## 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 5) | $T_A$ = +25°C<br>$T_A$ = +70°C | $I_D$ | 6<br>5 | A |
| Pulsed Drain Current (Note 6) | | $I_{DM}$ | 24 | A |
| Body-Diode Continuous Current (Note 5) | | $I_S$ | 2.25 | A |

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

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Total Power Dissipation (Note 5) | $P_D$ | 1.4 | W |
| Thermal Resistance, Junction to Ambient (Note 5) t ≤10s | $R_{\theta JA}$ | 90 | °C/W |
| 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 |
|---|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | | |
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | 30 | — | — | V | $I_D$ = 250μA, $V_{GS}$ = 0V |
| Zero Gate Voltage Drain Current | $T_J$ = +25°C<br>$T_J$ = +55°C | $I_{DSS}$ | — | — | 1<br>5 | μA | $V_{DS}$ = 30V, $V_{GS}$ = 0V |
| Gate-Body Leakage Current | | $I_{GSS}$ | — | — | ±100 | nA | $V_{DS}$ = 0V, $V_{GS}$ = ±20V |
| Gate Threshold Voltage | | $V_{GS(TH)}$ | 1.0 | — | 2.1 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA |
| Static Drain-Source On-Resistance (Note 7) | | $R_{DS(ON)}$ | — | 25<br>36 | 30<br>40 | mΩ | $V_{GS}$ = 10V, $I_D$ = 6A<br>$V_{GS}$ = 4.5V, $I_D$ = 5A |
| Forward Transconductance (Note 7) | | $g_{FS}$ | — | 5 | — | S | $V_{DS}$ = 10V, $I_D$ = 8A |
| Diode Forward Voltage (Note 7) | | $V_{SD}$ | — | 0.7 | 1.1 | V | $I_S$ = 2.25A, $V_{GS}$ = 0V |
| **DYNAMIC PARAMETERS (Note 8)** | | | | | | | |
| Total Gate Charge | | $Q_g$ | — | 10.5 | — | nC | $V_{GS}$ = 5V, $V_{DS}$ = 15V, $I_D$ = 6A |
| Gate-Source Charge | | $Q_{gs}$ | — | 3.8 | — | nC | $V_{GS}$ = 10V, $V_{DS}$ = 15V, $I_D$ = 6A |
| Gate-Drain Charge | | $Q_{gd}$ | — | 2.9 | — | nC | $V_{GS}$ = 10V, $V_{DS}$ = 15V, $I_D$ = 6A |
| Turn-On Delay Time | | $t_{D(ON)}$ | — | 11 | — | ns | $V_{DD}$ = 15V, $V_{GS}$ = 10V, $R_D$ = 1.8Ω, $R_G$ = 6Ω |
| Turn-On Rise Time | | $t_R$ | — | 7 | — | ns | |
| Turn-Off Delay Time | | $t_{D(OFF)}$ | — | 63 | — | ns | |
| Turn-Off Fall Time | | $t_F$ | — | 30 | — | ns | |
| Input Capacitance | | $C_{iss}$ | — | 755 | — | pF | $V_{DS}$ = 10V, $V_{GS}$ = 0V f = 1.0MHz |
| Output Capacitance | | $C_{oss}$ | — | 136 | — | pF | |
| Reverse Transfer Capacitance | | $C_{rss}$ | — | 108 | — | pF | |

Notes:
5. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width t ≤10s.
6. Repetitive Rating, pulse width limited by junction temperature.
7. Test pulse width t = 300ms.
8. Guaranteed by design. Not subject to production testing.

