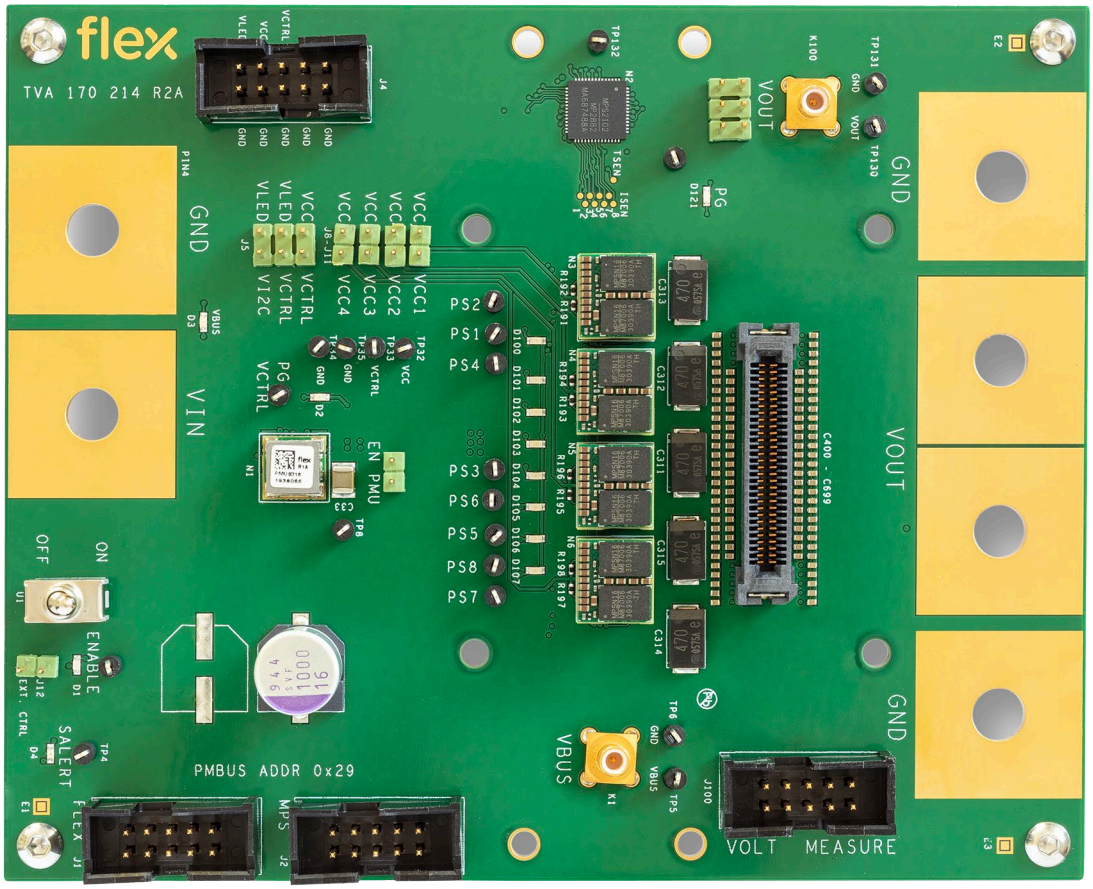
Power Modules

Evaluation board for 2-phase integrated power stage

USER GUIDE for BMR510

ROA 170214



Contents

1 Introduction

This User Guide provides a brief introduction and instruction on how to use test board ROA 170214 for the 2- phases integrated power stage module, BMR510. More information about BMR510 is found in the Technical Specification.

1.1 How to contact Flex Power Modules

For general questions or interest in our products, please visit our website or contact your local sales representative.

