

Product Summary

| BV_{DSS} | $R_{DS(ON)}$ Max | I_D Max $T_A = +25^\circ C$ |
|------------|-------------------------|----------------------------------|
| -30V | 50mΩ @ $V_{GS} = -10V$ | -4.5A |
| | 75mΩ @ $V_{GS} = -4.5V$ | -3.7A |

Description

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.

Applications

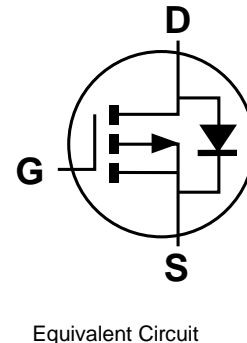
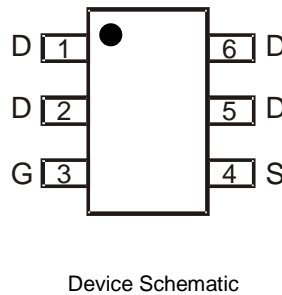
- Backlighting
- Power Management Functions
- DC-DC Converters

Features

- Low On-Resistance
- Low Input Capacitance
- 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 Indicator: See Diagram
- Terminals: Finish — Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ^(E3)
- Weight: 0.013grams (Approximate)

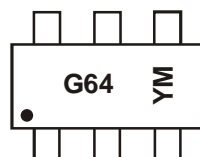


Ordering Information (Note 4)

| Part Number | Case | Packaging |
|--------------|--------|------------------|
| DMP3050LVT-7 | TSOT26 | 3000/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



G64 = Product Type Marking Code
 YM = Date Code Marking
 Y or Y= Year (ex: D = 2016)
 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} | -30 | V | |
| Gate-Source Voltage (Note 5) | V _{GSS} | ±25 | V | |
| Continuous Drain Current (Note 6) V _{GS} = -10V | Steady State | T _A = +25°C T _A = +70°C | -4.5 -3.5 | A |
| | t < 10s | T _A = +25°C T _A = +70°C | -5.2 -4.1 | A |
| Maximum Continuous Body Diode Forward Current (Note 6) | I _S | -2 | A | |
| Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%) | I _{DM} | -25 | A | |

