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## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)\ max}$ | $I_D$ $T_A$ = +25°C |
|---|---|---|
| 30V | 60mΩ @ $V_{GS}$ = 4.5V | 3.2A |
| | 80mΩ @ $V_{GS}$ = 2.5V | 2.7A |
| | 130mΩ @ $V_{GS}$ = 1.5V | 2.1A |

## Description

This new generation MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

## Applications

- General Purpose Interfacing Switch
- Power Management Functions

Analog Switch

## Features

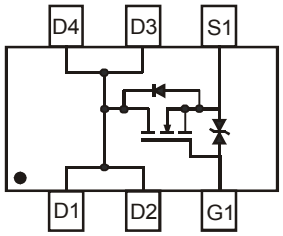
- Low On-Resistance
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- ESD Protected Gate
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT26
- Case Material – Molded Plastic, "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.015 grams (approximate)


SOT26

Top View



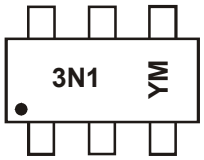

Top View
Internal Schematic

## Ordering Information (Note 4 & 5)

| Part Number | Qualification | Case | Packaging |
|---|---|---|---|
| DMN3115UDM-7 | Commercial | SOT26 | 3,000/Tape & Reel |
| DMN3115UDMQ-7 | Automotive | SOT26 | 3,000/Tape & Reel |
| DMN3115UDM-13 | Commercial | SOT26 | 10,000/Tape & Reel |
| DMN3115UDMQ-13 | Automotive | SOT26 | 10,000/Tape & Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information




3N1 = Marking Code
YM = Date Code Marking
Y = Year (ex: U = 2007)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|
| Code | U | 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 |

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

| Characteristic | Symbol | Value | Units |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 30 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±8 | V |
| Drain Current (Note 6) | $I_D$ | 3.2 | A |
| Pulsed Drain Current (Note 6) | $I_{DM}$ | 12.8 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Units |
|---|---|---|---|
| Total Power Dissipation (Note 6) | $P_D$ | 900 | mW |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 139 | °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 |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS (Note 7)** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | 30 | — | — | V | $V_{GS}$ = 0V, $I_D$ = 100μA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | — | — | 1 | μA | $V_{DS}$ = 30V, $V_{GS}$ = 0V |
| Gate-Source Leakage | $I_{GSS}$ | — | — | ±5 | μA | $V_{GS}$ = ±8V, $V_{DS}$ = 0V |
| **ON CHARACTERISTICS (Note 7)** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | 0.5 | — | 1.0 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA |
| Static Drain-Source On-Resistance | $R_{DS\ (ON)}$ | — | 40 | 60 | mΩ | $V_{GS}$ = 4.5V, $I_D$ = 6A |
| | | | 50 | 80 | | $V_{GS}$ = 2.5V, $I_D$ = 2A |
| | | | 76 | 130 | | $V_{GS}$ = 1.5V, $I_D$ = 1.0A |
| Forward Transfer Admittance | $\|Y_{fs}\|$ | — | 8 | — | S | $V_{DS}$ =10V, $I_D$ = 6A |
| Diode Forward Voltage (Note 7) | $V_{SD}$ | — | 0.7 | 1.1 | V | $V_{GS}$ = 0V, $I_S$ = 2A |
| **DYNAMIC CHARACTERISTICS** | | | | | | |
| Input Capacitance | $C_{iss}$ | — | 476 | — | pF | $V_{DS}$ = 15V, $V_{GS}$ = 0V<br>f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | — | 77 | — | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | — | 59 | — | pF | |

Notes: 6. Device mounted on FR-4 PCB, minimum recommended pad layout on 2oz. Copper pads.
7. Short duration pulse test used to minimize self-heating effect.

