

TPS610985 Evaluation Module

This document describes the characteristics, operation, and use of the TPS610985/TPS610986 evaluation module (EVM). The TPS610985/6 provides an ultra-low quiescent power supply solution for products powered by either a single-cell or two-cell alkaline, one-cell coin cell battery. The device integrates a load switch so that it can provide two separate output power rails, Vmain and Vsub. In low-power mode, the load switch is disabled and the device only consumes 300-nA quiescent current.

This EVM is compatible for TPS610985 and TPS610986.

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1 Introduction

The TLV62085 is a 3-A, synchronous, step-down converter in a 2 × 2-mm, 7-pin VSON package.

1.1 Performance Specification

The TPS610985 EVM helps designers evaluate the operation and performance of TPS610985/6 boost converter. The TPS610985/6 is a fixed output version with different part number. See [Table 1](#) for detailed information of each version. Mode pin selection determines whether the device operates in active mode or low-power mode. In active mode, both outputs are enabled with enhanced performance. In low-power mode, load switch is disabled with only 300-nA quiescent current consumed by the device.

1.2 Applications

This EVM supports the following applications:

- Smart remote control
- BLE tag
- Wearable application
- Low-power wireless application
- Portable consumer or medical products
- Single coin cell, single- or two-cell alkaline powered applications

2 Setup

This section describes how to properly use the TPS610985.

2.1 Input and Output Connector Descriptions

J1/J3 – VIN/GND	Positive input connection from the input supply for the EVM
J2 – S+, S–	Input voltage sense connections. Measure the input voltage at this point.
J4/J8 – Vmain/GND	Output connection of boost converter for the EVM
J5 – S+, S–	Vmain output voltage sense connection, measure the output voltage
J6/J9 – Vsyb/GND	Output connection of load switch for the EVM
J7 – S+, S–	Vsub output voltage sense connection, measure the output voltage
JP1 – Mode	Active/low power mode selection pin, can be either connected to Vmain or GND as shown in Table 1

Table 1. Mode Pin Selection And Output Version

Part Number	Vmain (Active)	Vmain (Low Power)	Vsub (Active)	Vsub (Low Power)
TPS610985	3.0 V	3.0 V	ON	OFF
TPS610986	3.3 V	3.3 V	ON	OFF

3 Schematic and Bill of Materials

This section provides the TPS610985 schematic and bill of materials (BOM).

3.1 Schematic

Figure 1 illustrates the EVM schematic.

