



**THE DATASHEET OF
DMN3026LVT-7**



Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on) \max}$ | I_D $T_A = +25^\circ\text{C}$ |
|---------------|---------------------------------------|------------------------------------|
| 30V | 23m Ω @ $V_{GS} = 10\text{V}$ | 6.6A |
| | 30m Ω @ $V_{GS} = 4.5\text{V}$ | 5.8A |

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

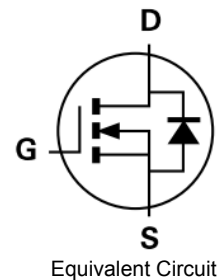
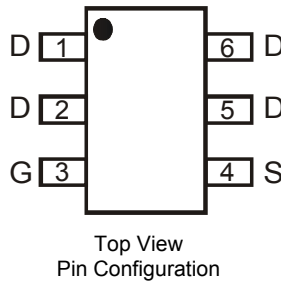
- DC-DC Converters
- Power management functions
- Backlighting

Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- 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: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 $\text{\textcircled{e3}}$
- Weight: 0.013 grams (approximate)

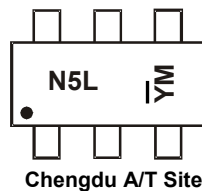
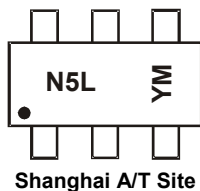


Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------|--------------------|
| DMN3026LVT-7 | TSOT26 | 3,000/Tape & Reel |
| DMN3026LVT-13 | TSOT26 | 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



N5L = Product Type Marking Code
 YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
 YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)
 Y or Y̅ = Year (ex: A = 2013)
 M = Month (ex: 9 = September)

Date Code Key

| Year Code | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------|------|------|------|------|------|------|------|
| | X | Y | Z | A | B | C | D |

| Month Code | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 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} | ±20 | V |
| Continuous Drain Current (Note 6) V _{GS} = 10V | Steady State | T _A = +25°C T _A = +70°C | I _D | 6.6 5.3 | A |
| | t < 10s | T _A = +25°C T _A = +70°C | I _D | 8.5 6.8 | A |
| Maximum Body Diode Forward Current (Note 6) | | | I _S | 3.0 | A |
| Pulsed Drain Current (10µs pulse, duty cycle = 1%) | | | I _{DM} | 35 | A |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | | Symbol | Value | Units |
|--|------------------------|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 5) | T _A = +25°C | P _D | 1.2 | W |
| | T _A = +70°C | | 0.8 | |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady state | R _{θJA} | 100 | °C/W |
| | t < 10s | | 60 | °C/W |
| Total Power Dissipation (Note 6) | T _A = +25°C | P _D | 1.5 | W |
| | T _A = +70°C | | 1.0 | |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady state | R _{θJA} | 83 | °C/W |
| | t < 10s | | 50 | °C/W |
| Thermal Resistance, Junction to Case (Note 6) | | R _{θJC} | 14.5 | °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 = 250µA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 1.0 | µA | V _{DS} = 30V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±100 | nA | V _{GS} = ±20V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 1.0 | 1.5 | 2.0 | V | V _{DS} = V _{GS} , I _D = 250µA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | 19 | 23 | mΩ | V _{GS} = 10V, I _D = 6.5A |
| | | — | 22 | 30 | | V _{GS} = 4.5V, I _D = 6.0A |
| Diode Forward Voltage | V _{SD} | — | 0.7 | 1.2 | V | V _{GS} = 0V, I _S = 1.0A |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C _{iSS} | — | 643 | — | pF | V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 65 | — | | |
| Reverse Transfer Capacitance | C _{rSS} | — | 49 | — | | |
| Gate Resistance | R _G | — | 2.5 | — | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| Total Gate Charge (V _{GS} = 4.5V) | Q _g | — | 5.7 | — | nC | V _{DS} = 15V, I _D = 4.0A |
| Total Gate Charge (V _{GS} = 10V) | Q _g | — | 12.5 | — | | |
| Gate-Source Charge | Q _{gs} | — | 1.7 | — | | |
| Gate-Drain Charge | Q _{gd} | — | 1.8 | — | | |
| Turn-On Delay Time | t _{D(on)} | — | 2.2 | — | nS | V _{GS} = 10V, V _{DD} = 15V, R _G = 6.0Ω, I _D = 6.5A |
| Turn-On Rise Time | t _r | — | 2.5 | — | | |
| Turn-Off Delay Time | t _{D(off)} | — | 12.1 | — | | |
| Turn-Off Fall Time | t _f | — | 3.0 | — | | |
| Body Diode Reverse Recovery Time | t _{rr} | — | 6.5 | — | nS | I _F = 6.5A, dI/dt = 100A/µs |
| Body Diode Reverse Recovery Charge | Q _{rr} | — | 1.7 | — | nC | I _F = 6.5A, dI/dt = 100A/µs |

- Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

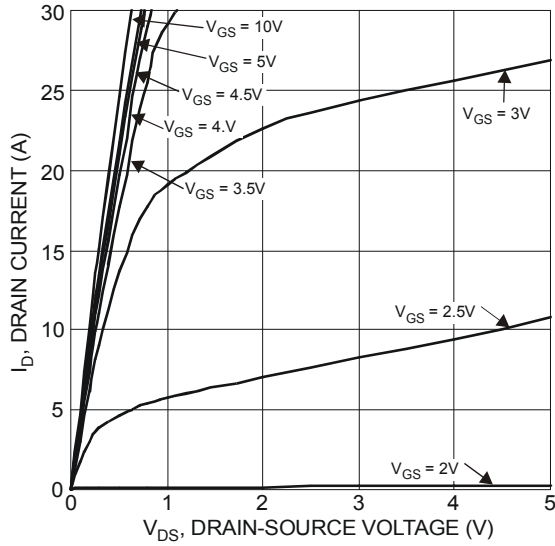


Figure 1 Typical Output Characteristics

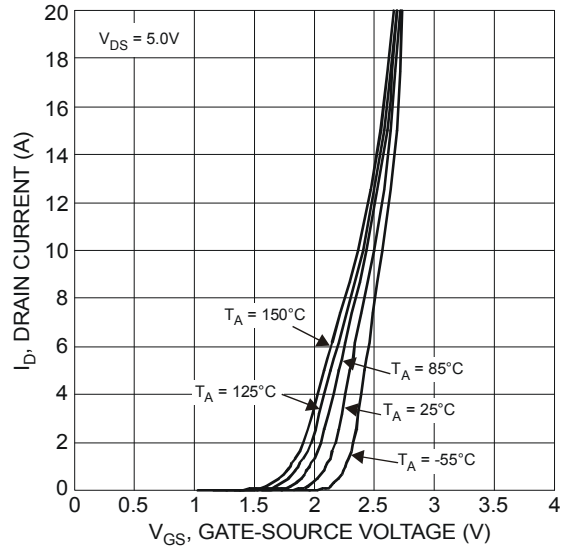


Figure 2 Typical Transfer Characteristics

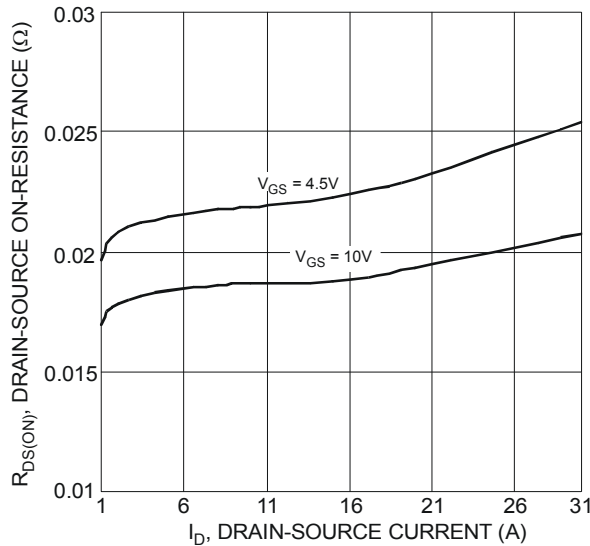


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

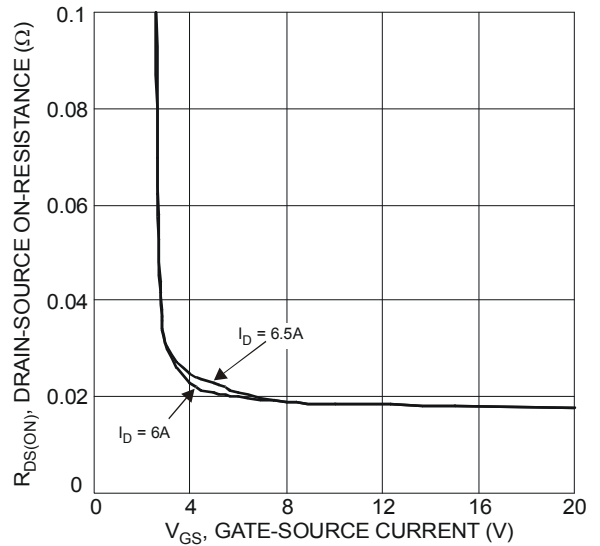


Figure 4 Typical Transfer Characteristics

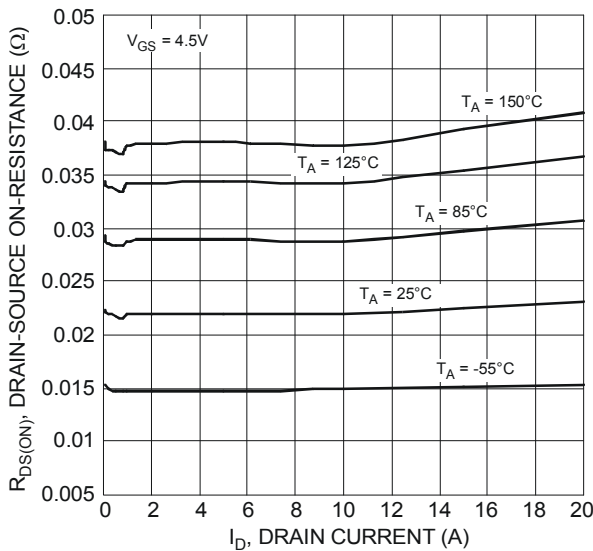


