

TSX Crystal Thermistor Integrated Design

CTS has years of experience in designing and manufacturing temperature sensors and frequency control products. We have combined our expertise to support development of the CTS Model TSX crystal with an integrated thermistor. This provides direct temperature-sensing to enable improved precision and calibration. This design allows the device to monitor its own temperature in real time, enabling precise frequency compensation.



Truly Accurate Frequency Stability

Crystals inherently experience frequency drift as temperature changes, this is one of the largest error sources in frequency control. With the TSX, the integrated thermistor measures the crystal's true, localized temperature in real time, enabling much tighter control over temperature drift.



Reduced Design Complexity

In traditional designs, achieving temperature compensation requires multiple discrete elements working together. Each adding complexity, cost, and potential for error. CTS Model TSX integrates the thermistor into a Crystal Unit to optimize space in circuit design and improve frequency temperature compensation compared to the conventional designs.



Compact Design, Consistent Performance

High-performance frequency control with tight stability (± 20 ppm) and a wide frequency range (16–285 MHz), delivering reliable operation across -40°C to $+85^{\circ}\text{C}$ environments. Its flexible capacitance and compact, rugged package options make it easy to integrate into space-constrained, high-reliability designs.

Technical Specifications Table:

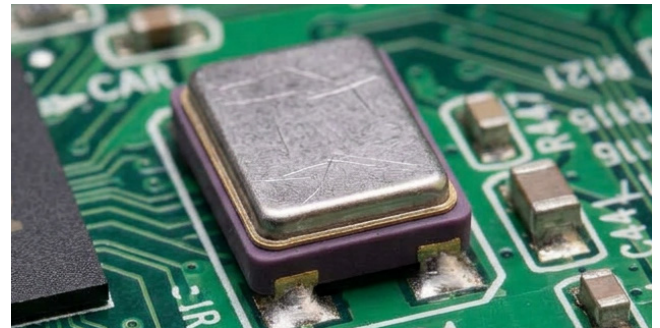
| Parameter | Data |
|-----------------------|--------------|
| Frequency Range | 16 to 285MHz |
| Load Capacitance | 6-50pF |
| Frequency Stability | ±20ppm |
| Operating Temperature | -40/+85°C |

Features

- Crystal unit with built in Thermistor
- Ultra Compact and Low Profile
- Hermetic Ceramic Surface Mount Package
- Fundamental Crystal Design
- Tape and Reel Packaging, EIA-481

Applications

- Wireless Communications
- Low Power MCUs, SoCs, RF ICs
- M2M Communications
- 5G, Wi-Fi, ZigBee, Z-Wave
- Bluetooth, Bluetooth Low Energy
- LoRa, LPWAN, 6LowPan, WLAN
- LTE, NB-IoT, GPS, MCU, FPGA
- Low Drive Chipsets
- Wearable Devices



Years Of Automotive Experience

CTS has a long history of developing advanced sensing technologies, building on decades of expertise in thermistors and precision measurement.

With over 40 years of frequency control design, CTS delivers highly reliable solutions engineered for accuracy and stability across demanding industries. By combining deep sensing knowledge with frequency control innovation, CTS creates integrated solutions like the TSX. CTS's goal is to continue to enhance performance, simplify design, and support consistent, high-precision operation in real-world applications.

Contact Information

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