

Description

The PNMUT7002E uses advanced trench technology to provide excellent $R_{DS(on)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

MOSFET Product Summary

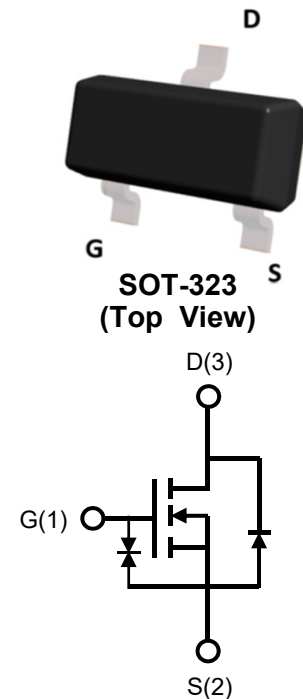
V _{DS} (V)	R _{DS(on)} (Ω)(Typ)	I _D (A)
60	1.4 @ V _{GS} = 10V	0.3
	1.6 @ V _{GS} = 4.5V	
ESD	HBM	
	Pass 2kV	

Feature

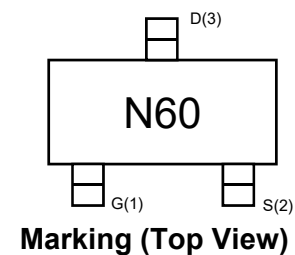
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

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



Circuit Diagram



Marking (Top View)

Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous ¹⁾	$T_C = 25^\circ C$	I_D	0.3	A
	$T_C = 100^\circ C$		0.2	
Pulsed Drain Current ²⁾		I_{DM}	1.2	A
Total Power Dissipation ³⁾		P_D	0.34	W
Thermal Resistance Junction-to-Ambient ⁴⁾		$R_{\theta JA}$	353	$^\circ C/W$
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	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V	-	-	1.0	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.6	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 0.3A	-	1.4	2.1	Ω
		V _{GS} = 4.5V, I _D = 0.2A	-	1.6	2.7	
Dynamic Characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} = 30V, V _{GS} = 0V, f = 1.0MHz	-	27	-	pF
Output Capacitance	C _{oss}		-	8.5	-	
Reverse Transfer Capacitance	C _{rss}		-	3.0	-	
Switching Characteristics ⁵⁾						
Turn-on Delay Time	t _{d(on)}	V _{DS} = 50V, V _{GS} = 10V, R _G = 6Ω, I _D = 0.2A	-	7.0	-	ns
Turn-on Rise Time	t _r		-	5.0	-	
Turn-Off Delay Time	t _{d(off)}		-	19	-	
Turn-Off Fall Time	t _f		-	21	-	
Total Gate Charge	Q _g	V _{DS} = 30V, V _{GS} = 10V, I _D = 0.2A	-	0.9	-	nC
Gate-Source Charge	Q _{gs}		-	0.15	-	
Gate-Drain Charge	Q _{gd}		-	0.25	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 0.2A	-	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. 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. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout
5. Guaranteed by design, not subject to production.

