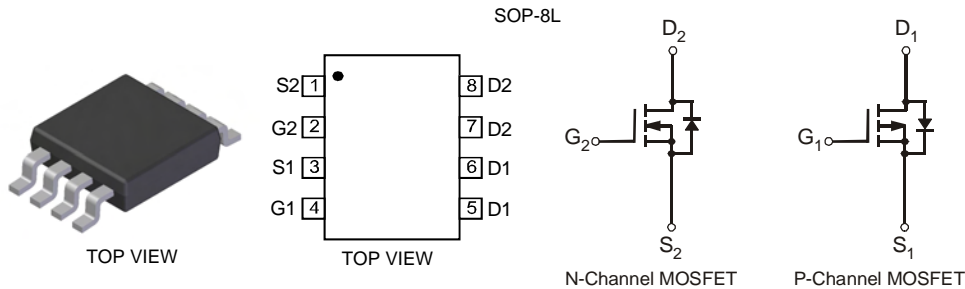


Features

- Complementary Pair MOSFET
- Low On-Resistance
 - N-Channel: 20mΩ @ 10V
32mΩ @ 4.5V
 - P-Channel: 45mΩ @ -10V
65mΩ @ -4.5V
- 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 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOP-8L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.072g (approximate)



Maximum Ratings N-CHANNEL @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|-------------------------------|-----------|------------|------|
| Drain Source Voltage | V_{DSS} | 30 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current (Note 1) | I_D | 9.1 7.7 | A |
| Pulsed Drain Current (Note 4) | I_{DM} | 32 | A |

Maximum Ratings P-CHANNEL @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|-------------------------------|-----------|----------|------|
| Drain Source Voltage | V_{DSS} | -30 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current (Note 1) | I_D | -6 -5 | A |
| Pulsed Drain Current (Note 4) | I_{DM} | -21 | A |

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 1) | 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:
1. Device mounted on FR-4 PCB, on 2oz. Copper pads with $R_{\theta JA} = 50^\circ\text{C/W}$
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 4. Repetitive rating, pulse width limited by junction temperature.

Electrical Characteristics N-CHANNEL @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 | I _{DSS} | — | — | 1 | μA | V _{DS} = 24V, 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 | 1.9 | 2.1 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | 18 29 | 20 32 | mΩ | V _{GS} = 10V, I _D = 6.9A V _{GS} = 4.5V, I _D = 5.0A |
| Forward Transfer Admittance | Y _{fs} | — | 10 | — | S | V _{DS} = 5V, I _D = 6.9A |
| Diode Forward Voltage (Note 5) | V _{SD} | 0.5 | — | 1.2 | V | V _{GS} = 0V, I _S = 1A |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C _{iss} | — | 631 | — | pF | V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 147 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 99 | — | pF | |
| Gate Resistance | R _G | — | 0.9 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| SWITCHING CHARACTERISTICS | | | | | | |
| Total Gate Charge | Q _g | — | 5.9 12.4 | — | nC | V _{DS} = 15V, V _{GS} = 4.5V, I _D = 7A V _{DS} = 15V, V _{GS} = 10V, I _D = 9A |
| Gate-Source Charge | Q _{gs} | — | 1.8 | — | | V _{DS} = 15V, V _{GS} = 10V, I _D = 9A |
| Gate-Drain Charge | Q _{gd} | — | 3.4 | — | | V _{DS} = 15V, V _{GS} = 10V, I _D = 9A |

