TND310

ON Semiconductor Device Nomenclature

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ON Semiconductor

ON Semiconductor®

www.onsemi.com

REFERENCE MANUAL

This document contains the device nomenclature breakdown (also referred to as the part number decoder, product naming convention, or part naming convention) for ON Semiconductor orderable devices. Whenever possible, ON Semiconductor uses these numbering systems in the naming of their products.

Historical Nomenclature Notes

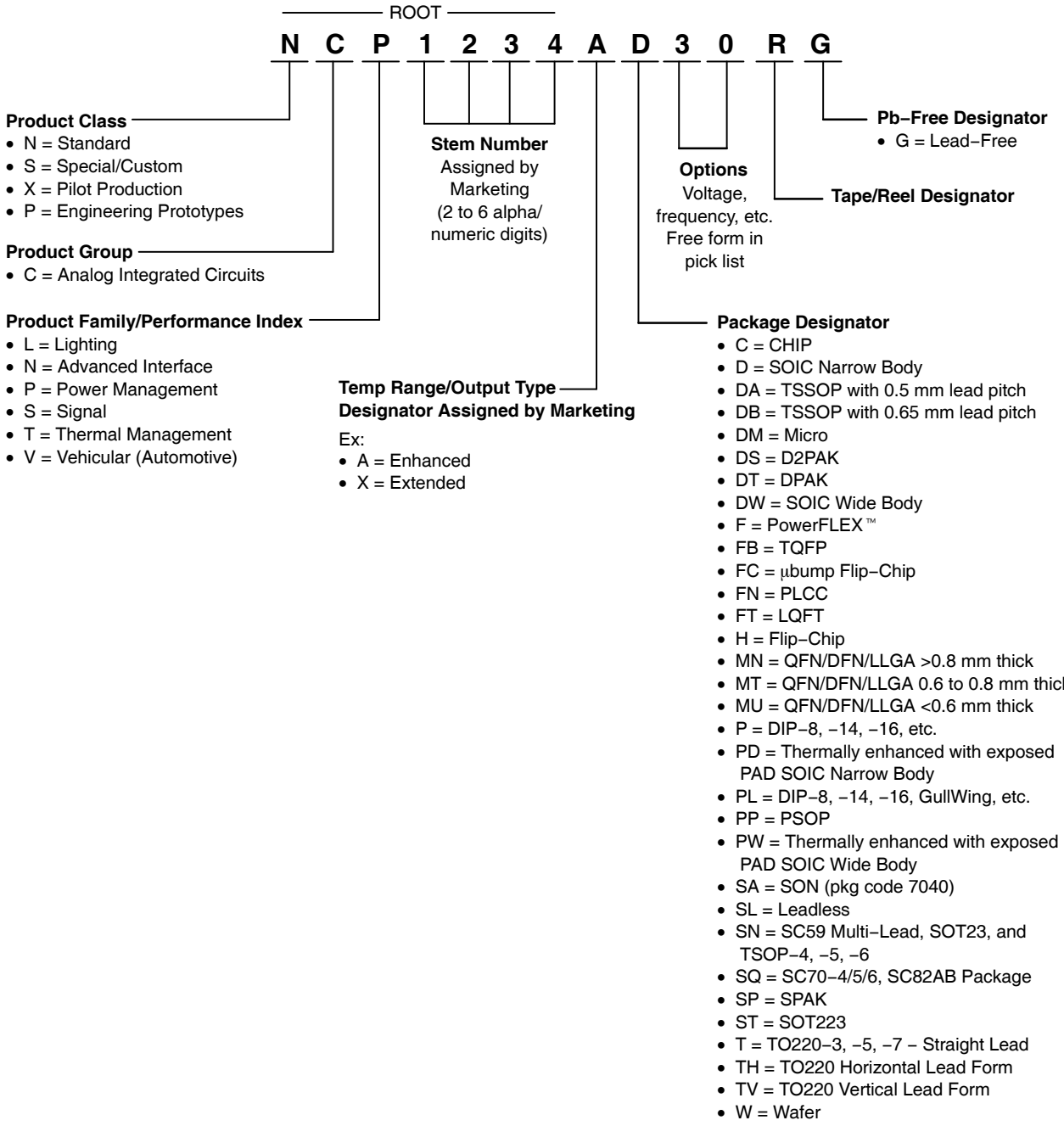
During its history, ON Semiconductor has been part of another company, and has acquired other companies and product lines. In order to maintain consistency for customers, part numbers have not changed, wherever possible. The following prefixes may indicate the original manufacturer:

- **Ax** – Aptina Imaging Corporation
- **AX** – Axsem AG
- **ADx** – Analog Devices, Inc.
- **AMIS** – AMI Semiconductor
- **ASM** – PulseCore
- **CAT** – Catalyst Semiconductor
- **CS** – Cherry Semiconductor
- **Kxx** – Truesense Imaging, Inc.
- **MC** – Motorola
- **NOI** – Cypress Semiconductor

The ESD/TVS, small signal diode and transistor, and thyristor portfolios have no single standard naming convention. They consist of many industry standard nomenclatures, along with several market targeted naming conventions. For any questions, please contact your local ON Semiconductor sales representative.

Current Nomenclatures

Naming Convention for Analog Devices



Naming Convention for CMOS Logic Family Devices

MC 74 VHCT XX 244A DW R2 G

Circuit Identifier
- MC = Motorola
- NL = ON Semiconductor

Family Type
- 74 = 74 Series (−55 to +125°C)
- AS = Analog Switches
- SF = Special Function
- 17 = Single Gate
- 27 = Dual Gate
- 37 = Triple Gate

CMOS Specification Identifier
- AC = Advance CMOS
- ACT = Advance CMOS TTL Compatible
- HC = Buffered High Speed CMOS
- HCT = High Speed CMOS TTL Compatible
- HCU = Unbuffered High Speed CMOS
- LCX = Low Voltage CMOS
- LVX = Low Voltage CMOS
- VCX = High Speed, Low Voltage CMOS
- VHC = Advance High Speed CMOS
- VHCT = VHC TTL Compatible
- SV = Ultra Low Voltage Single Gate (VCX)
- SZ = Single Gate LCX
- WZ = Double/Triple Gate LCX

Special Feature
- Blank = No Specific Feature
- H = Bus Hold
- 1G = Single Gate
- 1GT = Single Gate TTL Compatible

Function Type
- 00
- 04
- 244

Package Type
- P or N for PDIP
- D for 150 mil SOIC
- DF for SOT
- DT for TSSOP
- DW for 300 mil Plastic SOIC
- M or F for 200 mil EIAJ SOIC
- MN for QFN/DFN/LLGA >0.8 mm thick
- MT for QFN/DFN/LLGA 0.6 to 0.8 mm thick
- MU for QFN/DFN/LLGA <0.6 mm thick
- FCT for Flip−Chip

Tape/Reel Designator

Pb−Free Designator
- G = Lead−Free

Naming Convention for Analog Switch Devices

NLAS 5 2 2 3 0

Application Type
- 5 = Audio
- 7 = Multimedia/USB/Data
- 9 = General Purpose

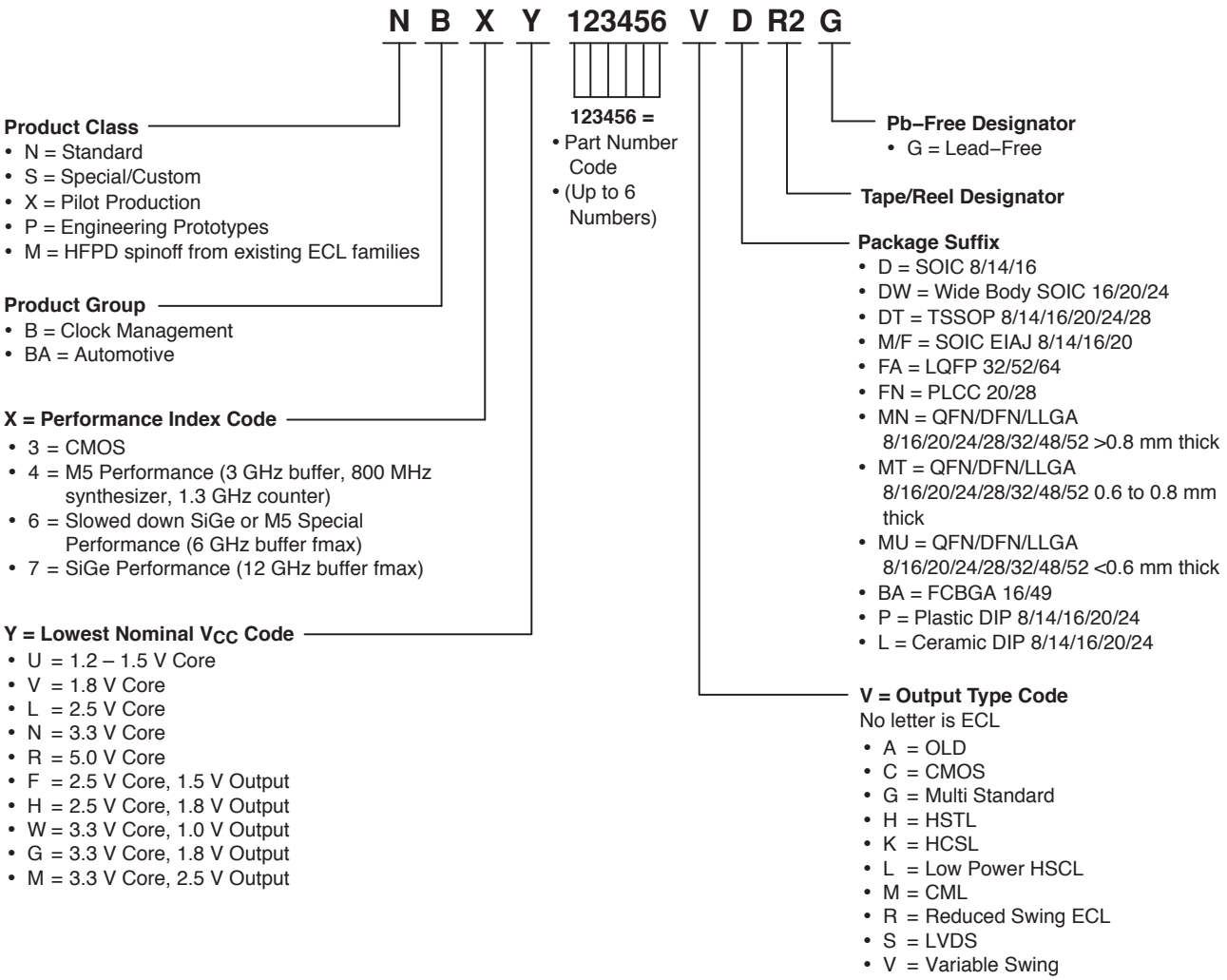
Channel Number
- 1, 2, 3, 4, 8...

Function Number
- 1 = SPST
- 2 = SPDT
- 3 = DPDT
- 4 = 4:1 Multiplexer
- 8 = 8:1 Multiplexer

Ron Range
- 0: Ron<100 ~ 1000 Ω
- 1: Ron<10 ~ 100 Ω
- 2: Ron<1 ~ 10 Ω
- 3: Ron<1 ~ 0.5 Ω

Flexible
(Could be used for bandwidth or other parameters) Will not be present unless needed.

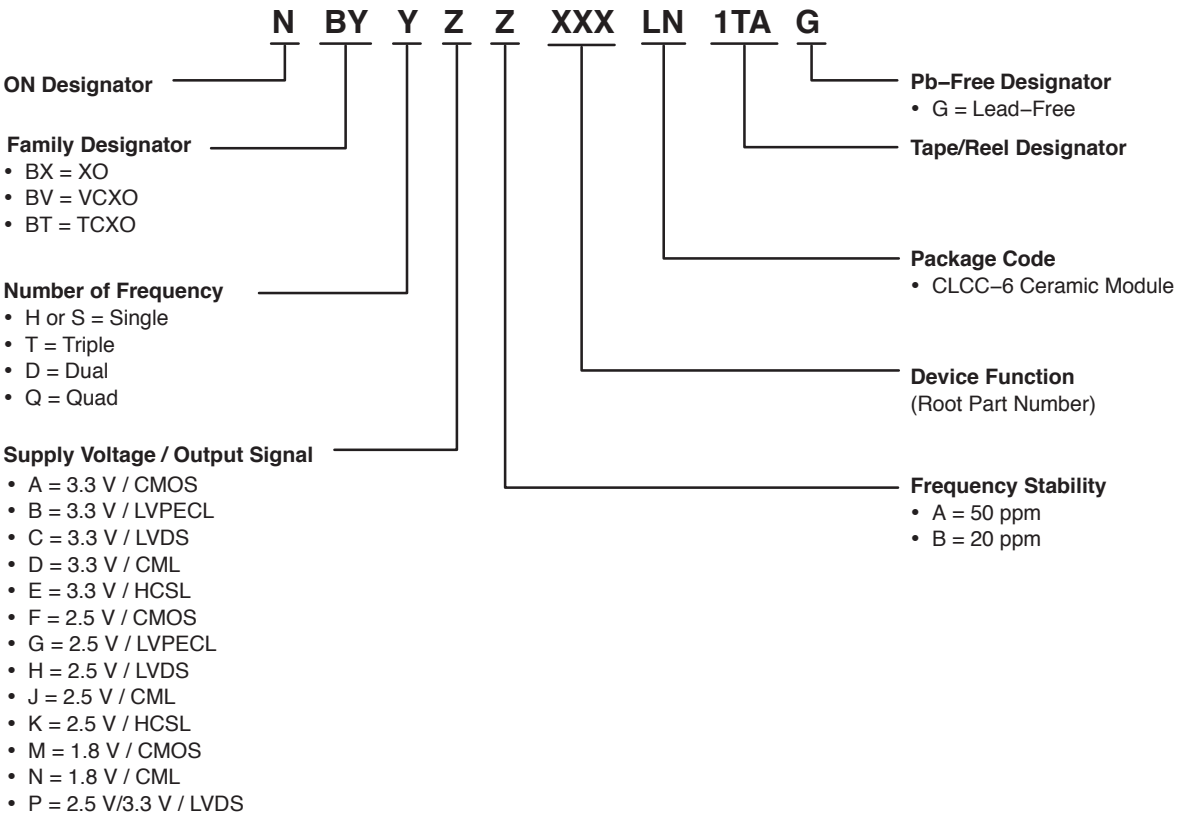
Naming Convention for Clock and Data Management Devices



Possible Device Prefixes

MC	MCH	MCK	MCW (Prescaler & Wafer Sales)
MCWh	MCWK	NBC	NBSG
SB	SC	NBSX (Mixed Signal)	

Naming Convention for Crystal Oscillator Devices



Naming Convention for Integrated Solutions Devices

N U D 3 1 3 4 X6 T1 G

Product Class
- N = Standard
- S = Special/Custom
- X = Pilot Production
- P = Engineering Prototypes

Product Group
- U = MicroIntegration™
- I = Smart

Product Family
- D = Driver
- F = Filter
- P = Protection
- S = Special Function

Descriptor 1

Product Family Description		Symbol
Drivers	Legacy	3
	LED	4
Filters	# of Filters	1–9
Protection	# of Protected Lines	1–9
SpecFunct/Customer Special Part No		0–9

Descriptor 2

Product Family Description

Driver	Function Type
Filter	Part Number
Protection	Line Type
Protection	Line Type
SpecFunct/Customer Special Part No	

Symbol	Symbol Definition
1	Relay
0–9	4 = Audio Filters
1	Data Line Only
2	Data and Power Line
0–9	

Pb−Free Designator
- G = Lead−Free

Tape/Reel Designator

Package Designator
- V = 24 Pin MLF
- H = ChipFET™
- B = D2PAK
- C = DPAK
- − Die T & R
- FC = Flip−Chip
- K = Micro8™
- U = MicroLeadless™
- QP = PLLP
- SN = POWERMITE®
- MN = QFN/DFN: >0.8 mm thick
- MT = QFN/DFN: 0.6 to 0.8 mm thick
- MU = QFN/DFN: <0.6 mm thick
- P5 = SOT953
- P6 = SOT963
- WT = SC70
- T = SC75/SC89
- W1 = SC88
- W5 = SC88A
- A = SMA
- S = SMC
- D = SOIC
- Z = SOT223
- L = SOT23
- XV5 = SOT553
- XV6 = SOT563
- E = SPAK
- M5 = TSOP5
- M = TSOP6/SC74

'D' before pkg designator indicates dual.
'1' after pkg designator = latch off SMART only.
'2' after pkg designator = auto−retry for S products only.

