



# STEVAL-IHP001V3

## ZigBee<sup>®</sup> SmartPlug demonstration board based on the STM32F10x, SPZB260-PRO and STPM01

Data brief

### Features

- Monitors energy consumption and electrical parameters
- Power network overload prevention and remote load management in a wireless HAN
- Network/standalone operating modes
- Relay/Triac modes for on/off and dimming features
- RoHS compliant

### Description

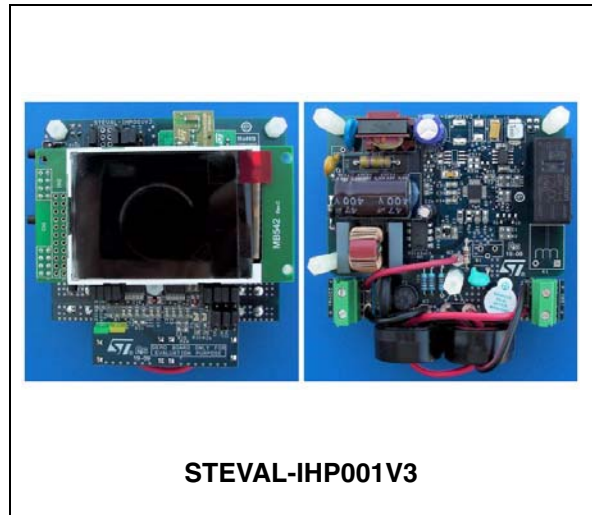
The STEVAL-IHP001V3 ZigBee<sup>®</sup> SmartPlug demonstration board employs the STM32F10x microcontroller, ZigBee SPZB260-PRO module and STPM01 energy metering IC to implement a ZigBee meter node which allows the user to monitor and manage the energy consumption of a connected load.

The SmartPlug board is a demonstration platform which provides guidelines for developing a home/building automation subsystem for energy management.

In a typical home system implementation, the board is plugged into an electrical wall socket, and supplies a home appliance or other generic electrical load.

Current, power, energy and other information related to the electrical load connected to the SmartPlug board can be shown on an LCD display locally, or sent to a ZigBee data concentrator through a home/building ZigBee network.

While the STEVAL-IHP001V3 replaces the STEVAL-IHP001V2, the hardware for both the V2 and V3 versions of the SmartPlug demonstration boards are identical. The STEVAL-IHP001V3 differs from the V2 version only in terms of the ZigBee PRO stack update.



In addition to the ZigBee PRO stack features, this update allows the use of the STEVAL-IFS013V2 USB-ZigBee dongle as network coordinator.

