



Product Summary

V _{(BR)DSS}	Rds(on)	Ι _D T _A = +25°C
130V	0.75Ω @ V _{GS} = 10V	1.0A
1300	$0.85\Omega @ V_{GS} = 6.0V$	0.9A

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.

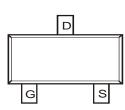
Applications

EW PRODUCT

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



Top View



G

Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN13H750S-7	SOT23	3,000/Tape & Reel
DMN13H750S-13	SOT23	10,000/Tape & Reel

Top View

Pin Configuration

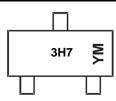
Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

 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



3H7 = Product Type Marking CodeYM = Date Code MarkingY or Y = Year (ex: C = 2015)M = Month (ex: 9 = September)

Date Code Key

Year	2014		2015	2016		2017	2018		2019	2020		2021
Code	В		С	D		E	F		G	Н		I
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D

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130V N-CHANNEL ENHANCEMENT MODE MOSFET

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 (e3)
- Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Terminal Connections: See Diagram
- Weight: 0.009 grams (Approximate)



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

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	130	V		
Gate-Source Voltage	V _{GSS}	±20	V		
	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	1.0 0.8	А
Continuous Drain Current (Note 6) V_{GS} = 10V	t<10s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	ID	1.2 1.0	А
Pulsed Drain Current (10µs Pulse, Duty Cycle ≦1%)	I _{DM}	3.3	A		
Maximum Body Diode Continuous Current (Note 6)			I _S	1.0	A

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

Characteristic		Symbol	Value	Units	
Tatal Dowar Disaination	(Note 5)	P	0.77	w	
Total Power Dissipation	(Note 6)	PD	1.26	vv	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	D	163		
mermai Resistance, Junction to Amplent (Note 5)	t<10s	$R_{ extsf{ heta}}$ JA	115		
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	D	99	°C/W	
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{ extsf{ heta}JA}$	70		
Thermal Resistance, Junction to Case	(Note 6)	$R_{\theta JC}$	17.3		
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +150	°C	

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

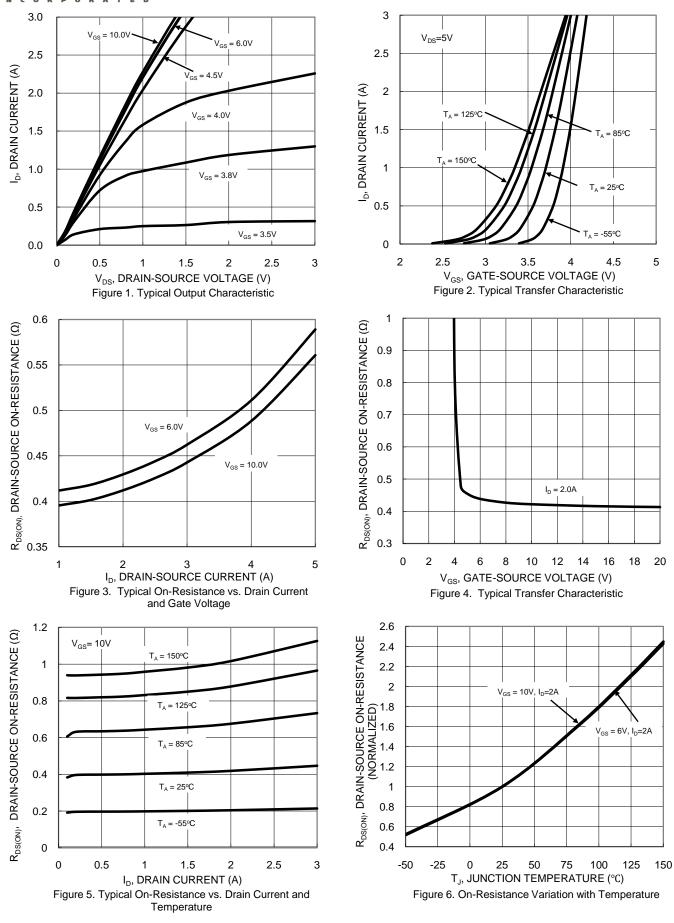
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)	Symbol	IVIIII	Тур	IVIAX	Unit	Test condition	
Drain-Source Breakdown Voltage	BV _{DSS}	130	_		V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current				100	nA	$V_{DS} = 120V, V_{GS} = 0V$	
Gate-Body Leakage	I _{DSS}			±100	nA	$V_{\rm DS} = +20V, V_{\rm DS} = 0V$ $V_{\rm GS} = \pm 20V, V_{\rm DS} = 0V$	
ON CHARACTERISTICS (Note 7)	IGSS			100		$VGS = \pm 20V, VDS = 0V$	
Gate Threshold Voltage	V _{GS(TH)}	2.0	2.7	4.0	V	$V_{DS} = V_{GS}, I_D = 250 \mu A$	
		_	0.41	0.75	_	$V_{GS} = 10V, I_D = 2.0A$	
Static Drain-Source On-Resistance	R _{DS (ON)}		0.43	0.85	Ω	$V_{GS} = 6.0V, I_D = 2.0A$	
Diode Forward Voltage	V _{SD}		0.8	1.2	V	$V_{GS} = 0V, I_{S} = 1.0A$	
DYNAMIC CHARACTERISTICS (Note 8)						•	
Input Capacitance	Ciss	_	231				
Output Capacitance	Coss	_	19		pF	$V_{DS} = 25V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}	_	11		1		
Gate Resistance	R _G	_	2.3	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge	Qa		5.6	_			
Gate-Source Charge	Q _{qs}	_	0.8	_	nC	$V_{DS} = 104V, V_{GS} = 10V,$	
Gate-Drain Charge	Q _{qd}		2.0			$I_D = 2.0A$	
Turn-On Delay Time	t _{D(ON)}		2.3				
Turn-On Rise Time	t _R		1.7			$V_{DS} = 65V, I_D = 2.0A,$	
Turn-Off Delay Time	t _{D(OFF)}		6.6	_	ns	$V_{GS} = 10V, R_{G} = 6.0\Omega$	
Turn-Off Fall Time	t _F		1.7	_]		
Reverse Recovery Time	t _{RR}		26	—	ns	1/- 100// $1-$ 100 di/dt 1000 ///0	
Reverse Recovery Charge	Q _{RR}		21		nC	V _R = 100V, I _F =1.0A, 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.



