FWG	600	1.45	50		223	TO-247-3
NGTB50N60L2	600	1.5	50		500	TO-247
NGTB75N60FL2	600	1.7	75		595	TO-247
NGTG12N60TF1G	600	1.4	24		54	
NGTG15N60S1	600	1.5	15		117	TO-220-3
NGTG20N60L2TF1G	600	1.45	40		64	
NGTG30N60FLWG	600	1.65	30		167	TO-247-3
NGTG30N60FWG	600	1.45	30		167	TO-247-3
NGTG50N60FLWG	600	1.65	50		223	TO-247-3
NGTG50N60FWG	600	1.45	50		223	TO-247-3
NGTB75N65FL2	650	1.7	75		595	TO-247
NGTB15N120FL	1200	2	15		156	TO-247-3
NGTB15N120IHL	1200	1.8	15		156	TO-247-3
NGTB15N120IHR	1200	2.1	15		333	TO-247
NGTB15N120L	1200	1.8	15		156	TO-247-3
NGTB20N120IHL	1200	1.8	20		192	TO-247-3
NGTB20N120IHR	1200	2.1	20		384	TO-247

IGBTs (continued)

Device	V <sub>(BR)CES</sub> Typ (V)	V <sub>CE(sat)</sub> Typ (V)	I <sub>C</sub> Max (A)	E <sub>AS</sub> Typ (mJ)	P <sub>D</sub> Max (W)	Package
NGTB20N120IHS	1200	2.1	20		156	TO-247-3
NGTB20N120L	1200	1.8	20		192	TO-247-3
NGTB25N120FL	1200	2	25		231	TO-247-3
NGTB25N120IHL	1200	1.85	25		192	TO-247-3
NGTB25N120L	1200	1.85	25		192	TO-247-3
NGTB30N120FL2	1200	2	30		452	TO-247-3
NGTB30N120IHL	1200	1.75	30		329	TO-247-3
NGTB30N120IHR	1200	2.2	30		384	TO-247
NGTB30N120IHS	1200	2	30		192	TO-247-3
NGTB30N120L	1200	1.75	30		260	TO-247-3
NGTB30N120L2	1200	1.7	30		534	TO-247-3
NGTB40N120FL	1200	2	40		320	TO-247-3
NGTB40N120FL2	1200	2	40		535	TO-247-3
NGTB40N120IHL	1200	1.9	40		329	TO-247-3
NGTB40N120IHR	1200	2.3	40		384	TO-247
NGTB40N120L	1200	1.9	40		260	TO-247-3
NGTB50N120FL2	1200	2.2	50		535	TO-247-3
NGTB15N135IHR	1350	2.15	15		357	TO-247-3
NGTB20N135IHR	1350	2.2	20		394	TO-247-3
NGTB30N135IHR	1350	2.3	30		394	TO-247-3
NGTB40N135IHR	1350	2.4	40		394	TO-247-3

JFETs

Device	Channel Polarity	I <sub>DSS</sub> Min (μA)	I <sub>DSS</sub> Max (μA)	V <sub>(BR)GSS</sub> Min (V)	C <sub>ISS</sub> Max (pF)	C <sub>RSS</sub> Max (pF)	Package
2SK2394	N Channel	10000; 16000	20000; 32000	15	10	2.9	
2SK3557	N Channel	10000; 16000	20000; 32000	15	10	2.9	
2SK3666	N Channel	600; 1200; 2500	1500; 3000; 6000	30	4	1.1	
2SK3738	N Channel	50	130	40	1.7	0.7	Micro8 FL / MSOP-8J
2SK3796	N Channel	600; 1200; 2500	1500; 3000; 6000	30	4	1.1	Micro8 FL / MSOP-8J
2SK536	N Channel		1	12	15	0.5	SC-59-3
2SK545	N Channel	55	95	-40	1.7	0.7	
2SK596S	N Channel	100; 150	170; 240	-20	4.1	0.88	TO-92 / SPA
2SK715	N Channel	7.3; 10	12 17	15	10	3	TO-92 / SPA
2SK932	N Channel	7300; 10000; 14500	12000; 17000; 24000	-10	10	3	
CPH3910	N Channel	20000	40000	25	6	2.3	CPH-3
CPH6904	N Channel	20000	40000	25	6	2.3	CPH-6
J112	N Channel	5000		35	28	5	TO-92
J310	N Channel	24000	60000	25	5	5.5	TO-92
MCH3914	N Channel	16000	50000	-15	4.9	1.4	SC-70FL / MCPH-3
MCH5908	N Channel	3200; 20000	1600	15	10.5	3.5	SC-88AFL / MCPH-5
MMBF4391L	N Channel	50	150000	30	14	3.5	SOT-23-3
MMBF4392L	N Channel	25	75000	30	14	3.5	SOT-23-3
MMBF4393L	N Channel	5000	30000	30	14	3.5	SOT-23-3

## ON Semiconductor Selector Guide – IGBTs and FETs

### JFETs (continued)

Device	Channel Polarity	I <sub>DSS</sub> Min (μA)	I <sub>DSS</sub> Max (μA)	V <sub>(BR)GSS</sub> Min (V)	C <sub>iss</sub> Max (pF)	C <sub>rss</sub> Max (pF)	Package
MMBFJ309L	N Channel	12000	30000	25	5	2.5	SOT-23-3
MMBFJ310L	N Channel	24000	60000	25	5	2.5	SOT-23-3
MMBFU310L	N Channel	24000	60000	25	5	2.5	SOT-23-3
MPF4393	N Channel	5000	30000	30	10	3.5	TO-92
TF252	N Channel	140; 210	240; 350	-20	3.1	0.95	
TF252TH	N Channel	140; 210	240; 350	-20	3.1	0.95	SOT-623 / VTFF
TF256	N Channel	140; 180; 240	100; 280; 450	-20	3.1	1	
TF256TH	N Channel	140; 180; 240	100; 280; 450	-20	3.1	1	SOT-623 / VTFF
TF262TH	N Channel	140	240	-20	3.5	0.65	
TF408	N Channel	1200	3000	-30	4	1.1	
TF410	N Channel	50	130	-40	0.7	0.3	
TF412S	N Channel	1200	3000	-30	4	1.1	SOT-883
TF414	N Channel	50	130	-40	0.7	0.3	SOT-883
CPH5901	N Channel & NPN	6000; 10000	12000; 20000	15	10	3	CPH-5
CPH5902	N Channel & NPN	10000; 16000	20000; 32000	15	10	2.9	CPH-5
CPH5905	N Channel & NPN	10000; 16000	20000; 32000	15	10	2.9	CPH-5
MMBFJ175L	P Channel	70	60000	30	11	5.5	SOT-23-3
MMBFJ177L	P Channel	1500	20000	30	11	5.5	SOT-23-3

MOSFETs

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>riss</sub> Typ (pF)	Package
ECH8668	Comp	Dual	20	10	1.3	7.5	1.3	26	17		10.8		2.9		1060	180	135	SOT-28 FL/ ECH-8
EMH2604	Comp	Dual	20	10	1.3	4	1	67	45		4.7		1.6		345	67	52	SOT-383FL/ EMH-8
MCH6660	Comp	Dual	20	10	1.3	2	0.8	205	136			1.8	0.55		128	28	21	SC-88FL/ MCPH-6
NTHC5513	Comp	Dual	20	12	1.2	3.9	2.1	115	80		4		0.7	6	180	80	25	ChipFET™-8
NTHD3100C	Comp	Dual	20	12	1.2	3.9	3.1	115	80		2.3		0.7	6	165	80	25	ChipFET-8
NTHD3102C	Comp	Dual	20	8	1.2	5.5	2.1	50	45		7.9		1.56	7	510	100	50	ChipFET-8
NTJD4105C	Comp	Dual	20	12	1.5	0.63	0.27	445	375		1.3		0.4		33	13	2.8	SC-88-6/ SC-70-6/ SOT-363-6
NTLJD3119C	Comp	Dual	20	8	1	4.6	2.3	85	65		3.7		1	3	271	72	43	WDFN-6
NTUD3169CZ	Comp	Dual	20	8	1	0.28	0.2		1500						12.5	3.6	2.6	SOT-963
NTZD3155C	Comp	Dual	20	6	1	0.54	0.25	700	500		1.5		0.35		80	13	10	SOT-563
CPH6635	Comp	Dual	30	10	1.3	0.4	0.8	5200				1.58	0.31		7	5.9	2.3	CPH-6
ECH8660	Comp	Dual	30	20	2.6	4.5	1.3		119	59		4.4	0.64		240	45	30	SOT-28 FL/ ECH-8
ECH8661	Comp	Dual	30	20	2.6	7	1.3		41	24		11.8	2		710	120	72	SOT-28 FL/ ECH-8
FW4604	Comp	Dual	30	20	1.6	6	1.8		70	39		9.1	1.7		430	105	75	
MCH6613	Comp	Dual	30	10	1.4	0.35	0.8	5200				1.58	0.31		7	5.9	2.3	SC-88FL/ MCPH-6
MCH6663	Comp	Dual	30	20	2.6	1.8	0.8		343	188		2	0.29		88	19	11	SC-88FL/ MCPH-6
NTGD4167C	Comp	Dual	30	12	1.5	2.9	0.9	125	90		3.7		0.8	3	295	48	27	TSOP-6
NTJD4158C	Comp	Dual	30	20	1.5	0.88	0.27	2500	1500		0.9		0.2		20	19	7.25	SC-88-6/ SC-70-6/ SOT-363-6
ECH8690	Comp	Dual	60	20	2.6	4.7	1.5		74	55		18	2.8		955	58	45	SOT-28 FL/ ECH-8
VEC2616	Comp	Dual	60	20	2.6	3	0.9		106	80		10	1.2		505	57	37	SOT-28FL/ VEC-8
FW344A	Comp	Dual	30/-30	20/-20	2.6	4.5/-3.5	1.4		112	64		5.6			250	175	145	SOIC8 NB EP
EFC4627R	N Ch	Dual	12	10	1.3	6	1.4	50.5	29.5		13.4							CSP-4
EFC6602R	N Ch	Dual	12	12	1.3	18	2	11	5.9		55							WLCSP-6
EFC6604R	N Ch	Dual	12	12	1.3	13	1.6	17.7	9		29							
EFC6611R	N Ch	Dual	12	8	1.3	27	2.5	6.3	3.2		100							
3SK263	N Ch	Dual	15	8	1.3	0.03	0.2								2.7		0.015	CP-4
ECH8649	N Ch	Dual	20	10	1.3	7.5	1.4	26	17		10.8		2.9		1060	180	135	SOT-28 FL/ ECH-8
ECH8653	N Ch	Dual	20	10	2.4	7.5	1.4						3.1		1280	170	105	SOT-28 FL/ ECH-8
ECH8656	N Ch	Dual	20	10	1.3	7.5	1.3	26	17		10.8		2.9		1060	180	135	SOT-28 FL/ ECH-8
EMH2407	N Ch	Dual	20	12	1.3	6	1.3	39	25		6.3		1.9		580	95	75	SOT-383FL/ EMH-8



# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
EMH2408	N Ch	Dual	20	12	1.3	4	1	67	45		4.7		1.6		345	67	52	SOT-383FL/ EMH-8
MCH6662	N Ch	Dual	20	10	1.3	2	0.8	240	160			1.8	0.55		128	28	21	SC-88FL/ MCPH-6
NTGD3148N	N Ch	Dual	20	12		3.5	1.1											TSOP-6
NTHD4508N	N Ch	Dual	20	12	1.2	4.1	2.1	115	75		2.6		0.7	6	180	100	25	ChipFET-8
NTJD4401N	N Ch	Dual	20	12	1.5	0.63	0.27	445	375		1.3		0.4		33	13	2.8	SC-88-6/ SC-70-6/ SOT-363-6
NTLGD3502N	N Ch	Dual	20	20	2	5.8	1.74		60		2.9		1.1	7	250	138	52	DFN-6
NTMD6N02	N Ch	Dual	20	12	1.2	6.5	2		35		12		4	0.02	785	260	75	SOIC-8
NTUD3170NZ	N Ch	Dual	20	8	1	0.28	0.2	2000	1500						12.5	3.6	2.6	SOT-963
NTZD3154N	N Ch	Dual	20	6	1	0.54	0.28	700	500		1.5		0.35		80	13	10	SOT-563
CPH6636R	N Ch	Dual	24	±12	1.3	6	0.9	28.7	20		3		0.5					CPH-6
ECH8601M	N Ch	Dual	24	12	1.3	8	1.5	35	23		7.5		2					SOT-28 FL/ ECH-8
ECH8651R	N Ch	Dual	24	12	1.3	10	1.4	21	14			24	4.5					SOT-28 FL/ ECH-8
ECH8655R	N Ch	Dual	24	12	1.3	9	1.4	25.5	17			16.8	4.8					SOT-28 FL/ ECH-8
ECH8693R	N Ch	Dual	24	12	1.3	14	1.4	10.5	7		13		2.4					SOT-28 FL/ ECH-8
ECH8697R	N Ch	Dual	24	12.5	1.3	10	1.5	17.5	11.6		6		0.9					SOT-28 FL/ ECH-8
EFC4612R	N Ch	Dual	24	12	1.3	6	1.6	72	45		7							WLCSP-4
EFC4626R	N Ch	Dual	24	10	1.3	5	1.4	72.4	46.2		7.5							CSP-4
EFC6601R	N Ch	Dual	24	12	1.3	13	2	17	11.5		48							WLCSP-6
EMH2412	N Ch	Dual	24	12	1.3	6	1.3	42	27		6.3		1.9					SOT-383FL/ EMH-8
EMH2418R	N Ch	Dual	24	12	1.3	9	1.3	23.1	15		4.4		0.7					SOT-383FL/ EMH-8
CPH5617	N Ch	Dual	30	10	1.3	0.15	0.25	5200				1.58	0.31		7	5.9	2.3	CPH-5
ECH8602M	N Ch	Dual	30	12	1.3	6	1.4	44	30		7.5		1.6					SOT-28 FL/ ECH-8
ECH8659	N Ch	Dual	30	20	2.6	7	1.3		41	24		11.8	2		710	120	72	SOT-28 FL/ ECH-8
ECH8663R	N Ch	Dual	30	12	1.3	8	1.4	28	20.5		12.3		2.8					SOT-28 FL/ ECH-8
ECH8664R	N Ch	Dual	30	12	1.3	7	1.3	34	23.5		10		2					SOT-28 FL/ ECH-8
EMH2409	N Ch	Dual	30	20	2.6	4	1		119	59		4.4	0.64		240	45	30	SOT-383FL/ EMH-8
EMH2411R	N Ch	Dual	30	12	1.3	5	1.4	54	36.5		5.9		1.2					SOT-383FL/ EMH-8
MCH6602	N Ch	Dual	30	10	1.3	0.35	0.8	5200				1.58	0.31		7	5.9	2.3	SC-88FL/ MCPH-6
MCH6661	N Ch	Dual	30	20	2.6	1.8	0.8		343	188		2	0.29		88	19	11	SC-88FL/ MCPH-6
NMLU1210	N Ch	Dual	30	20	2.2	4	1.2		28	17			8.8		476	175	91	UDFN-8

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTHD4502N	N Ch	Dual	30	20	3	3.9	2.1		140	85	1.9	3.6	0.7	4	140	53	16	ChipFET-8
NTJD4001N	N Ch	Dual	30	20	1.5	0.25	0.272	2500	1500		0.9		0.2		20	19	7.25	SC-88-6/ SC-70-6/ SOT-363-6
NTLJD4116N	N Ch	Dual	30	8	1	4.6	2.3	90	70		6.5		1.24	5	427	51	32	WDFN-6
NTLLD4901NF	N Ch	Dual	30	20		11	1.88		22	15	2.6		1.4		645	300	16	WDFN-8
NTMD4820N	N Ch	Dual	30	20	3	8	1.28		27	20	7.7		3.2	8	940	225	125	SOIC-8
NTMD4840N	N Ch	Dual	30	20	3	7.5	1.95		36	24	4.8		1.9	6	520	140	70	SOIC-8
NTMD4N03	N Ch	Dual	30	20	3	4	2		80	60		8		0.008	285	95	35	SOIC-8
NTMFD4901NF	N Ch	Dual	30	20	2.2	30	2.07		10	2.35	9.7	19.1	5.3	12	1150	360	105	SO-8FL Dual/ DFN-8
NTMFD4902NF	N Ch	Dual	30	20	2.2	18.2	3.45		10	6.5	9.7	19.1			1150	360	105	SO-8FL Dual/ DFN-8
NTMFD4C20N	N Ch	Dual	30	20	2.1	27	1.97		5.2	3.4	9.3	19	4.2	10	970	430	125	SO-8FL Dual/ DFN-8
NVLJD4007NZ	N Ch	Dual	30	20	1.5	0.245	0.755	7500	7000		0.75		0.2		12.2	10	3.3	WDFN-6
ECH8657	N Ch	Dual	35	20	2.6	4.5	1.3		119	59		4.6	1		230	37	25	SOT-28 FL/ ECH-8
FW216A	N Ch	Dual	35	20	2.5	23	2.5		112	64		5.6	0.8		280	60	30	SOIC8 NB EP
ECH8662	N Ch	Dual	40	10	1.3	6.5	1.3	42	30		12		3.4		1130	77	60	SOT-28 FL/ ECH-8
NTMD5836NL	N Ch	Dual	40	20	3	9	1.5		16+30 8	12+25		36+1 6	7.2+4. 0	19+9	2120	315	225	SOIC-8
NTMD5838NL	N Ch	Dual	40	20	3	8.9	2.1		30.8	25			4	10	785	123	90	SOIC-8
NTMD6N04	N Ch	Dual	40	20	3	5.8	2		43	34		20	5.5	20	723	156	53	SOIC-8
NVMFD5852NL	N Ch	Dual	40	20	2.4	40	27		12	6.9	20	36	10.9	15.2	1800	240	180	SO-8FL Dual/ DFN-8
NVMFD5853N	N Ch	Dual	40	20	4	53	37			10		24	6.6	9	1225	1250	100	SO-8FL Dual/ DFN-8
NVMFD5853NL	N Ch	Dual	40	20	2.4	34	24		15	10	12.8	23	7	12.1	1100	152	110	SO-8FL Dual/ DFN-8
MCH6604	N Ch	Dual	50	10	1.3	0.25	0.8	9.9				1.57	0.32		6.6	4.7	1.7	SC-88FL/ MCPH-6
NTJD5121N	N Ch	Dual	60	20	2.5	0.295	0.25		2500	1600	0.9		0.28		26	4.4	2.5	SC-88-6/ SC-70-6/ SOT-363-6
NTZD5110N	N Ch	Dual	60	20	2.5	0.31	0.28		2500	1600	0.7		0.1		24.5	4.2	2.2	SOT-563
NVMFD5483NL	N Ch	Dual	60	20	2.5	24	44.1		45	36	13.2	23.4	9.2	35	668	152	67	SO-8FL Dual/ DFN-8
NVMFD5485NL	N Ch	Dual	60	20	2.5	20	38.5		60	44	11.5	20	7.9	35.5	560	126	58	SO-8FL Dual/ DFN-8
NVMFD5489NL	N Ch	Dual	60	20	2.5	12	23.4		79	65		12.4	4.74	26.5	330	80	39	SO-8FL Dual/ DFN-8
NVMFD5873NL	N Ch	Dual	60	20	2.5	58	107		16.5	13	16.5	30.5	8.8	18	1560	145	96	SO-8FL Dual/ DFN-8
NVMFD5877NL	N Ch	Dual	60	20	3	17	23		60	39	5.9	11	2.8	11	540	55	36	SO-8FL Dual/ DFN-8
VEC2415	N Ch	Dual	60	20	2.6	3	0.9		106	80		10	2.1		505	57	37	SOT-28FL/ VEC-8

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
3SK264	N Ch	Single	15	8		0.03	0.2								2.5		0.015	CP-4
CPH3456	N Ch	Single	20	12	1.3	3.5	1	103	71		2.8		0.9		260	65	50	CPH-3
ECH8420	N Ch	Single	20	12	1.3	14	1.6	11.5	6.8			29	8.7		2430	410	330	SOT-28 FL/ ECH-8
MCH3476	N Ch	Single	20	12	1.3	2	0.8	190	125		1.8		0.55		128	28	21	SC-70FL/ MCPH-3
MCH3477	N Ch	Single	20	12	1.3	4.5	1	61	38		5.1		1.7		410	84	59	SC-70FL/ MCPH-3
MCH3479	N Ch	Single	20	12	1.3	3.5	0.9	95	64		2.8		0.9		260	65	50	SC-70FL/ MCPH-3
MCH3481	N Ch	Single	20	9	0.9	2	0.8	147	104		2.9		0.53		175	30	25	SC-70FL/ MCPH-3
MCH3484	N Ch	Single	20	5	0.8	4.5	1	40					1.8		630	75	65	SC-70FL/ MCPH-3
MCH6421	N Ch	Single	20	12	1.3	5.5	1.5	61	38		5.1		1.7		410	84	59	SC-88FL/ MCPH-6
MCH6437	N Ch	Single	20	12	1.3	7	1.5	35	24		8.4		2.4		660	125	100	SC-88FL/ MCPH-6
MCH6448	N Ch	Single	20	9	1	8	1.5	28	22		11.2		2.8		705	150	125	SC-88FL/ MCPH-6
MGSF1N02L	N Ch	Single	20	20	2.4	0.75	0.4		130	90					125	120	45	SOT-23-3
MGSF2N02EL	N Ch	Single	20	8	1	2.8	1.25	115	85			3.5	1.5		150	130	45	SOT-23-3
MMBF0201NL	N Ch	Single	20	20	2.4	0.3	0.225		1400	1000					45	25	5	SOT-23-3
MMBF2201N	N Ch	Single	20	20	2.4	0.3	0.15		1400	1000					45	25	5	SC-70-3/ SOT-323-3
NTA4001N	N Ch	Single	20	10	1.5	0.238	0.3	3500	3000						11.5	10	3.5	SC-75-3
NTA4153N	N Ch	Single	20	6	1.1	0.915	0.3	275	230		1.82				110	16	12	SC-75-3
NTE4153N	N Ch	Single	20	6	1.1	0.915	0.3	275	230		1.82		0.5		110	16	10	SC-89-3
NTGS3130N	N Ch	Single	20	8	1.4	5.6	1.1	32	24		13.2		4.2	8.8	965	198	110	TSOP-6
NTGS3446	N Ch	Single	20	12	1.2	5.1	2	55	45			8	2	0.01	510	200	60	TSOP-6
NTHS5404	N Ch	Single	20	12		7.2	2.5	45	30			12	3.2	11	740	337	88	ChipFET-8
NTJS3157N	N Ch	Single	20	8		4	1	70	60		6.9		1.8	5	500	75	60	SC-88-6/ SC-70-6/ SOT-363-6
NTK3043N	N Ch	Single	20	10	1.3	0.285	0.44	4500	3400					3.7	11	8.3	2.7	SOT-723-3
NTK3134N	N Ch	Single	20	6	1.2	0.89	0.45	450	350					3	79	13	9	SOT-723-3
NTNS3164NZ	N Ch	Single	20	8	1	0.245	0.154	2000	1500				0.1		23	5	3.3	SOT-883
NTNS3193NZ	N Ch	Single	20	8	1	0.224	0.12	1900	1400		0.7				15.8	3.5	2.4	XLLGA-3
NTR4501	N Ch	Single	20	12	1.2	3.2	1.25	105	80		2.4		0.6	3	200	80	50	SOT-23-3
SCH1430	N Ch	Single	20	12	1.3	2	0.8	190	125			1.8	0.55		128	28	21	SOT-563/ SCH6
SCH1433	N Ch	Single	20	10	1.3	3.5	0.8	95	64		2.8		0.9		260	65	50	SOT-563/ SCH6
NTD110N02R	N Ch	Single	24	20	2	110	110		6.2	4.6	23.6		11	0.048	2710	1105	450	DPAK-3
NTD14N03R	N Ch	Single	25	20	2	14	20.8		130	95	1.8			0.2	115	62	33	DPAK-3
NTD4856N	N Ch	Single	25	20	2.5	89	2.14		6.8	4.7	18	38	6.6	8	2241	567	279	DPAK-3

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTD4858N	N Ch	Single	25	20	2.5	73	2		9.3	6.2	12.8		5.2	3	1563	405	200	DPAK-3; IPAK-3
NTD4860N	N Ch	Single	25	20	2.5	65	2		11.1	7.5			4.7	3.5	1308	342	169	DPAK-3
NTD4863N	N Ch	Single	25	20	2.5	49	1.95		12.8	9.3	9		4.1	2.7	990	253	144	DPAK-3
NTJS4405N	N Ch	Single	25	8	1.5	1.2	0.63	400	350		0.75		0.2		49	22.4	8	SC-88-6/ SC-70-6/ SOT-363-6
NTMFS4854NS	N Ch	Single	25	16	2.5	149	86.2		3.9	2.5	36		15	33	4830	1130	550	SO-8FL/ DFN-8
NTS4409N	N Ch	Single	25	8	1.5	0.75	0.28	400	350		1.2		0.3		49	22.4	8	SC-70-3/ SOT-323-3
NTMS4503N	N Ch	Single	28	20	2	14	2.5		9.8	8			12	25	2400	1000	375	SOIC-8
3LN01C	N Ch	Single	30	10	1.3	0.15	0.25	5.2				1.58	0.31		7	5.9	2.3	
3LN01M	N Ch	Single	30	10	1.3	0.15	0.15	5.2				1.58	0.31		7	5.9	2.3	SC-70FL/ MCPH-3
3LN01S	N Ch	Single	30	10	1.3	0.15	0.15	5200				1.58	0.31		7	5.9	2.3	
3LN01SS	N Ch	Single	30	10	1.3	0.15	0.15	5200				1.58	0.31		7	5.9	2.3	SOT-623/ SSFP
ATP201	N Ch	Single	30	20	2.6	35	30		33	17		17	2.8		985	180	100	DPAK (Single Gauge)/ ATPAK
ATP202	N Ch	Single	30	20	2.6	50	40		20	12		27	4		1650	285	160	DPAK (Single Gauge)/ ATPAK
ATP203	N Ch	Single	30	20	2.6	75	50		13.5	8.2		44	5.6		2750	450	265	DPAK (Single Gauge)/ ATPAK
ATP204	N Ch	Single	30	20	2.6	100	60		9.1	5.6		70	9.2		4600	700	390	DPAK (Single Gauge)/ ATPAK
ATP218	N Ch	Single	30	10	1.3	100	60	5.6	3.8		70		14		6600	780	600	DPAK (Single Gauge)/ ATPAK
CPH3448	N Ch	Single	30	12	1.3	4	1	72	50		4.7		1.1		430	59	38	CPH-3
CPH3457	N Ch	Single	30	12	1.3	3	1	133	95		3.5		0.93		265	35	28	CPH-3
ECH8410	N Ch	Single	30	20	2.6	12	1.6		18.2	10		31	5.5		1700	300	200	SOT-28 FL/ ECH-8
EMH1405	N Ch	Single	30	20	2.6	8.5	1.5		34	19		15	2.7		820	130	90	SOT-383FL/ EMH-8
MCH3474	N Ch	Single	30	12	1.3	4	1	72	50		4.7		1.1		430	59	38	SC-70FL/ MCPH-3
MCH3475	N Ch	Single	30	20	2.6	1.8	0.8			180		2	0.29		88	19	11	SC-70FL/ MCPH-3
MCH3478	N Ch	Single	30	12	1.3	2	0.8	235	165		1.7		0.38		130	21	14	SC-70FL/ MCPH-3
MCH6431	N Ch	Single	30	20	2.6	5	1.5		91	55		5.6	0.8		280	60	30	SC-88FL/ MCPH-6
MCH6436	N Ch	Single	30	12	1.3	6	1.5	49	34		7.5		1.5		710	95	65	SC-88FL/ MCPH-6
MGSF1N03L	N Ch	Single	30	20	2.4	1.6	0.42		145	100					140	100	40	SOT-23-3
NTA7002N	N Ch	Single	30	10	1.5	0.154	0.3	7500	7000						11.5	10	3.5	SC-75-3

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	$V_{(BR)DSS}$ Min (V)	$V_{GS}$ Max (V)	$V_{GS(th)}$ Max (V)	$I_D$ Max (A)	$P_D$ Max (W)	$r_{DS(on)}$ Max @ $V_{GS} = 2.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 4.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 10$ V (m $\Omega$ )	$Q_g$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_g$ Typ @ $V_{GS} = 10$ V (nC)	$Q_{gd}$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_{rr}$ Typ (nC)	$C_{iss}$ Typ (pF)	$C_{oss}$ Typ (pF)	$C_{rss}$ Typ (pF)	Package
NTD20N03L27	N Ch	Single	30	20	2	20	74		27			13.8		0.017	1005	271	87	DDPAK-3
NTD4302	N Ch	Single	30	20	3	68	75		13	10		55		0.043	2050	640	225	DDPAK-3
NTD4804N	N Ch	Single	30	20	2.5	117	107		5.5	4	30	73	13	30	4490	952	556	DDPAK-3
NTD4805N	N Ch	Single	30	20	2.5	88	79		7.4	5	20.5	48	8.36		2865	610	338	DDPAK-3; IPAK-4
NTD4806N	N Ch	Single	30	20	2.5	76	68		9.4	6	15	37	7		2142	480	251	DDPAK-3; IPAK-3
NTD4808N	N Ch	Single	30	20	2.5	63	54.6		12.4	8	11.3	26	4.9	9.7	1538	334	180	DDPAK-3; IPAK-4
NTD4809N	N Ch	Single	30	20	2.5	58	52		14	9	11	25	5	9.2	1456	315	200	DDPAK-3; IPAK-3
NTD4809NH	N Ch	Single	30	20	2.5	58	52		12.5	9	15		7.7	7.5	2155	447	294	DDPAK-3
NTD4810N	N Ch	Single	30	20	2.5	54	50			10	9.2	21	4.4	8.8	1165	284	154	DDPAK-3
NTD4813N	N Ch	Single	30	20	2.5	40	35.3		24	13	6.9		3.6	7	860	201	115	IPAK-3
NTD4813NH	N Ch	Single	30	20	2.5	40	35.3		25.9	13	7.1	18.2	3	7	940	201	115	DDPAK-3
NTD4815N	N Ch	Single	30	20	2.5	35	32.6		25	15	6	14.1	3.1	5.5	770	181	108	IPAK-3
NTD4904N	N Ch	Single	30	20	2.2	79	52		5.5	3.7	16.8	41	3		3052	976	23	DDPAK-3; IPAK-3
NTD4906N	N Ch	Single	30	20	2.2	54	37.5		8	5.5	11	24	1.8	25	1932	642	19	DDPAK-3; IPAK-3
NTD4909N	N Ch	Single	30	20	2.2	41	29.4		12	8	7.6	17.5	1.3	20	1314	487	17.4	DDPAK-3; IPAK-3
NTD4910N	N Ch	Single	30	20	2.2	37	27.3		13	9	6.8	15.4	1.1	17	1203	460	12.5	DDPAK-3
NTD4963N	N Ch	Single	30	20	2.5	44	35.7		16	9.6	8.1	16.2	3.5	6	1035	220	115	DDPAK-3; IPAK-3
NTD4965N	N Ch	Single	30	20	2.5	68	38.5		10	4.7	17.2	28.2	8.5	16	1710	664	340	DDPAK-3; IPAK-3
NTD4969N	N Ch	Single	30	20	2.5	41	26.3		19	9	9	16.5	4.8	8	837	347	180	DDPAK-3; IPAK-3
NTD4970N	N Ch	Single	30	20	2.5	36	24.6		21	11	8.2	15.8	4	7	774	306	161	DDPAK-3; IPAK-3
NTGS4141N	N Ch	Single	30	20	3	7	2		35	25	6	12	3	8	560	115	75	TSOP-6
NTHS4166N	N Ch	Single	30	20	2.3	8.2	2.2		27	22	9.2	18	3.84	6	900	210	140	ChipFET-8
NTLJS4114N	N Ch	Single	30	12	1	7.8	3.3	45	35		8.5		2.1	5	650	115.5	70	WDFN-6
NTLUF4189NZ	N Ch	Single	30	8	1.5	1.5	0.8	350	200		1.4		0.4	2.1	95	15	10	UDFN-6
NTLUS4930N	N Ch	Single	30	20	2.2	6.3	1.65		32.3	26.3					476	197	101	UDFN-6
NTLUS4C12N	N Ch	Single	30	20	2.1	10.7	1.54		12	9			2.2	20	1172	546	26	UDFN-6
NTMFS4821N	N Ch	Single	30	20	2.5	58.5	38.5		10.8	6.95	10.7		3.8	2	1400	282	136	SO-8FL/DFN-5
NTMFS4823N	N Ch	Single	30	20	2.5	30	32.5		18	10.6	6		2.5	0.6	795	163	85	SO-8FL/DFN-5
NTMFS4825NFE	N Ch	Single	30	20	2.5	171	96.2		3	2	40.2	83.6	13.4	34	5660	1150	495	SO-8FL/DFN-5
NTMFS4833N	N Ch	Single	30	20	2.5	191	125		3	2	39	88	17	36	5600	1200	650	SO-8FL/DFN-5
NTMFS4833NS	N Ch	Single	30	20	2.5	156	86.2		3.4	2.2	36		13	32	5250	1080	500	SO-8FL/DFN-8

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTMFS4834N	N Ch	Single	30	20	2.5	130	86.2		4	3	32	74	11	25.9	4500	960	500	SO-8FL/DFN-5
NTMFS4835N	N Ch	Single	30	20	2.5	104	62.5		5	3.5	22	52	8.8	18	3100	670	360	SO-8FL/DFN-5
NTMFS4841N	N Ch	Single	30	20	2.5	57	41.7		11.4	7	11.5	25.4	5.1	10.7	1436	348	177	SO-8FL/DFN-5
NTMFS4845	N Ch	Single	30	16	2.5	115	62.5		4.4	2.9	25.6		8.6	9	3720	650	335	SO-8FL/DFN-5
NTMFS4846	N Ch	Single	30	±20	2.5	100	55.5		5.1	3.4	21.8		7.4	8.5	3250	562	289	SO-8FL/DFN-5
NTMFS4847N	N Ch	Single	30	16	2.5	85	48.1		6.2	4.1	19.2		6.1	6	2614	466	241	SO-8FL/DFN-5
NTMFS4851	N Ch	Single	30	16	2.5	66	41.7		8.7	5.9	13.5		4.5	3.5	1850	333	170	SO-8FL/DFN-5
NTMFS4852N	N Ch	Single	30	20	2.5	155	86.2		3.3	2.1	34.3	71.3	11.3	28.6	4970	970	427	SO-8FL/DFN-5
NTMFS4922NE	N Ch	Single	30	20	2	147	69.4		3	2	34	76.5	8.1	70	5505	2355	90	SO-8FL/DFN-5
NTMFS4923NE	N Ch	Single	30	20	2	91	48		4.8	3.3	22	49.4	3		3579	1264	39	SO-8FL/DFN-5
NTMFS4925N	N Ch	Single	30	20	2.2	48	23.2		8.5	5.6	10.8		4.2	13.6	1264	483	143	SO-8FL/DFN-5
NTMFS4925NE	N Ch	Single	30	20	2.2	48	23.2		10	6	10.8	21.5	4.2	13.6	1264	483	143	SO-8FL/DFN-5
NTMFS4926N	N Ch	Single	30	20	2.2	44	21.6		11.2	7	8.7	17.3	3.5	8	1004	390	119	SO-8FL/DFN-5
NTMFS4926NE	N Ch	Single	30	20	2.2	44	21.6		12	7	8.7	17.3	3.5	8	1004	390	119	SO-8FL/DFN-5
NTMFS4927N	N Ch	Single	30	20	2.2	38	20.8		12	7.3	8	16	3.1	8.4	913	366	108	SO-8FL/DFN-5
NTMFS4931N	N Ch	Single	30	20		246	104		1.5	1.1	61.5				9821	2720	234	SO-8FL/DFN-5
NTMFS4933N	N Ch	Single	30	20	2.2	210	104		2	1.2	62.1	148	10.1		10930	3230	92	SO-8FL/DFN-5
NTMFS4934N	N Ch	Single	30	20	2.2	147	69.4		3	2	34		8.1	70	5505	2355	90	SO-8FL/DFN-5
NTMFS4935N	N Ch	Single	30	20	2.2	93	48		4.2	3.2	22	49.4	3	45	3579	1264	39	SO-8FL/DFN-5
NTMFS4936N	N Ch	Single	30	20	2.2	79	43		4.8	3.8	19		2.4	36	3044	1014	39	SO-8FL/DFN-5
NTMFS4937N	N Ch	Single	30	20	2.2	70	43		6	4	15.9	31	2.2	35	2516	840	25	SO-8FL/DFN-5
NTMFS4939N	N Ch	Single	30	20	2.2	53	30		8	5.5	12.8	28.5	2.5	26	1954	642	26.5	SO-8FL/DFN-5
NTMFS4941N	N Ch	Single	30	20	2.2	47	25.5		9	6.2	11.3	25.5	1.64	25	1650	570	17	SO-8FL/DFN-5
NTMFS4946N	N Ch	Single	30	20	2.5	100	55.5		5.1	3.4	21.8	53	7.4	8.5	3250	562	289	SO-8FL/DFN-5
NTMFS4955N	N Ch	Single	30	20	2.2	48	2.7		8.5	5.6	10.8	21.5	4.2	13.6	1264	483	143	SO-8FL/DFN-5
NTMFS4C05N	N Ch	Single	30	20	2.2	78	33		5	3.4		30	5	30.2	1972	1215	59	SO-8FL/DFN-5

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	$V_{(BR)DSS}$ Min (V)	$V_{GS}$ Max (V)	$V_{GS(th)}$ Max (V)	$I_D$ Max (A)	$P_D$ Max (W)	$r_{DS(on)}$ Max @ $V_{GS} = 2.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 4.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 10$ V (m $\Omega$ )	$Q_g$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_g$ Typ @ $V_{GS} = 10$ V (nC)	$Q_{gd}$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_{rr}$ Typ (nC)	$C_{iss}$ Typ (pF)	$C_{oss}$ Typ (pF)	$C_{rss}$ Typ (pF)	Package
NTMFS4C06N	N Ch	Single	30	20	2.1	69	30.5		6	4		26	4	22	1683	841	40	SO-8FL/DFN-5
NTMFS4C08N	N Ch	Single	30	20	2.1	52	25.5		8.5	5.8		18.2	3.3	15.3	1113	702	39	SO-8FL/DFN-5
NTMFS4C09N	N Ch	Single	30	20	2.1	52	25.5		8.5	5.8		22.2	5.4	15	1252	610	126	SO-8FL/DFN-5
NTMFS4C10N	N Ch	Single	30	20	2.2	46	23.6		10.8	6.95		18.9	3.7	13.7	987	574	162	SO-8FL/DFN-5
NTMFS4C13N	N Ch	Single	30	20	2.1	38	21.6		13.8	9.1		15.2	3.7	9.7	770	443	127	SO-8FL/DFN-5
NTMFS4C35N	N Ch	Single	30	20	2.2	80	33		4.2	3.2	15	32.5	5.5	30	2300	1097	46	SO-8FL/DFN-5
NTMS4801N	N Ch	Single	30	20	2.5	12	2.1		12.5	9	12.2	25	4.4		1630	288	150	SOIC-8
NTMS4802N	N Ch	Single	30	20	2.5	18	2.5		5.5	4	36	75	13	40	5300	880	460	SOIC-8
NTMS4807N	N Ch	Single	30	20	3	14.8	2.5		7.5	6.1	24	46	10.4	23	2900	562	307	SOIC-8
NTMS4816N	N Ch	Single	30	20	3	11	2.04		16	10	9.2	18.3	3.8	9	1060	220	126	SOIC-8
NTMS4916N	N Ch	Single	30	20	2.5	11.4	1.98		12	9			6.5	20	1376	401		SOIC-8
NTMS4920N	N Ch	Single	30	20	3	17	2.12		5.7	4.3	26.3	58.9	3.8	65	4068	1170	41	SOIC-8
NTMS4937N	N Ch	Single	30	20	2.5	13.6	2		8.7	6.5	17.4	38.5	3.3	38	2563	715	25	SOIC-8
NTMS4939N	N Ch	Single	30	20	2.5	12.5	2		8.4	12.4			1.85	32	2000	620	16	SOIC-8
NTMS7N03R2	N Ch	Single	30	20	3	7	2.5		28	23		26		0.02	1064	300	94	SOIC-8
NTR4003N	N Ch	Single	30	20	1.4	0.56	0.83	2000	1500		1.15		0.23		21	19.7	8.1	SOT-23-3
NTR4170N	N Ch	Single	30	12	1.4	4	1.25		70	55	4.76		1.4	2.9	432	53.6	37.1	SOT-23-3
NTR4503N	N Ch	Single	30	20	3	2	0.73		140	110	1.9	3.6	0.7	4	135	52	15	SOT-23-3
NTS4001N	N Ch	Single	30	20	1.5	0.27	0.33	2000	1500		0.9		0.2		20	19	7.25	SC-70-3/ SOT-323-3
NTTFS4821N	N Ch	Single	30	20	2.5	57	38.5		10.8	7	10.5	24	4.5	1.7	1300	300	150	u8FL/ WDFN-8
NTTFS4824N	N Ch	Single	30	20	2.5	69	46.3		7.5	5	12.6	29	4.8	10	1750	350	170	u8FL/ WDFN-8
NTTFS4928N	N Ch	Single	30	20	2.2	37	20.8		13.5	9	8	16	3.1	8.4	913	366	108	u8FL/ WDFN-8
NTTFS4929N	N Ch	Single	30	20	2.2	34	22.3		17	11	8.8	16.3	4.4		920	337	175	u8FL/ WDFN-8
NTTFS4930N	N Ch	Single	30	20	2.2	23	20.2		30	23	5.5	9.8	3.1	4.6	476	197	101	u8FL/ WDFN-8
NTTFS4932N	N Ch	Single	30	20	2.2	79	43		5.5	4	20	46.5	3.3	37.5	3111	1064	42	u8FL/ WDFN-8
NTTFS4937N	N Ch	Single	30	20	2.2	75	43.1		7	4.5	15.7	35.5	1.9	33	2540	893	26	u8FL/ WDFN-8
NTTFS4939N	N Ch	Single	30	20	2.2	52	29.8		8	5.5	12.4	28	1.8	35.5	1979	711	20.2	u8FL/ WDFN-8
NTTFS4941N	N Ch	Single	30	20	2.2	46	25.2		9	6.2	10.1	22.8	1.3	22	1619	573	18	u8FL/ WDFN-8
NTTFS4C05N	N Ch	Single	30	20	2.2	75	33		5.1	3.6		31	5.5	34.4	1988	1224	71	u8FL/ WDFN-8
NTTFS4C06N	N Ch	Single	30	20	2.2	65	31		6.1	4.2	11.6	26	4	22	1683	841	40	u8FL/ WDFN-8

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTTFS4C08N	N Ch	Single	30	20	2.2	52	25.5		9	5.9	8.4	18.2	3.3	15.3	1113	702	39	u8FL/WDFN-8
NTTFS4C10N	N Ch	Single	30	20	2.2	44	23.6		11	7.4		19.3	6.1	8.3	993	574	163	u8FL/WDFN-8
NTTFS4C13N	N Ch	Single	30	20	2.1	38	21.5		14	9.4	7.8	15.2	3.7	9.7	770	443	127	u8FL/WDFN-8
NTTFS4C25N	N Ch	Single	30	20	2.2	27	20.2		26.5	17		10.3	2.7	5.7	500	295	85	u8FL/WDFN-8
NVMFS4841N	N Ch	Single	30	20	2.5	89	112		11.4	7	11.5	25.4	5.1	10.7	1436	348	177	SO-8FL/DFN-5
NVMFS4C05N	N Ch	Single	30	20	2.2	116	9		5	3.4	14	30	5.9	30.2	1972	1215	59	SO-8FL/DFN-5
NVTFS4823N	N Ch	Single	30	20	2.5	30	21		17.5	10.5	6	12	2.4	5	750	175	100	u8FL/WDFN-8
NVTFS4824N	N Ch	Single	30	20	2.5	46	21		7.5	4.7	14	29	5.5	8.8	1740	360	200	u8FL/WDFN-8
NVTFS4C05N	N Ch	Single	30	20	2.2	102	72		5.1	3.6	14.5	31	5.5	34.4	1968	1224	71	u8FL/WDFN-8
NVTFS4C06N	N Ch	Single	30	20	2.2	71	37		6.1	4.2	11.6	26	4.5	22	1683	841	40	u8FL/WDFN-8
NVTFS4C08N	N Ch	Single	30	20	2.2	55	31		9	5.9	8.4	18.2	3.3	15.3	1113	702	39	u8FL/WDFN-8
NVTFS4C10N	N Ch	Single	30	20	2.2	47	33		11	7.4	10.1	19.2	6.1	8.3	993	574	163	u8FL/WDFN-8
NVTFS4C13N	N Ch	Single	30	20	2.1	40	26		14	9.4	7.8	15.2	3.7	9.7	770	443	127	u8FL/WDFN-8
NVTFS4C25N	N Ch	Single	30	20	2.2	22.1	14.3		26.5	17	5.1	10.3	2.7	5.7	500	295	85	u8FL/WDFN-8
SCH1434	N Ch	Single	30	12	1.3	2	0.8	235	165		1.7		0.38		130	21	14	SOT-563/SCH6
SCH1435	N Ch	Single	30	12	1.3	3	0.8	126	89		3.5		0.93		265	35	28	SOT-563/SCH6
SCH1436	N Ch	Single	30	20	2.6	1.8	0.8			180		2	0.29		88	19	11	SOT-563/SCH6
SCH1439	N Ch	Single	30	20	2.6	3.5	1		110	72		5.6	0.8		280	60	30	SOT-563/SCH6
CPH3455	N Ch	Single	35	20	2.6	3	1		173	104		4	0.7		186	36	22	CPH-3
CPH6443	N Ch	Single	35	20	2.6	6	1.6		61	37		10	2		470	70	35	CPH-6
ECH8419	N Ch	Single	35	20	2.6	9	1.5		30	17		19	3.8		960	130	80	SOT-28 FL/ECH-8
MCH6444	N Ch	Single	35	20	2.6	2.5	0.8		166	98		4	0.7		186	36	22	SC-88FL/MCPH-6
ATP206	N Ch	Single	40	20	2.6	40	40		28	16		27	5.2		1630	205	110	DPAK (Single Gauge)/ATPAK
ATP207	N Ch	Single	40	20	2.6	65	50		15.5	9.1		54	11		2710	330	220	DPAK (Single Gauge)/ATPAK
ATP208	N Ch	Single	40	20	2.6	90	60		9.8	6		83	17		4510	535	385	DPAK (Single Gauge)/ATPAK



# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
BXL4004	N Ch	Single	40	20	2.6	100	1.75		6.6	3.9		140	25	230	8200	940	700	TO-220, 3-Lead/ TO-220-3L
NTB5404N	N Ch	Single	40	20	3.5	167	254		7	4.5		125	55	140	4300	1075	450	D <sup>2</sup> PAK-3
NTB5405N	N Ch	Single	40	20	3.5	116	150		8	5.8		88	37	113	2700	700	200	D <sup>2</sup> PAK-3
NTD5406N	N Ch	Single	40	20	3.5	70	100		17	10		45	20	65	1375	370	160	DPAK-3
NTD5407N	N Ch	Single	40	20	3.5	38	75		40	26		20	10.5	40	615	173	80	DPAK-3
NTD5802N	N Ch	Single	40	20	3.5	101	93.75		7.8	4.4		75	15	15	5300	850	550	DPAK-3
NTD5803N	N Ch	Single	40	20	3.5	76	83		10.1	7.2		51	12.7	17	3220	390	270	DPAK-3
NTD5804N	N Ch	Single	40	20	3.5	69	71		12	8.5		45	12.6	11.8	2460	310	215	DPAK-3
NTD5805N	N Ch	Single	40	20	3.5	51	47		16	9.5		33	9.8	15.5	1725	220	160	DPAK-3
NTD5806N	N Ch	Single	40	2.5	2.5	33	40		26	19		17	4.5	10.9	860	130	100	DPAK-3
NTD5807N	N Ch	Single	40	20	2.5	23	33		37	31		12.6	3.1	6.1	603	96	73	DPAK-3
NTMFS5830NL	N Ch	Single	40	20	3	172	125		3.6	2.3		113	32	33	5880	750	500	SO-8FL/ DFN-5
NTMFS5832NL	N Ch	Single	40	20	3	111	96		6.5	4.2	25	51	12.7	23.4	2700	360	250	SO-8FL/ DFN-5
NTMFS5834NL	N Ch	Single	40	20	3	74	89		13.6	9.3	12	24	6.3	108	1231	198	141	SO-8FL/ DFN-5
NTMS5835NL	N Ch	Single	40	20	3	12	2.6		14	10		40	9.5	17	2115	315	220	SOIC-8
NTMS5838NL	N Ch	Single	40	20	3	7.5	2.6		30.8	25		17	4	10	785	123	90	SOIC-8
NTP5404N	N Ch	Single	40	20	3.5	167	254		7	4.5		125	55	140	4300	1075	450	TO-220-3
NTTFS5811NL	N Ch	Single	40	20	2.2	53	33		10	6.7	18	31	10	12	1570	215	157	u8FL/ WDFN-8
NVD5803N	N Ch	Single	40	20	3.5	85	83			5.7		51	12.7	17	3220	390	270	DPAK-3
NVD5890N	N Ch	Single	40	20	3.5	123	107			3.7		74	16	40	4975	785	490	DPAK-3
NVD5890NL	N Ch	Single	40	20	2.5	123	107		5.5	3.7	42	74	18.8	34	4760	580	385	DPAK-3
NVMFS5830NL	N Ch	Single	40	20	2.4	185	158		3.6	2.3	58	113	32	33	5880	750	500	SO-8FL/ DFN-5
NVMFS5832NL	N Ch	Single	40	20	2.4	120	127		6.5	4.2	25	51	12.7	23.4	2700	360	250	SO-8FL/ DFN-5
NVMFS5833N	N Ch	Single	40	20	3.5	86	112			7.5		32.5		14	1714	210	144	SO-8FL/ DFN-5
NVMFS5834NL	N Ch	Single	40	20	3	75	107		13.6	9.3	12	24	6.3	108	1231	198	141	SO-8FL/ DFN-5
NVTFS5811NL	N Ch	Single	40	20	2.2	40	21		10	6.7	17	30	9	17	1570	215	157	u8FL/ WDFN-8
SFT1450	N Ch	Single	40	20	2.6	21	1		56	28		14.4	3.1		715	85	65	
5LN01C	N Ch	Single	50	10	1.3	0.1	0.25	9900				1.57	0.32		6.6	4.7	1.7	
5LN01M	N Ch	Single	50	10	1.3	0.1	0.15	9900				1.57	0.32		6.6	4.7	1.7	SC-70FL/ MCPH-3
5LN01S	N Ch	Single	50	10	1.3	0.1	0.15	9900				1.57	0.32		6.6	4.7	1.7	
5LN01SP	N Ch	Single	50	10	1.3	0.1	0.25	9.9				1.57	0.32		6.6	4.7	1.7	TO-92/ SPA
5LN01SS	N Ch	Single	50	10	1.3	0.1	0.15	9900				1.57	0.32		6.6	4.7	1.7	SOT-623/ SSFP

