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April 1st, 2010
Renesas Electronics Corporation

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R8C/Tiny Series

General-purpose Program for Compressing BCD

1. Abstract

This program converts 2-digit unpacked BCD data into 1-digit packed BCD.

2. Introduction

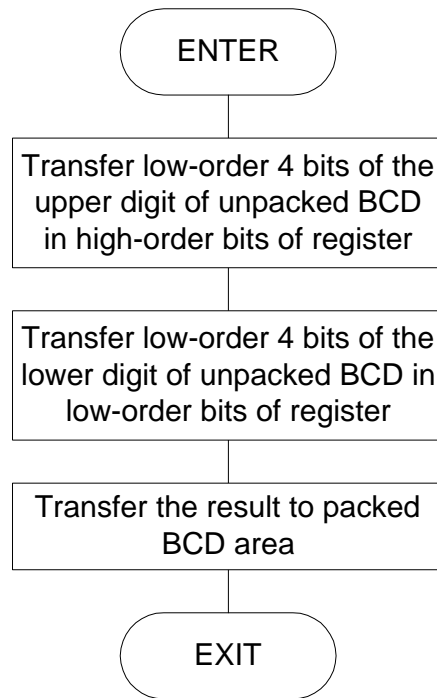
This program converts 2-digit unpacked BCD data into 1-digit packed BCD. Set the 2-digit unpacked BCD data in a variable area (UNPACK_BCDhi, UNPACK_BCDlow). When the program is executed, 1-digit packed BCD data is output to a variable area (PACK_BCD).

The program transfers the low-order 4 bits of the upper digit and the low-order 4 bits of the lower digit of the unpacked BCD in the high-order and the low-order bits of a data creation register by using a 4-bit manipulating instruction as it creates packed BCD.

Subroutine name : -	ROM capacity : 8 bytes
Interrupt during execution : Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0L	-	Packed BCD	Used to create data
R0H	-	-	Unused
R1	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	-	-	Unused
A1	-	-	Unused
UNPACK_BCDhi	Upper half of unpacked BCD	Does not change	←
UNPACK_BCDlow	Lower half of unpacked BCD	Does not change	←
PACK_BCD	-	Packed BCD	←
Usage precautions			

3. Flowchart



4. The example of a reference program

```

;*****
;
; M16C Program Collection No. 5
; CPU : R8C/Tiny
;
;*****
VramTOP .EQU 000400H ; USER PROGRAM RAM START ADDRESS
VromTOP .EQU 00D000H ; 12Kbyte Flash version
Vsb .EQU 000400H ; Sets SB
;
; .SECTION RAM,DATA
; .ORG VramTOP ; RAM area
UNPACK_BCDhi: .BLKB 1 ; Upper digit of unpacked BCD
UNPACK_BCDlow: .BLKB 1 ; Lower digit of unpacked BCD
PACK_BCD: .BLKB 1 ; Packed BCD
;=====
; Title: Compressing BCD
; Outline: Converts 2-digit unpacked BCD to 1-digit packed BCD.
; Input: -----> Output:
; R0L ( ) R0L (Packed BCD)
; R0H ( ) R0H (Unused)
; R1L ( ) R1L (Unused)
; 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
; .SB Vsb ; Declares SB register value
; .SBSYM UNPACK_BCDhi
; .SBSYM UNPACK_BCDlow
; .SBSYM PACK_BCD
LDC #Vsb,SB
;
; MOVLH UNPACK_BCDhi,R0L
; MOVLL UNPACK_BCDlow,R0L
; MOV.B R0L,PACK_BCD
;
; .END

```

5. Reference

SOFTWARE MANUAL

R8C/Tiny 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

REVISION HISTORY

Rev.	Date	Description	
		Page	Summary
1.00	Dec 24, 2003	-	First edition issued

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