

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on) \max}$	$I_D \max$ $T_A = +25^\circ C$
30V	1.2Ω @ $V_{GS} = 4V$	415mA
	1.5Ω @ $V_{GS} = 2.5V$	370mA
	2.2Ω @ $V_{GS} = 1.8V$	300mA

## Description

This MOSFET is designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

## Applications

- Backlighting
- Power Management Functions
- DC-DC Converters

## Features

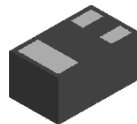
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.2V Max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

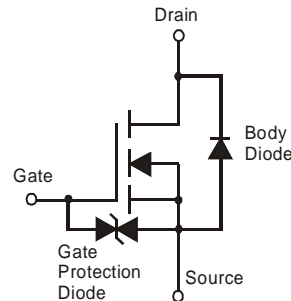
- Case: X2-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208④
- Weight: 0.001 grams (Approximate)



X2-DFN1006-3



Bottom View



Equivalent Circuit

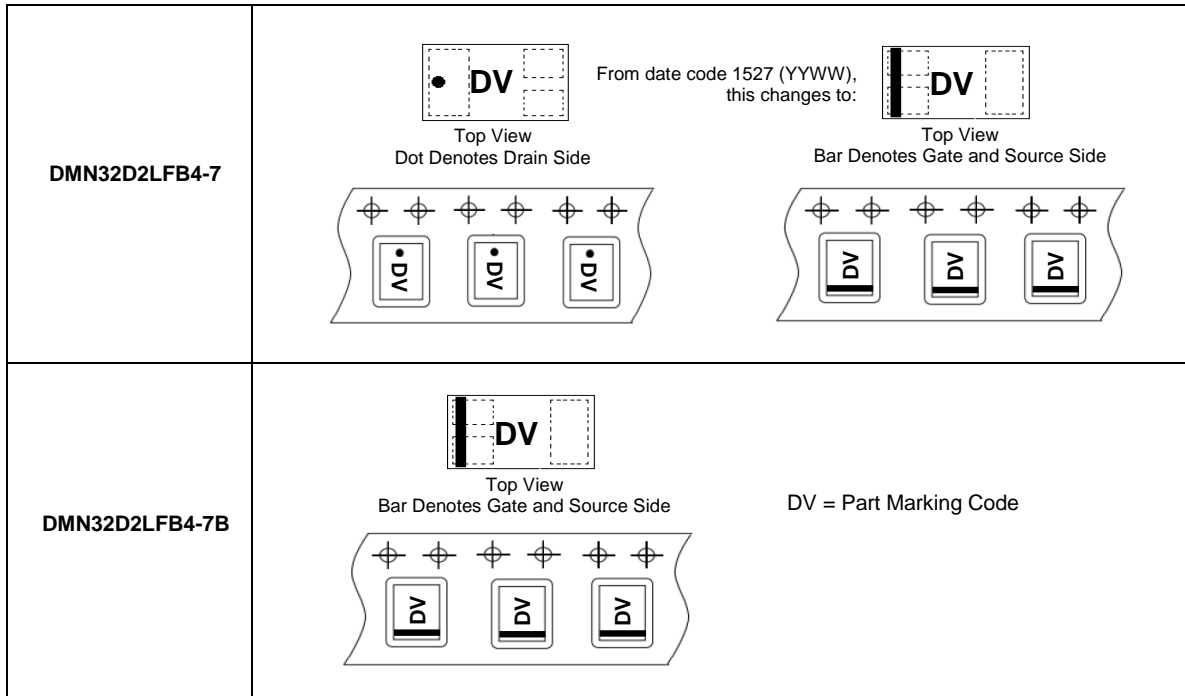

 Top View  
Pin-Out

## Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN32D2LFB4-7	DV	7	8	3,000
DMN32D2LFB4-7B	DV	7	8	10,000

