



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

| V _{(BR)DSS} | R _{DS(ON)} max | I _D max T _C = +25°C |
|----------------------|------------------------------|--|
| 80V | 16mΩ @ V _{GS} = 10V | 35A |
| 80 V | 22mΩ @ V _{GS} = 6V | 30A |

Description and Applications

This 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.

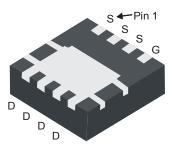
- Synchronous Rectifier
- Backlighting
- Power Management Functions
- DC-DC Converters

Features and Benefits

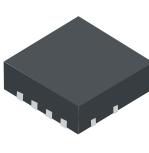
- Low R_{DS(ON)} ensures on state losses are minimized
- Excellent Q_{gd x} R_{DS(ON)} Product (FOM)
- Advanced Technology for DC/DC converts
- Small form factor thermally efficient package enables higher density end products
- Occupies just 33% of the board area occupied by SO-8 enabling smaller end product
- 100% UIS (Avalanche) rated
- 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

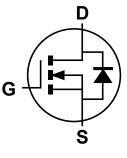
- Case: POWERDI[®]3333-8
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See diagram
- Terminals: Finish Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.008 grams (approximate)



Bottom View



Top View



Equivalent Circuit

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|---------------|-------------------|
| DMT8012LFG-7 | POWERDI3333-8 | 2,000/Tape & Reel |
| DMT8012LFG-13 | POWERDI3333-8 | 3,000/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 compounds.

4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



SG8 = Product Type Marking Code YYWW = Date Code Marking YY = Last digit of year (ex: 13 = 2013) WW = Week code (01 ~ 53)



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Units | |
|---|--|------------------|------------|---|
| Drain-Source Voltage | | V _{DSS} | 80 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V | |
| Continuous Drain Current (Note $E(X) = 40V$ | T _A = +25°C T _A = +70°C | ID | 9.5 7.6 | А |
| Continuous Drain Current (Note 5) V _{GS} = 10V | T _C = +25°C T _C = +70°C | ID | 35 28 | А |
| Maximum Continuous Body Diode Forward Current (Note 5) | | IS | 2 | А |
| Pulsed Drain Current (10µs pulse, duty cycle = 1%) | I _{DM} | 80 | А | |

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

| Characteristic | | Symbol | Value | Units | |
|--|------------------------|----------------------------------|------------|-------|--|
| Total Dower Dissinction (Note 5) | T _A = +25°C | D | 2.2 | W | |
| Total Power Dissipation (Note 5) | T _C = +25°C | PD | 30 | | |
| Thermal Resistance, Junction to Ambient (Note 5) | Steady State | Devi | 57 | | |
| | t<10s | R _{0JA} | 35 | °C/W | |
| Thermal Resistance, Junction to Case (Note 5) | $R_{\theta JC}$ | 4.2 | | | |
| 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 | Тур | Max | Unit | Test Condition | |
|--|---------------------|-----|------|------|------|---|--|
| OFF CHARACTERISTICS (Note 6) | | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 80 | — | — | V | V _{GS} = 0V, I _D = 250µA | |
| Zero Gate Voltage Drain Current | I _{DSS} | _ | _ | 1 | μA | $V_{DS} = 64V, V_{GS} = 0V$ | |
| Gate-Source Leakage | I _{GSS} | _ | — | ±100 | nA | V _{GS} = ±20V, V _{DS} = 0V | |
| ON CHARACTERISTICS (Note 6) | | | | | | - | |
| Gate Threshold Voltage | V _{GS(th)} | 1 | 1.5 | 3 | V | $V_{DS} = V_{GS}$, $I_D = 250 \mu A$ | |
| Static Drain-Source On-Resistance | P | _ | 13 | 16 | | V _{GS} = 10V, I _D = 12A | |
| | R _{DS(ON)} | _ | 14 | 22 | mΩ | $V_{GS} = 6V, I_D = 6A$ | |
| Diode Forward Voltage | V _{SD} | _ | 0.9 | 1.2 | V | V _{GS} = 0V, I _S = 12A | |
| DYNAMIC CHARACTERISTICS (Note 7) | | | | | | | |
| Input Capacitance | C _{iss} | _ | 1949 | — | pF | V _{DS} = 40V, V _{GS} = 0V, f = 1MHz | |
| Output Capacitance | Coss | _ | 177 | _ | | | |
| Reverse Transfer Capacitance | C _{rss} | _ | 10 | _ | | | |
| Gate resistance | Rg | _ | 0.7 | — | Ω | V_{DS} = 0V, V_{GS} = 0V, f = 1MHz | |
| Total Gate Charge (V _{GS} = 4.5V) | Qg | _ | 15 | — | | V _{DS} = 40V, I _D = 12A | |
| Total Gate Charge (V _{GS} = 10V) | Qg | _ | 34 | — | | | |
| Gate-Source Charge | Q _{gs} | _ | 6 | — | nC | | |
| Gate-Drain Charge | Q _{gd} | _ | 4.5 | _ | | | |
| Turn-On Delay Time | t _{D(on)} | _ | 4.9 | _ | | V _{DD} = 40V, V _{GS} = 10V, I _D = 12A, R _G = 1.6Ω, | |
| Turn-On Rise Time | tr | _ | 3.8 | _ | | | |
| Turn-Off Delay Time | t _{D(off)} | _ | 16.5 | _ | nS | | |
| Turn-Off Fall Time | t _f | _ | 3.5 | — | 1 | | |
| Body Diode Reverse Recovery Time | t _{rr} | _ | 30.2 | _ | nS | 1 100 IV/II 1000/ | |
| Body Diode Reverse Recovery Charge | Qrr | _ | 34.6 | _ | nC | —I _F = 12A, di/dt = 100A/μs | |

