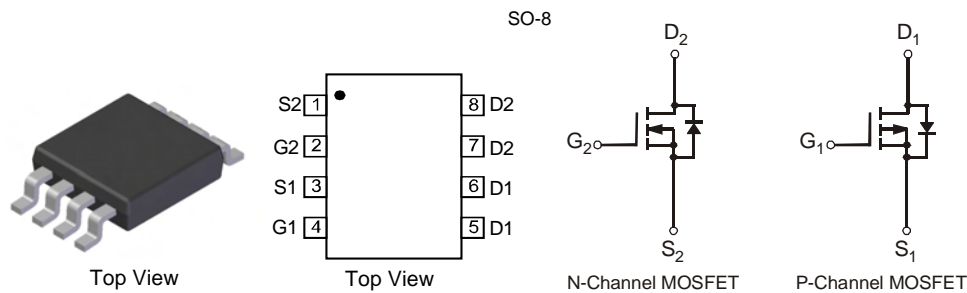


## Features

- Low On-Resistance
- N-Channel: 32mΩ @ 10V  
46mΩ @ 4.5V
- P-Channel: 39mΩ @ 10V  
53mΩ @ 4.5V
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Complementary Pair MOSFET
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## 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 lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 6
- Ordering Information: See Page 6
- Weight: 0.072 grams (approximate)



## Maximum Ratings N-CHANNEL – Q1 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                    |              |                          | Symbol    | Value    | Unit |
|-----------------------------------|--------------|--------------------------|-----------|----------|------|
| Drain-Source Voltage              |              |                          | $V_{DSS}$ | 30       | V    |
| Gate-Source Voltage               |              |                          | $V_{GSS}$ | $\pm 20$ | V    |
| Continuous Drain Current (Note 3) | Steady State | $T_A = 25^\circ\text{C}$ | $I_D$     | 8.1      | A    |
|                                   |              | $T_A = 85^\circ\text{C}$ |           | 5.1      |      |
| Pulsed Drain Current (Note 4)     |              |                          | $I_{DM}$  | 25       | A    |

## Maximum Ratings P-CHANNEL – Q2 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                    |              |                          | Symbol    | Value    | Unit |
|-----------------------------------|--------------|--------------------------|-----------|----------|------|
| Drain-Source Voltage              |              |                          | $V_{DSS}$ | -30      | V    |
| Gate-Source Voltage               |              |                          | $V_{GSS}$ | $\pm 20$ | V    |
| Continuous Drain Current (Note 3) | Steady State | $T_A = 25^\circ\text{C}$ | $I_D$     | -7.0     | A    |
|                                   |              | $T_A = 85^\circ\text{C}$ |           | -4.5     |      |
| Pulsed Drain Current (Note 4)     |              |                          | $I_{DM}$  | -25      | A    |

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

| Characteristic                                   | Symbol          | Value       | Unit                      |
|--|-----------------|-------------|---------------------------|
| Power Dissipation (Note 3)                       | $P_D$           | 2.5         | W                         |
| Thermal Resistance, Junction to Ambient (Note 3) | $R_{\theta JA}$ | 50          | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range          | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$          |