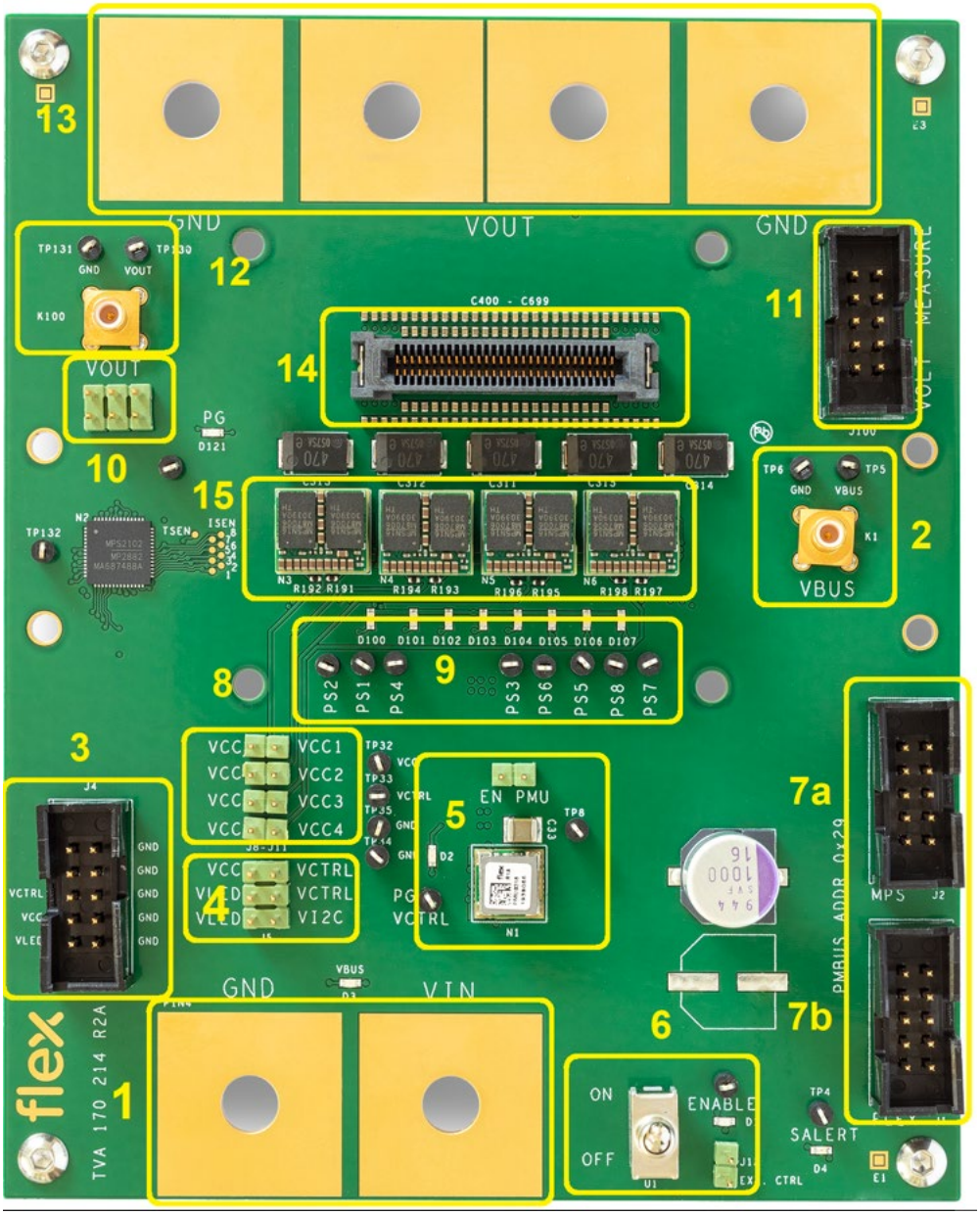
Flexpowermodules.com

1.2 Prerequisites

In order to operate the evaluation board, the following is needed:

- Power supply 5-16 V
- MPS PMBus adaptor and GUI compatible with controller MP2882R1

2 Position overview



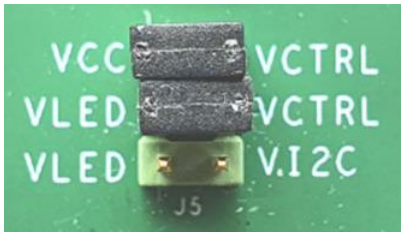
Position description

1. Input voltage connectors.
2. Input voltage measurement connector.
3. Connector for external +3.3V supplies (VCC, VCTRL, VLED) if on board supply (PMU module) is not used.
4. Jumpers to bridge VCC, VCTRL and VLED together.
5. PMU module circuitry for on board +3.3V supply.
6. Output voltage enable circuitry.
7. PMBus connectors.
8. Integrated power stage modules VCC supply jumpers.
9. Integrated power stage modules PWM signals test points and phase active LEDs.
10. Integrated power stage modules test type selection jumpers.
11. Integrated power stage modules voltage connector for ripple measurements. Points of measurement are the pads of VOUT capacitors (SP-CAP polymer).
12. Integrated power stage modules output voltage measurement connector. The type of test measurement related to the selection of 10.
13. Integrated power stage modules output voltage connectors.
14. Load slammer socket for integrated power stage rail.
15. Integrated power stage modules 1-4 (from left to right).

