



Winbond
Bus Termination Regulator
W83310S-R/N

Date: April 13, 2005 Revision: 1.0



Table of Content-

1.	GENERAL DESCRIPTION.....	1
2.	FEATURES.....	1
3.	APPLICATIONS.....	1
4.	PIN CONFIGURATION AND DESCRIPTION.....	2
5.	APPLICATION CIRCUIT	3
6.	INTERNAL BLOCK DIAGRAM.....	5
7.	ELECTRICAL CHARACTERISTICS.....	6
8.	TYPICAL OPERATING WAVEFORM.....	7
9.	PACKAGE DIMENSION.....	10
10.	ORDERING INFORMATION.....	11
11.	HOW TO READ THE TOP MARKING.....	11
12.	REVISION HISTORY	12

EEPW.com.cn 电子产品世界

1. GENERAL DESCRIPTION

The W83310S-R/N is a linear regulator which provides achieves 1.5Amp bi-directional sinking and driving capability for DDR SDRAM bus terminator application. The chip simply implement a stable power supply which can track half of input power dynamically for bus terminator with a single chip; that is the chip integrates two power MOSFETs. There is no any external power device needed. The W83310S-R/N is promoted with small footprint 8-SOP 150mil package. With W83301S-R/N design, a high integration, high performance, and cost-effective solution is promoted.

2. FEATURES

- ❖ Regulates a bi-directional power with driving and sinking capability
- ❖ Provides achieve 1.5Amp driving and sinking current
- ❖ Power MOSFET integrated
- ❖ Low external component count
- ❖ Low output voltage offset
- ❖ Operates with +5V,+3.3V and +2.5V power
- ❖ Small package
- ❖ Low cost and easy to use

3. APPLICATIONS

- ❖ DDR Bus Termination Regulator
- ❖ Active Termination Bus
- ❖ SSTL-2
- ❖ SSTL-3

4. PIN CONFIGURATION AND DESCRIPTION

- W83310S-R



SYMBOL	PIN	FUNCTION
VIN	1	Power input pin.
GND	2	Ground.
VREF	3	Reference voltage and Chip enable.
VOUT	4	Output voltage.
VCNTL	5	Gate drive voltage.
VCNTL	6	Gate drive voltage.
VCNTL	7	Gate drive voltage.
VCNTL	8	Gate drive voltage.

