TLV62084EVM-828 and TLV62084AEVM-828 Evaluation Modules

This user's guide describes the characteristics, operation, and use of TI's TLV62084 and TLV62084A evaluation modules (EVM). These EVMs are designed to help the user easily evaluate and test the operation and functionality of the TLV62084 and TLV62084A 2-A, buck converter. The EVM converts a 2.7-V to 6-V input voltage to a regulated 1.2-V output voltage that delivers up to 2 A. This user's guide includes setup instructions for the hardware, a printed-circuit board (PCB) layout, a schematic diagram, a bill of materials (BOM), and test results for the EVM.

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1 Introduction

The TLV62084 is a 2-A, synchronous, step-down converter in a 2-mm × 2-mm, 8-pin WSON package with *Power Good Logic Level High* impedance for EN = Low.

The TLV62084A is a 2-A, synchronous, step-down converter in a 2-mm × 2-mm, 8-pin WSON package with *Power Good Logic Level Low* impedance for EN = Low.

1.1 Background

The TLV62084EVM-828 uses the TLV62084 step-down converter and it is set to 1.2-V output. The EVM operates with full-rated performance with an input voltage between 2.7 V and 6 V.

The TLV62084AEVM-828 uses the TLV62084A step-down converter and it is set to 1.2-V output. The EVM operates with full-rated performance with an input voltage between 2.7 V and 6 V.

1.2 Performance Specification

Table 1 provides a summary of the TLV62084AEVM-828 performance specifications. All specifications are given for an ambient temperature of 25°C.

Table 1. Performance Specification Summary

Specification	Test Conditions	MIN	TYP	MAX	Unit
Input voltage		2.7		6	V
Output voltage			1.2		V
Output current		0		2	A

1.3 Modifications

The printed-circuit board (PCB) for this EVM is designed to accommodate additional output capacitors C4 and C5.

1.3.1 Input and Output Capacitors

C4 and C5 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. The total output capacitance must remain within the recommended range in the TLV62084, TLV62084A data sheet (SLVSAK9) for proper operation.

1.3.2 Adjustable-Output IC U1 Operation

U1 is configured for evaluation of the adjustable-output version. This unit is set to 1.2 V. Resistors R1 and R2 can be used to set the output voltage between 0.4 V and 4.0 V. See the data sheet for the recommended values.

2 Setup

This section describes how to properly use the TLV62084EVM-828 and TLV62084AEVM-828.

2.1 Connector Descriptions

J1 – VIN	Positive input voltage connection from the input supply for the EVM
J2, – S+/S–	Input voltage sense connections. Measure the input voltage at this point.
J3, – GND	Input return connection from the input supply for the EVM
J4, – VOUT	Positive output voltage connection
J5, – S+/S–	Output voltage sense connections. Measure the output voltage at this point.
J6, – GND	Output return connection
JP1 – EN	EN pin 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.
JP2 – EXT	EXT pin jumper. Place the supplied jumper across EXT and VOUT to reference the PG signal to VOUT. Place the supplied jumper across EXT and VIN to reference the PG signal to VIN
J7 – PG/GND	The PG output appears on pin 1 of this header with a convenient ground on pin 2.

2.2 EVM Setup

To operate the EVM, set jumpers JP1 and JP2 to the desired positions per Section 2.1. Connect the input supply to J1 and J3 and connect the load to J4 and J6.

3 Board Layout

This section provides the TLV62084xEVM-828 board layout and illustrations. The Gerbers are available on the EVM product page: TLV62084EVM-828 and TLV62084AEVM-828.

