CONTINUOUS VOLTAGE SMD CRYSTAL OSCILLATOR

ASDDV

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ESD Sensitive | Pb

2.5 x 2.0 x 0.95mm
RoHS/RoHS II Compliant
MSL Level = 1

Features

- Continuous Vdd operation from 1.6 V ~ 3.63 V
- Optimized for low current consumption
- Output Enable/Start & Disable/Stop function
- Output waveform CMOS/HCMOS/LVCMOS compatible
- Hermetically seam-sealed ceramic package

Applications

- Portable & wearable electronics
- Internet of Things (IoT)
- Consumer electronics
- Industrial control & automation
- Mobile communication

Electrical Specifications

Parameters		Min.	Typ.	Max.	Units	Notes
Frequency Range		1		160	MHz	
Operating Temperature Range		-40		+85	°C	See options
Storage Temperature Range		-55		+125	°C	
Overall Frequency Stability [Note 1]		-25		+25	ppm	See options
Supply Voltage (Vdd)		1.6		3.63	V	
Tri-state function		"1" (VIH≥0.7*Vdd) or Open: Oscillation; "0" (VIL<0.3*Vdd): No Oscillation/Hi Z			V	
Output Load				15	pF	CMOS
Output Voltage	V_{OH}	0.9*Vdd			V	
	V_{OL}			0.1*Vdd		
Aging 1 year @25°C± 3°C		-3.0		+3.0	ppm	
Aging 5 years @25°C± 3°C		-5.0		+5.0	ppm	
Symmetry @ ½ Vdd		45	50	55	%	
Start-up Time				5.0	ms	
Rise and Fall Time (Tr/Tf) @10%Vdd-90%Vdd, 15pF load	Vdd = 1.8V to 3.63V			8.0	ns	1MHz ≤ F ≤ 19.999MHz
				6.0		20MHz ≤ F ≤ 39.999MHz
				5.0		40MHz ≤ F ≤ 69.999MHz
				5.0		70MHz ≤ F ≤ 99.999MHz
				4.0		100MHz ≤ F ≤ 129.999MHz
				3.0		130MHz ≤ F ≤ 160MHz
	Vdd = 1.6V			10.0		1MHz ≤ F ≤ 19.999MHz
				8.0		20MHz ≤ F ≤ 39.999MHz
				6.0		40MHz ≤ F ≤ 69.999MHz
				6.0		70MHz ≤ F ≤ 99.999MHz
				5.0		100MHz ≤ F ≤ 129.999MHz
				5.0		130MHz ≤ F ≤ 160MHz
RMS Period Jitter @25°C± 3°C	Vdd = 3.0V to 3.63V			5.0	ps	
	Vdd = 1.6V to 2.5V			7.0		
RMS Phase Jitter @25°C± 3°C (10 - 39MHz: 12kHz to 5MHz) (>39MHz: 12kHz to 20MHz)				1.0	ps	
Disable Current				10.0	µA	

***Note 1: Overall frequency stability includes initial frequency tolerance @25°C± 3°C and stability over the operating temperature range.**

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Electrical Specifications *continued*

