

## **TPS2559EVM-624 Evaluation Module**

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This user's guide describes the TPS2559 evaluation module (TPS2559EVM-624). TPS2559EVM-624 contains evaluation and reference circuitry for the TPS2559. The TPS2559 device is a precision-adjustable current-limited power distribution switch intended for applications where heavy capacitive loads and short circuits are likely to be encountered.

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## 1 Introduction

The TPS2559EVM-624 evaluation module (EVM) is a fully assembled and tested circuit for evaluating the TPS2559 precision-adjustable current-limited power distribution switch. The EVM contains header connectors for easy connection to the external test and application circuitry.

## 2 Description

The PCB top-side accepts a power-distribution switch in a VSON-10 (DRC) package with a thermal pad. These switches have an enable input, an overcurrent status output, and overtemperature shutdown.

TPS2559EVM-624 is enabled active high.

### 2.1 Jumpers

**Table 1. Jumpers**

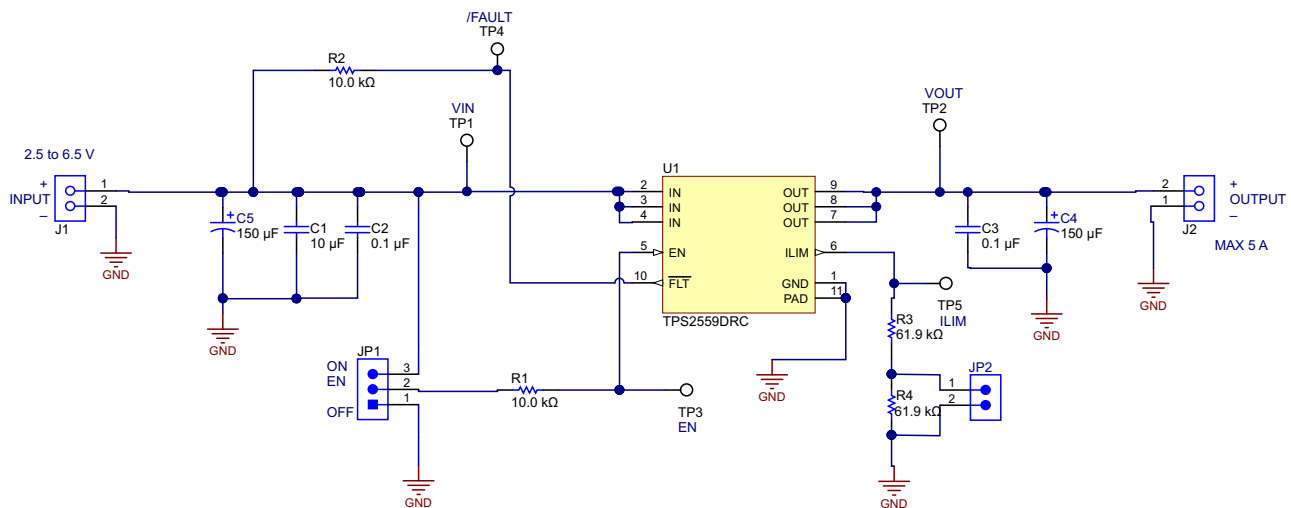
Jumpers	Description
JP1	Shorting pins 2 and 3 enables the TPS2559 Shorting pin 2 and 1 disables the TPS2559
JP2	Shorting JP2 current limits TPS2559 to 1.8 A Open JP2 for reduced current limit capability

### 2.2 Test Points

**Table 2. Test Points**

Test Point	Pin
TP1	VIN
TP2	VOUT
TP3	EN
TP4	/FAULT
TP5	ILIM

## 3 Schematic



**Figure 1. TPS2559EVM-624 Schematic**

## 4 Getting Started

- Connect the positive and negative terminal of the power supply to pin 1 and pin 2 of J1.
- Place a jumper on pins 1 and 2 of JP1 (EN and OFF).
- Place a jumper on JP2.
- Place a probe and current probe as shown:
  - Channel 1: TP1 (VIN) – DC, 5 V/div
  - Channel 2: TP2 (VOUT) – DC, 2 V/div
  - Channel 3: TP4 (/FAULT) – DC, 2 V/div
  - Channel 4: Input current – DC 1 A/div

Time scale is 5 ms/div.

