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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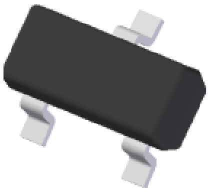
Features

- BV_{CEO} > 100V
- I_C = 1A High Continuous Collector Current
- I_{CM} = 2A Peak Pulse Current
- 500mW Power Dissipation
- h_{FE} Characterised Up to 2A for High Current Gain Hold Up
- Complementary PNP Type: NK-FMMT593

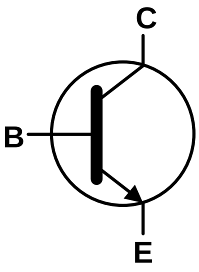
Mechanical Data

- 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 ⓔ3
- Weight: 0.008 grams (Approximate)

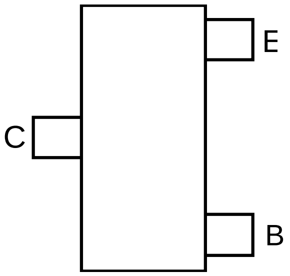
SOT23 (Type DN)



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_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Base Current	I_B	200	mA

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

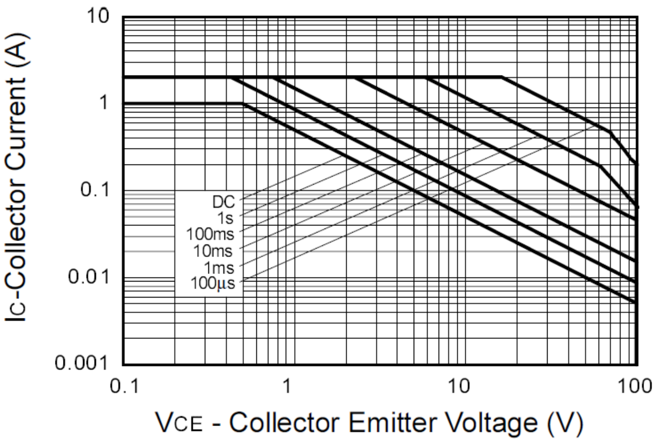
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead (Note 6)	$R_{\theta JL}$	197	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 7)

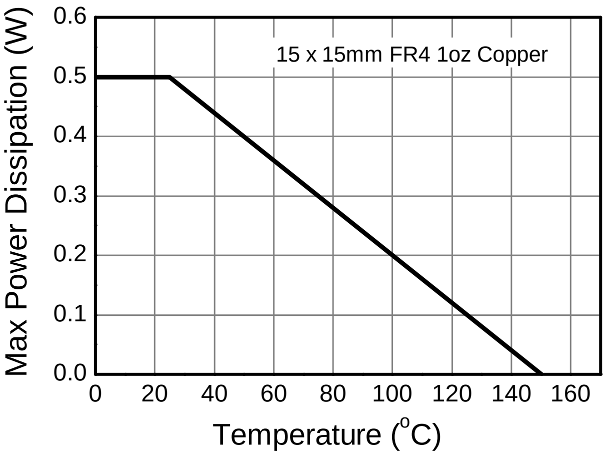
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes:
5. For a device mounted on 15mm × 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.

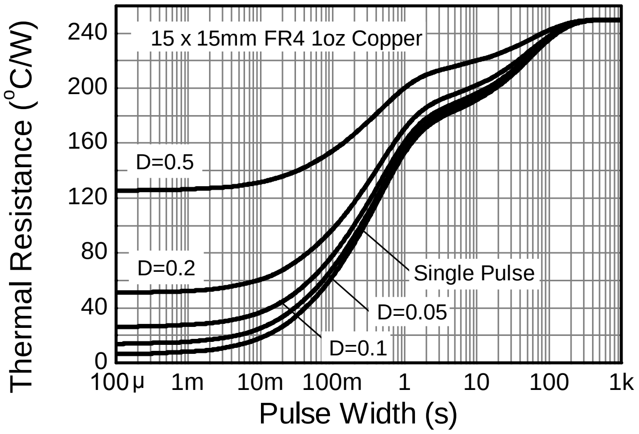
Thermal Characteristics and Derating Information



