

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(ON)} \text{ max}$ | $I_D \text{ MAX}$ $T_A = +25^\circ\text{C}$ |
|---------------|--|--|
| -12V | 0.8 Ω @ $V_{GS} = -4.5\text{V}$ | -0.2A |
| | 1.1 Ω @ $V_{GS} = -2.5\text{V}$ | |
| | 3.0 Ω @ $V_{GS} = -1.8\text{V}$ | |
| | 5.0 Ω @ $V_{GS} = -1.5\text{V}$ | |

Description

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.

Applications

- Load Switch
- Power Management Functions
- Portable Power Adaptors

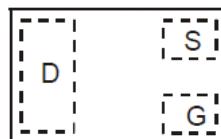
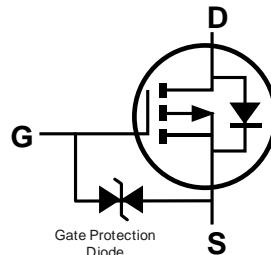
X2-DFN0806-3



Bottom View

Mechanical Data

- Case: X2-DFN0806-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (4)
- Weight: 0.00043 grams (Approximate)

Top View
Package Pin Configuration

Internal Schematic

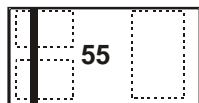
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------------|--------------------|
| DMP1555UFA-7B | X2-DFN0806-3 | 10,000/Tape & Reel |

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



55 = Product Type Marking Code

Top View
Bar Denotes Gate
and Source Side

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

| Characteristic | | Symbol | Value | Unit |
|--|----------|-----------|---------|------|
| Drain-Source Voltage | | V_{DSS} | -12 | V |
| Gate-Source Voltage | | V_{GSS} | ± 8 | |
| Continuous Drain Current ($V_{GS} = -4.5\text{V}$) | (Note 5) | I_D | -0.2 | A |
| Pulsed Drain Current | (Note 6) | I_{DM} | -1.5 | A |

Thermal Characteristics

| Characteristic | | Symbol | Value | Units |
|---|----------|-----------------|------------|---------------------------|
| Total Power Dissipation | (Note 5) | P_D | 0.36 | W |
| Thermal Resistance, Junction to Ambient | (Note 5) | $R_{\theta JA}$ | 353 | $^\circ\text{C}/\text{W}$ |
| 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} | -12 | — | — | V | $V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$ |
| Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$ | I_{DSS} | — | — | -1 | μA | $V_{DS} = -10\text{V}, V_{GS} = 0\text{V}$ |
| Gate-Source Leakage | I_{GSS} | — | — | ± 10 | μA | $V_{GS} = \pm 8\text{V}, V_{DS} = 0\text{V}$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | -0.4 | — | -1.0 | V | $V_{DS} = V_{GS}, I_D = -250\mu\text{A}$ |
| Static Drain-Source On-Resistance | $R_{DS(\text{ON})}$ | — | 0.4 | 0.8 | Ω | $V_{GS} = -4.5\text{V}, I_D = -0.2\text{A}$ |
| | | — | 0.55 | 1.1 | | $V_{GS} = -2.5\text{V}, I_D = -0.1\text{A}$ |
| | | — | 0.75 | 3.0 | | $V_{GS} = -1.8\text{V}, I_D = -0.05\text{A}$ |
| | | — | 1.0 | 5.0 | | $V_{GS} = -1.5\text{V}, I_D = -0.01\text{A}$ |
| Diode Forward Voltage | V_{SD} | — | — | -1.2 | V | $V_{GS} = 0\text{V}, I_S = -0.2\text{A}$ |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | | | |
| Input Capacitance | C_{iss} | — | 55.4 | — | pF | $V_{DS} = -10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$ |
| Output Capacitance | C_{oss} | — | 14.7 | — | pF | |
| Reverse Transfer Capacitance | C_{rss} | — | 11.9 | — | pF | |
| Total Gate Charge ($V_{GS} = 4.5\text{V}$) | Q_g | — | 0.84 | — | nC | $V_{DS} = -6\text{V}, V_{GS} = -4.5\text{V}, I_D = -0.2\text{A}$ |
| Gate-Source Charge | Q_{gs} | — | 0.12 | — | nC | |
| Gate-Drain Charge | Q_{gd} | — | 0.23 | — | nC | |
| Turn-On Delay Time | $t_{D(on)}$ | — | 16 | — | ns | $V_{DD} = -6\text{V}, V_{GS} = -4.5\text{V}, I_D = -0.2\text{A}, R_G = 6\Omega$ |
| Turn-On Rise Time | t_r | — | 62 | — | ns | |
| Turn-Off Delay Time | $t_{D(off)}$ | — | 232 | — | ns | |
| Turn-Off Fall Time | t_f | — | 186 | — | ns | |

