



Winbond
Bus Termination Regulator
W83310DS-A/W83310DG-A

W83310DS-A/W83310DG-A



W83310DS-A/W83310DG-A

Datasheet Revision History

	PAGES	DATES	VERSION	VERSION ON WEB	MAIN CONTENTS
1		1/17/2006	0.5	N.A.	First released
2					
3					
4					
5					
6					
7					
8					

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W83310DS-A/W83310DG-A



Table of Contents-

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

W83310DS-A/W83310DG-A



1. GENERAL DESCRIPTION

The W83310DS-A/W83310DG-A is a linear regulator provides a power achieves continuous 2.0Amp bi-directional sinking and driving capability for a high speed bus terminator application. The chip simply implements a stable power supply which tracks half of input power dynamically for bus terminator with a single chip. The W83310DS-A/W83310DG-A is promoted with small footprint 8-SOP 150mil power package. With W83310DS-A/W83310DG-A design, a high integration, high performance, and cost-effective solution are promoted.

2. FEATURES

- Regulates a bi-directional power with driving and sinking capability
- Provides achieve continuous 2.0Amp driving and sinking current
- Power MOSFET integrated
- Low external component count
- Low output voltage offset
- VCNTL Operates with +3.3V & 2.5 V power
- 8-SOP 90mil small power package
- Low cost and easy to use

3. APPLICATIONS

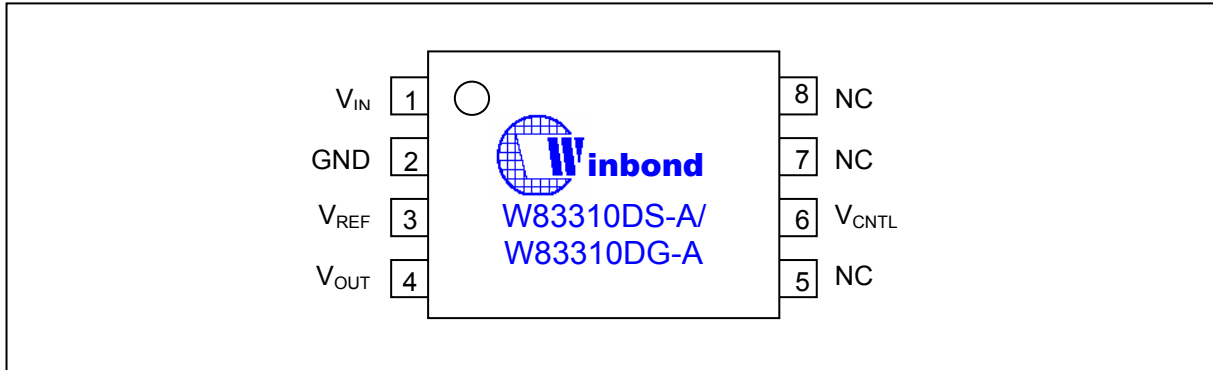
- DDR/DDRII Bus Termination Regulator
- Active Termination Bus
- Intel® Springdale GMCH- V_{TT} Support
- SSTL-2
- SSTL-3

W83310DS-A/W83310DG-A



4. PIN CONFIGURATION AND DESCRIPTION

- W83310DS-A/W83310DG-A



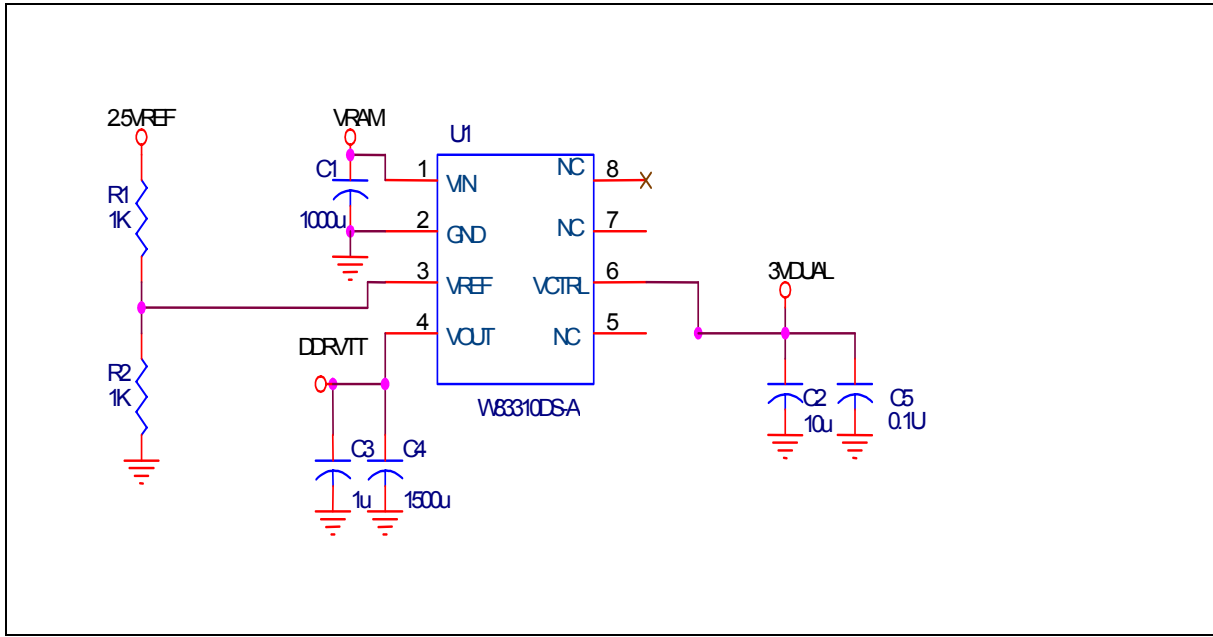
SYMBOL	PIN	FUNCTION
V_{IN}	1	Main power input pin.
GND	2	Power ground.
V_{REF}	3	Internal reference voltage source. Reference voltage on the pin will be referred with the value of pin
V_{OUT}	4	Voltage output pin.
NC	5	
V_{CNTL}	6	Power for internal control logic use
NC	7	
NC	8	

