

# TN50N30DL

## N-Channel Enhancement Mode Power MOSFET

### PDFN3x3-8L

### Product Summary

- $V_{DS} = 30V, I_D = 50A$
- $R_{DS(on)} < 9.6m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 15m\Omega @ V_{GS} = 4.5V$

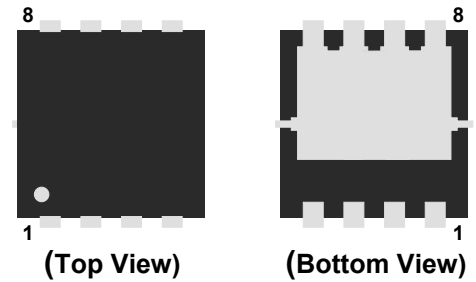
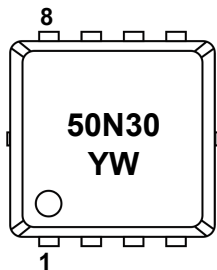
### Features

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

### Application

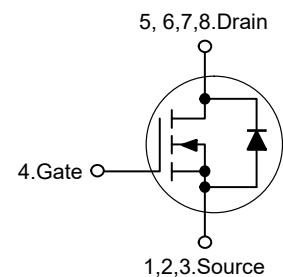
- Load Switch
- Battery Protection
- Uninterruptible Power Supply

### 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	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	50	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	100	A
Maximum Power Dissipation	$P_D$	20	W
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.25	°C/W
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Electrical Characteristics

(T<sub>C</sub>=25°C unless otherwise specified)

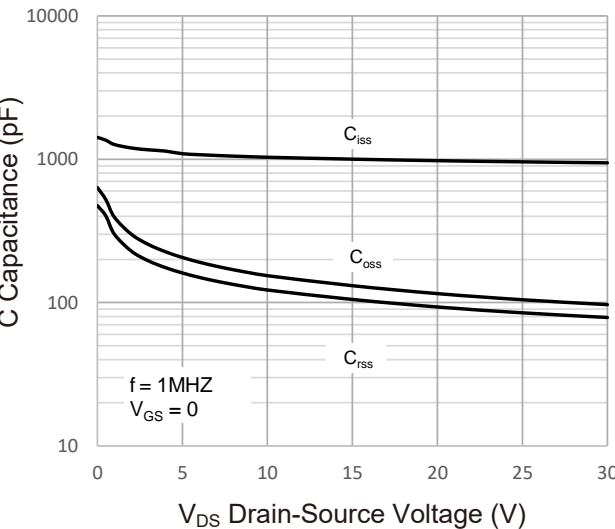
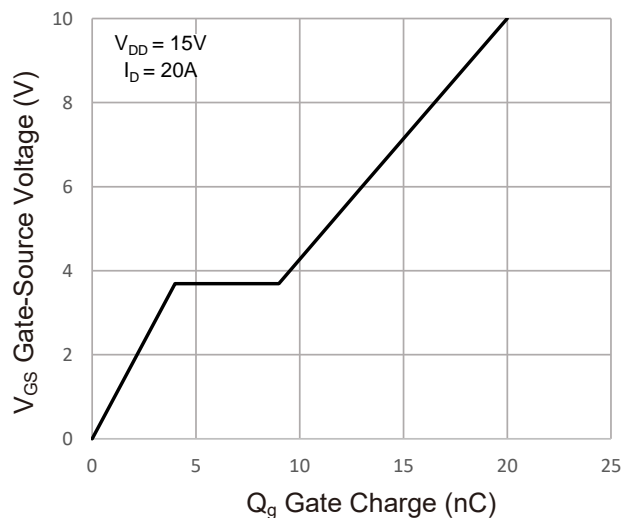
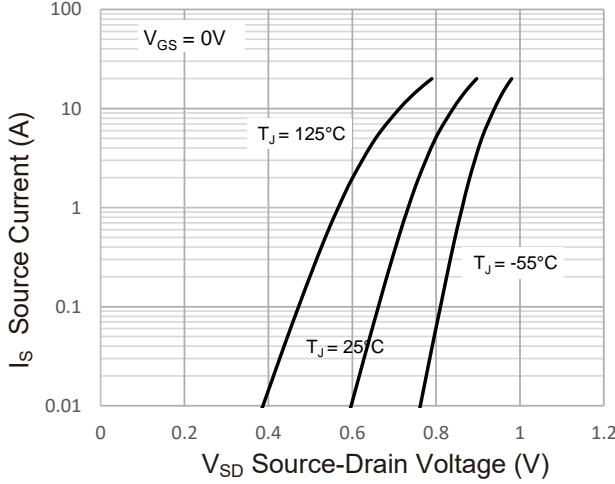
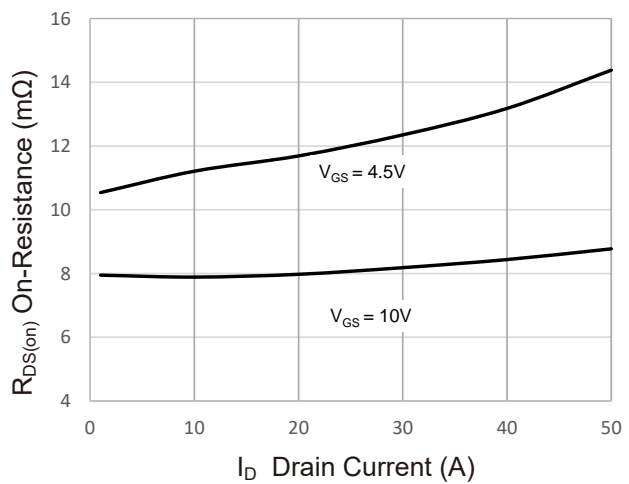
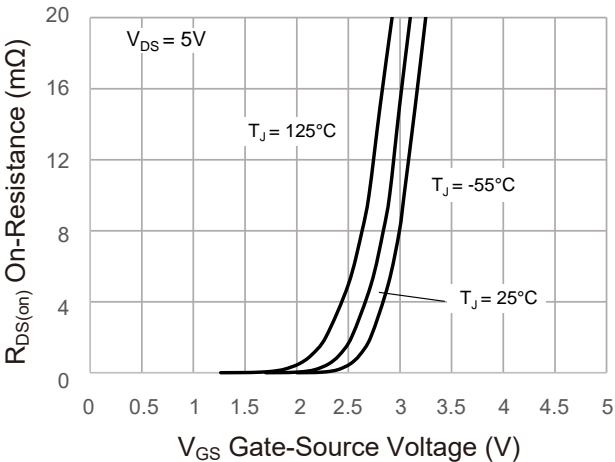
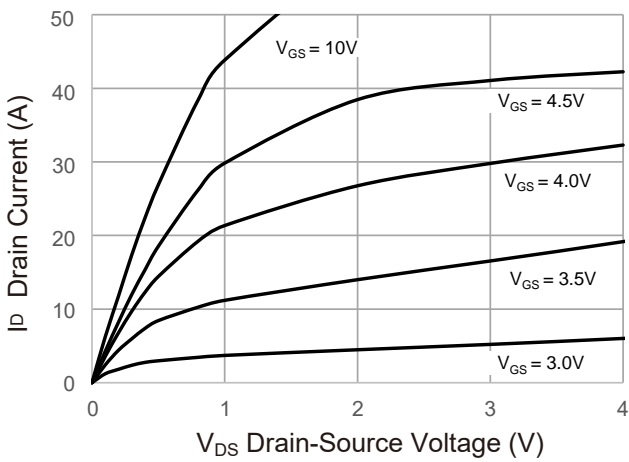
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
Gate Threshold Voltage <sup>Note2</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.5	2.5	V
Drain-Source On-Resistance <sup>Note2</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	--	--	9.6	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	--	--	15	mΩ
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	--	1004	--	pF
Output Capacitance	C <sub>oss</sub>		--	117	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	88	--	pF
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	--	20	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	4	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	5	--	nC
Switching Characteristics						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =15V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V, R <sub>GEN</sub> =3Ω	--	6	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	19	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	22	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	5	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage <sup>Note2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	--	--	1.2	V
Diode Forward Current	I <sub>S</sub>		--	--	50	A

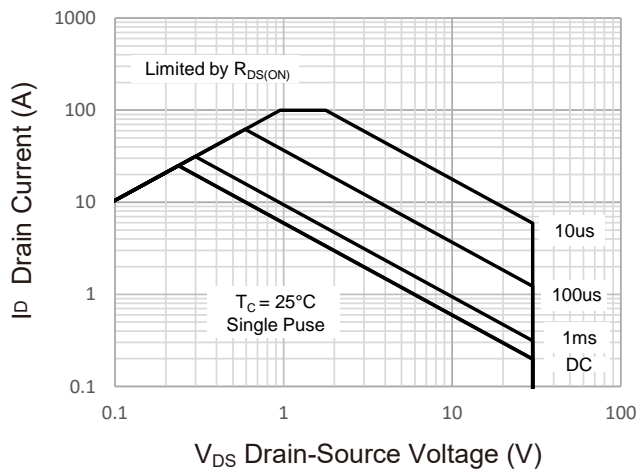
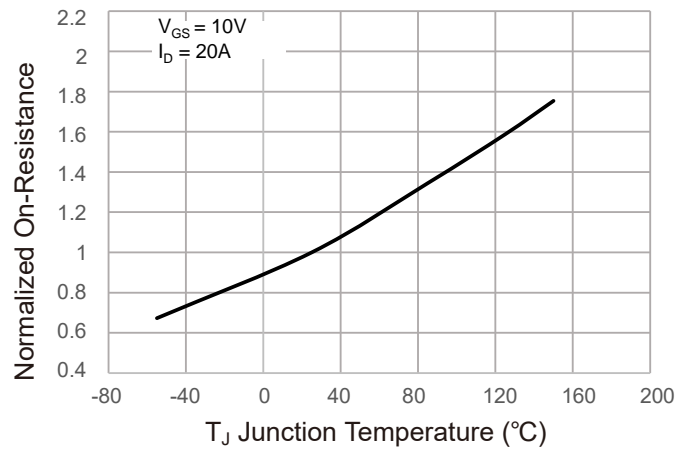
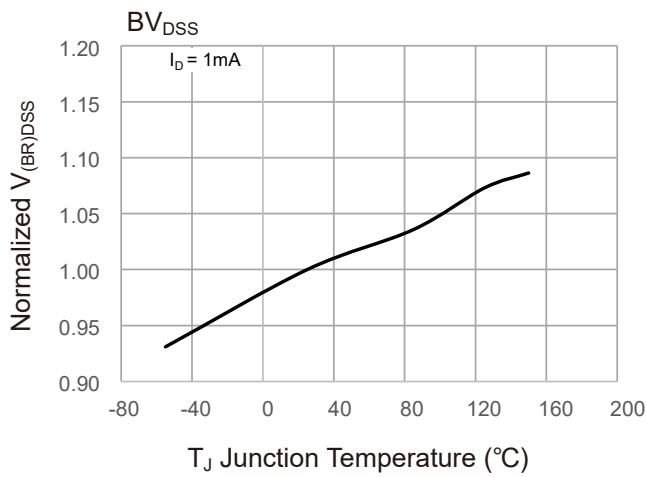
Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. The data tested by pulsed , pulse width≤ 300us , duty cycle ≤ 2%

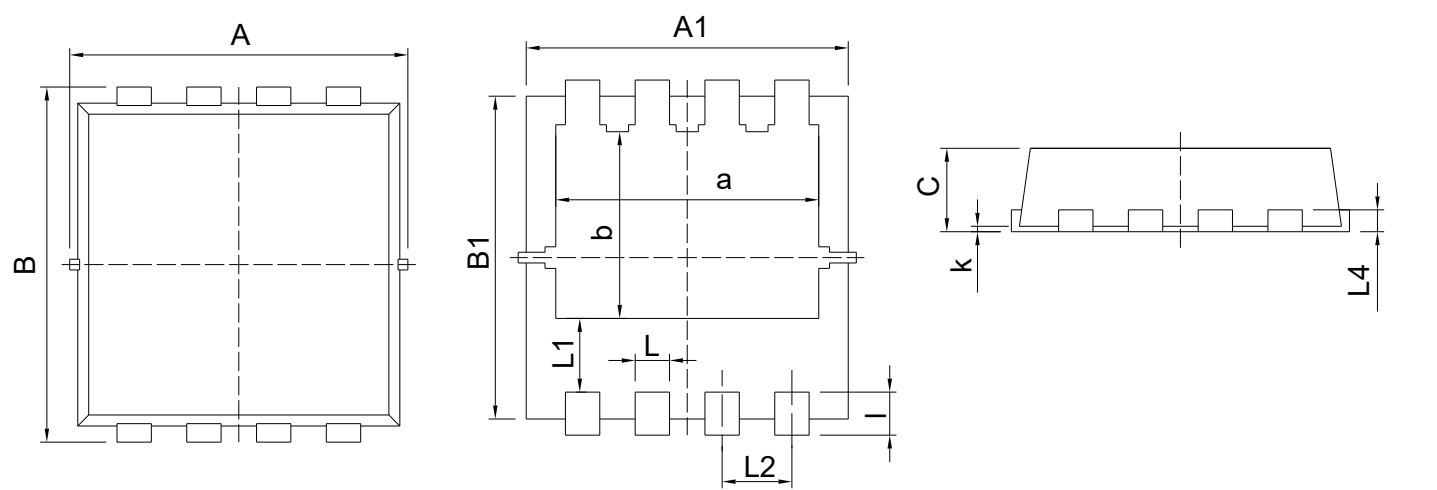
Typical Characteristic Curves





Package Outline

PDFN3x3-8L Dimensions in mm

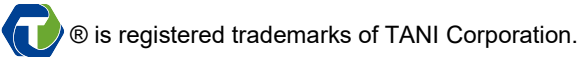


Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	3.2	3.4	L2	0.55	0.75
A1	3.1	3.2	L4	0.14	0.20
B	3.2	3.4	a	2.35	2.55
B1	2.95	3.05	b	1.635	1.835
C	0.75	0.85	k	0.0	0.05
L	0.25	0.35	l	0.3	0.5
L1	-	0.75			

Contact Information

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For additional information, please contact your local Sales Representative.



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The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

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