



DMN24H11DS

N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25°C
240V	11Ω @ V _{GS} = 10V	0.27A
2400	12Ω @ V _{GS} = 4.5V	0.26A

Description

This new generation MOSFET has been 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.

Applications

- DC-DC Converters
- Power management functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc

Features and Benefits

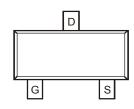
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

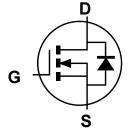
- Case: SOT23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 @3
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)







Top View Pin Configuration



Equivalent Circuit

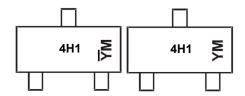
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN24H11DS-7	SOT23	3,000/Tape & Reel
DMN24H11DS-13	SOT23	10,000/Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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



4H1 = Product Type Marking Code

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)

 $Y \text{ or } \overline{Y} = \text{Year } (\text{ex: } Y = 2011)$

M = Month (ex: 9 = September)

Date Code Key

Year	201	1	2012		2013	20	14	2015		2016	- :	2017
Code	Υ		Z		Α	[3	С		D		E
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	240	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	I _D	0.27 0.22	А
Pulsed Drain Current (10µs pulse, duty cycle ≦1%)	I _{DM}	0.8	Α
Maximum Body Diode Continuous Current (Note 5)	I _S	0.8	Α
Peak diode recovery dv/dt	dv/dt	6.0	V/ns

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

Characteristic	Symbol	Value	Units		
Total Power Dissipation	(Note 5)	D	0.75	W	
Total Fower Dissipation	(Note 6)	P_{D}	1.2		
Thermal Desigtance, Junction to Ambient	(Note 5)	Б	166		
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{ hetaJA}$	104	°C/W	
Thermal Resistance, Junction to Case	(Note 6)	$R_{ heta JC}$	35		
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +150	°C	

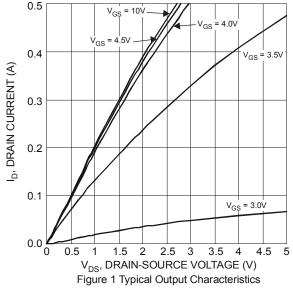
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

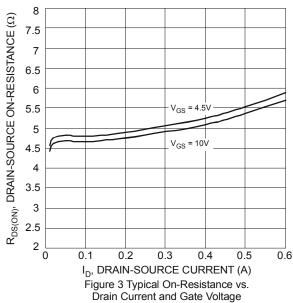
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	240		_	V	V _{GS} = 0V, I _D = 250μA	
Zero Gate Voltage Drain Current	I _{DSS}		_	100	nA	V _{DS} = 240V, V _{GS} = 0V	
Gate-Body Leakage	I _{GSS}	_	_	±100	nA	V _{GS} = ±20V, V _{DS} = 0V	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(th)}	1.0	2.0	3.0	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
Static Drain-Source On-Resistance	D	_	3.7	11	Ω	$V_{GS} = 10V, I_D = 0.3A$	
Static Dialii-Source Off-Resistance	R _{DS} (ON)		4.0	12	12	$V_{GS} = 4.5V, I_D = 0.2A$	
Diode Forward Voltage	V_{SD}		0.7	1.2	V	$V_{GS} = 0V, I_S = 0.1A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	_	76.8	_		V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	
Output Capacitance	Coss		6.9	_	pF		
Reverse Transfer Capacitance	Crss	_	4.1	_			
Gate Resistance	R _G		17	_	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz	
Total Gate Charge	Qg	_	3.7	_			
Gate-Source Charge	Q _{gs}	_	0.3	_	nC	$V_{DS} = 192V, V_{GS} = 10V,$ $I_{D} = 0.1A$	
Gate-Drain Charge	Q _{gd}	_	2.1	_		ID = 0.1A	
Turn-On Delay Time	t _{D(on)}		4.8	_			
Turn-On Rise Time	t _r		4.7	_	C	V _{DS} = 120V, I _D = 0.1A,	
Turn-Off Delay Time	t _{D(off)}		17.5	_	nS	$V_{GS} = 10V, R_G = 6.0\Omega$	
Turn-Off Fall Time	t _f	_	102.3	_			
Reverse Recovery Time	t _{rr}	_	45.6	_	nS	V _R = 100V. I _F = 1.0A.	
Reverse Recovery Charge	Qrr	_	51.6	_	nC	di/dt = 100A/µs	

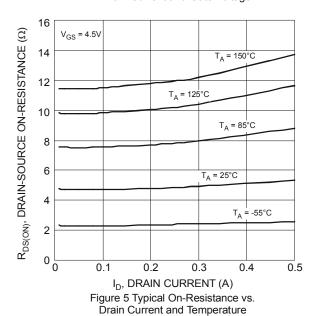
Notes:

- 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 1inch square copper pad layout
- 7 .Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production testing.

