RZ/V series

RZ/V FSP Example Project Bundle

Introduction

This document describes the contents of the Example Project Bundle for RZ/V Flexible Software Package (FSP).
The Example Projects contained within the bundle show how to write code for the various Renesas FSP modules.

Flexible Software Package is an optimized software package designed to provide easy to use, scalable, high-quality software for embedded system design. The primary goal is to provide lightweight, efficient drivers that meet common use cases in embedded systems. FSP code quality is enforced by peer reviews, automated requirements-based testing, and automated static analysis. FSP provides uniform and intuitive APIs that are well documented. Each module is supported with detailed user documentation including example code. FSP modules can be configured at build-time to optimize the size of the module for the feature set required by the application.

Supported Kit

RZ/V2L Evaluation Board Kit.

RZ/V2H Evaluation Board Kit.

Supported FSP Version

RZ/V FSP v2.0.1.

Proven Environment

e² studio 2024-07.

1. Using the Example Project

To use RZ/V FSP Example Project follow the steps mentioned in the following documents:

- Example Project Usage Guide
  RZ/V FSP Example Project Usage Guide

Users that are new to the FSP are recommended to refer to the document of ***Getting Started with Flexible Software Package*** prior to attempting to debug an example project.

2. List of Example Project Supported

Example \ Board Kit	RZ/V2L	RZ/V2H (CM33)	RZ/V2H (CR8_0/CR8_1)
ADC_C	✓	–	–
ADC_E	–	✓	✓
CANFD	✓	✓	✓
RIIC Master	✓	✓	✓
RIIC Slave	–	✓	✓
I3C_B	–	✓	–
RSPI	✓	–	–
SPI_B	–	✓	✓
SCI_B UART	–	✓	✓
SCIF	✓	–	–
INTC IRQ	✓	✓	✓
INTC TINT	–	✓	✓
WDT	–	✓	✓
FreeRTOS	✓	✓	✓
POEG	✓	✓	✓
GTM	✓	✓	✓
MTU3	✓	–	–
GPT (Input Capture)	✓	✓	✓
GPT (PWM)	✓	✓	✓

3. New Additions

- Add RZ/V2H Evaluation Board Kit as supported Kit
- Add each example for RZ/V2H CM33/CR8.
- Add the ADC_C, POEG and MTU3 example for RZ/V2L.
- Made DMAC transfer support in RSPI and SPI_B example.

4. Bug Fixes

- Changed to use heap_4 instead of heap_2 in the FreeRTOS example project to improve memory management.

5. Restriction

None.

Website and Support

Visit the following URLs to learn about key elements of the RZ/V FSP, download components and related documentation, and get support.

RZ/V2L Product Information	www.renesas.com/rz-mpus/rzv2l
RZ/V2H Product Information	www.renesas.com/rz-mpus/rzv2h
RZ/V Flexible Software Package	github.com/renesas/rzv-fsp
Renesas Support	www.renesas.com/support

Revision History

Rev.	Date	Description	
		Page	Summary
2.00	Aug.30.24	1	Updated supported kit, supported FSP version and proven environment.
		2	Updated section 2,3 and 4 in accordance with the update in RZ/V FSP Example Project Bandle v2.0.0.
1.00	Mar.29.24	–	First release document.

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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