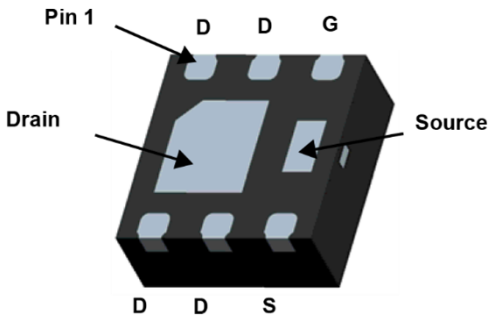
N-Channel MOSFET

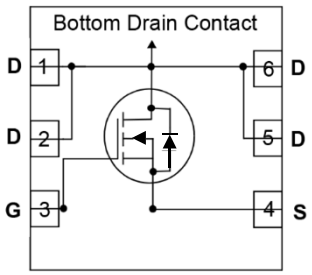
Description

The PNM6N30V15H uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications..

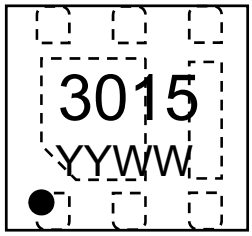
MOSFET Product Summary		
V_{DS}(V)	$R_{DS(on)}$(mΩ)	I_D(A)
30	8 @ V_{GS} = 10V	15
	10 @ V_{GS} = 4.5V	



Bottom View



Circuit Diagram



Pin1

Marking (Top View)

Feature

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

- PWM applications
- Load switch
- Power management

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Drain-source Voltage	V_{DS}	30	V
Gate-source Voltage	V_{GS}	±20	V
Drain Current	I_D	15	A
Pulsed Drain Current[1)]	I_{DM}	60	A
Total Power Dissipation	P_D	2.4	W
Thermal Resistance Junction-to-Ambient @ Steady State[2)]	$R_{\theta JA}$	52	℃/W
Junction and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃

Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{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	-	-	0.1	μA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	0.5	0.8	1.1	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D= 15A	-	8.0	10	mΩ
		V_{GS}= 4.5V, I_D= 8A	-	10	15	
		V_{GS}= 2.5V, I_D= 7.2A	-	14	20	
		V_{GS}= 1.8V, I_D= 3.5A	-	16	24	
Dynamic Parameters[4]						
Input Capacitance	C_{iss}	V_{DS}= 12V,V_{GS}= 0V, f= 1MHz	-	1179	-	pF
Output Capacitance	C_{oss}		-	138	-	
Reverse Transfer Capacitance	C_{rss}		-	130	-	
Switching Parameters[4]						
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 20V, R_L= 250Ω, V_{GEN} = 4.5V,R_{GEN} = 6Ω	-	8.3	-	ns
Turn-on Rise Time	t_r		-	17.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	38	-	
Turn-Off Fall Time	t_f		-	17	-	
Total Gate Charge	Q_g	V_{DS}= 15V,I_D= 6A, V_{GS}= 10V	-	27.9	-	nC
Gate-Source Charge	Q_{gs}		-	1.7	-	
Gate-Drain Charge	Q_{gd}		-	4.6	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	V_{GS}= 0V,I_S= 0.2A	-	0.8	1.2	V

