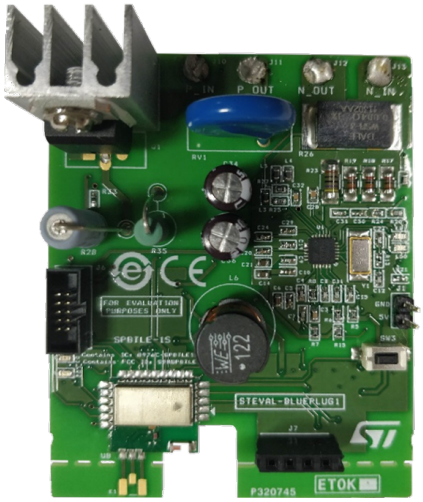
STEVAL-BLUEPLUG1

Data brief

SPBTLE-1S Based Smart Plug



Features

- Smart Energy Meter design with wireless connectivity
- BLE (Bluetooth Low Energy) v4.2 connectivity for control and metering panel: Smart-phone connectivity for energy consumption dashboard, control of appliances
- Dimming: Some loads can be controlled. For example, AC Induction fan speed, Heaters, Incandescent lamps
- Scheduling: Set the time of day for ON or OFF of the load
- NFC interface: To configure the design, store the logs (connector for adapter board)
- Rated voltage: 240 VAC (typ.)
- Rated current: 12 A (typ.)
- Power consumption of plug: 1.6 W (max.)
- Instantaneous and averaged power
- RMS and instantaneous voltage and current
- Radio certifications:
  - FCC certified: S9NSPBTLE1S
  - IC certified: 8976C-SPBTLE1S
- CE certified
- RoHS and China RoHS compliant

Product summary	
evaluation board	STEVAL-BLUEPLUG1
VIPerPlus family: Energy saving high voltage converter for direct feedback	VIPER06Xs
very low power application module for Bluetooth® Smart v4.2	SPBTLE-1S
ASSP for metering applications with up to four independent 24-bit 2nd order sigma-delta ADCs	STPM32

Description

The STEVAL-BLUEPLUG1 evaluation board for home-automation and IoT (internet of things) applications is designed to help you develop your own home or building automation subsystems for energy management, in a small form factor solution for easy integration into home and building electrical systems.

The board is compliant with Bluetooth Low Energy (BLE) specification 4.2 to allow secure communication of metering data from specific electrical loads to a smart phone with BLE support.

You can use an Android application for your smart phone to display energy measurement parameters and send dimming and scheduling commands to the Smart Plug board.

This board embeds an STPM32 metering chip for high accuracy measurement of power and energy in power line systems using shunt current sensors, and a non-isolated buck converter supply based on the VIPER06Xs. A three-terminal TRIAC controls the current through AC switching.

You can also interface the board with NFC enabled EEPROM via a dedicated connector.

