

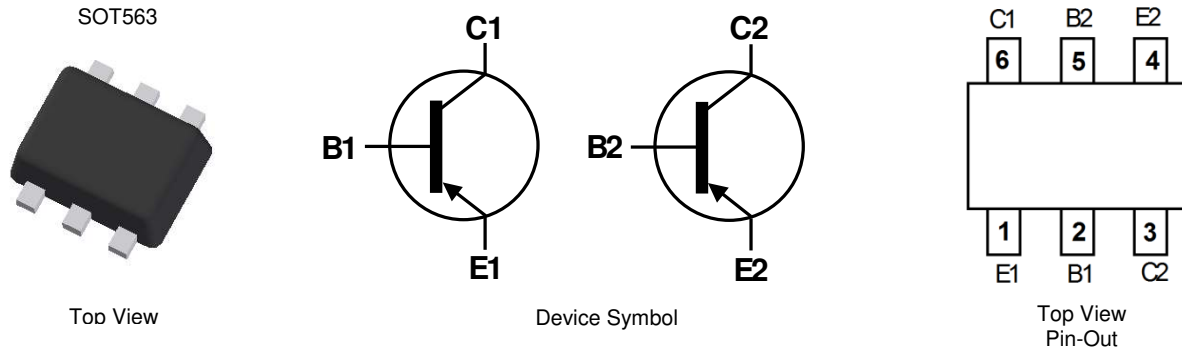
## Features

- $BV_{CEO} > -45V$
- $I_C = -100mA$  High Collector Current
- Pair of PNP Transistors That Are Intrinsically Matched (Note 1)
- 2% 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 or your local Diodes representative.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: SOT563
- 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 Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208③
- Weight: 0.003 grams (Approximate)

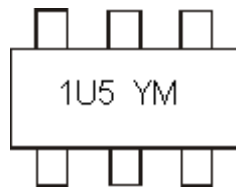


## Ordering Information (Note 5)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BCM857BV-7	1U5	7	8	3,000

- 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



1U5 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: J = 2022)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	K	L	M	N	O	P	R	S	T	U	V

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	$V_{EBO}$	-5.0	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.)

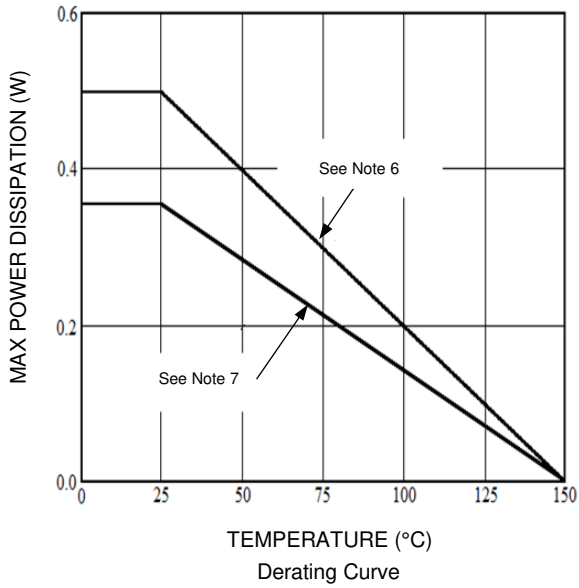
Characteristic	Symbol	Value	Unit
Power Dissipation. Total Device (Note 6)	$P_D$	500	mW
Power Dissipation. Single Transistor (Note 7)	$P_D$	357	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	+250	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	+350	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**ESD Ratings** (Note 8)

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

- Notes:
6. For a device with two active die running at equal power, 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.
  7. Same as Note 6 except for only one active die running.
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

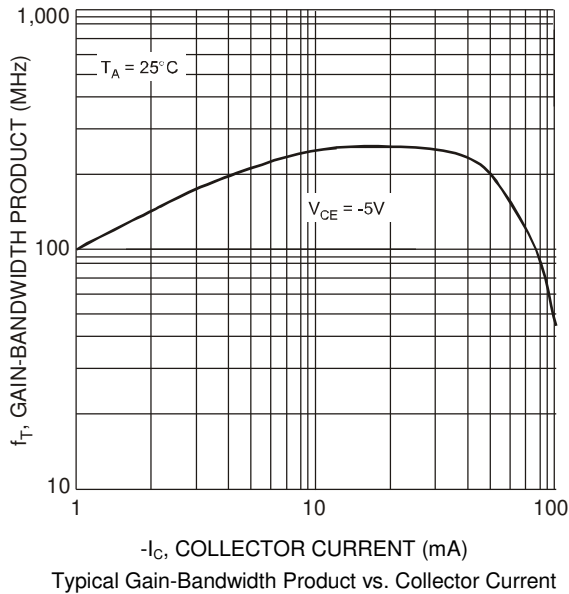
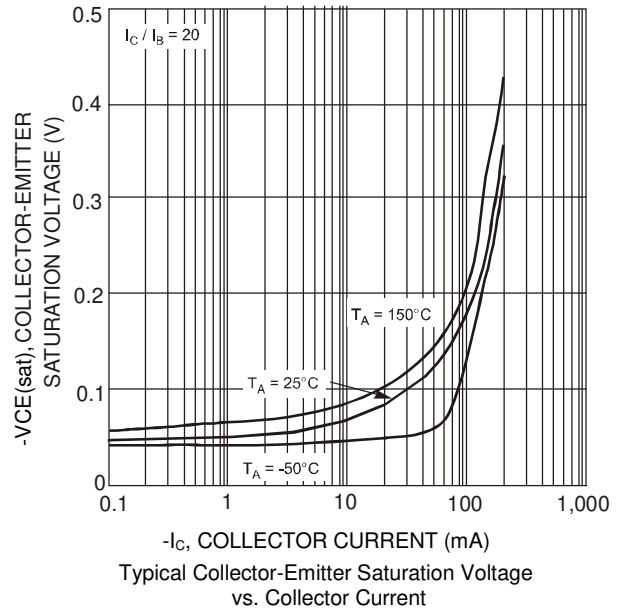
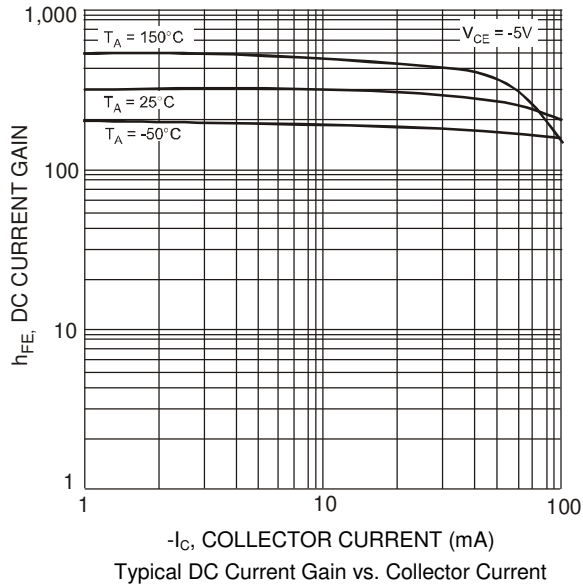


