

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ max                       | $I_D$ max<br>$T_A = +25^\circ\text{C}$ |
|---------------|--|--|
| -30V          | 42m $\Omega$ @ $V_{GS} = -10\text{V}$  | -5.1A                                  |
|               | 65m $\Omega$ @ $V_{GS} = -4.5\text{V}$ | -4.0A                                  |

## Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate
- **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**

## Description and Applications

This MOSFET is 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.

- Backlighting
- Power Management Functions
- DC-DC Converters

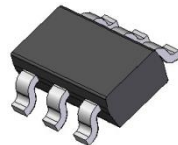
## Mechanical Data

- 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 — Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.015 grams (Approximate)

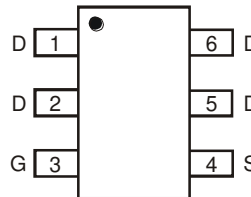


ESD PROTECTED

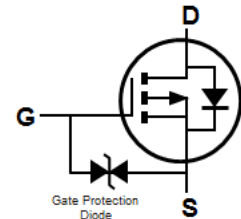
TSOT26



Top View



Top View  
Internal Schematic



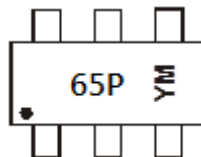
Equivalent Circuit

## Ordering Information (Note 4)

| Part Number   | Case   | Packaging          |
|---------------|--------|--------------------|
| DMP3065LVT-7  | TSOT26 | 3,000/Tape & Reel  |
| DMP3065LVT-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](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



65P = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|------|
| Code | Y    | Z    | A    | B    | C    | D    | E    | F    |

| 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 P-Channel** (@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> | ±20   | V     |
| Continuous Drain Current (Note 5) V <sub>GS</sub> = -10V  | Steady State | T <sub>A</sub> = +25°C | I <sub>D</sub>   | -5.1  | A     |
|   |              | T <sub>A</sub> = +70°C |                  | -4.2  |       |
| Continuous Drain Current (Note 5) V <sub>GS</sub> = -4.5V | Steady State | T <sub>A</sub> = +25°C | I <sub>D</sub>   | -4.0  | A     |
|   |              | T <sub>A</sub> = +70°C |                  | -3.2  |       |
| Maximum Body Diode Continuous Current                     |              |                        | I <sub>S</sub>   | -2.0  | A     |

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

| Characteristic                                   |              | Symbol                            | Value       | Units |
|--|--------------|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 6)                 |              | P <sub>D</sub>                    | 1.2         | W     |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State | R <sub>θJA</sub>                  | 102         | °C/W  |
| Total Power Dissipation (Note 5)                 |              | P <sub>D</sub>                    | 1.6         | W     |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State | R <sub>θJA</sub>                  | 78          | °C/W  |
| Operating and Storage Temperature Range          |              | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |

**Electrical Characteristics P-Channel** (@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> = -250μA  |
| Zero Gate Voltage Drain Current             | I <sub>DSS</sub>    | —   | —     | -1   | μA   | @T <sub>J</sub> = +25°C<br>V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V                        |
| Gate-Source Leakage                         | I <sub>GSS</sub>    | —   | —     | ±10  | μA   | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V   |
| <b>ON CHARACTERISTICS (Note 7)</b>          |                     |     |       |      |      |  |
| Gate Threshold Voltage                      | V <sub>GS(th)</sub> | -1  | -1.7  | -2.1 | V    | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                    |
| Static Drain-Source On-Resistance           | R <sub>DS(ON)</sub> | —   | 34    | 42   | mΩ   | V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.9A   |
|   |                     | —   | 52    | 65   |      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.7A  |
| Forward Transfer Admittance                 | Y <sub>fs</sub>     | —   | 8.5   | —    | S    | V <sub>DS</sub> = -5V, I <sub>D</sub> = -4.9A  |
| Diode Forward Voltage                       | V <sub>SD</sub>     | —   | -0.75 | -1.2 | V    | V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A   |
| <b>DYNAMIC CHARACTERISTICS (Note 8)</b>     |                     |     |       |      |      |  |
| Input Capacitance                           | C <sub>iss</sub>    | —   | 587   | 880  | pF   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V,<br>f = 1.0MHz                                    |
| Output Capacitance                          | C <sub>oss</sub>    | —   | 160   | 240  |      |  |
| Reverse Transfer Capacitance                | C <sub>rss</sub>    | —   | 84    | 130  |      |  |
| Total Gate Charge (V <sub>GS</sub> = -4.5V) | Q <sub>g</sub>      | —   | 6.3   | 10   | nC   | V <sub>DS</sub> = -15V, I <sub>D</sub> = -4.9A   |
| Total Gate Charge (V <sub>GS</sub> = -10V)  | Q <sub>g</sub>      | —   | 12.3  | 20   |      |  |
| Gate-Source Charge                          | Q <sub>gs</sub>     | —   | 1.9   | 4    |      |  |
| Gate-Drain Charge                           | Q <sub>gd</sub>     | —   | 2.5   | 5    |      |  |
| Turn-On Delay Time                          | t <sub>D(on)</sub>  | —   | 5.7   | 10   | ns   | V <sub>DD</sub> = -15V, V <sub>GS</sub> = -10V,<br>I <sub>D</sub> = -4.9A, R <sub>G</sub> = 6Ω |
| Turn-On Rise Time                           | t <sub>r</sub>      | —   | 11.8  | 22   |      |  |
| Turn-Off Delay Time                         | t <sub>D(off)</sub> | —   | 21.8  | 35   |      |  |
| Turn-Off Fall Time                          | t <sub>f</sub>      | —   | 23.9  | 40   |      |  |

