

RoHS Compliant Pb - Lead Free	Ltr	Revisions	Date	Appr

**Electrical Specifications:**

Frequency Range		3.200 to 70.000	MHz
Mode of Oscillation	Fundamental	3.200 to 32.768	MHZ
	Third Overtone	24.576 to 70.000	
Frequency Tolerance at 25°C	Standard	±30	PPM Max
	Optional	±25	
		±20	
		±15	
		±10	
Frequency Stability over Temperature Range	Standard	±50	PPM Max
	Optional	±30	
		±25	
		±20	
		±10	
Operating Temperature Range	Standard	-20 to +70	° C
	Extended	-40 to +85	
Storage Temperature Range		-55 to +125	
Aging		±5 first year ±3 thereafter	PPM Max/Year
Load Capacitance		10 to 32 and Series Resonance	pF
Shunt Capacitance		7.0	pF Max
Equivalent Series Resistance (ESR)		See ESR Table	Ohms
Drive Level		1.0	mW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm

**Frequency Range vs. ESR Values:**

Frequency Range in MHz	ESR Ohms Max	Mode of Operation
3.200 to 3.500	300	Fundamental
3.510 to 3.999	200	Fundamental
4.000 to 5.999	120	Fundamental
6.000 to 7.999	80	Fundamental
8.000 to 9.999	60	Fundamental
10.000 to 15.999	50	Fundamental
16.000 to 32.768	40	Fundamental
24.576 to 70.000	80	Fundamental-Third Overtone



11-3 Chien-Kuo Rd T.E.P.Z. 4027 Taiwan, ROC

All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

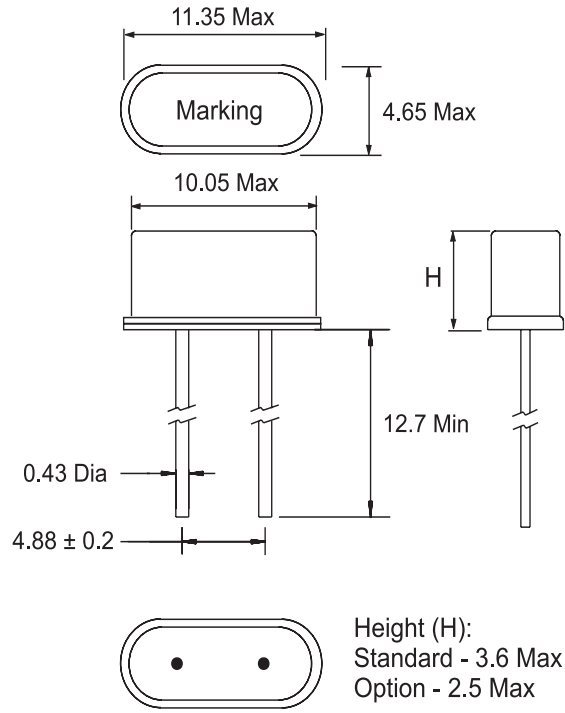
Page: 1/4 Date: April 30, 2006

Specification Title:

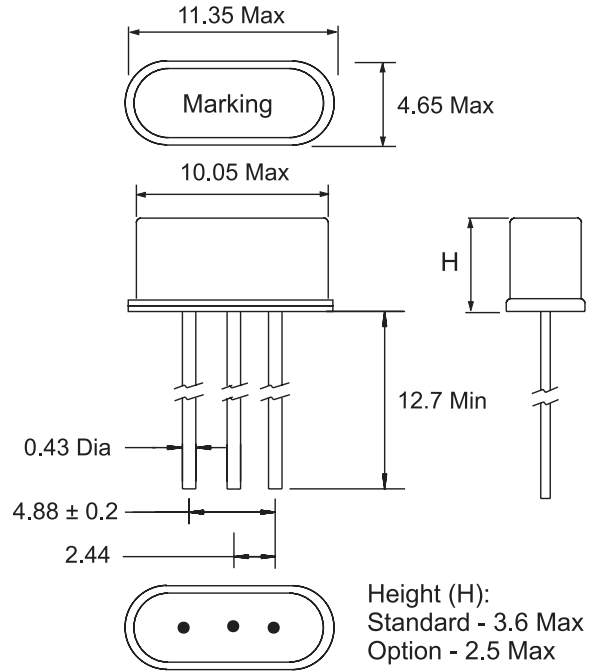
**Quartz Crystal  
Leaded Package  
HC-49/U-S Short Package  
General Product Specification**

