



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

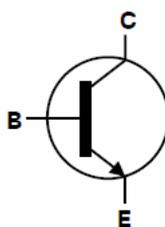
- $BV_{CEO} > 25V$
- $I_C = 3A$ High Continuous Current
- $I_{CM} = 8A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < 300mV @ 1A$
- Complementary PNP Type: NK-FZT749

Mechanical Data

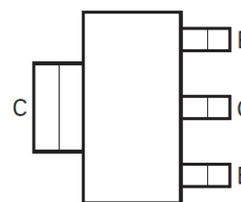
- Package: SOT223
- Package Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 
- Weight: 0.112 grams (Approximate)



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}	35	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	3	A
Peak Pulse Current	I_{CM}	8	A

Thermal Characteristics

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

Characteristic	Symbol	Value	Unit	
Power Dissipation	P_D	(Note 5)	2	W
		(Note 6)	3	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	(Note 5)	62.5	$^\circ\text{C/W}$
		(Note 6)	41.7	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 7)	$R_{\theta JL}$	12.9	$^\circ\text{C/W}$	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$	

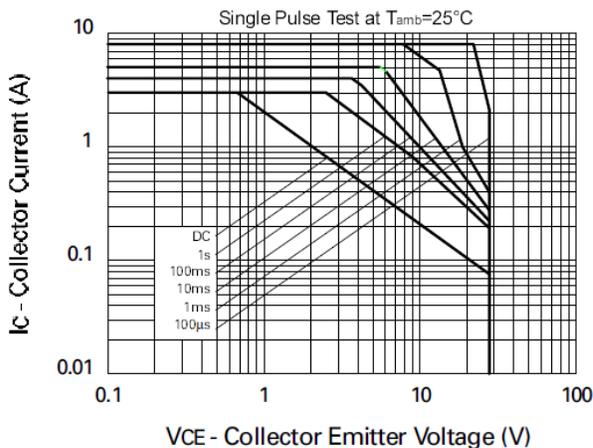
ESD Ratings

 (Note 8)

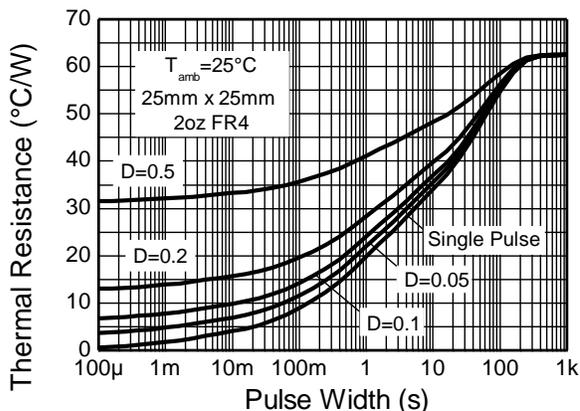
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
 - Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

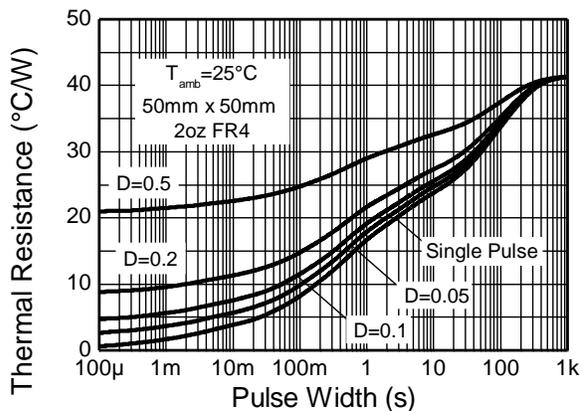
Thermal Characteristics and Derating Information



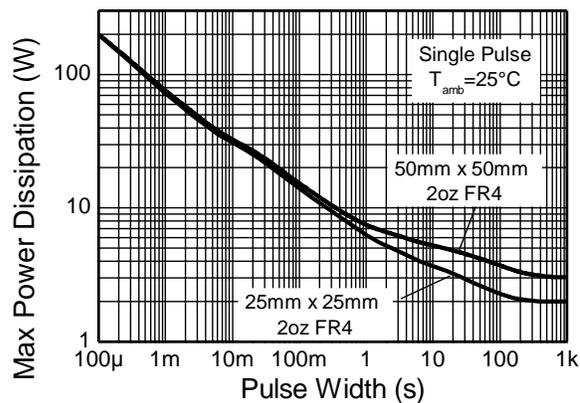
Safe Operating Area



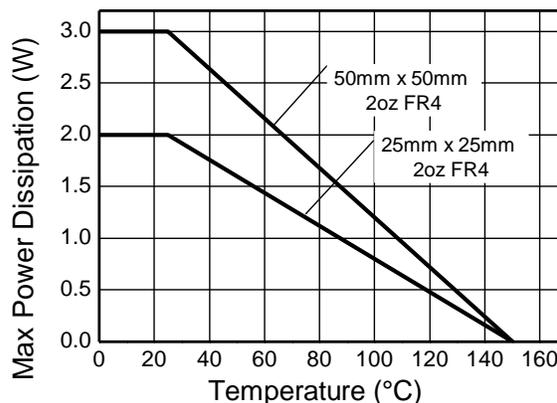
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



