

Description

The DMN3010 is the new generation trench N-ch MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

Features

- High - speed switching
- Excellent gate charge x $R_{DS(ON)}$ product (FOM)
- for extremely low $R_{DS(ON)}$
- Lead-Free, Halogen-Free; RoHS Compliant

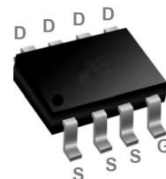
Applications

- Networking
- Load Switch
- Industrial DC/DC Conversion Circuits
- Motor Drive applications

V_{DS}	30V
I_D	11A
$R_{DS(ON) Typ}$	$9.5m\Omega @ V_{GS}=10V$
$R_{DS(ON) Typ}$	$12.5m\Omega @ V_{GS}=4.5V$

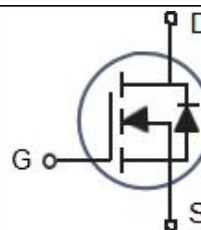
Outline

SOP-8 Pin Configuration



Equivalent

(4) Gate
(1\2\3) Source
(5\6\7\8) Drain



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
DMN3010	SOP-8		3000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous ^(Note2)	$T_A=25^\circ C$	I_D	11	A
	$T_A=70^\circ C$		8.8	A
-Pulsed ^(Note 1· Note 2)		I_{DM}	44	A
Maximum Power Dissipation	$T_A=25^\circ C$	P_D	1.8	W
	$T_A=70^\circ C$		1.1	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	70	$^\circ C / W$
Thermal Resistance Junction-Case		$R_{\theta JC}$	12	$^\circ C / W$

Electrical Characteristics (T_C=25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V , V _{GS} =0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250uA	1.0	1.5	2.4	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =5A		9.5	13.5	mΩ
		V _{GS} =4.5V , I _D =4A		12.5	16.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V , I _D =2A		18		S
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =15V , V _{GS} =0 V , f =1.0MHz		780		pF
Output Capacitance	C _{OSS}			160		pF
Reverse Transfer Capacitance	C _{RSS}			130		pF
Gate resistance	R _g	V _{GS} =0V,V _{DS} =0V, f=1MHz		3.2		Ω
Total Gate Charge	Q _g	V _{DS} =15V , I _D =5A , V _{GS} =10V		15		nC
Gate-Source Charge	Q _{gs}			4		nC
Gate-Drain Charge	Q _{gd}			3.8		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V , I _D =5A , V _{GS} =10V , R _{GEN} =6 Ω		11		ns
Rise Time	t _r			15		ns
Turn-Off Delay Time	t _{D(OFF)}			34		ns
Fall Time	t _f			10		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =5A		0.85	1.2	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

