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

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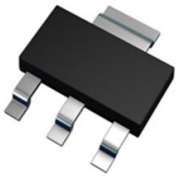
Features

- BV_{CEO} > -500V
- I_C = -150mA High Continuous Current
- I_{CM} = -500mA Peak Pulse Current

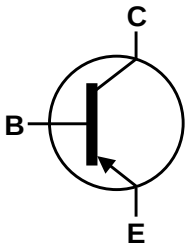
Mechanical Data

- Package: SOT223 (Type ZN)
- 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)

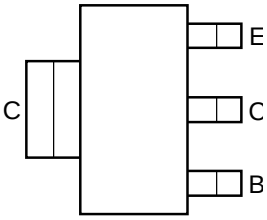
SOT223 (Type ZN)



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}	-500	V
Collector-Emitter Voltage	V_{CEO}	-500	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-150	mA
Peak Pulse Current	I_{CM}	-500	mA

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

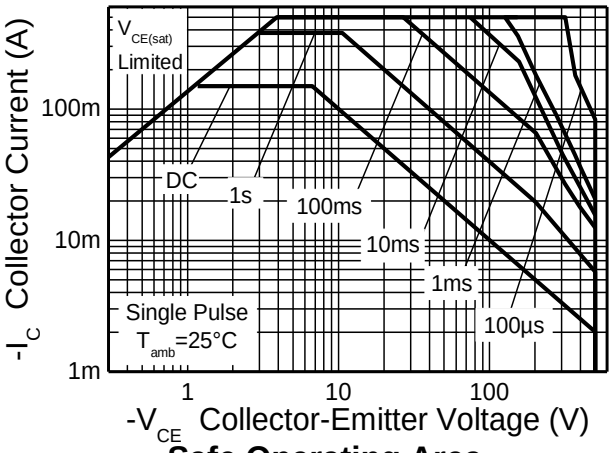
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	2	W
	(Note 6)		3	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	62.5	°C/W
	(Note 6)		41.7	°C/W
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	14.8	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

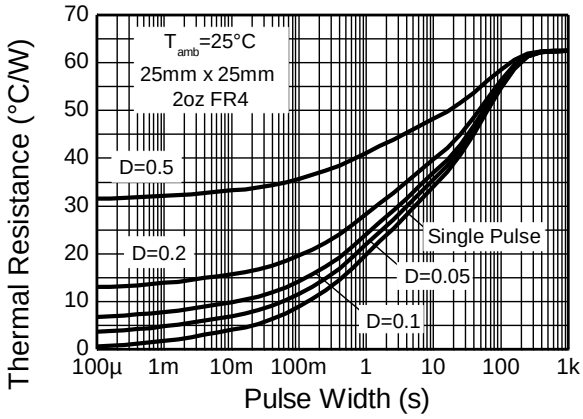
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

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.

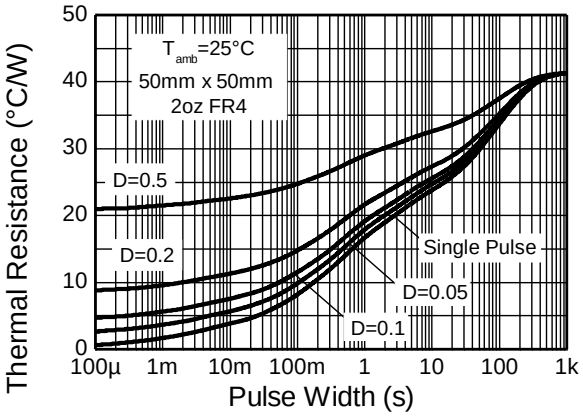
Thermal Characteristics and Derating Information



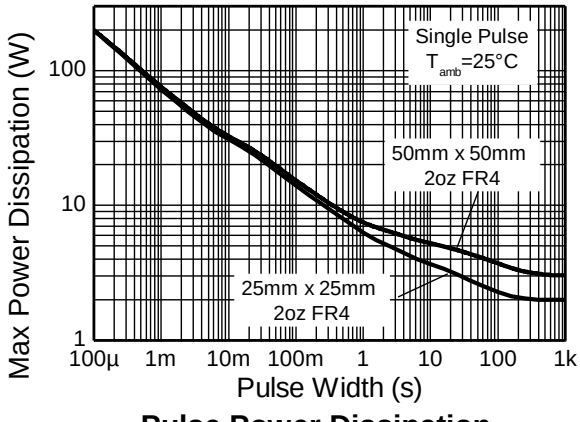
Safe Operating Area



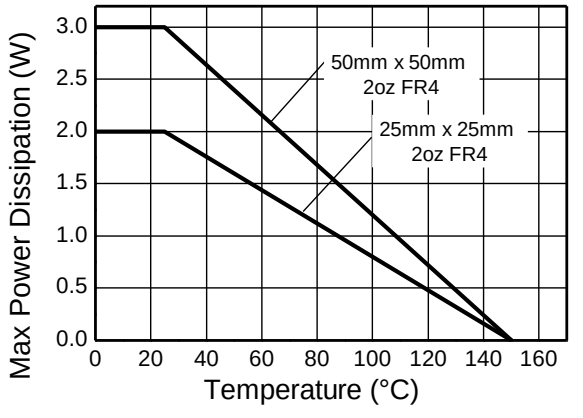
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