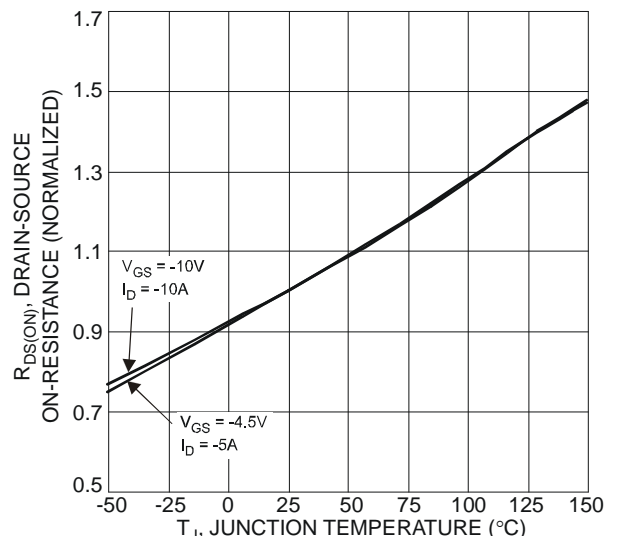
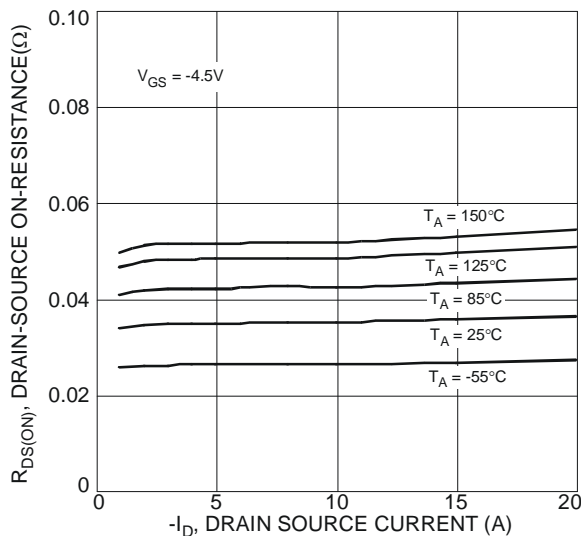
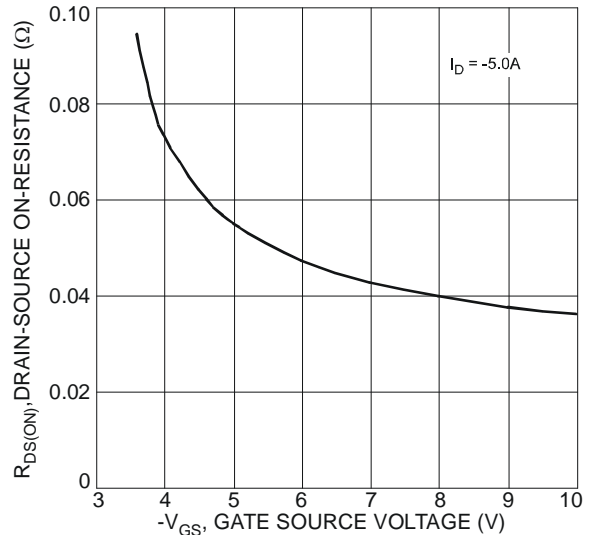
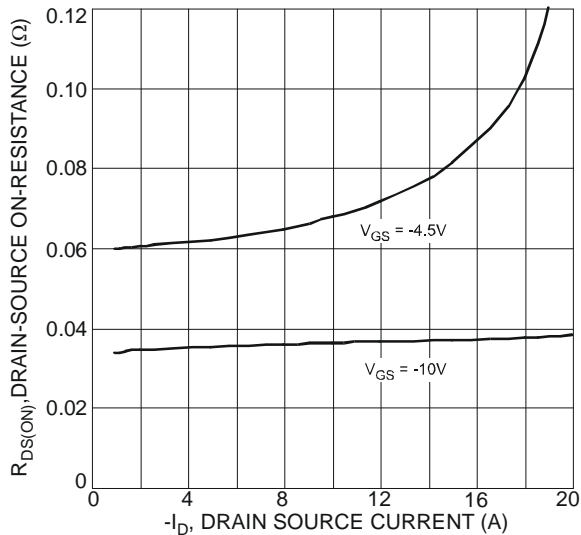
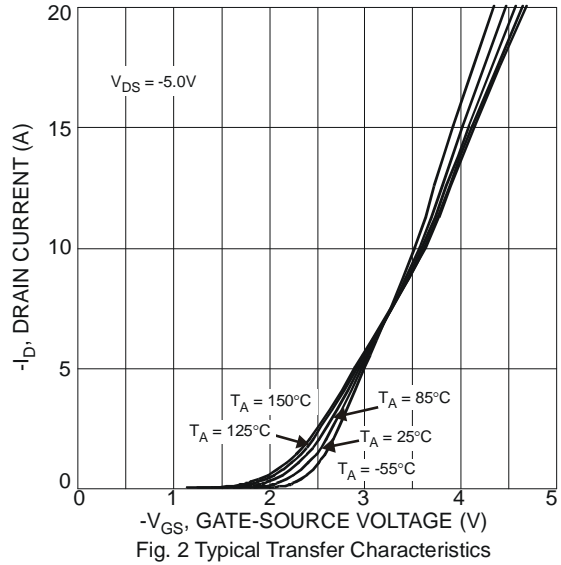
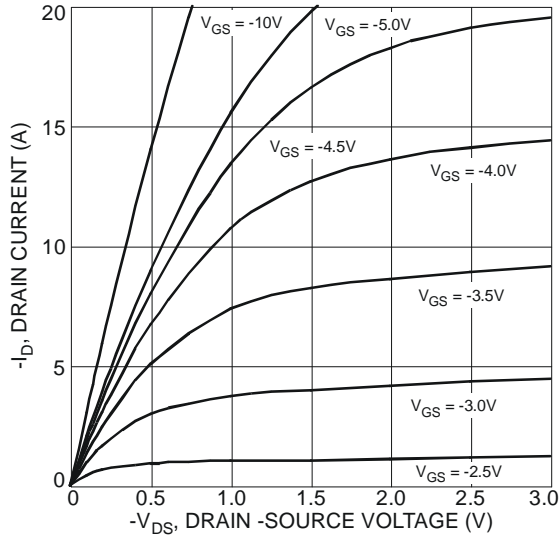
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit | |
|--|-----------------------------------|------------------------|------|------|
| Total Power Dissipation (Note 6) | P _D | T _A = +25°C | 1.6 | W |
| | | T _A = +70°C | 1.0 | |
| Thermal Resistance, Junction to Ambient (Note 6) | R _{θJA} | Steady State | 78 | °C/W |
| | | t < 10s | 49 | |
| Thermal Resistance, Junction to Case (Note 6) | R _{θJC} | 13 | | |
| 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 | 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 | - | -2.0 | V | V _{DS} = V _{GS} , I _D = -250µA |
| Static Drain-Source On-Resistance | R _{DS(ON)} | - | 36 | 50 | mΩ | V _{GS} = -10V, I _D = -4.5A |
| | | - | 56 | 75 | | V _{GS} = -4.5V, I _D = -3A |
