ON Semiconductor

Test Procedure for the NCN8025AMNGEVB Evaluation Board

Test Procedure:

Initial Setup

- Make sure PRES/ is connected to ground through the entire test procedure.
- Make sure the CMDVCC/ switch is in the 1 position.
- Make sure VSEL1 is set to 0 and VSEL0 is set to 1.
- Place jumpers on J3 and J4 and make sure that all other jumpers are removed.
- Two voltmeters should be placed; one between ground and CMDVCCb; the other between ground and CVCC.
- A function generator will be used for some of the measurements. This function generator should have a 50 Ω to ground terminator on it. This can be accomplished using a BNC T connector with one end going to the CLK_EXT_SMB and the other end with the 50 Ω terminator on it.
- The function generator should be set to a 3.00 Vpp amplitude square wave with an offset of +1.50 V; the frequency is 100 kHz. Set it up, but do not connect it to the board for the first two measurements.

DC Power Supplies:

Two power supplies are used to bias the demo board. VDDP is the input voltage of LDO Regulator. VDD is the "digital" power supply which biases the input stages of the NCN8025A device (control and signal inputs).
VDD and VDDP must be connected to the board for a correct operation.

- Connect the VDD power supply using the 2 pin male connector (J2).
- Connect the VDDP power supply through the 2 pin male connector (J1).
- Both VDD and VDDP are set to 5.00 VDC.

Initial turn on measurements:

1. Turn on both 5 VDC supplies.
2. Toggle the CMDVCC/ switch to the 0 position. You should observe 5 VDC from the voltmeter connected at CMDVCC/.
3. Now toggle the switch back to 1. You should observe the 5 VDC now on the voltmeter connected to CVCC. The other meter should return to 0 V.
4. Toggling the switch back and forth will continue to switch the 5 VDC between CVCC and CMDVCC/.

Voltage Selection Measurements:

Use the table below to change the VSEL0 and VSEL1 switches to change the CVCC voltage. Each time a new voltage is selected, the CMDVCC/switch will have to be switched back to 1 and then 0 again to reset the CVCC voltage.

VSEL1	VSEL0	CVCC
0	0	1.8 V
0	1	5.0 V
1	0	3.0 V
1	1	3.0 V

Go through the table and verify that CVCC matches it.

Frequency Divider Measurements:
For the next measurement, we will use both the function generator and an oscilloscope. Hook the function generator to the CLK_EXT_SMB connector. Now verify your function generator clock by connecting the oscilloscope between CLKIN and ground. The scope should be in DC acquisition mode at 1 MΩ with hi-res acquisition. It should also be set to measure frequency. CLKIN is just a pass-thru of the function generator signal. Once the function generator's signal is displayed clearly on the scope, it is time to take the measurements. Now place the oscilloscope probe between CLK and ground.

