



**THE DATASHEET OF  
ECS-120-32-4X**



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

# HC-49USX QUARTZ CRYSTAL

Request a Sample

## HC-49USX QUARTZ CRYSTAL



- Cost Effective
- Low Profile
- Pb Free/RoHS Compliant
- MSL 1

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS             | CONDITIONS     | HC-49USX |     |        | UNITS |
|------------------------|----------------|----------|-----|--------|-------|
|                        |                | MIN      | TYP | MAX    |       |
| Frequency              | Fo             | 3.570    |     | 70.000 | MHz   |
| Frequency Tolerance*   | @ +25°C        |          |     | ± 30   | ppm   |
| Frequency Stability*   | -10 ~ +70°C    |          |     | ± 50   | ppm   |
| Shunt Capacitance      | Co             |          |     | 7      | pF    |
| Load Capacitance       | Specify in P/N | 10       | 20  | Series | pF    |
| Drive Level            | DL             |          |     | 500    | μW    |
| Operating Temperature* | Topr           | -10      |     | +70    | °C    |
| Storage Temperature    | Tstg           | -55      |     | +125   | °C    |
| Aging (First Year)     | @ +25°C ±3°C   |          |     | ±5     | ppm   |

## DIMENSIONS (mm)

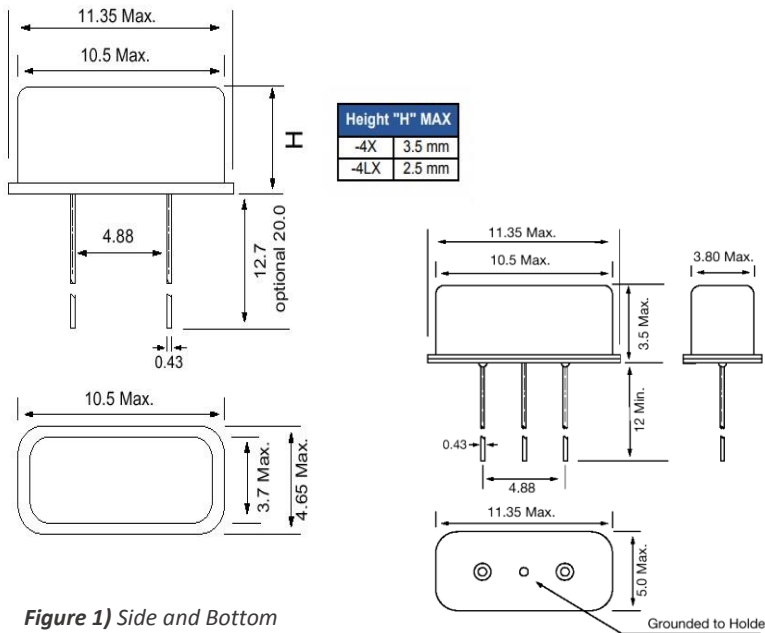


Figure 1) Side and Bottom

| Frequency (MHz) | ESR Ω Max. | Mode of Osc.             |
|-----------------|------------|--------------------------|
| 3.570 ~ 3.999   | 200        | Fundamental              |
| 4.000 ~ 4.999   | 150        | Fundamental              |
| 5.000 ~ 5.999   | 120        | Fundamental              |
| 6.000 ~ 6.999   | 100        | Fundamental              |
| 7.000 ~ 8.999   | 80         | Fundamental              |
| 9.000 ~ 12.999  | 60         | Fundamental              |
| 13.000 ~ 19.999 | 40         | Fundamental              |
| 20.000 ~ 30.000 | 30         | Fundamental              |
| 27.000 ~ 70.000 | 100        | 3 <sup>rd</sup> Overtone |

Figure 2) HC-49USX (-4X-3IL) 3<sup>rd</sup> In Line Lead Base, Side, and End View