Descriptor 3, 4

Product Family Description		Symbol
Driver	Part Number	0–9
Filter	Part Number	0–9
Protection	Part Number	0–9
SpecFunct/Customer Special		0–9

Naming Convention for MOS Power Devices

N G MS 1 3 001 N T1 G

Product Class
- N = Standard
- S = Special/Custom
- X = Pilot Production
- P = Engineering Prototypes

Product Group
- G = IGBT
- M = Micro Integration
- T = Power MOSFETs
- V = Automotive MOSFETs

Package Designator(s)
- A = SC-75
- B = D2PAK
- C = Chip Sales
- D = DPAK
- E = SC-89
- F = SOT-223 (Low Voltage)
- F = TO-220FP (High Voltage)
- G = TSOP
- H = ChipFET™
- J = SC-88
- K = SOT-723
- L = QFN/DFN/WDFN
- M = SOIC-8
- N = SOT-1123/SOT-553/XDFN/ULLGA
- P = TO-220
- Q = 8 mm x 8 mm (Low Voltage)
- Q = TSSOP (High Voltage)
- R = SOT-23
- S = SC-70
- T = Micro8™ (Low Voltage)
- T = SOT-223 (High Voltage)
- U = SOT-953
- V = FlipChip
- W = TO-247
- Y = TO-264
- Z = SOT-563
- AT = ATPAK
- BA = TO-263 FA Forming
- BD = TO-263 FD Forming
- CR = Dicing Ring Packing
- CT = Wafer Tray Packing
- CW = Wafer Packing
- DP = TP
- FP = TO-220F-3FS/3SG
- PL = TO-220-3L
- TL = TO-3P
- UL = TO-3PF
- WL = TO-247-3L
- P3 = CP
- P4 = CP4
- C3 = CPH3
- C5 = CPH5
- C6 = CPH6
- EC = ECH8
- EF = EFCP
- EM = EMH8
- M3 = MCPH3
- M5 = MCPH5
- M6 = MCPH6
- PC = PCP
- SC = SCH6
- FW = SOIC8
- VE = VEC8
- 'D' = After Package Designator = Dual
- 'L' = After Package Designator = Leadless
- 'S' = After Package Designator = Single Config
- 'F' = After Package Designator = Flat Lead (or Legacy FULLPAK™)
- 'G' = After Package Designator = >0.80 mm Thick
- 'J' = After Package Designator = 0.60 to 0.80 mm Thick
- 'Q' = After Package Designator = Quad
- 'U' = After Package Designator = <0.60 mm Thick

Battery Protection Products
- EFC = EFCP (CSP)
- EMH = EMH8
- ECH = ECH8

Voltage Rating
- 1 = <1 to 8 V
- 2 = 9 to 12 V
- 3 = 13 to 20 V
- 4 = 21 to 30 V
- 5 = 31 to 60 V
- 6 = 61 to 124 V
- 7 = 125 to 250 V
- 8 = 251 to 499 V
- 9 = 500 V +

Technology
- 0 = HD Plus
- 1 = Trench 1
- 2 = Standard IGBT
- 3 = Smart IGBT
- 4 = HD3E
- 5 = Raised Poly
- 6 = TMOS 7
- 7 = FastMOS
- 8 = Trench 2
- 9 = Trench 3
- A = Trench 4
- B = Trench 5
- C = Trench 6
- D = Superjunction 2
- E = SSG Trench 4
- F = SSG Trench 5
- G = GaN
- H = Trench 8
- J = Trench 7
- L = Trench 10
- P = SSG HVFET
- R = RF MOSFET
- U = UH4
- U1 = Superjunction Gen 1
- U2 = Superjunction Gen 2

Part Number
- (000 - 999) Sequential

Polarity/Other
- A = Current Sense
- B = Bidirectional
- N = N Channel
- P = P Channel
- C = Complementary
- F = FETKY®
- K = Temperature Sense
- L = Low Logic Level
- U = Low Gate Drive (Under 2.5 V)
- S = SenseFET
- T = TVS
- W= Wafer Pack
- Z = ESD
- E = Enhanced

Packaging/Tape & Reel Designator

Pb-Free/Halide Free Designator
- G = Pb-Free Plating/260c
- H = Halide Free Compound

Naming Convention for SO−8 (MiniMOS™), Micro8™, SOT−223, and TSOP−6 Power MOSFETs

PREVIOUS FORMAT 1

M M SF 4 P 01 HD R1

Circuit Identifier

TMOS®
- M = Miniature

Package Type
- DF = Dual FET (SO−8)
- SF = Single FET (SO−8)
- FT = FET Transistor (SOT−223)
- MTSF = Single FET (Micro8)
- MTDF = Dual FET (Micro8)
- MGSF = TSOP−6, SOT−23

Current

Tape/Reel Designator

Optional Suffix
- E = Energy Rated
- HD = High Cell Density
- L = Logic Level
- V = TMOS V™ (Five)
- Z = ESD

Voltage Rating (Divided by 10)

Channel Polarity
- N or P
- C = Complementary

PREVIOUS FORMAT 2

M T P 75 N 06 HD

Circuit Identifier
- X = Engineering Samples

TMOS®
- T = TMOS
- L = SMARTDISCRETES™
- G = IGBT (Except MGSF)

Package Type
- P = Plastic TO−220
- D = DPAK
- A = TO−220 Isolated
- W = TO−247
- B = D2PAK
- Y = TO−264

Current

Channel Polarity
- N or P

Voltage Rating (Divided by 10)

Optional Suffix
- L = Logic Level
- E = Energy Rated
- T4 = Tape & Reel (DPAK/D2PAK)
- RL = Tape & Reel (DPAK)
- HD = High Cell Density
- V = TMOS V™ (Five)

PREVIOUS FORMAT 3

M M SF 4 2 05

Circuit Identifier

TMOS®
- M = Miniature

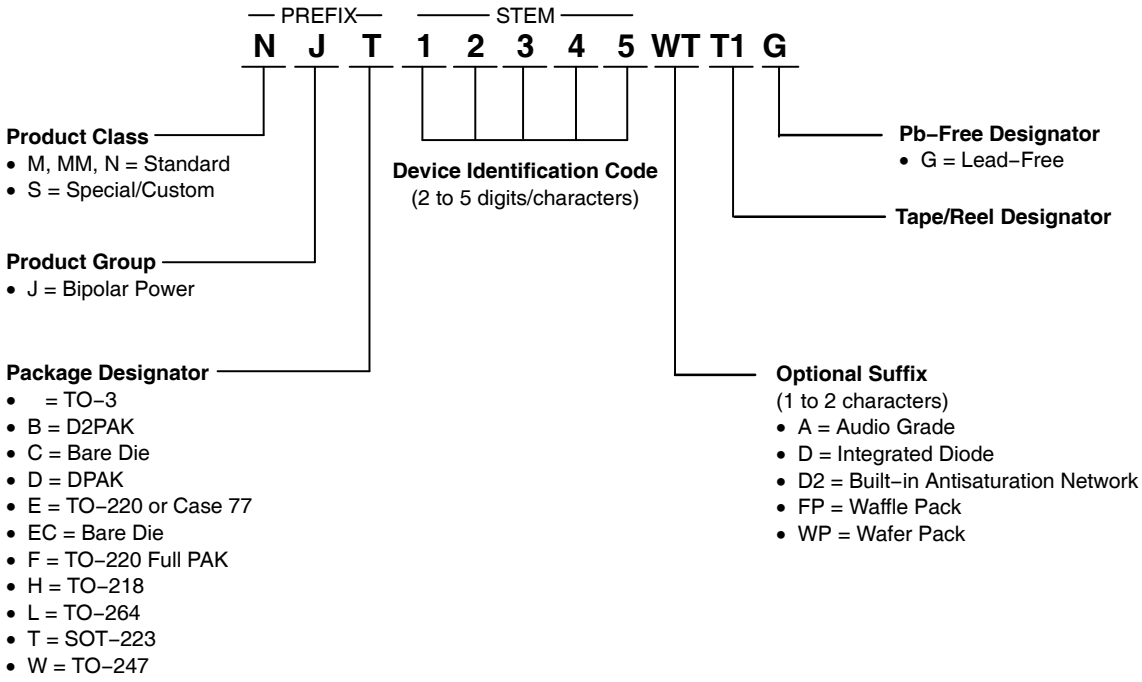
Package Type
- DF = Dual FET (SO−8)
- SF = Single FET (SO−8)
- FT = FET Transistor (SOT−223)
- MTSF = Single FET (Micro8)
- MTDF = Dual FET (Micro8)
- MGSF = TSOP−6, SOT−23

Technology
- 5 = Trench
- 4 = HD3e
- 3 = HD3
- 1 = HD1

Voltage + 10

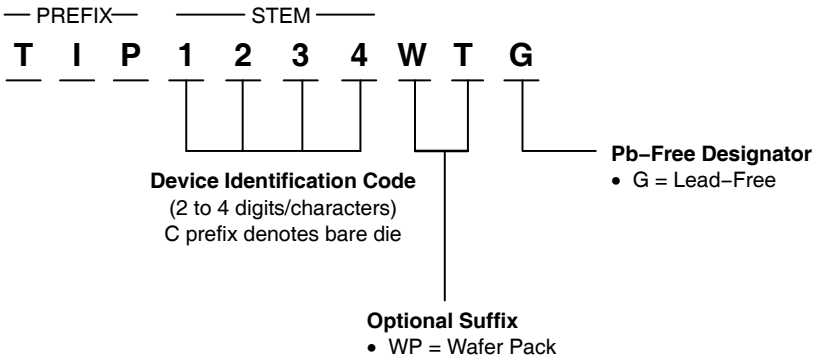
Even = N Channel
Odd = P Channel

Naming Convention for Bipolar Power Devices

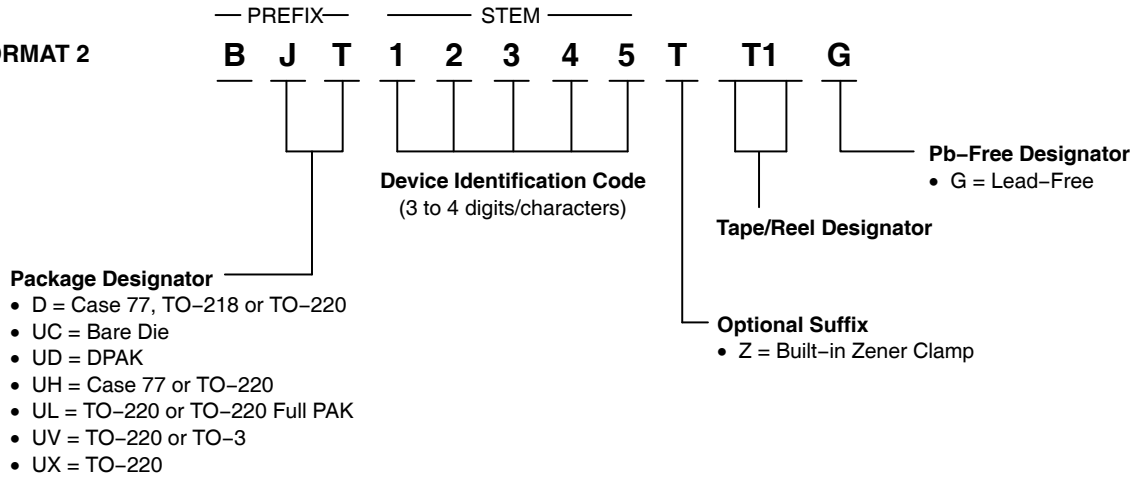


Naming Convention for Bipolar Power

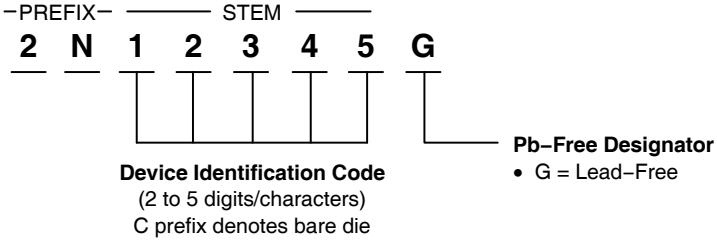
PREVIOUS FORMAT 1



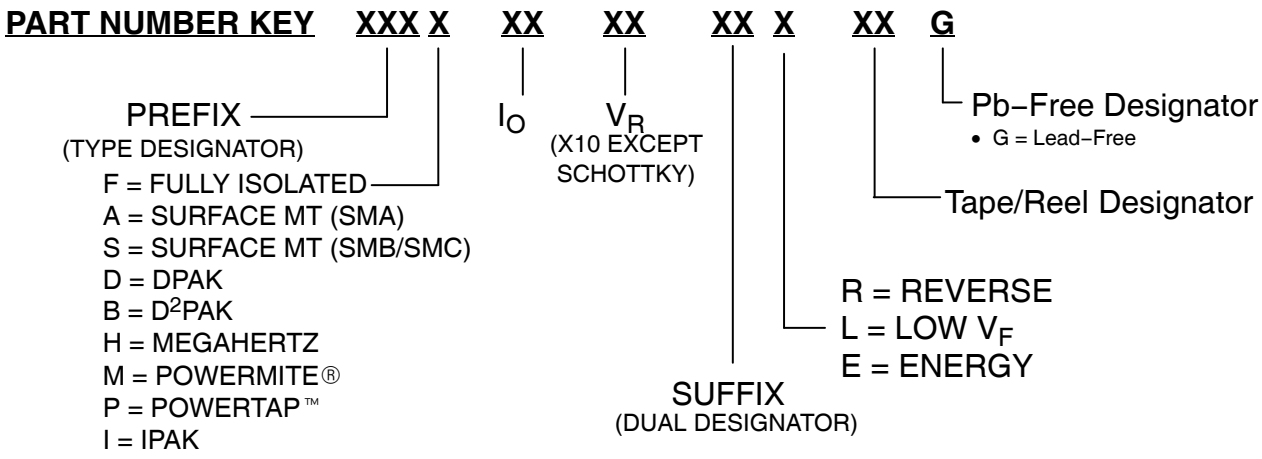
PREVIOUS FORMAT 2



PREVIOUS FORMAT 3



Naming Convention for Rectifier Devices



PREFIX KEY

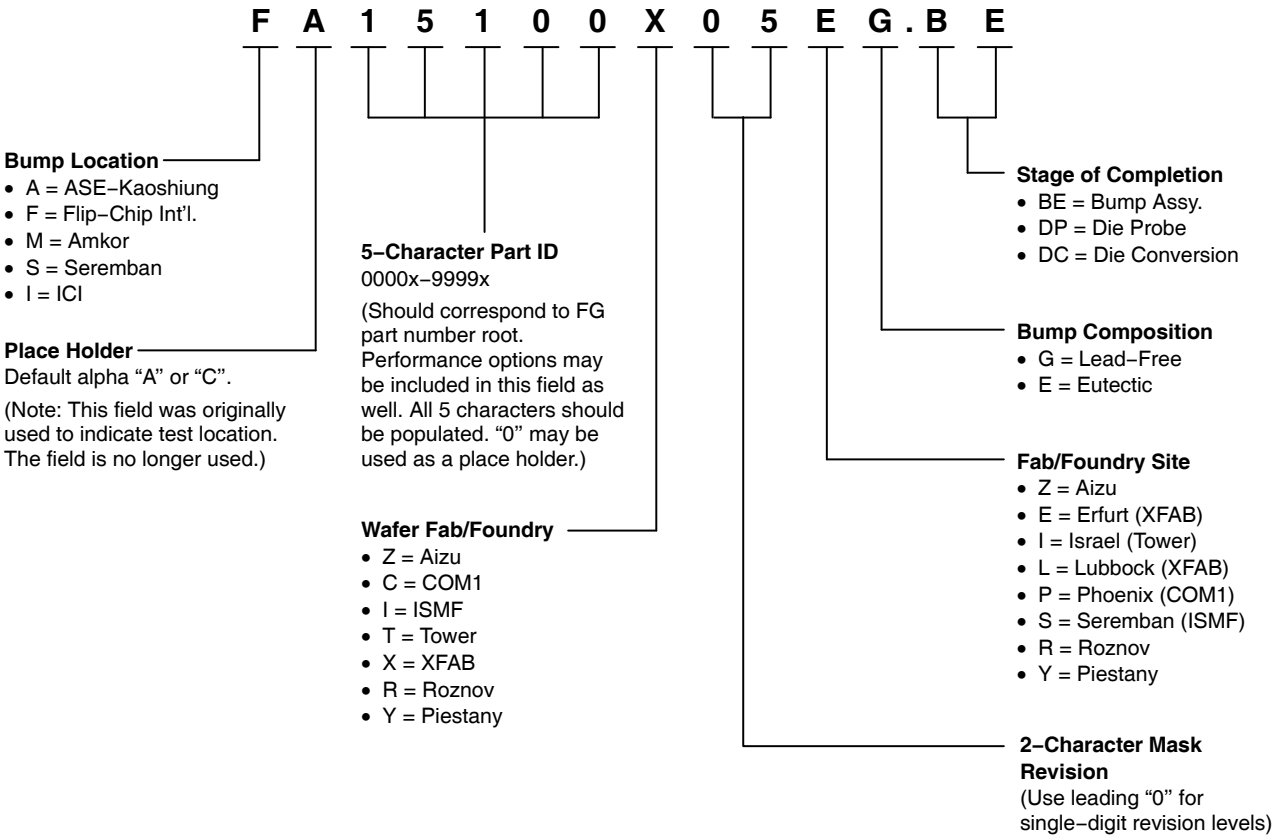
MUR = ULTRA FAST RECTIFIER
MBR = (SCHOTTKY) BARRIER RECTIFIER
MR = STANDARD & FAST RECOVERY
MSR = ULTRASOFT

SUFFIX KEY

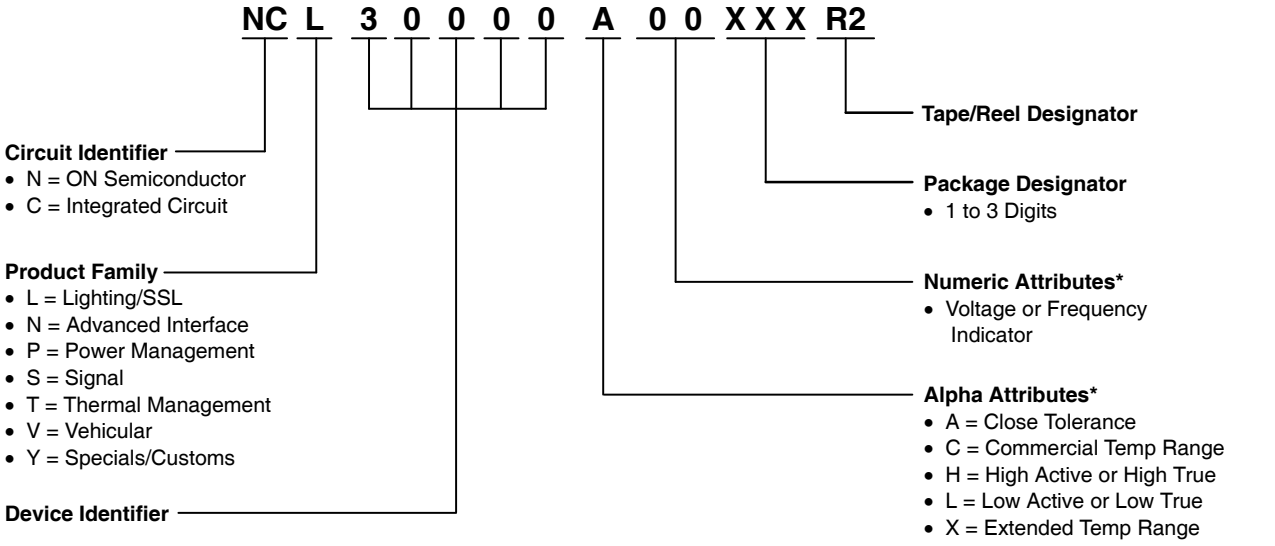
CT = CENTER TAP (DUAL) TO−220, POWERTAP, DPAK, D^{2}PAK
PT = CENTER TAP (DUAL) TO−218 PACKAGE
WT = CENTER TAP (DUAL) TO−247
SF = SOD−123 FLAT LEAD
PF = POWER FACTOR CORRECTION SPECIFIC

EXAMPLE:	MUR	30	20	WT
	ULTRAFAST	30 AMP	200 V	CENTER TAP (DUAL) TO−247
EXAMPLE:	MBR	30	45	WT
	SCHOTTKY	30 AMP	45 V	CENTER TAP (DUAL) TO−247

Naming Convention for FMO Bump



Naming Convention for LED/Lighting Products



* Optional

Naming Convention for I²C Serial EEPROMs

(Formerly Catalyst Semiconductor)

ROOT

CA T 24C AAA P T –G TN

Product Group

Product Class
- T = Standard Product
- V = Automotive Grade Product

Product Family
- 24C = I²C Serial EEPROM

Memory Density
- 01 = 1 Kb
- 02 = 2 Kb
- 04 = 4 Kb
- 08 = 8 Kb
- 16 = 16 Kb
- 32 = 32 Kb
- 64 = 64 Kb
- 128 = 128 Kb
- 256 = 256 Kb
- 512 = 512 Kb
- (M) 01 = 1024 Kb

Package Designator
- HU3 = UDFN, 2 x 3 x 0.5 mm
- HU4 = UDFN, 2 x 3 mm, 0.5P, Extended Pad
- HU5 = UDFN, COL, 2 x 3 mm
- L = PDIP, 300 mils
- TD = TSOT−23, 1.6 x 2.9 x 1.00 mm
- VP2 = TDFN, 2 x 3 x 0.75 mm
- W = SOIC
- X = SOIC
- Y = TSSOP, 4.4 mm
- Z = MSOP, 3 x 3 mm
- ZD2 = TDFN, 3 x 4.9 x 0.75 mm

Temperature Range
- I = Industrial (−40°C to +85°C)
- E = Extended (−40°C to +125°C)

Plating Finish
- G = NiPdAu, RoHS Compatible
- Blank = Matte−Tin, RoHS Compatible

Tape & Reel Designator
- T = Tape & Reel
- N = Number of Thousands Pieces/Reel

Naming Convention for SPI Serial EEPROMs

(Formerly Catalyst Semiconductor)

ROOT

CA T 25 AAA P T –G TN

Product Group

Product Class
- T = Standard Product
- V = Automotive Grade Product

Product Family
- 25 = SPI Serial EEPROM

Memory Density
- 010 = 1 Kb
- 020 = 2 Kb
- 040 = 4 Kb
- 080 = 8 Kb
- 160 = 16 Kb
- 320 = 32 Kb
- 640 = 64 Kb
- 128 = 128 Kb
- 256 = 256 Kb
- 512 = 512 Kb
- (M) 01 = 1024 Kb

Package Designator
- HU2 = UDFN, 2 x 2 x 0.5 mm
- HU3 = UDFN, 2 x 3 x 0.5 mm
- HU4 = UDFN, 2 x 3 mm, 0.5P, Extended Pad
- L = PDIP, 300 mils
- V = SOIC
- VP2 = TDFN, 2 x 3 x 0.75 mm
- X = SOIC
- Y = TSSOP, 4.4 mm
- Z = MSOP, 3 x 3 mm
- ZD2 = TDFN, 3 x 4.9 x 0.75 mm

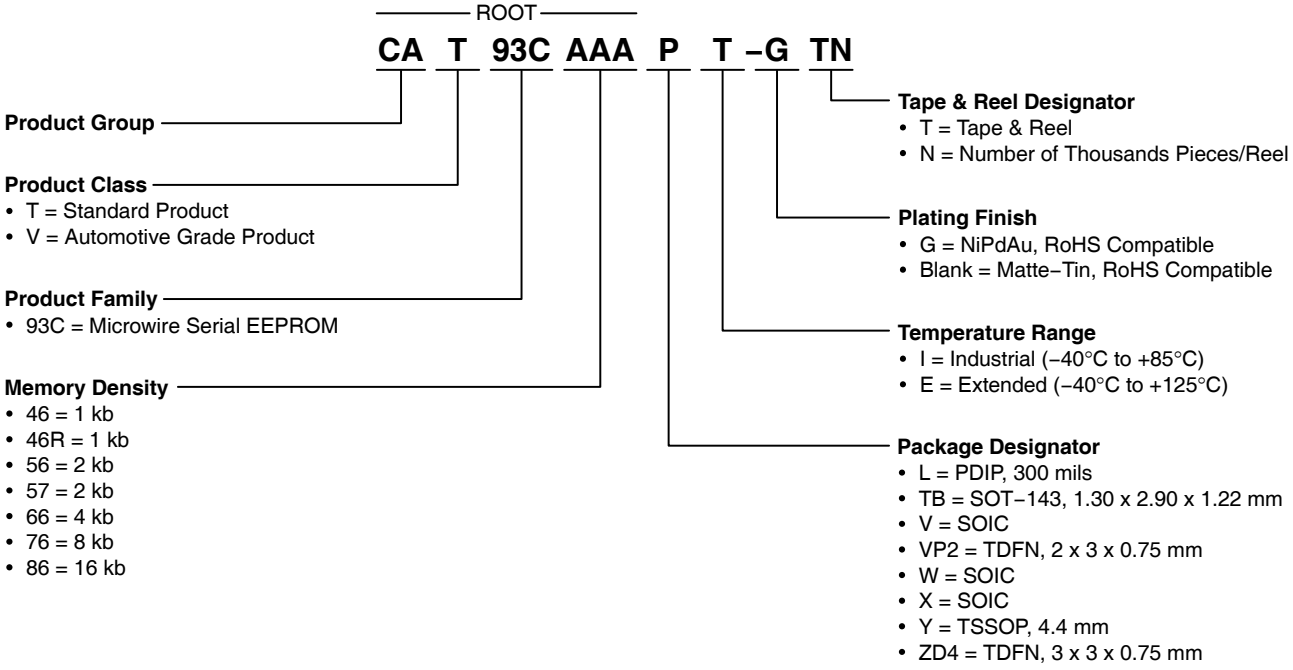
Temperature Range
- I = Industrial (−40°C to +85°C)
- E = Extended (−40°C to +125°C)

Plating Finish
- G = NiPdAu, RoHS Compatible
- Blank = Matte−Tin, RoHS Compatible

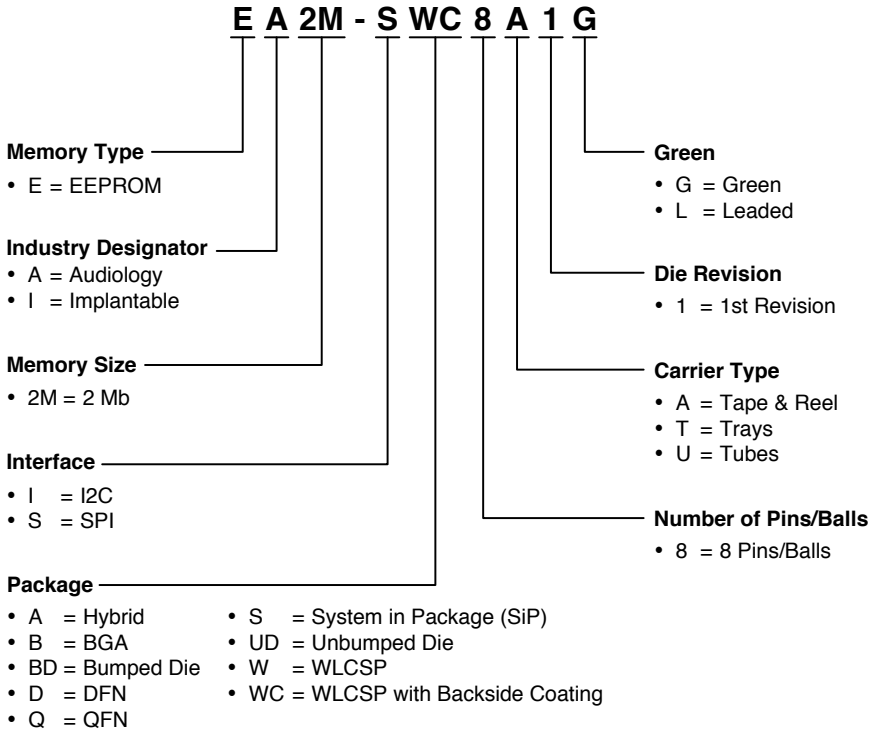
Tape & Reel Designator
- T = Tape & Reel
- N = Number of Thousands Pieces/Reel

