



PJM80N30DN

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 30V, I_D = 70A$
- $R_{DS(on)} < 5.1m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 7.7m\Omega @ V_{GS} = 4.5V$

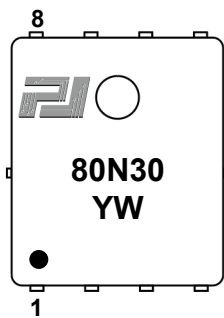
Features

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

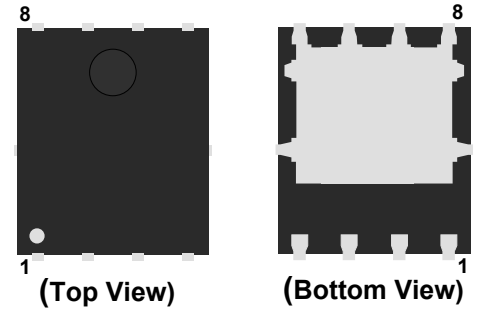
Application

- Load Switch
- PWM Application
- Power Management

Marking Code

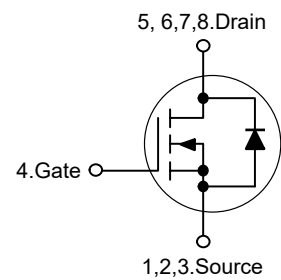


PDFN5x6-8L



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.

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous	$T_C = 25^\circ C$	I_D	70	A
	$T_C = 100^\circ C$		42	
Drain Current-Pulsed ^{Note1}		I_{DM}	280	A
Single Pulse Avalanche Energy ^{Note2}		E_{AS}	90	mJ
Maximum Power Dissipation		P_D	42	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3	$^\circ C/W$
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Electrical Characteristics

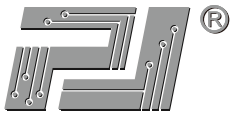
($T_J=25^{\circ}\text{C}$ unless otherwise specified)

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 ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.0	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =20A	--	3.9	5.1	mΩ
		V _{GS} =4.5V, I _D =10A	--	5.9	7.7	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	2106	--	pF
Output Capacitance	C _{oss}		--	235	--	pF
Reverse Transfer Capacitance	C _{rss}		--	203	--	pF
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V	--	37	--	nC
Gate-Source Charge	Q _{gs}		--	8	--	nC
Gate-Drain Charge	Q _{gd}		--	9	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =30A, V _{GS} =10V, R _{GEN} =3Ω	--	7.8	--	nS
Turn-on Rise Time	t _r		--	13	--	nS
Turn-off Delay Time	t _{d(off)}		--	31	--	nS
Turn-off Fall Time	t _f		--	10	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S =20A	--	--	1.2	V
Diode Forward Current	I _S		--	--	70	A
Body Diode Reverse Recovery Time	trr	I _F =20A, di/dt=100A/us	--	12	--	ns
Body Diode Reverse Recovery Charge	Qrr		--	3.6	--	nC

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. EAS Condition: $T_J=25^{\circ}\text{C}, V_{DD}=15V, V_G=10V, R_G=25\Omega, L=0.5\text{mH}, I_{AS}=19A$.

