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Renesas Electronics Corporation

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H8S/2200 Series

Data Transfer Started up by Software

Introduction

Starts up DTC at detection of a falling edge of a port to transfer one 128-byte block.

Target Device

H8S/2239

Contents

1. Specifications	2
2. Description of Functions	3
3. Principles of Operation.....	4
4. Description of Software.....	5
5. PAD.....	6

1. Specifications

1. As shown in figure 1, this sample task starts up DTC at detection of a falling edge of a port to transfer one 128-byte block of data.
2. Data in RAM1 from addresses H'600000 to H'60007F is transferred to RAM2 from addresses H'600080 to H'6000FF.
3. The internal operating frequency of the H8S/2215 is 16 MHz.

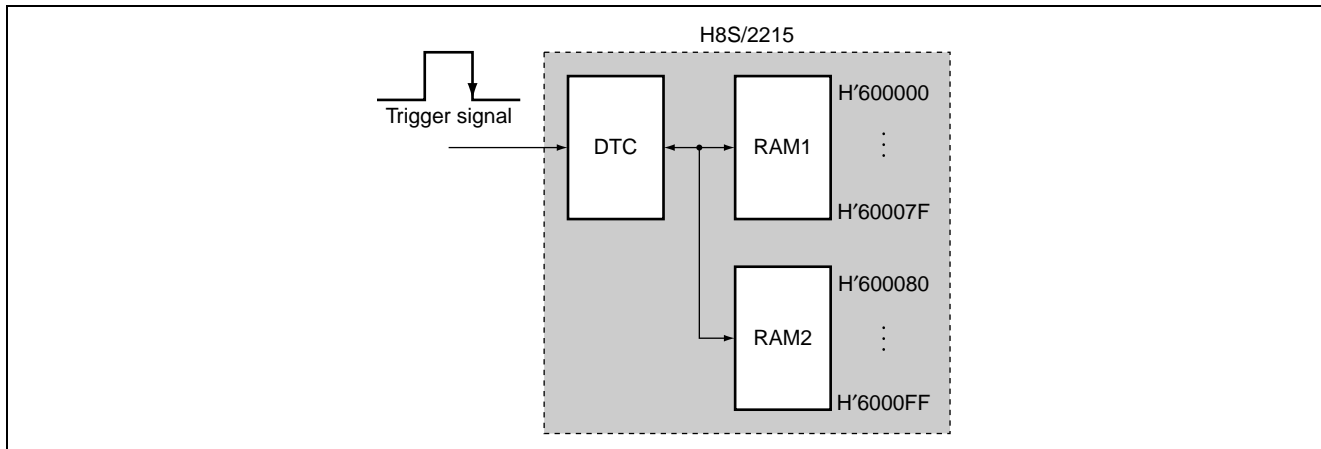


Figure 1 Block Diagram of Data Transfer Started up by Software

2. Description of Functions

1. This sample task starts up DTC by software to transfer 128-byte data to RAM.
 - A. The block diagram of DTC to be used by this sample task is shown in figure 2.

This sample task uses the following functions to transfer data:

- Function that starts up DTC by software (DTC startup by software)
- Function that enables an interrupt request to the CPU to be generated after termination of data transfer.

