ON Semiconductor

Test Procedure for the NCP5269GEVB Evaluation Board

Equipment needed: Power supply #1 for +5V power, 1A capability; power supply #2 for input voltage, variable from ~6 V to 25 V, minimum 3 A capability; oscilloscope, minimum of 2 channels and 100 MHz bandwidth for each channel; electronic load, minimum 15 A capability with less than 1 V input; NCP5269G Evaluation Board, NCP5269GEVB documentation (schematic, BOM, data sheet, etc.).

Procedure:

1. Visually inspect printed circuit board (PCB) assembly to verify that there are no broken or unintentional missing components, obvious shorts or any other anomalies.

2. Connect power supply #1 (5 V) to either the JA3 or JA5 2-pin terminal blocks, observing the polarity (ground is marked with a symbol at the top of both terminal blocks). Connect power supply #2 (input voltage) to JA6 terminal block, observing the correct polarity (ground is marked with a symbol on the right side of the terminal block). Set the initial voltage of supply #2 to 6 V. Leave the output unconnected to the electronic load.

3. Install jumpers on JA2, JA4 and JA8 before turning on the power supplies to the Evaluation Board (EVB). Jumper JA2 is the Enable input and JA4 and JA8 are the VID setting inputs.

4. Apply power to the EVB, 5 V power first, then input power. Make sure that no excessive current is being drawn from either power supply.

5. At this point, remove the jumper at JA2 (enable the EVB). This will allow the board to ramp the output voltage to the value set by the jumpers at JA4 and JA8. With those jumpers initially shorted, the output voltage should be 0.65 V. Continue to place and remove the JA4 and JA8 jumpers in the remaining three combinations to get the other output voltages (0.75 V, 0.80 V and 0.90 V)

ON Semiconductor

Test Procedure for the NCP5269GEVB Evaluation Board

6. With any VID setting, vary the input power supply up to a maximum of 25 V. The EVB should not draw excessive (<<1 A) current from the input supply.

7. Making sure that the electronic load's output is disabled connect the electronic load to the EVB's output terminal block and set the load's mode of operation to Constant Current mode. Return the input voltage to ~6 V and set the input power's current limit to at least 3 A. Set the current on the electronic load to 5 A. Turn on the output of the electronic load. The load should be drawing 5 A from the EVB. The output voltage of the EVB should not vary more than 10 mV. Verify the ability of the EVB to source at least 5 A in every VID setting.

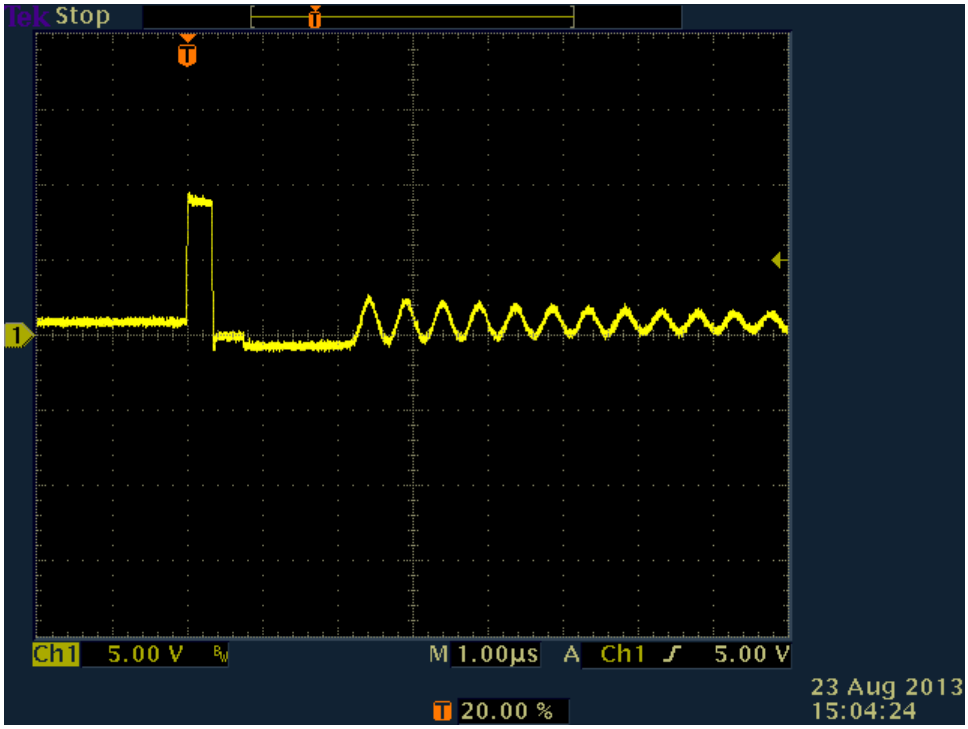
8. Increase the electronic load's current setting to 10 A. Verify, that at all VID settings, the EVB can source 10 A into the electronic load.

