

30V P-CHANNEL ENHANCEMENT MODE MOSFET PowerDI3333-8

Product Summary

BVDSS	Rds(on) Max	I _D Max T _A = +25°C
201/	10mΩ @ V _{GS} = -10V	-11.5A
-30V	18mΩ @ V _{GS} = -4.5V	-8.7A

Description

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

Applications

- Backlighting
- · Power management functions
- DC-DC converters

Features and Benefits

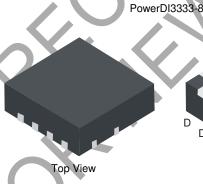
- Low Rds(ON) Ensures On-State Losses Are Minimized
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products
- Occupies Just 33% of the Board Area Occupied by SO-8 Enabling Smaller End Product
- ESD Protected Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The DMP3017SFGQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

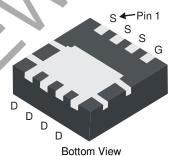
https://www.diodes.com/quality/product-definitions/

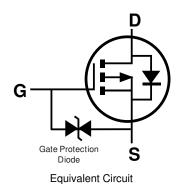
Mechanical Data

- Package: PowerDI[®]3333-8
- Package 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	Package	Packing		
Part Number	Package	Qty.	Carrier	
DMP3017SFGQ-7	PowerDI3333-8	2,000	Tape & Reel	
DMP3017SFGQ-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) & 2015/863/EU (RoHS 3) compliant.
- 2. 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/.

PowerDI is a registered trademark of Diodes Incorporated.



Marking Information



P17 = Product Type Marking Code YYWW = Date Code Marking YY = Last Digits of Year (ex: 22 = 2022) WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage			V _{DSS}	-30	V
Gate-Source Voltage			V _{GSS}	±25	V
Continuous Drain Current (Note 5) Vac. 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	-11.5 -9.4	А
Continuous Drain Current (Note 5) Vgs = -10V	t < 10s	T _A = +25°C T _A = +70°C	lo	-15.2 -12.1	А
Maximum Continuous Body Diode Forward Current (Note 6)			ls	-3.0	Α
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			Ірм	-80	Α
Avalanche Current (Note 7) L = 1mH			IAR	14	Α
Repetitive Avalanche Energy (Note 7) L = 1mH			Ear	104	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)	T _A = +25°C	D	0.94	W
Total Fower Dissipation (Note 6)	$T_A = +70^{\circ}C$	P_D	0.6	VV
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	Dove	137	°C/W
Thermal nesistance, Junction to Ambient (Note 6)	t < 10s	Reja	82	°C/W
Total Daway Dissination (Note 5)	T _A = +25°C	PD	2.2	w
Total Power Dissipation (Note 5)	T _A = +70°C		1.3	VV
Thermal Posistones, lugation to Ambient (Note 5)		D	60	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	t < 10s	Reja	36	°C/W
Thermal Resistance, Junction to Case (Note 5)	Rejc	3.0	°C/W	
Operating and Storage Temperature Range	TJ, TSTG	-55 to +150	°C	

- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout. Please see http://www.diodes.com/package-outlines.html for the latest version.
 7. IAR and EAR ratings are based on low frequency and duty cycles to keep TJ = +25°C.



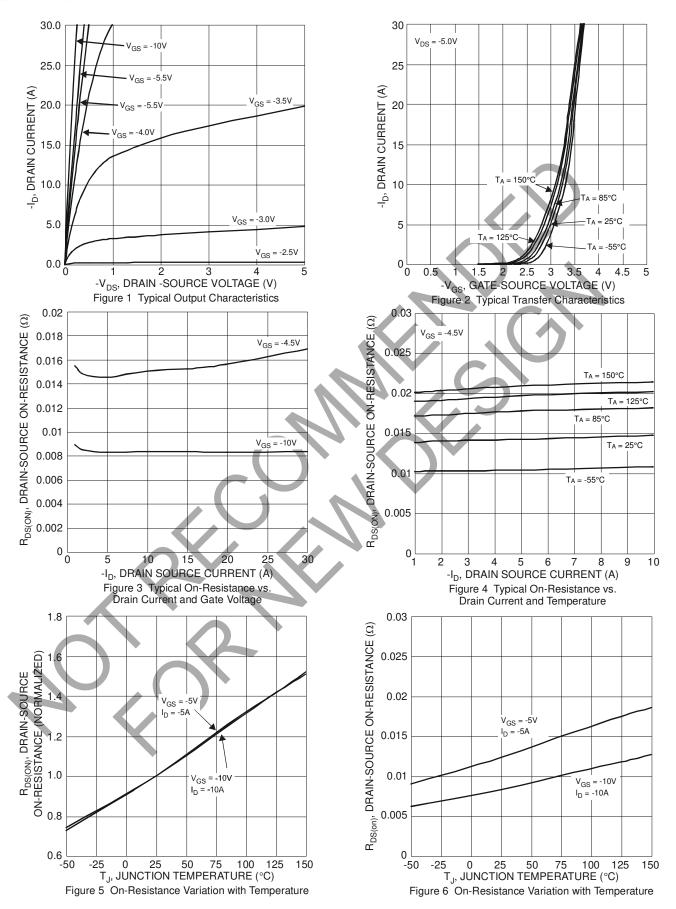
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage		-30	_	_	٧	$V_{GS} = 0V, I_{D} = -250\mu A$
Zero Gate Voltage Drain Current	IDSS		_	-1	μΑ	V _{DS} = -24V, V _{GS} = 0V
Gate-Source Leakage	Igss	_	_	±10	μA	$V_{GS} = \pm 25V$, $V_{DS} = 0V$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(TH)}	-1.0	_	-3.0	٧	$V_{DS} = V_{GS}$, $I_D = -250\mu A$
Static Drain-Source On-Resistance	Process	1	8.5	10	mΩ	$V_{GS} = -10V, I_D = -11.5A$
Static Dialif-Source Off-nesistance	RDS(ON)	1	15	18	mΩ	$V_{GS} = -4.5V, I_D = -8.5A$
Forward Transfer Admittance	Y _{fs}	_	24	_	S	V _{DS} = -5V, I _D = -11.5A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	Ciss		2246	_	pF	4577 77 077
Output Capacitance	Coss	1	352	1	pF	V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz
Reverse Transfer Capacitance	Crss		294		pF	1 = 1.000112
Gate Resistance	Rg	1	5.1	12	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1.0MHz$
Total Gate Charge (V _{GS} = 5V)	Qg		20.5		nC	
Total Gate Charge (V _{GS} = 10V)		_	41		nC	V 45V I- 44.5A
Gate-Source Charge		-//	7.6		nC	V _{DS} = -15V, I _D = -11.5A
Gate-Drain Charge	Q _{gd} •	<u>- 7</u>	8.0	_	nC	
Turn-On Delay Time	td(on)	1-1	7.5	7	ns	
Turn-On Rise Time	tr		15.4	- 4	ns	V _{DD} = -15V, V _{GS} = -10V
Turn-Off Delay Time	tD(OFF)	1	45.6	V – 1	ns	$R_G = 6\Omega$, $I_D = -11.5A$
Turn-Off Fall Time	tr	_	36.8		ns	
BODY DIODE CHARACTERISTICS						
Diode Forward Voltage	VsD	*	-0.7	_	V	Vgs = 0V, Is = -1A
Reverse Recovery Time (Note 8)	trr	-	20	_	ns	- 44 EA 41/4+ 400A/
Reverse Recovery Charge (Note 8)	Qrr		9.5	_	nC	Is = -11.5A, dl/dt = 100A/µs