W83310DS-A/W83310DG-A



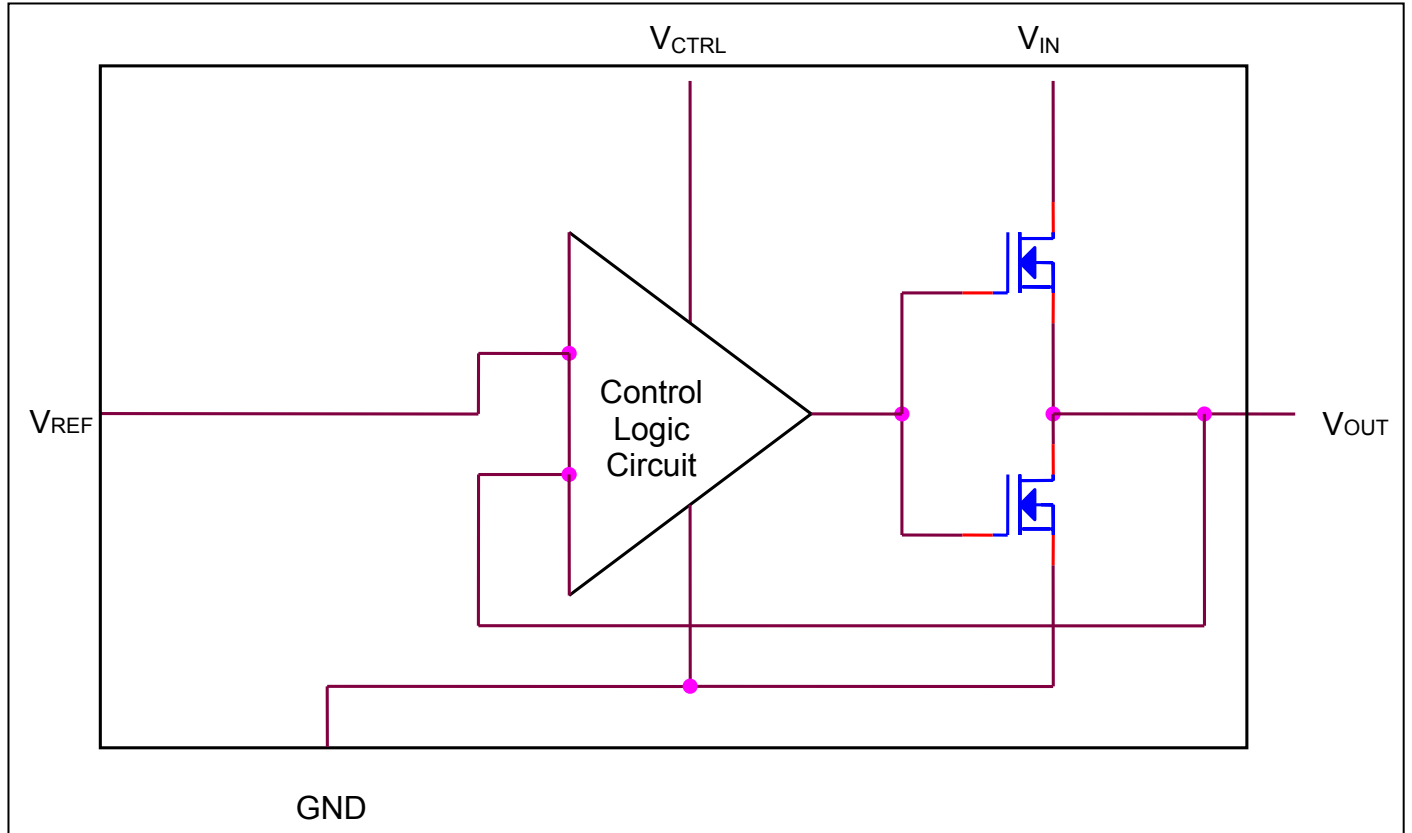
5. APPLICATION CIRCUIT

- W83310DS-A/W83310DG-A for DDR SDRAM Application





6. INTERNAL BLOCK DIAGRAM



W83310DS-A/W83310DG-A



7. ELECTRICAL CHARACTERISTICS

7.1 AC CHARACTERISTICS

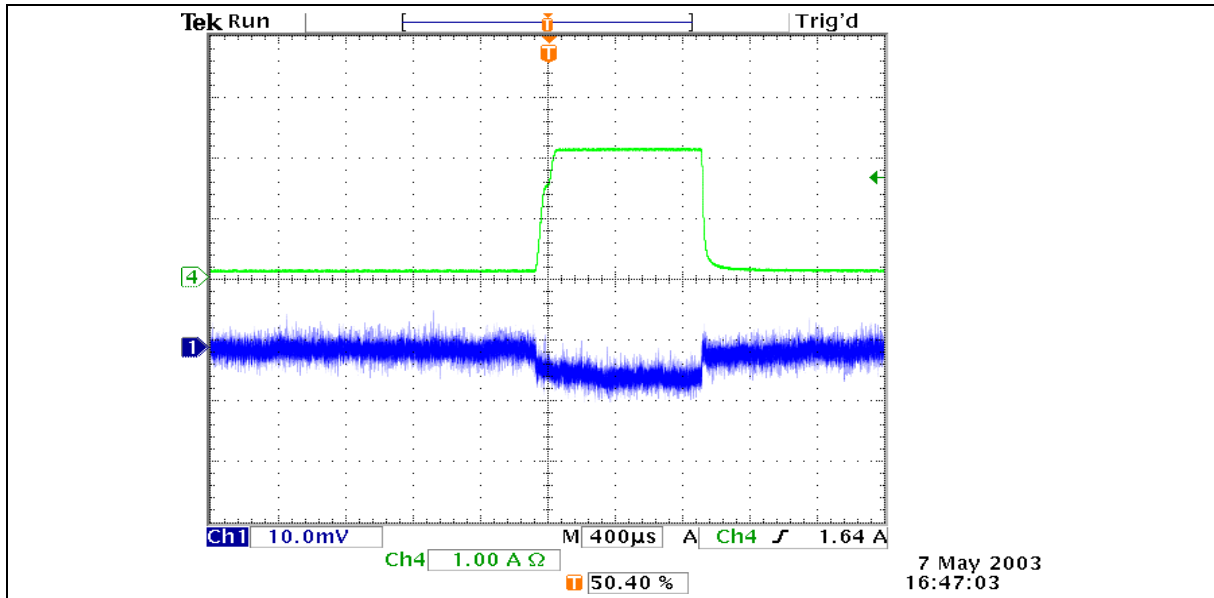
<i>C_{out}</i> =1000 <i>u</i> F, <i>T_A</i> = 0 °C to +70 °C						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Offset Voltage	V _{os}	-5	0	+5	mV	I _{out} =0A
Load Regulation			0.8		%	Loading: 0A→2.0A
			0.8			Loading: 0A→-2.0A
Input Voltage Range	V _{IN}	1.62		3.63	V	
	V _{CNTL}		3.3	3.63		
Operating Current of V _{CNTL}	I _{CNTL}		0.5	1	mA	No Load(I _{out} =0A)
Short Current Limit	I _{LMT}		4.0		A	

Note: Load regulation is tested by using a 1ms current pulse and V_{OUT} measuring.

