



07/22/2013

## Test Procedure for the NCV7383GEVK

### Required Equipment

- Dual channel Oscilloscope
- Bench Power Supply
- Voltmeter
- Two NCV7383 Evaluation Boards
- Two 12V power supply adapters
- Two FlexRay bus cable assemblies

### Test procedure Step 1:

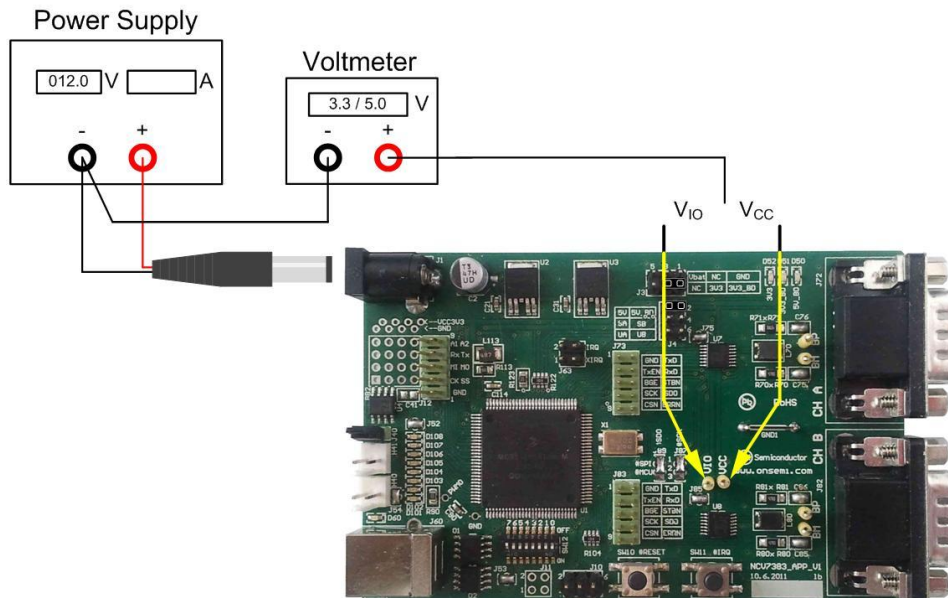


Figure 1. Input current and voltage regulators output voltage test

1. Set the boards to default configuration according to **Error! Reference source not found.** section.
2. Select one of the bus termination concepts (Bus Termination Configuration section) and adapt the respective parts. End node bus termination is recommended for 2-nodes network.
3. Connect the setup as shown above.
4. Apply an input voltage,  $V_{BAT} = 12\text{ V}$
5. Check  $I_{IN}$ ,  $V_{CC}$  and  $V_{IO}$

