

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**

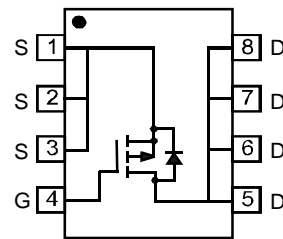
Mechanical Data

- 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}	± 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.

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

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

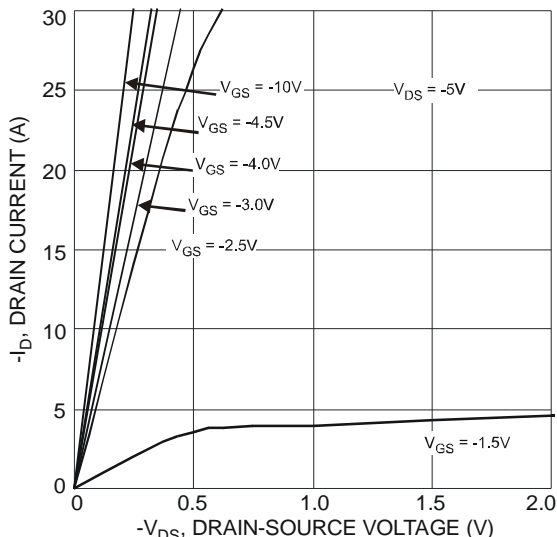


Fig. 1 Typical Output Characteristic

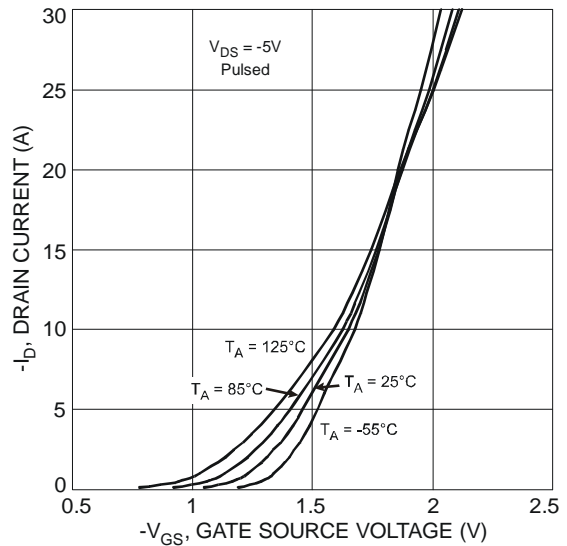


Fig. 2 Typical Transfer Characteristics

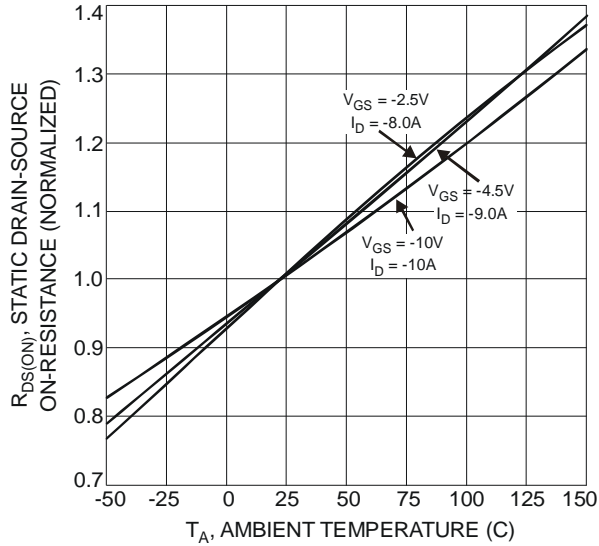


Fig. 3 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

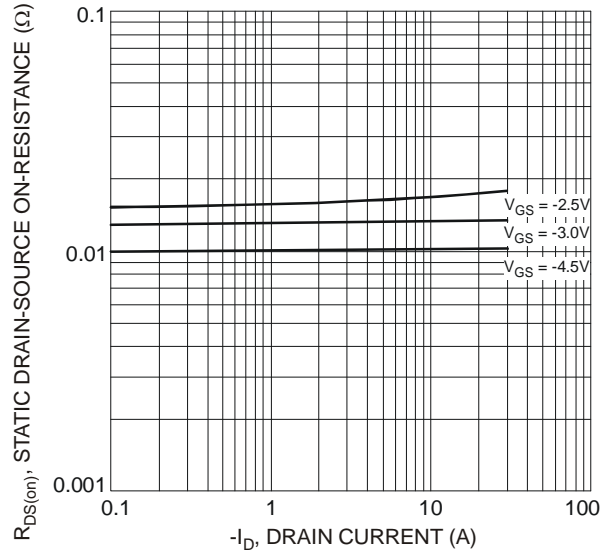


Fig. 4 On-Resistance vs. Drain Current and Gate Voltage

