

DUAL PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR
Features

- Ideally Suited for Automated Insertion
- For Switching and AF Amplifier Applications
- Ultra-Small Surface Mount Package
- "Lead-Free", RoHS Compliant (Note 1)
- "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

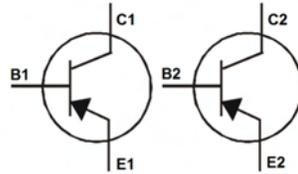
Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)

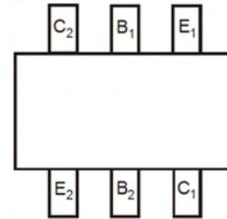
SOT363



Bottom View



Device Symbol

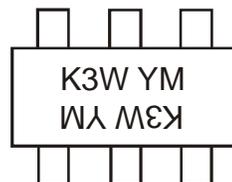


Pin-Out Top View

Ordering Information (Notes 3 & 4)

Product	Grade	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BC857BS-7-F	Commercial	K3W	7	8	3,000
BC857BS-13-F	Commercial	K3W	13	8	10,000
BC857BSQ-7-F	Automotive	K3W	7	8	3,000

- Notes:
1. No purposefully added lead.
 2. Halogen and Antimony Free. Diodes Inc's "Green" policy can be found on our website at <http://www.diodes.com>
 3. For packaging details, go to our website at <http://www.diodes.com>.
 4. Products with Q-suffix are automotive grade. All other products are commercial grade.

Marking Information


K3W = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: X = 2010)
 M = Month (ex: 9 = September)

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017
Code	X	Y	Z	A	B	C	D	E

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Base Current	I_{BM}	-200	mA

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic (Note 6)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = 100\mu\text{A}, I_B = 0$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-45	—	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = 100\mu\text{A}, I_C = 0$
DC Current Gain	h_{FE}	220	—	475	—	$V_{CE} = -5.0\text{V}, I_C = -2.0\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-100 -400	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	-700	—	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$
Base-Emitter Voltage	$V_{BE(on)}$	-580	-665	-750	mV	$V_{CE} = -5.0\text{V}, I_C = -2.0\text{mA}$
Collector-Cutoff Current	I_{CBO}	—	—	-15 -4.0	nA μA	$V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}, T_A = 150^\circ\text{C}$
Emitter Cutoff Current	I_{CEO}	—	—	-100	nA	$V_{EB} = -5.0\text{V}, I_C = 0$
Gain Bandwidth Product	f_T	100	—	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$
Collector-Base Capacitance	C_{CBO}	—	—	3	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$
Emitter-Base Capacitance	C_{EBO}	—	11	—	pF	$V_{EB} = -0.5\text{V}, f = 1.0\text{MHz}$

Notes: 5. Device mounted on FR-4 PCB. Diodes Inc. suggested pad layout document can be found on our website at <http://www.diodes.com>
6. Short duration pulse test used to minimize self-heating effect.

