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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企业微信二维码

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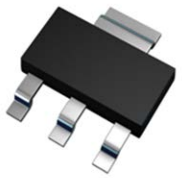
Features

- BV_{CEO} > 140V
- BV_{CBO} > 160V
- I_C = 2A High Continuous Current
- NPN Darlington With Gain > 10k
- Guaranteed h_{FE} Specified up to 1A

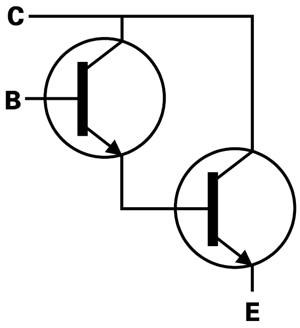
Mechanical Data

- Case: SOT223 (Type DN)
- 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 e3
- Weight: 0.112 grams (Approximate)

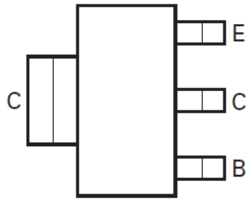
SOT223



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}	160	V
Collector-Emitter Voltage	V_{CEO}	140	V
Emitter-Base Voltage	V_{EBO}	10	V
Continuous Collector Current	I_C	2	A
Peak Pulse Current	I_{CM}	4	A

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	3.0	W
	(Note 6)		2.0	
	(Note 7)		1.6	
	(Note 8)		1.2	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	41.7	°C/W
	(Note 6)		62.5	
	(Note 7)		78.1	
	(Note 8)		104	
Thermal Resistance Junction to Lead	(Note 9)	$R_{\theta JL}$	12.9	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 10)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	2000	V	2
Electrostatic Discharge—Machine Model	ESD MM	200	V	B

Notes:
5. For a device mounted with the collector lead on 50mm × 50mm 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 6, except the device is mounted on 25mm × 25mm 2oz copper.
7. Same as Note 6, except the device is mounted on 25mm × 25mm 1oz copper.
8. Same as Note 6, except the device is mounted on minimum recommended pad layout.
9. Thermal resistance from junction to solder-point (at the end of the collector lead).
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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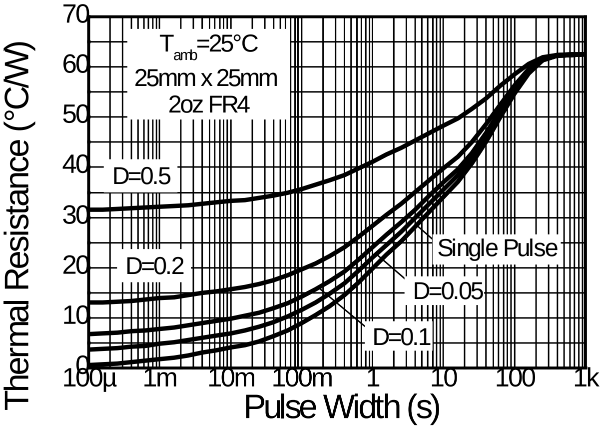
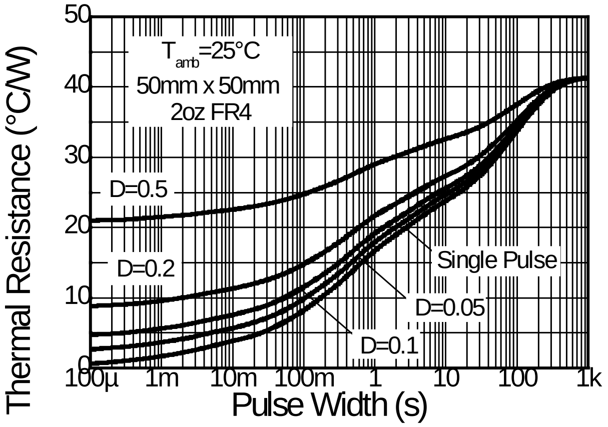
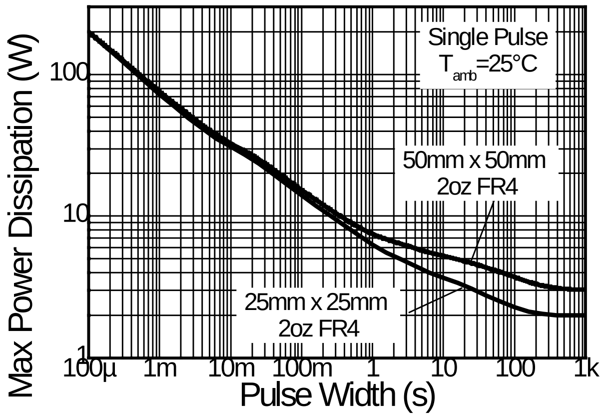
Thermal Characteristics and Derating Information



