

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = 25^\circ\text{C}$
20V	3.0Ω @ $V_{GS} = 4.5\text{V}$	240mA
	6.0Ω @ $V_{GS} = 1.8\text{V}$	170mA

Description and Applications

This new generation 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.

- DC-DC Converters
- Power management functions

Features and Benefits

- N-Channel MOSFET
- Low On-Resistance:
 - 3.0 Ω @ 4.5V
 - 4.0 Ω @ 2.5V
 - 6.0 Ω @ 1.8V
 - 10 Ω @ 1.5V
- Very Low Gate Threshold Voltage, 1.05V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package, 0.4mm Maximum Package Height
- ESD Protected Gate
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: X2-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.001 grams (approximate)

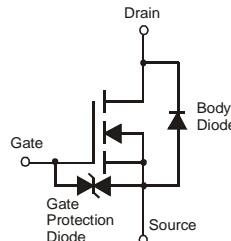


ESD PROTECTED

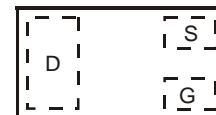
X2-DFN1006-3



Bottom View



Equivalent Circuit



Top View

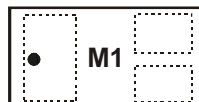
Ordering Information (Note 3)

Part Number	Case	Packaging
DMN26D0UFB4-7	X2-DFN1006-3	3,000/Tape & Reel
DMN26D0UFB4-7B	X2-DFN1006-3	10,000/Tape & Reel

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

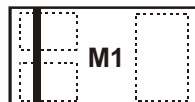
Marking Information

DMN26D0UFB4-7



Top View
Dot Denotes Drain Side

DMN26D0UFB4-7B



Top View
Bar Denotes Gate and Source Side

M1 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GSS}	±10	V
Continuous Drain Current (Note 4) V _{GS} = 4.5V	Steady State	T _A = 25°C	I _D	240	mA
		T _A = 70°C		190	
Continuous Drain Current (Note 4) V _{GS} = 1.8V	Steady State	T _A = 25°C	I _D	180	mA
		T _A = 70°C		140	
Pulsed Drain Current - T _P = 10µs			I _{DM}	805	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

Total Power Dissipation (Note 4) @T _A = 25°C	P _D	350	mW
Thermal Resistance, Junction to Ambient (Note 4)	R _{θJA}	357	°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 5)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 100µA
Zero Gate Voltage Drain Current @ T _C = 25°C	I _{DSS}	—	—	500	nA	V _{DS} = 20V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±1 ±100	µA nA	V _{GS} = ±10V, V _{DS} = 0V V _{GS} = ±5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	0.45	—	1.05	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(on)}	—	1.8	3.0	Ω	V _{GS} = 4.5V, I _D = 100mA V _{GS} = 2.5V, I _D = 50mA V _{GS} = 1.8V, I _D = 20mA V _{GS} = 1.5V, I _D = 10mA
		—	2.5	4.0		
		—	3.4	6.0		
		—	4.7	10.0		
Forward Transconductance	Y _{fs}	180	242	—	mS	V _{DS} = 10V, I _D = 0.1A
Source-Drain Diode Forward Voltage	V _{SD}	0.5	—	1.4	V	V _{GS} = 0V, I _S = 115mA
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	14.1	—	pF	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	2.9	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	1.6	—	pF	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(on)}	—	3.8	—	ns	V _{GS} = 4.5V, V _{DD} = 10V I _D = 200mA, R _G = 2.0Ω
Rise Time	t _r	—	7.9	—		
Turn-Off Delay Time	t _{d(off)}	—	13.4	—		
Fall Time	t _f	—	15.2	—		

- Notes:
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 - Short duration pulse test used to minimize self-heating effect.