Notes:

5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on minimum recommended pad layout test board, 10 μs pulse duty cycle = 1%.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

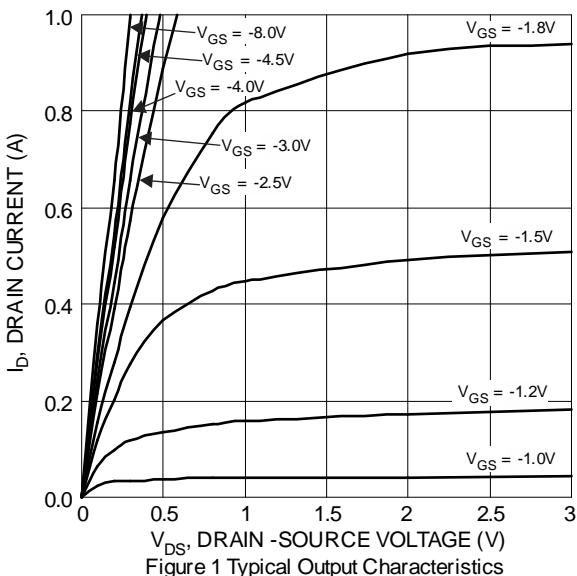


Figure 1 Typical Output Characteristics

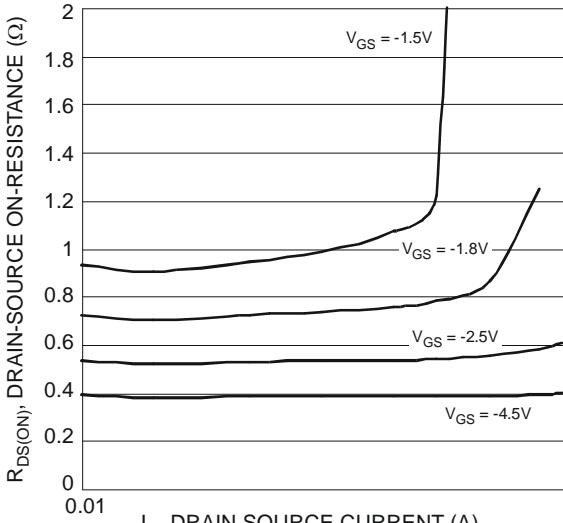
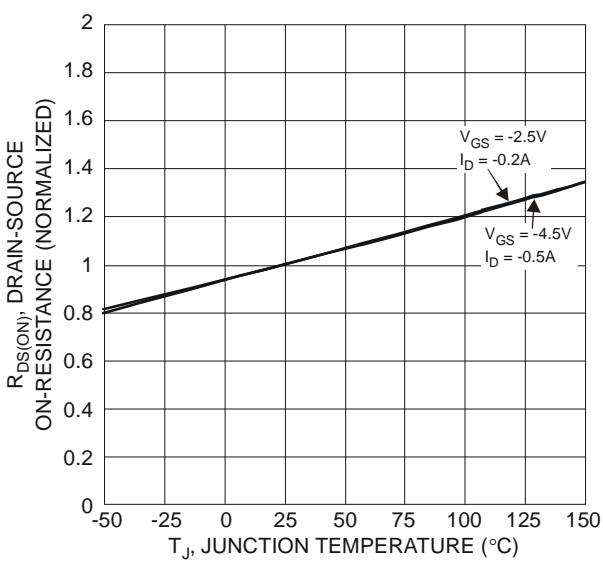
Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

