THE DATASHEET OF

BCM857BV-7

45V MATCHED PAIR PNP SMALL SIGNAL TRANSISTOR IN SOT563

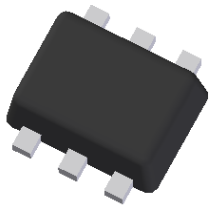
Features

- 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/

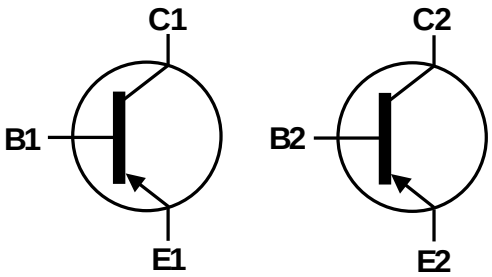
Mechanical Data

- 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 208 e3
- Weight: 0.003 grams (Approximate)

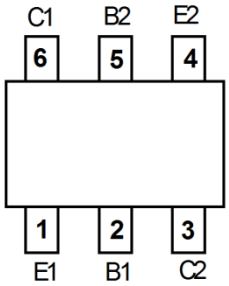
SOT563



Top View



Device Symbol



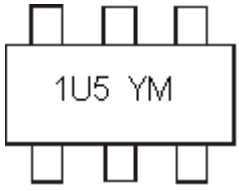
Top View
Pin-Out

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°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°C, unless otherwise specified.)

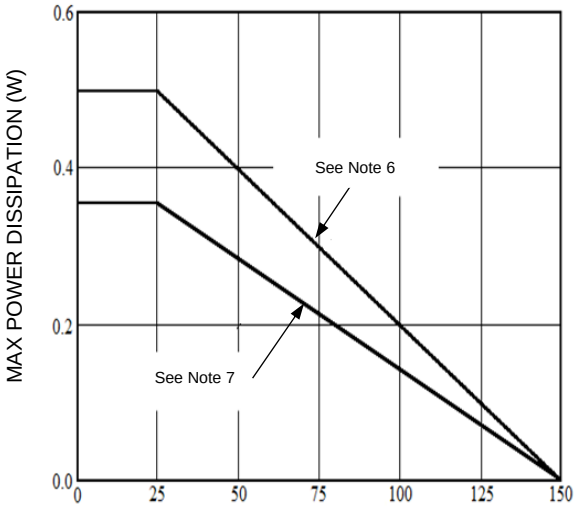
Characteristic	Symbol	Value	Unit
Power Dissipation. Total Device (Note 6)	P_D	500	mW
Power Dissipation. Single Transistor (Note 7)	P_D	357	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	+250	°C/W
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	+350	°C/W
Operating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



