

Target Board Kit S5D3 (TB-S5D3)

Quick Start Guide

Renesas Synergy™ Platform
Synergy Tools & Kits
Kits: TB-S5D3 v1.0

All information contained in these materials, including products and product specifications, represents information on the product at the time of publication and is subject to change by Renesas Electronics Corp. without notice. Please review the latest information published by Renesas Electronics Corp. through various means, including the Renesas Electronics Corp. website (<http://www.renesas.com>).

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 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.
 5. 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.
6. 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.
 7. 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.
 8. 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.
 9. 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.
 10. 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.
 11. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
 12. 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.4.0-1 November 2017)

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/.

Renesas Synergy™ Target Board Kit S5D3 (TB-S5D3) Disclaimer

By using this TB-S5D3, 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 <https://www.renesas.com/en-us/legal/disclaimer.html>.

The TB-S5D3 is not guaranteed to be error free, and the entire risk as to the results and performance of the TB-S5D3 is assumed by the User. The TB-S5D3 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 satisfactory quality, fitness for a particular purpose, title, and non-infringement of intellectual property rights with regard to the TB-S5D3. Renesas expressly disclaims all such warranties.

Renesas does not consider the TB-S5D3 a finished product and therefore the TB-S5D3 may not yet comply with some requirements applicable to finished products, including, but not limited to recycling (WEEE), CE, UL, restricted substances (ROHS), FCC, FEE, and electromagnetic compatibility regulations. 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 TB-S5D3, 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 Renesas Synergy™ Target Board Kit 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 Renesas Synergy™ Target Board Kit does not represent an ideal reference design for an end product and does not fulfill the regulatory standards for an end product.

Renesas Synergy™ Platform

Target Board Kit S5D3 (TB-S5D3)

Contents

1. Introduction.....	2
2. Kit Contents.....	2
3. Overview of the Out-of-Box (OoB) Demonstration (Blinky) Application	3
4. Setting up the TB-S5D3 Board	3
5. Powering up the TB-S5D3 Board.....	3
6. Running the Out-of-Box (OoB) Demonstration (Blinky) Application.....	3
7. Next Steps.....	4
Revision History.....	6

1. Introduction

This Quick Start Guide (QSG) walks you through the Out-of-Box (OoB) Demonstration (Blinky) Application that the TB-S5D3 board comes pre-programmed with. The QSG also includes the location from where you can download the software, development tools, and additional application projects for the TB-S5D3.

2. Kit Contents

The following components are included in the Target Board Kit S5D3 (TB-S5D3):

- 1x TB-S5D3 board
- 1x USB Type-A to USB Micro-B cable



Figure 1. TB-S5D3 Contents

3. Overview of the Out-of-Box (OoB) Demonstration (Blinky) Application

The Out-of-Box (OoB) Demonstration (Blinky) Application uses the RTOS timers in the Synergy Software Package (SSP) to toggle an LED connected to the GPIO of the S5D3 MCU at an interval of 0.5 seconds.

4. Setting up the TB-S5D3 Board

Prior to powering up the board, make sure that the jumper J8 is set up to configure the S5D3 MCU to execute code from the internal flash. Jumper J8 is located in the BOOT CONFIG section of the TB-S5D3 board as shown in Figure 2.

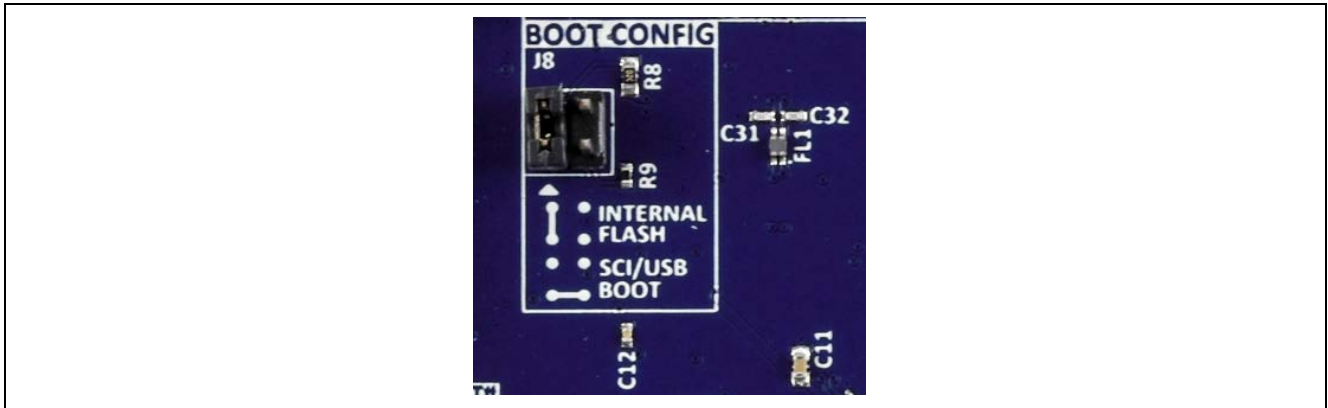


Figure 2. Boot Configuration Jumper Setting

5. Powering up the TB-S5D3 Board

You can power up the TB-S5D3 board from a 5 V power supply using the USB Type-A to USB Micro-B cable. Connect the Micro USB end of the cable to connector J11 (DEBUG USB located in the DEBUG area) on the TB-S5D3 board. Connect the other end of the cable to the USB port of a host PC or a USB power supply. LED2 (PWR) on the TB-S5D3 board lights up solid green indicating that the TB-S5D3 board is powered on.