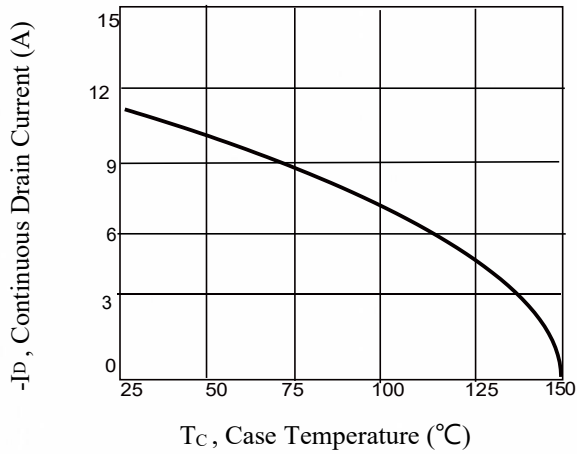


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

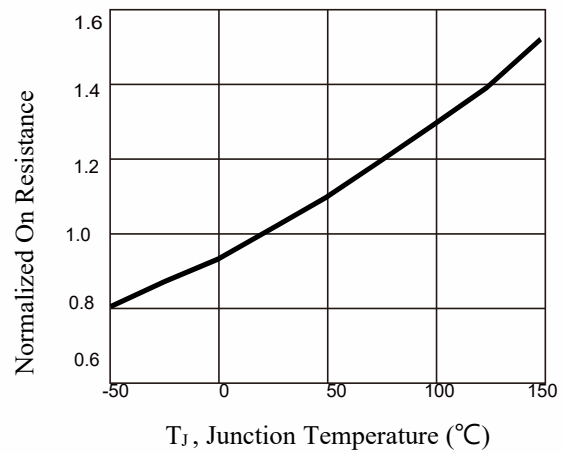


Fig.3 Normalized V_{th} vs. T_J

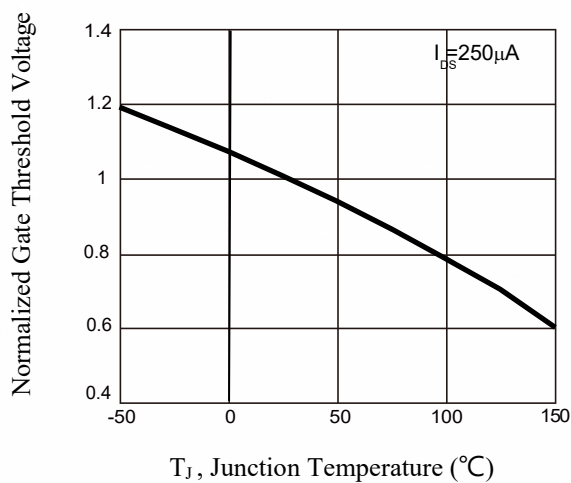


Fig.4 Gate Charge Waveform

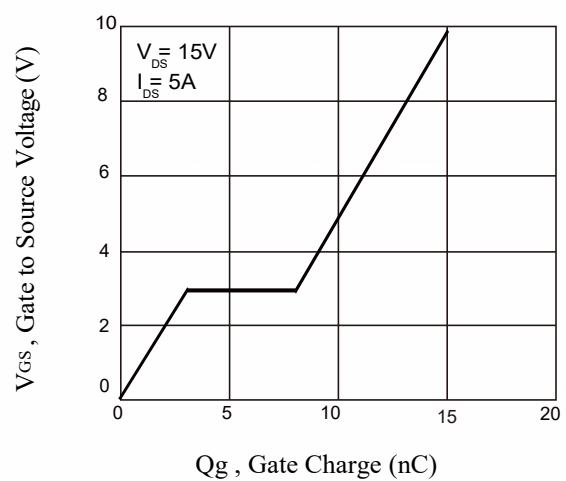


Fig.5 Typical Output Characteristics

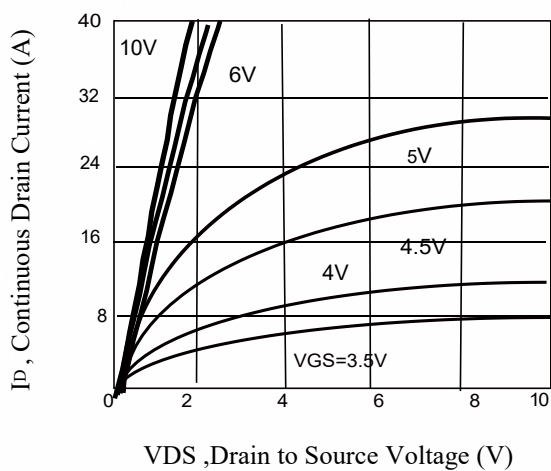


Fig.6 Turn-On Resistance vs. I_D

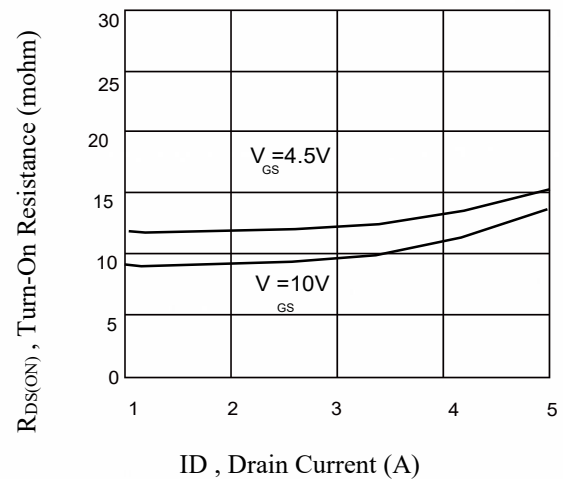


Fig.7 Capacitance

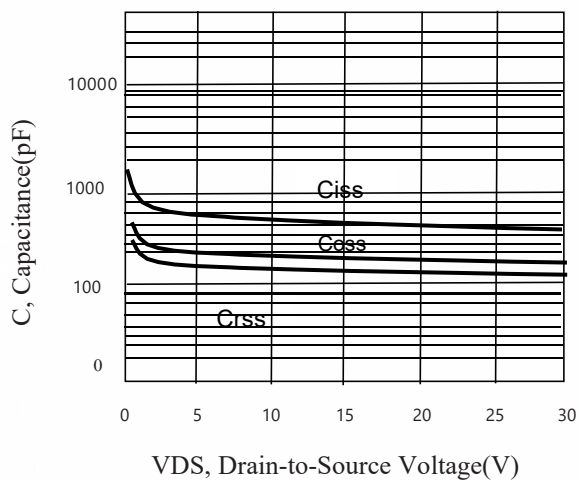


Fig.8 Typical Source-Drain Diode Forward Voltage

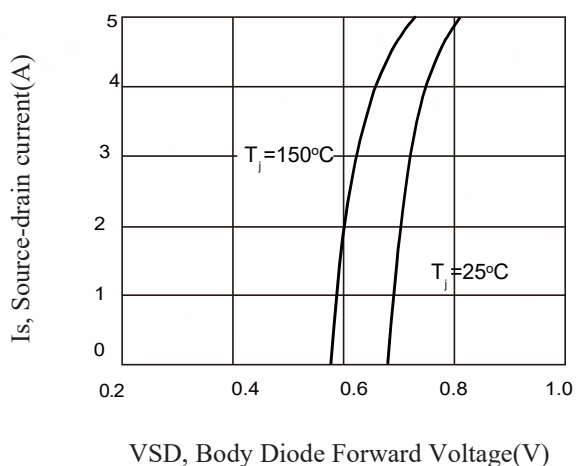


Fig.9 Normalized Transient Impedance

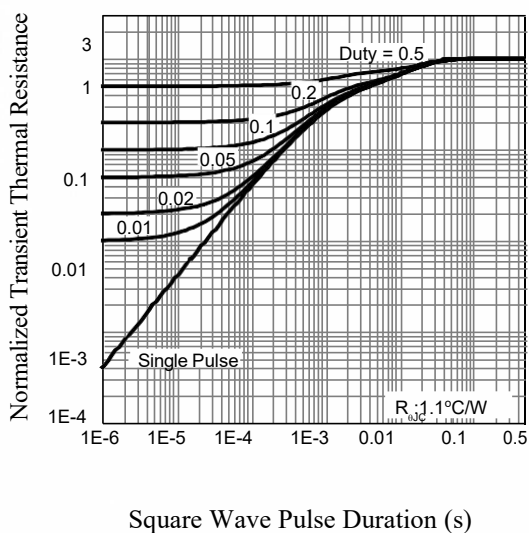


