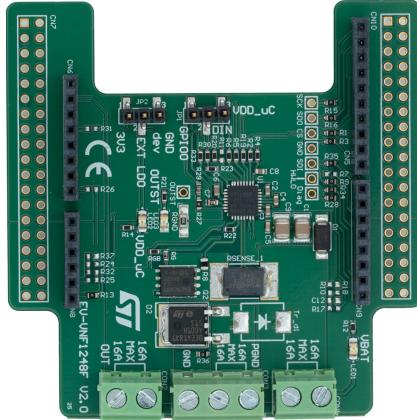


EV-VNF1248F easy board for automotive applications



Features

- Designed for automotive applications
- General:
 - High side switch Control IC with eFuse protection for automotive 12 V, 24 V and 48 V applications
 - SPI slave interface for host control
 - 32-bit ST-SPI interface compatible with 3.3 V and 5 V CMOS level
 - 2-stage charge pump
 - Gate drive for an external MOSFET in high-side configuration
 - High precision uni-directional digital current sense via SPI through an external high side shunt resistor
 - Input for an NTC resistor to monitor the external MOSFET temperature
 - Very low standby current
 - Emergency stop and limp-home pins for advanced safety features
 - Device configuration lock out by a dedicated digital input pin
 - Integrated ADC for TJ, VNTC, VOUT, VDS and VSENSE conversion
 - CCM: capacitive charging mode
 - Few times programmable non-volatile memory (FTP NVM) embedded for customer sector program/erase/read
- Protections
 - Direct input for hardware control of external MOSFET gate pin
 - Battery undervoltage shut-down
 - External MOSFET desaturation shutdown configurable via SPI
 - Hard short circuit latch-off configurable via SPI
 - Current vs time latch-off configurable via SPI (fuse-emulation)
 - Device overtemperature shutdown
 - External MOSFET overtemperature shutdown
 - Reverse battery with external component loss of GND
- Intelligent high current fuse replacement for automotive applications
- Especially intended for automotive power distribution applications

Product status link

[EV-VNF1248F](#)

Product summary

Order code	EV-VNF1248F
------------	-------------

Description

The **EV-VNF1248F** evaluation board simplifies the integration of a high-side switch controller with intelligent fuse protection into your prototype circuitry (MAX current allowed 32 A, limitation due to connector used). This pre-assembled board includes the **VNF1248F**, and the essential electrical components as recommended in the device datasheet. This setup allows for direct connections to the load, power supply, and microcontroller, eliminating the need for additional external component design and connections.

When used with the **EV-SPC582B** board flashed with the **STSW-EV-VNF1248F**, it forms a comprehensive evaluation tool for assessing the performance of **EV-VNF1248F** high-side switch.