- W83310S-N

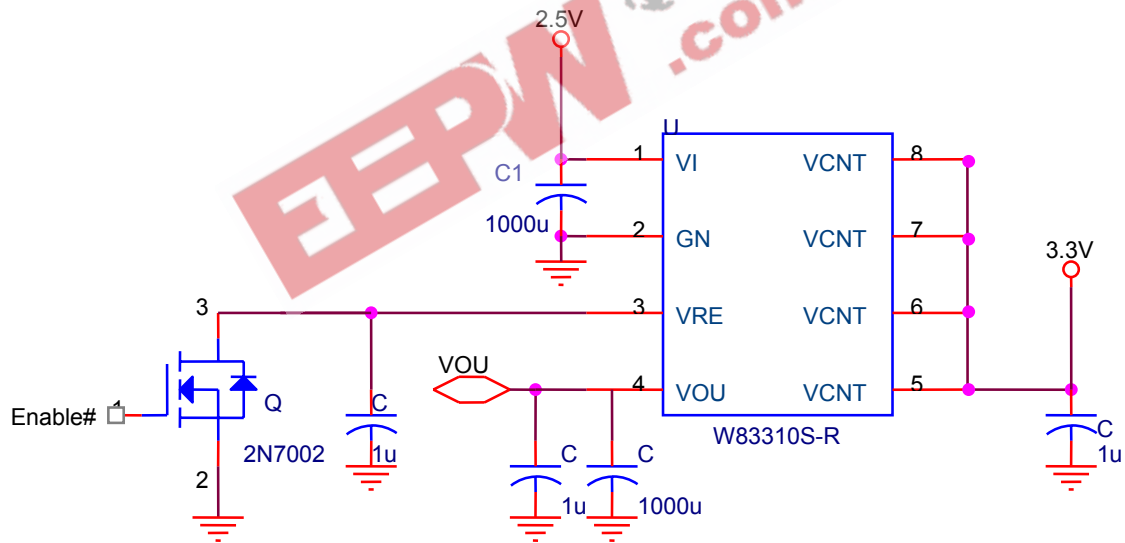




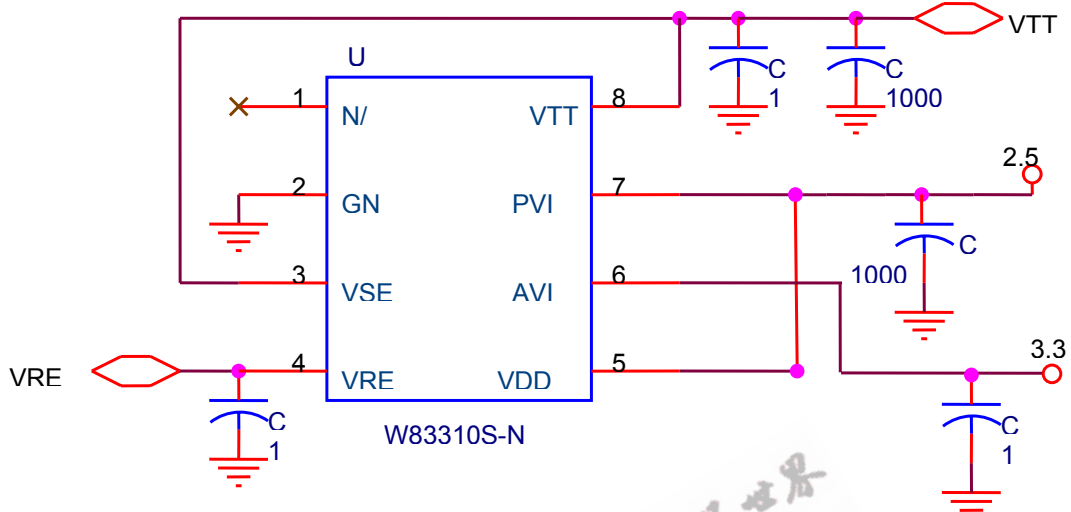
SYMBOL	PIN	FUNCTION
N/C	1	No internal connection.
GND	2	Ground.
VSENSE	3	Feedback pin for regulating VTT.
VREF	4	Internal reference voltage of VDDQ/2.
VDDQ	5	Input for internal reference equal to VDDQ/2.
AVIN	6	Analog input pin.
PVIN	7	Power input pin.
VTT	8	Output voltage for connection to termination resistors.

