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Test Procedure for the NCV7703GEVB Evaluation Board

ON Semiconductor®



This document should be used in conjunction with the NCV7703EVB/D document to confirm board functionality after assembly. Tests are performed using a computer with a parallel port interface and its associated custom operational program.

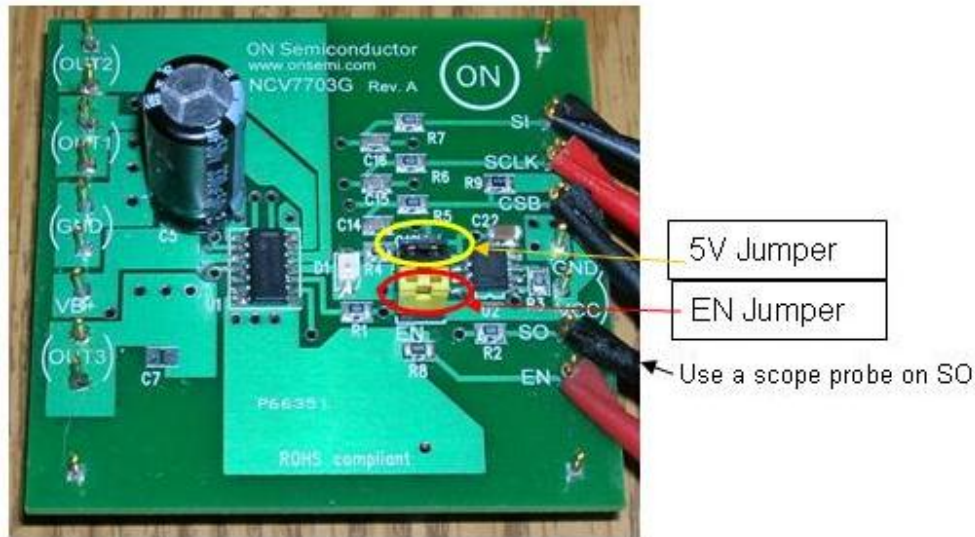


Figure 1. NCV7703 Evaluation Board

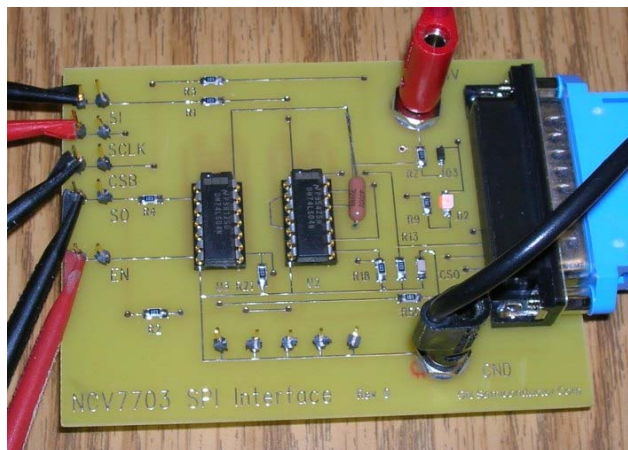


Figure 2. NCV7703 SPI Interface Buffer Board

Electrical Hardware	Software Interface
13.2 V Power Supply, 1 A min.	NCV7708 Driver.exe VB program
5V Power Supply, 1A min.	
2 Channel Oscilloscope	Computer with parallel port programmed to execute a VB.net program.
Parallel port Ribbon Connector	
Power leads for power supply	
4 clip-clip leads for logic pin connections	
1/4W 10K Resistor Load	
NCV7703 Evaluation Board	
NCV7703 SPI Interface Buffer Board	