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
ATP216	N Ch	Single	50	10	2.6	35	40	28	23		30		7.9		2700	150	110	DPAK (Single Gauge)/ ATPAK
BSS138L	N Ch	Single	50	20	1.5	0.2	0.225	10000	5600						40	12	3.5	SOT-23-3
2N7002E	N Ch	Single	60	20	2.5	0.26	0.3		3000	2500		0.81	0.08		26.7	4.6	2.9	SOT-23-3
2N7002K	N Ch	Single	60	20	2.3	0.38	0.42		2500	1600		0.7	0.1		24.5	4.2	2.2	SOT-23-3
2N7002L	N Ch	Single	60	20	2.5	0.115	0.3			7500					50	25	5	SOT-23-3
2N7002W	N Ch	Single	60	20	2.5	0.31	0.28		2500	1600		0.7	0.1		24.5	4.2	2.2	SC-70-3/ SOT-323-3
2SK3703	N Ch	Single	60	20	2.6	30	2		40	26		40	11.5		1780	266	197	
2SK3816	N Ch	Single	60	20	2.6	40	1.65			26		40	11.5		1780	266	197	
2SK4066	N Ch	Single	60	20	2.6	100	1.65		6.6	4.7		220	55		1250 0	1200	950	
2SK4094	N Ch	Single	60	20	2.6	100	1.75		7	5		220	55		1250 0	1200	950	TO-220, 3-Lead/ TO-220-3L
ATP212	N Ch	Single	60	20	2.6	35	40		33	23		34.5	6.8		1820	150	100	IPAK-5/ TP-5H
ATP213	N Ch	Single	60	20	2.6	50	50		21	16		58	12.5		3150	310	190	DPAK (Single Gauge)/ ATPAK
ATP214	N Ch	Single	60	20	2.6	75	60		11.5	8.1		96	18		4850	370	280	DPAK (Single Gauge)/ ATPAK
ATP401	N Ch	Single	60	20	2.6	100	90		5.2	3.7		300	60		1700 0	1000	770	DPAK (Single Gauge)/ ATPAK
ATP404	N Ch	Single	60	20	2.6	95	70		10.5	7.2		120	25		6400	490	380	DPAK (Single Gauge)/ ATPAK
CPH6442	N Ch	Single	60	20	2.6	6	1.6		59	43		20	4.2		1040	90	55	CPH-6
CPH6444	N Ch	Single	60	20	2.6	4.5	1.6		104	78		10	2.1		505	57	37	CPH-6
CPH6445	N Ch	Single	60	20	2.6	3.5	1.6		168	117		6.8	1.4		310	40	25	CPH-6
MCH3486	N Ch	Single	60	20	2.6	2	1		192	137		7	1.3		310	40	25	SC-70FL/ MCPH-3
MCH6445	N Ch	Single	60	20	2.6	4	1.5		104	78		10	2.1		505	57	37	SC-88FL/ MCPH-6
MMBF170L	N Ch	Single	60	20	3	0.5	0.225			5000								SOT-23-3
NDBA170N06A	N Ch	Single	60	20	2.6	170	90			3.3		280		310	1580 0	1000	740	D <sup>2</sup> PAK-3
NTB45N06	N Ch	Single	60	20	4	45	125			26		33		87	1224	345	76	D <sup>2</sup> PAK-3
NTB45N06L	N Ch	Single	60	15	2	45	125		28			23		90	1212	352	90	D <sup>2</sup> PAK-3
NTB5426N	N Ch	Single	60	20	4	120	215			6		150	67	235	5800	1000	370	D <sup>2</sup> PAK-3
NTB5860N	N Ch	Single	60	20	4	169	167			3		180	57	76	1076 0	1125	700	D <sup>2</sup> PAK-3
NTB5860NL	N Ch	Single	60	20	3	169	283		3.6	3	115	220	54	71	1321 6	1127	752	D <sup>2</sup> PAK-3
NTB60N06	N Ch	Single	60	20	4	60	150			14		62		146	2300	660	144	D <sup>2</sup> PAK-3
NTD18N06L	N Ch	Single	60	15	2	18	55		65		11			57	482	166	56	DPAK-3

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	$V_{(BR)DSS}$ Min (V)	$V_{GS}$ Max (V)	$V_{GS(th)}$ Max (V)	$I_D$ Max (A)	$P_D$ Max (W)	$r_{DS(on)}$ Max @ $V_{GS} = 2.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 4.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 10$ V (m $\Omega$ )	$Q_g$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_g$ Typ @ $V_{GS} = 10$ V (nC)	$Q_{gd}$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_{rr}$ Typ (nC)	$C_{iss}$ Typ (pF)	$C_{oss}$ Typ (pF)	$C_{rss}$ Typ (pF)	Package
NTD20N06	N Ch	Single	60	20	4	20	60			46		21.2		84	725	213	58	DPAK-3
NTD20N06L	N Ch	Single	60	20	2	20	60		48		16.1			66	707	224	72	DPAK-3
NTD24N06	N Ch	Single	60	20	4	24	62.5			42		24		96	846	252	95	DPAK-3
NTD24N06L	N Ch	Single	60	15	2	24	62.5		45		16				814	258	80	DPAK-3
NTD3055-094	N Ch	Single	60	20	4	12	48			94		10.9		47	323	107	34	DPAK-3; IPAK-4
NTD3055-150	N Ch	Single	60	20	4	9	28.8			150				0.036	200	70	26	DPAK-3
NTD3055L104	N Ch	Single	60	15	2	12	48		104		7.4			0.04	316	105	35	DPAK-3; IPAK-4
NTD3055L170	N Ch	Single	60	15	2	9	28.8		170		4.7			31	195	70	29	DPAK-3
NTD5414N	N Ch	Single	60	20	4	24	55			28.4		25	11.3	76	800	165	75	DPAK-3
NTD5862N	N Ch	Single	60	20	4	90	96			5.7		82	27	40	5050	500	300	DPAK-3; IPAK-4
NTD5865N	N Ch	Single	60	20	4	38	52			14		23	7.7	20	1261	136	85	DPAK-3; IPAK-4
NTD5865NL	N Ch	Single	60	20	2	40	52		19	16		29	8	13	1400	137	95	DPAK-3; IPAK-4
NTD5867NL	N Ch	Single	60	20	2.5	20	36		50	39		15	4.3	12	675	68	47	DPAK-3; IPAK-4
NTF3055-100	N Ch	Single	60	20	4	3	2.1			110		10.6		0.04	324	25	110	SOT-223-4/ TO-261-4
NTF3055L108	N Ch	Single	60	15	2	3	2.1		120		7.6			0.044	313	112	40	SOT-223-4/ TO-261-4
NTMFS5844NL	N Ch	Single	60	20	2.3	60	89		16	12		30	8	15	1460	150	96	SO-8FL/ DFN-5
NTP5860N	N Ch	Single	60	20	4	169	167			3		180	57	76	10760	1125	700	TO-220-3
NTP5860NL	N Ch	Single	60	20	3	169	167		3.6	3	115	220	54	71	13216	1127	752	TO-220-3
NTP5863N	N Ch	Single	60	20	4	97	150			7.8		55	19	28	3200	350	230	TO-220-3
NTP5864N	N Ch	Single	60	20	4	63	107			12.4		31	10	20	1680	189	124	TO-220-3
NTR5198NL	N Ch	Single	60	20	2.5	2.2	1.5		205		3	5.4			191	22	17	SOT-23-3
NTTFS5820NL	N Ch	Single	60	20	2.3	37	33		15	11.5	15	28	8	15	1462	150	96	u8FL/ WDFN-8
NTTFS5826NL	N Ch	Single	60	20	3	20	19		32	24	8.4	16	3.9	13	850	85	50	u8FL/ WDFN-8
NVB5860N	N Ch	Single	60	20	4	220	283			3		180	57	76	10760	1125	700	D <sup>2</sup> PAK-3
NVB5860NL	N Ch	Single	60	20	3	220	283		3.6	3		220	54	71	13216	1127	752	D <sup>2</sup> PAK-3
NVD5484NL	N Ch	Single	60	20	2.5	54	100		23	17	27	48		118	1410	315	135	DPAK-3
NVD5490NL	N Ch	Single	60	20	2.5	17	49		85	64	7.8	14	5.4	27	365	91	46	DPAK-3
NVD5862N	N Ch	Single	60	20	4	98	115			5.7		82	27	40	5050	500	300	DPAK-3
NVD5863NL	N Ch	Single	60	20	3	82	96		9	7.1		70	19.4	31	3850	350	220	DPAK-3
NVD5865NL	N Ch	Single	60	20	2	38	49		19	16		29	8	13	1400	137	95	DPAK-3
NVD5867NL	N Ch	Single	60	20	2.5	22	43		50	39		15	4.3	12	675	68	47	DPAK-3

MOSFETs (continued)

Device	Channel Polarity	Configuration	$V_{(BR)DSS}$ Min (V)	$V_{GS}$ Max (V)	$V_{GS(th)}$ Max (V)	$I_D$ Max (A)	$P_D$ Max (W)	$r_{DS(on)}$ Max @ $V_{GS} = 2.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 4.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 10$ V (m $\Omega$ )	$Q_g$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_g$ Typ @ $V_{GS} = 10$ V (nC)	$Q_{gd}$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_{rr}$ Typ (nC)	$C_{iss}$ Typ (pF)	$C_{oss}$ Typ (pF)	$C_{rss}$ Typ (pF)	Package
NVMFS5826NL	N Ch	Single	60	20	2.5	26	39		32	24	9.1	17	4	11	850	85	50	SO-8FL/DFN-5
NVMFS5844NL	N Ch	Single	60	20	2.3	61	107		16	12	15	30	8	15	1460	150	96	SO-8FL/DFN-5
NVMFS5885NL	N Ch	Single	60	20	2.5	39	54		21	15	12	21	6.3	16	1340	125	85	SO-8FL/DFN-5
NVR5198NL	N Ch	Single	60	2.5	20	2.2	1.5		205	155	2.8	5.1	1.5	6	102	25	16	SOT-23-3
NVTFS5820NL	N Ch	Single	60	20	2.3	29	21		15	11.5	15	28	8	15	1462	150	96	$\mu$ 8FL/WDFN-8
NVTFS5826NL	N Ch	Single	60	20	2.5	20	22		32	24	8.3	16	4	17	850	85	50	$\mu$ 8FL/WDFN-8
PCP1403	N Ch	Single	60	20	2.6	4.5	3.5		168	117		6.7	1.6		310	40	25	
SFT1446	N Ch	Single	60	20	2.6	20	23		76	51		16	3.6		750	59	47	
2SK4065	N Ch	Single	75		2.6	100	1.65		8	6		220	50		12200	950	730	
BMS4007	N Ch	Single	75	20	4	60	2					160	40	183	9700	540	360	TO-220ML(LS)
NVD6820NL	N Ch	Single	90	20	2.5	50	100		20.5	17		67			4200	220	130	DPAK-3
NVD6828NL	N Ch	Single	90	20	2.5	41	83		25	20	32	61	16	49	2900	175	126	DPAK-3
2SK3707	N Ch	Single	100	2.6	20	20	2		80	60		44	9.8		2150	160	110	
2SK3820	N Ch	Single	100	20	2.6	26	1.65			60		44	9.8		2150	160	110	
ATP405	N Ch	Single	100	20	3.5	40	70			33		68	15		4000	300	170	DPAK (Single Gauge)/ATPAK
BSS123L	N Ch	Single	100	20	2.8	0.17	0.225			6000					20	9	4	SOT-23-3
NTB6410AN	N Ch	Single	100	20	4	76	188			13		120	57	300	4500	650	250	D <sup>2</sup> PAK-3
NTB6411AN	N Ch	Single	100	20	4	77	217			14		100	47	330	3700	550	200	D <sup>2</sup> PAK-3
NTB6412AN	N Ch	Single	100	20	4	58	167			18.2		73	35	270	2700	400	150	D <sup>2</sup> PAK-3
NTB6413AN	N Ch	Single	100	20	4	42	136			28		51	26	230	1800	280	100	D <sup>2</sup> PAK-3
NTD6414AN	N Ch	Single	100	20	4	32	100			37		40	20	195	1450	230	95	DPAK-3
NTD6415AN	N Ch	Single	100	20	4	23	83			55		29	14.6	176	700	110	52	DPAK-3; IPAK-4
NTD6415ANL	N Ch	Single	100	20	2	23	83		56	52	20	35	14	152	1024	156	70	DPAK-3
NTD6416AN	N Ch	Single	100	20	4	17	71			81		20	10	135	620	110	50	DPAK-3; IPAK-4
NTD6416ANL	N Ch	Single	100	20	2.2	19	71		80	74		25	9.6	112	700	110	50	DPAK-3; IPAK-4
NTP6410AN	N Ch	Single	100	20	4	76	188			13		120	57	300	4500	650	250	TO-220-3
NTP6411AN	N Ch	Single	100	20	4	77	217			14	100	100	47	330	3700	550	200	TO-220-3
NTP6412AN	N Ch	Single	100	20	4	58	167			18.2		73	270		2700	400	150	TO-220-3
NTP6413AN	N Ch	Single	100	20	4	42	136			28		51	26		1800	280	100	TO-220-3
NVD6824NL	N Ch	Single	100	20	2.5	41	90		23	20		66	18	59	3468	187	133	DPAK-3
SFT1443	N Ch	Single	100	20	2.6	9	1		275	225		9.8	1.6		490	34	19	
SFT1445	N Ch	Single	100	20	2.6	17	1		126	111		19	3.8		1030	78	42	
NTB35N15	N Ch	Single	150	20	4	37	178			50		70	32	1.14	2275	450	90	D <sup>2</sup> PAK-3

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	$V_{(BR)DSS}$ Min (V)	$V_{GS}$ Max (V)	$V_{GS(th)}$ Max (V)	$I_D$ Max (A)	$P_D$ Max (W)	$r_{DS(on)}$ Max @ $V_{GS} = 2.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 4.5$ V (m $\Omega$ )	$r_{DS(on)}$ Max @ $V_{GS} = 10$ V (m $\Omega$ )	$Q_g$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_g$ Typ @ $V_{GS} = 10$ V (nC)	$Q_{gd}$ Typ @ $V_{GS} = 4.5$ V (nC)	$Q_{rr}$ Typ (nC)	$C_{iss}$ Typ (pF)	$C_{oss}$ Typ (pF)	$C_{rss}$ Typ (pF)	Package
NDD02N40	N Ch	Single	400	20	2	1.7	39			5500		5.5	1	260	121	16	3	DPAK-3; IPAK-4
NDT02N40	N Ch	Single	400	20	2	0.4	2			5500		5.5	1	260	121	16	3	SOT-223-4/ TO-261-4
2SK4085LS	N Ch	Single	500	30	5	11	2			43		46.6	46.6		1200	250	55	TO-220F-3FS
2SK4096LS	N Ch	Single	500	30	5	7.1	2			85		24	14		600	130	28	TO-220F-3FS
2SK4124	N Ch	Single	500	30	5	20	2.5			43		46.6	27.3		1200	250	55	TO-3P-3L
2SK4196LS	N Ch	Single	500	30	5	5	2			1560		14.6	8.8		360	77	17	TO-220F-3FS
ATP613	N Ch	Single	500	30	5	5.5	70			2000		13.8	7.6		350	68	15	DPAK (Single Gauge)/ ATPAK
BFL4036	N Ch	Single	500	30	5	14	2			520		38.4	22.1	4200	1000	200	44	TO-220F-3FS
BFL4037	N Ch	Single	500	30	5	16	2			430		48.6	27.4	5000	1200	250	55	TO-220F-3FS
NDD03N50Z	N Ch	Single	500	30	4.5	2.6	58			3300		10	5.5		274	38	8	DPAK-3; IPAK-4
NDD04N50Z	N Ch	Single	500	30	4.5	3	61			2700		12	6.1	0.9	308	43	9	DPAK-3; IPAK-4
NDD05N50Z	N Ch	Single	500	30	4.5	4.7	83			1500		18.5	10	1.25	530	68	15	DPAK-3; IPAK-4
NDF05N50Z	N Ch	Single	500	30	4.5	5.5	30			1500		18.5	10	1.25	530	68	15	TO-220 FULLPAK-3
NDF08N50Z	N Ch	Single	500	30	4.5	8.5	35			850		31	17	1.5	912	120	27	TO-220 FULLPAK-3
NDF11N50Z	N Ch	Single	500	30	4.5	12	39			520		46	25	2.5	1375	166	40	TO-220 FULLPAK-3
SFT1423	N Ch	Single	500	20	2.6	2	1			4900		8.7	2.9		175	32	6	
WPB4001	N Ch	Single	500	30	5	26	2.5			260		87	50	340	2250	450	90	TO-3P-3L
2SK4087LS	N Ch	Single	600	30	5	14	2			610		46	26.4		1200	220	50	TO-220F-3FS
2SK4099LS	N Ch	Single	600	30	5	8.5	2			940		29	16.5		750	140	31	TO-220F-3FS
2SK4125	N Ch	Single	600	30	5	17	2.5			61		46	26.7		1200	220	50	TO-3P-3L
2SK4197FS	N Ch	Single	600	30	5	3.5	2			3250		11			260	50	9.7	TO-220F-3FS
2SK4198FS	N Ch	Single	600	30	5	5	2			2.34		14.3	8.2		360	69	15	TO-220F-3FS
ATP602	N Ch	Single	600	30	5	5	70			2700		13.6	7.2		350	68	15	IPAK-5/ TP-5H
BFL4007	N Ch	Single	600	30	5	14	2			680		46	26.4	250	1200	220	43	TO-220F-3FS
NDD01N60	N Ch	Single	600	30	3.7	1.5	46			8500		7.2	3.1	288	160	22	4	DPAK-3; IPAK-4
NDD02N60Z	N Ch	Single	600	30	4.5	2.2	57			4800		10	5.3	0.7	274	34	7	DPAK-3; IPAK-4
NDD03N60Z	N Ch	Single	600	30	4.5	2.6	61			3600		12	6.1	0.9	312	39	8	DPAK-3; IPAK-4
NDD04N60Z	N Ch	Single	600	30	4.5	4.1	83			2000		19	10	1.3	535	62	14	DPAK-3; IPAK-4
NDD60N360U1	N Ch	Single	600	25	4	11	114			360		29			800	55	3.5	DPAK-3; IPAK-3; IPAK-4
NDD60N550U1	N Ch	Single	600	25	4	8.5	96			550		20			540	45	1	DPAK-3; IPAK-3; IPAK-4

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NDD60N745U1	N Ch	Single	600	25	4	6.8	83			745		18			450	30	1.5	DPAK-3; IPAK-3; IPAK-4
NDD60N900U1	N Ch	Single	600	25	4	5.9	74			900		15			360	25	1	DPAK-3; IPAK-3; IPAK-4
NDF02N60Z	N Ch	Single	600	30	4.5	2.4	24			4800		10	5.3	0.7	274	34	7	TO-220 FULLPAK-3
NDF03N60Z	N Ch	Single	600	30	4.5	3.1	27			3600		12	6.1	0.9	312	39	8	TO-220 FULLPAK-3
NDF04N60Z	N Ch	Single	600	30	4.5	4.8	30			2000		19	10	1.3	535	62	14	TO-220 FULLPAK-3
NDF06N60Z	N Ch	Single	600	30	4.5	7.1	35			1200		31	17	2	923	106	23	TO-220 FULLPAK-3
NDF08N60Z	N Ch	Single	600	30	4.5	8.4	34			950		39	21	2.2	1140	129	30	TO-220 FULLPAK-3
NDF10N60Z	N Ch	Single	600	30	4.5	10	39					47	26	3	1373	150	35	TO-220 FULLPAK-3
NDT01N60	N Ch	Single	600	30	3.7	0.4	2.5			8500			3.1	288	160	22	4	SOT-223-4/ TO-261-4
SFT1440	N Ch	Single	600	30	5	1.5	20			8100		6.3	3.6		130	25	4	
SFT1458	N Ch	Single	600	30	4.5	1	1			13		3.8			65	20	4.5	
WPB4002	N Ch	Single	600	30	5	23	2.5			360		84	45.4	340	2200	400	83	TO-3PB
2SK4088LS	N Ch	Single	650	30	5	11	2			850		37.6	17.6		1000	172	36	TO-220F-3FS
BFL4004	N Ch	Single	800	30	4	4.3	2			2500		36	18	6700	710	120	42	TO-220F-3FS
NDD03N80Z	N Ch	Single	800	30	4.5	2.9	96			4.5		17	9.1	1.3	440	52	9	DPAK-3; IPAK-4
BFL4001	N Ch	Single	900	30	4	4.1	2			2700		44			850	130	43	TO-220F-3FS
BFL4026	N Ch	Single	900	30	4	3.5	2					33	16.5	4700	650	100	35	TO-220F-3FS
2SK3745LS	N Ch	Single	1500	20	3.5	2	2			13000		37.5	20		380	70	40	TO-220F-3FS
2SK3746	N Ch	Single	1500	20	3.5	2	2			13		37.5			380	70	40	TO-3P-3L
2SK3747	N Ch	Single	1500	20	3.5	2	3			13000		37.5	20		30	70	40	
2SK3748	N Ch	Single	1500	20	3.5	4	3			7000		80	36		790	140	70	
2SK4177	N Ch	Single	1500	20	3.5	2	80			13000		37.5	20		380	70	40	
NDFP03N150C	N Ch	Single	1500	30	4	2.5	2			10500		34		1800	650	70	20	TO-220F-3FS
NDFPD1N150C	N Ch	Single	1500	30	4	0.1	2			15000 0		4.2			80	9	2.5	TO-220F-3FS
NDTL03N150C	N Ch	Single	1500	30	4	2.5	2.5			10500		34		2220	650	70	20	TO-3P-3L
NDUL03N150C	N Ch	Single	1500	30	4	2.5	3			10500		34	15		650	70	20	
WPH4003	N Ch	Single	1700	30	4	3	3			10500		48	22	3000	850	90	27	
CPH5871	N Ch	with Schottky Diode	30	12	1.3	3.5	0.9	74	52		4.7		1.1		430	59	38	CPH-5
NTLJF4156N	N Ch	with Schottky Diode	30	8	1	4	2.3	90	70		5.4		1.24	5	427	51	32	WDFN-6
NTMFS4897N	N Ch	with Schottky Diode	30	20	2.5	171	96.2		3	2	40.2	83.6	13.4	34	5660	1150	495	SO-8FL/ DFN-5

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTMFS4899N	N Ch	with Schottky Diode	30	20	2.5	75	48		7.5	5	12.2	25	4.8	5.7	1600	360	165	SO-8FL/DFN-5
NTMFS4982NF	N Ch	with Schottky Diode	30	20		207	89.3		1.9	1.3	40		12	71	6000	2400	160	SO-8FL/DFN-5
NTMFS4983NF	N Ch	with Schottky Diode	30	20	2.3	106	38		3.1	2.1	22.6	47.9	6.9	50	3250	1340	90	SO-8FL/DFN-5
NTMFS4985NF	N Ch	with Schottky Diode	30	20	2.3	65	22.73		5	3.4	14.2	30.5	4.2	32	2100	900	60	SO-8FL/DFN-5
NTTFS4985NF	N Ch	with Schottky Diode	30	20	2.3	64	22.73		5.2	3.5	13.6	29.4	4.1	32	2075	876	46	u8FL/WDFN-8
SCH2825	N Ch	with Schottky Diode	30	20	2.6	1.6	0.6			180		2	0.29		88	19	11	SOT-563/SCH6
FW217A	N Ch	Dual	35	20	2.6	6	1.8		70	39		10			470	70	35	SOIC8 NB EP
NVDD5894NL	N Ch	Dual	40	20	2.5	64	75		14.5	10	21	41	11.3	13.7	2103	259	183	DPAK-5
VEC2315	P Ch	Dual	-60	20	-2.6	-2.5	0.9		180	137		11	2		420	54	44	SOT-28FL/VEC-8
MCH6603	P Ch	Dual	-50	10	-1.4	-0.14	0.8	28000				1.4	0.23		7.4	4.2	1.3	SC-88FL/MCPH-6
ECH8667	P Ch	Dual	-30	20	-2.6	-5.5	1.3		77	39		13	3.2		600	145	110	SOT-28 FL/ECH-8
MCH6601	P Ch	Dual	-30	10	-1.4	-0.2	0.8	15400				1.43	0.25		7.5	5.7	1.8	SC-88FL/MCPH-6
MCH6664	P Ch	Dual	-30	20	-2.6	-1.5	0.8		555	325		2.2	0.49		82	22	16	SC-88FL/MCPH-6
ECH8654	P Ch	Dual	-20	10	-1.3	-5	1.3	58	38		11		2.8		960	180	140	SOT-28 FL/ECH-8
ECH8672	P Ch	Dual	-20	10	-1.3	-3.5	1.3	137	85		4		1.1		320	66	50	SOT-28 FL/ECH-8
EMH2308	P Ch	Dual	-20	10	-1.3	-3	1	137	85		4		1.1		320	66	50	SOT-383FL/EMH-8
ECH8652	P Ch	Dual	-12	10	-1.4	-6	1.3	45	28		11		2.9		1000	320	250	SOT-28 FL/ECH-8
EMH2314	P Ch	Dual	-12	10	-1.3	-5	1	75	37		12		2		1300	158	143	SOT-383FL/EMH-8
NTGD1100L	P Ch	Dual	8	8	1.2	3.3	0.83		55									SC-74
NTJD1155L	P Ch	Dual	8	8	1	1.3	0.4	220	175									SC-88-6/SC-70-6/SOT-363-6
NTHD4102P	P Ch	Dual	20	8	1.5	4.1	2.1	110	80		8.6		2.6	0.01	750	100	45	ChipFET-8
NTJD4152P	P Ch	Dual	20	12		0.88	0.272	500	260		2.2		0.65		155	25	18	SC-88-6/SC-70-6/SOT-363-6
NTLJD3115P	P Ch	Dual	20	8	1	4.1	2.3	135	100		5.5		1.4	5	531	91	56	WDFN-6
NTLUD3A260P	P Ch	Dual	20	8	1	2.1	0.8	290	200		4.2			5.1	300		29	UDFN-6
NTLUD3A50PZ	P Ch	Dual	20	8	1	4.4	1.4	70	50		10.4		3		920	85	80	UDFN-6
NTMD6P02	P Ch	Dual	20	12	1.2	6	0.5	50	33		20		8	0.04	1380	515	250	SOIC-8

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTZD3152P	P Ch	Dual	20	6	1	0.43	0.28	1200	900		1.7		0.4		105	15	10	SOT-563
NUS5530MN	P Ch	Dual	20	12	1.2	3.9	1.3	83	50		9.7		3.6		710	400	140	DFN-8
ATP301	P Ch	Single	-100	20	-3.5	-28	70			75		73	14		4000	270	150	DPAK (Single Gauge)/ ATPAK
SFT1345	P Ch	Single	-100	20	-2.6	-11	1		315	275		21	3.6		1020	72	43	
BMS3004	P Ch	Single	-75	20	-2.6	-68	2			8.5		300	70	470	1340 0	1000	740	
SMP3003	P Ch	Single	-75	20	-2.6	-100	90			8		280	55	380	1340 0	1000	740	
2SJ661	P Ch	Single	-60	20	-2.6	-38	1.65			39		80	12		4360	470	335	
6HP04MH	P Ch	Single	-60	20	-2.6	-0.37	0.6			4200		0.84			24.1	8.5	4.1	SC-70FL/ MCPH-3
ATP112	P Ch	Single	-60	20	-2.6	-25	40		59	43		33.5	7.9		1450	155	125	DPAK (Single Gauge)/ ATPAK
ATP113	P Ch	Single	-60	20	-2.6	-35	50		38	29.5		55	12		2400	250	195	DPAK (Single Gauge)/ ATPAK
ATP114	P Ch	Single	-60	20	-2.6	-55	60		21	16		92	15.5		4000	400	315	DPAK (Single Gauge)/ ATPAK
ATP302	P Ch	Single	-60	20	-2.6	-70	70		18	13		115	25		5400	500	370	DPAK (Single Gauge)/ ATPAK
ATP304	P Ch	Single	-60	20	-2.6	-100	90		8.9	6.5					1300 0	1080	760	DPAK (Single Gauge)/ ATPAK
BBS3002	P Ch	Single	-60	20	-2.6	100	90			5.8		280	55		1320 0	1300	950	D <sup>2</sup> PAK-3
CPH3351	P Ch	Single	-60	20	-2.6	-1.8	1		330	250		6	1.3		262	29	19	CPH-3
CPH6354	P Ch	Single	-60	20	-2.6	-4	1.6		135	100		14	3.4		600	60	50	CPH-6
SFT1342	P Ch	Single	-60	20	-2.6	-12	1		87	62		26	5		1150	115	95	
5LP01C	P Ch	Single	-50	10	-1.4	-0.07	0.25	28000				1.4	0.23		7.4	4.2	1.3	
5LP01M	P Ch	Single	-50	10	-1.4	-0.07	0.15	28000				1.4	0.23		7.4	4.2	1.3	SC-70FL/ MCPH-3
5LP01S	P Ch	Single	-50	10	-1.4	-0.07	0.15	28000				1.4	0.23		7.4	4.2	1.3	
5LP01SS	P Ch	Single	-50	10	-1.4	-0.07	0.15	28000				1.4	0.23		7.4	4.2	1.3	SOT-623/ SSFP
BSS84L	P Ch	Single	-50	20		-0.13	0.225		10000						30	10	5	SOT-23-3
ATP106	P Ch	Single	-40	20	-2.6	-30	40		41	25		29	5.9		1380	210	150	DPAK (Single Gauge)/ ATPAK
ATP107	P Ch	Single	-40	20	-2.6	-50	50		26	17		47	8		2400	330	240	DPAK (Single Gauge)/ ATPAK
ATP108	P Ch	Single	-40	20	-2.6	-70	60		16.5	10.4		79.5	15		3850	560	390	DPAK (Single Gauge)/ ATPAK
SFT1341	P Ch	Single	-40	10	-1.4	-10	1	154	112		8		2.5		650	65	50	
SFT1350	P Ch	Single	-40	20	-2.6	-19	1		105	59		12	2		590	85	61	



# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
3LP01C	P Ch	Single	-30	10	-1.4	-0.1	0.25	15.4				1.43	0.25		7.5	5.7	1.8	
3LP01M	P Ch	Single	-30	10	-1.4	-0.1	0.15	15400				1.43	0.25		7.5	5.7	1.8	SC-70FL/ MCPH-3
3LP01S	P Ch	Single	-30	10	-1.4	-0.4	0.15	15400				1.43	0.25		7.5	5.7	1.8	
3LP01SS	P Ch	Single	-30	10	-1.4	-0.1	0.15	15400				1.43	0.25		7.5	5.7	1.8	SOT-623/ SSFP
ATP101	P Ch	Single	-30	20	-2.6	-25	30		51	30		18.5	4		875	220	155	DPAK (Single Gauge)/ ATPAK
ATP102	P Ch	Single	-30	20	-2.6	-40	40		31	18.5		34	11.5		1490	360	270	DPAK (Single Gauge)/ ATPAK
ATP103	P Ch	Single	-30	20	-2.6	-55	50		20.5	13		47	8.7		2430	555	395	DPAK (Single Gauge)/ ATPAK
ATP104	P Ch	Single	-30	20	-2.6	-75	60		13.5	8.4		76	13		3950	880	610	DPAK (Single Gauge)/ ATPAK
CPH3355	P Ch	Single	-30	20	-2.6	-2.5	1		262	156		3.9	0.8		172	51	36	CPH-3
CPH3360	P Ch	Single	-30	20	-2.6	-1.6	0.9		532	303		2.2	0.49		82	22	16	CPH-3
CPH6341	P Ch	Single	-30	20	-2.6	-5	1.8		100	59		10	2.5		430	105	75	CPH-6
CPH6350	P Ch	Single	-30	20	-2.6	-6	1.6		82	43		13	3.2		600	145	110	CPH-6
CPH6355	P Ch	Single	-30	20	-2.6	-3	1.6		276	169		3.9	0.8		172	51	36	CPH-6
ECH8310	P Ch	Single	-30	20	-2.6	-9	1.5		28	17		28	6		1400	350	250	SOT-28 FL/ ECH-8
ECH8315	P Ch	Single	-30	20	-2.6	-7.5	1.5		44	25		18	4.7		875	200	150	SOT-28 FL/ ECH-8
MCH3333A	P Ch	Single	-30	-10	-1.3	-2	0.9	280	215		2.8		0.95		240	39	31	SC-70FL/ MCPH-3
MCH3375	P Ch	Single	-30	20	-2.6	-1.6	0.8		523	295		2.2	0.49		82	22	16	SC-70FL/ MCPH-3
MCH6331	P Ch	Single	-30	20	-2.6	-3.5	1.5		171	98		5	1.2		250	65	46	SC-88FL/ MCPH-6
MCH6341	P Ch	Single	-30	20	-2.6	-5	1.5		100	59		10	2.5		430	105	75	SC-88FL/ MCPH-6
MCH6342	P Ch	Single	-30	10	-1.3	-4.5	1.5	99	73		8.6		2.4		650	105	83	SC-88FL/ MCPH-6
MCH6344	P Ch	Single	-30	20	-2.6	-2	0.8		255	150		3.9	0.8		172	51	36	SC-88FL/ MCPH-6
SCH1337	P Ch	Single	-30	20	-2.6	-2	0.8		255	150		3.9	0.8		172	51	36	SOT-563/ SCH6
CPH3350	P Ch	Single	-20	10	-1.3	-3	1	124	83			4.6	1.3		375	77	58	CPH-3
CPH3356	P Ch	Single	-20	10	-1.4	-2.5	1	203	137		3.3		0.72		250	60	45	CPH-3
CPH6347	P Ch	Single	-20	12	-1.4	-6	1.6	66	39		10.5		3		860	170	130	CPH-6
ECH8320	P Ch	Single	-20	10	-1.3	-9.5	1.6	23	14.5			25	7.6		230	440	340	SOT-28 FL/ ECH-8
EMH1307	P Ch	Single	-20	10	-1.3	-6.5	1.5	44	26		13		3.7		1100	210	160	SOT-383FL/ EMH-8
MCH3376	P Ch	Single	-20	10	-1.4	-1.5	0.8	385	241		1.7		0.47		120	26	20	SC-70FL/ MCPH-3

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>riss</sub> Typ (pF)	Package
MCH3377	P Ch	Single	-20	10	-1.3	-3	1	125	83		4.6		1.3		375	77	58	SC-70FL/MCPH-3
MCH6321	P Ch	Single	-20	10	-1.3	-4	1.5	125	83		4.6		1.3		375	77	58	SC-88FL/MCPH-6
MCH6337	P Ch	Single	-20	10	-1.3	-4.5	1.5	75	49		7.3		2.1		670	130	94	SC-88FL/MCPH-6
NTLUS3A18PZ	P Ch	Single	-20	8	-1	-8.2	1.7	28	18				8.8	12	2240	240	210	UDFN-6
SCH1330	P Ch	Single	-20	10	-1.4	-1.5	1	385	241		1.7		0.47		120	26	20	SOT-563/SCH6
SCH1332	P Ch	Single	-20	10	-1.3	-2.5	1	138	95		4.6		1.3		375	77	58	SOT-563/SCH6
SCH1333	P Ch	Single	-20	10	-1.4	-2	0.8	196	130		3.3		0.72		250	60	45	SOT-563/SCH6
SCH1345	P Ch	Single	-20	10	-1.3	-4.5	1	64	49			11	1.9		1220	82	72	SOT-563/SCH6
CPH3348	P Ch	Single	-12	10	-1.4	-3	1	115	70		5.6		1.6		405	145	100	CPH-3
CPH6337	P Ch	Single	-12	10	-1.4	-3.5	1.6	115	70		5.6		1.6		405	145	100	CPH-6
ECH8308	P Ch	Single	-12	10	-1.3	-10	1.6	20	12.5		26		7.1		230	720	550	SOT-28 FL/ECH-8
ECH8309	P Ch	Single	-12	10	-1.3	-9.5	1.5	26	16		18		4.9		1780	540	390	SOT-28 FL/ECH-8
EMH1303	P Ch	Single	-12	10	-1.2	-7	1.5	36	23		12		2.9		1100	350	265	SOT-383FL/EMH-8
MCH3374	P Ch	Single	-12	8	-1.4	-3	1	115	70		5.6		1.6		405	145	100	SC-70FL/MCPH-3
MCH3382	P Ch	Single	-12	20	-0.9	-2	0.8	297	198		2.3		0.46		170	50	40	SC-70FL/MCPH-3
MCH3383	P Ch	Single	-12	5	-0.8	-3.5	1	69					1.1		1010	130	85	SC-70FL/MCPH-3
MCH6320	P Ch	Single	-12	10	-1.4	-3.5	1.5	115	70		5.6		1.6		405	145	100	SC-88FL/MCPH-6
MCH6336	P Ch	Single	-12	10	-1.4	-5	1.5	66	43		6.9		1.8		660	210	155	SC-88FL/MCPH-6
MCH6351	P Ch	Single	-12	10	-1.3	-9	1.5	24	16.9		20.5		3.2		2200	350	320	SC-88FL/MCPH-6
MCH6353	P Ch	Single	-12	10	-1.4	-6	1.4	48	35		12		2.1		1250	160	150	SC-88FL/MCPH-6
SCH1331	P Ch	Single	-12	10	-1.3	-3	1	126	84		5.6		1.6		405	145	100	SOT-563/SCH6
SCH1334	P Ch	Single	-12	10	-1.3	-1.6	0.8	345	215		1.6		0.43		120	46	36	SOT-563/SCH6
SCH1335	P Ch	Single	-12	10	-1.3	-2.5	0.8	175	112		3.1		0.9		270	90	72	SOT-563/SCH6
NTR2101P	P Ch	Single	8	8	1	3.7	0.96	72	52		12		2.5		1173	289	218	SOT-23-3
NTS2101P	P Ch	Single	8	8		1.4	0.29	140	100	210	6.4		1.5	9.5	640	120	82	SC-70-3/SOT-323-3
NTGS3433	P Ch	Single	12	8	1.5	2.35	1	95	75		7		3.5		550	450	200	TSOP-6
NTJS3151P	P Ch	Single	12	12		2.7	0.625	90	60		8.6		2.2		850	170	110	SC-88-6/SC-70-6/SOT-363-6
NTLJS2103P	P Ch	Single	12	8	0.8	5.9	1.9	50	40		12.8			14	1157	300	200	WDFN-6

# ON Semiconductor Selector Guide – IGBTs and FETs

## MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
MMSF3P02HD	P Ch	Single	20	20	2	5.6	2.5		95	75		33		0.133	1010	740	260	SOIC-8
NTA4151P	P Ch	Single	20	6		0.76	0.301	450	360		2.1		0.5		156	28	18	SC-75-3
NTE4151P	P Ch	Single	20	6		0.76	0.313				2.1		0.5		156	28	18	SC-89-3
NTF6P02	P Ch	Single	20	8	1	10	8.3	70	50			15	6	0.036	900	350	90	SOT-223-4/ TO-261-4
NTGS3136P	P Ch	Single	20	8	1	5.1	1.25	40	33		18		4.3		1901	274	175	TSOP-6
NTGS3441	P Ch	Single	20	8		2.35	1	135	90			6.2	2.5		480	265	100	TSOP-6
NTGS3443	P Ch	Single	20	12	1.5	4.4	2	90	65			7.5	2.9		565	320	120	TSOP-6
NTHS4101P	P Ch	Single	20	8	1.5	6.7	2.5	40	34		25		7		2100	290	200	ChipFET-8
NTHS5441T1	P Ch	Single	20	12	1.2	5.3	2.5	83				9.7	3.6		710	400	140	ChipFET-8
NTHS5443	P Ch	Single	20	12		4.9	2.5	110	65		7.5		2.2					ChipFET-8
NTJS4151P	P Ch	Single	20	12	1.2	4.2	1	85	60		10		2.8	0.23	850	160	110	SC-88-6/ SC-70-6/ SOT-363-6
NTK3139P	P Ch	Single	20	6	1.2	0.78	0.55		480					5	113	15	9	SOT-723-3
NTLJS3113P	P Ch	Single	20	8	1	7.7	3.3	50	40		13		2.9	44	1329	213	120	WDFN-6
NTLJS3A18PZ	P Ch	Single	20	8	1	8.4	3.4	25	18		28		8.8	12	2240	240	210	WDFN-6
NTLUS3A18PZC	P Ch	Single	20	8	1	8.2	1.7	25	18		28		8.8	12	2240	240	210	UDFN-6
NTLUS3A39PZ	P Ch	Single	20	8	1	5.2	1.5	60	30		10.4			4	920	85	80	UDFN-6
NTLUS3A40P	P Ch	Single	20	8	1	6.4	0.7	39	29		29		8.1	13.6	2600	600	190	UDFN-6
NTLUS3A90P	P Ch	Single	20	8	1	5	2.3	95	62		12.3		3.3	6	950	90	85	UDFN-6
NTMS10P02	P Ch	Single	20	12	1.2	10	2.5		14		48		17	0.075	3100	1100	475	SOIC-8
NTMS5P02	P Ch	Single	20	10	1.25	5.4	7.05	48	33		20		7	0.03	1375	510	200	SOIC-8
NTNS3A65PZ	P Ch	Single	20	8	1	0.235	0.154	2400	1600		1.1	1.1	0.2		40	6.7	5	SOT-883
NTNS3A91PZ	P Ch	Single	20	8	1	0.214	0.125	2400	1600						22	4.5	2.5	XLLGA-3
NTNUS3171PZ	P Ch	Single	20	8	1	0.2	0.2	4000	3500						13	3.4	1.6	SOT-1123-3
NTR0202PL	P Ch	Single	20	20	2.3	0.4	0.225		1100	800	2.18		0.4	0.007	70	74	26	SOT-23-3
NTR1P02	P Ch	Single	20	20	2.3	1	0.4		280	180	2.5			0.008	165	110	35	SOT-23-3
NTR1P02L	P Ch	Single	20	12	1.25	1.3	0.4	350	220		5500			0.008 5	225	130	55	SOT-23-3
NTR3A30PZ	P Ch	Single	20	8	1	2.9	0.48	50	38		17.6		4.9		1651	148	129	SOT-23-3
NTR4101P	P Ch	Single	20	8	1.2	3.2	0.73	120	85		7.5		2.2	1008	675	100	75	SOT-23-3
NTS4101P	P Ch	Single	20	8	1.5	1.37	0.329	160	120		6.4		1.5	4.25	603	90	62	SC-70-3/ SOT-323-3
NTTFS3A08PZ	P Ch	Single	20	8	1	14	4.5	9	6.7		54		14	234	5000	600	500	u8FL/ WDFN-8
NTZS3151P	P Ch	Single	20	8	1	0.95	0.21	200	150		5.6		1.2		458	61	38	SOT-563
MTB50P03HDL	P Ch	Single	30	15	2	50	125		25		74			0.246	3500	1500	550	D <sup>2</sup> PAK-3
MTP50P03HDL	P Ch	Single	30	15	2	50	125		25			74		0.246	3500	1500	550	TO-220-3
NTD25P03L	P Ch	Single	30	15	2	25	75		72		15				900	290	105	DPAK-3
NTF5P03	P Ch	Single	30	20	3	5.2	3.13		150	100				0.036	500	153	58	SOT-223-4/ TO-261-4
NTGS3455	P Ch	Single	30	20	3	3.5	1		170	100		9	2		480	220	60	TSOP-6

MOSFETs (continued)

Device	Channel Polarity	Configuration	V <sub>(BR)DSS</sub> Min (V)	V <sub>GS</sub> Max (V)	V <sub>GS(th)</sub> Max (V)	I <sub>D</sub> Max (A)	P <sub>D</sub> Max (W)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 2.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 4.5 V (mΩ)	r <sub>DS(on)</sub> Max @ V <sub>GS</sub> = 10 V (mΩ)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>g</sub> Typ @ V <sub>GS</sub> = 10 V (nC)	Q <sub>gd</sub> Typ @ V <sub>GS</sub> = 4.5 V (nC)	Q <sub>rr</sub> Typ (nC)	C <sub>iss</sub> Typ (pF)	C <sub>oss</sub> Typ (pF)	C <sub>rss</sub> Typ (pF)	Package
NTGS4111P	P Ch	Single	30	20	3	4.7	2		110	60		15.25	3.4	8	750	140	105	TSOP-6
NTMS4177P	P Ch	Single	30	20	2.5	11.4	2.5		19	12	29	55	13	30	3100	550	370	SOIC-8
NTR4171P	P Ch	Single	30	12	1.4	3.5	1.25		110	75					720	95	65	SOT-23-3
NTR4502P	P Ch	Single	30	20	3	1.95	1.25		350	200		6	1.7		200	80	50	SOT-23-3
NTS4173P	P Ch	Single	30	12	1.5	1.3	0.35		200	150	4.8		1.5	7	430	55	40	SC-70-3/ SOT-323-3
NTB25P06	P Ch	Single	60	15	4	27.5	120			75		33		200	1200	345	90	D <sup>2</sup> PAK-3
NTB5605P	P Ch	Single	60	20	2	18.5	88		140		13		7	140	730	211	67	D <sup>2</sup> PAK-3
NTD20P06L	P Ch	Single	60	20	2	15.5	65		150		15			0.13 130	740	207	66	DPAK-3
NTD2955	P Ch	Single	60	20	4	12	55			180		15	7	100	500	150	50	DPAK-3; IPAK-4
NTF2955	P Ch	Single	60	20	4	2.6	2.3			170		14.3	5.2	0.139	492	165	50	SOT-223-4/ TO-261-4
NTGS5120P	P Ch	Single	60	20	3	2.5	1.1		142	111		18.1	3.6	15.1	942	72	48	TSOP-6
NTP2955	P Ch	Single	60	20	4	12	62.5			196		14	6.2	126	507	150	48	TO-220-3
NTTFS5116PL	P Ch	Single	60	20	3	20	40		72	52	14	25	7	19	1258	127	84	u8FL/ WDFN-8
NVD5117PL	P Ch	Single	60	20	2.5	61	118		22	16	49	85	28	44	4800	480	320	DPAK-3
NVTFS5116PL	P Ch	Single	60	20	3	14	21		72	52	14	25	8	24	1258	127	84	u8FL/ WDFN-8
NVTFS5124PL	P Ch	Single	60	20	2.5	8	38		380	260	3.5	6	1.9	19	250	27	17	u8FL/ WDFN-8
EMH2801	P Ch	with Schottky Diode	-20	10	-1.3	-3	1	137	85		4		1.1		320	66	50	SOT-383FL/ EMH-8
MCH5839	P Ch	with Schottky Diode	-20	10	-1.4	-1.5	0.8	431	266		1.7		0.47		120	26	20	SC-88AFL/ MCPH-5
NTHD3101F	P Ch	with Schottky Diode	20	8	1.5	4.4	2.1	110	80		7.4		2.5	6.5	680	100	70	ChipFET-8
NTHD4P02	P Ch	with Schottky Diode	20	12	1.2	3	2.1	240	155		6		0.9	15	185	95	30	ChipFET-8
NTLGF3402P	P Ch	with Schottky Diode	20	12	2	3.9	3	225	140		3.8		1.6	37	230	105	40	DFN-6
NTLJF3117P	P Ch	with Schottky Diode	20	8	1	4.1	2.3	135	100		5.5			5.7	531	91	56	WDFN-6
NTMD4184PF	P Ch	with Schottky Diode	30	20	3	4	2.31		165	95		5.8	1.1		280	80	52	SOIC-8

**PROTECTED MOSFETS**

Device	Channel Polarity	$V_{(BR)DSS}$ Min (V)	$I_D$ Typ (A)	$r_{DS(on)}$ Max (m $\Omega$ )	$P_D$ Max (W)	Package
NUD4700		5.5	0.0001		1.56	POWERMITE-2
NCV8452		41	1.5	200	1.1	SOT-223-4 / TO-261-4
NCV8460A		41	9	60	1.183	SOIC-8
NCV8461		41	1.2	350	1.5	SOIC-8
NCV8401A	N Channel	42	33	23	1.56	DPAK-3
NCV8402A	N Channel	42	2	165	8.9	SOT-223-4 / TO-261-4
NCV8402AD	N Channel	42	2	165	1.62	SOIC-8
NCV8403A	N Channel	42	15	53	1.9	DPAK-3; SOT-223-4 / TO-261-4
NCV8405A	N Channel	42	6	100	1.7	DPAK-3; SOT-223-4 / TO-261-4
NCV8408	N Channel	42	8	60	2.3	DPAK-3
NCV8450A		45	0.8	2000		SOT-223-4 / TO-261-4
9N05A	N Channel	52	9	181	28.8	Bare Die; DPAK-3; SOT-223-4 / TO-261-4
NCV8440A	N Channel	52	2.6	95	1.69	SOT-223-4 / TO-261-4
NIMD6001A	N Channel	60	3	130		SOIC-8
TND027MP	N Channel	60	1.5	400	1	
TND027SW	N Channel	60	1.5	400	1.3	
NCV8406A	N Channel	65	7	210	1.31	DPAK-3; SOT-223-4 / TO-261-4

# Interfaces

---

## Table of Contents

	<b>Page</b>
Analog-to-Digital Converters (ADC) .....	206
I/O Expanders .....	206
Modems and Transceivers .....	206
Sensor Interfaces .....	207
SMART Card and SIM Card Interfaces .....	207

**ANALOG-TO-DIGITAL CONVERTERS (ADC)**

Device	Description	Channels	Resolution (bits)	Control Interface	f <sub>s</sub> Typ (kHz)	Package
NCD9830	ADC, 8-Bit, 8-Chanel, with I2C Interface	8	8	I2C		TSSOP-16

