

**RoHS Compliant
Pb - Lead Free**

Ltr	Revisions	Date	Appr

Electrical Specifications:

Nominal Frequency		32.768	KHz
Frequency Tolerance at 25° C	Standard	±20	PPM
	Optional	±15	
Aging		±3 (first year)	
Turnover Temperature		25 ±5	° C
Temperature Coefficient		-0.035 ± 0.008 PPM/Δ °C²	
Temperature Range (Operating)	Standard	-10 to +60	
	Optional	-40 to +85	
Temperature Range (Storage)		-55 to +125	
Equivalent Series Resistance		50	K Ohm Max
Load Capacitance	Standard	12.5	pF
	Optional	6.0	
Shunt Capacitance		1.5	pF Typ
Motional Capacitance		3.0	fF Typ
Drive Level		1.0	uW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm Min
Quality Factor		70000	Typ
Capacitance Ratio		450	
Resistance to Shock		±5 PPM maximum offset from 75 cm drop test in all axes on to a hard surface.	-



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

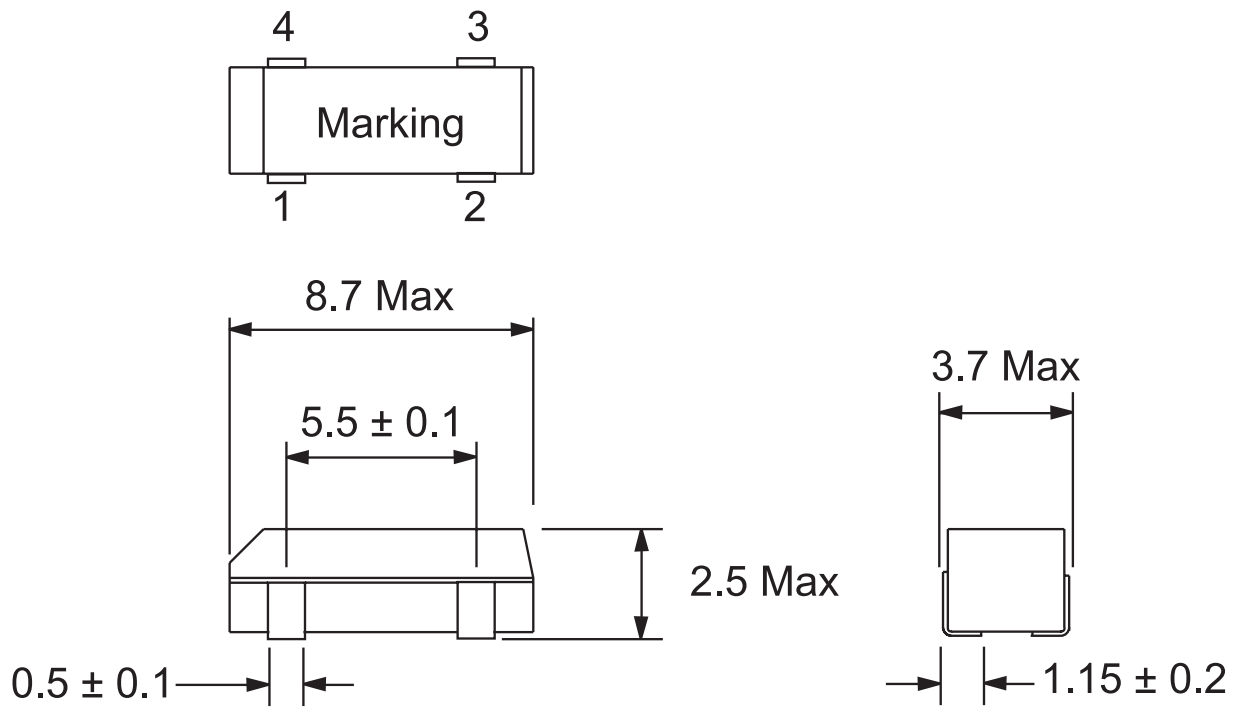
Page: 1/4 Date: June 10, 2006

Specification Title:

**Microprocessor Crystal Unit
32.768 KHz
3.8 x 8.0 millimeter Surface Mount
Thermoplastic Package
General Product Specification**

