Using the LM2776EVM Evaluation Module

User's Guide

Literature Number: SNVU475
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1 Introduction

The Texas Instruments LM2776EVM evaluation module (EVM) helps designers evaluate the operation and performance of the LM2776 Switched Capacitor Inverter.

The EVM contains one LM2776 switched capacitor unregulated inverter (See Table 1). For more details and electrical characteristics of this device, see the LM2776 device data sheet (SNVSA56).

Table 1. Device and Package Configurations

FLASH LED DRIVER	IC	PACKAGE
U1	LM2776	SOT23-6

2 Setup

This section describes the jumpers and connectors on the EVM as well as how to properly connect, set up, and use the LM2776EVM.

2.1 Input/Output Connector Description

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

EN - 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 (–).

VOUT- This is the output pin for the LM2776EVM. Currents up to 200 mA can be drawn from this terminal when the input voltage is higher than 2.7 V and lower than 5.5 V

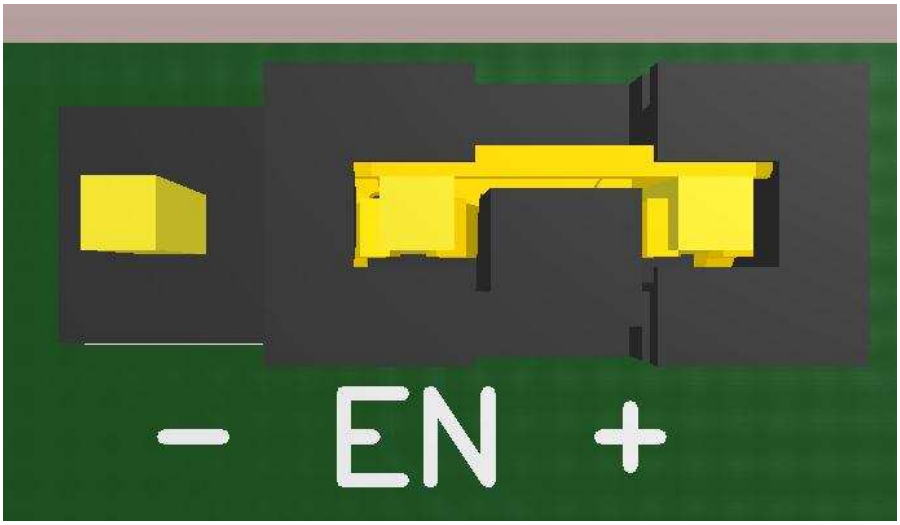

Figure 1. Enable Jumper Settings

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 LM2776EVM, the jumpers should be properly configured. The recommended setting, using shorting blocks is:

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 LM2776EVM.