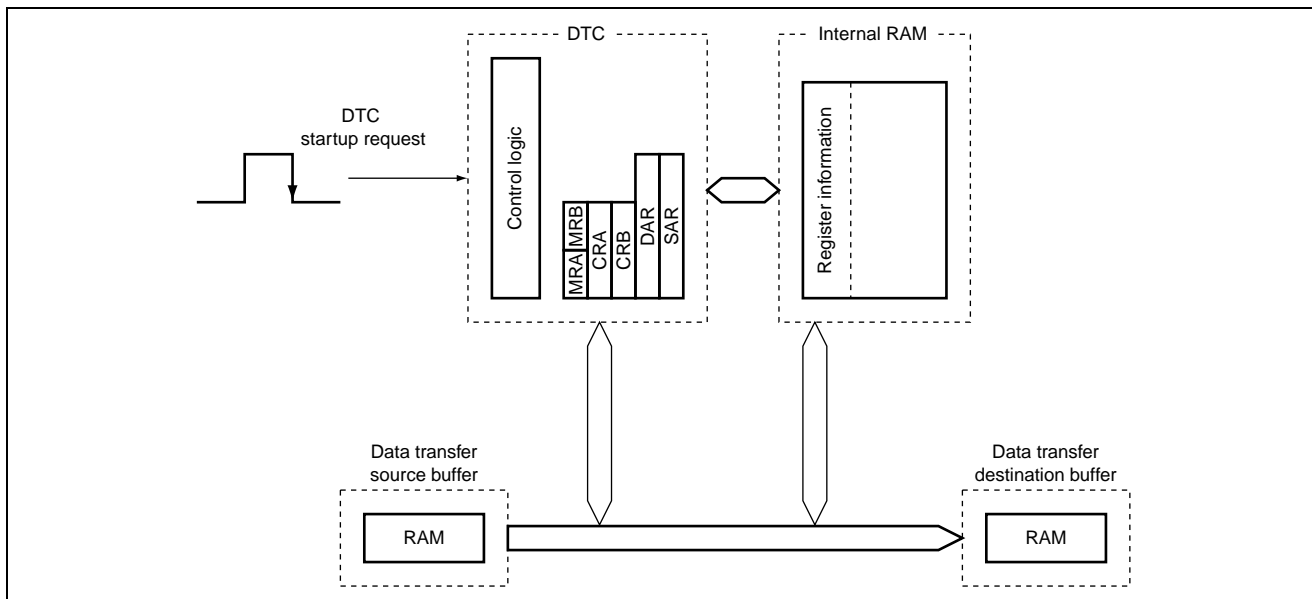


Figure 2 Block Diagram of Data Transfer Started up by Software

2. Function allocation of this sample task is shown in table 1. This sample task allocates the H8S/2215 functions as shown in table 1 for block transfer.

Table 1 Assignment of Functions

Elements	Description
MRA, MRB	Controls DTC mode.
SAR	Specifies the transfer source address.
DAR	Specifies the transfer destination address.
CRA	Specifies the number of times to transfer data.
DTCER	Controls enabling/disabling of DTC startup by each interrupt source.
P3DR	Inputs the trigger signal.

3. Principles of Operation

The principles of operations employed for use of DTC are shown in figure 3. This sample task performs hardware and software processing at the timing shown in figure 3 to transfer data in block.

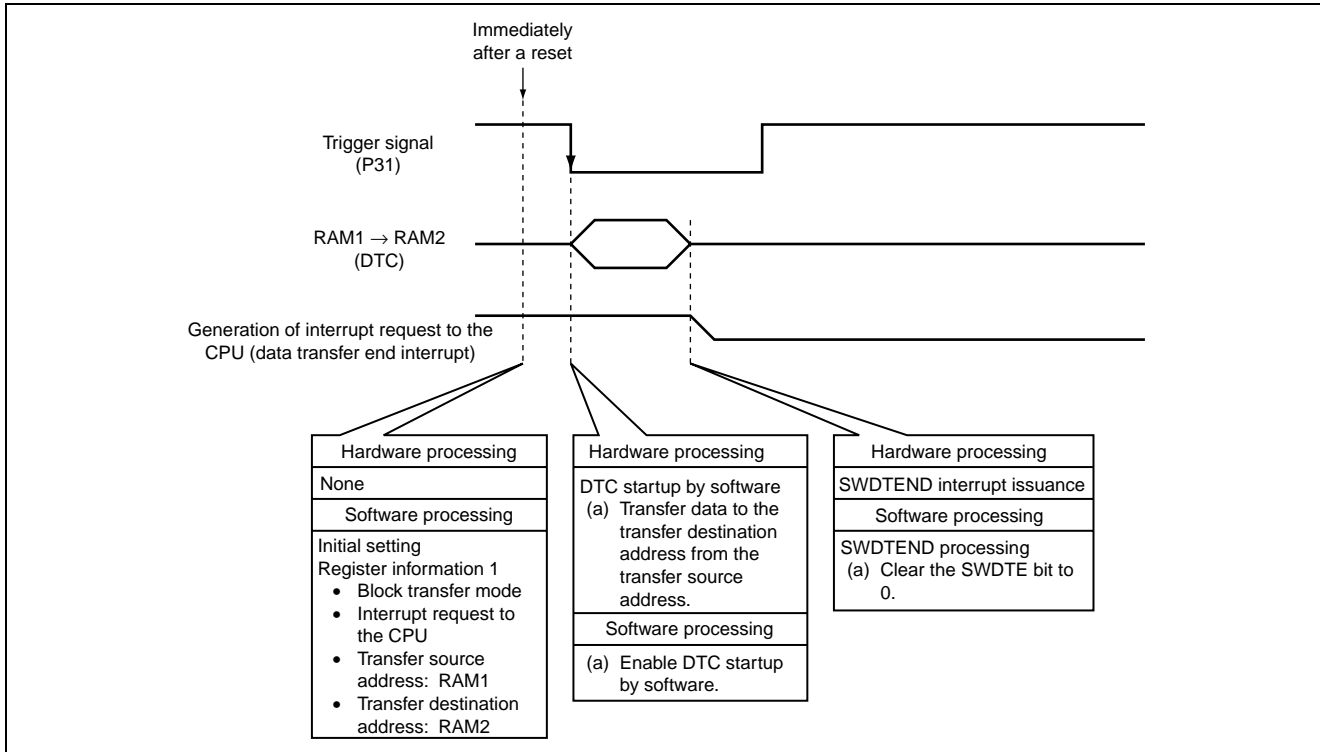


Figure 3 Principles of Operations Used for Data Transfer Started up by Software

4. Description of Software

1. Description of Modules

Module Name	Label Name	Function
Main routine	dtsftmn	Performs initial setting of DTC.
Transfer completion	trsend	Starts up by a DTC transfer end interrupt and sets the transfer end flag.

