

User Manual

DA14695 SmartBond Module Development Kit

UM-B-162

Abstract

This document outlines the system design, configuration options, and supported features of DA14695 SmartBond Module Development Kit, PCB version 331-39-B.

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1 Terms and Definitions

BLE	Bluetooth Low Energy
CIB	Communication Interface Board
DB	Daughterboard
DEVKIT	Development Kit
JTAG	Join Test Action Group
LDO	Low Dropout
OVP	Overvoltage Protection Circuit
PCB	Printed Circuit Board
SW	Software
SWD	Serial Wire Debug
UART	Universal Asynchronous Receiver-Transmitter
USB	Universal Serial Bus

2 References

- [1] DA1469x, Datasheet, Renesas Electronics.
- [2] UM-B-093, DA1469x Pro Development Kit, User Manual, 1.2, Renesas Electronics.
- [3] UM-B-065, Bluetooth® Smart Communication Interface Board, 1.0, Renesas Electronics.

Note 1 References are for the latest published version, unless otherwise indicated.

3 Introduction

This document describes DA14695 SmartBond Module Development Kit. The development kit is implemented on a single Daughterboard (DB) PCB and it comes with DA1469x Pro Development Kit for SW development, programming, debugging, and measuring current but also can be used stand alone.

The block diagram, the actual board, the various sections, and settings as well as the connectivity are presented. This Daughterboard supports the following features:

- Access to DA14695 SmartBond module, via UART or JTAG
- Reset button
- General Purpose LED
- USB connector for charging and data communications (supporting USB 2.0 full speed)
- OVP circuit on the VBUS power input
- Power selector switch [PRO-MB VLDO or Battery]
- Stand-alone operation

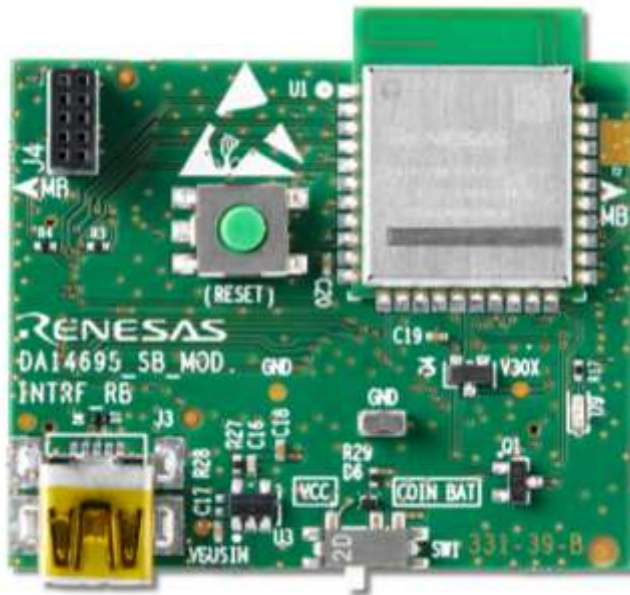


Figure 1: DA14695 SmartBond module DB

DA14695 SmartBond Module Development Kit



Figure 2: DA14695 SmartBond module DEVKIT

4 System Overview

4.1 Features

The features of DA14695 SmartBond module DB include:

- Integrated Renesas DA14695 SmartBond Module
- Reset push button
- General-purpose LED
- Supply from VLDO from DA1469x Pro Development Kit, 5 V USB or from battery (coin cell or Lipo)
- USB connector for charging and data communications (supporting USB 2.0 full speed)
- JTAG and UART interface over DA1469x Pro Development Kit
- JTAG and UART interface over on-board connector (J4)
- Stand-alone operation
- A dimension of 42.7x35 mm

