

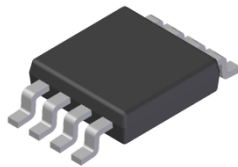
Features

- 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](#))**

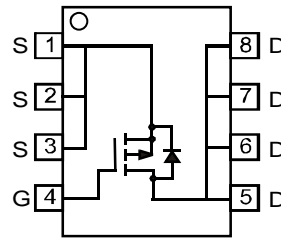
Mechanical Data

- 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 (e3)
- Weight: 0.072g (Approximate)

SO-8



Top View

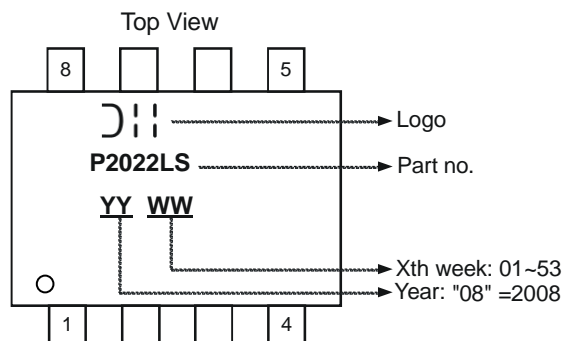

 Top View
Internal Schematic

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°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°C | I _D | -10 | A |
| | | T _A = +70°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 _{θJA} | 50 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

- Notes: 5. Device mounted on 2 oz. Copper pads on FR-4 PCB.
6. Pulse width ≤10μs, Duty Cycle ≤1%.

Electrical Characteristics (@T_A = +25°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} = 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 7) | | | | | | | | |
| 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 7) | V _{SD} | -0.5 | -0.68 | -1.2 | V | V _{GS} = 0V, I _S = -3A | | |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | | | |
| 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 8) | | | | | | | | |
| Total Gate Charge | Q _g | — | 28.1 | — | nC | V _{DS} = -10V, V _{GS} = -4.5V, I _D = -10A V _{DS} = -10V, V _{GS} = -10V, I _D = -10A V _{DS} = -10V, V _{GS} = -10V, I _D = -10A V _{DS} = -10V, V _{GS} = -10V, I _D = -10A | | |
| | | | 56.9 | | | | | |
| Gate-Source Charge | Q _{gs} | — | 3.4 | — | | | | |
| Gate-Drain Charge | Q _{gd} | — | 11.9 | | | | | |
| 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: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

