

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) \text{ max}}$	$I_D \text{ MAX}$ $T_A = +25^\circ\text{C}$
12V	366m Ω @ $V_{GS} = 4.5\text{V}$	0.5A
	520m Ω @ $V_{GS} = 2.5\text{V}$	
	950m Ω @ $V_{GS} = 1.8\text{V}$	
	1500m 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

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

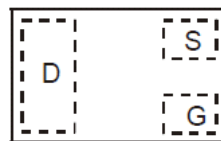
- Case: X2-DFN0806-3
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **(e4)**
- Weight: 0.00043 grams (Approximate)



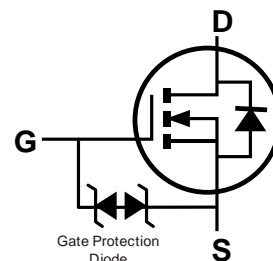
X2-DFN0806-3



Bottom View



Top View
Package Pin Configuration



Internal Schematic

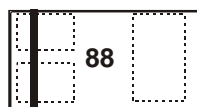
Ordering Information (Note 4)

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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	12	V
Gate-Source Voltage	V _{GSS}	±8	
Continuous Drain Current	I _D	0.5	A
Pulsed Drain Current	I _{DM}	1.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation	P _D	0.36	W
Thermal Resistance, Junction to Ambient	R _{θJA}	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	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	12	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	1	μA	V _{DS} = 10V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±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 = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	150	366	mΩ	V _{GS} = 4.5V, I _D = 200mA
		—	200	520		V _{GS} = 2.5V, I _D = 100mA
		—	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	C _{oss}	—	13.8	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	12.1	—	pF	
Total Gate Charge	Q _g	—	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	V _{DD} = 6V, V _{GS} = 4.5V, I _D = 0.2A, R _G = 6Ω
Turn-On Rise Time	t _r	—	18.8	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	106.5	—	ns	
Turn-Off Fall Time	t _f	—	59.2	—	ns	

