25V N-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- 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 1kV**
- **Qualified to AEC-Q101 Standards for High Reliability**

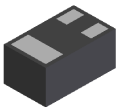
Mechanical Data

- 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
- Terminals: Finish – NiPdAu over Copper Leadframe; Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.001 grams (Approximate)

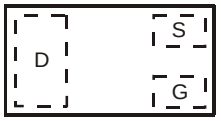


ESD PROTECTED TO 1kV

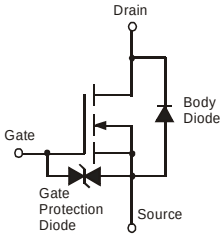
X1-DFN1006-3



Bottom View



Top View
Internal Schematic



Equivalent Circuit

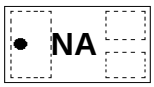
Ordering Information (Note 3)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN2600UFB-7	NA	7	8	3000
DMN2600UFB-7B	NA	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.

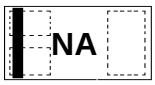
Marking Information

DMN2600UFB-7

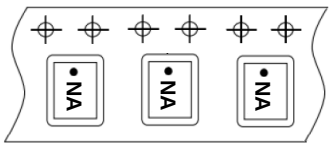


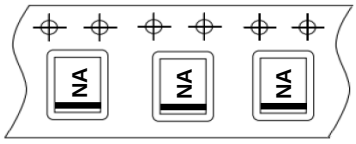
Top View
Dot Denotes Drain Side

From date code 1527 (YYWW), this changes to:

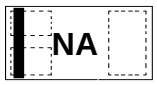


Top View
Bar Denotes Gate and Source Side



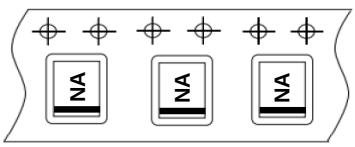


DMN2600UFB-7B



Top View
Bar Denotes Gate and Source Side

NA = Part Marking Code



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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	25	V
Gate-Source Voltage			V_{GSS}	±8	V
Continuous Drain Current (Note 4)	Steady State	T_A = +25°C T_A = +85°C	I_D	1.3 0.9	A
Pulsed Drain Current			I_{DM}	3.0	A

Thermal Characteristics (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	0.54	W
Thermal Resistance, Junction to Ambient @T_A = +25°C	$R_{\theta JA}$	234	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	25	-	-	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	-	-	1	µA	V_{DS} = 25V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	10	µA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.45	-	1.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	-	350	mΩ	V_{GS} = 4.5V, I_D = 200mA
				450		V_{GS} = 2.5V, I_D = 100mA
				600		V_{GS} = 1.8V, I_D = 75mA
Forward Transfer Admittance	$\|Y_{fs}\|$	40	-	-	mS	V_{DS} = 3V, I_D = 200mA
Diode Forward Voltage	V_{SD}	-	-	1.2	V	V_{GS} = 0V, I_S = 300mA
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	70.13	-	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	7.56	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	5.59	-	pF	
Gate Resistance	R_g	-	72.3	-	Ω	V_{DS} =0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	-	0.85	-	nC	V_{GS} = 4.5V, V_{DS} = 15V, I_D = 1A
Gate-Source Charge	Q_{gs}	-	0.16	-	nC	
Gate-Drain Charge	Q_{gd}	-	0.11	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	4.1	-	ns	V_{DS} = 15V, R_L=15Ω V_{GS} = 10V, R_G = 6Ω
Turn-On Rise Time	t_r	-	11.5	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	34.8	-	ns	
Turn-Off Fall Time	t_f	-	20.9	-	ns	

Notes: 4. Device mounted on FR-4 substrate PCB board, with minimum recommended pad layout.
5. Short duration pulse test used to minimize self-heating effect.
6. Guaranteed by design. Not subject to production testing.

