

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
60V	2Ω @ V _{GS} = 4V	320mA
	2.5Ω @ V _{GS} = 2.5V	50mA

Description and Applications

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.

- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

Features and Benefits

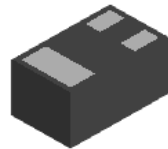
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

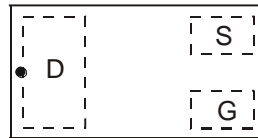
- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ^(e4)
- Weight: 0.001 grams (Approximate)



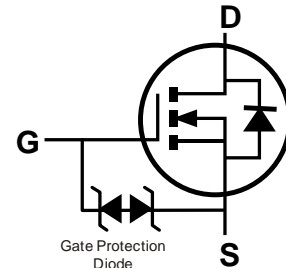
X1-DFN1006-3



Bottom View



Top View
Pin-Out




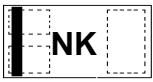
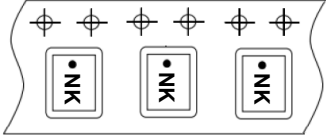
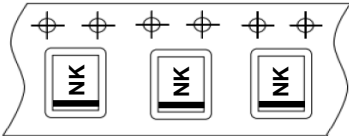

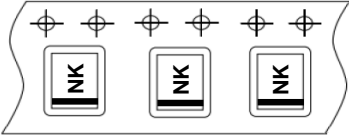
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN62D0LFB-7	X1-DFN1006-3	3,000 /Tape & Reel
DMN62D0LFB-7B	X1-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>DMN62D0LFB-7</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: 10px;">   </div>
<p>DMN62D0LFB-7B</p>	<div style="text-align: center;">  <p>Top View Bar Denotes Gate and Source Side</p> </div> <p style="text-align: right; margin-right: 100px;">NK = Part Marking Code</p> <div style="text-align: center; margin-top: 10px;">  </div>

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 5) V _{GS} = 4.0V	Steady State	T _A = +25°C	I _D	320	mA
		T _A = +70°C		75	
Pulsed Drain Current (Note 6)			I _{DM}	1	A

Thermal Characteristics

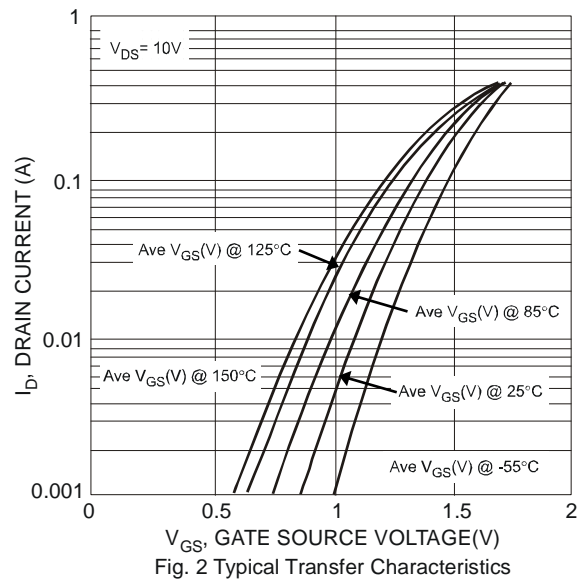
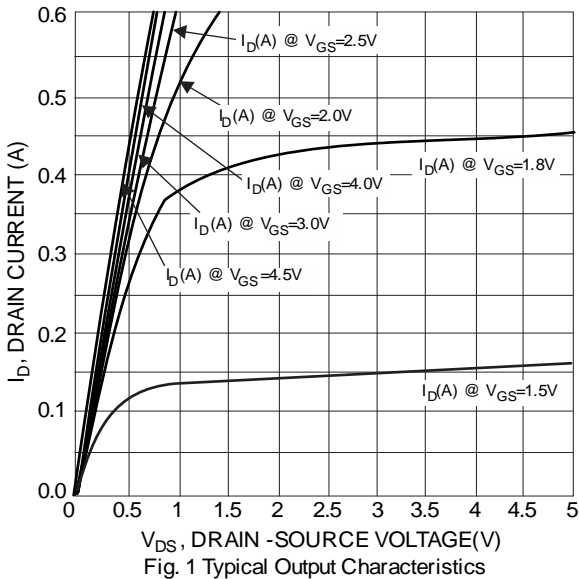
Characteristic	Symbol	Max	Unit
Power Dissipation (Note 5)	P _D	0.5	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)	R _{θJA}	258	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

