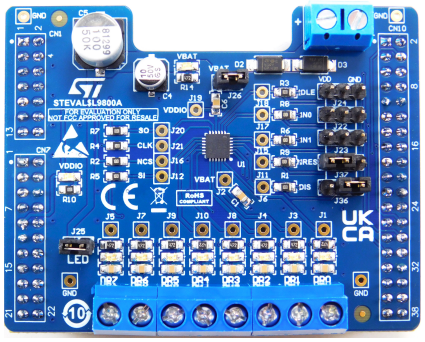
STEVAL-L9800

Data brief

L9800 multichannel driver evaluation board



Features

- Operating input voltage: 3 V to 28 V
- Eight LS drivers up to 0.5 A
- Idle mode for reduced current consumption
- Possible daisy chain configuration
- Two parallel input pins with input mapping functionality
- SPI communication interface for control and diagnostics
- Reference design with optimized bill of materials
- L9800 hosted in QFN24 package
- 4-layer PCB (70 x 55 mm)

Product summary	
L9800 multichannel driver evaluation board	STEVAL-L9800
8-channel low side driver	L9800-TR
Applications	Body control module (BCM) HVAC and climate control Power domain control (PDC)

Description

The STEVAL-L9800 is a tool designed to evaluate the L9800 smart power device, designed by STMicroelectronics in advanced BCD technology. The L9800 is an 8-channel IC with eight LS drivers designed for automotive applications (LEDs and relays) and compatible with resistive, inductive, and capacitive loads. The device offers advanced diagnostic and protection functionalities such as short to GND, open load, overcurrent, and overtemperature detection. The 8 output channels can be driven by SPI or by 2 dedicated parallel inputs that can be associated to different output thanks to a programmable internal multiplexer. Limp home functionality is also featured, which allows the use of 2 selected drivers in specific fault conditions, such as SPI fault, microcontroller fault, or supply UV. Daisy chain compatibility even with 8-bit SPI is available. The device is able to ensure operation in cranking scenarios down to VBATT = 3 V and very low quiescent current in the SLEEP condition.

A serial peripheral interface (SPI) is used for control and configuration of the loads and the device. Status feedback of all diagnostic functions is also provided.

There are two input pins available for direct control and PWM: these are connected to two defined outputs by default, but additional or different output mapping can be controlled by SPI. Thanks to the expansion connectors, the STEVAL-L9800 allows the complete control of L9800 communication interface (SPI) and parallel input/output.

The evaluation platform may also be controlled through a graphical user interface (GUI) on the AEK-MCU-C1MLIT1 hardware interface.

1 Overview

1.1 Electrical characteristics

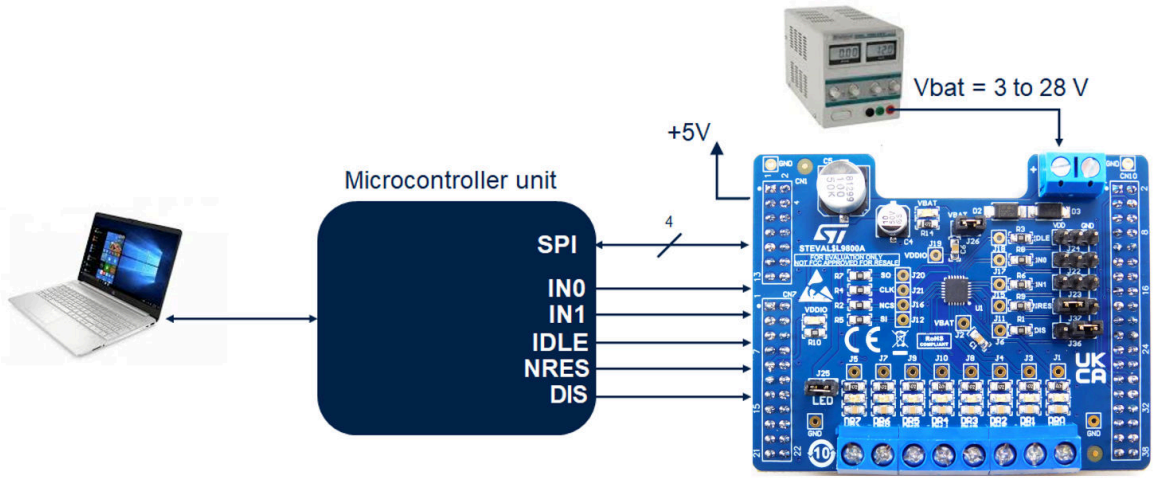
- Operative input voltage: 3 - 28 V (for VBATT pin)
- Operative input voltage: 3 - 5 V (for VDDIO pin)
- 8 LS drivers up to 0.5 A each
- Configurable inputs (using jumpers):
  - IN0/IN1
  - IDLE
  - NRES
  - DIS
- SPI communication interface
- 70 x 55 mm 4-layer PCB

