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April 1st, 2010
Renesas Electronics Corporation

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H8S Family

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/2339

Contents

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'FF7C50 to H'FF7CCF is transferred to RAM2 from addresses H'FF7CD0 to H'FF7D4F.
3. The internal operating frequency of the H8S/2339 is 19.6608 MHz.

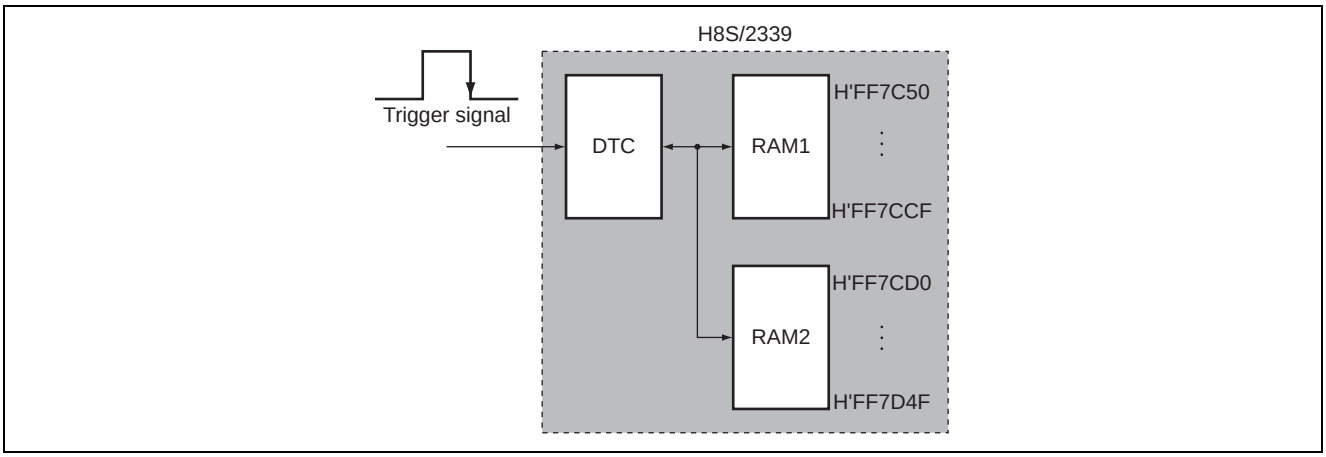


Figure 1 Block Diagram of Data Transfer Started up by Software

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 at the end of data transfer

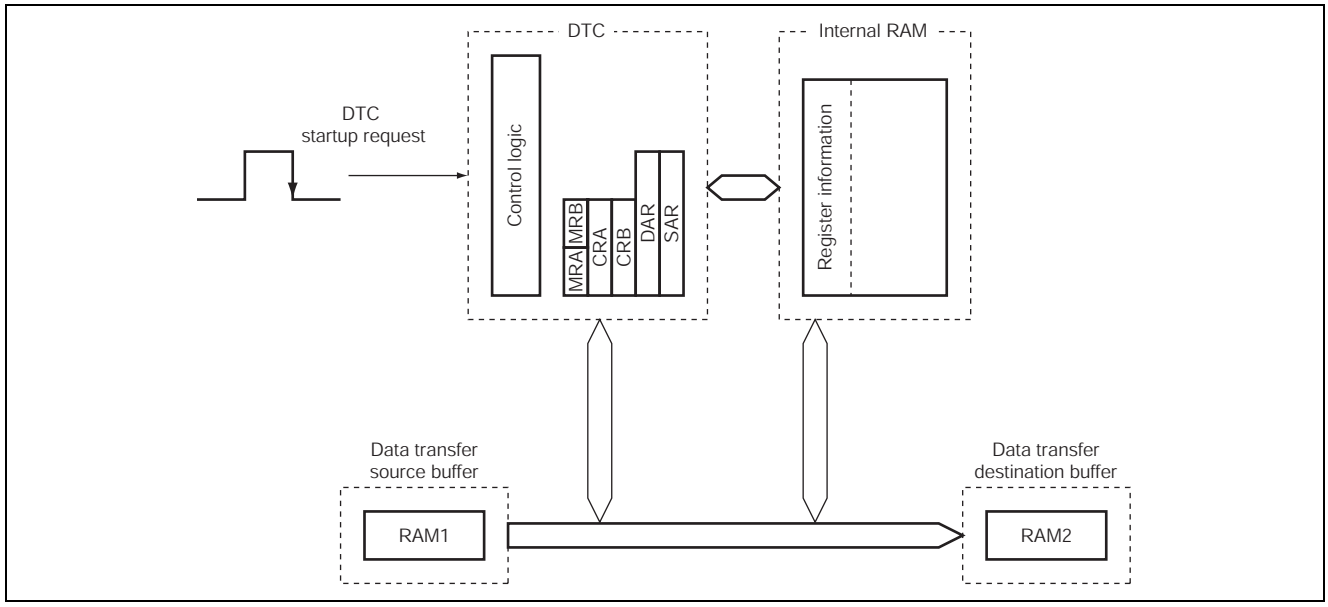


Figure 2 Block Diagram of Data Transfer Started up by Software

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.

