

# ATSM-49 and SX2050 Surface Mount Crystals

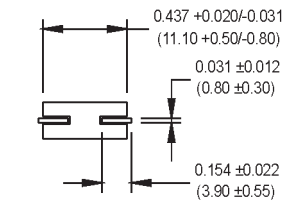
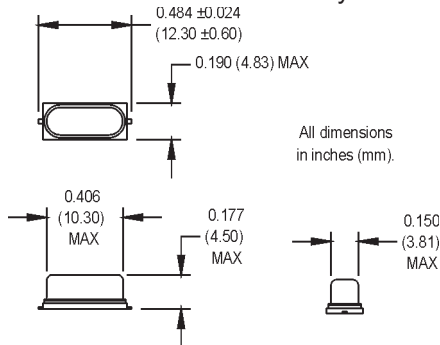


**\*SX2050-R 00.0000 MHz** (customer specified)  
-R signifies RoHS compliant part

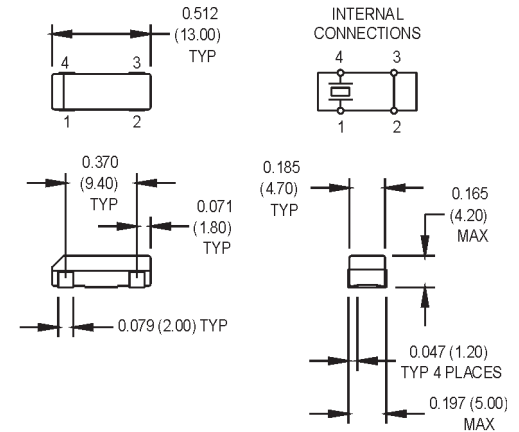
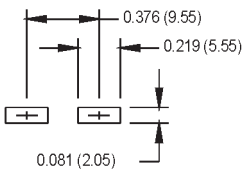
M1011Sxxx - Contact factory for datasheet

**\*ATSM-49-R 00.0000 MHz** (customer specified)  
-R signifies RoHS compliant part

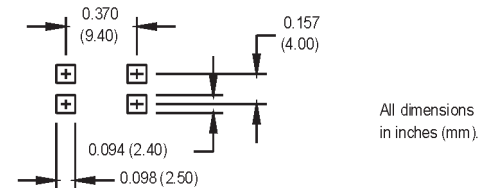
M1001Sxxx - Contact factory for datasheet



SUGGESTED SOLDER PAD LAYOUT



SUGGESTED SOLDER PAD LAYOUT



MtronPTI ATSM-49 Options	
Order by part number listed followed by the desired frequency.	
Part No.	Description
520-010-R	Fundamental frequencies, -20°C to +70°C operating temperature
520-230-R	Fundamental frequencies, 20pF load capacitance
520-260-R	Fundamental frequencies, 32pF load capacitance
520-930-R	3 <sup>rd</sup> overtone frequencies, 20pF load capacitance
520-960-R	3 <sup>rd</sup> overtone frequencies, 32pF load capacitance
522-210-R	Fundamental frequencies, -40°C to +85°C operating temperature
522-215-R	3 <sup>rd</sup> overtone frequencies, -40°C to +85°C operating temperature
Balance of specifications same as shown in "Electrical Specifications"	
Contact the factory for options not listed above.	
520-330-R-24.000 datasheet – Consult Factory	

Equivalent Series Resistance (ESR), Max.	
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

	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Electrical Specification	Frequency Range	F	3.579545		72	MHz	ATSM-49
			3.579545		60	MHz	SX2050
	Frequency Tolerance	F/F			±30	ppm	ATSM-49
					±50	ppm	SX2050
	Frequency Stability	ΔF/F			±50	ppm	ATSM-49 (See Note 1)
					±100	ppm	SX2050 (See Note 1)
	Operating Temperature	T <sub>A</sub>	-10		+70	°C	ATSM-49
			-20		+70	°C	SX2050
	Storage Temperature	T <sub>S</sub>	-55		+125	°C	
	Aging						
1 <sup>st</sup> Year				+3	ppm		
Thereafter (per year)				+5	ppm	Up to 3 <sup>rd</sup> year	
Load Capacitance	C <sub>L</sub>			18	pF	See Note 2	
Shunt Capacitance	C <sub>0</sub>			7	pF	ATSM-49	
				5	pF	SX2050	
ESR			See ESR Table				
Drive Level	D <sub>L</sub>	25	100	500	μW	ATSM-49	
		25	50	100	μW	SX2050	
Insulation Resistance	I <sub>R</sub>	500			MΩ		
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 x 10 <sup>-8</sup> )					
	Solderability	Per EIAJ-STD-002					
Max Soldering Conditions	See solder profile, Figure 1						

Note 1: BT Cut Fundamentals from 24.000 to 40.000 MHz have a stability of ±100 ppm  
Note 2: Series resonant designated by "SR" prefix (ie., SRATSM-49 or SRSX2050)

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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.

# MtronPTI Lead Free Solder Profile



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