

Product Summary

BV _{DSS}	R _{DS(on)}	I _D T _A = +25°C
20V	3.0Ω @ V _{GS} = 4.5V	240mA
	6.0Ω @ V _{GS} = 1.8V	180mA

Description

This new generation MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}) 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
- 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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

Mechanical Data

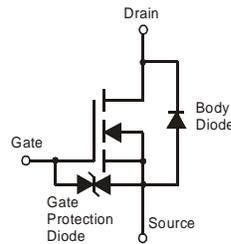
- Package: X2-DFN1006-3
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.001 grams (Approximate)



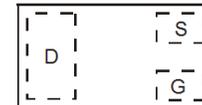
X2-DFN1006-3



Bottom View



Equivalent Circuit



Top View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
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) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

<p>DMN26D0UFB4-7</p>	<p>From date code 1527 (YYWW), this changes to:</p>
<p>DMN26D0UFB4-7B</p>	<p>M1 = Part Marking Code</p>

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	I _D	T _A = +25°C	240	mA
		T _A = +70°C	190	
Continuous Drain Current (Note 5) V _{GS} = 1.8V	I _D	T _A = +25°C	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.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5) @T _A = +25°C	P _D	350	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	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)}	0.6	—	0.9	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
		—	2.5	4.0		V _{GS} = 2.5V, I _D = 50mA
		—	3.4	6.0		V _{GS} = 1.8V, I _D = 20mA
		—	4.7	10.0		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.

