



DMPH4029LFG

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
-40V	$29m\Omega @ V_{GS} = -10V$	-8.0A
-40 v	$45 \mathrm{m}\Omega @ \mathrm{V}_{\mathrm{GS}} = -4.5 \mathrm{V}$	-6.0A

Description and Applications

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

- Backlighting
- Power Management Functions
- DC-DC Converters

40V 175°C P-CHANNEL ENHANCEMENT MODE MOSFET PowerDI3333-8

Features and Benefits

- Rated to +175°C Ideal for High Ambient Temperature Environments
- Low R_{DS(ON)} Ensures On State Losses Are Minimized
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products
- Occupies Just 33% of the Board Area Occupied by SO-8 Enabling Smaller End Product
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- An Automotive-Compliant Part is Available Under Separate Datasheet (<u>DMPH4029LFGQ</u>)

Mechanical Data

- Case: PowerDI[®]3333-8
- 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 (3)
- Weight: 0.072 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMPH4029LFG-7	PowerDI3333-8	2000/Tape & Reel
DMPH4029LFG-13	PowerDI3333-8	3000/Tape & Reel

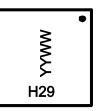
Notes:

EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



H29= Product Type Marking Code YYWW = Date Code Marking YY = Last Two Digits of year (ex: 19 = 2019) WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	-40	V		
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Durin Current (Nato C) \/ 40\/	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	ID	-8.0 -6.7	A
Continuous Drain Current (Note 6) V _{GS} = -10V	Steady State	T _C = +25°C T _C = +70°C	I _D	-22 -18	А
Pulsed Drain Current (380µs Pulse, Duty Cycle = 1%	I _{DM}	-88	A		
Maximum Continuous Body Diode Forward Current	Is	-2.0	A		
Pulsed Source Current (380µs Pulse, Duty Cycle = 1	lsed Source Current (380µs Pulse, Duty Cycle = 1%)		I _{SM}	-88	A
Avalanche Current (Note 7) L = 0.1mH			IAS	-25	A
Avalanche Energy (Note 7) L = 0.1mH			E _{AS}	32	mJ

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit	
Total Power Dissipation (Note 5)		PD	1.2	W	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	P	125	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t<10s	$R_{ extsf{ heta}JA}$	85	C/W	
Total Power Dissipation (Note 6)		PD	2.8	W	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	P	54	°C/W	
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{ extsf{ heta}JA}$	36		
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	6		
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +175	°C	

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)				•			
Drain-Source Breakdown Voltage	BV _{DSS}	-40	—	_	V	$V_{GS} = 0V, I_D = -250\mu A$	
Zero Gate Voltage Drain Current TJ = +25°C	IDSS	_	_	-1	μA	$V_{DS} = -40V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	—	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(TH)}	-1.0	—	-3.0	V	$V_{DS} = V_{GS}, I_D = -250 \mu A$	
Static Drain-Source On-Resistance		—	18	29	mΩ	$V_{GS} = -10V, I_D = -3A$	
Static Drain-Source On-Resistance	R _{DS(ON)}	—	23	45		$V_{GS} = -4.5V, I_D = -3A$	
Diode Forward Voltage	V _{SD}	—	-0.7	-1.2	V	$V_{GS} = 0V, I_{S} = -1A$	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	—	1626	—	pF		
Output Capacitance	C _{oss}	—	135	—	pF	V _{DS} = -20V, V _{GS} = 0V, f = 1.0MHz	
Reverse Transfer Capacitance	Crss	—	107	—	pF	1 - 1.00012	
Gate Resistance	R _g	_	11	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$	
Total Gate Charge (V _{GS} = -4.5V)	Qg	—	17	—	nC		
Total Gate Charge (V _{GS} = -10V)	Qg	—	34	-	nC		
Gate-Source Charge	Q _{gs}	—	3.7	—	nC	$V_{DS} = -20V, I_{D} = -3A$	
Gate-Drain Charge	Q _{gd}	_	6.0	-	nC		
Turn-On Delay Time	t _{D(ON)}	_	3.9	—	ns		
Turn-On Rise Time	t _R	—	2.8	—	ns	$V_{GS} = -10V, V_{DS} = -20V,$	
Turn-Off Delay Time	t _{D(OFF)}		83	_	ns	$R_G = 3\Omega, I_D = -3A$	
Turn-Off Fall Time	t _F		30	_	ns		
Body Diode Reverse Recovery Time	t _{RR}	_	17.3	—	ns	I _F = -3A, di/dt = 100A/µs	
Body Diode Reverse Recovery Charge	Q _{RR}	—	7.2	_	nC	I _F = -3A, di/dt = 100A/µs	

Notes: 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 1inch square copper plate.

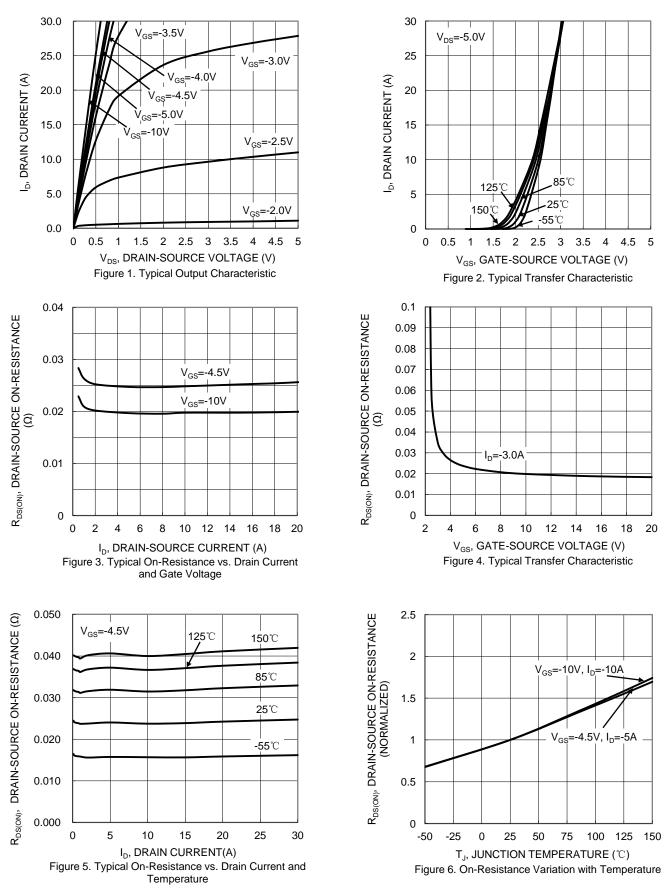
7. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_{J} = +25°C.