Electrical Characteristics P-CHANNEL @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 | I _{DSS} | — | — | -1.0 | μA | V _{DS} = -24V, 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 | -1.7 | -2.1 | V | V _{DS} = V _{GS} , I _D = -250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | 35 56 | 45 65 | mΩ | V _{GS} = -10V, I _D = -6A V _{GS} = -4.5V, I _D = -5.0A |
| Forward Transfer Admittance | Y _{fs} | — | 8.2 | — | S | V _{DS} = -5V, I _D = -6A |
| Diode Forward Voltage (Note 5) | V _{SD} | -0.5 | — | -1.2 | V | V _{GS} = 0V, I _S = -1A |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | C _{iss} | — | 722 | — | pF | V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 114 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 92 | — | pF | |
| Gate Resistance | R _G | — | 1.9 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| SWITCHING CHARACTERISTICS | | | | | | |
| Total Gate Charge | Q _g | — | 7.0 13.7 | — | nC | V _{DS} = -15V, V _{GS} = -4.5V, I _D = -6A V _{DS} = -15V, V _{GS} = -10V, I _D = -6A |
| Gate-Source Charge | Q _{gs} | — | 1.7 | — | | V _{DS} = -15V, V _{GS} = -4.5V, I _D = -6A |
| Gate-Drain Charge | Q _{gd} | — | 4.1 | — | | V _{DS} = -15V, V _{GS} = -4.5V, I _D = -6A |
| | | | | | | |

Notes: 5. Short duration pulse test used to minimize self-heating effect.