Part Number: **CA Series**

## Mechanical Outlines:



**Standard Type: HC-49/U-S**

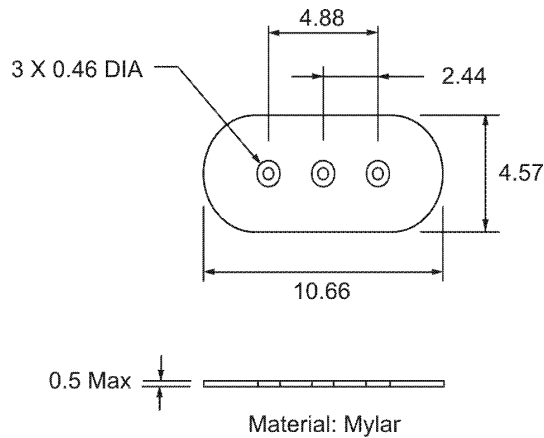


**3 Lead Base: HC-49/U-S with 3 lead (pin) base**

### Package Options:

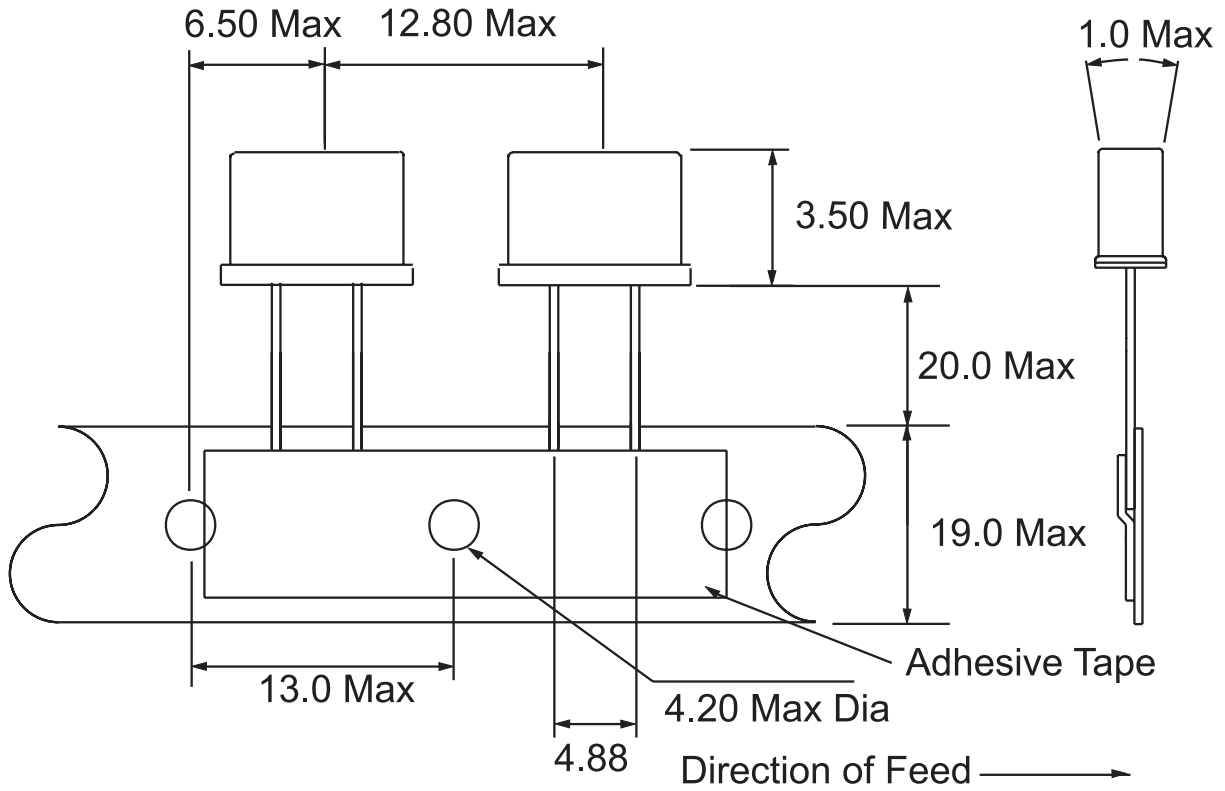
**A: Pre-Cut lead length ranging from 3 mm to 10 mm**