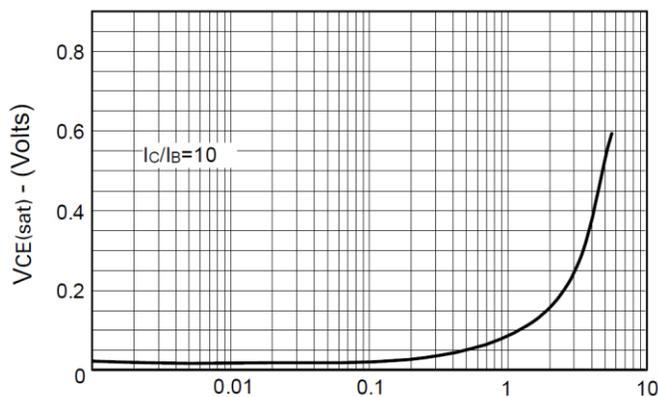
Derating Curve

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}	35	–	–	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	25	–	–	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	–	–	V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	–	–	0.1	μA	$V_{CB} = 30\text{V}$
		–	–	10		$V_{CB} = 30\text{V}, T_A = +100^\circ\text{C}$
Emitter Cut-Off Current	I_{EBO}	–	–	100	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	–	0.12	0.3	V	$I_C = 1\text{A}, I_B = 100\text{mA}$
		–	0.40	0.6		$I_C = 3\text{A}, I_B = 300\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	–	0.9	1.25	V	$I_C = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	–	0.8	1.0	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}$
DC Current Gain (Note 9)	h_{FE}	70	200	–	–	$I_C = 50\text{mA}, V_{CE} = 2\text{V}$
		100	200	300		$I_C = 1\text{A}, V_{CE} = 2\text{V}$
		75	150	–		$I_C = 2\text{A}, V_{CE} = 2\text{V}$
		15	50	–		$I_C = 6\text{A}, V_{CE} = 2\text{V}$
Current Gain-Bandwidth Product	f_T	150	240	–	MHz	$V_{CE} = 5\text{V}, I_C = 100\text{mA}, f = 100\text{MHz}$
Switching Times	t_{on}	–	55	–	ns	$I_C = 500\text{mA}, V_{CC} = 10\text{V}, I_{B1} = -I_{B2} = 50\text{mA}$
	t_{off}	–	300	–		
Output Capacitance	C_{ob0}	–	25	50	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

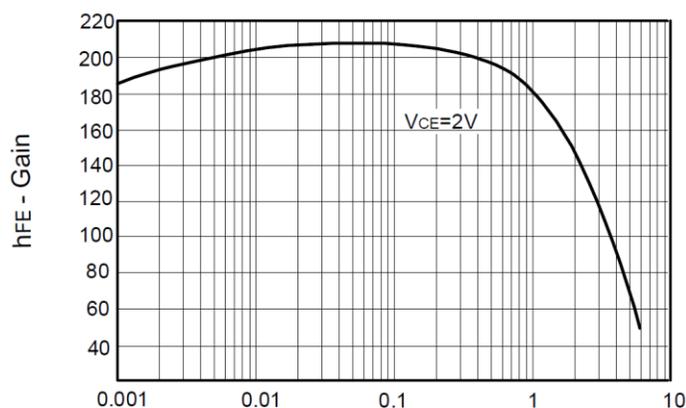
Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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



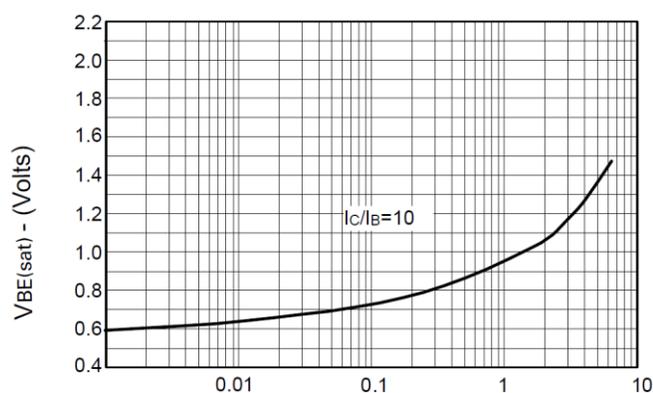
IC - Collector Current (Amps)

