

Description

The PSM8N120V100 uses split gate trench technology to provide excellent $R_{DS(ON)}$ low gate charge. This device is suitable for power management and high efficiency applications at high switching frequencies applications.

MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
120	8.8@ $V_{GS} = 10V$	100

Feature

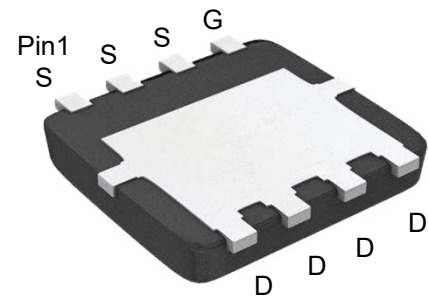
- Low $R_{DS(ON)}$ - Ensures On-State Losses are Minimized
- Excellent $Q_{gd} \times R_{DS(ON)}$ Product(FOM)
- Advanced Technology for DC-DC Converts
- Small Form Factor Thermally Efficient Package
Enables Higher Density End Products
- 100% UIS (Avalanche) Rated
- Lead-Free Finish ; RoHS Compliant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

Applications

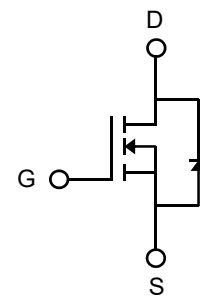
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers

Absolute maximum rating@25°C

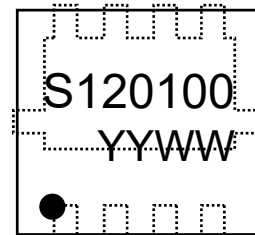
Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	100	A
Pulsed Drain Current ¹⁾	I_{DM}	330	A
Total Power Dissipation ²⁾	P_D	116	W
Thermal Resistance , Junction-case	$R_{\theta JC}$	0.702	°C/W
Thermal Resistance Junction-to-Ambient @ Steady State ²⁾	$R_{\theta JA}$	51.5	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	°C



PDFN5060-8L
(Bottom View)



Circuit Diagram



Pin1

Marking (Top View)

