



**THE DATASHEET OF
DMP2022LSS-13**



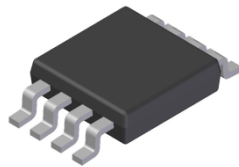
Features

- 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
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DMP2022LSSQ](#))**

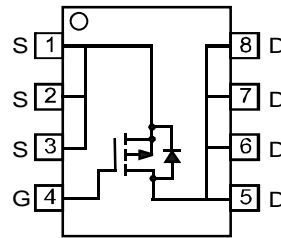
Mechanical Data

- 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 Leadframe. Solderable per MIL-STD-202, Method 208 **Ⓔ3**
- Weight: 0.072g (Approximate)

SO-8



Top View

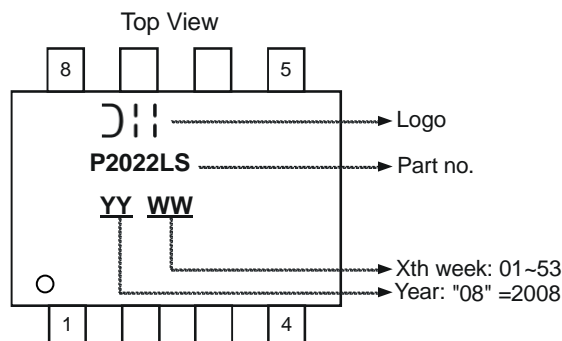

 Top View
Internal Schematic

Ordering Information (Note 4)

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

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	± 12	V
Drain Current (Note 5)	Steady State	$T_A = +25^\circ\text{C}$	I_D	-10	A
		$T_A = +70^\circ\text{C}$		-8	
Pulsed Drain Current (Note 6)			I_{DM}	-90	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	2.5	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes: 5. Device mounted on 2 oz. Copper pads on FR-4 PCB.
6. Pulse width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.6	-0.77	-1.1	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	8	13	m Ω	$V_{GS} = -10\text{V}, I_D = -10\text{A}$
		—	11	16		$V_{GS} = -4.5\text{V}, I_D = -9\text{A}$
		—	17	22		$V_{GS} = -2.5\text{V}, I_D = -8\text{A}$
		—	—	—		—
Forward Transconductance	g_{fs}	—	28	—	S	$V_{DS} = -10\text{V}, I_D = -10\text{A}$
Diode Forward Voltage (Note 7)	V_{SD}	-0.5	-0.68	-1.2	V	$V_{GS} = 0\text{V}, I_S = -3\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	2444	—	pF	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	594	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	556	—	pF	
Gate Resistance	R_G	—	2.0	—	Ω	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$
SWITCHING CHARACTERISTICS (Note 8)						
Total Gate Charge	Q_g	—	28.1	—	nC	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V}, I_D = -10\text{A}$
			56.9	—		$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -10\text{A}$
Gate-Source Charge	Q_{gs}	—	3.4	—	nC	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -10\text{A}$
Gate-Drain Charge	Q_{gd}	—	11.9	—		$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -10\text{A}$
Turn-On Delay Time	$t_{D(ON)}$	—	7.5	15		ns
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: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

