Ultra Miniature 1.6 x 1.2mm 32.768 kHz Crystal Oscillator



ASAKMP

ESD Sensitive

1.6 x 1.2 x 0.6mm
RoHS/RoHS II Compliant
MSL - N/A

FEATURES

- 32.768 kHz crystal oscillator
- Excellent ±10 ppm stability over temperature
- Excellent ±27 ppm all inclusive stability
- Compact form factor 1.6 x 1.2 mm
- Output enable/disable function
- Available over industrial operating temperature range (-40˚C to +85˚C)
- Supply voltage options 3.3V, 2.5V, 1.8V

APPLICATIONS

- Enhanced accuracy timekeeping
- RTC reference clock
- Medical devices
- Utility metering
- Wearables
- IoT
- Industrial timing
- Industrial wearables
- ULP input device

Electrical Specifications

Parameters		Minimum	Typical	Maximum	Units	Notes
Frequency Range			32.768		kHz	
Operating Temperature Range (OTR)		-40		+85	˚C	See options
Storage Temperature		-55		+125	˚C	
Frequency Accuracy Δf/f0 vs Tolerance (@+25 ±3˚C)		-7		+7	ppm	See options
vs Post Reflow (@+25 ±3˚C)		-2		+2		
vs Temperature (ref. to +25 ±3˚C)		-15		+15		See options
vs Aging (Over 10 Years @+25 ±3˚C)		-7		+7		
All Inclusive Stability Over 10-Year Product Life (-20˚C to +70˚C)		-27		+27		See options
Power Supply Voltage (V_{dd})		2.97	3.3	3.63	V	Option 1
		2.25	2.5	2.75		Option 2
		1.62	1.8	1.98		Option 3
			1.60 ~ 3.63			Option 4
Supply Current (I_{DD})			< 27.0	30.0	µA	V_{dd} = 3.0V, No Load
Stand Current Consumption (I_{STBY})				3.0	µA	
Output Load				15.0	pF	CMOS
Output Logic Levels	V_{OH}	0.9*V_{dd}			V	I_{OH} = -1 mA
	V_{OL}			0.1*V_{dd}		I_{OL} = +1 mA
Standby Logic Levels	V_{IH}	0.7*V_{dd}				Oscillation
	V_{IL}			0.3*V_{dd}		Hi Z
Symmetry @1/2 V_{dd}		45.0	50.0	55.0	%	V_{TH} = 0.5 V_{dd}
Start-up Time			< 2.25	7.0	ms	V_{dd} = 3.3V
			< 3.00	10.0		V_{dd} = 1.8V
Rise/Fall Time (Tr/Tf)				200.0	ns	10% V_{dd} to 90% V_{dd}

ABRACON LLC

5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 08.16.2018

ABRACON IS
ISO9001-2015
CERTIFIED

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MSL - N/A

Options and Part Identification

ASAKMP ▢ ▢ - 32.768KHz ▢

Supply Voltage
A: 3.3V
B: 2.5V
C: 1.8V
D: 1.60 ~ 3.63V

Option*	Set Tolerance	Operating Temp.	Stability Over Temperature	All Inclusive Stability Over 10-Year Product Life**
1	±7 ppm	-20˚C to +70˚C	±10 ppm	±27 ppm Maximum
2	±10 ppm	-20˚C to +70˚C	±10 ppm	±30 ppm Maximum
3	±7 ppm	-20˚C to +70˚C	±15 ppm	±32 ppm Maximum
4	±10 ppm	-20˚C to +70˚C	±15 ppm	±35 ppm Maximum
5	±7 ppm	-40˚C to +85˚C	±15 ppm	±32 ppm Maximum
6	±10 ppm	-40˚C to +85˚C	±15 ppm	±35 ppm Maximum
7	±7 ppm	-40˚C to +85˚C	±20 ppm	±37 ppm Maximum
8	±10 ppm	-40˚C to +85˚C	±20 ppm	±40 ppm Maximum

