RZ/A2M Group

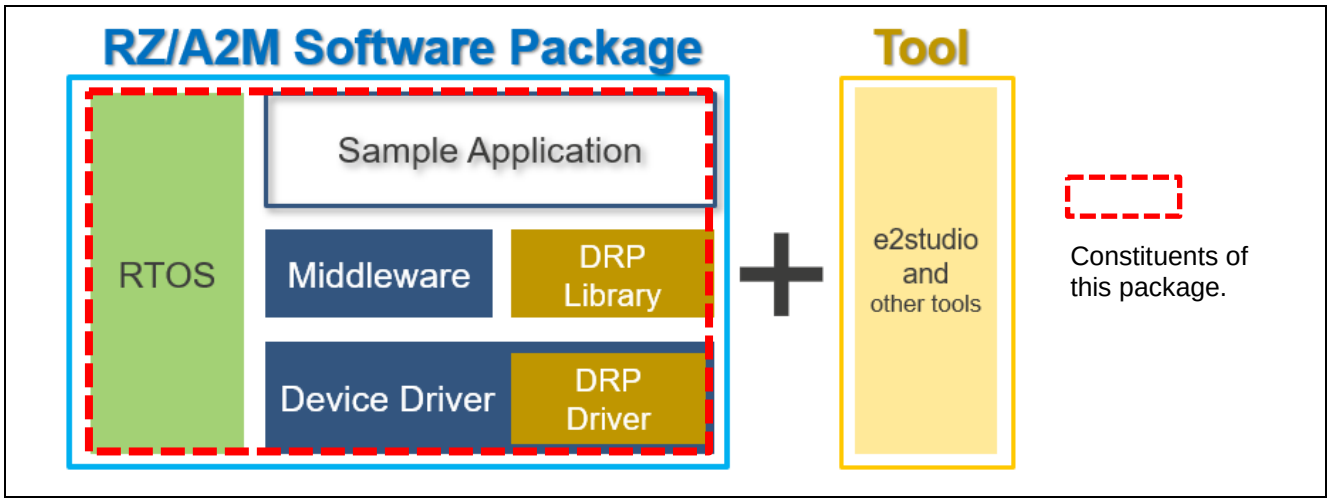
RZ/A2M Graphics RGA Package V1.08 Release Note

Introduction

This package has several simple applications using graphics RGA driver for RZ/A2M.

The Software Package shows how easy it is to create a professional, user-friendly and platform-independent user interface for your product. The entire application source code is included in the workspace enabling the Software Package to be ported to the platform of your choice.

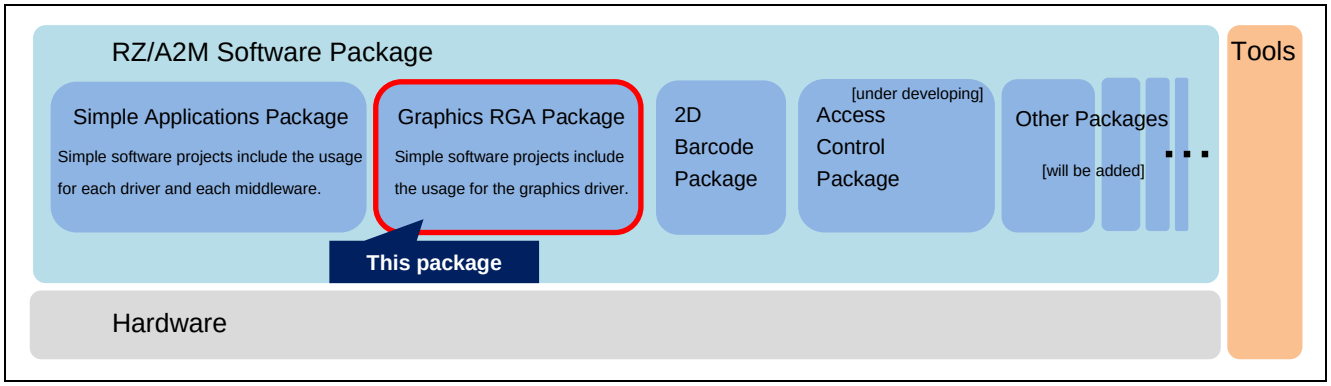
This package is one of RZ/A2M Software Package. RZ/A2M Software Package is a software development kit for the RZ/A2M that supports various RZ/A2M functions such as DRP(Dynamically Reconfigurable Processor), camera input, LCD output, and image adjustment. This package has the structure of the red frame in the following figure. However, device driver and middleware are only included what is necessary for the sample application.



