

20V NPN SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT89

Features

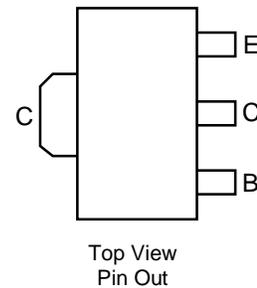
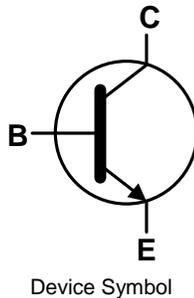
- $BV_{CE0} > 20V$
- $I_C = 1A$ High Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < 500mV @ 1A$
- Complementary PNP Type: BCX6925
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([BCX6825Q](#))**

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: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208^③
- Weight: 0.055 grams (Approximate)

Application

- Power MOSFET Gate Driving
- Low-Loss Power Switching

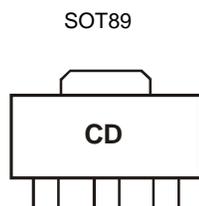


Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
BCX6825TA	AEC-Q101	CD	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> 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 <http://www.diodes.com/products/packages.html>.

Marking Information



CD = Product Type Marking Code

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	25	V
Collector-Emitter Voltage	V _{CEO}	20	V
Emitter-Base Voltage	V _{EBO}	5	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current	I _{CM}	2	A
Base Current	I _B	100	mA

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

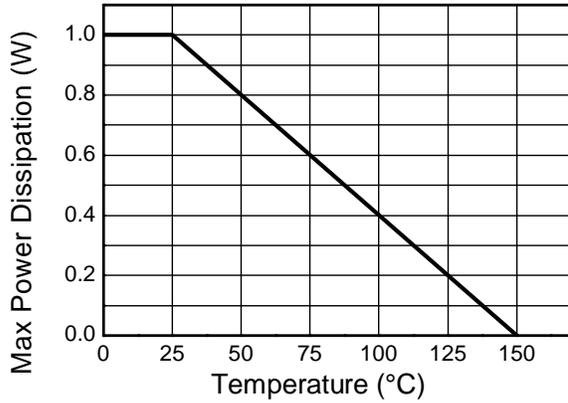
Characteristic	Symbol	Value	Unit
Collector Power Dissipation	P _D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	10.01	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

ESD Ratings (Note 7)

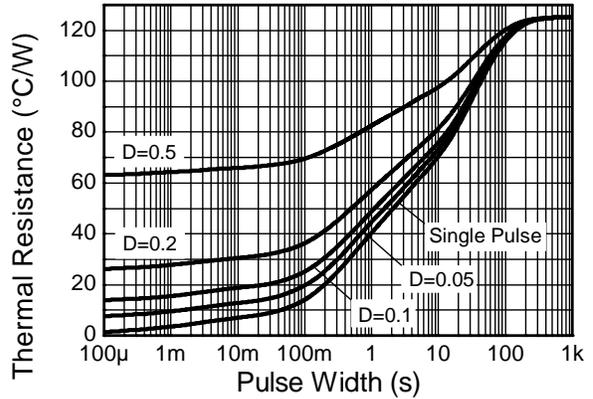
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

- Notes:
5. For a device surface mounted on 15mm X 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; device measured when operating in steady state condition.
 6. Thermal resistance from junction to solder-point (on the exposed collector pad).
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

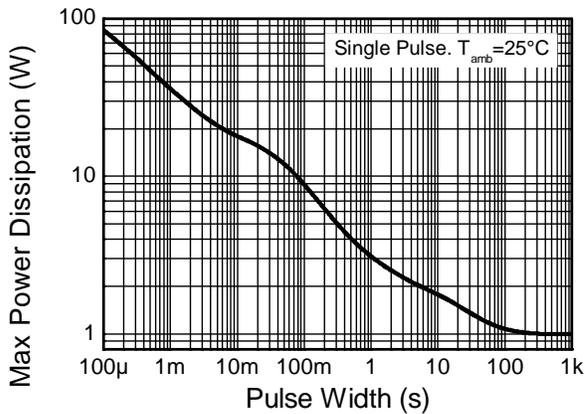
Thermal Characteristics and Derating Information



