# TPS82681xxEVM-589 Evaluation Module

The TPS82681xxEVM-589 facilitates the evaluation of the TPS8268xxx MicroSiP™ module family. There are two EVMs in this family: TPS8268105EVM-589 (PWR589-001) and TPS8268180EVM-589 (PWR589-002). PWR589-001 outputs a 1.05-V output voltage at up to 1.6 A of output current, while PWR589-002 outputs a 1.80-V output voltage at up to 1.6 A of output current. Both EVMs operate from input voltages between 2.5 V and 5.5 V

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## 1 Introduction

The TPS8268xxx are synchronous, step-down modules in a 2.3- x 2.9- x 1-mm package. All required passives are included.

### 1.1 Performance Specification

Table 1 provides a summary of the TPS82681xxEVM-589 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 Setpoint | TPS8268105EVM-589 | | 1.05 | | V |
| | TPS8268180EVM-589 | | 1.8 | | |
| Output Current | | 0 | | 1600 | mA |

MicroSiP is a trademark of Texas Instruments.

## 1.2 Modifications

The printed-circuit board (PCB) for this EVM is designed to accommodate some modifications by the user. Additional input and output capacitors can be added.

### 1.2.1 Input and Output Capacitors

C2 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.

C3, 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 data sheet for proper operation.

# 2 Setup

This section describes how to properly use the TPS82681xxEVM-589.

## 2.1 Input/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 – VOUT** | 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 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 J4 and J6.

# 3 TPS82681xxEVM-589 Test Results

The TPS82681xxEVM-589 was used to take all the data in the TPS82681xx data sheet (SLVSBR0). See the device data sheet for the performance of this EVM.

## 4 Board Layout

This section provides the TPS82681xxEVM-589 board layout and illustrations in Figure 2 through Figure 4. The Gerbers are available on the EVM product page: TPS8268105EVM-589.

