

Description

Xsis Electronics “XRH4x” Series High Temperature crystal units are designed and processed to operate over an extended temperature range of -55 °C to 230 °C. These crystal units are offered in a low profile, hermetically sealed resistance welded 7x9mm ceramic packages.

High temperature materials and proven processes are utilized to provide high reliability and long life at extreme temperatures.

In addition, the quartz crystal is mounted at four points to provide excellent shock and vibration resistance.

Features

- Round Crystal Mounted at 4 Points`
- > 20KG (0.1 mS) Shock Resistance
- 100% testing over operating temperature range
- Low Phase Noise
- Hermetically Sealed, Ceramic Package
- Tape & Reel packaging
- Made in USA, ECCN: EAR99

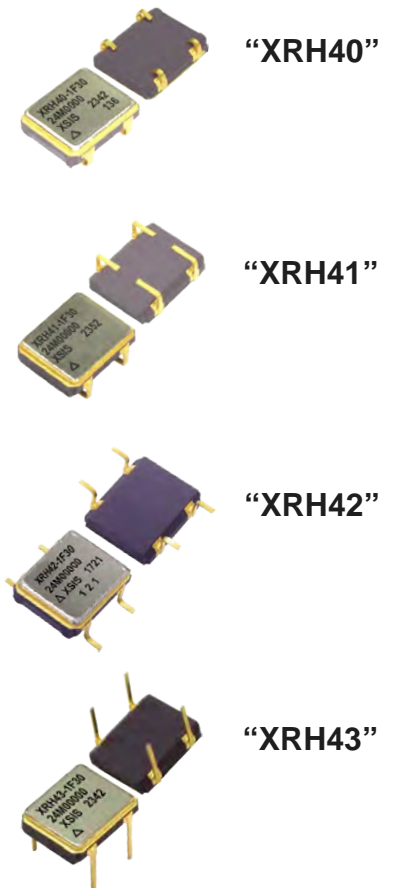
Applications

- Downhole Drilling Operations
- High Shock & Vibration
- High Temperature Avionics
- Gun Launched Munitions
- Jet Engine Sensors

Package Specifications &

- Package: Ceramic 90% AL₂O₃
- Seal: Hermetic – Resistance Welded
- Weight: 0.5g typical, 0.8g Max.
- Lead Material & Finish: Kovar, 1.27 to 2.2 µm gold over 1.27 to 8.9 µm nickel
- Lid Material & Finish: Kovar, 1.27 to 2.2 µm gold over 1.27 to 8.9 µm nickel
- Solder Reflow, Temp./Time: 260 °C Max for 10 Seconds Max.

Package Options



Contact Xsis Electronics at xisis@xisis.com for any special requirements.

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

P/N EXAMPLE: XRH40 - 1F30 - 40M00000 = 40.000 MHz, Fundamental Mode, 20 PF Load Capacitance, Frequency Accuracy of ± 100 PPM over -20°C to +200°C

XRH

40

-

1

-

F

30

-

Frequency

Package Options
See Page 5

Mode	
1	Fundamental
3	3 rd Overtone
5	5 th 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 Vs, Operating Temperature Range Options			
21	= ± 40 PPM	over -20°C to +150°C	***
22	= ± 100 PPM	over -20°C to +150°C	*
23	= ± 150 PPM	over -20°C to +150°C	*
24	= ± 40 PPM	over -20°C to +180°C	***
25	= ± 100 PPM	over -20°C to +180°C	***
26	= ± 150 PPM	over -20°C to +180°C	*
27	= ± 100 PPM	over -55°C to +180°C	***
28	= ± 150 PPM	over -55°C to +180°C	*
29	= ± 250 PPM	over -55°C to +180°C	*
30	= ± 100 PPM	over -20°C to +200°C	***
31	= ± 150 PPM	over -20°C to +200°C	***
32	= ± 200 PPM	over -20°C to +200°C	*
33	= ± 250 PPM	over -20°C to +200°C	*
34	= ± 100 PPM	over -55°C to +200°C	***
35	= ± 150 PPM	over -55°C to +200°C	***
36	= ± 200 PPM	over -55°C to +200°C	*
37	= ± 250 PPM	over -55°C to +200°C	*
38	= ± 200 PPM	over -55°C to +220°C	***
39	= ± 300 PPM	over -55°C to +220°C	*
40	= ± 250 PPM	over -20°C to +230°C	***
41	= ± 350 PPM	over -20°C to +230°C	*
42	= ± 250 PPM	over -55°C to +230°C	***
43	= ± 350 PPM	over -55°C to +230°C	*
44	= ± 45 PPM	over -20°C to +180°C	***
45	= ± 300 PPM	over -55°C to +200°C	*

*** Tight Stability

* Standard Stability

Contact Xsis Electronics at xisis@xisis.com (913-631-0448) for any special requirements.

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

Parameter	Fundamental	3 rd	5 th
Nominal Frequency Range	14 MHz to 40.0 MHz	40.0 MHz to 150.0 MHz	75.0 MHz to 200.0 MHz
Mode	Fundamental	3 rd	5 th
Resonance Type	See Ordering Information on Page 2		
Load Capacitance	See Ordering Information on Page 2		
Frequency Accuracy Vs. Temperature	See Ordering Information on Page 2		
Resistance (ESR) 14.0 to 20 MHz 20.1 to 40 MHz 40.0 to 90 MHz 90.1 to 150 MHz 75.0 to 125 MHz 125.1 to 200 MHz	35 Ohms Max. 30 Ohms Max.	50 Ohms Max 60 Ohms Max.	75 Ohms Max. 85 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

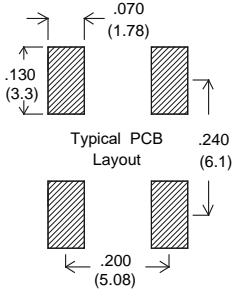
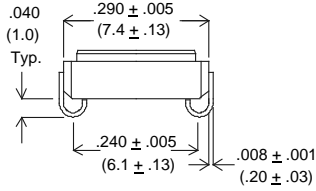
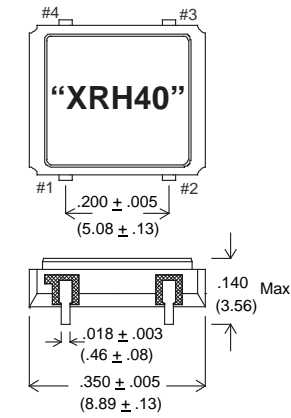
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Table IV - Environmental

XRH4x 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 (8 Oz)
Fine Leak:	MIL-STD-202, Method 112, Condition C-IIIc (1x10 ⁻⁸ 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 Type, Outline and Pin Connections – Dimensions are in inches (mm)



LEAD/PAD#	FUNCTION
1	CRYSTAL
2	N/C
3	CRYSTAL
4	N/C