Parameters	Min.	Typ.	Max.	Units	Notes
Supply Current (Idd) into 15pF Load @25°C± 3°C @ Vdd=3.3V			2.0	mA	1MHz ≤ F ≤ 5.999MHz
			2.0		6MHz ≤ F ≤ 9.999MHz
			3.0		10MHz ≤ F ≤ 19.999MHz
			4.0		20MHz ≤ F ≤ 29.999MHz
			5.0		30MHz ≤ F ≤ 39.999MHz
			5.0		40MHz ≤ F ≤ 45.999MHz
			5.0		46MHz ≤ F ≤ 48.999MHz
			6.0		49MHz ≤ F ≤ 50.999MHz
			8.0		51MHz ≤ F ≤ 54.999MHz
			8.0		55MHz ≤ F ≤ 60.999MHz
			12.5		61MHz ≤ F ≤ 75.999MHz
			14.5		76MHz ≤ F ≤ 80.999MHz
			14.5		81MHz ≤ F ≤ 105.999MHz
			15.5		106MHz ≤ F ≤ 119.999MHz
			15.5		120MHz ≤ F ≤ 130.999MHz
			18.0		131MHz ≤ F ≤ 139.999MHz
			18.0		140MHz ≤ F ≤ 149.999MHz
			18.0		150MHz ≤ F ≤ 156.999MHz
			19.0		157MHz ≤ F ≤ 160MHz
Supply Current (Idd) into 15pF Load @25°C± 3°C @ Vdd=2.5V			1.3	mA	1MHz ≤ F ≤ 5.999MHz
			1.3		6MHz ≤ F ≤ 9.999MHz
			2.0		10MHz ≤ F ≤ 19.999MHz
			3.0		20MHz ≤ F ≤ 29.999MHz
			3.5		30MHz ≤ F ≤ 39.999MHz
			4.5		40MHz ≤ F ≤ 45.999MHz
			4.5		46MHz ≤ F ≤ 48.999MHz
			5.0		49MHz ≤ F ≤ 50.999MHz
			6.5		51MHz ≤ F ≤ 54.999MHz
			7.0		55MHz ≤ F ≤ 60.999MHz
			10.0		61MHz ≤ F ≤ 75.999MHz
			11.5		76MHz ≤ F ≤ 80.999MHz
			11.5		81MHz ≤ F ≤ 105.999MHz
			12.5		106MHz ≤ F ≤ 119.999MHz
			12.5		120MHz ≤ F ≤ 130.999MHz
			14.0		131MHz ≤ F ≤ 139.999MHz
			14.0		140MHz ≤ F ≤ 149.999MHz
			14.0		150MHz ≤ F ≤ 156.999MHz
			15.0		157MHz ≤ F ≤ 160MHz
Supply Current (Idd) into 15pF Load @25°C± 3°C @ Vdd=1.8V			1.0	mA	1MHz ≤ F ≤ 5.999MHz
			1.0		6MHz ≤ F ≤ 9.999MHz
			1.6		10MHz ≤ F ≤ 19.999MHz
			2.2		20MHz ≤ F ≤ 29.999MHz
			2.5		30MHz ≤ F ≤ 39.999MHz
			3.0		40MHz ≤ F ≤ 45.999MHz
			3.5		46MHz ≤ F ≤ 48.999MHz
			3.5		49MHz ≤ F ≤ 50.999MHz
			3.5		51MHz ≤ F ≤ 54.999MHz
			4.0		55MHz ≤ F ≤ 60.999MHz
			9.0		61MHz ≤ F ≤ 75.999MHz
			9.0		76MHz ≤ F ≤ 80.999MHz
			10.0		81MHz ≤ F ≤ 105.999MHz
			10.0		106MHz ≤ F ≤ 119.999MHz
			10.5		120MHz ≤ F ≤ 130.999MHz
			10.5		131MHz ≤ F ≤ 139.999MHz
			11.5		140MHz ≤ F ≤ 149.999MHz
			11.5		150MHz ≤ F ≤ 156.999MHz
			11.5		157MHz ≤ F ≤ 160MHz