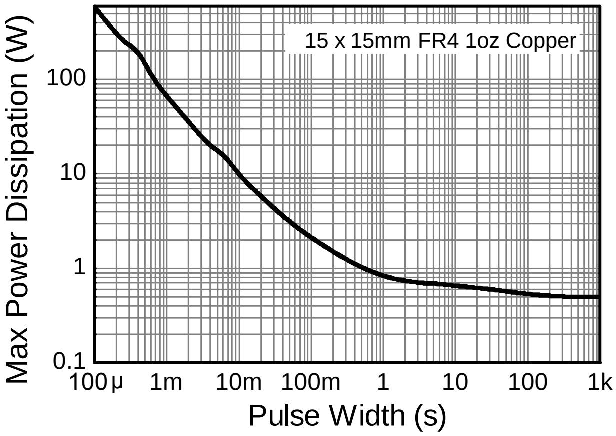
Safe Operating Area



Derating Curve



Transient Thermal Impedance



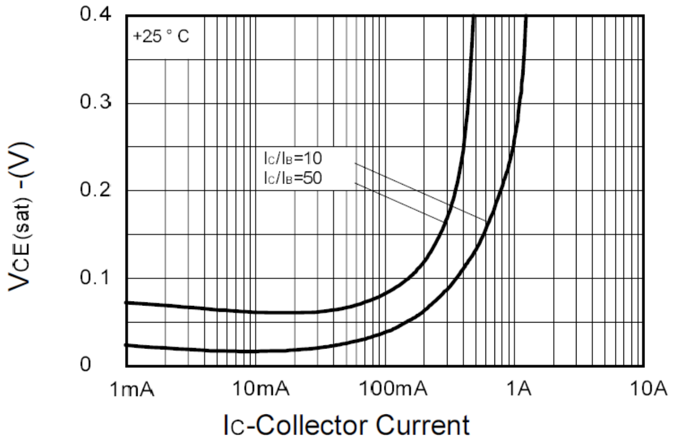
Pulse Power Dissipation

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

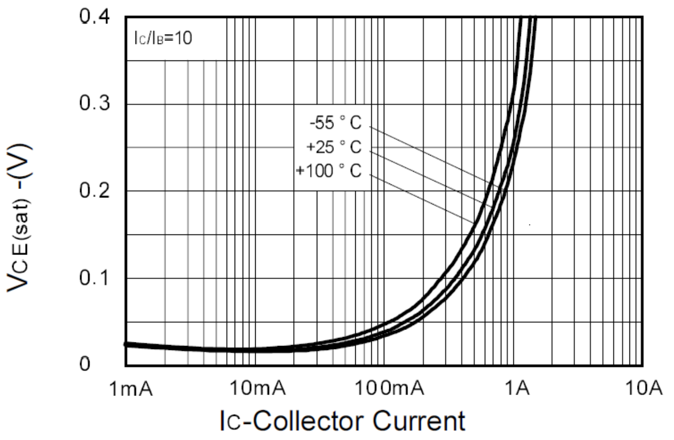
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	120	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	100	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	—	—	V	I_E = 100µA
Collector Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 100V
Emitter Cutoff Current	I_{EBO}	—	—	50	nA	V_{EB} = 5.6V
Collector Emitter Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 100V
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	100 100 60 20	— — — —	— 300 — —	—	I_C = 1mA, V_{CE} = 10V I_C = 250mA, V_{CE} = 10V I_C = 500mA, V_{CE} = 10V I_C = 1A, V_{CE} = 10V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	—	300 600	mV mV	I_C = 500mA, I_B = 50mA I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage (Note 8)	$V_{BE(on)}$	—	—	1.0	V	I_C = 1A, V_{CE} = 10V
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	—	—	1.15	V	I_C = 1A, I_B = 100mA
Output Capacitance	C_{obo}	—	—	10	pF	V_{CB} = 10V, f = 1MHz
Transition Frequency	f_T	150	—	—	MHz	V_{CE} = 10V, I_C = 50mA, f = 100MHz

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

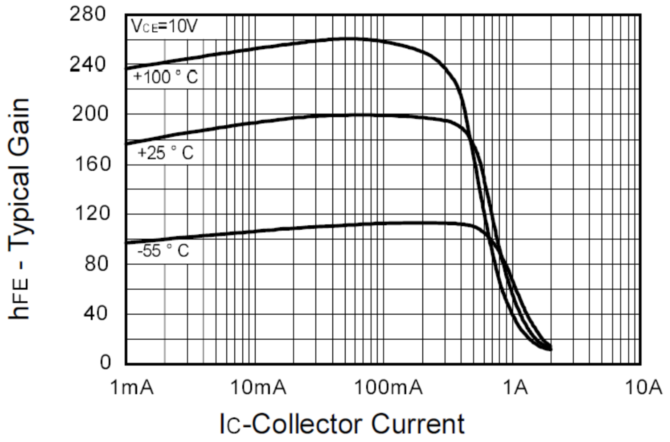
Typical Electrical Characteristics (@T$_A$ = +25°C, unless otherwise specified.)



