



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

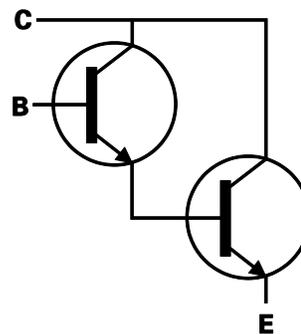
- $BV_{CEO} > 100V$
- $I_C = 0.5A$ High Continuous Collector Current
- $I_{CM} = 2A$ Peak Pulse Current
- 500mW Power Dissipation
- Darlington Transistor with High h_{FE} up to 5k at $I_C = 0.5A$

Mechanical Data

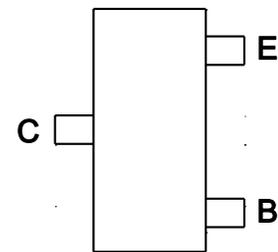
- Case: SOT23
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.008 grams (Approximate)



Top View



Device Symbol



Top View
Pin-Out

Absolute Maximum Ratings

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	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

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	250	$^\circ\text{C/W}$
Thermal Resistance, Junction to Lead (Note 6)	$R_{\theta JL}$	197	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

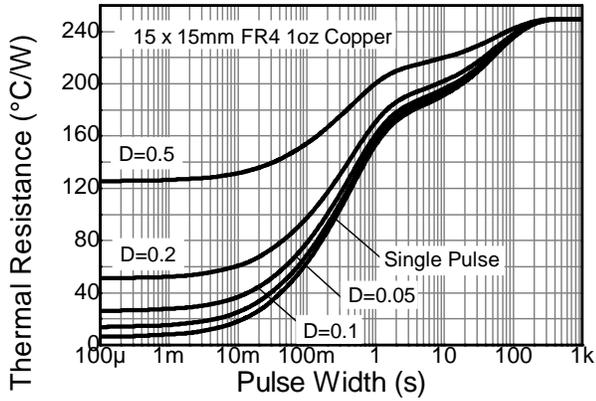
ESD Ratings

 (Note 7)

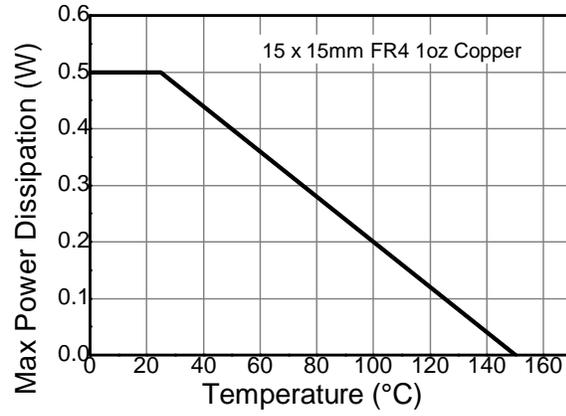
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge – Machine Model	ESD MM	200	V	B

- Notes:
5. 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 whilst operating in a steady-state.
 6. Thermal resistance from junction to solder-point (at the end of the collector lead).
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

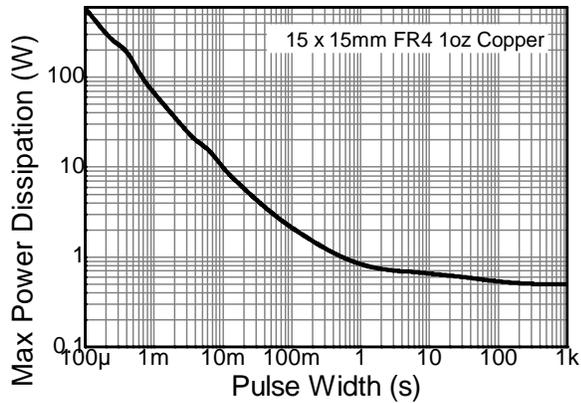
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Derating Curve



