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PMIC Powers Automotive MCUs In Functional Safety Applications

<u>Infineon Technologies'</u> TLF35585, an addition to the OPTIREG PMIC family, provides an integrated multi-rail power supply solution for demanding automotive systems. Specifically, it implements a reliable power supply for AURIX and other microcontrollers and enables robust systems with the highest functional safety requirements. Designs based on the TLF35585 PMIC are well suited for functional safety applications in harsh automotive environments, particularly in the chassis, powertrain, domain control and transmission areas (see Figs. 1 and 2).

The PMIC includes a boost-and-buck pre-regulator that supplies the post-regulator rails for the microcontroller supply, communication supply and a precise voltage reference. It also offers two trackers that follow the voltage reference to supply off-board sensors.

The main supervisory functions of the TLF35585 include a configurable window watchdog (time-based trigger), a functional watchdog (question and response-based trigger), and error pin monitoring as well as voltage monitoring. For the interaction with microcontrollers, a 16-bit SPI, interrupt and reset function are also available.

The device complies with ISO 26262 for systems up to ASIL D and supports an extended junction temperature range of up to 175°C. The wide switching frequency range enables optimization of efficiency and the use of small filter components. In addition, the IC integrates a flexible state machine, the wake-up concept with timer and a standby regulator, making the device suitable for a wide range of applications.

Available now, the TLF35585 is offered in either a small VQFN-48 or a TQFP-48—both packages are thermally enhanced and fully AEC-Q100 qualified (Grade 0). For more information, see the OPTIREG PMIC <u>page</u>.



Fig. 1. The TLF35585 OPTIREG PMIC provides an integrated multi-rail power supply solution for demanding automotive systems in segments such as chassis, safety, ADAS, powertrain, and drive train.





Fig. 2. Designed for safety-relevant applications, the TLF35585QUS02 includes a boost-buck preregulator supplying post regulator rails for microcontroller supply, communication supply and a precise voltage reference. In addition, two trackers following the voltage reference are available to supply off-board sensors.