

OPTIREG™ linear voltage regulator TLS850B0TxVxx demoboard

Z8F57876664



Family
overview



Support

Preface

Scope and purpose

This document provides information about the OPTIREG™ linear voltage regulator TLS850B0TxVxx demoboard for the ultra low quiescent current linear voltage regulator family TLS850B0TxVxx from Infineon Technologies AG. Please also refer to the corresponding [datasheet](#).

Intended audience

This document is intended for engineers who develop applications.

Table of contents

	Preface	1
	Table of contents	2
1	Introduction	3
1.1	General description	3
1.2	TLS850B0TxVxx features	3
1.3	Block diagram	3
2	Demoboard	5
2.1	Operating conditions	6
2.2	Demoboard configuration	6
2.2.1	Enable function	6
3	Schematic and layout	7
3.1	Schematic	7
3.2	Layout	7
4	Bill of materials	10
5	Restrictions	11
6	References	12
7	Revision history	13
	Disclaimer	14

1 Introduction

1 Introduction

This document describes the OPTIREG™ linear voltage regulator TLS850B0TxVxx demoboard and its functionality. It includes a brief summary of the used passive components, as well as a short explanation for the correct usage of the board. For specifications and parameters please refer to the datasheet.

1.1 General description

The TLS850B0TxVxx is a linear voltage regulator which can be connected directly to the battery board net of a car. It is optimized for low drop out and low current consumption in off mode and thus also suitable for standby operation. Additionally it can withstand high voltage transients such as a load dump scenario in a vehicle.

1.2 TLS850B0TxVxx features

To meet the automotive standards, the TLS850B0TxVxx comes with a feature set that includes:

- Output voltage accuracy $\pm 2\%$
- Enable feature to reduce the current consumption to a minimum while the application is not used
- Protection features:
 - Output current limitation
 - Overtemperature shutdown
- Robustness against high input transients up to 45 V
- Green Product (RoHS compliant)

1.3 Block diagram

[Figure 1](#) shows the device's basic features and their interaction.

