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H8/300L Super Low Power 系列

ASCII 码转换为 1 个字节的 16 进制数

要点

将 ASCII 码‘0’～‘9’和‘A’～‘F’转换为 1 个字节的 16 进制数。

动作确认器件

H8/38024

目录

1. 参数

内容		保存位置	数据长度（字节）
输入	ASCII 码	R0L	1
输出	1 个字节的 16 进制数	R0L	1
	有无转换	C 标志（CCR）	—

2. 内部寄存器变化和标志变化

R0		R1
•	○	•
R2		R3
•		•
R4		R5
•		•
R6		R7
•		•

I	U	H	U
•	•	×	•
N	Z	V	C
×	×	×	×

•：不变，×：不定，○：结果

3. 程序设计

程序存储器（字节）
24
数据存储器（字节）
0
堆栈（字节）
0
时钟周期数
38
重入
可
再定位
可
中途中断
可

4. 说明

4.1 功能

(1) 参数的详细内容如下：

R0L：设定 ASCII 码。执行软件 NIBBLE 后，设定 1 个字节的 16 进制数。

C 标志（CCR）：输出参数，表示软件 NIBBLE 执行后的状态。

C 标志= 1：表示 ASCII 码不为‘0’～‘9’和‘A’～‘F’。

C 标志= 0：表示 ASCII 码为‘0’～‘9’或者‘A’～‘F’。

(2) 软件 NIBBLE 的执行例子如图 7-1 所示。一旦如①设定输入参数，就如②将已转换为 1 个字节的 16 进制数的数据（H’0F）设定到 R0L。

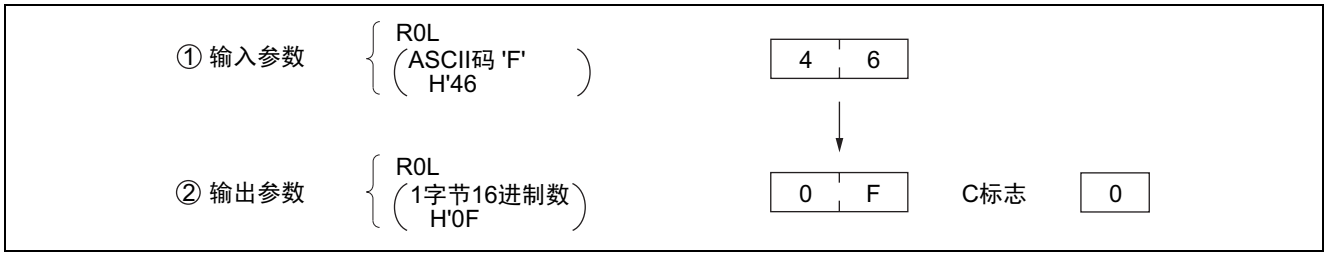


图 7-1 执行软件 NIBBLE 的例子

4.2 使用时的注意

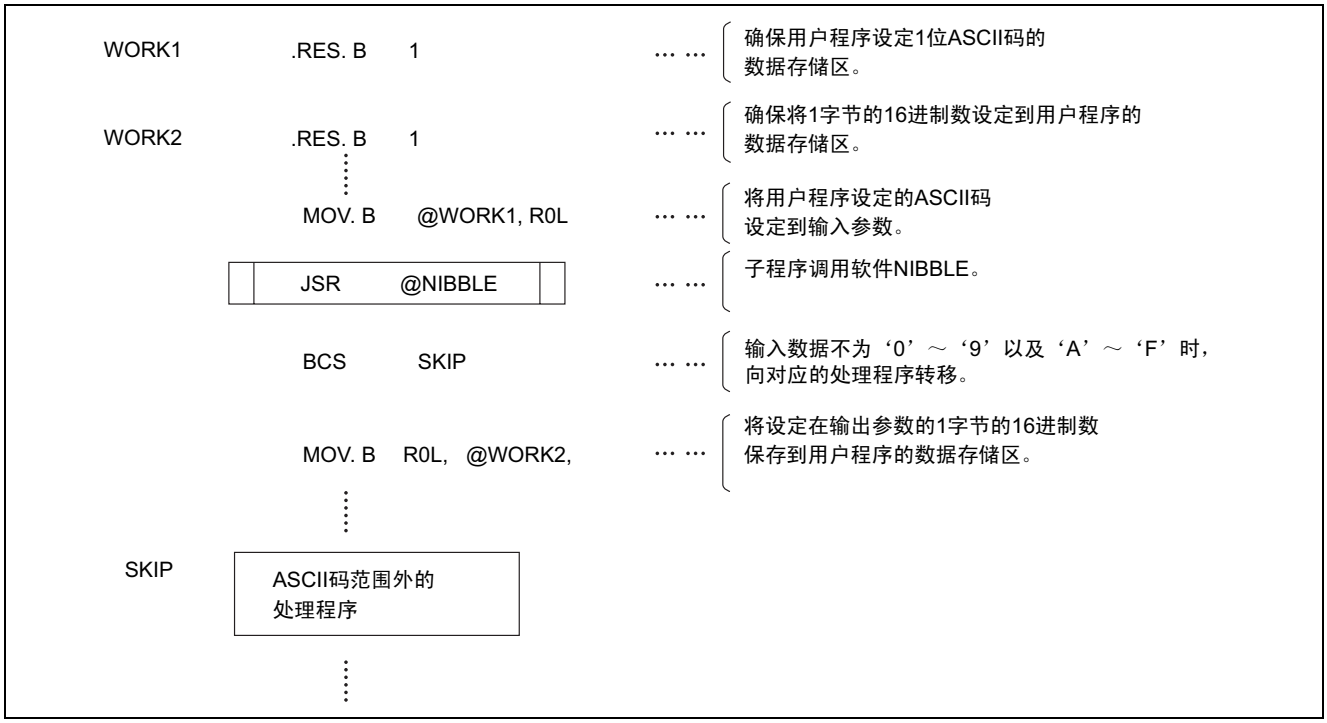
如果将‘0’～‘9’和‘A’～‘F’的 ASCII 码以外的数据设定到 R0L，就在执行软件 NIBBLE 后，R0L 的数据被破坏。