Fig.10 Maximum Safe Operation Area

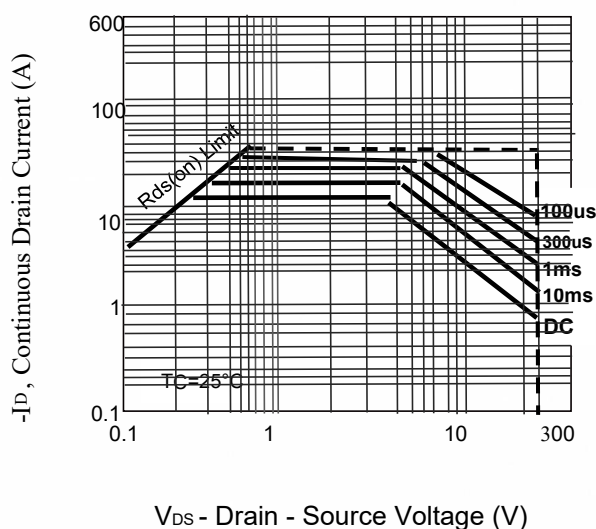


Figure11a. Switching Test Circuit

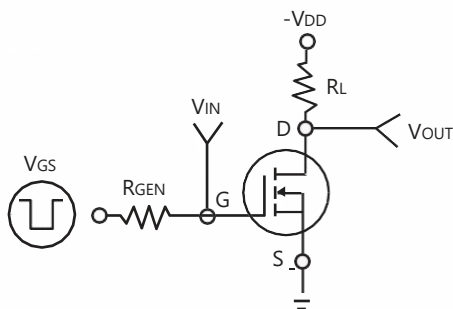
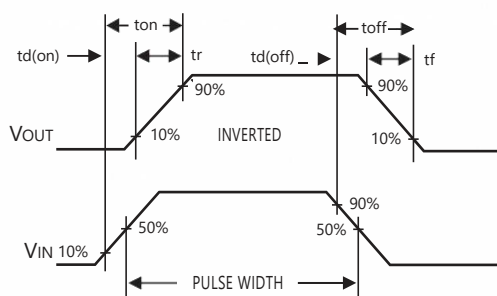
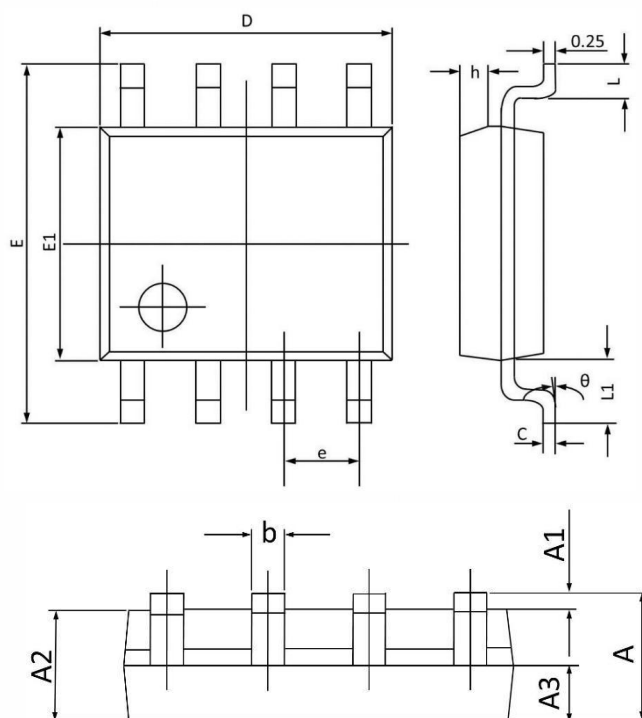


Figure11b. Switching Waveforms



SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.069
A1	0.050	0.250	0.002	0.010
A2	1.250	1.650	0.049	0.065
A3	0.500	0.700	0.020	0.028
b	0.300	0.510	0.012	0.020
c	0.150	0.260	0.006	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.020
L	0.400	1.000	0.016	0.039
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°

NOTICE

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