

Description

This device is Pb-Free, Halogen Free/BFR Free and RoHS compliant.

PNMT6N2E is composed by a transistor and a MOSFET

MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
20	200@ $V_{GS} = 4.5V$	1.0
	230@ $V_{GS} = 2.5V$	

Transistor Product Summary

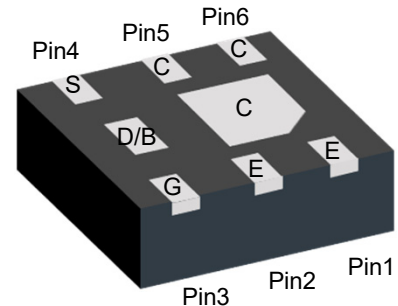
$V_{CE}(V)$	$V_{EB}(V)$	$V_{CESAT}(V)$	$I_D(A)$
-32	-6.0	-0.4	-1.5

Feature

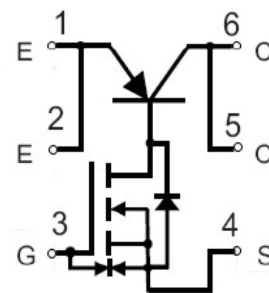
- Very low collector to emitter saturation voltage
- DC current gain >150
- Surface Mount Package
- 1.5A continuous collector current
- PNP epitaxial planar silicon transistor

Applications

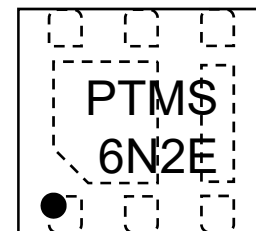
- Charging circuit
- Other power management in portable equipment



DFN2020-6L
(Bottom View)



Circuit Diagram



Marking (Top View)

Absolute maximum rating@25°C(PNP Transistor)

Rating	Symbol	Value	Units
Collector-Emitter Breakdown Voltage @ $I_C = -1mA$	$V_{(BR)CEO}$	-32	V
Collector-Base Breakdown Voltage @ $I_C = -0.1mA$	$V_{(BR)CBO}$	-40	V
Emitter -Base Breakdown Voltage @ $I_E = -0.1mA$	$V_{(BR)EBO}$	-6.0	V
Collector Current ¹⁾	I_C	-1.5	A
Collector Peak Current ²⁾	I_{CM}	-4.0	A
Total Dissipation @25°C ³⁾	P_{tot}	1.2	W
Storage Temperature	T_{stg}	-55~+150	°C
Max. Operating Junction Temperature	T_J	150	°C
Thermal Resistance from Junction to Ambient ⁴⁾	$R_{\theta JA}$	99.6	°C/W

Transistor with N-MOSFET

PNMT6N2E

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -1mA, I_B = 0$	-40	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -0.1mA, I_E = 0$	-32	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -0.1mA, I_C = 0$	-6.0	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -35V, I_E = 0$	-	-	-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -5V, I_C = 0$	-	-	-0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = -1V, I_C = -100mA$	100	-	300	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -800mA, I_B = -80mA$	-	-	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -800mA, I_B = -80mA$	-	-	-1.2	V

Absolute maximum rating@25°C (N-Ch)

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 10	V
Drain Current-Continuous ¹⁾	$T_C = 25^\circ C$	I_D	1.0	A
	$T_C = 100^\circ C$		0.8	
Pulsed Drain Current ²⁾		I_{DM}	4.0	A
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