CONTINUOUS VOLTAGE SMD CRYSTAL OSCILLATOR

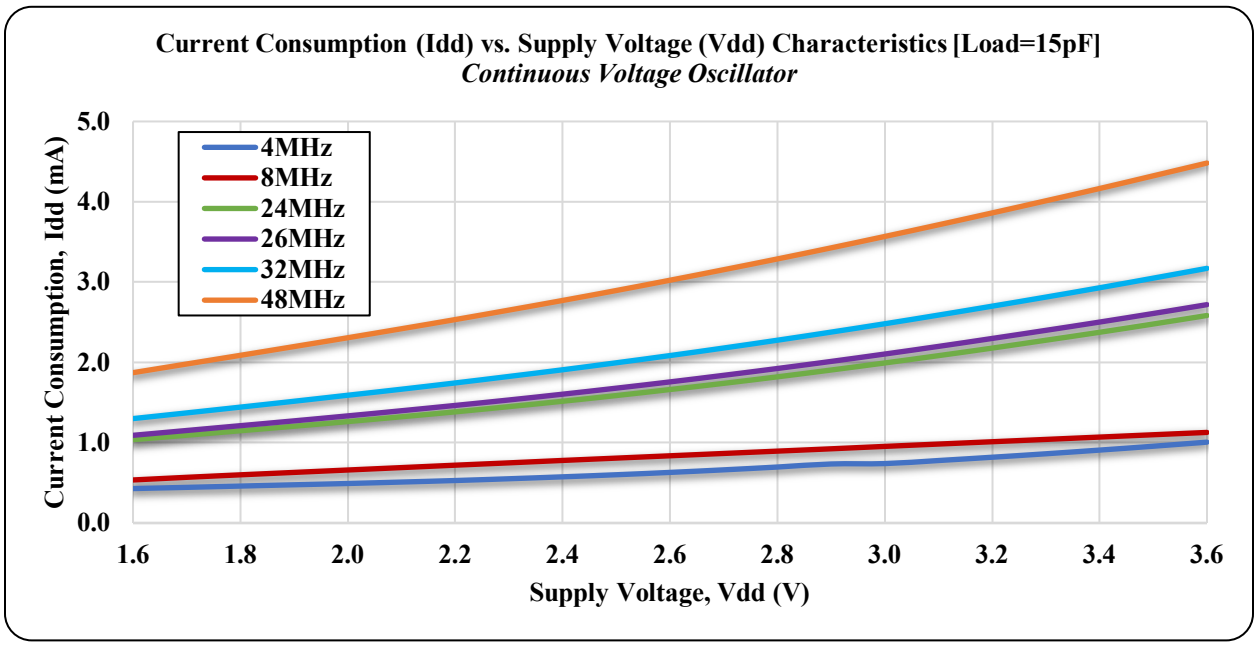
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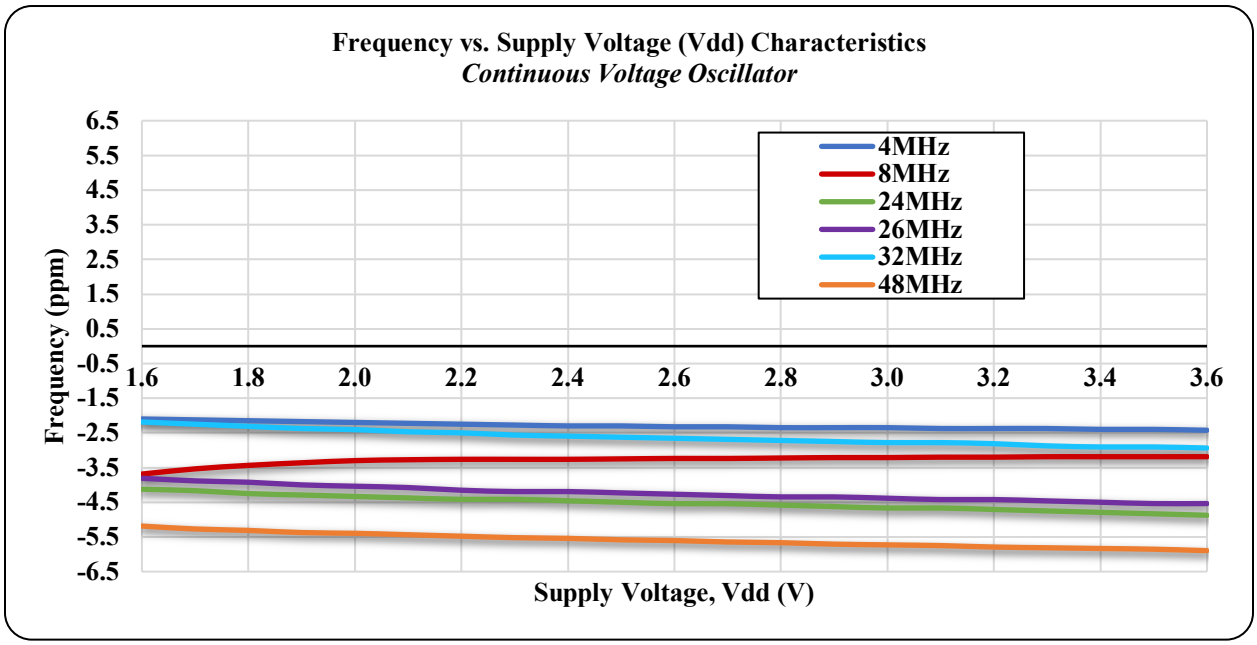
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2.5 x 2.0 x 0.95mm
RoHS/RoHS II Compliant
MSL Level = 1

