

Product Summary

| BV _{DSS} | R _{DS(ON)} Max | I _D Max T _A = +25°C |
|-------------------|--------------------------------|--|
| 30V | 60mΩ @ V _{GS} = 10V | 3.5A |
| | 100mΩ @ V _{GS} = 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 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/>

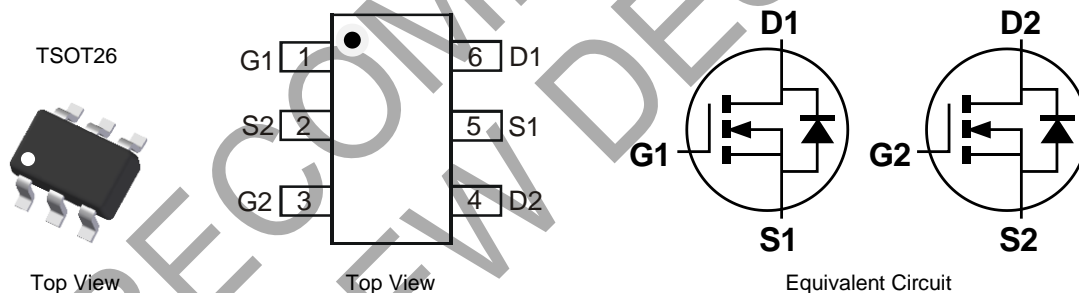
Description and Applications

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 (e3)
- Weight: 0.013 grams (Approximate)

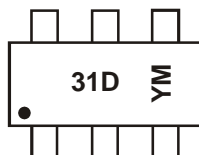


Ordering Information (Note 4)

| Orderable Part Number | Package | Packing | |
|-----------------------|---------|---------|-------------|
| | | 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 or YM = Date Code Marking
 Y or Y = Year (ex: L = 2024)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2017 | ... | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 |
|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | E | ... | L | M | N | P | R | S | T | U | V | W |

| 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 (@ $T_A = +25^\circ\text{C}$, unless otherwise stated.)

| Characteristic | | | Symbol | Value | Unit |
|--|------------------|--|----------|------------|------|
| Drain-Source Voltage | | | V_{DS} | 30 | V |
| Gate-Source Voltage | | | V_{GS} | ± 20 | V |
| Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$ | Steady State | $T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$ | I_D | 3.5 2.7 | A |
| | $t < 10\text{s}$ | $T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$ | I_D | 4.3 3.3 | A |
| Continuous Drain Current (Note 6) $V_{GS} = 4.5\text{V}$ | Steady State | $T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$ | I_D | 2.8 2.1 | A |
| | $t < 10\text{s}$ | $T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$ | I_D | 3.4 2.6 | A |
| Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%) | | | I_{DM} | 25 | A |
| Maximum Body Diode Forward Current (Note 5) | | | I_S | 1.5 | A |

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise stated.)

