



80V 175°C N-CHANNEL ENHANCEMENT MODE MOSFET POWERDI®

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _C = +25°C
80V	17mΩ @ V _{GS} = 10V	72A
	$21m\Omega$ @ $V_{GS} = 4.5V$	62A

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.

- · Synchronous Rectifier
- Backlighting
- Power Management Functions
- DC-DC Converters

Features

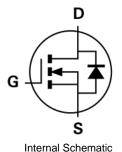
- Rated to +175°C Ideal for High Ambient Temperature Environments
- High Conversion Efficiency
- Low R_{DS(ON)} Minimizes On State Losses
- Low Input Capacitance
- · Fast Switching Speed
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

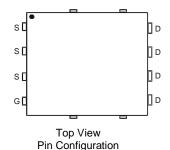
Mechanical Data

- Case: POWERDI[®] 5060-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Finish Matte Tin Annealed over Copper Leadframe;
 Solderable per MIL-STD-202, Method 208 (§3)
- Weight: 0.097 grams (Approximate)









Ordering Information (Note 4)

Part Number	Case	Packaging	
DMTH8012LPS-13	POWERDI [®] 5060-8	2,500 / Tape & Reel	

Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 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



| | Hanufacturer's Marking | H8012LS = Product Type Marking Code | YYWW = Date Code Marking | YY = Last Two Digits of Year (ex: 15 = 2015) | WW = Week Code (01 to 53)

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	80	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current, V _{GS} = 10V (Note 5)	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	10 8.4	А
Continuous Drain Current, V _{GS} = 10V (Note 6)	$T_C = +25$ °C $T_C = +70$ °C	I _D	72 60	А
Maximum Continuous Body Diode Forward Current (Note 6)		Is	90	Α
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)		I _{DM}	80	Α
Avalanche Current, L=0.1mH		I _{AS}	11.6	Α
Avalanche Energy, L=0.1mH		E _{AS}	10.2	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	$T_A = +25^{\circ}C$	P_{D}	2.6	W
Thermal Resistance, Junction to Ambient (Note 5)		$R_{ heta JA}$	57	°C/W
Total Power Dissipation (Note 6)	T _C = +25°C	P_{D}	136	W
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	1.1	°C/W
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +175	°C

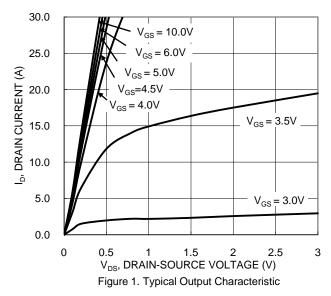
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)	,						
Drain-Source Breakdown Voltage	BV _{DSS}	80	-	-	V	$V_{GS} = 0V$, $I_D = 1mA$	
Zero Gate Voltage Drain Current	I _{DSS}	-	-	1	μΑ	$V_{DS} = 64V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	1	-	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(TH)}	1	-	3	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
Static Drain-Source On-Resistance	D	-	14	17	mΩ	$V_{GS} = 10V, I_D = 12A$	
Static Dialii-Source Off-Resistance	R _{DS(ON)}	1	16.5	21	11122	$V_{GS} = 4.5V, I_D = 6A$	
Diode Forward Voltage	V_{SD}	1	0.9	1.2	٧	$V_{GS} = 0V, I_{S} = 20A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	-	1949	-		$V_{DS} = 40V$, $V_{GS} = 0V$, $f = 1MHz$	
Output Capacitance	Coss	-	177	-	pF		
Reverse Transfer Capacitance	C _{rss}	-	10	-			
Gate Resistance	Rg	-	0.7	-	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Qg	=	15	-			
Total Gate Charge (V _{GS} = 10V)	Qg	-	34	-	nC	V _{DS} = 40V, I _D = 12A	
Gate-Source Charge	Q_{gs}	-	6	-	iiC		
Gate-Drain Charge	Q_{gd}	-	4.5	-			
Turn-On Delay Time	t _{D(ON)}	-	4.9	-		$V_{DD} = 40V, V_{GS} = 10V,$ $I_{D} = 12A, R_{G} = 1.6\Omega$	
Turn-On Rise Time	t _R	-	3.8	-			
Turn-Off Delay Time	t _{D(OFF)}	-	16.5	-	ns		
Turn-Off Fall Time	t _F	=	3.5	-			
Body Diode Reverse Recovery Time	t _{RR}	-	30.2	-	ns	1 124 di/dt 1004/0-	
Body Diode Reverse Recovery Charge	Q_{RR}	-	34.6	-	nC	$I_F = 12A$, di/dt = 100A/ μ s	

