

## Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **ESD Protected Gate 1kV**
- **Qualified to AEC-Q101 Standards for High Reliability**

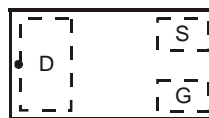
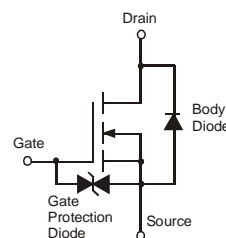
## Mechanical Data

- Case: 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
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.001 grams (approximate)

DFN1006-3



Bottom View


 Top View  
 Internal Schematic


Equivalent Circuit

## Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	25	V
Gate-Source Voltage			V <sub>GSS</sub>	±8	V
Continuous Drain Current (Note 3)	Steady State	T <sub>A</sub> = 25°C	I <sub>D</sub>	1.3	A
		T <sub>A</sub> = 85°C		0.9	
Pulsed Drain Current			I <sub>DM</sub>	3.0	A

## Thermal Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Power Dissipation (Note 3)			P <sub>D</sub>	0.54	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C			R <sub>θJA</sub>	234	°C/W
Operating and Storage Temperature Range			T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. No purposefully added lead
  2. Diodes Inc's "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php)
  3. Device mounted on FR-4 substrate PCB board, with minimum recommended pad layout.

# Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	25	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current T <sub>J</sub> = 25°C	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	10	μA	V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.45	-	1.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	-	350	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 200mA
				450		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 100mA
				600		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 75mA
Forward Transfer Admittance	Y <sub>fs</sub>	40	-	-	mS	V <sub>DS</sub> = 3V, I <sub>D</sub> = 200mA
Diode Forward Voltage	V <sub>SD</sub>	-	-	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA
<b>DYNAMIC CHARACTERISTICS (Note 5)</b>						
Input Capacitance	C <sub>iss</sub>	-	70.13	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	7.56	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	5.59	-	pF	
Gate Resistance	R <sub>g</sub>	-	72.3	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge	Q <sub>g</sub>	-	0.85	-	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 1A
Gate-Source Charge	Q <sub>gs</sub>	-	0.16	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	0.11	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	4.1	-	ns	V <sub>DS</sub> = 15V, R <sub>L</sub> = 15Ω V <sub>GS</sub> = 10V, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	-	11.5	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	34.8	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	20.9	-	ns	

Notes: 4. Short duration pulse test used to minimize self-heating effect.  
5. Guaranteed by design. Not subject to production testing.