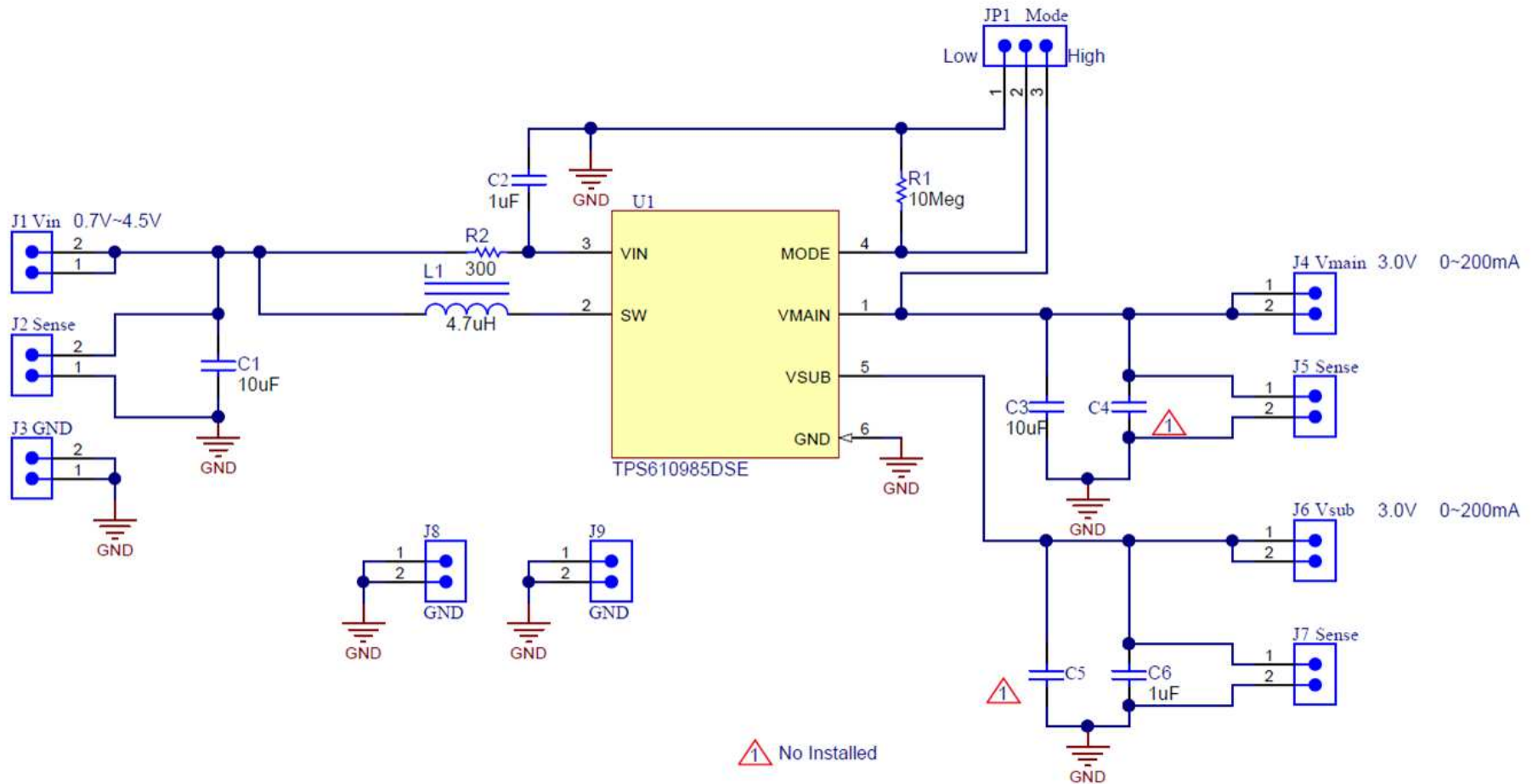


Figure 1. TPS610985 Schematic

3.2 Bill of Materials

Table 2 displays the EVM bill of materials.

Table 2. Bill of Materials TPS610985

Count	Footprint	Part Number	Value	Description
C1	0603	GRM188R60J106ME47D	10 μ F	CAP, CERM, 10 μ F, 6.3 V, \pm 20%, X5R, 0603
C2	0402	GRM155R61A105KE15D	1 μ F	CAP, CERM, 1 μ F, 10 V, \pm 10%, X5R, 0402
C3	0402	GRM155R60G106ME44D	10 μ F	CAP, CERM, 10 μ F, 4V, \pm 20%, X5R, 0402
C4	0603	GRM188R71C105KA12D	22 μ F	CAP, CERM, 1 μ F, 16 V, \pm 10%, X7R, 0603
C5	0402	GRM155R61A105KE15D	1 μ F	CAP, CERM, 1 μ F, 10 V, \pm 10%, X5R, 0402
C6	0402	GRM155R61A105KE15D	1 μ F	CAP, CERM, 1 μ F, 10 V, \pm 10%, X5R, 0402
L1	VLF302510MT	VLF302510MT-4R7M	4.7 μ H	Inductor, Shielded, Ferrite, 4.7 μ F, 0.86 A, 0.168 Ω , SMD
R1	0603	CRCW060310M0JNEA	10 M	RES, 10 M Ω , 5%, 0.1 W, 0603
R2	0402	CRCW0402300RJNED	300	RES, 300 Ω , 5%, 0.053 W, 0402
U1	DSE0006A	TPS610985DSER		Ultra-Low Quiescent Current Synchronous Boost with Integrated LDO/Load Switch, DSE0006A

4 Board Layout

Figure 2 through Figure 4 show the design of the TPS610985 EVM PCB layout. It is designed using a 2-layer PCB. Poor layout can lead to stability or EMI problems. Place the input and output capacitor, as well as the inductor, as close as possible to the IC.

