## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ max | $I_D$ max $T_A$ = +25°C |
|---|---|---|
| -20V | 45mΩ @ $V_{GS}$ = -4.5V | -4.5A |
| | 65mΩ @ $V_{GS}$ = -2.5V | -3.8A |

## Description

This new generation 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

- General Purpose Interfacing Switch
- Power Management Functions

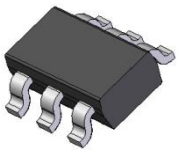
## Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- **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**

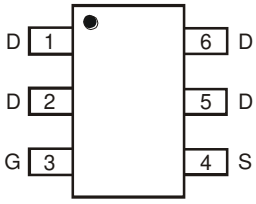
## Mechanical Data

- Case: SOT26
- 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)

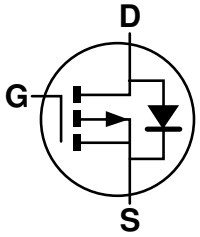
SOT26



Top View




Top View
Pin-Out




Equivalent Circuit

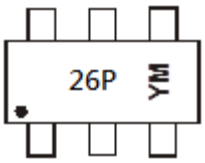
## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| DMP2066LVT-7 | SOT26 | 3,000/Tape & Reel |
| DMP2066LVT-13 | SOT26 | 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 compounds4. For packaging details, go to our website at http://www.diodes.com.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

## Marking Information

SOT26




**Shanghai A/T Site**

26P = Product Type Marking Code
YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
Y or $\overline{Y}$ = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

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

| 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 | | $V_{GSS}$ | ±8 | V |
| Drain Current (Note 5) Continuous | $T_A$ = +25°C<br>$T_A$ = +70°C | $I_D$ | -4.5<br>-3.7 | A |
| Pulsed Drain Current (10µs pulse, duty cycle = 1%) | | $I_{DM}$ | -20 | A |
| Body-Diode Continuous Current (Note 5) | | $I_S$ | -2.0 | A |

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

| Characteristic | | Symbol | Value | Units |
|---|---|---|---|---|
| Total Power Dissipation (Note 5) | | $P_D$ | 1.2 | W |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State | $R_{\theta JA}$ | 100 | °C/W |
| | t<10s | | 74 | |
| Total Power Dissipation (Note 6) | | $P_D$ | 1.8 | W |
| Thermal Resistance, Junction to Ambient (Note 6) | Steady State | $R_{\theta JA}$ | 70 | °C/W |
| | t<10s | | 46 | |
| 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 |
|---|---|---|---|---|---|---|
| **STATIC PARAMETERS (Note 7)** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | -20 | — | — | V | $I_D$ = -250µA, $V_{GS}$ = 0V |
| Zero Gate Voltage Drain Current<br>@ $T_J$ = +55°C (Note 8) | $I_{DSS}$ | — | — | -1<br>-10 | µA | $V_{DS}$ = -16V, $V_{GS}$ = 0V<br>$V_{DS}$ = -16V, $V_{GS}$ = 0V |
| Zero Gate Voltage Drain Current @$T_J$ = +150°C (Note 8) | $I_{DSS}$ | — | — | -100 | µA | $V_{DS}$ = -16V, $V_{GS}$ = 0V |
| Gate-Body Leakage Current | $I_{GSS}$ | — | — | ±100 | nA | $V_{DS}$ = 0V, $V_{GS}$ = ±8V |
| Gate Threshold Voltage | $V_{GS(th)}$ | -0.4 | — | -1.5 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = -250µA |
| Static Drain-Source On-Resistance | $R_{DS\ (ON)}$ | — | 25<br>33 | 45<br>65 | mΩ | $V_{GS}$ = -4.5V, $I_D$ = -4.5A<br>$V_{GS}$ = -2.5V, $I_D$ = -3.8A |
| Static Drain-Source On-Resistance @ $T_J$ = +125°C (Note 8) | $R_{DS\ (ON)}$ | — | — | 72 | mΩ | $V_{GS}$ = -4.5V, $I_D$ = -4.5A |
| Diode Forward Voltage | $V_{SD}$ | -0.5 | -0.72 | -1.4 | V | $I_S$ = -2.1A, $V_{GS}$ = 0V |
| On State Drain Current (Note 8) | $I_{D(ON)}$ | 10 | — | — | A | $V_{DS}$ ≦5V, $V_{GS}$ = 4.5V |
| **DYNAMIC PARAMETERS (Note 8)** | | | | | | |
| Input Capacitance | $C_{iss}$ | — | 1,496 | 2,990 | pF | $V_{DS}$ = -15V, $V_{GS}$ = 0V<br>f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | — | 130 | 260 | pF | |
| Reverse Transfer Capacitance | $C_{rss}$ | — | 116 | 230 | pF | |
| Total Gate Charge | $Q_G$ | — | 14.4 | 25 | nC | $V_{DS}$ = -10V, $V_{GS}$ = -4.5V,<br>$I_D$ = -4.5A |
| Gate-Source Charge | $Q_{GS}$ | — | 2.6 | 5 | | |
| Gate-Drain Charge | $Q_{GD}$ | — | 2.7 | 5.5 | | |
| Turn-On Delay Time | $t_{d(on)}$ | — | 8.5 | 30 | ns | $V_{DS}$ = -5V, $V_{GS}$ = -4.5V,<br>$I_D$ = -1A, $R_G$ = 6.0Ω |
| Rise Time | $t_r$ | — | 11 | 60 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | — | 61 | 130 | | |
| Fall Time | $t_f$ | — | 25 | 100 | | |

