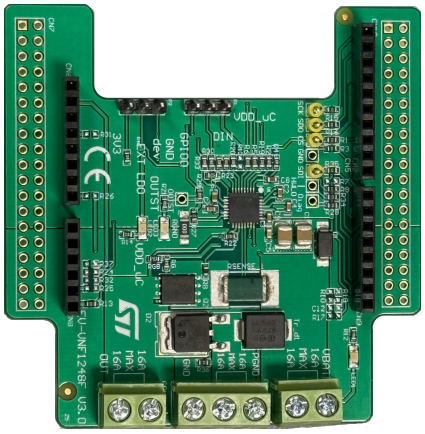
EV-VNF1248F

Data brief

EV-VNF1248F easy board for automotive applications



Product status link
EV-VNF1248F

Product summary	
Order code	EV-VNF1248F

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

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.

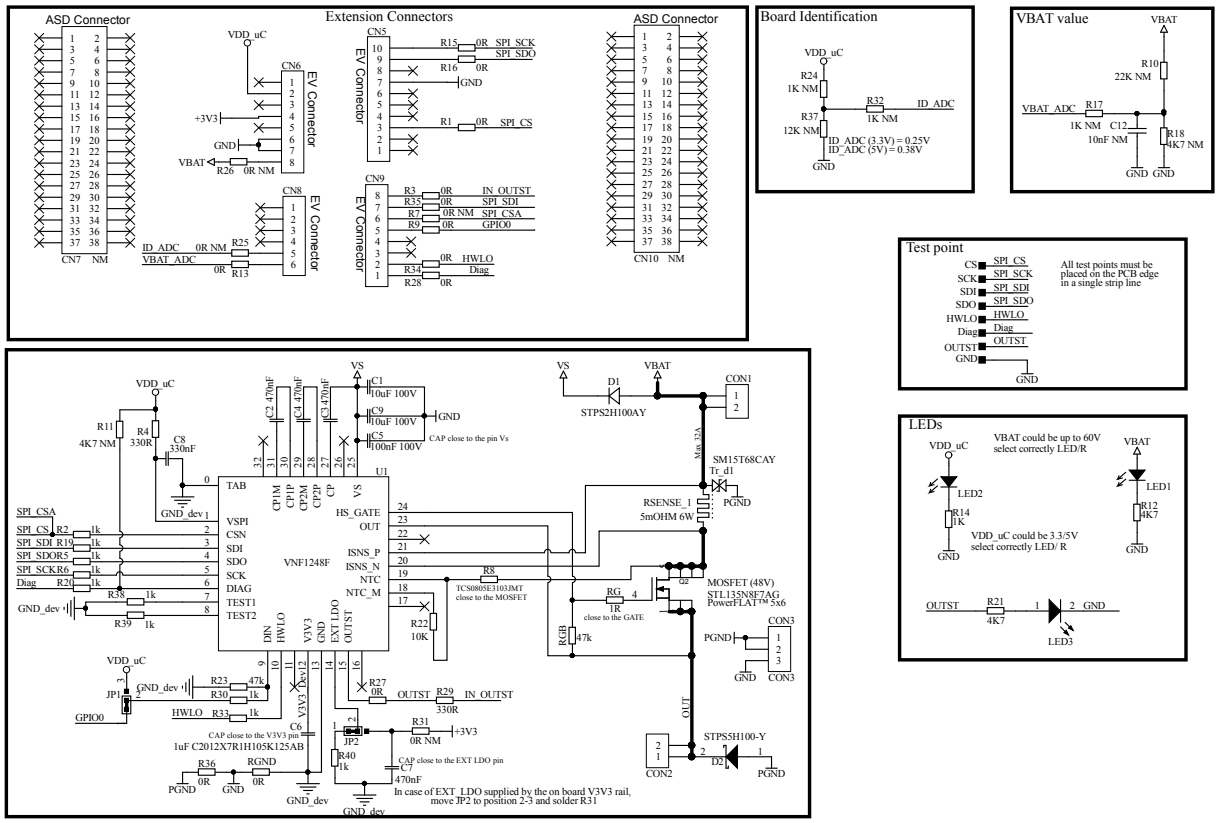
1 Overview

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

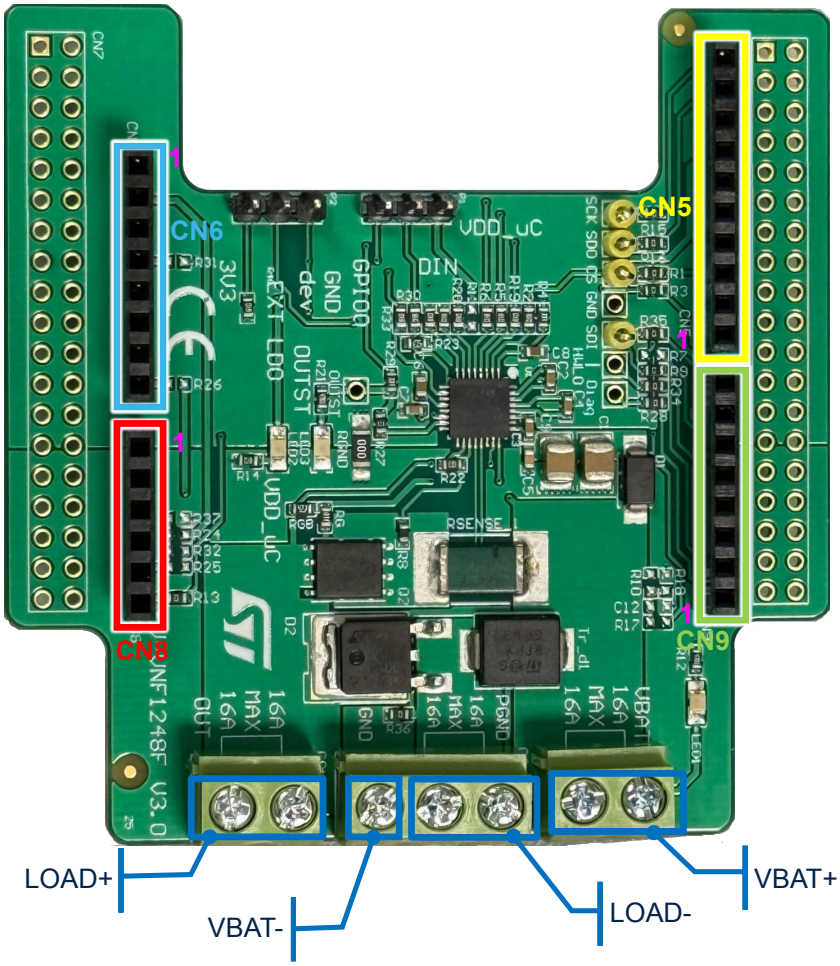


Table 1. CN connectors: pin functions

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

Pin number	Connector	Pin function
1	CN9	Diag
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.
28-Nov-2025	2	Board pictures and schematic updated to rev. 3.0

Contents

List of figures

List of tables

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