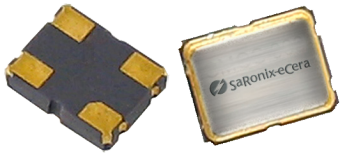
saRonix-eCera™

High Temperature Crystal Oscillator
AEC-Q200 Qualified

1.8V/2.5V/3.3V CMOS XO

HXQ Series



Product Features

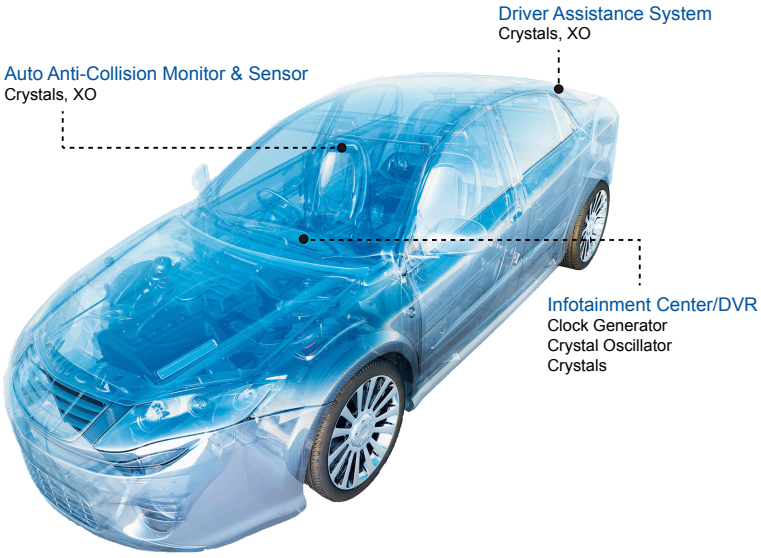
- Support high temperature up to 125°C
- Low phase jitter - < 1ps RMS max.
- Wide frequency range - 1.75 ~ 60MHz
- AEC-Q200 compliant
  - Grade 3, Grade 2, Grade 1
- Pb-free & RoHS compliant
- Various Packages:
  - 2.0 x 1.6, 2.5x2.0, 3.2x2.5, 5.0x3.2, 7.0x5.0

Product Description

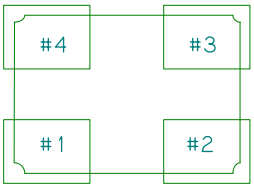
The HXQ series are high performance crystal oscillator families with very low jitter performance. It is designed to meet the requirements of automotive applications with AEC-Q 200 Grade 3, Grade 2, and Grade 1 qualification and operating temperature range of -40 up to +125°C. The CMOS family supports various options including different operating temperature range, stability, voltages and various package sizes.

Applications

- Automotive



Top view pin location



Pin Functions:

Pin	Function
1	OE
2	Ground
3	Output
4	V_{DD}

Part Ordering Information:

HX 71 FFF 00 Q

- (A) HX = Product Family
- (B) 71 = 7=7.0x5.0, 5=5.0x3.2, 3=3.2x2.5, 2=2.5x2.0, 1=2.0x1.6
- (C) FFF = Frequency Code
- (D) 00 = Serial Number
- (E) Q = Automotive Grade

Electrical Performance

Parameter		Min.	Typ.	Max.	Units	Notes
Output Frequency		1.75		60	MHz	
Supply Voltage		3.135	3.3	3.465	V	See ordering options
		2.375	2.5	2.625		
		1.71	1.8	1.89		
Supply Current, Output Enabled				20	mA	
Supply Current, Output Disabled only				100	uA	
Frequency Stability				±50	ppm	See ordering options
Operating Temperature Range		-40		+125	°C	See ordering options
Output Logic 0, V_{OL}				0.1 V_{DD}	V	
Output Logic 1, V_{OH}		0.9 V_{DD}			V	
Output Load				15	pF	
Duty Cycle		45		55	%	Measured 50% V_{DD}
Rise and Fall Time				8	ns	Measured 20/80% of waveform
Jitter, Accumulated, RMS (1-σ)				4	ps	20.000 adjacent periods
Jitter, Phase, RMS	< 40MHz			1	ps	12kHz to 5 MHz frequency band
	>=40MHz			1		12kHz to 20 MHz frequency band
Jitter, pk-pk				40	ps	100,000 random periods

Notes:
1. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (1 year at 25°C average effective ambient temperature), shock and vibration.
2. For specifications other than those listed, please contact sales.

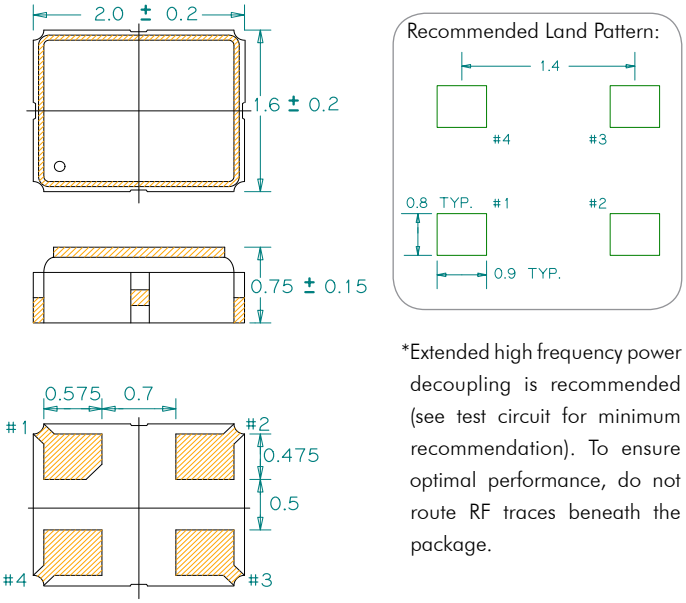
Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	0.7 V_{DD}			V	or open
Input Voltage (pin 1), Output Disable (low power standby)			0.3 V_{DD}	V	Output is Hi-Z
Output Disable Delay			200	ns	
Output Enable Delay			10	ms	
Start up Time			10	ms	

