



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




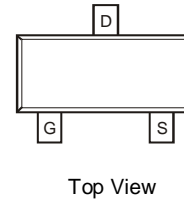
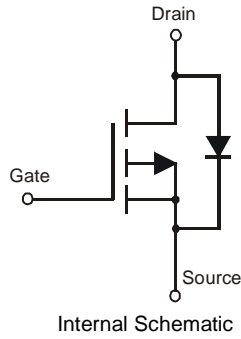
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Features

- Low $R_{DS(ON)}$:
 - $75m\Omega$ @ $V_{GS} = -4.5V$
 - $110m\Omega$ @ $V_{GS} = -2.7V$
 - $125m\Omega$ @ $V_{GS} = -2.5V$
- Low Input/Output Leakage

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 Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Terminal Connections: See Diagram Below
- Weight: 0.008 grams (Approximate)



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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current (Note 5) Continuous	I_D	$T_A = +25^\circ\text{C}$	-3.0
		$T_A = +70^\circ\text{C}$	-2.4
Pulsed Drain Current (Note 6)	I_{DM}	-15	A
Body-Diode Continuous Current (Note 5)	I_S	-2.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	1.4	W
Thermal Resistance, Junction to Ambient (Note 5); Steady-State	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	$I_D = -250\mu\text{A}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
$T_J = +25^\circ\text{C}$						
Gate-Body Leakage Current	I_{GSS}	—	—	± 100	nA	$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$
Gate Threshold Voltage	$V_{GS(TH)}$	-0.6	—	-1.25	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
On State Drain Current (Note 7)	$I_{D(ON)}$	-15	—	—	A	$V_{GS} = -4.5\text{V}, V_{DS} = -5\text{V}$
Static Drain-Source On-Resistance (Note 7)	$R_{DS(ON)}$	—	51	75	m Ω	$V_{GS} = -4.5\text{V}, I_D = -3.5\text{A}$ $V_{GS} = -2.7\text{V}, I_D = -3.0\text{A}$ $V_{GS} = -2.5\text{V}, I_D = -2.6\text{A}$
			87	110		
			99	125		
Forward Transconductance (Note 7)	g_{FS}	—	7.3	—	S	$V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Diode Forward Voltage (Note 7)	V_{SD}	—	-0.79	-1.26	V	$I_S = -1.7\text{A}, V_{GS} = 0\text{V}$
Maximum Body-Diode Continuous Current (Note 5)	I_S	—	—	1.7	A	—
DYNAMIC PARAMETERS (Note 8)						
Total Gate Charge	Q_g	—	7.3	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Gate-Source Charge	Q_{gs}	—	2.0	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Gate-Drain Charge	Q_{gd}	—	1.9	—	nC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -3.0\text{A}$
Turn-On Delay Time	$t_{D(ON)}$	—	12	—	ns	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V},$ $R_L = 10\Omega, R_G = 6\Omega$
Turn-On Rise Time	t_R	—	20	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	38	—	ns	
Turn-Off Fall Time	t_F	—	41	—	ns	
Input Capacitance	C_{iss}	—	443	—	pF	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	128	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	101	—	pF	

- Notes:
- Device mounted on 1"x1", FR-4 PC board with 2 oz. copper and test pulse width $t \leq 10\text{s}$.
 - Repetitive Rating, pulse width limited by junction temperature.
 - Test pulse width $t = 300\mu\text{s}$.
 - Guaranteed by design. Not subject to production testing.

