



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

- $BV_{CEO} > 15V$
- $I_C = 4A$  Continuous Collector Current
- $I_{CM} = 13A$  Peak Pulse Current
- $R_{CE(SAT)} = 50m\Omega$  for a Low Equivalent On-Resistance
- Low Saturation Voltage (70mV max @ 1A)
- $h_{FE}$  Characterized up to 12A

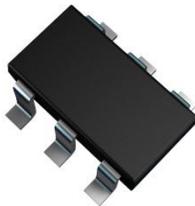
## Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification 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: 0.015 grams (Approximate)

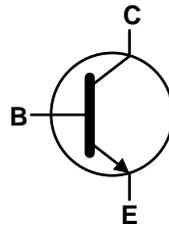
## Applications

- DC-DC Converters
- Power Management Functions
- Power Switches
- Motor Control

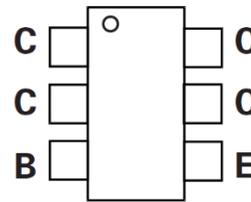
SOT26



Top View



Device Symbol



Top View  
Pin-Out

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	15	V
Collector-Emitter Voltage	V <sub>CEO</sub>	15	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Base Current	I <sub>B</sub>	500	mA
Continuous Collector Current	I <sub>C</sub>	4	A
Peak Pulse Collector Current	I <sub>CM</sub>	13	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

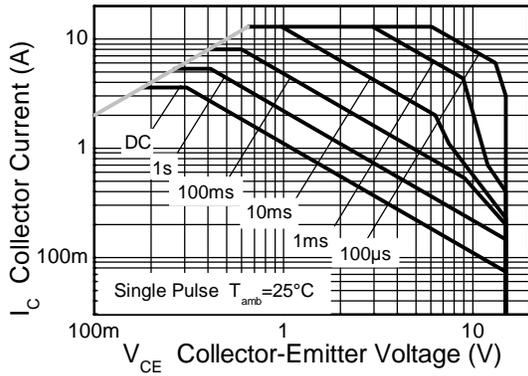
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	1.1	W
		8.8	
Linear Derating Factor		1.7	mW/°C
		13.6	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	113	°C/W
		73	
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	18.6	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 8)

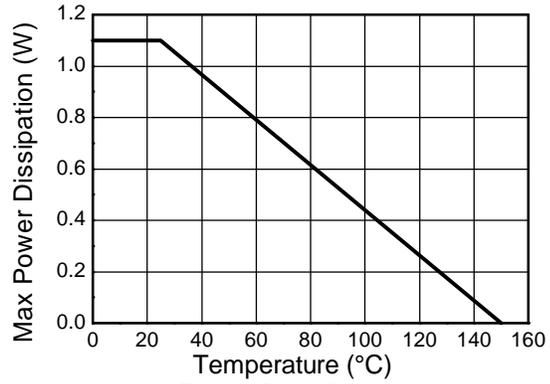
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the collector lead on 25mm x 25mm 1oz copper that is on single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  - Same as Note 6, except the device is measured at t ≤ 5 sec.
  - Thermal resistance from junction to solder-point (at the end of the collector lead).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

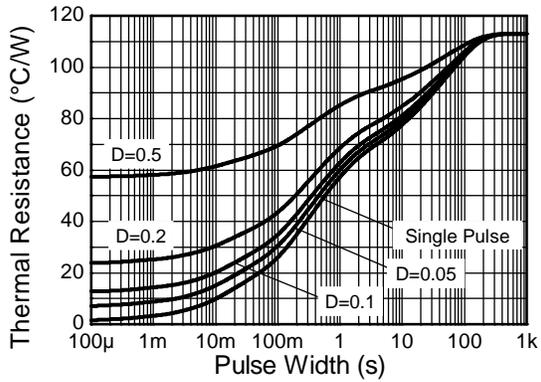
### Thermal Characteristics and Derating Information



