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

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Features

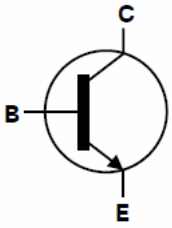
- BV_{CEO} > 60V
- I_C = 3A High Continuous Current
- I_{CM} = 6A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < 300mV @ 1A
- Complementary PNP Type: NK-FZT751

Mechanical Data

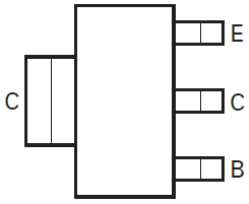
- Package: SOT223 (Type DN)
- Package Material: Molded Plastic. “Green” Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

SOT223 (Type DN)

Top View



Device Symbol



Top View
Pin-Out

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	3	A
Peak Pulse Current	I_{CM}	6	A

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

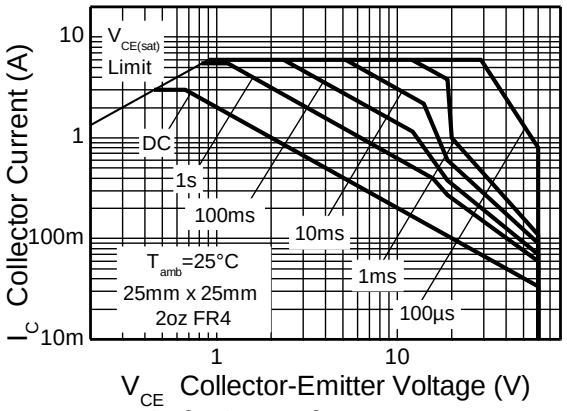
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	2	W
	(Note 6)		3	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	62.5	°C/W
	(Note 6)		41.7	°C/W
Thermal Resistance, Junction to Leads (Note 7)		$R_{\theta JL}$	12.9	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}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

ESD Ratings (Note 8)

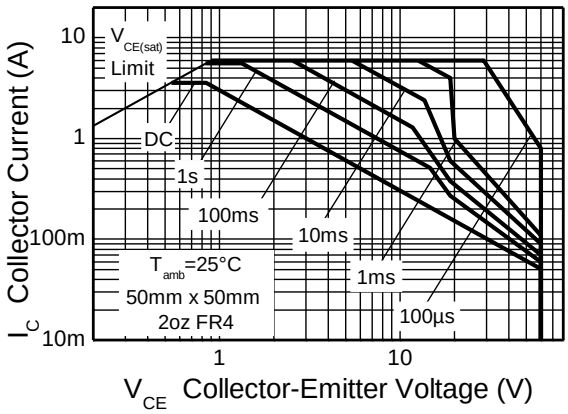
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device mounted with 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.
6. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

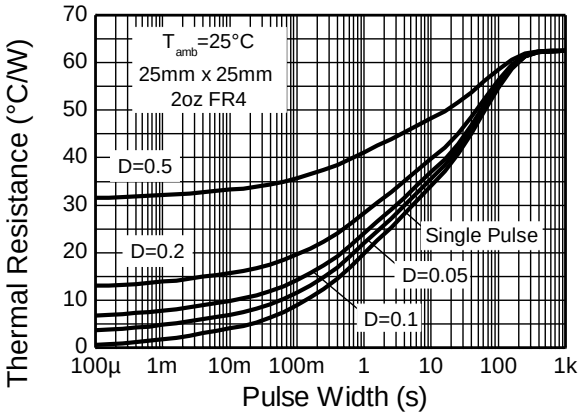
Thermal Characteristics and Derating Information



