优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码

企业QQ二维码

Features

- BV_{CEO} > -60V
- I_C = -4.3A High Continuous Current
- R_{SAT} = 32mΩ for a Low Equivalent On-Resistance
- Low Saturation Voltage $V_{CE(sat)}$ < -65mV @ I_C = -1A
- h_{FE} Specified Up to -10A for High Current Gain Hold Up
- Complementary NPN Type: DIODES™ NK-ZXTN2010Z

Mechanical Data

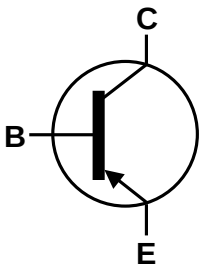
- Package: SOT89
- Package Material: Molded Plastic. “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.05 grams (Approximate)

Application

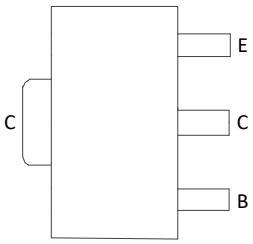
- Emergency Lighting Circuits
- Motor Driving (Including DC Fans)
- Backlight Inverters
- Power Switches
- Gate Driving MOSFETs and IGBTs

SOT89

Top View



Device Symbol



Top View
Pin Out

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

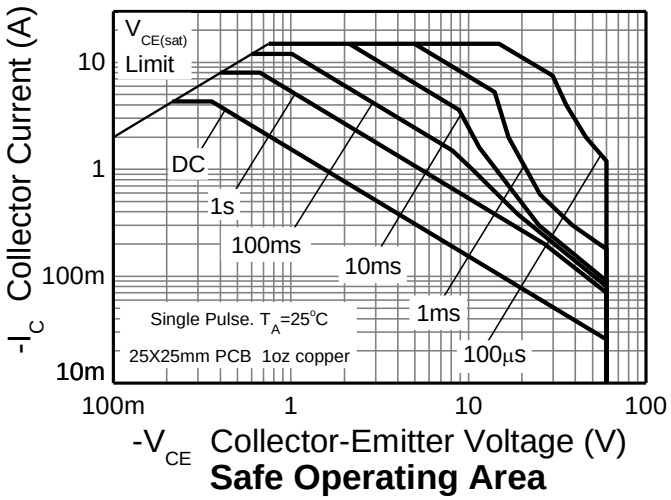
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Base Current	I_B	-2	A
Continuous Collector Current	I_C	-4.3	A
Peak Pulse Current	I_{CM}	-15	A

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

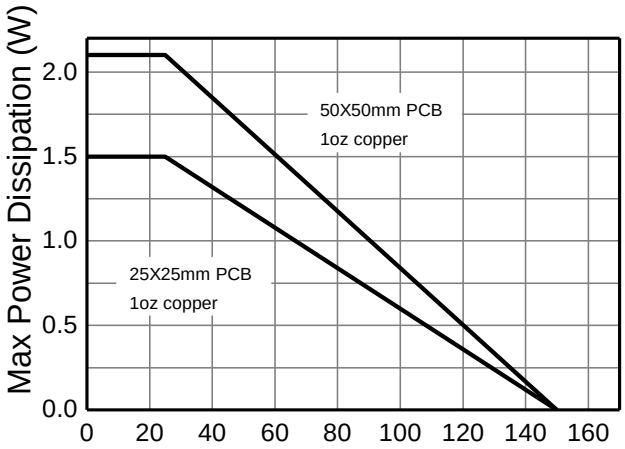
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) Linear Derating Factor	P_D	1 8	W mW/°C
Power Dissipation (Note 6) Linear Derating Factor	P_D	1.5 12	W mW/°C
Power Dissipation (Note 7) Linear Derating Factor	P_D	2.1 16.8	W mW/°C
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	83	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	60	°C/W
Thermal Resistance, Junction to Case (Note 5)	$R_{\theta JC}$	21	°C/W
Thermal Resistance, Junction to Leads (Note 8)	$R_{\theta JL}$	3.23	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
5. Minimum recommended pad layout
6. For a device surface mounted on 25mm x 25mm x 1.6mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions; device measured when operating in steady state condition.
7. Same as note (6), except the device is mounted on 50mm x 50mm single sided 1oz weight copper.
8. Thermal resistance from junction to solder-point (on the exposed collector pad).