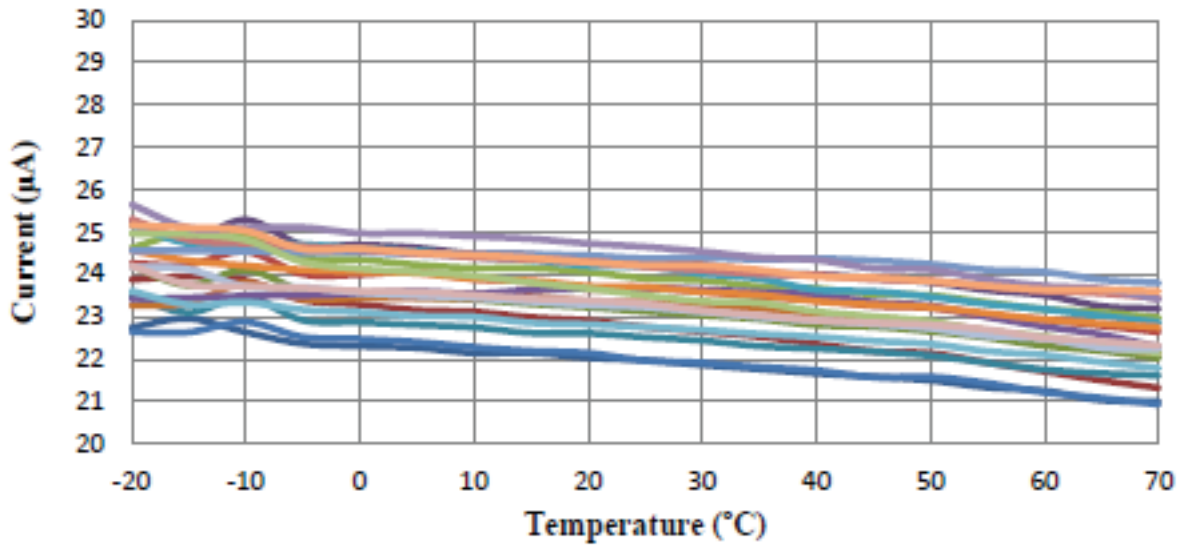
Packaging
Blank: Bulk
T3: 3K pcs/reel

*** For custom tolerance, operating temperature and stability, please contact Abracon.**

**** All-Inclusive Stability: Set-tolerance, shift through reflow, stability over temperature and aging over 10-year product life.**

