



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



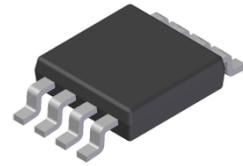
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Features

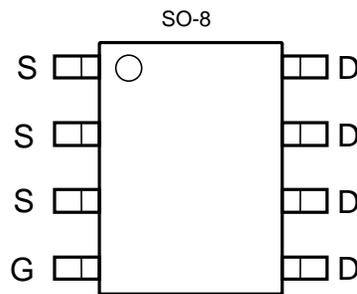
- Low On-Resistance
- $45\text{m}\Omega$ @ $V_{GS} = -10\text{V}$
- $65\text{m}\Omega$ @ $V_{GS} = -4.5\text{V}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

Mechanical Data

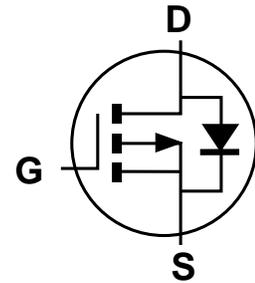
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe, Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.074 grams (Approximate)



Top View



Top View
Pin-Out



Equivalent Circuit

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DS}	-30	V
Gate-Source Voltage			V_{GS}	± 20	V
Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-7.1 -6.0	A
Pulsed Drain Current (Pulse Width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$)			I_{DM}	-20	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	2.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
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
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100 ± 800	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$ $V_{GS} = \pm 25\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1	-1.7	-2.1	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	—	45 65	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -6.0\text{A}$ $V_{GS} = -4.5\text{V}, I_D = -5.0\text{A}$
Forward Transconductance	g_{fs}	—	8	—	S	$V_{DS} = -10\text{V}, I_D = -5.3\text{A}$
Diode Forward Voltage (Note 6)	V_{SD}	-0.5	—	-1.2	V	$V_{GS} = 0\text{V}, I_S = -1.7\text{A}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	722	—	pF	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	114	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	92	—	pF	
Gate Resistance	R_G	—	3.3	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
SWITCHING CHARACTERISTICS (Note 7)						
Total Gate Charge	Q_G	—	6.8	—	nC	$V_{DS} = -15\text{V}, V_{GS} = -4.5\text{V},$ $I_D = -6\text{A}$
	Q_G	—	13.7	—	nC	
Gate-Source Charge	Q_{GS}	—	1.6	—	nC	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V},$ $I_D = -6\text{A}$
Gate-Drain Charge	Q_{GD}	—	4.18	—		
Turn-On Delay Time	$t_{D(ON)}$	—	6.4	—	ns	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V},$ $I_D = -1\text{A}, R_G = 6.0\Omega$
Rise Time	t_R	—	5.3	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	26.5	—		
Fall Time	t_F	—	14.7	—		

