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April 1st, 2010
Renesas Electronics Corporation

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H8/300H SLP Series
Power-On Reset Operation Using External Circuit

Introduction
An external reset circuit consisting of a resistor, a capacitor, and two diodes is connected to perform power-on resets.

Target Device
H8/38076

Contents

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1. Specifications

- A reset circuit (RC diode circuit) consisting of a resistor, a capacitor, and two diodes is connected to the H8/38076 to perform power-on resets. Figure 1 shows an example of connecting the external RC diode circuit.
- The P93 pin outputs 0 after reset is canceled.

![Diagram of Microcomputer with External RC Diode Circuit](image-url)

**Figure 1** Connection of Microcomputer when External RC Diode Circuit Is Used
2. Description of Functions

2.1 Functions

1. This sample task connects an RC diode circuit to the H8/38076 to perform power-on resets. Figure 2 is a block diagram of the RC diode circuit and H8/38076. The block diagram of the H8/38076 is described below.

- Port data register 9 (PDR9)
  - To confirm reset cancellation, P93 of port 9 is set to 0.

- Port control register 9 (PCR9)
  - The P93 pin of port 9 is set as an output pin.

![Figure 2 Block Diagram of RC Diode Circuit and H8/38076](image-url)
3. Principles of Operation

Figure 3 shows a power-on reset using the RC diode circuit.

Figure 3  Principles of Operation
4. **Description of Software**

4.1 **Module**

Table 1 is a list of the module used for this sample task.

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Label Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main routine</td>
<td>main</td>
<td>Outputs 0 from the P93 pin.</td>
</tr>
</tbody>
</table>

4.2 **Arguments**

No arguments are used for this sample task.

4.3 **Internal Registers**

The internal registers used for this sample task are described below.

- **PDR9** Port data register 9 Address: H′FFDC

<table>
<thead>
<tr>
<th>Bit</th>
<th>Bit Name</th>
<th>Setting</th>
<th>R/W</th>
<th>Function</th>
</tr>
</thead>
</table>
| 3   | P93      | 0       | R/W | Port data register 93

P93 = 0: Causes the P93 pin to produce low-level output.
P93 = 1: Causes the P93 pin to produce high-level output.

- **PCR9** Port control register 9 Address: H′FFEC

<table>
<thead>
<tr>
<th>Bit</th>
<th>Bit Name</th>
<th>Setting</th>
<th>R/W</th>
<th>Function</th>
</tr>
</thead>
</table>
| 3   | PCR93    | 1       | R/W | Port control register 93

PCR93 = 0: Sets the P93 pin as a P93 input pin.
PCR93 = 1: Sets the P93 pin as a P93 output pin.

4.4 **RAM Usage**

This sample task does not cover RAM usage.
5. Flowchart

5.1 Main Routine

```
<table>
<thead>
<tr>
<th>Section</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV1</td>
<td>H’0000000</td>
</tr>
<tr>
<td>P</td>
<td>H’00001000</td>
</tr>
</tbody>
</table>
```
6. Program Listing

/************************************************************/
/*                                                          */
/* H8/300H Super Low Power Series -H8/38076- */
/* Application Note */
/* */
/* 'Power on reset check program' */
/* */
/* Function */
/* : Power on reset circuit */
/* */
/* External Clock : 10MHz */
/* Internal Clock : 10MHz */
/* Sub Clock : 32.768kHz */
/* */
/************************************************************/

#include <machine.h>

/************************************************************/
/* Symbol Definition */
/************************************************************/
struct BIT {
    unsigned char b7:1;       /* bit7 */
    unsigned char b6:1;       /* bit6 */
    unsigned char b5:1;       /* bit5 */
    unsigned char b4:1;       /* bit4 */
    unsigned char b3:1;       /* bit3 */
    unsigned char b2:1;       /* bit2 */
    unsigned char b1:1;       /* bit1 */
    unsigned char b0:1;       /* bit0 */
};

#define PDR9_BIT    (*(volatile struct BIT *)0xFFDC)        /* Port Data
 Register 9 */
#define P93         PDR9_BIT.b3                             /* Port Data
 Register 9 bit3 */
#define PCR9_BIT    (*(volatile struct BIT *)0xFFEC)        /* Port Control
 Register 9 */
#define PCR93       PCR9_BIT.b3                             /* Port Control
 Register 9 bit3 */

/************************************************************/
/* Function define */
/************************************************************/
void main ( void );

/************************************************************/
/* Vector Address */
/************************************************************/
#pragma section     V1                                      /* VECTOR SECTOIN
 SET */
void (*const VEC_TBL1[])(void) = {
main

#pragma entry main(sp=0xFF80)
#pragma section
    /* P */
    /******************************************************************************/
    /* Main Program */
    /******************************************************************************/
void main ( void )
{
    PCR93 = 1;
    P93 = 0;
    while(1);
}
### Revision Record

<table>
<thead>
<tr>
<th>Rev.</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>Sep.16.04</td>
<td>First edition issued</td>
</tr>
</tbody>
</table>

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