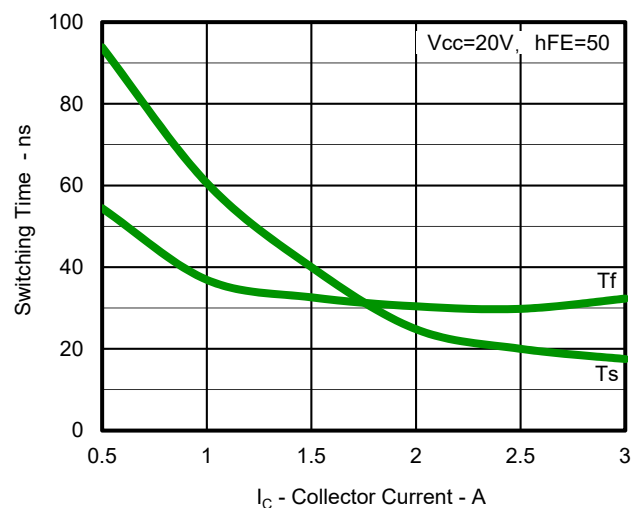
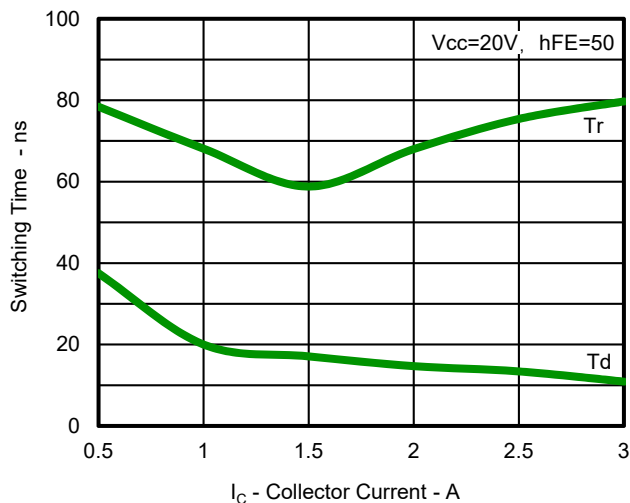
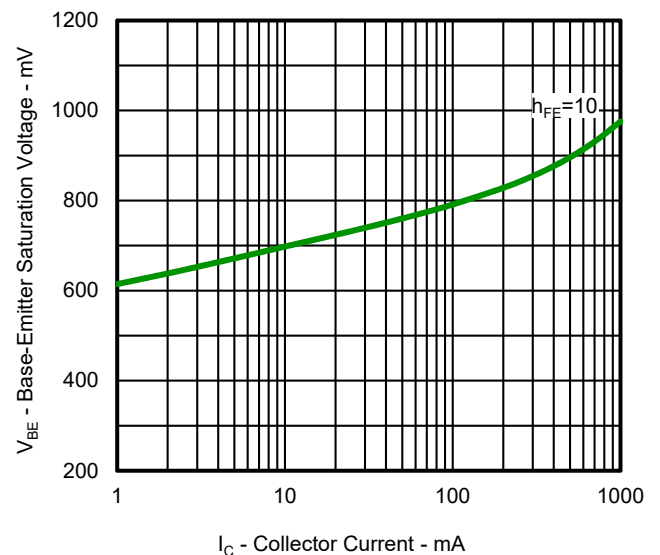
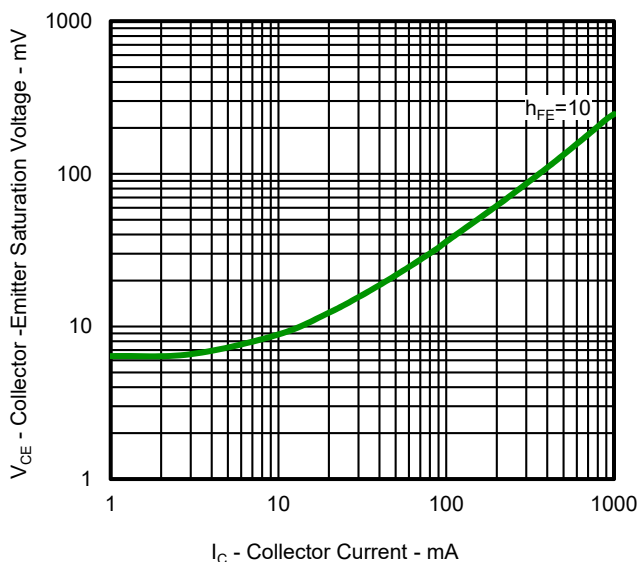
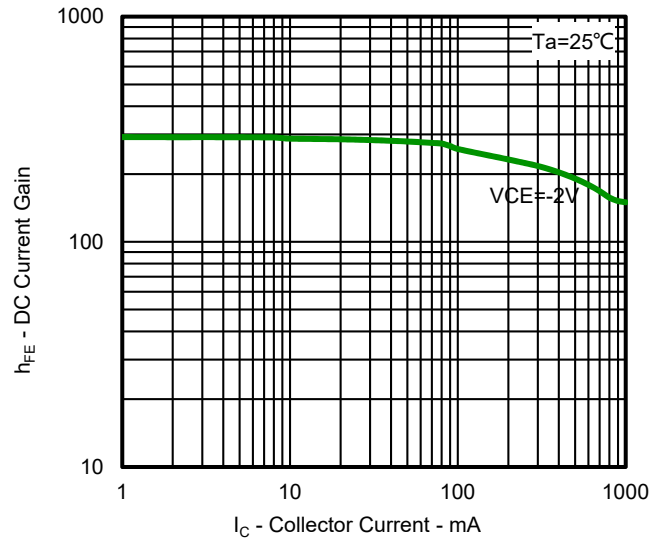
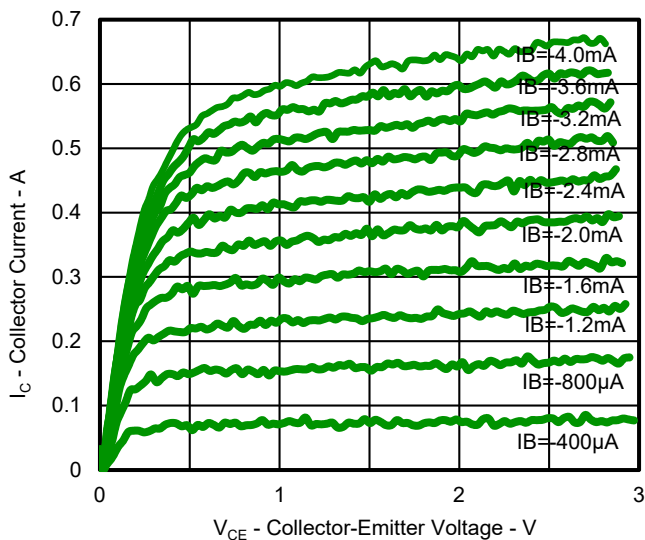
Electrical characteristics per line@25°C (unless otherwise specified)(N-Ch)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V	-	-	1.0	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 0.65A	-	200	350	mΩ
		V _{GS} = 2.5V, I _D = 0.45A	-	230	400	
		V _{GS} = 1.8V, I _D = 0.25A	-	270	450	
Dynamic Characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 100KHz	-	71	-	pF
Output Capacitance	C _{oss}		-	23	-	
Reverse Transfer Capacitance	C _{rss}		-	16	-	
Switching Characteristics ⁵⁾						
Turn-on Delay Time	t _{d(on)}	V _{DS} = 10V, V _{GS} = 4.5V, R _G = 10Ω, I _D = 1A	-	106	-	ns
Turn-on Rise Time	t _r		-	650	-	
Turn-Off Delay Time	t _{d(off)}		-	1680	-	
Turn-Off Fall Time	t _f		-	2310	-	
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 0.5A	-	0.8	-	nC
Gate-Source Charge	Q _{gs}		-	0.2	-	
Gate-Drain Charge	Q _{gd}		-	0.3	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 0.1A	-	0.8	1.2	V

