

30V Dual N Channel Enhancement MOSFET

Description

The DMN63D8LDW-7 is the new generation trench Dual 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

- Low Gate Charge
- Fast switching characteristic
- ESD protected gate
- Pb-free lead plating and halogen-free

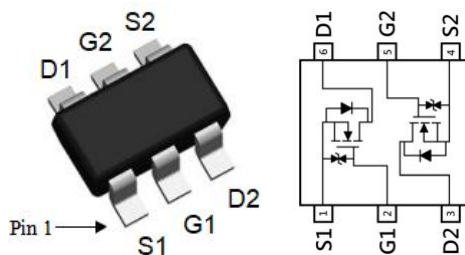
Applications

- Notebook
- Load Switch
- Power Management

V_{DSS}	30V
I_D	0.57A
$R_{DS(ON)}$	$0.4\Omega @ V_{GS} = -10V$
$R_{DS(ON)}$	$0.5\Omega @ V_{GS} = -4.5V$

Outline

SOT-363 Pin Configuration



Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
DMN63D8LDW-7	SOT-363		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	0.57	A
	$T_A = 70^\circ C$		0.45	A
-Pulsed ^(Note 1· Note 2)		I_{DM}	2.28	A
Maximum Power Dissipation	$T_A = 25^\circ C$	P_D	0.5	W
	$T_A = 70^\circ C$		0.3	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	260	$^\circ C / W$

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} =30V , V _{GS} =0V			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250uA	0.7	0.9	1.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V , I _D =0.2A		0.4	0.6	Ω
		V _{GS} =4.5V , I _D =0.2A		0.5	0.7	Ω
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C _{ISS}	V _{DS} =15V , V _{GS} =0 V , f =1.0MHz		19		pF
Output Capacitance	C _{OSS}			5.3		pF
Reverse Transfer Capacitance	C _{RSS}			2.6		pF
Total Gate Charge	Q _g	V _{DS} =15V , I _D =0.2A , V _{GS} =10V		1.1		nC
Gate-Source Charge	Q _{gs}			0.25		nC
Gate-Drain Charge	Q _{gd}			0.2		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =15V , I _D =0.2A , V _{GS} =10V , R _G =25Ω		5.2		ns
Rise Time	tr			18		ns
Turn-Off Delay Time	t _{D(OFF)}			22		ns
Fall Time	tf			20		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =0.2A			1.0	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