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to product testing

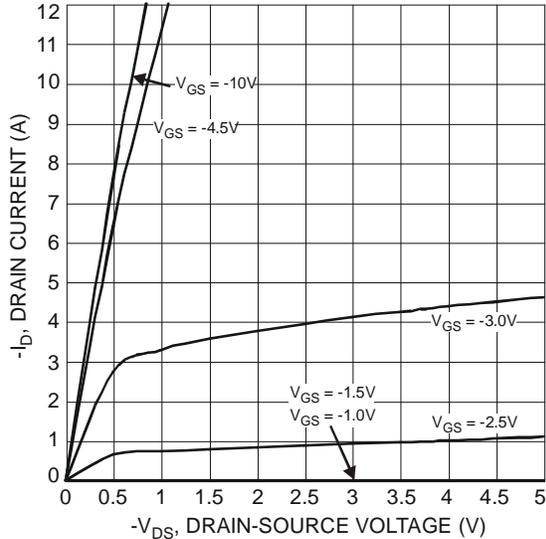


Fig. 1 Typical Output Characteristics

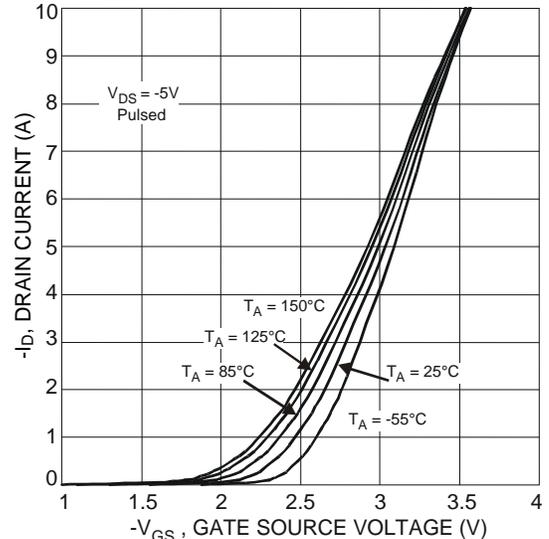


Fig. 2 Typical Transfer Characteristics

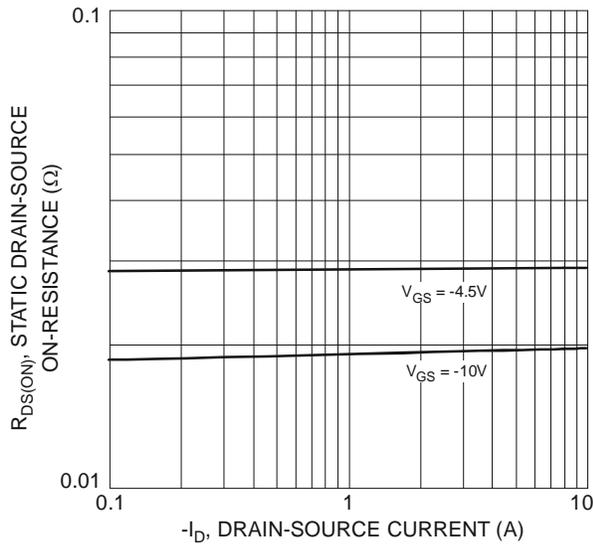


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

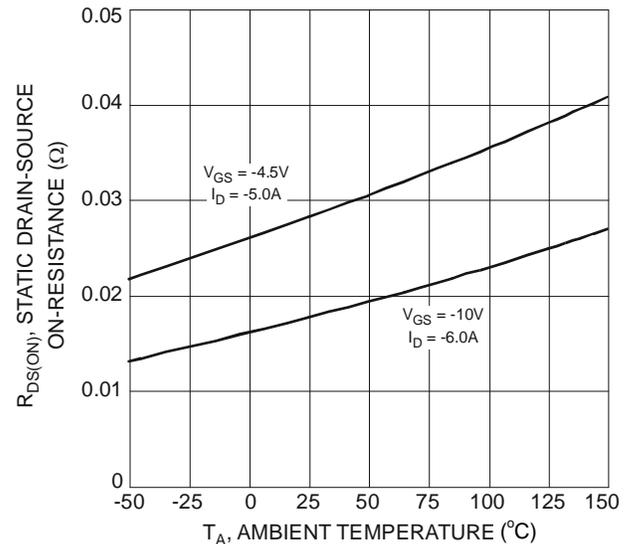


Fig. 4 Static Drain-Source On-Resistance vs. Ambient Temperature