4.2 System and components description

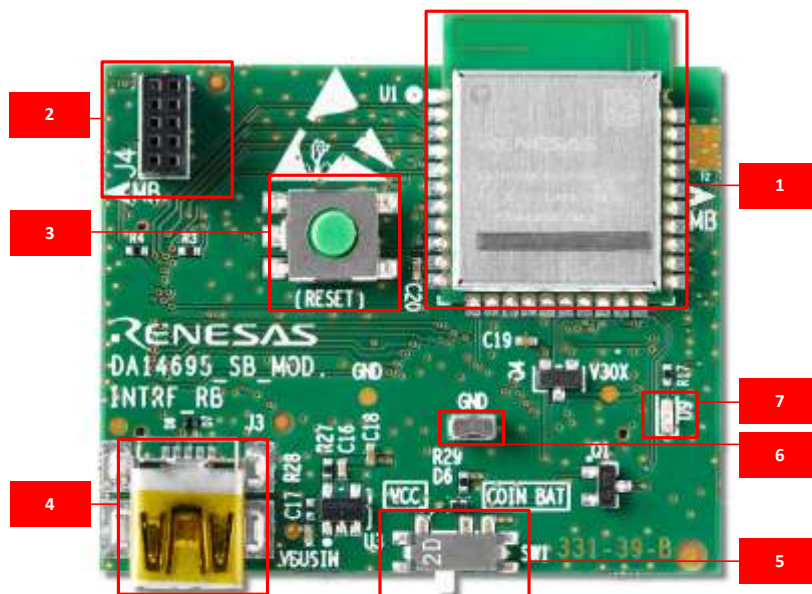


Figure 3: Component description – top side

The marked and numbered sections of the system are:

1. DA14695 SmartBond Module (U1)
2. JTAG/two-wire UART debugger connector (J4)
3. Reset button (Reset)
4. USB connector for power supply and USB data pins (J3)
5. Power switch (SW1). Selection between VLDO from PRO-MB/ Coin cell-Lipo battery.
6. GND pad (GND)
7. General purpose LED (D9)

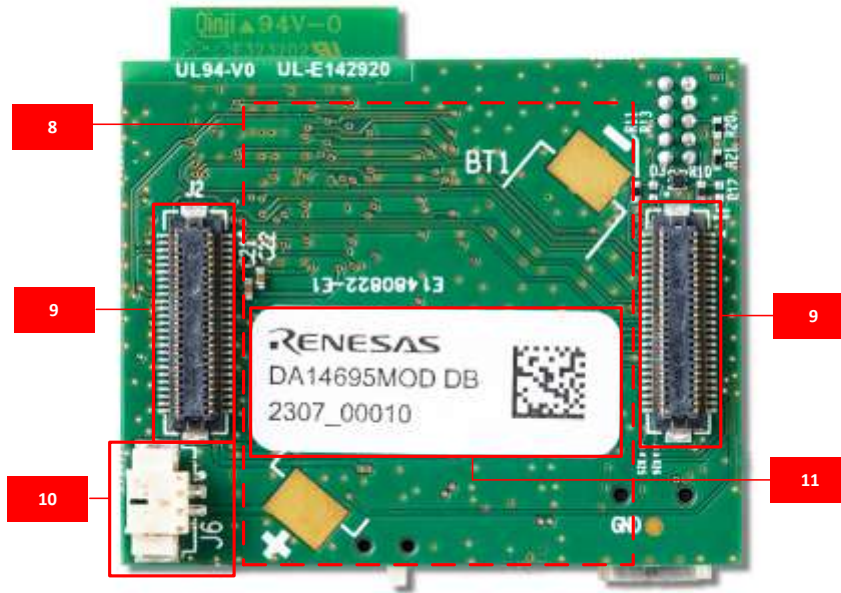


Figure 4: Component description – bottom side

The marked and numbered sections of the system, for the bottom side, are:

1. Coin cell battery (BT1, optional)
2. Interface connectors to motherboard (J1, J2)
3. Two-pin connector for Lipo battery (J6)
4. Renesas label

