

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                                     | Symbol           | Value | Unit |
|--|------------------|-------|------|
| Drain-Source Voltage                               | V <sub>DSS</sub> | -12   | V    |
| Gate-Source Voltage                                | V <sub>GSS</sub> | ±8    |      |
| Continuous Drain Current (V <sub>GS</sub> = -4.5V) | I <sub>D</sub>   | -0.2  | A    |
| Pulsed Drain Current                               | I <sub>DM</sub>  | -1.5  | A    |

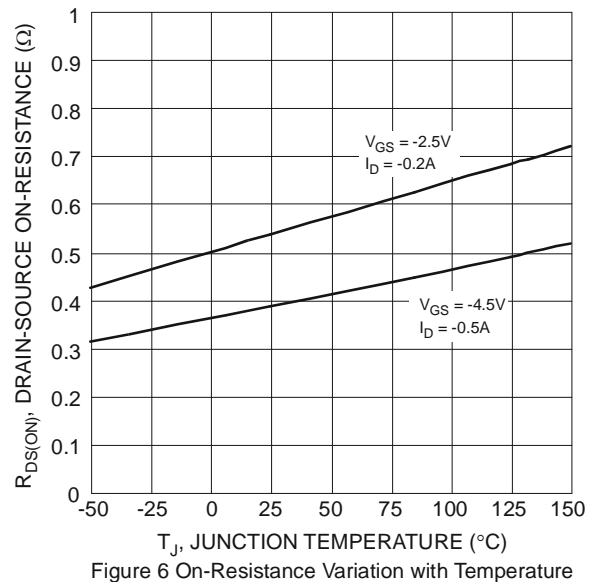
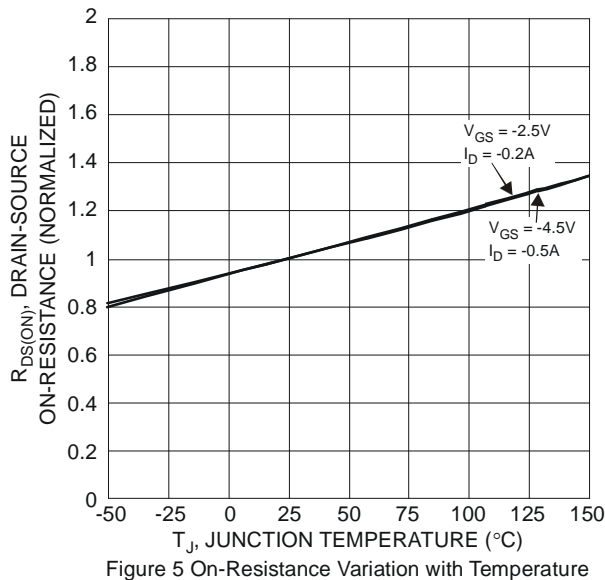
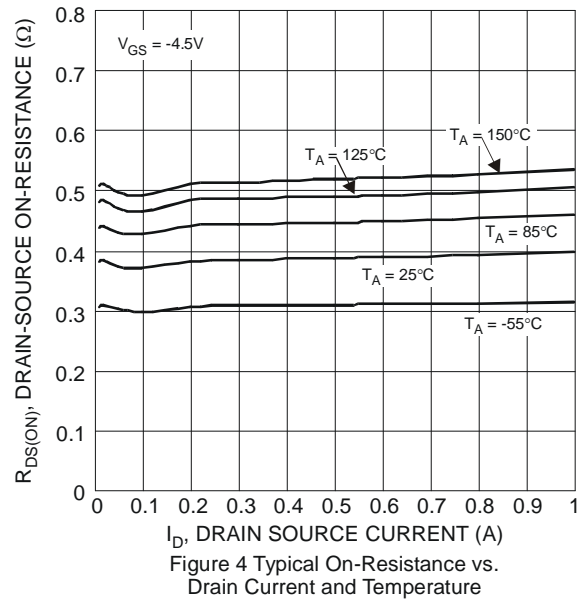
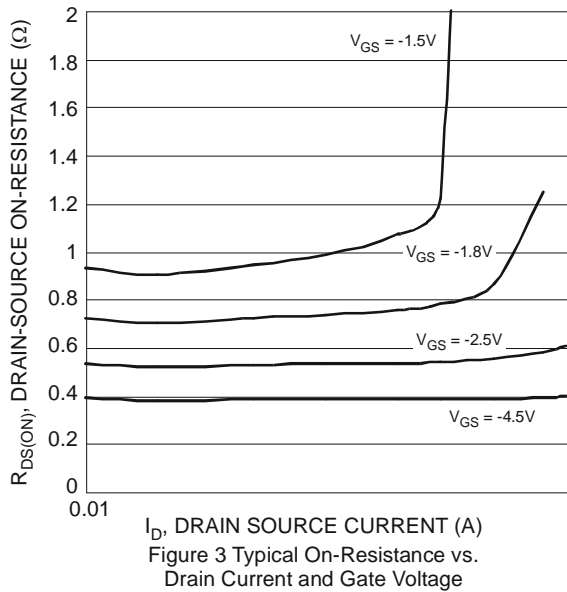
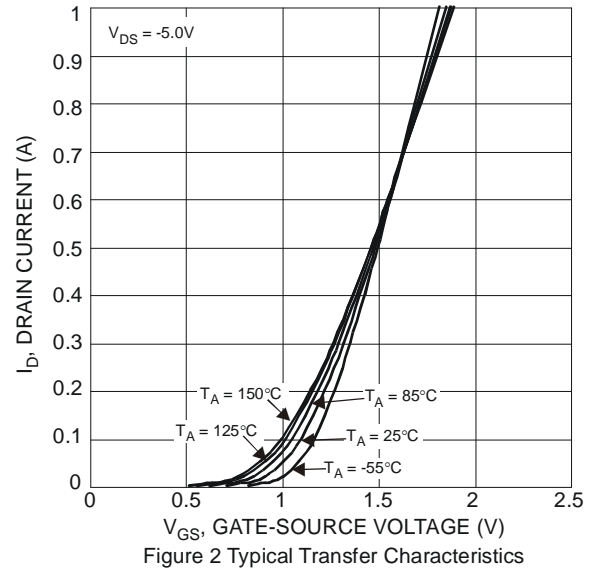
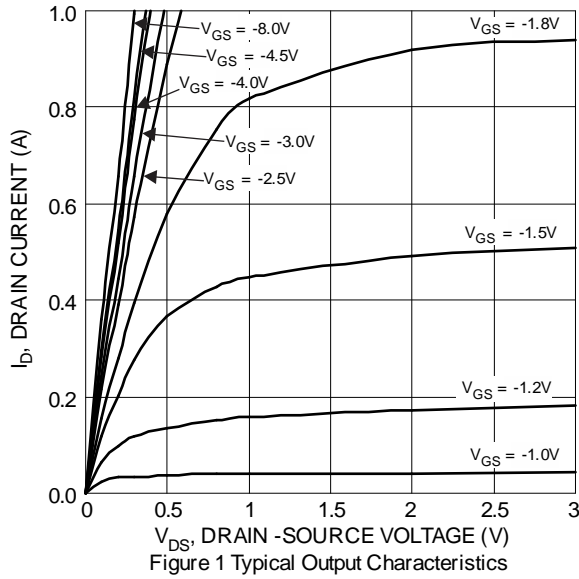
**Thermal Characteristics**

