

Features

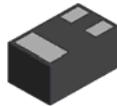
- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **ESD Protected Gate**
- Qualified to AEC-Q101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

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
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.001 grams (approximate)



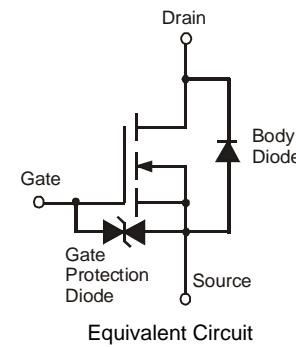
X1-DFN1006-3



Bottom View



Top View
Internal Schematic



Ordering Information (Note 4)

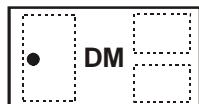
Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN2005LPK-7	DM	7	8	3,000
DMN2005LPK-7B	DM	7	8	10,000

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> 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>.

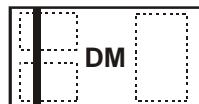
Marking Information

DMN2005LPK-7



Top View
Dot Denotes
Drain Side

DMN2005LPK-7B



Top View
Bar Denotes Gate
and Source Side

DM = Product Type Marking Code

Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current per element (Note 5)	I_D	440	mA

Thermal Characteristics

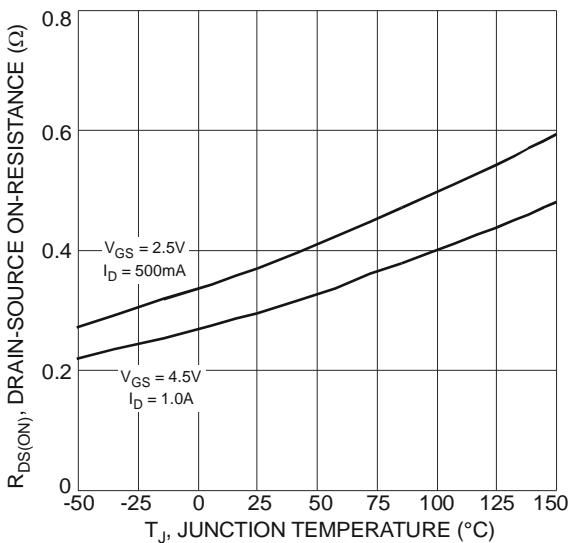
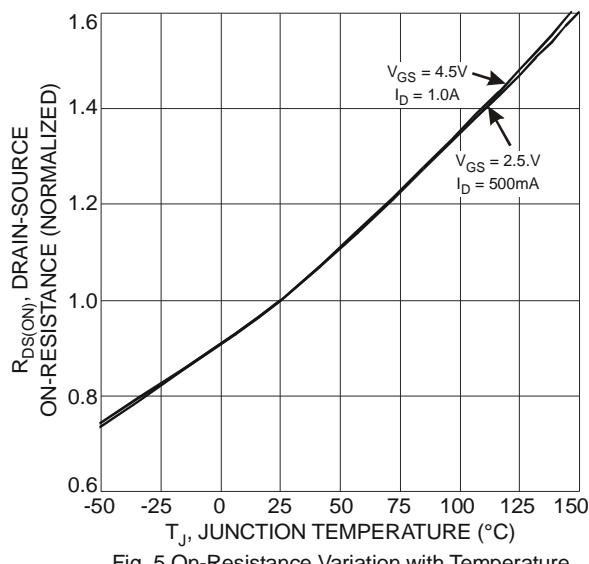