Typical Characteristics

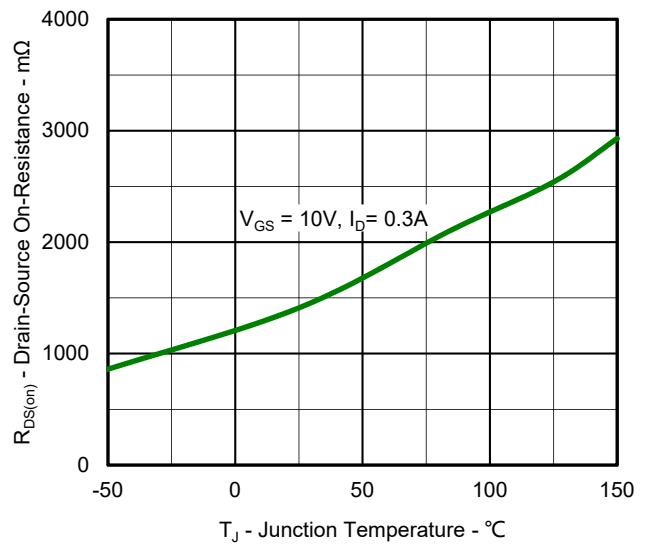
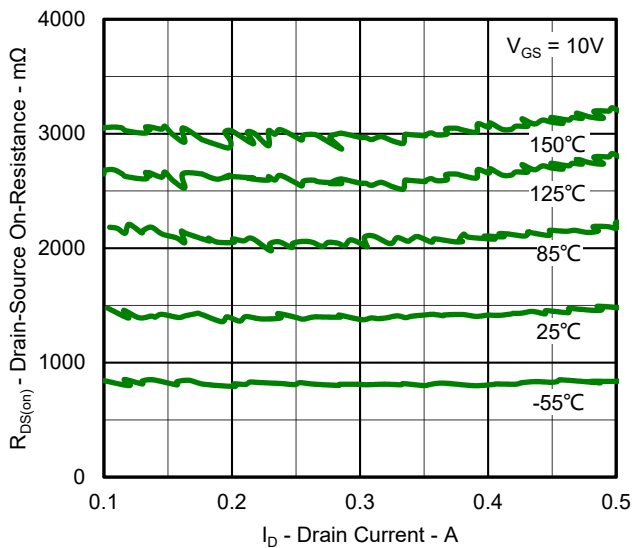
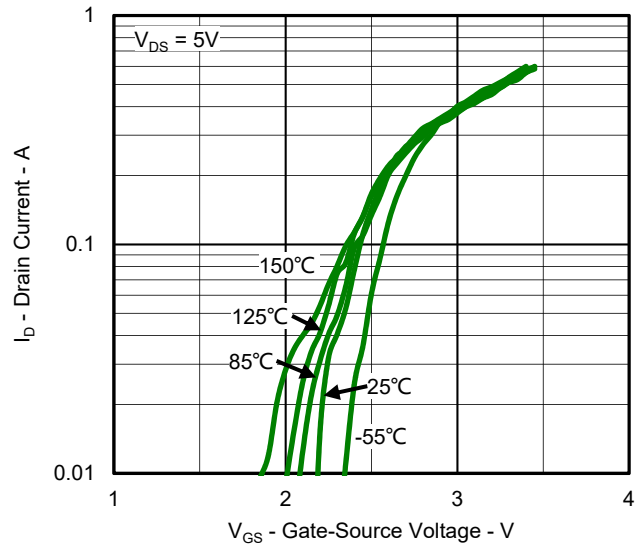
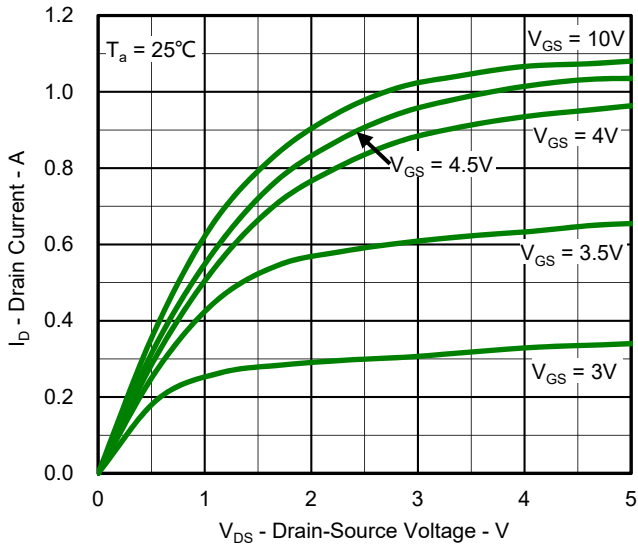
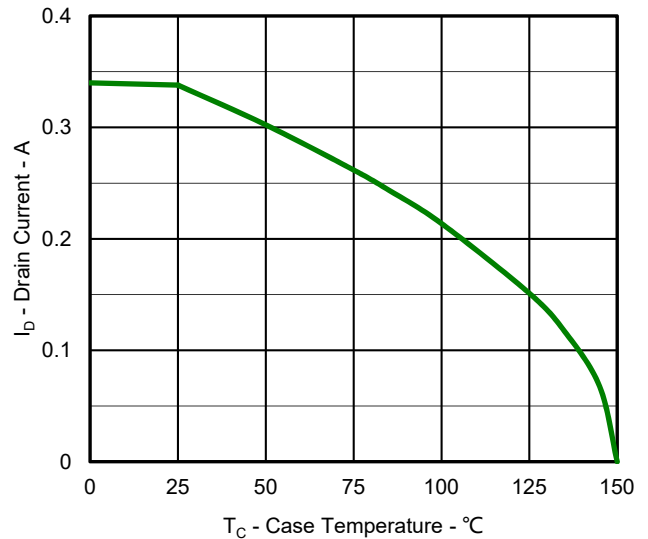
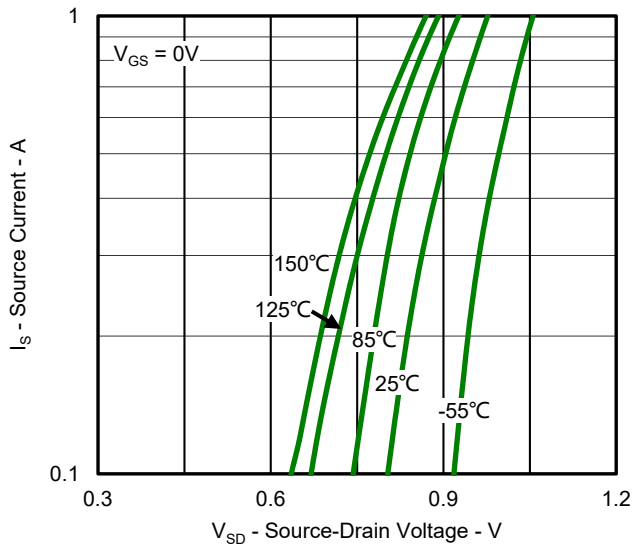