| Characteristic | | Symbol | Value | Unit |
|--|------------------|-----------------|-------------|--------------------|
| Total Power Dissipation (Note 5) | | P_D | 0.84 | W |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady state | $R_{\theta JA}$ | 155 | $^\circ\text{C/W}$ |
| | $t < 10\text{s}$ | | 109 | |
| Total Power Dissipation (Note 6) | | P_D | 1.27 | W |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady state | $R_{\theta JA}$ | 102 | $^\circ\text{C/W}$ |
| | $t < 10\text{s}$ | | 72 | |
| Thermal Resistance, Junction to Case (Note 6) | | $R_{\theta JC}$ | 34 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise stated.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|--------------|-----|------|-----------|---------------|--|
| OFF CHARACTERISTICS (Note 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DS} | 30 | - | - | V | $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | - | - | 1.0 | μA | $V_{DS} = 24\text{V}, V_{GS} = 0\text{V}$ |
| Gate-Source Leakage | I_{GSS} | - | - | ± 100 | nA | $V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 1.3 | 1.8 | 2.2 | V | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | - | 35 | 60 | m Ω | $V_{GS} = 10\text{V}, I_D = 3.1\text{A}$ |
| | | - | 54 | 100 | | $V_{GS} = 4.5\text{V}, I_D = 2\text{A}$ |
| Forward Transfer Admittance | $ Y_{fs} $ | - | 4 | - | S | $V_{DS} = 5\text{V}, I_D = 3.1\text{A}$ |
| Diode Forward Voltage | V_{SD} | - | 0.8 | 1 | V | $V_{GS} = 0\text{V}, I_S = 1\text{A}$ |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C_{iss} | - | 305 | - | pF | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$ |
| Output Capacitance | C_{oss} | - | 40 | - | | |
| Reverse Transfer Capacitance | C_{rss} | - | 40 | - | | |
| Gate Resistance | R_g | - | 1.4 | - | Ω | $V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$ |
| Total Gate Charge | Q_g | - | 4.1 | - | nC | $V_{DS} = 15\text{V}, V_{GS} = 4.5\text{V}, I_D = 3.1\text{A}$ |
| Total Gate Charge | Q_g | - | 9.0 | - | | |
| Gate-Source Charge | Q_{gs} | - | 1.2 | - | | |
| Gate-Drain Charge | Q_{gd} | - | 1.5 | - | | |
| Turn-On Delay Time | $t_{d(ON)}$ | - | 2.6 | - | ns | $V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, R_G = 3\Omega, R_L = 4.7\Omega$ |
| Turn-On Rise Time | t_R | - | 4.6 | - | | |
| Turn-Off Delay Time | $t_{d(OFF)}$ | - | 13.1 | - | | |
| Turn-Off Fall Time | t_F | - | 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.

