32.768 kHz
TUNING FORKS
AEC-Q200
COMPLIANT
SURFACE MOUNT
CRYSTALS
THRU HOLE
TUNING FORKS
THRU HOLE
CRYSTALS
THERMISTOR
CRYSTALS
MULTIVOLT
OSCILLATORS
SURFACE MOUNT
OSCILLATORS
PROGRAMMABLE
OSCILLATORS
ECSPRESSCON
OSCILLATORS
VCXO
TCXO
VC-TCXO
OCXO
CERAMIC
RESONATORS
SAW RESONATORS
FILTERS
POWER INDUCTORS
REAL TIME CLOCKS

ECS INC INTERNATIONAL



We are your Electronic Component Solution.

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THE ECS INC. DIFFERENCE

ECS Inc. International is a privately held global leader that is at the forefront of servicing a growing global demand for highly reliable and innovative passive components that meet the needs of today and beyond.

World class research firms and electronic device designers recognize ECS Inc. International as a top 25 international developer and manufacturer of innovative frequency control, sychronization, connectivity, and magnetic power solutions.

ECS Inc. International's primary focus is becoming the most cost-effective solutions-based vendor of choice in its space. This is accomplished by providing cutting edge products and assisting customers to create, build, and maintain the most technologically advanced and most reliable products in the world today.

Based in Lenexa, Kansas, U.S.A., ECS Inc. International was incorporated in 1980 and has conducted business on an international scale for more than 40 years. During that time, ECS Inc. International has delivered more than 3.4 billion passive timing and magnetic solutions to customers in more than 150 countries.

ECS Inc. International has a global support system of more than 28 locations that include manufacturing facilities and logistic centers in South Korea, Japan, China, Singapore, the United Kingdom and the United States. There are more than 185 sales offices in 22 countries that provide marketing, sales, engineering, distribution, and customer service.

To this day, ECS Inc. International maintains an innovative corporate culture designed to promote and develop creativity that maximizes our ability to meet the needs of the ever-changing global electronics market.

Product Description

SURFACE MOUNT 32.768 kHz **TUNING FORKS**



32.768 kHz Tuning Fork

ECS Inc. International offers a wide variety of quartz crystal products. Tuning fork crystals, also known as watch crystals, are designed to generate a standard 32.768 kHz frequency. While limited in frequency, tuning forks are more cost-effective than AT-cut crystals and require very little power, 0.1uW, whereas most AT-cut crystals are 10uW, making them ideal for low power and sleep applications. For more product options and information, contact our engineering team at engineering@ecsxtal.com.

Series Number	Package Size	Actual Size	ESR (kΩ)	Tolerance
ECX-1210	1.2 x 1.0 x 0.5 mm		90	±20ppm
ECX-1210B	1.2 x 1.0 x 0.35 mm		80	±20ppm
ECX-16	1.6 x 1.0 x 0.5 mm		90	±10ppm, ±20ppm
ECX-16R	1.6 x 1.0 x 0.5 mm		60	±20ppm
ECX-12	2.0 x 1.2 x 0.6 mm		90	±10ppm, ±20ppm
ECX-12R	2.0 x 1.2 x 0.6 mm		70	±10ppm, ±20ppm
ECX-12RR	2.0 x 1.2 x 0.6 mm		35	±20ppm
ECX-34G	3.2 x 1.5 x 0.9 mm		70	±20ppm
ECX-34R	3.2 x 1.5 x 0.9 mm		50	±10ppm, ±20ppm
ECX-34RR	3.2 x 1.5 x 0.9 mm		40	±20ppm
ECX-34S	3.2 x 1.5 x 0.9 mm		70	±20ppm
ECX-31B	3.2 x 1.5 x 0.9 mm		70	±10ppm, ±20ppm
ECX-49	4.1 x 1.5 x 0.9 mm		70	±20ppm
ECX-71	7.0 x 1.5 x 1.4 mm		65	±10ppm, ±20ppm
ECX-306X	8.0 x 3.8 x 2.5 mm		50	±10ppm, ±20ppm
ECX-2X6-FLX	9.1 x 2.5 x 2.1 mm		50	±10ppm, ±20ppm

Product
Applications

Wearable Devices
Wireless Modules
IoT / IoT Thermostats
Bluetooth / BLE
M2M Connectivity
Ultra-Low Power MCU
Drug Delivery Devices

Product Description

AEC-Q200 AUTOMOTIVE GRADE **TUNING FORKS**

ECS Inc. International's high temperature automotive grade frequency control quartz crystals are manufactured in IATF 16949 certified factories and are AEC-Q200 qualified. Offered in the leading surface mount packaging configurations, our AEC-Q200 crystal products are available in a range of frequencies. Automotive grade frequency control products are desirable for many customers in the automotive, industrial, and medical markets. These products meet the most stringent requirements for extremely harsh environments typical in automotive applications. For more product options and information, contact our engineering team at engineering@ecsxtal.com.



Innovative Transportation

From cell phones and the internet to Wi-Fi and GPS, electronics have become a part of our everyday lives. The automotive industry has seen the most dramatic incorporation of technology through the evolution of collision avoidance, safety measures, infotainment, telematics, and soon we will see fully autonomous cars. The continuing innovation will make transportation easier, faster, and safer. ECS Inc. is continuously developing new technology to provide solutions for tomorrow's needs.



