

## AC timer demonstration board on HT triacs and ST7Lite1b

Data brief

### Features

- 3 independent application programs
  - Hand dryer with infrared sensor and T1235H-6T switch
  - Bathroom fan with humidity sensor and ACS108 switch
  - Multi-entrance room controller with push button and BTB08-600SW switch
- Two potentiometers for setting sensor sensitivity and TRIAC turn-off delay
- Capacitive power supply (680 nF capacitor EPCOS B32923C3684)
  - 5 V  $\pm$ 10%
  - Average output current: 16 mA
  - Standby power losses < 0.3 W @ 230 V
- Program selector (U2)
- ICC connector for software adjustment
- Free development area with hole matrix available for application breadboard adaptation
- Overvoltage protection is not implemented on the board but some solder pads are available to implement it in two different ways:
  - Varistor addition between mains voltage
  - Transil addition between TRIAC A2-G terminals
- RoHS compliant

### Description

The purpose of the demonstration board is to promote the various types of applications where a single AC switch is controlled in on/off full-phase mode. The switch control is based on information from a single sensor evaluated by an MCU.



# 1 Demonstration description

This demonstration is a development tool that allows users to develop their own application. Through hole technology is used for easy modification of the board for the desired function.

Three applications have been developed and are ready to use with this demonstration board as the sensors are already implemented on the board (or have to be connected to the header for the humidity sensor):

1. Hand dryer (program 1)
  - Controlled load: heating resistor and fan in parallel
  - Sensor: infrared sensor using IR diode emitter (D5) and photo-transistor receiver (Q4)
2. Bathroom fan (program 2)
  - Controlled load: low power fan
  - Sensor: humidity sensor (to be connected to P3 header)
3. Multi-entrance room light control (program 3)
  - Controlled load: light bulb, CFL lamp
  - Sensor: push button

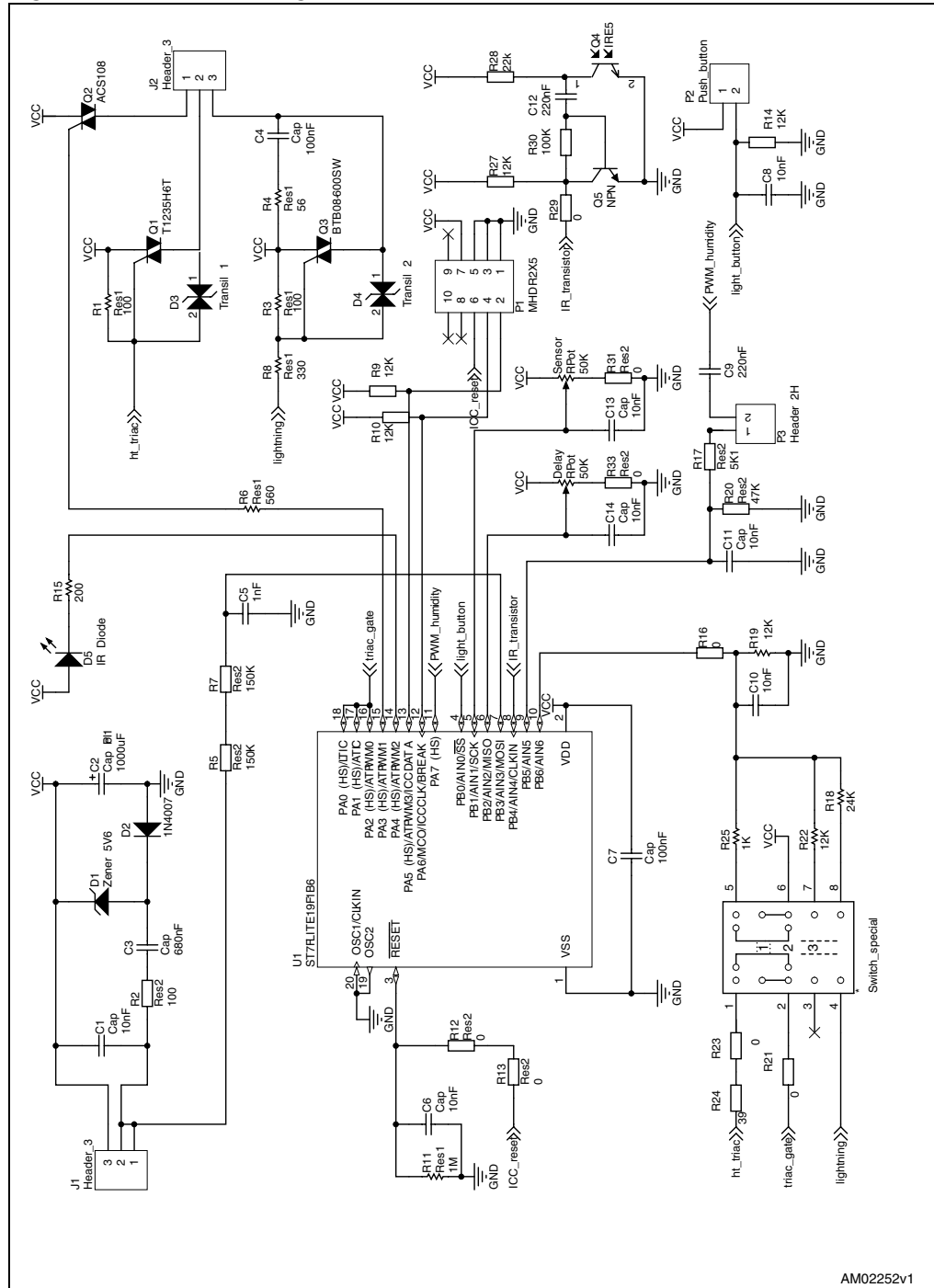
As previously stated, this board can easily be modified.

For example, here is a list of other possible applications that can be considered thanks to little software and hardware modifications:

- Water heater thermostat
- Household temperature control
- Humidity control (wood storage)
- Flood protection system (pump or valve control)
- Motion detector (outside lightning)
- The added advantages of this board are:
  - Spark free operation
  - No EMI or acoustic noise

## 2 Circuit schematic

Figure 1. Schematic diagram



### 3 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
16-Jul-2009	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.

© 2009 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)