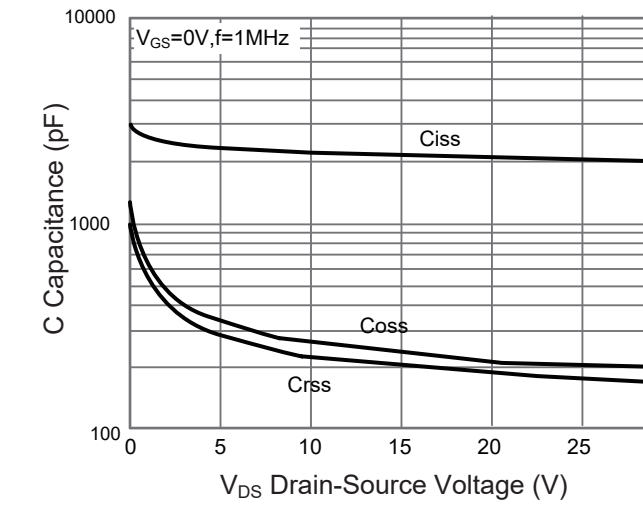
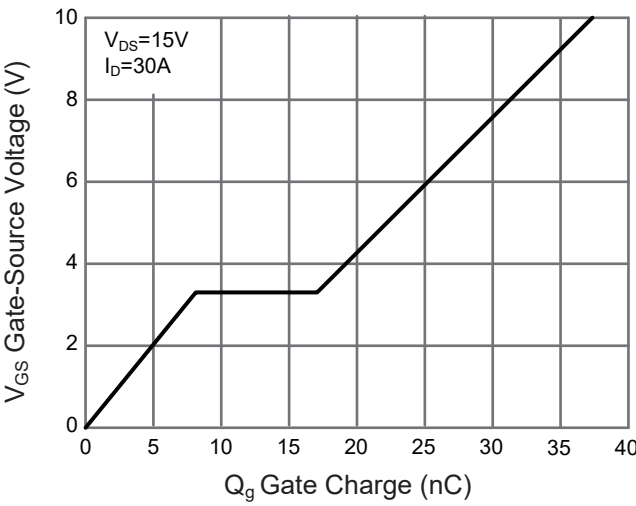
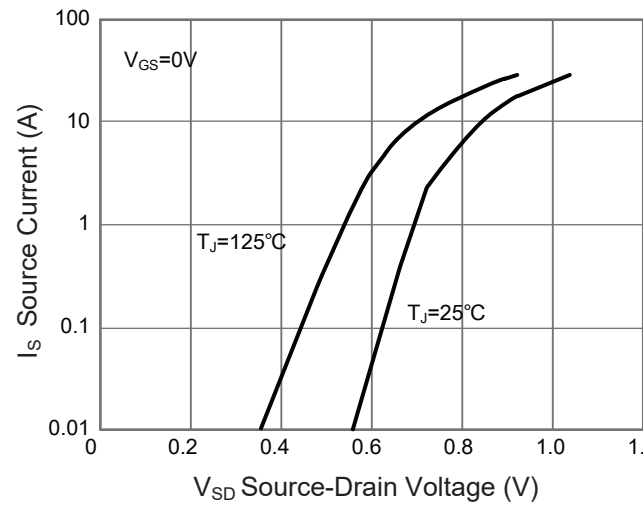
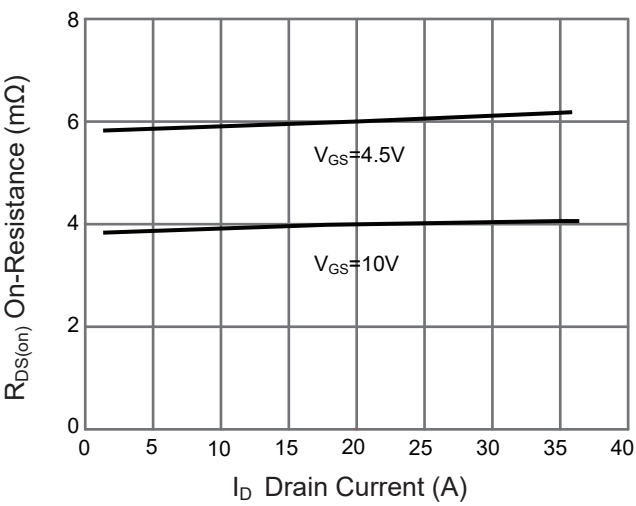
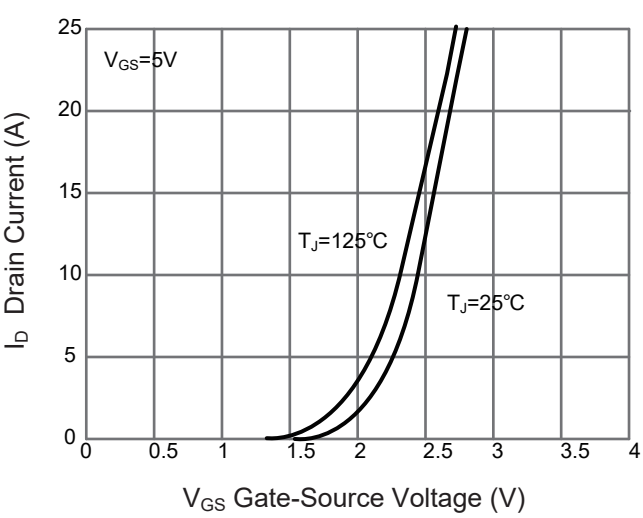
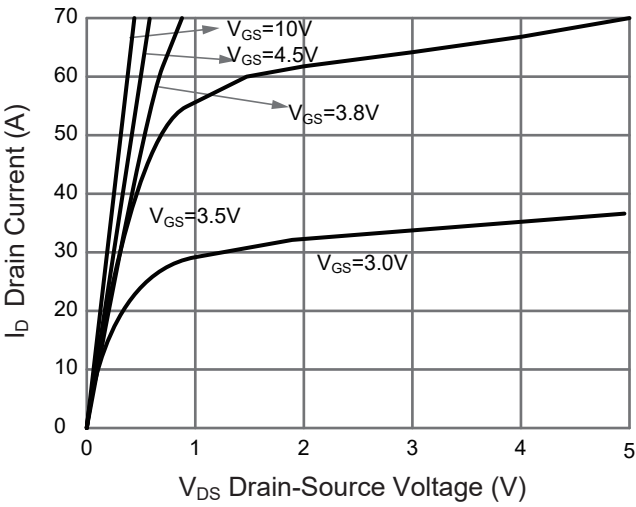
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

