Functional Safety Information

TLIN1431-Q1
Functional Safety Report

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Trademarks

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 TLIN1431-Q1.

2 Summary of Assessment

The TLIN1431-Q1 was developed using Texas Instruments Incorporated Quality Managed product development process and qualified according to AEC Q100 Grade 1. This assessment if the functional safety documentation for this product indicate it met 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 TLIN1431-Q1 passes the assessment. This assessment applies to all part numbers listed below when enabled for serial peripheral interface (SPI) control:

- TLIN14313-Q1 (3.3 V LDO output)
- TLIN14315-Q1 (5 V LDO output)

3 Product Description

The TLIN1431-Q1 is a local interconnect network (LIN) system basis chip (SBC) that integrates a watchdog, high-side switch, Limp home capability and highly configurable WAKE input pin. The device self-determines the control method, pin or serial peripheral interface (SPI), at power up. The watchdog defaults to a window watchdog for both control methods but for flexibility the device can be configured as a window or timeout watchdog with greater than 20 different time windows when SPI control is used.

The LIN transceiver provides a 200 kbps fast mode for end of line programming. A high-side switch with diagnostic capability is provided for on board LED. The highly configurable WAKE pin can be used with the high-side switch for cyclic sensing thus reducing the ECU sleep current. The WKRQ/INH pin can be configured for a digital wake output (WKRQ) or a VSUP based inhibit (INH) enable pin for an external supply.

