STEVAL-IPE007V1

Mono-phase energy meter based on ST7Flite

Data Brief

Features

- Satisfaction of IEC 61036 Accuracy Requirements for Class 1 Meters
- Cost-Effective: no ASSP used, single ST7F MCU
- Large voltage and current operative range
- AFE(Analog Front End) operation amplifier switches
- Resistor divider used as voltage sensor
- Works powered from a capacitive power supply
- RTC interface using SPI for display date and timer
- Design with other ST7 MCU can be re-used easily
- Tamper detection: detects, signals and continues to measure accurately under tamper condition
- Software calibration for analog circuit, PC GUI available
- External EEPROM for reliable storage of parameters reading
- LCD module interface for displaying up to 7 parameters
- Embedded software easily upgradeable through ICC connector available on the board

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Description

The board can be used to develop a single-phase power / energy meter with tamper detection based on ST7FLITE. It measures active power, voltage, current, power factor and line frequency in a single-phase distribution environment and displays these parameters in addition to current date and time. It differs from ordinary single-phase meters because it uses two current transformers (CT) to measure active power in both live and neutral wires. This enables the meter to detect, signal, and continue to measure the active energy consumed reliably even after the meter has been tampered. ST7FLite20 is the microcontroller used to perform all the measurements in the meter. This means there is no ASSP (Application Specific Standard Product) used for energy measurement. The active energy consumed is available in the form of frequency-modulated pulse outputs and the accumulated active energy is displayed on the LCD display module (GDM093).