- 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](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 N-CHANNEL – Q1** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic   | Symbol       | Min | Typ   | Max       | Unit       | Test Condition  |
|--|--------------|-----|-------|-----------|------------|---|
| <b>OFF CHARACTERISTICS (Note 5)</b>                      |              |     |       |           |            |   |
| Drain-Source Breakdown Voltage                           | $BV_{DSS}$   | 30  | -     | -         | V          | $V_{GS} = 0V, I_D = 250\mu A$                                     |
| Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$ | $I_{DSS}$    | -   | -     | 1.0       | $\mu A$    | $V_{DS} = 30V, V_{GS} = 0V$                                       |
| Gate-Source Leakage                                      | $I_{GSS}$    | -   | -     | $\pm 100$ | nA         | $V_{GS} = \pm 20V, V_{DS} = 0V$                                   |
| <b>ON CHARACTERISTICS (Note 5)</b>                       |              |     |       |           |            |   |
| Gate Threshold Voltage                                   | $V_{GS(th)}$ | 1   | 1.45  | 2.1       | V          | $V_{DS} = V_{GS}, I_C = 250\mu A$                                 |
| Static Drain-Source On-Resistance                        | $R_{DS(on)}$ | -   | 23    | 32        | m $\Omega$ | $V_{GS} = 10V, I_C = 7A$  |
|  |              |     | 32    | 46        |            | $V_{GS} = 4.5V, I_C = 5.6A$                                       |
| Forward Transfer Admittance                              | $ Y_{fs} $   | -   | 7.6   | -         | S          | $V_{DS} = 5V, I_C = 7A$   |
| Diode Forward Voltage (Note 5)                           | $V_{SD}$     | -   | 0.7   | 1.0       | V          | $V_{GS} = 0V, I_S = 1A$   |
| <b>DYNAMIC CHARACTERISTICS (Note 6)</b>                  |              |     |       |           |            |   |
| Input Capacitance  | $C_{iss}$    | -   | 404.5 | -         | pF         | $V_{DS} = 15V, V_{GS} = 0V,$<br>$f = 1.0\text{MHz}$               |
| Output Capacitance                                       | $C_{oss}$    | -   | 51.8  | -         | pF         |   |
| Reverse Transfer Capacitance                             | $C_{rss}$    | -   | 45.1  | -         | pF         |   |
| Gate Resistance  | $R_g$        | -   | 1.5   | -         | $\Omega$   | $V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$                       |
| Total Gate Charge (10V)                                  | $Q_g$        | -   | 9.2   | -         | nC         | $V_{GS} = 10V, V_{DS} = 15V,$<br>$I_D = 5.8A$                     |
| Gate-Source Charge                                       | $Q_{gs}$     | -   | 1.2   | -         | nC         |   |
| Gate-Drain Charge  | $Q_{gd}$     | -   | 1.8   | -         | nC         |   |
| Turn-On Delay Time                                       | $t_{D(on)}$  | -   | 3.4   | -         | ns         | $V_{GS} = 10V, V_{DS} = 15V,$<br>$R_G = 3\Omega, R_L = 2.6\Omega$ |
| Turn-On Rise Time  | $t_r$        | -   | 6.18  | -         | ns         |   |
| Turn-Off Delay Time                                      | $t_{D(off)}$ | -   | 13.92 | -         | ns         |   |
| Turn-Off Fall Time                                       | $t_f$        | -   | 2.84  | -         | ns         |   |

