

## Features

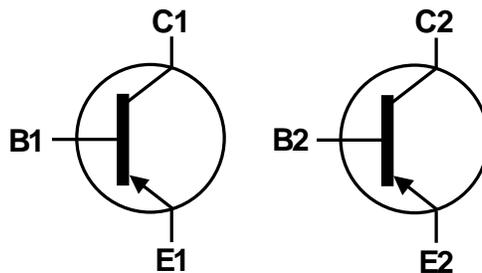
- $BV_{CEO} > -45V$
- $I_C = -100mA$  High Collector Current
- Pair of PNP Transistors that are Intrinsically Matched (Note 1)
- 10% Matching on Current Gain ( $h_{FE}$ )
- 2mV Matching on Base-Emitter Voltage ( $V_{BE}$ )
- Fully Internally Isolated in a Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS compliant (Notes 2 & 3)**
- **Halogen and Antimony Free. "Green" Device (Note 4)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

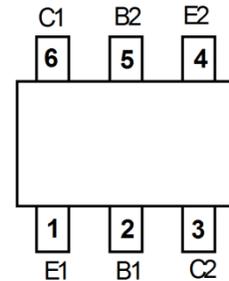
- Package: SOT363
- Package Material: Molded Plastic, "Green" Molding Compound  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.006 grams (approximate)



Top View



Device Symbol



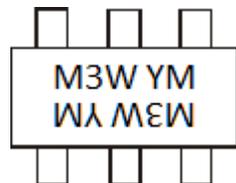
Top View  
Pin-Out

## Ordering Information (Note 5)

Orderable Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
				Quantity	Carrier
BCM857BS-7-F	M3W	7	8	3,000	Reel

- Notes:
1. Intrinsically matched pair as this is built with adjacent die from the same wafer.
  2. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  3. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  4. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



M3W = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: K = 2023)  
 M or  $\bar{M}$  = Month (ex: 2 = February)

### Date Code Key

Year	2016	.....	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	D	.....	J	K	L	M	N	P	R	S	T	U
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

**Absolute Maximum Ratings** (@  $T_A = +25^\circ\text{C}$  unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-45	V
Emitter-Base Voltage	$V_{EBO}$	-5	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 6) Total Device	$P_D$	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**ESD Ratings** (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

**Electrical Characteristics** (@  $T_A = +25^\circ\text{C}$  unless otherwise specified.)

Characteristic (Note 8)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CB0}$	-50	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-45	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -100\mu\text{A}$
DC Current Gain	$h_{FE}$	220	—	475	—	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
DC Current Gain matching (Note 9)	$h_{FE1} / h_{FE2}$	0.9	1	—	—	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-100 -400	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$
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	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
Base-Emitter Voltage matching (Note 10)	$V_{BE1(on)} - V_{BE2(on)}$	—	—	2	mV	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
Base-Emitter Voltage	$V_{BE(on)}$	-580	-665	-750	mV	$V_{CE} = -5\text{V}, I_C = -2\text{mA}$
Collector-Cutoff Current	$I_{CB0}$	—	—	-15 -4	nA $\mu\text{A}$	$V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}, T_A = +150^\circ\text{C}$
Emitter Cutoff Current	$I_{EBO}$	—	—	-100	nA	$V_{EB} = -5\text{V}$
Gain Bandwidth Product	$f_T$	100	—	—	MHz	$V_{CE} = -5\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$
Collector-Base Capacitance	$C_{CB0}$	—	2	3	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Emitter-Base Capacitance	$C_{EBO}$	—	11	—	pF	$V_{EB} = -0.5\text{V}, f = 1\text{MHz}$

- Notes:
- For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady state.
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.
  - Short duration pulse test used to minimize self-heating effect.
  - The smaller of the two values is taken as the numerator.
  - The smaller of the two values is subtracted from the larger value.

