

## Features

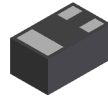
- Low On-Resistance
- Very Low Gate Threshold Voltage, 0.9V Max.
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **ESD Protected Gate**
- **Ultra Low Profile Package**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

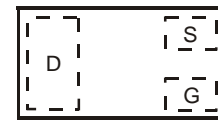
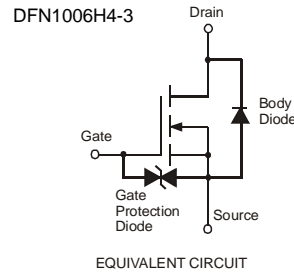
- Case: DFN1006H4-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.001 grams



ESD protected



BOTTOM VIEW


 TOP VIEW  
Pin Out Configuration

## 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	$V_{GSS}$	$\pm 10$	V
Drain Current per element (Note 1)		Continuous	200
		Pulsed (Note 3)	250
	$I_D$		mA

## Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

- Notes:
1. Device mounted on FR-4 PCB.
  2. No purposefully added lead.
  3. Pulse width  $\leq 10\mu\text{s}$ , Duty Cycle  $\leq 1\%$ .
  4. 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).

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (per element) (Note 5)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	—	—	V	$V_{GS} = 0V, I_D = 100\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 17V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 5$	$\mu\text{A}$	$V_{GS} = \pm 8V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (per element) (Note 5)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.53	—	0.9	V	$V_{DS} = V_{GS}, I_D = 100\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	0.9	1.5	$\Omega$	$V_{GS} = 4V, I_D = 10\text{mA}$
		—	0.85	1.7		$V_{GS} = 2.7V, I_D = 200\text{mA}$
		—	1.2	1.7		$V_{GS} = 2.5V, I_D = 10\text{mA}$
		—	2.4	3.5		$V_{GS} = 1.8V, I_D = 200\text{mA}$
		—	2.5	3.5		$V_{GS} = 1.5V, I_D = 1\text{mA}$
Forward Transfer Admittance	$ Y_{fs} $	40	—	—	mS	$V_{DS} = 3V, I_D = 10\text{mA}$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	41	—	pF	$V_{DS} = 3V, V_{GS} = 0V$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	13	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	4.5	—	pF	
Switching Time	Turn-on Time	$t_{on}$	—	14.2	nS	$V_{DD} = 3V, I_D = 10\text{mA},$ $V_{GS} = 0-2.5V$
	Turn-off Time	$t_{off}$	—	45.7		

Notes: 5. Short duration pulse test used to minimize self-heating effect.

