chanhvinh.com

STEVAL-IHP005V1

General purpose power line modem module based on the ST7540 PLM and STM32 microcontroller

Databrief

Features

- Communication interfaces
  - Configurable FSK power line modem interface with an embedded firmware stack for a complete power line communication management.
  - SPI and USART interfaces for module interfacing
- Module hardware
  - Internal configurable RTC time-clock with lithium backup battery
  - Up to 8 user-configurable general purpose input/output pins
  - Programmable user data and PLM parameters Flash memory area
- PLM communication protocol
  - Configurable PLM data link stack working model (master/slave, multimaster)
  - Unicast and broadcast data frame capability
  - CSMA/CA and repetitions management
  - Up to 100 bytes of user data payload
- SPI, USART communication protocol
  - Programmable communication interface (SPI, SCI)
  - Embedded data, programming and service APIs
- RoHS compliant



STEVAL-IHP005V1

Description

The general purpose power line modem module is based on an ST7540 FSK power line modem transceiver and an STM32 microcontroller. The PLM module board is a fully functional communication module, with 8 programmable I/Os, a real-time clock and a Flash memory area for modem parameters and user data storage.

The firmware structure is made up of several layers, each dealing with a different feature. The application layer engine is the general interface between the user program and all the parts of the module. It deals with the communication ports, the module peripherals such as SPI, SCI, RTC, I/Os, LEDs and timing management. It is also the interface between the PLM stack and the user program. The PLM stack, itself made up of several layers, implements and manages the power line communication, manages the conflicts, timing and repetitions, the addressing, and so on.

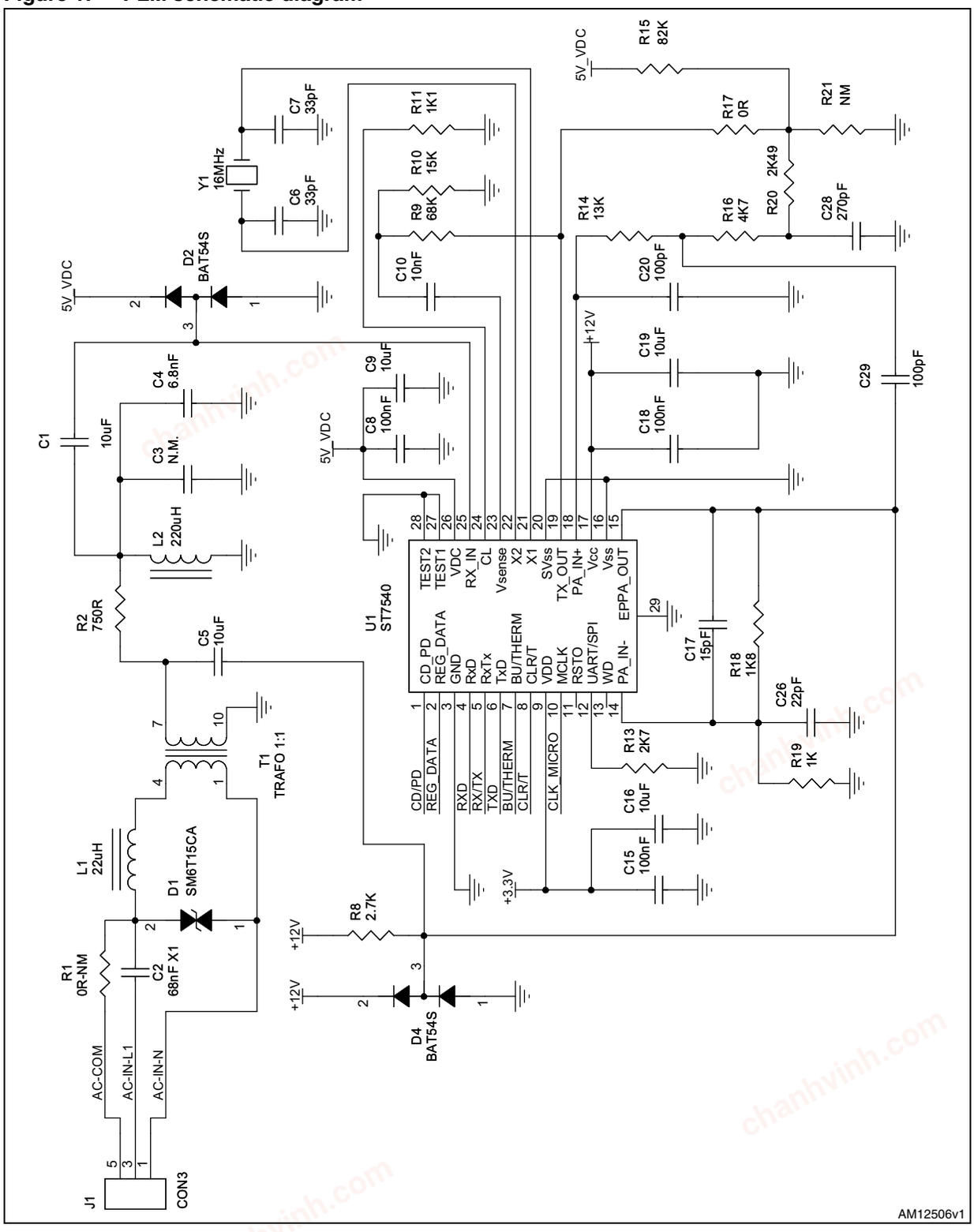
Some features are managed directly by the application engine, and are transparent to the user, such as the RTC management or the module parameter update, as well as the module programming and configuration, which is done by particular programming or service commands managed and acknowledged directly by the application engine.

