

## Description

The PDSM8PN03R6L 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

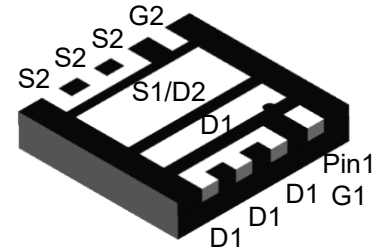
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
30	4.9@ $V_{GS} = 10V$	49
	6.7@ $V_{GS} = 4.5V$	

## Feature

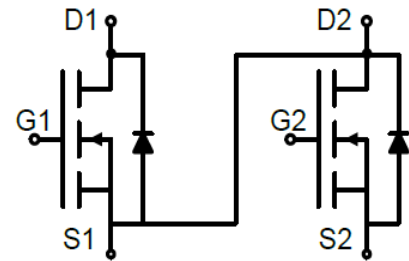
- Low  $R_{DS(ON)}$  - Ensures On-State Losses are Minimized
- Excellent  $Q_{gd} \times R_{DS(ON)}$  Product(FOM)
- Advanced Technology for DC-DC Converts
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products
- 100% UIS (Avalanche) Rated
- Lead-Free Finish ; RoHS Compliant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

## Applications

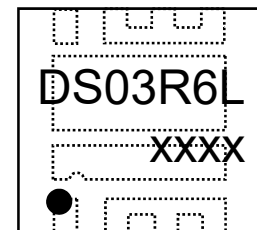
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



**DFN3030-8L  
(Bottom View)**



**Circuit Diagram**



Pin1

**Marking (Top View)**

## Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		$V_{DS}$	30	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current-Continuous <sup>1)</sup>	$T_C=25^\circ C$	$I_D$	49	A
	$T_C=100^\circ C$		31	
Pulsed Drain Current <sup>2)</sup>		$I_{DM}$	196	A
Total Power Dissipation <sup>3)</sup>		$P_D$	29	W
Avalanche Current <sup>4)</sup>		$I_{AS}$	27	A
Avalanche Energy <sup>4)</sup>		$E_{AS}$	38	mJ
Thermal Resistance , Junction-to-Case <sup>5)</sup>		$R_{\theta JC}$	4.3	$^\circ C/W$
Thermal Resistance Junction-to-Ambient <sup>6)</sup>		$R_{\theta JA}$	45.5	$^\circ C/W$
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~+150	$^\circ C$

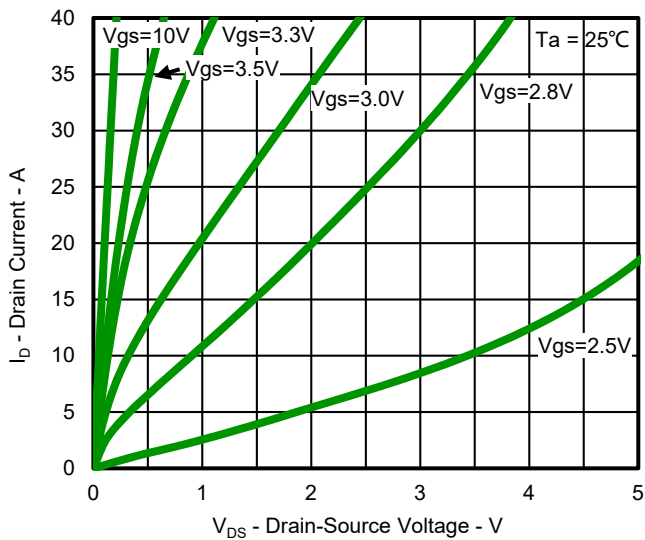
## Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V,I <sub>D</sub> = 250μA	30	-	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V,V <sub>GS</sub> = 0V	-	-	1.0	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V,V <sub>DS</sub> = 0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> ,I <sub>D</sub> = 250μA	1.0	1.5	2.1	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V,I <sub>D</sub> = 10A	-	4.9	6.3	mΩ
		V <sub>GS</sub> = 4.5V,I <sub>D</sub> = 8A	-	6.7	9.0	
Dynamic Characteristics <sup>7)</sup>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15V,V <sub>GS</sub> = 0V, f = 1.0MHz	-	851	-	pF
Output Capacitance	C <sub>oss</sub>		-	236	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	16	-	
Switching Characteristics <sup>7)</sup>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>G</sub> = 3Ω, I <sub>D</sub> = 10A	-	4.2	-	ns
Turn-on Rise Time	t <sub>r</sub>		-	2.7	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	18.3	-	
Turn-Off Fall Time	t <sub>f</sub>		-	6.5	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A	-	13.4	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.4	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	3.8	-	
Gate Resistance	R <sub>g</sub>	f=1MHz, Open Drain	-	4.1	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V,I <sub>S</sub> = 20A	-	0.9	1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =10A, d <sub>f</sub> /d <sub>t</sub> =100A/μs	-	13.7	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	4.0	-	nC

