

TLS202B1

Demonstration Board Manual

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Rev. 1.0, 2013-06-12

Automotive Power

1 Introduction

The TLS202B1 application board is a demonstration of the Infineon low drop out linear voltage post regulator. The TLS202B1 is the ideal IC to supply regulated voltage for general ECU's, safety and infotainment applications. The fixed output voltage makes the TLS202B1 suitable for supplying the majority of standard applications.

This application note contains information for the TLS202B1 Demonstration Board.

1.1 General Description

The TLS202B1 is a monolithic integrated fixed linear voltage post regulator for load currents up to 150 mA. The IC regulates an input voltage V_1 up to 18 V to a fixed output voltage of 3.3 V with a precision of $\pm 3\%$. The TLS202B1 is especially designed for applications requiring very low standby currents, e.g. with a permanent connection to the preregulators like DCDC converters. The regulator is not designed to operate with a direct connection to the battery. The component can be enabled/disabled via the Enable input. The device is available in a very small surface mounted PG_SCT595 package and is designed for the harsh environment of automotive applications. Therefore it is protected against overload, short circuit and overtemperature conditions by the implemented output current limitation and the overtemperature shutdown circuit. The TLS202B1 can be also used in all other applications requiring a stabilized 3.3 V voltage.

For more detailed information please see also TLS202B1 data sheet [\[1\]](#).

1.2 TLS202B1 Feature List

- Output Voltage: 3.3 V
- Output Voltage Accuracy of $\pm 3\%$
- Output Currents up to 150 mA
- Extended Input Voltage Operating Range of 2.7 V to 18 V
- Enable Functionality
- Low Dropout Voltage: typ. 290mV
- Very Low Current Consumption: typ. 50 μ A
- Very Low Shutdown Current: typ. 0.01 μ A
- Very High PSRR: typ. 63dB at 10 kHz
- Output Current Limitation
- Short Circuit protected
- Overtemperature Shutdown
- Wide Temperature Range From $-40\text{ }^\circ\text{C}$ up to $150\text{ }^\circ\text{C}$
- Suitable for Use in Automotive Electronics as Post Regulator
- Green Product (RoHS compliant)
- AEC Qualified