**Typical Electrical Characteristics** (@  $T_A = +25^\circ\text{C}$  unless otherwise specified.)

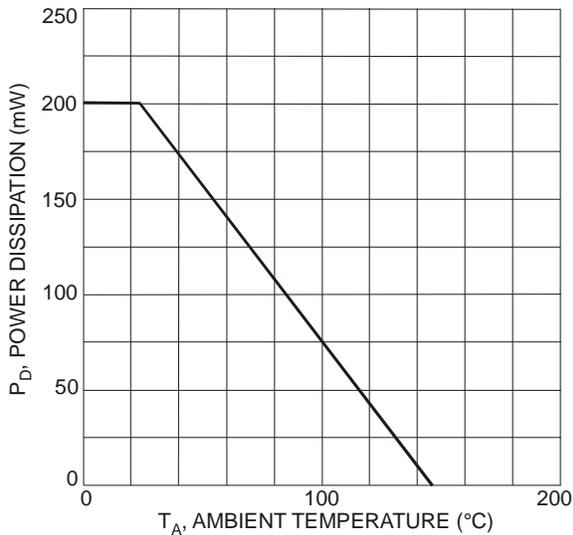


Fig. 1 Power Dissipation vs. Ambient Temperature

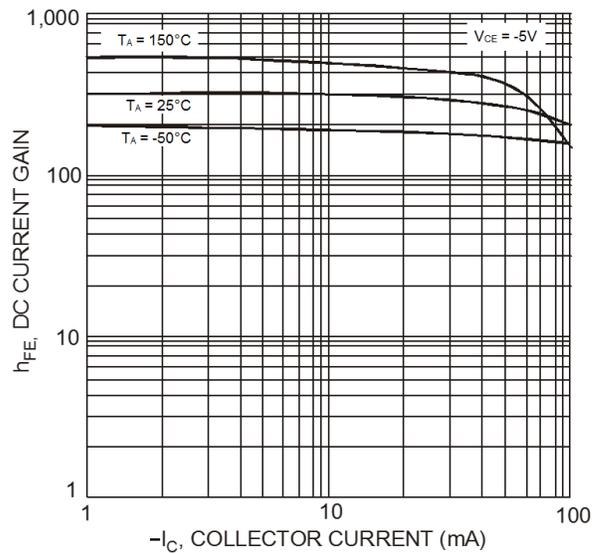


Fig. 2 Typical DC Current Gain vs. Collector Current

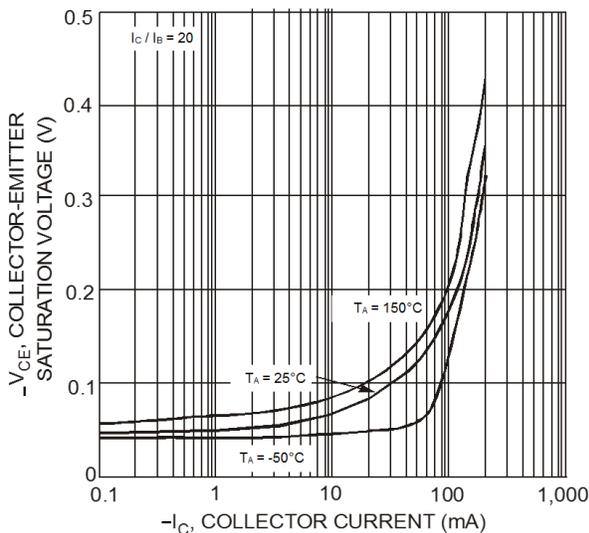


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

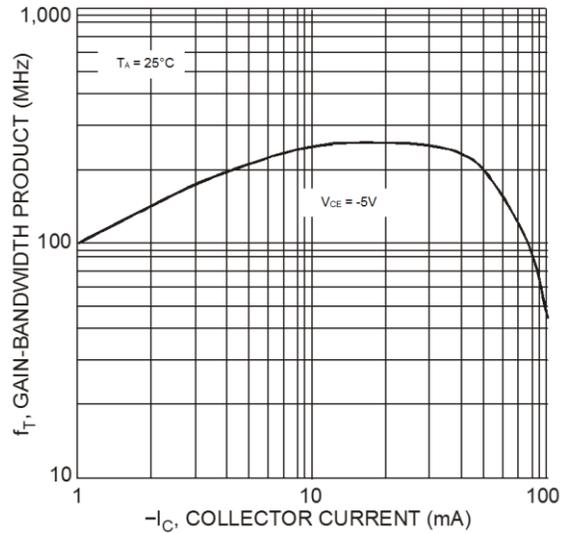
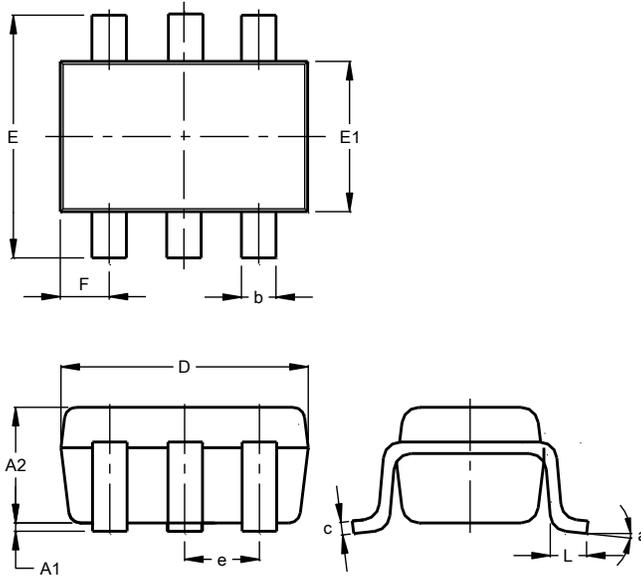


Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT363**

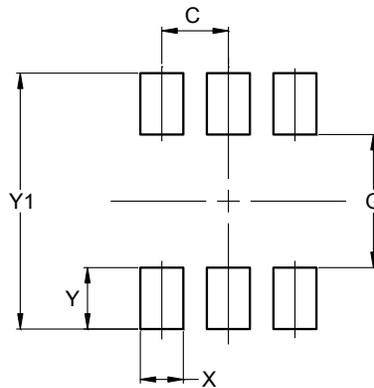


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT363**



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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