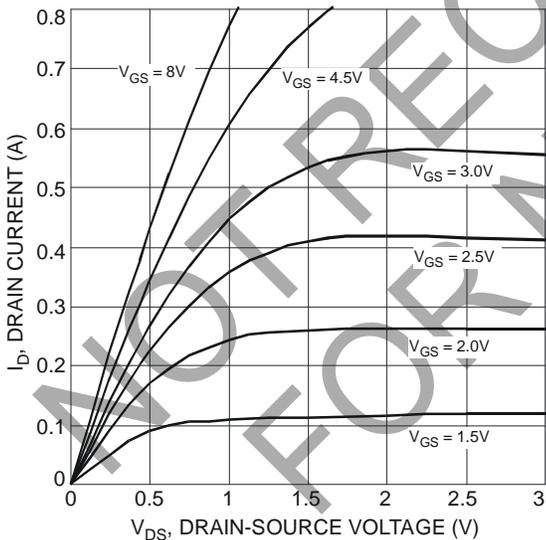


Fig. 1 Typical Output Characteristic

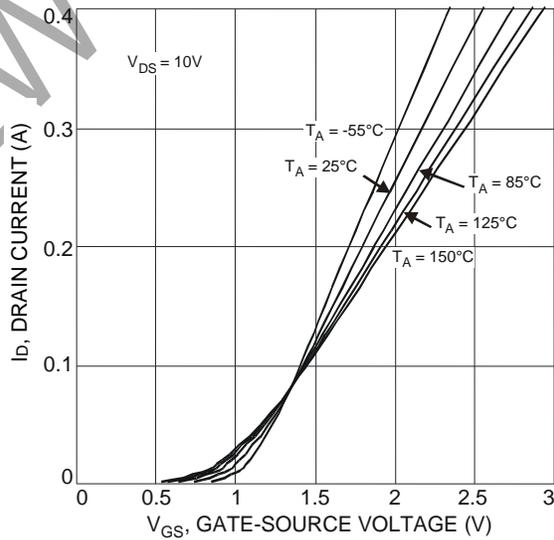


Fig. 2 Typical Transfer Characteristic

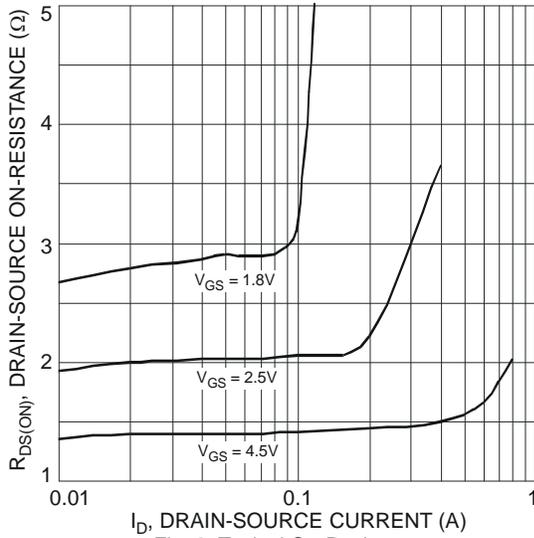


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

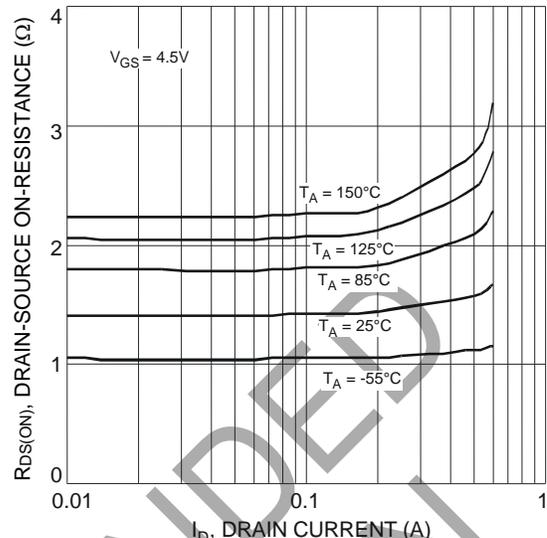


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

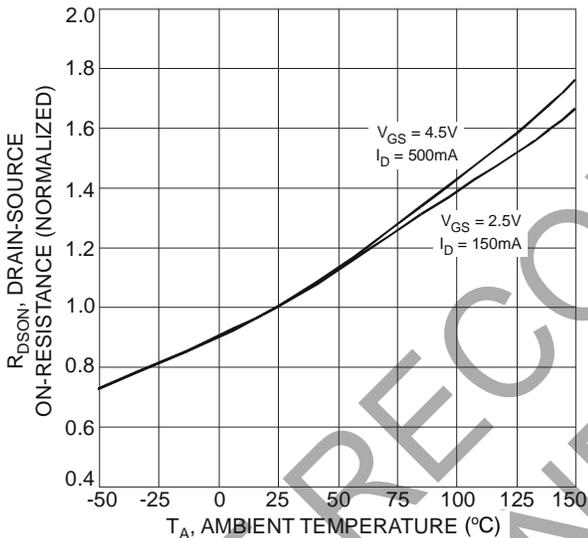


Fig. 5 On-Resistance Variation with Temperature

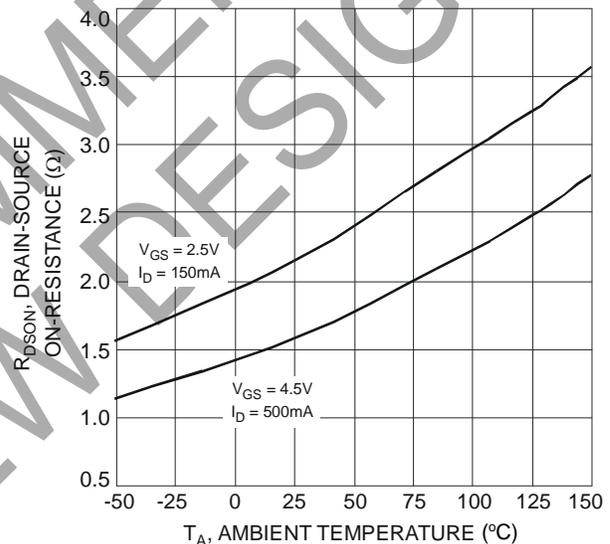