Note: If 5 V is supplied from the USB power supply or the host PC on which J-Link drivers are not installed, LED2 (DEBUG) blinks orange. If 5 V is supplied from the host PC on which J-Link drivers are installed and detected by the TB-S5D3, the LED2 (DEBUG) blinks orange with a very small duty cycle that is barely noticeable.

6. Running the Out-of-Box (OoB) Demonstration (Blinky) Application

Once the TB-S5D3 board is powered up, the Out-of-Box (OoB) Demonstration (Blinky) Application begins to execute. The LED 1 blinks red at an interval of 0.5 seconds.

Note: The source code of the Out-of-Box (OoB) Demonstration (Blinky) Application is available as *Out-of-Box (OoB) Demonstration (Blinky) Application for S1/S3/S5 Target Board Kits* downloadable from the S5D3 Target Board Kit webpage at www.renesas.com/synergy/tb-s5d3.

7. Next Steps

1. Learn more about the TB-S5D3.

Visit the S5D3 Target Board Kit webpage (www.renesas.com/synergy/tb-s5d3) to learn more about the TB-S5D3 and download related documentation, schematics, design files, application projects, and so forth.

2. Create My Renesas account (if you do not have one already).

You need a **My Renesas** account to download software, development tools, and application projects. Log in to or Sign up for a **My Renesas** account at www.update.renesas.com/SSO/login.

3. Download and install Synergy Software Package and Development Tools.

The Synergy Software Package, J-Link USB drivers, and one of the two supported tool chains are bundled and available as a single downloadable file as follows:

A. **IAR Platform Installer** installs Synergy Software Package and IAR Embedded Workbench® for Renesas Synergy™ IDE with IAR compiler and J-Link USB drivers.

Download from www.renesas.com/synergy/ewsynergy.

B. **e² studio Platform Installer** installs Synergy Software Package and e² studio for Synergy IDE with IAR compiler and J-Link USB drivers.

Download from www.renesas.com/synergy/e2studio.

Run the platform installer to install the necessary components on to your computer.

4. Explore existing application projects for the TB-S5D3.

Renesas provides several application projects to demonstrate different capabilities of the S5D3 MCU Group. These application projects can also serve as a good starting point for you to develop your custom applications. Application projects available for the TB-S5D3 are listed at www.renesas.com/synergy/tb-s5d3.

- Notes:
1. Every application project includes the project files, an application note, and instructions to import the application project.
 2. On downloading the application project from the website to your computer, the application projects have to be built using one of the two supported tool chains before they can be downloaded on to the TB-S5D3 board.

5. Learn more about the Synergy Platform.

Visit the following URLs to learn about the following elements of the Synergy Platform and download different components:

— Synergy Software: www.renesas.com/synergy/software

— Synergy Hardware: www.renesas.com/synergy/hardware

— Synergy Solutions Gallery: www.renesas.com/synergy/solutionsgallery

Website and Support

Visit the following URLs to learn about key elements of the Synergy Platform, download components and related documentation, and get support.

Synergy Software	www.renesas.com/synergy/software
Synergy Software Package	www.renesas.com/synergy/ssp
Software add-ons	www.renesas.com/synergy/addons
Software glossary	www.renesas.com/synergy/softwareglossary
Development tools	www.renesas.com/synergy/tools
Synergy Hardware	www.renesas.com/synergy/hardware
Microcontrollers	www.renesas.com/synergy/mcus
MCU glossary	www.renesas.com/synergy/mcuglossary
Parametric search	www.renesas.com/synergy/parametric
Kits	www.renesas.com/synergy/kits
Synergy Solutions Gallery	www.renesas.com/synergy/solutionsgallery
Partner projects	www.renesas.com/synergy/partnerprojects
Application projects	www.renesas.com/synergy/applicationprojects
Self-service support resources:	
Documentation	www.renesas.com/synergy/docs
Knowledgebase	www.renesas.com/synergy/knowledgebase
Forums	www.renesas.com/synergy/forum
Training	www.renesas.com/synergy/training
Videos	www.renesas.com/synergy/videos
Chat and web ticket	www.renesas.com/synergy/resourcelibrary

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Jan.01.19	-	Initial release
1.01	Feb.08.19	4	Updated Website and Support URLs, and made content improvements

Target Board Kit S5D3 (TB-S5D3) Quick Start Guide

Publication Date: Feb.08.19

Published by: Renesas Electronics Corporation
