

Product Summary

| BV _{DSS} | R _{DS(ON)} Max | I _D T _A = +25°C |
|-------------------|--------------------------------|--|
| -20V | 35mΩ @ V _{GS} = -4.5V | -6.0A |
| | 45mΩ @ V _{GS} = -2.5V | -5.2A |

Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- ESD Protected up to 3kV
- **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.

- DC-DC Converters
- Motor Control
- Power Management Functions
- Analog Switch

Mechanical Data

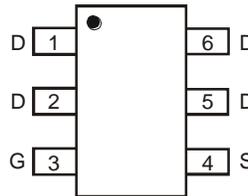
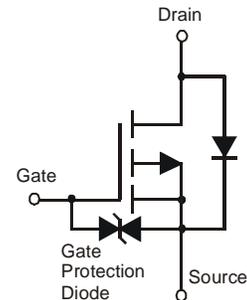
- Case: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.013 grams (Approximate)



TSOT26



Top View


 Top View
Pin-Out


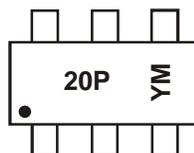
Equivalent Circuit

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------|--------------------|
| DMP2035UVT-7 | TSOT26 | 3,000/Tape & Reel |
| DMP2035UVT-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



20P = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: Y = 2011)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2011 | ~ | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|---|------|------|------|------|------|------|------|
| Code | Y | ~ | D | E | F | G | H | I | J |

| 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°C, unless otherwise specified.)

| Characteristic | | | Symbol | Value | Unit |
|---|--------------|--|------------------|--------------|------|
| Drain-Source Voltage | | | V _{DSS} | -20 | V |
| Gate-Source Voltage | | | V _{GSS} | ±12 | V |
| Continuous Drain Current (Note 6) V _{GS} = -4.5V | Steady State | T _A = +25°C T _A = +70°C | I _D | -6.0 -4.8 | A |
| | t < 10s | T _A = +25°C T _A = +70°C | I _D | -7.2 -5.7 | A |
| Continuous Drain Current (Note 6) V _{GS} = -2.5V | Steady State | T _A = +25°C T _A = +70°C | I _D | -5.2 -4.1 | A |
| | t < 10s | T _A = +25°C T _A = +70°C | I _D | -6.2 -4.9 | A |
| Maximum Continuous Body Diode Forward Current (Note 6) | | | I _S | -2.0 | A |
| Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%) | | | I _{DM} | -24 | A |

