



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

- $BV_{CEO} > -12V$
- $I_C = -1.25A$  Continuous Collector Current
- $I_{CM} = -3A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -215mV @ I_C = -1A$
- $R_{CE(SAT)} = 150m\Omega$  for a Low Equivalent On-Resistance
- 500mW Power Dissipation
- Excellent  $h_{FE}$  Characteristics up to -3A
- Complementary NPN Type: NK-ZUMT617

## Mechanical Data

- Case: SOT323
- 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 
- Weight: 0.006 grams (approximate)

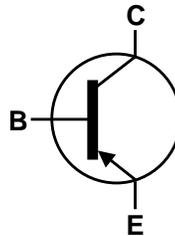
## Applications

- Negative boost functions in DC-DC converters
- Supply line switching in mobile phones and pagers
- Motor drivers in camcorders and mini disk players

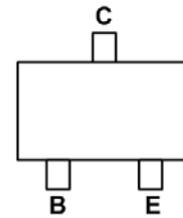
SOT323



Top view



Device symbol



Top View  
Pin-Out

### Absolute Maximum Ratings

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-12	V
Collector-Emitter Voltage	$V_{CEO}$	-12	V
Emitter-Base Voltage	$V_{EBO}$	-7	V
Peak Pulse Current	$I_{CM}$	-3	A
Continuous Collector Current	$I_C$	-1.25	A
Base Current	$I_B$	-200	mA

### Thermal Characteristics

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

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_D$	(Note 5) 385	mW
		(Note 6) 500	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	(Note 5) 325	$^\circ\text{C/W}$
		(Note 6) 250	
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	350	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

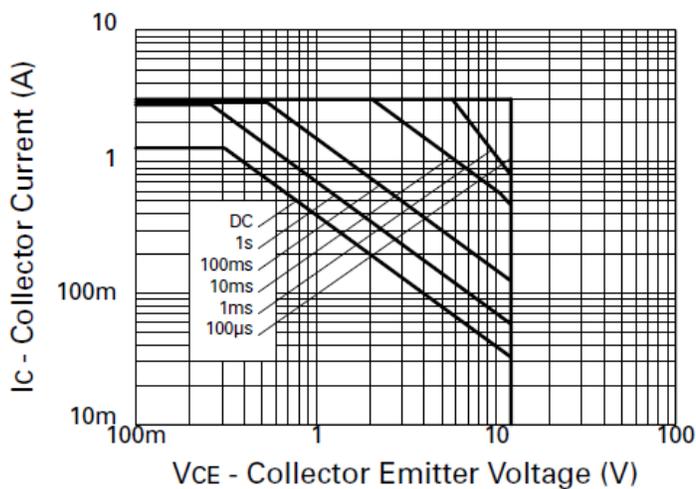
### ESD Ratings

 (Note 8)

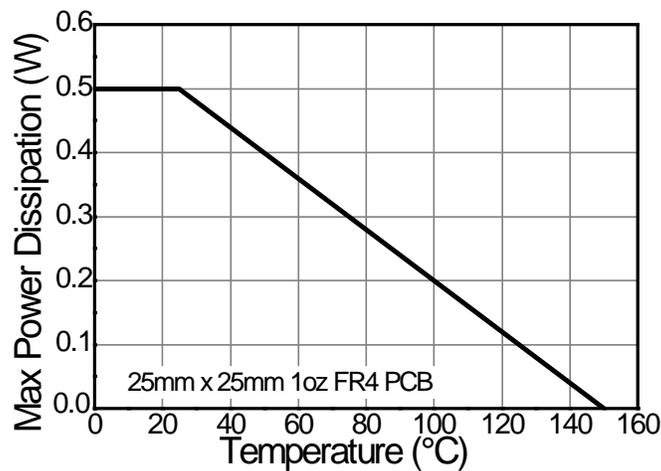
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with collector lead on 10mm x 8mm 1oz copper that is on a single-sided 0.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Same as note (5), except the collector lead is on a 25mm x 25mm 1oz copper.
  7. Thermal resistance from junction to solder-point (at the end of the leads).
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

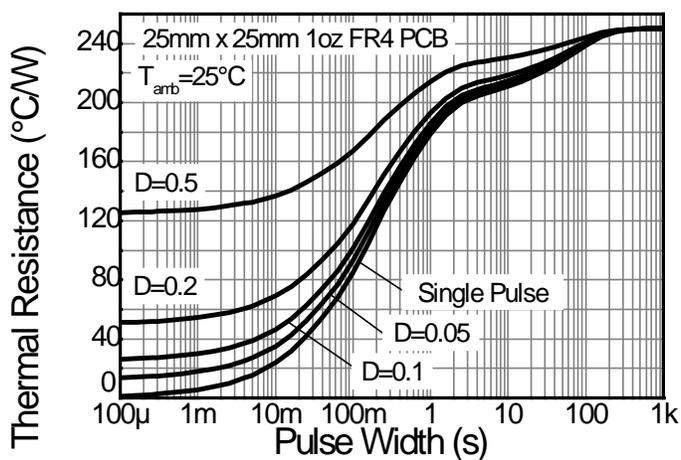
**Thermal Characteristics and Derating Information**