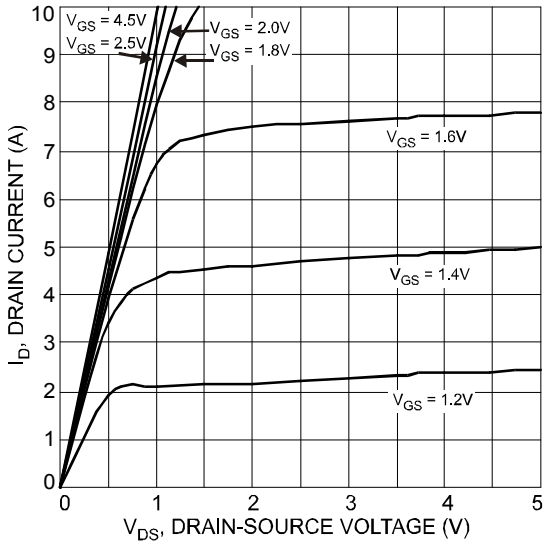


Fig.1 Typical Output Characteristic

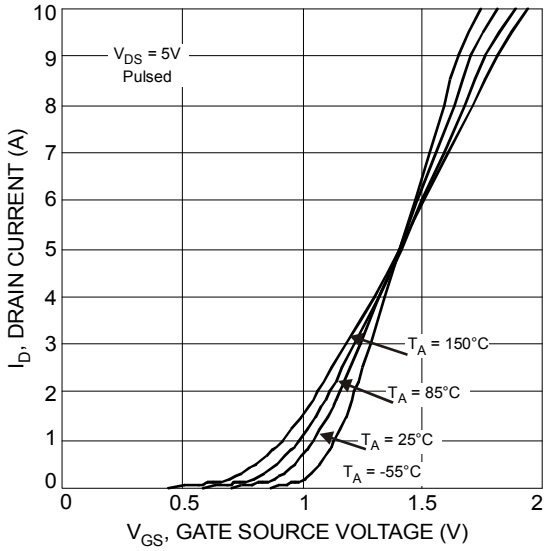


Fig. 2 Typical Transfer Characteristics

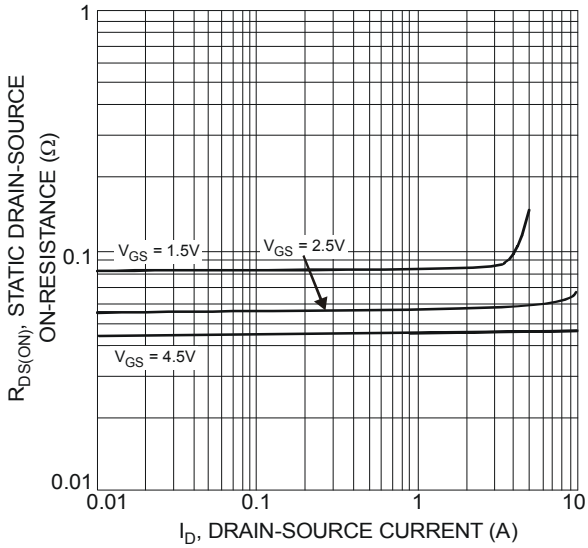



Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

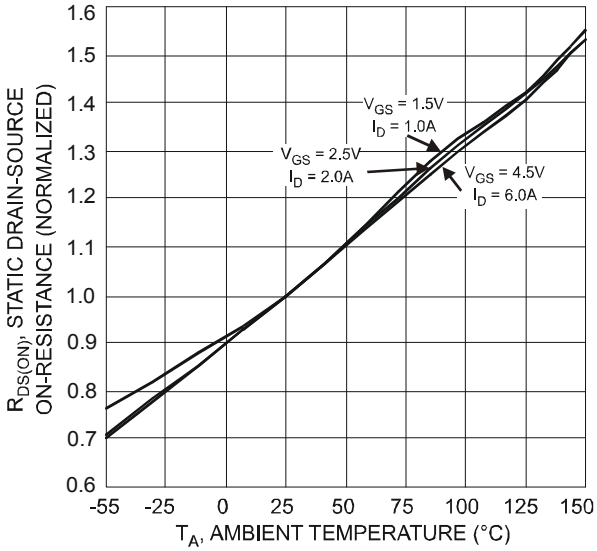



Fig. 4 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

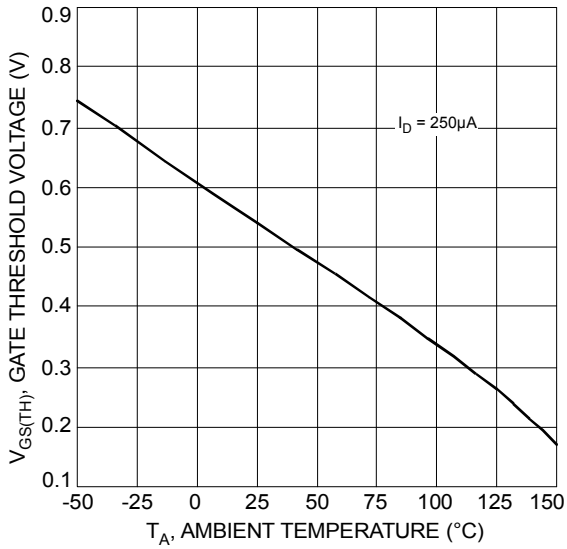



Fig. 5 Gate Threshold Variation vs. Ambient Temperature

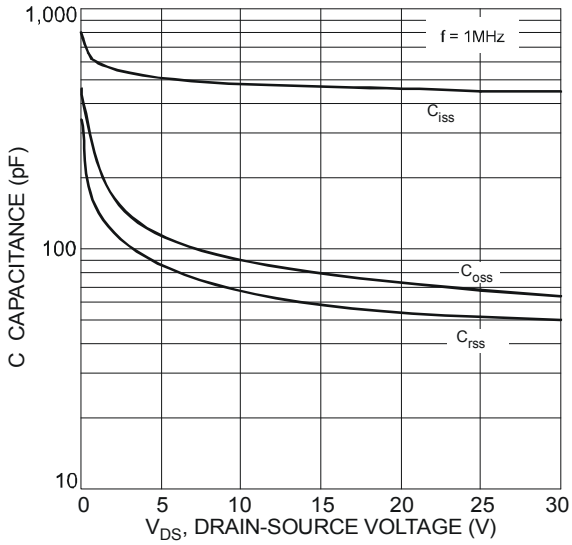



Fig. 6 Typical Total Capacitance

