

DMN26D0UDJ

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)}$ | I_D $T_A = +25^\circ\text{C}$ |
|---------------|---------------------------------------|------------------------------------|
| 20V | 3.0 Ω @ $V_{GS} = 4.5\text{V}$ | 240mA |
| | 6.0 Ω @ $V_{GS} = 1.8\text{V}$ | 180mA |

Description

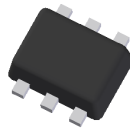
This new generation MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- DC-DC Converters
- Power management functions



SOT963



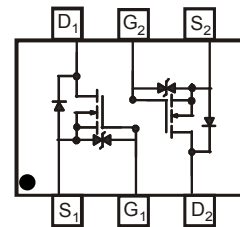
Top View

DUAL N-CHANNEL ENHANCEMENT MODE MOSFET Features

- Dual N-Channel MOSFET
- Low On-Resistance:
 - 3.0 Ω @ 4.5V
 - 4.0 Ω @ 2.5V
 - 6.0 Ω @ 1.8V
 - 10 Ω @ 1.5V
- Very Low Gate Threshold Voltage, 1.05V max
- Low Input Capacitance
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- ESD Protected Gate (HBM 300V)
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT963
- 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: 0.0027 grams (approximate)

Top View
Schematic and Transistor Diagram

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | | | Symbol | Value | Unit |
|--|--------------|---------------------------|-----------|----------|------|
| Drain Source Voltage | | | V_{DSS} | 20 | V |
| Gate-Source Voltage | | | V_{GSS} | ± 10 | V |
| Continuous Drain Current (Note 6) $V_{GS} = 4.5\text{V}$ | Steady State | $T_A = +25^\circ\text{C}$ | I_D | 240 | mA |
| | | $T_A = +70^\circ\text{C}$ | | 190 | |
| Continuous Drain Current (Note 6) $V_{GS} = 1.8\text{V}$ | Steady State | $T_A = +25^\circ\text{C}$ | I_D | 180 | mA |
| | | $T_A = +70^\circ\text{C}$ | | 140 | |
| Pulsed Drain Current - $T_P = 10\mu\text{s}$ | | | I_{DM} | 805 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Total Power Dissipation (Note 6) | P_D | 300 | mW |
| Thermal Resistance, Junction to Ambient (Note 6) | $R_{\theta JA}$ | 409 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--------------|------|------|----------------------|---------------------|---|
| OFF CHARACTERISTICS (Note 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | 20 | — | — | V | $V_{GS} = 0\text{V}, I_D = 100\mu\text{A}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | — | — | 500 | nA | $V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$ |
| @ $T_J = +85^\circ\text{C}$ (Note 8) | | | | 1.7 | μA | $V_{DS} = 2.6\text{V}, V_{GS} = 0\text{V}$ |
| Gate-Body Leakage | I_{GSS} | — | — | ± 1 ± 100 | μA nA | $V_{GS} = \pm 10\text{V}, V_{DS} = 0\text{V}$ $V_{GS} = \pm 5\text{V}, V_{DS} = 0\text{V}$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | 0.45 | 0.8 | 1.05 | V | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | — | 1.8 | 3.0 | Ω | $V_{GS} = 4.5\text{V}, I_D = 100\text{mA}$ |
| | | — | 2.5 | 4.0 | | $V_{GS} = 2.5\text{V}, I_D = 50\text{mA}$ |
| | | — | 3.4 | 6.0 | | $V_{GS} = 1.8\text{V}, I_D = 20\text{mA}$ |
| | | — | 4.7 | 10.0 | | $V_{GS} = 1.5\text{V}, I_D = 10\text{mA}$ |
| | | — | 9.5 | — | | $V_{GS} = 1.2\text{V}, I_D = 1\text{mA}$ |
| Forward Transconductance | $ Y_{fs} $ | 180 | 240 | — | mS | $V_{DS} = 10\text{V}, I_D = 0.1\text{A}$ |
| Source-Drain Diode Forward Voltage | V_{SD} | 0.5 | 0.8 | 1.0 | V | $V_{GS} = 0\text{V}, I_S = 10\text{mA}$ |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C_{iss} | — | 14.1 | — | pF | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$ |
| Output Capacitance | C_{oss} | — | 2.9 | — | pF | |
| Reverse Transfer Capacitance | C_{rss} | — | 1.6 | — | pF | |
| SWITCHING CHARACTERISTICS, $V_{GS} = 4.5\text{V}$ (Note 8) | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | — | 3.8 | — | ns | $V_{GS} = 4.5\text{V}, V_{DD} = 10\text{V}$ $I_D = 200\text{mA}, R_G = 2.0\Omega$ |
| Rise Time | t_r | — | 7.9 | — | | |
| Turn-Off Delay Time | $t_{d(off)}$ | — | 13.4 | — | | |
| Fall Time | t_f | — | 15.2 | — | | |



