

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on) \max}$                      | $I_D$<br>$T_A = +25^\circ\text{C}$ |
|---------------|--|------------------------------------|
| 30V           | 60m $\Omega$ @ $V_{GS} = 4.5\text{V}$  | 3.2A                               |
|               | 80m $\Omega$ @ $V_{GS} = 2.5\text{V}$  | 2.7A                               |
|               | 130m $\Omega$ @ $V_{GS} = 1.5\text{V}$ | 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

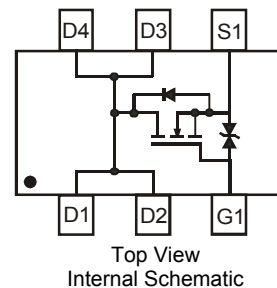
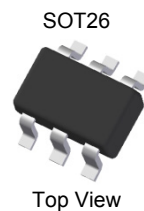
- General Purpose Interfacing Switch
  - Power Management Functions
- Analog Switch

## 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)

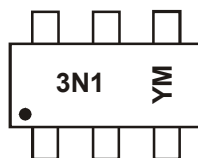


## Ordering Information (Note 4 & 5)

| 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](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/](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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                | Symbol           | Value | Units |
|-------------------------------|------------------|-------|-------|
| Drain-Source Voltage          | V <sub>DSS</sub> | 30    | V     |
| Gate-Source Voltage           | V <sub>GSS</sub> | ±8    | V     |
| Drain Current (Note 6)        | I <sub>D</sub>   | 3.2   | A     |
| Pulsed Drain Current (Note 6) | I <sub>DM</sub>  | 12.8  | A     |

**Thermal Characteristics**

| Characteristic                          | Symbol                            | Value       | Units |
|---|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 6)        | P <sub>D</sub>                    | 900         | mW    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 139         | °C/W  |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                      | Symbol              | Min | Typ | Max | Unit | Test Condition   |
|-------------------------------------|---------------------|-----|-----|-----|------|--|
| <b>OFF CHARACTERISTICS (Note 7)</b> |                     |     |     |     |      |  |
| Drain-Source Breakdown Voltage      | BV <sub>DSS</sub>   | 30  | —   | —   | V    | V <sub>GS</sub> = 0V, I <sub>D</sub> = 100µA               |
| Zero Gate Voltage Drain Current     | I <sub>DSS</sub>    | —   | —   | 1   | µA   | V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V                |
| Gate-Source Leakage                 | I <sub>GSS</sub>    | —   | —   | ±5  | µA   | V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V                |
| <b>ON CHARACTERISTICS (Note 7)</b>  |                     |     |     |     |      |  |
| Gate Threshold Voltage              | V <sub>GS(th)</sub> | 0.5 | —   | 1.0 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA |
| Static Drain-Source On-Resistance   | R <sub>DS(on)</sub> | —   | 40  | 60  | mΩ   | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6A                |
|                                     |                     |     | 50  | 80  |      | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 2A                |
|                                     |                     |     | 76  | 130 |      | V <sub>GS</sub> = 1.5V, I <sub>D</sub> = 1.0A              |
| Forward Transfer Admittance         | Y <sub>fs</sub>     | —   | 8   | —   | S    | V <sub>DS</sub> = 10V, I <sub>D</sub> = 6A                 |
| Diode Forward Voltage (Note 7)      | V <sub>SD</sub>     | —   | 0.7 | 1.1 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = 2A                  |
| <b>DYNAMIC CHARACTERISTICS</b>      |                     |     |     |     |      |  |
| Input Capacitance                   | C <sub>ISS</sub>    | —   | 476 | —   | pF   | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V<br>f = 1.0MHz  |
| Output Capacitance                  | C <sub>OSS</sub>    | —   | 77  | —   | pF   |  |
| Reverse Transfer Capacitance        | C <sub>RSS</sub>    | —   | 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.

