LM27761EVM User's Guide

1 Introduction

The Texas Instruments LM27761EVM evaluation module (EVM) helps designers evaluate the operation and performance of the LM27761 switched capacitor inverter.

The EVM contains one LM27761 regulated switched capacitor inverter (See Table 1). For more details and electrical characteristics of this device, see the LM27761 device data sheet (SNVSA85).

Table 1. Device and Package Configurations

FLASH LED DRIVER	IC	PACKAGE
U1	LM27761	WSON (8 pins)

2 Setup

This section describes the jumpers and connectors on the EVM as well as how to properly connect, set up, and use the LM27761EVM.

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 LM27761EVM. Currents up to 250 mA can be drawn from this pin when the input voltage is higher than 2.7 V and lower than 5.5 V.

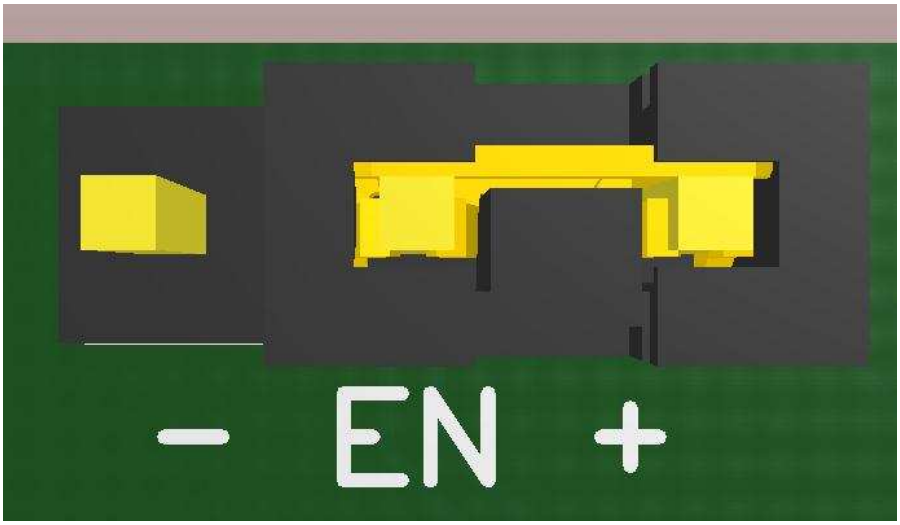


Figure 1. Enable Jumper Settings

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2.2 Input Voltage

The input voltage range for the LM27661 device is 2.7 V to 5.5 V.

2.3 Jumper Configuration

For proper operation of the LM27761EVM, the jumpers must be properly configured. The recommended setting, using shorting blocks is:

EN to +

In this configuration, the device powers 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 LM27761EVM.

2.4 Output Voltage Setting

The output voltage of the LM27761EVM is externally configurable. The value of R1 and R2 determines the output voltage setting. The output voltage can be calculated using Equation 1:

$$VOUT = –1.2\ V \times (R1 + R2)/R2 \quad (1)$$

3 Board Layout

Figure 2 and Figure 3 show the board layout for the LM27761EVM. The EVM offers capacitors and jumpers to enable the device and to configure it as desired.

The LM27761 dissipates power, especially during high current and high input voltage operation. The EVM layout is designed to minimize temperature rise during operation.

