

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on) \max}$ | $I_D \max$ $T_A = +25^\circ\text{C}$ |
|---------------|---------------------------------|---|
| 60V | $5\Omega @ V_{GS} = 10\text{V}$ | 115mA |

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.

- Load switches
- Power management functions
- Motor controls
- PWM applications

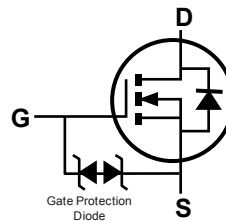


ESD PROTECTED, 1KV

SOT523

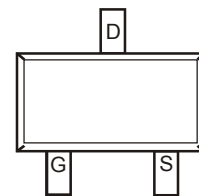


Top View



Gate Protection Diode

Equivalent Circuit



Top View
Pin Out

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- ESD Protected Gate, 1KV (HBM)
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

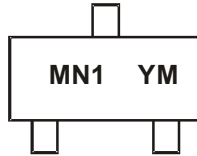
- Case: SOT523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208 ③
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Weight: 0.002 grams (approximate)

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|--------|------------------|
| DMN66D0LT-7 | SOT523 | 3000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



MN1 = Product Type Marking Code
 YM = Date Code Marking
 Y or Y= Year ex: I = 2021
 M = Month ex: 9 = September

Date Code Key

| Year | 2008 | | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Code | V | | I | J | K | L | M | N | O | P | R | S |

| 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 | Units |
|------------------------|---------------------|-------|-------|
| Drain-Source Voltage | V _{DSS} | 60 | V |
| Gate-Source Voltage | Continuous | ±20 | V |
| Drain Current (Note 5) | Continuous | 115 | mA |
| | Continuous @ +100°C | 73 | |
| | Pulsed | 800 | |

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

| Characteristic | Symbol | Value | Units |
|--|-----------------------------------|-------------|-------|
| Total Power Dissipation (Note 5) | P _D | 200 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | R _{θJA} | 625 | °C/W |
| 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 6) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 60 | 70 | — | V | V _{GS} = 0V, I _D = 10μA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 1.0 500 | μA | @ T _C = +25°C @ T _C = +125°C V _{DS} = 60V, V _{GS} = 0V |
| Gate-Body Leakage | I _{GSS} | — | — | ±5 | μA | V _{GS} = ±20V, V _{DS} = 0V |
| ON CHARACTERISTICS (Note 6) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 1.2 | — | 2.0 | V | V _{DS} = V _{GS} , I _D = 250μA |
| Static Drain-Source On-Resistance | R _{DS(on)} | — | 3.5 3.0 | 6 5 | Ω | @ T _C = +25°C @ T _C = +125°C V _{GS} = 5.0V, I _D = 0.115A V _{GS} = 10V, I _D = 0.115A |
| Forward Transconductance | g _{FS} | 80 | — | — | mS | V _{DS} = 10V, I _D = 0.115A |
| DYNAMIC CHARACTERISTICS (Note 7) | | | | | | |
| Input Capacitance | C _{iss} | — | 23 | — | pF | V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz |
| Output Capacitance | C _{oss} | — | 3.4 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 1.4 | — | pF | |
| SWITCHING CHARACTERISTICS (Note 7) | | | | | | |
| Turn-On Delay Time | t _{D(on)} | — | 10 | — | ns | V _{DD} = 30V, I _D = 0.115A, R _L = 150Ω, V _{GEN} = 10V, R _{GEN} = 25Ω |
| Turn-Off Delay Time | t _{D(off)} | — | 33 | — | ns | |

Notes:
 5. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to product testing.