1 Introduction

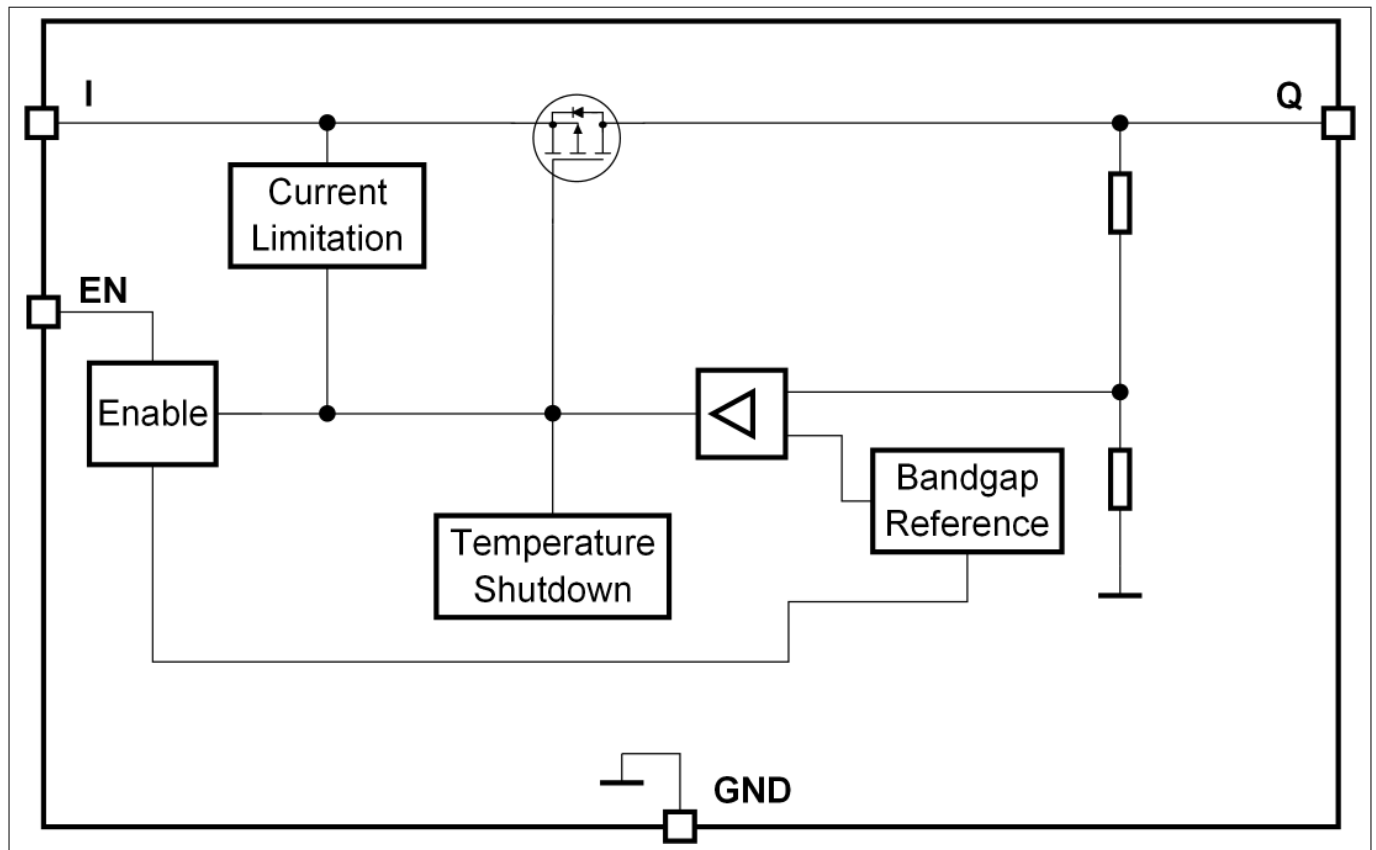


Figure 1 Block diagram TLS850B0TxVxx

2 Demoboard

2 Demoboard

The device is available in a PG-T0263-5 and PG-T0252-5 package. Basic functions of the device can be evaluated with it, as well as identifying the proper configuration. Apart from that it may serve as help to assess the device behavior outside of the application and under isolated conditions of stress.

Figure 2 and Figure 3 show the demoboards.



Figure 2 OPTIREG™ linear voltage regulator TLS850B0TBVxx demoboard



Figure 3 OPTIREG™ linear voltage regulator TLS850B0TEVxx demoboard

2 Demoboard

2.1 Operating conditions

To avoid electrical damage of the demoboard, the operating range defined in [Table 1](#) must be followed.

Table 1 Operating range¹⁾

Parameter	Symbol	Limit values		Unit	Note
		Min.	Max.		
Board supply	VIN	0	45	V	²⁾ Power supply
Regulator output	VOUT	0	7	V	Regulated output voltage
Enable input signal	EN	0	³⁾ 45	V	Enable signal to switch on the regulator

1) The Demoboard operates at an ambient temperature of 25°C.

2) Functional input voltage range: 3 V to 40 V.

3) Absolute maximum rating.

2.2 Demoboard configuration

The demoboard enables the operator to use and test the basic function set of the TLS850B0TxVxx. This includes the following features:

- Connecting the enable input signal to the supply voltage VIN via jumper JP1
- Delay the enable by adding an additional capacitor at EN (C5)
- Placeholder for additional output capacitor (C1)
- Several test points to conveniently attach probes to the respective signals

2.2.1 Enable function

The jumper JP1 can be used to connect the EN signal to the supply voltage VIN or to pull it to GND. Furthermore an external enable signal can be applied by using the banana jack EN.

Table 2 Jumper JP1 setting for enable function

JP1	Enable function
Pin 3 to pin 2	EN is connected to the supply voltage VIN; the regulator is enabled while it is supplied
Pin 2 to pin 1	EN is pulled to GND
Open	EN is floating; An external enable signal can be applied via the banana jack EN