RZ/A2M Software Package Configuration

Figure below shows the relation of RZ/A2M Software Package and this package. For details, refer following URL:

https://www.renesas.com/products/software-tools/software-os-middleware-driver/software-package/rza2-software-development-kit-free-rtos.html



The relation of RZ/A2M Software Packages and this package

Note that each software project includes only driver software and middleware used by each application. If you want to add software that is not included in the project, use the Smart Configurator feature. For usage of

Smart Configurator, please refer to the RZ/A2M Software Package Quick Start Guide (R01QS0027). If you want to add drivers included in this package to another project, refer to section 4.

Following sample applications are bundled in this package.

Graphics Library "RGA" Tutorial:

This example application demonstrates various functions of “Renesas Graphic Architecture” (RGA) that supports drawing a rectangle, drawing an image, blending, copying, fading, pan, scroll, zoom, rotation, and clipping. Displayed images are output to display monitor. This application works on FreeRTOS v10.0.0.

Target Device / Target Board

Target Device: RZ/A2M

Target Board Kit: RZ/A2M Evaluation Board Kit (RTK7921053S00000BE)

Contents

1. Package Contents

1.1 Software

This package contains the following software.

Table 1-1 Software of this package

No	Name	Folder
1	RZ/A2M Group Graphics Library "RGA" Tutorial	graphics_rga_sample

1.2 Documents

This package contains the following documents.

Table 1-2 Documents of this package

No	Title	Document Number
1	RZ/A2M Group RZ/A2M Graphics RGA Package V**1.08** Release Note	R01AN4606 (This document)

Also, each project indicated in Table 1-1 includes the sample program's application notes.

2. Folder Structure

Folder structure of this package and outline of contents are shown as follow.

```
TOP                                          : top folder
|
+---rza2m_graphics_sample_freertos_gcc       : RZ/A2M Group Graphics Library "RGA" Tutorial
+---component                                : RZ/A2M Group Driver Components
+---r01an4606ej0108-rza2m-rga-swpkg-gcc.pdf  : RZ/A2M Group Graphics RGA Package V1.08 Release Note (this document)
+---r01an4606jj0108-rza2m-rga-swpkg-gcc.pdf  : RZ/A2M Group Graphics RGA Package V1.08 Release Note (Japanese)
+---r01qs0027ej0106-rza2m-quick-start-guide.pdf : RZ/A2M Group Software Package Quick Start Guide (English)
+---r01qs0027jj0106-rza2m-quick-start-guide.pdf : RZ/A2M Group Software Package Quick Start Guide (Japanese)
```

Figure 2.1 Folder Structure

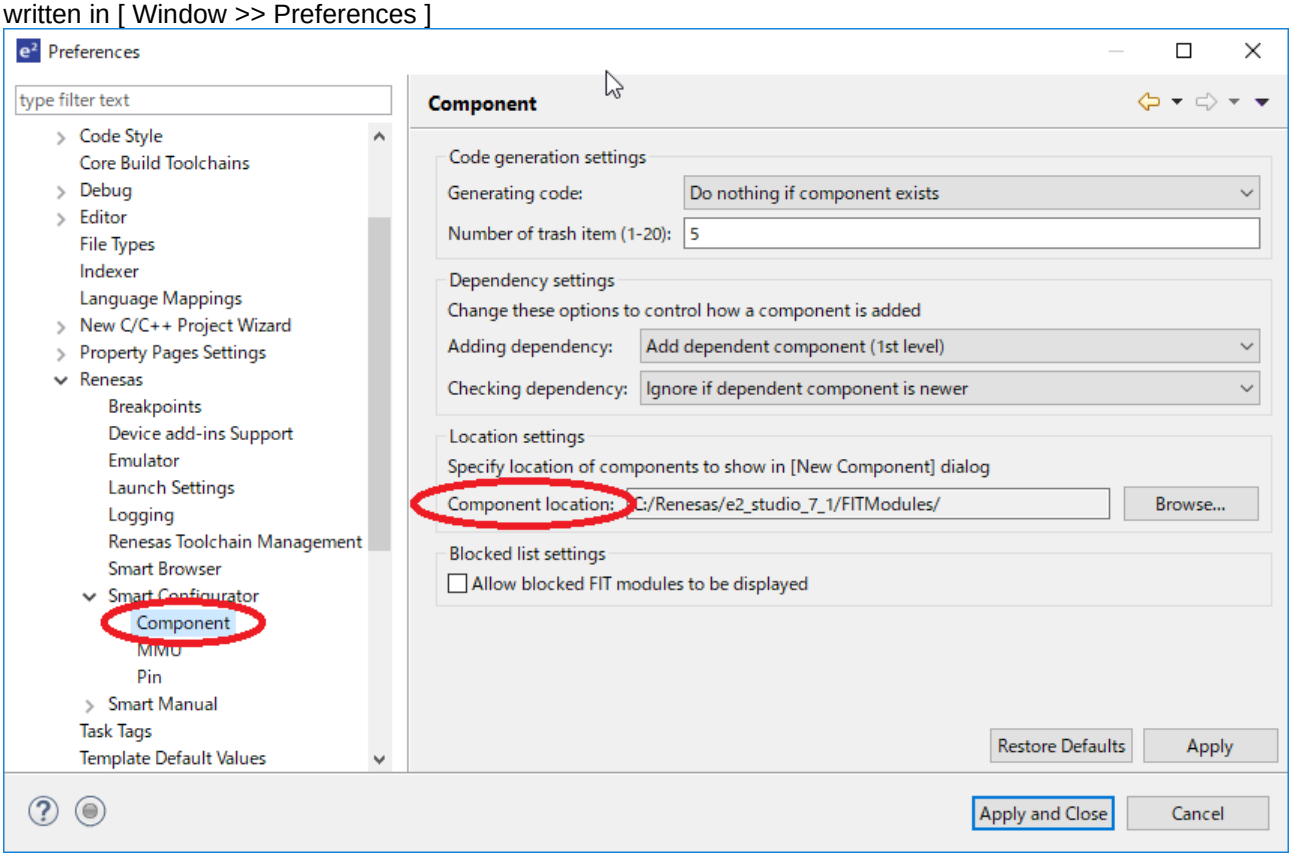
3. How to use the projects bundled in this package