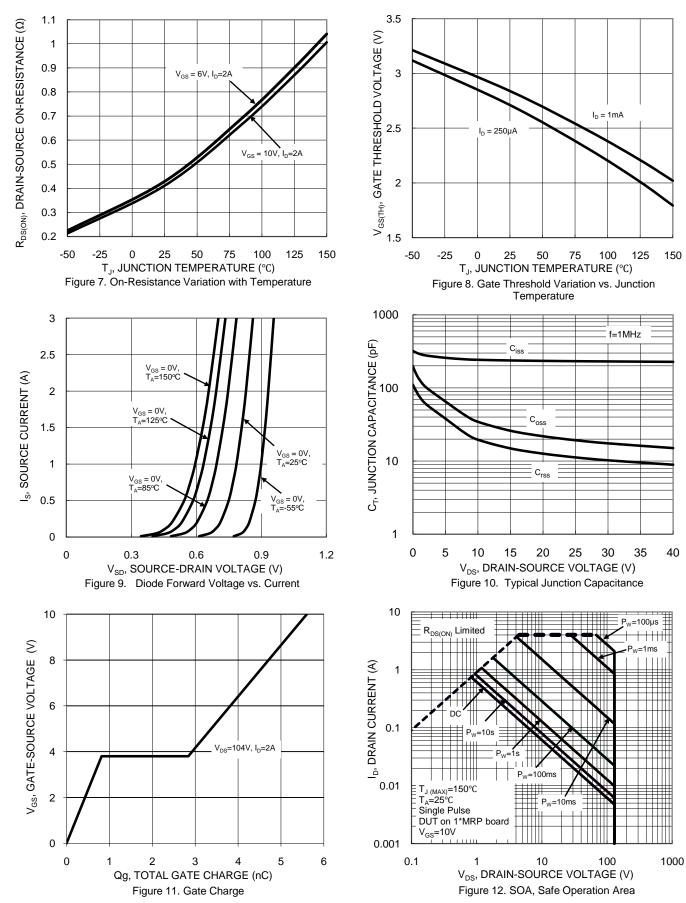
DMN13H750S



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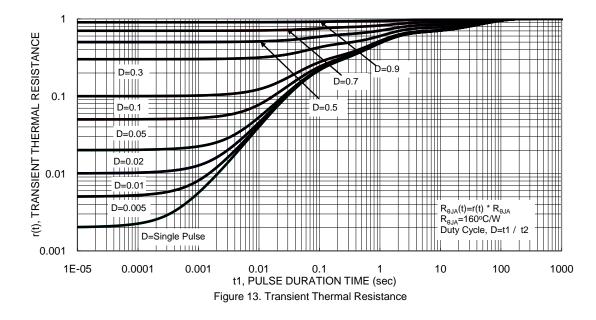


DMN13H750S



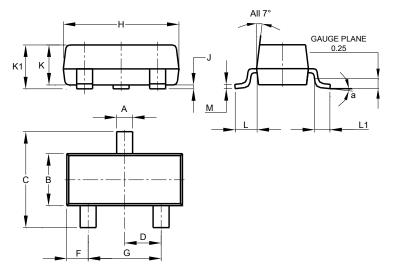
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Package Outline Dimensions

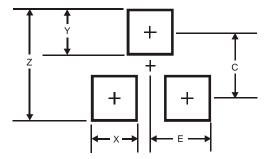
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



	SOT23							
Dim	Min	Max	Тур					
Α	0.37	0.51	0.40					
В	1.20	1.40	1.30					
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					
ĸ	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 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
Х	0.8
Y	0.9
С	2.0
E	1.35



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