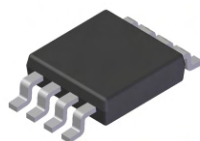


Features

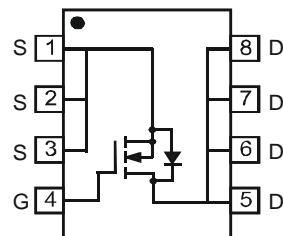
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**



TOP VIEW

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
- Terminal Connections: See Diagram Below
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.072 grams (approximate)


 TOP VIEW
 Internal Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | | | Symbol | Value | Unit |
|-----------------------------------|--------------|-----------------------|------------------|-------|------|
| Drain-Source Voltage | | | V _{DSS} | 30 | V |
| Gate-Source Voltage | | | V _{GSS} | ±20 | V |
| Continuous Drain Current (Note 3) | Steady State | T _A = 25°C | I _D | 11.6 | A |
| | | T _A = 70°C | | 8.5 | |
| Pulsed Drain Current (Note 4) | | | I _{DM} | 80 | A |

Thermal Characteristics

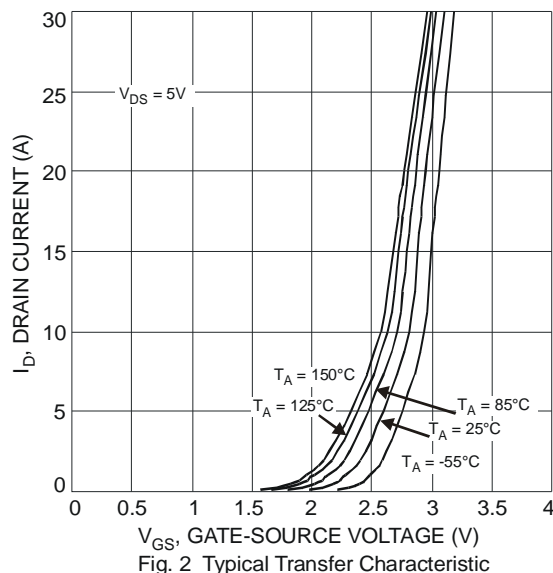
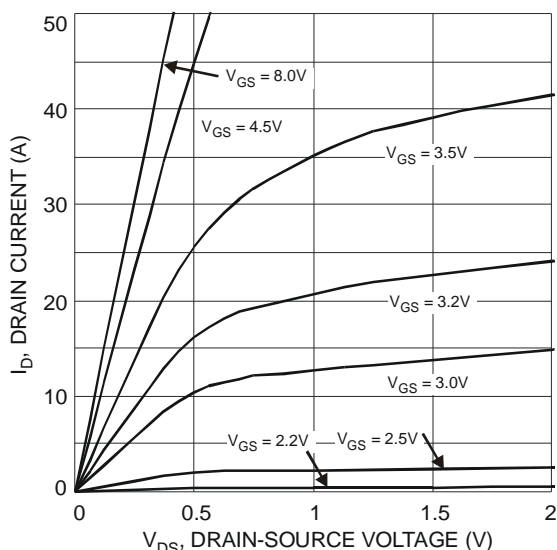
| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 3) | P _D | 1.43 | W |
| Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 3) | R _{θJA} | 87 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 4. Repetitive rating, pulse width limited by junction temperature.

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 T _J = 25°C | I _{DSS} | - | - | 1.0 | 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)} | 1.0 | 1.5 | 2.0 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | - | 7.0 | 10 | mΩ | V _{GS} = 10V, I _D = 11.6A |
| | | | 9.6 | 14 | | V _{GS} = 4.5V, I _D = 10.7A |
| Diode Forward Voltage | V _{SD} | - | 0.7 | 1.0 | V | V _{GS} = 0V, I _S = 2.1A |
| DYNAMIC CHARACTERISTICS (Note 6) | | | | | | |
| Input Capacitance | C _{iss} | - | 1289 | - | pF | V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | - | 187 | - | pF | |
| Reverse Transfer Capacitance | C _{rss} | - | 162 | - | pF | |
| Gate Resistance | R _g | - | 0.97 | - | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1MHz |
| Total Gate Charge at 10V | Q _g | - | 27.6 | - | nC | V _{GS} = 10V, V _{DS} = 15V, I _D = 11.6A, I _G = 1.0mA |
| Total Gate Charge at 5V | Q _g | - | 14.4 | - | nC | V _{GS} = 5V, V _{DS} = 15V, I _D = 11.6A, I _G = 1.0mA |
| Gate-Source Charge | Q _{gs} | - | 3.6 | - | nC | |
| Gate-Drain Charge | Q _{gd} | - | 4.9 | - | nC | |
| Turn-On Delay Time | t _{D(on)} | - | 7.04 | - | ns | V _{DD} = 15V, V _{GS} = 10V, R _{GS} = 11Ω, I _D = 11.6A |
| Turn-On Rise Time | t _r | - | 17.52 | - | ns | |
| Turn-Off Delay Time | t _{D(off)} | - | 36.13 | - | ns | |
| Turn-Off Fall Time | t _f | - | 19.67 | - | ns | |