| Forward Transfer Admittance | Y _{fs} | - | 7.2 | - | S | V _{DS} = -5V, I _D = -5A |
| Diode Forward Voltage | V _{SD} | - | -0.7 | -1.0 | V | V _{GS} = 0V, I _S = -1A |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C _{ISS} | - | 620 | - | pF | V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{OSS} | - | 83 | - | pF | |
| Reverse Transfer Capacitance | C _{RSS} | - | 62 | - | pF | |
| Gate Resistance | R _g | - | 10.8 | - | Ω | V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz |
| Total Gate Charge (V _{GS} = -4.5V) | Q _g | - | 5.1 | - | nC | V _{DS} = -15V, I _D = -6A |
| Total Gate Charge (V _{GS} = -10V) | Q _g | - | 10.5 | - | nC | |
| Gate-Source Charge | Q _{gs} | - | 1.8 | - | nC | |
| Gate-Drain Charge | Q _{gd} | - | 1.9 | - | nC | |
| Turn-On Delay Time | t _{D(ON)} | - | 6.8 | - | ns | V _{DD} = -15V, V _{GS} = -10V, R _g = 6Ω, I _D = -1A |
| Turn-On Rise Time | t _R | - | 4.9 | - | ns | |
| Turn-Off Delay Time | t _{D(OFF)} | - | 28.4 | - | ns | |
| Turn-Off Fall Time | t _F | - | 12.4 | - | ns | |