Typical Current Consumption

Current Consumption Over Temperature @ V_{dd} = 3.3V, 25 ±3˚C



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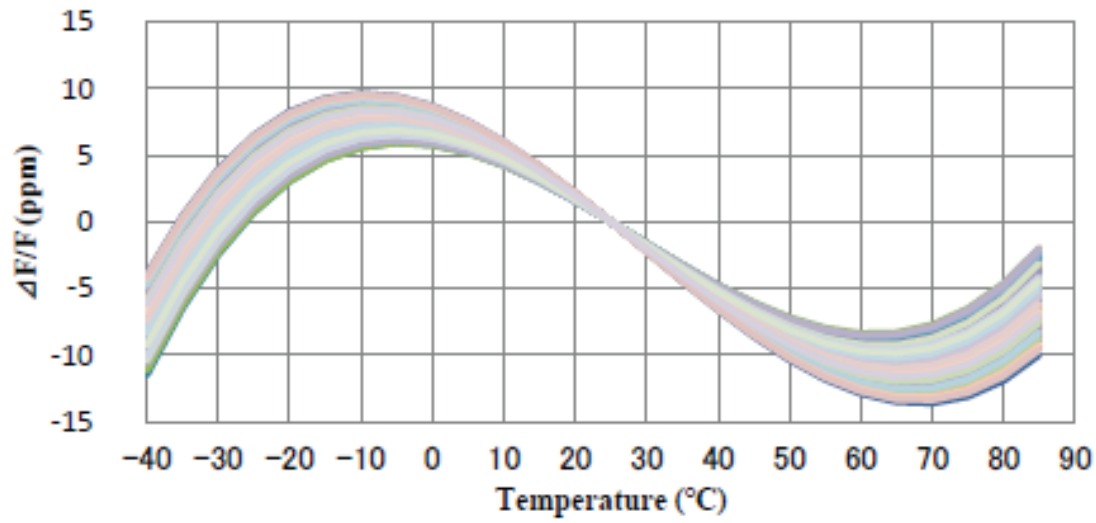
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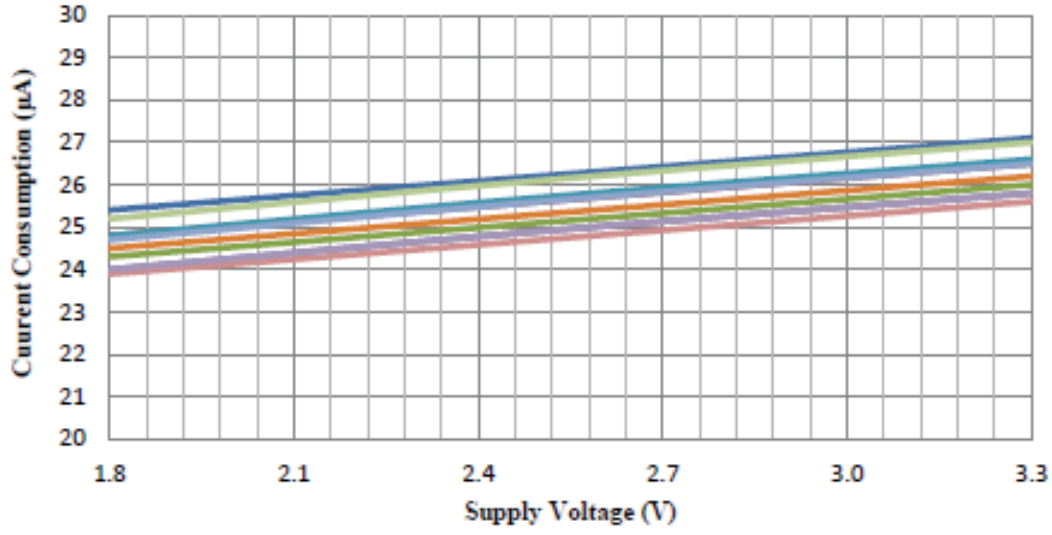
Typical Frequency Stability Over Temperature:

Frequency Stability Over Operating Temperature
Normalized to measured frequency @ 25˚C

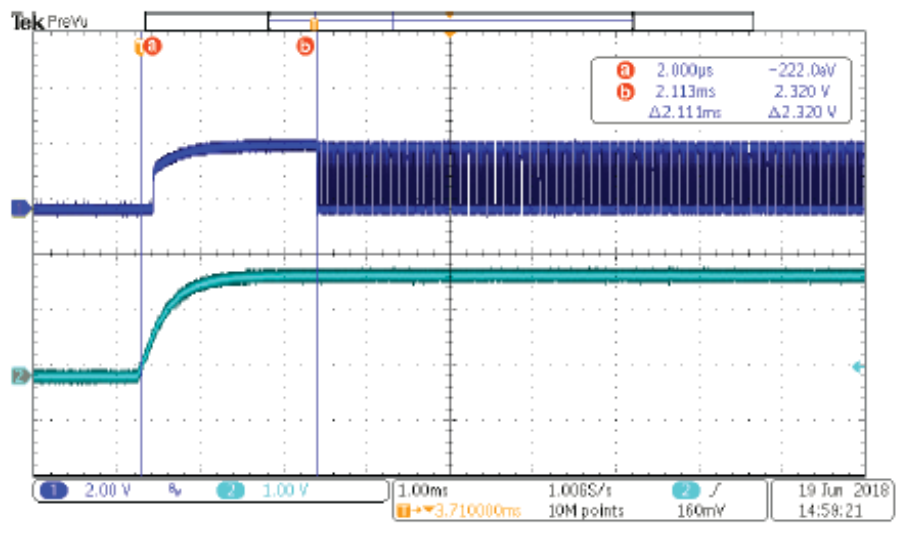


Typical Current Consumption (I_{dd})