Fig.3 Typical On-Resistance vs Drain Current and Temperature

Fig.4 On-Resistance Variation with Temperature



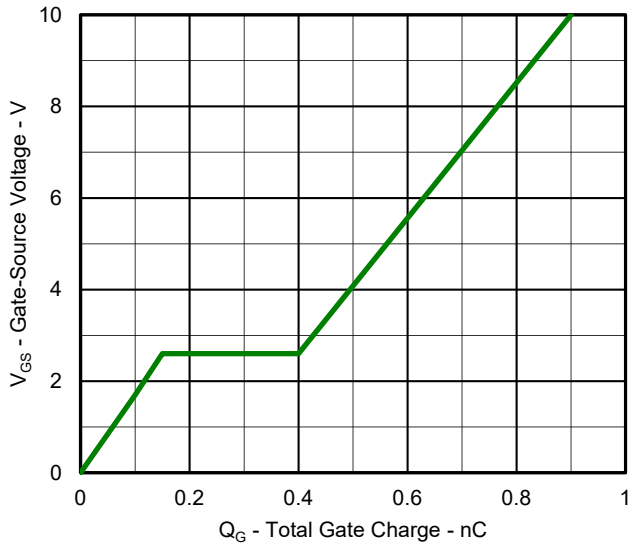


Fig.7 Gate Charge Characteristics

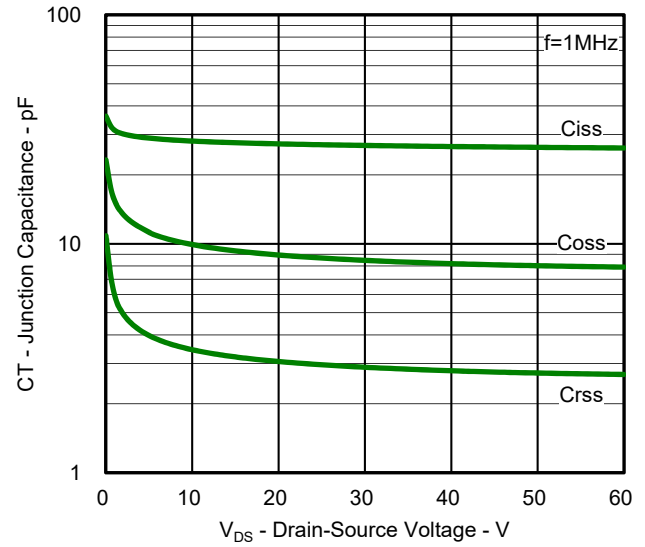


Fig.8 Typical Junction Capacitance