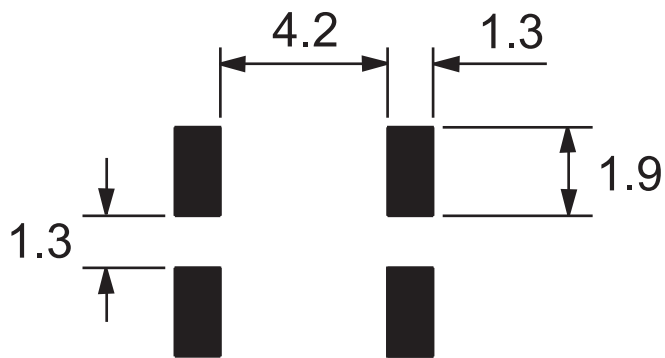
Part Number: CTP3-32.768-12.5-20

Mechanical Outline:

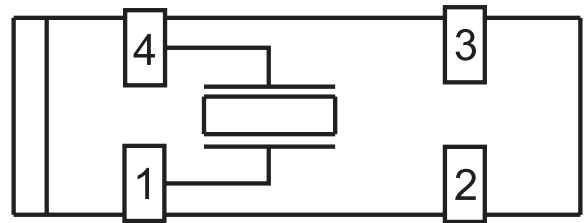


**Package is Thermoplastic.
Dimensions are millimeters.**

PCB Solder Pad Layout:

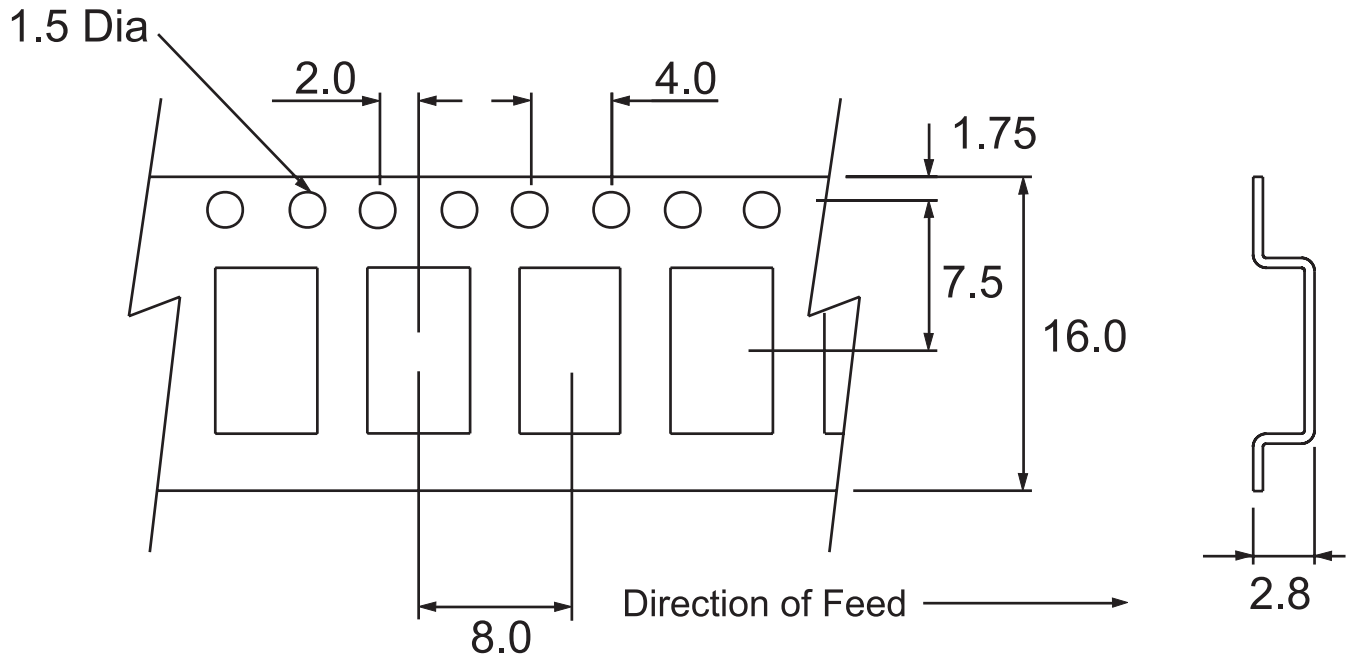


Pad Connection:



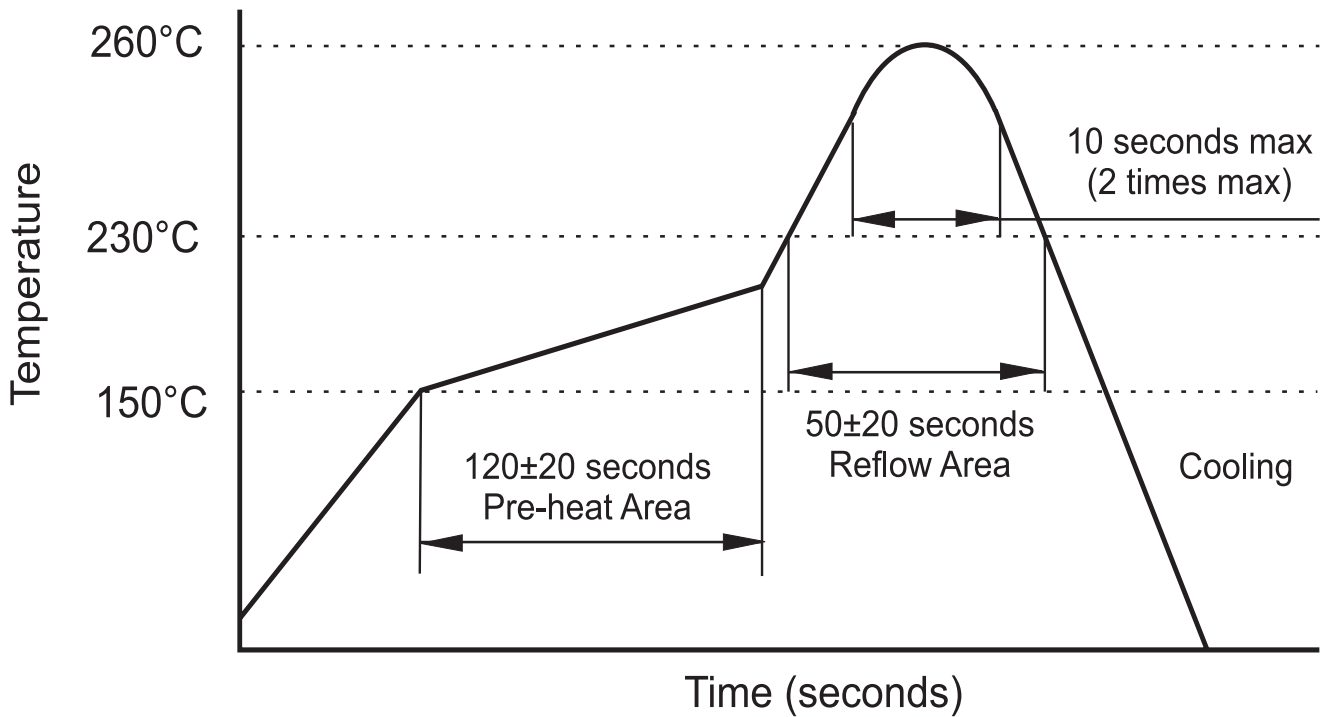
Top View

Carrier Tape Dimensions:



Dimensions are millimeters.

Solder Reflow Characteristics:



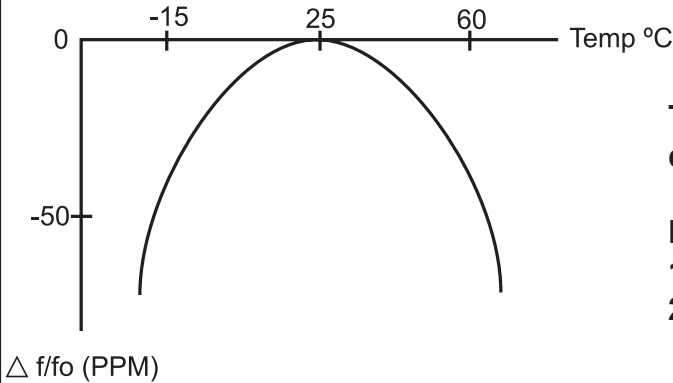
How to build a Part Number:

Series		CTP	Parameter
Package		3	3.8 x 8.0 mm Thermoplastic SMD
Frequency		32.768	KHz
Load Capacitance	Standard	12.5	12.5 pF
	Option	6	6 pF
Frequency Tolerance	Standard	20	±20 PPM
	Option	15	±15 PPM
Temperature Range	Standard	See Notes	-10 to +60 °C
	Option	X	-40 to +85 °C
Packaging		R	Tape and Reel

Part Number Example:

CTP3-32.768-12.5-20-R
CTP3- 3.8 x 8.0 mm Thermoplastic SMD Package
32.768 KHz Nominal Frequency
12.5 pF Load Capacitance
20: ±20 PPM Frequency Tolerance
-10 to +60° 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 (ΔT) is $(45-25) = +20 \text{ }^\circ\text{C}$
- 2- Change in frequency is $(-0.035 \times (\Delta \text{ }^\circ\text{C})^2) = (-0.035 \times (20)^2) = -14 \text{ PPM}$

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.