PreLab 5: DAC Continuity

In this lab, we will design a test routine to perform the continuity test on a new part (TLV5616 12bit DAC) using a new DIB.

1. Read the datasheet for the DAC TLV5616. You would like to perform a continuity test on this part. To help you develop this test, answer the following questions.
   i. Which pins are digital pins?
   ii. Which pins are analog pins?
   iii. The continuity of analog and digital pins must be tested separately because they cannot be grouped together. As seen previously, the continuity test on supply pins must be tested separately as well. Provide a test proceedure to test continuity. Be sure to draw a schematic for each continuity group showing how all other pins will be connected.
2. Look at the DIB schematic.
   i. Which resources are needed to test continuity for each site?
   ii. Which relays should be set to get the needed resources to the DUT?
   iii. Which CBITs control test relays?
3. When setting up the datasheet editor for this test, how many rows will you need? How many datastructures will you need and what will be the size of these datastructures?

Lab 5 - DAC Continuity: Digital Pin Units

In this lab, you will develop a new program that will perform DAC testing. For these tests, we must generate digital inputs using the digital source/measurement units (DPUs). These are described below.

A. DPU

The DPU's will be grouped using the digital vector editor, since we will need the vector editor for the next lab. However, once they have been defined and grouped, they CAN be used much like APU's and SPU's, to source and measure voltages.

B. Create a New Project and Create the Digital Continuity Function

1. New Project

Create a new project that will be used for the next 3 labs. Enable all of the appropriate functions in userinit and group the analog resources in this lab. Digital pins groups and DPU assignments will be added using the vector editor later.
Enable the code that loads the vector editor.

2. Set up the Digital Groups using the Digital Vector Editor

The DPU's will be set up using the digital vector editor.
(a) Create a new sheet. The label of the sheet will act like the label in the source code.

(b) Create a digital pin for the input (Din), the clock (Clk), the chip-select (CS), and the frame-select (FS). Specify whether the pins are inputs, outputs, or bidirectional.
(c) Group the pins for both sites.
(d) Assign the resource number to the pins.

3. Create the ContinuityFunction

(a) Create a new function called “Continuity”.
(b) Set up the Datasheet file to test continuity for all pins. Make sure the datasheet order of digital pins matches the digital pin group order in the vector editor and that the datasheet order of analog pins matches the continuity group order.
(c) Set up the analog pins (assume ground will be connected to the DIB ground) and digital pins to perform each continuity test. Measure the appropriate continuity voltages and datalog the results.
(d) Turn off all equipment at the end of the test routine
(e) Reset any relays.

5. Validate your Program

(a) Make sure that your program compiles and runs without alarms on your laptop.
(b) Backup your program and move it over to the ATE and verify continuity for 2 DAC chips. Note: there are 2 zif sockets on the DIB. The top zif socket is used for BOTH DAC sites. The other zif socket is used for 2 ADC sites. Place 1 DAC chip as high as possible in the zif socket and the other as low as possible in the zif socket. The continuity test will verify if you loaded your chip correctly!
(c) Run your test on the DAC chips multiple times and record the datalog and test times.

C. Write up Your Results

Turn in your final code and datalogs. Discuss your test results.