2. Description of Arguments

Label Name	Function	Data Length	Used in	I/O
trs_end	Flag indicating transfer end	unsigned char	Data transfer end	Output
	1: Transfer ended 0: Transfer in progress		Main routine	Input
err	Flag indicating DTC startup error	unsigned char	Main routine	Output
	1: Startup failure 0: Started up			

3. Description of Internal Registers Used

Register Name	Function	Used in
DTVECR	Enables DTC startup by software.	Main routine
MSTPCR	Controls DTC module stop mode.	Main routine

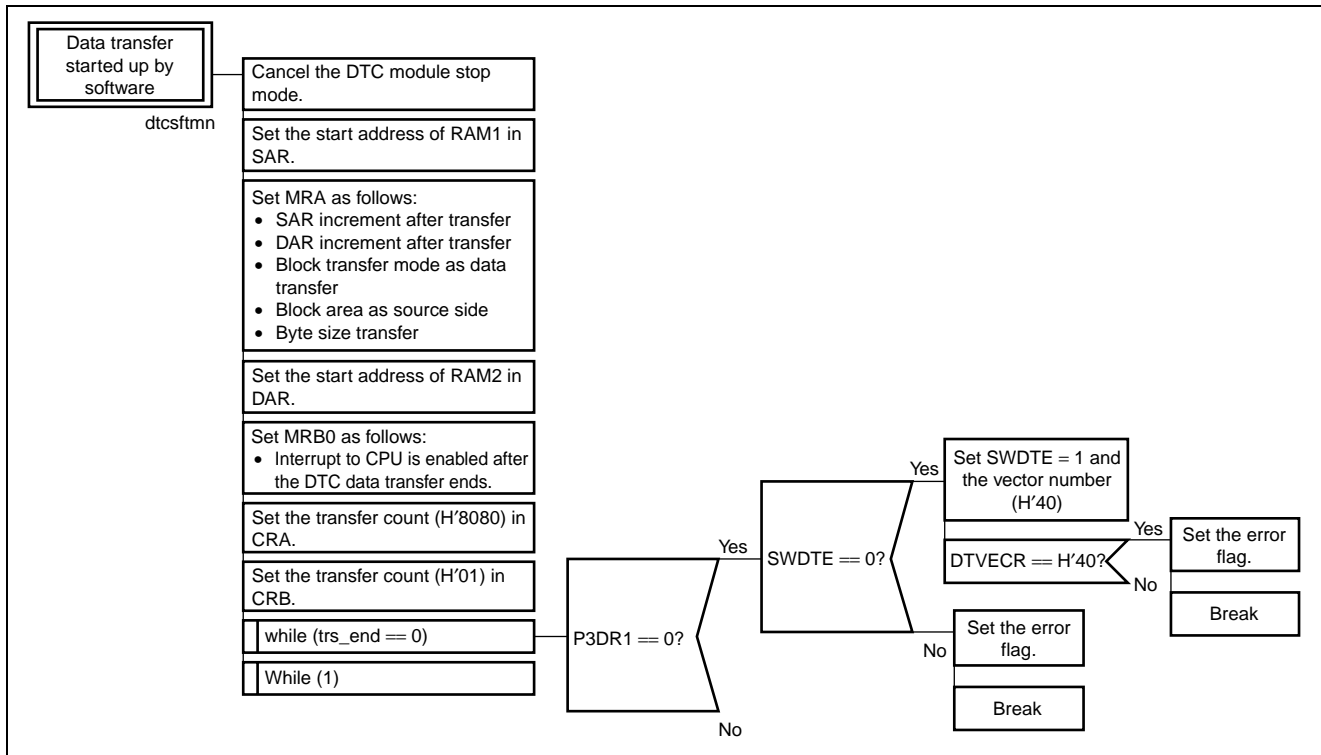
4. RAM Usage

Table below describes RAM usage in this sample task.

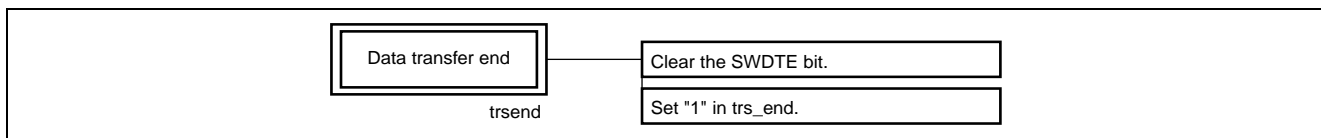
Label Name	Function	Data Length	Used in
MRA	Sets DTC in block transfer mode.	unsigned char	Main routine
MRB	Enables an interrupt to the CPU after data transfer.	unsigned char	
SAR	Sets the transfer source address (RAM1).	unsigned long	
DAR	Sets the transfer destination address (RAM2).	unsigned long	
CRA	Set the block size (H'8080).	unsigned short	
CRB	Sets the number of times to transfer (H'0001).	unsigned short	

5. PAD

1. Main Routine



2. Data Transfer End



Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Mar.16.04	—	First edition issued

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