

TN30N30DL

N-Channel Enhancement Mode Power MOSFET

PDFN3x3-8L

Product Summary

- $V_{DS} = 30V, I_D = 28A$
- $R_{DS(on)} < 25m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 38m\Omega @ V_{GS} = 4.5V$

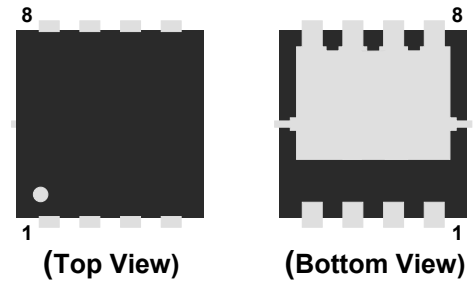
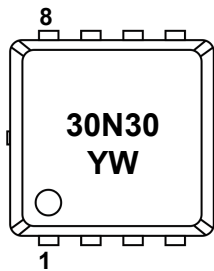
Features

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

Application

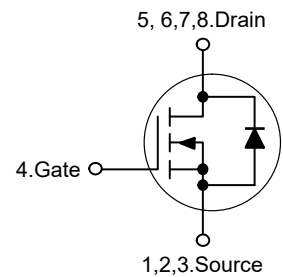
- Load Switch
- Battery Protection
- Uninterruptible Power Supply

Marking Code



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.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	28	A
Drain Current-Pulsed ^{Note1}	I_{DM}	50	A
Maximum Power Dissipation	P_D	18	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.94	°C/W
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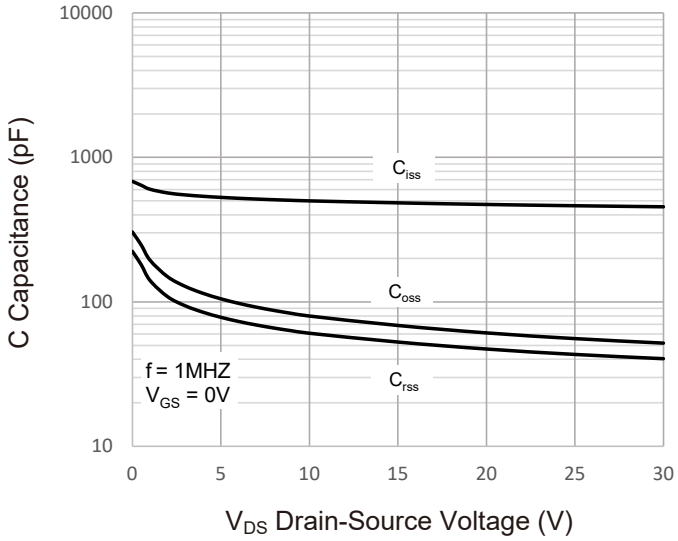
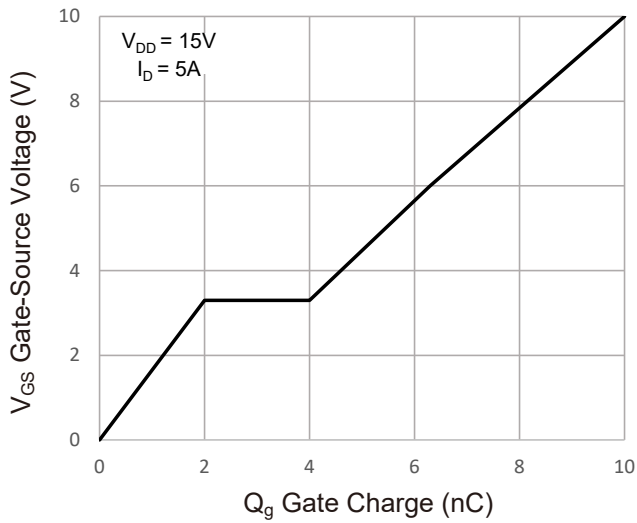
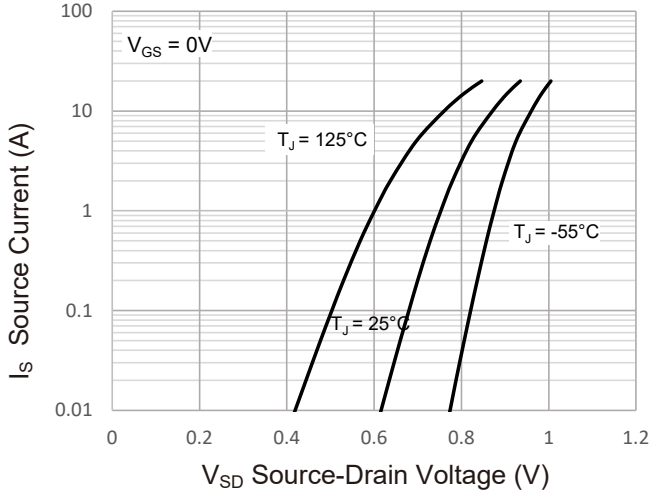
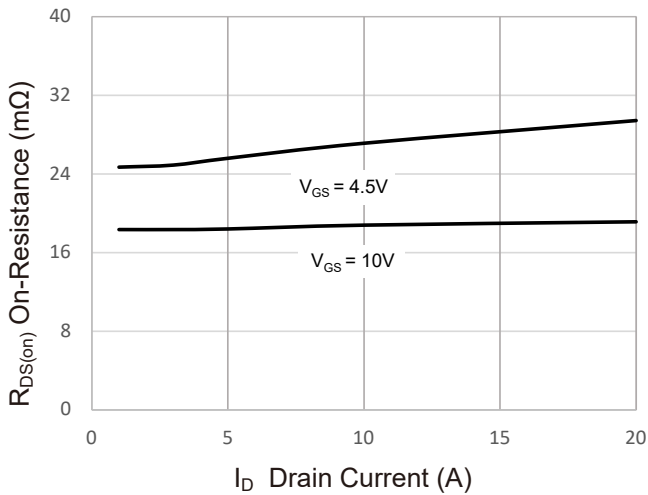
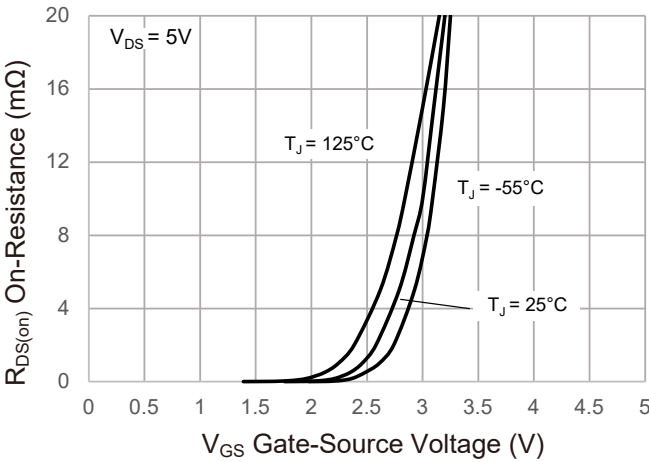
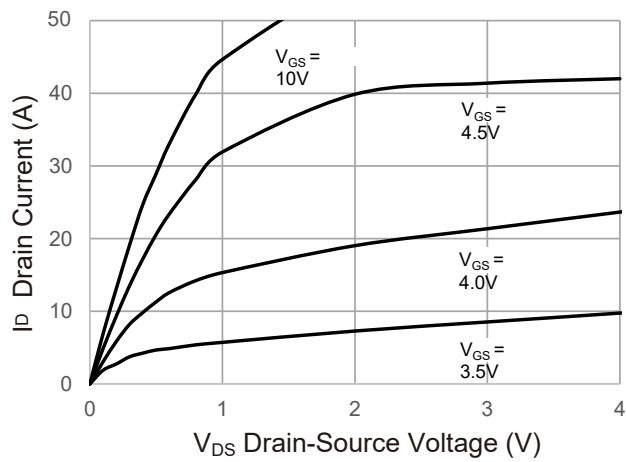
Electrical Characteristics(T_C=25°C unless otherwise specified)

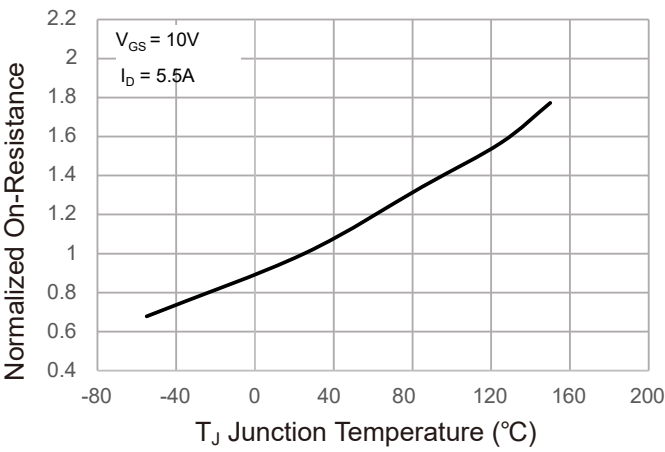
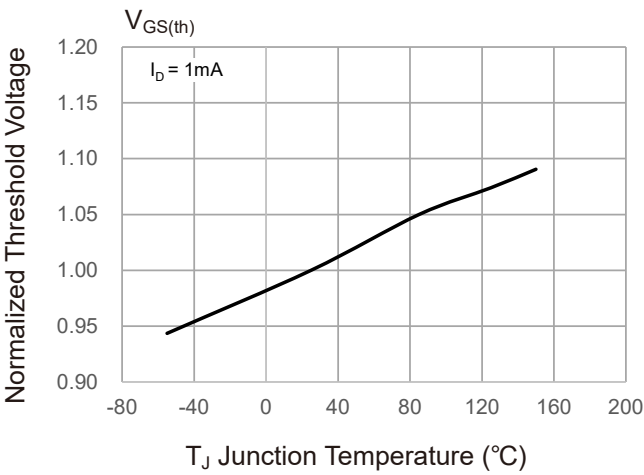
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D =250μA	30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V,V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note2}	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note2}	R _{DS(on)}	V _{GS} =10V,I _D =10A	--	--	25	mΩ
		V _{GS} =4.5V,I _D =8A	--	--	38	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f=1MHz	--	510	--	pF
Output Capacitance	C _{oss}		--	61	--	pF
Reverse Transfer Capacitance	C _{rss}		--	51	--	pF
Total Gate Charge	Q _g	V _{DS} =15V,I _D =5A, V _{GS} =10V	--	10	--	nC
Gate-Source Charge	Q _{gs}		--	2	--	nC
Gate-Drain Charge	Q _{gd}		--	2	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =5A, V _{GS} =10V, R _{GEN} =3Ω	--	4	--	nS
Turn-on Rise Time	t _r		--	11	--	nS
Turn-off Delay Time	t _{d(off)}		--	14	--	nS
Turn-off Fall Time	t _f		--	2	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note2}	V _{SD}	V _{GS} =0V,I _S =20A	--	--	1.2	V
Diode Forward Current	I _S		--	--	28	A

Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

Typical Characteristic Curves





Test Circuit

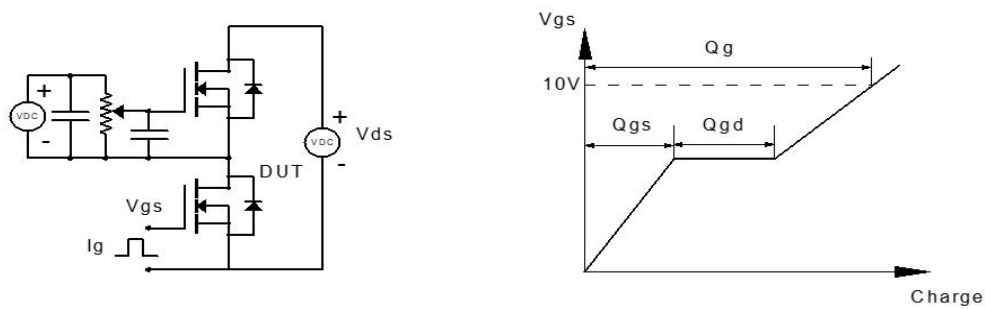


Figure 1: Gate Charge Test Circuit & Waveform

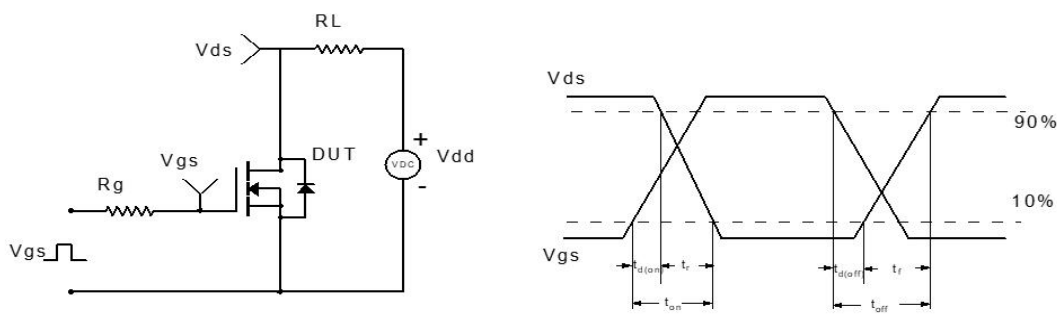


Figure 2: Resistive Switching Test Circuit & Waveform

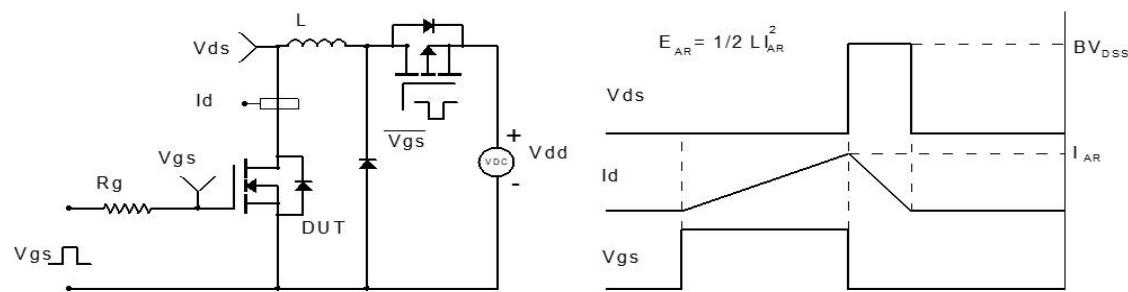


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

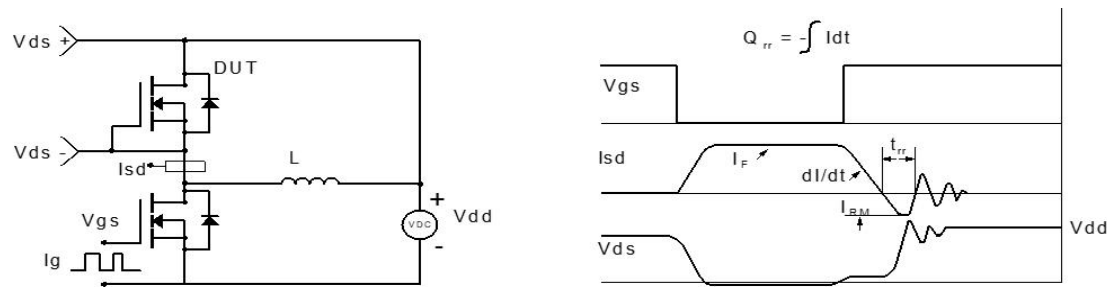
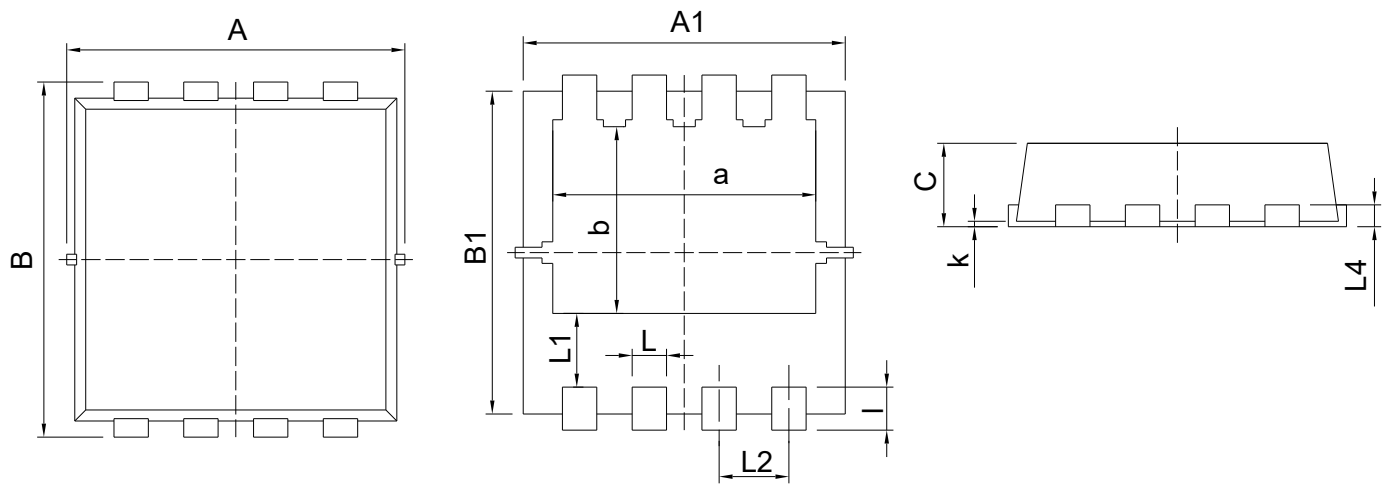


Figure 4: Diode Recovery Test Circuit & Waveform

Package Outline

PDFN3x3-8L Dimensions in mm

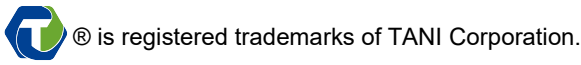


Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	3.2	3.4	L2	0.55	0.75
A1	3.1	3.2	L4	0.14	0.20
B	3.2	3.4	a	2.35	2.55
B1	2.95	3.05	b	1.635	1.835
C	0.75	0.85	k	0.0	0.05
L	0.25	0.35	l	0.3	0.5
L1	-	0.75			

Contact Information

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For additional information, please contact your local Sales Representative.



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