

## 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

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

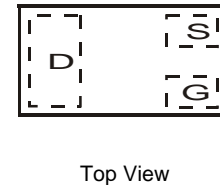
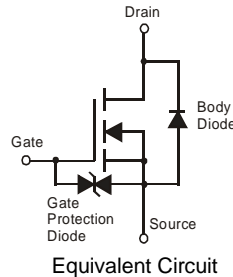
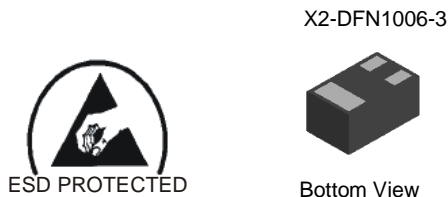
- DC-DC Converters
- Power Management Functions

## 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)

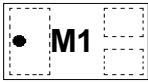
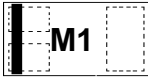
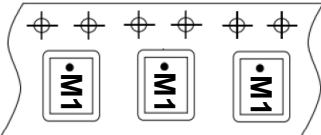
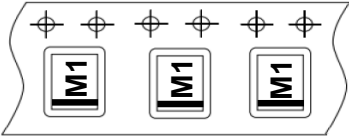
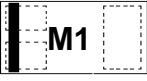
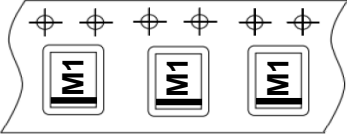


## Ordering Information (Note 4)

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](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**

<p><b>DMN26D0UFB4-7</b></p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Top View Dot Denotes Drain Side</p> </div> <div style="text-align: center;"> <p>From date code 1527 (YYWW), this changes to:</p>  <p>Top View Bar Denotes Gate and Source Side</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>
<p><b>DMN26D0UFB4-7B</b></p>	<div style="text-align: center; margin-bottom: 20px;">  <p>Top View Bar Denotes Gate and Source Side</p> </div> <div style="display: flex; justify-content: space-between;">  <div style="text-align: right;"> <p><b>M1</b> = Part Marking Code</p> </div> </div>

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain Source Voltage			V <sub>DSS</sub>	20	V
Gate-Source Voltage			V <sub>GSS</sub>	±10	V
Continuous Drain Current (Note 5) V <sub>GS</sub> = 4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	240	mA
		T <sub>A</sub> = +70°C		190	
Continuous Drain Current (Note 5) V <sub>GS</sub> = 1.8V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	180	mA
		T <sub>A</sub> = +70°C		140	
Pulsed Drain Current - T <sub>P</sub> = 10μs			I <sub>DM</sub>	805	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Total Power Dissipation (Note 5) @T <sub>A</sub> = +25°C	P <sub>D</sub>	350	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	357	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0V, I_D = 100\mu A$
Zero Gate Voltage Drain Current @ $T_C = +25^\circ\text{C}$	$I_{DSS}$	—	—	500	nA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 1$ $\pm 100$	$\mu A$ nA	$V_{GS} = \pm 10V, V_{DS} = 0V$ $V_{GS} = \pm 5V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.45	—	1.05	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.8	3.0	$\Omega$	$V_{GS} = 4.5V, I_D = 100mA$ $V_{GS} = 2.5V, I_D = 50mA$ $V_{GS} = 1.8V, I_D = 20mA$ $V_{GS} = 1.5V, I_D = 10mA$
		—	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	$V_{GS} = 0V, I_S = 115mA$
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
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	
<b>SWITCHING CHARACTERISTICS (Note 7)</b>						
Turn-On Delay Time	$t_{d(on)}$	—	3.8	—	ns	$V_{GS} = 4.5V, V_{DD} = 10V$ $I_D = 200mA, R_G = 2.0\Omega$
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.