4.3 Block diagram

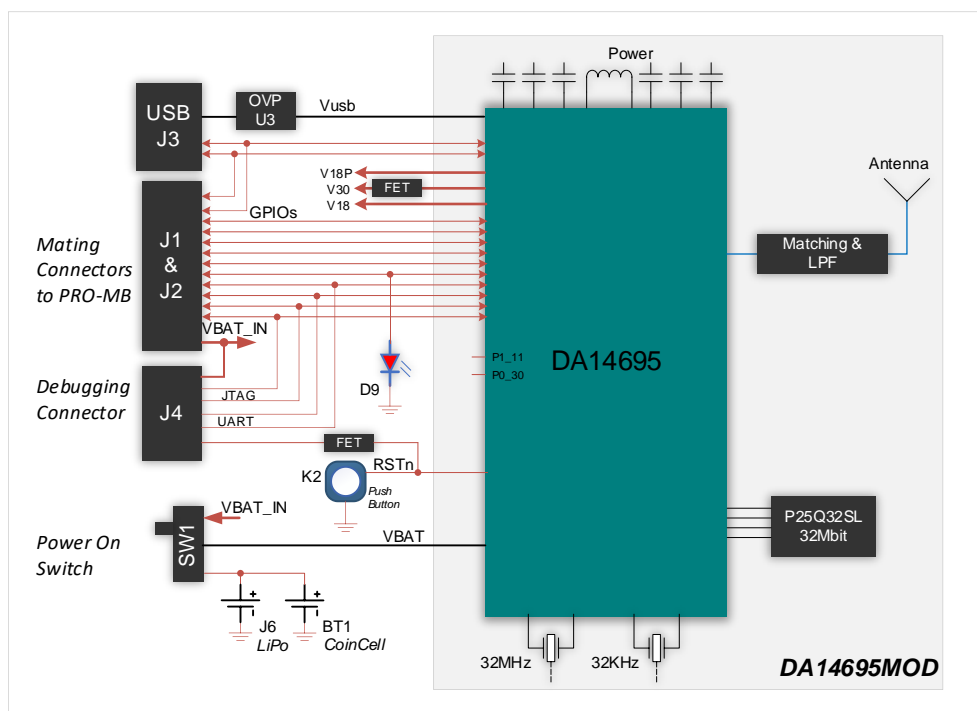


Figure 5: DA14695 SmartBond module DB block diagram

5 DA14695 SmartBond Module Daughterboard

5.1 Power section

The power supply on DA14695 SmartBond module DB supports three options:

- Power supply from DA1469x Pro Development Kit VLDO. PRO-MB LDO (U5) voltage can be adjusted with selection header, J5, (3.0 V as default, can be adjustable from 1.8 V to 4.2 V). See Ref. [2].
- Power supply from Coin cell (BT1) or Lipo battery (J6). Coin Cell battery case is optional and can be mounted on bottom side of the daughterboard.
- +5 V USB Power Supply (J3) with Over Voltage Protection Circuit (OVP).

NOTE

Do not mount coin cell battery or Lipo battery when daughterboard is powered from DA1469x Pro Development Kit.

The power supply from VLDO of DA1469x Pro Development Kit allows measuring current drawn from DA14695 SmartBond Module by using the current sensing circuit and the power profiler of Renesas's SmartSnippets Toolbox. For more information on current measurement see Ref. [2].

Power selection between DA1469x Pro Development Kit VLDO or Coin Cell/ Lipo Battery is done using SW1 power switch.

