



DMN6069SFG

60V N-CHANNEL ENHANCEMENT MODE MOSFET POWERDI

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _C = +25°C
60V	$50m\Omega$ @ $V_{GS} = 10V$	18A
60 V	$63m\Omega @ V_{GS} = 4.5V$	16A

Description and Applications

This MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}), yet maintain superior switching performance, making it ideal for high efficiency power management applications.

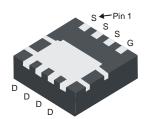
- Backlighting
- Power Management Functions
- DC-DC Converters

Features and Benefits

- Low R_{DS(ON)} Ensures On-State Losses are Minimized
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products (PowerDI[®])
- Occupies Just 33% of the Board Area Occupied by SO-8 Enabling Smaller End Product
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: PowerDI3333-8
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 (\$\sqrt{2}\$)
- Weight: 0.03 grams (Approximate)

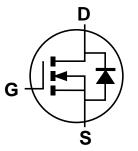


Bottom View



PowerDI3333-8

Top View



Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN6069SFG-7	PowerDI3333-8	2,000/Tape & Reel
DMN6069SFG-13	PowerDI3333-8	3,000/Tape & Reel

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



N69 = Product Type Marking Code YYWW = Date Code Marking YY = Last Two Digits of Year (ex: 16 = 2016) WW = Week Code (01 to 53)



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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Prain Current (Note 6) \/ 40\/	Steady State	$T_A = +25$ °C $T_A = +70$ °C	I _D	5.6 4.5	А
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	$T_C = +25$ °C $T_C = +70$ °C	I _D	18 14.5	А
Pulsed Drain Current (380µs Pulse, Duty Cycle = 1%)			I _{DM}	25	Α
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	2.5	Α
Avalanche Current (Note 7) L = 0.1mH			I _{AS}	12	Α
Avalanche Energy (Note 7) L = 0.1mH			E _{AS}	7.2	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)		P_{D}	0.93	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	C	134	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	t<10s	$R_{\theta JA}$	82	
Total Power Dissipation (Note 6)		P_{D}	2.4	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	D	53	°C/W
Themal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{\theta JA}$	33	
Thermal Resistance, Junction to Case	$R_{ heta JC}$	5		
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	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	60	_	_	V	$V_{GS} = 0V$, $I_D = 250\mu A$	
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}		_	1	μΑ	$V_{DS} = 60V$, $V_{GS} = 0V$	
Zero Gate Voltage Drain Current T _J = +150°C (Note 9)	I _{DSS}	_	_	100	μΑ	$V_{DS} = 60V$, $V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}		_	±100	nΑ	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(TH)}	1	_	3	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
Static Drain-Source On-Resistance		_	39	50	mΩ	$V_{GS} = 10V, I_D = 4.5A$	
Static Brain Godice on Resistance	R _{DS(ON)}	_	47	63	11122	$V_{GS} = 4.5V, I_D = 3A$	
Diode Forward Voltage	V_{SD}	_	_	1.1	V	$V_{GS} = 0V, I_S = 2.5A$	
On State Drain Current (Note 9)	I _{D(ON)}	20	_	_	Α	$V_{DS} \ge 5V$, $V_{GS} = 10V$	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	CISS		740	1,480	pF	.,	
Output Capacitance	Coss	1	40	80	pF	$V_{DS} = 30V, V_{GS} = 0V,$ -f = 1.0MHz	
Reverse Transfer Capacitance	C _{RSS}		28	55	pF	1 = 1.000112	
Gate Resistance	R_{G}	_	2.2	4	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Q_{G}	l	6.4	12	nC		
Total Gate Charge (V _{GS} = 10V)	Q_{G}		14	25	nC	V _{DS} = 30V. I _D = 12A	
Gate-Source Charge	Q _{GS}	1	2.8	5.5	nC	VDS = 30V, ID = 12A	
Gate-Drain Charge	Q_{GD}		2.3	5	nC		
Turn-On Delay Time	t _{D(ON)}		3.6	10	ns		
Turn-On Rise Time	t _R		5.0	10	ns	$V_{DS} = 30V, I_D = 12A$	
Turn-Off Delay Time	t _{D(OFF)}	_	12	24	ns	$V_{GS} = 10V, R_G = 6.0\Omega$	
Turn-Off Fall Time	t _F	_	3.3	10	ns		
Body Diode Reverse Recovery Time	t _{RR}		11	22	ns	1 454 4/4 4004/	
Body Diode Reverse Recovery Charge	Q_{RR}	_	5.1	10	nC	I _F = 4.5A, di/dt = 100A/μs	