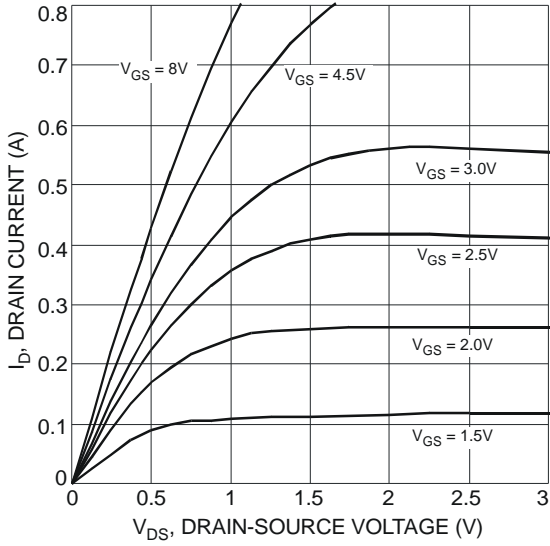


Fig. 1 Typical Output Characteristic

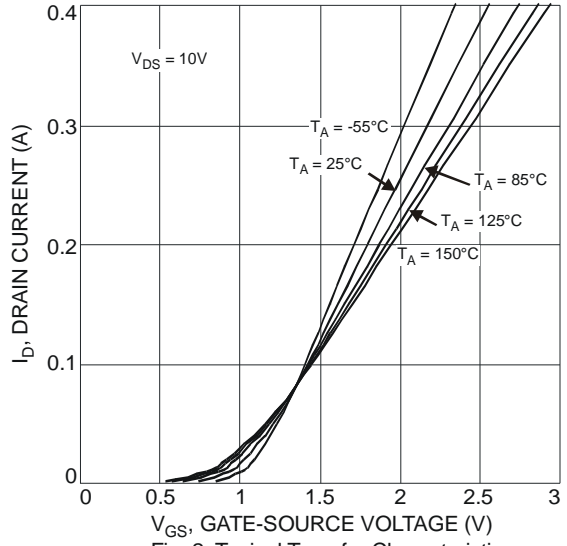


Fig. 2 Typical Transfer Characteristic

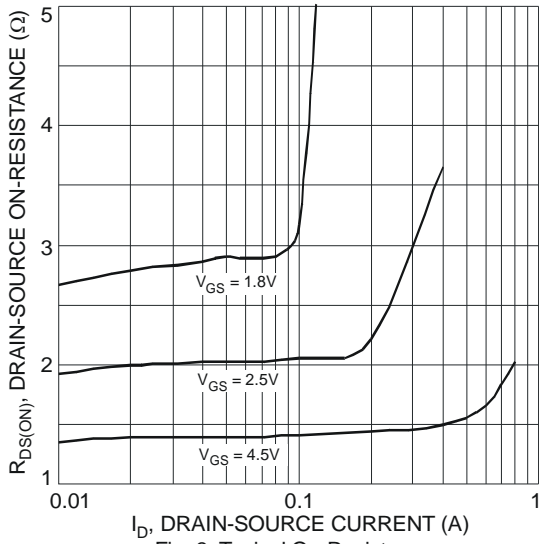


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

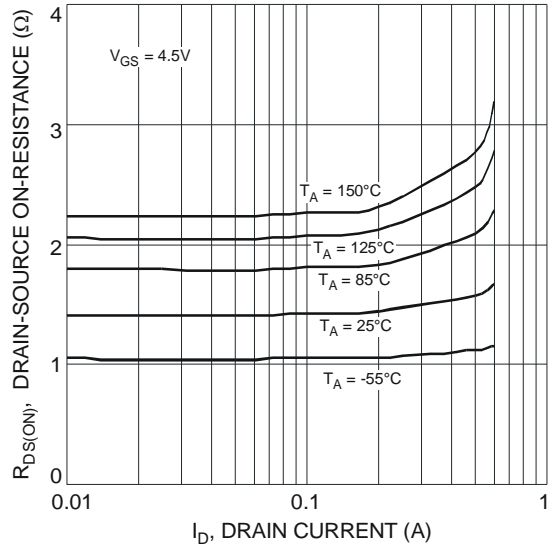


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

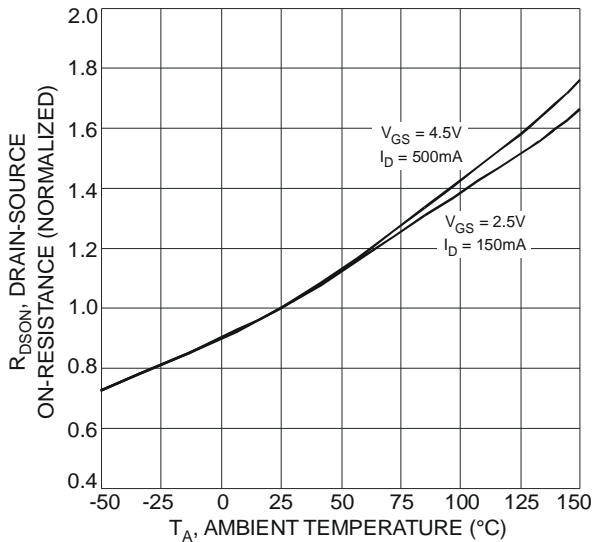


