NEW PRODUCT

# DMG9926UDM

## DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Please click here to visit our online spice models database.

## Features

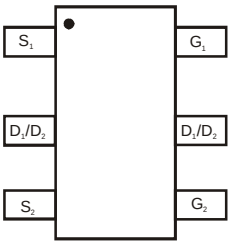
- Low Gate Charge
- Low $R_{DS(ON)}$:
  - 28mΩ @$V_{GS}$ = 4.5V
  - 32mΩ @$V_{GS}$ = 2.5V
  - 40mΩ @$V_{GS}$ = 1.8V
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

## Mechanical Data

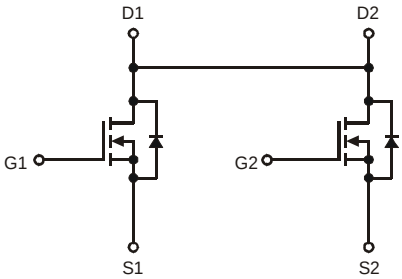
- Case: SOT-26
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)

TOP VIEW

SOT-26




TOP VIEW
Pin Configuration




Equivalent Circuit

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

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 20 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±8 | V |
| Drain Current (Note 1) Continuous | $T_A$ = 25°C<br>$T_A$ = 70°C | $I_D$ | 4.2<br>3.2 | A |
| Pulsed Drain Current (Note 2) | | $I_{DM}$ | 30 | A |

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

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Total Power Dissipation (Note 1) | $P_D$ | 0.98 | W |
| Thermal Resistance, Junction to Ambient (Note 1) t ≤10s | $R_{\theta JA}$ | 128 | °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 CHARACTERISTICS** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | 20 | — | — | V | $I_D$ = 250μA, $V_{GS}$ = 0V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | — | — | 1 | μA | $V_{DS}$ = 20V, $V_{GS}$ = 0V |
| Gate-Body Leakage Current | $I_{GSS}$ | — | — | ±100 | nA | $V_{DS}$ = 0V, $V_{GS}$ = ±8V |
| Gate Threshold Voltage | $V_{GS(th)}$ | 0.5 | — | 0.9 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA |
| Static Drain-Source On-Resistance (Note 5) | $R_{DS\ (ON)}$ | — | 22<br>25<br>31 | 28<br>32<br>40 | mΩ | $V_{GS}$ = 4.5V, $I_D$ = 8.2A<br>$V_{GS}$ = 2.5V, $I_D$ = 3.3A<br>$V_{GS}$ = 1.8V, $I_D$ = 2.0A |
| Forward Transfer Admittance | $\|Y_{FS}\|$ | — | 7 | — | S | $V_{DS}$ = 10V, $I_D$ = 4A |
| Diode Forward Voltage (Note 5) | $V_{SD}$ | — | 0.7 | 0.9 | V | $I_S$ = 2.25A, $V_{GS}$ = 0V |
| **DYNAMIC CHARACTERISTICS (Note 6)** | | | | | | |
| Input Capacitance | $C_{iss}$ | — | 856 | — | pF | $V_{DS}$ = 10V, $V_{GS}$ = 0V<br>f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | — | 83 | — | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | — | 78 | — | pF | |
| Gate Resisitance | $R_G$ | — | 1.32 | — | Ω | $V_{GS}$ = 0V, $V_{DS}$ = 0V, f = 1MHz |
| **SWITCHING CHARACTERISTICS** | | | | | | |
| Total Gate Charge | $Q_g$ | — | 8.3 | — | nC | $V_{GS}$ = 4.5V, $V_{DS}$ = 10V, $I_D$ = 8.2A |
| Gate-Source Charge | $Q_{gs}$ | — | 1.3 | — | nC | |
| Gate-Drain Charge | $Q_{gd}$ | — | 3.1 | — | nC | |
| Turn-On Delay Time | $t_{D(on)}$ | — | 8.4 | — | ns | $V_{DD}$ = 10V, $V_{GS}$ = 4.5V,<br>$R_L$ = 10Ω, $R_G$ = 6Ω |
| Turn-On Rise Time | $t_r$ | — | 8.2 | — | ns | |
| Turn-Off Delay Time | $t_{D(off)}$ | — | 40.4 | — | ns | |
| Turn-Off Fall Time | $t_f$ | — | 8.9 | — | ns | |

