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## 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 6) | $V_{GS}$ = -10V | $T_A$ = +25°C<br>$T_A$ = +70°C | $I_D$ | 250<br>200 | mA |
| Pulsed Drain Current (Note 6) | | | $I_{DM}$ | -1 | A |

## Thermal Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | | Symbol | Value | Units |
|---|---|---|---|---|
| Total Power Dissipation | (Note 5) | $P_D$ | 300 | mW |
| | (Note 6) | | 432 | |
| Thermal Resistance, Junction to Ambient | (Note 5) | $R_{\theta JA}$ | 398 | °C/W |
| | (Note 6) | | 290 | |
| Thermal Resistance, Junction to Case | (Note 5) | $R_{\theta JC}$ | 142 | |
| 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, $I_D$ = -1mA |
| Zero Gate Voltage Drain Current $T_J$ = +25°C | $I_{DSS}$ | - | - | -1 | µA | $V_{DS}$ = -30V, $V_{GS}$ = 0V |
| Gate-Source Leakage | $I_{GSS}$ | - | - | ±10 | µA | $V_{GS}$ = ±16V, $V_{DS}$ = 0V |
| **ON CHARACTERISTICS (Note 7)** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | -1.4 | - | -2.4 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = -250µA |
| Static Drain-Source On-Resistance | $R_{DS\ (ON)}$ | - | - | 2.4 | Ω | $V_{GS}$ = -10V, $I_D$ = -0.5A |
| | | | | 4 | | $V_{GS}$ = -4.5V, $I_D$ = -0.3A |
| Forward Transfer Admittance | $\|Y_{fs}\|$ | - | 6 | - | S | $V_{DS}$ = -10V, $I_D$ = -400mA |
| Diode Forward Voltage | $V_{SD}$ | - | 0.8 | 1.2 | V | $V_{GS}$ = 0V, $I_S$ = -300mA |
| **DYNAMIC CHARACTERISTICS (Note 8)** | | | | | | |
| Input Capacitance | $C_{iss}$ | - | 51.16 | - | pF | $V_{DS}$ = -15V, $V_{GS}$ = 0V, f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | - | 10.85 | - | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | - | 8.88 | - | pF | |
| Gate Resistance | $R_g$ | - | 275 | - | Ω | $V_{DS}$ = 0V, $V_{GS}$ = 0V, f = 1MHz |
| Total Gate Charge | $Q_g$ | - | 0.6 | - | nC | $V_{GS}$ = -4.5V; $V_{DS}$ = -10V, $I_D$ = -1A |
| Total Gate Charge | $Q_g$ | - | 1.2 | - | nC | $V_{GS}$ = -10V; $V_{DS}$ = -10V, $I_D$ = -1A |
| Gate-Source Charge | $Q_{gs}$ | - | 0.2 | - | nC | $V_{GS}$ = -10V; $V_{DS}$ = -10V, $I_D$ = -1A |
| Gate-Drain Charge | $Q_{gd}$ | - | 0.3 | - | nC | $V_{GS}$ = -10V; $V_{DS}$ = -10V, $I_D$ = -1A |
| Turn-On Delay Time | $t_{D(on)}$ | - | 9.86 | - | ns | $V_{DS}$ = -15V, $I_D$ = -1A, $V_{GS}$ = -10V, $R_G$ = 6Ω |
| Turn-On Rise Time | $t_r$ | - | 11.5 | - | ns | |
| Turn-Off Delay Time | $t_{D(off)}$ | - | 31.8 | - | ns | |
| Turn-Off Fall Time | $t_f$ | - | 21.9 | - | ns | |

Notes:
5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout
7 .Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

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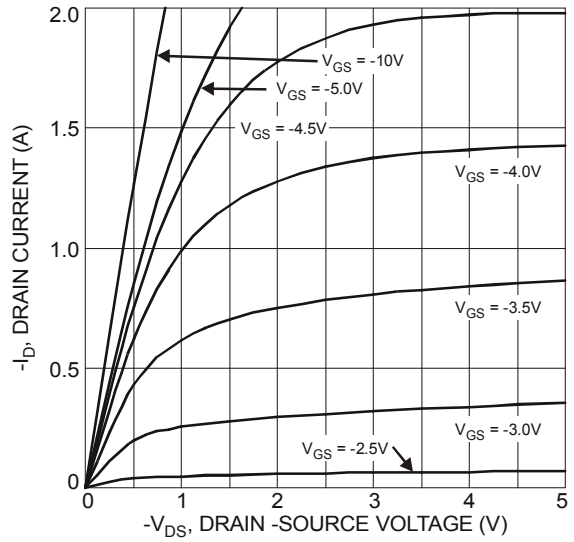


