User's Manual

RX14T Group

Fast Prototyping Board for RX14T Microcontroller Group
FPB-RX14T v1 User's Manual

Renesas RX Family
RX100 Series

Renesas Electronics
www.renesas.com

Rev.1.00 Sep 2025

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
6. Renesas Electronics products are classified according to the following two quality grades: “Standard” and “High Quality”. The intended applications for each Renesas Electronics product depends on the product’s quality grade, as indicated below.
   "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
   "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.

   Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user’s manual or other Renesas Electronics document.
7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION (“Vulnerability Issues”). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
8. When using Renesas Electronics products, refer to the latest product information (data sheets, user’s manuals, application notes, “General Notes for Handling and Using Semiconductor Devices” in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) “Renesas Electronics” as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
www.renesas.com/contact/.

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)
   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.
2. Processing at power-on
   The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.
3. Input of signal during power-off state
   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.
4. Handling of unused pins
   Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.
5. Clock signals
   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin
   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).
7. Prohibition of access to reserved addresses
   Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.
8. Differences between products
   Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a Microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system evaluation test for the given product.

Renesas FPB-RX14T Disclaimer

By using this FPB-RX14T, the User accepts the following terms, which are in addition to, and control in the event of disagreement, with Renesas' General Terms and Conditions available at renesas.com/legal-notices.

The FPB-RX14T is not guaranteed to be error free, and the entire risk as to the results and performance of the FPB-RX14T is assumed by the User. The FPB-RX14T is provided by Renesas on an "as is" basis without warranty of any kind whether express or implied, including but not limited to the implied warranties of good workmanship, fitness for a particular purpose, title, merchantability, and non-infringement of intellectual property rights. Renesas expressly disclaims any implied warranty.

Renesas does not consider the FPB-RX14T to be a finished product and therefore the FPB-RX14T may not comply with some requirements applicable to finished products, including, but not limited to recycling, restricted substances and electromagnetic compatibility regulations. Refer to Certifications section, for information about certifications and compliance information for the FPB-RX14T. It is the kit User's responsibility to make sure the kit meets any local requirements applicable to their region.

Renesas or its affiliates shall in no event be liable for any loss of profit, loss of data, loss of contract, loss of business, damage to reputation or goodwill, any economic loss, any reprogramming or recall costs (whether the foregoing losses are direct or indirect) nor shall Renesas or its affiliates be liable for any other direct or indirect special, incidental or consequential damages arising out of or in relation to the use of this FPB-RX14T, even if Renesas or its affiliates have been advised of the possibility of such damages.

Renesas has used reasonable care in preparing the information included in this document, but Renesas does not warrant that such information is error free nor does Renesas guarantee an exact match for every application or parameter to part numbers designated by other vendors listed herein. The information provided in this document is intended solely to enable the use of Renesas products. No express or implied license to any intellectual property right is granted by this document or in connection with the sale of Renesas products. Renesas reserves the right to make changes to specifications and product descriptions at any time without notice. Renesas assumes no liability for any damages incurred by you resulting from errors in or omissions from the information included herein. Renesas cannot verify, and assumes no liability for, the accuracy of information available on another company's website.

Precautions

This Fast Prototyping Board is only intended for use in a laboratory environment under ambient temperature and humidity conditions. A safe separation distance should be used between this and any sensitive equipment. Its use outside the laboratory, classroom, study area, or similar such area invalidates conformity with the protection requirements of the Electromagnetic Compatibility Directive and could lead to prosecution.

The product generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off or on, you are encouraged to try to correct the interference by one or more of the following measures:

• Ensure attached cables do not lie across the equipment.

• Reorient the receiving antenna.

• Increase the distance between the equipment and the receiver.

• Connect the equipment into an outlet on a circuit different from that which the receiver is connected.

• Power down the equipment when not in use.

• Consult the dealer or an experienced radio/TV technician for help.

Note: It is recommended that wherever possible shielded interface cables are used.

The product is potentially susceptible to certain EMC phenomena. To mitigate against them it is recommended that the following measures be undertaken:

• The user is advised that mobile phones should not be used within 10 m of the product when in use.

• The user is advised to take ESD precautions when handling the equipment.

The Evaluation Kit does not represent an ideal reference design for an end product and does not fulfil the regulatory standards for an end product.

Proprietary Notice

Renesas RX Family

FPB-RX14T v1 User's Manual

Contents

List of Abbreviations and Acronyms 4

1. Board Overview 5
1.1 Assumptions and Advisory Notes 6

2. Box Contents 7

3. Ordering Information 7

4. Hardware Architecture and Default Configuration 8
4.1 Board Architecture 8
4.2 Block Diagram 8
4.3 Component Placement and Dimension 9
4.4 Jumper Settings 12
4.4.1 Copper Jumpers 12
4.4.2 Traditional Pin Header Jumpers 12
4.4.3 Default Jumper Configuration 12

5. System Control and Ecosystem Access 15
5.1 Power 15
5.1.1 USB 15
5.1.2 Header Connector J5 15
5.1.3 Power Supply Considerations 15
5.1.4 Power-up Behavior 16
5.2 Debug and Programming 16
5.2.1 E2 OB 16
5.2.2 Settings in e^2 studio and Renesas Flash Programmer 17
5.3 Ecosystem 19
5.3.1 Digilent Pmod Connectors 20
5.3.2 Arduino Connector 24
5.4 Miscellaneous 27
5.4.1 LED 27
5.4.2 User and Reset Switches 28
5.4.3 SCI Interface Connector 29

6. MCU Native Pin Access 30
6.1 Breakout Pin Headers 30
6.2 MCU Current Measurement 31

7. Recommended Components 32

8. Certifications 33

8.1 EMC/EMI Standards 33

8.2 Material Selection, Waste, Recycling and Disposal Standards 34

8.3 Safety Standards 34

9. Design and Manufacturing Information 35

10. Website and Support 35

Revision History 36

Figures

Figure 1. FPB-RX14T v1 Top Side 6

Figure 2. FPB-RX14T v1 Bottom Side 6

Figure 3. FPB-RX14T v1 7

Figure 4. FPB-RX14T v1 Block Diagram 8

Figure 5. Reference number for components on the FPB-RX14T v1 (top side) 9

Figure 6. Reference number for components on the FPB-RX14T v1 (bottom side) 10

Figure 7. Dimension of the FPB-RX14T v1 11

Figure 8. Copper Jumpers 12

Figure 9. Power Supply 15

Figure 10. Pin header jumper J7 16

Figure 11. e^2 studio Setting 17

Figure 12. Renesas Flash Programmer Settings 18

Figure 13. Pmod 1 Connector 21

Figure 14. Pmod 1 Copper Jumpers (bottom side) 21

Figure 15. Pmod 2 Connector 23

Figure 16. Pmod 2 Copper Jumpers (bottom side) 23

Figure 17. Arduino Connectors 25

Figure 18. Arduino Copper Jumpers (bottom side) 25

Figure 19. User LEDs 27

Figure 20. Power LED and Debug LED 27

Figure 21. Reset (SW2) and User Switch (SW1) 28

Figure 22. SCI Interface Connector (J6) 29

Figure 23. Breakout Pin Headers J1 and J2 30

Figure 24. RX MCU Current Measurement Circuit 31

Figure 25. RX MCU Current Measurement Pin Header J3 and R3 31

Tables

Table 1. List of Abbreviations and Acronyms 4
Table 2. Board Architecture 8
Table 3. Default Jumper Settings 13
Table 4. Operating mode 16
Table 5. USB Debug Connections 16
Table 6. Pmod 1 Connections 20
Table 7. Pmod 2 Connections 22
Table 8. Arduino Connections 24
Table 9. FPB-RX14T v1 LED Functions 27
Table 10. FPB-RX14T v1 Switches 28
Table 11. SCI Interface Connections 29
Table 12. Recommended Components 32
Table 13. FPB-RX14T v1 Design Package Contents 35

List of Abbreviations and Acronyms

Table 1. List of Abbreviations and Acronyms

Abbreviation	Full Form
BoM	Bill of Materials
CS	Chip Select
CTS	Clear to Send
EMC	Electro Magnetic Compatibility
EMI	Electro Magnetic Interference
EU	European Union
FPB	Fast Prototyping Board
GPIO	General Purpose Input Output
I^2C (or IIC)	Inter-Integrated Circuit
IDE	Integrated Development Environment
I/F	Interface
INT	Interrupt
I/O	Input/Output
IRQ	Interrupt Request
LED	Light Emitting Diode
LFQFP	Lead Free Quad Flat Package
MCU	Micro Controller Unit
MISO	Master In Slave Out
MOSI	Master Out Slave In
NC (or N.C.)	Not Connected
PWM	Pulse Width Modulation
RIIC	Renesas I^2C
RSPI	Renesas SPI
RTC	Real Time Clock
RTS	Request to Send
RXD	Receive Data
S12ADE	12-bit Analog to Digital Converter
SCI	Serial Communications Interface
SCK	Serial Clock
SCL	Serial Clock Line
SDA	Serial Data Line
SMD	Surface Mount Device
SPI	Serial Peripheral Interface
TXD	Transmit Data
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus

1. Board Overview

The FPB-RX14T v1, a Fast Prototyping Board for the RX14T MCU, enables users to seamlessly evaluate the features of the RX14T MCU and develop embedded systems applications using the e^2 studio IDE. Users can use on-board features along with their choice of popular ecosystem add-on modules to bring their big ideas to life.

The key features of the FPB-RX14T v1 are categorized in two groups (consistent with the architecture of the board) as follows:

MCU Native Pin Access

- R5F514T5AMFM MCU (referred to as RX MCU)
  - Max 48 MHz, 32-bit RX CPU (RXv2)
  - 128 KB ROM, 12 KB RAM
  - 64-pin, LFQFP package
- Native pin access through 2 x 32-pin breakout pin headers (not fitted)
- RX MCU current measurement point for precision current consumption measurement
- RX MCU on-chip oscillators as clock

System Control and Ecosystem Access

- Two 5 V input sources
  - USB
  - External power supply (using 2-pin header [not fitted])
- On-board debugger / programmer (E2 emulator On Board (referred as E2OB, FINE Interface))
- LEDs and switches
  - Two User LEDs (green)
  - Power LED (green) indicating availability of regulated power
  - Debug LED (yellow) indicating the debug connection
  - One User switch
  - One Reset switch
- Two popular ecosystem expansions
  - Two Digilent Pmod (UART / SPI / I^{2}C) connectors
  - Arduino Uno R3 (referred to as Arduino) connector
- SCI Interface Connector (not fitted)
  - Supports UART connection
  - Supports connection with the MC-COM Renesas Flexible Motor Control Communication Board (Product part number: RTK0EMXC90S00000BJ)

