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With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

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Features

- $BV_{CEO} > 80V$
- $I_C = -1A$ High Continuous Current
- Low saturation voltage $V_{CE(sat)} < 250mV$ @ 150mA
- Complementary type BSR33
- **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
- PPAP capable (Note 4)

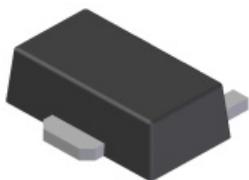
Mechanical Data

- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.052 grams (Approximate)

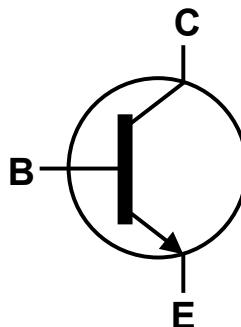
Application

- Load management functions
- Solenoid, relay and actuator drivers
- DC – DC modules

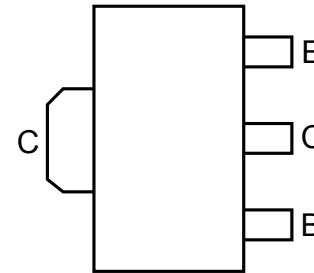
SOT89



Top View



Device Symbol


 Top View
 Pin-Out

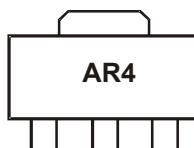
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BSR43TA	AEC-Q101	AR4	7	12	1,000
BSR43QTA	Automotive	AR4	7	12	1,000

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. 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.
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. Automotive products are AEC-Q10x qualified and are PPAP capable. Automotive, AEC-Q10x and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



AR4 = Product Type Marking Code

Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	90	V
Collector-Emitter Voltage	V_{CEO}	80	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Peak Base Current	I_{BM}	200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	1	W
		1.5	
		2.1	
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	125	°C/W
		83	
		60	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	13	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

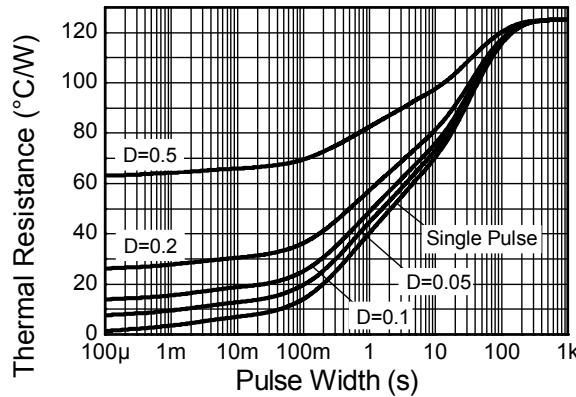
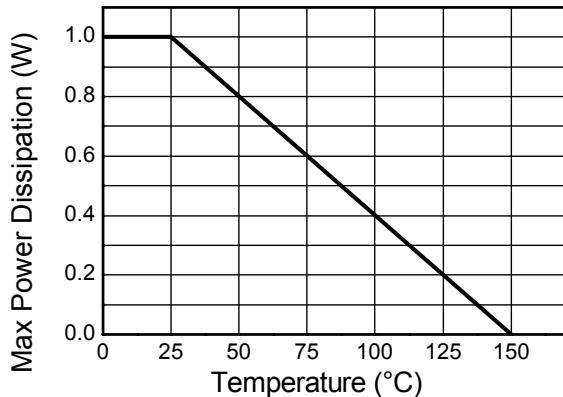
ESD Ratings (Note 9)

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

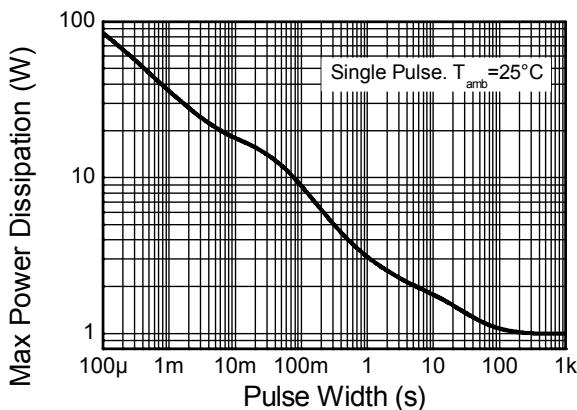
Notes:

6. For a device mounted with the exposed collector pad on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
8. Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
9. Thermal resistance from junction to solder-point (on the exposed collector pad).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

