

Description

The PSM8N04R3H uses split gate trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for power management and high efficiency applications at high switching frequencies applications.

MOSFET Product Summary

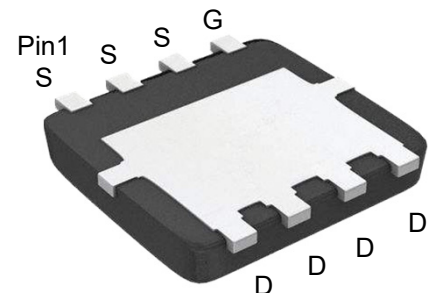
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
40	2.1@ $V_{GS} = 10V$	140

Feature

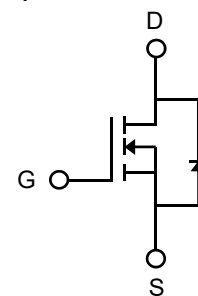
- Low $R_{DS(ON)}$ - Ensures On-State Losses are Minimized
- Excellent $Q_{gd} \times R_{DS(ON)}$ Product(FOM)
- Advanced Technology for DC-DC Converts
- Small Form Factor Thermally Efficient Package
Enables Higher Density End Products
- 100% UIS (Avalanche) Rated
- Lead-Free Finish ; RoHS Compliant
- Halogen and Antimony Free. "Green" Device

Applications

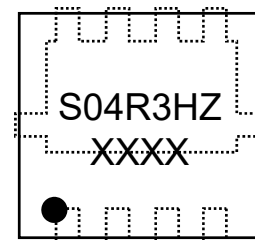
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



**PDFN5060-8L
(Bottom View)**



Circuit Diagram



Pin1

Marking (Top View)

Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous ¹⁾	$T_C = 25^\circ C$	I_D	140	A
	$T_C = 100^\circ C$		89	
Pulsed Drain Current ²⁾		I_{DM}	560	A
Total Power Dissipation ³⁾		P_D	73	W
Avalanche Current ⁴⁾		I_{AS}	34	A
Avalanche Energy ⁴⁾		E_{AS}	289	mJ
Thermal Resistance , Junction-to-Case ⁵⁾		$R_{\theta JC}$	1.7	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ⁶⁾		$R_{\theta JA}$	46.9	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} = 0V	-	-	1.0	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	2.1	2.7	mΩ
Dynamic Characteristics ⁷⁾						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V f= 1MHz	-	2038	-	pF
Output Capacitance	C _{oss}		-	1106	-	
Reverse Transfer Capacitance	C _{rss}		-	37	-	
Switching Characteristics ⁷⁾						
Turn-on Delay Time	t _{d(on)}	V _{DS} = 20V, V _{GS} = 10V, R _G = 3Ω, I _D = 20A	-	10	-	ns
Turn-on Rise Time	t _r		-	12	-	
Turn-Off Delay Time	t _{d(off)}		-	21	-	
Turn-Off Fall Time	t _f		-	10	-	
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A	-	29	-	nC
Gate-Source Charge	Q _{gs}		-	8.6	-	
Gate-Drain Charge	Q _{gd}		-	4.6	-	
Gate Resistance	R _g	f=1MHz, Open Drain	-	1.5	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 20A	-	0.8	1.2	V
Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=100A/us	-	40	-	ns
Reverse Recovery Charge	Q _{rr}		-	35	-	nC

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature ($T_{J_Max} = 150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. This single-pulse measurement was taken under the following condition [$L = 0.5mH, V_{GS} = 10V, V_{DS} = 30V$] while its value is limited by $T_{J_Max} = 150^\circ C$.
5. Device mounted on infinite heatsink.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
7. Guaranteed by design, not subject to production.

