



### N-CHANNEL ENHANCEMENT MODE MOSFET

#### **Features**

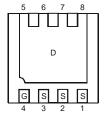
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 1)
- "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

#### **Mechanical Data**

- Case: DFN3030-8
- 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 lead frame. Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.0172 grams (approximate)







TOP VIEW

**BOTTOM VIEW** 

TOP VIEW Internal Schematic

**BOTTOM VIEW** Pin Configuration

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

Chara	acteristic		Symbol	Value	Units
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±25	V
Drain Current (Note 3)	Steady State	$T_A = 25$ °C $T_A = 85$ °C	I <sub>D</sub>	7.44 4.82	А
Pulsed Drain Current (Note 4)			I <sub>DM</sub>	40	A

#### Thermal Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 3)	$P_{D}$	0.94	W
Thermal Resistance, Junction to Ambient	$R_{ heta JA}$	133	°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.
- $2.\ Diodes\ Inc.'s\ "Green"\ policy\ can\ be\ found\ on\ our\ website\ at\ http://www.diodes.com/products/lead\_free/index.php.$
- 3. Device mounted on FR-4 PCB with minimum recommended pad layout.
- 4. Repetitive rating, pulse width limited by junction temperature.

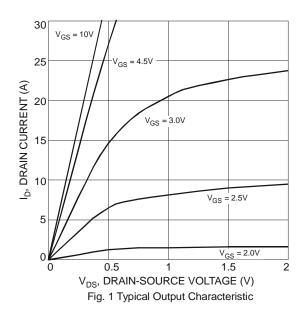


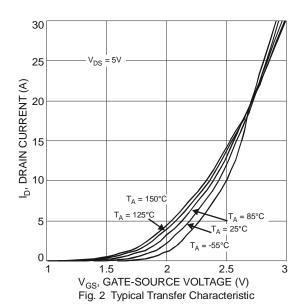
# **Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current TJ = 25°C	I <sub>DSS</sub>	1	-	1.0	μΑ	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	I <sub>GSS</sub>	1	-	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V <sub>GS(th)</sub>	8.0	-	1.5	V	$V_{DS} = V_{GS}$ , $I_D = 250\mu A$
Static Drain-Source On-Resistance	D	-	11	17	mΩ	$V_{GS} = 10V, I_D = 9A$
Static Drain-Source On-Nesistance	R <sub>DS (ON)</sub>		15	24		$V_{GS} = 4.5V, I_D = 7A$
Forward Transfer Admittance	Y <sub>fs</sub>	-	8	-	S	$V_{DS} = 10V, I_{D} = 9A$
Diode Forward Voltage	$V_{SD}$	-	0.7	1.0	V	$V_{GS} = 0V, I_{S} = 1A$
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C <sub>iss</sub>	-	798	-	pF	- V 40V V 0V
Output Capacitance	Coss	-	128	-	pF	$V_{DS} = 10V, V_{GS} = 0V,$ - f = 1.0MHz
Reverse Transfer Capacitance	C <sub>rss</sub>	-	122	-	pF	1 – 1.011112
Gate Resistance	Rg	-	1.37	-	Ω	$V_{DS} = 0V$ , $V_{GS} = 0V$ , $f = 1MHz$
Total Gate Charge	$Q_{g}$	-	9.47	-	nC	\\
Gate-Source Charge	$Q_{gs}$	-	1.87	-	nC	$V_{GS} = 5V, V_{DS} = 15V,$ $I_{D} = 9A$
Gate-Drain Charge	$Q_{gd}$	-	5.60	-	nC	ID = 9A
Turn-On Delay Time	t <sub>D(on)</sub>	-	5.03	-	ns	
Turn-On Rise Time	t <sub>r</sub>	-	4.50	-	ns	$V_{DD} = 15V, V_{GEN} = 10V,$
Turn-Off Delay Time	t <sub>D(off)</sub>	-	26.33	-	ns	$R_L = 15\Omega$ , $R_G = 6\Omega$ , $I_D = 1A$
Turn-Off Fall Time	t <sub>f</sub>	-	8.55	-	ns	

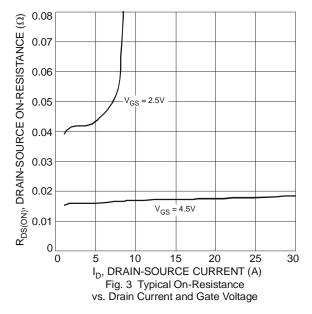
Notes:

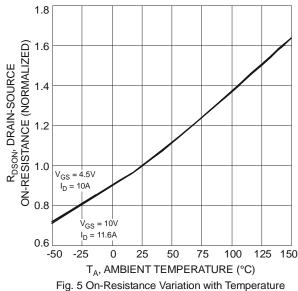
- 5. Short duration pulse test used to minimize self-heating effect.
- 6. Guaranteed by design. Not subject to product testing.











