

Description

The PSM8PN30V120 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

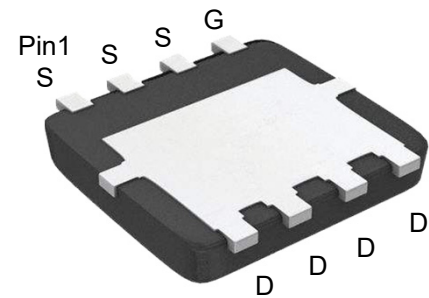
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
30	1.9 @ $V_{GS} = 10V$	120

Feature

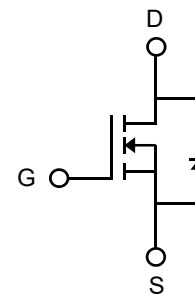
- Low $R_{DS(ON)}$ - Ensures On-State Losses are Minimized
- Excellent $Q_{gd} \times R_{DS(ON)}$ Product(FOM)
- Advanced Technology for DC-DC Converts
- Small Form Factor Thermally Efficient Package
Enables Higher Density End Products
- 100% UIS (Avalanche) Rated
- Lead-Free Finish ; RoHS Compliant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

Applications

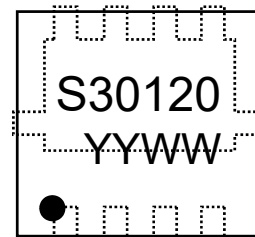
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



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}	± 20	V
Drain Current	I_D	120	A
Pulsed Drain Current ¹⁾	I_{DM}	250	A
Avalanche Energy, Single Pulse	E_{AS}	130	mJ
Diode Continuous Forward Current	I_S	53	A
Total Power Dissipation ²⁾	P_D	2.4	W
Thermal Resistance Junction-to-Ambient @ Steady State ²⁾	$R_{\theta JA}$	52	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	°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}	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics ³⁾						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	-	1.9	2.5	m Ω
		$V_{GS} = 4.5V, I_D = 20A$	-	3.0	4.0	
Dynamic Parameters ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1MHz$	-	2400	-	pF
Output Capacitance	C_{oss}		-	1200	-	
Reverse Transfer Capacitance	C_{rss}		-	50	-	
Switching Parameters ⁴⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GEN} = 10V,$ $R_{GEN} = 3\Omega, I_D = 20A$	-	6.0	-	ns
Turn-on Rise Time	t_r		-	3.0	-	
Turn-Off Delay Time	$t_{d(off)}$		-	38	-	
Turn-Off Fall Time	t_f		-	14	-	
Total Gate Charge	Q_g	$V_{DS} = 15V, I_D = 20A,$ $V_{GS} = 4.5V$	-	15	-	nC
Gate-Source Charge	Q_{gs}		-	6	-	
Gate-Drain Charge	Q_{gd}		-	3	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³⁾	V_{SD}	$V_{GS} = 0V, I_S = 2A$	-	0.7	1.1	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Characteristics

