

Wireless motion detector based on Bluetooth® Low Energy and PIR sensor



Features

- BlueNRG-M2SA module for communication
- Signal conditioning based on TSU102
- Window comparator based on TS883
- STLQ020 power management
- CR2032 coin cell battery
- Connectivity with STBLESensor app
- Motion detection range up to 5 m
- Low-power design
- RoHS compliant

Description

The STEVAL-BLUEPIRV1 evaluation board is an application example design of a wireless motion detector based on a passive infrared (PIR) sensor and featuring Bluetooth® Low Energy wireless connectivity.

The passive infrared sensors are the most used sensors for motion detection, thanks to their low-power consumption and price.

The STEVAL-BLUEPIRV1 evaluation board uses IRA-S210ST01 by Murata. The detection range of the IML-0688 Fresnel lens is up to 5 m.

The on-board low-power TSU102 CMOS op-amp and TS883 comparator perform the analog signal conditioning with a power consumption in a sub- μ A range.

The embedded BlueNRG-M2SA FCC and IC certified radio module (FCC ID: S9N-BNRGM2S and IC: 8976CBNRGM2SA), which integrates an application microcontroller based on an Arm®Cortex®-M0 core, features the Bluetooth® Low Energy connectivity.

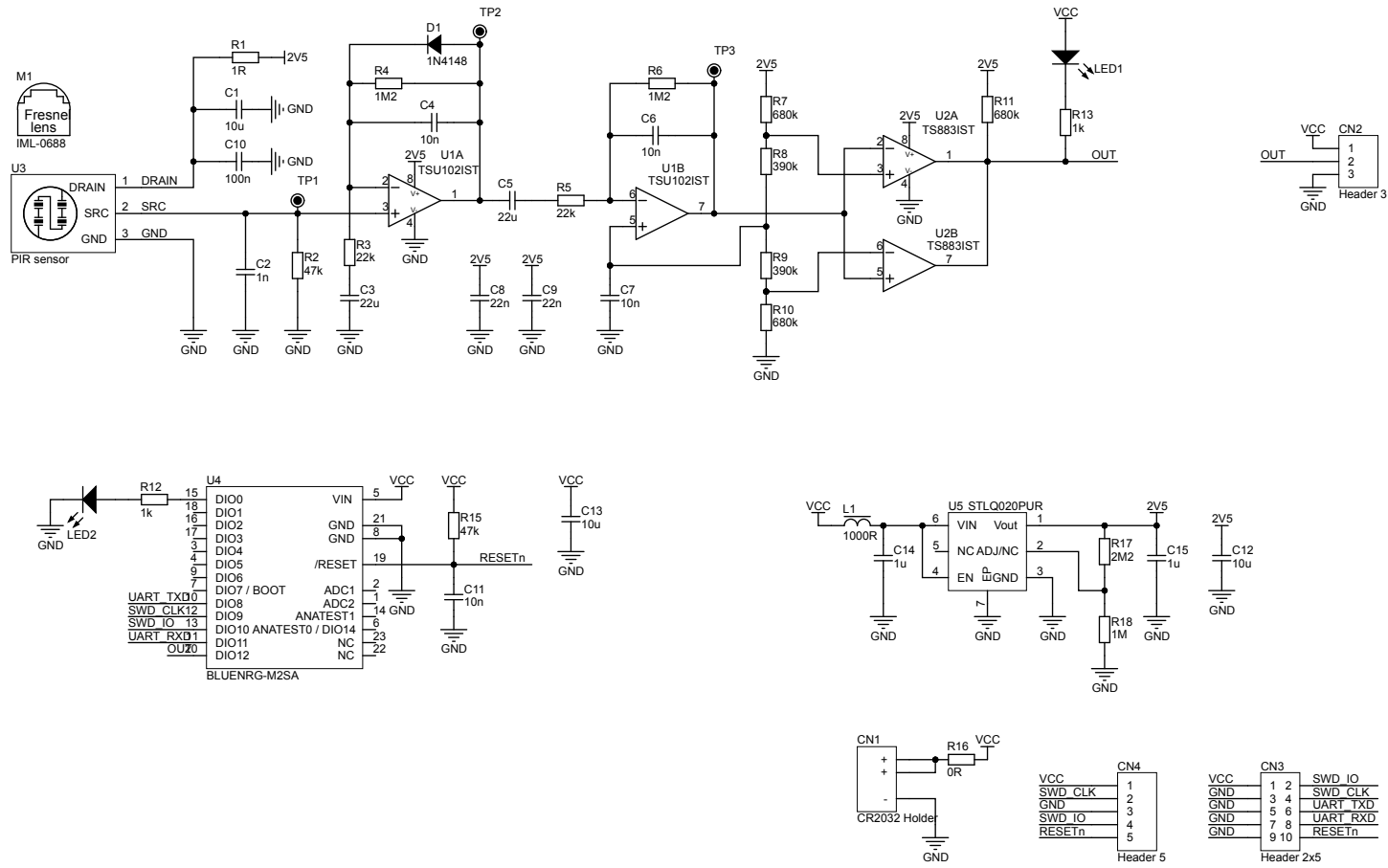
The whole design has been built by focusing on low-power consumption. Even though powered via a CR2032 coin-cell battery, the board expected lifetime is around a year.

Product summary

Wireless motion detector based on Bluetooth® Low Energy and PIR sensor	STEVAL-BLUEPIRV1
Very low power application processor module for Bluetooth® Low Energy v5.2	BlueNRG-M2SA
Nanopower (580 nA) rail-to-rail I/O 5 V CMOS op-amp	TSU102IST
Rail-to-rail 0.9 V nanopower, open drain dual comparators	TS883IST
Bluetooth® Low Energy sensor application for Android and iOS	STBLESensor
Application	Industrial Sensors

1 Schematic diagrams

Figure 1. STEVAL-BLUEPIRV1 circuit schematic



2 Board versions

Table 1. STEVAL-BLUEPIRV1 versions

PCB version	Schematic diagrams	Bill of materials
STEVAL\$BLUEPIRV1A ⁽¹⁾	STEVAL\$BLUEPIRV1A schematic diagrams	STEVAL\$BLUEPIRV1A bill of materials

1. This code identifies the STEVAL-BLUEPIRV1 evaluation board first version. It is printed on the board PCB.

Revision history

Table 2. Document revision history

Date	Revision	Changes
11-Apr-2022	1	Initial release.

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