

BCM857BS

#### 45V MATCHED PAIR PNP SMALL SIGNAL TRANSISTOR IN SOT363

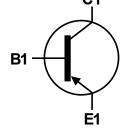
#### **Features**

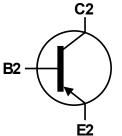
- BV<sub>CEO</sub> > -45V
- I<sub>C</sub> = -100mA High Collector Current
- Pair of PNP Transistors That Are Intrinsically Matched (Note 1)
- 10% Matching on Current Gain (h<sub>FE</sub>)
- 2mV Matching on Base-Emitter Voltage (V<sub>BE</sub>)
- Fully Internally Isolated in a Small Surface Mount Package
- Totally Lead-Free & Fully RoHS compliant (Notes 2 & 3)
- Halogen and Antimony Free. "Green" Device (Note 4)
- Qualified to AEC-Q101 for High Reliability

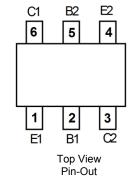
### **Mechanical Data**

- Case: 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 @3
- Weight: 0.006 grams (approximate)









Top View

Device Symbol

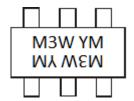
## **Ordering Information** (Note 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BCM857BS-7-F	AEC-Q101	M3W	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**



M3W = 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	В		С	D		Е	F		G	Н		I
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



## Absolute Maximum Ratings (@TA = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-45	V
Emitter-Base Voltage	$V_{EBO}$	-5.0	V
Collector Current	Ic	-100	mA
Peak Collector Current	I <sub>CM</sub>	-200	mA
Peak Base Current	I <sub>BM</sub>	-200	mA

### Thermal Characteristics (@TA = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6) Total Device	P <sub>D</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{ hetaJA}$	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°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	С

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

Characteristic (Note 8)	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50	_	_	V	$I_C = 100 \mu A, I_B = 0$
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	$I_E = 100 \mu A, I_C = 0$
DC Current Gain	h <sub>FE</sub>	220	-	475		$V_{CE} = -5.0V, I_{C} = -2.0mA$
DC Current Gain matching (Note 9)	h <sub>FE1/</sub> h <sub>FE2</sub>	0.9	1	1		$V_{CE} = -5.0V, I_{C} = -2.0mA$
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	_		-100 -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>	_	-700	_	mV	$I_C = -10 \text{mA}, I_B = -0.5 \text{mA}$
Base-Emitter Voltage	V <sub>BE(on)</sub>	-580	-665	-750	mV	$V_{CE}$ = -5.0V, $I_{C}$ = -2.0mA
Base-Emitter Voltage matching (Note 10)	V <sub>BE1(on)</sub> - V <sub>BE2(on)</sub>	_	ı	2	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Base-Emitter Voltage	V <sub>BE(on)</sub>	-580	-665	-750	mV	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -2.0mA
Collector-Cutoff Current	I <sub>CBO</sub>		1 1	-15 -4.0	nΑ μΑ	V <sub>CB</sub> = -30V V <sub>CB</sub> = -30V, T <sub>A</sub> = +150°C
Emitter Cutoff Current	I <sub>EBO</sub>	_	_	-100	nA	$V_{EB} = -5.0V, I_{C} = 0$
Gain Bandwidth Product	f <sub>T</sub>	100	_		MHz	$V_{CE} = -5.0V$ , $I_{C} = -10mA$ , $f = 100MHz$
Collector-Base Capacitance	C <sub>CBO</sub>		2	3	pF	V <sub>CB</sub> = -10V, f = 1.0MHz
Emitter-Base Capacitance	C <sub>EBO</sub>	_	11	_	pF	V <sub>EB</sub> = -0.5V, f = 1.0MHz

- 6. 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.
  7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.
- S. Short duration pulse test used to minimize self-heating effect.
   The smaller of the two values is taken as the numerator.
- 10. The smaller of the two values is subtracted from the larger value.



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

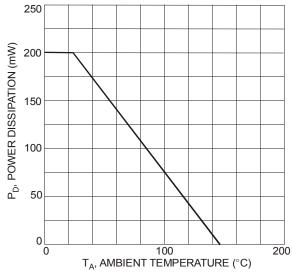


Fig. 1 Power Dissipation vs. Ambient Temperature

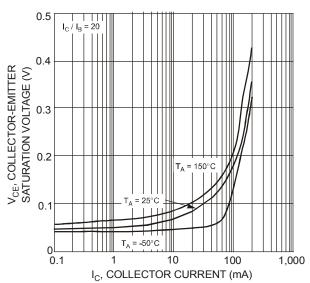


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

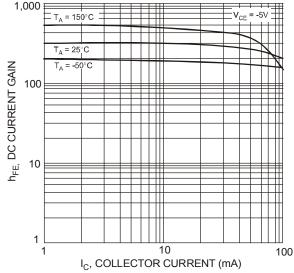


Fig. 2 Typical DC Current Gain vs. Collector Current

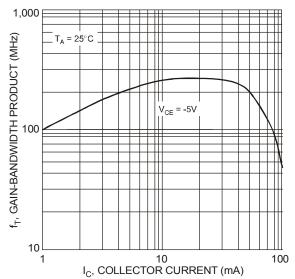
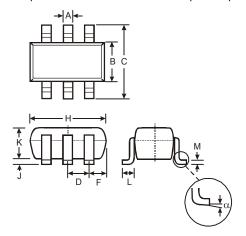


Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current



# **Package Outline Dimensions**

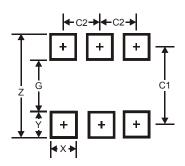
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



	SOT363						
Dim	Min	Max	Тур				
Α	0.10	0.30	0.25				
В	1.15	1.35	1.30				
С	2.00	2.20	2.10				
D	0.65 Typ						
F	0.40	0.45	0.425				
Н	1.80	2.20	2.15				
J	0	0.10	0.05				
K	0.90	1.00	1.00				
L	0.25	0.40	0.30				
M	0.10	0.22	0.11				
α	0°	8°	-				
All	All Dimensions in mm						

# **Suggested Pad Layout**

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



Dimensions	Value (in mm)
Z	2.5
G	1.3
Х	0.42
Y	0.6
C1	1.9
C2	0.65



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