Application Note

FLASH_Code

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1. Preface

This application note describes sample software for the Code Flash area rewriting function using the flash driver.
This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
BSP	Board Support Package
UART	Universal Asynchronous Receiver Transmitter
Timer	T32A：32-bit Timer Event Counter

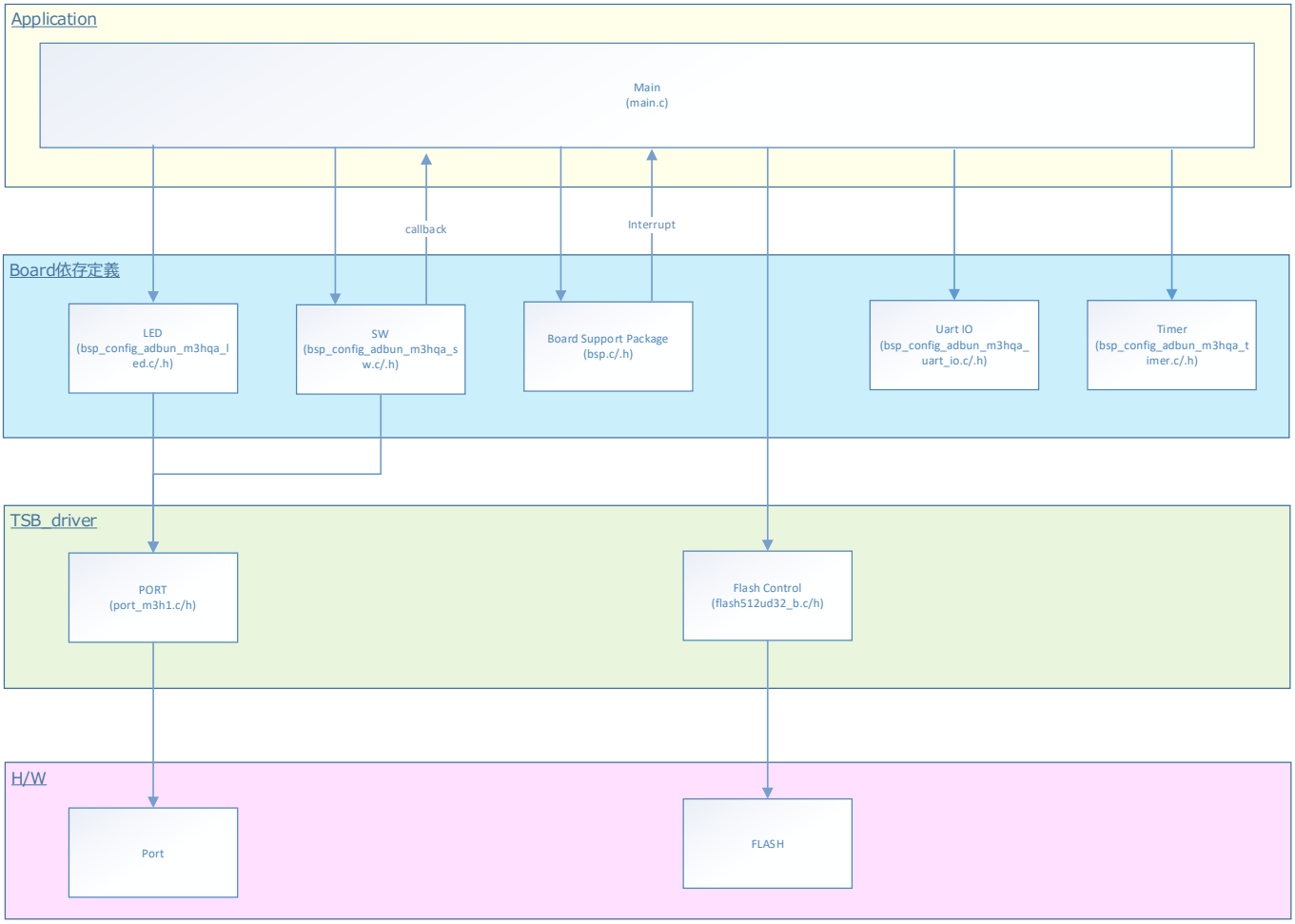
3. Reference Document

Document	Notes
Data sheet	Refer to the data sheet of MCU to be used.
Reference manual	Refer to the reference manual of each IP to be used.
Application note MCU User Guide	Refer to the MCU user manual to be used.
Driver API list	Refer to the MCU Doc folder to be used.

