



# QUARTZ CRYSTALS & OSCILLATORS

Product Catalog

## CONTENTS

### Quartz Crystals

Ceramic Base – SMD	04
Full Metal – SMD & THT	06
Tuning Fork – SMD	07

### Oscillators

CMOS – SMD & THT	08
LVPECL & LVDS – SMD	08
CMOS Programmable – SMD	09
CMOS Clock Type – SMD	09
TCXO – SMD	10
VCXO – SMD	10

Services	11
Imprint & Contact	11

## OVER TWO DECADES OF EXPERIENCE

auris-GmbH is a supplier of quartz crystals, oscillators, resonators and SAWs. Founded in 2000 in Germany, we began by supplying the European market with through-hole frequency products. Today auris-GmbH is known worldwide for high quality and offering some of the world's smallest quartz crystals and oscillators.

Manufacturing facilities in China, Taiwan and Hong Kong, use state-of-the-art technology to produce large quantities of quartz resonators of different shapes and functions. The production facilities are ISO 9001, ISO 14001 and ISO/TS 16949 certified by SGS systems. All crystals and oscillators are fully compliant with RoHS regulations (version 2011/65/EU).

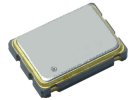
This brochure shows our range of innovative products and technical competence for all industrial and commercial applications. Feel free to contact us if you would like to learn more about our products!

Your team from

**auris** 



## QUARTZ CRYSTALS CERAMIC BASE – SMD



### HC1210 (4 Pad)

Frequency range 24.00 ~ 100.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±10 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 1.2 x 1.0 x 0.35 mm

### HC1612 (4 Pad)

Frequency range 24.00 ~ 100.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±10 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 1.6 x 1.2 x 0.4 mm

### HC2016 (4 Pad)

Frequency range 16.00 ~ 96.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±10 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 2.0 x 1.6 x 0.5 mm

### HC2520 (4 Pad)

Frequency range 12.00 ~ 100.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±10 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 2.5 x 2.0 x 0.6 mm

### HC3225 (4 Pad)

Frequency range 8.00 ~ 156.25 MHz  
Tolerance (25°C) ±10 ppm ~ ±50 ppm  
Toler. vs. temp. ±10 ppm ~ ±100 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 3.2 x 2.5 x 0.8 mm

### HC5032 (2/4 Pad)

Frequency range 7.60 ~ 156.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±50 ppm  
Toler. vs. temp. ±10 ppm ~ ±100 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 8 pF ~ series  
Dimensions 5.0 x 3.2 x 1.1 mm

### HC6035 (2/4 Pad)

Frequency range 7.00 ~ 200.00 MHz  
Tolerance (25°C) ±5 ppm ~ ±50 ppm  
Toler. vs. temp. ±10 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 8 pF ~ series  
Dimensions 6.0 x 3.5 x 1.2 mm

### HC7050 (4 Pad)

Frequency range 6.00 ~ 125.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±50 ppm  
Toler. vs. temp. ±10 ppm ~ ±100 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 8 pF ~ series  
Dimensions 7.0 x 5.0 x 1.0 mm

## QUARTZ CRYSTALS CERAMIC BASE – SMD



### CM2016 (4 Pad)

Frequency range 16.00 ~ 54.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±20 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 6 pF ~ series  
Dimensions 2.0 x 1.6 x 0.7 mm

### CM3225 (4 Pad)

Frequency range 12.00 ~ 54.00 MHz  
Tolerance (25°C) ±10 ppm ~ ±30 ppm  
Toler. vs. temp. ±20 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 10 pF ~ series  
Dimensions 3.2 x 2.5 x 0.8 mm

### CM5032 (2/4 Pad)

Frequency range 8.00 ~ 32.00 MHz  
Tolerance (25°C) ±20 ppm ~ ±30 ppm  
Toler. vs. temp. ±20 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 10 pF ~ series  
Dimensions 5.0 x 3.2 x 1.1 mm

### CM7050 (2/4 Pad)

Frequency range 6.00 ~ 30.00 MHz  
Tolerance (25°C) ±20 ppm ~ ±30 ppm  
Toler. vs. temp. ±20 ppm ~ ±50 ppm  
Operating temp. -20°C ~ +70°C typ.  
Load capacitance 10 pF ~ series  
Dimensions 7.0 x 5.0 x 1.45 mm