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

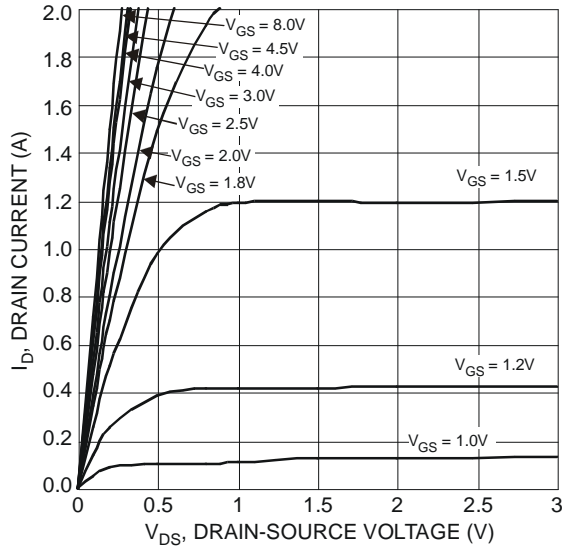


Figure 1 Typical Output Characteristics

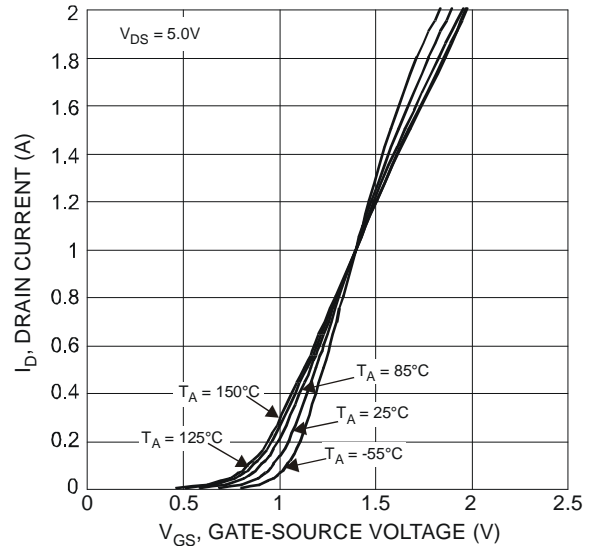


Figure 2 Typical Transfer Characteristics

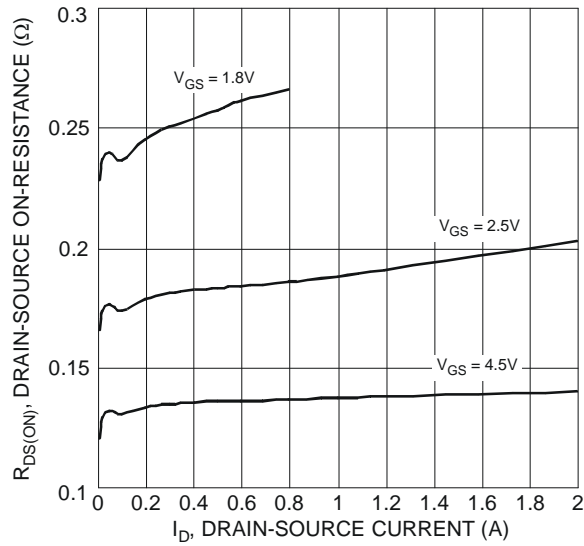


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

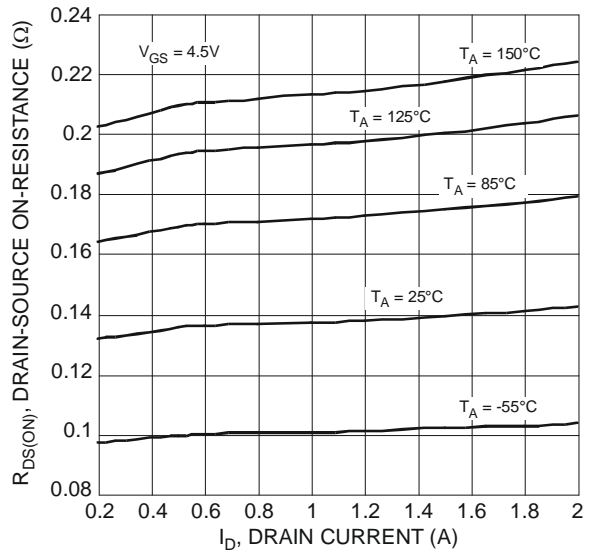


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

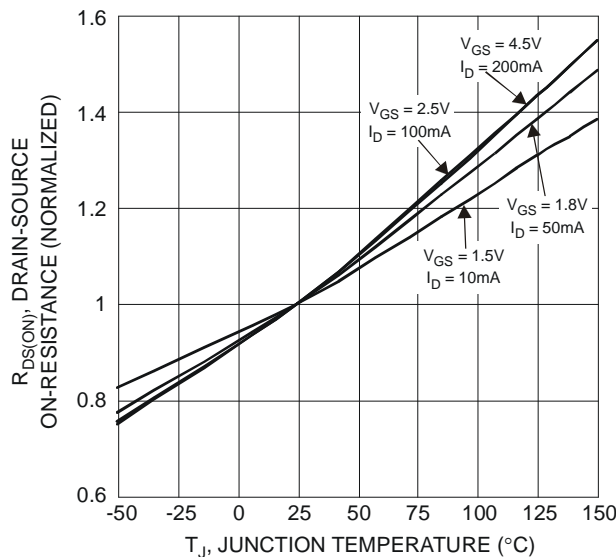


Figure 5 On-Resistance Variation with Temperature

