

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

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Renesas Electronics Corporation

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## R8C/Tiny Series

### General-purpose Program for Subtracting 32 Bits

#### 1. Abstract

This program performs a 32-bit unsigned subtraction using registers.

This program performs a 32-bit unsigned subtraction between memory locations.

#### 2. Introduction

This program performs a 32-bit unsigned subtraction using registers. Set the minuend in R2 and R0 and the subtrahend in R3 and R1 beginning with the upper half, respectively. The subtraction result is output to R2 and R0 beginning with the upper half and borrow information to the C flag, respectively.

This program performs a 32-bit unsigned subtraction between memory locations. Set the least significant memory address of the minuend and that of the subtrahend in the address registers. The subtraction result is output to the minuend's memory location and borrow information to the C flag, respectively.

C	Meaning
0	With borrow
1	Without borrow

#### (1) 32-bit subtraction (register)

Subroutine name : SUBTRACT32	ROM capacity : 5 bytes
Interrupt during execution : Accepted	Number of stacks used : None

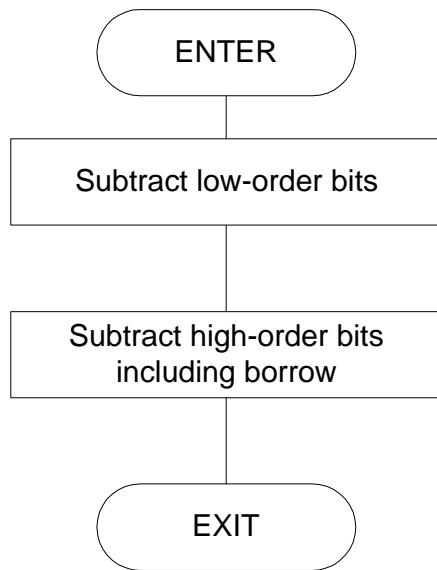
Register/memory	Input	Output	Usage condition
R0	Lower half of minuend	Lower half of subtraction result	←
R1	Lower half of subtrahend	Does not change	←
R2	Upper half of minuend	Upper half of subtraction result	←
R3	Upper half of subtrahend	Does not change	←
A0	-	-	Unused
A1	-	-	Unused
C flag	-	Borrow information	←
Usage precautions	The minuend is destroyed as a result of program execution.		

**(2) 32-bit subtraction (memory)**

Subroutine name : SUBTRACTmemory32	ROM capacity : 7 bytes
Interrupt during execution : Accepted	Number of stacks used : None

Register/memory	Input	Output	Usage condition
R0	-	-	Unused
R1	-	-	Unused
R2	-	-	Unused
R3	-	-	Unused
A0	Minuend address	Does not change	←
A1	Subtrahend address	Does not change	←
Memory indicated by A0	Minuend	Subtraction result	←
Memory indicated by A1	Subtrahend	Does not change	←
C flag	-	Borrow information	←
Usage precautions	The minuend is destroyed as a result of program execution.		

**3. Flowchart**



#### 4. Reference Program

Please find the reference program from the following URL.

[http://www.renesas.com/fmwk.jsp?cnt=Application\\_Notes.jsp&fp=/products/mpumcu/m16c\\_family/r8c\\_tiny\\_series/&dscl=disclaimer8.html&title=Application%20Notes&lid=81](http://www.renesas.com/fmwk.jsp?cnt=Application_Notes.jsp&fp=/products/mpumcu/m16c_family/r8c_tiny_series/&dscl=disclaimer8.html&title=Application%20Notes&lid=81)

#### 5. Reference

SOFTWARE MANUAL

R8C/Tiny Series SOFTWARE MANUAL

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

#### 6. Website and contact for support

Renesas Web-site

<http://www.renesas.com>

Contact for Renesas technical support

csc@renesas.com

## REVISION HISTORY

Rev.	Date	Description	
		Page	Summary
1.00	Dec 24, 2003	-	First edition issued
1.10	Nov 11, 2005	Page 3	Chapter 4, source program of reference program deleted Downloads page described on this page.
		Page 3	Chapter 6, website and contact for support revised
		-	Source program revised

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