

This product represents our selection of low profile resistance weld type quartz crystals.

- OPTIONS:
- extended temperature range
 - tighter tolerances
 - mylar spacer
 - 3rd in line lead base
 - radial tape and reel (1,000 pcs)

FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Low profile
- Excellent reliability
- "AT strip" blank technology
- PbFree/RoHS Compliant

PART NUMBERING GUIDE "EXAMPLE"

| MANUFACTURER | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE** |
|--------------|-------------------------|-------------------|----------------|
| ECS | 160 | 20 | 4X |

* Load capacitance (xx=xx pF, S= series resonance), ** Package Type examples (4X= 3.5mm max. height, 4LX= 2.5mm max. height)
 For extended temp range of -40 to +85°C ad -DN suffix for example ECS-160-20-4-DN
 Note: See Product Selection Guide for additional options.

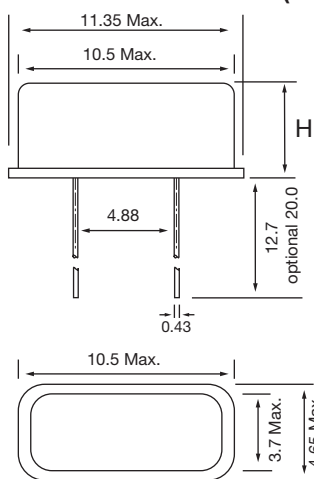
OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | MINIMUM | MAXIMUM | UNITS |
|---------------------------------|----------------------------|---------|---------|-------|
| FREQUENCY RANGE | f_0 | 3.57 | 70.000 | MHz |
| FREQUENCY TOLERANCE | @ +25°C | | ±30 | PPM |
| FREQUENCY STABILITY, ref @ 25°C | Standard -10 ~ +70°C | | ±50 | PPM |
| | "DN" Option -40 ~ +85°C | | ±100 | PPM |
| OPERATING TEMPERATURE | Standard | -10 | ±70 | °C |
| | DN option | -40 | +85 | °C |
| STORAGE TEMPERATURE | | -40 | +105 | °C |
| SHUNT CAPACITANCE | C_0 | | 7.0 | pF |
| LOAD CAPACITANCE | C_L (Customer Specified) | 10.0 | Series | pF |
| DRIVE LEVEL | 3.57 ~ 70.000MHz | | 0.5 | mW |
| AGING (FIRST YEAR) | @ +25°C | | ±5.0 | PPM |

EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω | FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω |
|-----------------------|-------------|-----------|-----------------------|-------------|-----------|
| 3.570 ~ 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 O/T | 100 |
| 7.000 ~ 8.999 | Fundamental | 80 | | | |

PACKAGE DIMENSIONS (mm)



| Height "H" (max.) | |
|-------------------|--------|
| -4X | 3.5 mm |
| -4LX | 2.5 mm |

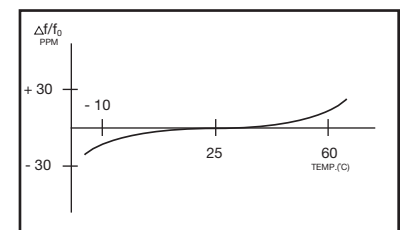
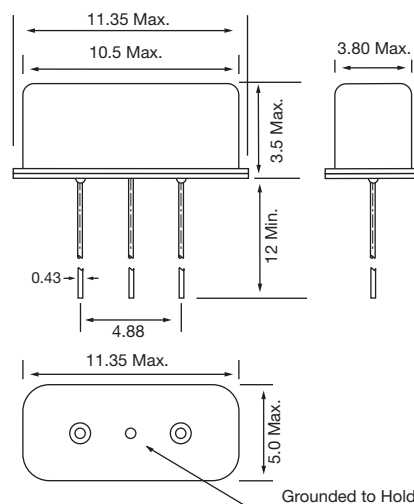


Figure 3) Frequency vs Temperature Curve

Figure 1) HC-49USX - Top and Side views

Figure 2) HC-49USX - 3rd In Line Lead Base - Side & Bottom View