

OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

Z8F56520820



Family
overview



Support

Preface

Scope and purpose

This document provides information about the usage of the OPTIREG™ linear voltage regulator TLT807B0EPV demoboard. The OPTIREG™ linear voltage regulator TLT807B0EPV demoboard is used to demonstrate the ultra low quiescent current linear voltage regulator TLT807B0EPV in a PG-TSDSO-14 package 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	TLT807B0EPV 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
2.2.2	Adjustable output voltage	6
3	Schematic and layout	8
3.1	Schematic	8
3.2	Layout	8
4	Bill of materials	10
5	Restrictions	12
6	References	13
	Revision history	14
	Disclaimer	15

1 Introduction

1 Introduction

This document describes the OPTIREG™ linear voltage regulator TLT807B0EPV 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 TLT807B0EPV is a standby linear voltage regulator which is designed for 24 V systems and the demanding environment of truck applications. It is optimized for low drop out voltage and low current consumption in off mode. Additionally it can withstand high voltage transients.

1.2 TLT807B0EPV features

To meet the automotive standards the TLT807B0EPV comes with a feature set that includes:

- Output voltage accuracy $\pm 2\%$
- Enable: reduces the current consumption to a minimum while the application is not used
- Adjustable output voltage: 1.2 V to 20 V
- Protection features:
 - Output current limitation
 - Reverse polarity protection
 - Overtemperature shutdown
- Protected against high input transients up to 58 V for less than 400 ms
- Green Product (RoHS compliant)

