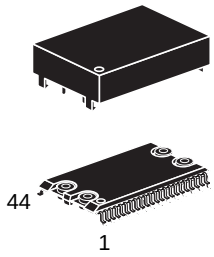
M48T201Y
M48T201V

3.3V-5V TIMEKEEPER® CONTROLLER

DATA BRIEFING

- CONVERTS LOW POWER SRAMs into NVRAMs
- YEAR 2000 COMPLIANT
- BATTERY LOW FLAG
- INTEGRATED REAL TIME CLOCK, POWER-FAIL CONTROL CIRCUIT, BATTERY and CRYSTAL
- WATCHDOG TIMER
- WRITE PROTECT VOLTAGES (V_{PFD} = Power-fail Deselect Voltage):
  - M48T201Y: $4.1V \leq V_{PFD} \leq 4.5V$
  - M48T201V: $2.7V \leq V_{PFD} \leq 3.0V$
- PACKAGING INCLUDES a 44-LEAD SOIC and SNAPHAT® TOP (to be Ordered Separately)
- SOIC PACKAGE PROVIDES DIRECT CONNECTION for a SNAPHAT TOP which CONTAINS the BATTERY and CRYSTAL
- MICROPROCESSOR POWER-ON RESET (Valid even during battery back-up mode)
- PROGRAMMABLE ALARM OUTPUT ACTIVE IN THE BATTERY BACKED-UP MODE

SNAPHAT (SH)
Battery/Crystal



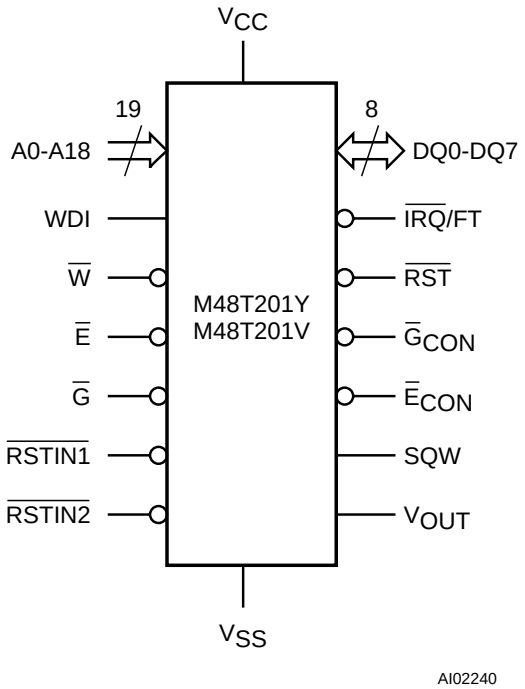
SOH44 (MH)

DESCRIPTION

The M48T201Y/201V are self-contained devices that include a real time clock (RTC), programmable alarms, a watchdog timer, and a square wave output which provides control of up to 512K x 8 of external low-power static RAM. Access to all RTC functions and the external RAM is the same as conventional bytewide SRAM. The 16 TIMEKEEPER® registers offer year, month, date, day, hour, minute, second, calibration, interrupt, alarm, century, watchdog, and square wave output data. Externally attached static RAMs are controlled by the M48T201Y/201V via the $\overline{G}_{CON}$ and $\overline{E}_{CON}$ signals.

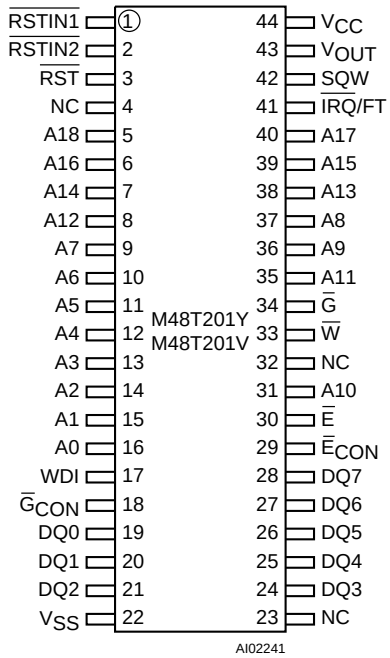
The 44 pin 330mil SOIC provides sockets with gold plated contacts at both ends for direct connection to a separate SNAPHAT housing containing the battery and crystal. The unique design allows the SNAPHAT battery package to be mounted on top of the SOIC package after the completion of the surface mount process.

Logic Diagram



Complete data available on *DATA-on-DISC CD-ROM* or at *www.st.com*

SOIC Pin Connections



Warning: NC = Not Connected.

Signal Names

A0-A18	Address Inputs
DQ0-DQ7	Data Inputs / Outputs
RSTIN1	Reset 1 Input
RSTIN2	Reset 2 Input
RST	Reset Output (Open Drain)
WDI	Watchdog Input
E	Chip Enable Input
G	Output Enable Input
W	Write Enable Input
E_{CON}	RAM Chip Enable Output
G_{CON}	RAM Enable Output
IRQ/FT	Interrupt / Frequency Test Output (Open Drain)
SQW	Square Wave Output
V_{OUT}	Supply Voltage Output
V_{CC}	Supply Voltage
V_{SS}	Ground

Ordering Information Scheme
For a list of available options or for further information on any aspect of this device, please contact the STMicroelectronics Sales Office nearest to you.

Example: M48T201Y -70 MH 1 TR

Supply Voltage and Write Protect Voltage

201Y V_{CC} = 4.5V to 5.5V
V_{PFD} = 4.1V to 4.5V

201V V_{CC} = 3.0V to 3.6V
V_{PFD} = 2.8V to 3.0V

Speed

-70 70ns (M48T201Y)

-85 85ns (M48T201V)

Package

MH (1) SOH44

Temperature Range

1 0 to 70 °C

Shipping Method for SOIC

blank Tubes

TR Tape & Reel

Note: 1. The SOIC package (SOH28) requires the battery package (SNAPHAT) wich is ordered separately under the part number "M4Zxx-BR00SH1" in plastic tube or "M4Zxx-BR00SH1TR" in Tape & Reel form.

Caution: Do not place the SNAPHAT battery package "M4Zxx-BR00SH1" in conductive foam since will drain the lithium button-cell battery.