





25V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C
-25V	10Ω @ $V_{GS} = -4.5V$	-166mA
	13Ω @ V _{GS} = -2.7V	-138mA

Description

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.

Applications

- Load Switch
- Portable Applications
- **Power Management Functions**

Features

- 0.4mm Ultra Low Profile Package for Thin Application
- 0.48mm² Package Footprint, 16 Times Smaller than SOT23
- Low V_{GS(th)}, Can be Driven Directly From a Battery
- Low R_{DS(on)}
- ESD Protected Gate (>6kV Human Body Mode)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

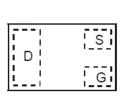
- Case: X2-DFN0806-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208 @4
- Weight: 0.00043 grams (approximate)



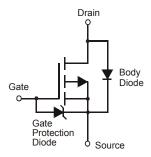


Bottom View

X2-DFN0806-3



Top View Package Pin Configuration



Equivalent Circuit

Ordering Information (Note 4)

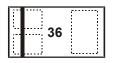
Part Number	Case	Packaging	
DMP213DUFA-7B	X2-DFN0806-3	10,000/Tape & Reel	

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

DMN213DUFA-7B



Top View Bar Denotes Gate and Source Side

36 = Product Type Marking Code



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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-25	V
Gate-Source Voltage			V_{GSS}	-8	- V
	V _{GS} = 4.5V	(Note 6)	I _D	-166	mA
Continuous Drain Current		T _A = +70°C (Note 6)		-125	
		(Note 5)	I _D	-145	mA
Pulsed Drain Current		(Note 7)	I _{DM}	-500	mA

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P _D	360	mW
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

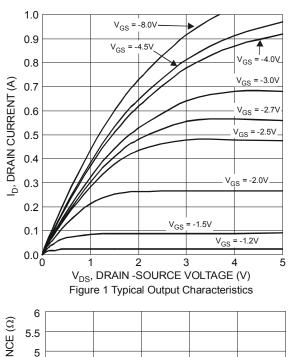
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

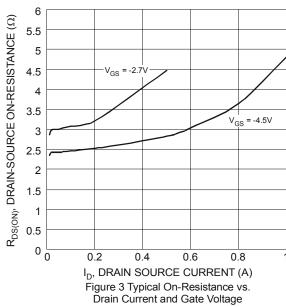
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)	Oymboi		Typ	IVIGA	Onit	Test condition	
Drain-Source Breakdown Voltage	BV _{DSS}	-25	_	_	V	$V_{GS} = 0V, I_D = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	-1	μΑ	V _{DS} = -20V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}	_	_	-100	nA	V _{GS} = -8V, V _{DS} = 0V	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(th)}	-0.65	-0.9	-1.5	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Static Danie Course On Besistance		_	_	10	Ω	V _{GS} = -4.5V, I _D = -0.2A	
Static Drain-Source On-Resistance	R _{DS(on)}	_	_	13		$V_{GS} = -2.7V$, $I_D = -0.05A$	
Forward Transfer Admittance	Y _{fs}	_	189	_	S	$V_{DS} = -5V, I_D = -0.2A$	
Diode Forward Voltage	V _{SD}	_	_	-1.5	V	V _{GS} = 0V, I _S = -0.2A	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	_	27.2	_	pF		
Output Capacitance	C _{oss}	_	6.1	_	pF	$V_{DS} = -10V, V_{GS} = 0V,$ f = 1MHz	
Reverse Transfer Capacitance	C _{rss}	_	1.7	_	pF	1 - 11/11/12	
Total Gate Charge	Qg	_	0.35	_	nC		
Gate-Source Charge	Q _{gs}	_	0.08	_	nC	$V_{DS} = -5V, I_D = -0.2A,$ $V_{GS} = -4.5V$	
Gate-Drain Charge	Q _{gd}	_	0.06	_	nC		
Turn-On Delay Time	t _{D(on)}	_	4.5	_	ns		
Turn-On Rise Time	t _r	_	2.3	_	ns	$V_{DS} = -6V, V_{GS} = -4.5V,$ $I_{D} = -0.2A, R_{G} = 50\Omega$	
Turn-Off Delay Time	t _{D(off)}	_	24.1	_	ns		
Turn-Off Fall Time	t _f	_	11	_	ns		