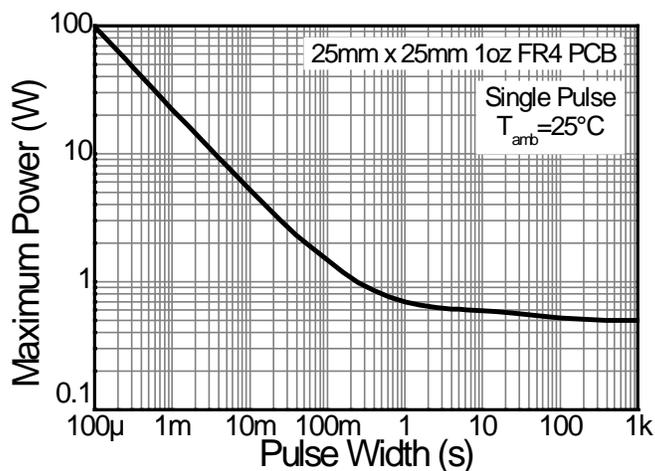
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



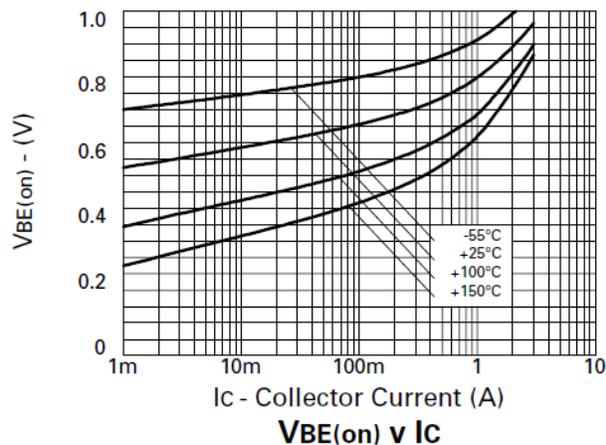
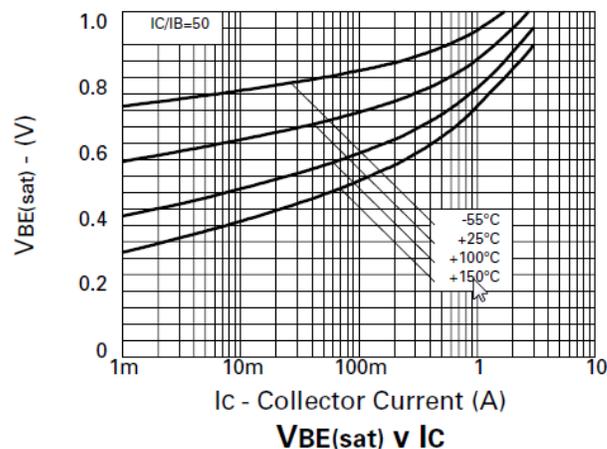
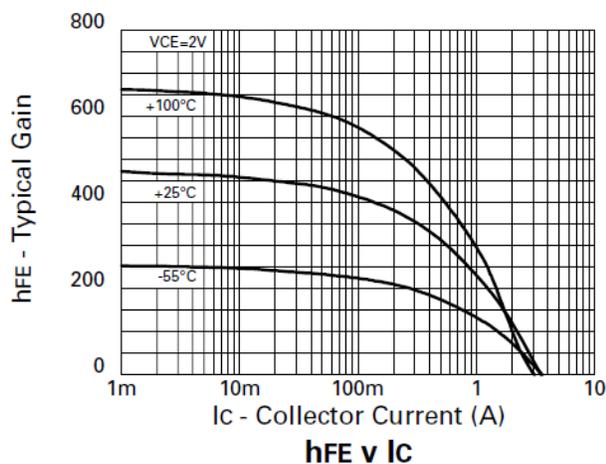
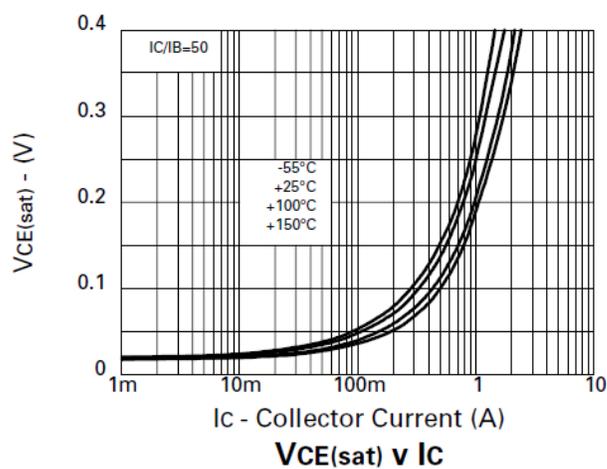
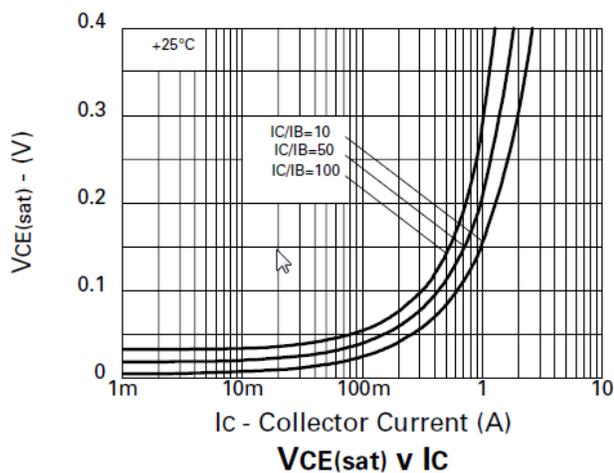
**Pulse Power Dissipation**

