L9800

Low-side eight-channel driver for a wide range of applications

Versatile multichannel switches with a wide variety of programmable drivers for advanced control capabilities

The L9800 eight-channel switch with fixed low-side drivers includes advanced protections against overtemperature, overcurrent, overvoltage, and electrostatic discharge (ESD) conditions.

This highly integrated, multichannel driver reduces the overall footprint in a highly flexible, monolithic, medium-current output solution.

The device combines multiple functions in a single package to support the demanding requirements of automotive environments like powertrain and body control systems.

KEY FEATURES & 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 capability
- Small package TFQFN24
- Low quiescent current

KEY APPLICATIONS

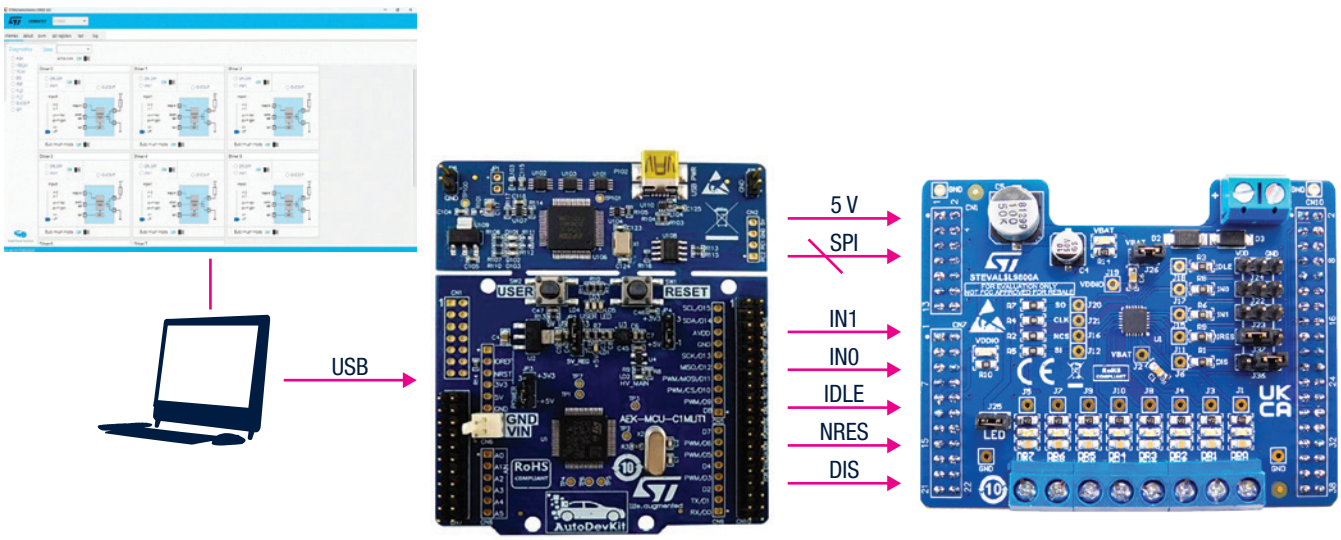
- Body control modules
- Heating ventilation and air conditioning (HVAC) and climate control

Detailed description

The L9800 is an 8-channel IC consisting of 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 to work with low supply voltages, the L9800 remains operational even at low battery voltages (VBATT ≥ 3 V), making it suitable for start-stop systems.
The integrated circuit 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.

The device is therefore fully compatible with fail-safe (limp home) functionality. Limp-home mode allows the device to remain operational and provide essential functionality in critical system fault situations. If the primary microcontroller fails, an external safety microcontroller can intervene to control the parallel inputs. The system basis chip (SBC) forces the IDLE signal low, which brings the device into limp-home mode.
The L9800 is equipped with built-in protection against, overcurrent, overtemperature, Electrostatic discharge (ESD), Reverse battery protection on VBATT without external components. detecting open-load conditions in the off state and short-circuits. The device is advisable for safety application according to the ISO 26262 (ASIL B).

The L9800 includes two special-purpose pins enhancing the safety behavior: the NRES pin, which resets internal registers to their default values, and the DIS pin, which disables all channels.
To help developers evaluate the many benefits of this compact solution, an L9800 evaluation board is available (**STEVAL-L9800**).
The evaluation platform includes a full-featured 1-Mbyte SPC58 MCU discovery board (**AEK-MCU-C1MLIT1**), which can be plugged to the STEVAL-L800 board and configured using its dedicated graphical user interface (**STSW-L9800-Y0**).



Part number	Package	Number of channels	Operating voltage range	R_{DSon}(typ.)	Nominal current	Temperature range
L9800-TR	TFQFN24	8x LS driver	3 to 28 V	770 mΩ	500 mA	-40 to 150 °C