Using the LM2775EVM Evaluation Module

User's Guide



Literature Number: SNVU469A
May 2015–Revised June 2018

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LM2775EVM User's Guide

1 Introduction

The Texas Instruments LM2775EVM evaluation module (EVM) helps designers evaluate the operation and performance of the LM2775 switched capacitor 5-v boost converter. The device offers configurability via two logic pins allowing or disallowing PFM operation at light loads and active discharge during shutdown.

The EVM contains one LM2775 switched capacitor 5-V boost converter (See Table 1). For more details and electrical characteristics of this device, see the LM2775 device data sheet (SNVSA57).

Table 1. Device and Package Configurations

FLASH LED DRIVER	IC	PACKAGE
U1	LM2775	WSON

2 Setup

This section describes the jumpers and connectors on the EVM as well as how to properly connect, set up, and use the LM2775EVM.

2.1 Input/Output Connector Description

VIN / GND: These are the power input pins for the driver. The pins provide power (VIN) and ground (GND) connections to allow the user to attach the EVM to a cable harness.

EN (J1): This is the jumper used to enable the boost converter (EN pin). The driver will be enabled when the EN pin is high (+) and disabled when it is low (–).

PFM (J2): This jumper is used to enable and disable PFM mode. PFM mode will be allowed when the PFM pin is high (+) and disabled when it is low (–).

OUTDIS (J3): This jumper is used to discharge the output during shutdown. Active discharge is enabled when the OUTDIS pin is high (+) and disabled when it is low (–).

VOUT- This is the output pin for the LM2775EVM. Currents up to 200 mA can be drawn from this terminal when the input voltage is higher than 3.1 V and lower than 5.5 V.

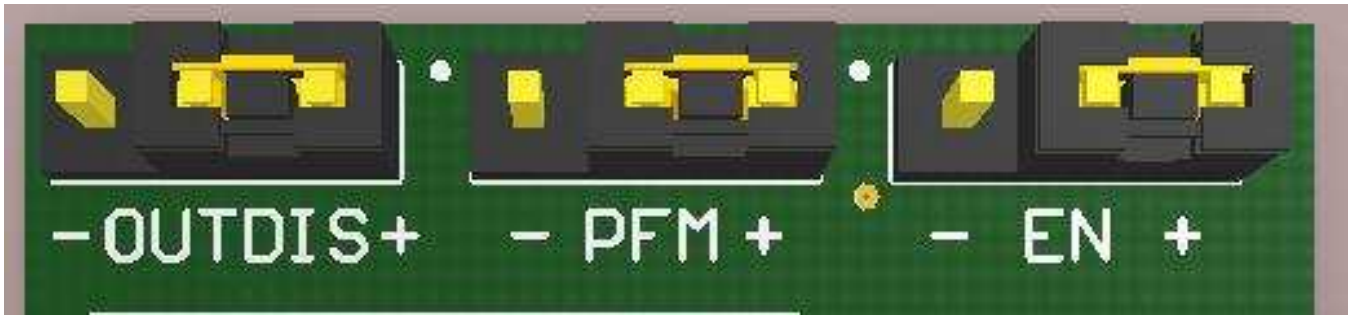


Figure 1. Enable Jumper Settings

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2.2 Setup

The input voltage range for the flash driver is 2.7 V to 5.5 V.

2.3 Operation

For proper operation of the LM2775EVM, the jumpers should be properly configured. The recommended setting, using shorting blocks is:

OUTDIS to +

PFM to +

EN to +

In this configuration, the device will power up when an input voltage is applied. Once running, current can be pulled from the VOUT connector. Test points are provided for voltage measuring when current is drawn from the LM2775EVM.

