# NOT RECOMMENDED FOR NEW DESIGN USE DMN3061SVTQ



DMN3135LVTQ

#### 30V DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

### **Product Summary**

| BV <sub>DSS</sub> | R <sub>DS(ON)</sub> Max        | I <sub>D</sub> Max<br>T <sub>A</sub> = +25°C |
|-------------------|--------------------------------|--|
| 201/              | 60mΩ @ V <sub>GS</sub> = 10V   | 3.5A   |
| 30V               | 100mΩ @ V <sub>GS</sub> = 4.5V | 2.8A   |

### **Features and Benefits**

- Low On-Resistance
- Low Input Capacitance
- · Fast Switching Speed
- Low Input/Output Leakage
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The DIODES™ DMN3135LVTQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

https://www.diodes.com/quality/product-definitions/

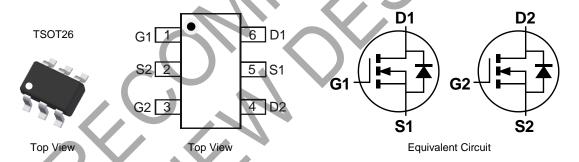
### **Description and Applications**

This MOSFET is designed to meet the stringent requirements of Automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Backlighting
- DC-DC converters
- Power management functions

### **Mechanical Data**

- Package: TSOT26
- Package Material: Molded Plastic, "Green" Molding Compound.
   UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.013 grams (Approximate)



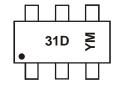
### Ordering Information (Note 4)

| Part Number   | Packago | Pack | king        |
|---------------|---------|------|-------------|
| Part Number   | Package | Qty. | Carrier     |
| DMN3135LVTQ-7 | TSOT26  | 3000 | Tape & Reel |

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 2. See https://www.diodes.com/quality/lead-free/ 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. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

## **Marking Information**



31D = Product Type Marking Code YM = Date Code Marking Y = Year (ex: J = 2022) M = Month (ex: 9 = September)

#### Date Code Key

| Year  | 2017 |     | 2022 | 2023  | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|-------|------|-----|------|-------|------|------|------|------|------|------|------|------|
| Code  | Е    |     | J    | K     | L    | М    | N    | 0    | Р    | R    | S    | T    |
|       |      |     |      |       |      |      |      |      |      |      |      |      |
| Month | lon  | Fah | Mor  | A m # | May  | lum  | lul  | A    | Con  | Ont  | Nov  | Doo  |
| Month | Jan  | Feb | Mar  | Apr   | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |



### **Maximum Ratings** (@ T<sub>A</sub> = +25°C, unless otherwise stated.)

| Characteristic   | Symbol           | Value  | Unit           |            |   |
|--|------------------|--|----------------|------------|---|
| Drain-Source Voltage                                     | VDSS             | 30   | V              |            |   |
| Gate-Source Voltage                                      | V <sub>GSS</sub> | ±20  | V              |            |   |
| Continuous Dunin Coursest (Nata CVV 40V                  | Steady<br>State  | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | I <sub>D</sub> | 3.5<br>2.7 | А |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V  | t<10s            | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | lD             | 4.3<br>3.3 | А |
| Continuous Durin Comment (Note CVV)                      | Steady<br>State  | T <sub>A</sub> = +25°C<br>T <sub>A</sub> = +70°C | lD             | 2.8<br>2.1 | А |
| Continuous Drain Current (Note 6) V <sub>GS</sub> = 4.5V | lD               | 3.4<br>2.6                                       | А              |            |   |
| Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%        | IDM              | 25   | Α              |            |   |
| Maximum Body Diode Forward Current (Note 5)              |                  |  | Is             | 1.5        | Α |

# Thermal Characteristics (@ TA = +25°C, unless otherwise stated.)

| Characteristic                                   |                    | Symbol            | Value       | Unit |
|--|--------------------|-------------------|-------------|------|
| Total Power Dissipation (Note 5)                 |                    | PD                | 0.84        | W    |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady state t<10s | R <sub>0</sub> JA | 155<br>109  | °C/W |
| Total Power Dissipation (Note 6)                 |                    | PD                | 1.27        | W    |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady state t<10s | ReJA              | 102<br>72   | °C/W |
| Thermal Resistance, Junction to Case (Note 6)    |                    | Rejc              | 34          |      |
| Operating and Storage Temperature Range          |                    | TJ, TSTG          | -55 to +150 | °C   |