- Notes:
- AEC-Q101 V_{GS} maximum is ±20V.
 - 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 product testing.



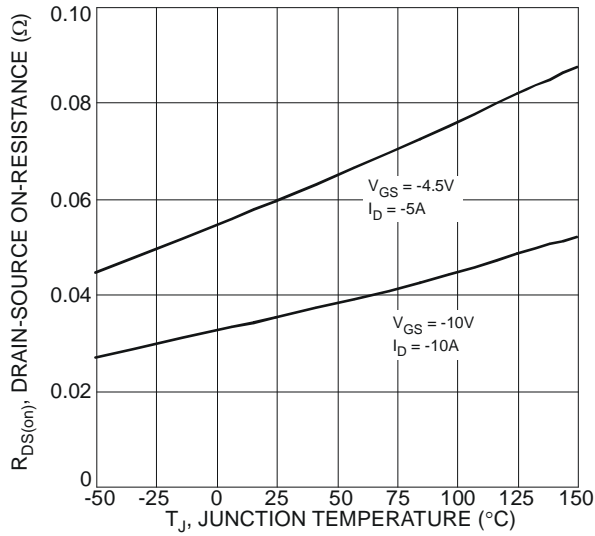


Fig. 7 On-Resistance Variation with Temperature

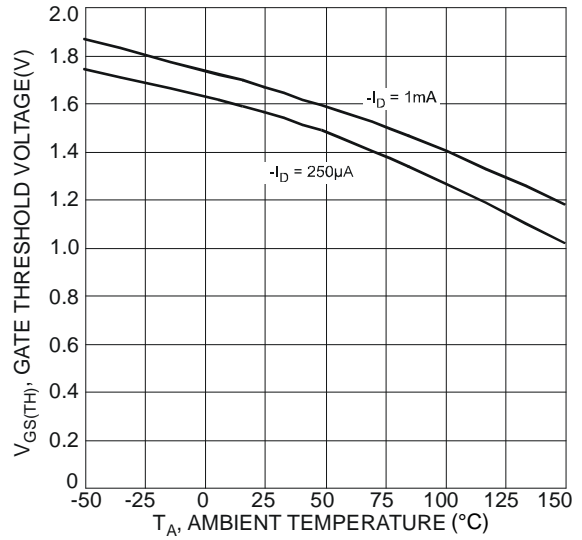


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

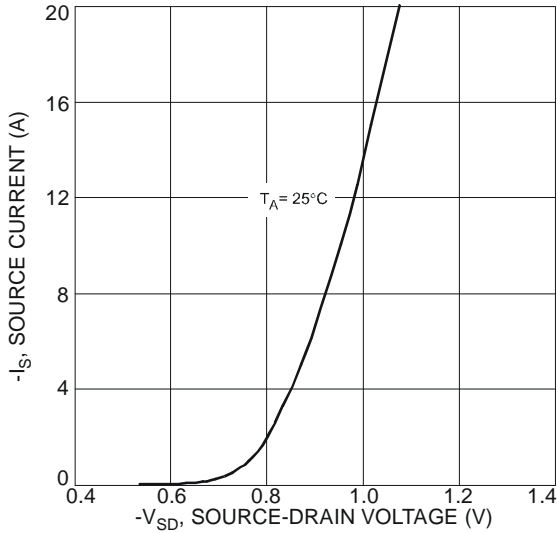


Fig. 9 Diode Forward Voltage vs. Current

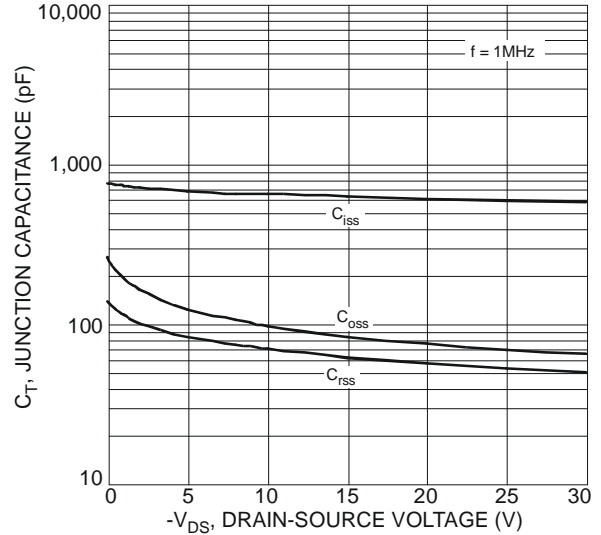


Fig. 10 Typical Junction Capacitance

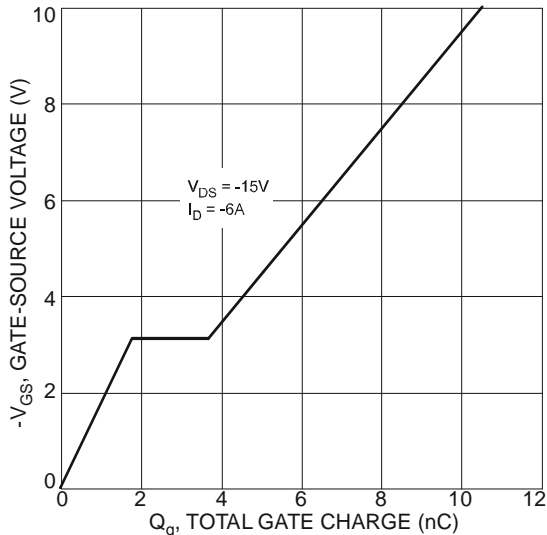


Fig. 11 Gate-Charge Characteristics

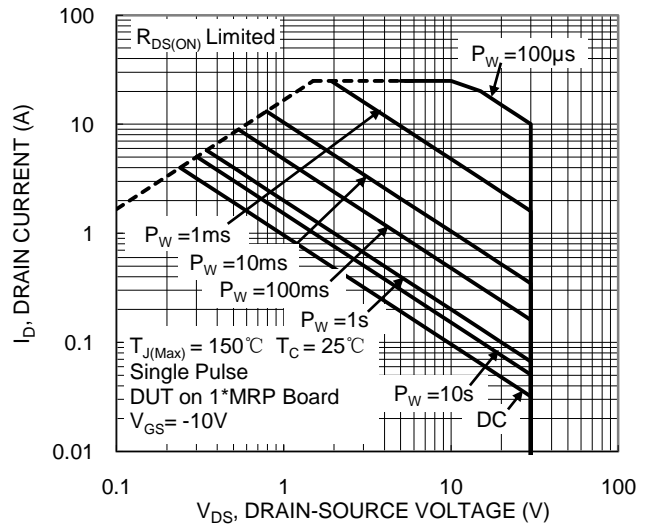


Figure 12. SOA, Safe Operation Area

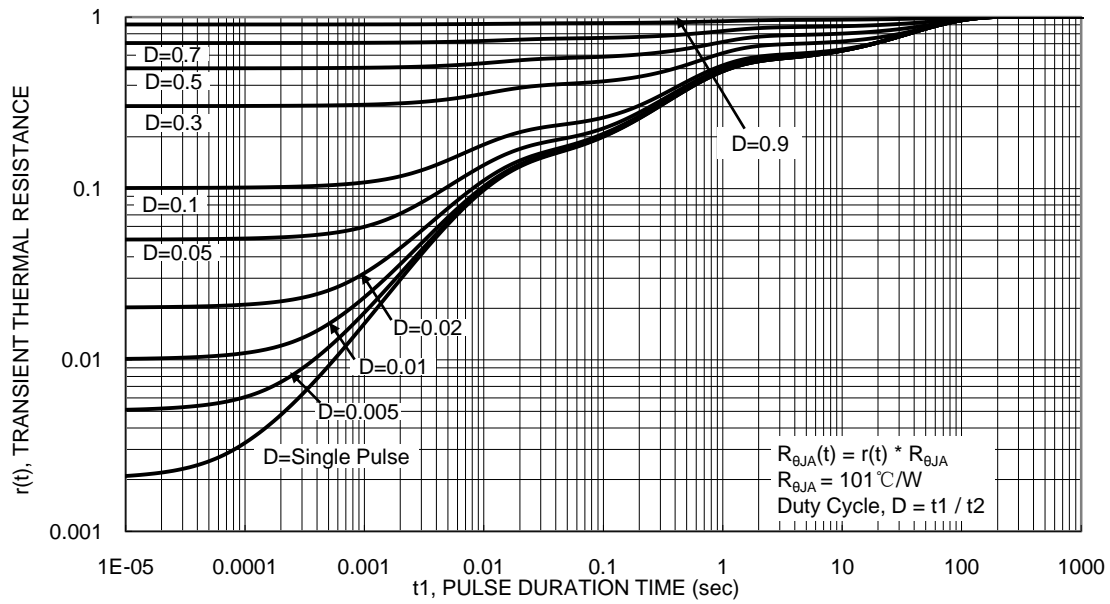