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.

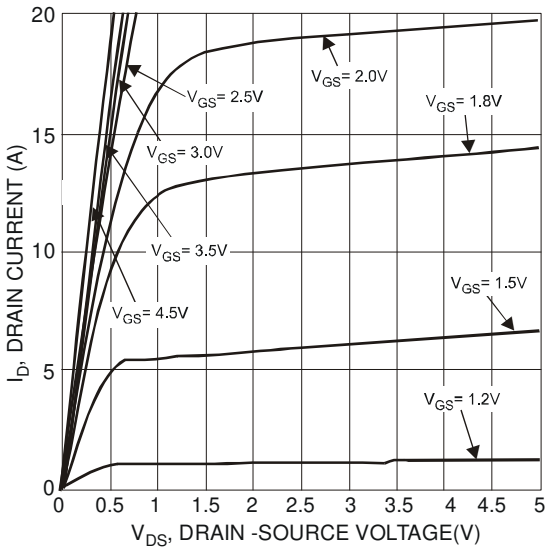



Figure 1 Typical Output Characteristics

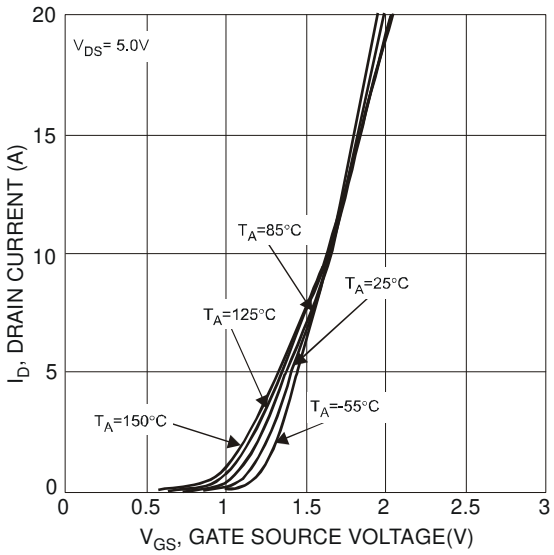



Figure 2 Typical Transfer Characteristics

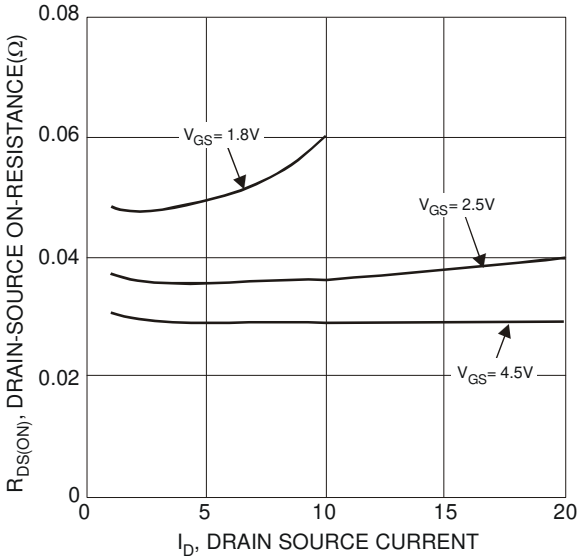



Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

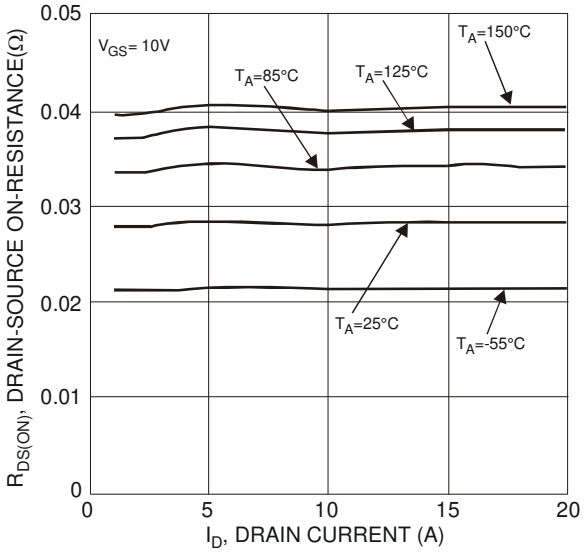



Figure 4 Typical On-Resistance vs. Drain Current and Temperature

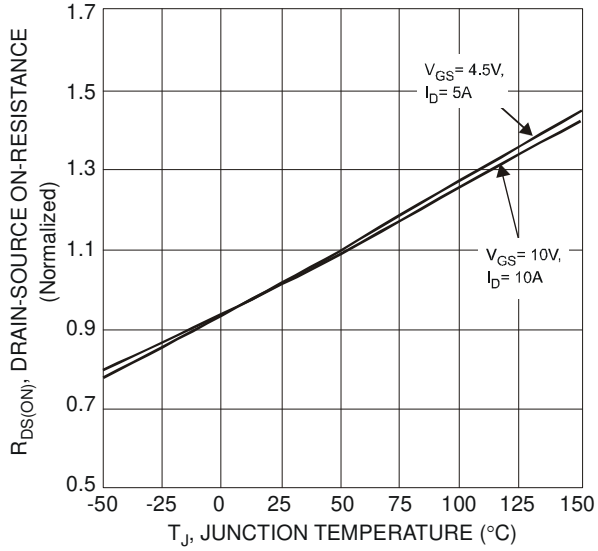