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

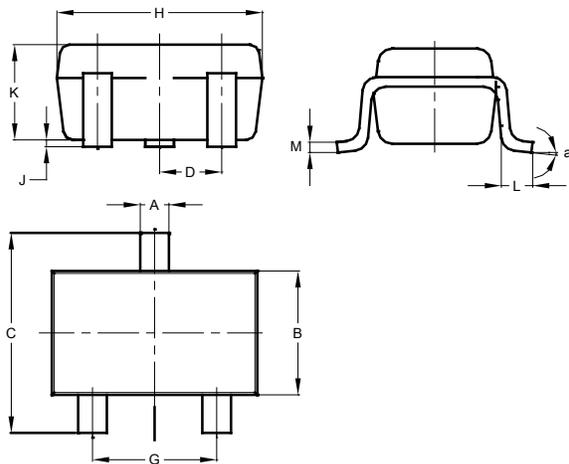
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b> (Note 9)						
Collector-Base Breakdown Voltage	$V_{CBO}$	-12	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO}$	-12	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{EBO}$	-7	—	—	V	$I_E = -100\mu\text{A}$
Collector-Base Cutoff Current	$I_{CBO}$	—	—	-10	nA	$V_{CB} = -10\text{V}$
Emitter-Base Cutoff Current	$I_{EBO}$	—	—	-10	nA	$V_{EB} = -5.6\text{V}$
Collector-Emitter Cutoff Current	$I_{CES}$	—	—	-10	nA	$V_{CES} = -10\text{V}$
<b>ON CHARACTERISTICS</b> (Note 9)						
DC Current Gain	$h_{FE}$	300	490	—	—	$I_C = -10\text{mA}, V_{CE} = -2.0\text{V}$
		300	450			$I_C = -0.1\text{A}, V_{CE} = -2.0\text{V}$
		200	340			$I_C = -0.5\text{A}, V_{CE} = -2.0\text{V}$
		125	250			$I_C = -1.25\text{A}, V_{CE} = -2.0\text{V}$
		75	140			$I_C = -2\text{A}, V_{CE} = -2.0\text{V}$
		30	80			$I_C = -3\text{A}, V_{CE} = -2.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-25	-40	mV	$I_C = -0.1\text{A}, I_B = -10\text{mA}$
		—	-55	-100	mV	$I_C = -0.25\text{A}, I_B = -10\text{mA}$
		—	-110	-175	mV	$I_C = -0.5\text{A}, I_B = -10\text{mA}$
		—	-160	-215	mV	$I_C = -1\text{A}, I_B = -50\text{mA}$
		—	-185	-240	mV	$I_C = -1.25\text{A}, I_B = -100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-990	-1100	mV	$I_C = -1.25\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	-850	-1000	mV	$I_C = -1.25\text{A}, V_{CE} = -2.0\text{V}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	$C_{obo}$	—	15	—	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(on)}$	—	50	—	ns	$V_{CC} = -10\text{V}, I_C = -1\text{A}, I_{B1} = -I_{B2} = -100\text{mA}$
Turn-Off Time	$t_{(off)}$	—	135	—	ns	
Current Gain-Bandwidth Product	$f_T$	—	220	—	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$

 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.)

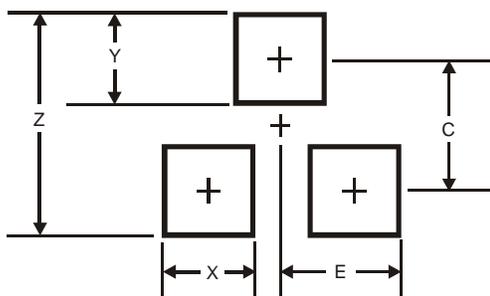


### Package Outline Dimensions



SOT323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.650 BSC		
F	0.375	0.475	0.425
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.00	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
a	8°C		
All Dimensions in mm			

### Suggested Pad Layout



Dimensions	SOT323
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0