

Crystal (HCR™)

± 50ppm XRCGB-F-N Series



The Murata Hybrid Crystal Resonator (HCR™) XRCGB series is a 100% crystal timing device, in a new hybrid package available in specific frequencies from 24MHz to 48MHz. The goal of the Murata HCR™ is low cost in a small 2016 package, targeting cost and size sensitive applications that formerly could only be met by ± 50ppm crystals.

Murata's HCR™ is now available in a variety of frequency tolerances from ± 50ppm to ± 200ppm tolerance versions with the introduction of the **new XRCGB-F-N series**. The new XRCGB-F-N series has an accuracy of ± 50ppm at frequencies of 24, 25, 26, 27, and 30MHz. Adding this higher accuracy series, Murata is now able to expand its business into new target applications within the consumer and industrial markets.

Features

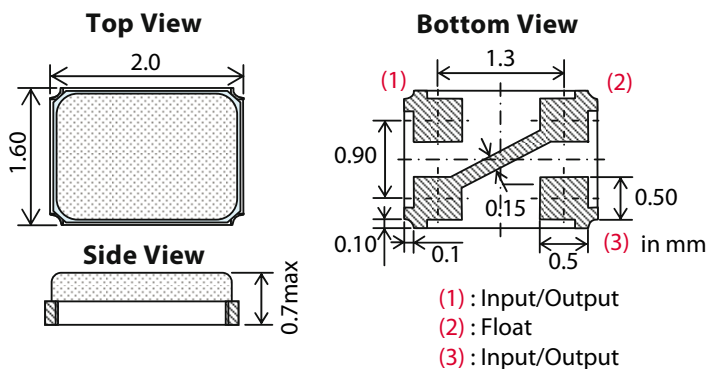
- **High Reliability**
- **Low Cost**
- **Compact Size** – 2016, 4-Terminal Package
- **Tight Tolerance** – ± 50ppm (initial + temp)
- **Robust Packaging**
- **Murata's HCR™ products are RoHS compliant**

Applications

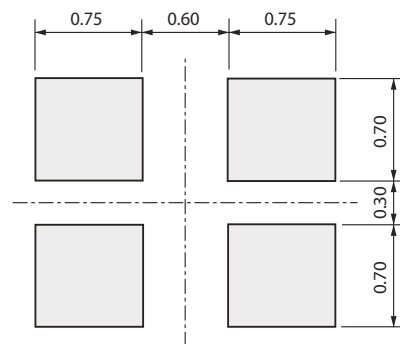
- **PCH** (Platform Control Hub) – 25MHz, ± 50/60ppm
- **Ethernet** – 25MHz, ± 50/60ppm
- **Application Processor** – 24MHz / 26MHz, ± 50/60ppm
- **Graphic Processor** – 27MHz, ± 50/60ppm

(Not available for automotive applications at this time.)

Dimensions



Land Pattern



Note: Land pattern layout is for reference purposes only.

Specifications

Nominal Frequency	24M, 25M, 26M, 27M, 30MHz
Vibration Mode (Crystal Cut)	Fundamental (AT-cut)
Operating Temperature	-20° to +85°C
Initial Frequency Tolerance	± 30ppm or ± 25ppm max.
Frequency Shift by Temperature	± 30ppm (-20° to +85°C) ± 25ppm (-10° to +70°C)
Equivalent Series Resistance	150Ω max. @24M to 27MHz 100Ω max. @30M



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Product Lineup

Frequency (MHz)	± 50ppm Tolerance (Initial + Temperature) -10°C to +70°C	± 60ppm Tolerance (Initial + Temperature) -20°C to +85°C
24.000	XRCGB24M000FAN00R0	XRCGB24M000F3N00R0
25.000	XRCGB25M000FAN00R0	XRCGB25M000F3N00R0
26.000	XRCGB26M000FAN00R0	XRCGB26M000F3N00R0
27.000	XRCGB27M000FAN00R0	XRCGB27M000F3N00R0
30.000	XRCGB30M000FAN00R0	XRCGB30M000F3N00R0

HCR™ vs Conventional Crystal

	HCR™	Conventional Crystal
Frequency Tolerance (Initial + Temp)	± 50ppm min	± 50ppm min
Size	2016	2016, 2025, 3225
Cost	Competitive	Competitive for 3225 Premium cost applies to smaller size
Package	Liquid tight package	Hermetically sealed airtight package
ESR	100Ω to 150Ω – ESR for 2016 HCR™ is comparable to ESR of 2016 conventional crystal	40Ω to 200Ω – dependent on package size
Stable Supply	Avoid supply issues using Murata's-made package not dependent on outside suppliers	Possible supply issues using ceramic package dependent on outside suppliers

Why Choose Murata's HCR™?

- Design requires an accuracy of ± 50ppm through ± 200ppm (initial + temperature).
- Compact size at a competitive price.
- Eliminate second source concerns being Murata's 2016 package is 4-terminal and can fit on the same pads of larger 4-terminal 3225 & 2520 crystal packages.
- Avoid potential supply issues due to the Murata-made package technology, which allows the HCR™ not to depend on outside suppliers for the crystal's package.
- Murata's hybrid technology provides high shock resistance and high resistance to drive level (300uW max).
- The ESR of the HCR 2016 package is comparable to the ESR of a conventional crystal 2016 package.
- ICs have sufficient gain to support HCR™ and maintain a sufficient level of margin despite HCR™ 2016 package having a slightly higher ESR than conventional crystals in larger packages (3225).

If the key to your design is accuracy, small package, reliable, robust, and cost-effective pricing, then Murata's HCR™ is your number 1 crystal choice!

