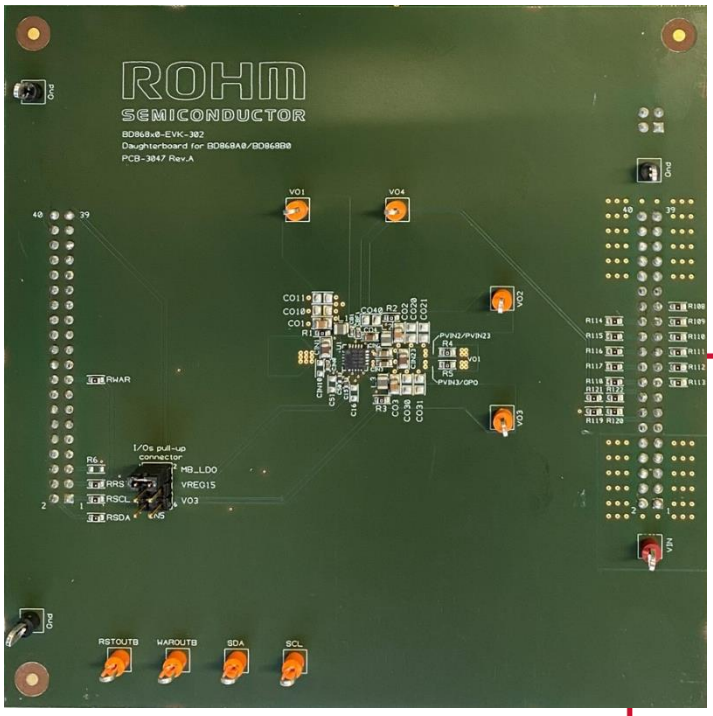
BD868x0MUF-C

Camera PMIC EVK User Guide



User's Guide

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1. REVISION HISTORY

Revision	Date	Description
001	13 July 2022	First edition

Important Notice

This evaluation board is intended for **product evaluation in a research and development context only** and is not intended for resale to end consumers and it is not authorized for end customer or household use. This board may not comply with CE or similar standards (including, but not limited to the EMC directive) and may not fulfil other requirements of the country it will be operated in by the user. The user shall ensure that the evaluation board will be handled in a way that is compliant with all the standards and regulations in the country it will be operated in.

The evaluation board provided here has only been subjected to functional testing under typical load conditions. The design of this evaluation board is tested by ROHM only as described in the user guide for this board. The design is not qualified in terms of safety requirements, manufacturing and operation over the entire operating temperature range or lifetime.

This evaluation board may only be used by authorized personnel that is properly trained in recognizing and dealing with the dangers of testing powered on equipment and generally experimenting with powered on circuits. Ensure you review this user guide as it contains important safety warnings. Take care that capacitors on the board have discharged fully before touching any part of the board. Always place the evaluation board under appropriate covers, such as in a Perspex box, to protect against accidental touching of high voltage parts BEFORE applying a voltage supply to the board.

To ensure safe operation, please carefully read all precautions before handling the evaluation board

Before Use

[1] Verify that the parts/components are not damaged or missing (i.e. due to the drops).
[2] Check that there are no conductive foreign objects on the board.
[3] Be careful when performing soldering on the module and/or evaluation board to ensure that solder splash does not occur.
[4] Check that there is no condensation or water droplets on the circuit board.

During Use

[5] Be careful to not allow conductive objects to come into contact with the board.
[6] Please exercise extreme caution when using conductive tools such as tweezers and screwdrivers.
[7] If used under conditions beyond its rated voltage, it may cause defects such as short-circuit or, depending on the circumstances, permanent damages.

After Use

[8] The ROHM Evaluation Board contains the circuits which store the high voltage. Since it stores the charges even after the connected power circuits are cut, please discharge the electricity after using it, and please deal with it after confirming such electric discharge.
[9] Protect against electric shocks by wearing insulated gloves when handling.

This evaluation board is intended for use only in research and development facilities and should by handled **only by qualified personnel familiar with all safety and operating procedures.**

SAFETY PRECAUTIONS

Caution: This evaluation board may only be used by authorized personnel that is properly trained in recognizing and dealing with the dangers of testing high voltage equipment and generally experimenting with high voltage circuits. This board should only be used in a lab facility properly equipped for the safe testing of power electronic systems at the relevant voltage levels. Failure to comply may result in damage to equipment, personal injury or death.

Warning: This evaluation board contains DC bus capacitors which take time to discharge after removal of the power supplies. Before working on the evaluation board wait after deactivating all connected power supplies to ensure that the capacitors have discharged.

Warning: Before disconnecting, connecting or reconnecting wires or measurement probes to the board or before touching the board or performing any manipulations on the board ensure that all external power is removed or disconnected from the board and ensure the capacitors have discharged. Failure to do so may result in damage to equipment, personal injury or death.

Caution: Some component surfaces on the evaluation board may become hot during testing and remain hot for a certain time after turn-off. Take appropriate measures while handling the board after use. Failure to do so may cause personal injury.

Caution: Incorrect connection of power supplies or loads can damage the board. Carefully review the information in this document.

2. OVERVIEW

2.1. Purpose

The Camera PMIC EVK has the purpose to explore the functionality of the new camera PMIC BD868x0MUF-C.

This user's guide describes the content of the Camera PMIC EVK kit, that consists of:

- 1x Daughter Board (DB) BD868x0-EVK-302 (PCB3047), in the future abbreviated as BD868x0-DB, that is board under test (DUT)
- 1x Mother Board *PMIC-MB-EVK-302 Revision B (PCB3046)*, in the future abbreviated as PMIC-MB-EVK, with already plugged-in MCU board (CY8CKIT-059)
- 1x ROHM PMIC EVK GUI interface

2.2. Acronyms & Abbreviations

Acronym	Description
DB	Daughter Board
MB	Mother Board
GUI	Graphical User Interface
PMIC	Power Management Integrated Circuit
EVK	Evaluation Kit
DUT	Device Under Test
PMIC-MB-EVK	Mother board EVK
BD868x0-DB	Daughter board
BOM	Bill of Material

Table 1: Acronyms & Abbreviations

2.3. EVK Part List

The EVK box consist of:

- 1x PMIC-MB-EVK
- 1x BD868x0-DB
- 1x USB – Micro-USB cable
- 1x USB stick including software program ROHM PMIC EVK

3. START UP

Some external hardware is needed for the evaluation of the BD868x0-DB. In particular:

- A power supply, able to supply voltage in the range 4.0V to 18V and power capability of at least 15W
- An electronic load, able to supply more than 2A

3.1. Boards Connection Overview

Figure 1 shows an overview of the board connection, highlighting how to connect external hardware for evaluation of our Camera PMIC EVK.

For detailed steps, please refer to the next paragraphs.

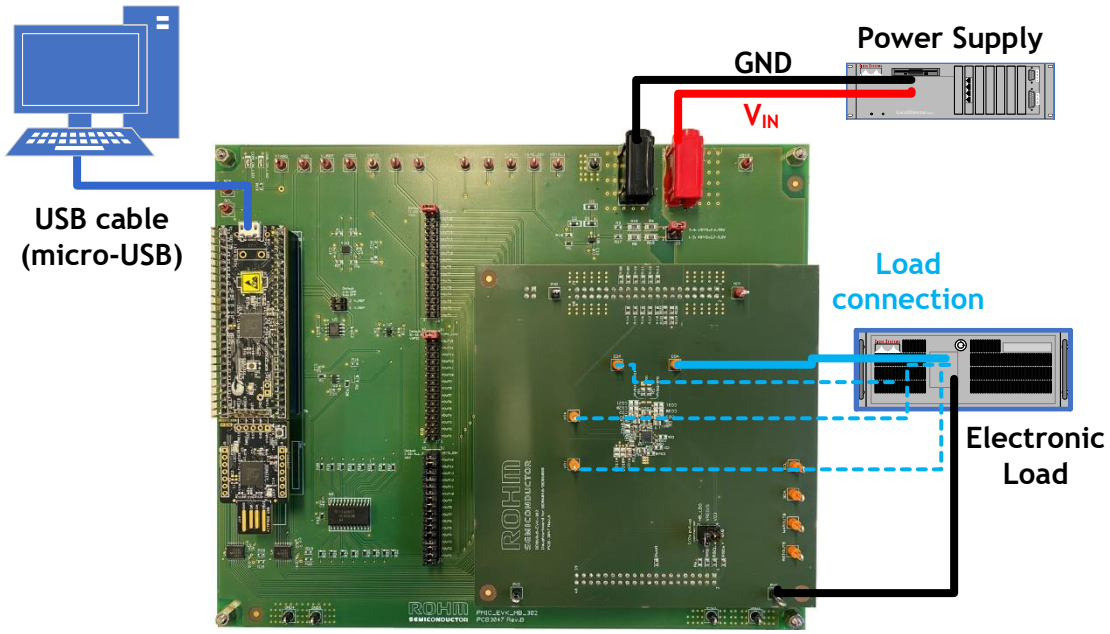


Figure 1: Boards connection overview

3.2. GUI Software Installation

To run and test the functionality of BD868x0-DB via a computer, the dedicated GUI need to be installed.

Download the latest version via our website or use the USB stick provided with the EVK kit and extract the .zip file in your own computer folder. Then run the executable file ROHM_EVK.exe to start the GUI.

Figure 2: Executable file

3.3. PC Connection

Communication between GUI software and EVK hardware is achieved by inserting a micro-USB cable into the CY8CKIT-059 plug-in board that is mounted on the MB (see Figure 1 and Figure 4).

Once the communication between GUI and CY8CKIT-059 plug-in board is established, the "EVK connection" box of the GUI software will turn to yellow. The initialization steps are also shown in the "Log" tab at the bottom (see figure below).

