

RTC

Peripheral Board

Technical Manual

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RTC Peripheral Board Technical Manual. No part of this work may be reproduced in any manner without written permission of BiPOM Electronics.

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WARRANTY:

BiPOM Electronics warrants RTC board for a period of 1 year . If the board becomes defective during this period, BiPOM Electronics will at its option, replace or repair the board. This warranty is voided if the product is subjected to physical abuse or operated outside stated electrical limits. BiPOM Electronics will not be responsible for damage to any external devices connected to RTC. BiPOM Electronics disclaims all warranties express or implied warranties of merchantability and fitness for a particular purpose. In no event shall BiPOM Electronics be liable for any indirect, special, incidental or consequential damages in connection with or arising from the use of this product. BiPOM's liability is limited to the purchase price of this product.

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1. Overview

RTC board is low cost peripheral board that provides access to real time clock via I2C bus. The board directly interface via expansion connector to Single Board Computer (SBC) systems from BiPOM Electronics such as PRO-MAX/51,MINI-MAX/51,MINI-MAX/908. This family of SBC provides all the essential elements of a computer system such as microprocessor, memory, serial port, parallel ports, timers, counters and interrupt handlers on a single chip. The data acquisition system such as logger is a very easy task with an using of these boards.

RTC board has DS1307 serial real time clock from Dallas Semiconductor.

The DS1307(RTC) is a low power full BCD clock/calendar plus 56 bytes of nonvolatile SRAM. Address and data are transferred serially via I2C bus. The clock/calendar provides seconds, minutes, hours, day, date,month and year information. RTC board has the 3V standard lithium battery which allows the timekeeping function be continued when the input voltage falls below V battery.

2. Specifications

RTC board has the following configuration:

- DS1307, Real Time Clock/Calendar
- BH500, Battery holder
- CR/BR 1220, 3V standard lithium battery
- Expansion connector

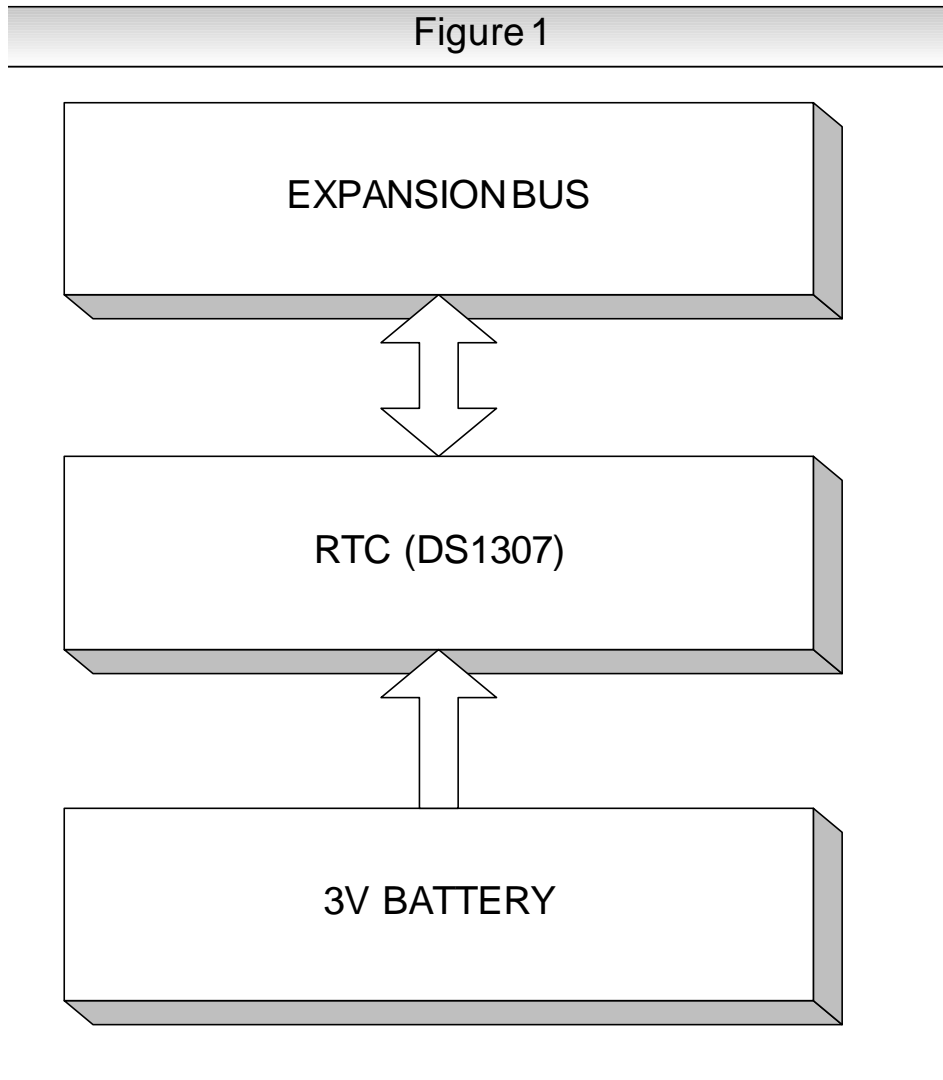
Dimensions are 2.35 X 2.40 inches (5.97 X 6.10 centimeters).