# Electrical Characteristics (@ TA = +25°C, unless otherwise stated.)

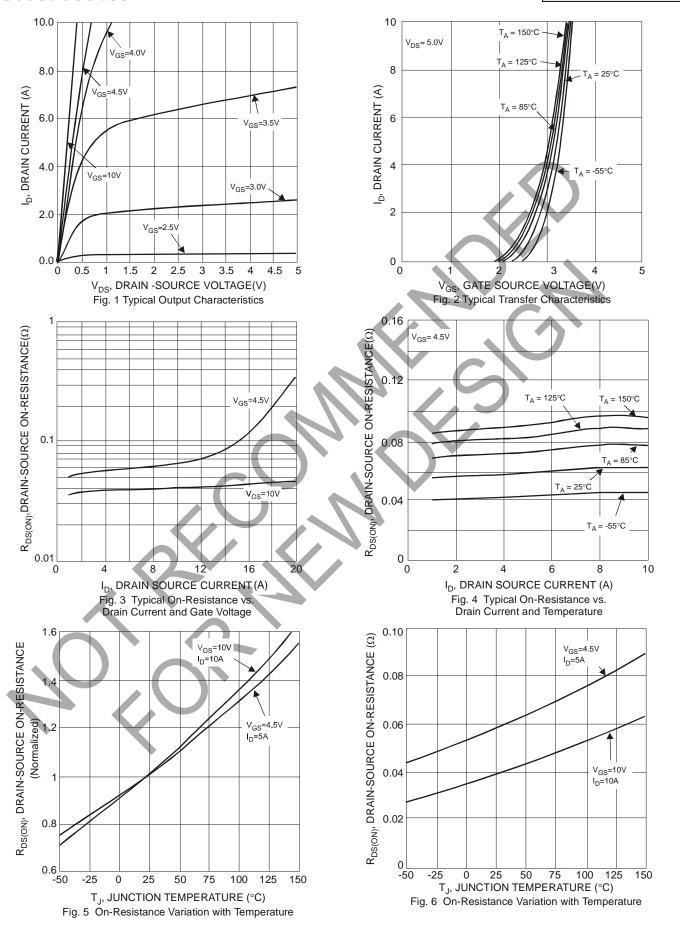
| Characteristic                    | Symbol              | Min | Тур  | Max  | Unit  | Test Condition  |  |
|-----------------------------------|---------------------|-----|------|------|-------|---|--|
| OFF CHARACTERISTICS (Note 7)      |                     |     |      |      |       |   |  |
| Drain-Source Breakdown Voltage    | BVDSS               | 30  | -    | -    | V     | $V_{GS} = 0V, I_{D} = 250\mu A$                                       |  |
| Zero Gate Voltage Drain Current   | IDSS                |     | -    | 1.0  | μΑ    | V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V                           |  |
| Gate-Source Leakage               | I <sub>GSS</sub>    | -   | -    | ±100 | nA    | $V_{GS} = \pm 20V, V_{DS} = 0V$                                       |  |
| ON CHARACTERISTICS (Note 7)       |                     |     |      |      |       | •   |  |
| Gate Threshold Voltage            | Vgs(TH)             | 1.3 | 1.8  | 2.2  | V     | $V_{DS} = V_{GS}$ , $I_D = 250\mu A$                                  |  |
| Statio Drain Source On Registeres |                     | -   | 35   | 60   | mΩ    | V <sub>G</sub> S = 10V, I <sub>D</sub> = 3.1A                         |  |
| Static Drain-Source On-Resistance | RDS(ON)             | -   | 54   | 100  | 11122 | $V_{GS} = 4.5V, I_{D} = 2A$   |  |
| Forward Transfer Admittance       | Y <sub>fs</sub>     | -   | 4    | -    | S     | $V_{DS} = 5V, I_{D} = 3.1A$   |  |
| Diode Forward Voltage             | VsD                 | -   | 8.0  | 1    | V     | V <sub>G</sub> S = 0V, I <sub>S</sub> = 1A                            |  |
| DYNAMIC CHARACTERISTICS (Note 8)  |                     |     |      |      |       |   |  |
| Input Capacitance                 | Ciss                | -   | 305  | -    | pF    | 45)/ )/ 6)/   |  |
| Output Capacitance                | Coss                | -   | 40   | -    |       | $V_{DS} = 15V, V_{GS} = 0V,$<br>f = 1.0MHz                            |  |
| Reverse Transfer Capacitance      | Crss                | -   | 40   | =    |       | I = 1.0IVIH2  |  |
| Gate Resistance                   | Rg                  | -   | 1.4  | -    | Ω     | $V_{DS} = 0V$ , $V_{GS} = 0V$ , $f = 1MHz$                            |  |
| Total Gate Charge                 | Qg                  | -   | 4.1  | =    |       | $V_{DS} = 15V, V_{GS} = 4.5V, I_{D} = 3.1A$                           |  |
| Total Gate Charge                 | Qg                  | -   | 9.0  | -    | 1     |   |  |
| Gate-Source Charge                | Qgs                 | -   | 1.2  | -    | nC    | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.1A   |  |
| Gate-Drain Charge                 | Q <sub>qd</sub>     | -   | 1.5  | -    |       |   |  |
| Turn-On Delay Time                | t <sub>D</sub> (ON) | -   | 2.6  | -    |       |   |  |
| Turn-On Rise Time                 | t <sub>R</sub>      | -   | 4.6  | -    |       | $V_{GS} = 10V, V_{DS} = 15V,$<br>$R_{G} = 3\Omega, R_{L} = 4.7\Omega$ |  |
| Turn-Off Delay Time               | tD(OFF)             | -   | 13.1 | -    | ns    |   |  |
| Turn-Off Fall Time                | tr                  | -   | 2.5  | -    |       |   |  |

Notes:

- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
   Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
   Short duration pulse test used to minimize self-heating effect.
   Guaranteed by design. Not subject to production testing.