1.3 Block Diagram

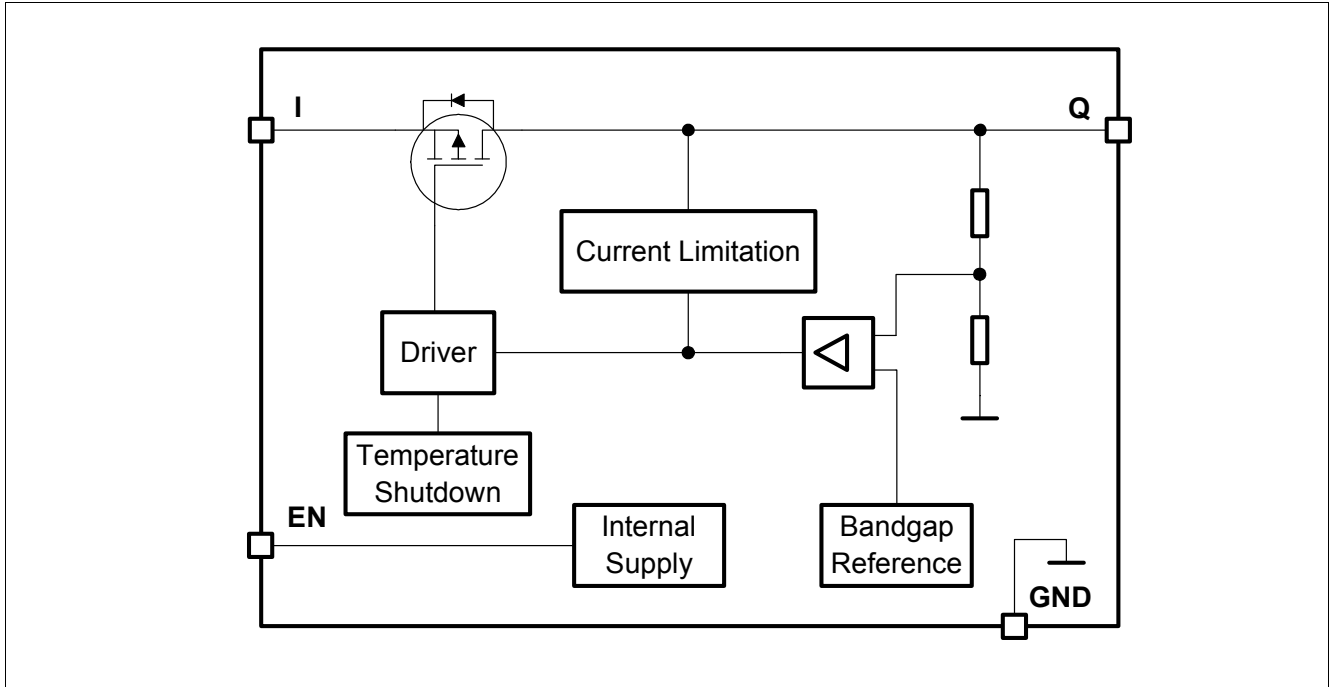


Figure 1 Block Diagram of TLS202B1

2 Demonstration Board

The TLS202B1 Demonstration Board is equipped by default with TLS202B1 and all necessary components.

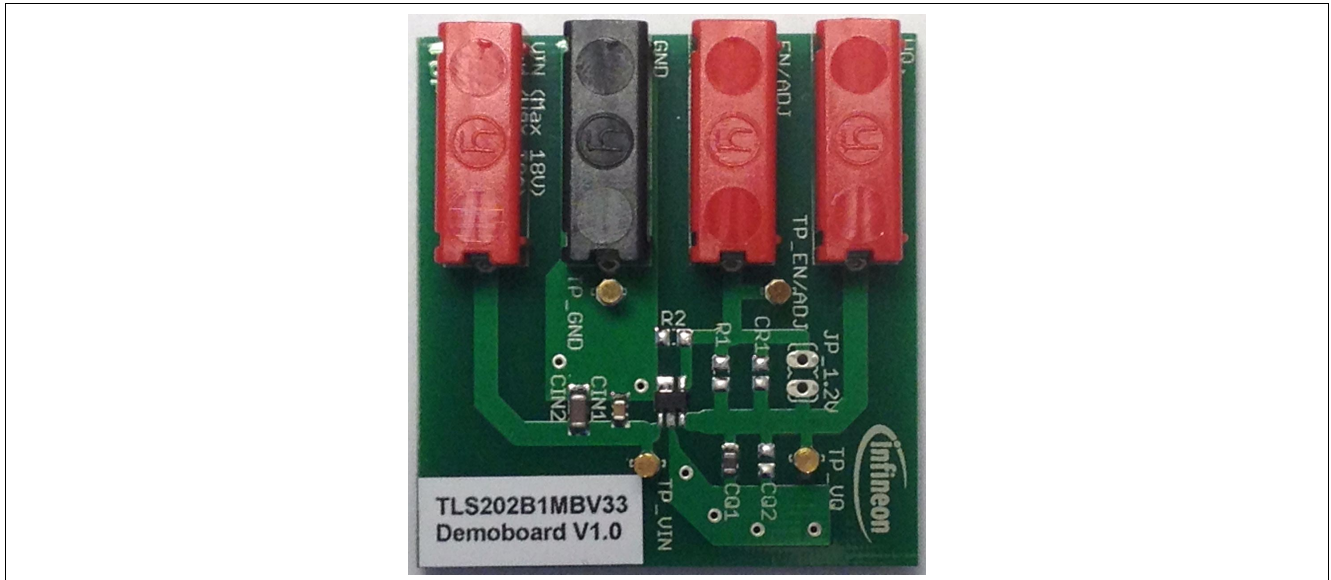


Figure 2 TLS202B1 Demonstration Board

2.1 Operating Conditions

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

Table 1 Operating Range¹⁾

| Parameter | Symbol | Limit Values | | Unit | Note |
|----------------------------|--------|--------------|-------------------|------|--|
| | | Min. | Max. | | |
| Board Supply ²⁾ | VIN | 0 | 18 | V | Power supply |
| Regulator Output | VQ | 0 | 5.5 ³⁾ | V | Regulated output for loads up to 150mA |
| Enable Signal | EN | 0 | 18 | V | Enable signal to switch regulator on |
| Ground | GND | 0 | 0 | V | System GND |

1) The Demonstration Board operates at ambient temperature of 25°C.

2) Functional input voltage range starts from 2.7 V to 18 V.

3) Nominal output voltage depends on voltage variant of TLS202B1.

2.2 Signal Adaption

For easy signal adaption e.g. connecting probes for an oscilloscope, test point connectors indicated by "TP_xxx", can be found at the Demonstration Board.

