

Product Summary

$V_{(BR)DSS}$	$R_{DS(on) \max}$	$I_D \max$ $T_A = +25^\circ\text{C}$
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

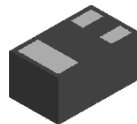
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.2V Max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device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

Mechanical Data

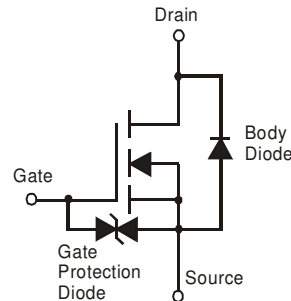
- Case: X2-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208④
- Weight: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



X2-DFN1006-3



Bottom View



Equivalent Circuit



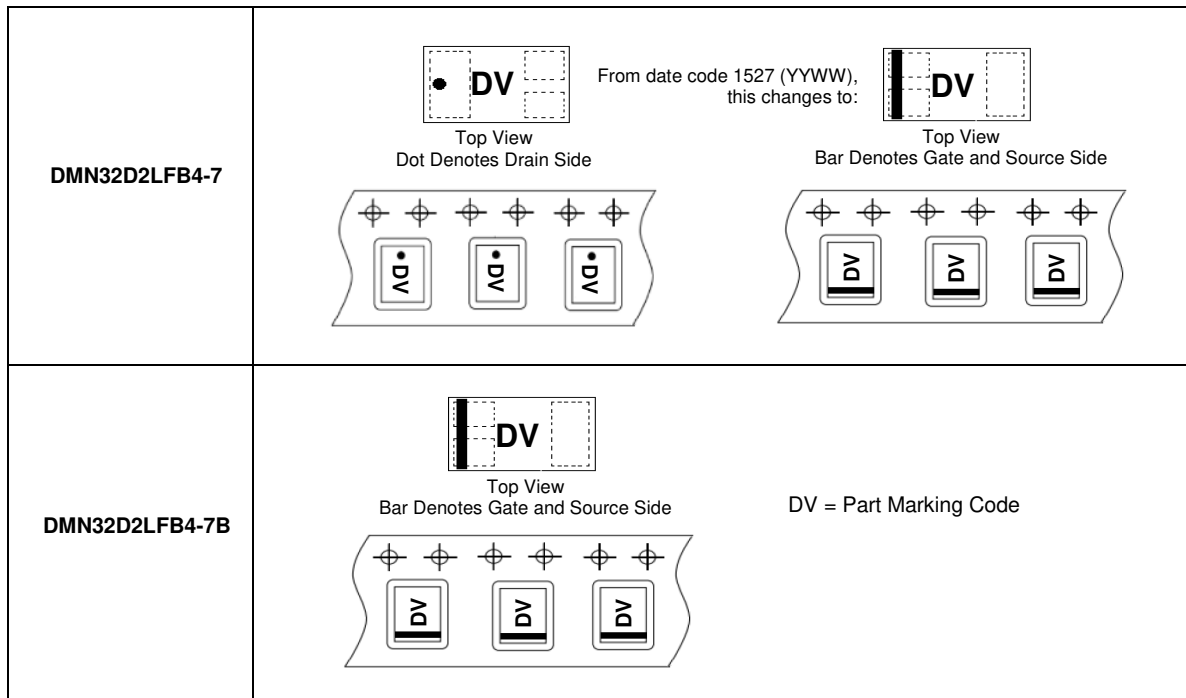
Top View
Pin-Out

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 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±10	V
Drain Current (Note 5)	I _D	300	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 _{θJA}	357	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 6)							
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0V, I_D = 10\mu A$	
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 30V, V_{GS} = 0V$	
Gate-Body Leakage	I_{GSS}	—	—	± 10 ± 500	μA nA	$V_{GS} = \pm 10V, V_{DS} = 0V$ $V_{GS} = \pm 5V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 6)							
Gate Threshold Voltage	$V_{GS(th)}$	0.6	—	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu A$	
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	2.2	Ω	$V_{GS} = 1.8V, I_D = 20mA$	
		—	—	1.5		$V_{GS} = 2.5V, I_D = 20mA$	
		—	—	1.2		$V_{GS} = 4.0V, I_D = 100mA$	
Forward Transconductance	$ Y_{fs} $	100	—	—	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}	—	39	78	pF	$V_{DS} = 3V, V_{GS} = 0V$ $f = 1.0MHz$	
Output Capacitance	C_{oss}	—	10	20	pF		
Reverse Transfer Capacitance	C_{rss}	—	3.6	7.2	pF		
Switching Time	Turn-on Time	t_{on}	—	11	22	nS	$V_{DD} = 5V, I_D = 10mA,$ $V_{GS} = 0-5V$
	Turn-off Time	t_{off}	—	51	102	nS	