5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

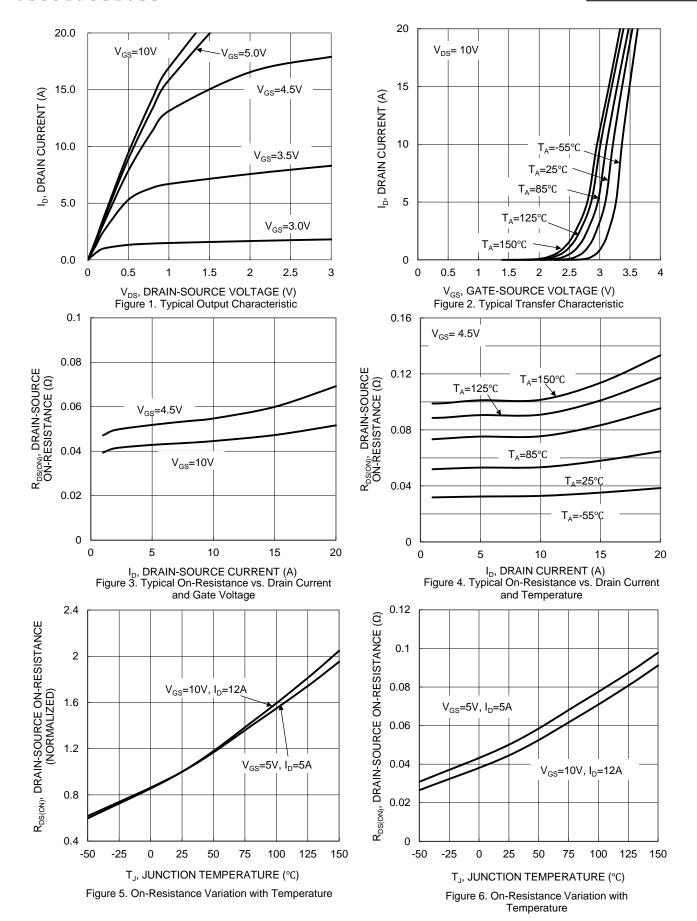
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate.

^{7.} I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_{J} = +25°C.

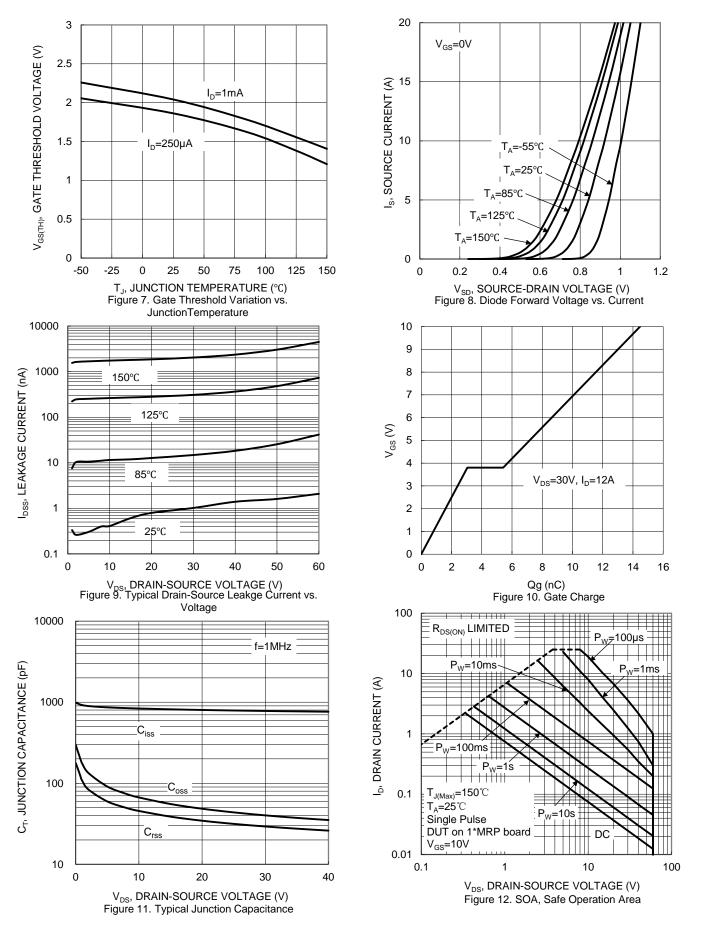
^{8.} Short duration pulse test used to minimize self-heating effect.

