



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



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

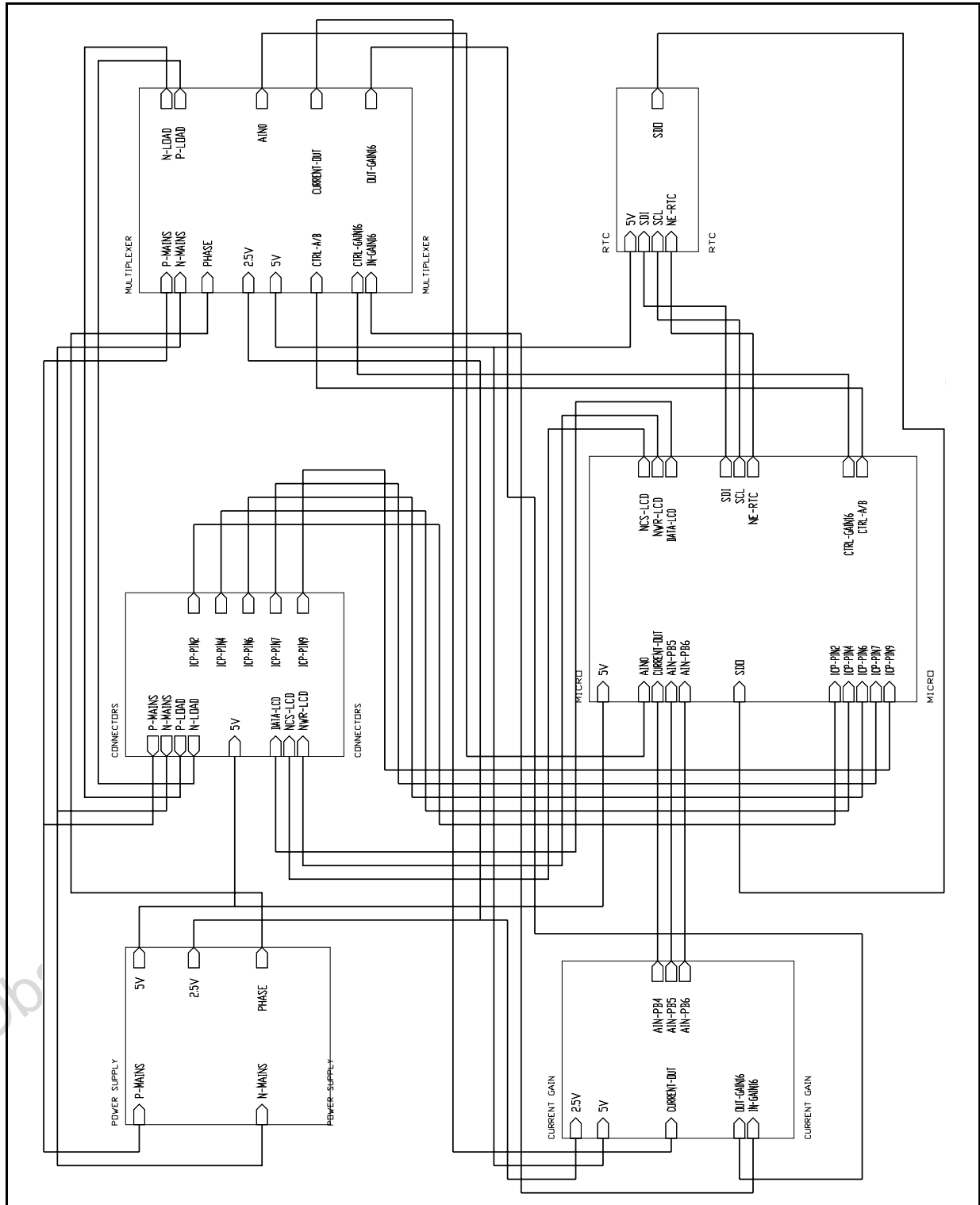
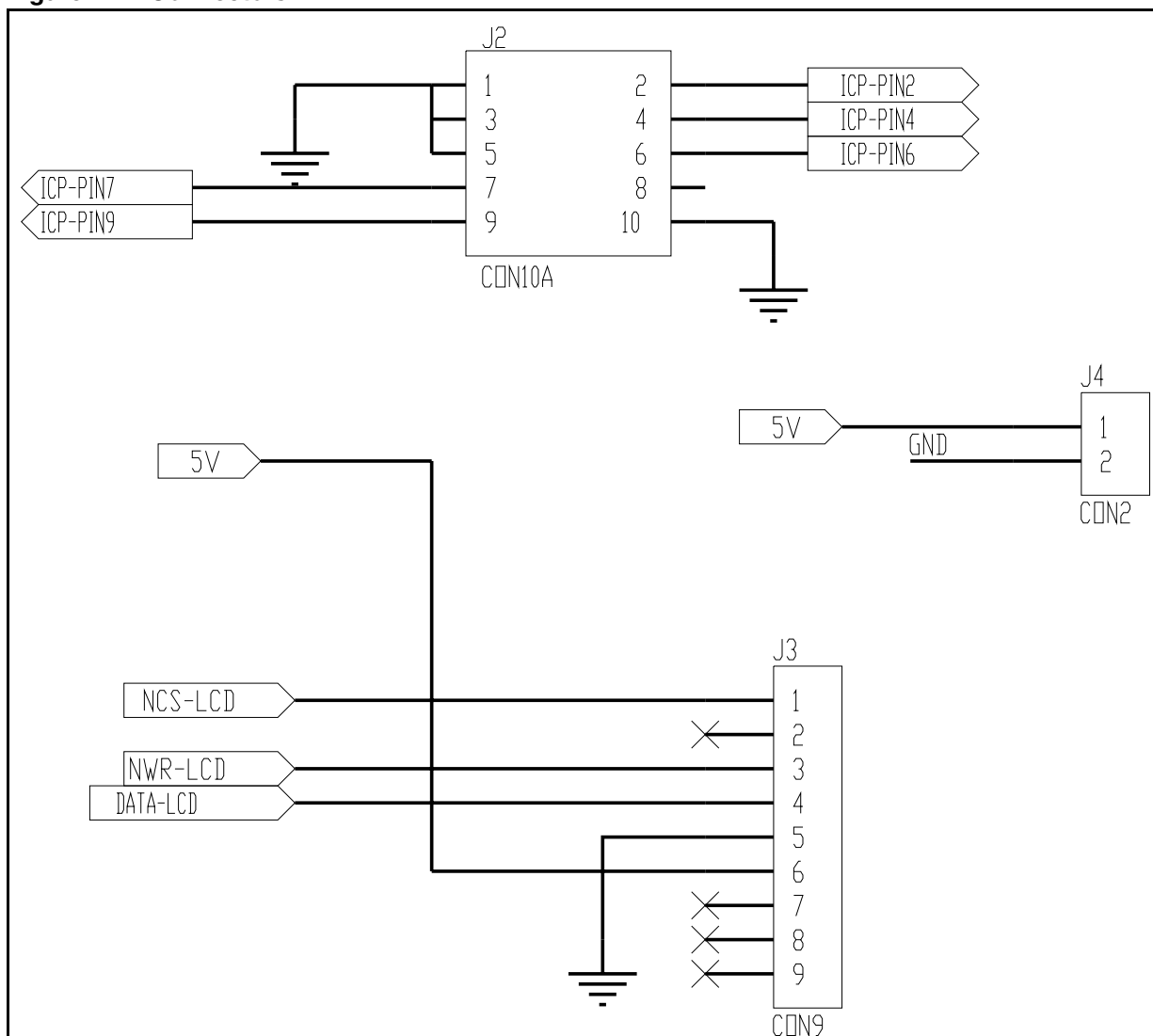