# 1 Schematic diagrams

Figure 1. AC load driver circuit

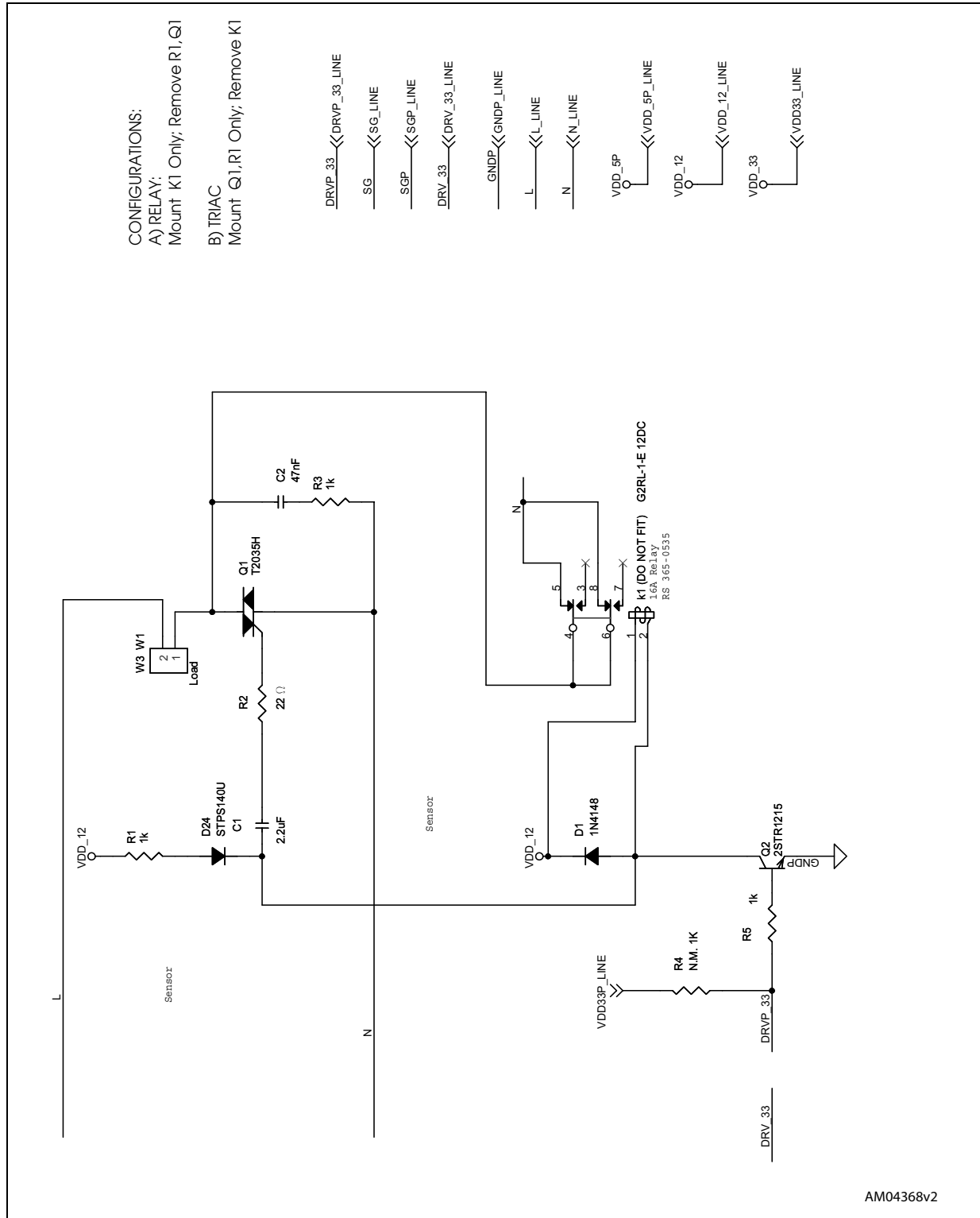
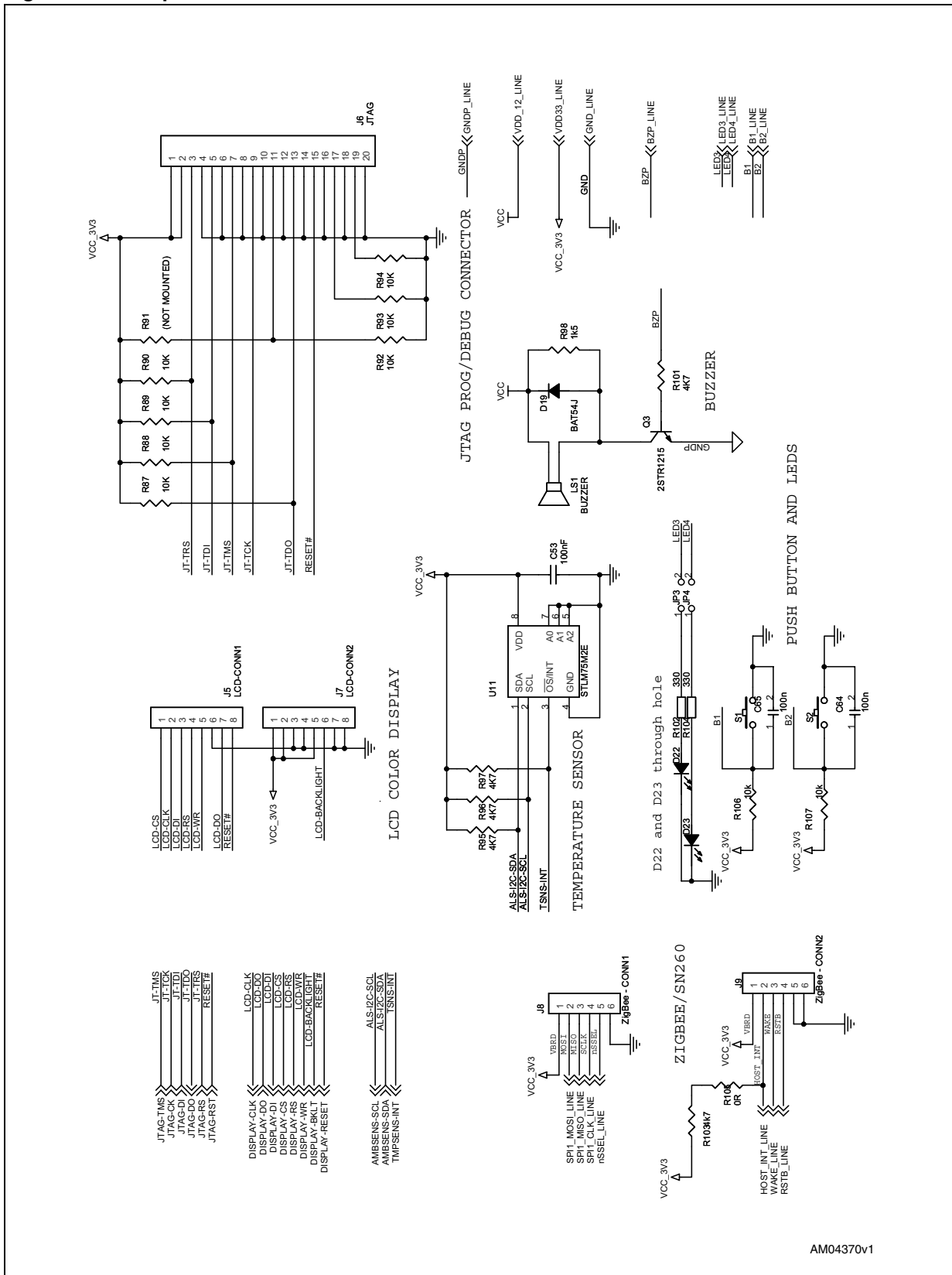




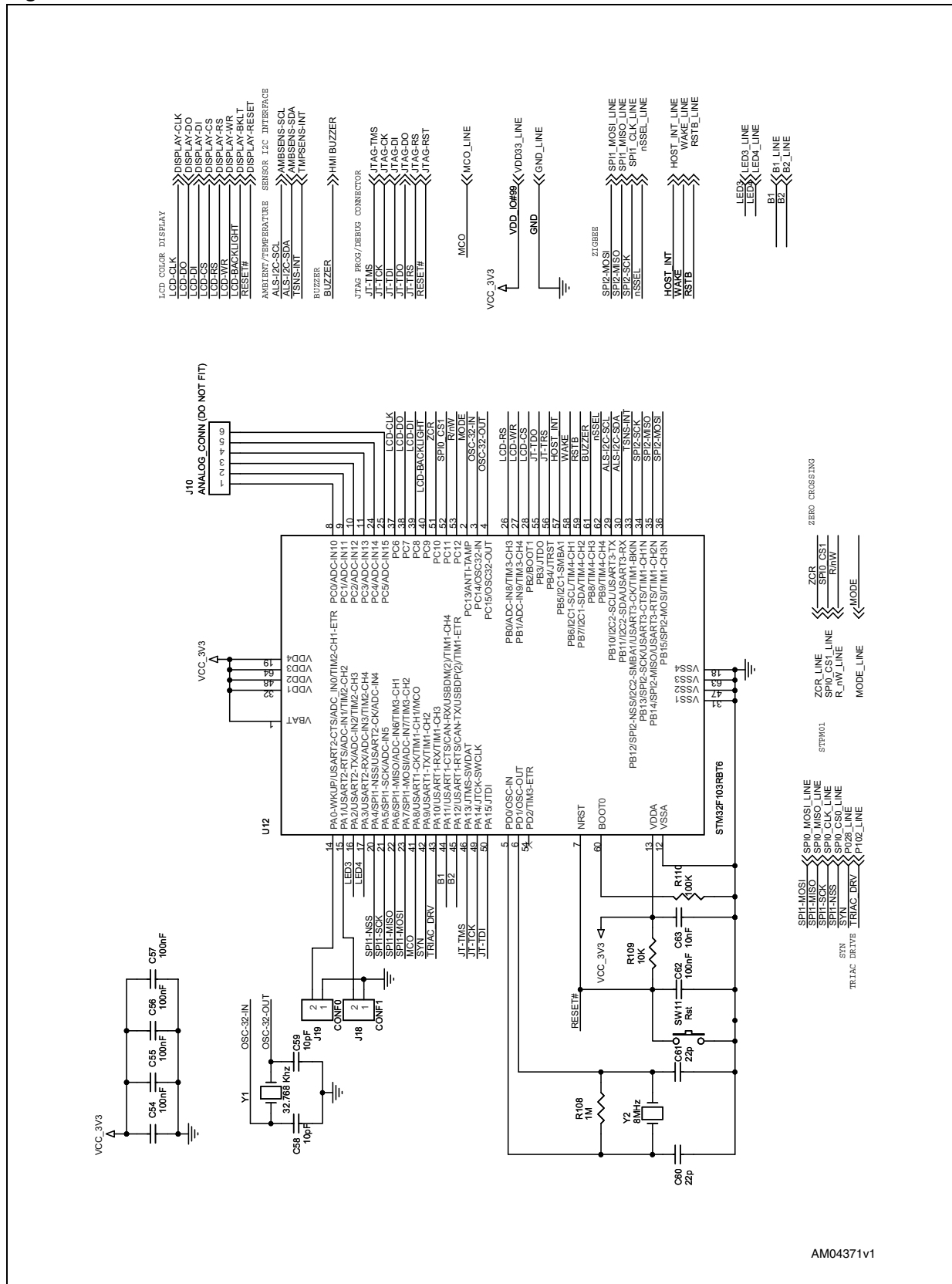
Figure 3. Temperature sensor circuit and connectors