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

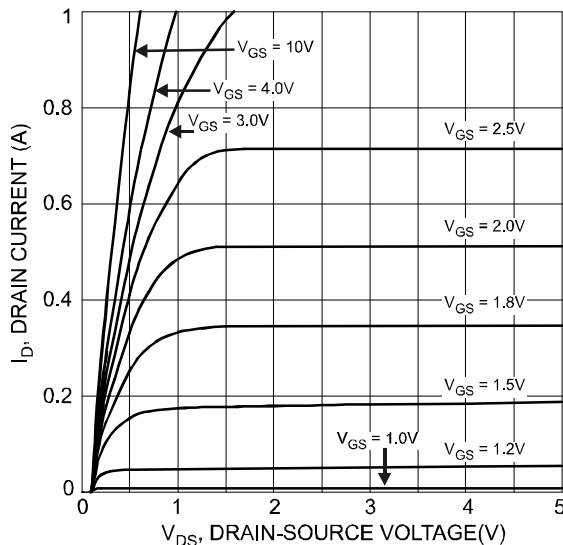


Fig. 1 Typical Output Characteristics

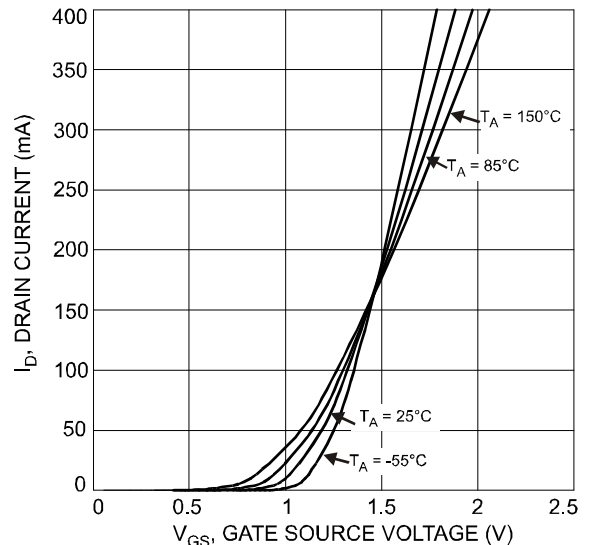


Fig. 2 Typical Transfer Characteristics

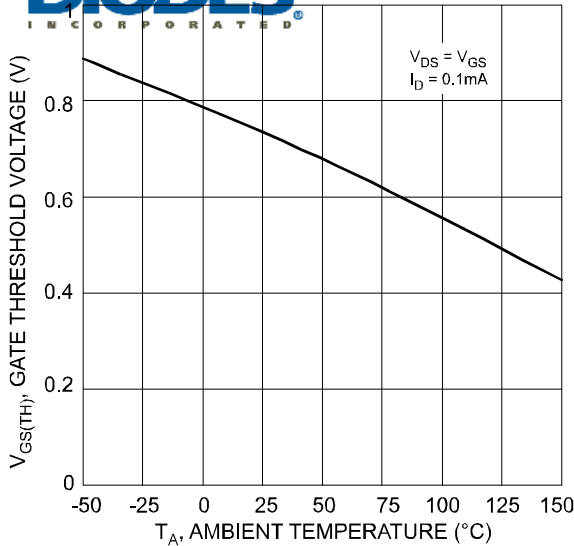


Fig. 3 Gate Threshold Voltage vs. Ambient Temperature

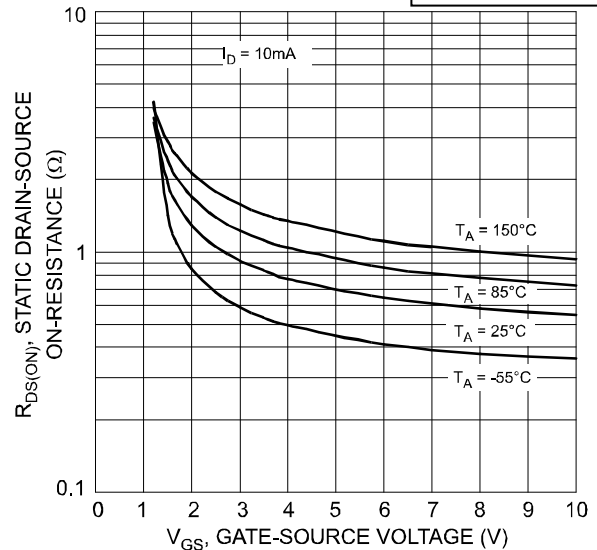


Fig. 4 Static Drain-Source On-Resistance vs. Gate-Source Voltage

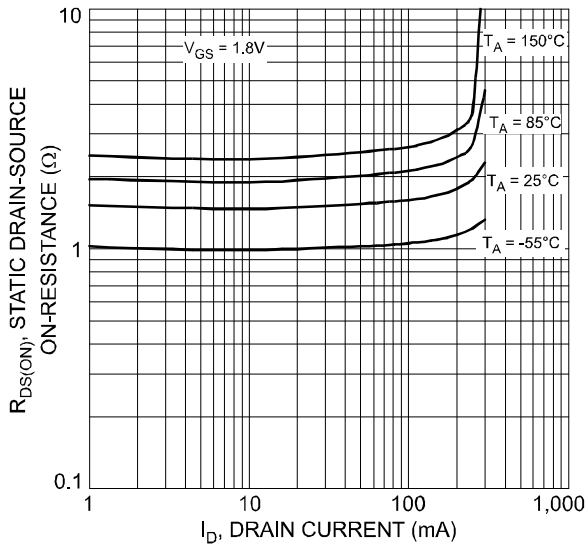