1 Schematic diagrams

Figure 1. **STEVAL-BLUEPLUG1 schematic - SPBTLE-1S**

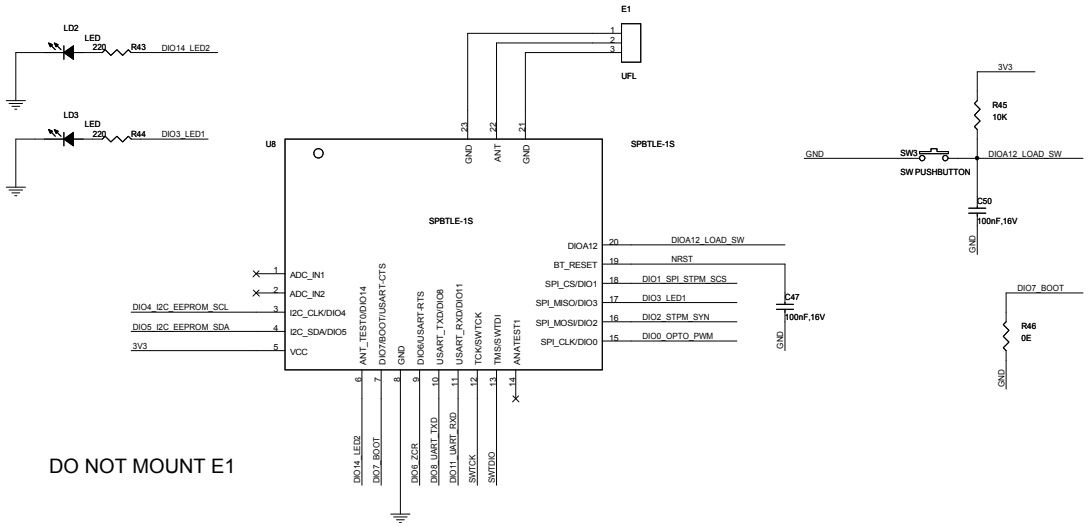


Figure 2. **STEVAL-BLUEPLUG1 schematic - STPM32**

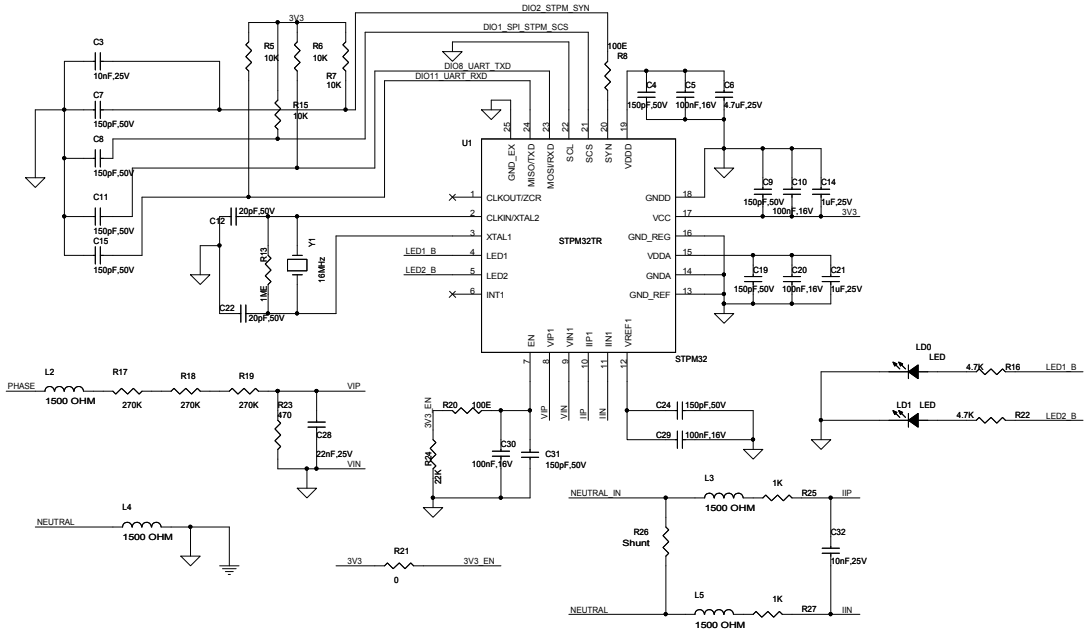
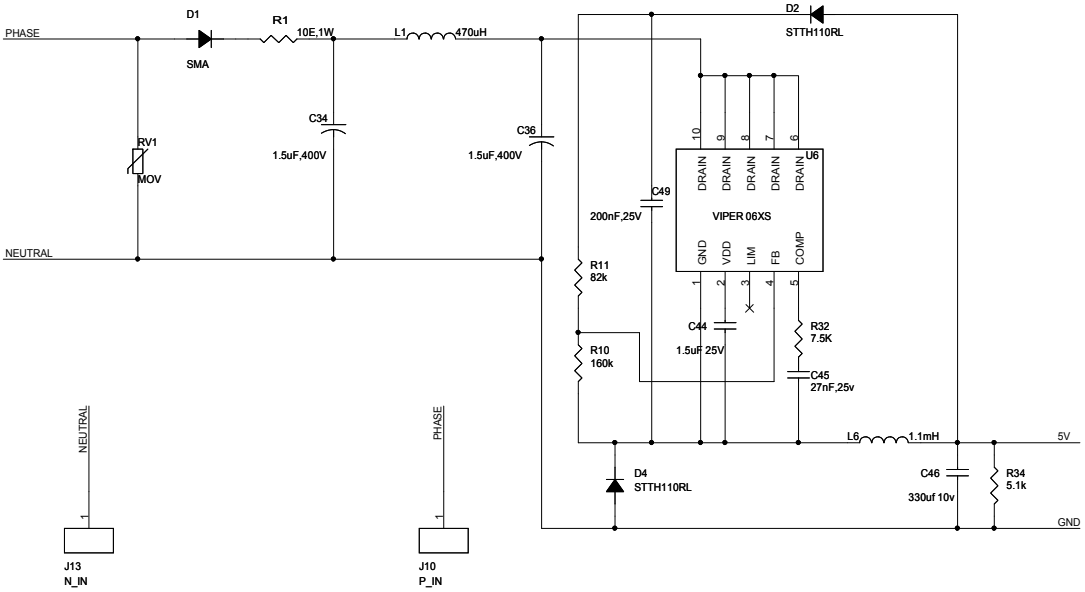


Figure 3. **STEVAL-BLUEPLUG1 schematic - Viper power supply**



DO NOT MOUNT J10, J13

REGULATOR

Figure 4. **STEVAL-BLUEPLUG1 schematic - Snubberless TRIAC section**

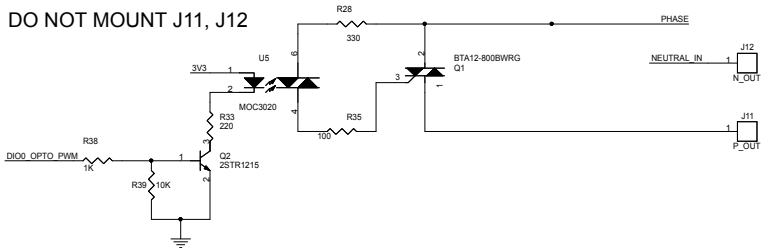


Figure 5. **STEVAL-BLUEPLUG1 schematic - ZCD**

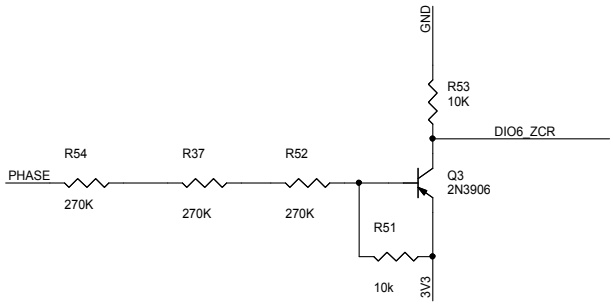


Figure 6. **STEVAL-BLUEPLUG1 schematic - SWD**

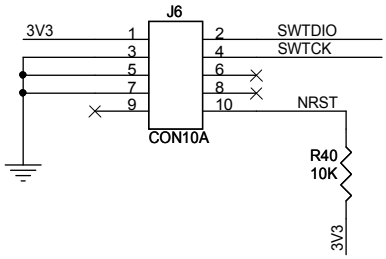


Figure 7. **STEVAL-BLUEPLUG1 schematic - M24LR dual EEPROM**

Revision history

Table 1. **Document revision history**

Date	Version	Changes
28-May-2018	1	Initial release.

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