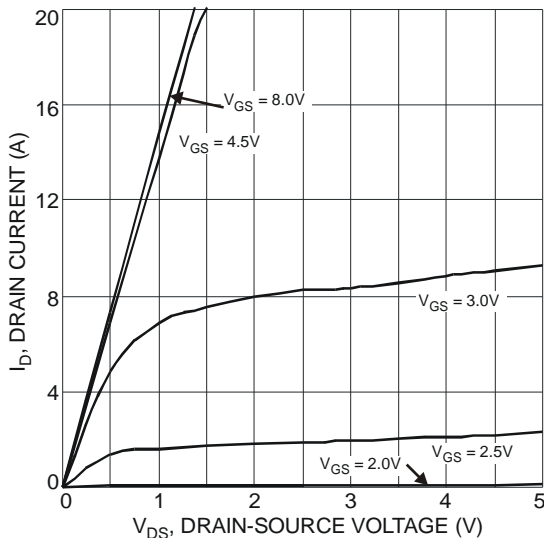


Fig. 1 Typical Output Characteristics

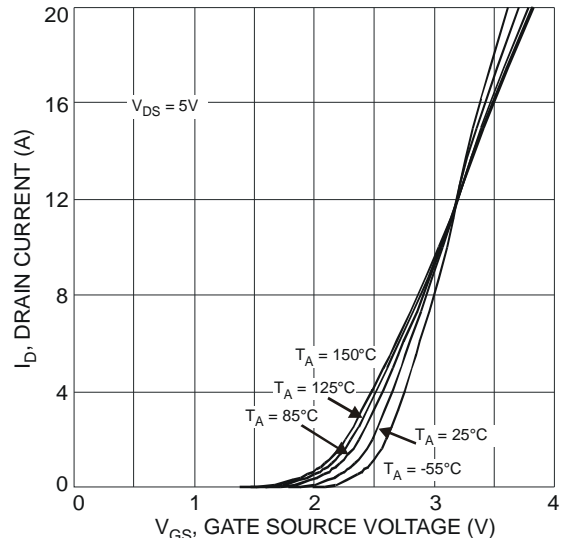


Fig. 2 Typical Transfer Characteristics

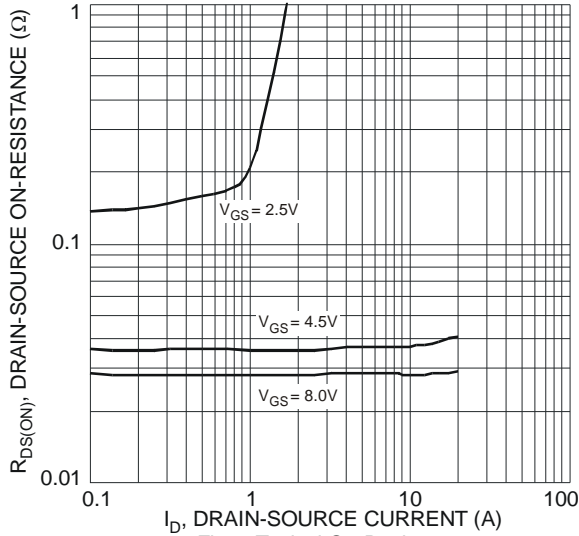


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

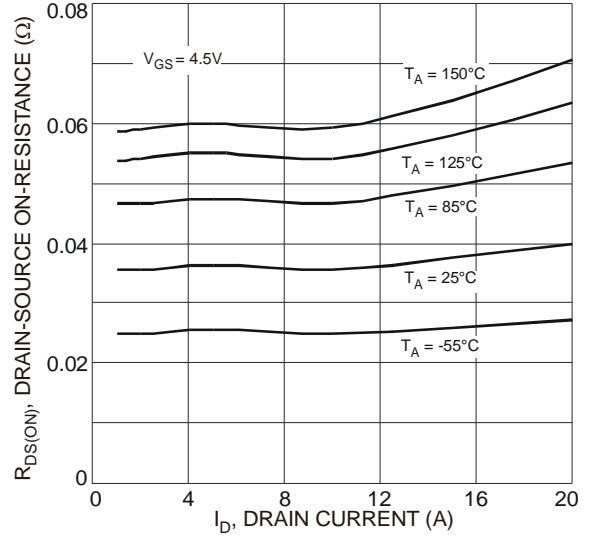


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

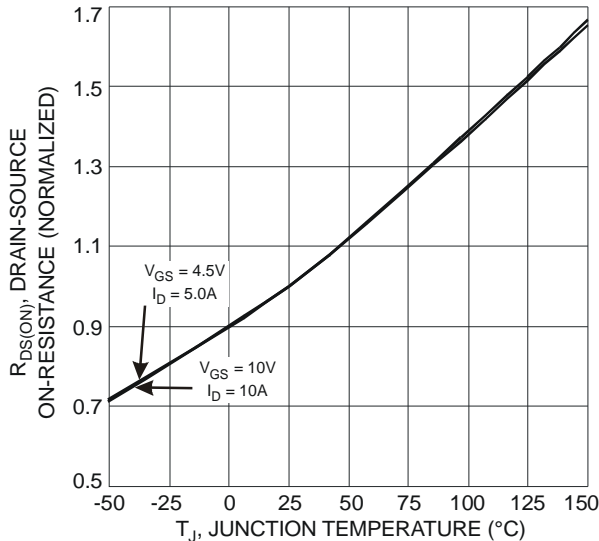


