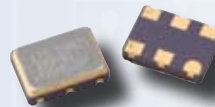


PRECISION *FREQUENCY CONTROL* DEVICES

- *Super Precision OCXO*
- *Low Cost 9 x 14mm SMT OCXO*
- *Low Phase Noise OCXO*
- *Voltage Controlled SAW VCXO*
- *TCXO and VCXO Products*



Super Precision OCXO

Design Features:

- CTS designed and manufactured SC-Cut Quartz Crystal
- Aging rate reaching $<2 \times 10^{-11}$ /day during first year of operation
- Precision oven controlled plus temperature compensation provides temperature stability option to $<1 \times 10^{-10}$ over -20°C to $+75^{\circ}\text{C}$
- Total stability of 37 ppb for life in support of UMTS
- Provides holdover time accuracy of $10\mu\text{s}$ for CDMA
- Digital communication and frequency adjust
- +5VDC or +12VDC operation
- Standard frequencies: 5, 10 and 15 MHz

Product Benefits:

- Smaller size and less cost than conventional double-oven OCXO
- Several standard frequencies developed
- Capable of providing CDMA $10\mu\text{s}$ accuracy over temperature and 24 hours
- Supports the frequency stability and timing requirements of UMTS, LTE, CDMA and WiMAX
- Serves as the primary reference for UMTS and holdover reference for CDMA
- Versatile platform design – custom configurations and performance



Conventional OCXO

Design Features:

- AT-cut and SC-cut crystal versions
- Several industry standard package sizes and low profile height
- Through-hole and surface mount configurations
- Supporting system power supply of 3.3V, 5V, and 12V
- High stability and low phase noise platforms
- Wide range of standard frequencies
- Serves as stand-alone primary reference or in disciplined mode
- Low Phase Noise option available

Product Benefits:

- Primary reference for cellular pico-cell base stations
- Secondary, disciplined reference for Cellular macro- and micro-cells
- Low noise, high stability reference for test and measurement equipment
- Versatile platform design—custom performance available
- Serves most telecom applications:
 - Wireless Cellular
 - WiMAX
 - Microwave
 - Stratum 3 telecom timing
 - Stratum 3E telecom timing
 - Repeaters

General Specifications:

- Frequency range: 10 MHz to 38.88 MHz
(selected standard frequencies available)
- Stability over temperature:
 - -40°C to $+85^{\circ}\text{C}$: ± 280 ppb (AT-cut);
 - -20°C to $+85^{\circ}\text{C}$: ± 4 ppb (SC-cut)
- Aging range: 370 ppb (AT-cut) to 50 ppb/yr (SC-cut)



Low Cost 9 x 14mm SMT OCXO

www.ctscorp.com

Design Features:

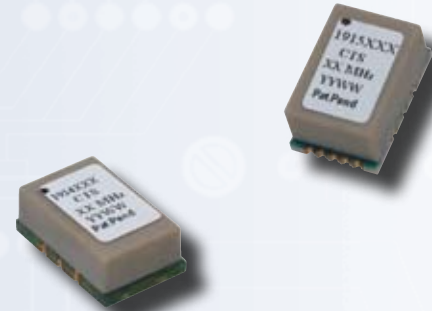
- Temperature compensation in addition to oven temperature control
- Small 9 x 14mm surface mount platform
- Low operating power and fast warm-up
- Low phase noise
- Frequency stability better than TCXO at comparable cost

Product Benefits:

- Reference for GSM, CDMA and UMTS Femtocell base stations
- Stratum 3 telecom timing reference
- Reference for wireless repeaters
- Commonly used in Synch-E client applications

General Specifications:

- Selected standard frequencies up to 26 MHz
- Stability over temperature:
 - 100 ppb (over commercial range);
 - 280 ppb (over industrial range)
- Aging: 40 ppb over +30°C to +55°C and 280 ppb over -40°C to +85°C



Voltage Controlled SAW Oscillator - VCSO

Design Features:

- Discrete construction for custom performance
- Output frequencies available from 400 MHz to 850 MHz
- Available in two common size platforms
- Low jitter/phase noise
- Complementary PECL outputs
- Enable/disable feature
- 3.3V or 5V operation
- Selected frequencies range: 480 MHz to 850 MHz
- Jitter: <0.1 ps (RMS)

Product Benefits:

- Low cost platforms
- SONET/Gigabit Ethernet compliant
- Standard SONET and FEC frequencies
- Tuning range for guaranteed acquire and maintain lock for life



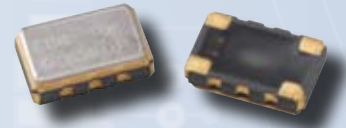
See the complete list of available products and specifications at:
www.ctscorp.com/components/

CTS[®]
ELECTRONIC COMPONENTS

Temperature Compensated Crystal Oscillators - TCXO

Features and Benefits:

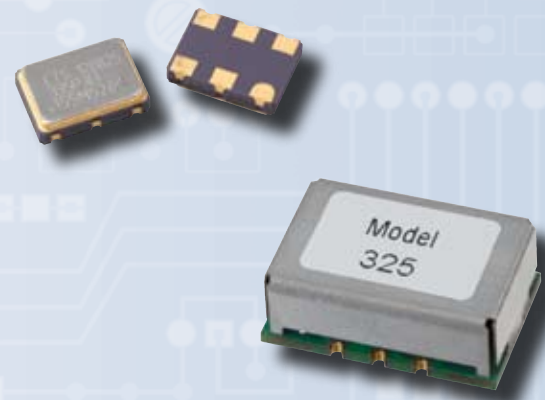
- Low-cost standard product platforms
- Discrete design platforms for custom performance
- Stratum 3, Stratum 4 and SMC applications
- HCMOS and Clipped Sinewave outputs available
- Stabilities from 2.5 ppm to 0.28 ppm
- Selected frequencies from 10 MHz to 36 MHz



Voltage Controlled Crystal Oscillators - VCXO

Features and Benefits:

- Low-cost standard platforms
- Low Phase Noise for custom and precision performance
- SONET and Gigabit Ethernet compliant
- HCMOS, PECL or LVDS outputs available
- Frequency tuning range guaranteed to acquire and maintain lock for life
- Fundamental crystal design at frequencies from 1.5 MHz to 212.5 MHz
- Stability from 20 ppm to 50 ppm



See the complete list of available products and specifications at: www.ctscorp.com/components/

CTS Sales Products are supported by well qualified Manufacturing Representatives and Authorized Stocking Distributors. You may locate your representative or preferred distributor at www.ctscorp.com. Your CTS Sales Contact is:

