

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

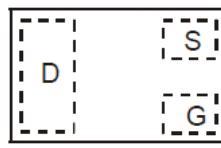
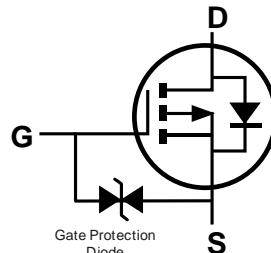
X2-DFN0806-3



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

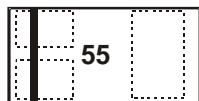
Ordering Information (Note 4)

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.

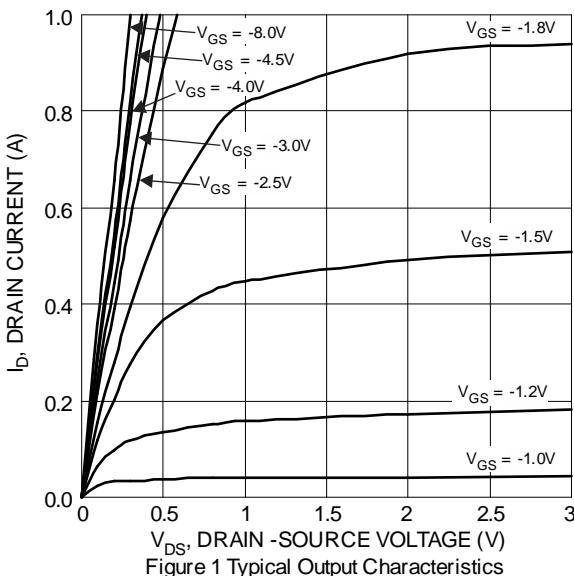


Figure 1 Typical Output Characteristics

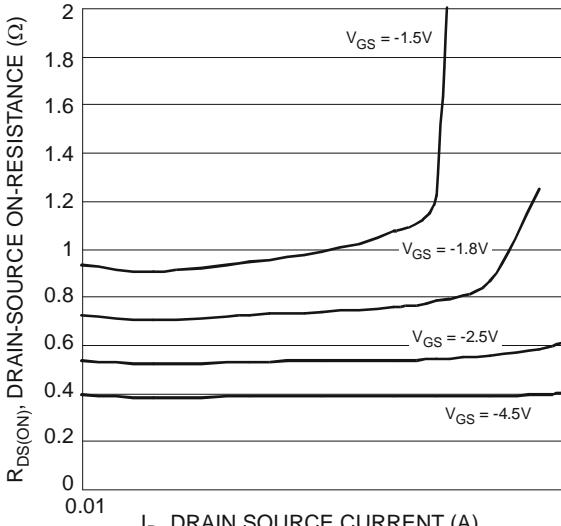


