

ATS-49 and MP-1 Crystals

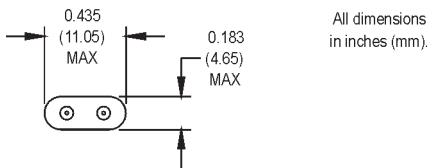
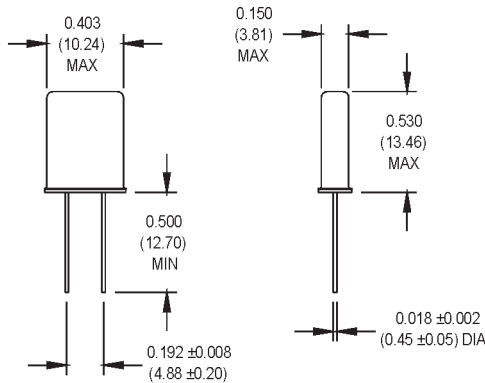


MP-1 (HC-49/U) 00.0000 MHz (customer specified frequency)

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

M1002Sxxx - Contact factory for datasheet.

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



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

	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes	
Electrical Specifications	Frequency Range	F	1.8432 3.579545		200 72	MHz MHz	MP-1 ATS-49	
	Frequency Tolerance	F/F	-30		+30	ppm		
	Frequency Stability	$\Delta F/F$	-50		+50	ppm	See Note 1	
	Operating Temperature	T_A	-10		+70	$^{\circ}\text{C}$		
	Storage Temperature	T_S	-55		+125		$^{\circ}\text{C}$	
	Aging Per Year			± 5	± 5			
	Load Capacitance	C_L		18		pF	See Note 2	
	Shunt Capacitance	C_O			7	pF		
	ESR		See ESR Tables					
	Drive Level	D_L	50 25	100 100	1 500	mW μW	MP-1 ATS-49	
Insulation Resistance	I_R	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°C to 125°C , 15 min dwell, 10 cycles)						
	Hermeticity	MIL-STD-202, Method 112 (must meet 1×10^{-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 ± 100 ppm (ATS-49)

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

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