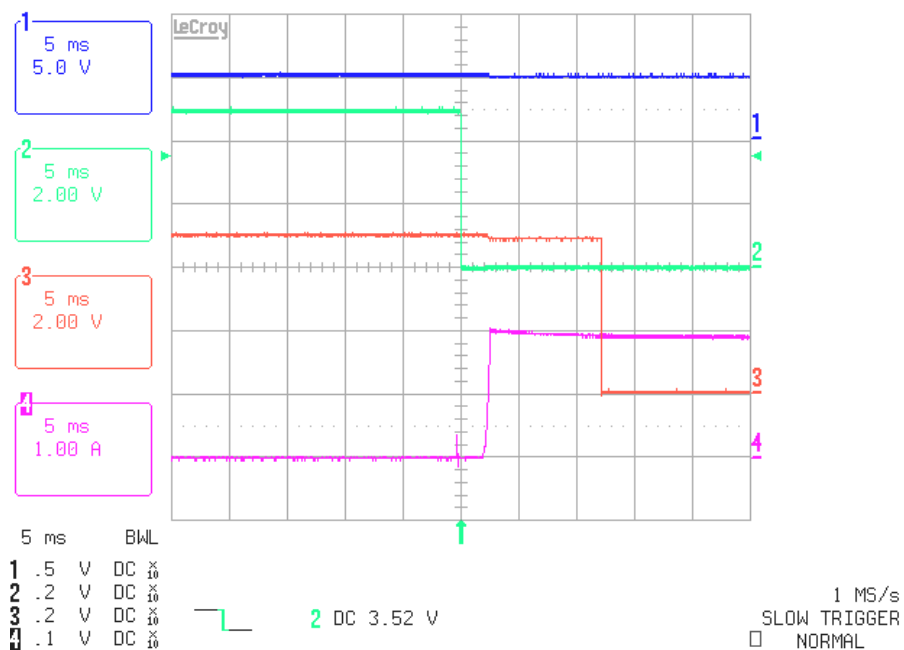
### 4.1 Monitor

- Turn on the power supply.
- There should be no output voltage.
- Move the jumper on JP1 to pins 2 and 3 (ON and EN).
- Vin should pass through to the output.
- Set the scope for normal trigger, single sweep. Trigger on Channel 2, negative slope at 3.5 V.

### 4.2 Verify EVM Output

Momentarily short the output connector.

Observe the waveform as shown in [Figure 2](#).



**Figure 2. Channel 1(VIN), Channel 2 (VOUT), Channel 3 (/FLT), Channel 4 (IIN)**

Channel 4 reaches IOS current limit. Afterward, Channel 2 goes low and Channel 3 goes low after  $t_{\text{fault}}$  (/Fault deglitch).

## 5 EVM Assembly Drawing and PCB Layout

### 5.1 PCB Drawings

Figure 3 to Figure 5 show component placement and layout of the TPS2559EVM-624.

