

Description

Features

100V, 138A

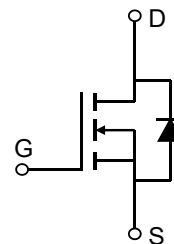
$R_{DS(ON)}$ Typ = 3mΩ @ $V_{GS} = 10V$

Advanced Split Gate Trench Technology

Excellent $R_{DS(ON)}$ and Low Gate Charge

100% UIS TESTED!

100% ΔVds TESTED!



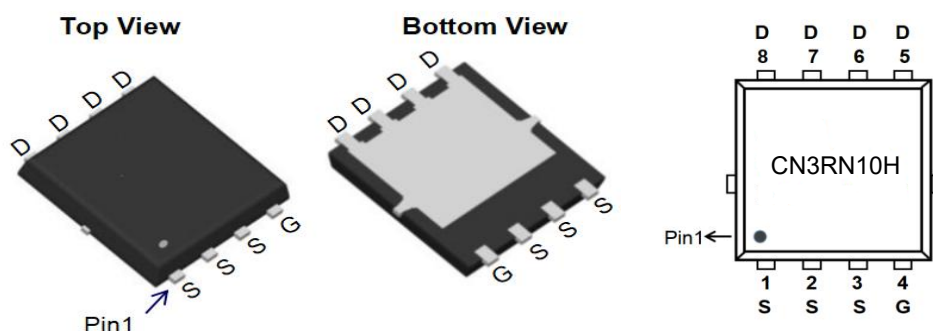
Schematic Diagram

Application

Load Switch

PWM Application

Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
NVMFWS3D6N10MCLT1G-CN	CN3RN10H	PDFN5x6-8L	TAPING	13"	5000	60000

Absolute Maximum Ratings (@ $T_J = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	100	V	
V _{GS}	Gate-to-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	138	A
		T _C = 100°C	82.8	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	552	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	342	mJ	
P _D	Power Dissipation	T _C = 25°C	139	W
R _{θJC}	Thermal Resistance, Junction to Case	0.9	°C/W	
T _J , T _{STG}	Junction & Storage Temperature Range	-55 to 150	°C	

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.4	2.7	3.6	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 30A	-	3	3.9	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	3658	-	pF
C _{oss}	Output Capacitance		-	1536	-	pF
C _{rss}	Reverse Transfer Capacitance		-	19	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 20A	-	49	-	nC
Q _{gs}	Gate Source Charge		-	17	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 50V I _D = 48A, R _{GEN} = 6Ω	-	26	-	ns
t _r	Turn-On Rise Time		-	15	-	ns
t _{d(off)}	Turn-Off DelayTime		-	28	-	ns
t _f	Turn-Off Fall Time		-	12	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 30A	-	-	138	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	552	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
trr	Body Diode Reverse Recovery Time		-	60	-	ns
Qrr	Body Diode Reverse Recovery Charge		I _F = 24A, di/dt = 100A/us	-	70	-

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = 37\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Test Circuit

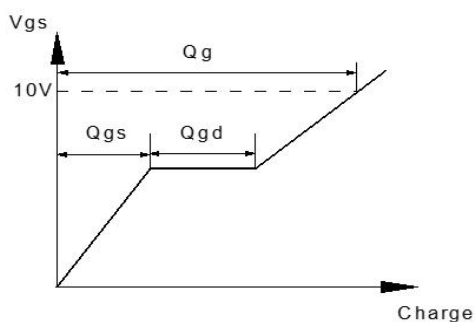
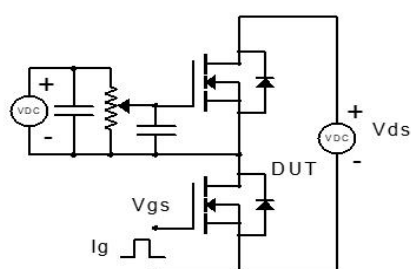


Figure 1: Gate Charge Test Circuit & Waveform

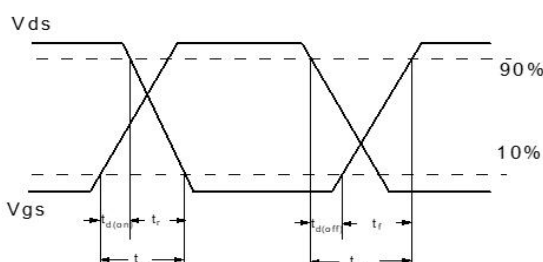
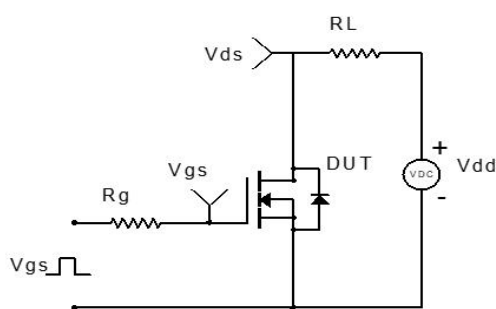


Figure 2: Resistive Switching Test Circuit & Waveform

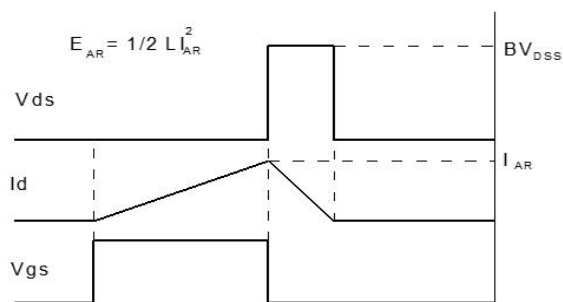
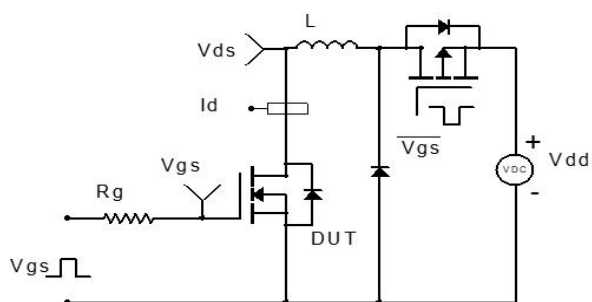


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

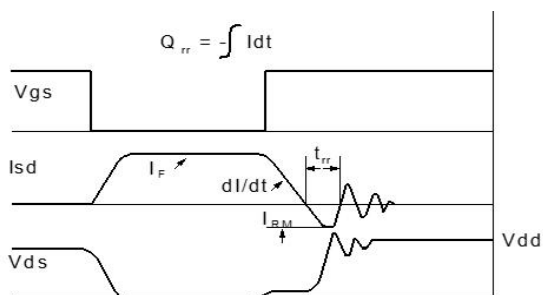
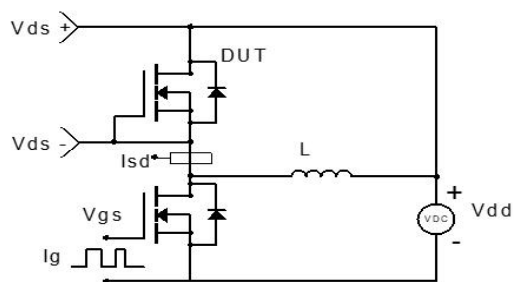
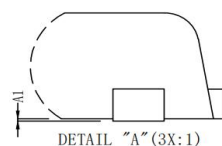
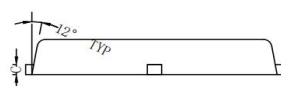
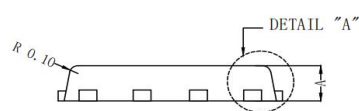
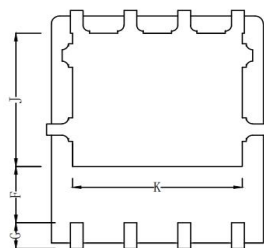
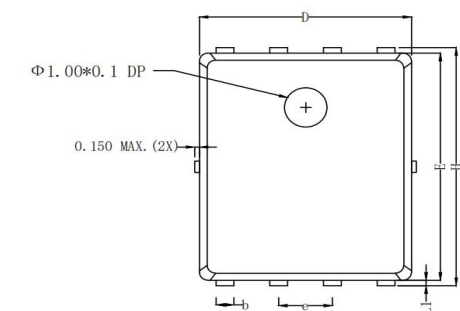


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN5x6-8L)



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.03	0.05
b	0.25	0.30	0.35
c	0.254 REF		
D	4.80	4.90	5.00
F	1.35 REF		
E	5.65	5.75	5.85
e	1.27 BSC		
H	5.90	6.00	6.10
L1	0.10	0.13	0.16
G	0.55 REF		
K	4.00 REF		
J	3.45 REF		

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