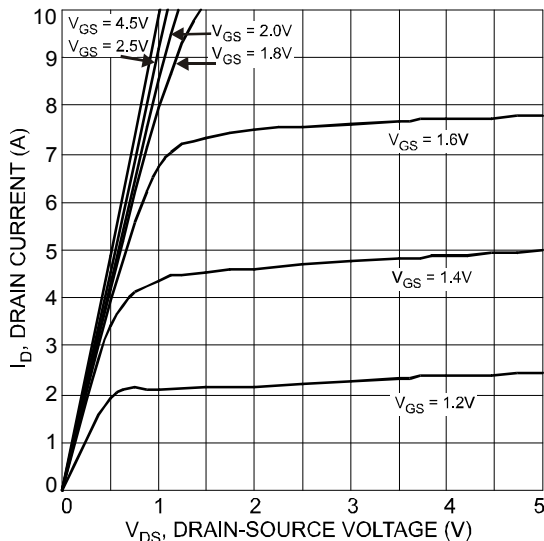


Fig. 1 Typical Output Characteristic

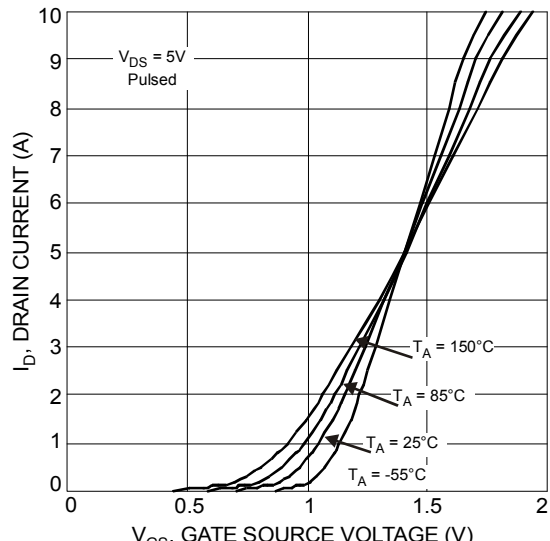


Fig. 2 Typical Transfer Characteristics

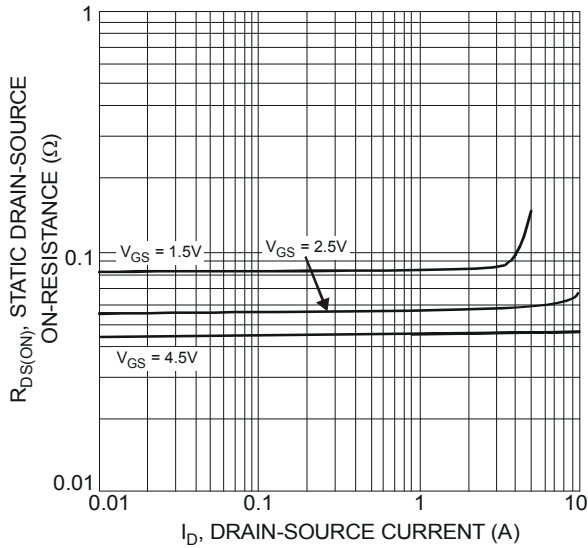


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

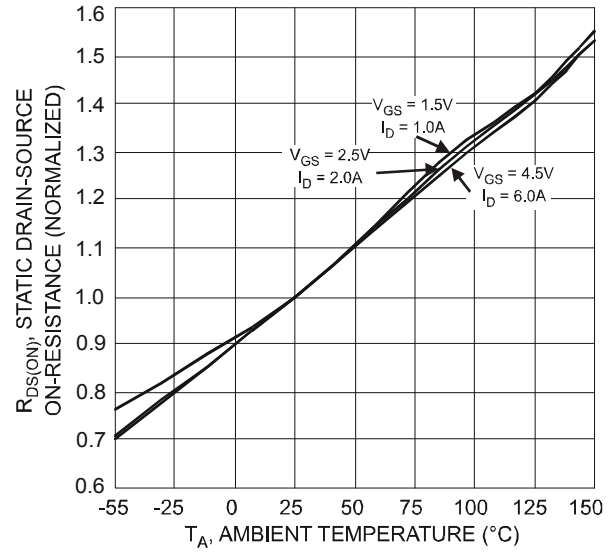


Fig. 4 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

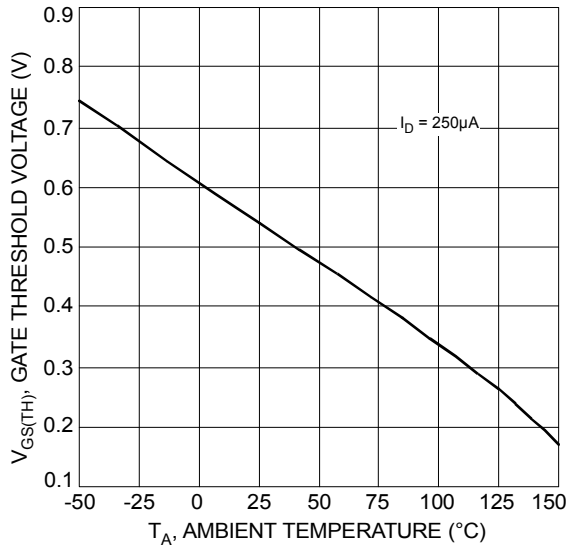


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