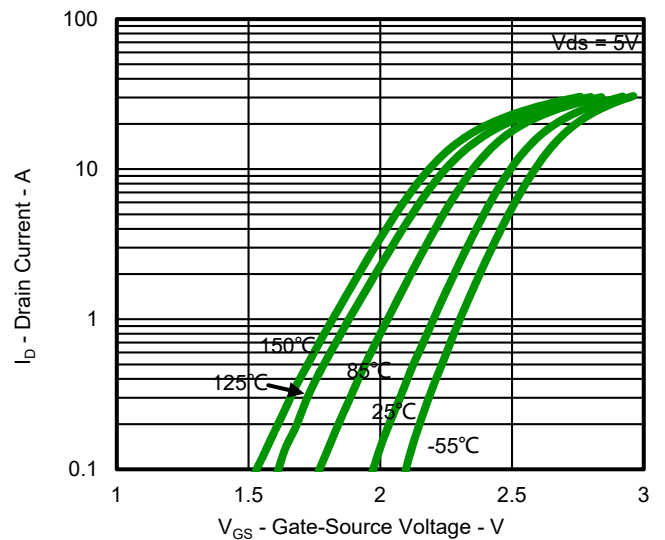
## Notes:

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 ( $L=0.1mH, V_{GS}=10V, V_{DS}=30V$ ) while it's 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.