Typical Characteristics

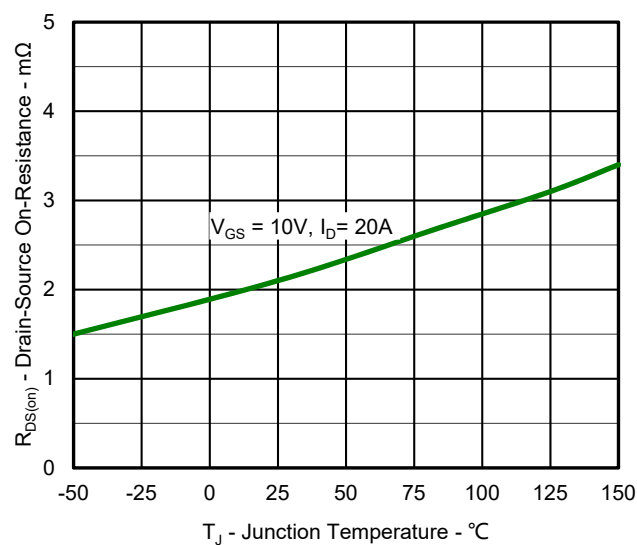
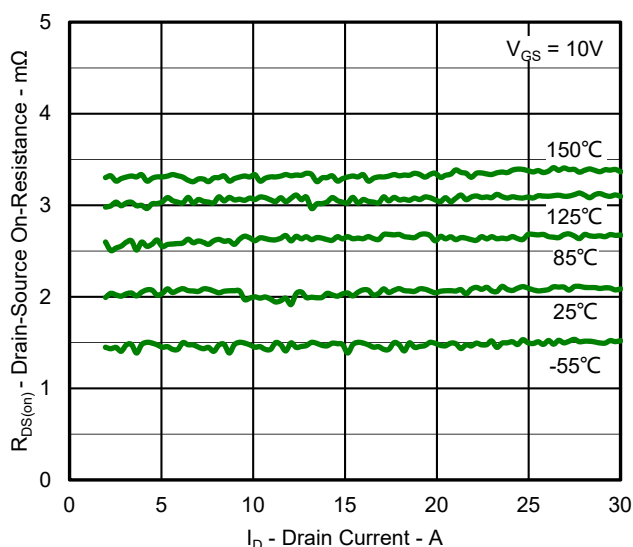
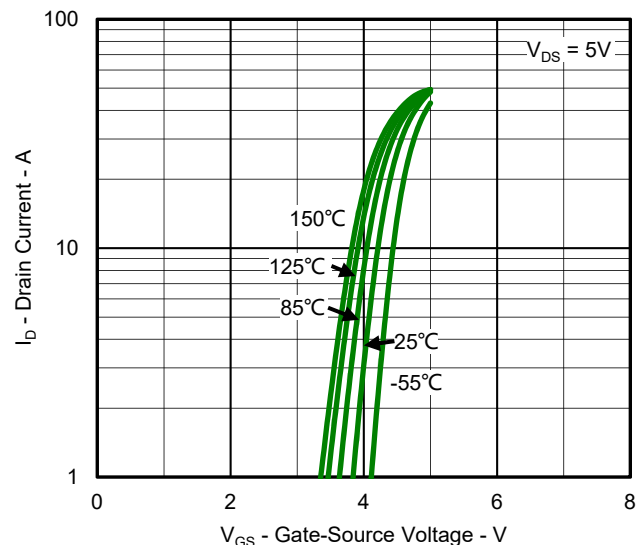
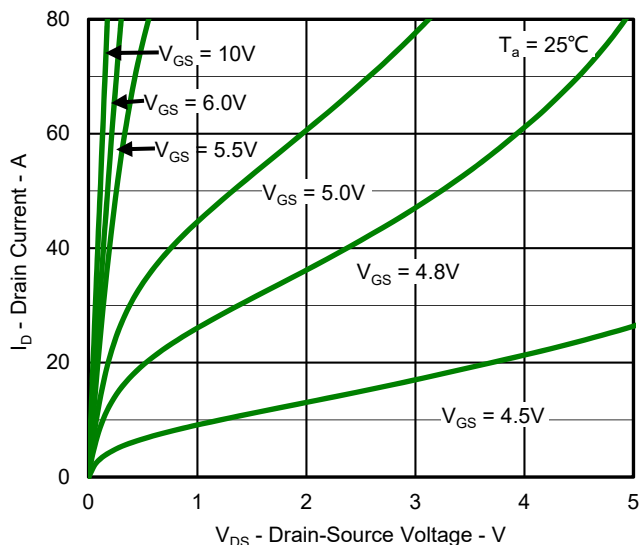