Figure 1 Typical Output Characteristics

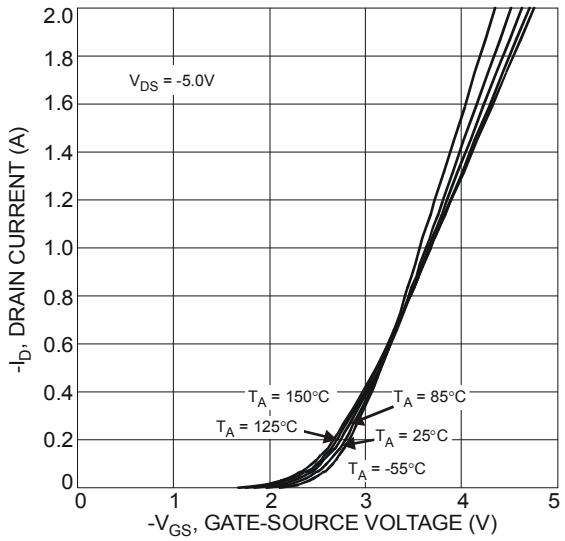


Figure 2 Typical Transfer Characteristics

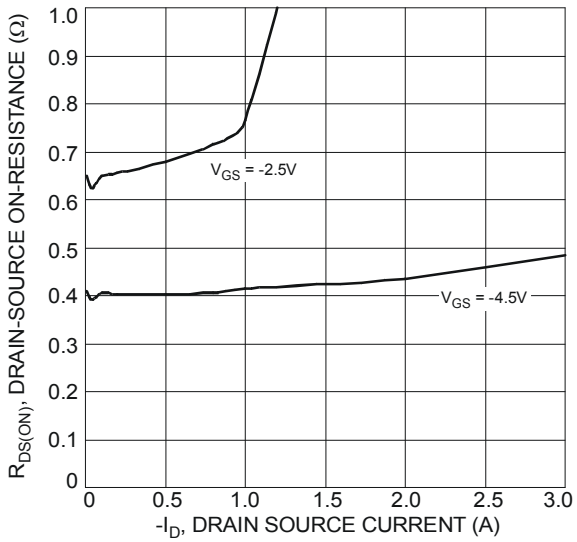


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

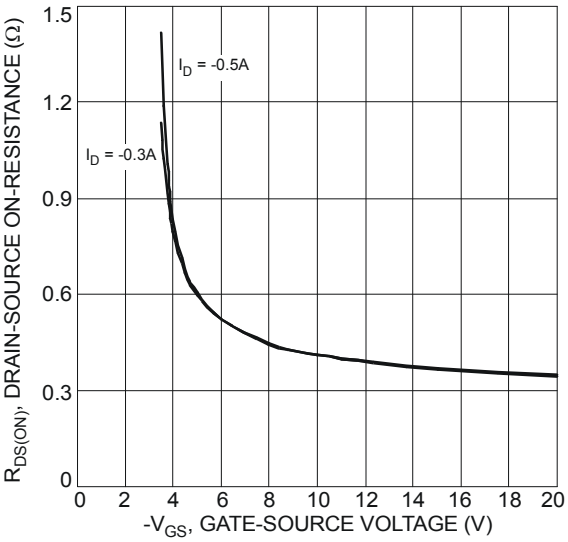


Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