Absolute Maximum Ratings

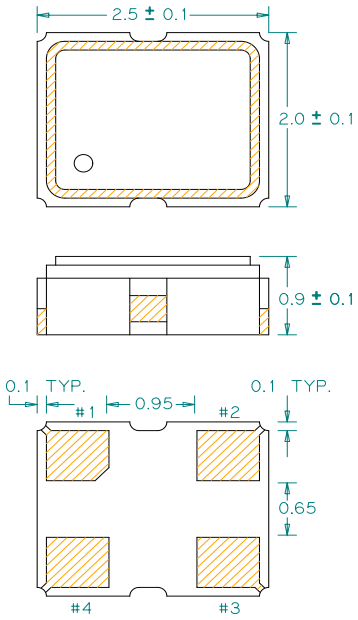
Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-55		+125	°C	

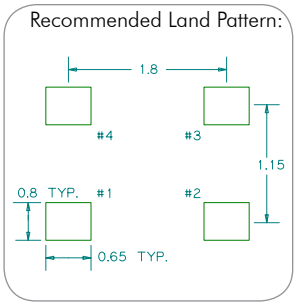
2.0x1.6 Package: (Scale: none; dimensions are in mm)



*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

Package: 2.5x2.0 (Scale: none; dimensions are in mm)





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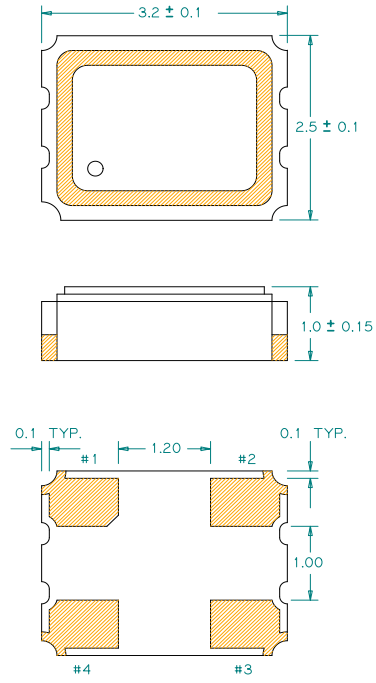
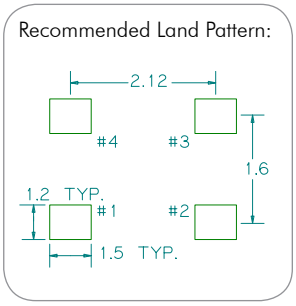
Package: 3.2x2.5 (Scale: none; dimensions are in mm)





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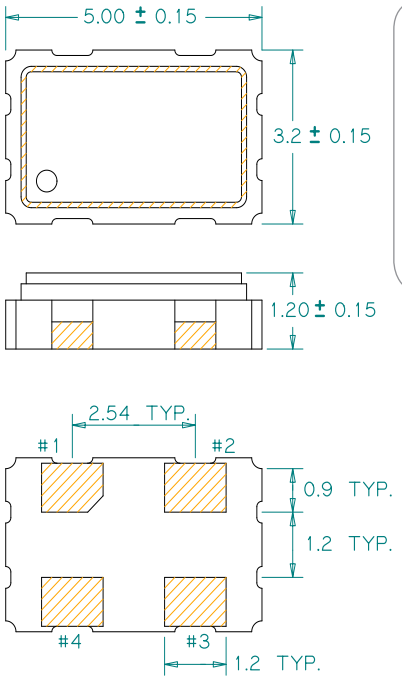
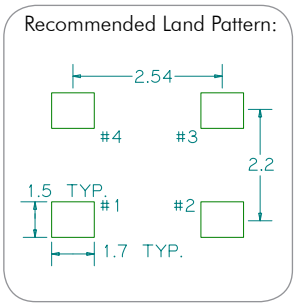
Package: 5.0x3.2 (Scale: none; dimensions are in mm)





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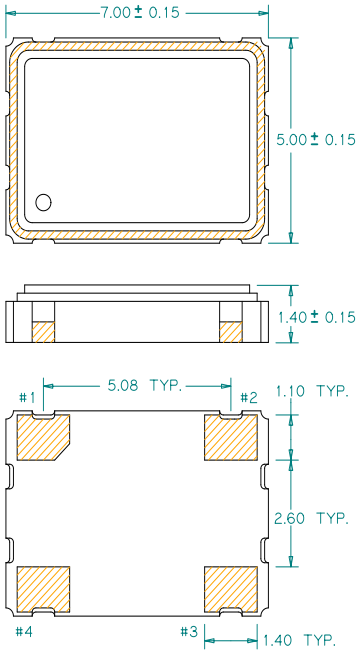
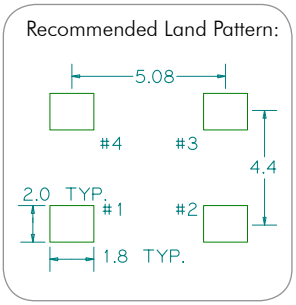
Package: 7.0x5.0 (Scale: none; dimensions are in mm)





*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

For the latest product information visit: http://www.pericom.com/products/crystals-and-crystal-oscillators/cxo/?part=HXQ

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