1 Board schematic

Figure 1. Block diagram

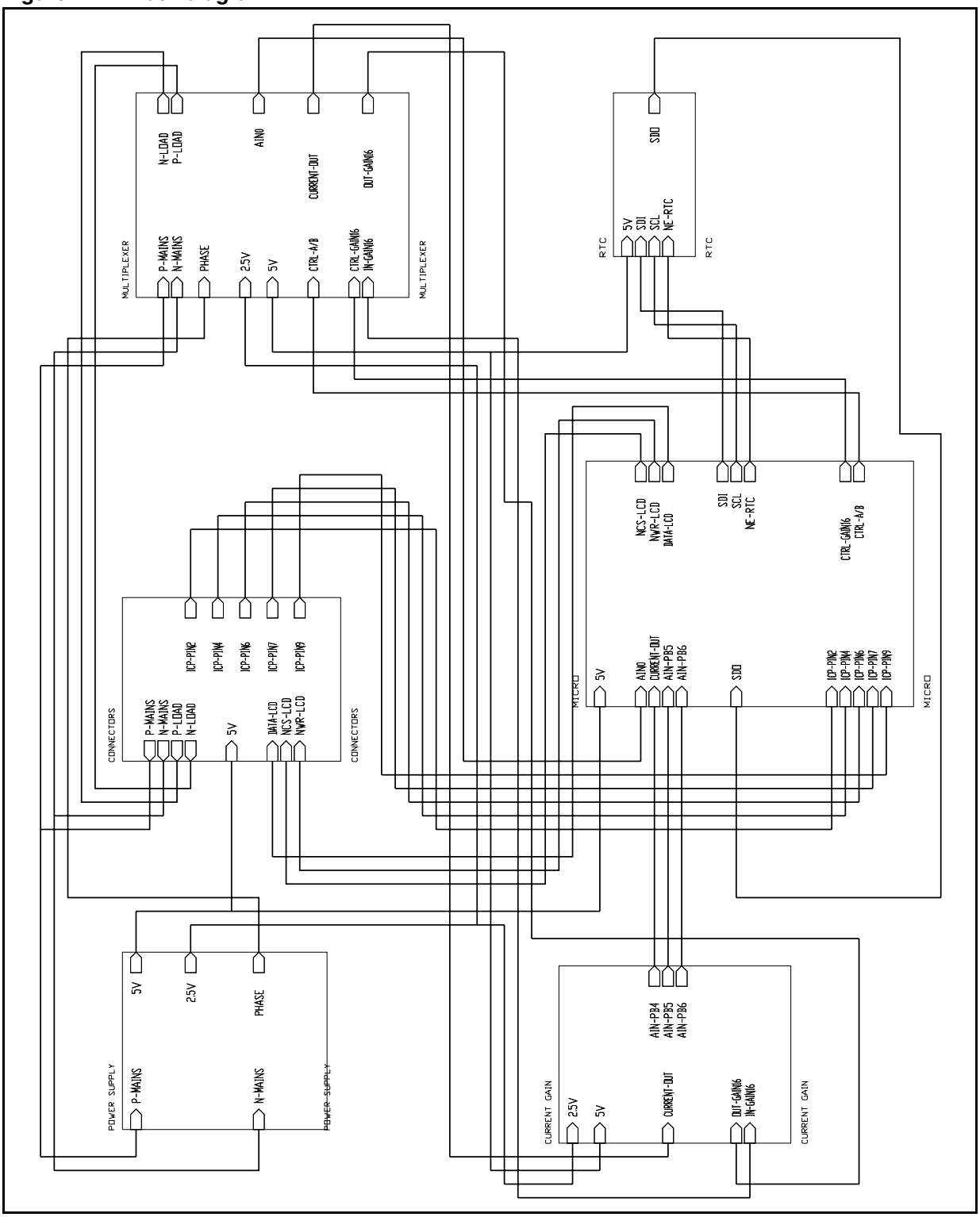


Figure 2. Connectors

