



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

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企业微信二维码



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Features

- $BV_{CEO} > -60V$
- $I_C = -4.3A$ High Continuous Current
- $R_{SAT} = 32m\Omega$ 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: NK-ZXTN2010ZQ

Mechanical Data

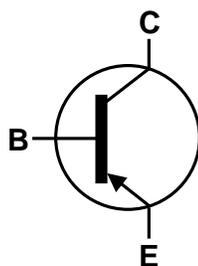
- Package: SOT89
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.05 grams (Approximate)

Application

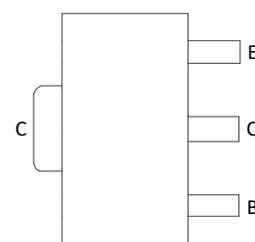
- Emergency Lighting Circuits
- Motor Driving (Including DC Fans)
- Backlight Inverters
- Power Switches
- Gate Driving MOSFETs and IGBTs



Top View



Device Symbol



Top View
Pin Out

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

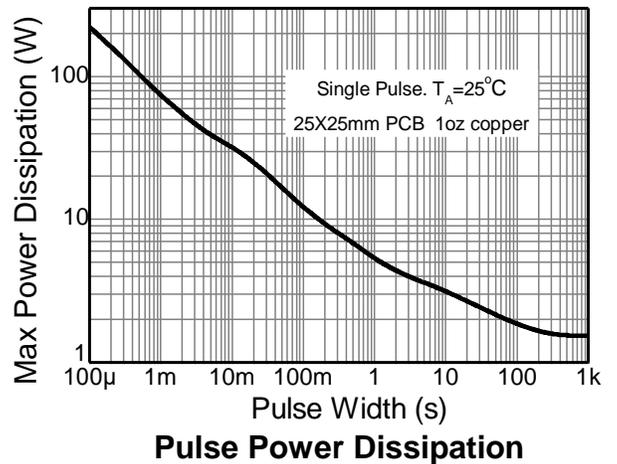
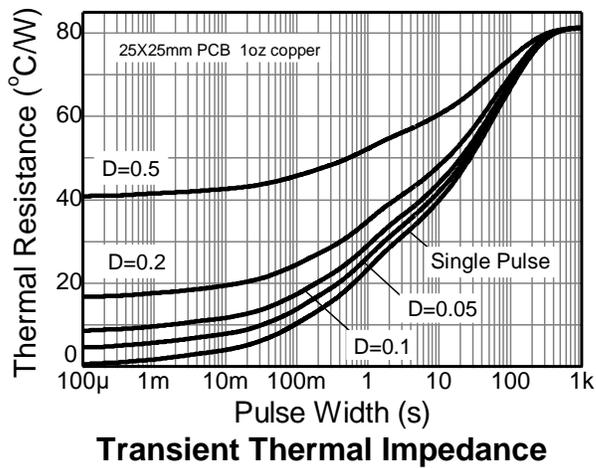
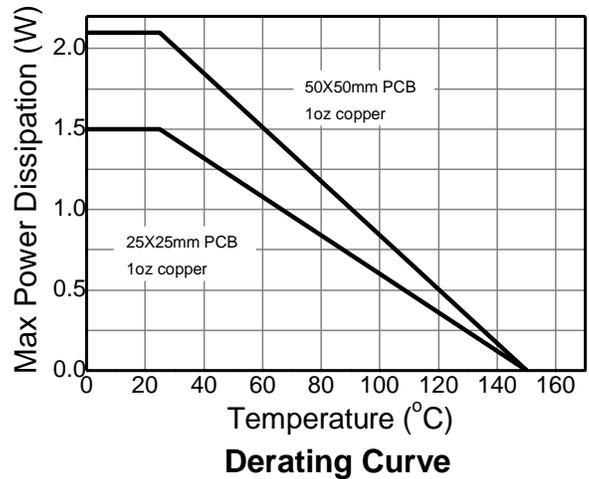
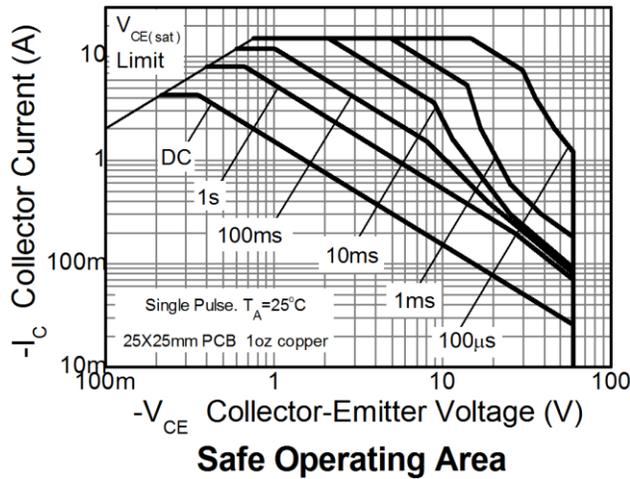
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-100	V
Collector-Emitter Voltage	V _{CE0}	-60	V
Emitter-Base Voltage	V _{EB0}	-7	V
Base Current	I _B	-2	A
Continuous Collector Current	I _C	-4.3	A
Peak Pulse Current	I _{CM}	-15	A