**I/O EXPANDERS**

Device	I/O	Cascadable	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	Interrupt Output	I/O Pullups	LED Blink/ PWM	I <sub>O</sub> Min (mA)	Package
CAT9534	8	8 Slave ID Addresses	2.3	5.5	Yes	No	No	10	TQFN-16; TSSOP-16
CAT9554	8	8 Slave ID Addresses	2.3	5.5	Yes	Yes	No	10	TQFN-16; TSSOP-16
CAT9554A	8	8 Slave ID Addresses	2.3	5.5	Yes	Yes	No	10	TQFN-16; TSSOP-16
CAT9557	8	8 Slave ID Addresses	2.3	5.5	No	No	No	10	SOIC-16; TQFN-16; TSSOP-16
CAT9532	16	8 Slave ID Addresses	2.3	5.5	No	No	Yes	25	SOIC-24W; TQFN-24; TSSOP-24
CAT9552	16	8 Slave ID Addresses	2.3	5.5	No	No	Yes	25	SOIC-24W; TQFN-24; TSSOP-24
CAT9555	16	8 Slave ID Addresses	2.3	5.5	Yes	Yes	No	10	SOIC-24W; TQFN-24; TSSOP-24
LC709004A	16		2	6					SOIC-24 W/ MFP-24SJ
PCA9535E	16		1.65	5.5	Yes	No	No	25	QFN-24; SOIC-24; TSSOP-24
PCA9655E	16		5.5	1.65	Yes	Yes	No	25	QFN-24; SOIC-24; TSSOP-24
LC709006A	24		2	6					SOIC-36 W/ MFP-36SDJ

**MODEMS AND TRANSCEIVERS**

Device	Data Transmission Standard	Data Rate	Number of Drivers	Number of Receivers	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>PLH</sub> Max (μs)	I <sub>O</sub> Max (μA)	I <sub>H</sub> Max (mA)	Package
AMIS-30660	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-30663	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-41682	CAN		1	1	4.75	5.25	8	45000	6.3	SOIC-14
AMIS-41683	CAN		1	1	4.75	5.25	8	45000	6.3	SOIC-14
AMIS-42665	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-42670	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-42671	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-42673	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-42675	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	8	SOIC-8
AMIS-42700	CAN	1 Mb/s	2	2	-0.3	7				SOIC-20W
AMIS-42770	CAN	1 Mb/s	1	1	4.75	5.25	1	45000	19.5	SOIC-20W
NCV7340	CAN	1 Mb/s	1	1	4.75	5.25	1	100000	10	SOIC-8
NCV7341	CAN	1 Mb/s	1	1	4.75	5.25				SOIC-14
NCV7342	CAN	1 Mb/s	1	1	4.5	5.5	1	100000	10	SOIC-8
NCV7349	CAN	1Mb/s	1	1	4.75	5.25	1	100000	10	SOIC-8
NCV7351	CAN	1 Mb/s	1	1	4.5	5.5	1	100000	10	SOIC-8
NCV7356	CAN	100 kbps	1	1	-0.3	18	6.3	350000	0.05	SOIC-14; SOIC-8
NCV7441	CAN	1 Mb/s	2	2	4.75	5.25	1	100000	20	SOIC-14
NCV7462	CAN; LIN		7	2	5	28		250000		SSOP-36 EP
NCV7471	CAN; LIN		0	3	2.5	28				SSOP-36 EP
NCV7381	FlexRay	10 Mb/s	1	1	5.5	50	0.06	60000	17	SSOP-16
NCV7383	FlexRay	10 Mb/s	1	1	4.75	5.25	0.06	60000	16	TSSOP-14

## MODEMS AND TRANSCEIVERS (continued)

Device	Data Transmission Standard	Data Rate	Number of Drivers	Number of Receivers	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>PLH</sub> Max (μs)	I <sub>O</sub> Max (μA)	I <sub>H</sub> Max (mA)	Package
A5191HRT	HART	1200 baud	1	1	3	5.5	0.02	670	0.0005	LQFP-32; PLCC-28; QFN-32
NCN5192	HART	1200 baud	1	1	3	5.5	0.02	670	0.0005	QFN-32
NCN5120	KNX	9600 baud	1	1	3.13	3.47				QFN-40
AMIS-30600	LIN	20 kbaud	1	1	7.3	18	50	40000	0.7	SOIC-8
NCV7321	LIN	20 kbaud	1	1	5	27				SOIC-8
NCV7420	LIN	20 kbaud	1	1	5	26		50000		SOIC-14
NCV7424	LIN	20 kbaud	4	4	5	27				TSSOP-16
NCV7425	LIN	20 kbaud	1	1	5	28	50	150000	1.6	SOIC-16W EP
NCV7430	LIN	20 kbaud	3	1	5.5	43		100000		SOIC-14
AMIS-49200	MAU	31.25 kbps	1	1	4.75	6.2	4.7	30000	0.001	LQFP-44; NQFP-44
NCN5150	M-BUS	38400 baud	1	1						QFN-20; SOIC-16
AMIS-49587	S-FSK	2400 baud	1	1	3	3.6				PLCC-28; QFN-52
NCN49597	S-FSK	4800 baud	1	1	3	3.6				QFN-52
NCN49599	S-FSK	9600 baud	1	1	3	3.6				QFN-56
NCN5151										QFN-20

## SENSOR INTERFACES

Device	Description	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>T</sub> Max (mA)	V <sub>I</sub> Typ (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NCS37000	Ground Fault Circuit Interrupter (GFCI)	1	6	12	1.5	1.8	-40	125	QFN-16
NCS37005	Ground Fault Interrupter (GFI), UL943B		6	18			-40	85	QFN-16; TSSOP-16
NCS37010	Single CT UL943 GFCI with Self Test and Lockout		6	12	2.2	1.8	-40	85	QFN-16; TSSOP-20
NCS37012	Single CT UL943 GFCI with Self Test	1	6	12	1	12	-40	85	QFN-16; TSSOP-20
NCV1124	Dual Variable-Reluctance Sensor Interface	2	4.5	5.5	5	250	-40	125	SOIC-8

## SMART CARD AND SIM CARD INTERFACES

Device	Description	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>T</sub> Typ (mA)	I <sub>I(standby)</sub> Max (μA)	f <sub>clock</sub> Max (MHz)	Package
NCN4555	SIM Card Power Supply and Level Translator	1.8	5.5	0.03	4	5	QFN-16
NCN4557	SIM/SAM/Smart Card Power Supply and Level Shifter, Dual	1.8	5.5	0.03	3	5	QFN-16
NCN6001	Smart Card Interface	2.7	6	0.5	60	40	TLLGA-20; TSSOP-20
NCN6804	Smart Card Interface, Dual	2.7	5.5	0.1	100	40	QFN-32
NCN8024	Smart Card Interface	4.5	5.5	6	1000	18	SOIC-28W; TSSOP-28
NCN8024R	Smart Card Interface	2.7	5.5	4	61	27	SOIC-28W
NCN8025	Smart Card Interface	2.7	5.5	4	61	27	QFN-16; QFN-24
NCN8026	Smart Card Interface, Low Power	1.6	5.5	1	3	27	QFN-24





# Memory

---

## Table of Contents

	<b>Page</b>
EEPROM Memory .....	210
Flash Memory .....	215
SRAM Memory .....	215

## ON Semiconductor Selector Guide – Memory

### EEPROM MEMORY

Device	Type	Density	Organization	Data Transmission Standard	f <sub>cycle</sub> Max (kHz)	t <sub>ACC</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (mA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
CAT1021	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	60	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1022	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	60	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1023	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	60	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1024	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	40	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1025	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	40	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1026	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	50	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1027	Serial	2 kb	256 x 8	I2C	400	900	2.7	5.5	60	3	-40	85	MSOP-8; PDIP-8; SOIC-8; TSSOP-8
CAT1161	Serial	16 kb	2k x 8	I2C	400	1000	2.7	6	50	3	-40	85	PDIP-8; SOIC-8
CAT1162	Serial	16 kb	2k x 8	I2C	400	1000	2.7	6	50	3	-40	85	PDIP-8; SOIC-8
CAT1163	Serial	16 kb	2k x 8	I2C	400	1000	2.7	6	50	3	-40	85	PDIP-8; SOIC-8
CAT13001	Serial	1 kb	Split	MicroWire	2000	-	2.5	5.5	25	3	-40	85	SOIC-8
CAT1320	Serial	32 kb	4k x 8	I2C	400	-	3	5.5	40	3	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT1321	Serial	32 kb	4k x 8	I2C	400	-	3	5.5	40	3	-40	85	PDIP-8
CAT14002	Serial	2 kb	256 x 8	I2C	400	-	2.5	5.5	22	1	-40	85	SOIC-8
CAT14004	Serial	4 kb	512 x 8	I2C	400	-	2.5	5.5	22	1	-40	85	SOIC-8
CAT14008	Serial	8 kb	1k x 8	I2C	400	-	2.5	5.5	22	1	-40	85	SOIC-8
CAT14016	Serial	16 kb	2k x 8	I2C	400	-	2.5	5.5	22	1	-40	85	SOIC-8
CAT15002	Serial	2 kb	256 x 8	SPI	10000	-	2.5	5.5	25	2	-40	85	SOIC-8
CAT15004	Serial	4 kb	512 x 8	SPI	10000	-	2.5	5.5	25	2	-40	85	SOIC-8
CAT15008	Serial	8 kb	1k x 8	SPI	10000	-	2.5	5.5	25	2	-40	85	SOIC-8
CAT15016	Serial	16 kb	2k x 8	SPI	10000	-	2.5	5.5	25	2	-40	85	SOIC-8
CAT1640	Serial	64 kb	8k x 8	I2C	400	-	3	5.5	40	3	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT1641	Serial	64 kb	8k x 8	I2C	400	-	3	5.5	40	3	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT24AA01	Serial	1 kb	128 x 8	I2C	400	-	1.7	5.5	1	1	-40	85	SOIC-8; TSOT-23-5
CAT24AA02	Serial	2 kb	256 x 8	I2C	400	-	1.7	5.5	1	1	-40	85	SOIC-8; TSOT-23-5
CAT24AA04	Serial	4 kb	512 x 8	I2C	1000	-	1.7	5.5	1	1	-40	85	SOIC-8; TSOT-23-5
CAT24AA08	Serial	8 kb	1k x 8	I2C	1000	-	1.7	5.5	1	1	-40	85	SOIC-8; TSOT-23-5
CAT24AA16	Serial	16 kb	2k x 8	I2C	1000	-	1.7	5.5	1	1	-40	85	TSOT-23-5

**EEPROM MEMORY** (continued)

Device	Type	Density	Organization	Data Transmission Standard	f <sub>cycle</sub> Max (kHz)	t <sub>ACC</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (mA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
CAT24C01	Serial	1 kb	128 x 8	I2C	400	–	1.7	5.5	1	1	–40	85	MSOP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8
CAT24C02	Serial	2 kb	256 x 8	I2C	400	900	1.7; 1.8	5.5	3; 5	1	–40	85; 125	MSOP–8; PDIP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8; UDFN–8
CAT24C03	Serial	2 kb	256 x 8	I2C	400	–	1.8	5.5	1	1	–40	85	PDIP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8
CAT24C04	Serial	4 kb	512 x 8	I2C	400; 1000	–	1.7; 1.8	5.5	1; 2	1	–40	85; 125	MSOP–8; PDIP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8; UDFN–8; WLCSP–4; WLCSP–5
CAT24C05	Serial	4 kb	512 x 8	I2C	400	–	1.8	5.5	1	1	–40	85	SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8
CAT24C08	Serial	8 kb	1k x 8	I2C	400	900	1.7; 1.8	5.5	1; 2	1	–40	85; 125	MSOP–8; PDIP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8; UDFN–8; WLCSP–4; WLCSP–5
CAT24C128	Serial	128 kb	16k x 8	I2C	400; 1000	400; 3500	1.8	5.5	1; 2; 5	1; 3	–40	85; 125	PDIP–8; SOIC–8; TSSOP–8; UDFN–8
CAT24C16	Serial	16 kb	2k x 8	I2C	400	–	1.7; 1.8	5.5	1; 2	1	–40	85; 125	MSOP–8; PDIP–8; SOIC–8; TDFN–8; TSOT–23–5; TSSOP–8; UDFN–8; WLCSP–4; WLCSP–5
CAT24C164	Serial	16 kb	2k x 8	I2C	400	–	1.8	5.5	1	1	–40	85	PDIP–8; SOIC–8; TDFN–8; TSSOP–8
CAT24C208	Serial	8 kb	1k x 8	I2C	400	–	2.5	5.5	50	1	–40	85	SOIC–8
CAT24C21	Serial	1 kb	128 x 8	I2C	400	–	2.5	5.5	1	1	–40	85	MSOP–8; PDIP–8; SOIC–8
CAT24C256	Serial	256 kb	32k x 8	I2C	400; 1000	400; 900	1.8; 2.5	5.5	1; 2; 5	1; 3	–40	85; 125	MSOP–8; PDIP–8; SOIC–8; TSSOP–8; UDFN–8
CAT24C32	Serial	32 kb	4k x 8	I2C	400	–	1.7	5.5	1; 2	1	–40	85	PDIP–8; SOIC–8; TDFN–8; TSOP–5 / SOT–23–5; TSSOP–8; UDFN–8

## ON Semiconductor Selector Guide – Memory

### EEPROM MEMORY (continued)

Device	Type	Density	Organization	Data Transmission Standard	f <sub>cycle</sub> Max (kHz)	t <sub>Acc</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (mA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
CAT24C512	Serial	512 kb	64k x 8	I2C	400; 1000	400; 900	1.8; 2.5	5.5	2; 5	1	-40	85; 125	MSOP-8; PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT24C64	Serial	64 kb	8k x 8	I2C	400	400	1.7	5.5	1	1	-40	85; 125	MSOP-8; PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT24M01	Serial	1 Mb	128k x 8	I2C	400; 1000	400; 900	1.8; 2.5	5.5	2; 5	1	-40	80; 85; 125	PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT25010	Serial	1 kb	128 x 8	SPI	10000	-	1.8	5.5	2	2	-40	85	MSOP-8; PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25020	Serial	2 kb	256 x 8	SPI	10000	-	1.8	5.5	2	2	-40	85	MSOP-8; PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25040	Serial	4 kb	512 x 8	SPI	10000	-	1.8	5.5	2	2	-40	85	MSOP-8; PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25080	Serial	8 kb	1k x 8	SPI	10000	-	1.8; 2.5	5.5	2	2	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25128	Serial	128 kb	16k x 8	SPI	10000	140	1.8	5.5	2; 3	2	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25160	Serial	16 kb	2k x 8	SPI	10000	40	1.8; 2.5	5.5	2	2	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25256	Serial	256 kb; 512 kb	32k x 8	SPI	10000	40	1.8	5.5	2; 3; 5	2	-40	85; 125	PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT25320	Serial	32 kb	4k x 8	SPI	10000	40	1.8	5.5	2; 3; 5	2	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25512	Serial	512 kb	64k x 8	SPI	10000; 20000	40	1.8; 2.5	5.5	1; 3	3	-40	85; 125	PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT25640	Serial	64 kb	8k x 8	SPI	10000	40	1.8; 2.5	5.5	2	2	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT25AM02	Serial	2 Mb	256k x 8	SPI	5000		1.6	3.6	3	1	0	70	
CAT25M01	Serial	1 Mb	128k x 8	SPI	10000	-	1.8; 2.5	5.5	5	3	-40	85; 125	SOIC-8; TSSOP-8
CAT25M02	Serial	2 Mb	256k x 8	SPI	10000		1.7	5.5	3	2	-40	85	SOIC-8
CAT34C02	Serial	2 kb	256 x 8	I2C	400	900	1.7	5.5	1	1	-40	85	TDFN-8; TSSOP-8; UDFN-8

**EEPROM MEMORY** (continued)

Device	Type	Density	Organization	Data Transmission Standard	f <sub>cycle</sub> Max (kHz)	t <sub>Acc</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (mA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
CAT64LC40	Serial	4 kb	256 x 16	SPI	1000	300	2.5	6	3	3	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT93C46	Serial	1 kb	128 x 8; Split	MicroWire	2000	250	1.65; 1.8	5.5	2	3	-40 -20	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8; UDFN-8
CAT93C46B	Serial	1 kb	128 x 8	MicroWire	4000	250	1.8	5.5	2; 5	1	-40	85; 125	PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT93C46R	Serial	1 kb	128 x 8	MicroWire	2000	250	1.8	5.5	2	3	-40	85	SOIC-8; TDFN-8; TSSOP-8
CAT93C56	Serial	2 kb	256 x 8	MicroWire	2000	250	1.8	5.5	4	1	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8
CAT93C57	Serial	2 kb	256 x 8	MicroWire	2000	250	1.8	5.5	4	1	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT93C66	Serial	4 kb	512 x 8; Split	MicroWire	2000	250	1.8	5.5	2; 4	1; 3	-40	85; 125	PDIP-8; SOIC-8; TDFN-8; TSSOP-8
CAT93C76	Serial	8 kb	1k x 8	MicroWire	2000	150	1.8	5.5	10	3	-40	85	PDIP-8; SOIC-8; TSSOP-8
CAT93C76B	Serial	8 Kb	1K x 8 ; 512 x 16	MicroWire	4000	100	1.65; 1.85	5.5	5	2	-40 -20	85; 125	MSOP-8; PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT93C86	Serial	16 kb	2k x 8	MicroWire	2000	150	1.8	5.5	10	3	-40	85; 125	PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAT93C86B	Serial	16 kb	2k x 8	MicroWire	4000	100	1.65; 1.8	5.5	2; 5	2	-40 -20	85; 125	MSOP-8; PDIP-8; SOIC-8; TSSOP-8; UDFN-8
CAV24C02	Serial	2 kb	256 x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24C04	Serial	4 kb	512 x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24C08	Serial	8 kb	1k x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24C128	Serial	128 kb	16k x 8	I2C	1000	400	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV24C16	Serial	16 kb	2k x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24C256	Serial	256 kb	32k x 8	I2C	1000	400	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV24C32	Serial	32 kb	4k x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24C512	Serial	512 kb	64k x 8	I2C	1000	400	2.5	5.5	5	2.5	-40	125	SOIC-8; TSSOP-8
CAV24C64	Serial	64 kb	8k x 8	I2C	400	900	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV24M01	Serial	1 Mb	128k x 8	I2C	1000	900	5.5	2.5	5	5	-40	125	SOIC-8; TSSOP-8
CAV25010	Serial	1 kb	128 x 8	SPI	10000	35	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV25020	Serial	2 kb	256 x 8	SPI	10000	35	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8

## ON Semiconductor Selector Guide – Memory

### EEPROM MEMORY (continued)

Device	Type	Density	Organization	Data Transmission Standard	f <sub>cycle</sub> Max (kHz)	t <sub>ACC</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (mA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
CAV25040	Serial	4 kb	512 x 8	SPI	10000	35	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV25080	Serial	8 kb	1k x 8	SPI	10000	35	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV25128	Serial	128 kb	16k x 8	SPI	10000	40	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV25160	Serial	16 kb	2k x 8	SPI	10000	35	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV25256	Serial	256 kb	32k x 8	SPI	10000	40	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV25320	Serial	32 kb	4k x 8	SPI	10000	35	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV25512	Serial	512 kb	64k x 8	SPI	10000	40	2.5	5.5	5	3	-40	125	SOIC-8
CAV25640	Serial	64 kb	8k x 8	SPI	10000	35	2.5	5.5	5	3	-40	125	SOIC-8; TDFN-8; TSSOP-8
CAV25M01	Serial	1 Mb	128k x 8	SPI	10000	40	2.5	5.5	5	3	-40	125	SOIC-8; TSSOP-8
CAV93C46	Serial	1 kb	128 x 8	MicroWire	2000	250	2.5	5.5	5	1	-40	125	SOIC-8; TSSOP-8
CAV93C56	Serial	2 Kb	128 x 16	MicroWire	2000	250	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV93C66	Serial	4 kb	256 x 16	MicroWire	2000	250	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV93C76	Serial	8 kb	1k x 8	MicroWire	2000	250	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
CAV93C86	Serial	16 kb	2k x 8	MicroWire	2000	250	2.5	5.5	5	2	-40	125	SOIC-8; TSSOP-8
LE24162LBXA	Serial	16 kb	2k x 8	I2C	400	900	1.7	3.6	2	0.5	-40	85	WLCSP
LE24512AQF	Serial	512 kb	64k x 8	I2C	400	900	1.7	3.6	2	0.5	-40	85	WDFN-8 / VSON-8K
LE2464C	Serial	64 kb	8k x 8	I2C	400	900	1.7	3.6	2	0.5	-40	85	
LE24CBK23MC	Serial	4 kb	512 x 8	I2C	400	900	2.5	5.5	5	1.6	-40	85	SOIC-8 / SOP-8J
LE25CB643TT-BH	Serial	64 kb	8k x 8	SPI	5000	80	2.7	5.5	3	1	-40	85	Micro8

**FLASH MEMORY**

Device	Density	Organization	t <sub>ACC</sub> Max (ns)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Max (μA)	I <sub>act</sub> Max (mA)	T Min (°C)	T Max (°C)	Package
LE25S40AMC	4 Mb	512k x 8	11	1.65	1.95	50	6	-40	90	SOIC-8 / SOP-8J
LE25S40MB	4 Mb	512k x 8	11	1.65	1.95	50	6	-40	85	SOIC-8 / SOP-8K
LE25S80QH	8 Mb	1024k x 8	11	1.65	1.95	50	6	-40	90	VDFN-8 / VSON-8J
LE25S81QE	8 Mb	1024k x 8	9	1.65	1.95	50	6	-40	85	VDFN-8 / VSON-8T
LE25U20AMB	2 Mb	256k x 8	15	2.3	3.6	50	6	-40	85	SOIC-8 / SOP-8K
LE25U40CMC	4 Mb	512k x 8	15	2.3	3.6	50	6	-40	85	SOIC-8 / SOP-8J
LE25U40CQE	4 Mb	512k x 8	11	2.3	3.6	50	6	-40	85	VDFN-8 / VSON-8T
LE25U40CQH	4 Mb	512k x 8	11	2.3	3.6	50	6	-40	85	VDFN-8 / VSON-8J
LE25U81AQE	8 Mb	1024k x 8	9	2.3	2.7	50	6	-40	85	VDFN-8 / VSON-8T

**SRAM MEMORY**

Device	Type	Density	Organization (bits)	f <sub>cycle</sub> Max (MHz)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	I <sub>standby</sub> Typ (μA)	I <sub>act</sub> Max (μA)	Package
N01S830HA/D	Serial	1 Mb	128k x 8	20	2.5	5.5	4	-	
N25S818HA	Serial	256 kb	32k x 8	16	1.7	1.95	0.2	-	SOIC-8; TSSOP-8
N25S830HA	Serial	256 kb	32k x 8	20	2.7	3.6	1	-	SOIC-8; TSSOP-8
N64S818HA	Serial	64 kb	8k x 8	16	1.7	1.95	1	4	SOIC-8; TSSOP-8
N64S830HA	Serial	64 kb	8k x 8	20	2.7	3.6	1	4	SOIC-8; TSSOP-8





# Microcontrollers

---

## Table of Contents

	<b>Page</b>
Application Specific Microcontrollers .....	218
General Purpose Microcontrollers .....	219

APPLICATION SPECIFIC MICROCONTROLLERS

Device	Bits	ROM (bits)	RAM (bits)	Bus Cycle Time Min (μs)	Instruction Cycle Time Min (μs)	Interrupts	IO Ports	ADC	PWM Outputs	Timers	USB	LCD Controller/Driver	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	Package
LC877917A	8	16K x 8 (Flash)	512 x 9	0.25	0.75	21 sources, 10 vector address	51	12/8-bit x 7 channel		16-bit x 2; 8-bit x 4		32 segments	2.4	3.6	PQFP-64 / QIP-64E
LC87F1A32A	8	32K x 8 (Flash)	2048 x 9	0.083	0.25	28 sources, 10 vector address	39	12/8-bit x 12 channel	2	16-bit x 2; 8-bit x 2	DEVICE (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1D64A	8	64K x 8 (Flash)	4096 x 9	0.0625	0.188	30 sources, 10 vector address	39	12/8-bit x 12 channel	2	16-bit x 2; 8-bit x 4	DEVICE (Full Speed)		2.7	5.5	TQFP-48 / TQFP-48J
LC87F1HC8A	8	128K x 8 (Flash)	16384 x 9	0.083	0.25	40 sources, 10 vector address	37	8-bit x 12 channel	2	16-bit x 2; 8-bit x 4	HOST (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1JJ2A	8	192 x 8 (Flash)	16384 x 9	0.083	0.25	41 sources, 10 vector address	37	8bit x 12ch	2	16-bit x 2; 8-bit x 4	HOST (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1JJ4A	8	192 x 8 (Flash)	20480 x 9	0.083	0.25	41 sources, 10 vector address	37	8-bit x 12 channel	2	16-bit x 2; 8-bit x 4	HOST (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1JJ8A	8	192 x 8 (Flash)	24576 x 9	0.083	0.25	41 sources, 10 vector address	37	8bit x 12ch	2	16-bit x 2; 8-bit x 4	HOST (Full Speed)		2.7	5.5	
LC87F1K64A	8	64K x 8 (Flash)	8192 x 9	0.083	0.25	44 sources, 10 vector address	39	12ch	2	16-bit x 2; 8-bit x 4	HOST (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1L16A	8	16K x 8 (Flash)	2048B x 9	0.0833	0.25	39 sources, 10 vector address	35	8/12bit x 12ch	2	16-bit x 2; 8-bit x 4	DEVICE (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F1M16A	8	16K x 8 (Flash)	1024 x 9	0.083	0.25	35 sources, 10 vector address	38	12/8-bit x 20 channel	2	16-bit x 2; 8-bit x 4	DEVICE (Full Speed)		2.7	5.5	SPQFP-48 / SQFP-48
LC87F76C8A	8	128K x 8 (Flash)	4096 x 9	0.0833	0.25	22 sources, 10 vector address	71	12-bit x 12 channel	2	16-bit x 2; 8-bit x 4		32 segments	2.2	5.5	PQFP-80 / QFP-80 TQFP-80 / TQFP-80J
LC87F7932B	8	32K x 8 (Flash)	2048 x 9	0.25	0.75	21 sources, 10 vector address	51	12/8-bit x 7 channel	0	16-bit x 2; 8-bit x 4		32 segments, 4 commons	2.4	3.6	SPQFP-64 / SQFP-64
LC87F7DC8A	8	128K x 8 (Flash)	4096 x 9	0.083	0.25	31 sources, 10 vector address	91	12-bit x 15 channel	2	16-bit x 3; 8-bit x 4		54 segments	2.2	5.5	PQFP-100 / QIP-100E
LC87F7NC8A	8	128K x 8 (Flash)	8192 x 9	0.056	0.167	31 sources, 10 vector address	83	12bit x 15 channel	2	16-bit x 3; 8-bit x 4		54 segments	2.5	3.6	PQFP-100 / QIP-100E
LC87F7NJ2A	8	192 x 8 (Flash)	8192 x 9	0.056	0.167	31 sources, 10 vector address	83	12bit x 15 channel	2	16-bit x 3; 8-bit x 4		54 segments	2.5	3.6	PQFP-100 / QIP-100E

**APPLICATION SPECIFIC MICROCONTROLLERS** (continued)

Device	Bits	ROM (bits)	RAM (bits)	Bus Cycle Time Min (μs)	Instruction Cycle Time Min (μs)	Interrupts	I/O Ports	ADC	PWM Outputs	Timers	USB	LCD Controller/Driver	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	Package
LC87F7NP6A	8	256K x 8 (Flash)	8192 x 9	0.056	0.167	31 sources, 10 vector address	83	12bit x 15 channel	2	16-bit x 3; 8-bit x 4		54 segments	2.5	3.6	PQFP-100 / QIP-100E
LC88F42A0PAU	16	64K x 8 (Flash)	4096 x 8	0.083		26 sources, 16 vector address							3	3.6	SSOP-24
LC88F83B0A	16	128K x 8 (Flash)	4096 x 8		0.25	12 sources, 11 vector address	36	12/8-bit x 4 channel	0	16-bit x 5		72 or 64 segments	2.3	5.5	NA-Bare Die

**GENERAL PURPOSE MICROCONTROLLERS**

Device	Bits	ROM (bits)	RAM (bits)	Bus Cycle Time Min (μs)	Instruction Cycle Time Min (μs)	Interrupts	I/O Ports	ADC	Timers	PWM Outputs	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	Package
LC87F0808A	8	8K x 8 (Flash)	256 x 9	0.05	0.15	21 sources, 10 vector address	30	10/8-bit x 10 channel	16-bit x 2; 8-bit x 2	6	3.3	5.5	LQFP-36 / QFP-36
LC87F0A08A	8	8K x 8 (Flash)	256 x 9	0.125	0.375	16 sources, 9 vector address	30	12/8-bit x 8 channel	16-bit x 3	0	2.5	5.5	LQFP-36 / QFP-36
LC87F0N04A	8	4.5K x 8 (Flash)	128 x 9	0.1	0.3	14 sources, 9 vector address	12	10/8-bit x 6 channel	16-bit x 2	1	5.5	2.8	SSOP-16
LC87F2608A	8	8K x 8 (Flash)	512 x 9	0.1	0.3	16 sources, 10 vector address	7	12-bit x 3 channel	16-bit x 2		2.7	5.5	SOIC-10 W / MFP-10SK
LC87F2C64A	8	64K x 8 (Flash)	2048 x 9	0.083	0.25	28 sources, 10 vector address	73	12/8-bit x 8 channel	16-bit x 2; 8-bit x 4	4	2.4	5.5	PQFP-80 / QFP-80
LC87F2G08A	8	8K x 8 (Flash)	256 x 9	0.083	0.25	18 sources, 10 vector address	21	12/8-bit x 8 channel	16-bit x 2; 8-bit x 2	0	1.8	5.5	SOIC-24 W / MFP-24SJ; SSOP-24
LC87F2H08A	8	8K x 8 (Flash)	256 x 9	0.083	0.25	20 sources, 10 vector address	26	12/8-bit x 9 channel	16-bit x 2; 8-bit x 2	2	1.8	5.5	LQFP-36 / QFP-36
LC87F2J32A	8	32K x 8 (Flash)	1024 x 9	0.083	0.25	23 sources, 10 vector address	41	12/8-bit x 8 channel	16-bit x 2; 8-bit x 4	2	1.8	5.5	PQFP-48 / QIP-48E SPQFP-48 / SQFP-48
LC87F2W48A	8	50K x 8 (Flash)	1536 x 9	0.083 3	0.25	24 sources, 10 vector address	40	12bit x 14ch	16-bit x 2; 8-bit x 4	2	2.7	5.5	SPQFP-48 / SQFP-48
LC87F5G32A	8	32K x 8 (Flash)	1024 x 9	0.1	0.3	22 sources, 10 vector address	39	12/8-bit x 12 channel	16-bit x 2; 8-bit x 4	2	2.5	5.5	SPQFP-48 / SQFP-48
LC87F5JC8A	8	128K x 8 (Flash)	4096 x 9	0.083	0.25	26 sources, 10 vector address	55	8-bit x 11 channel	16-bit x 3; 8-bit x 4	2	2.2	5.5	PQFP-64 / QIP-64E
LC87F5LP6A	8	256K x 8 (Flash)	8192 x 9	0.833	0.25	29 sources, 10 vector address	89	8-bit x 15 channel	16-bit x 2; 8-bit x 4	4	2.5	5.5	PQFP-100 / QIP-100E; TQFP-100
LC87F5M64A	8	64K x 8 (Flash)	2048 x 9	83.3	250	27 sources, 10 vector address	55	8bit x 11	16-bit x 2; 8-bit x 4	2	2.2	5.5	PQFP-64 / QIP-64E

## ON Semiconductor Selector Guide – Microcontrollers

### GENERAL PURPOSE MICROCONTROLLERS (continued)

Device	Bits	ROM (bits)	RAM (bits)	Bus Cycle Time Min (μs)	Instruction Cycle Time Min (μs)	Interrupts	I/O Ports	ADC	Timers	PWM Outputs	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	Package
LC87F5R96B	8	96K x 8 (Flash)	4096 x 9	0.083	0.25	27 sources, 10 vector address	55	8-bit x 11 channel	16-bit x 2; 8-bit x 4	2	2.5	5.5	PQFP-64 / QIP-64E
LC87F5VP6A	8	256K x 8 (Flash)	10240 B x 9	66	200	29 sources, 10 vector address	89	8bit x 15	16-bit x 2; 8-bit x 4	4	2.5	5.5	PQFP-100 / QIP-100E
LC87F5WC8A	8	128K x 8 (Flash)	4096 x 9	0.083 3	0.25	29 sources, 10 vector address	89	8-bit x 15 channel	16-bit x 2; 8-bit x 4	4	2.2	5.5	PQFP-100 / QIP-100E
LC87FBG08A	8	8K x 8 (Flash)	256 x 9	0.083 3	0.25	19 sources, 10 vector address	21	12/8-bit x 9 channel	16-bit x 2; 8-bit x 2	2	1.8	5.5	SSOP-24; VCT-24
LC87FBK08A	8	8K x 8 (Flash)	256 x 9	0.083	0.25	15 sources, 9 vector address	21	12/8-bit x 8 channel	16-bit x 2; 8-bit x 2	0	2.7	5.5	SSOP-24
LC87FC096A	8	96K x 8 (Flash)	4096 x 9	0.083 3	0.25	31 sources, 10 vector address	55	12-bit x 11 channel	16-bit x 3; 8-bit x 4	4	2.5	3.6	PQFP-64 / QIP-64E
LC88F52H0A	16	512K x 8 (Flash)	24K x 8	0.083	0.083	57 sources, 16 vector address	90	12/8-bit x 16 channel	16-bit x 8	2	2.5	5.5	TQFP-100
LC88F58B0A	16	128K x 8 (Flash)	6144 x 9	0.083	0.083	40 sources, 16 vector address	54	12/8-bit x 11 channel	16-bit x 6	2	2.2	5.5	SPQFP-64 / SQFP-64
LC88FC2H0A	16	512K x 8 (Flash)	24K x 8	0.083	0.083	61 sources, 14 vector address	90	12/8-bit x 16 channel	16-bit x 8	2	2.7	3.6	TQFP-100

# Optical, Image and Touch Sensors

---

## Table of Contents

	<b>Page</b>
Ambient Light Sensors .....	222
CMOS Image Sensors .....	222
Contact Image Sensor Modules .....	223
Touch Sensors .....	223

**AMBIENT LIGHT SENSORS**

Device	Output Interface	I <sub>O</sub> Typ (μA)	V <sub>in</sub> Min (V)	V <sub>in</sub> Max (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LA0151CS	Analog	1.6; 80	2.2	5.5	-30	85	ODCSP-4
LA0152CS	Analog	8; 80	2.2	5.5	-30	85	ODCSP-4
LV0111CF	Analog	21	2.3	5.5	-30	85	ODCSP-4J
NOA1211	Analog	14	2	5.5	-40	85	CUDFN-6
NOA1212	Analog	64	2	5.5	-40	85	CUDFN-6
LV0104CS	I2C	70	2.3	3.6	-30	85	ODCSP-4
NOA1305	I2C		2.4	3.6	-40	85	CUDFN-6
NOA3301	I2C		2.3	3.6	-40	80	CUDFN-8
NOA3302	I2C		2.3	3.6	-40	80	CWDFN-8

**CMOS IMAGE SENSORS**

Device	Megapixels	Frame Rate (fps)	Optical Format	Shutter Type	Pixel Size (μm)	Color	Package
STAR250	0.25	29	1 inch	Rolling	25 x 25	Mono	JLDCC-84; Wafer
LUPA300	0.3	250	1/2 inch	Pipelined and Triggered Global	9.9 x 9.9	Color; Mono	LCC-48; Wafer
PYTHON300	0.3	850	1/4 inch	Global	4.8 x 4.8	Color; Mono	LCC-48
PYTHON500	0.5	560	1/3 inch	Global	4.8 x 4.8	Color; Mono	LCC-48
STAR1000	1	11	1 inch	Rolling	15 x 15	Mono	JLDCC-84
LUPA1300-2	1.3	500	1 inch	Pipelined and Triggered Global	14 x 14	Color; Mono	CPGA-168
PYTHON1300	1.3	43 210	1/2 inch	Global	4.8 x 4.8	Color; Mono	LCC-48
VITA1300	1.3	37; 150	1/2 inch	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.8 x 4.8	Color; Mono	Bare Die; LCC-48
VITA2000	2	23; 92	2/3 inch	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.8 x 4.8	Color; Mono	LCC-52
LUPA3000	3	485	1 inch	Pipelined and Triggered Global	8.0 x 8.0	Color; Mono	CPGA-369
LUPA4000	4	15	35 mm	Pipelined Global	12 x 12	Color; Mono	CPGA-127
VITA5000	5	75	1 inch	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.8 x 4.8	Color; Mono	LCC-68
IBIS4-6600	6.6	5	1 inch	Rolling	3.5 x 3.5	Mono	LCC-68
VITA12k	12	160	4/3 inch	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.5 x 4.5	Color; Mono; NIR	CPGA-355
VITA16K	16	120	35 mm	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.5 x 4.5	Color; Mono; NIR	CPGA-355
VITA25K	25	53	35 mm	Pipelined Global, Rolling with CDS, LVDS, 10-bit outputs	4.5 x 4.5	Color; Mono	CPGA-355

**CONTACT IMAGE SENSOR MODULES**

Device	Resolution (dpi)	Pixels	Scan Length (mm)	Line Scanning Speed ( $\mu\text{s}/\text{line}$ )	Output	Number of Outputs	Light Source Color	f Max (MHz)	Package
NOM02A6-AW49G	200	832	104	167	Analog	1	White	5	Image Sensor Module
NOM02A4-AG01G	200	1728	216	1728	Analog	1	Green	2	Image Sensor Module A4
NOM02A4-AR03G	200	1728	216	346	Analog	1	Red	5	Image Sensor Module A4
NOM02A4-MW60G	200	1728	216	90	Multiple Analog	4	White	5	Image Sensor Module A4
NOM02B4-DR11G	200	2048	256	410	Binary	1	Red	5	Image Sensor Module

**TOUCH SENSORS**

Device	Number of Sensing Inputs	Number of Sensing Outputs	Interface Control	Proximity Sensing	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	I <sub>DD</sub> Typ ( $\mu\text{A}$ )	Package
LC717A00AJ	8	8	I2C; SPI	Yes	2.6	5.5	320	SSOP-30
LC717A00AR	8	8	I2C; SPI	Yes	2.6	5.5	320	VCT-28
LC717A10AJ	16		I2C; SPI	Yes	2.6	5.5	570	SSOP-30
LC717A10AR	16		I2C; SPI	Yes	2.6	5.5	570	VCT-28





# Standard Logic

---

## Table of Contents

	<b>Page</b>
Arithmetic Functions .....	226
Buffers .....	227
Flip-Flops .....	232
Latches and Registers .....	233
Logic Gates .....	235
Multiplexers .....	244
Multivibrators .....	247
Bus Transceivers .....	247
Translators .....	248

## ON Semiconductor Selector Guide – Standard Logic Devices

### ARITHMETIC FUNCTIONS

Device	Type	Description	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	P <sub>D</sub> Max (W)	I <sub>O</sub> Max (mA)	Package
MC14008B	Adder	4–Bit Full Adder	3	18	320	0.5	2.25	SOIC–16
MC14007UB	Arithmetic Logic Unit	Dual Complementary Pair Plus Inverter	3	18	75	0.5	2.25; 2.5	SOIC–14
MC14490	Bounce Eliminator	Hex Bounce Eliminator	3	18	320	0.5	9	SOIC–16W
MC14017B	Counter	Decade Counter/Divider	3	18	460	0.5	2.25	SOIC–16
MC14018B	Counter	Preset Divide By N Counter	3	18	240	0.5	2.25	SOIC–16
MC14020B	Counter	14–Bit Binary Counter	3	18	1725	0.5	2.25	SOIC–16
MC14022B	Counter	Octal Counter	3	18	460	0.5	2.25	SOIC–16
MC14024B	Counter	7–Stage Ripple Counter	3	18	750	0.5	2.25	SOIC–14
MC14029B	Counter	Binary/Decade Up/Down Counter	3	18	200	0.5	2.25	SOIC–16
MC14040B	Counter	12–Bit Binary Counter	3	18	1440	0.5	2.25	SOIC–16; TSSOP–16
MC14060B	Counter	14–Stage Binary Counter/Oscillator	3	18	1300	0.5	2.25	SOIC–16; TSSOP–16
MC14516B	Counter	Binary Up/Down Counter	3	18	260	0.5	2.25	SOIC–16
MC14518B	Counter	Dual BCD Up Counter	3	18	230	0.5	2.25	SOIC–16W
MC14520B	Counter	Dual BCD Up Counter	3	18	230	0.5	2.25	SOIC–16W
MC14526B	Counter	Presettable 4–Bit Down Counters	3	18	450	0.5	2.25	SOIC–16W
MC14569B	Counter	Programmable Divide–By–N Dual 4–Bit Binary/BCD Down Counter	3	18	500	0.5	2.25	SOIC–16W
MC74AC161	Counter	Synchronous Presettable Binary Counter	2	6	9.5	0.35	24	SOIC–16
MC74AC163	Counter	Synchronous Presettable Binary Counter	2	6	9.5	0.35	24	SOIC–16
MC74AC4040	Counter	12–Stage Binary Ripple Counter	2	6	8	0.75	24	SOIC–16
MC74ACT161	Counter	Synchronous Presettable Binary Counter	4.5	5.5	10.5	0.35	24	SOIC–16
MC74ACT163	Counter	Synchronous Presettable Binary Counter	4.5	5.5	11	0.35	24	SOIC–16
MC74HC160A	Counter	BCD Counter with Asynchronous Reset Mode	2	6	22	0.45; 0.5	25	SOIC–16; TSSOP–16
MC74HC161A	Counter	Presettable Counter	2	6	16	0.45; 0.5	5.2	SOIC–16; TSSOP–16
MC74HC163A	Counter	Presettable Counter	2	6	22	0.45; 0.5	5.2	SOIC–16; TSSOP–16
MC74HC390A	Counter	Dual 4–Stage Binary Ripple Counter with $\overline{Q}2$ and $\overline{Q}5$ Sections	2	6	58	0.75	5.2	SOIC–16; SOIC–20W; TSSOP–16
MC74HC393A	Counter	Dual 4–Stage Binary Ripple Counter	2	6	52	0.75	5.2	SOIC–14; TSSOP–14
MC74HC4020A	Counter	Monolithic WFR, Binary Counter	2	6	31	0.75	5.2	SOIC–16; TSSOP–16
MC74HC4040A	Counter	Monolithic WFR, Binary Counter	2	6	31	0.75	5.2	SOIC–16; TSSOP–16
MC74HC4060A	Counter	14–Stage Binary Ripple Counter with Oscillator	2	6	250	0.75	5.2	SOIC–16; TSSOP–16

**ARITHMETIC FUNCTIONS** (continued)

Device	Type	Description	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	P <sub>D</sub> Max (W)	I <sub>O</sub> Max (mA)	Package
MC14521B	Divider	24-Stage Frequency Divider	3	18	4500	0.5	2.25	SOIC-16
MC14585B	Magnitude Comparator	4-Bit Magnitude Comparator	3	18	360	0.5	2.25	SOIC-16
MC14536B	Timer	Programmable Timer	3	18	6000	0.5	2.25	SOIC-16W
MC14541B	Timer	Programmable Timer Oscillator	3	18	10000	0.5	8	SOIC-14; TSSOP-14
MC1455	Timer	Timer Circuit	4.5	16	100	0.625	200	SOIC-8
MC1455B	Timer	Timer Circuit	4.5	16	100	0.625	200	SOIC-8
NCV1455	Timer	Timer Circuit	4.5	16	125	0.625	200	SOIC-8

**BUFFERS**

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74VHC1G05	Single Inverter, Open Drain	1	Open Drain	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G07	Single Non-Inverting Buffer, Open Drain	1	Open Drain	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G125	Single Non-Inverting Buffer, 3-State	1	3-State	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G126	Single Non-Inverting Buffer, 3-State	1	3-State	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G50	Single Non-Inverting Buffer	1	CMOS	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT125	Single Non-Inverting Buffer, 3-State	1	3-State	3	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT126	Single Non-Inverting Buffer, TTL Level	1	3-State	3	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT50	Single Non-Inverting Buffer, TTL Level	1	CMOS	1.65	5.5	7.7	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
NL17SG04	Single Inverter	1	CMOS	0.9	4.6	3.7	8	SOT-953
NL17SG34	Single Buffer	1	CMOS	0.9	4.6	3.7	8	SOT-953
NL17SH126	Noninverting 3-State Buffer	1	3-State	5.5	2	3.5	8	SOT-953
NL17SV16	Single Non-Inverting Buffer	1	Single	0.9	4.6	1.5	50	SOT-553
NL17SZ05	Single Open Drain Inverter	1	Open Drain	1.65	5.5	3	24	SOT-953

## ON Semiconductor Selector Guide – Standard Logic Devices

### BUFFERS (continued)

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL17SZ06	Single Inverter, Open Drain	1	Open Drain	1.65	5.5	3	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NL17SZ07	Single Non-Inverting Buffer, Open Drain	1	Open Drain	1.65	5.5	3.5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NL17SZ125	Single Non-Inverting Buffer, 3-State	1	CMOS	1.65	5.5	2.6	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953; TSOP-5 / SOT-23-5; UDFN-6
NL17SZ126	Single Non-Inverting Buffer, 3-State	1	3-State	1.65	5.5	5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953
NL17SZ16	Single Buffer	1	CMOS	1.65	5.5	4.5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NL17SZ17	Single Non-Inverting Buffer with Schmitt Trigger Output	1	CMOS	1.65	5.5	4.9	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NLU1G07	Single Non-Inverting Buffer with Open Drain Output	1	Open Drain	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU1G14	Single Inverter with Schmitt Trigger Input	1	CMOS	1.65	5.5	8.6	8	UDFN-6; ULLGA-6
NLU1GT125	Single Non-Inverting Buffer, 3-State	1	3-State	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU1GT126	Single Non-Inverting Buffer, TTL-Level	1	3-State	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU1GT50	Single Non-Inverting Buffer with TTL-Compatible Inputs	1	CMOS	1.65	5.5	6.7	8	UDFN-6; ULLGA-6
NLX1G125	Non-Inverting Buffer, 3-State	1	3-State	1.65	5.5	2.7	32	Flip-Chip-5
PCA9511A	Hot Swappable I2C-Bus and SMBus Bus Buffer	1	Open Drain	2.7	5.5	70	50	Micro8
NL27WZ06	Dual Inverter, Open Drain	2	CMOS	1.65	5.5	3	32	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NL27WZ07	Dual Buffer, Open Drain	2	Open Drain	1.65	5.5	3.5	32	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NL27WZ125	Dual Buffer, 3-State Low Enable	2	3-State	1.65	5.5	5.7	32	US8
NL27WZ126	Dual Buffer, 3-State High Enable	2	3-State	1.65	5.5	5.7	24	US8
NL27WZ16	Dual Buffer	2	CMOS	1.65	5.5	2	24	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NL27WZ17	Dual Non-Inverting Buffer with Schmitt Trigger Input	2	Dual	1.65	5.5	2	24	SC-88-6 / SC-70-6 / SOT-363-6
NLU2G04	Dual Inverter	2	CMOS	1.65	5.5	5.5	8	UDFN-6; ULLGA-6

**BUFFERS** (continued)

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NLU2G07	Dual Non-Inverting Buffer with Open Drain Output	2	CMOS	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU2G16	Dual Buffer	2	CMOS	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU2G17	Dual Buffer with Schmitt Trigger Output	2	CMOS	1.65	5.5	8.6	8	UDFN-6; ULLGA-6
NLX2G06	Dual Inverter with Open Drain Output	2	Open Drain	1.65	5.5	2.4	24	UDFN-6
NLX2G07	Dual Buffer with Open Drain Output	2	Open Drain	1.65	5.5	3.5	32	UDFN-6; ULLGA-6
NLX2G16	Dual Buffer	2	CMOS	1.65	5.5	1.8	24	UDFN-6; ULLGA-6
NLX2G17	Dual Buffer with Schmitt Trigger Output	2	CMOS	1.65	5.5	3.1	24	ULLGA-6
NL37WZ06	Triple Inverter, Open Drain	3	CMOS	1.65	5.5	3	32	US8
NL37WZ07	Triple Buffer, Open Drain	3	Open Drain	1.65	5.5	3.5	32	US8
NL37WZ16	Triple Buffer	3	CMOS	1.65	5.5	2	24	US8
NL37WZ17	Triple Non-Inverting Buffer with Schmitt Trigger Inputs	3	CMOS	1.65	5.5	4.9	24	US8
NLU3G14	Triple Inverter with Schmitt Trigger Input	3	CMOS	1.65	5.5	8.6	8	UDFN-8; ULLGA-8
NLU3G16	Triple Non-Inverting Buffer	3	CMOS	1.65	5.5	5.5	8	UDFN-8; ULLGA-8
NLU3G17	Triple Non-Inverting Buffer with Schmitt Trigger Output	3	CMOS	1.65	5.5	8.6	8	UDFN-8; ULLGA-8
NLX3G17	Triple Non-Inverting Buffer with Schmitt Trigger Output	3	CMOS	1.65	5.5	2.7	24	ULLGA-8
MC74AC125	Quad Buffer with 3-State Outputs	4	3-State	2	6	7	24	SOIC-14; TSSOP-14
MC74ACT125	Quad Buffer with 3-State Outputs	4	3-State	4.5	5.5	9	24	SOIC-14; TSSOP-14
MC74HC125A	Quad Non-inverting Buffer, 3-State	4	3-State	2	6	24	6	SOIC-14; TSSOP-14
MC74HC126A	Quad Non-inverting Buffer, 3-State	4	3-State	2	6	24	6	SOIC-14; TSSOP-14
MC74HCT125A	Quad Non-inverting Buffer with LSTTL Compatible Inputs, 3-State	4	3-State	2	6	18	6	SOIC-14; TSSOP-14
MC74LCX125	Low Voltage Quad Non-Inverting Buffer, 3-State	4	3-State	2	3.6	6	24	SOIC-14; TSSOP-14
MC74LVX125	Quad Bus Buffer, 3-State	4	3-State	2	3.6	9.7	4	SOIC-14; TSSOP-14
MC74VHC125	Quad Bus Buffer, 3-State	4	3-State	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHC126	Quad Bus Buffer, 3-State	4	3-State	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT125A	Quad Bus Buffer, 3-State, TTL Level	4	3-State	4.5	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT126A	Quad Bus Buffer, 3-State, TTL Level	4	3-State	4.5	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT257A	Quad 2-Channel Multiplexer (Mux) with 3-State Outputs	4	3-State	4.5	5.5	7.9	8	SOIC-16; TSSOP-16
NLSF3T125	Quad Bus Buffer with 3-state Control Inputs	4	3-State	2	5.5	5.5	25	QFN-16
NLSF3T126	Quad Bus Buffer with 3-state Control Inputs	4	3-State	2	5.5	7.5	25	QFN-16

