BCX6825

20V NPN SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT89

Features

- BV_{CEO} > 20V
- High current capability Maximum Continuous Current I_C = 1A
- Low saturation voltage $V_{CE(sat)}$ < 500mV @ 1A
- Complementary PNP type: BCX69
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

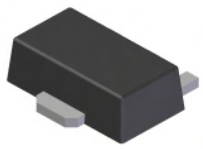
Mechanical Data

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

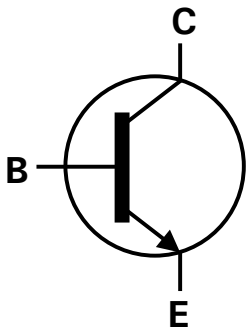
Application

- Power MOSFET gate driving
- Low loss power switching

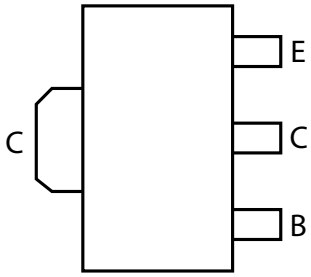
SOT89



Top View



Device symbol



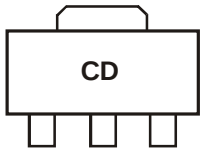
Top View
Pin-out

Ordering Information (Notes 3 & 4)

Product	Status	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BCX6825TA	Commercial	CD	7	12	1000
BCX6825QTA	Automotive	CD	7	12	1000

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free.
2. Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com
3. For packaging details, go to our website at http://www.diodes.com
4. Products with Q-suffix are automotive grade. Automotive products are electrical and thermal the same as the commercial, except where specified.

Marking Information



CD = Product Type Marking Code

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Maximum Ratings @T_A = 25°C unless otherwise specified

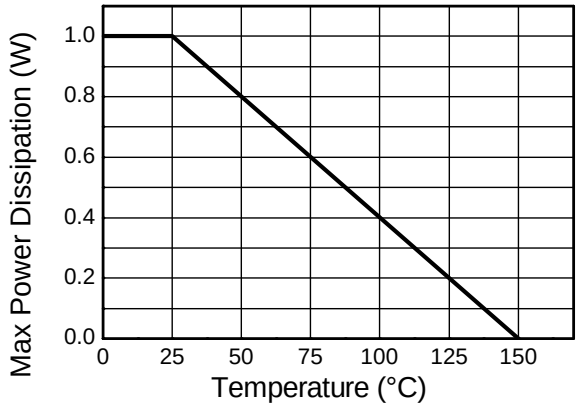
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	25	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

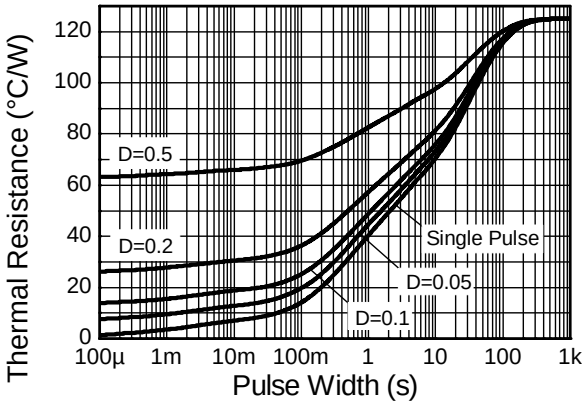
Characteristic	Symbol	Value	Unit
Collector Power Dissipation	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	10.01	°C/W
Operating and Storage Temperature Range	T_J,T_{STG}	-65 to +150	°C

Notes: 5. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
6.Thermal resistance from junction to solder-point (on the exposed collector pad).

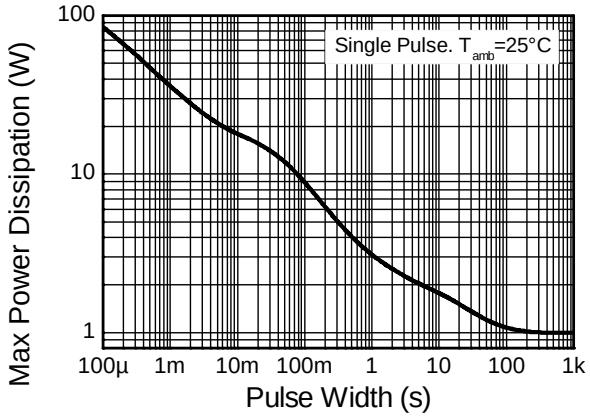
Thermal Characteristics



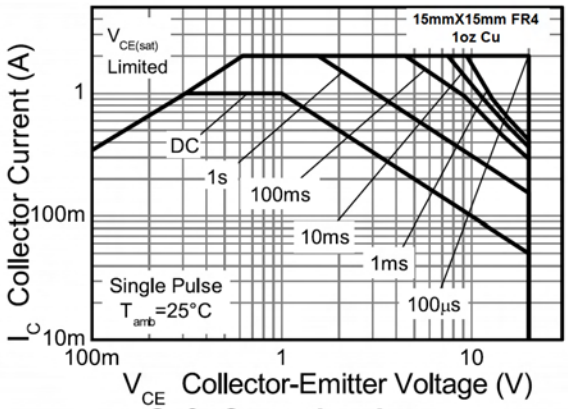
Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation



Safe Operating Area

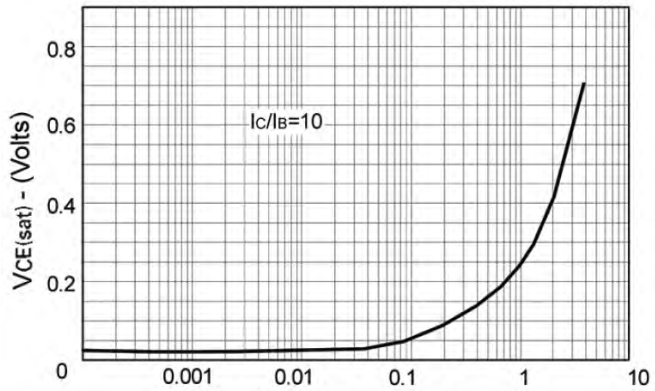
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Electrical Characteristics @T_A = 25°C unless otherwise specified

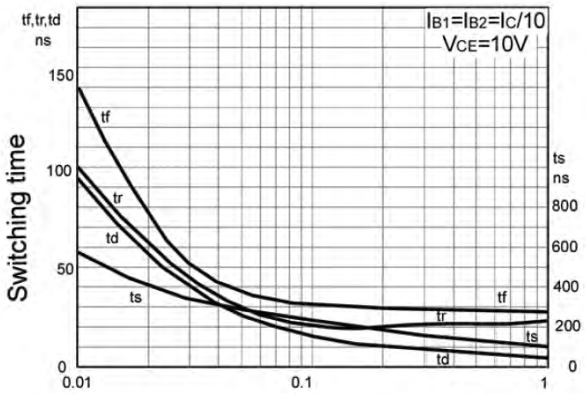
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	25	-	-	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	20	-	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	-	-	V	I_E = 100µA
Collector Cutoff Current	I_{CBO}	-	-	100 10	nA µA	V_{CB} = 25V V_{CB} = 25V, T_A = 125°C
Emitter Cutoff Current	I_{EBO}	-	-	10	µA	V_{EB} = 5V
DC current transfer Static ratio (Note 7)	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 7)	$V_{CE(sat)}$	-	-	0.5	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-on Voltage (Note 7)	$V_{BE(on)}$	-	-	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

Notes: 7. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤2%.

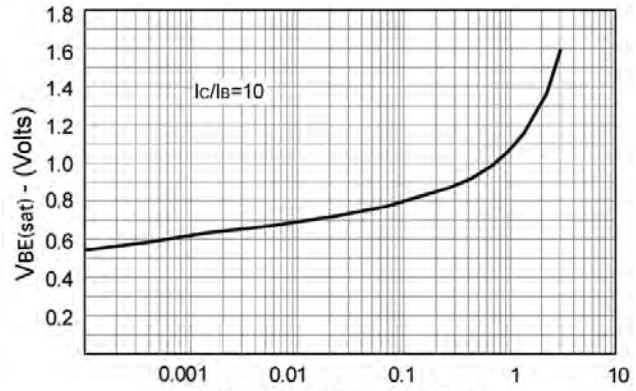
Typical Characteristics



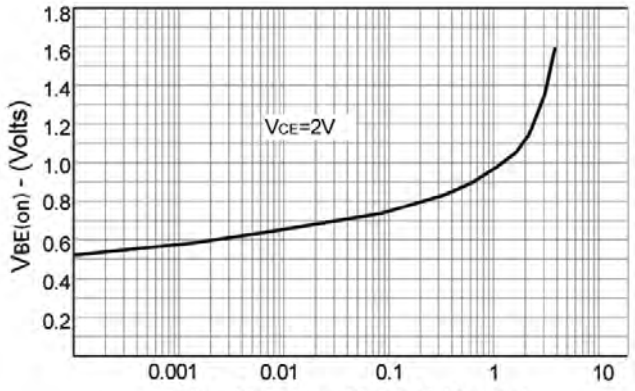
VCE(sat) v IC



Switching Speeds



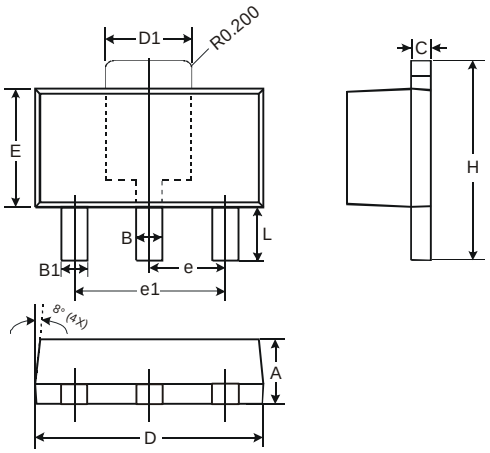
VBE(sat) v IC



VBE(on) v IC

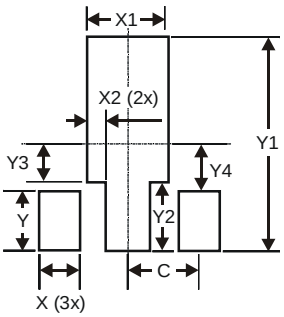
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Package Outline Dimensions



SOT89		
Dim	**Min**	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



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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