



- ▶ Cost effective
- ▶ Excellent Aging
- ▶ "AT" cut crystal
- ▶ Wide frequency range
- ▶ Pb Free/RoHS Compliant

# HC-49UX Quartz Crystal

The HC-49UX is an "AT" cut resistance weld type Thru Hole quartz crystal.

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                     | CONDITIONS            | HC-49UX |     |        | UNITS |
|--------------------------------|-----------------------|---------|-----|--------|-------|
|                                |                       | MIN     | TYP | MAX    |       |
| Frequency Range                | $f_0$                 | 1.800   |     | 100.00 | MHz   |
| Frequency Tolerance            | at +25°C              |         |     | ± 30   | ppm   |
| Frequency Stability ref @ 25°C | Standard -10 to +70°C |         |     | ± 50   | ppm   |
| Shunt Capacitance              | $C_0$                 |         |     | 7      | pF    |
| Load Capacitance (CL)          | Specify in P/N        | 10      | 20  | Series | pF    |
| Drive Level                    |                       |         |     | 1.0    | mW    |
| Operating Temperature          | Standard              | -10     |     | +70    | °C    |
| Storage Temperature            |                       | -55     |     | +125   | °C    |
| Aging (First Year)             | @ +25°C ±3°C          |         |     | ±5     | ppm   |

## EQUIVALENT SERIES RESISTANCE/MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE OF OSC | MAX ESR Ω | FREQUENCY RANGE (MHz) | MODE OF OSC  | MAX ESR Ω |
|-----------------------|-------------|-----------|-----------------------|--------------|-----------|
| 1.800 ~ 1.999         | Fundamental | 750       | 5.000 ~ 5.999         | Fundamental  | 50        |
| 2.000 ~ 2.399         | Fundamental | 500       | 6.000 ~ 7.999         | Fundamental  | 40        |
| 2.400 ~ 2.999         | Fundamental | 300       | 8.000 ~ 9.999         | Fundamental  | 35        |
| 3.000 ~ 3.199         | Fundamental | 200       | 10.000 ~ 12.499       | Fundamental  | 30        |
| 3.200 ~ 3.699         | Fundamental | 120       | 12.500 ~ 15.999       | Fundamental  | 25        |
| 3.700 ~ 4.199         | Fundamental | 100       | 16.000 ~ 30.000       | Fundamental  | 20        |
| 4.200 ~ 4.899         | Fundamental | 70        | 30.000 ~ 100.000      | 3rd Overtone | 40        |
| 4.900 ~ 4.999         | Fundamental | 55        |                       |              |           |

## PACKAGE DIMENSIONS (mm)

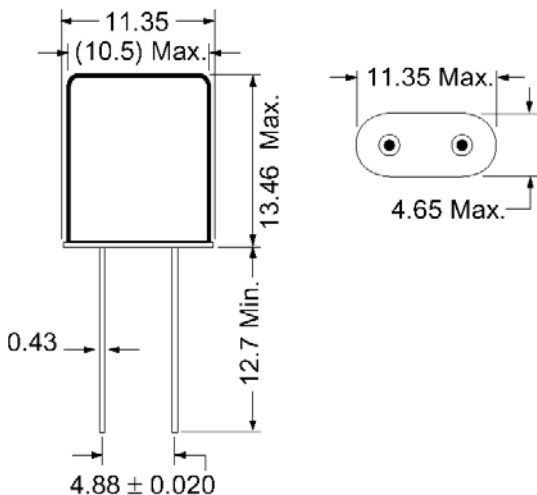


Figure 1) Side and Bottom views

## PART NUMBERING GUIDE: Example ECS-200-20-1X

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S = Series

1X = HC-49UX

## Custom Options

Tolerance      Stability      Temp Range

A = ±25 ppm  
C = ±10 ppm

D = ±100 ppm  
E = ±50 ppm  
G = ±30 ppm  
H = ±25 ppm  
K = ±10 ppm

L = -10 ~ +70°C  
M = -20 ~ +70°C  
N = -40 ~ +85°C  
P = -40 ~ +105°C  
S = -40 ~ +125°C  
U = -55 ~ +125°C