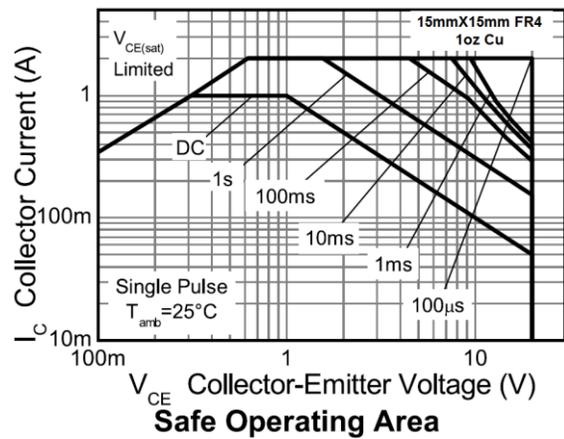
Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation



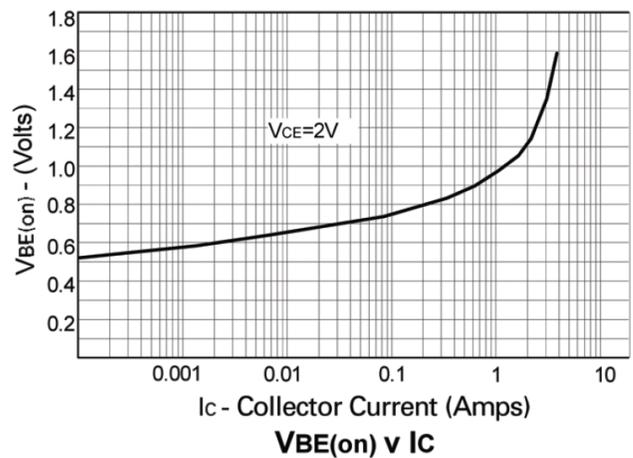
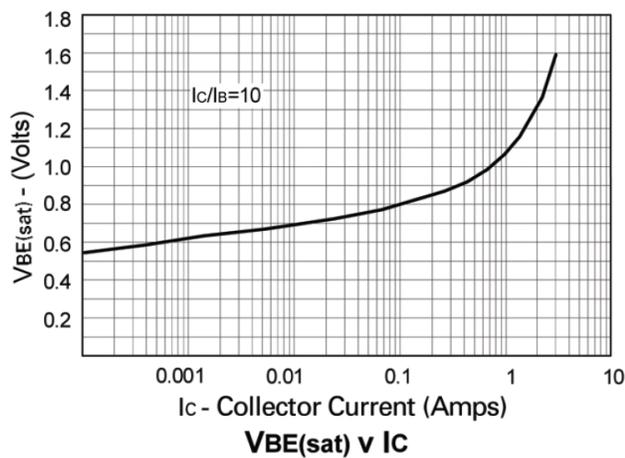
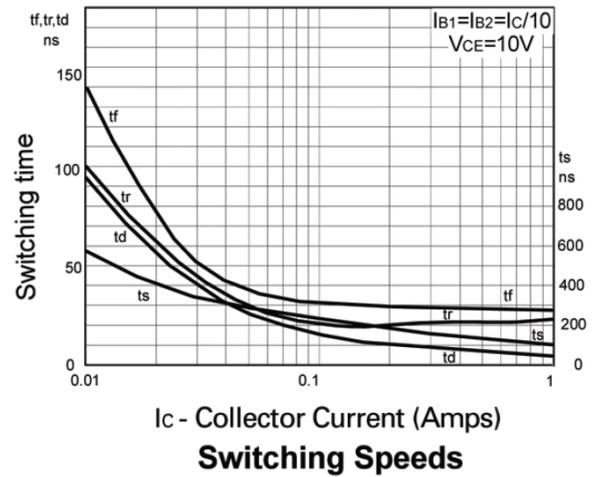
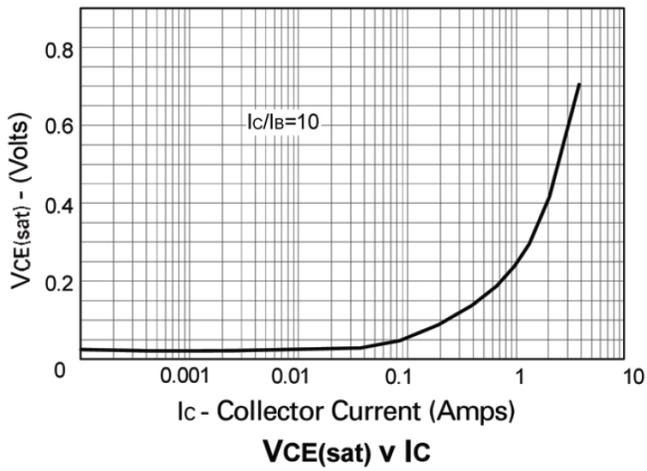
Safe Operating Area