Fig.3 Typical On-Resistance vs Drain Current and Temperature

Fig.4 On-Resistance Variation with Temperature

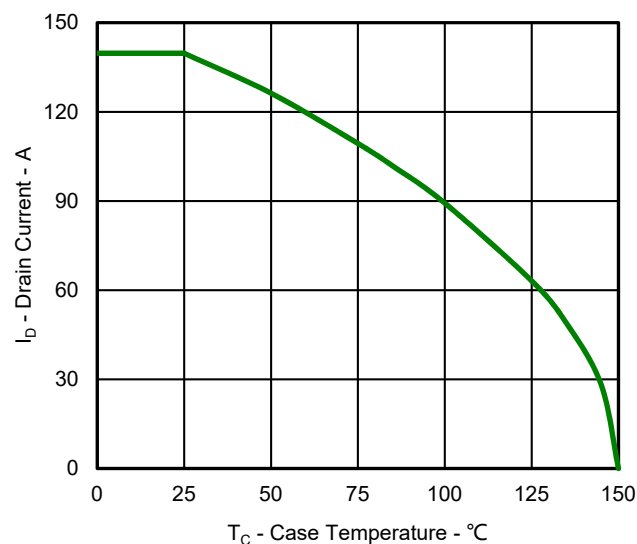
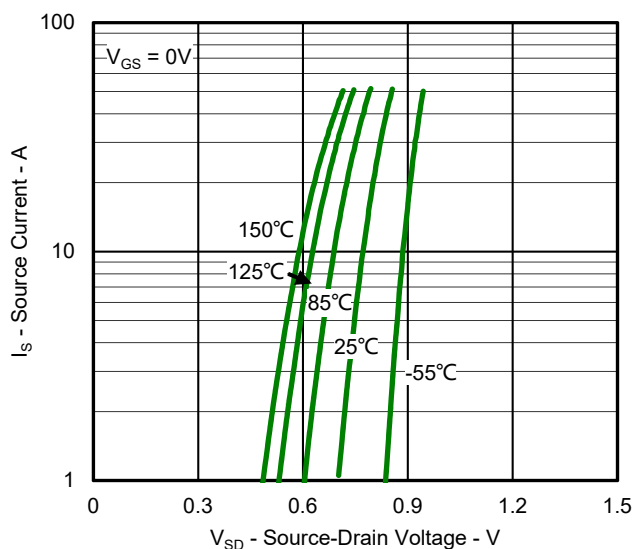