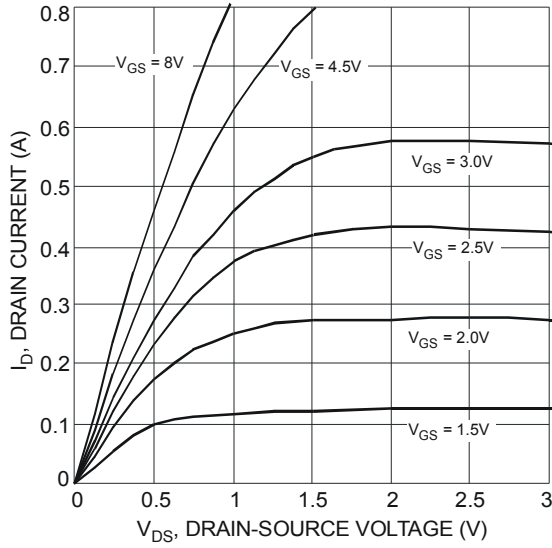


Fig. 1 Typical Output Characteristic

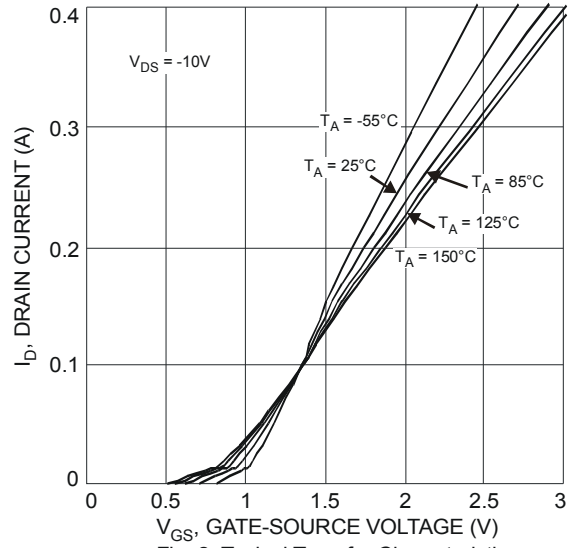


Fig. 2 Typical Transfer Characteristic

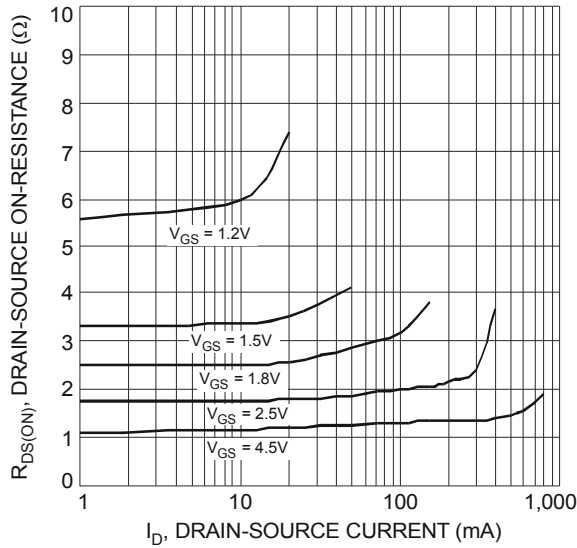


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

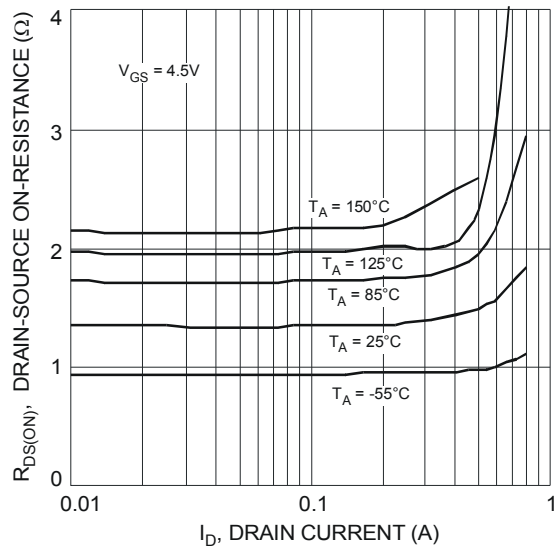


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

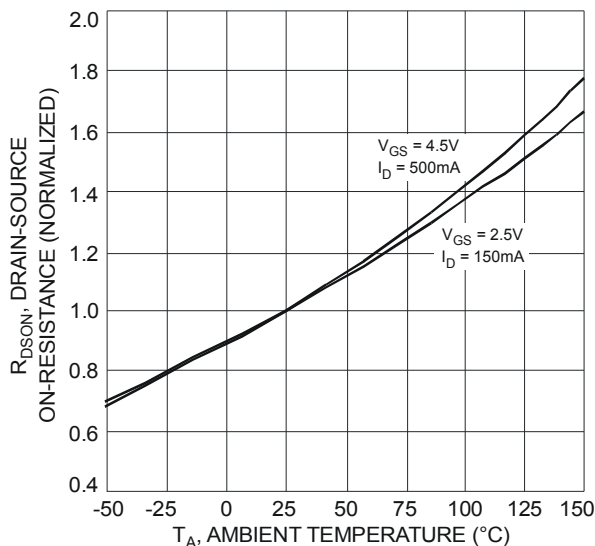


Fig. 5 On-Resistance Variation with Temperature

