



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)}	I _D T _A = +25℃
240V	$3.5\Omega @ V_{GS} = 10V$	0.48A
	3.5Ω @ $V_{GS} = 4.5V$	0.48A
	6.0Ω @ $V_{GS} = 3.3V$	0.37A

Description

This new generation 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.

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)

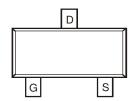
Mechanical Data

- 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 (e3)
- Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe).
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)

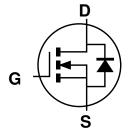
SOT23







Top View Pin Configuration



Equivalent Circuit

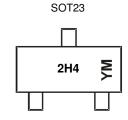
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN24H3D5L-7	SOT23	3,000/Tape & Reel
DMN24H3D5L-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.
- 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



2H4 = Product Type Marking Code YM = Date Code Marking Y or \overline{Y} = Year (ex: C = 2015) M = Month (ex: 9 = September)

Date Code Key

	Year	2015		2016	2017		2018	2019		2020	2021		2022
	Code	С		D	Е		F	G		Н	I		J
_													
	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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) $V_{GS} = 10V$ Steady $T_A = +25 ^{\circ}C$ $T_A = +70 ^{\circ}C$			I _D	0.48 0.39	А
Pulsed Drain Current (10µs pulse, duty cycle ≤ 1%)	I _{DM}	1.9	Α		
Maximum Body Diode Continuous Current (Note 6)			Is	1.5	Α

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

Characteristic	Symbol	Value	Units		
Total Power Dissipation	(Note 5)	PD	0.76	W	
Total Fower dissipation	(Note 6)	PD	1.26	VV	
Thermal Resistance, Junction to Ambient	(Note 5)	נ	163		
memai nesistance, junction to Ambient	(Note 6)	$R_{ heta JA}$	99	°C/W	
Thermal Resistance, Junction to Case	$R_{ heta JC}$	31			
Operating and Storage Temperature Range		$T_{J,}T_{STG}$	-55 to 150	°C	

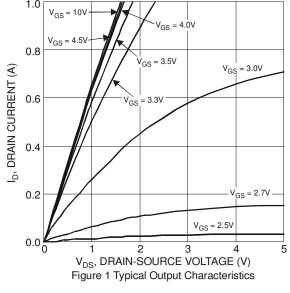
Electrical Characteristics (@T_A = +25 °C, unless otherwise specified.)

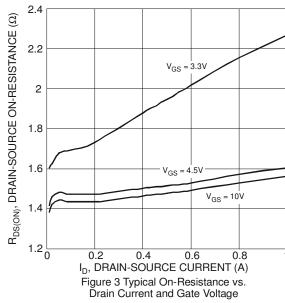
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	240	_	_	V	$V_{GS} = 0V$, $I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1.0	μΑ	$V_{DS} = 192V, V_{GS} = 0V$	
Gate-Body Leakage	I _{GSS}		_	±100	nA	$V_{GS}=\pm 20V,V_{DS}=0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.95	2.5	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
		_	1.5	3.5		$V_{GS} = 10V, I_D = 0.3A$	
Static Drain-Source On-Resistance	R _{DS(ON)}		1.5	3.5	Ω	$V_{GS} = 4.5V, I_D = 0.2A$	
		_	1.7	6.0		$V_{GS} = 3.3V, I_D = 0.1A$	
Diode Forward Voltage	V_{SD}	_	0.7	1.2	V	$V_{GS} = 0V, I_{S} = 0.3A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	_	188	_		V 05V V 0V	
Output Capacitance	Coss	_	11	_	pF	$V_{DS} = 25V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}		8	_		1 - 1.0WH2	
Gate Resistance	R_g		3.86	_	Ω	VDS = 0V, VGS = 0V, f = 1.0MHz	
Total Gate Charge	Q_g		6.6	_			
Gate-Source Charge	Q_{gs}		8.0	_	nC	$V_{DS} = 192V, V_{GS} = 10V,$ $I_{D} = 0.5A$	
Gate-Drain Charge	Q_{gd}		2.1	_		ID = 0.3A	
Turn-On Delay Time	t _{D(on)}		2.3	_			
Turn-On Rise Time	t _r	_	2.0	_	nS	$V_{DS} = 60V, R_L = 200\Omega$	
Turn-Off Delay Time	t _{D(off)}		21	_	110	$V_{GS} = 10V$, $R_G = 25\Omega$	
Turn-Off Fall Time	t _f	_	7.2	_			