ON Semiconductor

Test Procedure for the NCP5269GEVB Evaluation Board

9. With the oscilloscope, verify that the switching node (test point SWN, TPA2) changes from discontinuous conduction mode (DCM) to continuous conduction mode (CCM) when the load is turned on and off. Example waveforms are as follows:

<u>DCM operation, output current = 0 A</u>



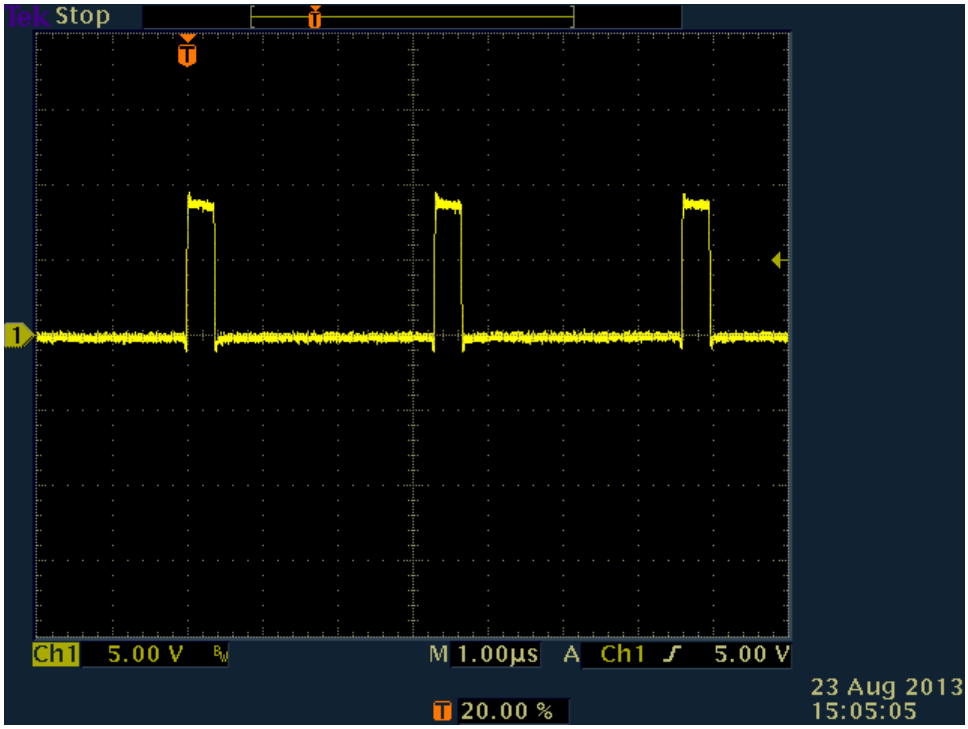
Channel 1 = SWN test point (TPA2)

ON Semiconductor

Test Procedure for the NCP5269GEVB Evaluation Board

9. continued, verification of DCM and CCM operation of the EVB.

<u>CCM operation, output current = 10 A</u>



Channel 1 = SWN test point (TPA2)

At this time also verify that the switching frequency in CCM is ~300 kHz, as in the above picture. This is the default setting for switching frequency (set by resistor RA6 on the EVB).

ON Semiconductor

Test Procedure for the NCP5269GEVB Evaluation Board

10. Check the over-current protection (OCP) by either shorting the output of the EVB or increasing the load current setting of the electronic load until the EVB shuts off, signaled by the power good LED (DA1) turning off. This current should be a minimum of 11-12 A. If it is substantially lower or higher, check the values of the resistors RA7 and RA8 and capacitor CA8 according to the schematic or BOM. Also check that the inductor is marked with 'R88' on the top of the package. There will be some variation due to the variability of the inductor's DC resistance and temperature of the inductor. The OCP limit will be somewhat higher when the inductor is cold and will be somewhat lower if the inductor is hot.

This concludes the test of the NCP5269GEVB. Please turn off all power before disconnecting power supplies and electronic load.