User's Guide
SLUUB15–April 2014

TPS2559EVM-624 Evaluation Module

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

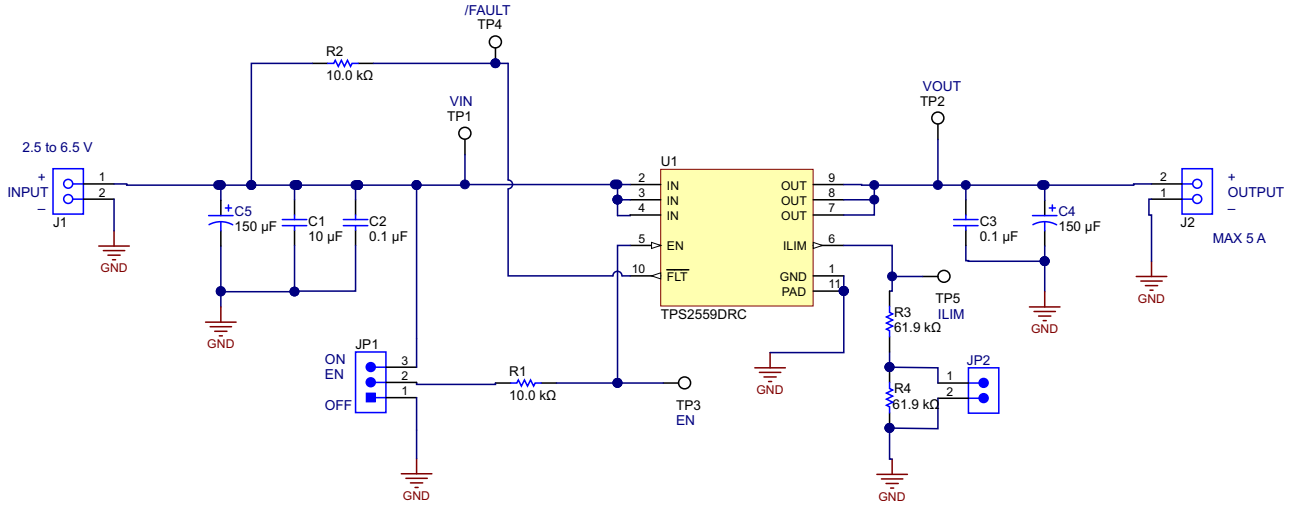

Figure 1. TPS2559EVM-624 Schematic

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.

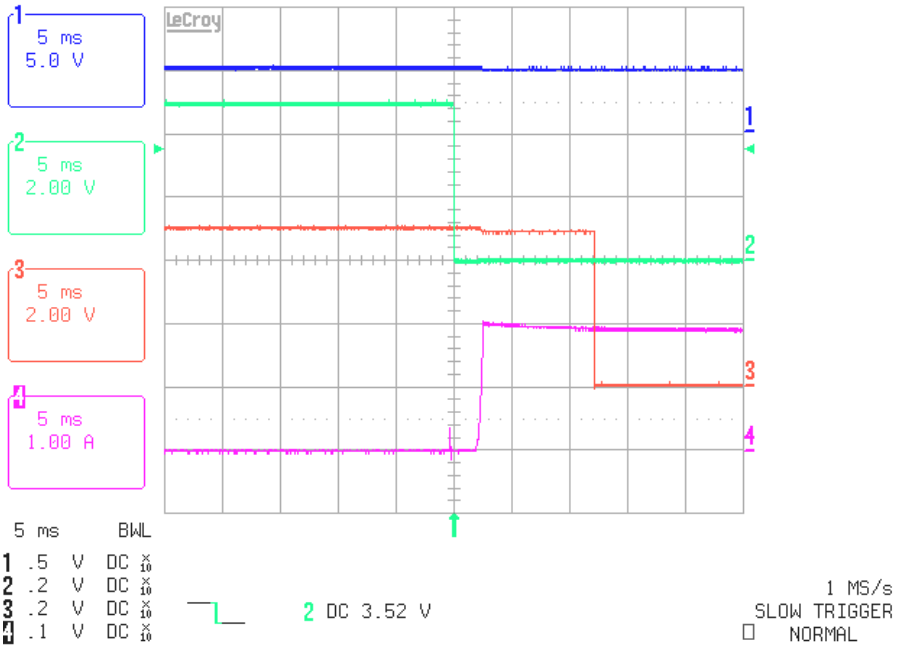

Figure 2. Channel 1(VIN), Channel 2 (VOUT), Channel 3 (/FLT), Channel 4 (IIN)

Channel 4 reaches IOS current limit. Afterward, Channel 2 goes low and Channel 3 goes low after t_{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.