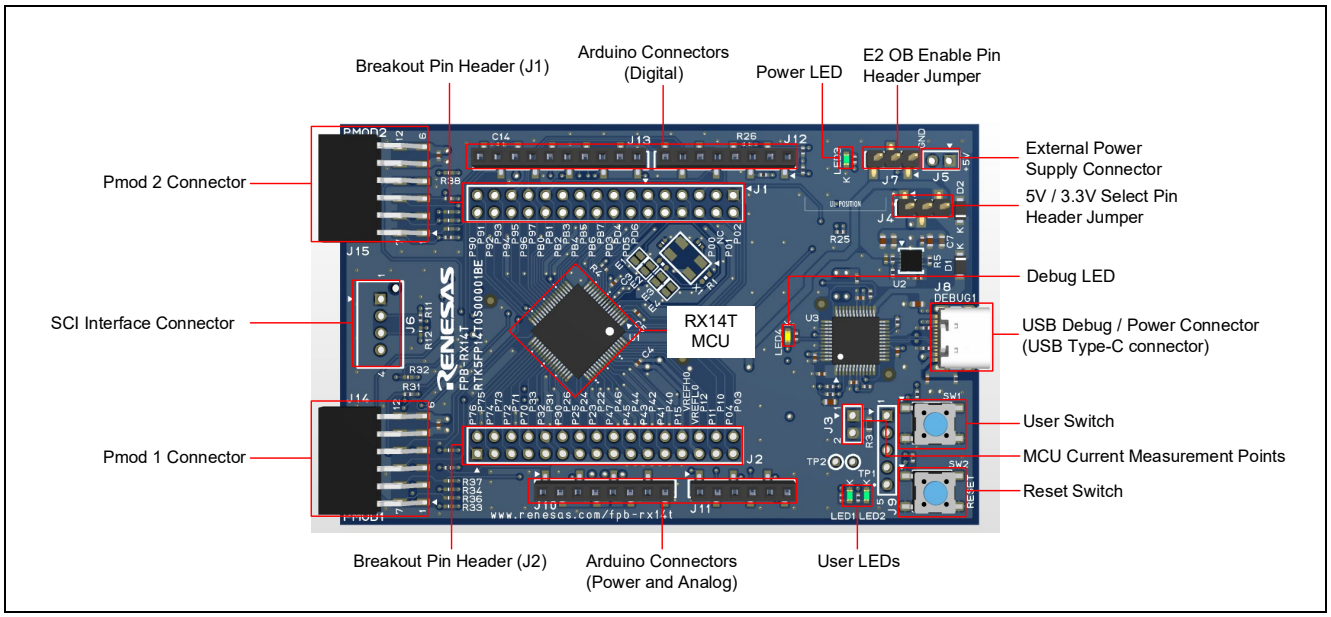

Figure 1. FPB-RX14T v1 Top Side

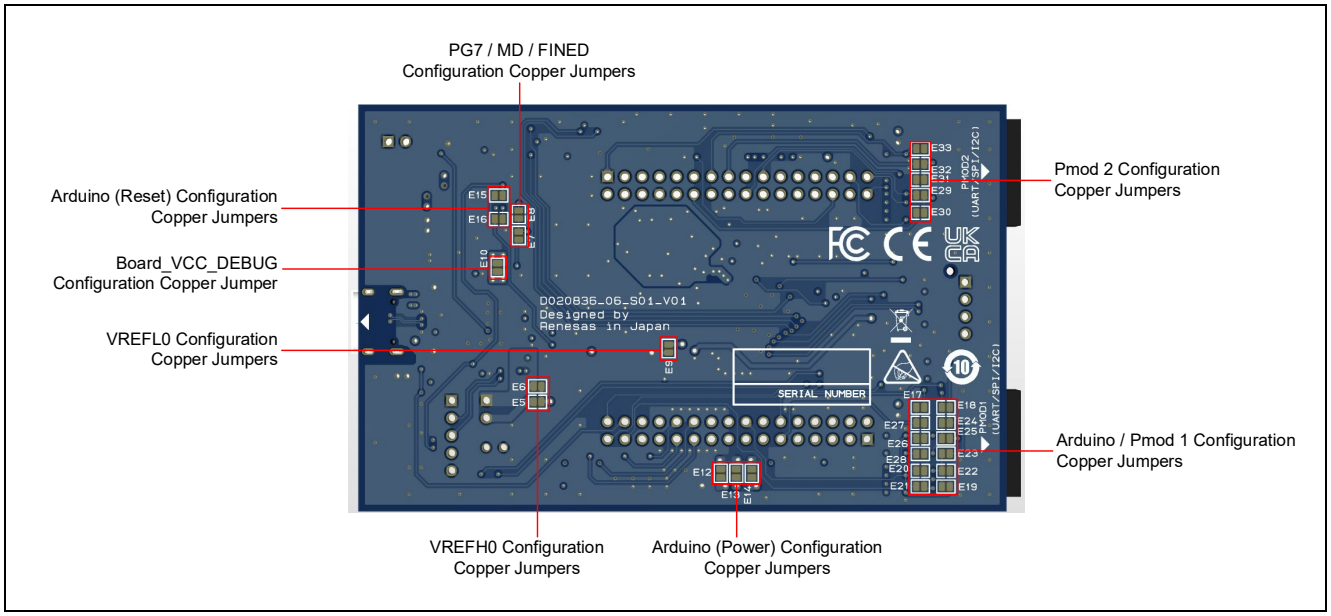

Figure 2. FPB-RX14T v1 Bottom Side

1.1 Assumptions and Advisory Notes

1. It is assumed that the user has a basic understanding of microcontrollers and embedded systems hardware.
2. An Integrated Development Environment (IDE) such as e^2 studio is required to develop embedded applications on FPB-RX14T v1.

2. Box Contents

1. FPB-RX14T
2. Printed Quick Start Guide

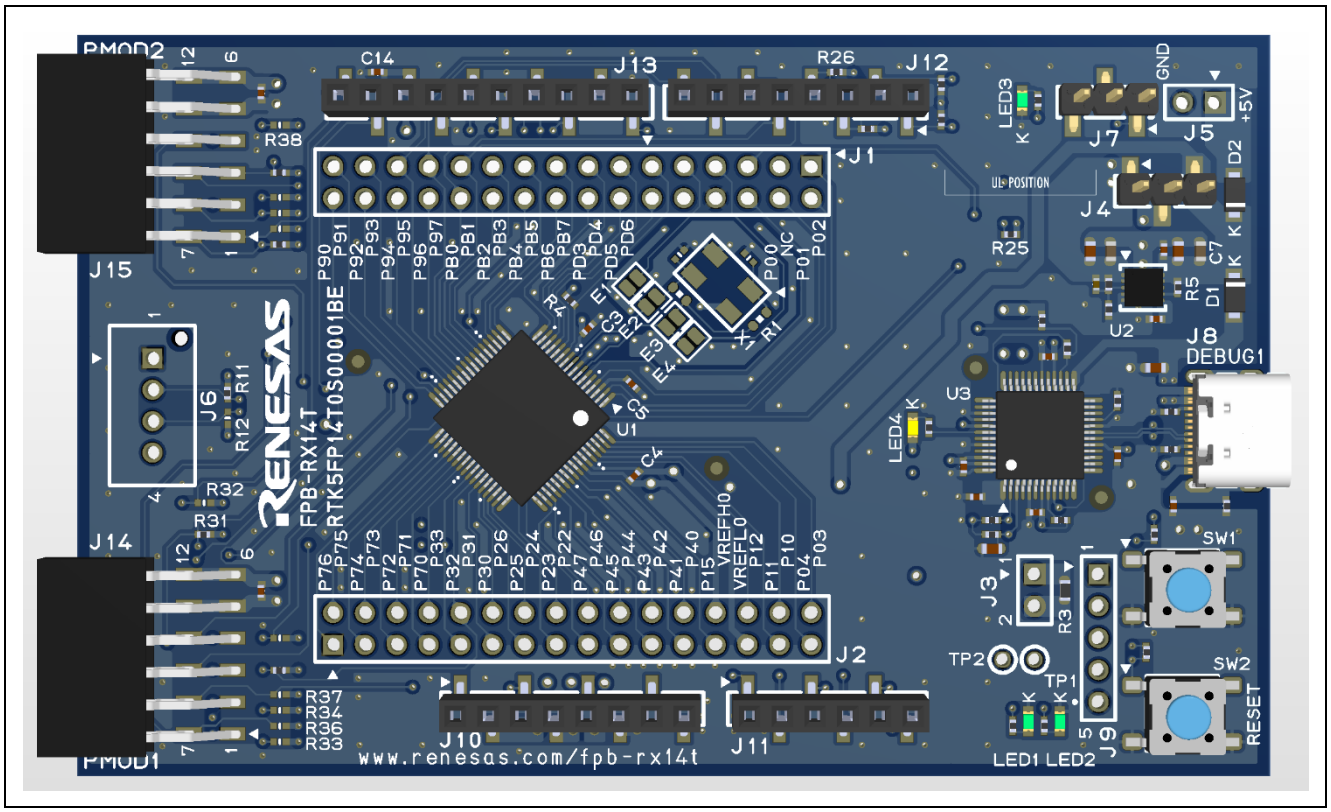

Figure 3. FPB-RX14T v1

3. Ordering Information

- FPB-RX14T v1 orderable part number: RTK5FP14T0S00001BE

Note: The underlined character in the orderable part number represents the kit version.

4. Hardware Architecture and Default Configuration

4.1 Board Architecture

The FPB-RX14T v1 is designed with an architecture similar to other boards in the FPB series. Alongside the RX MCU there is an on-board programmer / debugger, pin headers for access to all the pins on the RX MCU, a power supply regulator, some LEDs and switches, and several ecosystem I/O connectors (Pmod and Arduino).

Table 2. Board Architecture

Category	Features	Function present on all similar boards	Functionality is:
MCU Native Pin Access	RX MCU, breakout pin headers for all RX MCU I/O and power, 2-pin header for RX MCU current measurement (not fitted)	Yes	MCU dependent
System Control and Ecosystem Access	Power, debugger, user LEDs and switch, reset switch, ecosystem connectors, SCI interface connector (not fitted)	Yes	Same or similar across other FPB boards