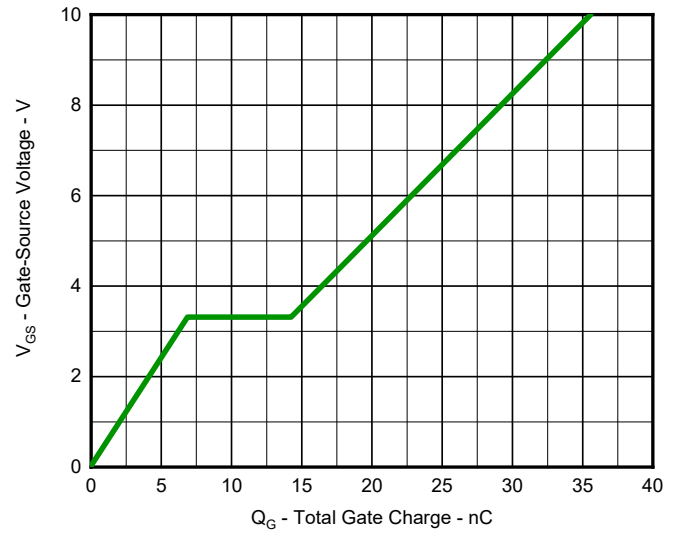
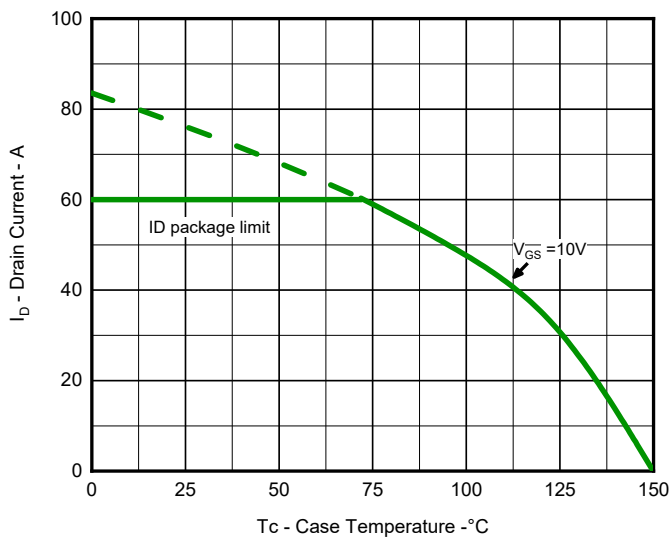
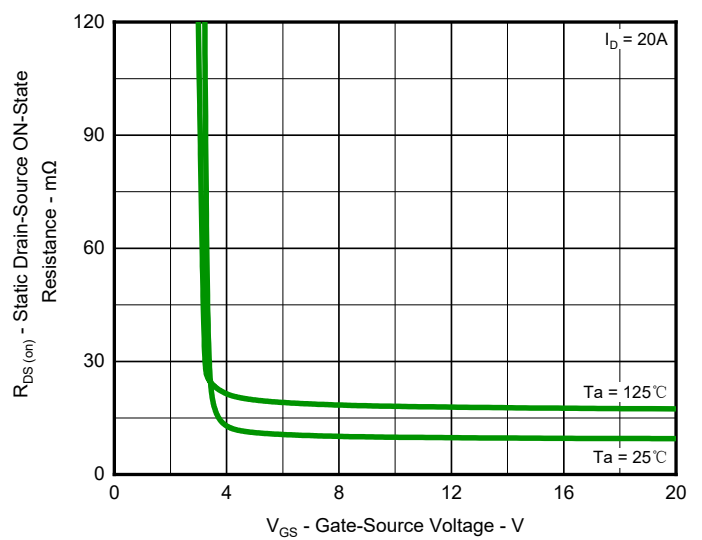
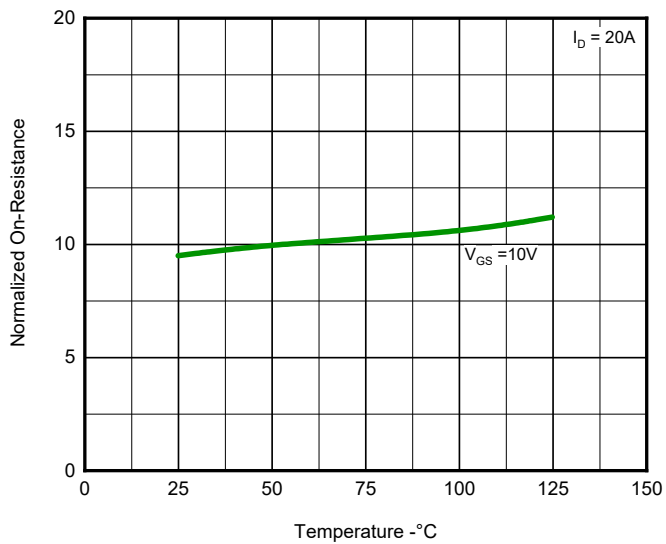
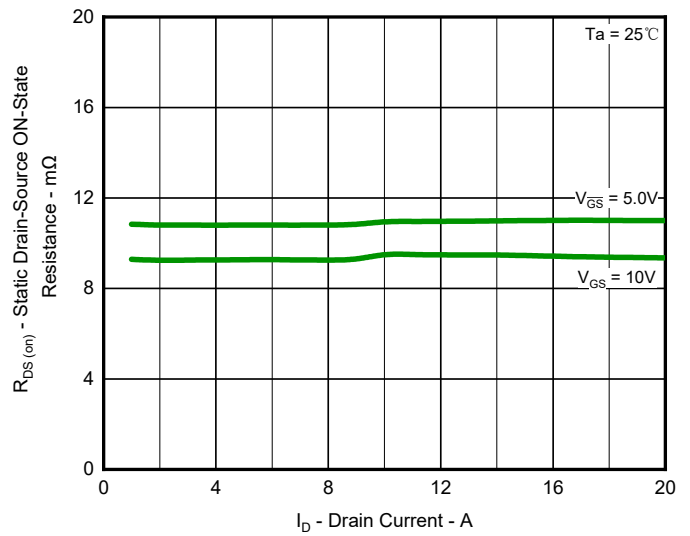
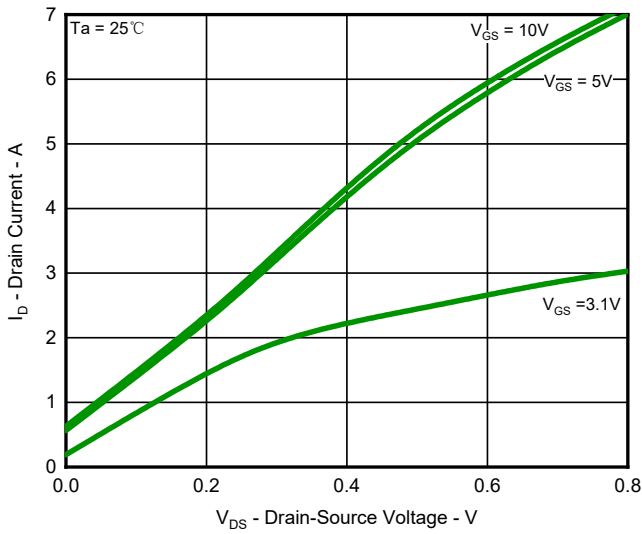
Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	120	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 120V, V_{GS} = 0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics ³⁾						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.9	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 6A$	-	8.8	10.5	m Ω
Dynamic Parameters ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = 60V, V_{GS} = 0V,$ $f = 1MHz$	-	2256	-	pF
Output Capacitance	C_{oss}		-	247	-	
Reverse Transfer Capacitance	C_{rss}		-	3.43	-	
Switching Parameters ⁴⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 60V, V_{GS} = 10V,$ $R_G = 10\Omega, I_D = 20A$	-	4.9	-	ns
Turn-on Rise Time	t_r		-	15.7	-	
Turn-Off Delay Time	$t_{d(off)}$		-	82	-	
Turn-Off Fall Time	t_f		-	40	-	
Total Gate Charge	Q_g	$V_{DD} = 60V, I_D = 20A,$ $V_{GS} = 10V$	-	18	-	nC
Gate-Source Charge	Q_{gs}		-	6.9	-	
Gate-Drain Charge	Q_{gd}		-	7.4	-	
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	-	6.5	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage ³⁾	V_{SD}	$V_{GS} = 0V, I_S = 20A$	-	0.83	1.1	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper in a still air environment with $T_a = 25^\circ C$.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Characteristics