Regarding how to use, refer to the documents in each folder in this package.

4. How to use components bundled in this package

To import components bundled in this package ("r_png", "r_rga" in "generate\sc_drivers") that cannot ne downloaded to another project, do the following steps.

1. Copy .xml, .zip, .mdf files including in "component" folder in this package to the folder at the path written in [Window >> Preferences]

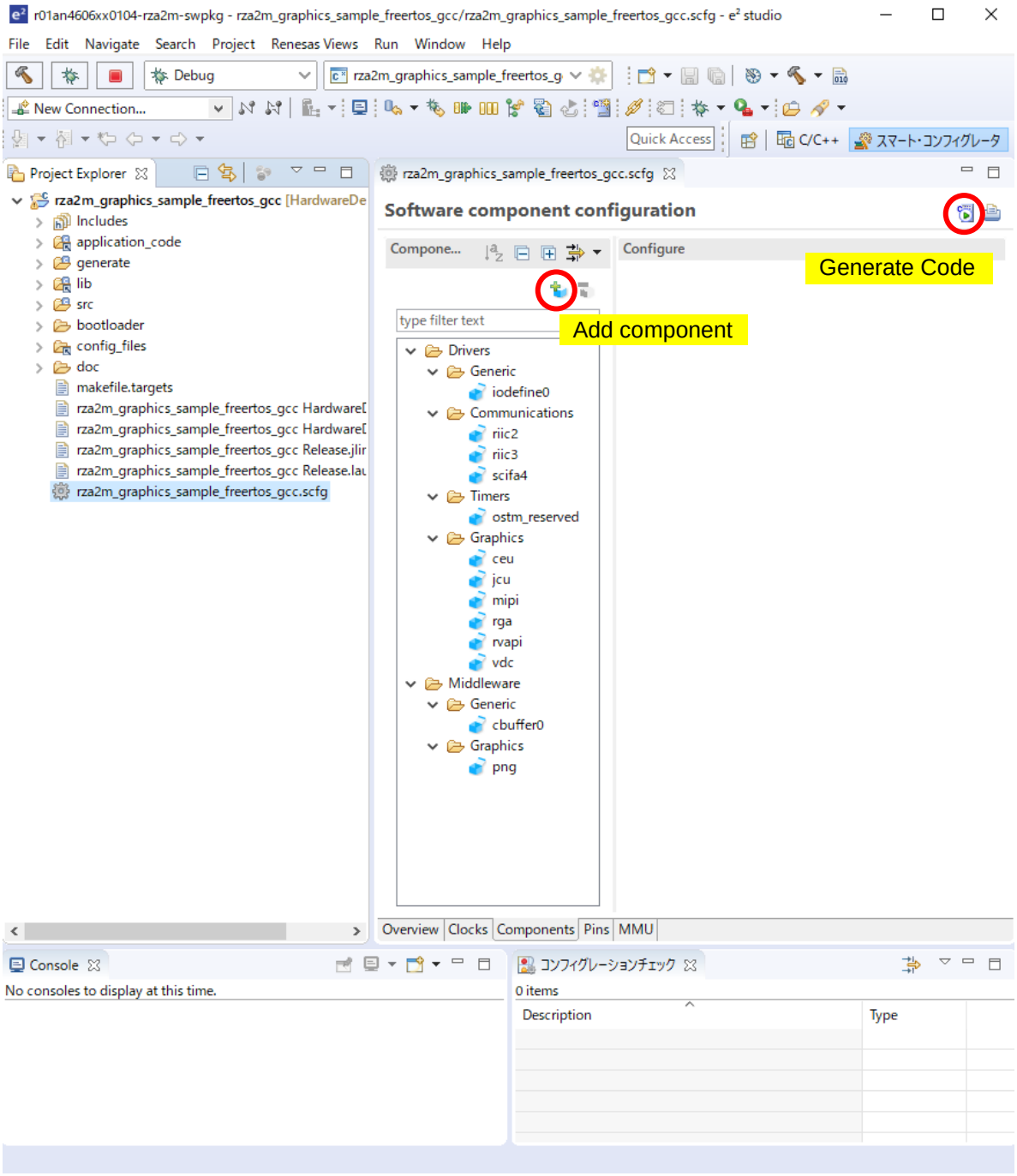


[C/C++ >> Renesas >> Smart Configurator >> Component >> Component location (RZ)].

2. If old version component has been imported in the target project, remove it. Also, if there is .xml, .mdf file in "(Project Folder)\.settings\smartconfigurator", delete it.

3. (Re)start e2 studio.

4. Open the project tree in the Project Explorer view and double click ".scfg" file in the project.



I. To add components, push [Components (tab) >> Add component (located above)] button.

II. Push [Generate Code (located top right)] button

The above steps add components to "(Project Folder)\generate\sc_drivers" and "(Project Folder)\.settings\smartconfigurator".

5. Reference Application Notes

Following is the list of application notes related to this software package.

RZ/A2M Simple Applications Package (R01AN4494)
This package consists application programs which are sample to use drivers and middleware.

RZ/A2M Group RZ/A2M Software Core Package (R01AN5443).
Drivers and middleware for RZ/A2M that can be added to the project bundled in this package.

6. Restrictions

None.

7. Precautions

The Precautions of this package are shown as follow.

Table 7-1 Precautions

No.	Type	Description
1	Ethernet	It is not possible to add the TCP/IP protocol stack to a project by using Smart Configurator. In the case you use the TCP/IP protocol stack, please use “Ethernet sample program” bundled in "RZ/A2M Simple Applications Package"(R01AN4494).