4.2 Block Diagram

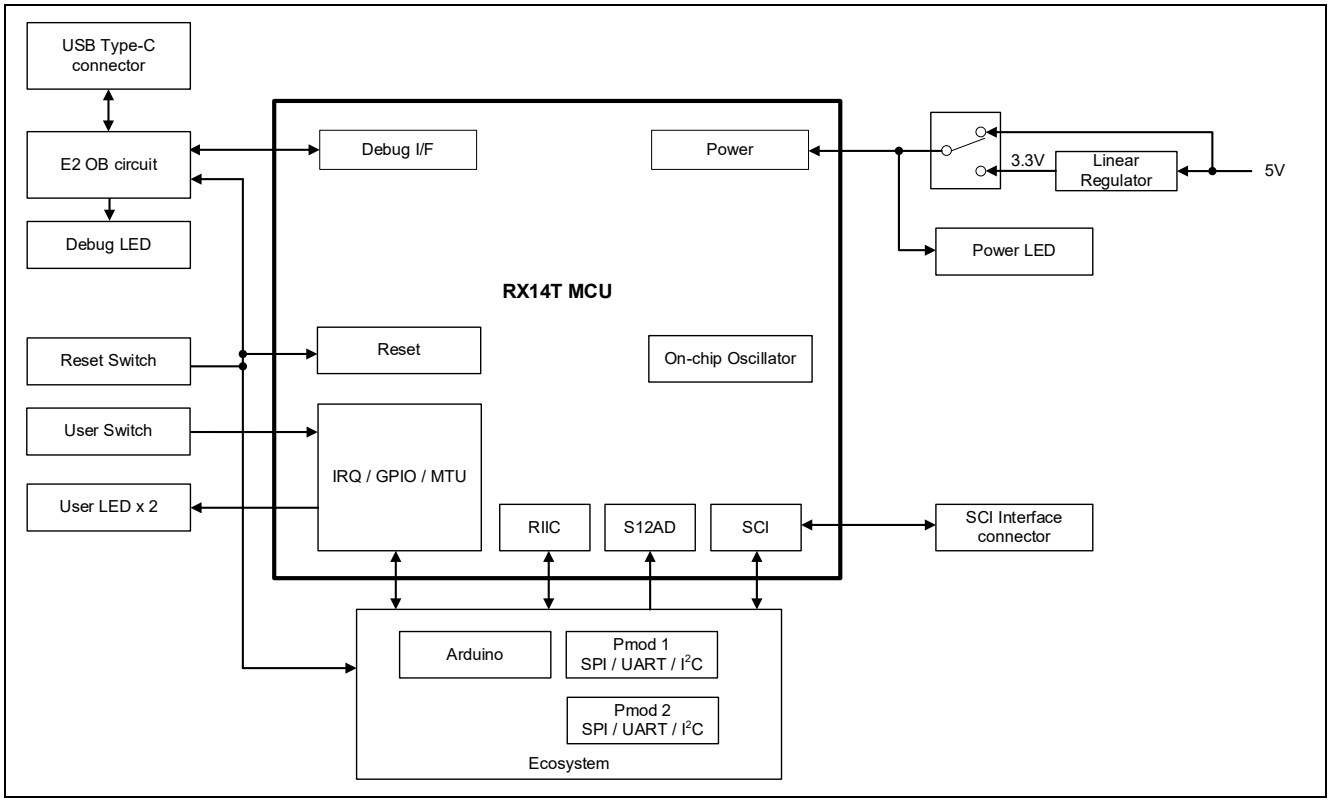

Figure 4. FPB-RX14T v1 Block Diagram

4.3 Component Placement and Dimension

Reference number for components on the FPB-RX14T v1 are shown below.

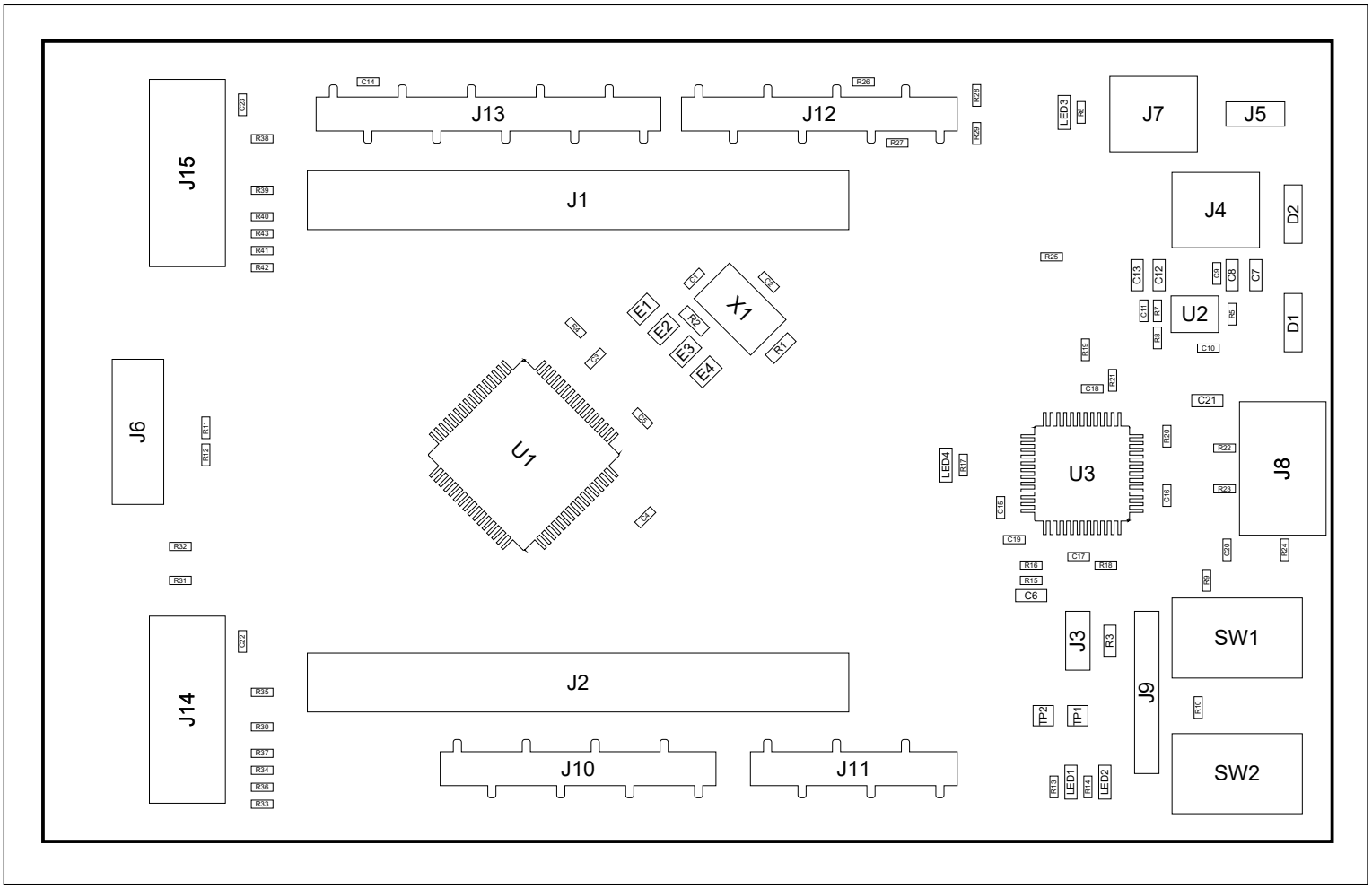

Figure 5. Reference number for components on the FPB-RX14T v1 (top side)

Figure 6. Reference number for components on the FPB-RX14T v1 (bottom side)

Dimension of the FPB-RX14T v1 is shown below.

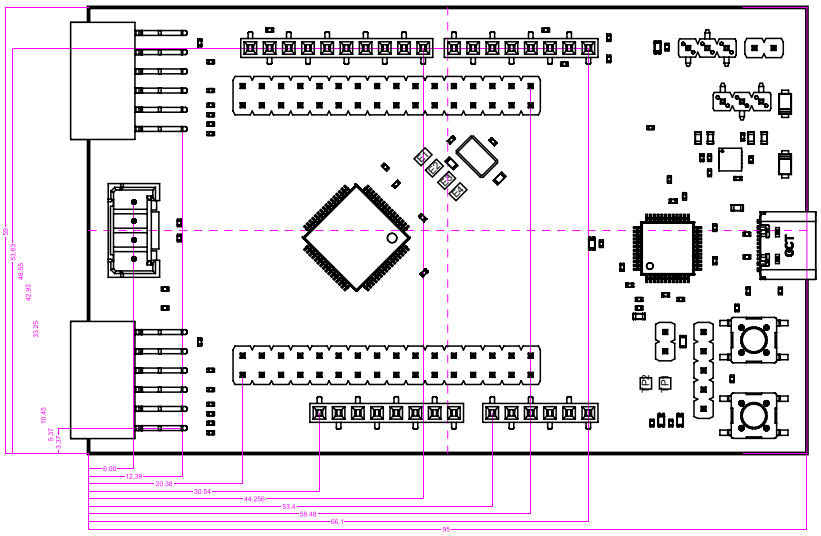

Figure 7. Dimension of the FPB-RX14T v1

4.4 Jumper Settings

Two types of jumpers are provided on the FPB-RX14T v1.

1. Copper jumpers (trace-cut type and solder-bridge type)
2. Traditional pin header jumpers

The following sections describe each type and their default configuration.

4.4.1 Copper Jumpers

Copper jumpers are of two types, designated **trace-cut** and **solder-bridge**.

A **trace-cut jumper** is provided with a narrow copper trace connecting its pads. The silk screen overlay printing around a trace-cut jumper is a solid box. To isolate the pads, cut the trace between pads adjacent to each pad, then remove the connecting copper foil either mechanically or with the assistance of heat. Once the etched copper trace is removed, the trace-cut jumper is turned into a solder-bridge jumper for any later changes.

A **solder-bridge** jumper is provided with two isolated pads that may be joined together by one of three methods:

- Solder may be applied to both pads to develop a bulge on each and the bulges joined by touching a soldering iron across the two pads.
- A small wire may be placed across the two pads and soldered in place.
- A 0Ω SMD resistor may be placed across the two pads to short the pads together by soldering.

For any copper jumper, the connection is considered **closed** if there is an electrical connection between the pads (default for trace-cut jumpers.) The connection is considered **open** if there is no electrical connection between the pads (default for the solder-bridge jumpers).

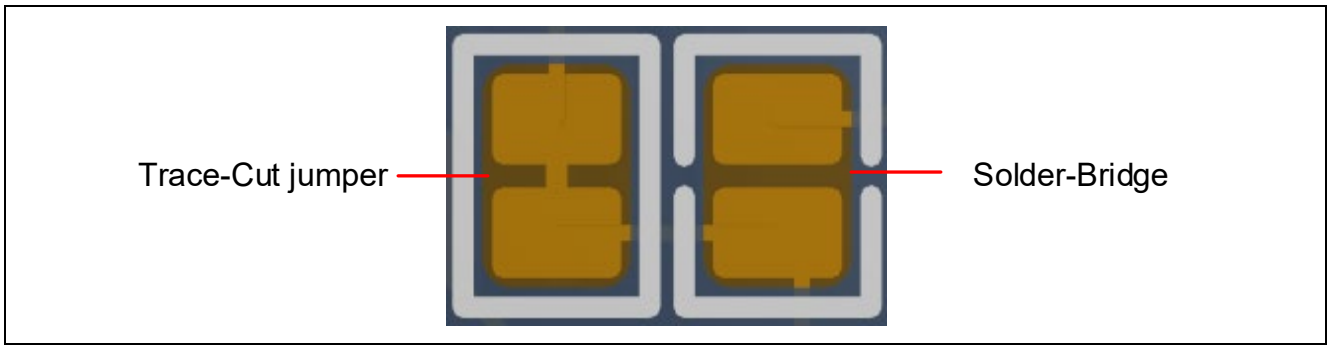

Figure 8. Copper Jumpers

4.4.2 Traditional Pin Header Jumpers

These jumpers are traditional small pitch jumpers that require an external shunt to open/close them. The traditional pin header jumpers on the FPB-RX14T v1 are 0.1” (2.54 mm) pitch headers and use compatible 2.54 mm shunt jumpers.

4.4.3 Default Jumper Configuration

The following table describes the default settings for each jumper on the FPB-RX14T v1. This includes copper jumpers (reference number Ex) and traditional pin header jumpers (reference number Jx). This also includes some 0Ω resistors (reference number Rx) because the resistors are used as jumper function.

