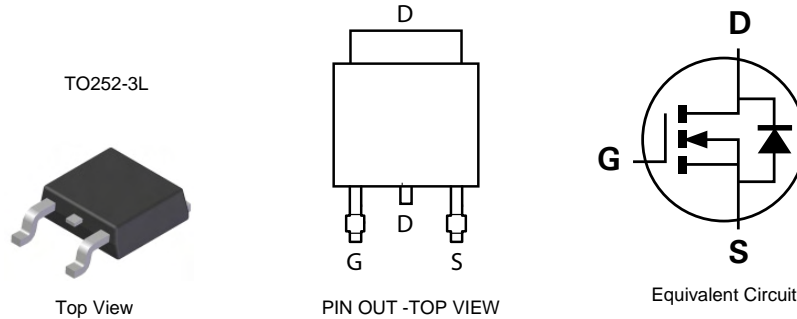


Features

- 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**

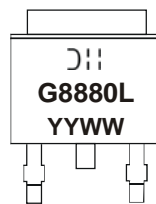
Mechanical Data

- Case: TO252-3L
- 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
- Weight: 0.33 grams (approximate)


Ordering Information (Note 3)

| Part Number | Case | Packaging |
|---------------|----------|--------------------|
| DMG8880LK3-13 | TO252-3L | 2500 / Tape & Reel |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information


G8880L = Product Type Marking Code
 Ⓜ||| = Manufacturer's Marking
 YYWW = Date Code Marking
 YY = Year (ex: 09 = 2009)
 WW = Week (01 ~ 53)

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 4) V _{GS} = 10V | Steady State | T _A = 25°C T _A = 85°C | I _D | 11 8 | A |
| Continuous Drain Current (Note 5) V _{GS} = 10V | Steady State | T _A = 25°C T _A = 85°C | I _D | 16.5 12 | A |
| Pulsed Drain Current (Note 6) | | | I _{DM} | 48 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 4) | P _D | 1.68 | W |
| Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 4) | R _{θJA} | 74.3 | °C/W |
| Power Dissipation (Note 5) | P _D | 4.1 | W |
| Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 5) | R _{θJA} | 30.8 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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} | 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 7) | | | | | | |
| 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 9.6 | 9.3 14 | mΩ | V _{GS} = 10V, I _D = 11.6A V _{GS} = 4.5V, I _D = 10.7A |
| Forward Transfer Admittance | Y _{fs} | - | 22 | - | S | V _{DS} = 15V, I _D = 15A |
| Diode Forward Voltage | V _{SD} | - | 0.7 | 1.0 | V | V _{GS} = 0V, I _{SD} = 2.1A |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| 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 |
| 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 _G = 11Ω, I _D = 11.6A, R _L = 1.3Ω |
| 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:
- Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
 - Device mounted on 2" x 2" FR-4 PCB with high coverage 2oz. copper, single sided.
 - Repetitive rating, pulse width limited by junction temperature and current limited by package.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