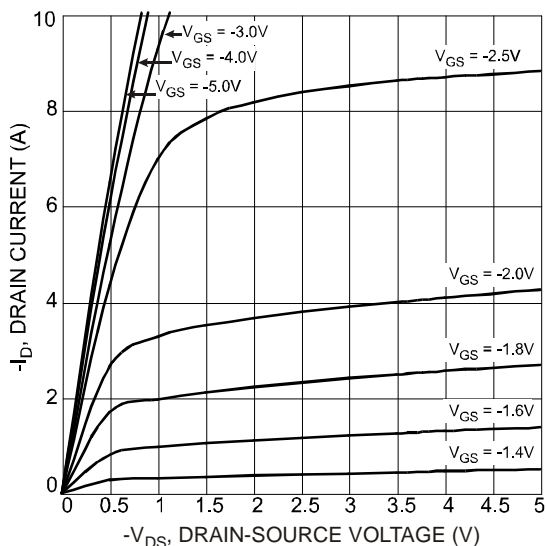


Fig. 1 Typical Output Characteristics

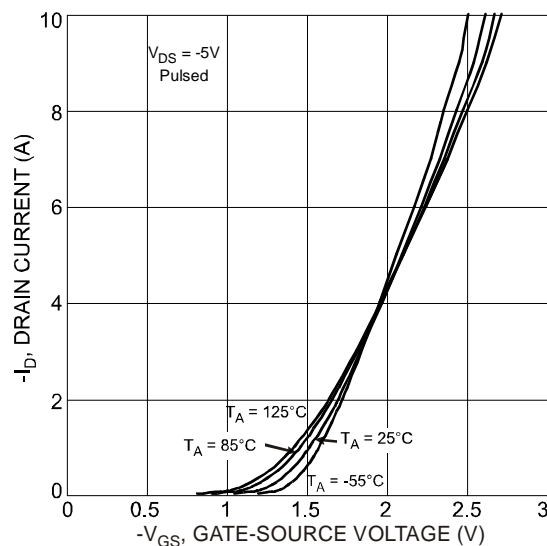


Fig. 2 Typical Transfer Characteristics

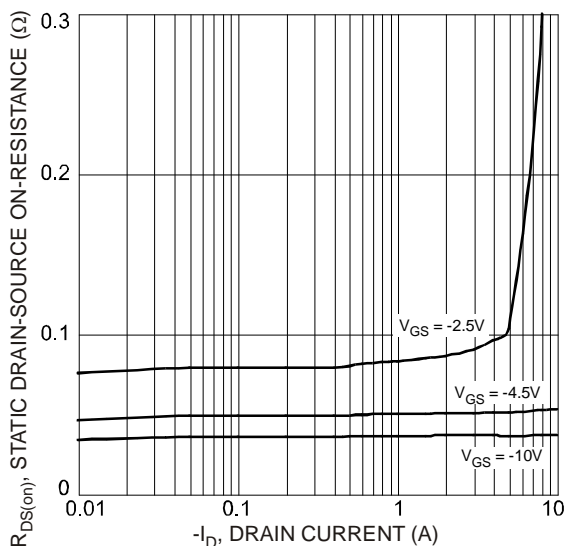


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

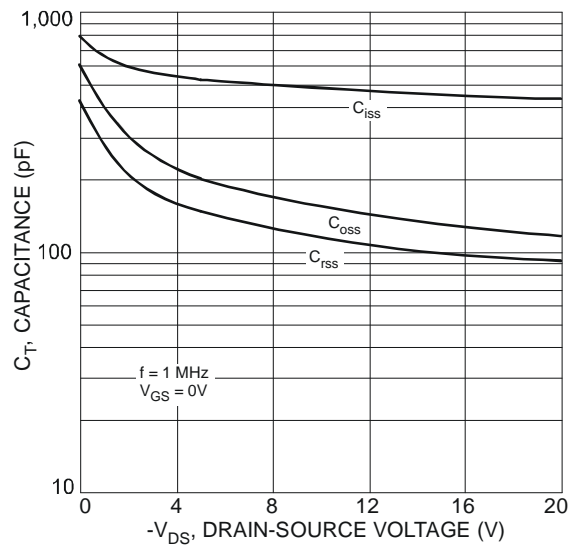