**Safe Operating Area**



**Derating Curve**



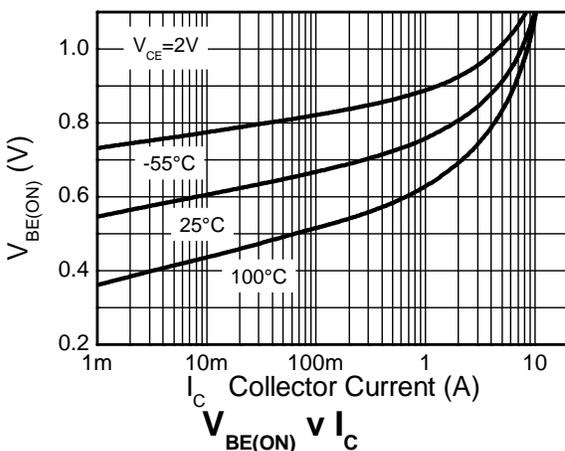
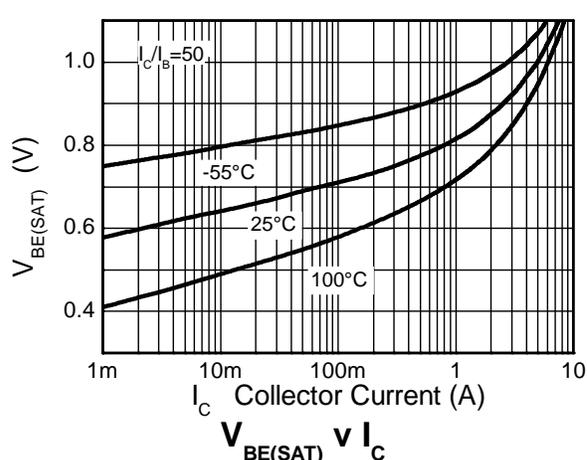
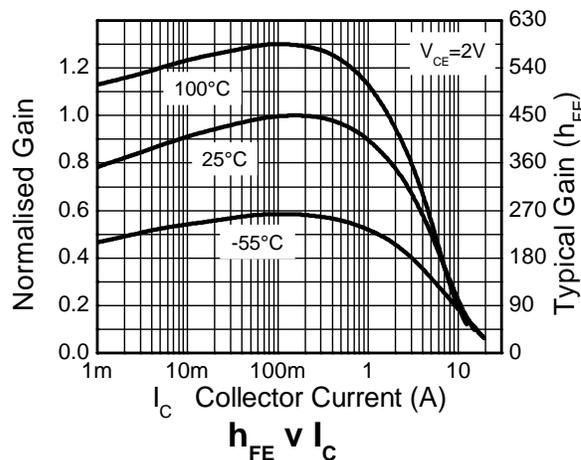
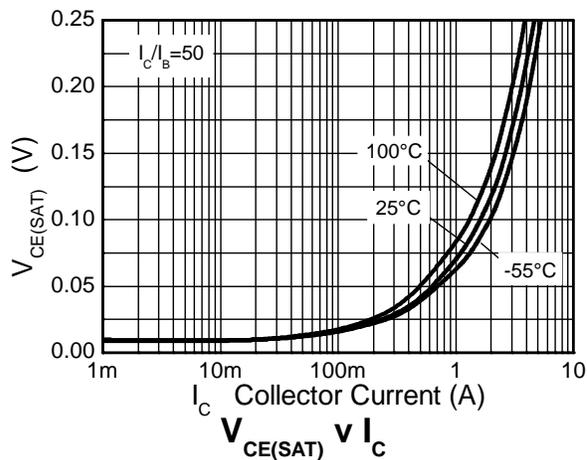
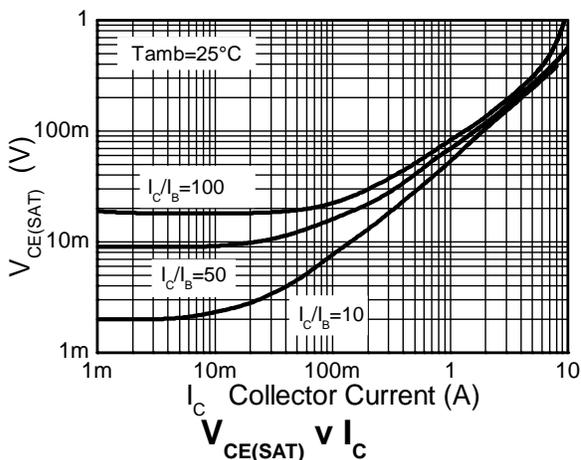
**Transient Thermal Impedance**

