

Real Time Clock Serial 64byte Clock/Calendar/Alarm/Supervisor 28-Pin SOX T/R



Images are for reference only

[Inquiry](#)

Manufacturer: [STMicroelectronics, Inc](#)

Package/Case: SOP28

Product Type: Clock & Timer ICs

Lifecycle: Active

General Description

The M41ST85W is a combination serial real-time clock, microprocessor supervisor, and NVRAM supervisor. It is built in a low-power CMOS SRAM process and has a 64-byte memory space with 44 bytes of NVRAM and 20 memory-mapped RTC registers. The RTC registers are configured in binary coded decimal (BCD) format.

The M41ST85W combines a 400 kHz I2C serial RTC with an automatic backup battery switchover circuit for powering an external LPSRAM as well as the internal RTC. When power begins to fail, the switchover automatically connects to the backup battery to keep the RTC and external LPSRAM alive in the absence of system power. Access to the LPSRAM is also cut off via a chip-enable gate function, thereby write-protecting the memory. A programmable watchdog and power-on reset/low voltage detect function are the key elements in the microprocessor supervisor section.

The real-time clock includes a built-in 32.768 kHz oscillator (crystal-controlled), which provides the time base for the timekeeping and calendar functions. Eight of the 20 clock registers provide the basic clock/calendar functions while the other 12 bytes provide status/control for the alarm, watchdog, and squarewave functions.

RTC addresses and data are transferred serially via the two-line, bidirectional I2C interface. The built-in address register is incremented automatically after each WRITE or READ data byte.

The M41ST85W has a built-in power sense circuit which detects power failures and automatically switches to the backup battery when a power failure occurs. During an outage, the power to sustain the SRAM and clock operations is typically supplied by a small lithium button-cell battery as is the case when using the SNAPHAT® package option.

Functions available to the user include a non-volatile, time-of-day clock/calendar, alarm interrupts, watchdog timer, and programmable squarewave generator. Other features include a power-on reset as well as two additional debounce reset inputs (RSTIN1 and RSTIN2) which can also generate an output reset (RST). The eight registers for basic clock/calendar functions contain the century, year, month, date, day, hour, minute, second, and tenths/hundredths of a second in 24-hour BCD format. Corrections for 28, 29 (leap year - valid until year 2100), 30 and 31 day months are made automatically.

The M41ST85W is offered in two 28-lead SOIC packages. The 300 mil SOH28 SNAPHAT® IC package mates with ST's SNAPHAT battery/crystal top (ordered separately). SNAPHAT battery options include 48 mAh and 120 mAh. ST's 300 mil SOX28 embedded crystal IC includes the 32 KHz crystal and is perfect for applications where a low profile is a must.

The SOH28 SNAPHAT SOIC includes sockets with gold plated contacts at both ends for direct connection to the SNAPHAT top. The SNAPHAT battery/crystal top is inserted atop the IC package after the completion of the surface mount assembly process which avoids potential battery and crystal damage due to the high temperatures required for device surface-mounting. The unique design allows the battery to be replaced, thus extending the life of the RTC and NVRAM indefinitely.

The SNAPHAT top is keyed to prevent reverse insertion. The SNAPHAT IC and SNAPHAT tops are shipped separately. The ICs are available in plastic anti-static tubes or in tape & reel form. The SNAPHAT tops are shipped in plastic anti-static tubes. The part numbers are M4T28-BR12SH1 (48 mAh) and

M4T32-BR12SH1 (120 mAh). For the extended temperature requirement, the 120 mAh M4T32-BR12SH6 is available.

Key Features

400 kHz I2C serial interface

3.0/3.3 V operating voltage

CC

Ultralow battery supply current of 500 nA (max)

RoHS compliant

Serial RTC features

Seconds, minutes, hours, day, date, month, and year

Century

Tenths/hundredths of seconds

Clock calibration register allows compensation for crystal variations over temperature

Functions in battery back-up mode

Microprocessor supervisor features

62.5 ms to 128 s time-out period

Open drain reset output

Reset voltage, V

PFD

Two reset input pins

Watchdog can be steered to reset output

NVRAM supervisor features

Automatically switches to back-up battery and deselected (write-protects) external LPSRAM via chip-enable gate

Power-fail deselect (write protect) voltage, V

PFD

Switchover, V

SO

Other features

28-lead SNAPHATIC (SOH28) SNAPHAT battery/crystal top to be ordered separately

28-lead embedded crystal SOIC (SOX28)



Recommended For You

M41T62LC6F

STMicroelectronics, Inc
CLCC8

M48T35Y-70PC1

STMicroelectronics, Inc
DIP

M48T18-150PC1

STMicroelectronics, Inc
DIP

M48T58Y-70PC1

STMicroelectronics, Inc
DIP

M48T08-150PC1

STMicroelectronics, Inc
DIP

M41ST85WMH6F

STMicroelectronics, Inc
SOP28

M48T08-100PC1

STMicroelectronics, Inc
DIP

M48T58-70PC1

STMicroelectronics, Inc
DIP

M41ST87WMX6TR

STMicroelectronics, Inc
SOP28

M48T12-150PC1

STMicroelectronics, Inc
DIP

M41T93SMY6F

STMicroelectronics, Inc
SOP18

M41T66Q6F

STMicroelectronics, Inc
QFN16

M41T94MQ6F

STMicroelectronics, Inc

SOP16

M41T62Q6F

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QFN16

M41T94MH6F

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