Fig. 4 Typical Total Capacitance

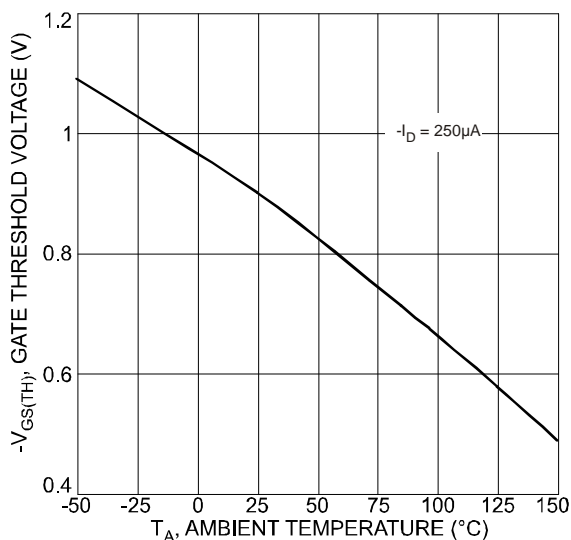


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

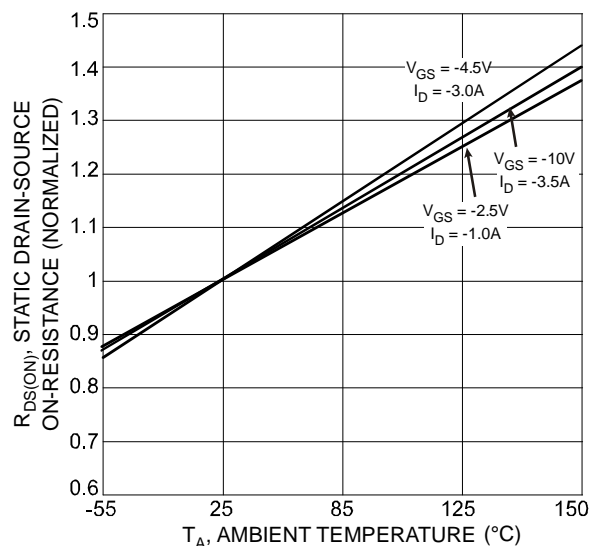


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

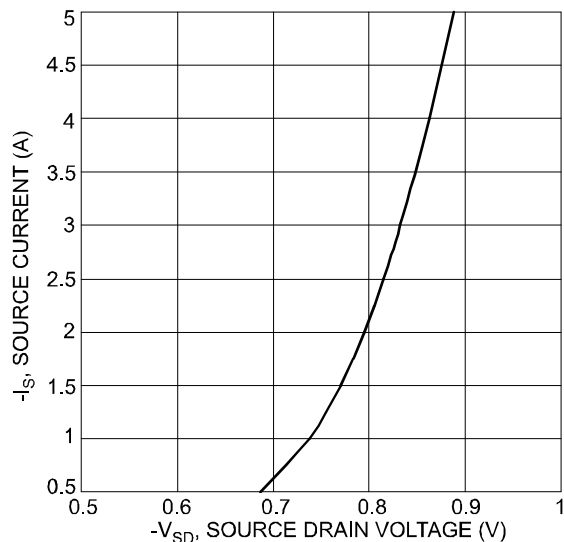


Fig. 7 Diode Forward Voltage vs. Current