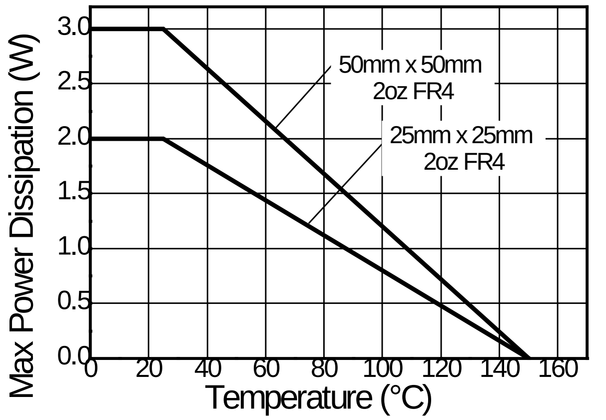
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



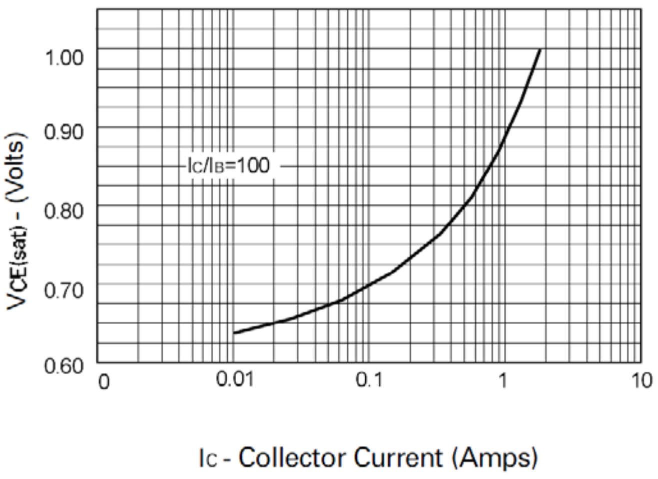
Derating Curve

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

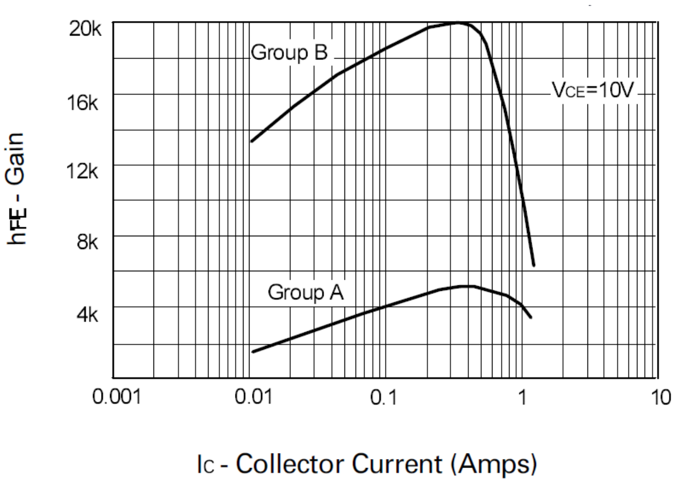
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	160	—	—	V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage (Note 12)	BV_{CEO}	140	—	—	V	$I_C = 10mA$
Emitter-Base Breakdown Voltage	BV_{EBO}	10	—	—	V	$I_E = 100\mu A$
Collector-Base Cut-Off Current	I_{CBO}	— —	—	0.01 10	µA µA	$V_{CB} = 140V$ $V_{CB} = 140V$, $T_A = +100°C$
Collector-Emitter Cut-Off Current	I_{CES}	-	—	10	µA	$V_{CES} = 140V$
Emitter Cut-Off Current	I_{EBO}	-	—	0.1	µA	$V_{EB} = 8V$
DC Current Gain (Note 12) Group A (FZT600)	h_{FE}	1000 2000 1000	— — —	— 100,000 —	—	$I_C = 50mA$, $V_{CE} = 10V$ $I_C = 500mA$, $V_{CE} = 10V$ $I_C = 1A$, $V_{CE} = 10V$
Group B (FZT600B)		5000 10,000 5000	10,000 20,000 10,000	— 100,000 —	—	$I_C = 50mA$, $V_{CE} = 10V$ $I_C = 500mA$, $V_{CE} = 10V$ $I_C = 1A$, $V_{CE} = 10V$
Collector-Emitter Saturation Voltage (Note 12)	$V_{CE(sat)}$	— —	0.75 0.85	1.1 1.2	V	$I_C = 500mA$, $I_B = 5mA$ $I_C = 1A$, $I_B = 10mA$
Base-Emitter Saturation Voltage (Note 12)	$V_{BE(sat)}$	—	1.7	1.9	V	$I_C = 1A$, $I_B = 10mA$
Base-Emitter Turn-On Voltage (Note 12)	$V_{BE(on)}$	—	1.5	1.7	V	$I_C = 1A$, $V_{CE} = 5V$
Output Capacitance (Note 12)	C_{obo}	—	10	15	pF	$V_{CB} = 10V$, f = 1MHz
Current Gain-Bandwidth Product (Note 12)	f_T	150	250	—	MHz	$V_{CE} = 10V$, $I_C = 100mA$, f=20MHz
Turn-On Time	t_{on}	—	0.75	—	µs	$V_{CC} = 10V$, $I_C = 500mA$ $I_{B1} = -I_{B2} = 0.5mA$
Turn-Off Time	t_{off}	—	2.20	—	µs	

Note: 12. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%.

