



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

| Characteristic                                                    | Symbol           | Value      | Units |
|-------------------------------------------------------------------|------------------|------------|-------|
| Drain-Source Voltage                                              | V <sub>DSS</sub> | 30         | V     |
| Gate-Source Voltage                                               | V <sub>GSS</sub> | ±20        | V     |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V           | I <sub>D</sub>   | 3.6<br>2.9 | A     |
| Pulsed Drain Current (Note 6) (Pulse width ≤10μs, Duty Cycle ≤1%) | I <sub>DM</sub>  | 30         | A     |
| Maximum Body Diode Forward Current (Note 6)                       | I <sub>S</sub>   | 1.4        | A     |

**Thermal Characteristics**

| Characteristic                                                           | Symbol                            | Value       | Unit |
|--------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                                               | P <sub>D</sub>                    | 0.77        | W    |
| Thermal Resistance, Junction to Ambient @T <sub>A</sub> = +25°C (Note 5) | R <sub>θJA</sub>                  | 164         | °C/W |
| Power Dissipation (Note 6)                                               | P <sub>D</sub>                    | 1.4         | W    |
| Thermal Resistance, Junction to Ambient @T <sub>A</sub> = +25°C (Note 6) | R <sub>θJA</sub>                  | 90          | °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>   | 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 7)</b>                     |                     |     |      |      |      |                                                                                             |
| Gate Threshold Voltage                                 | V <sub>GS(TH)</sub> | 1.0 | —    | 2.0  | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                  |
| Static Drain-Source On-Resistance                      | R <sub>DS(ON)</sub> | —   | 25   | 50   | mΩ   | V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.6A                                                |
|                                                        |                     | —   | 31   | 70   |      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.8A                                               |
| Diode Forward Voltage                                  | V <sub>SD</sub>     | —   | 0.75 | 1.0  | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A                                                   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>                |                     |     |      |      |      |                                                                                             |
| Input Capacitance                                      | C <sub>iss</sub>    | —   | 495  | —    | pF   | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V,<br>f = 1.0MHz                                  |
| Output Capacitance                                     | C <sub>oss</sub>    | —   | 50   | —    | pF   |                                                                                             |
| Reverse Transfer Capacitance                           | C <sub>rss</sub>    | —   | 43   | —    | pF   |                                                                                             |
| Gate Resistance                                        | R <sub>g</sub>      | —   | 2.0  | —    | Ω    | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz                                        |
| Total Gate Charge (V <sub>GS</sub> = 4.5V)             | Q <sub>g</sub>      | —   | 5.3  | —    | nC   | V <sub>DS</sub> = 15V, I <sub>D</sub> = 3.6A                                                |
| Total Gate Charge (V <sub>GS</sub> = 10V)              | Q <sub>g</sub>      | —   | 11.2 | —    | nC   |                                                                                             |
| Gate-Source Charge                                     | Q <sub>gs</sub>     | —   | 1.2  | —    | nC   |                                                                                             |
| Gate-Drain Charge                                      | Q <sub>gd</sub>     | —   | 1.9  | —    | nC   |                                                                                             |
| Turn-On Delay Time                                     | t <sub>D(ON)</sub>  | —   | 2.3  | —    | ns   | V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V,<br>R <sub>L</sub> = 2.2Ω, R <sub>G</sub> = 3Ω |
| Turn-On Rise Time                                      | t <sub>r</sub>      | —   | 3.3  | —    | ns   |                                                                                             |
| Turn-Off Delay Time                                    | t <sub>D(OFF)</sub> | —   | 10.3 | —    | ns   |                                                                                             |
| Turn-Off Fall Time                                     | t <sub>f</sub>      | —   | 2.3  | —    | ns   |                                                                                             |

