



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



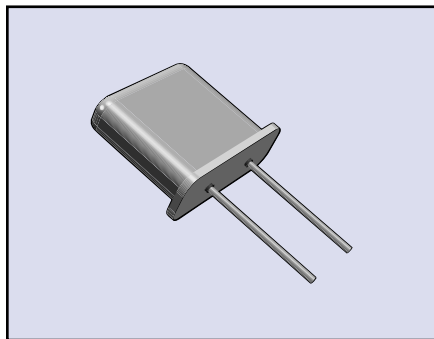
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This product represents our selection of standard resistance weld type quartz crystals.

- OPTIONS:
- extended temperature range
 - pullability
 - mylar spacer
 - vinyl sleeve
 - third ground lead
 - radial Tape and Reel (1,000 pcs)

FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Tight tolerances
- Excellent reliability
- "AT" cut crystal

PART NUMBERING GUIDE "EXAMPLE"

| ECS | FREQUENCY (16.0000 MHz) | LOAD CAPACITANCE* | PACKAGE TYPE |
|-----|-------------------------|-------------------|--------------|
| - | 160 | 20 | 1 |

* Load capacitance (xx=xx pF, S= series resonance)
 Note: See Product Selection Guide for additional options.

OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | MINIMUM | MAXIMUM | UNITS |
|-----------------------|--------------------------------------|---------|----------|-------|
| FREQUENCY RANGE | f_0 | 1.800 | 100.000 | MHz |
| FREQUENCY TOLERANCE | Ref @ +25°C | -30 | +30 | PPM |
| FREQUENCY STABILITY | Ta=-10°C ~ +70°C | -50 | +50 | PPM |
| OPERATING TEMPERATURE | T _{OPR} | -10 | +70 | °C |
| STORAGE TEMPERATURE | T _{STG} | -30 | +85 | °C |
| SHUNT CAPACITANCE | C ₀ | | 7.0 | pF |
| LOAD CAPACITANCE | C _L (Customer Specified) | 10.0 | Series | pF |
| DRIVE LEVEL | 1.800 ~ 3.000MHz, 3.000 ~ 100.000MHz | | 2.0, 1.0 | mW |
| AGING (FIRST YEAR) | @ +25°C | -5.0 | +5.0 | PPM |

EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

| FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω | FREQUENCY RANGE (MHz) | MODE | MAX ESR Ω |
|-----------------------|-------------|-----------|-----------------------|-------------|-----------|
| 1.800 ~ 1.999 | Fundamental | 750 | 5.000 ~ 5.999 | Fundamental | 50 |
| 2.000 ~ 2.399 | Fundamental | 500 | 6.000 ~ 7.999 | Fundamental | 40 |
| 2.400 ~ 2.999 | Fundamental | 300 | 8.000 ~ 9.999 | Fundamental | 35 |
| 3.000 ~ 3.199 | Fundamental | 200 | 10.000 ~ 12.499 | Fundamental | 30 |
| 3.200 ~ 3.699 | Fundamental | 120 | 12.500 ~ 15.999 | Fundamental | 25 |
| 3.700 ~ 4.199 | Fundamental | 100 | 16.000 ~ 25.000 | Fundamental | 20 |
| 4.200 ~ 4.899 | Fundamental | 70 | 23.000 ~ 100.000 | 3rd O/T | 40 |
| 4.900 ~ 4.999 | Fundamental | 55 | | | |

PACKAGE DIMENSIONS (mm)

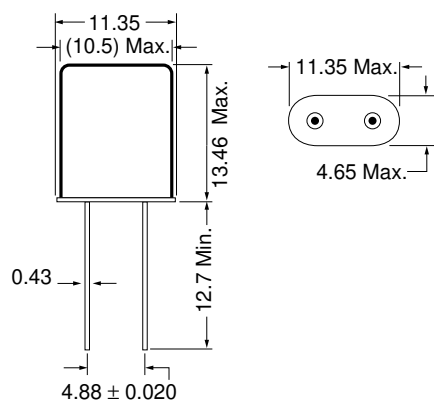


Figure 1) HC-49U - Side and Bottom views

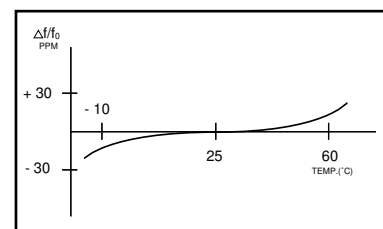


Figure 2) Frequency vs Temperature Curve