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

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	25	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	20	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	5	—	—	V	I _E = 100μA
Collector Cut-Off Current	I _{CBO}	—	—	100 10	nA μA	V _{CB} = 25V V _{CB} = 25V, T _A = +125°C
Emitter Cut-Off Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V
DC Current Transfer Static Ratio (Note 8)	h _{FE}	50 160 60	— 250 —	— 400 —	—	I _C = 5mA, V _{CE} = 10V I _C = 500mA, V _{CE} = 1V I _C = 1A, V _{CE} = 1V
Collector-Emitter Saturation Voltage (Note 8)	V _{CE(sat)}	—	—	0.5	V	I _C = 1A, I _B = 100mA
Base-Emitter Turn-On Voltage (Note 8)	V _{BE(on)}	—	—	1.0	V	I _C = 1A, V _{CE} = 1V
Transitional Frequency	f _T	100	—	—	MHz	I _C = 100mA, V _{CE} = 5V, f = 100MHz
Output Capacitance	C _{obo}	—	—	25	pF	V _{CB} = 10V, f = 1MHz

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

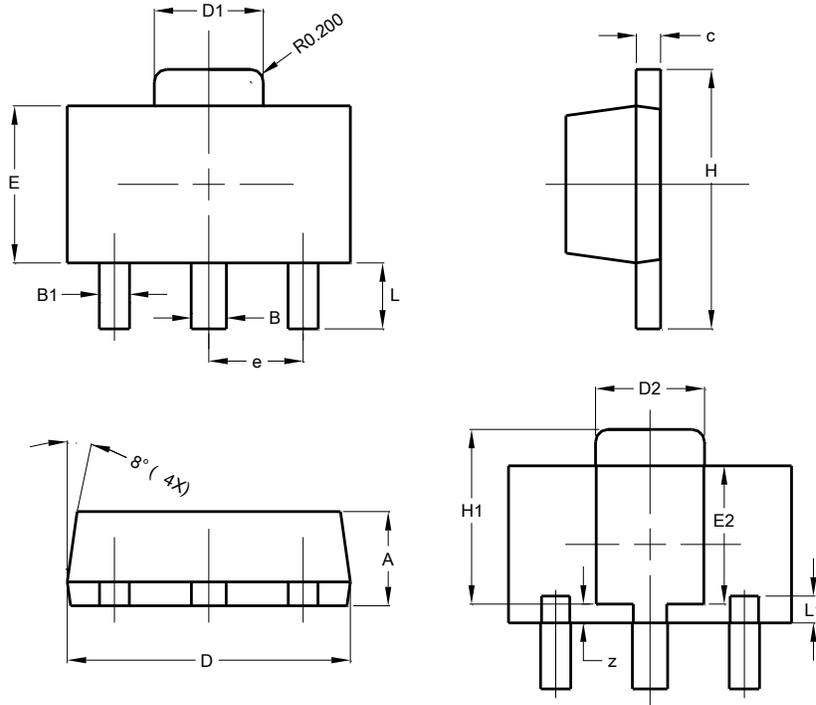
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT89

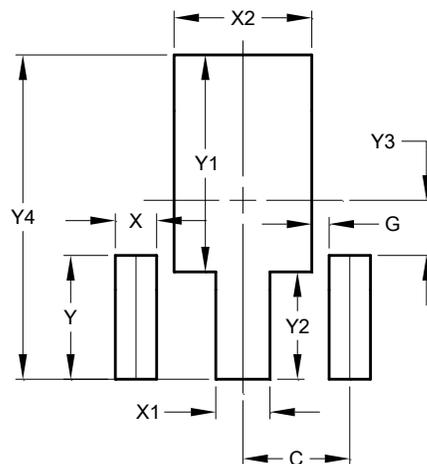


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

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

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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