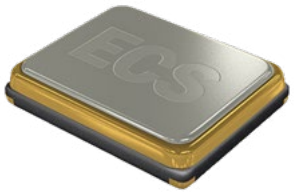
Series Number	Package Size	Actual Size	ESR (kΩ)	Tolerance
ECX-12Q	2.0 x 1.2 x 0.55 mm		90	±20ppm
ECX-34Q	3.2 x 1.5 x 0.9 mm		70	±10ppm, ±20ppm

Product **Applications**

Automotive
IoT
Mobile Devices
Drug Delivery Devices
Industrial
Wireless
RTC
Microprocessors

Product Description

SURFACE MOUNT **CRYSTALS**



ECS Inc. International's surface mount crystals provide high reliability and long-term stability. SMD crystals are ideal for microprocessors, IoT, wearables, and many additional applications. Crystal products can be supplied at custom and standard frequencies. ECS Inc. crystals can be customized with tight stability and low equivalent series resistance (ESR) with customer specified pullability. ECS Inc. offers the broadest range of package sizes in the industry with crystals as small as 1.2 x 1.0 mm and wide temperature ranges up to +125ºC.

Series Number	Package Size	Actual Size	Frequency (min-max)	Operating Temperatures
ECX-1048	1.2 x 1.0 x 0.33 mm		32 ~ 54 MHz	-40ºC ~ +85ºC
ECX-1048B**	1.2 x 1.0 x 0.33 mm		32 ~ 60 MHz	-40ºC ~ +85ºC
ECX-1247	1.6 x 1.2 x 0.3 mm		24 ~ 80 MHz	-40ºC ~ +125ºC
ECX-1247B*	1.6 x 1.2 x 0.3 mm		24 ~ 80 MHz	-40ºC ~ +85ºC
ECX-1247B2**	1.6 x 1.2 x 0.3 mm		24 ~ 80 MHz	-40ºC ~ +85ºC
ECX-1637	2.0 x 1.6 x 0.45 mm		16 ~ 80 MHz	-40ºC ~ +125ºC
ECX-1637B*	2.0 x 1.6 x 0.45 mm		16 ~ 50 MHz	-40ºC ~ +85ºC
ECX-1637B2**	2.0 x 1.6 x 0.45 mm		16 ~ 50 MHz	-30ºC ~ +85ºC
ECX-2236	2.5 x 2.0 x 0.55 mm		12 ~ 80 MHz	-40ºC ~ +85ºC
ECX-2236B*	2.5 x 2.0 x 0.55 mm		12 ~ 60 MHz	-40ºC ~ +85ºC
ECX-2236B2**	2.5 x 2.0 x 0.55 mm		12 ~ 50 MHz	-30ºC ~ +85ºC
ECX-32	3.2 x 2.5 x 0.8 mm		8 ~ 54 MHz	-55ºC ~ +125ºC
ECS-33B*	3.2 x 2.5 x 0.8 mm		10 ~ 54 MHz	-40ºC ~ +85ºC
ECS-33B2**	3.2 x 2.5 x 0.8 mm		10 ~ 54 MHz	-40ºC ~ +85ºC
ECX-42	4.0 x 2.5 x 0.8 mm		12 ~ 50 MHz	-40ºC ~ +85ºC
ECX-53B	5.0 x 3.2 x 0.85 mm		8 ~ 50 MHz	-40ºC ~ +85ºC
ECX-53B-DU	5.0 x 3.2 x 0.85 mm		10 ~ 50 MHz	-55ºC ~ +125ºC

*±1ppm aging first year
**±2ppm aging first year

Product **Applications**

Wearable Devices
IoT
Bluetooth
Mobile Devices
Industrial
Wireless Devices

Product Description

SURFACE MOUNT **CRYSTALS**

Series Number	Package Size	Actual Size	Frequency (min-max)	Operating Temperatures
ECX-53	5.0 x 3.2 x 1.2 mm		8 ~ 50 MHz	-40ºC ~ +85ºC
ECX-64	6.0 x 3.5 x 1.1 mm		7.3728 ~ 50 MHz	-40ºC ~ +85ºC
ECX-64A	6.0 x 3.5 x 1.1 mm		8 ~ 50 MHz	-40ºC ~ +85ºC
ECX-23G	6.0 x 3.5 x 1.2 mm		8 ~ 50 MHz	-40ºC ~ +85ºC
CSM-8M	7.0 x 5.0 x 1.3 mm		6 ~ 42 MHz	-40ºC ~ +105ºC
CSM-8A	7.0 x 5.0 x 1.7 mm		6 ~ 100 MHz	-40ºC ~ +85ºC
CSM-3X	7.6 x 4.1 x 2.3 mm		12 ~ 40 MHz	-40ºC ~ +85ºC
CSM-9	8.0 x 4.5 x 1.8 mm		4 ~ 50 MHz	-40ºC ~ +85ºC
ECX-19A	11.0 x 5.0 x 2.0 mm		3.57 ~ 40 MHz	-20ºC ~ +70ºC
CSM-7SSX	11.4 x 4.7 x 2.6 mm		3.57 ~ 50 MHz	-40ºC ~ +85ºC
CSM-7X-3L	11.4 x 4.7 x 4.2 mm		3.57 ~ 70 MHz	-40ºC ~ +125ºC
CSM-7X	11.4 x 4.7 x 4.3 mm		3.57 ~ 70 MHz	-55ºC ~ +125ºC
CSM-12	11.8 x 5.5 x 2.5 mm		3.57 ~ 40 MHz	-40ºC ~ +85ºC
ECX-3SX	12.5 x 4.6 x 3.7 mm		3.57 ~ 70 MHz	-10ºC ~ +70ºC
CSM-4ALX	12.5 x 4.85 x 4.0 mm		3.57 ~ 30 MHz	-40ºC ~ +85ºC
CSM-4AX	12.5 x 4.85 x 5.0 mm		3.57 ~ 30 MHz	-40ºC ~ +85ºC

Product Description

AEC-Q200 AUTOMOTIVE GRADE **CRYSTALS**

ECS Inc. International offers the highest quality AEC-Q200 automotive grade parts in the industry. These parts are manufactured in IATF-16949 certified factories and have met the stringent requirements for extremely harsh environments typical in automotive applications. Our automotive grade crystal parts are available in a range of package sizes, frequency ranges, and temperature ranges up to +150ºC. Automotive grade frequency products are desirable for customers in the automotive, industrial, and medical markets. For more product options and information, contact our engineering team at engineering@ecsxtal.com.



