

To our customers,

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Renesas Electronics Corporation

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## H8/300L Series

### Block Transfer 1 (MOVE1)

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#### Introduction

1. The software MOVE1 moves a block of data from one data memory area to another.
2. The source and destination data memory areas can be specified as desired.
3. The block data may be any length within the range of 1 to 255 bytes.

#### Target Device

H8/300L Series

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### 1. Arguments

Description		Memory area	Data length (bytes)
Input	Byte count (number of bytes)	R0L	1
	Start address of source area	R1	2
	Start address of destination area	R2	2
Output	—	—	—

### 2. Changes to Internal Registers and Flags

R0H	R0L	R1	R2	R3	R4	R5	R6	R7
×	×	×	×	•	•	•	•	•
I	U	H	U	N	Z	V	C	
•	•	•	•	×	×	×	•	

•: No change

×: Undefined

†: Result

### 3. Specifications

Program memory (bytes)	14
Data memory (bytes)	0
Stack (bytes)	0
Clock cycle count	4598
Reentrant	Possible
Relocation	Possible
Interrupt	Possible

### 4. Note

The clock cycle count in the specifications (4598) is for 255 bytes of block data.

5. Description

5.1 Details of functions

1. The following arguments are used with the software MOVE1:  
 R0L: Sets, as an input argument, the number of bytes in a block of data.  
 R1: Sets, as an input argument, the start address of the source memory area.  
 R2: Sets, as an input argument, the start address of the destination memory area.
2. The following figure illustrates the execution of the software MOVE1.  
 When the input arguments are set as shown in (1), the data is moved as a block from the source (H'FD80 to H'FD89) to the destination (H'FE80 to H'FE89) as shown in (2).