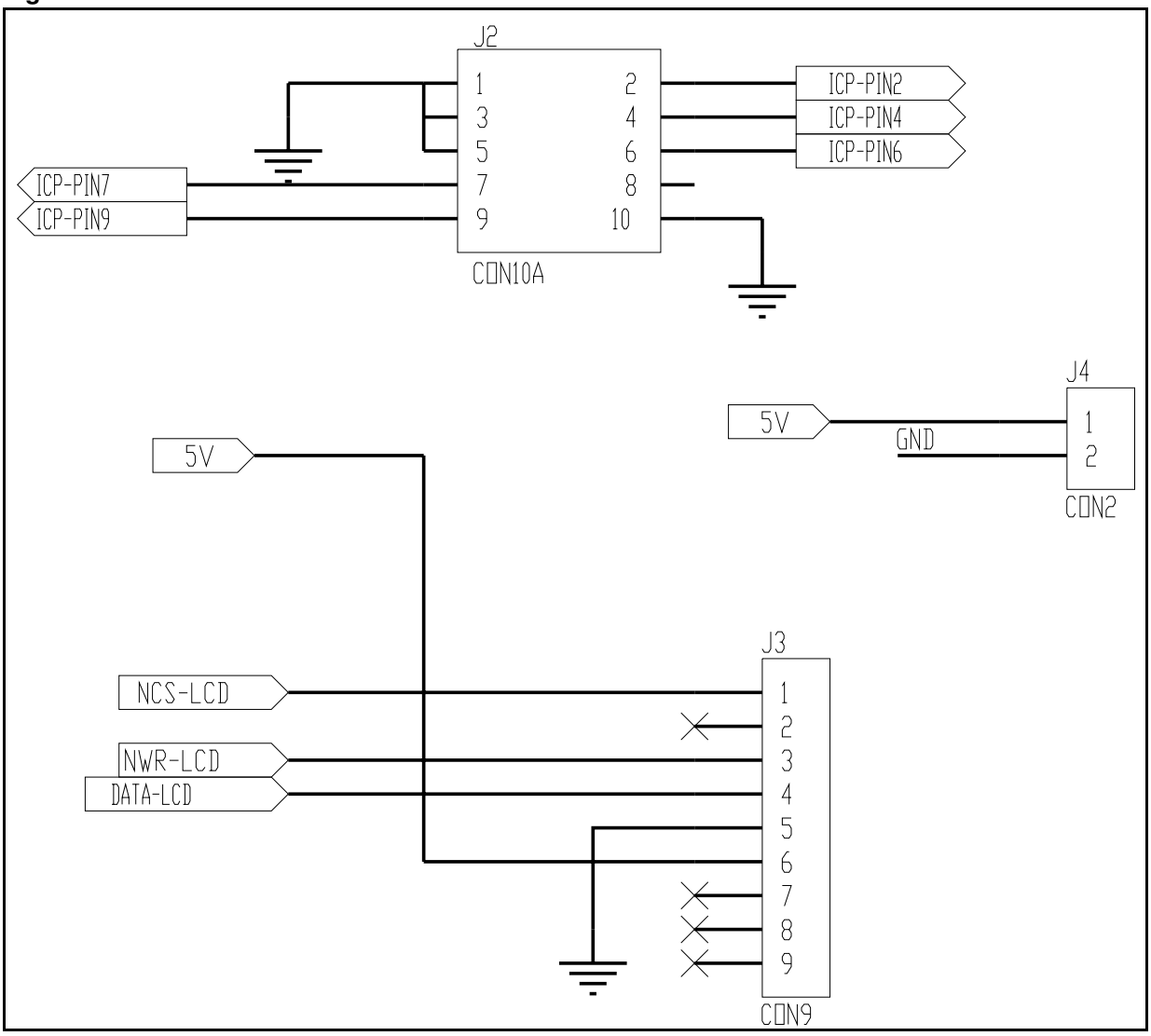


Figure 3. Power supply

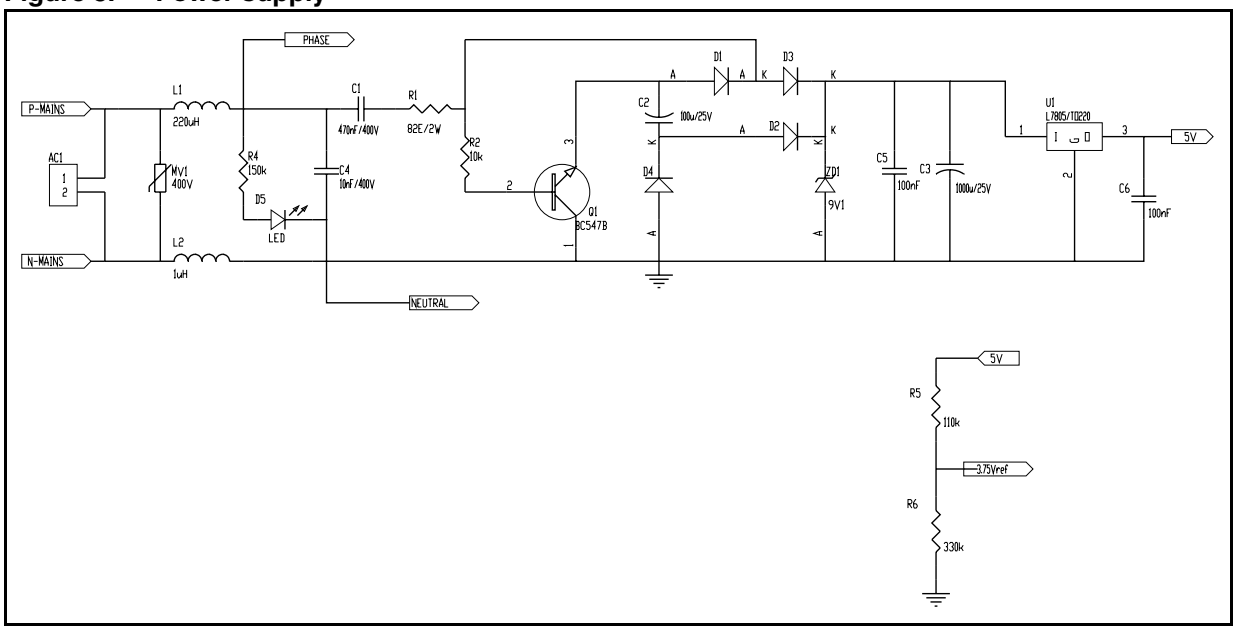


Figure 4. Current gain