- 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



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

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V <sub>DSS</sub>	30	V
Gate-Source Voltage	V <sub>GSS</sub>	±10	V
Drain Current (Note 5)	I <sub>D</sub>	300	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 PCB, pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com>.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
<b>OFF CHARACTERISTICS (Note 6)</b>							
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 10μA	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	@ T <sub>C</sub> = +25°C V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V	
Gate-Body Leakage	I <sub>GSS</sub>	—	—	±10 ±500	μA nA	V <sub>GS</sub> = ±10V, V <sub>DS</sub> = 0V V <sub>GS</sub> = ±5V, V <sub>DS</sub> = 0V	
<b>ON CHARACTERISTICS (Note 6)</b>							
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.6	—	1.2	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	—	2.2 1.5 1.2	Ω	V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 20mA V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 20mA V <sub>GS</sub> = 4.0V, I <sub>D</sub> = 100mA	
Forward Transconductance	Y <sub>fs</sub>	100	—	—	mS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.1A	
Source-Drain Diode Forward Voltage	V <sub>SD</sub>	0.5	—	1.4	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 115mA	
<b>DYNAMIC CHARACTERISTICS</b>							
Input Capacitance	C <sub>iSS</sub>	—	39	78	pF	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0V f = 1.0MHz	
Output Capacitance	C <sub>oSS</sub>	—	10	20	pF		
Reverse Transfer Capacitance	C <sub>rSS</sub>	—	3.6	7.2	pF		
Switching Time	Turn-on Time	t <sub>on</sub>	—	11	22	nS	V <sub>DD</sub> = 5V, I <sub>D</sub> = 10mA, V <sub>GS</sub> = 0-5V
	Turn-off Time	t <sub>off</sub>	—	51	102	nS	

Note: 6. Short duration pulse test used to minimize self-heating effect.