1.2 System requirements

- 3 V to 28 V power supply with current capability up to 8 A
- Loads: LED, relay, solenoid lamp with a rating of 12 V/0.5 A
- Oscilloscope and/or multimeter

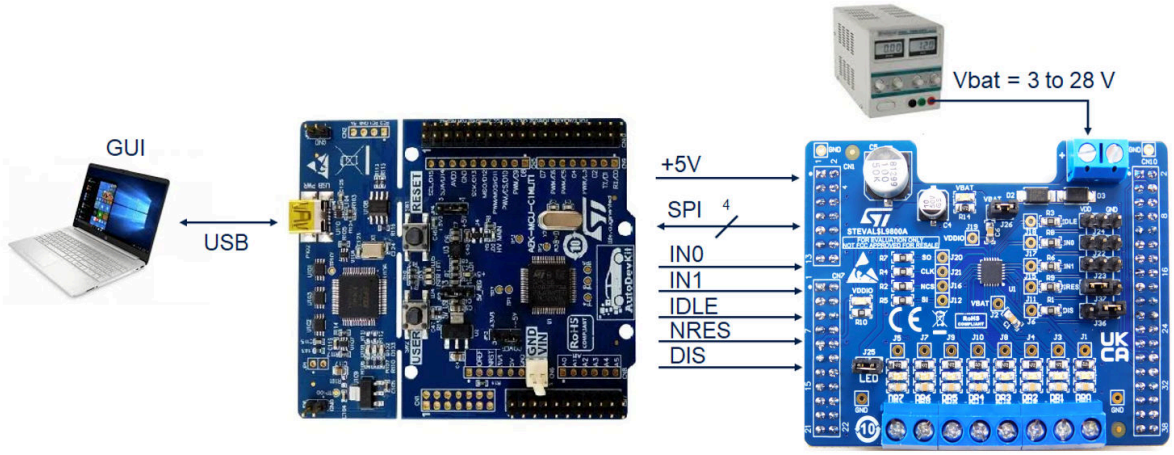
1.3 External connection

Figure 1. Connection with an arbitrary microcontroller board



Note: The configuration sequence is available in the STEVAL-L9800 user manual.