Notes:

- Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 Thermal resistance from junction to soldering point (on the exposed drain pad).
 Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to product testing.





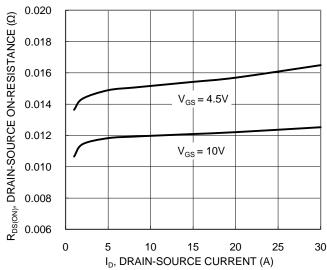


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

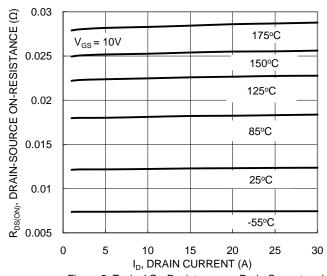
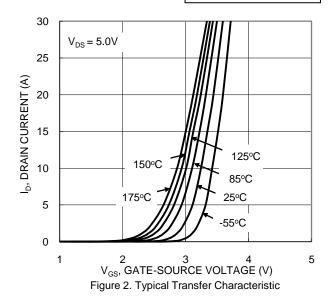
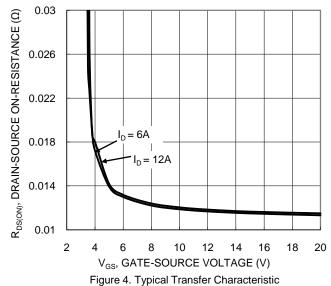


Figure 5. Typical On-Resistance vs. Drain Current and Temperature





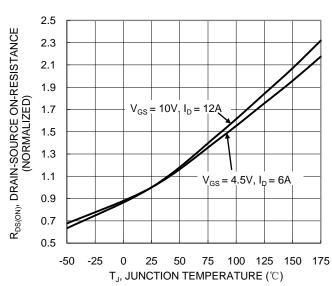


Figure 6. On-Resistance Variation with Temperature



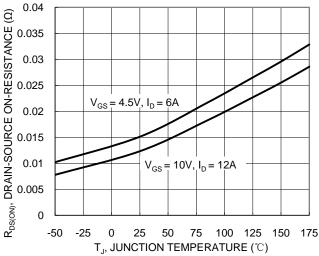


Figure 7. On-Resistance Variation with Temperature

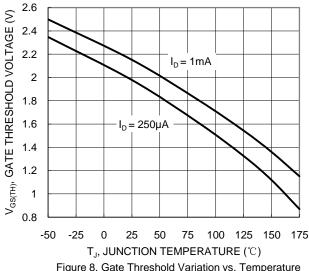
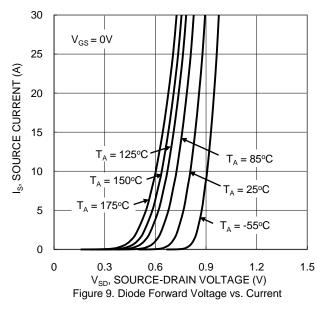
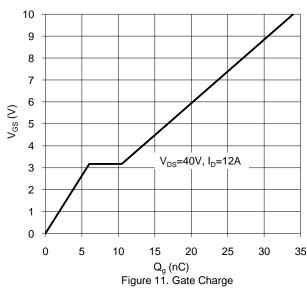
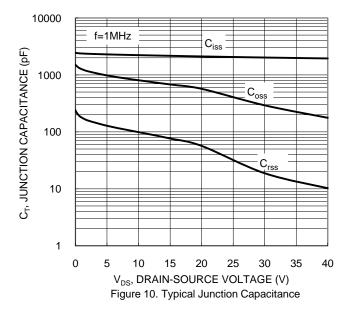
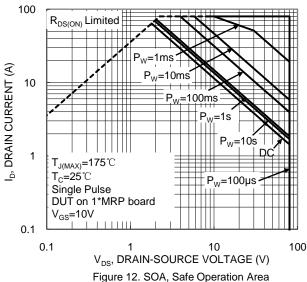


