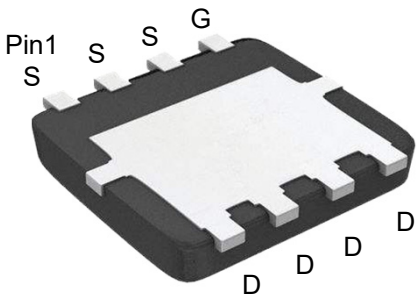
N-Channel MOSFET

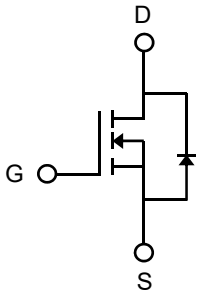
Description

The PNM8N30V160A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. 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	1.4@ V_{GS} = 10V	160



Bottom View



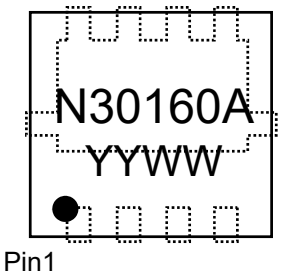
Circuit Diagram

Feature

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

Applications

- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



Marking (Top View)

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	160	A
Pulsed Drain Current	I_{DM}	650	A
Total Power Dissipation[1)]	P_D	1.4	W
Total Power Dissipation[2)]		2.8	
Avalanche Energy, Single Pulse	E_{AS}	599	mJ
Thermal Resistance , Junction-case	$R_{\theta JC}$	1.38	℃/W
Thermal Resistance Junction-to-Ambient[1)]	$R_{\theta JA}$	92	℃/W
Thermal Resistance Junction-to-Ambient[2)]		44	
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	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS},I_D = 250μA	1.0	1.6	2.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 10V,I_D = 20A	-	1.4	2.0	mΩ
		V_{GS} = 4.5V,I_D = 15A	-	1.9	3.3	
Gate Resistance	R_G	V_{DS} = 0V,V_{GS} = 0V, f = 1.0MHz	-	1.0	-	Ω
Diode Forward Voltage	V_{SD}	V_{GS} = 0V,I_S = 20A	-	0.78	1.1	V
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS} = 15V,V_{GS} = 0V, f = 1.0MHz	-	8123	-	pF
Output Capacitance	C_{oss}		-	868	-	
Reverse Transfer Capacitance	C_{rss}		-	705	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 15V, V_{GS} = 10V, I_D = 2A, R_{GEN} = 10Ω	-	9.9	-	ns
Turn-on Rise Time	t_r		-	28.4	-	
Turn-Off Delay Time	$t_{d(off)}$		-	243	-	
Turn-Off Fall Time	t_f		-	84	-	
Total Gate Charge	Q_g	V_{DS} = 15V,I_D = 10A, V_{GS} = 10V	-	149	-	nC
Gate-Source Charge	Q_{gs}		-	18.6	-	
Gate-Drain Charge	Q_{gd}		-	24.1	-	
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	I_F = 10A, di/dt = 100A/μs	-	29.7	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	20	-	nC

Notes:
1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.