In addition to the HC series, we offer quartz crystals similar in construction in four different sizes with the CM series. They also consist of an acrylic base and a metal lid. While the HC series is seam sealed, CM quartz crystals use an epoxy sealing technique. With the CM series we offer you the following advantages:

- more choices for quick solutions
- shorter delivery times
- lower prices in most cases

## QUARTZ CRYSTALS FULL METAL – SMD



**HC49S7S**  
 Frequency range 8.00 ~ 50.00 MHz  
 Tolerance (25°C) ±10 ppm ~ ±50 ppm  
 Toler. vs. temp. ±10 ppm ~ ±150 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 7.6 x 4.0 x 2.0 mm



**HC49S8S**  
 Frequency range 8.00 ~ 50.00 MHz  
 Tolerance (25°C) ±10 ppm ~ ±50 ppm  
 Toler. vs. temp. ±10 ppm ~ ±150 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 8.4 x 3.0 x 2.0 mm



**HC49USSMD**  
 Frequency range 3.579 ~ 90.00 MHz  
 Tolerance (25°C) ±5 ppm ~ ±50 ppm  
 Toler. vs. temp. ±10 ppm ~ ±150 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 12.8 x 4.7 x 4.5 mm

## QUARTZ CRYSTALS FULL METAL – THT



**HC49US**  
 Frequency range 3.579 ~ 90.00 MHz  
 Tolerance (25°C) ±5 ppm ~ ±50 ppm  
 Toler. vs. temp. ±10 ppm ~ ±150 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 11.1 x 4.7 x 3.5 mm

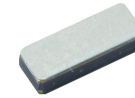


**HC49U**  
 Frequency range 1.8432 ~ 180.00 MHz  
 Tolerance (25°C) ±5 ppm ~ ±50 ppm  
 Toler. vs. temp. ±5 ppm ~ ±100 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 11.05 x 5.0 x 13.46 mm



**UM1**  
 Frequency range 6.00 ~ 160.00 MHz  
 Tolerance (25°C) ±5 ppm ~ ±50 ppm  
 Toler. vs. temp. ±10 ppm ~ ±50 ppm  
 Operating temp. -20°C ~ +70°C typ.  
 Load capacitance 5 pF ~ series  
 Dimensions 7.0 x 3.2 x 8.0 mm

## QUARTZ CRYSTALS TUNING FORK – SMD



**LC1210**  
 Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 9/12.5 pF  
 Temp. coefficient -0.045 ppm/°C<sup>2</sup> max.  
 Operating temp. -40 °C ~ +85 °C typ.  
 Dimensions 1.2 x 1.0 x 0.4 mm

### LC2012 (low ESR available)

Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 7/9/12.5 pF  
 Temp. coefficient -0.045 ppm/°C<sup>2</sup> max.  
 Operating temp. -40 °C ~ +85 °C typ.  
 Dimensions 2.0 x 1.2 x 0.6 mm

### LC4115

Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 9/10/12.5 pF  
 Temp. coefficient -0.034 ± 0.006 ppm/°C<sup>2</sup>  
 Operating temp. -20°C ~ +70°C typ.  
 Dimensions 4.1 x 1.5 x 0.75 mm



**TC206B**  
 Frequency range 32.768 kHz  
 Tolerance (25°C) ±10 ppm ~ ±100 ppm  
 Load capacitance 6/7/10/12.5 pF  
 Temp. coefficient -0.034 ± 0.006 ppm/°C<sup>2</sup>  
 Operating temp. -20°C ~ +70°C typ.  
 Dimensions 2.0 x 6.1 mm

### LC1610

Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 9/12.5 pF  
 Temp. coefficient -0.045 ppm/°C<sup>2</sup> max.  
 Operating temp. -40 °C ~ +85 °C typ.  
 Dimensions 1.6 x 1.0 x 0.5 mm

### LC/LM3215 (low ESR available)

Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 6/7/9/12.5 pF  
 Temp. coefficient -0.045 ppm/°C<sup>2</sup> max.  
 Operating temp. -20°C ~ +70°C typ.  
 Dimensions 3.2 x 1.5 x 0.9 mm

