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>
<thead>
<tr>
<th>FLASH LED DRIVER</th>
<th>IC</th>
<th>PACKAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>LM27761</td>
<td>WSON (8 pins)</td>
</tr>
</tbody>
</table>

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.
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:

\[ V_{OUT} = -1.2 \times \frac{R1 + R2}{R2} \]  

(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
Figure 3. Bottom Assembly Layer
Figure 4. LM27761EVM Schematic
## 5 Bill of Materials

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