3 Schematic and layout

3 Schematic and layout

3.1 Schematic

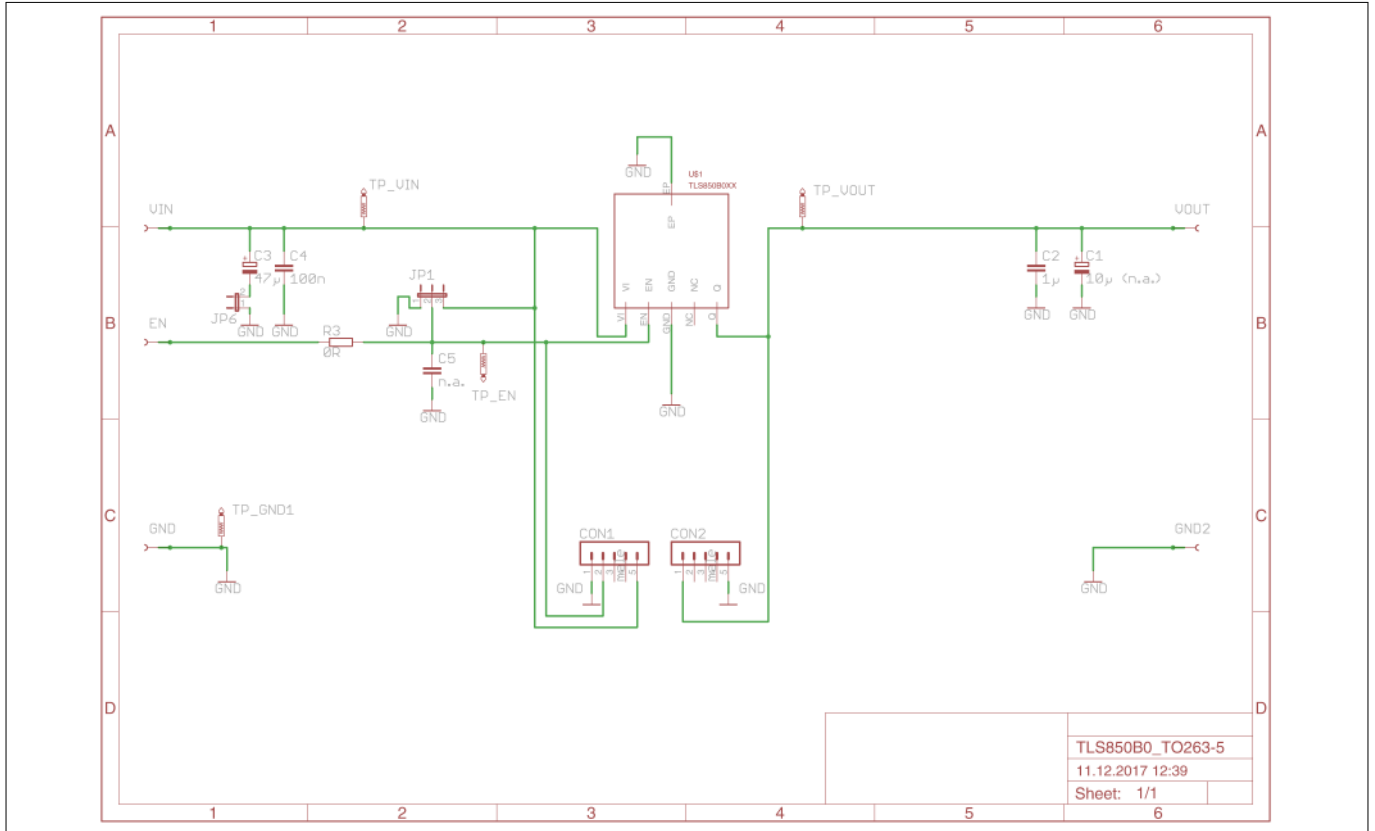


Figure 4 Schematic of OPTIREG™ linear voltage regulator TLS850B0TxVxx demoboard

3.2 Layout

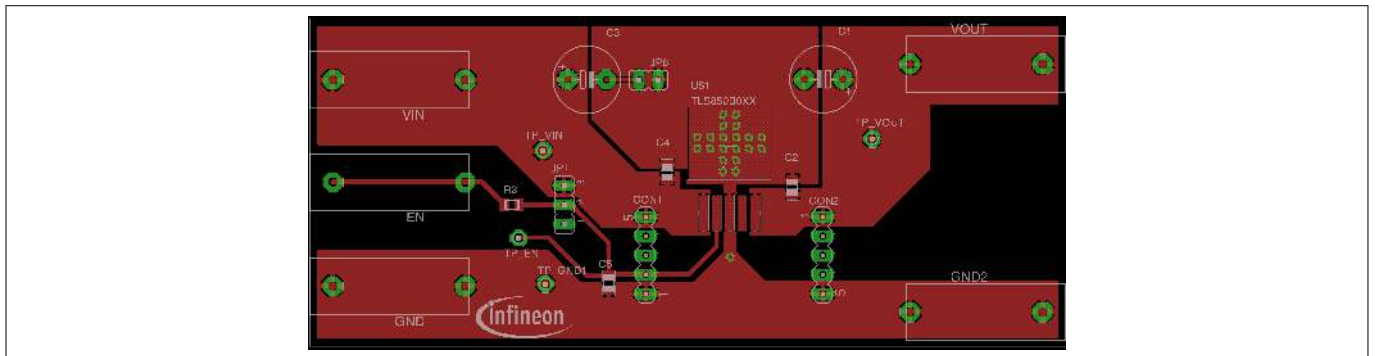


Figure 5 Top layer of OPTIREG™ linear voltage regulator TLS850B0TBVxx demoboard