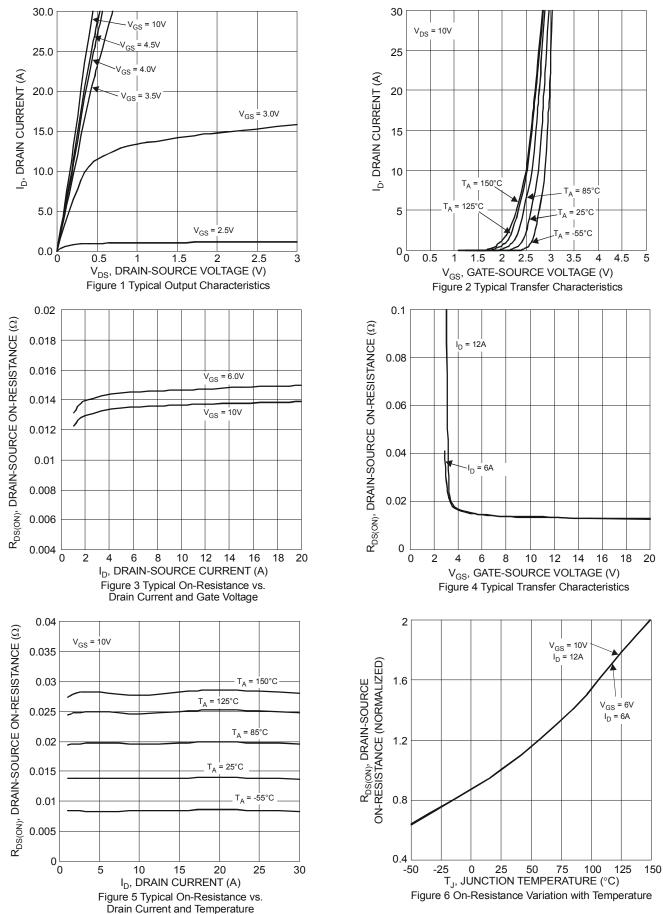
Notes: 5. R_{0JA} is determined with the device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate. R_{0JC} is guaranteed by design while R_{0JA} is determined by the user's board design.

6. Short duration pulse test used to minimize self-heating effect.

7. Guaranteed by design. Not subject to product testing.



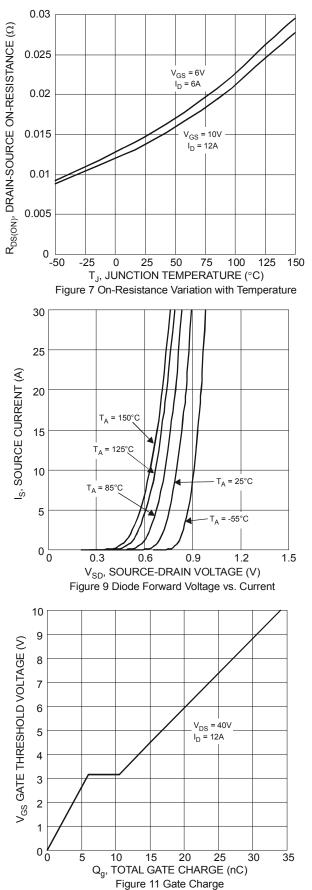
DMT8012LFG

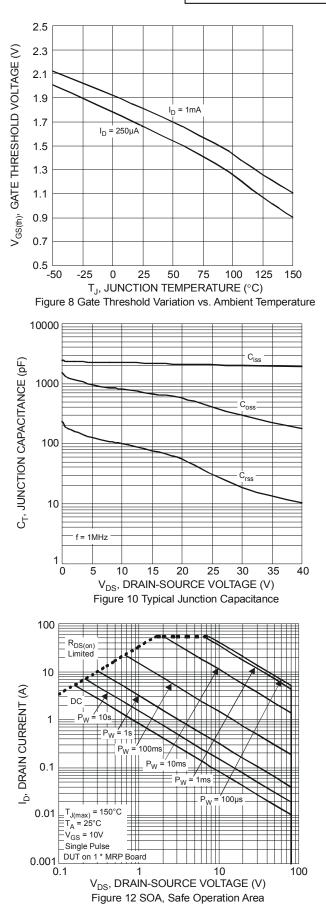


NEW PRODUCT

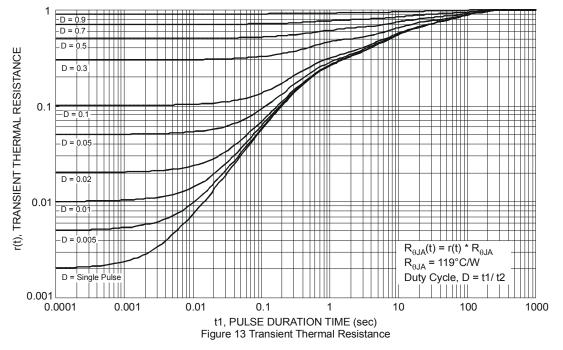
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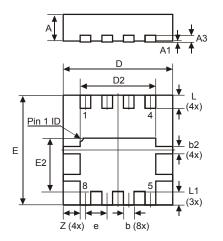






Package Outline Dimensions

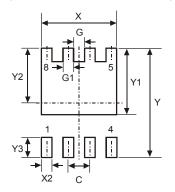
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



| POWERDI [®] 3333-8 | | | | | |
|-----------------------------|------|------|-------|--|--|
| Dim | Min | Max | Тур | | |
| D | 3.25 | 3.35 | 3.30 | | |
| Е | 3.25 | 3.35 | 3.30 | | |
| D2 | 2.22 | 2.32 | 2.27 | | |
| E2 | 1.56 | 1.66 | 1.61 | | |
| Α | 0.75 | 0.85 | 0.80 | | |
| A1 | 0 | 0.05 | 0.02 | | |
| A3 | - | - | 0.203 | | |
| b | 0.27 | 0.37 | 0.32 | | |
| b2 | - | - | 0.20 | | |
| L | 0.35 | 0.45 | 0.40 | | |
| L1 | - | - | 0.39 | | |
| е | _ | - | 0.65 | | |
| Ζ | _ | _ | 0.515 | | |
| All Dimensions in mm | | | | | |

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for latest version.



| Dimensions | Value (in mm) | | | |
|------------|---------------|--|--|--|
| С | 0.650 | | | |
| G | 0.230 | | | |
| G1 | 0.420 | | | |
| Y | 3.700 | | | |
| Y1 | 2.250 | | | |
| Y2 | 1.850 | | | |
| Y3 | 0.700 | | | |
| Х | 2.370 | | | |
| X2 | 0.420 | | | |

DMT8012LFG Document number: DS36606 Rev. 3 - 2



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