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H8SX Series

Short Address Access Switching

Introduction

As well as having an architecture that is upward-compatible with each CPU of the H8/300, H8/300H, and H8S series, so as to inherit a full complement of peripheral functions, the H8SX microcomputer series has a maximum operating frequency of 50 MHz and uses a 32-bit H8SX core CPU as well as an on-chip multiplier/divider to improve performance.

This H8SX series Application Note provides information you may be need during software and hardware design. This is a basic edition that provides operation examples that each use a single H8SX series on-chip peripheral function.

Although the operation of each program, circuit, and other aspects covered by this application note has been checked, make sure that you conduct your own operation checks before actually using the H8SX series.

Contents

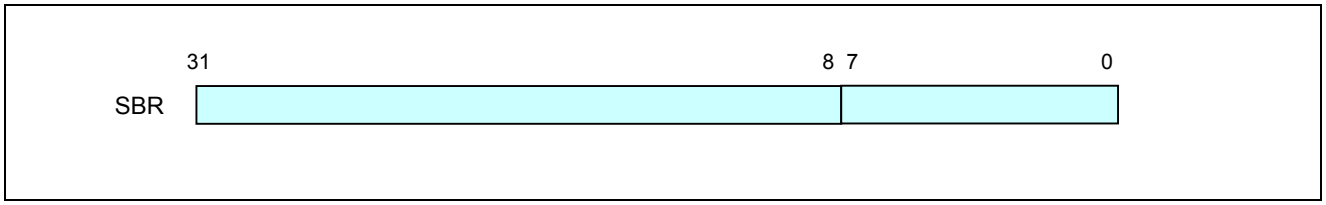
1. Overview

With the H8SX CPUs, you can set any 8-bit absolute address space.

With the conventional H8 series, the 8-bit absolute address space was fixed to an area between addresses H'FFFF00 and H'FFFFFF and overlaps with internal I/O space. With the H8SX, you can set a 256-byte area as the 8-bit absolute address space, starting at the address set in the SBR register.

2. Configuration

The short address base register (SBR) is a 32-bit register. The 24 high-order bits of this register are valid. The 8 low-order bits are reserved. A value of 0 is read if these bits are read.



The same value must be set in the SBR for all load modules. To access the SBR, use the STC.L and LDC.L instructions in an assembler file.

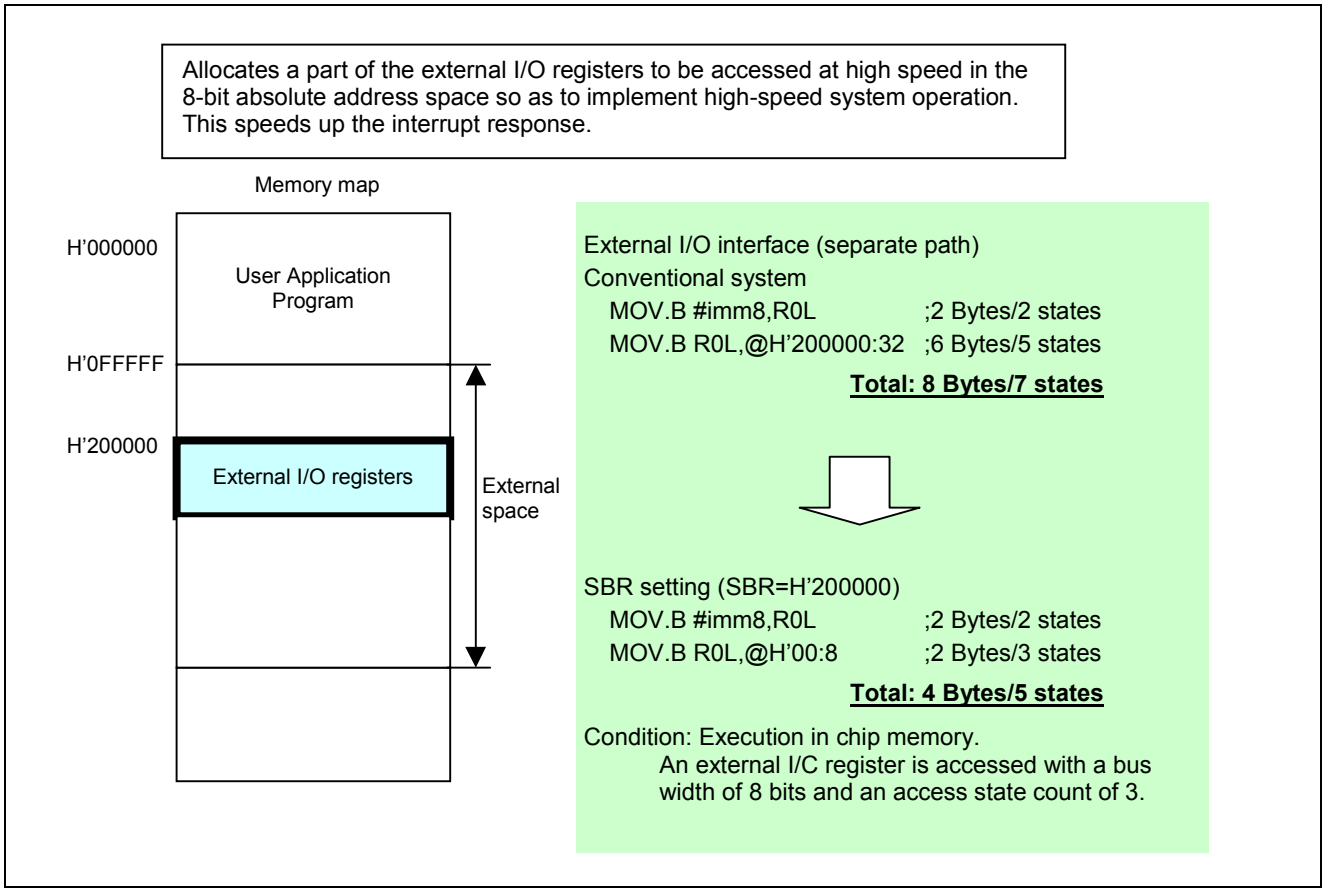


Figure 1 Example of Using the SBR

3. Sample Program

To access the short address base register, use an assembler instruction. You cannot directly access the SBR using an instruction written in C. The sample program shown below is a function-format assembler program that can be called from within a program written in C.

Function prototype

```
void changeSBR(unsigned long short_address )
```

Argument	Description
short_address	Sets a 32-bit value to be set in the SBR. The 8 low-order bits are ignored.

Return value	Description
None	—

A source program written in assembly language is shown below. The same value must be set in the SBR for all modules.

```
;
; void changeSBR(unsigned long short_address)
;
    .SECTION P,CODE,ALIGN=2
    .EXPORT  _changeSBR
;
_changeSBR  .EQU    $
    ; Uses the area at addresses from H'FF0000 to H'FF00FF as the 8-bit absolute address space.
    MOV.L  #H'FF0000,ER0
    AND.B  #H'00,R0L
    LDC.L  ER0,SBR
    RTS
;
    .END
```

Example)

An example of calling the above function is shown below:

```
#define SHORT_ADDRESS 0x00FF0000
extern void changeSBR(unsigned long);
void main(void)
{
      changeSBR((unsigned long)SHORT_ADDRESS);
}
```

Revision Record

		Description	
Rev.	Date	Page	Summary
1.00	Sept.19.03	—	First edition issued

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