Current Consumption vs. Supply Voltage @ 25 ±3˚C



Typical Start-Up Time @ V_{dd} = 1.8V, 25 ±3˚C



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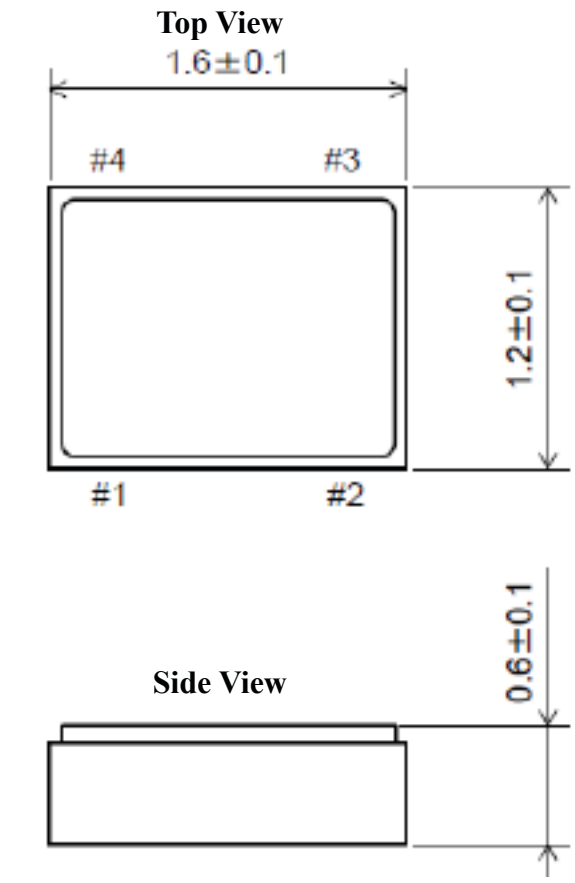


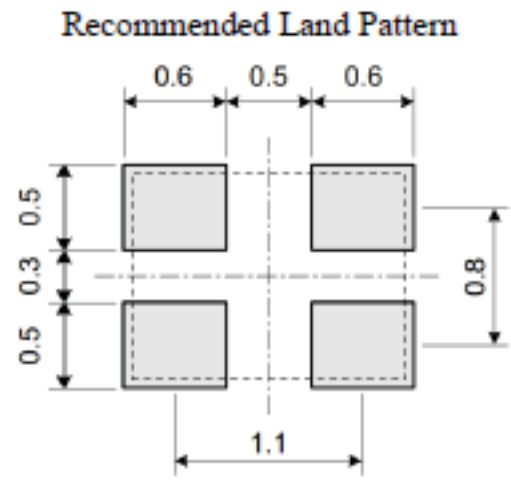
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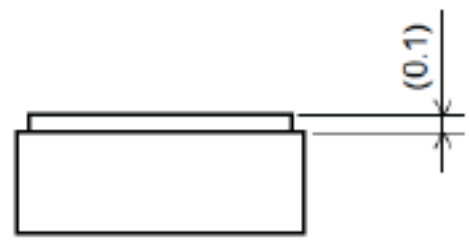
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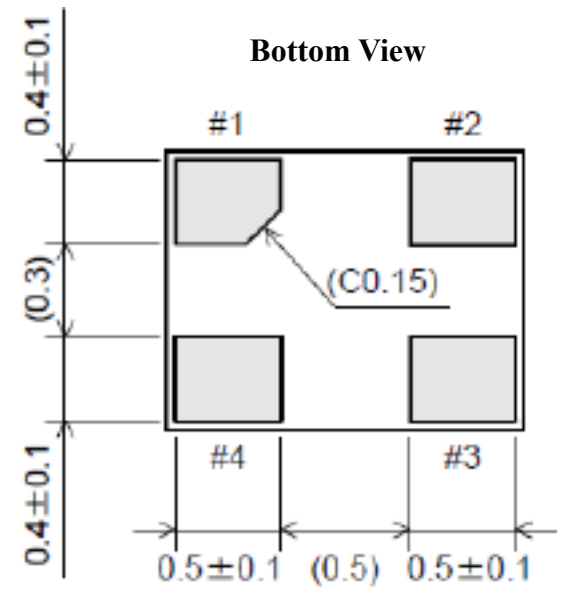
1.6 x 1.2 x 0.6mm
RoHS/RoHS II Compliant
MSL - N/A