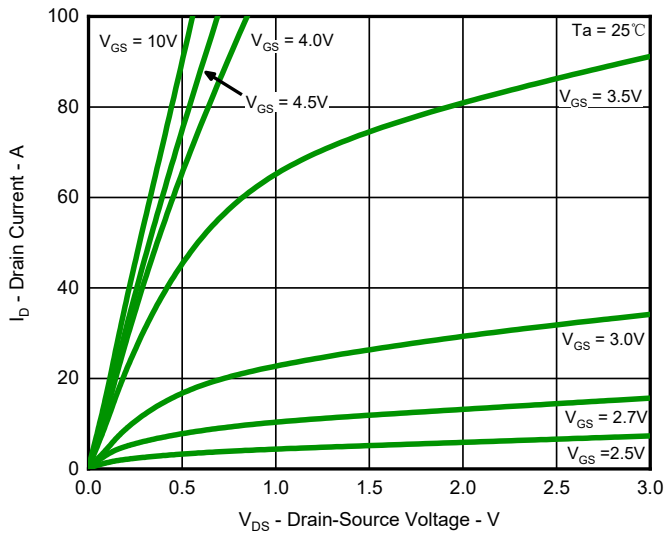


Fig.1 Output Characteristics

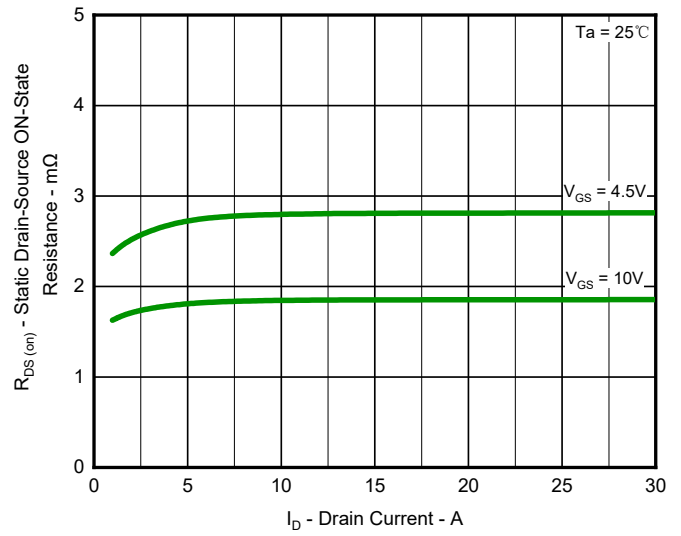


Fig.2 On-Resistance vs. Drain Current (I)

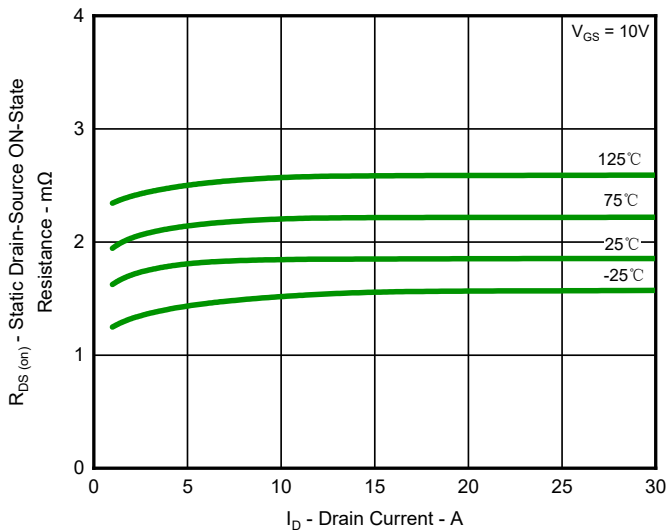


Fig.3 On-Resistance vs. Drain Current (II)