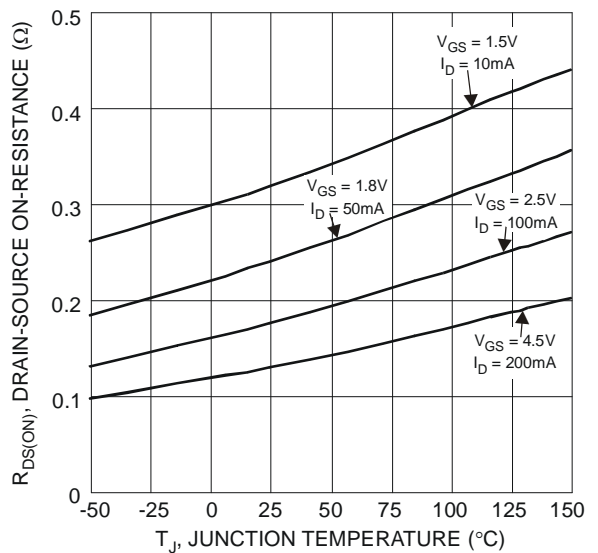


Figure 6 On-Resistance Variation with Temperature

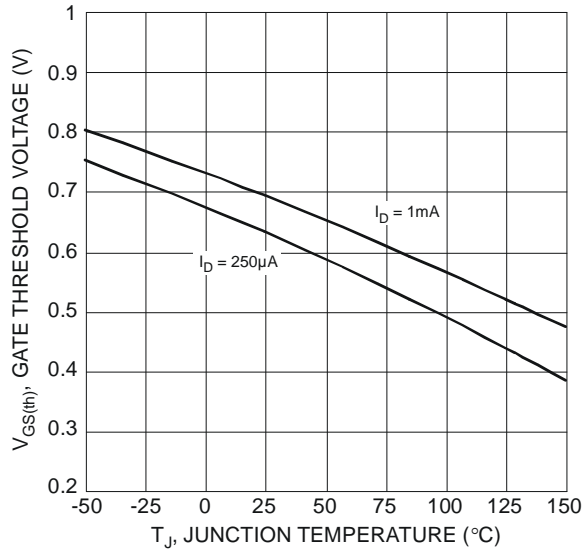


Figure 7 Gate Threshold Variation vs. Ambient Temperature

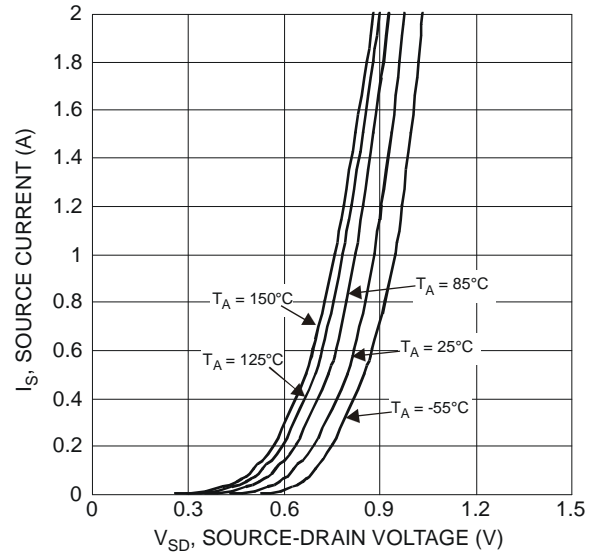


Figure 8 Diode Forward Voltage vs. Current

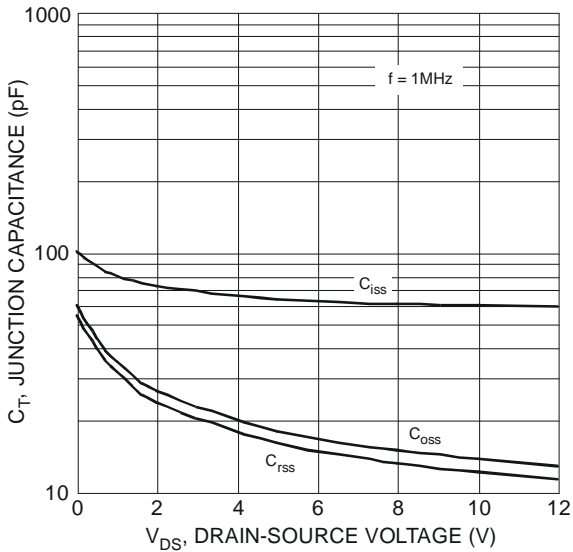


Figure 9 Typical Junction Capacitance

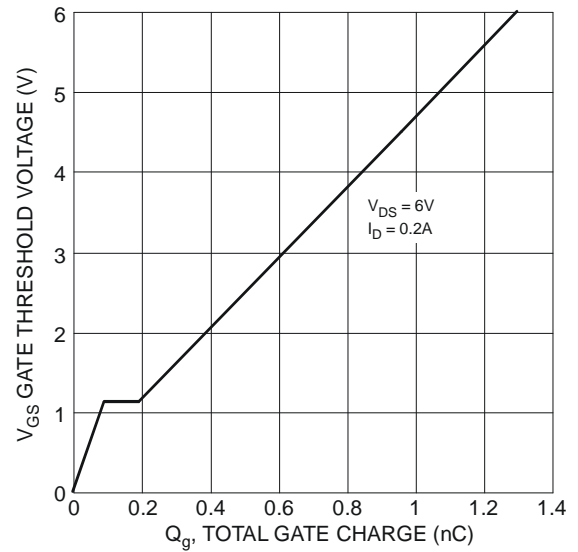


Figure 10 Gate Charge

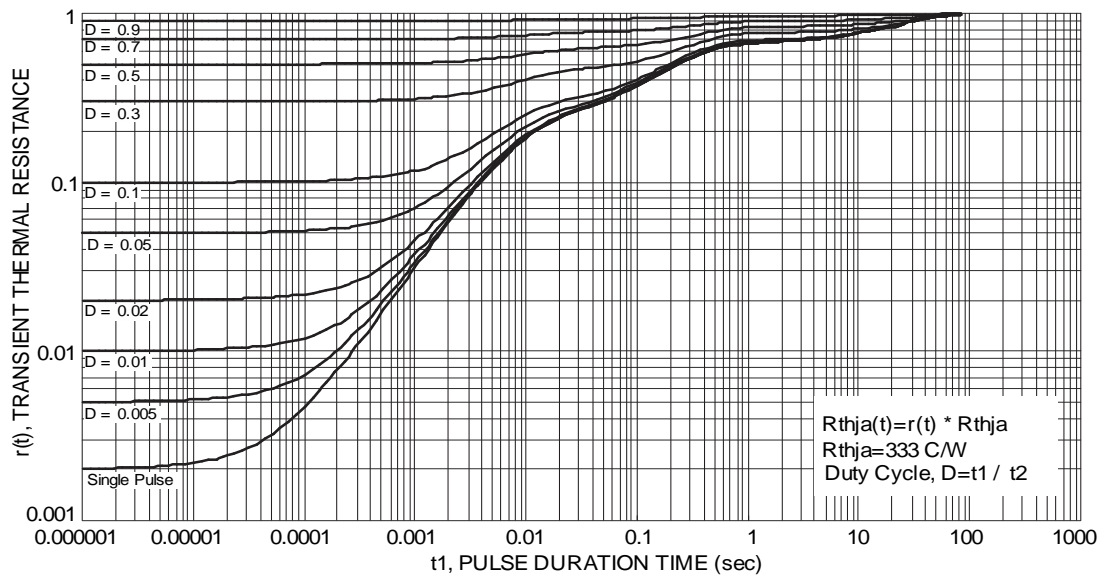