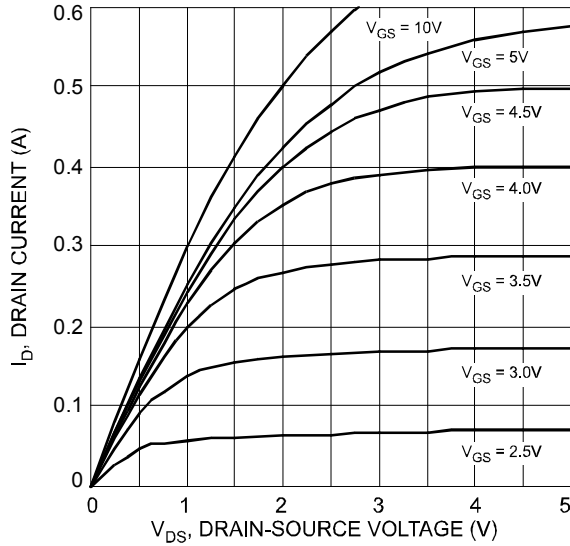


Fig. 1 Typical Output Characteristic

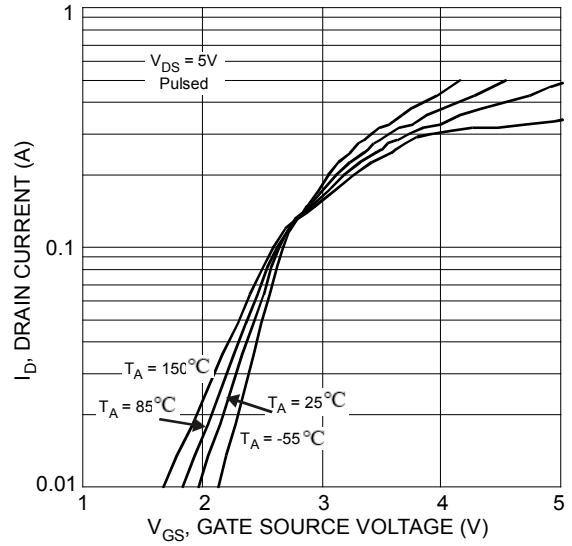


Fig. 2 Typical Transfer Characteristics

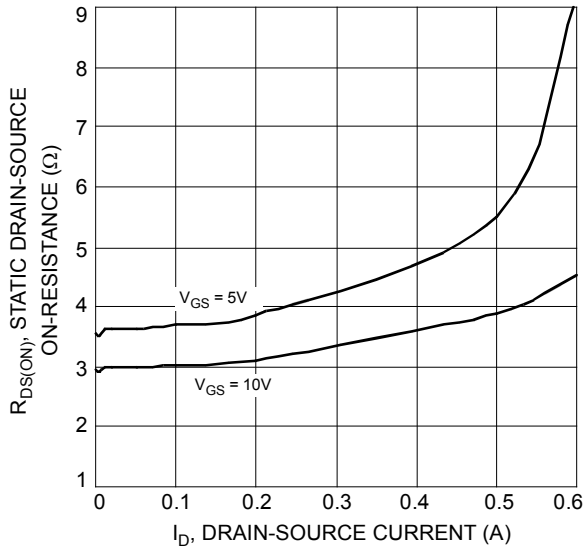


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

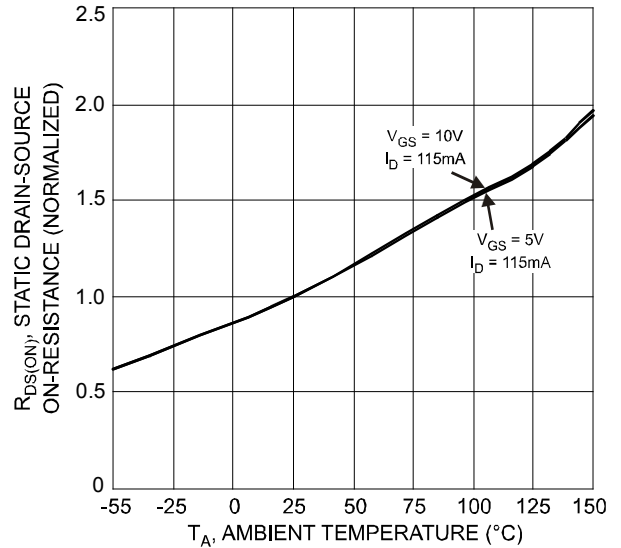


Fig. 4 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

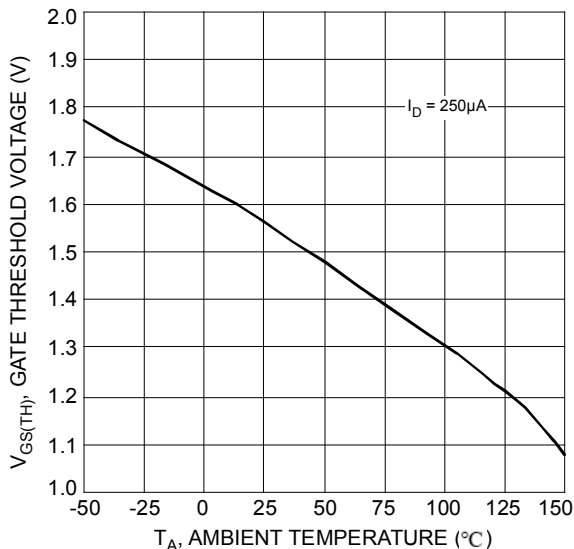


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

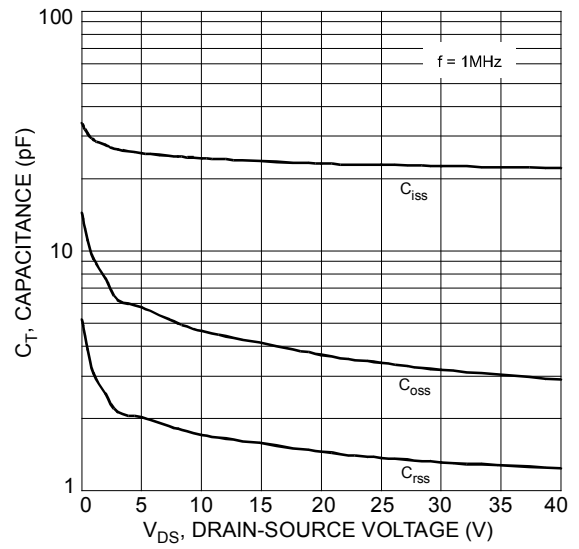


Fig. 6 Typical Total Capacitance

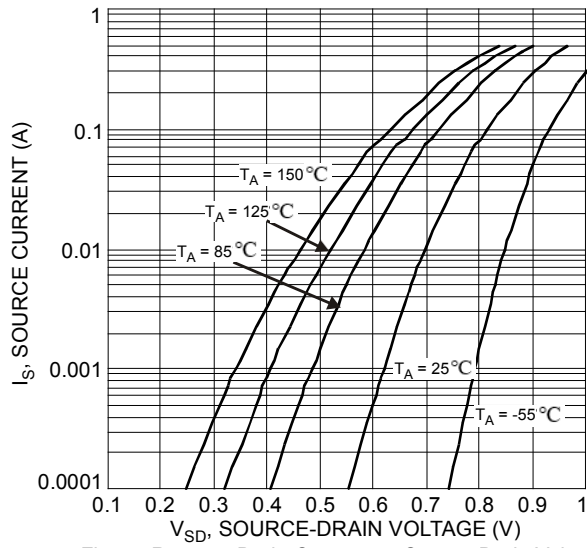
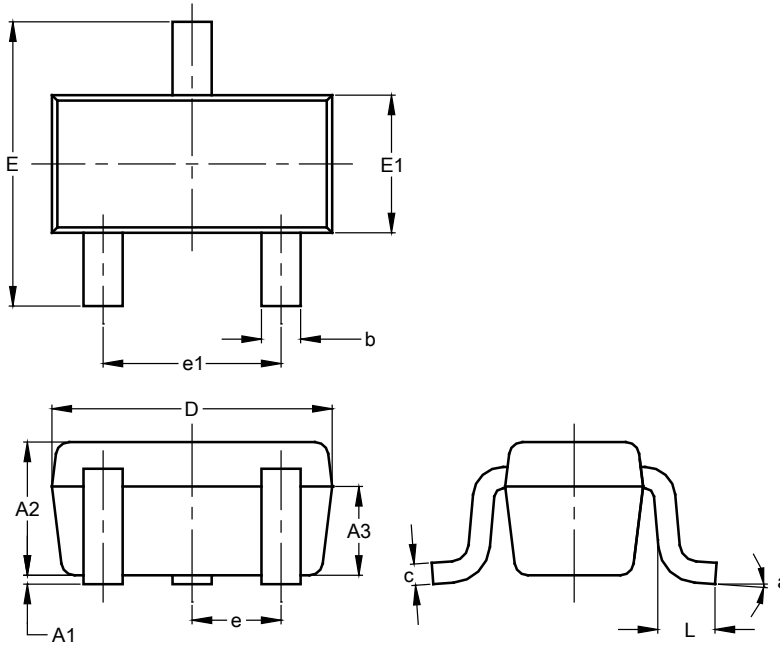


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

Package Outline Dimensions