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. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Repetitive Rating: Pulse width limited by maximum junction temperature ($T_{J_Max} = 150^\circ C$).
4. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum square copper pad layout.
5. Guaranteed by design, not subject to production.

Typical Characteristics (PNP Transistor)



Typical Characteristics(N-Ch)

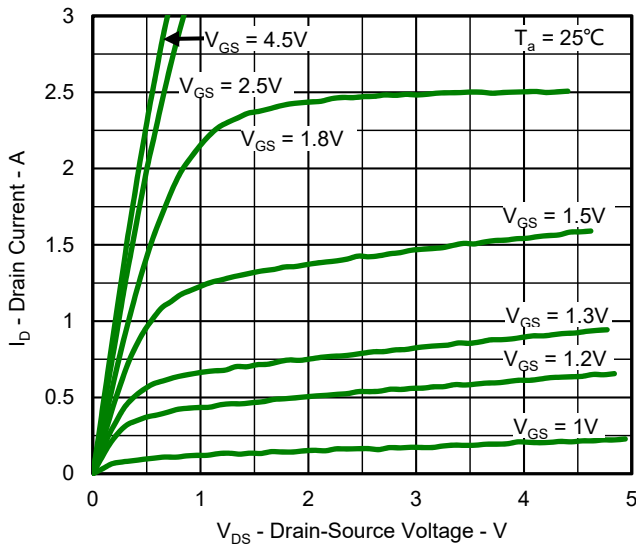


Fig.1 Output Characteristics