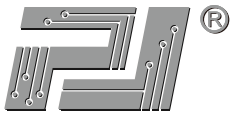


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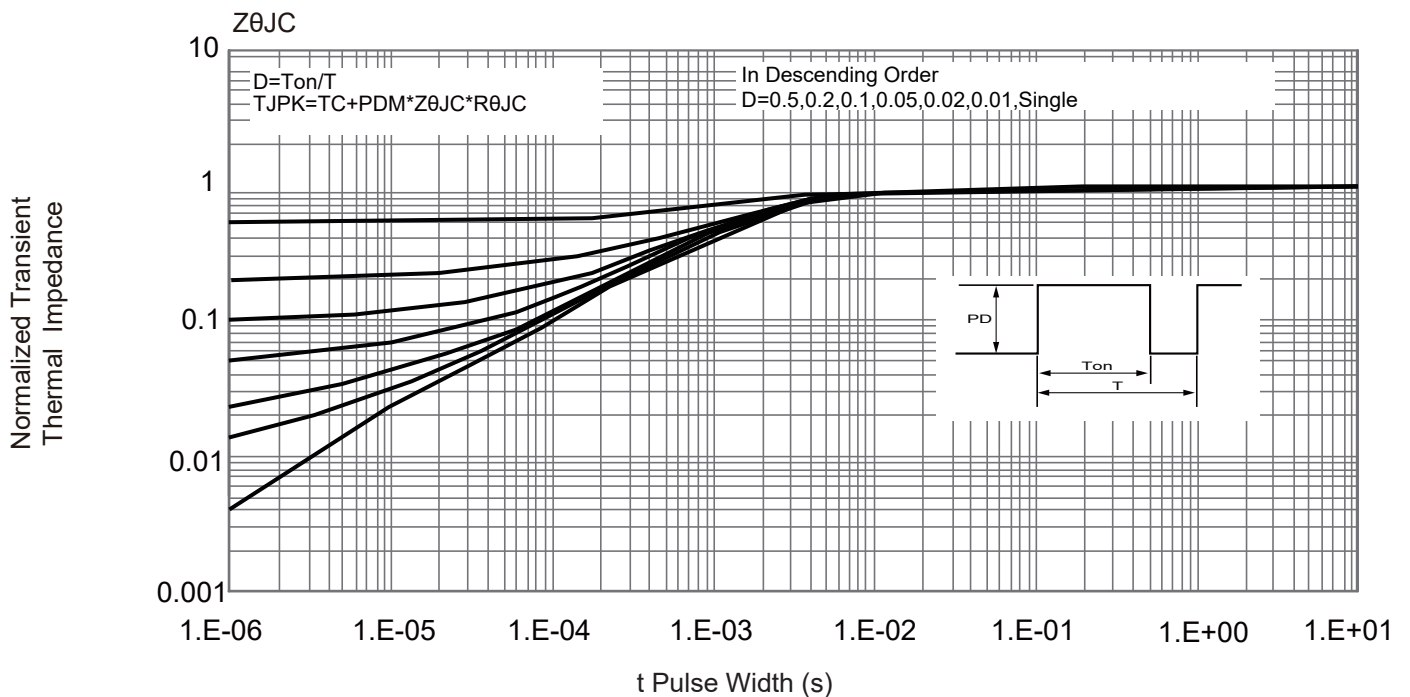
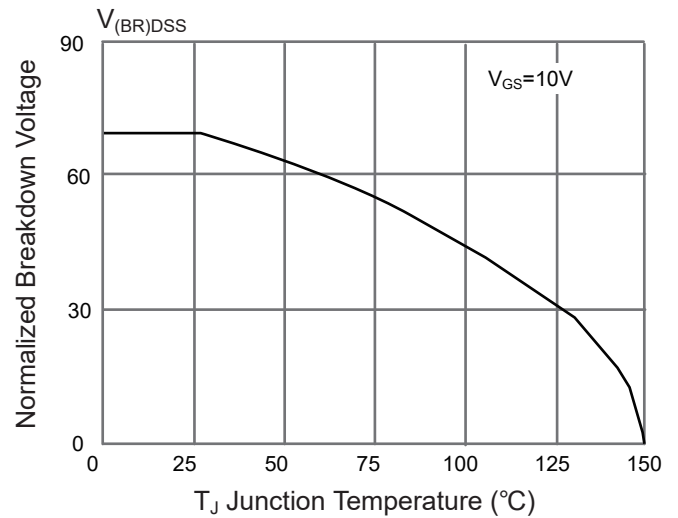
