

Application Note

HDMA TSPI MEM

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1. Preface

This application note describes the sample software of HDMA_TSPI_MEM using High-speed Direct Memory Access Controller (HDMAC). This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/ Abbreviation	Definition
HDMAC	High-speed Direct Memory Access Controller
TSPI	Toshiba Serial Peripheral Interface
UART	Universal Asynchronous Receiver Transmitter

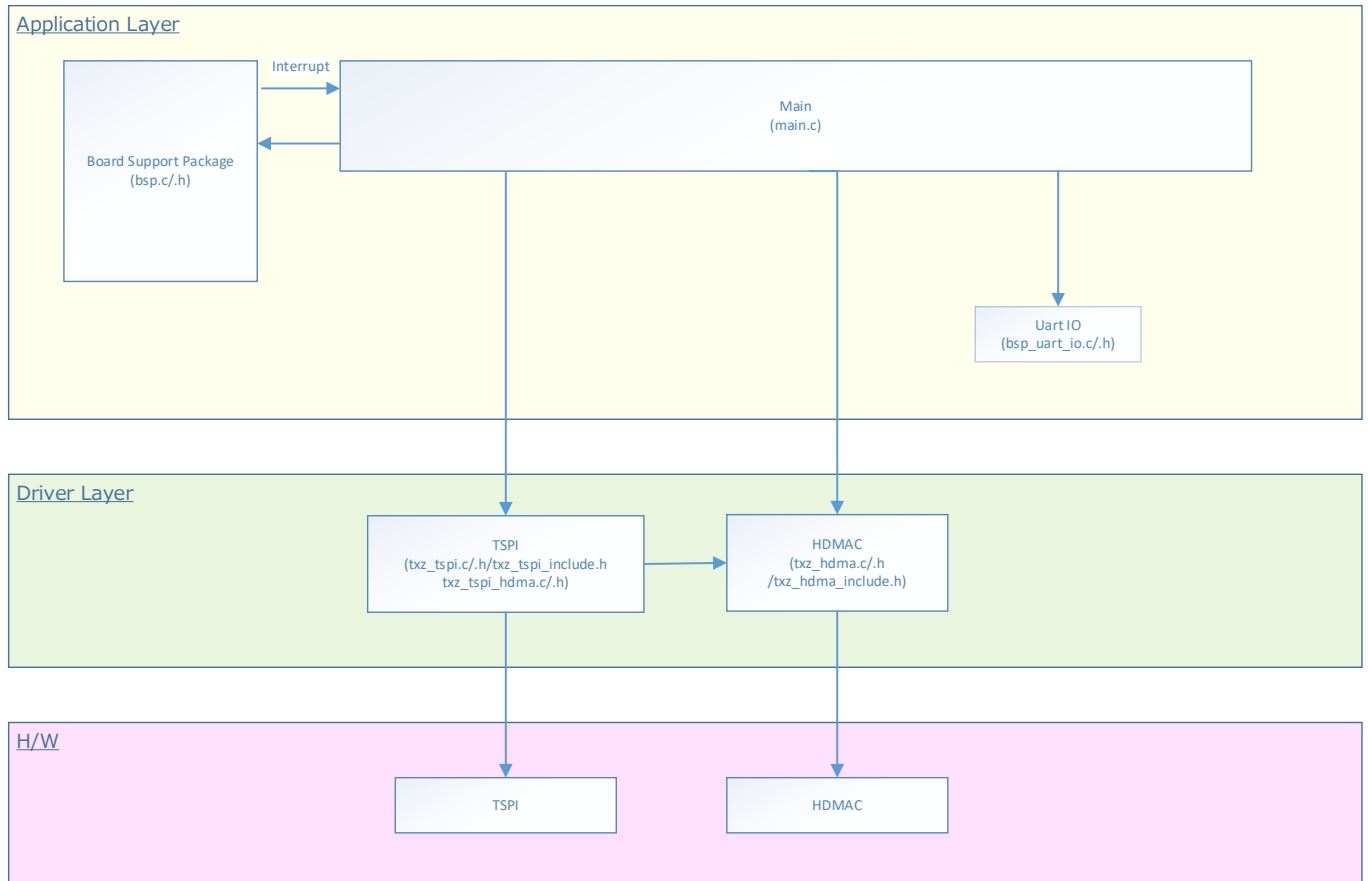
3. Reference Document

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
HDMA_TSPI_MEM	Sample of HDMA_TSPI_MEM

5. Configuration Diagram



6. Sample Program: HDMA_TSPI_MEM

This sample software inputs data using HDMA function and outputs it to the terminal emulator using TSPI transfer function.

6.1. Outlines of Operation

The data input from the terminal emulator is transmitted by the HDMA transfer function, and the transmitted data is displayed.

- "Input = " is displayed on the terminal emulator.
- Any data should be input.
- "transdata=" is displayed on the terminal emulator, and the input data is displayed continuously.

6.2. Function to Use

The functions to use are as follows;

IP	Channel	Objective
HDMAC	BSP_HDMAC_0	TSPI transmission/reception DMA request
TSPI	BSP_TSPI_0	TSPI transmission/reception
UART	BSP_UART_0	Communication with the terminal emulator

6.3. Interrupt to Use

Interrupt	Outlines
HDMA Interrupt	HDMA transmission end interrupt
	HDMA transmission error interrupt

6.4. Configuration

Nothing.

6.5. Example of Terminal Emulator Output

6.5.1. Normal Operation

Initial display

```
Input =
```

When inputting "Enter" after inputting character

```
Input = 123456
```

Output transferred data

```
Input = 123456  
transdata = 123456
```

6.5.2. Case of Error Occurrence

Nothing.

7. HDMA Driver

7.1. List of Drivers

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

Interface Name	Control outlines
get_dst_address	Destination address is acquired.
get_src_address	Source address is acquired.
hdma_channel_init	Channel of the HDMA object is initialized.
hdma_clear_error	Error is cleared.
hdma_deinit	HDMA object is released.
hdma_dstPeri_Set	HDMA DstPeripheral is set.
hdma_E_disable	HDMA E is disabled.
hdma_E_enable	HDMA E is enabled.
hdma_FlowType_Set	HDMA FlowCntrl is set.
hdma_get_error	Error is acquired.
hdma_HALT_enable	HDMA HALT is enabled.
hdma_IE_disable	HDMA IE is disabled.
hdma_IE_enable	HDMA IE is enabled.
hdma_init	HDMA object is initialized.
hdma_ITC_disable	HDMA ITC is disabled.
hdma_ITC_enable	HDMA ITC is enabled.
hdma_lll_set	HDMA LLI address is set.
hdma_LOCK_disable	HDMA LOCK is disabled.
hdma_LOCK_enable	HDMA LOCK is enabled.
hdma_srcPeri_Set	HDMA SrcPeripheral is set.
hdma_startIt	HDMA mode is started.
hdma_startPerilt	HDMA peripheral mode is started.
hdma_stopIt	HDMA mode is stopped.
hdma_stopPerilt	HDMA peripheral mode is stopped.

8. Revision History

Revision	Date	Description
1.0	2021-10-29	First release

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