## Features

- Low $R_{DS(ON)}$:
  - 40 mΩ @$V_{GS}$ = -4.5V
  - 70 mΩ @$V_{GS}$ = -2.5V
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

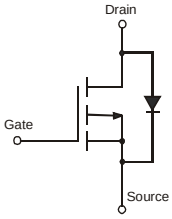
## Mechanical Data

- Case: SC-59
- Case Material – Molded Plastic. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See page 4
- Weight: 0.014 grams (approximate)

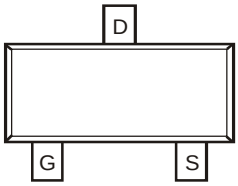
SC-59



TOP VIEW




Internal Schematic




Pin Configuration

## Maximum Ratings @$T_A$ = 25°C unless otherwise specified

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | -20 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±12 | V |
| Drain Current (Note 1) Continuous | $T_A$ = 25°C<br>$T_A$ = 70°C | $I_D$ | -4.6<br>-3.7 | A |
| Pulsed Drain Current (Note 2) | | $I_{DM}$ | -18 | A |
| Body-Diode Continuous Current (Note 1) | | $I_S$ | 2.0 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Total Power Dissipation (Note 1) | $P_D$ | 1.25 | W |
| Thermal Resistance, Junction to Ambient (Note 1); Steady-State | $R_{\theta JA}$ | 100 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

Notes:
1. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width t ≤10s.
2. Repetitive Rating, pulse width limited by junction temperature.
3. No purposefully added lead.
4. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.


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## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | -20 | — | — | V | $I_D$ = -250μA, $V_{GS}$ = 0V |
| Zero Gate Voltage Drain Current $T_J$ = 25°C | $I_{DSS}$ | — | — | -1 | μA | $V_{DS}$ = -20V, $V_{GS}$ = 0V |
| Gate-Body Leakage Current | $I_{GSS}$ | — | — | ±100 | nA | $V_{DS}$ = 0V, $V_{GS}$ = ±12V |
| Gate Threshold Voltage | $V_{GS(th)}$ | -0.6 | -0.96 | -1.2 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = -250μA |
| On State Drain Current (Note 5) | $I_{D(ON)}$ | -15 | — | — | A | $V_{GS}$ = -4.5V, $V_{DS}$ = -5V |
| Static Drain-Source On-Resistance (Note 5) | $R_{DS(ON)}$ | — | 29<br>55 | 40<br>70 | mΩ | $V_{GS}$ = -4.5V, $I_D$ = -4.6A<br>$V_{GS}$ = -2.5V, $I_D$ = -3.8A |
| Forward Transconductance (Note 5) | $g_{FS}$ | — | 9 | — | S | $V_{DS}$ = -10V, $I_D$ = -4.5A |
| Diode Forward Voltage (Note 5) | $V_{SD}$ | -0.5 | -0.72 | -1.4 | V | $I_S$ = -2.1A, $V_{GS}$ = 0V |
| Maximum Body-Diode Continuous Current (Note 1) | $I_S$ | — | — | 1.7 | A | — |
| **DYNAMIC PARAMETERS (Note 6)** | | | | | | |
| Input Capacitance | $C_{iss}$ | — | 820 | — | pF | $V_{DS}$ = -15V, $V_{GS}$ = 0V<br>f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | — | 200 | — | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | — | 160 | — | pF | |
| Gate Resistance | $R_G$ | — | 2.5 | — | Ω | $V_{DS}$ = 0V, $V_{GS}$ = 0V<br>f = 1.0MHz |
| **SWITCHING CHARACTERISTICS** | | | | | | |
| Total Gate Charge | $Q_G$ | — | 10.1 | — | nC | $V_{DS}$ = -10V, $V_{GS}$ = -4.5V,<br>$I_D$ = -4.5A |
| Gate-Source Charge | $Q_{GS}$ | — | 1.5 | — | | |
| Gate-Drain Charge | $Q_{GD}$ | — | 4.3 | — | | |
| Turn-On Delay Time | $t_{d(on)}$ | — | 4.4 | — | ns | $V_{DS}$ = -10V, $V_{GS}$ = -4.5V,<br>$I_D$ = -1A, $R_G$ = 6.0Ω |
| Rise Time | $t_r$ | — | 9.9 | — | | |
| Turn-Off Delay Time | $t_{d(off)}$ | — | 28.0 | — | | |
| Fall Time | $t_f$ | — | 23.4 | — | | |

Notes: 5. Test pulse width t = 300μs.
6. Guaranteed by design. Not subject to production testing.

