



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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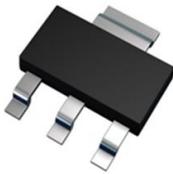
Features

- $BV_{CEO} > -400V$
- $I_C = -200mA$ High Continuous Current
- Excellent h_{FE} Characteristics up to $-100mA$
- Low Saturation Voltage $V_{CE(sat)} < -200mV$ @ $-20mA$
- Complementary NPN Type: NK-FZT458

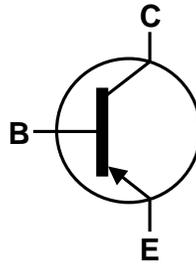
Mechanical Data

- 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 ③
- Weight: 0.112 grams (Approximate)

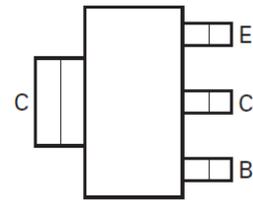
SOT223 (Type DN)



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 _{CB0}	-400	V
Collector-Emitter Voltage	V _{CEO}	-400	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-200	mA

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

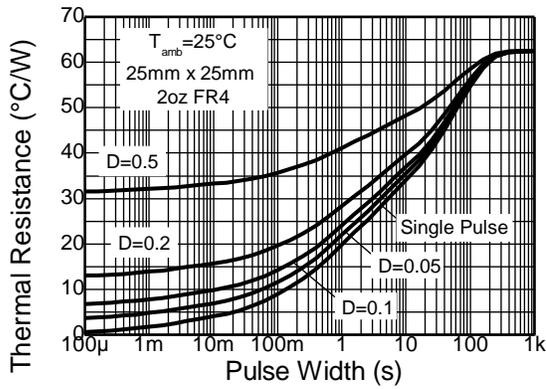
Characteristic	Symbol	Value	Unit	
Power Dissipation	P _D	(Note 5)	2	W
		(Note 6)	3	W
Thermal Resistance, Junction to Ambient	R _{θJA}	(Note 5)	62.5	°C/W
		(Note 6)	41.7	°C/W
Thermal Resistance, Junction to Leads (Note 7)	R _{θJL}	19.41	°C/W	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C	

ESD Ratings (Note 8)

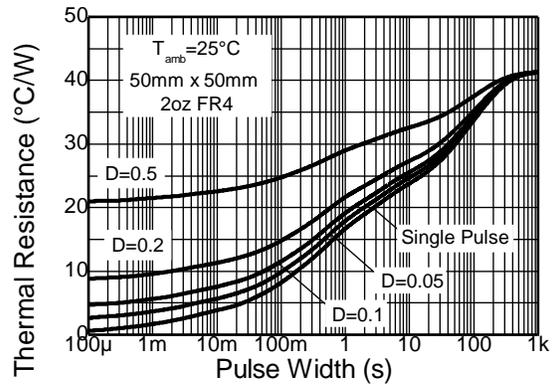
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- 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 a steady-state.
 6. Same as note (5), except the device is mounted on 50mm x 50mm single sided 2oz weight 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.

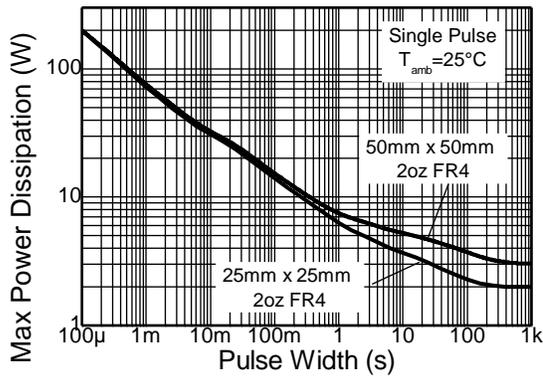
Thermal Characteristics and Derating Information



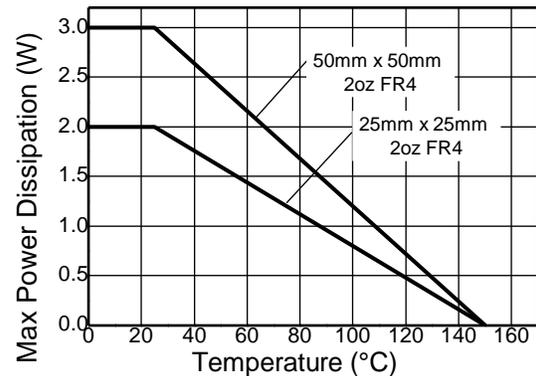
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