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

| Characteristic | | | Symbol | Value | Unit |
|--|--------------|--|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5) | | | P _D | 1.2 | W |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State | | R _{θJA} | 106 | °C/W |
| | t < 10s | | | 74 | |
| Total Power Dissipation (Note 6) | | | P _D | 2.0 | W |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State | | R _{θJA} | 65 | °C/W |
| | t < 10s | | | 46 | |
| Thermal Resistance, Junction to Case (Note 6) | | | R _{θJC} | 11.8 | |
| 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} | -20 | — | — | V | V _{GS} = 0V, I _D = -250µA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | -1 | µA | V _{DS} = -20V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | ±10 | µA | V _{GS} = ±8V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | -0.4 | -0.7 | -1.5 | V | V _{DS} = V _{GS} , I _D = -250µA |
| Gate Threshold Voltage Temperature Coefficient | ΔV _{GS(TH)} /ΔT _J | — | 2.5 | — | mV/°C | I _D = -250µA, Referenced to +25°C |
| Static Drain-Source On-Resistance | R _{DS(ON)} | — | 23 | 35 | mΩ | V _{GS} = -4.5V, I _D = -4.0A |
| | | — | 30 | 45 | | V _{GS} = -2.5V, I _D = -4.0A |
| | | — | 41 | 62 | | V _{GS} = -1.8V, I _D = -2.0A |
| Forward Transfer Admittance | Y _{fs} | — | 18 | — | S | V _{DS} = -5V, I _D = -5.5A |
| Diode Forward Voltage (Note 6) | V _{SD} | — | -0.7 | -1.0 | V | V _{GS} = 0V, I _S = -1A |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C _{iss} | — | 1,610 | 2,400 | pF | V _{DS} = -10V, V _{GS} = 0V f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 157 | 210 | | |
| Reverse Transfer Capacitance | C _{rss} | — | 145 | 200 | | |
| Gate Resistance | R _G | — | 9.4 | 14.1 | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| Total Gate Charge | Q _g | — | 15.4 | 23.1 | nC | V _{DS} = -10V, V _{GS} = -4.5V I _D = -4A |
| Gate-Source Charge | Q _{gs} | — | 2.5 | — | | |
| Gate-Drain Charge | Q _{gd} | — | 3.3 | — | | |
| Turn-On Delay Time | t _{D(ON)} | — | 17 | 33 | ns | V _{GS} = -4.5V, V _{DS} = -10V, R _G = 6Ω, I _D = -1A, R _L = 10Ω |
| Turn-On Rise Time | t _R | — | 12 | 19 | | |
| Turn-Off Delay Time | t _{D(OFF)} | — | 94 | 150 | | |
| Turn-Off Fall Time | t _F | — | 42 | 64 | | |
| Reverse Recovery Time | t _{RR} | — | 14 | 25 | ns | I _F = -4.5A, di/dt = 100A/µS |
| Reverse Recovery Charge | Q _{RR} | — | 4 | 8 | nC | |

- 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.