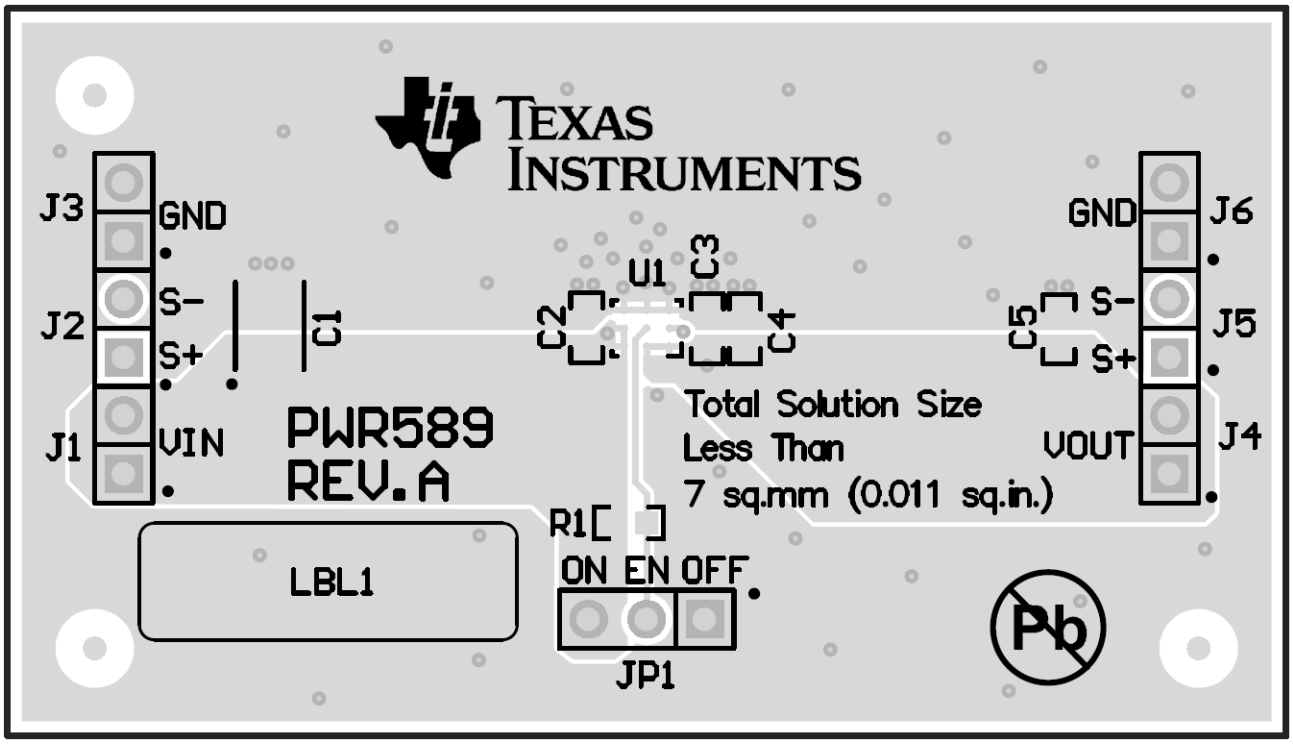


**Figure 1. Top Assembly**

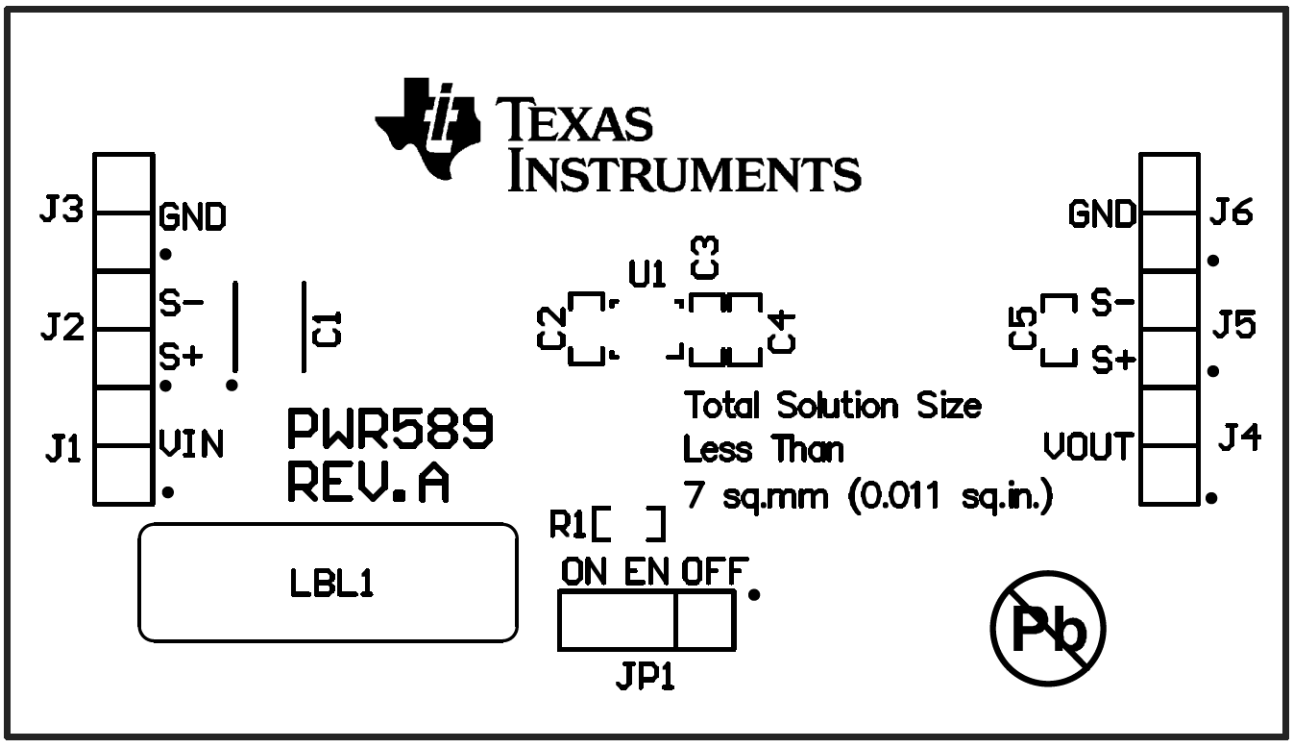


**Figure 2. Top Silkscreen Layer**

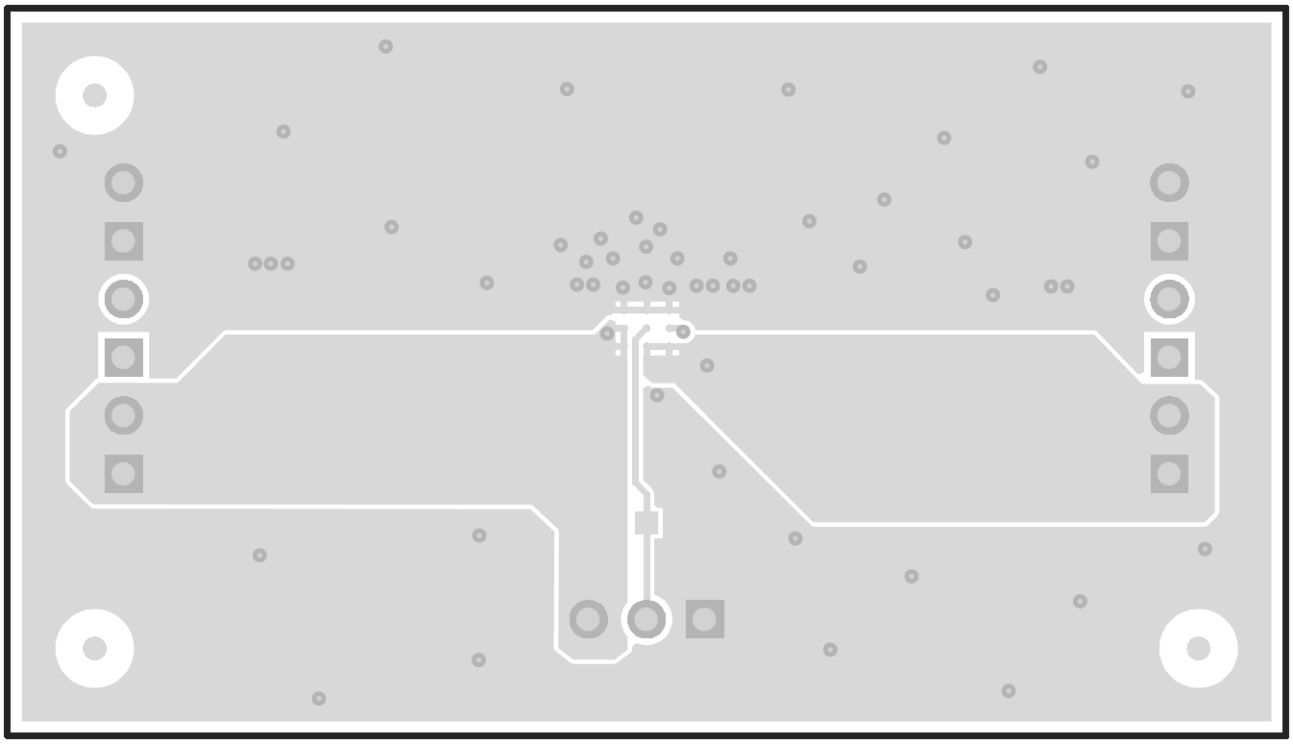

**Figure 3. Top Copper Layer**

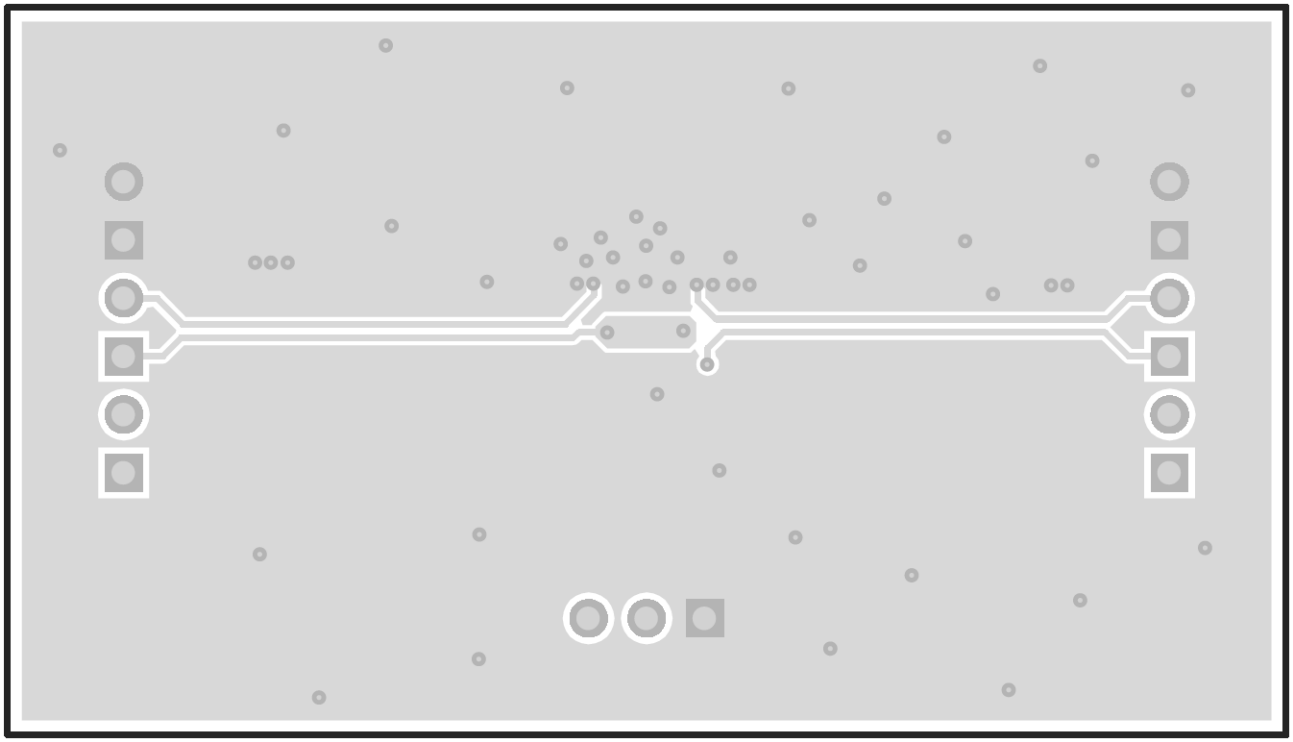

**Figure 4. Bottom Copper Layer**

# 5 Schematic and Bill of Materials

This section provides the TPS82681xxEVM-589 schematic and bill of materials (BOM).

## 5.1 Schematic

Figure 5 illustrates the EVM schematic.

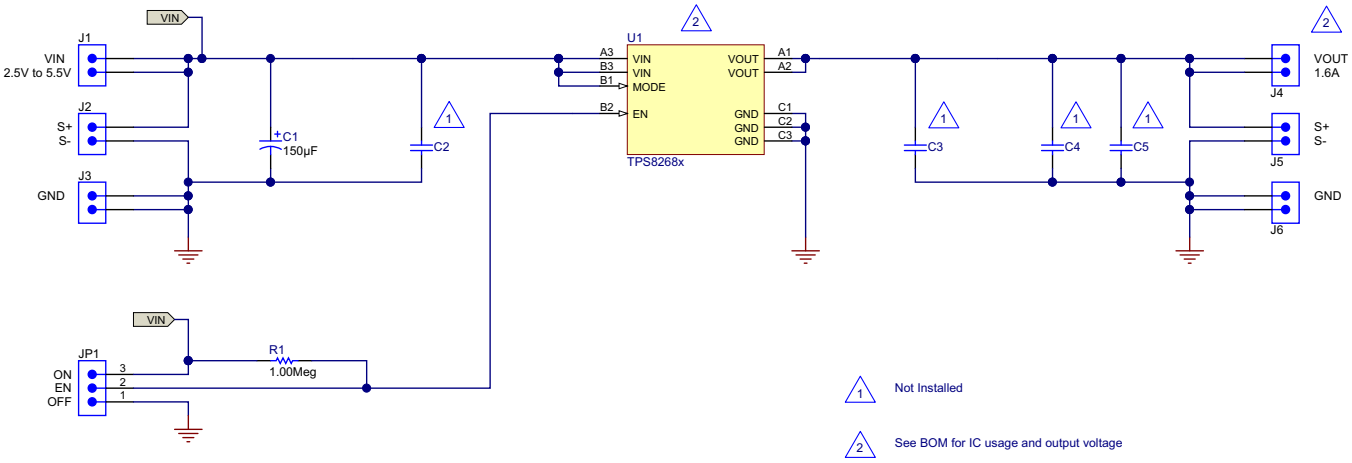


