Transceiver and isolator simplify high-temperature automotive designs

Texas Instruments (TI) introduced the TCAN1044EV-Q1 Grade 0 CAN FD transceiver and the ISO7741E-Q1 Grade 0 digital isolator for reliable communication and protection in (hybrid) electric vehicle systems that exceed +125 °C.

(Source: Texas Instruments)

The devices are qualified to the Grade 0 ambient operating temperature specification of the AEC-Q100 (Automotive Electronics Council) standard supporting temperatures of up to +150 °C. The transceiver complying with the ISO 11898-2:2016 supports Classical CAN and CAN FD networks with data rates up to 8 Mbit/s. The chip includes internal logic level translation to allow for interfacing the transceiver I/Os directly to 1,8 V, 2,5 V, 3,3 V, or 5 V logic I/Os. It also supports a low-power stand-by mode and a wake over CAN wake up pattern (WUP). Integrated protection and diagnostic features include thermal-shutdown (TSD), TXD-dominant time-out, supply undervoltage detection, and bus fault protection up to ±58 V.

The isolator features an 1,5-kV RMS (root mean square) working voltage and a 5 kV RMS isolation voltage. It enables engineers to protect low-voltage circuitry from high-voltage events in a vehicle's systems. The device can be used in 48 V HEVs (hybrid electric vehicles) where the co-existence of internal combustion engines and battery systems can heat the air around ICs beyond +125 °C. Using the isolator with the CAN FD transceiver engineers can increase the in-vehicle network (IVN) signal protection and signal reach as well as used data-rates.

The ISO7741E-Q1 isolator is available from TI and authorized distributors in a 10,3 mm x 7,5 mm 16-pin package. TCAN1044EV-Q1 transceivers are available from TI in 4,9 mm x 3,91 mm 8 pin packages. TI's products are at work in electronic systems reaching from connected cars and so called smart homes to self-monitoring health devices and automated factories. With about 30 000 employees in more than 30 countries, the company engineers, manufactures, tests, and sells analog and embedded semiconductor chips.

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