Series Number	Package Size	Actual Size	Frequency (min-max)	Operating Temperatures
ECX-12Q	2.0 x 1.2 x 0.55 mm		32.768 kHz	-40ºC ~ +125ºC
ECX-34Q	3.2 x 1.5 x 0.9 mm		32.768 kHz	-40ºC ~ +125ºC
ECX-1247Q	1.6 x 1.2 x 0.3 mm		24 ~ 60 MHz	-40ºC ~ +125ºC
ECX-1637Q	2.0 x 1.6 x 0.45 mm		16 ~ 60 MHz	-40ºC ~ +125ºC
ECX-1637BQ	2.0 x 1.6 x 0.45 mm		16 ~ 52 MHz	-40ºC ~ +85ºC
ECX-1637QZ	2.0 x 1.6 x 0.45 mm		16 ~ 60 MHz	-40ºC ~ +125ºC
ECX-2236Q	2.5 x 2.0 x 0.55 mm		12 ~ 60 MHz	-40ºC ~ +125ºC
ECX-33Q	3.2 x 2.5 x 0.8 mm		8 ~ 54 MHz	-40ºC ~ +125ºC
ECX-33QZ*	3.2 x 2.5 x 0.8 mm		12 ~ 32 MHz	-40ºC ~ +125ºC
ECX-33B2Q	3.2 x 2.5 x 0.8 mm		8 ~ 54 MHz	-55ºC ~ +125ºC
ECX-53BQ	5.0 x 3.2 x 0.85 mm		8 ~ 54 MHz	-55ºC ~ +125ºC
ECX-53BQZ*	5.0 x 3.2 x 0.9 mm		13 ~ 26 MHz	-40ºC ~ +125ºC
ECX-53Q	5.0 x 3.2 x 1.1 mm		8 ~ 54 MHz	-40ºC ~ +150ºC
CSM-8Q	7.0 x 5.0 x 1.3 mm		8 ~ 36 MHz	-55ºC ~ +125ºC

*Ruggedized Shock Resistance: 5000 g's 0.3 msec

Product Description

THRU HOLE **TUNING FORKS**

Series Number	Package Size	Actual Size	Frequency (min-max)	Operating Temperatures
ECX-1X5X	5.1 x 1.5 x 1.5 mm		32.768 kHz	-10ºC ~ +60ºC
ECX-2X6X	6.2 x 2.1 x 2.1 mm		32.768 kHz	-10ºC ~ +60ºC
ECX-3X8X	8.2 x 3.1 x 3.1 mm		32.768 kHz	-10ºC ~ +60ºC

Product Description

THRU HOLE **CRYSTALS**

Series Number	Package Size	Actual Size	Frequency (min-max)	Operating Temperatures
HC-46X	6.8 x 4.0 x 1.8 mm		12 ~ 40 MHz	-10ºC ~ +70ºC
UM1, UM5, UM4	7.8 x 3.1 mm		10 ~ 90 MHz	-10ºC ~ +70ºC
ECS-3X9X	9.0 x 3.2 x 3.2 mm		4 ~ 70 MHz	-10ºC ~ +60ºC
ECS-3X10X	10.5 x 3.2 x 3.2 mm		3.5 ~ 9.83 MHz	-10ºC ~ +60ºC
HC-49USX	11.35 x 4.65 x 3.50 mm		3.5 ~ 70 MHz	-55ºC ~ +125ºC
HC-49USSX	11.35 x 5.0 x 2.1 mm		3.5 ~ 50 MHz	-40ºC ~ +85ºC
HC-49UX	11.35 x 4.65 x 13.46 mm		1.8 ~ 100 MHz	-40ºC ~ +85ºC

Product Description

MHz CRYSTAL WITH **THERMISTOR**

Part Number	Package Size	Actual Size	Load Capacitance	Frequency	Operating Temperatures
ECX-192-7-37TC-CZY-TR	2.05 x 1.65 x 0.8 mm		7 pF	19.2 MHz	-30ºC ~ +85ºC
ECX-260-7-37TC-CZY-TR	2.05 x 1.65 x 0.8 mm		7 pF	26 MHz	-30ºC ~ +85ºC
ECX-384-8-37TC-CZY-TR	2.05 x 1.65 x 0.8 mm		8 pF	38.4 MHz	-30ºC ~ +85ºC
ECX-192-7-36TC-CZY-TR	2.55 x 2.05 x 1.0 mm		7 pF	19.2 MHz	-30ºC ~ +85ºC
ECX-260-9-36TC-CZY-TR	2.55 x 2.05 x 1.0 mm		9 pF	26 MHz	-30ºC ~ +85ºC

MultiVolt™ OSCILLATORS

The ECS Inc. MultiVolt™ oscillators have been designed and manufactured to offer flexibility and high performance. The MultiVolt™ oscillators can operate across a supply voltage 1.6V ~ 3.3V or on a static supply compatible with 1.8V, 2.5V, 3.0V, and 3.3V. They are available with frequencies of 32.768 kHz or 0.75 MHz ~ 320 MHz. These oscillators are ideal for medical, IoT, video, and industrial applications. The MultiVolt™ series offers better jitter, and better performance than MEMS oscillators at a lower cost.

