45V MATCHED PAIR PNP SMALL SIGNAL TRANSISTOR IN SOT563

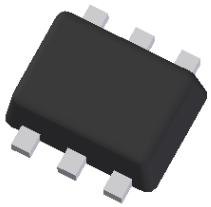
Features

- 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)**
- **Qualified to AEC-Q101 for High Reliability**

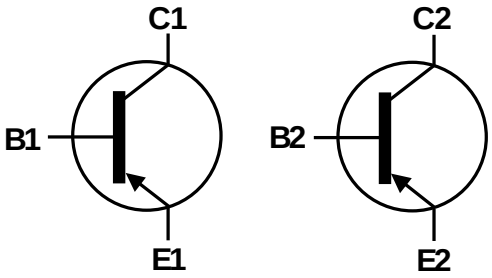
Mechanical Data

- Case: SOT563
- Case 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)

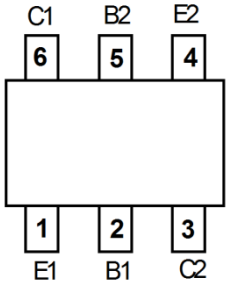
SOT563



Top View



Device Symbol



Top View
Pin-Out

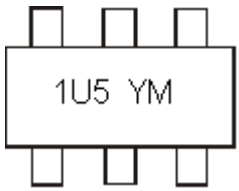
Ordering Information (Note 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BCM857BV-7	AEC-Q101	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) compliant.
3. See http://www.diodes.com/quality/lead_free.html 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 http://www.diodes.com/products/packages.html.

Marking Information

SOT563



1U5 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: B = 2014)
M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021
Code	B	C	D	E	F	G	H	I

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

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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

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:
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.
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.

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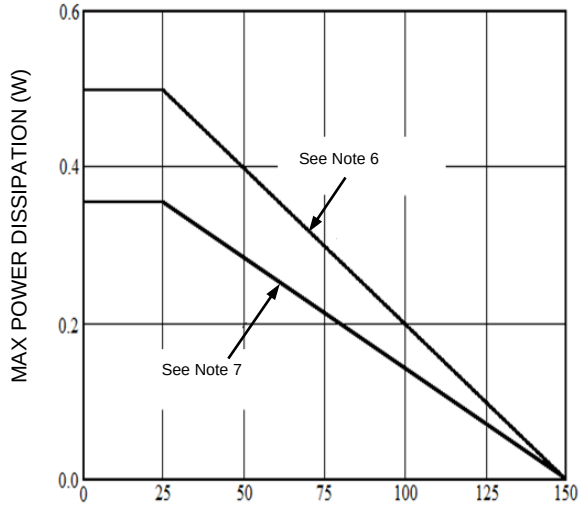
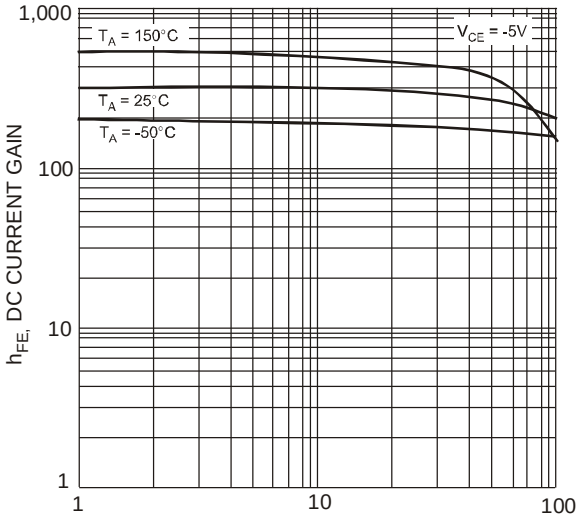
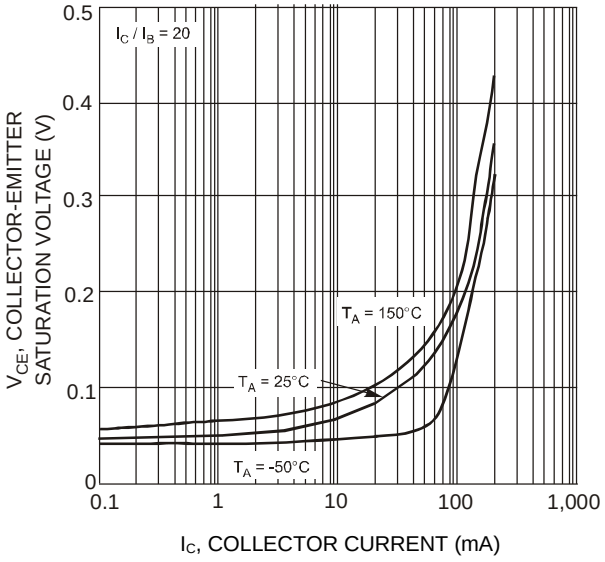
Typical Electrical Characteristics (@T_A = +25°C unless otherwise specified.)



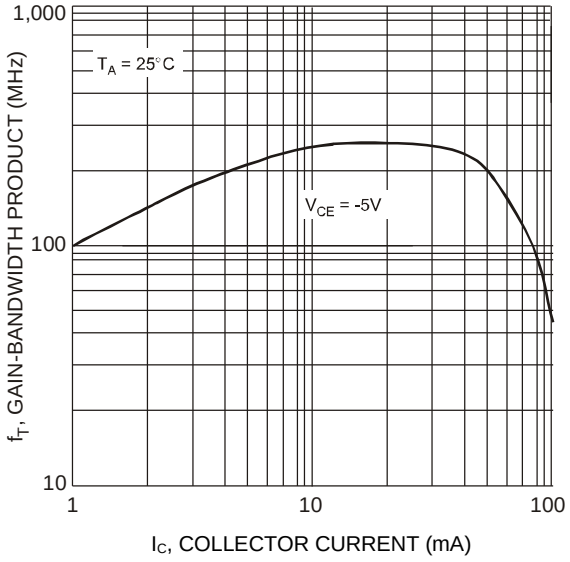
Derating Curve



Typical DC Current Gain vs. Collector Current



Typical Collector-Emitter Saturation Voltage vs. Collector Current



Typical Gain-Bandwidth Product vs. Collector Current

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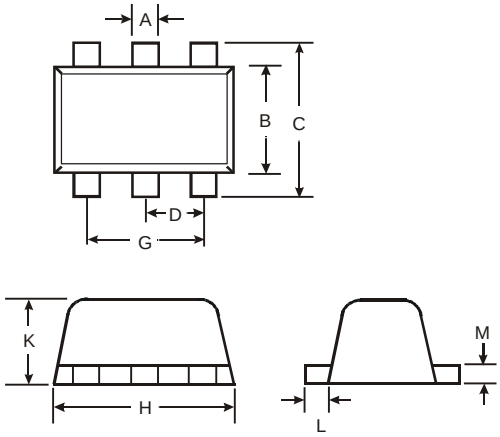
Package Outline Dimensions

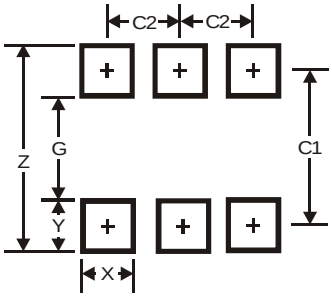
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT563			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	SOT563
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9