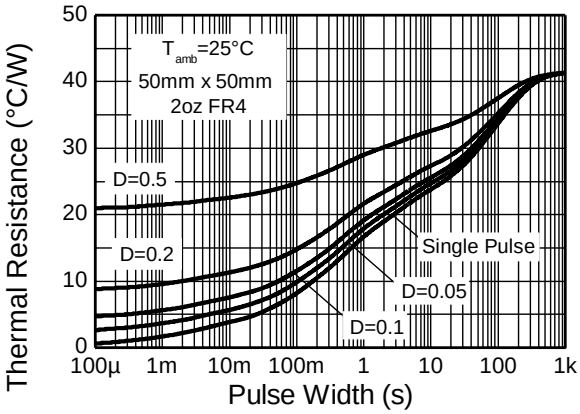
Safe Operating Area



Safe Operating Area



Transient Thermal Impedance



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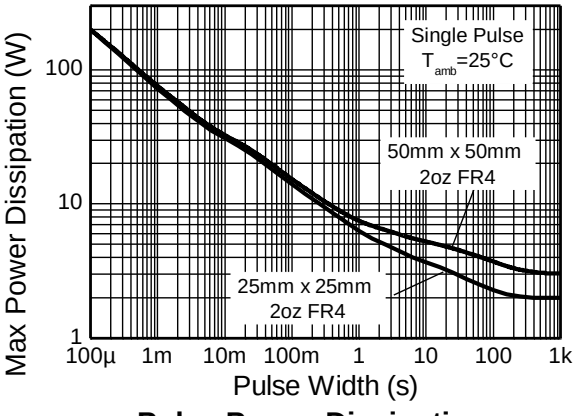
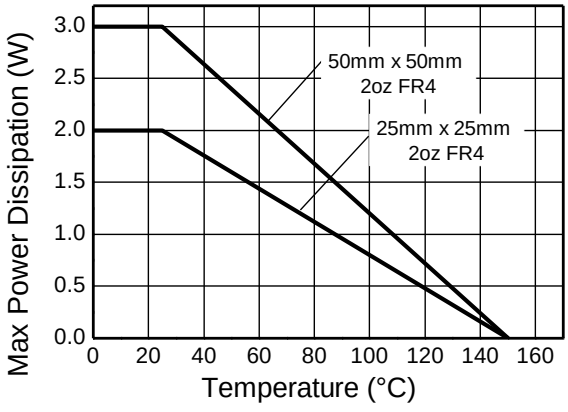


Pulse Power Dissipation



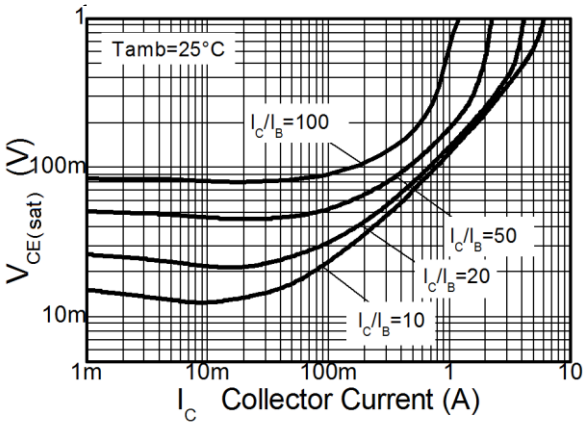
Derating Curve

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

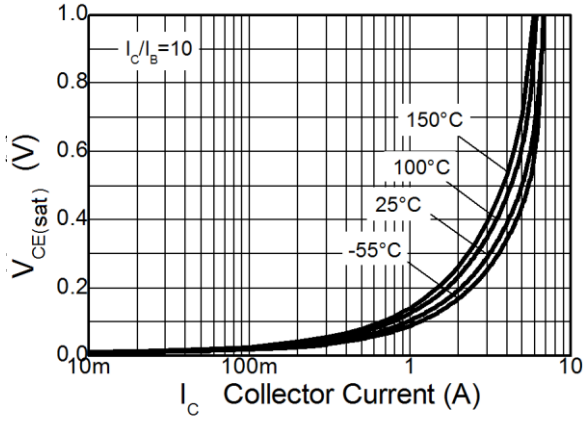
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	80	–	–	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	60	–	–	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	–	–	V	I_E = 100μA
Collector Cut-Off Current	I_{CBO}	–	–	0.1	μA	V_{CB} = 60V
		–	–	10		V_{CB} = 60V, T_A = +125°C
Emitter Cut-Off Current	I_{EBO}	–	–	20	nA	V_{EB} = 6V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	–	0.12	0.3	V	I_C = 1A, I_B = 100mA
		–	0.43	0.6		I_C = 3A, I_B = 300mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	–	0.9	1.25	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	–	0.8	1.0	V	I_C = 1A, V_{CE} = 2V
DC Current Gain (Note 9)	h_{FE}	70	200	–	–	I_C = 50mA, V_{CE} = 2V
		100	200	300		I_C = 500mA, V_{CE} = 2V
		80	170	–		I_C = 1A, V_{CE} = 2V
		40	80	–		I_C = 2A, V_{CE} = 2V
Current Gain-Bandwidth Product (Note 9)	f_T	140	175	–	MHz	V_{CE} = 5V, I_C = 100mA, f = 100MHz
Switching Times	t_{on}	–	45	–	ns	I_C = 500mA, V_{CC} = 10V, I_{B1} = -I_{B2} = 50mA
	t_{off}	–	800	-		
Output Capacitance (Note 9)	C_{obo}	–	–	30	pF	V_{CB} = 10V, f = 1MHz