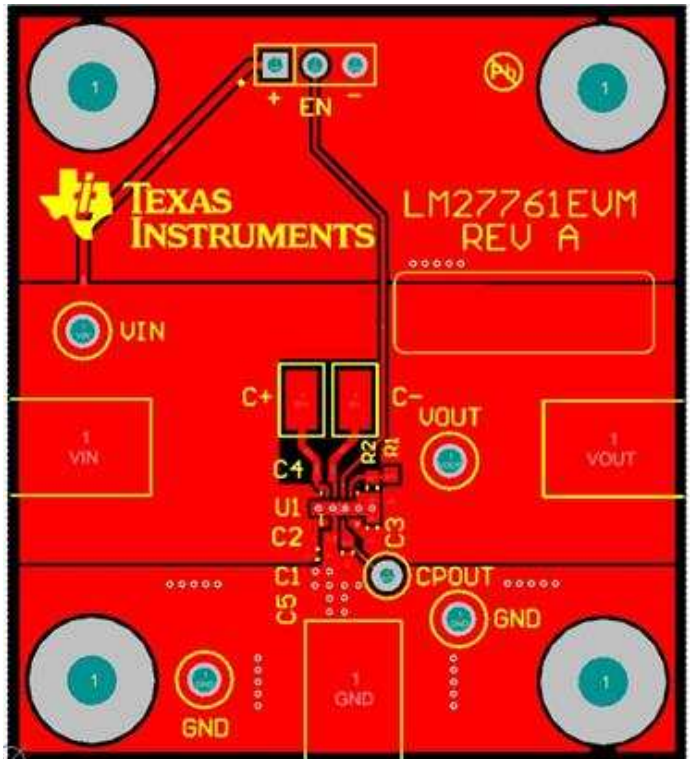


Figure 2. Top Assembly Layer

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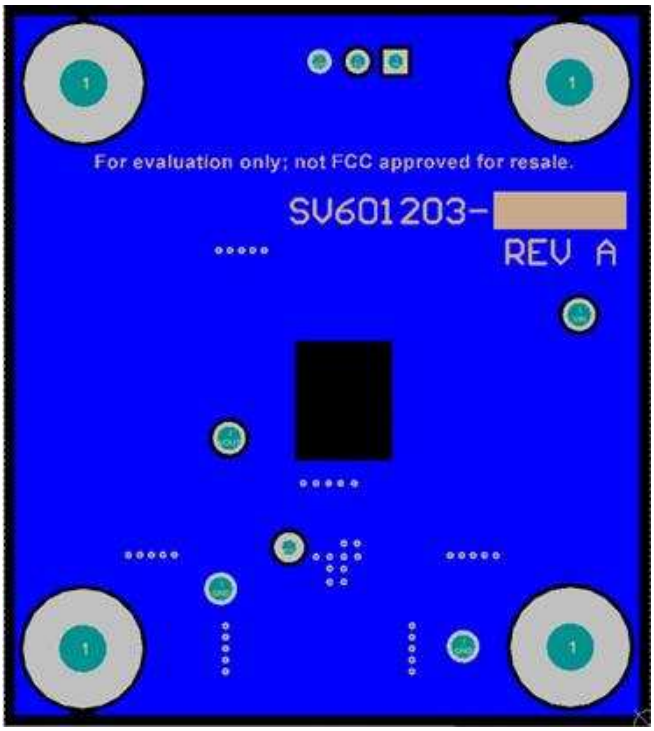