Function for copper jumper Ex in the table describe function at Closed. The circuit group for each jumper is the reference number found in the board schematic (available in the Design Package). Functional details for many of the listed jumpers may be found in sections associated with each functional area of the kits.

Table 3. Default Jumper Settings

Location	Circuit Group	Default (Open / Closed) (Fitted / Not fitted)	Function
J4	Power Supply	Jumper on pins 2-3	Connect Board_VCC to 5.0 V
J7	E2OB	Jumper on pins 1-2 (Refer to section 5.2 in detail)	At jumper on pins 1-2, E2 OB is held in reset (Standalone operation mode)
			At jumper on pins 2-3, E2 OB is enabled (Debug on-board mode)
E1	MCU	Closed	At closed, connect P36 (EXTAL) to breakout pin header J1
E2	MCU	Open	At closed, connect P36 (EXTAL) to crystal oscillator X1
E3	MCU	Open	At closed, connect P37 (XTAL) to crystal oscillator X1
E4	MCU	Closed	At closed, connect P37 (XTAL) to breakout pin header J1
E5	MCU	Open	At closed, connect P14 (VREFH0) to UC_VCC
E6	MCU	Closed	At closed, connect P14 (VREFH0) to Board_VCC
E7	MCU	Closed	At closed, connect PG7 (MD / FINED) to E2 OB
E8	MCU	Open	At closed, connect PG7 (MD / FINED) to breakout pin header J1
E9	MCU	Closed	At closed, connect P13 (VREFL0) to GND
E10	Power Supply	Closed	At closed, connect Board_VCC to Board_VCC_DEBUG (Do not open this copper jumper)
E12	Arduino	Closed	At closed, connect 5.0 V to Arduino (5V)
E13	Arduino	Closed	At closed, connect 3.3 V to Arduino (3.3V)
E14	Arduino	Closed	At closed, connect Board_VCC to Arduino (IOREF)
E15	Arduino	Closed	At closed, connect RES# to Arduino (RESET)
E16	Arduino	Open	At closed, connect P00 (IRQ4) to Arduino (RESET)
E17	Arduino	Closed	At closed, connect P30 (SCK6) to Arduino (D13 / SCK)
E18	Arduino	Open	At closed, connect PB4 (RXD6 / SMISO6) to Arduino (D12 / MISO)
E19	Arduino	Closed	At closed, connect P11 (TXD6 / SMOSI6 / MTIOC3A) to Arduino (D11 / MOSI / PWM)
E20	Pmod 1	Open	At closed, connect PB7 (CTS6# / RTS6#) to Pmod 1 (CTS / CS / INT)
E21	Pmod 1	Closed	At closed, connect P22 (IRQ2) to Pmod 1 (CTS / CS / INT)
E22	Pmod 1	Open	At closed, connect P11 (TXD6 / SMOSI6 / MTIOC3A) to Pmod 1 (TXD / MOSI)
E23	Pmod 1	Closed	At closed, connect PB4 (RXD6 / SMISO6) to Pmod 1 (TXD / MOSI)
E24	Pmod 1	Open	At closed, connect PB4 (RXD6 / SMISO6) to Pmod 1 (RXD / MISO / SCL)
E25	Pmod 1	Closed	At closed, connect P26 (SCL0) to Pmod 1 (RXD / MISO / SCL)
E26	Pmod 1	Open	At closed, connect PB7 (CTS6# / RTS6#) to Pmod 1 (RTS / SCK / SDA)

Location	Circuit Group	Default (Open / Closed) (Fitted / Not fitted)	Function
E27	Pmod 1	Open	At closed, connect P30 (SCK6) to Pmod 1 (RTS / SCK / SDA)
E28	Pmod 1	Closed	At closed, connect P31 (SDA0) to Pmod 1 (RTS / SCK / SDA)
E29	Pmod 2	Closed	At closed, connect PB5 (TXD1 / SMOSI1 / SSDA1) to Pmod 2 (TXD / MOSI)
E30	Pmod 2	Open	At closed, connect PD7 to Pmod 2 (TXD / MOSI)
E31	Pmod 2	Open	At closed, connect PB5 (TXD1 / SMOSI1 / SSDA1) to Pmod 2 (RTS / SCK / SDA)
E32	Pmod 2	Open	At closed, connect PD4 (SCK1) to Pmod 2 (RTS / SCK / SDA)
E33	Pmod 2	Closed	At closed, connect PD6 (RTS1#) to Pmod 2 (RTS / SCK / SDA)
R3	MCU CURRENT MEASUREMENT	Fitted (Refer to section 6.2 in detail)	At fitted, connect Board_VCC to UC_VCC
			At not fitted, the RX MCU current can be measured over this jumper

5. System Control and Ecosystem Access

The FPB-RX14T v1 provides a power supply regulator, an on-board debugger, simple I/O (switches and LEDs), and popular I/O ecosystem connectors. These are all described in detail below.

5.1 Power

The FPB-RX14T v1 is designed for 5 V operation. An on-board Linear Regulator is used to convert the 5 V supply to a 3.3 V supply. The 3.3 V supply is used to power the RX MCU and other peripheral features by default.

The 3.3 V supply is used to power the RX MCU and other peripheral features by shorting pin 1 and 2 of the pin header jumper J4. The 5 V supply is used to power the RX MCU and other peripheral features by shorting pin 2 and 3 of the pin header jumper J4.

RX MCU specifies power-on VCC rising gradient. When suppling the 5 V to the RX MCU, the power-on VCC rising gradient depends on capability of the power supply that supplies 5 V to the FPB-RX14T v1 because input 5 V to the FPB-RX14T v1 is supplied to the RX MCU through the reverse protection diode.

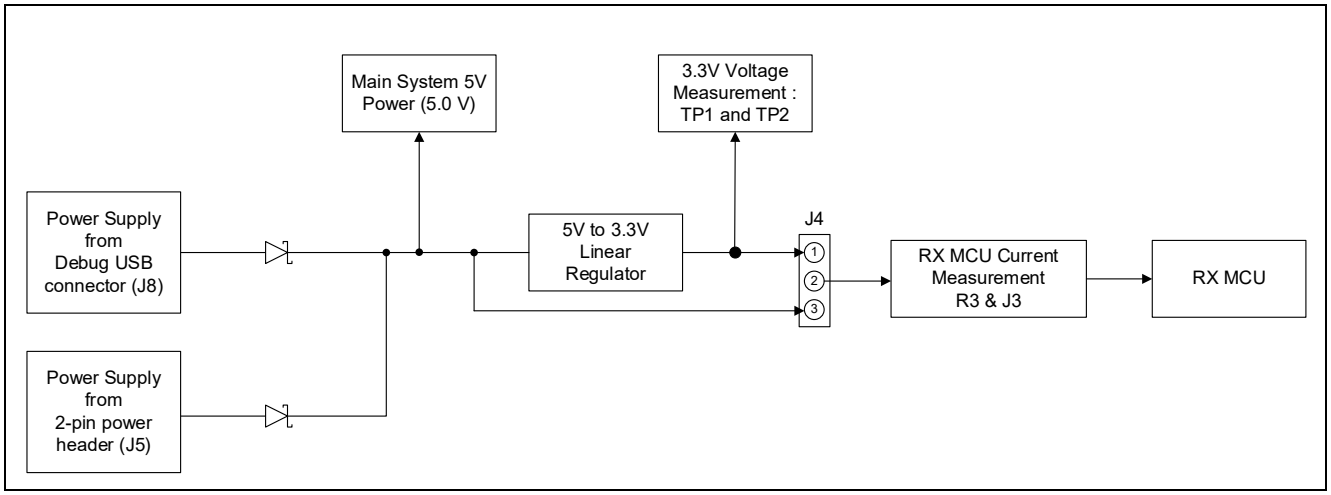

Figure 9. Power Supply

5.1.1 USB

5 V may be supplied from a host PC to the USB connector (J8) labelled DEBUG1 on the board. Power from this source is connected to the main system 5 V power. Reverse current protection is provided between this connector and the main system 5 V power.

5.1.2 Header Connector J5

5 V may be supplied from an external power supply to connector J5. J5 is a standard 2-pin header on a 0.1” (2.54 mm) pitch. Pin 1 is 5 V, and pin 2 is GND. Power from this source is connected to the main system 5 V power. Reverse current protection is provided between J5 and the main system 5 V power.

5.1.3 Power Supply Considerations

Voltage of Main System 5 V Power will be lower than the power supply voltage because of the forward voltage (max 0.55V@1A) of the reverse current protection diode. Main System 5 V Power supplies to external devices connected to Arduino, Pmod 1, Pmod 2 and SCI interface connector.

The maximum current that could be supplied to the FPB-RX14T v1 is as shown below, and this includes the current consumed by external boards connected to the ecosystem connectors and breakout pin headers.

Power supply from USB: max. 500 mA

Power supply from J5: max. 1 A

5.1.4 Power-up Behavior

When powered, the Power LED (LED3) colored green turns on and blinky example project which is pre-programmed starts and User LED1 and LED2 start blinking.

5.2 Debug and Programming

The FPB-RX14T v1 can be debugged and programmed using the E2 OB.

The FPB-RX14T v1 supports Debug on-board mode in which can debug and program by E2 OB circuit and Standalone operation mode in which RX MCU operates as standalone by disabling E2 OB circuit. The mode can be configured by pin header jumper J7.

Table 4. Operating mode

J7	Operating mode
Jumper on pins 2-3	Debug on-board mode
Jumper on pins 1-2	Standalone operation

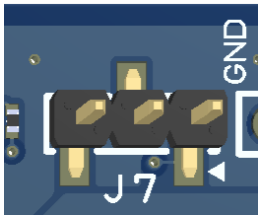

Figure 10. Pin header jumper J7

5.2.1 E2 OB

USB DEBUG1 (USB Type-C) connector (J8) connects the E2 OB to a host PC, allowing re-programming and debugging of the RX MCU firmware.

The E2 OB connects to the RX MCU using the FINE interface. Please note that connecting the same host PC to multiple FPB-RX14T v1 is not possible.

Table 5. USB Debug Connections

USB Debug Connector		FPB-RX14T v1
Pin	Description	Signal
J8-A4/B9	VBUS	+5V_USB_DBG
J8-A9/B4	VBUS	+5V_USB_DBG
J8-A5	CC1	5.1kΩ pull-down
J8-B5	CC2	5.1kΩ pull-down
J8-A6	D+1	USBDBG_DP
J8-B6	D+2	USBDBG_DP
J8-A7	D-1	USBDBG_DM
J8-B7	D-2	USBDBG_DM
J8-A8	SBU1	N.C.
J8-B8	SBU2	N.C.
J8-A1/B12	GND	GND
J8-A12/B1	GND	GND

A yellow indicator, LED4, shows the status of the debug interface. When the FPB-RX14T v1 is powered, and LED4 is blinking, it indicates that the host PC recognizes the E2 OB circuit. When LED4 is on solid, it indicates that the host PC is connected to the E2 OB circuit.