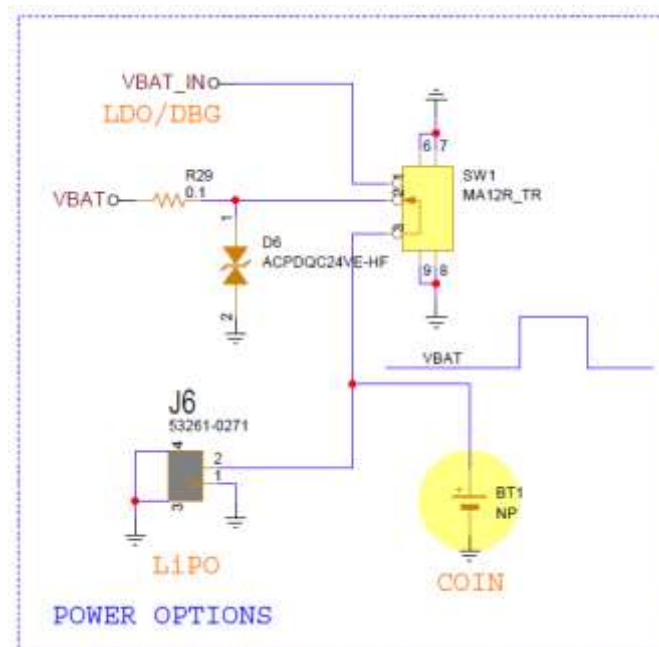


Figure 6: Power option selection for DA14695 SmartBond module DB

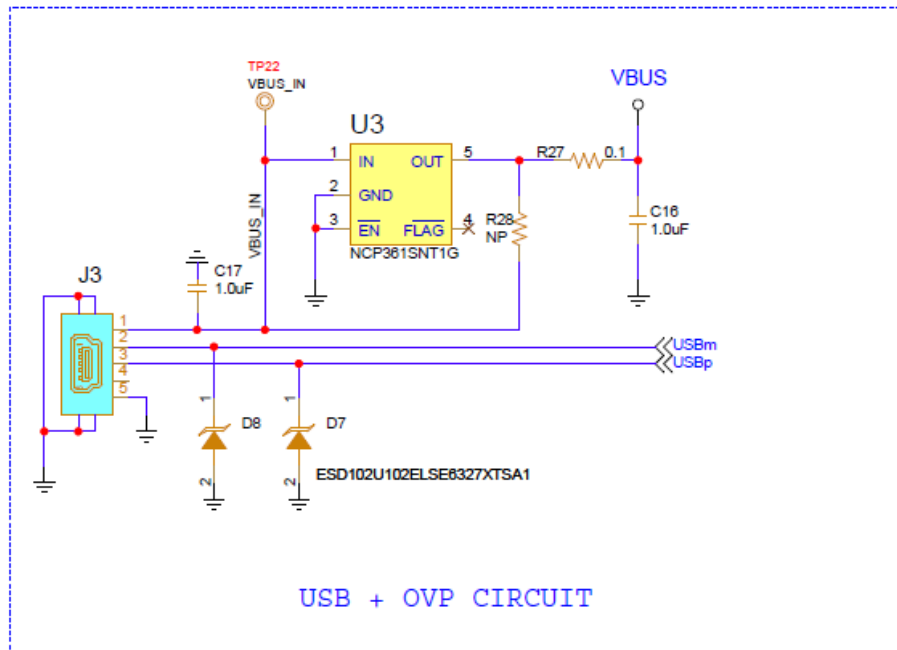


Figure 7: USB power supply section with overvoltage protection circuit

5.2 Reset operation

To reset DA14695 SmartBond module, do one of the following:

- On board, press the RESET button (Reset).
- Use software from the UART and JTAG interface of on-board connector (J4).

