

# HC49/4H SMX Crystals

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## Delivery Options

- Please contact our sales office for current leadtimes

## Holder Style

- HC49/4H SMX crystals are resistance welded, hermetically sealed in an inert atmosphere with glass to metal seals securing the lead wires. The lead wires are formed into a gull wing and mounted on a plastic former
- Lower profiles available, please contact our sales office

## General Specifications

- Load Capacitance ( $C_L$ ): 10pF to 75pF or Series
- Drive Level: 0.5mW max
- Static Capacitance ( $C_0$ ): 9pF max
- Ageing:  $\pm 3$ ppm typical per year

## Standard Frequency Tolerances and Stabilities

- $\pm 50$ ppm,  $\pm 100$ ppm

## Operating Temperature Ranges

- 0 to 50°C      -20 to 70°C
- 10 to 60°C    -30 to 80°C

## Storage Temperature Range

- -55 to 125°C

## Environmental Specification

- Shock: 981m/s<sup>2</sup> for 6ms, three shocks in each direction along three mutually perpendicular planes,
- Vibration: 10 to 60Hz 0.75mm displacement, 60 to 500Hz 98.1m/s<sup>2</sup> acceleration, 30 minute in each of three mutually perpendicular planes

## Solder Condition

- For typical soldering conditions, please see the relevant page in Application Notes

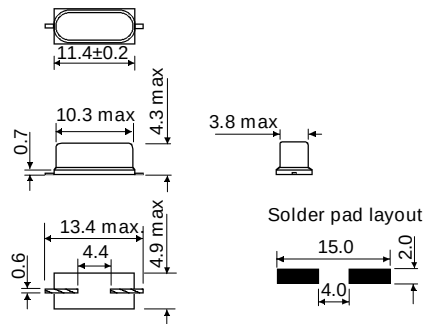
## Marking

- Frequency only

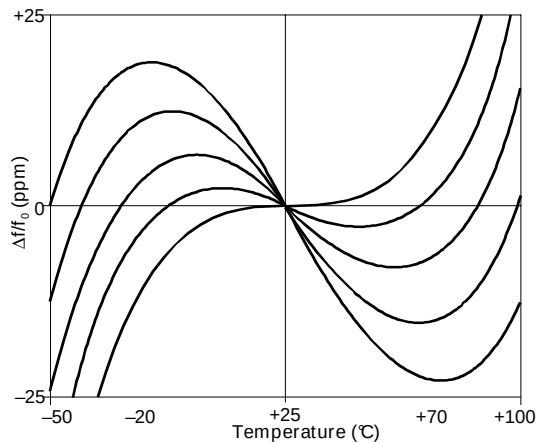
## Minimum Order Information Required

- Frequency + Holder + Frequency Tolerance @ 25°C  
+ Frequency Stability + Operating Temperature Range +  
Circuit Condition + Overtone Order

## Outline in mm



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

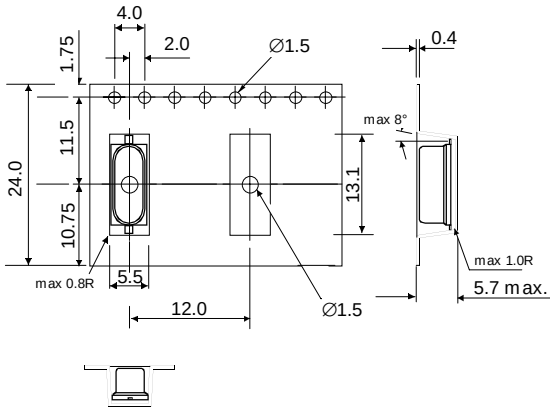


**Electrical Specification – maximum limiting values**

| Frequency Range   | Frequency Tolerance<br>@ 25°C ±2°C    | Operating Temperature<br>Range | Frequency Stability Available Over<br>Operating Temperature |         | ESR<br>max. | Vibration<br>Mode      |
|-------------------|---------------------------------------|--------------------------------|-------------------------------------------------------------|---------|-------------|------------------------|
|                   |                                       |                                | Minimum                                                     | Maximum |             |                        |
| 3.2 to < 5.0MHz   | ±10ppm to ±100ppm                     | 0 to 50°C                      | ±15ppm                                                      | ±100ppm | 200Ω        | Fundamental<br>AT cut  |
|                   |                                       | -10 to 60°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±25ppm                                                      | ±100ppm |             |                        |
| 5.0 to < 8.0MHz   | ±10ppm to ±100ppm                     | 0 to 50°C                      | ±15ppm                                                      | ±100ppm | 120Ω        | Fundamental<br>AT cut  |
|                   |                                       | -10 to 60°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±25ppm                                                      | ±100ppm |             |                        |
| 8.0 to < 12.0MHz  | ±10ppm to ±100ppm                     | 0 to 50°C                      | ±10ppm                                                      | ±100ppm | 70Ω         | Fundamental<br>AT cut  |
|                   |                                       | -10 to 60°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±20ppm                                                      | ±100ppm |             |                        |
| 12.0 to < 25.0MHz | ±10ppm to ±100ppm                     | 0 to 50°C                      | ±5ppm                                                       | ±100ppm | 50Ω         | Fundamental<br>AT cut  |
|                   |                                       | -10 to 60°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±20ppm                                                      | ±100ppm |             |                        |
| 25.0 to < 32.0MHz | ±10ppm to ±100ppm                     | 0 to 50°C                      | ±10ppm                                                      | ±100ppm | 40Ω         | Fundamental<br>AT cut  |
|                   |                                       | -10 to 60°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±15ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±20ppm                                                      | ±100ppm |             |                        |
| 25.0 to < 40.0MHz | Inclusive with Frequency<br>Stability | 0 to 50°C                      | ±50ppm                                                      | ±100ppm | 50Ω         | Fundamental<br>BT cut  |
|                   |                                       | -10 to 60°C                    | ±70ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±100ppm                                                     | ±100ppm |             |                        |
| 28.0 to < 86.0MHz | ±15ppm to ±100ppm                     | 0 to 50°C                      | ±15ppm                                                      | ±100ppm | 100Ω        | 3rd Overtone<br>AT cut |
|                   |                                       | -10 to 60°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -20 to 70°C                    | ±20ppm                                                      | ±100ppm |             |                        |
|                   |                                       | -30 to 80°C                    | ±25ppm                                                      | ±100ppm |             |                        |

**Note.** For any other frequencies / specification please contact our sales office.

**Outline in mm - Tape**



**Outline in mm - Reel**