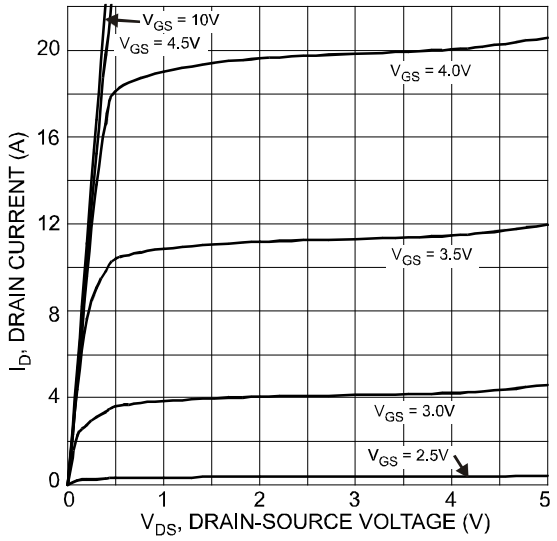



Fig. 1 Typical Output Characteristics

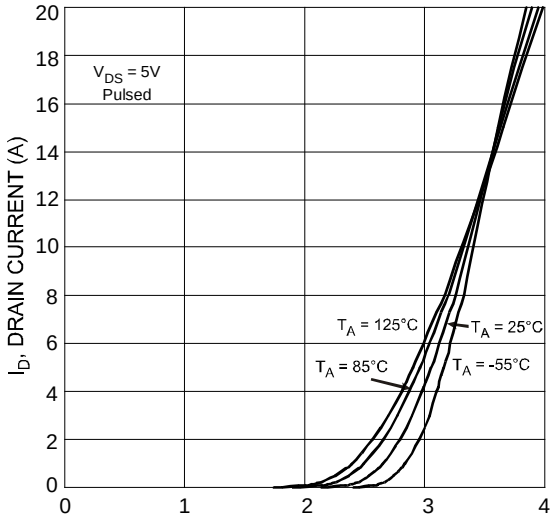



Fig. 2 Typical Transfer Characteristics

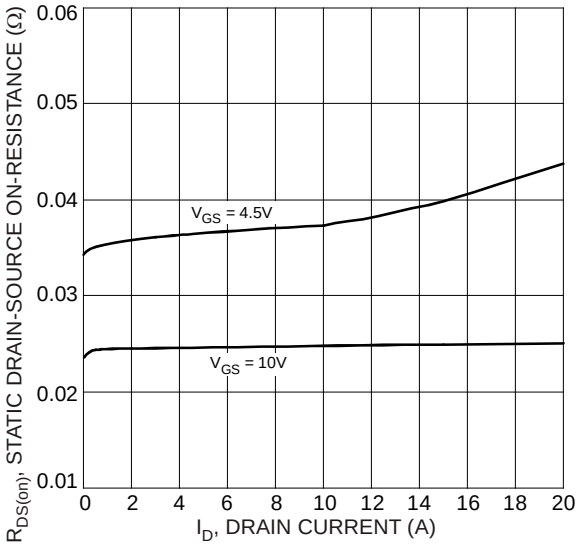



Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

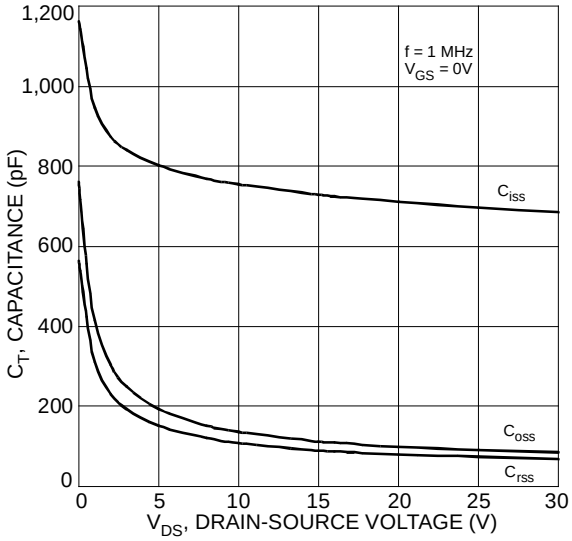



Fig. 4 Typical Total Capacitance

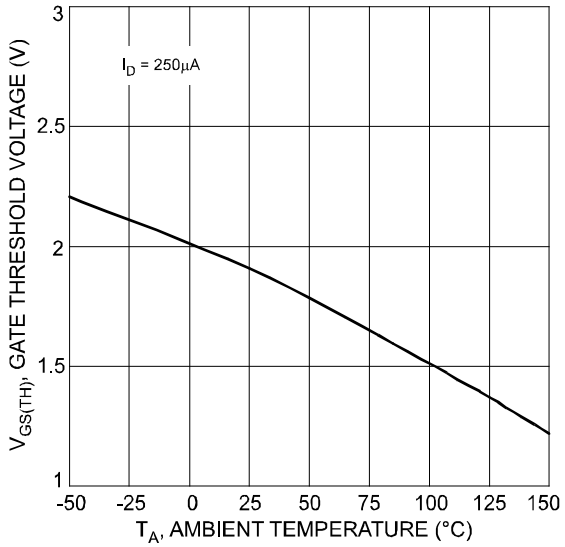



Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

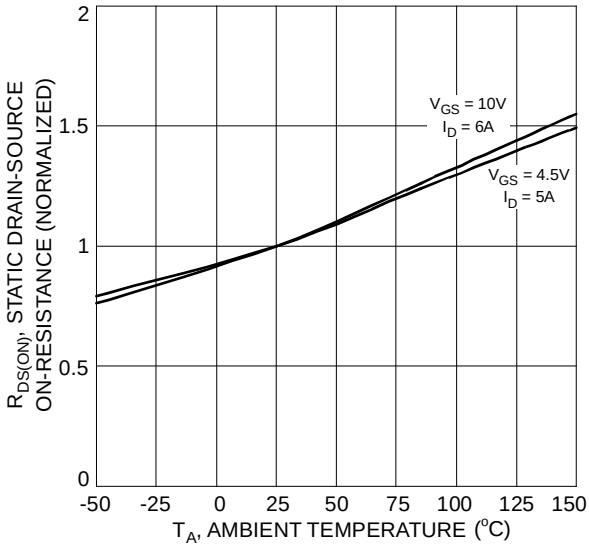



Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

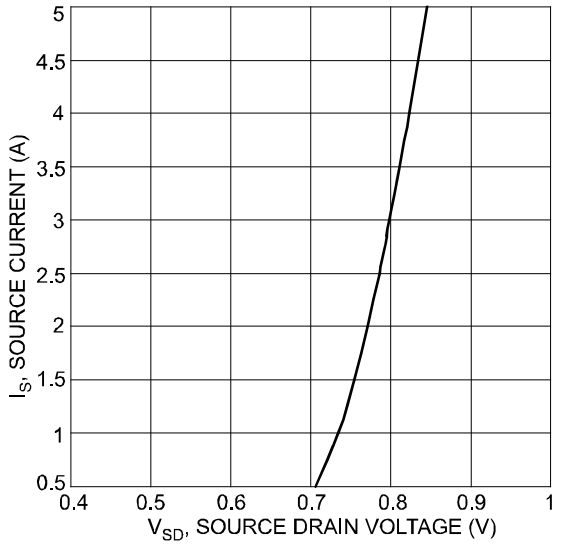
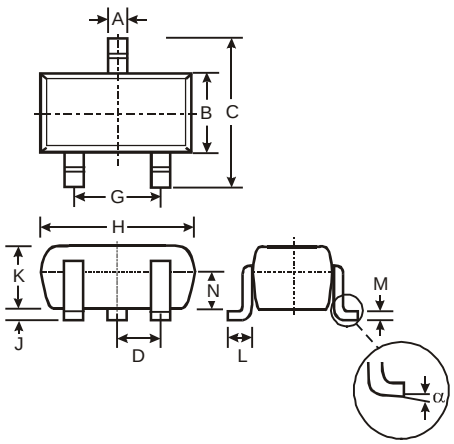


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