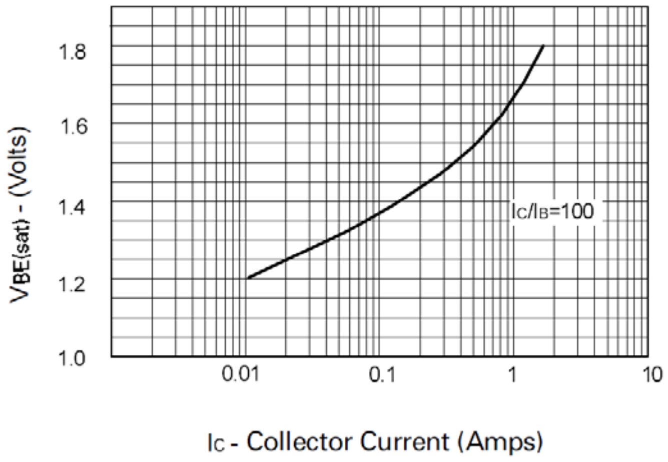
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



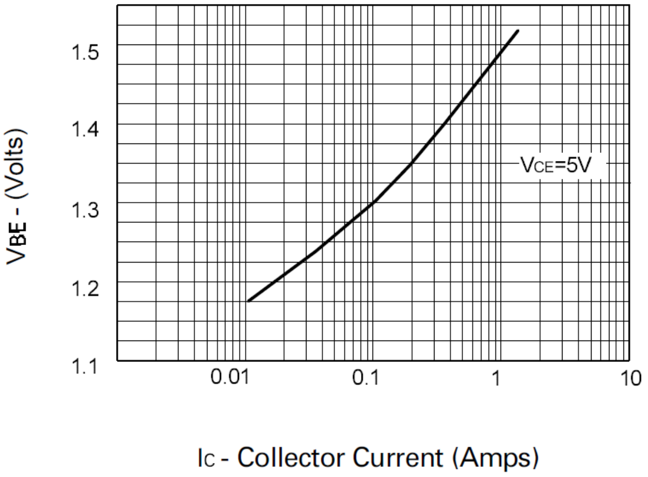
VCE(sat) v IC



hFE v IC



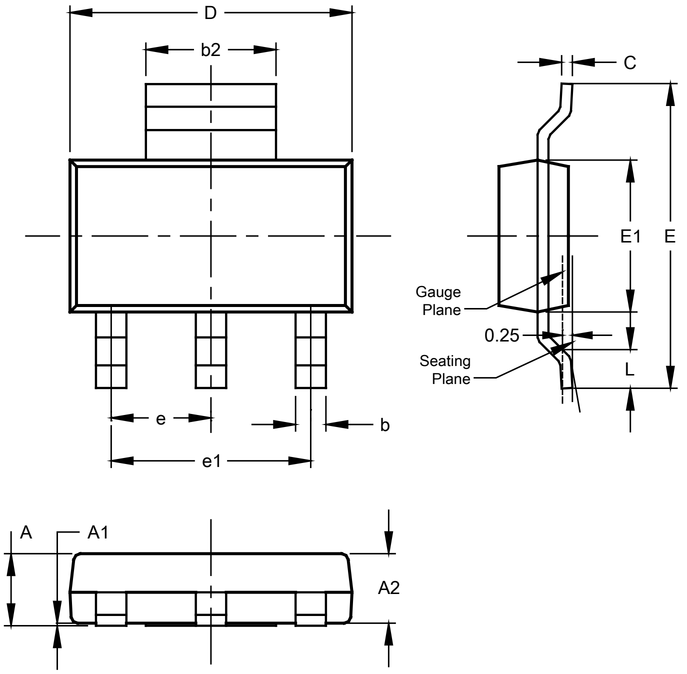
VBE(sat) v IC



VBE(on) v IC

Package Outline Dimensions

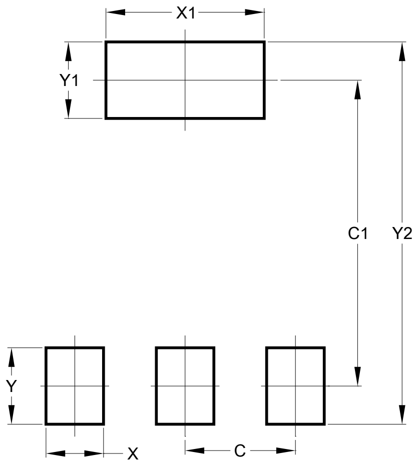
SOT223 (Type DN)



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

Note: 13. For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.