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

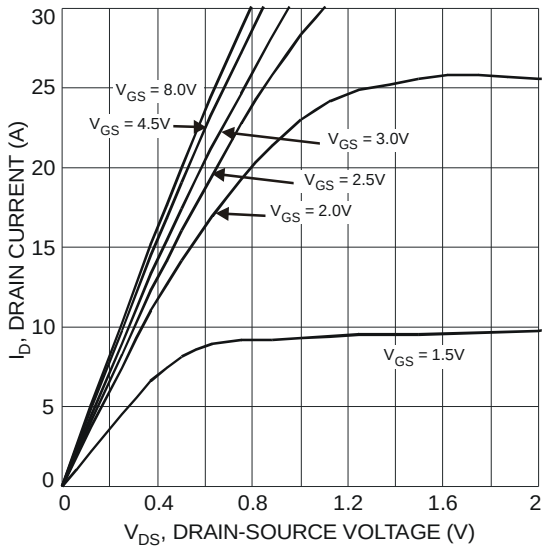

Fig. 1 Typical Output Characteristics

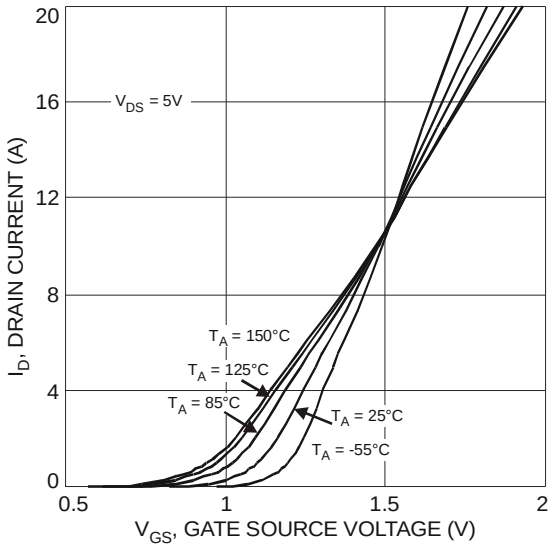

Fig. 2 Typical Transfer Characteristics


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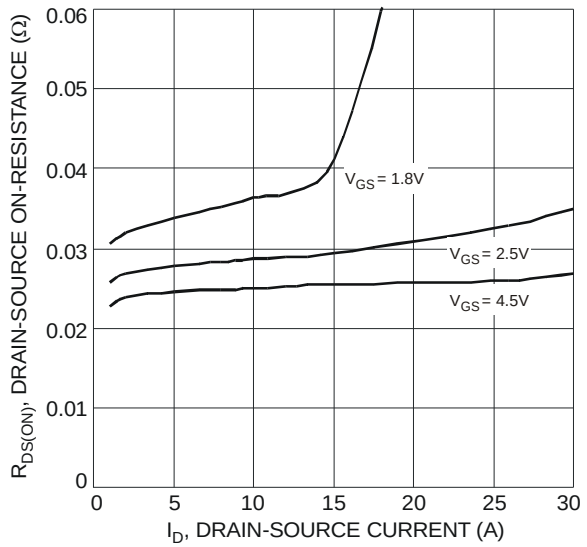