32.768 kHz **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-327MV	1.6 x 1.2 x 0.7 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-327MVATX-1	2.0 x 1.6 x 0.9 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-327MVATX-2	2.5 x 2.0 x 1.0 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-2012MV-327KE	2.0 x 1.2 x 0.9 mm		±10ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-3215MV-327KE	3.2 x 1.5 x 0.9 mm		±50ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-327ATQMV*	3.2 x 2.5 x 0.9 mm		±100ppm	32.768 kHz	-40ºC ~ +125ºC
ECS-327MVATX-3	3.2 x 2.5 x 1.2 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-327MVATX-5	5.0 x 3.2 x 1.3 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC
ECS-327MVATX-7	7.0 x 5.0 x 1.4 mm		±25ppm	32.768 kHz	-40ºC ~ +85ºC

*AEC-Q200 Qualified Oscillator

HCMOS **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-1612MV	1.6 x 1.2 x 0.7 mm		±25ppm	3 ~ 80 MHz	-40ºC ~ +85ºC
ECS-2016MV	2.0 x 1.6 x 0.85 mm		±25ppm	1.5 ~ 54 MHz	-40ºC ~ +85ºC
ECS-2520MV	2.5 x 2.0 x 0.8 mm		±50ppm	2 ~ 160 MHz	-40ºC ~ +85ºC
ECS-3225MV	3.2 x 2.5 x 1.2 mm		±50ppm	2 ~ 160 MHz	-40ºC ~ +85ºC
ECS-5032MV	5.0 x 3.2 x 1.3 mm		±50ppm	0.75 ~ 160 MHz	-40ºC ~ +85ºC
ECS-7050MV	7.0 x 5.0 x 1.7 mm		±50ppm	1 ~ 160 MHz	-40ºC ~ +85ºC

LVDS Low Jitter <50fs **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECX2-LMV-3	3.2 x 2.5 x 0.9 mm		±25ppm	100 ~ 320 MHz	-40ºC ~ +85ºC
ECX2-LMV-5	5.0 x 3.2 x 1.2 mm		±25ppm	100 ~ 320 MHz	-40ºC ~ +85ºC
ECX2-LMV-7	7.0 x 5.0 x 1.5 mm		±25ppm	100 ~ 320 MHz	-40ºC ~ +85ºC

Low Current **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-2520MVLC	2.5 x 2.0 x 0.8 mm		±50ppm	1 ~ 75 MHz	-40ºC ~ +85ºC
ECS-3225MVLC	3.2 x 2.5 x 1.0 mm		±50ppm	1 ~ 75 MHz	-40ºC ~ +85ºC

Tight Stability **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-2520SMV	2.5 x 2.0 x 0.8 mm		±5ppm / ±10ppm	8 ~ 60 MHz	-40ºC ~ +105ºC
ECS-3225SMV	3.2 x 2.5 x 1.2 mm		±5ppm / ±10ppm	8 ~ 60 MHz	-40ºC ~ +105ºC

HCMOS AEC-Q200 **MultiVolt™**

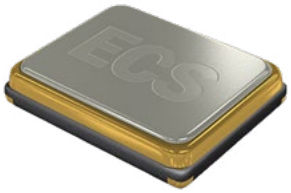
Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-2016MVQ	2.0 x 1.6 x 0.85 mm		±50ppm	1.5 ~ 54 MHz	-40ºC ~ +125ºC
ECS-2520MVQ	2.5 x 2.0 x 0.8 mm		±50ppm	1 ~ 160 MHz	-40ºC ~ +125ºC
ECS-2520SMVQ	2.5 x 2.0 x 1.0 mm		±20ppm	8 ~ 60 MHz	-40ºC ~ +105ºC
ECS-327ATQMV	3.2 x 2.5 x 0.9 mm		±100ppm	32.768 kHz	-40ºC ~ +125ºC
ECS-3225MVQ	3.2 x 2.5 x 1.2 mm		±50ppm	1 ~ 160 MHz	-40ºC ~ +125ºC
ECS-3225SMVQ	3.2 x 2.5 x 1.2 mm		±20ppm	8 ~ 60 MHz	-40ºC ~ +150ºC

TCXO **MultiVolt™**

Series Number	Package Size	Actual Size	Stability	Frequency (min-max)	Operating Temperatures
ECS-TXO-16CSMV4	1.6 x 1.2 x 0.56 mm		±0.5ppm	26 ~ 52 MHz	-30ºC ~ +85ºC
ECS-TXO-20CSMV	2.0 x 1.6 x 0.8 mm		±0.5ppm	10 ~ 52 MHz	-30ºC ~ +85ºC
ECS-TXO-20CSMV4	2.0 x 1.6 x 0.8 mm		±0.5ppm	10 ~ 52 MHz	-40ºC ~ +85ºC
ECS-TXO-2016MV	2.0 x 1.6 x 0.8 mm		±2.5ppm	10 ~ 60 MHz	-40ºC ~ +85ºC
ECS-TXO-20CSMV-AC	2.5 x 2.0 x 1.0 mm		±0.5ppm	10 ~ 52 MHz	-30ºC ~ +85ºC
ECS-TXO-2520MV	2.5 x 2.0 x 1.0 mm		±2.5ppm	10 ~ 60 MHz	-40ºC ~ +85ºC
ECS-TXO-25CSMV	2.5 x 2.0 x 1.0 mm		±0.5ppm	10 ~ 52 MHz	-40ºC ~ +85ºC
ECS-TXO-25CSMV-AC	2.5 x 2.0 x 0.8 mm		±0.5ppm	10 ~ 52 MHz	-40ºC ~ +85ºC
ECS-TXO-3225MV	3.2 x 2.5 x 1.0 mm		±2.5ppm	8 ~ 60 MHz	-40ºC ~ +85ºC
ECS-TXO-32CSMV	3.2 x 2.5 x 1.2 mm		±2.5ppm	10 ~ 52 MHz	-40ºC ~ +85ºC

Product Description

SURFACE MOUNT **OSCILLATORS**



ECS Inc. oscillator products include quartz based and silicon hybrid clock oscillators with a complete range of performance options. We have CMOS, LVDS, LVPECL, and HCMOS output configurations available. We have dual in-line and PC board mountable design package options. For more product options and information, contact our engineering team at engineering@ecsxtal.com.

