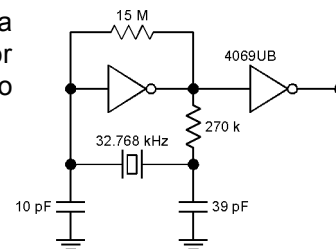


# MMCC-1, MMCC-2, and MMCC-3 Tuning Fork Crystals



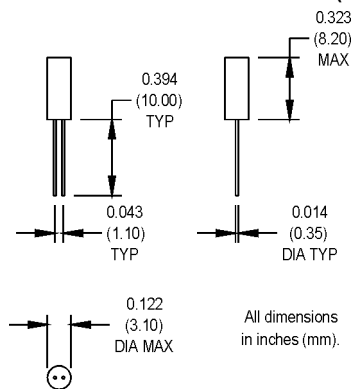
## Precision 32.768 kHz quartz crystals for realtime applications

The majority of applications use a 32.768 kHz crystal in an oscillator circuit incorporating binary division to produce a 1 Hz output.



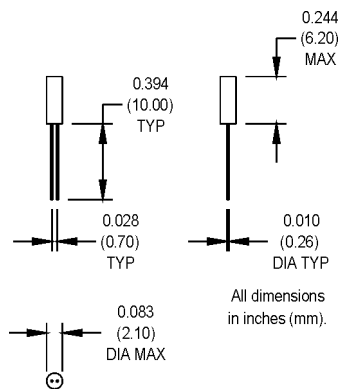
\*MMCC-1 00.0000 MHz (customer specified frequency)

\*MMCC-1-R 00.0000 MHz (RoHS Compliant and customer specified frequency)



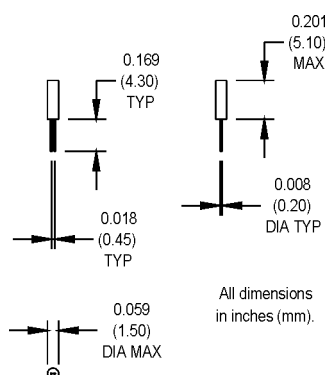
\*MMCC-2 00.0000 MHz (customer specified frequency)

\*MMCC-2-R 00.0000 MHz  
(RoHS Compliant and customer specified frequency)



\*MMCC-3 00.0000 MHz (customer specified frequency)

\*MMCC-3-R 00.0000 MHz (RoHS Compliant and customer specified frequency)

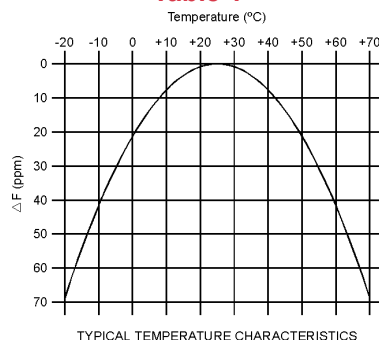


## Electrical/Environmental Specifications

PARAMETERS	VALUE	
Frequency	32.768 kHz	
Tolerance @ +25°C	±30 ppm	
Aging	±3 ppm/yr. Max.	
Shunt Capacitance	MMCC-1 MMCC-2 MMCC-3	1.60 pF, Typical 1.35 pF, Typical 1 pF, Typical
Load Capacitance	MMCC-1/MMCC-2 MMCC-3	12.5 pF, Typical 8.0 pF, Typical
Standard Operating Conditions	See Table 1	
Storage Temperature	-40°C to +85°C	
Equivalent Series Resistance (ESR), Max.	MMCC-1/MMCC-2 MMCC-3	35K Ω 40K Ω
Resonance	Parallel	
Quality Factor	70,000 Min.	
Turnover Temperature	+25°C ±5°C	
Parabolic Curvature Constant	-0.034 ppm/°C <sup>2</sup> , Typical	
Drive Level	1.0 μW Max.	
Holder	Compression seal	
Mechanical Shock	MIL-STD-202, Method 213, C	
Vibration	MIL-STD-202, Method 201 & 204	
Solder Conditions	See page 147	
Thermal Cycle	MIL-STD-883, Method 1010, B	

\* Series resonant designated by "SR" prefix (i.e., SRMMCC-1).  
Use MtronPTI part number **374-005** for ± 20 ppm tolerance (MMCC-1).  
Use MtronPTI part number **375-05A** for ± 20 ppm tolerance (MMCC-2).  
Contact the factory for specifications not listed.

**Table 1**



MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice. No liability is assumed as a result of their use or application.

Please see [www.mtronpti.com](http://www.mtronpti.com) for our complete offering and detailed datasheets. Contact us for your application specific requirements: MtronPTI 1-800-762-8800.