

**RoHS Compliant  
Pb - Lead Free**

Ltr	Revisions	Date	Appr

### Electrical Specifications:

Frequency Range		1.000 to 180.000	MHz
Mode of Oscillation	Fundamental	1.000 to 50.000	MHZ
	Third Overtone	23.000 to 75.000	
	Fifth Overtone	60.000 to 110.000	
	Seventh Overtone	110.000 to 180.000	
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	
		±15	
		±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	
Equivalent Series Resistance (ESR)		See ESR Table	Ohm
Drive Level		1.0	mW Max
Insulation Resistance		500 at 100 Vdc ± 15 Vdc	M Ohm



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

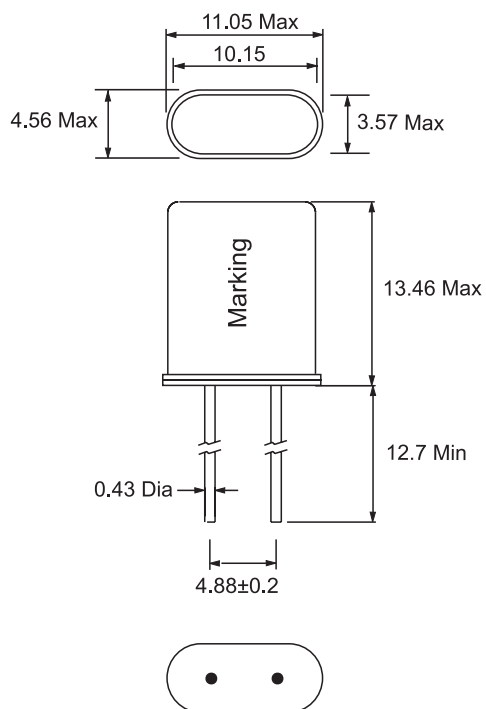
Page: 1/4 Date: May 27, 2006

Specification Title:

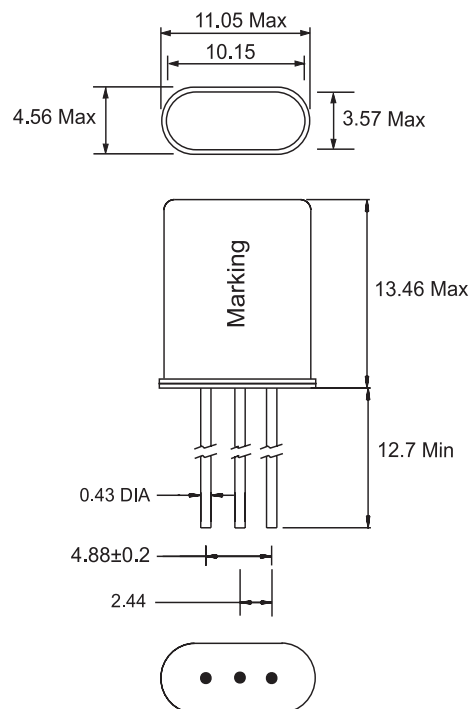
**Quartz Crystal  
Leaded Package  
HC-49/U Type  
General Product Specification**

Part Number: **C Series**

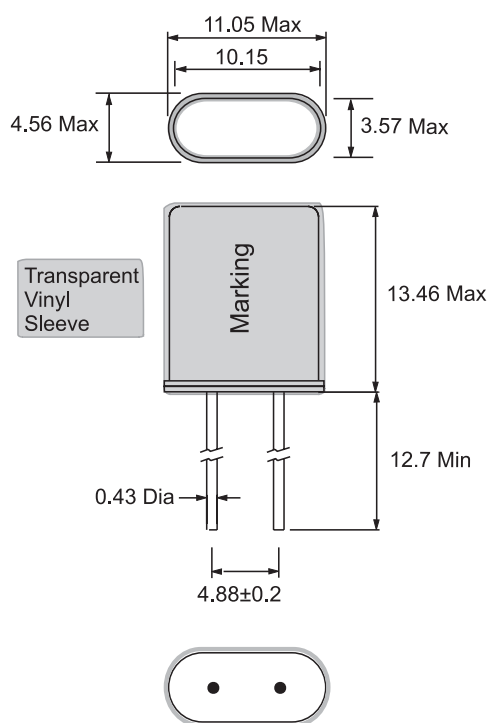
## Mechanical Outline and Package Options:



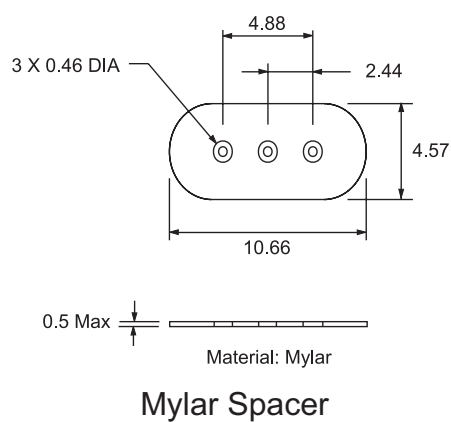
Standard Type: HC-49/U



3 Lead Base: HC-49/U  
with 3 lead base (header)



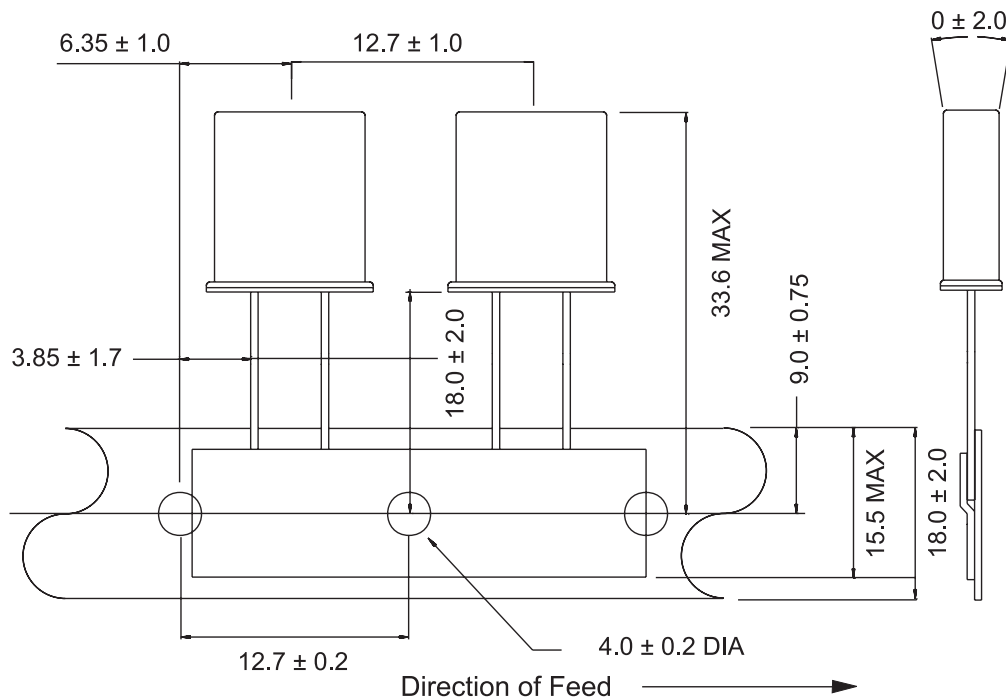
Sleeve Type: HC-49/U  
with vinyl sleeve



Mylar Spacer

Dimensions are millimeters.

## Carrier Tape Dimensions:



Dimensions are millimeters.

## Frequency Range vs. ESR Values:

Frequency Range in MHz	ESR Ohm Max	Mode of Operation
1.000 to 2.000	750	Fundamental
2.100 to 2.400	550	Fundamental
2.410 to 3.000	350	Fundamental
3.100 to 3.700	200	Fundamental
3.710 to 4.200	100	Fundamental
4.210 to 4.900	70	Fundamental
4.910 to 6.000	50	Fundamental
6.100 to 8.000	40	Fundamental
8.100 to 10.000	35	Fundamental
10.100 to 12.500	30	Fundamental
12.510 to 50.000	25	Fundamental/Third Overtone
23.000 to 75.000	40	Fundamental/Third Overtone
60.000 to 110.000	80	Third/Fifth Overtone
110.100 to 180.000	120	Seventh Overtone

## Notes:

- 1- Standard Temperature Range and Fundamental Mode do not need to be included in Part Number description.
- 2- Lead length (pre-cut) package option is available from 3 to 10 mm. Bulk packaging only.
- 3- Product is shipped bulk. 1000 pieces per box, 10 plastic bags containing 100 pieces.
- 3- Tape and reel packaging is available for 1000 pieces minimum.
- 4- Specification subject to change without notice.

## How to build a Part Number:

Series		C	Parameter
Package		-	HC-49/U
		-	
Frequency		1.000 to 180.000	MHz
		-	
Load Capacitance		10	10 pF
		12	12pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		S	Series Resonance
		-	
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
		5	Fifth Overtone
		7	Seventh Overtone
		-	
Temperature Range	Standard	See Notes	-20 to +70 °C
	Option	X	-40 to +85 °C
		-	
Package Options		Cx (See Notes)	x mm ±10%
		L	3 lead header
		P	Mylar spacer
		S	Vinyl sleeve
		-	
Packaging		See Notes	Bulk
		R	Tape and Reel

## Part Number Example:

**C-80.000-S-3030-5-X**

**C: HC-49/U**

**80.000 MHz Nominal Frequency**

**Series Resonant**

**3030: ±30 PPM Tolerance and ±30 PPM Stability**

**Fifth Overtone Mode**

**-40 to +85 ° C Extended Temperature Range**