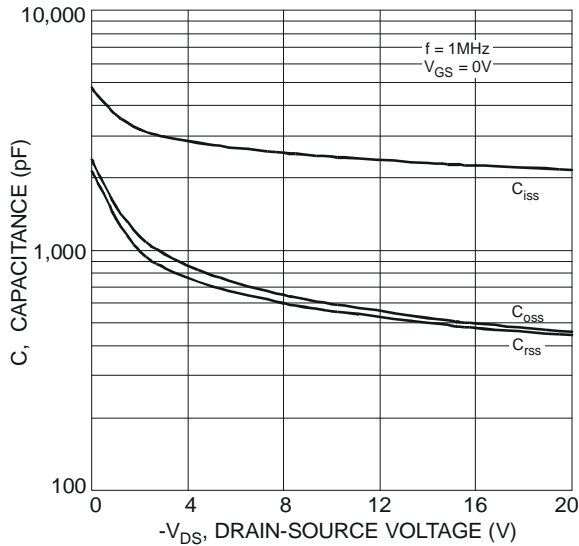


Fig. 5 Typical Total Capacitance

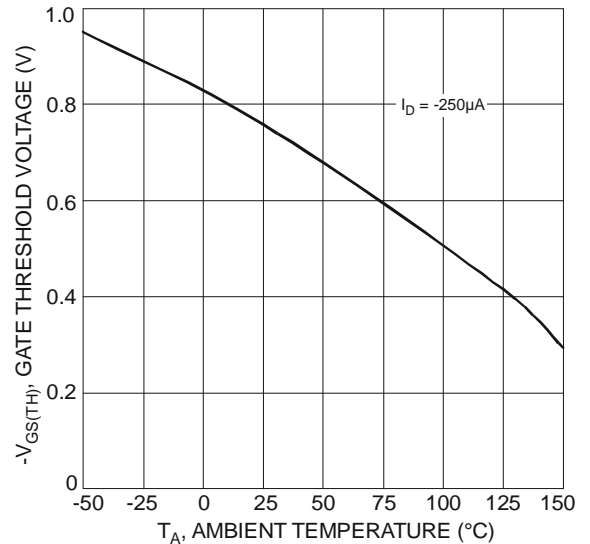


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

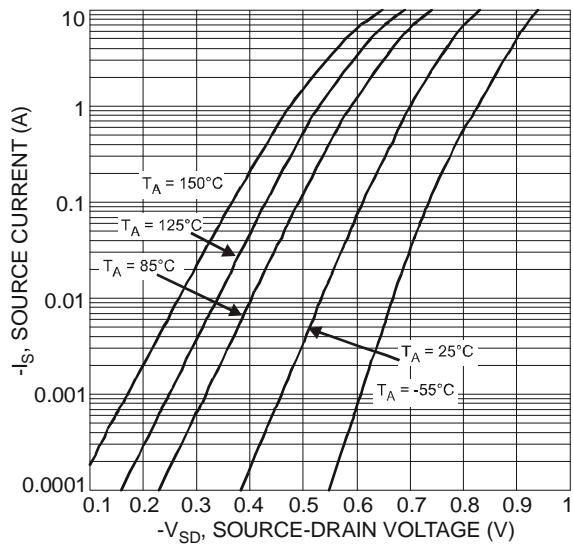


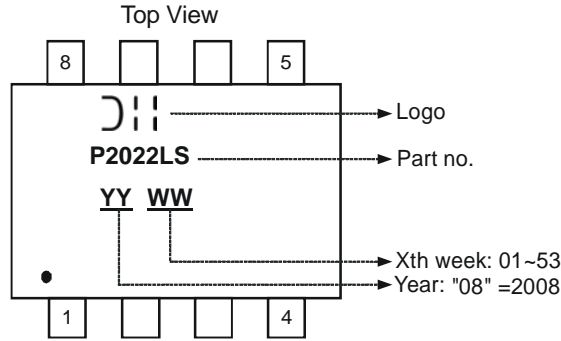
Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

Ordering Information (Note 7)

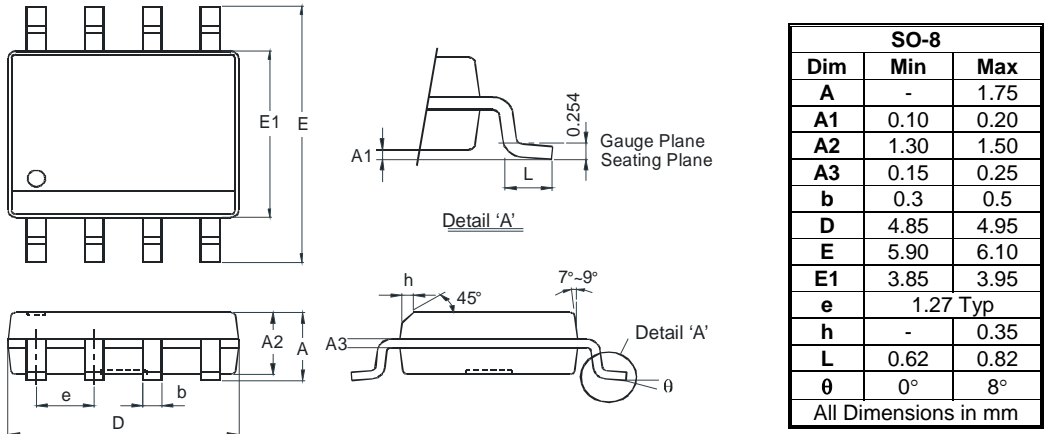
Part Number	Case	Packaging
DMP2022LSS-13	SO-8	2500/Tape & Reel

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

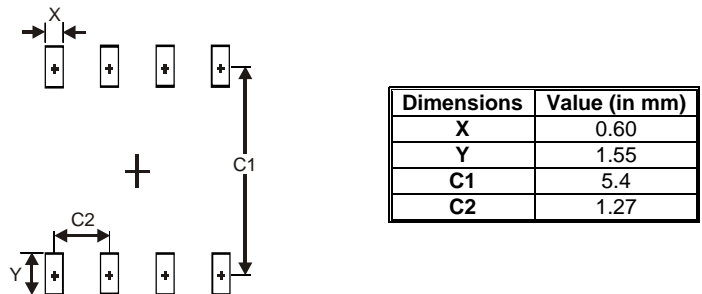
Marking Information



Package Outline Dimensions



Suggested Pad Layout



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