优尚

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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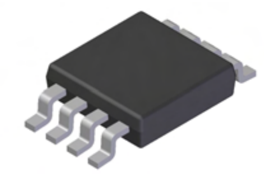
Features

- Low On-Resistance
  - 65mΩ @ V_{GS} = -10V
  - 115mΩ @ V_{GS} = -4.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

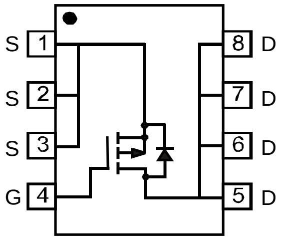
Mechanical Data

- Case: SOP-8L
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072g (approximate)



TOP VIEW

SOP-8L



TOP VIEW
Internal Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current (Note 1)	Steady State	T_A = 25°C T_A = 70°C	I_D	-5.3 -4.7	A
Pulsed Drain Current (Note 3)			I_{DM}	-20	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	2.5	W
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	50	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Device mounted on 2 oz. 1” x 1” Copper pads on 2” x 2” FR-4 PCB.
2. No purposefully added lead.
3. Pulse width ≤10µS, Duty Cycle ≤1%.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	µA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	-1	—	-2.1	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	— —	56 98	65 115	mΩ	V_{GS} = -10V, I_D = -5.3A V_{GS} = -4.5V, I_D = -4.2A
Forward Transconductance	g_{fs}	—	5.2	—	S	V_{DS} = -10V, I_D = -5.3A
Diode Forward Voltage (Note 5)	V_{SD}	-0.5	—	-1.2	V	V_{GS} = 0V, I_S = -2A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	336	—	pF	V_{DS} = -25V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	70	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	49	—	pF	
Gate Resistance	R_G	—	4.6	—	Ω	V_{DS} = 0V, V_{GS} = 0V f = 1.0MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_G	—	4.0	—	nC	V_{DS} = -15V, V_{GS} = -4.5V, I_D = -5.0A
	Q_G	—	7.8	—	nC	V_{DS} = -15V, V_{GS} = -10V, I_D = -5.0A
Gate-Source Charge	Q_{GS}	—	1.0	—		
Gate-Drain Charge	Q_{GD}	—	2.5	—		
Turn-On Delay Time	$t_{d(on)}$	—	6.0	—	ns	V_{DS} = -15V, V_{GS} = -10V, I_D = -1A, R_G = 6.0Ω
Rise Time	t_r	—	5.0	—		
Turn-Off Delay Time	$t_{d(off)}$	—	17.6	—		
Fall Time	t_f	—	9.5	—		

Notes: 5. Short duration pulse test used to minimize self-heating effect.

