



# MP-1 Series HC-49U Crystal Resonator

## FEATURES

Resistance Weld (HC-49U)  
 AT-Cut Fundamental and Overtone Modes  
 Swept Quartz Options Available  
 Rugged Design to support harsh environments  
 MIL-PRF-3098 (CR64/U, CR69/U) equivalent

## APPLICATIONS

Avionics and Aerospace  
 Communication and Navigation  
 Military Radios  
 Instrumentation and Industrial  
 Test and Measurement Equipment

## ORDERING INFORMATION

<b>MP-1</b>	<b>-R</b>	<b>00.0000 MHz</b>
<b>Product</b> <b>MP-1:</b> Fundamental (AT-cut) <b>302-000:</b> Third Overtones (AT-cut) <i>See Note 2</i> <b>309-000:</b> Fifth Overtones (AT-cut) <i>See Note 3</i> <b>320-000:</b> Fifth Overtones (AT-cut) <i>See Note 4</i>		
<b>RoHS Compliance</b> <b>-R:</b> RoHS Compliant <b>-V:</b> non-RoHS		

Example of parallel resonant part Number: MP-1-R 16 .0000 MHz  
 Example of series resonant part Number: SRMP-1-R 16 .0000 MHz

### Notes

Note 1	Series resonant designated "SR" prefix (i.e., SRMP-1-R)
Note 2	This is a parallel resonant part.
Note 3	This is a series resonant part.
Note 4	This is a series resonant part.

## ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency Range	F <sub>0</sub>	1.8432		200	MHz	
Frequency Tolerance	F/F	-30		+30	ppm	@ +25°C, see ordering information.
Frequency Stability	ΔF/F	-50		+50	ppm	Over the operating temperature range
Aging		-5		+5	ppm	Per year
Load Capacitance			18		pF	See Note 1
Shunt Capacitance				7	pF	
ESR		See ESR Table				
Drive Level	DL	50	100	1000	μW	
Insulation Resistance	IR	500			MΩ	

Temperature						
Operating Temperature	T <sub>A</sub>	-10		+70	°C	
Storage Temperature	T <sub>S</sub>	-55		+125	°C	

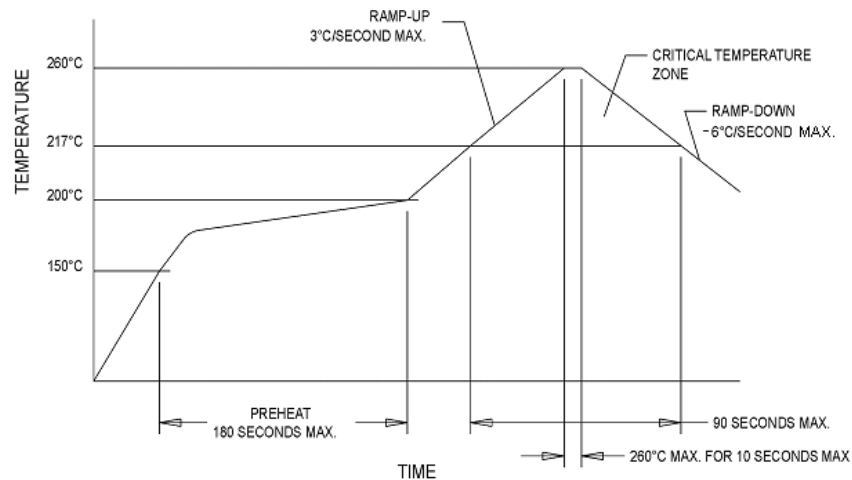
## ESR Table

Frequency Range	ESR (MAX)
Fundamental (AT-cut)	
1.8432 to 1.999 MHz	700 Ω
2.000 to 2.399 MHz	600 Ω
2.400 to 3.299 MHz	400 Ω
3.300 to 3.569 MHz	140 Ω
3.570 to 3.999 MHz	100 Ω
4.000 to 5.999 MHz	75 Ω
6.000 to 7.999 MHz	50 Ω
8.000 10.999 MHz	40 Ω
11.000 14.999 MHz	30 Ω
15.000 to 19.999 MHz	25 Ω
20.000 to 34.000 MHz	25 Ω
Third Overtone (AT-cut) – Note 2	
20.000 to 49.999 MHz	40 Ω
50.000 to 75.000 MHz	50 Ω
Fifth Overtone (AT-cut) – Note 3	
50.000 to 125.000 MHz	90 Ω
Seventh Overtone (AT-cut) – Note 4	
125.000 to 200.000 MHz	150 Ω

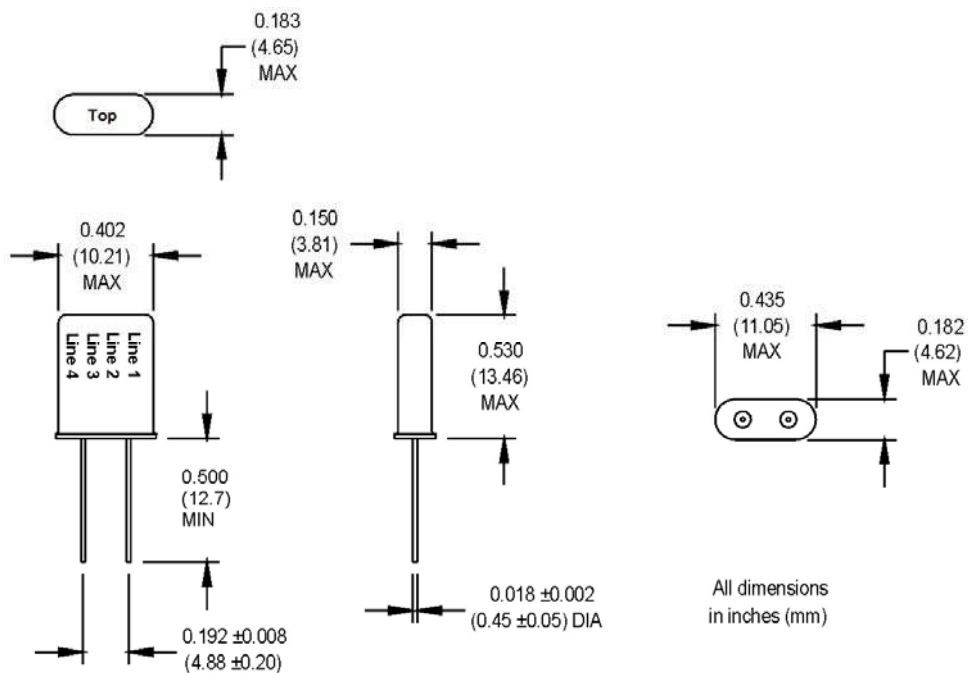
## ENVIRONMENTAL CONDITIONS

Mechanical Shock	Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, 1/2 sinewave)
Mechanical Vibration	Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)
Thermal Cycle	MIL-STD-883, Method 1010, B (-55°C to 125°C, 15 min dwell, 10 cycles)
Solderability	Per EIAJ-STD-002
Hermeticity	Per MIL-STD-202, Method 112 (1 x 10 <sup>-8</sup> atm cc/s of helium)
Max Wave Soldering	Conditions +260°C for 10 secs. Max.

## LEAD FREE SOLDER PROFILE



## MECHANICAL AND PIN OUT INFORMATION



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.