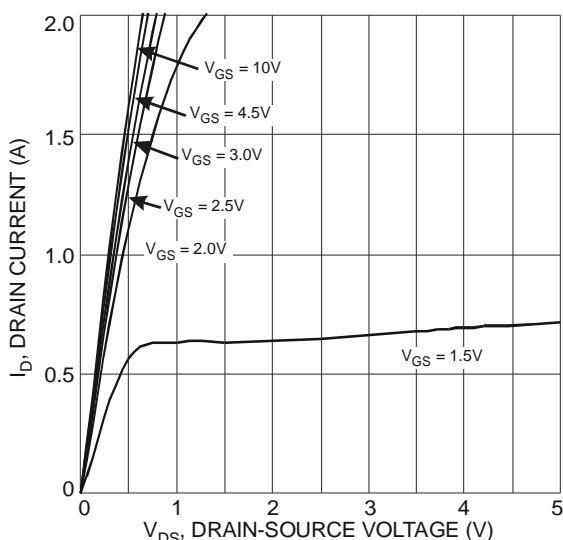


Fig. 1 Typical Output Characteristic

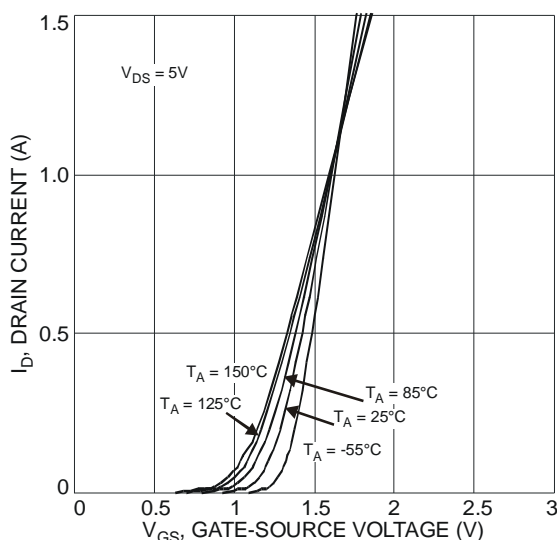


Fig. 2 Typical Transfer Characteristic

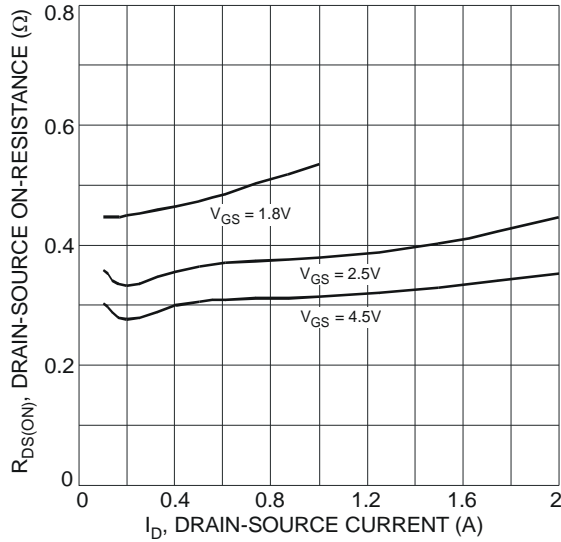


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

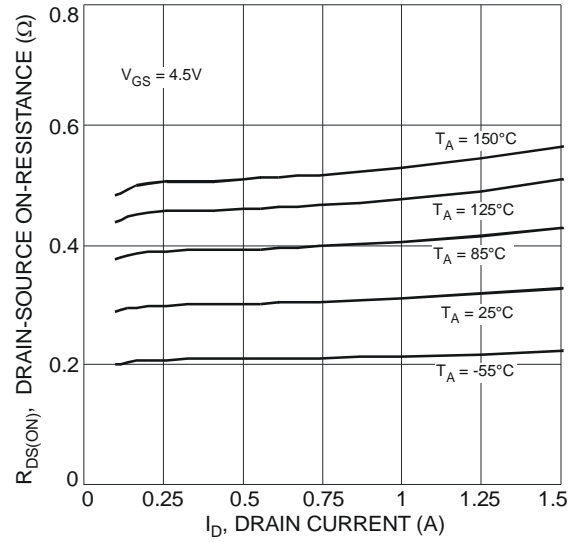


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

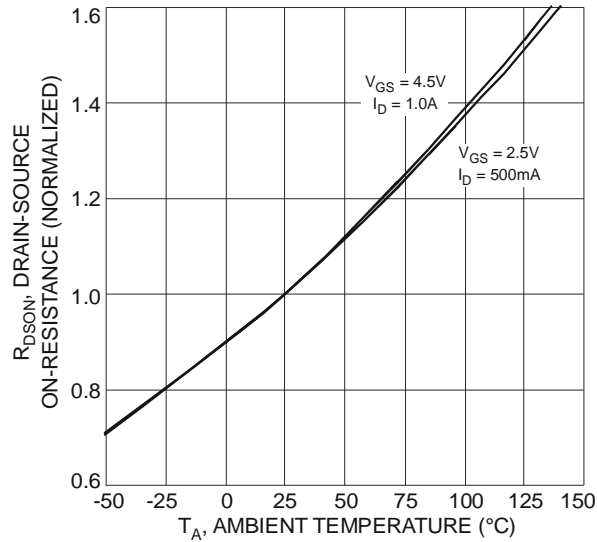


Fig. 5 On-Resistance Variation with Temperature

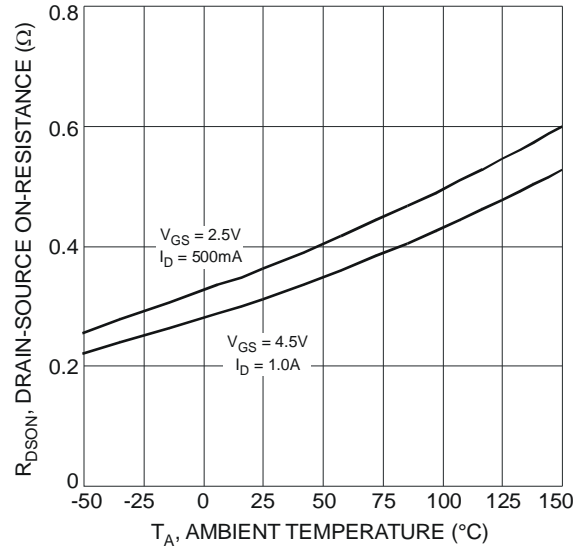