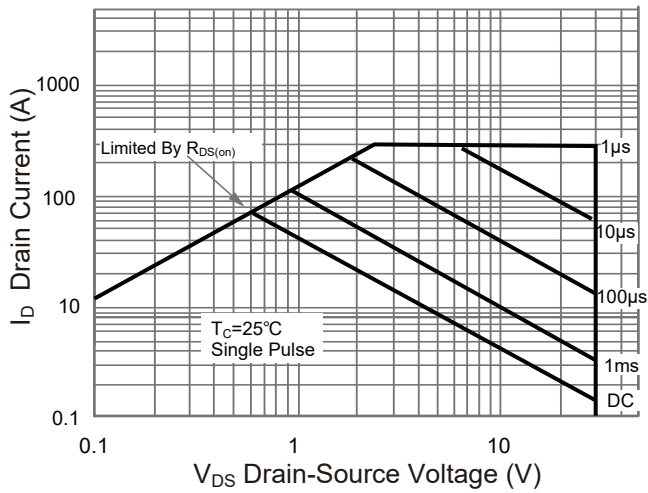
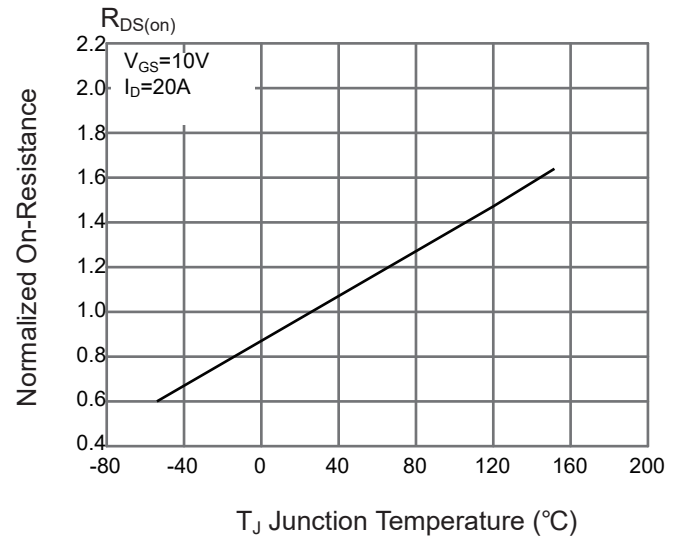
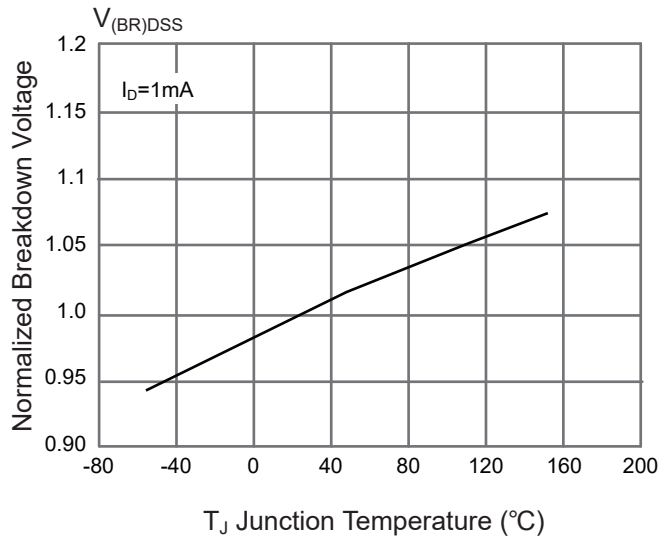
Typical Characteristic Curves





