65V NPN MATCHED PAIR SMALL SIGNAL TRANSISTOR IN SOT363

Features

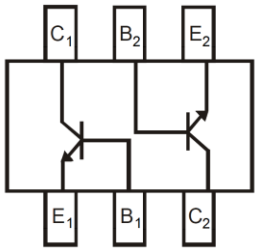
- Ultra-Small Surface Mount Package
- Current Gain Matching
- Base-Emitter Voltage Matching
- Ideally Suited for Automated Insertion
- For Switching and AF Amplifier Application
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified 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: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

SOT363

Top View



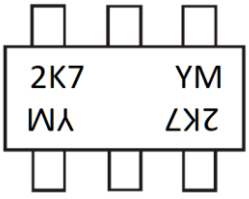
Device Schematic
Top View

Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
BCM846BS-7	AEC-Q101	2K7	7	8	3,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. 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.
3. Halogen- and Antimony-free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



2K7 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: F = 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025
Code	F	G	H	I	J	K	L	M

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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	65	V
Emitter-Base Voltage	V_{EBO}	6	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 (Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

ESD Ratings (Note 6)

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 7)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	I_C = 100μA, I_B = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	65	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	I_E = 100μA, I_C = 0
DC Current Gain	h_{FE}	200	—	450	—	V_{CE} = 5V, I_C = 2mA
DC Current Gain Matching	h_{FE1}/h_{FE2}	0.9	1	1.1	—	V_{CE} = 5V, I_C = 2mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	100 400	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	755	—	mV	I_C = 10mA, I_B = 0.5mA
		—	905	—	mV	I_C = 100mA, I_B = 5mA
Base-Emitter Voltage	$V_{BE(ON)}$	610	665	710	mV	V_{CE} = 5V, I_C = 2mA
Base-Emitter Voltage Matching	$V_{BE1(ON)}$ - $V_{BE2(ON)}$	-2	—	2	mV	V_{CE} = 5V, I_C = 2mA
Collector-Cutoff Current	I_{CBO}	— —	— —	15 5	nA μA	V_{CB} = 40V V_{CB} = 40V, T_A = +125°C
Emitter-Cutoff Current	I_{EBO}	—	—	20	nA	V_{EB} = 5V, I_C = 0
Gain Bandwidth Product	f_T	100	—	—	MHz	V_{CE} = 5V, I_C = 10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	2	3	pF	V_{CB} = 10V, f = 1MHz
Emitter-Base Capacitance	C_{EBO}	—	11	—	pF	V_{EB} = 0.5V, f = 1MHz

Notes:
5. For a device mounted with the collector lead on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.
7. Short duration pulse test used to minimize self-heating effect.