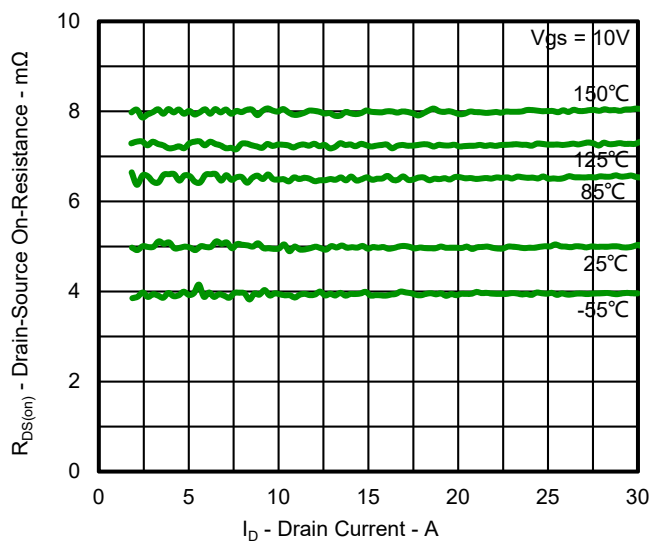
## Typical Characteristics



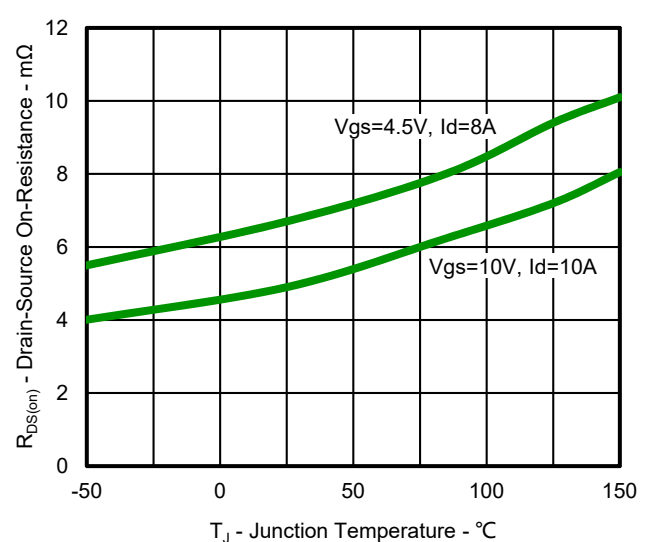
**Fig.1 Output Characteristics**



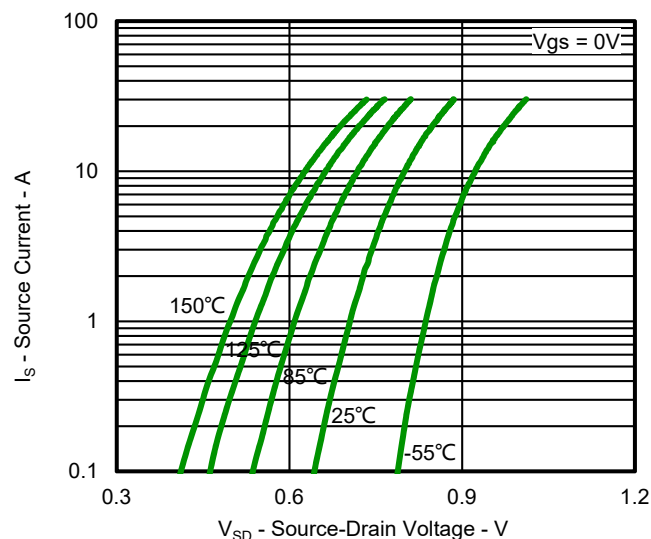
**Fig.2 Typical Transfer Characteristic**



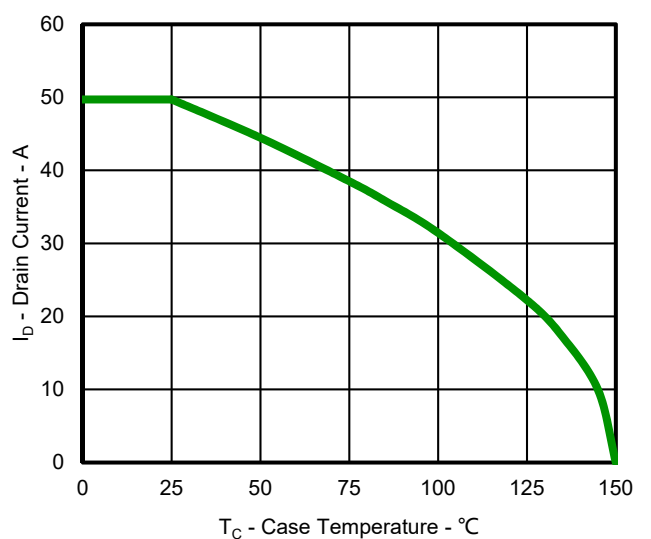
**Fig.3 Typical On-Resistance vs Drain Current and Temperature**



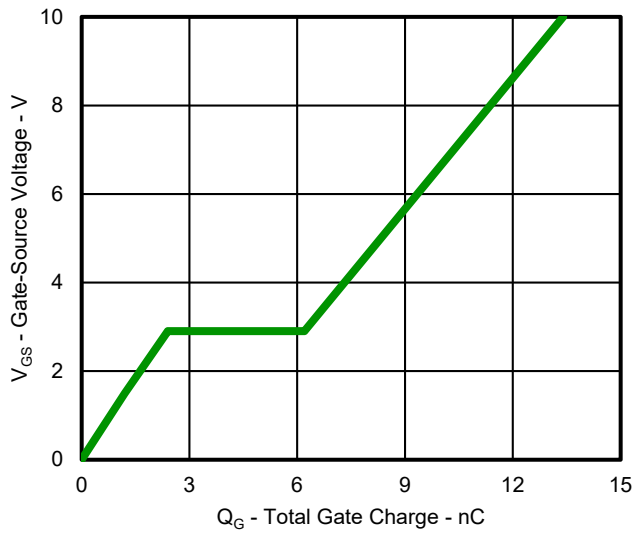
**Fig.4 On-Resistance Variation with Temperature**