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

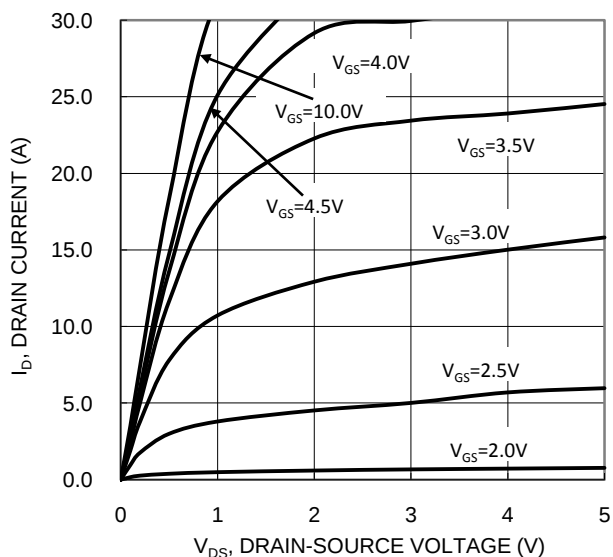


Figure 1. Typical Output Characteristic

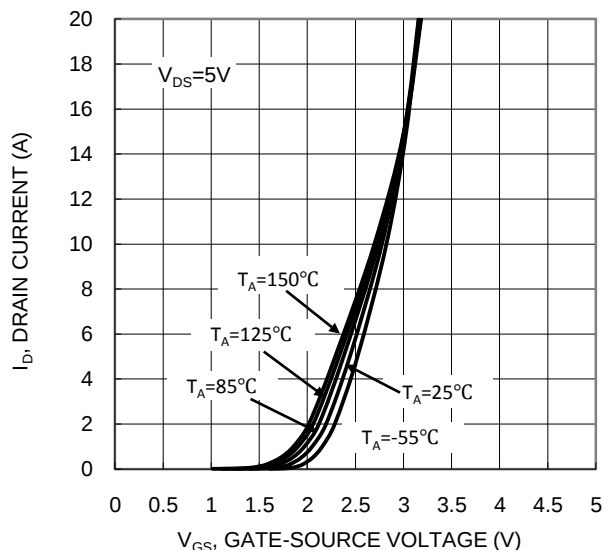


Figure 2. Typical Transfer Characteristic

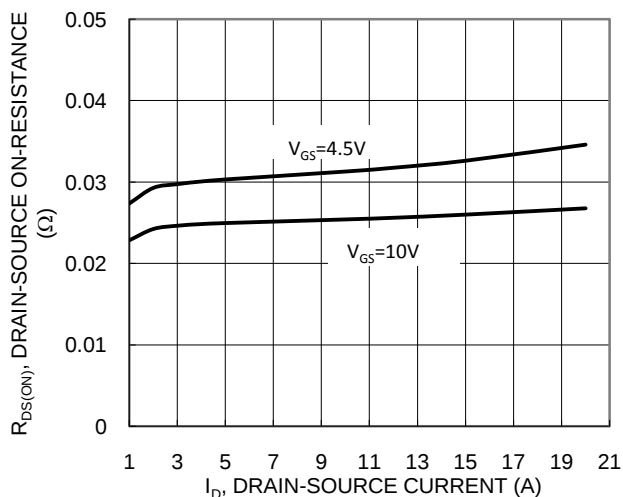


