RTC Module Timing Solutions

This paper identifies the barriers and benefits of various timing solutions and offers guidance on when and why an RTC module timing solution may be a better choice:

- The Criticality of Timing Solutions
- The Capability Range of Common Timing Solutions (Crystals, Crystal Oscillators, Temperature Compensated Crystal Oscillators, Real-Time Clock Modules)
- The Pros and Cons of Switching to RTC Modules

FAQ on RTC modules and oscillators:

Internals of a Quartz Crystal Oscillator – The quartz crystal is encased in a hermetically sealed package, used as the resonator.

What is a RTC module?

- RTC stands for "Real Time Clock". These RTC modules are integrated circuits that measure time and date. RTC modules are incorporated in electronic devices which need to keep an accurate track of time.

How does a RTC module work?

- An RTC module records the passage of time by counting the cycles of an oscillator. Most RTC modules use a "crystal oscillator", while others use micro resonators on the RTC's silicon chip.

What is the use of crystal oscillators in microcontrollers?

- Crystal oscillators are used to keep track of time by using the mechanical resistance of a vibrating quartz crystal to create an electrical signal of constant frequency. Crystal oscillators have a frequency of 32.768 kHz, the same frequency used in quartz watches and clocks.

Where are crystal oscillators used?

- This type of quartz crystal oscillator is commonly used in quartz watches, radio transmitters and receivers, and other digital integrated circuits. Most consumer goods with a time-keeping function also contain crystal oscillators, such as TVs, personal computers, toys, digital cameras and phones.