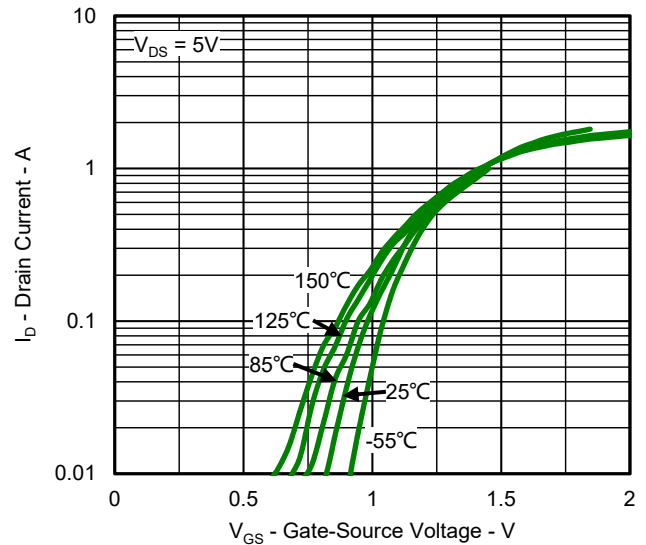


Fig.2 Typical Transfer Characteristic

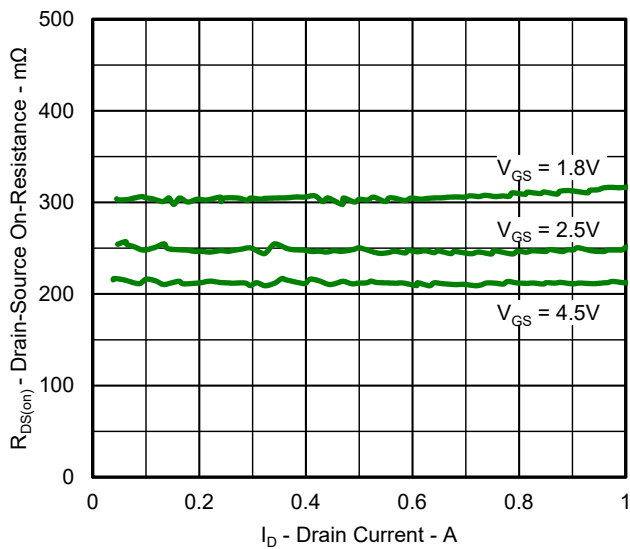


Fig.3 Typical On-Resistance vs Drain Current

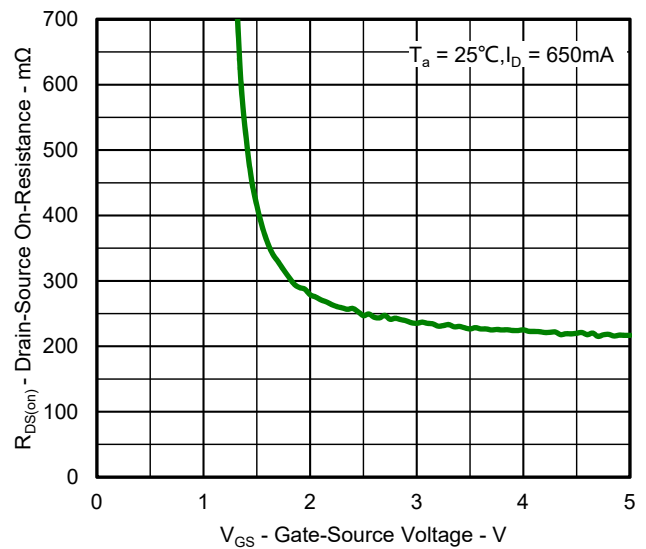


Fig.4 On-Resistance vs Gate-Source Voltage

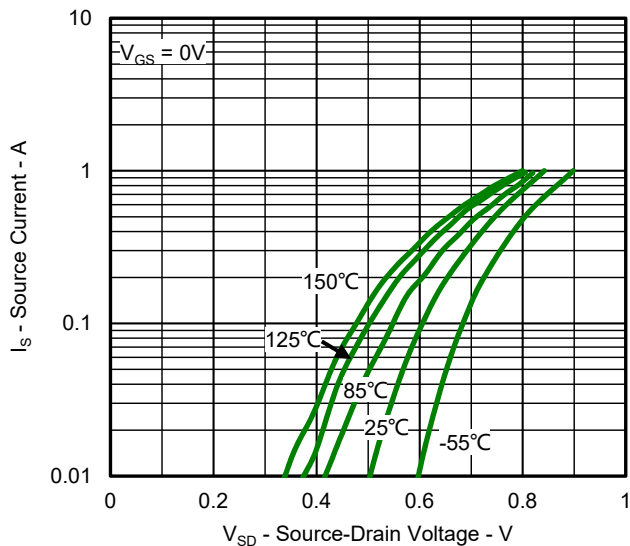


Fig.5 Diode Forward Voltage vs. Current

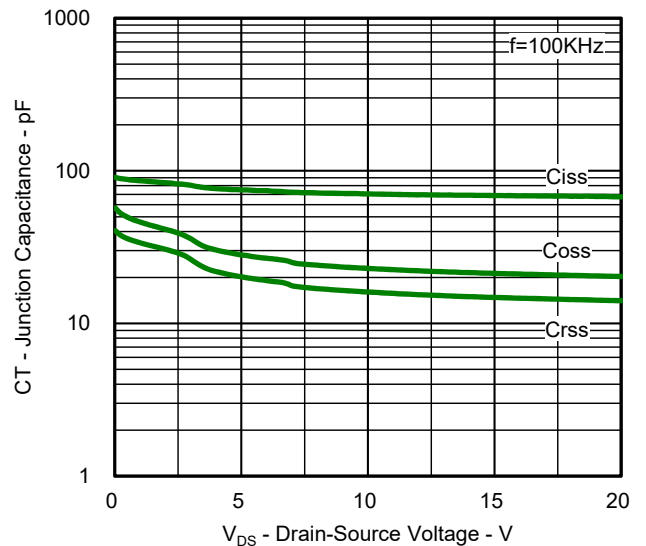
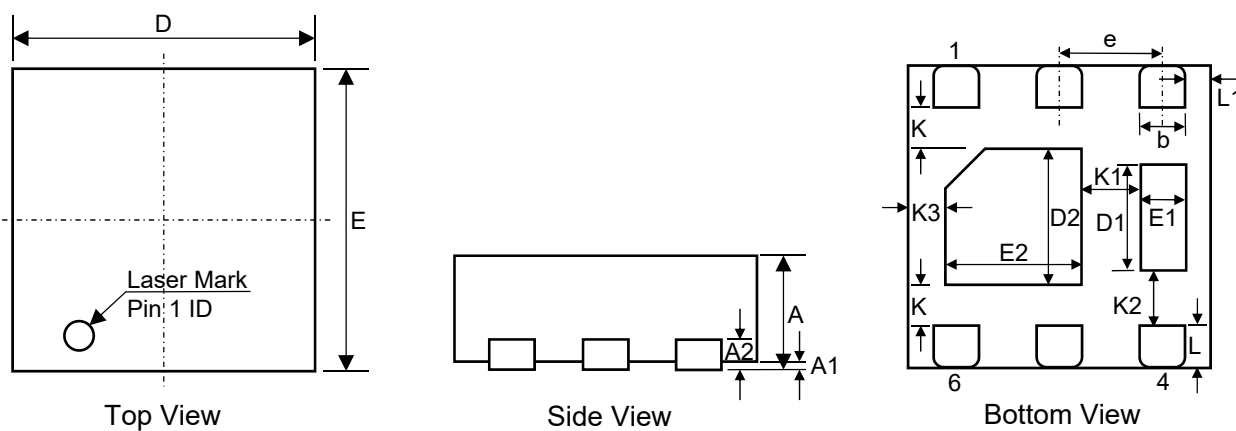
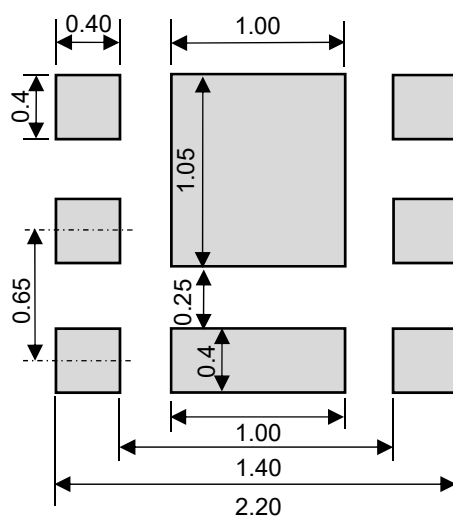