Mounting holes of 0.138 inches (3.5 millimeters) on four corners.

0° - 70° C operating, -40° - +85° C storage temperature range.

3. Functional Blocks

Figure 1 shows the block diagram of the MMC/RTC board.



Real Time Clock/Calendar

RTC has an DS1307 (IC1) full BCD clock/calendar from Dallas Semiconductor. The RTC is controlled via an I2C-compatible serial bus. SCL and SDA lines of RTC are provided on a 20-pin expansion bus for interfacing to peripherals and other external circuits. The clock/calendar provides seconds, minutes, hours, day, date, month and year information. The clock operates in either the 24-hour or 12-hour format with AM/PM indicator. The DS1307 has a built-in power sense circuit which detects power failures and automatically switches to the battery supply.

More information on the DS1307 can be obtained from Dallas Semiconductor web site at www.dal-semi.com.

Battery and Battery Holder

MMC/RTC has an BH500 battery holder (BAT1) which is tolerant to CR/BR 1216,1220,1225 3V lithium battery. As VCC falls below V_{Bat} the RAM and timekeeper of RTC are switched to the external 3V battery. In this way the timekeeping function continues unaffected by the low input voltage. A lithium battery with 35mAh or greater will back up the DS1307 for more than 10 years in the absence of power.

Expansion Bus

All the control pins and power supply are available on the 20-pin Expansion connector(J1) for interfacing to existing SBC boards. RTC peripheral board can be connected either as a piggyback daughter-board on SDC board using standoffs or can be placed up away from SBC board using a 20-wire ribbon cable. Table 1 shows the pin assignments for Expansion connector.

Expansion connector (J1)

Signal	Pin	Pin	Signal
P3.0	20	19	P3.1
P3.2	18	17	P3.3
P3.4	16	15	P3.5
P3.6	14	13	P3.7
P1.0	12	11	P1.1
P1.2	10	9	P1.3
P1.4	8	7	P1.5
P1.6	6	5	P1.7
VCC	4	3	GND
VCC	2	1	GND

Table 1

4. Board Layout

Figure 2 shows positions of major components on the RTC board.