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

9. Guaranteed by design. Not subject to product testing.



DMPH4029LFG







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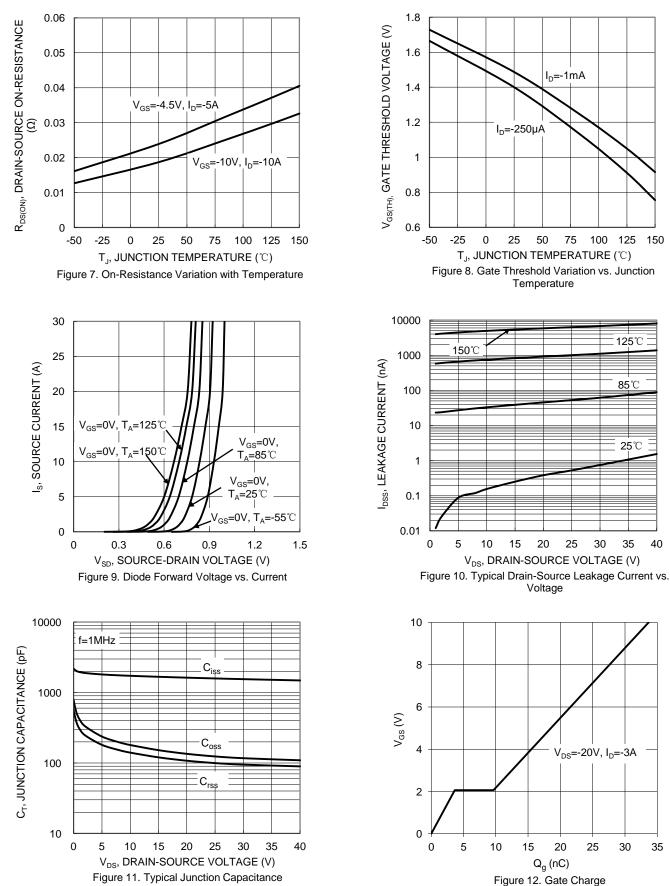
125℃

85℃

25℃

35

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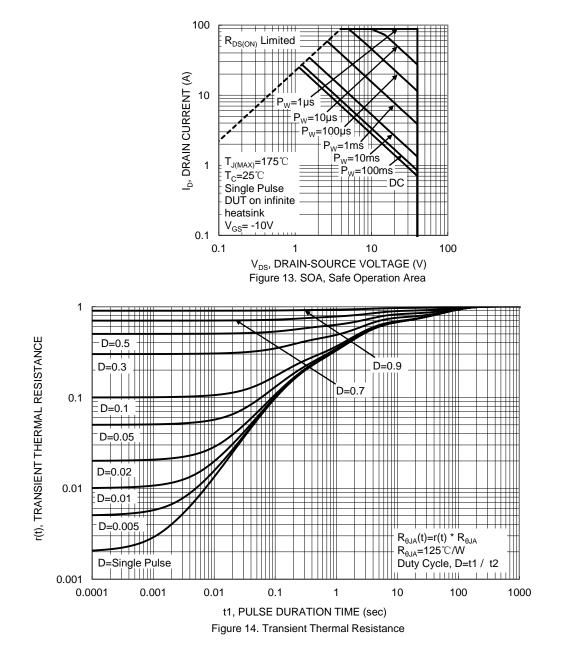


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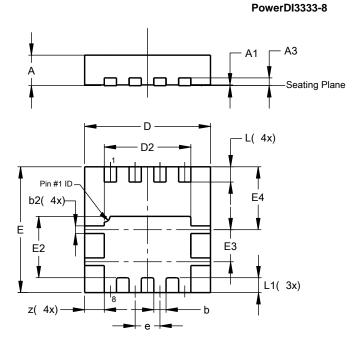






Package Outline Dimensions

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

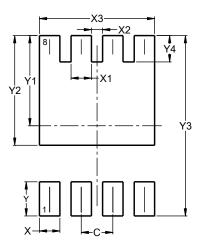


	PowerDI3333-8						
Dim	Min	Max	Тур				
Α	0.75	0.85	0.80				
A1	0.00	0.05	0.02				
A3	-	-	0.203				
b	0.27	0.37	0.32				
b2	0.15	0.25	0.20				
D	3.25	3.35	3.30				
D2	2.22	2.32	2.27				
Е	3.25	3.35	3.30				
E2	1.56	1.66	1.61				
E3	0.79	0.89	0.84				
E4	1.60	1.70	1.65				
е	_	_	0.65				
L	0.35	0.45	0.40				
L1	_	_	0.39				
z	_	-	0.515				
All I	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
Х	0.420
X1	0.420
X2	0.230
X3	2.370
Y	0.700
Y1	1.850
Y2	2.250
Y3	3.700
Y4	0.540

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