

## Features

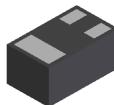
- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- ESD Protected Gate 1kV
- Qualified to AEC-Q101 Standards for High Reliability

## Mechanical Data

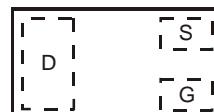
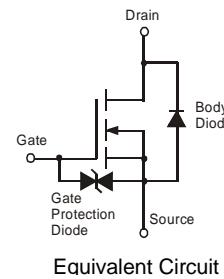
- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe; Solderable per MIL-STD-202, Method 208<sup>④</sup>
- Weight: 0.001 grams (Approximate)



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](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

<b>DMN2600UFB-7</b>	 <b>NA</b> Top View Dot Denotes Drain Side	From date code 1527 (YYWW), this changes to:  <b>NA</b> Top View Bar Denotes Gate and Source Side
<b>DMN2600UFB-7B</b>	 <b>NA</b> Top View Bar Denotes Gate and Source Side	<b>NA</b> = Part Marking Code  <b>NA</b>

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

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

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$  unless otherwise specified.)

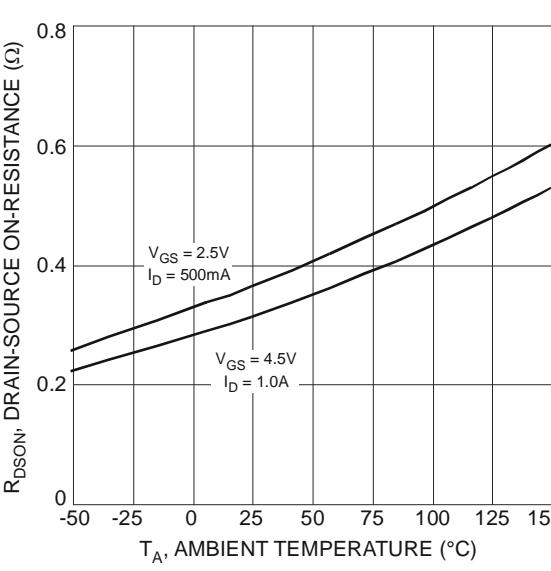
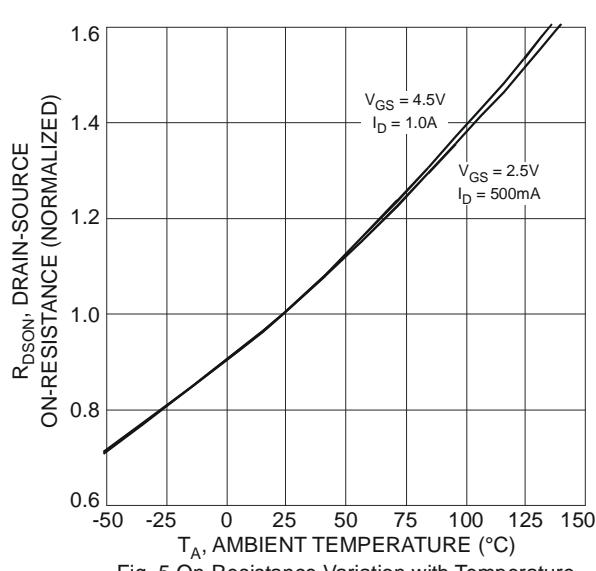
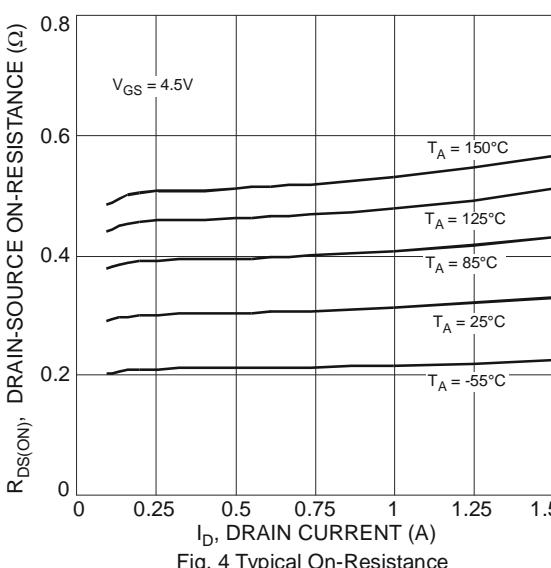
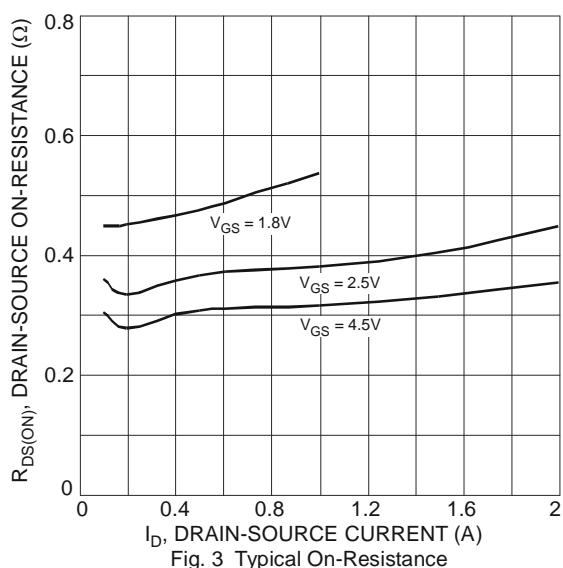
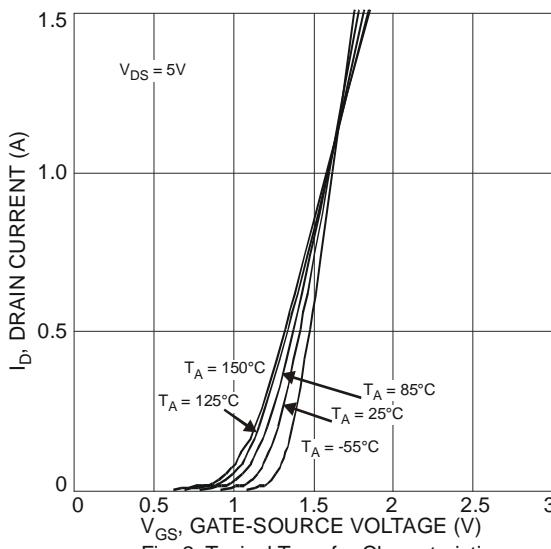
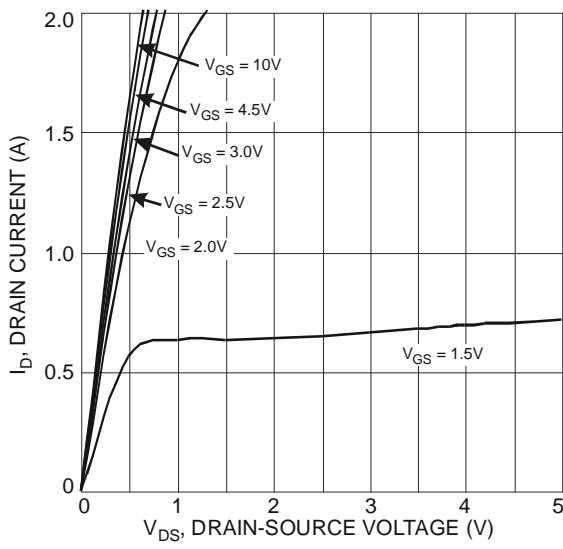
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	$P_D$	0.54	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$	$R_{\theta JA}$	234	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

