

# Application Note

## SMIF UART

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## 1. Preface

This application note describes the sample software of SMIF\_UART using Serial Memory Interface (SMIF). 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
SMIF	Serial Memory Interface
UART	Universal Asynchronous Receiver Transmitter
T32A	32bit Timer Event Counter

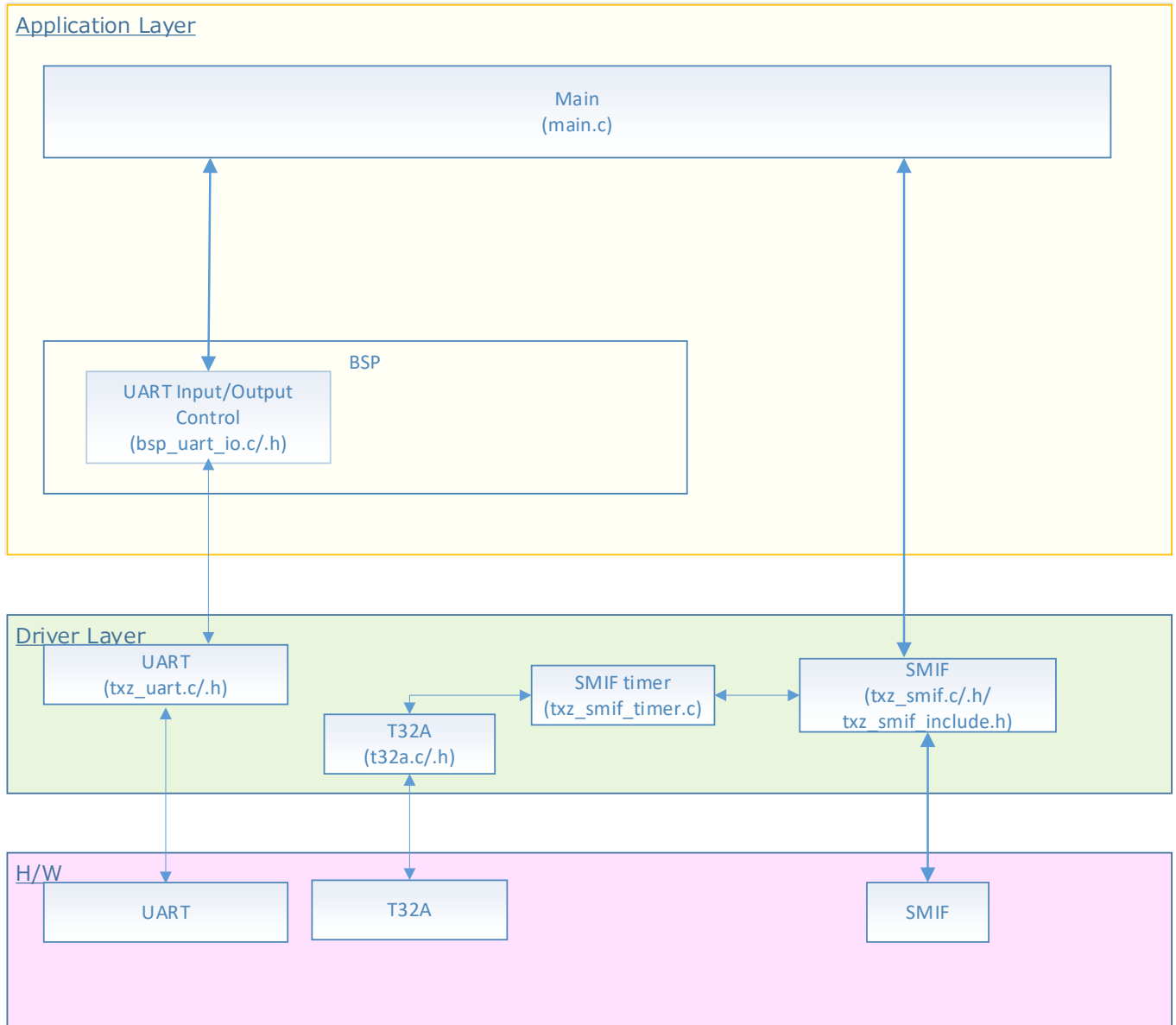
## 3. Reference Document

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.

## 4. Target Sample Program

Sample Program	Outlines
SMIF_UART	Sample of SMIF function

## 5. Configuration Diagram



## 6. Sample Program: SMIF\_UART

This sample software executes the “write” or “read” command which is input to the terminal software. When the “write” command is input, successively input characters are stored to the Flash ROM. When the “read” command is input, the data in the Flash ROM is displayed on the terminal software.

### 6.1. Outlines of Operation

"command >" is displayed on the terminal software. The command is input according to the format of the following "write" command or "read" command. When the "write" command is executed, the input data is stored to the Flash ROM (address: 0x00000000). When the “read” command is executed, the data in the Flash ROM (address: 0x00000000) is read, and is displayed on the terminal software.

And when the “damp” command is input, the data in the Flash ROM is displayed on the terminal software.

- Command format:  
 “write” command  
 write\_ X X: Any characters (16 characters or less)  
 “read” command  
 read  
 “damp” command  
 damp\_ xxxxxx\_ yyyy  
 xxxxxx: Start address (Hexadecimal: 0 to FFFFFFFF)  
 yyyy: Display byte count (Hexadecimal: 0 to FFFF)  
 When the start address and the display byte count are omitted, “damp 0 20” is executed.

### 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
UART	BSP_UART_0	Communication with the terminal software
SMIF	BSP_SMIF_0	Serial memory interface

### 6.3. Interrupt to Use

Interrupt	Outlines
UART Interrupt	UART reception interrupt
	UART transmission interrupt
	UART ERROR interrupt
Timer Interrupt	Interval timer interrupt

### 6.4. Configuration

Nothing.

## 6.5. Example of Terminal Software Output

### 6.5.1. Normal Operation

Display “write” command

```
command > write testdata
write data > testdata
```

write command  
testdata is stored to Flash ROM(0x00000000),  
and display it.

Display “read” command

```
command > read
read data > testdata
```

read command  
Read data stored in Flash ROM(0x00000000)  
and display it.

Display “dump” command

```
command > dump 0 20
damp data >
0x00000000: 74 65 73 74 64 61 74 61 00 FF FF FF FF FF FF FF
0x00000010: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

Display “bw” command

```
command > bw 1000 a
0x1000 > a(0x61)
```

bw command  
a(1byte) is stored to Flash ROM(0x00001000),  
and display it.

Display “br” command

```
command > br 1000
byte read data > 0x1000 = a(0x61)
```

br command  
Read data stored in Flash ROM(0x00001000)  
and display it.

### 6.5.2. Case of Error Occurrence

Nothing.

## 7. SMIF Driver

### 7.1. List of Drivers

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

Interface Name	Control Outlines
BusyCheckTimer	Busy check timer
smif_bank_read	Bank register read
smif_bank_write	Bank register write
smif_erase_chip	Chip is erased.
smif_erase_sector	Sector is erased.
smif_finalize	Finalization
smif_init	Initialization
smif_sflash_read_id	ID is read.
smif_write_data	Data is written.

## 8. Revision History

Revision	Date	Description
1.0	2021-11-04	First release

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