Winbond Electronics Corp.

DDR BUFFER FOR SIS CHIPSET

W83176R-716

Data Sheet Revision History

	Pages	Dates	Version	Version On Web	Main Contents
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					

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.

Publication Release Date: April. 2001
Revision 1.0

1.0 GENERAL DESCRIPTION

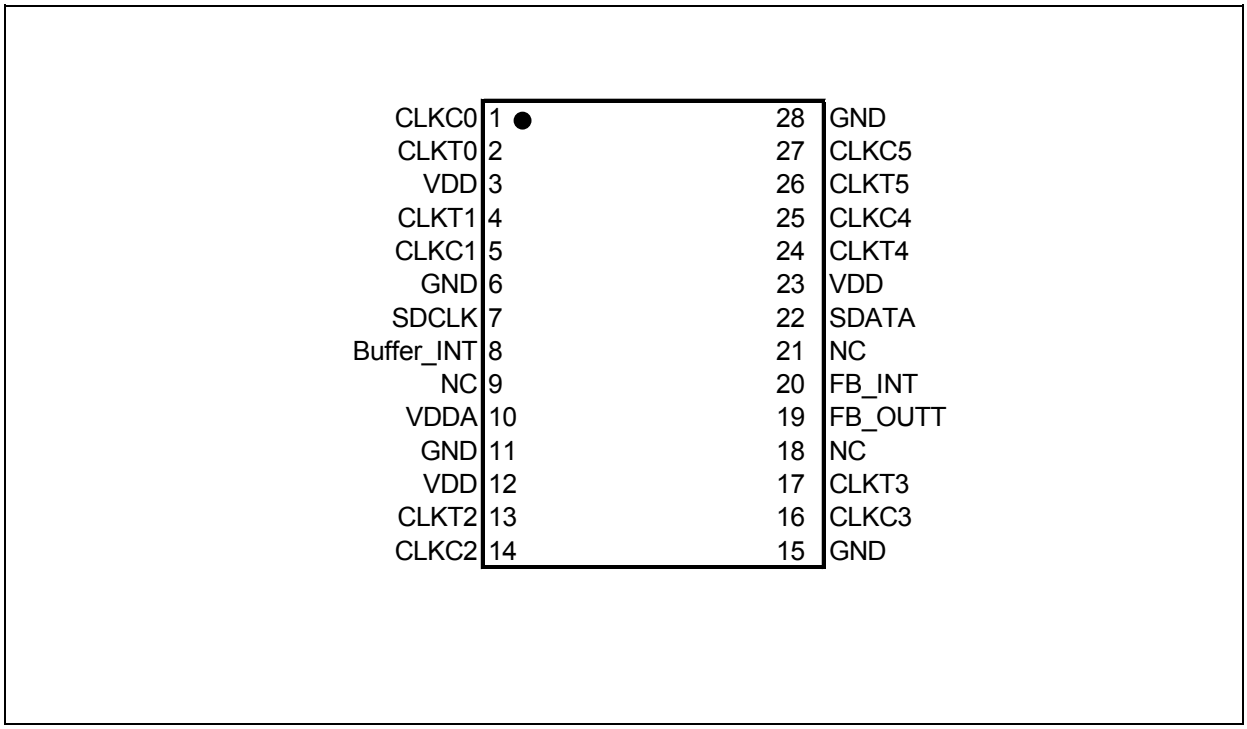
The W83176R-716 is a 2.5V D.D.R. Clock buffer designed for SiS chipset. W83176R-716 can support 2 D.D.R. DRAM DIMMs. W83176R-716 can be incorporated with W83194BR-640/740 which is the step-less clock with free programmable CPU/AGP/PCI freq. outputs.