AM04370v1



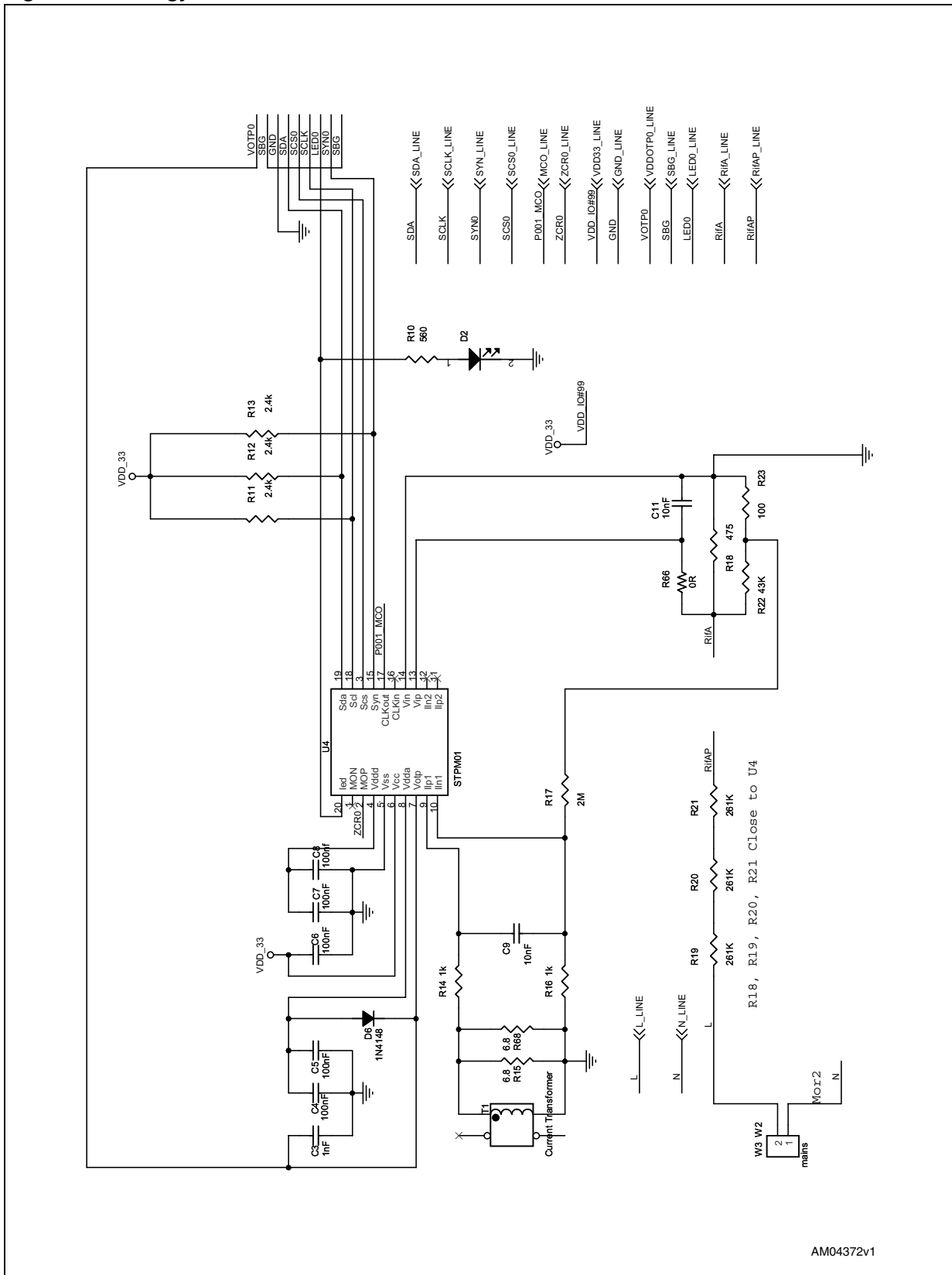
Figure 4. Microcontroller circuit



AM04371v1



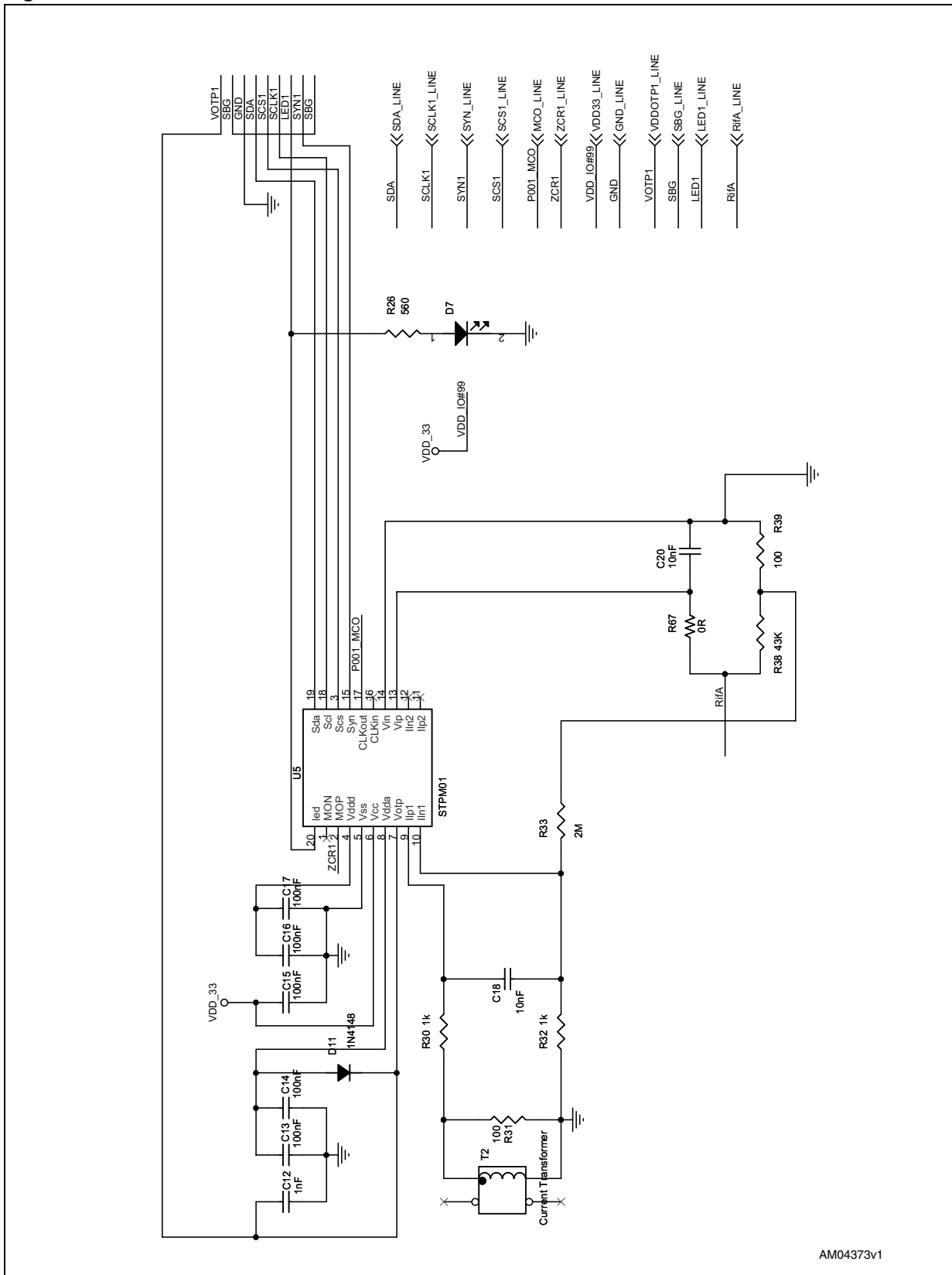
Figure 5. Energy meter circuit



AM04372v1

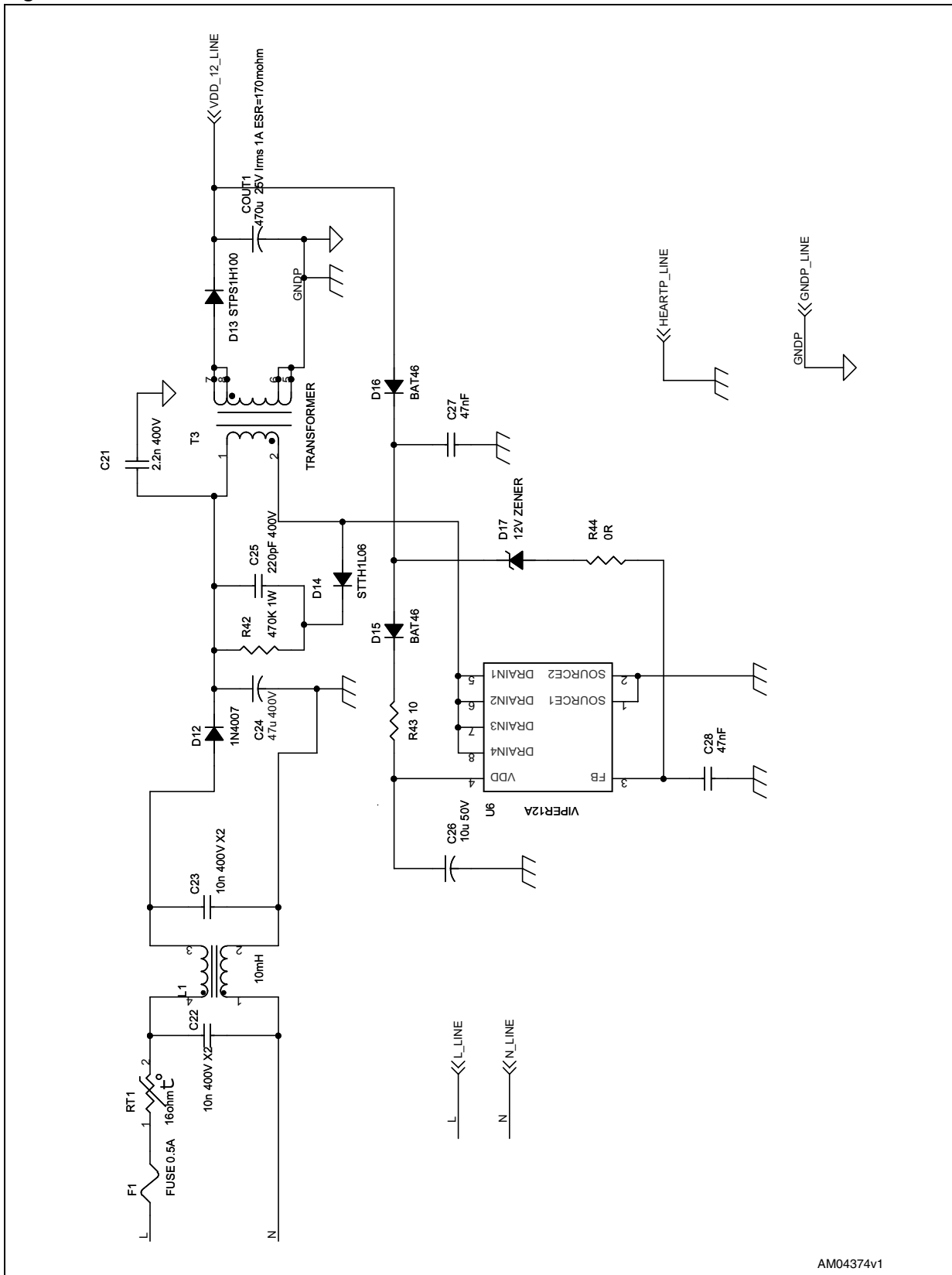


