

TLE9263 Evaluation Kit EVB2

Getting Started

Abstract

This Evaluation Kit documentation is intended to provide an overview to the hardware and software operation of the TLE9263 Evaluation Kit.

The Demokit is available with the superset devices TLE9263-3BQX or TLE9263-3BQX3V3 devices which cover all variants of the Mid-Range+ SBC Family

For simplification reasons, the document always refers to the TLE9263 Evaluation Board.

In case of question, please contact your local sales person for support.

Note: The following information is given as a hint for the implementation of the device only and shall not be regarded as a description or warranty of a certain functionality, condition or quality of the device.

| | | |
|----------|---|---------------|
| 1 | Introduction..... | 2 |
| 2 | Hardware..... | 3 |
| 2.1 | Evaluation Kit Contents | 3 |
| 2.2 | Evaluation Board Overview | 4 |
| 2.2.1 | Power Settings | 4 |
| 2.2.2 | Jumper Overview & Settings | 4 |
| 3 | The uIO Stick | 5 |
| 4 | How the GUI looks like..... | 6 |
| 4.1 | Software Installation..... | 6 |
| 4.2 | How the GUI looks like | 6 |
| 5 | Additional Information | 7 |
| | Revision History | 7 |
| | Evaluation Board Schematics and Layout | 8 - 10 |

1 Introduction

The TLE9263 device belongs to the new generation SBC Mid-Range+ family designed specifically for automotive applications such as Body control modules, Gateway, Climate control, Seat control, Door control and closures, Light control modules, Engine management systems.

The TLE9263 Evaluation Kit is intended to provide a simple, easy-to-use tool to become familiar with the device and to perform first application tests. The evaluation kit contains a TLE9263 application board, which is equipped with a 16-pin connector (uIO connector) to interface to the uIO stick (to be ordered separately), The TLE9263 SPI communication is emulated by the uIO stick which is controlled by a PC-Software (see also installation instructions).

Mid-Range+ SBC Product Features:

- Very low quiescent current consumption in Stop- and Sleep Mode
- Periodic cyclic sense in Normal-, Stop- and Sleep Mode
- Periodic cyclic wake in Normal- and Stop Mode
- Linear Voltage Regulator 3.3V or 5V, 250mA
- Linear Voltage Regulator 5V, 100mA, robust against short to Vbat
- Linear Voltage Regulator with external PNP transistor (configurable)
- CAN FD Transceiver ISO11898-2:2016 & SAE J2284 with up to 5Mbit/s and Partial Networking
- LIN Transceiver LIN2.2, J2602
- Four High-Side Outputs 7 Ω typ., e.g. for LED lighting, cyclic sensing, etc.
- Two independent PWM generators and two On/Off Timers
- Three universal High-Voltage Wake Inputs for voltage level monitoring with cyclic sense functionality
- Alternate High-Voltage Measurement Function, e.g. for battery voltage sensing
- Reset Output and Fail Outputs
- Over temperature and short circuit protection feature
- Wide input voltage and temperature range
- Green Product (RoHS compliant) & AEC Qualified
- PG-VQFN-48 leadless exposed-pad power package with Lead Tip Inspection (LTI) feature to support Automatic Optical Inspection (AOI)

2 Hardware

The TLE9263 Evaluation Kit is designed to be compatible with the μ IO USB stick, which plugs into the Evaluation Board via a standard 16-pin connector and allows easy interface to the PC via USB for SPI, CAN, and LIN communication.

2.1 Evaluation Kit Contents

The following items are included in the TLE9263 Evaluation Board box:

- Application Evaluation Board
- Infocard

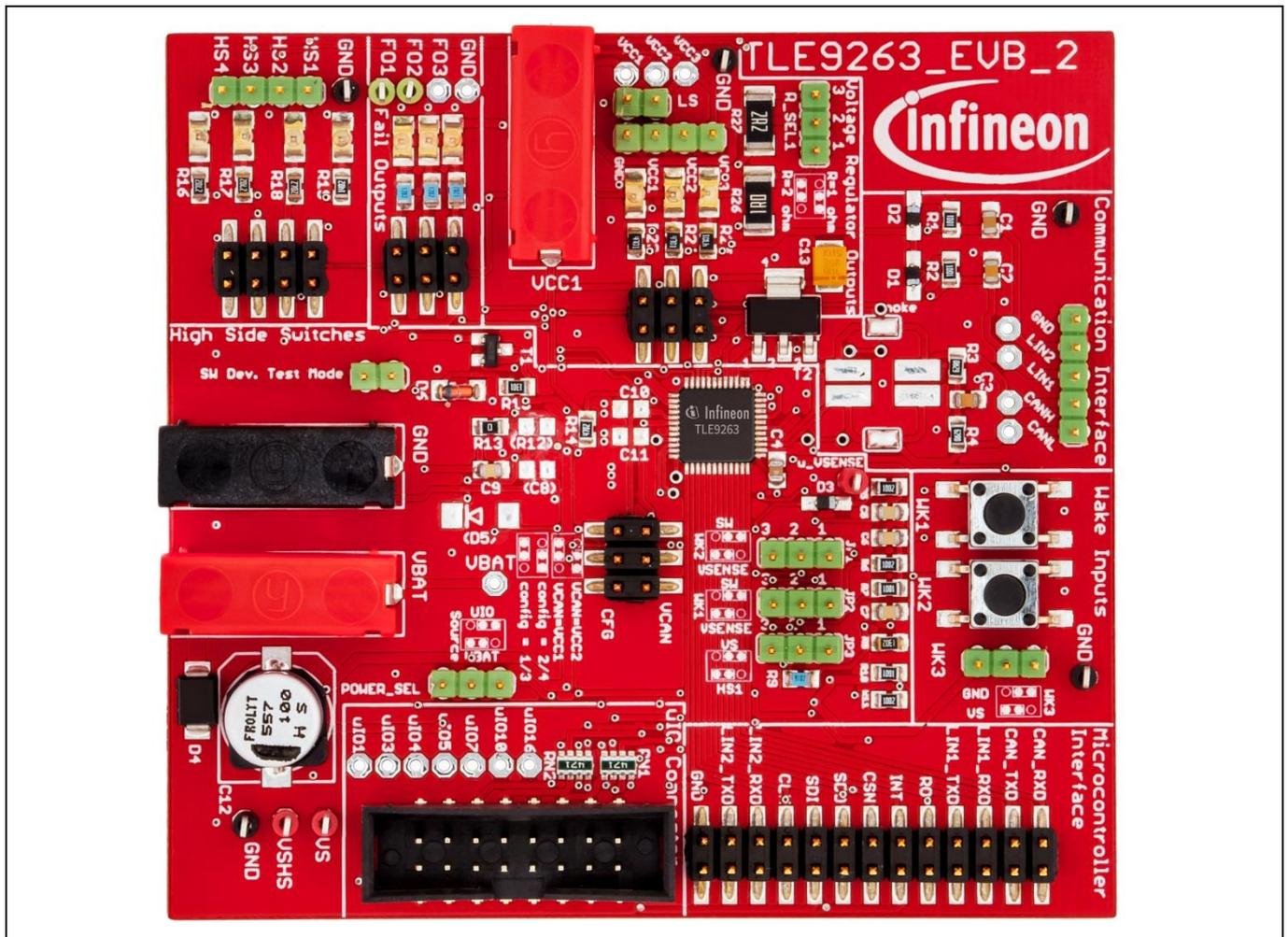


Figure 1 TLE9263 Evaluation Board with μ IO USB stick Control

2.2 Evaluation Board Overview

The Evaluation board is a 2 layer PCB, using 35µm Cu metalization.

The PG-VQFN-48 package has an exposed pad. Hence, for better thermal performance it is soldered on the PCB. Overall 16 thermal vias are placed directly below the exposed pad island. The most obvious heat flow is via the exposed pad through the thermal vias. The footprint is an absolute minimal with no additional copper area.

2.2.1 Power Settings

Connect VBAT and GND via standard power supply, with a nominal voltage of 13.5V. This is the default board supply configuration.