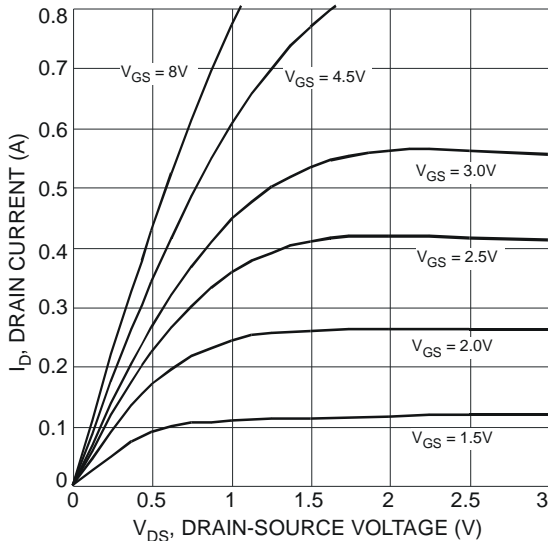


Fig. 1 Typical Output Characteristic

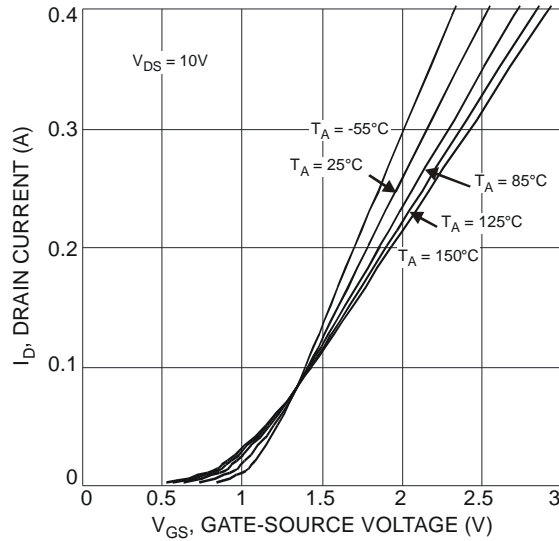


Fig. 2 Typical Transfer Characteristic

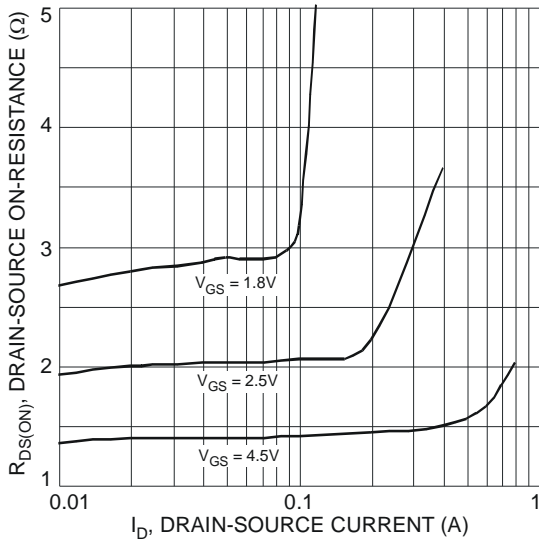


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

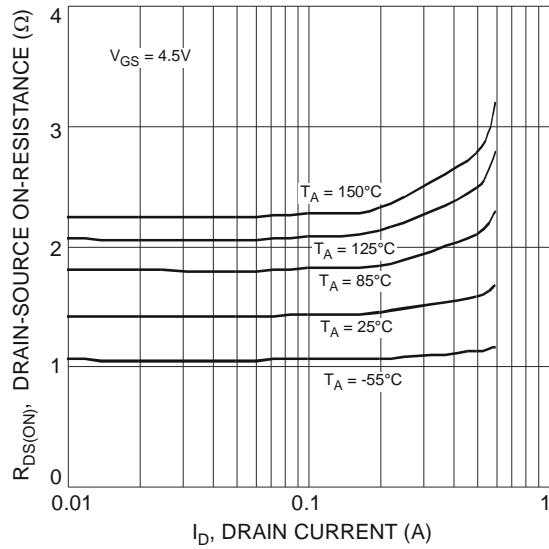


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