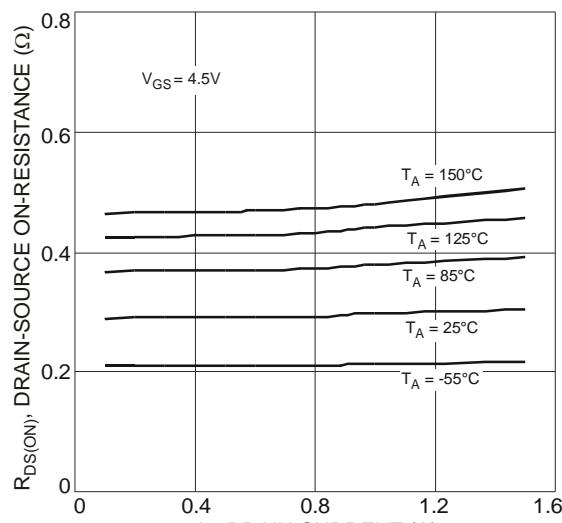
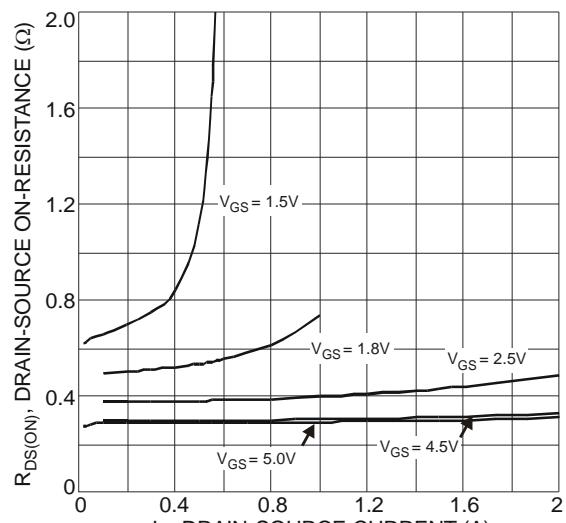
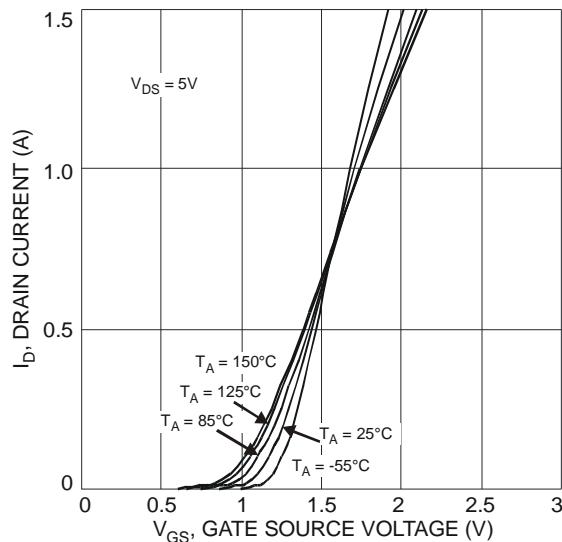
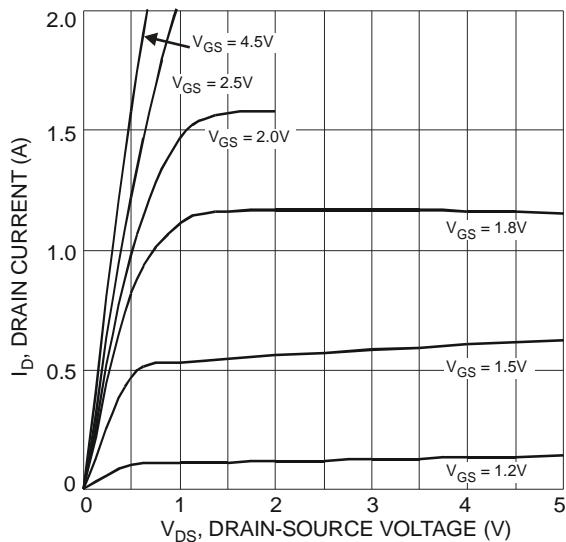
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	450	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	218	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150	°C

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}	20	—	—	V	$V_{GS} = 0\text{V}$, $I_D = 100\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	10	μA	$V_{DS} = 17\text{V}$, $V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 5	μA	$V_{GS} = \pm 8\text{V}$, $V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	0.53	—	1.2	V	$V_{DS} = V_{GS}$, $I_D = 100\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	0.35	1.5	Ω	$V_{GS} = 4\text{V}$, $I_D = 10\text{mA}$
		—	0.4	1.7		$V_{GS} = 2.7\text{V}$, $I_D = 200\text{mA}$
		—	0.45	1.7		$V_{GS} = 2.5\text{V}$, $I_D = 10\text{mA}$
		—	0.55	3.5		$V_{GS} = 1.8\text{V}$, $I_D = 200\text{mA}$
		—	0.65	3.5		$V_{GS} = 1.5\text{V}$, $I_D = 1\text{mA}$
Forward Transfer Admittance	$ Y_{fs} $	40	—	—	mS	$V_{DS} = 3\text{V}$, $I_D = 10\text{mA}$

Notes: 5. Device mounted on FR-4 PCB.