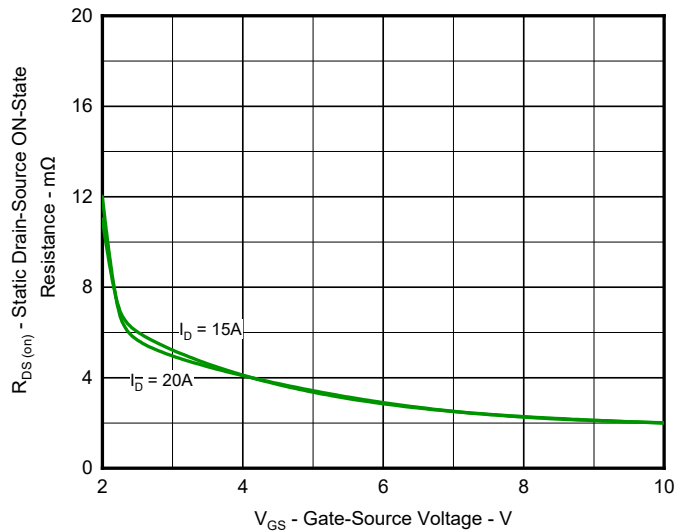


Fig.4 On-Resistance vs. Gate-Source Voltage

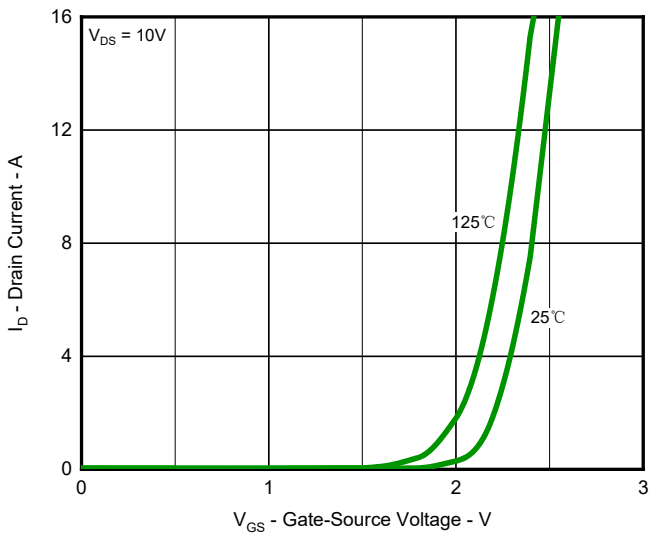


Fig.5 Typical Transfer Characteristic

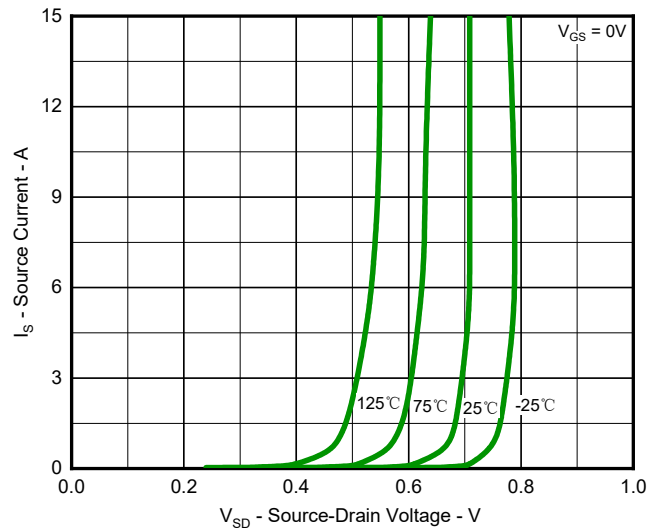


Fig.6 Diode Forward Voltage vs. Current

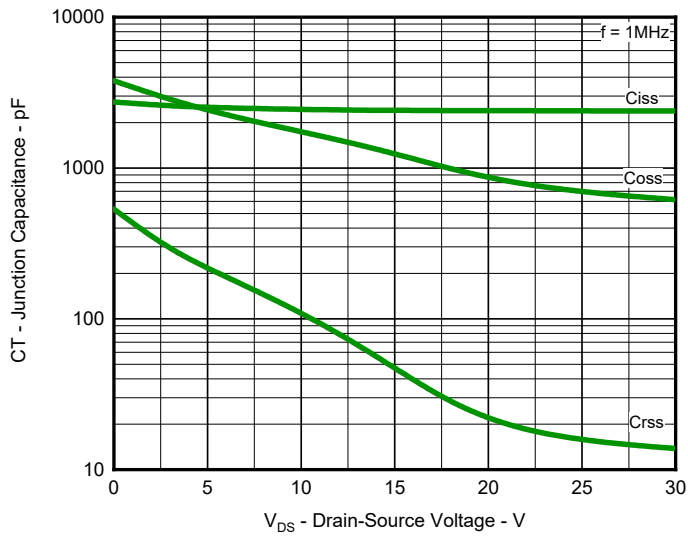


