



No.11-3 Jianguo Rd., T.E.P.Z. 42760 Taiwan, ROC

All dimensions are millimeters.

CAD:	TCR
Review:	EG
Appr:	JL
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Date:	August 01, 2022

Specification Title:

**Microprocessor Crystal Unit
32.768 KHz
3.2x 1.5 millimeter Surface Mount
Thermoplastic Package
General Product Specification**

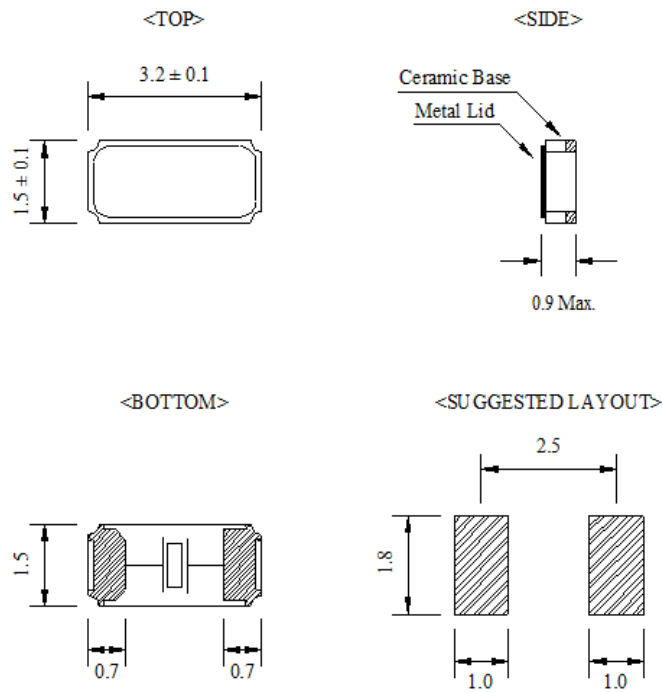
Series Name: CTS3 Series

Electrical Specifications:

Nominal Frequency		32.768	KHz
Frequency Tolerance at 25°C	Standard	±20	PPM
Aging		±3	PPM Max/Year
Turnover Temperature		25 ±5	°C
Temperature Coefficient		-0.035 Typ. PPM/°C ²	
Temperature Range (Operating)	Standard	-40 to +85	
Storage Temperature Range		-55 to +125	
Equivalent Series Resistance(ESR)		70	K Ohm Max
Load Capacitance	Standard	12.5	pF
	Optional	7.0	
	Optional	9.0	
Shunt Capacitance		1.2	pF Typ
Motional Capacitance		3.7	fF Typ
Drive Level		1	uW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm

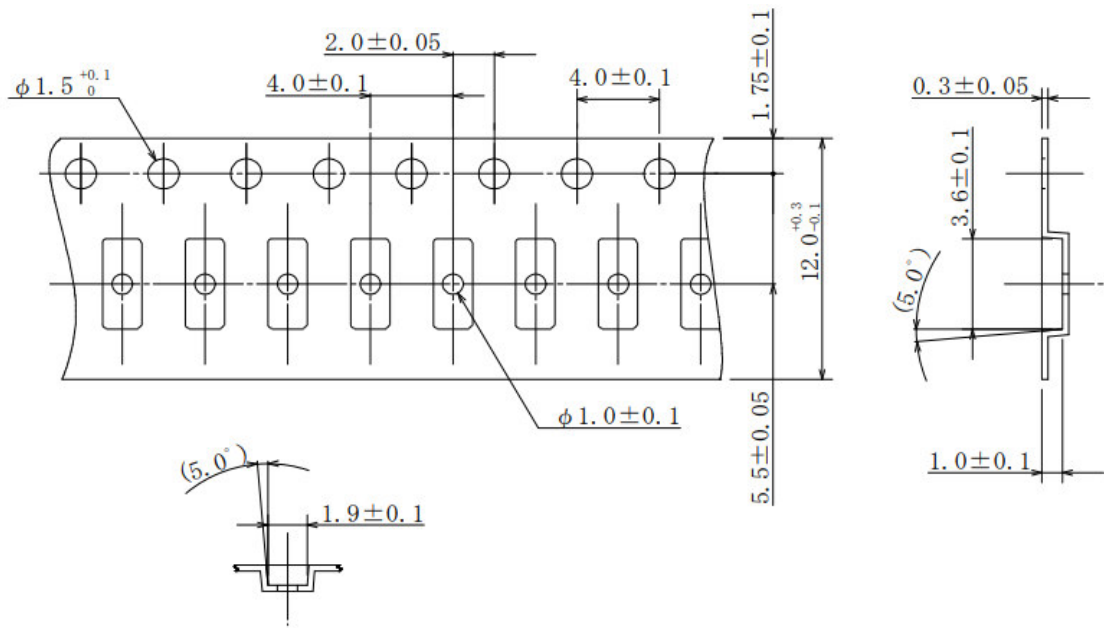
RoHS Compliant Pb - Lead Free	Ltr	Revisions	Date	Appr