Figure 2. Connectors



Obsolete Product

Figure 3. Power supply

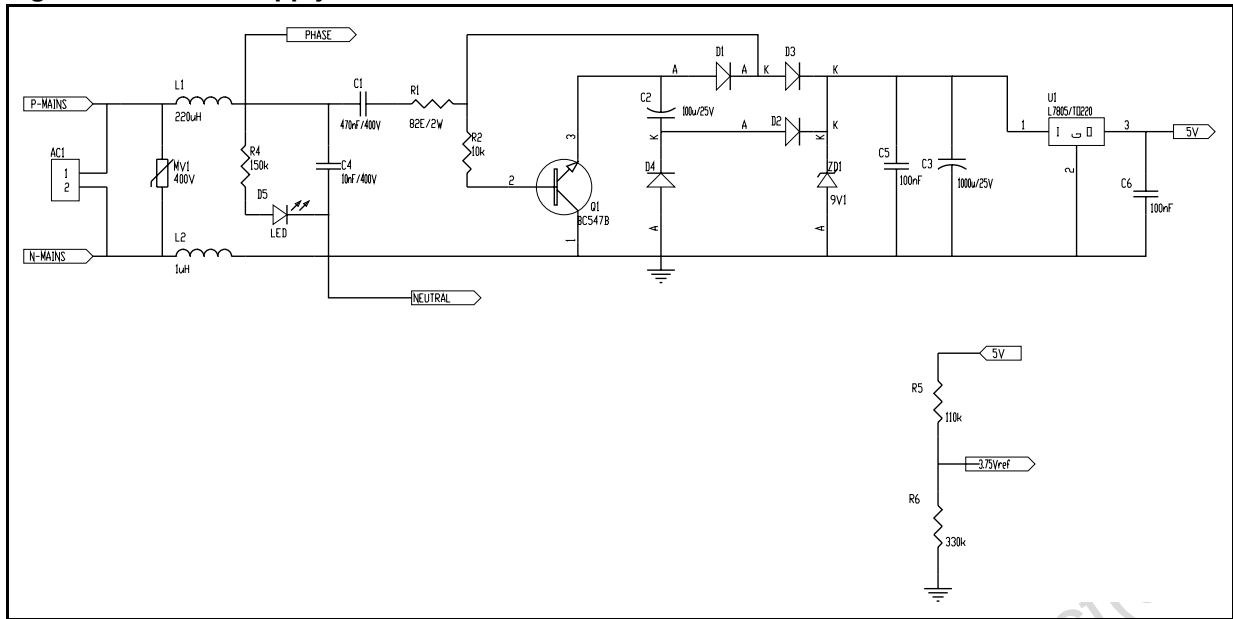