N-CHANNEL

NEW PRODUCT

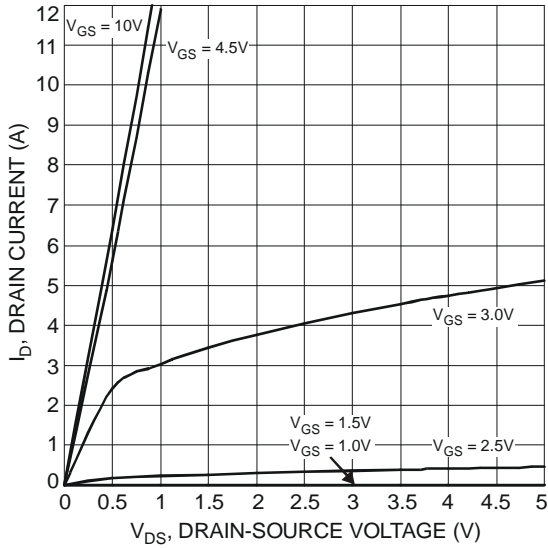


Fig. 1 Typical Output Characteristics

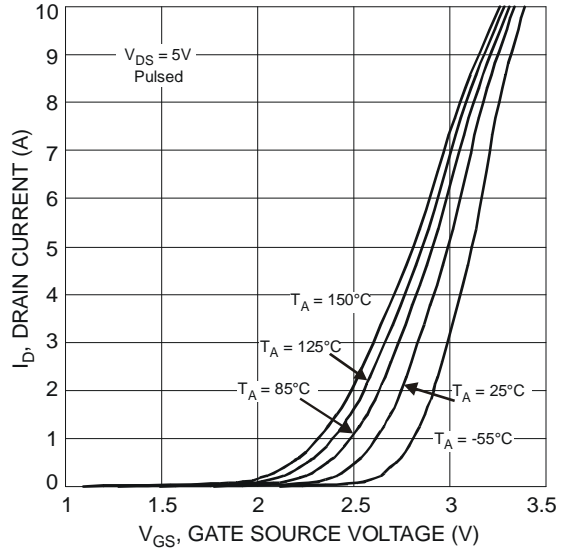


Fig. 2 Typical Transfer Characteristics

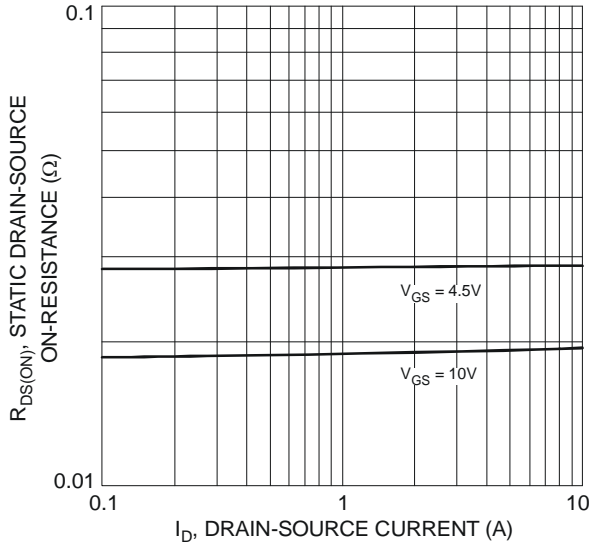


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

