



30V P-CHANNEL ENHANCEMENT MODE MOSFET POWERDI®

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
-30V	$20m\Omega$ @ $V_{GS} = -10V$	- 8.7 A
-307	$29mΩ @ V_{GS} = -5V$	-7.2 A

Features and Benefits

- 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.
- 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

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.

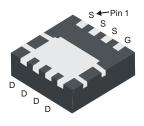
- Backlighting
- Power Management Functions
- DC-DC Converters

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 (§3)
- Weight: 0.03 grams (Approximate)

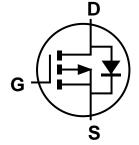
POWERDI®3333-8







Top View



Equivalent Circuit

Ordering Information (Note 4)

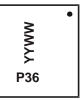
Part Number	Case	Packaging
DMP3036SFG-7	POWERDI3333-8	2,000/Tape & Reel
DMP3036SFG-13	POWERDI3333-8	3,000/Tape & Reel

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

POWERDI®3333-8



P36 = Product Type Marking Code YYWW = Date Code Marking YY = Last Digit of Year (ex: 14 = 2014) WW = Week Code (01 ~ 53)



Characteristic	Symbol	Value	Units		
Drain-Source Voltage	V _{DSS}	-30	V		
Gate-Source Voltage			V _{GSS}	±25	V
Continuous Dusin Courset (Note CVV 40V	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	-8.7 -7.0	А
Continuous Drain Current (Note 6) V _{GS} = -10V	t<10s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	-12.7 -10.1	А
Continuous Dusin Courset (Note CVV 5V	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	-7.2 -5.8	А
Continuous Drain Current (Note 6) V _{GS} = -5V	t<10s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	ID	-10.5 -8.4	А
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	-80	Α		
Maximum Continuous Body Diode Forward Current (Is	-3.6	Α		
Avalanche Current (Note 7) L=0.3 mH			I _{AS}	-17.5	Α
Avalanche Energy (Note 7) L=0.3 mH			E _{AS}	64	mJ

Thermal Characteristics ($@T_A = +25^{\circ}C$, unless otherwise specified.)

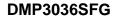
Characteristic	Symbol	Value	Units	
Total Power Dissipation (Note 5)		P_{D}	0.95	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	ב	137	°C/W
Themal Resistance, Junction to Ambient (Note 3)	t<10s	$R_{\theta JA}$	65	°C/W
Total Power Dissipation (Note 6)		P_{D}	2.3	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	D	55	°C/W
Themal Resistance, Junction to Ambient (Note o)	t<10s	$R_{\theta JA}$	26	°C/W
Thermal Resistance, Junction to Case (Note 6)		$R_{ heta JC}$	6.14	°C/W
Operating and Storage Temperature Range		$T_{J_i}T_{STG}$	-55 to +150	°C

Electrical Characteristics (@ $T_A = \pm 25^{\circ}C$, unless otherwise specified.)

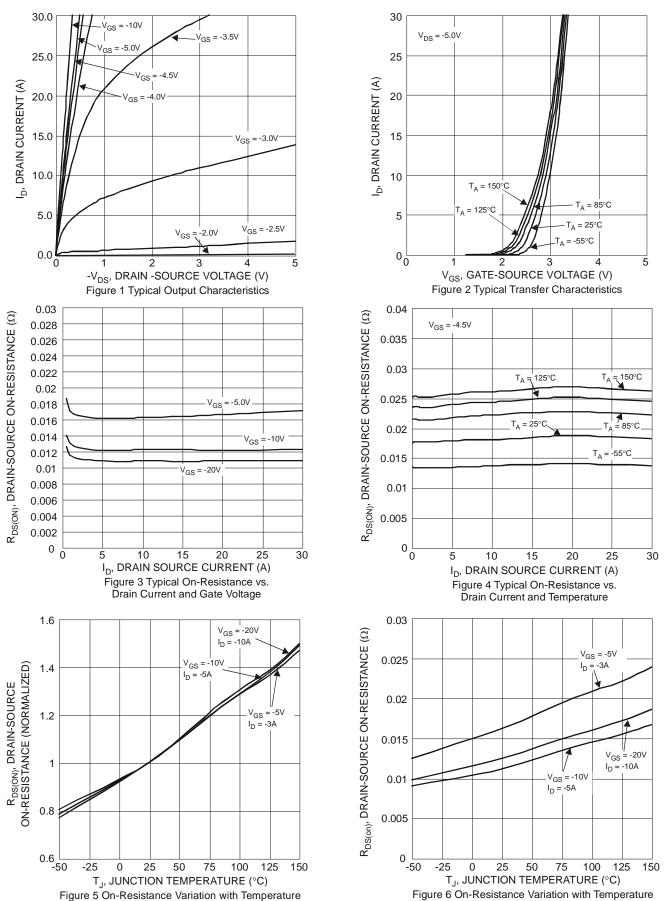
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	-30	-	-	V	$V_{GS} = 0V, I_{D} = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	-	-	-1.0	μΑ	$V_{DS} = -30V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	$V_{GS} = \pm 25V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(th)}	-1.0	-2.0	-2.5	V	$V_{DS} = V_{GS}$, $I_D = -250\mu A$	
Static Drain-Source On-Resistance	J	1	13	20	mΩ	$V_{GS} = -10V, I_D = -8A$	
Static Diani-Source Off-Resistance	R _{DS (ON)}	-	18.4	29		$V_{GS} = -5V, I_{D} = -5A$	
Diode Forward Voltage	V_{SD}	-	-0.74	-1.0	V	$V_{GS} = 0V, I_{S} = -1A$	
DYNAMIC CHARACTERISTICS (Note 9)	<u>.</u>						
Input Capacitance	C _{iss}	-	1931	-	pF	45)/)/ 0)/	
Output Capacitance	Coss	-	226	-	pF	$V_{DS} = -15V, V_{GS} = 0V,$ - f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}	-	168	-	pF	1 = 1.001112	
Gate Resistance	Rg	-	10.9	-	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge V _{GS} = -5V	Qq	-	8.8	-	nC		
Total Gate Charge V _{GS} = -10V	Qq	-	16.5	-	nC	151/1/ 451/1/ 401/1	
Gate-Source Charge	Q _{qs}	-	2.6	-	nC	$V_{DS} = -15V$, $V_{GS} = -10V$, $I_{D} = -10V$	
Gate-Drain Charge	Q _{qd}	-	3.6	-	nC		
Turn-On Delay Time	t _{D(on)}	-	8.2	-	ns		
Turn-On Rise Time	t _r	-	14	-	ns	$V_{GEN} = -10V, V_{DD} = -15V,$	
Turn-Off Delay Time	t _{D(off)}	-	65	-	ns	$R_{GEN} = 3\Omega$, $I_D = -10A$	
Turn-Off Fall Time	t _f	-	31.6	-	ns	1	