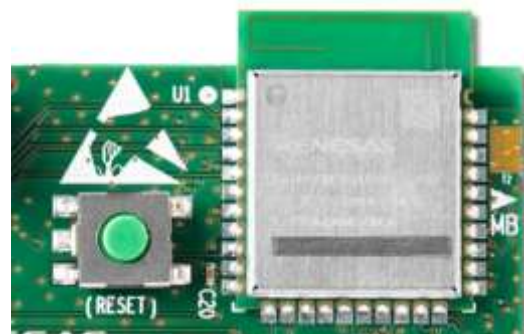
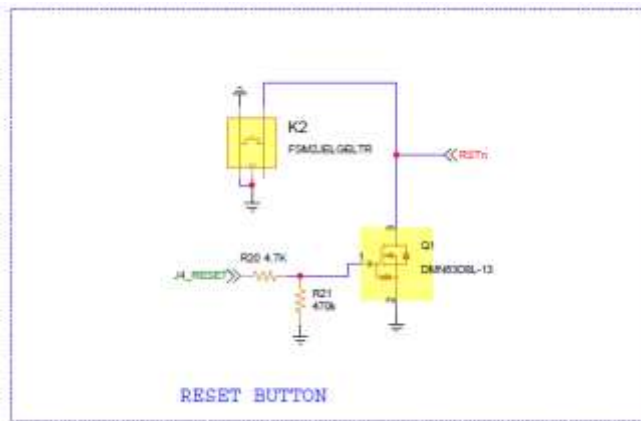


Figure 8: Reset button on DA14695 SmartBond module DB

DA14695 SmartBond Module Development Kit

5.3 General purpose LED

LED D9 is a general-purpose LED and is driven by P1_1.

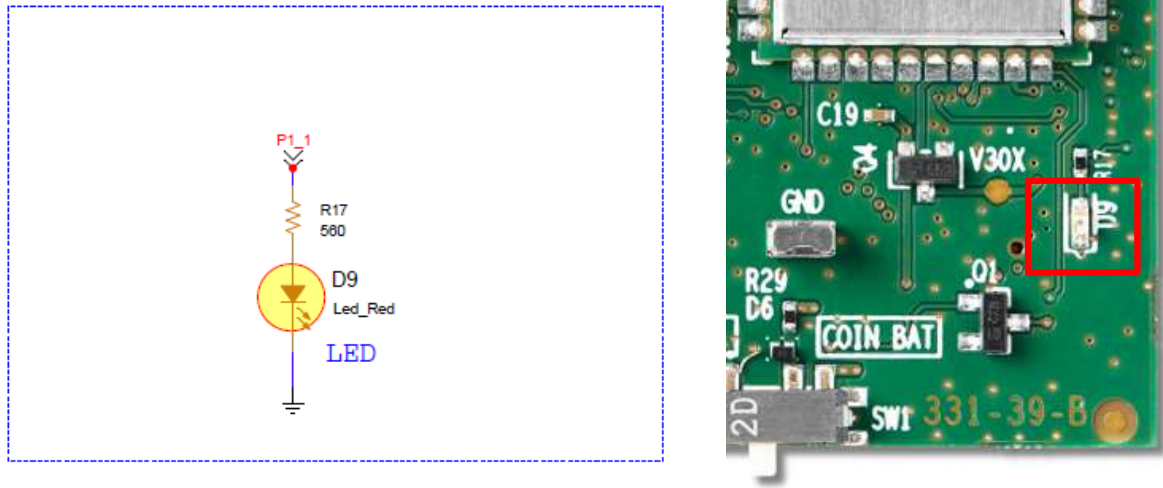


Figure 9: General purpose LED on DA14695 SmartBond module DB

5.4 On-board JTAG/two-wire UART Interface

DA14695 SmartBond Module DB provides debugging connector (J4) for JTAG/two-wire UART interface (Figure 10). The connector (CIB connector) has the following features:

- Access to SWD pins connected to Cortex M33 core
- Reset from JLink-OB or button on the CIB board, see Ref. [3]
- Two-wire UART signals connected to bootable UART pins
- Powering to the daughterboard in stand-alone operation from CIB board