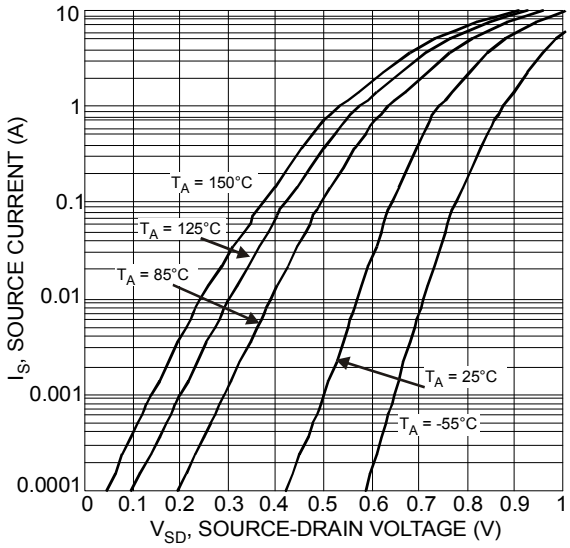
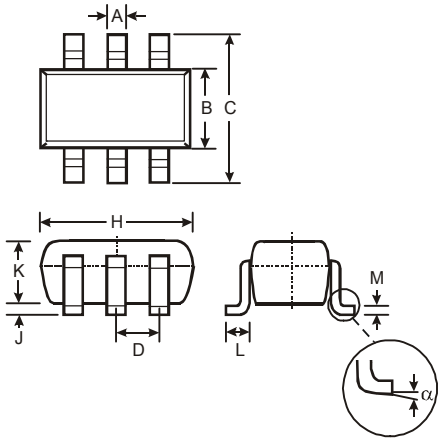



Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

## Package Outline Dimensions

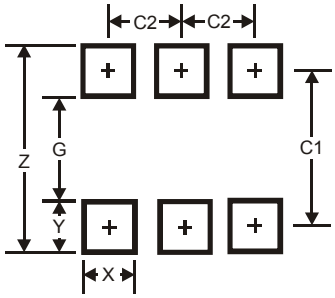
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.




| SOT26 | | | |
|---|---|---|---|
| **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

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.




| 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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