Table 1: Required Equipment

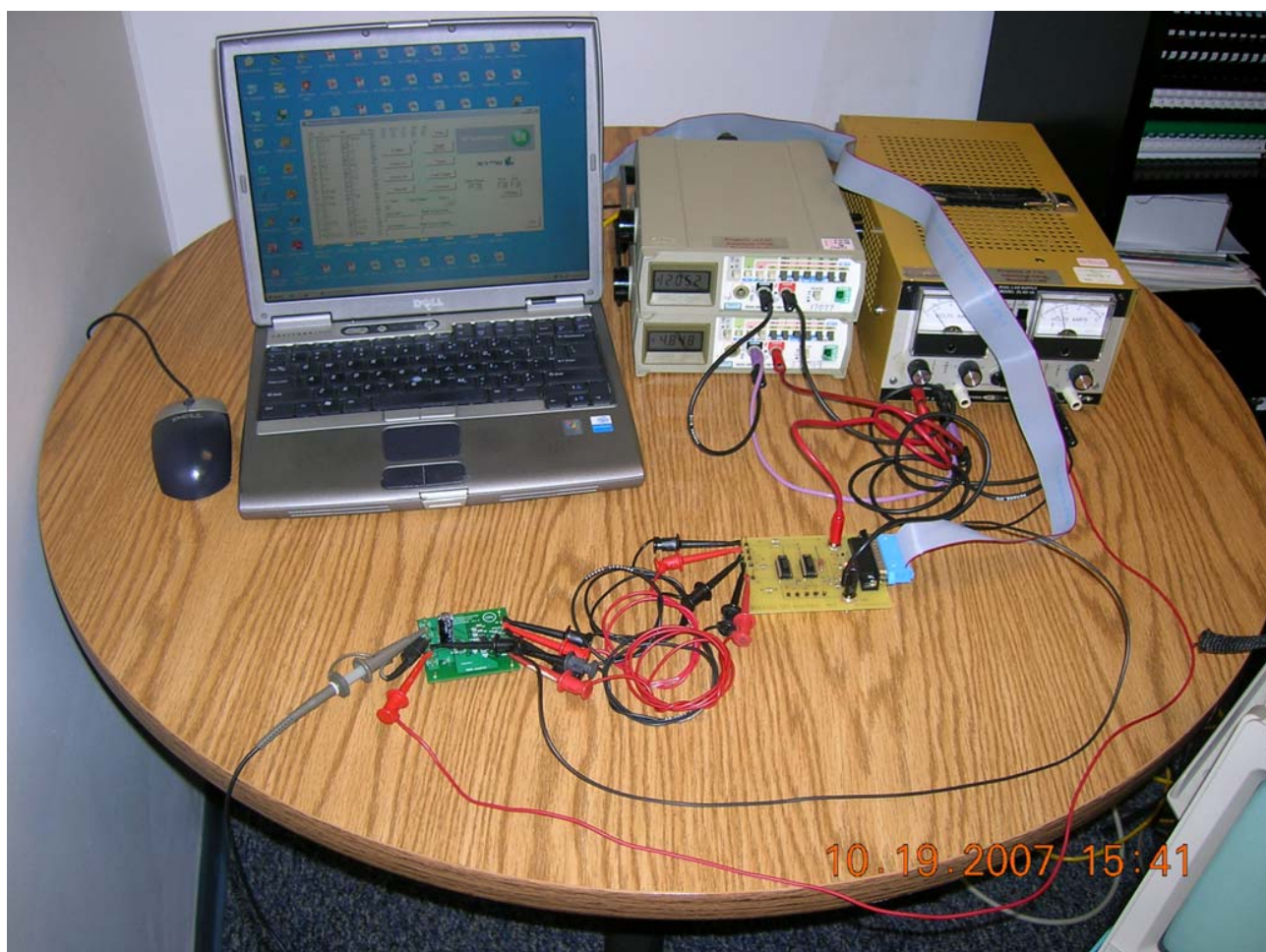
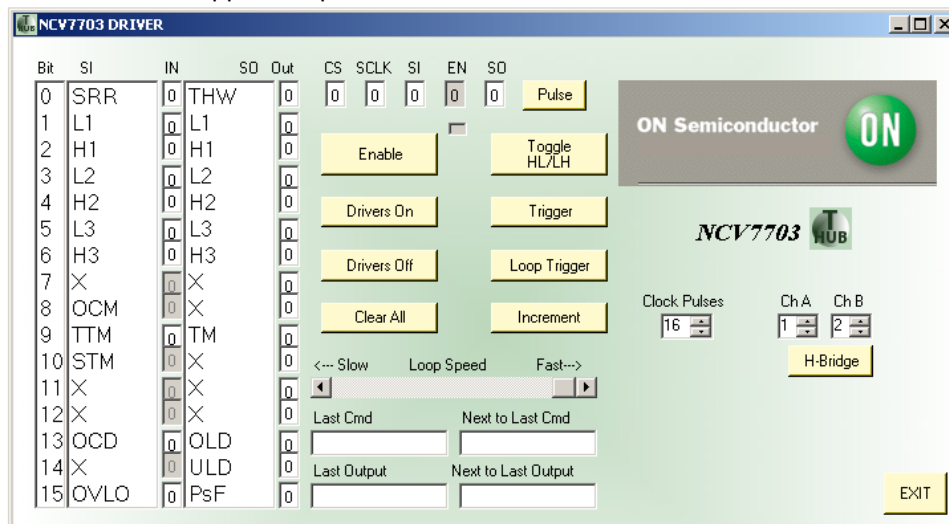