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Characteristics

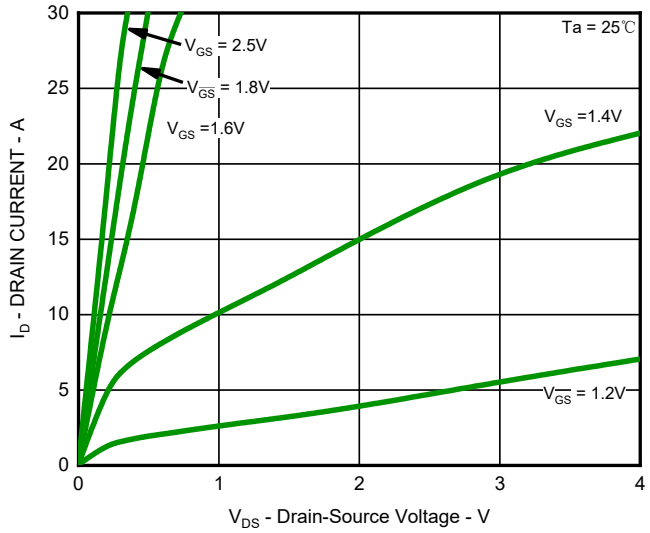


Fig.1 Output Characteristics

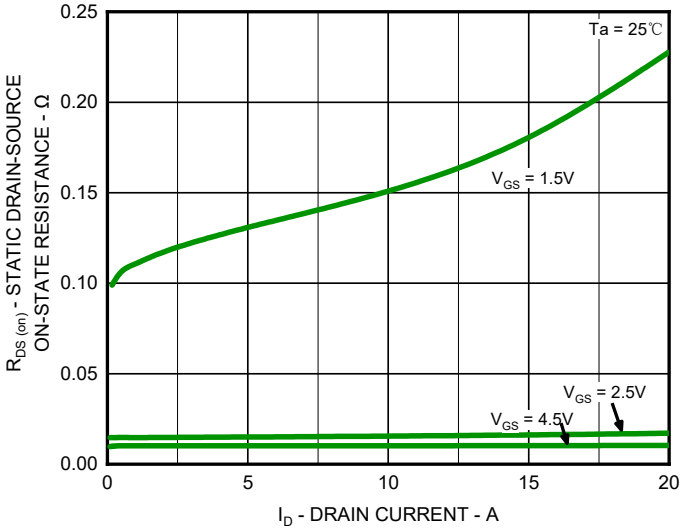


Fig.2 On-Resistance vs. Drain Current (I)

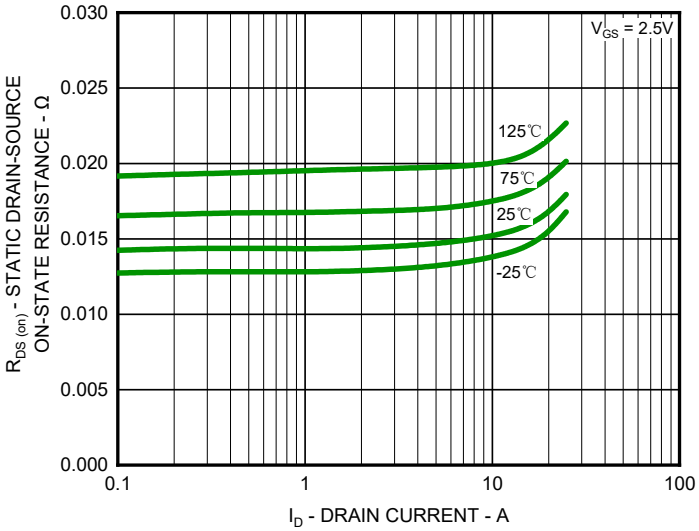


Fig.3 On-Resistance vs. Drain Current (II)