Fig. 5 On-Resistance Variation with Temperature

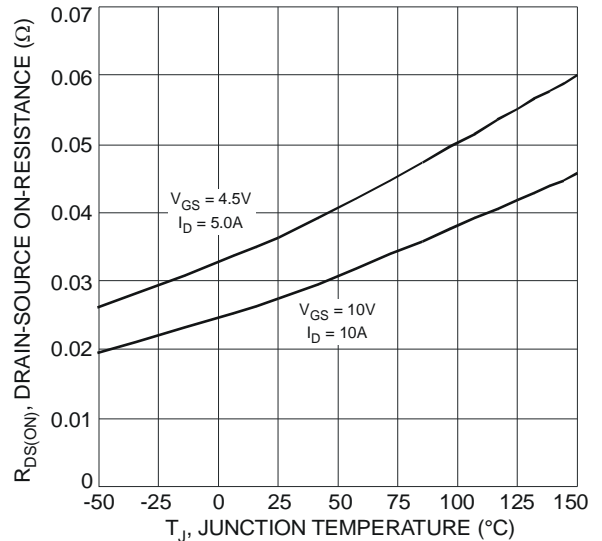


Fig. 6 On-Resistance Variation with Temperature

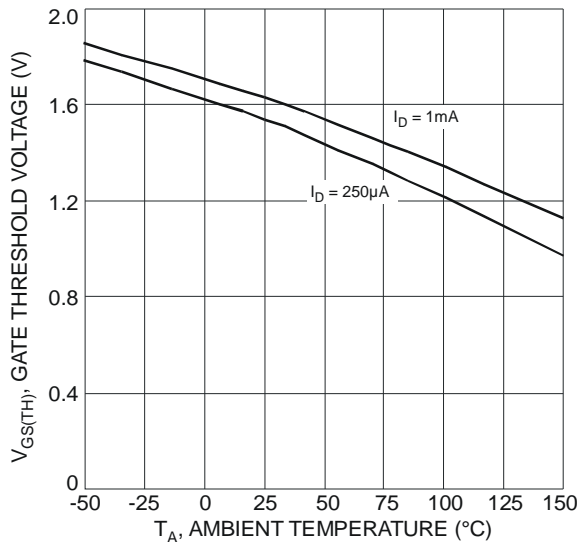


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

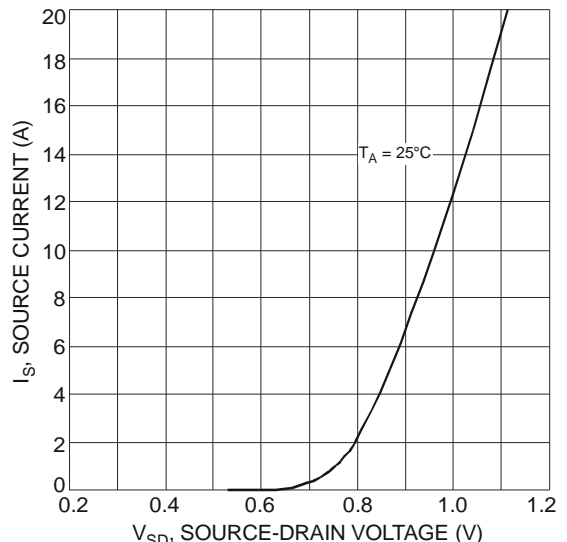
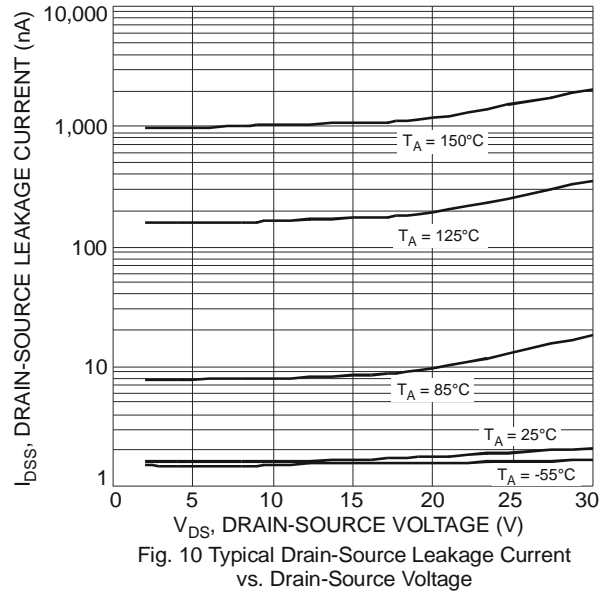
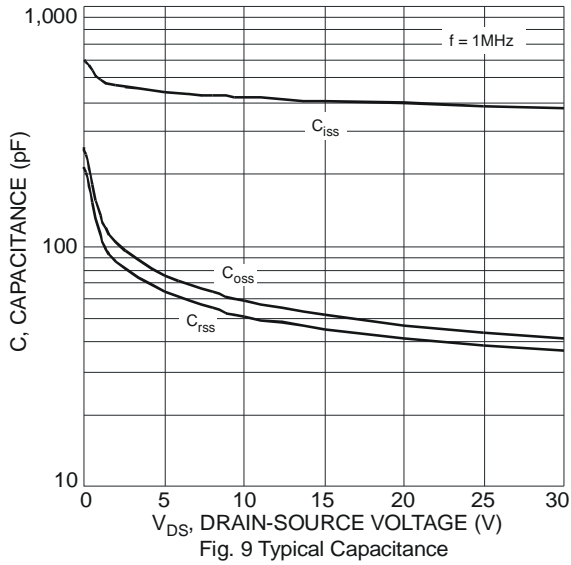


