

## Features

- Low On-Resistance
  - 13mΩ @  $V_{GS} = -10V$
  - 16mΩ @  $V_{GS} = -4.5V$
  - 22mΩ @  $V_{GS} = -2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

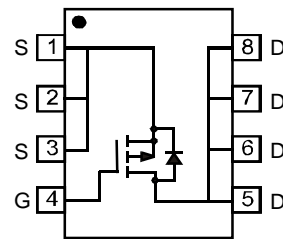
## Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- 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)

SO-8



TOP VIEW


 TOP VIEW  
Internal Schematic

## Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			$V_{DSS}$	-20	V
Gate-Source Voltage			$V_{GSS}$	$\pm 12$	V
Drain Current (Note 1)	Steady State	$T_A = 25^\circ C$	$I_D$	-10	A
		$T_A = 70^\circ C$		-8	
Pulsed Drain Current (Note 3)			$I_{DM}$	-35	A

## Thermal Characteristics

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

- Notes:
1. Device mounted on 2 oz. Copper pads on FR-4 PCB.
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu S$ , Duty Cycle  $\leq 1\%$ .
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-20	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-1	μA	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.6	0.77	-1.1	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	—	8	13	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A
		—	11	16		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -9A
		—	17	22		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -8A
Forward Transconductance	g <sub>fs</sub>	—	28	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -10A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	-0.5	0.68	-1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -3A
<b>DYNAMIC CHARACTERISTICS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	—	2444	—	pF	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	594	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	556	—	pF	
Gate Resistance	R <sub>G</sub>	—	2.0	—	Ω	V <sub>GS</sub> = 0V V <sub>DS</sub> = 0V, f = 1MHz
<b>SWITCHING CHARACTERISTICS (Note 6)</b>						
Total Gate Charge	Q <sub>g</sub>	—	28.1 56.9	—	nC	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -10A V <sub>DS</sub> = -10V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A
Gate-Source Charge	Q <sub>gs</sub>	—	3.4	—		V <sub>DS</sub> = -10V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A
Gate-Drain Charge	Q <sub>gd</sub>	—	11.9	—		V <sub>DS</sub> = -10V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A
Turn-On Delay Time	t <sub>D(on)</sub>	—	7.5	15	ns	V <sub>DD</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V, R <sub>GEN</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	9.9	20		
Turn-Off Delay Time	t <sub>D(off)</sub>	—	108.0	216		
Turn-Off Fall Time	t <sub>f</sub>	—	76.5	153		

Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Guaranteed by design. Not subject to product testing.

