## Product Summary

| $BV_{DSS}$ | $R_{DS(ON)}$ Max | $I_D$ $T_A$ = +25°C |
|---|---|---|
| 60V | 2Ω @ $V_{GS}$ = 4V | 310mA |
| | 2.5Ω @ $V_{GS}$ = 2.5V | 295mA |

## Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected**
- **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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

## Description and Applications

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

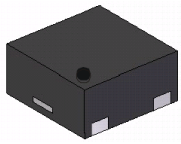
- DC-DC converters
- Power management functions
- Battery operated systems and solid-state relays
- Drivers: relays, solenoids, lamps, hammers, displays, memories, transistors, etc.

## Mechanical Data

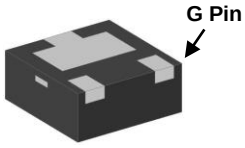
- Package: U-DFN1212-3
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e4
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)

ESD PROTECTED

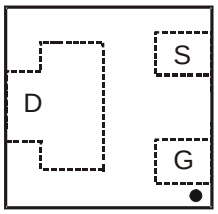
U-DFN1212-3 (Type C)



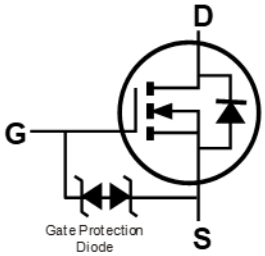
Top View




Bottom View




Pin-Out Top View




Equivalent Circuit

## Ordering Information (Note 4)

| Part Number | Package | Packing | |
|---|---|---|---|
| | | Qty. | Carrier |
| DMN62D0LFD-7 | U-DFN1212-3 (Type C) | 3,000 | Tape & Reel |
| DMN62D0LFD-13 | U-DFN1212-3 (Type C) | 10,000 | 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


K63 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: J = 2022)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2013 | … | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | A | … | J | K | L | M | N | O | P | R | S | T |

| 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 | | $V_{DSS}$ | 60 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | V |
| Continuous Drain Current (Note 5) $V_{GS}$ = 4.0V | $T_A$ = +25°C<br>$T_A$ = +70°C | $I_D$ | 310<br>260 | mA |
| Pulsed Drain Current (Note 6) (10µs Pulse, Duty Cycle = 1%) | | $I_{DM}$ | 1.0 | A |

## Thermal Characteristics

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Power Dissipation (Note 5) | $P_D$ | 0.48 | W |
| Thermal Resistance, Junction to Ambient @$T_A$ = +25°C (Note 5) | $R_{\theta JA}$ | 265 | °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 7)** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | 60 | — | — | V | $V_{GS}$ = 0V, $I_D$ = 250µA |
| Zero Gate Voltage Drain Current $T_J$ = +25°C | $I_{DSS}$ | — | — | 1.0 | µA | $V_{DS}$ = 60V, $V_{GS}$ = 0V |
| Gate-Source Leakage | $I_{GSS}$ | — | — | ±100 | nA | $V_{GS}$ = ±5V, $V_{DS}$ = 0V |
| | | — | — | ±500 | nA | $V_{GS}$ = ±10V, $V_{DS}$ = 0V |
| | | — | — | ±2.0 | µA | $V_{GS}$ = ±15V, $V_{DS}$ = 0V |
| **ON CHARACTERISTICS (Note 7)** | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 0.6 | — | 1.0 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 250µA |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | — | 1.3 | 2 | Ω | $V_{GS}$ = 4V, $I_D$ = 100mA |
| | | — | 1.4 | 2.5 | | $V_{GS}$ = 2.5V, $I_D$ = 50mA |
| | | — | 1.8 | 3 | | $V_{GS}$ = 1.8V, $I_D$ = 50mA |
| | | — | 2.4 | — | | $V_{GS}$ = 1.5V, $I_D$ = 10mA |
| Forward Transfer Admittance | $\|Y_{fs}\|$ | — | 1.8 | — | S | $V_{DS}$ = 10V, $I_D$ = 200mA |
| Diode Forward Voltage | $V_{SD}$ | — | 0.8 | 1.3 | V | $V_{GS}$ = 0V, $I_S$ = 115mA |
| **DYNAMIC CHARACTERISTICS (Note 8)** | | | | | | |
| Input Capacitance | $C_{iss}$ | — | 31 | — | pF | $V_{DS}$ = 25V, $V_{GS}$ = 0V, f = 1.0MHz |
| Output Capacitance | $C_{oss}$ | — | 4.3 | — | | |
| Reverse Transfer Capacitance | $C_{rss}$ | — | 3.0 | — | | |
| Gate Resistance | $R_g$ | — | 99 | — | Ω | $V_{DS}$ = 0V, $V_{GS}$ = 0V, f = 1MHz |
| Total Gate Charge | $Q_g$ | — | 0.5 | — | nC | $V_{GS}$ = 4.5V, $V_{DS}$ = 10V, $I_D$ = 250mA |
| Gate-Source Charge | $Q_{gs}$ | — | 0.09 | — | | |
| Gate-Drain Charge | $Q_{gd}$ | — | 0.07 | — | | |
| Turn-On Delay Time | $t_{D(ON)}$ | — | 2.6 | — | ns | $V_{GS}$ = 10V, $V_{DS}$ = 30V, $R_L$ = 150Ω, $R_G$ = 25Ω, $I_D$ = 200mA |
| Turn-On Rise Time | $t_R$ | — | 2.1 | — | ns | |
| Turn-Off Delay Time | $t_{D(OFF)}$ | — | 18 | — | ns | |
| Turn-Off Fall Time | $t_F$ | — | 8.7 | — | ns | |