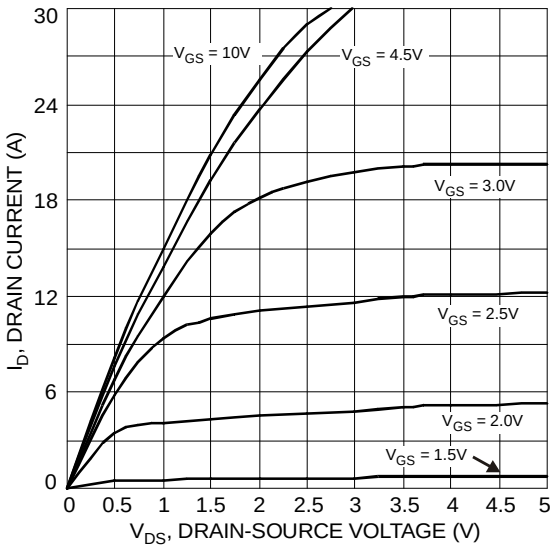


Fig. 1 Typical Output Characteristic

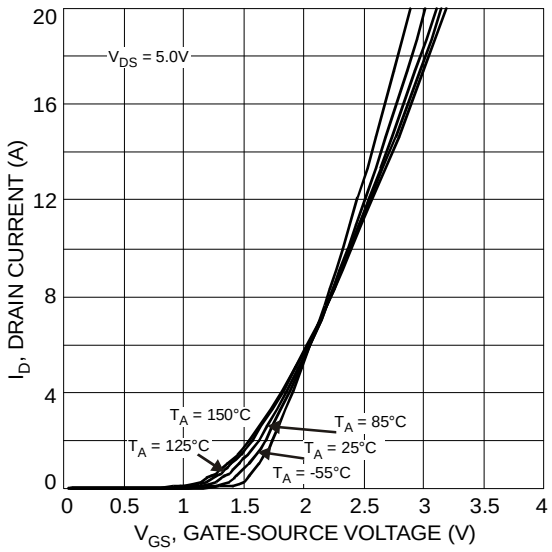


Fig. 2 Typical Transfer Characteristic


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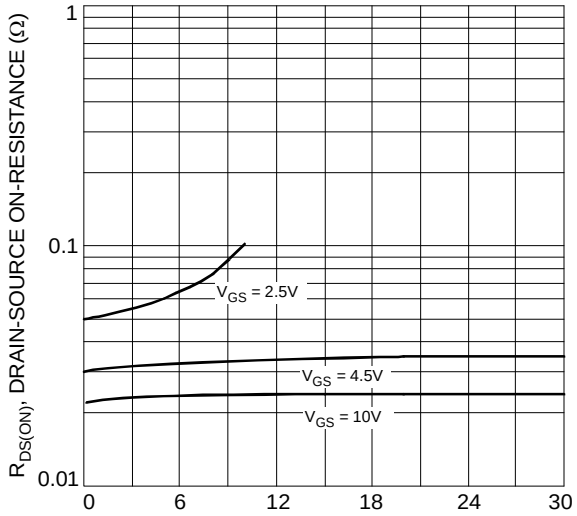



Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

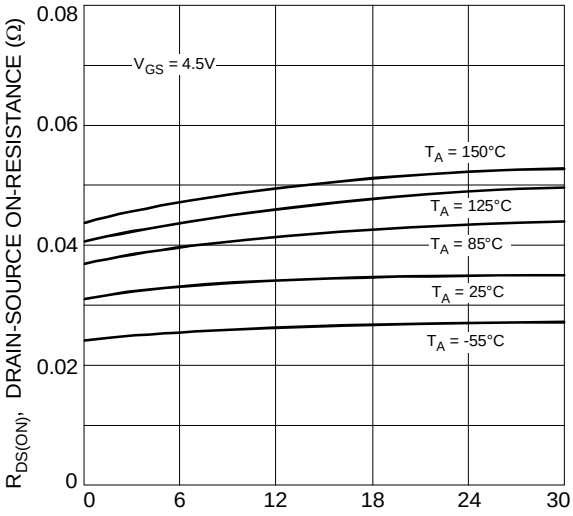



Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

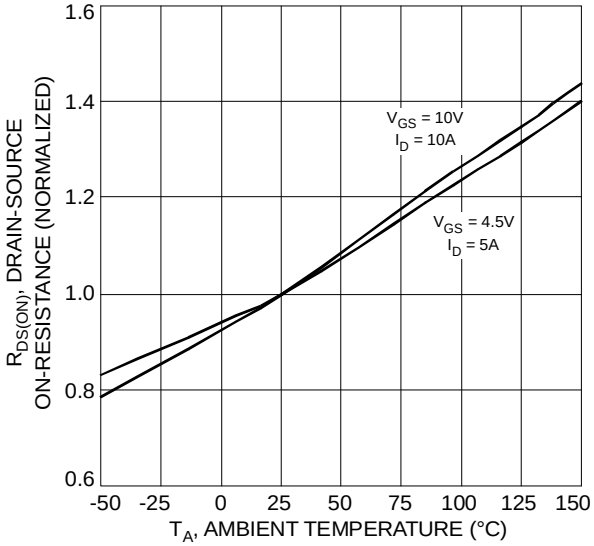



Fig. 5 Normalized On-Resistance vs. Ambient Temperature

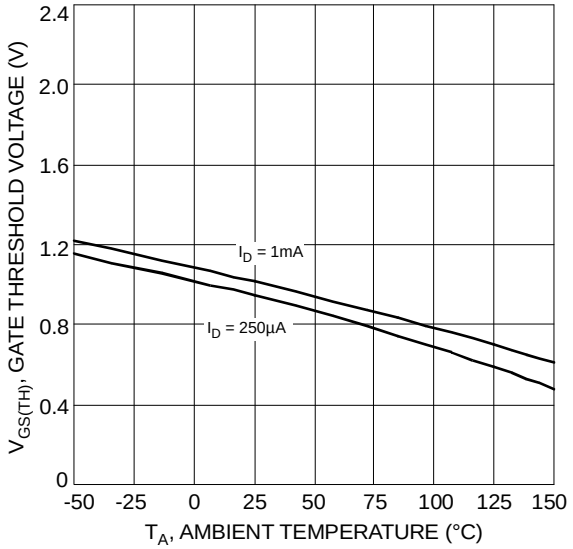



Fig. 6 Gate Threshold Variation vs. Ambient Temperature

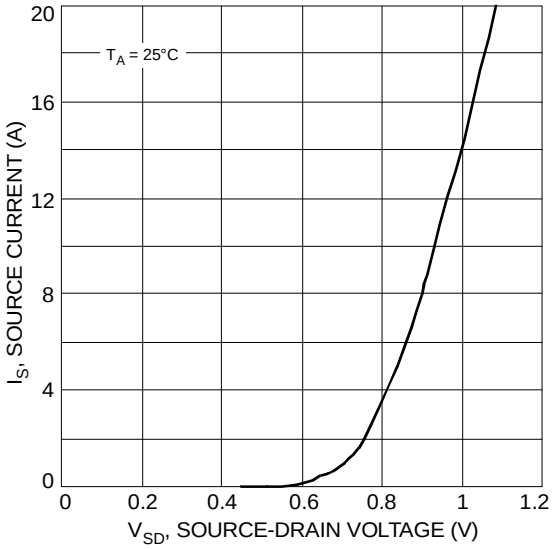



Fig. 7 Diode Forward Voltage vs. Current

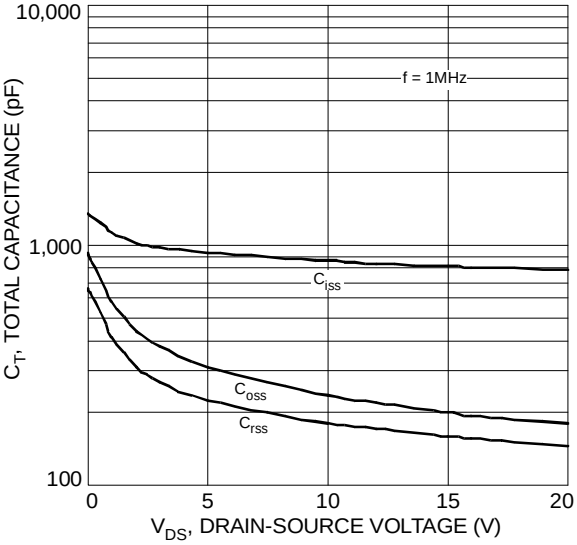



Fig. 8 Typical Total Capacitance

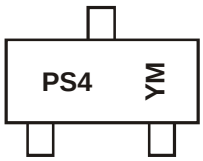

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## Ordering Information (Note 7)

| Part Number | Case | Packaging |
|---|---|---|
| DMP2066LSN-7 | SC-59 | 3000/Tape & Reel |

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

## Marking Information



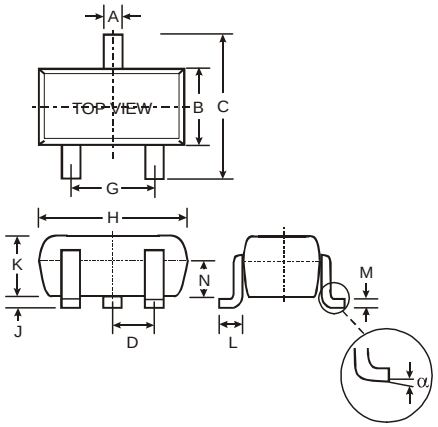

PS4 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: V = 2008
M = Month ex: 9 = September

Date Code Key

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Code | V | W | X | Y | Z | A | B | C |

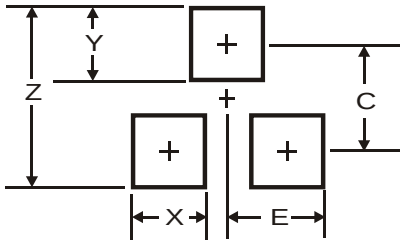
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

## Package Outline Dimensions




| SC-59 | | |
|---|---|---|
| Dim | Min | Max |
| A | 0.35 | 0.50 |
| B | 1.50 | 1.70 |
| C | 2.70 | 3.00 |
| D | 0.95 | |
| G | 1.90 | |
| H | 2.90 | 3.10 |
| J | 0.013 | 0.10 |
| K | 1.00 | 1.30 |
| L | 0.35 | 0.55 |
| M | 0.10 | 0.20 |
| N | 0.70 | 0.80 |
| α | 0° | 8° |
| All Dimensions in mm | | |

## Suggested Pad Layout




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


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