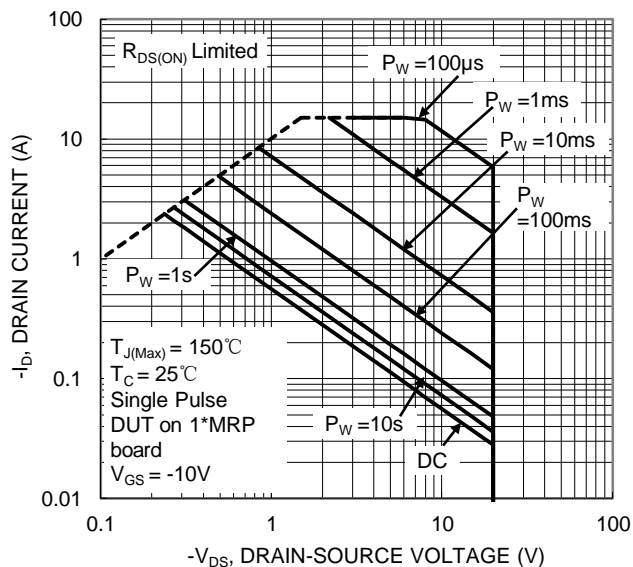


Fig. 8 SOA, Safe Operation Area

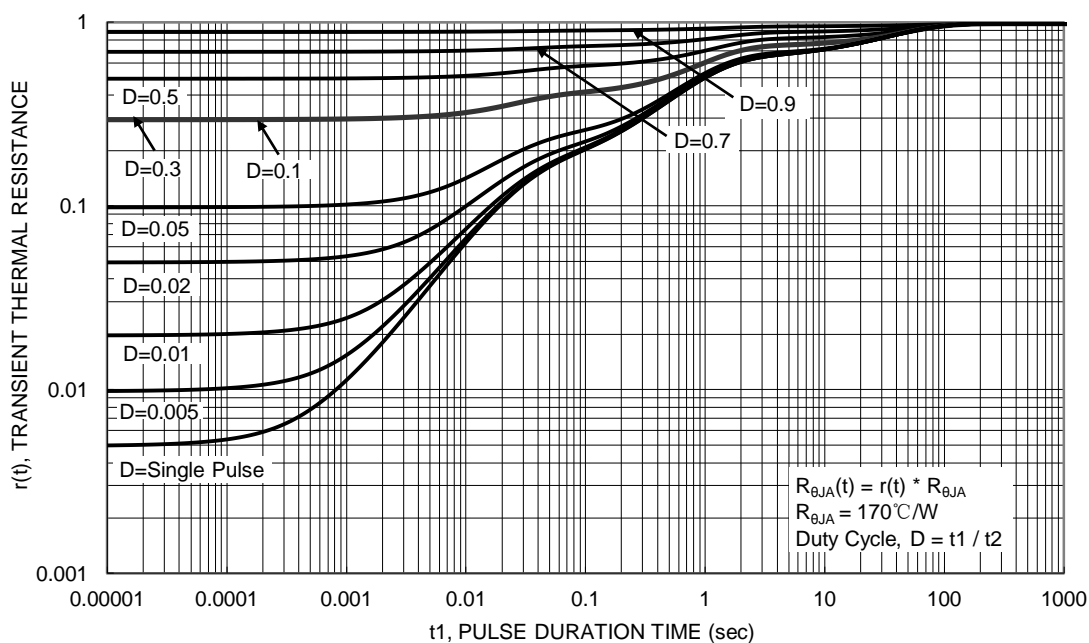
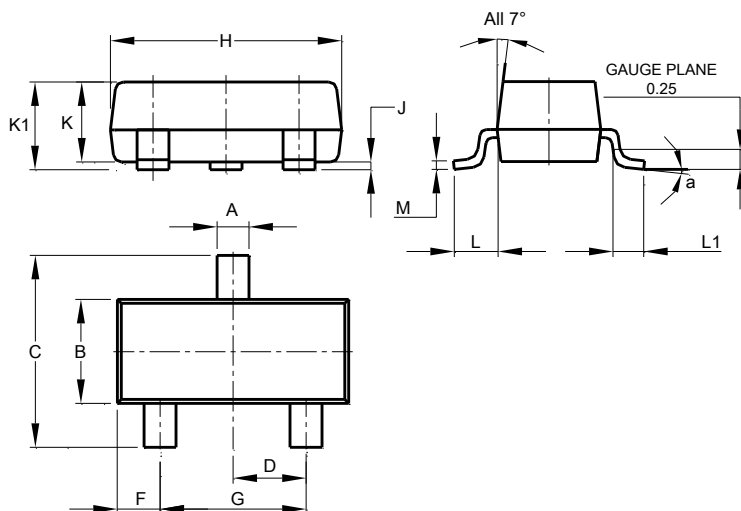


Figure 9. Transient Thermal Resistance

Package Outline Dimensions

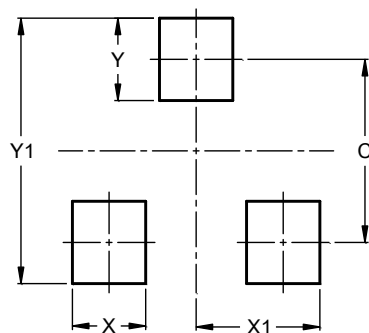
SOT23



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