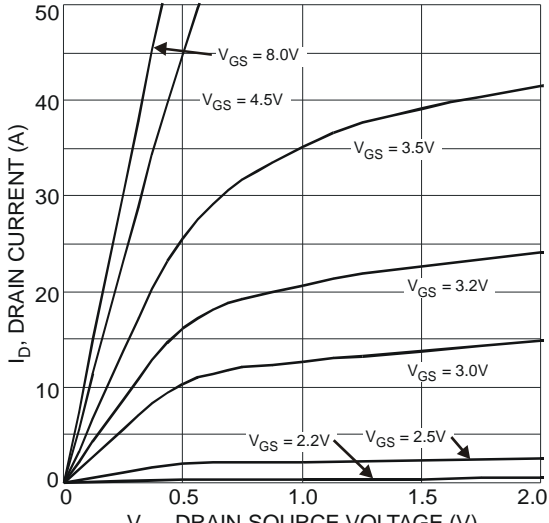


Fig. 1 Typical Output Characteristics

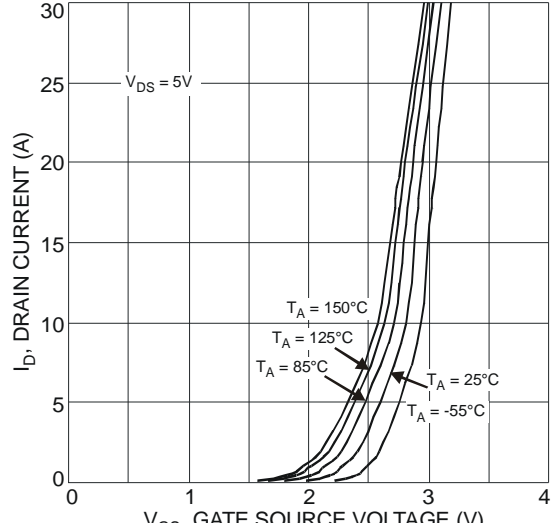


Fig. 2 Typical Transfer Characteristics

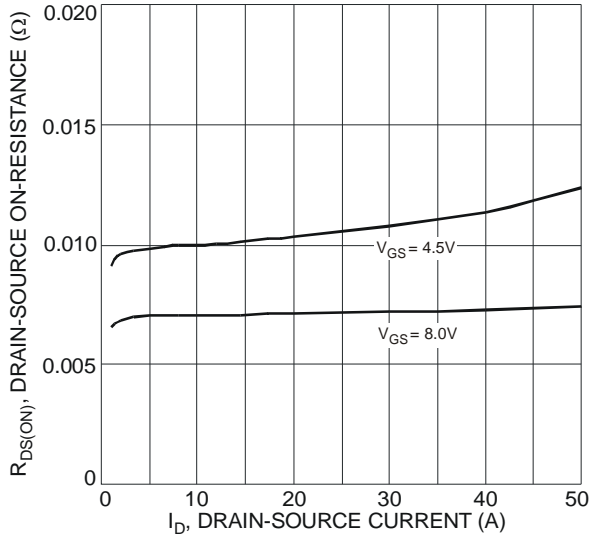


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

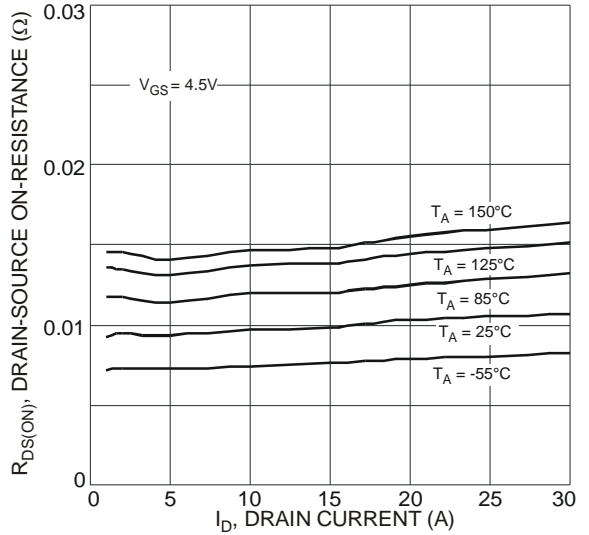


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

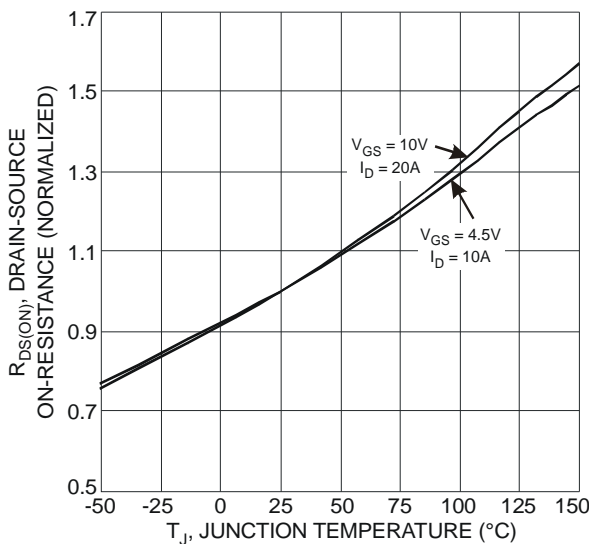


Fig. 5 On-Resistance Variation with Temperature

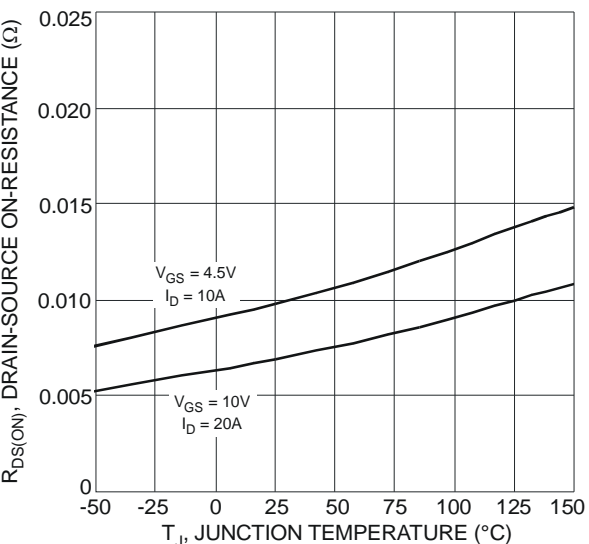


Fig. 6 On-Resistance Variation with Temperature

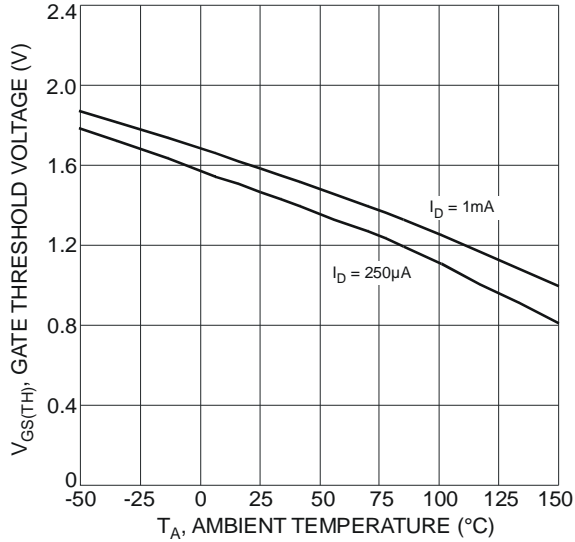