1.3 Block diagram

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

1 Introduction

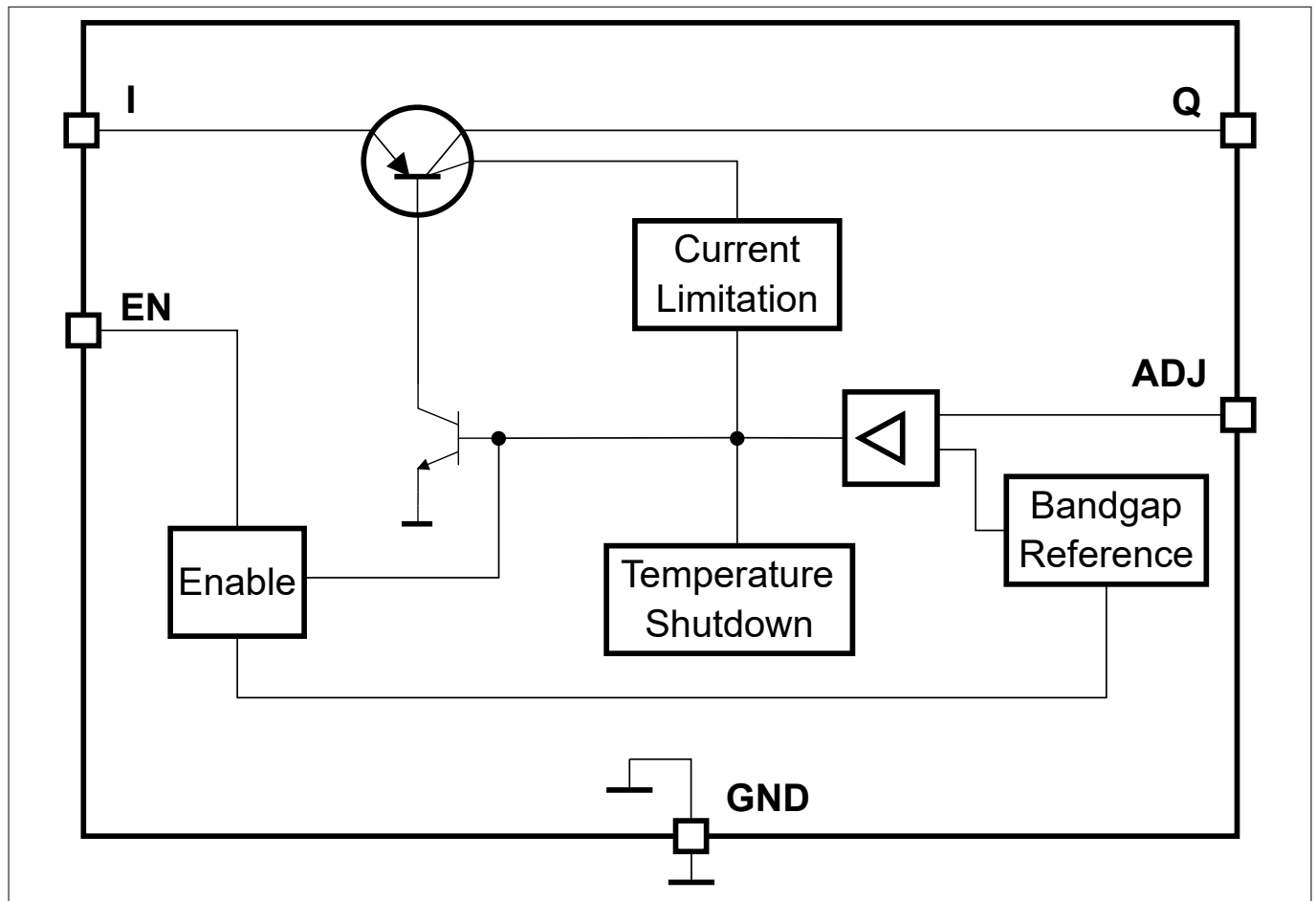


Figure 1 Block diagram TLT807B0EPV

2 Demoboard

2 Demoboard

The device is available in a PG-TSDSO-14 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 observe the device behavior outside of the application and under isolated conditions of stress.

Figure 2 shows the OPTIREG™ linear voltage regulator TLT807B0EPV demoboard.