5. APPLICATION CIRCUIT

- W83310S-R



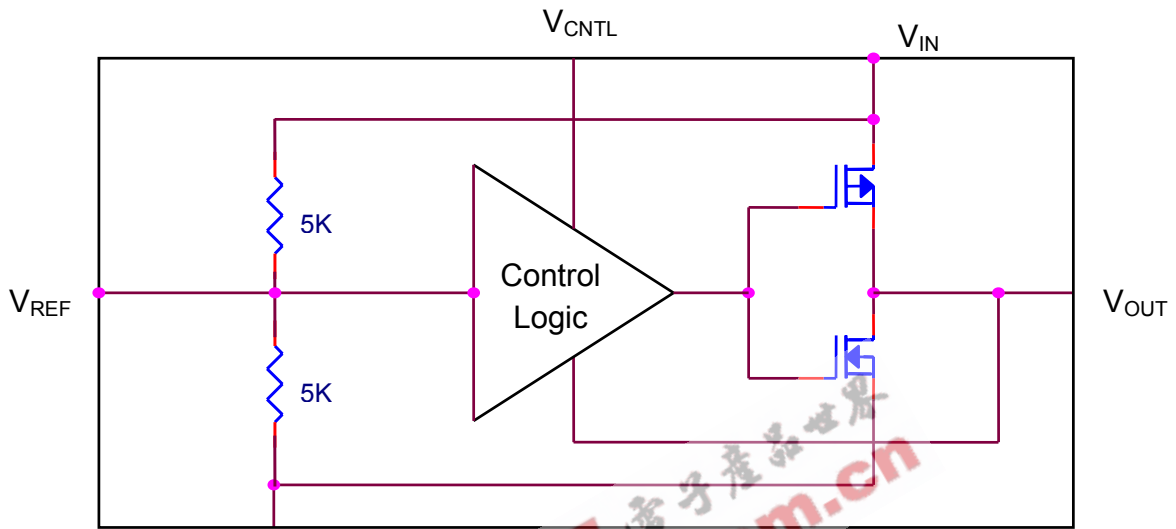
- W83310S-N



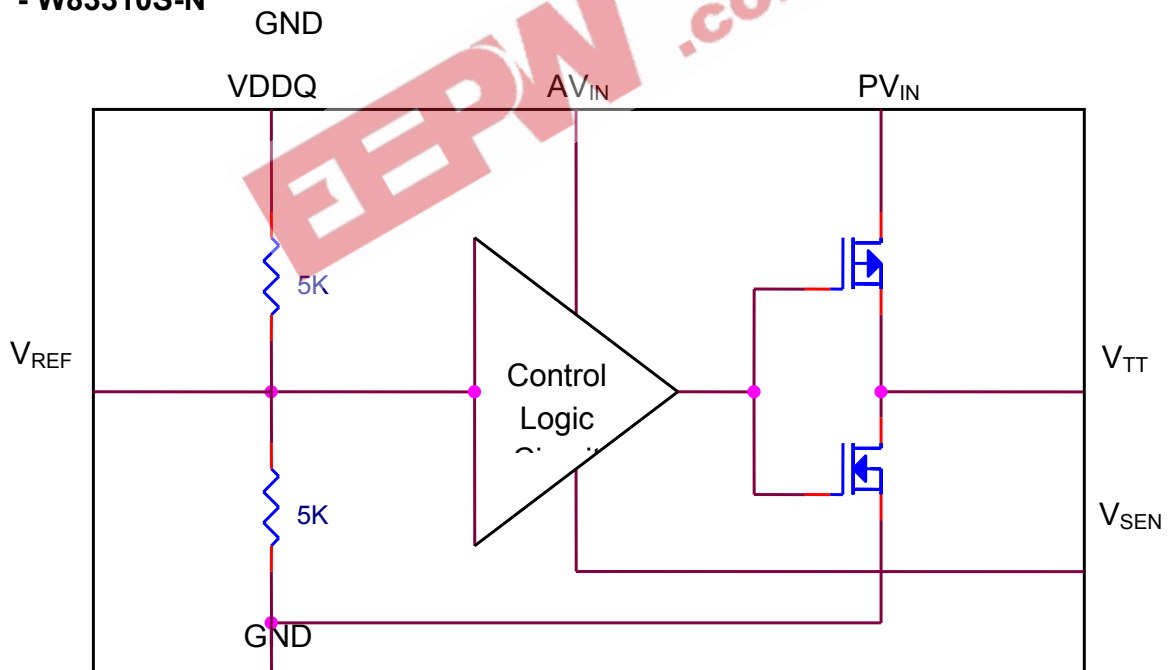
EEPW 电子产品世界 .com.cn

6. INTERNAL BLOCK DIAGRAM

- W83310S-R



- W83310S-N





7. ELECTRICAL CHARACTERISTICS

AC CHARACTERISTICS

W83310S-R						
$V_{IN}=2.5V, V_{CNTL}=3.3V, V_{REF}=1.25V, C_{out}=100\mu F, T_A = 0^\circ C \text{ to } +70^\circ C$						
Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Output Offset Voltage	V_{OS}	-5	0	+5	mV	$I_{OUT}=0A$
Load Regulation			0.8		%	Loading: $0A \rightarrow 1.5A$
			0.8			Loading: $0A \rightarrow -1.5A$
Input Voltage Range	V_{IN}		2.5		V	
	V_{CNTL}		3.3			
Operating Current of VCNTL	I_{CNTL}		0.5	1	mA	No Load ($I_{OUT}=0A$)
Shutdown Threshold Trigger		0.4			V	Output=High
				0.1	V	Output=Low
Shutdown Current	I_{SHDN}		10		μA	$V_{REF}<0.2V$ Loading= $0.7A$

