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DMN26D0UFB4-7

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Lead-free Green

DMN26D0UFB4

N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

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

Description

This new generation 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

- DC-DC Converters
- Power Management Functions

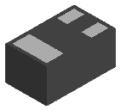
Features and Benefits

- N-Channel MOSFET
- Low On-Resistance
- 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
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

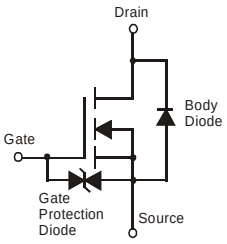
Mechanical Data

- 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 e4
- Weight: 0.001 grams (Approximate)

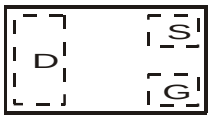
X2-DFN1006-3



Bottom View



Equivalent Circuit



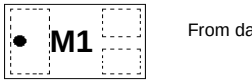
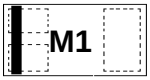
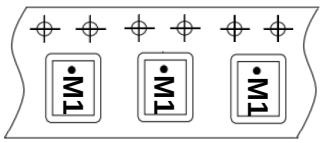
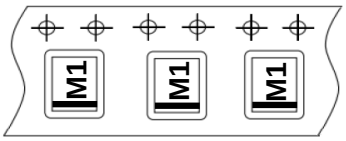
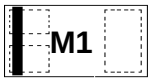
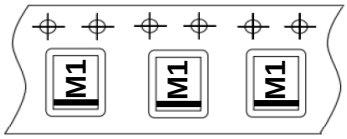
Top View

Ordering Information (Note 4)

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 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

DMN26D0UFB4-7	 Top View Dot Denotes Drain Side From date code 1527 (YYWW), this changes to:  Top View Bar Denotes Gate and Source Side  
DMN26D0UFB4-7B	 Top View Bar Denotes Gate and Source Side  **M1** = Part 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 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	240 190	mA
Continuous Drain Current (Note 5) V_{GS} = 1.8V	Steady State	T_A = +25°C T_A = +70°C	I_D	180 140	mA
Pulsed Drain Current - T_P = 10µs			I_{DM}	805	mA

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

Total Power Dissipation (Note 5) @T_A = +25°C	P_D	350	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	357	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
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 6)						
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 2.5 3.4 4.7	3.0 4.0 6.0 10.0	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
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 (Note 7)						
Input Capacitance	C_{iss}	—	14.1	28.2	pF	V_{DS} = 15V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	2.9	5.8	pF	
Reverse Transfer Capacitance	C_{rss}	—	1.6	3.2	pF	
SWITCHING CHARACTERISTICS (Note 7)						
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: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to product testing.