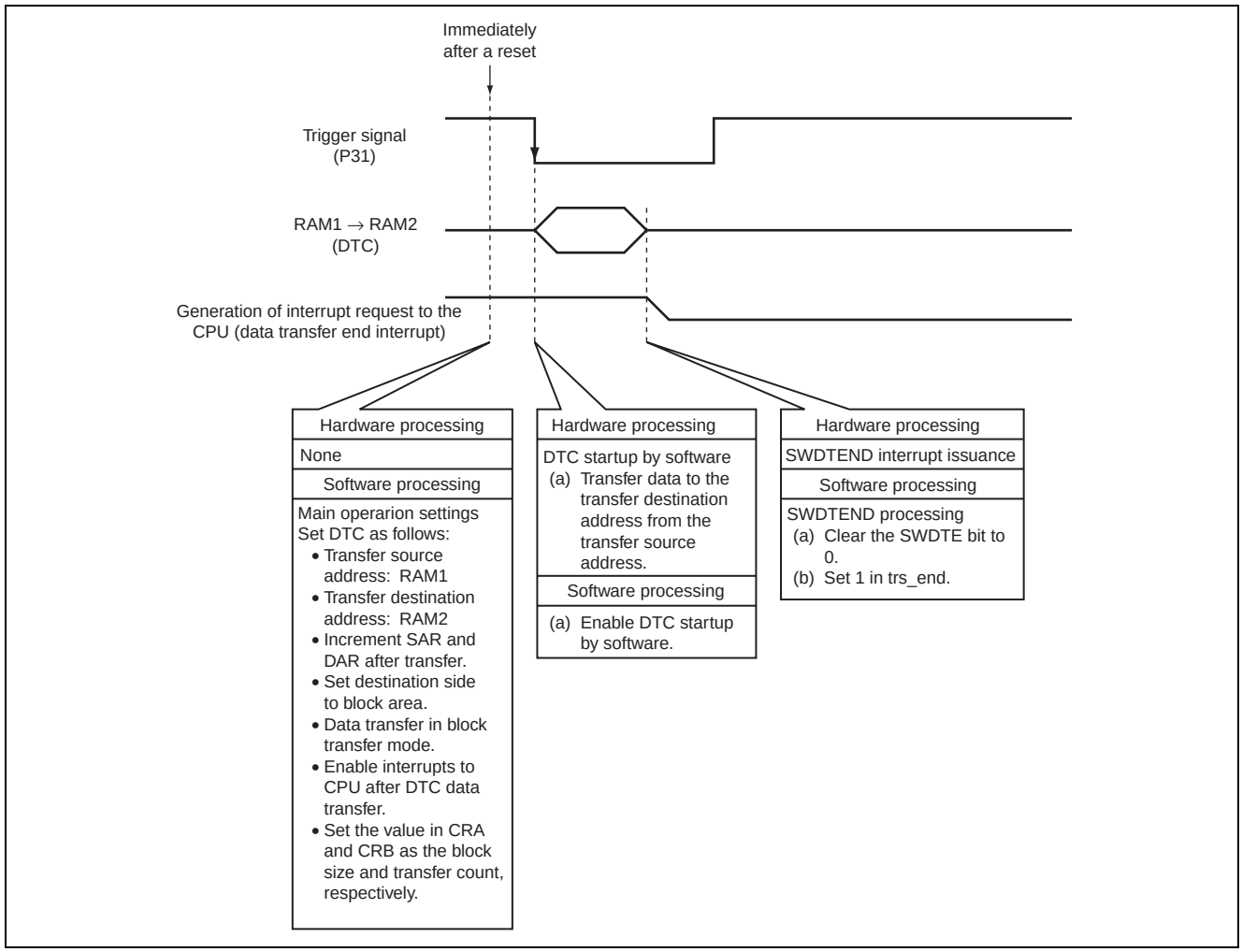


Figure 3 Principles of Operations Used for Data Transfer Started up by Software

4. Description of Software

1. Description of Modules

Module Name	Label Name	Function
Main routine	dtcsftmn	Performs initial setting of DTC.
Data transfer end	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 1: Transfer ended 0: Transfer in progress	unsigned char	Data transfer end Main routine	Output Input
err	Flag indicating DTC startup error 1: Startup failure 0: Started up	unsigned char	Main routine	Output

3. Description of Internal Registers Used

Register Name	Function	Used in
DTVECR	Enables DTC startup by software by clearing the SWDTE bit to 0.	Main routine, data transfer end
MSTPCR	Controls DTC module stop mode.	Main routine

