
Renesas Flash Programmer V3.08.00

R20UT4680EJ0100
Rev.1.00
Oct.01.20

Release Notes

Introduction

Thank you for purchasing the Renesas Flash Programmer (RFP).

This document covers specifications of the RFP that have been added or changed, restrictions, and points for caution. For points for caution, also see the user's manual of the RFP.

See the following documents for restrictions applying to particular target MCUs.

- User's manuals of the target MCUs
- Documents in which restrictions applying to particular target MCUs are listed

Contents

1. Product Version	2
2. Additions and Changes to Specifications	3
2.1 List of additions and changes to specifications	3
2.2 Details of additions and changes	5
3. Restrictions	9
3.1 List of restrictions	9
3.2 Details of restrictions	10

1. Product Version

No.	Version Number of RFP	Remark
(1)	V3.00.00	
(2)	V3.01.00	
(3)	V3.02.00	
(4)	V3.02.01	
(5)	V3.03.00	
(6)	V3.03.01	
(7)	V3.04.00	
(8)	V3.05.00	
	V3.05.01	
	V3.05.02	
(9)	V3.05.03	
(10)	V3.06.00	
(11)	V3.06.01	
	V3.06.02	
(12)	V3.08.00	

Note: The version number of the RFP is displayed in the title bar of the main window.

2. Additions and Changes to Specifications

2.1 List of additions and changes to specifications

No.	Addition/Change	Applicable MCUs	Product Version (Corresponds to the Numbers for the 12 Versions in the Table of Section 1)											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Display of the checksums of files	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Loading multiple program files	All	x	✓	✓	✓	✓ (*1)							
3	Importing license files	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	Programming of unique codes	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	Generating RPI files	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	Entering user-specified bit-rates for COM connections	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	Using a board that includes the UPD78F0730 microcontroller, which supports serial (COM) connection through a virtual USB driver	All	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	Support for Renesas Synergy™ microcontrollers	Renesas Synergy™	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	Support for the E2 emulator	RH850	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
		RL78				—	✓	✓	✓	✓	✓	✓	✓	✓
		RX				—	—	—	✓	✓	✓	✓	✓	✓
10	Change to filling with 0xFF	All	—	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓
11	Addition to handling of out-of-range errors for the memory of the MCU	All	x	x	x	x	✓	✓	✓	✓	✓	✓	✓	✓
12	Display of the checksums of files in particular areas of flash memory	RH850, RL78, RX	x	x	x	x	x	x	✓	✓	✓	✓	✓	✓
13	Release from license authentication	—	x	x	x	x	x	x	✓	✓	✓	✓	✓	✓

14	Expansion of command-line options	All	x	x	x	x	x	x	x	x	✓	✓	✓	✓	✓
15	Support of relative paths for files	All	x	x	x	x	x	x	x	x	✓	✓	✓	✓	✓
16	Change to the feature for generating RPI files	All	—	x	x	x	x	x	x	x	✓	✓	✓	✓	✓
17	Addition of the feature for displaying projects that have recently been used	All	x	x	x	x	x	x	x	x	✓	✓	✓	✓	✓
18	Addition of the feature for encrypting program files	All	x	x	x	x	x	x	x	x	x	✓	✓	✓	✓
19	Expansion of command-line options (2)	All	x	x	x	x	x	x	x	x	x	✓	✓	✓	✓
20	Addition of the feature for standard output from the command line	All	x	x	x	x	x	x	x	x	x	✓	✓	✓	✓
21	Support for RA and RE families	RA, RE	—	—	—	—	—	—	—	—	—	—	—	✓	✓
22	Support for Linux	All	—	—	—	—	—	—	—	—	—	—	—	—	✓
23	Support for the J-Link debug probe from SEGGER	RA	—	—	—	—	—	—	—	—	—	—	—	—	✓
24	Addition of the support for the security functions of the RA family	RA	—	—	—	—	—	—	—	—	—	—	—	—	✓

—: Not supported, x: No additions or changes to specifications, ✓: Supported

Note: *1. Restrictions on the number of files to read have been removed.

2.2 Details of additions and changes

No. 1 Display of the checksums of files

Applicable MCUs: All

Description: When a file is selected in the [Program File] area on the [Operation] tabbed page, the checksum of the file as a whole is displayed within the [Program File] area and output in the log output panel.

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 2 Loading multiple program files

Applicable MCUs: All

Description: The RFP is now capable of loading multiple program files. All of the files selected by the user are combined before being programmed in the flash memory.