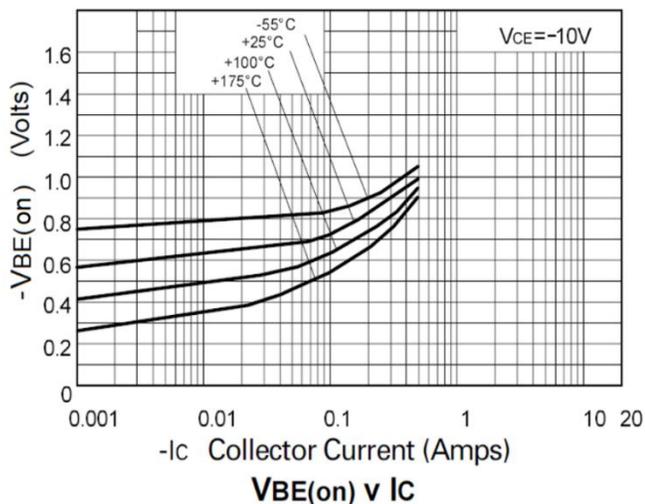
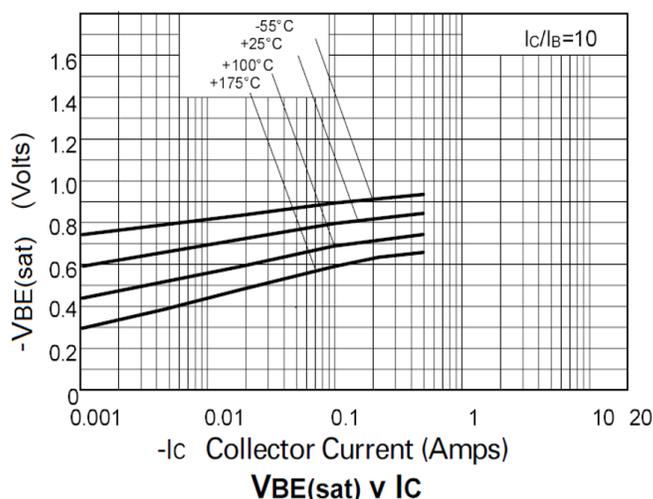
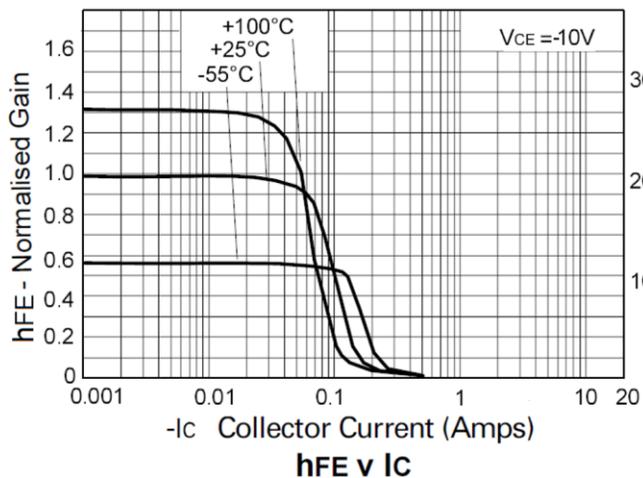
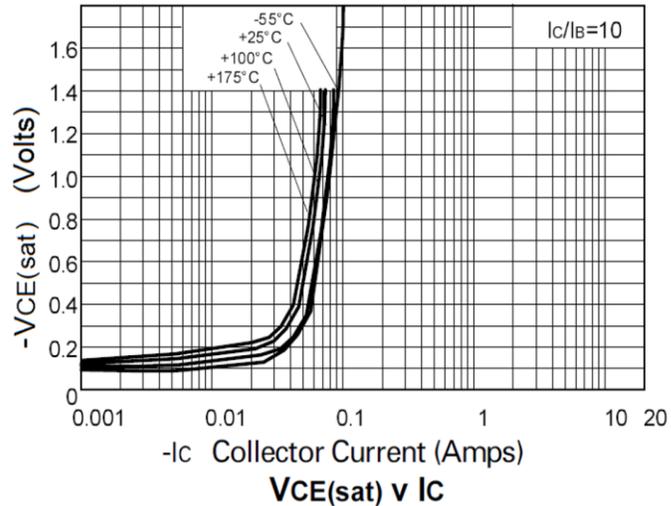
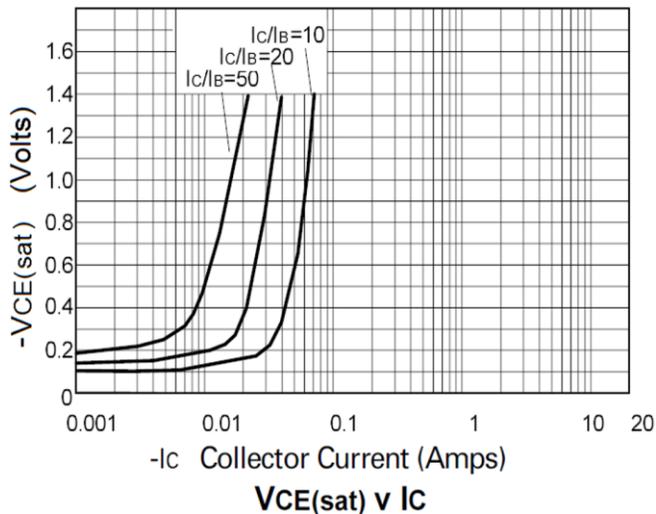
Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-400	—	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-400	—	—	V	I _C = -1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	—	—	V	I _E = -100μA
Collector Cut-Off Current	I _{CBO}	—	—	-100	nA	V _{CB} = -320V
Collector Cut-Off Current	I _{CES}	—	—	-100	nA	V _{CE} = -320V
Emitter Cut-Off Current	I _{EBO}	—	—	-100	nA	V _{EB} = -5V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(sat)}	—	—	-0.2 -0.5	V	I _C = -20mA, I _B = -2mA I _C = -50mA, I _B = -6mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(sat)}	—	—	-0.9	V	I _C = -50mA, I _B = -5mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	—	—	-0.9	V	I _C = -50mA, V _{CE} = -10V
DC Current Transfer Static Ratio (Note 9)	h _{FE}	100 100 15	— — —	— 300 —	—	I _C = -1mA, V _{CE} = -10V I _C = -50mA, V _{CE} = -10V I _C = -100mA, V _{CE} = -10V
Transitional Frequency (Note 9)	f _T	50	—	—	MHz	V _{CE} = -20V, I _C = -10mA f = 20MHz
Output Capacitance (Note 9)	C _{obo}	—	—	5	pF	V _{CB} = -20V, f = 1MHz
Switching Time	t _{on}	—	95	—	ns	I _C = -50mA, V _C = -100V I _{B1} = 5mA, I _{B2} = -10mA
	t _{off}	—	1,600	—		