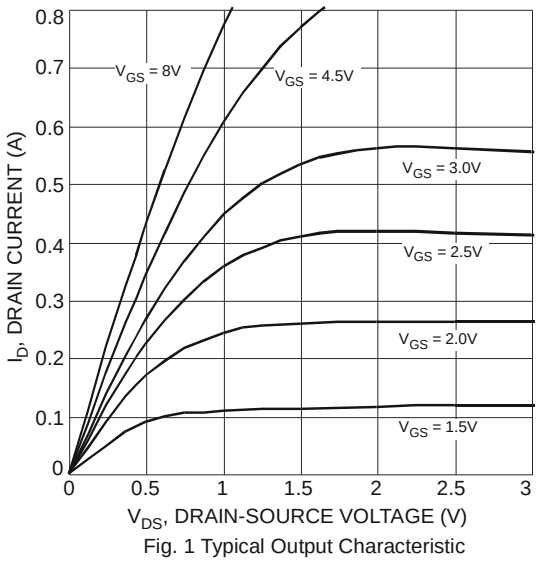


Fig. 1 Typical Output Characteristic

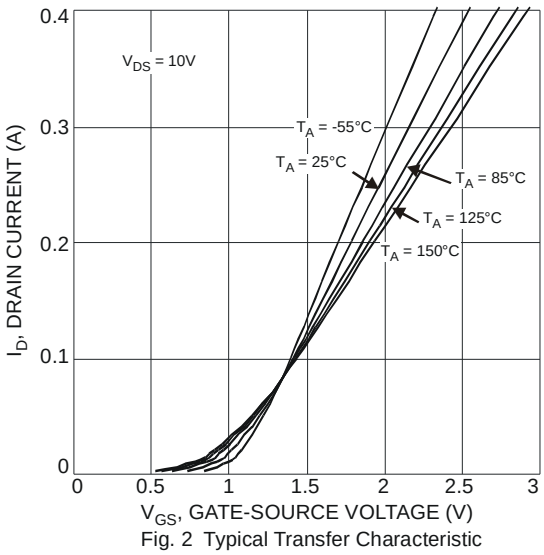


Fig. 2 Typical Transfer Characteristic

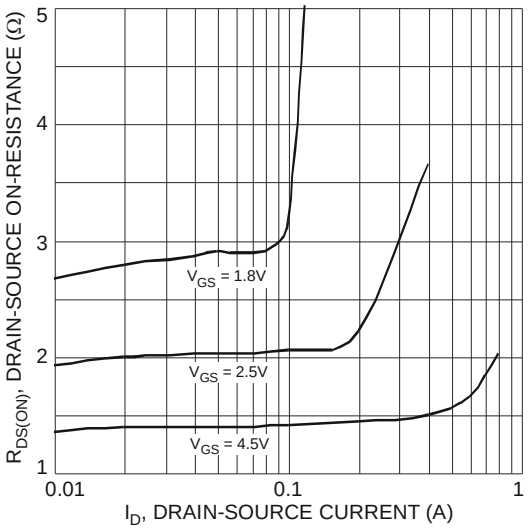


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

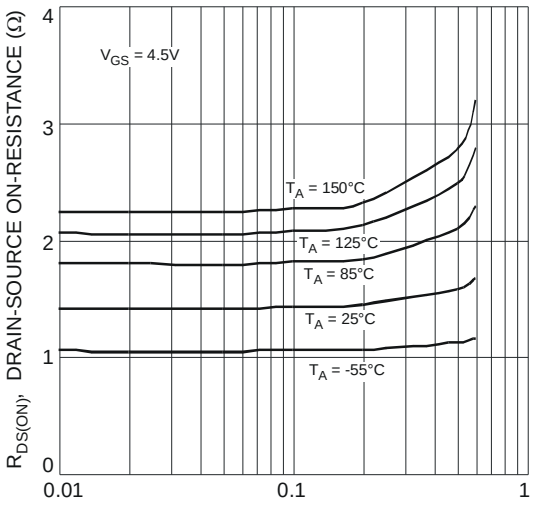


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

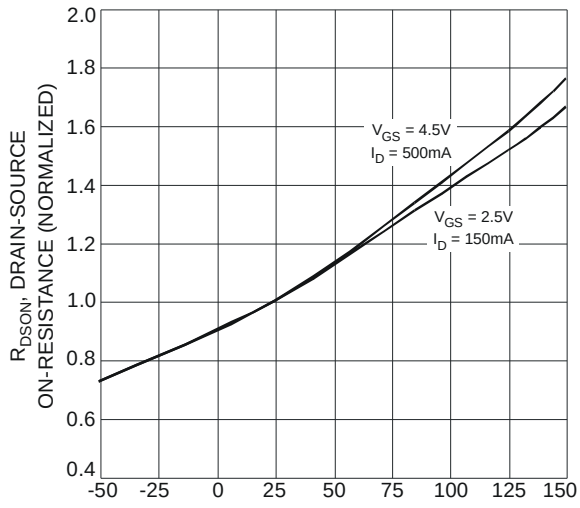


Fig. 5 On-Resistance Variation with Temperature