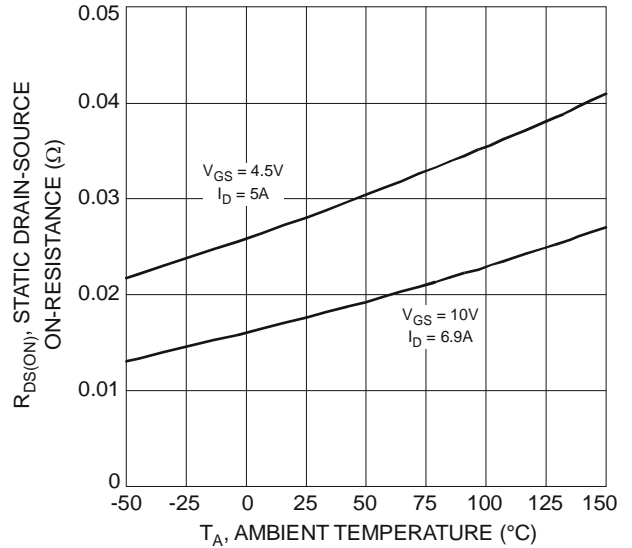


Fig. 4 Static Drain-Source On-Resistance vs. Ambient Temperature

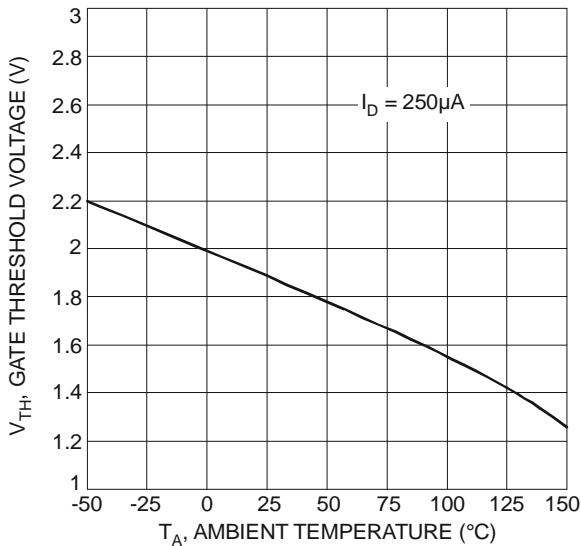


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

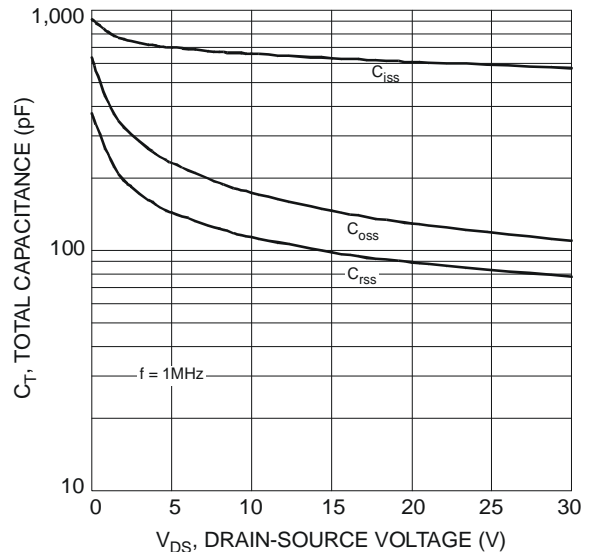


Fig. 6 Typical Total Capacitance

N-CHANNEL (continued)