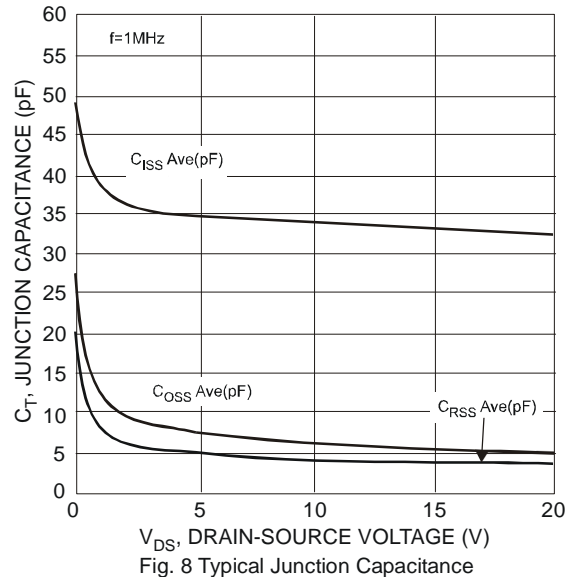
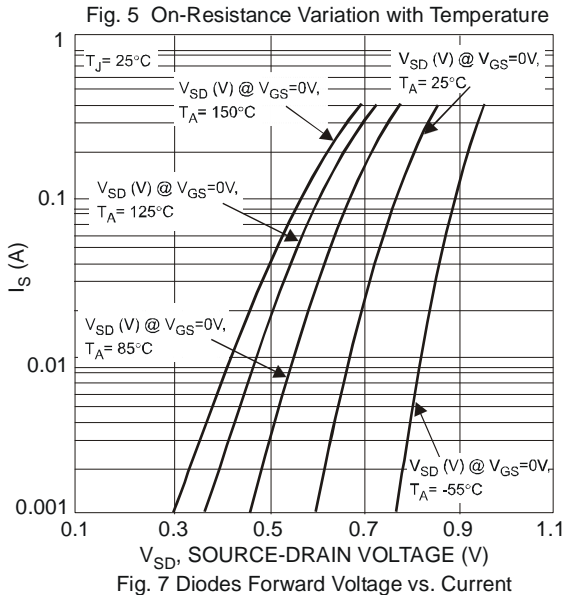
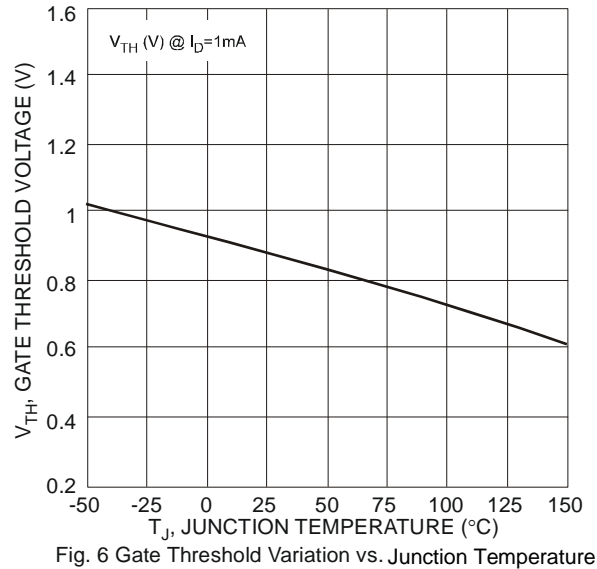
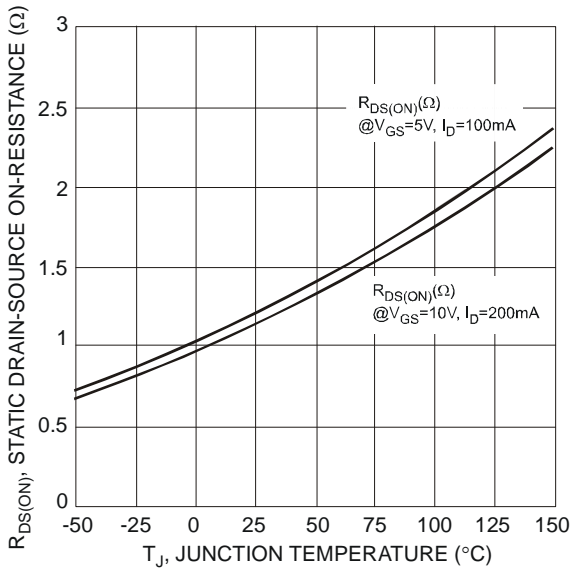
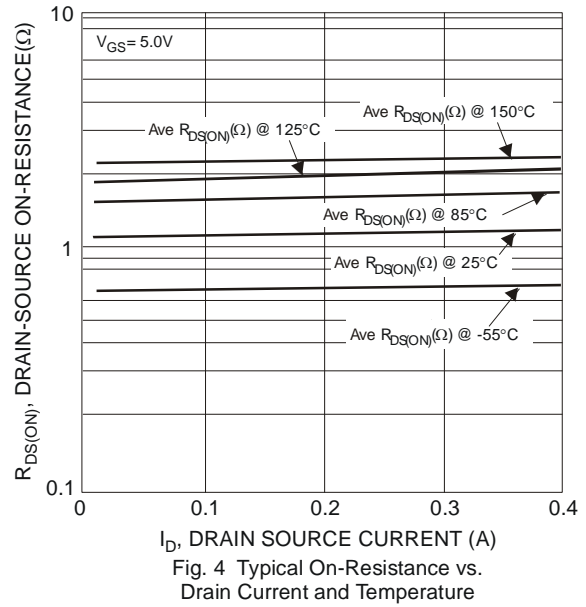
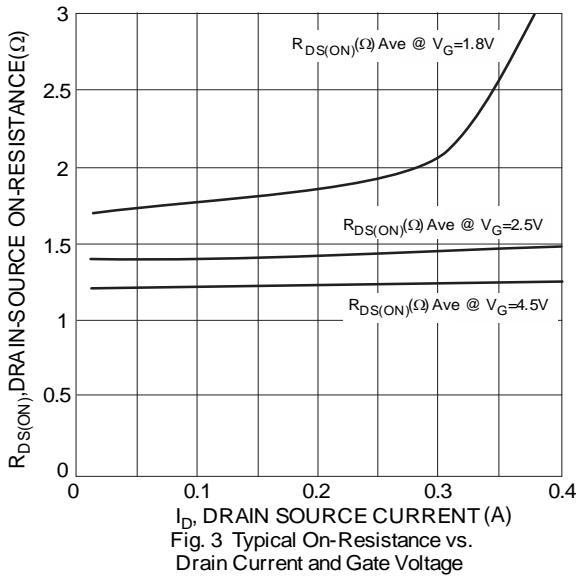
- Notes:
5. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
 6. Repetitive rating, pulse width limited by junction temperature.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	1.0	μA	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 5V, V_{DS} = 0V$
		—	—	± 500	nA	$V_{GS} = \pm 10V, V_{DS} = 0V$
		—	—	± 2.0	μA	$V_{GS} = \pm 15V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.6	—	1.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.3	2	Ω	$V_{GS} = 4V, I_D = 100mA$
		—	1.5	2.5		$V_{GS} = 2.5V, I_D = 50mA$
		—	1.9	3		$V_{GS} = 1.8V, I_D = 50mA$
		—	2.6	—		$V_{GS} = 1.5V, I_D = 10mA$
Forward Transfer Admittance	$ Y_{fs} $	—	0.8	—	S	$V_{DS} = 10V, I_D = 200mA$
Diode Forward Voltage	V_{SD}	—	0.9	1.3	V	$V_{GS} = 0V, I_S = 115mA$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	32	64	pF	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$
Output Capacitance	C_{oss}	—	4.4	9		
Reverse Transfer Capacitance	C_{rss}	—	2.9	6		
Gate Resistance	R_g	—	126	250	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge	Q_g	—	0.45	0.9	nC	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 250mA$
Gate-Source Charge	Q_{gs}	—	0.08	0.2		
Gate-Drain Charge	Q_{gd}	—	0.08	0.2		
Turn-On Delay Time	$t_{D(ON)}$	—	3.4	10	ns	$V_{GS} = 10V, V_{DS} = 30V, R_L = 150\Omega, R_g = 25\Omega, I_D = 200mA$
Turn-On Rise Time	t_r	—	3.4	10	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	26.4	45	ns	
Turn-Off Fall Time	t_f	—	16.3	30	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.