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

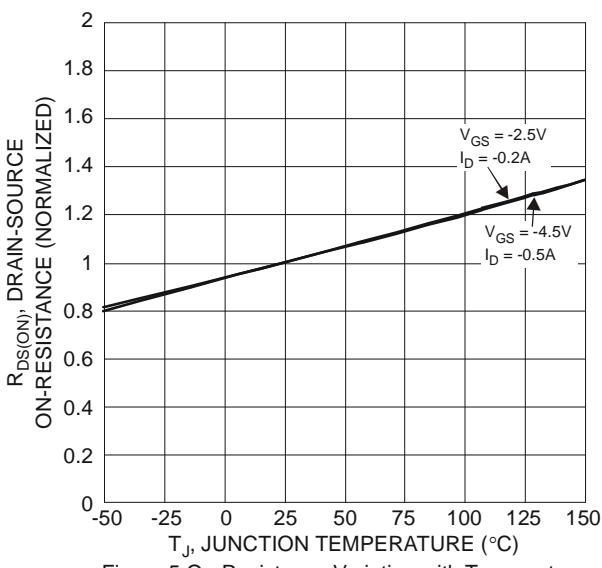


Figure 5 On-Resistance Variation with Temperature

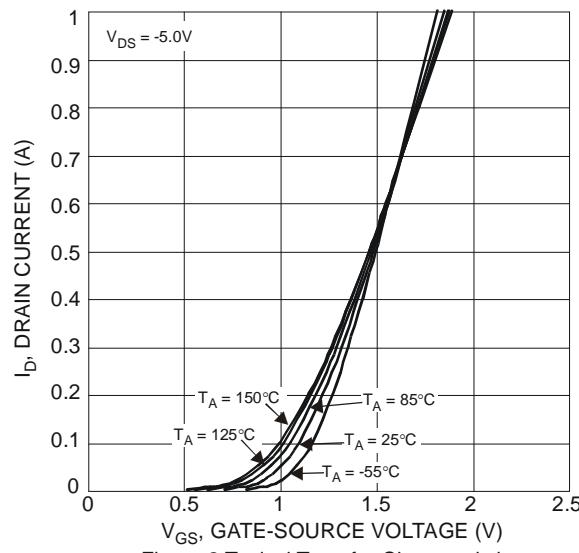


Figure 2 Typical Transfer Characteristics

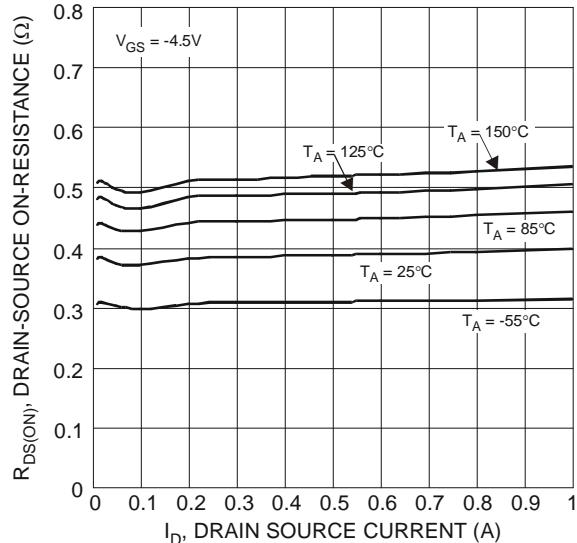


Figure 4 Typical On-Resistance vs.
Drain Current and Temperature

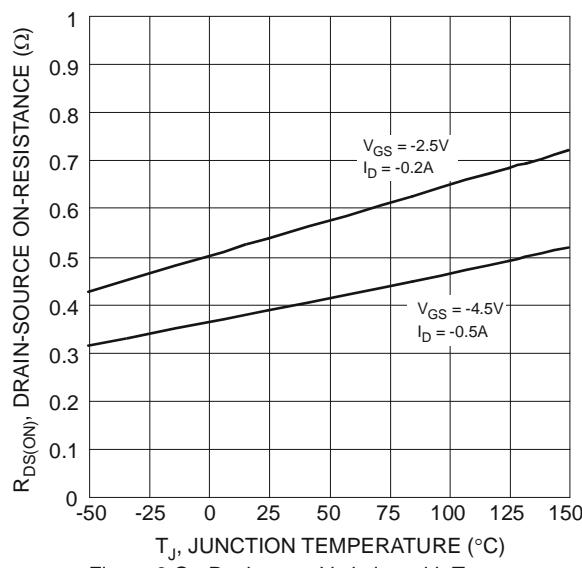


Figure 6 On-Resistance Variation with Temperature