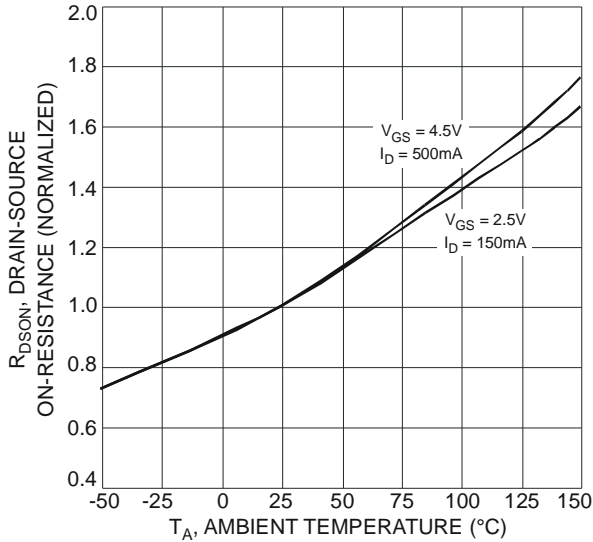


Fig. 5 On-Resistance Variation with Temperature

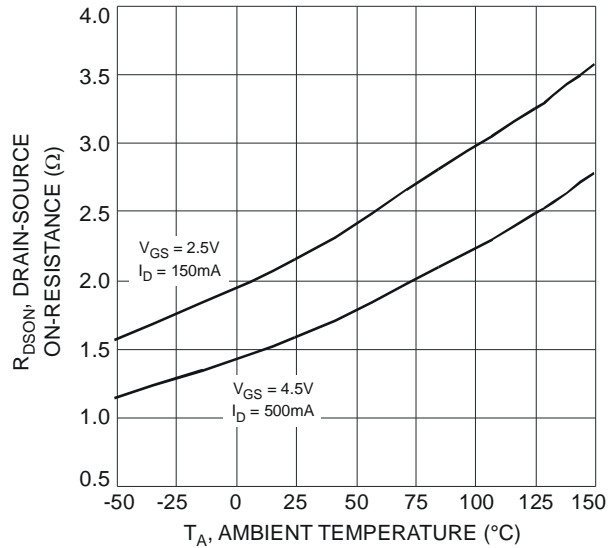


Fig. 6 On-Resistance Variation with Temperature

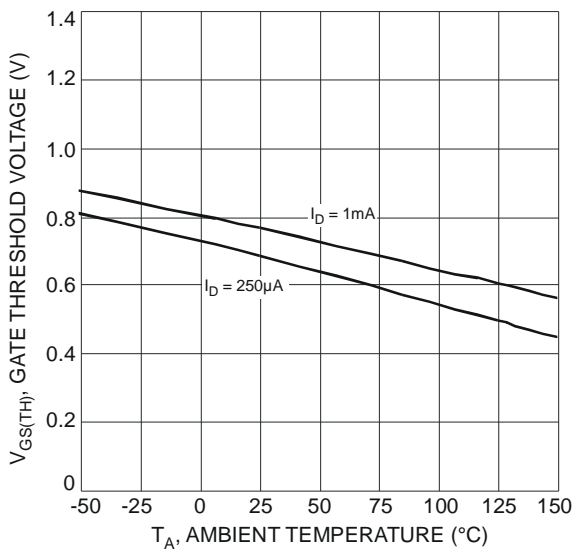


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

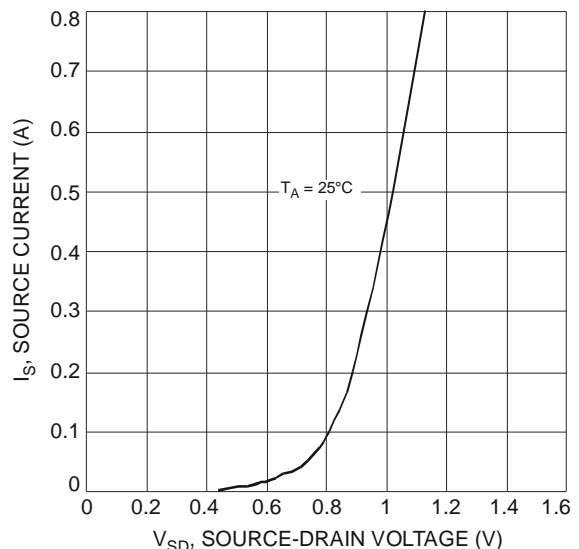
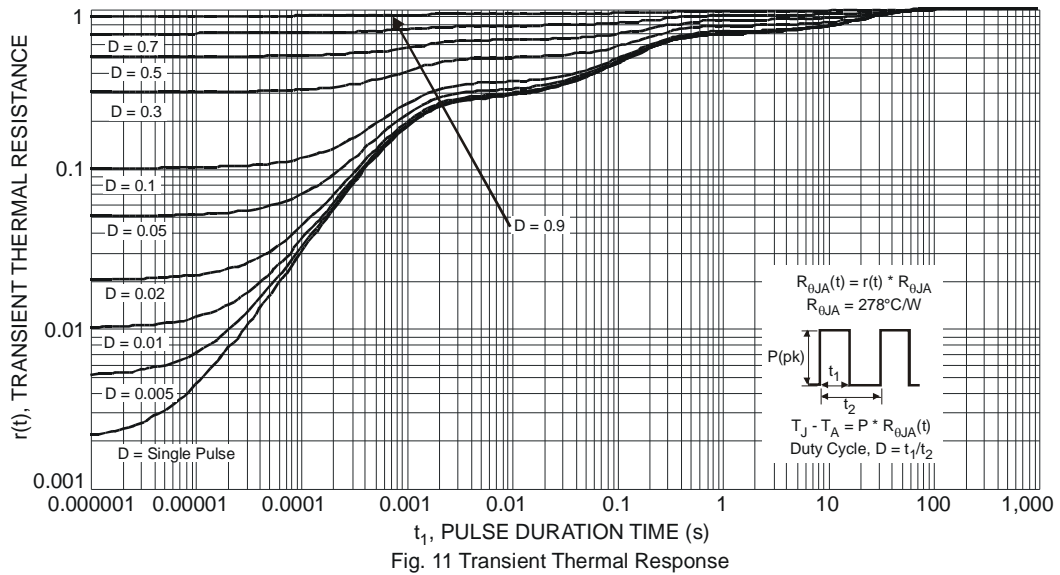
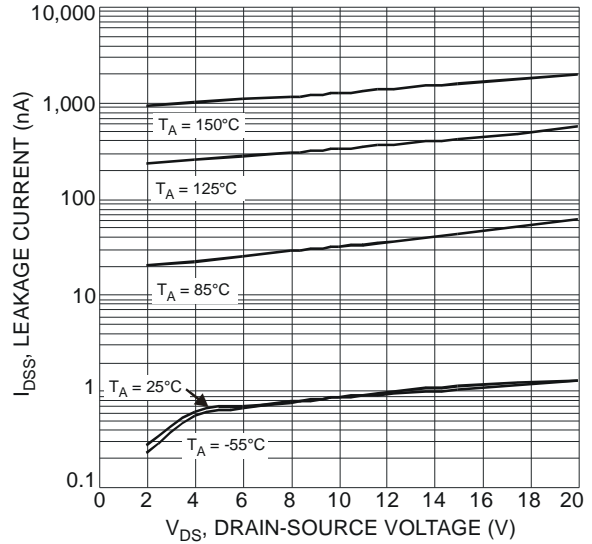