4.3 数据存储器的说明

软件 NIBBLE 不使用数据存储器。

4.4 使用例

设定 ASCII 码，子程序调用软件 NIBBLE。



4.5 工作原理

(1) 以 R0L 数据的运算结果 C 标志为基础，判断被设定在 R0L 的数据是否在表 7-1 的 ASCII 码表的‘0’～‘F’范围内（表 7-1 的□的部分）。

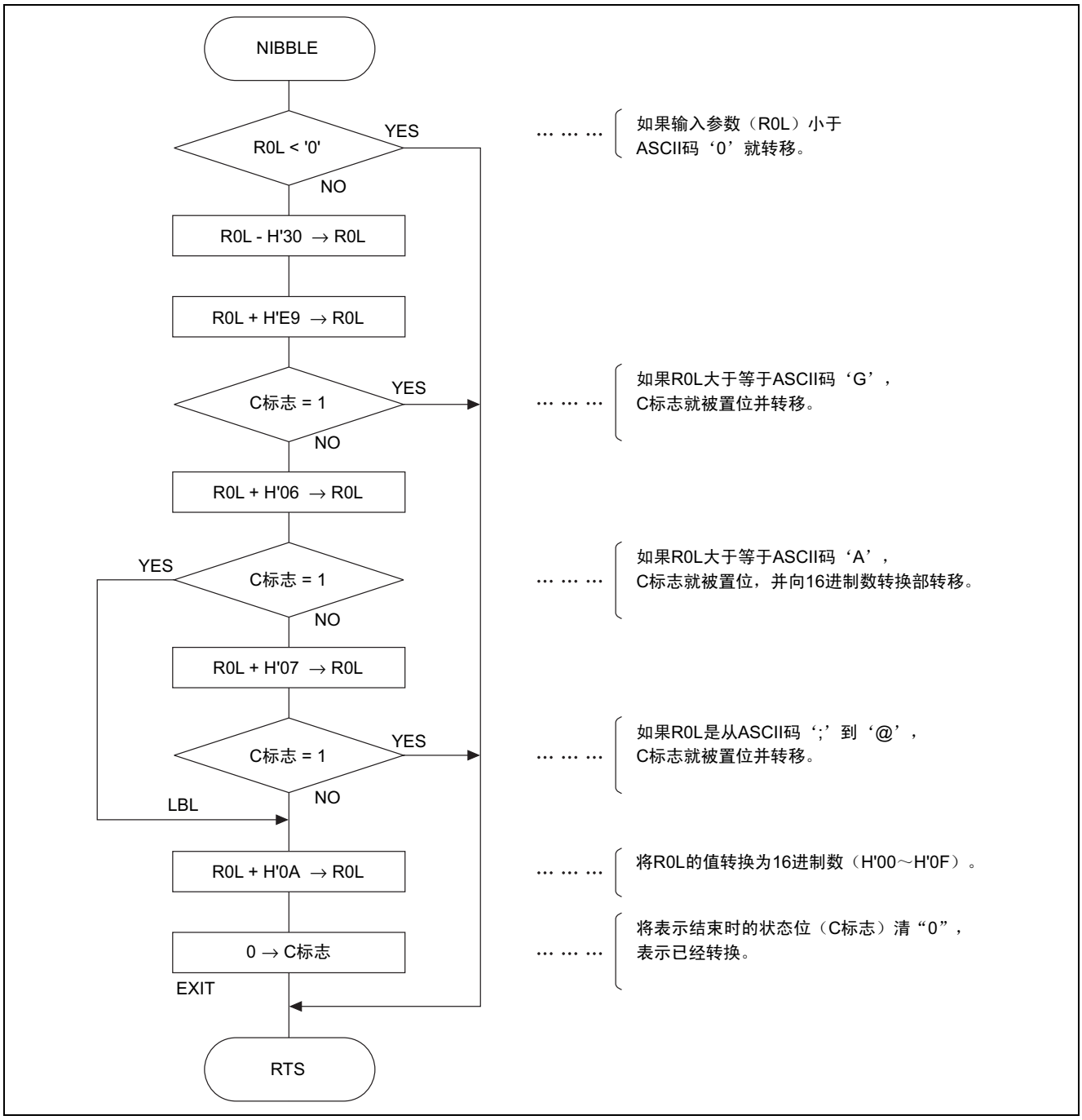
(2) 进行运算，删除‘:’～‘@’（表 7-1 的□的部分）。

(3) ‘0’～‘9’、‘A’～‘F’以外的情况，在判断(1)、(2)的过程中，将 C 标志置“1”。

表 7-1 ASCII 码表

MSD / LSD	0 0 0 0	1 0 0 1	2 0 1 0	3 0 1 1	4 1 0 0	5 1 0 1	6 1 1 0	7 1 1 1
0 0000	NUL	DLE	SP	0	@	P	`	p
1 0001	SOH	DC_1	!	1	A	Q	a	q
2 0010	STX	DC_2	"	2	B	R	b	r
3 0011	ETX	DC_3	#	3	C	S	c	s
4 0100	EOT	DC_4	$	4	D	T	d	t
5 0101	ENG	NAK	%	5	E	U	e	u
6 0110	ACK	SYN	&	6	F	V	f	v
7 0111	BEL	ETB	'	7	G	W	g	w
8 1000	BS	CAN	(	8	H	X	h	x
9 1001	HT	EM	)	9	I	Y	i	y
A 1010	LF	SUB	*	:	J	Z	j	z
B 1011	VT	ESC	+	;	K	[	k	{
C 1100	FF	FS	,	<	L	\	l	|
D 1101	CR	GS	-	=	M	]	m	}
E 1110	SO	RS	•	>	N	↑	n	~
F 1111	SI	VS	/	?	O	←	o	DEL

5. 流程图


NIBBLE
R0L < '0'
YES
NO
R0L - H'30 → R0L
R0L + H'E9 → R0L
C标志 = 1
YES
NO
R0L + H'06 → R0L
C标志 = 1
YES
NO
R0L + H'07 → R0L
C标志 = 1
YES
NO
LBL
R0L + H'0A → R0L
0 → C标志
EXIT
RTS
… … …
如果输入参数（R0L）小于ASCII码‘0’就转移。
… … …
如果R0L大于等于ASCII码‘G’，C标志就被置位并转移。
… … …
如果R0L大于等于ASCII码‘A’，C标志就被置位，并向16进制数转换部转移。
… … …
如果R0L是从ASCII码‘;’到‘@’，C标志就被置位并转移。
… … …
将R0L的值转换为16进制数（H'00～H'0F）。
… … …
将表示结束时的状态位（C标志）清“0”，表示已经转换。

6. 程序清单

```
*** H8/300 ASSEMBLER    VER 1.0B **   08/18/92 20:08:15
PROGRAM NAME =
1                           ;*********************************************************************
2                           ;*
3                           ;*   00 – NAME                  :CHANGE 1 BYTE ASCII CODE
4                           ;*                               TO 4 BIT HEXAGON (NIBBLE)
5                           ;*
6                           ;*********************************************************************
7                           ;*