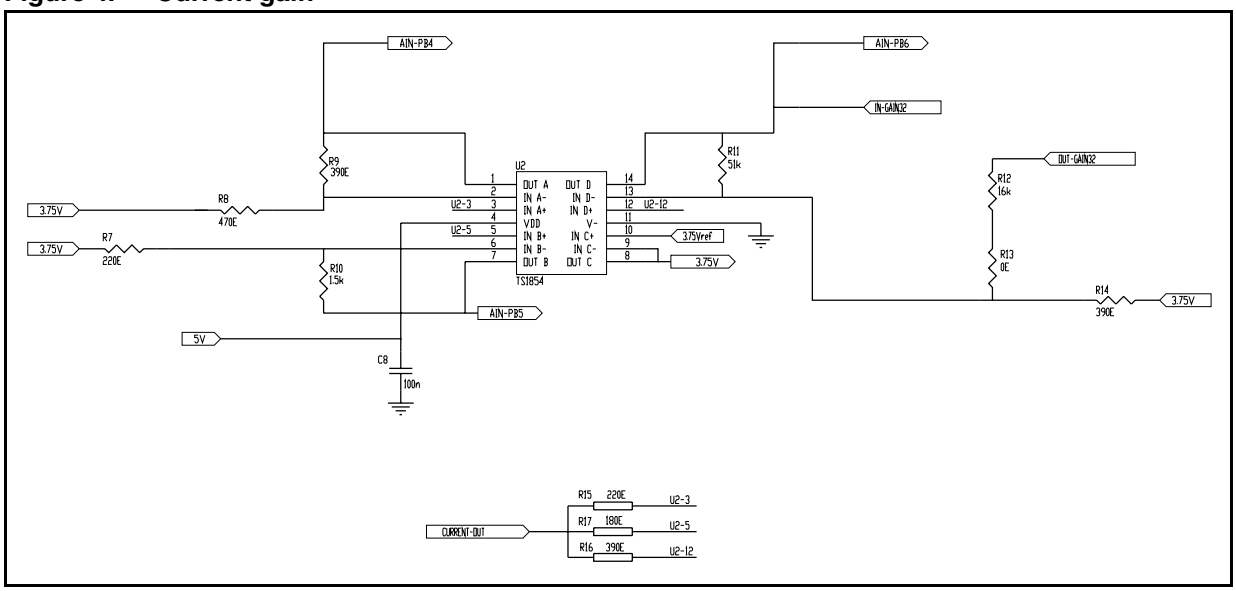


Figure 5. Micro

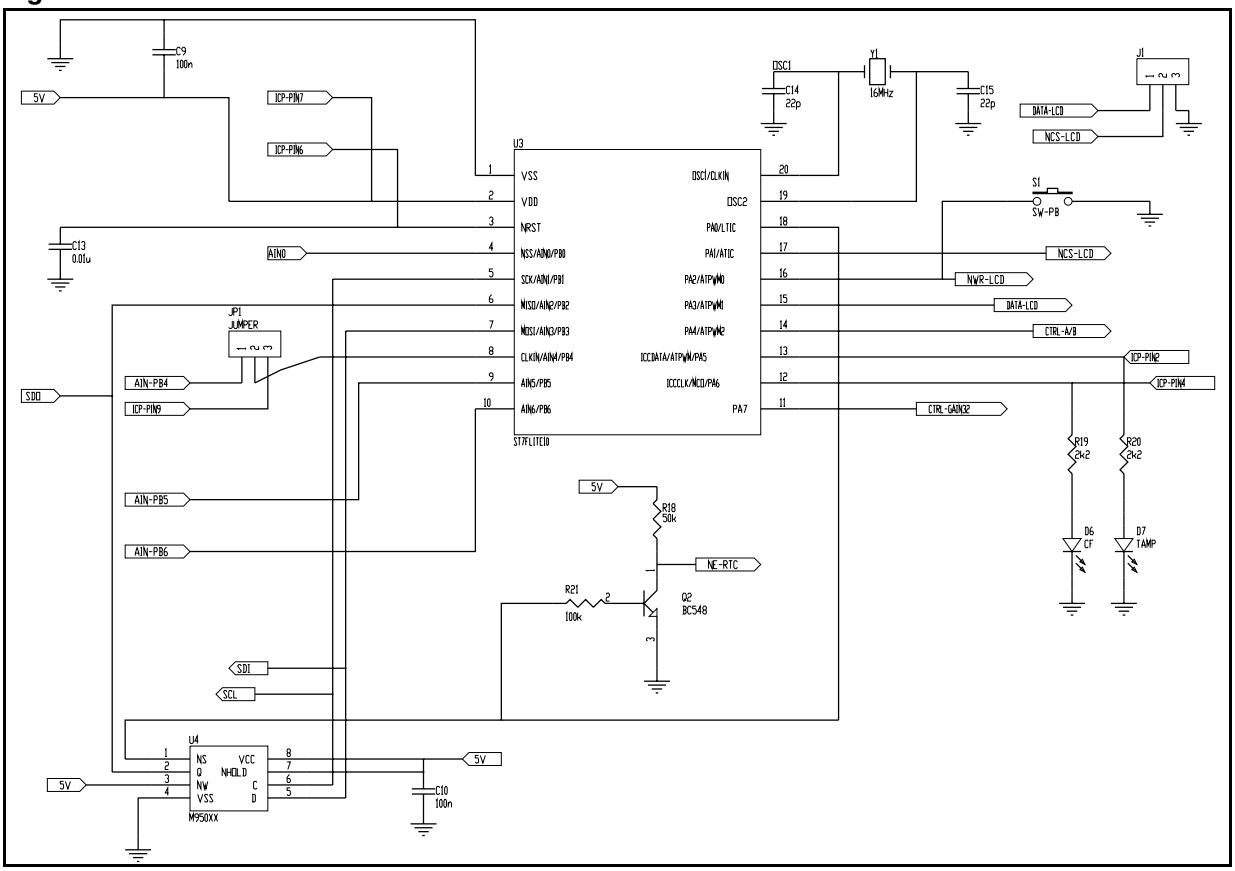


Figure 6. Multiplexer

