



DMN15H310SE

150V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON)} max	I _D T _A = +25°C
450) ($310 \text{m}\Omega$ @ $V_{GS} = 10V$	2.0A
150V	330 m Ω @ V _{GS} = 5.0 V	1.9A

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

- Motor Control
- Transformer Driving Switch
- DC-DC Converters
- Power Management Functions
- Uninterrupted Power Supply

Features

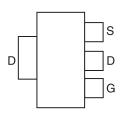
- 100% Unclamped Inductive Switch (UIS) Test in Production
- Fast Switching Speed
- Low On-Resistance
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

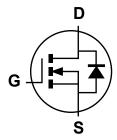
- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound;
 UL Flammability Classification Rating 94V-0 (Note 1)
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram Below
- Terminals: Finish Matte Tin Annealed over Copper Leadframe;
 Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.112 grams (Approximate)







Pin Out - Top View



Equivalent Circuit

Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMN15H310SE-13	Standard	SOT223	2,500 / Tape & Reel

Notes:

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

SOT223

Oll = Manufacturer's Marking 15H310 = Marking Code YWW = Date Code Marking Yor Y = Year (ex: 4 = 2014) WW = Week (01 - 53)

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

Characteristic	Symbol	Value	Units	
Drain-Source Voltage	V _{DSS}	150	V	
Gate-Source Voltage	V _{GSS}	±20	V	
Continuous Durin Courset (Note 5) / _ 40)/	$T_A = +25$ °C $T_A = +70$ °C	I _D	2.0 1.6	А
Continuous Drain Current (Note 5) V _{GS} = 10V	$T_{C} = +25^{\circ}C$ $T_{C} = +70^{\circ}C$	I _D	7.1 5.6	А
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	10	Α	
Maximum Body Diode Continuous Current	Is	2.5	Α	
Avalanche Energy (Note 6) L=26mH	Eas	1.45	mJ	
Avalanche Current (Note 6) L=26mH	I _{AS}	0.2	Α	
Peak Diode Recovery dv/dt ($I_{SD} \le 7.3A$, di/dt $\le 300A/\mu s$)		dv/dt	5	V/ns

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

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	TA = +25°C	D-	1.9	W
Total Fower Dissipation (Note 5)	TA = +70°C	P _D	1.2	
Thermal Resistance, Junction to Ambient (Note 5)		R _{θJA}	64	°C/W
Total Power Dissipation (Note 5) TC = +25°C		P _D	23.5	W
Thermal Resistance, Junction to Case (Note 5)		R ₀ JC	5.3	°C/W
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}	150	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	V _{DS} = 120V, 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)}	1	2.2	3	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain-Source On-Resistance	В	_	178	310	mΩ	V _{GS} = 10V, I _D = 1.5A	
Static Drain-Source On-Resistance	R _{DS (ON)}	_	190	330	mΩ	V _{GS} = 5.0V, I _D = 1.0A	
Diode Forward Voltage	V _{SD}	_	0.76	1.2	V	V _{GS} = 0V, I _S = 1.7A	
DYNAMIC CHARACTERISTICS (Note 6)							
Input Capacitance	C _{iss}	_	405	_		V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz	
Output Capacitance	Coss	_	40	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	20	_			
Gate Resistance	R _G	_	2.88	_	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz	
Total Gate Charge (V _{GS} = 5.0V)	Qg	_	4.6	_		V _{DS} = 80V, I _D = 7.3A	
Total Gate Charge (V _{GS} = 10V)	Qg	_	8.7	_	nC		
Gate-Source Charge	Q _{gs}	_	1.7	_	IIC		
Gate-Drain Charge	Q _{gd}	_	1.8	_			
Turn-On Delay Time	t _{D(on)}	_	3.5	_		$V_{DD} = 50V, V_{GS} = 10V,$ $R_G = 25\Omega, I_D = 7.3A$	
Turn-On Rise Time	t _r	_	7.8	_	nS		
Turn-Off Delay Time	t _{D(off)}	_	22	_	113		
Turn-Off Fall Time	t _f	_	11	_			
Reverse Recovery Time	t _{rr}	_	38	_	ns	I _F = 7.3A, di/dt = 100A/μs	
Reverse Recovery Charge	Q _{rr}	_	53	_	nC	I _F = 7.3A, di/dt = 100A/μs	

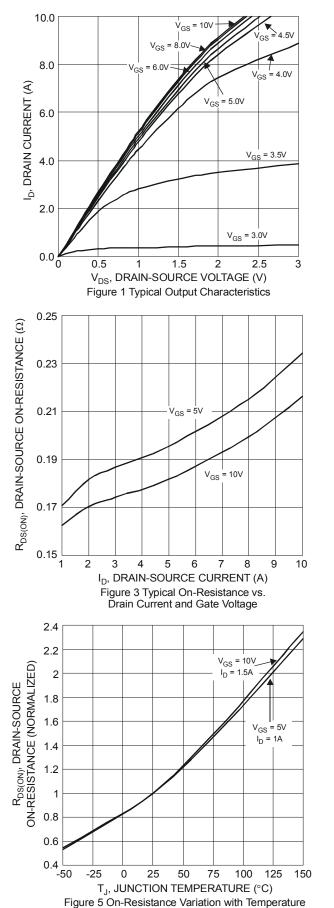
5. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate.

