

DDR BUFFER FOR SIS CHIPSET

W83176R-716

Data Sheet Revision History

	Pages	Dates	Version	Version	Main Contents
				On Web	
1	n.a.			n.a.	All of the versions before 0.50 are for internal use.
2	n.a.	02/Apr	1.0	1.0	Change version and version on web site to 1.0
3					
4					
5					
6					
7					
8					
9					
10					

Please note that all data and specifications are subject to change without notice. All the trademarks of products and companies mentioned in this data sheet belong to their respective owners.

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Winbond customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Winbond for any damages resulting from such improper use or sales.



1.0 GENERAL DESCRIPTION

The W83176R-716 is a 2.5V D.D.R. Clock buffer designed for SiS chipset. W83176R-716 can support 2 D.D.R. DRAM DIMMs. W83176R-716 can be incorporated with W83194BR-640/740 which is the step-less clock with free programmable CPU/AGP/PCI freq. outputs.

The W83176R-716 provides I²C serial bus interface to program the registers to enable or disable each clock outputs. The W83176R-716 accepts a pair reference clock as its input and runs on 2.5V supply.

2.0 PRODUCT FEATURES

- Zero-delay clock outputs
- Feedback pins for synchronous
- Supports 2 D.D.R. DIMMs
- One pairs of additional outputs for feedback
- Low Skew outputs (< 100ps)
- Supports 266MHz D.D.R. SDRAM
- I²C 2-Wire serial interface and I²C read back
- 28-pin SSOP package



3.0 PIN CONFIGURATION

CLKC0	1 • 2	28	GND
CLKT0	2 2	27	CLKC5
VDD	3 2	26	CLKT5
CLKT1	4 2	25	CLKC4
CLKC1	5 2	24	CLKT4
GND	6 2	23	VDD
SDCLK	7 2	22	SDATA
Buffer_INT	8 2	21	NC
NC	9 2	20	FB_INT
VDDA	10	19	FB_OUTT
GND	11 [·]	18	NC
VDD	12	17	CLKT3
CLKT2	13	16	CLKC3
CLKC2	14	15	GND

4.0 PIN DESCRIPTION

IN - Input OUT - Output I/O - Bi-directional Pin - Internal 120kΩ pull-up

- 3 -



4.1 Clock Outputs

SYMBOL	PIN	I/O	FUNCTION
CLKC[5:0]	1,5,14,16,25, 27	OUT	Complementory Clocks of differential pair outputs
CLKT[5:0]	2,4,13,17,24, 26	OUT	True Clocks of differential pair outputs
SDATA	22	I/O	Serial data of I ² C 2-wire control interface
SDCLK	7	IN	Serial clock of I ² C 2-wire control interface
Buffer_INT	8	IN	True reference clock input
NC	9, 18, 20	IN	Not connected
FB_OUTT	19	OUT	True Feedback output, dedicated for external feedback. It switches at the same frequency as the CLK. This output must be wired to FB_INT.
FB_INC	21	IN	Complementory Feedback input, provides feedback signal to the internal PLL for synchronization with CLK_INC to eliminate phase error.

4.2 Power Pins

SYMBOL	PIN	FUNCTION
GND	6,11,15,28	Ground
VDD	3,12,23	Power Supply 2.5V
AVDD	10	Analog power supply, 2.5V



5.1 Register 0 : Control Register (1 = active, 0 = inactive)

Bit	@PowerUp	Pin	Description	
7	1	1,2	CLKC0,CLKT0(Active / Inactive)	
6	1	4,5	CLKC1,CLKT1(Active / Inactive)	
5	1	13,14	CLKC2,CLKT2(Active / Inactive)	
4	1	16,17	CLKC3,CLKT3(Active / Inactive)	
3	1	24,25	CLKC4,CLKT4(Active / Inactive)	
2	1	26,27	CLKC5,CLKT5(Active / Inactive)	
1	1	-	Reserved	
0	1	-	Reserved	

5.2 Register 1: Reserved Register (default = 1)

Bit	@PowerUp	Pin	Description
7	1	-	Reserved (Skew Control ??)
6	1	-	Reserved
5	1	-	Reserved
4	1	-	Reserved
3	1	-	Reserved
2	1	-	Reserved
1	1	-	Reserved
0	1	-	Reserved

5.3 Register 2: Reserved Register (default = 1)

Bit	@PowerUp	Pin	Description
7	1	-	Reserved
6	1	-	Reserved
5	1	-	Reserved
4	1	-	Reserved
3	1	-	Reserved
2	1	-	Reserved
1	1	-	Reserved
0	1	-	Reserved



Bit	@PowerUp	Pin	Description
7	1	-	Reserved
6	1	-	Reserved
5	1	-	Reserved
4	1	-	Reserved
3	1	-	Reserved
2	1	-	Reserved
1	1	-	Reserved
0	1	-	Reserved

5.4 Register 3: Reserved Register (default = 1)

6.0 ORDERING INFORMATION

Part Number	Package Type	Production Flow
W83176R-716	28 PIN SSOP	Commercial, 0°C to +70°C

7.0 HOW TO READ THE TOP MARKING



1st line: Winbond logo and the type number: W83176R-716 2nd line: Tracking code <u>2 8051234</u>

2: wafers manufactured in Winbond FAB 2

8051234: wafer production series lot number

3rd line: Tracking code 814 G B B

814: packages made in '98, week 14

- <u>**G**</u>: assembly house ID; O means OSE, G means GR
- A: Internal use code
- **<u>B</u>**: IC revision

All the trade marks of products and companies mentioned in this data sheet belong to their respective owners.



8.0 PACKAGE DRAWING AND DIMENSIONS

28pin 209mil



No. 4, Creation Rd. III Science-Based Industrial Park Hsinchu, Taiwan TEL: 886-35-770066 FAX: 886-35-789467 www: http://www.winbond.com.tw/

Taipei Office

9F, No. 480, Rueiguang Road, Neihu District, Taipei, 114, Taiwan TEL: 886-2-81777168 FAX: 886-2-87153579 Rm. 803, World Trade Square, Tower II 123 Hoi Bun Rd., Kwun Tong Kowloon, Hong Kong TEL: 852-27516023-7 FAX: 852-27552064 (North America) Corp. 2727 North First Street

San Jose, California 95134 TEL: 1-408-9436666 FAX: 1-408-9436668

Please note that all data and specifications are subject to change without notice. All the trade marks of products and companies mentioned in this data sheet belong to their respective owners.

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Winbond customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Winbond for any damages resulting from such improper use or sale.