

TNG10H30NDN

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 100V, I_D = 30A$
- $R_{DS(on)} < 17m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 21m\Omega @ V_{GS} = 4.5V$

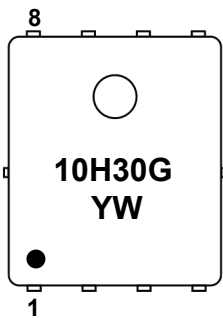
Features

- Advanced Split Gate Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

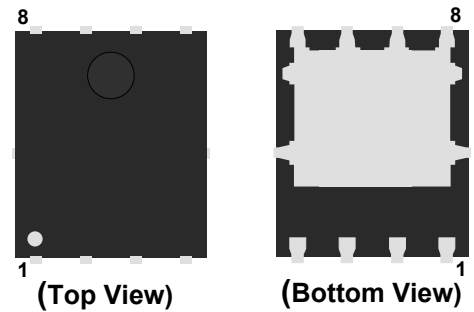
Application

- Isolated DC
- Motor control
- Synchronous-rectification

Marking Code

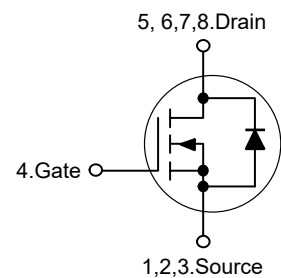


PDFN5x6-8L



Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current ^{1,6}	32	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current ^{1,6}	20	A
I_{DM}	Pulsed Drain Current ²	90	A
EAS	Single Pulse Avalanche Energy ³	45	mJ
I_{AS}	Avalanche Current	30	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation ⁴	37.9	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹ ($t \leq 10s$)	---	25	°C/W
	Thermal Resistance Junction-Ambient ¹	---	55	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	3.3	°C/W

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=10A$	---	15.5	20	$m\Omega$
	Static Drain-Source On-Resistance ²	$V_{GS}=4.5V$, $I_D=10A$	---	21	30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.2	1.8	2.2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=80V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=80V$, $V_{GS}=0V$, $T_J=55^{\circ}\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1	---	Ω
Q_g	Total Gate Charge (10V)	$V_{DS}=50V$, $V_{GS}=10V$, $I_D=10A$	---	17.9	---	nC
Q_{gs}	Gate-Source Charge		---	2.8	---	
Q_{gd}	Gate-Drain Charge		---	5.2	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V$, $V_{GS}=10V$, $R_G=6\Omega$, $I_D=1A$	---	13	---	ns
T_r	Rise Time		---	6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
T_f	Fall Time		---	29	---	
C_{iss}	Input Capacitance	$V_{DS}=50V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	849	---	pF
C_{oss}	Output Capacitance		---	185	---	
C_{rss}	Reverse Transfer Capacitance		---	8	---	

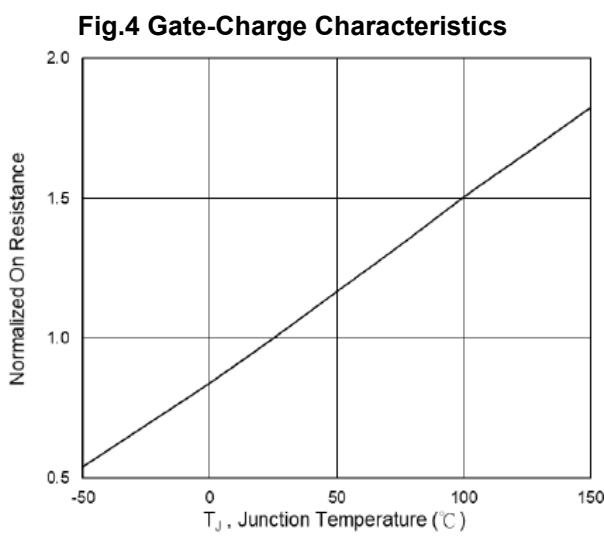
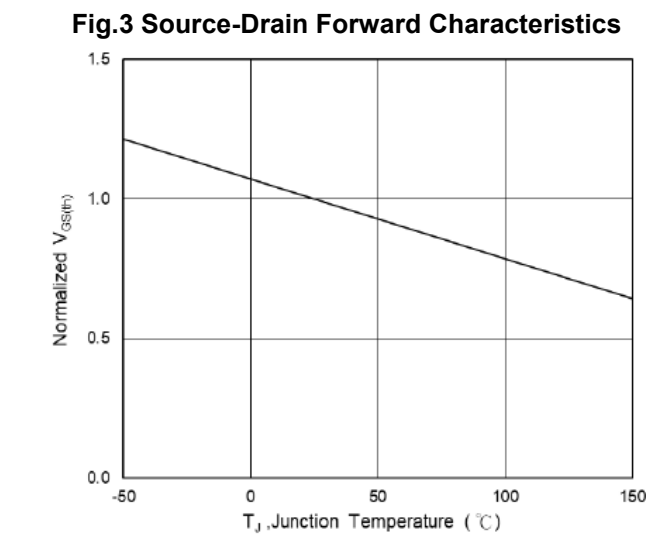
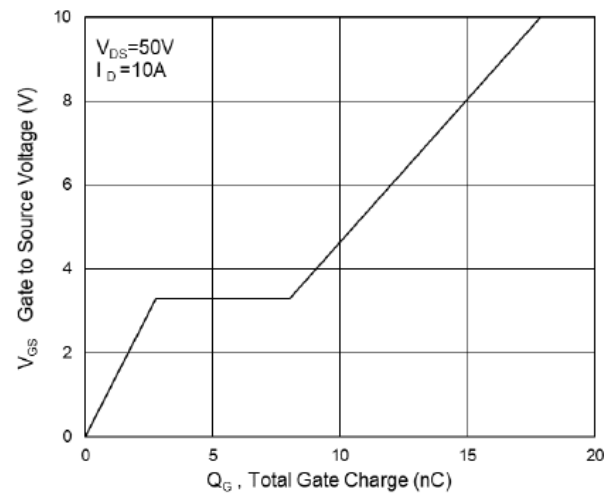
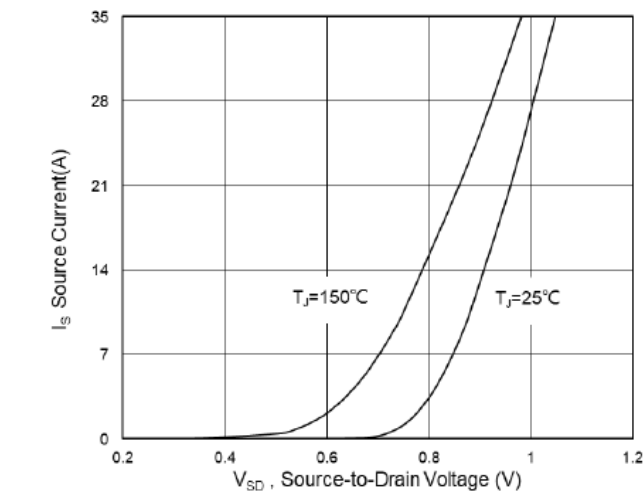
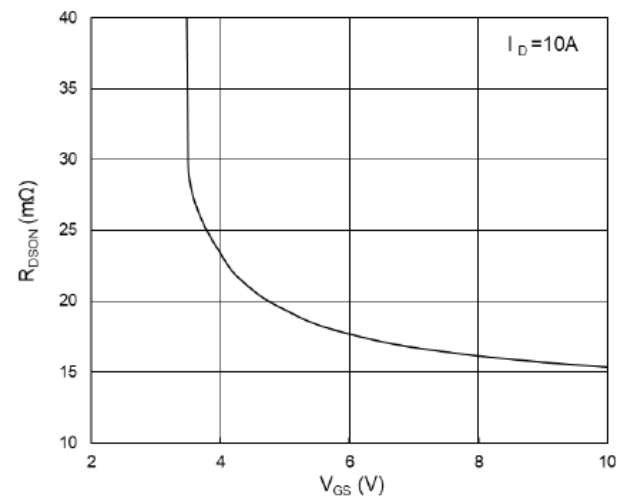
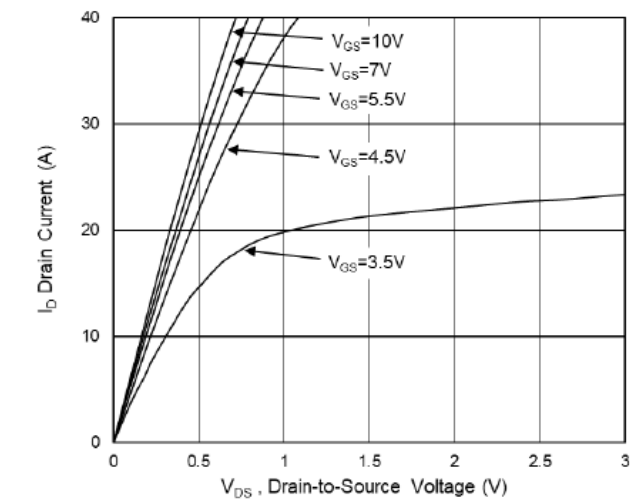
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,5,6}	$V_G=V_D=0V$, Force Current	---	---	32	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=1A$, $T_J=25^{\circ}\text{C}$	---	---	1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=30A$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.
- 6.The maximum current rating is package limited.

Typical Characteristic Curves



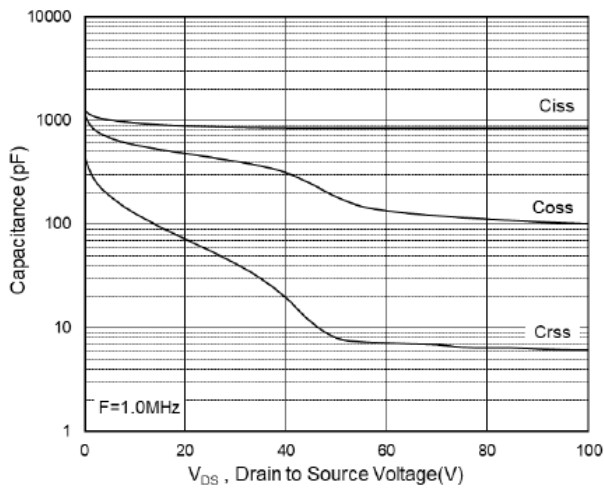


Fig.7 Capacitance

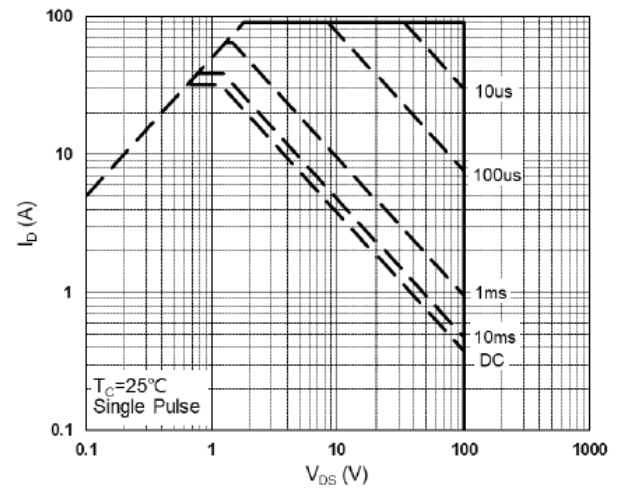


Fig.8 Safe Operating Area

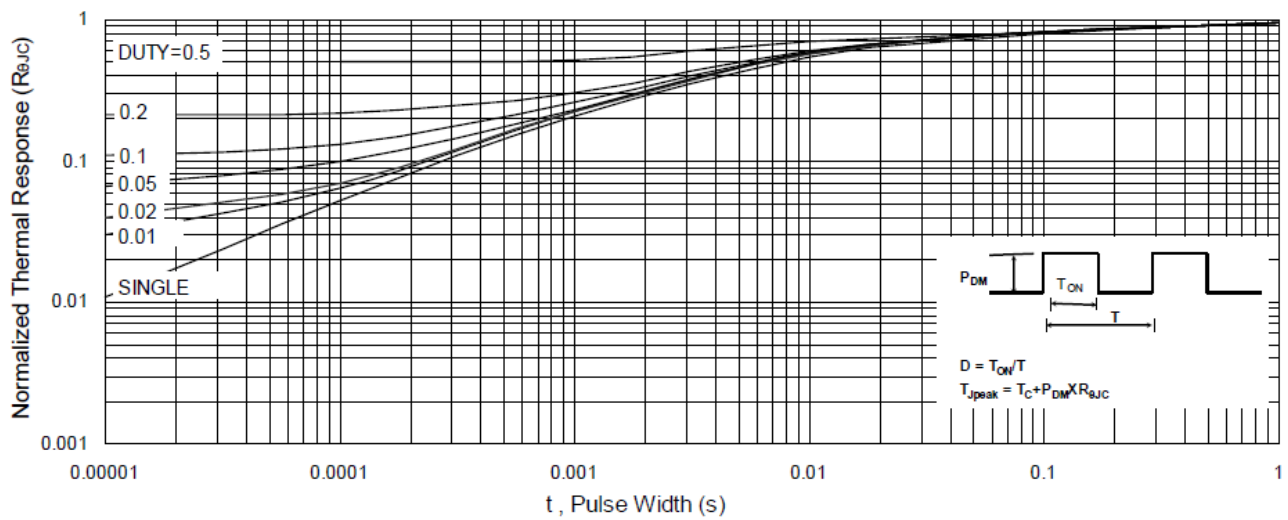


Fig.9 Normalized Maximum Transient Thermal Impedance

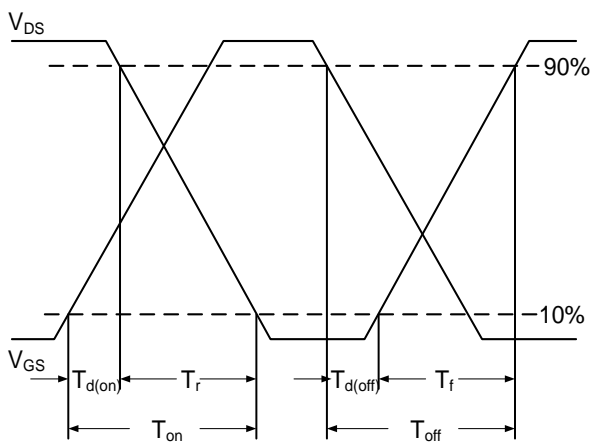


Fig.10 Switching Time Waveform

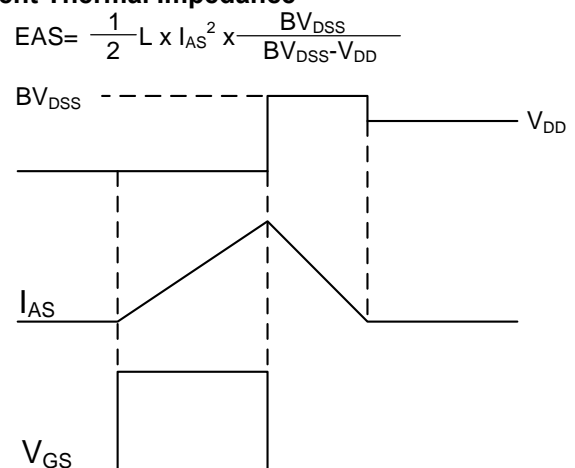
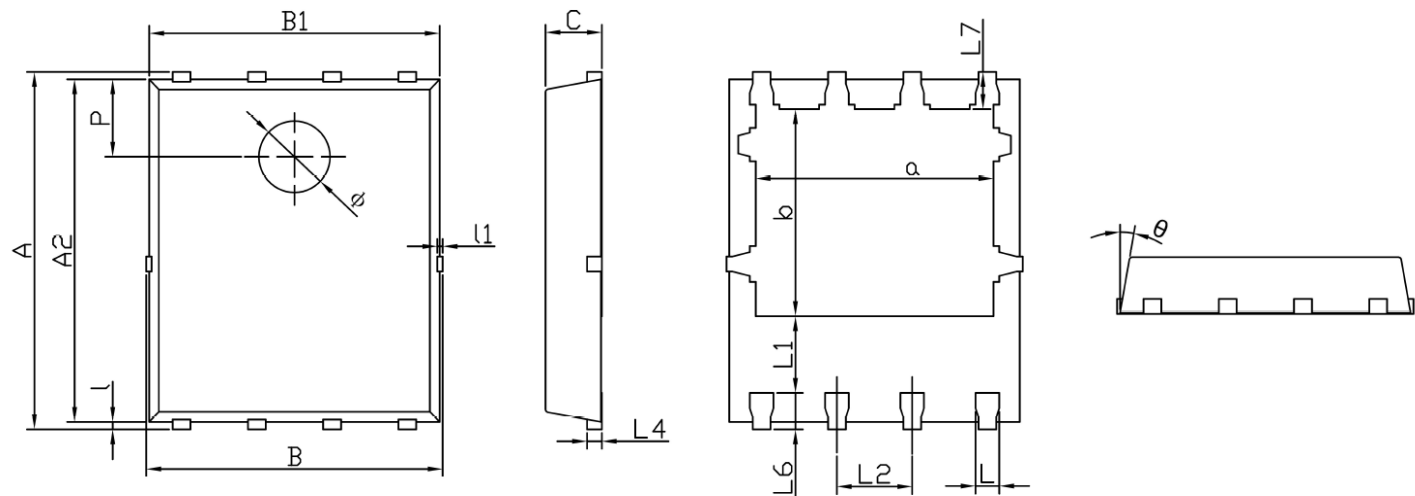


Fig.11 Unclamped Inductive Switching Waveform

Package Outline

PDFN5x6-8L Dimensions in mm




Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	5.90	6.10	L1	1.10	-
a	3.91	4.11	I1	-	0.10
A2	5.70	5.80	L2	1.17	1.37
B	4.90	5.10	L4	0.21	0.34
b	3.375	3.575	L6	0.51	0.71
B1	4.80	5.00	L7	0.51	0.71
C	0.90	1.00	P	1.15	1.45
L	0.30	0.50	θ	8°	12°
I	0.06	0.20	Φ	1.10	1.30

Contact Information

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For additional information, please contact your local Sales Representative.

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