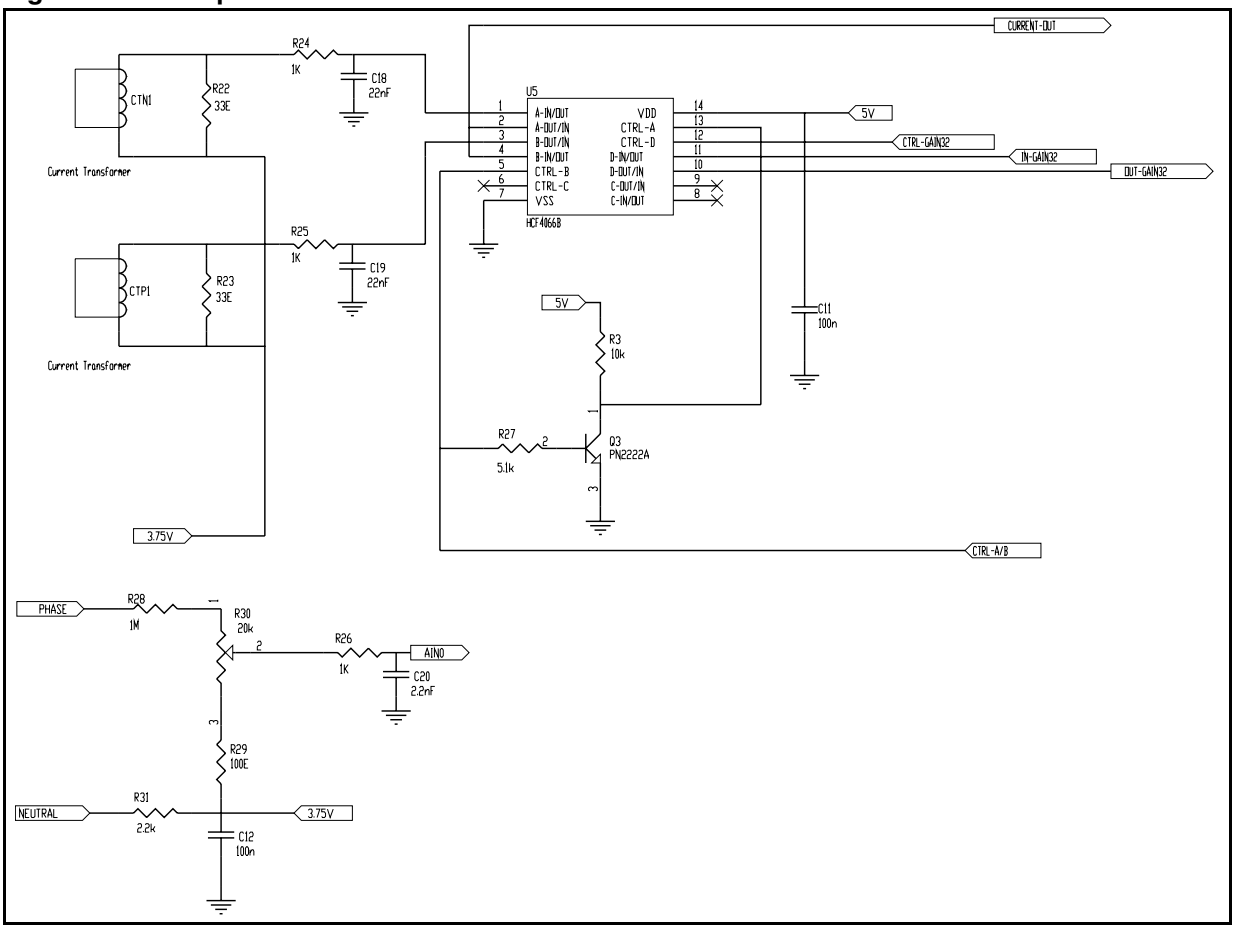
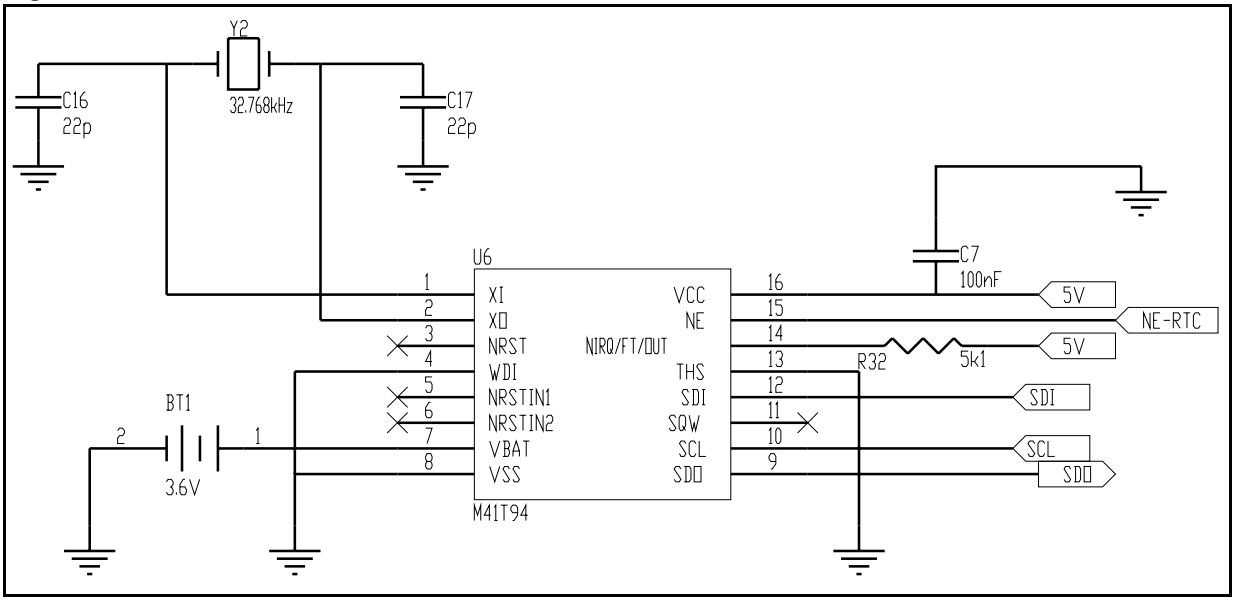


Figure 7. RTC



2 Revision history

Table 1. Revision history

Date	Revision	Changes
20-Jul-2007	1	Initial release.

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