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

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



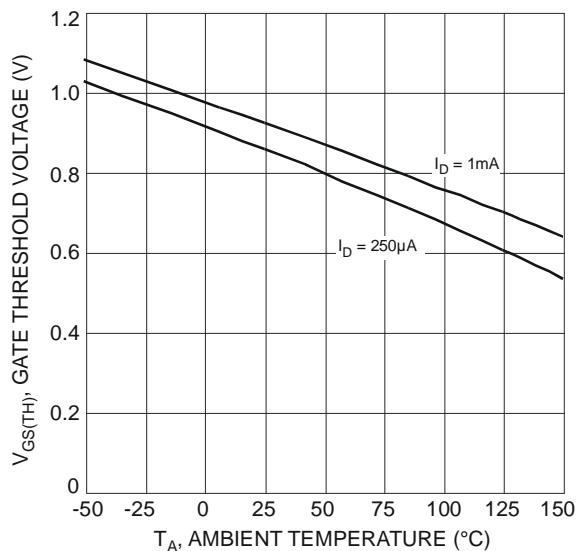


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

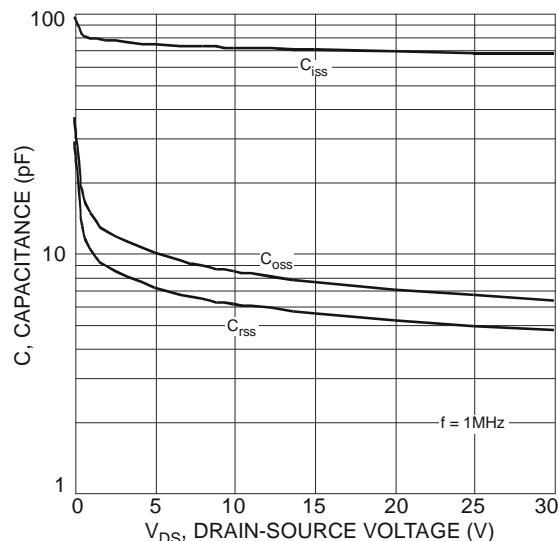


Fig. 9 Typical Total Capacitance

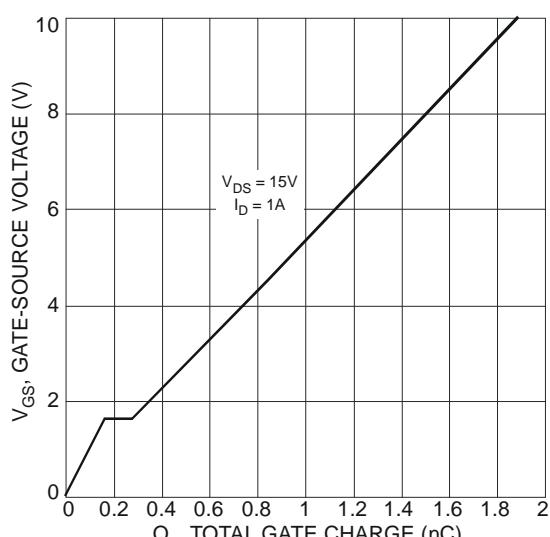


Fig. 11 Gate-Charge Characteristics

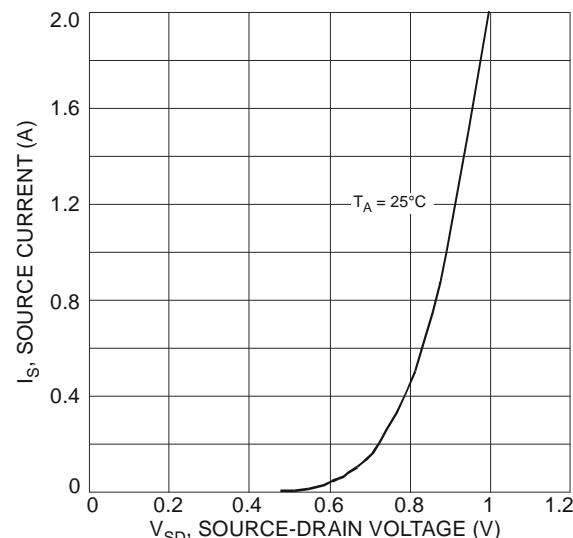


Fig. 8 Diode Forward Voltage vs. Current

