I²C™ & SPI Real-Time Clock/Calendar Families

Battery Switchover, Non-Volatile Memory, Unique Peripherals

Feature Rich, Low Cost Timekeeping Solutions

Microchip's Real-Time Clocks are highly integrated with non-volatile memory and cost effective features for real life applications. This includes a battery switchover with timestamp to maintain timekeeping so the time and duration of any power failure can be logged. When higher accuracy is needed, digital trimming can compensate for crystal frequencies that drift over temperature.

Baseline Features for all RTCCs

Timing
- Programmable alarm/clock output
- Wide digital trimming range for accuracy
- Timestamp @ V_{CC} Fail and V_{CC} Restore

User Memory
- Battery-backed SRAM
- EEPROM
- Unique ID/MAC address

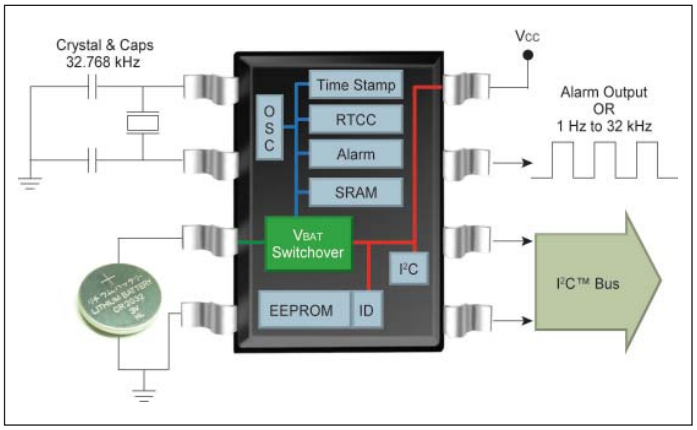
Industry Standard Pinout

Low Power
- Wide operating and backup voltages
  - V_{CC} = 1.8V to 5.5V
  - V_{BAT} = 1.3V to 5.5V
- Standby currents
  - I_{CC} < 2 µA @ 3V
  - I_{BAT} < 700 nA @ 1.8V

Backup Power
- Automatic battery switchover

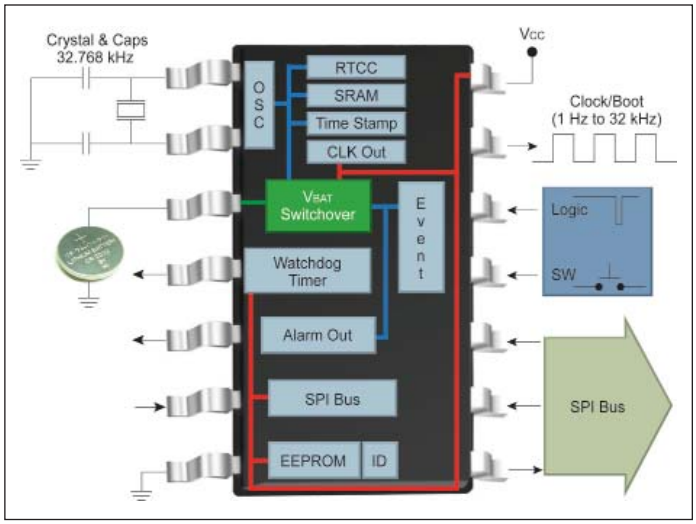
MCP794XX I²C RTCC Features

- Three types of user memory
  - SRAM: 64 bytes
  - EEPROM: 0 and 1 Kbits
  - Unique ID: 64 bits
- Alarms
  - Counts down to the second
- Digital Trimming
  - Adjustment range of ~11 seconds/day
- Operating Speed
  - 400 kHz



MCP795XX SPI RTCC Features

- Three types of user memory
  - SRAM: 64 bytes
  - EEPROM: 1 and 2 Kbits
  - Unique ID: 128 bits
- Alarms
  - Counts down to 0.01 seconds
- Digital trimming
  - Adjustment range of ~22 seconds/day
- Watchdog timer
  - Dual retriggers using SPI bus or GPIO
  - From 15 msec to 64 sec
- Event detect inputs
  - High speed - Programmable count
  - Low speed - Programmable debounce
- Boot clock (boot devices only)
  - 32 KHz clock output at powerup
- Operating speed
  - 10 MHz @ 4.5V