Typical Characteristics

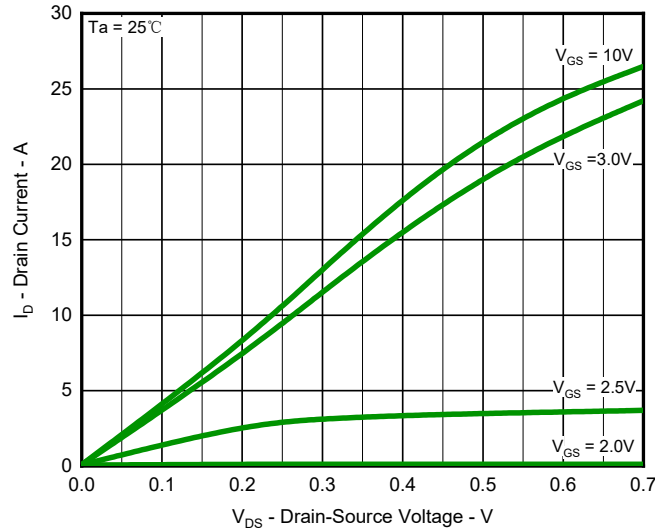


Fig.1 Output Characteristics

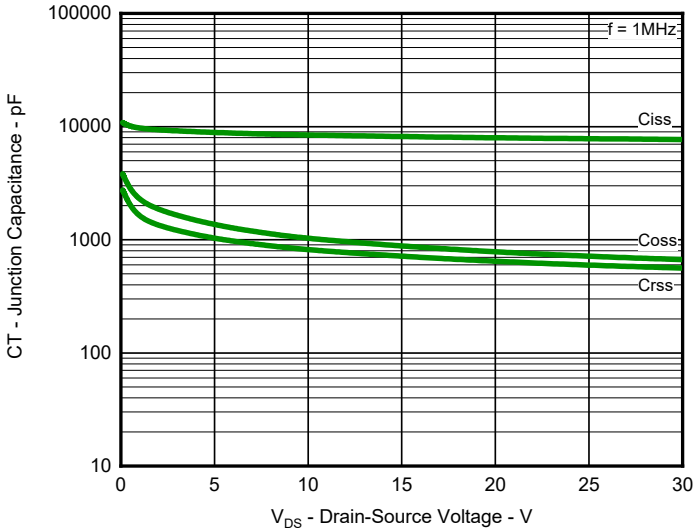


Fig.2 Typical Junction Capacitance

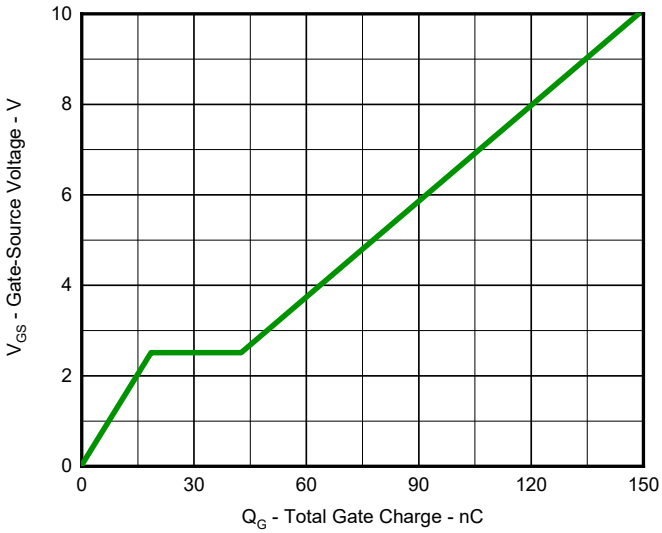


