NS110H012T

N-Channel 105V, 1.2mΩ Typ. Power MOSFET

Features

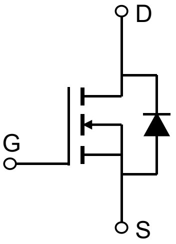
- 105V, 405A

  $R_{DS(ON)}$ Typ = 1.2mΩ @ V_{GS} = 10V

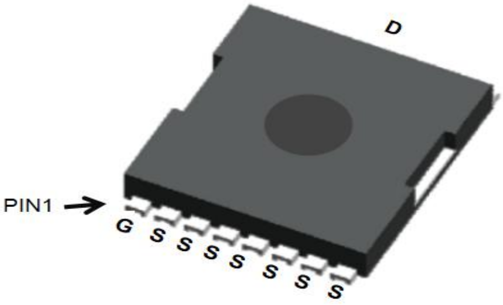
  Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!

Application

- Load Switch
- PWM Application
- Power Management



Schematic Diagram



TOLL-8L

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
NS110H012T	NS110H012T	TOLL	TAPING	13"	2000	10000

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		105	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	405	A
		T_C = 100°C	243	A
I_{DM}	Pulsed Drain Current (1)		1620	A
E_{AS}	Single Pulsed Avalanche Energy (2)		729	mJ
P_D	Power Dissipation	T_C = 25°C	521	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.24	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

Electrical Characteristics (T_J = 25°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	105	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 105V, 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	-	1.2	1.56	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 50V, f = 100KHz	-	8771	-	pF
C_{oss}	Output Capacitance		-	3653	-	pF
C_{rss}	Reverse Transfer Capacitance		-	89	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 50V, I_D = 100A	-	160	-	nC
Q_{gs}	Gate Source Charge		-	55	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	38	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 50V I_D= 100A, R_{GEN} = 3Ω	-	30	-	ns
t_r	Turn-On Rise Time		-	80	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	82	-	ns
t_f	Turn-Off Fall Time		-	95	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	405	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	1620	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 100A, di/dt = 100A/us	-	10000	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	180	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=54A
3. Pulse Test: Pulse Width⩽300μs, Duty Cycle⩽0.5%.

Test Circuit

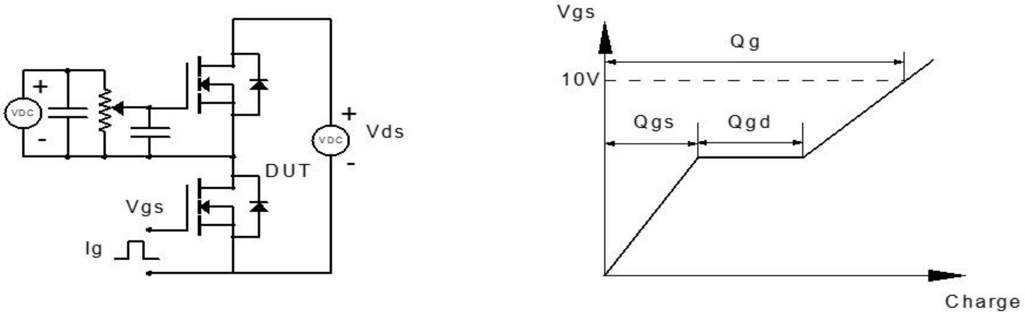


Figure 1: Gate Charge Test Circuit & Waveform

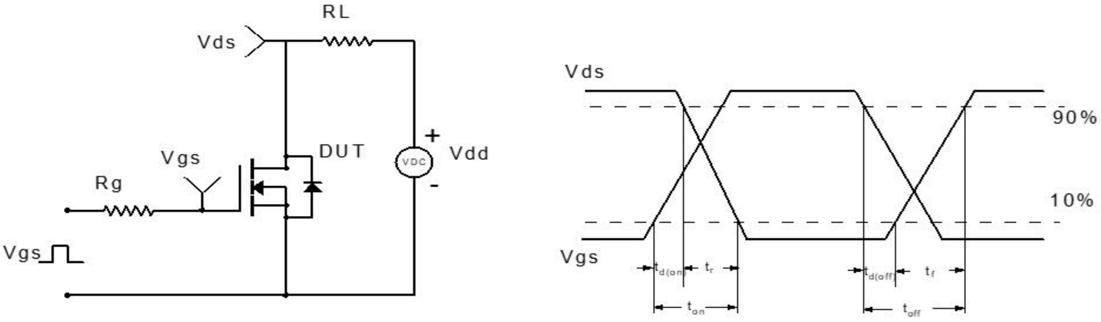


Figure 2: Resistive Switching Test Circuit & Waveform

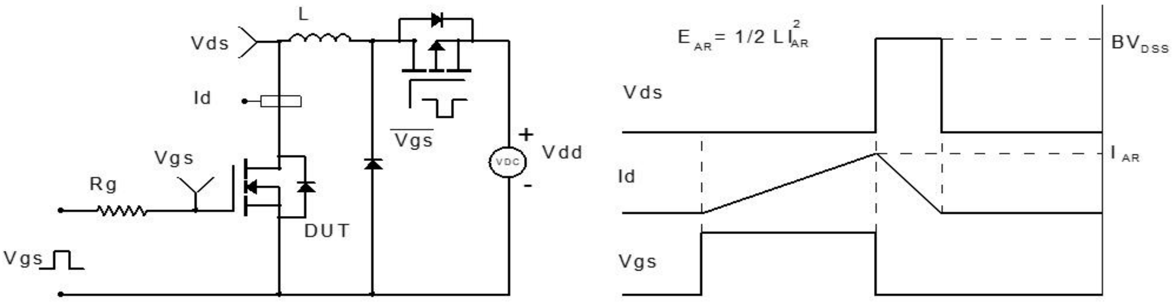


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

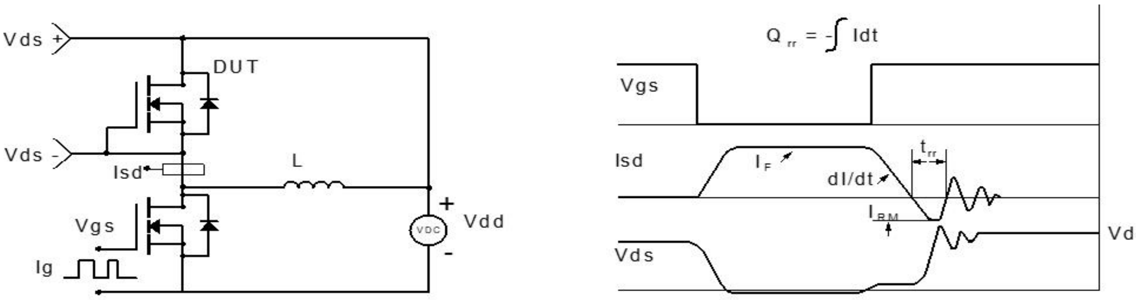
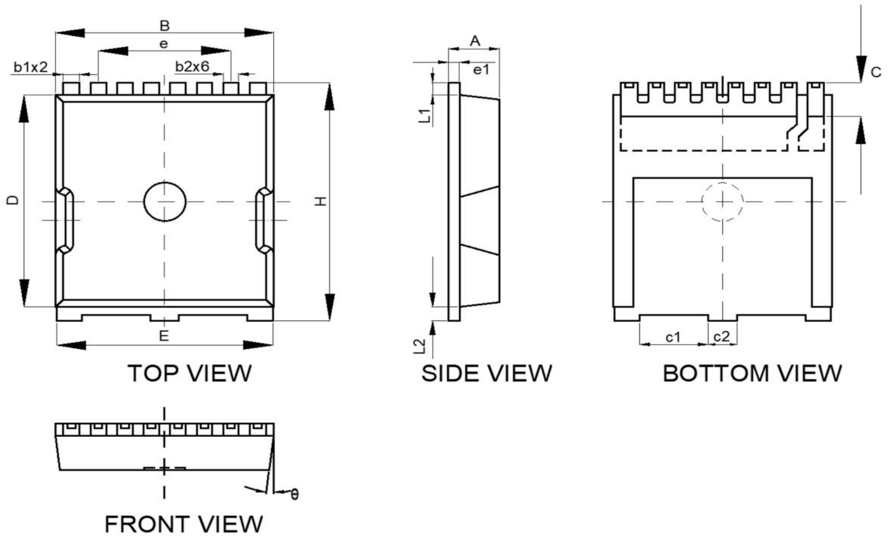


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TOLL)



SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.40
B	9.85	9.90	9.95
C	1.50	1.60	1.70
D	10.40	10.50	10.60
E	9.75	9.80	9.85
H	11.60	11.70	11.80
L1	0.55	0.65	0.75
L2	0.65	0.70	0.75
e	6.0BSC		
e1	0.45	0.50	0.55
b1	0.70	0.75	0.80
b2	0.60	0.70	0.80
c1	3.00	3.10	3.20
c2	1.10	1.20	1.30
θ	11°		

Important Notice

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“Typical” parameters which provided in datasheets can vary in different applications and actual performance may vary over time. Customers are responsible for doing all necessary testing to minimize the risks associated with their applications and products.

Contact information

For more information,please visit:http://www.nx-semi.com