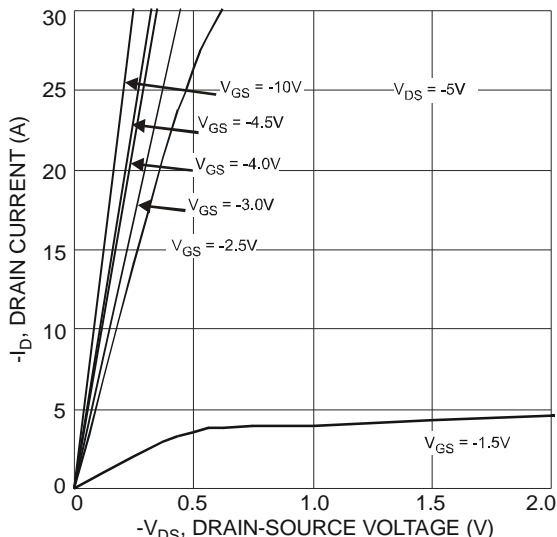


Fig. 1 Typical Output Characteristic

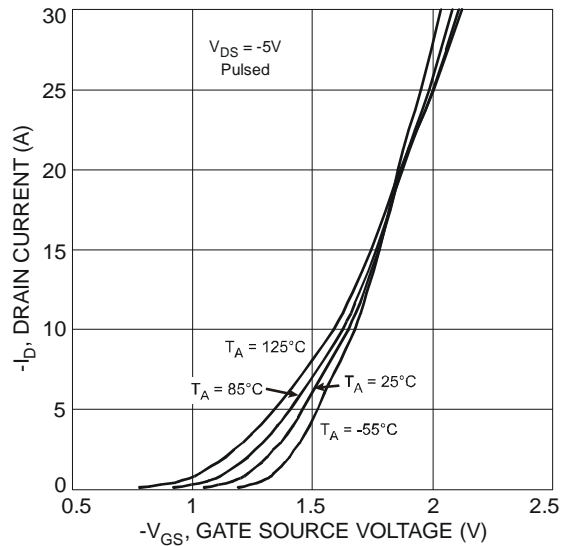


Fig. 2 Typical Transfer Characteristics

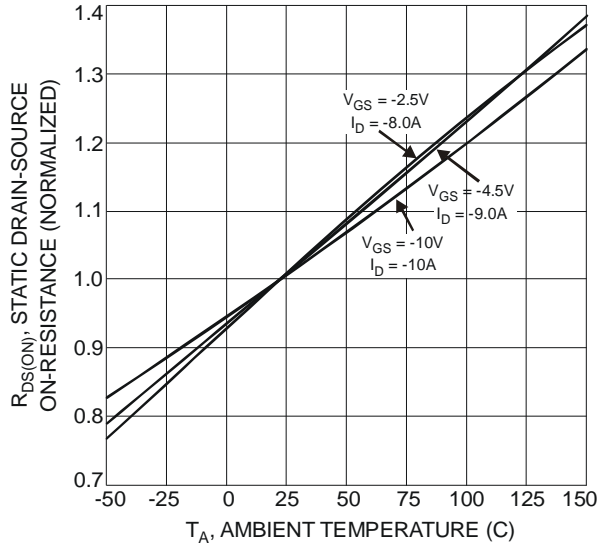


Fig. 3 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

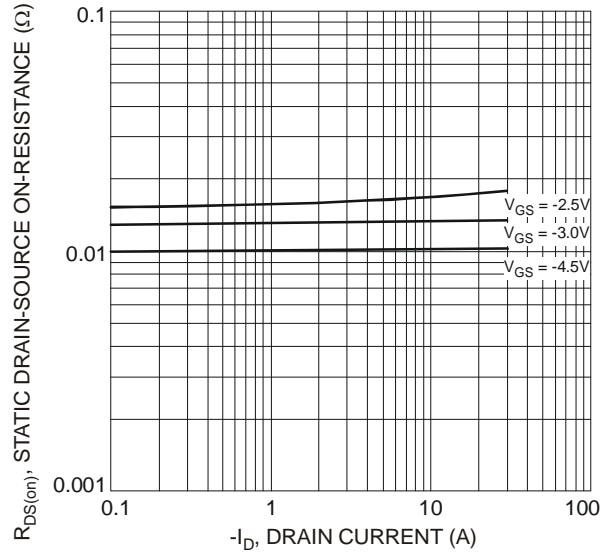


Fig. 4 On-Resistance vs. Drain Current and Gate Voltage

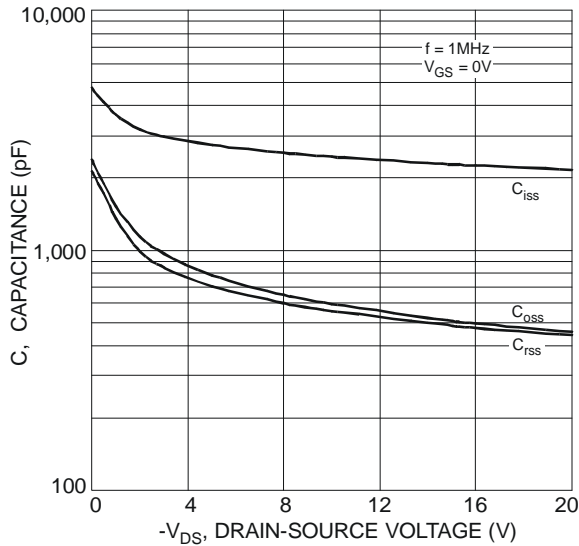


Fig. 5 Typical Total Capacitance

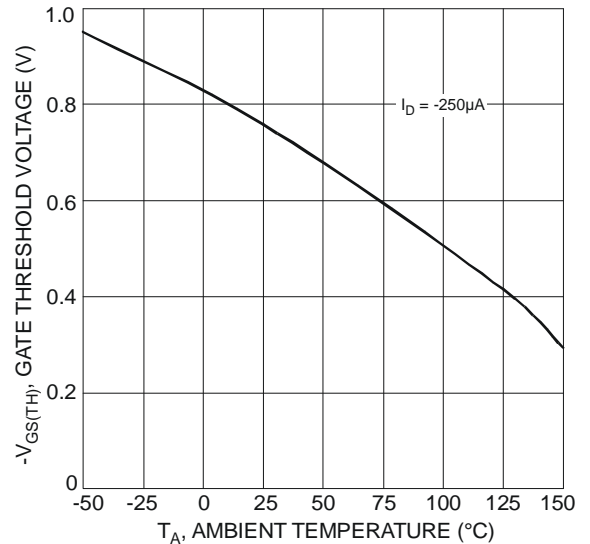


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