Series Number	Package Size	Actual Size	Key Feature	Frequency (min-max)	Operating Temperatures
ECS-327KE	3.2 x 2.5 x 1.0 mm		Low Current 1.5µA	32.768 kHz	-40ºC ~ +85ºC
ECS-1618	2.0 x 1.6 x 0.9 mm		1.8V CMOS	1.5 ~ 80 MHz	-40ºC ~ +85ºC
ECS-1633	2.0 x 1.6 x 0.9 mm		3.3V CMOS	1.5 ~ 80 MHz	-40ºC ~ +85ºC
ECS-2520Q	2.5 x 2.0 x 0.8 mm		AEC-Q200	0.75 ~ 60 MHz	-40ºC ~ +125ºC
ECS-2025	2.5 x 2.0 x 0.8 mm		2.5V CMOS	0.75 ~ 75 MHz	-40ºC ~ +85ºC
ECS-2018	2.5 x 2.0 x 0.9 mm		1.8V CMOS	0.75 ~ 50 MHz	-40ºC ~ +85ºC
ECS-2033	2.5 x 2.0 x 0.9 mm		3.3V CMOS	0.75 ~ 75 MHz	-55ºC ~ +125ºC
ECS-2520S	2.5 x 2.0 x 0.9 mm		±10ppm Stability	3.2 ~ 55 MHz	-40ºC ~ +85ºC
ECS-3225Q	3.2 x 2.5 x 0.9 mm		AEC-Q200	0.75 ~ 60 MHz	-40ºC ~ +125ºC
ECS-2325	3.2 x 2.5 x 1.0 mm		2.5V CMOS	1 ~ 95 MHz	-40ºC ~ +85ºC
ECS-2333	3.2 x 2.5 x 1.0 mm		3.3V CMOS	1 ~ 95 MHz	-40ºC ~ +85ºC
ECS-3961	5.0 x 3.2 x 1.3 mm		5.0V CMOS	1 ~ 125 MHz	-55ºC ~ +125ºC
ECS-3963	5.0 x 3.2 x 1.3 mm		3.3V HCMOS	1 ~ 125 MHz	-55ºC ~ +125ºC
ECS-3518	5.0 x 3.2 x 1.3 mm		1.8V HCMOS	1.544 ~ 125 MHz	-40ºC ~ +85ºC
ECS-3525	5.0 x 3.2 x 1.3 mm		2.5V HCMOS	1.544 ~ 125 MHz	-40ºC ~ +85ºC
ECS-3955M	7.0 x 5.0 x 1.6 mm		5V 50 pF Load	1.8 ~ 70 MHz	-55ºC ~ +125ºC
ECS-3951M	7.0 x 5.0 x 1.7 mm		5V HCMOS	1.8 ~ 125 MHz	-55ºC ~ +125ºC
ECS-3953M	7.0 x 5.0 x 1.7 mm		3.3V HCMOS	1.8 ~ 125 MHz	-55ºC ~ +125ºC
ECS-LVDS25	7.0 x 5.0 x 1.7 mm		2.5V LVDS	80 ~ 300 MHz	-40ºC ~ +85ºC
ECS-LVDS33	7.0 x 5.0 x 1.7 mm		3.3V LVDS	80 ~ 300 MHz	-40ºC ~ +85ºC
ECS-PEC25	7.0 x 5.0 x 1.7 mm		2.5V PECL	40 ~ 300 MHz	-40ºC ~ +85ºC
ECS-PEC33	7.0 x 5.0 x 1.7 mm		3.3V PECL	40 ~ 300 MHz	-40ºC ~ +85ºC

Product Description

SURFACE MOUNT **OSCILLATORS** CONT.

Series Number	Package Size	Frequency (min-max)	Operating Temperatures
ECS-2532HS High Stability HCMOS	3.2 x 2.5 x 0.9 mm	1 ~ 55 MHz	-40ºC ~ +85ºC
ECS-3250SS Spread Spectrum	5.0 x 3.2 x 1.05 mm	10 ~ 168 MHz	-10ºC ~ +70ºC
ECS-327SMO (1.5 ~ 6V)	6.5 x 4.0 x 2.0 mm	32.768 kHz	-40ºC ~ +85ºC
ECS-8FX (+3.3V or +5.0V)	14.0 x 9.8 x 4.7 mm	1 ~ 80 MHz	-40ºC ~ +85ºC

Product Description

PROGRAMMABLE **OSCILLATORS**

Series Number	Package Size	Frequency (min-max)	Operating Temperatures
ECS-P53 / ECS-P55 (+3.3V or +5.0V)	5.0 x 3.2 x 1.0 mm	1 ~ 125 MHz	-40ºC ~ +85ºC
ECS-P73 / ECS-P75 (+3.3V or +5.0V)	7.5 x 5.0 x 1.6 mm	1 ~ 150 MHz	-40ºC ~ +85ºC
ECS-P83X / ECS-P85X (+3.3V or +5.0V)	13.2 x 13.2 x 5.4 mm	1 ~ 150 MHz	-40ºC ~ +85ºC
ECS-P143X / ECS-P145X (+3.3V or +5.0V)	20.7 x 12.9 x 5.0 mm	1 ~ 150 MHz	-40ºC ~ +85ºC

