SensorTile connectable sensor node: solder only

Features

- Very compact module for motion, audio, environmental sensing and Bluetooth® low energy connectivity with a complete set of firmware examples
- Mobile connectivity via the STBLESensor app, available for iOS™ and Android™
- Main components:
  - STM32L476JG – 32-bit ultra-low-power MCU with Cortex®M4F
  - LSM6DSM – iNEMO inertial module: 3D accelerometer and 3D gyroscope
  - LSM303AGR – Ultra-compact high-performance eCompass module: ultra-low power 3D accelerometer and 3D magnetometer
  - LPS22HB – MEMS nano pressure sensor: 260-1260 hPa absolute digital output barometer
  - MP34DT05-A – 64 dB SNR digital MEMS microphone
  - BlueNRG-MS – Bluetooth low energy network processor
  - BALF-NRG-02D3 – 50 Ω balun with integrated harmonic filter
  - LD39030SJ18R – 300 mA low quiescent current soft-start, low noise voltage regulator
- 2 V - 5.5 V power supply range
- External interfaces: UART, SPI, SAI (Serial Audio Interface), I²C, DFSDM, USB OTG, ADC, GPIOs
- Solderable only interface (no connector on back side)
- SWD interface for debugging and programming capability
- CE certified
- RoHS and China RoHS compliant
- WEEE compliant
- FCC certified
- IC certified
- TYPE certified

Product summary

SensorTile connectable sensor node: solder only	STEVAL-STLCS02V1
Ultra-low-power microcontroller with FPU ARM Cortex-M4	STM32L476JG
Bluetooth low energy network processor supporting Bluetooth 4.1 core specification	BlueNRG-MS
e-Compass with 3D digital linear acceleration sensor, 3D digital magnetic sensor	LSM303AGR
Ultra-compact piezoresistive absolute pressure sensor	LPS22HB
iNEMO 6DoF inertial module	LSM6DSM
Applications	Sensing

Description

STEVAL-STLCS02V1 (SensorTile) is a highly integrated reference design that can be plugged into form-factor prototypes, adding sensing and connectivity capabilities to new designs through a smart hub solution.
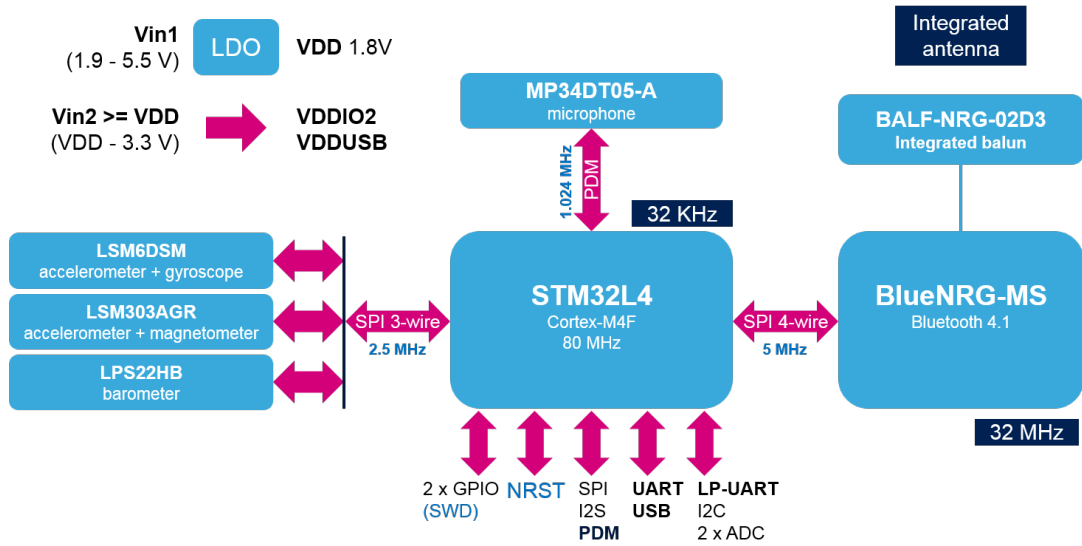
It can also easily support development of monitoring and tracking applications like standalone sensor nodes connected to iOS™ or Android™ smartphone applications.

The SensorTile occupies a very small 13.5 x 13.5 mm square outline, with all the electronic components on the top side. The connector pinout is repeated on 18 PCB pads to render the SensorTile a solderable system on module.

Refer to user manual UM2101 *Getting started with the STEVAL-STLKT01V1 SensorTile integrated development platform* for more information.

DB3221 - Rev 5 - February 2021
For further information contact your local STMicroelectronics sales office.

www.st.com

1 Schematic diagram

Figure 1. Functional block diagram

2   Regulatory approvals

The SensorTile module STEVAL-STLCS02V1 is marketed under the same FCC identifier (ID: S9NSTILE01) as the SensorTile kit (code STEVAL-STLKT01V1) and the SensorTile module STEVAL-STLCS01V1 as a class I permissive change. The FCC ID S9NSTILE01 is a limited modular approval as the module does not have RF shielding. The radio transmitter was tested for FCC certification in the specific host with model number STEVAL-STLCX01V1, belonging to the SensorTile kit (code STEVAL-STLKT01V1). When integrated in a custom designed host, the SensorTile module STEVAL-STLCS02V1 must be tested and FCC certified in the custom designed host.

The SensorTile module STEVAL-STLCS02V1 is marketed under the same IC certification number IC: 8976C-STILE01 as a class I permissive change to model number HVIN: STEVAL-STLCS01V1. Please refer to the data brief of the SensorTile kit (code STEVAL-STLKT01V1) for complete information on PMN, FVIN and HMN. The SensorTile module is certified as a limited module because the modular transmitter does not have RF shielding. The radio transmitter was tested in the representative host with model number STEVAL-STILECX01V1, belonging to the SensorTile kit (code STEVAL-STLKT01V1). When the SensorTile module is integrated into a different custom designed host, the developer of the host shall perform additional radiated emission test and meet technical requirements and labeling requirements as per RSP100 section 3.2 http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01130.html for IC certification.

The Bluetooth radio power output is set by default at 0 dBm. The FCC and IC certifications refer to this operating value. The power output can be changed up to 8 dBm by reprogramming the device firmware, but the change of this operating value will require an update of the FCC and IC certifications, with additional radio emission tests to be performed.

Revision history

Table 1. Document revision history

Date	Version	Changes
28-Mar-2017	1	Initial release.
09-Nov-2017	2	Updated features in cover page.
05-Mar-2019	3	Updated cover page features. Added product summary table.
13-Mar-2019	4	Updated cover page features.
01-Feb-2021	5	Updated cover page features and product summary table.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.