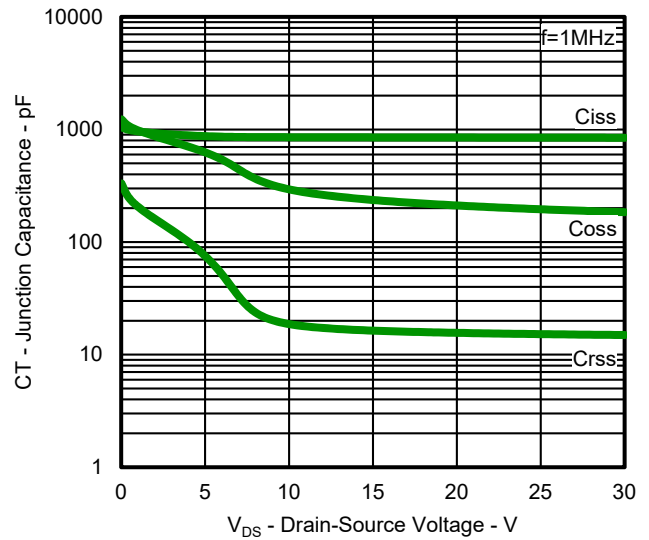
**Fig.5 Diode Forward Voltage vs. Current**



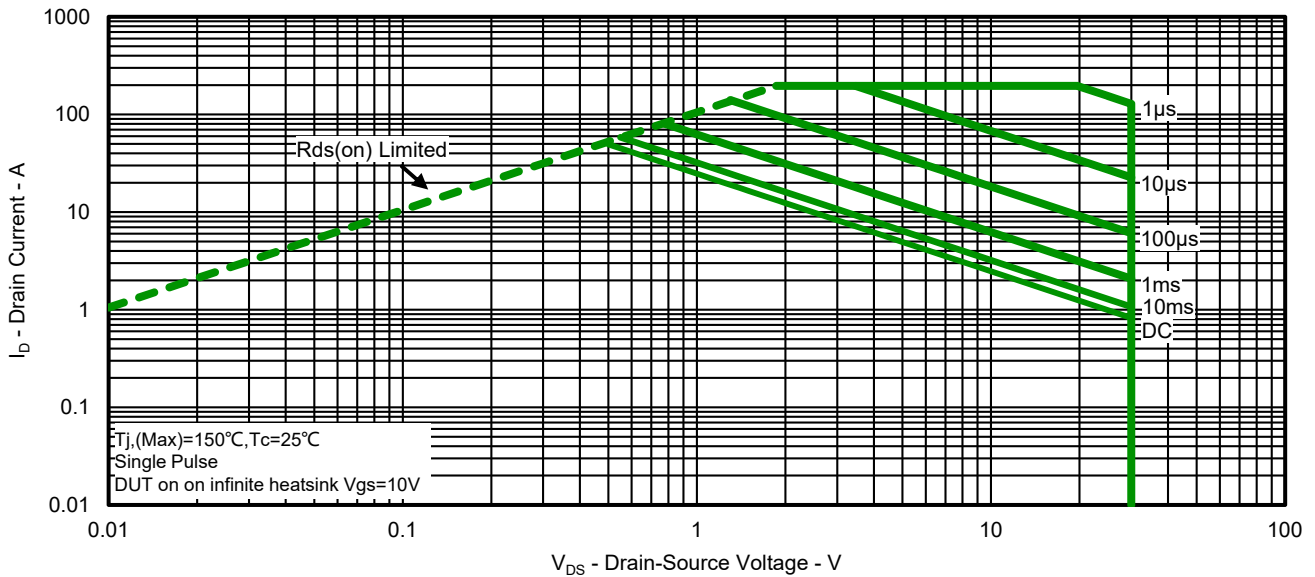
**Fig.6 Maximum Drain Current vs. Case Temperature**



