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Renesas Electronics Corporation

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Customization of Flash Memory Download Program for E10A-USB Emulator

Introduction

Points to be noted when creating the write and erase modules for writing to the flash memory, which is not stated on the web site, is described.

Contents

1. Writing to the Flash Memory

There are the following ways to write the user program to the flash memory:

JEDEC Standard Command Compatibility Method: Issues a command to the predefined address such as 0x555, 0x2AA.

CUI Command Method: Issues the write command (0x40) or the erase command (0x20) via the CUI (Command User Interface).

Please check the writing method by referring to the definition of commands described in the datasheet of the flash memory to be used.

When the JEDEC standard command compatibility method is used, the flash memory sample program from Fujitsu can be reused.

When the CUI command method is used, the flash memory sample program from Renesas can be reused.

When a writing method other than above is used, the sample programs cannot be used. Accordingly, the user needs to write a new program for downloading.

Note that the flash memory downloading function of the E10A-USB does not support the page-write mode.

2. Customizing the Source Program

This section describes how to customize the individual programs according to each writing method. Please check the datasheet of the flash memory to be used, and change the parts of the program which are enclosed in circles. The parts to be modified are the same for both byte mode and word mode. However, the command may differ depending on the mode, so please set the commands for the used mode. In byte mode, the bus width is 8 bits (one unit of flash memory is used), 16 bits (two units of flash memory is used), or 32 bits (four units of flash memory is used). Similarly, in word mode, the bus width is 16 bits (one unit of flash memory is used) or 32 bits (two units of flash memory is used).

JEDEC Standard Command Compatibility Method:

A sample program created by FUJITSU is used.

File name: fmtool.src

```
;=============================================
;  EQU
;=============================================
O_FMErase       .equ  H'0C001000
O_FMWrite       .equ  H'0C001100
FM_TOOL_STACK   .equ  H'0C002000
FM_TOP_ADDRESS  .equ  H'00000000

:
:
FM_CMD_RESET    .equ  H'000000F0
;
FM_CHK_DQ7      .equ  H'00000080
FM_CHK_DQ5      .equ  H'00000020


;=============================================
;  FM DATA TABLE
;=============================================
:
:
;           [ADDRESS]  [DATA(W)]
FM_ERASE_DATA:
   .data.l  H'00000AAA,H'000000AA        ; 1
   .data.l  H'00000554,H'00000055        ; 2
   .data.l  H'00000AAA,H'00000080        ; 3
   .data.l  H'00000AAA,H'000000AA        ; 4
   .data.l  H'00000554,H'00000055        ; 5
   .data.l  H'00000AAA,H'00000010        ; 6
   .data.l  H'00000000,H'FFFFFFFF        ; .. END ID.
;
;
;
;           [ADDRESS]  [DATA(W)]
FM_WRITE_DATA:
   .data.l  H'00000AAA,H'000000AA        ; 1
   .data.l  H'00000554,H'00000055        ; 2
   .data.l  H'00000AAA,H'000000A0        ; 3
   .data.l  H'00000000,H'FFFFFFFF        ; .. END ID.
```

Start address of the erase module

The RAM area in the user system is used. Secure the size of H'100 bytes or more.

Start address of the write module

The RAM area in the user system is used. Secure the size of H'800 bytes or more.

Start address of the stack area for write/erase module

The RAM area in the user system is used. Secure the size of H'100 bytes or more.

Set the start address of the flash memory area in the user system.

Reset command

Status check flag

Used for checking whether or not the command processing is correctly completed.
DQ7 (data polling flag),
DQ5 (timing limit elapsed flag)

Erase command sequence

Write the command sequence for erasing the chip. The left portion is the address and the right portion is the data. Do not change the last data (END ID).

Write command sequence

Write the command sequence for writing to the chip. The left portion is the address and the right portion is the data. Do not change the last data (END ID).

CUI Command Method:

A sample program created by RENESAS is used.

File name: fmtool.src

```
;=============================================
;  EQU
;=============================================
O_FMErase       .equ  H'0C001000
O_FMWrite       .equ  H'0C001100
FM_TOOL_STACK   .equ  H'0C002000
FM_TOP_ADDRES   .equ  H'00000000
:
:

;; Word
FM_CMD_ERASE    .equ  H'00020020
FM_CMD_WRITE    .equ  H'00400040
FM_CMD_READ     .equ  H'00ff00ff
FM_CMD_STSCLR   .equ  H'00500050
FM_CMD_CONFIRM  .equ  H'00d000d0




FM_CHK_SR7      .equ  H'00800080
FM_CHK_SR7      .equ  H'00000020
FM_CHK_SR4      .equ  H'00100010
FM_CHK_SR3      .equ  H'00080008



   :
   :


FM_ERASE_ADDRESS:
   .data.l  H'00000000, H'00080000, H'00100000, H'00180000
   .data.l  H'00200000, H'00280000, H'00300000, H'00380000
   .data.l  H'00400000, H'00480000, H'00500000, H'00580000
   .data.l  H'00600000, H'00680000, H'00700000, H'00780000
        :               :
   .data.l  H'FFFFFFFF
```

Start address of the erase module

The RAM area in the user system is used. Secure the size of H'100 bytes or more.

Start address of the write module

The RAM area in the user system is used. Secure the size of H'800 bytes or more.

Start address of the stack area for write/erase module

The RAM area in the user system is used. Secure the size of H'100 bytes or more.

Set the start address of the flash memory area in the user system.

Erase command

Write command

Read command

Clear status register command

Check command

Command that is used at the last cycle of the command sequence.

Write state machine status

Erase status

Program status

Block status after erasure

Start addresses of the individual blocks

A list of start addresses of each block in the flash memory. Do not change H'FFFFFFFF at the end.

Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Sep.23.04	—	First edition issued

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