The W83176R-716 provides I^2C 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
- I^2C 2-Wire serial interface and I^2C read back
- 28-pin SSOP package

3.0 PIN CONFIGURATION



4.0 PIN DESCRIPTION

IN - Input

OUT - Output

I/O - Bi-directional Pin

- Internal 120kΩ pull-up

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^2C 2-wire control interface
SDCLK	7	IN	Serial clock of I^2C 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

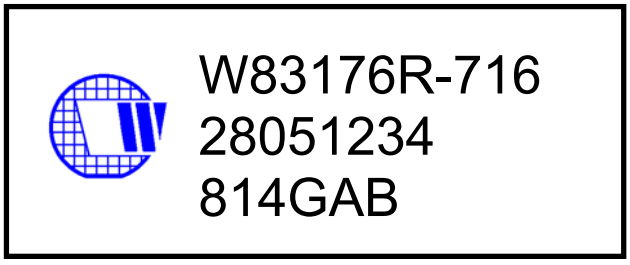
5.4 Register 3: Reserved Register (default = 1)

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

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 2 8051234

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

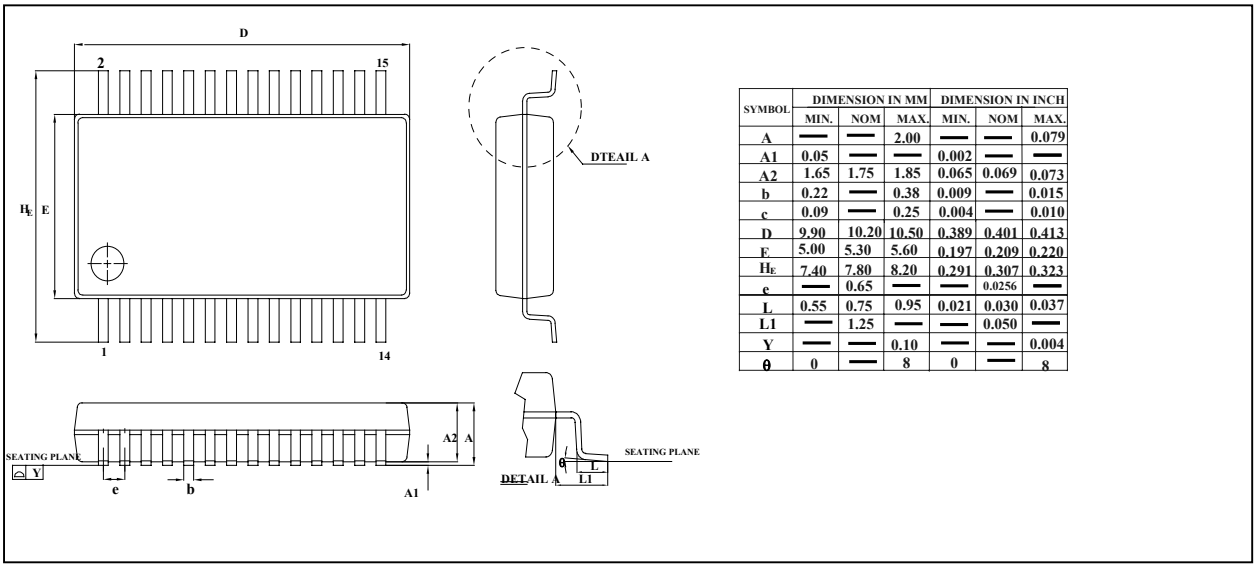
G: assembly house ID; O means OSE, G means GR

A: Internal use code

B: IC revision

8.0 PACKAGE DRAWING AND DIMENSIONS

28pin 209mil



SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM	MAX.	MIN.	NOM	MAX.
A	—	—	2.00	—	—	0.079
A1	0.05	—	—	0.002	—	—
A2	1.65	1.75	1.85	0.065	0.069	0.073
b	0.22	—	0.38	0.009	—	0.015
c	0.09	—	0.25	0.004	—	0.010
D	9.90	10.20	10.50	0.389	0.401	0.413
E	5.00	5.30	5.60	0.197	0.209	0.220
H_E	7.40	7.80	8.20	0.291	0.307	0.323
e	—	0.65	—	—	0.0256	—
L	0.55	0.75	0.95	0.021	0.030	0.037
L1	—	1.25	—	—	0.050	—
Y	—	—	0.10	—	—	0.004
θ	0	—	8	0	—	8

Winbond Electronics Corp.

Headquarters

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

Winbond Electronics (H.K.) Ltd.

Rm. 803, World Trade Square, Tower II
123 Hoi Bun Rd., Kwun Tong
Kowloon, Hong Kong
TEL: 852-27516023-7
FAX: 852-27552064

Winbond Electronics
(North America) Corp.

2727 North First Street
San Jose, California 95134
TEL: 1-408-9436666
FAX: 1-408-9436668