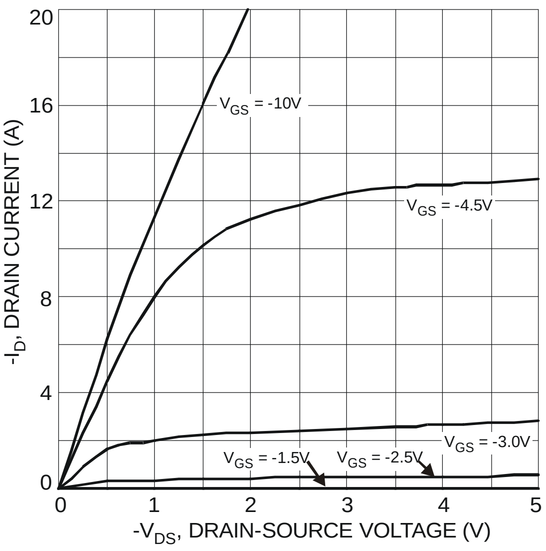


Fig. 1 Typical Output Characteristics

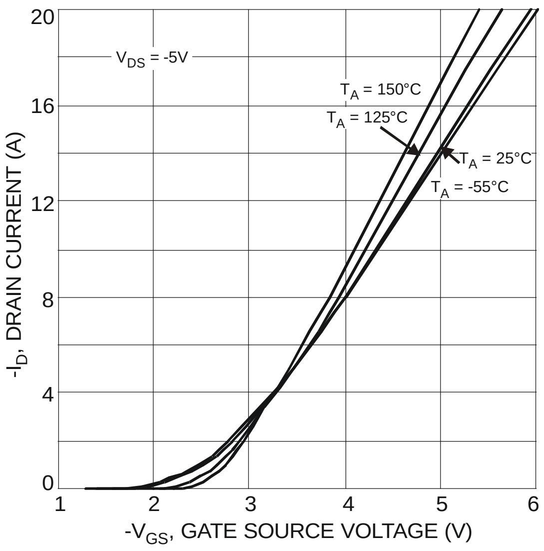


Fig. 2 Typical Transfer Characteristics

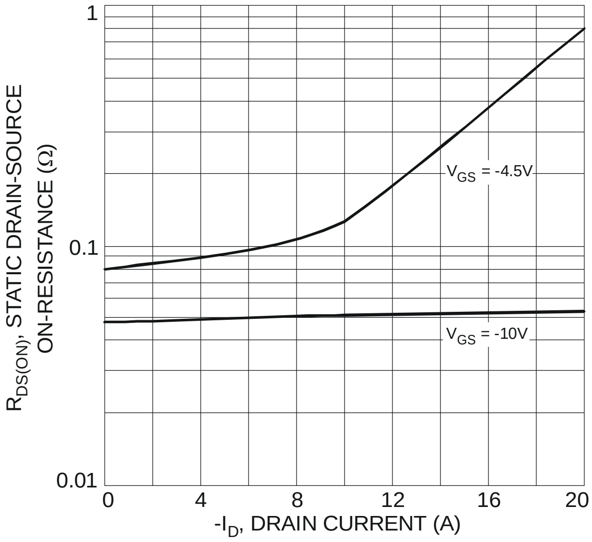


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

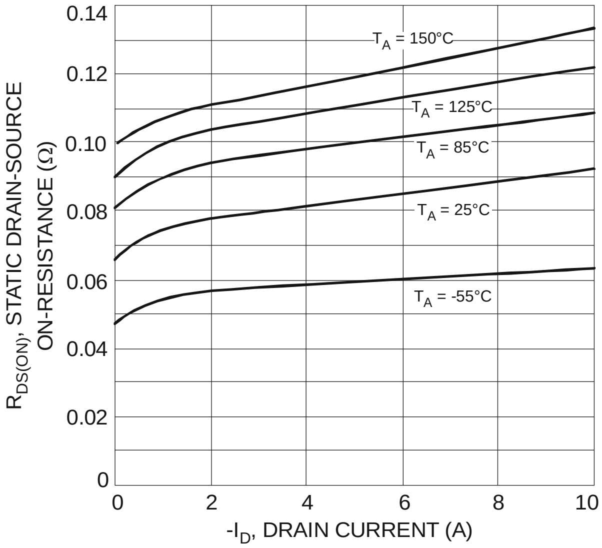


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

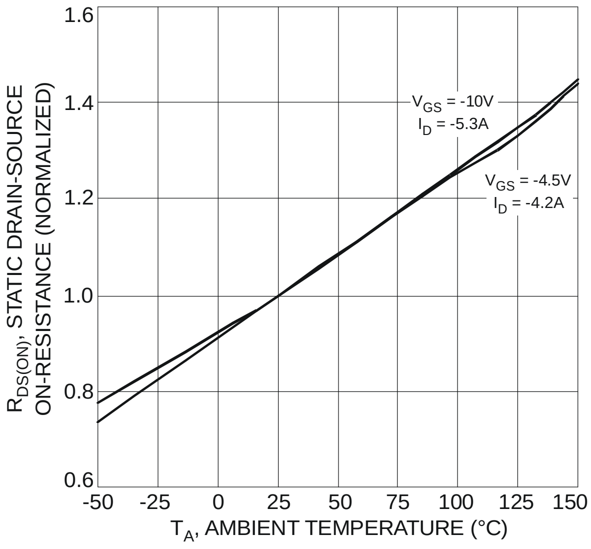


Fig. 5 On-Resistance Variation with Temperature

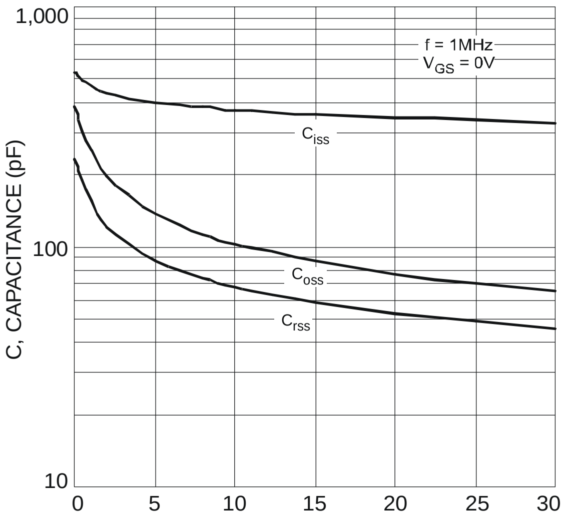


Fig. 6 Typical Capacitance

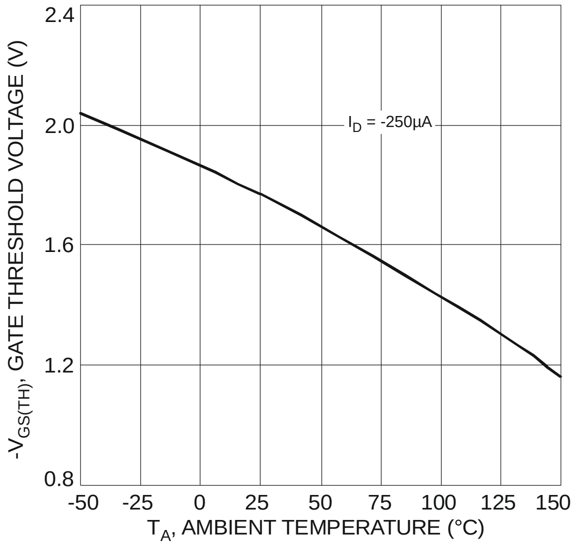