Product Description

ECSpressCON **OSCILLATORS**

Available Sizes	Series Number	Output	Frequency (min-max)	Voltage
2.5 x 2.0 mm 	ECX-H (XO)	HCMOS	10 ~ 250 MHz	+2.5 or +3.3V
3.2 x 2.5 mm 	ECX-P (XO)	LVPECL	10 ~ 1500 MHz	+2.5 or +3.3V
5 x 3.2 mm 	ECX-L (XO)	LVDS	10 ~ 1500 MHz	+2.5 or +3.3V
7 x 5 mm 	ECXV-H (VCXO)	HCMOS	10 ~ 250 MHz	+2.5 or +3.3V
	ECXV-P (VCXO)	LVPECL	10 ~ 1500 MHz	+2.5 or +3.3V
	ECXV-L (VCXO)	LVDS	10 ~ 1500 MHz	+2.5 or +3.3V
	ETXO-H (TCXO)	HCMOS	10 ~ 250 MHz	+2.5 or +3.3V
	ETXO-P (TCXO)	LVPECL	10 ~ 1500 MHz	+2.5 or +3.3V
	ETXO-L (TCXO)	LVDS	10 ~ 1500 MHz	+2.5 or +3.3V

Product Description

VCXO, TCXO, VC-TCXO **OSCILLATORS**



Quartz oscillators are a drop-in complete timing circuit. They offer excellent frequency tolerance and temperature stability over the required temperature range while maintaining low jitter and phase noise performance. They are available in fixed or configurable XOs, VCXOs, and TCXOs. If you need a simple reference clock or you are developing a mission critical system, we have the right oscillator to support your design. For more product options and information, contact our engineering team at engineering@ecsxtal.com.

Series Number	Package Size	Output Type	Frequency (min-max)	Stability	Operating Temperatures
ECS-2532VXO	3.2 x 2.5 x 0.9 mm	HCMOS	2 ~ 54 MHz	±30ppm	-10ºC ~ +70ºC
ECS-VXO-73	7.0 x 5.0 x 1.6 mm	HCMOS	3 ~ 77.76 MHz	±50ppm	-10ºC ~ +70ºC
ECS-VXO-75	7.0 x 5.0 x 1.6 mm	HCMOS	3 ~ 77.76 MHz	±50ppm	-10ºC ~ +70ºC
ECS-VXO-97	7.0 x 5.0 x 1.8 mm	HCMOS	8 ~ 40 MHz	±30ppm	-10ºC ~ +60ºC
ECS-327TXO-2012	2.0 x 1.2 x 1.1 mm	HCMOS	32.768 MHz	±5ppm	-40ºC ~ +85ºC
ECS-327TXO	3.28 x 2.5 x 1.3 mm	HCMOS	32.768 MHz	±5ppm	-40ºC ~ +85ºC
ECS-TXO-2016	2.0 x 1.6 x 0.8 mm	HCMOS	9.5 ~ 60 MHz	±2.5ppm	-40ºC ~ +85ºC
ECS-TXO-2520	2.5 x 2.0 x 0.9 mm	HCMOS	3.2 ~ 55 MHz	±2.5ppm	-40ºC ~ +85ºC
ECS-TXO-3225	3.2 x 2.5 x 1.0 mm	HCMOS	8.192 ~ 40 MHz	±2.5ppm	-40ºC ~ +85ºC
ECS-TXO32-S3	3.2 x 2.5 x 0.9 mm	Clipped Sine Wave	9.6 ~ 50 MHz	±280ppb	-40ºC ~ +85ºC
ECS-TXO-5032	5.0 x 3.2 x 1.5 mm	HCMOS	6.4 ~ 38.4 MHz	±2.5ppm	-40ºC ~ +85ºC
ECS-TXO53-S3	5.0 x 3.2 x 1.8 mm	HCMOS	10 ~ 52 MHz	±280ppb	-40ºC ~ +85ºC
ECS-VC-TXO32-S3	3.2 x 2.5 x 0.9 mm	Clipped Sine Wave	9.6 ~ 50 MHz	±280ppb	-40ºC ~ +85ºC

OCXO **OSCILLATORS**

Series Number	Package Size	Output Type	Frequency (min-max)	Stability	Operating Temperatures
ECOC-7050	7.0 x 5.0 x 3.3 mm	LVCMOS	10 ~ 50 MHz	±50ppb	-40ºC ~ +85ºC
ECOC-9775	9.7 x 7.5 x 5.65 mm	LVCMOS	10 ~ 48 MHz	±50ppb	-40ºC ~ +85ºC
ECOC-2522-C	25.4 x 22.0 x 12.2 mm	HCMOS	2 ~ 100 MHz	±30ppb	-40ºC ~ +75ºC
ECOC-2522-S	25.4 x 22.0 x 12.2 mm	Sine Wave	2 ~ 100 MHz	±30ppb	-40ºC ~ +75ºC

Product Description

RESONATORS



ECS Inc. International is a leading manufacturer of ceramic resonators. Ceramic resonators are made of high stability piezoelectric ceramics that function as a mechanical resonator. They are used in a broad range of applications that don't require precision timing such as consumer electronics, communication, personal computing, elevators, fire alarms, and exercise equipment. Ceramic resonators are a low-cost solution for non-critical timing. Let ECS Inc. International be your one-stop shop for resonators.