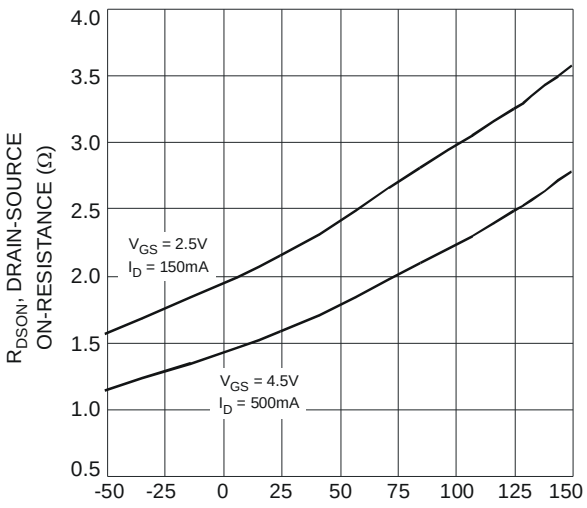


Fig. 6 On-Resistance Variation with Temperature

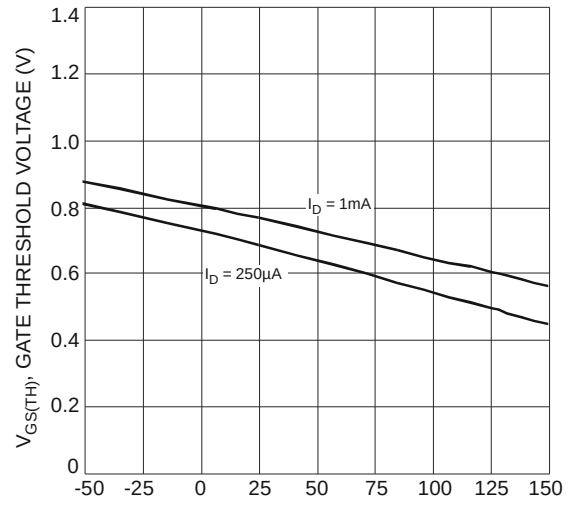


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

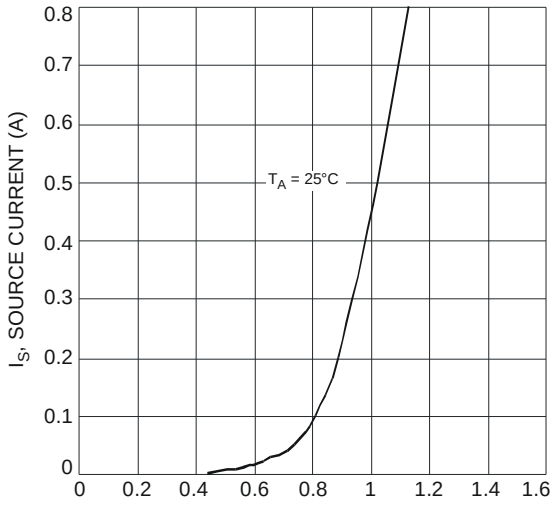


Fig. 8 Diode Forward Voltage vs. Current

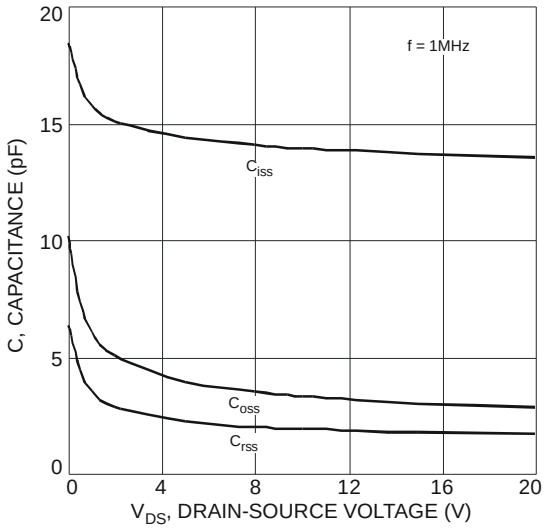


Fig. 9 Typical Total Capacitance

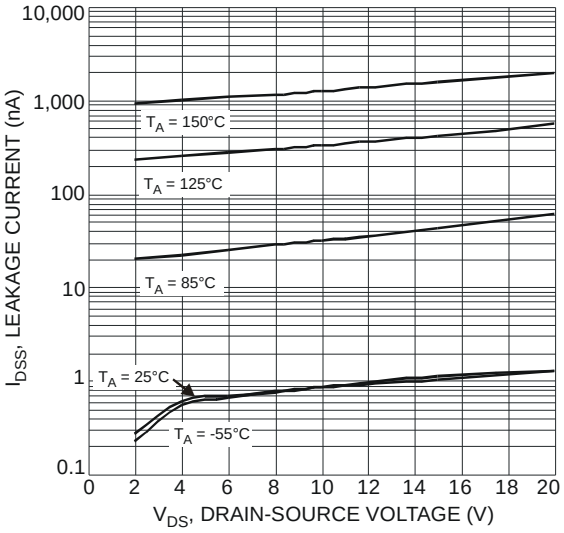


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

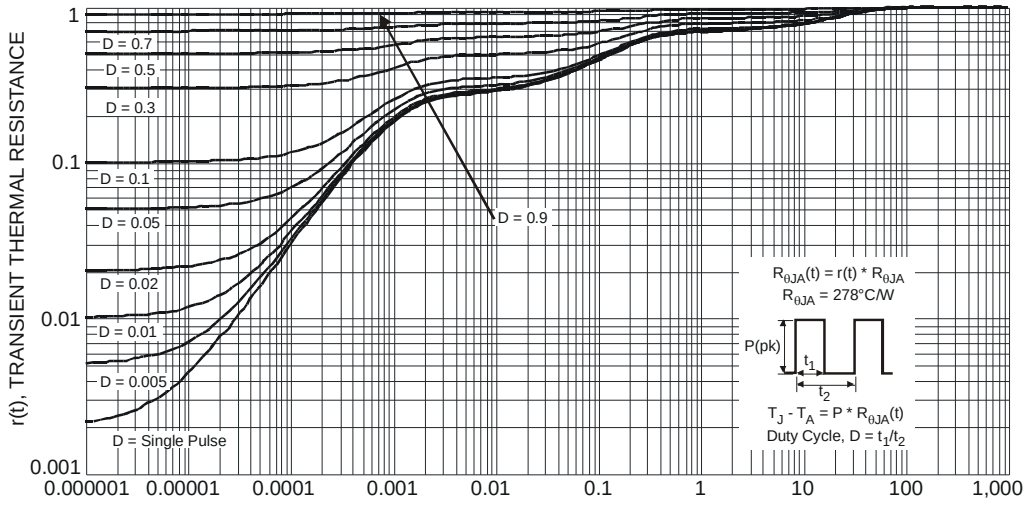
