

**Features**

- High Shock & Vibration Design
- AT-Cut Fundamental & Overtone Modes
- 100% Screening per MIL-PRF-3098, Class B
- Made in USA, ECCN: EAR99

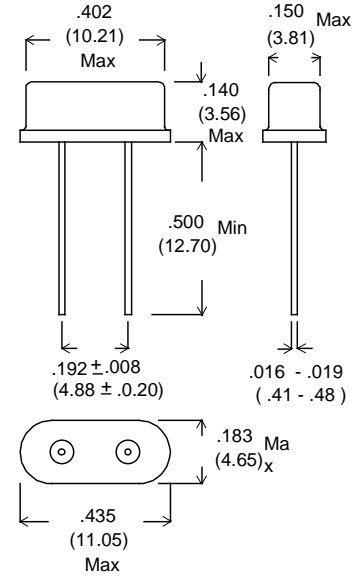


**Applications**

- High Shock & Vibration Applications
- Navigation Systems
- Aerospace Instrumentation
- Military & Defense

**Package Specifications & Outline:**

- Cover Material: Nickel Silver
- Lead & Base Material & Finish: Kovar, 2 to 5 µm Min. Nickel Plate
- Weight: 1.0g typical, 1.4g Max.
- Seal: Hermetic – Resistance Weld
- Solder Reflow, Temp./Time: 260°C Max for 10 Seconds Max.



Hot Solder Tinning per MIL-PRF-55310 is optional at additional cost.

Contact Xsis Electronics at [xisis@xisis.com](mailto:xisis@xisis.com) for any special requirements.

Dimensions: Inches (mm)

**ORDERING INFORMATION ( Please build your part number from options below ) :**

**P/N EXAMPLE: XCR49SH -1F6 - 24M00000 = 24.000 MHz, Fundamental Mode, 20 PF Load Capacitance, Frequency Accuracy of ± 50 PPM over -55°C to +125°C**

**XCR49SH - 1 F 6 - Frequency**

Mode	
1	= Fundamental
3	= 3 <sup>rd</sup> Overtone
5	= 5 <sup>th</sup> Overtone

Load Capacitance Options	
R	= Series
A	= 8 pF
B	= 10 pF
C	= 12 pF
D	= 15 pF
E	= 18 pF
F	= 20 pF
G	= 25 pF
H	= 30 pF
Z	= Custom

Frequency Accuracy Options		
1	= ± 10 PPM	0°C to +50°C
2	= ± 20 PPM	-10°C to +70°C
3	= ± 20 PPM	-40°C to +85°C
4	= ± 50 PPM	-40°C to +85°C
5	= ± 25 PPM	-55°C to +105°C
6	= ± 50 PPM	-55°C to +125°C
7	= ± 75 PPM	-55°C to +125°C

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**Table I - Electrical Specifications, Fundamental, and 3rd Overtone Oscillation modes**

Parameter	Fundamental	3 <sup>rd</sup>
Nominal Frequency Range	5.0 MHz to 30.0 MHz	25.0 MHz to 90.0 MHz
Mode	Fundamental	3 <sup>rd</sup>
Resonance Type	See Ordering Information on Page 1	
Load Capacitance	See Ordering Information on Page 1	
Frequency Accuracy Vs. Temperature	See Ordering Information on Page 1	
Resistance ( ESR )		
5.00 to 6.00 MHz	100 Ohms Max.	
6.01 to 8.00 MHz	80 Ohms Max.	
8.01 to 10.00 MHz	70 Ohms Max.	
10.01 to 15.00 MHz	60 Ohms Max.	
15.01 to 30.00 MHz	40 Ohms Max.	
25.00 to 50.00 MHz		80 Ohms Max.
50.01 to 90.00 MHz		70 Ohms Max.
Shunt Capacitance	7 pF Max.	
Unwanted Modes Resistance	> 2 times the Main Mode Resistance	
Storage Temperature	-55 °C to +125 °C	
Drive Level	50 µW Typical, 1 mW Max.	
Aging at 25°C per year	± 3 PPM Max	

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**Table II - Environmental Specifications :**

Crystal Units shall be able to withstand any of the following environmental stresses with change in Frequency of less than 5 PPM and change in resistance of less than 10%.

Test - Inspection	Test Method - Condition
Shock	MIL-STD-202, Method 213, Cond. C
Vibration	MIL-STD-202, Method 204, Cond. A, 3 hours minimum.
Thermal Shock	MIL-STD-202, Method 107, Cond. B
Moisture Resistance	MIL-STD-202, Method 106, except Step 7b, Vibration, is not applicable.

**Table III - 100% Screening per MIL-PRF-3098, Class B**

Test - Inspection	Test Method – Condition
Pre-seal Visual Examination	MIL-PRF-3098, Method 4.10.2.2
Stabilization Bake ( Prior to Seal ) /	MIL-STD-883, Method 1008, Condition C ( +150 °C ), 24 hours minimum
Seal ( Fine and Gross Leak )	MIL-PRF-3098, Para. 4.10.26
Frequency and Resistance over Operating Temperature	MIL-PRF-3098, Para. 4.10.18
External Visual & Mechanical	MIL-PRF-3098, Para. 4.10.2.1

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**Table IV - Environmental**

XCR49SH series crystal units are designed to meet or exceed the Environmental tests specified below. Customized screening and environmental testing are also available to meet your special requirements.

Test	Test Conditions
Mechanical Shock:	3000G, 0.5 mS shock.
Vibration, Random:	20G RMS, 10 Hz to 2000 Hz
Thermal Shock:	MIL-STD-202, Method 107, Condition B
Temperature Cycle:	MIL-STD-883, Method, 1010, Condition B
Moisture Resistance:	MIL-STD-202, Method 106
Salt Atmosphere:	MIL-STD-202, Method 101
Acceleration:	MIL-STD-883, Method 2002, Condition A, 5000G
Terminal Strength:	MIL-STD-202, Method 211. Cond. A ( 2 pounds )
Fine Leak:	MIL-STD-202, Method 112, Condition C-IIIc (1x10 <sup>-8</sup> atm-cc/sec)
Gross Leak:	MIL-STD-202, Method 112, Condition D
Solderability:	MIL-STD-202, Method 208 ( ANSI-EIA-J-STD-002 )
Resistance to Soldering Heat:	MIL-STD-202, Method 210, Condition B or C
Resistance to Solvents:	MIL-STD-202, Method 215
Low Temperature Storage:	MIL-PRF-3098