DAC128S085EVM Booster Pack User’s Guide

User's Guide

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Table 1-1. Device and Package Configurations

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<tr>
<th>DEVICE</th>
<th>IC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>LM4120IM5-4.1</td>
<td>SOT-23</td>
</tr>
<tr>
<td>U2</td>
<td>DAC128S085CIMT</td>
<td>TSSOP-16</td>
</tr>
</tbody>
</table>

Figure 1-1. DAC128S085EVM Evaluation Board
2.1 **Graphical User Interface (GUI)**

To use the DAC128S085EVM install the DAC12xSxxx Software:

1. If you are receiving the DAC128S085EVM from a FAE the software GUI will be in a .zip file. Otherwise, click this link [http://www.ti.com/product/dac128s085](http://www.ti.com/product/dac128s085), scroll down to the “software” section, and download the latest evaluation software.

2. Unzip the downloaded file into a known directory, and run the “setup.exe” file located in [Unzip location]\DAC12xSxxx\EVM_GUI\DAC12xSxxx Installer_v1.zip\DAC12xSxxx Installer\Installer\Volume. Follow the pop-screen instructions by clicking the “Next” button to install the software.

3. When the installation is finished, please click “Finish” button.
2.2 **Launchpad Firmware Upgrade**

Note: This section is only needed with a brand new Launchpad. If a Launchpad is shipped with an DAC128S085 EVM then skip section 2.2.

### 2.2.1 MSP430 Firmware Upgrade Application Installation

1. Navigate to [http://www.ti.com/tool/msp430usbdevpack](http://www.ti.com/tool/msp430usbdevpack) and click on Get Software.
2. Scroll-down to the end of the page to find the USB Collateral Installers section.
3. Click on MSP430_USB_Firmware_Upgrade_Example-x-x-x-Setup.exe to download the tool; the page will redirect to a submission form.
4. Complete the information requested and submit the form; if approved, a download button will appear.
5. Run the installation file and follow the on-screen instructions until completion. When asked about the setup type, select Application Only. Click Finish when done.

### 2.2.2 Firmware upgrade

1. If you are receiving the DAC128S085EVM from a FAE the firmware is a text file “DAC128S085EVM_Firmware-v0.87.txt”
2. Open the MSP430 USB Firmware Upgrade application. By default, the application can be launched from Start >> Programs >> Texas Instruments >> MSP430 USB Firmware Upgrade Example.
3. Click Next to proceed on the first prompt; read and accept the license agreement and click Next to continue.

   ![Figure 2-2. USB Firmware Upgrade Window](image)

4. Enable the Select Firmware button and browse to open the downloaded firmware “DAC128S085EVM_Firmware-v0.87.txt”.
5. Press the BSL button on the MSP430 LaunchPad and connect to the PC with a USB cable; if detected, the text on the Firmware Upgrade tool will change from No device connected to Found 1 device.
6. Click on the Upgrade Firmware button to program the LaunchPad. Close the application when done.

**Update USB Driver**

1. Before launching the DAC12xSxxx software, connect the DAC128S085EVM board to a USB port of your PC. Go to Device Manager and find “MSP43-USB Example”. Right click and select Update Driver Software.
Figure 2-3. Driver Not Installed
2. On the next screen, select the “Browse my computer for driver software” option and go to the directory of your install files and select the “TI_ADC_DAC_EVMs_Driver.inf” file.

3. If prompted with a warning window select “Install this Driver Anyway”. Close the installation window when it is done. The device manager should now display a “TI_ADC_DAC_EVMs” item followed by a COM port number.

Figure 2-4. Driver Authentication Warning
Figure 2-5. Driver Installed
3.1 Connections

1. Attach the DAC128S085EVM BoosterPack onto the MSP430 LaunchPad using connectors JA, JB, JC, JD. The proper orientation of the Launchpad and DAC128S085EVM is when the text “LaunchPad” and “2013 TI” are in the same direction.

2. Connect the USB cable from the LaunchPad to the PC

3.2 Launching the Software

1. The DAC12xSxxx GUI software can be run by clicking on Start >> All Program >> DAC12xSxxx. After running the GUI select DAC128S085.
2. GUI Descriptions
   - DB[15:12]: These 4 bits control different write modes, channel selects, and special operation modes. See the DAC128S085 datasheet for more details.
   - DB[11:0]: These 12 bits are for setting the DAC output codes.
   - DB[11:0] Output Type: This field changes DB[11:0] to either binary, decimal, or hexadecimal type.
3. Quick start:
   - a. Write “1001” to DB[15:12] to switch into WTM mode
   - b. Write “0000” to DB[15:12] and “800” to DB[11:0] to select channel A and set channel A output to Vref/2 of 2.048V.
Figure 4-1. Top Assembly Layer
Figure 4-2. Top Layer Routing
Figure 4-3. Power Layer Routing
Figure 4-4. Ground Layer Routing
Figure 4-5. Bottom Layer Routing
Figure 5-1. DAC128S085EVM Schematic
<table>
<thead>
<tr>
<th>Designator</th>
<th>Quantit y</th>
<th>Value</th>
<th>Description</th>
<th>PartNumber</th>
<th>Manufacturer</th>
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<td>Printed Circuit Board</td>
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<td>Keystone Electronics</td>
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</table>
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