8                           ;*   ENTRY             :R0L              (1 BYTE ASCII CODE)
9                           ;*
10                          ;*   RETURN            :R0L              (4 BIT HEXADECIMAL)
11                          ;*                     C flag of CCR     (C=0;FALSE , C=1;TRUE)
12                          ;*
13                          ;*********************************************************************
14                          ;
15 NIBBLE_c C 0000               .SECTION          NIBBLE_code,CODE,ALIGN=2
16                               .EXPORT           NIBBLE
17                          ;
18 NIBBLE_c C 0000          NIBBLE
19 NIBBLE_c C 0000 F030          MOV.B   #H'30,R0H
20 NIBBLE_c C 0002 1808          SUB.B   R0H,R0L            ;R0L - #H'30 -> R0L
21 NIBBLE_c C 0004 4510          BCS     EXIT               ;Branch if R0L<'0'
22 NIBBLE_c C 0006 88E9          ADD.B   #H'E9,R0L
23 NIBBLE_c C 0008 450C          BCS     EXIT               ;Branch if R0L<'F'
24 NIBBLE_c C 000A 8806          ADD.B   #H'06,R0L
25 NIBBLE_c C 000C 4504          BCS     LBL                ;Branch if R0L<=H'FF
26 NIBBLE_c C 000E 8807          ADD.B   #H'07,R0L
27 NIBBLE_c C 0010 4504          BCS     EXIT               ;Branch if R0L<=H'FF
28 NIBBLE_c C 0012          LBL
29 NIBBLE_c C 0012 880A          ADD.B   #H'0A,R0L          ;Change R0L to ASCII CODE
30 NIBBLE_c C 0014 06FE          ANDC    #H'FE,CCR          ;Clear C flag of CCR
31 NIBBLE_c C 0016          EXIT
32 NIBBLE_c C 0016 5470          RTS
33                          ;
34                               .END
*****TOTAL ERRORS       0
*****TOTAL WARNINGS     0
```

修订记录

Rev.	发行日	修订内容	
		页	修订要点
1.00	2005.07.29	—	初版发行

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