5.2.2 Settings in e² studio and Renesas Flash Programmer

FPB-RX14T v1 needs to be configured in Debug on-board shown in Table 4 when the MCU is debugged or re-programmed with e² studio. Figure 11 shows the settings for e² studio when creating a new project for the FPB-RX14T v1.

[Debug hardware]: Select [E2 Lite (RX)]

[Target Device]: Select [R5F514T5]

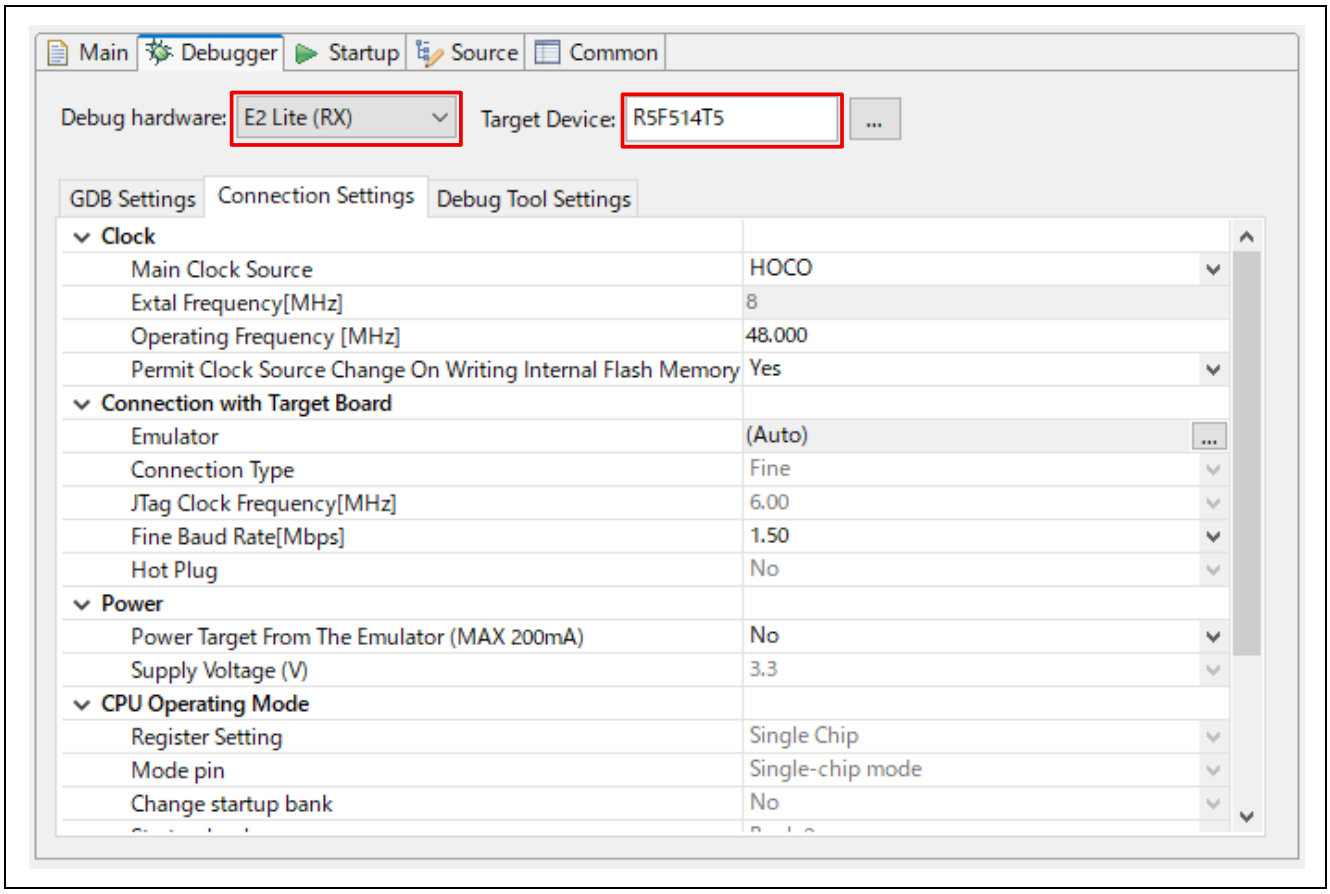

Figure 11. e² studio Setting

FPB-RX14T v1 needs to be configured in Debug on-board shown in Table 4 when the MCU is re-programmed with Renesas Flash Programmer. Figure 12 shows the settings for Renesas Flash Programmer when creating a new project for the FPB-RX14T v1.

Connect an USB cable between the FPB-RX14T v1 and a host PC and create a new project.

[Microcontroller]: Select [RX100]

[Project Name]: Define project name

[Project Name]: Select project folder location

[Tool]: Select [E2 emulator Lite]

[Tool Details]: Select [FINE]

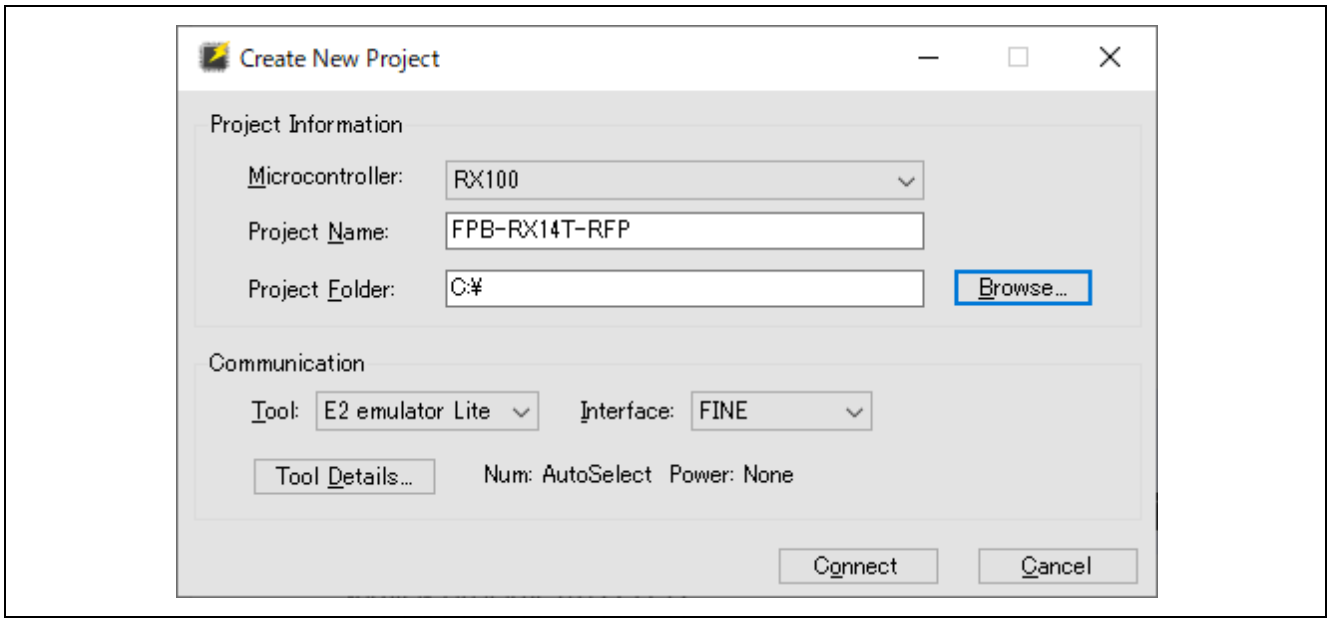

Figure 12. Renesas Flash Programmer Settings

5.3 Ecosystem

The Ecosystem connectors provide users the means to connect several third party add-on modules compatible with two popular ecosystems using the following connectors:

1. Two Digilent Pmod (UART / SPI / I²C) connectors
2. Arduino connectors

Note: We do not guarantee connection to all types of third party add-on modules. Confirm the specifications of this product and any third party add-on modules you intend to use.

5.3.1 Digilent Pmod Connectors

5.3.1.1 Pmod 1

A 12-pin Pmod Type-2A (expanded SPI), Type-3A (expanded UART) and Type-6A (expanded I^2C) connector is provided at connector J14 labelled PMOD1. At Type-2A, the RX MCU acts as the SPI master, and the connected module acts as an SPI slave device. At Type-6A, the RX MCU acts as a two-wire serial master, and a connected module acts as a two-wire serial slave.

Table 6. Pmod 1 Connections

Pmod 1 Connector				FPB-RX14T v1	Pmod 1 Configuration	
Pin	Option Type-2A	Option Type-3A	Default Type-6A	Signal	Closed	Open
J14-1	CS	CTS / GPIO		PB7 (CTS6# / RTS6#) *1 *2	E20	E21
			INT	P22 (IRQ2)	E21	E20
J14-2	MOSI	TXD		P11 (TXD6 / SMOSI6 / MTIOC3A) *1 *3	E22	E19, E23
			RESET	PB4 (RXD6 / SMISO6) *3	E23	E18, E22, E24
J14-3	MISO	RXD		PB4 (RXD6 / SMISO6) *1 *3	E24	E18, E23, E25
			SCL	P26 (SCL0) *3	E25	E24
J14-4	SCK			P30 (SCK6) *1 *3	E27	E17, E26, E28
		RTS / GPIO		PB7 (CTS6# / RTS6#) *1 *2	E26	E20, E27, E28
			SDA	P31 (SDA0) *3	E28	E26, E27
J14-5	GND			GND		
J14-6	VCC			Board_VCC		
J14-7	GPIO / INT (slave to master)			PB3 (IRQ3)		
J14-8	GPIO / RESET (master to slave)			P03		
J14-9	GPIO / CS2			P04		
J14-10	GPIO / CS3			PD5		
J14-11	GND			GND		
J14-12	VCC			Board_VCC		

*1. Open at shipping.
*2. PB7 can be used as either CTS6# or RTS6#.
*3. The signals are shared with Arduino.

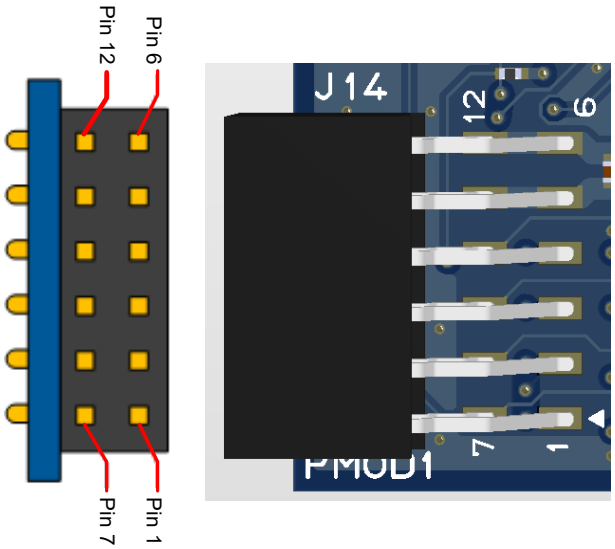

Figure 13. Pmod 1 Connector

Pmod Type-2A / 3A Operation

The option for SPI (Type-2A) or UART (Type-3A) can be configured at Pmod 1. To configure the FPB-RX14T v1 to use the Type-2A or Type-3A, configure the copper jumpers using Table 6. Following figure shows the copper jumpers to use the Type-2A or Type-3A.

