## **HC49/4H SMX Crystals**

#### ISSUE 13; 28 SEPTEMBER 2004

#### **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<sub>L</sub>): 10pF to 75pF or Series
- Drive Level: 0.5mW max
- Static Capacitance (C<sub>0</sub>): 9pF max
- Ageing: ±3ppm typical per year

#### Standard Frequency Tolerances and Stabilities

■ ±50ppm, ±100ppm

### **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/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 minute in each of three mutually perpendicular planes

## **Solder Condition**

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

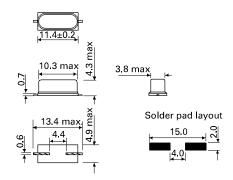
#### Marking

■ Frequency only

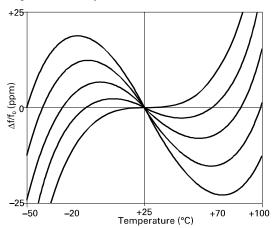
## Minimum Order Information Required

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 @ 25°C ±2°C	Operating Temperature Range	Frequence Stability Available Over Operating Temperature		ESR max.	Vibration Mode
			Minimum	Maximum	1	
3.2 to < 5.0MHz	±10ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	200Ω	Fundamental 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	Fundamenta 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	Fundamenta 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	Fundamenta 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	Fundamenta 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 Stability	0 to 50°C	±50ppm	±100ppm	50Ω	Fundamenta 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 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

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## Outline in mm - Reel