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



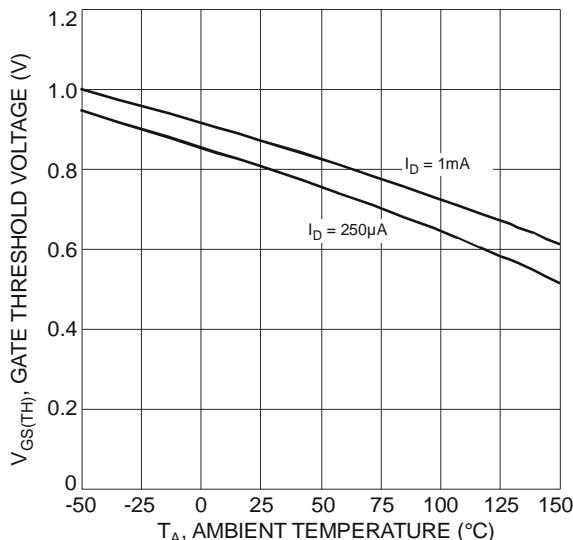


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

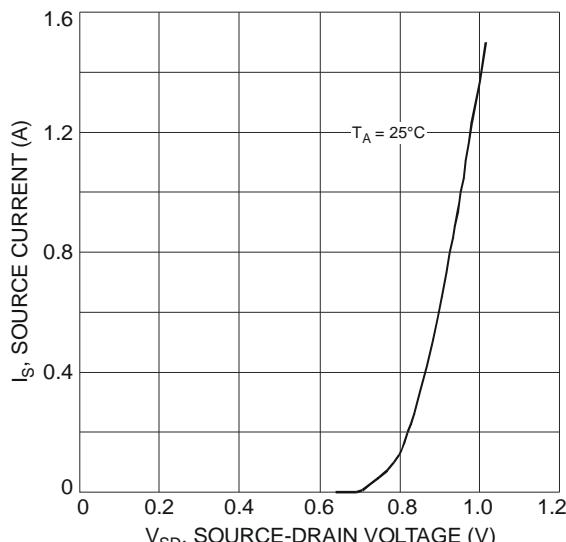


Fig. 8 Diode Forward Voltage vs. Current

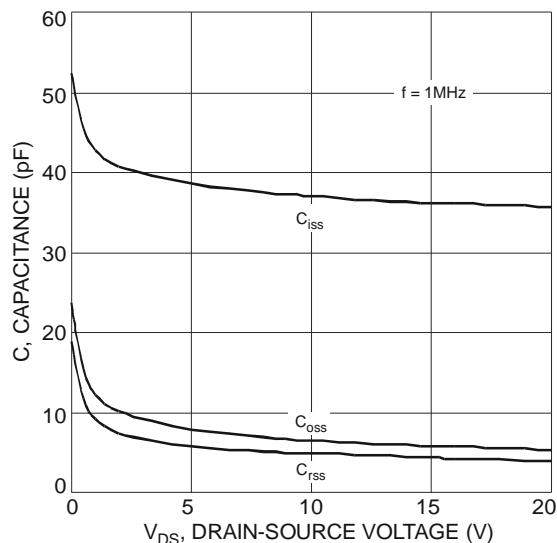


Fig. 9 Typical Capacitance

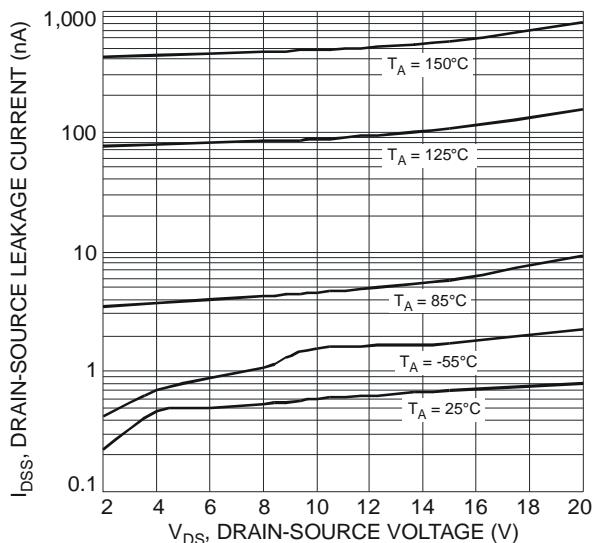


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

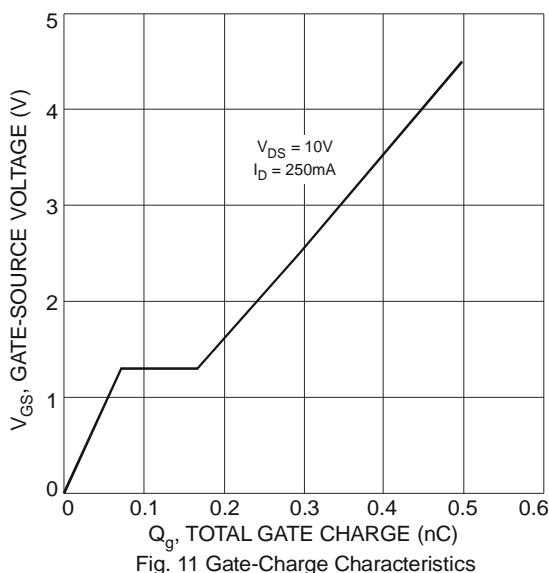
