

## **TLV62568PEVM-884 and TLV62569PEVM-884 Evaluation Modules**

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This user's guide describes the characteristics, operation, and use of TI's TLV62568P and TLV62569P evaluation modules (EVM). These EVMs are designed to help the user easily evaluate and test the operation and functionality of the TLV62568P (1-A) and TLV62569P (2-A) buck converters. The EVMs convert a 2.5-V to 5.5-V input voltage to a regulated 1.8-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 of the EVM. Throughout this document, TLV6256xPEVM-884 is used as an abbreviation representing the TLV62568PEVM-884 (001) and TLV62569PEVM-884 (002) EVMs.

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### **Trademarks**

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## 1 Introduction

The TLV62568PDDC and TLV62569PDDC are synchronous step-down converters in 2.9-mm × 2.8-mm, 6-pin SOT-23 package. The TLV62568PEVM-884 (PWR884-001) uses the TLV62568PDDC integrated circuit (IC). The TLV62569PEVM-884 (PWR884-002) uses the TLV62569PDDC IC.

### 1.1 Performance Specification

[Table 1](#) provides a summary of the TLV6256xPEVM-884 performance specifications.

**Table 1. Performance Specification Summary**

Specification		Test Conditions	MIN	TYP	MAX	Unit
Input voltage			2.5		5.5	V
Output voltage setpoint				1.8		V
Output current	TLV62568PEVM-884		0		1	A
	TLV62569PEVM-884		0		2	A

## 1.2 Modifications

The printed-circuit board (PCB) for this EVM is designed to accommodate the adjustable voltage version of this IC. On the EVM, additional input and output capacitors can be added. Finally, a feedforward capacitor can be added.

### 1.2.1 Input and Output Capacitors

C4 is provided for an additional input capacitor. This capacitor is not required for proper operation but can be used to reduce the input voltage ripple.

C6, C7, and C8 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 output capacitance must remain within the recommended range in the TPS62568P ([SLVSD89](#)) and TPS62569P ([SLVSDG1](#)) data sheets for proper operation.

### 1.2.2 Feedforward Capacitor

C5 is provided for the installation of an optional feedforward capacitor. This capacitor is not required for proper operation but can be used to improve the load transient performance.

## 2 Setup

This section describes how to properly use the TLV6256xPEVM-884.

### 2.1 Connector Descriptions

<b>J1, Pin 1 and 2 – VIN</b>	Positive input voltage connection from the input supply for the EVM
<b>J1, Pin 3 and 4 – S+/S–</b>	Input voltage sense connections. Measure the input voltage at this point.
<b>J1, Pin 5 and 6 – GND</b>	Input return connection from the input supply for the EVM
<b>J2, Pin 1 and 2 – VOUT</b>	Positive output voltage connection
<b>J2, Pin 3 and 4 – S+/S–</b>	Output voltage sense connections. Measure the output voltage at this point.
<b>J2, Pin 5 and 6 – GND</b>	Output return connection
<b>JP1 – EN</b>	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.
<b>JP2 – PG Pullup Voltage</b>	PG pin pullup voltage jumper. Place the supplied jumper on JP2 to connect the PG pin pullup resistor to the output voltage. Alternatively, the jumper can be removed and a different voltage can be supplied on pin 1 to pull up the PG pin to a different level. This externally-applied voltage must remain below 5.5 V.
<b>J3 – PG</b>	The PG output appears on pin 1 of this header with a convenient ground on pin 2.

### 2.2 Hardware Setup

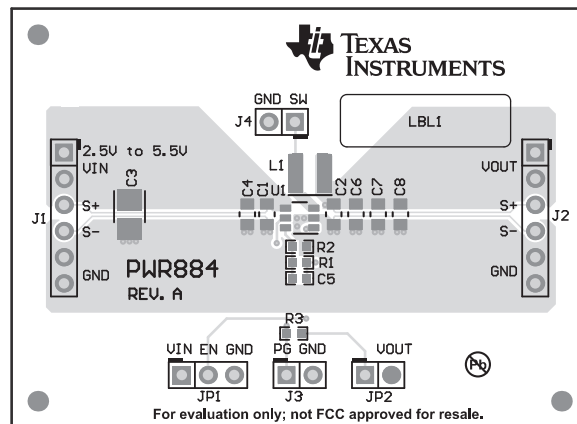
To operate the EVM, set jumpers JP1 to the desired positions per [Section 2.1](#). Connect the input supply to J1, and connect the load to J2.

## 3 TLV6256xPEVM-884 Test Results

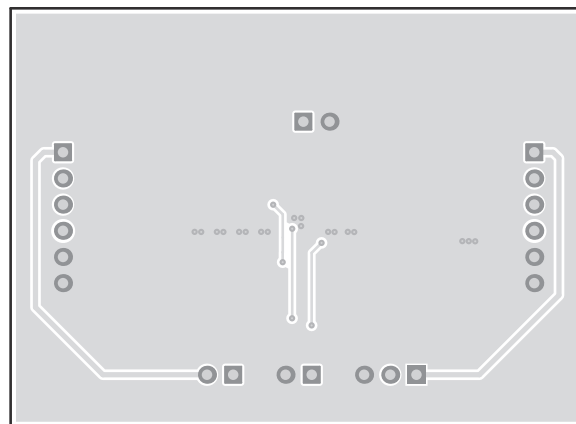
The TLV6256xPEVM-884 was used to take the data in the TLV62568P and TLV62569P data sheet. See the device data sheet for the performance of this EVM.

