

## Features

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

## Applications

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

## Package Specifications & Outline:

- Package Material, Finish & Weight: See Page 4,
- 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.

## Package Options



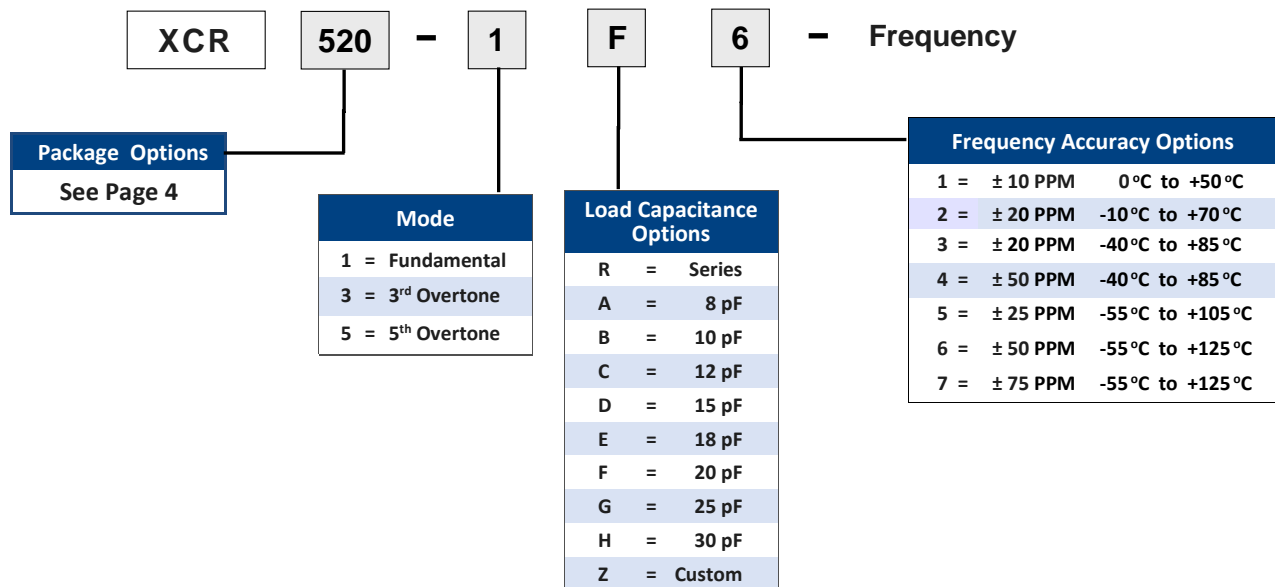
“XCR520”



“XCR521”

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

**P/N EXAMPLE: XCR520 -1F6 - 24M00000 = 24.000 MHz, Fundamental Mode, 20 PF Load Capacitance, Frequency Accuracy of ± 50 PPM over -55 °C to +125 °C**



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**Table I - Electrical Specifications, Fundamental, 3rd and 5th Overtone Oscillation modes**

| Parameter                          | Fundamental                        | 3 <sup>rd</sup>      | 5 <sup>th</sup>     |
|------------------------------------|------------------------------------|----------------------|---------------------|
| Nominal Frequency Range            | 6.4 MHz to 30.0 MHz                | 25.0 MHz to 90.0 MHz | 40.0 MHz to 150 MHz |
| Mode                               | Fundamental                        | 3 <sup>rd</sup>      | 5 <sup>th</sup>     |
| Resonance Type                     | See Ordering Information           |                      |                     |
| Load Capacitance                   | See Ordering Information           |                      |                     |
| Frequency Accuracy Vs. Temperature | See Ordering Information           |                      |                     |
| Resistance ( ESR )                 |                                    |                      |                     |
| 6.40 to 10.00 MHz                  | 40 Ohms Max.                       |                      |                     |
| 10.01 to 15.00 MHz                 | 30 Ohms Max.                       |                      |                     |
| 15.01 to 30.00 MHz                 | 25 Ohms Max.                       |                      |                     |
| 25.00 to 30.00 MHz                 |                                    | 50 Ohms Max.         |                     |
| 30.01 to 60.00 MHz                 |                                    | 40 Ohms Max          |                     |
| 60.01 to 90.00 MHz                 |                                    | 60 Ohms Max.         |                     |
| 40.00 to 90.00 MHz                 |                                    |                      | 50 Ohms Max.        |
| 90.01 to 125.00 MHz                |                                    |                      | 60 Ohms Max.        |
| 125.01 to 150.00 MHz               |                                    |                      | 65 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  |

**Table IV - Environmental**

XCR52x 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.

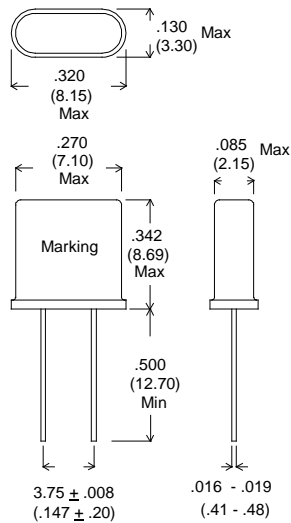
| Test                          | Test Conditions   |
|-------------------------------|---|
| Mechanical Shock:             | 3000G, 0.5 mS shock.  |
| Vibration, Random:            | 20G RMS, 10 Hz to 2000 Hz   |
| Thermal Shock:                | MIL-STD-202, Method 107, Condition B  |
| Temperature 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 ( 4 pound for Pins, 2 pound for wire leads ) |
| 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  |

**Package Specifications:**

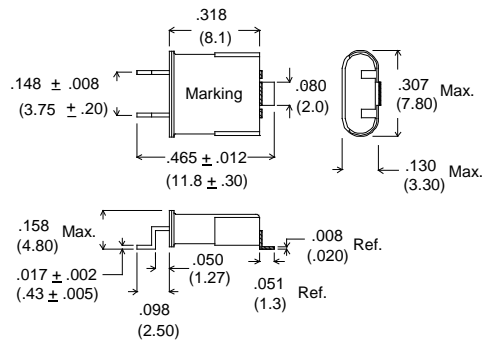
Cover Material & Finish: Nickel Silver

Lead Material & Finish Kovar, 6 to 15 microinches gold over 100 microinches Min. Nickel

Weight: 0.9g Typical, 1.2g Max



**Package Option ‘XCR520’**



**Package Option ‘XCR521’**

Dimensions are in inches (mm)