Fig. 8 Diode Forward Voltage vs. Current



**Electrical Characteristics P-CHANNEL** @TA = 25°C unless otherwise specified

| Characteristic  | Symbol              | Min | Typ   | Max  | Unit | Test Condition  |
|---|---------------------|-----|-------|------|------|---|
| <b>OFF CHARACTERISTICS (Note 5)</b>                   |                     |     |       |      |      |   |
| Drain-Source Breakdown Voltage                        | BV <sub>DSS</sub>   | -30 | -     | -    | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   |
| Zero Gate Voltage Drain Current T <sub>J</sub> = 25°C | I <sub>DSS</sub>    | -   | -     | -1.0 | μA   | V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V  |
| Gate-Source Leakage                                   | I <sub>GSS</sub>    | -   | -     | ±100 | nA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V  |
| <b>ON CHARACTERISTICS (Note 5)</b>                    |                     |     |       |      |      |   |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | -1  | -1.7  | -2.2 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                               |
| Static Drain-Source On-Resistance                     | R <sub>DS(on)</sub> | -   | 30    | 39   | mΩ   | V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.3A  |
|   |                     |     | 42    | 53   |      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.7A   |
| Forward Transfer Admittance                           | Y <sub>fs</sub>     | -   | 7     | -    | S    | V <sub>DS</sub> = -5V, I <sub>D</sub> = -4.3A   |
| Diode Forward Voltage (Note 5)                        | V <sub>SD</sub>     | -   | -0.75 | -1.0 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.7A  |
| <b>DYNAMIC CHARACTERISTICS (Note 6)</b>               |                     |     |       |      |      |   |
| Input Capacitance                                     | C <sub>iSS</sub>    | -   | 1002  | -    | pF   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1.0MHz                                  |
| Output Capacitance                                    | C <sub>oSS</sub>    | -   | 125   | -    | pF   |   |
| Reverse Transfer Capacitance                          | C <sub>rSS</sub>    | -   | 118   | -    | pF   |   |
| Gate Resistance                                       | R <sub>g</sub>      | -   | 13    | -    | Ω    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz                                      |
| Total Gate Charge (4.5V)                              | Q <sub>g</sub>      | -   | 10.1  | -    | nC   | V <sub>GS</sub> = -4.5V/-10V, V <sub>DS</sub> = -15V, I <sub>D</sub> = -6A                |
| Total Gate Charge (10V)                               | Q <sub>g</sub>      | -   | 21.1  | -    | nC   |   |
| Gate-Source Charge                                    | Q <sub>gs</sub>     | -   | 2.8   | -    | nC   |   |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     | -   | 3.2   | -    | nC   |   |
| Turn-On Delay Time                                    | t <sub>D(on)</sub>  | -   | 10.1  | -    | ns   | V <sub>GS</sub> = -10V, V <sub>DS</sub> = -15V, R <sub>G</sub> = 6Ω, I <sub>D</sub> = -1A |
| Turn-On Rise Time                                     | t <sub>r</sub>      | -   | 6.5   | -    | ns   |   |
| Turn-Off Delay Time                                   | t <sub>D(off)</sub> | -   | 50.1  | -    | ns   |   |
| Turn-Off Fall Time                                    | t <sub>f</sub>      | -   | 22.2  | -    | ns   |   |