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 _{θJA}	125	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	83	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	R _{θJA}	60	°C/W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	21	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R _{θJL}	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 (5), 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

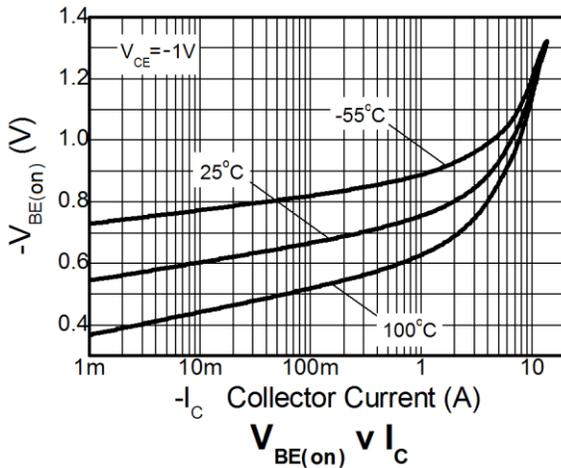
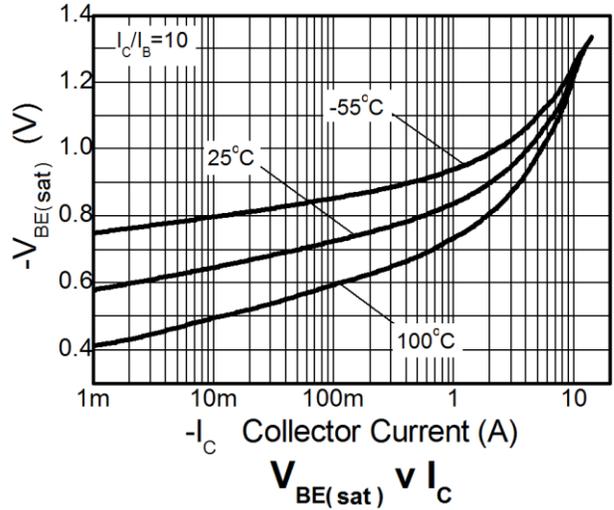
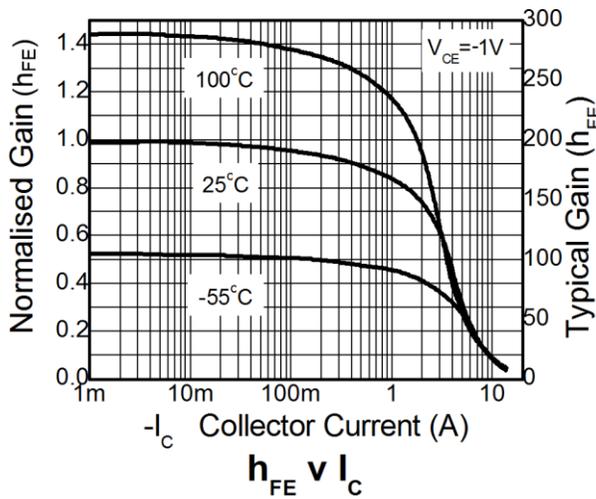
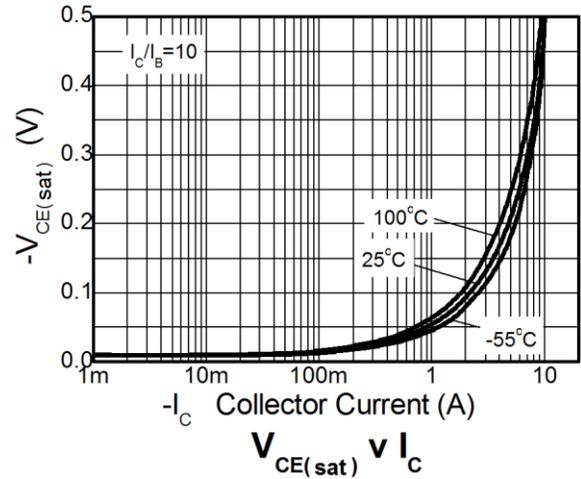
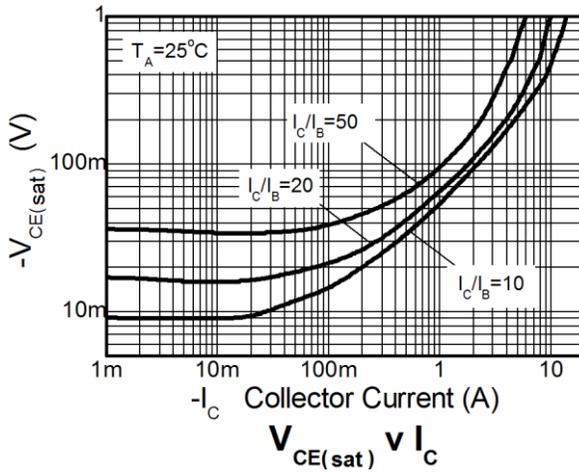