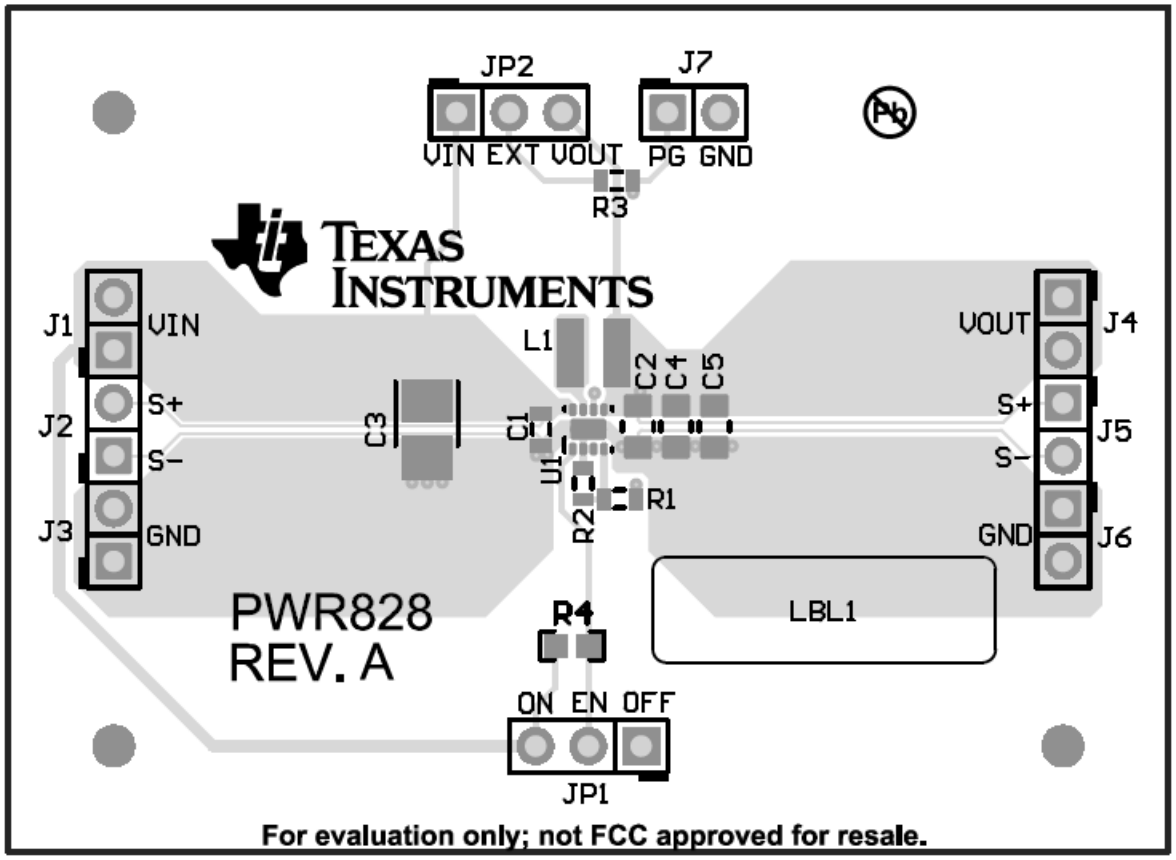

Figure 1. Assembly Layer

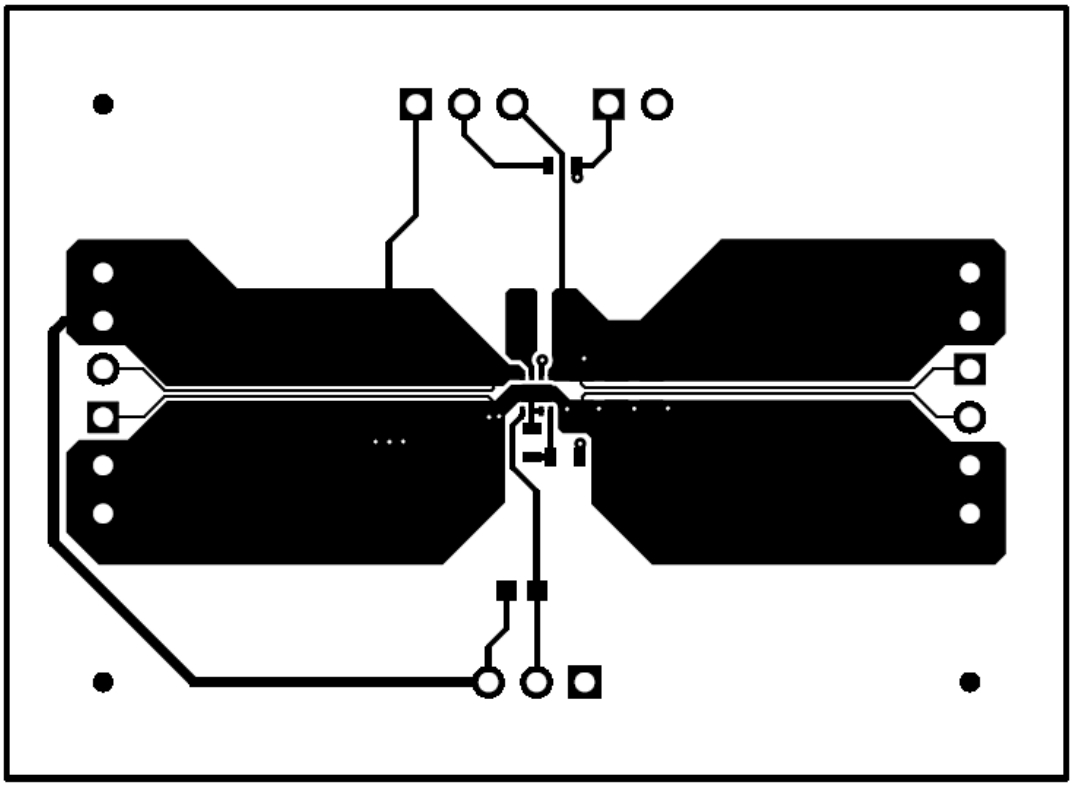

Figure 2. Top Layer

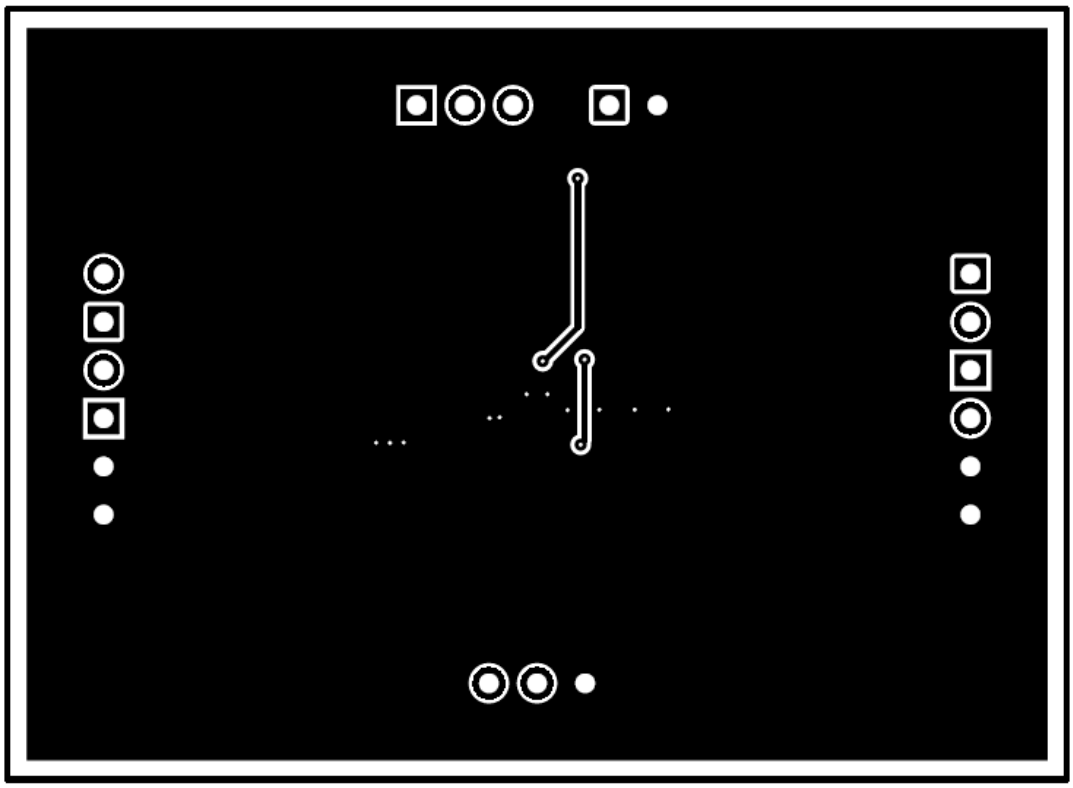

Figure 3. Bottom Layer

4 Schematic and Bill of Materials

This section provides the TLV62084xEVM-828 schematic and bill of materials.

4.1 Schematic

Figure 4 illustrates the TLV62084xEVM-828 schematic.