Fig. 6 On-Resistance Variation with Temperature

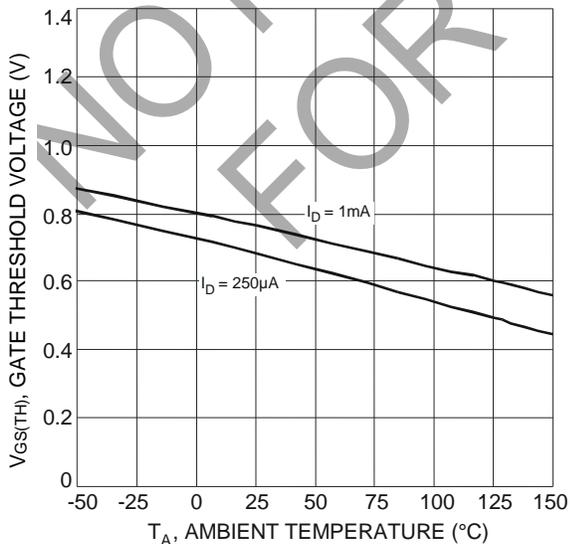


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

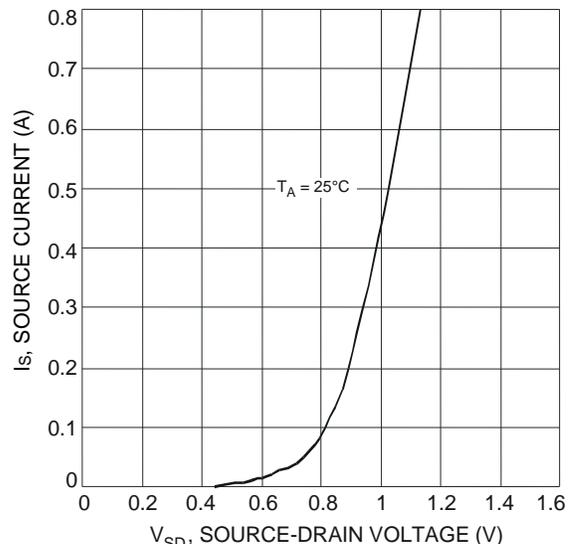


Fig. 8 Diode Forward Voltage vs. Current

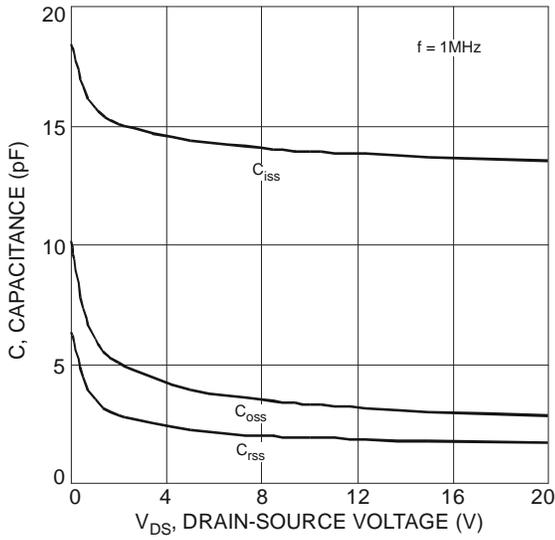


Fig. 9 Typical Total Capacitance

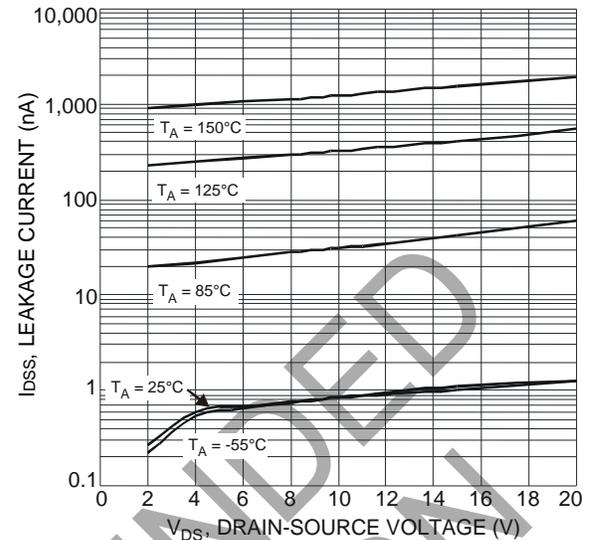


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

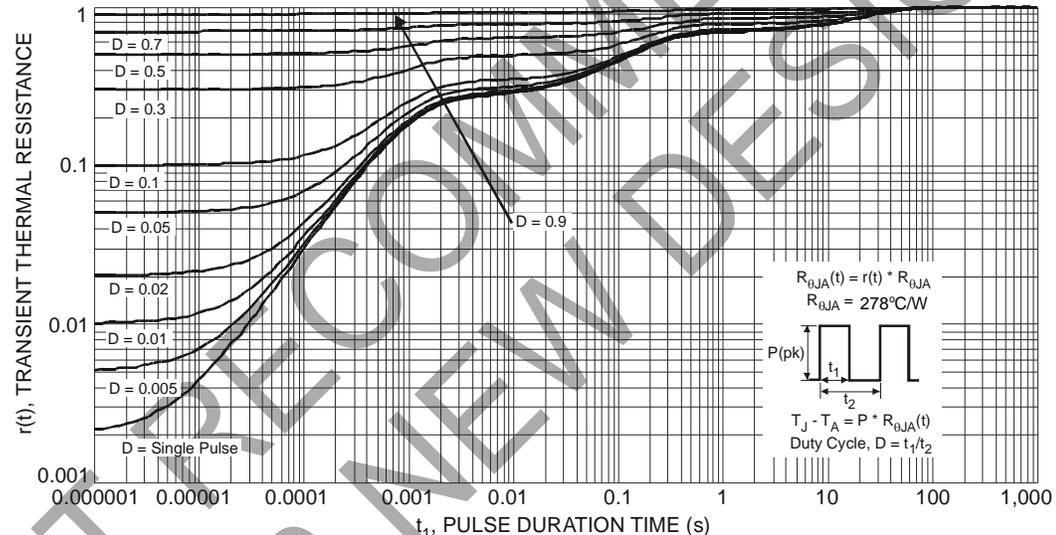
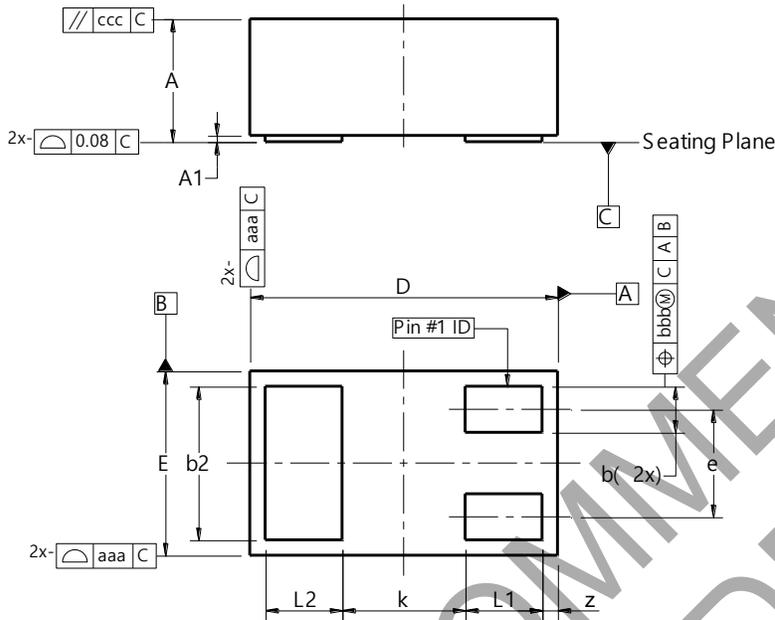


Fig. 11 Transient Thermal Response

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X2-DFN1006-3

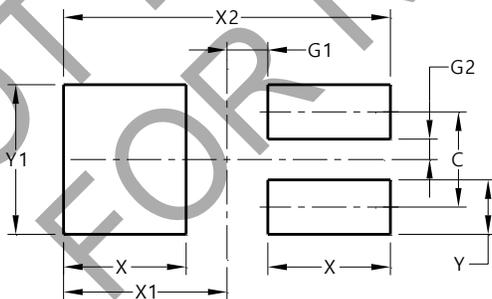


X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
k	—	—	0.40
z	0.02	0.08	0.05
aaa	—	0.15	—
bbb	—	0.05	—
ccc	—	0.05	—
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X2-DFN1006-3



Dimensions	Value (in mm)
C	0.350
G1	0.150
G2	0.075
X	0.450
X1	0.600
X2	1.200
Y	0.200
Y1	0.550

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