Figure 3: EVK connection confirmation

4. MB DESCRIPTION

The Mother board can be used with a variety of different DBs that are developed for different ROHM ICs. It acts as an interface between the DBs, PC and external equipment.

Functional blocks of the board are shown below:

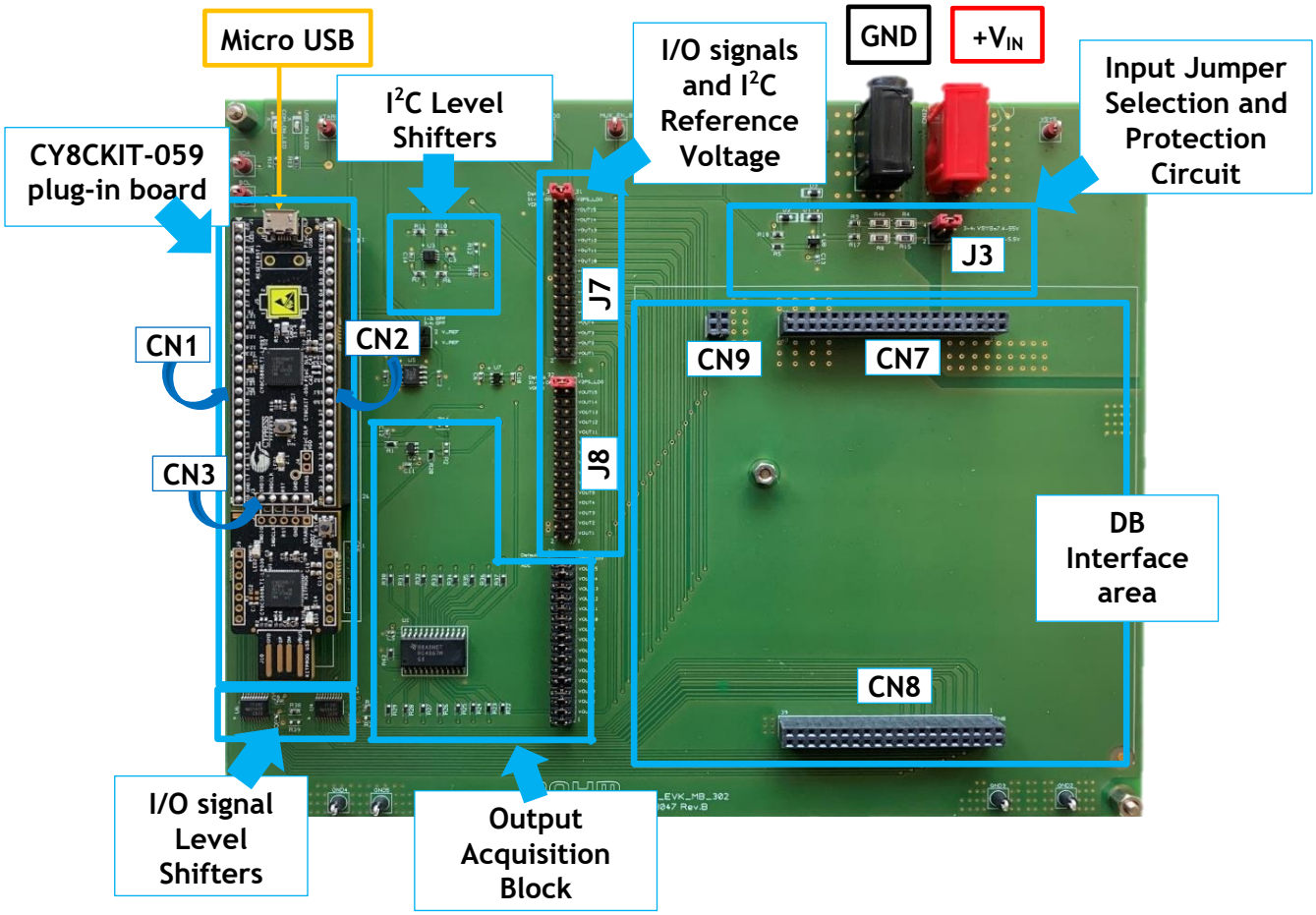


Figure 4: MB Functional Blocks

For schematic details and BOM please refer to paragraph 7.

4.1. Input Jumper Selection and Protection Circuit

Different DBs can have different input voltage ranges. The input voltage is digitized and displayed in the GUI. To get a better accuracy of the displayed input voltage jumper J3 must be set appropriately according to the current input voltage range:

- 2.7 – 5.5V
- 7.4 – 55V

These two paths have different voltage divider circuits. They divide the value of the sensed input voltage such that it remains below the maximum admissible value for the buffered sense circuit.

To avoid destruction of the sense circuit in case the input voltage is beyond the selected range, a circuit protection is onboard to clamp the scaled-down input buffer voltage to a maximum of 4V.

Please note that if J3 is placed in the wrong position the input voltage value shown by the GUI will be incorrect.

4.2. MCU interface

A CY8CKIT-059 plug-in board is included in the MB set. It connects via 3 connectors CN1, CN2 and CN3 (Figure 4 – under CY8CKIT-059 plug-in board) to the MB. Its purpose is to manage the communication between the GUI, MB and DB.

4.3. DB Interface

The DB is plugged into three connectors (CN7, CN8 and CN9).

CN7 carries all power signals (VIN and VOx), CN8 contains all the PMIC signal lines, whereas CN9 is only a fool proof connector to prevent an erroneous DB plug-in orientation.

4.4. Level shifters

The logic signals of the CY8CKIT-059 plug-in board and the MB could have different voltage levels. To adapt the levels three level shifters are foreseen. Two of them, U4 and U6, take care of the I/O signals while U3 handles I2C signals.

4.5. Reference Voltage for I/O signals and I^2C signals

Different DBs could lead to different required reference levels for I/O signals (VGPIO) or I2C (VI2C). For this reason, the jumper connectors J7 and J8 (Figure 4) set the voltage reference of VGPIO and VI2C to any chosen output voltage VOx that is provided by the DB or by the local LDO 1.8V reference.

The default setting for both jumpers J7 and J8 is between pin #31 and #32, so the local LDO 1.8V is set for both VGPIO and VI2O. For any additional information on the details of other pin lines, please refer to the schematic in paragraph **Fehler! Verweisquelle konnte nicht gefunden werden.**.

4.6. Outputs Acquisition Block

The MB input voltage (that is also the DB input voltage) and all outputs of the DB are sensed and transferred to the CY8CKIT-059 plug-in board by a multiplexer followed by a buffer stage.

5. DB DESCRIPTON

The BD868x0-DB has been designed to provide an easy tool to test the functionality of new camera PMICs BD868A0 and BD868B0.

The core design of the application is compact. However, the large board size and multiple test points allow a quick and easy evaluation.

The BD868A0/B0 contains 3 buck regulators and 1 LDO output as well as an internal linear regulator.

The schematics and the layout are designed with some unmounted capacitors both at the input and at the outputs. This provides more flexibility for the input- and output buffering.

5.1. DB Plug-in

Unless already put in place, before starting the board evaluation, BD868x0-DB needs to be plugged-in into MB. Please take care to plug-in correctly in order not to destroy the board itself.

Board orientation is given by connector CN3 (see Figure 5).

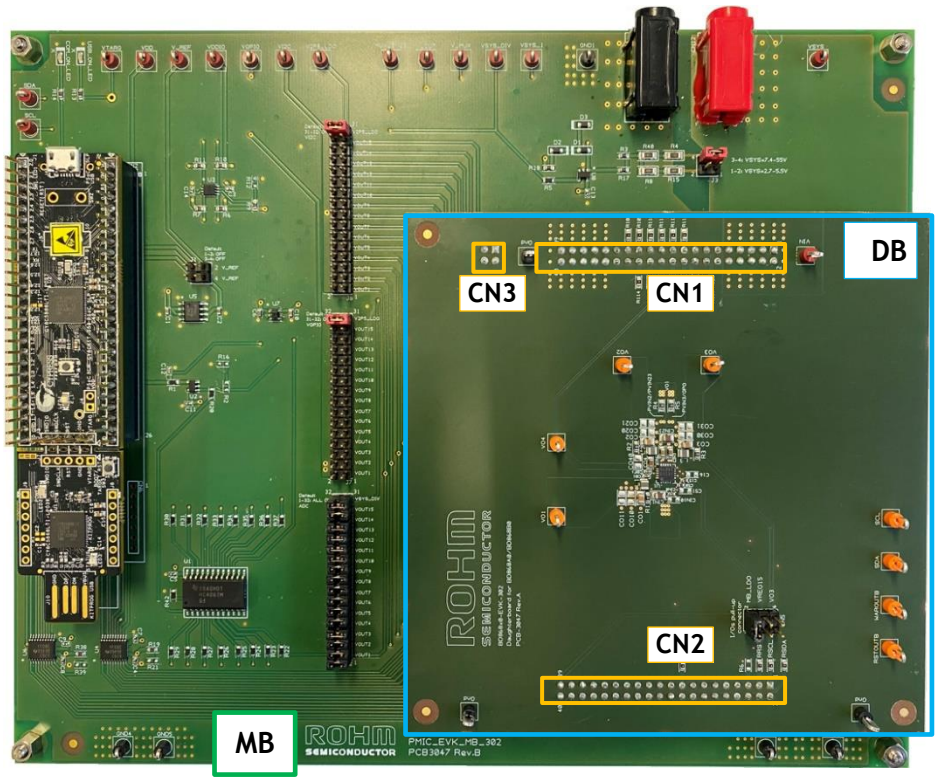


Figure 5: BD868x0-DB plugged into MB

5.2. Boards Powering

Connect an input voltage of 4V to 18V to the banana jacks on the MB. BD868x0-DB is powered via MB banana jacks through CN1 (see Figure 5).