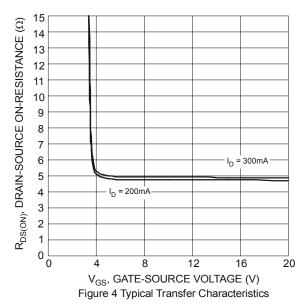








0.3 V_{DS} = 5.0V 0.25 ID, DRAIN CURRENT (A) 0.2 0.15 0.1 T_A = 125°C = 25°C 0.05 0 0 0.5 1.5 2 2.5 3.5 4 4.5 1 3 5 V_{GS} , GATE-SOURCE VOLTAGE (V) Figure 2 Typical Transfer Characteristics



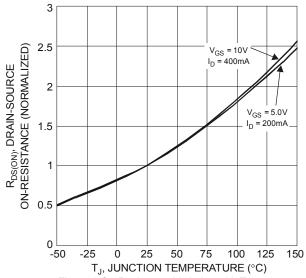
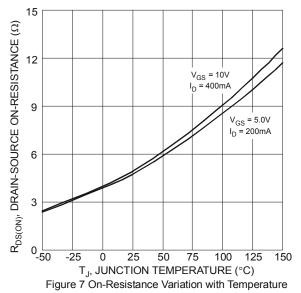
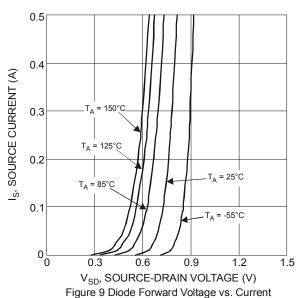
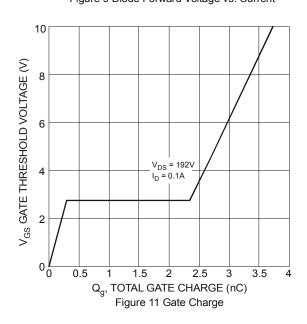


Figure 6 On-Resistance Variation with Temperature









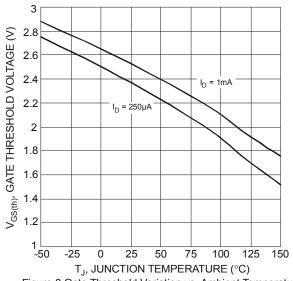
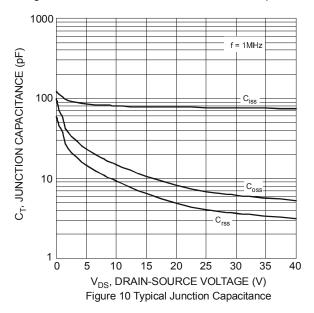
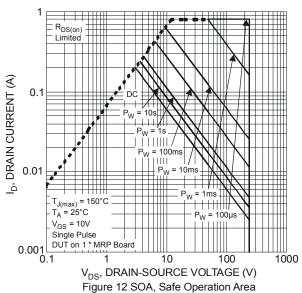
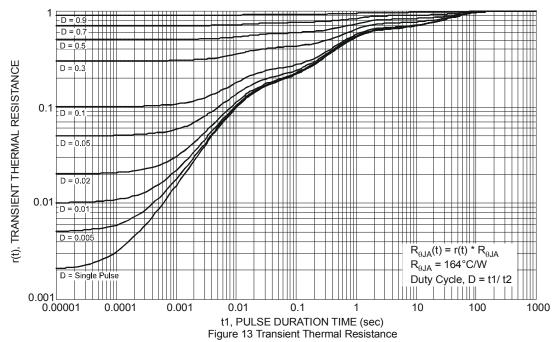


Figure 8 Gate Threshold Variation vs. Ambient Temperature



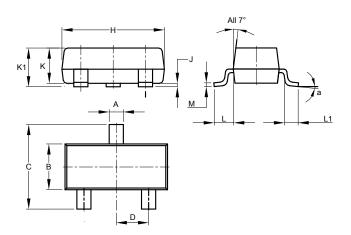






Package Outline Dimensions

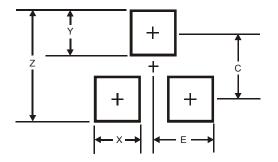
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SO123							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	2.30	2.50	2.40				
D	0.89	1.03	0.915				
F	0.45	0.60	0.535				
G	1.78	2.05	1.83				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
K	0.890	1.00	0.975				
K1	0.903	1.10	1.025				
L	0.45	0.61	0.55				
L1	0.25	0.55	0.40				
M	0.085	0.150	0.110				
а	8°						
All	All Dimensions in mm						

Suggested Pad Layout

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



Dimensions	Value (in mm)				
Z	2.9				
Х	0.8				
Υ	0.9				
С	2.0				
E	1.35				



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