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

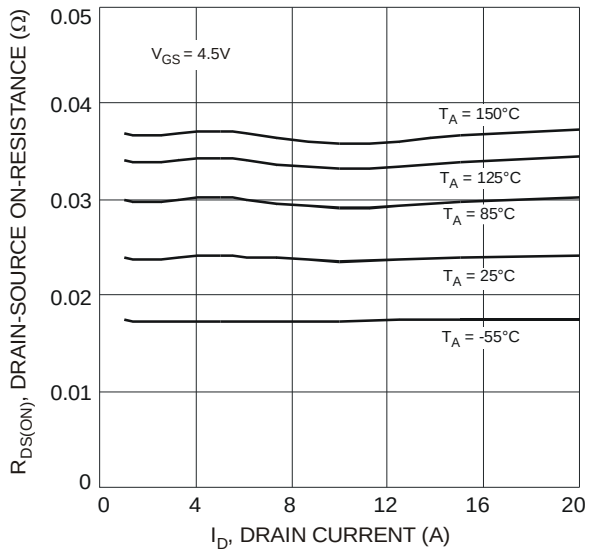


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

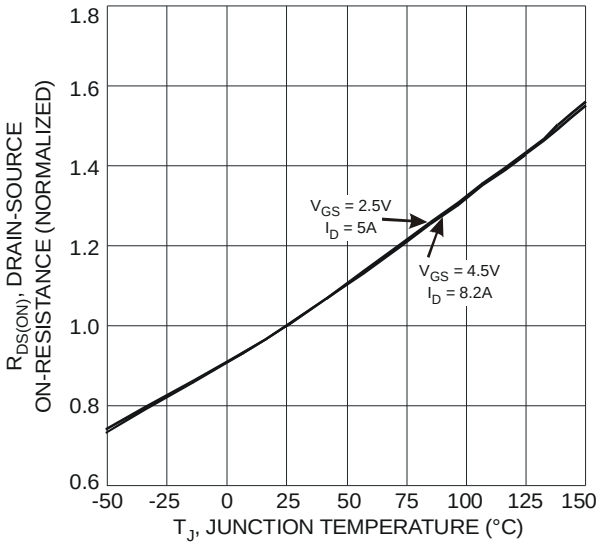


Fig. 5 On-Resistance Variation with Temperature

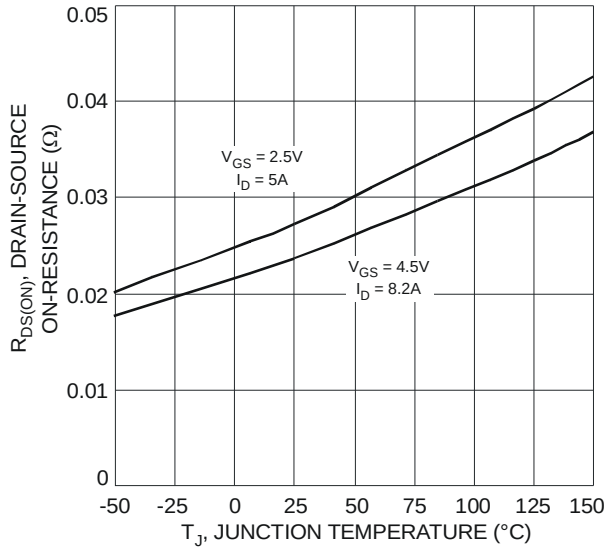


Fig. 6 On-Resistance Variation with Temperature

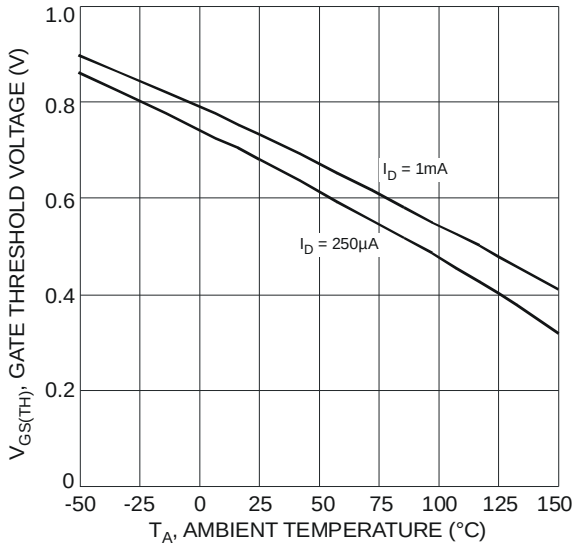


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

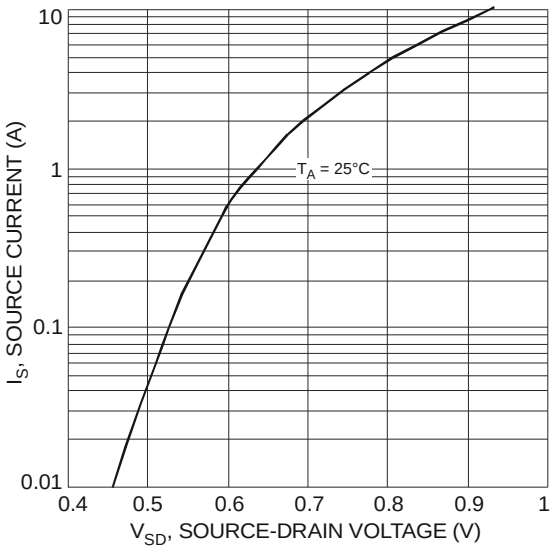


Fig. 8 Diode Forward Voltage vs. Current


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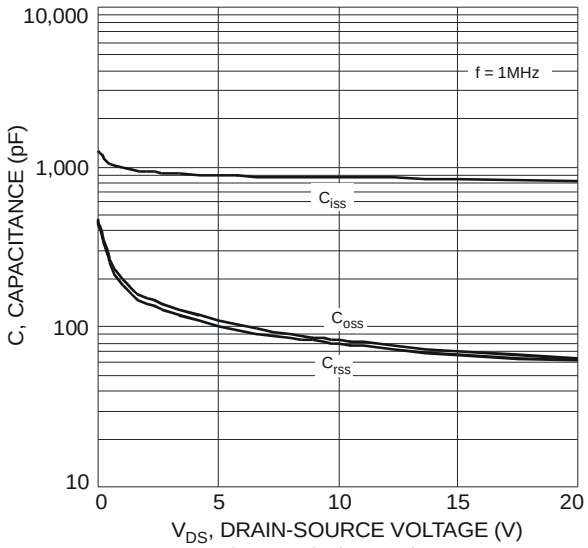