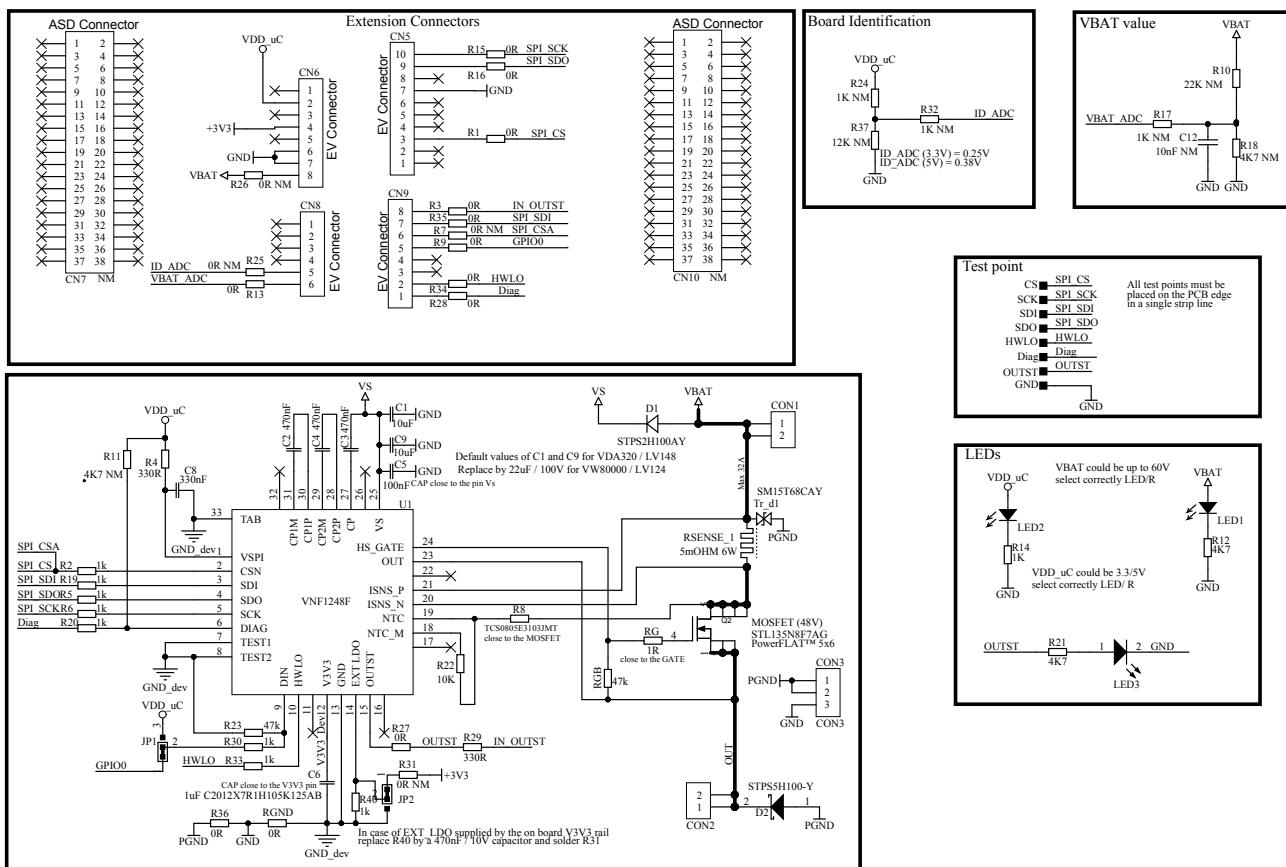
1 Overview

The **EV-VNF1248F** comes pre-assembled with a **VNF1248F** high-side switch controller. The onboard minimum set of electrical components (as per device datasheet recommendation) enables the user to directly connect the load, the power supply and the microcontroller without any additional effort in external component design and connection.

The **VNF1248F** is a high-side switch controller with intelligent fuse protection for 12 V, 24 V and 48 V automotive applications. The Control IC is interfaced with a host microcontroller through a 3.3 V and 5 V CMOS-compatible SPI interface and provides protection and diagnostics to the system.

The board schematics are shown below.

Figure 1. Board schematics



2 Board connections

The figure below shows the placement of the connectors used for powering the evaluation board, connecting the load, and controlling the functionality and diagnostics of the device.

Figure 2. Evaluation board connections

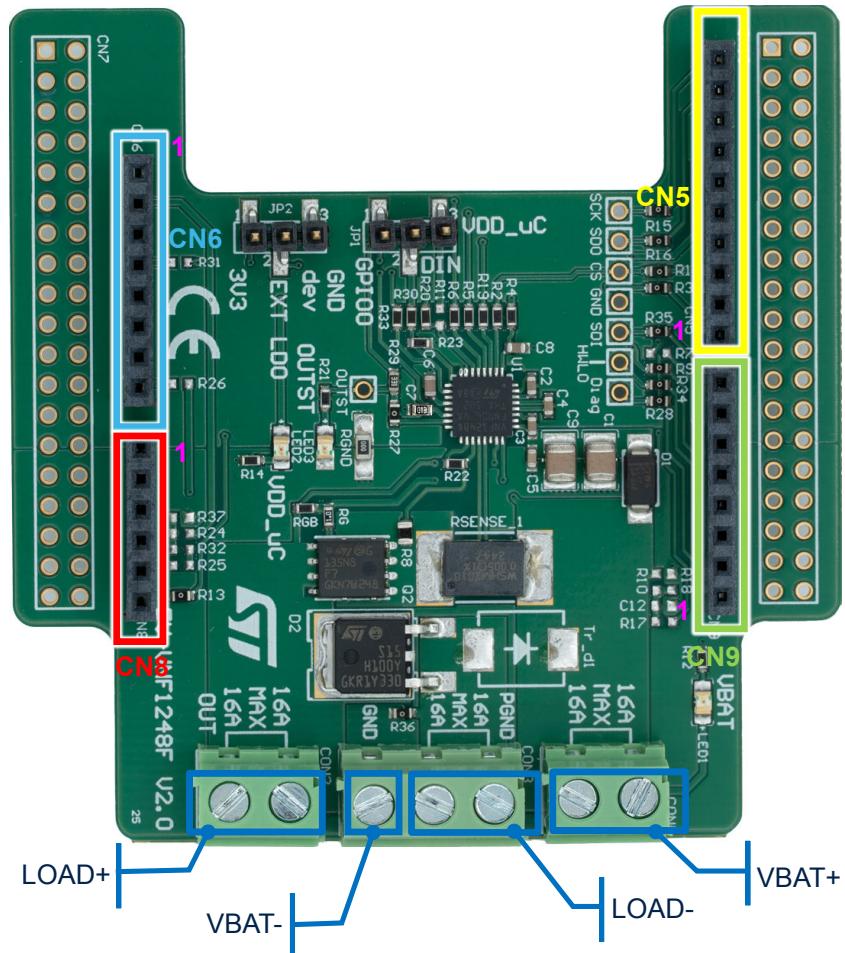


Table 1. CN connectors: pin functions

Pin number	Connector	Pin function
3	CN5	SPI_CS
7	CN5	GND
9	CN5	SPI_SDO
10	CN5	SPI_SCK
4	CN6	3.3 V
5	CN6	5 V
6	CN6	GND
7	CN6	GND
5	CN8	ID_ADC
6	CN8	VBAT_ADC
1	CN9	Diag

Pin number	Connector	Pin function
2	CN9	HWLO
5	CN9	GPIO0 (DIN)
6	CN9	SPI_CSA
7	CN9	SPI_SDI
8	CN9	IN_OUTST

Revision history

Table 2. Document revision history

Date	Revision	Changes
23-Jul-2025	1	Initial release.

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