2.2.2 Jumper Overview & Settings

For configuration purposes, there are several jumpers on the application board that can be used as follows:

| Jumper Name | Description | Default configuration |
|-------------------|---|--------------------------------|
| JP1 | WK2 Sensing voltage (switch or sense output) | WK2 connected with SW (button) |
| JP2 | WK1 Sensing voltage (switch or Sense input =Vbat) | WK1 connected with SW (button) |
| JP3 | WK1 Supply voltage (from VS or HS1) | WK1 connected with VS |
| JP4 | HS4 state signalization via LED | closed |
| JP5 | HS3 state signalization via LED | closed |
| JP6 | HS2 state signalization via LED | closed |
| JP7 | HS1 state signalization via LED | closed |
| JP8 | FO1 state signalization via LED | closed |
| JP9 | FO2 state signalization via LED | closed |
| JP10 | FO3 state signalization via LED | closed |
| JP11 | VCC1 state signalization via LED | closed |
| JP12 | VCC2 state signalization via LED | closed |
| JP13 | VCC3 state signalization via LED | closed |
| CFG | SBC configuration mode (Config 1/3 or 2/4) | Config 1/3 |
| VCAN | Choosing CAN power supply (VCAN = VCC1 or VCC2) | VCAN = VCC1 |
| SW Dev. Test Mode | Running SBC in Dev. mode (connect to GND or open) | opened |
| R_SEL1 | Selecting VCC3 shunt Resistor (1 Ohm or 2 Ohm) | 2 Ohm selected |
| POWER_SEL | Selection of power source of the evaluation board | Power from VBAT |
| LS | Load sharing for VCC1 and VCC3 (closed = activated) | Opened = deactivated |
| WK3 | Choosing the level for WK3 input (GND or VS) | WK3 = VS |

3 The μ IO-Stick

The μ IO-stick is a testing and development platform that connects the Infineon Evaluation Board with the computer. This kit uses a 32-bit microcontroller of the XMC4000 processor family featuring the ARM Cortex-M4 processor high performance core. The μ IO-stick is especially designed for board extension test capability, i.e. to interface with an application board such as the TLE9263 Evaluation Board. More information can be found at <https://www.infineon.com/cms/de/product/evaluation-boards/uio-stick/>.

The TLE9263 SPI communication is emulated by the μ IO-stick which is controlled by a PC-Software named Config Wizard. The μ IO-stick firmware can be updated in the Config Wizard (Extras) to the most current version.

Table 1 Pinout of the μ IO stick for usage with the TLE9263 Evaluation Board

| Pin | μ IO Name | Type | TLE9263 Assignment |
|-----|---------------|--------|--|
| 1 | TXD1 | Out | TXDLIN1 not connected |
| 2 | GND | GND | GND |
| 3 | RXD1 | In | RXDLIN1 not connected |
| 4 | VDD5 | Supply | not assigned |
| 5 | LIN | I/O | LIN1 not connected |
| 6 | VS | Supply | VS not connected |
| 7 | RESET_5V | Out | not connected |
| 8 | GPIO3_5V | I/O | INT (used as an output from the TLE9263) |
| 9 | SCS_5V | Out | CSN (used as an input for the TLE9263) |
| 10 | GPIO2_5V | I/O | not assigned not connected |
| 11 | SCLK_5V | Out | CLK (used as an input for the TLE9263) |
| 12 | GPIO1_5V | I/O | FO (used as an output from the TLE9263) |
| 13 | MISO_5V | In | SDO (used as an output from the TLE9263) |
| 14 | GPIO0_5V | I/O | RO (used as an output from the TLE9263) |
| 15 | MOSI_5V | Out | SDI (used as an input for the TLE9263) |
| 16 | AD0 | In | not assigned not connected |