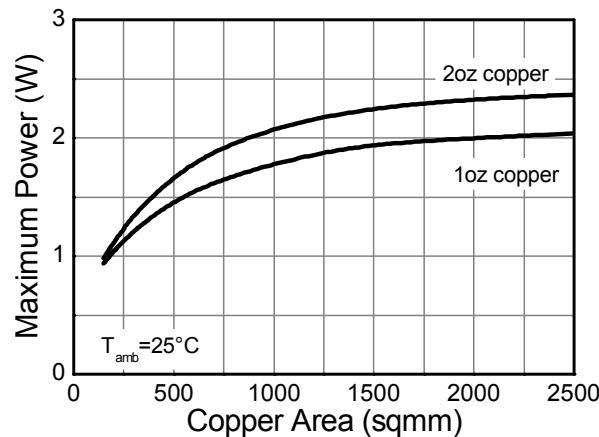
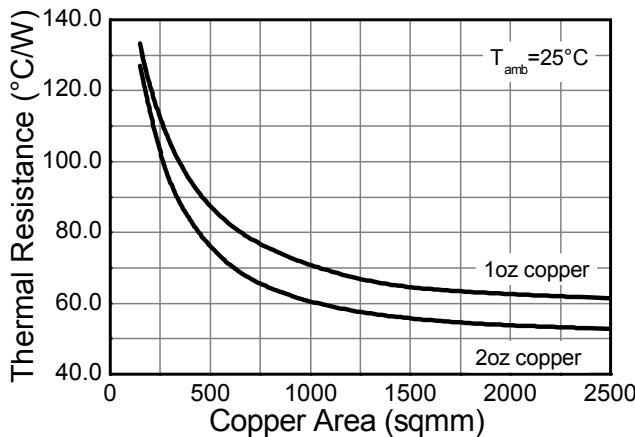
Thermal Characteristics and Derating Information



Derating Curve



Pulse Power Dissipation

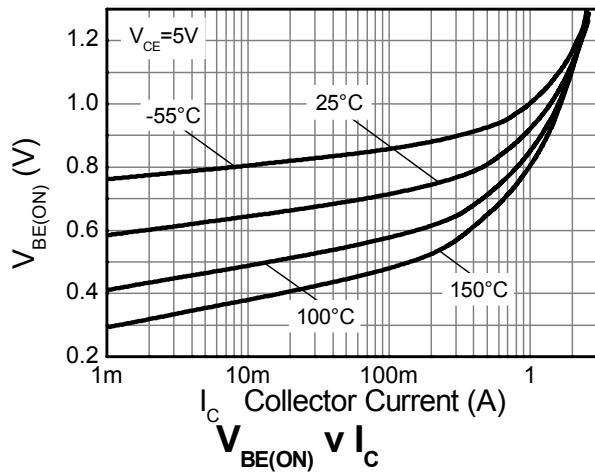
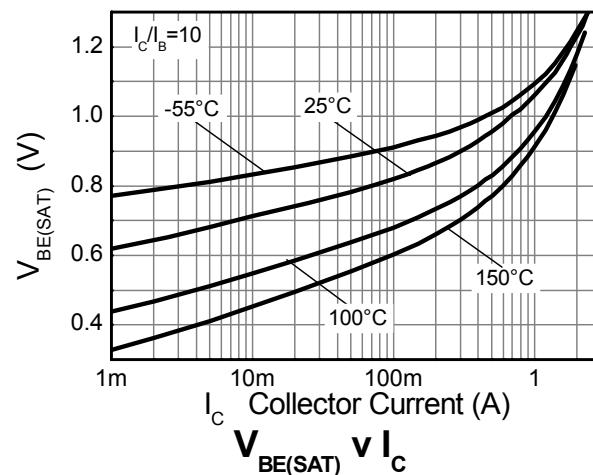
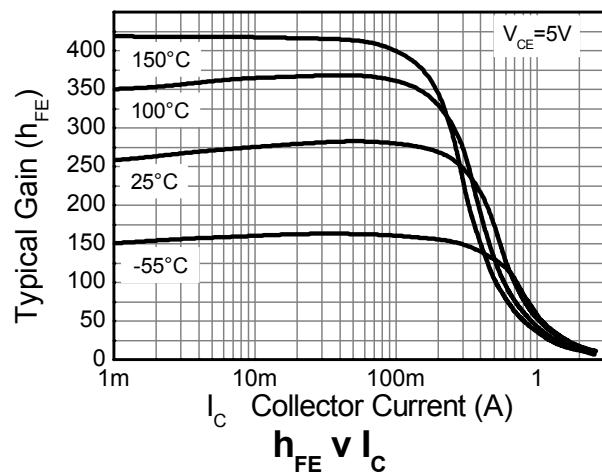
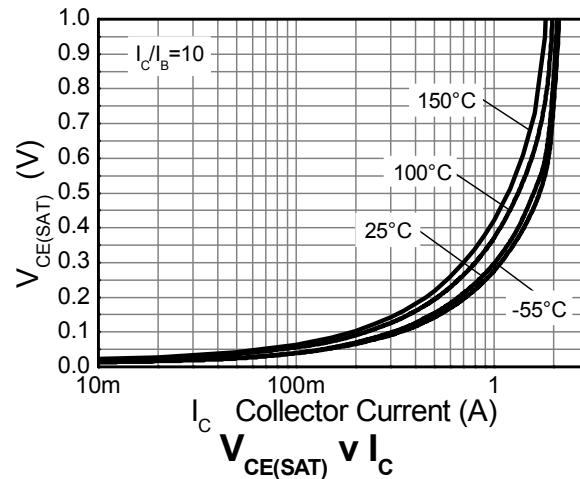
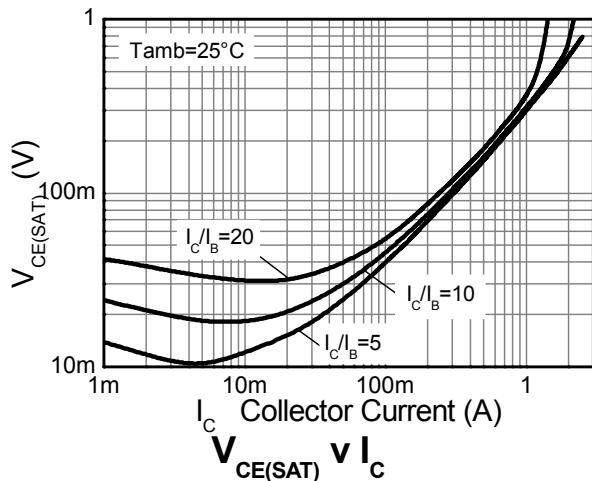


