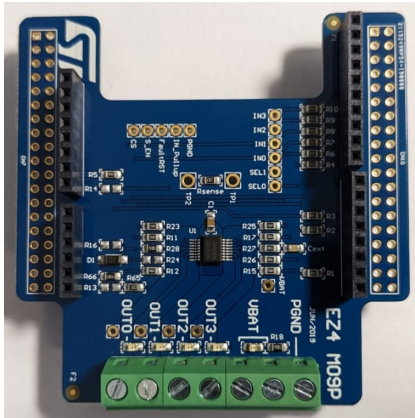


VNQ9050LAJ evaluation board



Product status link

[EV-VNQ9050LAJ](#)

Product summary

Order code	EV-VNQ9050LAJ
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Features

Description	Parameter	Value
Max. transient supply voltage	V_{CC}	36 V
Operating voltage range	V_{CC}	4 to 28 V
Typ. on-state resistance (per Ch.)	R_{ON}	50 mΩ
Current limitation (typ.)	I_{LIMH}	17.8 A
Standby current (max.)	I_{STBY}	0.5 μA

- Designed for automotive applications
- Extreme low voltage operation for deep cold cranking applications (compliant with LV124, revision 2013)
- General
 - Quad channel smart high-side driver with current sense analog feedback
 - Very low standby current
 - Compatible with 3 V and 5 V CMOS outputs
- Current sense diagnostic functions
 - Multiplexed analog feedback of: load current with high precision proportional current mirror
 - Overload and short to ground (power limitation) indication
 - Thermal shutdown indication
 - Off-state open-load detection (with external pull-up)
 - Output short to V_{CC} detection
 - Sense enable/disable
- Protections
 - Undervoltage shutdown
 - Overvoltage clamp
 - Load current limitation
 - Self limiting of fast thermal transients
 - Configurable latch-off on overtemperature or power limitation with dedicated fault reset pin
 - Loss of ground and loss of V_{CC}
 - Reverse battery through self turn-on
 - Electrostatic discharge protection

Applications

- Automotive rear lighting
- Automotive ambient lighting

Description

The [EV-VNQ9050LAJ](#) board provides an easy way to connect VNQ9050LAJ into existing system.

1 Overview

The EV-VNQ9050LAJ comes pre-assembled with the VNQ9050LAJ high-side driver. An onboard minimum set of electrical components (as for 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 EV-VNQ9050LAJ is a quad channel high-side driver manufactured using ST proprietary VIPower M0-9 technology and housed in a PowerSSO-16 package. The device is designed to drive 12 V automotive grounded loads through a 3 V and 5 V CMOS-compatible interface, providing protection and diagnostics.

The device integrates advanced protective functions such as load current limitation, overload active management by power limitation, and overtemperature shutdown with configurable latch-off.

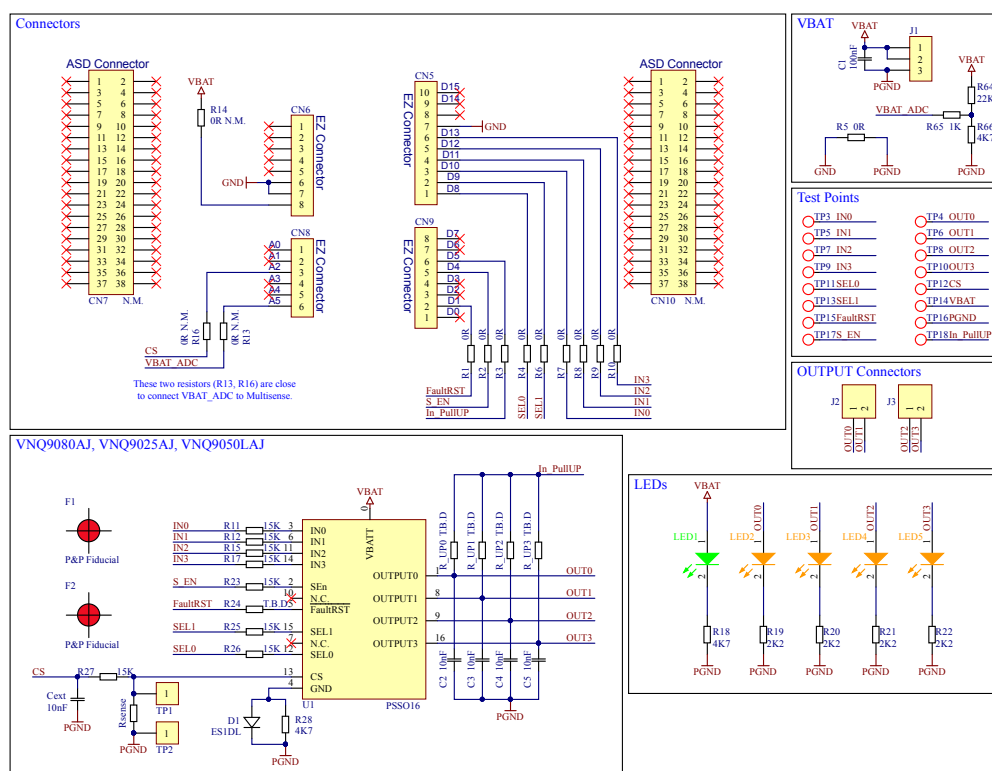
A FaultRST pin unlatches the output in case of fault or disables the latch-off functionality.