Mechanical Dimensions









Dimensions: mm

PIN #	Function
1	Enable/Disable
2	GND
3	Output
4	V_{dd}

Note: Recommend using a 0.01µF bypass capacitor between PIN 2 and 4.

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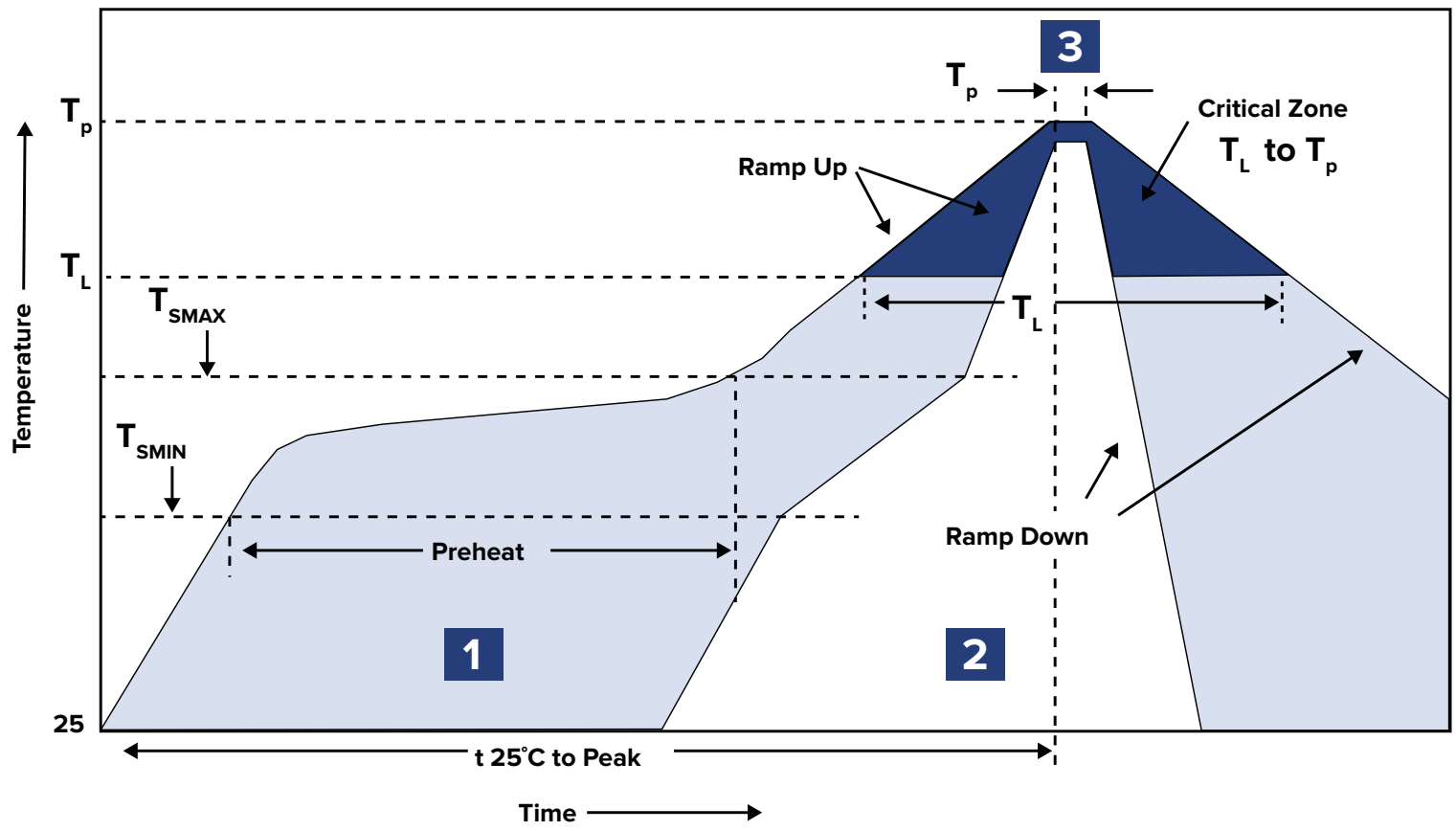