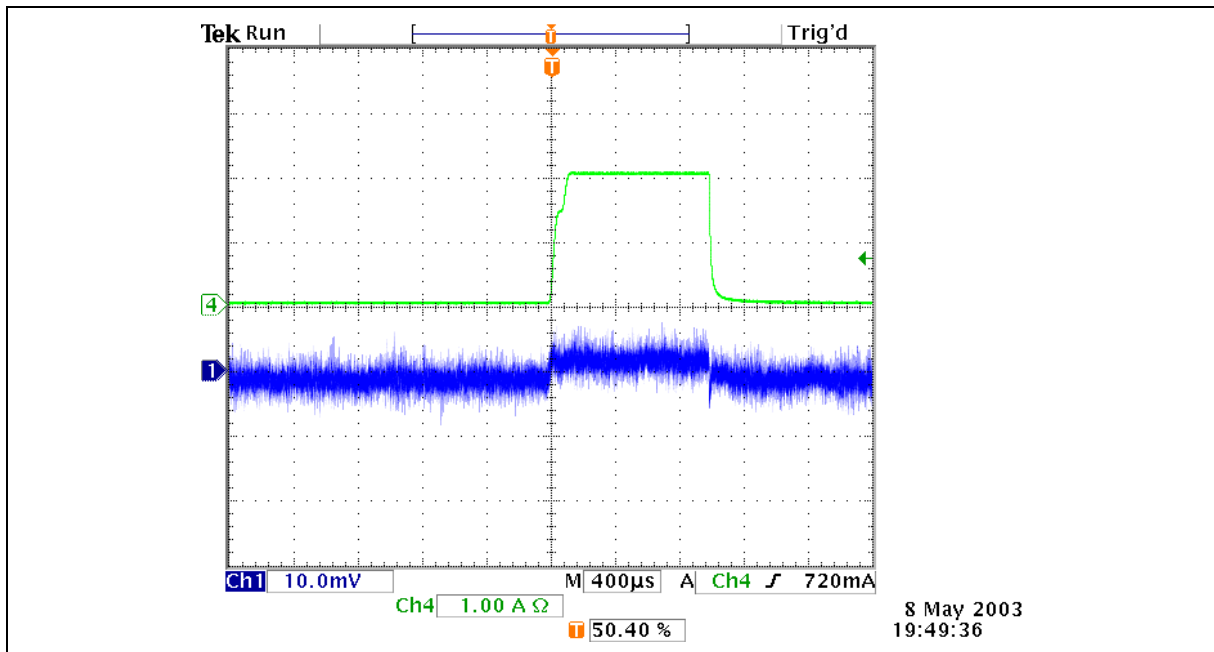


8. TYPICAL OPERATING WAVEFORM

Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.225V$; 2.0Amp pulse driving current.



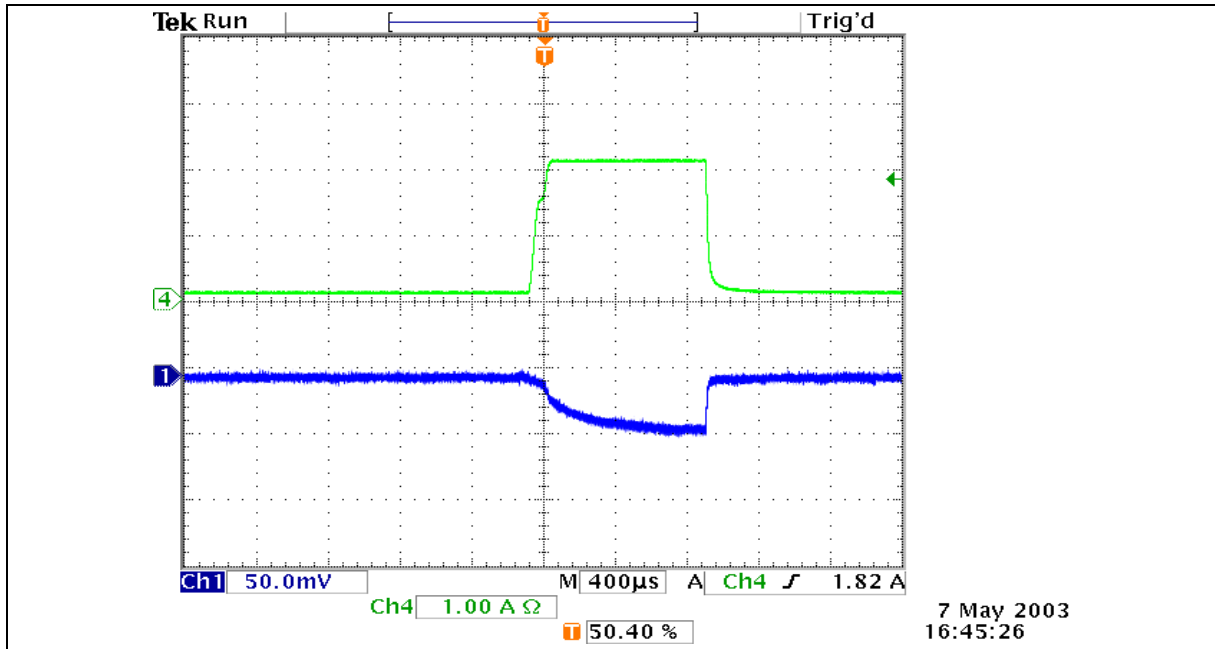
Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.225V$; 2.0Amp pulse sinking current.