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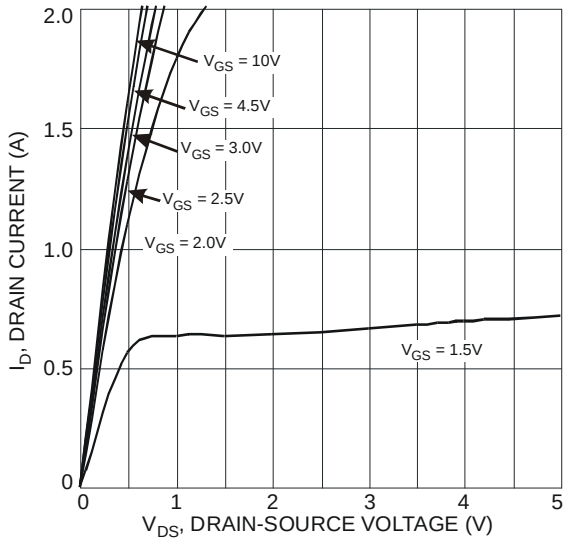

Fig. 1 Typical Output Characteristic

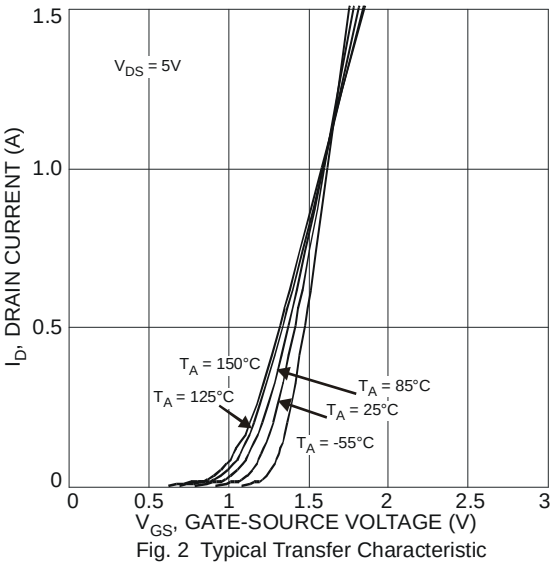

Fig. 2 Typical Transfer Characteristic

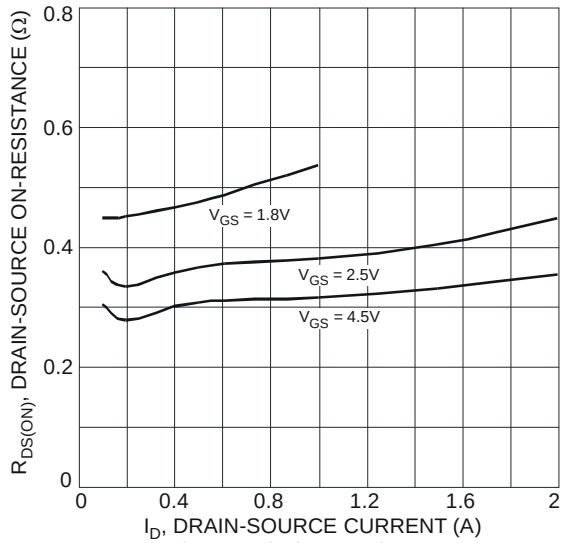

Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

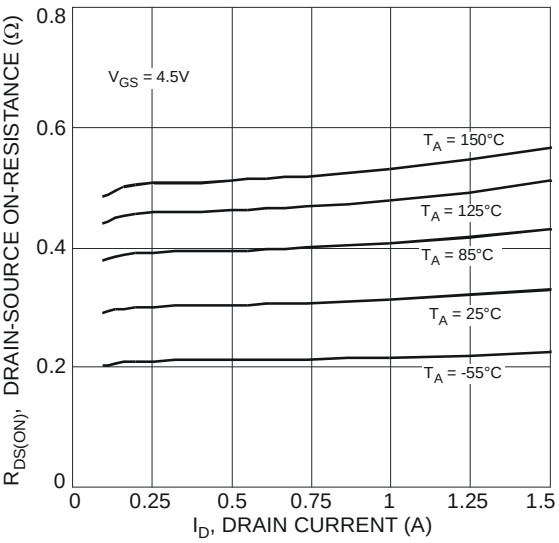