## 4 Board Layout

This section provides the TLV6256xPEVM-884 board layout and illustrations. The Gerbers are available on the EVM product pages: [TLV62568PEVM-884](#) and [TLV62569PEVM-884](#).



**Figure 1. Top Layer**



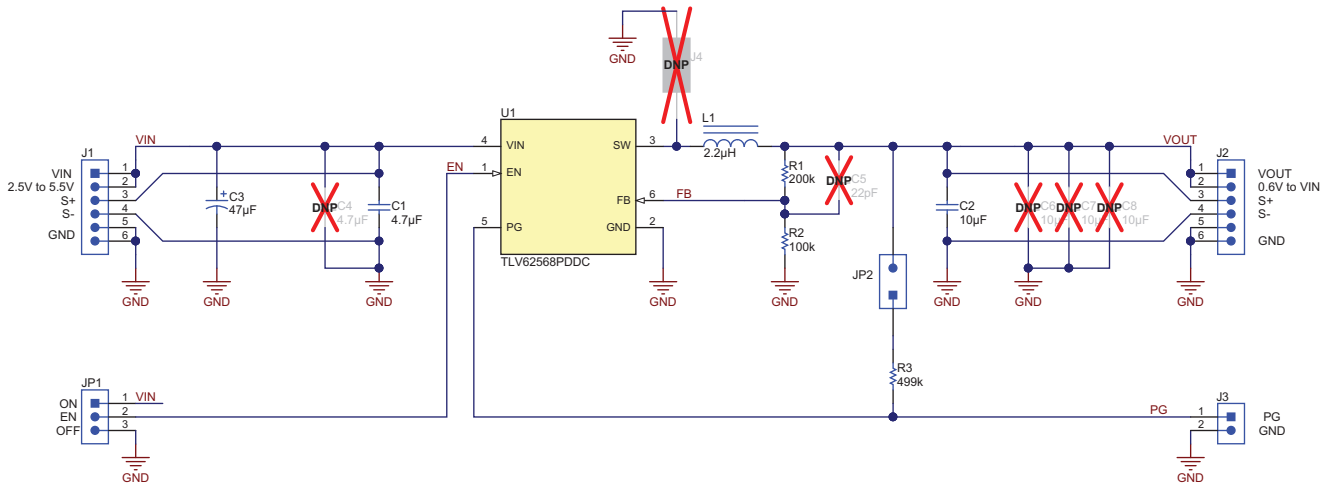
**Figure 2. Bottom Layer**

## 5 Schematic and Bill of Materials

This section provides the TLV6256xPEVM-884 schematic and bill of materials.

### 5.1 Schematic

Figure 3 illustrates the EVM schematic.



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**Figure 3. TLV6256xPEVM-884 Schematic**

### 5.2 Bill of Materials

Table 2 lists the BOM for this EVM.

**Table 2. TLV6256xEVM-884 Bill of Materials**

Qty		Ref Des	Value	Description	Size	Part Number	Manufacturer
TLV62568PEVM-884	TLV62569PEVM-884						
1	1	C1	4.7uF	Capacitor, Ceramic, 10V, X7R, +/- 10%	0805	GRM21BR71A475KA73L	Murata
1	1	C2	10uF	Capacitor, Ceramic, 10V, X7R, +/- 10%	0805	GRM21BR71A106KE51L	Murata
1	1	C8	47uF	Capacitor, Tantalum, 6.3V, +/- 20%	3528-21	T520B476M006ATE025	Kemet
1	0	L1	2.2uH	Inductor, Shielded, 2.8 A, 0.045 ohm	4x4mm	SDER041H-2R2MS	Cyntec
0	1	L1	2.2uH	Inductor, Shielded, 5.5 A, 0.04 ohm	4x4mm	XAL4020-222MEB	Coilcraft
1	1	R1	200k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
1	1	R2	100k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
1	1	R3	499k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
1	0	U1	TLV62568 P	IC, 5.5V 1A Step-Down Converter	2.9x2.8mm	TLV62568PDDC	TI
0	1	U1	TLV62569 P	IC, 5.5V 2A Step-Down Converter	2.9x2.8mm	TLV62569PDDC	TI

## Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (Month Year) to A Revision	Page
• This user's guide was changed globally from supporting the TLV62568EVM-884 and TLV62569EVM-884 to support for the TLV62568PEVM-884 and TLV62569PEVM-884. ....	1
• Deleted the <i>Thermal Data</i> table. ....	3
• Changed capacitors in the <i>Input and Output Capacitors</i> section. ....	3

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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.*

### **3.2 Canada**

3.2.1 *For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210 or RSS-247*

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This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

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Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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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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