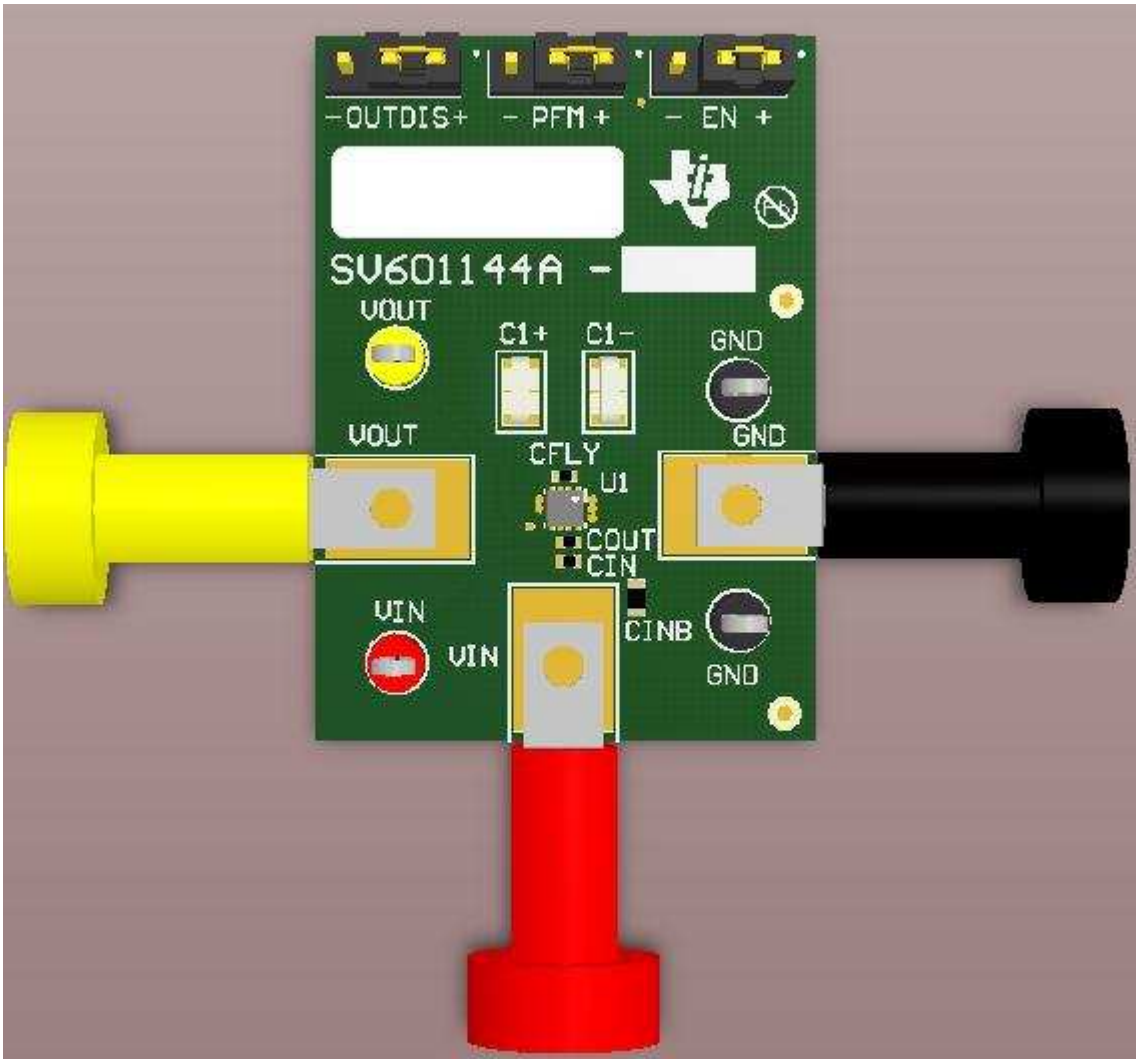


Figure 2. Jumper Configuration

3 Board Layout

Figure 3 and Figure 4 show the board layout for the LM2775EVM. The EVM offers capacitors and jumpers to enable the device and to configure it as desired.

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The LM2775 will dissipate power, especially during high current and high input voltage operation. The EVM layout is designed to minimize temperature rise during operation.