Mechanical Outline:



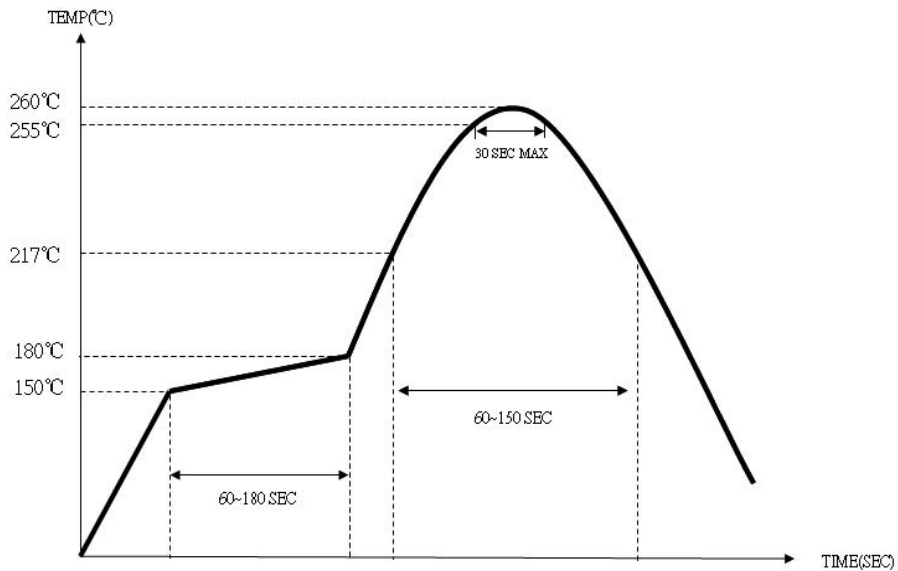
Dimensions are millimeters.

Carrier Tape Dimensions:



Dimensions are millimeters.

Solder Reflow Characteristics:



How to build a Part Number:

Series		CTS	Parameter
Package		3	3.2 x 1.5 mm Thermoplastic SMD
Frequency		32.768	KHz
Load Capacitance	Standard	12.5	12.5pF
	Option	7	7pF
	Option	9	9pF
Frequency Tolerance	Standard	20	±20PPM
Temperature Range	Standard	X	-40 to +85 °C
Packaging		R	Tape and Reel

Part Number Example:

CTS3-32.768-12.5-20-X-R

CTS3- 3.2 x 1.5 mm Thermoplastic SMD Package

32.768 KHz Nominal Frequency

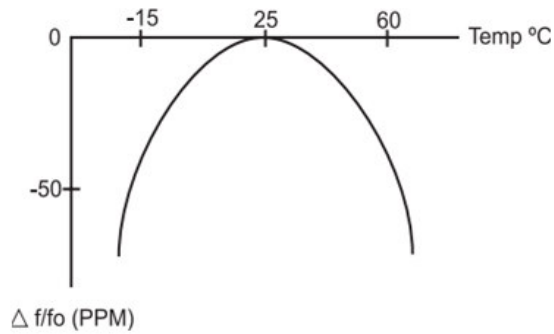
12.5 pF Load Capacitance

20: ±20 PPM Frequency Tolerance

X:-40 to +85° C Temperature Range

R: Tape and Reel Packaging

Frequency vs. Temperature Characteristics:



To calculate the frequency stability the parabolic curvature constant (K) is needed.

For calculating the stability at 45 ° C?

1- Change in temperature (Δ T) is (45-25) = +20 °C

2- Change in frequency is (-0.035 x (Δ °C)²) =

$$(-0.035 \times (20)^2 = -14 \text{ PPM})$$

Notes:

- 1- Standard Temperature Range does not need to be included in Part Number description.
- 2- Product is shipped in Tape and Reel configuration. Each reel contains 3000 pieces.
- 3- Quantities less than 3000 are shipped bulk in ESD pouches.
- 4- Specification subject to change without notice.

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