Figure 6. Differential current meter circuit



AM04373v1

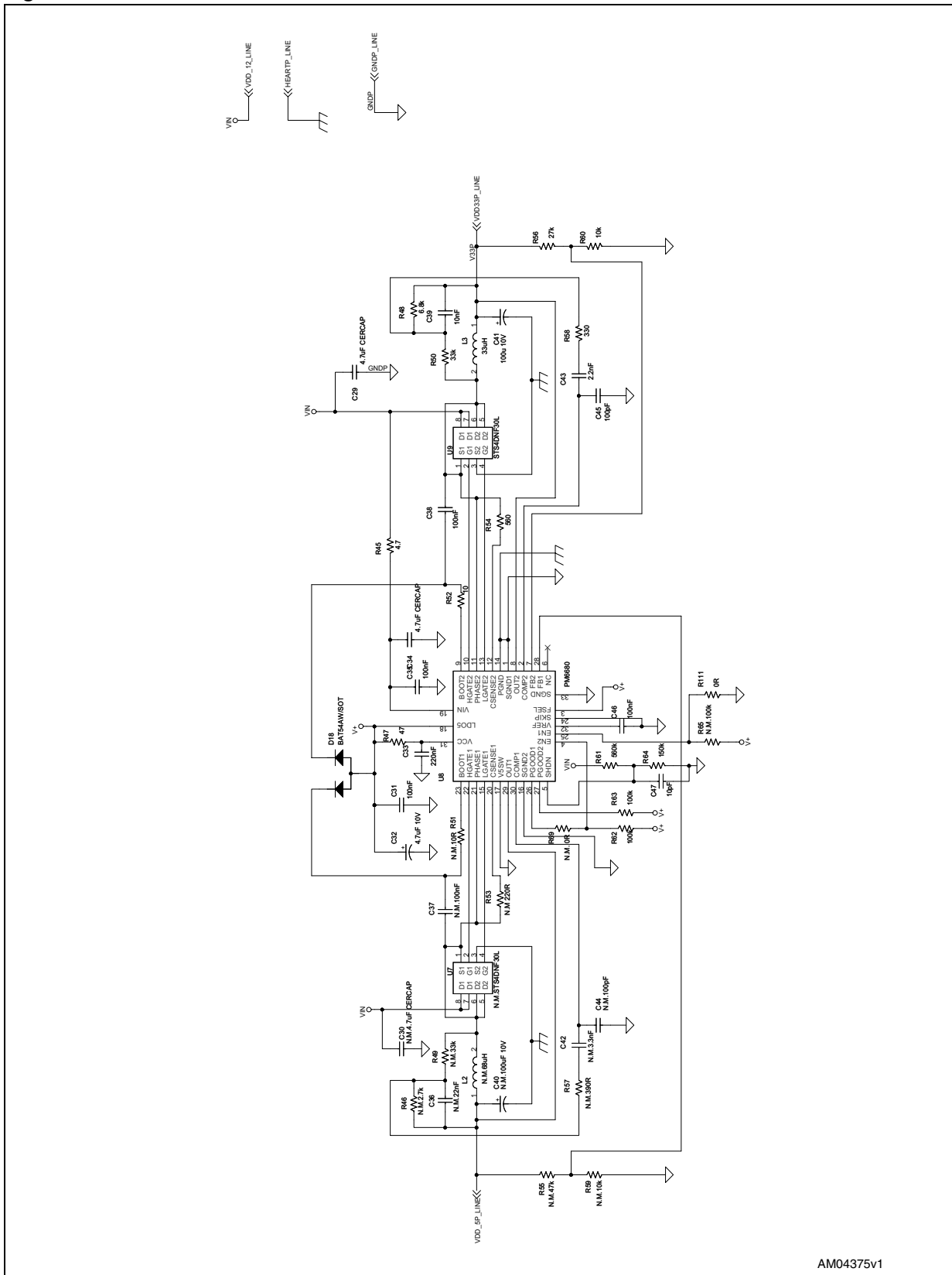
Figure 7. AC-DC converter circuit



AM04374v1



Figure 8. DC-DC converter circuit



## 2 Revision history

**Table 1. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 26-Apr-2010 | 1        | Initial release. |

**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.

© 2010 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](http://www.st.com)