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

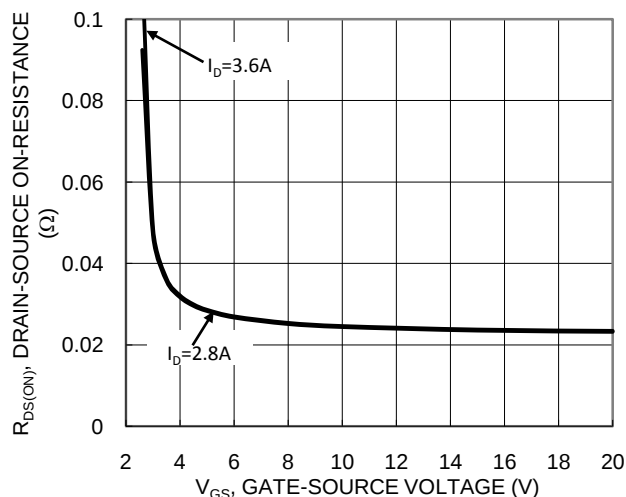


Figure 4. Typical Transfer Characteristic

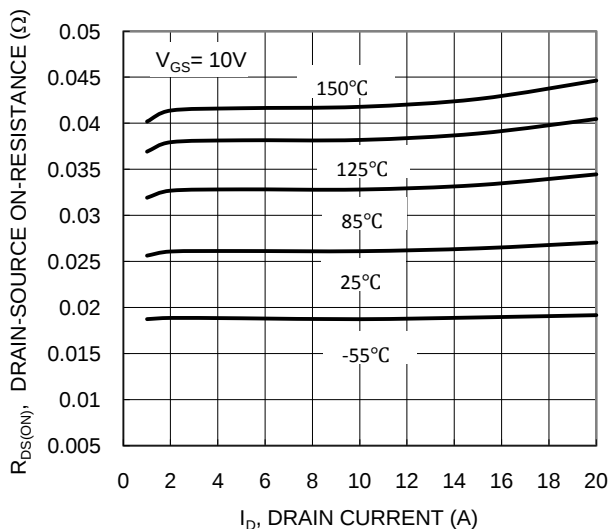


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

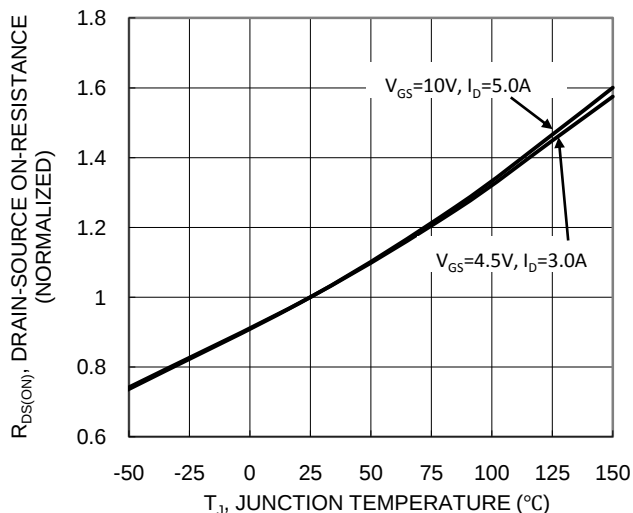