Figure 5 On-Resistance Variation with Temperature

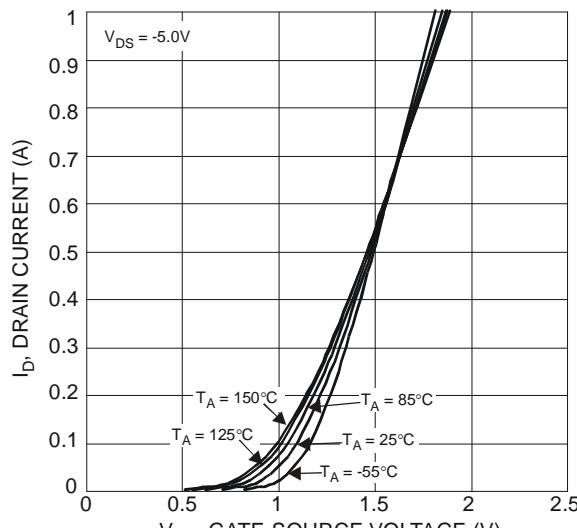


Figure 2 Typical Transfer Characteristics

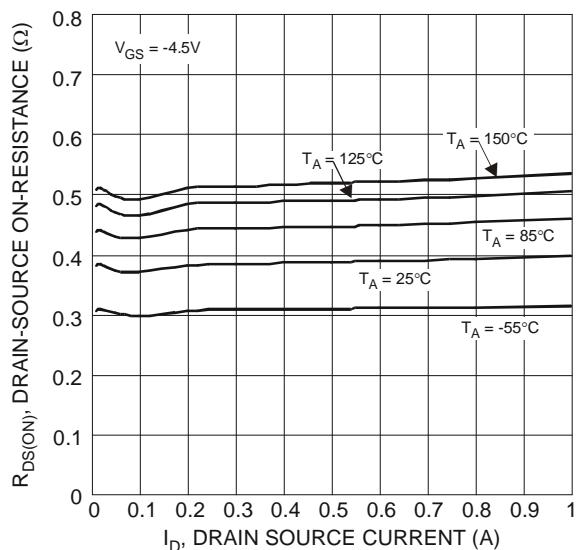
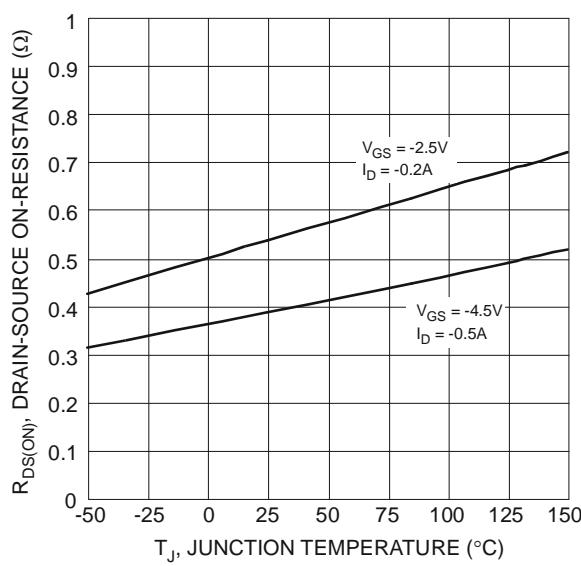
Figure 4 Typical On-Resistance vs.
Drain Current and Temperature