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

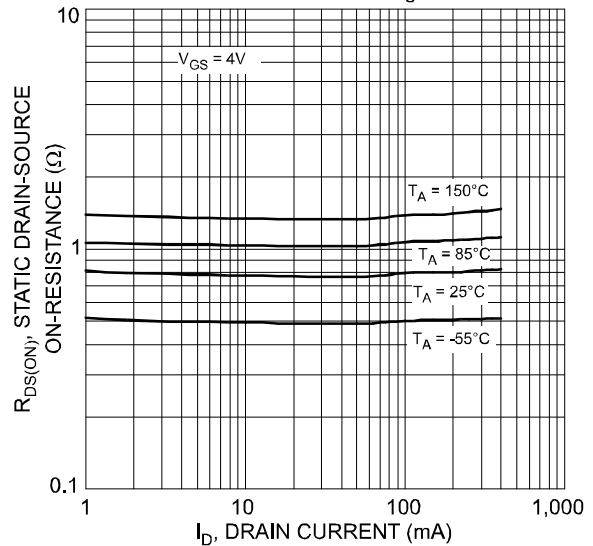


Fig. 6 Static Drain-Source On-Resistance vs. Drain Current

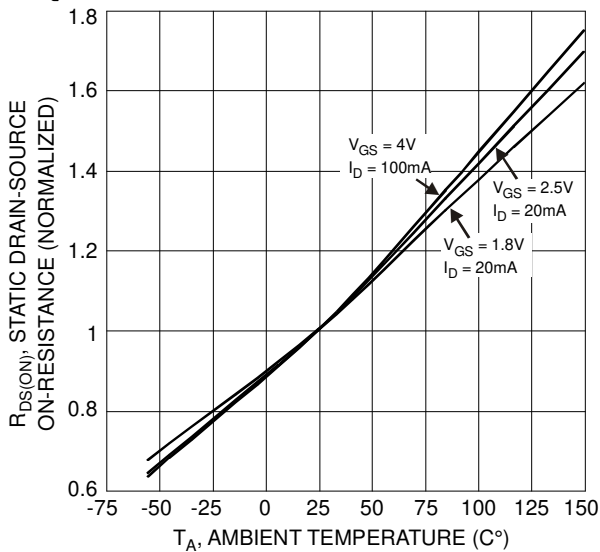


Fig. 7 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

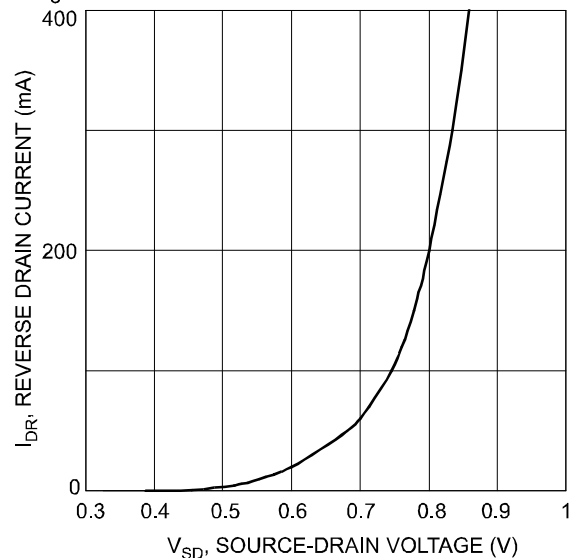


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

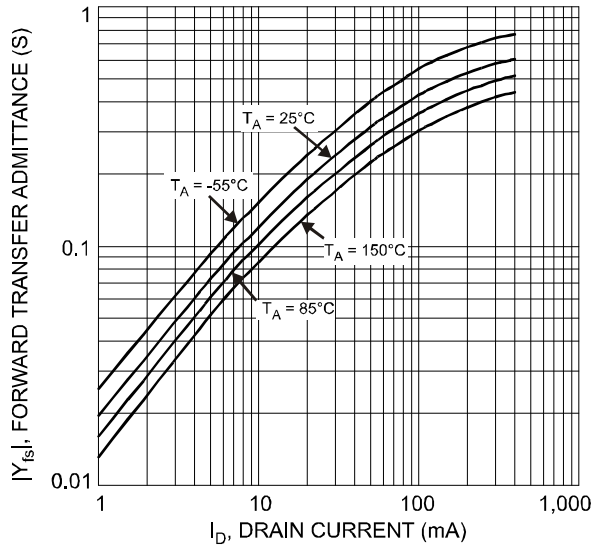


Fig. 9 Forward Transfer Admittance vs. Drain Current