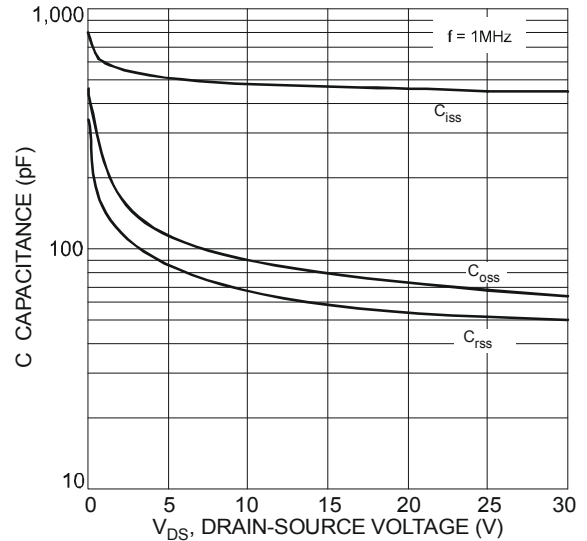


Fig. 6 Typical Total Capacitance

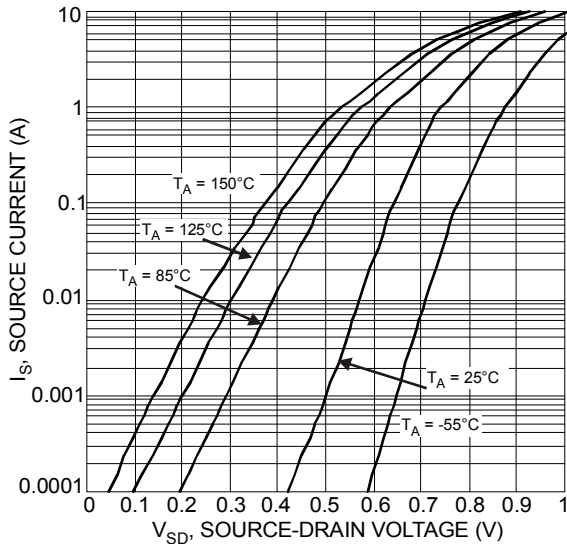
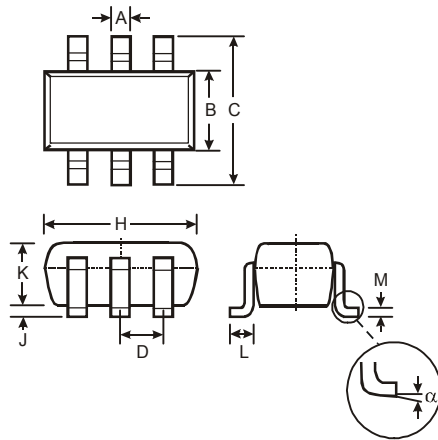


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

**Package Outline Dimensions**

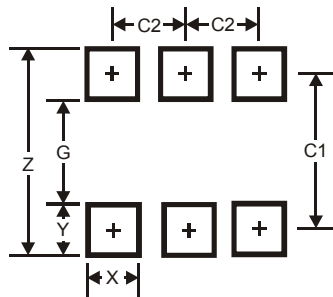
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| 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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