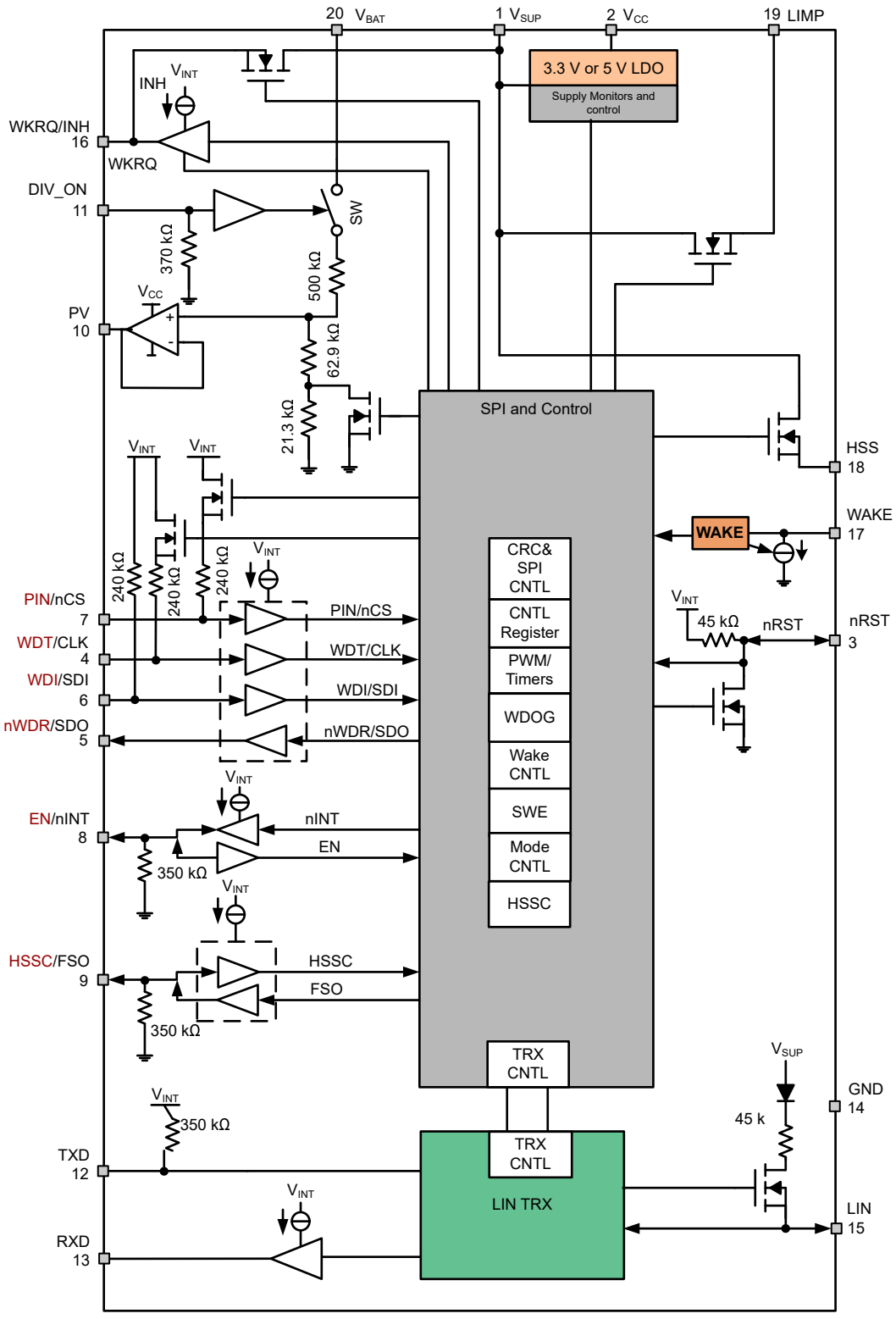

Figure 3-1. TLIN1431-Q1 Functional Block Diagram

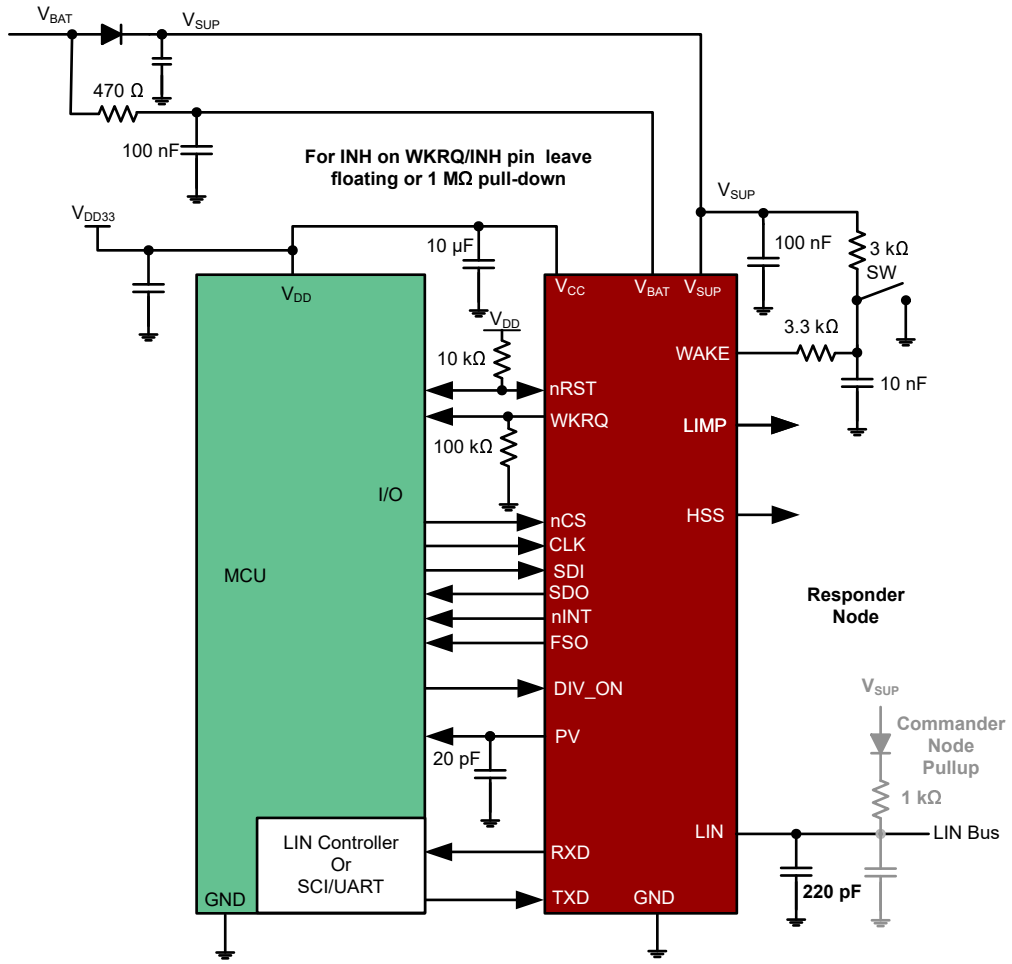

Figure 3-2. TLIN1431-Q1 Typical SPI control application

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	1	Pass	TI.com
	Functional Safety Analysis Report (Quantitative FMEDA)	1	Pass	Document Available on MySecure
	Functional Safety Analysis Report	1	Pass	TI.com

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