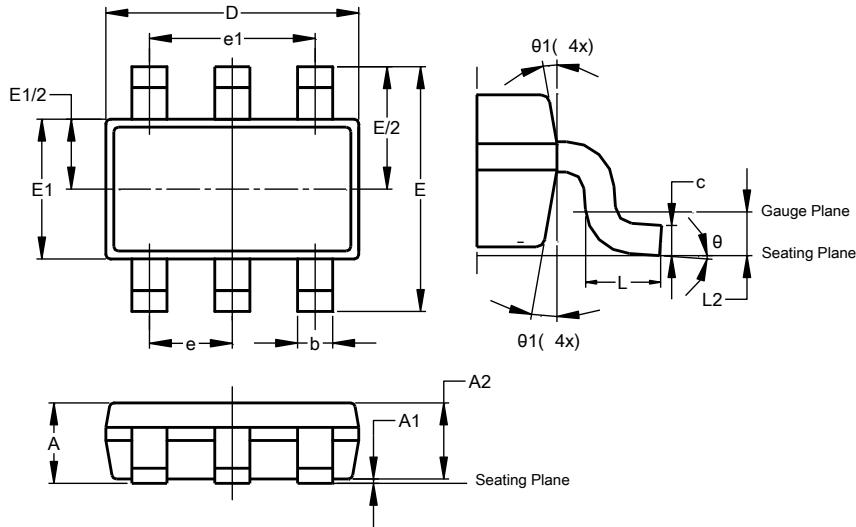


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TSOT26

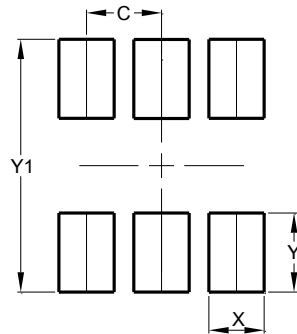


| TSOT26 | | | |
|-----------------------------|-----------|-------|-------|
| Dim | Min | Max | Typ |
| A | - | 1.00 | - |
| A1 | 0.010 | 0.100 | - |
| A2 | 0.840 | 0.900 | - |
| D | 2.800 | 3.000 | 2.900 |
| E | 2.800 BSC | | |
| E1 | 1.500 | 1.700 | 1.600 |
| b | 0.300 | 0.450 | - |
| c | 0.120 | 0.200 | - |
| e | 0.950 BSC | | |
| e1 | 1.900 BSC | | |
| L | 0.30 | 0.50 | - |
| L2 | 0.250 BSC | | |
| θ | 0° | 8° | 4° |
| θ1 | 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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