**Figure 5. TPS82681xxEVM-589 Schematic**

## 5.2 Bill of Materials

Table 2 lists the BOM for this EVM.

**Table 2. TPS82681xxEVM-589 Bill of Materials**

| Count | | RefDes | Value | Description | Size | Part Number | MFR |
|---|---|---|---|---|---|---|---|
| PWR589-001 | PWR589-002 | | | | | | |
| 1 | 1 | C1 | 150µF | Capacitor, Tantalum, 6.3V, 25 mΩ, 20% | 3528 | T520B157M006ATE025 | Kemet |
| 1 | 1 | R1 | 1MΩ | Resistor, 1%, 0.1W | 0603 | Std | Std |
| 1 | 0 | U1 | TPS8268105 | IC, 1600-mA High-Efficiency MicroSiP™ Step-Down Converter Module | 2.3 mm x 2.9 mm | TPS8268105SIP | TI |
| 0 | 1 | U1 | TPS8268180 | IC, 1600-mA High-Efficiency MicroSiP™ Step-Down Converter Module | 2.3 mm x 2.9 mm | TPS8268180SIP | TI |

## Revision History

**Changes from Original (October 2014) to A Revision** **Page**

- Added the TPS8268180 globally where needed. Tool names (TPS8268105EVM-589 and TPS8268180EVM-589) are combined to TPS82681xxEVM-589. ..... 1
- Deleted *Thermal Performance (VIN = 5 V, IOUT = 1200 mA)* image. ..... 2
- Added TPS8268180 to BOM. ..... 5

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

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