Typical Current Consumption (Idd) vs. Supply Voltage (Vdd) Characteristics @25°C± 3°C [Load = 15pF]



Typical Frequency vs. Supply Voltage (Vdd) Characteristics @ 25°C± 3°C



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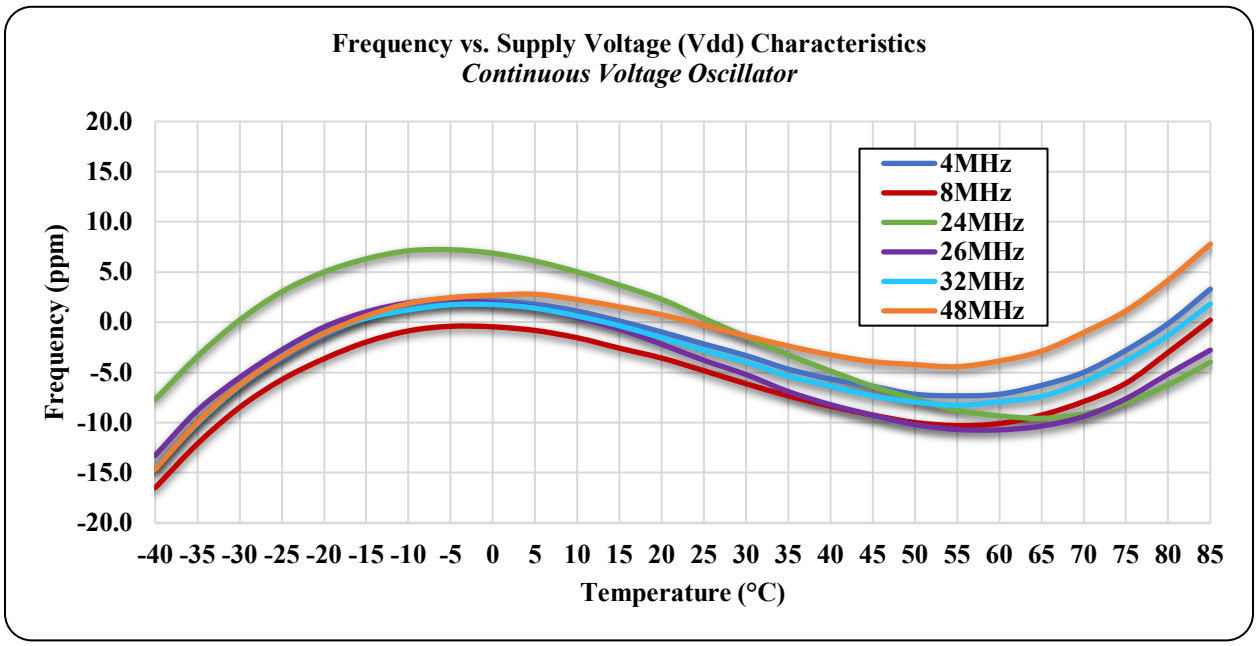
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ESD Sensitive | Pb

2.5 x 2.0 x 0.95mm
RoHS/RoHS II Compliant
MSL Level = 1

Typical Frequency vs. Temperature Characteristics



Part Identification

ASDDV- [ ] - [ ] [ ] - [ ]

Frequency in MHz
Please specify the frequency in MHz. e.g. 14.31818MHz

Operating Temp.
E: -20°C ~ +70°C
N: -30°C ~ +85°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C (*)
A: -40°C ~ +125°C (**)

(*) ±30 ppm, ±50 ppm, & ±100 ppm only
(**) ±50 ppm & ±100 ppm only

Overall Freq. Stability (***)
J: ± 20 ppm
R: ± 25 ppm
K: ± 30 ppm
C: ± 50 ppm
Q: ± 100 ppm

(***) Contact Abracon for availability, not available at all operating temp. ranges nor at all carrier frequencies