VCE(sat) v IC



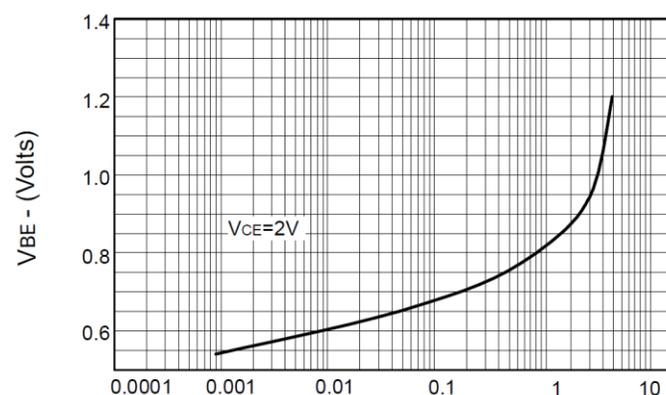
IC - Collector Current (Amps)

hFE v IC



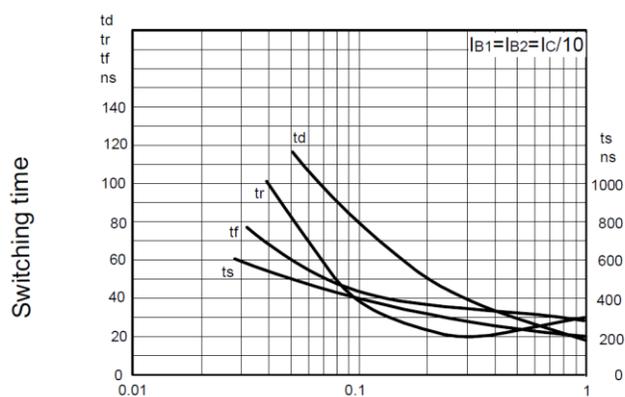
IC - Collector Current (Amps)

VBE(sat) v IC



IC - Collector Current (Amps)

VBE(on) v IC

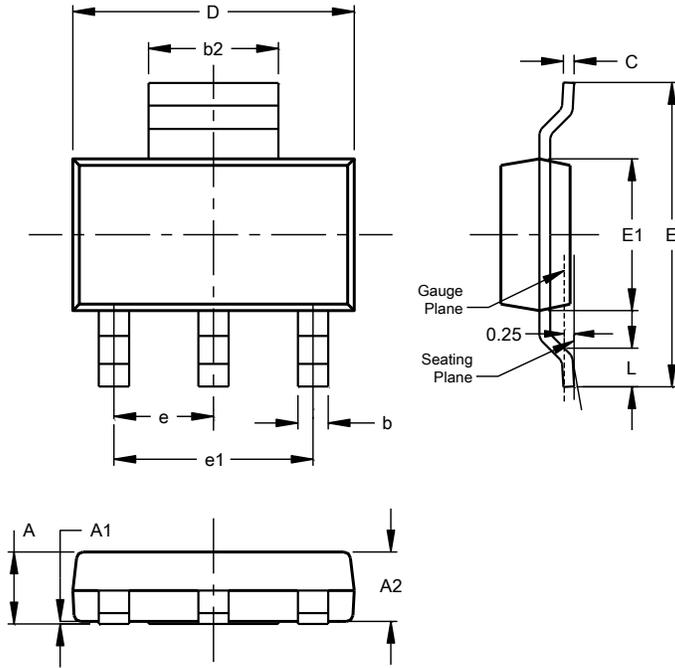


IC - Collector Current (Amps)

Switching Speeds

Package Outline Dimensions

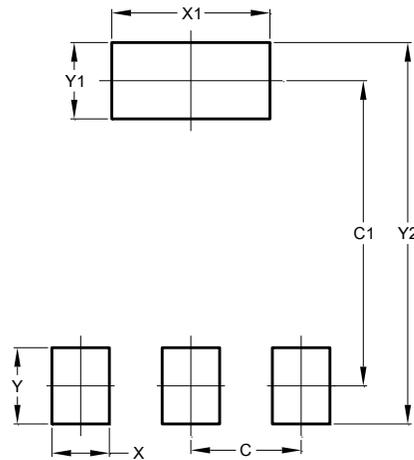
SOT223 (Type DN)



SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00