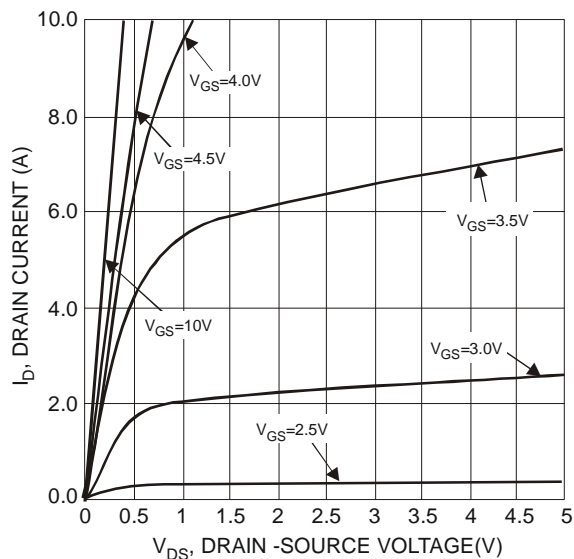


Fig. 1 Typical Output Characteristics

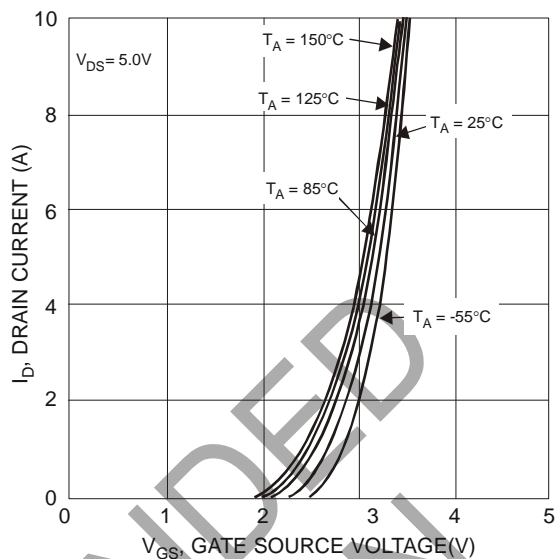


Fig. 2 Typical Transfer Characteristics

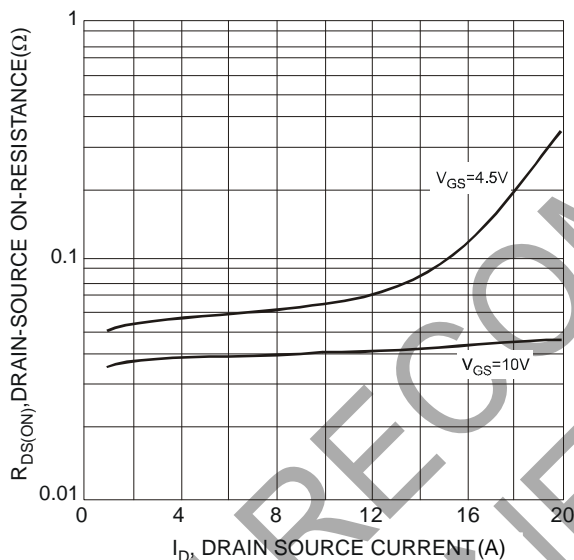


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

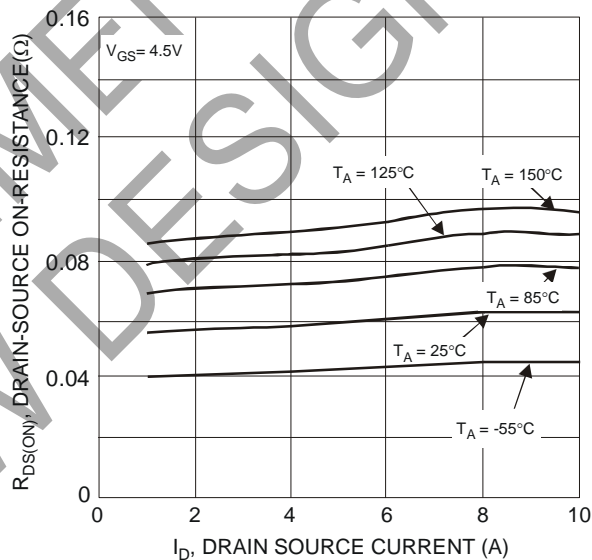


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