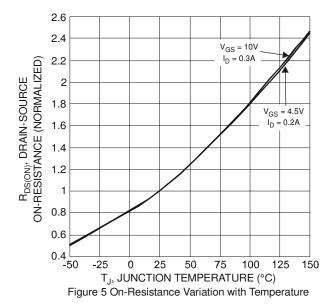
Notes:

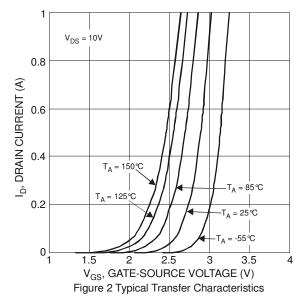
- 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper pad layout
- 7 .Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production testing.

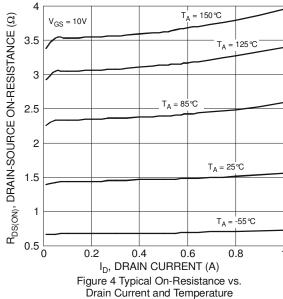












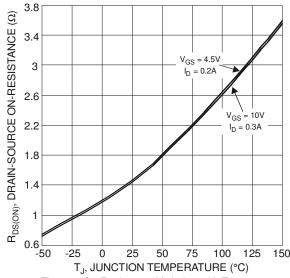


Figure 6 On-Resistance Variation with Temperature



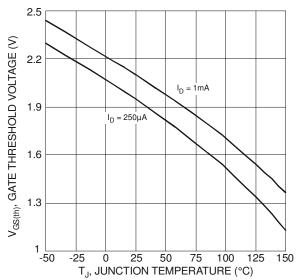
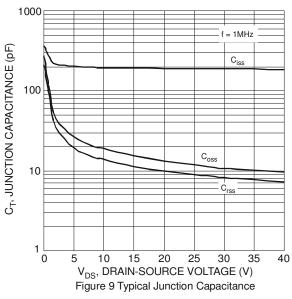
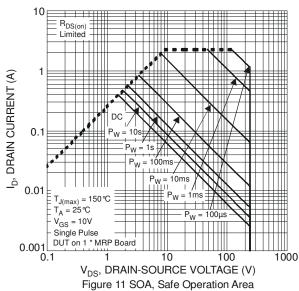
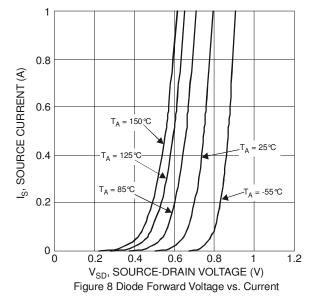
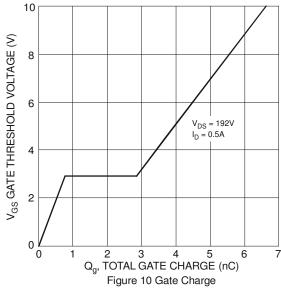


Figure 7 Gate Threshold Variation vs. Ambient Temperature

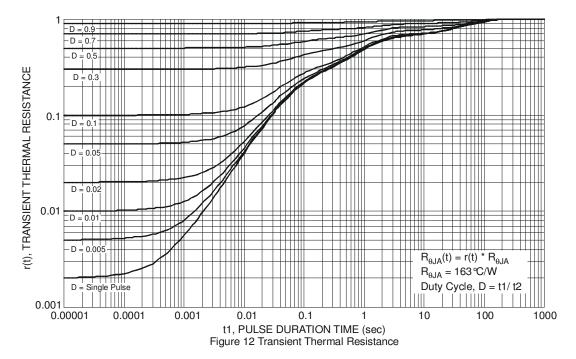






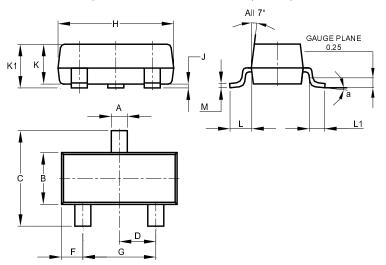






Package Outline Dimensions

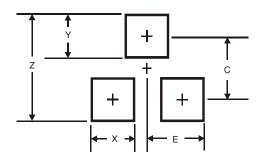
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
C	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				
7	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				
М	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 the latest version.



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



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