Naming Convention for Microwire Serial EEPROMs

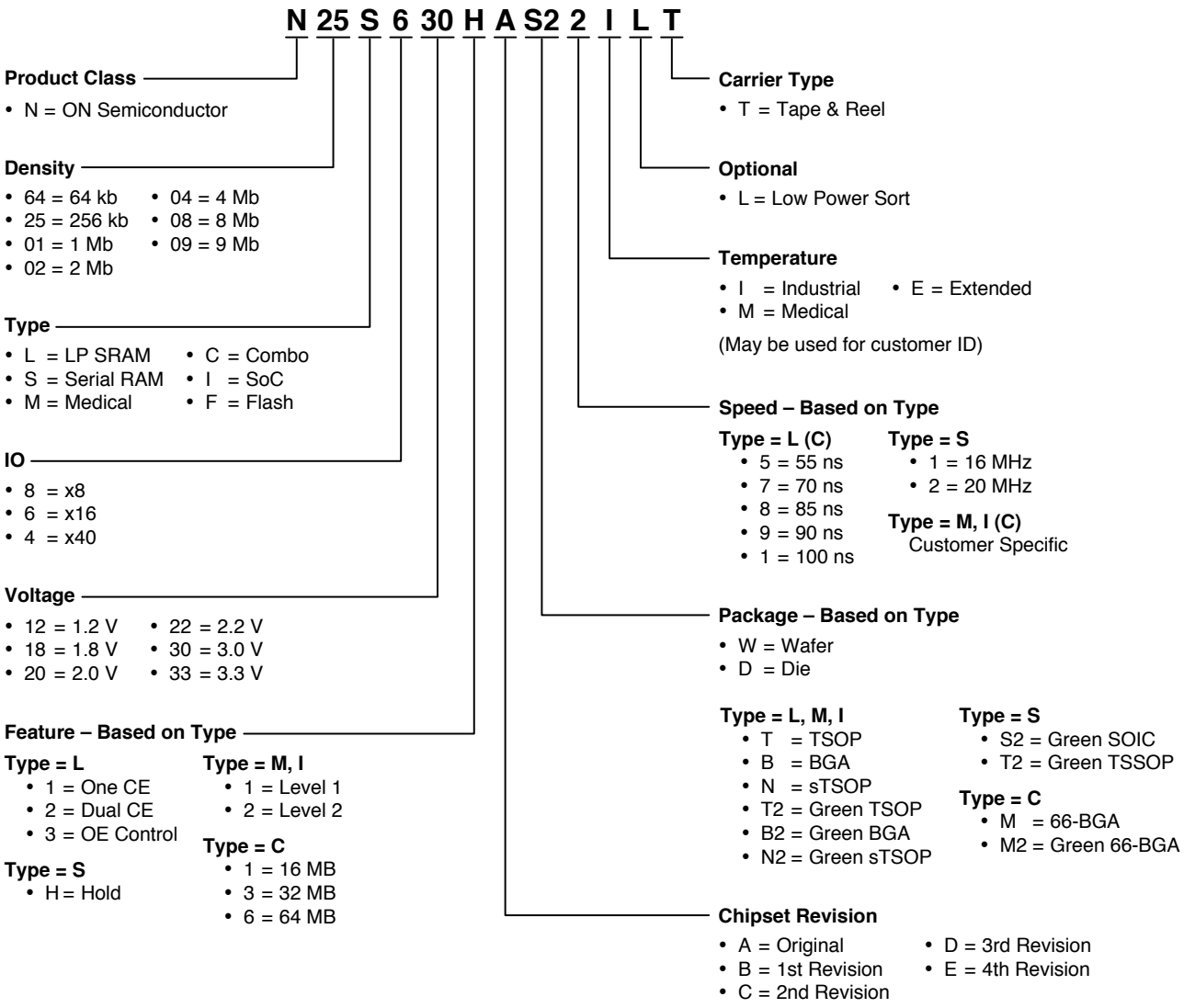
(Formerly Catalyst Semiconductor)



Naming Convention for EEPROM Memory

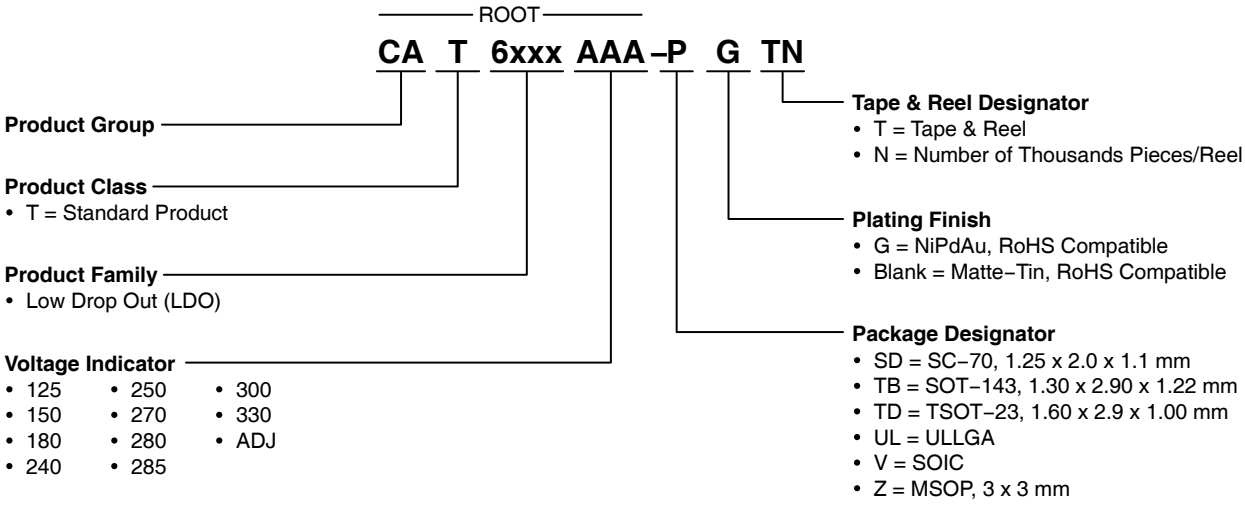


Naming Convention for Memory Products



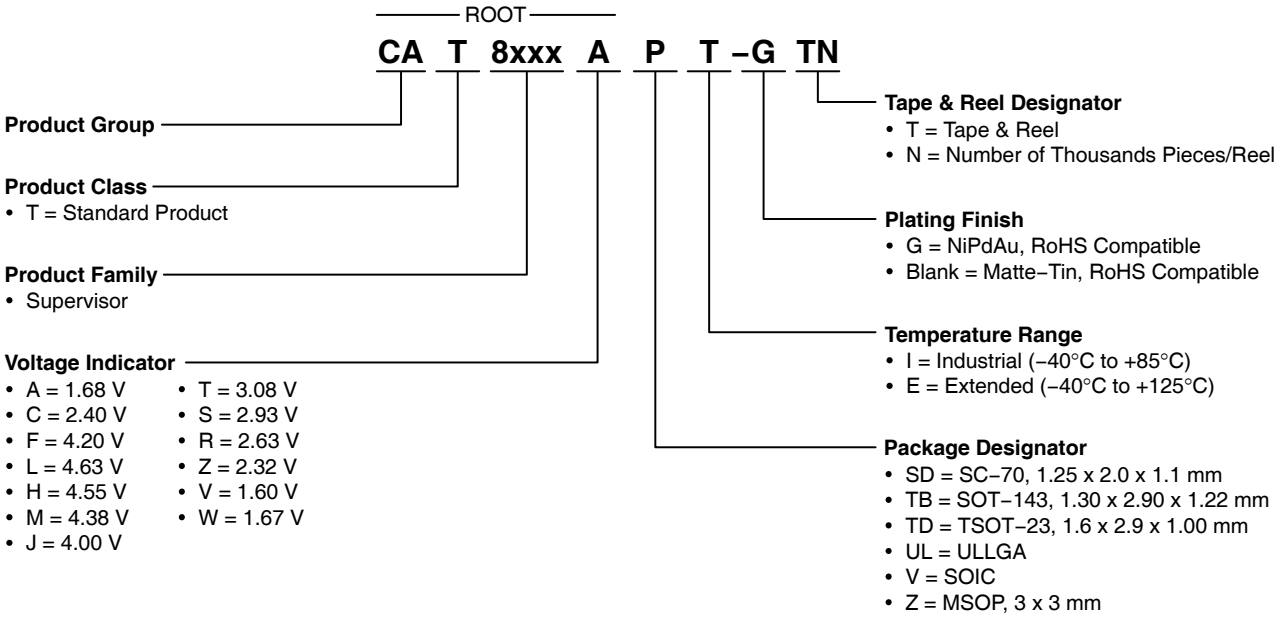
Naming Convention for Low Drop Out (LDO) Products

(Formerly Catalyst Semiconductor)



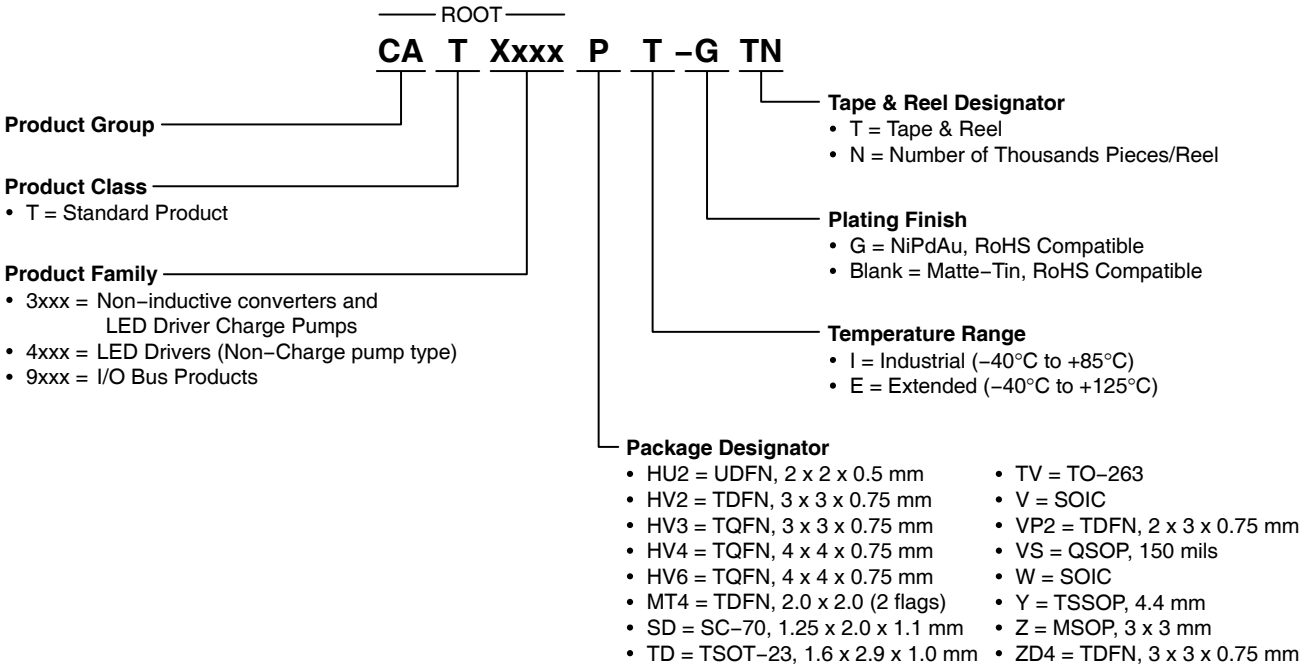
Naming Convention for Supervisor Products

(Formerly Catalyst Semiconductor)



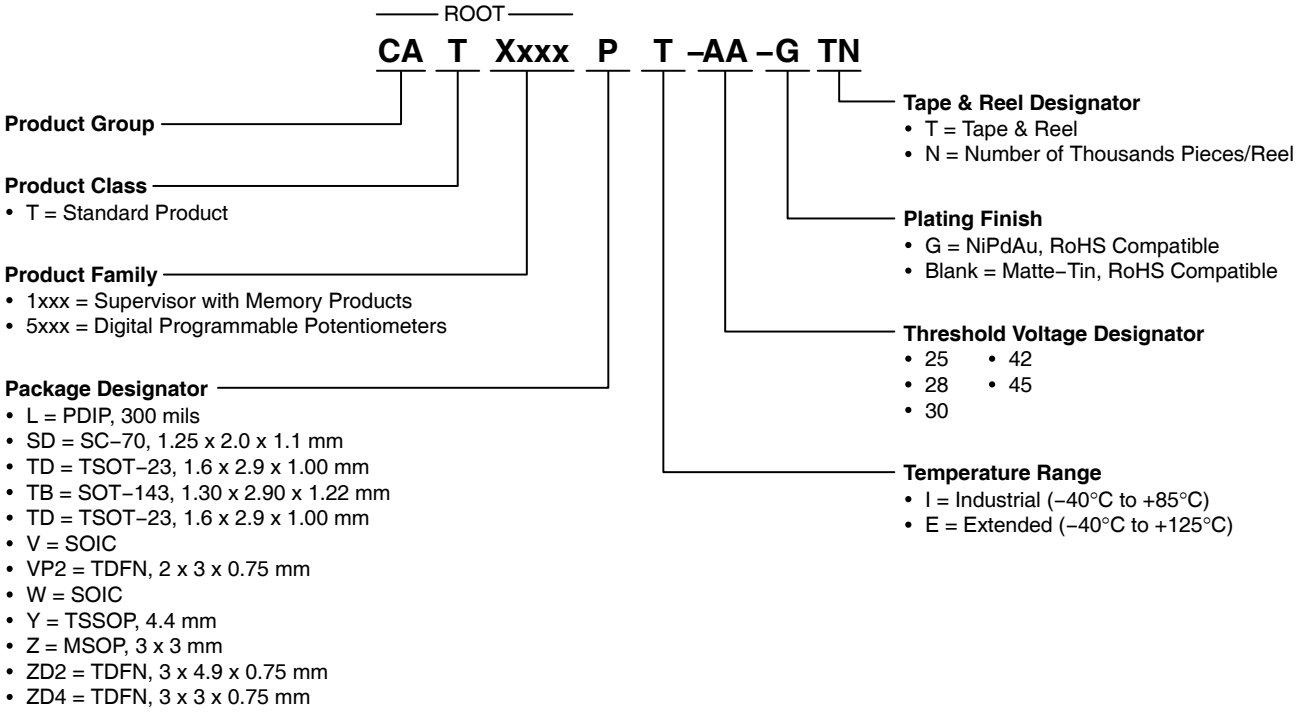
Naming Convention for Charge Pumps, LED Drivers and I/O Bus Products

(Formerly Catalyst Semiconductor)



Naming Convention for Digital Programmable Potentiometers and Supervisor with Memory Products

(Formerly Catalyst Semiconductor)