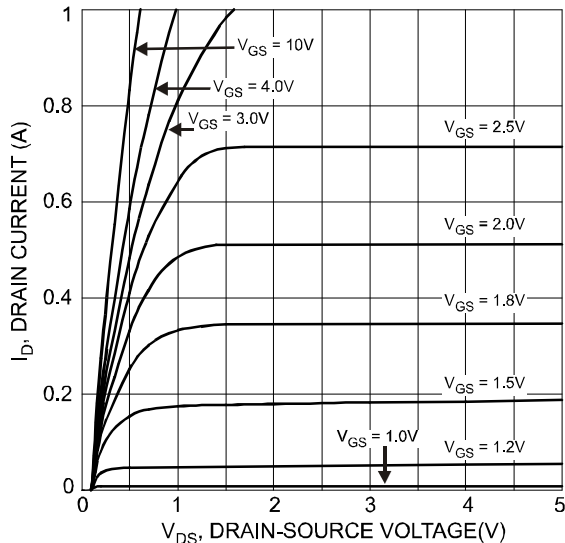


Fig. 1 Typical Output Characteristics

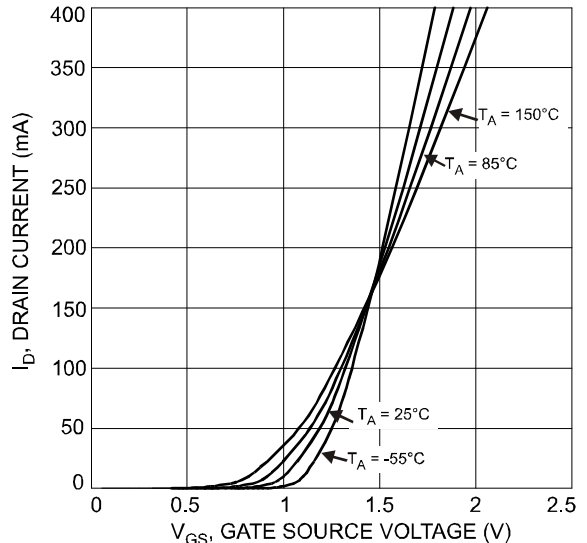


Fig. 2 Typical Transfer Characteristics

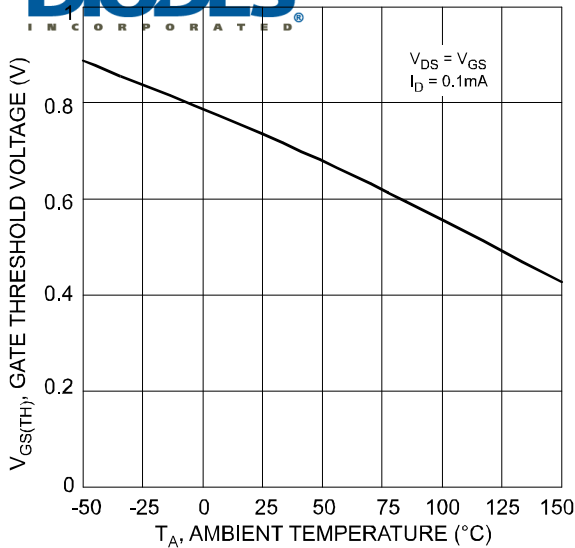


Fig. 3 Gate Threshold Voltage vs. Ambient Temperature

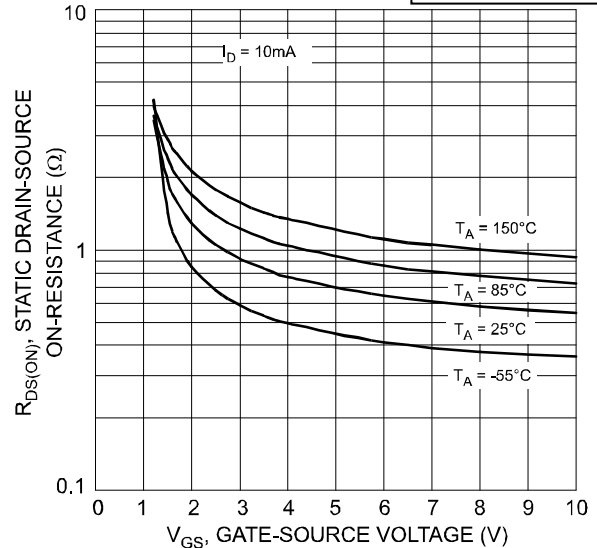


Fig. 4 Static Drain-Source On-Resistance vs. Gate-Source Voltage

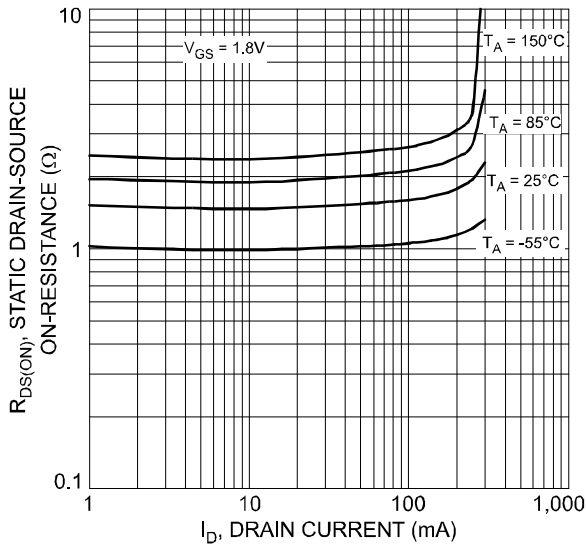


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

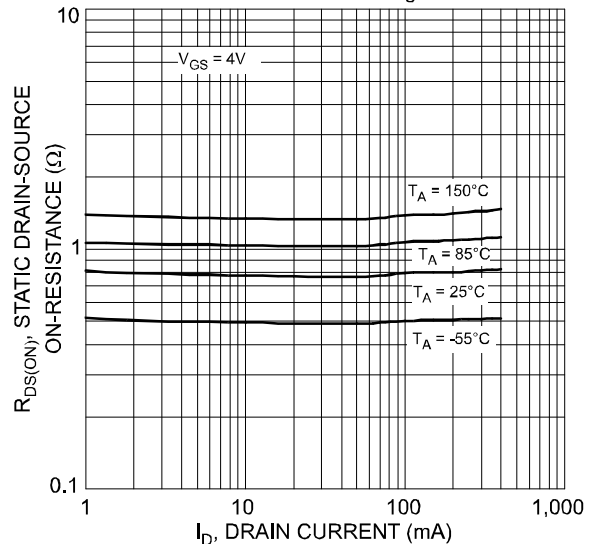


Fig. 6 Static Drain-Source On-Resistance vs. Drain Current

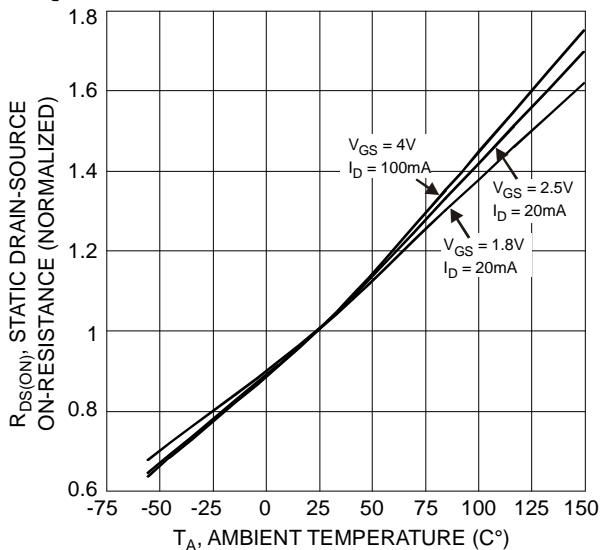


Fig. 7 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