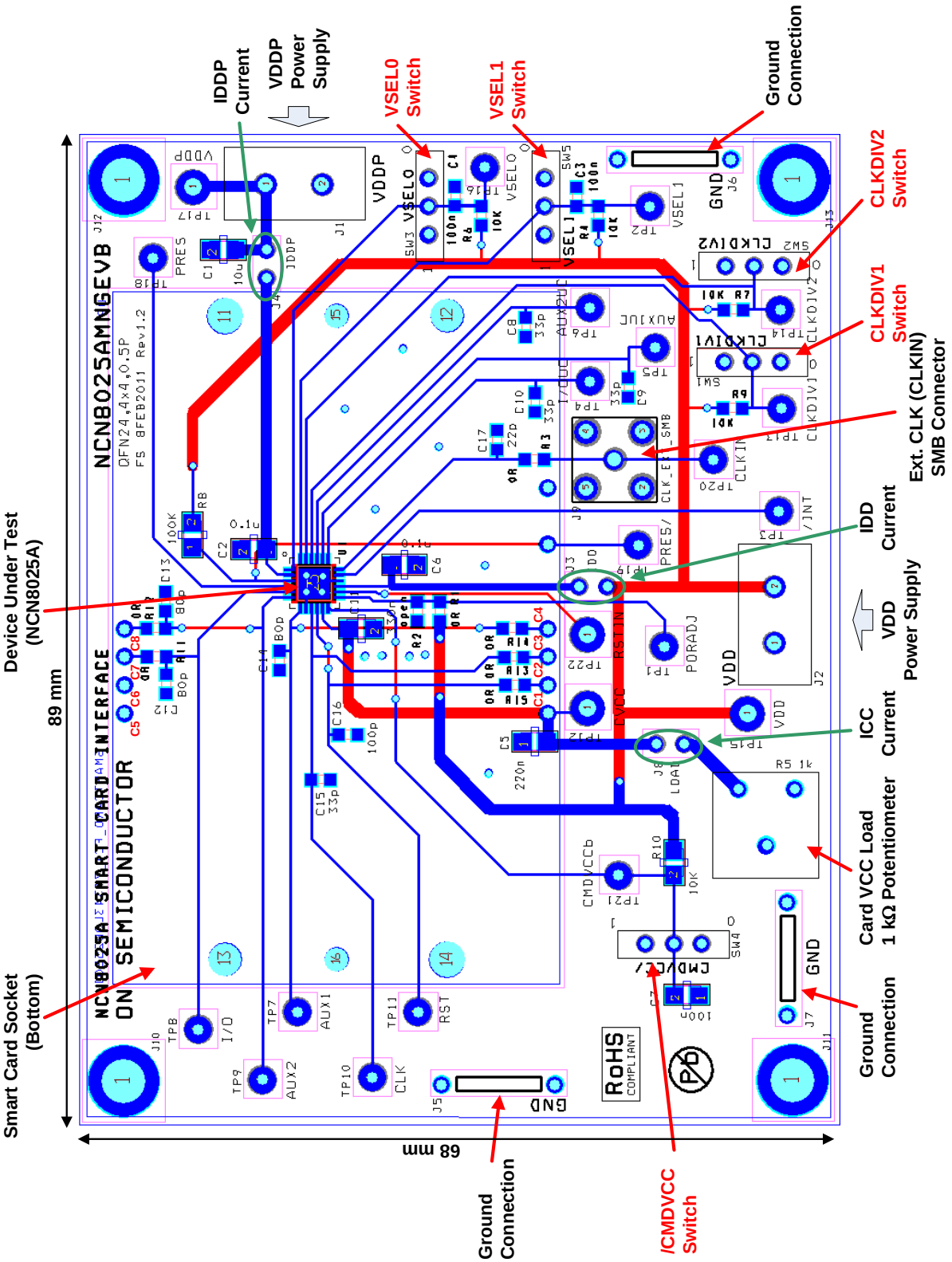
CLKDIV1	CLKDIV2	Divider
0	1	DIV 1/1
0	0	DIV 1/2
1	0	DIV 1/4
1	1	DIV 1/8

Switch CLKDIV1 and CLKDIV2 according to the above table and make sure the output signal adjust to it. At 100 kHz, you should have a divide by 1, which is just the fundamental 100 kHz. You should then have the divide by 2 = 50 kHz; divide by 4 = 25 kHz; divide by 8 = 12.5 kHz.

The output amplitude of this signal can be adjusted using the VSEL0 and VSEL1 toggles from before. Switch these switches to adjust the amplitude now. Remember you will have to re-toggle the CMDVCC/ switch to change to the new amplitude.

Frequency Pass-thrus:
This part of the procedure will test the signal pass-thrus of the part to make sure they are soldered correctly. Take the functions generators signal and place it on either the I/OUC, AUX1UC, or AUX2UC pins. Now measure the signal output on its respective output pin; either the I/O, AUX1, or AUX2. Make sure the output matches the input for all three.

End of Test.


IDDP Current
VDDP Power Supply
VSEL0 Switch
VSEL1 Switch
Ground Connection
CLKDIV2 Switch
CLKDIV1 Switch
Ext. CLK (CLKIN) SMB Connector
IDD Current
VDD Power Supply
ICC Current
Card VCC Load 1 kΩ Potentiometer
Ground Connection
/CMDVCC Switch
Ground Connection
Smart Card Socket (Bottom)
Device Under Test (NCN8025A)
89 mm
68 mm
NCN8025AMN6EVB
ON SEMICONDUCTOR
SMART_CARD_INTERFACE
QFN24,4x4,0.5P
FS_8FEB2011_Rev1.2
RoHS COMPLIANT