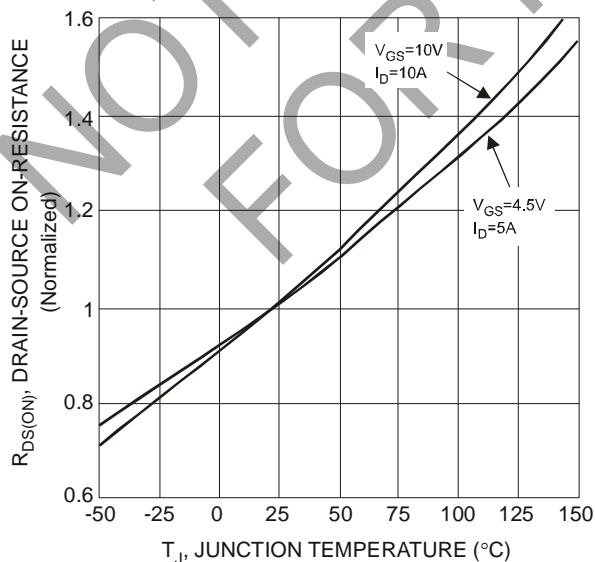


Fig. 5 On-Resistance Variation with Temperature

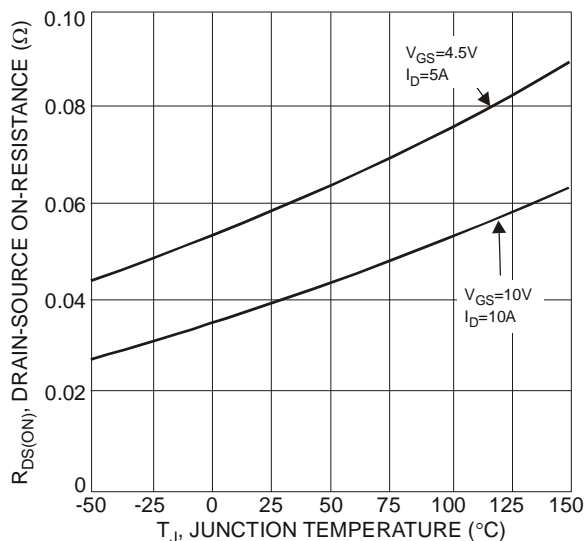


Fig. 6 On-Resistance Variation with Temperature

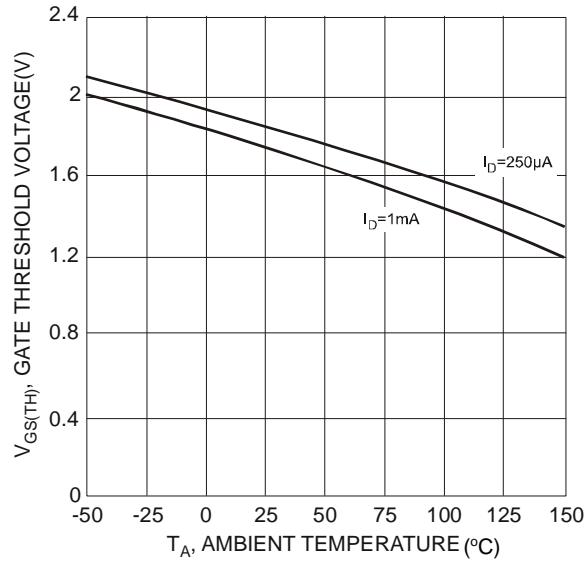


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

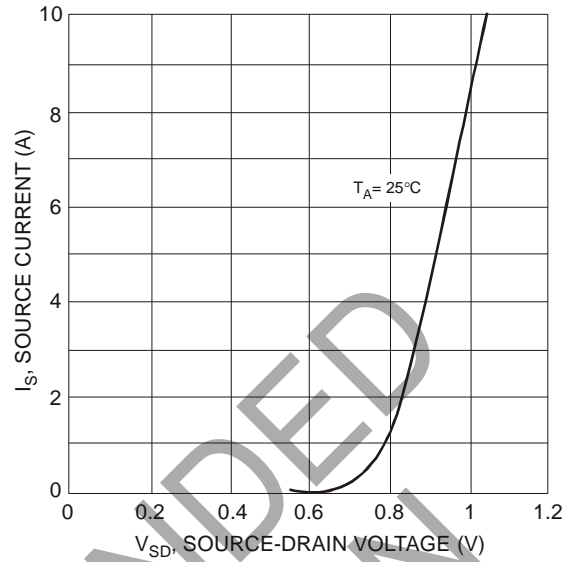


Fig. 8 Diode Forward Voltage vs. Current