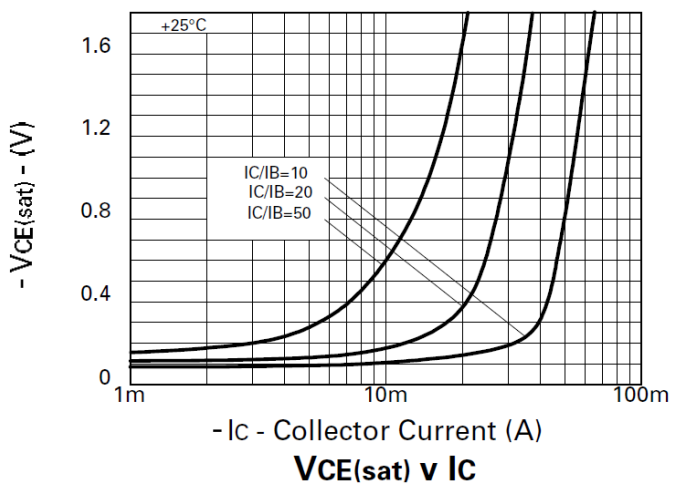
Derating Curve

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

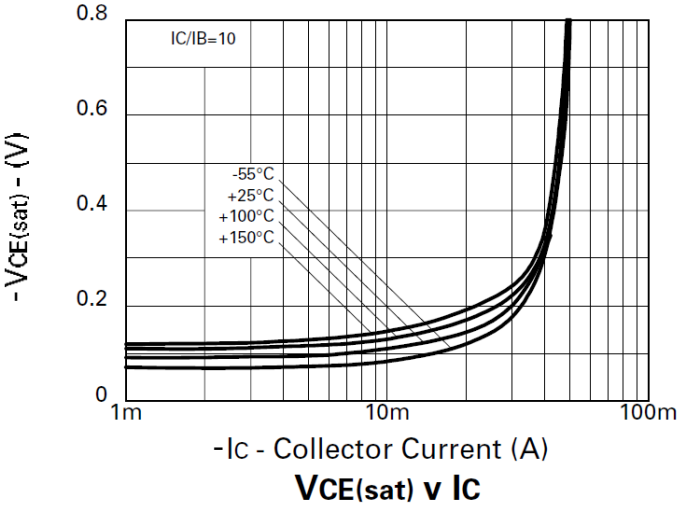
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-500	–	–	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-500	–	–	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	–	–	V	I_E = -100μA
Collector Cut-Off Current	I_{CBO}	–	–	-100	nA	V_{CB} = -500V
Collector Cut-Off Current	I_{CES}	–	–	-100	nA	V_{CE} = -500V
Emitter Cut-Off Current	I_{EBO}	–	–	-100	nA	V_{EB} = -5.6V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	–	–	-200	mV	I_C = -20mA, I_B = -2mA
		–	–	-500		I_C = -50mA, I_B = -10mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	–	–	-900	mV	I_C = -50mA, I_B = -10mA
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	–	–	-900	mV	I_C = -50mA, V_{CE} = -10V
DC Current Gain (Note 9)	h_{FE}	100	–	300	–	I_C = -1mA, V_{CE} = -10V
		80	–	300		I_C = -50mA, V_{CE} = -10V
		—	15	–		I_C = -100mA, V_{CE} = -10V
Current Gain-Bandwidth Product	f_T	60	–	–	MHz	V_{CE} = -20V, I_C = -10mA f = 50MHz
Turn-On Time	t_{on}	–	110	–	ns	V_{CC} = -100V, I_C = -50mA
Turn-Off Time	t_{off}	–	1.5	–	μs	I_{B1} = -5mA, I_{B2} = 10mA
Output Capacitance	C_{obo}	–	–	8	pF	V_{CB} = -20V, f = 1MHz

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

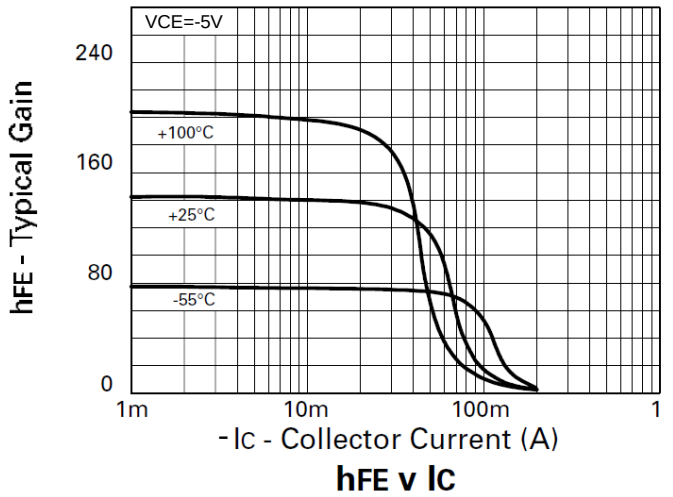
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