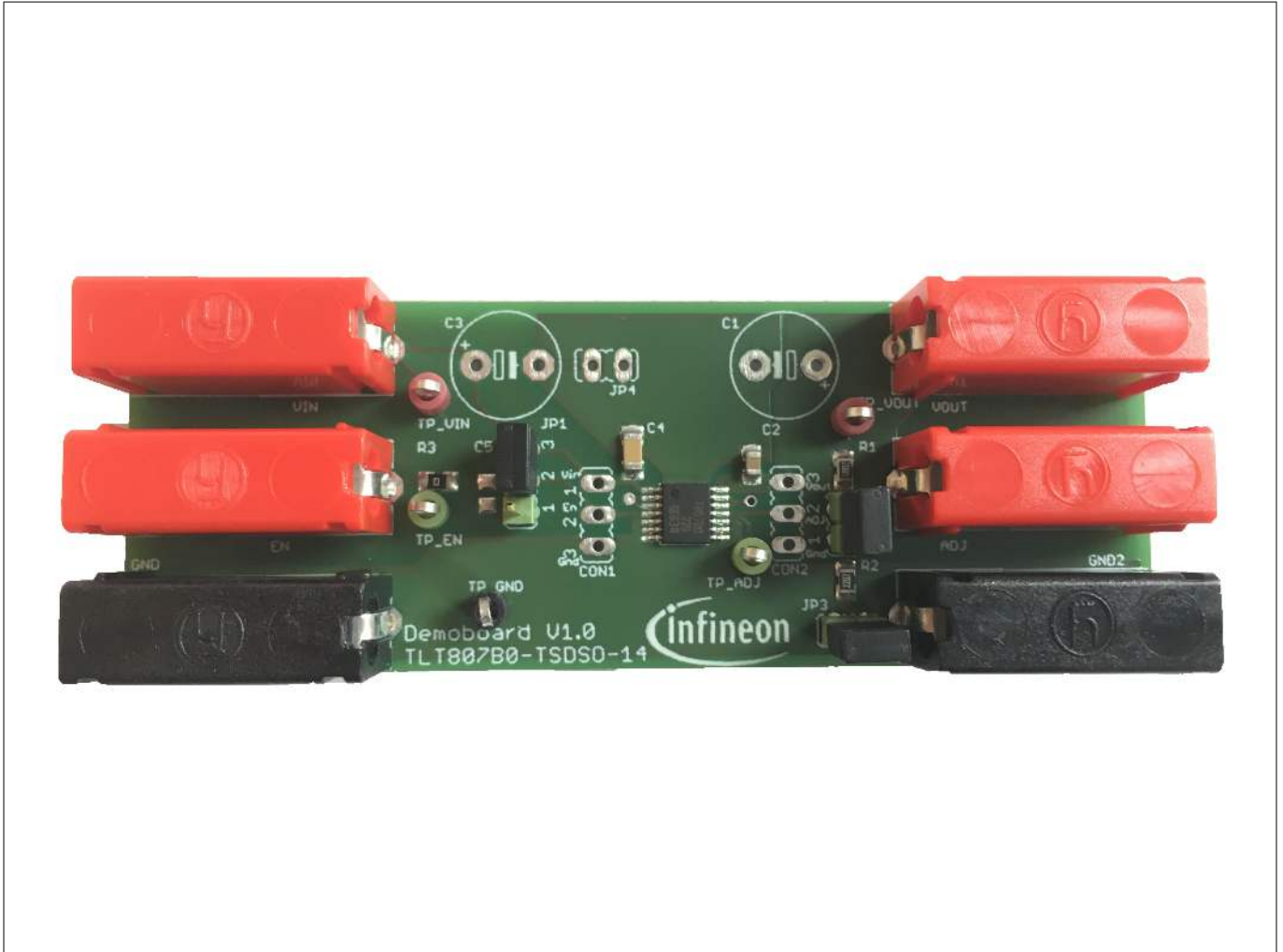


Figure 2 OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

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	VOOUT	0	36	V	Regulated output voltage
Enable input signal	EN	0	45	V	³⁾ Enable signal to switch on the regulator

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

2) Functional input voltage range: 2.75 V to 42 V.

3) Absolute maximum rating.

2.2 Demoboard configuration

The demoboard enables the operator to use and test the basic function set of the TLT807B0EPV. This includes following features:

- Connecting the Enable input signal to the supply voltage VIN via jumper JP1
- Placeholder for additional input capacitor (C3)
- Placeholder for additional output capacitor (C1)
- Configure the output voltage via the resistor divider (R_1 , R_2)
- Disable the resistor divider R_1, R_2 via jumper JP2 and JP3
- Connecting a external resistor divider via the banana jack ADJ

For further information on configuration and components see [Schematic](#).

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, external enable signal can be applied via the banana jack EN

2.2.2 Adjustable output voltage

The TLT807B0EPV is an adjustable standby linear voltage regulator. Therefore, the OPTIREG™ linear voltage regulator TLT807B0EPV demoboard provides the option to configure the external voltage divider in two ways:

1. Changing the ratio of the voltage divider R_1 and R_2
2. Apply a feedback off board via the banana jack ADJ¹⁾

For dimensioning the voltage divider, use the following formulas:

¹ Make sure that the on board voltage divider is disconnected by pulling jumper JP2 and JP3.