4. Target Sample Program

Sample Program	Outline
FLASH_Code	Sample program of FLASH_Code function

5. Configuration Diagram



6. Sample Program：FLASH_Code

This is sample software that swaps CODE_area_A and CODE_area_B each time BSP_PSW_1 is pressed and executes CODE_area_A.

6.1. Outlines of Operation

Executes the processing of CODE_area_A.
When BSP_PSW_1 is pressed, BSP_LED_1 is turn on, BSP_LED_2 is turn off, BSP_LED_3 is turn on, and BSP_LED_4 is turn off.
Also, save the CODE_area_A to RAM_A and the CODE_area_B to RAM_B.
Erases the data in the CODE_area.
After that, the contents of RAM_B are written in CODE_area_A, and the contents of RAM_A are written in CODE_area_B.

6.2. Function to Use

The functions to use are as follows.
For the Port assignment of each channel, refer to the MCU user manual.

IP	Channel	Objective
PORT(Push-Switch)	BSP_PSW_1	For event triggers
PORT(LED)	BSP_LED_1	For operation check
	BSP_LED_2	For operation check
	BSP_LED_3	For operation check
	BSP_LED_4	For operation check
UART	BSP_UART _1	For terminal emulator communication (Outputs log)

6.3. Interrupt to Use

Interrupt	Outlines
INTUART0RX	UART ch0 Receive interrupt for terminal emulator
INTUART0TX	UART ch0 Transmission interrupt for terminal emulator
INTUART0ERR	UART ch0 Error interrupt for terminal emulator

6.4. Configuration

“main.c” configuration setting.

Configuration	Current Value	Description
CODE_area_A	Code Flash Block1	-
CODE_area_B	Code Flash Block2	-
CODE_area_size	0x1000	Code Flash size used (secured) in CODE_area_A and CODE_area_B processing
RAM_A	-	Backup RAM in CODE_area_A
RAM_B	-	Backup RAM in CODE_area_B
Cycle A	0.5Hz(2000ms)	BSP_LED_1 blinking cycle
Duty A	50%	
Cycle B	0.5Hz(2000ms)	BSP_LED_2 blinking cycle
Duty B	50%	
Cycle C	0.5Hz(2000ms)	BSP_LED_3 blinking cycle
Duty C	50%	
Cycle D	0.5Hz(2000ms)	BSP_LED_4 blinking cycle
Duty D	50%	

6.5. Example of Terminal Emulator Output

6.5.1. Normal Operation

```
Excecute Program A
Please Press the S4

RAM trasferring.
Erasing.
Rewiting.
Finished.
Excecute Program B
Please Press the S4
```

6.5.2. Case of Error Occurrence

Nothing.

7. FLASH Driver

7.1. List of driver

The FLASH is controlled by using the following interface.
For an example of use, refer to the source code.

Driver	Control Outlines
fc_enable_areasel	AREA0 Enabled
fc_disable_areasel	AREA0 Disable
fc_get_status	Get the status of flash automation
fc_write_code_flash	Code flash ROM auto write command
fc_write_data_flash	Data flash auto write command
fc_erase_page_code_flash	Code flash ROM automatic page erase command
fc_erase_page_data_flash	Data flash automatic page erase command
fc_blank_check_page_code_flash	Check for blanks in code FLASH ROM on the specified page
fc_blank_check_page_data_flash	Check for blanks in the data flash on the specified page
fc_erase_block_data_flash	Data flash automatic block erase command
fc_blank_check_block_data_flash	Check for blanks in the data FLASH of the specified block
fc_erase_area_data_flash	Data flash automatic area erase command
fc_blank_check_area_data_flash	Check for blanks in the data FLASH in the specified area
fc_write_user_information_area	User information area auto write command
fc_erase_user_information_area	User information area automatic page clear command
fc_read_user_information_area	Reading the user information area
fc_read_clock_set	Read time setting
fc_protect_clear	Clear the project
fc_protect_status	Check the protection status
fc_security_clear	Erase protection
fc_security_status	Check security status
fc_read_buf_set	Enable / Disable Read Buffer

7.2. Details

See “3. Reference Documents” for more information.

8. Revision History

Revision	Date	Description
1.0	2022-04-08	First release

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