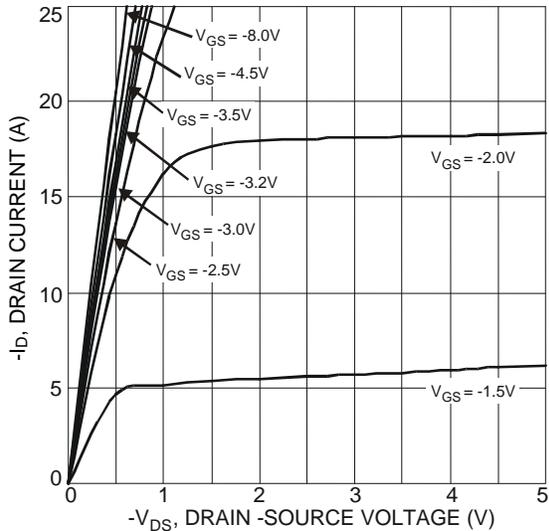


Fig. 1 Typical Output Characteristics

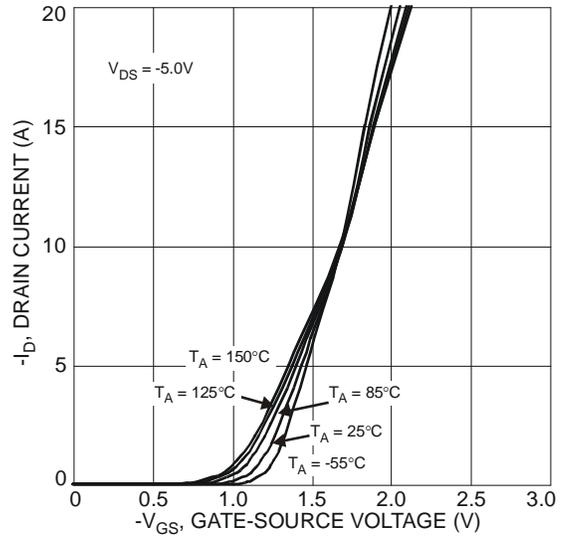


Fig. 2 Typical Transfer Characteristics

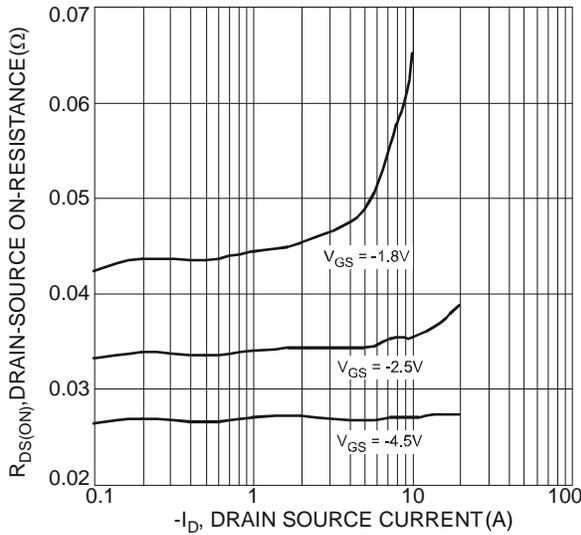


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

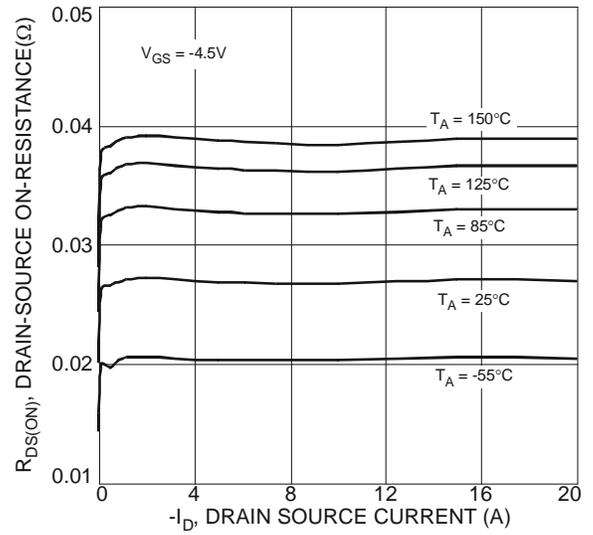


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

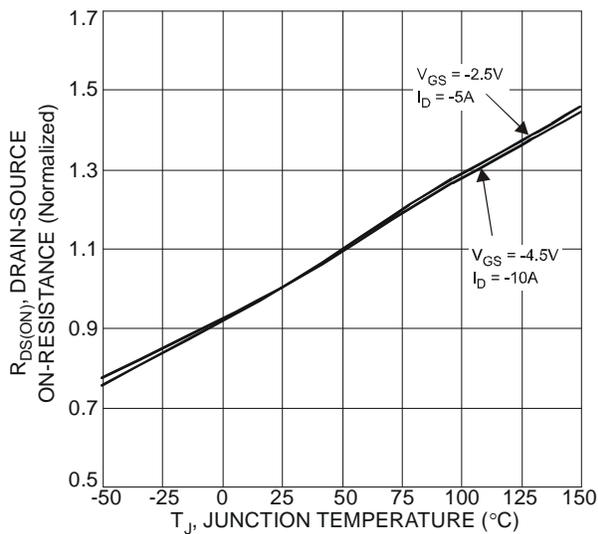


Fig. 5 On-Resistance Variation with Temperature