Naming Convention and Ordering Information for ASIC Devices

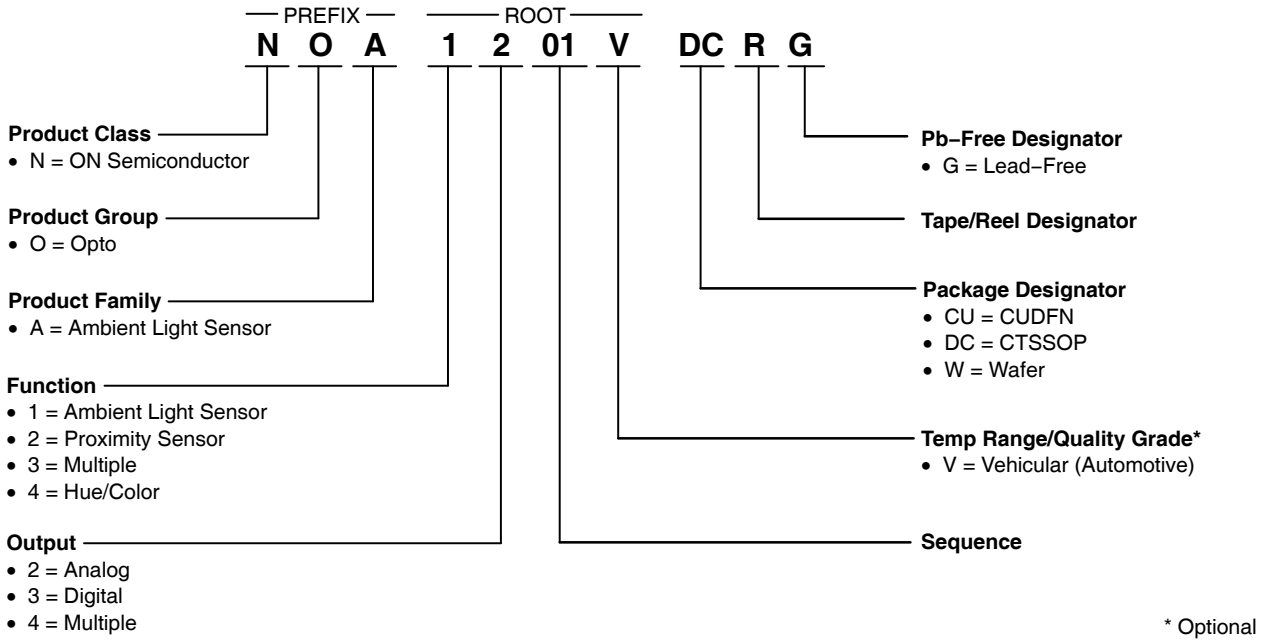
12345−123 − ABC

Device Number
5−3 Digit Alpha−Numeric

Packing Form Designator
- XWF = Wafer Form
- XSW = Sorted Wafer
- XDW = Die in Wafer Form
- XDI = Die
- XDF = Die in File Frame
- XDS = Die in Tape
- XUD = Untested and Packaged
- XUP = Untested and Packaged in Tape & Reel
- XTD = Tested and Packaged in Trays or Tubes
- XTP = Tested and Packaged in Tape & Reel
- XPD = Photo Diode Array
- XMD = Module

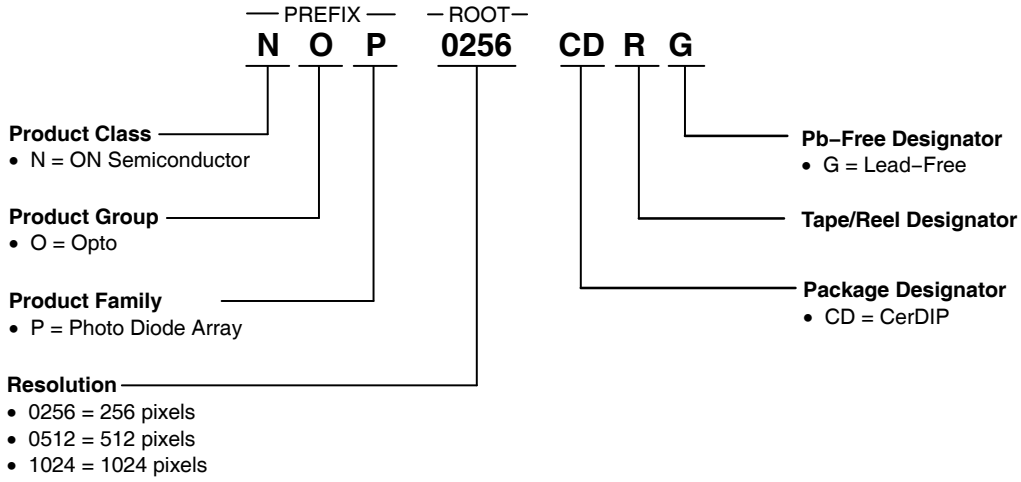
Notes:
1. Not all packing forms are available for each product.
2. Contact ON Semicondcutor Customer Service for more details.

Naming Convention for Ambient Light Sensor Devices

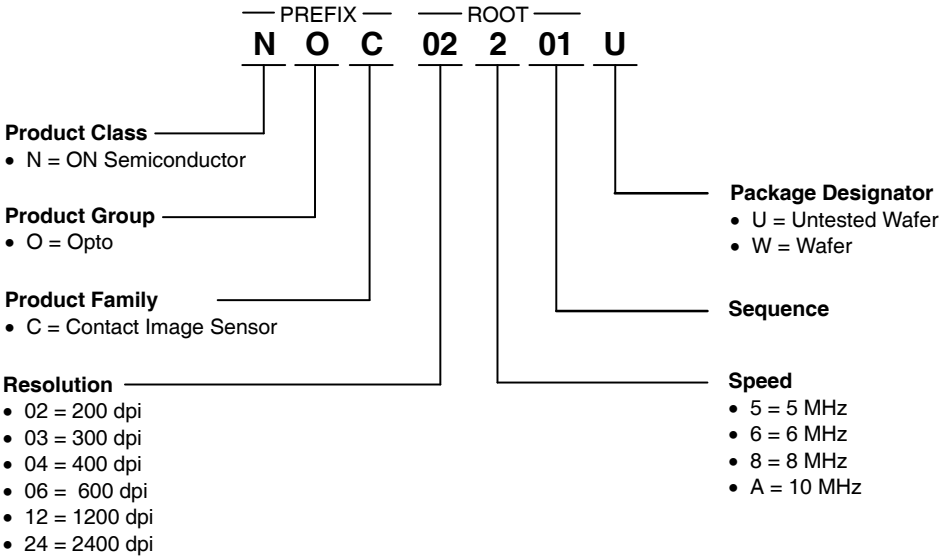


* Optional

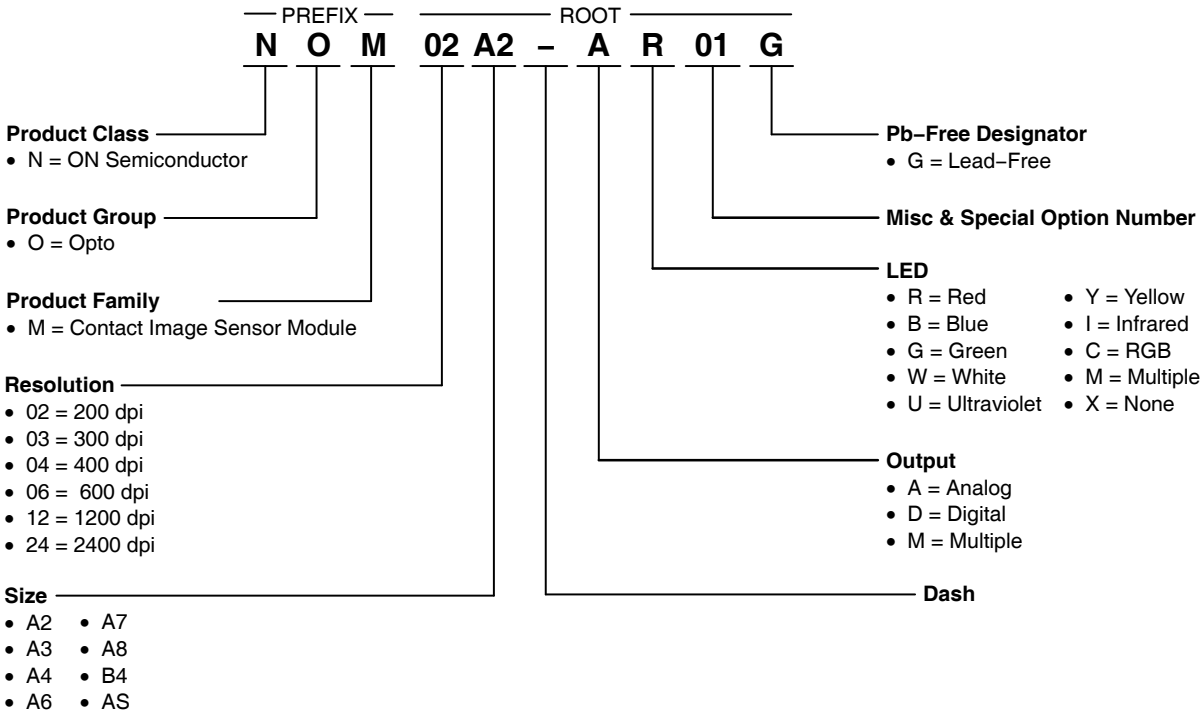
Naming Convention for Photo Diode Array Devices



Naming Convention for Contact Image Sensor Devices



Naming Convention for Contact Image Sensor Modules



Naming Convention for Image Sensors

(Formerly Cypress Semiconductor)

N O I P1 S N 1300 A – Q D I

Product Class
- N = ON Semiconductor

Product Group
- O = Opto

Product Category
- A = Ambient Light Sensor
- C = Contact Image Sensor
- I = Image Sensor
- M = Image Sensor Module
- P = Photo Diode Array

Product Family
- CP = Custom Product
- H2 = HAS 2
- H3 = HAS 3
- I4 = IBIS 4
- I5 = IBIS 5
- L1 = LUPA
- L2 = LUPA 2
- P1 = PYTHON LVDS
- P2 = PYTHON CMOS
- P3 = PYTHON LVDS OPTION
- M1 = MANO LVDS
- M2 = MANO CMOS
- S1 = STAR
- V1 = VITA LVDS
- V2 = VITA CMOS
- X1 = 24 Port XGS
- X2 = 12 Port XGS
- X3 = 6 Port XGS

Process
- B = BSI
- F = NIR Enhanced
- S = Standard

Color
- C = Color
- E = Color Microlens
- F = Color Microlens CRA Option 1
- G = Color Microlens CRA Option 2
- M = Monochrome
- N = Mono Microlens
- P = Mono Microlens CRA Option 1
- R = Mono Microlens CRA Option 2

Resolution
- 0250 = 0.25 MP
- 0300 = 0.3 MP
- 0480 = 0.48 MP
- 0500 = 0.5 MP
- 1000 = 1.0 MP
- 1300 = 1.3 MP
- 1600 = 1.6 MP
- 2000 = 2.0 MP
- 3000 = 3.0 MP
- 4000 = 4.0 MP
- 5000 = 5.0 MP
- 6600 = 6.6 MP
- 8000 = 8.0 MP
- 9000 = 9.0 MP
- 9400 = 9.4 MP
- 9600 = 9.6 MP
- 010K = 10 MP
- 012K = 12 MP
- 014K = 14 MP
- 016K = 16 MP
- 025K = 25 MP
- Custom Name

Additional Functionality
- A = Default
- B = Additional Features
- S = Space, Level 1
- T = Space, Level 2
- U = Space, Level 3

Package
- F = QFN/QFP
- G = PGA/μPGA
- H = JLDCC
- L = LGA
- Q = LCC
- S = CSP
- W = Wafer Sales
- X = Bare Die

Glass
- A = AF45
- B = D263 AR/AR
- C = D263 AR/IR
- D = D263
- E = D263 AR
- H = BK7G18 AR
- J = N-BK7 AR/AR
- K = N-BK7 IR/AR
- O = ABC
- S = Sapphire
- T = Protective Tape on Default Glass Lid
- W = Windowless

Temperature
- C = Commercial 0 to +70°C
- I = Industrial -40 to +85°C

Naming Convention for Image Sensors

(Formerly Truesense Imaging, Inc.)

K AI - 290 50 - CXA - DD - AA

Product Line
- K = Image Sensors

Family Designation
- AF = Full Frame CCD
- AI = Interline CCD
- AE = Interline EMCCD
- LI = Linear CCD
- SC = Support Chip
- AC = CMOS
- AT = TDI CCD

Resolution (2 or 3 Digits)

Specified in units of 100 K pixels,
e.g. 290 = 29.0 Mega Pixels

Sequence (2 Digits)

Color Filter Array
- A = No CFA (Monochrome)
- B = Pigment, Bayer CMY
- C = Pigment, Bayer RGB
- D = Pigment, Linear RGB
- E = 3G Stagger
- F = Pigment, Bayer RGB, Gen 2
- G = Striped RGRB
- H = RB Checkerboard
- J = Hybrid Dichroic
- L = RBG and Mono
- M = Mono with RB Surround
- N = Pigment, Bayer RGB, Shorter Red Wavelength
- P = Sparse CFA Pattern A
- Q = Sparse CFA Pattern A, Gen 2
- R = Pigment, Linear RGB, Gen2
- S = Mono with RB Surround, Gen2
- X = Special

Microlens
- A = No microlenses
- B = Telecentric microlenses
- C = Cylindrical microlenses
- D = None with spacer (Not for UV or bundle attachment)
- X = Special

Product Revision

Package
- A = Wafer Form (No Pkg)
- B = Die Form (No Pkg)
- C = Cerdip, Sidebrazed Pins
- D = Cerdip, Sidebrazed Pins, CuW
- E = Cerdip, Leadframe
- F = CLCC
- G = PLCC
- H = Plastic DIP
- J = PGA
- K = PGA, CuW Base
- L = QFP
- M = CSP
- N = Bare Die, Reconstituted Wafer
- P = Polyimide Substrate
- Q = Aluminum Nitride Substrate
- R = pLLP
- S = PGA, CuW Base, TEC Cooler
- X = Special

Cover Glass
- A = No Glass
- B = Clear, No Coatings
- C = Clear, AR Coated 1 Side
- D = Clear, AR Coated 2 Sides
- E = Clear, AR Coated Side 1, IR Coated Side 2
- F = Quartz, No Coatings
- G = Plastic, No Coatings
- H = IR Absorbing, AR Coated 2 Sides
- J = Clear, AR Coated 2 Sides, with Light Shield
- K = Quartz, AR Coated 2 Sides
- L = Hermetic, AR Coated 2 Sides
- P = Clear, No Coatings (Taped)
- Q = Clear, AR Coated 1 Side (Taped)
- R = Clear, AR Coated 2 Sides (Taped)
- S = Quartz, No Coatings (Taped)
- X = Special

Testing Method
- A = Standard
- B = Standard with Defect Map
- C = Non-Standard
- D = Non-Standard with Defect Map
- E = Low Temperature
- F = Low Temperature with Defect Map
- G = Customer Specific
- H = Standard with Special Visual
- X = Special