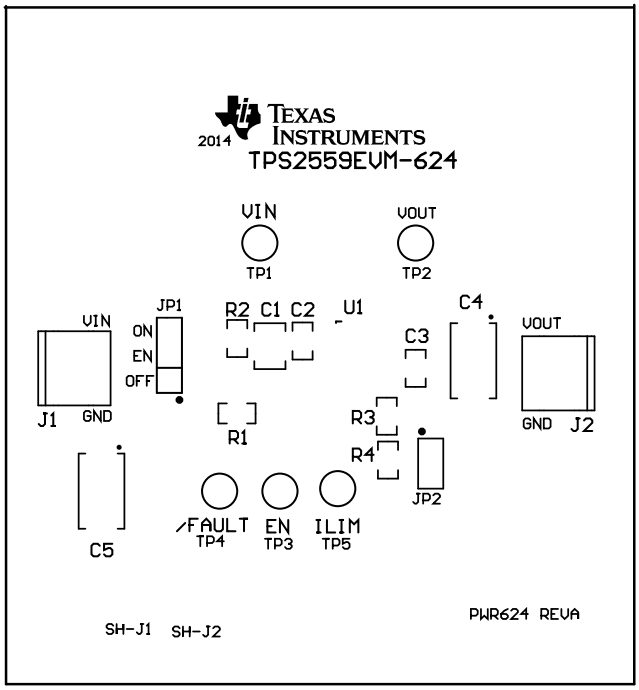

Figure 3. Top Side Component Placement

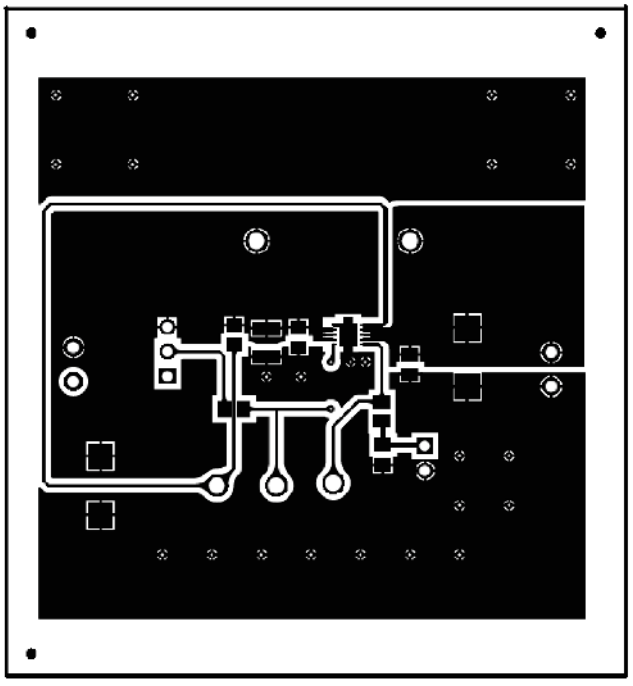

Figure 4. Top Side Routing

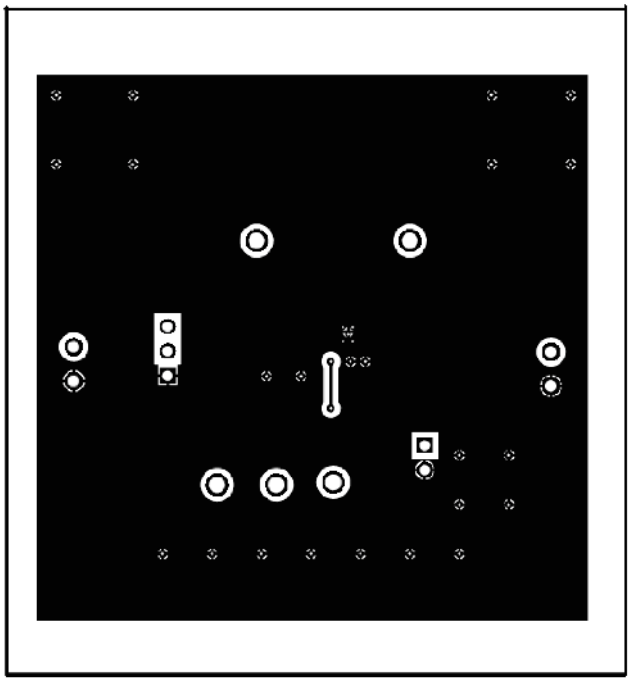

Figure 5. Bottom Side Routing

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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- *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.*
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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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