Fig. 6 On-Resistance Variation with Temperature

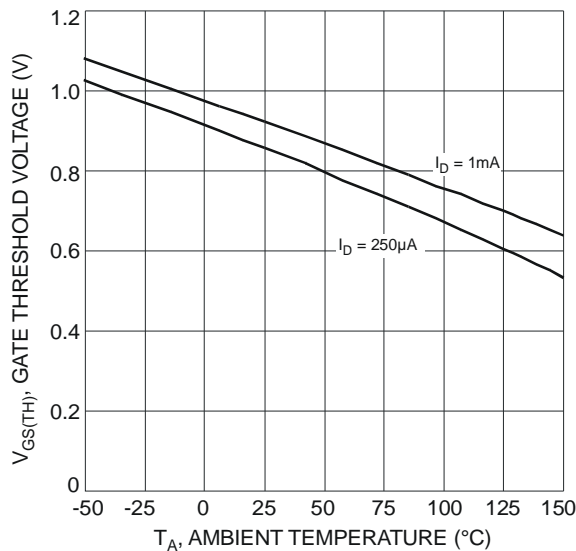


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

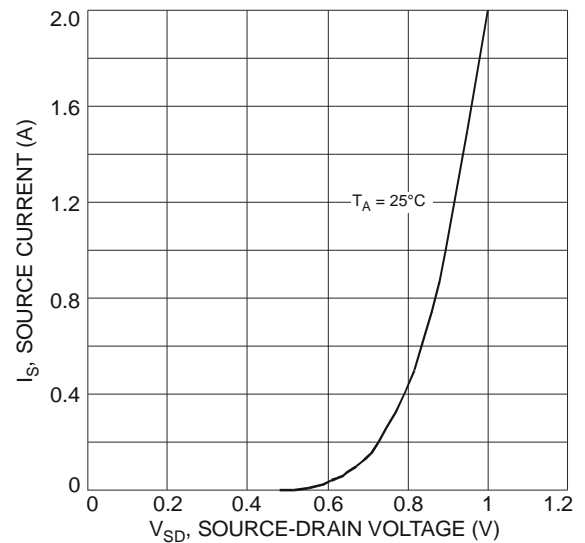


Fig. 8 Diode Forward Voltage vs. Current

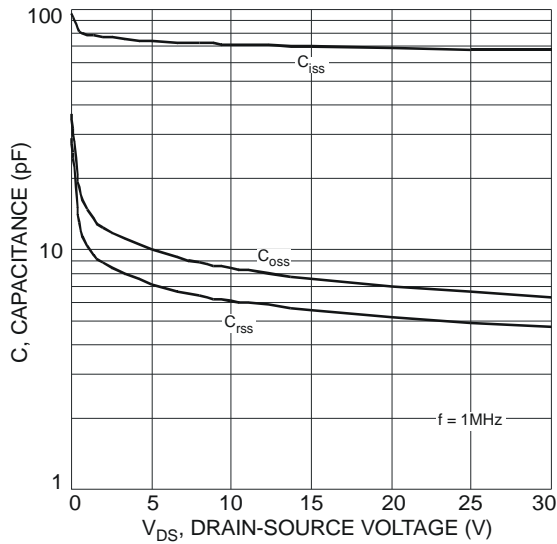


Fig. 9 Typical Total Capacitance

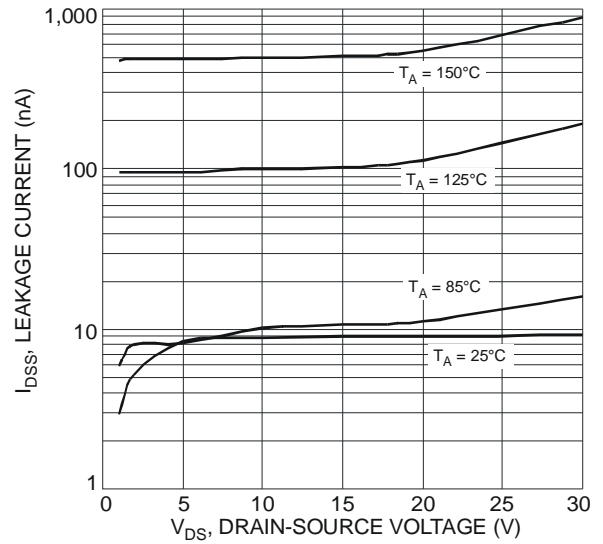


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

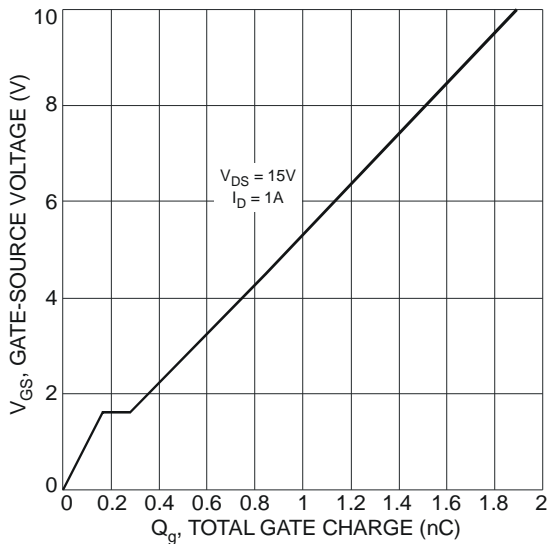


Fig. 11 Gate-Charge Characteristics

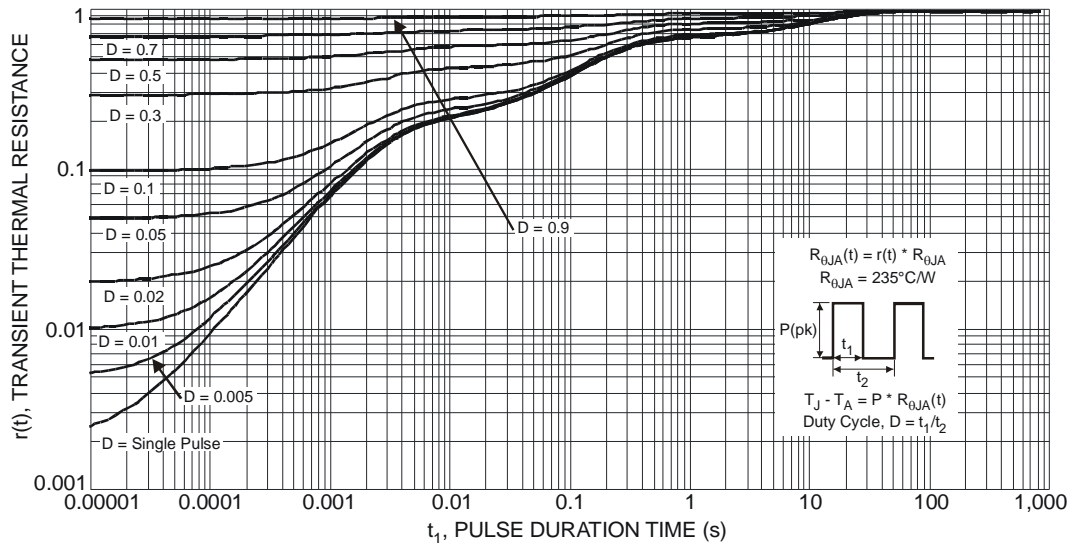


