



**THE DATASHEET OF
ECS-250-18-4X-F**



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)

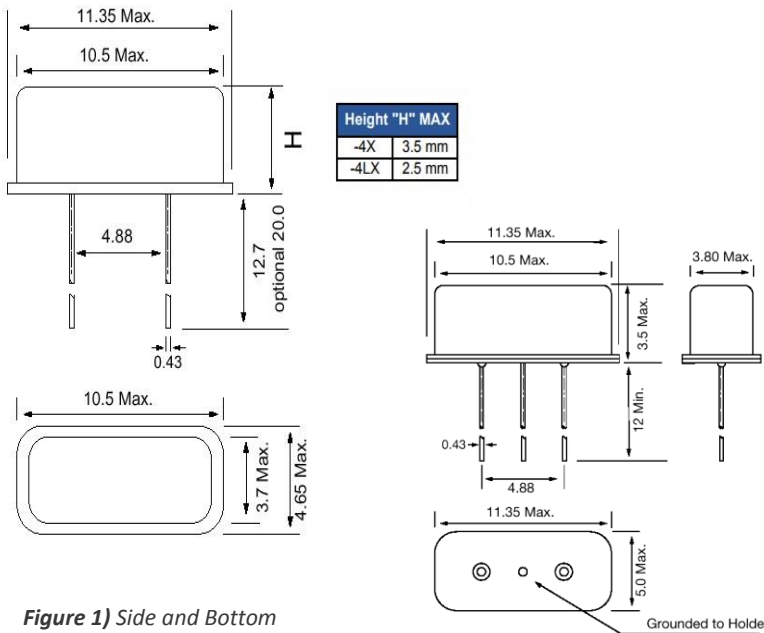


Figure 1) Side and Bottom

| 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 rd Overtone |

Figure 2) HC-49USX (-4X-3IL) 3rd 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 See P/N Guide | 20 = 20 pF S = Series | 4X = 3.5 mm 4LX = 2.5 mm 4X-3IL = 3 rd In Line Lead Base | Blank = Std A = ± 25 ppm J = ± 20 ppm R = ± 15 ppm C = ± 10 ppm | Blank = Std D = ± 100 ppm E = ± 50 ppm G = ± 30 ppm H = ± 25 ppm T = ± 20 ppm † W = ± 15 ppm † K = ± 10 ppm † | Blank = Std L = -10 ~ +70°C M = -20 ~ +70°C Y = -30 ~ +85°C N = -40 ~ +85°C P = -40 ~ +105°C S = -40 ~ +125°C 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 |

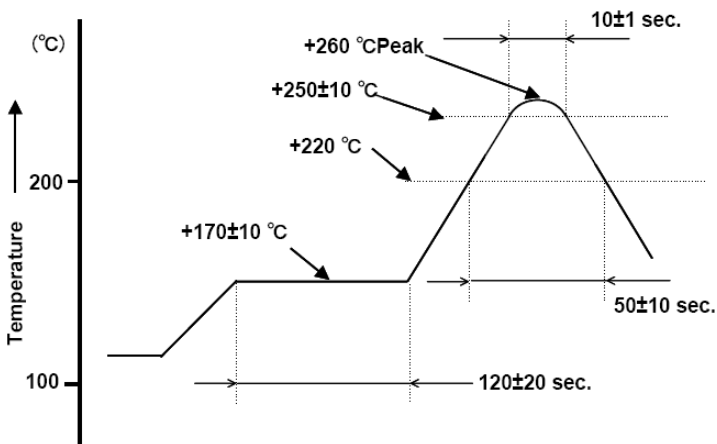



Figure 1) Suggested Solder Profile

| 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 |

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 [ECS Inc. Information](#)

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