Fig.3 Gate Charge Characteristics

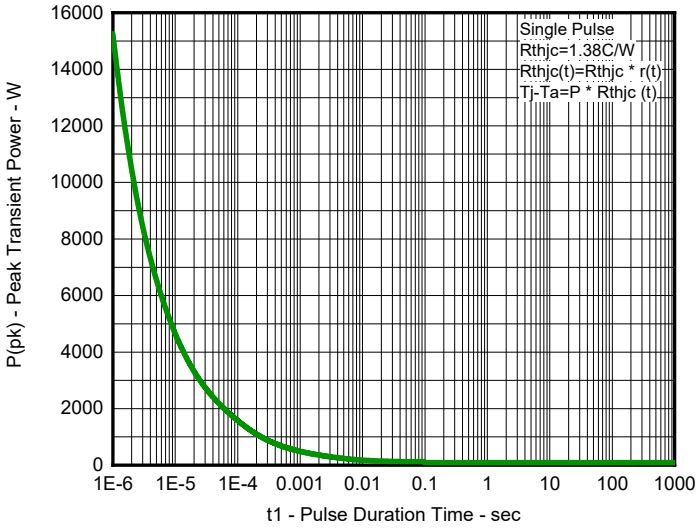


Fig.4 Single Pulse Maximum Power Dissipation

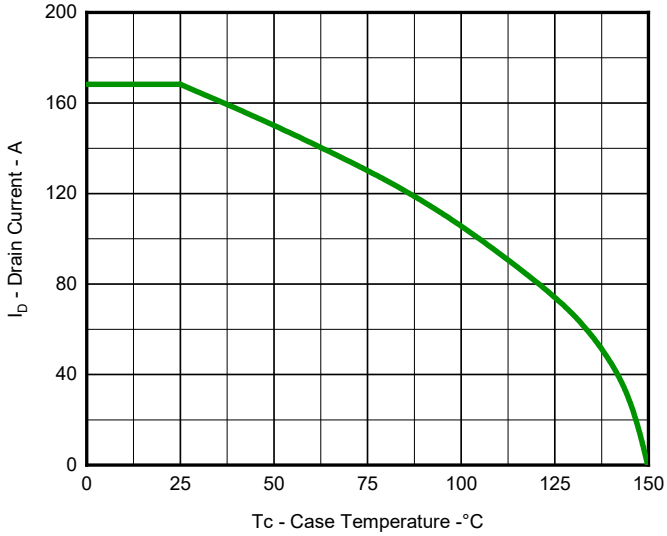


Fig.5 Maximun Drain Current vs. Case Temperature