Fig. 9 Typical Capacitance

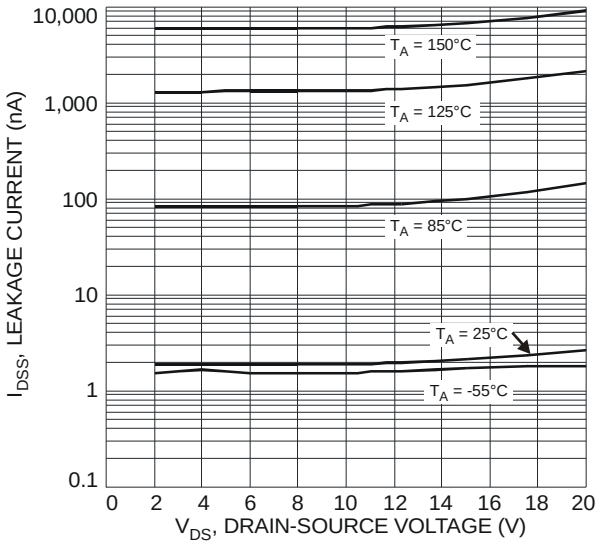



Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

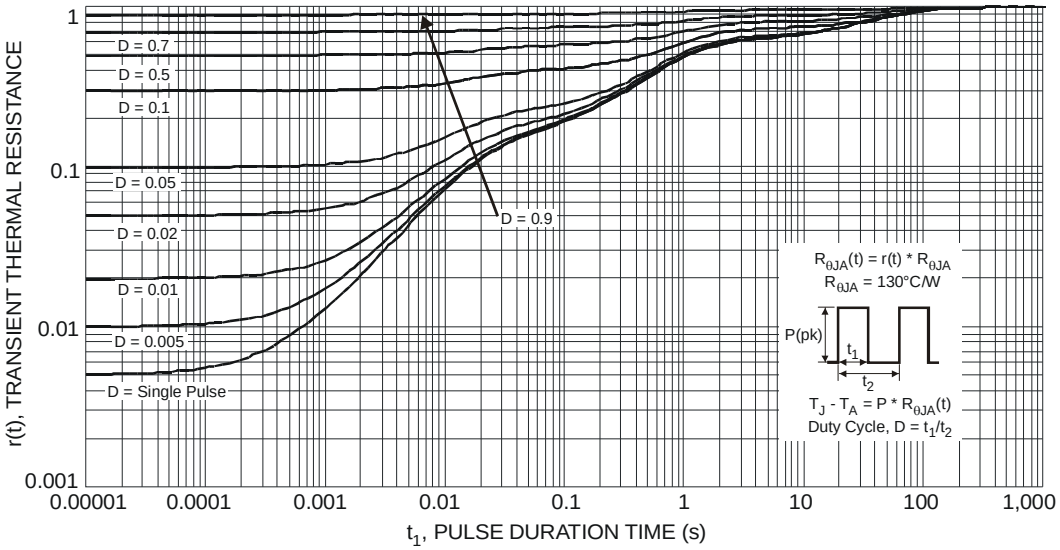


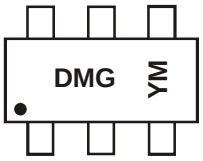

Fig. 11 Transient Thermal Response

## Ordering Information (Note 7)

| Part Number | Case | Packaging |
|---|---|---|
| DMG9926UDM-7 | SOT-26 | 3000/Tape & Reel |

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

## Marking Information




DMG = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: W = 2009)
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 |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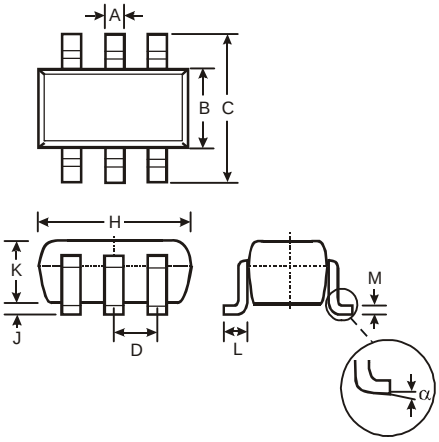
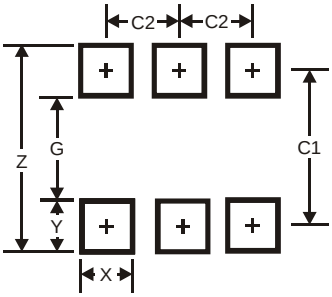
## Package Outline Dimensions




| SOT-26 | | | |
|---|---|---|---|
| **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 |
| **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 |
| **α** | 0° | 8° | — |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 3.20 |
| **G** | 1.60 |
| **X** | 0.55 |
| **Y** | 0.80 |
| **C1** | 2.40 |
| **C2** | 0.95 |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