Note: VCC power that supplies to J14-Pin6 and Pin12 is Board_VCC same as RX MCU power. Board_VCC voltage is selectable either 3.3 V or 5 V by configuring pin header J4.

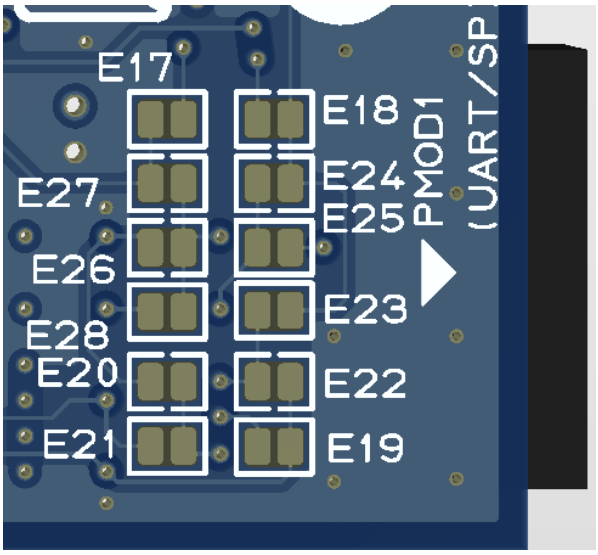

Figure 14. Pmod 1 Copper Jumpers (bottom side)

5.3.1.2 Pmod 2

A 12-pin Pmod Type-2A (expanded SPI), Type-3A (expanded UART) and Type-6A (expanded I²C) connector is provided at connector J15 labelled PMOD2. At Type-2A, the RX MCU acts as the SPI master, and the connected module acts as an SPI slave device. At Type-6A, the RX MCU acts as a two-wire serial master, and a connected module acts as a two-wire serial slave.

Table 7. Pmod 2 Connections

Pmod 2 Connector				FPB-RX14T v1	Pmod 2 Configuration	
Pin	Option Type-2A	Default Type-3A	Option Type-6A	Signal	Closed	Open
J15-1	CS	CTS / GPIO	INT	P02 (CTS1# / IRQ5)		
J15-2	MOSI	TXD		PB5 (TXD1 / SMOSI1 / SSDA1) *1	E29	E30, E31
			RESET	PD7 *2	E30	E29
J15-3	MISO	RXD	SCL	PB6 (RXD1 / SMISO1 / SSCL1)		
J15-4	SCK			PD4 (SCK1) *2	E32	E31, E33
		RTS / GPIO		PD6 (RTS1#)	E33	E31, E32
			SDA	PB5 (TXD1 / SMOSI1 / SSDA1) *1 *2	E31	E29, E32, E33
J15-5	GND			GND		
J15-6	VCC			Board_VCC		
J15-7	GPIO / INT (slave to master)			P93 (IRQ1)		
J15-8	GPIO / RESET (master to slave)			P91		
J15-9	GPIO			P90		
J15-10	GPIO			P70		
J15-11	GND			GND		
J15-12	VCC			Board_VCC		

*1. PB5 can be used as either TXD1 / SMOSI1 or SSDA1.

*2. Open at shipping.

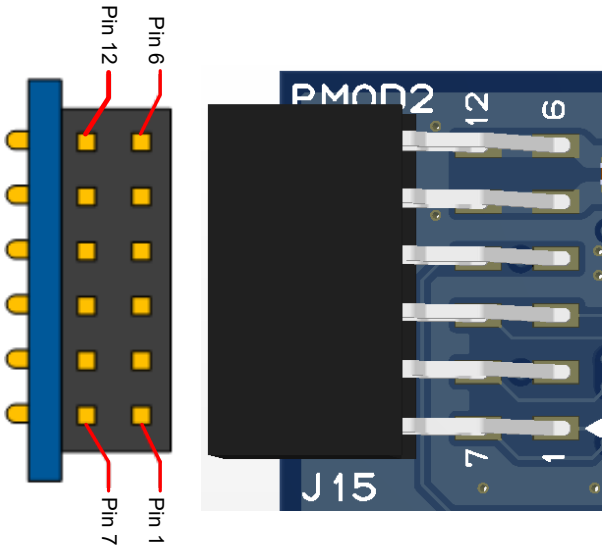

Figure 15. Pmod 2 Connector

Pmod Type-2A / 6A Operation

The option for SPI (Type-2A) or I²C (Type-6A) can be configured at Pmod 2. To configure the FPB-RX14T v1 to use the Type-2A or Type-6A, configure the copper jumpers using Table 7. Following figure shows the copper jumpers to use the Type-2A or Type-6A.

Note: VCC power that supplies to J15-Pin6 and Pin12 is Board_VCC same as RX MCU power. Board_VCC voltage is selectable either 3.3 V or 5 V by configuring pin header J4.

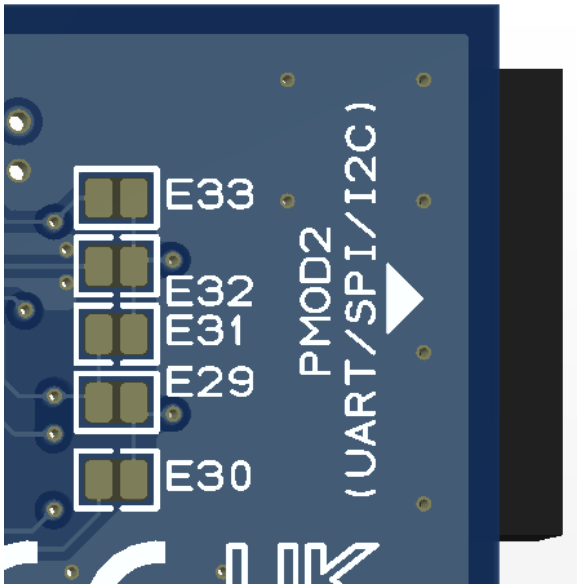

Figure 16. Pmod 2 Copper Jumpers (bottom side)

5.3.2 Arduino Connector

Arduino compatible connector interface is provided at connector J10, J11, J12 and J13.

Table 8. Arduino Connections

Arduino Compatible Connector		FPB-RX14T v1	Arduino Configuration	
Pin	**Description**	**Signal**	**Closed**	**Open**
J10-1	NC	NC		
J10-2	IOREF	Board_VCC	E14	
J10-3	RESET	RES#	E15	E16
		P00 (IRQ4) *1	E16	E15
J10-4	3.3V	3.3 V	E13	
J10-5	5 V	5 V	E12	
J10-6	GND	GND		
J10-7	GND	GND		
J10-8	VIN	NC		
J11-1	A0	P40 (AN000)		
J11-2	A1	P41 (AN001)		
J11-3	A2	P42 (AN002)		
J11-4	A3	P43 (AN003)		
J11-5	A4	P44 (AN004)		
J11-6	A5	P45 (AN005)		
J12-1	D0 / RX	P76 (RXD12)		
J12-2	D1 / TX	P96 (TXD12)		
J12-3	D2 / INT	P71 (IRQ6)		
J12-4	D3 / INT / PWM	P72 (IRQ7 / MTIOC4A)		
J12-5	D4	PB0		
J12-6	D5 / PWM	PB1 (MTIOC0A)		
J12-7	D6 / PWM	P95 (MTIOC2A)		
J12-8	D7	P97		
J13-1	D8	P94		
J13-2	D9 / PWM	P75 (MTIOC4C)		
J13-3	D10 / SS / PWM	P33 (MTIOC0C)		
J13-4	D11 / MOSI / PWM	P11 (TXD6 / SMOSI6 / MTIOC3A) *2	E19	E22
J13-5	D12 / MISO	PB4 (RXD6 / SMISO6) *1 *2	E18	E23, E24
J13-6	D13 / SCK	P30 (SCK6) *2	E17	E27
J13-7	GND	GND		
J13-8	AREF	VREFH0		
J13-9	SDA	P31 (SDA0) *2		
J13-10	SCL	P26 (SCL0) *2		

*1. Open at shipping.
*2. The signal is shared with Pmod 1.