NOTE: High frequency switching noise at the output can be minimized by adding a 0.1-µF ceramic capacitor close to the output terminals (VOUT)

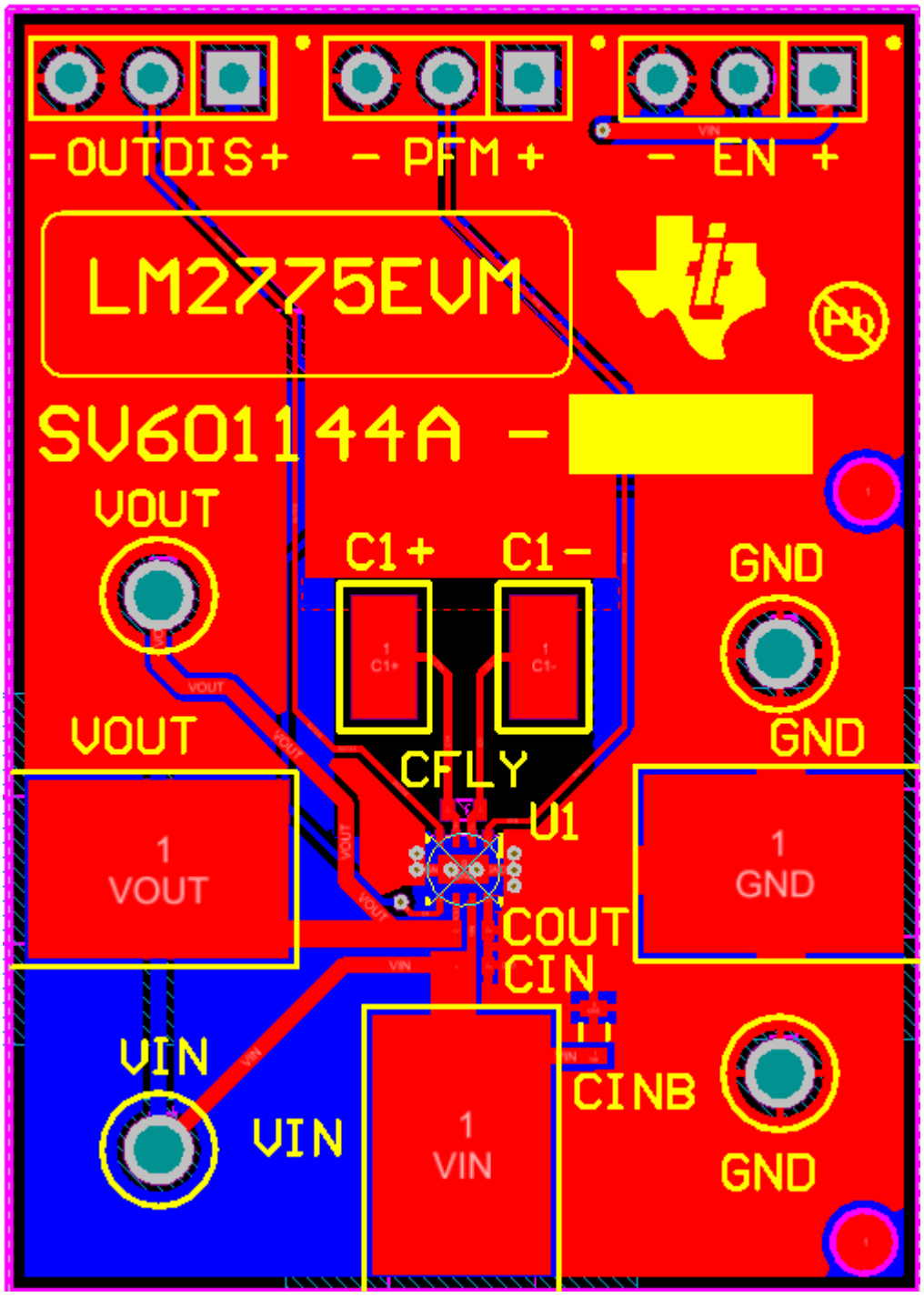


