



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

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors

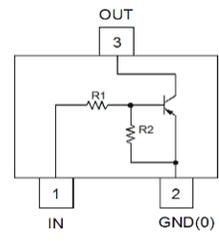
### Mechanical Data

- Case: SOT23
- 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 Ⓜ3
- Weight: 0.008 grams (Approximate)

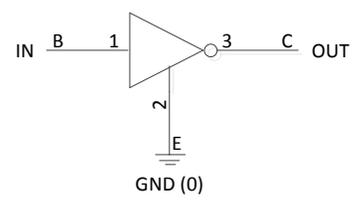
R1 (NOM)	R2 (NOM)
47kΩ	22kΩ



Top View



Device Schematic



Equivalent Inverter Circuit

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

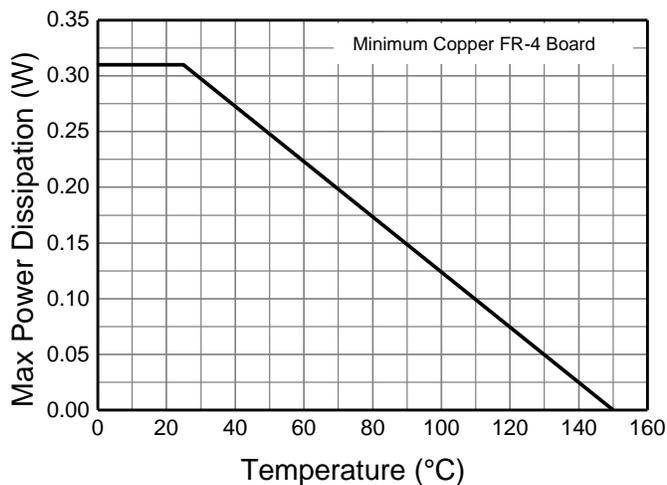
Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>	$V_{CC}$	-50	V
Input Voltage <Pin: (1) to (2)>	$V_{IN}$	+10 to -40	V
Output Current	$I_O$	-30	mA
Output Current	$I_C$ (Max)	-100	mA

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

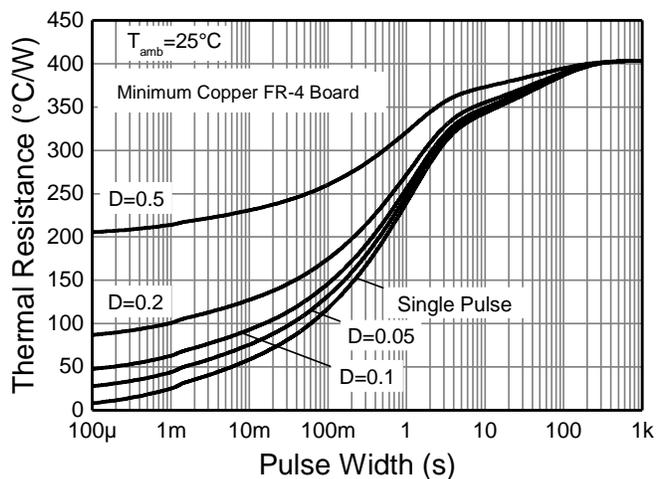
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	310	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	403	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Note: 5. Mounted on FR-4 PC Board with minimum recommended pad layout.

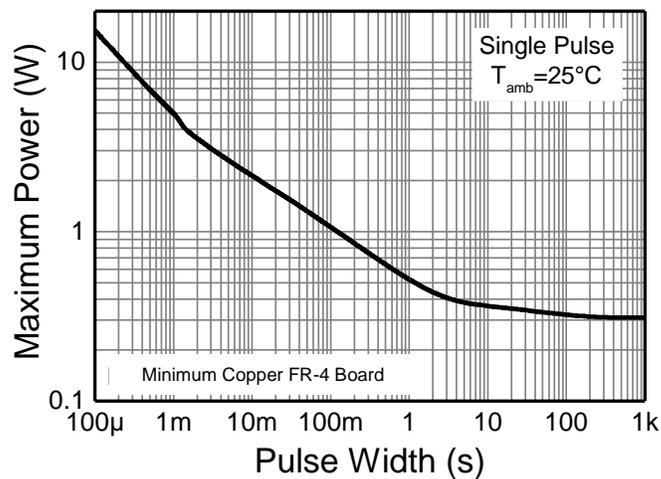
### Thermal Characteristics and Derating Information