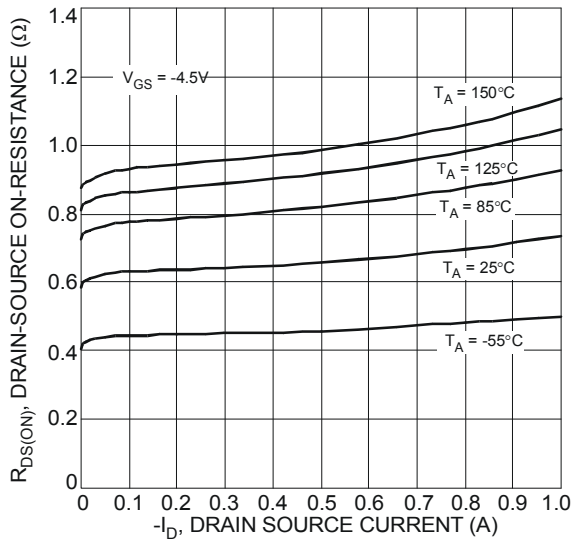


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

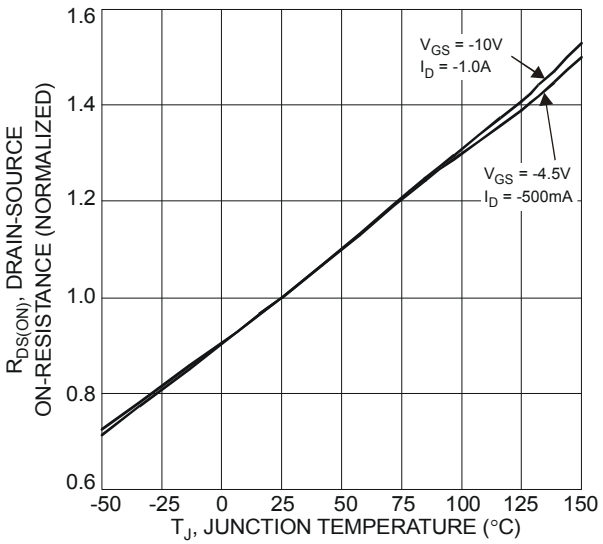


Figure 6 On-Resistance Variation with Temperature

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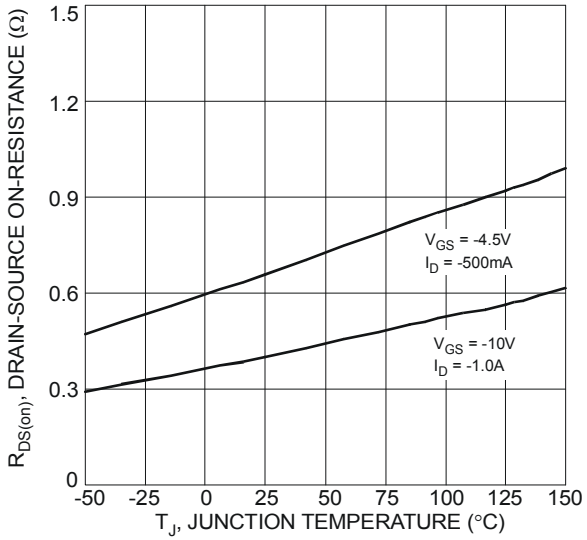