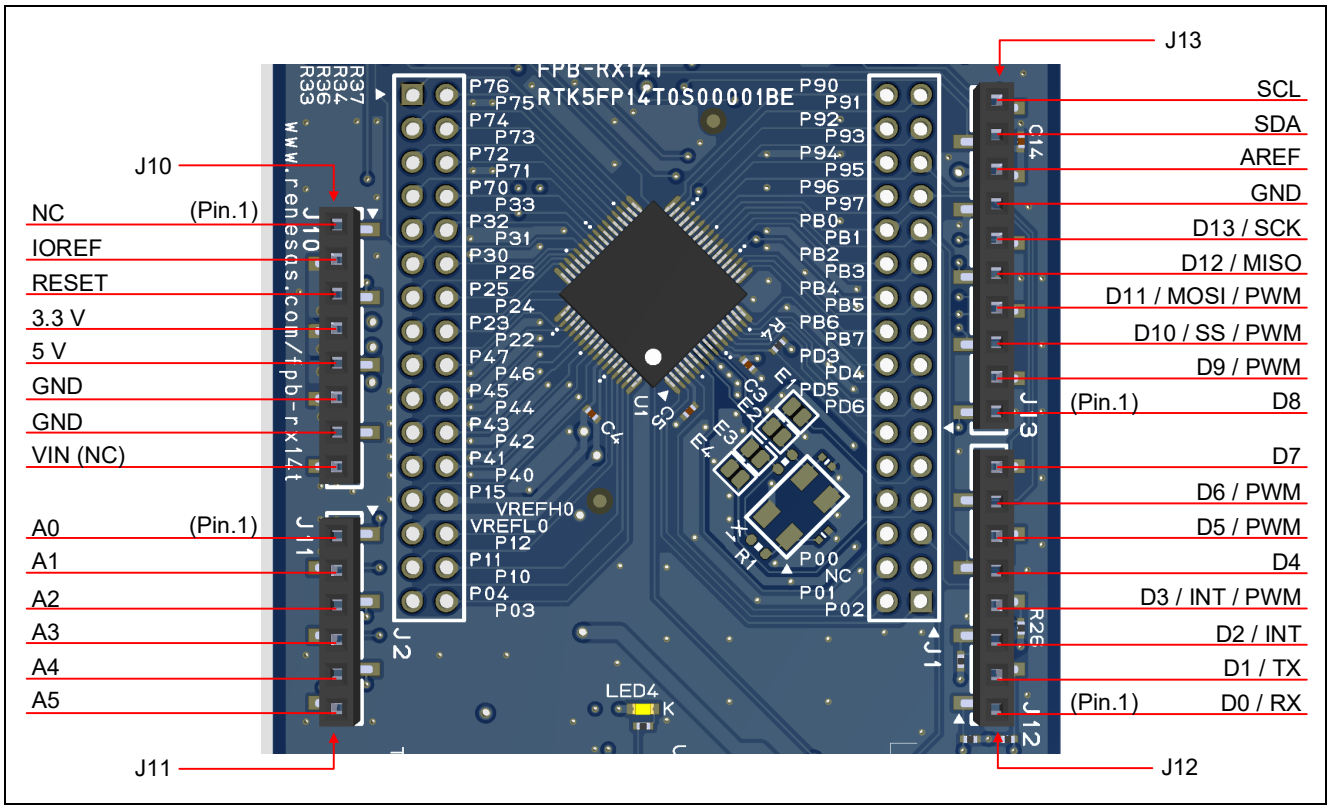

Figure 17. Arduino Connectors

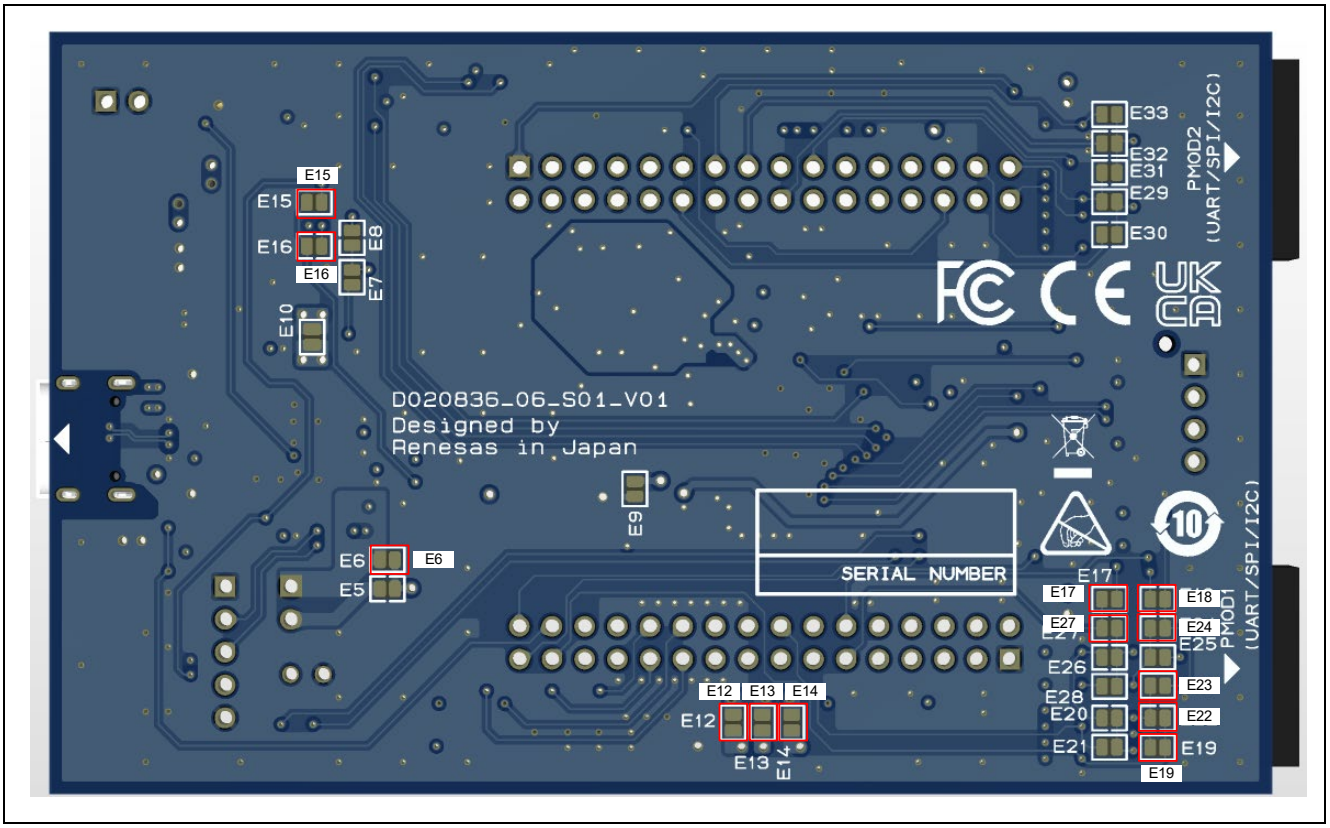

Figure 18. Arduino Copper Jumpers (bottom side)

Arduino Shield Considerations

AREF (J13-Pin8) output from Arduino Shield is connected to VREFH0 (Analog reference voltage supply pin for the 12-bit A/D converter) of RX MCU, however, Board_VCC is connected to VREFH0 at default condition. When Arduino AREF supplies power to VREFH0, the user must disconnect VREFH0 from Board_VCC power. Copper jumper E6 is provided on the FPB-RX14T v1 to disconnect VREFH0 from on-board Board_VCC power.

The FPB-RX14T v1 supplies 5 V power to J10-Pin5 of Arduino Shield through copper jumper E12, however, some of the RX MCU pins which are connected to Arduino Shield are not 5 V tolerant. When the FPB-RX14T v1 supplies 5 V power to Arduino Shield, however Board_VCC = 3.3 V, the user must confirm the RX14T Group User's Manual: Hardware and the specification of Arduino Shield you intend to use. Cut copper jumper E12 for disabled supplying 5 V to Arduino Shield.

5.4 Miscellaneous

5.4.1 LED

Four LEDs are provided on the FPB-RX14T v1.

Functions of the LEDs on the FPB-RX14T v1 is described in the following table. User LEDs turn on when RX MCU ports output high level.

Table 9. FPB-RX14T v1 LED Functions

LED			FPB-RX14T v1
Designator	**Color**	**Function**	**Signal**
LED1	Green	User LED	P32 (MTIOC3C)
LED2	Green	User LED	P92 (MTIOC1A)
LED3	Green	Power LED	Board_VCC
LED4	Yellow	Debug LED	E2 OB circuit

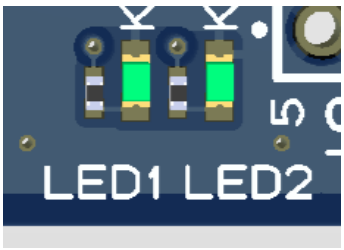

Figure 19. User LEDs

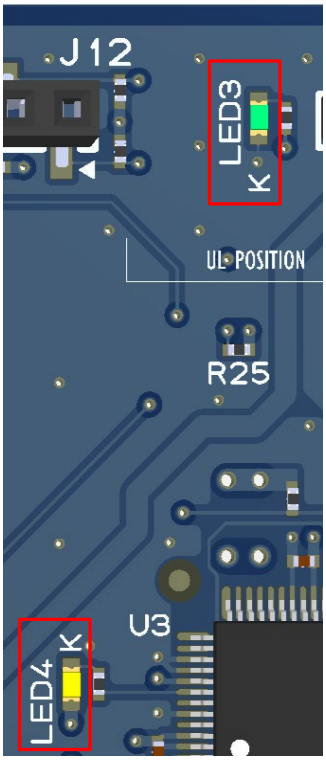

Figure 20. Power LED and Debug LED

5.4.2 User and Reset Switches

Two miniature, momentary, mechanical push-button type SMD switches are mounted on the FPB-RX14T v1.

Pressing the reset switch (SW2) generates a reset signal to reset the RX MCU. The signal which is connected to the user switch (SW1) is at low level while the user switch is pressed.

Table 10. FPB-RX14T v1 Switches

Switch			FPB-RX14T v1
Designator	**Function**	**Button Color**	**Signal**
SW1	User Switch	Blue	P10 (IRQ0)
SW2	Reset Switch	Blue	RES#

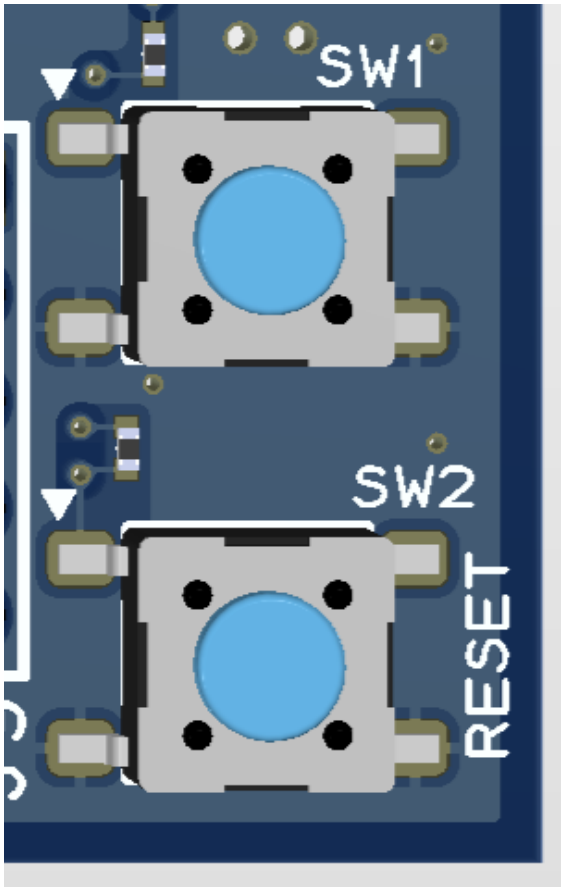

Figure 21. Reset (SW2) and User Switch (SW1)

5.4.3 SCI Interface Connector

A 4-pin male connector for communicating the MC-COM Renesas Flexible Motor Control Communication Board (Product part number: RTK0EMXC90S00000BJ) is provided at connector J6 (not fitted) on the FPB-RX14T v1.

Table 11. SCI Interface Connections

SCI Interface Connector	FPB-RX14T v1
Pin	**Signal**
J6-1	GND
J6-2	P24 (RXD5)
J6-3	P23 (TXD5)
J6-4	Board_VCC

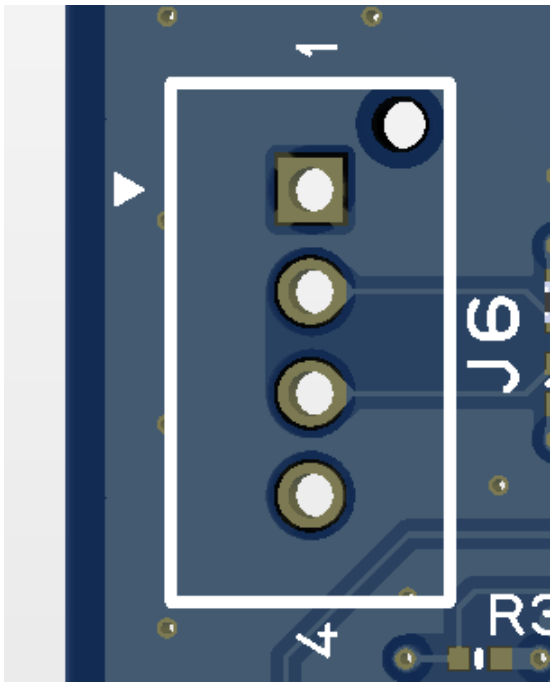

Figure 22. SCI Interface Connector (J6)

6. MCU Native Pin Access

6.1 Breakout Pin Headers

The FPB-RX14T v1 pin headers (not fitted), J1 and J2, provide access to RX MCU interface signals. Each header pin is labelled with the power or port connected to that pin (Some header pins aren't labelled because of not enough space.). Refer to the RX14T Group User's Manual: Hardware for details of each port function, and the FPB-RX14T v1 schematic for pin header port assignments.