Fig.5 Diode Forward Voltage vs. Current

Fig.6 Maximum Drain Current vs. Case Temperature

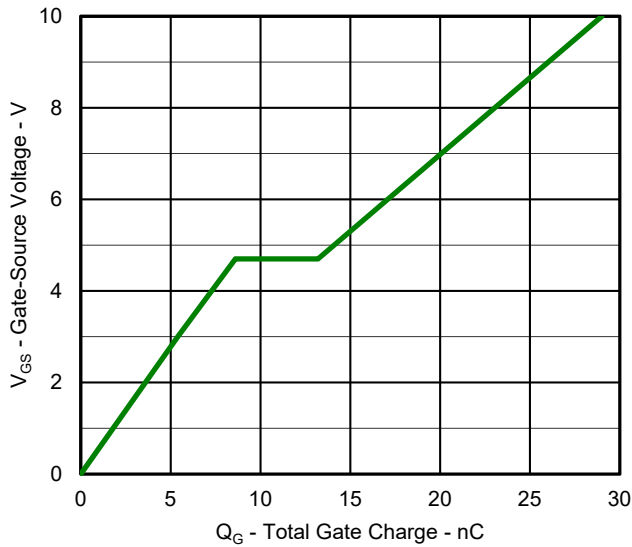


Fig.7 Gate Charge Characteristics

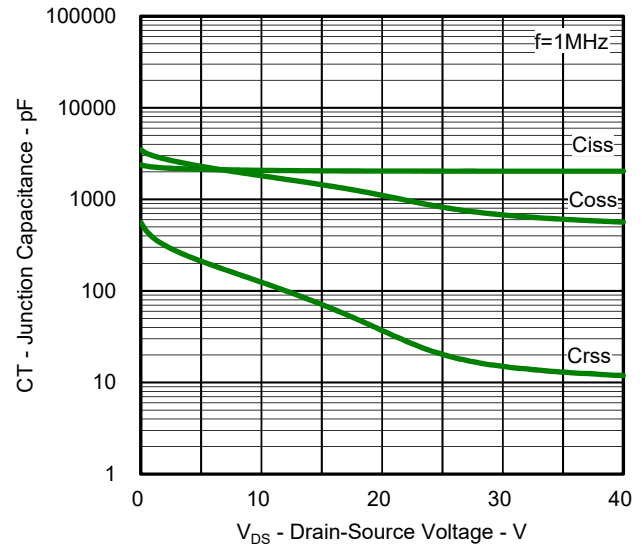