Notes: 5. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
6. Repetitive rating, pulse width limited by junction temperature.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

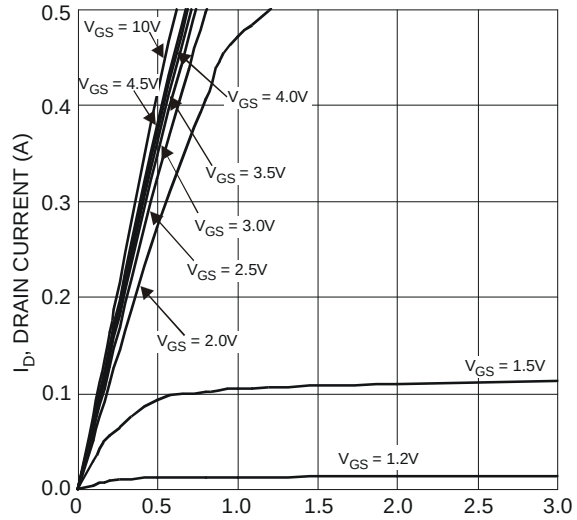


Figure 1 Typical Output Characteristics

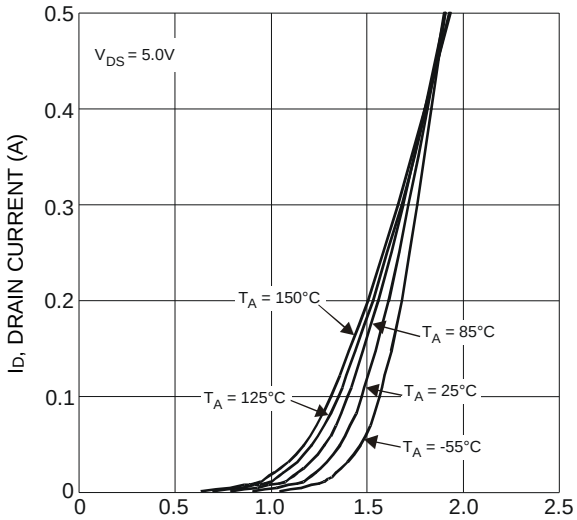


Figure 2 Typical Transfer Characteristics

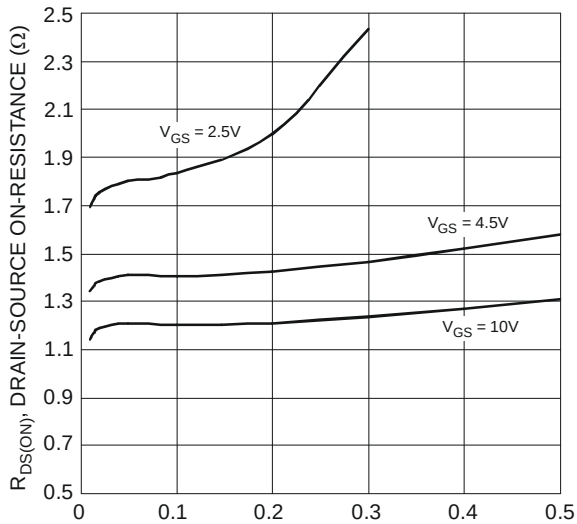


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

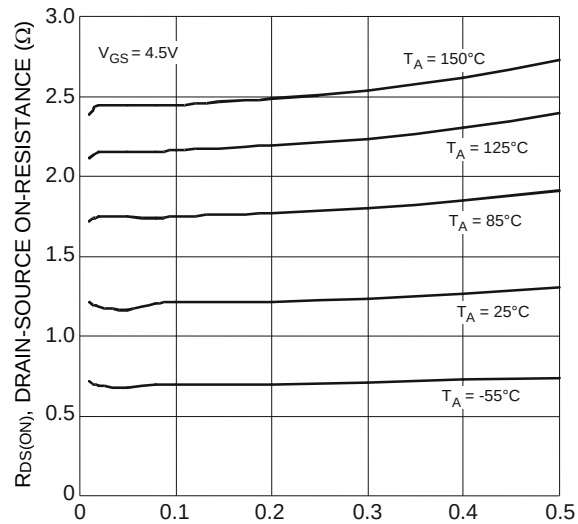


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

