

## EEPROM Series

# Difference between BR25H-2C, BR25H-W(C) and BR35H-WC

### Pin configuration and function

Regarding BR25H-W(C) and BR25H-2C, Pin3 and Pin7 are assigned as “WPB” and “HOLDB”, respectively.

Both terminals are assigned as NC (No Connection) for BR35H-WC.

Pin No.	BR25H-2C			BR25H-W(C)			BR35H-WC		
	pin name	I/O	function	pin name	I/O	function	pin name	I/O	function
1	CSB	I	Chip select input	CSB	I	Chip select input	CSB	I	Chip select input
2	SO	O	Serial data output	SO	O	Serial data output	SO	O	Serial data output
3	WPB	I	Write protect input. 1K/2K/4Kbit products; Write command is prohibited. 8Kbit≤products; Write status register command is prohibited.	WPB	I	Write protect input. 1K/2K/4Kbit products; Write command is prohibited. 8Kbit≤products; Write status register command is prohibited.	NC	–	NC (No Connection)
4	GND	–	All input/output reference voltage, 0V.	GND	–	All input/output reference voltage, 0V.	GND	–	All input/output reference voltage, 0V.
5	SI	I	Start bit, Opcode, address and serial data input.	SI	I	Start bit, Opcode, address and serial data input.	SI	I	Start bit, Opcode, address and serial data input.
6	SCK	I	Serial clock input	SCK	I	Serial clock input	SCK	I	Serial clock input
7	HOLDB	I	Hold input Command communications are suspended temporarily. (Hold status)	HOLDB	I	Hold input Command communications are suspended temporarily. (Hold status)	NC	–	NC (No Connection)
8	VCC	–	Supply Voltage	VCC	–	Supply Voltage	VCC	–	Supply Voltage
pin assignment									

### Command and Opcode

BR25H-2C and BR25H-W(C) have Write status register command “WRSR”, but BR35H-WC does not have this command.

Command	Function	Opcode							
		BR25H-2C, BR25H-W(C)						BR35H-WC	
		020(2Kbit)		040(4Kbit)		080(8Kbit)~		160(16Kbit)~128(128Kbit)	
WREN	Write enable	0000	*110	0000	*110	0000	0110	0000	0110
WRDI	Write disable	0000	*100	0000	*100	0000	0100	0000	0100
READ	Read	0000	*011	0000	A <sub>8</sub> 011	0000	0011	0000	0011
WRITE	Write	0000	*010	0000	A <sub>8</sub> 010	0000	0010	0000	0010
RDSR	Read status register	0000	*101	0000	*101	0000	0101	0000	0101
WRSR	Write status register	0000	*001	0000	*001	0000	0001	Not exist	

## Status register

Regarding BR25H-W(C) and BR25H-2C, status register bits [7], [3], and [2] are located in EEPROM and they are assigned WPEN (or 1), BP1, and BP2, respectively.

Regarding BR35H-WC, status register bits [7], [3], and [2] are fixed to "0".

BR25H-2C BR25H-W(C)	Status register[7:0]							
density	[7]	[6]	[5]	[4]	[3]	[2]	[1]	[0]
1Kbit	1	1	1	1	BP1	BP0	WEN	$\bar{R}/B$
2Kbit	1	1	1	1	BP1	BP0	WEN	$\bar{R}/B$
4Kbit	1	1	1	1	BP1	BP0	WEN	$\bar{R}/B$
8Kbit	WPEN	0	0	0	BP1	BP0	WEN	$\bar{R}/B$
16Kbit	WPEN	0	0	0	BP1	BP0	WEN	$\bar{R}/B$
32Kbit	WPEN	0	0	0	BP1	BP0	WEN	$\bar{R}/B$
64Kbit	WPEN	0	0	0	BP1	BP0	WEN	$\bar{R}/B$
128Kbit	WPEN	0	0	0	BP1	BP0	WEN	$\bar{R}/B$

BR35H-WC	Status register[7:0]							
density	[7]	[6]	[5]	[4]	[3]	[2]	[1]	[0]
16Kbit	0	0	0	0	0	0	WEN	$\bar{R}/B$
32Kbit	0	0	0	0	0	0	WEN	$\bar{R}/B$
64Kbit	0	0	0	0	0	0	WEN	$\bar{R}/B$
128Kbit	0	0	0	0	0	0	WEN	$\bar{R}/B$

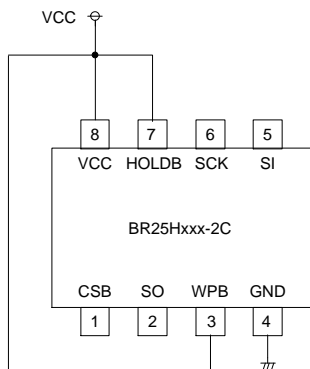
## Description of status register

bit	Memory location	Function	Description
WPEN	EEPROM	Write Protect pin Enable	WPB pin enable or disable designation bit invalid:WPEN=0 / valid:WPEN=1
BP1	EEPROM	Block protect1	EEPROM write disable block designation bit [BP1:BP0]=00 write enable for all address [BP1:BP0]=01 write disable in the 4th quarter of address [BP1:BP0]=10 write disable in the 2nd half of address [BP1:BP0]=11 write disable for all address
BP0	EEPROM	Block protect2	
WEN	Register	Write Enable	'write' and 'write status register' command enable or disable status confirmation bit. write (including status register) prohibited: WEN=0 write (including status register) permitted: WEN=1
$\bar{R}/B$	Register	Ready bar / Busy	write cycle status (Ready / Busy) confirmation bit Not in write cycle (Ready:command acceptable) =0 In write cycle (Busy :command unacceptable)=1

## Pin termination in case of replacement from BR35H-WC or BR25H-W(C) to BR25H-2C

BR25H-W(C) and BR35H-WC can be replaced with BR25H-2C.

In case of replacement from BR35H-WC, pin termination will be needed if WPB and HOLDB functions are not necessary.



pull-up resistors are not necessary

## Main electrical characteristics

BR25H-2C is characteristically upward compatible with BR25H-W(C) and BR35H-WC.

Parameter		BR25H-2C	BR25H-W(C)	BR35H-WC
electrical characteristics (DC)	input and output leak current	±2uA	±10uA	±10uA
	Operating timing characteristics (AC characteristics)	Data output delay time1	60ns	70ns
Data output delay time1 (CL2=30pF)		50ns	55ns	55ns
Time from HOLDB to Output change		60ns	70ns	—
Write time		4ms	5ms	5ms
Data retention	Ta ≤ 25°C	100years	40years	100years
	Ta ≤ 105°C	60years	—	60years
	Ta ≤ 125°C	50years	20years	50years
Write cycles	Ta ≤ 85°C	1,000,000cycles	1,000,000cycles	1,000,000cycles
	Ta ≤ 105°C	500,000cycles	500,000cycles	500,000cycles
	Ta ≤ 125°C	300,000cycles	300,000cycles	300,000cycles

## Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.  
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products specified in this document are not designed to be radiation tolerant.
- 7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 10) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 11) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.
- 12) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 13) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

## ROHM Customer Support System

<http://www.rohm.com/contact/>