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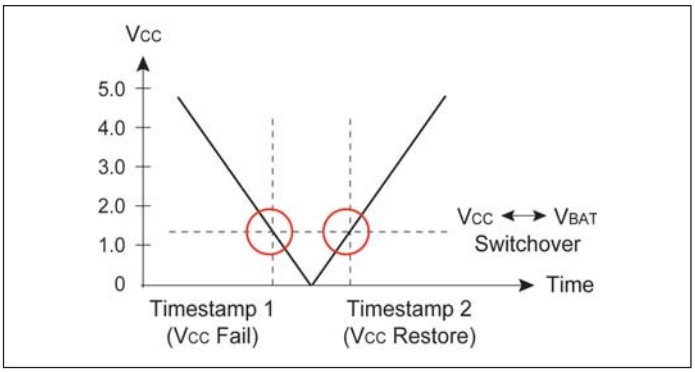
I²C™ and SPI Real-Time Clock/Calendar Features

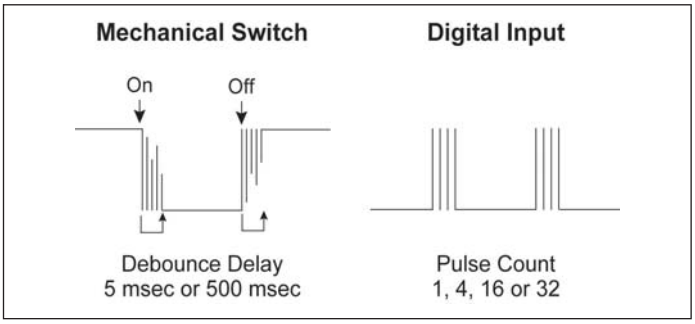
Product	Timing Features				Memory			Unique Features			Packages
	Digital Trimming	Alarms/ Count	Watchdog Timer	Outputs	SRAM (Bytes)	EE (Kbits)	ID/MAC (Bits)	Power Fail Timestamp	Event Detects	Boot Clock (32 kHz)	
I²C™ Real-Time Clock/Calendar (400 kHz)											
MCP7941X	±127 ppm (+1 ppm)	2 (1 sec)	–	MFP (IRQ/CLK)	64	1	64	✓	–	–	8 SOIC, 8 TSSOP, 8 MSOP 8 TDFN
MCP7940X	±127 ppm (+1 ppm)	2 (1 sec)	–	MFP (IRQ/CLK)	64	0	64	✓	–	–	
MCP7940N	±127 ppm (+1 ppm)	2 (1 sec)	–	MFP (IRQ/CLK)	64	0	0	✓	–	–	
SPI Real-Time Clock/Calendar (10 MHz)											
MCP795W2X	±255 ppm (+1 ppm)	2 (0.01 sec)	✓	1. CLK 2. IRQ 3. WDT RST	64	2	128	✓	✓	–	14 SOIC 14 TSSOP
MCP795W1X	±255 ppm (+1 ppm)	2 (0.01 sec)	✓	1. CLK 2. IRQ 3. WDT RST	64	1	128	✓	✓	–	
MCP795B2X	±255 ppm (+1 ppm)	2 (0.01 sec)	✓	1. CLK 2. IRQ 3. WDT RST	64	2	128	✓	✓	✓	
MCP795B1X	±255 ppm (+1 ppm)	2 (0.01 sec)	✓	1. CLK 2. IRQ 3. WDT RST	64	1	128	✓	✓	✓	

Note: All part numbers with an "X" have 3 ID programming options: 0 = Blank ID, 1 = EUI-48™ MAC Address, 2 = EUI-64™ MAC Address

Power Fail Timestamp



Two Event Detect Inputs (SPI RTCC)



RTCC Development Environment

RTCC PICtail Plus Daughter Boards plug into compatible development systems.

MCP79410 I²C™ PICtail® Plus Daughter Board (AC164140)

MCP795W20 SPI PICtail® Plus Daughter Board (AC164147)

Compatible Development Tools

PICDEM™ PIC18 Explorer Board (DM183032)

Explorer 16 Development Board (DM240001)

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www.microchip.com/clock

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