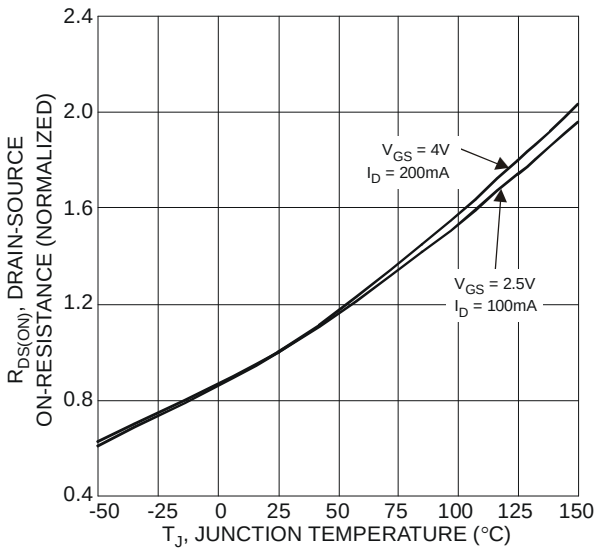


Figure 5 On-Resistance Variation with Temperature

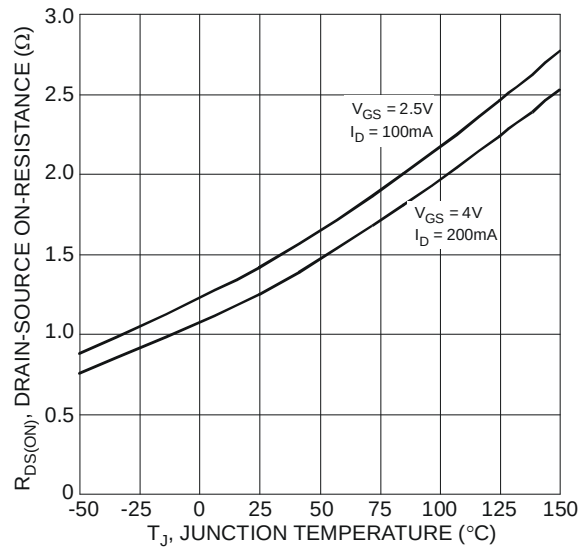


Figure 6 On-Resistance Variation with Temperature

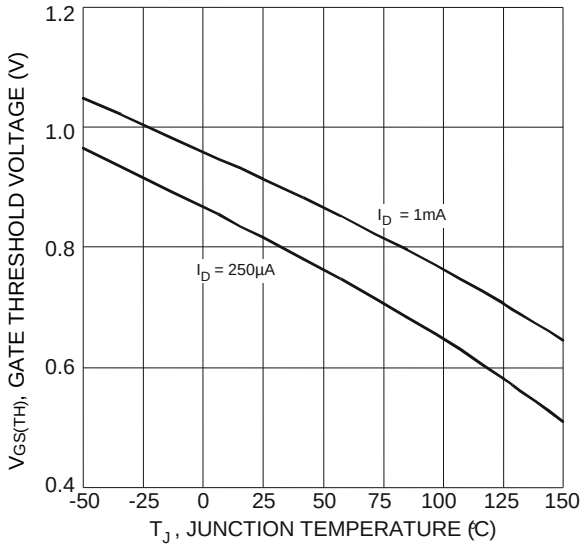



Figure 7 Gate Threshold Variation vs. Junction Temperature

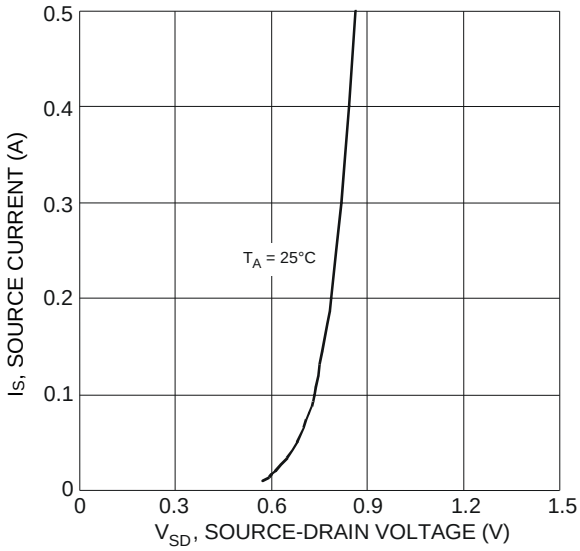



Figure 8 Diode Forward Voltage vs. Current

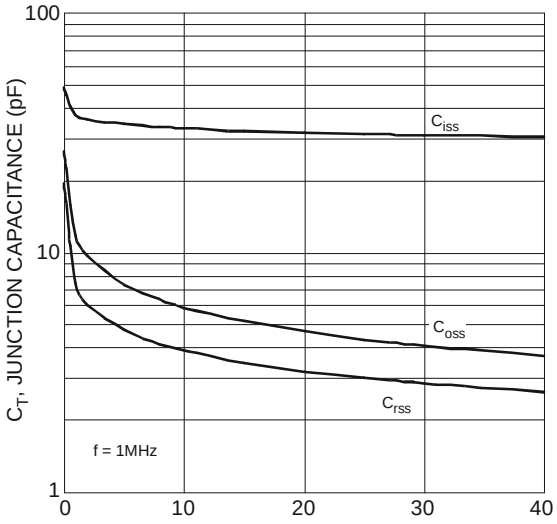



Figure 9 Typical Junction Capacitance

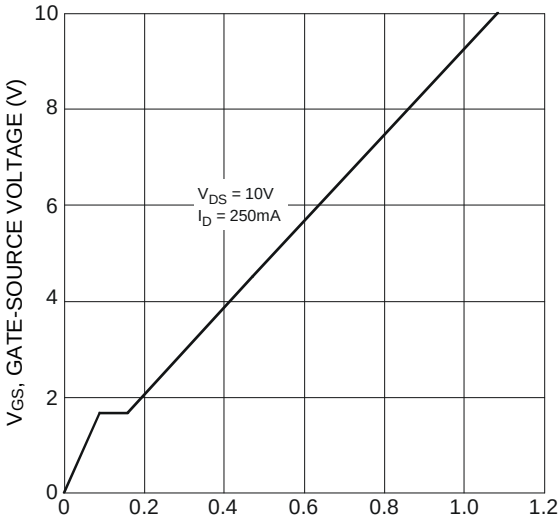



Figure 10 Gate Charge