### LC4918

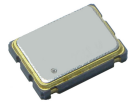
Frequency range 32.768 kHz  
 Tolerance (25°C) ±20 ppm ~ ±50 ppm  
 Load capacitance 7/9/12.5 pF  
 Temp. coefficient -0.034 ± 0.006 ppm/°C<sup>2</sup>  
 Operating temp. -20°C ~ +70°C typ.  
 Dimensions 4.9 x 1.8 x 1.0 mm



**MP03**  
 Frequency range 32.768 kHz  
 Tolerance (25°C) ±5 ppm ~ ±50 ppm  
 Load capacitance 6/7/9/12.5 pF  
 Temp. coefficient -0.034 ± 0.006 ppm/°C<sup>2</sup>  
 Operating temp. -40 °C ~ +85 °C typ.  
 Dimensions 8.0 x 3.8 x 2.6 mm



## OSCILLATORS CMOS – SMD



**AQO1612**  
 Frequency range 2.00 ~ 80.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 3.3 V  
 Dimensions 1.6 x 1.2 x 0.8 mm

**AQO2016**  
 Frequency range 1.00 ~ 160.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 0.8 ~ 3.6 V  
 Dimensions 2.0 x 1.6 x 0.8 mm

**AQO2520**  
 Frequency range 1.00 ~ 160.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 0.8 ~ 5.0 V  
 Dimensions 2.5 x 2.0 x 1.0 mm

**AQO3225**  
 Frequency range 1.00 ~ 160.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 0.8 ~ 5.0 V  
 Dimensions 3.2 x 2.5 x 1.2 mm

**AQO5032**  
 Frequency range 1.00 ~ 160.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 0.8 ~ 5.0 V  
 Dimensions 5.0 x 3.2 x 1.3 mm

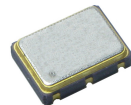
**AQO7050**  
 Frequency range 1.00 ~ 160.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 0.8 ~ 5.0 V  
 Dimensions 7.0 x 5.0 x 1.4 mm

## OSCILLATORS CMOS – THT



**AQO14 / AQO08**  
 Frequency range 0.25 ~ 180.00 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $0^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 3.3 V / 5.0 V  
 Dimensions 20.4 x 13.1 x 5.3 mm /  
 12.9 x 12.9 x 5.3 mm

## OSCILLATORS LVPECL & LVDS – SMD



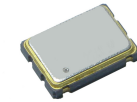
**AQO2520/3225 LVPECL/LVDS (6 Pad)**  
 Frequency range 13.50 ~ 156.25 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 2.5 V / 3.3 V  
 Dimensions 2.5 x 2.0 x 1.1 mm /  
 3.2 x 2.5 x 1.2 mm

**AQO5032/7050 LVPECL/LVDS (6 Pad)**  
 Frequency range 13.50 ~ 212.50 MHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 2.5 V / 3.3 V  
 Dimensions 5.0 x 3.2 x 1.3 mm /  
 7.0 x 5.0 x 1.8 mm

## OSCILLATORS CMOS PROGRAMMABLE – SMD

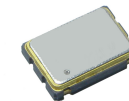
For developers it is often important to have quick access to required oscillators. In most cases, patterns are available relatively quickly, but sometimes it has to go even faster. For this reason, auris-GmbH offers a programming service for oscillators:

- individual solutions
- various sizes available in stock
- short delivery time of a few days
- minimal quantities from five pieces
- various package sizes



**APQO5032/7050**  
 Frequency range 1.00 ~ 133.00 MHz  
 Tolerance  $\pm 25$  ppm ~  $\pm 100$  ppm  
 Operating temp.  $0^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 3.3 V / 5.0 V  
 Output 15 ~ 50 pF  
 Dimensions 5.0 x 3.2 x 1.2 mm /  
 7.0 x 5.0 x 1.7 mm

## OSCILLATORS CLOCK TYPE – SMD



**AQO1612 Clock (under development)**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 3.3 V  
 Dimensions 1.6 x 1.2 x 0.6 mm

