



12V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON) max}	I _{D MAX} T _A = +25°C	
12V	366mΩ @ V _{GS} = 4.5 V		
	520mΩ @ V _{GS} = 2.5V	0.5A	
	950mΩ @ V _{GS} = 1.8V	0.5A	
	1500mΩ @ V _{GS} =1.5V		

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

Features

- 0.4mm Ultra Low Profile Package for Thin Application
- 0.48mm² Package Footprint, 16 Times Smaller than SOT23
- Low On-Resistance
- Low Input Capacitance
- ESD Protected Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

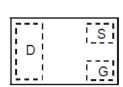
- Case: X2-DFN0806-3
- Case Material: Molded Plastic, "Green" Molding Compound;
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (4)
- Weight: 0.00043 grams (Approximate)



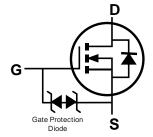
X2-DFN0806-3



Bottom View



Top View Package Pin Configuration



Internal Schematic

Ordering Information (Note 4)

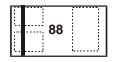
Part Number	Case	Packaging
DMN1260UFA-7B	X2-DFN0806-3	10,000/Tape & Reel

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

X2-DFN0806-3



Top View Bar Denotes Gate and Source Side

88 = Product Type Marking Code



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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	12	V
Gate-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current	(Note 5)	I _D	0.5	Α
Pulsed Drain Current	(Note 6)	I _{DM}	1.5	Α

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	°C/W
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to 150	°C

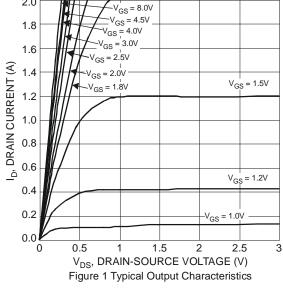
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

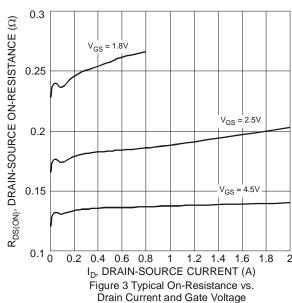
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	12	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	_	_	1	μA	$V_{DS} = 10V, V_{GS} = 0V$	
Gate-Source Leakage		_	_	±10	μA	$V_{GS} = \pm 8V$, $V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(th)}	0.4	_	1.0	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
		_	150	366	mΩ	V _{GS} = 4.5V, I _D = 200mA	
Static Drain-Source On-Resistance		_	200	520		V _{GS} = 2.5V, I _D = 100mA	
Static Drain-Source On-Resistance	R _{DS(ON)}	_	260	950		V _{GS} = 1.8V, I _D = 50mA	
		_	350	1500		V _{GS} = 1.5V, I _D = 10mA	
Diode Forward Voltage	V _{SD}	_	_	1.2	V	V _{GS} = 0V, I _S = 0.2A	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	_	60	_	pF	V _{DS} = 10V, V _{GS} = 0V, - f = 1MHz	
Output Capacitance	Coss	_	13.8	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	12.1	_	pF		
Total Gate Charge	Qg	_	0.96	_	nC	V _{DS} = 6V, V _{GS} = 4.5V, I _D = 0.2A	
Gate-Source Charge	Q _{gs}	_	0.09	_	nC		
Gate-Drain Charge	Q _{gd}	_	0.10	_	nC		
Turn-On Delay Time	t _{D(on)}	_	7.4	_	ns		
Turn-On Rise Time	t _r	_	18.8	_	ns	$V_{DD} = 6V, V_{GS} = 4.5V,$ $I_{D} = 0.2A, R_{G} = 6\Omega$	
Turn-Off Delay Time	t _{D(off)}	_	106.5	_	ns		
Turn-Off Fall Time	t _f	_	59.2	_	ns		

Notes:

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







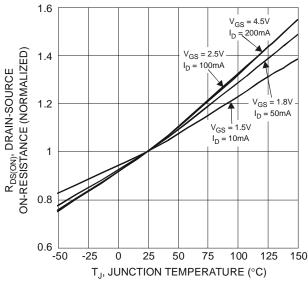
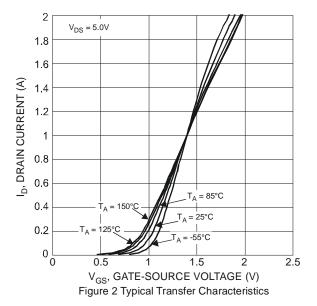
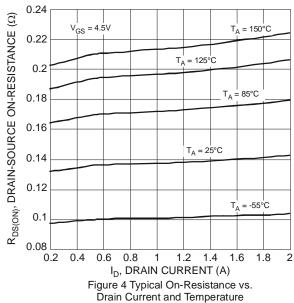


Figure 5 On-Resistance Variation with Temperature





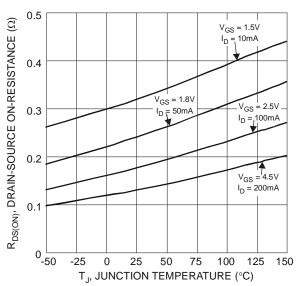


Figure 6 On-Resistance Variation with Temperature



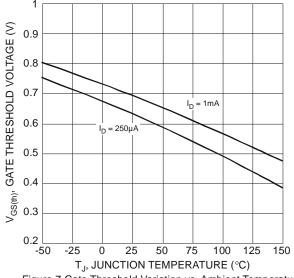
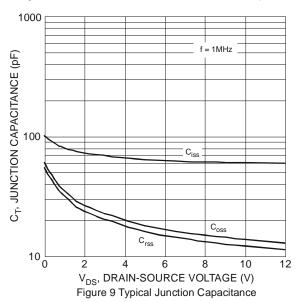
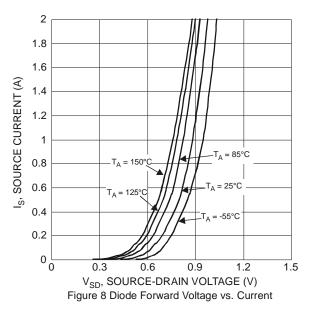
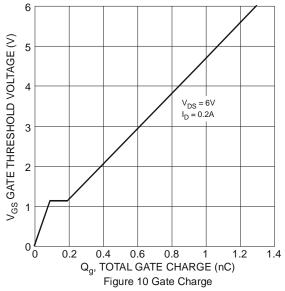


Figure 7 Gate Threshold Variation vs. Ambient Temperature







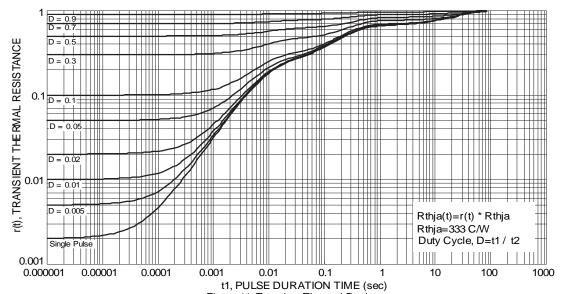
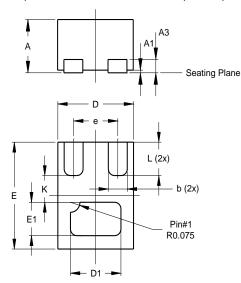


Figure 11 Transient Thermal Resistance



Package Outline Dimensions

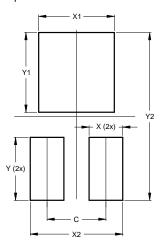
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



X2-DFN0806-3				
Dim	Min	Max	Тур	
Α	0.375	0.40	0.39	
A1	0	0.05	0.02	
A3	-	-	0.10	
b	0.10	0.20	0.15	
D	0.55	0.65	0.60	
D1	0.35	0.45	0.40	
Е	0.75	0.85	0.80	
E1	0.20	0.30	0.25	
е	-	-	0.35	
K	-	-	0.20	
L	0.20	0.30	0.25	
All Dimensions in mm				

Suggested Pad Layout

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



Dimensions	Value			
Dillielisions	(in mm)			
С	0.350			
Х	0.200			
X1	0.450			
X2	0.550			
Υ	0.375			
Y1	0.475			
Y2	1.000			



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