The placement of the breakout pin headers allows for a standard 2.54 mm (0.100") breadboard to be placed on both pin headers. This can be used for prototyping and testing of custom circuitry for use with the RX MCU.

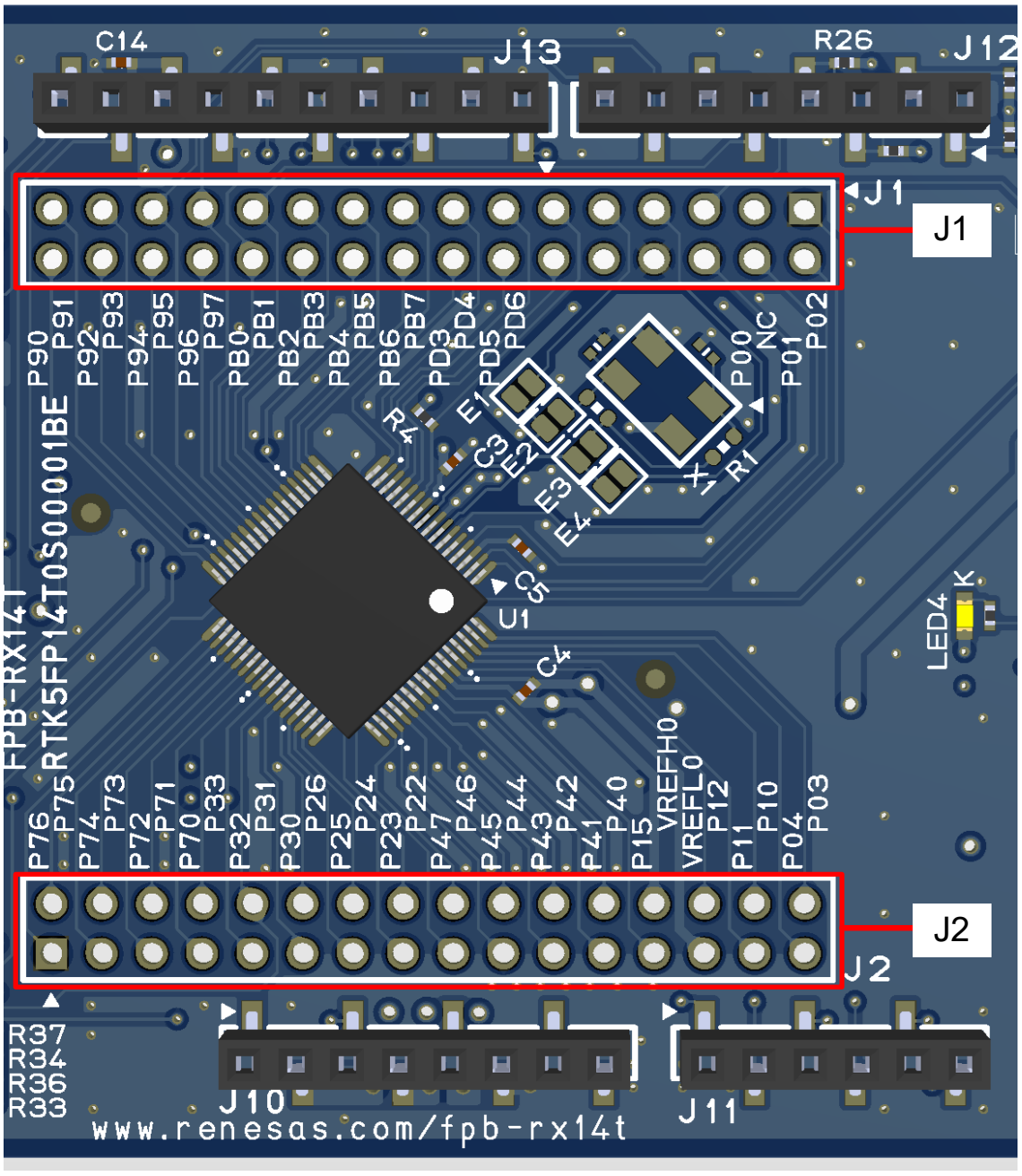

Figure 23. Breakout Pin Headers J1 and J2

6.2 MCU Current Measurement

Two pin header J3 (not fitted) is provided on the FPB-RX14T v1 to measure the RX MCU current.

Resistor R3 is 0Ω (SMD 0603). It should be removed in order to measure the current consumption using an ammeter connected between the pin header pins.

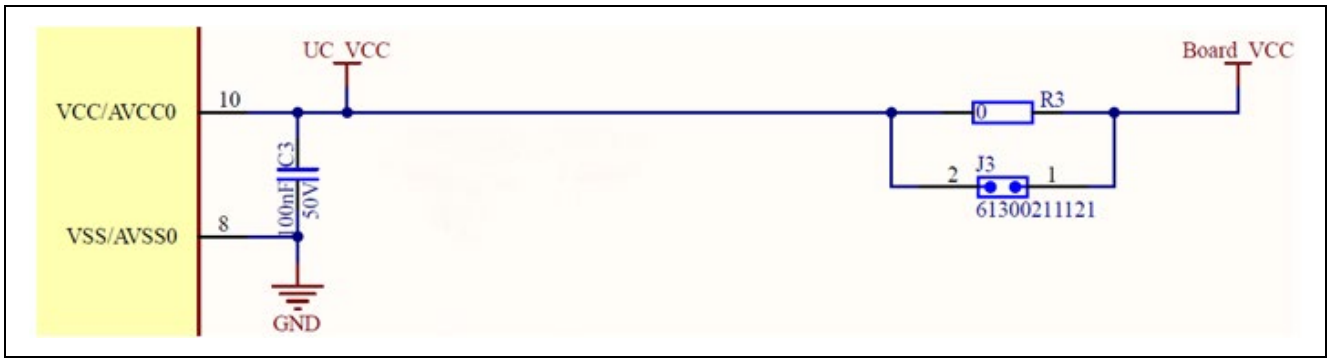

Figure 24. RX MCU Current Measurement Circuit

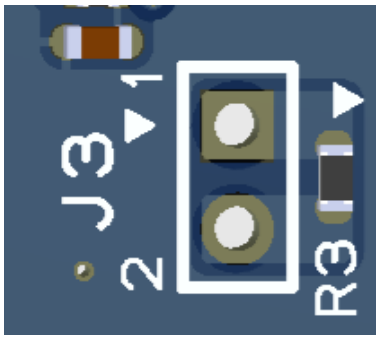

Figure 25. RX MCU Current Measurement Pin Header J3 and R3

7. Recommended Components

Table 12 lists recommended part numbers for the components that can be fitted as required.

Table 12. Recommended Components

Designator(s)	Description	Manufacturer	Part Number
X1	8 MHz Crystal	Abracon	ABM3B-8.000MHZ-10-1-U
J1, J2	32-way male header	Wurth Elektronik	61303221121
J3, J5	2-way male header	Wurth Elektronik	61300211121
J6	4-pin male header	Molex	53375-0410
R1 *1	Damping Resistor of crystal oscillator X1	-	The resistance must be adjusted by users.
R2 *1	Feedback Resistor of crystal oscillator X1	-	The resistance must be adjusted by users.
R40 *2	Pull-up Resistor	Yageo	RC0402FR-072K2L
R12, R32, R33, R34, R35, R36, R37, R38, R41, R43	Pull-up Resistors	Yageo	RC0402FR-0710KL
C1, C2 *3	Loading Capacitors	-	The capacitance must be adjusted by users.

*1. Pads of chip resistance (size 0603) are provided on the FPB-RX14T v1.
*2. Pads of chip resistance (size 0402) are provided on the FPB-RX14T v1.
*3. Pads of chip capacitance (size 0402) are provided on the FPB-RX14T v1.

8. Certifications

The FPB-RX14T v1 meets the following certifications/standards. See page 4 of this user's manual for the disclaimer and precautions.

8.1 EMC/EMI Standards

- FCC Notice (Class A)

  This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

  NOTE- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/television technician for help.

- Innovation, Science and Economic Development Canada ICES-003 Compliance:
  CAN ICES-3 (A)/NMB-3(A)

- CE Class A (EMC)

  This product is herewith confirmed to comply with the requirements set out in the Council Directives on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive 2014/30/EU.

  Warning – This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures to correct this interference.

- UKCA Class A (EMC)

  This product is in conformity with the following relevant UK Statutory Instrument(s) (and its amendments): 2016 No. 1091 Electromagnetic Compatibility Regulations 2016.

  Warning – This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be requried to take adequate measures to correct this interference.

- Taiwan: Chinese National Standard 13438, C6357 compliance, Class A limits
- Australia/New Zealand AS/NZS CISPR 32:2015, Class A

8.2 Material Selection, Waste, Recycling and Disposal Standards

- EU RoHS
- China SJ/T 113642014, 10-year environmental protection use period.
- WEEE Directive (2012/19/EU) & The Waste Electrical and Electronic Equipment Regulations 2013

The WEEE (Waste Electrical and Electronic Equipment) regulations put responsibilities on producers for the collection and recycling or disposal of electrical and electronic waste. Return of WEEE under these regulations is applicable in the UK and European Union.

This equipment (including all accessories) is not intended for household use. After use the equipment cannot be disposed of as household waste, and the WEEE must be treated, recycled and disposed of in an environmentally sound manner.

Renesas Electronics Europe GmbH can take back end of life equipment. Register for this service at;
https://www.renesas.com/eu/en/support/regional-customer-support/weee

8.3 Safety Standards

- UL 94V-0

9. Design and Manufacturing Information

The design and manufacturing information for the FPB-RX14T v1 is available in the “FPB-RX14T v1 Design Package” available on renesas.com/fpb-rx14t.

- Design package file name: fpb-rx14t-v1-designpackage.zip
- Design package contents

Table 13. FPB-RX14T v1 Design Package Contents

File Type	Content	File / Folder Name
File (PDF)	Schematics	fpb-rx14t-v1-schematics
File (PDF)	Mechanical Drawing	fpb-rx14t-v1-mechdwg
File (PDF)	3D Drawing	fpb-rx14t-v1-3d
File (EXCEL)	BoM	fpb-rx14t-v1-bom
Folder	Manufacturing Files	Manufacturing Files
Folder	Design Files	Design Files-Altium

10. Website and Support

Visit the following URLs to learn about the kit and the RX family of microcontrollers, download tools and documentation, and get support.

FPB-RX14T Resources	renesas.com/fpb-rx14t
RX Kit Information	renesas.com/rx/kits
RX Product Information	renesas.com/rx
RX Product Support Forum	renesas.com/rx/forum
RX Videos	renesas.com/rx/videos
RX Kit Feedback and Feature Request	renesas.com/rx/kitfeedback
Renesas Support	renesas.com/support

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Sep.30.25	—	Initial release

FPB-RX14T v1 User's Manual

Publication Date: Sep.30.25 Rev.1.00

Published by: Renesas Electronics Corporation

FPB-RX14T v1 User's Manual

Renesas Electronics Corporation

R20UT5612EG0100