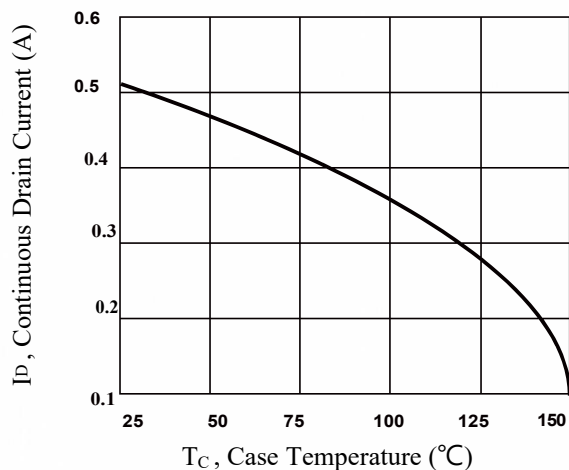


Fig.2 Normalized RDSON vs. TJ

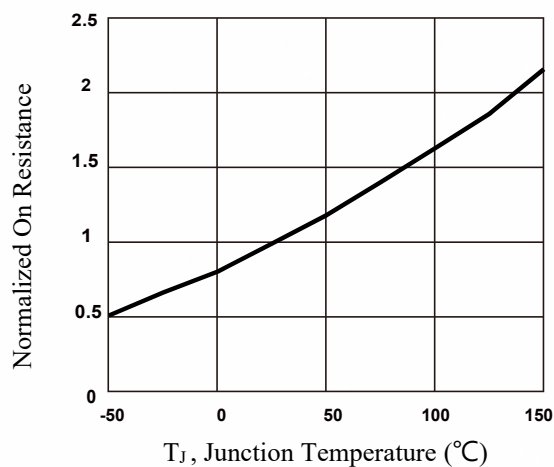


Fig.3 Normalized Vth vs. TJ

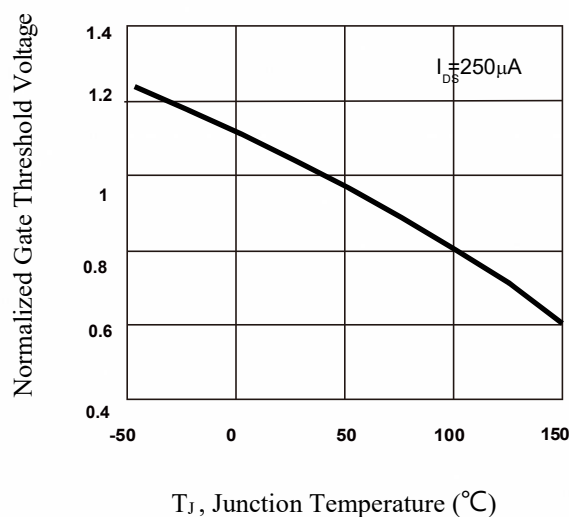


Fig.4 Gate Charge Waveform

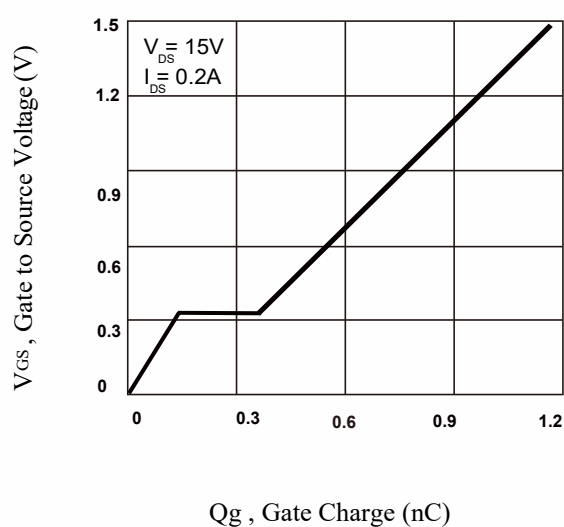


Fig.5 Typical Output Characteristics

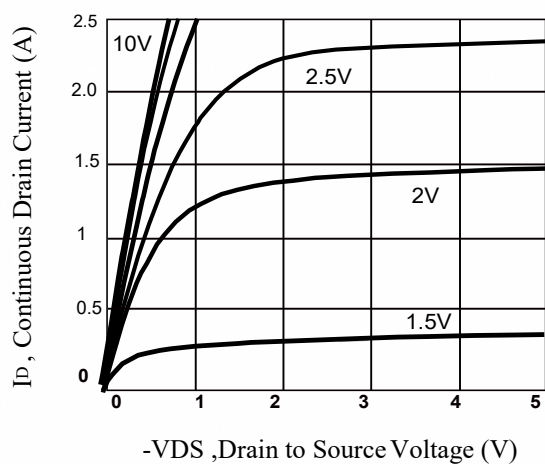


Fig.6 Capacitance

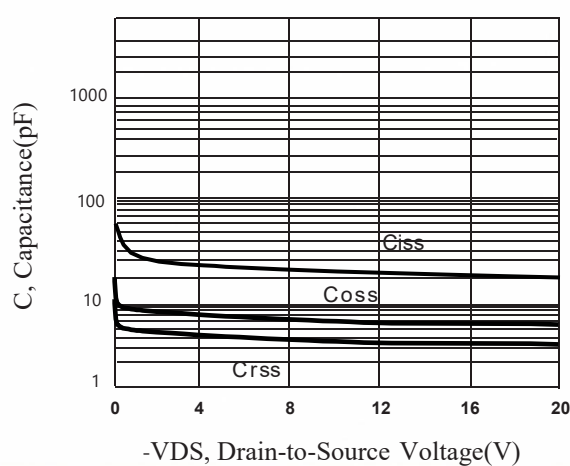


Fig.7 Turn-On Resistance vs. ID

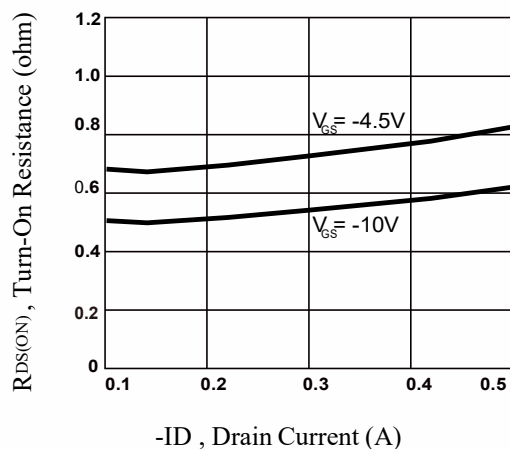


Fig.8 Typical Source-Drain Diode Forward Voltage

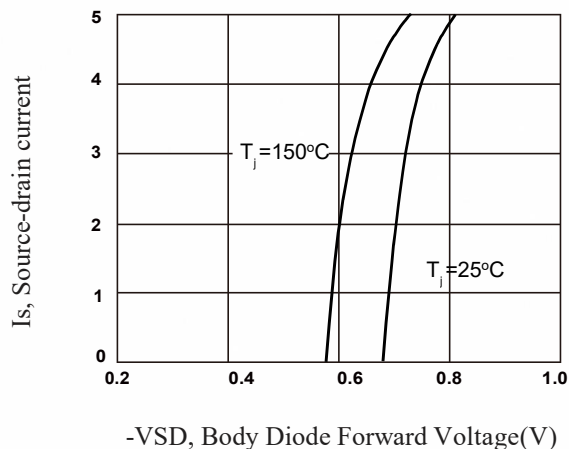


Fig.9 Normalized Transient Impedance

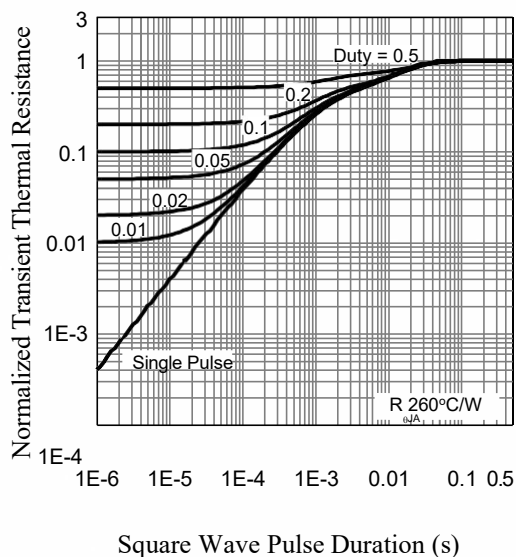


Fig.10 Maximum Safe Operation Area

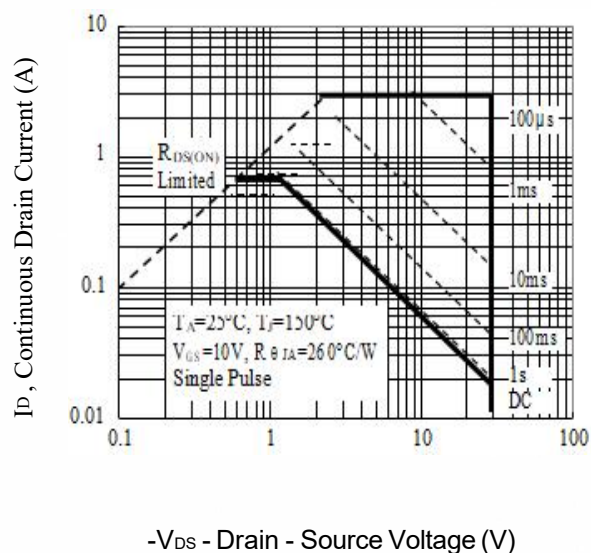


Figure11a. Switching Test Circuit

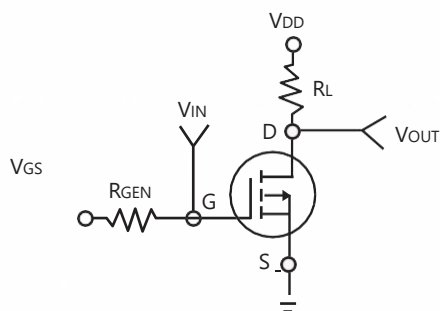
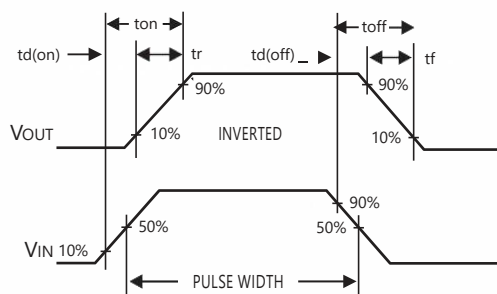
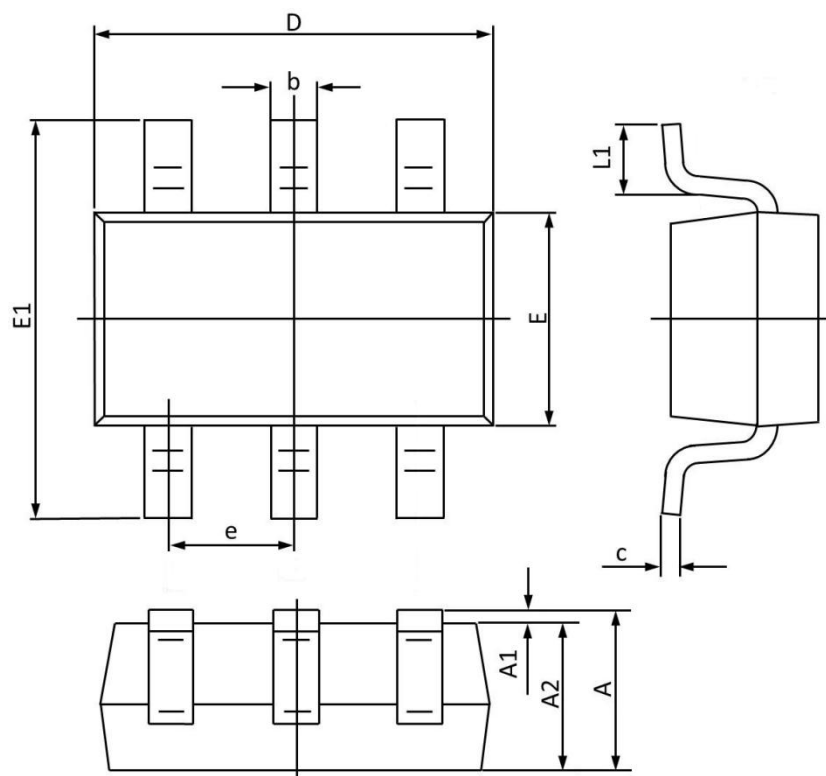


Figure11b. Switching Waveforms



SOT-363 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
A1	0.100	0.000	0.004	0.000
A2	1.000	0.800	0.039	0.031
b	0.330	0.100	0.013	0.004
c	0.250	0.100	0.010	0.004
D	2.200	1.800	0.087	0.071
E	1.350	1.150	0.053	0.045
E1	2.400	1.800	0.094	0.071
e	0.65BSC		0.026BSC	
L1	0.350	0.100	0.014	0.004

NOTICE

NKGL reserves the to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein.NKGL does not assume any liability arsing out of the application or use of any product described herein.