TPS62095EVM-632 Evaluation Module

The TPS62095EVM-632 (PWR632) is a fully assembled and tested circuit for evaluating the TPS62095. The TPS62095 is a step-down converter that operates with an input voltage between 2.5-V and 5.5-V, an output voltage of 1.8-V using external resistors, and can deliver up to 4000-mA of continuous current. The converter has a programmable soft-start, a power good output, and several other safety features.

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1 Introduction

The TPS62095 is a 4-A, synchronous, step-down converter in a 3- × 3-mm, 16-terminal QFN package. The TPS62095EVM-632 (PWR632) uses the TPS62095 set to a 1.8-V output. The EVM operates with full-rated performance with an input voltage between 2.5-V and 5.5-V.

1.1 Performance Specification

Table 1 provides a summary of the TPS62095EVM-632 performance specifications.

Table 1. Performance Specification Summary

Specification	Test Conditions	MIN	TYP	MAX	UNIT
Input voltage		2.5	3.6	5.5	V
Output voltage	PWM mode	1.77	1.8	1.84	V
Output current		0		4	A

1.2 Modifications

The PCB for this EVM is designed to accommodate additional output capacitors or a feedforward capacitor, or both. The output voltage may be changed by adjusting the values of R1 and R2. The soft-start time is adjusted by changing the value of C4.

1.2.1 Output Capacitors

C7 and C10 are provided for additional output capacitors. These capacitors are not required for proper operation, but can be used to reduce the output voltage ripple and to improve the load transient response.

1.2.2 Feedforward Capacitor

C9 is provided for the installation of an optional feedforward capacitor. This capacitor is not required for proper operation.

2 Setup

This section describes how to properly use the TPS62095EVM-632.

2.1 Input and Output Connector Descriptions

J1 – VIN	Positive input connection from the input supply for the EVM
J2 – S+, S–	Input voltage sense connections. Measure the input voltage at this point
J3 – GND	Return connection from the input supply for the EVM
J4 – PG, GND	The PG output appears on terminal 1 of this header with a convenient ground on terminal 2.
J5 – VOUT	Output voltage connection
J6 – S+, S–	Output voltage sense connections; measure the output voltage at this point
J7 – GND	Output return connection
JP1 – EN	EN terminal input jumper. Place the supplied jumper across ON and EN to turn on the IC. Place the jumper across OFF and EN to turn off the IC.

2.2 Setup

To operate the EVM, set jumper JP1 to the desired position per Section 2.1. Connect the input supply to J1 and J3 and connect the load to J5 and J7.

3 TPS62095EVM-632 Test Results

The TPS62095EVM-632 was used to take the data in the TPS62095 data sheet, SLVSBD8. For the performance of this EVM, see the device data sheet.

4 Board Layout

This section provides the TPS62095EVM-632 board layout and illustrations. The Gerber files are available on the EVM product page: TPS62095EVM-632.

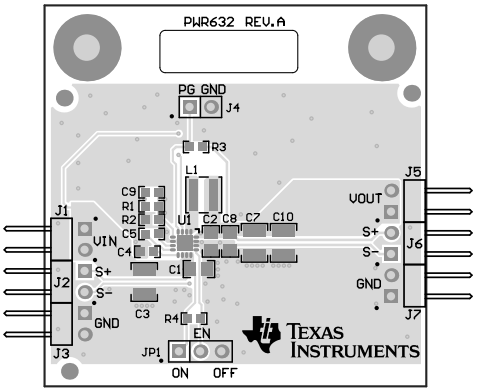

Figure 1. Assembly Layer

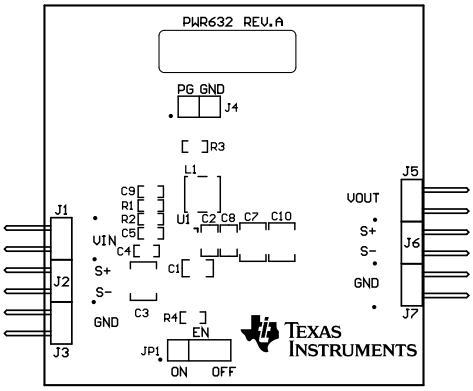

Figure 2. Top Silk Layer

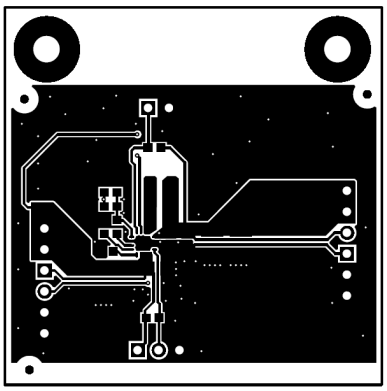

Figure 3. Top Layer

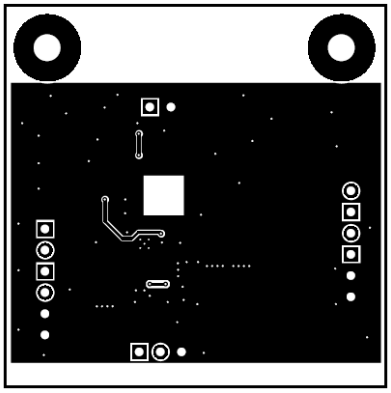

Figure 4. Bottom Layer

5 Schematic and Bill of Materials

This section provides the TPS62095EVM-632 schematic and bill of materials.