## ON Semiconductor Selector Guide – Standard Logic Devices

### BUFFERS (continued)

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC14049B	Hex Inverter	6	CMOS	3	18	80	16	SOIC-16
MC14049UB	Hex Inverter	6	CMOS	3	18	65	16	SOIC-16; TSSOP-16
MC14050B	Hex Buffer	6	CMOS	3	18	80	16	SOIC-16; TSSOP-16
MC14503B	Hex Non-inverting Buffer, 3-State	6	3-State	3	18	80	6.2	SOIC-16
MC14572UB	Hex Gate; 4 Inverters; 1 NOR; 1 NAND	6	CMOS	3	18	100	2.25	SOIC-16
MC74AC05	Hex Inverter Open-Drain	6	Open Drain	2	6	6	24	SOIC-14
MC74ACT05	Hex Inverter with Open-Drain Outputs	6	Open Drain	4.5	5.5	8.5	24	SOIC-14; TSSOP-14
MC74HC05A	Hex Inverter with Open Drain Outputs	6	Open Drain	2	6	15	5.2	SOIC-14; TSSOP-14
MC74HC365A	Hex 3-State Non-inverting Buffer with Common Enables	6	3-State	2	6	20	7.8	SOIC-16; TSSOP-16
MC74HC367A	Hex 3-State NonInverting Buffer with Separate 2-Bit and 4-Bit Sections	6	3-State	2	6	24	24	SOIC-16; TSSOP-16
MC74HCT365A	Hex buffer/line driver, 3-state, TTL	6	3-State	4.5	5.5	12	6	SOIC-16; TSSOP-16
MC74HCT366A	Hex buffer/line driver, 3-state, inverting, TTL	6	3-State	2	6	24	24	SOIC-16; TSSOP-16
MC74LCX06	Low Voltage CMOS Hex Inverter with Open Drain Outputs and 5V-Tolerant I/Os	6	Open Drain	2	3.6	3.7	24	SOIC-14; TSSOP-14
MC74LCX07	Low Voltage CMOS Hex Buffer with Open Drain Outputs and 5V-Tolerant Inputs	6	Open Drain	2	5.5	3	24	SOIC-14; TSSOP-14
MC74LVX50	Hex Buffer	6	CMOS	2	3.6	9.7	4	SOIC-14; TSSOP-14
MC74VHC50	Hex Buffer	6	3-State	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT50A	Non-inverting Buffer / CMOS Logic Level Shifter with LSTTL-Compatible Inputs	6	3-State	4.5	5.5	7.7	8	SOIC-14; TSSOP-14
MC74AC240	Octal Buffer/Line Driver, 3-State	8	3-State	2	6	6.5	24	SOIC-20W; TSSOP-20
MC74AC244	Octal Buffer/Line Driver, 3-State	8	3-State	2	6	7	24	SOIC-20W; TSSOP-20
MC74AC540	Octal Buffer/Line Driver with 3-State Outputs	8	3-State	2	6	6	24	SOIC-20W
MC74AC541	Octal Buffer/Line Driver with 3-State Outputs	8	3-State	2	6	6	24	SOIC-20W; TSSOP-20
MC74ACT240	Octal Buffer/Line Driver, 3-State	8	3-State	4.5	5.5	8.5	24	SOIC-20W; TSSOP-20
MC74ACT241	Octal Buffer/Line Driver, 3-State	8	3-State	4.5	5.5	9	24	SOIC-20W; TSSOP-20
MC74ACT244	Octal Buffer/Line Driver, 3-State	8	3-State	4.5	5.5	9	24	SOIC-20W; TSSOP-20
MC74ACT540	Octal Buffer/Line Driver with 3-State Outputs	8	3-State	4.5	5.5	8	24	SOIC-20W; TSSOP-20
MC74ACT541	Octal Buffer/Line Driver with 3-State Outputs	8	3-State	4.5	5.5	7.5	24	SOIC-20W; TSSOP-20

**BUFFERS** (continued)

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HC240A	Octal Inverting Buffer/Line Driver/Line Receiver, 3-State	8	3-State	2	6	22	6	SOIC-20W; TSSOP-20
MC74HC244A	Octal 3-State Non-Inverting Buffer/Line Driver/Line Receiver	8	3-State	2	6	22	6	SOIC-20W; TSSOP-20
MC74HC540A	Octal 3-State Inverting Buffer/Line Driver/Line Receiver	8	3-State	2	6	25	6	SOIC-20W; TSSOP-20
MC74HC541A	Octal 3-State Non-inverting Buffer/Line Driver/Line Receiver	8	3-State	2	6	25	6	SOIC-20W; TSSOP-20
MC74HCT241A	Octal 3-State Noninverting Buffer/Line Driver/Line Receiver with LSTTL-Compatible Inputs	8	3-State	4.5	5.5	23	6	SOIC-20W; TSSOP-20
MC74HCT244A	Octal 3-State Non-Inverting Buffer/Line Driver/Line Receiver, TTL Level	8	3-State	4.5	5.5	26	6	SOIC-20W; TSSOP-20
MC74HCT541A	Octal 3-State Non-inverting Buffer/Line Driver/Line Receiver, TTL Level	8	3-State	4.5	5.5	30	6	SOIC-20W; TSSOP-20
MC74LCX240	Low Voltage Octal Inverting Buffer, 3-State	8	3-State	2	3.6	6.5	24	SOIC-20W; TSSOP-20
MC74LCX244	Octal Buffer, Non-Inverting, Low Voltage, 3-State	8	3-State	2	3.6	6.5	24	QFN-20; SOIC-20W; TSSOP-20
MC74LCX540	Low Voltage CMOS Octal Buffer Flow Through Pinout	8	3-State	2	3.6	6.5	24	SOIC-20W; TSSOP-20
MC74LCX541	Low Voltage CMOS Octal Buffer Flow Through Pinout	8	3-State	2	3.6	6.5	24	SOIC-20W; TSSOP-20
MC74LVX240	Octal Inverting Bus Buffer, 3-State	8	3-State	2	3.6	9.7	4	SOIC-20W; TSSOP-20
MC74LVX244	Octal Non-inverting Bus Buffer, 3-State	8	3-State	2	3.6	10.6	4	SOIC-20W; TSSOP-20
MC74LVX541	Octal Bus Buffer	8	3-State	2	3.6	7	4	SOIC-20W; TSSOP-20
MC74VHC240	Octal Inverting Bus Buffer/Line Driver, 3-State Output	8	3-State	2	5.5	7.5	8	SOIC-20W; TSSOP-20
MC74VHC244	Octal Non-inverting Bus Buffer, 3-State	8	3-State	2	5.5	7.5	8	SOIC-20W; TSSOP-20
MC74VHC540	Octal Bus Buffer	8	3-State	2	5.5	7	8	SOIC-20W; TSSOP-20
MC74VHC541	Octal Bus Buffer	8	3-State	2	5.5	7	8	SOIC-20W; TSSOP-20
MC74VHCT240A	Octal Inverting Buffer/Line Driver, 3-State Output	8	3-State	4.5	5.5	8.8	8	SOIC-20W; TSSOP-20
MC74VHCT244A	Octal Bus Buffer/Line Driver	8	3-State	4.5	5.5	8.4	8	SOIC-20W; TSSOP-20
MC74VHCT541A	Non-inverting Octal Bus Buffer/Line Driver/Line Receiver, TTL Level, 3-State	8	3-State	4.5	5.5	7.9	8	SOIC-20W; TSSOP-20
MC74LCX16240	Low Voltage 16-Bit CMOS Buffer	16	3-State	2	3.6	4.5	24	TSSOP-48
MC74LCX16244	Low Voltage 16-Bit CMOS Buffer	16	3-State	2	3.6	4.5	24	TSSOP-48



## ON Semiconductor Selector Guide – Standard Logic Devices

### FLIP-FLOPS

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL17SZ74	Single D Flip-Flop	D-Type	1	1.65	5	5	24	US8
NLX1G74	Single D Flip-Flop	D-Type	1	1.65	5.5	2.6	24	UQFN-8
MC14013B	Dual D Flip-Flop	D-Type	2	3	18	150	2.25	SOIC-14; TSSOP-14
MC74AC74	Dual D Flip-Flop Positive Edge Trigger	D-Type	2	2	6	9.5	24	SOIC-14; TSSOP-14
MC74ACT74	Dual D-Type Positive Edge-Triggered Flip-Flop	D-Type	2	4.5	5.5	10	24	SOIC-14; TSSOP-14
MC74HC74A	Dual D Flip-Flop with Set and Reset	D-Type	2	2	6	20	4	SOIC-14; TSSOP-14
MC74HCT74A	Dual D Flip-Flop with Set and Reset	D-Type	2	4.5	5.5	24	4	SOIC-14
MC74LCX74	Low Voltage CMOS Dual D Flip-Flop	D-Type	2	2	3.6	7	24	SOIC-14; TSSOP-14
MC74LVX74	Dual D Flip-Flop	D-Type	2	2	3.6	13.6	4	SOIC-14; TSSOP-14
MC74VHC74	Dual D Flip-Flop with Set and Reset	D-Type	2	2	5.5	9.3	8	SOIC-14; TSSOP-14
MC74VHCT74A	Dual D Flip-Flop with Set and Reset	D-Type	2	4.5	5.5	8.8	8	SOIC-14; TSSOP-14
MC14175B	Quad D-Type Flip-Flop	D-Type	4	3	18	160	2.25	SOIC-16
MC74HC175A	Quad D Flip-Flop with Common Clock and Reset	D-Type	4	2	6	26	4	SOIC-16; TSSOP-16
MC14174B	Hex D-Type Flip-Flop	D-Type	6	3	18	160	2.25	SOIC-16
MC74HC174A	Hex D Flip-Flop with Clock	D-Type	6	2	6	22	4	SOIC-16; TSSOP-16
NLSF1174	Hex D Flip-Flop with Common Clock and Reset	D-Type	6	2	6	19	25	QFN-16
MC74AC273	Octal D Flip-Flop	D-Type	8	2	6	10	24	SOIC-20W; TSSOP-20
MC74AC374	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	6	9.5	24	SOIC-20W; TSSOP-20
MC74AC377	Octal D Flip-Flop with Clock Enable	D-Type	8	2	6	10	24	SOIC-20W; TSSOP-20
MC74AC574	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	6	9.5	24	SOIC-20W; TSSOP-20
MC74ACT273	Octal D Flip-Flop	D-Type	8	4.5	5.5	11	24	SOIC-20W; TSSOP-20
MC74ACT374	Octal D Flip-Flop with 3-State Outputs	D-Type	8	4.5	5.5	10	24	SOIC-20W; TSSOP-20
MC74ACT377	Octal D Flip-Flop with Clock Enable	D-Type	8	4.5	5.5	10	24	SOIC-20W
MC74ACT574	Octal D Flip-Flop with 3-State Outputs	D-Type	8	4.5	5.5	11	24	SOIC-20W; TSSOP-20
MC74HC273A	Octal D Flip-Flop	D-Type	8	2	6	29	6	SOIC-20W; TSSOP-20
MC74HC374A	Octal D Flip-Flop	D-Type	8	2	6	25	6	SOIC-20W; TSSOP-20
MC74HC377A	Octal D-Type Flip-Flop with Common Clock and Enable	D-Type	8	2	6	200	2	SOIC-20W; TSSOP-20
MC74HC574A	Octal 3-State Non-inverting D Flip-Flop	D-Type	8	2	6	32	6	SOIC-20W; TSSOP-20
MC74HCT273A	Octal D Flip-Flop	D-Type	8	4.5	5.5	25	6	SOIC-20W; TSSOP-20

**FLIP-FLOPS** (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HCT374A	Octal 3-State Non-inverting D Flip-Flop	D-Type	8	4.5	5.5	31	6	SOIC-20W; TSSOP-20
MC74HCT574A	Octal 3-State Non-inverting D Flip-Flop	D-Type	8	4.5; 5.5	5.5	30	6	SOIC-20W; TSSOP-20
MC74LCX374	Low Voltage CMOS Octal D Flip-Flop	D-Type	8	2	3.6	8.5	24	SOIC-20W; TSSOP-20
MC74LCX574	Low Voltage CMOS Octal D Flip-Flop Flow Through Pinout	D-Type	8	2	3.6	8.5	3.6; 24	SOIC-20W; TSSOP-20
MC74LVX374	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	3.6	14.1	4	SOIC-20W; TSSOP-20
MC74LVX574	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	3.6	16.7	4	SOIC-20W; TSSOP-20
MC74VHC374	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	5.5	10.1	8	SOIC-20W; TSSOP-20
MC74VHC574	Octal D Flip-Flop with 3-State Outputs	D-Type	8	2	5.5	10.6	8	SOIC-20W; TSSOP-20
MC74VHCT374A	Octal D Flip-Flop with 3-State Outputs	D-Type	8	4.5	5.5	10.4	8	SOIC-20W; TSSOP-20
MC74VHCT574A	Octal D Flip-Flop with 3-State Outputs	D-Type	8	4.5	5.5	10.4	8	SOIC-20W; TSSOP-20
MC74LCX16374	Low Voltage CMOS 16-Bit D Flip-Flop	D-Type	16	2	3.6	6.2	24	TSSOP-48
MC14027B	Dual J-K Flip-Flop	JK-Type	2	3	18	150	2.25	SOIC-16
MC74HC112A	Dual J-K Flip-Flop with Set and Reset	JK-Type	2	2	6	21	5.2	SOIC-16; TSSOP-16
MC74HC73A	Dual J-K Flip-Flop with Reset	JK-Type	2	2	6	21	5.2	SOIC-14; TSSOP-14

**LATCHES AND REGISTERS**

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HC259A	8-Bit Addressable Latch 1-of-8 Decoder	Coder / Decoder	8	2	6	100	5.2	SOIC-16; TSSOP-16
MC14042B	Quad Transparent Latch	Latch	4	3	18	180	2.25	SOIC-16
MC14043B	Quad R-S Latches	Latch	4	3	18	175	2.25	SOIC-16
MC14044B	Quad R-S Latches	Latch	4	3	18	175	2.25	SOIC-16
MC14099B	8-Bit Addressable Latch	Latch	1	3	18	150	2.25	SOIC-16W
MC14511B	BCD-to-7-Segment Latch/Decoder/Driver	Latch	1	3	18	580	25	SOIC-16; SOIC-16W
MC14543B	BCD-to-7-Segment Latch/Decoder/Driver for Liquid Crystals	Latch	1	3	18	660	10	SOIC-16
MC74AC259	8-Bit Addressable Latch	Latch	8	2	6	10	24	SOIC-16
MC74AC373	Octal Transparent Latch with 3-State Outputs	Latch	8	2	6	9.5	24	SOIC-20W; TSSOP-20
MC74AC573	Octal Buffer/Line Driver with 3-State Outputs	Latch	8	2	6	10	24	SOIC-20W; TSSOP-20
MC74ACT259	8-Bit Addressable Latch	Latch	8	4.5	5.5	11	24	SOIC-16
MC74ACT373	Octal Transparent Latch with 3-State Outputs	Latch	8	4.5	5.5	10	24	SOIC-20W; TSSOP-20
MC74ACT564	Octal D Latch with 3-State Outputs	Latch	8	4.5	5.5	10.5	24	SOIC-20W

## ON Semiconductor Selector Guide – Standard Logic Devices

### LATCHES AND REGISTERS (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74ACT573	Octal Buffer/Line Driver with 3-State Outputs	Latch	8	4.5	5.5	10.5	24	SOIC-20W; TSSOP-20
MC74HC373A	Octal 3-State Non-Inverting Transparent Latch	Latch	8	2	6	25	6	SOIC-20W; TSSOP-20
MC74HC573A	Octal 3-State Non-inverting Transparent Latch	Latch	8	2	6	30	6	SOIC-20W; TSSOP-20
MC74HCT373A	Octal Latch	Latch	8	4.5	5.5	28	6	SOIC-20W; TSSOP-20
MC74HCT573A	Octal 3-State Transparent Latch/Transceiver	Latch	8	4.5	5.5	30	6	SOIC-20W; TSSOP-20
MC74LCX16373	Low Voltage CMOS 16-Bit Transparent Latch	Latch	16	2	3.6	5.4	24	TSSOP-48
MC74LCX373	Low Voltage CMOS Octal Transparent Latch	Latch	8	2	3.6	8	24	SOIC-20W; TSSOP-20
MC74LCX573	Low Voltage CMOS Octal Transparent Latch Flow Through Pinout	Latch	8	2	3.6	8	24	SOIC-20W; TSSOP-20
MC74LVX259	8-Bit Addressable Latch/1-of-8 Decoder CMOS Logic Level Shifter	Latch	1	2	3.6	12	4	SOIC-16; TSSOP-16
MC74LVX373	Octal Transparent Latch 3-State	Latch	8	2	3.6	12.8	4	SOIC-20W; TSSOP-20
MC74LVX573	Octal D Latch 3-State Outputs	Latch	8	2	3.6	12.8	4	SOIC-20W; TSSOP-20
MC74VHC259	8-Bit Addressable Latch/1-of-8 Decoder CMOS Logic Level Shifter	Latch	1	2	5.5	10	8	SOIC-16; TSSOP-16
MC74VHC373	Octal D-Type Latch with 3-State Output	Latch	8	2	5.5	9.2	8	SOIC-20W; TSSOP-20
MC74VHC573	Octal Non-Inverting D Latch, 3-State Output	Latch	8	2	5.5	8.8	8	SOIC-20W; TSSOP-20
MC74VHCT259A	8-Bit Addressable Latch/1-of-8 Decoder CMOS Logic Level Shifter	Latch	1	4.5	5.5	10	8	SOIC-16; TSSOP-16
MC74VHCT373A	Octal Transparent Latch 3-State	Latch	8	4.5	5.5	9.5	8	SOIC-20W; TSSOP-20
MC74VHCT573A	Octal D Latch with 3-State Output	Latch	8	4.5	5.5	9.5	8	SOIC-20W; TSSOP-20
NL17SG373	LOW-POWER D-TYPE Transparent Latch with 3-State Output	Latch	1	0.9	3.6	2.4	8	SC-88-6 / SC-70-6 / SOT-363-6
MC14076B	4-Bit D Register with Three-State Outputs	Register	4	3	18	250	2.25	SOIC-16
MC14014B	8-Bit Static Shift Register	Shift Register	1	3	18	340	2.25	SOIC-16
MC14015B	Dual 4-Bit Static Shift Register	Shift Register	2	3	18	250	2.25	SOIC-16
MC14021B	8-Bit Static Shift Register	Shift Register	1	3	18	340	2.25	SOIC-16
MC14094B	8-Bit Storage/Shift Register with Three-State Outputs	Shift Register	1	3	18	250	2.25	SOIC-16; TSSOP-16
MC14517B	Dual 64-Bit Static Shift Register	Shift Register	2	3	18	300	2.25	SOIC-16W
MC14549B	Successive Approximation Register	Shift Register	1	3	18	420	2.25	SOIC-16W
MC14557B	1- to 64-Bit Variable Length Shift Register	Shift Register	1	3	18	260	2.25	SOIC-16W
MC14559B	Successive Approximation Register	Shift Register	1	3	18	420	2.25	SOIC-16W

**LATCHES AND REGISTERS** (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HC164A	8–Bit Serial–Input/Parallel–Output Shift Register	Shift Register	1	2	6	32	4	SOIC–14; TSSOP–14
MC74HC165A	8–Bit Serial or Parallel–Input/Serial Output Shift Register	Shift Register	1	2	6	30	4	SOIC–16; TSSOP–16
MC74HC4094A	8–Bit Shift and Store Register	Shift Register	1	2	6	150	2	SOIC–16; TSSOP–16
MC74HC589A	8–Bit Shift Register	Shift Register	1	2	6	40	6	SOIC–16; TSSOP–16
MC74HC595A	Shift Register 3–State	Shift Register	1	2	6	28	6	SOIC–16; TSSOP–16
MC74HC597A	8–Bit Serial or Parallel–Input/Serial–Output Shift Register with Input Latch	Shift Register	1	2	6	250	2	SOIC–16; TSSOP–16
MC74HCT4094A	8–Bit Shift and Store Register with LSTTL Compatible Inputs	Shift Register	1	4.5	5.5	50	2	SOIC–16; TSSOP–16
MC74HCT595A	Shift Register 3–State, TTL	Shift Register	1	4.5	5.5	28	6	SOIC–16; TSSOP–16
MC74LV594A	8–Bit Shift Register with Output Register	Shift Register	1	2	6	6.5	12	SOIC–16; TSSOP–16
MC74VHC595	8–Bit Shift Register w/Output Storage Register (3–State)	Shift Register	1	2	5.5	10	8	SOIC–16; TSSOP–16
NLV74HC165A	8–Bit Serial or Parallel–Input/Serial Output Shift Register	Shift Register	1	2	6	30	4	SOIC–16

**LOGIC GATES**

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HC1G08	Single 2–Input AND Gate	AND	1	2	6	20	2	SC–88A–5 / SC–70–5 / SOT–323–5 TSOP–5 / SOT–23–5
MC74VHC1G08	Single 2–Input AND Gate	AND	1	2	5.5	7.9	8	SC–88A–5 / SC–70–5 / SOT–323–5 TSOP–5 / SOT–23–5
MC74VHC1G09	Single 2–Input AND Gate, Open Drain	AND	1	2	5.5	7.9	8	SC–88A–5 / SC–70–5 / SOT–323–5 TSOP–5 / SOT–23–5
MC74VHC1GT08	Single 2–Input AND Gate, TTL Level	AND	1	3	5.5	7.9	8	SC–88A–5 / SC–70–5 / SOT–323–5 TSOP–5 / SOT–23–5
NL17SG08	Single 2–Input AND Gate	AND	1	0.9	4.6	3.5	8	SOT–953
NL17SH08	Single 2–Input AND Gate	AND	1	2	5.5	3.5	8	SOT–953
NL17SHT08	Single 2–Input AND Gate	AND	1	3	5.5	5.9	4	SOT–953
NL17SV08XV5T2	2–Input AND Gate, Ultra–Low Voltage	AND	1	0.9	3.6	1	24	SOT–553

## ON Semiconductor Selector Guide – Standard Logic Devices

### LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL17SZ08	Single 2-Input AND Gate	AND	1	1.65	5.5	4.5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953
MC14082B	Dual 4-Input AND Gate	AND	2	3	18	130	2.25	SOIC-14
NL27WZ08	Dual 2-Input AND Gate	AND	2	1.65	5.5	3.7	32	US8
NLX2G08	Dual 2-Input AND Gate	AND	2	1.65	5.5	3.9	24	UQFN-8
MC14073B	Triple 3-Input AND Gate	AND	3	3	18	130	2.25	SOIC-14
MC74AC11	Triple 3-Input AND Gate	AND	3	2	6	8	24	SOIC-14
MC74ACT11	Triple 3-Input AND Gate	AND	3	4.5	5.5	9.5	24	SOIC-14
MC74HC11A	Triple 3-Input AND Gate	AND	3	2	6	16	5.2	SOIC-14; TSSOP-14
MC74AC08	Quad 2-Input AND Gate	AND	4	2	6	7.5	24	SOIC-14; TSSOP-14
MC74ACT08	Quad 2-Input AND Gate	AND	4	4.5	5.5	9	24	SOIC-14; TSSOP-14
MC74HC08A	Quad 2-Input AND Gate	AND	4	2	6	15	4	SOIC-14; TSSOP-14
MC74HCT08A	Quad 2-Input AND Gate with LSTTL Compatible Inputs	AND	4	2	6	15	4	SOIC-14; TSSOP-14
MC74LCX08	Low Voltage Quad 2-Input AND Gate	AND	4	2	3.6	5.5	24	SOIC-14; TSSOP-14
MC74LVX08	Quad 2-Input AND Gate	AND	4	2	3.6	10.6	4	SOIC-14; TSSOP-14
MC74VHC08	Quad 2-Input AND Gate	AND	4	2	5.5	7.9	8	SOIC-14; TSSOP-14
MC74VHCT08A	Quad 2-Input AND Gate	AND	4	4.5	5.5	7.9	8	SOIC-14; TSSOP-14
NLSF308	Quad 2-Input AND Gate	AND	4	2	5.5	7.9	8	QFN-16
MC14011UB	Quad 2-Input NAND Gate	AND/NAND; NAND	4	3	18	100	2.25	SOIC-14
MC14093B	Quad 2-Input NAND Gate with Schmitt Trigger Input	AND/NAND; NAND	4	3	18	100	2.25	SOIC-14; TSSOP-14
NLU1G08	Single 2-Input AND Gate	AND; AND/NAND	1	1.65	5.5	5.9	8	UDFN-6
NLX1G11	3-Input AND Gate	AND; AND/NAND	3	1.65	5.5	2.4	24	UDFN-6; ULLGA-6
MC14081B	Quad 2-Input AND Gate	AND; AND/NAND	4	3	18	130	2.25	SOIC-14; TSSOP-14
MC74VHC1GT126	Single Non-Inverting Buffer, TTL Level	Buffer	1	3	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
NL17SG07	Buffer with Open-Drain Output	Buffer	1	0.9	3.6	2.5	8	SOT-953
NL17SG125	Bus Buffer with 3-State	Buffer	1	0.9	4.6	3.5	8	SOT-953
NL17SG17	Schmitt Buffer	Buffer	1	0.9	3.6	2.5	8	SOT-953
NL17SG34	Single Buffer	Buffer	1	0.9	4.6	3.7	8	SOT-953
NL17SH125	Non-Inverting 3-State Buffer	Buffer	1	1.65	5.5	3.8	8	SOT-953
NL17SH126	Noninverting 3-State Buffer	Buffer	1	5.5	2	3.5	8	SOT-953
NL17SH17	Single Schmitt-Trigger Buffer	Buffer	1	1.65	5.5	4	8	SOT-953

LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL17SH34	Single Buffer	Buffer	1	1.65	5.5	3.5	8	SOT-953
NL17SHT126	NON-INVERTING 3-STATE BUF	Buffer	1	3	5.5	5.5	4	SOT-953
NL17SZ17	Single Non-Inverting Buffer with Schmitt Trigger Output	Buffer	1	1.65	5.5	4.9	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
MC74HCT365A	Hex buffer/line driver, 3-state, TTL	Buffer	6	4.5	5.5	12	6	SOIC-16; TSSOP-16
MC74HCT366A	Hex buffer/line driver, 3-state, inverting, TTL	Buffer	6	2	6	24	24	SOIC-16; TSSOP-16
MC74HCT259A	8-Bit Addressable Latch 1-of-8 Decoder	Coder/Decoder	1	4.5	5.5	42	5.2	SOIC-16; TSSOP-16
MC74HC160A	BCD Counter with Asynchronous Reset Mode	Counter	4	2	6	22	25	SOIC-16; TSSOP-16
MC74HC1G04	Single Inverter	Inverter	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74HC1G14	Single Inverter, Schmitt Trigger Input	Inverter	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74HC1GU04	Single Unbuffered Inverter	Inverter	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G04	Single Inverter	Inverter	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G14	Single Inverter, Schmitt Trigger Input	Inverter	1	2	5.5	10.6	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT04	Single Inverter, TTL Level	Inverter	1	3	5.5	7.7	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT14	Single Inverter with TTL Level Input, Schmitt Trigger Input	Inverter	1	3	5.5	10.6	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GU04	Unbuffered Single Inverter	Inverter	1	2	5.5	7	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
NL17SG04	Single Inverter	Inverter	1	0.9	4.6	3.7	8	SOT-953
NL17SG14	Schmitt Inverter	Inverter	1	0.9	3.6	2.5	8	SOT-953
NL17SGU04	Unbuffered Inverter	Inverter	1	0.9	4.6	3.5	8	SOT-953
NL17SH04	Single Inverter	Inverter	1	2	5.5	3.5	8	SOT-953
NL17SH14	Single Schmitt-Trigger Inverter	Inverter	1	1.65	5.5	4	8	SOT-953

## ON Semiconductor Selector Guide – Standard Logic Devices

### LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL17SHT04	Inverter	Inverter	1	3	5.5	7.7	4	SOT-953
NL17SV04	Single Inverter, Ultra-Low Voltage	Inverter	1	0.9	3.6	2.3	50	SOT-553
NL17SZ04	Single Inverter	Inverter	1	1.65	5.5	4.3	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NL17SZ05	Single Open Drain Inverter	Inverter	1	1.65	5.5	3	24	SOT-953
NL17SZ14	Single Inverter with Schmitt Trigger Input	Inverter	1	1.65	5.5	5.9	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NL17SZU04	Unbuffered Single Inverter	Inverter	1	1.65	5.5	5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553
NLU1G04	Single Inverter	Inverter	1	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU1G14	Single Inverter with Schmitt Trigger Input	Inverter	1	1.65	5.5	8.6	8	UDFN-6; ULLGA-6
NLU1GT04	Single Inverter, TTL-Level	Inverter	1	1.65	5.5	6.7	8	UDFN-6
NLU1GT14	Single Inverter with LSTTL-Compatible Input and Schmitt Trigger Input	Inverter	1	1.65	5.5	8.6	8	UDFN-6; ULLGA-6
NLU1GU04	Unbuffered Single Inverter	Inverter	1	1.65	5.5	5.5	8	UDFN-6
NL27WZ04	Dual Inverter	Inverter	2	1.65	5.5	3.6	32	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NL27WZ14	Dual Inverter with Schmitt Trigger Input	Inverter	2	1.65	5.5	4.9	32	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NL27WZU04	Unbuffered Dual Inverter	Inverter	2	1.65	5.5	5.6	32	SC-88-6 / SC-70-6 / SOT-363-6; TSOP-6
NLU2G04	Dual Inverter	Inverter	2	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU2G06	Dual Inverter with Open Drain Output	Inverter	2	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLU2G14	Dual Inverter with Schmitt Trigger Input	Inverter	2	1.65	5.5	8.6	8	UDFN-6; ULLGA-6
NLU2GU04	Unbuffered Dual Inverter	Inverter	2	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLX2G04	Dual Inverter	Inverter	2	1.65	5.5	1.8	24	UDFN-6; ULLGA-6
NLX2G14	Dual Inverter with Schmitt Trigger Input	Inverter	2	1.65	5.5	4.9	32	UDFN-6; ULLGA-6
NLX2GU04	Unbuffered Dual Inverter	Inverter	2	1.65	5.5	2.7	16	ULLGA-6
NL37WZ04	Triple Inverter	Inverter	3	1.65	5.5	3.6	32	US8
NL37WZ14	Triple Inverter with Schmitt Trigger Input	Inverter	3	1.65	5.5	4.9	32	US8
NLU3G14	Triple Inverter with Schmitt Trigger Input	Inverter	3	1.65	5.5	8.6	8	UDFN-8; ULLGA-8

LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NLX3G14	Triple Inverter with Schmitt Trigger Input	Inverter	3	1.65	5.5	3.3	24	ULLGA-8
MC14069UB	Hex Inverter	Inverter	6	3	18	100	2.25	SOIC-14; TSSOP-14
MC14106B	Hex Inverter with Schmitt Trigger Input	Inverter	6	3	18	100	2.25	SOIC-14; TSSOP-14
MC14584B	Hex Inverter with Schmitt-Trigger Input	Inverter	6	3	18	100	2.25	SOIC-14; TSSOP-14
MC74AC04	Hex Inverter	Inverter	6	2	6	7	24	SOIC-14; TSSOP-14
MC74AC14	Hex Inverter with Schmitt Trigger Input	Inverter	6	2	6	10	24	SOIC-14; TSSOP-14
MC74ACT04	Hex Inverter	Inverter	6	4.5	5.5	8.5	24	SOIC-14; TSSOP-14
MC74ACT14	Hex Inverter with Schmitt Trigger Input	Inverter	6	4.5	5.5	11.5	24	SOIC-14; TSSOP-14
MC74HC04A	Hex Inverter	Inverter	6	2	6	15	4	SOIC-14; TSSOP-14
MC74HC14A	Hex Inverter with Schmitt Trigger Input	Inverter	6	2	6	15	4	SOIC-14; TSSOP-14
MC74HCT04A	Hex Inverter with LSTTL-Compliant Input	Inverter	6	4.5	5.5	17	4	SOIC-14; TSSOP-14
MC74HCT14A	Hex Inverter with Schmitt Trigger Input	Inverter	6	4.5	5.5	32	4	SOIC-14; TSSOP-14
MC74HCU04A	Unbuffered Hex Inverter	Inverter	6	2	6	14	4	SOIC-14; TSSOP-14
MC74LCX04	Low Voltage CMOS Hex Inverter	Inverter	6	2	3.6	5.2	24	SOIC-14; TSSOP-14
MC74LCX14	Low Voltage CMOS Hex Inverter with 5.0 V-Tolerant Input and Schmitt Trigger Input	Inverter	6	2	3.6	6.5	24	SOIC-14; TSSOP-14
MC74LCXU04	Low Voltage CMOS Unbuffered Hex Inverter	Inverter	6	2	3.6	3.6	16	SOIC-14; TSSOP-14
MC74LVX04	Hex Inverter	Inverter	6	2	3.6	9.7	4	SOIC-14; TSSOP-14
MC74LVX14	Hex Inverter with Schmitt Trigger Input	Inverter	6	2	3.6	14.1	4	SOIC-14; TSSOP-14
MC74LVXU04	Hex Inverter	Inverter	6	2	3.6	9.7	4	SOIC-14; TSSOP-14
MC74VHC04	Hex Inverter	Inverter	6	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHC14	Hex Inverter with Schmitt Trigger Input	Inverter	6	2	5.5	10.6	8	SOIC-14; TSSOP-14
MC74VHCT04A	Hex Inverter with LSTTL-Compatible Inputs	Inverter	6	4.5	5.5	7.7	8	SOIC-14; TSSOP-14
MC74VHCT14A	Hex Inverter with Schmitt Trigger Input	Inverter	6	4.5	5.5	9.6	8	SOIC-14; TSSOP-14
MC74VHCU04	Unbuffered Hex Inverter	Inverter	6	2	5.5	7	8	SOIC-14; TSSOP-14
MC74HC1G00	Single 2-Input NAND Gate	NAND	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74HC30A	8-Input NAND Gate	NAND	1	2	6	30	5.2	SOIC-14; TSSOP-14



## ON Semiconductor Selector Guide – Standard Logic Devices

### LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74VHC1G00	Single 2-Input NAND Gate	NAND	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1G01	Single 2-Input NAND Gate, Open Drain	NAND	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1G132	Single 2-Input NAND Gate with Schmitt Trigger Input	NAND	1	2	5.5	9.7	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1G135	Single 2-Input NAND Gate, Schmitt Trigger, Open Drain	NAND	1	2	5.5	9.7	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1GT00	Single 2-Input NAND Gate TTL level	NAND	1	3	5.5	7.9	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
NL17SG00	Single 2-Input NAND Gate	NAND	1	0.9	4.6	3.5	8	SOT-953
NL17SH00	Single 2-Input NAND Gate	NAND	1	2	5.5	3	8	SOT-953
NL17SHT00	SINGLE 2-INPUT NAND GATE	NAND	1	3	5.5	6.9	10	SOT-953
NL17SV00	Single 2-Input NAND Gate	NAND	1	0.9	3.6	2.3	50	SOT-553
NL17SZ00	Single 2-Input NAND Gate	NAND	1	1.65	5.5	4.3	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953
NLU1G00	Single 2-Input NAND Gate	NAND	1	1.65	5.5	3.5	8	ULLGA-6
MC14012B	Dual 4-Input NAND Gates	NAND	2	3	18	130	2.25	SOIC-14
MC74AC20	Dual 4-Input NAND Gate	NAND	2	2	6	7	24	SOIC-14
MC74ACT20	Dual 4-Input NAND Gate	NAND	2	4.5	5.5	9	24	SOIC-14
MC74HC20A	Dual 4-Input NAND Gate	NAND	2	2	6	23	4	SOIC-14; TSSOP-14
MC74HCT20A	Dual 4-Input NAND Gate, TTL	NAND	2	4.5	5.5	42	4	SOIC-14; TSSOP-14
NL27WZ00	Dual 2-Input NAND Gate	NAND	2	1.65	5.5	3.6	32	US8
NLX2G00	Dual 2-Input NAND Gate	NAND	2	1.65	5.5	3.7	24	ULLGA-8
MC14023B	Triple 3-Input NAND Gate	NAND	3	3	18	130	2.25	SOIC-14
MC74AC10	Triple 3-Input NAND Gate	NAND	3	2	6	7	24	SOIC-14
MC74ACT10	Triple 3-Input NAND Gate	NAND	3	4.5	5.5	9	24	SOIC-14; TSSOP-14
MC74HC10A	Triple 3-Input NAND Gate	NAND	3	2	6	16	5.2	SOIC-14; TSSOP-14
NLX1G10	3-Input NAND Gate	NAND	3	1.65	5.5	2.4	24	ULLGA-6
MC14011B	Quad 2-Input NAND Gate	NAND	4	3	18	100	2.25	SOIC-14; TSSOP-14
MC74AC00	Quad 2-Input NAND Gate	NAND	4	2	6	8	24	SOIC-14; TSSOP-14

LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74AC132	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	2	6	9	24	SOIC-14
MC74ACT00	Quad 2-Input NAND Gate	NAND	4	4.5	5.5	9	24	SOIC-14; TSSOP-14
MC74ACT132	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	4.5	5.5	11.5	24	SOIC-14
MC74HC00A	Quad 2-Input NAND Gate	NAND	4	2	6	15	4	SOIC-14; TSSOP-14
MC74HC03A	Quad 2-Input NAND Gate with Open Drain Outputs	NAND	4	2	6	24	4	SOIC-14; TSSOP-14
MC74HC132A	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	2	6	25	4	SOIC-14; TSSOP-14
MC74HCT132A	Quad 2-Input NAND Gate with Schmitt Trigger Inputs with LSTTL Compatible Inputs	NAND	4	2	6	25	4	SOIC-14; TSSOP-14
MC74LCX00	Low Voltage CMOS Quad 2-Input NAND Gate	NAND	4	2	3.6	5.2	24	SOIC-14; TSSOP-14
MC74LVX00	Quad 2-Input NAND Gate	NAND	4	2	3.6	9.7	4	SOIC-14; TSSOP-14
MC74LVX132	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	2	3.6	15.4	4	SOIC-14; TSSOP-14
MC74VHC00	Quad 2-Input NAND Gate	NAND	4	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHC132	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	2	5.5	9.7	8	SOIC-14; TSSOP-14
MC74VHCT00A	Quad 2-Input NAND Gate	NAND	4	3	5.5	7.9	8	SOIC-14; TSSOP-14
MC74VHCT132A	Quad 2-Input NAND Gate with Schmitt Trigger Input	NAND	4	4.5	5.5	9.7	8	SOIC-16; TSSOP-14
MC74HC1G02	Single 2-Input NOR Gate	NOR	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G02	Single 2-Input NOR Gate	NOR	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1G03	Single 2-Input NOR Gate, Open Drain	NOR	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
MC74VHC1GT02	Single 2-Input NOR Gate TTL Level	NOR	1	3	5.5	7.7	8	SC-88A-5 / SC-70-5 / SOT-323-5 TSOP-5 / SOT-23-5
NL17SG02	Single 2-Input NOR Gate	NOR	1	0.9	4.6	3.5	8	SOT-953
NL17SH02	Single 2-Input NOR Gate	NOR	1	1.65	5.5	3	8	SOT-953
NL17SV02	Single 2-Input NOR Gate, Ultra-Low Voltage	NOR	1	0.9	3.6	3.3	50	SOT-553
NL17SZ02	Single 2-Input NOR Gate	NOR	1	1.65	5.5	4.3	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953

## ON Semiconductor Selector Guide – Standard Logic Devices

### LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL27WZ02	Dual 2-Input NOR Gate	NOR	2	1.65	5.5	3.7	32	US8
NLX2G02	Dual 2-Input NOR Gate	NOR	2	1.65	5.5	3.9	24	ULLGA-8
MC14025B	Triple 3-Input NOR Gate	NOR	3	3	18	130	2.25	SOIC-14
MC14001B	Quad 2-Input NOR Gate	NOR	4	3	18	100	2.25	SOIC-14; TSSOP-14
MC14001UB	Quad 2-Input NOR Gate	NOR	4	3	18	100	2.25	SOIC-14
MC74AC02	Quad 2-Input NOR Gate	NOR	4	2	6	6.5	24	SOIC-14; TSSOP-14
MC74ACT02	Quad 2-Input NOR Gate	NOR	4	4.5	5.5	9.5	24	SOIC-14; TSSOP-14
MC74HC02A	Quad 2-Input NOR Gate	NOR	4	2	6	15	4	SOIC-14; TSSOP-14
MC74LCX02	Low Voltage CMOS Quad 2-Input NOR Gate	NOR	4	2	3.6	5.2	24	SOIC-14; TSSOP-14
MC74LVX02	Quad 2-Input NOR Gate	NOR	4	2	3.6	10.1	4	SOIC-14; TSSOP-14
MC74VHC02	Quad 2-Input NOR Gate	NOR	4	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT02A	Quad 2-Input NOR Gate	NOR	4	4.5	5.5	7.5	8	SOIC-14; TSSOP-14
NLSF302	Quad 2-Input NOR Gate	NOR	4	2	5.5	7.5	8	QFN-16
MC74HC1G32	Single 2-Input OR Gate	OR	1	2	6	20	2	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1G32	Single 2-Input OR Gate	OR	1	2	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC74VHC1GT32	Single 2-Input OR Gate, TTL Level	OR	1	3	5.5	7.5	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
NL17SG32	Single 2-Input OR Gate	OR	1	0.9	4.6	3.7	8	SOT-953
NL17SH32	NL17SH32 Single 2-Input OR Gate	OR	1	2	5.5	3.7	8	SOT-953
NL17SHT32	Single 2-Input OR Gate	OR	1	3	5.5	7.5	4	SOT-953
NL17SV32	Single 2-Input OR Gate	OR	1	0.9	3.6	3.3	50	SOT-553
NL17SZ32	Single 2-Input OR Gate	OR	1	1.65	5.5	4.5	24	SC-88A-5 / SC-70-5 / SOT-323-5; SOT-553; SOT-953
NLU1G32	Single 2-Input OR Gate	OR	1	1.65	5.5	5.5	8	UDFN-6; ULLGA-6
NLX1G332	3-Input OR Gate	OR	1	1.65	5.5	8	24	UDFN-6; ULLGA-6
NL27WZ32	Dual 2-Input OR Gate	OR	2	1.65	5.5	3.7	32	US8
NLX2G32	Dual 2 Input OR Gate	OR	2	1.65	5.5	3.9	24	ULLGA-8
MC74AC32	Quad 2-Input OR Gate	OR	4	2	6	7.5	24	SOIC-14; TSSOP-14

LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74ACT32	Quad 2-Input OR Gate with TTL	OR	4	4.5	5.5	9	24	SOIC-14; TSSOP-14
MC74HC32A	Quad OR Gate	OR	4	2	6	15	4	SOIC-14; TSSOP-14
MC74LCX32	Low Voltage Quad 2-Input OR Gate with 5V-Tolerant Inputs	OR	4	2	3.6	5.5	24	SOIC-14; TSSOP-14
MC74LVX32	Quad 2-Input OR Gate	OR	4	2	3.6	10.1	4	SOIC-14; TSSOP-14
MC74VHC32	2-1 Quad OR Gate	OR	4	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74VHCT32A	Quad 2-Input OR Gate / CMOS Logic Level Shifter with LSTTL-Compatible Inputs	OR	4	2	5.5	7.5	8	SOIC-14; TSSOP-14
MC74HCT32A	Quad 2-Input OR Gate with LSTTL Compatible Inputs	OR/NOR	4	2	6	15	4	SOIC-14; TSSOP-14
NLU1GT32	Single 2-Input OR Gate, TTL-Level	OR; OR/NOR	1	1.65	5.5	5.5	8	UDFN-6
MC14071B	Quad 2-Input OR Gate	OR; OR/NOR	4	3	18	130	2.25	SOIC-14; TSSOP-14
NL7SZ57	Configurable Multifunction Gate (9 Selectable Functions)	SmartGate	1	1.65	5.5	2.5	32	SC-88-6 / SC-70-6 / SOT-363-6
NLX1G57	1.65 to 5.5 V Flexible Logic MiniGate™ with 24 mA Output Drive	SmartGate	1	1.65	5.5	5.1	24	UDFN-6; ULLGA-6
NLX1G58	Flexible Choice Logic (9 Configurable Functions), Inverting	SmartGate	1	1.65	5.5	5.1	24	ULLGA-6
NLX1G97	Flexible Choice Logic (9 Configurable Functions)	SmartGate	1	1.65	5.5	6.3	24	ULLGA-6
NLX1G98	Flexible Choice Logic (9 Configurable Functions), Inverting	SmartGate	1	1.65	5.5	5.1	24	ULLGA-6
NLX1G99	Selectable Function Logic	SmartGate	1	1.65	5.5	6.7	32	UDFN-8; ULLGA-8
NL7SZ58	Flexible Choice Logic (9 Configurable Functions), Inverting	SmartGate	3	1.65	5.5	2.5	32	SC-88-6 / SC-70-6 / SOT-363-6
NL7SZ97	Flexible Choice Logic (9 Configurable Functions)	SmartGate	3	1.65	5.5	2.5	32	SC-88-6 / SC-70-6 / SOT-363-6
MC14572UB	Hex Gate; 4 Inverters; 1 NOR; 1 NAND	SmartGate	6	3	18	100	2.25	SOIC-16
MC14077B	Quad Exclusive NOR Gate	XNOR; XOR/XNOR	4	3	18	150	2.25	SOIC-14
MC74VHC1GT86	Single 2-Input Exclusive OR Gate, TTL Level	XOR	1	3	5.5	8.8	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
NL17SG86	Single 2-Input XOR Gate	XOR	1	0.9	4.6	6.6	3	SOT-953
NL17SZ86	Single 2-Input Exclusive OR Gate	XOR	1	1.65	5.5	4.2	24	SC-88A-5 / SC-70-5 / SOT-323-5 / SOT-953
NLU1G86	Single 2-Input Exclusive OR Gate	XOR	1	1.65	5.5	6.8	8	UDFN-6; ULLGA-6

## ON Semiconductor Selector Guide – Standard Logic Devices

### LOGIC GATES (continued)

Device	Description	Type	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NLU1GT86	Single 2-Input Exclusive OR Gate, TTL-Level	XOR	1	1.65	5.5	6.8	8	UDFN-6; ULLGA-6
NL27WZ86	Dual 2-Input Exclusive OR Gate	XOR	2	1.65	5.5	4.2	32	US8
NLX2G86	Dual 2-Input Exclusive OR Gate	XOR	2	1.65	5.5	4.8	24	UQFN-8
MC74AC86	Quad 2-Input Exclusive OR Gate	XOR	4	2	6	8.5	24	SOIC-14; TSSOP-14
MC74ACT86	Quad 2-Input Exclusive-OR Gate	XOR	4	4.5	5.5	9.5	24	SOIC-14; TSSOP-14
MC74HC86A	Quad 2-Input Exclusive OR Gate	XOR	4	2	6	20	4	SOIC-14; TSSOP-14
MC74HCT86A	Quad 2-Input Exclusive OR Gate with LSTTL Compatible Inputs	XOR	4	2	6	17	4	SOIC-14; TSSOP-14
MC74LCX86	Low Voltage CMOS Quad 2-Input XOR Gate	XOR	4	2	3.6	6.5	24	SOIC-14; TSSOP-14
MC74LVX86	Quad 2-Input XOR Gate	XOR	4	2	3.6	12.8	4	SOIC-14; TSSOP-14
MC74VHC86	Quad 2-Input XOR Gate	XOR	4	2	5.5	8.8	8	SOIC-14; TSSOP-14
MC74VHCT86A	Quad 2-Input XOR Gate / CMOS Logic Level Shifter with LSTTL-Compatible Inputs	XOR	4	2	5.5	8.8	8	SOIC-14; TSSOP-14
MC74VHC1G86	Single 2-Input Exclusive OR Gate	XOR/XNOR	1	2	5.5	8.8	8	SC-88A-5 / SC-70-5 / SOT-323-5 / TSOP-5 / SOT-23-5
MC14070B	Quad XOR Gate	XOR; XOR/XNOR	4	3	18	150	2.25	SOIC-14

### MULIPLEXERS

Device	Description	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC14028B	BCD-to-Decimal Decoder	1	3	18	260	2.25	SOIC-16
MC14512B	8-Channel Data Selector	1	3	18	250	2.25	SOIC-16
MC14514B	4-Bit Transparent Latch/4-to-16 Line Decoder	1	3	18	450	2.25	SOIC-24
MC14515B	4-Bit Transparent Latch/4-to-16 Line Decoder	1	3	18	450	2.25	SOIC-24
MC14532B	8-Bit Priority Encoder	1	3	18	220	2.25	SOIC-16
MC74AC138	1-of-8 Decoder/Demultiplexer	1	2	6	9.5	24	SOIC-16; TSSOP-16
MC74ACT138	1-of-8 Decoder/Demultiplexer	1	4.5	5.5	10.5	24	SOIC-16; TSSOP-16
MC74HC138A	1-of-8 Decoder/Demultiplexer	1	2	6	19; 27	4; 5.2	SOIC-16; TSSOP-16
MC74HC151A	8-Input Multiplexer	1	2	6	43	5.2	SOIC-16; TSSOP-16
MC74HC238A	1-of-8 Decoder/Demultiplexer	1	2	6	19	5.2	SOIC-16; TSSOP-16
MC74HC251A	8-Input Multiplexer (3-state)	1	2	6	48	5.2	SOIC-16; TSSOP-16
MC74HC4067A	Quad Analog Switch/Multiplexer/Demultiplexer	1	2	6	19	25	SOIC-24; TSSOP-24