IMPORTANTE NOTE:

Before applying power to the MB, please select the current input voltage range according to the plugged-in DB. In case of BD868x0-DB, please set jumper J3 on MB (see Figure 6) between pin #3 and #4 for range 7.4 – 55V.

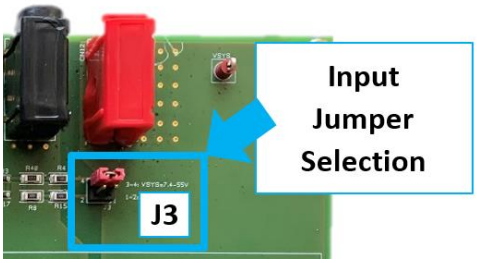


Figure 6: Input Voltage Reference Selection via J3

To power ON the EVK set, an external power supply needs to be connected to the banana jacks (see Figure 1 and Figure 4) that mounted on the MB. Check that the input voltage is in accordance with the range reported in BD868x0 datasheet (please take care of the correct orientation of the inputs since no reverse protection is foreseen on the MB).

5.3. Load Connection

Each output can be tested in light load or in full load.

An external load can be connected to the access points listed in the Table 2 according to the maximum value, as indicated in the datasheet. As an example, the picture below shows how an electronic load should be connected to output 3.

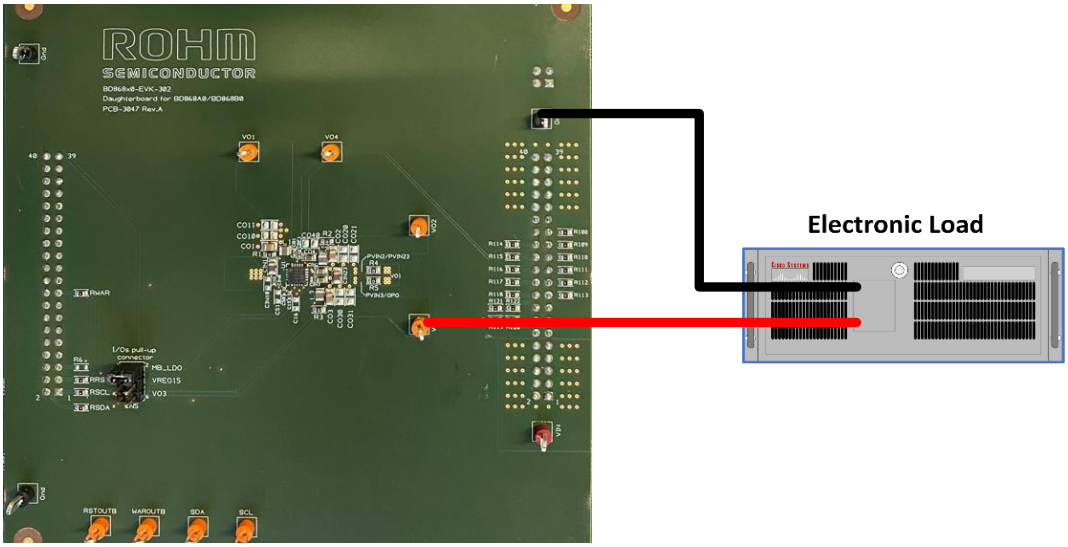


Figure 7: Example of electronic load connected to VO3

5.4. Board Access Points

The EVK board has many access points to ease measurements of PMIC outputs and other signals.

Below is a table that summarize them:

Access point	Description

VO1	Test point for Output 1
VO2	Test point for Output 2
VO3	Test point for Output 3
VO4	Test point for Output 4
SDA	Test point for serial interface data
SCL	Test point for serial interface clock
WAROUTB	Test point for Warning output
RSTOUTB	Test point for Reset output
VIN	Test point for board Input Voltage
GND	Test point for Ground

Table 2: List of access points

5.5. Stand-alone functioning

BD868x0-DB has been designed to be used in combination with the PMIC-MB-EVK and the GUI interface. However, the DB can also be operated in stand-alone mode without the GUI software.

In this case, an input voltage must be applied either to CN1 (positive voltage V_{IN} connected to pin #1 to #10 and GND to pin #31 to #40) or to the related access points V_{IN} and GND.

The jumper at CN5 must be put on position 5-6.

5.5.1. I^2C and Warning/Reset Output Pull-up Jumper

In normal operation (i.e., when plugged into the MB), the pull-up voltage for I^2C communication and warning/reset outputs is given by the level shifter installed on the MB. In this case, the jumper of CN5 must be removed.

However, in case of stand-alone use or in case of communication problems between DB and MB, a jumper on connector CN5 can be placed to have a different voltage reference.

More precisely, there are 3 possible pull-up voltages depending where the jumper is placed on connector CN5:

- 1.8V LDO from MB (if connected) if jumper is placed between pin #1 and pin #2
- 1.5V from internal regulator of BD868x0 if jumper is placed between pin #3 and pin #4
- 1.8V from output VO3 of DB if jumper is placed between pin #5 and pin #6

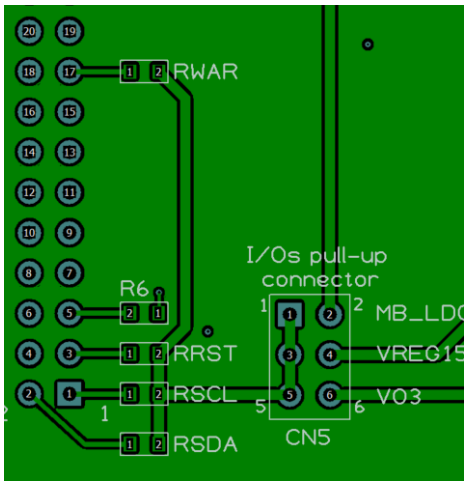


Figure 8: Setting to be check for stand-alone DB use

6. USE OF THE GUI

6.1. DB Selection

After applying the power, as described in the previous paragraphs, select the board name "*BD868A0-EVK-302 DS2 (CRC ON, RnD)*" in the drop-down menu present on the top right side in the main page of the GUI. Alternatively, you could also choose the board in the tab "Board" on the top-left side of the GUI.

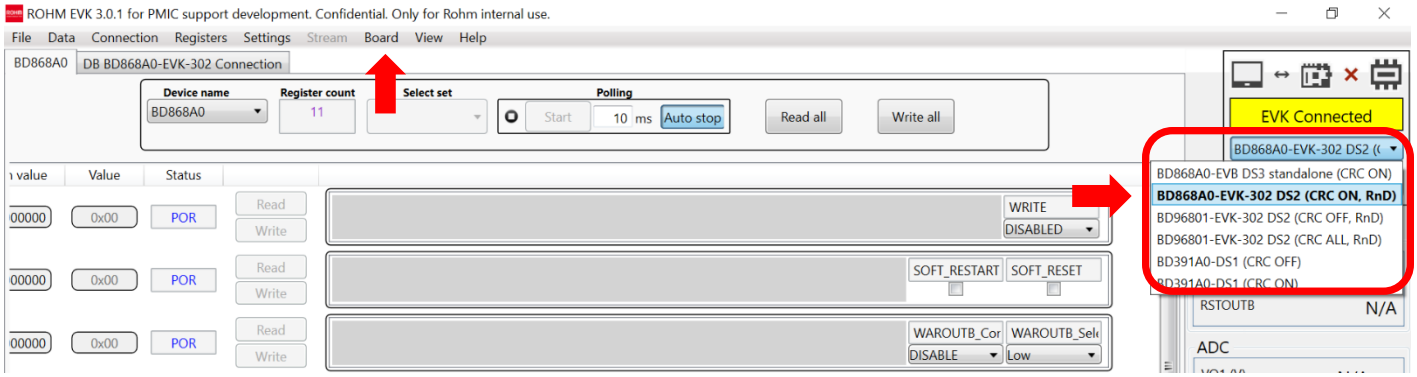


Figure 9: Board selection

Once done, you need to press the "Confirm board" button. Now the field "EVK connection" turns green.

