

HC49/4H Crystals

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Delivery Options

- Common frequencies may be available from stock
- Lower height holders available please contact sales office

Holder Style

- HC49/4H crystals are resistance welded, hermetically sealed in an inert atmosphere with glass to metal seals securing the lead wires
- Holders suffixed '-3L have a centre third wire which grounds the case

General Specifications

- Load Capacitance (C_L): 10pF to 75pF or Series
- Drive Level: 500 μ W max.
- Static Capacitance (C_0): 7pF max.
- Ageing: ± 5 ppm typical per year, ± 1 ppm available on request

Standard Frequency Tolerances and Stabilities

- ± 10 ppm, ± 20 ppm, ± 30 ppm, ± 50 ppm, ± 100 ppm, tighter tolerances and stabilities available on request.

Operating Temperature Ranges

- 0 to 50°C -30 to 80°C
- 10 to 60°C -40 to 90°C
- 20 to 70°C -55 to 105°C

Storage Temperature Range

- 55 to 125°C

Environmental Specification

- Shock: 981m/s² for 6ms, three shocks in each direction along three mutually perpendicular planes
- Vibration: 10 to 60Hz 0.75mm displacement, 60 to 500Hz 98.1m/s² acceleration, 30 minutes in each of three mutually perpendicular planes

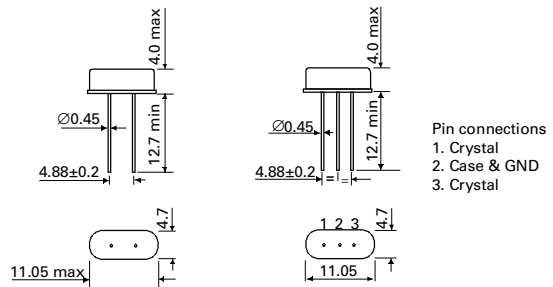
Marking

- Frequency only

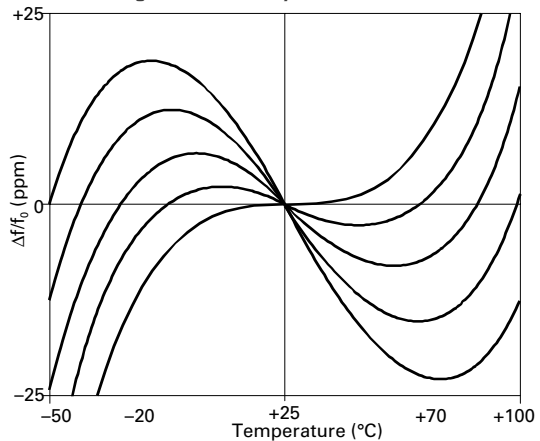
Minimum Order Information Required

- Frequency + Holder + Frequency Tolerance @ 25°C + Frequency Stability + Operating Temperature Range + Circuit Condition + Overtone Order + Tape & Reel Packaging Available

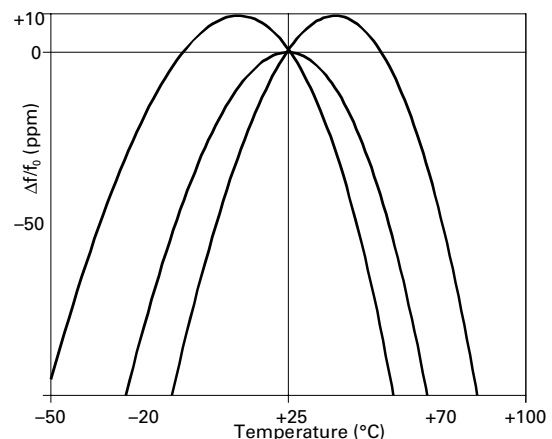
Outline in mm - HC49/4H & HC49/4H-3L



Typical Frequency vs Temperature Curves for various angles of AT-cut crystals



Typical Frequency vs Temperature Curves for various angles of BT-cut crystals



Electrical Specifications - maximum limiting values

| Frequency Range | Frequency Tolerance @ 25°C ±2°C | Operating Temperature Range | Frequency Stability Available Over Operating Temperature | | ESR max. | Vibration Mode |
|------------------|---------------------------------|-----------------------------|--|---------|----------|--------------------|
| | | | Minimum | Maximum | | |
| 3.2 to <4.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 300Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 4.0 to <5.5MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 130Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 5.5 to <6.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 100Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 6.0 to <9.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 80Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 9.0 to <13.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 60Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 13.0 to <20.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 40Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |
| 20.0 to <30.0MHz | ±10ppm to ±100ppm | 0 to 50°C | ±15ppm | ±100ppm | 30Ω | Fundamental AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±30ppm | ±100ppm | | |
| | | -55 to 105°C | ±100ppm | ±500ppm | | |

LEADED QUARTZ CRYSTALS

| Frequency Range | Frequency Tolerance @ 25°C ±2°C | Operating Temperature Range | Frequency Stability Available over Operating Temperature | | ESR max. | Vibration Mode |
|------------------|------------------------------------|-----------------------------|--|---------|----------|---------------------|
| | | | Minimum | Maximum | | |
| 27.0 to 50.0MHz | Inclusive with Frequency Stability | 0 to 50°C | ±50ppm | ±100ppm | 40Ω | Fundamental BT cut |
| | | -10 to 60°C | ±70ppm | ±100ppm | | |
| | | -20 to 70°C | ±100ppm | ±100ppm | | |
| 28.0 to 100.0MHz | ±10ppm to 100ppm | 0 to 50°C | ±15ppm | ±100ppm | 100Ω | 3rd Overtone AT cut |
| | | -10 to 60°C | ±20ppm | ±100ppm | | |
| | | -20 to 70°C | ±20ppm | ±100ppm | | |
| | | -30 to 80°C | ±25ppm | ±100ppm | | |
| | | -40 to 90°C | ±50ppm | ±100ppm | | |
| | | -55 to 105°C | ±50ppm | ±100ppm | | |

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