**MULIPLEXERS** (continued)

Device	Description	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74HCT138A	1-of-8 Decoder/Demultiplexer with LSTTL Compatible Inputs	1	4.5	5.5	27	4	SOIC-16; TSSOP-16
MC74LCX138	Low Voltage CMOS 3-to-8 Decoder/Demultiplexer	1	2	3.6	6	24	SOIC-16; TSSOP-16
MC74LVX138	3-to-8 Line Decoder	1	2	3.6	12.3	4	SOIC-16; TSSOP-16
MC74LVX4051	Analog Multiplexer/Demultiplexer (Mux/Demux)	1	2.5	6	23	4	QFN-16; SOIC-16; TSSOP-16
MC74LVXT4051	Analog Multiplexer/Demultiplexer (Mux/Demux)	1	2.5	6	23	4	SOIC-16; TSSOP-16
MC74VHC138	3-to-8 Line Decoder	1	2	5.5	10.1	8	SOIC-16; TSSOP-16
MC74VHC4052	Analog Multiplexer/Demultiplexer	1	2	6	49	8	SOIC-16; TSSOP-16
MC74VHC4053	Analog Multiplexer/Demultiplexer	1	2	6	49	8	SOIC-16; TSSOP-16
MC74VHCT138A	3-to-8 Line Decoder	1	3	5.5	11.4	8	SOIC-16; TSSOP-16
NLX1G99	Selectable Function Logic	1	1.65	5.5	6.7	32	UDFN-8; ULLGA-8
MC14555B	Dual Binary to 1-of-4 Decoder/Demultiplexer	2	3	18	190	2.25	SOIC-16
MC14556B	Dual Binary to 1-of-4 Decoder/Demultiplexer	2	3	18	190	2.25	SOIC-16
MC74AC139	Dual 1-of-4 Decoder/Demultiplexer	2	2	6	8.5	24	SOIC-16; TSSOP-16
MC74AC253	Dual 4-Input Multiplexer with 3-State Outputs	2	2	6	11.5	24	SOIC-16
MC74ACT139	Dual 1-of-4 Decoder/Demultiplexer	2	4.5	5.5	9.5	24	SOIC-16; TSSOP-16
MC74ACT153	Dual 4-Input Multiplexer	2	4.5	5.5	11.5	24	SOIC-16
MC74ACT253	Dual 4-Input Multiplexer with 3-State Outputs	2	4.5	5.5	13	24	SOIC-16
MC74HC139A	Dual 1-of-4 Decoder / Demultiplexer	2	2	6	23	4	SOIC-16; TSSOP-16
MC74HC153A	Dual 4-Input Data Selector/Multiplexer High-Performance Silicon-Gate CMOS	2	2	6	36	5.2	SOIC-16; TSSOP-16
MC74LCX139	Dual Low Voltage CMOS 2-of-4 Decoder/Demultiplexer	2	2	3.6	6.2	24	SOIC-16; TSSOP-16
MC74LCX157	Low Voltage CMOS Quad 2-Input Multiplexer	2	2	3.6	5.8	24	SOIC-16; TSSOP-16
MC74LVX139	Dual 2-to-4 Decoder/Demultiplexer	2	2	3.6	13	4	SOIC-16; TSSOP-16
MC74LVX4052	Analog Multiplexer/Demultiplexer (Mux/Demux)	2	2.5	6	23	4	SOIC-16; TSSOP-16
MC74LVXT4052	Analog Multiplexer/Demultiplexer (Mux/Demux)	2	2.5	6	23	4	SOIC-16; TSSOP-16
MC74VHC139	Dual 2-to-4 Decoder/Demultiplexer	2	2	5.5	9.2	8	SOIC-16; TSSOP-16
MC74VHCT139A	Dual 2-to-4 Decoder/Demultiplexer	2	4.5	5.5	9.2	8	SOIC-16; TSSOP-16

## ON Semiconductor Selector Guide – Standard Logic Devices

### MULIPLEXERS (continued)

Device	Description	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NL7SZ18	1:2 Digital Demultiplexer Non-Inverting, 3-State	2	1.65	5.5	4	32	SC-88-6 / SC-70-6 / SOT-363-6; UDFN-6
NL7SZ19	1:2 Digital Multiplexer / Demultiplexer	2	1.65	5.5	4	50	SC-88-6 / SC-70-6 / SOT-363-6; UDFN-6
MC74LVX4053	Analog Multiplexer / Demultiplexer	3	2.5	6	23	4	SOIC-16; TSSOP-16
MC74LVXT4053	Analog Multiplexer/Demultiplexer (Mux/Demux)	3	2.5	6	23	4	SOIC-16; TSSOP-16
NLAS4053	Analog Multiplexers/Demultiplexers	3	2.5	5.5	40	50	SOIC-16; TSSOP-16
MC74AC157	Quad 2-Input Multiplexer	4	2	6	9	24	SOIC-16; TSSOP-16
MC74AC257	Quad 2-Input Multiplexer 3-State Output	4	2	6	7.5	24	SOIC-16
MC74ACT157	Quad 2-Input Multiplexer	4	4.5	5.5	9.5	24	SOIC-16; TSSOP-16
MC74ACT257	Quad 2-Input Multiplexer with 3-State Output	4	4.5	5.5	10.5	24	SOIC-16
MC74HC157A	Data Selector/Multiplexer (Mux), 2-Input Q	4	2	6	21	6	SOIC-16; TSSOP-16
MC74HCT4051A	Analog Multiplexers / Demultiplexers with LSTTL Compatible Inputs	4	2	12	45	25	SOIC-16; TSSOP-16
MC74HCT4066A	Quad Analog Switch/Multiplexer/Demultiplexer /with LSTTL Compatible Inputs	4	4.5	5.5	10	2	SOIC-14; TSSOP-14
MC74HCT4851A	Analog Multiplexers/Demultiplexers with Injection Current Effect Control with LSTTL Compatible Inputs	4	2	6	40	0.0001	SOIC-16; SOIC-16W; TSSOP-16
MC74LCX158	Low Voltage Quad 2-Input Multiplexer	4	2	3.6	6.5	24	SOIC-16; TSSOP-16
MC74LCX257	Low Voltage CMOS Quad 2-Input Multiplexer	4	2	3.6	6	24	SOIC-16; TSSOP-16
MC74LCX258	Low Voltage Quad 2-Input Multiplexer with 5V-Tolerant Inputs and Outputs (3-State, Inverting)	4	2	3.6	6.5	24	SOIC-16; TSSOP-16
MC74LVX157	Quad 2-Channel Multiplexer (Mux)	4	2	3.6	11.4	4	SOIC-16; TSSOP-16
MC74LVX257	Quad 2-Channel Multiplexer with 3-State Outputs	4	2	3.6	12	4	SOIC-16; TSSOP-16
MC74VHC157	2-Input Data Selector/Multiplexer (Mux)	4	2	5.5	8.4	8	SOIC-16; TSSOP-16
MC74VHC257	Quad 2-Channel Multiplexer with 3-State Outputs	4	2	5.5	7.9	8	SOIC-16; TSSOP-16
MC74VHC4316	Quad Analog Multiplexer/Demultiplexer (Mux/Demux)	4	2	6	8		SOIC-16; TSSOP-16
MC74VHCT157A	Quad 2-Channel Multiplexer	4	4.5	5.5	8.4	8	TSSOP-16
MC74HCT4852A	Analog Multiplexers/Demultiplexers with Injection, TTL	8	4.5	5.5	40	0.0001	SOIC-16; TSSOP-16

**MULTIVIBRATORS**

Device	Description	Channels	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC14528B	Dual Monostable Multivibrator	2	3	18	240	2.25	SOIC-16
MC14538B	Dual Precision Monostable Multivibrator	2	3	18	300	2.25	SOIC-16; SOIC-16W; TSSOP-16
MC74HC4538A	Dual Precision Monostable Multivibrator	2	3	6	35	4	SOIC-16; TSSOP-16

**BUS TRANSCEIVERS**

Device	Description	Channels	Output	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC74AC245	Octal Bidirectional Transceiver with 3-State Inputs/Outputs	1	3-State	2	2 6	6.5	24	SOIC-20W; TSSOP-20
MC74ACT245	Octal Bidirectional Transceiver with 3-State Inputs/Outputs	1	3-State	4.5	5.5	8	24	SOIC-20W; TSSOP-20
MC74ACT640	Octal 3-State Inverting Bus Transceiver	1	3-State	4.5	5.5	8	24	SOIC-20W
MC74HC245A	Octal 3-State Non-Inverting Bus/Transceiver	1	3-State	2	6	15	6	SOIC-20W; TSSOP-20
MC74HCT245A	Octal 3-State Non-Inverting Bus Transceiver	1	3-State	4.5	5.5	22	6	SOIC-20W; TSSOP-20
MC74LCX245	Octal Transceiver, CMOS, Low Voltage	1	CMOS	2	3.6	7	24	QFN-20; SOIC-20W; TSSOP-20
MC74LVX245	Octal Bus Transceiver	1	CMOS	2	3.6	10.1	4	SOIC-20W; TSSOP-20
MC74VHC245	Octal Bus Transceiver	1	CMOS	2	5.5	7.5	8	SOIC-20W; TSSOP-20
MC74VHCT245A	Octal Bus Transceiver	1	CMOS	4.5	5.5	8.7	8	SOIC-20W; TSSOP-20
PCA9517A	Level Translating I2C-BUS	1	Open Drain	0.9	5.5	150	6	Micro8
PCA9617A	Level-Translating I2C-Bus / SMBus Repeater	1	Open Drain	0.8	5.5	173	13	Micro8
FST3125	4-Bit Bus Switch	4	CMOS	4	5.5	0.25	128	SOIC-14; TSSOP-14
FST3126	4-bit Bus Switch	4	CMOS	4	5.5	0.25	128	SOIC-14; TSSOP-14
MC74AC646	Octal Bus Transceiver Register with 3-State Outputs (Non-inverting)	8	3-State	2	6	12	24	SOIC-24
MC74AC652	Octal Bus Transceiver Register with 3-State Outputs (Non-inverting)	8	3-State	2	6	12	24	SOIC-24
MC74ACT646	Octal Bus Transceiver/Register with 3-State Outputs (Non-inverting)	8	3-State	4.5	5.5	14.5	24	SOIC-24
MC74ACT652	Octal Bus Transceiver/Register with 3-State Outputs (Non-inverting)	8	3-State	4.5	5.5	14.5	24	SOIC-24
MC74LCX16245	Low Voltage CMOS 16-Bit Transceiver	8	3-State	2	3.6	5.2	24	TSSOP-48
MC74LVX4245	Dual Supply Octal Translating Transceiver	8	3-State	2.7	3.6	10	24	SOIC-24; TSSOP-24
MC74LVXC3245	Configurable Dual Supply Octal Transceiver	8	3-State	2.3	3.6	9	24	SOIC-24; TSSOP-24



## ON Semiconductor Selector Guide – Standard Logic Devices

### TRANSLATORS

Device	Description	Channels	Input Level	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
MC14504B	Hex Level Shifter	1	CMOS; TTL	3	18	340	2.25	SOIC-16; TSSOP-16
NLSV1T240	1-Bit Dual-Supply Inverting Level Translator	1	CMOS	0.9	4.5	3.3	50	UDFN-6
NLSV1T244	1-Bit Dual-Supply Non-Inverting Level Translator	1	CMOS	0.9	4.5	3.3	50	UDFN-6
NLSV1T34	1-Bit Dual-Supply Non-Inverting Level Translator	1	CMOS	0.9	4.5	3.3	24	SC-88A-5 / SC-70-5 / SOT-323-5; UDFN-6; ULLGA-6
NLSX5011	Level Translator, 1-Bit, 100 Mbps, Configurable Dual-Supply	1	CMOS	0.9	4.5	11	0.02	UDFN-6; ULLGA-6
NLSV2T240	2-Bit Dual-Supply Inverting Level Translator	2	CMOS	0.9	4.5	3.3	50	UDFN-8
NLSV2T244	2-Bit Dual-Supply Non-Inverting Level Translator	2	CMOS	0.9	4.5	3.3	50	Micro8; SOIC-8; UDFN-8
NLSX0102	2-Bit 20 Mb/s Dual-Supply Level Translator	2	CMOS	1.5	5.5	7.4	1	Flip-Chip-8
NLSX3012	2-Bit 100 Mbps Configurable Dual-Supply Level Translator	2	CMOS	1.3	4.5	7.2	0.02	Micro8; SOIC-8; UDFN-8
NLSX3373	Translator, Dual-Supply Level, 2-Bit, 20 Mb/s	2	CMOS	1.2	5.5	30	40	UDFN-8
NLSX4302E	DUAL-SUPPLY LEVEL TRANSLA	2	CMOS	1.5	5.5	8.6	0.02	UQFN-8
NLSX4373	Level Translator, 2-Bit, 20 Mbps, Dual-Supply	2	CMOS	1.5	5.5	20	1	Micro8; SOIC-8; UDFN-8
NLSX5002	2-Bit 100 Mbps Configurable Dual-Supply Level Translator	2	CMOS	0.9	4.5	13	0.02	UQFN-8
NLSX5012	Level Translator, 2-Bit, 140 Mbps, Enhanced Dual-Supply, Auto Sense	2	CMOS	0.9	4.5	11	0.02	Micro8; SOIC-8; UDFN-8
PCA9306	Dual Bidirectional I <sup>2</sup> C Bus and SMBus Voltage Level Translator	2	CMOS	0	5.5	2	64	TSSOP-8; UDFN-8; UQFN-8; US8
NLSV22T244MUTAG	Dual 2-Bit Dual-Supply Non-Inverting Level Translator	4	CMOS	1.65	3.6	3.3	50	UQFN-12
NLSV4T240	4-Bit Dual-Supply Inverting Level Translator	4	CMOS	0.9	4.5	3.3	50	UQFN-12
NLSV4T240E	4-Bit Dual-Supply Inverting Level Translator	4	CMOS	0.9	4.5	2.5	24	SOIC-14; TSSOP-14; UQFN-12
NLSV4T244	4-Bit Dual-Supply Non-Inverting Level Translator	4	CMOS	0.9	4.5	3.3	50	SOIC-14; TSSOP-14; UQFN-12
NLSV4T244E	4-Bit Dual-Supply Non-Inverting Level Translator	4	CMOS	0.9	4.5	2.5	24	SOIC-14; TSSOP-14; UQFN-12
NLSV4T3144	4-bit configurable dual-supply bus buffer level translator	4	CMOS	0.9	4.5	1.9	50	UQFN-12
NLSV4T3234	4-Bit Dual Supply Bus Buffer Translator w/ 26 Ohm Output Series Resistor	4	CMOS	0.9	4.5	5.6	50	Flip-Chip CSP-11
NLSX3014	Level Translator, 4-Bit, Configurable Dual-Supply, 100 Mbps	4	CMOS	0.9	4.5	6.5	0.02	UQFN-12

**TRANSLATORS** (continued)

Device	Description	Channels	Input Level	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	t <sub>pd</sub> Max (ns)	I <sub>O</sub> Max (mA)	Package
NLSX3378	4-Bit 20 Mbps Dual-Supply Level Translator	4	CMOS	1.2	4.5	15	40	Flip-Chip-12
NLSX4014	4-Bit 100 Mbps Configurable Dual-Supply Level Translator	4	CMOS	1.3	4.5	17	0.02	SOIC-14; TSSOP-14; UQFN-12
NLSX4378	Level Translator, 4-Bit, 24 Mbps, Dual-Supply	4	CMOS	1.65	5.5	20	1	Flip-Chip-12
NLSX5014	Level Translator, 4-Bit, 100 Mbps, Configurable Dual-Supply	4	CMOS	0.9	4.5	11	0.02	SOIC-14; TSSOP-14; UQFN-12
MC74LVX4245	Dual Supply Octal Translating Transceiver	8	TTL	2.7	3.6	10	24	SOIC-24; TSSOP-24
NLSV8T240MUTAG	8-Bit Dual-Supply Inverting Level Translator	8	CMOS	0.9	4.5	3.3	50	UDFN-20
NLSV8T244	8-Bit Dual-Supply Non-Inverting Level Translator	8	CMOS	0.9	4.5	3.3	50	SOIC-20W; TSSOP-20; UDFN-20
NLSX3013	8-Bit 100 Mbps Configurable Dual-Supply Level Translator	8	CMOS	1.3	4.5	6 6.5	0.02	Flip-Chip-20
NLSX3018	8-Bit 100 Mb/s Configurable Dual-Supply Level Translator	8	CMOS	0.9	4.5	6.5	20	SOIC-20W; TSSOP-20; UDFN-20
NLA16T245	16 bit translators	16	CMOS	0.9	4.5	4.5	12	TSSOP-48



# Thermal Management

---

## Table of Contents

	<b>Page</b>
Fan Controllers .....	252
Temperature Sensors .....	252

## ON Semiconductor Selector Guide – Thermal Management

### FAN CONTROLLERS

Device	Data Transmission Standard	I <sub>CC</sub> Max (mA)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	T Min (°C)	T Max (°C)	Package
ADM1024	SMBus	3.5	2.8	5.5	0	100	TSSOP-24
ADM1026	SMBus	4	3	5.5	0	100	LQFP-48
ADM1033	SMBus	3	3	5.5	-40	125	QSOP-16
ADM1034	SMBus	3	3	3.6	-40	125	QSOP-16
ADT7460	SMBus	3	3	5.5	-40	120	QSOP-16
ADT7462	SMBus	4	3	5.5	-40	125	LFCSP-32
ADT7463	SMBus	3	3	5.5	-40	120	QSOP-24
ADT7467	SMBus	3	3	5.5	-40	120	QSOP-16
ADT7473	SMBus	3	3	3.6	-40	125	QSOP-16
ADT7475	SMBus	3	3	3.6	-40	125	QSOP-16
ADT7476	SMBus	3	3	3.6	-40	125	QSOP-24
ADT7476A	SMBus	3	3	3.6	-40	125	QSOP-24
ADT7490	SMBus	5	3	3.6	-40	125	QSOP-24
NCT7491	SMBus	5	3	3.6	-40	125	QFN-24; QSOP-24

### TEMPERATURE SENSORS

Device	Sensor Type	Data Transmission Standard	I <sub>CC</sub> Max (mA)	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	T Min (°C)	T Max (°C)	Temperature Error (°C)	Package
CAT34TS02	Local	I <sup>2</sup> C	0.5	3	3.6	-20	125	±3	TDFN-8
CAT34TS04	Local	I <sup>2</sup> C	1	1.7	5.5	-20	125	±3	TDFN-8; UDFN-8
NCT203	Local	I <sup>2</sup> C		1.6	2.75				WDFN-8; WLCSP8
NCT80	Local	I <sup>2</sup> C	0.58	2.8	5.75	-40	125	±2	TSSOP-24
NCT75	Local	SMBus	0.575	3	5.5	-55	125	±1	DFN-8; Micro8; SOIC-8
NCT1008	Local & Remote	I <sup>2</sup> C	0.35	2.8	3.6	-40	125	±1	DFN-8; WDFN-8
NCT72	Local & Remote	I <sup>2</sup> C	0.35	2.8	3.6	-40	125	±1	DFN-8; WDFN-8
NVT210	Local & Remote	I <sup>2</sup> C	0.35	2.8	3.6	-40	125	±1	Micro8; WDFN-8
ADM1021A	Local & Remote	SMBus	0.2	3	5.5	-55	125	±3	QSOP-16
ADM1023	Local & Remote	SMBus	0.2	3	5.5	0	120	±1	QSOP-16
ADM1032	Local & Remote	SMBus	0.215	3	5.5	0	120	±1	Micro8; SOIC-8
ADT7461	Local & Remote	SMBus	0.215	3	5.5	-40	125	±1	Micro8; SOIC-8
ADT7461A	Local & Remote	SMBus	0.35	3	3.6	-40	125	±1	Micro8
ADT7481	Local & Remote	SMBus	0.35	3	3.6	-40	125	±1	Micro10
ADT7483A	Local & Remote	SMBus	0.35	3	3.6	-40	125	±1	QSOP-16
NCT210	Local & Remote	SMBus	0.37	3	5.5	-65	125	±3	QSOP-16
NCT214	Local & Remote	SMBus	0.35	3	3.6	-40	125	±1	WDFN-10
ADT7485A	Local & Remote	SST	5	3	3.6	-40	125	±1	Micro10
NCT65	Remote		1.15	2.8	3.6	-40	125		Micro8
NCT218	Remote	I <sup>2</sup> C		1.6	2.75				WDFN-8; WLCSP8
CAT6095	Serial	I <sup>2</sup> C; SMBus	0.2	3	3.6	-40	125	±3	TDFN-8

# Thyristors

---

## Table of Contents

	<b>Page</b>
Programmable Unijunction Transistors (PUTs) .....	254
SIDACs .....	254
Silicon Controlled Rectifiers (SCRs) .....	254
Thyristor Surge Protection Devices (TSPDs) .....	255
Triacs .....	255

**PROGRAMMABLE UNIJUNCTION TRANSISTORS (PUTs)**

Device	I <sub>GAO</sub> Max (μA)	I <sub>P</sub> Max (μA)	V <sub>T</sub> Min (V)	V <sub>T</sub> Max (V)	I <sub>V</sub> Max (μA)	Package
2N6027	0.01	2	0.2	1.6	50	TO-92
2N6028	0.01	0.15	0.2	0.6	25	TO-92

**SIDACs**

Device	I <sub>T(RMS)</sub> Max (A)	V <sub>(BO)</sub> Min (V)	V <sub>(BO)</sub> Max (V)	Package
MKP1V	0.9	110; 120; 150; 220	130; 140; 170; 250	Axial Lead-2
MKP3V	1	110; 220	130; 250	Axial Lead-2
MKP9V160	0.9	150	170	Axial Lead-2

**SILICON CONTROLLED RECTIFIERS (SCRs)**

Device	I <sub>T(RMS)</sub> Max (A)	V <sub>DRM</sub> Min (V)	I <sub>TSM</sub> Max (A)	I <sub>GT</sub> Max (mA)	V <sub>GT</sub> Max (V)	Package
NYC0102B	0.25	200	7	0.2	0.8	SOT-23-3
2N506X	0.8	30; 50; 100; 200	10	0.2	0.8	TO-92
MCR08X	0.8	200; 600	8	0.2	0.8	SOT-223-4 / TO-261-4
MCR100X	0.8	100; 200; 400; 600	10	0.2	0.8	TO-92
NYC008	0.8	600	10	0.0002	0.8	TO-92
MCR22-8	1.5	600	15	0.2	0.8	TO-92
NYC222	1.5	50; 400; 600	15	0.2	0.8	SOT-223-4 / TO-261-4
C106	4	200; 400; 600	20	0.2	0.8	TO-225-3
MCR106	4	400; 600	25	0.2	1	TO-225-3
MCR703A	4	100	25	0.075	0.8	DPAK-3
MCR706A	4	400	25	0.075		DPAK-3
MCR708A	4	600	25	0.075	0.8	DPAK-3; IPAK-4
MCR716	4	400	25	0.075	0.8	DPAK-3
MCR718	4	600	25	0.075	0.8	DPAK-3
C122F1	8	50	90	25	1.5	TO-220-3
MCR218-2	8		100	25	1.5	TO-220-3
MCR218-4	8		100	25	1.5	TO-220-3
MCR218-6	8		100	25	1.5	TO-220-3
MCR72-3	8		100	0.2	1.5	TO-220-3
MCR72-6	8	400	100	0.2	1.5	TO-220-3
MCR72-8	8		100	0.2	1.5	TO-220-3
MCR8DCM	8		80	15	1	DPAK-3
MCR8DCN	8	800	80	15	1	DPAK-3
MCR8DSM	8		90	0.2	1	DPAK-3
MCR8DSN	8		90	0.2	1	DPAK-3
MCR8N	8	800	80	15	1	TO-220-3
MCR8SD	8	400	80	0.2	1	TO-220-3
MCR8SM	8	600	80	0.2	1	TO-220-3
MCR8SN	8	800	80	0.2	1	TO-220-3
MCR310-010	10		100	0.2	1.5	TO-220-3
2N639X	12	50; 100; 400; 800	100	30	1.5	TO-220-3
MCR12DCX	12	600; 800	100	20	1	DPAK-3
MCR12DSM	12	600	100	0.2	1	DPAK-3
MCR12DSN	12	800	100	0.2	1	DPAK-3; IPAK-4

**SILICON CONTROLLED RECTIFIERS (SCRs)** (continued)

Device	$I_{T(RMS)}$ Max (A)	$V_{DRM}$ Min (V)	$I_{TSM}$ Max (A)	$I_{GT}$ Max (mA)	$V_{GT}$ Max (V)	Package
MCR12X	12	400; 600; 800	100	20	1	TO-220-3
MCR68-2	12		100	30	1.5	TO-220-3
2N640X	16	50; 100; 200; 400; 600; 800	160	30	1.5	TO-220-3
MCR16N	16	800	160	20	1	TO-220-3
2N650X	25	50; 100; 400; 600; 800	300	30	1.5	TO-220-3
MCR25D	25	400	300	30	1	TO-220-3
MCR25M	25	600	300	30	1	TO-220-3
MCR25N	25	800	300	30	1	TO-220-3
MCR69-2	25		300	30	1.5	TO-220-3
MCR69-3	25		300	30	1.5	TO-220-3

**THYRISTOR SURGE PROTECTION DEVICES (TSPDs)**

Device	$V_{(BO)}$ Max (V)	$I_H$ Min (mA)	$I_{PPS}$ Max (A)	$C_O$ Typ (pF)	Package
NP0080TA Series	20; 30	50	50	11; 13	TSOP-5 / SOT-23-5

**TRIACs**

Device	$V_{DRM}$ Min (V)	$I_{T(RMS)}$ Max (A)	$I_{TSM}$ Max (A)	$I_{GT}$ Max (mA)	Package
MAC12D	100	12	100	35	TO-220-3
MAC97A4	200	0.6	8	5	TO-92
MAC08B	200	0.8	8	10	SOT-223-4 / TO-261-4
T2322B	200	2.5	25	10	TO-225-3
2N6071A	200	4	30	5-5-5-10	TO-225-3
2N6071B	200	4	30	3	TO-225-3
MAC228A4	200	8	80	5	TO-220-3
MAC97A6	400	0.6	8	5	TO-92
MAC997A6	400	0.8	8	5	TO-92
MAC997B6	400	0.8	8	3	TO-92
2N6073A	400	4	30	5	TO-225-3
2N6073B	400	4	30	3	TO-225-3
T2500D	400	6	60	25	TO-220-3
MAC228A6	400	8	80	5	TO-220-3
MAC8D	400	8	80	35	TO-220-3
MAC8SD	400	8	70	5	TO-220-3
MAC9D	400	8	80	50	TO-220-3
T2800D	400	8	100	25	TO-220-3
MAC12HCD	400	12	100	50	TO-220-3
MAC15A6	400	15	150	50	TO-220-3
MAC16D	400	16	150	50	TO-220-3
MAC16HCD	400	16	150	50	TO-220-3
MAC97A8	600	0.6	8	5	TO-92
MAC08M	600	0.8	8	10	SOT-223-4 / TO-261-4
MAC997A8	600	0.8	8	5	TO-92
MAC997B8	600	0.8	8	3	TO-92
NYE08-10B6	600	0.8	8	10	TO-92
NYE08-10B6S	600	0.8	8	10	SOT-223-4 / TO-261-4
Z0107MARLRP	600	1	8	5	TO-92
Z0109MAA0P0	600	1	8	10	TO-92
Z01XXMA	600	1	8	3	TO-92



## ON Semiconductor Selector Guide – Thyristors

### TRIACs (continued)

Device	V <sub>DRM</sub> Min (V)	I <sub>T(RMS)</sub> Max (A)	I <sub>TSM</sub> Max (A)	I <sub>GT</sub> Max (mA)	Package
Z01XXMN	600	1	8	3; 5; 10	SOT-223-4 / TO-261-4
2N6075A	600	4	30	5	TO-225-3
2N6075B	600	4	30	3	TO-225-3
MAC4DCM	600	4	40	35	DPAK-3; IPAK-4
MAC4DHM	600	4	40	5	DPAK-3; IPAK-4
MAC4DLM	600	4	40	3	DPAK-3; IPAK-4
MAC4DSM	600	4	40	10	DPAK-3; IPAK-4
NYT6-5D	600	6	60	5-5-5-10	IPAK-4
2N6344	600	8	100	50	TO-220-3
BTA08-35MA	600	8	90	35	TO-220-3
MAC228A8	600	8	80	5	TO-220-3
MAC8M	600	8	80	35	TO-220-3
MAC8SM	600	8	70	5	TO-220-3
MAC9M	600	8	80	50	TO-220-3
MAC210A8	600	10	100	50	TO-220-3
2N6344A	600	12	100	50	TO-220-3
2N6348A	600	12	100	50	TO-220-3
BTB12-5MA	600	12	126	5	TO-220-3
MAC12HCM	600	12	100	50	TO-220-3
MAC12M	600	12	100	35	TO-220-3
MAC12SM	600	12	90	5	TO-220-3
MAC212A8	600	12	100	50	TO-220-3
MAC15-8	600	15	150	50	TO-220-3
MAC15A8	600	15	150	50	TO-220-3
MAC15M	600	15	150	35	TO-220-3
MAC16CM	600	16	150	35	TO-220-3
MAC16HC	600	16	150	50	TO-220-3
MAC16M	600	16	150	50	TO-220-3
MAC4DCN	800	4	40	35	DPAK-3; IPAK-4
MAC4DSN	800	4	40	10	DPAK-3
MAC4DSN-001	800	4	40	10	IPAK-4
BTA08-800CW	800	8	90	35	TO-220-3
MAC228A10	800	8	80	5	TO-220-3
MAC8N	800	8	80	35	TO-220-3
MAC8SN	800	8	70	5	TO-220-3
MAC9N	800	8	80	50	TO-220-3
MAC210A10	800	10	100	50	TO-220-3
2N6349A	800	12	100	50	TO-220-3
MAC12HCN	800	12	100	50	TO-220-3
MAC12N	800	12	100	35	TO-220-3
MAC12SN	800	12	90	5	TO-220-3
MAC212A10	800	12	100	50	TO-220-3
MAC15-10	800	15	150	50	TO-220-3
MAC15A10	800	15	150	50	TO-220-3
MAC15N	800	15	150	35	TO-220-3
MAC16CN	800	16	150	35	TO-220-3
MAC16HCN	800	16	150	50	TO-220-3
MAC16N	800	16	150	50	TO-220-3
BTA08-50MA	600; 800	8	90	50	TO-220-3
BTB08-35MA	600; 800	8	90	35	TO-220-3
BTB08-50MA	600; 800	8	90	50	TO-220-3

## TRIACs (continued)

Device	V <sub>DRM</sub> Min (V)	I <sub>T(RMS)</sub> Max (A)	I <sub>TSM</sub> Max (A)	I <sub>GT</sub> Max (mA)	Package
BTA12-25MA	600; 800	12	120	25-25-25-50	TO-220-3
BTA12-35MA	600; 800	12	105	35	TO-220-3
BTA12-50MA	600; 800	12	105	50	TO-220-3
BTB12-35MA	600; 800	12	120	35	TO-220-3
BTB12-50MA	600; 800	12	120	50	TO-220-3
BTA16-10MA	600; 800	16	170	10	TO-220-3
BTA16-35MA	600; 800	16	170	35	TO-220-3
BTA16-50MA	600; 800	16	170	50	TO-220-3
BTB16-35MA	600; 800	16	170	35	TO-220-3
BTB16-50MA	600; 800	16	170	50	TO-220-3
BTA25-35MA	600; 800	25	250	35	TO-220-3
BTA25H-35MA	600; 800	25	250	35	TO-220-3
BTA30-35MA	600; 800	30	400	35	TO-220-3
BTA30H-35MA	600; 800	30		35	TO-220-3



# Tunable Components

---

## Table of Contents

	<b>Page</b>
Passive Tunable Integrated Circuits (PTICs) .....	260
PTIC Controllers .....	260

## ON Semiconductor Selector Guide – Tunable Components

### PASSIVE TUNABLE INTEGRATED CIRCUITS (PTICS)

Device	C @ V <sub>bias</sub> = 2 V Typ (pF)	C @ V <sub>bias</sub> = 20 V Typ (pF)	Tuning Range 2 – 20 V Typ	Tuning Range 20 – 2 V Typ	Q @ 700 MHz, 10 V	Q @ 2.4 GHz, 10 V	f <sub>0</sub> MHz
TCP-3012H	1.2	0.32	3.8	3.6	90	60	700–2700
TCP-3027H	2.7	0.71	3.8	3.6	90	60	700–2700
TCP-3027N	2.7	0.77	3.5	3.3			
TCP-3033H	3.3	0.87	3.8	3.6	90	60	700–2700
TCP-3033N	3.3	0.94	3.5	3.3	90	60	
TCP-3039H	3.9	1.03	3.8	3.6	90	60	700–2700
TCP-3039N	3.9	1.11	3.5	3.3	90	60	
TCP-3047H	4.7	1.24	3.8	3.6	90	60	700–2700
TCP-3047N	4.7	1.34	3.5	3.3	90	60	
TCP-3056H	5.6	1.47	3.8	3.6	100	65	700–2700
TCP-3056N	5.6	1.6	3.5	3.3	100	65	
TCP-3068H	6.8	1.79	3.8	3.6	100	75	700–2700
TCP-3068N	6.8	1.94	3.5	3.3	100	75	
TCP-3082H	8.2	2.16	3.8	3.6	100	70	700–2700
TCP-3082N	8.2	2.34	3.5	3.3	100	70	

### PTIC CONTROLLERS

Device	Number of Outputs	Voltage Range (V)	Auto-Detected Interfaces	V <sub>ESD</sub> (HBM) (V)	Package
TCC-103	3	2 – 20	MIPI RFFE; SPI	2000	Bare Die
TCC-106	6	2 – 20	MIPI RFFE; SPI	2000	WLCSP-20

# Voltage and Current Management

---

## Table of Contents

	Page
Battery Fuel Gauges .....	262
Current Protection .....	262
Load Switches .....	262
Voltage Protection .....	263
Voltage References .....	263
Voltage Supervisors .....	265

**BATTERY FUEL GAUGES**

Device	Battery Type	Number of Cells Charged	Interface	V <sub>DD</sub> Min (V)	V <sub>DD</sub> Max (V)	I <sub>DD</sub> (µA)	Tolerance (%)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
LC709203F	Li-ion	1	I2C	2.5	4.5	15	3	-40	85	VDFN-8/ VSON-8J; WLCSP-9
LC709201F	Li-ion	1	I2C	2.25	5.5	30	5	-40	85	VCT-16
LC709202F	Li-ion	1	I2C	2.5	4.5	15	3	-40	85	VCT-16

**CURRENT PROTECTION**

Device	Type	V <sub>I</sub> Max (V)	r <sub>DS(on)</sub> Max (mΩ)	T <sub>SD</sub> Typ (°C)	T <sub>hyst</sub> Typ (°C)	Package
NCP383	Adjustable	5.5	70	140	10	UDFN-10
NCP380	Adjustable; Fixed	7	80; 100	140	10	TSOP-5/ SOT-23-5; TSOP-6; UDFN-6
NIS5112	Auto-Retry; Latch Off	18	35	135	40	SOIC-8
NIS5132	Auto-Retry; Latch Off	18	55	175	45	DFN-10
NIS5135	Auto-Retry; Latch Off		82	175	45	DFN-10
NCP1080	Ethernet		600	155	10	TSSOP-20
NCP1081	Ethernet		600	155	10	TSSOP-20
NCP1082	Ethernet		600	155	10	TSSOP-20
NCP1083	Ethernet		600	155	10	TSSOP-20
NCP1090	Ethernet	60	600	155	10	SOIC-8; TSSOP-8
NCP1091	Ethernet	60	600	155	10	SOIC-8; TSSOP-8
NCP1092	Ethernet	60	600	155	10	SOIC-8; TSSOP-8
NCP1093	Ethernet	60	600	155	10	DFN-10
NCP1094	Ethernet	60	600	155	10	DFN-10
NCP382	Fixed	5.5	100; 140	140	10	DFN-8; SOIC-8
NIS5232	Latch Off	18	55	175	45	DFN-10
NCP373	MOSFET	28	220; 300	150	30	LLGA-12
NCP374	MOSFET	28	155	150	30	TLLGA-12
CAT2300			-	-	-	TDFN-8

**LOAD SWITCHES**

Device	Channels	r <sub>on</sub> (mΩ)	I Max (A)	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	Package
NCP451	1	13	3	0.5	5.5	WLCSP-6
NCP4543	1	10.2	7.3	0.5	6	QFN-18
NCP4545	1	4.7	10.5	0.5	6	QFN-18
NCP45520	1	9.5	11.5	0.5	13.5	DFN-8
NCP45521	1	9.5	11.5	0.5	13.5	DFN-8
NCP45524	1	18	6	0.5	13.5	DFN-8
NCP45525	1	18	6	0.5	13.5	DFN-8
NCP45540	1	4.7	18	0.5	13.5	UDFN-12
NCP45560	1	2.4	23	0.5	13.5	DFN-12
NCP338	1	16	2	1	3.6	WLCSP-6
NCP432	1	35	1.5	1	3.6	WLCSP-4
NCP433	1	35	1.5	1	3.6	WLCSP-4
NCP434	1	29	2	1	3.6	WLCSP-4
NCP435	1	29	2	1	3.6	WLCSP-4
NCP436	1	15	3	1	3.6	WLCSP-6
NCP437	1	15	3	1	3.6	WLCSP-6

**LOAD SWITCHES** (continued)

Device	Channels	r <sub>on</sub> (mΩ)	I Max (A)	V <sub>I</sub> Min (V)	V <sub>I</sub> Max (V)	Package
NCP333	1	55	1.5	1.2	5.5	WLCSP-4
NCP334	1	47	2	1.2	5.5	WLCSP-4
NCP335	1	47	2	1.2	5.5	WLCSP-4
NCP336	1	21	3	1.2	5.5	WLCSP-6
NCP337	1	21	3	1.2	5.5	WLCSP-6
NCP330	1	30	3	1.8	5.5	UDFN-4
NCP331	1	30	3	1.8	5.5	TSOP-6
NCP340	1	30	3	1.8	5.5	UDFN-4
NCP341	1	26	3	1.8	5.5	UDFN-4
NCP439		27	2	1	3.6	WLCSP-4

**VOLTAGE PROTECTION**

Device	V <sub>CC</sub> Min (V)	V <sub>CC</sub> Max (V)	P <sub>(AV)</sub> Max (W)	V <sub>IT+</sub> Typ (V)	V <sub>IT</sub> Typ (V)	I <sub>DDH</sub> Max (μA)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
NCP372	-30	30	0.45	6.3	2.7	260	-40	85	LLGA-12
NCP370	-28	28	2.5	6.6	2.7	280	-40	85	LLGA-12
LV51130T	-0.3	12	0.17	4.35	2.3	13	-30	85	HMSOP-8
LV51131T	-0.3	12	0.17	4.3	2.4	13	-30	85	HMSOP-8
NCP347	1.2	28	0.44	5.63	2.95	250	-40	85	WDFN-10
NCP348	1.2	28	0.48	6.02; 6.4	3.25	250	-40	85	WDFN-10
NCP349	1.2	28	0.065	5.68; 6.02; 6.4; 6.85	2.95; 3.25	0.25	-40	85	DFN-6
NCP360	1.2	20	0.3	5.675; 6.25; 7.07; 7.2	3	35	-40	85	TSOP-5/ SOT-23-5; UDFN-6
NCP361	1.2	20	0.3	5.675	3	35	25	85	TSOP-5/ SOT-23-5; UDFN-6
NCP367	1.2	28	0.3 0.9	5.85; 6.07; 6.84; 7.2	5.75; 5.97; 6.74; 7.1	130	-40	85	DFN-8
NCP373	1.2	30	0.8	5.77	5.705	315	-40	125	LLGA-12
NCP374	1.2	30	0.8	5.77	5.705	315	-40	85	TLLGA-12
NCP391	1.2	28	0.69	7.4	7.3	170	40	125	WLCSP-6
CAT6500	2.5	5.5	1.2	7	1.6	35	-40	85	WQFN-32
NIS1050	3	30	0.75			850	-40	125	WDFN-6
NCP3712ASN							-40	85	SC-74; TSOP-6

**VOLTAGE REFERENCES**

Device	Type	V <sub>(BR)</sub> Typ (V)	Tolerance (%)	I <sub>Q</sub> Typ (mA)	I <sub>R</sub> Min (mA)	V <sub>F</sub> Max (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
CAT102	Adjustable	0.6	1	0.09	0.1	18	-40	85	TSOT-23-5
TLV431A	Adjustable	1.24	1	0.055	0.055; 0.08	16; 18	-40	85	SOT-23-3; TO-92; TSOP-5/ SOT-23-5
TLV431B	Adjustable	1.24	0.5		0.000055	16	-40	85	SOT-23-3; TO-92; TSOP-5/ SOT-23-5
TL431	Adjustable	2.495	2.2		1	36	-40; 0	70; 85	Micro8; SOIC-8; TO-92
TL431A	Adjustable	2.495	1	0.5	1	36	-40; 0	70; 85; 125	Micro8; SOIC-8; TO-92



## ON Semiconductor Selector Guide – Voltage and Current Management

### VOLTAGE REFERENCES (continued)

Device	Type	V <sub>(BR)</sub> Typ (V)	Tolerance (%)	I <sub>Q</sub> Typ (mA)	I <sub>R</sub> Min (mA)	V <sub>F</sub> Max (V)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package
TL431B	Adjustable	2.495	0.4	0.5	1	36	-40; 0	70; 85; 125	Micro8; SOIC-8; TO-92
NCP431	Adjustable	2.5	1	0.04	0.04	36	-40; 0	70; 85; 125	SOIC-8; SOT-23-3; TO-92
NCP4328	Adjustable	1.25; 0.0625	0.48	0.105; 0.115	0.105; 0.115	1.256	-40	125	TSOP-5/ SOT-23-5; TSOP-6
LM4041	Fixed	1.255	0.2; 0.5	-	0.06	-	-40	85	SC-88A-5/ SC-70-5; SOT-23-3
REF3020	Fixed	2.045	0.2	0.03	-	6.5	-40	85	SOT-23-3
NCV1009	Fixed	2.5	0.2	-	0.4	-	-40	125	SOIC-8
REF3025	Fixed	2.5	0.2	0.03	-	6.5	-40	85	SOT-23-3
NCP4300A	Fixed	2.6	1	-	0.08	36	0	105	SOIC-8
REF3030	Fixed	3	0.2	0.03	-	6.5	-40	85	SOT-23-3
REF3033	Fixed	3.3	0.2	0.03	-	6.5	-40	85	SOT-23-3
REF3040	Fixed	4.096	0.2	0.03	-	6.5	-40	85	SOT-23-3
CAT8900	Fixed	1.024; 1.2; 1.25; 1.8; 2.048; 2.5; 2.6; 3; 3.3	0.03; 0.05; 0.06; 0.08; 0.1; 0.12; 0.14; 0.15; 0.17; 0.19; 0.2; 0.21; 0.24; 0.28; 0.42; 0.49	0.45	0.1	6.5	-40	85	SOT-23-3
LM285	Fixed	1.235; 2.5	1; 1.5	-	0.01	-	-40	85	SOIC-8; TO-92
LM385	Fixed	1.235; 2.5	2; 3	-	0.015	-	0	70	SOIC-8; TO-92
LM385B	Fixed	1.235; 2.5	1; 1.5	-	0.015	-	0	70	SOIC-8; TO-92
LM4040	Fixed	1.255; 2.5; 3; 3.3; 4.096; 5	0.2; 1	-	0.06	-	-40	85	SC-88A-5/ SC-70-5; SOT-23-3
NCS1002			0.4	0.4			-40	105	SOIC-8
NCP51460		3.3	1	0.14	20	30	0	100	SOT-23-3
NCS1002A				0.4			-40	105	SOIC-8
SCP51460									SOT-23-3

VOLTAGE SUPERVISORS

Device	Voltages Monitored	V <sub>CC</sub> Max (V)	V <sub>(TO)</sub> Typ (V)	I <sub>Q</sub> Typ (μA)	Reset Active State	Reset Timer	Manual Reset	Watchdog Timer	Package
CAT872	0	5.5	–	0.05	Low	Yes	Yes	No	ULLGA-6
CAX803	1	2.5	2.32; 4	10; 15	Low	Yes	No	No	SOT-23-3
NCP308	1	5.5	3.3	1.6	Low	Yes	Yes	No	TSOP-6; WDFN-6
CAT1232LP	1	5.5	4.38; 4.63	35	High; Low	Yes	Yes	Yes	MSOP-8; PDIP-8; SOIC-8
CAT130044	1	5.5	2.63	20	High; Low	Yes	No	Yes	SOIC-8
CAT1832	1	5.5	2.55; 2.88	20	High; Low	Yes	No	Yes	MSOP-8; PDIP-8; SOIC-8
CAT803	1	5.5	2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.63	6; 8	Low	Yes	No	No	SC-70-3 SOT-23-3
CAT808	1	5.5	2.7	5	Low	No	No	No	TSOT-23-5
CAT809	1	5.5	1.6; 2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.63	6; 8	Low	Yes	No	No	SC-70-3 SOT-23-3
CAT810	1	5.5	2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.63	6	High	Yes	No	No	SOT-23-3
CAT811	1	5.5	2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.63	6; 8	Low	Yes	No	No	SOT-123-4
CAT812	1	5.5	2.32; 3.08; 4.38; 4.63	6; 8	High	Yes	No	No	SOT-123-4
CAT824	1	5.5	2.19; 2.32; 2.63; 2.93; 3.08; 4.38; 4.63	6	High; Low	Yes	No	Yes	SC-88A-5/ SC-70-5 TSOT-23-5
CAT853	1	5.5	2.4; 2.63; 2.93; 3.08; 4; 4.2; 4.38; 4.63	6	Low	Yes	No	No	SOT-23-3
CAT863	1	5.5	2.93; 3.08; 4.38	6	Low	Yes	No	No	SOT-23-3
CAT869	1	5.5	3.08	6	Low	Yes	No	No	SOT-23-3
CAT874	1	5.5	–	0.1	High	Yes	Yes	No	ULLGA-6
CAT8801	1	5.5	1.67; 2.32; 2.63; 2.925; 3.075; 4.38; 4.625	0.2	Low	Yes	No	No	SC-70-3 SOT-23-3
MAX803	1	5.5	1.2; 2.63; 2.93; 3.08; 4.63	0.5	Low	Yes	No	No	SC-70-3/ SOT-323-3
MAX809	1	5.5	1.2; 1.6; 2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.55; 4.63; 4.9	0.5	Low	Yes	No	No	SC-70-3/ SOT-323-3; SOT-23-3
MAX810	1	5.5	1.2; 2.63; 2.93; 3.08; 4.38; 4.63	0.5	High	Yes	No	No	SC-70-3/ SOT-323-3; SOT-23-3
NCP803	1	5.5	1.2; 1.6; 2.32; 2.63; 2.93; 3.08; 4; 4.38; 4.63	0.5	Low	Yes	No	No	SOT-23-3
NCV809	1	5.5	2.63; 2.93; 4.38; 4.63	0.5	Low	Yes	No	No	SOT-23-3
MC33064	1	6.5	4.61	390	Low	No	No	No	Micro8; SOIC-8; TO-92; TSOP-5/ SOT-23-5
MC34064	1	6.5	4.61	390	Low	No	No	No	Micro8; SOIC-8; TO-92; TSOP-5/ SOT-23-5
NCV33064	1	6.5	4.61	390	Low	No	No	No	Micro8; SOIC-8; TO-92

# ON Semiconductor Selector Guide – Voltage and Current Management

## VOLTAGE SUPERVISORS (continued)

Device	Voltages Monitored	V <sub>CC</sub> Max (V)	V <sub>(TO)</sub> Typ (V)	I <sub>Q</sub> Typ (µA)	Reset Active State	Reset Timer	Manual Reset	Watchdog Timer	Package
MC33164	1	10	2.71; 4.33	24; 32	Low	No	No	No	Micro8; SOIC-8; TO-92
MC34164	1	10	2.71; 4.33	24; 32	Low	No	No	No	Micro8; SOIC-8; TO-92; TSOP-5/SOT-23-5
NCP300	1	10	0.9; 1.8; 1.85; 2; 2.5; 2.7; 2.8; 3; 3.3; 3.4; 4.4; 4.5; 4.6; 4.7	0.5	High; Low	No	No	No	TSOP-5/SOT-23-5
NCP301	1	10	0.9; 1; 1.1; 1.2; 1.6; 1.8; 2; 2.2; 2.4; 2.5; 2.6; 2.7; 2.8; 3; 3.1; 3.2; 3.3; 3.4; 3.6; 3.9; 4; 4.2; 4.5; 4.6; 4.7	0.5	High; Low	No	No	No	TSOP-5/SOT-23-5
NCP302	1	10	0.9; 1.5; 1.8; 2; 2.7; 3; 3.3; 3.8; 4; 4.3; 4.5; 4.7	0.5	High; Low	No	No	No	TSOP-5/SOT-23-5
NCP303	1	10	0.9; 1; 1.1; 1.3; 1.4; 1.5; 1.6; 1.7; 1.8; 2; 2.2; 2.3; 2.4; 2.5; 2.6; 2.7; 2.8; 2.9; 3; 3.1; 3.2; 3.3; 3.4; 3.6; 3.8; 4; 4.2; 4.4; 4.5; 4.6; 4.8; 4.9	0.5	Low	No	No	No	TSOP-5/SOT-23-5
NCP304	1	10	0.9; 1.8; 2; 2.2; 2.3; 2.5; 2.7; 2.9; 3; 3.3; 3.7; 3.8; 4; 4.2; 4.3; 4.5; 4.6; 4.7	1	High; Low	No	No	No	SC-82AB-4
NCP304A	1	10	4.3	1	Low	No	No	No	SC-82AB-4
NCP305	1	10	0.9; 1.1; 1.5; 1.6; 1.7; 1.8; 2; 2.2; 2.3; 2.4; 2.5; 2.6; 2.7; 2.8; 2.9; 3; 3.1; 3.2; 3.3; 3.4; 3.5; 3.6; 3.7; 4; 4.4; 4.5; 4.7; 4.9	1	Low	No	No	No	SC-82AB-4
NCV300	1	10	2; 2.7; 2.8; 3; 3.6	0.5	Low	No	No	No	TSOP-5/SOT-23-5
NCV301	1	10	1.2; 1.6; 2; 2.2; 2.5; 2.7; 2.8; 3.3; 4; 4.2; 4.5	0.5	High; Low	No	No	No	TSOP-5/SOT-23-5
NCV302	1	10	3	0.5	Low	No	No	No	TSOP-5/SOT-23-5
NCV303	1	10	1; 1.5; 1.7; 2.3; 2.9; 3; 4.2; 4.4; 4.5; 4.7; 4.9	0.5	Low	No	No	No	TSOP-5/SOT-23-5
NCV33164	1	10	2.71; 4.33	24; 32	Low	No	No	No	SOIC-8
CAX809	1	2.5; 3; 3.3; 5	2.32; 2.63; 3.08; 4.38	10; 15	Low	Yes	No	No	SOT-23-3
CAX810	1	2.5; 3; 3.3; 5	2.32; 2.63; 3.08; 4.38; 4.63	10; 15	High	Yes	No	No	SOT-23-3
CAT823	1	3.3; 5.5	2.19; 2.32; 2.63; 2.93; 3.08; 4.63	6	Low	Yes	Yes	Yes	SC-88A-5/SC-70-5 TSOT-23-5
CAT825	1	3.3; 5.5	2.19; 2.32; 2.63; 2.93; 3.08; 4.38; 4.63	3 6	High; Low	Yes	Yes	No	SC-88A-5/SC-70-5 TSOT-23-5
CAT705	2	5.5	4.63	6	Low	Yes	Yes	Yes	SOIC-8
CAT813	2	5.5	2.32; 4.63	6	High	Yes	Yes	Yes	MSOP-8; SOIC-8
MAX708	2	5.5	2.63; 2.93; 3.08; 4.38	12	High; Low	No	Yes	No	Micro8; SOIC-8