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

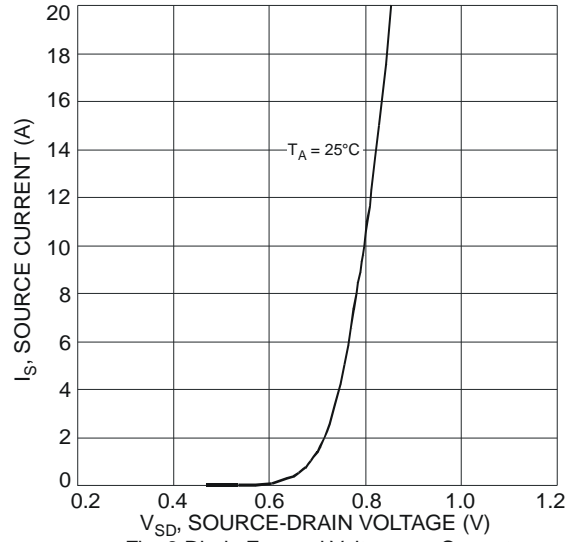


Fig. 8 Diode Forward Voltage vs. Current

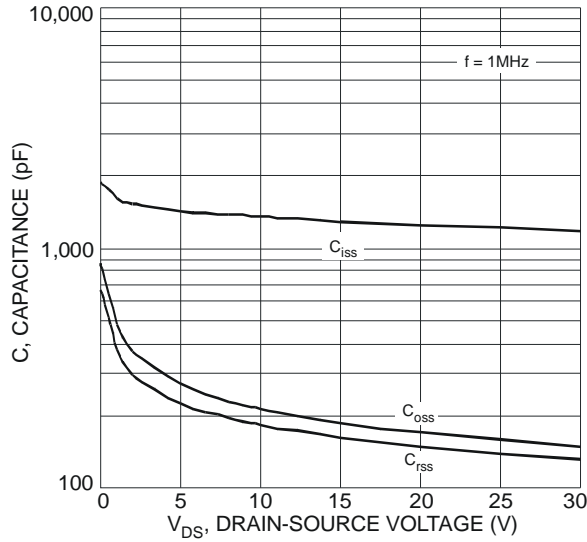


Fig. 9 Typical Capacitance

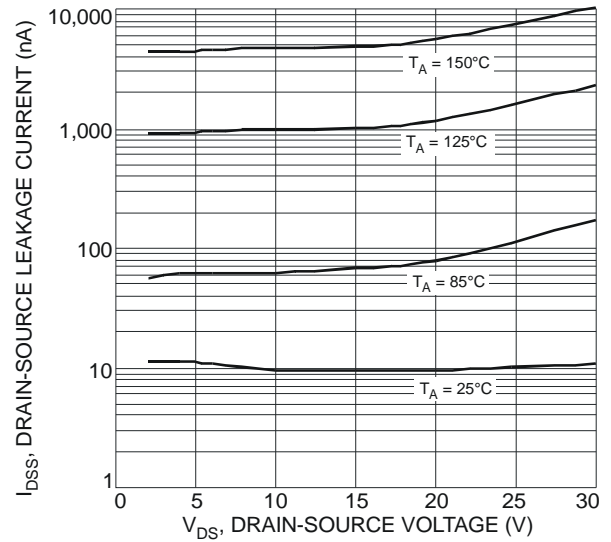


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

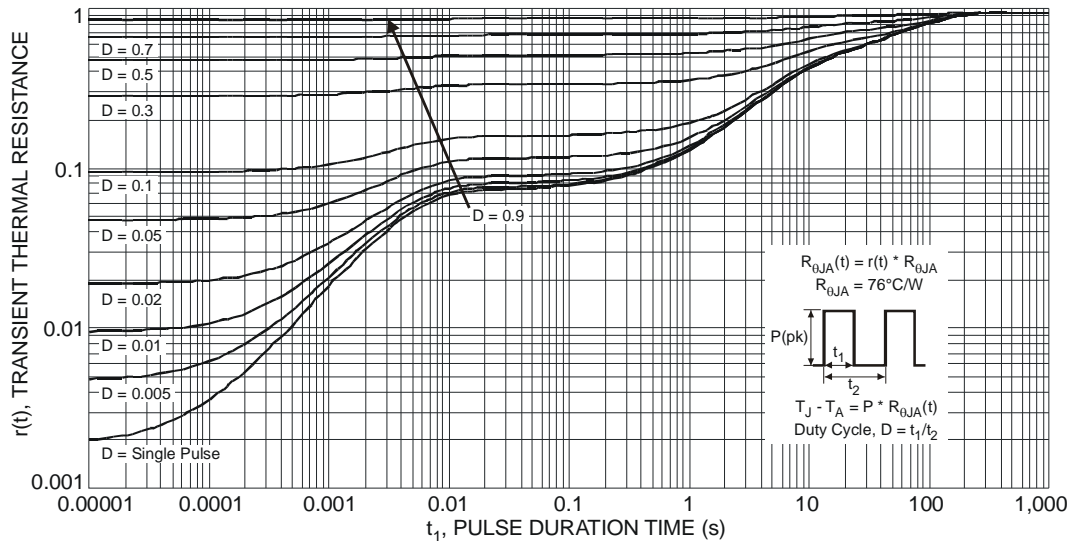
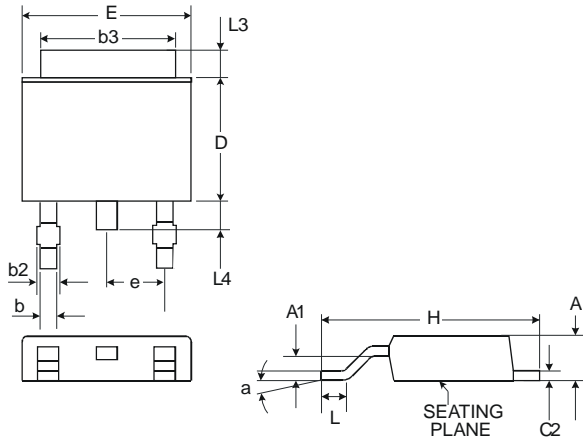


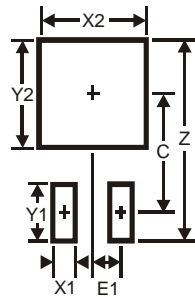
Fig. 11 Transient Thermal Response

Package Outline Dimensions



| TO252-3L | | | |
|----------------------|------------|------|-------|
| Dim | Min | Typ | Max |
| A | 2.19 | 2.29 | 2.39 |
| A1 | 0.97 | 1.07 | 1.17 |
| b | 0.64 | 0.76 | 0.88 |
| b2 | 0.76 | 0.95 | 1.14 |
| b3 | 5.21 | 5.33 | 5.50 |
| C2 | 0.45 | 0.51 | 0.58 |
| D | 6.00 | 6.10 | 6.20 |
| E | 6.45 | 6.58 | 6.70 |
| e | 2.286 Typ. | | |
| H | 9.40 | 9.91 | 10.41 |
| L | 1.40 | 1.59 | 1.78 |
| L3 | 0.88 | 1.08 | 1.27 |
| L4 | 0.64 | 0.83 | 1.02 |
| a | 0° | - | 10° |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 11.6 |
| X1 | 1.5 |
| X2 | 7.0 |
| Y1 | 2.5 |
| Y2 | 7.0 |
| C | 6.9 |
| E1 | 2.3 |

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