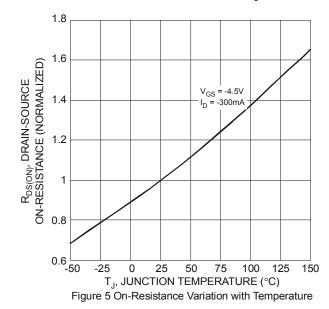
Notes:

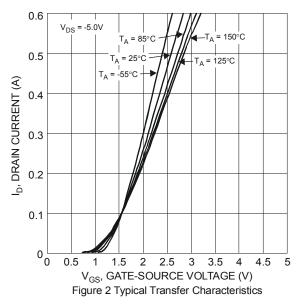
- 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout
 Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to production testing.

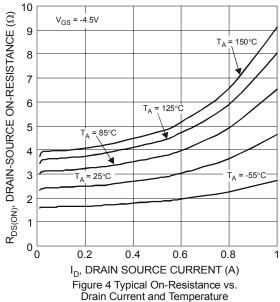


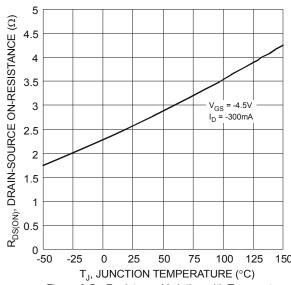














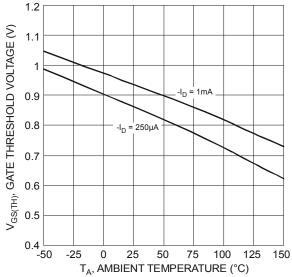
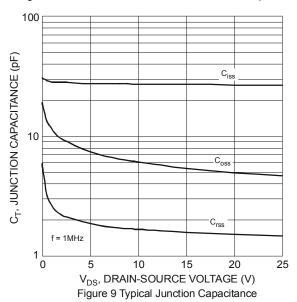
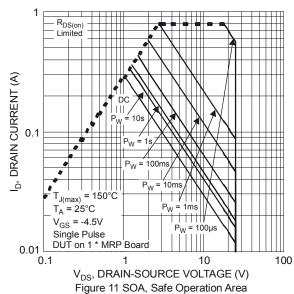
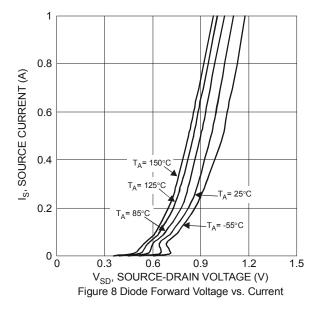
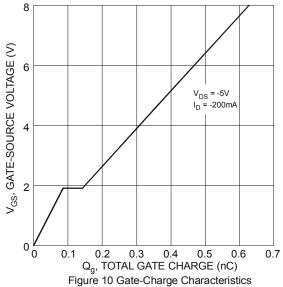


Figure 7 Gate Threshold Variation vs. Ambient Temperature

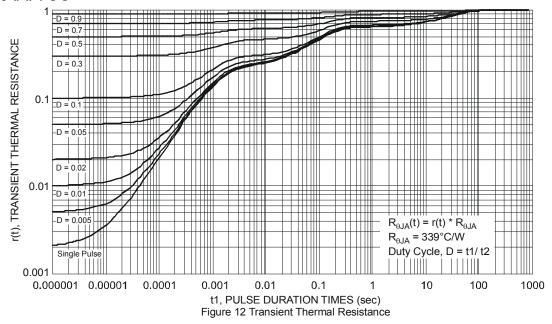






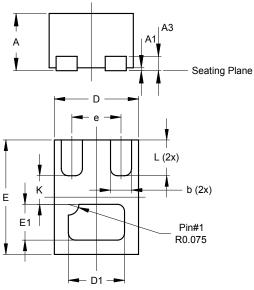






Package Outline Dimensions

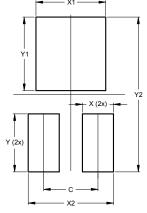
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



X2-DFN0806-3					
Dim	Min	Max	Тур		
Α	0.375	0.40	0.39		
A1	0	0.05	0.02		
А3	1	ı	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	-	ı	0.35		
K	1	ı	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)		
С	0.350		
X	0.200		
X1	0.450		
X2	0.550		
Y	0.375		
Y1	0.475		
Y2	1.000		



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