CERAMIC **RESONATORS**

Series Number	Type	Package Size	Frequency (min-max)	Tolerance/Stability	Operating Temperatures
ECS-HFR-B	Surface Mount	2.5 x 2.0 x 1.0 mm	20 ~ 50 MHz	±0.5%/±0.4%	-20ºC ~ +80ºC
ECS-CTE	Surface Mount	3.2 x 1.3 x 1.0 mm	8 ~ 12 MHz	±0.5%/±0.2%	-40ºC ~ +85ºC
ECS-CR2-A	Surface Mount	3.7 x 3.1 x 1.2 mm	8 ~ 40 MHz	±0.5%/±0.3%	-20ºC ~ +80ºC
ECS-CR2-B	Surface Mount	3.7 x 3.1 x 1.2 mm	8 ~ 40 MHz	±0.5%/±0.4%	-20ºC ~ +70ºC
ECS-CTA	Surface Mount	6.0 x 3.0 x 1.5 mm	2 ~ 12 MHz	±0.5%/±0.2%	-25ºC ~ +85ºC
ECS-CTP	Surface Mount	6.0 x 3.0 x 1.6 mm	1.84 ~ 20 MHz	±0.5%/±0.35%	-40ºC ~ +85ºC
ZTB	Thru-Hole	7.0 x 3.5 x 9.0 mm	455 kHz	±2kHz/±0.3%	-20ºC ~ +80ºC

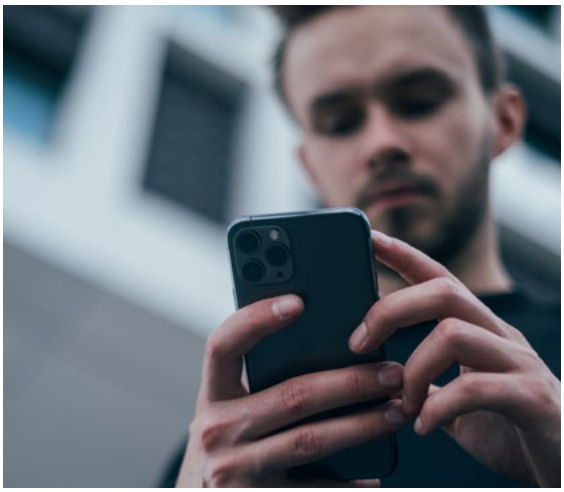
SAW **RESONATORS**

Series Number	Type	Package Size	Frequency (min-max)	Stability	Operating Temperatures
ECS-NDR	Surface Mount	3.0 x 3.0 mm	315 ~ 915 MHz	0.032 ppm / $^{O}C^{2}$	-40ºC ~ +85ºC
ECS-NSR	Surface Mount	3.8 x 3.8 mm	315 ~ 950 MHz	0.032 ppm / $^{O}C^{2}$	-40ºC ~ +85ºC
ECS-SDR1	Surface Mount	5.0 x 5.0 mm	310 ~ 433 MHz	0.032 ppm / $^{O}C^{2}$	-40ºC ~ +85ºC
ECS-DR1	Thru-Hole	9.5 x 9.5 x 3.3 mm	310 ~ 434 MHz	0.037 ppm / $^{O}C^{2}$	-40ºC ~ +85ºC
ECX-DR2	Thru-Hole	9.5 x 9.5 x 3.3 mm	310 ~ 434 kHz	0.037 ppm / $^{O}C^{2}$	-40ºC ~ +85ºC

Product Description

FILTERS

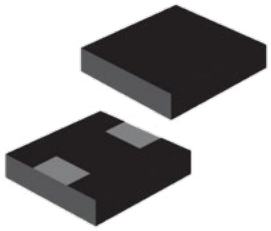
ECS Inc. International is a leading manufacturer of quartz, SAW, and ceramic based filters for communications, industrial and medical markets. We work closely with our customers to develop the best solution for their application. ECS Inc. offers standard IF filters at 10.7 MHz. We offer a wide selection of monolithic crystal filters both thru hole and surface mount packages, and a wide range of center frequencies including 10.7 MHz, 21.4 MHz, 45.0 MHz, 70.0 MHz and 90.0 MHz. The monolithic crystal filter offers the stability of a quartz device ideal for IF filtering. The monolithic design is both cost effective and space saving making them ideal for today's wireless and telecommunications applications. For more product options and information, contact our engineering team at engineering@ecsxtal.com.



Series Number	Type		Package Size	Operating Temperatures	Frequency (min-max)
ECS Thru Hole	Monolithic Crystal Filters		Multiple Options	-20ºC ~ +70ºC	10.7 ~ 90 MHz
ECS-38SMF	Monolithic Crystal Filters		3.8 x 3.8 x 1.0 mm	-30ºC ~ +80ºC	45 MHz
ECS-75SMF	Monolithic Crystal Filters		7.0 x 5.0 x 0.8 mm	-30ºC ~ +80ºC	45 ~ 70.05 MHz
ECS-96SMF	Monolithic Crystal Filters		7.0 x 5.0 x 1.35 mm	-30ºC ~ +85ºC	21.4 ~ 109.65 MHz
ECS-96SMF	Monolithic Crystal Filters		7.0 x 5.0 x 1.35 mm	-30ºC ~ +80ºC	45 MHz
ECS-DSF947.5B-21	SAW		3.0 x 3.0 x 1.5 mm	-30ºC ~ +80ºC	947.5 MHz
ECS-D479.5B	SAW		9.5 x 9.5 x 3.5 mm	-25ºC ~ +85ºC	479.5 MHz
ECS-D480	SAW		9.5 x 9.5 x 3.5 mm	-25ºC ~ +85ºC	480 MHz
ECS-DCF-101	Use in Pair	Ceramic	8.6 x 5.0 x 3.0 mm	-40ºC ~ +85ºC	5235 MHz
ECS-DCF-102		Ceramic	8.6 x 4.6 x 3.0 mm	-40ºC ~ +85ºC	5697 MHz
ECS-DCF-103	Use in Pair	Ceramic	8.6 x 4.6 x 3.0 mm	-40ºC ~ +85ºC	5665 MHz
ECS-DCF-104		Ceramic	8.6 x 5.0 x 3.0 mm	-40ºC ~ +85ºC	5245 MHz
ECS-DCF-105	Use in Pair	Ceramic	12.8 x 4.4 x 4.2 mm	-40ºC ~ +85ºC	6225 MHz
ECS-DCF-106		Ceramic	12.8 x 5.3 x 3.8 mm	-40ºC ~ +85ºC	5492.5 MHz
ECS-DCF-107	Use in Pair	Ceramic	9.4 x 5.1 x 3.0 mm	-40ºC ~ +85ºC	5492.5 MHz
ECS-DCF-108		Ceramic	9.4 x 4.1 x 3.0 mm	-40ºC ~ +85ºC	6525 MHz
ECS-DCF-109	Use in Pair	Ceramic	9.6 x 5.1 x 3.0 mm	-40ºC ~ +85ºC	5442.5 MHz
ECS-DCF-110		Ceramic	9.6 x 4.1 x 3.0 mm	-40ºC ~ +85ºC	6450 MHz