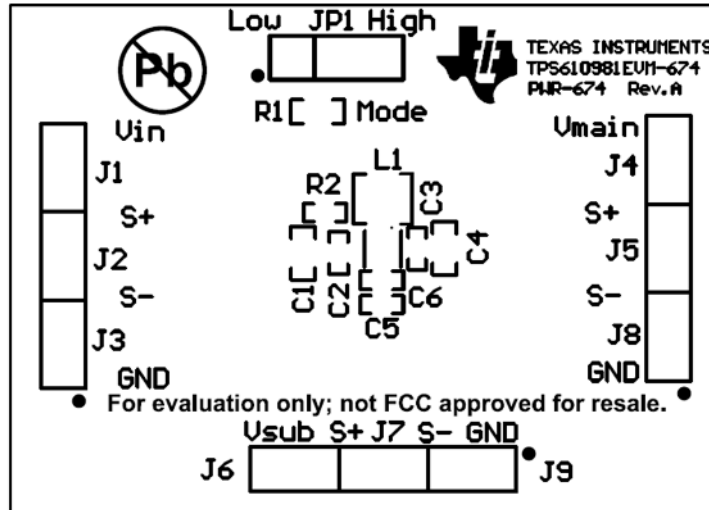


Figure 2. Silkscreen (Viewed From Top)

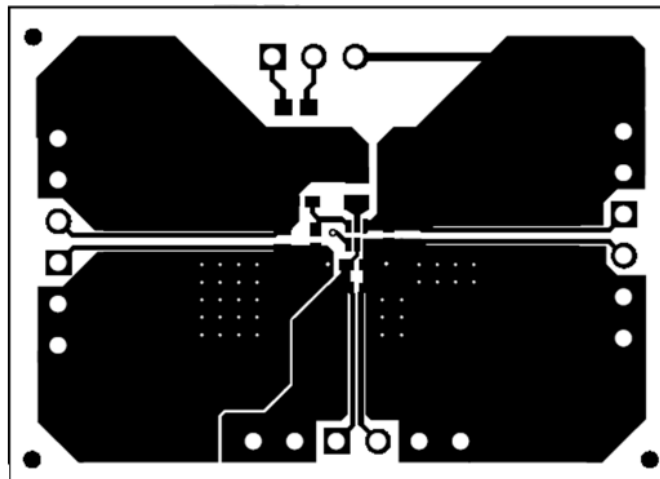


Figure 3. Top Layer (Viewed From Top)

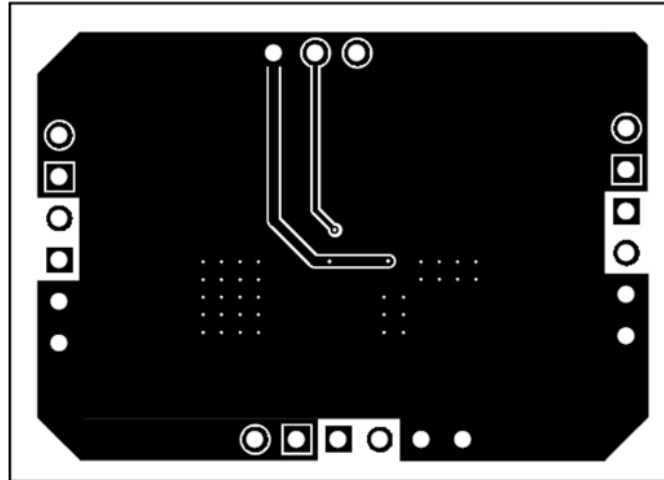


Figure 4. Bottom Layer (Viewed From Top)

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210

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http://www.tij.co.jp/lstds/ti_ja/general/eStore/notice_01.page

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.

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