Fig.8 Typical Junction Capacitance

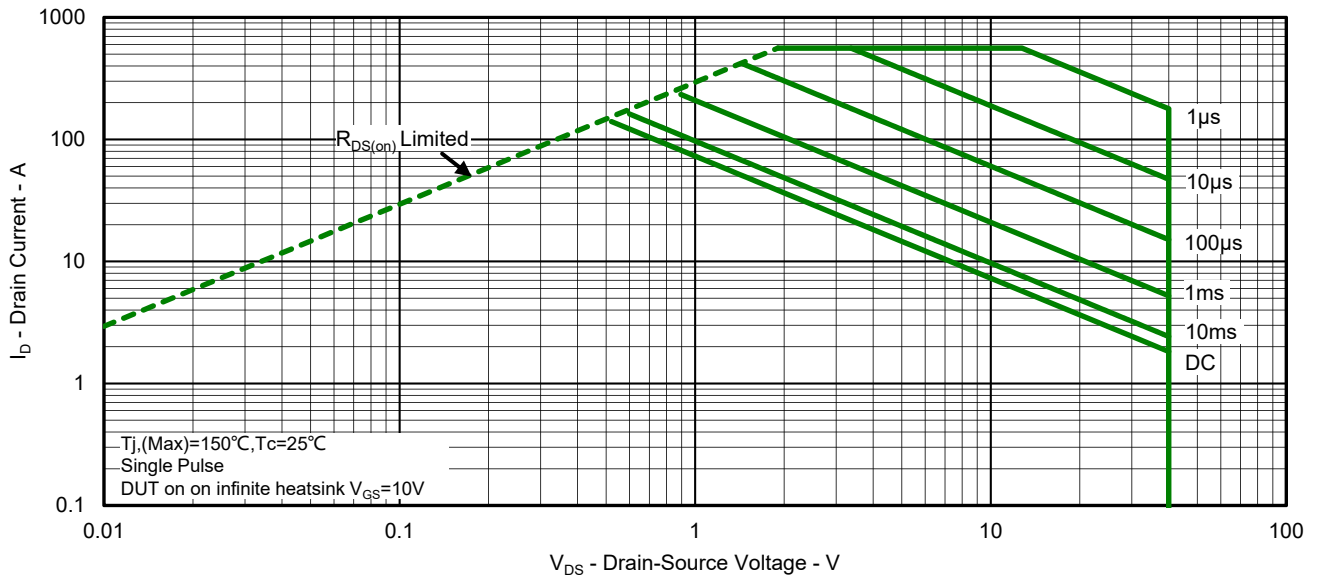


Fig.9 Safe Operation Area

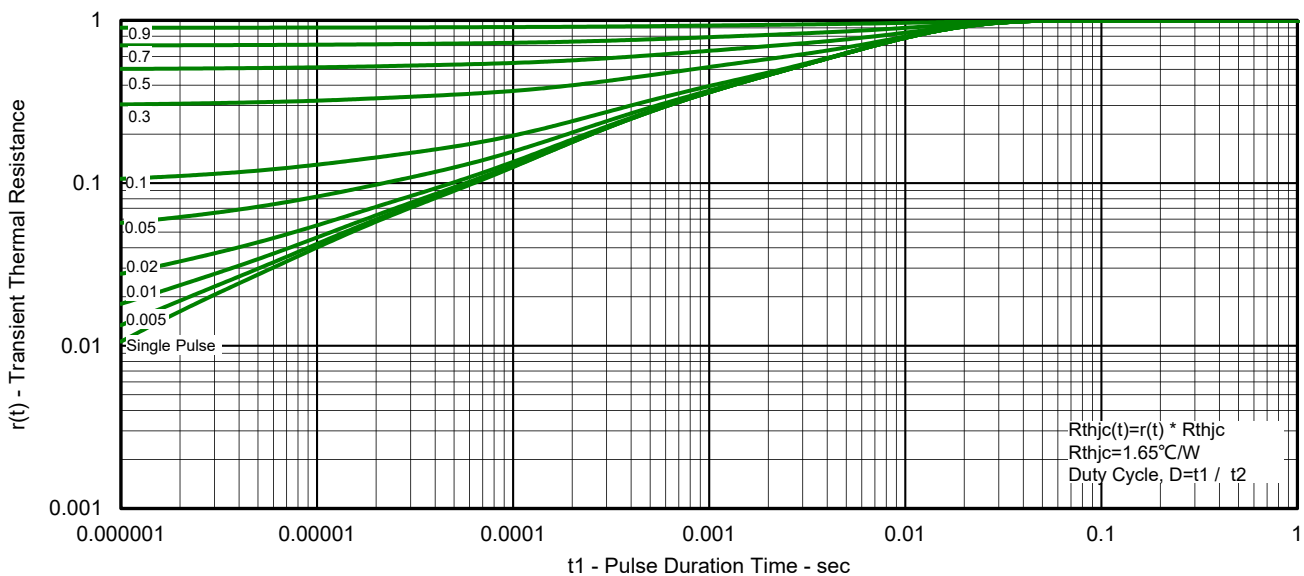
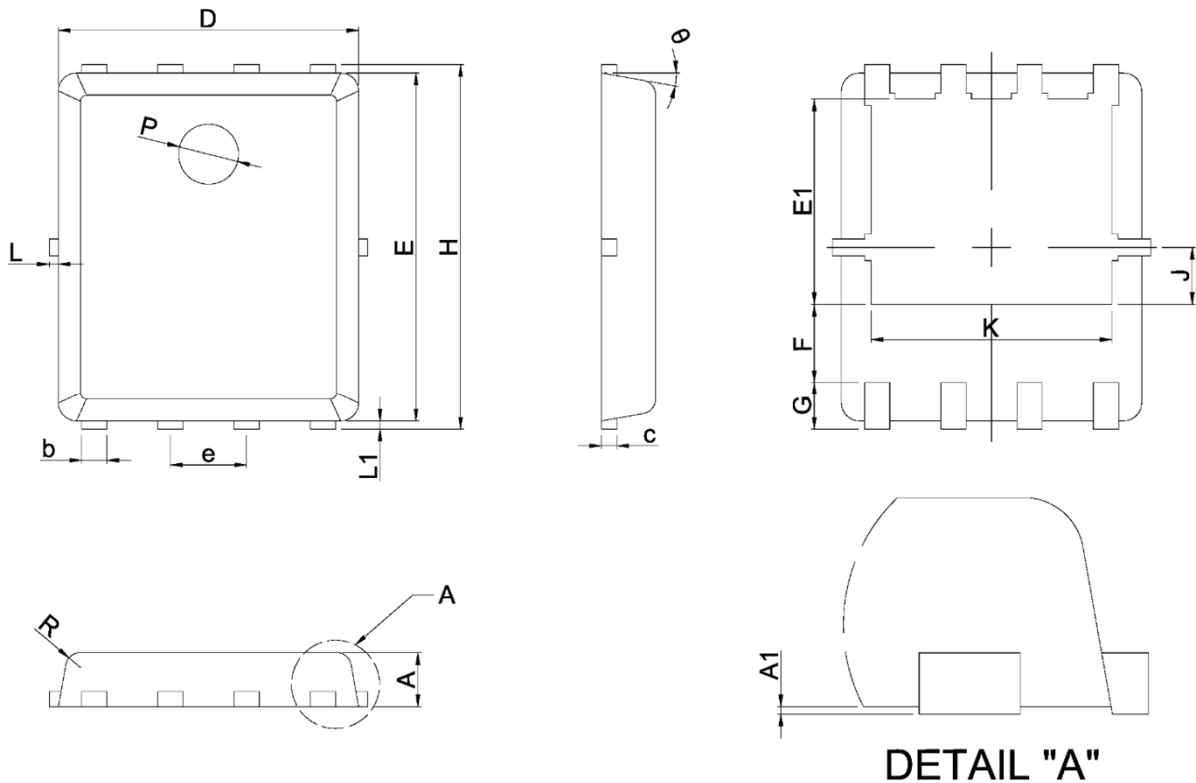


