



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



企业QQ二维码

Features

- $BV_{CEO} > 50V$
- $I_C = 4A$ Collector Current
- Low Saturation Voltage $V_{CE(sat)} < 60mV @ 1A$
- Epitaxial Planar Die Construction
- High Peak Current and Gain

Mechanical Data

- Package: SOT23
- Package 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 (3)
- Weight: 0.008 grams (Approximate)

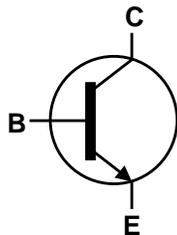
Applications

- DC-DC converters
- DC fans
- Power switches
- Motor controls
- MOSFET gate drivers

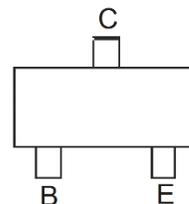
SOT23



Top View



Device Symbol



Top View
Pin-Out

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

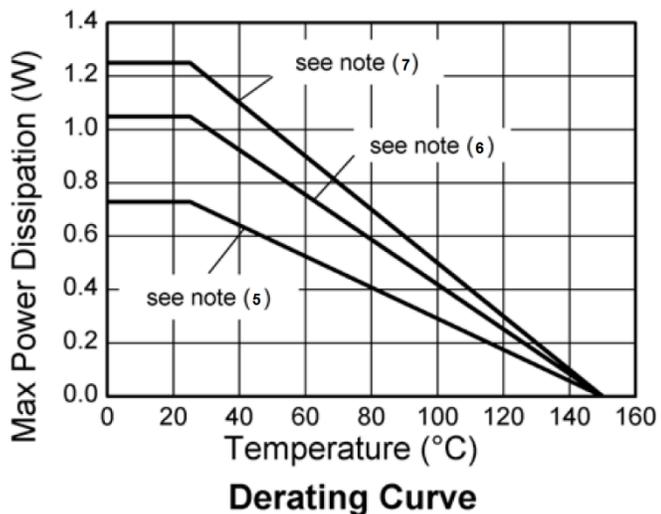
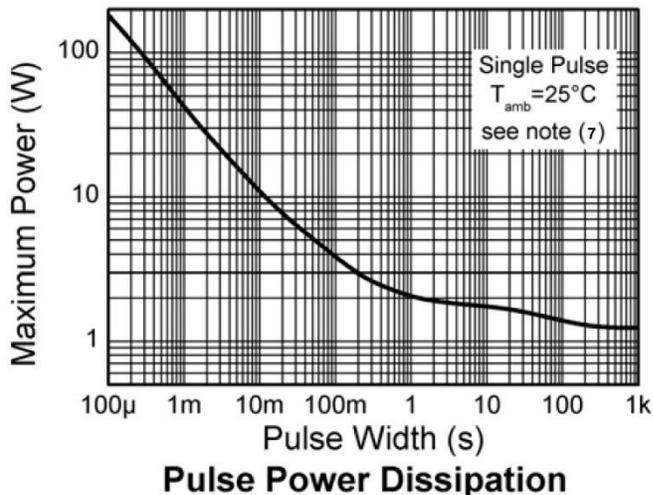
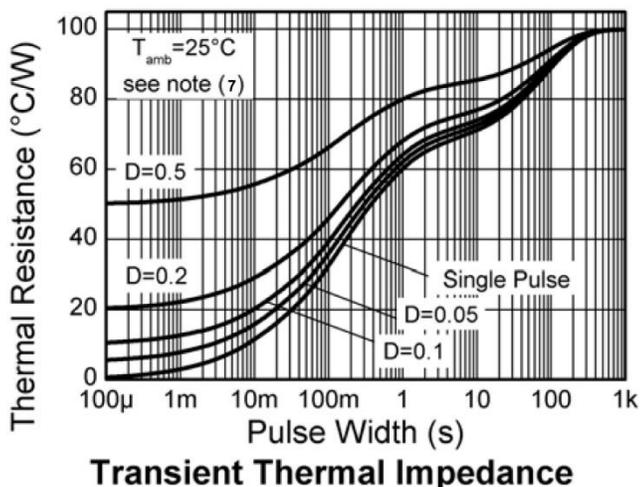
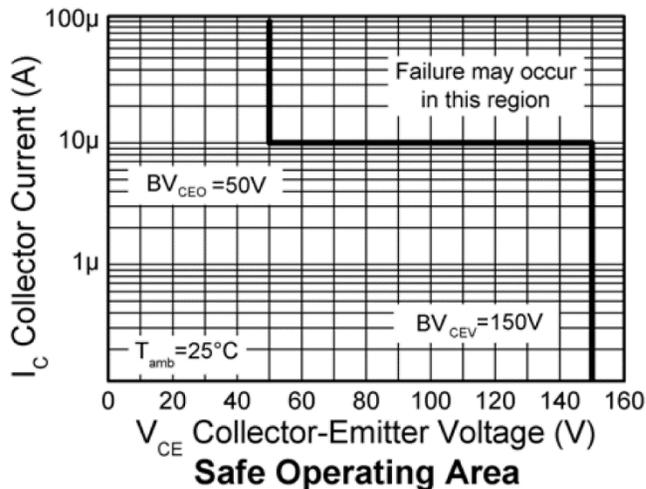
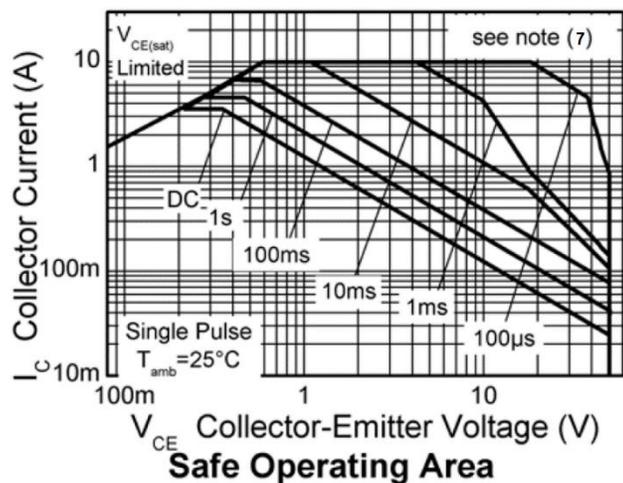
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	150	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EB0}	7	V
Collector-Emitter Voltage (Forward Blocking)	V_{CEX}	150	V
Emitter-Collector Voltage (Reverse Blocking)	V_{ECO}	5	V
Base Current	I_B	1	A
Continuous Collector Current	I_C	4	A
Peak Collector Current	I_{CM}	10	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P_D	0.73	W mW/ $^\circ\text{C}$
		5.84	
		1.05	
		8.4	
		1.25	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	9.6	$^\circ\text{C/W}$
		1.81	
		14.5	
		171	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	119	$^\circ\text{C/W}$
		100	
		69	
		13	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
5. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
 6. For the device mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
 7. For the device mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
 8. Same as Note 7, except measured at $t < 5$ seconds.
 9. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

