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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Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of Automotive Applications.

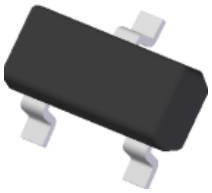
Features

- BV_{CEO} > 100V
- I_C = 0.5A High Continuous Collector Current
- I_{CM} = 2A Peak Pulse Current
- 500mW Power Dissipation
- Darlington transistor with high h_{FE} up to 5k at I_C = 0.5A

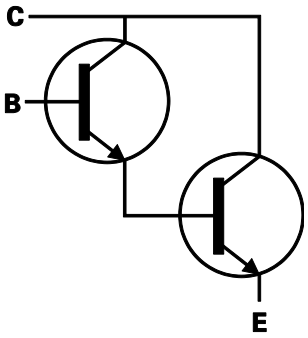
Mechanical Data

- Case: SOT23
- 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: 0.008 grams (Approximate)

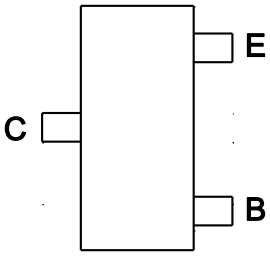
SOT23



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}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	10	V
Continuous Collector Current	I_C	500	mA
Peak Pulse Current	I_{CM}	2	A

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

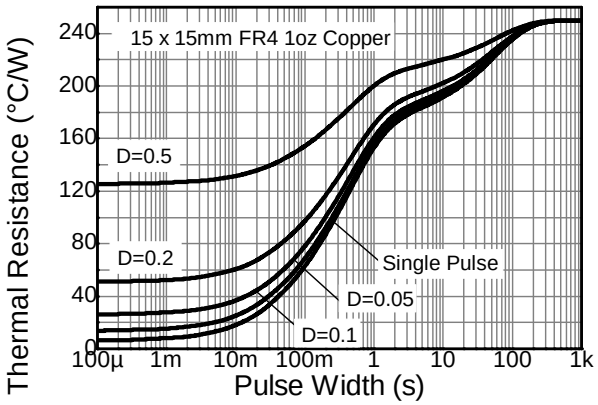
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead (Note 7)	$R_{\theta JL}$	197	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

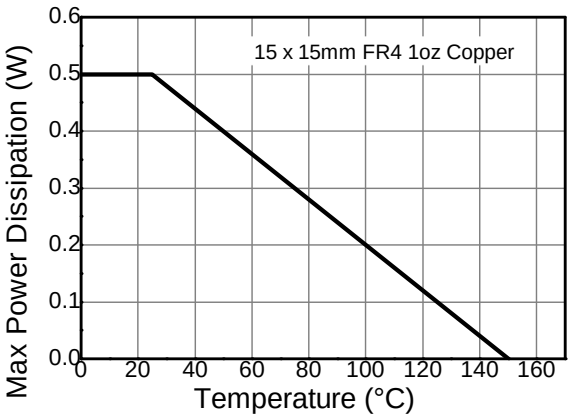
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

Notes:
6. For a device mounted on 15mm X 15mm 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions while operating in a steady-state.
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.

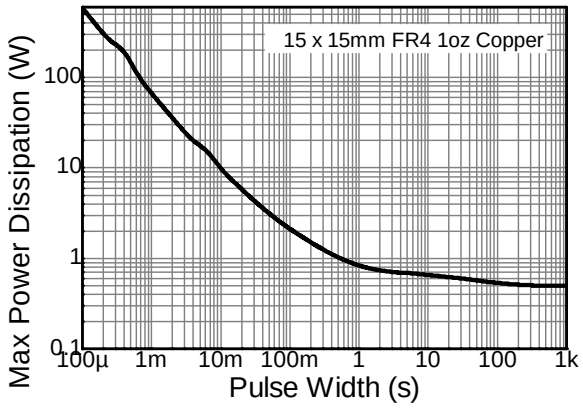
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Derating Curve