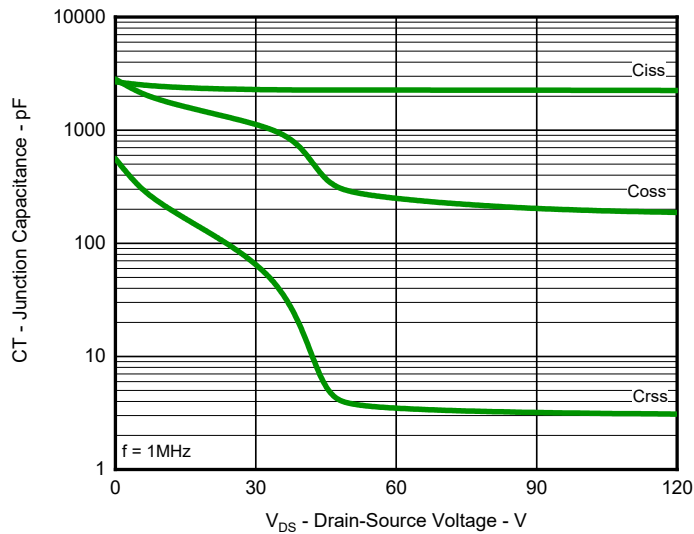


Fig.7 Typical Junction Capacitance

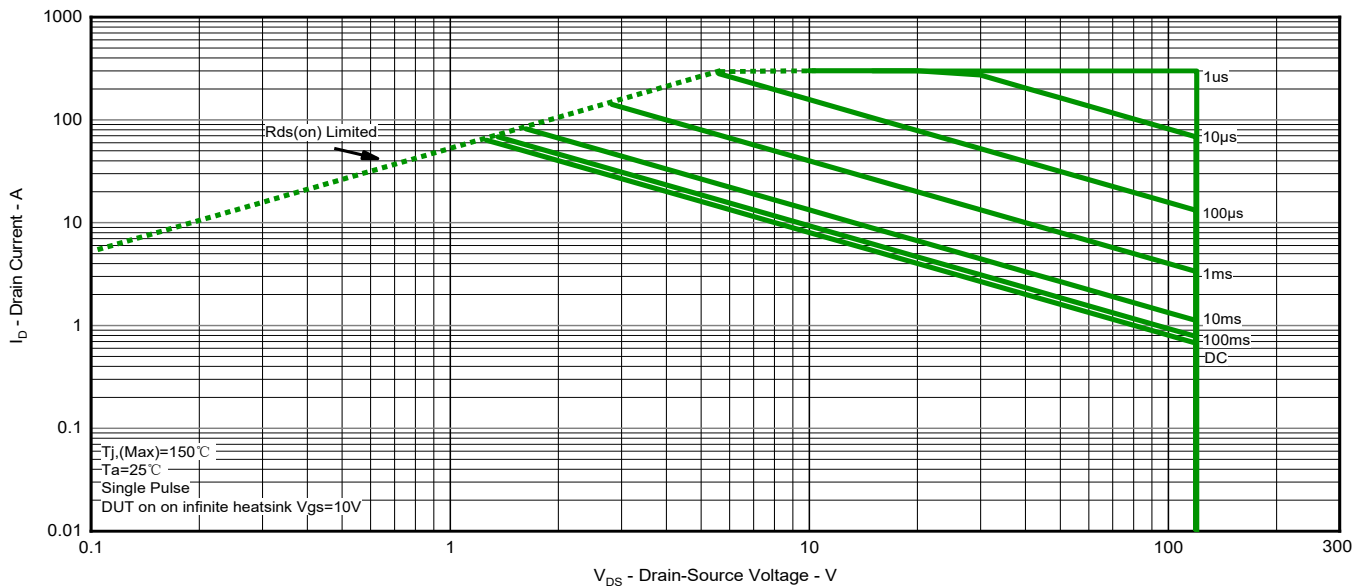


Fig.8 Safe Operation Area