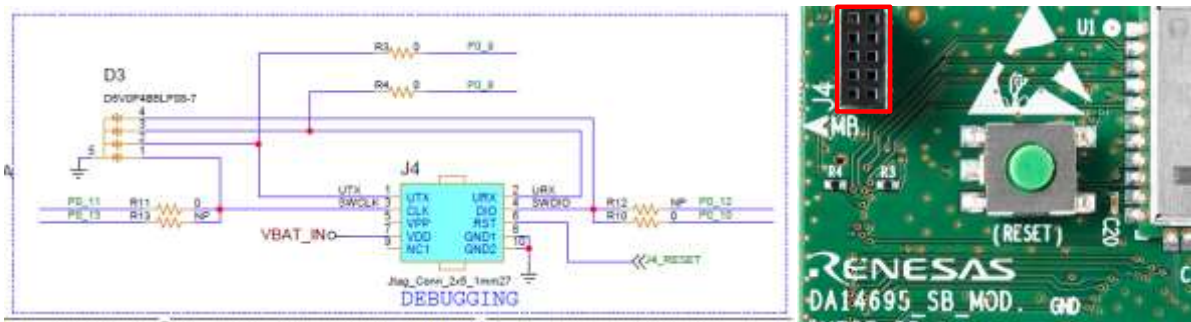


Figure 10: CIB (JTAG/UART interface) connector (J4)

Table 1: JTAG/two-wire UART signals assignment

Function		Signals	
		DA14695 SmartBond Module DEVKIT	
Enabled by DIP-switch S1 (on PRO-MB)		J4	DA14695 SmartBond Module
M33_SWDIO	P0_10	P0_10	P0_10
M33_SWCLK	P0_11	P0_11	P0_11
UTX	P0_9	P0_9	P0_9
URX	P0_8	P0_8	P0_8