| Characteristic                          | Symbol                            | Value      | Units |
|---|-----------------------------------|------------|-------|
| Total Power Dissipation                 | P <sub>D</sub>                    | 0.36       | W     |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 353        | °C/W  |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to 150 | °C    |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic   | Symbol              | Min  | Typ  | Max  | Unit | Test Condition   |
|--|---------------------|------|------|------|------|--|
| <b>OFF CHARACTERISTICS (Note 7)</b>                    |                     |      |      |      |      |  |
| Drain-Source Breakdown Voltage                         | BV <sub>DSS</sub>   | -12  | —    | —    | 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   | μA   | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V   |
| Gate-Source Leakage                                    | I <sub>GSS</sub>    | —    | —    | ±10  | μA   | V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V  |
| <b>ON CHARACTERISTICS (Note 7)</b>                     |                     |      |      |      |      |  |
| Gate Threshold Voltage                                 | V <sub>GS(th)</sub> | -0.4 | —    | -1.0 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                    |
| Static Drain-Source On-Resistance                      | R <sub>DS(on)</sub> | —    | 0.4  | 0.8  | Ω    | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -0.2A  |
|  |                     | —    | 0.55 | 1.1  |      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.1A  |
|  |                     | —    | 0.75 | 3.0  |      | V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -0.05A   |
|  |                     | —    | 1.0  | 5.0  |      | V <sub>GS</sub> = -1.5V, I <sub>D</sub> = -0.01A   |
| Diode Forward Voltage                                  | V <sub>SD</sub>     | —    | —    | -1.2 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -0.2A   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>                |                     |      |      |      |      |  |
| Input Capacitance                                      | C <sub>iss</sub>    | —    | 55.4 | —    | pF   | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V,<br>f = 1MHz                                      |
| Output Capacitance                                     | C <sub>oss</sub>    | —    | 14.7 | —    | pF   |  |
| Reverse Transfer Capacitance                           | C <sub>rss</sub>    | —    | 11.9 | —    | pF   |  |
| Total Gate Charge (V <sub>GS</sub> = 4.5V)             | Q <sub>g</sub>      | —    | 0.84 | —    | nC   | V <sub>DS</sub> = -6V, V <sub>GS</sub> = -4.5V,<br>I <sub>D</sub> = -0.2A                      |
| Gate-Source Charge                                     | Q <sub>gs</sub>     | —    | 0.12 | —    | nC   |  |
| Gate-Drain Charge                                      | Q <sub>gd</sub>     | —    | 0.23 | —    | nC   |  |
| Turn-On Delay Time                                     | t <sub>D(on)</sub>  | —    | 16   | —    | ns   | V <sub>DD</sub> = -6V, V <sub>GS</sub> = -4.5V,<br>I <sub>D</sub> = -0.2A, R <sub>G</sub> = 6Ω |
| Turn-On Rise Time                                      | t <sub>r</sub>      | —    | 62   | —    | ns   |  |
| Turn-Off Delay Time                                    | t <sub>D(off)</sub> | —    | 232  | —    | ns   |  |
| Turn-Off Fall Time                                     | t <sub>f</sub>      | —    | 186  | —    | ns   |  |

