

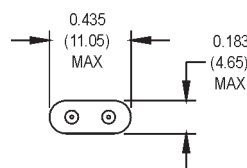
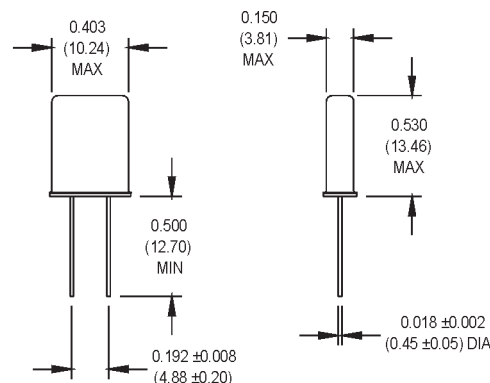
# ATS-49 and MP-1 Crystals



**MP-1 (HC-49/U) 00.0000 MHz** (customer specified frequency)

**MP-1-R (HC-49/U) 00.0000 MHz** (RoHS Compliant and customer specified frequency)

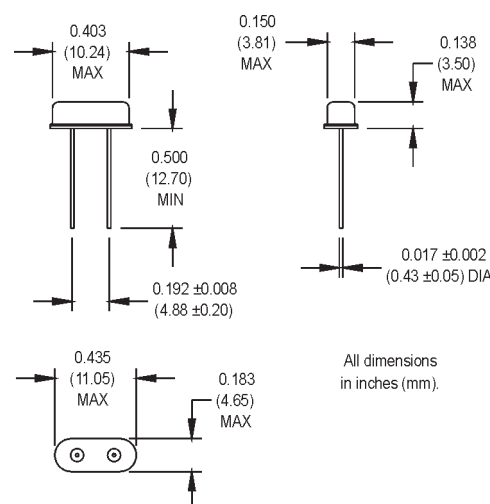
M1002Sxxx - Contact factory for datasheet.



All dimensions  
in inches (mm).

Equivalent Series Resistance (ESR), Max.	ATS-49
Fundamental (AT-cut)	
3.579 to 3.999 MHz	200 Ω
4.000 to 4.999 MHz	150 Ω
5.000 to 5.999 MHz	120 Ω
6.000 to 9.999 MHz	100 Ω
10.000 to 13.999 MHz	80 Ω
14.000 to 40.000 MHz	50 Ω
Fundamental (BT-cut)	
24.000 to 50.000 MHz	100 Ω
Third Overtones (AT-cut)	
25.000 to 39.999 MHz	100 Ω
40.000 to 72.000 MHz	80 Ω

Equivalent Series Resistance (ESR), Max.	MP-1
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 to 10.999 MHz	40 Ω
11.000 to 14.999 MHz	30 Ω
15.000 to 19.999 MHz	25 Ω
20.000 to 34.000 MHz	25 Ω
Third Overtones (AT-cut)	
20.000 to 49.999 MHz	40 Ω
50.000 to 75.000 MHz	50 Ω
Fifth Overtones (AT-cut)	
50.000 to 125.000 MHz	90 Ω
Seventh Overtones (AT-cut)	
125.000 to 200.000 MHz	150 Ω



All dimensions  
in inches (mm).

**\*ATS-49 00.0000 MHz** (customer specified)

**\*ATS-49-R 00.0000 MHz** (RoHS Compliant and customer specified frequency )

M1004Sxxx - Contact factory for datasheet.

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Revision: 08-07-07

## ATS-49 and MP-1 Crystals



MtronPTI ATS-49 Options	
Order by part number listed followed by the desired frequency.	
Part No.	Description
397-030	Fundamental, 20pF load, $\pm 30$ ppm tolerance, $\pm 50$ ppm stability, $-10^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ operating temperature
397-040	Fundamental, series resonant, $-10^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ operating temperature
397-310	Fundamental, 18pF load, $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ operating temperature
482-010	Fundamental, base insulator
482-040	Fundamental, series resonant, base insulator
482-740	Fundamental, series resonant, $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ operating temperature
483-240	3 <sup>rd</sup> overtone, series resonant, $\pm 30$ ppm tolerance, $\pm 50$ ppm stability, $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ operating temperature
493-040	3 <sup>rd</sup> overtone, series resonant
Balance of specifications same as shown in "Electrical Specifications"	
Contact the factory for options not listed above.	

Electrical Specifications	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
	Frequency Range	F	1.8432		200	MHz	MP-1
			3.579545		72	MHz	ATS-49
	Frequency Tolerance	F/F	-30		+30	ppm	
	Frequency Stability	$\Delta F/F$	-50		+50	ppm	See Note 1
	Operating Temperature	T <sub>A</sub>	-10		+70	$^{\circ}\text{C}$	
	Storage Temperature	T <sub>S</sub>	-55		+125	$^{\circ}\text{C}$	
	Aging Per Year			$\pm 5$	$\pm 5$		
	Load Capacitance	C <sub>L</sub>		18		pF	See Note 2
	Shunt Capacitance	C <sub>O</sub>			7	pF	
	ESR		See ESR Tables				
	Drive Level	D <sub>L</sub>	50	100	1	mW	MP-1
			25	100	500	$\mu\text{W}$	ATS-49
	Insulation Resistance	I <sub>R</sub>	500			MOhms	
Environmental	Mechanical Shock	MIL-STD-202, Method 213, C (100 g's)					
	Vibration	MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)					
	Thermal Cycle	MIL-STD-883, Method 1010, B ( $-55^{\circ}\text{C}$ to $125^{\circ}\text{C}$ , 15 min dwell, 10 cycles)					
	Hermeticity	MIL-STD-202, Method 112 (must meet $1 \times 10^{-8}$ )					
	Solderability	Per EIAJ-STD-002					
	Max Wave Soldering Conditions	$+260^{\circ}\text{C}$ for 10 secs. Max.					

Note 1: BT cut fundamentals from 24.000 to 40.000 MHz have a stability of  $\pm 100$  ppm (ATS-49)

Note 2: Series resonant designated "SR" prefix (i.e., SRATS-49 or SRMP-1)

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