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	90	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	80	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	—	100 50	nA μA	$V_{\text{CB}} = 60\text{V}$ $V_{\text{CB}} = 60\text{V}, T_J = +150^\circ\text{C}$
DC current transfer Static ratio (Note 11)	h_{FE}	30 100 50	— — —	— 300 —	—	$I_C = 100\mu\text{A}, V_{\text{CE}} = 5\text{V}$ $I_C = 100\text{mA}, V_{\text{CE}} = 5\text{V}$ $I_C = 500\text{mA}, V_{\text{CE}} = 5\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{\text{CE}(\text{sat})}$	— —	— —	0.25 0.5	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{\text{BE}(\text{sat})}$	—	—	1.0 1.2	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Transitional Frequency	f_T	100	—	—	MHz	$I_C = 50\text{mA}, V_{\text{CE}} = 10\text{V}$ $f = 35\text{MHz}$
Output capacitance	C_{obo}	—	—	12	pF	$V_{\text{CB}} = 10\text{V}, f = 1\text{MHz}$
Input Capacitance	C_{ibo}	—	—	90	pF	$V_{\text{CB}} = 0.5\text{V}, f = 1\text{MHz}$
Turn-On Time	T_{on}	—	—	250	ns	$V_{\text{CC}} = 20\text{V}, I_C = 100\text{mA}$
Turn-Off Time	T_{off}	—	—	1000	ns	$I_{B1} = I_{B2} = 5\text{mA}$

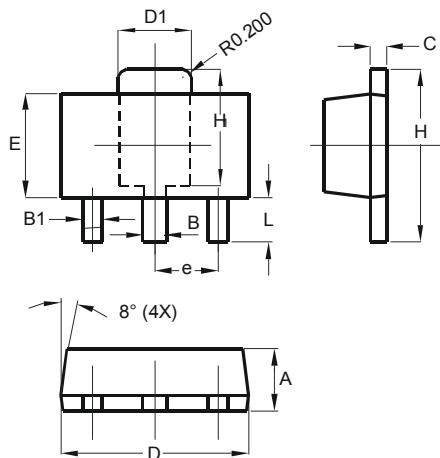
Note: 11. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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



Package Outline Dimensions

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

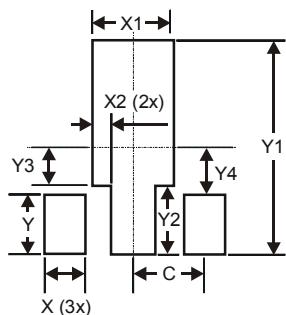


SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20

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)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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