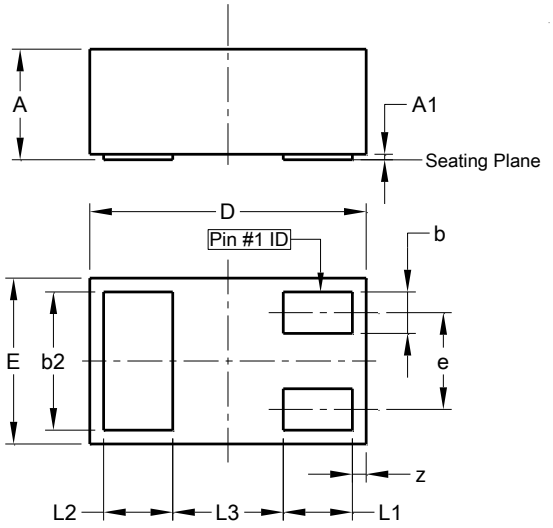


Fig. 11 Transient Thermal Response

Package Outline Dimensions

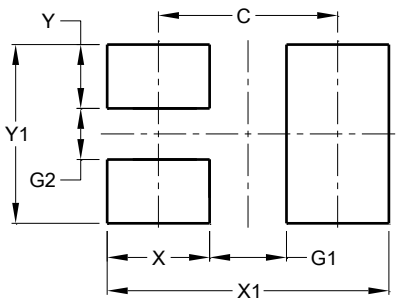
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0.00	0.05	0.03
b	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
z	0.02	0.08	0.05
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	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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