Fig.10 Transient Thermal Resistance

Product Dimension (PDFN5060-8L)

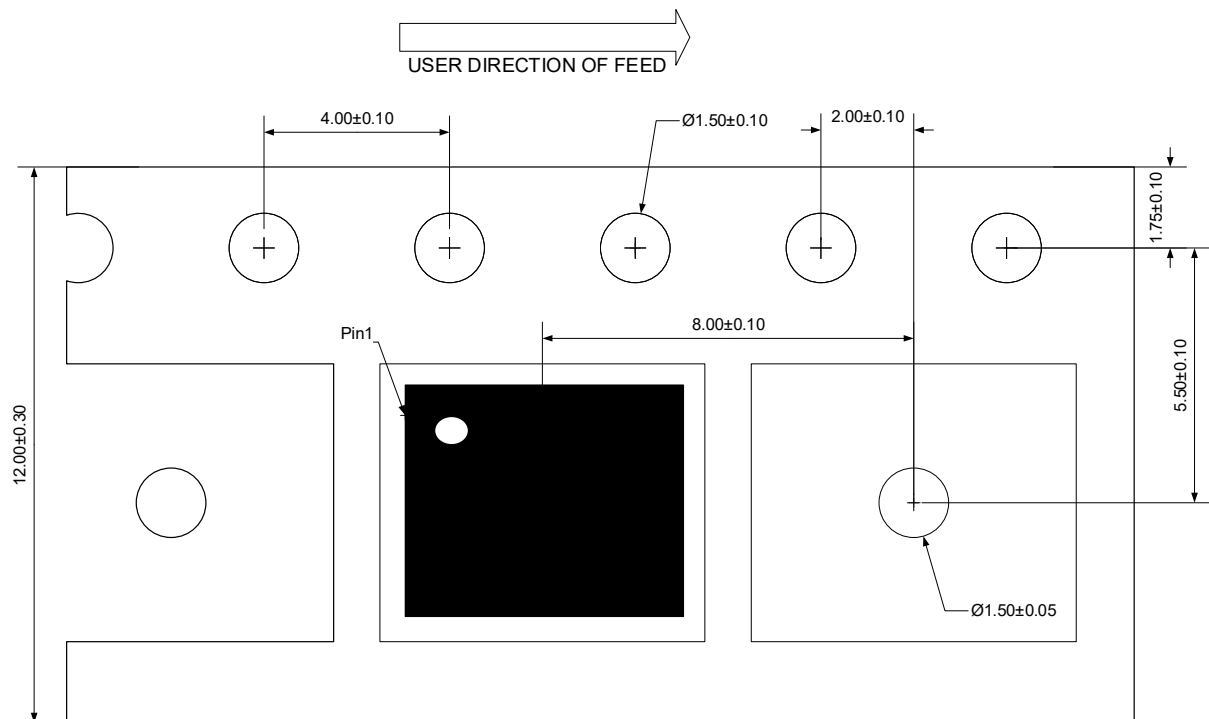


Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.05	0.000	0.002
b	0.35	0.49	0.014	0.019
c	0.254 Ref.		0.010 Ref.	
D	4.80	5.10	0.189	0.201
E	5.70	5.90	0.224	0.232
E1	3.35	3.65	0.132	0.144
e	1.27 BSC.		0.050 BSC.	
F	1.40 Ref.		0.055 Ref.	
G	0.60 Ref.		0.024 Ref.	
H	5.95	6.20	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

Package	Reel	Shipping
PDFN5060-8L	13"	5000 / Tape & Reel

Load With Information



Unit:mm

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