Figure 5 On-Resistance Variation with Temperature

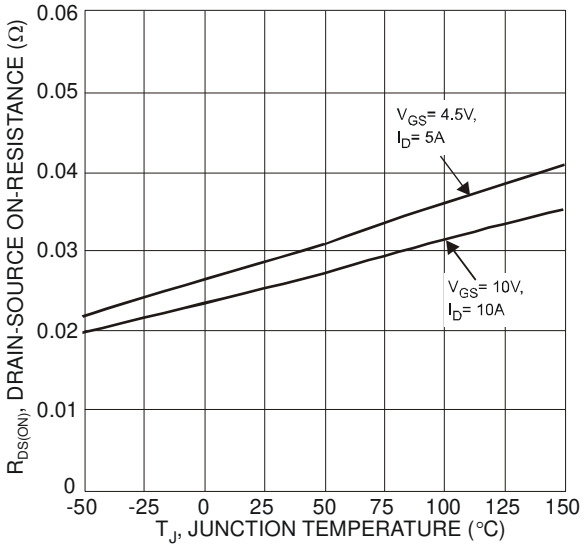



Figure 6 On-Resistance Variation with Temperature

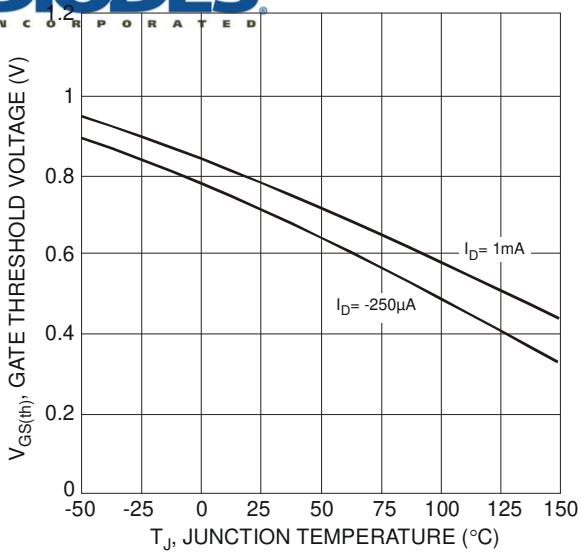



Figure 7 Gate Threshold Variation vs. Ambient Temperature

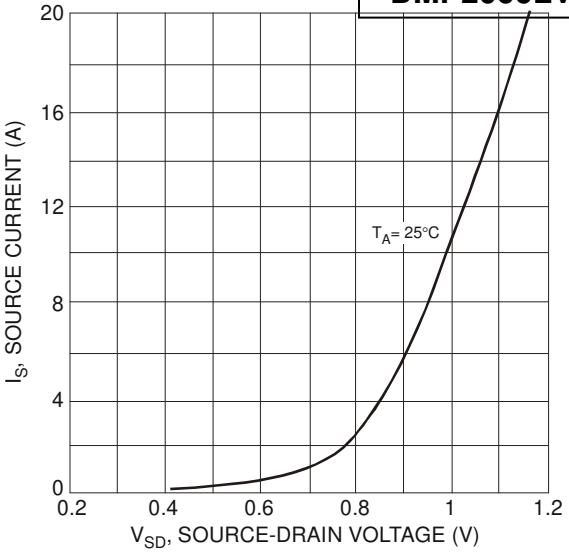



Figure 8 Diode Forward Voltage vs. Current

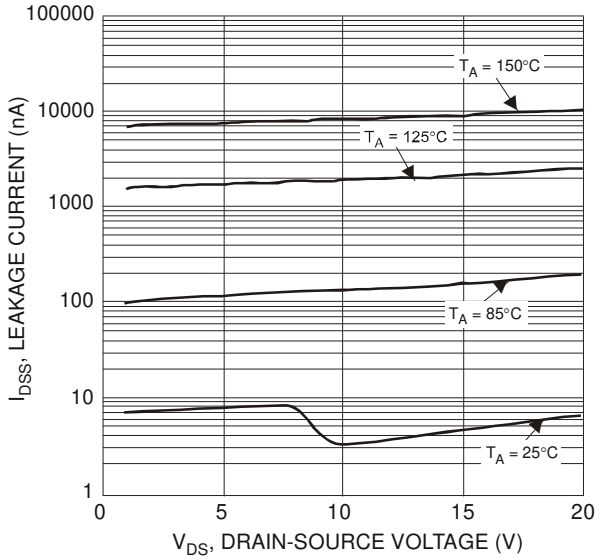



Figure 9 Typical Drain-Source Leakage Current vs. Voltage