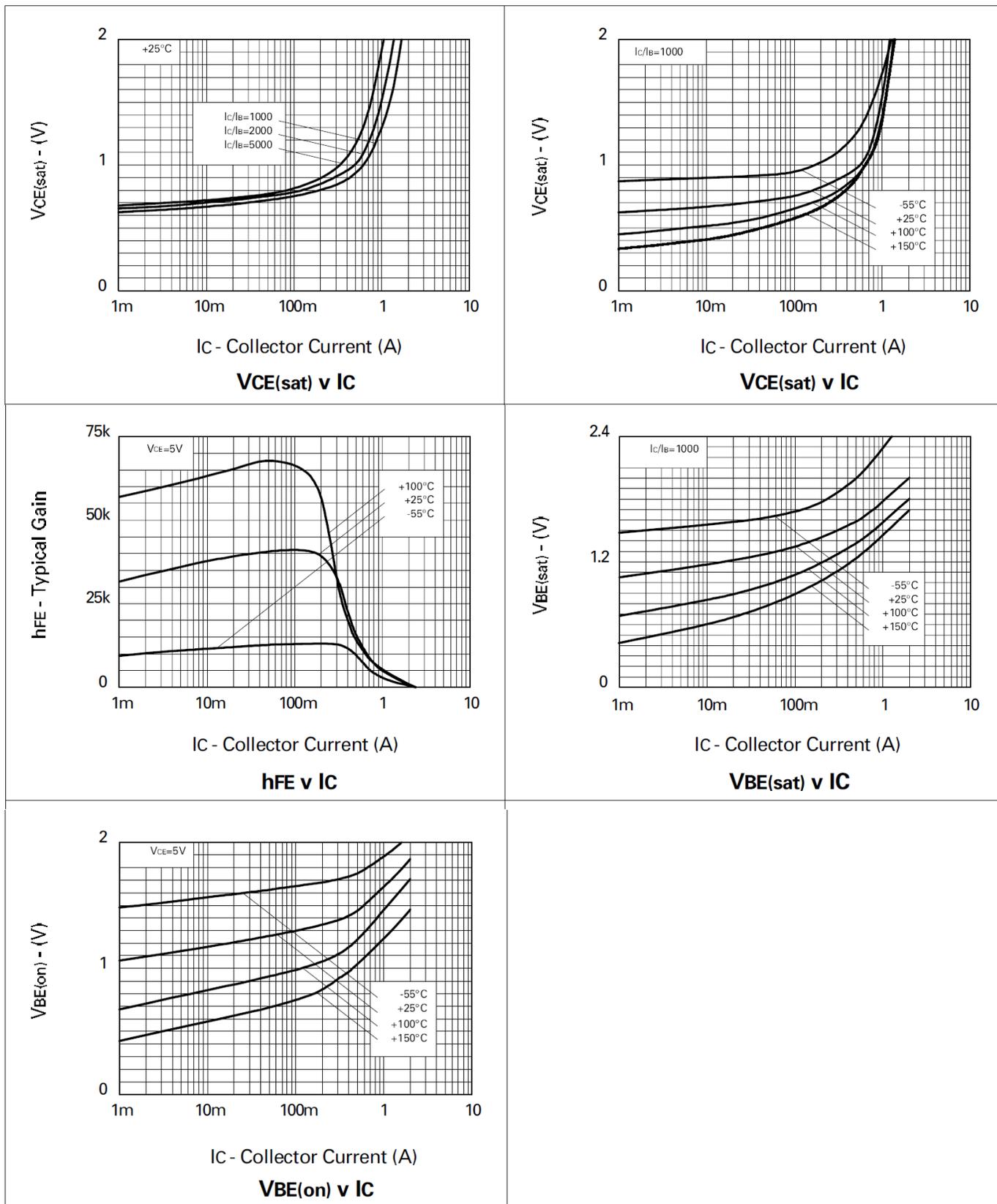
Pulse Power Dissipation

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

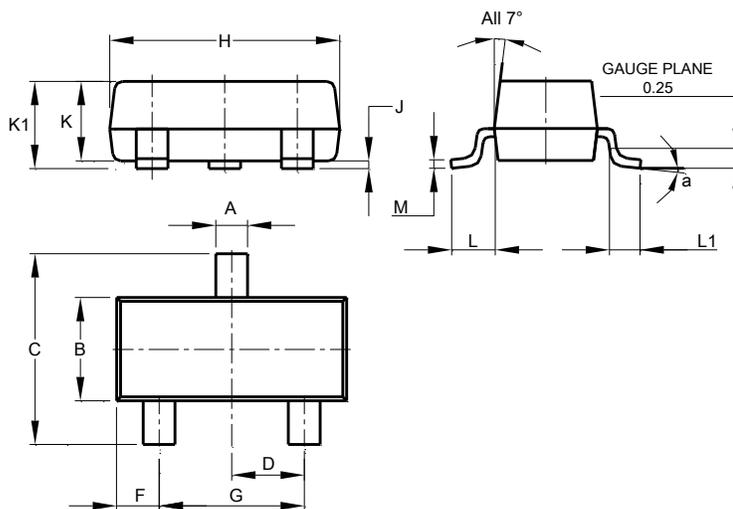
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	120	300	—	V	I _C = 10μA
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	100	130	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	10	14	—	V	I _E = 10μA
Collector Cutoff Current	I _{CB0}	—	0.02	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 8)	h _{FE}	15k 5k	— —	— —	—	I _C = 100mA, V _{CE} = 5V I _C = 500mA, V _{CE} = 5V
Collector-Emitter Saturation Voltage (Note 8)	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 8)	V _{BE(ON)}	—	1.5	1.8	V	I _C = 500mA, V _{CE} = 5V
Base-Emitter Saturation Voltage (Note 8)	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, V _S = 10V
	t _{OFF}	—	2.5	—	μs	

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

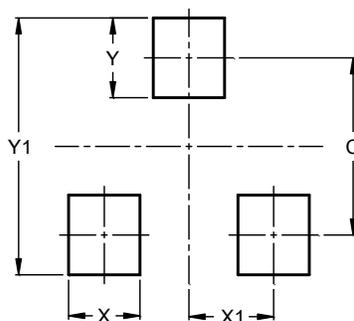


Package Outline Dimensions

SOT23


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

SOT23


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.