Fig.7 Typical Junction Capacitance

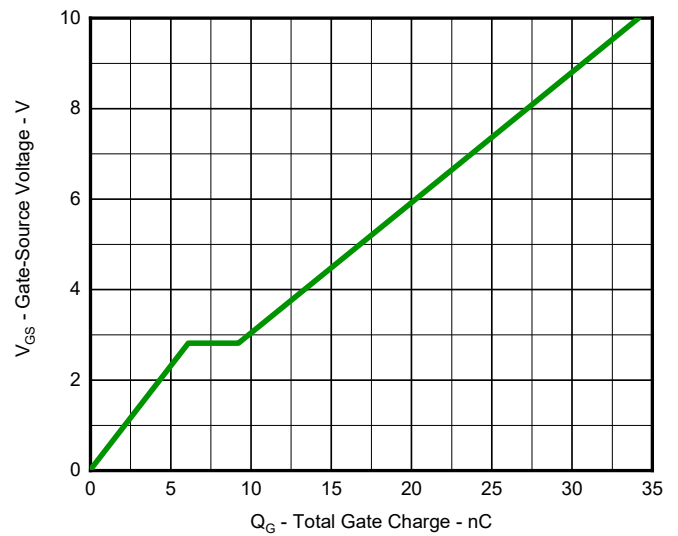


Fig.8 Gate Charge Characteristics

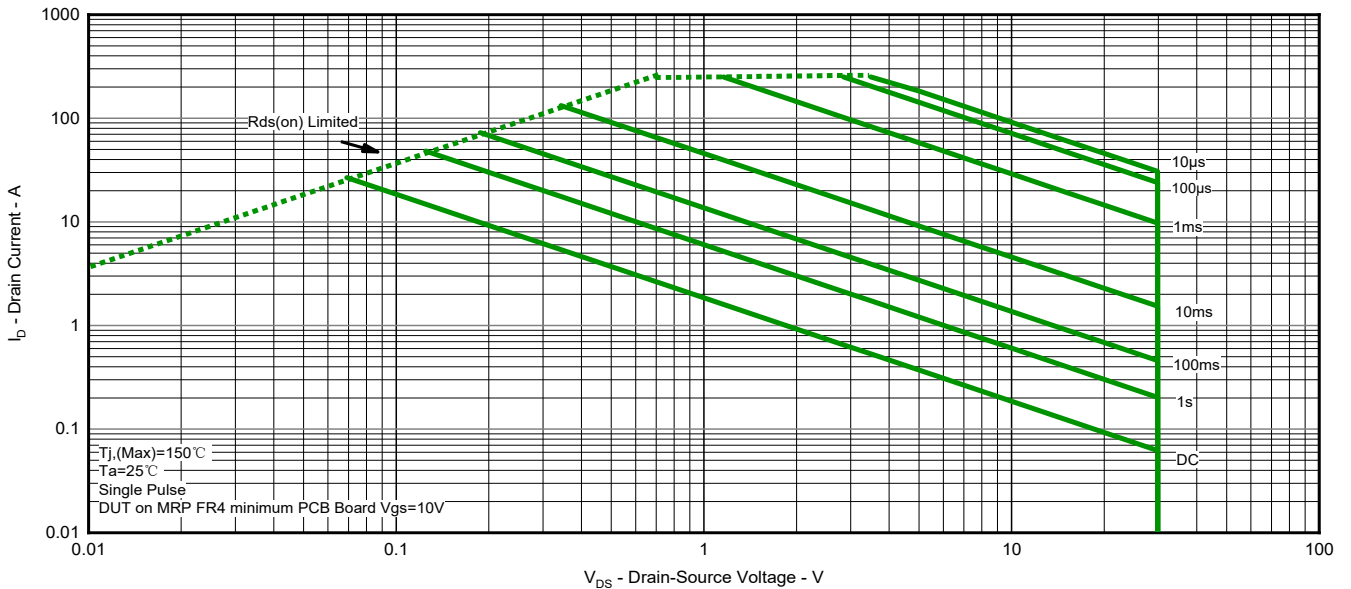


Fig.9 Safe Operation Area

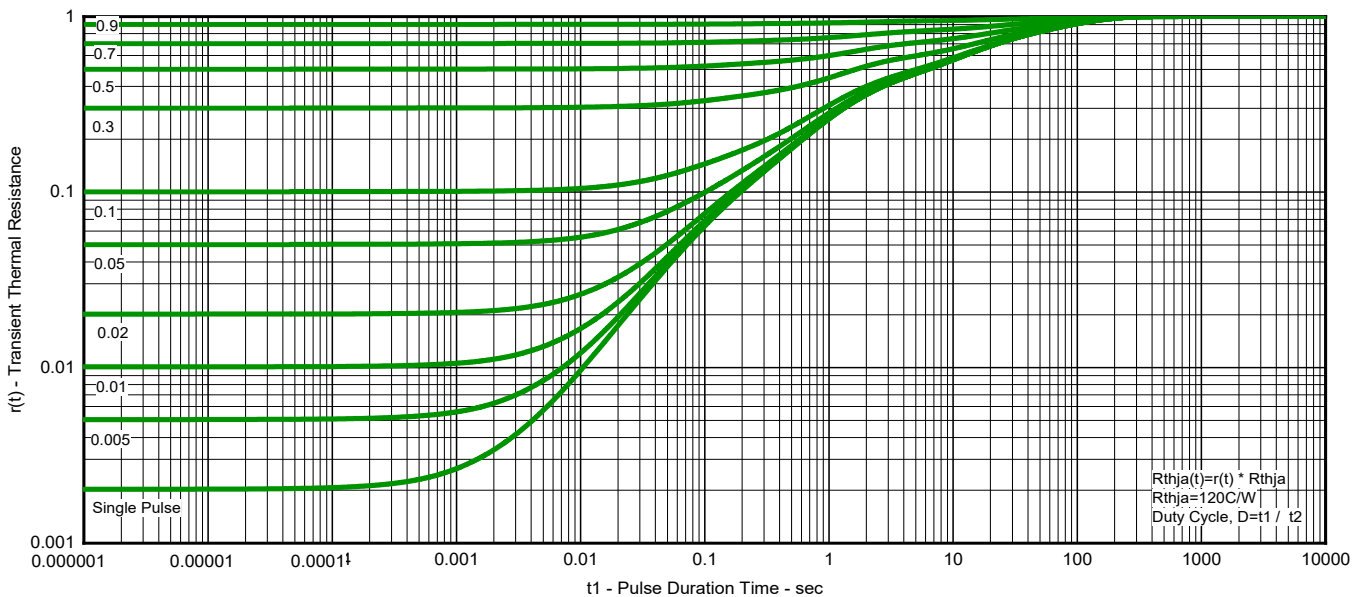
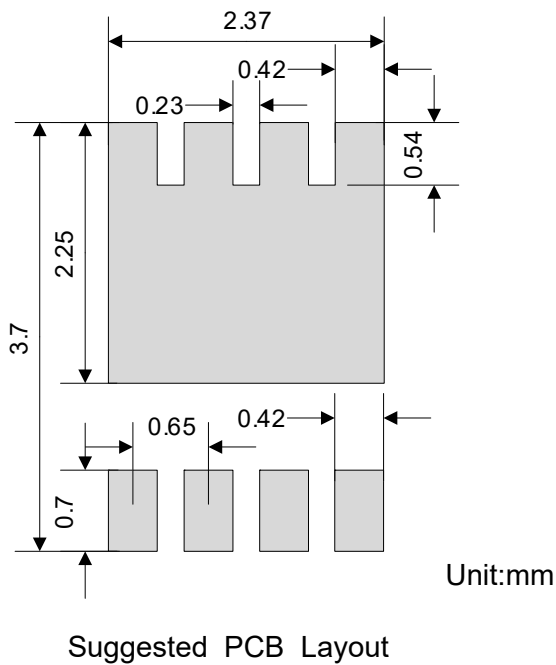
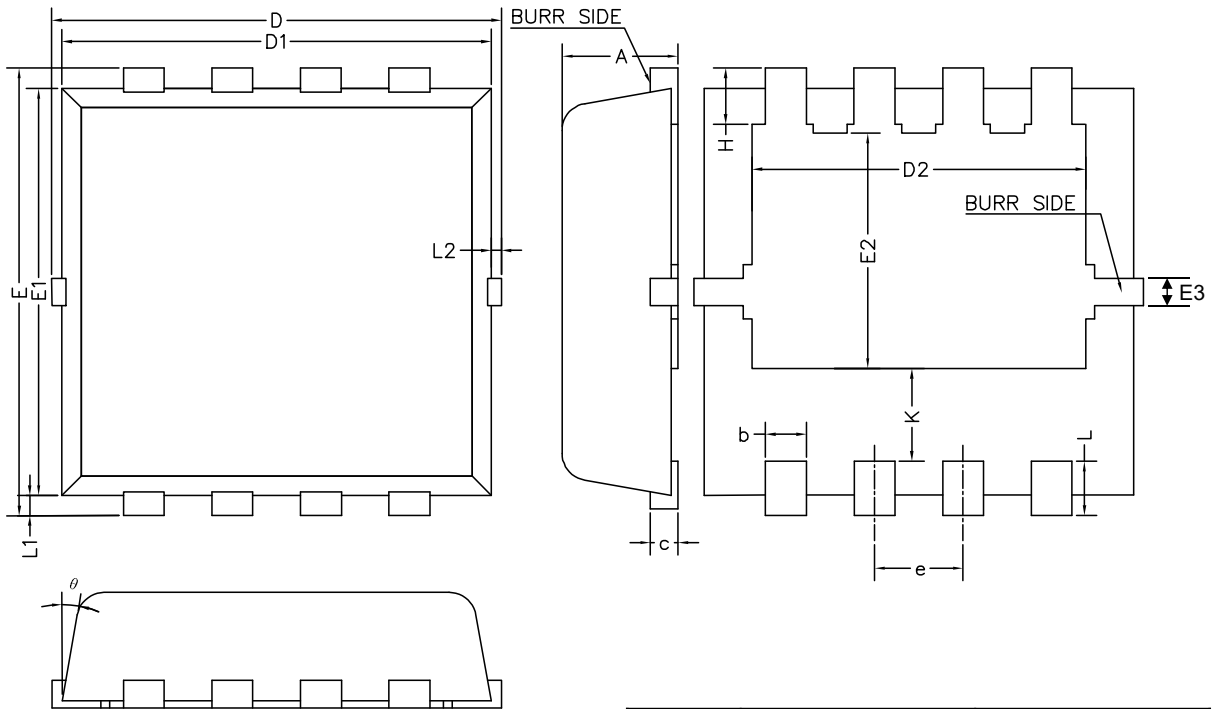


Fig.10 Transient Thermal Resistance

Product dimension (DFN3333-8L)



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
e	0.55	0.75	0.022	0.030
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022
L1	0.10	0.20	0.004	0.008
L2	-	0.15	-	0.006
θ	8°	12°	8°	12°
E3	0.20 Ref.		0.008 Ref.	