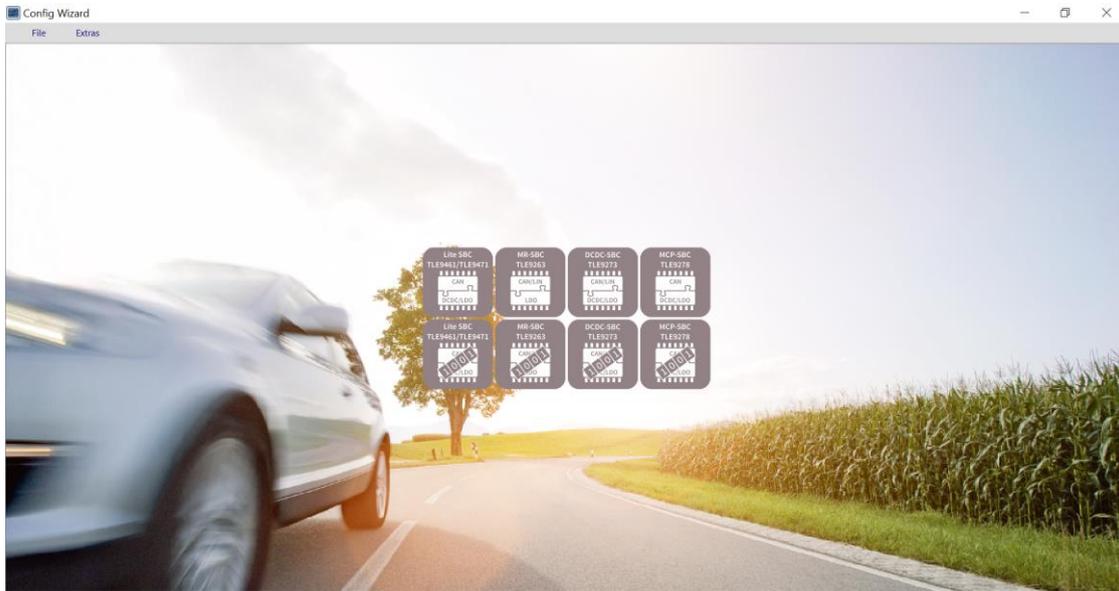
4 SBC Config Wizard

4.1 Software Installation

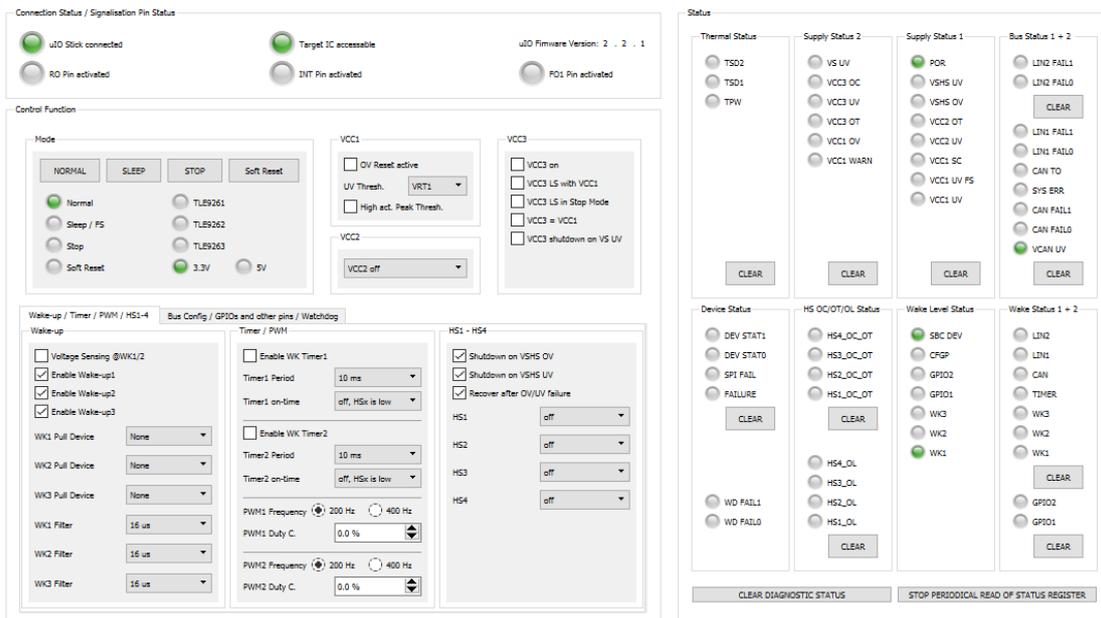
Before getting started, please install the Config Wizard software that can be downloaded via the [Infineon Toolbox](#). After successful installation, search for “*Config Wizard for SBC*” in **Manage Tools** and press Install. After that, the tool symbol appears under **My Tools** and can be started.

4.2 How the GUI looks like

Starting:



Choosing the MR-SBC TLE9263 (having the evaluation board connected via μ IO-stick):



5 Additional Information

A short video tutorial how to setup the board can be found at:

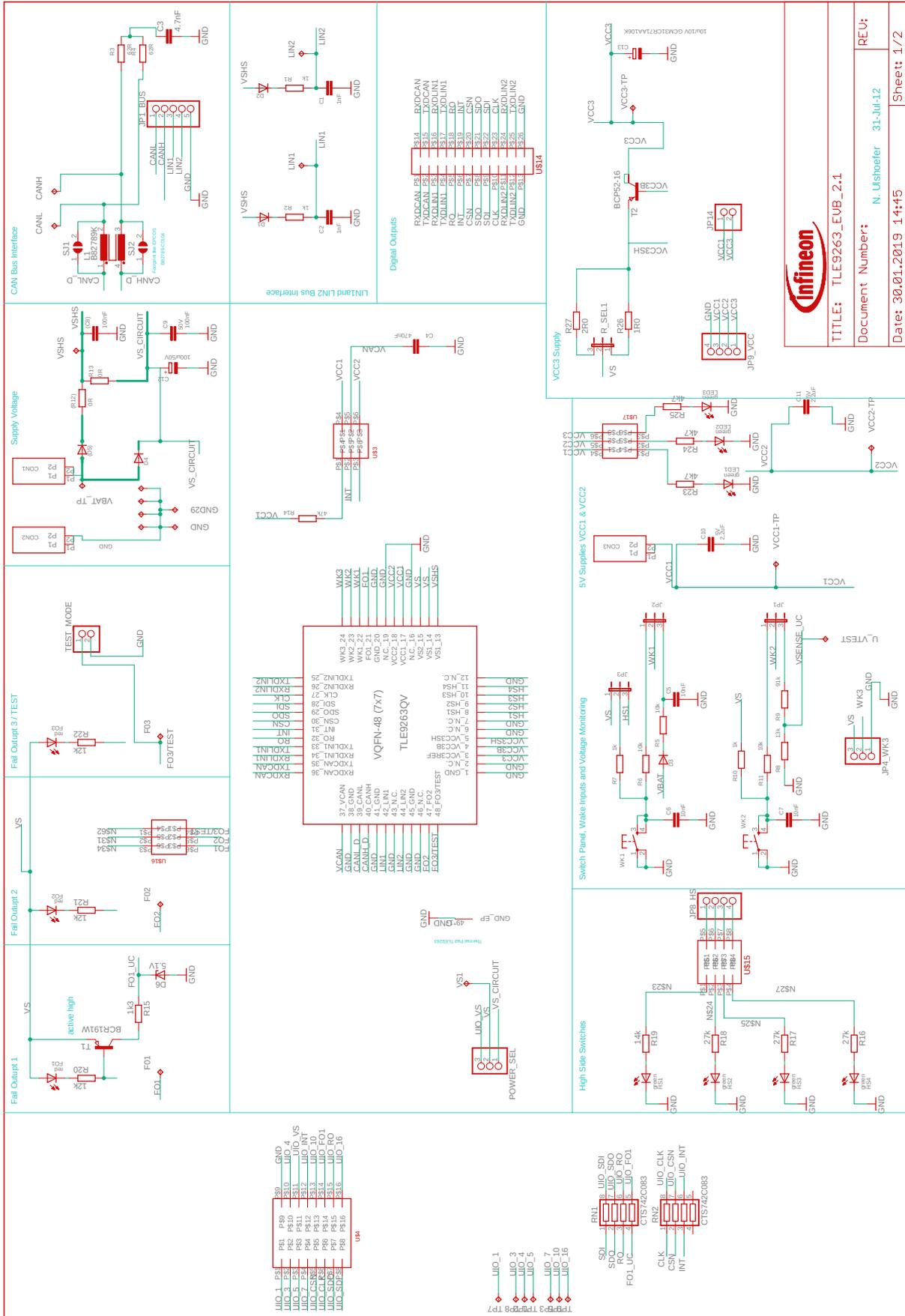
<https://www.infineon.com/cms/de/product/evaluation-boards/mid-range-sbc-board/#!videos>

