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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RZ*-A0147A/E	Rev.	1.00
Title	Fail-safe support status change		Information Category	Technical Notification		
Applicable Product	RZ/G2L Group RZ/G2LC Group	Lot No. All lots	Reference Document	RZ/G2L Group User's Manual: Hardware Rev.1.50 RZ/G2LC Group User's Manual: Hardware Rev.1.50		

[Title]
Fail-safe support status change.

[Summary of changes]
The following boot modes are not supported by the fail-safe mode.
- Boot mode 0(eSD) Not supported
- Boot mode 1(1.8-V eMMC) Not supported
- Boot mode 2(3.3-V eMMC) Not supported

[User's manual Update]
Originally, if the boot program fails to read data or loader program, the program enters fail-safe mode.

In this product, the system does not transition to fail-safe mode if eSD or eMMC boot failed. Because since the OS timer is already stopped after the boot sequence ends, referencing it causes the system to get stuck in a timer wait state.

Accordingly, we will change the User's Manual to indicate that fail-safe is not supported for Boot mode 0(eSD), Boot mode1(1.8-V eMMC) and Boot mode 2(3.3-V eMMC).

[From]

4.2.1.3 Operation of Booting from eSD

In boot mode 0 (booting from eSD), this LSI is booted from the loader program in the eSD device connected to channel 0 of the SD host interface (SDHI) as follows.

The boot program executes the following processing to access the eSD device.

1. Setting up the necessary peripheral modules (SDHI channel 0 and GPIO)
2. Mounting the eSD device
3. Issuing a read command to the eSD device through the SDHI to obtain the size of the loader program data from sector 1 of the selected partition

After obtaining the size of the loader program data, the SDHI issues a read command to the eSD device to transfer the loader program from sector 8 of the selected partition to the addresses H'0_0001_2000 to H'0_0002_EFFF of the on-chip RAM for the obtained data size.

Then, execution branches to the start address (H'0_0001_2000) of the loader program transferred to the on-chip RAM to execute the loader program that was stored in the eSD device.

If the boot program has failed to read data, it reads data from a reserved area. If reading has failed for all reserved areas, the boot program enters fail-safe mode (SCIF downloading mode). If the fail-safe processing has failed, execution enters an infinite loop in the on-chip ROM and the boot processing is terminated.

[To]

4.2.1.3 Operation of Booting from eSD

In boot mode 0 (booting from eSD), this LSI is booted from the loader program in the eSD device connected to channel 0 of the SD host interface (SDHI) as follows.

The boot program executes the following processing to access the eSD device.

1. Setting up the necessary peripheral modules (SDHI channel 0 and GPIO)
2. Mounting the eSD device
3. Issuing a read command to the eSD device through the SDHI to obtain the size of the loader program data from sector 1 of the selected partition

After obtaining the size of the loader program data, the SDHI issues a read command to the eSD device to transfer the loader program from sector 8 of the selected partition to the addresses H'0_0001_2000 to H'0_0002_EFFF of the on-chip RAM for the obtained data size.

Then, execution branches to the start address (H'0_0001_2000) of the loader program transferred to the on-chip RAM to execute the loader program that was stored in the eSD device.

If the boot program has failed to read data, it reads data from a reserved area. If reading has failed for all reserved areas, execution enters an infinite loop in the on-chip ROM and the boot processing is terminated.

[From]

4.2.2.3 Operation of Booting from 1.8-V eMMC

In boot mode 1 (booting from 1.8-V eMMC), this LSI is booted from the loader program in the 1.8-V eMMC device connected to channel 0 of the SD host interface (SDHI) as follows.

The boot program executes the following processing to access the eMMC device.

1. Setting up the necessary peripheral modules (SDHI channel 0 and OSTM channel 0)
2. Starting the alternative boot operation mode of the eMMC device
   Read access begins from sector 0 of the partition selected by the [179] field (PARTITION_CONFIG) of the extended CSD (EXT_CSD) register in the eMMC device. For details, refer to **Section 4.2.2.5** and **Section 4.2.2.5(1)**.
3. Dummy reading from sector 0 and obtaining the size of the loader program data from sector 1

After the size of the loader program data is obtained, the loader program is transferred from sector 2 to the addresses H'0_0001_2000 to H'0_0002_EFFF of the on-chip RAM for the obtained data size.

Then, execution branches to the start address (H'0_0001_2000) of the loader program transferred to the on-chip RAM to execute the loader program that was stored in the eMMC device.

If the boot program has failed to read the loader program, it enters fail-safe mode (SCIF downloading mode). If the fail-safe processing has failed, execution enters an infinite loop in the on-chip ROM and the boot processing is terminated.

Note that the data bus width is set to eight bits for booting from the eMMC device.

[To]

4.2.2.3 Operation of Booting from 1.8-V eMMC

In boot mode 1 (booting from 1.8-V eMMC), this LSI is booted from the loader program in the 1.8-V eMMC device connected to channel 0 of the SD host interface (SDHI) as follows.

The boot program executes the following processing to access the eMMC device.

1. Setting up the necessary peripheral modules (SDHI channel 0 and OSTM channel 0)
2. Starting the alternative boot operation mode of the eMMC device
   Read access begins from sector 0 of the partition selected by the [179] field (PARTITION_CONFIG) of the extended CSD (EXT_CSD) register in the eMMC device. For details, refer to **Section 4.2.2.5** and **Section 4.2.2.5(1)**.
3. Dummy reading from sector 0 and obtaining the size of the loader program data from sector 1

After the size of the loader program data is obtained, the loader program is transferred from sector 2 to the addresses H'0_0001_2000 to H'0_0002_EFFF of the on-chip RAM for the obtained data size.

Then, execution branches to the start address (H'0_0001_2000) of the loader program transferred to the on-chip RAM to execute the loader program that was stored in the eMMC device.

If the boot program has failed to read the loader program, execution enters an infinite loop in the on-chip ROM and the boot processing is terminated.

Note that the data bus width is set to eight bits for booting from the eMMC device.