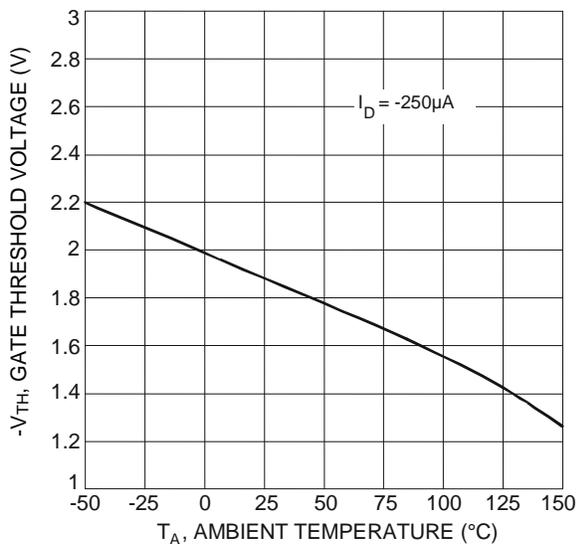


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

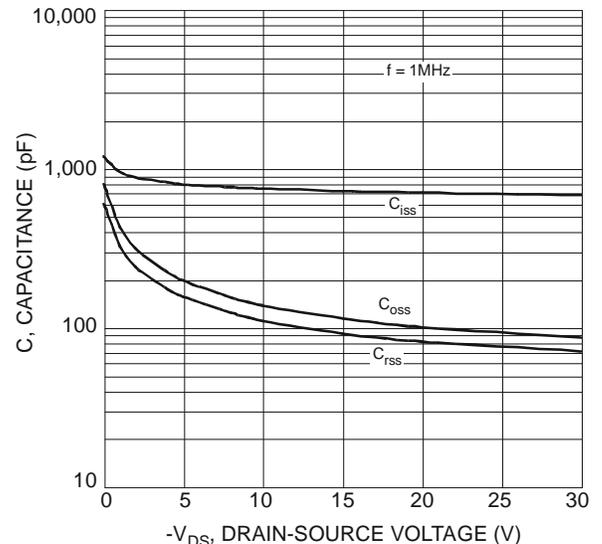


Fig. 6 Typical Total Capacitance

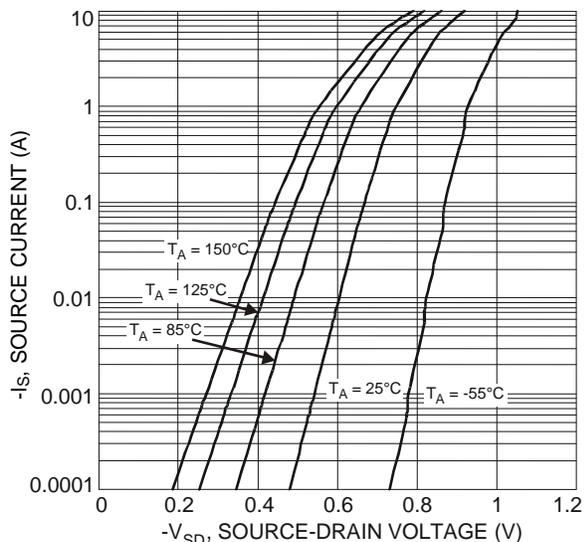


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

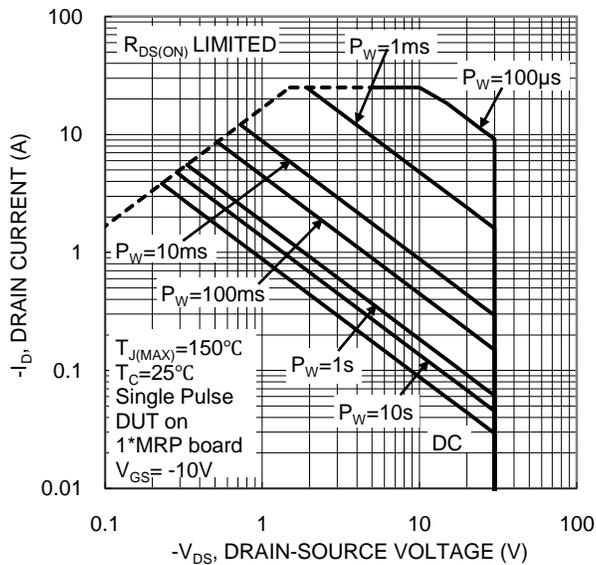


Fig. 8 SOA, Safe Operation Area

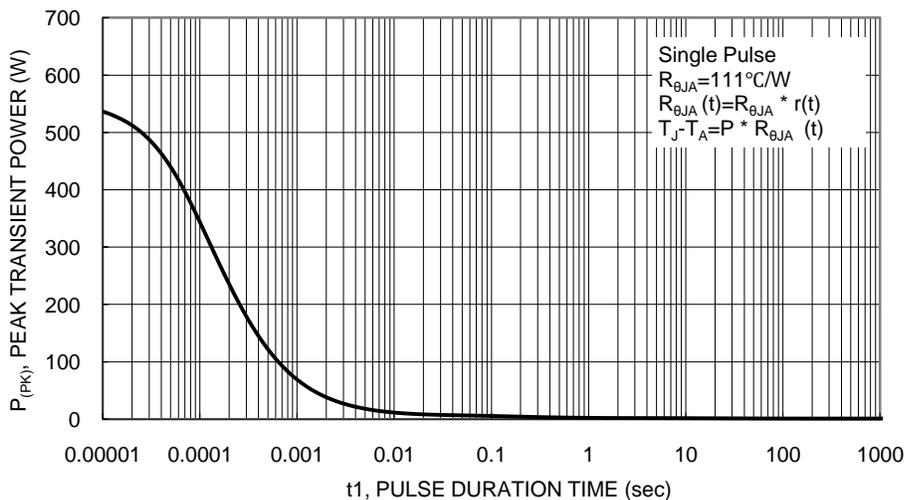