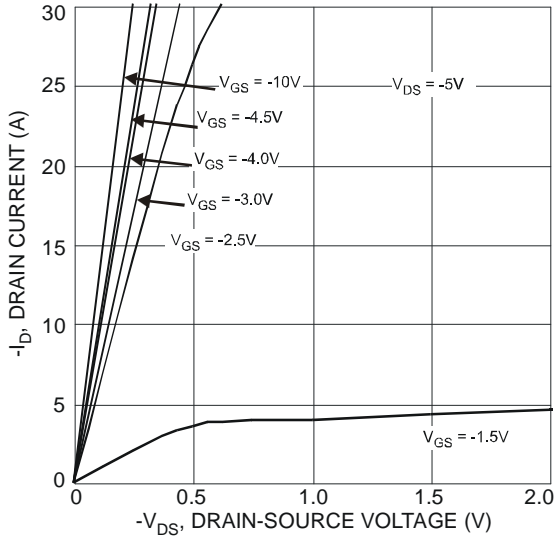


Fig. 1 Typical Output Characteristic

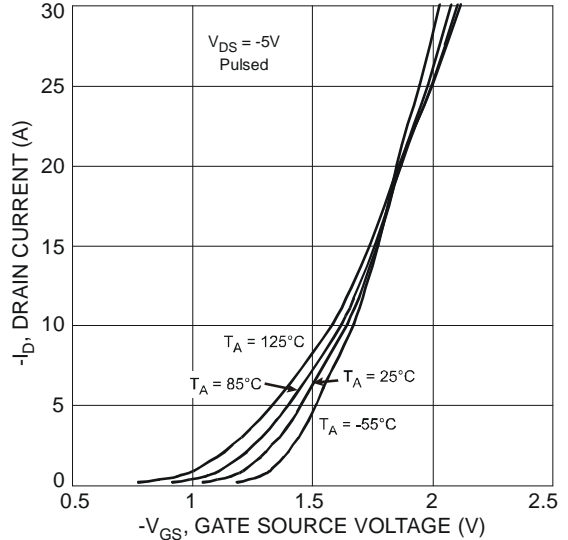


Fig. 2 Typical Transfer Characteristics

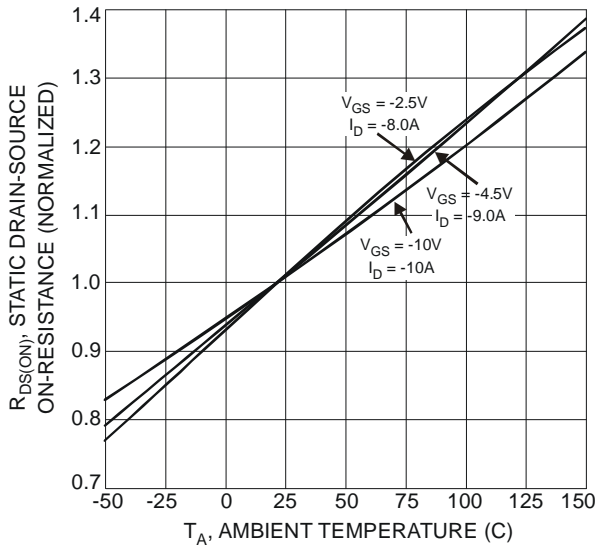


Fig. 3 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

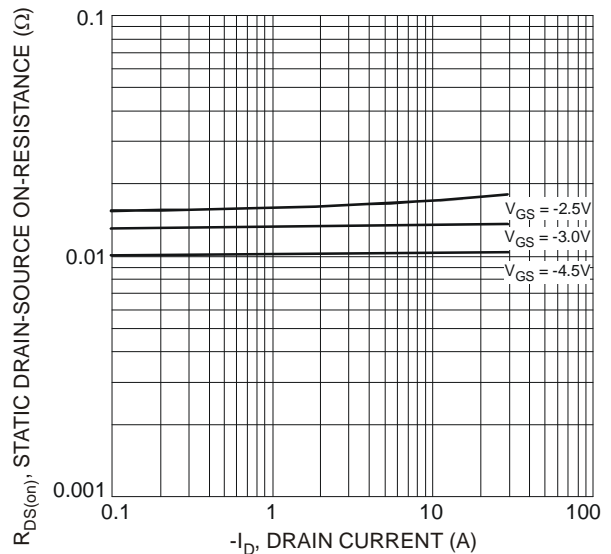


Fig. 4 On-Resistance vs. Drain Current and Gate Voltage

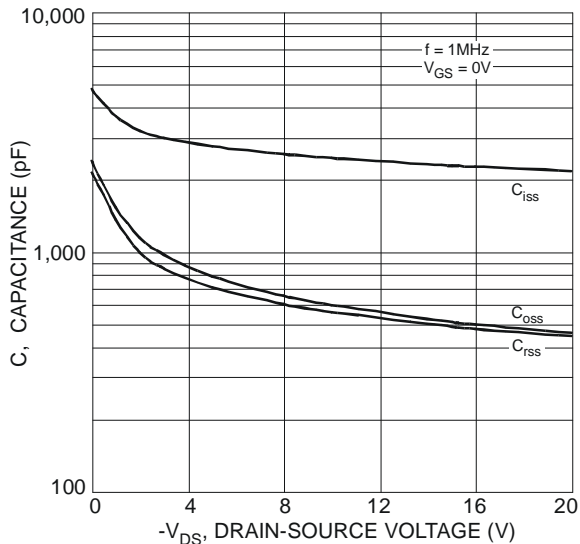


Fig. 5 Typical Total Capacitance

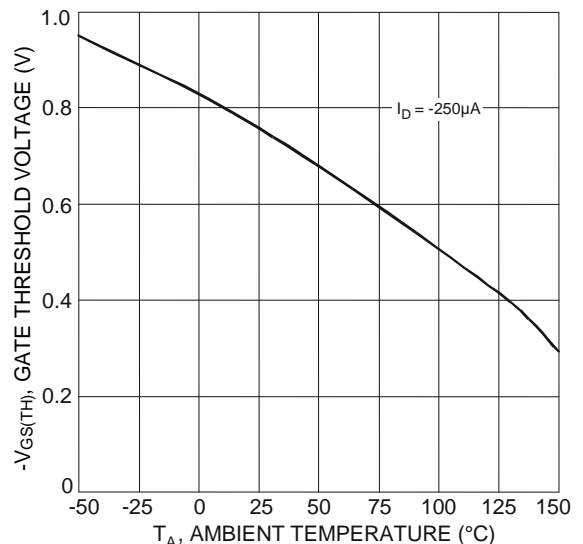