Packaging
Blank: Bulk
T: 1k pcs / reel
T3: 3k pcs / reel

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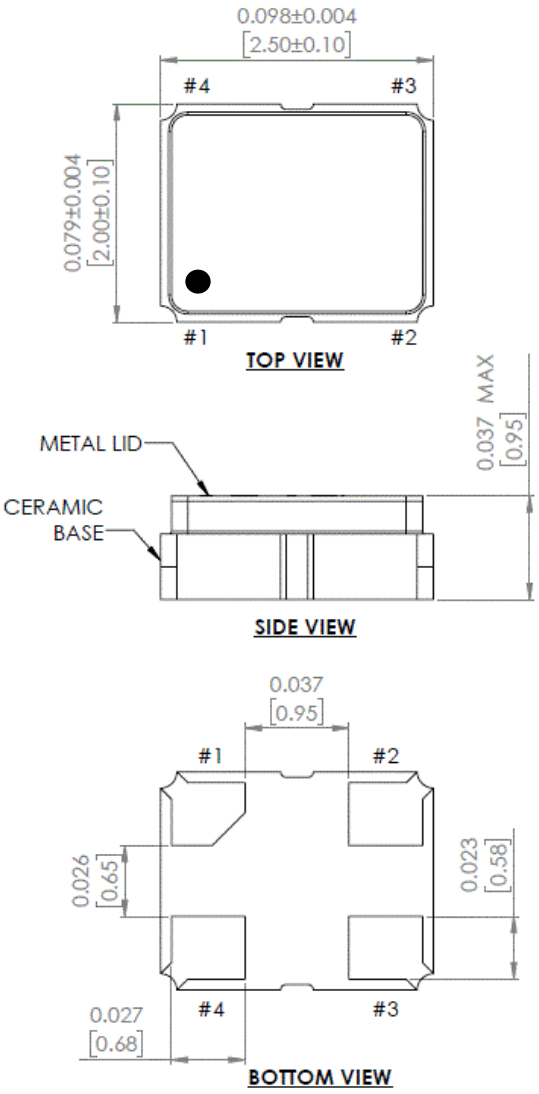
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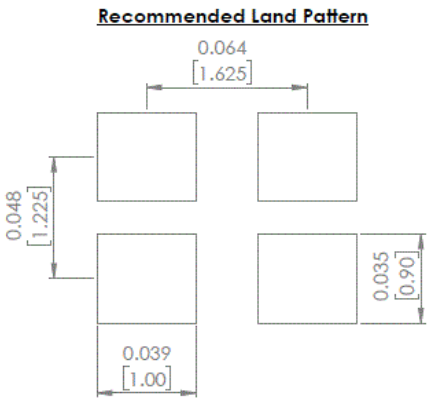
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RoHS/RoHS II Compliant
MSL Level = 1

Mechanical Dimensions





Pin #	Function
1	Tri-State
2	GND
3	Output
4	Vdd

Note: Recommended to use approximately 0.01µF bypass capacitor between PIN 2 and PIN 4

Dimensions: inches (mm)

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Reflow Profile [JEDEC J-STD-020]

