



100V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25°C
100V	700mΩ @ V _{GS} = 10V	0.70A
1000	900mΩ @ V _{GS} = 6.0V	0.62A

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

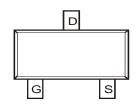
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

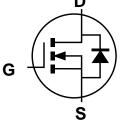
- Case: SOT23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe). (@3)
- Terminal Connections: See Diagram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







Top View Pin Configuration



Equivalent Circuit

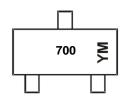
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN10H700S-7	SOT23	3,000/Tape & Reel
DMN10H700S-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 https://www.diodes.com/design/support/packaging/diodes-packaging/

Marking Information



700 = Product Type Marking Code YM = Date Code Marking Y or \overline{Y} = Year (ex: E= 2017) M = Month (ex: 9 = September)

Date Code Key

Year	2015	2016	2017	2018	2019	2020	202	21 2	022	2023	2024	2025
Code	С	D	Е	F	G	Н	I		J	K	L	М
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

October 2017



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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	I _D	0.70 0.56	А
Pulsed Drain Current (10µs Pulse, Duty Cycle ≦1%)	I _{DM}	2.5	Α
Maximum Body Diode Continuous Current (Note 6)	I _S	0.6	Α

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

Characteristic		Symbol	Value	Unit	
Total Power Dissipation	(Note 5)	C	0.4	W	
Total Power Dissipation	(Note 6)	P _D	0.5		
Thermal Resistance, Junction to Ambient (Note 5)	Ctoody state	$R_{ heta JA}$	303		
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	$R_{ heta JA}$	239	°C/W	
Thermal Resistance, Junction to Case	(Note 6)	$R_{ heta JC}$	88		
Operating and Storage Temperature Range		T_{J} , T_{STG}	-55 to +150	°C	

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

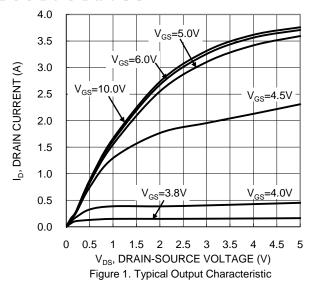
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)				•	•		
Drain-Source Breakdown Voltage	BV _{DSS}	100	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	V _{DS} = 100V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(TH)}	2.0	2.7	4.0	٧	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
Static Drain-Source On-Resistance	D	_	540	700	mΩ	$V_{GS} = 10V, I_D = 1.5A$	
Static Dialii-Source Off-Resistance	R _{DS(ON)}	_	550	900	11177	$V_{GS} = 6.0V, I_D = 1.0A$	
Diode Forward Voltage	V_{SD}		0.9	1.1	V	$V_{GS} = 0V, I_S = 1.5A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	Ciss	_	235	_			
Output Capacitance	Coss	_	7	_	pF	$V_{DS} = 50V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	Crss	_	5	_		1 = 1.0WHZ	
Gate Resistance	R _G	_	1.9	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1.0MHz$	
Total Gate Charge	Qg	_	4.6	_			
Gate-Source Charge	Q_{gs}	_	1.1	_	nC	$V_{DS} = 50V, V_{GS} = 10V,$	
Gate-Drain Charge	Q_{gd}		1.6	_		I _D = 1.0A	
Turn-On Delay Time	t _{D(ON)}	_	2.5	_			
Turn-On Rise Time	t _R		1.1	_	20	$V_{DS} = 50V, I_{D} = 1.0A,$	
Turn-Off Delay Time	t _{D(OFF)}		5.4	_	ns	$V_{GS} = 10V, R_{G} = 6.0\Omega$	
Turn-Off Fall Time	t _F		1.0	_			
Reverse Recovery Time	t _{RR}		22		ns	V _R = 100V, I _F =1.8A, di/dt=100A/µs	
Reverse Recovery Charge	Q_{RR}	_	15	_	nC	$VR = 100V$, $IF = 1.0A$, $dI/dI = 100A/\mu S$	

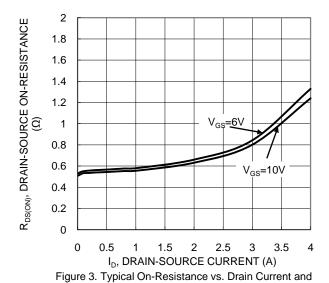
Notes:

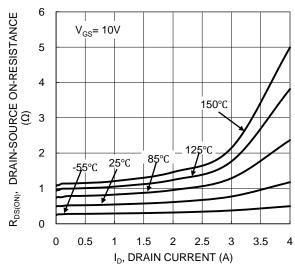
- 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
- 7 .Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to production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