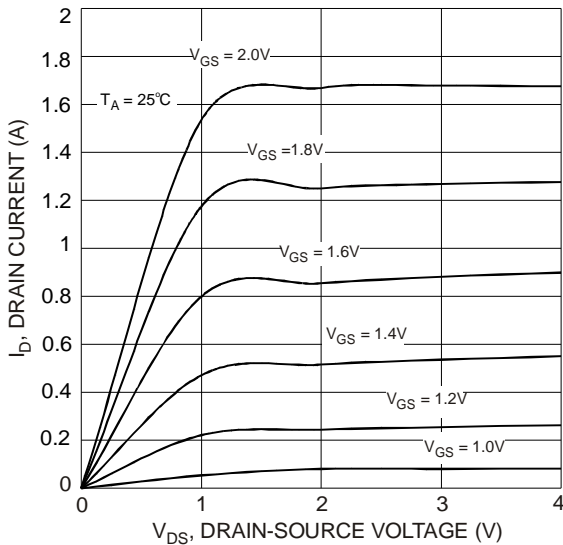


Fig. 1 Typical Output Characteristics

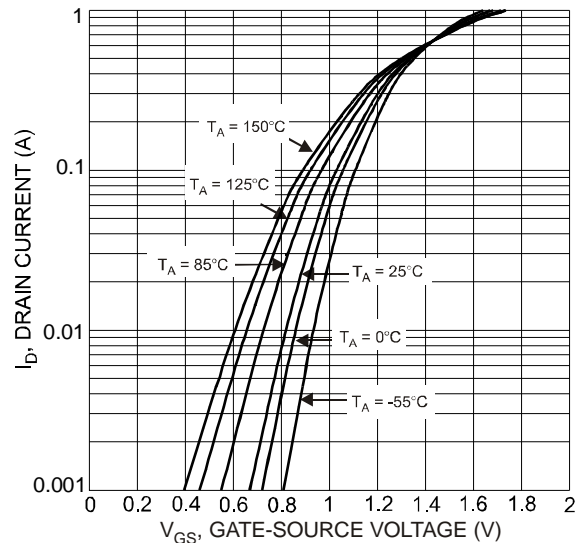


Fig. 2 Reverse Drain Current vs. Source-Drain Voltage

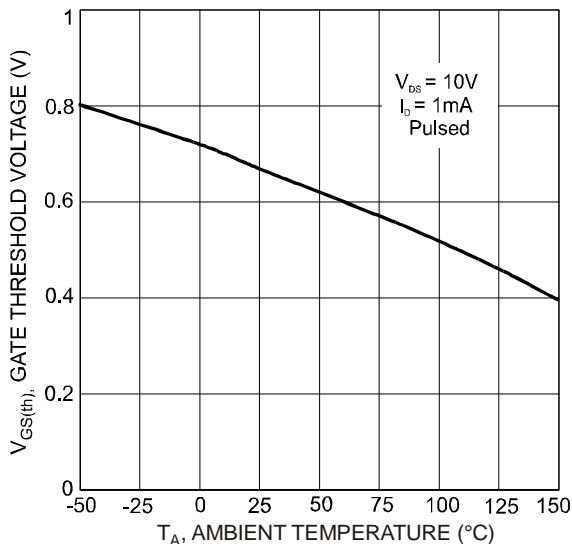


Fig. 3 Gate Threshold Voltage vs. Ambient Temperature

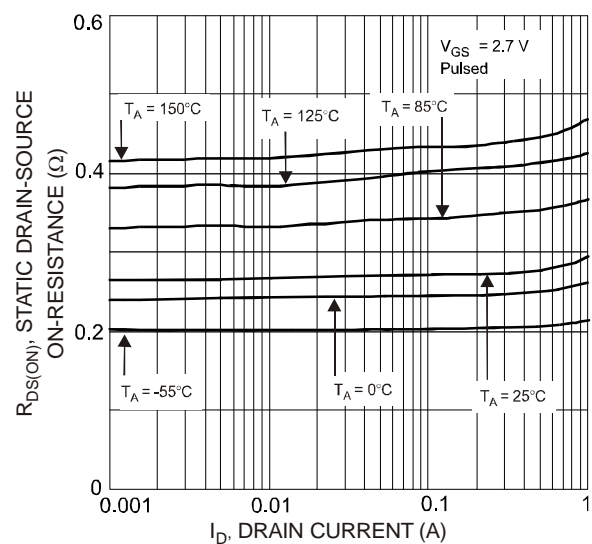


Fig. 4 Static Drain-Source On-State Resistance vs. Drain Current

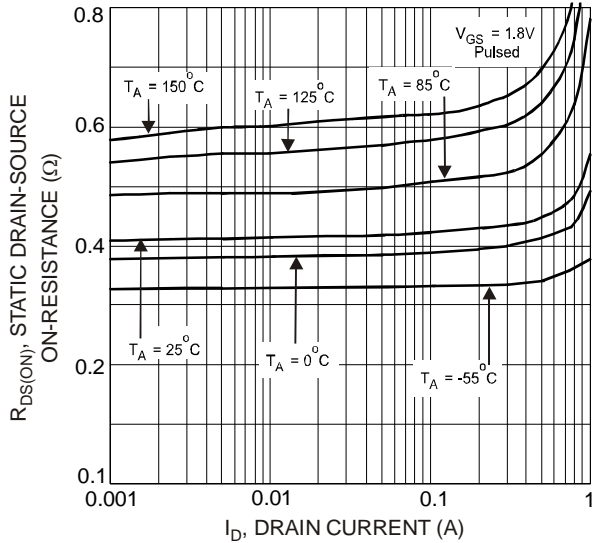


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

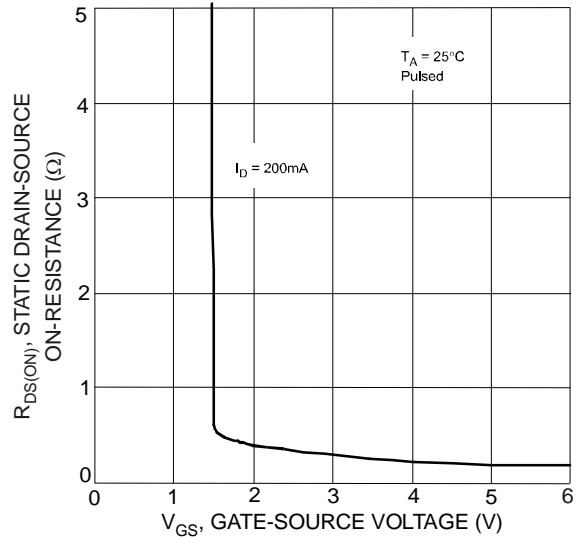


Fig. 6 Static Drain-Source, On-Resistance vs. Gate-Source Voltage

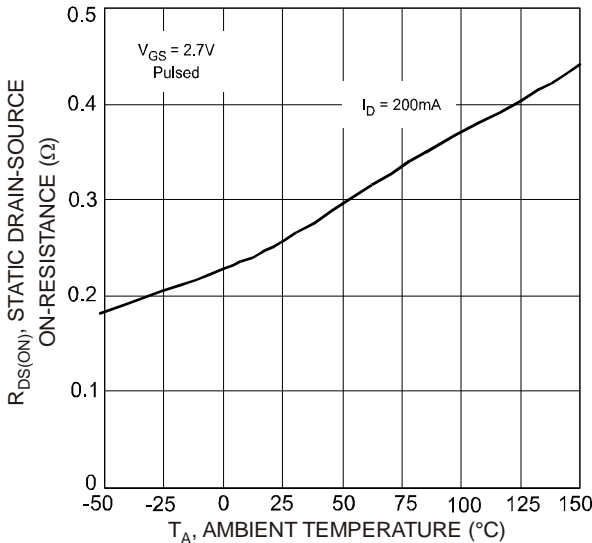


Fig. 7 Static Drain-Source, On-Resistance vs. Ambient Temperature

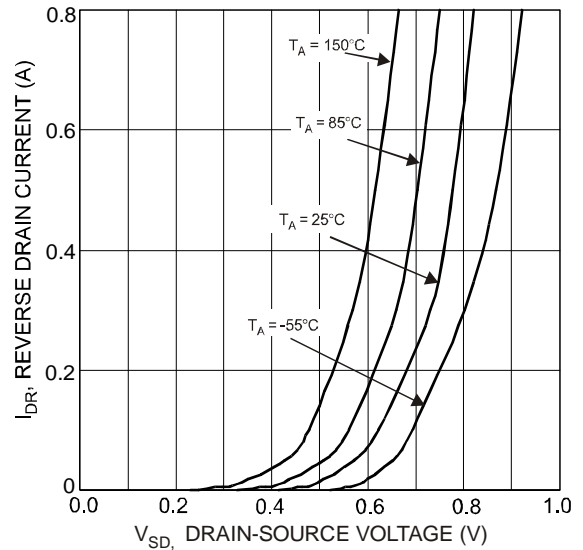