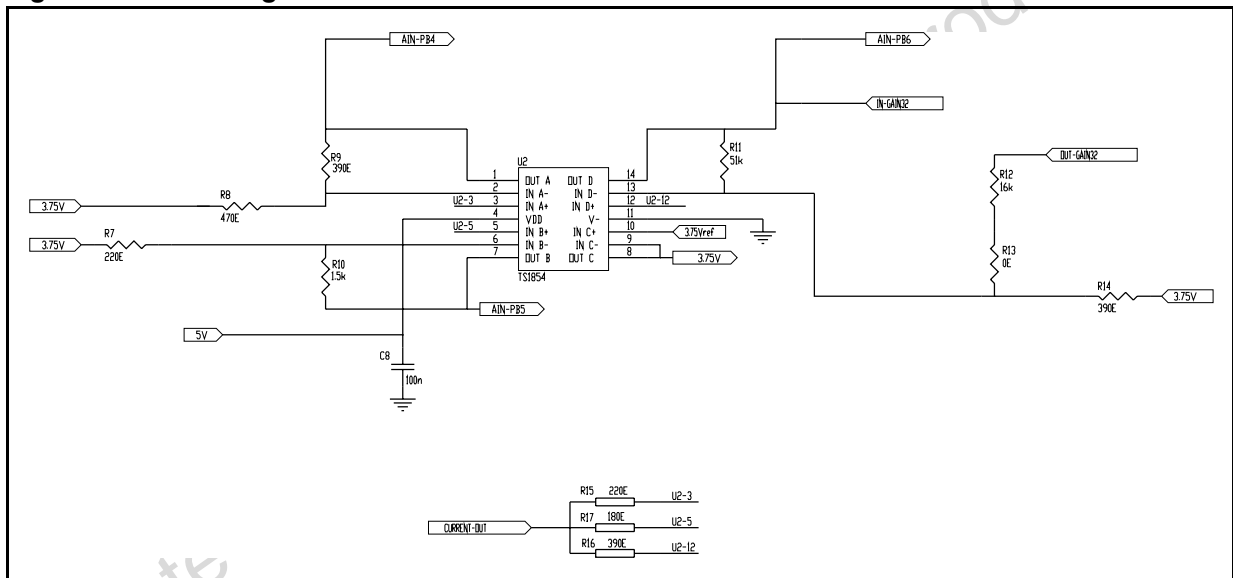
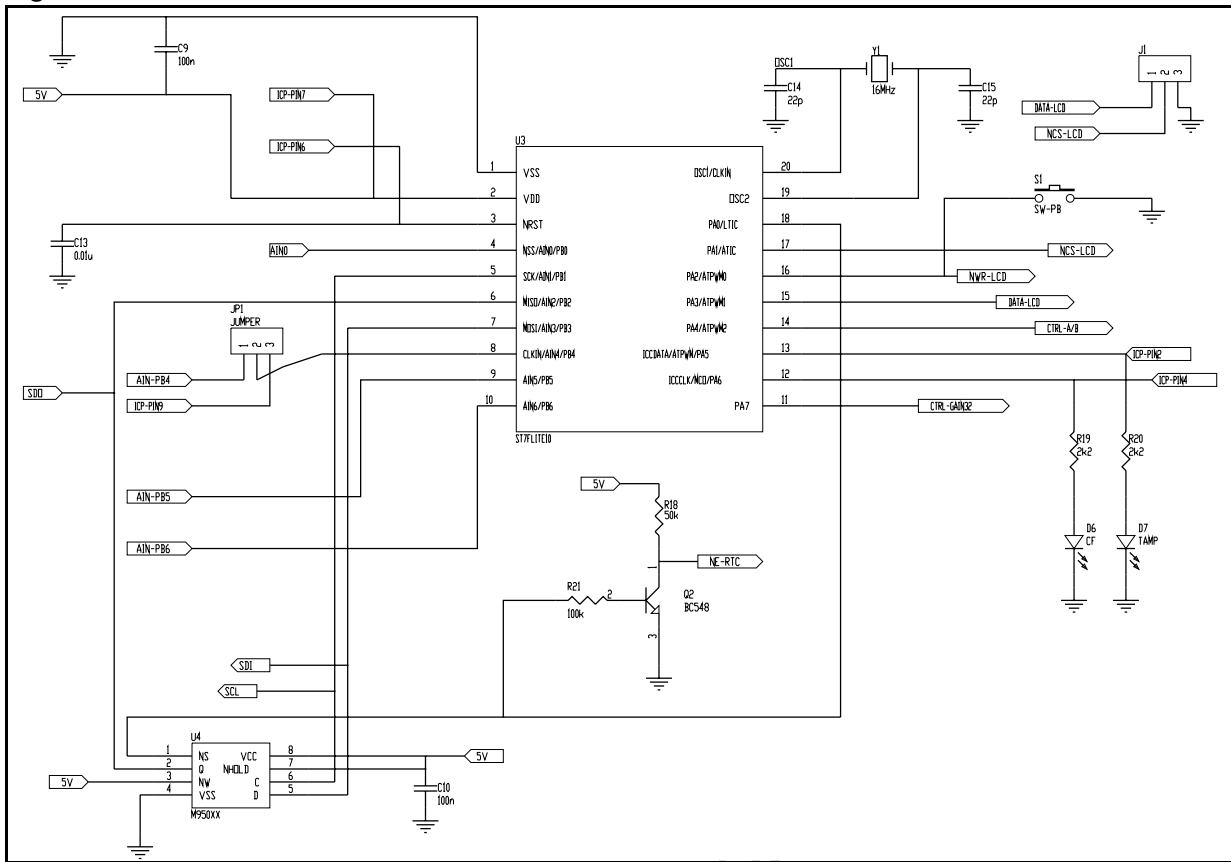