6 Appendix A

A.1 Schematic

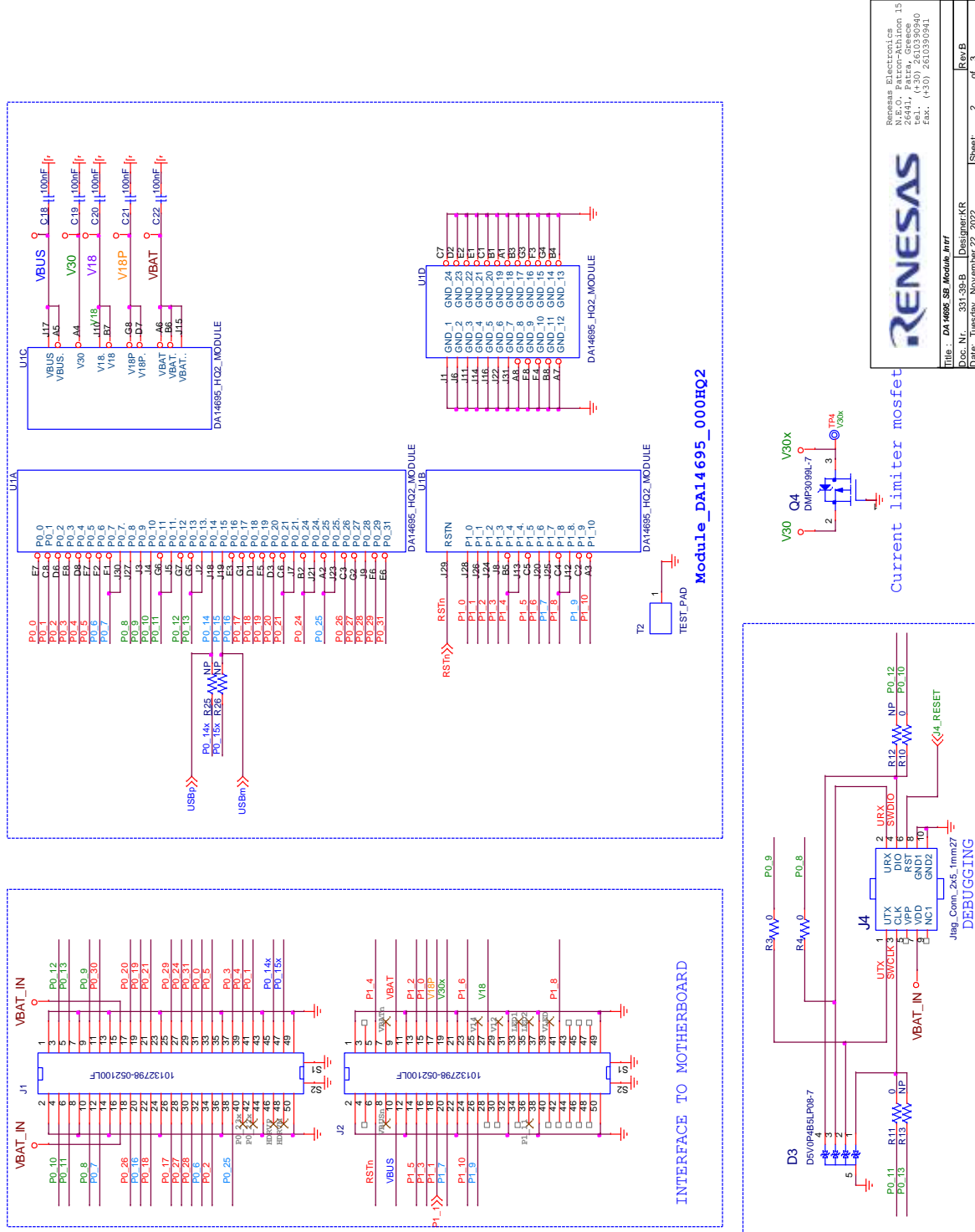
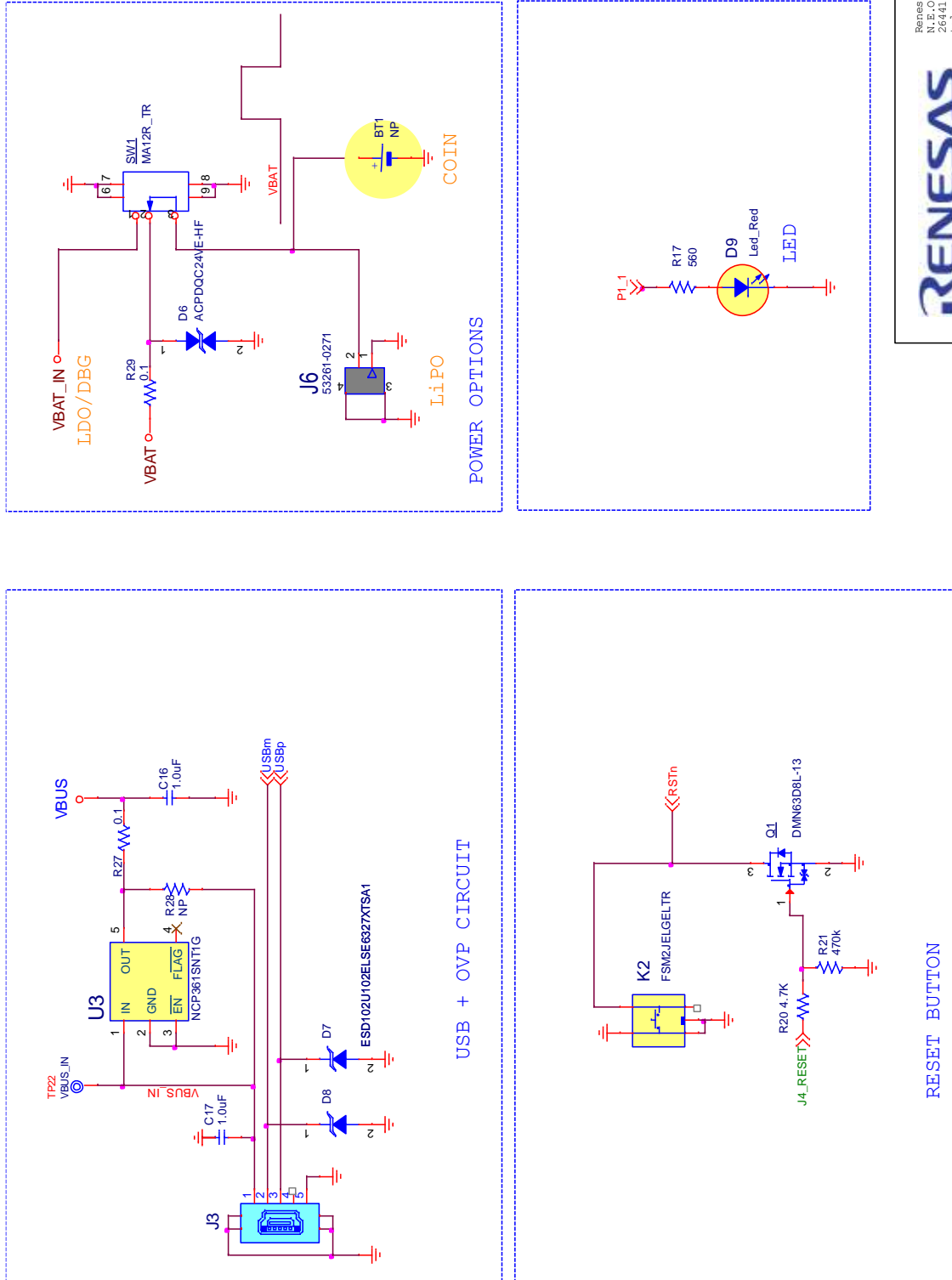