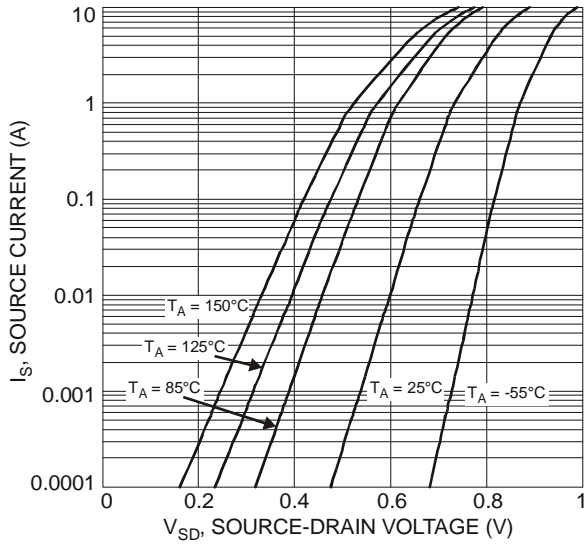


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

P-CHANNEL

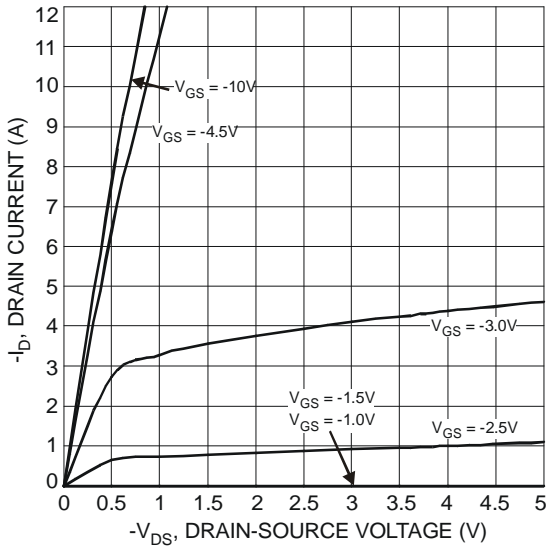


Fig. 8 Typical Output Characteristics

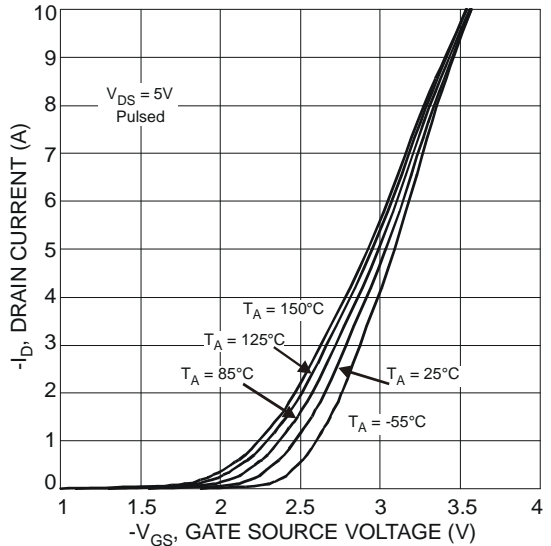


Fig. 9 Typical Transfer Characteristics

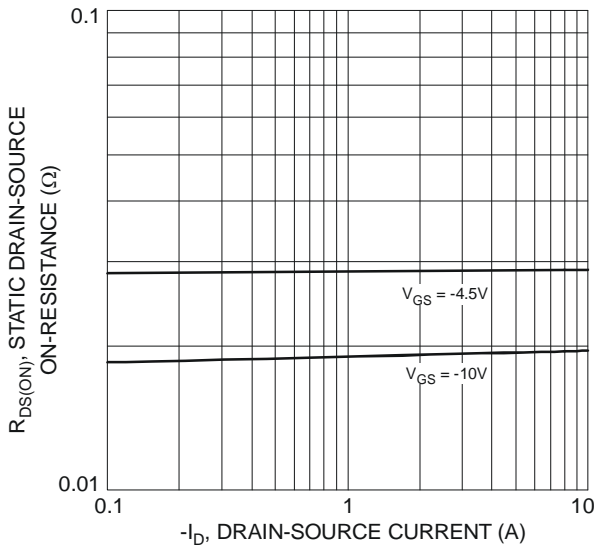


Fig. 10 On-Resistance vs. Drain Current & Gate Voltage

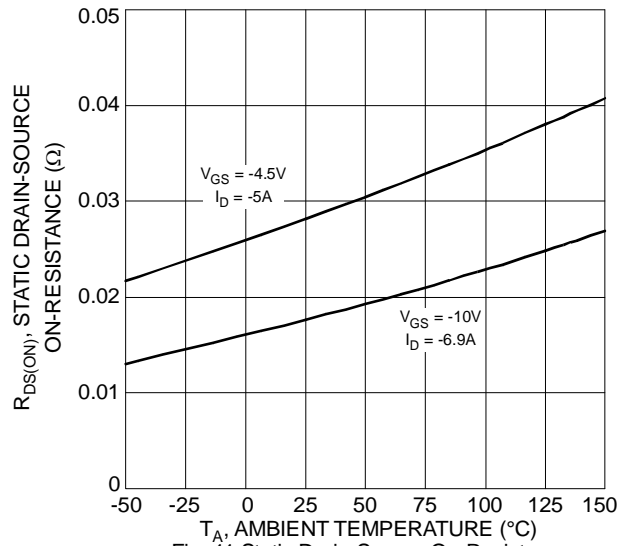


Fig. 11 Static Drain-Source On-Resistance vs. Ambient Temperature

P-CHANNEL (continued)