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

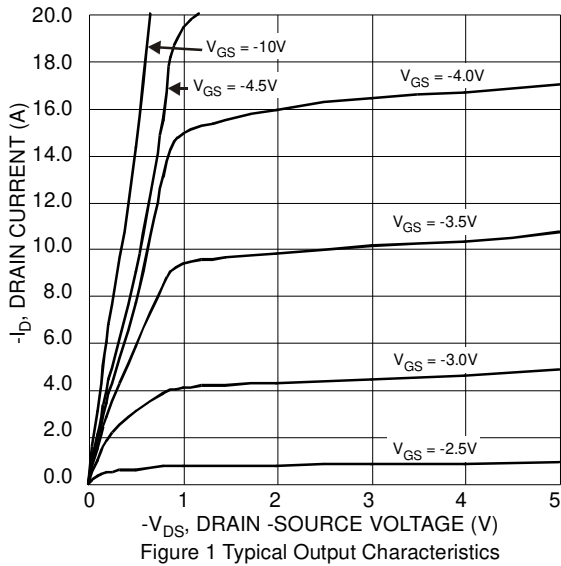


Figure 1 Typical Output Characteristics

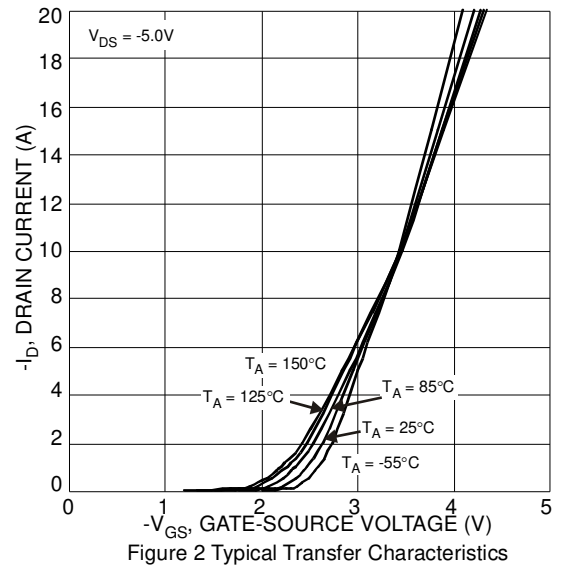


Figure 2 Typical Transfer Characteristics

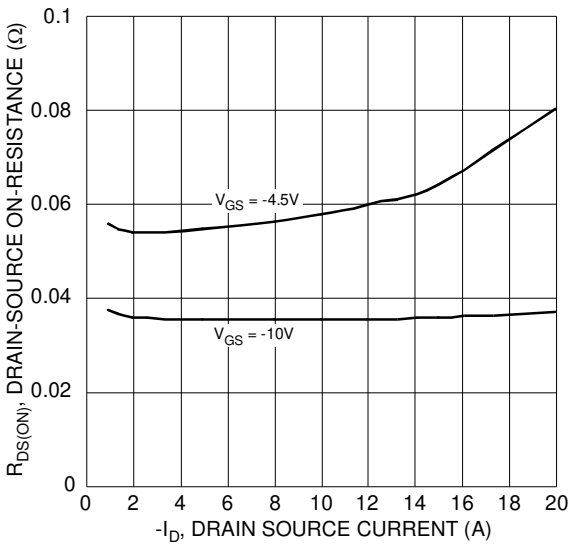


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

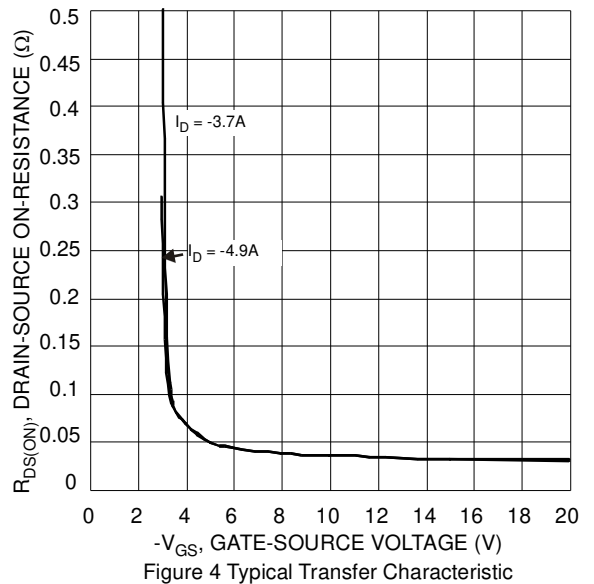


Figure 4 Typical Transfer Characteristic