2	Environment	If it is happened a build error while building the project of this package as it is, the setting of environment may be incorrect. Check following items: • Follow section 3 of “RZ/A2M Software Package Quick Start Guide”(R01QS0027) • Install e2 studio v7.3 or later again.
3	Environment	To avoid build error, expand the project to the folder with short full-path.
4	Environment	To avoid build error, expand the project to the folder without multi-byte character.
5	Environment	This package includes elf-formatted boot loader. Therefore, the project to generate the boot loader is not bundled. Following application note includes the boot loader project. To get it, please download from Renesas site: RZ/A2M Group Example of Booting from Serial Flash Memory (R01AN4333)
6	All	Since V1.04, the folder structure of the project using FreeRTOS has been changed to follow Amazon FreeRTOS. Therefore, they are incompatible with the project between V1.04 and V1.03.
7	TES Guiliani	It is not possible to add TES Guiliani to an existing project. When using TES Guiliani, please use Guiliani 2.2 SDK for RZ/A2M Software Package as a base project.
8	TES Guiliani	Contact following URL if you use both TES Guiliani and TCP/IP protocol stack. https://www.renesas.com/support/contact.html

Revision History

Rev.	Date	Description	
		Page	Summary
1.08	Jun. 20, 2020	p7	Update the document number of 5.Reference Application Notes.
1.07	Mar. 20, 2020	p7	Update the document number of 5.Reference Application Notes.
1.06	Dec. 17, 2019	p7	Update the document number of 5.Reference Application Notes.
1.05	Sep. 30, 2019	p4	Modified Figure2.1 Folder structure.
1.04	Jun. 07, 2019	p4	Modified Figure2.1 Folder structure.
		p6	Modified the setting screen of 4.How to use components bundled in this package.
		p7	Update the document number of 5.Reference Application Notes. Added No.6 of 7.Precautions.
1.03	Apr. 15, 2019	p7	No.5 : Modified from RZ/A1LU to RZ/A2M
1.02	Dev. 28, 2018	-	First Edition issued

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.

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