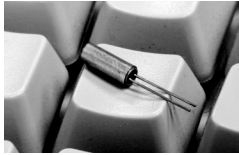
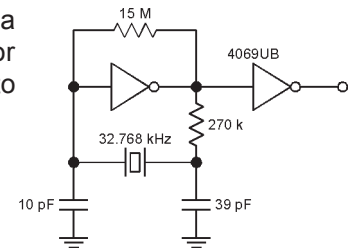


# MMCC-1, MMCC-2, and MMCC-3 Tuning Fork Crystals

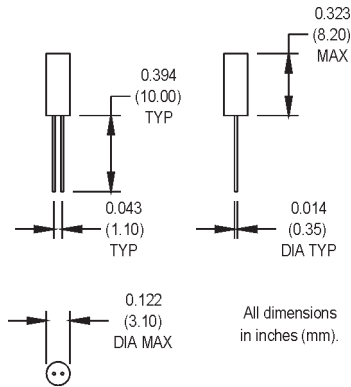


## Precision 32.768 kHz quartz crystals for realtime applications

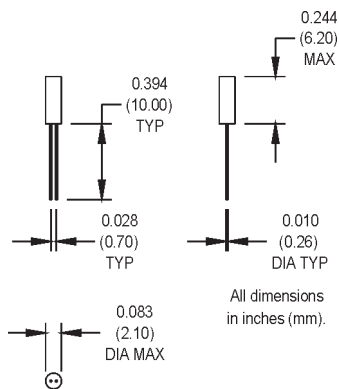
The majority of applications use a 32.768 kHz crystal in an oscillator circuit incorporating binary division to produce a 1 Hz output.



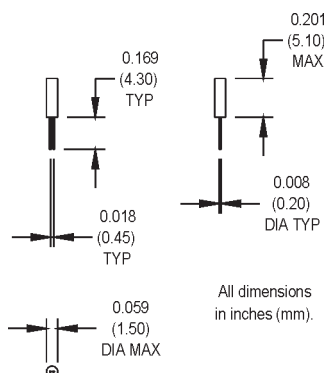
### \*MMCC-1-R



### \*MMCC-2-R



### \*MMCC-3-R

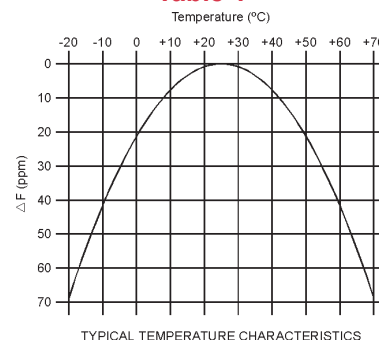


## Electrical/Environmental Specifications

	PARAMETERS	VALUE
Electrical Specifications	Frequency	32.768 kHz
	Tolerance @ +25°C	±30 ppm
	Aging	±3 ppm/yr. Max.
	Shunt Capacitance MMCC-1	1.60 pF, Typical
	MMCC-2	1.35 pF, Typical
	MMCC-3	1 pF, Typical
	Load Capacitance MMCC-1/MMCC-2	12.5 pF, Typical
	MMCC-3	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	35 Kohms
	MMCC-3	40 Kohms
	Resonance	Parallel
	Quality Factor	70,000 Min.
Turnover Temperature	+25°C to ±5°C	
Parabolic Curvature Constant	-0.034 ppm/°C <sup>2</sup> , Typical	
Drive Level	1.0 i W Max.	
Environmental	Holder	Compression seal
	Mechanical Shock	MIL-STD-202, Method 213, C
	Vibration	MIL-STD-202, Method 201 & 204
	Thermal Cycle	MIL-STD-883, Method 1010, B
	Maximum Wave Soldering Conditions	+260°C for 10 secs.

\* 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.