## Package Outline Dimensions

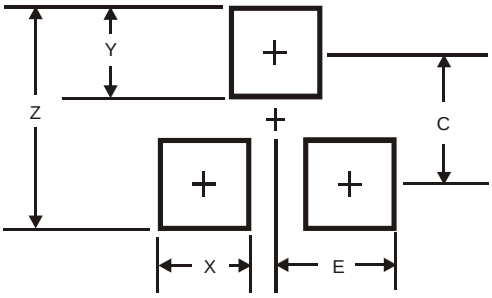
Please see http://www.diodes.com/package-outlines.html for the latest version.




| SC59 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.35 | 0.50 | 0.38 |
| **B** | 1.50 | 1.70 | 1.60 |
| **C** | 2.70 | 3.00 | 2.80 |
| **D** | - | - | 0.95 |
| **G** | - | - | 1.90 |
| **H** | 2.90 | 3.10 | 3.00 |
| **J** | 0.013 | 0.10 | 0.05 |
| **K** | 1.00 | 1.30 | 1.10 |
| **L** | 0.35 | 0.55 | 0.40 |
| **M** | 0.10 | 0.20 | 0.15 |
| **N** | 0.70 | 0.80 | 0.75 |
| **α** | 0° | 8° | - |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 3.4 |
| **X** | 0.8 |
| **Y** | 1.0 |
| **C** | 2.4 |
| **E** | 1.35 |

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