

Functional Safety Information
TCAN4550-Q1
Functional Safety Report



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1 Purpose of the Functional Safety Report

The purpose of the Functional Safety Report is to summarize the results from analysis and documentation involved in the development of this project and to determine the results are sufficient to claim compliance to the identified functional safety standard(s). This high level overview is intended to be used by customers as a part of their safety case with respect to the TCAN4550-Q1.

2 Summary of Assessment

The TCAN4550-Q1 was developed using Texas Instruments Incorporated Quality Managed product development process and qualified according to AEC Q100 Grade 1. This assessment of the functional safety documentation for these products indicate they meet the minimum requirements for enabling additional system level analysis.

These products did not follow any functional safety development process and do not claim compliance to any functional safety standard.

The work products developed may be helpful for the customer to integrate these products into the functional safety systems. TI recommends the customer integrate this product through "evaluation of hardware elements" as described in ISO 26262-8 Clause 13 or similar method.

The TCAN4550-Q1 passes the assessment. This assessment applies to all part numbers listed below:

- TCAN4550RGYQ1

3 Product Description

The TCAN4550-Q1 is a CAN FD controller with an integrated CAN FD transceiver supporting data rates up to 8 Mbps. The CAN FD controller meets the specifications of the ISO 11898-1:2015 high speed Controller Area Network (CAN) data link layer and meets the physical layer requirements of the ISO 11898-2:2016 High Speed Controller Area Network (CAN) specification providing an interface between the CAN bus and the host system supporting both classical CAN and CAN FD up to 8 megabits per second (Mbps). The TCAN4550-Q1 provides CAN FD transceiver functionality: differential transmit capability to the bus and differential receive capability from the bus. The device includes many protection features providing device and CAN bus robustness. The device can also wake up via remote wake up using the CAN bus implementing the ISO 11898-2:2016 Wake Up Pattern (WUP). Input/Output support for 3.3 V and 5 V microprocessors using the VIO pin for a seamless interface. The TCAN4550-Q1 has a Serial Peripheral Interface (SPI) that connects to a local microprocessor for the device configuration, transmission and reception of CAN frames. The SPI interface supports clock rates up to 18 MHz.

The TCAN4550-Q1 has three main blocks as shown in Figure 3-1. A typical application for the TCAN4550-Q1 is shown in Figure 3-2.