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Test Circuit

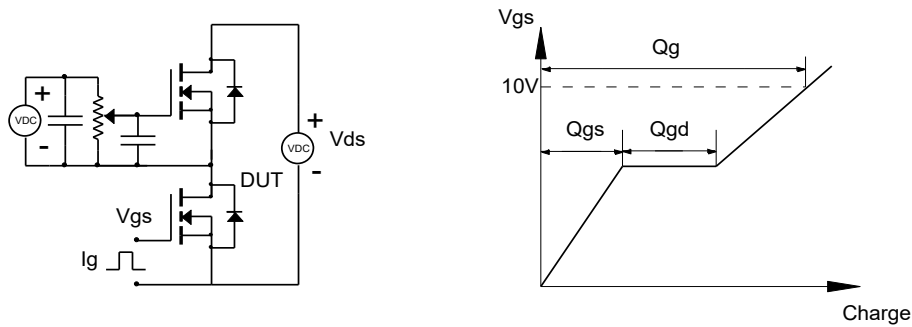


Figure 1: Gate Charge Test Circuit & Waveform

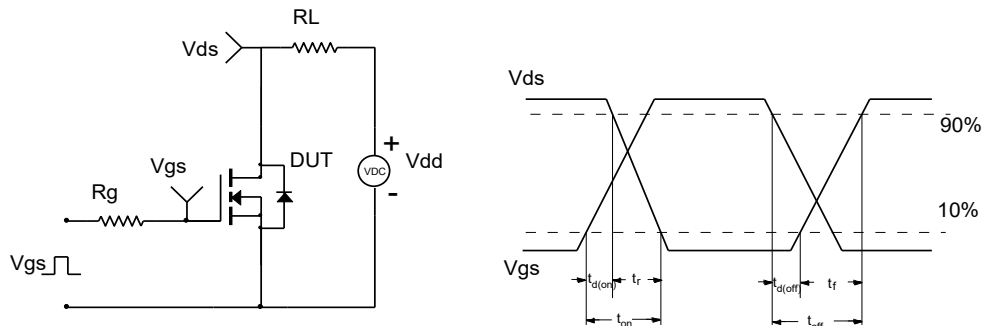


Figure 2: Resistive Switching Test Circuit & Waveform

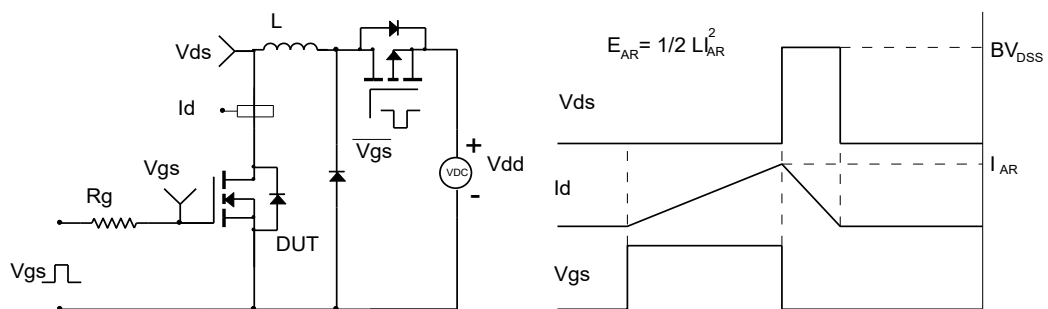


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

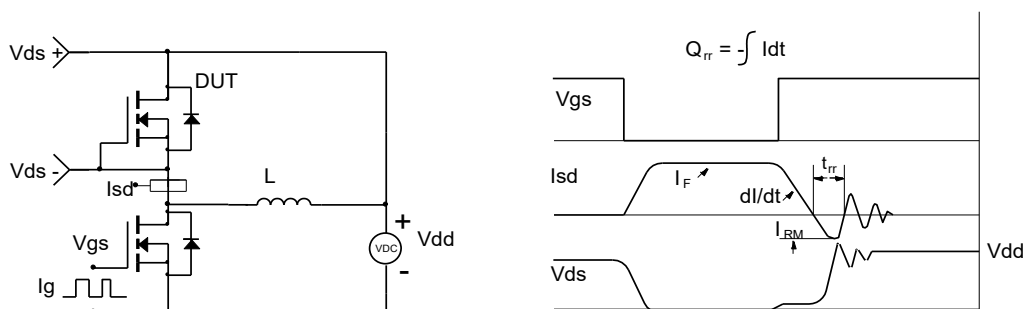