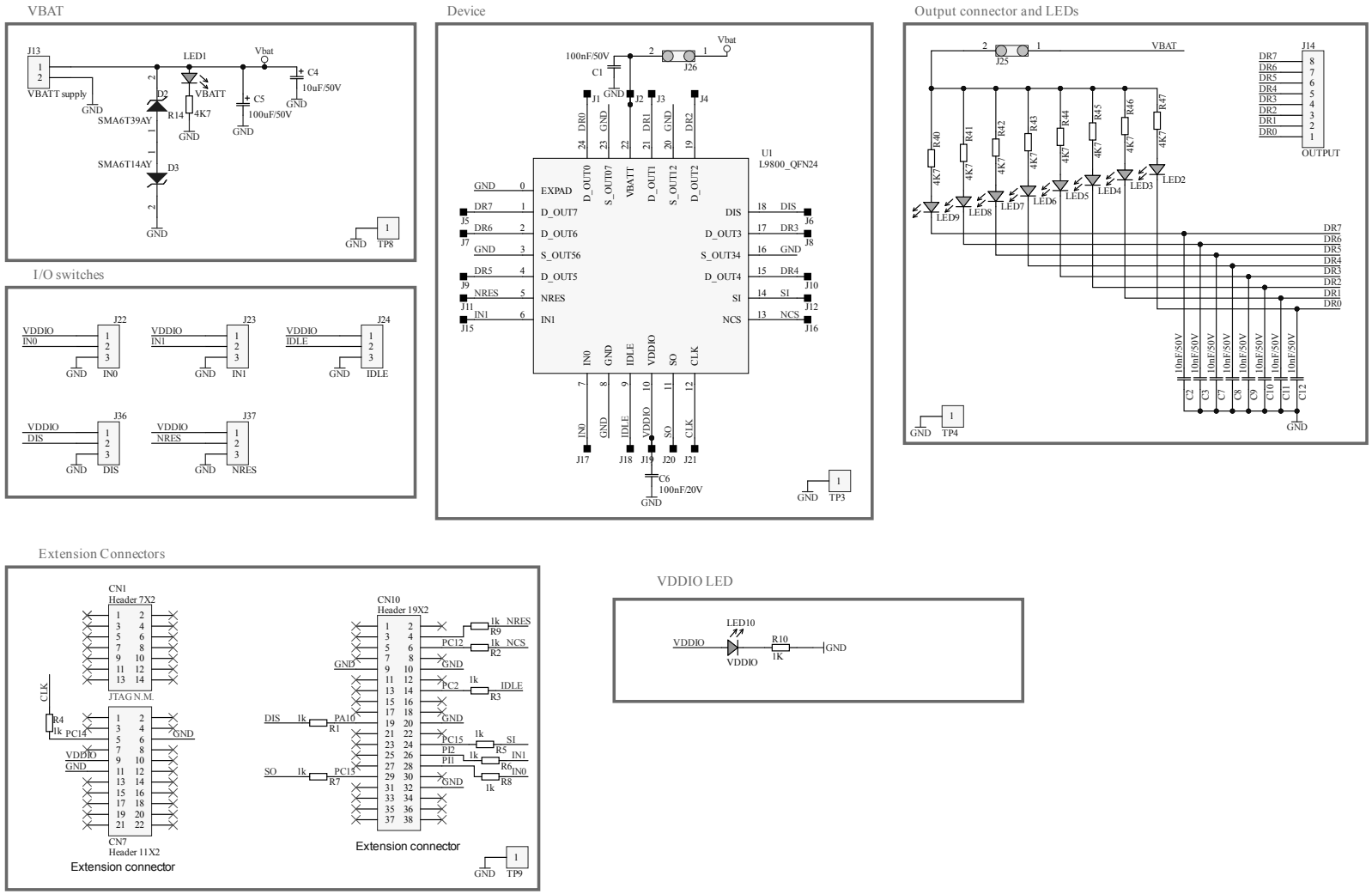
Figure 2. Connection with an arbitrary microcontroller board



Note: A graphical user interface is available on the AEK-MCU-C1MLIT1 interface.

2 Schematic diagrams

Figure 3. STEVAL-L9800 evaluation board schematic



3 Board versions

Table 1. STEVAL-L9800 versions

Finished good	Schematic diagrams	Bill of materials
STEVAL$L9800A (1)	STEVAL$L9800A schematic diagrams	STEVAL$L9800A bill of materials

1. *This code identifies the STEVAL-L9800 evaluation board first version.*

4 Reference documents

[1] STEVAL-L9800 user manual (UM3342)

Revision history

Table 2. **Document revision history**

Date	Version	Changes
04-Apr-2025	1	Initial release.

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