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

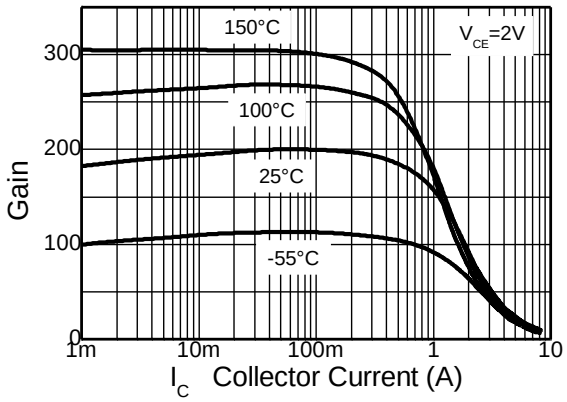
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



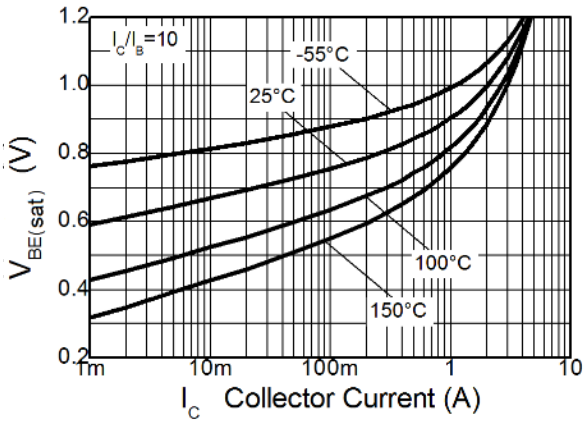
$V_{CE(sat)}$ v I_C



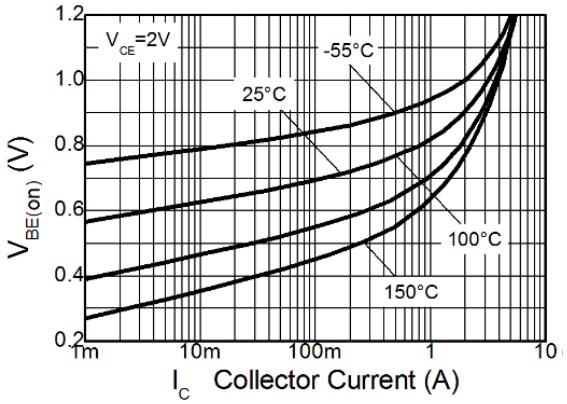
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



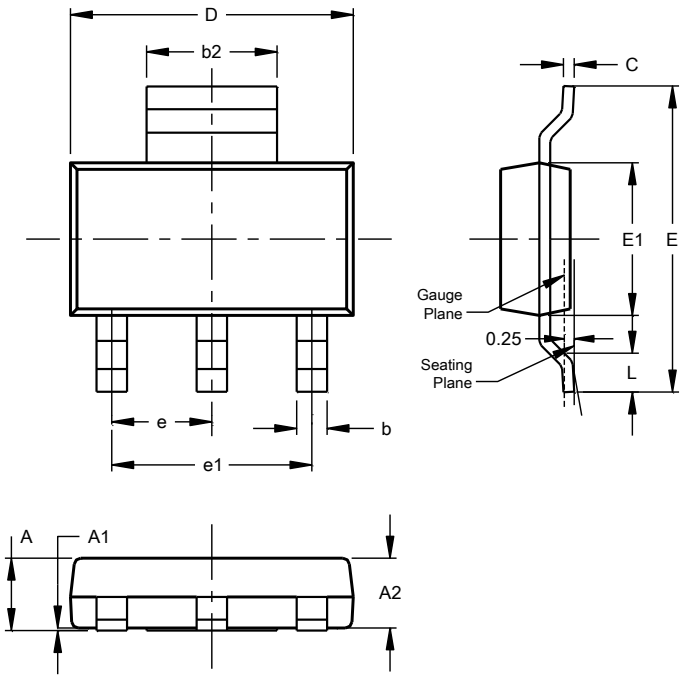
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

Package Outline Dimensions

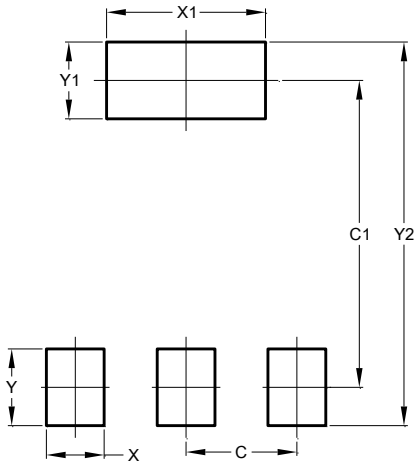
SOT223 (Type DN)



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