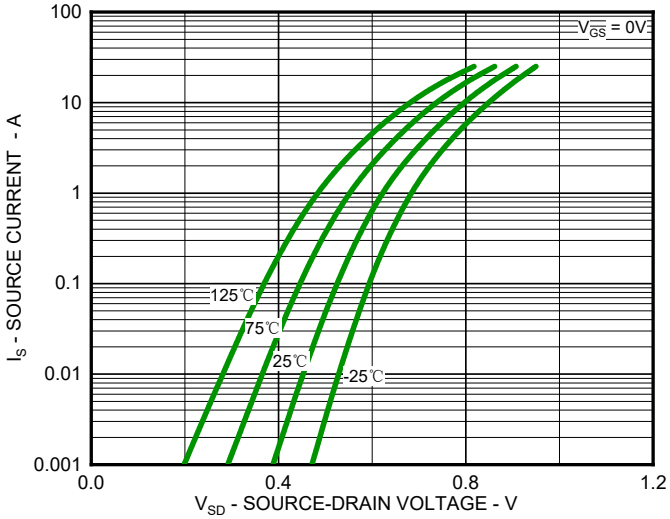


Fig.4 Diode Forward Voltage vs. Current

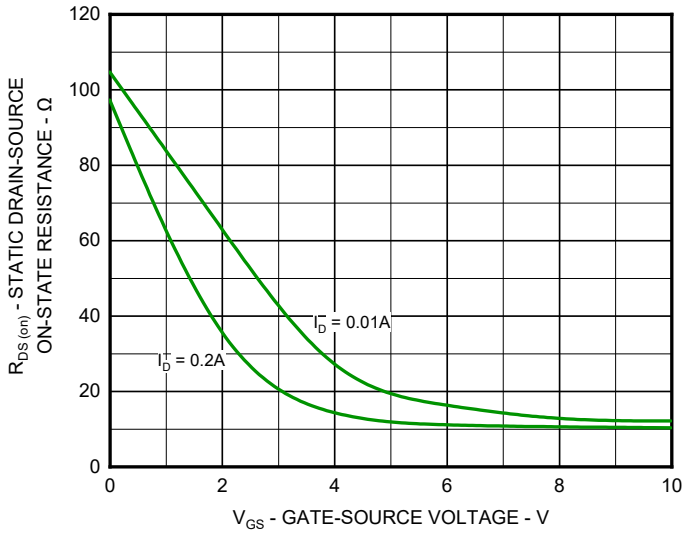


Fig.5 On-Resistance vs. Gate-Source Voltage

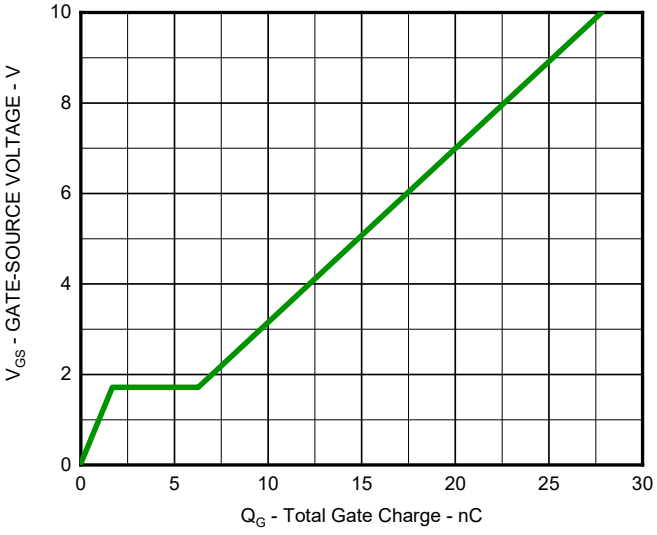


Fig.6 Gate Charge Characteristics