**Derating Curve**



**Transient Thermal Impedance**



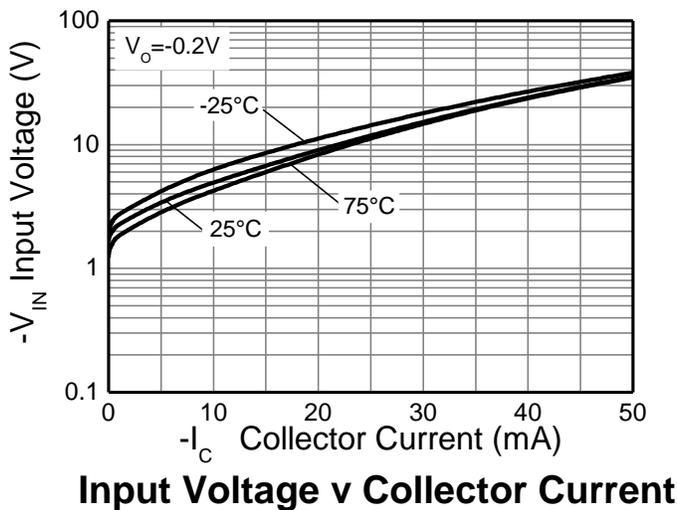
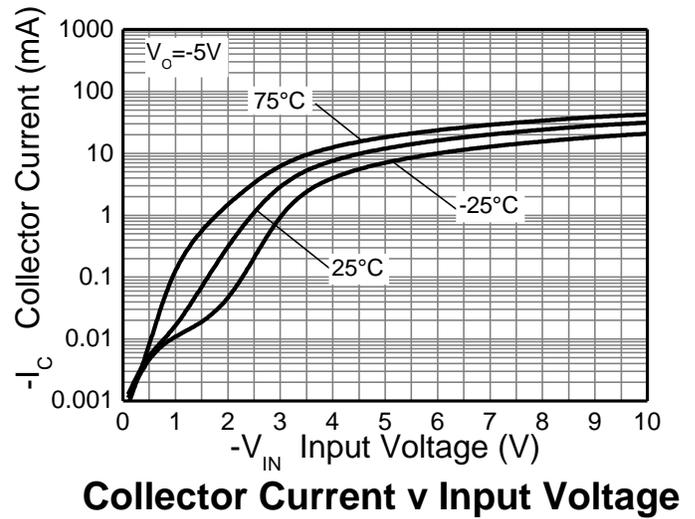
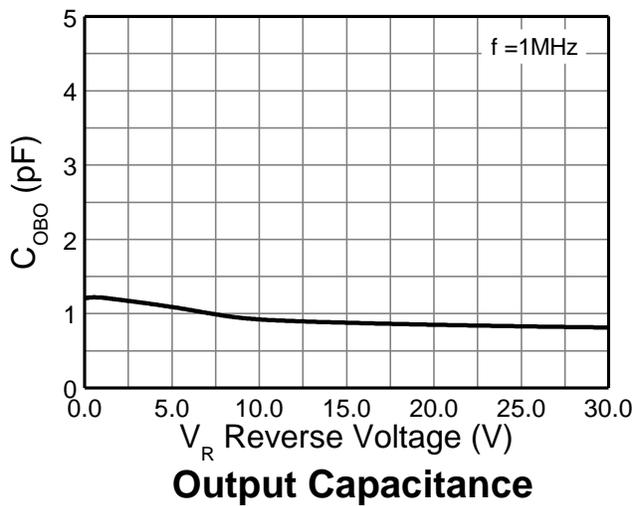
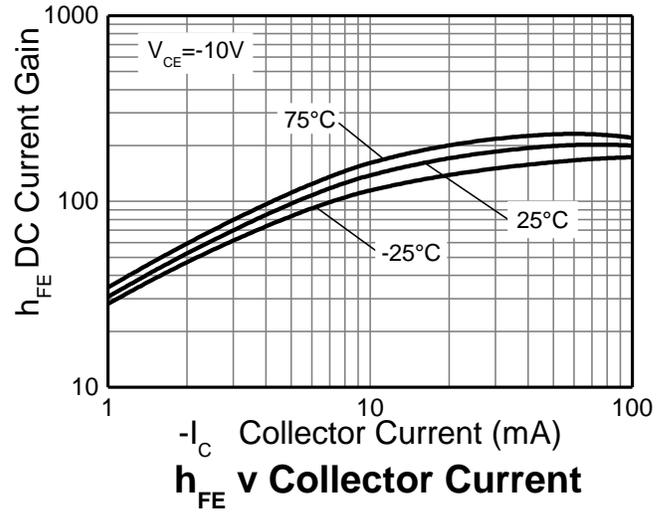
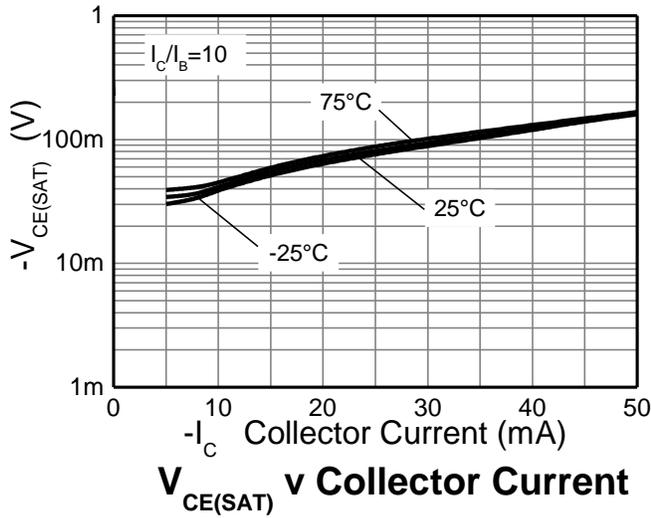
**Pulse Power Dissipation**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	$V_{I(OFF)}$ (Note 6)	-0.8	—	—	V	$V_{CC} = -5V, I_O = -100\mu A$
	$V_{I(ON)}$ (Note 7)	—	—	-4.0		$V_O = -0.3V, I_O = -2mA$
Output Voltage	$V_{O(ON)}$	—	-0.1	-0.3	V	$I_O/I_I = -10mA/-0.5mA$
Input Current	$I_I$	—	—	-0.16	mA	$V_I = -5V$
Output Current	$I_{O(OFF)}$	—	—	-0.5	$\mu A$	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	$G_I$	56	—	—	—	$V_O = -5V, I_O = -10mA$
Input Resistor Tolerance	$\Delta R_1$	-30	—	+30	%	—
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	—	+20	%	—
Gain-Bandwidth Product (Note 8)	$f_T$	—	250	—	MHz	$V_{CE} = -10V, I_E = -5mA,$ $f = 100MHz$