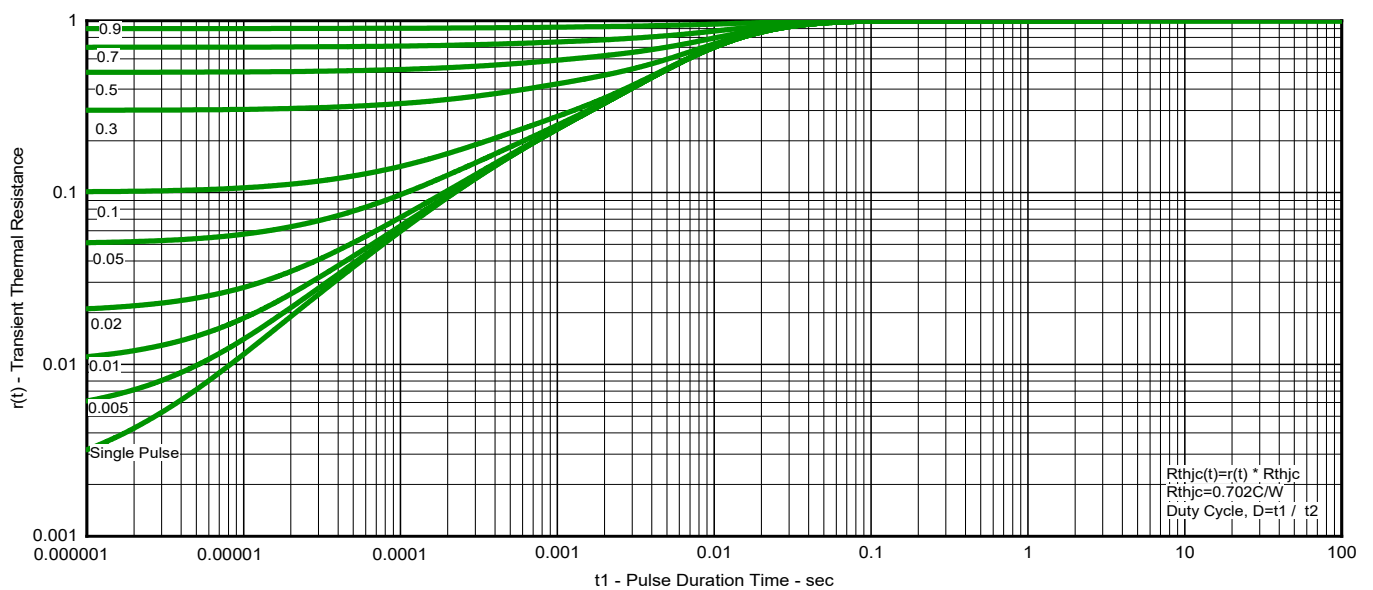
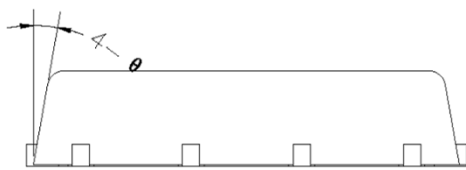
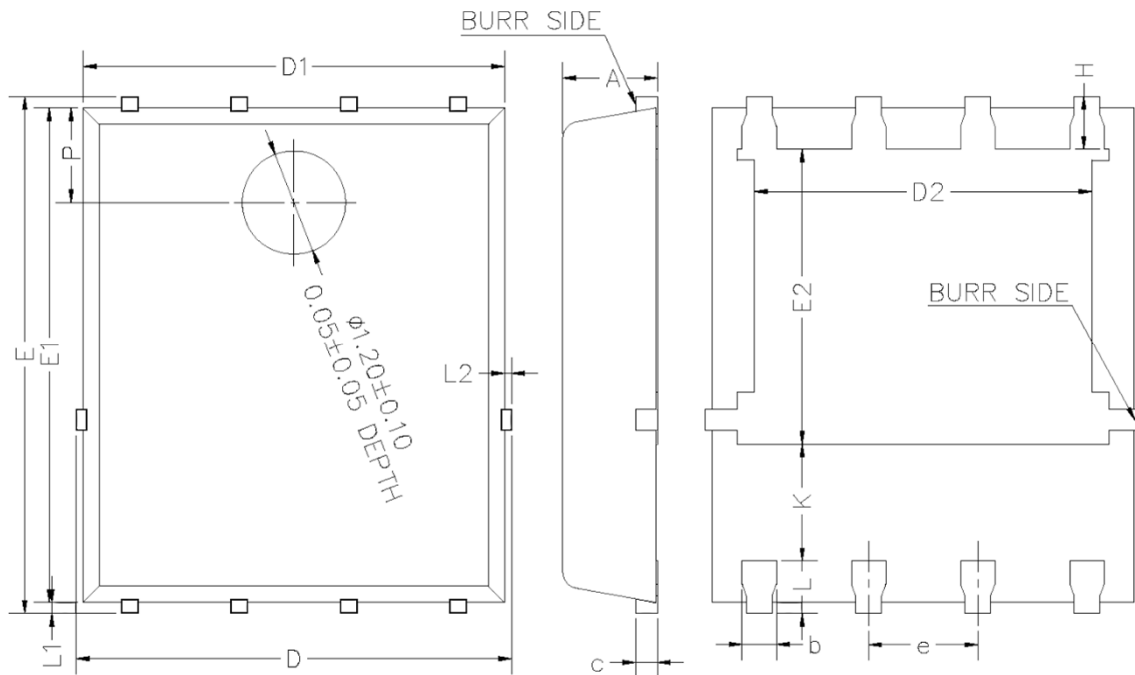