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

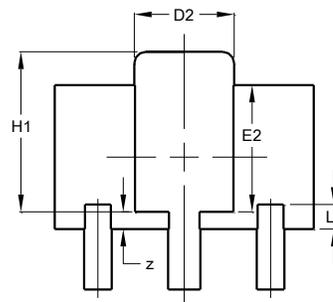
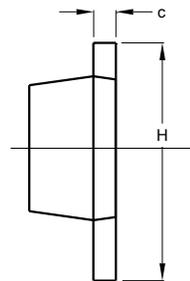
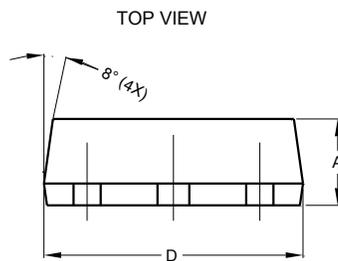
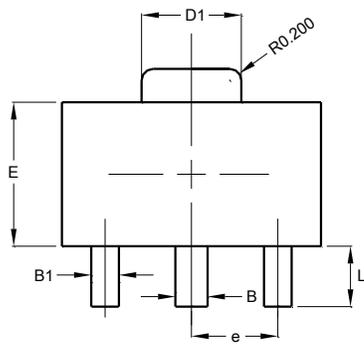
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-120	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CER}	-100	-120	—	V	$I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}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

 Note: 9. 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.)

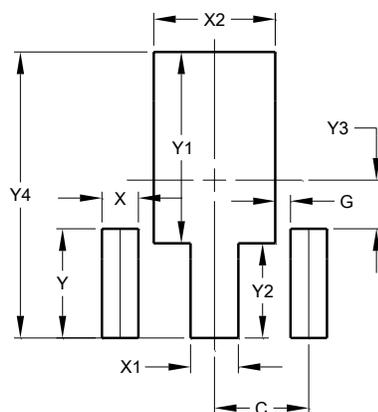


Package Outline Dimensions

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