Figure 8. Gate Threshold Variation vs. Temperature

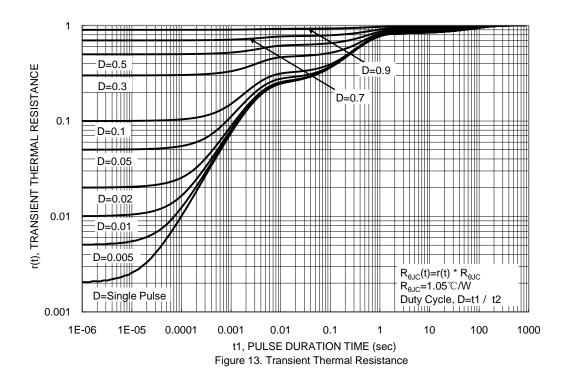










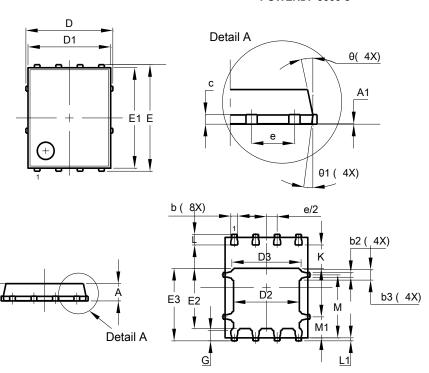




Package Outline Dimensions

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

POWERDI®5060-8

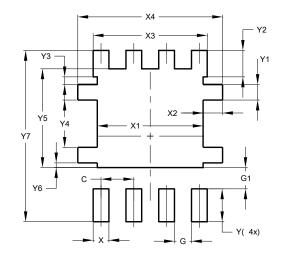


POWERDI®5060-8				
Dim	Min	Max	Тур	
Α	0.90	1.10	1.00	
A1	0.00	0.05	-	
b	0.33	0.51	0.41	
b2	0.200	0.350	0.273	
b3	0.40	0.80	0.60	
С	0.230	0.330	0.277	
D	Ļ	5.15 BSC	,	
D1	4.70	5.10	4.90	
D2	3.70	4.10	3.90	
D3	3.90	4.30	4.10	
Е	(3.15 BSC	,	
E1	5.60	6.00	5.80	
E2	3.28	3.68	3.48	
E3	3.99	4.39	4.19	
е	•	1.27 BSC	,	
G	0.51	0.71	0.61	
K	0.51	-	-	
L	0.51	0.71	0.61	
L1	0.100	0.200	0.175	
M	3.235	4.035	3.635	
M1	1.00	1.40	1.21	
θ	10°	12º	11º	
θ1	6º	8º	70	
All Dimensions in mm				

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.

POWERDI[®]5060-8



Dimensions	Value (in mm)
С	1.270
G	0.660
G1	0.820
Х	0.610
X1	4.100
X2	0.755
Х3	4.420
X4	5.610
Υ	1.270
Y1	0.600
Y2	1.020
Y3	0.295
Y4	1.825
Y5	3.810
Y6	0.180
Y7	6.610



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ПОСТАВКА ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

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Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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