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



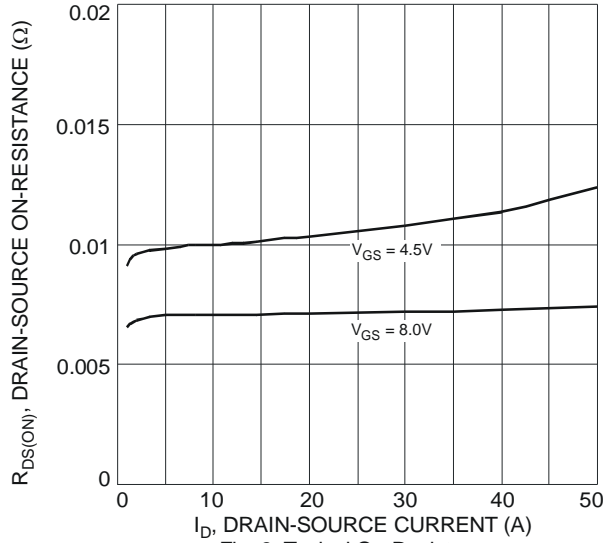


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

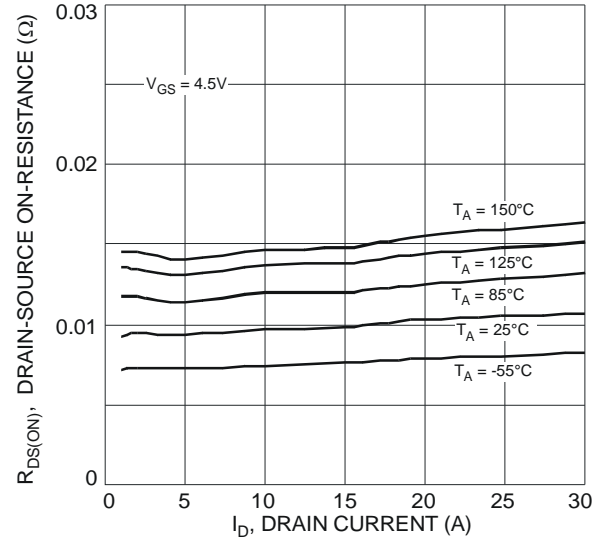


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

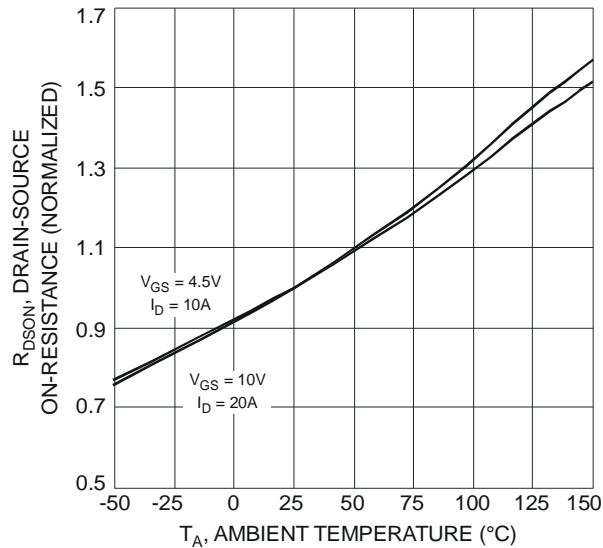


Fig. 5 On-Resistance Variation with Temperature

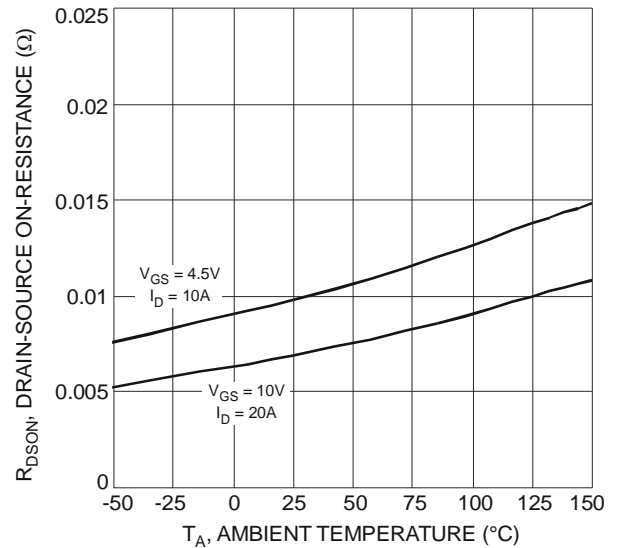


Fig. 6 On-Resistance Variation with Temperature

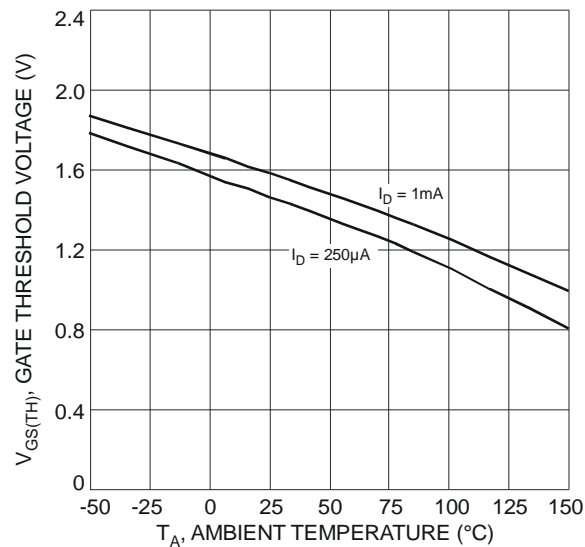


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