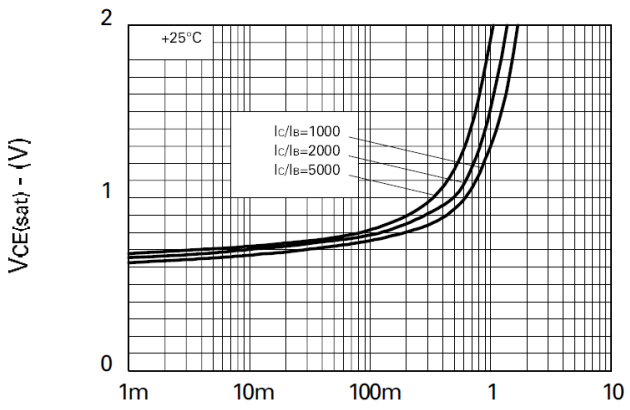
Pulse Power Dissipation

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

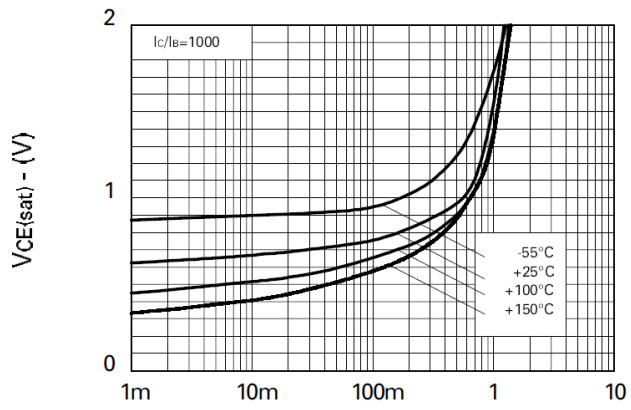
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	120	300	—	V	I_C = 10μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	100	130	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	10	14	—	V	I_E = 10μA
Collector Cutoff Current	I_{CBO}	—	0.02	10	nA	V_{CB} = 100V
Emitter Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 8V
Collector Emitter Cutoff Current	I_{CES}	—	—	10	μA	V_{CE} = 100V
Static Forward Current Transfer Ratio (Note 9)	h_{FE}	15k 5k	— —	— —	—	I_C = 100mA, V_{CE} = 5V I_C = 500mA, V_{CE} = 5V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	0.9 0.78	1.0 0.9	V V	I_C = 500mA, I_B = 5mA I_C = 100mA, I_B = 0.1mA
Base-Emitter Turn-On Voltage(Note 9)	$V_{BE(on)}$	—	1.5	1.8	V	I_C = 500mA, V_{CE} = 5V
Base-Emitter Saturation Voltage(Note 9)	$V_{BE(sat)}$	—	1.7	1.9	V	I_C = 500mA, I_B = 5mA
Output Capacitance	C_{obo}	—	6	—	pF	V_{CB} = 10V, f = 100mHz
Switching Times	t_{on}	—	0.7	—	μs	I_C = 100μA, I_B = 0.1mA,
	t_{off}	—	2.5	—	μs	V_S = 10V

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

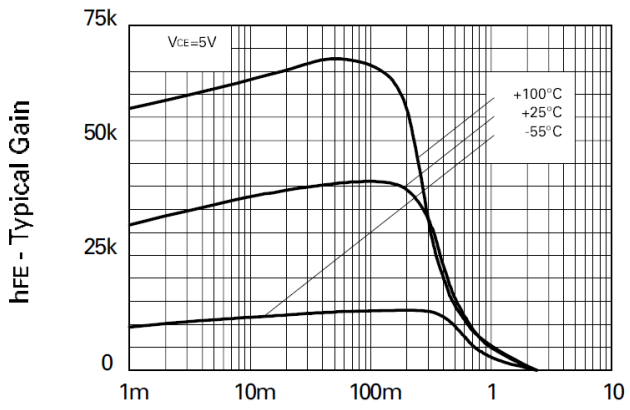
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



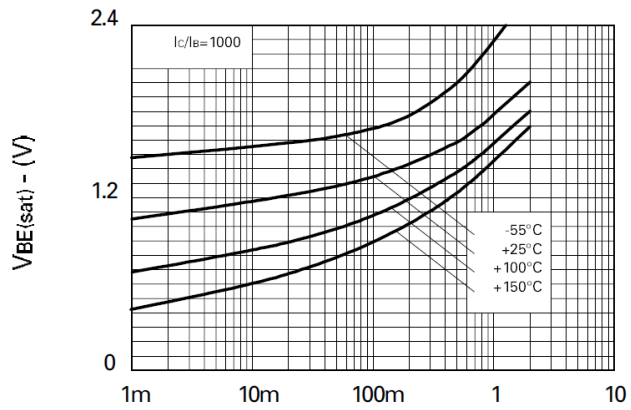
VCE(sat) v IC



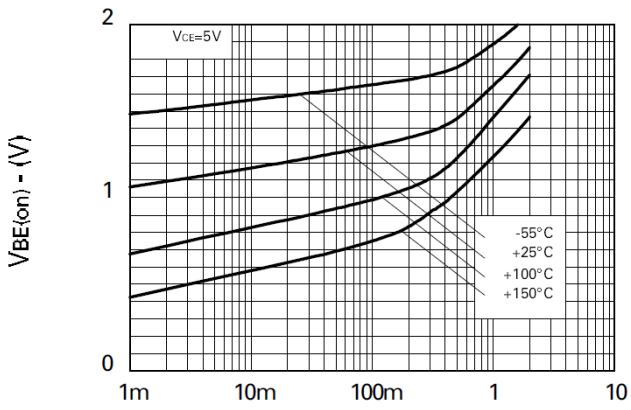
VCE(sat) v IC



hFE v IC

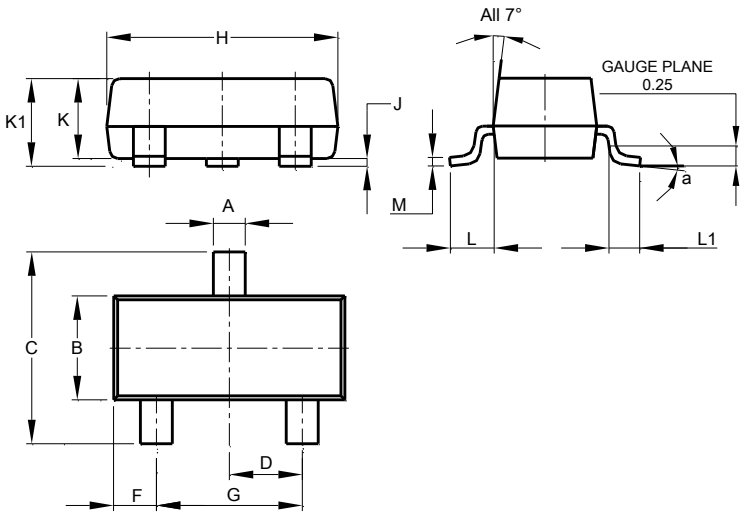


VBE(sat) v IC



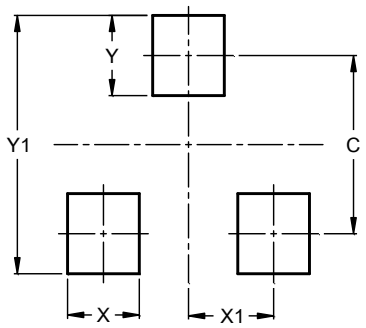
VBE(on) v IC

Package Outline Dimensions



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

Note : 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.