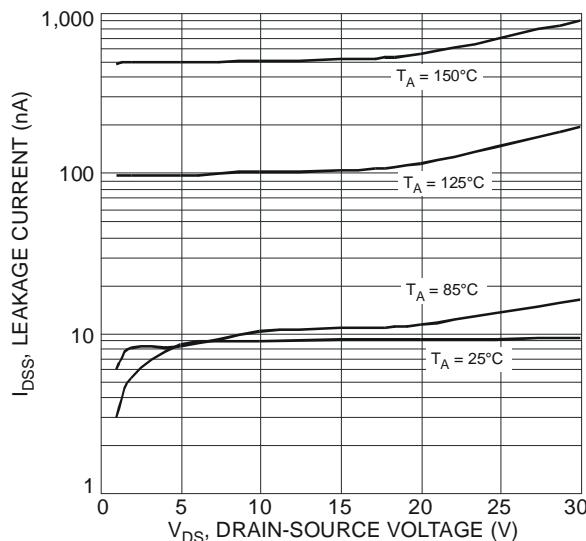


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

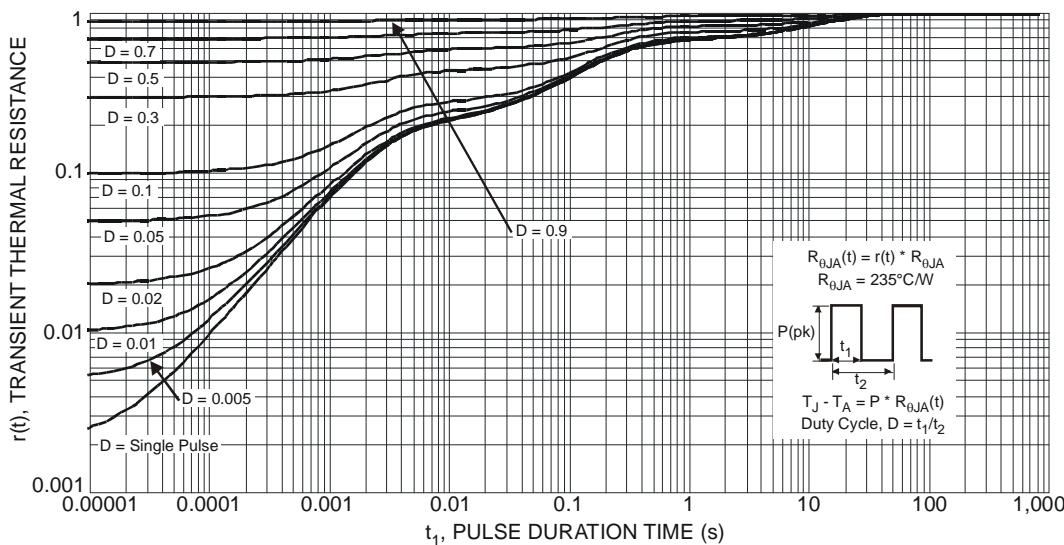
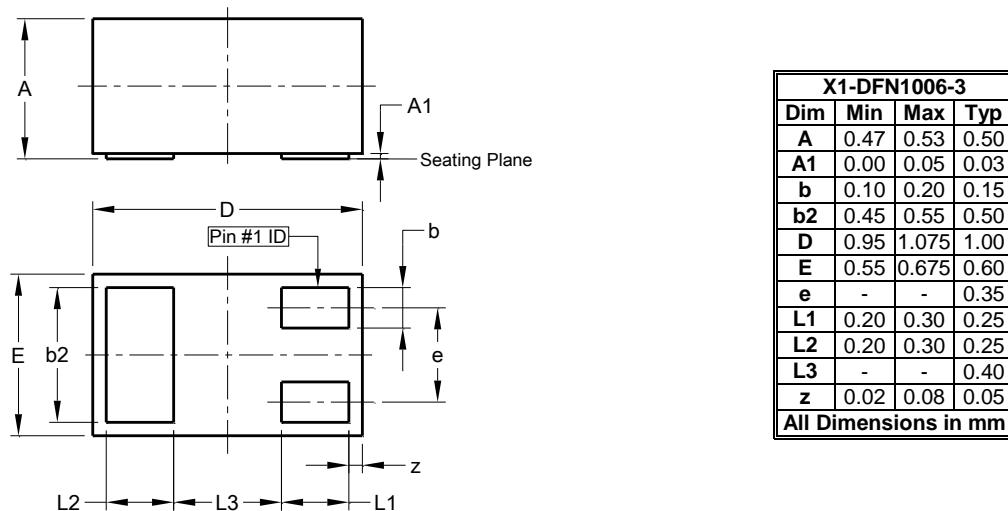


Fig. 12 Transient Thermal Response

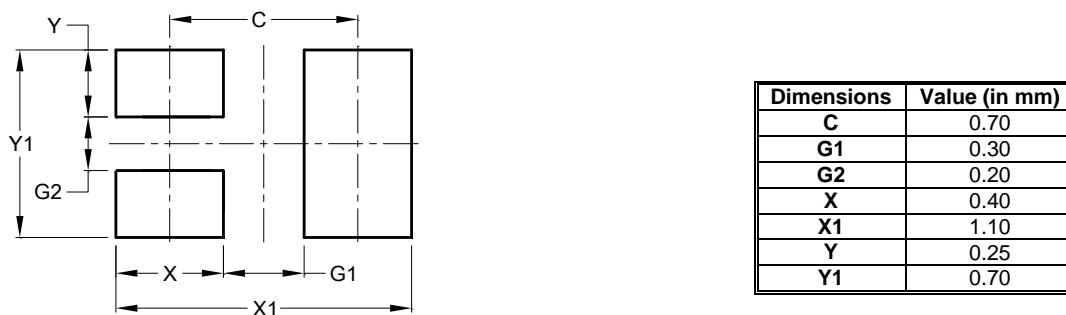
## Package Outline Dimensions

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



## Suggested Pad Layout

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



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