2 Demoboard

$$V_Q = \left(\frac{R_1}{R_2} + 1 \right) V_{\text{ref}}$$

Equation 1

$$R_1 + R_2 \leq 250 \text{ k}\Omega$$

Equation 2

3 Schematic and layout

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3.1 Schematic

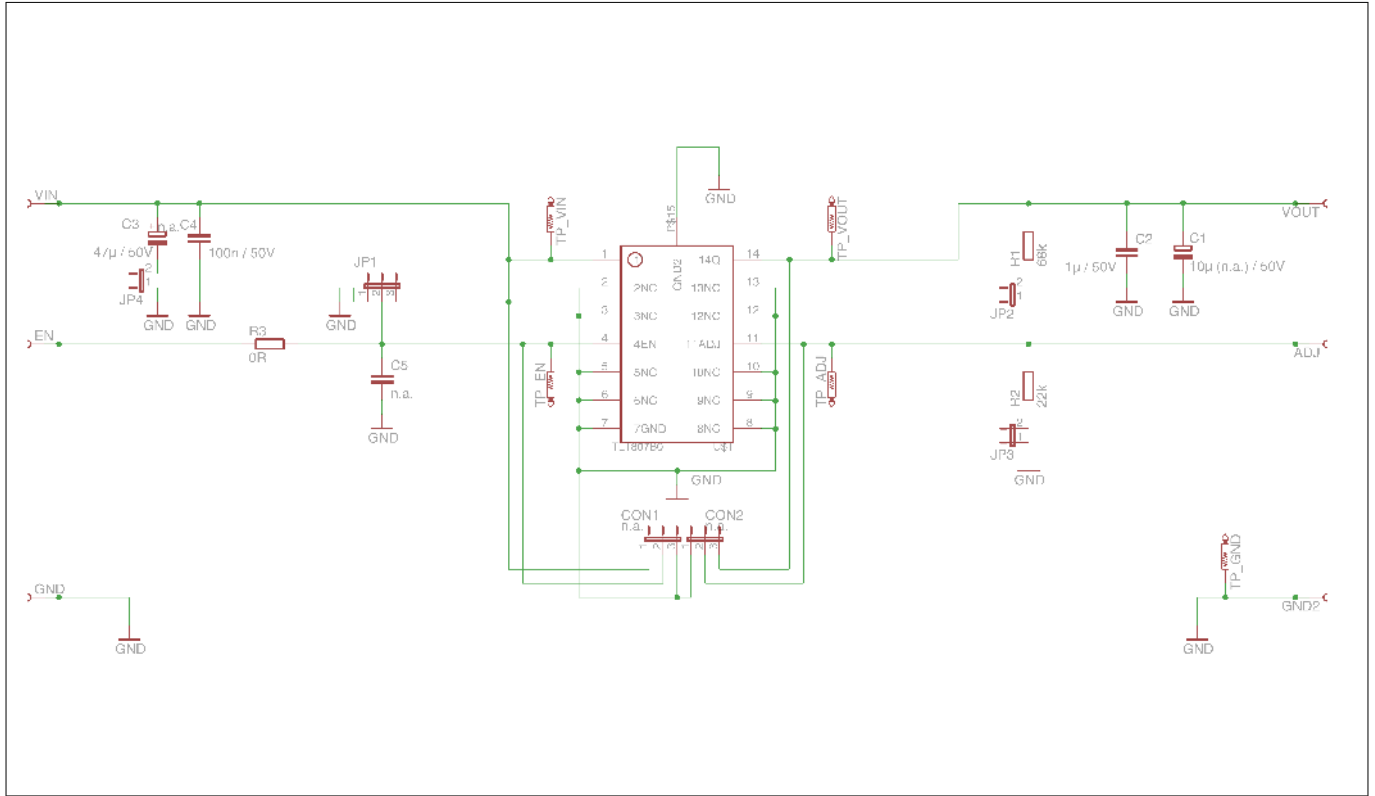


Figure 3 Schematic of OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

3.2 Layout

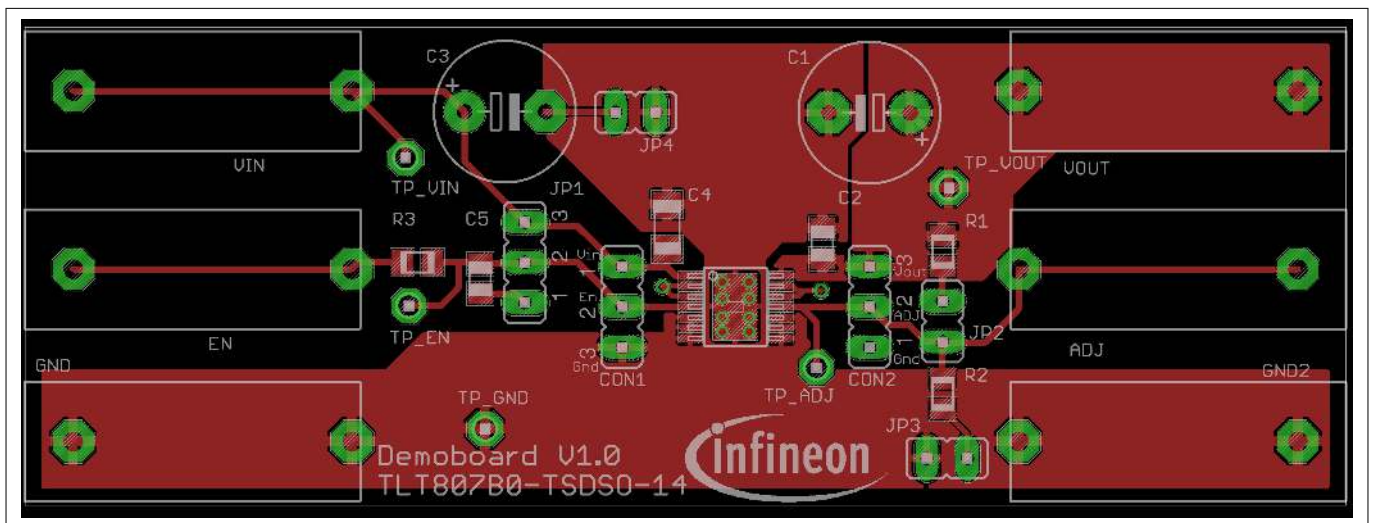


Figure 4 Top layer of OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

3 Schematic and layout

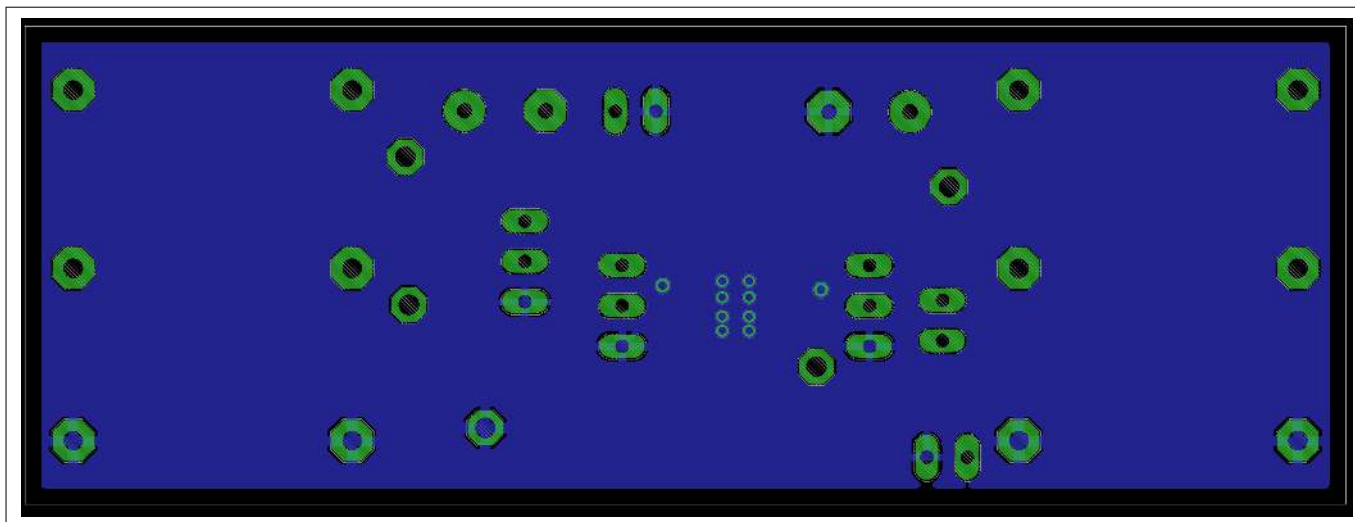


Figure 5 Bottom layer of OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

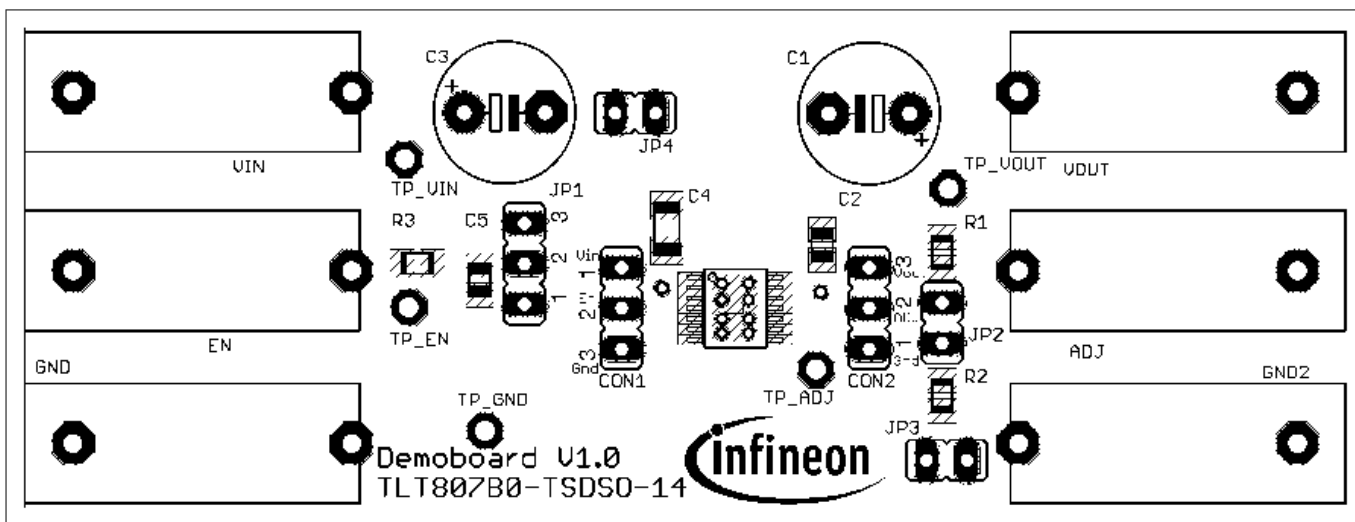


Figure 6 Top layer components of OPTIREG™ linear voltage regulator TLT807B0EPV demoboard

4 Bill of materials

4 Bill of materials

Table 3 Bill of materials