Figure 11: Schematic of DA14695 SmartBond module DB [331-39-B], Page 1

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	Rev.B

Figure 12: Schematic of DA14695 SmartBond module DB [331-39-B], Page 2

A.2 Placed components

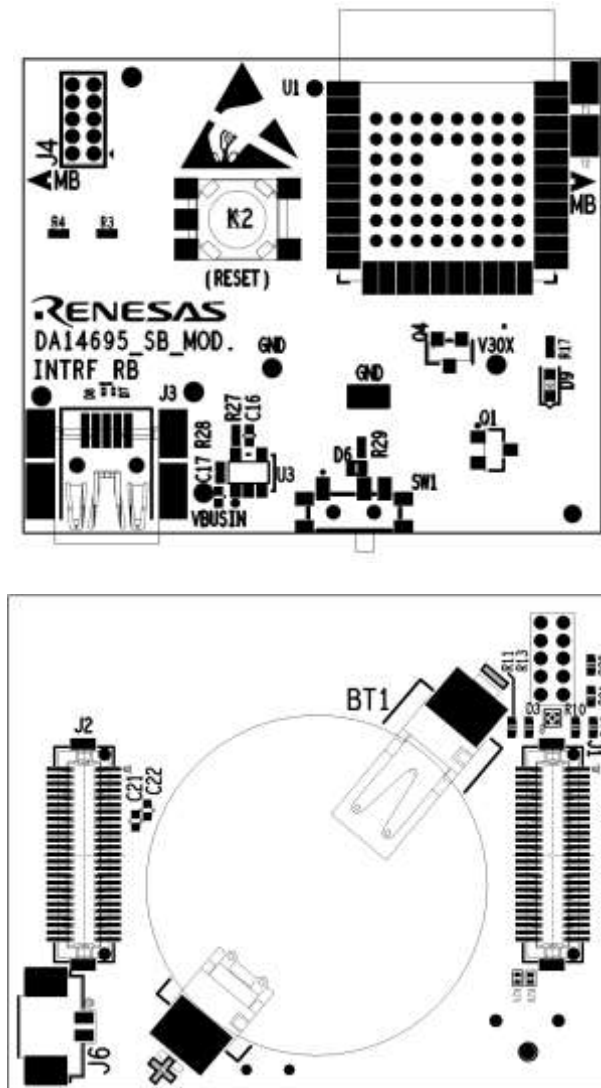


Figure 13: Components on top/bottom side for DA14695 SmartBond module DB [331-39-B]

Revision History

Revision	Date	Description
1.0	Aug. 11, 2023	Initial version.

DA14695 SmartBond Module Development Kit

Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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