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 3 Importing license files

Applicable MCUs: All

Description: The RFP is now capable of importing license files.

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 4 Programming of unique codes

Applicable MCUs: All

Description: The RFP now supports programming of a unique code in a designated area of flash memory.

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 5 Generating RPI files

Applicable MCUs: All

Description: The RFP is now capable of generating RPI files, which contain data from a designated area of code flash or data flash memory, along with the flash option settings.

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 6 Entering user-specified bit-rates for COM connections

Applicable MCUs: All

Description: While the values of [Speed] were only selectable from the pull-down menu on the [Connect Setting] tabbed page in V3.00.00 and earlier versions, V3.01.00 allows the user to enter a desired bit-rate (but only in the case of a COM connection).

Version: This feature is supported by V3.01.00 and later versions of the RFP.

No. 7 Using a board that includes the UPD78F0730 microcontroller, which supports serial (COM) connection through a virtual USB driver

Applicable MCUs:	All
Description:	V3.01.00 of the RFP is also capable of programming by using a board that include a UPD78F0730 microcontroller of the 78K0 family, which supports serial (COM) connection through a virtual USB driver. Programming in this way may lead to the following error if V3.00.00 or an earlier version is in use. E4000003: A timeout error occurred. <Example of an applicable board> EZ-0012 evaluation board for DC/DC LED control by the RL78/I1A* *: For other Renesas evaluation boards equipped with the UPD78F0730, check the corresponding user's manuals.
Version:	This feature is supported by V3.01.00 and later versions of the RFP.

No. 8 Support for Renesas Synergy™ microcontrollers

Applicable MCUs:	Renesas Synergy™
Description:	The RFP now supports Renesas Synergy™ microcontrollers. Note that the supported versions may differ according to the microcontroller. For details, refer to “List of MCUs Supported by Renesas Flash Programmer V3” on the Renesas Website.
Version:	This feature is supported by V3.02.00 and later versions of the RFP.

No. 9 Support for the E2 emulator

Applicable MCUs:	RH850, RL78
Description:	The RFP now supports programming of flash memory via the E2 emulator.
Version:	For RH850 devices, this feature is supported by V3.02.01 and later versions of the RFP. For RL78 devices, this feature is supported by V3.03.00 and later versions of the RFP.

No. 10 Change to filling with 0xFF

Applicable MCUs:	All
Description:	For [Fill with 0xFF] in the [Operation Setting] tabbed page, the specification has been changed so that the target area can be selected but the configuration area is not selectable as a target. Since information on the setting for [Fill with 0xFF] is not carried over if a project that was created in V3.02.01 or an earlier version is read, change the setting as required.
Version:	This change to the specification applies to V3.03.00 and later versions of the RFP.

No. 11 Addition to handling of out-of-range errors for the memory of the MCU

Applicable MCUs:	All
Description:	Previously, when an attempt at access to data out of the range of memory in the MCU was detected, the RFP output a warning message and continued processing. However, in such cases now, the RFP can be set to generate an error and stop processing with an optional function from V3.03.00.
Version:	This feature is supported by V3.03.00 and later versions of the RFP.

No. 12 Display of the checksums of files in particular areas of flash memory

Applicable MCUs:	RH850, RL78, RX
Description:	A [File Checksum] feature has been added under the [File] menu. The checksums of program files in particular areas are displayed in the [Log output] panel. For the RL78, the checksums can be calculated within block-selection ranges.
Version:	This feature is supported by V3.04.00 and later versions of the RFP.

No. 13 Release from license authentication

Applicable MCUs:	All
Description:	A feature for release from license authentication has been added.
Version:	This feature is supported by V3.04.00 and later versions of the RFP.

No. 14 Expansion of command-line options

Applicable MCUs:	All
Description:	New commands have been added to those specifiable as command-line options. In addition to the existing specification of program files, the command can be executed with the specification of a tool or commands, by which the settings can be replaced with those in the project file.
Version:	This feature is supported by V3.05.00 and later versions of the RFP.

No. 15 Support of relative paths for files

Applicable MCUs:	All
Description:	The specification has been changed so that the following files are saved with relative paths when they are placed under the project directory. <ul style="list-style-type: none">• Program file• Unique code file
Version:	This feature is supported by V3.05.00 and later versions of the RFP.