Table 2 Signals

| Connector | Accessible Signal |
|-----------|--------------------------------|
| TP_VIN | - I (power supply) |
| TP_VQ | - Q (output voltage) |
| TP_EN/ADJ | - EN (enable voltage) |
| TP_GND | - GND (chip ground connection) |

3 Schematic and Layout

3.1 Schematic

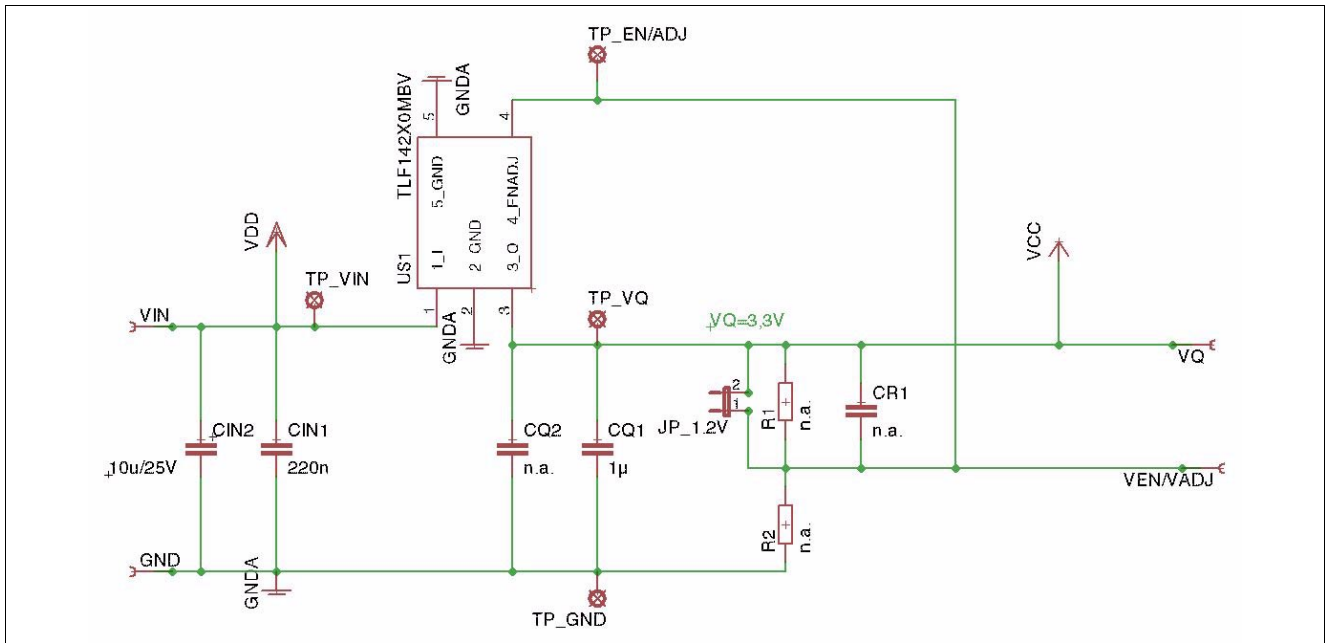


Figure 3 Schematic of TLS202B1 Demonstration Board

3.2 Layout

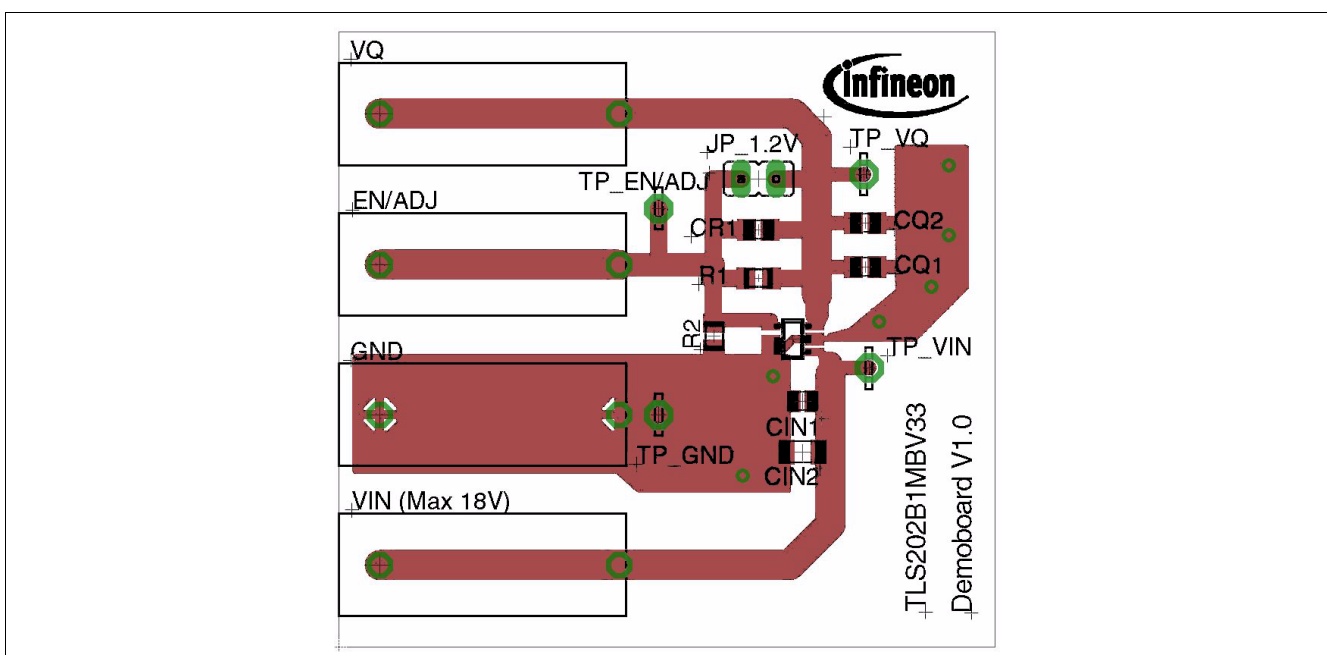


Figure 4 Top Layer of TLS202B1 Demonstration Board

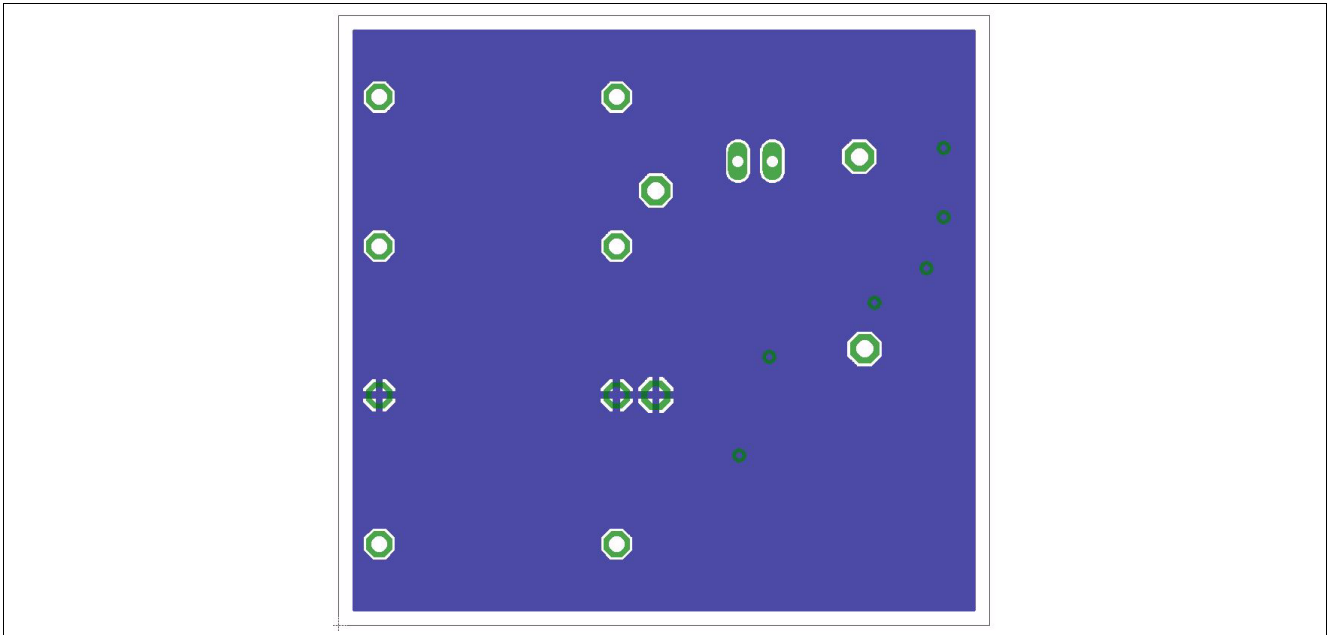


Figure 5 Bottom Layer of TLS202B1 Demonstration Board

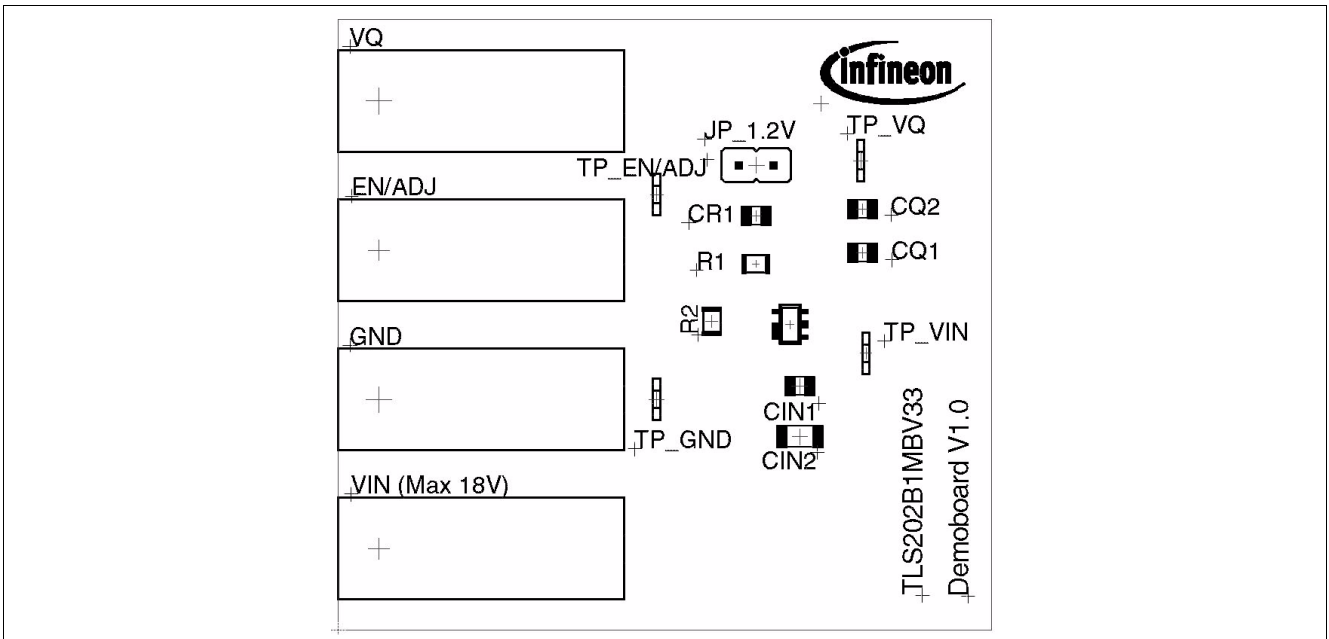


Figure 6 Top Layer components of TLS202B1 Demonstration Board