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Reflow Profile



Zone	Description	Temperature	Time
1	Preheat / Soak	T_{SMIN} to T_{SMAX} 150°C to 170°C	80 to 100 sec.
2	Reflow	T_L 220°C	50 to 70 sec.
3	Peak heat	T_P 260°C±5°C	5 sec. Maximum

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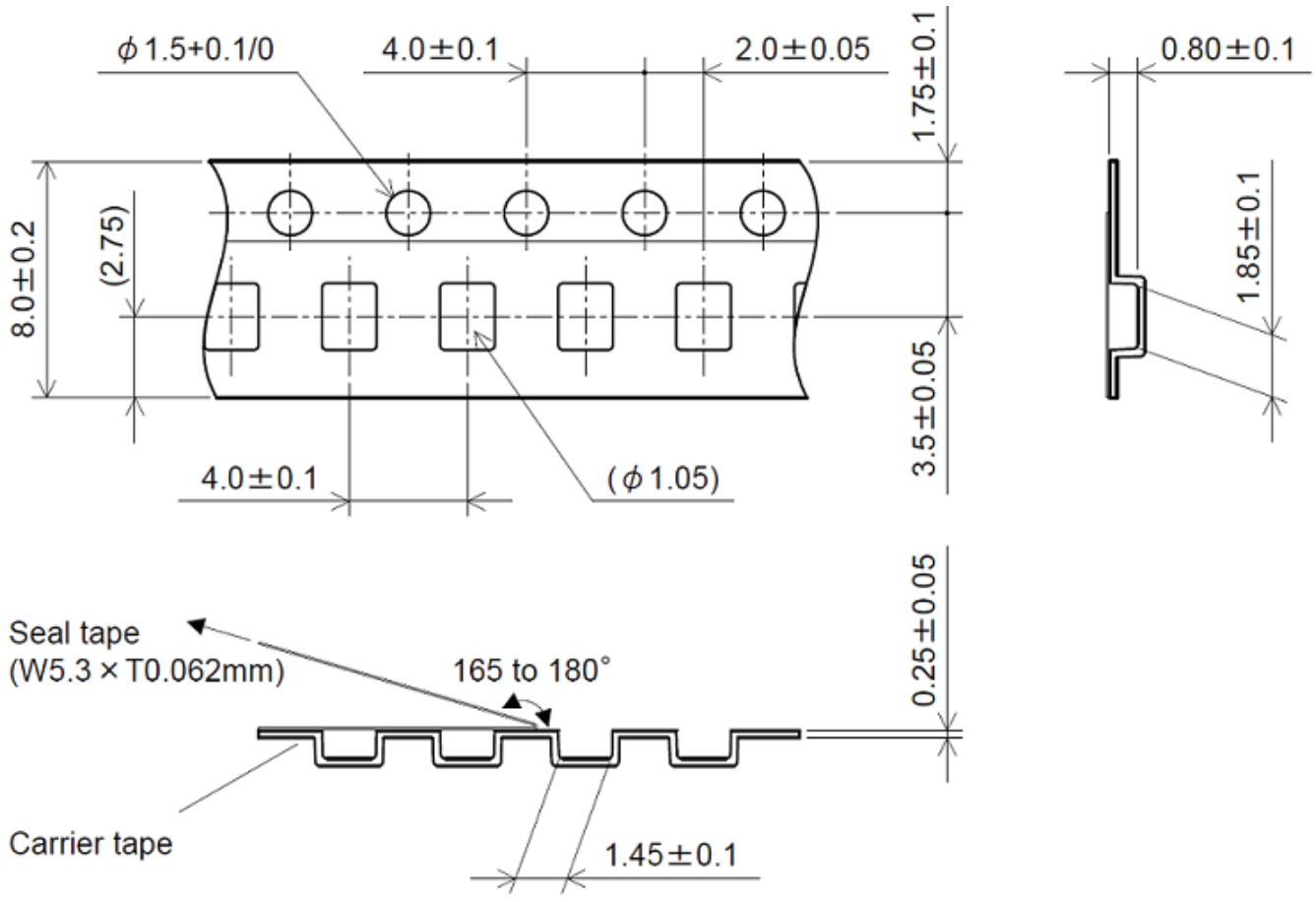