Product Grade
- 0 = Highest Grade (Fewest Cosmetic Defects)
- 1 = Cosmetic Specs Relaxed Relative to Grade 0
- 2 = Cosmetic Specs Relaxed Relative to Grade 1
- 3 = Cosmetic Specs Relaxed Relative to Grade 2
- A = Standard Grade: Used when only one grade is available for a given product.
- C = Commercial Grade: Meets all specification criteria, but have not been fully qualified. Intended for evaluation purposes only and have NO warranty. Quantities are strictly limited and sold only “as available”.
- E = Engineering Grade: Electrically functional and meet most, but not necessarily all, product performance specifications, however there are no limitations on the number of or size of cosmetic defects (points, clusters, columns, glass defects, etc.) allowed. Intended for evaluation purposes only and have NO warranty. Quantities are strictly limited and sold only “as available”.
- T = Test Sample: Closely resembles the performance of the final product, however may not meet any of the specification criteria. Intended for evaluation purposes only and have NO warranty. Quantities are strictly limited and sold only “as available”.
- M = Mechanical Sample: Meets all physical dimensions and tolerances and likely does not image. Intended for evaluation purposes only and have NO warranty. Quantities are strictly limited and sold only “as available”.
- X = Special

Naming Convention for Image Sensors

(Formerly Aptina Imaging Corporation)

Base Part Number

A S 05 4 0 HD 8 C 22 S H D2 0 - XX - YYYYY - E

Product Line
- A = Image Sensors

Product Type
- S = SOC
- R = RAW Sensor
- P = ISP
- T = Test Chip
- G = Generic
- B = Bridge
- D = Downgrade

Resolution
- Y1 = 0.01 Megapixel
- Y2 = 0.02 Megapixel
- Y9 = 0.09 Megapixel
- X1 = 0.1 Megapixel
- X9 = 0.9 Megapixel
- 01 = 1 Megapixel
- 99 = 99 Megapixel
- B1 = Demo3 Base Board
- B2 = Demo3 Adapter - Old Style HB
- B3 = Demo2x Adapter - New Style HB
- B4 = ICP Adapter Board
- B5 = Stereo Receiver Board

Optical Format
- 0 = >1" or ISP
- 1 = 1"
- 2 = 1/2"
- 3 = 1/3"
- 4 = 1/4"
- 5 = 1/5"
- 6 = 1/6"
- 7 = 1/7"
- 8 = 1/8"
- 9 = 1/9"
- A = 1/10"
- B = 1/11"
- C = 1/12"
- D = 1/13"
- N = N/A

Unique Product Identifier (ID)

Must increment for a new product with the same resolution and optical format (e.g., each new ¼" VGA part increments this by one). Sequence 0, 1, 2…9, A, B,…Z .

Marketing Descriptor

Provides marketing ability to add additional descriptive information that may be helpful in positioning the part.
- CS = Default, CMOS Sensor
- LC = Low Cost
- HQ = Premium
- QP = Downgrade
- HD = High Definition
- M0 = Module
- HS = High Speed
- AI = Array Imager
- AT = Automotive
- MB = Mobile
- SR = Surveillance
- CM = Medical
- NB = Notebook
- CM = Camera
- SC = Scanning
- CP = Clarity+

Major "Imager Customer" Revision

Defaulted to "S", 2~9

Chromaticity
- C = RGB
- M = Monochrome
- Y = CMY
- R = RCCC
- G = RGBC
- B = RCBC
- S = Common
- L = Logic
- A = Color Array
- N = Mono Array
- D = RCCB
- F = RYYB

(OR) IP Control for ICP
- "0" – FD = 0, EDOF = 0
- "1" – FD = 1, EDOF = 1
- "2" – FD = 1, EDOF = 0
- "3" – FD = 0, EDOF = 1

CRA Degree

"00" as N/A, otherwise will show the actual degree shift

Sample and Demo Board Identifier
- E = Eng Identifier (AS/ES/QS)
- M = Mechanical Sample
- GEVB = Demo Board
- GEVK = Demo Kit
- Blank = Production Part

Mechanical Finish, Glass, Wafer Thickness*

See definitions on following page

Customer Special

Customer specific attribute

Special Options
- 0 = Default, N/A
- D = Demo Board
- H = Head Board
- D = High Speed
- G = WLM Socketed Board
- A = EMI Pad
- B = Non-Coating
- C = Without EMI Shielding
- F = With Flash Stacked Die
- L = Low Cost
- J = Low Profile
- K = Dual Sensor (3D) Headboard
- M = ALTM Only
- N = Different Package Size
- P = Dual Sensor (3D) Demo Kit
- W = Demo Module
- D3 = Demo Kit (Demo3)
- Q = Adapter/FBGA/ ASIC Board

Package Options
- A = Lead Free
- B = Leaded
- C = Halogen Free
- D = 7.5 x 7.5 Lead Free
- E = 9.5 x 9.5 Lead Free
- F = 5.5 x 5.5 Lead Free
- Z = BIB/HIB Option (Different Bond Option)
- 0 = Module
- 1 = 100 μm Thickness
- 2 = 200 μm Thickness
- 3 = 305 μm Thickness
- 4 = 400 μm Thickness
- 6 = 675 μm Thickness
- 9 = No-Grinding

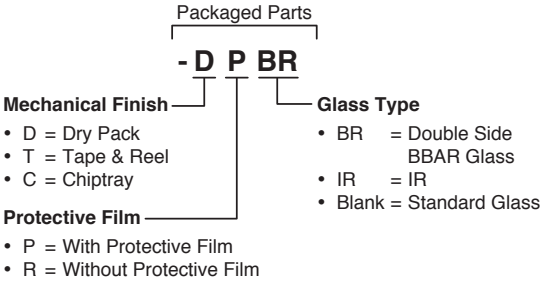
Package Type
- A = CLCC
- B = PLCC
- C = ILCC
- D = Die Sales
- E = IBGA
- F = LBGA
- G = VFBGA
- H = CPGA
- J = TPLCC
- K = CSP
- L = WLC
- M = CLGA
- N = imBGA
- P = tpBGA
- Q = iCBGA
- R = mPLCC
- W = Wafer Sales (EA)
- Y = Wafer Sales (WFR)

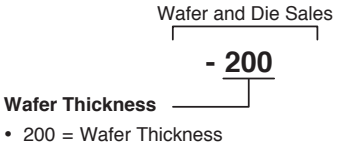
Interface Type
- M = MIPI
- C = CCP/CCP2
- H = HISPI
- U = MULTI
- N = N/A
- P = PARALLEL
- L = LVDS
- S = SLVS

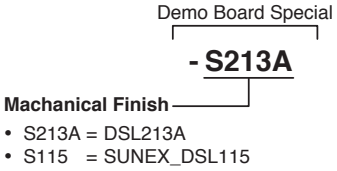
Operating Temp
- S = Commercial
- A = Automotive (–40 to +85°C)
- X = Extended (–40 to +105°C)
- N = N/A

Naming Convention for Image Sensors

(Formerly Aptina Imaging Corporation)







Naming Convention for Legacy Image Sensors

(Formerly Aptina Imaging Corporation)

MT9 J 0 0 1 I12 ST C V xxxxxx ES

Product Line
- MT9 = Image Sensors, Legacy

Product Size
- C = CIF
- V = VGA
- M = 1 Meg
- D = 2 Meg
- T = 3 Meg
- Q = 4 Meg
- P = 5 Meg
- E = 8 Meg
- N = 9 Meg
- J = 10 Meg
- W = 12 Meg
- F = 14 Meg
- H = 16 Meg
- S = Special/Custom

Product Type
- 0 = Sensor Only
- 1 = SOC
- 2 = "Open"
- 3 = DSP
- 4 = High Speed
- 5 = Custom
- 6 = Others

Product Group
- 0 = Consumer Camera
- 1 = Mobile/PC
- 2 = Automotive/Industrial
- 3 = Surveillance

Unique Product Identifier (ID)

Must increment for a new product with the same resolution and optical format (e.g., each new ¼" VGA part increments this by one). Sequence 0, 1, 2…9, A, B,…Z .

PACKAGE CODE

Material/Construction
- A = TSV-RDL
- C = Ceramic
- X = Xintec
- E = Tessera
- P = Plastic
- S = Shellcase
- I = Imager
- L = Laminate
- T = Tiny
- Z = CWL CSP
- M = WLC

Form

Form 1: Form
- D = Singulated Die
- W = Die in Wafer Form
- M = Module
- B = Demo Base Board
- R = Demo Received Board
- V = LVDS Adapter Board

Package Type
- 0 = CSP
- 1 = LCC Pb-Free
- 2 = ICSP
- 3 = PGA
- 4 = QFP
- 5 = Custom
- 6 = Bumped
- 7 = BGA
- 8 = CSP Pb-Free
- 9 = ICSP Pb-Free
- A = BGA Pb-Free
- B = MVP
- C = Non-Bumped TSV-RDL
- D = Low Profile

Form 2 = 0

Leads/Bumps/Pins
- 0 = 32
- 1 = 28
- 2 = 48
- 3 = 64
- 4 = 144
- 5 = 208
- 6 = 280
- 7 = 52
- 8 = 30
- 9 = 44
- A = 35
- B = 13
- C = 84
- D = 137/169
- E = 16
- F = 38
- G = 116
- H = 122
- J = 54
- K = 25
- L = 55
- M = 67
- N = 120

Form 3 = 0

Note: If using Form 1, Form 2 (Package Type) and Form 3 (Leads/Bumps/Pins) will be "0"

Special Processing
- AS = Alpha Sample
- ES = Engineering Sample
- MS = Mechanical Sample
- MC = Module Camera Demo System
- I = Errata
- :X = DID Mark Designator
- Blank = Mass Production

Design ID and Probe/Test Level

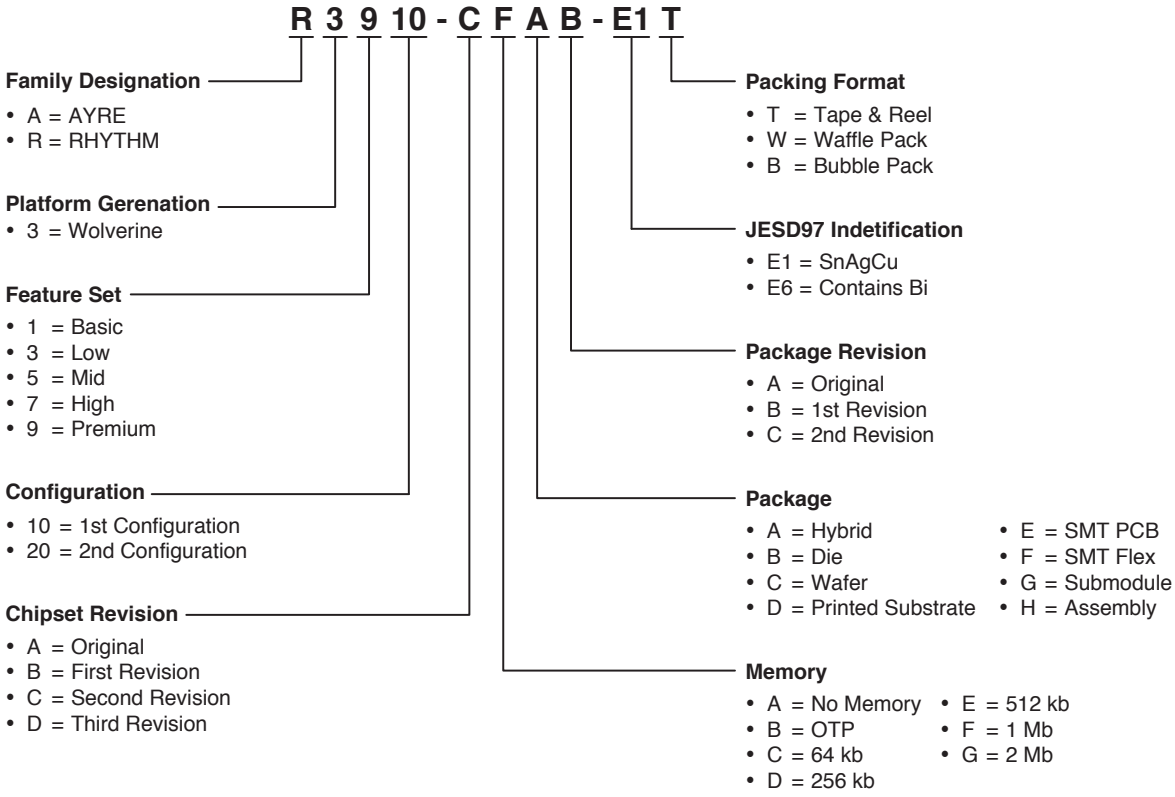
Six characters will appear for Die/ Wafer Only

Special Options
- A = Lens Head Board and Adapter Kit
- B = Non-Standard CRA
- C = Non-Standard CRA 27 Degrees
- D = Demo Board
- E = Recon (RDL)
- F = Frame Grabber
- G = WLM Socketed Headboard
- H = Head Board
- I = IR Glass
- J = JPEG Output
- K = Special Die Offset
- L = Lens Eval Kit
- M = MiPi
- N = No Lid
- P = CCP
- Q = Optical Quality
- LC = Low Cost
- R = Reference Camera
- S = High Speed
- T3 = Tier 3
- U = Parallel Interface
- V = Serial Interface
- W = NTUB
- X = No Micro Lens
- Y = Black Solder Mask
- Z = Non-Standard Micro Lens Shift
- PF = Protective Film
- 2 = 200 μm Wafer Thickness
- 3 = 305 μm Wafer Thickness
- 4 = 200 μm Thick Cover Glass
- 5 = 300 μm Thick Cover Glass
- 6 = 675 μm Wafer Thickness
- 7 = EMI Pad
- 8 = Non-Coating