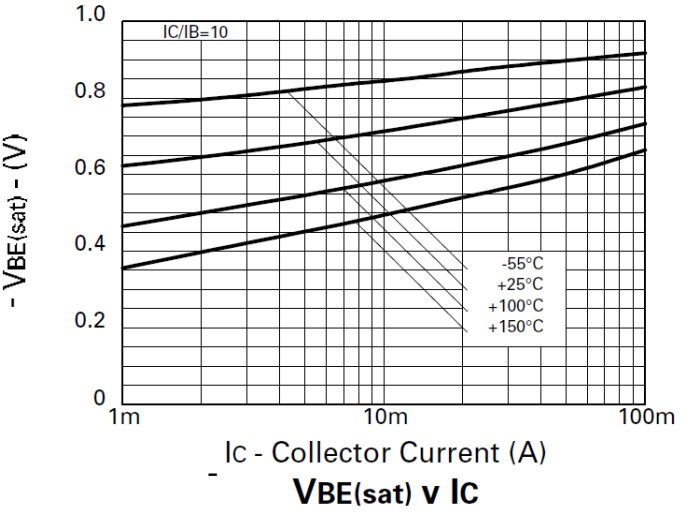
VCE(sat) v IC



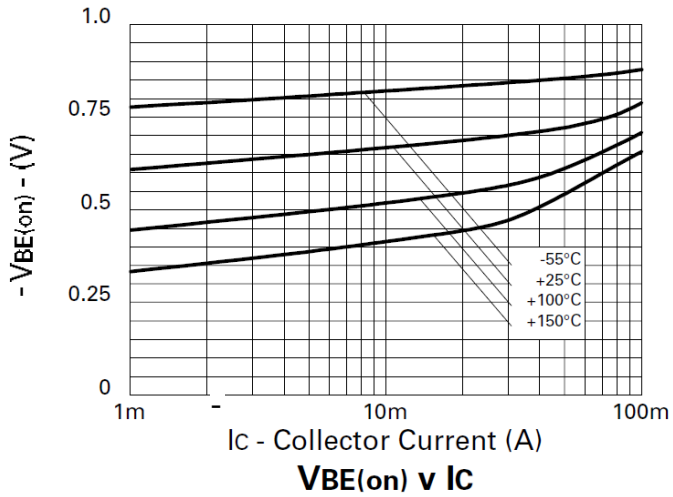
VCE(sat) v IC



hFE v IC

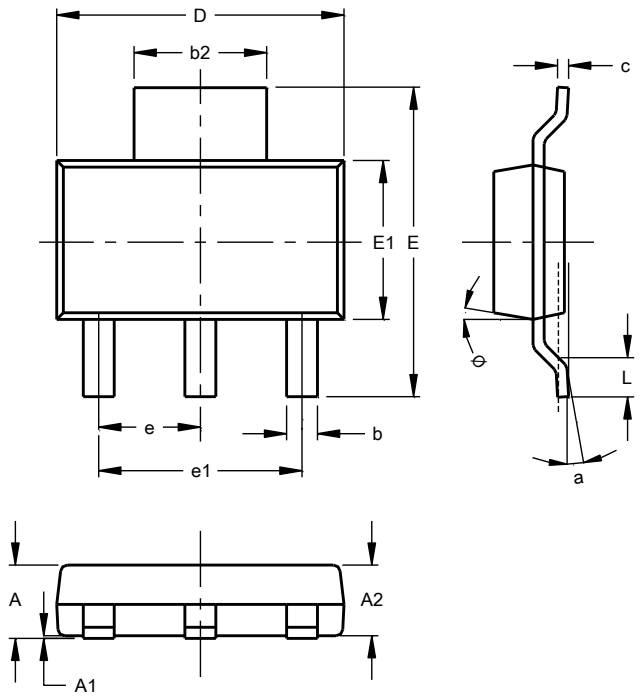


VBE(sat) v IC



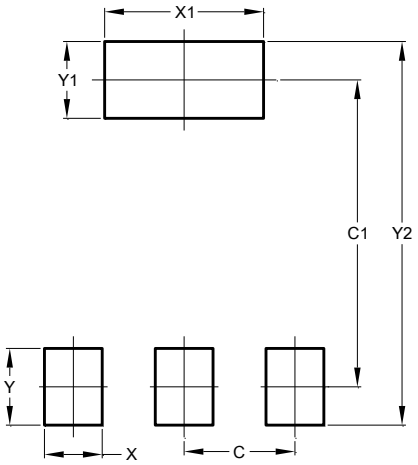
VBE(on) v IC

Package Outline Dimensions



SOT223 (Type ZN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.02	0.10	--
A2	1.50	1.68	1.60
b	0.60	0.80	--
b2	2.90	3.10	--
c	0.24	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	2.30 NOM		
e1	4.60 NOM		
L	0.90	--	--
a	--	--	10°
θ	--	15°	--
All Dimensions in mm			

Suggested Pad Layout



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