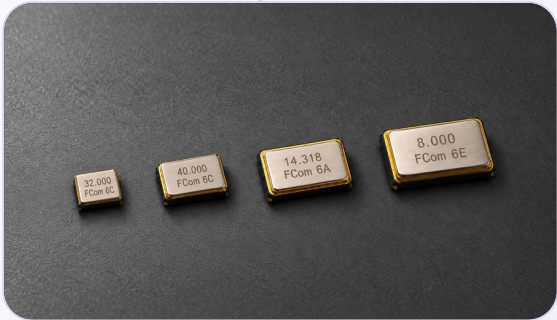


QUARTZ FREQUENCY CONTROL

Quartz Crystal Resonators

Product Selection Guide

- Compact SMD
& Leaded Packages
- Low CL
& Automotive Options



- Standard SMD
- Low CL · 4 pF
- Through-hole
- Automotive Series

Compare frequency, package and electrical options.

Review 39 series in a consistent, one-row-per-product format. Compare frequency, tolerance, temperature, load capacitance and ESR, then open the matching series datasheet.

- 39

Individual series
in one guide
- 04

Product groups
for comparison
- 4 pF

Low CL options
in five series
- 1210

Miniature SMD
package option

19 SERIES

Standard SMD

1210 to 7050 SMD packages, plus HC-49/US surface-mount options. Every FCX and FSX series is listed individually.

Full selection list · Pages 02-03

5 SERIES

Low Load Capacitance

4 pF CL options in 1210, 1612, 2016, 2520 and 3225 packages. Operating range: -40 to +95°C.

Low CL selection · Page 04

6 SERIES

Through-Hole Packages

HC-49/US, HC-49U, HC-50U, UM-1 and UM-5 packages. Frequency ranges depend on the series and vibration mode.

Through-hole selection · Page 04

9 SERIES

Automotive Selection

AEC-Q200 series in 1210 to 5032 packages, with -40 to +125°C operation and model-specific electrical ratings.

Automotive selection · Page 05

Compare the series. Confirm the configuration.

Click a series name or View PDF to open its datasheet. Confirm frequency, vibration mode and electrical options for the required ordering code.

01

Miniature SMD Crystals

1210, 1612, 2016, 2520 and 3225 packages.
Each series is listed separately for direct comparison.

Package range: 1.2 × 1.0 to 3.2 × 2.5 mm

11 SERIES · SURFACE MOUNT

Photo	Series	Package	Frequency MHz	Tolerance ¹ ppm	Operating temp. ¹ °C	CL options ² pF	ESR limits ² Ω	Datasheet PDF
	FCX-1S	1210 4-SMD	24-76.8	±5	-40 to +125	6, 10, 18	60-100	View PDF ↗
	FCX-1M	1612 4-SMD	24-60	±5	-40 to +125	6, 10, 18	30-60	View PDF ↗
	FSX-1M	1612 4-SMD	24-60	±5	-40 to +125	6, 10, 18	30-60	View PDF ↗
	FCX-2S	2016 4-SMD	16-96	±5	-40 to +125	6, 10, 18	30-100	View PDF ↗
	FSX-2MS	2016 4-SMD	16-96	±5	-40 to +125	6, 10, 18	30-100	View PDF ↗
	FCX-2M	2520 4-SMD	12-66	±5	-40 to +125	6, 10, 18	60-180	View PDF ↗
	FSX-2M	2520 4-SMD	12-66	±5	-40 to +125	6, 10, 18	60-180	View PDF ↗
	FCX-3M	3225 4-SMD	8-80	±5	-40 to +125	6, 10, 18	30-300	View PDF ↗
	FSX-3M	3225 4-SMD	8-80	±5	-40 to +125	6, 10, 18	30-300	View PDF ↗
	FCX-3G	3225 4-SMD	8-55.4	±5	-40 to +125	6, 10, 18	40-300	View PDF ↗
	FSX-3L	3225 4-SMD	8-55.4	±5	-40 to +125	6, 10, 18	40-300	View PDF ↗

Package codes express nominal length × width in 0.1 mm units; 1612 means 1.6 × 1.2 mm. Images are not to scale.

Read the parameters together

1. Tolerance is the initial frequency tolerance at the stated reference temperature. It is separate from frequency stability over temperature; confirm the required combination in the series datasheet.

2. CL entries are listed options, not a continuous range; other CL values may be specified where offered. ESR entries summarize frequency-dependent maximum limits. Use the limit for the selected frequency.

02

Larger SMD & HC-49 Packages

5032 and 7050 ceramic packages, plus HC-49/US SMD options.
Compare the mounting arrangement as well as the electrical ratings.

Standard SMD selection continued

8 SERIES · SURFACE MOUNT

Photo	Series	Package	Frequency MHz	Tolerance ¹ ppm	Operating temp. ¹ °C	CL options ² pF	ESR limits ² Ω	Datasheet PDF
	FCX-5M	5032 4-SMD	8-54	±5	-40 to +125	6, 10, 18	40-80	View PDF ↗
	FSX-5M	5032 4-SMD	8-54	±5	-40 to +125	6, 10, 18	40-80	View PDF ↗
	FCX-5G	5032 2-SMD	8-54	±5	-40 to +125	6, 10, 18	40-120	View PDF ↗
	FSX-5L	5032 2-SMD	8-54	±5	-40 to +125	6, 10, 18	40-120	View PDF ↗
	FCX-7M	7050 4-SMD	6-48	±5	-40 to +125	8, 12, 18	80-100	View PDF ↗
	FSX-7M	7050 4-SMD	6-48	±5	-40 to +125	8, 12, 18	80-100	View PDF ↗
	FCX-9M	HC-49/US SMD	3.2-64	±5	-40 to +125	6, 10, 18	30-120	View PDF ↗
	HCM49S	HC-49/US SMD	3.2-64	±5	-40 to +125	6, 10, 18	30-120	View PDF ↗

Package codes: 5032 = 5.0 × 3.2 mm; 7050 = 7.0 × 5.0 mm. Refer to each drawing for height and land pattern.

