

Smart Switch Supports Fuel Savings In Automotive Power Trains

[Infineon Technologies'](#) TLE9104SH smart switch, a new member of the company's FLEX multichannel low-side switch family, is intended to help reduce fuel consumption and CO₂ emissions in automotive applications. The TLE9104SH is said to be the first smart four-channel low-side switch for currents up to 5 A dc in 12-V systems. This allows controlling actuators such as high-precision port fuel injectors, high-energy valves or high-current relays in engine management, transmission control and battery management systems.

According to the vendor, when compared with comparable products on the market, the TLE 9104SH sets a benchmark for current and energy capabilities as well as package footprint. With an $R_{DS(ON)}$ of 300 m Ω at 150°C, it comes in a new cost and size optimized DSO-20 package (PG-DSO-20-88) with a footprint area of about 80 mm².

It is equipped with a 16-bit serial peripheral interface (SPI) for control and diagnostics. All channels are protected against overcurrent/temperature and enhanced with active clamping circuitry for driving inductive loads. Load status detection is possible over the SPI for short to ground (SCG), open load (OL), and short to battery (SCB) conditions. Four input pins are available for direct control of the switches.

Safety features include an extra output enable pin, SPI communication watchdog and output stage status information available via SPI. This makes the product well suited for safety critical automotive and industrial applications.

To support design activities, Infineon provides a development board with the TLE9104SH in the Arduino form factor, which can be used in two kinds of evaluation setups. The [TLE9104SH shield](#) can easily be used either in combination with the [XMC1100 Boot Kit](#) (Version S) or in combination with the [AURIX TC277 Evaluation Board](#) (TriBoard) with the help of an additional [Multichannel Connection PCB](#) (version L).

The TLE9104SH is now available. Samples can be ordered via Infineon distributors or online. Evaluation software, user manual, application notes and further information are available at www.infineon.com/flex. The new device is priced at \$4.83 in small sample quantities. For more information see the product [page](#).

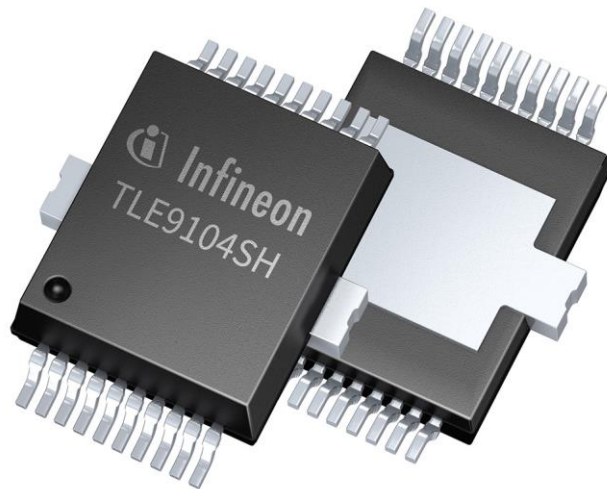


Fig. 1. The TLE9104SH is described as the first smart four-channel low-side switch for currents up to 5 A dc in 12-V systems. This allows controlling actuators such as high-precision port fuel injectors, high-energy valves or high-current relays in engine management, transmission control and battery management systems. With an $R_{DS(ON)}$ of 300 m Ω at 150°C, it comes in a cost and size optimized DSO-20 package with an 80-mm² footprint.

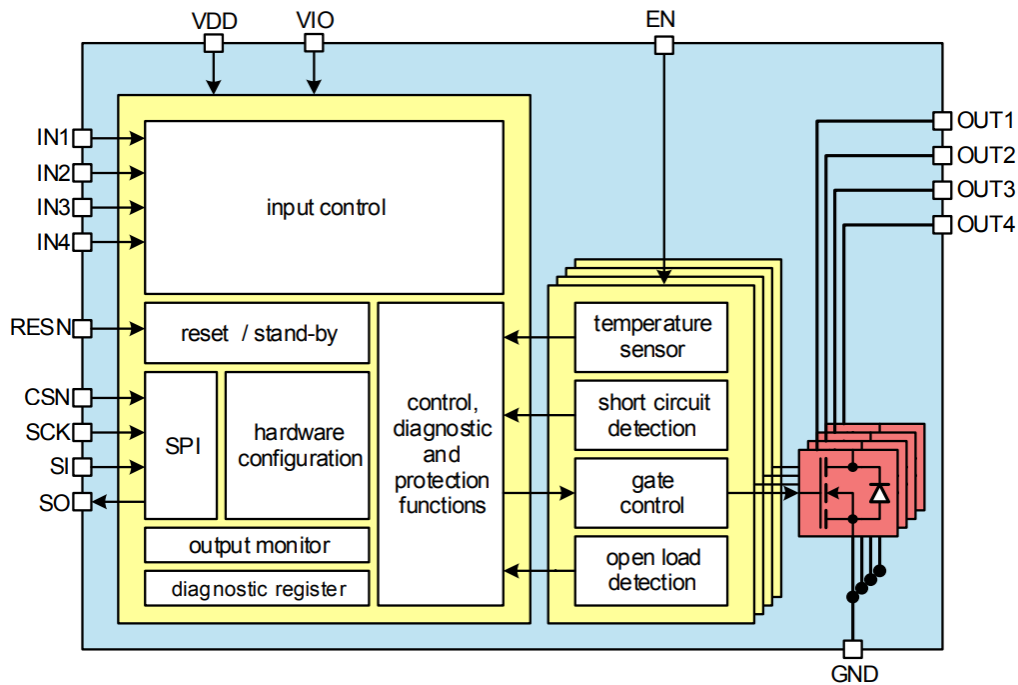


Fig. 2. This smart switch is equipped with a 16-bit serial peripheral interface (SPI) for control and diagnosis. All channels are protected against overcurrent/temperature and enhanced with active clamping circuitry for driving inductive loads. Load status detection is possible over the SPI for short to ground (SCG), open load (OL), and short to battery (SCB) conditions. Four input pins are available for direct control of the switches.