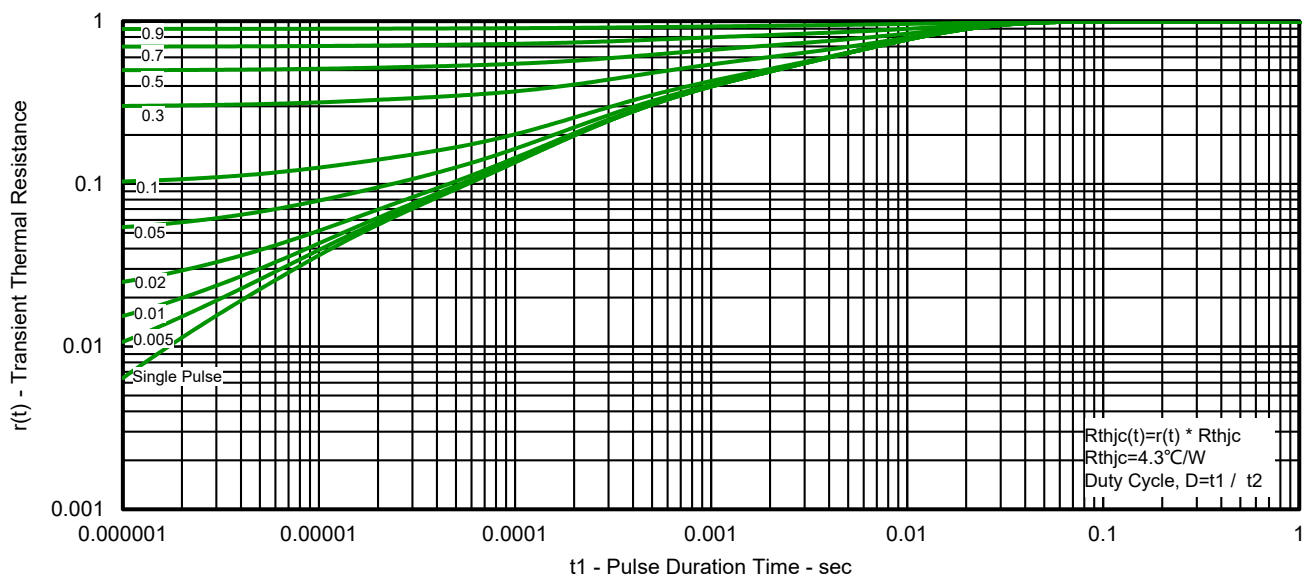
**Fig.7 Gate Charge Characteristics**



**Fig.8 Typical Junction Capacitance**

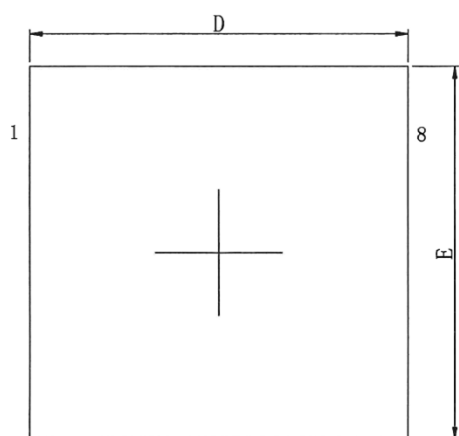


**Fig.9 Safe Operation Area**

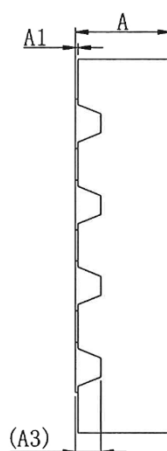


**Fig.10 Transient Thermal Resistance**

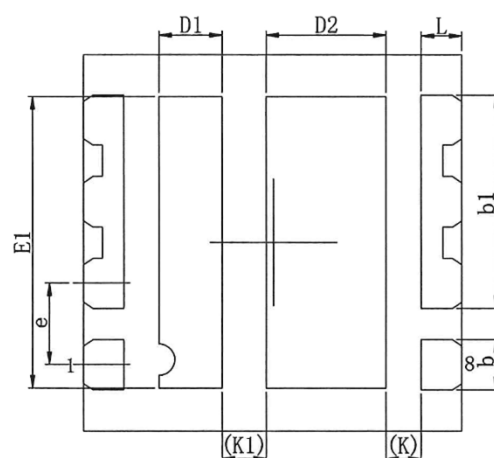
## Product Dimension (DFN3030-8L)



TOP VIEW  
[顶视图]



SIDE VIEW  
[侧视图]