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

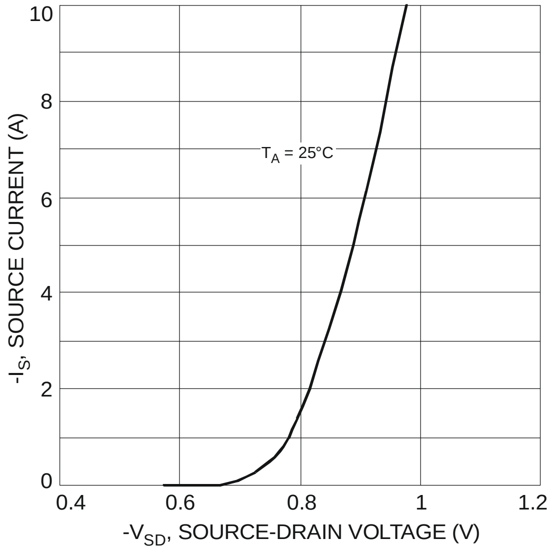


Fig. 8 Diode Forward Voltage vs. Current

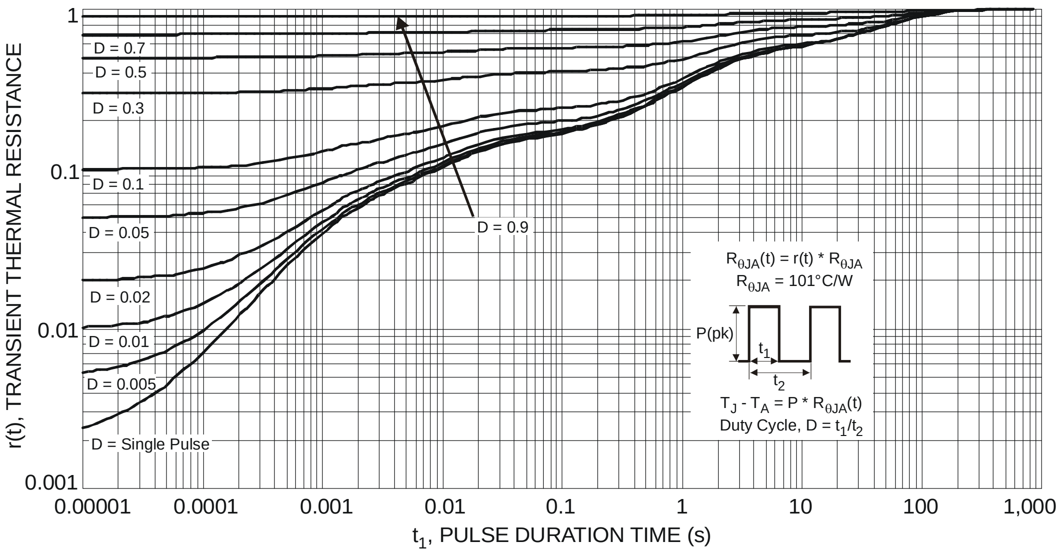
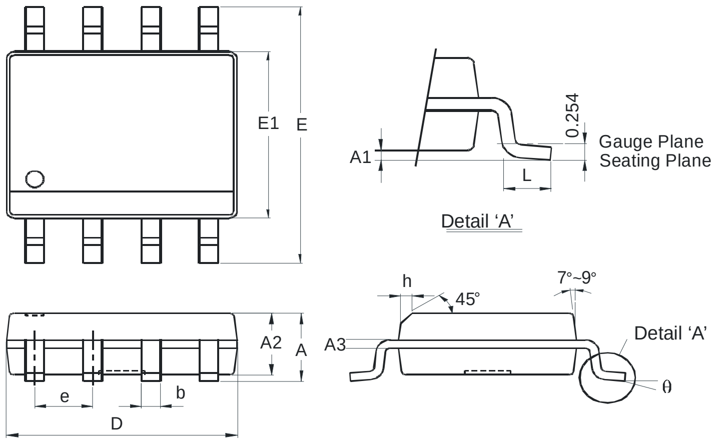


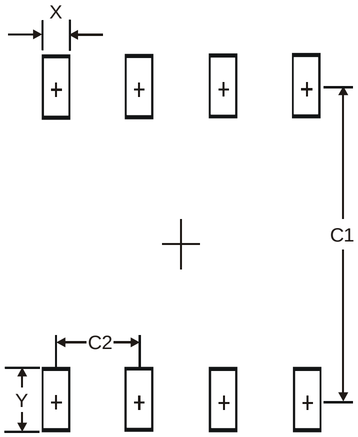
Fig. 9 Transient Thermal Response

Package Outline Dimensions



SOP-8L		
Dim	**Min**	**Max**
A	-	1.75
A1	0.08	0.25
A2	1.40	1.50
A3	0.20 Typ	
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.80	3.90
e	1.27 Typ	
h	-	0.35
L	0.60	0.80
θ	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27