[Notes]

RX Family

SCI Module Firmware Integration Technology

RX Driver Package

R20TS0854ES0100
Rev.1.00
Jul. 01, 2022

Outline

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

1. More than 1 SCI channel uses DTC, abnormality in data transfer might happen.

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1.1 Applicable Products

1) SCI module Firmware Integration Technology (SCI FIT module)

The applicable revision numbers and document numbers are as follows:

Table 1.1 SCI FIT module applicable products

Revision number of the SCI FIT module	Document number
Rev.4.30	R01AN1815EJ0430
Rev.4.20	R01AN1815EJ0420
Rev.4.10	R01AN1815EJ0410
Rev.4.00	R01AN1815EJ0400
Rev.3.91	R01AN1815EJ0391
Rev.3.90	R01AN1815EJ0390
Rev.3.80	R01AN1815EJ0380
Rev.3.70	R01AN1815EJ0370
Rev.3.60	R01AN1815EJ0360

2) RX Driver Package

The SCI 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 SCI FIT module are as follows:

Table 1.2 SCI FIT module applicable products

RX Driver Package product name	RX Driver Package revision number	Document number	Revision number of the included SCI FIT module
RX Family RX Driver Package Ver.1.34	Rev.1.34	R01AN6323xx0134	Rev.4.30
RX Family RX Driver Package Ver.1.33	Rev.1.33	R01AN6073xx0133	Rev.4.10
RX Family RX Driver Package Ver.1.32	Rev.1.32	R01AN6013xx0132	Rev.3.90
RX Family RX Driver Package Ver.1.31	Rev.1.31	R01AN5975xx0131	Rev.3.80
RX Family RX Driver Package Ver.1.30	Rev.1.30	R01AN5882xx0130	Rev.3.70
RX Family RX Driver Package Ver.1.29	Rev.1.29	R01AN5826xx0129	Rev.3.70

RX Family RX Driver Package Ver.1.27	Rev.1.27	R01AN5600xx0127	Rev.3.70

1.2 Applicable Devices

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

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

RX64M, RX65N, RX66N, and RX66T, RX671 groups

RX71M, RX72T, RX72M, and RX72N groups

1.3 Details

Data transfer would fail when more than 1 SCI channels uses DTC FIT module.

In SCI code, DTC transfer information structures `tx_info_dtc` and `rx_info_dtc` are shared among SCI channels. Under this condition, if the data transfer of one SCI channel (using DTC) is initiated before the data transfer of the other SCI channel (using DTC) is completed, transfer may be erroneous because the DTC transfer information structure is corrupted.

```
//r_sci_rx_dtc.c
…
dtc_cmd_arg_t          tx_args_dtc;
dtc_transfer_data_cfg_t tx_cfg_dtc;
dtc_transfer_data_t     tx_info_dtc;
dtc_cmd_arg_t          rx_args_dtc;
dtc_transfer_data_cfg_t rx_cfg_dtc;
dtc_transfer_data_t     rx_info_dtc;
…
//Only 1 set of transfer information and shared by all SCI channels using DTC
```

1.4 Conditions

- When more than one SCI channels use DTC, transfer may be erroneous.

Below are sample codes which illustrate the conditions under which the error would happen:

```
//main.c
…
R_SCI_SendReceive(g_my_sci_handle12, …, …);
R_SCI_Send(g_my_sci_handle0, …, …);
//CH12 transfer may be erroneous.
…
```

In the above code, `R_SCI_Send(g_my_sci_handle0, …, …)` is called immediately after `R_SCI_SendReceive(g_my_sci_handle12, …, …)`, without checking if CH12 data transfer is completed. `tx_info_dtc` is used by both CH0 and CH12, DTC transfer information for CH12 is corrupted, and thus transfer may be erroneous.

Similarly, the code below would also yield transfer to be erroneous:

```
//main.c
…
R_SCI_Send(g_my_sci_handle12, …, …);
R_SCI_Send(g_my_sci_handle0, …, …);
//CH12 transfer will be corrupted. Error would happen
…
```

1.5 Workaround

Temporary workaround: Do not use two or more SCI channels with DTC

User should upgrade to SCI FIT Rev.4.40 once it is available

1.6 Schedule for Fixing the Problem

This problem will be fixed in SCI FIT Rev.4.40

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Jul. 01.22	-	First edition issued

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