Part	Value	Device	Package	Description
ADJ		BABU4MM	BANANENBUCHSE4 MM	
C1	10 μ F (n.a.) / 50 V	CPOL-EUE5-8.5	E5-8,5	POLARIZED CAPACITOR, European symbol
C2	1 μ F / 50 V	C-EUC0805	C0805	CAPACITOR, European symbol
C3	47 μ F / 50 V	CPOL-EUE5-8.5	E5-8,5	POLARIZED CAPACITOR, European symbol
C4	100 nF / 50 V	C-EUC1206	C1206	CAPACITOR, European symbol
C5	n.a.	C-EUC0805	C0805	CAPACITOR, European symbol
CON1	n.a.	JP2E	JP2	JUMPER
CON2	n.a.	JP2E	JP2	JUMPER
EN	–	BABU4MM	BANANENBUCHSE4 MM	–
GND	–	BABU4MM	BANANENBUCHSE4 MM	–
GND2	–	BABU4MM	BANANENBUCHSE4 MM	–
JP1	–	JP2E	JP2	JUMPER
JP2	–	JP1E	JP1	JUMPER
JP3	–	JP1E	JP1	JUMPER
JP4	–	JP1E	JP1	JUMPER
R1	68 k Ω	R-EU_M0805	M0805	RESISTOR, European symbol
R2	22 k Ω	R-EU_M0805	M0805	RESISTOR, European symbol
R3	0 Ω	R-EU_M0805	M0805	RESISTOR, European symbol
TP_ADJ	–	PTR1PAD1-13	P1-13	TEST PIN
TP_EN	–	PTR1PAD1-13	P1-13	TEST PIN
TP_GND	–	PTR1PAD1-13	P1-13	TEST PIN
TP_VIN	–	PTR1PAD1-13	P1-13	TEST PIN
TP_VOUT	–	PTR1PAD1-13	P1-13	TEST PIN

(table continues...)

4 Bill of materials

Table 3 (continued) Bill of materials

Part	Value	Device	Package	Description
U\$1	–	TLT807B0EPV	PG-TSDSO-14	TruckVreg
VIN	–	BABU4MM	BANANENBUCHSE4 MM	–
VOU	–	BABU4MM	BANANENBUCHSE4 MM	–

5 Restrictions

The demoboard is only intended to be used for evaluation and test purposes. Basic safety features and functions can be tested with it. 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]	TLT807B0EPV Datasheet, Infineon Technologies AG

Revision history

Revision history

Revision	Date	Changes
1.01	2022-11-29	Document updated • Editorial changes
1.0	2017-06-28	Document created

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