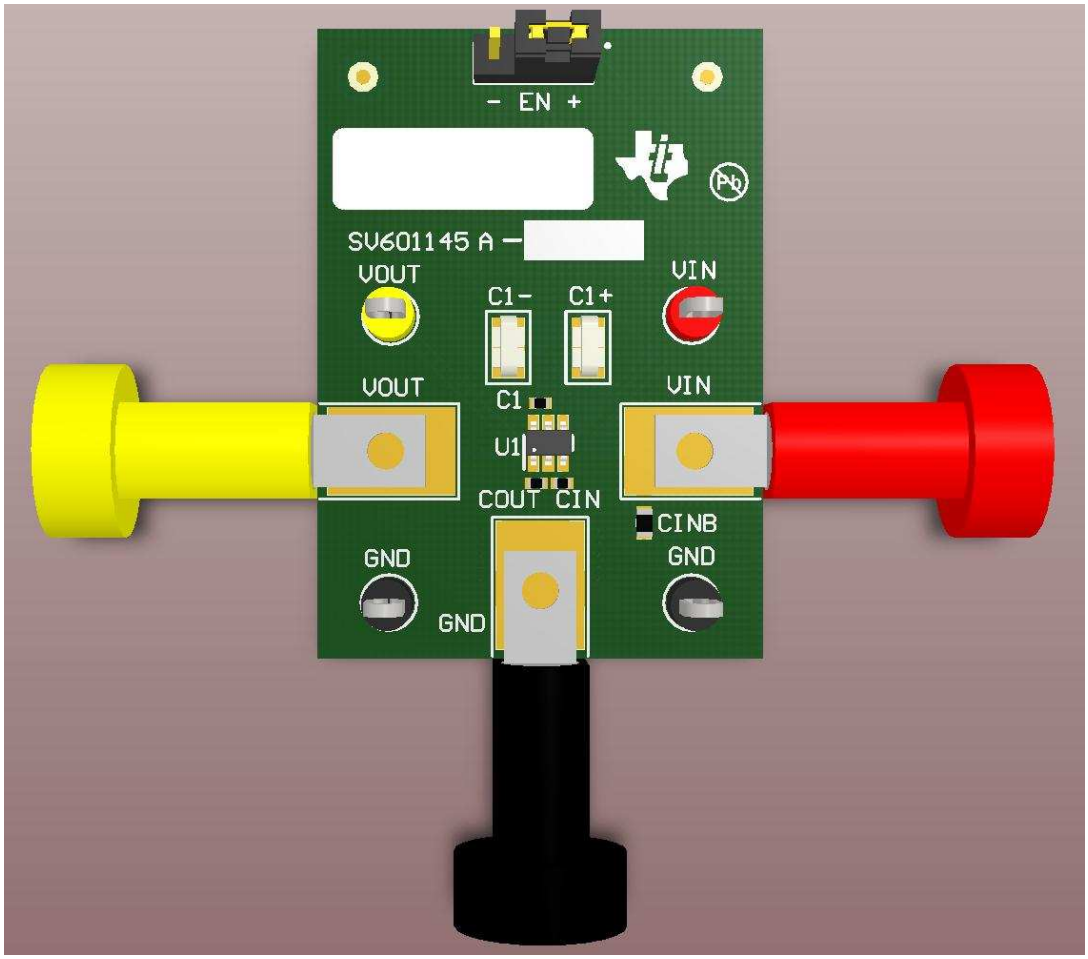

Figure 2. Jumper Configuration

3 Board Layout

Figure 3 and Figure 4 show the board layout for the LM2776EVM. The EVM offers capacitors and jumpers to enable the device and to configure it as desired.

The LM2776 will dissipate power, especially during high current and high input voltage operation. The EVM layout is designed to minimize temperature rise during operation.

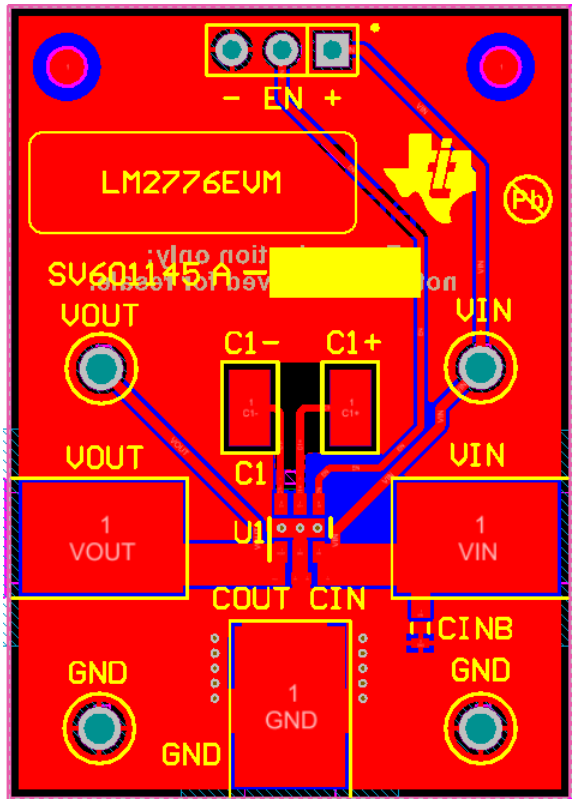

Figure 3. Top Assembly Layer

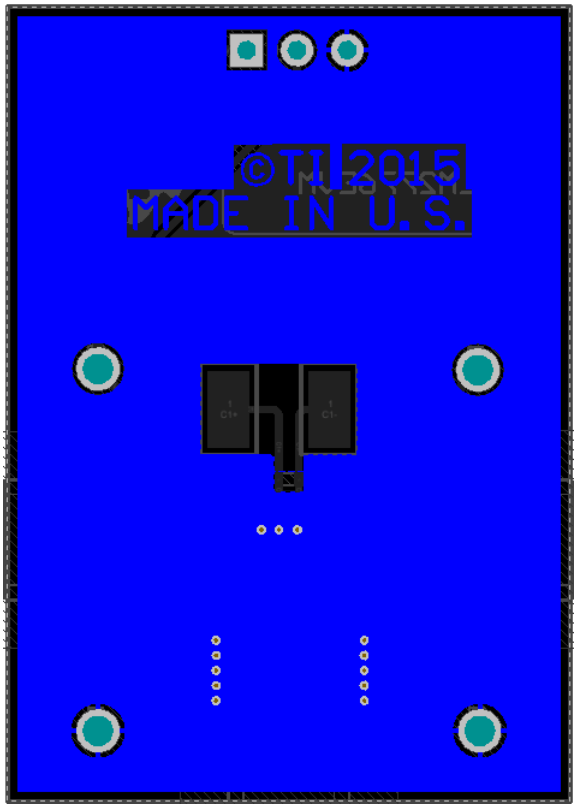

Figure 4. Bottom Assembly Layer (UNMIRRORED)