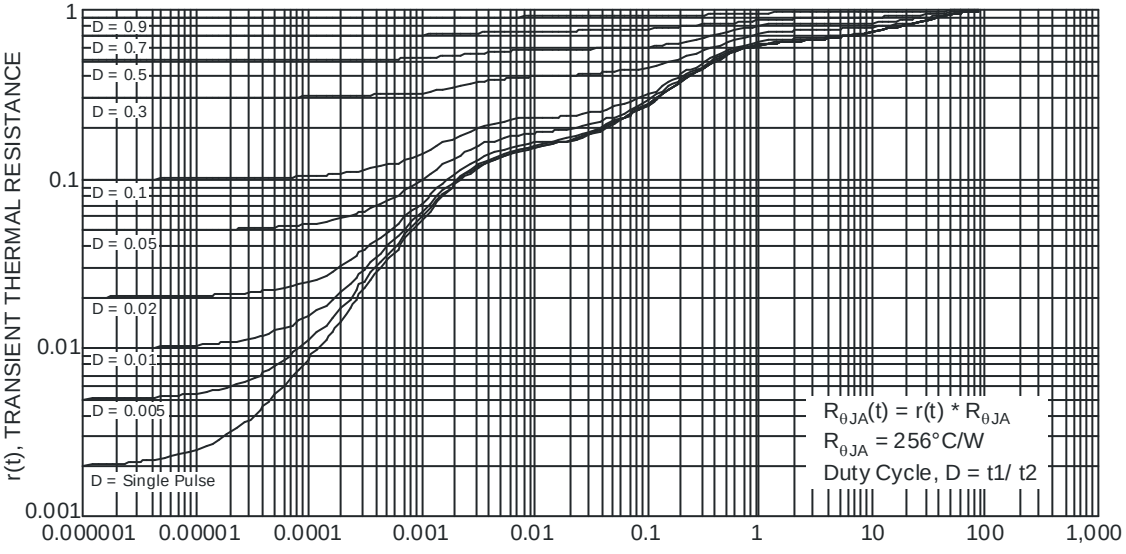
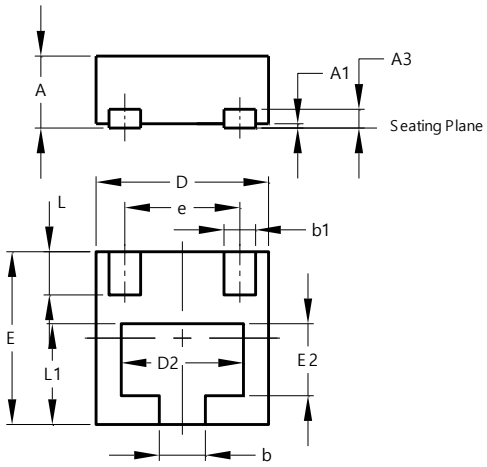



Figure 11 Transient Thermal Resistance

## Package Outline Dimensions

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

**U-DFN1212-3 (Type C)**

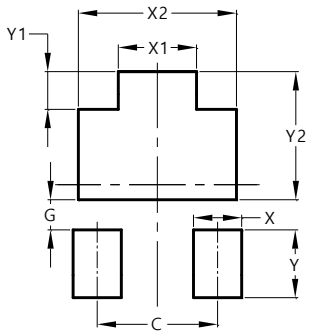



| U-DFN1212-3 Type C | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.47 | 0.53 | 0.50 |
| **A1** | 0 | 0.05 | 0.02 |
| **A3** | - | - | 0.13 |
| **b** | 0.27 | 0.37 | 0.32 |
| **b1** | 0.17 | 0.27 | 0.22 |
| **D** | 1.15 | 1.25 | 1.20 |
| **D2** | 0.75 | 0.95 | 0.85 |
| **e** | - | - | 0.80 |
| **E** | 1.15 | 1.25 | 1.20 |
| **E2** | 0.40 | 0.60 | 0.50 |
| **L** | 0.25 | 0.35 | 0.30 |
| **L1** | 0.65 | 0.75 | 0.70 |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

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

**U-DFN1212-3 (Type C)**




| Dimensions | Value (in mm) |
|---|---|
| **C** | 0.800 |
| **G** | 0.200 |
| **X** | 0.320 |
| **X1** | 0.520 |
| **X2** | 1.050 |
| **Y** | 0.450 |
| **Y1** | 0.250 |
| **Y2** | 0.850 |

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