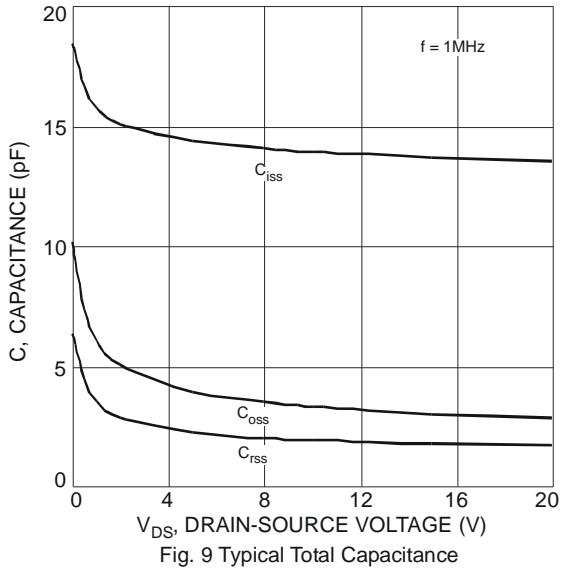
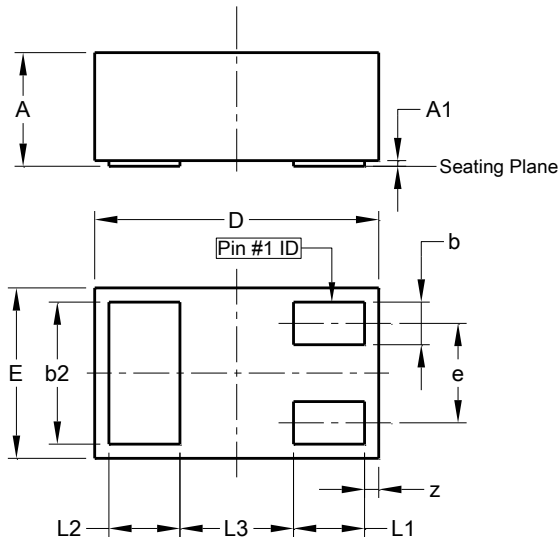


Fig. 8 Diode Forward Voltage vs. Current



### Package Outline Dimensions

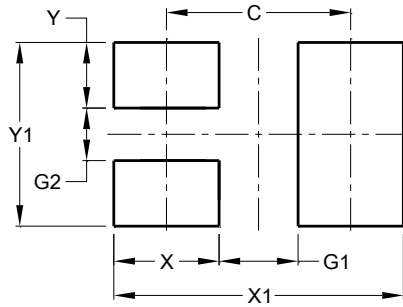
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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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