**B: Insulating Mylar Spacer (shown below)**



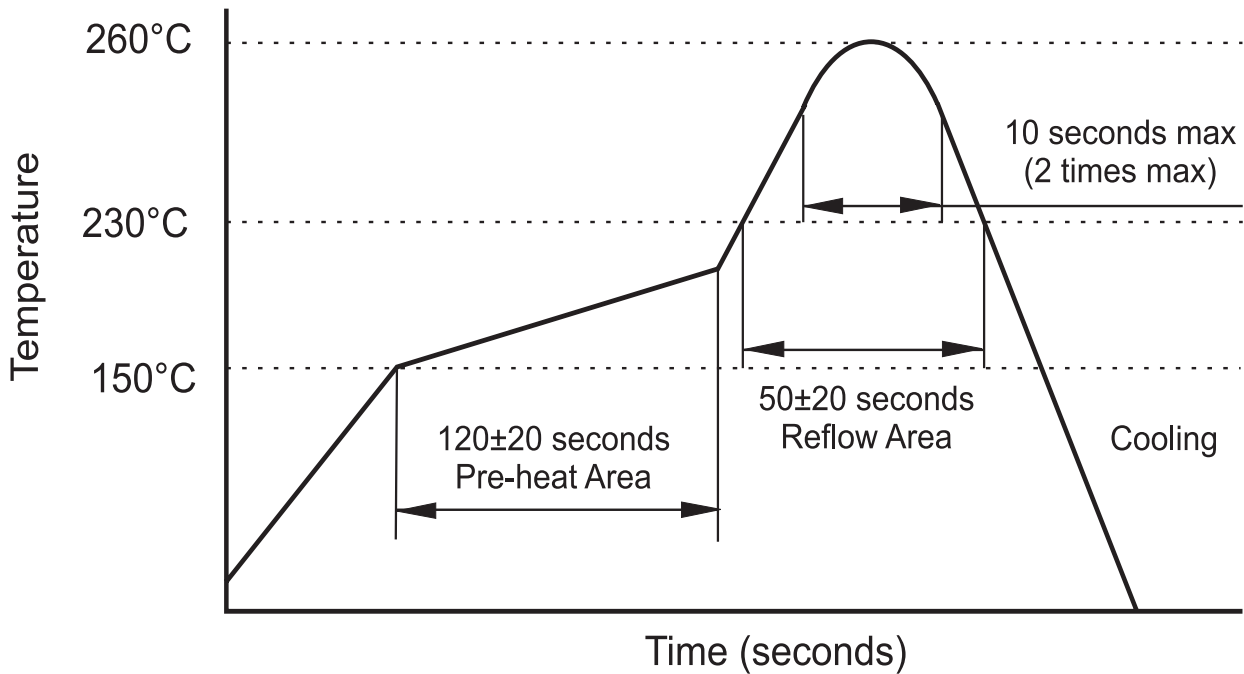
**Dimensions are millimeters.**

**Carrier Tape Dimensions:**



**Dimensions are millimeters.**

**Solder Reflow Characteristics:**



### How to build a Part Number:

Series		C	Parameter
Package		A	HC-49/U-S
		-	
Frequency		3.200 to 70.000	MHz
		-	
Load Capacitance		10	10 pF
		12	12 pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		S	Series
		-	
Frequency Tolerance	Standard	30	±30 PPM
	Option	25	±25 PPM
		20	±20 PPM
		15	± 15 PPM
		10	±10 PPM
Frequency Stability	Standard	50	±50 PPM
	Option	30	±30 PPM
		25	±25 PPM
		20	±20 PPM
		15	±15 PPM
		10	±10 PPM
		-	
Mode of Oscillation		See Notes	Fundamental
		3	Third Overtone
		-	
Temperature Range	Standard	See Notes	-20 to +70 °C
	Option	X	-40 to +85 °C
		-	
Package Height	Standard	See Notes	3.6
	Option	25	2.5
		-	
Package Options	Cx (Cut Leads)		x mm ± 10%
	L		3 Lead (Pin) Base
	P		Mylar Spacer
		-	
Packaging	Standard	See Notes	Bulk
	Option	R	Tape and Reel

#### Part Number Example:

CA-18.432-32-3030

CA: HC-49/U-S Leaded Package

18.432 MHz Nominal Frequency

32pF Load Capacitance

3030: ±30 PPM Tolerance and ±30 PPM Stability

Fundamental Mode

-20 to +70 ° C Temperature Range

Standard Height - 3.6 mm

#### Notes:

1- Standard Temperature Range and Fundamental Mode do not need to be included in Part Number description.

2- Product is shipped bulk. 1000 pieces per box, 10 plastic bags containing 100 pieces.

4- Optional tape and reel packaging is available for 1000 pieces minimum.

5- Specification subject to change without notice.