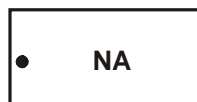
Fig. 12 Transient Thermal Response

## Ordering Information (Note 6)

Part Number	Case	Packaging
DMN2600UFB-7	DFN1006-3	3000/Tape & Reel

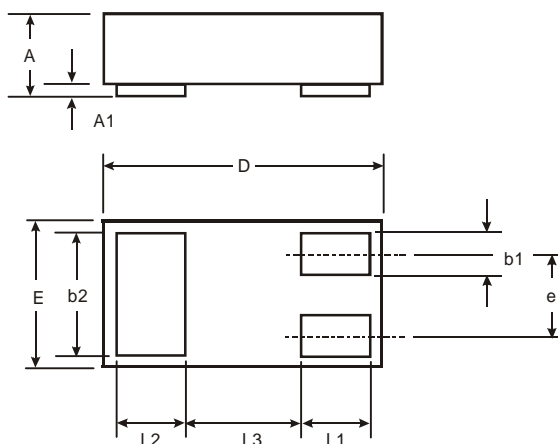
Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



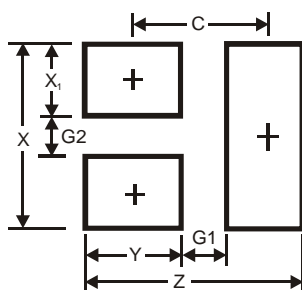
NA = Product Type Marking Code  
Dot Denotes Drain Side

## Package Outline Dimensions



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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