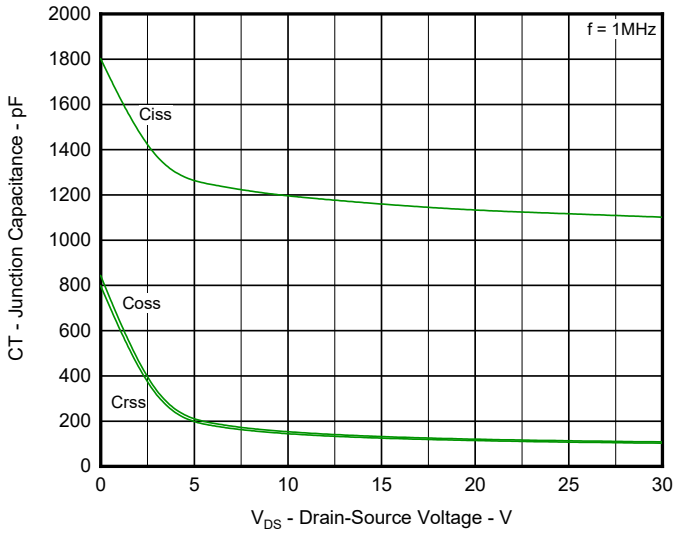


Fig.7 Typical Junction Capacitance

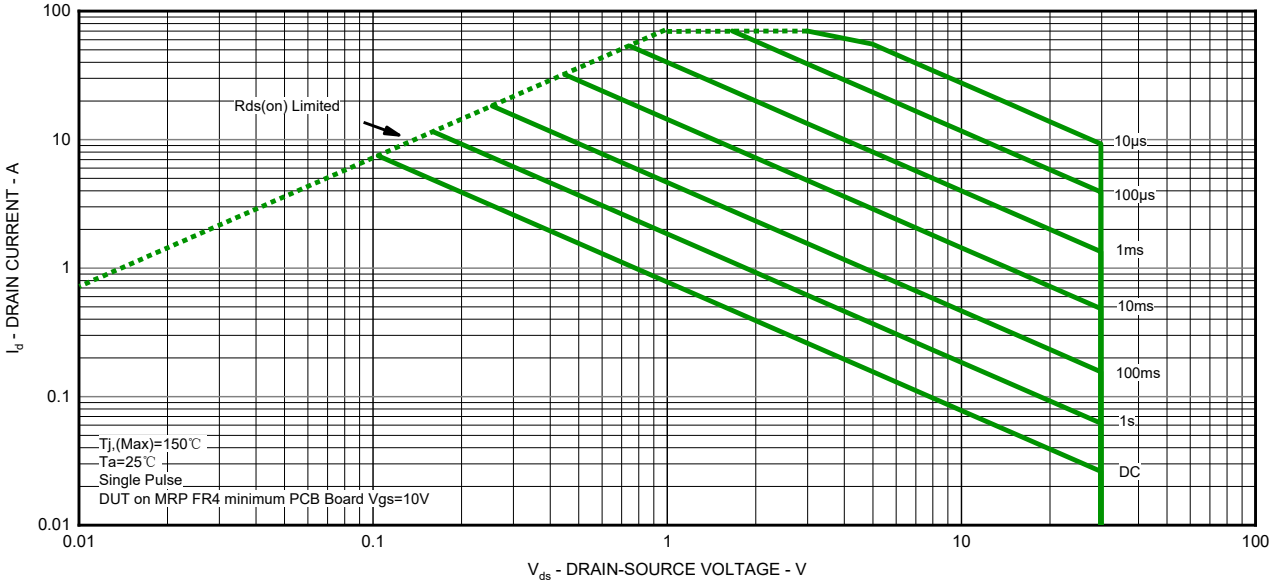


Fig.8 Safe Operation Area

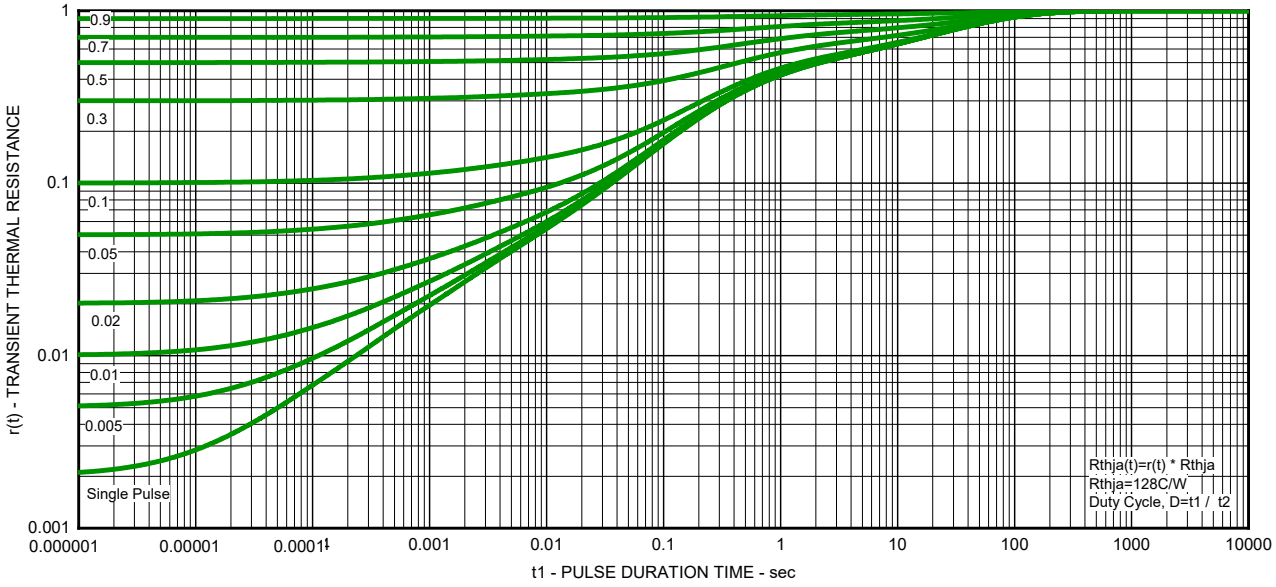
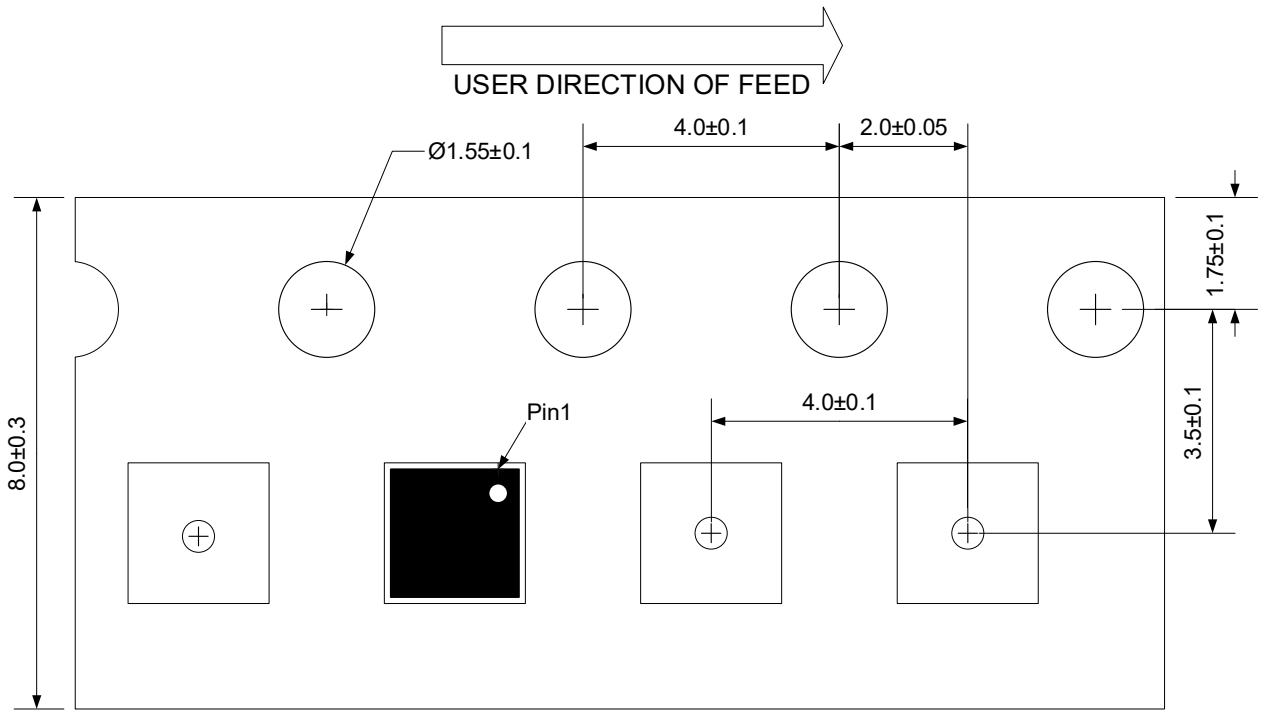