^{9.} Guaranteed by design. Not subject to product testing.

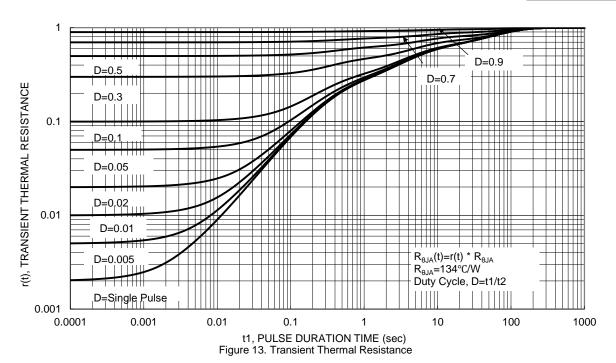










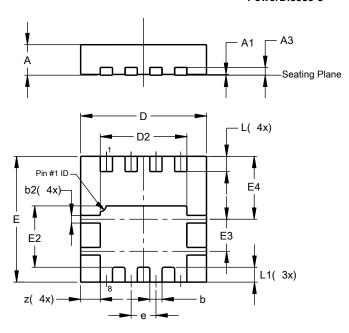




Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

PowerDI3333-8

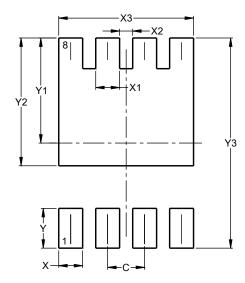


PowerDI3333-8					
Dim	Min	Max	Тур		
Α	0.75	0.85	0.80		
A1	0.00	0.05	0.02		
A3	-	-	0.203		
b	0.27	0.37	0.32		
b2	0.15	0.25	0.20		
D	3.25	3.35	3.30		
D2	2.22	2.32	2.27		
Е	3.25	3.35	3.30		
E2	1.56	1.66	1.61		
E3	0.79	0.89	0.84		
E4	1.60	1.70	1.65		
е	_	_	0.65		
L	0.35	0.45	0.40		
L1	_	_	0.39		
Z	_	_	0.515		
All Dimensions in mm					

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

PowerDI3333-8



Dimensions	Value (in mm)		
С	0.650		
X	0.420		
X1	0.420		
X2	0.230		
Х3	2.370		
Y	0.700		
Y1	1.850		
Y2	2.250		
Y3	3.700		



IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
 - 1. are intended to implant into the body, or
 - 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2016, Diodes Incorporated

www.diodes.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET category:

Click to view products by Diodes Incorporated manufacturer:

Other Similar products are found below:

614233C 648584F MCH3443-TL-E MCH6422-TL-E FDPF9N50NZ FW216A-TL-2W FW231A-TL-E APT5010JVR NTNS3A92PZT5G IRF100S201 JANTX2N5237 2SK2464-TL-E 2SK3818-DL-E FCA20N60_F109 FDZ595PZ STD6600NT4G FSS804-TL-E 2SJ277-DL-E 2SK1691-DL-E 2SK2545(Q,T) D2294UK 405094E 423220D MCH6646-TL-E TPCC8103,L1Q(CM 367-8430-0972-503 VN1206L 424134F 026935X 051075F SBVS138LT1G 614234A 715780A NTNS3166NZT5G 751625C 873612G IRF7380TRHR IPS70R2K0CEAKMA1 RJK60S3DPP-E0#T2 RJK60S5DPK-M0#T0 APT5010JVFR APT12031JFLL APT12040JVR DMN3404LQ-7 NTE6400 JANTX2N6796U JANTX2N6784U JANTXV2N5416U4 SQM110N05-06L-GE3 SIHF35N60E-GE3