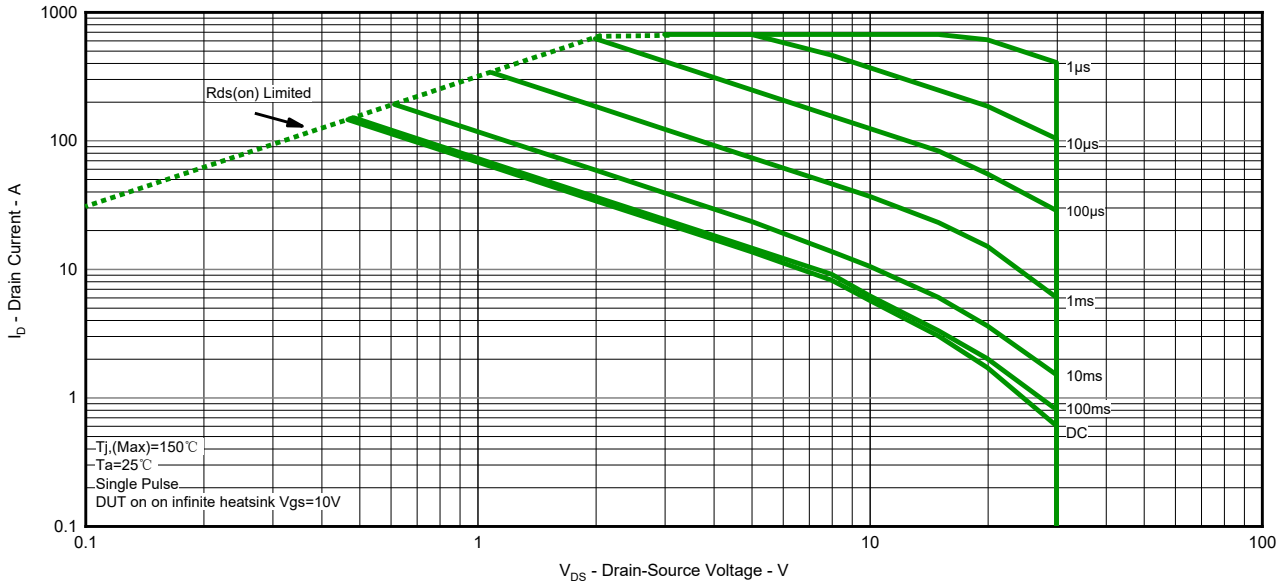


Fig.6 Safe Operation Area

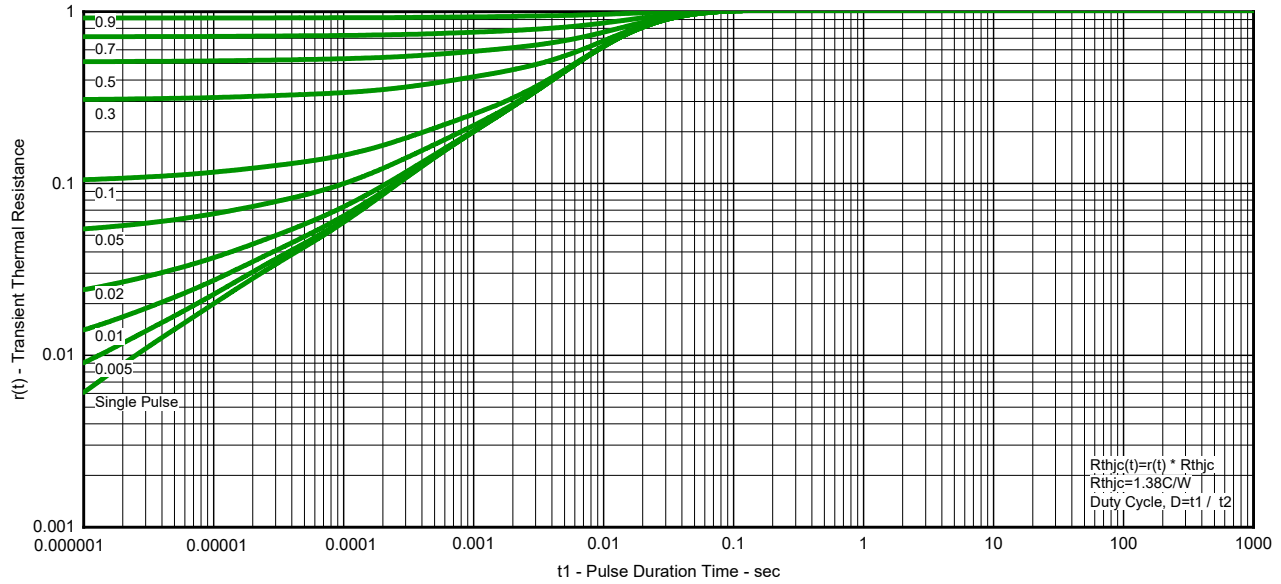
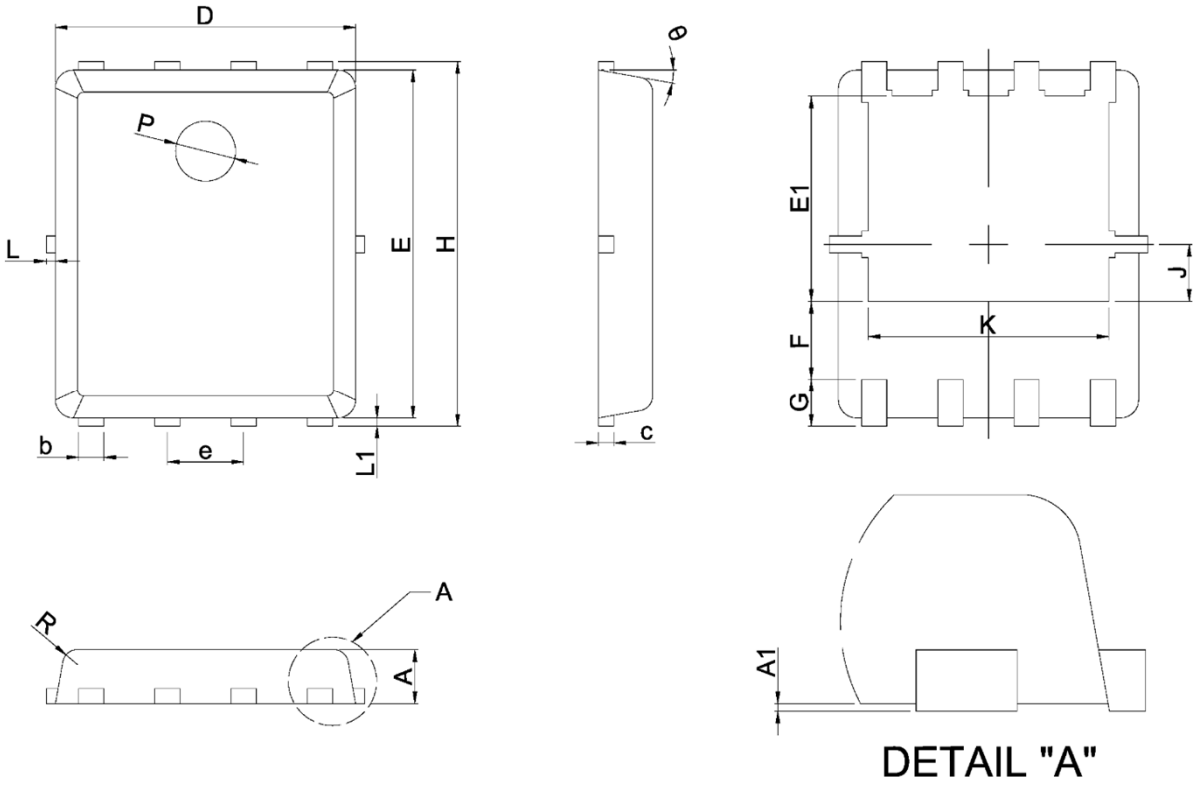


Fig.7 Transient Thermal Resistance

Product Dimension (PDFN5060-8L)