5.1 Schematic

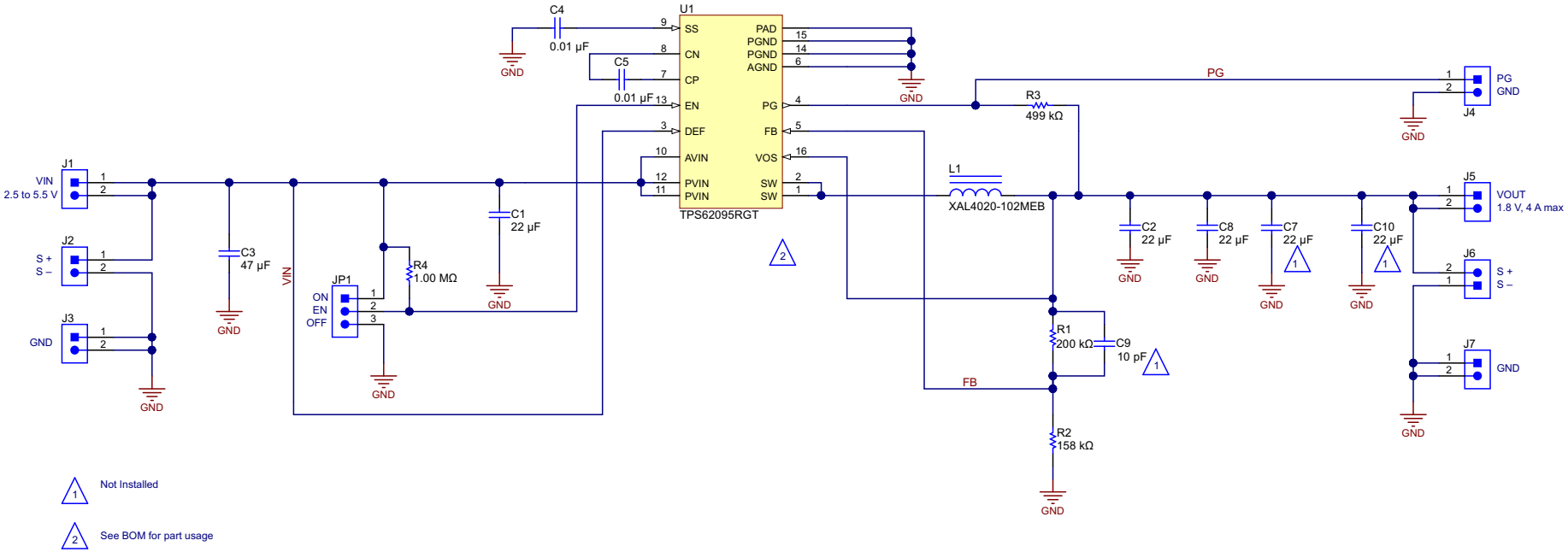

Figure 5. TPS62095EVM-632 Schematic

5.2 Bill of Materials

The TPS62095EVM-632 may be populated with TPS62095 (U1) devices that do not contain the correct top-side markings on the top of the device itself. These devices are still fully tested TPS62095 devices and meet the specified electrical characteristics of the data sheet.

Table 2. TPS62095EVM-632 Bill of Materials

Count	RefDes	Value	Description	Size	Part Number	Manufacturer
2	C1, C2	22 µF	Capacitor, Ceramic Chip, 16 V, X5R, ±20%	0805	GRM21BR61C226ME44	Murata
1	C3	47 µF	Capacitor, Ceramic Chip, 16 V, X5R, ±20%	1210	GRM32ER61C476ME15L	Murata
1	C4, C5	0.01 µF	Capacitor, Ceramic Chip, 50 V, X5R, ±10%	0603	GRM188R61H103KA01D	Murata
1	L1	1 µH	Inductor, Shielded Power, 8.7 A	4 mm × 4 mm	XAL4020-102MEB	Coilcraft
1	R1	200 kΩ	Resistor, Chip, 1/16 W, 1%	0603	Std	Std
1	R2	158 kΩ	Resistor, Chip, 1/16 W, 1%	0603	Std	Std
1	R3	499 kΩ	Resistor, Chip, 1/16 W, 1%	0603	Std	Std
1	R4	1.0 MΩ	Resistor, Chip, 1/16 W, 1%	0603	Std	Std
1	U1	TPS62095	IC, 4-A High Efficiency Step Down Converter	3 mm × 3 mm	TPS62095RGT	TI

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- *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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Concernant les EVMs avec antennes détachables

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