### Table 1. Desired Results

$$I_{IN} = 65\text{ mA to }75\text{ mA}$$

$$V_{CC} = 4.9\text{ V to }5.1\text{ V}$$

$$V_{IO} = 3.2\text{ V to }3.4\text{ V}$$

## Test procedure Step 2:

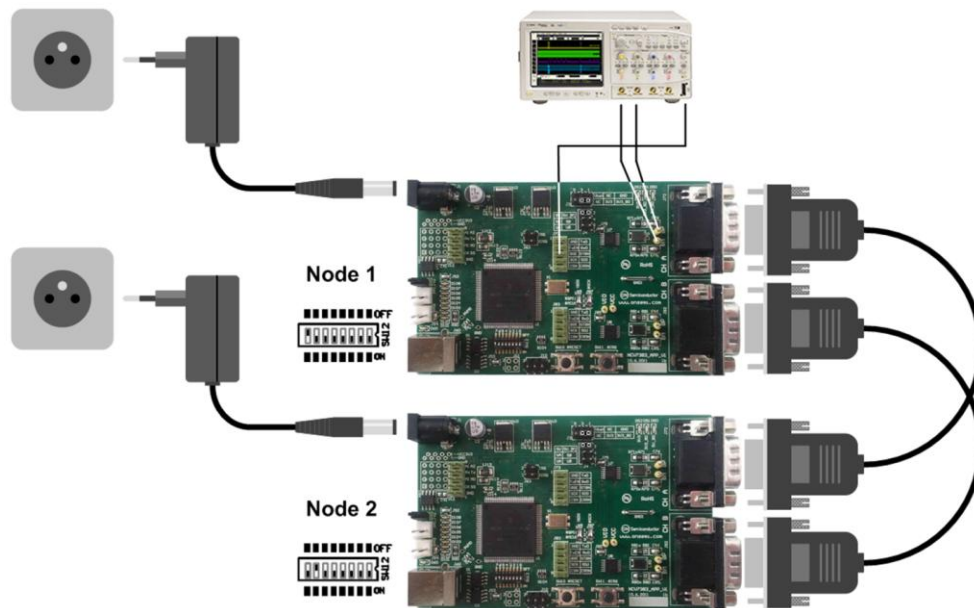


Figure 2. Simple FlexRay network configuration

1. Connect two boards according to figure above.
2. Set a different board address on each board. One of the boards must be set with address 1 and is considered as Master Board. Node address is configurable by address switch (SW12).
3. Connect an oscilloscope to BP and BM test-points (Channel A or B).
4. After the power supply is applied, FlexRay communication should be automatically initialized, what should be signaled by one of the LEDs (LED4-LED8) on both nodes. Communication on FlexRay bus should be visible on oscilloscope (BP and BM test-points).
5. Press and hold SW11 (#IRQ) on Node 1 for more than 3 seconds. Both nodes should be switched to STANDBY mode. FlexRay communication is stopped and the current consumption should be reduced.
6. Press the #IRQ button on any node. Both nodes should be woken up and the FlexRay communication should be restarted.

## Results:

The following waveforms should be visible in Normal mode (Figure 3) and in Standby mode (Figure 4).

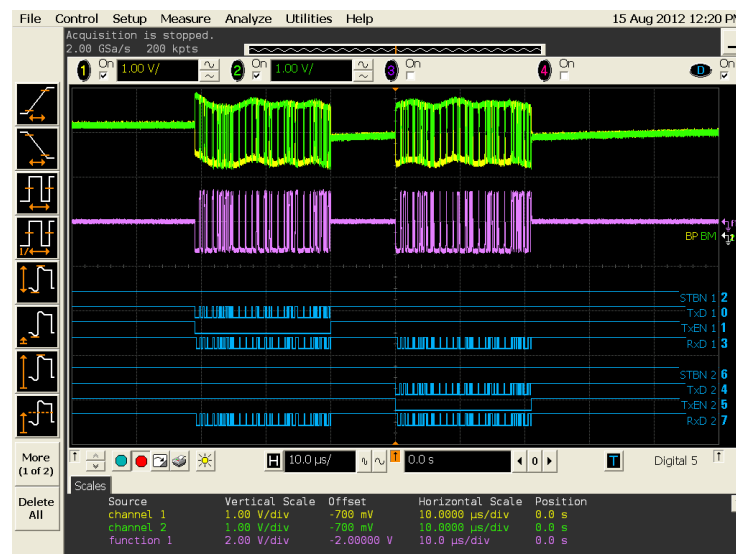


Figure 3. Normal mode

Battery current consumption is typ. 70 mA per node in Normal mode.



Figure 4. Standby mode

Battery current consumption is typ. 10 mA per node in Standby mode. Most of the current is consumed by the power supplies LED indicators.