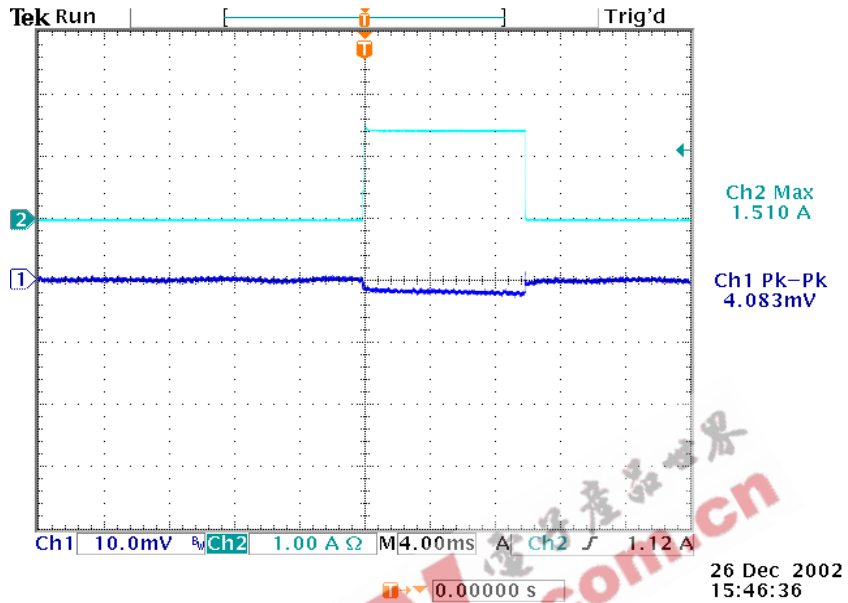
Note: Load regulation is tested with a 10ms pulse current and measuring V_{OUT} .

W83310S-N						
$A_{VIN}=3.3V; P_{VIN}=2.5V \text{ is recommended}, V_{DDQ}=2.5V, V_{REF}=1.25V, C_{out}=100\mu F, T_A = 0^\circ C \text{ to } +70^\circ C$						
Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Output Offset Voltage	V_{OS}	-5	0	+5	mV	$I_{OUT}=0A$
Load Regulation			0.8		%	Loading: $0A \rightarrow 1.5A$
			0.8			Loading: $0A \rightarrow -1.5A$
Input Voltage Range	V_{DDQ}		2.5		V	
	P_{VIN}		2.5			
	A_{VIN}		3.3			
Operating Current of AVIN	I_{AVIN}		0.5	1	mA	No Load ($I_{OUT}=0A$)

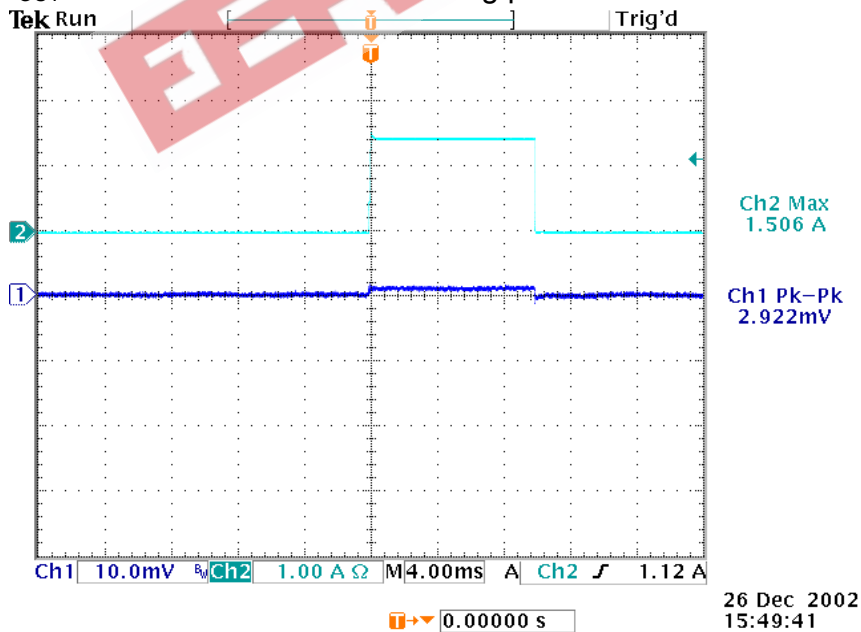
Note: Load regulation is tested with a 10ms pulse current and measuring V_{TT} .