Product Description

POWER **INDUCTORS**



ECS Inc. offers a wide selection of small form factor power inductors for DC/DC power applications. A power inductor, also known as a coil or choke, is a two-terminal passive electronic component used to clean up the output from high frequency switching power supplies. They offer low magnetic radiation for low noise environments. They do this by storing energy in the form of a magnetic field. ECS Inc.'s small form factor shielded power inductors offer low DC resistance and wide temperature ranges. Let ECS Inc. International be your one-stop shop for power inductors.

Series Number	Package Size	Inductance Range	I_{sat} (Amps)	DCR (mΩ)	Operating Temperatures
ECS-MPI2520R0	2.5 x 2.0 x 1.0 mm	0.47 - 4.7 µH ±20%	1.1 - 4.4	28 - 240	-40ºC ~ +105ºC
ECS-MPI2520R1	2.5 x 2.0 x 1.2 mm	0.47 - 10 µH ±20%	1.2 - 4.8	20 - 390	-40ºC ~ +105ºC
ECS-MPI4040R1*	4.45 x 4.06 x 1.2 mm	0.09 - 10 µH ±20%	2.8 - 32	8.5 - 370	-55ºC ~ +125ºC
ECS-MPI4040R2*	4.45 x 4.06 x 1.5 mm	0.47 - 10 µH ±20%	3.1 - 12.2	12 - 240	-55ºC ~ +125ºC
ECS-MPI4040R3*	4.45 x 4.06 x 1.85 mm	0.22 - 22 µH ±20%	2.2 - 20	5.8 - 408	-55ºC ~ +125ºC
ECS-MPI4040R4*	4.45 x 4.06 x 2.0 mm	0.22 - 22 µH ±20%	1.8 - 15	5.3 - 316	-55ºC ~ +125ºC
ECS-MPIL0530	5.49 x 5.18 x 3.0 mm	0.68 - 22 µH ±20%	3 - 14	11 - 270	-40ºC ~ +125ºC
ECS-HCMPI-0502Q*	5.5 x 5.3 x 1.9 mm	0.15 - 1.5 µH ±20%	13.3 - 30	4.6 - 18.7	-40ºC ~ +125ºC
ECS-HCMPI-0503Q*	5.5 x 5.3 x 2.9 mm	0.15 - 4.7 µH ±20%	8.2 - 36	2.31 - 36.3	-40ºC ~ +125ºC
ECS-MPIL0630	7.4 x 6.6 x 3.0 mm	0.10 - 22 µH ±20%	3 - 20	3.4 - 125	-40ºC ~ +125ºC

*AEC-Q200 Qualified Inductors

Product Description

REAL TIME CLOCKS

A real time clock is a digital clock thats main function is to keep accurate track of the time even when power supply is turned off or the device is placed into low power mode. These all-in-one devices are engineered to provide better performances than discrete components, simplify integration in new designs and accelerate time to market. Find the RTC that best suits your needs below. For help selecting an RTC, please contact us at engineering@ecsxtal.com.

Series Number	Package Size	Voltage	Frequency	Stability	Operating Temperatures
ECS-RTC-3225-5609	3.2 x 2.5 x 1.0 mm	+2.5 ~ 5.0 V	32.768 kHz	±20 PPM	-40ºC ~ +85ºC
ECS-RTC-3225-5699HS	3.2 x 2.5 x 1.0 mm	+2.5 ~ 5.0 V	32.768 kHz	±5 PPM	-40ºC ~ +85ºC
ECS-RTC-3225-5699C3	3.2 x 2.5 x 1.0 mm	+2.5 ~ 5.0 V	32.768 kHz	±3 PPM	-40ºC ~ +85ºC

ECS Inc. International

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A Thank You

FROM OUR CEO

To our valued ECS Inc. customer –

We want to thank you for reviewing our product catalog.

We have spent the last 44 years working tirelessly to ensure that every time you select an ECS Inc. International component for your design, you can count on excellent quality and performance. We will continue to be a leader in the frequency control and magnetics industry as we continue to develop new products to meet emerging technologies with cutting edge solutions to fill gaps in traditional product development.

We strive to provide so much more than just a component. As an ECS Inc. International customer, you are our priority. It is every team member's daily goal to provide you with concentrated attention, support, and care that is unparalleled while ensuring we are always looking ahead at the new advancements in technology. We want to be there for every customer because no matter if you purchase a thousand pieces per year or ten thousand pieces per year, we truly appreciate you.

Looking toward the future, we intend to expand our teams both domestically and internationally with enhanced engineering staff, sales representatives, distribution partners, and educational resources.

We understand that you have choices when designing every board, so on behalf of us and all our team members internationally, we want to personally thank you for choosing to be a part of the ECS Inc. International family.

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Eric Slatten
President and CEO, ECS Inc. International



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