Check the land pattern

5032 options include 4-SMD and 2-SMD formats. Match pad count, connections, body height and recommended land pattern before substitution.

Match CL and ESR

FCX-7M and FSX-7M list 8, 12 and 18 pF. Other series on this page list 6, 10 and 18 pF; ESR limits vary by frequency.

Read the parameters together

1. Tolerance is the initial frequency tolerance at the stated reference temperature. It is separate from frequency stability over temperature; confirm the required combination in the series datasheet.

2. CL entries are listed options, not a continuous range; other CL values may be specified where offered. ESR entries summarize frequency-dependent maximum limits. Use the limit for the selected frequency.

03

Low CL & Through-Hole Crystals

Five low-capacitance SMD series and six leaded series.
Compare each family using its stated frequency and temperature range.

4 pF SMD options and leaded crystal packages

11 SERIES · 2 PRODUCT GROUPS

Photo	Series	Package	Frequency MHz	Tolerance ¹ ppm	Operating temp. ¹ °C	CL options ² pF	ESR limits ² Ω	Datasheet PDF
Low CL · Surface mount								5 SERIES
	FCX-1S-LC	1210 4-SMD	24-76.8	±10	-40 to +95	4	60-100	View PDF ↗
	FCX-1M-LC	1612 4-SMD	24-60	±10	-40 to +95	4	30-60	View PDF ↗
	FCX-2S-LC	2016 4-SMD	16-96	±10	-40 to +95	4	30-100	View PDF ↗
	FCX-2M-LC	2520 4-SMD	12-66	±10	-40 to +95	4	60-180	View PDF ↗
	FCX-3M-LC	3225 4-SMD	8-80	±10	-40 to +95	4	30-300	View PDF ↗
Through-hole · HC and UM packages								6 SERIES
	HC-49/US	HC-49/US Through-hole	3.2-64	±5	-40 to +125	6, 10, 18	30-120	View PDF ↗
	FCX-9S	HC-49/US Through-hole	3.2-64	±5	-40 to +125	6, 10, 18	30-120	View PDF ↗
	FCX-4U	HC-49U Through-hole	1.8-64	±5	-40 to +125	10, 18, 20	40-300	View PDF ↗
	FCX-5U	HC-50U Through-hole	0.85-4	±10	-40 to +125	10, 18, 20	100-1000	View PDF ↗
	FCX-M1	UM-1 Through-hole	7-200 ³	±5	-40 to +125	10, 18, 20	25-100	View PDF ↗
	FCX-M5	UM-5 Through-hole	4-200 ³	±5	-40 to +125	10, 18, 20	30-100	View PDF ↗

Images are for identification. Refer to each series drawing for dimensions, lead pitch and available package variants.

Confirm CL and vibration mode

1. Low CL series specify ±10 ppm initial tolerance and ±30 ppm stability over -40 to +95°C. Through-hole series use their own temperature and stability ratings.

2. CL entries are listed options; ESR values summarize frequency-dependent maximum limits.

3. UM frequency ranges include overtone options. FCX-M1: 3rd overtone 40-120 MHz; 5th 80-200 MHz. FCX-M5: 3rd 24-100 MHz; 5th 100-200 MHz. Confirm mode when ordering.

04

Automotive Quartz Crystals

AEC-Q200 series in miniature and ceramic SMD packages.
Operating temperature: -40 to +125°C.

AEC-Q200 automotive series

9 SERIES · SURFACE MOUNT

Photo	Series	Package	Frequency MHz	Tolerance ¹ ppm	Operating temp. ¹ °C	CL options ² pF	ESR limits ² Ω	Datasheet PDF
	FCX-1S-A	1210 4-SMD	24-76.8	±10	-40 to +125	6, 10, 18	60-100	View PDF ↗
	FCX-1M-A	1612 4-SMD	24-60	±10	-40 to +125	6, 10, 18	30-60	View PDF ↗
	FCX-2S-A	2016 4-SMD	16-52	±10	-40 to +125	6, 10, 18	50-120	View PDF ↗
	FCX-2M-A	2520 4-SMD	12-54	±10	-40 to +125	6, 10, 18	80-160	View PDF ↗
	FCX-3M-A	3225 4-SMD	8-50	±10	-40 to +125	6, 10, 18	40-200	View PDF ↗
	FCX-3G-A	3225 4-SMD	8-54	±10	-40 to +125	6, 10, 18	60-300	View PDF ↗
	FCX-3L-A	3225 2-SMD	8	±50	-40 to +125	8	500	View PDF ↗
	FCX-5M-A	5032 4-SMD	8-54	±10	-40 to +125	6, 10, 18	50-100	View PDF ↗
	FCX-5G-A	5032 2-SMD	8-54	±10	-40 to +125	6, 10, 18	60-140	View PDF ↗

Automotive designation applies to the listed -A series. Images are for identification and are not to scale.

Check model-specific electrical ratings

- Eight series list ±10 ppm initial tolerance and ±50 ppm stability over -40 to +125°C. FCX-3L-A specifies 8 MHz, ±50 ppm initial tolerance and ±150 ppm stability over that range.
- FCX-3L-A uses 8 pF CL and a 500 Ω maximum ESR. The other series list 6, 10 or 18 pF CL, with frequency-dependent ESR limits. Confirm the oscillator IC requirements.

Need help matching a crystal?

Share your target frequency, package, CL, temperature range and oscillator IC with FCom for specification review.

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