Fig. 9 Single Pulse Maximum Power Dissipation

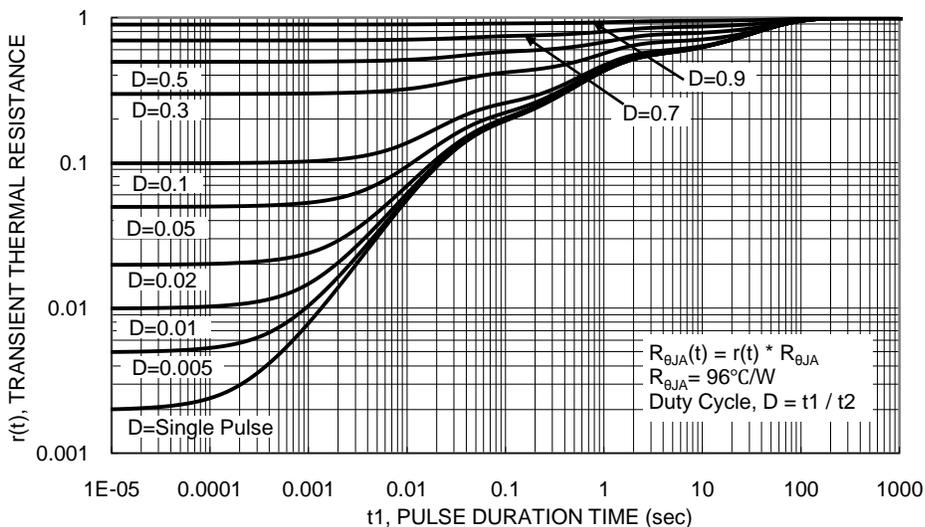
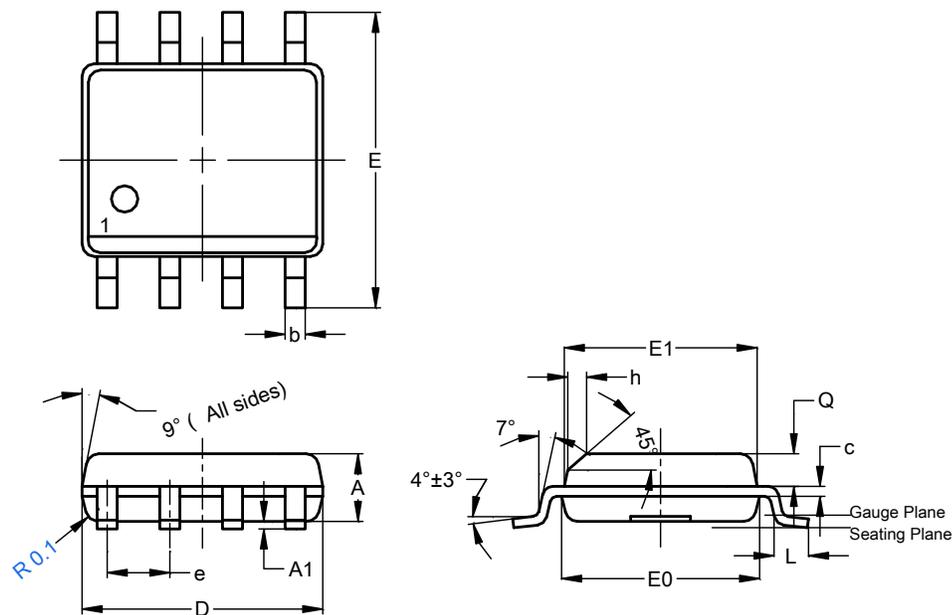


Fig. 10 Transient Thermal Resistance

Package Outline Dimensions

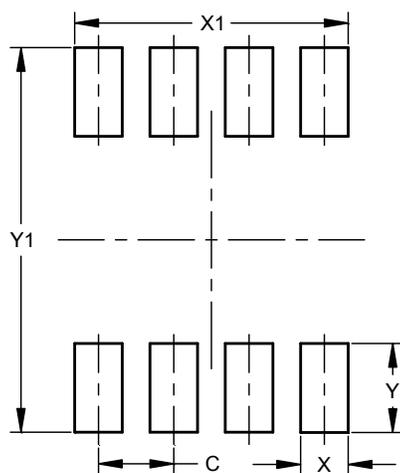
SO-8



SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

Suggested Pad Layout

SO-8



Dimensions	Value (in mm)
C	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50