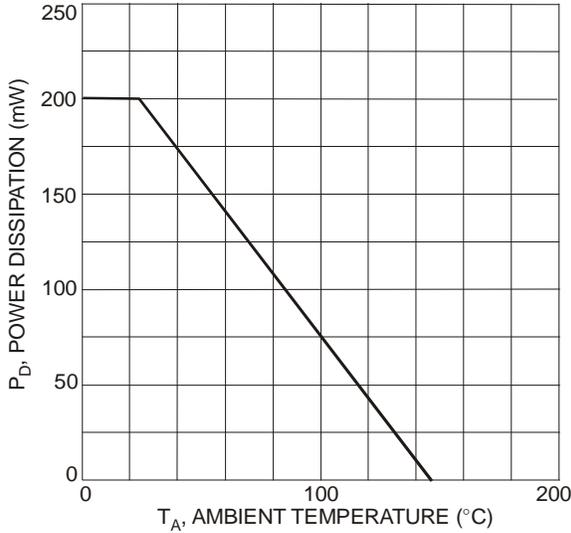


Fig. 1 Power Dissipation vs. Ambient Temperature

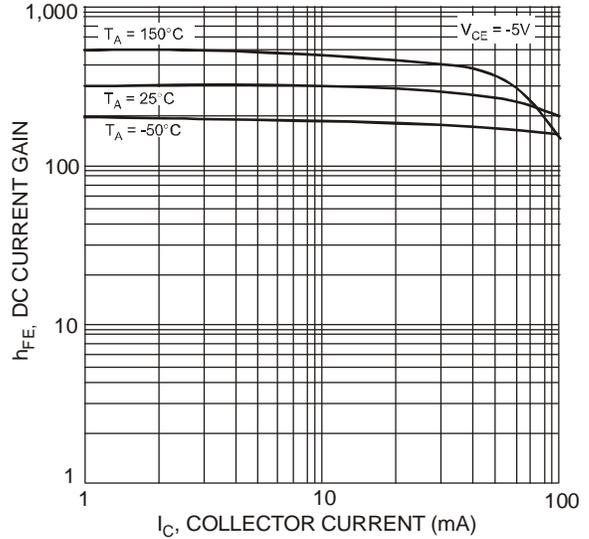


Fig. 2 Typical DC Current Gain vs. Collector Current

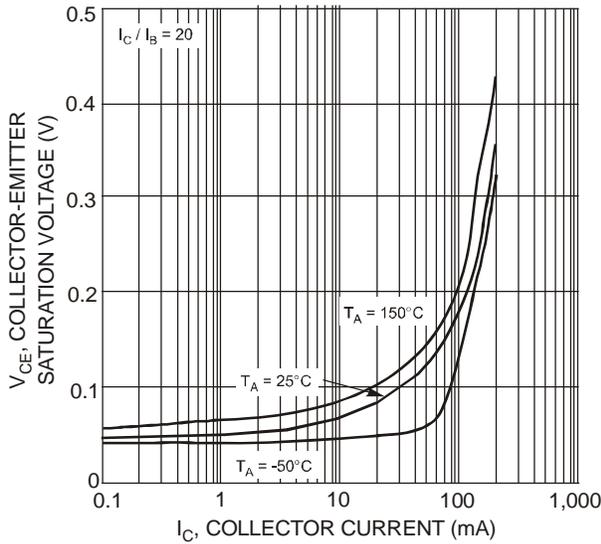


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

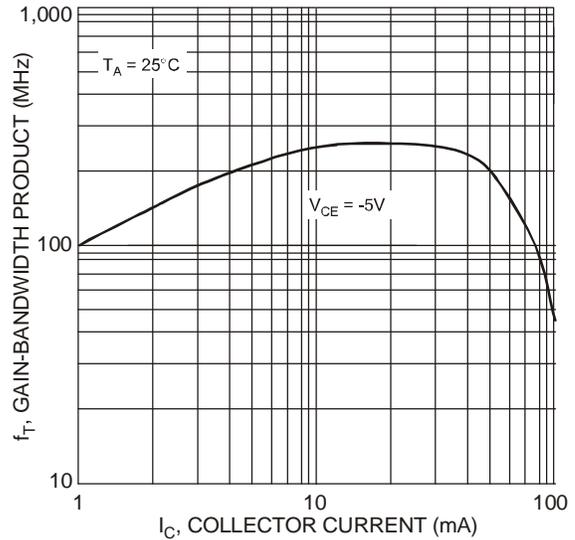
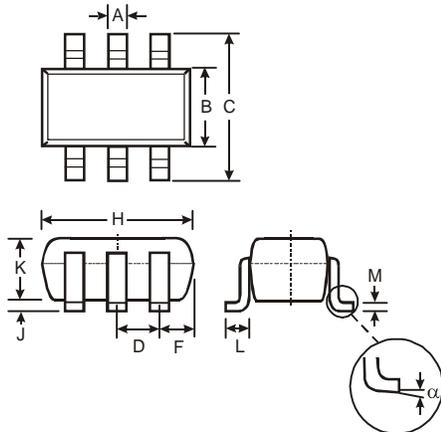


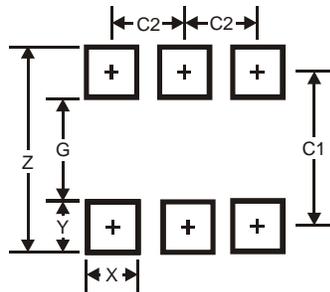
Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



SOT363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Typ	
F	0.40	0.45
H	1.80	2.20
J	0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.22
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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