**AQO2520 Clock**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 5.0 V  
 Dimensions 2.5 x 2.0 x 1.0 mm

**AQO5032 Clock**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 5.0 V  
 Dimensions 5.0 x 3.2 x 1.3 mm

**AQO2016 Clock**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 5.0 V  
 Dimensions 2.0 x 1.6 x 0.8 mm

**AQO3225 Clock**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 5.0 V  
 Dimensions 3.2 x 2.5 x 1.2 mm

**AQO7050 Clock**  
 Frequency range 32.768 kHz  
 Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
 Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
 Input voltage 1.8 ~ 5.0 V  
 Dimensions 7.0 x 5.0 x 1.4 mm

## OSCILLATORS TCXO – SMD



### ATCQO2016 (CMOS & Clipped Sine)

Frequency range 9.50 ~ 60.00 MHz  
Tolerance  $\pm 1$  ppm ~  $\pm 2$  ppm  
Operating temp.  $-30^{\circ}\text{C}$  ~  $+85^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 3.3 V  
Dimensions 2.0 x 1.6 x 0.8 mm

### ATCQO2520 (CMOS & Clipped Sine)

Frequency range 9.50 ~ 70.00 MHz  
Tolerance  $\pm 1$  ppm ~  $\pm 2$  ppm  
Operating temp.  $-30^{\circ}\text{C}$  ~  $+85^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 3.3 V  
Dimensions 2.5 x 2.0 x 1.0 mm

### ATCQO3225 (CMOS & Clipped Sine)

Frequency range 9.50 ~ 66.00 MHz  
Tolerance  $\pm 0.5$  ppm ~  $\pm 2.5$  ppm  
Operating temp.  $-30^{\circ}\text{C}$  ~  $+85^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 3.3 V  
Dimensions 3.2 x 2.5 x 1.2 mm

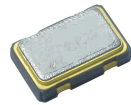
### ATCQO5032 (CMOS & Clipped Sine)

Frequency range 9.50 ~ 60.00 MHz  
Tolerance  $\pm 0.5$  ppm ~  $\pm 2.5$  ppm  
Operating temp.  $-30^{\circ}\text{C}$  ~  $+85^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 3.3 V  
Dimensions 5.0 x 3.2 x 1.3 mm

### ATCQO7050 (CMOS & Clipped Sine)

Frequency range 13.00 ~ 52.00 MHz  
Tolerance  $\pm 0.5$  ppm ~  $\pm 2.5$  ppm  
Operating temp.  $-30^{\circ}\text{C}$  ~  $+85^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 3.3 V  
Dimensions 7.0 x 5.0 x 1.4 mm

## OSCILLATORS VCXO – SMD



### AVCQO2520 (4 Pad)

Frequency range 1.25 ~ 62.00 MHz  
Tolerance  $\pm 20$  ppm ~  $\pm 50$  ppm  
Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
Input voltage 3.3 V  
Dimensions 2.5 x 2.0 x 1.0 mm

### AVCQO3225 (4/6 Pad)

Frequency range 2.00 ~ 66.00 MHz  
Tolerance  $\pm 25$  ppm ~  $\pm 50$  ppm  
Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
Input voltage 2.8 V / 3.3 V  
Dimensions 3.2 x 2.5 x 1.2 mm

### AVCQO5032 (4/6 Pad)

Frequency range 1.00 ~ 54.00 MHz  
Tolerance  $\pm 25$  ppm ~  $\pm 100$  ppm  
Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 5.0 V  
Dimensions 5.0 x 3.2 x 1.3 mm

### AVCQO7050 (4/6 Pad)

Frequency range 1.00 ~ 52.00 MHz  
Tolerance  $\pm 25$  ppm ~  $\pm 100$  ppm  
Operating temp.  $-20^{\circ}\text{C}$  ~  $+70^{\circ}\text{C}$  typ.  
Input voltage 1.8 ~ 5.0 V  
Dimensions 7.0 x 5.0 x 1.8 mm

## OUR CUSTOMER SERVICE OFFERS:

- design-in support with work-bench collaboration
- technical advice
- fast and cost-effective development of customized solutions
- testing, analysis and optimization of customized circuits
- project monitoring from initial evaluation to production

## IMPRINT & CONTACT

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