

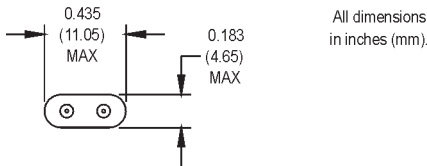
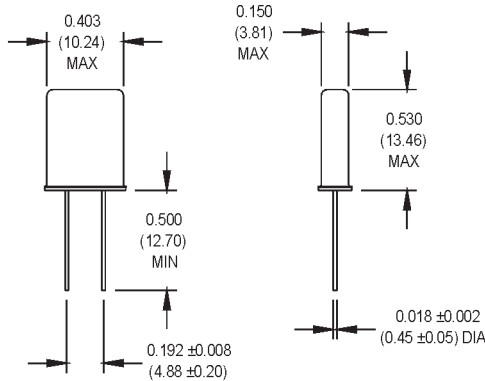
ATS-49 and MP-1 Crystals



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

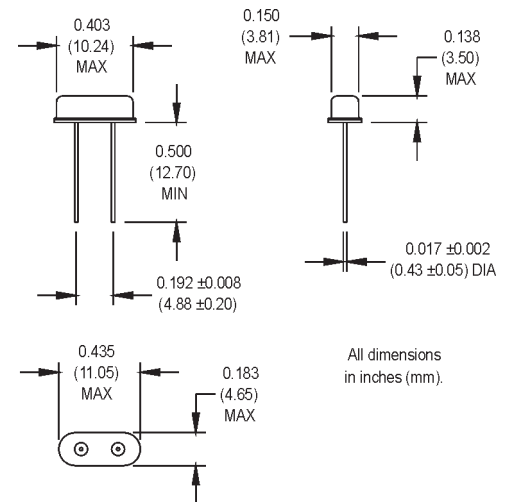
MP-1-R (HC-49/U) 00.0000 MHz (RoHS Compliant and customer specified frequency)

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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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, ± 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 | 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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