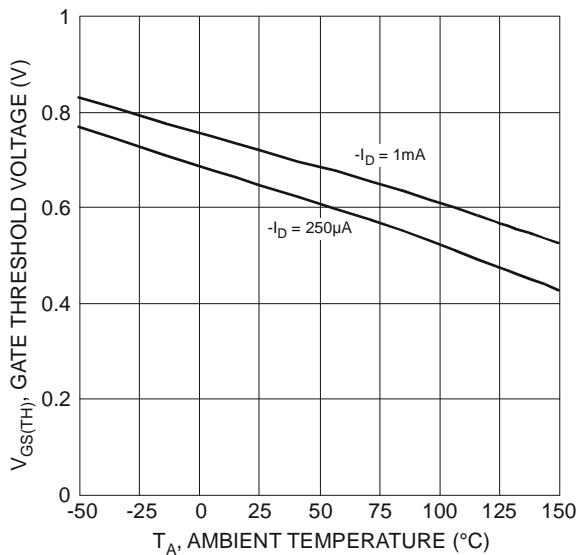


Figure 7 Gate Threshold Variation vs. Ambient Temperature

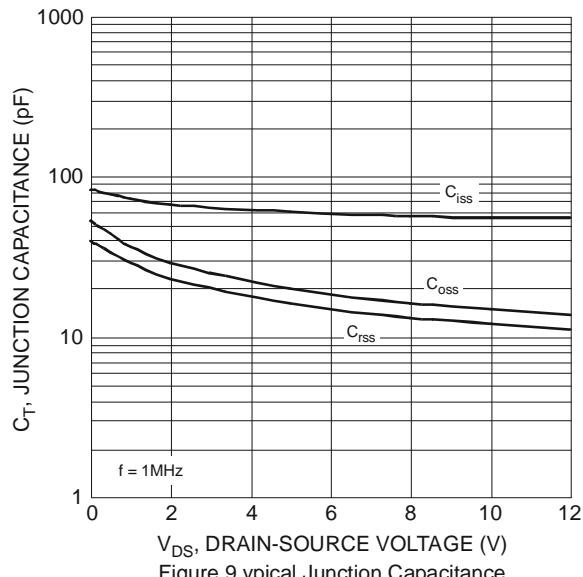


Figure 9 Typical Junction Capacitance

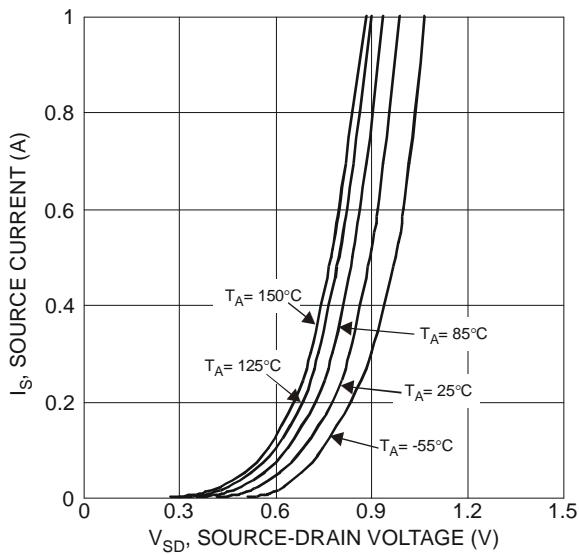


Figure 8 Diode Forward Voltage vs. Current

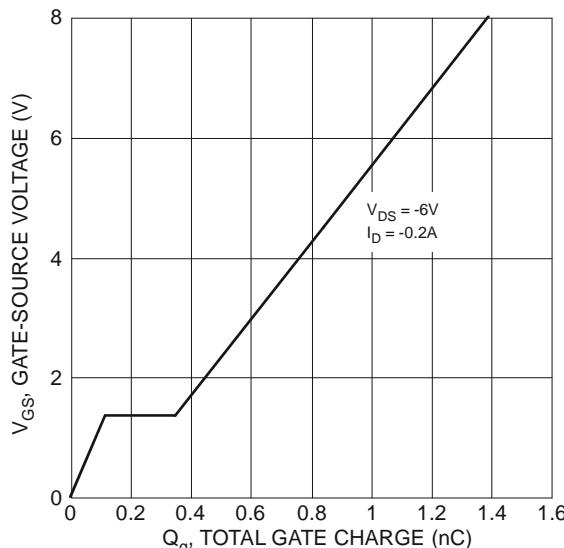


Figure 10 Gate-Charge Characteristics

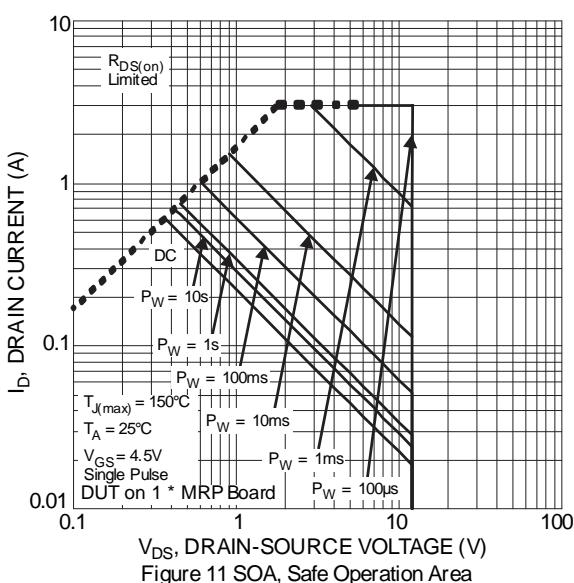
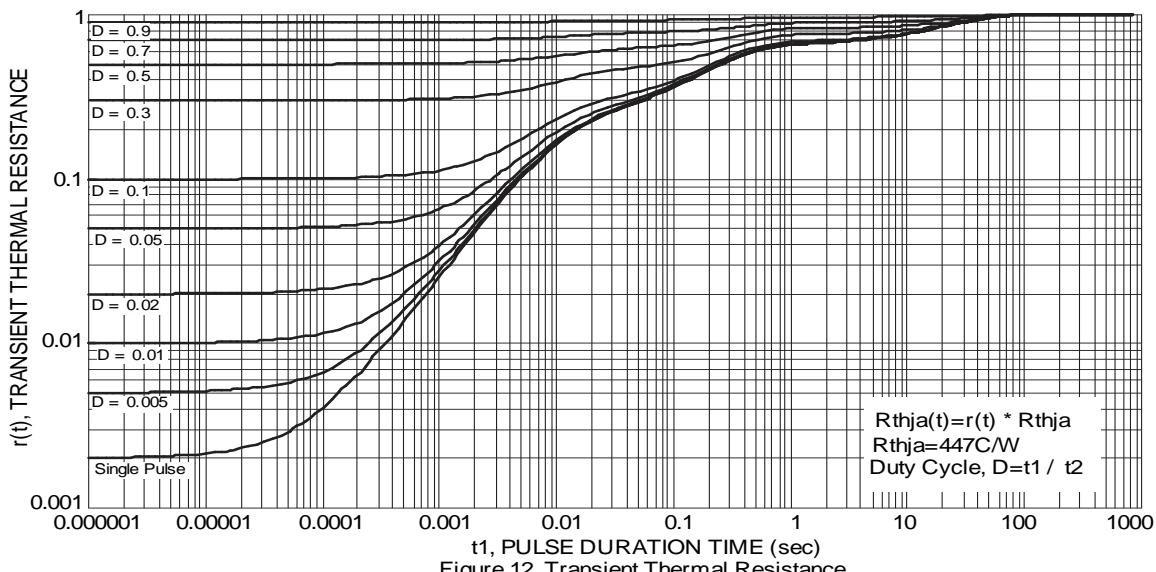