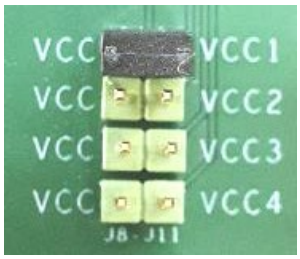
3 Power-up instructions

3.1 Power-up instruction

- Un-populate the external enable control jumper J12 (position 6).
- Populate the PMU enable jumper J30 ("EN PMU") (position 5). This enables the PMU module to supply VCTRL and VCC from the input voltage.
- Bridge VCTRL, VCC and VLED together by jumpers in J5 (position 4).



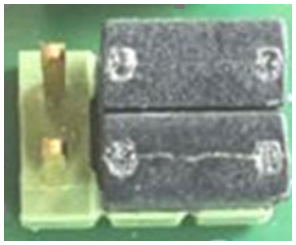
- Make sure the VCC supply jumper (J8-J11, position 8) is populated for each VRM module (1 to 4, from left to right) that shall be operated:



- Use the Integrated power stage modules' test type selection jumpers (position 10) to make the choice of sense point:

  - To test load transient and output ripple, test type selection jumpers (position 10) should be populated to left. Use connectors at position 12 to measure Vout.

  - To test efficiency, test type selection jumpers (position 10) should be populated to right. Use connectors at position 12 to measure Vout.



- Set the enable switch (position 6) in OFF position
- Apply Vin = 12V through connectors (position 1)
- Connect an MPS adaptor to PMBus connector J2 (position 7a). The MP2882 controller should now be detected at address 0x29 when making a scan in the MPS GUI
- Enable the output voltage by setting the enable switch (position 6) in ON position. Depending on controller configuration the power good LEDs will give green light

4 Board supplies

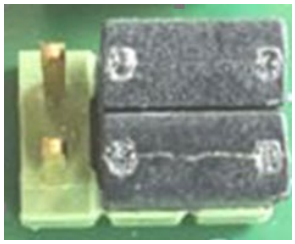
Supply	Description
VIN	Input supply to the VRM modules and the PMU POL module. Supplied by the connectors (position 1).
VCC	Driver supply for VRM modules. Supplied by jumper to VCTRL (position 4) or connector (position 3).
VCTRL	Supply for controller. Supplied by PMU module or connector (position 3).
VLED	Supply for all LEDs on the test board. Supplied by jumper to VCTRL (position 4), jumper to VI2C (position 4) or connector (position 3).
VI2C	Supply (3.3V) provided by Flex PMBus adaptor connector (position 7b).

5 Efficiency measurement

In order to measure the efficiency of the integrated power stage modules alone, the following setup should be made:

- Disable the PMU module by un-populating jumper J30 (position 5).
- Disable the integrated power stage modules not to be measured by un-populating the corresponding VCC supply jumpers (position 8):

- Set the position jumpers (position 10) in right position for the BMR510 module to be measured. By default, the sense point will be at the pads at module 1 but it also possible to sense at module 4 (or weigh between module 1 and 4), see schematic for details



- Separate VCC, VCTRL and VLED supplies by un-populating all jumpers in J5 (position 4).
- Supply the integrated power stage modules (VIN, VCC=+3.3V) and their controller (VCTRL=+3.3V) by external supplies through the connectors (position 1, 3).

Measure integrated power stage module by using Vin connector (position 2) and Vout connector(position12).
The input and output currents must be measured by external equipment.

6 Phase active LEDs

These LEDs (position 9) indicate the integrated power stage phases currently switching. Each LED will light up when the corresponding PWM signal is active.

7 Contact us

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