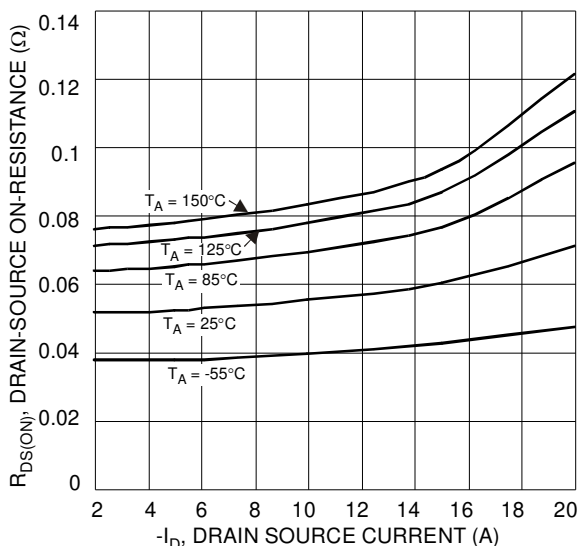


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

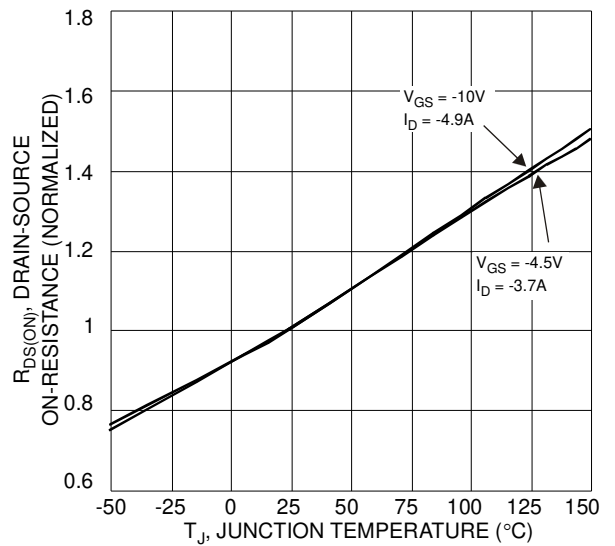


Figure 6 On-Resistance Variation with Temperature

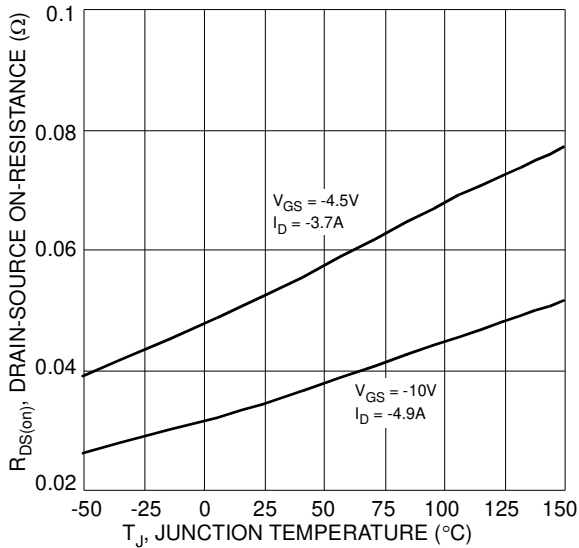


Figure 7 On-Resistance Variation with Temperature

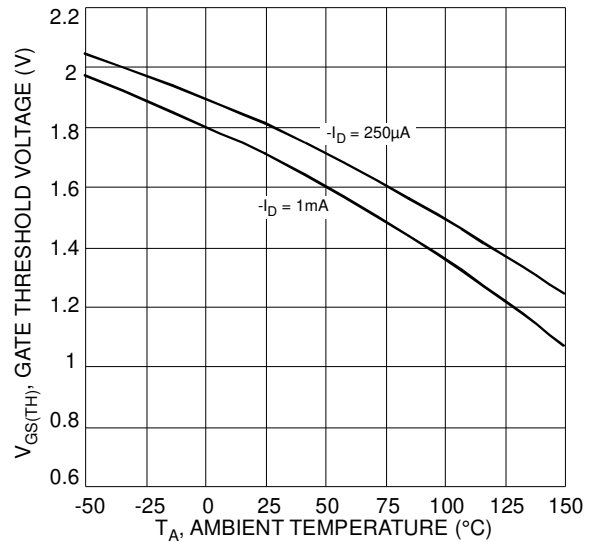


Figure 8 Gate Threshold Variation vs. Ambient Temperature

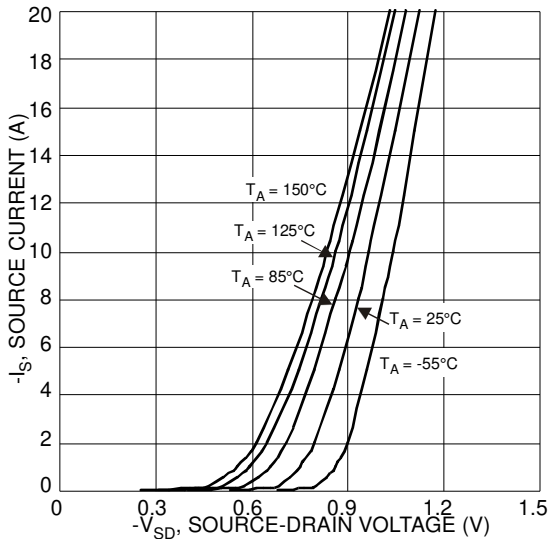


