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

Converting from Hexadecimal Data to ASCII Code

1.0 Abstract

This program converts hexadecimal data into ASCII code.

2.0 Introduction

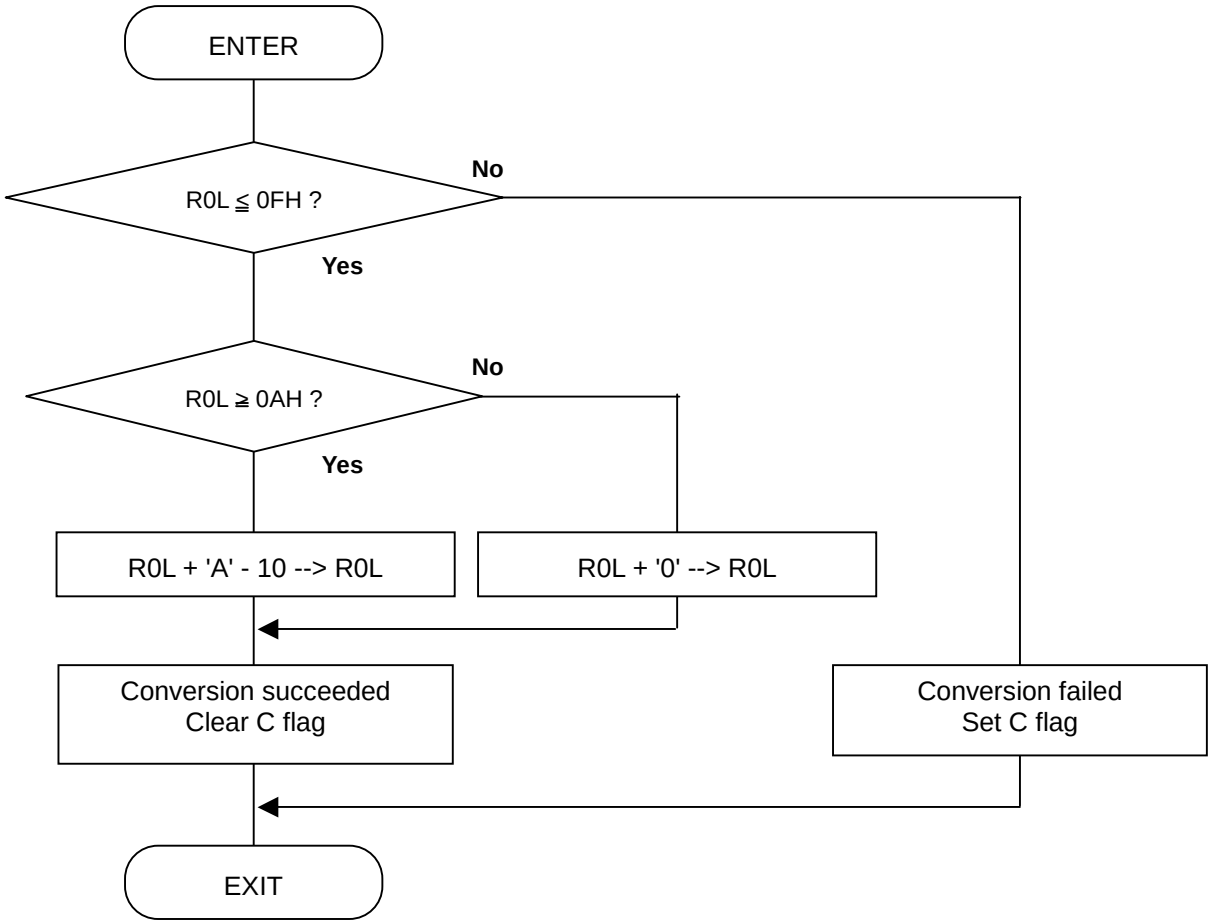
This program converts hexadecimal data into ASCII code. The hexadecimal data that can be converted are from “00H” to “0FH.” The converted ASCII code are numbers from ‘0’ to ‘9’ and alphabets from ‘A’ to'F’. Set the hexadecimal data in R0L. The converted ASCII code is output to R0L. Conversion information is output to the C flag.

C	Meaning
0	Hexadecimal converted into ASCII code
1	Not converted because inconvertible code was input

Subroutine name : HTOA	ROM capacity : 21bytes
Interrupt during execution:Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0L	Hexadecimal	ASCII code	←
R0H	-	-	Unused
R1	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	-	-	Unused
A1	-	-	Unused
C flag	-	Conversion information	←
Usage precautions			

3.0 Flowchart



4.0 Programming Code

```
;*****************************************************************
;       M16C Program Collection
;       CPU : M16C/80 series
;*****************************************************************
VromTOP     .EQU        0FE0000H            ; Declares start address of ROM
;===================================================================
;   Title: Converting hexadecimal into ASCII code
;   Contents of processing:
;               The hexadecimal data input in R0L is converted into ASCII code, which is returned
;               to R0L. The valid hexadecimal data are 00 to 0F. 0A to 0F are converted into 'A' to
;               'F.'  No conversion is performed if invalid code is input.
;   Procedure:  (1) Input hexadecimal data in R0L.
;               (2) Call the subroutine.
;               (3) The converted hexadecimal data is loaded into R0L.
;   Result:     When converted into ASCII code, the C flag is cleared to 0.  If not converted into
;               ASCII code, i.e., if any hexadecimal data other than 00 to 0F was input, the C flag is
;               set to 1.
;   Input:      ------------------------------>     Output:
;   R0L(Hexadecimal)                        R0L(ASCII code)
;   R0H()                                   R0H(Unused)
;   R1()                                    R1(Unused)
;   R2()                                    R2(Unused)
;   R3()                                    R3(Unused)
;   A0()                                    A0(Unused)
;   A1()                                    A1(Unused)
;   Stack amount used: None
;===================================================================
            .SECTION    PROGRAM,CODE
            .ORG        VromTOP             ; ROM area
HTOA:                                       ;
  CMP.B     #0FH,R0L                        ; 0F or below?
  JGTU      HTOA_ERR                        ; --> No(not converted)
  CMP.B     #0AH,R0L                        ; 0A or above?
  JGEU      HTOA10                          ; --> Yes (A to F set)
  OR.B      #'0',R0L                        ;
  FCLR      C                               ; Sets "converted" information
  RTS                                       ;
HTOA10:                                     ;
  ADD.B     #(41H-10),R0L                   ; ADD.B   #'A'-10,R0L
  FCLR      C                               ; Sets "converted" information
  RTS                                       ;
HTOA_ERR:                                   ;
  FSET      C                               ; Sets "not-converted" information
  RTS                                       ;
  ;                                         ;
            .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)

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Renesas Technology Corp.

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