DMN10H700S



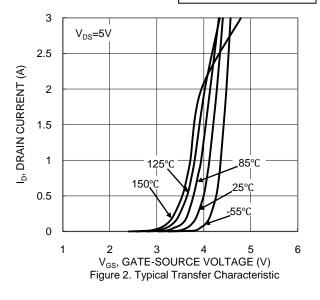


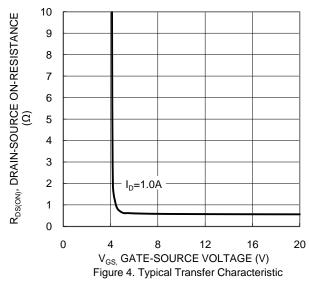




Gate Voltage

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





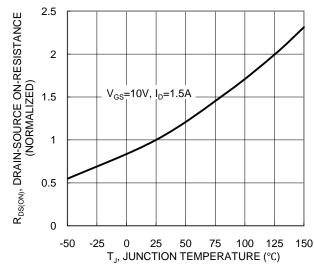


Figure 6. On-Resistance Variation with Junction Temperature





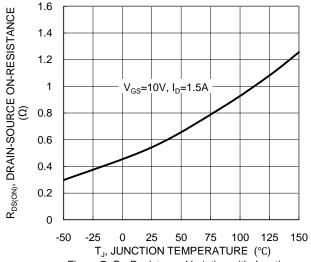
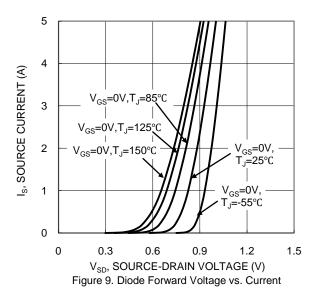
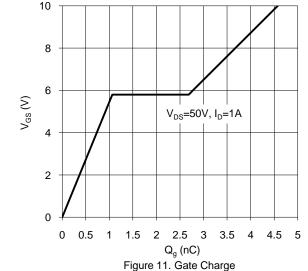


Figure 7. On-Resistance Variation with Junction Temperature





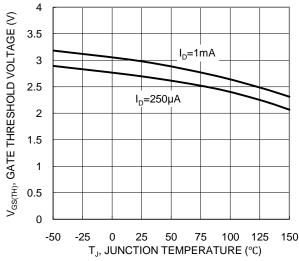
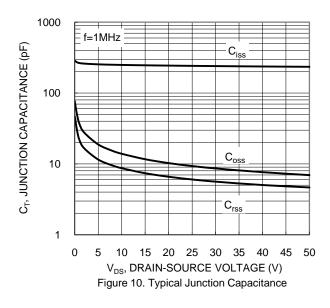


Figure 8. Gate Threshold Variation vs. Junction Temperature



10 Limited ID, DRAIN CURRENT (A) 1 0.1 T_{J(MAX)}=150°C 0.01 T_C=25°C Single Pulse DUT on 1*MRP board V_{GS}=10V 0.001 0.1 10 100 1000 V_{DS}, DRAIN-SOURCE VOLTAGE (V) Figure 12. SOA, Safe Operation Area



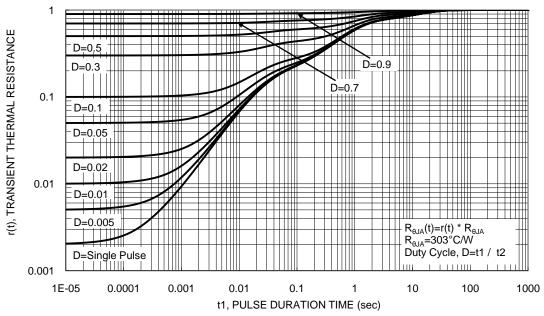


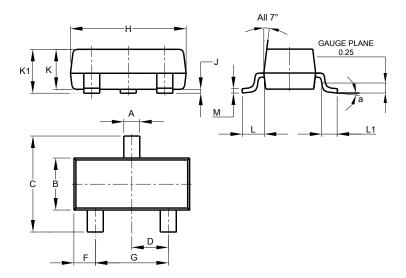
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

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

SOT23

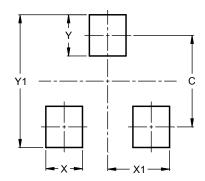


SOT23								
Dim	Min	Max	Тур					
Α	0.37	0.51	0.40					
В	1.20	1.40	1.30					
С	2.30	2.50	2.40					
D	0.89	1.03	0.915					
F	0.45	0.60	0.535					
G	1.78	2.05	1.83					
H	2.80	3.00	2.90					
J	0.013	0.10	0.05					
K	0.890	1.00	0.975					
K1	0.903	1.10	1.025					
L	0.45	0.61	0.55					
L1	0.25	0.55	0.40					
М	0.085	0.150	0.110					
а	0°	8°						
All Dimensions in mm								

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)				
С	2.0				
Х	0.8				
X1	1.35				
Y	0.9				
Y1	2.9				



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