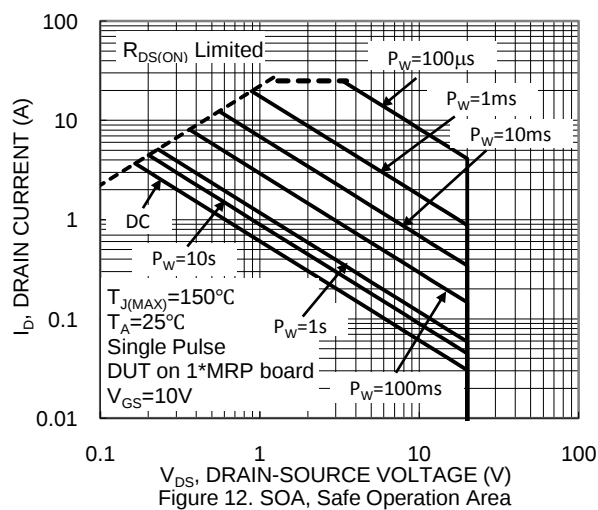
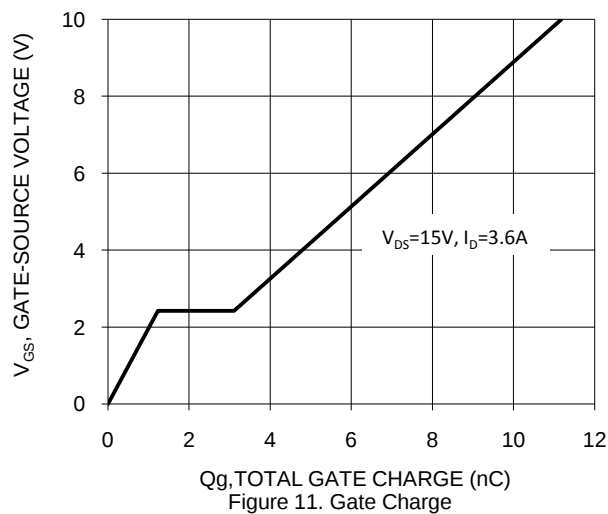
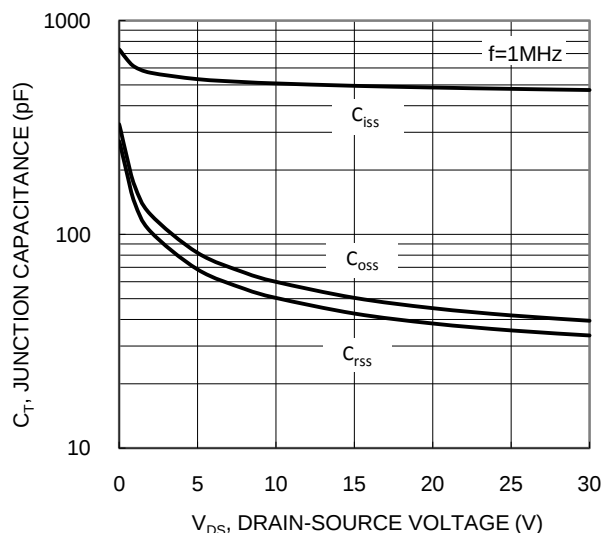
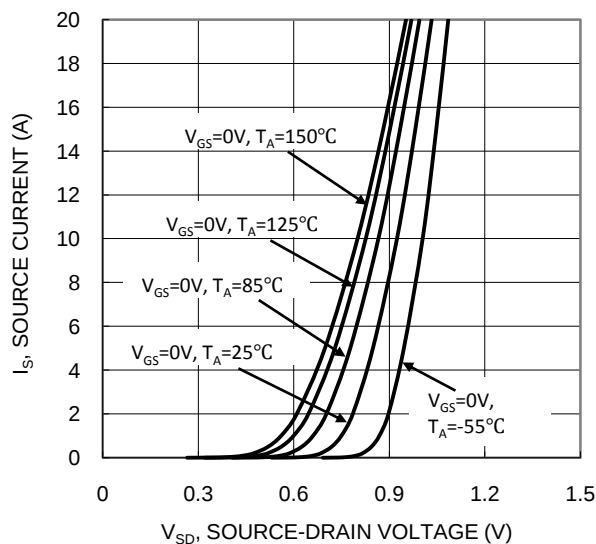
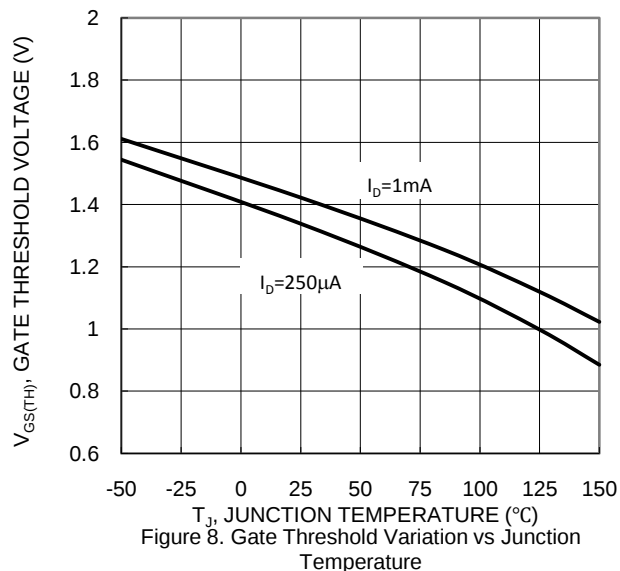
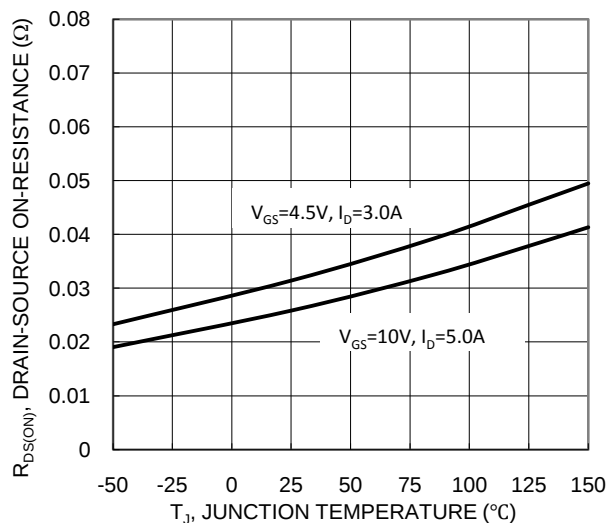
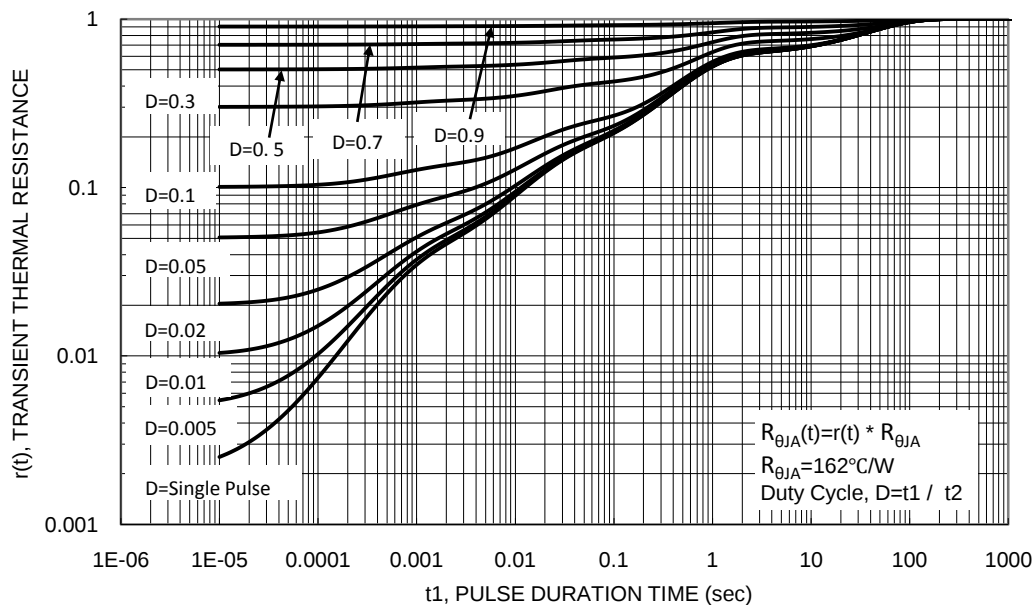


