Designing and manufacturing innovative frequency control devices since 1927

Microprocessor Crystals

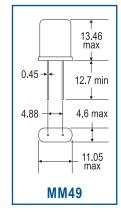
MM49 M SM49

For many years, the MM49 unit was an industry-standard crystal, with advantages in size and cost. Although smaller and newer designs have gained large acceptance, the reliable MM49 remains the most economical in many applications. In addition, it can usually be designed to provide special motional parameter requirements, such as VCXO pull, that smaller crystal units cannot match. So if cost is an issue, Monitor recommends the rugged, resistance-welded MM49, and its surface-mountable partner, the SM49.

SPECIFICATIONS	MM49 & SM49
Frequency Range	1.0 ~ 200.0 MHz*
Operating Temp Range	-201C ~ 701C (other ranges available, please call factory)
Storage Temp Range	-551C ~ 1051C
Shunt Capacitance	7.0 pF max
Calibration Tolerance	± 30ppm @ 251C
Frequency Tolerance vs Temp Range	\pm 50ppm from -201C to 701C standard (call for other options)
Equiv Series Resistance (MHz = Ω max) Fundamental unless otherwise otherwise indicated	1.843 ~ 4.0 = 800
Drive Level	0.1 mW max
Humidity	85% RH, 851C, 48 Hours
Hermetic Seal	Leak Rate 2 x 10-8 ATM-cm ³ /sec max
Solderability	MIL-STD-202F Method 208E
Vibration	MIL-STD-202F Method 204; 35G, 50~2000 Hz (<25.0 MHz); 20G, 50~2000 Hz (25.0 MHz)
Shock	MIL-STD-202F Method 213B Test Cond E, 1000G, 1/2 Sine Wave
Packaging	Bulk (standard); Tape & Reel available (see over)

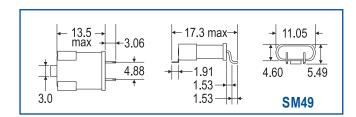
^{*} Call for your specific frequency requirement





Units = mm

Monitor Products has a proven track record as a pioneer manufacturer in the frequency control market. If our extensive selection of standard and engineered crystals and oscillators does not meet your spec, we will work with you towards a customized solution.

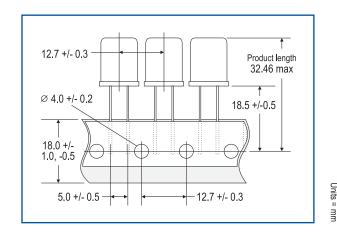


Monitor Products Company Inc reserves the right to make changes to its products and product specifications without notice. No liability is assumed as a result of their use or application.

07-02-01



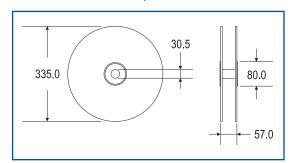
MM49 M SM49 Microprocessor Crystals



TAPE & REEL SPECIFICATIONS

MM49: 18.0mm tape, 1500 pcs/reel (specs as pictured)

SM49: Please contact factory



CRYSTAL CORRELATION THEORY

Series Resonance:

At series resonance, the crystal looks resistive in the circuit, and correlation of frequency is not a problem. It must be specified if unit is to be manufactured at series or at a particular load capacitance.

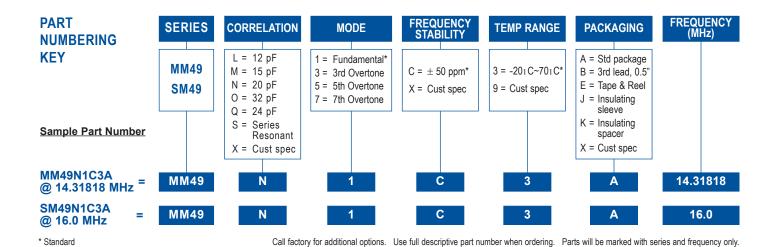
$$F_{S} = \frac{1}{2\pi\sqrt{L_{1}C_{1}}}$$

Anti-Resonance Parallel:

Crystals operating at anti-resonance will look inductive in the circuit. Changes of reactive values in the circuit will change the crystal frequency. If the crystal is to be used

$$F_{p} = \frac{1}{2\pi} \sqrt{\frac{C_{1} + C_{0}}{L_{1} C_{1} C_{0}}}$$

at anti-resonance, the load capacitance should always be specified. The load capacitance $C_{\mbox{\scriptsize L}}$ is the dynamic capacitance of the total circuit.



Monitor Products Company Inc reserves the right to make changes to its products and product specifications without notice. No liability is assumed as a result of their use or application.

07-02-01