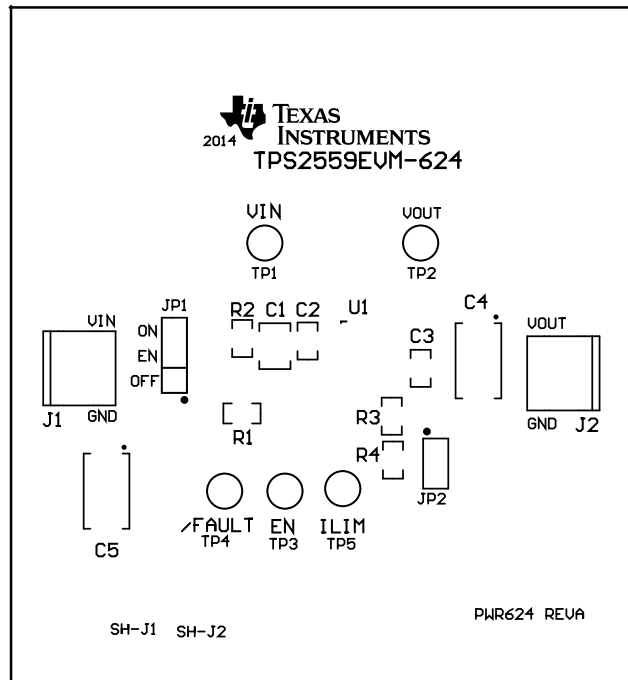


Figure 3. Top Side Component Placement

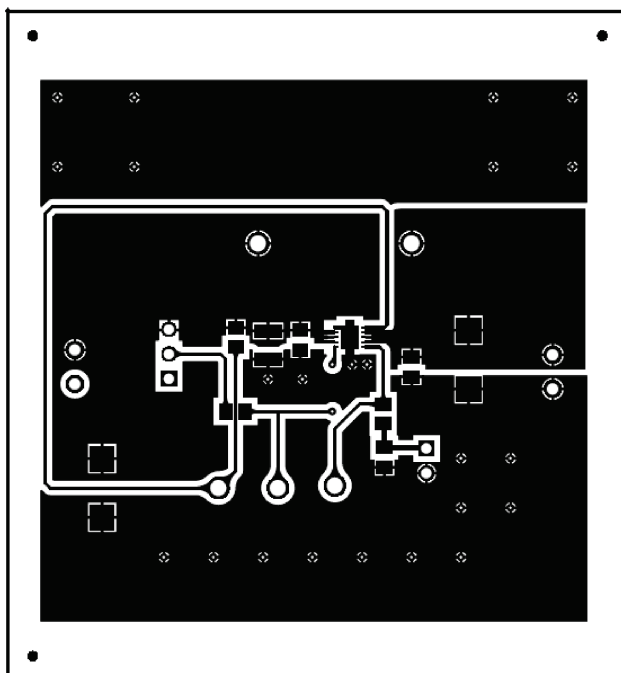


Figure 4. Top Side Routing

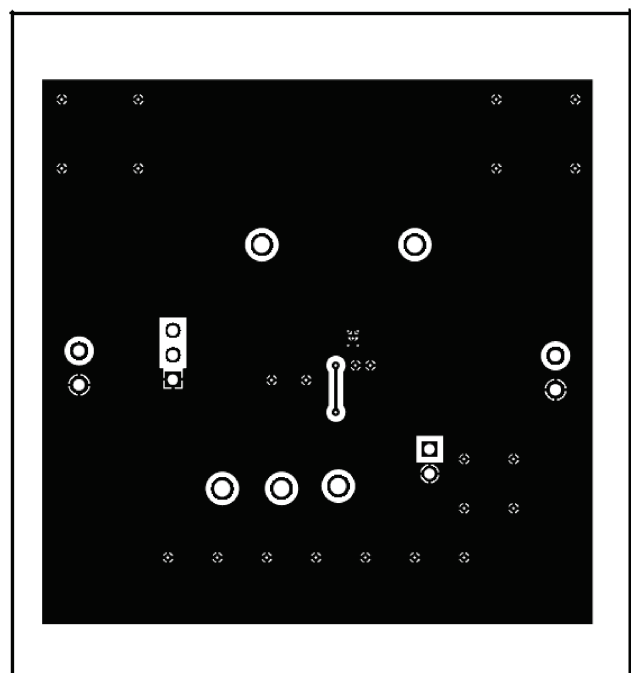


Figure 5. Bottom Side Routing

## 6 Bill of Materials

**Table 3. TPS2559EVM-624 BOM**

Designator	Description	Manufacturer	Part Number	Quantity
!PCB	Printed Circuit Board	Any	PWR624	1
C1	CAP, CERM, 10uF, 16V, ±10%, X5R, 1210	AVX	1210YD106KAT2A	1
C2, C3	CAP, CERM, 0.1uF, 25V, ±10%, X7R, 0805	AVX	08053C104KAT2A	2
C4, C5	CAP, TA, 150uF, 16V, ±10%, 0.15 ohm, SMD	Kemet	B45197A3157K409	2
FID1, FID2, FID3	Fiducial mark. There is nothing to buy or mount.	N/A	N/A	3
J1, J2	Conn Term Block, 2POS, 3.5mm, TH	Phoenix Contact	1751248	2
JP1	Header, 100mil, 3x1, Tin plated, TH	Sullins Connector Solutions	PEC03SAAN	1
JP2	Header, 100mil, 2x1, Tin plated, TH	Sullins Connector Solutions	PEC02SAAN	1
LBL1	Thermal Transfer Printable Labels, 0.650" W x 0.200" H - 10,000 per roll	Brady	THT-14-423-10	1
R1, R2	RES, 10.0k ohm, 1%, 0.125W, 0805	Vishay-Dale	CRCW080510K0FKEA	2
R3, R4	RES, 61.9k ohm, 1%, 0.125W, 0805	Vishay-Dale	CRCW080561K9FKEA	2
SH-J1, SH-J2	Shunt, 100mil, Gold plated, Black	3M	969102-0000-DA	2
TP1, TP2, TP3, TP4, TP5	Test Point, TH, Multipurpose, White	Keystone	5012	5
U1	Current-Limited, Power-Distribution Switches, DRC0010A	Texas Instruments	TPS2559DRC	1

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DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
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