8. TYPICAL OPERATING WAVEFORM

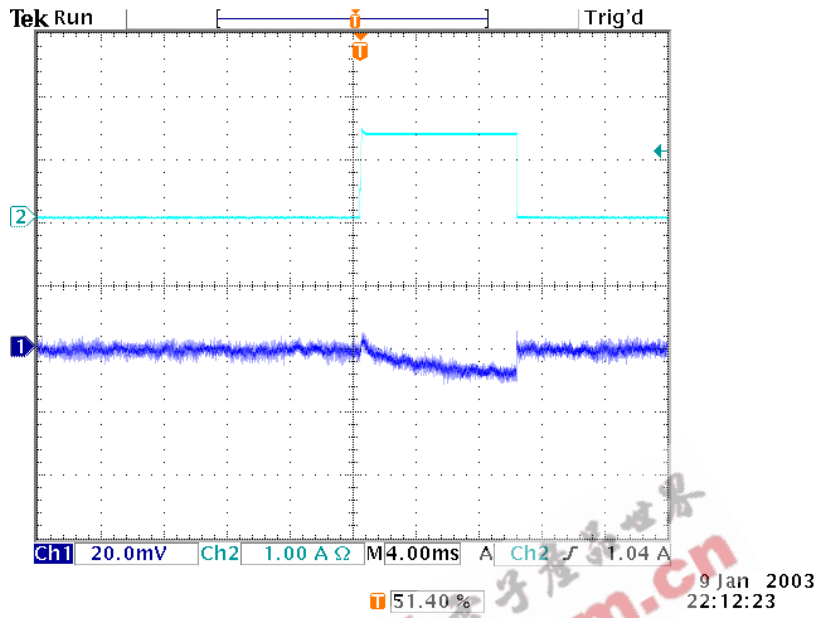
W83310S-R V_{OUT} offset with a 1.5A/10ms driving pulse current.



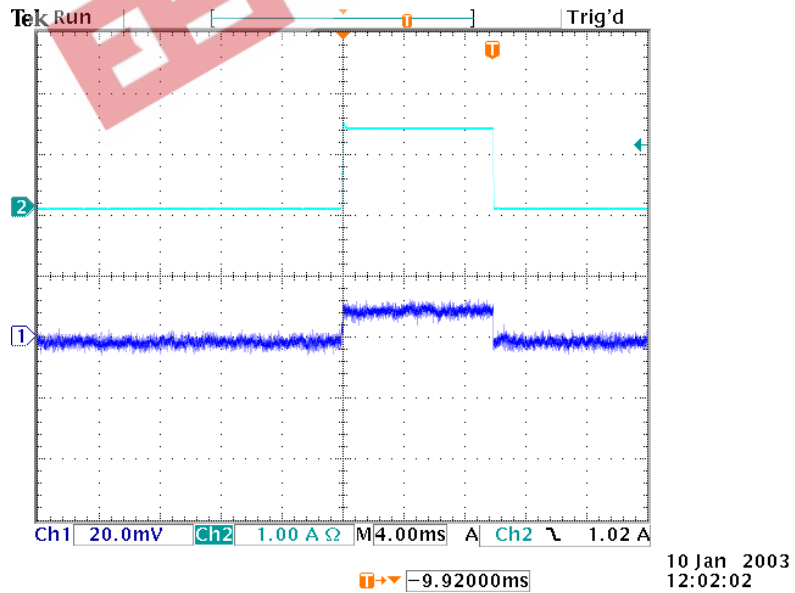
W83310S-R V_{OUT} offset with a 1.5A/10ms sinking pulse current.