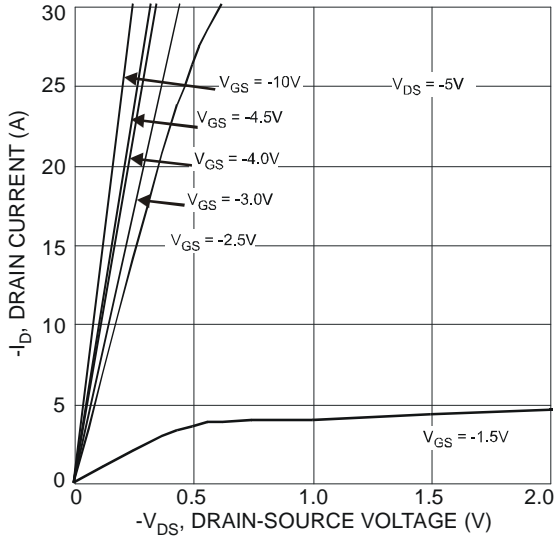


Fig. 1 Typical Output Characteristic

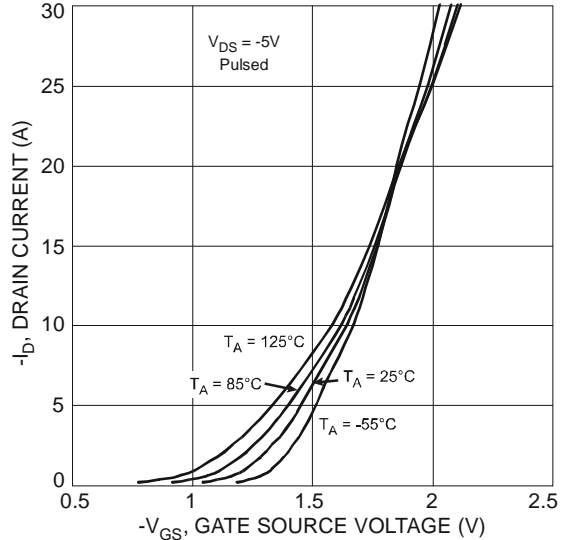


Fig. 2 Typical Transfer Characteristics

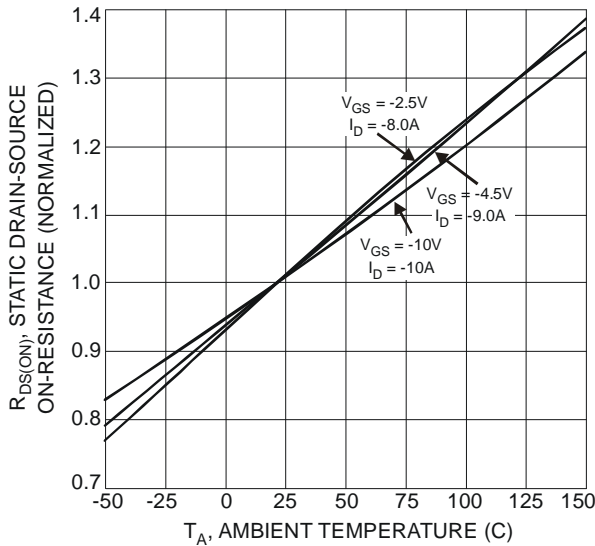


Fig. 3 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

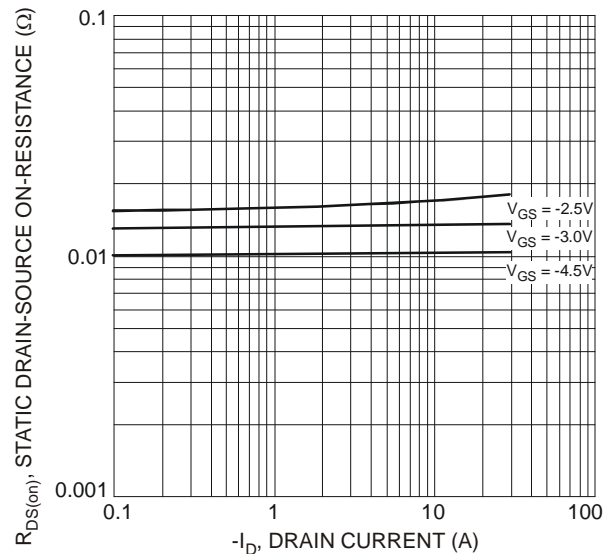


Fig. 4 On-Resistance vs. Drain Current and Gate Voltage

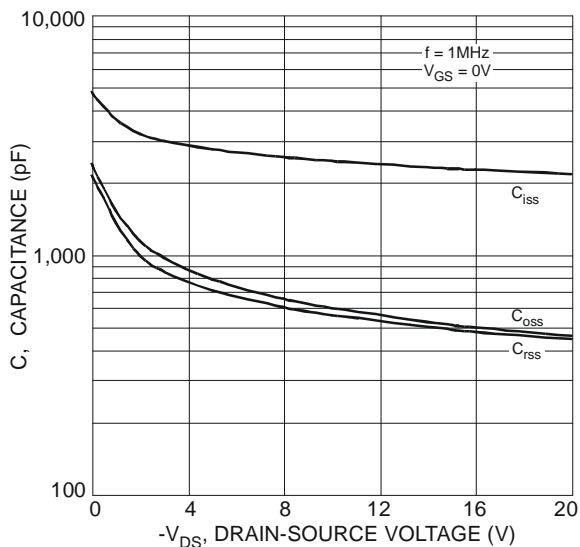


Fig. 5 Typical Total Capacitance

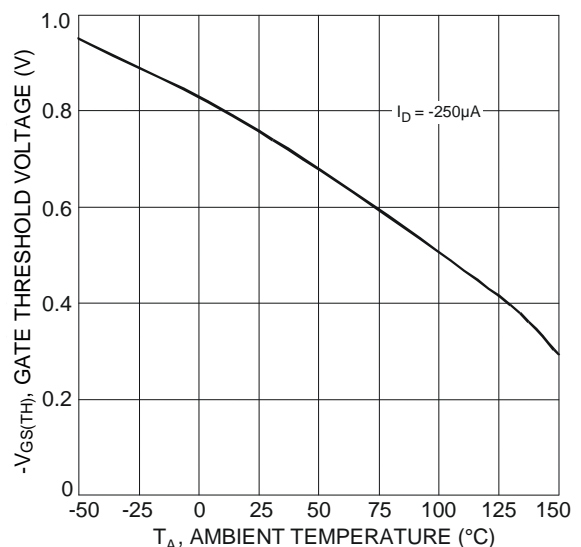


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

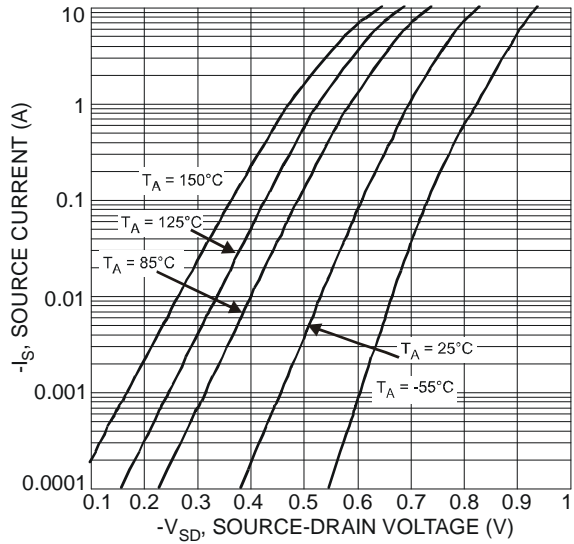


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

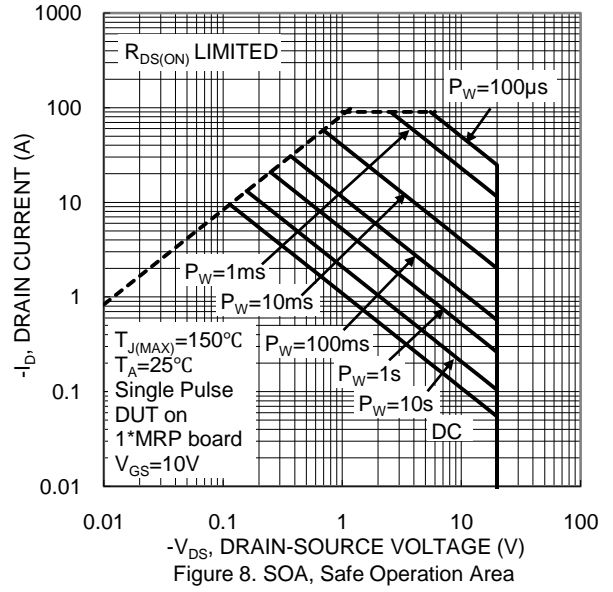