**VOLTAGE SUPERVISORS** (continued)

Device	Voltages Monitored	V <sub>CC</sub> Max (V)	V <sub>(TO)</sub> Typ (V)	I <sub>Q</sub> Typ (μA)	Reset Active State	Reset Timer	Manual Reset	Watchdog Timer	Package
MC33161	2	40	1.27	450	Low	No	No	No	Micro8; SOIC-8
NCV33161	2	40	1.27			No	No	No	Micro8; SOIC-8
CAT706	2	3.6; 5.5	2.63; 2.93; 3.08; 4.38	6	Low	Yes	Yes	No	MSOP-8; SOIC-8
CAT8710	4	5.5	0.62	3	Low	Yes	No	No	TSOT-23-6
CAT885	5	5.5	1.68; 2.33; 2.87; 2.95; 3.08; 4.63	2	Low	Yes	Yes	No	MSOP-8
NCT80	7	5.75		0.58	Low	No	Yes	No	TSSOP-24



## Alphanumeric Parts Index

---

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
1.5SMC10A	168	1N5406	108	1N6273A	169
1.5SMC12A	169	1N5407	108	1N6274A	169
1.5SMC13A	169	1N5408	108	1N6275A	169
1.5SMC15A	169	1N5817	115	1N6276A	170
1.5SMC16A	170	1N5818	115	1N6277A	170
1.5SMC18A	170	1N5819	116	1N6278A	170
1.5SMC20A	170	1N5820	115	1N6279A	171
1.5SMC22A	170	1N5821	115	1N6280A	171
1.5SMC24A	171	1N5822	116	1N6281A	171
1.5SMC27A	171	1N5908	167	1N6282A	171
1.5SMC30A	171	1N5913B	123	1N6283A	172
1.5SMC33A	172	1N5917B	124	1N6284A	172
1.5SMC36A	172	1N5919B	124	1N6285A	172
1.5SMC39A	172	1N5920B	125	1N6286A	172
1.5SMC43A	172	1N5921B	125	1N6287A	173
1.5SMC47A	172	1N5923B	126	1N6288A	173
1.5SMC51A	173	1N5924B	126	1N6289A	173
1.5SMC56A	173	1N5925B	127	1N6290A	173
1.5SMC6.8A	167	1N5927B	127	1N6291A	173
1.5SMC62A	173	1N5929B	128	1N6292A	173
1.5SMC68A	173	1N5929BRNG	128	1N6293A	174
1.5SMC7.5A	168	1N5931B	129	1N6294A	174
1.5SMC82A	174	1N5932B	129	1N6373	167
1.5SMC91A	174	1N5932BRNG	129	1N6376	174
1N4001	108	1N5934B	130	1N6377	174
1N4002	108	1N5934BRNG	130	1N6380	174
1N4003	108	1N5935B	130	1PMT12A	169
1N4004	108	1N5937B	131	1PMT16A	170
1N4005	108	1N5938B	131	1PMT33A	172
1N4006	108	1N5940B	132	1PMT5.0A	167
1N4007	108	1N5941B	132	1PMT5920B	125
1N4933	109	1N5942B	132	1PMT5921B	125
1N4934	109	1N5946B	133	1PMT5924B	126
1N4935	109	1N5948B	133	1PMT5929B	128
1N4936	109	1N5952B	133	1PMT5933B	130
1N4937	109	1N5953B	133	1PMT5935B	130
1N53	133	1N5955B	133	1PMT5941B	132
1N5335B	123	1N5956B	133	1SMA10A	169
1N5400	108	1N6267A	167	1SMA10CA	175
1N5401	108	1N6270A	168	1SMA11A	169
1N5402	108	1N6271A	168	1SMA12A	169
1N5404	108	1N6272A	168	1SMA12CA	175

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
1SMA13A	169	1SMA5920B	125	1SMB12CA	175
1SMA13CA	175	1SMA5921B	125	1SMB130A	174
1SMA14A	170	1SMA5922B	126	1SMB13A	169
1SMA15A	170	1SMA5923B	126	1SMB13CA	175
1SMA15CA	175	1SMA5924B	126	1SMB14A	170
1SMA16A	170	1SMA5925B	127	1SMB14CA	175
1SMA16CA	175	1SMA5926B	127	1SMB150A	174
1SMA17A	170	1SMA5927B	127	1SMB15A	170
1SMA18A	170	1SMA5928B	128	1SMB15CA	175
1SMA18CA	175	1SMA5929B	128	1SMB160A	174
1SMA20A	171	1SMA5930B	128	1SMB16A	170
1SMA20CA	175	1SMA5931B	129	1SMB16CA	175
1SMA22A	171	1SMA5932B	129	1SMB170A	174
1SMA24A	171	1SMA5933B	130	1SMB17A	170
1SMA24CA	176	1SMA5934B	130	1SMB17CA	175
1SMA26A	171	1SMA5935B	130	1SMB18A	170
1SMA26CA	176	1SMA5936B	131	1SMB18CA	175
1SMA28A	172	1SMA5937B	131	1SMB20A	171
1SMA28CA	176	1SMA5938B	131	1SMB20CA	175
1SMA30A	172	1SMA5939B	131	1SMB22A	171
1SMA30CA	176	1SMA5940B	132	1SMB22CA	176
1SMA33A	172	1SMA5941B	132	1SMB24A	171
1SMA33CA	176	1SMA5942B	132	1SMB24CA	176
1SMA36A	172	1SMA5943B	132	1SMB26A	171
1SMA36CA	176	1SMA5945B	132	1SMB26CA	176
1SMA40A	172	1SMA6.0A	168	1SMB28A	172
1SMA40CA	176	1SMA6.5A	168	1SMB28CA	176
1SMA43A	173	1SMA60CA	176	1SMB30A	172
1SMA45A	173	1SMA70A	174	1SMB30CA	176
1SMA48A	173	1SMA70CA	176	1SMB33A	172
1SMA48CA	176	1SMA78CA	177	1SMB33CA	176
1SMA5.0A	167	1SMA8.0A	168	1SMB36A	172
1SMA54A	173	1SMA8.5A	168	1SMB36CA	176
1SMA58A	173	1SMA9.0A	168	1SMB40A	172
1SMA58CA	176	1SMB100A	174	1SMB40CA	176
1SMA5913B	123	1SMB10A	169	1SMB43A	173
1SMA5914B	123	1SMB10CA	175	1SMB43CA	176
1SMA5915B	123	1SMB110A	174	1SMB45A	173
1SMA5916B	123	1SMB11A	169	1SMB45CA	176
1SMA5917B	124	1SMB11CA	175	1SMB48A	173
1SMA5918B	124	1SMB120A	174	1SMB48CA	176
1SMA5919B	124	1SMB12A	169	1SMB5.0A	167



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
1SMB51A	173	1SMB5949B	133	1SMC5.0A	167
1SMB51CA	176	1SMB5951B	133	1SMC54A	173
1SMB54A	173	1SMB5952B	133	1SMC58A	173
1SMB54CA	176	1SMB5953B	133	1SMC6.0A	168
1SMB58A	173	1SMB5954B	133	1SMC6.5A	168
1SMB58CA	176	1SMB5955B	133	1SMC60A	173
1SMB5913B	123	1SMB5956B	133	1SMC64A	173
1SMB5914B	123	1SMB6.0A	168	1SMC7.5A	168
1SMB5915B	123	1SMB6.5A	168	1SMC70A	174
1SMB5916B	123	1SMB60A	173	1SMC75A	174
1SMB5917B	124	1SMB60CA	176	1SMC78A	174
1SMB5918B	124	1SMB64A	173	1SMC8.0A	168
1SMB5919B	124	1SMB64CA	176	1SMC9.0A	168
1SMB5920B	125	1SMB7.0A	168	1SS400	120
1SMB5921B	125	1SMB7.5A	168	1SV233	108
1SMB5922B	126	1SMB70A	174	1SV234	108
1SMB5923B	126	1SMB75A	174	1SV246	108
1SMB5924B	126	1SMB75CA	177	1SV249	108
1SMB5925B	127	1SMB8.0A	168	1SV251	108
1SMB5926B	127	1SMB8.5A	168	1SV263	108
1SMB5927B	127	1SMB85A	174	1SV264	108
1SMB5928B	128	1SMB9.0A	168	1SV267	108
1SMB5929B	128	1SMB90A	174	1SV315	108
1SMB5930B	128	1SMC10A	169	2N3055	48
1SMB5931B	129	1SMC12A	169	2N3055A	48
1SMB5932B	129	1SMC13A	169	2N3442	38
1SMB5933B	130	1SMC14A	170	2N3771	48
1SMB5934B	130	1SMC15A	170	2N3772	48
1SMB5935B	130	1SMC16A	170	2N3773	38
1SMB5936B	131	1SMC17A	170	2N4124	40
1SMB5937B	131	1SMC18A	170	2N4401	41
1SMB5938B	131	1SMC20A	171	2N4918	42
1SMB5939B	131	1SMC22A	171	2N4919	42
1SMB5940B	132	1SMC24A	171	2N4920	42
1SMB5941B	132	1SMC26A	171	2N4921	42
1SMB5942B	132	1SMC28A	172	2N4922	42
1SMB5943B	132	1SMC30A	172	2N4923	42
1SMB5944B	132	1SMC33A	172	2N5038	48
1SMB5945B	132	1SMC36A	172	2N506X	254
1SMB5946B	133	1SMC40A	172	2N5087	39
1SMB5947B	133	1SMC43A	173	2N5088	39
1SMB5948B	133	1SMC48A	173	2N5089	39

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
2N5190	44	2N6292	44	2SK3816	193
2N5191	44	2N6338	48	2SK3820	195
2N5192	44	2N6341	38	2SK4065	195
2N5194	44	2N6344	256	2SK4066	193
2N5195	44	2N6344A	256	2SK4085LS	196
2N5302	48	2N6348A	256	2SK4087LS	196
2N5401	37	2N6349A	256	2SK4088LS	197
2N5550	37	2N6387	36	2SK4094	193
2N5551	37	2N6388	36	2SK4096LS	196
2N5655	37	2N639X	254	2SK4099LS	196
2N5657	37	2N640X	255	2SK4124	196
2N5684	48	2N6426	33	2SK4125	196
2N5686	48	2N6427	33	2SK4177	197
2N5883	48	2N6487	48	2SK4196LS	196
2N5884	48	2N6488	48	2SK4197FS	196
2N5885	48	2N6490	48	2SK4198FS	196
2N5886	48	2N6491	48	2SK536	181
2N6027	254	2N650X	255	2SK545	181
2N6028	254	2N6520	37	2SK596S	181
2N6034	34	2N6667	36	2SK715	181
2N6035	34	2N7002E	193	2SK932	181
2N6036	34	2N7002K	193	3EZ13D5	128
2N6038	34	2N7002L	193	3EZ18D11	129
2N6039	34	2N7002W	193	3EZ6.2D5	125
2N6040	35	2SA1020	43	3LN01C	187
2N6042	35	2SA1774	40	3LN01M	187
2N6043	35	2SA2029M3	40	3LN01S	187
2N6045	35	2SC4617	40	3LN01SS	187
2N6052	36	2SC5658M3	40	3LP01C	200
2N6071A	255	2SC5658RM3	40	3LP01M	200
2N6071B	255	2SJ661	199	3LP01S	200
2N6073A	255	2SK2394	181	3LP01SS	200
2N6073B	255	2SK3557	181	3SK263	183
2N6075A	256	2SK3666	181	3SK264	186
2N6075B	256	2SK3703	193	5LN01C	192
2N6107	44	2SK3707	195	5LN01M	192
2N6109	44	2SK3738	181	5LN01S	192
2N6111	44	2SK3745LS	197	5LN01SP	192
2N6284	36	2SK3746	197	5LN01SS	192
2N6286	36	2SK3747	197	5LP01C	199
2N6287	36	2SK3748	197	5LP01M	199
2N6288	44	2SK3796	181	5LP01S	199

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
5LP01SS	199	ADT7473	252	ASM3P2274A	77
5SMC75A	173	ADT7475	252	ASM3P2474A	77
6HP04MH	199	ADT7476	252	ASM3P2579A	77
74FST3257	21	ADT7476A	252	ASM3P2598A	77
7SB3125	20	ADT7481	252	ASM3P2669A	77
7SB3126	20	ADT7483A	252	ASM3P2760A	77
7SB3257	20	ADT7485A	252	ASM3P2775A	77
7SB384	20	ADT7490	252	ASM3P2779A	77
7SB385	21	AMIS-30421	150	ASM3P2811A	77
7WB3125	21	AMIS-30422	150	ASM3P2812A	77
7WB3126	21	AMIS-30512	150	ASM3P2814A	77
7WB3305	21	AMIS-30521	150	ASM3P2853A	77
7WB3306	21	AMIS-30522	150	ASM3P2863A	77
7WB383	21	AMIS-30523	150	ASM3P2872A	77
7WBD3125	21	AMIS-30532	150	ASM3P623S05B	77
7WBD3126	21	AMIS-30543	150	ATP101	200
7WBD3305	21	AMIS-30600	207	ATP102	200
7WBD3306	21	AMIS-30621	150	ATP103	200
7WBD383	21	AMIS-30622	151	ATP104	200
80SQ045N	116	AMIS-30623	151	ATP106	199
9N05A	204	AMIS-30624	151	ATP107	199
A5191HRT	207	AMIS-30660	206	ATP108	199
ADM1021A	252	AMIS-30663	206	ATP112	199
ADM1023	252	AMIS-39100	141	ATP113	199
ADM1024	252	AMIS-39101	141	ATP114	199
ADM1026	252	AMIS-41683	206	ATP201	187
ADM1032	252	AMIS-42665	206	ATP202	187
ADM1033	252	AMIS-42670	206	ATP203	187
ADM1034	252	AMIS-42671	206	ATP204	187
ADP3110A	142	AMIS-42673	206	ATP206	191
ADP3120A	142	AMIS-42675	206	ATP207	191
ADP3210	85	AMIS-42700	206	ATP208	191
ADP3211	85	AMIS-42770	206	ATP212	193
ADP3212	85	AMIS-49200	207	ATP213	193
ADP3611	142	AMIS-49587	207	ATP214	193
ADP4100	85	ASM219940L	57	ATP216	193
ADT7460	252	ASM3P18S19B	77	ATP218	187
ADT7461	252	ASM3P2107A	77	ATP301	199
ADT7461A	252	ASM3P2108A	77	ATP302	199
ADT7462	252	ASM3P2111B	77	ATP304	199
ADT7463	252	ASM3P2180A	77	ATP401	193
ADT7467	252	ASM3P2182A	77	ATP404	193

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
ATP405	195	BAT54XV2	112	BC639	42
ATP602	196	BAV199L	121	BC639-16Z	42
ATP613	196	BAV23CL	121	BC807-16L	41
AYRE SA3291	27	BAV70DXV6	121	BC807-25L	41
BAL99L	120	BAV70L	121	BC807-25W	41
BAS116L	120	BAV70M3	121	BC807-40L	41
BAS116T	120	BAV70T	121	BC807-40W	41
BAS16DXV6	121	BAV70W	121	BC808-24L	41
BAS16H	120	BAV74L	121	BC817-16L	41
BAS16L	120	BAV99L	121	BC817-25L	41
BAS16M3	120	BAV99RW	121	BC817-40L	41
BAS16P2	120	BAV99W	121	BC818-40L	41
BAS16T	120	BAW56L	121	BC846AL	40
BAS16W	120	BAW56M3	121	BC846BDW1	49
BAS16XV2	120	BAW56T	121	BC846BL	40
BAS19L	120	BAW56W	121	BC846BM3	40
BAS20H	120	BBS3002	199	BC846BPDW1	49
BAS20L	120	BC237B	39	BC846BW	40
BAS21AH	120	BC327	42	BC847AL	39
BAS21DW5	121	BC327-025	42	BC847AW	39
BAS21H	120	BC327-25	42	BC847BDW1	49
BAS21M3	120	BC337	42	BC847BL	39
BAS21SL	121	BC337-025	42	BC847BM3	39
BAS21TMR6	121	BC337-040	42	BC847BPDW1	49
BAS40-04L	114	BC337-25	42	BC847BPDV6	49
BAS40-06L	114	BC337-40	42	BC847BT	39
BAS40L	113	BC369	42	BC847BW	39
BAS70-04L	114	BC373	33	BC847CDW1	49
BAS70L	113	BC490	42	BC847CDXV6	49
BAT54	112	BC517	33	BC847CL	40
BAT54AL	114	BC546B	40	BC847CW	40
BAT54AW	114	BC547B	39	BC848AL	39
BAT54CL	114	BC547C	40	BC848BL	39
BAT54CT	114	BC548B	39	BC848BW	39
BAT54CW	114	BC548C	39	BC848CDW1	49
BAT54CXV3	114	BC549C	39	BC848CL	39
BAT54H	112	BC550C	40	BC848CPDW1	49
BAT54L	113	BC556B	40	BC848CW	39
BAT54M3	113	BC557B	39	BC849BL	39
BAT54SL	114	BC557C	40	BC849CL	39
BAT54SW	114	BC560C	39	BC850BL	39
BAT54W	113	BC637	42	BC850CL	40

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
BC856AL	40	BD139	43	BDX33B	36
BC856BDW1	49	BD140	43	BDX33C	36
BC856BL	40	BD159	37	BDX34B	36
BC856BM3	40	BD179	43	BDX34C	36
BC856BW	40	BD180	42	BDX53B	35
BC857AL	39	BD234	43	BDX53C	35
BC857BDW1	49	BD237	43	BDX54B	35
BC857BL	39	BD241C	43	BDX54C	35
BC857BT	39	BD242B	43	BELASIGNA 200	26
BC857BW	39	BD242C	43	BELASIGNA 250	26
BC857CDW1	49	BD243C	44	BELASIGNA 300	26
BC857CL	40	BD244B	44	BF423	37
BC857CW	40	BD244C	44	BF493S	37
BC858AL	39	BD435	44	BF720	37
BC858AW	39	BD437	44	BF721	37
BC858BL	39	BD438	44	BFL4001	197
BC858BW	39	BD439	44	BFL4004	197
BC858CDXV6	49	BD441	44	BFL4007	196
BC858CL	39	BD442	44	BFL4026	197
BCP53	45	BD675	34	BFL4036	196
BCP53-10	45	BD675A	34	BFL4037	196
BCP53-16	45	BD676	34	BMS3004	199
BCP56	45	BD676A	34	BMS4007	195
BCP56-10	45	BD677	34	BSP16	37
BCP56-16	45	BD677A	34	BSP19A	37
BCP68	45	BD678	34	BSP52	33
BCP69	45	BD678A	34	BSS123L	195
BCW30L	39	BD679	34	BSS138L	193
BCW32L	39	BD679A	34	BSS63L	40
BCW33L	39	BD680	34	BSS64L	40
BCW65AL	42	BD680A	34	BSS84L	199
BCW65CL	42	BD681	34	BSV52L	39
BCW66L	42	BD682	34	BTA08-35MA	256
BCW68GL	42	BD787	44	BTA08-50MA	256
BCW70L	39	BD788	44	BTA08-800CW	256
BCW72L	39	BD809	45	BTA12-25MA	257
BCX17L	41	BD810	45	BTA12-35MA	257
BCX19L	41	BDV64B	36	BTA12-50MA	257
BD135	43	BDV65B	36	BTA16-10MA	257
BD136	43	BDW42	36	BTA16-35MA	257
BD137	43	BDW46	36	BTA16-50MA	257
BD138	43	BDW47	36	BTA25-35MA	257

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
BTA25H-35MA	257	BZX84C10E	127	BZX84C43E	132
BTA30-35MA	257	BZX84C10L	127	BZX84C43L	132
BTA30H-35MA	257	BZX84C11E	127	BZX84C47E	132
BTB08-35MA	256	BZX84C11L	127	BZX84C47L	132
BTB08-50MA	256	BZX84C12E	127	BZX84C4V3E	123
BTB12-35MA	257	BZX84C12L	127	BZX84C4V3L	123
BTB12-50MA	257	BZX84C13E	128	BZX84C4V7E	124
BTB12-5MA	256	BZX84C13L	128	BZX84C4V7L	124
BTB16-35MA	257	BZX84C15E	128	BZX84C51E	132
BTB16-50MA	257	BZX84C15L	128	BZX84C51L	132
BU323Z	36	BZX84C16E	129	BZX84C56E	132
BU406	38	BZX84C16L	129	BZX84C56L	132
BUB323Z	36	BZX84C18E	129	BZX84C5V1E	124
BUD42D	38	BZX84C18L	129	BZX84C5V1L	124
BUH50	38	BZX84C20E	129	BZX84C5V6E	124
BUL45D2	38	BZX84C20L	129	BZX84C5V6L	124
BUV21	38	BZX84C22E	130	BZX84C62E	132
BUV22	38	BZX84C22L	130	BZX84C62L	132
BUV26	48	BZX84C24E	130	BZX84C68E	132
BUV27	38	BZX84C24L	130	BZX84C68L	133
BUX85	38	BZX84C27E	130	BZX84C6V2E	125
BXL4004	192	BZX84C27L	130	BZX84C6V2L	125
BYV32	109	BZX84C2V4E	122	BZX84C6V8E	125
BYW29	109	BZX84C2V4L	122	BZX84C6V8L	125
BYW51	109	BZX84C2V7E	122	BZX84C75E	133
BYW80	109	BZX84C2V7L	122	BZX84C75L	133
BZG03C15	128, 133, 169, 174	BZX84C30E	131	BZX84C7V5E	126
BZG03C150	133	BZX84C30L	131	BZX84C7V5L	126
BZX84B12	127	BZX84C33E	131	BZX84C8V2E	126
BZX84B15	128	BZX84C33L	131	BZX84C8V2L	126
BZX84B16	128	BZX84C36E	131	BZX84C9V1E	126
BZX84B18	129	BZX84C36L	131	BZX84C9V1L	126
BZX84B22	130	BZX84C39E	131	C106	254
BZX84B24	130	BZX84C39L	131	C122F1	254
BZX84B27	133	BZX84C3V0E	122	C3/D3	82
BZX84B5V1	124	BZX84C3V0L	122	CAT102	263
BZX84B5V6	124	BZX84C3V3E	123	CAT1021	210
BZX84B6V2	125	BZX84C3V3L	123	CAT1022	210
BZX84B6V8	125	BZX84C3V6E	123	CAT1023	210
BZX84B7V5	126	BZX84C3V6L	123	CAT1024	210
BZX84B8V2	126	BZX84C3V9E	123	CAT1025	210
BZX84B9V1	126	BZX84C3V9L	123	CAT1026	210

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
CAT1027	210	CAT25010	212	CAT4103	139
CAT1161	210	CAT25020	212	CAT4104	139
CAT1162	210	CAT25040	212	CAT4106	140
CAT1163	210	CAT25080	212	CAT4109	139
CAT1232LP	265	CAT25128	212	CAT4137	140
CAT13001	210	CAT25160	212	CAT4139	140
CAT130044	265	CAT25256	212	CAT4201	140
CAT1320	210	CAT25320	212	CAT4237	140
CAT1321	210	CAT25512	212	CAT4238	140
CAT14002	210	CAT25640	212	CAT4240	140
CAT14004	210	CAT25AM02	212	CAT5110	104
CAT14008	210	CAT25M01	212	CAT5111	104
CAT14016	210	CAT25M02	212	CAT5112	104
CAT15002	210	CAT310	139	CAT5113	104
CAT15004	210	CAT32	140	CAT5114	104
CAT15008	210	CAT3200	84	CAT5115	104
CAT15016	210	CAT3200HU2	84	CAT5116	104
CAT1640	210	CAT3211	156	CAT5118	105
CAT1641	210	CAT3224	138	CAT5119	105
CAT1832	265	CAT34C02	212	CAT5120	104
CAT2300	262	CAT34TS02	252	CAT5121	105
CAT24AA01	210	CAT34TS04	252	CAT5122	105
CAT24AA02	210	CAT3604A	138	CAT5123	105
CAT24AA04	210	CAT3604V	138	CAT5124	105
CAT24AA08	210	CAT3606	138	CAT5125	105
CAT24AA16	210	CAT3612	138	CAT5126	104
CAT24C01	211	CAT3626	138	CAT5127	105
CAT24C02	211	CAT3636	138	CAT5128	104
CAT24C03	211	CAT3643	138	CAT5132	104
CAT24C04	211	CAT3644	138	CAT5133	104
CAT24C05	211	CAT3648	138	CAT5137	104
CAT24C08	211	CAT3649	138	CAT5138	104
CAT24C128	211	CAT3661	138	CAT5140	104
CAT24C16	211	CAT4002A	139	CAT5171	104
CAT24C164	211	CAT4003B	139	CAT5172	104
CAT24C208	211	CAT4004	139	CAT5221	104
CAT24C21	211	CAT4004A	139	CAT5241	104
CAT24C256	211	CAT4004B	139	CAT5251	105
CAT24C32	211	CAT4008	139	CAT5259	105
CAT24C512	212	CAT4016	139	CAT5261	104
CAT24C64	212	CAT4026	139	CAT5271	104
CAT24M01	212	CAT4101	139	CAT5273	104

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
CAT5401	104	CAT93C56	213	CAX809	266
CAT5409	104	CAT93C57	213	CAX810	266
CAT5411	104	CAT93C66	213	CM1205	164
CAT5419	104	CAT93C76	213	CM1213	164
CAT6095	252	CAT93C76B	213	CM1213A	164
CAT6201	96	CAT93C86	213	CM1213A-04SO	162
CAT6202	97	CAT93C86B	213	CM1214A	161
CAT6217	93	CAT9532	206	CM1216	164
CAT6218	96	CAT9534	206	CM1223	161
CAT6219	97	CAT9552	206	CM1224	164
CAT6220	96	CAT9554	206	CM1230	164
CAT6221	96	CAT9554A	206	CM1231-02SO	160
CAT6241	101	CAT9555	206	CM1233	164
CAT6243	99	CAT9557	206	CM1234	164
CAT64LC40	213	CAV24C02	213	CM1235	164
CAT6500	263	CAV24C04	213	CM1236	164
CAT660	84	CAV24C08	213	CM1241	162
CAT661	84	CAV24C128	213	CM1242-07	160
CAT705	266	CAV24C16	213	CM1242-33	160
CAT706	267	CAV24C256	213	CM1248-04QG	162
CAT803	265	CAV24C32	213	CM1248-08DE	164
CAT808	265	CAV24C512	213	CM1250	162
CAT809	265	CAV24C64	213	CM1263-02SE	161
CAT810	265	CAV24M01	213	CM1263-06DE	163
CAT811	265	CAV25010	213	CM1293A	161
CAT812	265	CAV25020	213	CM1293A-04SO	162
CAT813	266	CAV25040	214	CM1402	166
CAT823	266	CAV25080	214	CM1422	166
CAT824	265	CAV25128	214	CM1442	167
CAT825	266	CAV25160	214	CM1443-04	166
CAT853	265	CAV25256	214	CM1443-08	166
CAT863	265	CAV25320	214	CM1451	165
CAT869	265	CAV25512	214	CM1457	165
CAT8710	267	CAV25640	214	CM1624	165
CAT872	265	CAV25M01	214	CM1641	162
CAT874	265	CAV4201	140	CM1693	165
CAT8801	265	CAV93C46	214	CM2006	163
CAT885	267	CAV93C56	214	CM2009	163
CAT8900	264	CAV93C66	214	CM2020-00TR	164
CAT93C46	213	CAV93C76	214	CM2020-01TR	164
CAT93C46B	213	CAV93C86	214	CM6136	170
CAT93C46R	213	CAX803	265	CM6305	166



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
CPH3348	201	CS5172	89	DTA123TE	31
CPH3350	200	CS5173	89	DTA123TM3	31
CPH3351	199	CS8101	92	DTA124EM3	31
CPH3355	200	CS8126	98	DTA124XM3	31
CPH3356	200	CS8182	95	DTA143EE	31
CPH3360	200	CS8183	95	DTA143EM3	31
CPH3448	187	CS8190	156	DTA143TE	31
CPH3455	191	CS8361	95	DTA143TM3	31
CPH3456	186	CS8363	92	DTA143ZE	31
CPH3457	187	CSPEMI201A	165	DTA143ZM3	31
CPH3910	181	CSPEMI202A	165	DTA144EM3	31
CPH5512	108	CSPEMI205	165	DTA144TM3	31
CPH5617	184	CSPEMI307A	166	DTA144WM3	31
CPH5871	197	CSPEMI400	166	DTC113EE	31
CPH5901	182	D44H11	30, 45	DTC113EM3	31
CPH5902	182	D44H8	45	DTC114EE	31
CPH5905	182	D44VH	48	DTC114EM3	31
CPH6337	201	D45H11	30, 45	DTC114TE	31
CPH6341	200	D45H8	45	DTC114TM3	31
CPH6347	200	D45VH	48	DTC114YE	31
CPH6350	200	DA121T	120	DTC114YM3	31
CPH6354	199	DAN222	121	DTC115EM3	31
CPH6355	200	DAN222M3	121	DTC115TM3	31
CPH6442	193	DAP222	121	DTC123EE	31
CPH6443	191	DAP222M3	121	DTC123EM3	31
CPH6444	193	DF3A6.8FU	161, 167	DTC123JE	31
CPH6445	193	DF6A6.8	125, 162	DTC123JM3	31
CPH6635	183	DSM10G	108	DTC123TE	31
CPH6636R	184	DTA113EE	31	DTC123TM3	31
CPH6904	181	DTA113EM3	31	DTC124EM3	31
CS3351	150	DTA114EE	31	DTC124XM3	31
CS3361	150	DTA114EM3	31	DTC143EE	31
CS51021A	84	DTA114TE	31	DTC143EM3	31
CS51022A	84	DTA114TM3	31	DTC143TE	31
CS51031	85	DTA114YE	31	DTC143TM3	31
CS51221	8	DTA114YM3	31	DTC143ZE	31
CS5124	6, 84	DTA115EM3	31	DTC143ZM3	31
CS51411	87	DTA115TM3	31	DTC144EM3	31
CS51412	87	DTA123EE	31	DTC144TM3	31
CS51413	87	DTA123EM3	31	DTC144WM3	31
CS51414	87	DTA123JE	31	ECH8308	201
CS5171	87	DTA123JM3	31	ECH8309	201

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
ECH8310	200	EMD5DXV6	52	ESD11L	161
ECH8315	200	EMF18XV6	52	ESD11N5	160
ECH8320	200	EMF5XV6	52	ESD4238	164
ECH8410	187	EMG2DXV5	51	ESD5205	160
ECH8419	191	EMH1303	201	ESD5384	163
ECH8420	186	EMH1307	200	ESD5481	160, 177
ECH8601M	184	EMH1405	187	ESD5482	160
ECH8602M	184	EMH2308	198	ESD5484	160, 177
ECH8649	183	EMH2314	198	ESD5B	160, 175
ECH8651R	184	EMH2407	183	ESD5Z	161, 175
ECH8652	198	EMH2408	184	ESD7002	161, 171
ECH8653	183	EMH2409	184	ESD7004	162
ECH8654	198	EMH2411R	184	ESD7008	161
ECH8655R	184	EMH2412	184	ESD7016	161
ECH8656	183	EMH2418R	184	ESD7104	160
ECH8657	185	EMH2604	183	ESD7181	160
ECH8659	184	EMH2801	203	ESD7381	161
ECH8660	183	EMI2121	164	ESD7383	160
ECH8661	183	EMI2124	165	ESD7481	160
ECH8662	185	EMI2180	164	ESD7484	160
ECH8663R	184	EMI4162	165	ESD7554	162
ECH8664R	184	EMI4172	164	ESD7951	160
ECH8667	198	EMI4182	164	ESD7C	161
ECH8668	183	EMI4182MU	165	ESD7L	161, 174
ECH8672	198	EMI4183	165	ESD7M5.0DT5G	161, 174
ECH8690	183	EMI4183MU	165	ESD8004	162
ECH8693R	184	EMI4184	165	ESD8006	163
ECH8697R	184	EMI4192MTTAG	164	ESD8008	164
EFC4612R	184	EMI4193	165	ESD8040	164
EFC4619R	143	EMI520	166	ESD8104	162
EFC4621R	143	EMI6316	166	ESD8472	160
EFC4626R	184	EMI7204MU	165	ESD9B	160, 175
EFC4627R	183	EMI7206MU	165	ESD9C	161
EFC6601R	184	EMI7208MU	165	ESD9L	161, 167
EFC6602R	183	EMI9106	167	ESD9M	161, 175
EFC6604R	183	EMT1DXV6	49	ESD9P	161
EFC6611R	183	EMX1DXV6	49	ESD9R3	161, 175
EMC2DXV5	52	EMX2DXV6	49	ESD9X12S	161, 169
EMC3DXV5	52	ESD1014	160, 175	ESD9X3.3S	161, 167
EMC4DXV5	52	ESD11A3.3	161	ESD9X5.0S	161, 167
EMC5DXV5	52	ESD11A5	161	ESD9X7.0	161, 168
EMD4DXV6	52	ESD11B	160	ESDR0502B	162

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
ESDR0502N	162	LA4815VH	14	LB11600JV	145
ESDR0524P	162	LA5724MC	87	LB11620GP	145
ESDR7534	168	LA5735MC	87	LB11620T	145
FS6128-04	75	LA5744	87	LB11650	144
FS6128-07	75	LA5744MP	87	LB11651	144
FS6370	76	LA5744TP	87	LB11660FV	145
FS6377	76	LA5756	87	LB11660RV	145
FS7140	75	LA5757TP	87	LB11668MC	156
FS7145	75	LA5771MP	87	LB11669MC	156
FST3125	247	LA5774	87	LB11683H	145
FST3126	247	LA5774MC	87	LB11685AV	145
FW216A	185	LA5774MP	87	LB11685VH	145
FW217A	198	LA5779	87	LB11693H	146
FW344A	183	LA5779MP	87	LB11693JH	146
FW4604	183	LA5797MC	84	LB11696V	146
HBL21000	160	LA59700MC	99	LB11697V	146
HN1B01FDW1	49	LA6500	16	LB11822	146
HN2D02FUTW1	121	LA6571	18	LB11826	146
I2T100	82	LA6581DM	156	LB11847	151
I2T30 (E)	82	LA6581MC	145	LB11850VA	146
I3T25	82	LA6581T	145	LB11851FA	156
I3T50	82	LA6583MC	145	LB11851MC	156
I3T80	82	LA6584JA	145	LB11852FV	146
I4T 45V75V	82	LA6584M	145	LB11852RV	146
IBIS4-6600	222	LA6585FA	156	LB11861MC	146
IMD10A	51	LA6585MC	145	LB11862MC	156
IMH20TR1	32	LA6586FA	145	LB11867FV	146
J112	181	LA6587FA	145	LB11867RV	146
J310	181	LA6588MC	145	LB11868V	146
LA0151CS	222	LA6595DM	156	LB11870	146
LA0152CS	222	LA6595T	145	LB11872H	146
LA4425A	14	LA6597FMC	156	LB11873	146
LA4425PV	14	LA6681MC	156	LB11876	146
LA4450	14	LA72730	23	LB11899J	156
LA4535MC	14	LA72910V	28	LB11920	146
LA4537MC	14	LA72912V	28	LB11921T	146
LA4625	14	LA72914V	28	LB11922	146
LA4628	15	LA73031V	23	LB11923V	146
LA4631VC	14	LA73076V	18	LB11946	151
LA4708N	14	LA74309FA	15	LB11948T	151
LA4725	15	LA7784	28	LB11961	146
LA4814JA	14	LA8153QA	28	LB11961V	146

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
LB11964FA	156	LB1948MC	155	LC75829PW	137
LB11967V	147	LB1960MC	157	LC75832E	136
LB11970FV	147	LB1962MC	157	LC75832W	136
LB11970RV	147	LB1973JA	151	LC75833E	136
LB11983	157	LB1975	147	LC75833W	136
LB11988H	148	LB1976	147	LC75836W	137
LB11988HR	148	LB1980H	147	LC75839PW	137
LB11988V	147	LB1980JH	147	LC75843UGA	136
LB1205M	148	LB8503V	147	LC75844M	138
LB1638MC	157	LB8649W	155	LC75847T	137
LB1830MC	144	LC03-6	164, 167	LC75852E	136
LB1836M	155	LC450029PKB	137	LC75852W	136
LB1837M	155	LC70310KBG	26	LC75857W	137
LB1838JM	151	LC703200AW	26	LC75863W	137
LB1838M	151	LC709004A	206	LC75878W	136
LB1843V	144	LC709006A	206	LC75879PT	137
LB1845	151	LC709201F	262	LC75886PW	137
LB1846MC	151	LC709202F	262	LC75890W	137
LB1847	151	LC709203F	262	LC75897PW	137
LB1848MC	151	LC717A00AJ	223	LC78211	20
LB1860M	147	LC717A00AR	223	LC79401KNE	138
LB1861M	147	LC717A10AJ	223	LC79430KNE	138
LB1862MC	157	LC717A10AR	223	LC79431KNE	138
LB1863M	147	LC74731W	28	LC79451KB	138
LB1867M	147	LC74732W	28	LC823430TA	26
LB1868M	147	LC74772V	28	LC824204-13YB	21
LB1876	147	LC749000AT	28	LC824206XA	21
LB1909MC	151	LC749000PT	28	LC877917A	218
LB1927	147	LC749402BG	28	LC87F0808A	219
LB1928	147	LC749402PT	28	LC87F0A08A	219
LB1929	147	LC75700T	138	LC87F0N04A	219
LB1930MC	144	LC75805PE	136	LC87F1A32A	218
LB1933M	151	LC75806PT	137	LC87F1D64A	218
LB1935FA	157	LC75809PT	137	LC87F1HC8A	218
LB1936V	155	LC75810E	136	LC87F1JJ2A	218
LB1937T	151	LC75810T	136	LC87F1JJ4A	218
LB1938FA	144	LC75812PT	138	LC87F1JJ8A	218
LB1939T	151	LC75813E	137	LC87F1K64A	218
LB1940T	151	LC75813T	137	LC87F1L16A	218
LB1945D	151	LC75814V	138	LC87F1M16A	218
LB1945H	151	LC75818PT	136	LC87F2608A	219
LB1947VC	157	LC75829PE	137	LC87F2C64A	219

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
LC87F2G08A	219	LE25S80QH	215	LM4040	264
LC87F2H08A	219	LE25S81QE	215	LM4041	264
LC87F2J32A	219	LE25U20AMB	215	LM833	17
LC87F2W48A	219	LE25U40CMC	215	LMV301	16
LC87F5G32A	219	LE25U40CQE	215	LMV321	16
LC87F5JC8A	219	LE25U40CQH	215	LMV324	18
LC87F5LP6A	219	LE25U81AQE	215	LMV331	15
LC87F5M64A	219	LM201A	16	LMV339	16
LC87F5R96B	220	LM211	15	LMV358	17
LC87F5WC8A	220	LM224	17	LMV393	15
LC87F76C8A	218	LM239	16	LMV821	16
LC87F7932B	218	LM2574	87	LMV824	18
LC87F7DC8A	218	LM2575	87	LMV931	16
LC87F7NC8A	218	LM2576	87	LMV932	17
LC87F7NJ2A	218	LM258	17	LMV981	16
LC87F7NP6A	219	LM2594	87	LMV982	17
LC87FBG08A	220	LM2595	87	LP2950	92
LC87FBK08A	220	LM2596	87	LP2951	92
LC87FC096A	220	LM285	264	LUPA1300-2	222
LC88F42A0PAU	219	LM2901	16	LUPA300	222
LC88F52H0A	220	LM2902	17	LUPA3000	222
LC88F58B0A	220	LM2902V	18	LUPA4000	222
LC88F83B0A	219	LM2903	15	LV0104CS	222
LC88FC2H0A	220	LM2903V	15	LV0111CF	222
LC898111AXB	148	LM2904	17	LV47004P	14
LC898113	149	LM2904V	17	LV47009P	14
LC898119XC	148	LM293	15	LV47011P	14
LC898121XA	157	LM2931	92	LV47017P	14
LC898122XA	149	LM301A	16	LV47022P	14
LC898212XC	157	LM311	15	LV4904V	14
LC898212XD	157	LM317	100	LV4910T	15
LC898215XA	149	LM317L	92	LV49152V	14
LC898300XA	149	LM317M	97	LV49157V	14
LC898301AXA	157	LM324	18	LV4924VH	15
LC898301XA	157	LM324A	18	LV49821VH	14
LE24162LBXA	214	LM337	91	LV5011MD	139
LE24512AQF	214	LM339	16	LV5012MD	139
LE2464C	214	LM358	17	LV5026MC	140
LE24CBK23MC	214	LM385	264	LV5029MD	140
LE25CB643TT-BH	214	LM385B	264	LV5044V	85
LE25S40AMC	215	LM392	17	LV5050NV	85
LE25S40MB	215	LM393	15	LV5052V	85

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
LV5061V	85	LV5771QA	85	LV8498CT	157
LV5068V	85	LV58063MC	87	LV8548MC	152
LV5069JA	85	LV5980MC	87	LV8549MC	152
LV51130T	263	LV5980MD	90	LV8702V	152
LV51131T	263	LV71081E	23	LV8711T	156
LV5207LP	138	LV7109E	23	LV8712T	152
LV5216CS	138	LV8011V	144	LV8713T	152
LV5217GP	139	LV8012T	155	LV8716QA	157
LV52204MT	140	LV8013T	144	LV8727	152
LV52204MU	140	LV8014T	155	LV8729V	152
LV52205MU	140	LV8018W	144	LV8731V	156
LV52206XA	140	LV8019LP	144	LV8732V	156
LV5232VH	141	LV8019V	144	LV8734V	156
LV5256GP	90	LV8044LP	151	LV8735V	156
LV5609LP	141	LV8062FA	157	LV8736V	156
LV5609V	141	LV8063FA	157	LV8740V	156
LV56351HA	87	LV8068V	147	LV8741V	156
LV56351JA	87	LV8075LP	144	LV8746V	152
LV5636VH	87	LV8080LP	155	LV8747TA	157
LV56801P	100	LV8086T	155	LV8760T	144
LV5680NPVC	100	LV8094CT	149	LV8761V	144
LV5680P	100	LV8104V	147	LV8762T	144
LV5681P	100	LV8111V	157	LV8771VH	152
LV5682P	101	LV8112V	147	LV8772	152
LV56831P	101	LV8121V	157	LV8773	152
LV5683P	101	LV8127T	157	LV8774Q	157
LV56841PVD	101	LV8136V	147	LV8800V	148
LV5684NPVD	101	LV8139JA	157	LV8804FV	148
LV5684PVC	101	LV8163QA	157	LV8804V	148
LV5684PVD	101	LV8400V	144	LV8805SV	148
LV5686PVC	101	LV8401V	144	LV8805V	148
LV5692P	101	LV8402GP	155	LV8806QA	148
LV5693P	101	LV8402V	155	LV8824QA	148
LV5694P	101	LV8405V	155	LV8827LFQA	157
LV5695P	101	LV8406T	156	LV8829LFQA	157
LV5696P	100	LV8411GR	156	LV8850GA	148
LV5725JA	85	LV8413GP	156	LV8860V	148
LV5744V	85	LV8414CS	151	M1MA141WA	121
LV5749NV	85	LV8415CB	157	M1MA142WA	121
LV5761V	85	LV8415XA	157	M1MA142WK	121
LV5768M	87	LV8417CS	144	M1MA151K	120
LV5768V	85	LV8491CT	149	M1MA151WA	121

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
M1MA151WK	121	MAC4DSM	256	MBR130LSF	115
M1MA152K	120	MAC4DSN	256	MBR140ESF	116
M1MA152WA	121	MAC4DSN-001	256	MBR140SF	116
M1MA152WK	121	MAC8D	255	MBR150	117
MA3075	168	MAC8M	256	MBR1535CT	115
MAC08B	255	MAC8N	256	MBR1545CT	116
MAC08M	255	MAC8SD	255	MBR160	117
MAC12D	255	MAC8SM	256	MBR16100CT	118
MAC12HCD	255	MAC8SN	256	MBR1635	116
MAC12HCM	256	MAC97A4	255	MBR1645	116
MAC12HCN	256	MAC97A6	255	MBR1H100SF	118
MAC12M	256	MAC97A8	255	MBR20200CT	119
MAC12N	256	MAC997A6	255	MBR2030CTL	115
MAC12SM	256	MAC997A8	255	MBR2080CT	117
MAC12SN	256	MAC997B6	255	MBR2090CT	117
MAC15-10	256	MAC997B8	255	MBR20H100CT	118
MAC15-8	256	MAC9D	255	MBR20L45	116
MAC15A10	256	MAC9M	256	MBR20L60CTG	117
MAC15A6	255	MAC9N	256	MBR230LSFT1G	115
MAC15A8	256	MAX1720	84	MBR2515L	115
MAC15M	256	MAX708	266	MBR2535CT	116
MAC15N	256	MAX803	265	MBR2535CTL	116
MAC16CM	256	MAX809	265	MBR2545CT	116
MAC16CN	256	MAX810	265	MBR2H100SF	118
MAC16D	255	MBD330DW	114	MBR3045ST	116
MAC16HC	256	MBD54DW	114	MBR3045WT	116
MAC16HCD	255	MBD770DW	114	MBR30H100CT	118
MAC16HCN	256	MBR0520L	115	MBR30L45	116
MAC16M	256	MBR0530	115	MBR30L60CTG	117
MAC16N	256	MBR0540	116	MBR3100	118
MAC210A10	256	MBR10100	117	MBR340	116
MAC210A8	256	MBR1035	115	MBR350	117
MAC212A10	256	MBR1045	116	MBR360	117
MAC212A8	256	MBR1060	117	MBR4015CTL	115
MAC228A10	256	MBR1080	117	MBR4015LWT	115
MAC228A4	255	MBR1090	117	MBR40250	119
MAC228A6	255	MBR10L60CTG	117	MBR40250T	119
MAC228A8	256	MBR1100	118	MBR4045WT	116
MAC4DCM	256	MBR120ESF	115	MBR40H100WT	118
MAC4DCN	256	MBR120LSF	115	MBR40L45	116
MAC4DHM	256	MBR120VLSF	115	MBR40L60CTG	117
MAC4DLM	256	MBR130	115	MBR41H100CT	118

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MBR440MFS	116	MBRB4030	115	MBRS190	117
MBR460MFS	117	MBRB8H100T4G	118	MBRS2040L	116
MBR5100MFS	118	MBRD1035CTL	116	MBRS230L	115
MBR540MFS	116	MBRD320	115	MBRS240L	116
MBR560MFS	117	MBRD330	115	MBRS260T3	117
MBR5H100MFS	118	MBRD340	116	MBRS2H100T3G	118
MBR6045WT	116	MBRD350	117	MBRS3100T3	118
MBR60H100CT	118	MBRD360	117	MBRS3200	119
MBR60L45	116	MBRD5H100T4G	118	MBRS3201	119
MBR7030WT	115	MBRD620CT	115	MBRS340	119
MBR735	116	MBRD630CT	115	MBRS360	117
MBR745	116	MBRD640CT	116	MBRS410ET3	115
MBRA120ET3	115	MBRD650CT	117	MBRS410LT3	115
MBRA130L	115	MBRD660CT	117	MBRS4201	119
MBRA140	116	MBRD835L	116	MBRS540	116
MBRA160T3	117	MBRF10H150CTG	119	MBT2222ADW1	49
MBRA1H100	118	MBRF10L60CTG	117	MBT35200MR6	47
MBRA210ET3	115	MBRF20100CT	118	MBT3904DW1	49
MBRA210LT3	115	MBRF20200CT	119	MBT3906DW1	49
MBRA2H100	118	MBRF2045CTG	117	MBT3946DW1	49
MBRA320T3G	115	MBRF2060CT	117	MBT6429DW1	49
MBRA340	116	MBRF20H150CTG	119	MC100E016	56
MBRAF1100	118	MBRF20L60CTG	117	MC100E101	67
MBRAF1540	116	MBRF2545CT	117	MC100E104	67
MBRAF260	117	MBRF30H100CTG	118	MC100E107	68
MBRAF2H100	118	MBRF30H150CTG	119	MC100E111	57
MBRAF3200	119	MBRF30L60CTG	117	MC100E112	64
MBRAF360	117	MBRF40250T	119	MC100E116	64
MBRAF440	116	MBRM110E	115	MC100E131	66
MBRB1045	116	MBRM110L	115	MC100E136	56
MBRB1545CT	116	MBRM120E	115	MC100E137	56
MBRB20100CT	118	MBRM120L	115	MC100E143	66
MBRB20200CT	119	MBRM130L	115	MC100E150	66
MBRB2060CT	117	MBRM140	116	MC100E151	66
MBRB2515L	115	MBRM1H100	118	MC100E158	68
MBRB2535CTL	116	MBRM2H100	118	MC100E163	70
MBRB2545CT	117	MBRS1100	118	MC100E164	70
MBRB3030CT	115	MBRS120	115	MC100E175	66
MBRB3030CTL	115	MBRS130	115	MC100E195	71
MBRB30H30CT-1	115	MBRS130L	115	MC100E196	71
MBRB30H60CT-1	117	MBRS140	116	MC100E210	61
MBRB40250TG	119	MBRS1540	116	MC100E211	57