Figure 4. Current gain



Obsolete

Figure 5. Micro



Obsolete Product(s) - Obso

Figure 6. Multiplexer

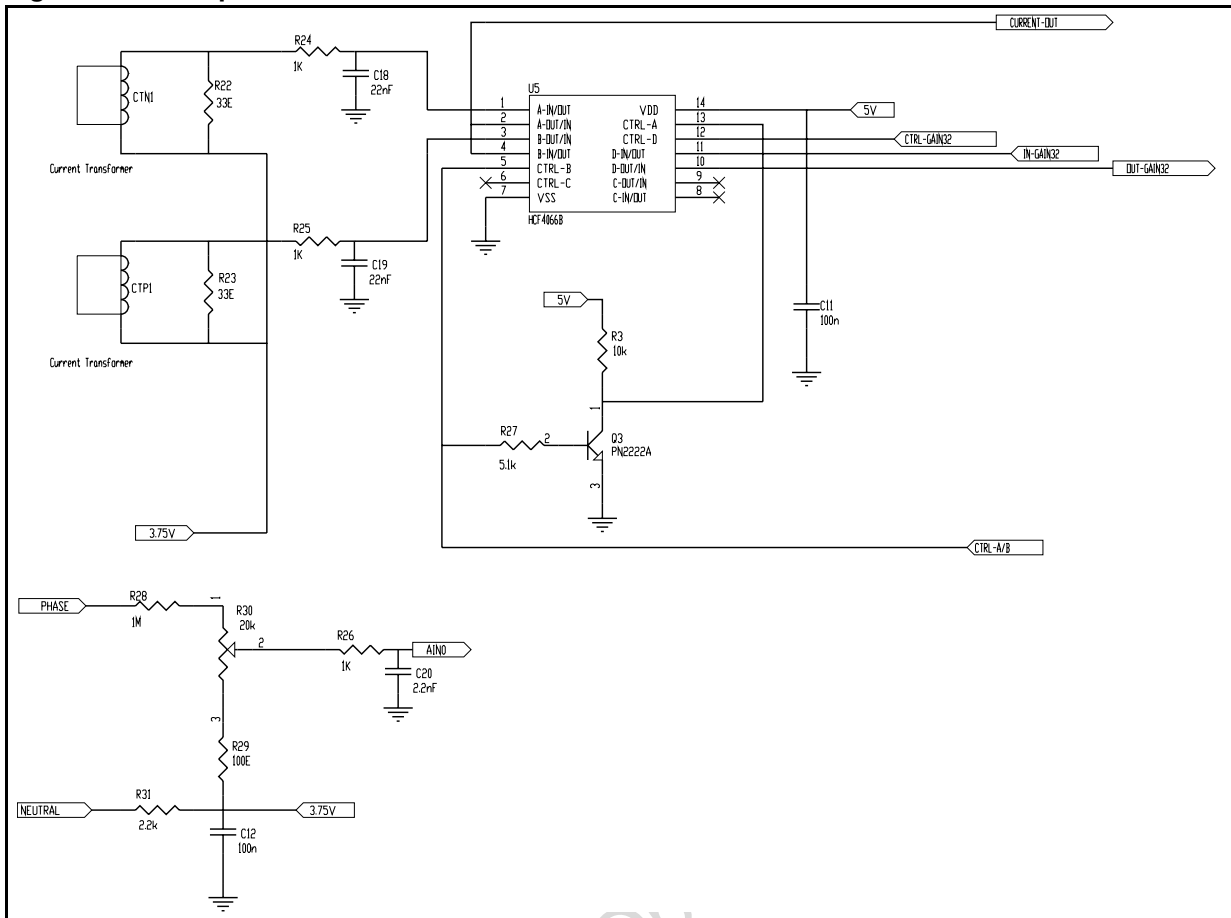
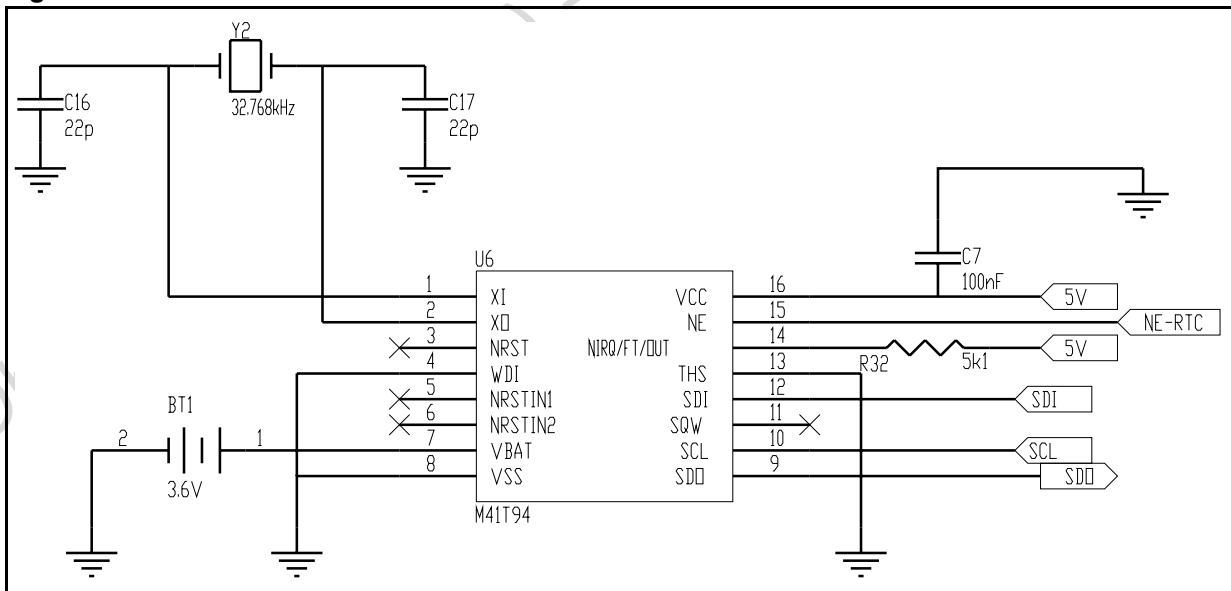


Figure 7. RTC



2 Revision history

Table 1. Revision history

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

Obsolete Product(s) - Obsolete Product(s)

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com