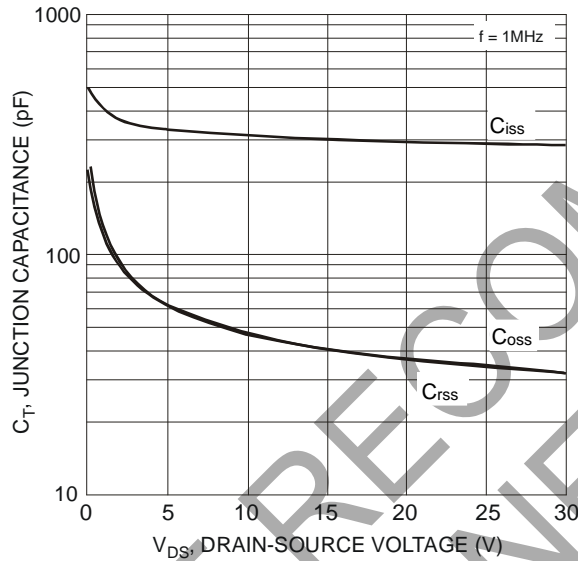


Fig. 9 Typical Junction Capacitance

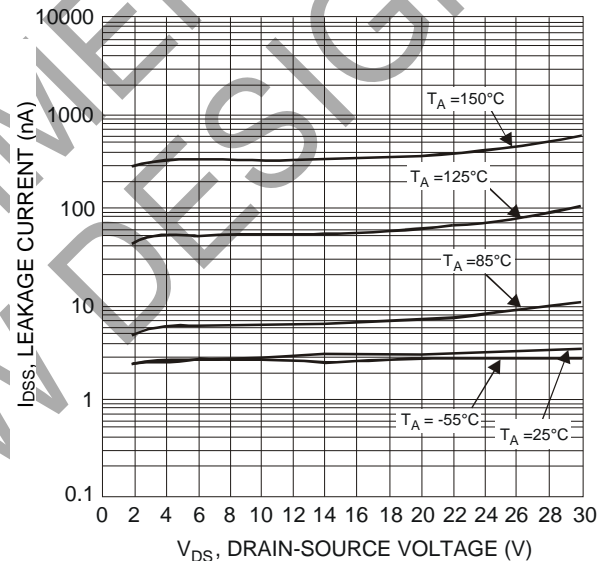


Fig. 10 Typical Drain-Source Leakage Current vs. Voltage

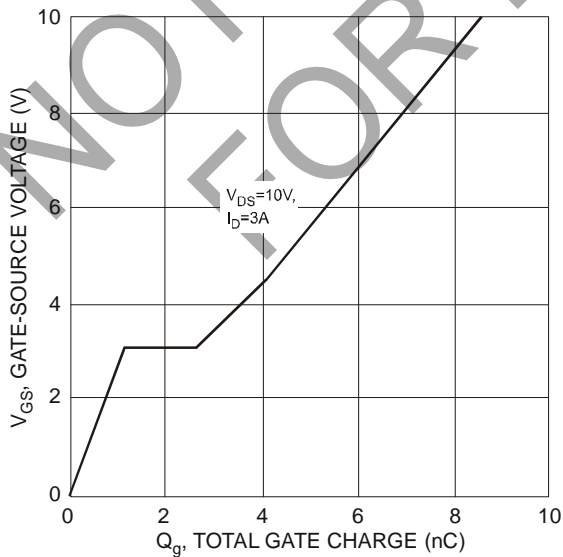


Fig. 11 Gate-Charge Characteristics

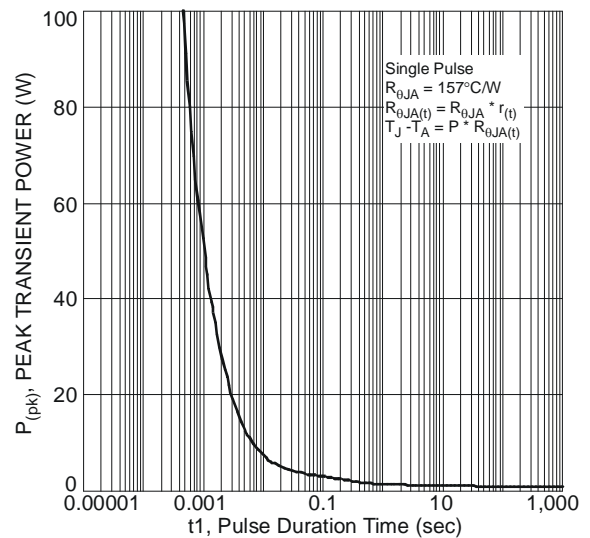
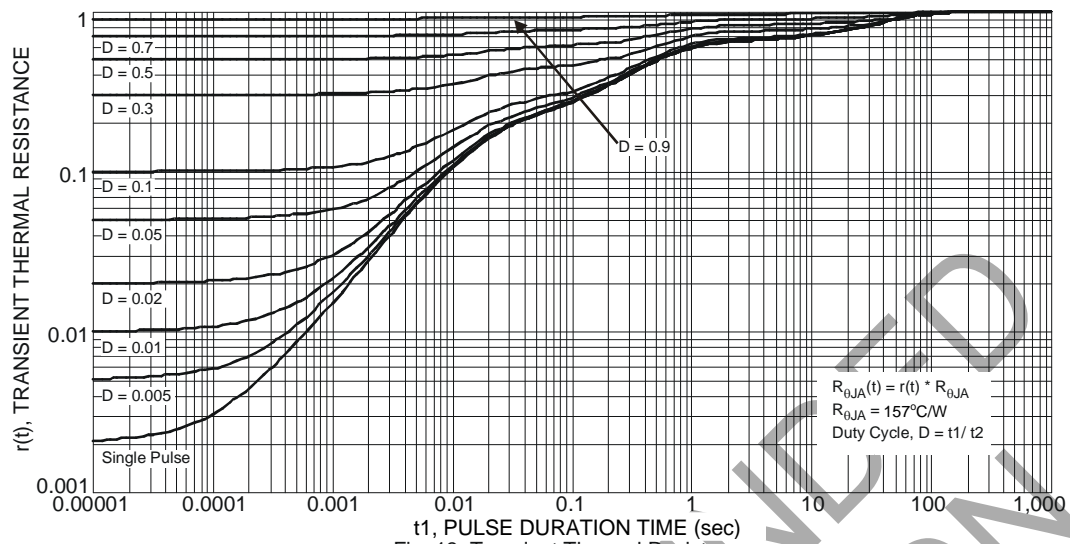