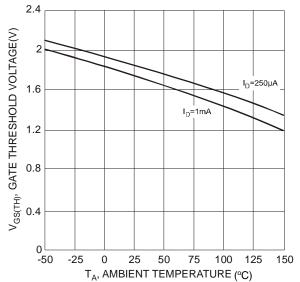
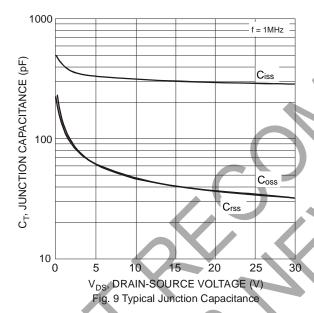
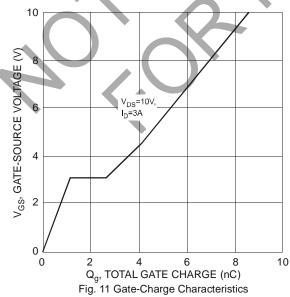
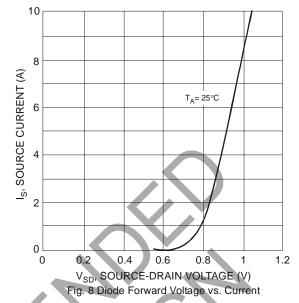


Fig. 7 Gate Threshold Variation vs. Ambient Temperature







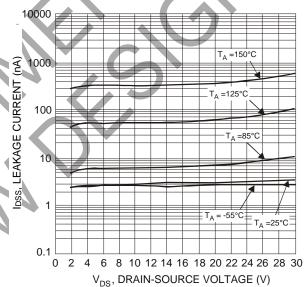


Fig. 10 Typical Drain-Source Leakage Current vs. Voltage

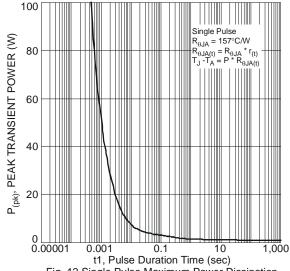
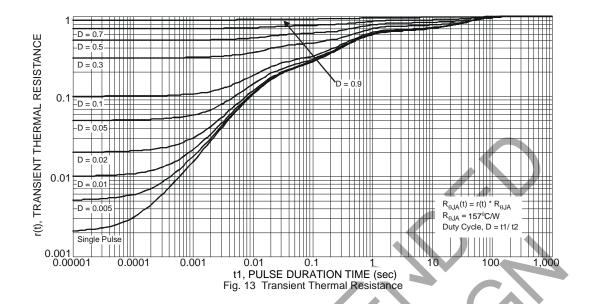


Fig. 12 Single Pulse Maximum Power Dissipation



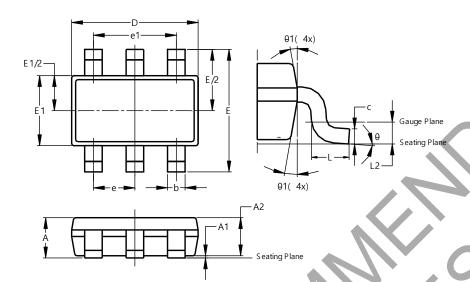




### **Package Outline Dimensions**

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

#### TSOT26

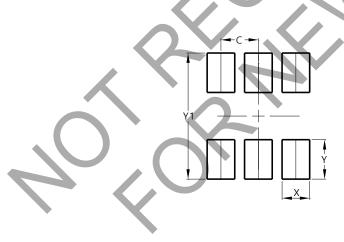


| TSOT26 |             |          |       |  |  |  |  |
|--------|-------------|----------|-------|--|--|--|--|
| Dim    | Min Max Typ |          |       |  |  |  |  |
| Α      |             | 1.00     | -     |  |  |  |  |
| A1     | 0.010       | 0.100    | 1     |  |  |  |  |
| A2     | 0.840       | 0.900    | _     |  |  |  |  |
| Ρ      | 2.800       | 3.000    | 2.900 |  |  |  |  |
| E      | 2           | .800 BS  | C     |  |  |  |  |
| É      | 1.500       | 1.700    | 1.600 |  |  |  |  |
| Ь      | 0.300       | 0.450    | -     |  |  |  |  |
| C      | 0.120       | 0.200    | _     |  |  |  |  |
| е      | 0           | .950 BS  | С     |  |  |  |  |
| e1     | 1.900 BSC   |          |       |  |  |  |  |
| L      | 0.30        | -        |       |  |  |  |  |
| L2     | 0.250 BSC   |          |       |  |  |  |  |
| θ      | 0°          | 8°       | 4°    |  |  |  |  |
| θ1     | 4°          | _        |       |  |  |  |  |
| A      | II Dimen    | sions in | mm    |  |  |  |  |

# Suggested Pad Layout

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

### TSOT26



| Dimensions | Value (in mm) |
|------------|---------------|
| С          | 0.950         |
| Х          | 0.700         |
| Y          | 1.000         |
| V1         | 3 200         |



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