Figure 3. Bottom Assembly Layer

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4 Schematic

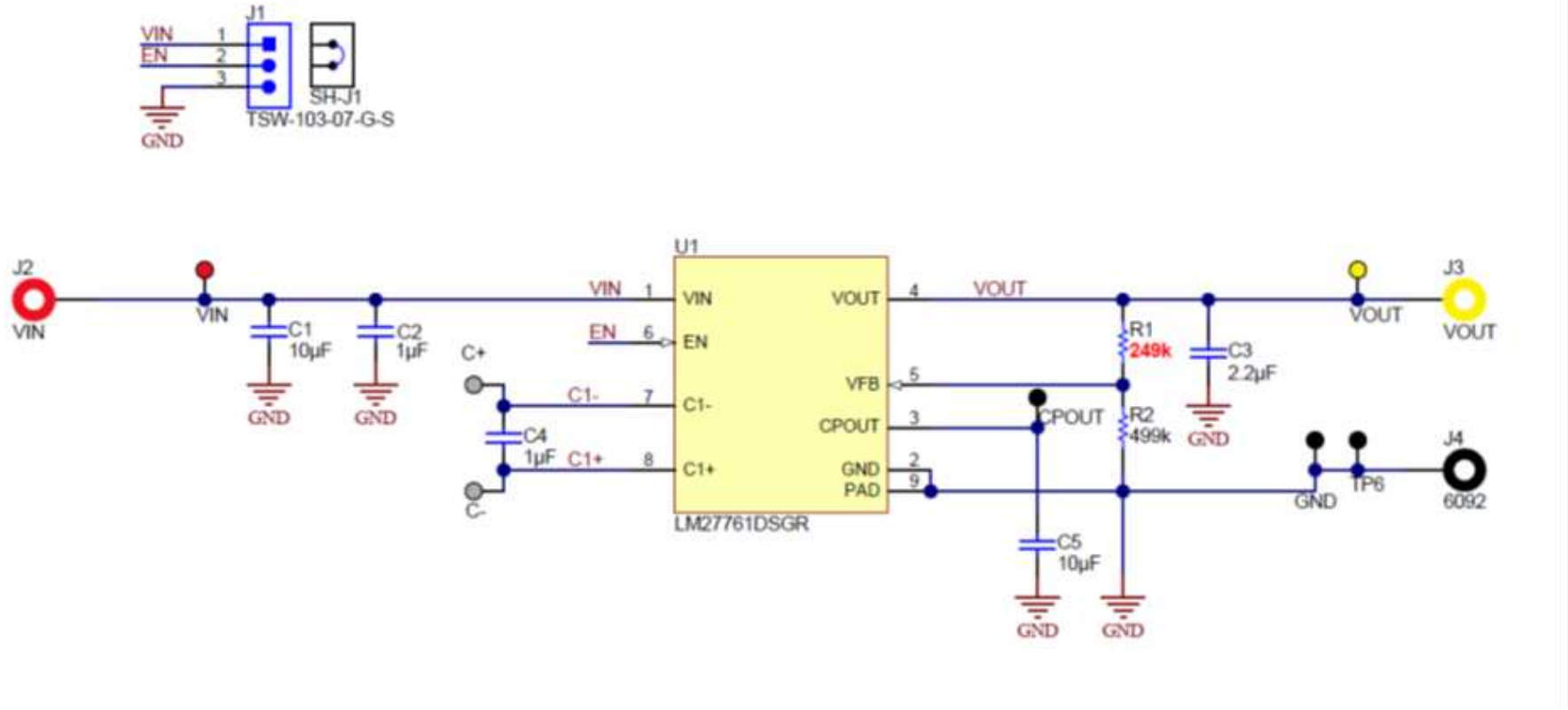


Figure 4. LM27761EVM Schematic

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5 Bill of Materials

DESIGNATOR	DESCRIPTION	MANUFACTURER	PART NUMBER
PCB	Printed Circuit Board	Any	SV601203
C1	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0603	TDK	C1608X5R1A106M
C2	CAP, CERM, 1 µF, 25 V, +/- 10%, X5R, 0402	TDK	C1005X5R1E105K050BC
C3	CAP, CERM, 2.2 µF, 6.3 V, +/- 10%, X5R, 0603	Taiyo Yuden	JMK107BJ225KAHT
C4	CAP, CERM, 1 µF, 10 V, +/- 10%, X5R, 0402	MuRata	GRM155R61A105KE15D
C5	CAP, CERM, 10 µF, 10 V, +/- 20%, X5R, 0603	TDK	C1608X5R1A106M
CPOUT	Test Point, Miniature, Black, TH	Keystone	5001
GND	Test Point, Multipurpose, Black, TH	Keystone	5011
J1	Header, 100mil, 3x1, Gold, TH	Samtec	TSW-103-07-G-S
J2	Standard Banana Jack, Insulated, Red	Keystone	6091
J3	BANANA JACK, 15A, Insulated, Nylon,Yellow	Emerson Network Power	108-0907-001
J4	Standard Banana Jack, Insulated, Black	Keystone	6092
R1	RES, 249 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603249KFKEA
R2	RES, 499 k, 1%, 0.1 W, 0603	Vishay-Dale	CRCW0603499KFKEA
SH-J1	Shunt, 100mil, Gold plated, Black	3M	969102-0000-DA
TP6	Test Point, Multipurpose, Black, TH	Keystone	5011
U1	Low-Noise Regulated Switched-Capacitor Voltage Inverter, DSG0008A	Texas Instruments	LM27761DSGR
VIN	Test Point, Multipurpose, Red, TH	Keystone	5010
VOUT	Test Point, Multipurpose, Yellow, TH	Keystone	5014

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