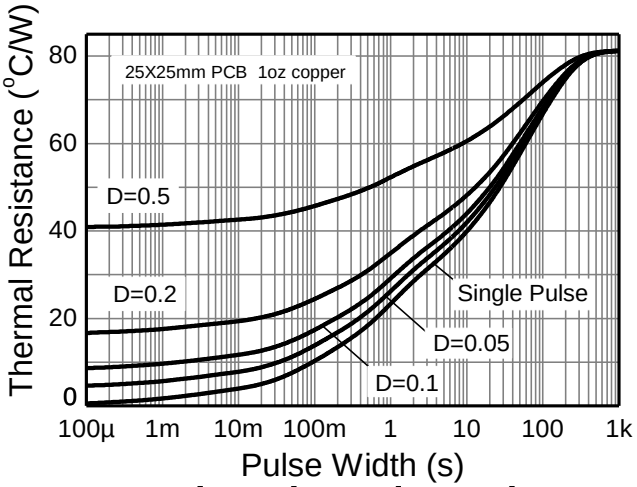
Thermal Characteristics and Derating Information



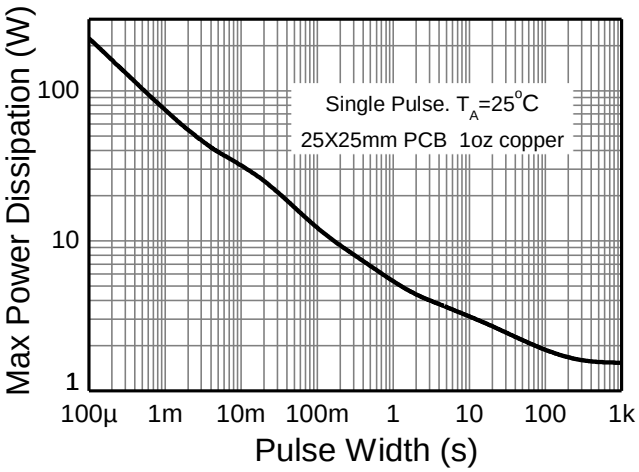
Safe Operating Area



Derating Curve



Transient Thermal Impedance



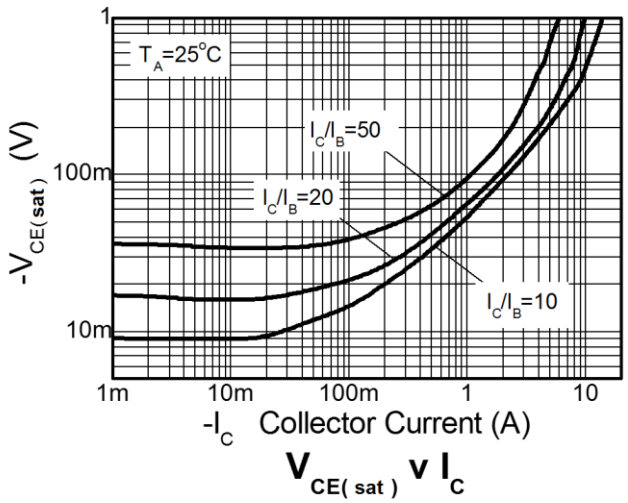
Pulse Power Dissipation

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

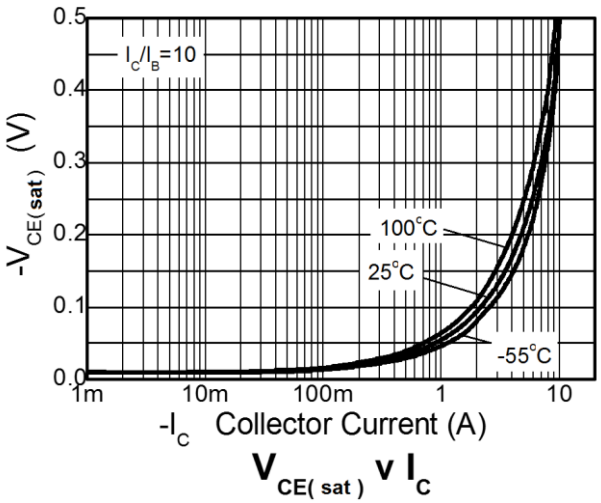
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-120	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CER}	-100	-120	—	V	I_C = -1μA, R_B ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-60	-80	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	—	V	I_E = -100μA
Collector Cutoff Current	I_{CBO}	—	-1 —	-20 -500	nA nA	V_{CB} = -80V V_{CB} = -80V, T_A = +100°C
Collector Cutoff Current	I_{CER} R ≤ 1kΩ	—	-1 —	-20 -500	nA nA	V_{CB} = -80V V_{CB} = -80V, T_A = +100°C
Emitter Cutoff Current	I_{EBO}	—	-1	-10	nA	V_{EB} = -6V