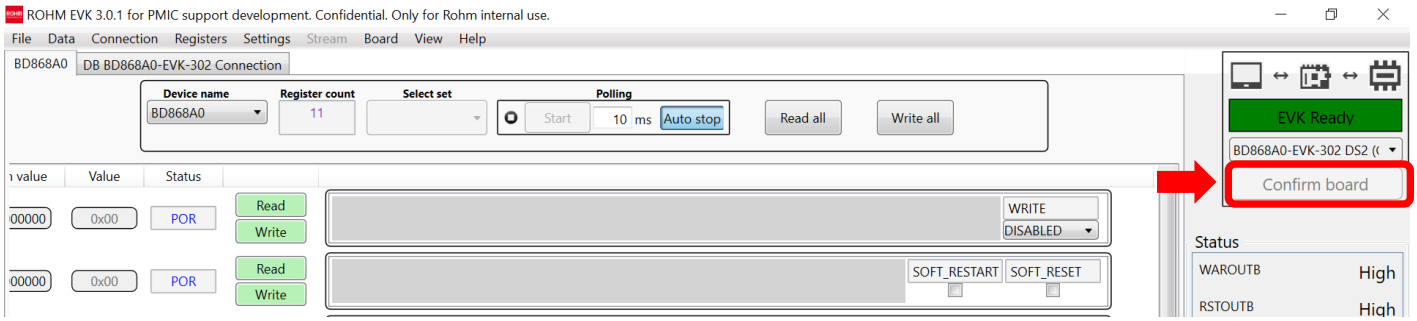
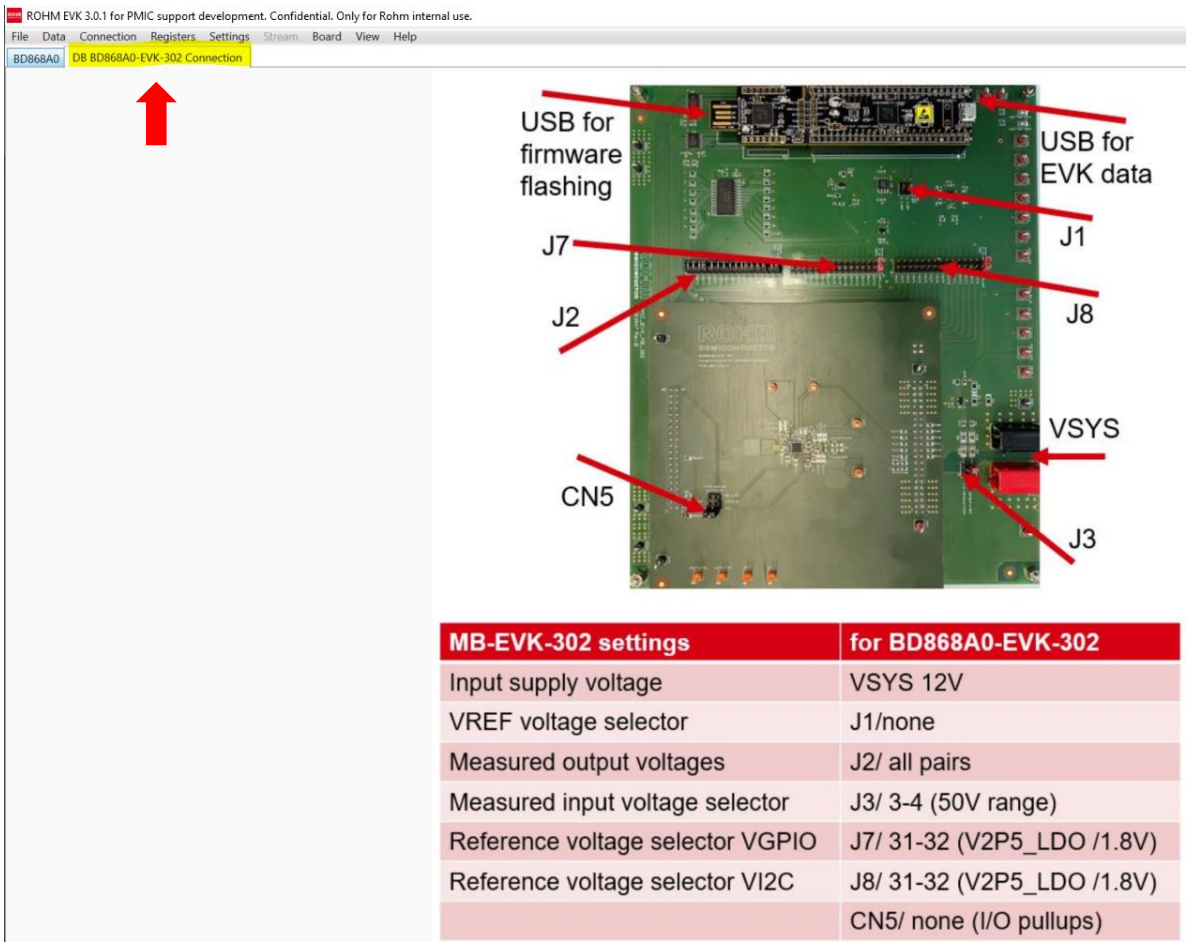


Figure 10: Confirm board

Board matching can also be verified in the "DB BD868A0-EVK-302 Connection" tab:



MB-EVK-302 settings	for BD868A0-EVK-302
Input supply voltage	VSYS 12V
VREF voltage selector	J1/none
Measured output voltages	J2/ all pairs
Measured input voltage selector	J3/ 3-4 (50V range)
Reference voltage selector VGPIO	J7/ 31-32 (V2P5_LDO /1.8V)
Reference voltage selector VI2C	J8/ 31-32 (V2P5_LDO /1.8V)
	CN5/ none (I/O pullups)

Figure 11: GUI "DB BD868A0-EVK-302 Connection" tab

6.2. I²C communication confirmation

After selection of the board name and pressing of the "Confirm board" button, the confirmation of the correct functioning of the board is given in the "Connection status" box on the top right side of the GUI.

A green "EVK Ready" will appear as depicted in Figure 12.

Input & output voltages are also simultaneously displayed in the related cells.

Figure 12: Communication information in main page of GUI tool

6.2.1. Board Lost of Communication

Problems with I^{2}C communication during testing operation will not generate an automatic failure message. However, the status turns to "Error" after pressing any read/write button.

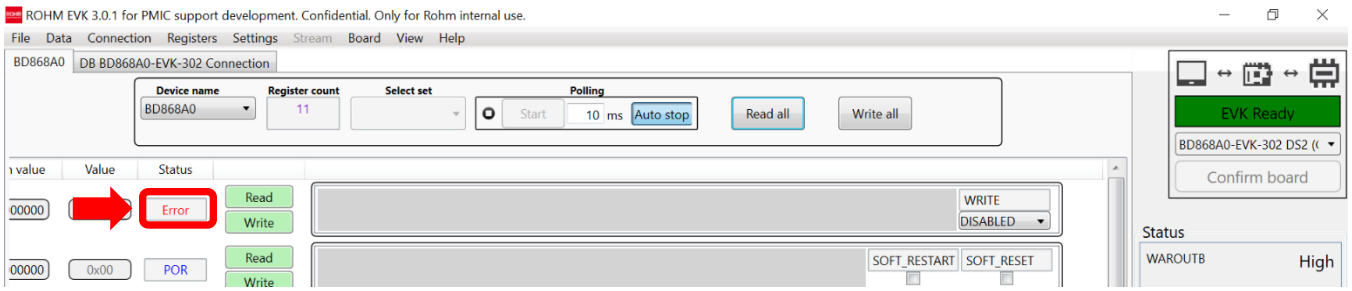


Figure 13: GUI Lost of communication

In this state the voltage values will not be updated even if the voltage box keeps showing the last value before the loss of communication.

Also, no access to PMIC registers is possible.

6.3. GUI Menus

In the top left corner of the GUI menu a "Help" menu provides information regarding revision, version and configuration of the CY8CKIT-059 plug-in board and the GUI software.

On the right side is an area containing the following elements:

- "EVK connection" box that indicates the status of the communication between GUI and CY8CKIT-059 plug-in board that is plugged-in into the MB
- Drop down menu for EVK selection
- "Confirm board" button that needs to be pressed, once the appropriate EVK is selected from the drop-down menu
- Status box, to show warnings and reset outputs. Below them is a box "ADC" indicating the input voltage as well as all output voltages.

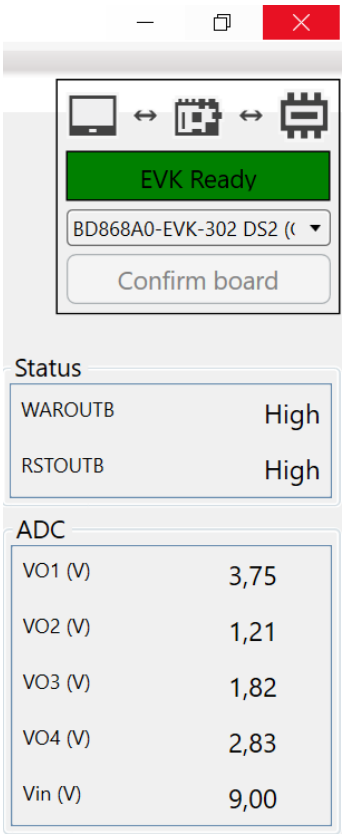


Figure 14: Right side menus

The GUI contains 9 main tabs:

- File (allows to exit GUI software)
- Data
- Connection
- Registers
- Settings
- Stream (disabled for BD868x0 GUI)
- Board (see chapter 6.1)
- View (enables/disables additional views)
- Help

The following sub-chapters describe some of them.

6.3.1. Data / Connection tabs

The Data tab offers the possibility to log or stream the data.

The Connection tabs offers choices to connect the EVK via USB cable or BLE (Bluetooth Low Energy) connection. However, BLE is not supported for the BD868x0-EVK-302.

6.3.2. Registers tab

Register contents can be saved into a file or into the IC. It is also possible to read registers from a file or from the IC.

6.3.3. Settings tab

The most important drop-down item is probably "Reconfigure product family". The correct product family needs to be assigned to the GUI software tool to make it work correctly. As a preparation the appropriate json software key that needs to be requested at a Rohm representative, needs to be copied into the folder ROHM-EVK-GUI→ConfigurationKeys.