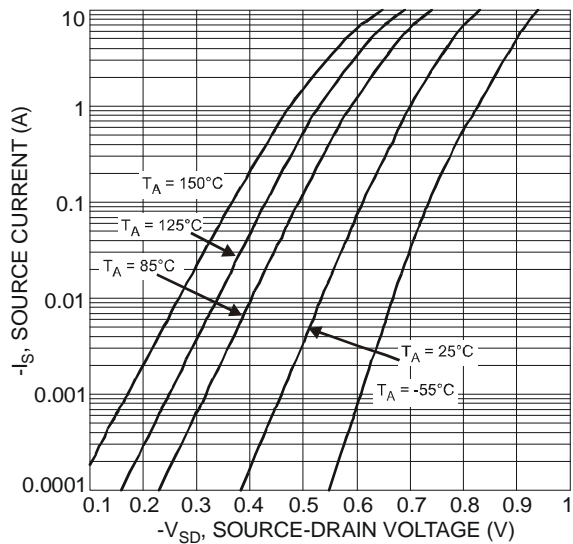


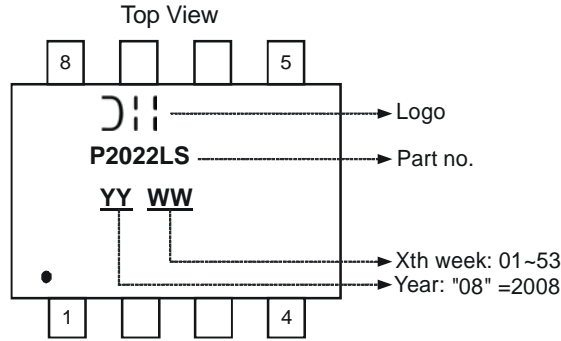
Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

### Ordering Information (Note 7)

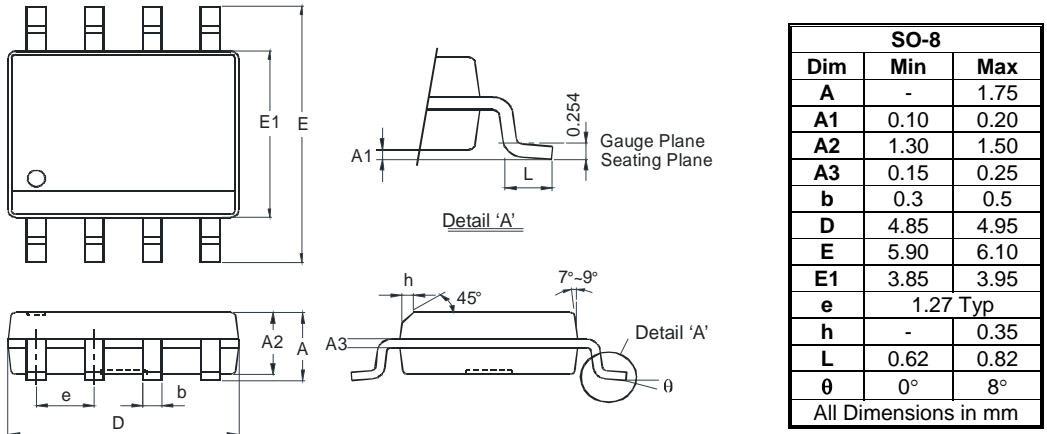
Part Number	Case	Packaging
DMP2022LSS-13	SO-8	2500/Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

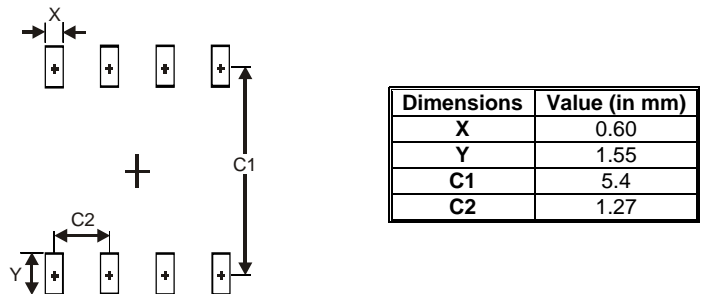
### Marking Information



### Package Outline Dimensions



### Suggested Pad Layout



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