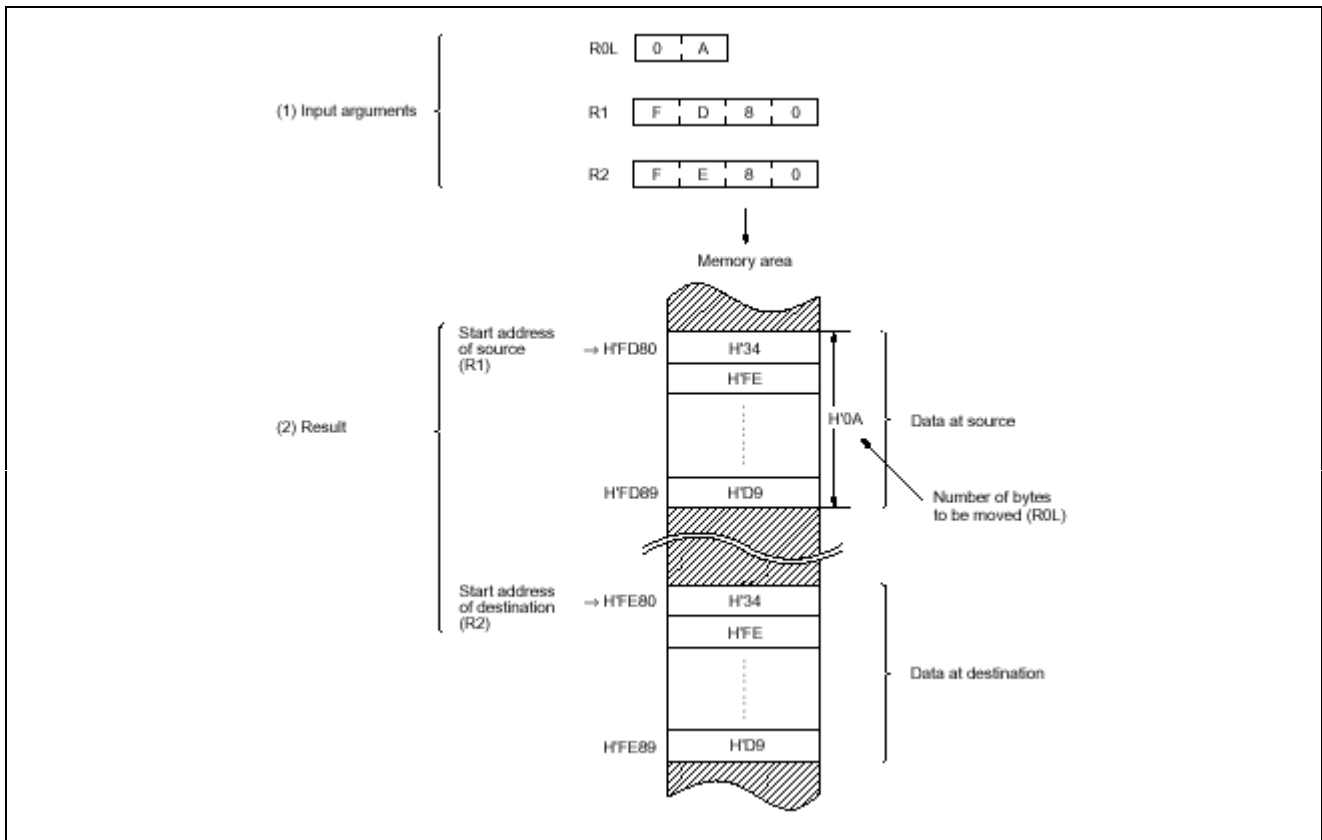


Figure 5.1 Example of Software MOVE1 Execution

### 5.2 Notes on usage

1. R0L is one byte long and should satisfy the relation  $H'01 \leq R0L \leq H'FF$ .
2. Do not set "0" in R0L; otherwise, the software MOVE1 cannot be terminated.
3. Set the input arguments, ensuring that the source data memory area (A) does not overlap the destination data memory area (C) as shown in figure 5.2. In the case of figure 5.2, the overlapped block data (B) at the source will be lost.

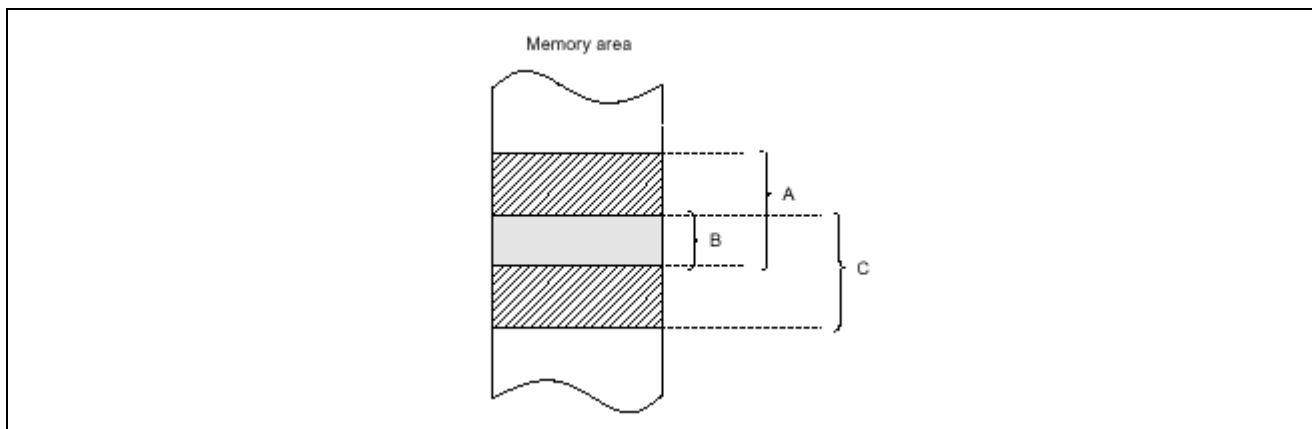


Figure 5.2 Moving Block Data with Overlapping Data Memory Areas

### 5.3 Data memory

The software MOVE1 does not use the data memory.