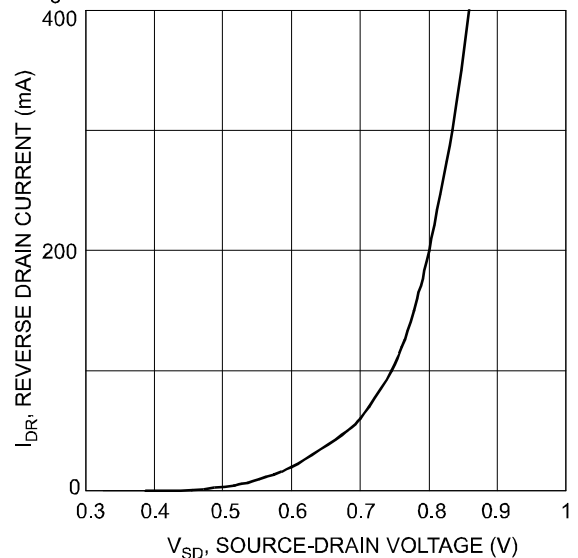


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

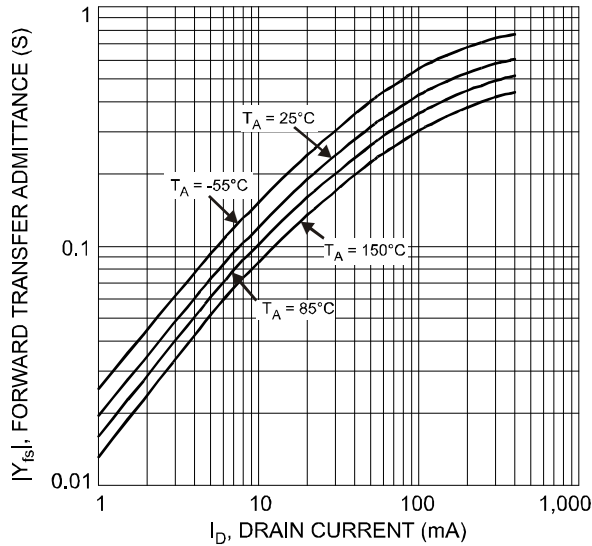


Fig. 9 Forward Transfer Admittance vs. Drain Current

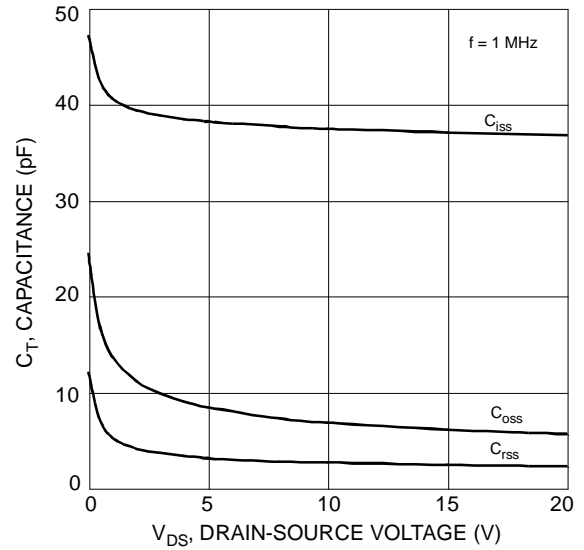
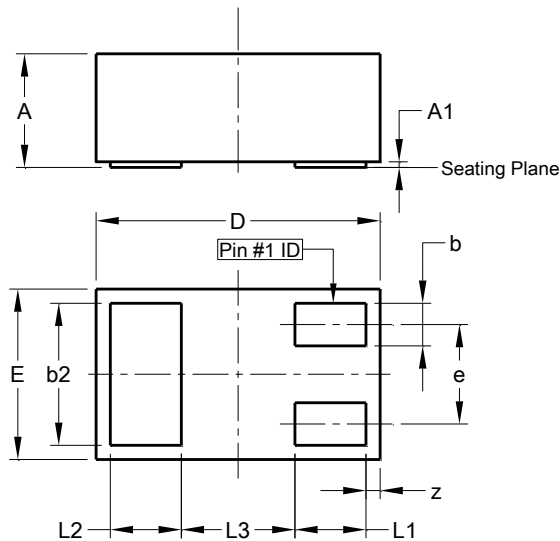


Fig. 10 Typical Capacitance

### Package Outline Dimensions

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

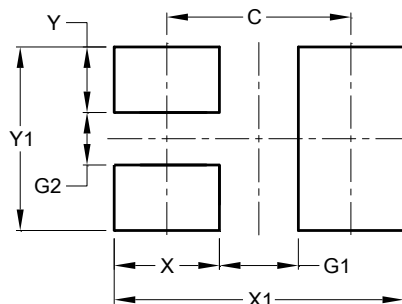


X2-DFN1006-3			
Dim	Min	Max	Typ
A	-	0.40	-
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05

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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