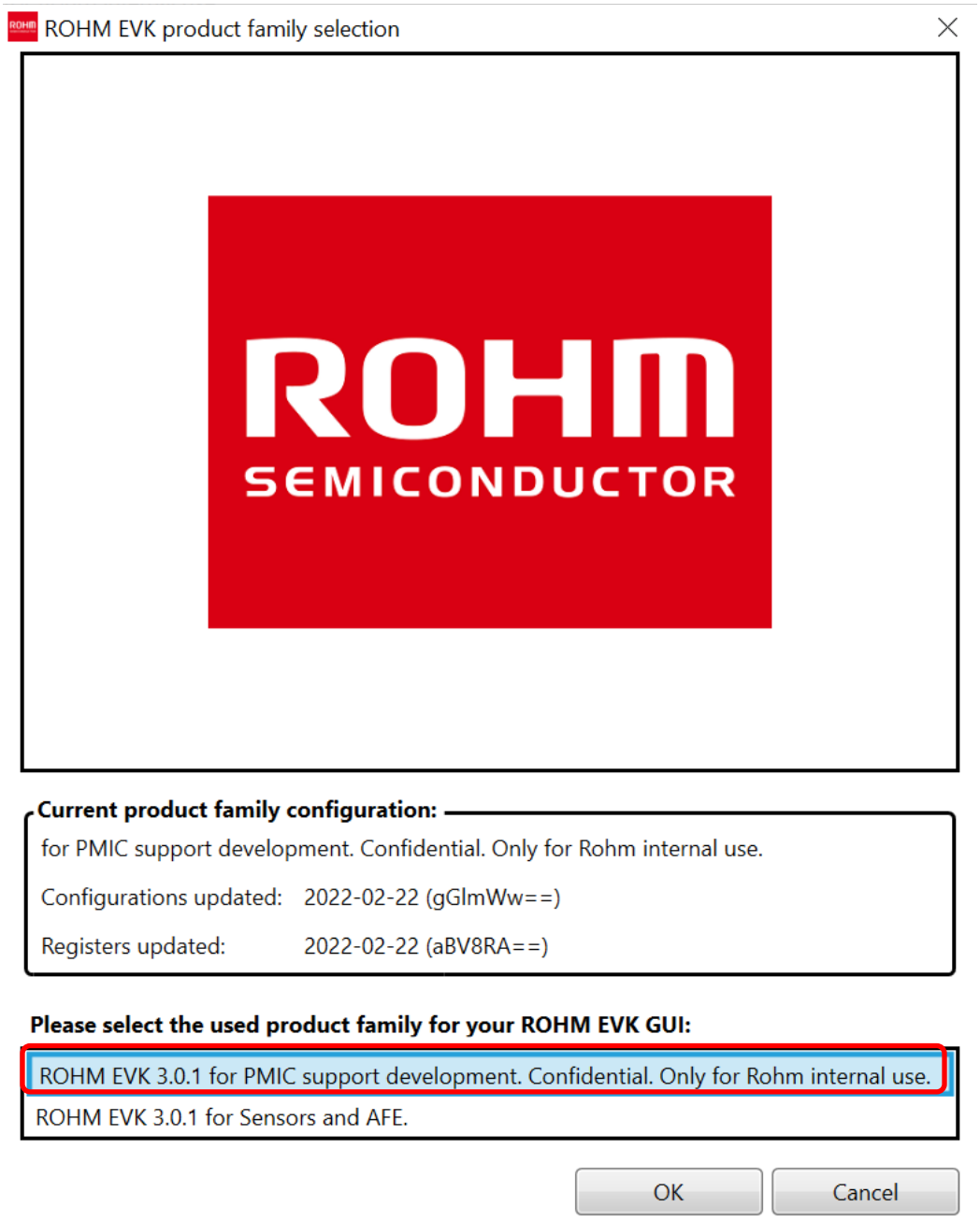


Figure 15: Settings tab → Reconfigure product family

6.4. GUI main area

For each register address, name, binary value, hexadecimal value and status values are shown. "Read" & "Write" buttons are also present to read out a register or to write into a register.

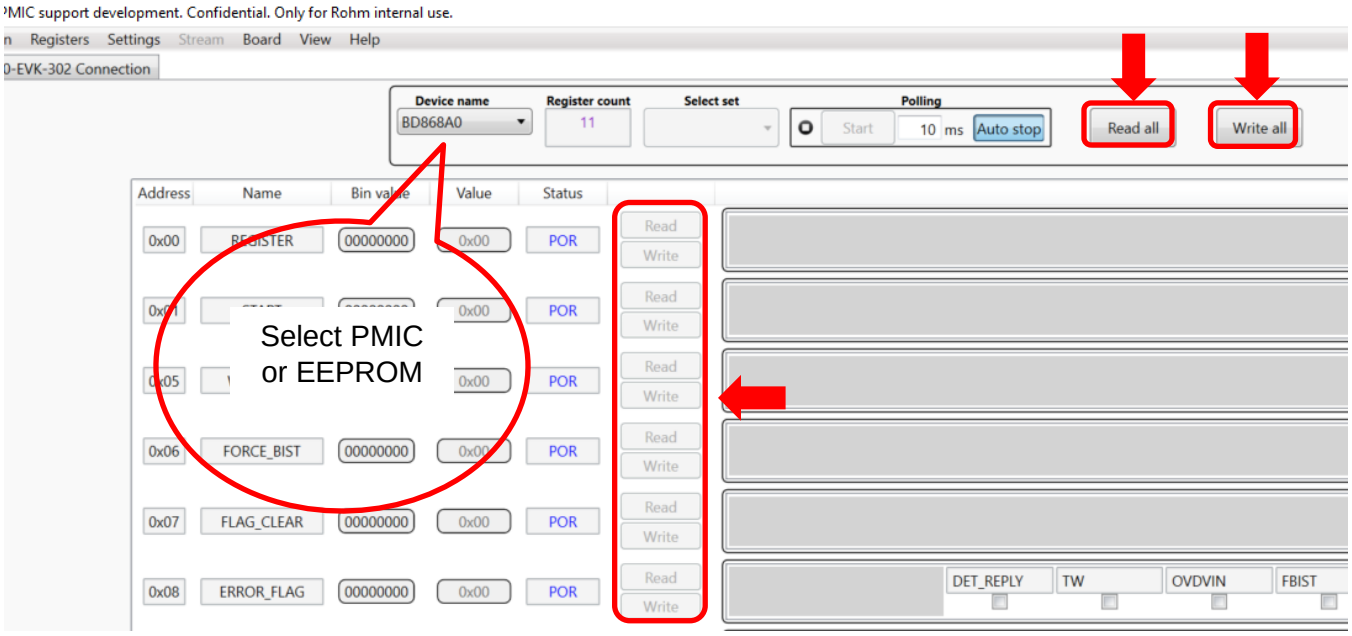


Figure 16: Read/write register buttons

6.4.1. Read register

Any register can be read by pressing the "Read all" button highlighted in the figure **Fehler! Verweisquelle konnte nicht gefunden werden.** or by using the "Read" button that is part of each register row in the GUI.

The hexadecimal value will be displayed in the "Value" box. The single bit indication will be updated in the register map area as well.

Figure 17: Register value visualization

If read action fails, the status next to the address will show the message "Error".

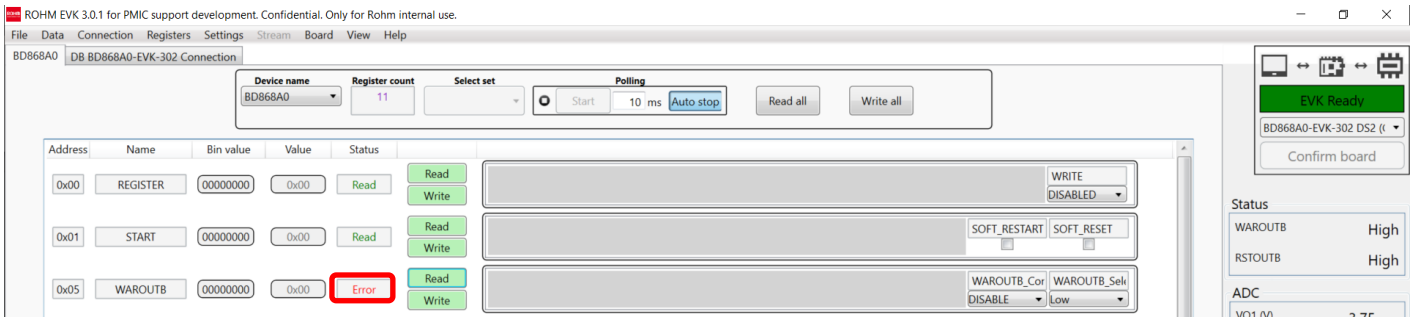


Figure 18: "Error" status read

6.4.1.1. Write Register

To write any of the writable registers, the user must first enable the write-operation. This is done changing the first bit of register 0x00:

1. Use the drop-down menu to select "*ENABLED*" in register 0x00:

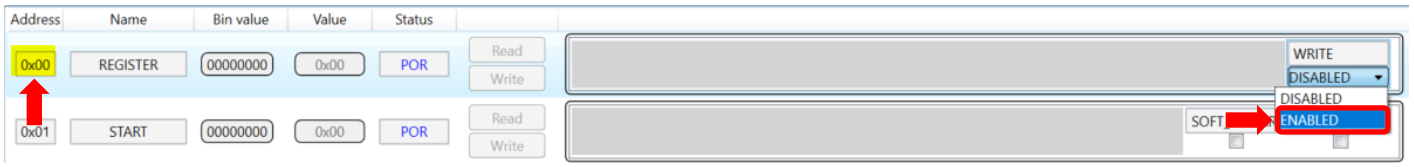


Figure 19: Select write-protection bit

2. Now the binary value and the hexadecimal value change and "Edited" appears in the "Status" box.

Figure 20: Edit write-protection bit

3. Press "Write" button and the status box will change to "*Stored*".

Figure 21: Write protection bit

If the write-protection bit is not enabled first, no register can be written, and the indication "W*rite Fail*" will appear in the status box next to the register.

