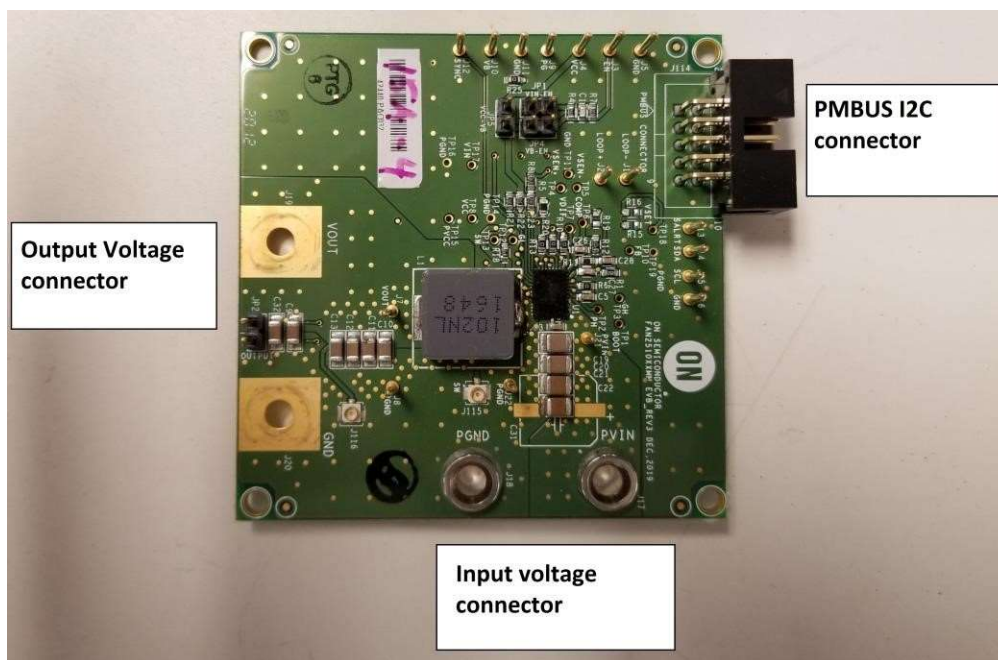


Test Procedure for the FAN251040EVB Evaluation Board

I. Description and scope

This document applies to the FAN251040 Rev.3 Evaluation Board (EVB) PCB fab with a FAN251030 or FAN251040 High Current Synchronous Buck Converter IC soldered into the WQFN34 5x7 0.5P footprint.

II. EVB Photo – Below is a photo of the standard FAN251040EVB



III. Setup and Procedure

Using cables with banana jack connector, connect a power supply capable of 20V and 20A to the input voltage connector (+ to PVIN, - to PGND). Set the input supply voltage to 12V and the current limit to 1A at the start. Plug in a jumper on JP4 and JP5. Connect the output voltage connector (+ to VOUT, - to GND) to the EVB and the other end to an electronic load capable of sinking at least 40A.

After verifying the correct input and load connections and verifying the input voltage and current limit settings of the input supply, turn on power to the EVB. If no values were changed on the EVB prior to this, the output voltage should be 3.3 V \pm 10 mV. Connect an oscilloscope probe to the SW test point (TP13) and verify that the switching frequency is 600 kHz. At this time, you may also start raising the input

supply voltage up to the maximum of 18 V to verify that the EVB will operate at that voltage.

To test the current capability of the EVB, set the electronic load to 35A. Increase the current limit of the input supply to at least 15A and set the input voltage to a value of 12 V. The FAN251040 can handle up to 35A. Verify the output can maintain about 3.3V at max load for each chip. Monitor the switch node on an oscilloscope while stepping to load from 0A to max, switching frequency should remain at about 600kHz with the same duty cycle (this is a fixed frequency PWM part).

IV. Making adjustments

R16 (Vset resistor) on the FAN251040EVB is used to adjust output voltage. The resistor value correspond to specific output voltage are listed on the table below. By default, R16=7.87K Ω , which correspond to 3.3Vout.

Table 2. V_{OUT} PRESET SETTING

VSET Resistor Value (k Ω)	V _{OUT} preset value (V)
Short	0.6
0.845	0.6
1.3	0.9
1.78	0.95
2.32	1
2.87	1.05
3.48	1.2
4.12	1.25
4.75	1.5
5.49	1.8
6.19	2.1
6.98	2.5
7.87	3.3
8.87	5
10 & greater value	0.8

V. PMBUS Communication hardware and software

Install the provided software (dgSCOM). Hook up the provide I2C interface dongle to the PMBUS connector on the EVB. Following the instructions below to setup the software with the EVB.

By connecting dgsCOM interface board to jumper (here), We could use the GUI to change the setting.
 User Friendly GUI: Users can read/write and check the status of PMBUS commands.

- PMBUS Configurations
- PMBUS Control
- PMBUS Faults
- PMBUS Status
- PMBUS Monitor
- PMBUS Commands Details
- RunBatch to Load the file
- TestCase to pass/fail tests
- Trim

FAN2510XXMN GUI Boot-up

- Hook up the I2C dongle via USB
- Boot up dgsCOM.exe
- dgsCOM should recognize the dongle as UM232H
- FT_OK shown after connecting to the dongle properly

Click the connect button

Dongle hooked up

Before connecting to dongle

Dongle connected properly

FAN2510XXMN GUI Loading Register Map

- Load up the register map corresponding to FAN251030/40
- Once reg map load successfully. A list of registers will pop-up

Click this icon to load register map

Open the register map

Default slave addr = 0Fh

Default I2C freq = 100kHz. Can be changes to 400kHz

To check if PMBUS communication is working. Start with a 12V input supply to the

EVB. Go to register 88h (read_vin), click on the “Read” button a few times. Check to see if the “Value” window shows about 12V.



This ends the instructions for powering up and testing the FAN251040EVB. Questions or comments please send them to Alan.Feng@onsemi.com