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC100E310	57	MC100ELT28	72	MC100EP809	57
MC100E404	67	MC100EP01	67	MC100EP90	72
MC100E431	65	MC100EP016A	56	MC100EP91	72
MC100E446	70	MC100EP05	67	MC100EPT20	71
MC100E451	66	MC100EP08	68	MC100EPT21	71
MC100E452	66	MC100EP101	67	MC100EPT22	72
MC100E457	68	MC100EP105	67	MC100EPT23	72
MC100EL01	67	MC100EP11	57	MC100EPT24	71
MC100EL04	67	MC100EP116	64	MC100EPT25	71
MC100EL05	67	MC100EP131	66	MC100EPT26	71
MC100EL07	68	MC100EP139	56	MC100EPT622	72
MC100EL11	57	MC100EP14	57	MC100H642	57
MC100EL12	62	MC100EP140	75	MC100H643	57
MC100EL13	61	MC100EP142	66	MC100H646	57
MC100EL14	57	MC100EP16	62	MC100H680	64
MC100EL15	57	MC100EP16F	62	MC100LVE111	57
MC100EL16	62	MC100EP16T	62	MC100LVE164	70
MC100EL1648	78	MC100EP16VA	62	MC100LVE210	57
MC100EL17	64	MC100EP16VB	62	MC100LVE222	61
MC100EL29	65	MC100EP16VC	62	MC100LVE310	57
MC100EL30	65	MC100EP16VS	62	MC100LVEL01	67
MC100EL31	65	MC100EP16VT	62	MC100LVEL05	67
MC100EL32	56	MC100EP17	64	MC100LVEL11	58
MC100EL33	56	MC100EP195	71	MC100LVEL12	62
MC100EL34	56	MC100EP195B	71	MC100LVEL13	61
MC100EL35	66	MC100EP196	71	MC100LVEL14	58
MC100EL38	56	MC100EP196B	71	MC100LVEL16	62
MC100EL39	56	MC100EP210S	61	MC100LVEL17	64
MC100EL51	65	MC100EP29	65	MC100LVEL29	65
MC100EL52	65	MC100EP31	65	MC100LVEL30	65
MC100EL56	68	MC100EP32	56	MC100LVEL31	65
MC100EL57	69	MC100EP33	56	MC100LVEL32	56
MC100EL58	68	MC100EP35	66	MC100LVEL33	56
MC100EL59	68	MC100EP40	75	MC100LVEL34	56
MC100EL90	72	MC100EP445	70	MC100LVEL37	56
MC100EL91	72	MC100EP446	70	MC100LVEL38	56
MC100ELT20	71	MC100EP451	66	MC100LVEL39	56
MC100ELT21	71	MC100EP51	65	MC100LVEL40	75
MC100ELT22	72	MC100EP52	65	MC100LVEL51	65
MC100ELT23	72	MC100EP56	68	MC100LVEL56	68
MC100ELT24	71	MC100EP57	69	MC100LVEL58	68
MC100ELT25	71	MC100EP58	68	MC100LVEL59	68

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC100LVEL90	72	MC10E196	71	MC10EP139	56
MC100LVEL91	72	MC10E211	58	MC10EP142	66
MC100LVEL92	72	MC10E404	67	MC10EP16	62
MC100LVELT20	71	MC10E416	64	MC10EP16T	62
MC100LVELT22	72	MC10E431	65	MC10EP16VA	63
MC100LVELT23	72	MC10E446	70	MC10EP17	64
MC100LVEP05	67	MC10E451	66	MC10EP195	71
MC100LVEP11	58	MC10E452	66	MC10EP29	65
MC100LVEP111	58	MC10E457	68	MC10EP31	65
MC100LVEP14	58	MC10EL01	67	MC10EP32	56
MC100LVEP16	62	MC10EL04	67	MC10EP33	57
MC100LVEP210	61	MC10EL05	67	MC10EP35	66
MC100LVEP34	56	MC10EL07	68	MC10EP445	70
MC10E016	56	MC10EL11	58	MC10EP446	70
MC10E101	67	MC10EL12	62	MC10EP451	66
MC10E104	67	MC10EL15	58	MC10EP51	65
MC10E107	68	MC10EL16	62	MC10EP52	65
MC10E111	58	MC10EL31	65	MC10EP56	68
MC10E112	64	MC10EL32	56	MC10EP57	69
MC10E116	64	MC10EL33	56	MC10EP58	68
MC10E122	64	MC10EL34	56	MC10EP89	62
MC10E131	66	MC10EL35	66	MC10EP90	72
MC10E136	56	MC10EL51	65	MC10EPT20	71
MC10E137	56	MC10EL52	65	MC10H016	56
MC10E141	66	MC10EL57	69	MC10H101	67
MC10E142	66	MC10EL58	68	MC10H102	67
MC10E143	66	MC10EL89	61	MC10H103	67
MC10E150	66	MC10ELT20	71	MC10H104	67
MC10E151	66	MC10ELT21	71	MC10H105	67
MC10E154	68	MC10ELT22	72	MC10H107	68
MC10E155	68	MC10ELT24	71	MC10H115	64
MC10E156	69	MC10ELT25	71	MC10H116	64
MC10E157	68	MC10ELT28	72	MC10H123	64
MC10E158	68	MC10EP01	67	MC10H124	72
MC10E163	70	MC10EP016	56	MC10H125	72
MC10E164	70	MC10EP05	67	MC10H131	65
MC10E1651	15	MC10EP08	68	MC10H135	66
MC10E1652	15	MC10EP101	67	MC10H136	56
MC10E167	68	MC10EP105	67	MC10H141	66
MC10E171	69	MC10EP11	58	MC10H158	68
MC10E175	66	MC10EP116	64	MC10H164	70
MC10E195	71	MC10EP131	66	MC10H176	66

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC10H350	72	MC14040B	226	MC14528B	247
MC10H351	72	MC14042B	233	MC14532B	244
MC10H600	71	MC14043B	233	MC14536B	227
MC10H601	71	MC14044B	233	MC14538B	247
MC10H602	72	MC14046B	78	MC14541B	227
MC10H604	72	MC14049B	230	MC14543B	233
MC10H605	72	MC14049UB	230	MC14549B	234
MC10H640	58	MC14050B	230	MC1455	227
MC10H641	58	MC14051B	23	MC14551B	23
MC10H643	58	MC14052B	22	MC14555B	245
MC10H645	58	MC14053B	23	MC14556B	245
MC10H646	58	MC14060B	226	MC14557B	234
MC10LVEP11	58	MC14066B	23	MC14559B	234
MC10LVEP16	63	MC14067B	23	MC1455B	227
MC10SX1130	62	MC14069UB	239	MC14569B	226
MC10SX1189	62	MC14070B	244	MC14572UB	230, 243
MC10SX1190	62	MC14071B	243	MC14584B	239
MC12026A	57	MC14073B	236	MC14585B	227
MC12080	57	MC14076B	234	MC1496	28
MC12093	57	MC14077B	243	MC1496B	28
MC14001B	242	MC14081B	236	MC3302	16
MC14001UB	242	MC14082B	236	MC33025	8
MC14007UB	226	MC14093B	236	MC3303	18
MC14008B	226	MC14094B	234	MC33033	148
MC14011B	240	MC14099B	233	MC33035	148
MC14011UB	236	MC14106B	239	MC33039	148
MC14012B	240	MC1413	141	MC33060A	6
MC14013B	232	MC14174B	232	MC33063A	89
MC14014B	234	MC14175B	232	MC33064	265
MC14015B	234	MC14490	226	MC33067	6
MC14016B	23	MC14503B	230	MC33071	16
MC14017B	226	MC14504B	248	MC33072	17
MC14018B	226	MC14511B	233	MC33074	18
MC14020B	226	MC14512B	244	MC33077	17
MC14021B	234	MC14514B	244	MC33078	17
MC14022B	226	MC14515B	244	MC33079	18
MC14023B	240	MC14516B	226	MC33151	142
MC14024B	226	MC14517B	234	MC33152	142
MC14025B	242	MC14518B	226	MC33153	142
MC14027B	233	MC14520B	226	MC33161	267
MC14028B	244	MC14521B	227	MC33163	90
MC14029B	226	MC14526B	226	MC33164	266

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC33166	90	MC74AC11	236	MC74ACT153	245
MC33167	87	MC74AC125	229	MC74ACT157	246
MC33171	16	MC74AC132	241	MC74ACT161	226
MC33172	17	MC74AC138	244	MC74ACT163	226
MC33174	18	MC74AC139	245	MC74ACT20	240
MC33178	17	MC74AC14	239	MC74ACT240	230
MC33179	18	MC74AC157	246	MC74ACT241	230
MC33201	16	MC74AC161	226	MC74ACT244	230
MC33202	17	MC74AC163	226	MC74ACT245	247
MC33204	18	MC74AC20	240	MC74ACT253	245
MC33262	10	MC74AC240	230	MC74ACT257	246
MC33269	98	MC74AC244	230	MC74ACT259	233
MC33272A	17	MC74AC245	247	MC74ACT273	232
MC33274A	18	MC74AC253	245	MC74ACT32	243
MC33275	96	MC74AC257	246	MC74ACT373	233
MC33363A	10	MC74AC259	233	MC74ACT374	232
MC33363B	10	MC74AC273	232	MC74ACT377	232
MC33364	6	MC74AC32	242	MC74ACT540	230
MC33368	10	MC74AC373	233	MC74ACT541	230
MC33375	96	MC74AC374	232	MC74ACT564	233
MC33761	91	MC74AC377	232	MC74ACT573	234
MC33762	91	MC74AC4040	226	MC74ACT574	232
MC3403	18	MC74AC540	230	MC74ACT640	247
MC34060A	8	MC74AC541	230	MC74ACT646	247
MC34063A	89	MC74AC573	233	MC74ACT652	247
MC34064	265	MC74AC574	232	MC74ACT74	232
MC34071	16	MC74AC646	247	MC74ACT86	244
MC34071A	16	MC74AC652	247	MC74HC00A	241
MC34072	17	MC74AC74	232	MC74HC02A	242
MC34072A	17	MC74AC86	244	MC74HC03A	241
MC34074	18	MC74ACT00	241	MC74HC04A	239
MC34074A	18	MC74ACT02	242	MC74HC05A	230
MC34164	266	MC74ACT04	239	MC74HC08A	236
MC34167	87	MC74ACT05	230	MC74HC10A	240
MC34262	10	MC74ACT08	236	MC74HC112A	233
MC34268	98	MC74ACT10	240	MC74HC11A	236
MC74AC00	240	MC74ACT11	236	MC74HC125A	229
MC74AC02	242	MC74ACT125	229	MC74HC126A	229
MC74AC04	239	MC74ACT132	241	MC74HC132A	241
MC74AC05	230	MC74ACT138	244	MC74HC138A	244
MC74AC08	236	MC74ACT139	245	MC74HC139A	245
MC74AC10	240	MC74ACT14	239	MC74HC14A	239

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC74HC151A	244	MC74HC4067A	244	MC74HCT74A	232
MC74HC153A	245	MC74HC4094A	235	MC74HCT86A	244
MC74HC157A	246	MC74HC4316A	23	MC74HCU04A	239
MC74HC160A	226, 237	MC74HC4538A	247	MC74LCX00	241
MC74HC161A	226	MC74HC4851A	23	MC74LCX02	242
MC74HC163A	226	MC74HC4852A	22	MC74LCX04	239
MC74HC164A	235	MC74HC540A	231	MC74LCX06	230
MC74HC165A	235	MC74HC541A	231	MC74LCX07	230
MC74HC174A	232	MC74HC573A	234	MC74LCX08	236
MC74HC175A	232	MC74HC574A	232	MC74LCX125	229
MC74HC1G00	239	MC74HC589A	235	MC74LCX138	245
MC74HC1G02	241	MC74HC595A	235	MC74LCX139	245
MC74HC1G04	237	MC74HC597A	235	MC74LCX14	239
MC74HC1G08	235	MC74HC73A	233	MC74LCX157	245
MC74HC1G14	237	MC74HC74A	232	MC74LCX158	246
MC74HC1G32	242	MC74HC86A	244	MC74LCX16240	231
MC74HC1GU04	237	MC74HCT04A	239	MC74LCX16244	231
MC74HC20A	240	MC74HCT08A	236	MC74LCX16245	247
MC74HC238A	244	MC74HCT125A	229	MC74LCX16373	234
MC74HC240A	231	MC74HCT132A	241	MC74LCX16374	233
MC74HC244A	231	MC74HCT138A	245	MC74LCX240	231
MC74HC245A	247	MC74HCT14A	239	MC74LCX244	231
MC74HC251A	244	MC74HCT20A	240	MC74LCX245	247
MC74HC259A	233	MC74HCT241A	231	MC74LCX257	246
MC74HC273A	232	MC74HCT244A	231	MC74LCX258	246
MC74HC30A	239	MC74HCT245A	247	MC74LCX32	243
MC74HC32A	243	MC74HCT259A	237	MC74LCX373	234
MC74HC365A	230	MC74HCT273A	232	MC74LCX374	233
MC74HC367A	230	MC74HCT32A	243	MC74LCX540	231
MC74HC373A	234	MC74HCT365A	230, 237	MC74LCX541	231
MC74HC374A	232	MC74HCT366A	230, 237	MC74LCX573	234
MC74HC377A	232	MC74HCT373A	234	MC74LCX574	233
MC74HC390A	226	MC74HCT374A	233	MC74LCX74	232
MC74HC393A	226	MC74HCT4051A	246	MC74LCX86	244
MC74HC4020A	226	MC74HCT4066A	22, 246	MC74LCXU04	239
MC74HC4040A	226	MC74HCT4094A	235	MC74LV594A	235
MC74HC4046A	78	MC74HCT4851A	246	MC74LVX00	241
MC74HC4051A	23	MC74HCT4852A	246	MC74LVX02	242
MC74HC4052A	22	MC74HCT541A	231	MC74LVX04	239
MC74HC4053A	22	MC74HCT573A	234	MC74LVX08	236
MC74HC4060A	226	MC74HCT574A	233	MC74LVX125	229
MC74HC4066A	22	MC74HCT595A	235	MC74LVX132	241

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC74LVX138	245	MC74VHC14	239	MC74VHC4053	245
MC74LVX139	245	MC74VHC157	246	MC74VHC4066	23
MC74LVX14	239	MC74VHC1G00	240	MC74VHC4316	246
MC74LVX157	246	MC74VHC1G01	240	MC74VHC50	230
MC74LVX240	231	MC74VHC1G02	241	MC74VHC540	231
MC74LVX244	231	MC74VHC1G03	241	MC74VHC541	231
MC74LVX245	247	MC74VHC1G04	237	MC74VHC573	234
MC74LVX257	246	MC74VHC1G05	227	MC74VHC574	233
MC74LVX259	234	MC74VHC1G07	227	MC74VHC595	235
MC74LVX32	243	MC74VHC1G08	235	MC74VHC74	232
MC74LVX373	234	MC74VHC1G09	235	MC74VHC86	244
MC74LVX374	233	MC74VHC1G125	227	MC74VHCT00A	241
MC74LVX4051	245	MC74VHC1G126	227	MC74VHCT02A	242
MC74LVX4052	245	MC74VHC1G132	240	MC74VHCT04A	239
MC74LVX4053	246	MC74VHC1G135	240	MC74VHCT08A	236
MC74LVX4066	22	MC74VHC1G14	237	MC74VHCT125A	229
MC74LVX4245	247, 249	MC74VHC1G32	242	MC74VHCT126A	229
MC74LVX50	230	MC74VHC1G50	227	MC74VHCT132A	241
MC74LVX541	231	MC74VHC1G66	22	MC74VHCT138A	245
MC74LVX573	234	MC74VHC1G86	244	MC74VHCT139A	245
MC74LVX574	233	MC74VHC1GT00	240	MC74VHCT14A	239
MC74LVX74	232	MC74VHC1GT02	241	MC74VHCT157A	246
MC74LVX8051	23	MC74VHC1GT04	237	MC74VHCT240A	231
MC74LVX8053	23	MC74VHC1GT08	235	MC74VHCT244A	231
MC74LVX86	244	MC74VHC1GT125	227	MC74VHCT245A	247
MC74LVXC3245	247	MC74VHC1GT126	227, 236	MC74VHCT257A	229
MC74LVXT4051	245	MC74VHC1GT14	237	MC74VHCT259A	234
MC74LVXT4052	245	MC74VHC1GT32	242	MC74VHCT32A	243
MC74LVXT4053	246	MC74VHC1GT50	227	MC74VHCT373A	234
MC74LVXT4066	22	MC74VHC1GT66	22	MC74VHCT374A	233
MC74LVXT8051	23	MC74VHC1GT86	243	MC74VHCT50A	230
MC74LVXT8053	23	MC74VHC1GU04	237	MC74VHCT541A	231
MC74LVXU04	239	MC74VHC240	231	MC74VHCT573A	234
MC74VHC00	241	MC74VHC244	231	MC74VHCT574A	233
MC74VHC02	242	MC74VHC245	247	MC74VHCT74A	232
MC74VHC04	239	MC74VHC257	246	MC74VHCT86A	244
MC74VHC08	236	MC74VHC259	234	MC74VHCU04	239
MC74VHC125	229	MC74VHC32	243	MC7805	99
MC74VHC126	229	MC74VHC373	234	MC7806	99
MC74VHC132	241	MC74VHC374	233	MC7806A	99
MC74VHC138	245	MC74VHC4051	23	MC7808	99
MC74VHC139	245	MC74VHC4052	245	MC7808A	99

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MC7809	99	MC7905A	91	MCH6341	200
MC7809A	99	MC7906	91	MCH6342	200
MC7812	99	MC7908	91	MCH6344	200
MC7812A	99	MC7908A	91	MCH6351	201
MC7815	99	MC7912	91	MCH6353	201
MC7815A	99	MC7915	91	MCH6421	186
MC7818	99	MC7918	91	MCH6431	187
MC7818A	99	MC7924	91	MCH6436	187
MC7824	99	MC79L05	91	MCH6437	186
MC7824A	99	MC79L12	91	MCH6444	191
MC78FC30	93	MC79L15	91	MCH6445	193
MC78FC33	93	MC79L18	91	MCH6448	186
MC78FC40	93	MC79L24	91	MCH6601	198
MC78FC50	93	MC79M05	91	MCH6602	184
MC78L05A	92	MC79M08	91	MCH6603	198
MC78L08A	92	MC79M12	91	MCH6604	185
MC78L09A	92	MC79M15	91	MCH6613	183
MC78L12A	92	MCH12140	75	MCH6660	183
MC78L15A	92	MCH3333A	200	MCH6661	184
MC78L18A	92	MCH3374	201	MCH6662	184
MC78L24A	92	MCH3375	200	MCH6663	183
MC78LC	91	MCH3376	200	MCH6664	198
MC78M05	97	MCH3377	201	MCK12140	75
MC78M05A	97	MCH3382	201	MCR08X	254
MC78M06	97	MCH3383	201	MCR100X	254
MC78M08	97	MCH3474	187	MCR106	254
MC78M09	98	MCH3475	187	MCR12DCX	254
MC78M12	98	MCH3476	186	MCR12DSM	254
MC78M12A	98	MCH3477	186	MCR12DSN	254
MC78M15	98	MCH3478	187	MCR12X	255
MC78M15A	98	MCH3479	186	MCR16N	255
MC78M18	98	MCH3481	186	MCR218-2	254
MC78M20	98	MCH3484	186	MCR218-4	254
MC78M24	98	MCH3486	193	MCR218-6	254
MC78PC18	93	MCH3914	181	MCR22-8	254
MC78PC25	93	MCH5839	203	MCR25D	255
MC78PC28	93	MCH5908	181	MCR25M	255
MC78PC30	93	MCH6320	201	MCR25N	255
MC78PC33	93	MCH6321	201	MCR310-010	254
MC78PC50	93	MCH6331	200	MCR68-2	255
MC7905	91	MCH6336	201	MCR69-2	255
MC7905.2	91	MCH6337	201	MCR69-3	255

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MCR703A	254	MJD148	46	MJE253	30, 44
MCR706A	254	MJD200	46	MJE270	33
MCR708A	254	MJD210	46	MJE271	33
MCR716	254	MJD243	30, 46	MJE2955T	45
MCR718	254	MJD253	30, 46	MJE3055T	45
MCR72-3	254	MJD2955	46	MJE340	37
MCR72-6	254	MJD3055	46	MJE3439	37
MCR72-8	254	MJD31	46	MJE344	37
MCR8DCM	254	MJD31C	46	MJE350	37
MCR8DCN	254	MJD32	46	MJE371	44
MCR8DSM	254	MJD32C	46	MJE4343	38
MCR8DSN	254	MJD340	37	MJE5730	38
MCR8N	254	MJD350	37	MJE5731	38
MCR8SD	254	MJD41C	46	MJE5731A	38
MCR8SM	254	MJD42C	46	MJE5742	35
MCR8SN	254	MJD44E3	36	MJE5850	38
MDC3105	141	MJD44H11	30, 46	MJE5851	38
MG2040	164	MJD45H11	30, 46	MJE5852	38
MGSF1N02L	186	MJD47	38	MJE700	34
MGSF1N03L	187	MJD50	38	MJE702	34
MGSF2N02EL	186	MJD5731	38	MJE800	34
MJ11012	36	MJD6039	34	MJE802	34
MJ11015	36	MJE13007	38	MJF122	35
MJ11016	36	MJE15028	30	MJF127	35
MJ11021	36	MJE15029	30	MJF15030	30, 38
MJ11022	36	MJE15030	30	MJF15031	30, 38
MJ11028	36	MJE15031	30	MJF18004	38
MJ11032	36	MJE15032	30	MJF18008	38
MJ11033	36	MJE15033	30, 38	MJF2955	45
MJ14002	48	MJE15034	30	MJF3055	45
MJ2955	48	MJE15035	30	MJF31C	43
MJ4502	48	MJE170	43	MJF32C	43
MJ802	48, 3, 46	MJE171	43	MJF44H11	45
MJB42C	46	MJE172	43	MJF45H11	45
MJB44H11	46	MJE180	43	MJF47	38
MJB45H11	46	MJE18004	38	MJF6388	36
MJB5742	35	MJE18008	38	MJH11017	36
MJD112	33	MJE181	43	MJH11019	36
MJD117	33	MJE182	43	MJH11020	36
MJD122	35	MJE200	44	MJH11021	36
MJD127	35	MJE210	44	MJH11022	36
MJD128	35	MJE243	30, 44	MJH6284	36



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MJH6287	36	MM3Z4V7S	124	MM5Z6V2S	125
MJW18020	38	MM3Z5V1	124	MM5Z6V8	125
MKP1V	254	MM3Z5V1S	124	MM5Z6V8S	125
MKP3V	254	MM3Z5V6	124	MM5Z7V5	126
MKP9V160	254	MM3Z5V6S	124	MM5Z8V2	126
MM3Z10V	127	MM3Z6V2	125	MM5Z8V2S	126
MM3Z10VS	127	MM3Z6V2S	125	MM5Z9V1	127
MM3Z11V	127	MM3Z6V8	125	MM5Z9V1S	127
MM3Z12V	127	MM3Z6V8S	125	MMBD101L	113
MM3Z12VS	127	MM3Z7V5	126	MMBD2835L	121
MM3Z13V	128	MM3Z7V5S	126	MMBD2836L	121
MM3Z15V	128	MM3Z8V2	126	MMBD2837L	121
MM3Z15VS	128	MM3Z8V2S	126	MMBD2838L	121
MM3Z16V	129	MM3Z9V1	127	MMBD301L	113
MM3Z16VS	129	MM3Z9V1S	127	MMBD301M3	113
MM3Z18V	129	MM5Z10V	127	MMBD330	113
MM3Z18VS	129	MM5Z12V	127	MMBD352L	114
MM3Z20V	129	MM5Z13V	133	MMBD352W	114
MM3Z22V	130	MM5Z15V	128	MMBD353L	114
MM3Z22VS	130	MM5Z16V	129	MMBD354L	114
MM3Z24V	130	MM5Z18V	129	MMBD355L	114
MM3Z24VS	130	MM5Z20V	129	MMBD452L	114
MM3Z27V	130	MM5Z24V	130	MMBD6050L	120
MM3Z27VS	130	MM5Z27V	130	MMBD6100L	121
MM3Z2V4	122	MM5Z2V4	122	MMBD7000L	121
MM3Z2V7	122	MM5Z2V4S	122	MMBD701L	113
MM3Z30V	131	MM5Z2V7	122	MMBD717L	114
MM3Z33V	131	MM5Z30V	133	MMBD770	113
MM3Z33VS	131	MM5Z33V	131	MMBD914L	120
MM3Z36V	131	MM5Z36V	131	MMBF0201NL	186
MM3Z36VS	131	MM5Z3V0	122	MMBF170L	193
MM3Z39V	132	MM5Z3V3	123	MMBF2201N	186
MM3Z3V0	122	MM5Z3V6	123	MMBF4391L	181
MM3Z3V3	123	MM5Z4V7	132	MMBF4392L	181
MM3Z3V3S	123	MM5Z4V3	123	MMBF4393L	181
MM3Z3V6	123	MM5Z4V7	124	MMBFJ175L	182
MM3Z3V9	123	MM5Z4V7S	124	MMBFJ177L	182
MM3Z3V9S	123	MM5Z5V1	124	MMBFJ309L	182
MM3Z43V	132	MM5Z5V1S	124	MMBFJ310L	182
MM3Z4V3	123	MM5Z5V6	124	MMBFU310L	182
MM3Z4V3S	123	MM5Z5V6S	124	MMBT2131	42
MM3Z4V7	124	MM5Z6V2	125	MMBT2222AL	41

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MMBT2222AM3	41	MMBT918L	39	MMBZ5235B	125
MMBT2222AT	41	MMBTA05L	41	MMBZ5236B	126
MMBT2222AW	41	MMBTA06L	41	MMBZ5237B	126
MMBT2222L	41	MMBTA13L	33	MMBZ5238B	126
MMBT2369AL	40	MMBTA14L	33	MMBZ5239B	127
MMBT2369L	40	MMBTA42L	37	MMBZ5239E	127
MMBT2484L	40	MMBTA55L	41	MMBZ5240B	127
MMBT2907AL	41	MMBTA56L	41	MMBZ5240E	127
MMBT2907AM3	41	MMBTA56W	41	MMBZ5241B	127
MMBT2907AW	41	MMBTA63L	33	MMBZ5242B	127
MMBT3416L	39	MMBTA64L	33	MMBZ5242E	128
MMBT3904L	40	MMBTA70L	39	MMBZ5243B	128
MMBT3904T	40	MMBTA92L	37	MMBZ5244B	128
MMBT3904W	40	MMBTH10-4L	39	MMBZ5245B	128
MMBT3906L	40	MMBTH10L	39	MMBZ5245E	128
MMBT3906T	40	MMBTH10M3	39	MMBZ5246B	129
MMBT3906W	40	MMBZ12V	169	MMBZ5247B	129
MMBT4124L	40	MMBZ15V	169	MMBZ5248B	129
MMBT4126L	40	MMBZ15VD	128	MMBZ5248E	129
MMBT4401L	41	MMBZ18V	170	MMBZ5249B	129
MMBT4401M3	41	MMBZ20V	170	MMBZ5250B	129
MMBT4401W	41	MMBZ27V	171	MMBZ5250E	129
MMBT4403L	41	MMBZ27VAW	171	MMBZ5251B	130
MMBT4403M3	41	MMBZ27VC	130	MMBZ5252B	130
MMBT4403W	41	MMBZ27VCW	171	MMBZ5252E	130
MMBT489L	47, 50	MMBZ33V	172	MMBZ5253B	130
MMBT5087L	39	MMBZ5221B	122	MMBZ5253E	130
MMBT5088L	39	MMBZ5222B	122	MMBZ5254B	130
MMBT5089L	39	MMBZ5223B	122	MMBZ5255B	131
MMBT5401L	37	MMBZ5225B	122	MMBZ5256B	131
MMBT5401W	37	MMBZ5225BL	122	MMBZ5256E	131
MMBT5550L	37	MMBZ5226B	123	MMBZ5257B	131
MMBT5551L	37	MMBZ5227B	123	MMBZ5257E	131
MMBT5551M3	37	MMBZ5228B	123	MMBZ5258B	131
MMBT589L	47, 50	MMBZ5229B	123	MMBZ5258E	131
MMBT6427L	33	MMBZ5230B	124	MMBZ5259B	132
MMBT6428L	40	MMBZ5231B	124	MMBZ5259BL	132
MMBT6429L	40	MMBZ5231BL	124	MMBZ5260B	132
MMBT6517L	37	MMBZ5231E	124	MMBZ5260E	132
MMBT6520L	37	MMBZ5232B	125	MMBZ5261B	132
MMBT6521L	39	MMBZ5233B	125	MMBZ5261E	132
MMBT8099L	41	MMBZ5234B	125	MMBZ5262E	132

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MMBZ5263B	132	MMSZ20	129	MMSZ47	132
MMBZ5263BL	132	MMSZ22	130	MMSZ4700	128
MMBZ5263E	132	MMSZ24	130	MMSZ4701	128
MMBZ5264B	132	MMSZ27	130	MMSZ4701E	128
MMBZ5268B	133	MMSZ27E	131	MMSZ4702	128
MMBZ5270B	133	MMSZ2V4	122	MMSZ4703	129
MMBZ5V6A	125, 167	MMSZ2V7	122	MMSZ4704	129
MMBZ6V2A	125, 167	MMSZ2V7E	122	MMSZ4705	129
MMBZ6V8A	167	MMSZ30	131	MMSZ4706	129
MMDL101	112	MMSZ33	131	MMSZ4707	129
MMDL301	112	MMSZ33E	131	MMSZ4708	130
MMDL6050	120	MMSZ36	131	MMSZ4709	130
MMDL770	112	MMSZ39	132	MMSZ4710	130
MMDL914	120	MMSZ3V0	122	MMSZ4711	131
MMJT350	37	MMSZ3V3	123	MMSZ4713	131
MMQA12V	162, 169	MMSZ3V6	123	MMSZ4714	131
MMQA15V	162, 169	MMSZ3V9	123	MMSZ4715	131
MMQA18V	162, 170	MMSZ43	132	MMSZ4717	132
MMQA20V	162, 170	MMSZ4678	122	MMSZ4V3	124
MMQA22V	162, 171	MMSZ4679	122	MMSZ4V7	124
MMQA24V	162, 171	MMSZ4680	122	MMSZ51	132
MMQA27V	162, 171	MMSZ4680E	122	MMSZ52	133
MMQA33V	162, 172	MMSZ4681	122	MMSZ5232E	125
MMQA5V6T1	162, 167	MMSZ4682	122	MMSZ5235E	126
MMQA6V2	162, 167	MMSZ4683	122	MMSZ5237E	126
MMQA6V8	162, 167	MMSZ4684	123	MMSZ5242E	128
MMSD103	120	MMSZ4685	123	MMSZ5244E	128
MMSD301	112	MMSZ4686	123	MMSZ5245E	128
MMSD4148	120	MMSZ4687	124	MMSZ5246E	129
MMSD701	112	MMSZ4688	124	MMSZ5248E	129
MMSD914	120	MMSZ4689	124	MMSZ5250E	129
MMSF3P02HD	202	MMSZ4689E	124	MMSZ5251E	130
MMSZ10	127	MMSZ4690	125	MMSZ5252E	130
MMSZ11	127	MMSZ4690E	125	MMSZ5253E	130
MMSZ12	128	MMSZ4691	125	MMSZ5254E	131
MMSZ13	128	MMSZ4692	126	MMSZ5255E	131
MMSZ13E	128	MMSZ4693	126	MMSZ5256E	131
MMSZ15	128	MMSZ4694	126	MMSZ5257E	131
MMSZ15E	128	MMSZ4696	127	MMSZ5258E	131
MMSZ16	129	MMSZ4697	127	MMSZ56	132
MMSZ18	129	MMSZ4698	127	MMSZ5V1	124
MMSZ18E	129	MMSZ4699	128	MMSZ5V6	125

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MMSZ6V2	125	MPS2222	41	MRA4005	108
MMSZ6V8	126	MPS2222A	41	MRA4006	108
MMSZ7V5	126	MPS2907A	41	MRA4007	108
MMSZ8V2	126	MPS4124	40	MRS1504	108
MMSZ8V2E	126	MPS4250	39	MSA1162	40
MMSZ9V1	127	MPS5172	39	MSB1218A-R	39
MMUN2111L	31	MPS650	43	MSB92	37
MMUN2112L	31	MPS651	43	MSB92A	37
MMUN2113L	31	MPS6726	42	MSB92AW	37
MMUN2114L	31	MPS750	43	MSB92W	37
MMUN2115L	31	MPS751	43	MSC2712G	40
MMUN2116L	31	MPS8099	41	MSD1819A-R	40
MMUN2130L	31	MPSA05	41	MSD42	37
MMUN2131L	31	MPSA06	41	MSD42SW	37
MMUN2132L	31	MPSA13	33	MSD42W	37
MMUN2133L	31	MPSA14	33	MSD601-R	40
MMUN2134L	31	MPSA18	40	MSD602-R	41
MMUN2135L	31	MPSA27	33	MSQA6V1W5	125, 163
MMUN2136L	31	MPSA29	33	MSR1560	111
MMUN2137L	31	MPSA42	37	MSR860	111
MMUN2138L	31	MPSA55	41	MSRD620CT	111
MMUN2140L	31	MPSA56	41	MSRD620CTR	111
MMUN2141L	31	MPSA92	37	MTB50P03HDL	202
MMUN2211L	31	MPSH10	39	MTP50P03HDL	202
MMUN2212L	31	MPSW01	42	MUN2111	31
MMUN2213L	31	MPSW01A	42	MUN2112	31
MMUN2214L	31	MPSW05	41	MUN2113	31
MMUN2215L	31	MPSW06	41	MUN2114	31
MMUN2216L	31	MPSW42	37	MUN2115	31
MMUN2217L	31	MPSW45	33	MUN2116	31
MMUN2230L	31	MPSW45A	33	MUN2130	31
MMUN2231L	31	MPSW51	42	MUN2131	31
MMUN2232L	31	MPSW51A	42	MUN2132	31
MMUN2233L	31	MPSW55	41	MUN2133	31
MMUN2234L	31	MPSW56	41	MUN2134	31
MMUN2235L	31	MPSW92	37	MUN2135	31
MMUN2236L	31	MR851	109	MUN2136	31
MMUN2237L	31	MR852	109	MUN2137	31
MMUN2238L	31	MR854	109	MUN2138	31
MMUN2240L	31	MR856	109	MUN2140	31
MMUN2241L	31	MRA4003T3	108	MUN2141	31
MPF4393	182	MRA4004	108	MUN2211	31

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MUN2212	31	MUN5137	31	MUN5331DW1	32
MUN2213	31	MUN5137DW1	32	MUN5332DW1	32
MUN2214	31	MUN5138	31	MUN5333DW1	32
MUN2215	31	MUN5140	31	MUN5334DW1	32
MUN2216	31	MUN5141	31	MUN5335DW1	32
MUN2230	31	MUN5211	31	MUN5336DW1	32
MUN2231	31	MUN5211DW1	32	MUR105	109
MUN2232	31	MUN5212	31	MUR110	109
MUN2233	31	MUN5212DW1	32	MUR1100E	111
MUN2234	31	MUN5213	31	MUR115	109
MUN2235	31	MUN5213DW1	32	MUR120	109
MUN2236	31	MUN5214	31	MUR130	110
MUN2237	31	MUN5214DW1	32	MUR140	110
MUN2238	31	MUN5215	31	MUR1520	111
MUN2240	31	MUN5215DW1	32	MUR1540	110
MUN2241	31	MUN5216	31	MUR1560	110
MUN5111	31	MUN5230	31	MUR160	110
MUN5111DW1	32	MUN5230DW1	32	MUR1610CT	109
MUN5112	31	MUN5231	31	MUR1615CT	109
MUN5112DW1	32	MUN5231DW1	32	MUR1620CT	109
MUN5113	31	MUN5232	31	MUR1620CTR	109
MUN5113DW1	32	MUN5232DW1	32	MUR1640CT	110
MUN5114	31	MUN5233	31	MUR1660CT	111
MUN5114DW1	32	MUN5233DW1	32	MUR180E	111
MUN5115	31	MUN5234	31	MUR2020R	110
MUN5115DW1	32	MUN5234DW1	32	MUR210	109
MUN5116	31	MUN5235	31	MUR2100E	111
MUN5116DW1	32	MUN5235DW1	32	MUR220	109
MUN5130	31	MUN5236	31	MUR240	110
MUN5130DW1	32	MUN5236DW1	32	MUR260	110
MUN5131	31	MUN5237	31	MUR3020WT	110
MUN5131DW1	32	MUN5237DW1	32	MUR3040WTG	111
MUN5132	31	MUN5238	31	MUR3060WT	111
MUN5132DW1	32	MUN5240	31	MUR405	109
MUN5133	31	MUN5241	31	MUR410	109
MUN5133DW1	32	MUN5311DW1	32	MUR4100E	111
MUN5134	31	MUN5312DW1	32	MUR415	109
MUN5134DW1	32	MUN5313DW1	32	MUR420	109
MUN5135	31	MUN5314DW1	32	MUR440	110
MUN5135DW1	32	MUN5315DW1	32	MUR460	110
MUN5136	31	MUN5316DW1	32	MUR480E	111
MUN5136DW1	32	MUN5330DW1	32	MUR550PF	110

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
MUR620CT	109	MURS160	110	NB3N15625	76
MUR805	109	MURS205	109	NB3N200S	59
MUR810	109	MURS210	109	NB3N201S	59
MUR8100E	111	MURS220	109	NB3N206S	59
MUR815	109	MURS230	110	NB3N2302	79
MUR820	109	MURS240	110	NB3N2304NZ	59
MUR840	110	MURS260	110	NB3N3002	76
MUR860	110	MURS320	109	NB3N3010B	76
MUR880E	111	MURS340	110	NB3N3020	75
MURA105	111	MURS360	110	NB3N49152	76
MURA115	111	MURS360BT3G	110	NB3N501	76
MURA130	110	MURS480E	111	NB3N502	76
MURA140	110	N01S830HA/D	215	NB3N508S	75
MURA160	110	N25S818HA	215	NB3N51034	76
MURA205	111	N25S830HA	215	NB3N511	76
MURA215T3	111	N64S818HA	215	NB3N551	59
MURA230T3	110	N64S830HA	215	NB3N5573	76
MURA240T3	110	NB100ELT23L	72	NB3N62208	76
MURA260T3	110	NB100EP223	58	NB3N65027	76
MURB1620CT	110	NB100LVEP17	64	NB3N853501E	59
MURB1660CT	111	NB100LVEP221	58	NB3N853531E	59
MURD320	109	NB100LVEP222	58	NB3RL02	61
MURD330	110	NB100LVEP224	58	NB3U23C	64
MURD340	110	NB100LVEP56	69	NB3V8312C	64
MURD530	110	NB100LVEP91	72	NB3W1200L	64, 79
MURD620CT	109	NB2304A	79	NB4L16M	63
MURF1620CT	110	NB2305A	79	NB4L339	57
MURF1660CT	111	NB2308A	79	NB4L52	65
MURH840CT	110	NB2309A	79	NB4L6254	69
MURH860CT	110	NB3F8L3005C	58	NB4L7210	69
MURHB840CT	110	NB3F8L3010C	58	NB4L858M	69
MURHB860CT	110	NB3H83905C	59	NB4N111K	59
MURHD560	110	NB3L02	59	NB4N1158	63, 69
MURHD560W1	110	NB3L553	59	NB4N11M	59
MURHF860CT	110	NB3L83948C	59	NB4N121K	59
MURHS160T3	110	NB3L853141	64	NB4N316M	63
MURJ1660CTG	111	NB3N106K	59	NB4N441	75
MURS105	109	NB3N108K	59	NB4N507A	76
MURS110	109	NB3N111K	59	NB4N527S	63
MURS115	109	NB3N1200K	64, 79	NB4N7132	69
MURS120	109	NB3N121K	59	NB4N840M	69
MURS140	110	NB3N15552	76	NB4N855S	63

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NB6HQ14M	60	NB7V58M	69	NBXDBB017	74
NB6L11	60	NB7V72M	69	NBXDBB018	74
NB6L11M	60	NB7VPQ16M	63	NBXDDA016	74
NB6L11S	60	NB7VQ1006M	63	NBXDPA012	74
NB6L14	60	NB7VQ14M	61	NBXDPA017	74
NB6L14M	60	NB7VQ572M	61, 70	NBXDPA018	74
NB6L14S	60	NB7VQ58M	69	NBXDPA019	74
NB6L16	63	NBC12429	75	NBXHBA017	74
NB6L239	57	NBC12430	76	NBXHBA019	74
NB6L295	71	NBC12439	76	NBXHGA017	74
NB6L295M	71	NBSG11	61	NBXHGA019	74
NB6L56	69	NBSG14	61	NBXHGA053	74
NB6L572M	69	NBSG16	63	NBXMBB024	74
NB6L611	60	NBSG16M	63	NBXSBA007	74
NB6L72	69	NBSG16VS	63	NBXSBA008	74
NB6L72M	69	NBSG53A	65	NBXSBA010	74
NB6LQ572	70	NBSG72A	69	NBXSBA017	74
NB6LQ572M	70	NBSG86A	68, 69	NBXSBA019	75
NB6N11S	60	NBVSBA011	74	NBXSBA020	75
NB6N14S	60	NBVSBA015	74	NBXSBA021	75
NB6N239S	57	NBVSBA017	74	NBXSBA022	75
NB6VQ572M	70	NBVSBA018	74	NBXSBA023	75
NB7HQ14M	60	NBVSBA024	74	NBXSBA024	75
NB7L1008M	60	NBVSBA026	74	NBXSBA025	75
NB7L111M	60	NBVSBA027	74	NBXSBA030	75
NB7L11M	61	NBVSBA037	74	NBXSBA031	75
NB7L14	61	NBVSBA041	74	NBXSBA045	75
NB7L14M	61	NBVSPA013	74	NBXSBA046	75
NB7L216	63	NBVSPA015	74	NBXSBA051	75
NB7L32M	57	NBVSPA017	74	NBXSB024	75
NB7L572	70	NBVSPA018	74	NBXSGA008	75
NB7L585	61, 69	NBVSPA019	74	NBXSPA008	75
NB7L585R	61, 69	NBVSPA024	74	NBXSPA022	75
NB7L72M	69	NBVSPA027	74	NCD9830	206
NB7L86M	67, 69	NBVSPA042	74	NCL30000	6, 10, 138
NB7LQ572	70	NBXDBA009	74	NCL30001	6, 10, 138
NB7N017M	57	NBXDBA012	74	NCL30002	8, 10, 140
NB7V32M	57	NBXDBA014	74	NCL30051	8, 10, 141
NB7V33M	57	NBXDBA015	74	NCL30080	6, 138
NB7V52M	65	NBXDBA017	74	NCL30081	6, 138
NB7V585M	69	NBXDBA018	74	NCL30082	6, 138
NB7V586M	69	NBXDBA019	74	NCL30083	6, 139

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NCL30100	85, 140	NCP1051	9	NCP1244	7
NCL30105	140	NCP1052	9	NCP1246	7
NCL30160	140	NCP1053	9	NCP1247	7
NCL30161	86	NCP1054	9	NCP1249	7
NCN1154	21	NCP1055	9	NCP1249CD	7
NCN1188	21	NCP1070	6	NCP1250	7
NCN2411	21	NCP1071	6	NCP1251	7
NCN2612	22	NCP1072	9	NCP1252	8
NCN2612B	22	NCP1075	9	NCP1253	7
NCN3411	21	NCP1076	9	NCP1254	7
NCN3612B	22	NCP1077	9	NCP1255	7
NCN4555	207	NCP1080	85, 90, 262	NCP1271	7
NCN4557	207	NCP1081	84, 90, 262	NCP1288	7
NCN49597	207	NCP1082	84, 90, 262	NCP1294	8, 84
NCN49599	207	NCP1083	84, 90, 262	NCP1308	7
NCN5120	207	NCP1090	86, 90, 262	NCP1336	7
NCN5150	207	NCP1091	86, 90, 262	NCP1337	7
NCN5151	207	NCP1092	86, 90, 262	NCP1338	7
NCN5192	207	NCP1093	86, 90, 262	NCP1351	7
NCN6001	207	NCP1094	86, 90, 262	NCP1377	7
NCN6804	207	NCP1117	99	NCP1379	7
NCN7200	21	NCP1117LP	99	NCP1380	7
NCN7201	21	NCP1124	10	NCP1392	8, 142
NCN8024	207	NCP1126	9	NCP1393	142
NCN8024R	207	NCP1129	9	NCP1395	8
NCN8025	207	NCP1136	10	NCP1396	8
NCN8026	207	NCP114	96	NCP1397	8
NCN9252	21	NCP1200	6	NCP1398	8
NCP1010	9	NCP1203	6	NCP1400A	89
NCP1011	9	NCP1207A	6	NCP1402	89
NCP1012	9	NCP1207B	6	NCP1403	89
NCP1013	9	NCP1216	6	NCP1406	89
NCP1014	9	NCP1216A	6	NCP1421	90
NCP1015	9	NCP1217	6	NCP1422	90
NCP102	91	NCP1217A	6	NCP1423	90
NCP1027	9	NCP1218	6	NCP1450A	90
NCP1028	9	NCP1219	6	NCP1521B	87
NCP1030	10, 87	NCP1230	6	NCP1522B	88
NCP1031	10, 87	NCP1234	6	NCP1523B	88
NCP1032	10, 90	NCP1236	6	NCP1529	88
NCP1034	85	NCP1237	6	NCP1532	88
NCP1050	9	NCP1238	6	NCP1547	88



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NCP1562	7	NCP2860	96	NCP347	263
NCP1579	85	NCP2890	14	NCP348	263
NCP1581	85	NCP2892	14	NCP349	263
NCP1587	85	NCP2892B	14	NCP360	263
NCP1587A	85	NCP2990	14	NCP361	263
NCP1589A	85	NCP2991	14	NCP367	263
NCP1589D	85	NCP2993	14	NCP370	263
NCP1589L	85	NCP300	266	NCP3712ASN	263
NCP1592	88	NCP301	266	NCP372	263
NCP1593	88	NCP3011	85	NCP373	262, 263
NCP1595	88	NCP3012	85	NCP374	262, 263
NCP1597	88	NCP302	266	NCP380	262
NCP1597B	88	NCP3020	85	NCP382	262
NCP1599	88	NCP303	266	NCP383	262
NCP1605	11	NCP3030	85	NCP391	263
NCP1607	10	NCP304	266	NCP4200	85
NCP1608	10	NCP304A	266	NCP4208	85
NCP1611	10	NCP305	266	NCP4300A	264
NCP1612	11	NCP3063	89, 140	NCP4304	11
NCP1615	11	NCP3064	89	NCP431	264
NCP1631	10	NCP3065	89, 140	NCP432	262
NCP1650	10	NCP3066	89, 140	NCP4328	11, 264
NCP1652	10	NCP308	265	NCP433	262
NCP1653	10	NCP3121	88	NCP434	262
NCP1654	10	NCP3123	88	NCP435	262
NCP1729	84	NCP3163	89	NCP4353	11
NCP1840	138	NCP3170	88	NCP4354	11
NCP1850	84	NCP3231	88	NCP4355	11
NCP1851	84	NCP330	263	NCP436	262
NCP1852	84	NCP331	263	NCP437	262
NCP1854	84	NCP333	263	NCP439	263
NCP1910	8, 10	NCP3334	98	NCP451	262
NCP1927	7, 10	NCP3335A	98	NCP4543	262
NCP1937	7, 11	NCP3337	98	NCP4545	262
NCP2704	15	NCP334	263	NCP45520	262
NCP2809	14	NCP335	263	NCP45521	262
NCP2811	14	NCP336	263	NCP45524	262
NCP2815	14	NCP337	263	NCP45525	262
NCP2817	14	NCP338	262	NCP45540	262
NCP2820	15	NCP340	263	NCP4586	93
NCP2823	15	NCP341	263	NCP4587	93
NCP2824	15	NCP3420	142	NCP4588	95

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NCP4589	96	NCP5212T	85	NCP571	94
NCP4620	93	NCP5217	85	NCP57152	100
NCP4623	93	NCP5222	86	NCP57302	100
NCP4624	93	NCP5228	86	NCP582	94
NCP4625	96	NCP5230	86	NCP583	94
NCP4626	96	NCP5252	88	NCP58300	100
NCP4632	100	NCP5269	86	NCP584	95
NCP4640	91	NCP5304	142	NCP585	96
NCP4641	93	NCP5338	136, 142	NCP5901	142
NCP4671	97	NCP5351	142	NCP5901B	142
NCP4672	91	NCP5359	142	NCP5911	142
NCP4680	93	NCP5359A	142	NCP59150	100
NCP4681	94	NCP5369	136, 142	NCP59300	100
NCP4682	94	NCP5378	86	NCP59302	100
NCP4683	96	NCP5380	86	NCP600	94
NCP4684	94	NCP5386	84	NCP603	96
NCP4686	97	NCP5392	86	NCP605	98
NCP4687	98	NCP5392P	86	NCP612	92
NCP4688	94	NCP5392Q	86	NCP6131	86
NCP4810	167	NCP5392T	86	NCP6132	86
NCP4894	14	NCP5393B	86	NCP6151	86
NCP500	94	NCP5395	86	NCP623	94
NCP5005	90, 141	NCP5395T	86	NCP630	100
NCP5006	90, 141	NCP5422A	86	NCP6332	88
NCP5007	90, 141	NCP5425	86	NCP6334	88
NCP502	91	NCP5500	98	NCP6335	88
NCP5030	141	NCP5501	98	NCP6338	88
NCP508	91	NCP5504	95	NCP6343	88
NCP5104	142	NCP551	94	NCP6354	88
NCP5106	142	NCP553	92	NCP6360	88
NCP5109	142	NCP5603	138	NCP6361	88
NCP511	94	NCP5612	138	NCP662	92
NCP5111	142	NCP562	92	NCP663	92
NCP51190	90	NCP5623B	138	NCP690	99
NCP51198	90	NCP5623C	138	NCP691	99
NCP51199	90	NCP5623T	139	NCP6914	88
NCP512	92	NCP563	92	NCP692	99
NCP51200	90	NCP565	100	NCP6922C	88, 101
NCP51460	91, 264	NCP566	100	NCP6924	88, 98
NCP51510	90	NCP5661	99	NCP693	99
NCP5181	142	NCP5662	100	NCP694	99
NCP5212	85	NCP5663	100	NCP698	94