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

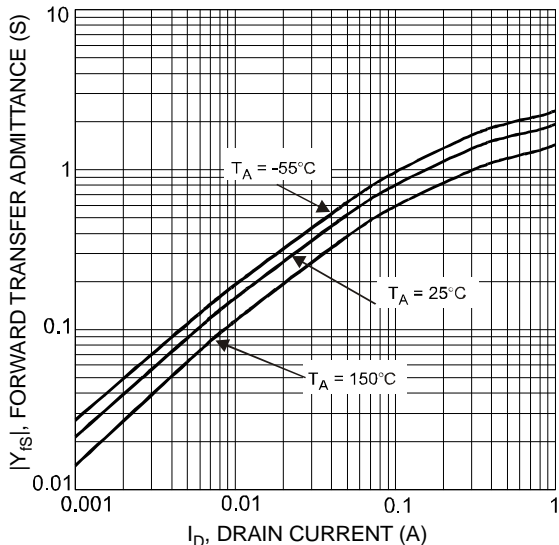


Fig. 9 Forward Transfer Admittance vs. Drain Current

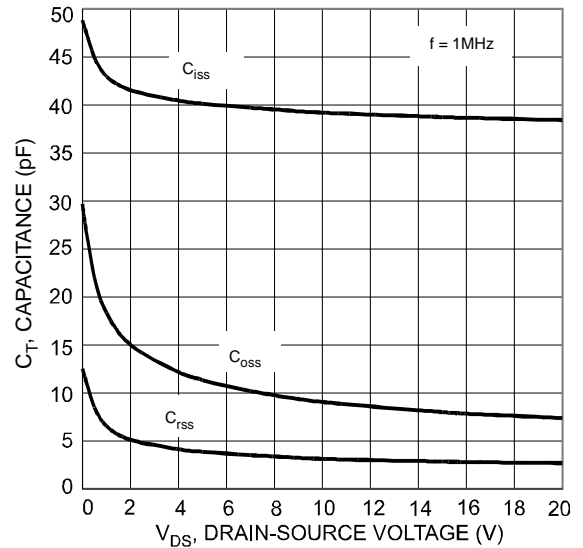


Fig. 10 Capacitance Variation

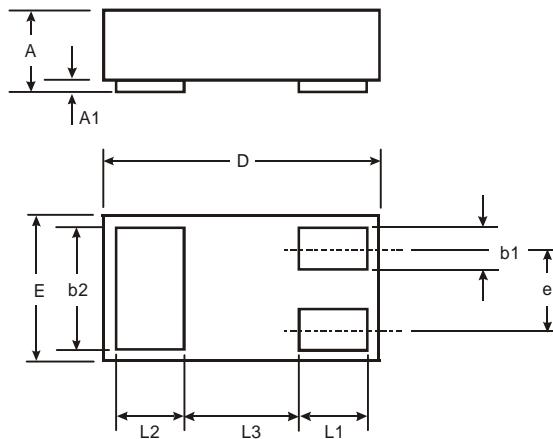
**Ordering Information** (Note 6)

Part Number	Case	Packaging
DMN2005LP4K-7	DFN1006H4-3	3000/Tape & Reel

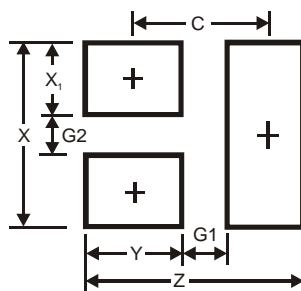
Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**


DN = Product Type Marking Code  
Dot Denotes Drain Side

**Package Outline Dimensions**


DFN1006H4-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0	0.05	0.02
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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