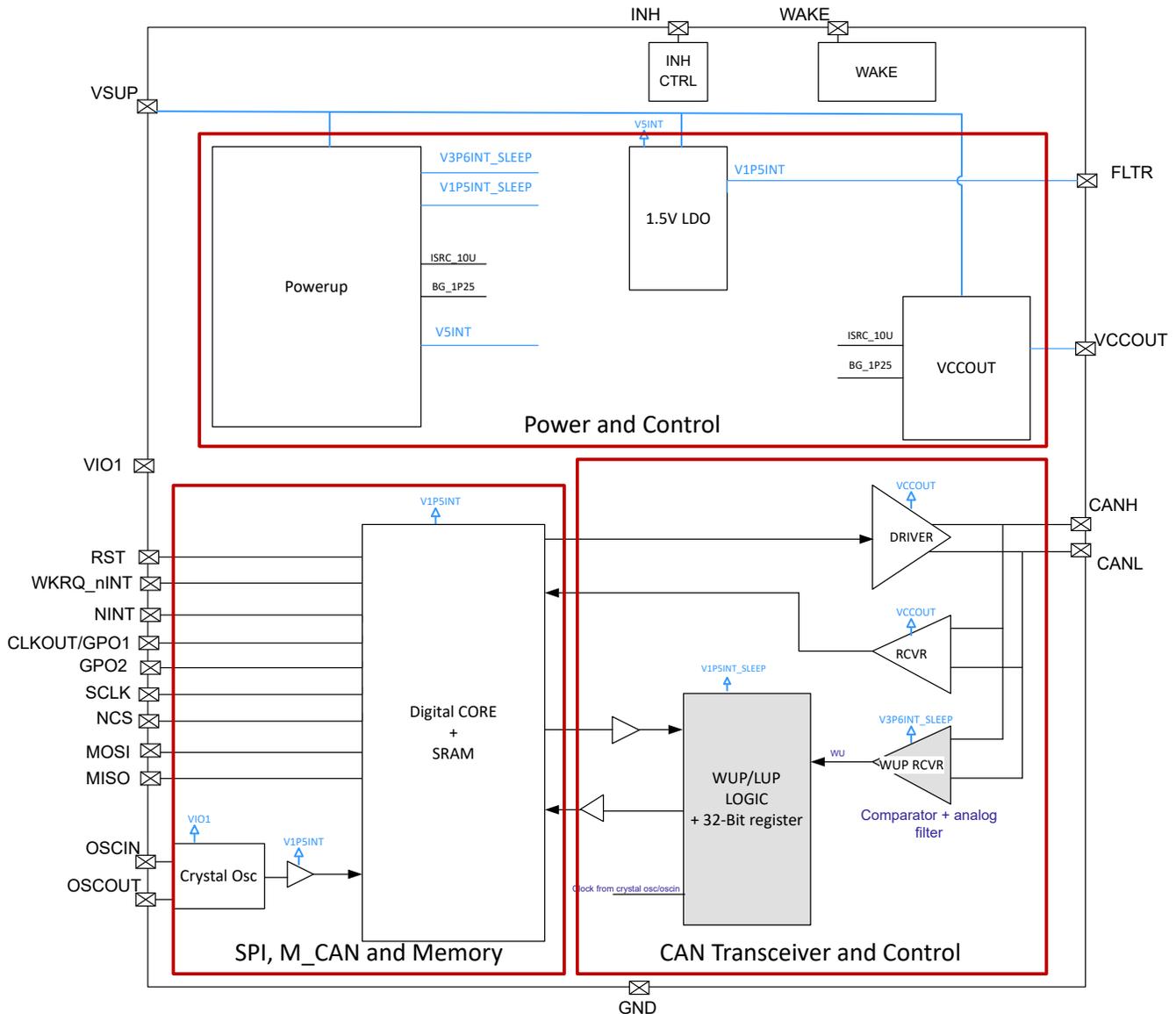


Figure 3-1. TCAN4550-Q1 High Level Block Diagram

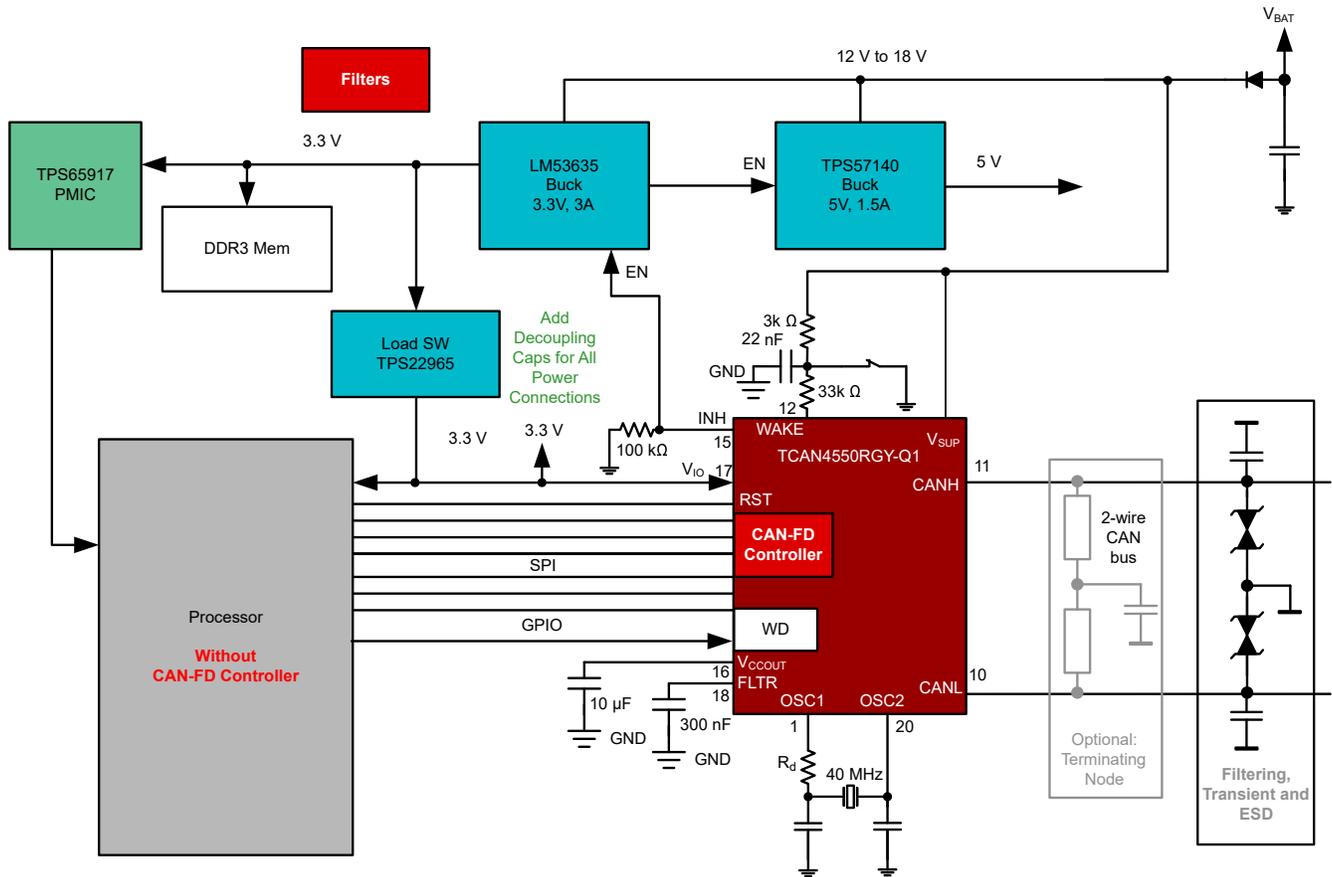


Figure 3-2. TCAN4550-Q1 Typical Application

4 Fulfillment of Texas Instruments Functional Safety Quality-Managed Requirements

Texas Instruments carried out this assessment with respect to relevant requirements for the Functional Safety Quality-Managed Requirements.

Table 4-1. Details of Functional Safety Quality-Managed Documents

Lifecycle Phase	Document Name	Version Number	Assessment Results	Evidence
None	Functional Safety Manual	A	Pass	Tl.com
	Functional Safety Analysis Report (Quantitative FMEDA)	2p1	Pass	Document Available on MySecure
	Functional Safety Analysis Report	1	Pass	Tl.com

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