

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics Corporation

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## M16C/60 Series and M16C/20 Series

### General-purpose Program for Converting from 1-byte BCD Code to HEX Code

#### 1. Abstract

This program converts 1-byte BCD code into 1-byte HEX code.

#### 2. Introduction

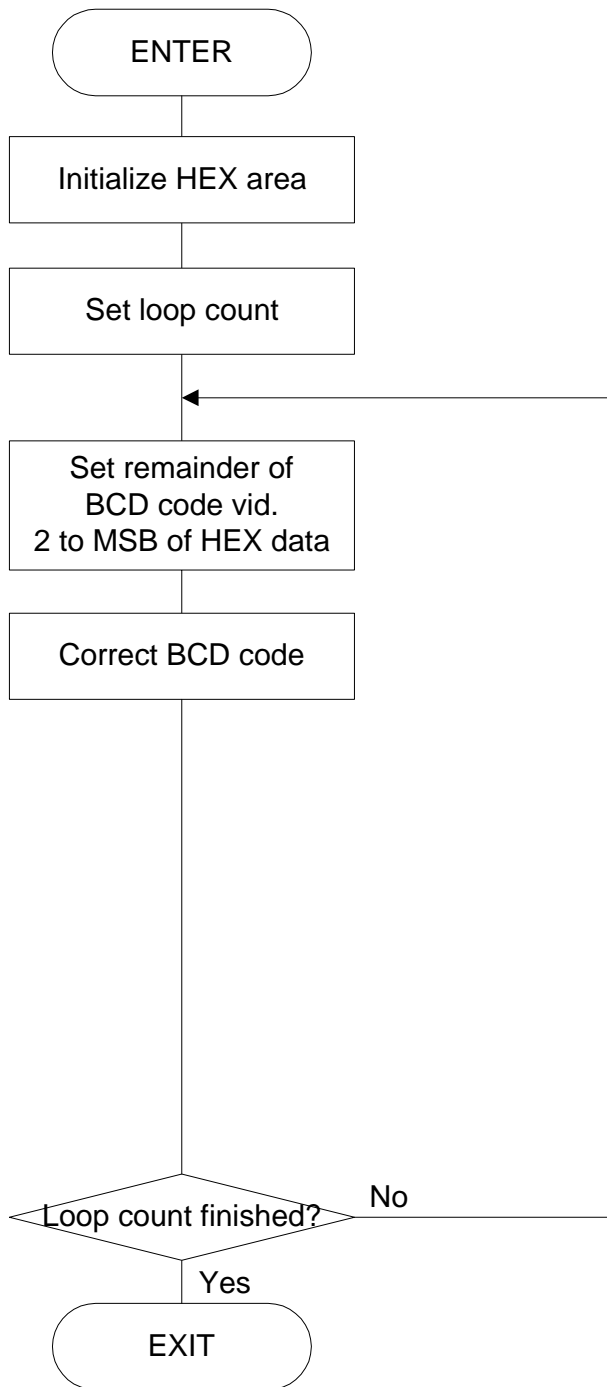
This program converts 1-byte BCD code into 1-byte HEX code. Set the BCD code in R0H. The HEX code is output to R0L.

In this program, the BCD code is divided by 2 (shifted right) and the remainder is loaded into the register as HEX code. If a significant bit is transferred from the BCD's high-order digit to the low-order digit, numeric correction is applied.

|                                       |                              |
|---------------------------------------|------------------------------|
| Subroutine name : BCDtoHEX_1byte      | ROM capacity : 19 bytes      |
| Interrupt during execution : Accepted | Number of stacks used : None |

| Register/memory   | Input                                                       | Output           | Usage condition |
|-------------------|-------------------------------------------------------------|------------------|-----------------|
| R0L               | -                                                           | HEX code         | ←               |
| R0H               | BCD code                                                    | Indeterminate    | ←               |
| R1L               | -                                                           | 00 <sub>16</sub> | Loop count      |
| R1H               | -                                                           | -                | Unused          |
| R2                | -                                                           | -                | Unused          |
| R3                | -                                                           | -                | Unused          |
| A0                | -                                                           | -                | Unused          |
| A1                | -                                                           | -                | Unused          |
|                   |                                                             |                  |                 |
|                   |                                                             |                  |                 |
| Usage precautions | The BCD code is destroyed as a result of program execution. |                  |                 |

3. Flowchart



#### 4. The example of a reference program

```

;*****
; *
; M16C General-purpose Programs *
; CPU : M16C *
; *
;*****
VromTOP      .EQU      0F0000H          ; Declares start address of ROM
;
;=====
; Title      : Converting from BCD code to HEX code
; Outline    : Converts 1-byte BCD code into 1-byte HEX code
; Input      : -----> Output:
; R0L ( )    R0L      (HEX code)
; R0H (BCD code) R0H    (Indeterminate)
; R1L ( )    R1L      (Indeterminate)
; R1H ( )    R1H      (Unused)
; R2 ( )    R2        (Unused)
; R3 ( )    R3        (Unused)
; A0 ( )    A0        (Unused)
; A1 ( )    A1        (Unused)
; Stack amount used: None
; Notes:
;=====
          .SECTION      PROGRAM, CODE
          .ORG          VromTOP          ; ROM area
BCDtoHEX_1byte:
          MOV.B         #0,R0L          ; Initializes HEX area
          MOV.B         #8,R1L          ; Sets loop count
BCDtoHEX_1byte_10:
          SHL.B         #-1,R0H         ; Shifts most significant bit
          RORC.B        R0L             ;
          BTST          3+8,R0          ;
          JEQ           BCDtoHEX_1byte_20 ;
          SUB.B         #3,R0H          ;
BCDtoHEX_1byte_20:
          ADJNZ.B      #-1,R1L,BCDtoHEX_1byte_10 ; --> Executes next BCD digit
          RTS
;
          .END

```

## 5. Reference

SOFTWARE MANUAL

M16C/60 M16C/20 Series SOFTWARE MANUAL

(Acquire the most current version from Renesas web-site)

## 6. Web-site and contact for support

Renesas Web-site

<http://www.renesas.com>

Contact for Renesas technical support

Mail to : [support\\_apl@renesas.com](mailto:support_apl@renesas.com)

### REVISION HISTORY

| Rev. | Date         | Description |                      |
|------|--------------|-------------|----------------------|
|      |              | Page        | Summary              |
| 1.00 | Jul 08, 2002 | -           | First edition issued |
|      |              |             |                      |
|      |              |             |                      |

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