To our customers,

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

M16C/80 Series

Changing Blocks

1.0 Abstract

This program changes memory contents consisting of the same number of bytes with each othermemory location.

2.0 Introduction

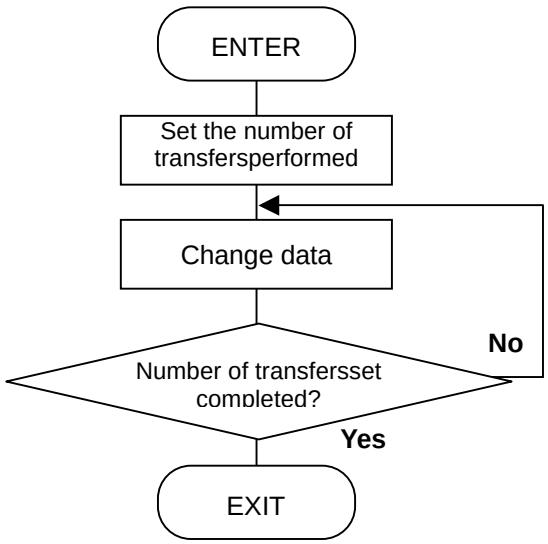
This program changes memory contents consisting of the same number of bytes with each other memorylocation. An add and conditional branch instruction (ADJNZ) is used to count the number of transfers performed.

In this program, memory contents basically are changed in bytes. However, if the memory contents to bechanged consist of even bytes, they can be changed in words for increased speed of processing.

Subroutine name : -	ROM capacity : 18byte
Interrupt during execution:Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0L	-	Last data of BLOCK2	Register used for change
R0H	-	-	Unused
R1	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	-	"0000_{16}"	Number of transfers performed
A1	-	-	Unused
BLOCK1	Content of BLOCK1	Content of BLOCK2	←
BLOCK2	Content of BLOCK2	Content of BLOCK1	←
Usage precautions	Memory contents are changed in bytes.		

3.0 Flowchart



4.0 Programming Code

```
;*****************************************************************
; *
;       M16C Program Collection
;       CPU : M16C/80 series
; *
;*****************************************************************
VramTOP     .EQU    0000400H            ; Declares start address of RAM
VromTOP     .EQU    0FE0000H            ; Declares start address of ROM
      .SECTIONRAM,DATA
      .ORGVramTOP                       ; RAM area
LENGTH      .EQU    10                  ; Length of area
BLOCK1:     .BLKB   LENGTH              ; Area1
BLOCK2:     .BLKB   LENGTH              ; Area2
;;
;=====================================================================
;   Title: Changing blocks
;   Outline: Changes data in units of blocks.
;   Input:      ------------------------------>     Output:
;   R0L( )                                  R0(Indeterminate)
;   R0H( )                                  R0(Unused)
;   R1( )                                   R1(Unused)
;   R2( )                                   R2(Unused)
;   R3( )                                   R3(Unused)
;   A0( )                                   A0(Indeterminate)
;   A1( )                                   A1(Unused)
;   Stack amount used: None
;   Notes:
;=====================================================================
                .SECTION    PROGRAM,CODE
                .ORG        VromTOP             ; ROM area
    MOV.B       #LENGTH,A0                      ; Sets number of transfers performed
LOOP:                                           ;
    MOV.B       BLOCK1-1[A0],R0L                ;
    XCHG.B      R0L,BLOCK2-1[A0]                ; Changes data
    MOV.B       R0L,BLOCK1-1[A0]                ;
    ADJNZ.W     #-1,A0,LOOP                     ; --> Looped for the number of transfers performed
;                                               ;
                .END ;
```

5.0 Reference

MCU Technical Information Homepage

http://www.infomicom.maec.co.jp/indexe.htm
(or http://www.mdece.com/ , http://www.mitsubishichips.com/products/mcu/index.html or your local Web Site.)

Technical Support

E-mail: support@apl.maec.co.jp
(or your local support E-mail address. A private e-mail address should NOT be used.)

Data Sheet

M16C/80 group
(Use the latest version on the Homepage: http://www.infomicom.maec.co.jp/indexe.htm)

User's Manual

M16C/80 group
(Use the latest version on the Homepage: http://www.infomicom.maec.co.jp/indexe.htm)

RENESAS
Renesas Technology Corp.

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