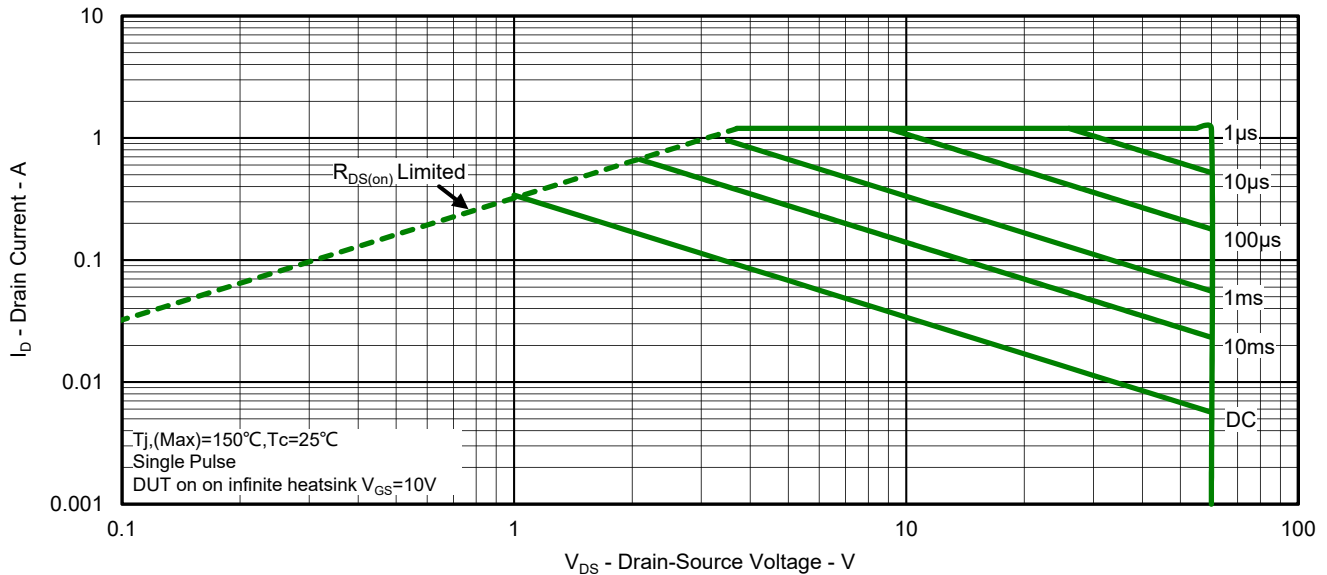


Fig.9 Safe Operation Area

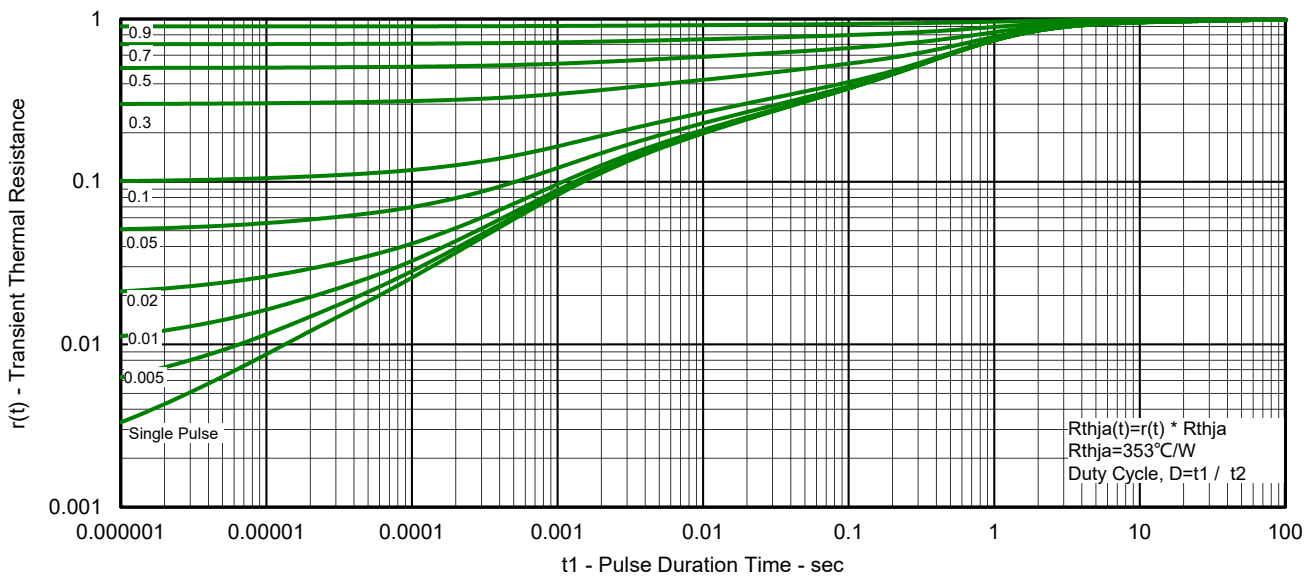
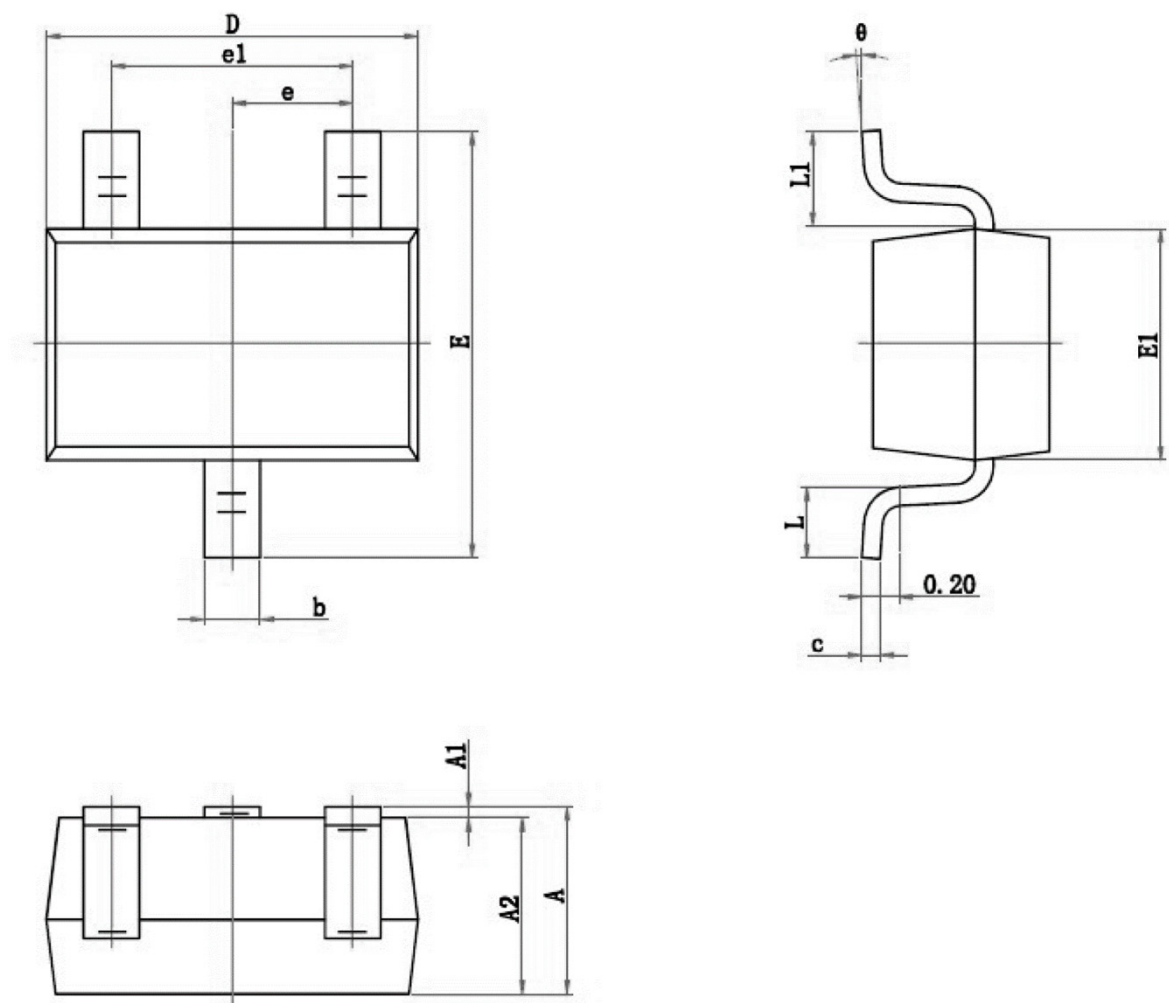