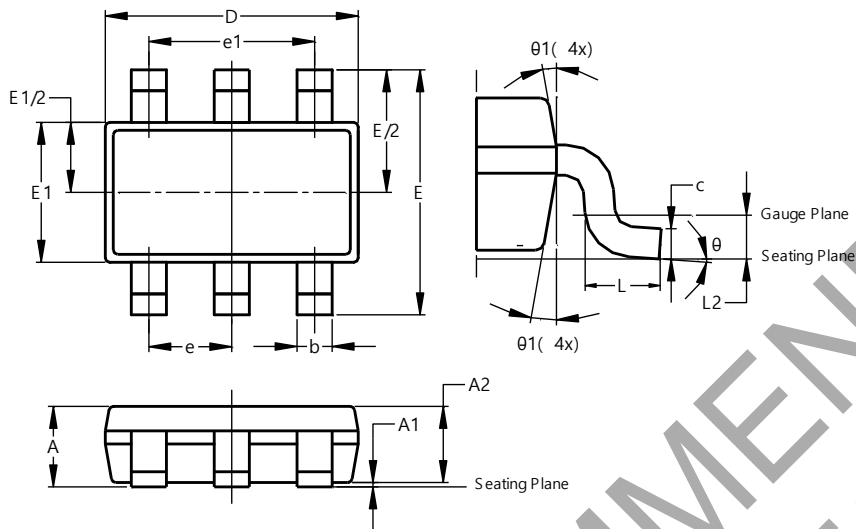
Fig. 12 Single Pulse Maximum Power Dissipation



Package Outline Dimensions

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

TSOT26

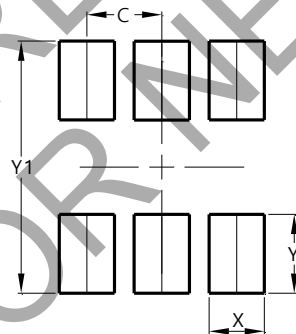


| TSOT26 | | | |
|----------------------|-----------|-------|-------|
| Dim | Min | Max | Typ |
| A | — | 1.00 | — |
| A1 | 0.010 | 0.100 | — |
| A2 | 0.840 | 0.900 | — |
| D | 2.800 | 3.000 | 2.900 |
| E | 2.800 BSC | | |
| E1 | 1.500 | 1.700 | 1.600 |
| b | 0.300 | 0.450 | — |
| c | 0.120 | 0.200 | — |
| e | 0.950 BSC | | |
| e1 | 1.900 BSC | | |
| L | 0.30 | 0.50 | — |
| L2 | 0.250 BSC | | |
| θ | 0° | 8° | 4° |
| $\theta 1$ | 4° | 12° | — |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

TSOT26



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.950 |
| X | 0.700 |
| Y | 1.000 |
| Y1 | 3.200 |

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