NXP RTC
PCF85263
PCF85363

RTC with battery back-up switch and time stamp

Energy-efficient, autonomous timing circuit featuring time stamp, battery back-up, two alarms, and resolution up to 1/100 s.

KEY FEATURES

▸ Multiple operating modes
  – Clock (seconds to 99 years)
  – Stopwatch or elapsed-time counter (1/100 s to 999 999 h)
  – WatchDog in parallel
▸ Battery input voltage can be lower or higher than V_{DD}
▸ Meets UL requirements
▸ Time-stamp input, three time-stamp registers
▸ Two independent alarms
▸ Electronic frequency tuning via command
▸ Large clock operating voltage range (0.9 to 5.5 V)
▸ Ideal for battery-backed operation (I_{DD}= ~0.27 µA)
▸ 400 kHz two-line I²C-bus interface (at V_{DD} = 1.8 to 5.5 V)
▸ SO8, TSSOP8, TSSOP10, and tiny DFN2626 package

APPLICATIONS

▸ Printers, copiers
▸ Electronic metering
▸ TVs, Blu-Ray players, projectors, etc.
▸ White goods
▸ Digital cameras

▸ Accurate, high-duration timers
▸ Data loggers

The NXP PCF85263 is a CMOS real-time clock (RTC) and calendar, optimized for low power consumption, that switches automatically to battery power when main power is lost.

The PCF85263 can be configured as a stopwatch (or elapsed-time counter) with a resolution of up to 1/100 s. Three time stamps make it easy to register special events, and the device can also register tamper detection or time of battery switchover.

The PCF8536 has additional 64 Byte battery buffered RAM.

A sophisticated battery backup circuit improves power efficiency. The circuit makes it possible to use a battery with a nominal voltage that is higher or lower than the regular supply voltage. For example, in a system that uses a V_{DD} of 2.5 V, a lithium battery of 3 V can be used as a backup.

The PCF85263 can be used to perform standard RTC functions, such as tracking the actual time and data or acting as a reference timer. To support power management,

the PCF85263 can be used to wake the microcontroller from hibernation mode, and in systems that use a PLL, it can serve as a system reference clock for the PLL input. The PCF85263 can also be used as a WatchDog timer, or as an activation timer to start measurements or initiate other functions.

Interrupt selection: at every second, minute, or hour and up to two alarms on two independent outputs. The designer can choose between a permanent or a pulse interrupt signal or one interrupt and a time-stamp input.

For compensating the quartz frequency tolerance, a dedicated offset register can be programed.

Full featured versions are available in TSSOP10 and lead less package DFN2626-10 package. Versions without time stamp pin are available in 8 pin packages SO8 and TSSOP8. All are equipped with an I²C Fast-Mode (FM) 400 kHz interface.
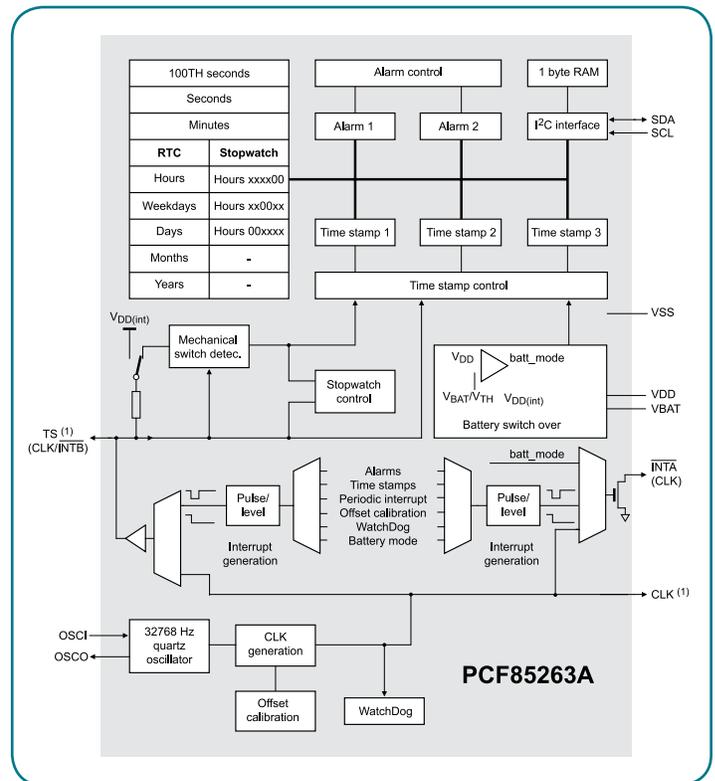
DEMO BOARD

The PCF85263 is supported by the demo board OM13510, equipped with battery backup and a jumper to select the RTC. The board is shipped ready to use, with a quartz. In order to start, connect the power supply and use the serial interface to initiate communications for setting the actual time.
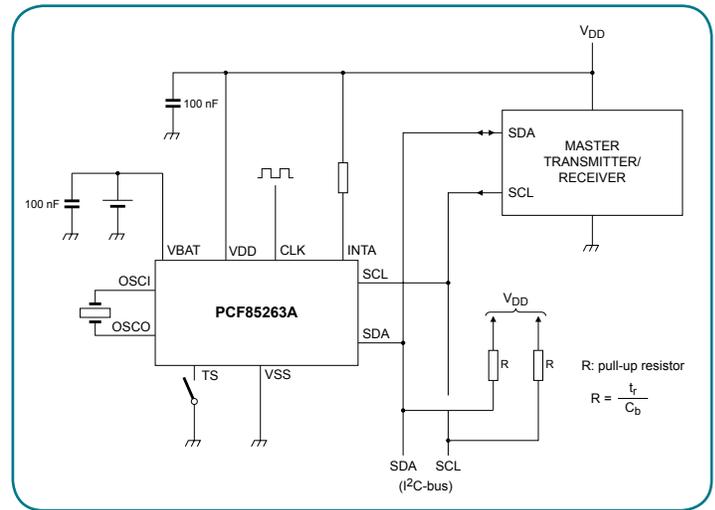
PCF85263A BLOCK DIAGRAM

PCF85263 EVALUATION BOARD I²C (OM13510)

PCF85263A APPLICATION DIAGRAM

Product number	PCF85263AT/A	PCF85263ATT/A	PCF85262ATT1/A	PCF85263ATL/A	PCF85363 family**
Interface	FM I²C-bus	FM I²C-bus	FM I²C-bus	FM I²C-bus	FM I²C-bus
Battery switch, interrupt / CLK output	X	X	X	X	X
Time-stamp input, separate CLK output	-	-	X	X	(X)
Package	SO8	TSSOP8	TSSOP10	DFN2626-10	DFN2626-10, TSSOP8,10

** RTC sister family with additional 64 Byte battery buffered RAM