

## 87SMX Crystals

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### Delivery Options

- Please contact our sales office for current leadtimes

### Holder Style

- 87SMX crystals are resistance welded, hermetically sealed in an inert atmosphere with glass to metal seals securing the lead wires. The low profile crystal is attached to a surface mount base. A low cost 'drop on' alternative to the 86SMX package

### General Specifications

- Load Capacitance ( $C_L$ ): 10pF to 75pF or Series
- Drive Level: 500 $\mu$ W 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

- 40 to 85°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 Note.

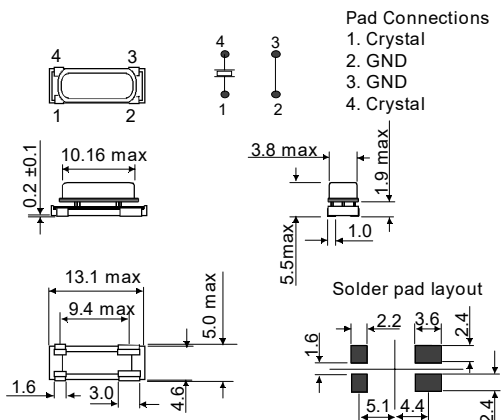
### Marking

- Frequency only

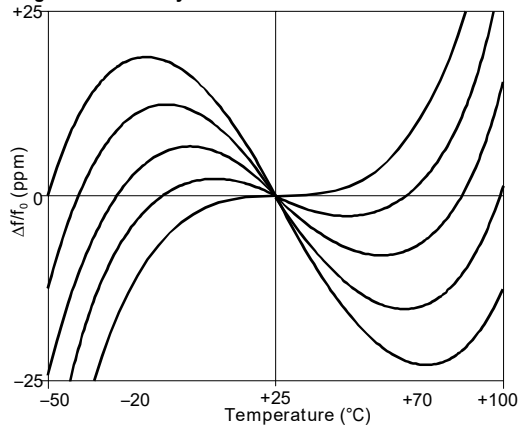
### Minimum Order Information Required

- 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

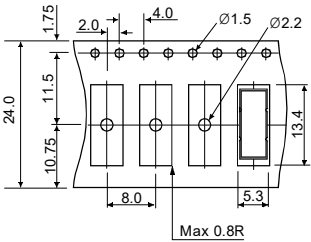


**Electrical Specification – maximum limiting values**

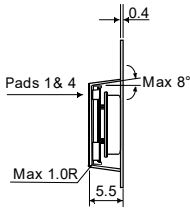
Frequency Range	Frequency Tolerance @ 25°C ±2°C	Operating Temperature Range	Frequency Stability Available Over Operating Temperature		ESR max.	Vibration Mode
			Minimum	Maximum		
3.2 to < 5.0MHz	±15ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	200Ω	Fundamental AT cut
		-10 to 60°C	±20ppm	±100ppm		
		-20 to 70°C	±20ppm	±100ppm		
		-30 to 80°C	±25ppm	±100ppm		
5.0 to < 8.0MHz	±15ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	120Ω	Fundamental 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	±15ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	70Ω	Fundamental 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	±15ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	50Ω	Fundamental 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 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	Fundamental 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 / specifications please contact our sales office.

**Outline in mm - Tape**



Pad Orientation. Pins 1 and 4 on Sprocket side of Tape as



**Outline in mm - Reel**