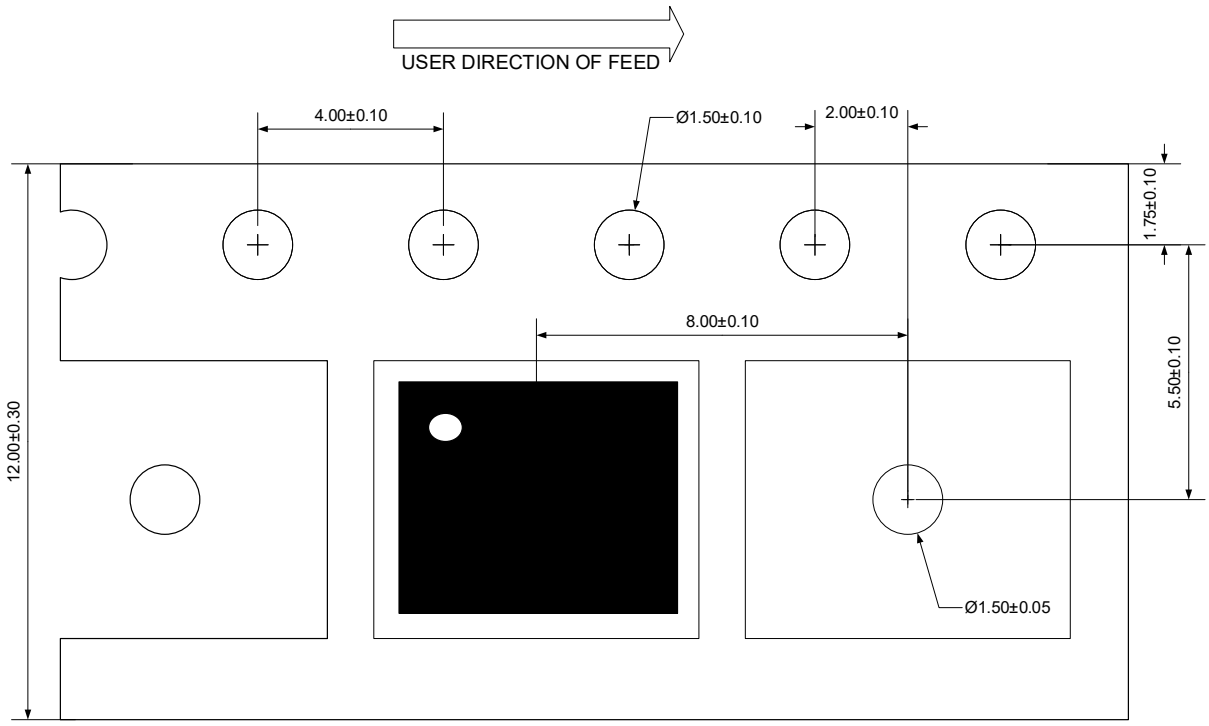


Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
b	0.35	0.49	0.014	0.019
c	0.254 Ref.		0.010 Ref.	
D	4.90	5.10	0.193	0.201
E	5.70	5.90	0.224	0.232
E1	3.35	3.65	0.132	0.144
e	1.27 BSC.		0.050 BSC.	
F	1.40 Ref.		0.055 Ref.	
G	0.60 Ref.		0.024 Ref.	
H	5.95	6.20	0.234	0.244
J	0.95 BSC.		0.037 BSC.	
K	4.00 Ref.		0.157 Ref.	
L	-	0.15	-	0.006
L1	0.10	0.18	0.004	0.007
P	1.00 Ref.		0.039 Ref.	
R	0.25 Ref.		0.010 Ref.	
θ	6°	14°	6°	14°

Ordering Information

Device	Package	Reel	Shipping
PNM8N30V160A	PDFN5060-8L(Pb-Free)	13"	5000 / Tape & Reel

Load With Information



Unit:mm

IMPORTANT NOTICE

Prisemi® and Prisemi® are registered trademarks of **Prisemi Electronics Co., Ltd** (Prisemi**),** Prisemi reserves the right to make changes without further notice to any products herein. Prisemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Prisemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. “Typical” parameters which may be provided in Prisemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals” must be validated for each customer application by customer’s technical experts. Prisemi does not convey any license under its patent rights nor the rights of others. The products listed in this document are designed to be used with ordinary electronic equipment or devices, Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Website: http://www.prisemi.com
For additional information, please contact your local Sales Representative.
©Copyright 2009, Prisemi Electronics
Prisemi® is a registered trademark of Prisemi Electronics.
All rights are reserved.