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

| ECS - FREQUENCY ABBREVIATION | LOAD CAPACITANCE                  | PACKAGE                  | AVAILABLE OPTIONS  |   |  | PACKAGING   |      |
|------------------------------|-----------------------------------|--------------------------|--|---|--|---|------|
|                              |                                   |                          | Tolerance  | Stability   | Temp Range   |   |      |
| ECS                          | 200 = 20.000 MHz<br>See P/N Guide | 20 = 20 pF<br>S = Series | 4X = 3.5 mm<br>4LX = 2.5 mm<br>4X-3IL = 3 <sup>rd</sup><br>In Line Lead Base | Blank = Std<br>A = ± 25 ppm<br>J = ± 20 ppm<br>R = ± 15 ppm<br>C = ± 10 ppm | Blank = Std<br>D = ± 100 ppm<br>E = ± 50 ppm<br>G = ± 30 ppm<br>H = ± 25 ppm<br>T = ± 20 ppm †<br>W = ± 15 ppm †<br>K = ± 10 ppm † | Blank = Std<br>L = -10 ~ +70°C<br>M = -20 ~ +70°C<br>Y = -30 ~ +85°C<br>N = -40 ~ +85°C<br>P = -40 ~ +105°C<br>S = -40 ~ +125°C<br>U = -55 ~ +125°C | Bulk |

\* Specify available options in P/N.

† Contact ECS for availability over extended temp range.

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| SOLDER PROFILE                          |
|---|
| Peak solder Temp +260°C Max 10 sec Max. |
| 2 Cycles Max.                           |
| MSL 1, Lead Finish Sn/Cu Matte          |

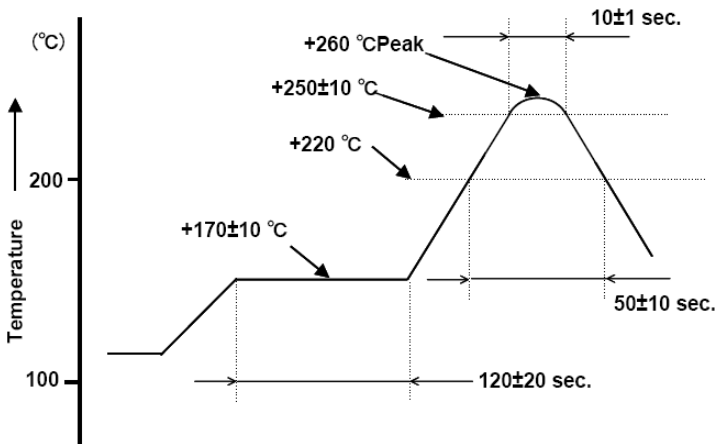


Figure 1) Suggested Solder Profile

| DEVELOPED FREQUENCIES |                 |              |                 |
|-----------------------|-----------------|--------------|-----------------|
| Abbreviation          | Frequency (MHZ) | Abbreviation | Frequency (MHZ) |
| 035                   | 3.579545        | 120          | 12.000          |
| 036                   | 3.6864          | 122.8        | 12.288          |
| 040                   | 4.000           | 129.6        | 12.960          |
| 040.3                 | 4.032           | 135          | 13.5168         |
| 041                   | 4.096           | 143          | 14.31818        |
| 042                   | 4.194034        | 147.4        | 14.7456         |
| 044                   | 4.433618        | 150          | 15.000          |
| 049                   | 4.9152          | 153          | 15.360          |
| 050                   | 5.000           | 160          | 16.000          |
| 051                   | 5.0688          | 163.8        | 16.384          |
| 060                   | 6.000           | 177.3        | 17.734475       |
| 061                   | 6.144           | 180          | 18.000          |
| 065                   | 6.500           | 184          | 18.432          |
| 073                   | 7.3728          | 196.6        | 19.6608         |
| 076.8                 | 7.680           | 200          | 20.000          |
| 080                   | 8.000           | 220          | 22.000          |
| 085                   | 8.500           | 221          | 22.1184         |
| 090                   | 9.000           | 240          | 24.000          |
| 092.1                 | 9.216           | 245.7        | 24.576          |
| 098.3                 | 9.8304          | 250          | 25.000          |
| 100                   | 10.000          | 270          | 27.000          |
| 102.4                 | 10.240          | 282.24       | 28.224          |
| 107.3                 | 10.738635       | 286.3        | 28.63636        |
| 110                   | 11.000          | 320          | 32.000          |
| 110.5                 | 11.0592         | 400          | 40.000          |
| 115.2                 | 11.520          | 480          | 48.000          |
| 119.8                 | 11.98135        | 500          | 50.000          |

## Looking for pricing, stock, or lifecycle information?

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 [ECS Inc. Information](#)

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