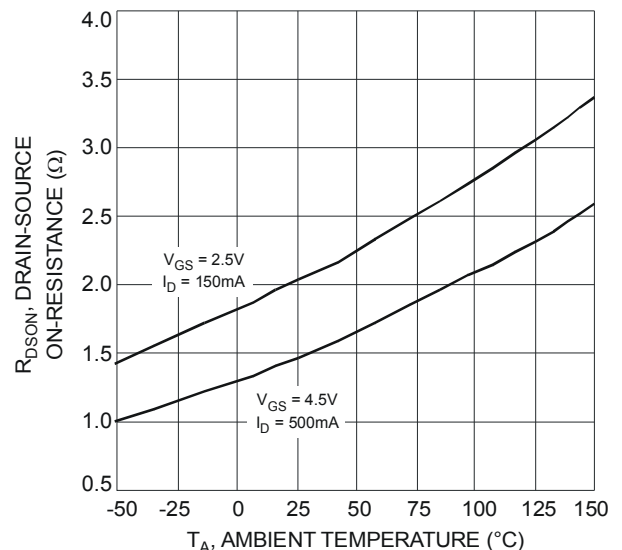


Fig. 6 On-Resistance Variation with Temperature



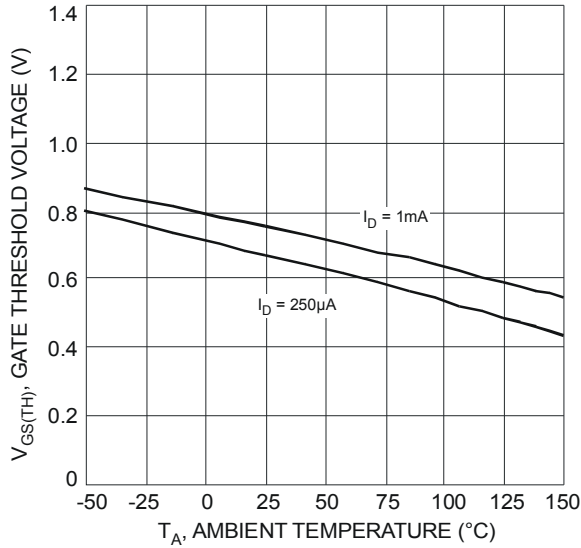


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

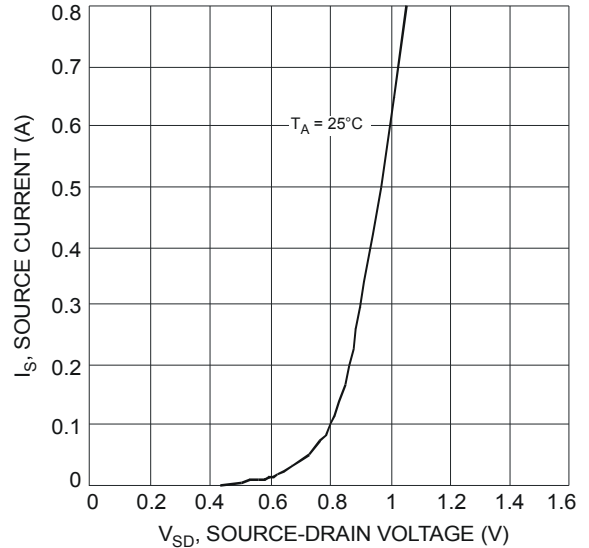


Fig. 8 Diode Forward Voltage vs. Current

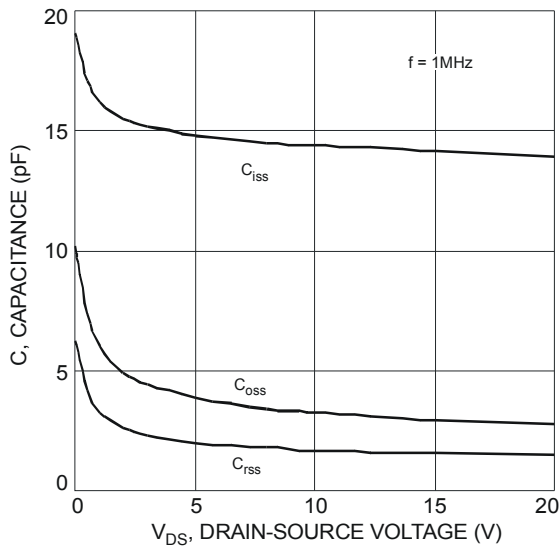


Fig. 9 Typical Total Capacitance

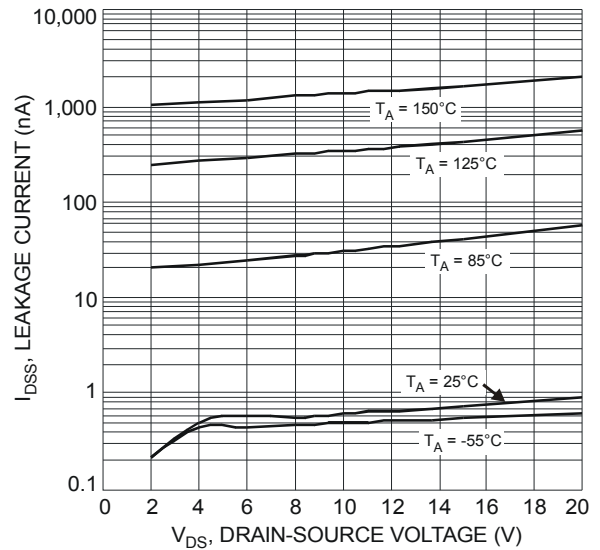
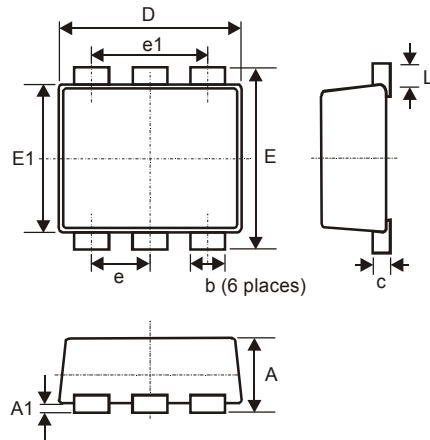


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

Package Outline Dimensions



| SOT963 | | | |
|----------------------|----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.40 | 0.50 | 0.45 |
| A1 | 0 | 0.05 | - |
| c | 0.120 | 0.180 | 0.150 |
| D | 0.95 | 1.05 | 1.00 |
| E | 0.95 | 1.05 | 1.00 |
| E1 | 0.75 | 0.85 | 0.80 |
| L | 0.05 | 0.15 | 0.10 |
| b | 0.10 | 0.20 | 0.15 |
| e | 0.35 Typ | | |
| e1 | 0.70 Typ | | |
| All Dimensions in mm | | | |