Figure 6 On-Resistance Variation with Temperature

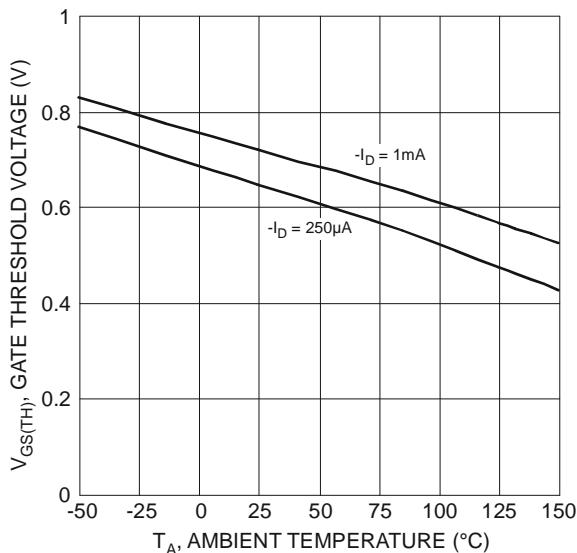


Figure 7 Gate Threshold Variation vs. Ambient Temperature

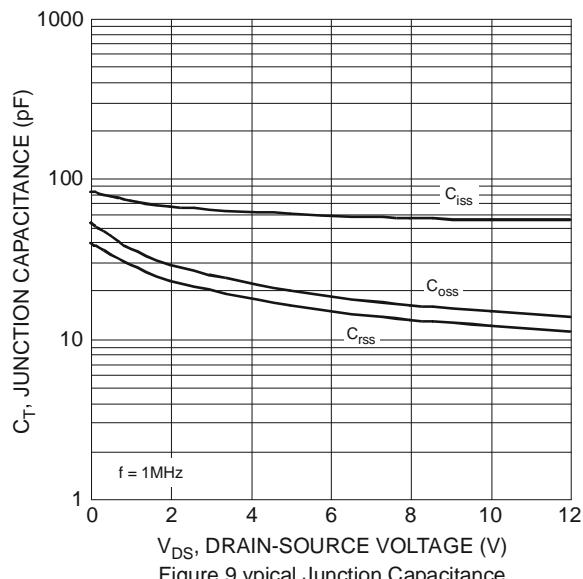


Figure 9 Typical Junction Capacitance

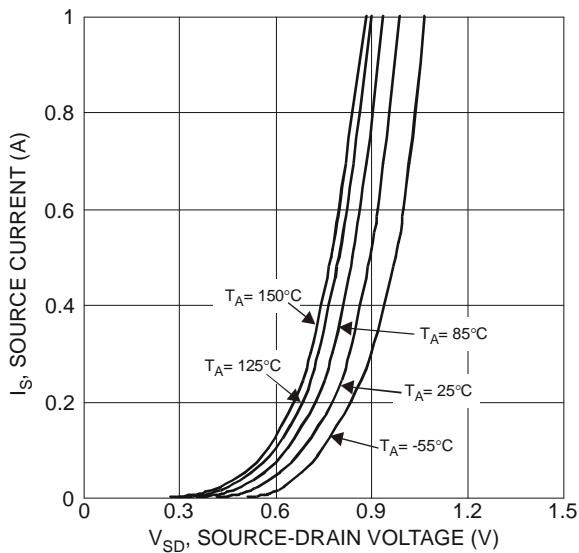


Figure 8 Diode Forward Voltage vs. Current

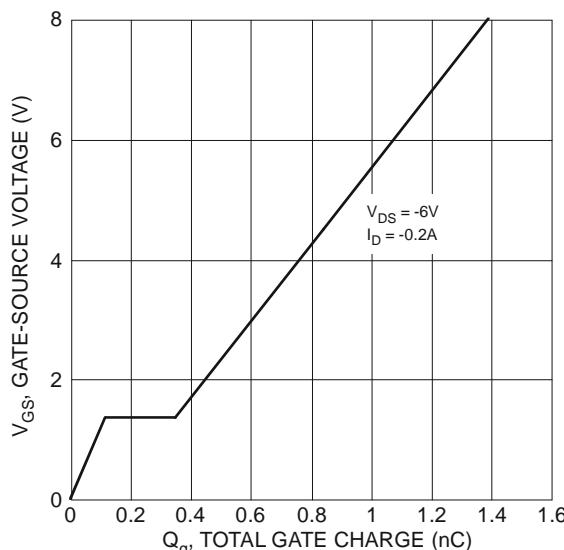


Figure 10 Gate-Charge Characteristics

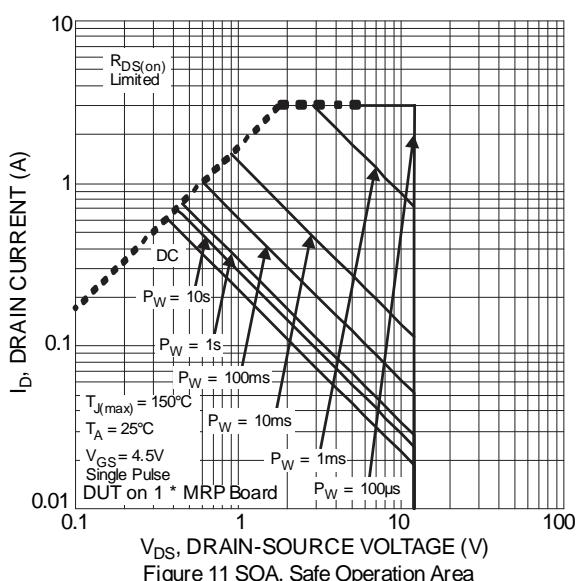
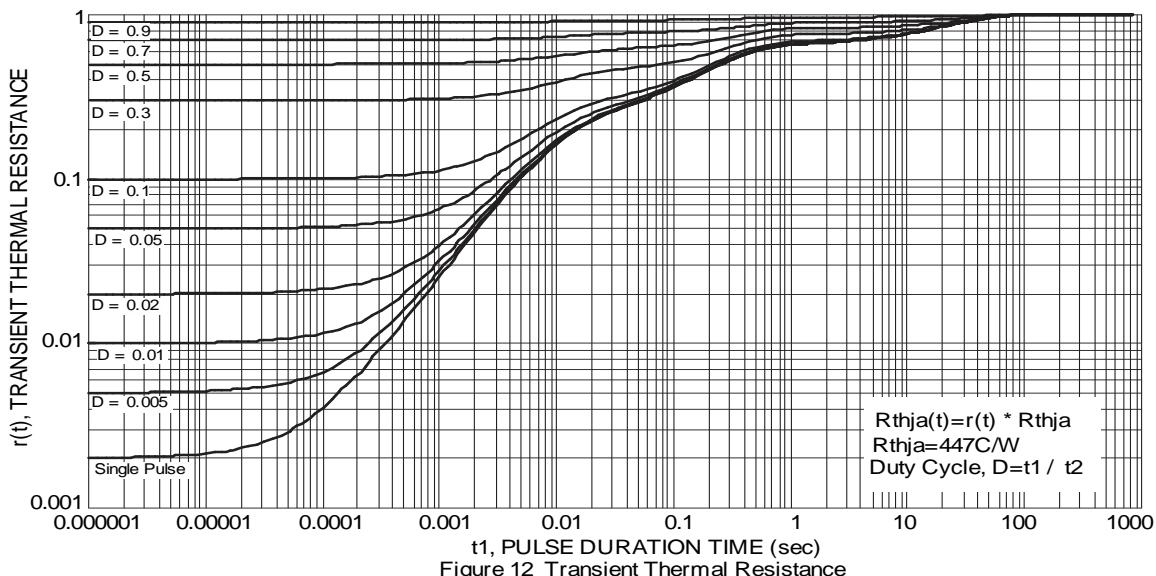