### Jumpers and Default Configuration

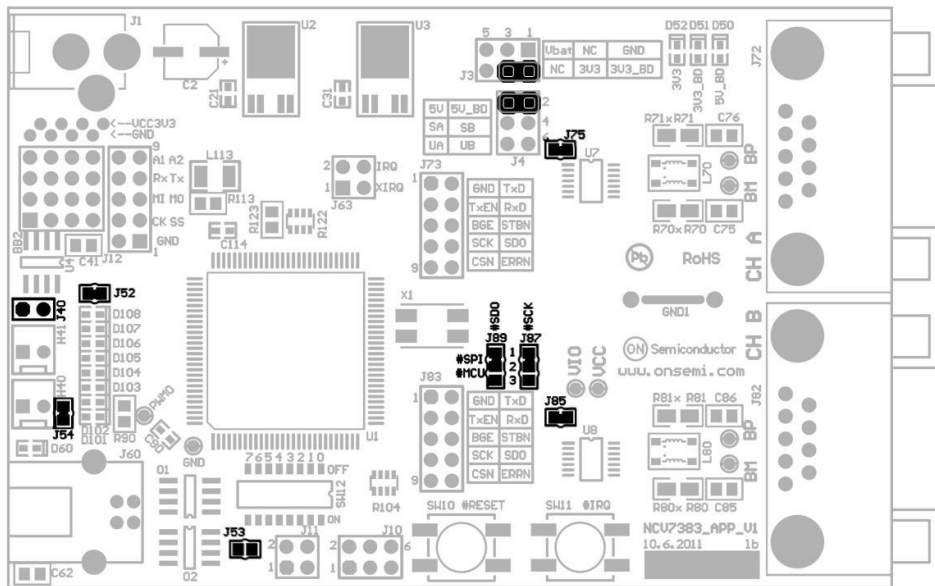


Figure 5. Jumpers and Soldering Straps

Table 3. 2-pin Jumper

		Open
		Closed

Table 2. 3-pin Jumper

	1	2	3	
				Open
				Closed position 1-2
				Closed position 2-3

**Table 4. NCV7383 EVB Jumpers Configuration**

<b>Jumper</b>	<b>Function</b>	<b>Configuration</b>	<b>Description</b>	<b>Default</b>
J3	Bus Driver VIO supply	Open	Bus Driver VIO unsupplied	Closed 3V3 – 3V3_BD
		Closed	Bus Driver VIO connected to voltage regulator output	
J4	Bus Driver VCC supply	Open	Bus Driver VCC unsupplied	Closed 5V – 5V_BD
		Closed	Bus Driver VCC connected to voltage regulator output	
J40	CAN bus termination	Open	CAN bus without termination	Closed
		Closed	CAN bus with 120Ω termination	
J52	General purpose LED	Open	LEDs Disabled	Closed
		Closed	LEDs Enabled	
J53	UART power supply	Open	UART Disabled	Open
		Closed	UART Enabled	
J54	MCU output mcu_PP0 function	Open	LED D101 disabled, PWM0 enabled	Closed
		Closed	LED D101 enabled, PWM0 not recommended	
J87	Channel B SCK pin connection	Open	SCK_B disconnected	Closed 1-2
		Closed 1-2	SCK_B connected to common hardware SPI interface	
		Closed 2-3	SCK_B connected to separated software SPI interface	
J89	Channel B SDO pin connection	Open	SDO_B disconnected	Closed 1-2
		Closed 1-2	SDO_B connected to common hardware SPI interface	
		Closed 2-3	SDO_B connected to separated software SPI interface	
J75	Bus Driver Dig. Pull-ups (Ch A)	Open	TxEN, SCN and SCK pull-ups disconnected from VIO	Closed
		Closed	TxEN, SCN and SCK pull-ups connected to VIO	
J85	Bus Driver Dig. Pull-ups (Ch B)	Open	TxEN, SCN and SCK pull-ups disconnected from VIO	Closed
		Closed	TxEN, SCN and SCK pull-ups connected to VIO	
		Closed	TxEN, SCN and SCK pull-ups connected to VIO	

## Bus Termination Configuration

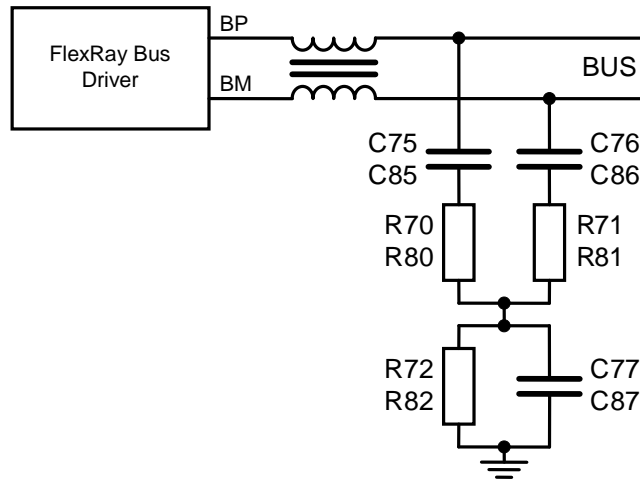


Figure 6. FlexRay bus termination connection (Channel A: R7x, C7x; Channel B: R8x, C8x)

Table 5. FlexRay Bus Termination configuration

Component	End node (Low-Ohmic termination)	Middle node – Variant 1 (High-Ohmic termination)	Middle node – Variant 2 (Custom termination)
Ch. A: C75, C76 Ch. B: C85, C86	Short	Short	100 pF
Ch. A: R70, R71 Ch. B: R80, R81	47 $\Omega$	1300 $\Omega$	24 $\Omega$
Ch. A: R72 Ch. B: R82	Not Assembled	Not Assembled	47 $\Omega$
Ch. A: C77 Ch. B: C87	4.7 nF	4.7 nF	4.7 pF