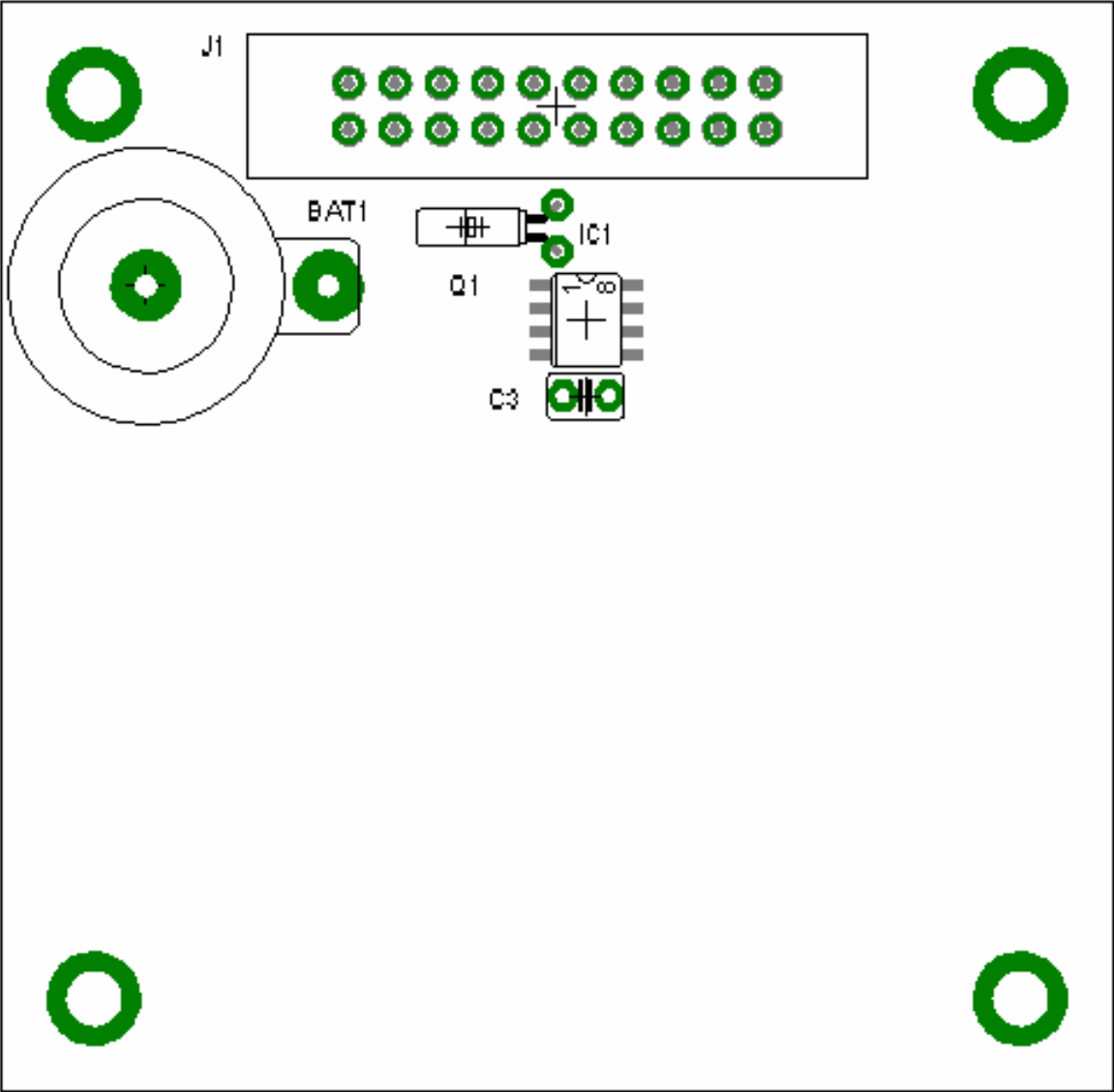
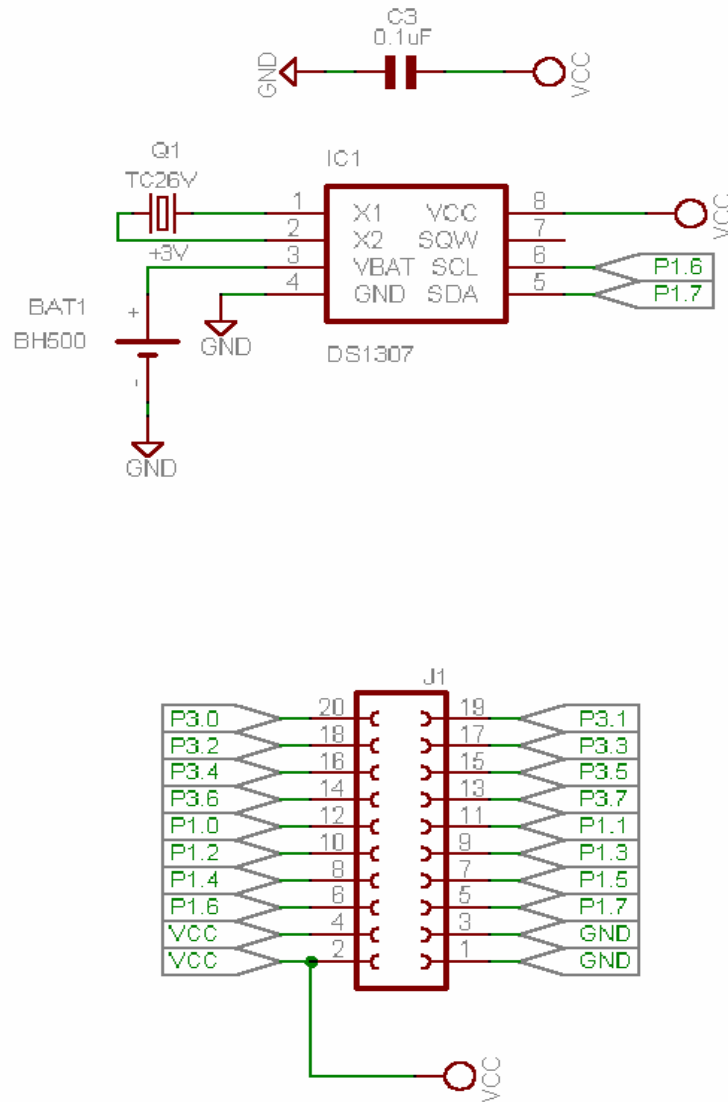


Figure 2

5.Schematic



RTC Board

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