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

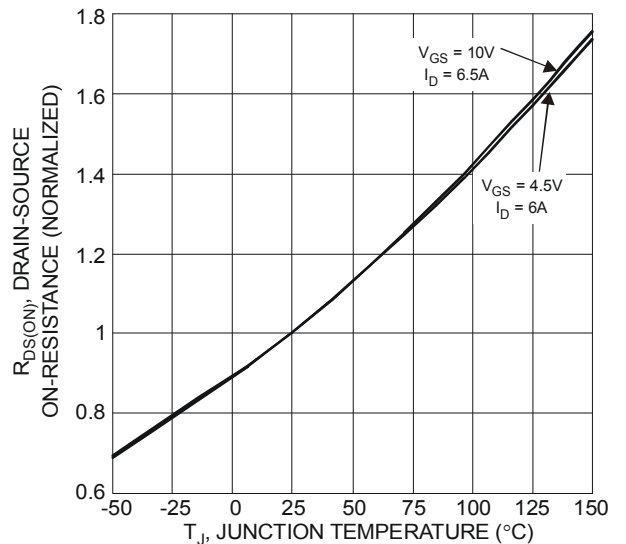


Figure 6 On-Resistance Variation with Temperature

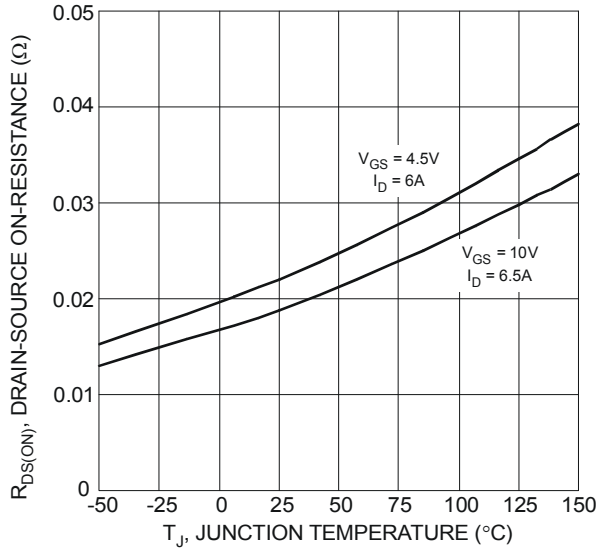


Figure 7 On-Resistance Variation with Temperature

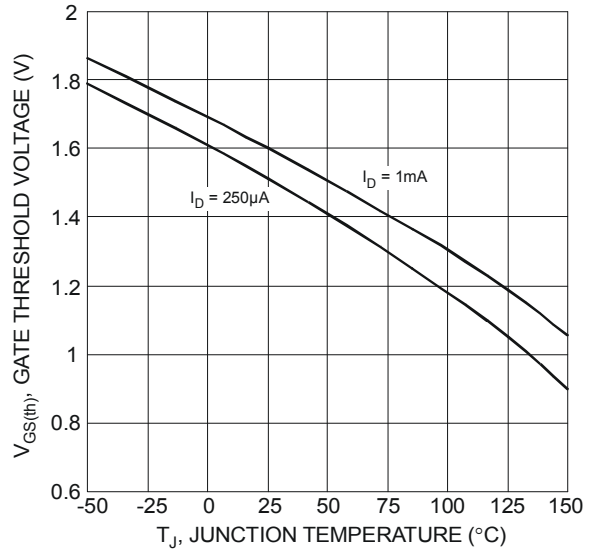


Figure 8 Gate Threshold Variation vs. Ambient Temperature

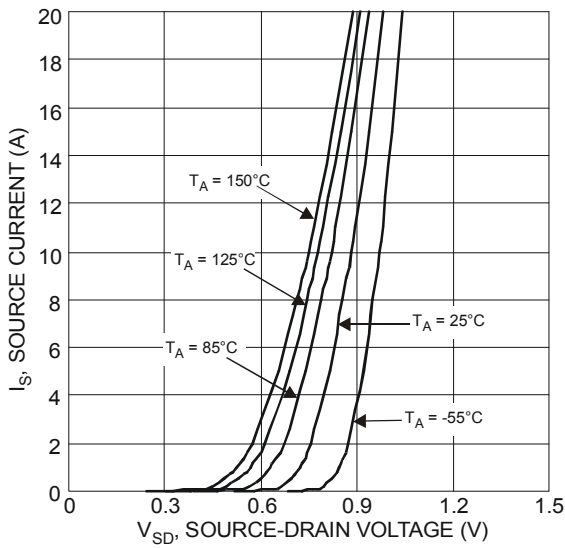


Figure 9 Diode Forward Voltage vs. Current

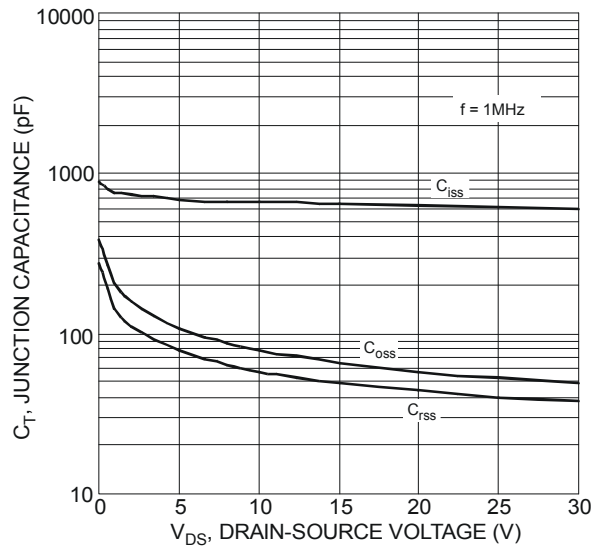


Figure 10 Typical Junction Capacitance