Figure 7 On-Resistance Variation with Temperature

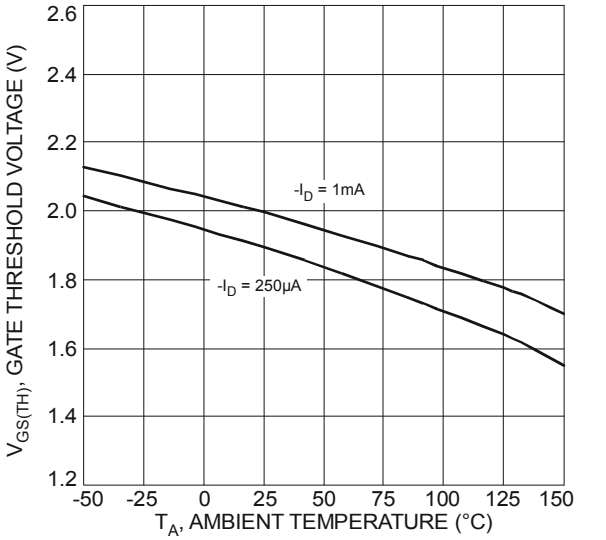


Figure 8 Gate Threshold Variation vs. Ambient Temperature

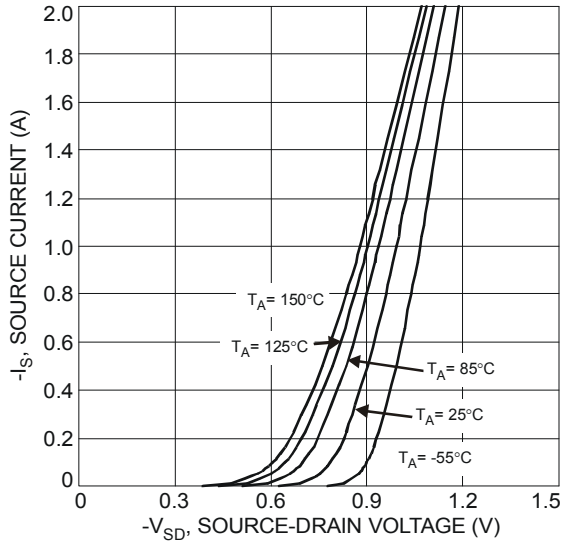


Figure 9 Diode Forward Voltage vs. Current

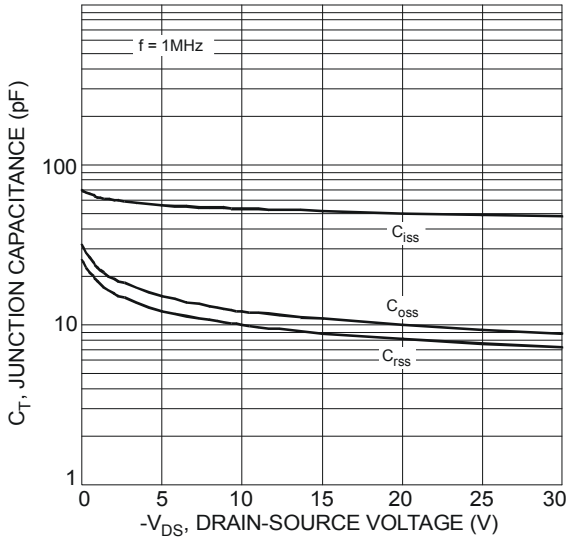


Figure 10 Typical Junction Capacitance

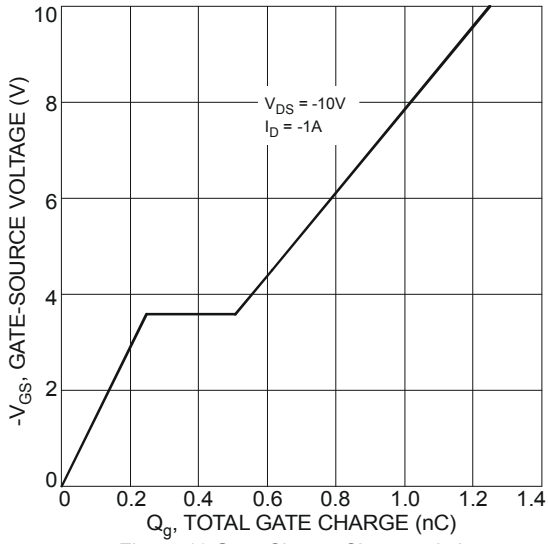


Figure 11 Gate-Charge Characteristics

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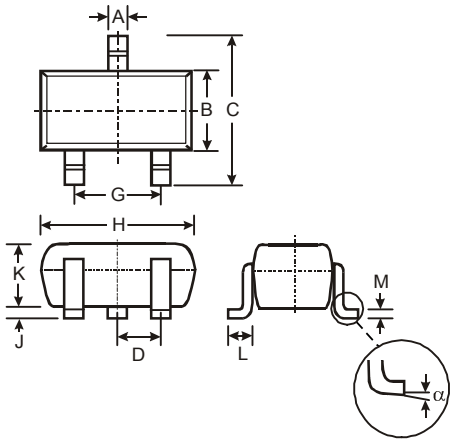
## Package Outline Dimensions

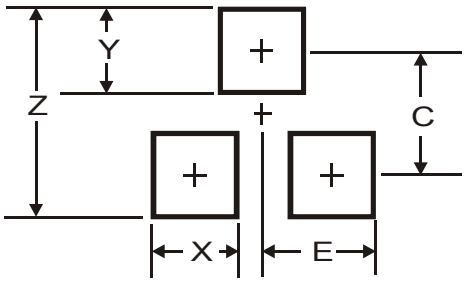
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.




| SOT323 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.25 | 0.40 | 0.30 |
| **B** | 1.15 | 1.35 | 1.30 |
| **C** | 2.00 | 2.20 | 2.10 |
| **D** | - | - | 0.65 |
| **G** | 1.20 | 1.40 | 1.30 |
| **H** | 1.80 | 2.20 | 2.15 |
| **J** | 0.0 | 0.10 | 0.05 |
| **K** | 0.90 | 1.00 | 0.95 |
| **L** | 0.25 | 0.40 | 0.30 |
| **M** | 0.10 | 0.18 | 0.11 |
| **α** | 0° | 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** | 2.8 |
| **X** | 0.7 |
| **Y** | 0.9 |
| **C** | 1.9 |
| **E** | 1.0 |

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