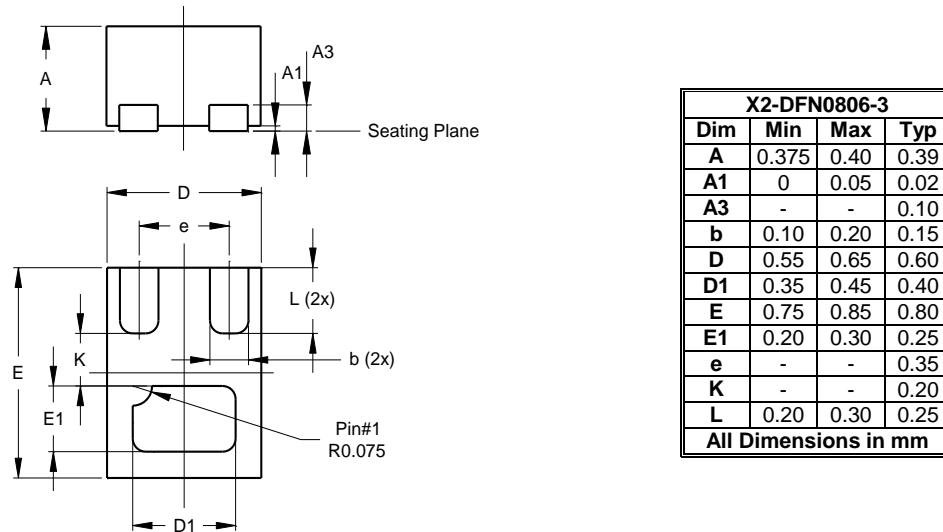
Figure 11 SOA, Safe Operation Area



NEW PRODUCT

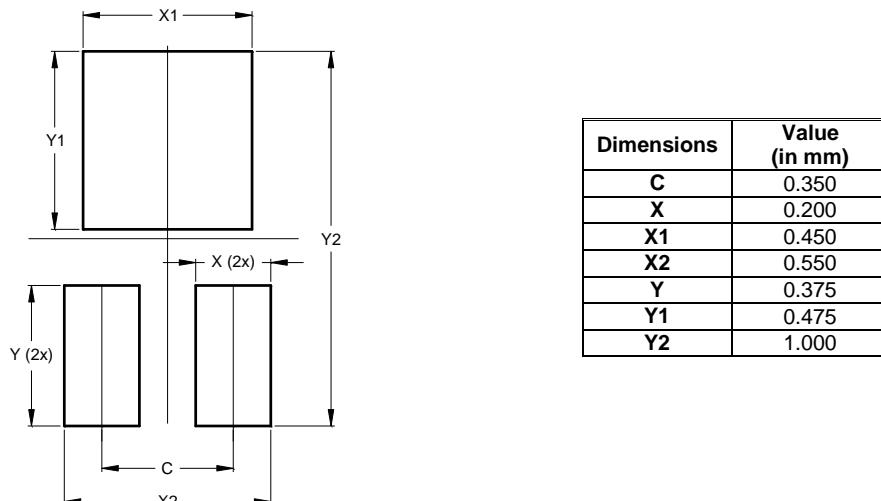
Package Outline Dimensions

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



Suggested Pad Layout

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



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