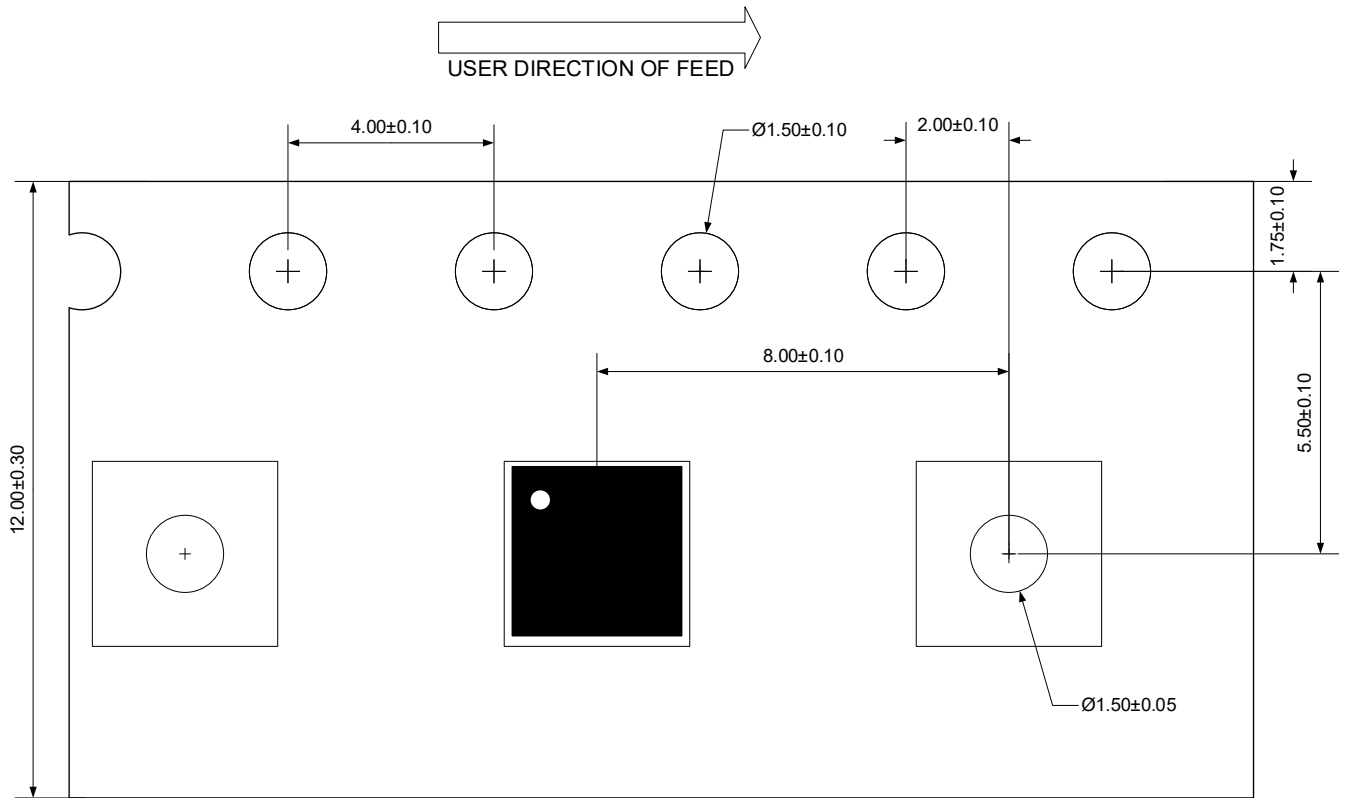
N-Channel MOSFET

PSM8PN30V120

Ordering information


Device	Package	Reel	MSL	Shipping
PSM8PN30V120	DFN3333-8L (Pb-Free)	13"	3	5000 / Tape & Reel

Load with information



Unit:mm


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