Fig.6 Typical Junction Capacitance

Product Dimension (DFN2020-6L)



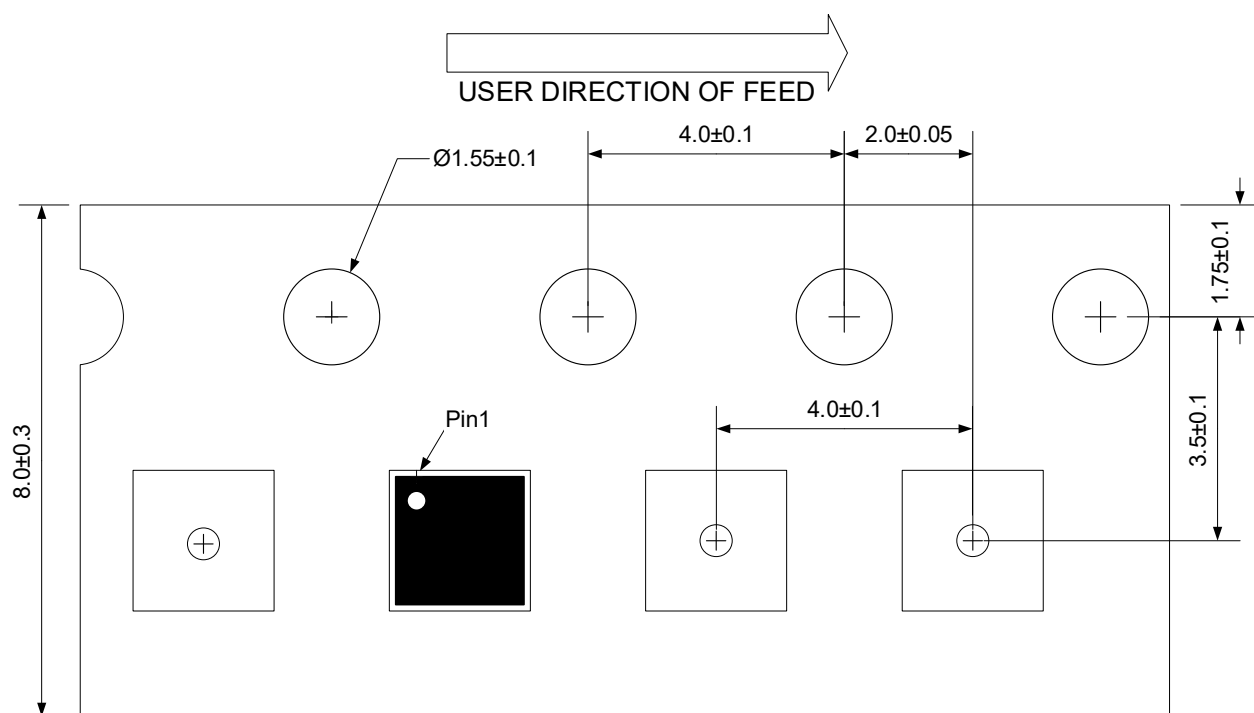
Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.70	0.80	0.028	0.031	E2	0.80	1.05	0.031	0.041
A1	0.00	0.05	0.000	0.002	e	0.65 BSC.		0.026 BSC.	
A2	0.203 Ref.		0.008 Ref.		K	0.20 Min.		0.008 Min.	
b	0.25	0.35	0.010	0.014	K1	0.35 Ref.		0.014 Ref.	
D	1.90	2.10	0.075	0.083	K2	0.35 Ref.		0.014 Ref.	
D1	0.70	0.90	0.028	0.035	K3	0.20 Ref.		0.008 Ref.	
D2	0.70	0.90	0.028	0.035	L	0.30	0.40	0.012	0.016
E	1.90	2.10	0.075	0.083	L1	0.20 Ref.		0.008 Ref.	
E1	0.20	0.40	0.008	0.016					



Suggested PCB Layout

Unit: mm

Load with information



Unit:mm

Ordering information

Package	Reel	Shipping
DFN2020-6L	7"	3000 / Tape & Reel

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