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

SOT523

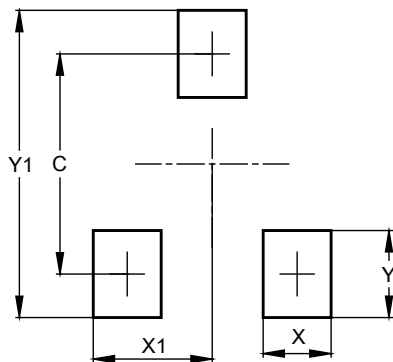


| SOT523 | | | |
|----------------------|----------|------|------|
| Dim | Min | Max | Typ |
| A1 | 0.00 | 0.10 | 0.05 |
| A2 | 0.60 | 0.80 | 0.75 |
| A3 | 0.45 | 0.65 | 0.50 |
| b | 0.15 | 0.30 | 0.22 |
| c | 0.10 | 0.20 | 0.12 |
| D | 1.50 | 1.70 | 1.60 |
| E | 1.45 | 1.75 | 1.60 |
| E1 | 0.75 | 0.85 | 0.80 |
| e | 0.50 BSC | | |
| e1 | 0.90 | 1.10 | 1.00 |
| L | 0.20 | 0.40 | 0.33 |
| a | 0° | -- | 8° |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOT523



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.29 |
| X | 0.40 |
| X1 | 0.70 |
| Y | 0.51 |
| Y1 | 1.80 |

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