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic (Note 9)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50	—	—	V	I <sub>C</sub> = -100μA, I <sub>B</sub> = 0
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-45	—	—	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub>	200	290	450	—	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
DC Current Gain Matching (Note 10)	h <sub>FE1</sub> /h <sub>FE2</sub>	0.98	1	—	—	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	-50 -200	-200 -400	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA I <sub>C</sub> = -100mA, I <sub>B</sub> = -5.0mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	-760	—	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA
Base-Emitter Voltage	V <sub>BE(on)</sub>	-600	-650	-700	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Base-Emitter Voltage Matching (Note 11)	V <sub>BE1(on)</sub> - V <sub>BE2(on)</sub>	—	—	2	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Collector Cut-Off Current	I <sub>CBO</sub>	—	—	-15 -5.0	nA μA	V <sub>CB</sub> = -30V V <sub>CB</sub> = -30V, T <sub>A</sub> = +150°C
Emitter Cut-Off Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -5.0V, I <sub>C</sub> = 0
Gain Bandwidth Product	f <sub>T</sub>	100	175	—	MHz	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -10mA, f = 100MHz
Collector-Base Capacitance	C <sub>CBO</sub>	—	—	2.2	pF	V <sub>CB</sub> = -10V, f = 1.0MHz
Emitter-Base Capacitance	C <sub>EBO</sub>	—	10	—	pF	V <sub>EB</sub> = -0.5V, f = 1.0MHz

- Notes:
9. Short duration pulse test used to minimize self-heating effect.
  10. The smaller of the two values is taken as the numerator.
  11. The smaller of the two values is subtracted from the larger value.

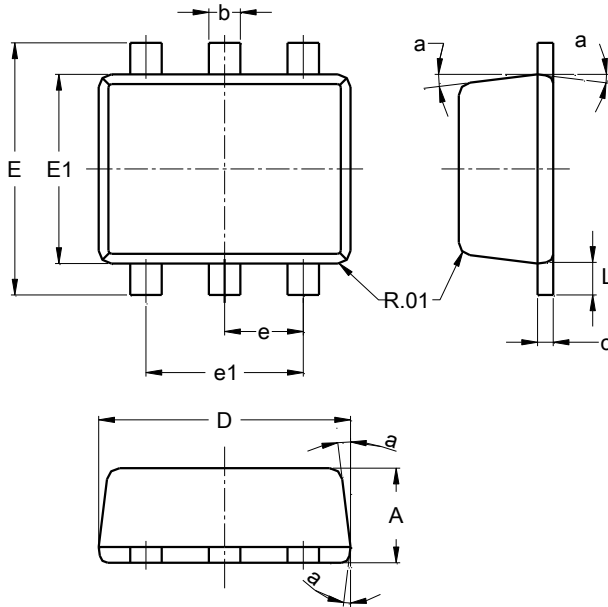
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$  unless otherwise specified.)



## Package Outline Dimensions

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

SOT563

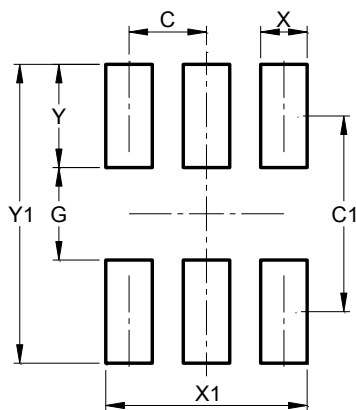


SOT563			
Dim	Min	Max	Typ
<b>A</b>	0.55	0.60	--
<b>b</b>	0.15	0.30	0.20
<b>c</b>	0.10	0.18	0.11
<b>D</b>	1.50	1.70	1.60
<b>E</b>	1.55	1.70	1.60
<b>E1</b>	1.10	1.25	1.20
<b>e</b>	--	--	0.50
<b>e1</b>	0.90	1.10	1.00
<b>L</b>	0.10	0.30	0.20
<b>a</b>	8°	9°	7°
<b>All Dimensions in mm</b>			

## Suggested Pad Layout

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

SOT563



Dimensions	Value (in mm)
<b>C</b>	0.500
<b>C1</b>	1.270
<b>G</b>	0.600
<b>X</b>	0.300
<b>X1</b>	1.300
<b>Y</b>	0.670
<b>Y1</b>	1.940

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