Figure 4: Diode Recovery Test Circuit & Waveform



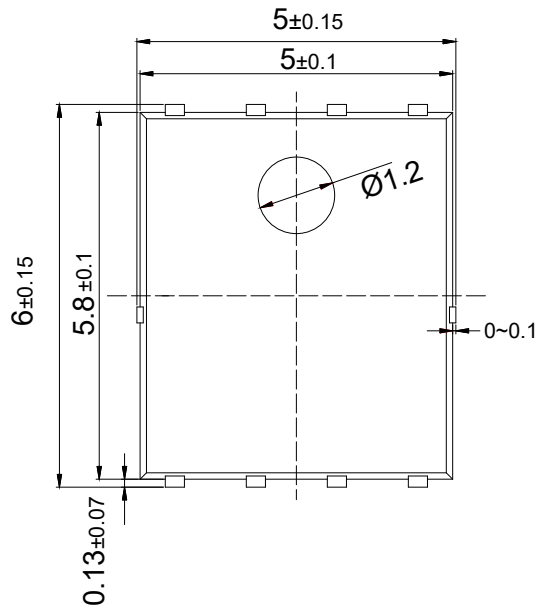
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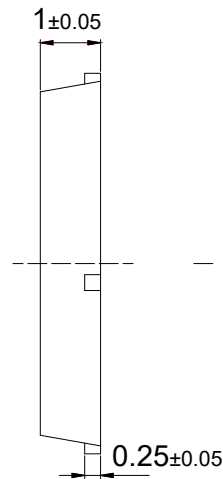
Package Outline

PDFN5x6-8L

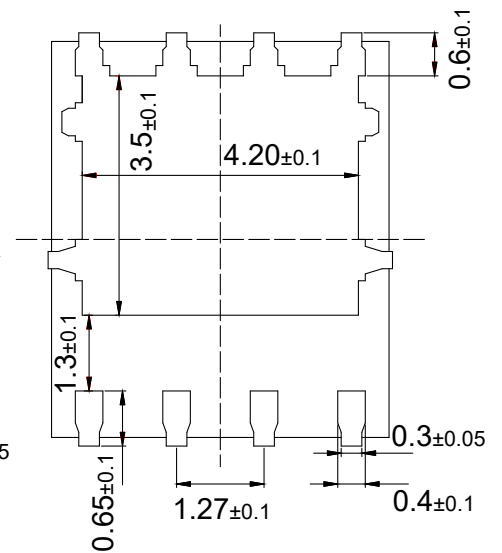
Dimensions in mm



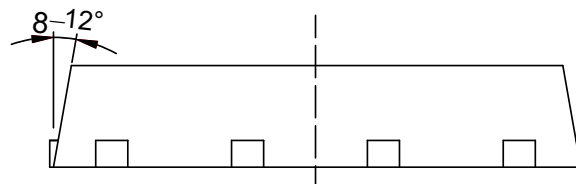
TOP VIEW



RIGHT VIEW



BOTTOM VIEW



SIDE VIEW