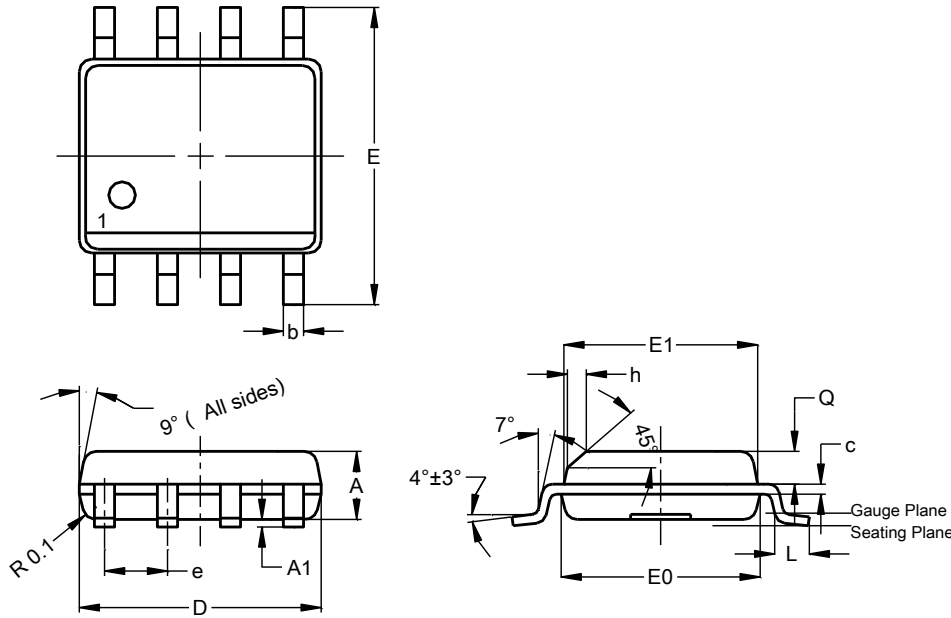


Figure 8. SOA, Safe Operation Area

Package Outline Dimensions

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

SO-8

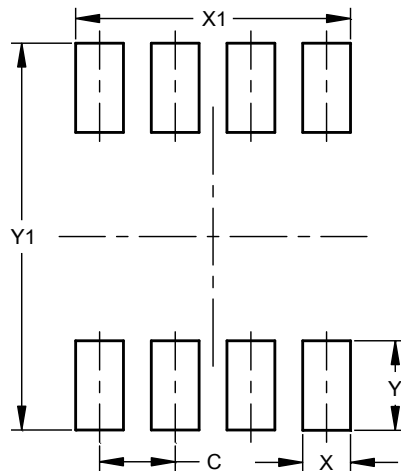


| SO-8 | | | |
|-----------------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 1.40 | 1.50 | 1.45 |
| A1 | 0.10 | 0.20 | 0.15 |
| b | 0.30 | 0.50 | 0.40 |
| c | 0.15 | 0.25 | 0.20 |
| D | 4.85 | 4.95 | 4.90 |
| E | 5.90 | 6.10 | 6.00 |
| E1 | 3.80 | 3.90 | 3.85 |
| E0 | 3.85 | 3.95 | 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.

SO-8



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

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