Figure 3. Top Assembly Layer

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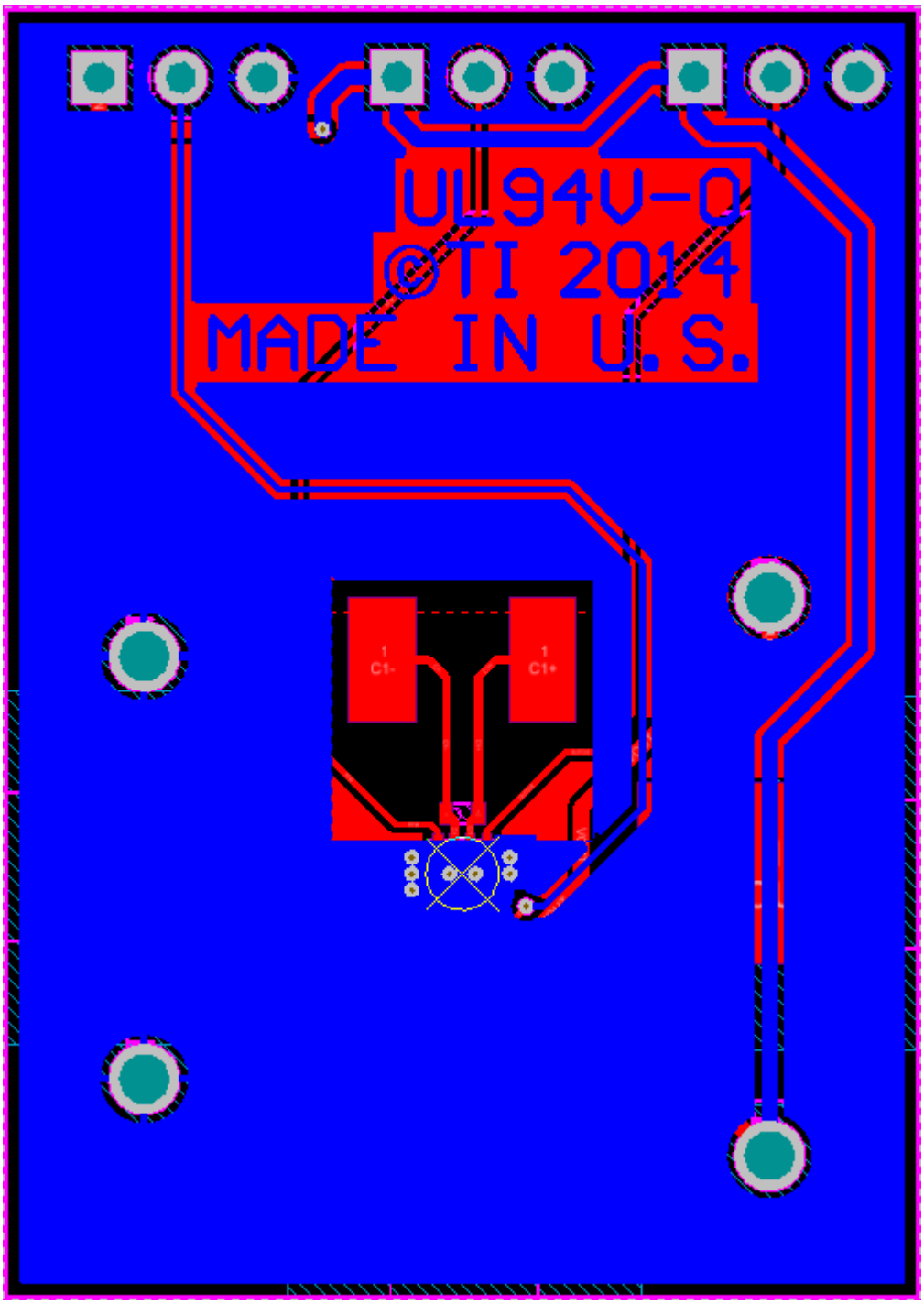


Figure 4. Bottom Assembly Layer (UNMIRRORED)