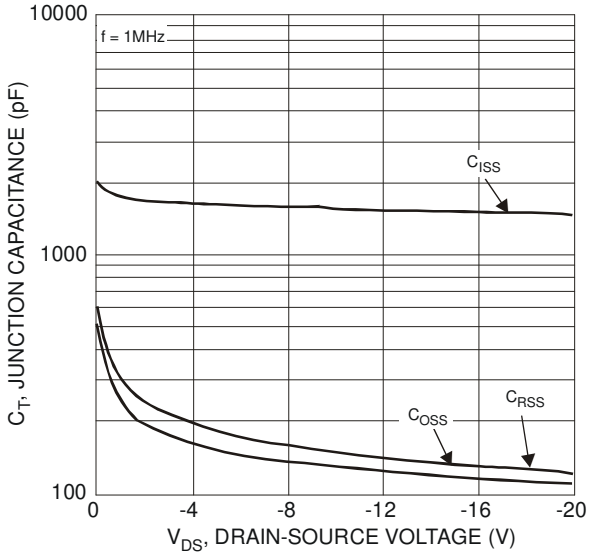



Figure 10 Typical Junction Capacitance

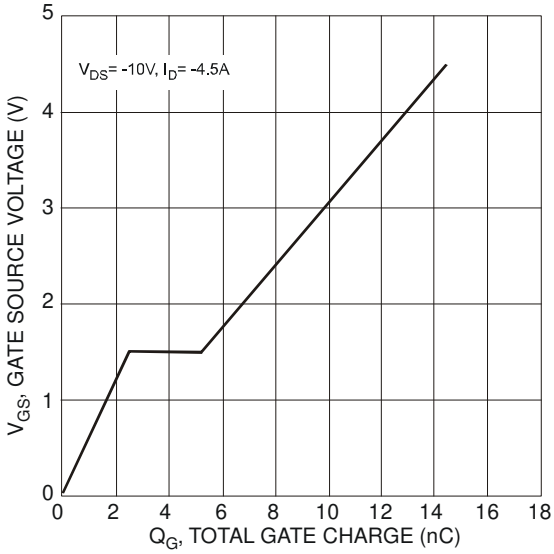
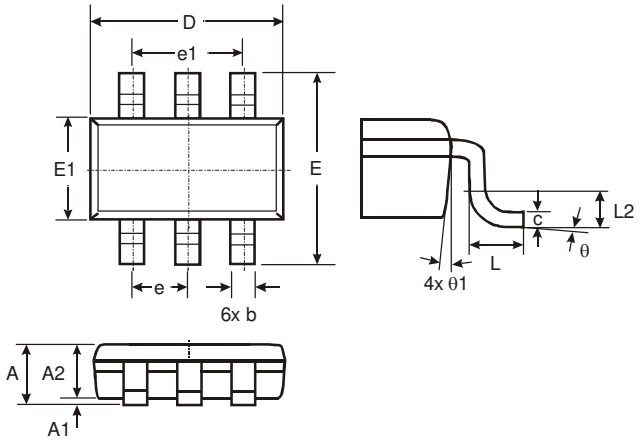



Figure 11 Gate Charge Characteristics

## Package Outline Dimensions

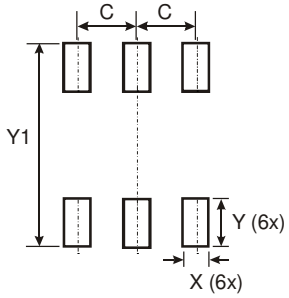
**TSOT26**




| 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

**TSOT26**




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

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