A dedicated multifunction multiplexed analog output pin delivers diagnostic functions including high precision proportional load current sense, in addition to the detection of overload and short-circuit to ground, short to VCC, and OFF-state open-load.

A sense enable pin allows OFF-state diagnosis to be disabled during the module low-power mode as well as external sense resistor sharing among similar devices.

Figure 1. Board schematics

Figure 1. Board schematics



2 Board connections

The Figure 2 shows the placement of the connectors to be used for supplying the evaluation board, connecting the load, and controlling the functionality and diagnostic of the device.

Figure 2. Evaluation board connections

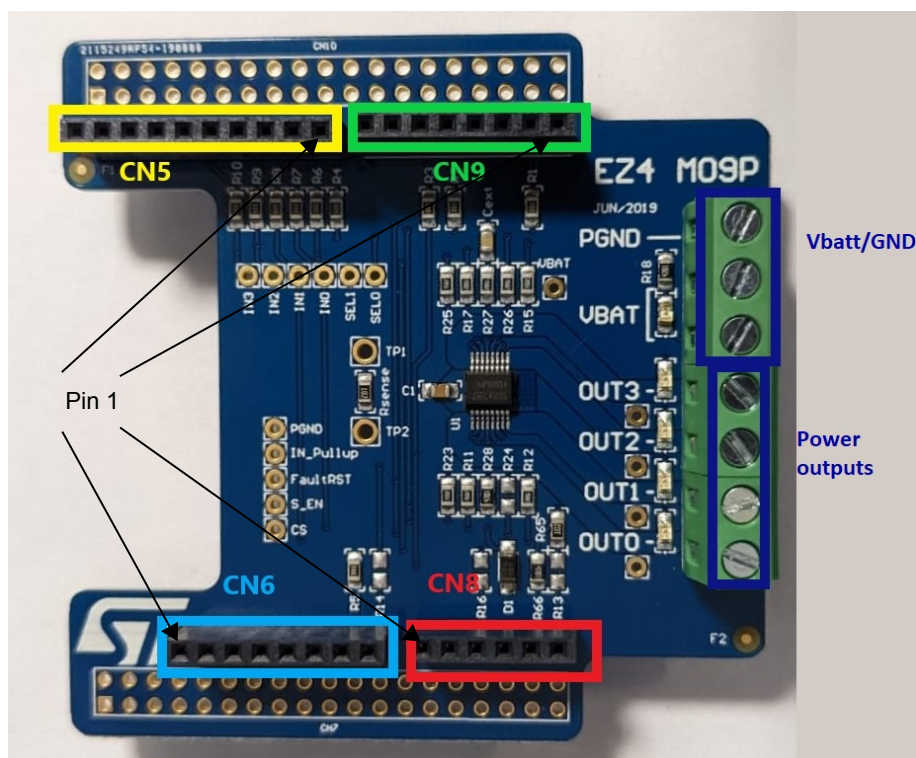


Table 1. CN connectors: pin functions

Pin number	Connector	Pin function
1	CN5	SEL0
2	CN5	SEL1
3	CN5	IN0
4	CN5	IN1
5	CN5	IN2
6	CN5	IN3
7	CN5	GND
6	CN6	GND
7	CN6	GND
6	CN8	VBAT_ADC
3	CN8	MultiSense
2	CN9	FaultRST
5	CN9	SEn
6	CN9	In_PullUP

Revision history

Table 2. Document revision history

Date	Revision	Changes
02-Sep-2025	1	Initial release.

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