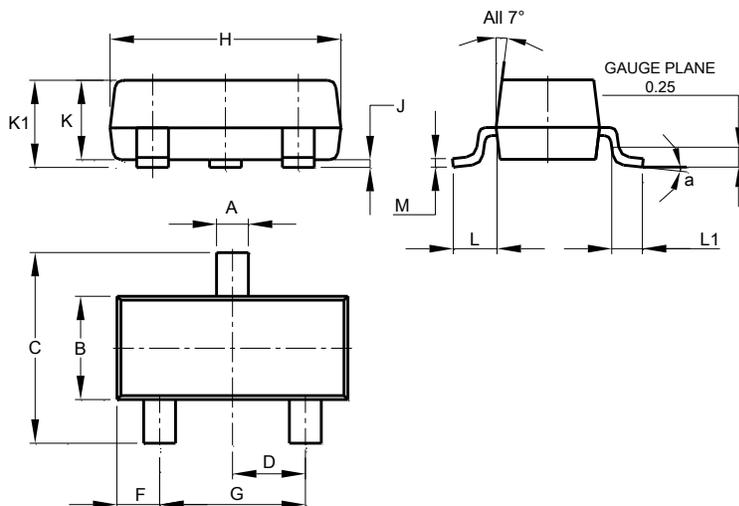
Notes: 6. Guarantees that the device will be switched OFF if the Input Voltage is less than -0.8V.  
 7. Guarantees that the device will be switched ON if the Input Voltage is more than -4V.  
 8. Transistor - For Reference Only.

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



## Package Outline Dimensions

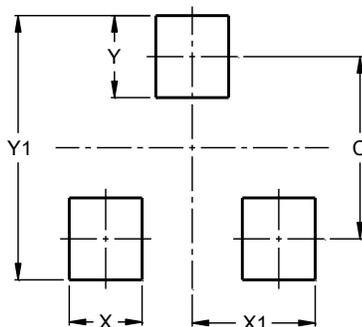
SOT23



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