Thermal Characteristics

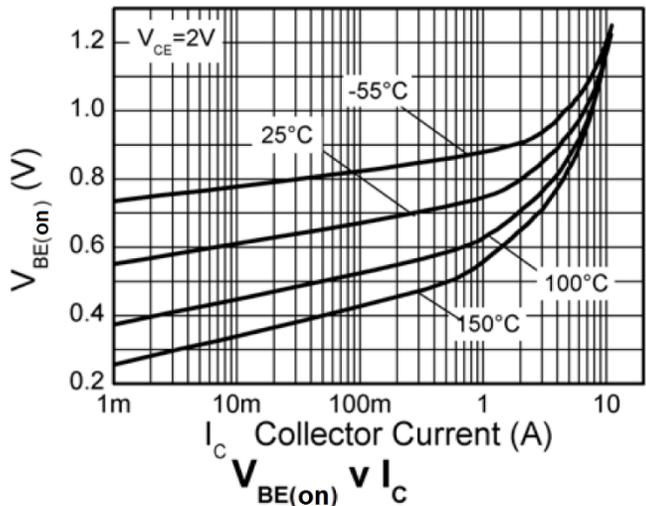
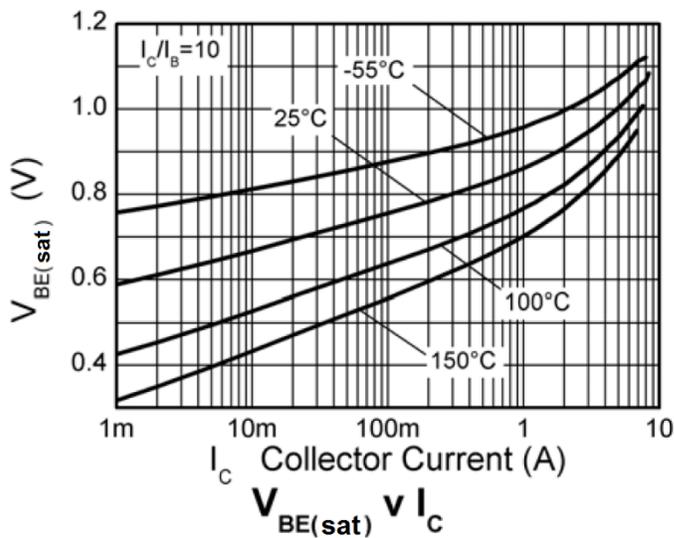
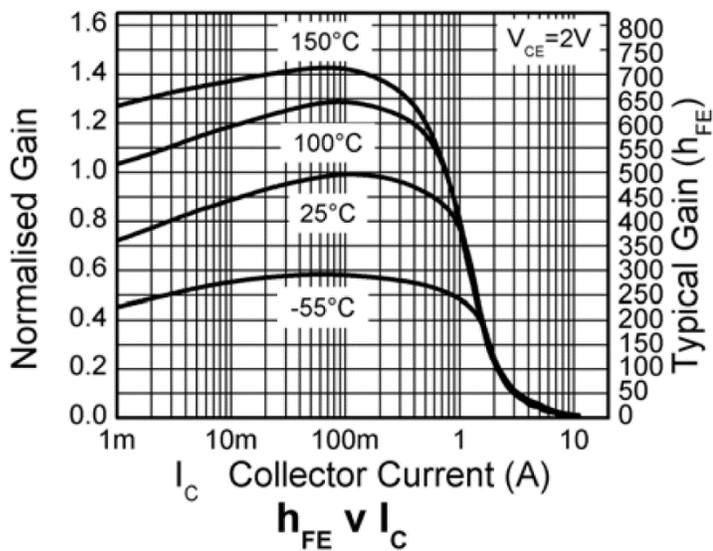
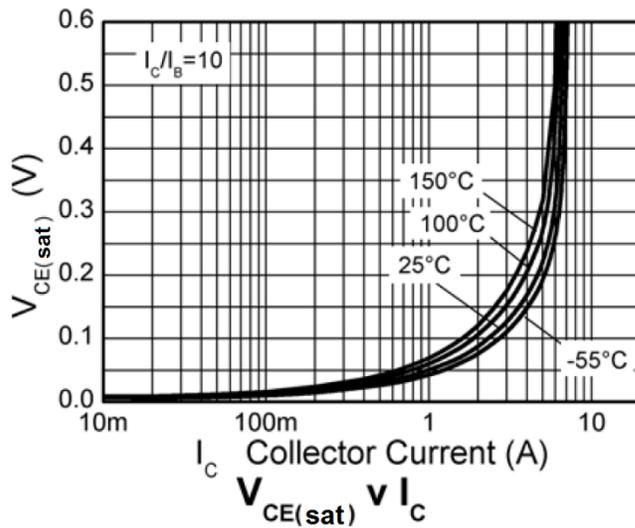
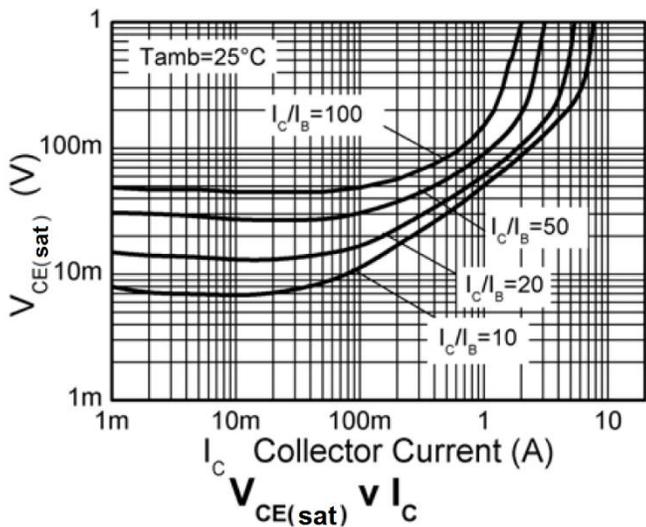