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

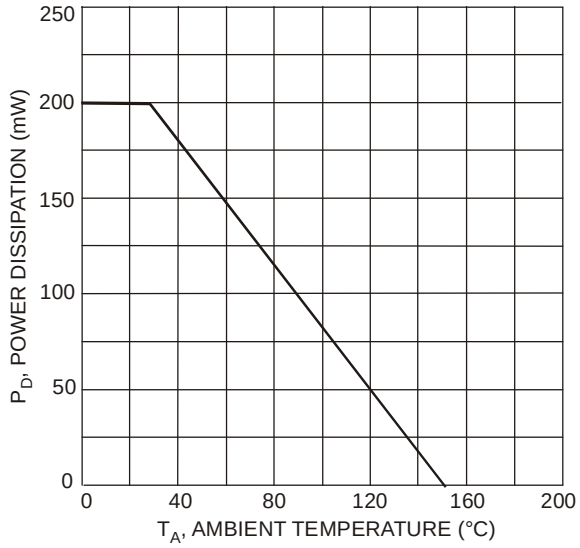


Figure 1 Power Derating Curve

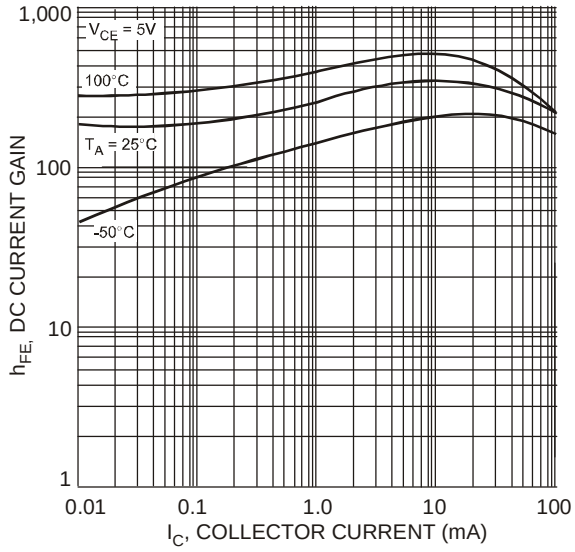


Figure 2 Typical DC Current Gain vs. Collector Current

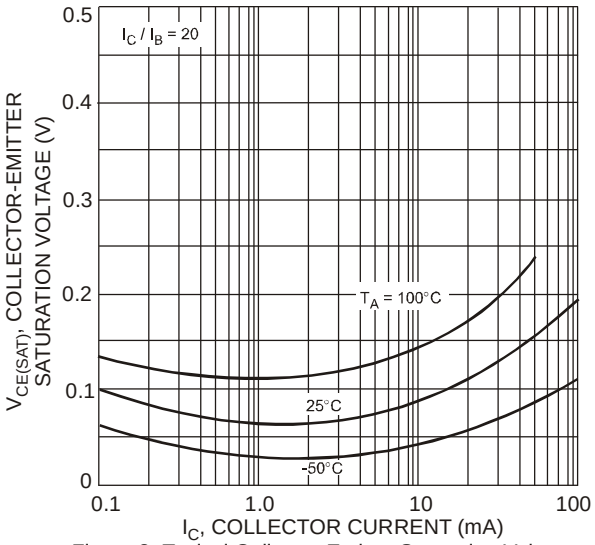


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

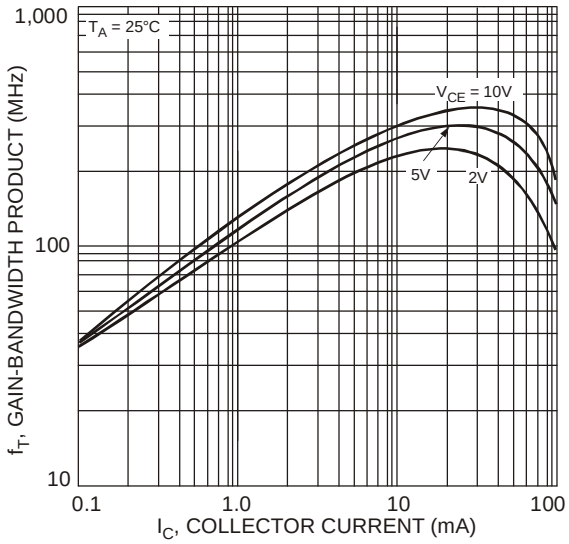


Figure 4 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

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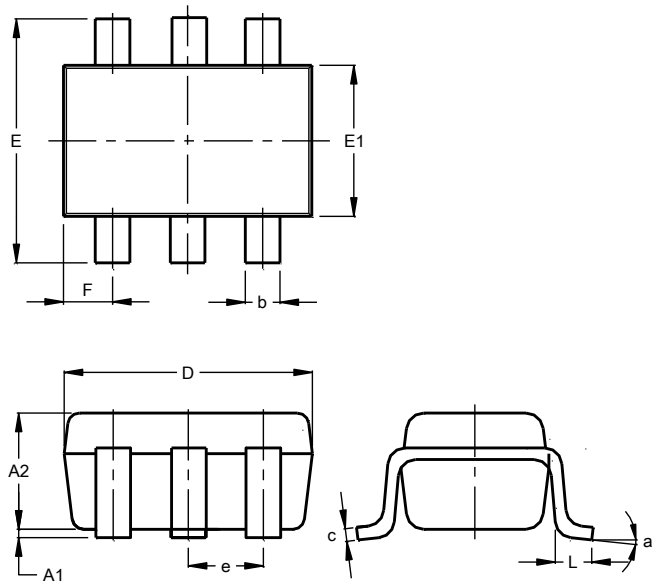

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Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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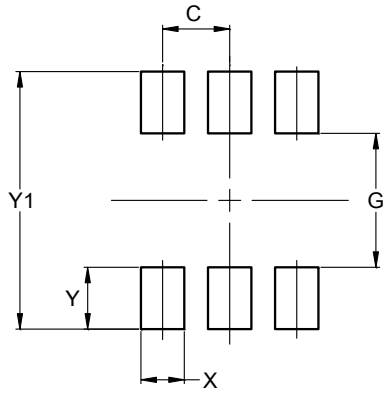

Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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