DC Current Transfer Static Ratio (Note 9)	h_{FE}	100 100 45 10	250 200 90 25	— 300 — —	—	I_C = -10mA, V_{CE} = -1V I_C = -2A, V_{CE} = -1V I_C = -5A, V_{CE} = -1V I_C = -10A, V_{CE} = -1V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	-14 -50 -75 -160	-20 -65 -110 -215	mV	I_C = -100mA, I_B = -10mA I_C = -1A, I_B = -100mA I_C = -2A, I_B = -200mA I_C = -5A, I_B = -500mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	-950	-1050	mV	I_C = -5A, I_B = -500mA
Base-Emitter Turn-on Voltage (Note 9)	$V_{BE(on)}$	—	-840	-950	mV	I_C = -5A, V_{CE} = -1V
Transitional Frequency (Note 9)	f_T	—	120	—	MHz	I_C = -100mA, V_{CE} = -10V, f = 50MHz
Output Capacitance	C_{obo}	—	48	—	pF	V_{CB} = -10V, f = 1MHz
Switching Time	t_{on}	—	39	—	ns	V_{CC} = -10V, I_C = -1A, I_{B1} = -I_{B2} = -100mA
	t_{off}	—	370	—		

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

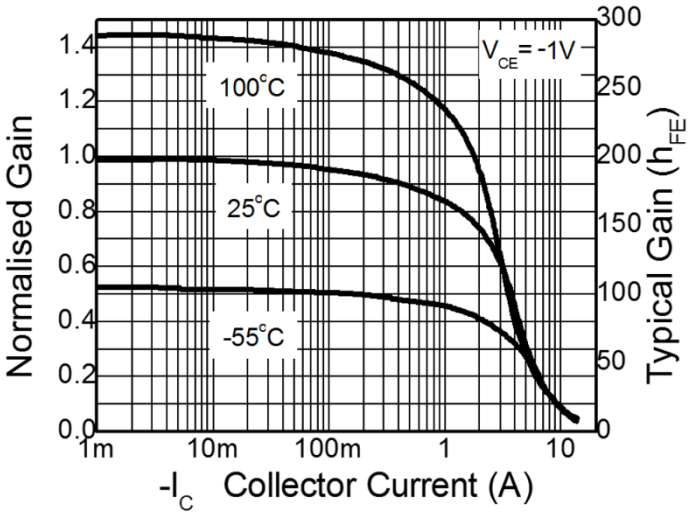
Typical Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)