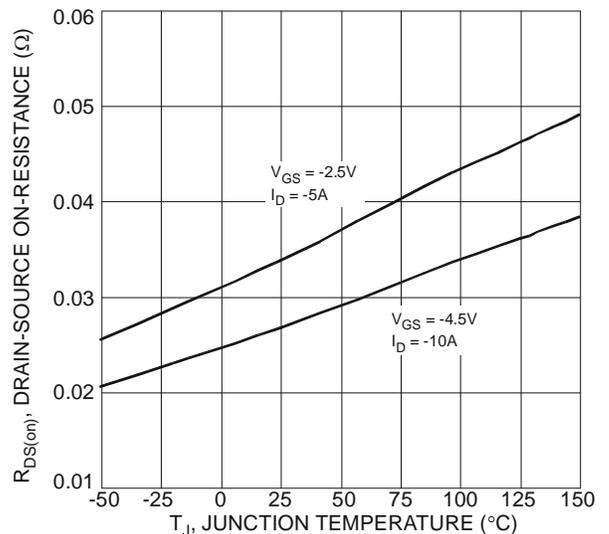


Fig. 6 On-Resistance Variation with Temperature

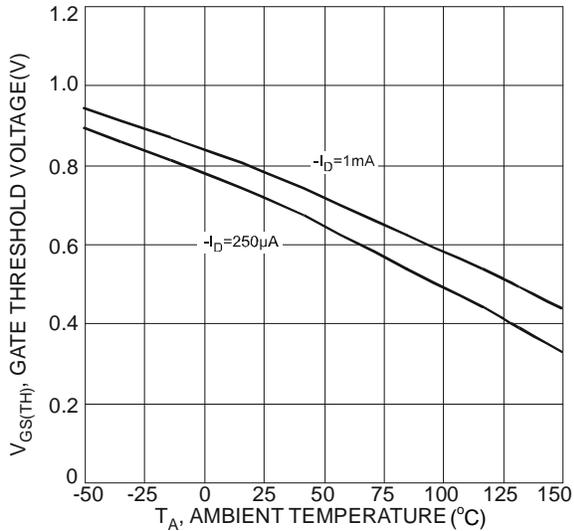


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

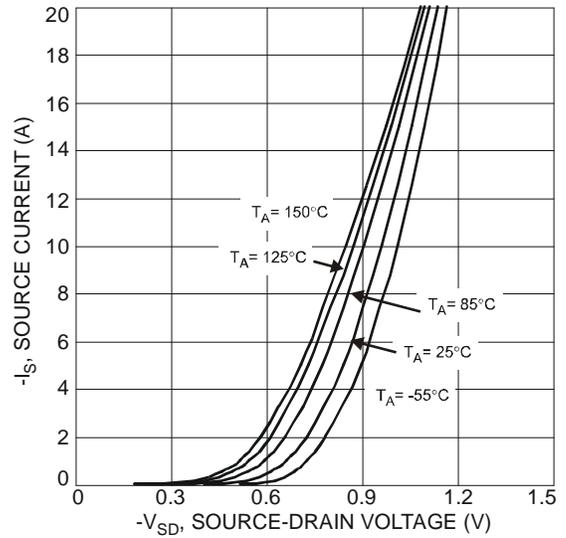


Fig. 8 Diode Forward Voltage vs. Current

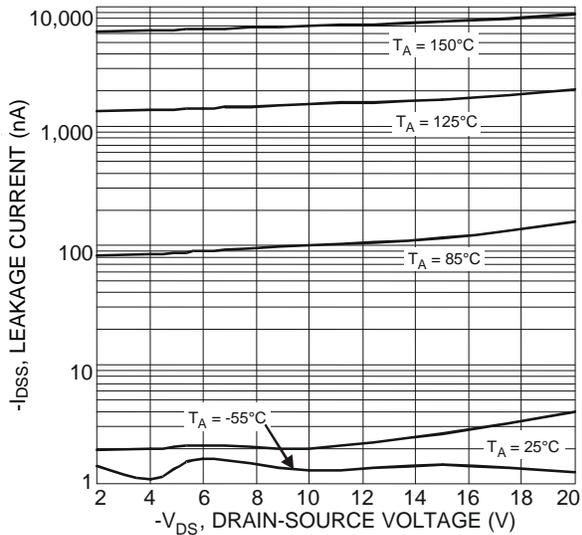


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

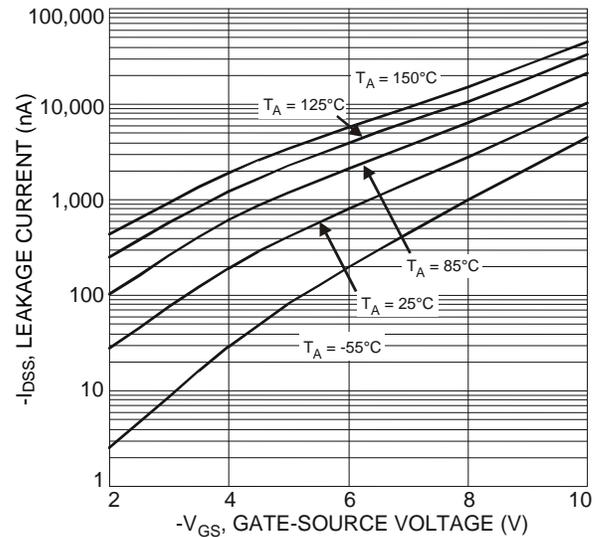


Fig. 10 Typical Gate-Source Leakage Current vs. Voltage