4 Schematic

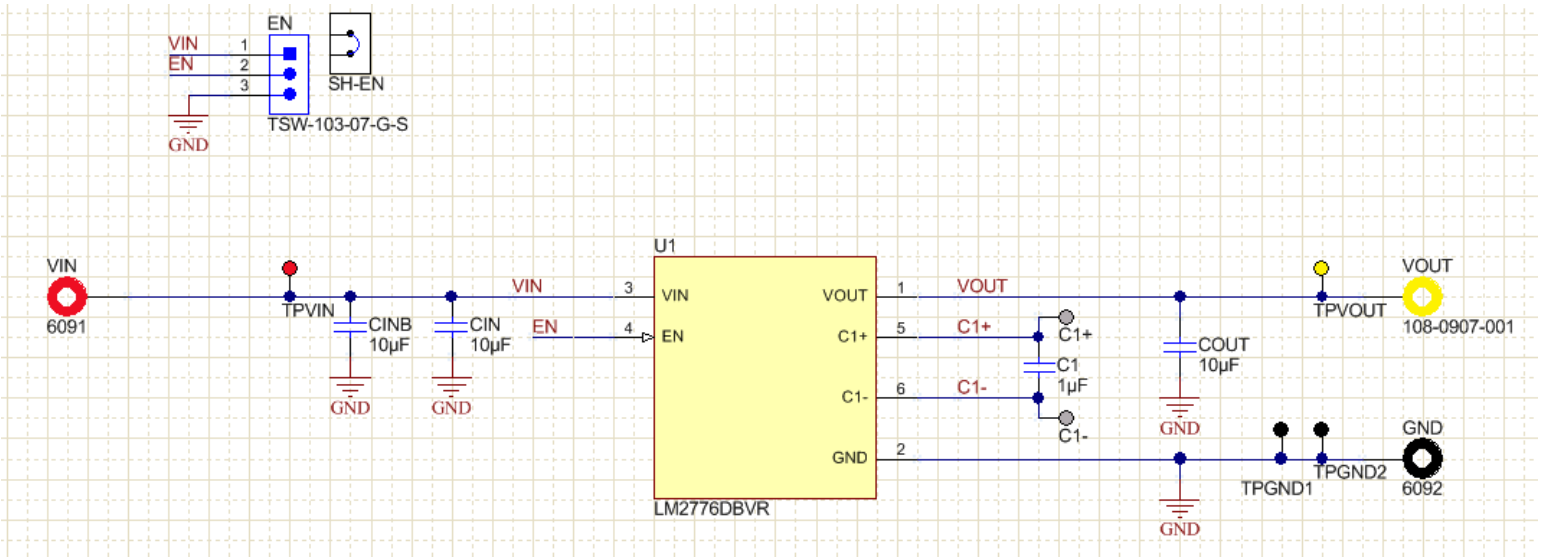

Figure 5. LM2776EVM Schematic

5 Bill of Materials

DESIGNATOR	DESCRIPTION	MANUFACTURER	PART NUMBER	QUANTITY
U1	Switched Capacitor Inverter, DBV0006A	Texas Instruments	LM2776DBVT	1
!PCB1	Printed Circuit Board	Any	SV601145	1
CIN, COUT	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0402	Samsung	CL05A106MP5NUNC	2
C1	CAP, CERM, 1 µF, 35 V, +/- 10%, JB, 0402	TDK	C1005JB1V105K050BC	1
CINB	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0603	TDK	C1608X5R1A106M	1
EN	Header, 100mil, 3x1, Gold, TH	Samtec	TSW-103-07-G-S	1
VIN	Standard Banana Jack, Insulated, Red	Keystone	6091	1
VOUT	BANANA JACK, 15A, Insulated, Nylon,Yellow	Emerson Network Power	108-0907-001	1
GND	Standard Banana Jack, Insulated, Black	Keystone	6092	1
SH-EN	Shunt, 100mil, Gold plated, Black	3M	969102-0000-DA	1
TPVIN	Test Point, Multipurpose, Red, TH	Keystone	5010	1
TPVOUT	Test Point, Multipurpose, Yellow, TH	Keystone	5014	1
TPGND1, TPGND2	Test Point, Multipurpose, Black, TH	Keystone	5011	2

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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.*

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

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Concernant les EVMs avec appareils radio:

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.

Concernant les EVMs avec antennes détachables

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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