No. 16 Change to the feature for generating RPI files

Applicable MCUs:	All
Description:	The specification has been changed so that the following settings are reflected in [Save Image File] from the [File] menu. <ul style="list-style-type: none">• [P.V] on the [Block Setting] tabbed page• [Fill with 0xFF] on the [Operation Setting] tabbed page Note: Due to this change, RPI files may not perfectly match those that have been output by V3.04.00 and earlier versions.
Version:	This feature is supported by V3.05.00 and later versions of the RFP.

No. 17 Addition of the feature for displaying projects that have recently been used

Applicable MCUs:	All
Description:	A feature for displaying the names of project files that have most recently been used (up to four names) has been added to the [File] menu. A filename can be selected to open the given project.
Version:	This feature is supported by V3.05.00 and later versions of the RFP.

No. 18 Addition of the feature for encrypting program files

Applicable MCUs:	All
Description:	A feature for encrypting program files has been added. Executing the encryption utility program from the command line allows the encryption with a password of program files.
Version:	This feature is supported by V3.06.00 and later versions of the RFP.

No. 19 Expansion of command-line options (2)

Applicable MCUs:	All
Description:	New commands (bin, read32, write32 and writebit) have been added to those specifiable as command-line options.
Version:	This feature is supported by V3.06.00 and later versions of the RFP.

No. 20 Addition of the feature for standard output from the command line

Applicable MCUs:	All
Description:	A feature for displaying a log and the state of progress in standard output from the command line when commands are executed has been added.
Version:	This feature is supported by V3.06.00 and later versions of the RFP.

No. 21 Support for RA and RE families

Applicable MCUs:	RA, RE
Description:	The RFP now supports RA and RE families. Note that the supported versions may differ according to the microcontroller. For details, refer to "List of MCUs Supported by Renesas Flash Programmer V3" on the Renesas Website.
Version:	This feature is supported by V3.06.01 and later versions of the RFP.

No. 22 Support for Linux

Applicable MCUs:	All
Description:	Versions of Ubuntu* have been added as operating environments. It is operated from the command line and does not require the settings by the GUI. Command-line operation is also available under Windows. However, the Linux command line does not support the GUI. *: 18.04 LTS Desktop, 64-bit and 20.04 LTS Desktop, 64-bit
Version:	This feature is supported by V3.08.00 and later versions of the RFP.

No. 23 Support for the J-Link debug probe from SEGGER

Applicable MCUs:	RA
Description:	The RFP now supports programming by the J-Link debug probe from SEGGER via a serial interface.
Version:	This feature is supported by V3.08.00 and later versions of the RFP.

No. 24 Addition of the support for the security functions of the RA family

Applicable MCUs:	RA
Description:	The RFP now supports the TrustZone and device life-cycle management (DLM) security functions of the RA family.
Version:	This feature is supported by V3.08.00 and later versions of the RFP.

3. Restrictions

3.1 List of restrictions

No.	Restriction	Applicable MCUs	Product Version (Corresponds to the Numbers for the 12 Versions in the Table of Section 1)											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Errors occurring when commands are executed in the boot mode (USB interface) of MCUs of the RX64M and RX71M groups	RX64M RX71M	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Self-checking of the E1 or E2 emulator leading to errors	All	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	An Error Occurring during Installation of the USB Driver for USB Boot MCU TypeB	Renesas Synergy™ RX651 RX65N	—	—	×	×	×	✓	✓	✓	✓	✓	✓	✓
4	A Connection Error Occurring with the E2 Emulator (revision B)	RH850	—	—	—	×	×	✓	✓	✓	✓	✓	✓	✓
		RL78	—	—	—	—	×	✓	✓	✓	✓	✓	✓	✓
5	Setting lock bits in RX MCUs	RX21x RX22x RX610 RX62x RX63x RX64M RX71M	×	×	×	×	×	×	×	×	✓	✓	✓	✓
6	Restriction on enabling of the intelligent cryptographic unit slave E (ICUSE) of the RH850/C1M-A, RH850/F1K, RH850/F1KM-S1, RH850/P1L-C, and RH850/P1M-E groups	RH850/C1M-A RH850/F1K RH850/F1KM-S1 RH850/P1L-C RH850/P1M-E	×	×	×	×	×	×	×	×	×	✓	✓	✓
7	Restriction on lock bits and OTP of the RH850/C1M-A2 group	RH850/C1M-A2 (R7F701275)	—	—	—	—	—	—	—	—	×	×	✓	✓

—: Not supported, ×: Not fixed, ✓: Fixed

3.2 Details of restrictions

No. 1 Errors occurring when commands are executed in the boot mode (USB interface) of MCUs of the RX64M and RX71M groups

Applicable MCUs:	RX64M and RX71M groups
Description:	The following error will occur if commands such as for writing are executed while a target MCU is connected and is in boot mode (for the USB interface). E100000D: A flow error occurred in the device. (Response 34:C3)
Resolution:	This problem has been fixed and does not arise in V3.01.00 and later versions of the RFP.