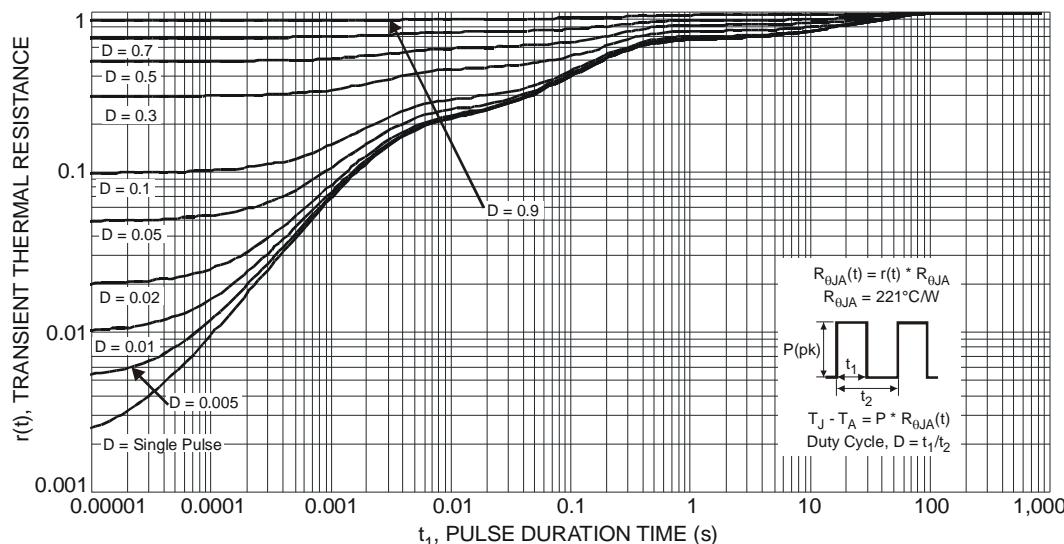
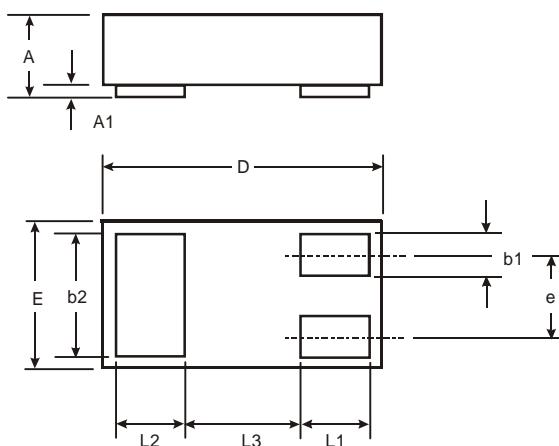


Fig. 11 Gate-Charge Characteristics



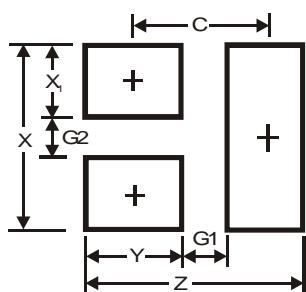
Package Outline Dimensions



X1-DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.03
b1	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

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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