

- ▶ Cost effective
- ▶ Low profile
- ▶ Pb Free/RoHS Compliant

# HC-49USX

## Quartz Crystal

The HC-49USX is the low profile resistance weld type Thru Hole quartz crystal.

### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                     | CONDITIONS            | HC-49USX |     |        | UNITS |
|--------------------------------|-----------------------|----------|-----|--------|-------|
|                                |                       | MIN      | TYP | MAX    |       |
| Frequency Range                | $f_o$                 | 3.57     |     | 70.000 | MHz   |
| Frequency Tolerance            | at +25°C              |          |     | ± 30   | ppm   |
| Frequency Stability ref @ 25°C | Standard -10 to +70°C |          |     | ± 50   | ppm   |
| Shunt Capacitance              | $C_o$                 |          |     | 7      | pF    |
| Load Capacitance (CL)          | Specify in P/N        | 10       | 20  | Series | pF    |
| Drive Level                    |                       |          |     | 500    | μW    |
| 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 |
|-----------------------|-------------|-----------|-----------------------|--------------|-----------|
| 3.57 ~ 3.999          | Fundamental | 200       | 9.000 ~ 12.999        | Fundamental  | 60        |
| 4.000 ~ 4.999         | Fundamental | 150       | 13.000 ~ 19.999       | Fundamental  | 40        |
| 5.000 ~ 5.999         | Fundamental | 120       | 20.000 ~ 30.000       | Fundamental  | 30        |
| 6.000 ~ 6.999         | Fundamental | 100       | 27.000 ~ 70.000       | 3rd Overtone | 100       |
| 7.000 ~ 8.999         | Fundamental | 80        |                       |              |           |

### PACKAGE DIMENSIONS (mm)

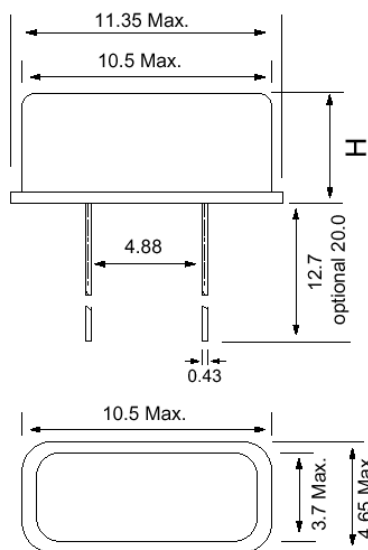


Figure 1) Side and Top views

| Height "H" MAX |        |
|----------------|--------|
| -4X            | 3.5 mm |
| -4LX           | 2.5 mm |

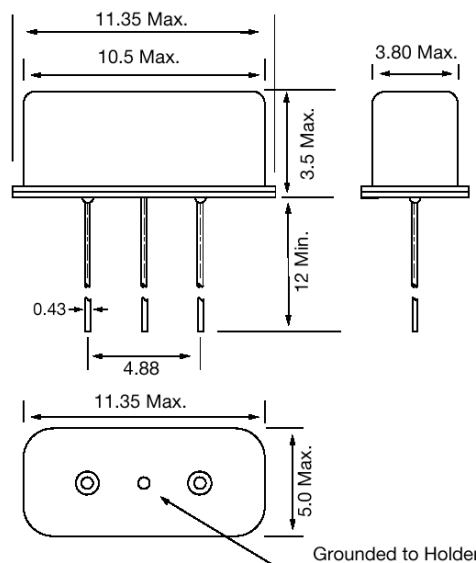


Figure 2) HC-49USX (-4X-3IL) 3rd In Line Lead Base  
Side, Bottom and End View.

### PART NUMBERING GUIDE: Example ECS-200-20-4X

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S = Series

4X = 3.5 mm  
4LX = 2.5 mm  
4X-3IL = 3rd  
In Line Lead Base

### Custom Options

Tolerance

A = ±25 ppm  
C = ±10 ppm

Stability

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

Temp Range

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