4. RAM Usage

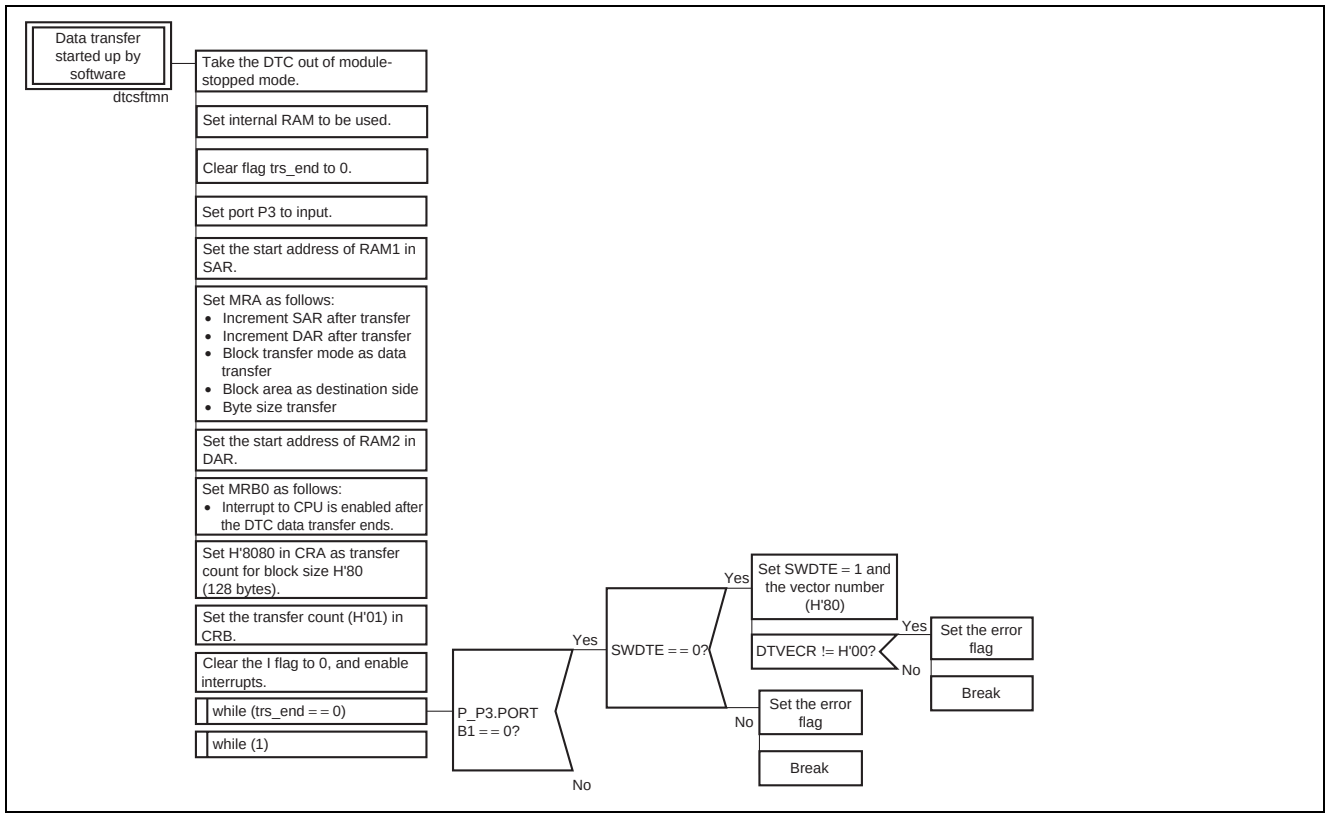
Table below describes RAM usage in this sample task.

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	

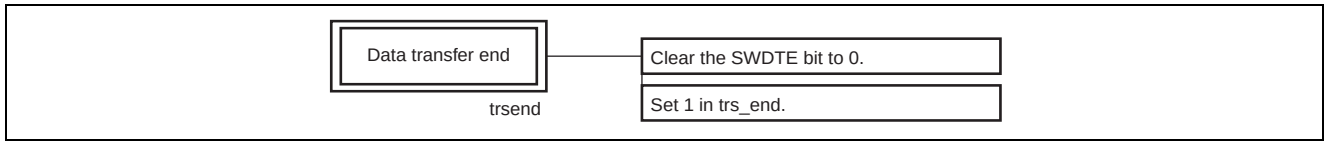
5. PAD

5.1 Main Routine and Data Transfer End

1. Main Routine



2. Data Transfer End



5.2 Link Addresses

Section	Address
CDtc_vect_SOFT	H' 00000400
PResetPRG, PIntPRG, P, C$DSEC, D	H' 00000800
B, R	H' 00FFDC00
S	H' 00FFF9F0

5.3 DTC Address

File Name	DTC Address
Intprg.c	#pragma section Dtc_vect_SOFT const unsigned int vector_soft = {0xF800};

Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Feb.17.05	—	First edition issued

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