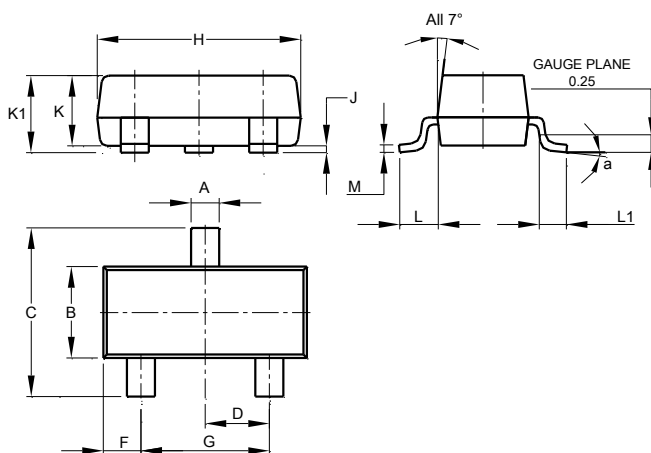
Figure 6. On-Resistance Variation with Temperature





## Package Outline Dimensions

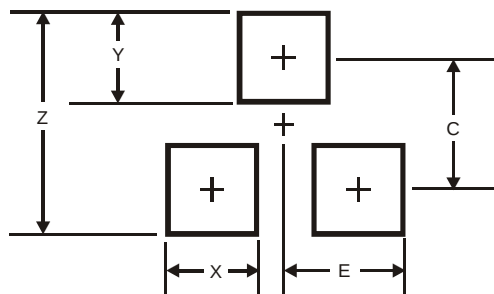
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 0.89  | 1.03  | 0.915 |
| F                    | 0.45  | 0.60  | 0.535 |
| G                    | 1.78  | 2.05  | 1.83  |
| H                    | 2.80  | 3.00  | 2.90  |
| J                    | 0.013 | 0.10  | 0.05  |
| K                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| α                    | 8°    |       |       |
| 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) |
|------------|---------------|
| Z          | 2.9           |
| X          | 0.8           |
| Y          | 0.9           |
| C          | 2.0           |
| E          | 1.35          |

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