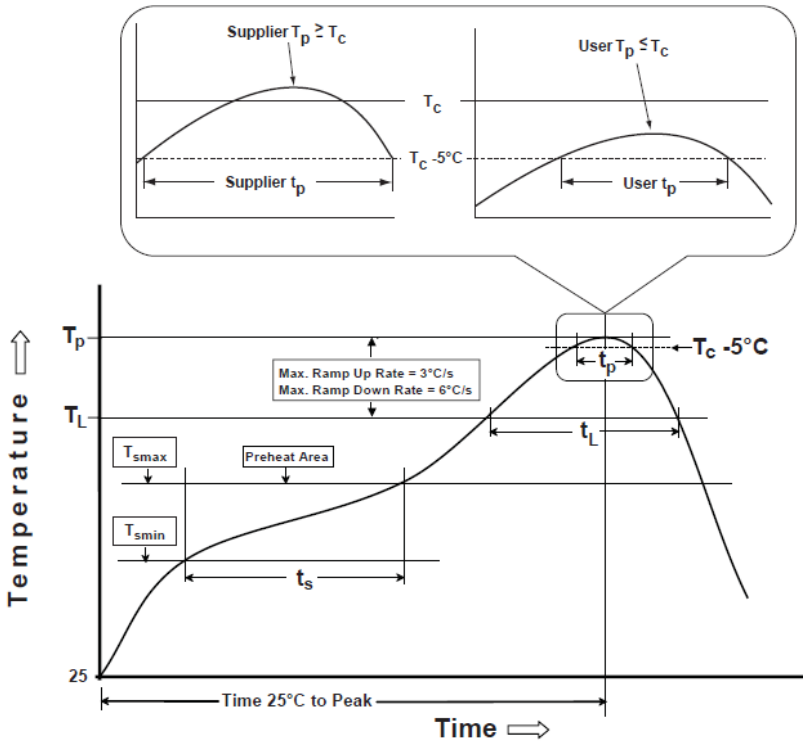


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures (T_c)			
Package Thickness	Volume mm³ <350	Volume mm³ 350-2000	Volume mm³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T_{smax} to T_P)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T_P)*	**see Table 1**	**see Table 2**
Time (t_p)** within 5°C of the specified classification temperature (T_C)	20 sec.	30 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.

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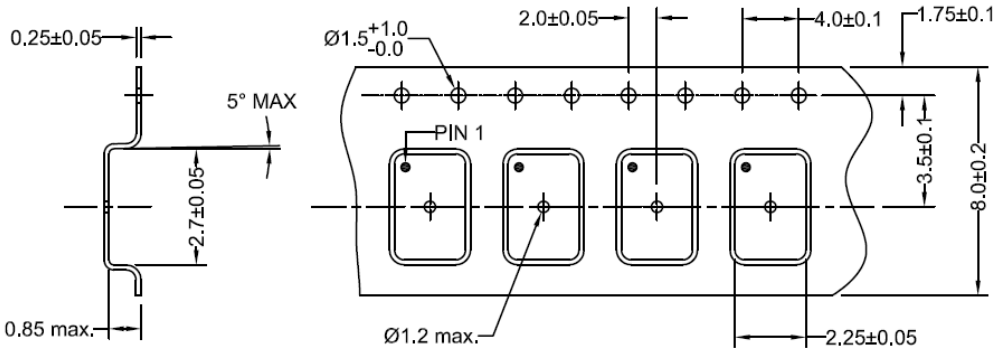
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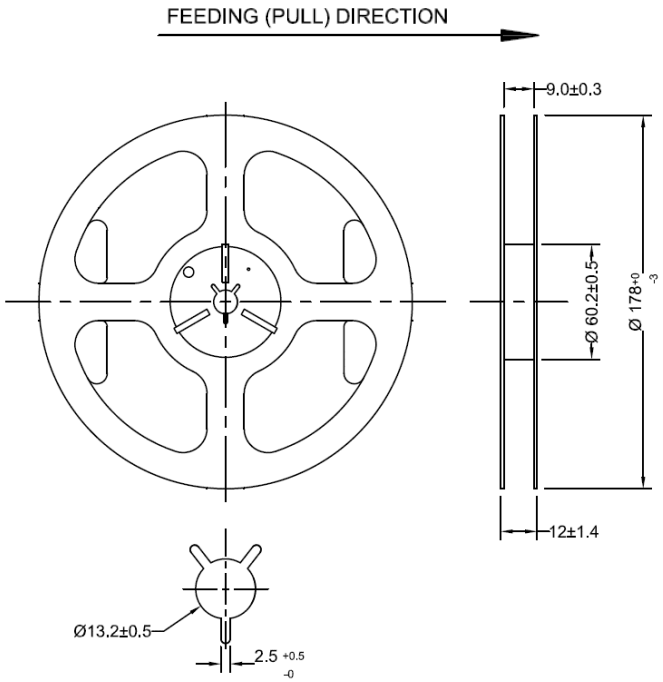
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RoHS/RoHS II Compliant
MSL Level = 1

Packaging

T: 1,000pcs/reel (500021, 500240)
T3: 3,000pcs/reel (500021, 500240, 500603)





Dimensions: inches (mm)

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