Figure 22: "Write Fail" status when write bit not enabled

If a user tries to write a register while no I²C communication is present, "Error" will be displayed in the status box:

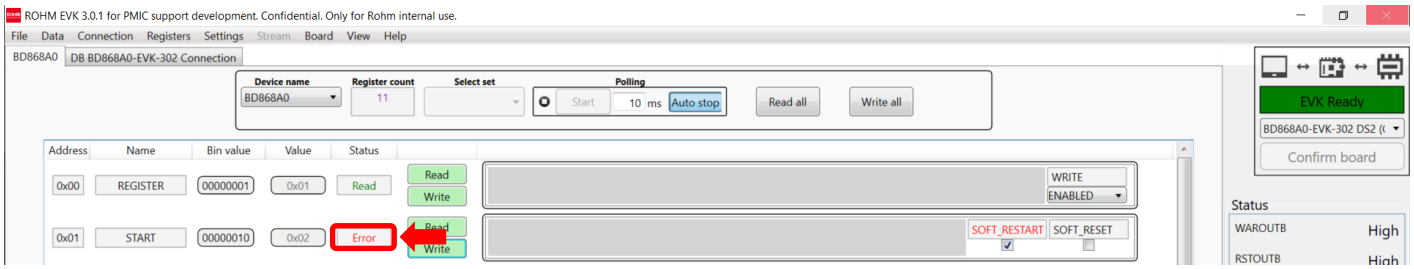


Figure 23: "Error" status when no I²C communication is present

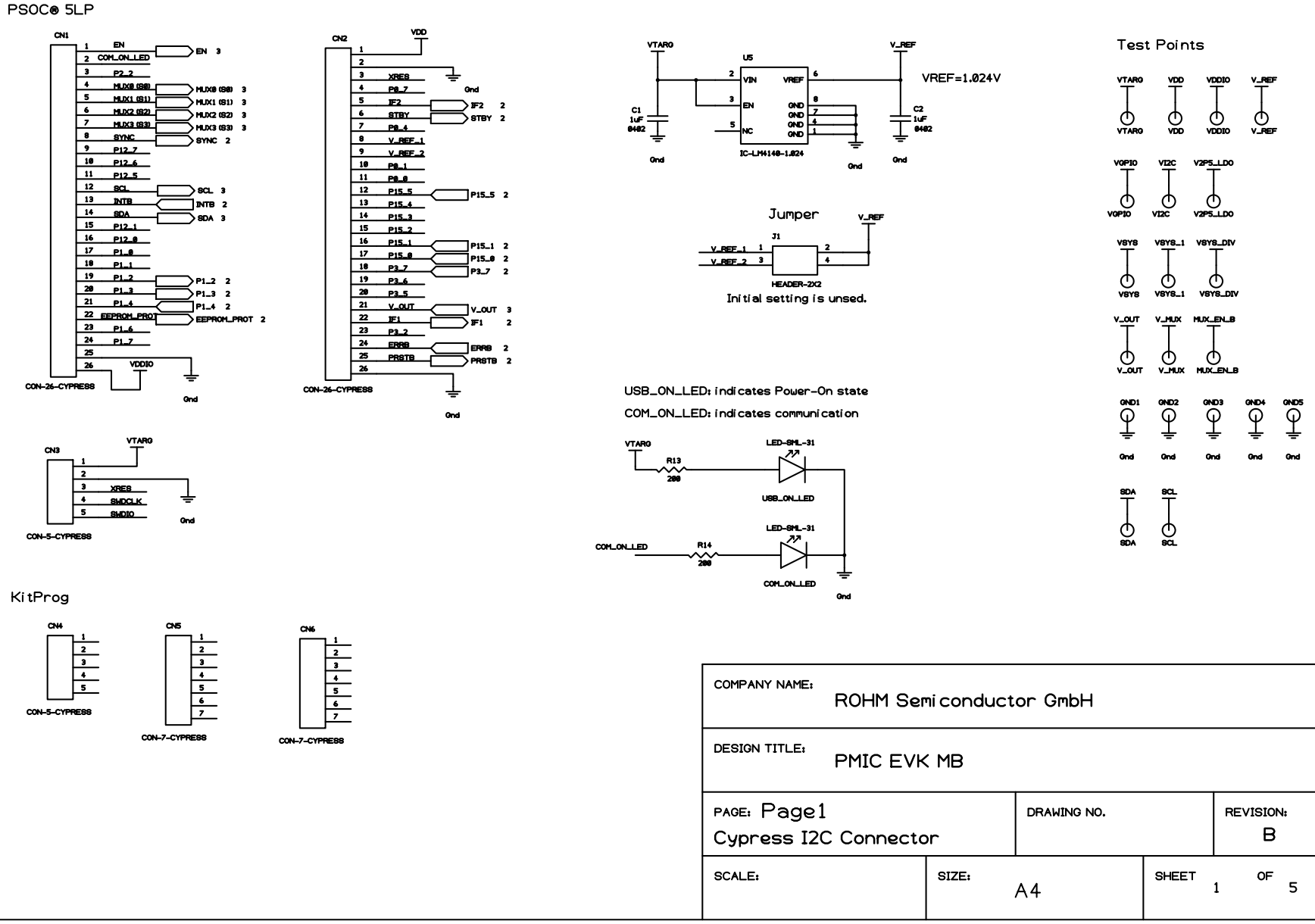
7. MB SCHEMATIC AND BOM

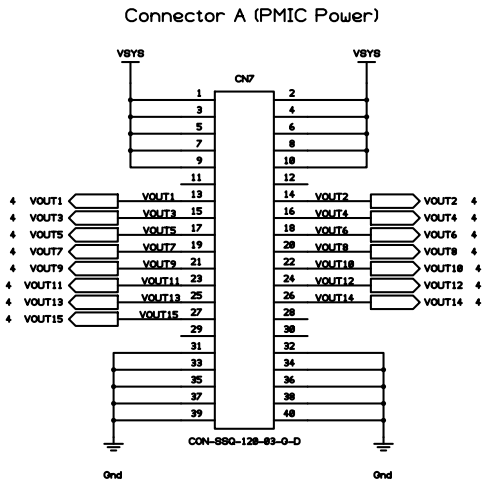
Schematic and BOM of PMIC-MB-EVK are reported hereafter.

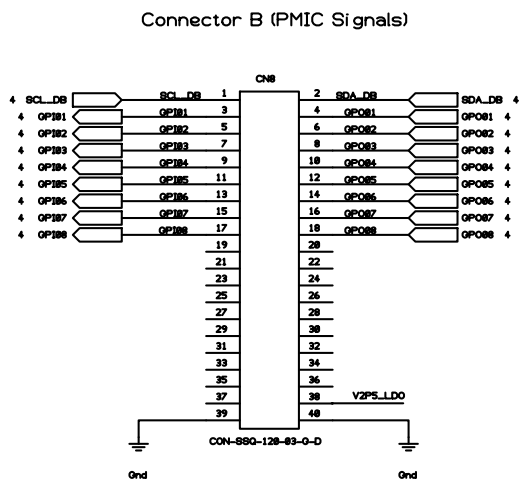
Reference	Characteristic	Parts Number	Manufacturer
CN1, CN2	2.54mm connector 1x26 female	TSW-126-07-G-S	Samtec
CN3, CN4	2.54mm connector 1x5 female	TSW-105-07-G-S	Samtec
CN5, CN6	2.54mm connector 1x7 female	TSW-107-07-G-S	Samtec
CN7, CN8	2.54mm connector 2x20 female	SSQ-120-03-G-D	Samtec
CN9	2.54mm connector 2x2 female	SSQ-102-03-G-D	Samtec
CN12	4mm Female Red	24.243.1	Multicomp
CN13	4mm Female Black	24.243.2	Multicomp
J1, J3	2.54mm header 2x2 male	TSW-102-07-G-D	Samtec
J2, J7, J8	2.54mm header 2x16 male	TSW-116-07-G-D	Samtec
U1	16-Channel	CD74HC4067M	TI
U2, U8	Ultra-Low Noise Ground Sense	LMR1802G-LB	ROHM
U4, U6	8-Bit Bi-directional	TXS0108EPW	TI
U3	I2C and SMBus	TXS0102DCT	TI
U5	LDO 1.024V	LM4140ACM-1.0/NOPB	TI
U7	LDO 2.5V	BU25TD3WG	ROHM

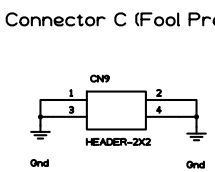
USB_ON_LED, COM_ON_LED	LED 0603 Green	SML-D12P8W	ROHM
D1, D2	Schottky diode VF=0.37V	RB751VM-40	ROHM
D3	Zener diode 3.6V-3.845V	UDZVTE-173.6B	ROHM
C1, C2, C6, C10	1uF, 16V, 10%, X7R, 0603	EMK107B7105KA-T	Taiyo Yuden
C3, C4, C5, C7, C8, C9, C11, C13, C14	100nF, 16V, 10%, X7R, 0402	EMK105B7104KV-F	Taiyo Yuden
C12	10pF, 50V, 5%, U2J, 0402	UMK105UJ100DV-F	Taiyo Yuden
R1, R5, R20, R42, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37	0R, 0603, 1/4W	PMR03EZPJ000	ROHM
R13, R14	220R, 0603, 5%, TC200, 1/10W	MCR03EZPJ221	ROHM
R2	100k, 0603, 5%, TC200, 1/10W	MCR03EZPJ104	ROHM
R16	5.1k, 0603, 5%, TC200, 1/10W	MCR03EZPJ512	ROHM
R4, R8	3k, 1206, 5%, TC100, 1/4W	MCR18EZPF302	ROHM
R6, R7	2.2k, 0603, 1%, TC100, 1/10W	MCR03EZPJ222	ROHM
R10, R11	510, 0603, 1%, TC100, 1/10W	MCR03EZPJ511	ROHM
R3, R9, R17, R19, R38, R12, R21, R39	10k, 0603, 1%, TC100, 1/10W	MCR03EZPF103	ROHM
R15, R40	75k, 1206, 5%, TC100, 1/4W	MCR18EZPF753	ROHM
R18	360R, 0603, 5%, TC200, 1/10W	MCR03EZPJ361	ROHM
VTARG, VDD, VDDIO, V_REF, VGPIO, VI2C, V2P5_LDO, VSYS, VSYS_1, VSYS_DIV, V_OUT, V_MUX, MUX_EN_B, SDA, SCL	Test Point Red	5005	Keystone
GND1, GND2, GND3, GND4, GND5	Test Point Black	5006	Keystone