Fig. 5 On-Resistance Variation with Temperature

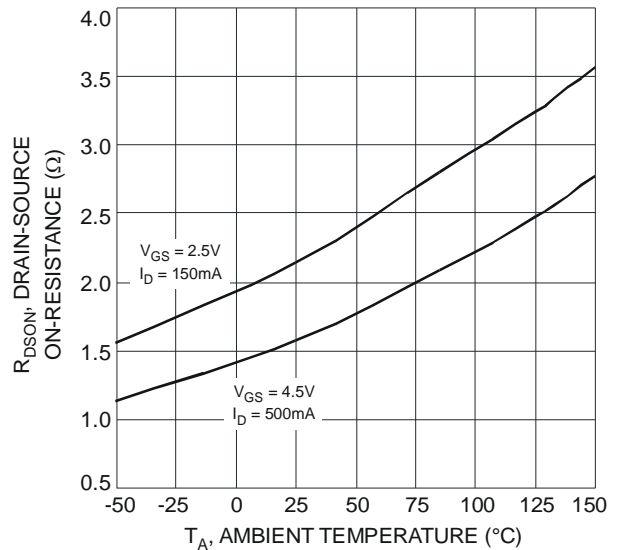


Fig. 6 On-Resistance Variation with Temperature

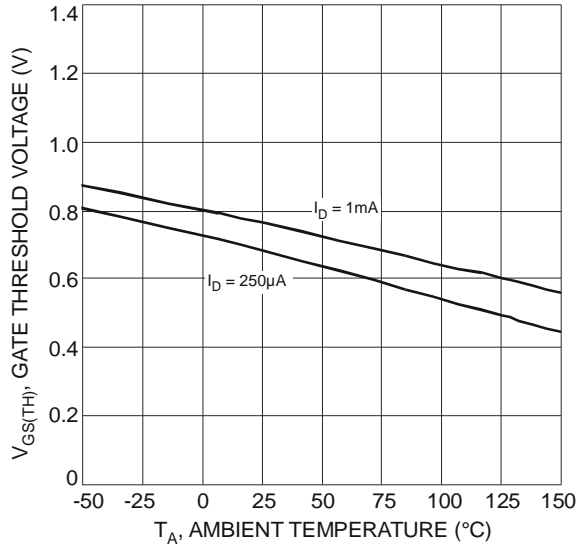


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

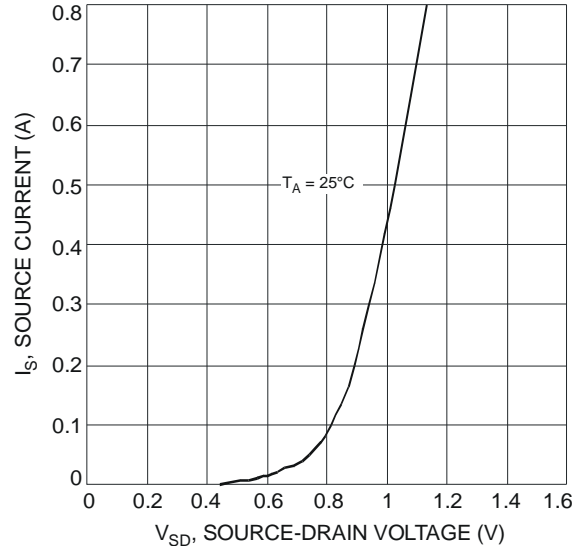


Fig. 8 Diode Forward Voltage vs. Current

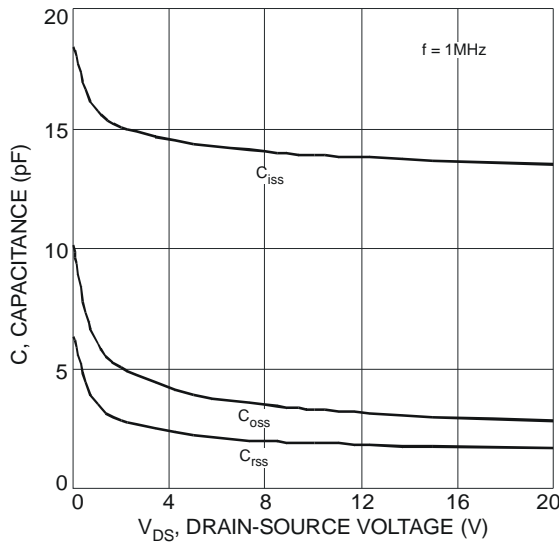


Fig. 9 Typical Total Capacitance

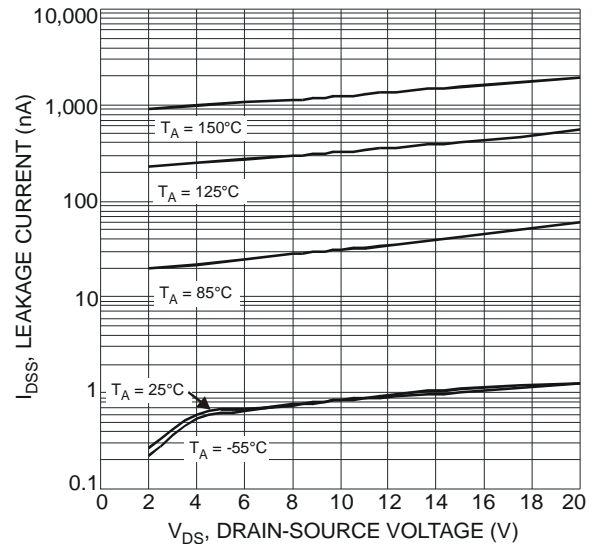