Figure 9 Diode Forward Voltage vs. Current

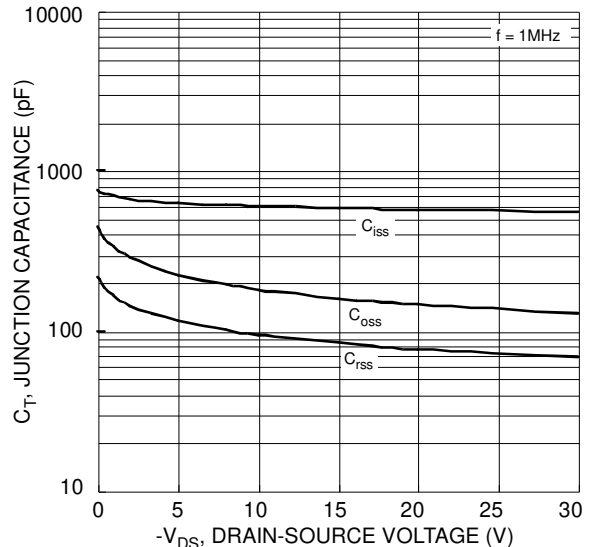


Figure 10 Typical Junction Capacitance

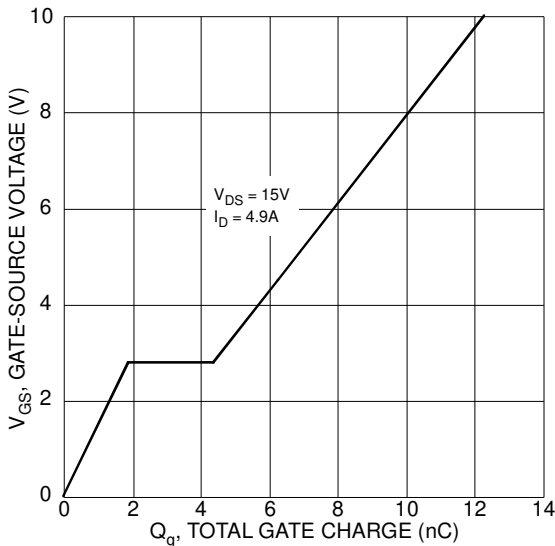


Figure 11 Gate-Charge Characteristics

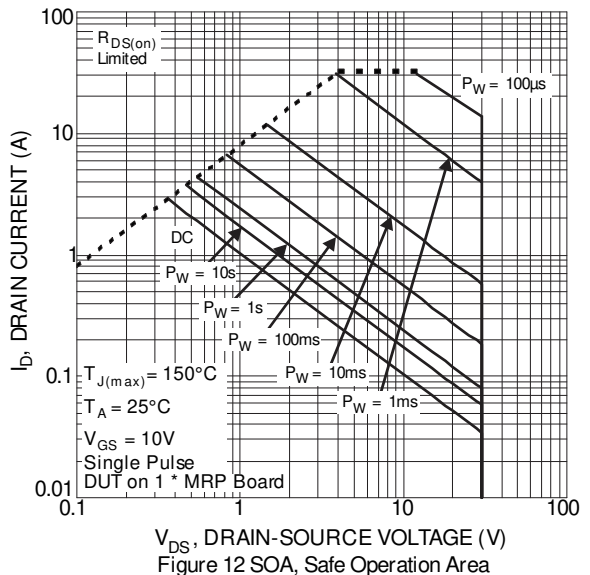


Figure 12 SOA, Safe Operation Area

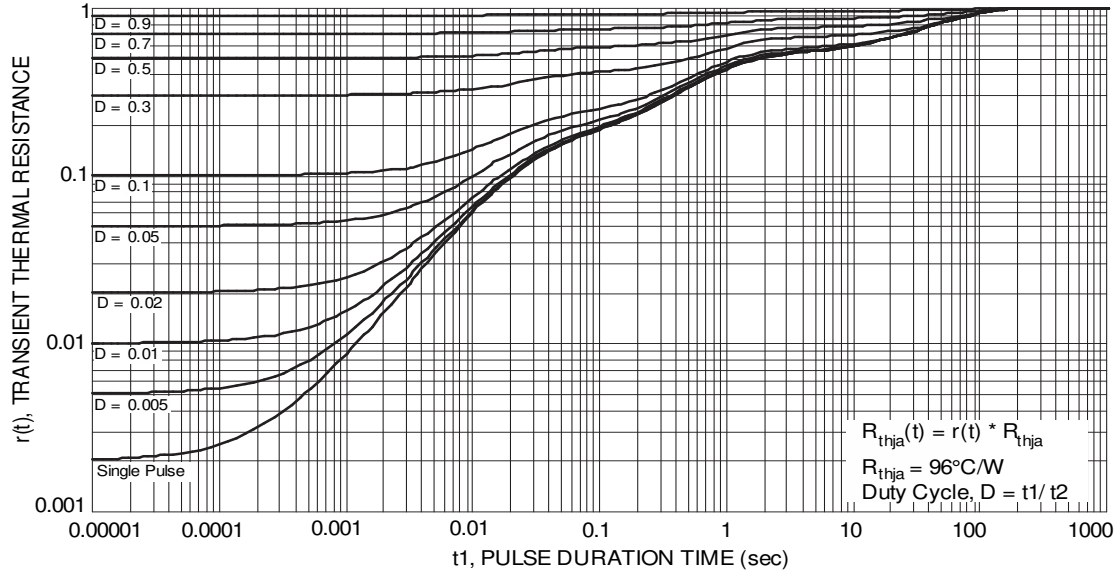
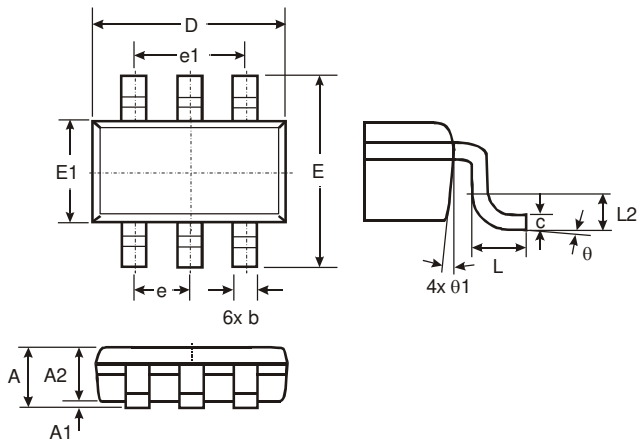


Figure 13 Transient Thermal Resistance

**Package Outline Dimensions**

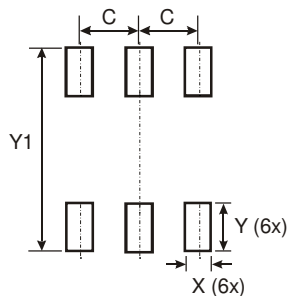
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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°  | -    |
| <b>All Dimensions in mm</b> |      |      |      |

**Suggested Pad Layout**

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



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

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