

# Quartz Crystal

## Resistance Welded HC-49/U,49/T Package

### FEATURE

- Height 13.46mm For HC-49U, And 11.5mm for HC-49/T
- A resistance weld completely sealed type
- The tight frequency stability
- Copes with high density mounting and is the optimum for mass production

### ELECTRICAL SPECIFICATIONS

Nominal frequency:	1.8432MHz to 150.000MHz
Oscillation mode:	See below table
Operating temperature range	-20°C--+70°C (Typical), -10°C ~ +60°C, -40°C ~ +85°C, or specify
Storage temperature range	-40°C--+85°C
Frequency tolerance:	±30PPM at 25±2°C (Typical), or specify
Frequency stability	±50PPM over -20~70°C (Typical), or specify
Load capacitance:	16pF, 18pF, 20pF, 30pF, series, or specify
Equivalent series resistance	See below table
Parallel capacitance(Co):	7PF Max
Drive level	100 µW Typical
Insulation resistance:	More than 500M Ω AT DC100V

### EQUIVALENT SERIES RESISTANCE(ESR) AND OSCILLATION MODE

Frequency Range	E.S.R (Ω)	Mode	Frequency Range	E.S.R (Ω)	Mode
1.843MHz~1.999MHz	350Max	Fundamental/AT	6.000MHz~6.999MHz	50Max	Fundamental/AT
2.000MHz~2.399MHz	300Max	Fundamental/AT	7.000MHz~9.999MHz	30Max	Fundamental/AT
2.400MHz~2.999MHz	200Max	Fundamental/AT	10.000MHz~12.999MHz	20Max	Fundamental/AT
3.000MHz~3.199MHz	150Max	Fundamental/AT	13.000MHz~30.000MHz	20Max	Fundamental/AT
3.200MHz~3.499 MHz	100Max	Fundamental/AT	24.000MHz~29.999MHz	50Max	Third Overtone
3.500MHz~3.899MHz	90Max	Fundamental/AT	30.000MHz~65.000MHz	40Max	Third Overtone
3.900MHz~4.099MHz	70Max	Fundamental/AT	60.000MHz~99.999MHz	90Max	Third Overtone
4.100MHz~5.999MHz	60Max	Fundamental/AT	100.000MHz~150.000MHz	60Max	Fundamental/AT

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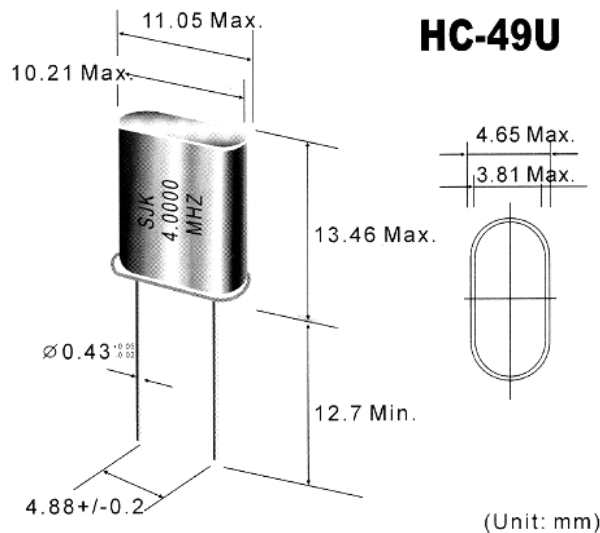
### Mechanical characteristics

Resistance to shock:	$\pm 3$ PPM Max $\pm 3 \Omega$ Max, Naturally drop it 3 times on a hard wood plate from 100cm height
Resistance to vibration:	$\pm 3$ PPM Max $\pm 3 \Omega$ Max

### Reliability

Aging	$\pm 3$ PPM Max/Year
Air tightness	
(1) Gross leak	should be immersed in hot water( $90 \pm 5^\circ\text{C}$ ) for 5 minutes
(2) Fine leak	should be less than $5 \times 10^{-8}$ atmcc/sec by helium leak detector
Low drive characteristics	Measured $\Delta 1, C1, 3$ point at 1.0,, 10, 100 $\mu\text{W}$

### Dimension



### PART NUMBER

20.000	20	30	40	F	A	50
Frequency e.g. 20.000:20.000 MHz	Load capacitance e.g. 20.20pf s:series	Frequency tolerance e.g. 30: $\pm 30$ ppm	E.S.R.max e.g. 20:40 $\Omega$ max	oscillate mode F Fundamental 3:3rd overtone 5:5th overtone	operating temperature range A:-10-60 $^\circ\text{C}$ B:-20-70 $^\circ\text{C}$ C:-40-85 $^\circ\text{C}$	temperature stability: e.g. 50: $\pm 50$ ppm