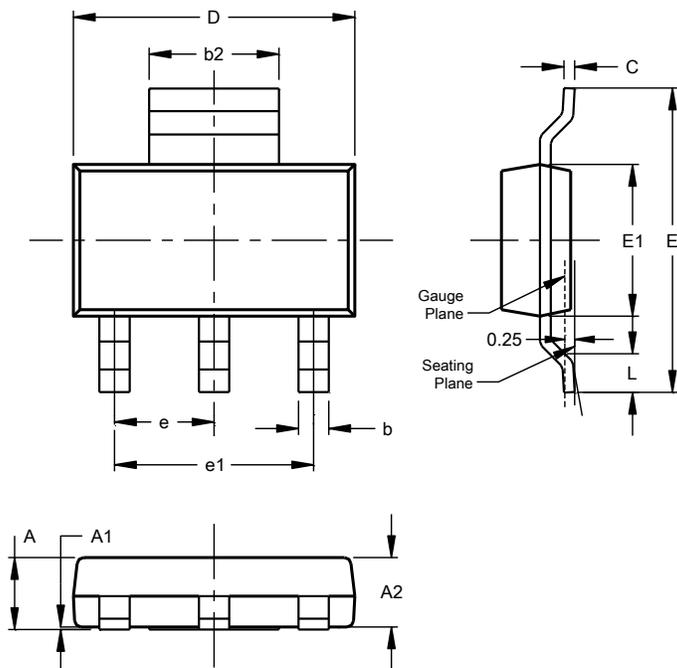
Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

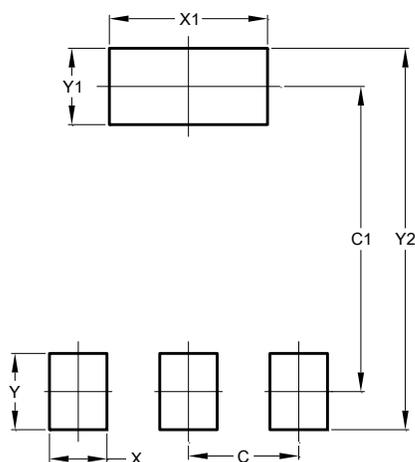
SOT223 (Type DN)



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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