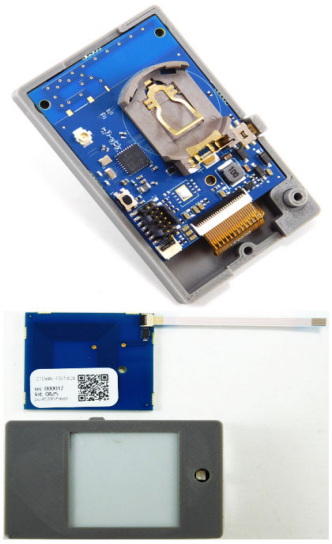
# STEVAL-ESL1KCB

Data brief

## Electronic shelf label (ESL) based on Bluetooth® LE



The picture shown is for illustration purpose only.
Actual product may vary depending on buyer's selection and availability.

## Features

- Ultralow power wireless STM32WB09KE microcontroller based on the Arm Cortex®-M0+ core, featuring 512 Kbytes of flash memory and 64 Kbytes of SRAM in a VFQFPN32 package
- Supports Bluetooth® LE SIG specification v5.4 PAwR feature
- ST25DV04KC-IE6C3 dynamic NFC/RFID tag IC with 4-Kbit EEPROM
- On-board 2.4 GHz PCB antenna
- On-board 13.56 MHz inductive antenna
- STLINK-V3SET target connector
- User LED
- User and reset push buttons
- 1.54 inches E-Ink display
- CR2032 battery holder
- Dedicated STM32 hotspot containing firmware and setup guide

## Description

The STEVAL-ESL1KCB is a modular application example of a wireless electronic shelf label (ESL) featuring Bluetooth® LE and NFC connectivity. The kit includes two boards.

The STEVAL-ESLWB0CB with the ultralow power wireless STM32WB09KE microcontroller grants the communication with another Bluetooth® LE device acting as an access point to set the ESL display (price, text, icons) via PAwR packets.

The STEVAL-ESLST25CB with the ST25DV04KC dynamic NFC/RFID tag IC stores more product information like the address of a web page.

The STEVAL-ESLWB0CB can run the ESL application STM32WB0-BLE-PAwR-ESL.

| Product summary | |
|---|---|
| Electronic shelf label (ESL) based on Bluetooth® LE | STEVAL-ESL1KCB |
| Ultra-low-power, Arm Cortex-M0+ MCU 64 MHz | STM32WB09KEV6TR |
| Dynamic NFC/ RFID tag IC with 4-Kbit EEPROM | ST25DV04KC-IE6C3 |
| Application | Electronic shelf labels |

# 1 Schematic diagrams

*Notice: These schematics are for illustration purpose only. Actual product may vary depending on buyer's selection and availability.*

**Figure 1. STEVAL-ESLWB0CB circuit schematic (1 of 6)**

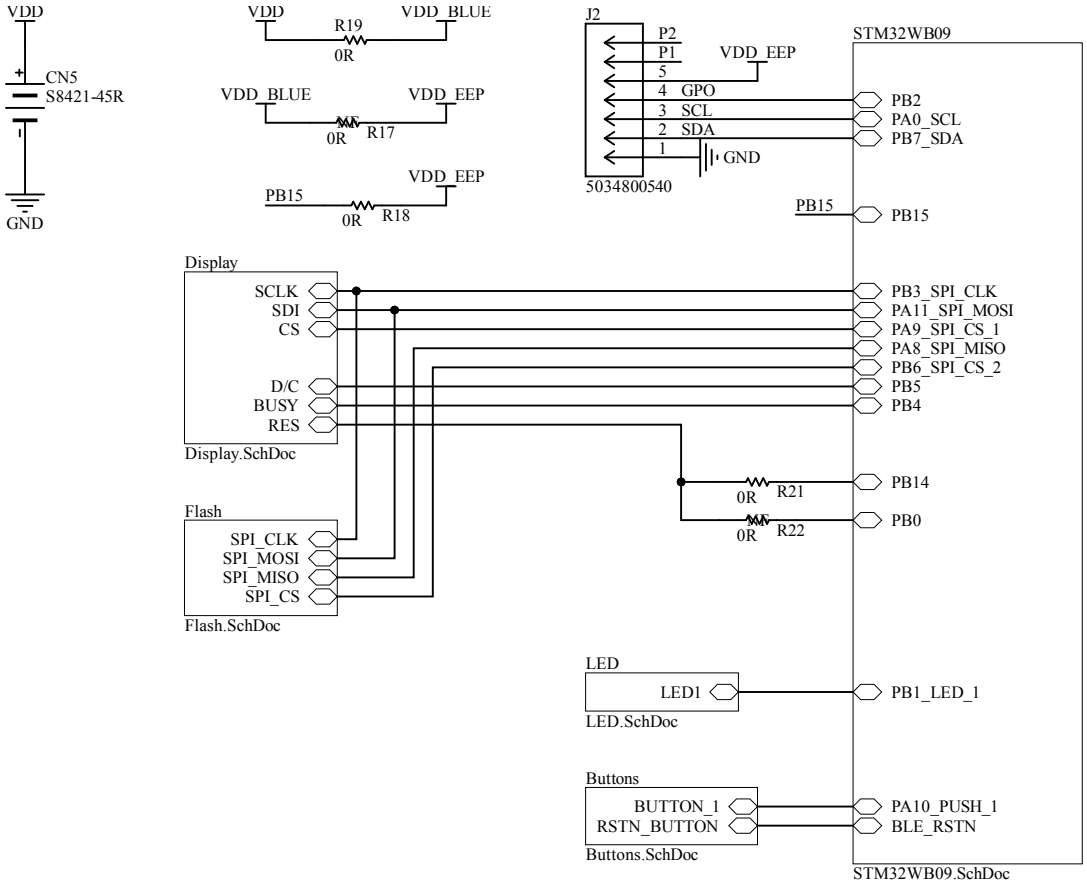


**Figure 2. STEVAL-ESLWB0CB circuit schematic (2 of 6)**

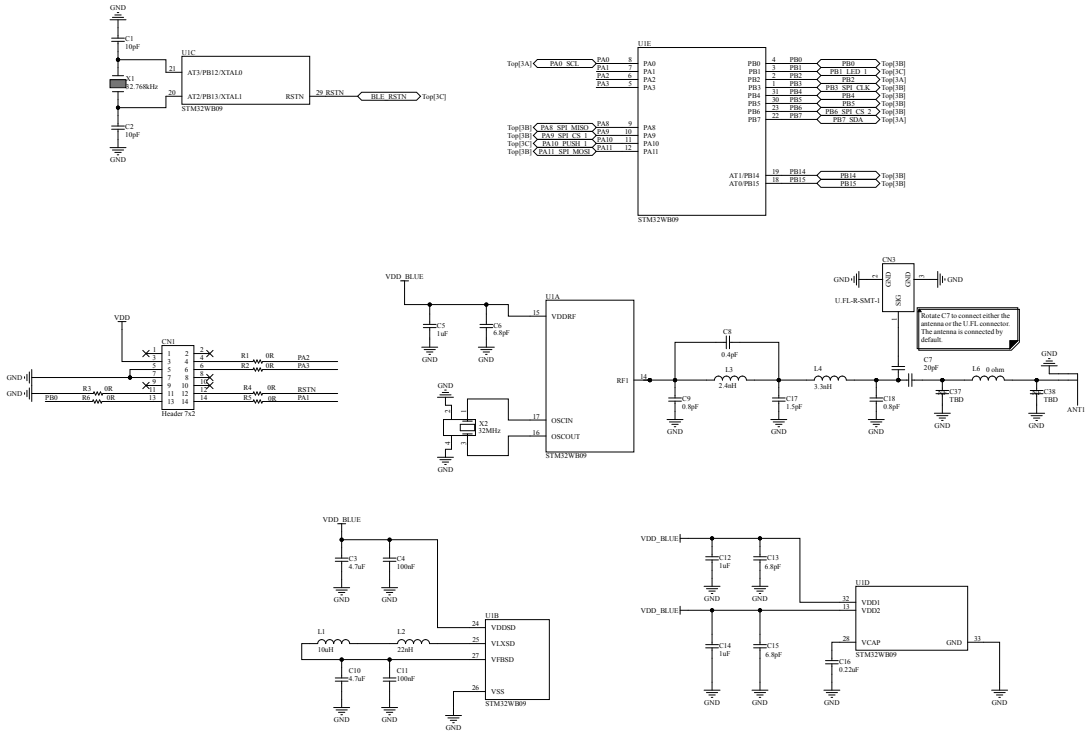



**Figure 3. STEVAL-ESLWB0CB circuit schematic (3 of 6)**

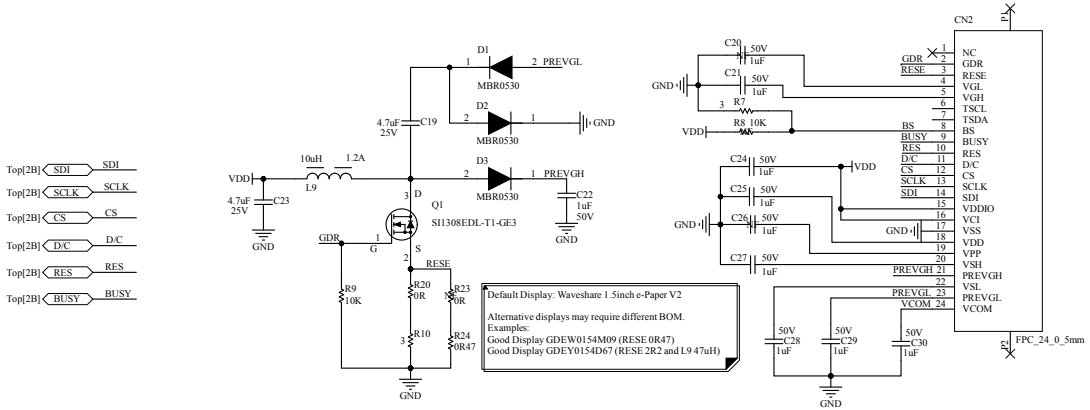


Figure 4. **STEVAL-ESLWB0CB circuit schematic (4 of 6)**

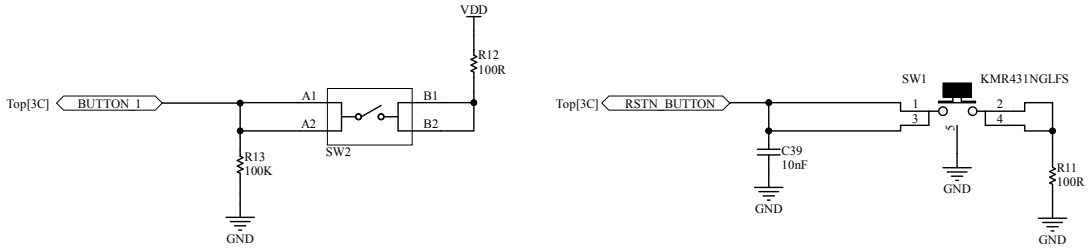



Figure 5. **STEVAL-ESLWB0CB circuit schematic (5 of 6)**

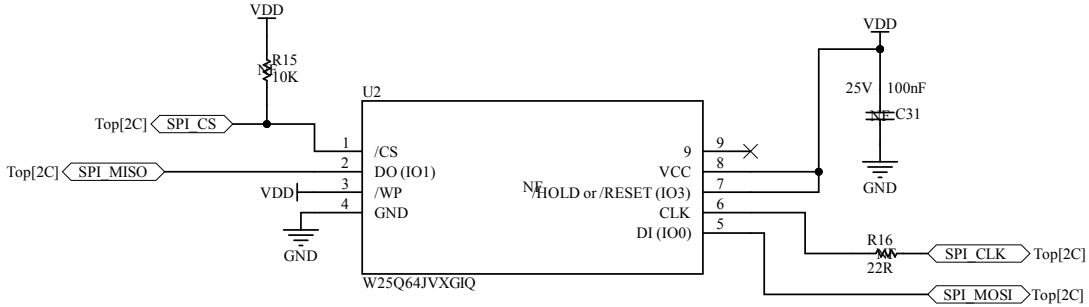



Figure 6. **STEVAL-ESLWB0CB circuit schematic (6 of 6)**

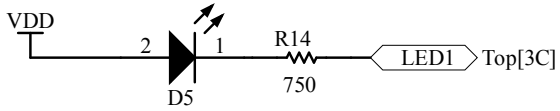
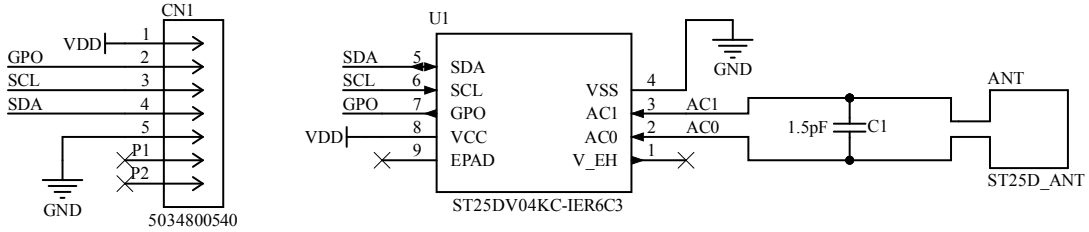



Figure 7. **STEVAL-ESLST25CB circuit schematic**



# 2 Custom evaluation boards information

*Notice:* *These evaluation boards are custom designed and built, in small quantities, according to specific requests from customers and are destined for evaluation and testing of ST products in a research and development setting. Please contact ST to provide your specific requests and get your custom built board(s).*

## Revision history

Table 1. **Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 05-Mar-2025 | 1 | Initial release. |
| 08-Apr-2025 | 2 | Updated Section 1: Schematic diagrams, Section Features and Section Description.<br>Minor text changes. |
| 10-Jul-2025 | 3 | Updated Cover image. |

**IMPORTANT NOTICE – 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.

In the event of any conflict between the provisions of this document and the provisions of any contractual arrangement in force between the purchasers and ST, the provisions of such contractual arrangement shall prevail.

The 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 acknowledgment.

The 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 the 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.

If the purchasers identify an ST product that meets their functional and performance requirements but that is not designated for the purchasers' market segment, the purchasers shall contact ST for more information.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, 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.

© 2025 STMicroelectronics – All rights reserved