Figure 3. Test Setup

Test Procedure:

NCV7703 Evaluation Board Test Procedure

1. Install the NCV7703 software on your computer using the provided Setup.exe, Setup.ini, and Setup7703.msi files.
 - a. A new USB interface is under development. This parallel port procedure is an interim solution until the USB solution is available. Installation of the parallel port solution is not compatible on all computers. The reason is unknown. Unacceptable operation is identified as all 1's in yellow highlighted in the SO column of the program.
 - i. Some sensitivity to performance (read improvement) was noted with minor changes to the 5V supply on the SPI Interface Board.
2. There are 2 jumpers on the evaluation board.
 - a. "EN" as per NCV7703EVB/D. This jumper should **NOT** be connected. The enable function will be checked using the NCV7703 SPI Interface Board.
 - b. "5V" as per NCV7703EVB/D. This jumper should be connected. This will check the NCV7703 Evaluation Board on-board voltage regulator (NCV8501).
3. Connect clip-to-clip wires from the NCV7703 SPI Interface Buffer Board to the NCV7703 Evaluation Board. Wires should be connected to identical names. Make sure to connect
 - a. SI
 - b. SCLK
 - c. CSB
 - d. SO (no connection is needed for the SO pins). Use only a scope probe on the demoboard to verify signal presence.
 - e. EN
4. Connect the parallel port ribbon cable between the PC and the NCV7703 SPI Interface Board.
5. Connect the 5V power supply to 5V on the SPI Interface Board. The power on LED on this board should light.
6. Connect the 13.2V power supply to VB+ of the NCV7703 Evaluation Board. The power on LED on this board should light.
7. Start the NCV7703 parallel port interface software. A screen should appear as per below.



Extreme Care Must Be Taken With This Program!!!
NEVER turn on a channel high and low side driver at the same time!!!

Damage to the NCV7703 could occur.
 H1 & L1 should never be on at the same time.
 H2 & L2 should never be on at the same time.
 H3 & L3 should never be on at the same time.

8. Verify operation of the NCV8501.
 - a. Measure the voltage on VCC.
 - i. Verify it is at 5V.

9. Verify output driver functionality.
 - a. **Check the low-side drivers.**
 - i. Put a 10k load from OUT1 to VB+.
 - ii. Click on the Trigger Loop button.
 - iii. Click on the Enable button of the parallel port software interface.
 1. Verify OUT1 is high (13.2V).
 - iv. Click on the L1 button (it will become highlighted in yellow).
 1. Verify OUT1 is low.
 - v. Click on the L1 button (the yellow highlight will be removed).
 1. Verify OUT1 is high. **NOTE – This puts the device back in a state where L1 is off. This is critical before attempting to turn H1 on in the next step.**
 - vi. Click on the Enable button to turn the device off.
 - b. **Check the high-side drivers.**
 - i. Move the 10k load to a position of OUT1 to GND.
 - ii. Click on the Enable button of the parallel port software interface.
 1. Verify OUT1 is low.
 - iii. Click on the H1 button (it will become highlighted in yellow).
 1. Verify OUT1 is high (13.2V).
 - iv. Click on the H1 button (the yellow highlight will be removed).
 1. Verify OUT1 is low. **NOTE – This puts the device back in a state where H1 is off. This is critical before attempting to turn L1 on.**
 - v. Click on the Enable button to turn the device off.
 - c. Repeat 9a & 9b for OUT2 and OUT3.

10. **Verify SO connection.**
 - a. Put a scope probe on SO.
 - b. Re-enable the part by clicking on the Enable pin after checking OUT3 (H3) from test #9.
 - i. Verify the SO signal exists (look for a square wave signal).
 - c. Click on the Enable button to turn the device off.
 - i. Verify the SO signal is gone.

11. Verify EN connection
 - a. Remove the wire connecting the EN of the SPI Interface Buffer Board to the EN of the Evaluation board. **This must be done BEFORE the next step, or damage to the SPI Interface Buffer Board may occur.**
 - b. Connect the EN jumper.
 - i. Verify the SO signal reappears.

Revision Summary

Rev 0 – October 19, 2007

Rev 1 – November 16, 2007

- 1) Added text to Figure 1.
- 2) Added to the Electrical Hardware Table.
- 3) Added required software files and note for USB solution.
- 4) Modified setup to remove SO connection.
- 5) Corrected ribbon cable description.
- 6) Minor text modifications.
- 7) Modified SO testing without SCLK signal.