3 Schematic and layout

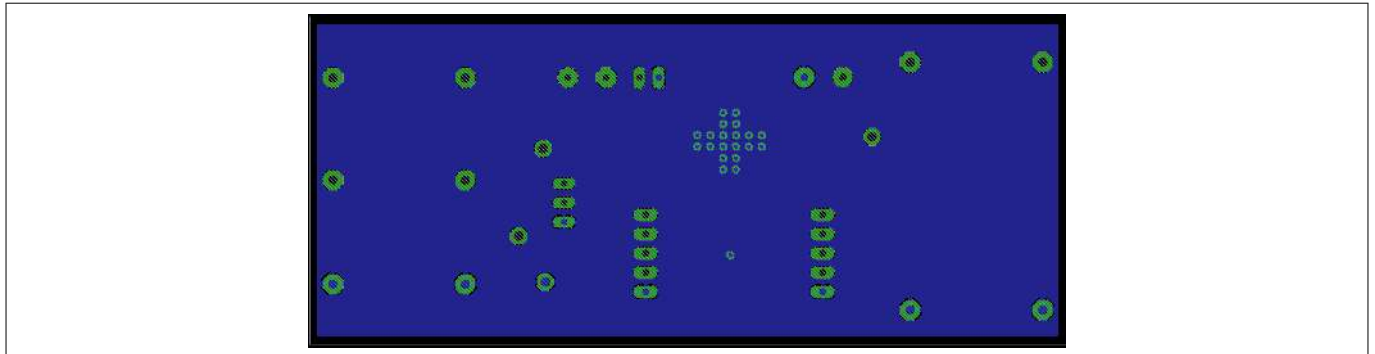


Figure 6 Bottom layer of OPTIREG™ linear voltage regulator TLS850B0TBVxx demoboard

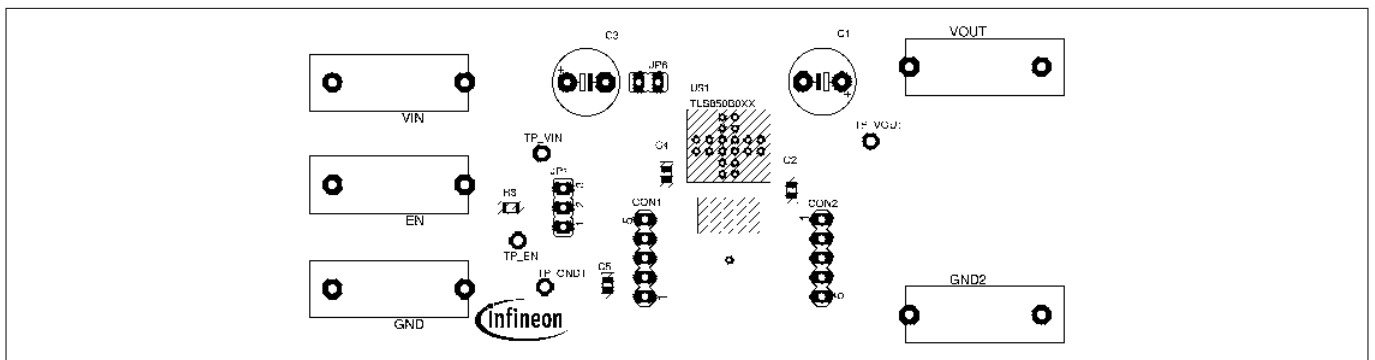


Figure 7 Top layer components of OPTIREG™ linear voltage regulator TLS850B0TBVxx demoboard