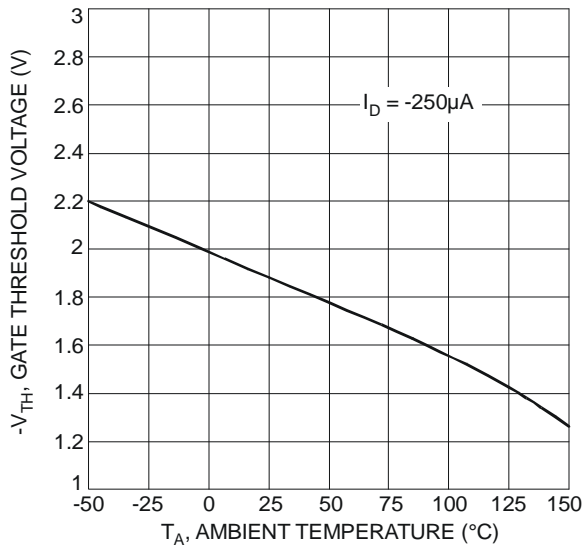


Fig. 12 Gate Threshold Variation vs. Ambient Temperature

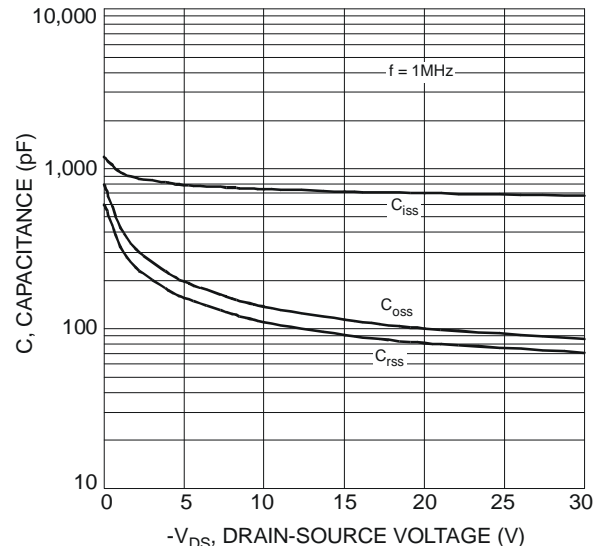


Fig. 13 Typical Total Capacitance

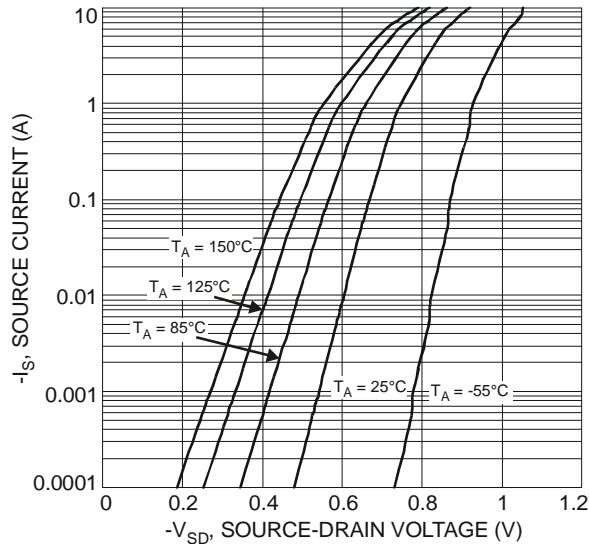


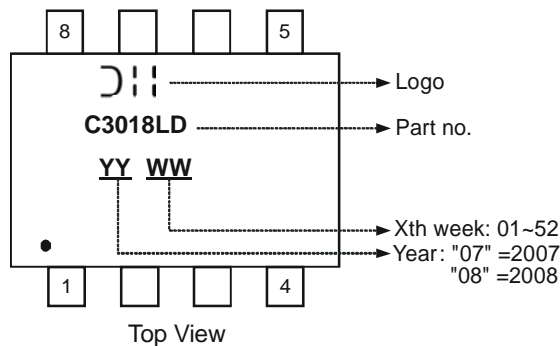
Fig. 14 Reverse Drain Current vs. Source-Drain Voltage

Ordering Information (Note 6)

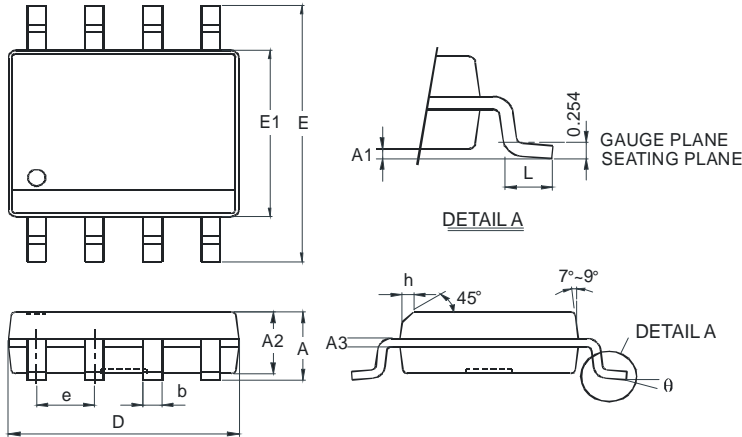
| Part Number | Case | Packaging |
|---------------|--------|------------------|
| DMC3018LSD-13 | SOP-8L | 2500/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

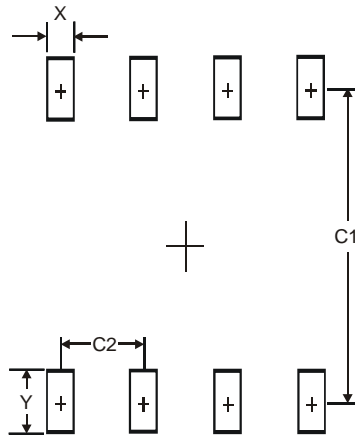


Package Outline Dimensions



| SOP-8L | | |
|----------------------|-----------|------|
| Dim | Min | Max |
| A | - | 1.75 |
| A1 | 0.08 | 0.25 |
| A2 | 1.30 | 1.50 |
| A3 | 0.20 Typ. | |
| b | 0.3 | 0.5 |
| D | 4.80 | 5.30 |
| E | 5.79 | 6.20 |
| E1 | 3.70 | 4.10 |
| e | 1.27 Typ. | |
| h | - | 0.35 |
| L | 0.38 | 1.27 |
| 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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