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

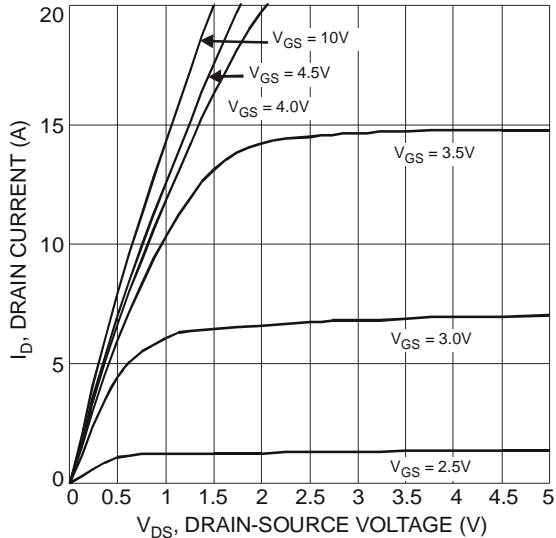


Fig. 11 Typical Output Characteristics

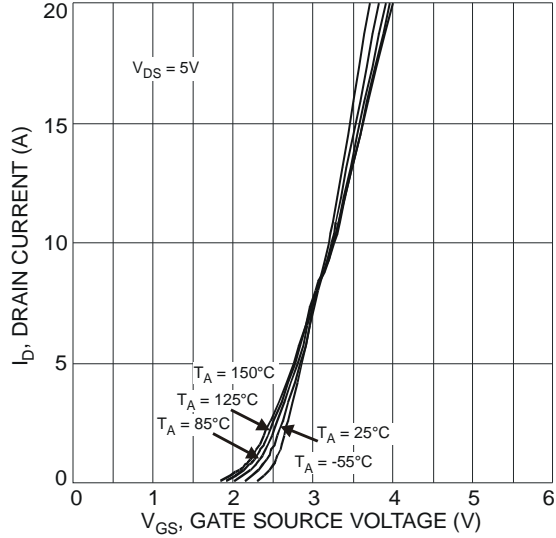


Fig. 12 Typical Transfer Characteristics

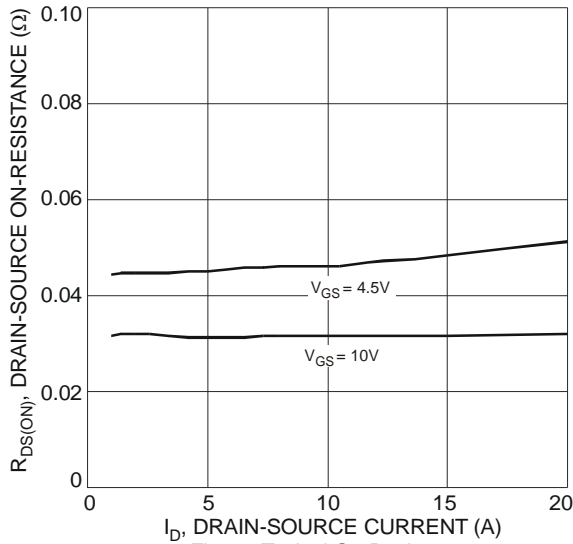


Fig. 13 Typical On-Resistance vs. Drain Current and Gate Voltage

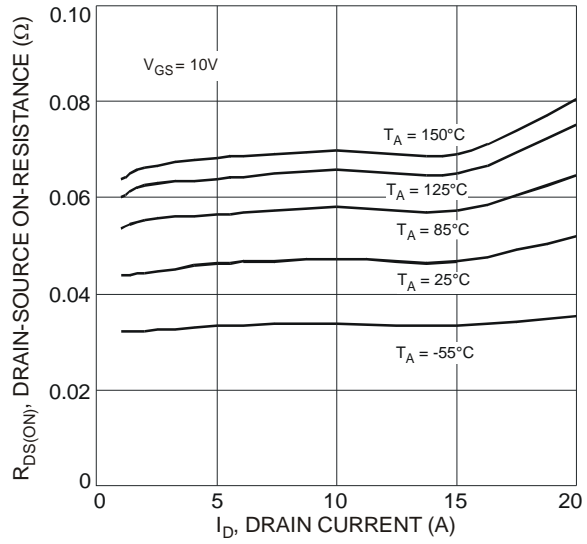


Fig. 14 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

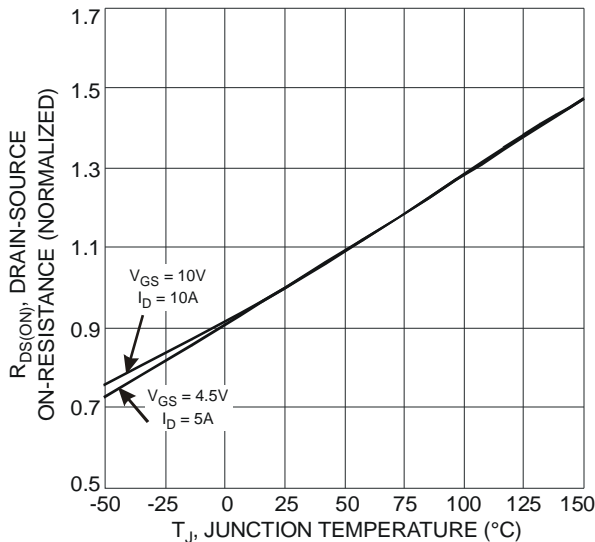