No. 2 Self-checking of the E1 or E20 emulator leading to errors

Applicable MCUs:	All
Description:	Executing the self-checking program for an E1 or E20 emulator that has been connected with V3.00.00 of the Renesas Flash Programmer leads to errors. The following are the log entries relating to errors in the self-checking program. [Result of TEST1] FAIL (Error 1103) [Error Message] The E1/E20 self-check has failed. [Error Detail] Internal module check has failed. Facilities other than self-checking (flash programming and debugging) will operate correctly. Supplementary Note: Connecting the V3.00.00 Renesas Flash Programmer to an E1 or E20 emulator leads to overwriting of the firmware in the emulator. This leads to errors when the self-checking program for the emulator is executed.
Resolution:	This problem has been fixed and does not arise in V3.01.00 and later versions of the RFP.

No. 3 An Error Occurring during Installation of the USB Driver for USB Boot MCU TypeB

Applicable MCUs:	Renesas Synergy™, RX651 and RX65N group
Description:	When using the applicable products shown in section 3.1 (No.3), the following error may occur during installation of the USB Driver for USB Boot MCU TypeB V1.00.00 (for Renesas Synergy™ microcontrollers and RX651 and RX65N groups in the RX family), and installation may not succeed. If the error does not occur, installation was successful. E0140021: Some installations have failed. The installations of the specified tools are not completed
Resolution:	This problem has been fixed and does not arise in V3.03.01 and later versions of the RFP.

No. 4 A Connection Error Occurring with the E2 Emulator (revision B)

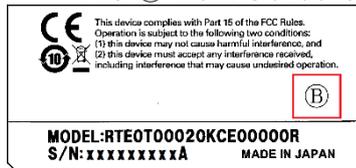
Applicable MCUs: RH850, RL78

Description: When using the applicable products shown in section 3.1 (No.4) and connecting the Renesas Flash Programmer to the MCU via the E2 emulator (revision B), the following error occurs, and connection is not established.

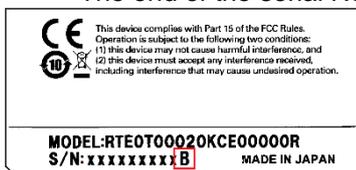
E30002FE: This tool is not supported

Note: E2 emulator revision B can be confirmed by the label on the back of the main unit.

➤ The **Ⓟ** mark is attached.



➤ The end of the serial No. is other than "A".



Resolution: This problem has been fixed and does not arise in V3.03.01 and later versions of the RFP.

No. 5 Setting lock bits in RX MCUs

Applicable MCUs: RX21x, RX22x, RX610, RX62x, RX63x, RX64M, RX71M

Description: For details on this problem, refer to the issue of RENESAS TOOL NEWS (document no.: R20TS0330EJ0100) found by entering the following URL.

<https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ts0330>

Resolution: This problem has been fixed and does not arise in V3.05.00 and later versions of the RFP.

No. 6 Restriction on enabling of the intelligent cryptographic unit slave E (ICUSE) of the RH850/C1M-A, RH850/F1K, RH850/F1KM-S1, RH850/P1L-C, and RH850/P1M-E groups

Applicable MCUs: RH850/C1M-A, RH850/F1K, RH850/F1KM-S1, RH850/P1L-C, RH850/P1M-E

Description: For details on this problem, refer to the issue of RENESAS TOOL NEWS (document no.: R20TS0399EJ0100) found by entering the following URL.

<https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ts0399>

Resolution: This problem has been fixed and does not arise in V3.05.03 and later versions of the RFP.

No. 7 Restriction on lock bits and OTP of the RH850/C1M-A2 group

Applicable MCUs: RH850/C1M-A2 (R7F701275)

Description: For the settings of lock bits or OTP, when blocks 69 and 70 which straddle code flash memory 1 and code flash memory 2 are successively set, the settings for all blocks above block 70 in code flash memory 2 are not reflected (only the settings of all blocks in code flash memory 1, that is, up to block 69 are reflected).

Resolution: This problem has been fixed and does not arise in V3.06.00 and later versions of the RFP.

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.

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/.