Fig. 4 Typical On-Resistance
vs. Drain Current and Temperature

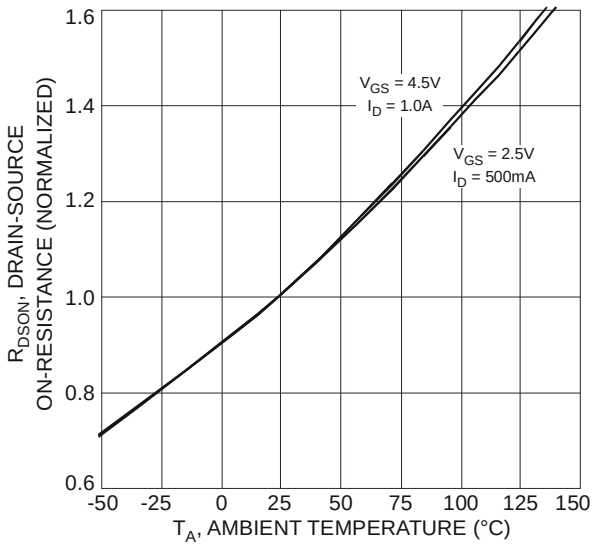

Fig. 5 On-Resistance Variation with Temperature

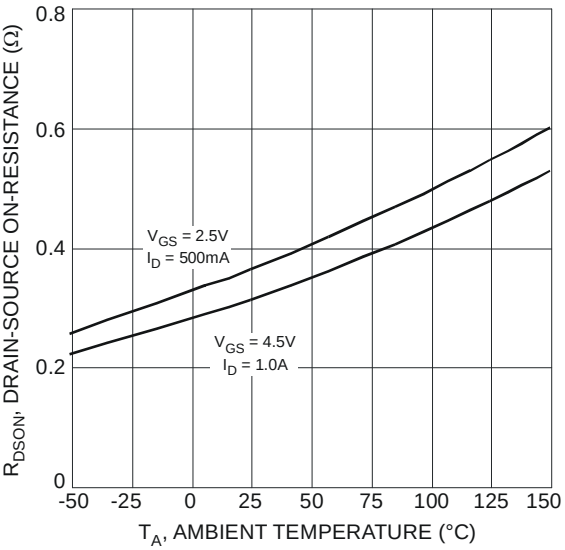

Fig. 6 On-Resistance Variation with Temperature

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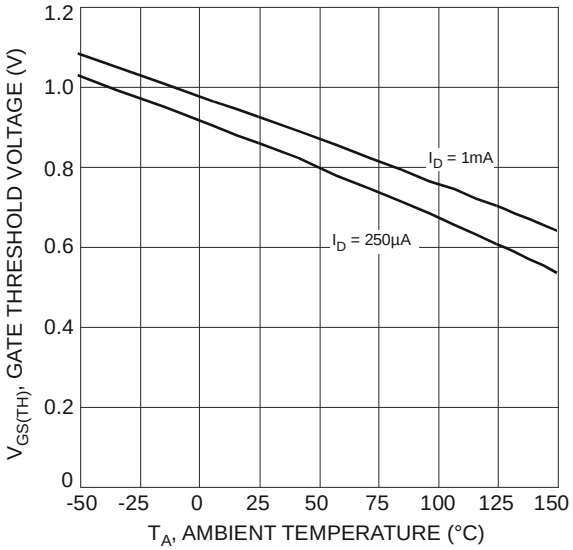