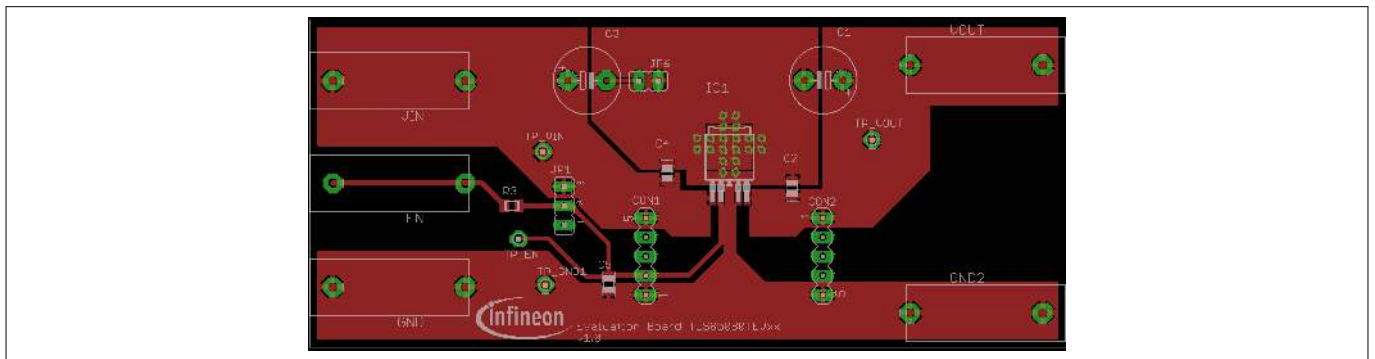


Figure 8 Top layer of OPTIREG™ linear voltage regulator TLS850B0TEVxx demoboard

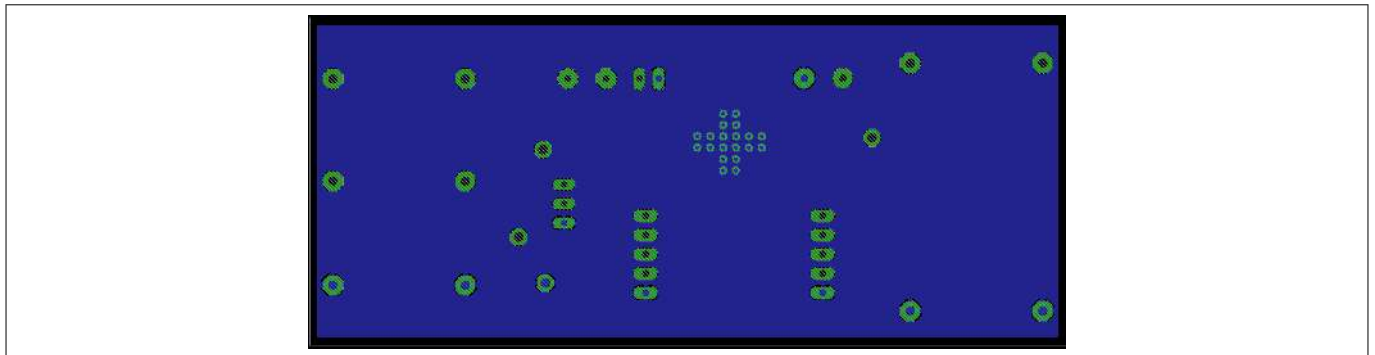


Figure 9 Bottom layer of OPTIREG™ linear voltage regulator TLS850B0TEVxx demoboard