5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Device mounted on FR-4 substrate PC board, 202 copper, with minimum recommended parents.
 Device mounted on FR-4 substrate PC board, 202 copper, with 1 inch square copper plate.
 UIS in production with L = 0.1mH, starting T_A = +25°C.
 Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to product testing.









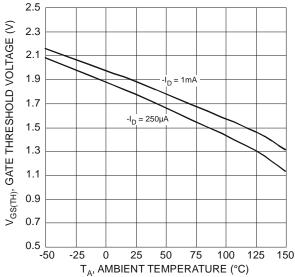


Figure 7 Gate Threshold Variation vs. Ambient Temperature

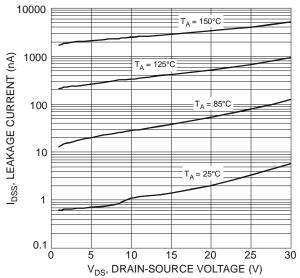
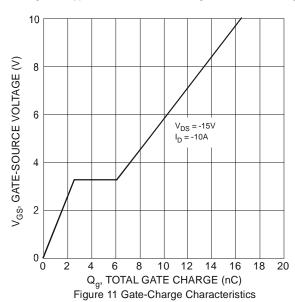
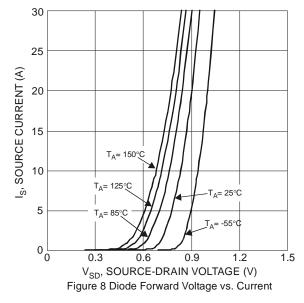
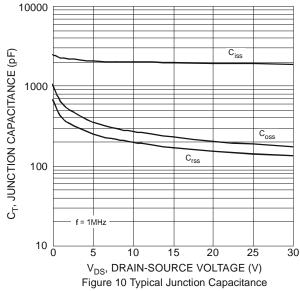
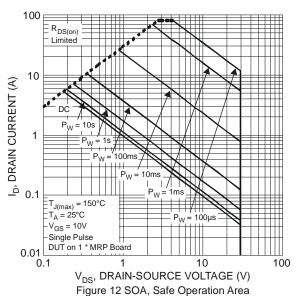


Figure 9 Typical Drain-Source Leakage Current vs. Voltage

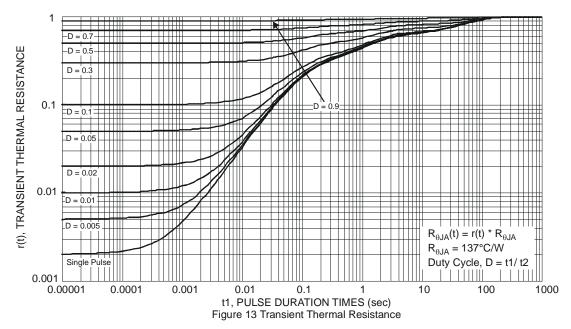






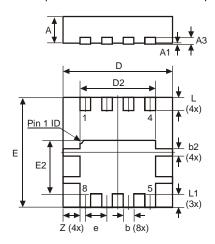






Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.

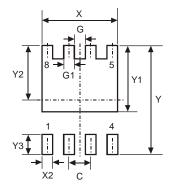


POWERDI3333-8						
Dim	Min	Max	Тур			
D	3.25	3.35	3.30			
Е	3.25	3.35	3.30			
D2	2.22	2.32	2.27			
E2	1.56	1.66	1.61			
Α	0.75	0.85	0.80			
A1	0	0.05	0.02			
A3	-	-	0.203			
b	0.27	0.37	0.32			
b2	1	-	0.20			
١	0.35	0.45	0.40			
L1	1	-	0.39			
е	_	_	0.65			
Z	_	_	0.515			
All Dimensions in mm						

DOWED DIAGON O

Suggested Pad Layout

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



Dimensions	Value (in mm)			
С	0.650			
G	0.230			
G1	0.420			
Y	3.700			
Y1	2.250			
Y2	1.850			
Y3	0.700			
Х	2.370			
X2	0.420			



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