Fig.10 Transient Thermal Resistance

Product Dimension (SOT-323)

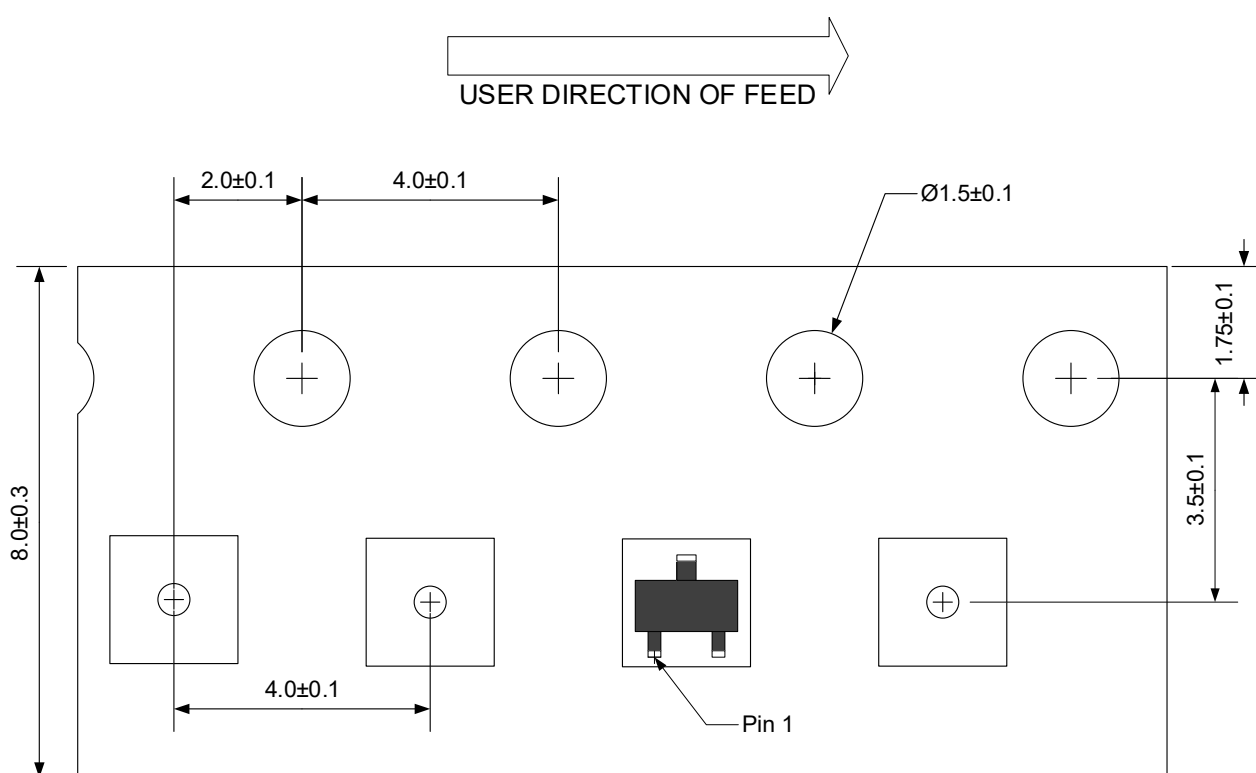


Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.00	0.035	0.039
b	0.20	0.40	0.008	0.016
c	0.08	0.15	0.003	0.006
D	2.00	2.20	0.079	0.087
E	2.15	2.45	0.085	0.096
E1	1.15	1.35	0.045	0.053
e	0.65 Typ.		0.026 Typ.	
e1	1.20	1.40	0.047	0.055
L	0.26	0.46	0.010	0.018
L1	0.525 Ref.		0.021 Ref.	
θ	0°	8°	0°	8°

Ordering information

Package	Reel	Shipping
SOT-323	7"	3000 / Tape & Reel

Load with information



Unit:mm

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