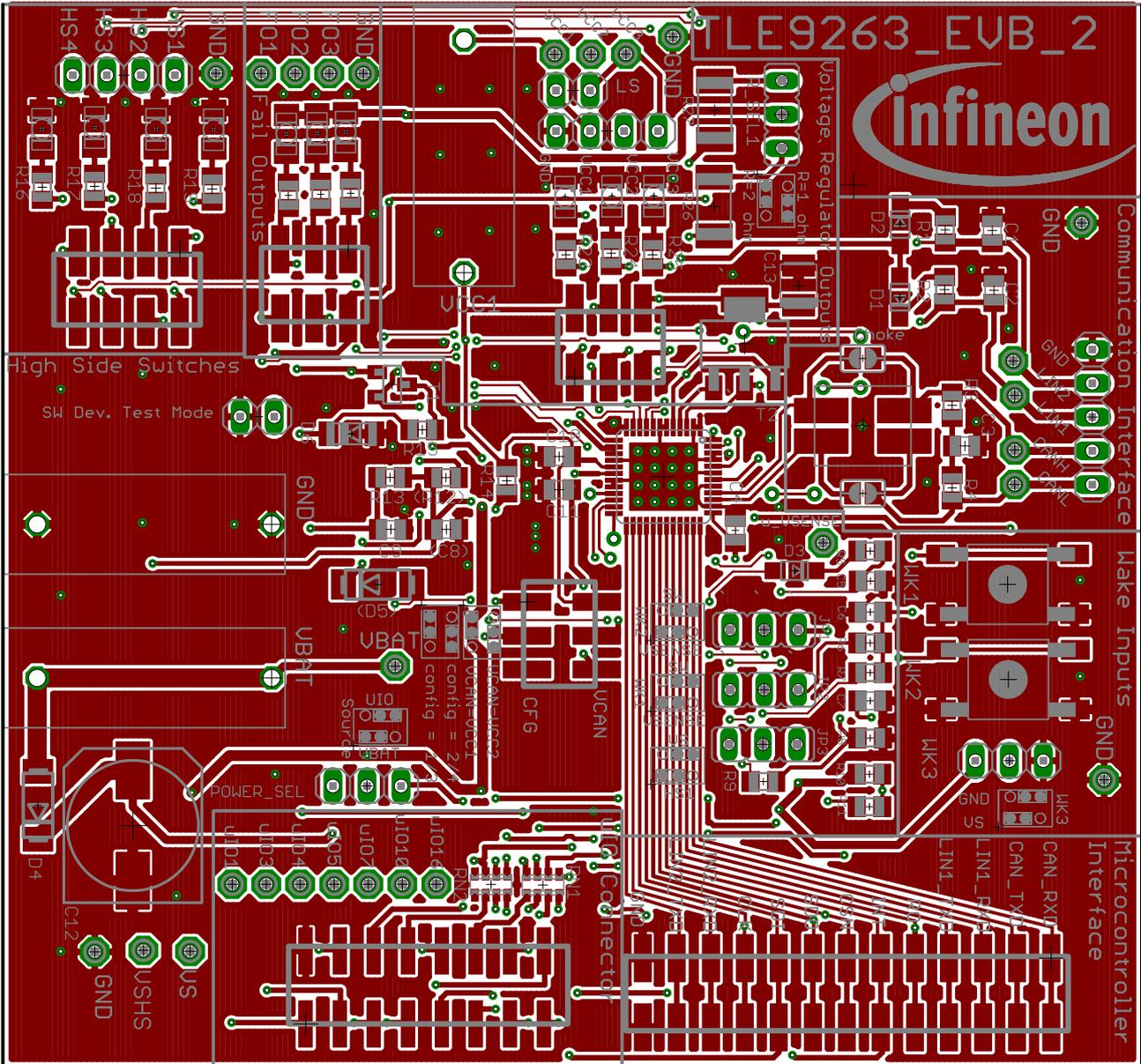
For further information you can contact <http://www.infineon.com/sbc> or your regional FAE.