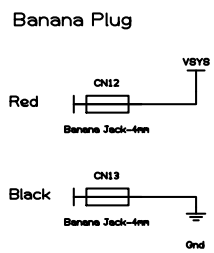
Table 3: PMIC-MB-EVK-302 BOM

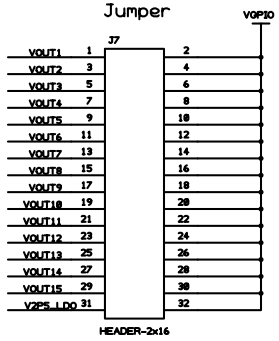




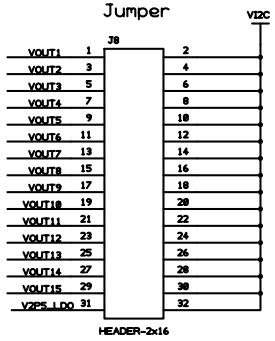




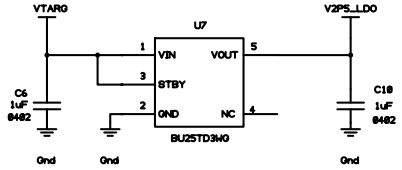




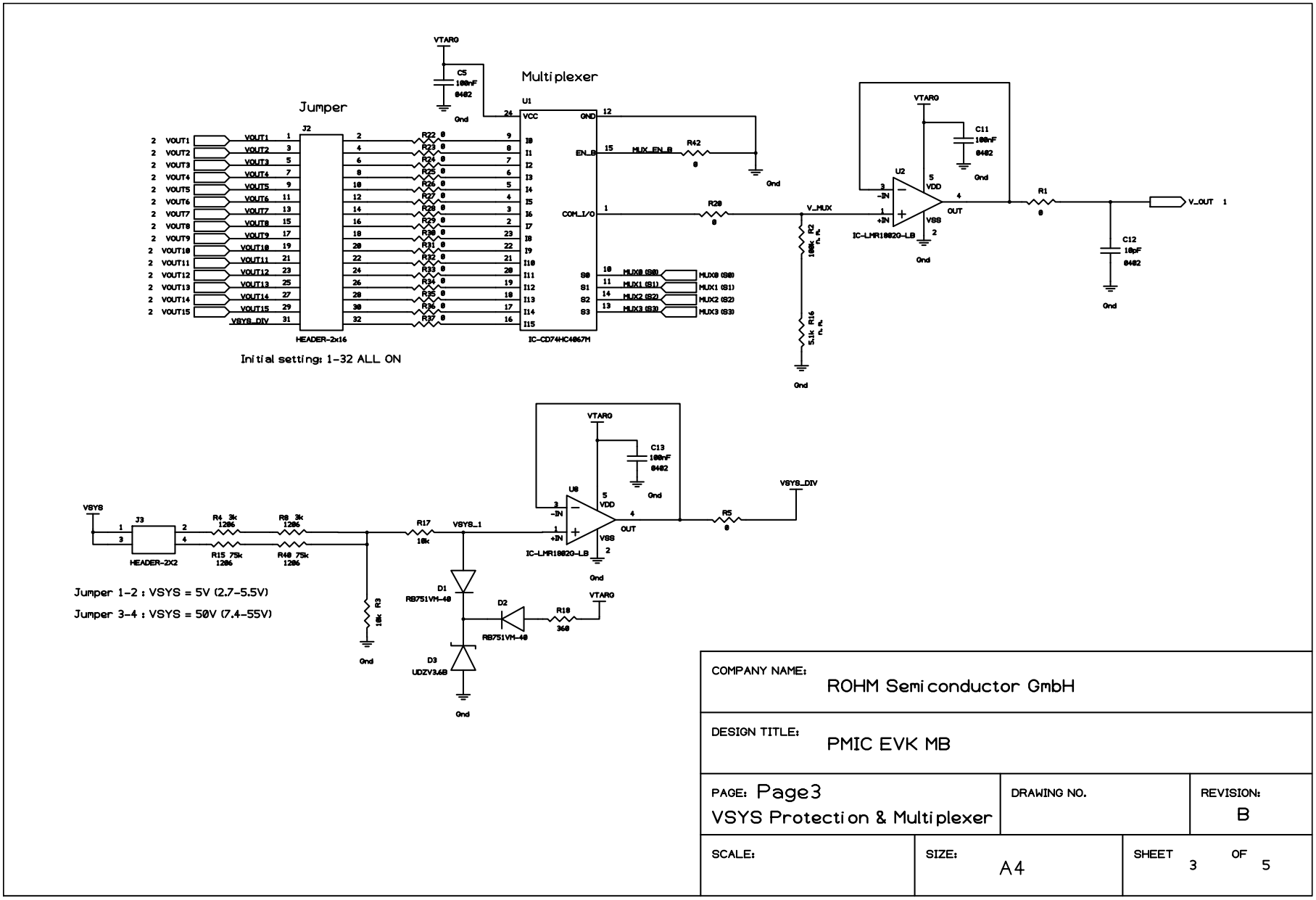
Initial setting: 31-32 ON

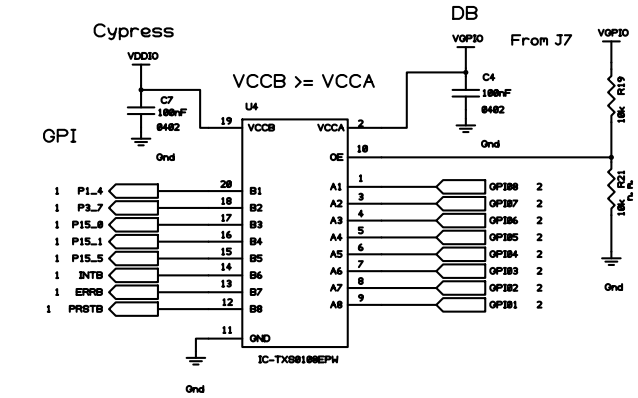


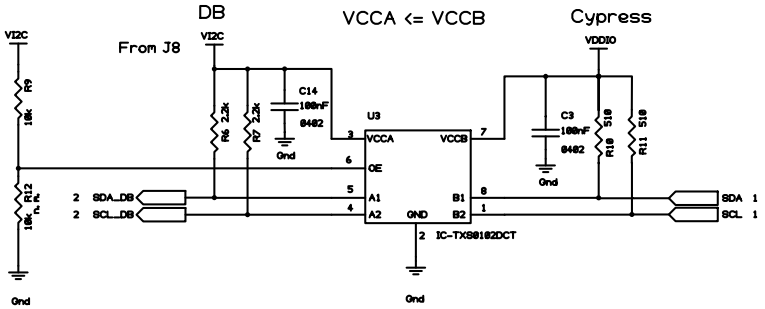
Initial setting: 31-32 ON

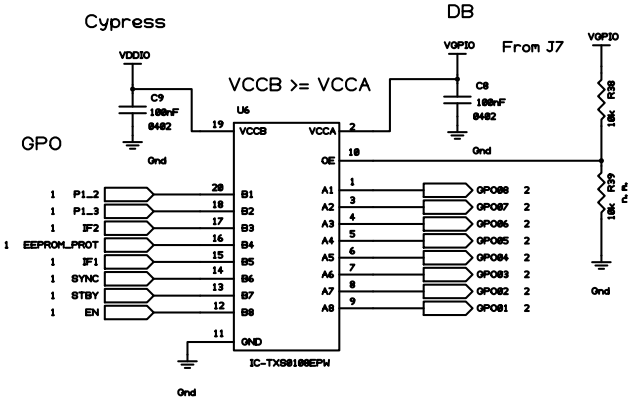


COMPANY NAME: ROHM Semiconductor GmbH		
DESIGN TITLE: PMIC EVK MB		
PAGE: Page2 MB/DB Connector	DRAWING NO.	REVISION: B
SCALE:	SIZE: A4	SHEET 2 OF 5


Jumper
Multiplexer
Initial setting: 1-32 ALL ON
HEADER-2x16
IC-CD74HC4067M
IC-LMR10020-LB
HEADER-2X2
Jumper 1-2 : VSYS = 5V (2.7-5.5V)
Jumper 3-4 : VSYS = 50V (7.4-55V)
RB751VM-40
UDZV3.6B
COMPANY NAME: ROHM Semiconductor GmbH
DESIGN TITLE: PMIC EVK MB
PAGE: Page3
VSYS Protection & Multiplexer
DRAWING NO.
REVISION: B
SCALE:
SIZE: A4
SHEET 3 OF 5







COMPANY NAME: ROHM Semiconductor GmbH			
DESIGN TITLE: PMIC EVK MB			
PAGE: Page4 Level Shifter	DRAWING NO.	REVISION: B	
SCALE:	SIZE: A4	SHEET 4 OF 5	

8. DB SCHEMATIC AND BOM

Schematic and BOM of BD868x0-EVK-302 are reported hereafter.