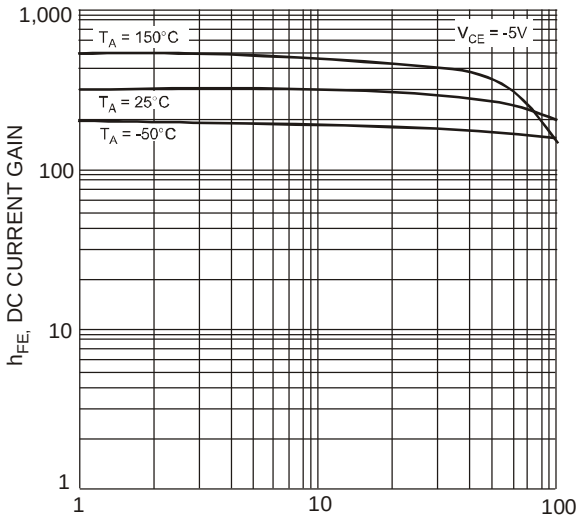
Derating Curve

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

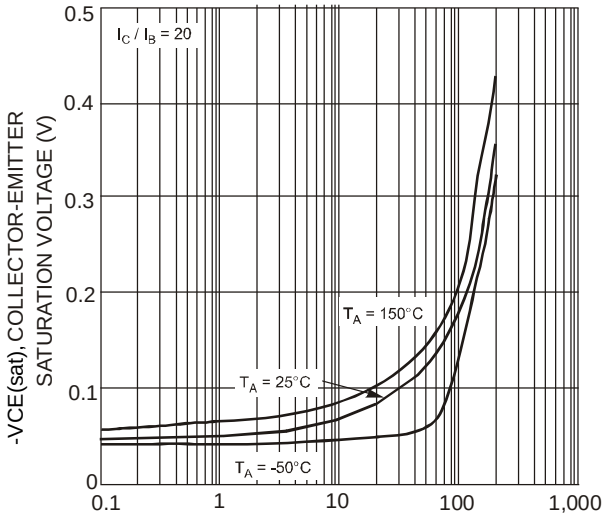
Characteristic (Note 9)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -100µA, I_B = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	-45	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -100µA, I_C = 0
DC Current Gain	h_{FE}	200	290	450	—	V_{CE} = -5.0V, I_C = -2.0mA
DC Current Gain Matching (Note 10)	h_{FE1}/h_{FE2}	0.98	1	—	—	V_{CE} = -5.0V, I_C = -2.0mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	-50 -200	-200 -400	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	-760	—	mV	I_C = -10mA, I_B = -0.5mA
Base-Emitter Voltage	$V_{BE(on)}$	-600	-650	-700	mV	V_{CE} = -5.0V, I_C = -2.0mA
Base-Emitter Voltage Matching (Note 11)	$V_{BE1(on)}$ - $V_{BE2(on)}$	—	—	2	mV	V_{CE} = -5.0V, I_C = -2.0mA
Collector Cut-Off Current	I_{CBO}	— —	— —	-15 -5.0	nA µA	V_{CB} = -30V V_{CB} = -30V, T_A = +150°C
Emitter Cut-Off Current	I_{EBO}	—	—	-100	nA	V_{EB} = -5.0V, I_C = 0
Gain Bandwidth Product	f_T	100	175	—	MHz	V_{CE} = -5.0V, I_C = -10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	—	2.2	pF	V_{CB} = -10V, f = 1.0MHz
Emitter-Base Capacitance	C_{EBO}	—	10	—	pF	V_{EB} = -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.

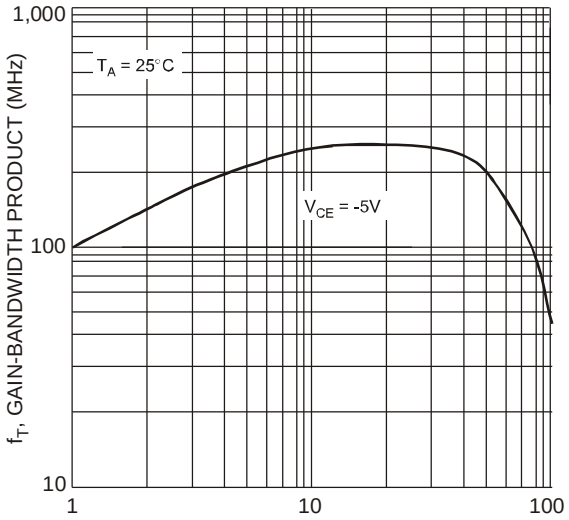
Typical Electrical Characteristics (@T_A = +25°C unless otherwise specified.)



Typical DC Current Gain vs. Collector Current



Typical Collector-Emitter Saturation Voltage vs. Collector Current

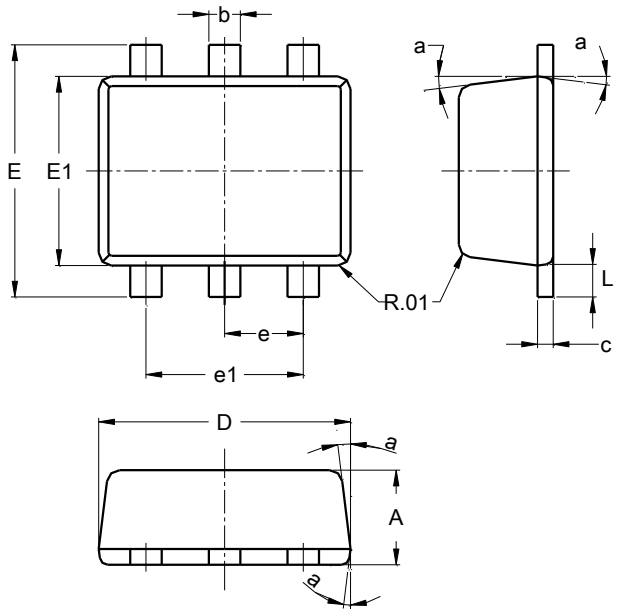


Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

SOT563

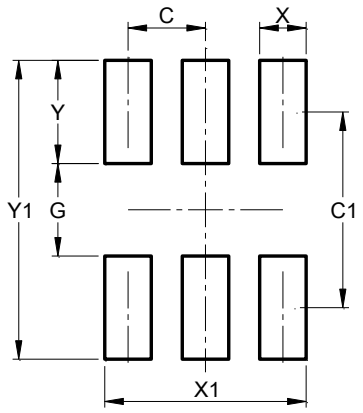


SOT563			
Dim	**Min**	**Max**	**Typ**
A	0.55	0.60	--
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°
All Dimensions in mm			

Suggested Pad Layout

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

SOT563



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

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