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

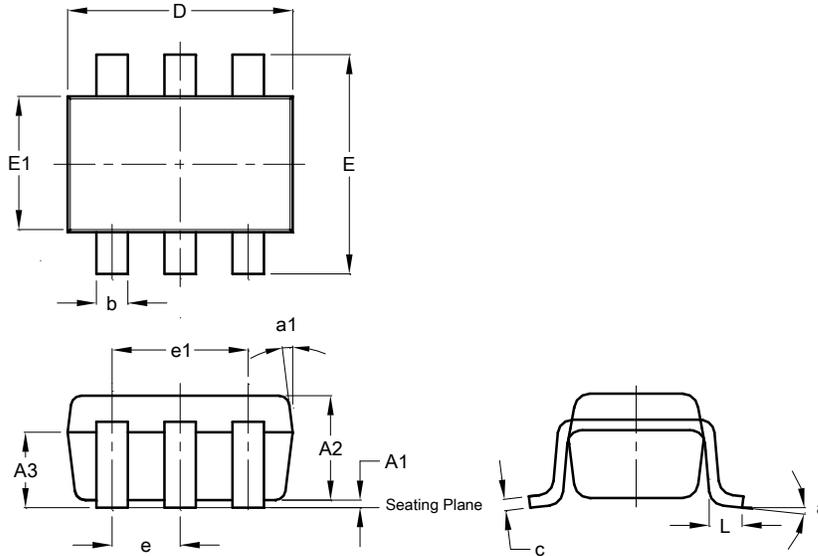
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	15	70	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	$BV_{CEO}$	15	18	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	5	8.2	—	V	$I_E = 100\mu\text{A}$
Collector-Base Cutoff Current	$I_{CBO}$	—	—	100	nA	$V_{CB} = 10\text{V}$
Emitter Cutoff Current	$I_{EBO}$	—	—	100	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Cutoff Current	$I_{CES}$	—	—	100	nA	$V_{CES} = 10\text{V}$
<b>ON CHARACTERISTICS (Note 9)</b>						
DC Current Gain	$h_{FE}$	200	415	—	—	$I_C = 10\text{mA}, V_{CE} = 2\text{V}$
		300	450	—		$I_C = 0.2\text{A}, V_{CE} = 2\text{V}$
		200	320	—		$I_C = 3\text{A}, V_{CE} = 2\text{V}$
		150	240	—		$I_C = 5\text{A}, V_{CE} = 2\text{V}$
		—	80	—		$I_C = 12\text{A}, V_{CE} = 2\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	8	14	mV	$I_C = 100\text{mA}, I_B = 10\text{mA}$
		—	70	100		$I_C = 1\text{A}, I_B = 10\text{mA}$
		—	165	200		$I_C = 3\text{A}, I_B = 50\text{mA}$
		—	230	260		$I_C = 4\text{A}, I_B = 50\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(sat)}$	—	0.94	1	V	$I_C = 4\text{A}, I_B = 50\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	0.87	0.95	V	$I_C = 4\text{A}, V_{CE} = 2\text{V}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	$f_T$	80	120	—	MHz	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Output Capacitance	$C_{obo}$	—	30	40	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(on)}$	—	120	—	ns	$V_{CC} = 10\text{V}, I_C = 3\text{A}$
Turn-Off Time	$t_{(off)}$	—	160	—	ns	$I_{B1} = I_{B2} = 50\text{mA}$

 Note: 9. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

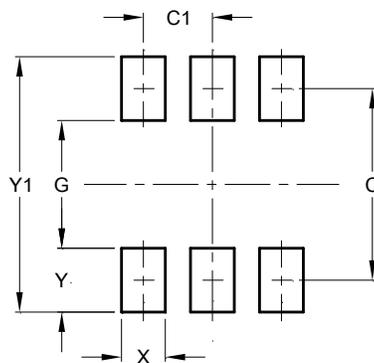


### Package Outline Dimensions



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

### Suggested Pad Layout



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20