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CB0}	150	180	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	50	67	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7.0	8.3	—	V	I _E = 100μA
Emitter-Collector Breakdown Voltage	BV _{ECO}	5.0	7.4	—	V	I _E = 100μA
Emitter-Collector Breakdown Voltage	BV _{ECX}	5.0	8.0	—	V	I _E = 100μA, R _{BC} ≤ 1kΩ or -0.25V < V _{BC} < 0.25V
Collector-Emitter Breakdown Voltage	BV _{CEX}	150	180	—	V	I _C = 100μA, R _{BE} ≤ 1kΩ or -1V < V _{BE} < 0.25V
Collector Cutoff Current	I _{CB0}	—	1	50	nA	V _{CB} = 150V
		—	—	20	μA	V _{CB} = 150V, T _{amb} = +100°C
Emitter Cutoff Current	I _{EBO}	—	1	50	nA	V _{EB} = 5.6V
Collector-Emitter Cutoff Current	I _{CEX}	—	—	100	nA	V _{CE} = 150V, R _{BE} ≤ 1kΩ or -1V < V _{BE} < 0.25V
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h _{FE}	300	450	900	—	I _C = 10mA, V _{CE} = 2V
		240	410	—		I _C = 1A, V _{CE} = 2V
		20	40	—		I _C = 4A, V _{CE} = 2V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	50	60	mV	I _C = 1A, I _B = 100mA
		—	160	260		I _C = 1A, I _B = 10mA
		—	180	250		I _C = 2A, I _B = 40mA
		—	190	235		I _C = 3.5A, I _B = 175mA
		—	160	210		I _C = 4A, I _B = 400mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	970	1070	mV	I _C = 4A, I _B = 400mA
Base-Emitter Turn-On Voltage	V _{BE(on)}	—	870	970	mV	I _C = 4A, V _{CE} = 2V
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance (Note 10)	C _{obo}	—	12	20	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	—	200	—	MHz	V _{CE} = 10V, I _C = 50mA f = 100MHz
SWITCHING CHARACTERISTICS						
Delay Time	t _d	—	65	—	ns	V _{CC} = 10V, I _C = 1A I _{B1} = -I _{B2} = 10mA
Rise Time	t _r	—	111	—	ns	
Storage Time	t _s	—	429	—	ns	
Fall Time	t _f	—	140	—	ns	

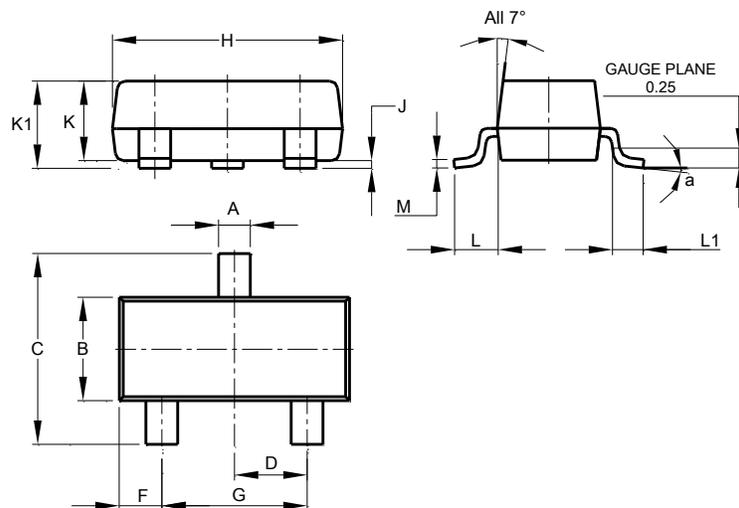
Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

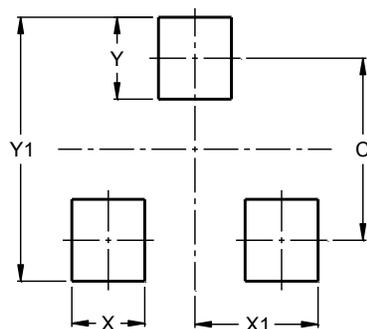
SOT23



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