Preliminary Presentation Sheet

RTC-32k-CAL.01

Challenge

Counting time even when devices are asleep is a requirement for most application. With the growing markets of IoT and wearable devices spending most of time in such a sleep mode, power savings thus appear as a key challenge for Clock and Calendar functions.

Embedding the Real Time Clock (RTC) in the SoC is consequently necessary, as a subpart of the Always-On domain. Thus, benefiting from an extremely low power RTC is mandatory to reach the best battery autonomy.

The RTC-32k-CAL.01 is a low power RTC relying on a crystal oscillator and designed to achieve the requirements of low power modes and deep sleep modes of IoT devices. Together with the qOSCXT-LP-32k-co.01 it will allow you to achieve the lowest power consumption for your Always-On domain.

Key Benefits

- **Low power consumption**
  - Ultra low power consumption, thank to SESAME standard-cell library
  - Designed to be used together with the qOSCXT-LP-32k-co.01 crystal oscillator, a 50 nA oscillator, contributing to reach the lowest power consumption for the whole Always-On domain.
- **High accuracy**
  - The RTC relies on a 32.768 kHz oscillator or on an external clock source with pre-scaler. A digital trimming logic enables to correct the inaccurate clock sources.
- **A highly configurable solution**
  - A large set of programmable functions are embedded on the RTC: alarms, interrupts.
  - Support of external reference clock for permitting clock calibration.

Applications

- IoT, wearables
- Consumer electronics
- Automotive
- Industrial and medical

Features

- The **Clock and Calendar functions** enable counting seconds, minutes, hours, days, months and years, considering end-of-month and leap-years. Data are stored in binary-coded decimal (BCD) format.
- **Programmable alarms** can be set.
- **Interrupts** could be generated for events or overflows.
- **External clock source** can be selected. In that case, a pre-scaler can be programmed to adjust the clock frequency to 1 Hz.
- Compliant with **AMBA 2** APB specifications
- The RTC embeds its **SCAN** chains, enabling structural testability during the industrial test.

Synopsis