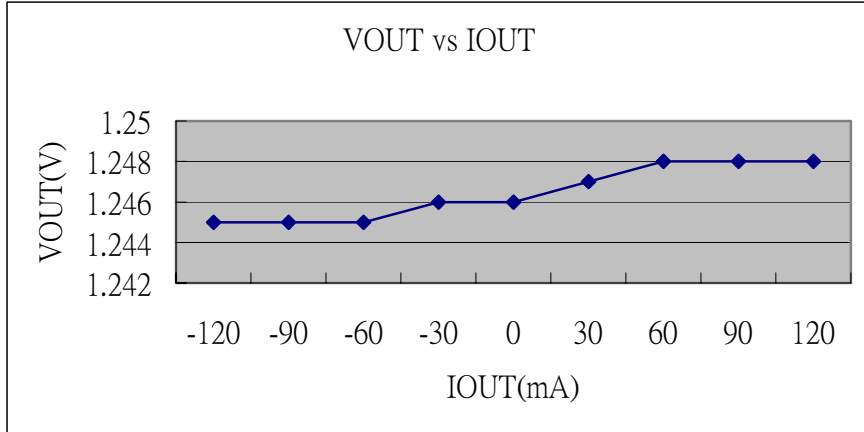
W83310S-N V_{TT} offset with a 1.5A/10ms driving pulse current.



W83310S-N V_{TT} offset with a 1.5A/10ms sinking pulse current.



- Load regulation with various sinking/driving loading



EEPW 电子产品世界 .com.cn



10. ORDERING INFORMATION

PART NUMBER	PACKAGE TYPE	PRODUCTION FLOW
W83310S-R	8PIN SOP	Commercial, 0°C to +70°C
W83310S-N	8PIN SOP	Commercial, 0°C to +70°C

11. HOW TO READ THE TOP MARKING



Left line: Winbond logo

1st & 2nd line: W83310S-R/N – the part number

3rd line: Tracking code Tracking code 249 O A

249: packages assembled in Year 02', week 49

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

B: the IC version



12. REVISION HISTORY

VERSION	DATE	PAGE	DESCRIPTION
0.51	12/2002	N.A.	The versions before 0.5 are only for internal reference.
0.60	02/2003	3	Recommend circuit update
0.61	03/2003	5	AC specification update
1.0	4/13/2005	12	Add disclaimer

Important Notice

Winbond products are not designed, intended, authorized or warranted for use as components in systems or equipment intended for surgical implantation, atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for other applications intended to support or sustain life. Further more, Winbond products are not intended for applications wherein failure of Winbond products could result or lead to a situation wherein personal injury, death or severe property or environmental damage could occur.

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.



Headquarters
No. 4, Creation Rd. III,
Science-Based Industrial Park,
Hsinchu, Taiwan
TEL: 886-3-5770066
FAX: 886-3-5665577
<http://www.winbond.com.tw/>

Taipei Office
9F, No.480, Rueiguang Rd.,
Neihu District, Taipei, 114,
Taiwan, R.O.C.
TEL: 886-2-8177-7168
FAX: 886-2-8751-3579

Winbond Electronics Corporation America
2727 North First Street, San Jose,
CA 95134, U.S.A.
TEL: 1-408-9436666
FAX: 1-408-5441798

Winbond Electronics Corporation Japan
7F Daini-ueno BLDG, 3-7-18
Shinyokohama Kohoku-ku,
Yokohama, 222-0033
TEL: 81-45-4781881
FAX: 81-45-4781800

Winbond Electronics (Shanghai) Ltd.
27F, 2299 Yan An W. Rd. Shanghai,
200336 China
TEL: 86-21-62365999
FAX: 86-21-62365998

Winbond Electronics (H.K.) Ltd.
Unit 9-15, 22F, Millennium City,
No. 378 Kwun Tong Rd.,
Kowloon, Hong Kong
TEL: 852-27513100
FAX: 852-27552064

*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.*