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4 Schematic

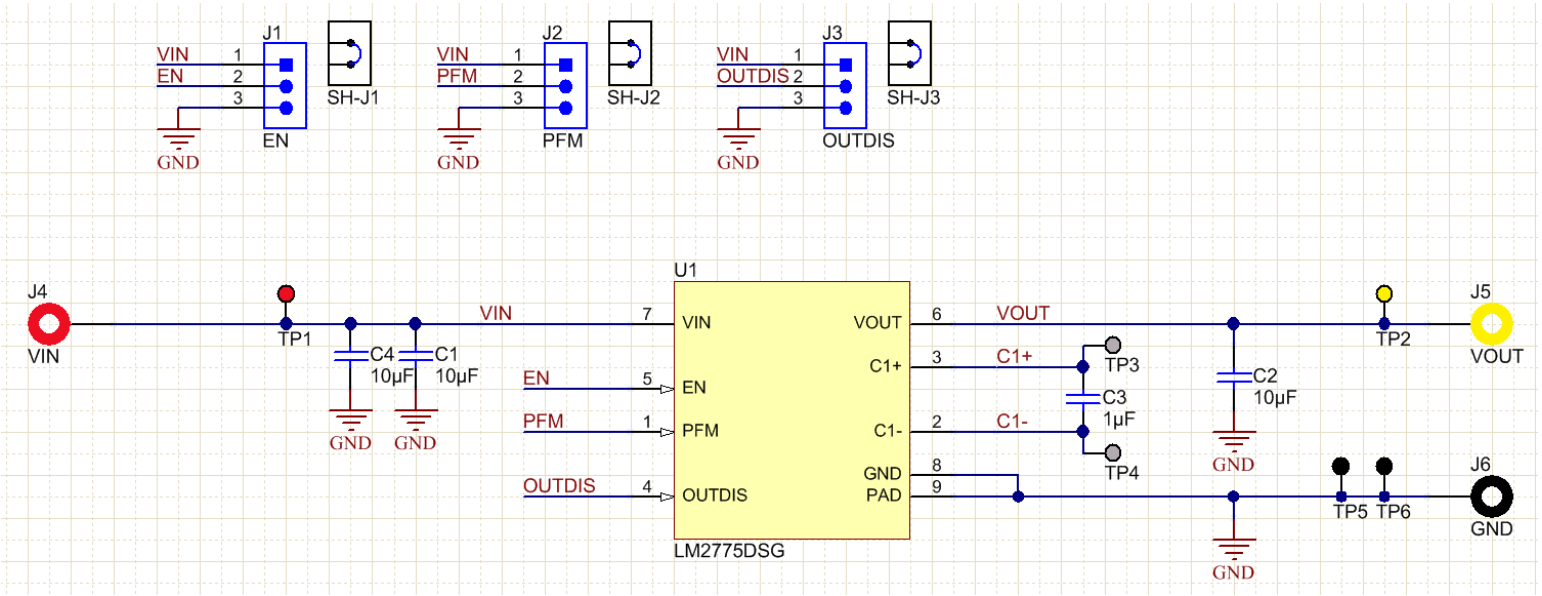


Figure 5. LM2775EVM Schematic

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5 Bill of Materials

DESIGNATOR	DESCRIPTION	MANUFACTURER	PART NUMBER	QUANTITY
U1	Switched Capacitor 5 V Boost Converter, DSG0008A	Texas Instruments	LM2775DSG	1
!PCB1	Printed Circuit Board	Any	SV601144	1
C1, C2	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0402	Samsung	CL05A106MP5NUNC	2
C3	CAP, CERM, 1 µF, 35 V, +/- 10%, JB, 0402	TDK	C1005JB1V105K050BC	1
C4	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0603	TDK	C1608X5R1A106M	1
J1, J2, J3	Header, 100mil, 3x1, Gold, TH	Samtec	TSW-103-07-G-S	3
J4	Standard Banana Jack, Insulated, Red	Keystone	6091	1
J5	BANANA JACK, 15A, Insulated, Nylon,Yellow	Emerson Network Power	108-0907-001	1
J6	Standard Banana Jack, Insulated, Black	Keystone	6092	1
SH-J1, SH-J2, SH-J3	Shunt, 100mil, Gold plated, Black	3M	969102-0000-DA	3
TP1	Test Point, Multipurpose, Red, TH	Keystone	5010	1
TP2	Test Point, Multipurpose, Yellow, TH	Keystone	5014	1
TP5, TP6	Test Point, Multipurpose, Black, TH	Keystone	5011	2

Revision History

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

Changes from Original (May 2015) to A Revision **Page**

- Added a note "High frequency switching noise at the output can be minimized by adding a 0.1-µF ceramic capacitor close to the output terminals" 6

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