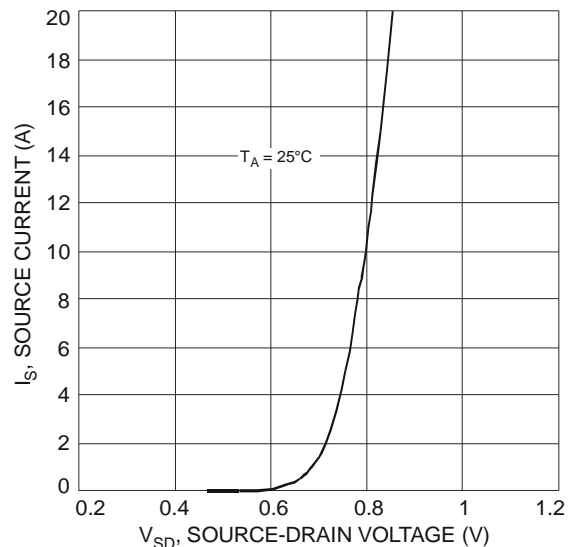


Fig. 8 Diode Forward Voltage vs. Current

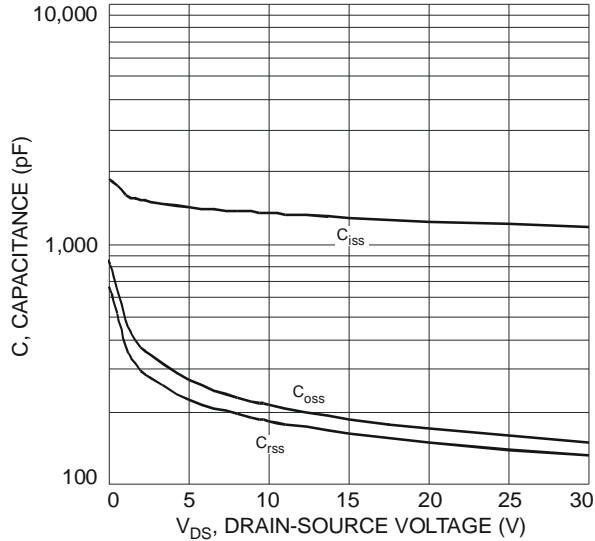


Fig. 9 Typical Total Capacitance

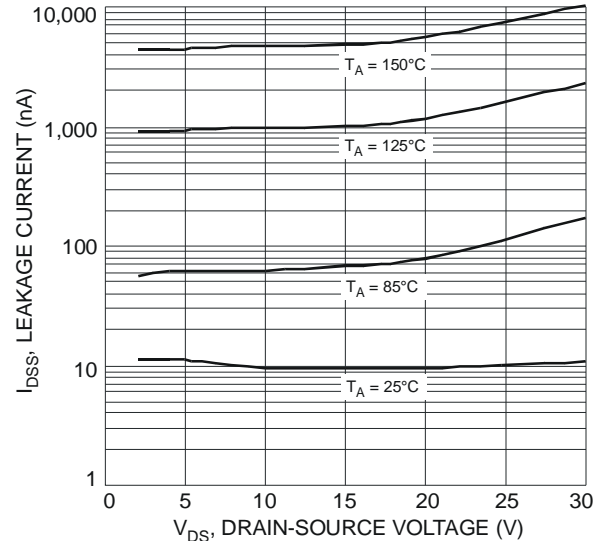


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

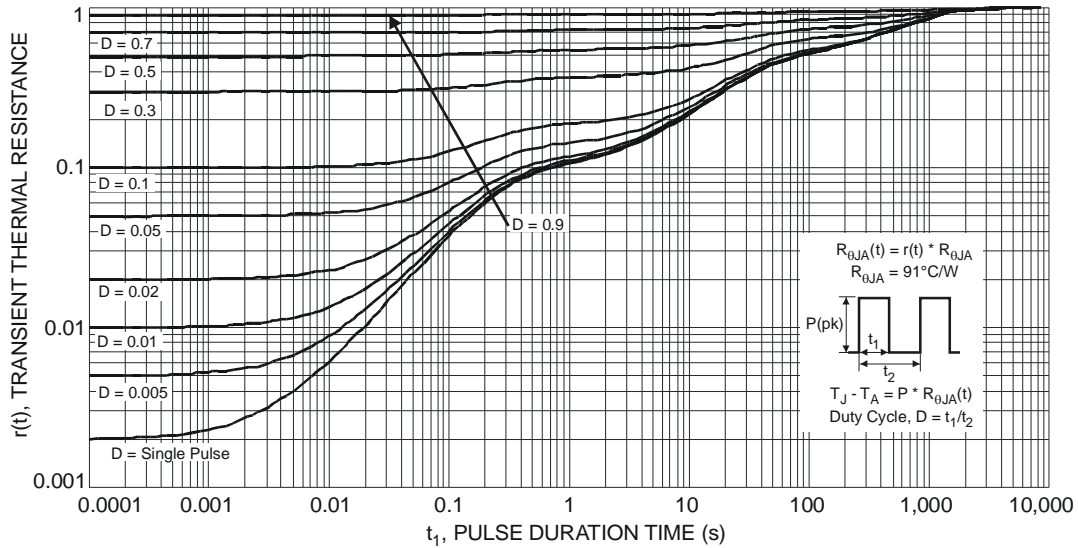


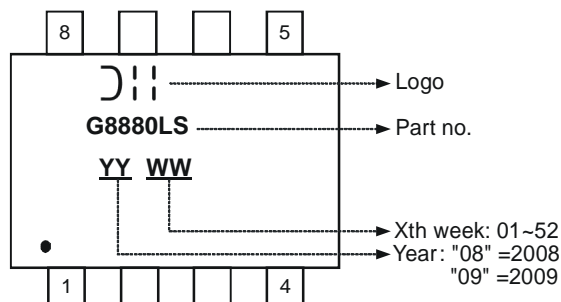
Fig. 11 Transient Thermal Response

Ordering Information (Note 7)

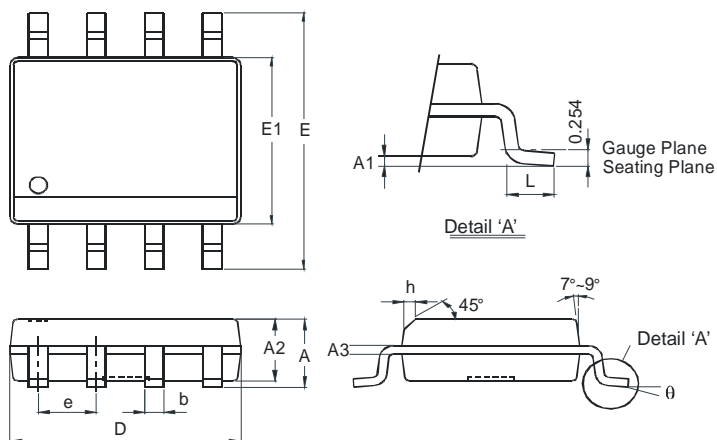
| Part Number | Case | Packaging |
|---------------|------|--------------------|
| DMG8880LSS-13 | SO-8 | 2500 / Tape & Reel |

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

Marking Information

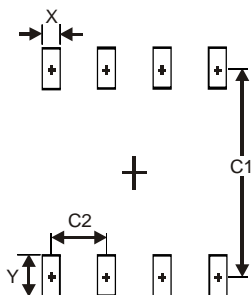


Package Outline Dimensions



| SO-8 | | |
|----------------------|----------|------|
| Dim | Min | Max |
| A | - | 1.75 |
| A1 | 0.10 | 0.20 |
| A2 | 1.30 | 1.50 |
| A3 | 0.15 | 0.25 |
| b | 0.3 | 0.5 |
| D | 4.85 | 4.95 |
| E | 5.90 | 6.10 |
| E1 | 3.85 | 3.95 |
| e | 1.27 Typ | |
| h | - | 0.35 |
| L | 0.62 | 0.82 |
| 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 |

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