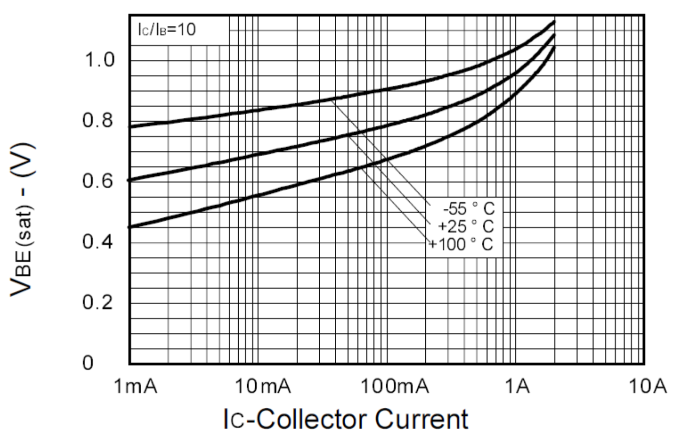
VCE(sat) v IC



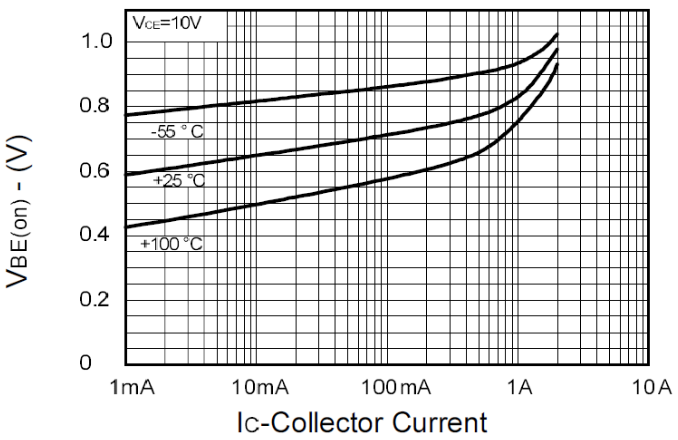
VCE(sat) v IC



hFE V IC



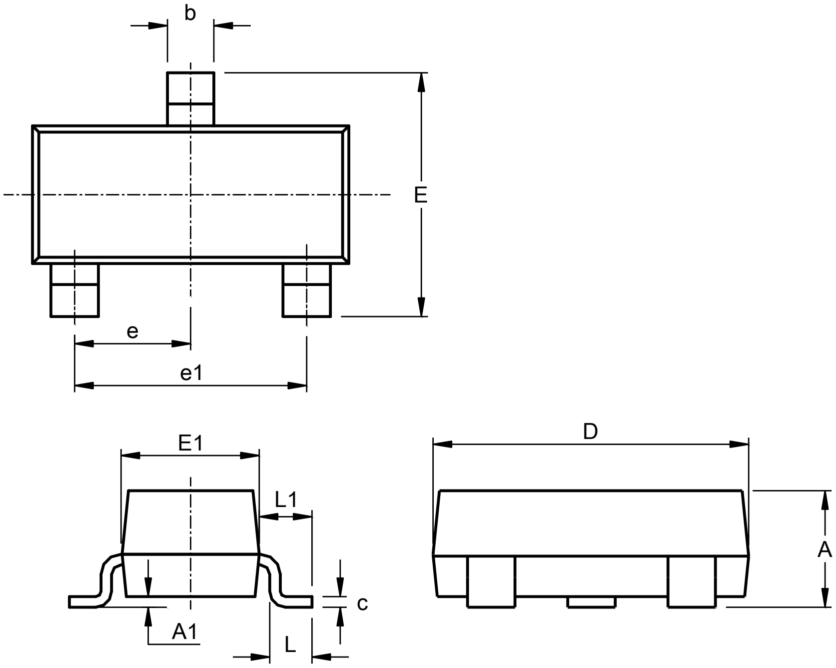
VBE(sat) v IC



VBE(on) v IC

Package Outline Dimensions

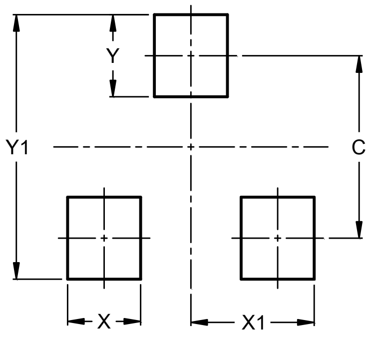
SOT23 (Type DN)



SOT23 Type DN			
Dim	**Min**	**Max**	**Typ**
A	0.89	1.12	1.00
A1	0.01	0.10	0.05
b	0.30	0.51	0.45
c	0.08	0.20	0.10
D	2.80	3.04	3.00
E	2.10	2.64	2.42
E1	1.20	1.40	1.37
e	0.95 REF		
e1	1.90 REF		
L	0.25	0.60	0.30
L1	0.45	0.62	0.54
All Dimensions in mm			

Suggested Pad Layout

SOT23 (Type DN)



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