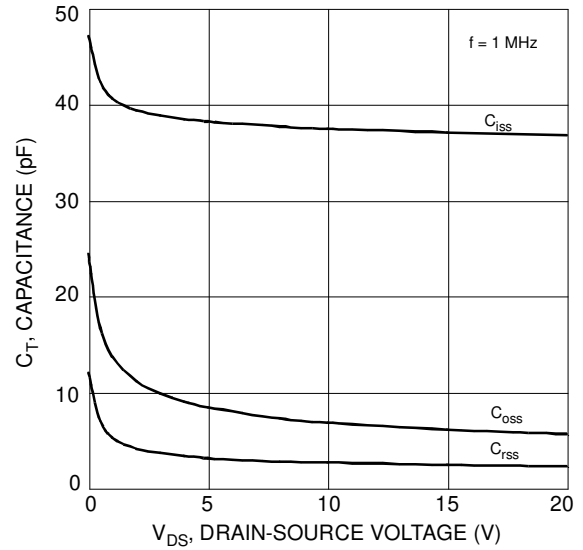
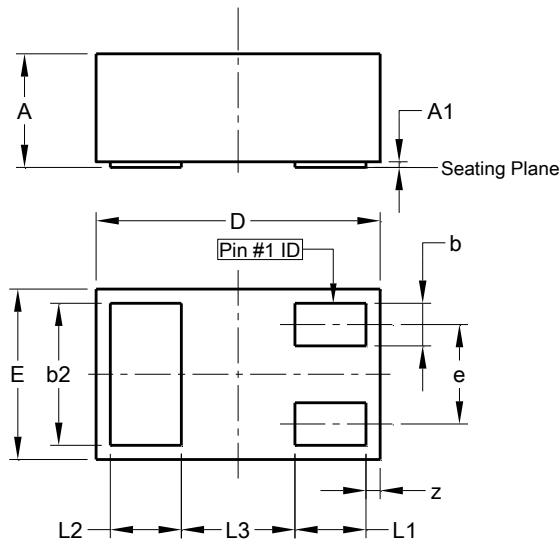


Fig. 10 Typical Capacitance

Package Outline Dimensions

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

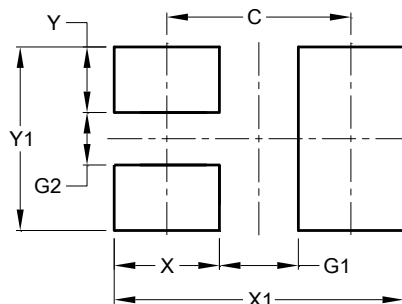


X2-DFN1006-3			
Dim	Min	Max	Typ
A	-	0.40	-
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05

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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