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
  - Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.



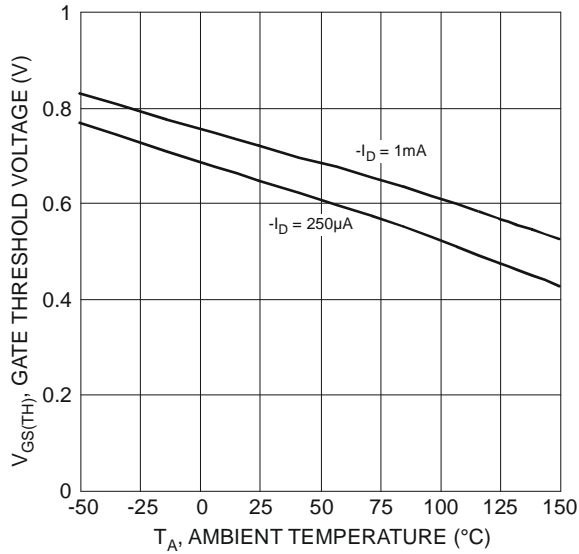


Figure 7 Gate Threshold Variation vs. Ambient Temperature

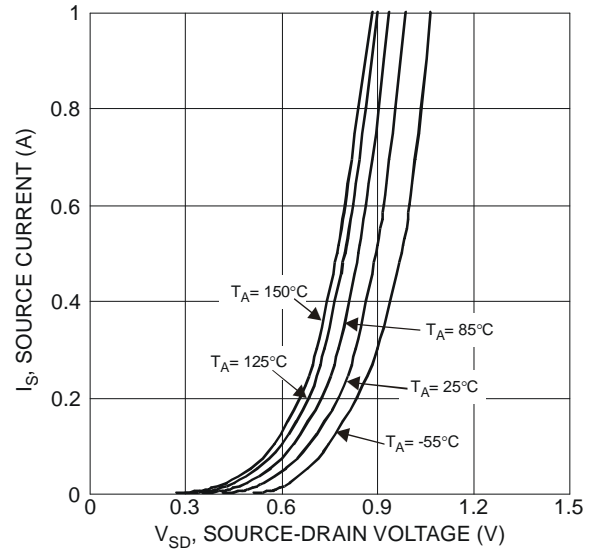


Figure 8 Diode Forward Voltage vs. Current

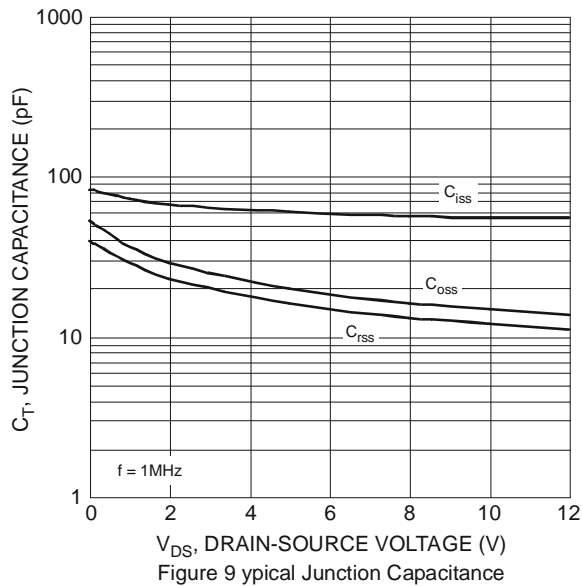


Figure 9 typical Junction Capacitance

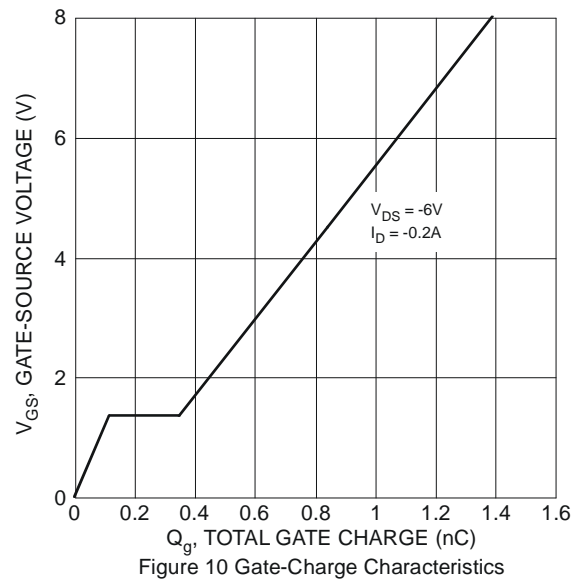


Figure 10 Gate-Charge Characteristics

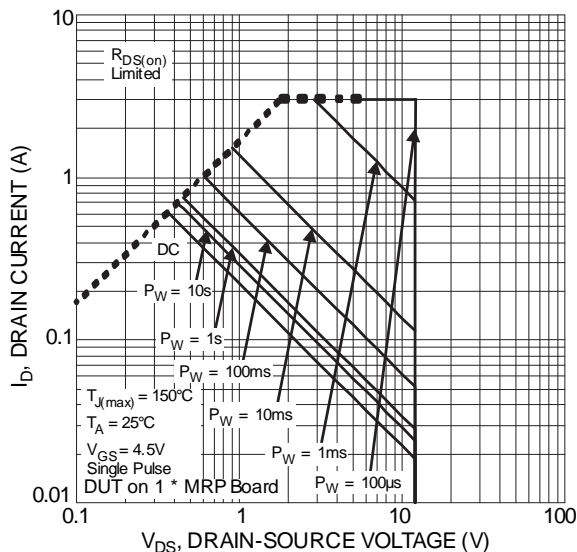
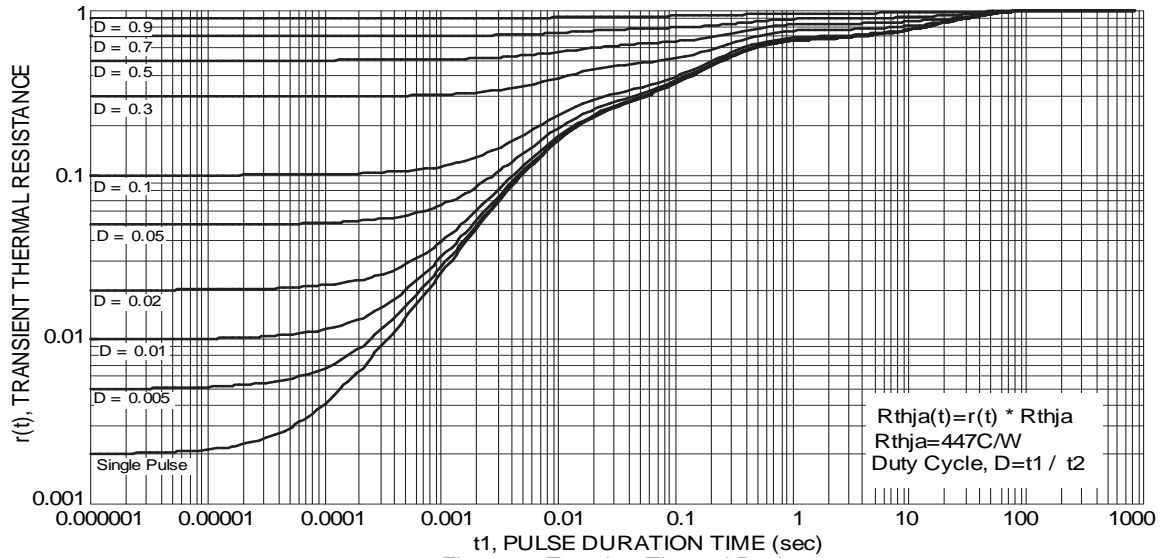
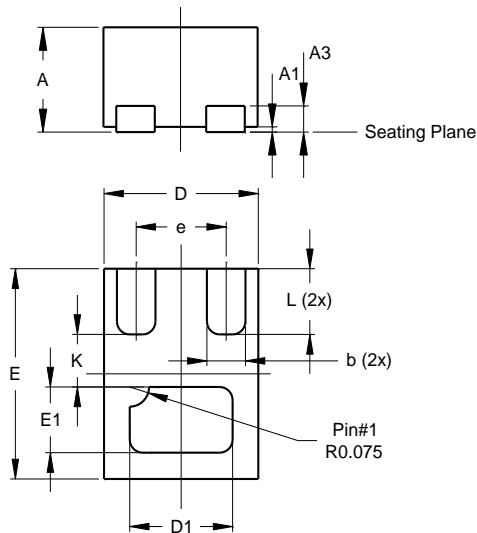


Figure 11 SOA, Safe Operation Area



## Package Outline Dimensions

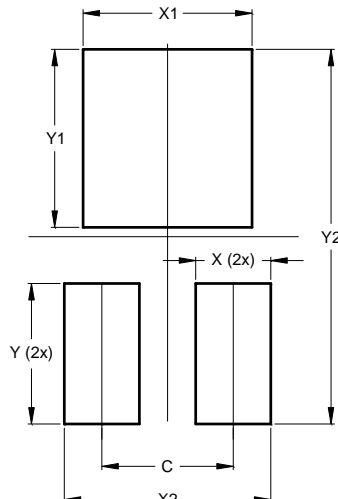
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| X2-DFN0806-3         |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 0.375 | 0.40 | 0.39 |
| A1                   | 0     | 0.05 | 0.02 |
| A3                   | -     | -    | 0.10 |
| b                    | 0.10  | 0.20 | 0.15 |
| D                    | 0.55  | 0.65 | 0.60 |
| D1                   | 0.35  | 0.45 | 0.40 |
| E                    | 0.75  | 0.85 | 0.80 |
| E1                   | 0.20  | 0.30 | 0.25 |
| e                    | -     | -    | 0.35 |
| K                    | -     | -    | 0.20 |
| L                    | 0.20  | 0.30 | 0.25 |
| All Dimensions in mm |       |      |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.350         |
| X          | 0.200         |
| X1         | 0.450         |
| X2         | 0.550         |
| Y          | 0.375         |
| Y1         | 0.475         |
| Y2         | 1.000         |

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