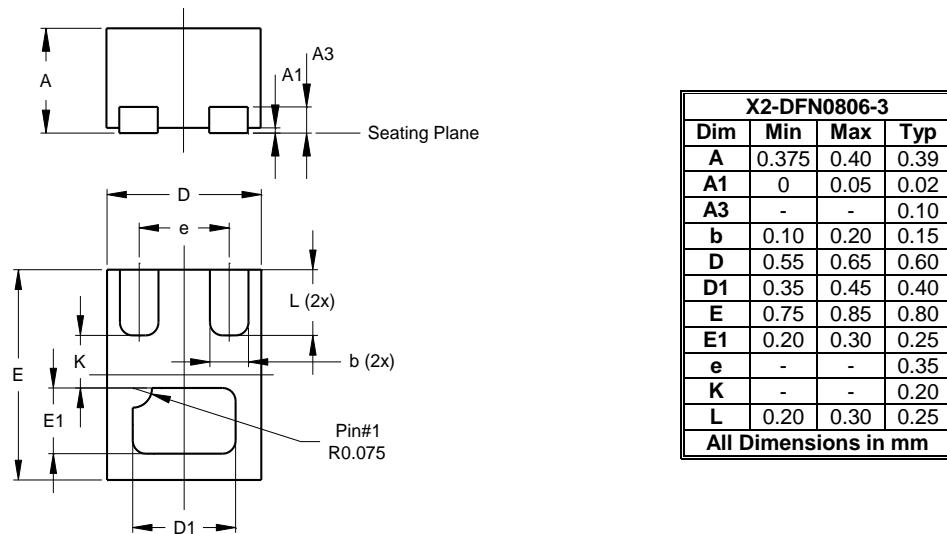
Figure 11 SOA, Safe Operation Area



NEW PRODUCT

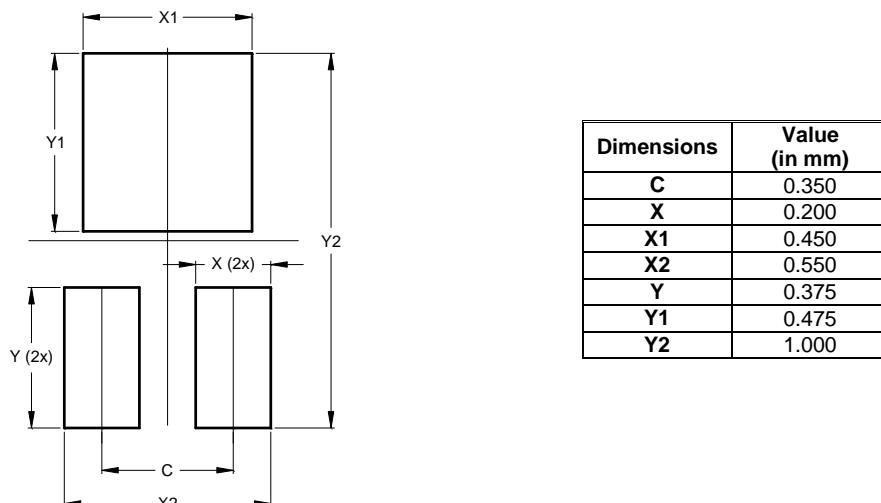
Package Outline Dimensions

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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