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

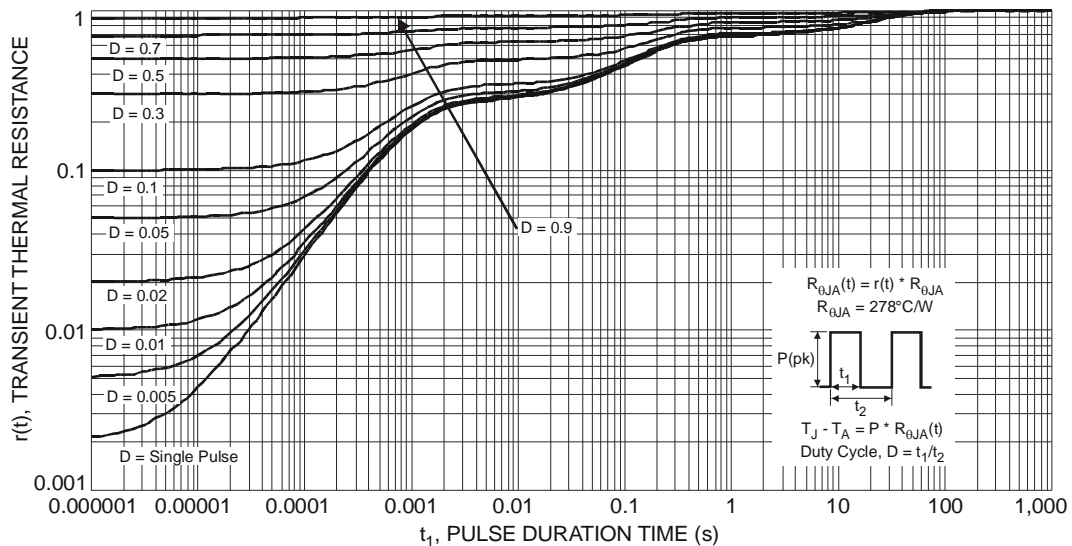
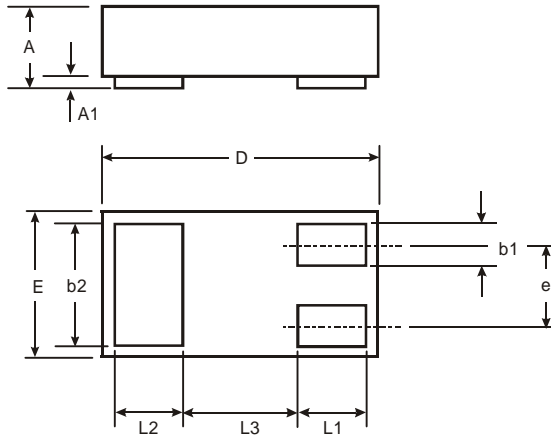


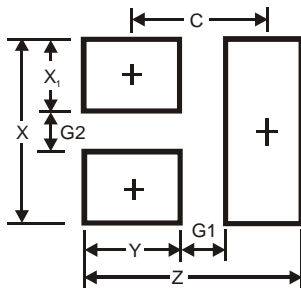
Fig. 11 Transient Thermal Response

Package Outline Dimensions



X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0	0.05	0.02
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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