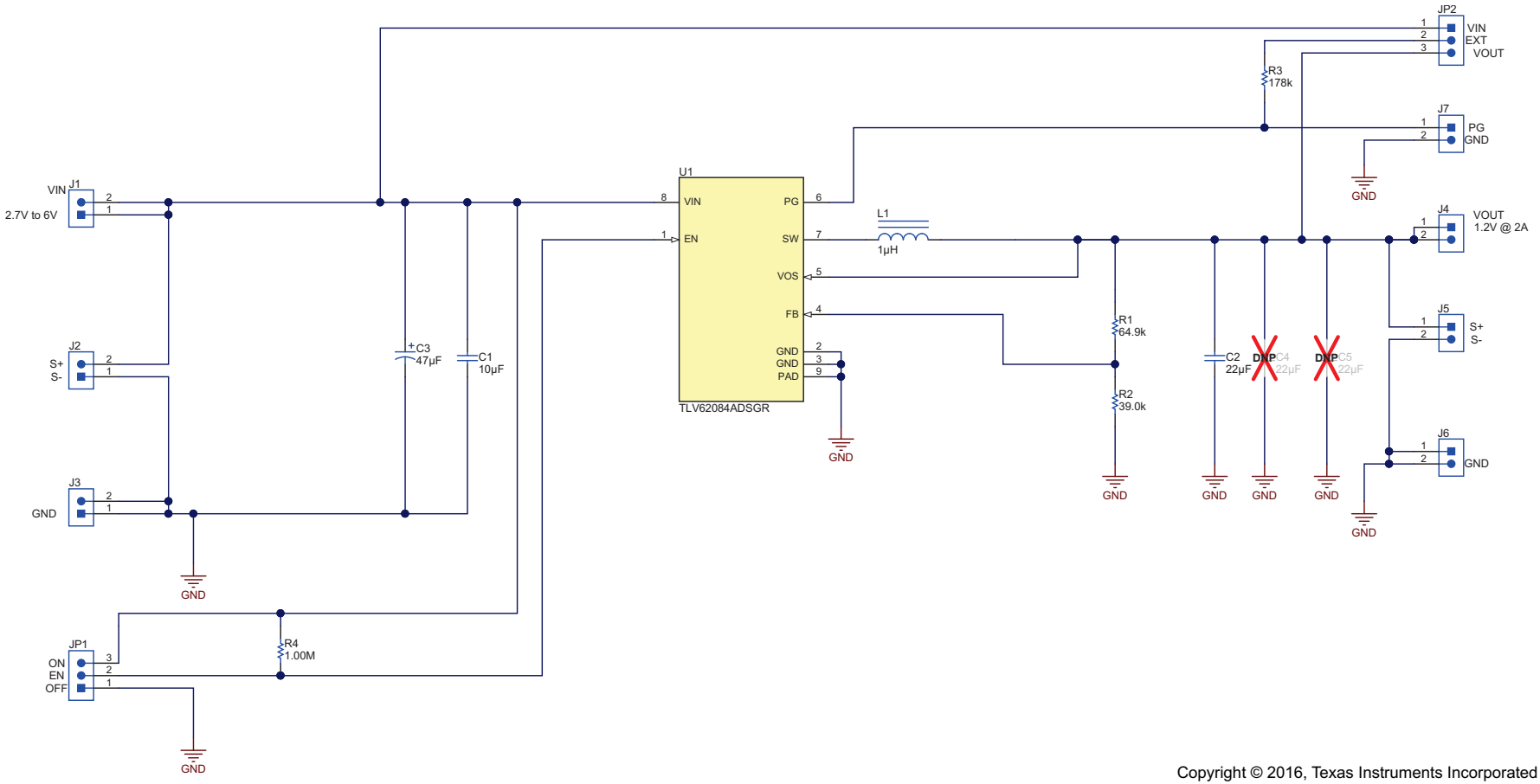

Figure 4. TLV62084xEVM-828 Schematic

4.2 Bill of Materials

Table 2 lists the TLV62084xEVM-828 BOM.

Table 2. TLV62084xEVM-828 Bill of Materials

Count		Ref Des	Value	Description	Size	Part Number	Manufacturer
-001	-002						
1	1	C1	10uF	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0603	0603	GRM188R61A106ME69D	Murata
1	1	C2	22uF	CAP, CERM, 22 µF, 6.3 V, +/- 20%, X5R, 0805	0805	GRM21BR60J226ME39L	Murata
1	1	C3	47uF	CAP, Tantalum Polymer, 47 µF, 8 V, +/- 20%, 0.035 ohm, 3528-21 SMD	3528-21	T520B476M008ATE035	Kemet
1	1	L1	1uH	Inductor, Shielded, Composite, 1 µH, 2.5 A, 0.04 ohm, SMD	3x1.2x3mm	XFL3012-102MEB	Coilcraft
1	1	R1	64.9k	RES, 64.9 k, 1%, 0.1 W, 0603	0603	Std	Std
1	1	R2	39.0k	RES, 39.0 k, 1%, 0.1 W, 0603	0603	Std	Std
1	1	R3	178k	RES, 178 k, 1%, 0.1 W, 0603	0603	Std	Std
1	1	R4	1.00Meg	RES, 1.00 M, 1%, 0.1 W, 0603	0603	Std	Std
1	0	U1	TLV62084ADSGR	2-A High-Efficient Step Down Converter in 2× 2mm SON Package	2× 2mm	TLV62084ADSGR	TI
0	1	U1	TLV62084DSGR	2-A High-Efficient Step Down Converter in 2× 2mm SON Package	2× 2mm	TLV62084DSGR	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.*

3.2 *Canada*

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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http://www.tij.co.jp/lsds/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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