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NCP699	94	NCS37005	207	NCV331	15
NCP700B	95	NCS37010	207	NCV33152	142
NCP702	95	NCS37012	207	NCV33161	267
NCP703	96	NCS5650	17	NCV33163	90
NCP705	98	NCS7101	17	NCV33164	266
NCP706	100	NCS8353	15	NCV33202	17
NCP707	95	NCT1008	252	NCV33204	18
NCP717	96	NCT203	252	NCV33269	99
NCP729	95	NCT210	252	NCV33274A	18
NCP752	95	NCT214	252	NCV33275	96
NCP7800	100	NCT218	252	NCV33375	96
NCP803	265	NCT65	252	NCV3843B	7
NCP81044	86	NCT72	252	NCV4264	92
NCP81045	86	NCT7491	252	NCV4264-2	92
NCP81046	86	NCT75	252	NCV4266	94
NCP81081	136, 142	NCT80	252, 267	NCV4269A	94
NCP81161	142	NCV1009	264	NCV4274	97
NCS1002	264	NCV1117	100	NCV4275A	97
NCS1002A	264	NCV1124	207	NCV4276B	97
NCS2001	16	NCV1413	141	NCV4279A	94
NCS2002	16	NCV1455	227	NCV4290	97
NCS2003	16	NCV2002	17	NCV4299	94
NCS2004	16	NCV2393	15	NCV4299AD	94
NCS2200	15	NCV2575	88	NCV47411	92
NCS2200A	15	NCV2901	16	NCV47700	97
NCS2202	15	NCV2902	18	NCV47701	97
NCS2211	14	NCV2903	15	NCV47710	97
NCS2220	15	NCV2904	17	NCV47711	97
NCS2300	16	NCV2931	92	NCV494	85
NCS2372	17	NCV2951	92	NCV4949A	93
NCS2553	18	NCV300	266	NCV51411	88
NCS2561	18	NCV301	266	NCV5171	90
NCS2563	18	NCV302	266	NCV5173	90
NCS2564	18	NCV303	266	NCV5500	98
NCS2566	18	NCV3063	89	NCV5501	98
NCS2584	18	NCV3064	89	NCV5504	95
NCS2632	14	NCV3163	89	NCV551	94
NCS29001	141	NCV317	100	NCV553	92
NCS325	16	NCV33035	148	NCV565	100
NCS3402	15	NCV33063AV	89	NCV612	93
NCS36000	16	NCV33064	265	NCV6334	88
NCS37000	207	NCV33072	17	NCV6354	88

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NCV662	93	NCV7812	100	NCV8702	95
NCV663	93	NCV78663	141	NCV8703	97
NCV70501	158	NCV78L05A	93	NCV8705	98
NCV70521	152	NCV78L08	93	NCV8752	95
NCV70522	152	NCV78L12A	93	NCV8768	95
NCV70522DQ	158	NCV809	265	NCV8769	95
NCV70627	152	NCV8141	98	NCV8770	97
NCV7240	141	NCV8184	91	NCV8772	97
NCV7321	207	NCV8401A	204	NCV8774	97
NCV7340	206	NCV8402A	204	NCV8842	88
NCV7341	206	NCV8402AD	204	NCV8843	88
NCV7342	206	NCV8403A	204	NCV8851-1	86
NCV7349	206	NCV8405A	204	NCV8852	86
NCV7351	206	NCV8406A	204	NCV8853	86
NCV7356	206	NCV8408	204	NCV8855	88
NCV7381	206	NCV8440A	204	NCV8870	86
NCV7383	206	NCV8450A	204	NCV8871	86
NCV7420	207	NCV8452	204	NCV8872	84
NCV7424	207	NCV8460A	204	NCV8873	84
NCV7425	207	NCV8461	204	NCV8876	86
NCV7430	139, 207	NCV8501	94	NCV8881	88, 100
NCV7441	206	NCV8502	95	NCV890100	88
NCV7462	101, 139, 141, 206	NCV8503	97	NCV890101	88
NCV7471	206	NCV8504	97	NCV890130	89
NCV7513B	142	NCV8505	97	NCV890131	89
NCV7517B	142	NCV8506	97	NCV890200	89
NCV7518	142, 158	NCV8508B	96	NCV890201	89
NCV7608	141	NCV8509	93	NCV890230	89
NCV7680	139	NCV8518B	96	NCV890231	90
NCV7702B	141, 158	NCV8535	98	NCV896530	89
NCV7703B	141, 144	NCV8537	98	NCV898031	84
NCV7707	141, 142, 158	NCV8560	95	NDBA170N06A	193
NCV7708B	141, 149	NCV8570B	95	NDD01N60	196
NCV7708E	142, 149	NCV8603	96	NDD02N40	196
NCV7710	141, 158	NCV8605	98	NDD02N60Z	196
NCV7718	141, 158	NCV8614B	93	NDD03N50Z	196
NCV7719	142, 158	NCV8665	95	NDD03N60Z	196
NCV7720	141, 158	NCV8667	95	NDD03N80Z	197
NCV7751	141	NCV8668	95	NDD04N50Z	196
NCV7805	100	NCV8669	95	NDD04N60Z	196
NCV7808	100	NCV8674	97	NDD05N50Z	196
NCV7809	100	NCV8675	97	NDD60N360U1	196

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NDD60N550U1	196	NGTB15N120L	180	NGTG50N60FLWG	180
NDD60N745U1	197	NGTB15N135IHR	181	NGTG50N60FWG	180
NDD60N900U1	197	NGTB15N60EG	180	NHPV08S600	110
NDF02N60Z	197	NGTB15N60S1	180	NHPV15S600	111
NDF03N60Z	197	NGTB20N120IHL	180	NIMD6001A	204
NDF04N60Z	197	NGTB20N120IHR	180	NIS1050	263
NDF05N50Z	196	NGTB20N120	181	NIS5112	262
NDF06N60Z	197	NGTB20N120L	181	NIS5132	262
NDF08N50Z	196	NGTB20N135IHR	181	NIS5135	262
NDF08N60Z	197	NGTB20N60L2TF1G	180	NIS5232	262
NDF10N60Z	197	NGTB25N120FL	181	NJD1718	45, 50
NDF11N50Z	196	NGTB25N120IHL	181	NJD2873	45
NDFP03N150C	197	NGTB25N120L	181	NJD35N04	34
NDFPD1N150C	197	NGTB30N120FL2	181	NJT4030P	46
NDT01N60	197	NGTB30N120IHL	181	NJT4031N	46
NDT02N40	196	NGTB30N120IHR	181	NJW0281	38
NDTL03N150C	197	NGTB30N120	181	NJW0302	38
NDUL03N150C	197	NGTB30N120L	181	NJW1302	38
NE521	15	NGTB30N120L2	181	NJW21193	38
NE5230	17	NGTB30N135IHR	181	NJW21194	38
NE5517	17	NGTB30N60FLWG	180	NJW3281	38
NE5532	17	NGTB30N60FWG	180	NJW44H11	30, 45
NE5534	17	NGTB30N60IHLWG	180	NJX1675P	49
NE570	15	NGTB40N120FL	181	NL17SG00	240
NE592	18	NGTB40N120FL2	181	NL17SG02	241
NGB15N41A	180	NGTB40N120IHL	181	NL17SG04	227, 237
NGB18N40A	180	NGTB40N120IHR	181	NL17SG07	236
NGB8202A	180	NGTB40N120L	181	NL17SG08	235
NGB8204A	180	NGTB40N135IHR	181	NL17SG125	236
NGB8206A	180	NGTB40N60FLWG	180	NL17SG14	237
NGB8207AB	180	NGTB40N60IHLWG	180	NL17SG17	236
NGB8207B	180	NGTB50N120FL2	181	NL17SG32	242
NGB8245	180	NGTB50N60FLWG	180	NL17SG34	227, 236
NGD15N41A	180	NGTB50N60FWG	180	NL17SG373	234
NGD18N40A	180	NGTB50N60L2	180	NL17SG86	243
NGD18N45	180	NGTB75N60FL2	180	NL17SGU04	237
NGD8201A	180	NGTB75N65FL2	180	NL17SH00	240
NGD8205A	180	NGTG12N60TF1G	180	NL17SH02	241
NGTB10N60FG	180	NGTG15N60S1	180	NL17SH04	237
NGTB15N120FL	180	NGTG20N60L2TF1G	180	NL17SH08	235
NGTB15N120IHL	180	NGTG30N60FLWG	180	NL17SH125	236
NGTB15N120IHR	180	NGTG30N60FWG	180	NL17SH126	227, 236

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NL17SH14	237	NL27WZ32	242	NLAS5223	20, 22
NL17SH17	236	NL27WZ86	244	NLAS52231	20
NL17SH32	242	NL27WZU04	238	NLAS5223B	20
NL17SH34	237	NL37WZ04	238	NLAS5223C	20
NL17SHT00	240	NL37WZ06	229	NLAS7213	21
NL17SHT04	238	NL37WZ07	229	NLAS7222A	21
NL17SHT08	235	NL37WZ14	238	NLAS7222B	21
NL17SHT126	237	NL37WZ16	229	NLAS7222C	21
NL17SHT32	242	NL37WZ17	229	NLAS7242	21
NL17SV00	240	NL7SZ18	246	NLAS8252	21
NL17SV02	241	NL7SZ19	246	NLAS9431	22
NL17SV04	238	NL7SZ57	243	NLASB3157	22
NL17SV08XV5T2	235	NL7SZ58	243	NLAST4051	23
NL17SV16	227	NL7SZ97	243	NLAST44599	23
NL17SV32	242	NL7WB66	22	NLAST4501	22
NL17SZ00	240	NLA16T245	249	NLAST4599	22
NL17SZ02	241	NLAS1053	22	NLAST9431	23
NL17SZ04	238	NLAS2066	22	NLSF1174	232
NL17SZ05	227, 238	NLAS2750	20	NLSF302	242
NL17SZ06	228	NLAS3158	22	NLSF308	236
NL17SZ07	228	NLAS323	22	NLSF3T125	229
NL17SZ08	236	NLAS324	22	NLSF3T126	229
NL17SZ125	228	NLAS325	22	NLSF595	139
NL17SZ126	228	NLAS3699	20	NLSV1T240	248
NL17SZ14	238	NLAS3699B	20	NLSV1T244	248
NL17SZ16	228	NLAS3799	20, 23	NLSV1T34	248
NL17SZ17	228, 237	NLAS3799B	20	NLSV22T244MUTAG	248
NL17SZ32	242	NLAS3899	20, 21,	NLSV2T240	248
NL17SZ74	232	NLAS4051	23	NLSV2T244	248
NL17SZ86	243	NLAS4053	23, 246	NLSV4T240	248
NL17SZU04	238	NLAS4157	20	NLSV4T240E	248
NL27WZ00	240	NLAS44599	23	NLSV4T244	248
NL27WZ02	242	NLAS4501	22	NLSV4T244E	248
NL27WZ04	238	NLAS4599	22	NLSV4T3144	248
NL27WZ06	228	NLAS4684	20	NLSV4T3234	248
NL27WZ07	228	NLAS4717	21	NLSV8T240MUTAG	249
NL27WZ08	236	NLAS4717EP	21, 22	NLSV8T244	249
NL27WZ125	228	NLAS4783	20	NLSX0102	248
NL27WZ126	228	NLAS4783B	20	NLSX3012	248
NL27WZ14	238	NLAS5123	20, 22	NLSX3013	249
NL27WZ16	228	NLAS5157	20	NLSX3014	248
NL27WZ17	228	NLAS5213	20	NLSX3018	249

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NLSX3373	248	NLX1G74	232	NS6A5.0AF	167
NLSX3378	249	NLX1G97	243	NS6A5.0AT	167
NLSX4014	249	NLX1G98	243	NSA5.0AFT3G	167
NLSX4302E	72, 248	NLX1G99	243, 245	NSA5.0AT3G	167
NLSX4373	248	NLX2G00	240	NSB12ANT3G	169
NLSX4378	249	NLX2G02	242	NSB1706DMW5	51
NLSX5002	248	NLX2G04	238	NSB4904DW1	32
NLSX5011	248	NLX2G06	229	NSB9435	52
NLSX5012	248	NLX2G07	229	NSBA113EDXV6	32
NLSX5014	249	NLX2G08	236	NSBA113EF3	31
NLU1G00	240	NLX2G14	238	NSBA114EDP6	32
NLU1G04	238	NLX2G16	229	NSBA114EDXV6	32
NLU1G07	228	NLX2G17	229	NSBA114EF3	31
NLU1G08	236	NLX2G32	242	NSBA114TDP6	32
NLU1G14	228, 238	NLX2G66	22	NSBA114TDXV6	32
NLU1G32	242	NLX2G86	244	NSBA114TF3	31
NLU1G86	243	NLX2GU04	238	NSBA114YDP6	32
NLU1GT04	238	NLX3G14	239	NSBA114YDXV6	32
NLU1GT125	228	NLX3G17	229	NSBA114YF3	31
NLU1GT126	228	NMLU1210	184	NSBA115EDXV6	32
NLU1GT14	238	NOA1211	222	NSBA115TDP6	32
NLU1GT32	243	NOA1212	222	NSBA115TF3	31
NLU1GT50	228	NOA1305	222	NSBA123EDXV6	32
NLU1GT86	244	NOA3301	222	NSBA123EF3	31
NLU1GU04	238	NOA3302	222	NSBA123JDP6	32
NLU2G04	228, 238	NOM02A4-AG01G	223	NSBA123JDXV6	32
NLU2G06	238	NOM02A4-AR03G	223	NSBA123JF3	31
NLU2G07	229	NOM02A4-MW60G	223	NSBA123TDP6	32
NLU2G14	238	NOM02A6-AW49G	223	NSBA123TF3	31
NLU2G16	229	NOM02B4-DR11G	223	NSBA124EDP6	32
NLU2G17	229	NP0080TA Series	255	NSBA124EDXV6	32
NLU2GU04	238	NRVBB1060	117	NSBA124EF3	31
NLU3G14	229, 238	NRVBD1035CTL	116	NSBA124XDXV6	32
NLU3G16	229	NS2029M3	40	NSBA124XF3	31
NLU3G17	229	NS3L500	21	NSBA143EDP6	32
NLV74HC165A	235	NS5A4684S	20	NSBA143EDXV6	32
NLX1G10	240	NS5B1G384	21	NSBA143EF3	31
NLX1G11	236	NS5B1G385	20, 21, 22	NSBA143TDXV6	32
NLX1G125	228	NS5S1153	20, 21	NSBA143TF3	31
NLX1G332	242	NS6A12AF	169	NSBA143ZDP6	32
NLX1G57	243	NS6A13AF	169	NSBA143ZDXV6	32
NLX1G58	243	NS6A13AT	169	NSBA143ZF3	31

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NSBA144EDP6	32	NSBC124EPDP6	32	NSI45030AZ	140
NSBA144EDXV6	32	NSBC124EPDXV6	32	NSI45030Z	140
NSBA144EF3	31	NSBC124XDXV6	32	NSI45035J	140
NSBA144TF3	31	NSBC124XF3	31	NSI45060JD	140
NSBA144WDP6	32	NSBC124XPDXV6	32	NSI45090JD	140
NSBA144WDXV6	32	NSBC143EDP6	32	NSI50010YT1G	140
NSBA144WF3	31	NSBC143EDXV6	32	NSI50150AD	140
NSBC113EDXV6	32	NSBC143EF3	31	NSI50350AD	140
NSBC113EF3	31	NSBC143EPDP6	32	NSI50350AS	140
NSBC113EPDXV6	32	NSBC143EPDXV6	32	NSIC2020B	140
NSBC114EDP6	32	NSBC143TDXV6	32	NSIC2030B	140
NSBC114EDXV6	32	NSBC143TF3	31	NSIC2050B	140
NSBC114EF3	31	NSBC143TPDXV6	32	NSL12AW	47
NSBC114EPDP6	32	NSBC143ZDP6	32	NSM6056M	53
NSBC114EPDXV6	32	NSBC143ZDXV6	32	NSM80100M	53
NSBC114TDP6	32	NSBC143ZF3	31	NSM80101M	53
NSBC114TDXV6	32	NSBC143ZPDP6	32	NSQA6V8A	133, 163, 175
NSBC114TF3	31	NSBC143ZPDXV6	32	NSR0115CQP6	114
NSBC114TPDXV6	32	NSBC144EDP6	32	NSR0130P2	112
NSBC114YDP6	32	NSBC144EDXV6	32	NSR0140P2	112
NSBC114YDXV6	32	NSBC144EF3	31	NSR0170P2	112
NSBC114YF3	31	NSBC144EPDP6	32	NSR01F30MX	113
NSBC114YPDP6	32	NSBC144EPDXV6	32	NSR01F30NX	113
NSBC114YPDXV6	32	NSBC144TF3	31	NSR01L30MX	113
NSBC115EDXV6	32	NSBC144WDP6	32	NSR01L30NX	113
NSBC115TDP6	32	NSBC144WDXV6	32	NSR0230M2	112
NSBC115TF3	31	NSBC144WF3	31	NSR0230P2	112
NSBC115TPDP6	32	NSBC144WPDP6	32	NSR0240H	112
NSBC123EDXV6	32	NSD16F3	120	NSR0240P2	112
NSBC123EF3	31	NSD914F3	120	NSR0240V2	112
NSBC123EPDXV6	32	NSD914XV2	120	NSR02F30NX	113
NSBC123JDP6	32	NSDEMP11XV6	121	NSR02L30NX	113
NSBC123JDXV6	32	NSI45015W	139	NSR0320MW2	112
NSBC123JF3	31	NSI45020	139	NSR0320XV6	113
NSBC123JPDP6	32	NSI45020A	139	NSR0340H	112
NSBC123JPDXV6	32	NSI45020J	139	NSR0340P2	112
NSBC123TDP6	32	NSI45025	139	NSR0340V2	112
NSBC123TF3	31	NSI45025A	139	NSR0520V2	112
NSBC123TPDP6	32	NSI45025AZ	139	NSR05F20NX	113
NSBC124EDP6	32	NSI45025Z	139	NSR05F30NX	113
NSBC124EDXV6	32	NSI45030	139	NSR05F40NX	113
NSBC124EF3	31	NSI45030A	139	NSR0620P2	112



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NSR1020MW2	112	NSS40300DD	49, 50	NTB25P06	203
NSR10F20NX	113	NSS40300MD	49, 50	NTB35N15	195
NSR10F30NX	113	NSS40300MZ4	46, 50	NTB45N06	193
NSR10F40NX	113	NSS40301MD	49, 50	NTB45N06L	193
NSR20F20NX	113	NSS40301MZ4	46, 50	NTB5404N	192
NSR20F30NX	113	NSS40302PD	49, 50	NTB5405N	192
NSR20F40NX	113	NSS40500UW3	48, 50	NTB5426N	193
NSR30CM3	114	NSS40501UW3	48, 50	NTB5605P	203
NSRLL30XV2	112	NSS40600CF8	47	NTB5860N	193
NSS12100M3	47, 50	NSS40601CF8	47	NTB5860NL	193
NSS12100UW	47, 50	NSS60200L	47, 50	NTB60N06	193
NSS12100XV6	47	NSS60201L	47, 50	NTB6410AN	195
NSS12200L	47, 50	NSS60600MZ4	46, 50	NTB6411AN	195
NSS12200W	47	NSS60601MZ4	46, 50	NTB6412AN	195
NSS12201L	47, 50	NST30010MXV6	49	NTB6413AN	195
NSS12500UW3	48, 50	NST3904DP6	49	NTD110N02R	186
NSS12501UW3	48, 50	NST3904DXV6	49	NTD14N03R	186
NSS12601CF8	47	NST3904F3	40	NTD18N06L	193
NSS1C200L	47, 50	NST3906DP6	49	NTD20N03L27	188
NSS1C200MZ4	45, 50	NST3906DXV6	49	NTD20N06	194
NSS1C201L	47, 50	NST3906F3	40	NTD20N06L	194
NSS1C201MZ4	45, 50	NST3946DP6	49	NTD20P06L	203
NSS1C300E	46, 50	NST3946DXV6	49	NTD24N06	194
NSS1C301E	46, 50	NST45010	49	NTD24N06L	194
NSS20101J	47, 50	NST45011MW6	49	NTD25P03L	202
NSS20200L	47, 50	NST489AM	47	NTD2955	203
NSS20201L	47, 50	NST846BF3	40	NTD3055-094	194
NSS20201MR6	47	NST847BDP6	49	NTD3055-150	194
NSS20300MR6	47	NST847BF3	39	NTD3055L104	194
NSS20500UW3	48, 50	NST847BPDP6	49	NTD3055L170	194
NSS20501UW3	48, 50	NST848BF3	39	NTD4302	188
NSS20601CF8	47	NST856BF3	40	NTD4804N	188
NSS30070MR6	42	NST857BDP6	49	NTD4805N	188
NSS30071MR6	42	NST857BF3	39	NTD4806N	188
NSS30100L	47, 50	NSTB1002DXV5	52	NTD4808N	188
NSS30101L	47, 50	NSTB1005DXV5	52	NTD4809N	188
NSS30201MR6	47	NSTB60	51	NTD4809NH	188
NSS35200CF8	47	NSZ5V6V2	125	NTD4810N	188
NSS35200MR6	47	NTA4001N	186	NTD4813N	188
NSS40200L	47, 50	NTA4151P	202	NTD4813NH	188
NSS40200UW6	47	NTA4153N	186	NTD4815N	188
NSS40201L	47, 50	NTA7002N	187	NTD4856N	186

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NTD4858N	187	NTGS3441	202	NTLJS3113P	202
NTD4860N	187	NTGS3443	202	NTLJS3A18PZ	202
NTD4863N	187	NTGS3446	186	NTLJS4114N	188
NTD4904N	188	NTGS3455	202	NTLLD4901NF	185
NTD4906N	188	NTGS4111P	203	NTLUD3A260P	198
NTD4909N	188	NTGS4141N	188	NTLUD3A50PZ	198
NTD4910N	188	NTGS5120P	203	NTLUF4189NZ	188
NTD4963N	188	NTHC5513	183	NTLUS3A18PZ	201
NTD4965N	188	NTHD3100C	183	NTLUS3A18PZC	202
NTD4969N	188	NTHD3101F	203	NTLUS3A39PZ	202
NTD4970N	188	NTHD3102C	183	NTLUS3A40P	202
NTD5406N	192	NTHD4102P	198	NTLUS3A90P	202
NTD5407N	192	NTHD4502N	185	NTLUS4930N	188
NTD5414N	194	NTHD4508N	184	NTLUS4C12N	188
NTD5802N	192	NTHD4P02	203	NTMD4184PF	203
NTD5803N	192	NTHS4101P	202	NTMD4820N	185
NTD5804N	192	NTHS4166N	188	NTMD4840N	185
NTD5805N	192	NTHS5404	186	NTMD4N03	185
NTD5806N	192	NTHS5441T1	202	NTMD5836NL	185
NTD5807N	192	NTHS5443	202	NTMD5838NL	185
NTD5862N	194	NTJD1155L	198	NTMD6N02	184
NTD5865N	194	NTJD4001N	185	NTMD6N04	185
NTD5865NL	194	NTJD4105C	183	NTMD6P02	198
NTD5867NL	194	NTJD4152P	198	NTMFD4901NF	185
NTD6414AN	195	NTJD4158C	183	NTMFD4902NF	185
NTD6415AN	195	NTJD4401N	184	NTMFD4C20N	185
NTD6415ANL	195	NTJD5121N	185	NTMFS4821N	188
NTD6416AN	195	NTJS3151P	201	NTMFS4823N	188
NTD6416ANL	195	NTJS3157N	186	NTMFS4825NFE	188
NTE4151P	202	NTJS4151P	202	NTMFS4833N	188
NTE4153N	186	NTJS4405N	187	NTMFS4833NS	188
NTF2955	203	NTK3043N	186	NTMFS4834N	189
NTF3055-100	194	NTK3134N	186	NTMFS4835N	189
NTF3055L108	194	NTK3139P	202	NTMFS4841N	189
NTF5P03	202	NTLGD3502N	184	NTMFS4845	189
NTF6P02	202	NTLGF3402P	203	NTMFS4846	189
NTGD1100L	198	NTLJD3115P	198	NTMFS4847N	189
NTGD3148N	184	NTLJD3119C	183	NTMFS4851	189
NTGD4167C	183	NTLJD4116N	185	NTMFS4852N	189
NTGS3130N	186	NTLJF3117P	203	NTMFS4854NS	187
NTGS3136P	202	NTLJF4156N	197	NTMFS4897N	197
NTGS3433	201	NTLJS2103P	201	NTMFS4899N	198

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NTMFS4922NE	189	NTMS5835NL	192	NTST20120CTG	119
NTMFS4923NE	189	NTMS5838NL	192	NTST20U100CTG	118
NTMFS4925N	189	NTMS5P02	202	NTST30100CTG	118
NTMFS4925NE	189	NTMS7N03R2	190	NTST30100SG	118
NTMFS4926N	189	NTNS3164NZ	186	NTST30120CTG	119
NTMFS4926NE	189	NTNS3193NZ	186	NTST30U100CTG	118
NTMFS4927N	189	NTNS3A65PZ	202	NTST40100CTG	118
NTMFS4931N	189	NTNS3A91PZ	202	NTST40120CTG	119
NTMFS4933N	189	NTNUS3171PZ	202	NTST60100CTG	118
NTMFS4934N	189	NTP2955	203	NTSV20100CTG	118
NTMFS4935N	189	NTP5404N	192	NTSV20120CTG	119
NTMFS4936N	189	NTP5860N	194	NTSV2080CTG	117
NTMFS4937N	189	NTP5860NL	194	NTSV20U100CTG	118
NTMFS4939N	189	NTP5863N	194	NTSV20U80CTG	117
NTMFS4941N	189	NTP5864N	194	NTSV30100CTG	118
NTMFS4946N	189	NTP6410AN	195	NTSV30100SG	119
NTMFS4955N	189	NTP6411AN	195	NTSV30120CTG	119
NTMFS4982NF	198	NTP6412AN	195	NTSV3080CTG	117
NTMFS4983NF	198	NTP6413AN	195	NTTFS3A08PZ	202
NTMFS4985NF	198	NTR0202PL	202	NTTFS4821N	190
NTMFS4C05N	189	NTR1P02	202	NTTFS4824N	190
NTMFS4C06N	190	NTR1P02L	202	NTTFS4928N	190
NTMFS4C08N	190	NTR2101P	201	NTTFS4929N	190
NTMFS4C09N	190	NTR3A30PZ	202	NTTFS4930N	190
NTMFS4C10N	190	NTR4003N	190	NTTFS4932N	190
NTMFS4C13N	190	NTR4101P	202	NTTFS4937N	190
NTMFS4C35N	190	NTR4170N	190	NTTFS4939N	190
NTMFS5830NL	192	NTR4171P	203	NTTFS4941N	190
NTMFS5832NL	192	NTR4501	186	NTTFS4985NF	198
NTMFS5834NL	192	NTR4502P	203	NTTFS4C05N	190
NTMFS5844NL	194	NTR4503N	190	NTTFS4C06N	190
NTMS10P02	202	NTR5198NL	194	NTTFS4C08N	191
NTMS4177P	203	NTS2101P	201	NTTFS4C10N	191
NTMS4503N	187	NTS4001N	190	NTTFS4C13N	191
NTMS4801N	190	NTS4101P	202	NTTFS4C25N	191
NTMS4802N	190	NTS4173P	203	NTTFS5116PL	203
NTMS4807N	190	NTS4409N	187	NTTFS5811NL	192
NTMS4816N	190	NTS8100MFS	118	NTTFS5820NL	194
NTMS4916N	190	NTSJ2080CTG	117	NTTFS5826NL	194
NTMS4920N	190	NTSJ3080CTG	117	NTUD3169CZ	183
NTMS4937N	190	NTSJ30U80CTG	117	NTUD3170NZ	184
NTMS4939N	190	NTST20100CTG	118	NTZD3152P	199

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NTZD3154N	184	NUF8600	166	NVD5865NL	194
NTZD3155C	183	NUF8610	166	NVD5867NL	194
NTZD5110N	185	NUP1105L	160, 176	NVD5890N	192
NTZS3151P	202	NUP1301	160	NVD5890NL	192
NUD3105	141	NUP2105	160, 176	NVD6820NL	195
NUD3105D	141	NUP2114	162	NVD6824NL	195
NUD3112	141	NUP2115L	160, 177	NVD6828NL	195
NUD3124	142	NUP2201	160	NVDD5894NL	198
NUD3160	142	NUP2202	160	NVLJD4007NZ	185
NUD4001	140	NUP2301	160	NVMFD5483NL	185
NUD4011	140	NUP3112UPMUTAG	163	NVMFD5485NL	185
NUD4700	204	NUP3115UP	160	NVMFD5489NL	185
NUF2042XV6	165	NUP4000	161, 177	NVMFD5852NL	185
NUF2101	165	NUP4004M5	160	NVMFD5853N	185
NUF2114	165	NUP4016	163	NVMFD5853NL	185
NUF2116	165	NUP4060AXV6T1G	163	NVMFD5873NL	185
NUF2221	165	NUP4103	163	NVMFD5877NL	185
NUF2230	165	NUP4106	163, 175	NVMFS4841N	191
NUF2441	165	NUP4114	163	NVMFS4C05N	191
NUF2450	165	NUP412V	163	NVMFS5826NL	195
NUF3102	166	NUP4201	163, 175	NVMFS5830NL	192
NUF4001MU	165	NUP4201MR6	163	NVMFS5832NL	192
NUF4211	166	NUP4202W1	160	NVMFS5833N	192
NUF4220	165	NUP4212	163	NVMFS5834NL	192
NUF4310	166	NUP4301	160	NVMFS5844NL	195
NUF4401MN	166	NUP4302	160	NVMFS5885NL	195
NUF4402MN	166	NUP4304MR6	160	NVR5198NL	195
NUF4403MN	166	NUP45V6	163	NVT210	252
NUF6001MU	166	NUP46V8	163	NVTFS4823N	191
NUF6010	166	NUP5120X6	163	NVTFS4824N	191
NUF6105	166	NUP5150	163	NVTFS4C05N	191
NUF6400	166	NUP8011	164	NVTFS4C06N	191
NUF6401MN	166	NUS2401	51, 141	NVTFS4C08N	191
NUF6402	166	NUS5530MN	199	NVTFS4C10N	191
NUF6406	166	NVB5860N	194	NVTFS4C13N	191
NUF6410	166	NVB5860NL	194	NVTFS4C25N	191
NUF8001MU	166	NVD5117PL	203	NVTFS5116PL	203
NUF8010	166	NVD5484NL	194	NVTFS5124PL	203
NUF8152	165	NVD5490NL	194	NVTFS5811NL	192
NUF8401	166	NVD5803N	192	NVTFS5820NL	195
NUF8402	166	NVD5862N	194	NVTFS5826NL	195
NUF8410	166	NVD5863NL	194	NYC008	254

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
NYC0102B	254	NZ9F5V6S	125	P2814B	78
NYC222	254	NZ9F6V2	125	P2I2305NZ	61
NYE08-10B6	255	NZ9F6V2S	125	P2N2222A	41
NYE08-10B6S	255	NZ9F6V8	126	P3I2005A	78
NYT6-5D	256	NZ9F6V8S	126	P3MS650100H	78
NZ23C5V6	125	NZ9F7V5	126	P3MS650103H	78
NZ9F10V	127	NZ9F7V5S	126	P3P2043B	78
NZ9F10VS	127	NZ9F8V2	126	P3P25812A	78
NZ9F11V	127	NZ9F8V2S	126	P3P25814	78
NZ9F11VS	127	NZ9F9V1	127	P3P623S00BG	78
NZ9F12V	128	NZ9F9V1S	127	P3P76Z11DH	78
NZ9F12VS	128	NZF220DFT1	165	P3P8163A	78
NZ9F13V	128	NZF220TT1	165	P3P816711A	78
NZ9F13VS	128	NZL5V6AT	167	P3P8203A	78
NZ9F15V	128	NZL5V6AXV3	162	P3P8220A	78
NZ9F15VS	128	NZL6V8AXV3	162, 167	P3P85R01A	78
NZ9F16V	129	NZL7V5AXV3	162	P3PS550AH	78
NZ9F16VS	129	NZQA5V6	163, 167	P3PS850BH	78
NZ9F18V	129	NZQA5V6A	125, 163, 167	P3PSL450AH	78
NZ9F18VS	129	NZQA6V2	125, 163, 167	P6KE100A	174
NZ9F20V	130	NZQA6V8	126, 163, 167	P6KE10A	168
NZ9F22V	130	NZQA6V8A	126, 163, 167	P6KE12A	169
NZ9F24V	130	ONBCD25	82	P6KE130A	174
NZ9F2V4	122	ONC18 (0.18 mm)	82	P6KE13A	169
NZ9F2V4S	122	ONC18 18V18V	82	P6KE150A	174
NZ9F2V7	122	ONC18 5V30V	82	P6KE15A	169
NZ9F2V7S	122	ONC18G/MS	82	P6KE160A	174
NZ9F3V0	122	ONC25	82	P6KE16A	170
NZ9F3V0S	123	P1708C	77	P6KE180A	174
NZ9F3V3	123	P1727A	77	P6KE18A	170
NZ9F3V3S	123	P1817A	77	P6KE200A	174
NZ9F3V6	123	P1817B	77	P6KE20A	170
NZ9F3V6S	123	P1819B	77	P6KE22A	171
NZ9F3V9	123	P1819G	77	P6KE24A	171
NZ9F3V9S	123	P1P3800A	76	P6KE27A	171
NZ9F4V3	124	P1P8160A	77	P6KE30A	171
NZ9F4V3S	124	P2042A	77	P6KE33A	172
NZ9F4V7	124	P2084A	76	P6KE36A	172
NZ9F4V7S	124	P2781A	77	P6KE39A	172
NZ9F5V1	124	P2782A	77	P6KE43A	172
NZ9F5V1S	124	P2784	77	P6KE47A	173
NZ9F5V6	125	P2811B	77	P6KE51A	173

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
P6KE56A	173	P6SMB39CA	176	PCS3P7303A	78
P6KE6.8A	167	P6SMB43A	172	PCS3P8504A	78
P6KE62A	173	P6SMB43CA	176	PCS3PS550A	78
P6KE68A	173	P6SMB47CA	176	PN2222A	41
P6KE7.5A	168	P6SMB51A	173	PYTHON1300	222
P6KE75A	173	P6SMB51CA	176	PYTHON300	222
P6KE82A	174	P6SMB56A	173	PYTHON500	222
P6KE91A	174	P6SMB56CA	176	PZT2222A	41
P6P82PS01A	78	P6SMB6.8A	168	PZT2907A	41
P6SMB100A	174	P6SMB62A	173	PZT3904	40
P6SMB10A	168	P6SMB62CA	176	PZT651	45
P6SMB11CA	175	P6SMB68A	173	PZT751	45
P6SMB120A	174	P6SMB68CA	176	PZTA42	37
P6SMB12A	169	P6SMB7.5A	168	PZTA92	37
P6SMB12CA	175	P6SMB75A	173	PZTA96S	37
P6SMB130A	174	P6SMB75CA	176	RB520S30	112
P6SMB13A	169	P6SMB8.2A	168	RB521S30	112
P6SMB150A	174	P6SMB82A	174	RB751S40	112
P6SMB15A	169	P6SMB9.1A	168	RB751V40	112
P6SMB15CA	175	P6SMB91A	174	REF3020	264
P6SMB160A	174	PACDN004	162	REF3025	264
P6SMB16A	170	PACDN006	163	REF3030	264
P6SMB16CA	175	PACDN009	163	REF3033	264
P6SMB180A	174	PACDN042	162, 167	REF3040	264
P6SMB18A	170	PACDN1404	163	RHYTHM R3110	27
P6SMB18CA	175	PACDN1408	164	RHYTHM R3710	27
P6SMB200A	174	PACVGA105	164	RHYTHM R3910	27
P6SMB20A	170	PACVGA200	164	RHYTHM R3920	27
P6SMB20CA	175	PACVGA201	164	RHYTHM SB3229	27
P6SMB22A	171	PCA9306	248	RHYTHM SB3231	27
P6SMB22CA	175	PCA9511A	228	SA10A	169
P6SMB24A	171	PCA9517A	247	SA12A	169
P6SMB24CA	176	PCA9535E	206	SA13A	169
P6SMB27A	171	PCA9617A	247	SA15A	170
P6SMB27CA	176	PCA9655E	206	SA16A	170
P6SMB30A	171	PCP1403	195	SA17A	170
P6SMB30CA	176	PCS1P2192A	76	SA18A	170
P6SMB33A	172	PCS2P2309NZ	61	SA20A	171
P6SMB33CA	176	PCS3I8504AG-08CR	78	SA24A	171
P6SMB36A	172	PCS3P2537A	78	SA26A	171
P6SMB36CA	176	PCS3P25811A	78	SA28A	172
P6SMB39A	172	PCS3P7100A	78	SA30A	172

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
SA33A	172	SL15	161, 170	SMF7.5A	168
SA36A	172	SL24	161, 171	SMF8.0A	168
SA5.0A	167	SM05	168	SMF9.0A	168
SA571	15	SM12	169	SMP3003	199
SA572	15	SM15T1G	170	SMS05	163, 175
SA575	15	SM24T1G	171	SMS05C	163, 175
SA6.0A	168	SM36T1G	176	SP110 (0.11 mm)	82
SA7.0A	168	SMA3101	28	SP40 (40 nm)	82
SC3 (0.35 mm)	82	SMA3103	28	SP65 (65 nm)	82
SC5 (0.5 mm)	82	SMA3107	28	SRDA05-4	160
SCH1330	201	SMA3109	28	SRDA3.3-4	163, 175
SCH1331	201	SMA3117	28	SRV05-4	167
SCH1332	201	SMA4306	28	SS16	117
SCH1333	201	SMA5101	28	SS24	119
SCH1334	201	SMDA05CDR2G	161, 177	SS26	117
SCH1335	201	SMDA12CDR	161, 177	SS30	158
SCH1337	200	SMDA15CDR2G	161, 177	SSESD11B	164, 177
SCH1345	201	SMDA24	161, 177	STAR1000	222
SCH1430	186	SMF05	163	STAR250	222
SCH1433	186	SMF05C	175	STF202	165
SCH1434	191	SMF10A	169	STK404-070N-E	14
SCH1435	191	SMF11A	169	STK404-120N-E	14
SCH1436	191	SMF12A	169	STK404-140N-E	14
SCH1439	191	SMF13A	169	STK433-040N-E	14
SCH2825	198	SMF14A	170	STK433-060N-E	14
SCP51460	101, 264	SMF15A	170	STK433-130N-E	14
SD05	167	SMF18A	170	STK433-330N-E	14
SD12	169	SMF20A	171	STK433-840N-E	14
SFT1341	199	SMF22A	171	STK433-890N-E	14
SFT1342	199	SMF24A	171	STK544UC62K-E	149
SFT1345	199	SMF26A	171	STK551U362A-E	149
SFT1350	199	SMF28A	172	STK551U392A-E	149
SFT1423	196	SMF30A	172	STK551U3A2A-E	149
SFT1440	197	SMF33A	172	STK554U362A-E	149
SFT1443	195	SMF36A	172	STK554U362C-E	149
SFT1445	195	SMF48A	173	STK554U392A-E	149
SFT1446	195	SMF5.0A	124, 167	STK57FU391A-E	150
SFT1450	192	SMF58A	173	STK5F1U3E2D-E	149
SFT1458	197	SMF5920	125	STK5F4U3E2D-E	150
SG3525A	84	SMF6.0A	168	STK611-721-E	149
SL05	161, 168	SMF6.5A	168	STK621-061-E	149
SL12	161, 175	SMF7.0A	168	STK672-040-E	152

# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
STK672-050-E	152	STK672-642A-E	155	TCP-3047N	260
STK672-060-E	152	STK672-642AN-E	155	TCP-3056H	260
STK672-070-E	152	STK672-732A-E	155	TCP-3056N	260
STK672-080-E	152	STK672-740A-E	155	TCP-3068H	260
STK672-110-E	152	STK672-740AN-E	155	TCP-3068N	260
STK672-110-SL-E	152	STK673-010-E	155	TCP-3082H	260
STK672-120-E	152	STK673-011-E	155	TCP-3082N	260
STK672-210-E	152	STK681-300	144	TF252	182
STK672-220-E	153	STK681-310	144	TF252TH	182
STK672-340-E	153	STK681-320	145	TF256	182
STK672-400	153	STK681-332-E	145	TF256TH	182
STK672-400C-E	153	STK681-352-E	145	TF262TH	182
STK672-401C-E	153	STK681-360-E	145	TF408	182
STK672-410	153	STK682-010-E	155	TF410	182
STK672-410C-E	153	STK760-213A-E	10	TF412S	182
STK672-430A-E	153	STK760-216-E	10	TF414	182
STK672-430AN-E	153	STK984-091A-E	148	TIG056BF	180
STK672-432A-E	153	SVC203C	122	TIG058E8	180
STK672-432B-E	153	SVC230	122	TIG065E8	180
STK672-440A-E	153	SVC236	122	TIG067SS	180
STK672-440AN-E	153	SVC270	122	TIG074E8	180
STK672-440B-E	153	SVC272	122	TIP100	35
STK672-440BN-E	153	SVC276	122	TIP101	35
STK672-442AN-E	153	SVC704	122	TIP102	35
STK672-442B-E	154	SVC710	122	TIP106	35
STK672-442BN-E	154	SZBZX84C3V3LT1	123	TIP107	35
STK672-520	154	SZBZX84C7V5	126	TIP110	33
STK672-523-E	154	SZMMSZ52	133	TIP111	33
STK672-532	154	T2322B	255	TIP112	33
STK672-533-E	154	T2500D	255	TIP115	33
STK672-540	154	T2800D	255	TIP116	33
STK672-543-E	154	TCA0372	17	TIP117	33
STK672-600	154	TCC-103	260	TIP120	35
STK672-610	154	TCC-106	260	TIP121	35
STK672-612B-E	154	TCP-3012H	260	TIP122	35
STK672-622A-E	154	TCP-3027H	260	TIP125	35
STK672-630A-E	154	TCP-3027N	260	TIP126	35
STK672-630C-E	154	TCP-3033H	260	TIP127	35
STK672-632A-E	154	TCP-3033N	260	TIP140	36
STK672-640A-E	154	TCP-3039H	260	TIP141	36
STK672-640AN-E	154	TCP-3039N	260	TIP142	36
STK672-640C-E	155	TCP-3047H	260	TIP147	36



# Alphabetical Parts Listing

Device Number	Page	Device Number	Page	Device Number	Page
TIP2955	48	TIP50	38	UC3844B	8
TIP29A	42	TL431	263	UC3845B	8
TIP29B	42	TL431A	263	UESD3.3D	162
TIP29C	42	TL431B	264	UESD5.0D	162
TIP3055	48	TL494	84	UESD6.0D	162
TIP30C	42	TL594	84	ULN2003	141
TIP31	43	TLV271	17	UMC2	51
TIP31A	43	TLV431A	263	UMC3	51
TIP31B	43	TLV431B	263	UMC5	51
TIP31C	43	TND027MP	204	UMZ1N	49
TIP32	43	TND027SW	204	VEC2315	198
TIP32A	43	TND314S	143	VEC2415	185
TIP32B	43	TND315S	143	VEC2616	183
TIP32C	43	TND316S	143	VITA12k	222
TIP33C	45	TND321VD	143	VITA1300	222
TIP35A	48	TND322VD	143	VITA16K	222
TIP35C	48	TND323VD	143	VITA2000	222
TIP36A	48	TND523SS	143	VITA25K	222
TIP36C	48	TND524VS	143	VITA5000	222
TIP41A	44	TND525SS	143	WPB4001	196
TIP41B	44	TS391	15	WPB4002	197
TIP41C	44	UAA2016	141	WPH4003	197
TIP42	44	UC2842B	7	Z0107MARLRP	255
TIP42A	44	UC2843B	7	Z0109MAA0P0	255
TIP42B	44	UC2844B	7	Z01XXMA	255
TIP42C	44	UC2845B	8	Z01XXMN	256
TIP47	38	UC3842B	8		
TIP48	38	UC3843B	8		

## Sales and Design Assistance from ON Semiconductor

### ON Semiconductor Distribution Partners

Allied Electronics	www.alliedelec.com	(800) 433-5700
Arrow Electronics	www.arrow.com	(800) 777-2776
Avnet	www.em.avnet.com	(800) 332-8638
Chip One Stop, Inc.	www.chip1stop.com/maker/on	(81) 45 470 8771
Daiwa Distribution Ltd.	www.daiwahk.com	(852) 2341 3351
Digi-Key	www.digikey.com	(800) 344-4539
EBV Elektronik	www.ebv.com/en/locations.html	(49) 8121 774-0
Fuji Electronics Co., Ltd.	www.fujiele.co.jp	(81) 3 3814 1770
Future & FAI Electronics	www.futureelectronics.com/contact	1-800-FUTURE1 (388-8731)
Mouser Electronics	www.mouser.com	(800) 346-6873
Newark/Farnell	www.farnell.com/onsemi	(800) 4-NEWARK
OS Electronics Co., Ltd.	www.oselec.jp	Japanese: (81) 3 3255 5985 Other Languages: (81) 3 3255 6066
Promate Electronic Co.	www.promate.com.tw	(886) 2 2659 0303
RinnoVent Co., Ltd. (Ryosan Group)	www.ryosan.co.jp	(81) 3 3862 2440
RS Components KK	jp.rs-online.com	(81) 45 335 8550
Segyung Bristestone Co.	www.bristestone.com	(82) 2 3218 1511
Serial AMSC	www.serialsystem.jp	(81) 3 5795 1635
Serial Microelectronics, HK	www.serialsys.com.hk	(852) 2790 8220
World Peace Industries Co.	www.wpi-group.com	(852) 2365 4860
WT Microelectronics Co.	www.wtmec.com	(852) 2950 0820
Yosun Electronics	www.yosun.com.tw	(886) 2 2659 8168

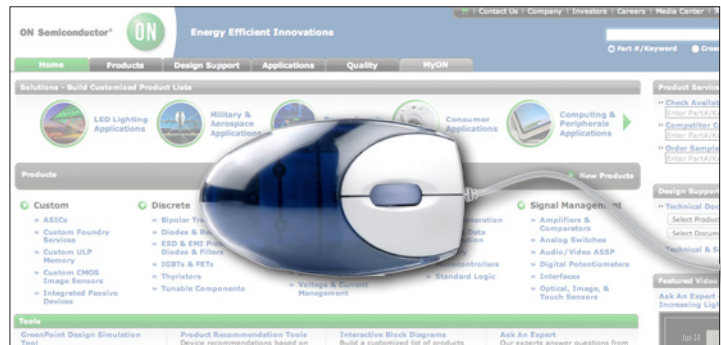
### INTERNATIONAL

<b>GREATER CHINA</b>	Beijing	86-10-8577-8200
	Hong Kong	852-2689-0088
	Shenzhen	86-755-8209-1128
	Shanghai	86-21-5131-7168
	Taipei, Taiwan	886-2-2377-9911
<b>FRANCE</b>	Paris	33 (0)1 39-26-41-00
<b>GERMANY</b>	Munich	49 (0) 89-93-0808-0
<b>INDIA</b>	Bangalore	91-98-808-86706
<b>ISRAEL</b>	Raanana	972 (0) 9-9609-111
<b>ITALY</b>	Milan	39 02 9239311
<b>JAPAN</b>	Tokyo	81-3-5817-1050
<b>KOREA</b>	Seoul	82-31-786-3700
<b>MALAYSIA</b>	Penang	60-4-6463877
<b>SINGAPORE</b>	Singapore	65-6484-8603
<b>SLOVAKIA</b>	Piestany	421 33 790 2450
<b>UNITED KINGDOM</b>	Windsor	44 1753 62 6718

For a comprehensive listing of ON Semiconductor Sales Offices, please visit: [www.onsemi.com/salesupport](http://www.onsemi.com/salesupport)

### AMERICAS REP FIRMS

<b>Alabama</b>	Huntsville	e-Components	(256) 533-2444
<b>Brazil</b>	Countrywide	Ammon & Rizos	(+55) 11-4688-1960
<b>California</b>	Bay Area	Electec	(408) 496-0706
	Southern California	Tech Coast Sales	(949) 305-6869
<b>Canada</b>	Eastern Canada	Astec	(905) 607-1444
<b>Connecticut</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>Florida</b>	Statewide	e-Components	(888) 468-2444
<b>Georgia</b>	Atlanta	e-Components	(888) 468-2444
<b>Illinois</b>	Hoffman Estates	Stan Clothier Company	(847) 781-4010
<b>Indiana</b>	Fishers	Bear VAI	(317) 570-0707
<b>Kansas</b>	Overland Park	Stan Clothier Company	(913) 894-1675
<b>Maine</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>Maryland</b>	Columbia	Third Wave Solutions	(410) 290-5990
<b>Massachusetts</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>Mexico</b>	Countrywide	Ammon & Rizos	(+55) 11-4688-1960
<b>Michigan</b>	St. Joseph	Bear VAI	(440) 526-1991
<b>Minnesota</b>	Eden Prairie	Stan Clothier Company	(952) 944-3456
<b>Missouri</b>	St. Charles	Stan Clothier Company	(636) 916-3777
<b>New Hampshire</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>New Jersey</b>	Statewide	S.J. Metro	(516) 942-3232
<b>New York</b>	Binghamton	TriTech - Full Line Rep	(607) 722-3580
	Jericho	S.J. Metro	(516) 942-3232
	Rochester	TriTech - Full Line Rep	(585) 385-6500
<b>North Carolina</b>	Raleigh	e-Components	(888) 468-2444
<b>Ohio</b>	Brecksville	Bear VAI Technology	(440) 526-1991
<b>Puerto Rico</b>	Countrywide	e-Components	(888) 468-2444
<b>Rhode Island</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>Vermont</b>	Statewide	Paragon Electronic Systems	(603) 645-7630
<b>Wisconsin</b>	Evansville	Stan Clothier Company	(608) 882-0686
	Oconomowoc	Stan Clothier Company	(608) 882-0686



ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

#### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada.

**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910

**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative