



# PJM50N60DL

## N-Channel Enhancement Mode Power MOSFET

### Product Summary

- $V_{DS} = 60V, I_D = 50A$
- $R_{DS(on)} < 16.5m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 19.5m\Omega @ V_{GS} = 4.5V$

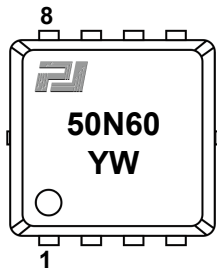
### Features

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

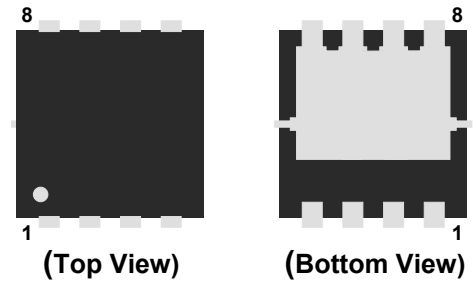
### Application

- Load Switch
- Power Management
- PWM Application

### Marking Code

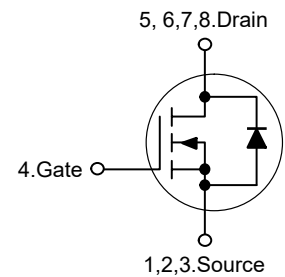


### PDFN3x3-8L



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.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	50	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	140	A
Maximum Power Dissipation	$P_D$	42	W
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

### Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.98	°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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, 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> =30A	--	--	16.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	--	--	19.5	mΩ
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	--	1990	--	pF
Output Capacitance	C <sub>oss</sub>		--	135	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	115	--	pF
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, I <sub>D</sub> =30A, V <sub>GS</sub> =10V	--	45	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	8	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	11	--	nC
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =30A, V <sub>GS</sub> =10V, R <sub>GEN</sub> =1.8Ω	--	11	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	79	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	33	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	107	--	nS
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage	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%

### Test Circuit

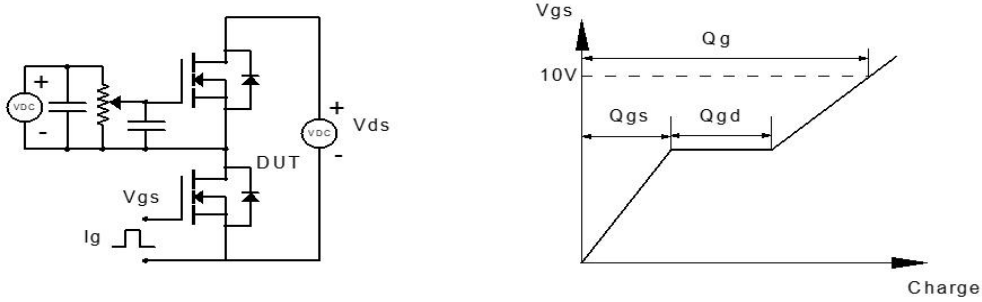


Figure 1: Gate Charge Test Circuit & Waveform

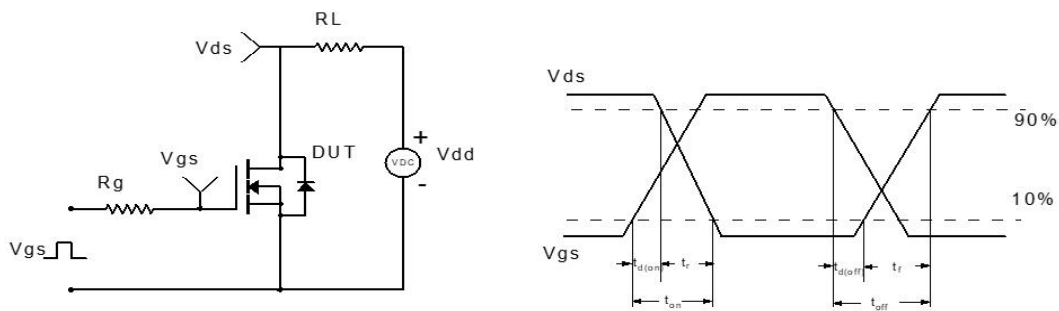


Figure 2: Resistive Switching Test Circuit & Waveform

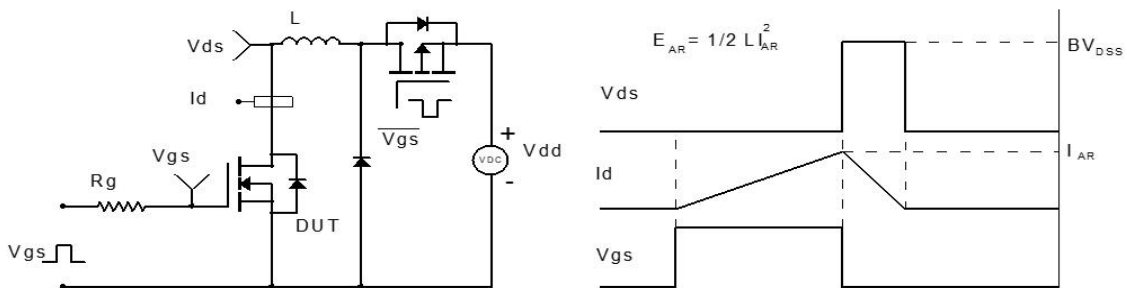


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

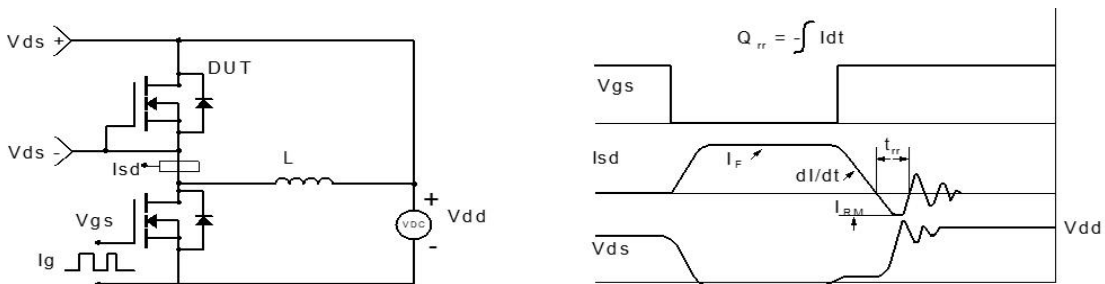


Figure 4: Diode Recovery Test Circuit & Waveform



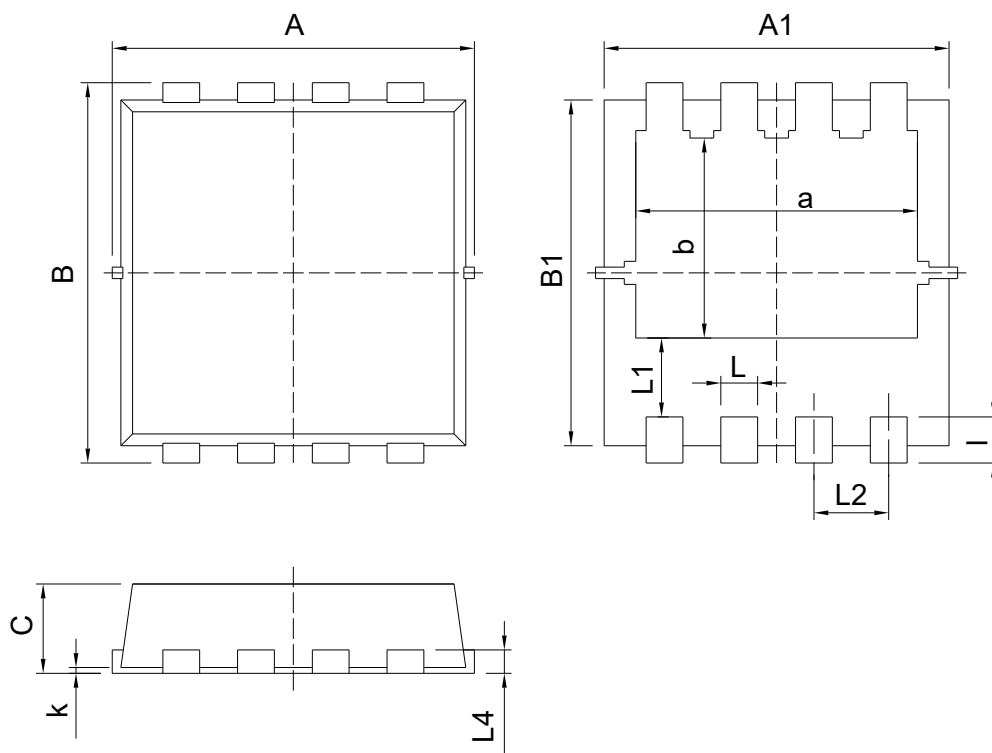
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### Package Outline

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			