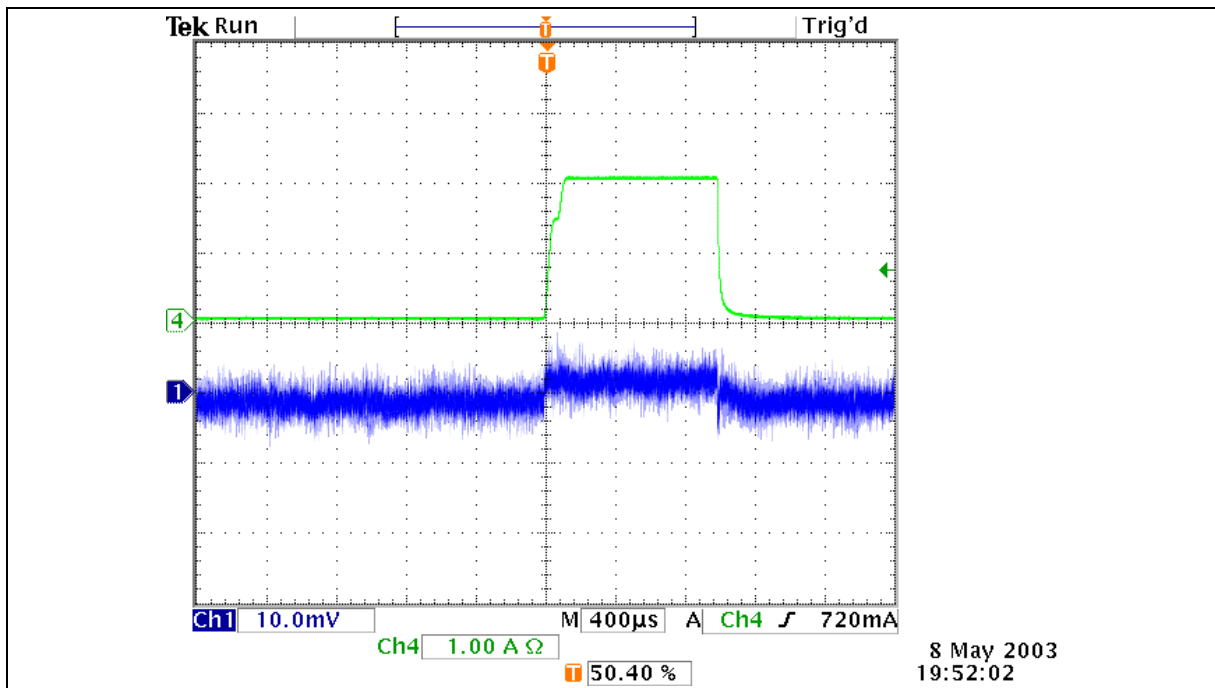
W83310DS-A/W83310DG-A



Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.45V$; 2.0Amp pulse driving current.



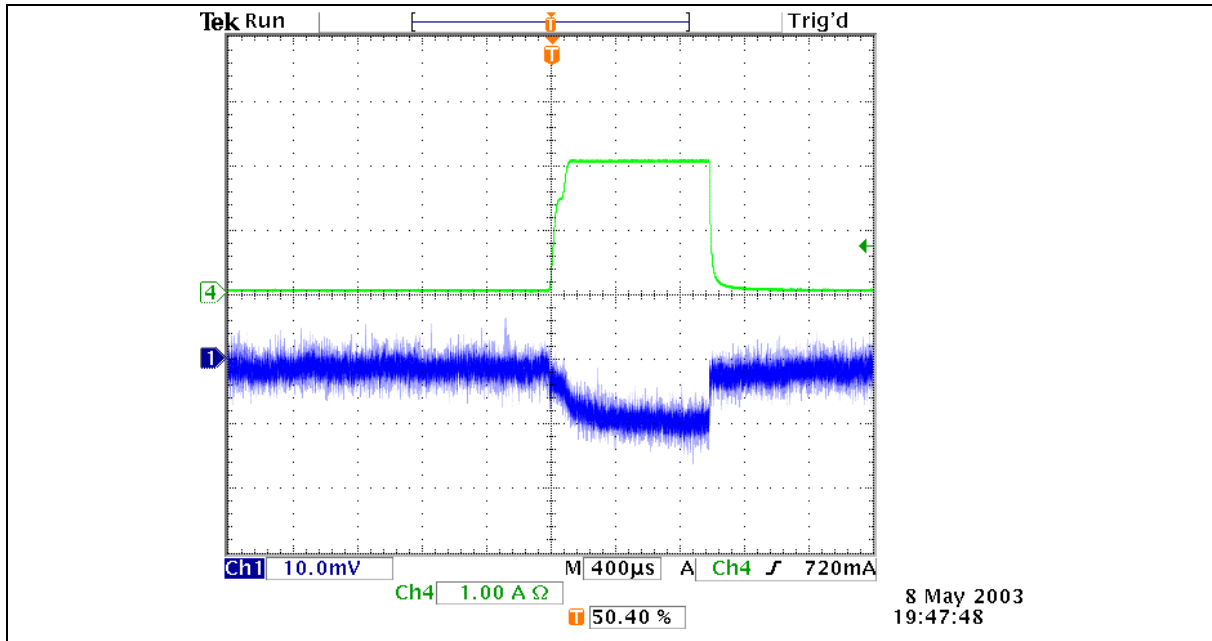
Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.45V$; 2.0Amp pulse sinking current.