4 Bill of Material

Table 3 Bill of Material

| Part | Value | Package |
|-------------|-----------------------------|----------------|
| VIN | Banana jack | BABU4MM |
| VW | Banana jack | BABU4MM |
| EN/ADJ | Banana jack | BABU4MM |
| GND | Banana jack | BABU4MM |
| R1 | not applicable for TLS202B1 | R0805 |
| R2 | not applicable for TLS202B1 | R0805 |
| CR1 | not applicable for TLS202B1 | R0805 |
| CIN1 | 220 nF / 25 V (X7R) | C0805 |
| CIN2 | 10 μ F / 25 V (X7R) | C1206 |
| CQ1 | 1 μ F / 16 V (X7R) | C0805 |
| CQ2 | not placed | C0805 |
| TP_VIN | | |
| TP_VQ | | |
| TP_EN/ADJ | | |
| TP_GND | | |
| IC1 | TLS202B1MBV33 | PG_SCT595 |

5 General Information

5.1 Restrictions

This Application Board is offering limited features allowing you only to evaluate and test the Infineon products. The Demonstration Board is not an end product (or finished appliance), nor is it intended or authorized by Infineon to be integrated into end products. You are not authorized to use the Demonstration Board in any production system.

5.2 Additional Information

[1] TLS202B1 Data Sheet (For further information you may contact <http://www.infineon.com/>)

5.3 Revision History

| Revision | Date | Changes |
|----------|------------|-----------------|
| 1.0 | 2013-05-27 | Initial version |
| | | |
| | | |

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