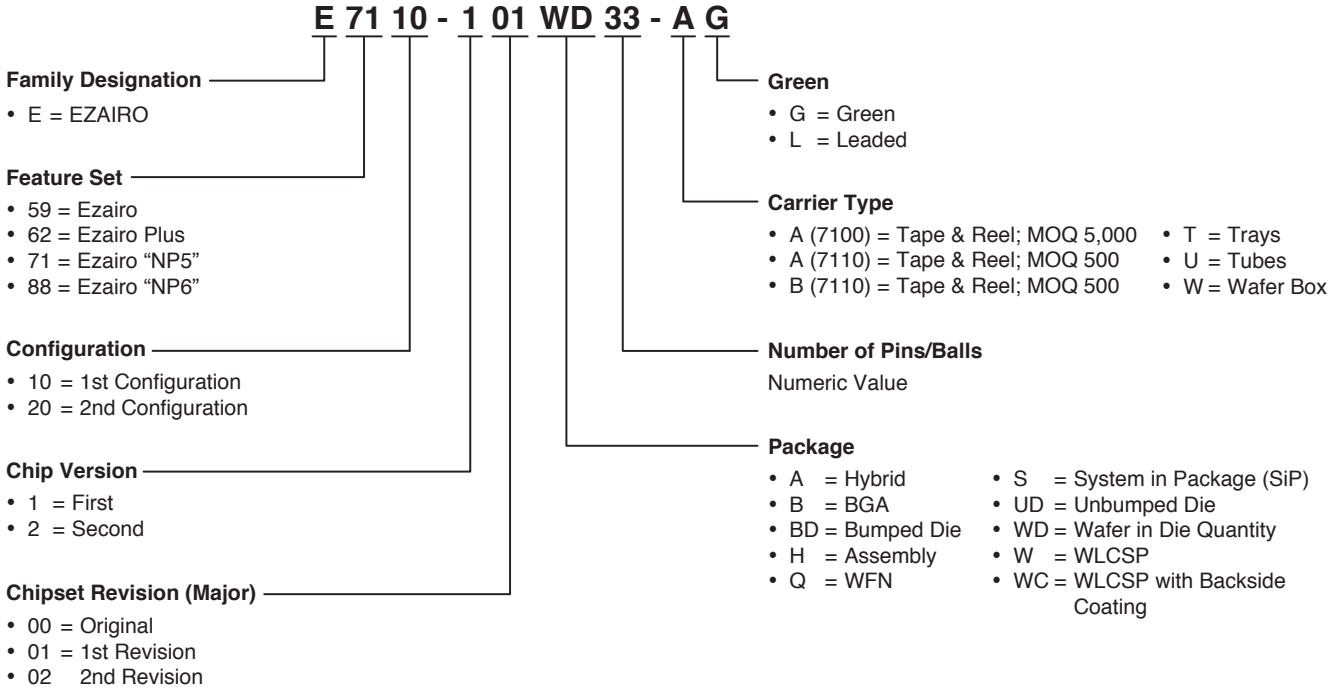
Chromaticity
- C = RGB (Red, Green, Blue)
- M = Monochrome
- R = Red/Clear
- G = RGBC
- Y = CMY (Cyan, Magenta, Yellow)
- L = Logic - IP "00"

Operating Temp
- ST = Commercial
- AT = Automotive
- XT = Extended

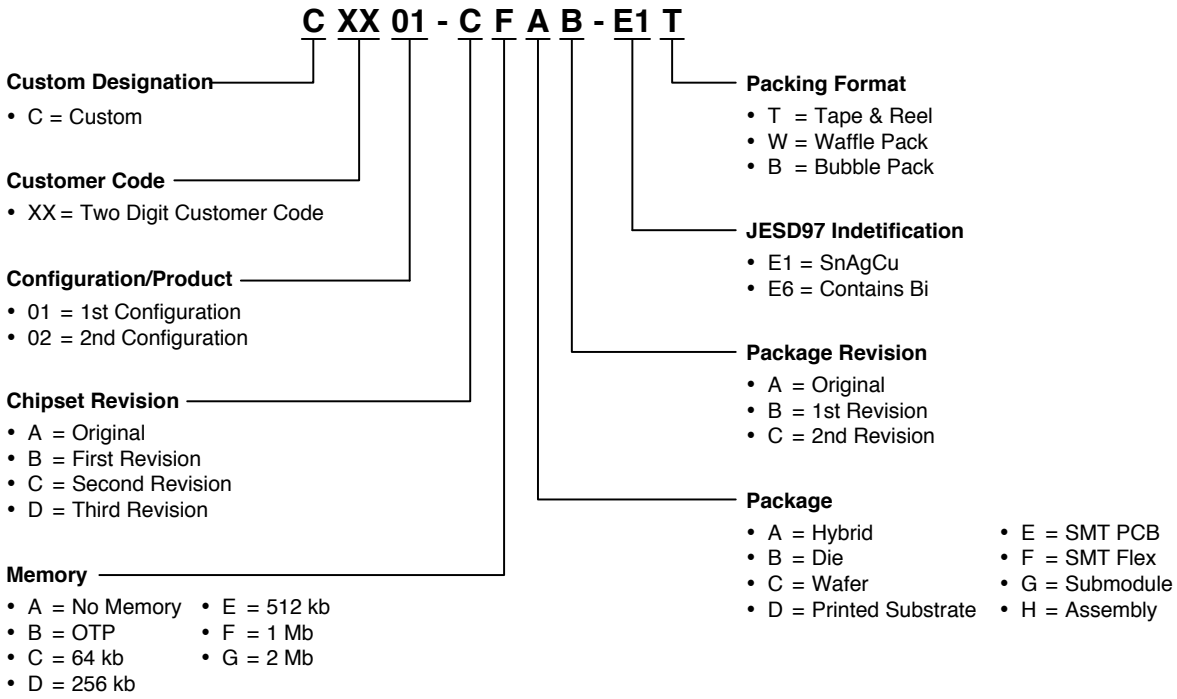
Naming Convention for Preconfigured Hearing Products



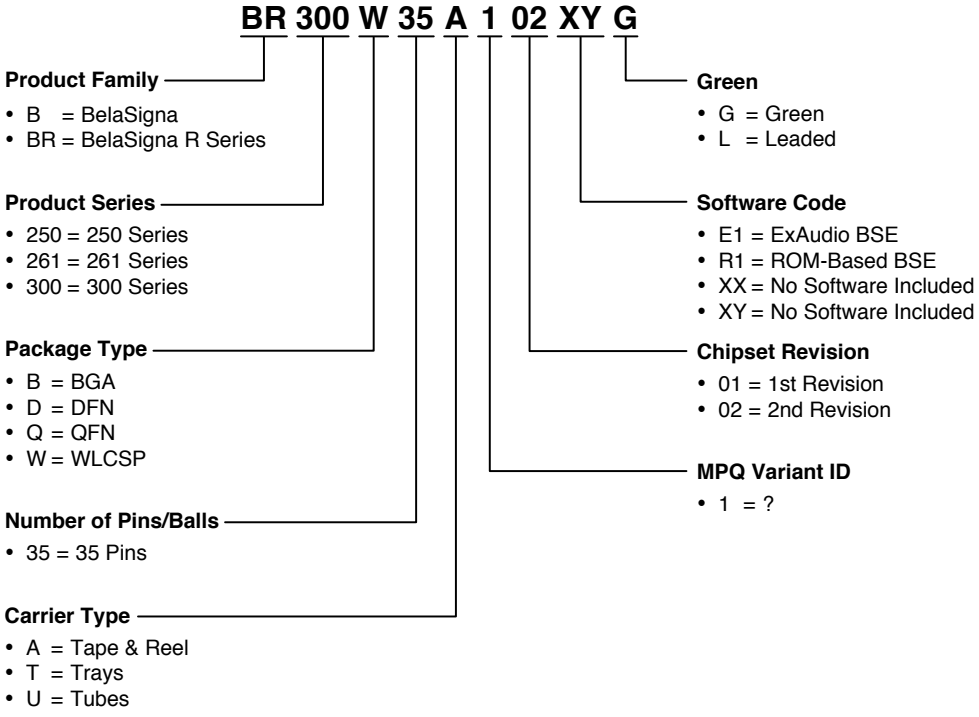
Naming Convention for Open-Programmable Hearing Products



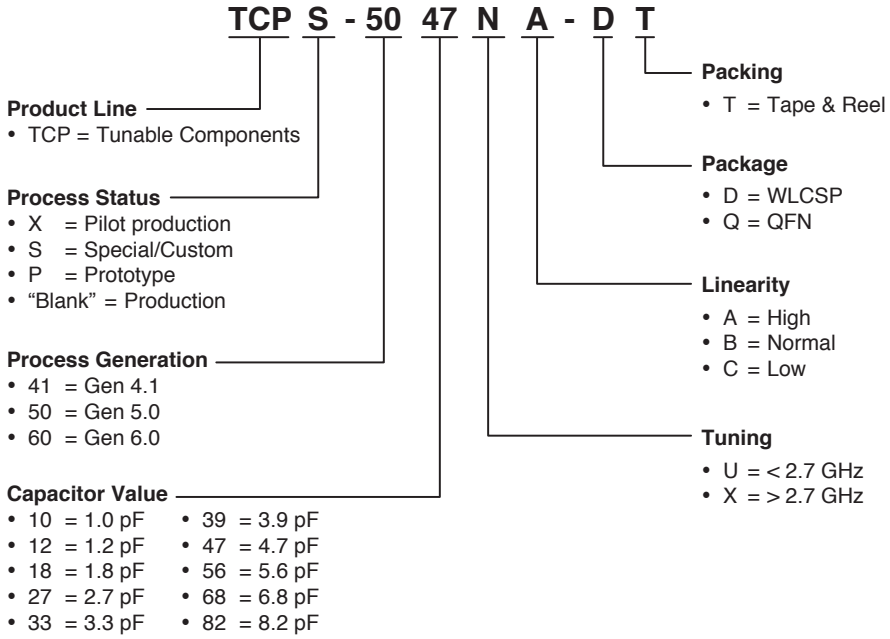
Naming Convention for Custom Hearing Products



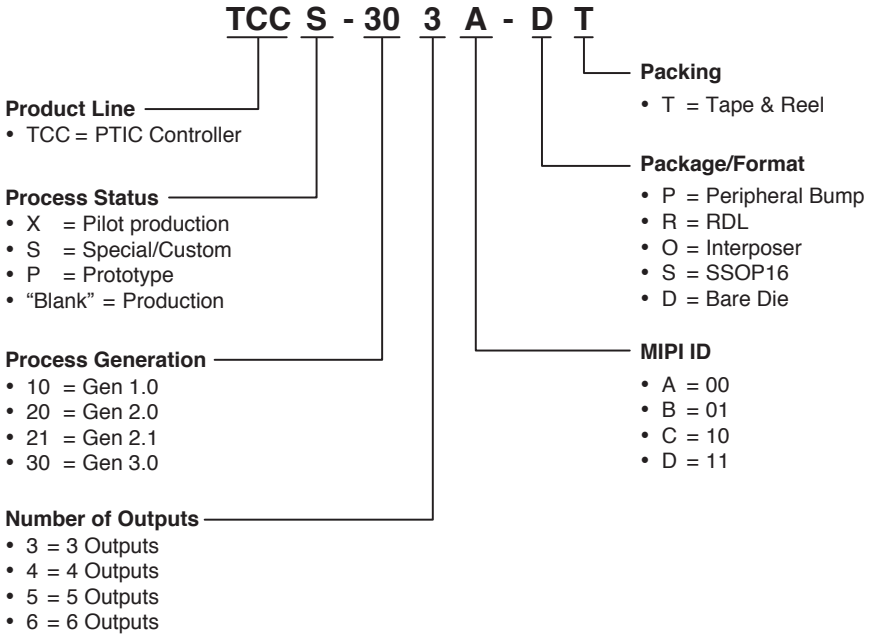
Naming Convention for BelaSigna Products



Naming Convention for Passive Tunable Integrated Circuits (PTIC)



Naming Convention for Passive Tunable Integrated Circuit (PTIC) Controllers



Naming Convention for Dual PTIC RF Tuner IC

TCP - 50 1 x - D T

Product Line
- TCP = Tunable Components

Process Generation
- 50 = Gen 5.0
- 60 = Gen 6.1

Product Variant
- 1 = 8.2 pF PTIC + 2.7 pF PTIC

Optional Suffix
- 'Blank' = Standard Part

Package
- D = WLCSP

Packing
- T = Tape & Reel

Naming Convention for Power Management ICs

HPM 10 01 - BD C C A - E1 T

Product Class
- HPM = Hearing Aid Power Management

Product Generation
- 10 = Contact-Based Version
  20 Wireless Version

Configuration/Product
- 01 = 1st Configuration
- 02 = 2nd Configuration

Package
- A = Hybrid
- B = BGA
- BD = Bumped Die
- D = DFN
- Q = WFN
- S = System in Package (SiP)
- U = Umbumped Die
- W = WLCSP
- WC = WLCSP with Backside Coating

Memory
- A = No Memory
- B = OTP
- C = 64 kb
- D = 256 kb
- E = 512 kb
- F = 1 Mb
- G = 2 Mb

Package
- A = Hybrid
- B = Die
- C = Wafer
- D = Printed Substrate
- E = SMT PCB
- F = SMT Flex
- G = Submodule
- H = Assembly

Package Revision
- A = Original
- B = 1st Revision
- C = 2nd Revision

JESD97 Indetification
- E1 = SnAgCu
- E6 = Contains Bi

Packing Format
- T = Tape & Reel
- W = Waffle Pack
- B = Bubble Pack

Naming Convention for Bluetooth® Low Energy RF ICs

NCH - RSL 10 - x 1 01 WC 51 - A B G

Product Class
- NCH-RSL = Consumer/Healthcare
- MD-RSL = Life Critical Devices

Product Generation
- 10 = Bluetooth 5.0

Special/Custom*
- 'Blank' = Standard
  * Reserved for Special or Custom Designator

Chip Version
- 1 = 1st Version
- 2 = 2nd Version

Chip Revision (Major)
- 01 = 1st Revision
- 02 = 2nd Revision

Package
- G = Green
- L = Leaded

Qualification
- A = Medical – Life Threatening
- B = Medical – Non-Life Threatening
- C = Consumer

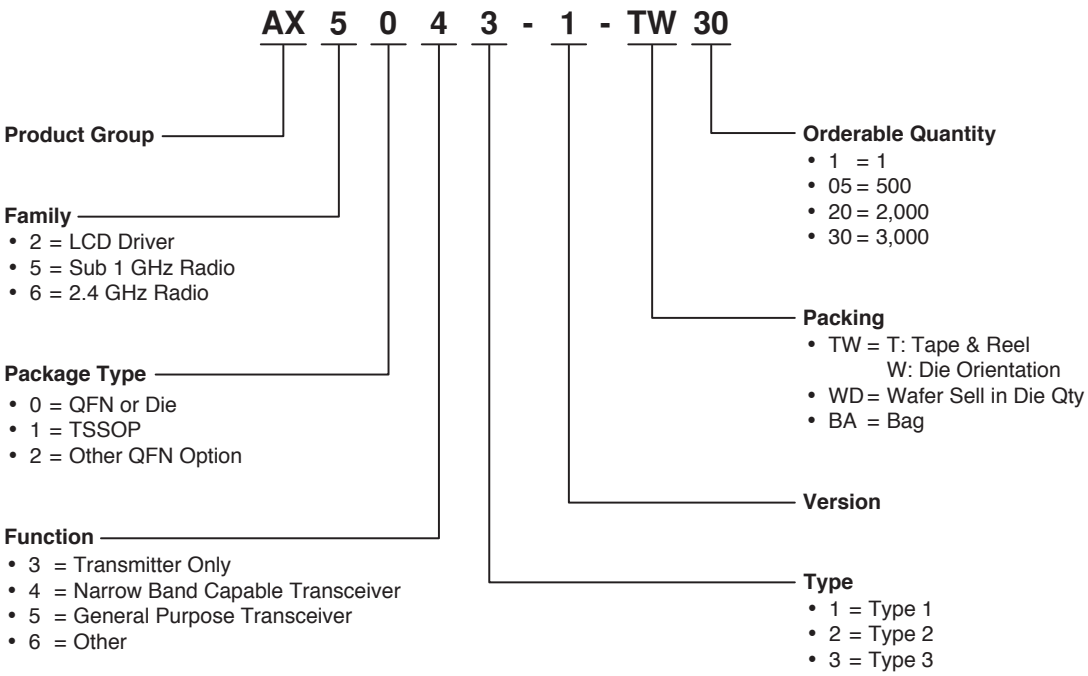
Carrier Type
- A = Tape & Reel
- T = Trays
- U = Tubes