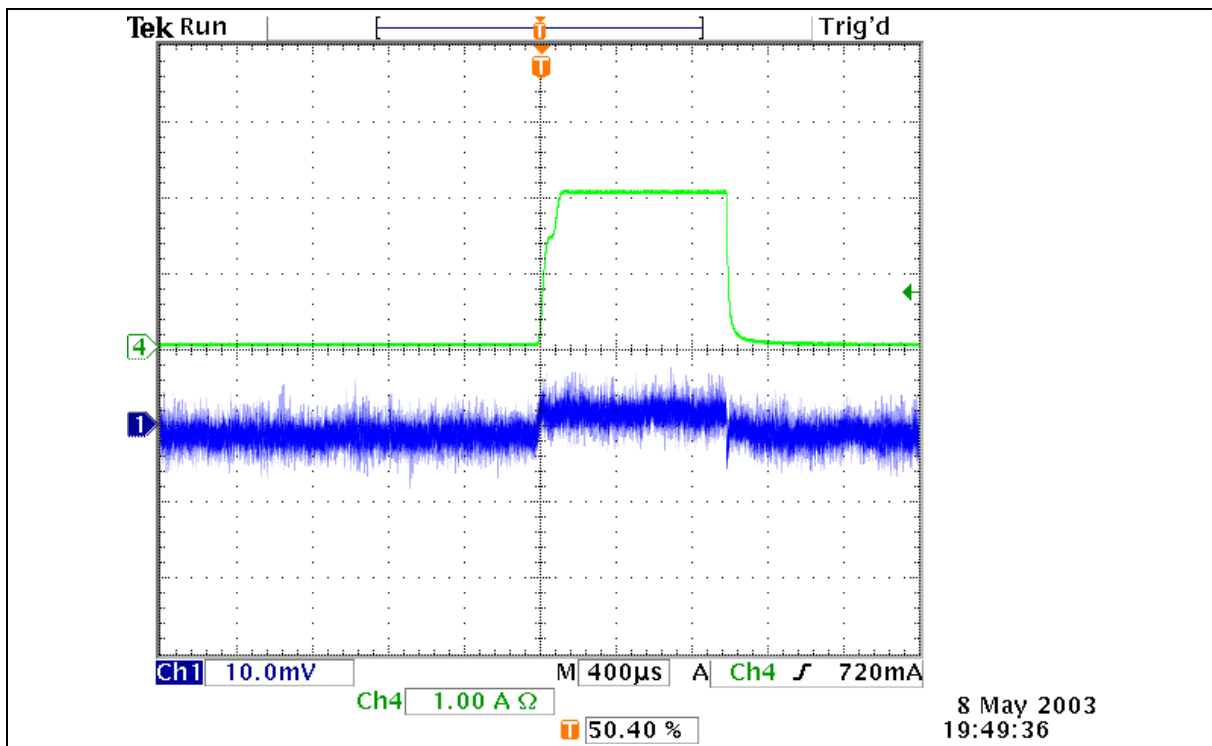
W83310DS-A/W83310DG-A



Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp pulse driving current.



Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp pulse sinking current.