### 5.4 Example of use

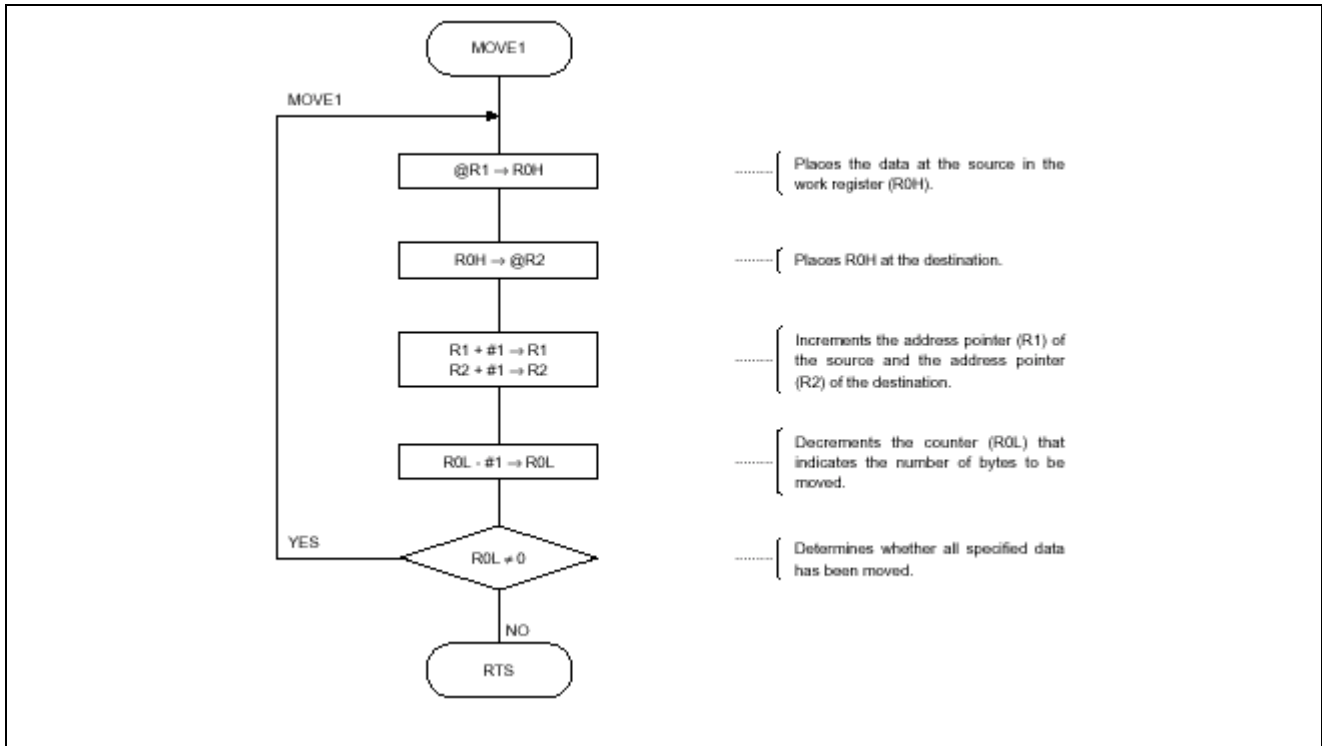
Set the start address of a source, the start address of a destination, and the number of bytes to be moved in the arguments and call the software MOVE1 as a subroutine.

WORK1	. DATA. B	10	.....	Reserves a data memory area (1 byte: contents=H'0A) in which the user program places the number of bytes to be moved.	
	. ALIGN	2	.....		Places the data memory area (WORK1) at an even address.
WORK2	. DATA. W	0	.....	Reserves a data memory area (2 bytes: contents=H'0000) in which the user program places the start address of the source.	
WORK3	. DATA. W	0	.....	Reserves a data memory area (2 bytes: contents=H'0000) in which the user program places the start address of the destination.	
	MOV. B	@WORK1, R0L	.....	Places the number of bytes set by the user program in the R0L argument.	
	MOV. W	@WORK2, R1	.....		Places the start address of the source set by the user program.
	MOV. W	@WORK3, R2	.....		Places the start address of the destination set by the user program.
	JSR	@MOVE1	.....	Calls the software MOVE1 as a subroutine.	

## 5.5 Operation

1. R1 is used as the pointer that indicates the address of the source and R2 the pointer that indicates the address of the destination.
2. The cycle of storing the data at the source in the work register (R0H) and then at the destination is repeated in 16-bit absolute addressing mode.
3. R0L is used as the counter that indicates the number of bytes moved. It is decremented each time 1-byte data is moved until it reaches 0.

6. Flowchart





## 7. Program List

```

*** H8/300 ASSEMBLER VER 1.0B ** 08/18/92 09:45:34
PROGRAM NAME =
1                                     ;*****
2                                     ;*
3                                     ;*   00-NAME :BLOCK DATA TRANSFER (MOVE1)
4                                     ;*
5                                     ;*****
6                                     ;*
7                                     ;*   ENTRY   :R0L (Byte counter)
8                                     ;*           R1 (Source data start address)
9                                     ;*           R2 (Destination data start address)
10                                    ;*
11                                    ;*   RETURN  :NOTHING
12                                    ;*
13                                    ;*****
14                                    ;
15   MOVE1_co C      0000                .SECTION          MOVE1_code, CODE, ALIGN=2
16                                     .EXPORT            MOVE1
17                                     ;
18   MOVE1_co C      00000000           MOVE1 .EQU $           ;Entry point
19   MOVE1_co C      0000   6810         MOV.B   @R1,R0H       ;Load source address data to R0H
20   MOVE1_co C      0002   68A0         MOV.B   R0H,@R2       ;Store R0H to destination address
21   MOVE1_co C      0004   0B01         ADDS.W #1,R1        ;Increment source address pointer
22   MOVE1_co C      0006   0B02         ADDS.W #1,R2        ;Increment destination address pointer
23   MOVE1_co C      0008   1A08         DEC    R0L          ;Decrement byte counter
24   MOVE1_co C      000A   46F4         BNE    MOVE1        ;Branch if byte counter = 0
25                                     ;
26   MOVE1_co C      000C   5470         RTS
27                                     ;
28                                     .END

*****TOTAL ERRORS 0
*****TOTAL WARNINGS 0

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### Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Sep.18.03	—	First edition issued

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