Fig.9 Transient Thermal Resistance

Load with information

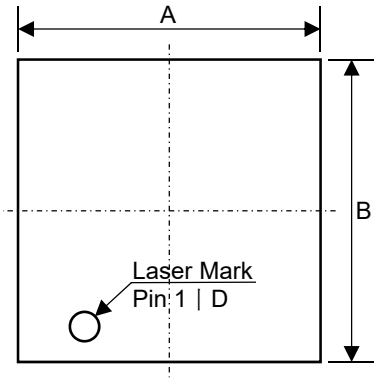


Unit:mm

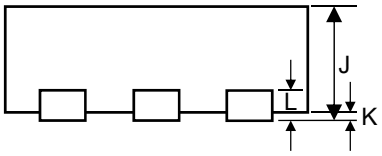
Ordering information

Device	Package	Reel	Shipping
PNM6N30V15H	DFN2X2-6L	7"	3000 / Tape & Reel

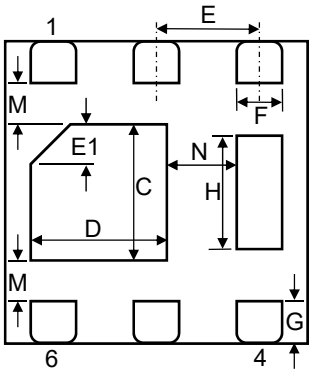
Product dimension (DFN2X2-6L)



Top View

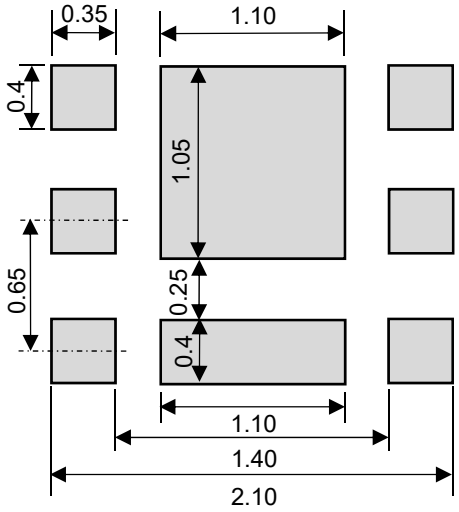


Side View



Bottom View

Dim	Millimeters	
	Min	Max
A	1.90	2.10
B	1.90	2.10
C	0.90	1.10
D	0.80	1.00
E	0.55	0.75
E1	0.25 Ref.	
F	0.25	0.35
G	0.20	0.30
H	0.50	0.70
J	0.50	0.65
K	0.00	0.05
L	0.152 Ref.	
M	0.25 Ref.	
N	0.375 Ref.	



Suggested PCB Layout

Unit:mm

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