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

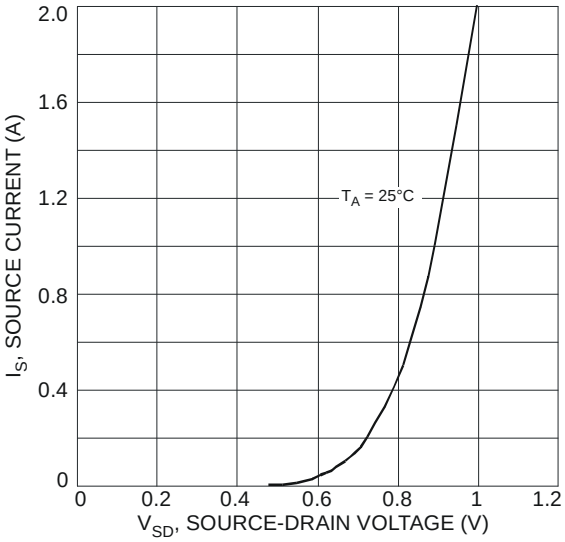

Fig. 8 Diode Forward Voltage vs. Current

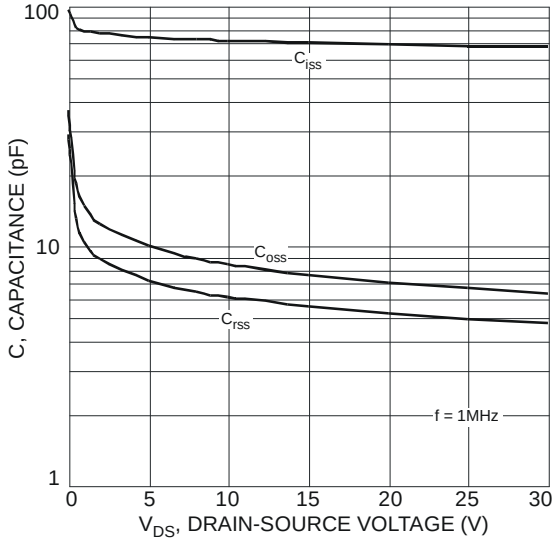

Fig. 9 Typical Total Capacitance

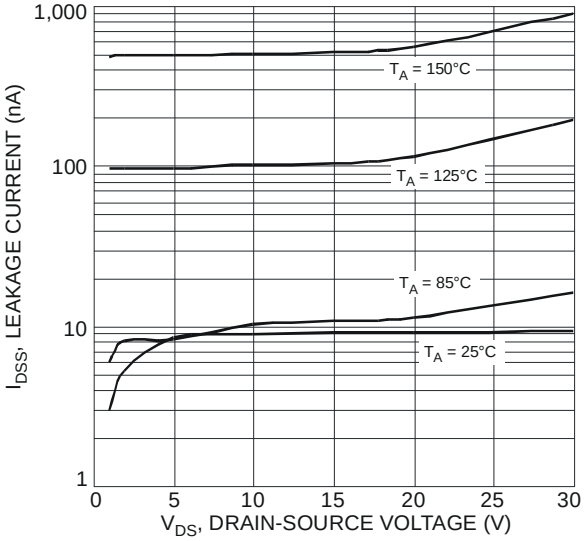

Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

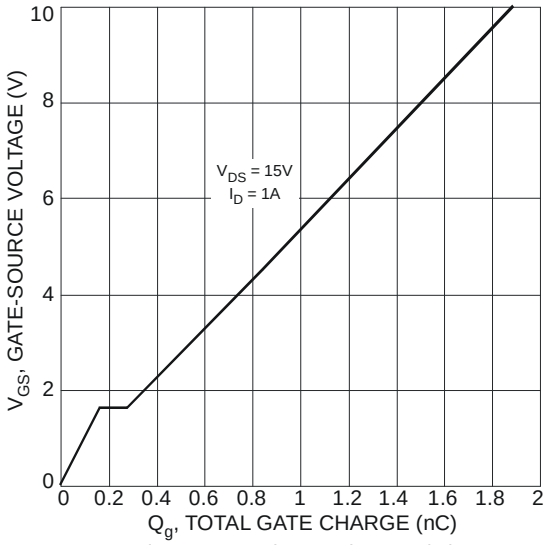

Fig. 11 Gate-Charge Characteristics

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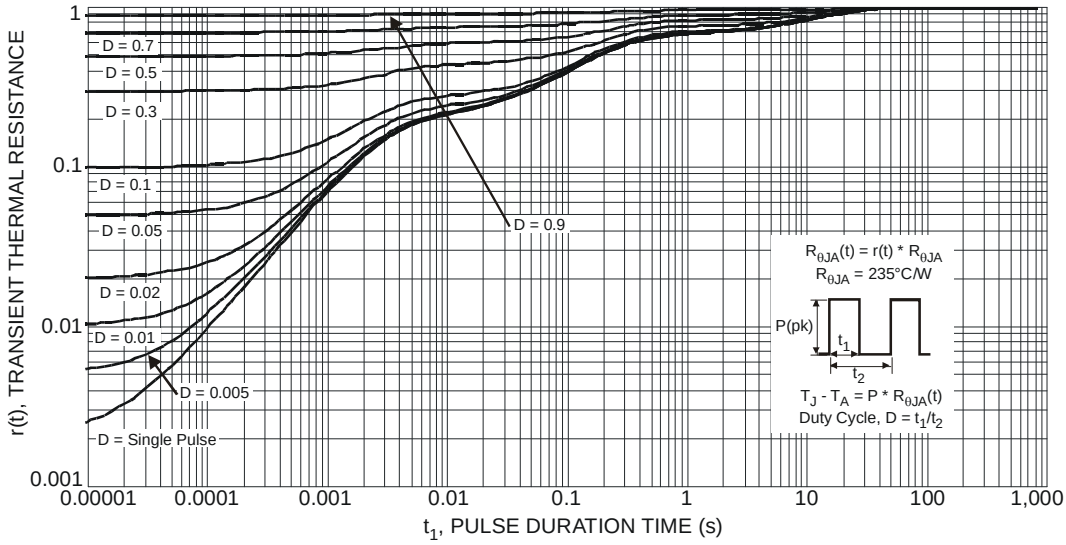