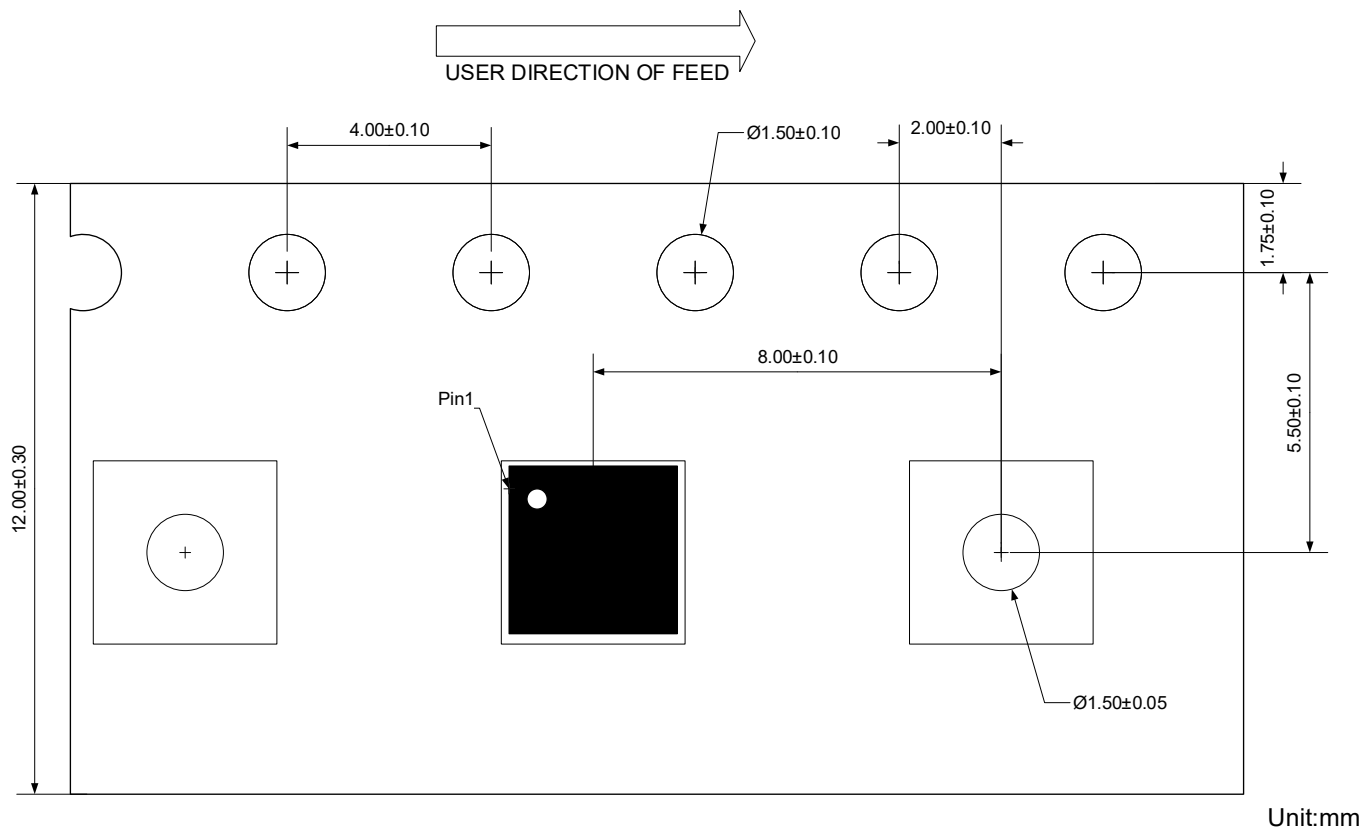
BOTTOM VIEW  
[背视图]

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A3	0.203 Ref.		0.008 Ref.	
b	0.35	0.45	0.014	0.018
b1	1.60	1.80	0.063	0.071
D	2.90	3.10	0.114	0.122
D1	0.40	0.60	0.016	0.024
D2	0.85	1.05	0.033	0.041
E	2.90	3.10	0.114	0.122
E1	2.225	2.425	0.088	0.095
e	0.65 BSC		0.026 BSC	
L	0.22	0.42	0.009	0.017
K	0.28 Ref.		0.011 Ref.	
K1	0.35 Ref.		0.014 Ref.	


## Ordering Information

Package	Reel	Shipping
DFN3030-8L	13"	5000 / Tape & Reel

## Load With Information




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