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

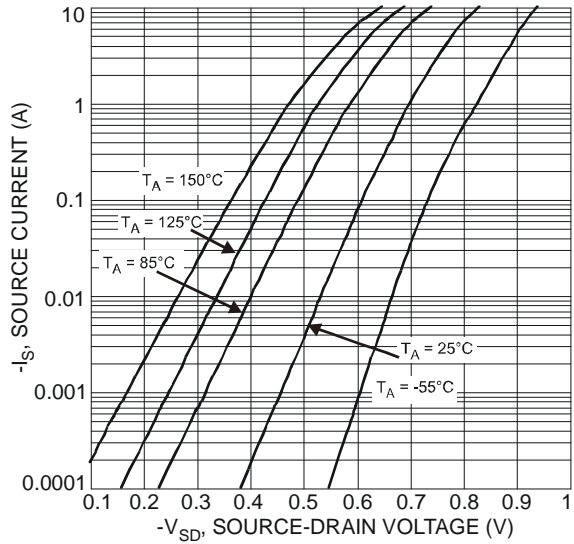


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

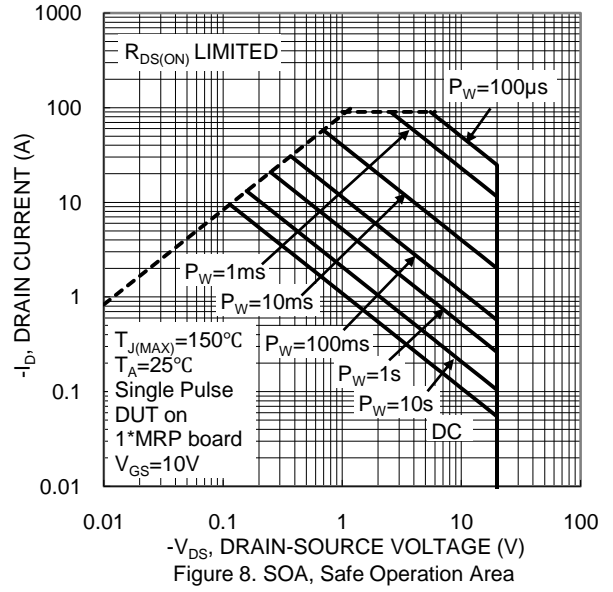
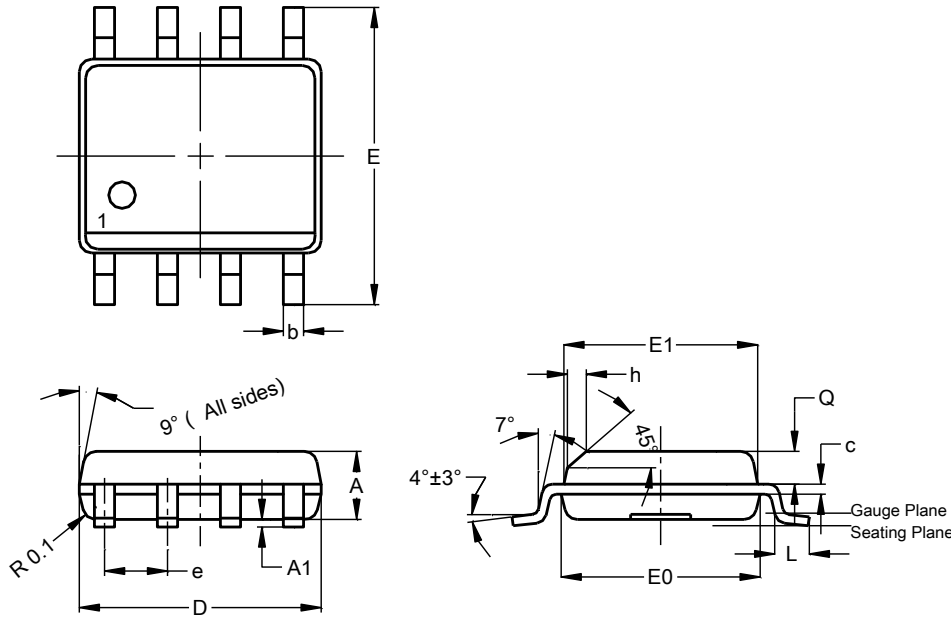


Figure 8. SOA, Safe Operation Area

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SO-8

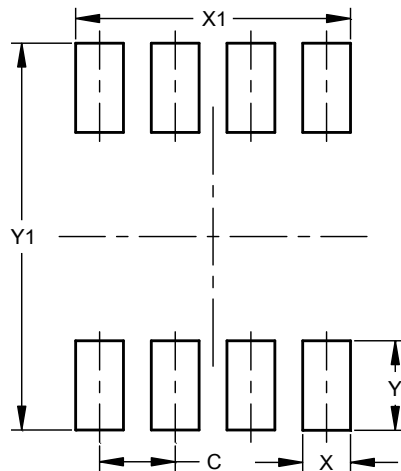


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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

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