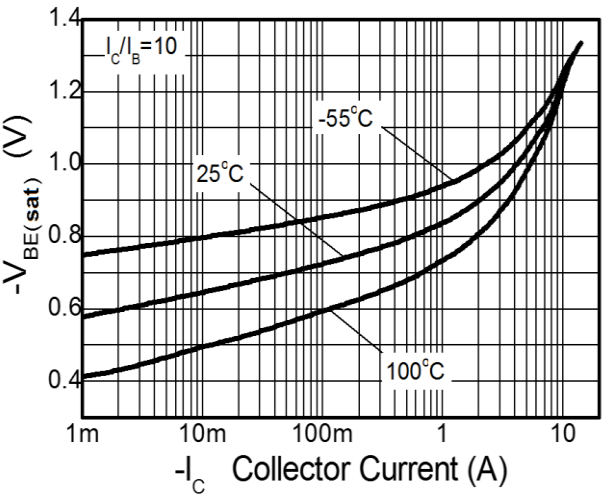
$V_{CE(sat)}$ v I_C



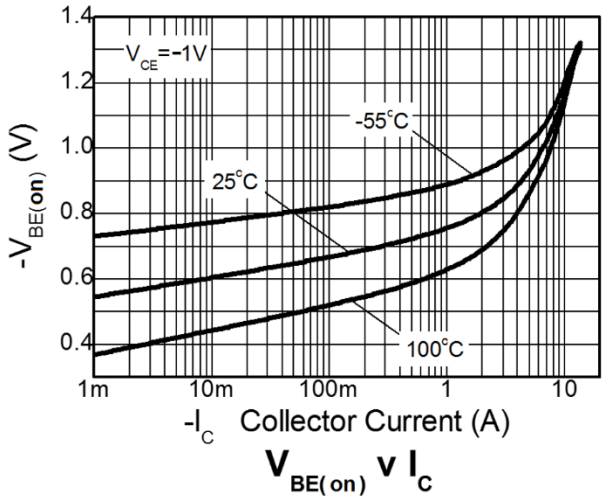
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



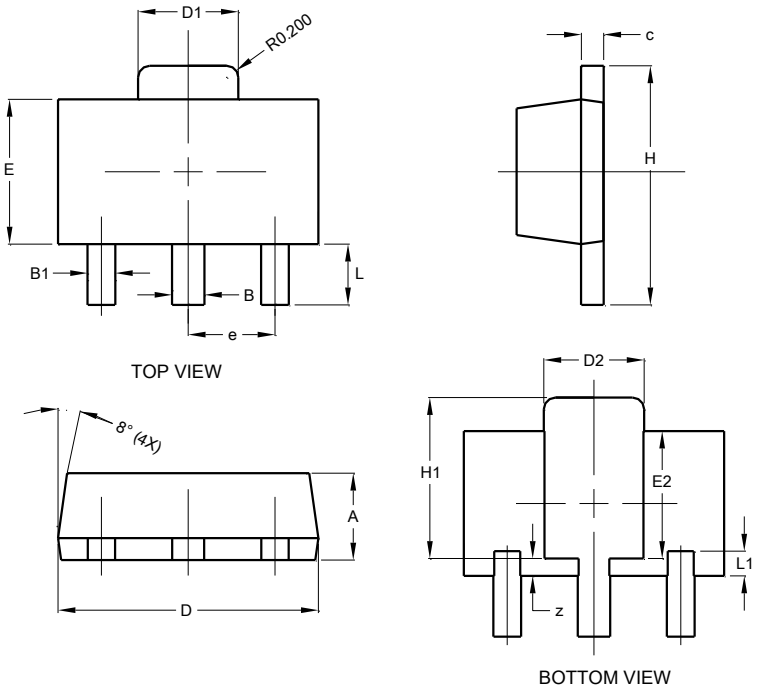
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

Package Outline Dimension

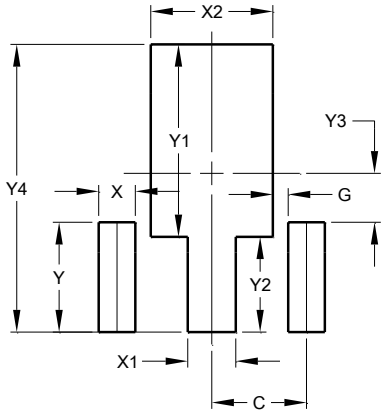
SOT89



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

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