Notes:

^{8.} Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.







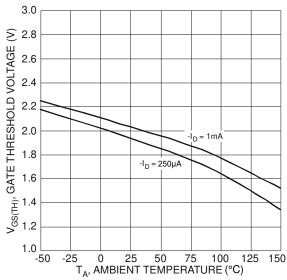
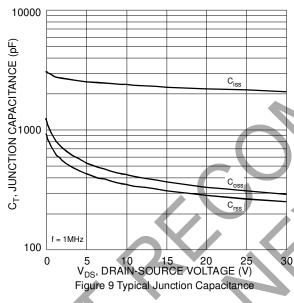
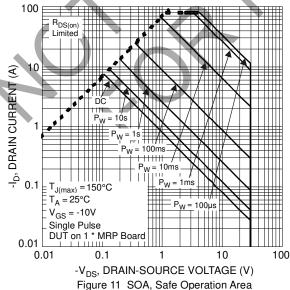
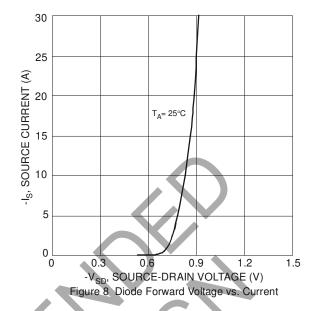
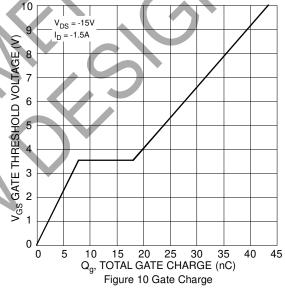


Figure 7 Gate Threshold Variation vs. Ambient Temperature

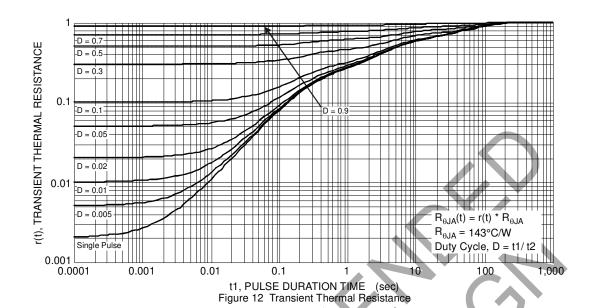










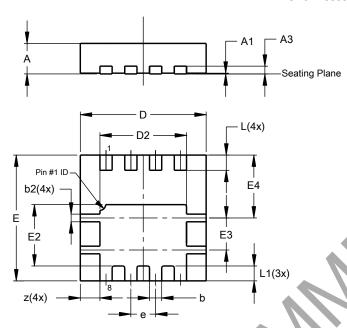




Package Outline Dimensions

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

PowerDI3333-8

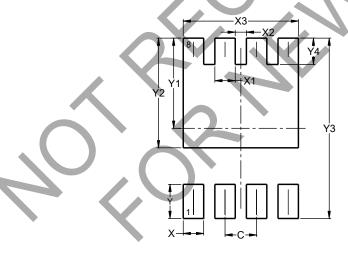


PowerDI3333-8					
Dim	Min	Max	Тур		
Α	0.75	0.85	0.80		
A 1	0.00	0.05	0.02		
A3		1	0.203		
b	0.27	0.37	0.32		
b2	0.15	0.25	0.20		
D	3.25	3.35	3.30		
D2	2.22	2.32	2.27		
Ħ	3.25	3.35	3.30		
E 2	1.56	1.66	1.61		
E3	0.79	0.89	0.84		
E4	1.60	1.70	1.65		
Ð	- (1	0.65		
٦	0.35	0.45	0.40		
L1	-		0.39		
z	- 4		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			
Х	0.420			
X1	0.420			
X2	0.230			
Х3	2.370			
Υ	0.700			
Y1	1.850			
Y2	2.250			
Y3	3.700			
Y4	0.540			



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