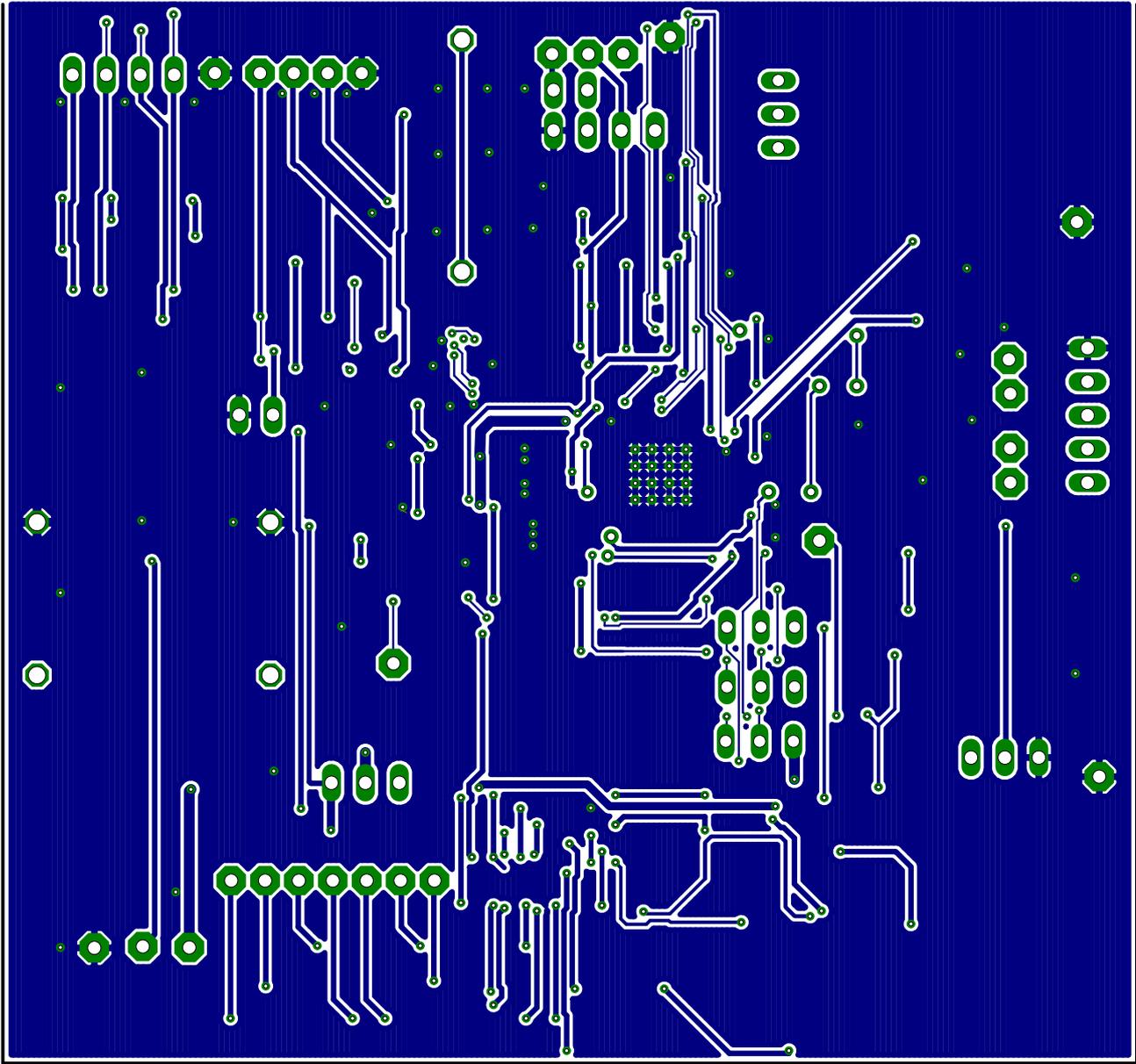
Revision History

Major changes since the last revision

| Page or Reference | Description of change |
|-------------------|---|
| Rev 2.0 | Initial Release for the TLE9263 EVB2 |
| Rev 2.1 | Update with Config Wizard GUI description |
| | |







Trademarks of Infineon Technologies AG

AURIX™, C166™, CanPAK™, CIPOS™, CoolGaN™, CoolMOS™, CoolSET™, CoolSiC™, CORECONTROL™, CROSSAVE™, DAVE™, DI-POL™, DrBlade™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, eupec™, FCOS™, HITFET™, HybridPACK™, Infineon™, ISOFACE™, IsoPACK™, i-Wafer™, MIPAQ™, ModSTACK™, my-d™, NovalithIC™, OmniTune™, OPTIGA™, OptiMOS™, ORIGA™, POWERCODE™, PRIMARION™, PrimePACK™, PrimeSTACK™, PROFET™, PRO-SIL™, RASIC™, REAL3™, ReverSave™, SatRIC™, SIEGET™, SIPMOS™, SmartLEWIS™, SOLID FLASH™, SPOC™, TEMPFET™, thinQ!™, TRENCHSTOP™, TriCore™.

Trademarks updated August 2015

Other Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

Edition 2016-09-20

Published by

Infineon Technologies AG

81726 Munich, Germany

© 2019 Infineon Technologies AG.

All Rights Reserved.

Do you have a question about this document?

Email: erratum@infineon.com

Document reference

Error! Unknown document property name.

IMPORTANT NOTICE

The information contained in this application note is given as a hint for the implementation of the product only and shall in no event be regarded as a description or warranty of a certain functionality, condition or quality of the product. Before implementation of the product, the recipient of this application note must verify any function and other technical information given herein in the real application. Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind (including without limitation warranties of non-infringement of intellectual property rights of any third party) with respect to any and all information given in this application note.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof are reasonably expected to result in personal injury.