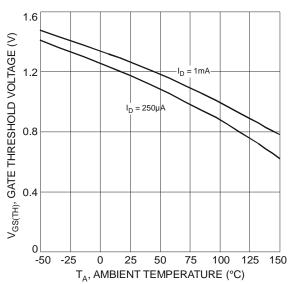


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

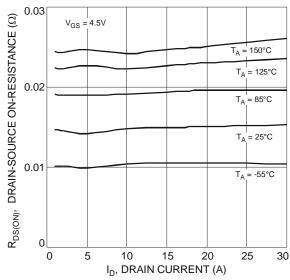


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

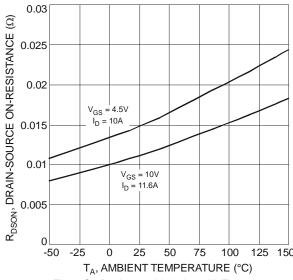
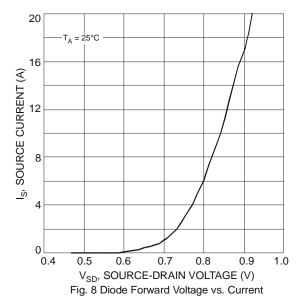
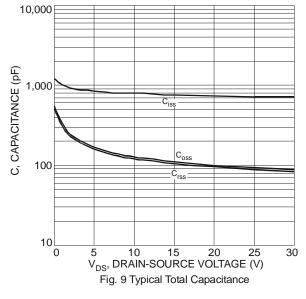


Fig. 6 On-Resistance Variation with Temperature







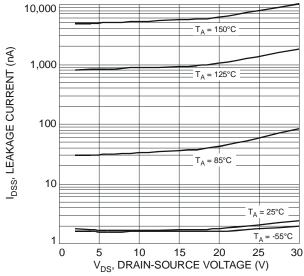
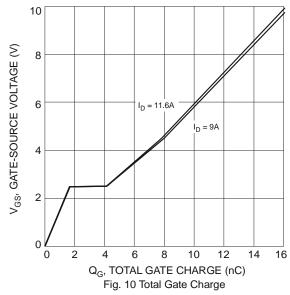


Fig. 11 Typical Leakage Current vs. Drain-Source Voltage



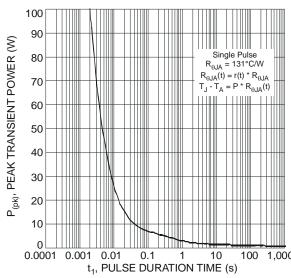


Fig. 12 Single Pulse Maximum Power Dissipation

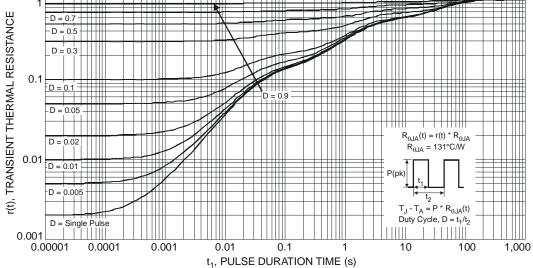


Fig. 13 Transient Thermal Response

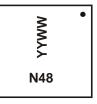


### Ordering Information (Note 7)

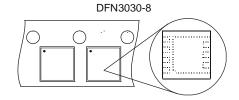
Part Number	Case	Packaging
DMG4800LFG-7	DFN3030-8	3000/Tape & Reel

Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

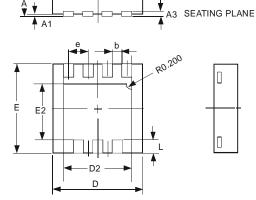
## **Marking Information**



N48 = Product marking code YYWW = Date code marking YY = Last digit of year (ex: 09 for 2009) WW = Week code 01 to 52

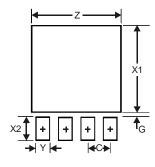


# **Package Outline Dimensions**



DFN3030-8				
Dim	Min	Max	Тур	
Α	0.57	0.63	0.60	
A1	0	0.05	0.02	
А3			0.15	
b	0.29	0.39	0.34	
D	2.90	3.10	3.00	
D2	2.19	2.39	2.29	
е			0.65	
Е	2.90	3.10	3.00	
E2	1.64	1.84	1.74	
L	0.30	0.60	0.45	
All Dimensions in mm				

# Suggested Pad Layout



<b>Dimensions</b>	Value (in mm)
Z	2.59
G	0.11
X1	2.49
X2	0.65
Y	0.39
С	0.65



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