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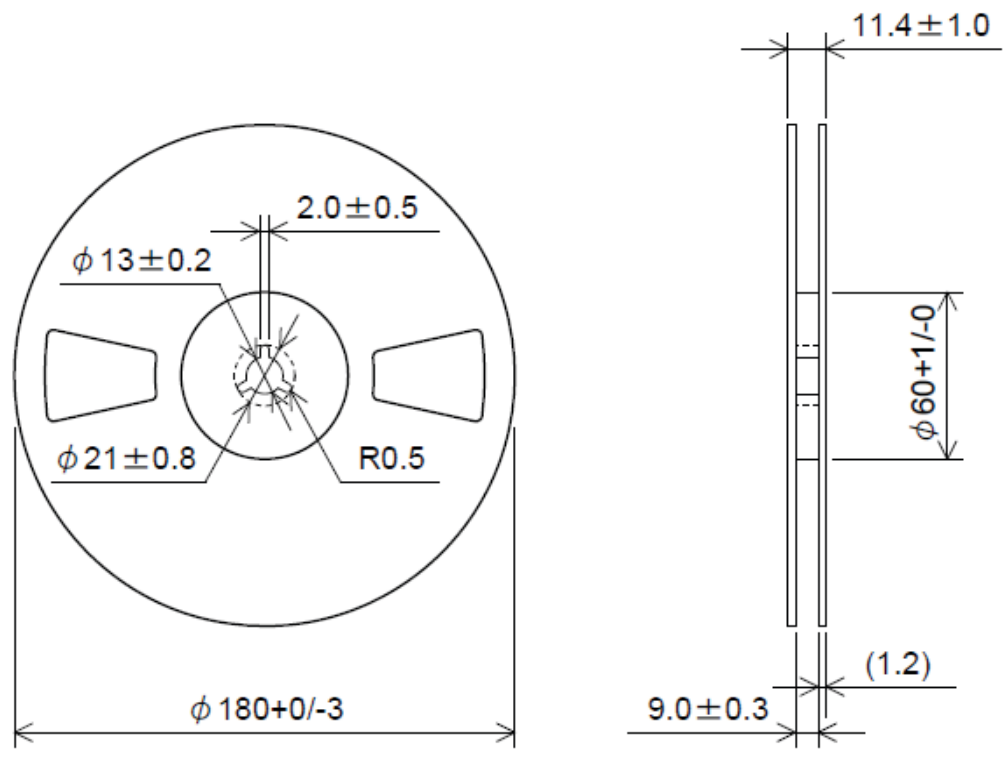
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MSL - N/A

Packaging

T3= Tape and reel (3,000pcs/reel)





Dimensions: mm

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