Package Pins
- 51 = 51 Pins

Package
- A = Hybrid
- B = BGA
- BD = Bumped Die
- D = DFN
- Q = QFN
- S = System in Package (SiP)
- U = Unbumped Die
- W = WLCSP
- WC = WLCSP with Backside Coating

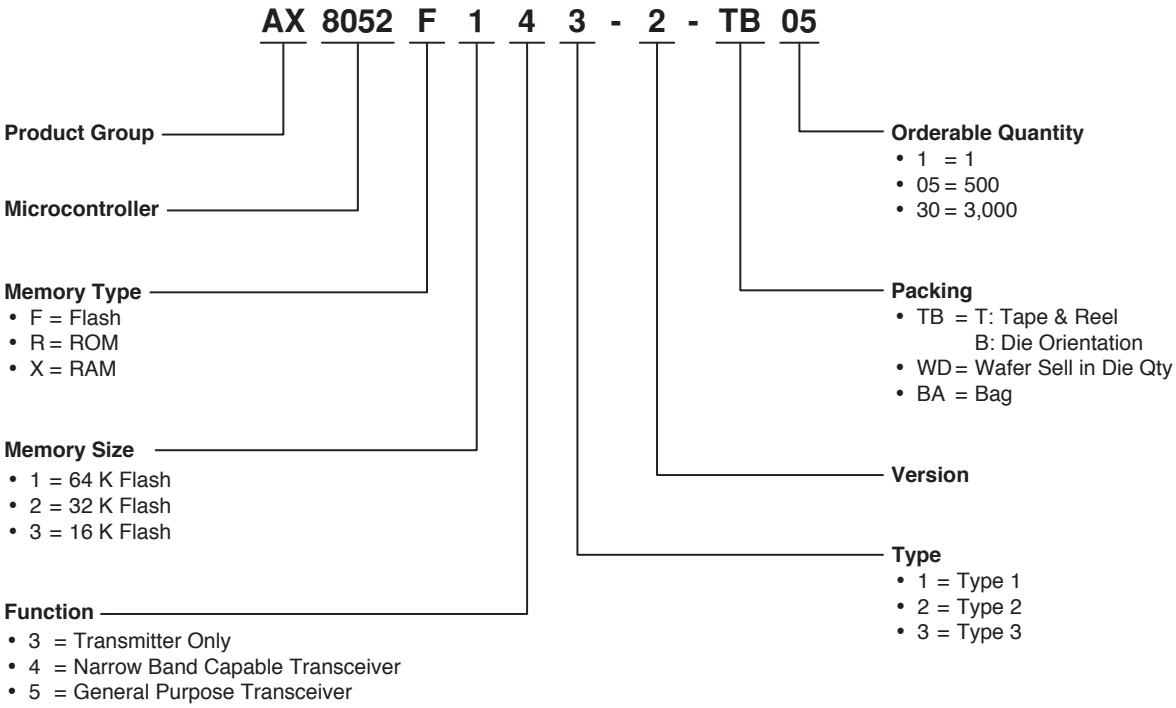
Naming Convention for Standard RF ICs

(Formerly Axsem)



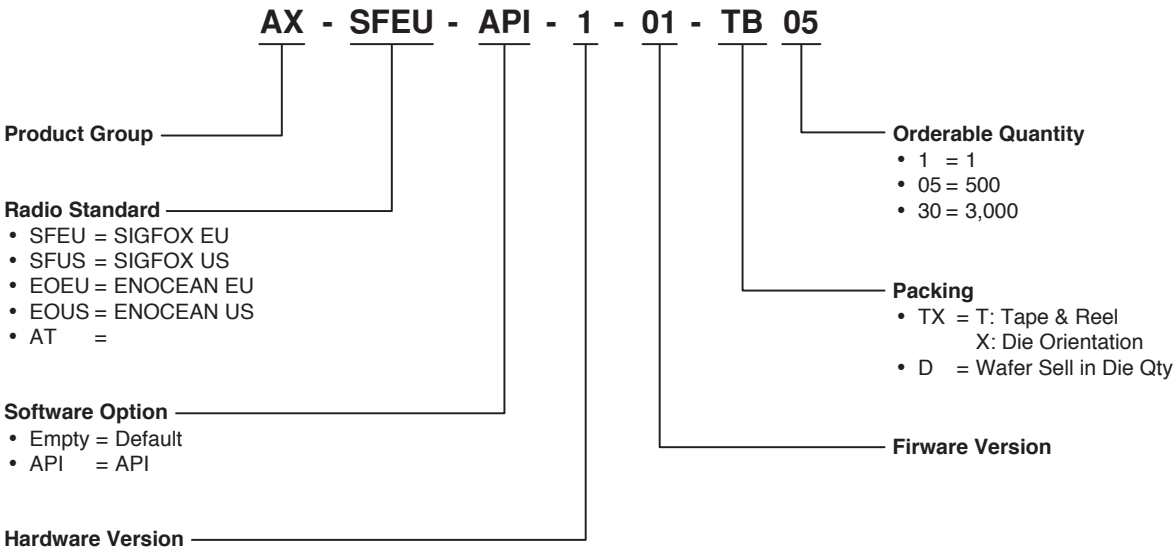
Naming Convention for RF Microcontrollers

(Formerly Axsem)



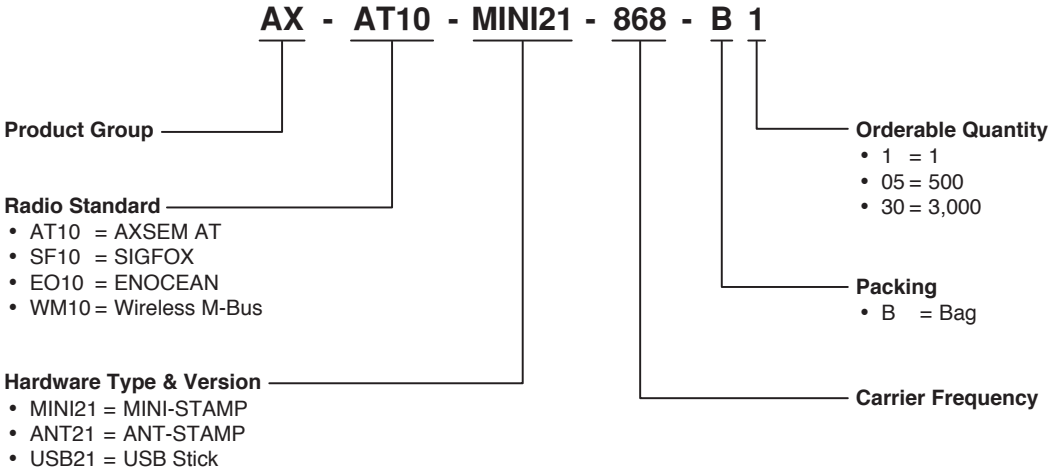
Naming Convention for RF Microcontrollers with Radio Standards

(Formerly Axsem)

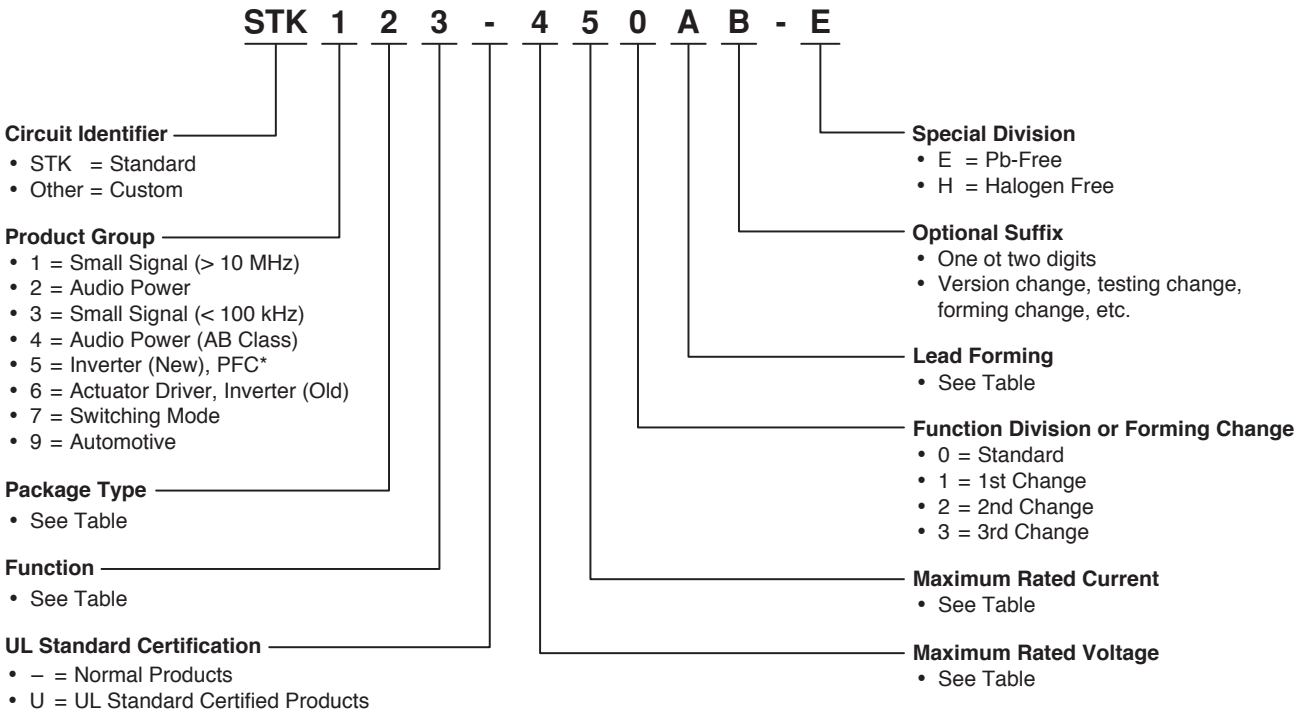


Naming Convention for RF Modules

(Formerly Axsem)



Naming Convention for IPM Devices



	2	3	4	5	A
Designator	Package Type	Function	Maximum Rated Voltage	Maximum Rated Current	Lead Forming
(Blank)	—	—	—	—	Straight
1	Smart	3-Phase Inverter; Built-In 1 Shunt R	Up to 150 V; Active High	1 A or Lower	—
2	Smart 2nd	3-Phase Inverter; For External 1 Shunt R	Up to 599 V; Active High	Up to 2 A	—
3	SIP04	3-Phase Inverter; Built-In 3 Shunt Rs	600 V; Active High	Up to 3 A	—
4	SOP1	3-Phase Inverter; For External 3 Shunt Rs	600 V; Active High	Up to 5 A	—
5	SIP1A	Single-Phase Inverter; Built-In 1 Shunt R	600 V; Active High	Up to 8 A	—
6	SIP2	Single-Phase Inverter; For External 1 Shunt R	Up to 1200 V; Active High	Up to 10 A	—
7	SIP2A	Induction Heating; 1 Burner	1700 V; Active High	Up to 10 A	—
8	SIP3	induction Heating; 2 Burners	—	Up to 12 A	—
9	SIP2 Case Type	PFC + 3-Phase Inverter	—	Up to 15 A	—
0	SIP3 Case Type	PFC + 3-Phase Inverter	—	Up to 15 A	—
A	DIP30	PFC; No Bridge	Up to 150 V; Active Low	Up to 20 A	SL Zigzag (From case to first clipping point = 2.5 mm)
B	DIP42	PFC; With Bridge	Up to 599 V; Active Low	Up to 25 A	SL Zigzag (From case to first clipping point = 5.35 mm)
C	DIPS	PFC; Bridge Free	600 V; Active Low	Up to 30 A	One Side Zigzag (Lead length 6.8 mm version)
D	DIP05	PFC; Interleave	600 V; Active Low	Up to 40 A	SL Bent
E	DIP2	PFC; Bridge Free Interleave	600 V; Active Low	Up to 50 A	One Side Zigzag (With insert plate)
F	DIP4	PFC + 3-Phase Inverter; No Bridge	Up to 1200 V; Active Low	Up to 60 A	L Bent
G	DIP5	PFC + 4-Phase Inverter; With Bridge	1700 V; Active Low	Up to 75 A	SL Bent + Stopper
H	Tenmen Case Screw	PFC + 5-Phase Inverter; Bridge Free	—	75 A or Larger	—
J	Tenmen Case Terminal	PFC + 6-Phase Inverter; Interleave	—	Up to 1 kW / 5 A	DIPS Bent (One side SL/One side SL Chidori; Lead length 5.5 mm version above case)
K	SIP2B	Power Conditioner; Converter	—	Up to 2 kW / 10 A	One Side Zigzag (Lead length 9 mm version)
L	DIPS2	Power Conditioner; Inverter	600 V	Up to 3 kW / 15 A	L-Zigzag (Smart 1st)
M	SIP3B	Power Conditioner; Converter + Inverter	600 V; Built-In 1 Shunt R	Up to 4 kW / 20 A	Both Side Chidori (Smart 2nd bent)
N	New Package	Power Conditioner; Others	600 V; Built-In HVIC	Up to 5 kW / 25 A	DIPS Bent (One side SL/One side SL Chidori; Lead length 9.7 mm version above case)
P	SIP3A	—	600 V; Built-In HVIC + Shunt R	Up to 6 kW / 30 A	—
Q	DIPS3	3-Phase Inverter + Break; Built-In a Shunt R	1200 V	Up to 8 kW / 40 A	—
R	DIPS3.5	3-Phase Inverter + Break; For External 3 Shunt Rs	1200 V; Built-In 1 Shunt R	Up to 10 kW	—
S	PQFN	CIB; Built-In a Shunt R	1200 V; Built-In HVIC	10 kW or Larger	—
T	SIP3A	CIB; For External 3 Shunt Rs	1200 V; Built-In HVIC + Shunt R	Up to 100 A	—
U	DIP-C2	—	—	Up to 150 A	—
V	DIP-C3	—	—	Up to 200 A	—

Naming Convention for DS and iPS Devices

PRODUCT NAME

LC 1 2 3 4 5 6 7 8 9 A B - XXX

Product Class
- L = Power Supply (Regulator)
- LA = Bipolar Linear
- LB = Bipolar Digital
- LC = CMOS
- LE = Memory
- LV = Bi-CMOS

Device Identification Code
Includes all or some of the following items

Part Code
Number and alpha characters

Quantity Level
- U = Automotive

Revision Code
- N = Rev 1
- A = Rev 2
- B = Rev 3
- Y = Rev 4
- S = Rev 5

Package Designator

Price Code
- L = Price Change First Time
- LL = Second Time
- LM = Third Time

Hotsukyo Code
- Z = Hotsukyo

Packing Name
- E = Pb-Free
- G = Pb-Free (Legacy)
- H = Halide Free

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