

[Notes] RX Family

R20TS0946ES0100

Rev.1.00

Clock Synchronous Control Module for Serial NOR Flash

Jun. 16, 2023

Memory Access Firmware Integration Technology

RX Driver Package

Outline

When using the products in the title, note the following point.

1. When the functions listed in section 1.3 are used, error code returned might be incorrect.

1. When the functions listed in section 1.3 are used, error code returned might be incorrect.

1.1 Applicable Products

- 1) Clock Synchronous Control Module for Serial NOR Flash Memory Access (FLASH SPI FIT module)

The applicable revision numbers and document numbers are as follows:

Table 1.1 FLASH SPI FIT module applicable products

Revision number of the FLASH SPI FIT module	Document number
Rev.3.03	R01AN2662EJ0303
Rev.3.02	R01AN2662EJ0302
Rev.3.01	R01AN2662EJ0301
Rev.3.00	R01AN2662EJ0300

2) RX Driver Package

The FLASH SPI FIT module in 1) is also included in the RX Driver Package

The product names and revision numbers of the applicable RX Driver Package and the revision numbers of the FLASH SPI FIT module are as follows:

Table 1.2 FLASH SPI FIT module applicable products

RX Driver Package product name	RX Driver Package revision number	Document number	Revision number of the included FLASH SPI FIT module
RX Family RX Driver Package Ver.1.36	Rev.1.36	R01AN6515xx0136	Rev.3.03
RX Family RX Driver Package Ver.1.34	Rev.1.34	R01AN6323xx0134	Rev.3.03
RX Family RX Driver Package Ver.1.33	Rev.1.33	R01AN6073xx0133	Rev.3.03
RX Family RX Driver Package Ver.1.32	Rev.1.32	R01AN6013xx0132	Rev.3.02
RX Family RX Driver Package Ver.1.31	Rev.1.31	R01AN5975xx0131	Rev.3.02
RX Family RX Driver Package Ver.1.30	Rev.1.30	R01AN5882xx0130	Rev.3.02
RX Family RX Driver Package Ver.1.29	Rev.1.29	R01AN5826xx0129	Rev.3.01
RX Family RX Driver Package Ver.1.27	Rev.1.27	R01AN5600xx0127	Rev.3.01
RX Family	Rev.1.26	R01AN5401xx0126	Rev.3.01

RX Driver Package Ver.1.26			
RX Family RX Driver Package Ver.1.25	Rev.1.25	R01AN5371xx0125	Rev.3.01
RX Family RX Driver Package Ver.1.24	Rev.1.24	R01AN5267xx0124	Rev.3.01
RX Family RX Driver Package Ver.1.23	Rev.1.23	R01AN4976xx0123	Rev.3.01
RX Family RX Driver Package Ver.1.22	Rev.1.22	R01AN4873xx0122	Rev.3.01
RX Family RX Driver Package Ver.1.20	Rev.1.20	R01AN4794EJ0120	Rev.3.01
RX Family RX Driver Package Ver.1.19	Rev.1.19	R01AN4677EJ0119	Rev.3.00

1.2 Applicable Devices

RX110, RX111, RX113, RX130, RX13T, and RX140 groups

RX230, RX231, RX23E-A, RX23T, RX23W, RX24T, and RX24U groups

RX64M, RX65N, RX660, RX66N, RX66T, and RX671 groups

RX71M, RX72M, RX72N, and RX72T groups

1.3 Details

Incorrect “if” condition were found in several functions in `r_flash_spi_drvif.c`. This has resulted in the “if” condition would never be fulfilled, and thus the ‘if’ block of code would never be entered:

```
//r_flash_spi_drvif.c
...
if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD) //this is incorrect!!
{
    Return FLASH_SPI_ERR_HARD; //this will never be entered!!
}
...
// Note:
// MEMDRV_SUCCESS = 0
// MEMDRV_ERR_HARD = -2
```

Table below lists the functions which contain the aforementioned bug, and the corresponding affected APIs:

Table 1.3 Function which has the bug and affected API

Function which contains the bug	Affected API
<code>r_flash_spi_drvif_tx</code>	<code>R_FLASH_SPI_Set_Write_Protect,</code> <code>R_FLASH_SPI_Write_Configuration,</code> <code>R_FLASH_SPI_Quad_Enable,</code> <code>R_FLASH_SPI_Quad_Disable,</code> <code>R_FLASH_SPI_Write_Data_Page,</code> <code>R_FLASH_SPI_Erase,</code> <code>R_FLASH_SPI_Polling,</code> <code>R_FLASH_SPI_Read_Status,</code> <code>R_FLASH_SPI_Read_Security,</code> <code>R_FLASH_SPI_Read_ID,</code> <code>R_FLASH_SPI_Set_4byte_Address_Mode,</code>

	R_FLASH_SPI_Read_Data, R_FLASH_SPI_Read_Configuration
r_flash_spi_drvif_tx_add	R_FLASH_SPI_Write_Data_Page
r_flash_spi_drvif_tx_data	R_FLASH_SPI_Write_Data_Page
r_flash_spi_drvif_rx	R_FLASH_SPI_Read_Configuration, R_FLASH_SPI_Set_Write_Protect, R_FLASH_SPI_Quad_Enable, R_FLASH_SPI_Quad_Disable, R_FLASH_SPI_Write_Configuration, R_FLASH_SPI_Read_Security, R_FLASH_SPI_Polling, R_FLASH_SPI_Read_ID, R_FLASH_SPI_Read_Status, R_FLASH_SPI_Write_Data_Page
r_flash_spi_drvif_rx_add	N/A
r_flash_spi_drvif_rx_data	R_FLASH_SPI_Read_Data

1.4 Conditions

- In `r_flash_spi_drvif_tx()`, if `R_MEMDRV_Tx()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
//r_flash_spi_drvif_tx()
...
ret_drv = R_MEMDRV_Tx(devno, &memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

- In `r_flash_spi_drvif_tx_add()`, if `R_MEMDRV_TxData()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
// r_flash_spi_drvif_tx_add()
...
ret_drv = R_MEMDRV_TxData(devno, &memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

- In `r_flash_spi_drvif_tx_data()`, if `R_MEMDRV_TxData()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
//r_flash_spi_drvif_tx_data()
...
ret_drv = R_MEMDRV_TxData(devno,&memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

- In `r_flash_spi_drvif_rx()`, if `R_MEMDRV_Rx()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
// r_flash_spi_drvif_rx()
...
ret_drv = R_MEMDRV_Rx(devno, &memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

- In `r_flash_spi_drvif_rx_add()`, if `R_MEMDRV_RxData()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
// r_flash_spi_drvif_rx_add()
...
ret_drv = R_MEMDRV_RxData(devno, &memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

- In `r_flash_spi_drvif_rx_data()`, if `R_MEMDRV_RxData()` returns `ret_drv = MEMDRV_ERR_HARD`, `FLASH_SPI_ERR_OTHER` will be returned to the caller, which is incorrect

```
// r_flash_spi_drvif_rx_data()
...
ret_drv = R_MEMDRV_RxData(devno, &memdrv_info);

if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD)
{
    return FLASH_SPI_ERR_HARD;
}
else if (MEMDRV_SUCCESS > ret_drv)
{
    return FLASH_SPI_ERR_OTHER;
}
return FLASH_SPI_SUCCESS;
```

1.5 Workaround

Temporary workaround: Change the 'if' condition from:

```
if (MEMDRV_SUCCESS == MEMDRV_ERR_HARD) to:  
if (MEMDRV_ERR_HARD == ret_drv)
```

User should upgrade to FLASH SPI FIT Rev.3.10 or later

1.6 Schedule for Fixing the Problem

This problem has been fixed in FLASH SPI FIT Rev.3.10

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Jun.16.23	-	First edition issued

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