Fig. 15 On-Resistance Variation with Temperature

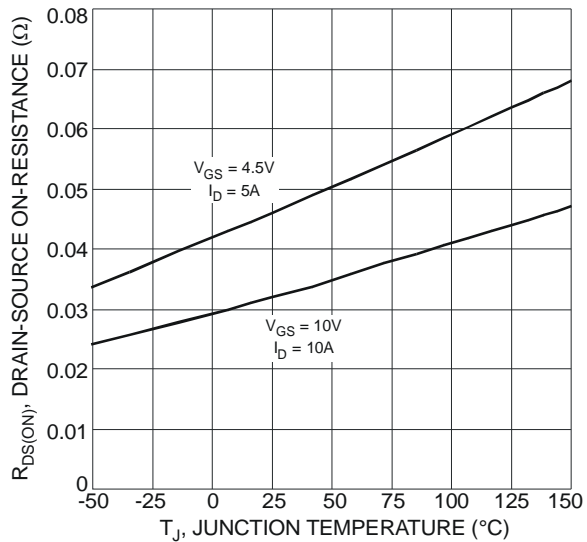


Fig. 16 On-Resistance Variation with Temperature

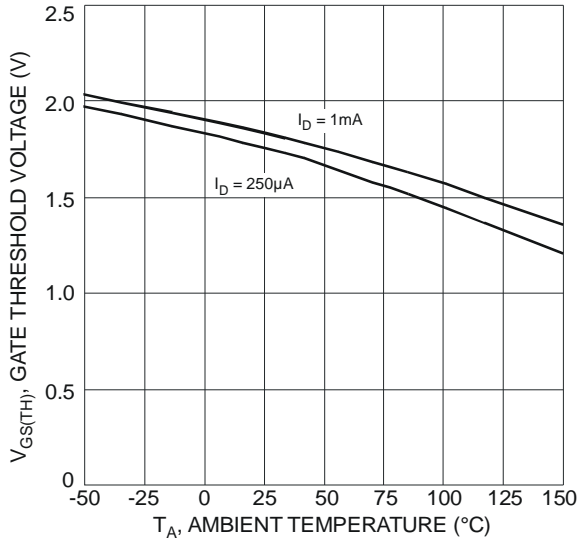


Fig. 17 Gate Threshold Variation vs. Ambient Temperature

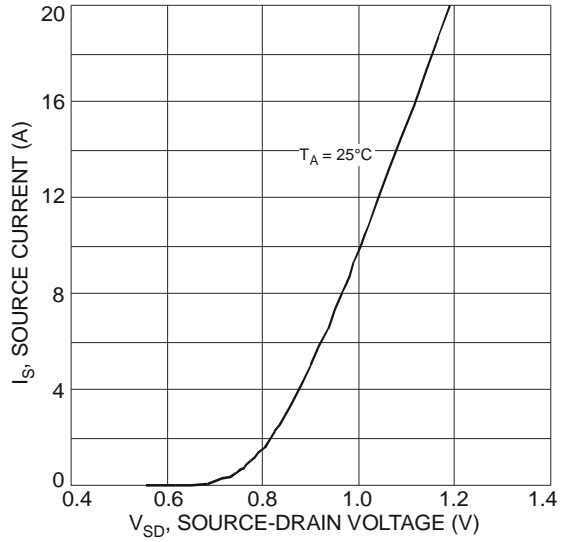


Fig. 18 Diode Forward Voltage vs. Current

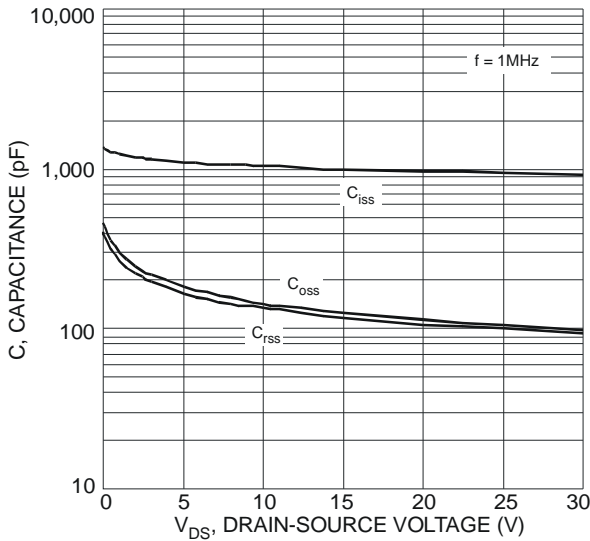


Fig. 19 Typical Capacitance

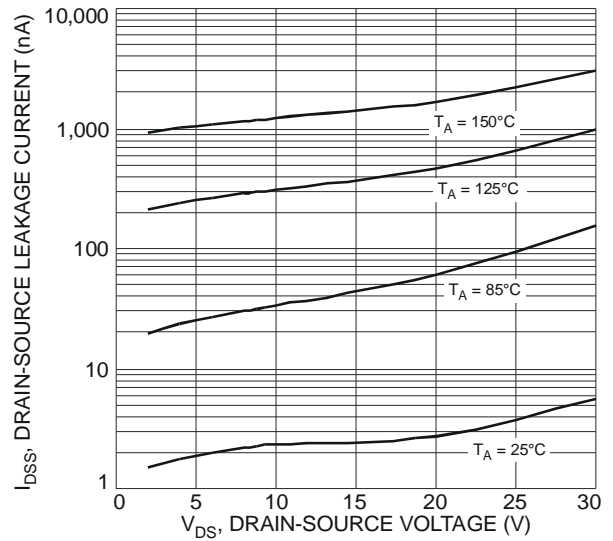


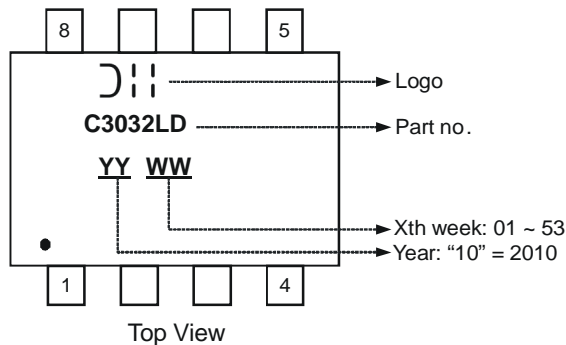