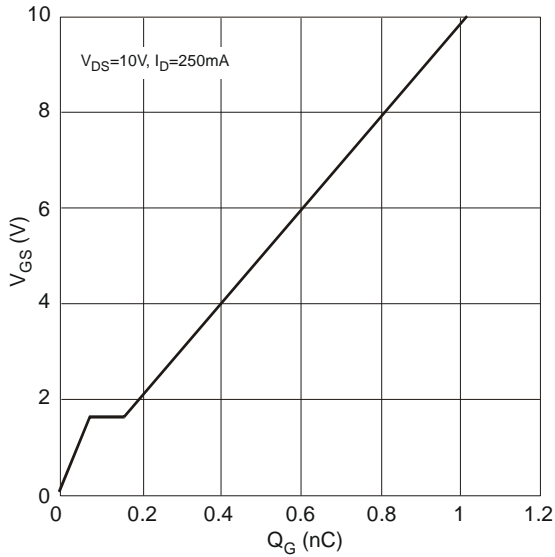


Fig. 9 Gate Charge Characteristics

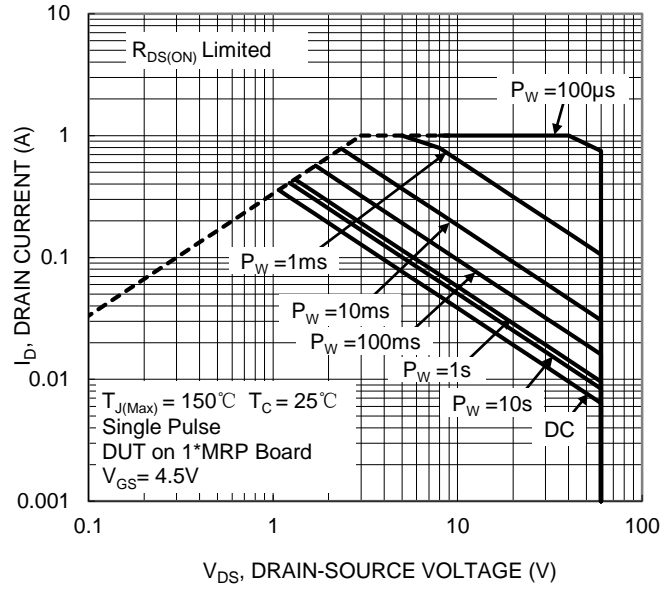


Fig. 10 SOA, Safe Operation Area

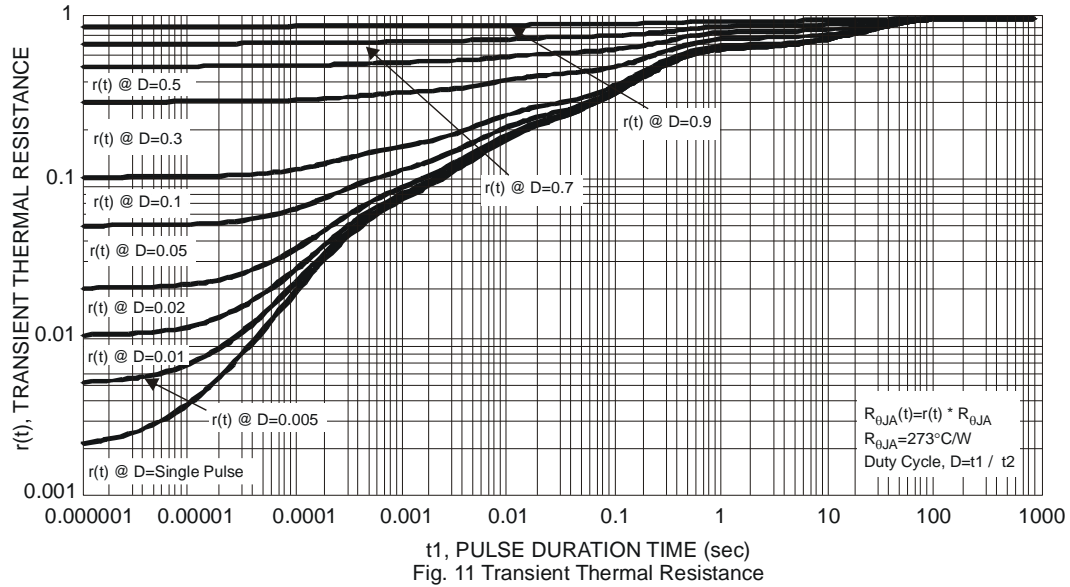
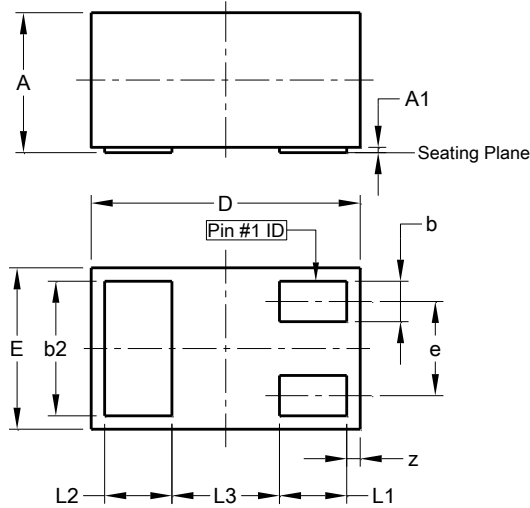


Fig. 11 Transient Thermal Resistance

Package Outline Dimensions

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

X1-DFN1006-3

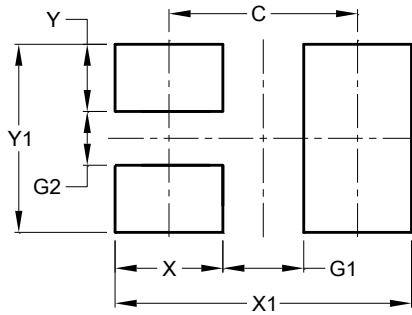


X1-DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
All Dimensions in mm			

Suggested Pad Layout

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

X1-DFN1006-3



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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