Fig.9 Transient Thermal Resistance

Product Dimension (PDFN5060-8L)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	1.00	1.20	0.039	0.047
b	0.35	0.45	0.014	0.018
c	0.21	0.34	0.008	0.013
D	-	5.10	-	0.201
D1	4.80	5.00	0.189	0.197
D2	3.91	4.11	0.154	0.162
e	1.17	1.37	0.046	0.054
E	5.90	6.10	0.232	0.240
E1	5.70	5.80	0.224	0.228
E2	3.34	3.54	0.131	0.139
H	0.51	0.71	0.020	0.028
K	1.10	-	0.043	-
L	0.51	0.71	0.020	0.028
L1	0.06	0.20	0.002	0.008
L2	-	0.10	-	0.004
P	1.00	1.20	0.039	0.047
θ	8°	12°	8°	12°

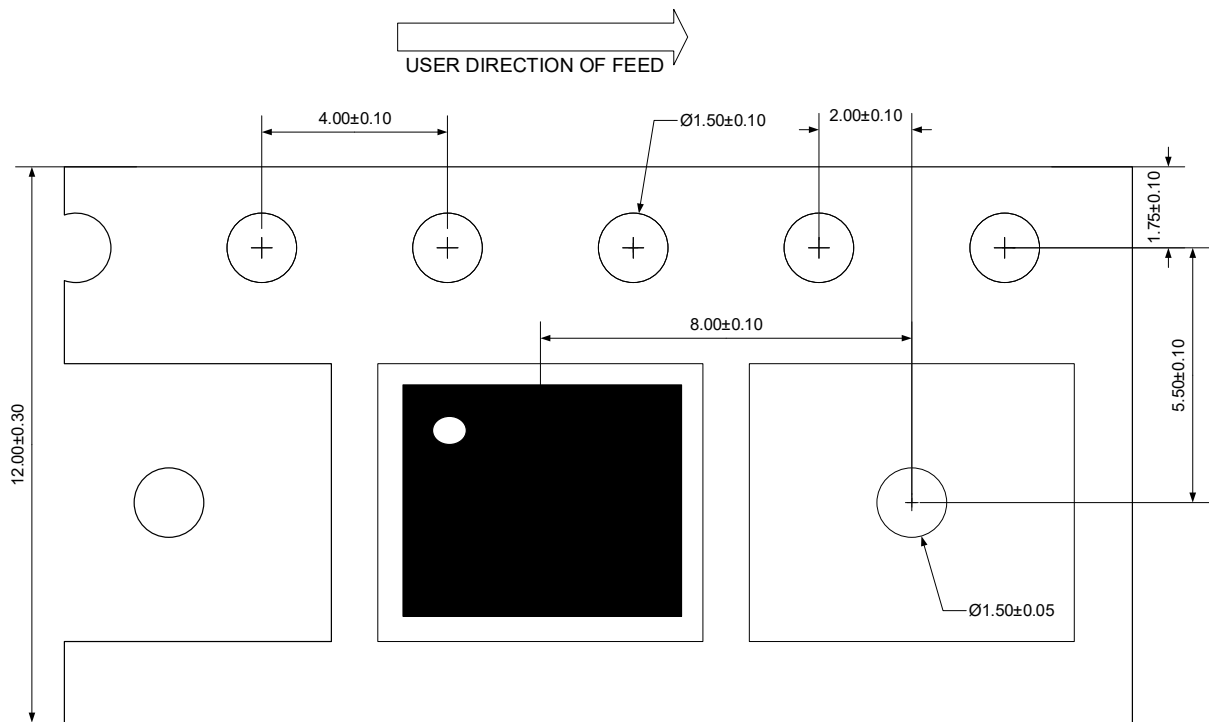
N-Channel MOSFET

PSM8N120V100

Ordering Information


Device	Package	Reel	Shipping
PSM8N120V100	PDFN5060-8L	13"	5000 / Tape & Reel

Load With Information



Unit:mm


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