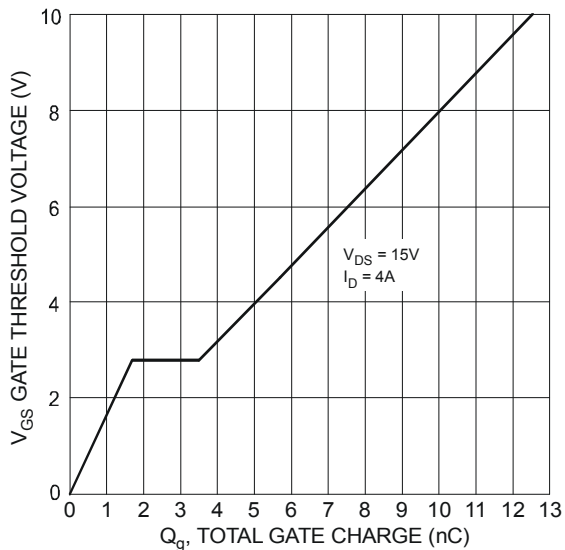


Figure 11 Gate Charge

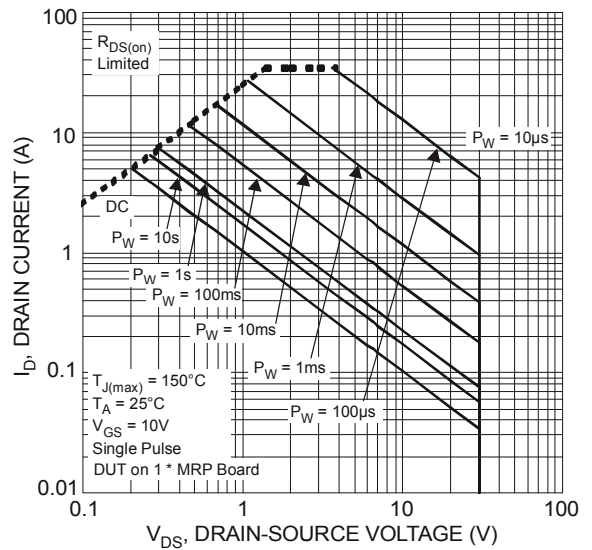
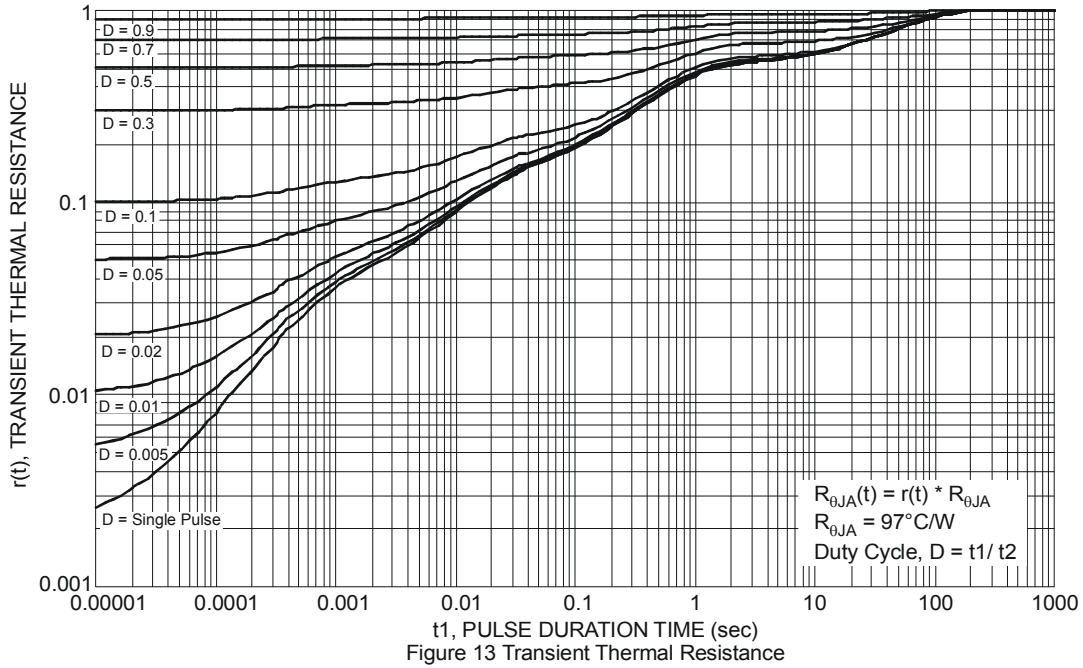
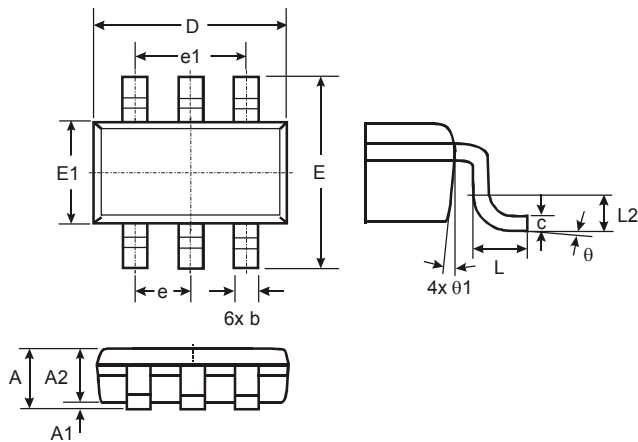


Figure 12 SOA, Safe Operation Area



Package Outline Dimensions

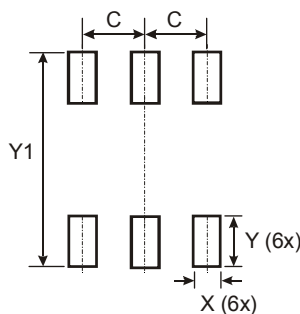
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| TSOT26 | | | |
|-----------------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | — | 1.00 | — |
| A1 | 0.01 | 0.10 | — |
| A2 | 0.84 | 0.90 | — |
| D | — | — | 2.90 |
| E | — | — | 2.80 |
| E1 | — | — | 1.60 |
| b | 0.30 | 0.45 | — |
| c | 0.12 | 0.20 | — |
| e | — | — | 0.95 |
| e1 | — | — | 1.90 |
| L | 0.30 | 0.50 | — |
| L2 | — | — | 0.25 |
| θ | 0° | 8° | 4° |
| θ1 | 4° | 12° | — |
| All Dimensions in mm | | | |

Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.950 |
| X | 0.700 |
| Y | 1.000 |
| Y1 | 3.199 |

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