Reference	Characteristic	Parts Number	Manufacturer
C15, C50	2.2uF, 16V, 10%, X6S, 0402	GRT155C81C225KE13D	Murata
C16, C51	Not mounted	CGA3E1X7R1C105K	TDK
CB1	47nF, 16V, 10%, X7R, 0402	CGA2B2X7R1C473K	TDK
CBF1, CIN0	0.1uF, 25V, 10%, X7R, 0402	CGA2B3X7R1E104K	TDK
CIN1	4.7uF, 25V, 10%, X7R, 0805	CGA4J1X7R1E475K	TDK
CIN2, CIN3	10uF, 16V, 20%, X6S, 0603	GRT188C81E475KE13D	Murata
CIN10	Not mounted	CGA3E2X7R1E104K080AA	TDK
CIN23	4.7uF, 10V, 10%, X7R, 0805	CGA4J3X7R1A475K	TDK
CN1, CN2	2x 20 pins connector	TSW-120-07-G-D	Samtec
CN3	2x 2 pins connector	TSW-102-07-G-D	Samtec
CN5	2x 3 pins connector	TSW-103-07-G-D	Samtec
CO1, CO2, CO3, CO10, CO11, CO20, CO21, CO30, CO31	10uF, 6.3V, 10%, X7R, 0805	CGA4J1X7R0J106K	TDK
CO4	4.7uF, 16V, 10%, X6S, 0603	GRT188C81C475KE13D	Murata
CO40	Not mounted	CGA4J3X7R1C225K	TDK
L1	2.2uH, 1.9A, 20%, 0806	TFM201610ALMA2R2M	TDK
L2, L3	1uH, 3.1A, 20%, 0806	TFM201610ALMA1R0M	TDK
R1, R2, R3, R4, R5, R6	0, 1/10W, 0603	RC0603JR-070RL	Yageo
R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122	100k,0603, 5%, TC200, 1/10W	KTR03EZPJ104	ROHM
RRST, RWAR	10k,0603, 5%, TC200, 1/10W	KTR03EZPJ103	ROHM
RSCL, RSDA	2k2,0603, 5%, TC200, 1/10W	KTR03EZPJ222	ROHM
TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8	Test Point Orange	5013	Keystone
TP17	Test Point Red	5010	Keystone
TP20, TP23, TP24	Test Point Black	5011	Keystone
U1	Camera PMIC	BD868A0 or BD868B0	ROHM

Table 4: BD868x0-EVK-302 BOM

Redundant capacitor components have also been foreseen and not mounted to give maximum freedom and easy test access to the customer to change the value of the input/output capacitor bank blocks.

The above BOM is slightly different when using BD868A0 vs. BD868B0:

U1	BD868A0	BD868B0
R5	mounted	Not mounted
R6	Not mounted	mounted
CIN3	mounted	Not mounted

Table 5: BOM for BD868A0 vs. BD868B0

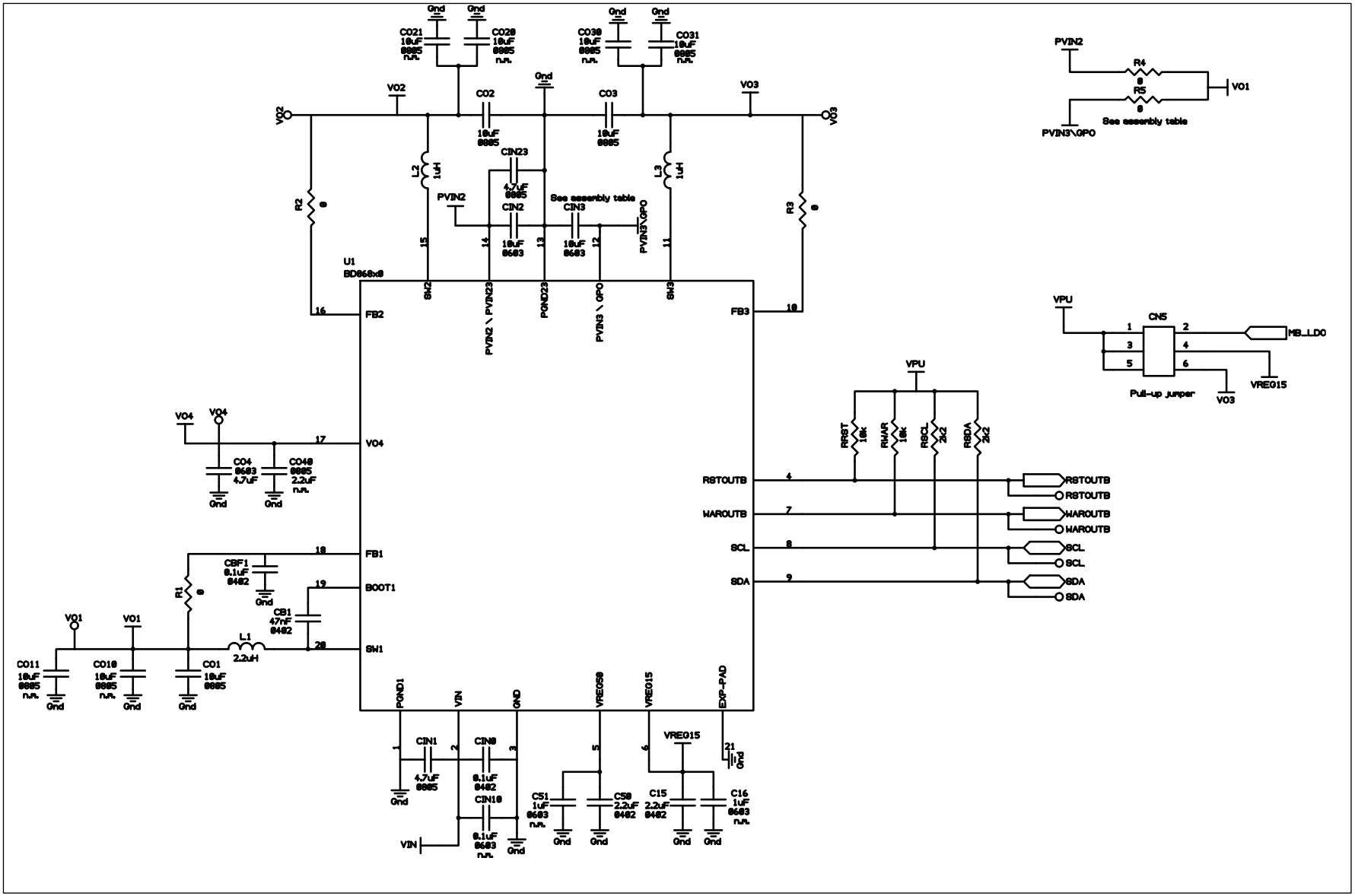


Figure 24: BD868x0-EVK-302 schematics part 1 of 2

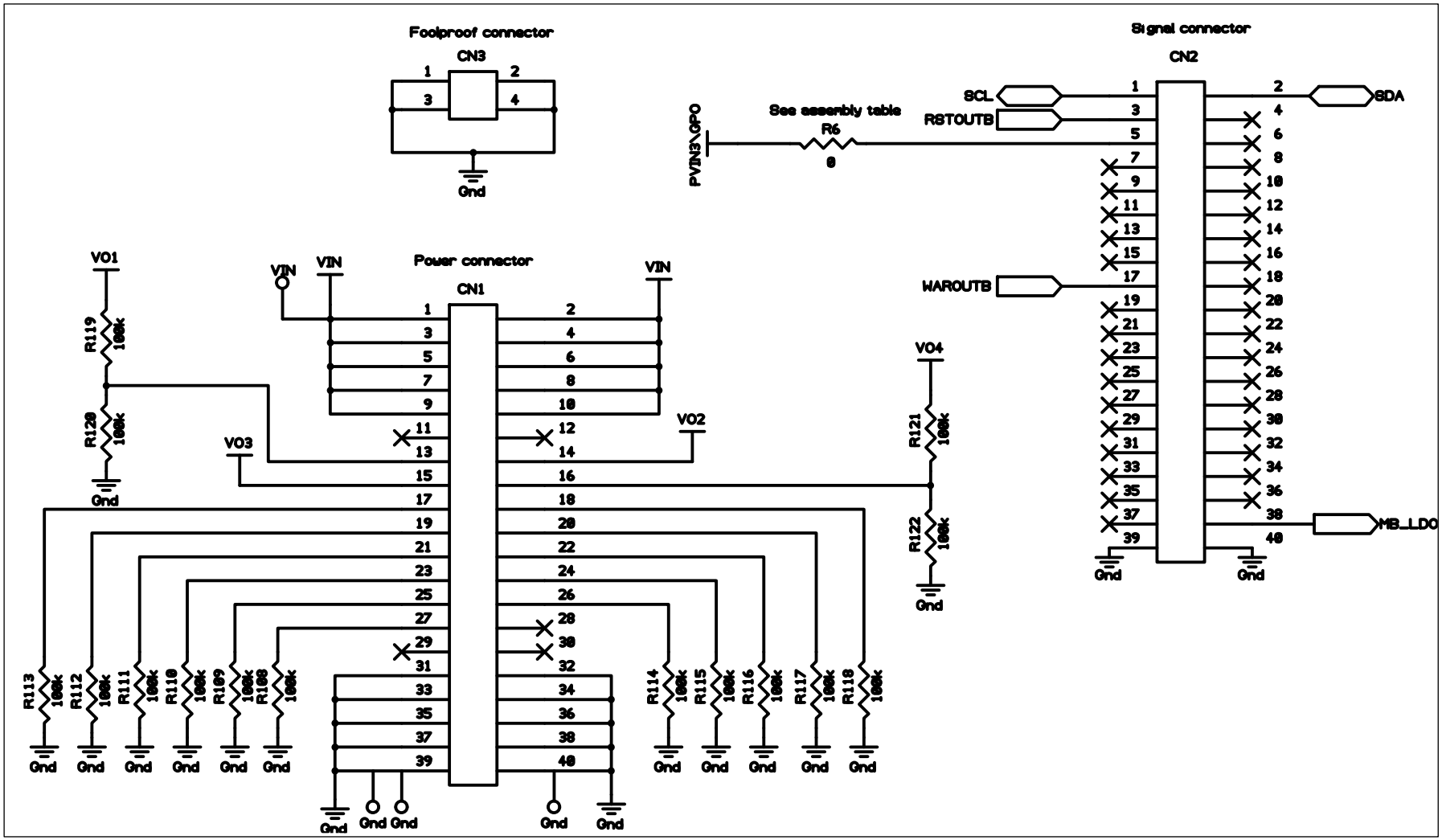


Figure 25: BD868x0-EVK-302 schematics part 2 of 2

Notes

1) The information contained herein is subject to change without notice

2) Before you use our Products, please contact our sales representative and verify the latest specifications:

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products specified in this document are not designed to be radiation tolerant.

7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

10) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.

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