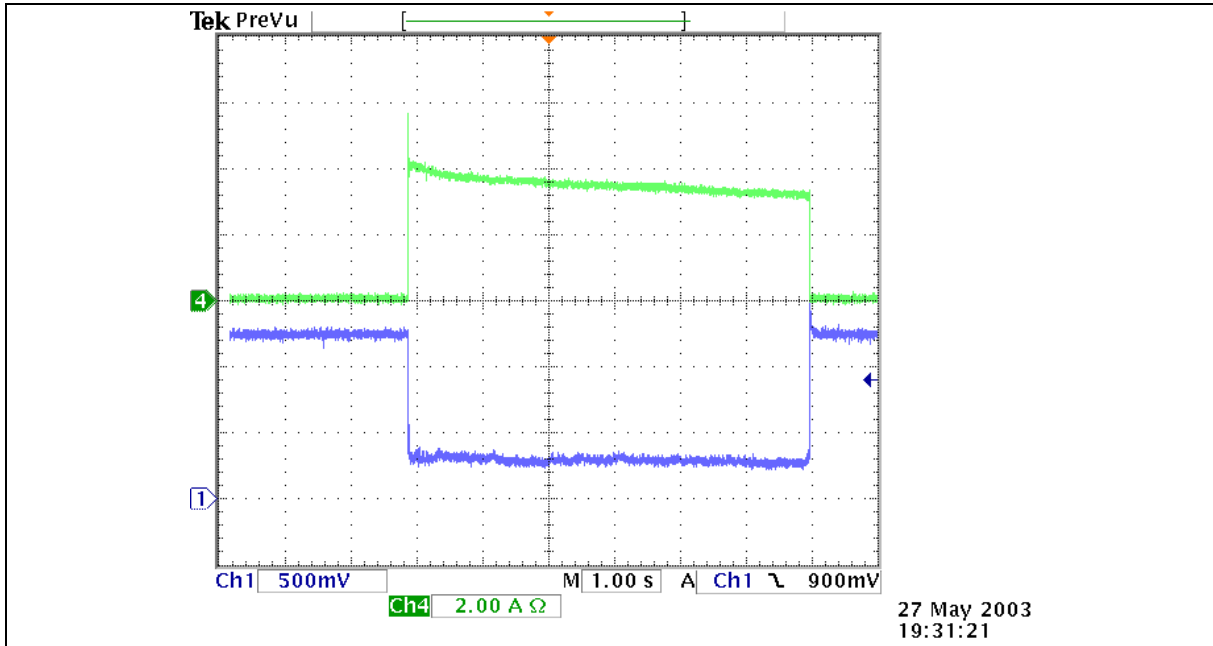


W83310DS-A/W83310DG-A

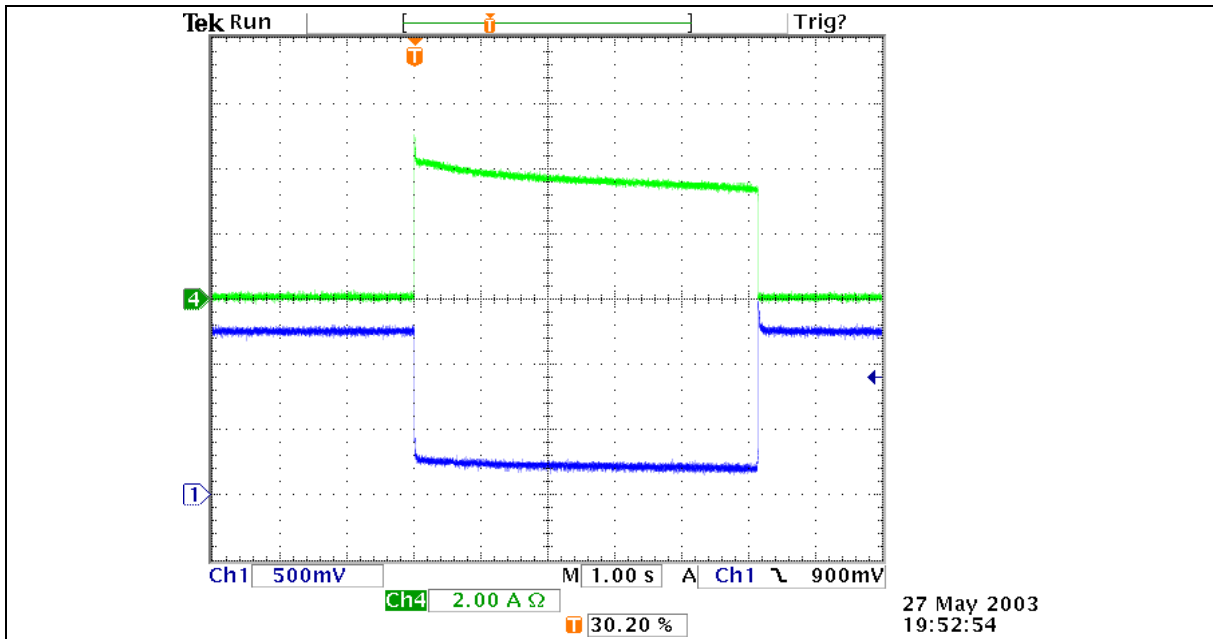


Short Current Limit

- $V_{CTRL} = 3.3V$



- $V_{CTRL} = 3.6V$

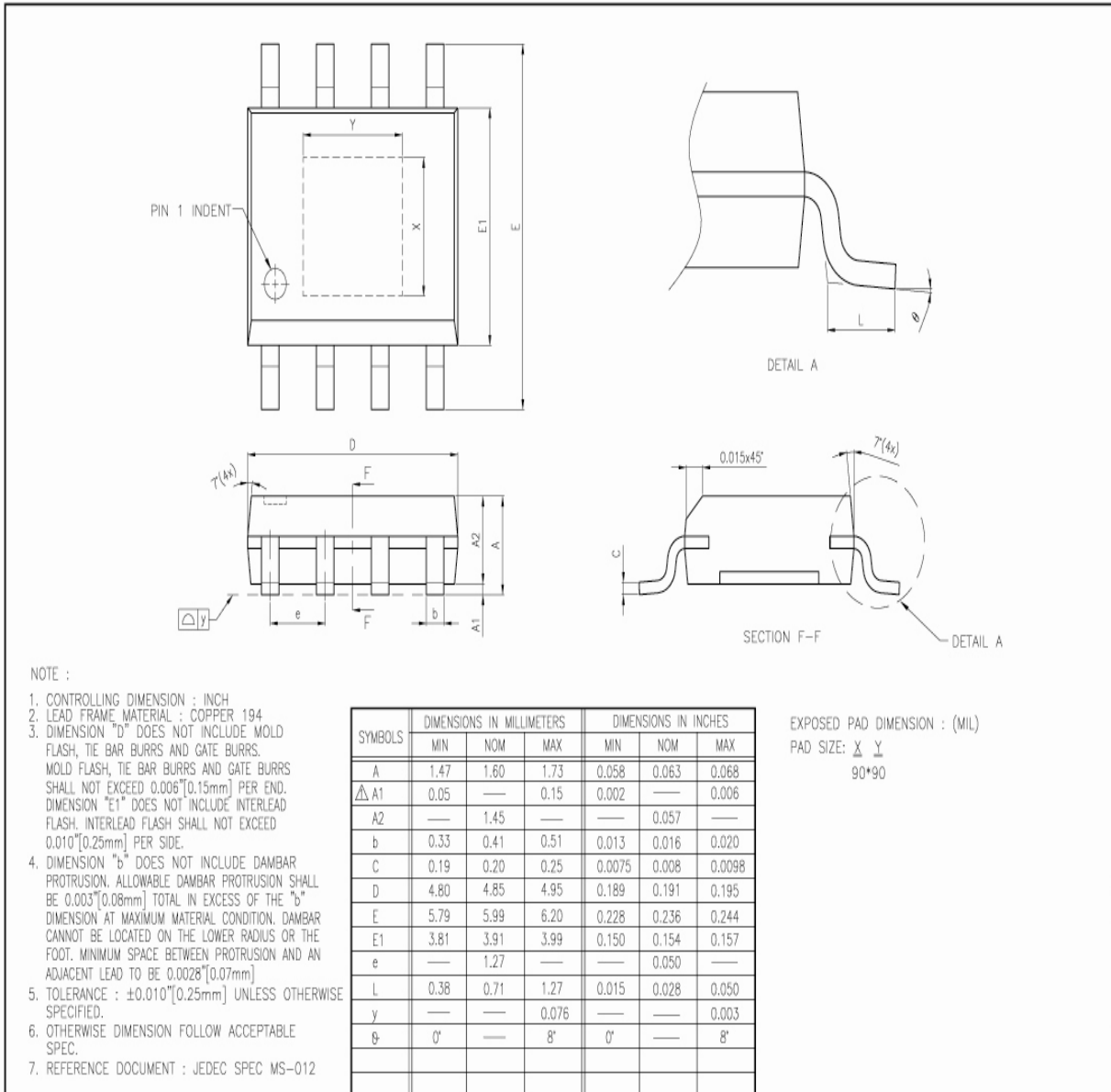


W83310DS-A/W83310DG-A



9. PACKAGE DIMENSION

8L Power SOP 150mil



W83310DS-A/W83310DG-A



10. THERMAL PERFORMANCE

TEST ON FOUR-LAYER (2S2P) JEDEC TEST BOARD							
PACKAGE	POWER (W)	COMPONENT TEMP. (°C)					Θ JC (°C /W)
		PACKAGE	DIE	DOWNSET	LEAD	AMBIENT	
PSOP-8	3.05	100	145	79	78	25	14.7

An area of 190mil*150mil on the top layer is use as a thermal pad for W83310DS and this is connected to the bottom layer by vias. The Θja of the W83310DS mounted on this demo board is about 39 °C /W. Assuming the TA=25 °C and TJ=160 °C, the maximum power dissipation is calculated as: PD(max)=(160-25)/39=3.46W

11. ORDERING INFORMATION

PART NUMBER	PACKAGE TYPE	PRODUCTION FLOW
W83310DS-A	Power SOP-8	
W83310DG-A	Power SOP-8	

12. HOW TO READ THE TOP MARKING



Left line: Winbond logo

1st & 2nd line: W83310DS-A/W83310DG-A – the part number

3rd line: Tracking code 318 G A

318: packages assembled in Year 03', week 18

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

A: the IC version

W83310DS-A/W83310DG-A



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