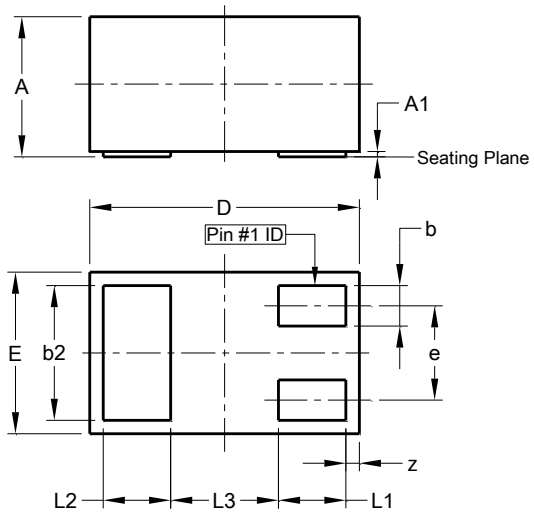


Fig. 12 Transient Thermal Response

Package Outline Dimensions

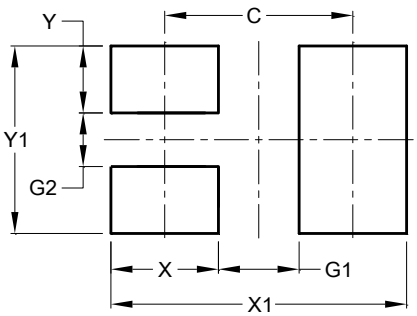
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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 AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for 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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