The user layer is fully customizable by using some easy to use APIs available for user application implementation. User data can be easily addressed to the PLM or to the other communication interface by simply changing the destination channel in the user data structure.

chanhvinh.com

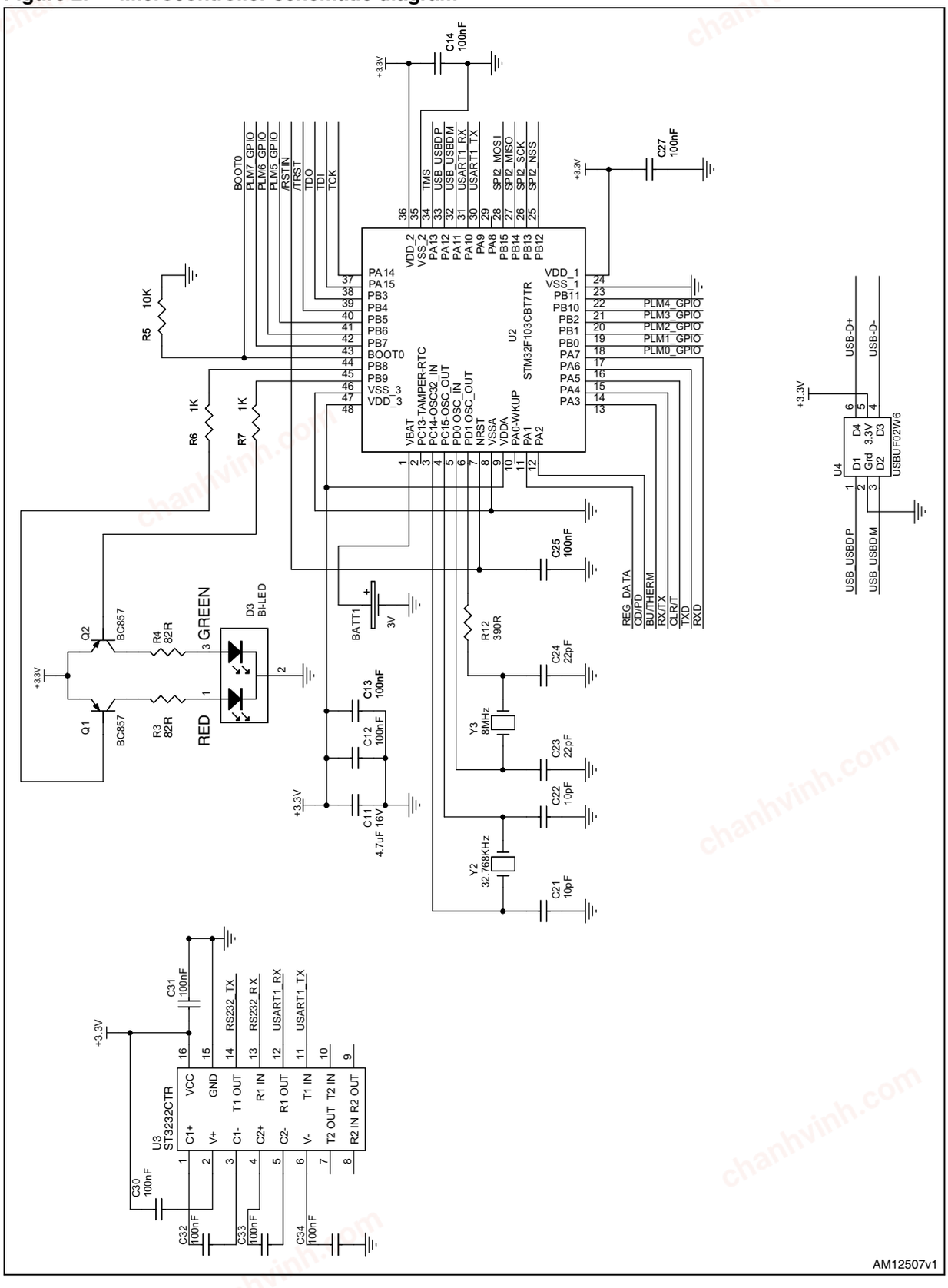
1 Schematic diagram

Figure 1. PLM schematic diagram



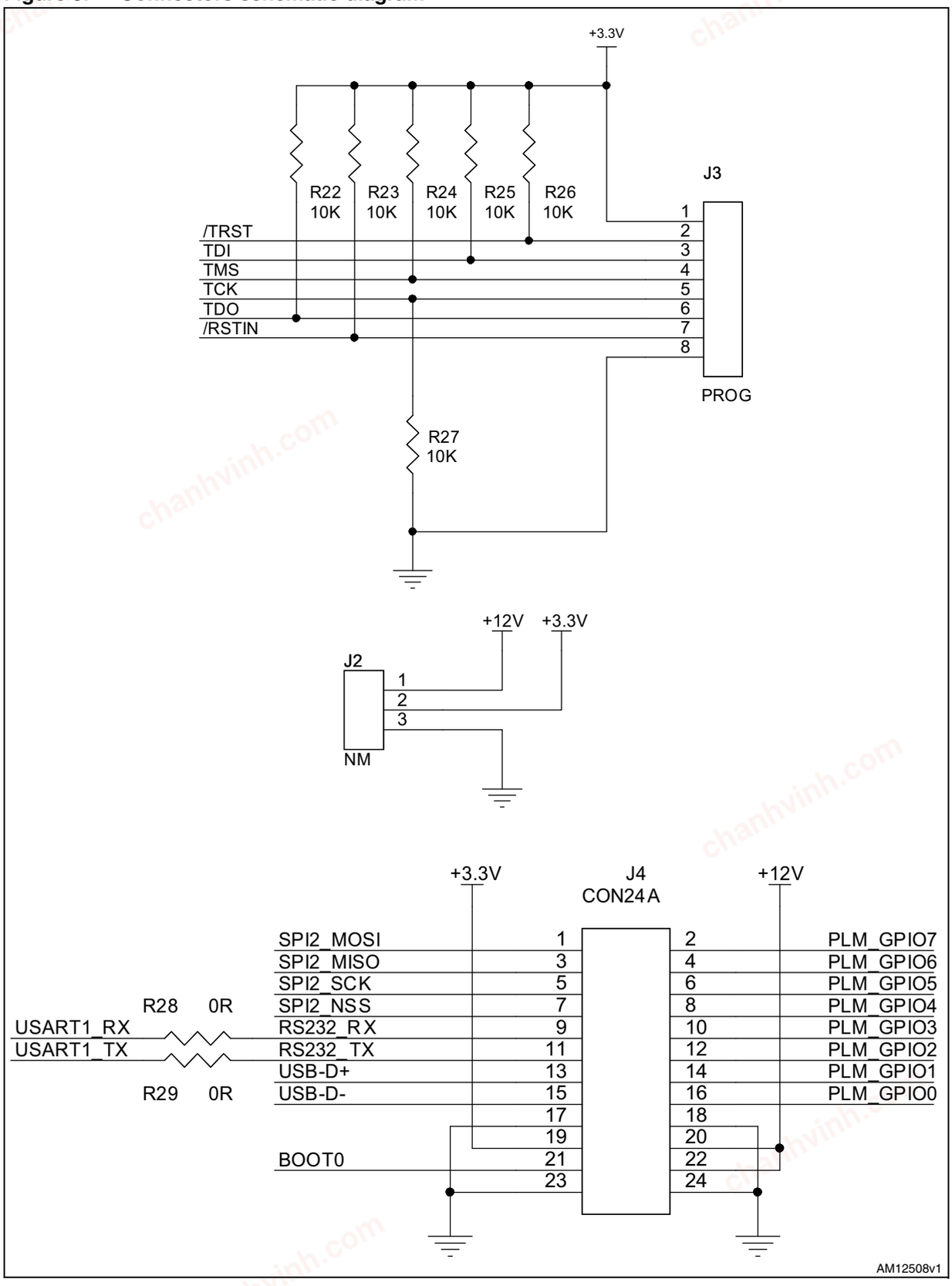
chanhvinh.com

Figure 2. Microcontroller schematic diagram



chanhvinh.com

Figure 3. Connectors schematic diagram



chanhvinh.com

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
06-Aug-2012	1	Initial release.

chanhvinh.com

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 TWO AUTHORIZED ST REPRESENTATIVES, 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.

© 2012 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 - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com