



**Distributor of ECS Inc. International: Excellent Integrated System Limited**  
Datasheet of ECS-200-20-4X - Crystal 20.0000MHz 30ppm 20pF 30 Ohm -10°C - 70°C  
Through Hole HC49/US

Contact us: [sales@integrated-circuit.com](mailto:sales@integrated-circuit.com) Website: [www.integrated-circuit.com](http://www.integrated-circuit.com)

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## Excellent Integrated System Limited

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For any questions, you can email us directly:

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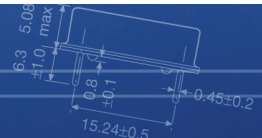


- ▶ Cost effective
- ▶ Low profile
- ▶ Pb Free/RoHS Compliant
- ▶ MSL 1



# HC-49USX Quartz Crystal

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



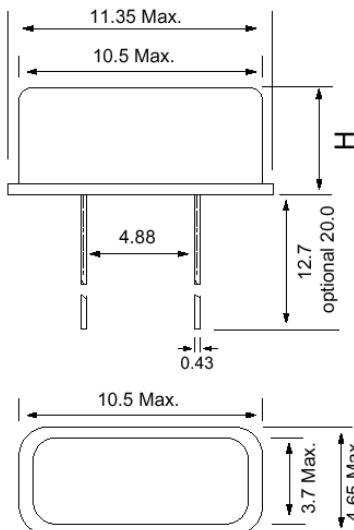
## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                     | CONDITIONS            | HC-49USX |     |        | UNITS |
|--------------------------------|-----------------------|----------|-----|--------|-------|
|                                |                       | MIN      | TYP | MAX    |       |
| Frequency Range                | fo                    | 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              | Co                    |          |     | 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

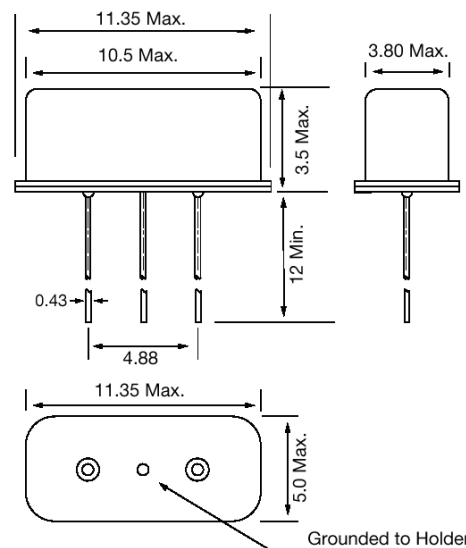
| FREQUENCY RANGE (MHz) | MODE OF OSC | MAX ESR $\Omega$ | FREQUENCY RANGE (MHz) | MODE OF OSC  | MAX ESR $\Omega$ |
|-----------------------|-------------|------------------|-----------------------|--------------|------------------|
| 3.57 ~ 3.999          | Fundamental | 200              | 9.000 ~ 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   | Stability   | Temp Range  |
|-------------|-------------|-------------|
| ±0.0005 in. | ±0.0001 in. | 60 to 140°F |

|                  |
|------------------|
| A = $\pm 25$ ppm |
| J = $\pm 20$ ppm |
| R = $\pm 15$ ppm |
| C = $\pm 10$ ppm |

D=  $\pm 100$  ppm  
E=  $\pm 50$  ppm  
G=  $\pm 30$  ppm  
H=  $\pm 25$  ppm  
T=  $\pm 20$  ppm  
W=  $\pm 15$  ppm  
K=  $\pm 10$  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 |