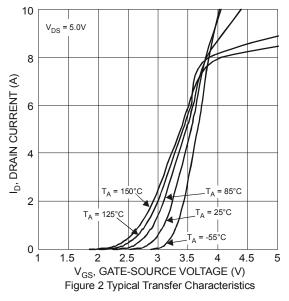
Notes:

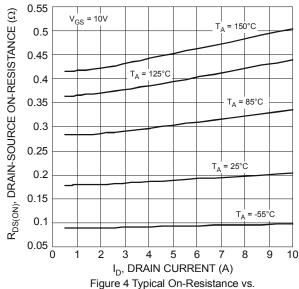
^{6.} Guaranteed by design. Not subject to product testing.7. Short duration pulse test used to minimize self-heating effect.

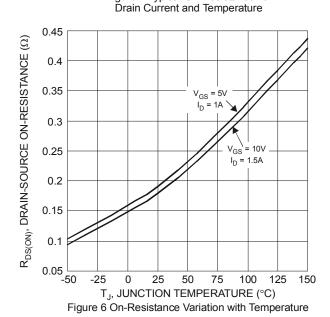














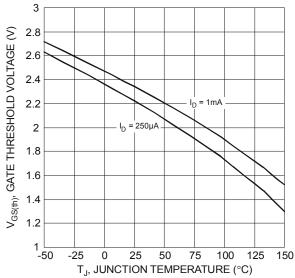
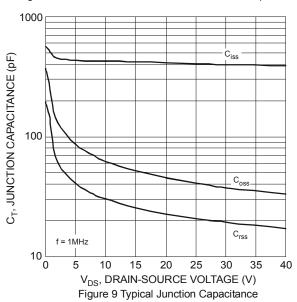
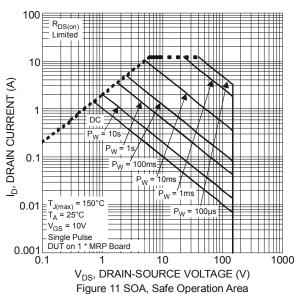
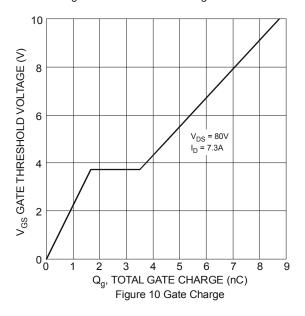


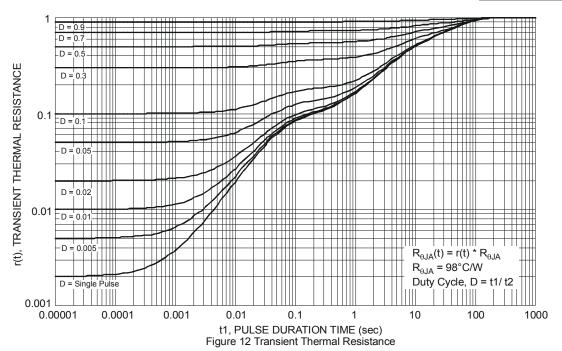
Figure 7 Gate Threshold Variation vs. Ambient Temperature







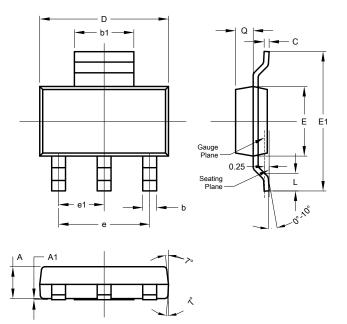






Package Outline Dimensions

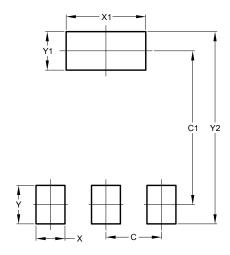
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223					
Dim	Min	Max	Тур		
Α	1.55	1.65	1.60		
A1	0.010	0.15	0.05		
b	0.60	0.80	0.70		
b1	2.90	3.10	3.00		
С	0.20	0.30	0.25		
D	6.45	6.55	6.50		
Е	3.45	3.55	3.50		
E1	6.90	7.10	7.00		
е	-	-	4.60		
e1	-	-	2.30		
L	0.85	1.05	0.95		
Q	0.84	0.94	0.89		
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)				
С	2.30				
C1	6.40				
Х	1.20				
X1	3.30				
Y	1.60				
Y1	1.60				
C2	8 00				



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