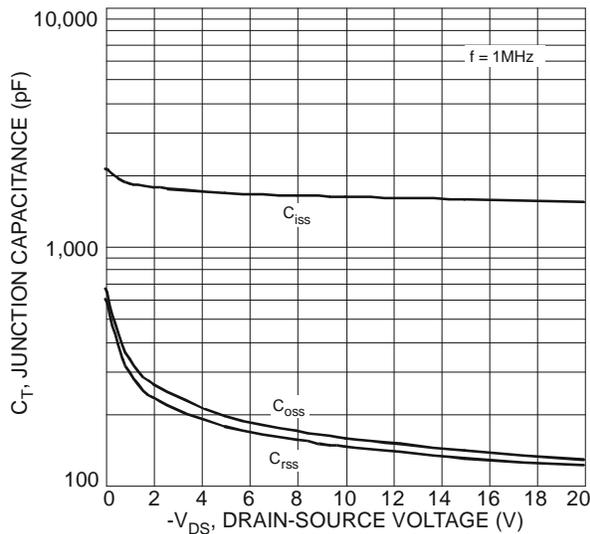


Fig. 11 Typical Junction Capacitance

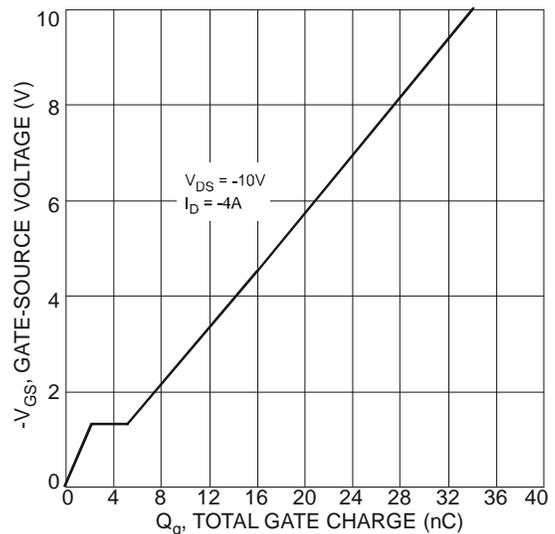


Fig. 12 Gate-Charge Characteristics

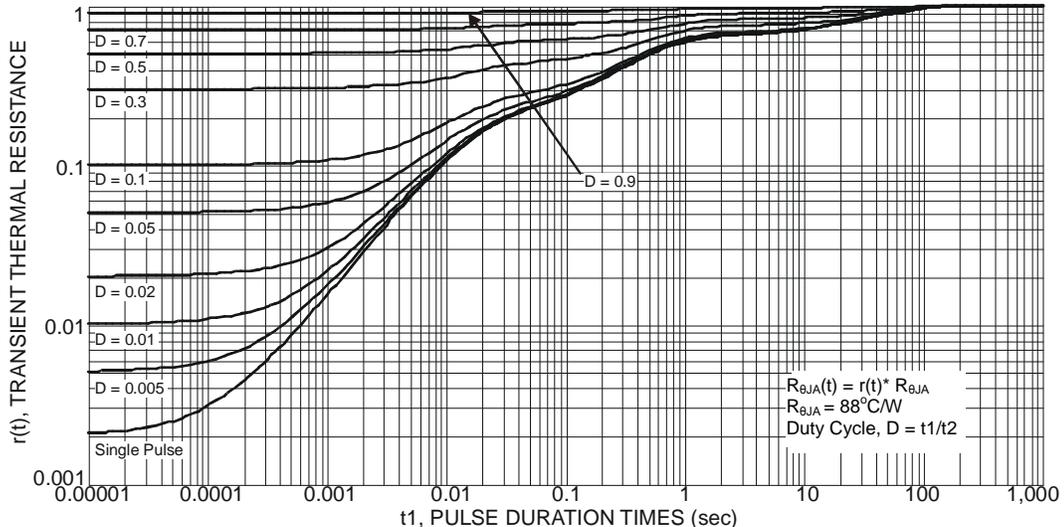
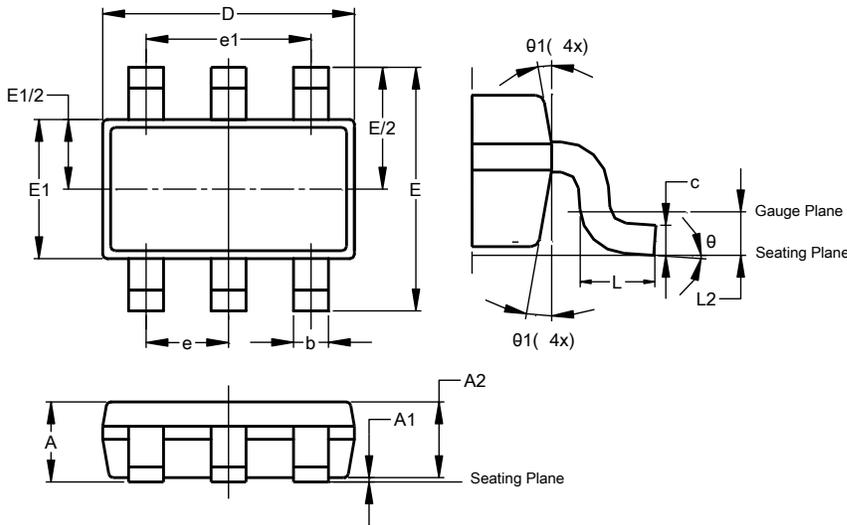


Fig. 13 Transient Thermal Resistance

Package Outline Dimensions

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

TSOT26



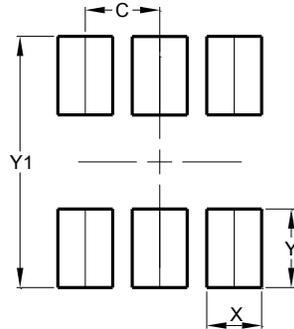
| TSOT26 | | | |
|--------|-----------|-------|-------|
| Dim | Min | Max | Typ |
| A | - | 1.00 | - |
| A1 | 0.010 | 0.100 | - |
| A2 | 0.840 | 0.900 | - |
| D | 2.800 | 3.000 | 2.900 |
| E | 2.800 BSC | | |
| E1 | 1.500 | 1.700 | 1.600 |
| b | 0.300 | 0.450 | - |
| c | 0.120 | 0.200 | - |
| e | 0.950 BSC | | |
| e1 | 1.900 BSC | | |
| L | 0.30 | 0.50 | - |
| L2 | 0.250 BSC | | |
| theta | 0° | 8° | 4° |
| theta1 | 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 | 3.199 |

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