

L9026

Highly configurable multi-channel driver for automotive applications



Flexible multi-channel switches with a wide variety of programmable drivers for advanced control capabilities

An eight-channel switch with two fixed high-side drivers and six configurable high/low-side drivers, the L9026 includes advanced protections against overtemperature, overcurrent, overvoltage, and electrostatic discharge (ESD) conditions.

These highly flexible, monolithic, medium-current output drivers offer self-configuring outputs that can be used as either low-side or high-side drivers in any combination.

Designed to work from -40 to +150°C, this multi-channel relay driver meets or exceeds automotive requirements.

The main advantages using a multi-channel driver, compared to a discrete solution, is its improved integration and scalability. It is also evident in terms of the number of connections required between the different devices.

KEY FEATURES AND BENEFITS

- AEC-Q100 qualified
- ISO 26262 compliant, ASIL-B system ready
- Two parallel input pins with input mapping functionality
- Limp-home mode using IDLE and IN pins
- Daisy chain compatible, even with 8-bit SPI devices
- Low quiescent current

KEY APPLICATIONS

- Body control modules
- Heating Ventilation and Air Conditioning (HVAC) and climate control
- Gasoline multi-point injection systems
- Diesel direct injection systems

Detailed description

The **L9026** is an 8-channel IC comprising two fixed high-side drivers and six configurable high/low-side drivers.

The device is controlled and diagnosed via a 16-bit serial peripheral interface (SPI), which also provides daisy chain capability, allowing multiple devices to be assembled in a single SPI chain using the same number of microcontroller pins.

Designed for working with low supply voltages, the L9026 remains operational even at low battery voltages ($V_{BATT} \geq 3\text{ V}$), making it suitable for start-stop systems.

The L9026 has two input pins connected by default to two output pins, allowing control even when the digital supply voltage is not available. Its input mapping function makes it possible to connect the input pins to different outputs or assign multiple outputs to the same input pin. In this scenario, when the device is in fail-safe mode (limp home), multiple channels can be controlled by a single signal applied to one input pin.

Limp-home mode is designed to manage limited functionality of the device in critical system fault situations.

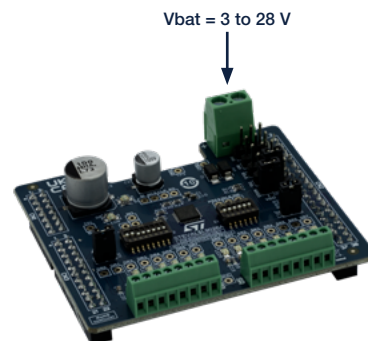
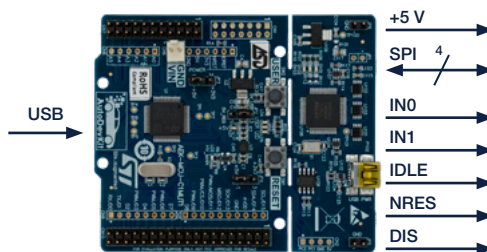
If the primary microcontroller that controls the device fails, an external safety microcontroller takes over by controlling the parallel inputs. The system basis chip (SBC) forces the IDLE signal low, which brings the device into limp-home mode. During this mode, the device remains active, allowing essential functions to continue operating.

The device provides load diagnostics by detecting open-load conditions in the off state and short-circuits. It can detect abnormal voltages on the output and, in the event of a fault, it can differentiate between an open-load condition and a short-circuit.

The device is available in two package versions: HTSSOP24 and VFQFPN32.

The QFN package includes two additional pins for safety reasons: the NRES pin, which resets internal registers to their default values, and the DIS pin, which disables all channels. To help developers benefit from all the advantages of this compact solution, an L9026 evaluation board is available ([STEVAL-L9026](#)).

The evaluation platform includes a full-featured 1-Mbyte SPC58 MCU discovery board ([AEK-MCU-C1MLIT1](#)), which can be plugged to the STEVAL-L9026 board and configured using its dedicated graphical user interface ([STSW-L9026-Y0](#)).



Part number	Package	Number of channels	Operating voltage range	RDS _{on} (typ.)	Nominal current	Temperature range
L9026-Y0-TR	HTSSOP24	2x HS plus 6x HS/LS configurable	6 to 28 V	750 mΩ	500 mA	-40 to 175 °C
L9026-B03N-TR	VFQFPN32					



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