Fig. 20 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

**Ordering Information** (Note 7)

| Part Number   | Case | Packaging        |
|---------------|------|------------------|
| DMC3032LSD-13 | SO-8 | 2500/Tape & Reel |

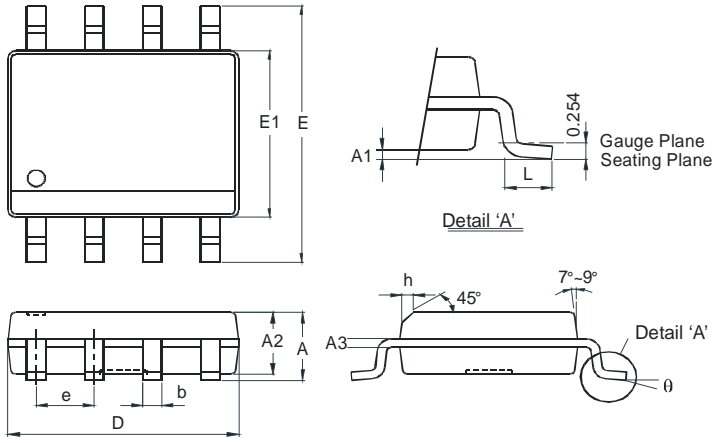
Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



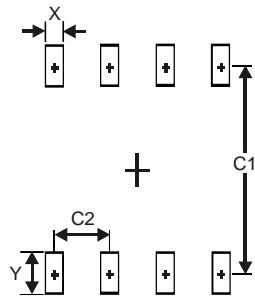
NEW PRODUCT

**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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