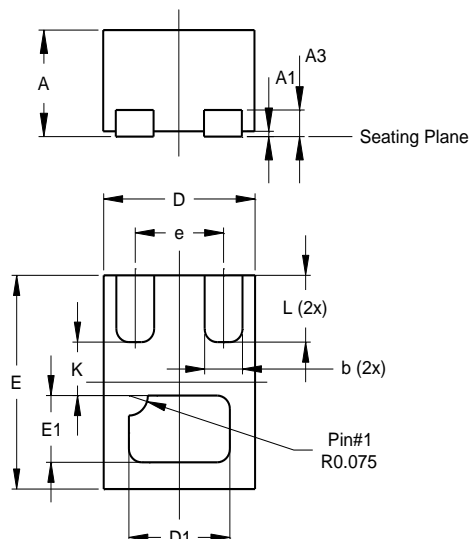


Figure 11 Transient Thermal Resistance

Package Outline Dimensions

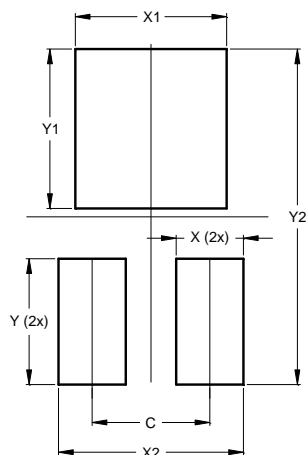
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X2-DFN0806-3			
Dim	Min	Max	Typ
A	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
E	0.75	0.85	0.80
E1	0.20	0.30	0.25
e	-	-	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 (in mm)
C	0.350
X	0.200
X1	0.450
X2	0.550
Y	0.375
Y1	0.475
Y2	1.000

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