3 Schematic and layout

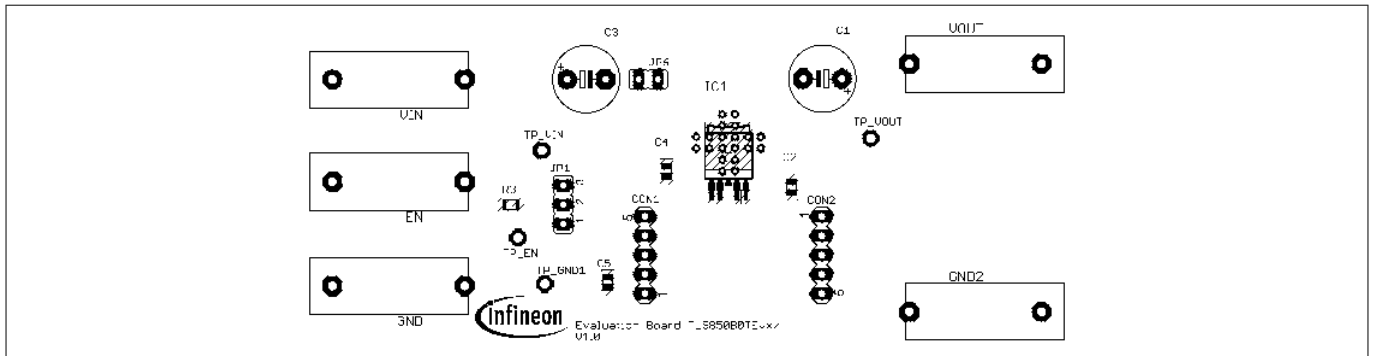


Figure 10 Top layer components of OPTIREG™ linear voltage regulator TLS850B0TEVxx demoboard

4 Bill of materials

4 Bill of materials

Table 3 Bill of materials

Part	Value	Device	Package	Description
C1	10 μ F (n.a.)	CPOL-EUE5-8.5	E5-8,5	POLARIZED CAPACITOR, European symbol
C2	1 μ F	C-EUC0805	C0805	CAPACITOR, European symbol
C3	47 μ F	CPOL-EUE5-8.5	E5-8,5	POLARIZED CAPACITOR, European symbol
C4	100 nF	C-EUC0805	C0805	CAPACITOR, European symbol
C5	n.a.	C-EUC0805	C0805	CAPACITOR, European symbol
CON1	–	MA05-1	MA05-1	PIN HEADER
CON2	–	MA05-1	MA05-1	PIN HEADER
EN	–	BABU4MM	BANANENBUCHSE4 MM	–
GND	–	BABU4MM	BANANENBUCHSE4 MM	–
GND2	–	BABU4MM	BANANENBUCHSE4 MM	–
JP1	–	JP2E	JP2	JUMPER
JP6	–	JP1E	JP1	JUMPER
R3	0 Ω	R-EU_M0805	M0805	RESISTOR, European symbol
TP_EN	–	PTR1PAD1-13	P1-13	TEST PIN
TP_GND1	–	PTR1PAD1-13	P1-13	TEST PIN
TP_VIN	–	PTR1PAD1-13	P1-13	TEST PIN
TP_VOUT	–	PTR1PAD1-13	P1-13	TEST PIN
U\$1	–	TLS850B0TxVxx	PG-TO263-5/PG-TO252-5	–
VIN	–	BABU4MM	BANANENBUCHSE4 MM	–
VOUT	–	BABU4MM	BANANENBUCHSE4 MM	–

5 Restrictions

This demoboard offers limited features only to evaluate and test Infineon products. The demoboard is neither an end product, nor it is intended or authorized by Infineon to be used as a reference design. It must not be used for any field production.

For further information please refer to: www.infineon.com.

6 References

Table 4

Number	Bibliography
[1]	What The Designer Should Know – Introduction to Automotive Linear Voltage Regulators. Infineon Technologies AG
[2]	TLS850B0TEV33 datasheet , Infineon Technologies AG
[3]	TLS850B0TEV50 datasheet , Infineon Technologies AG
[4]	TLS850B0TBV33 datasheet , Infineon Technologies AG
[5]	TLS850B0TBV50 datasheet , Infineon Technologies AG

7 Revision history

7 Revision history

Revision	Date	Changes
1.01	2022-11-29	Document updated • Editorial changes
1.0	2017-12-15	Document created.

Trademarks

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

Edition 2022-11-29

Published by

Infineon Technologies AG

81726 Munich, Germany

© 2022 Infineon Technologies AG

All Rights Reserved.

Do you have a question about any aspect of this document?

Email: erratum@infineon.com

Document reference

IFX-Z8F57876664

Important notice

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, 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.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

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.

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 can reasonably be expected to result in personal injury.