



**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



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# 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

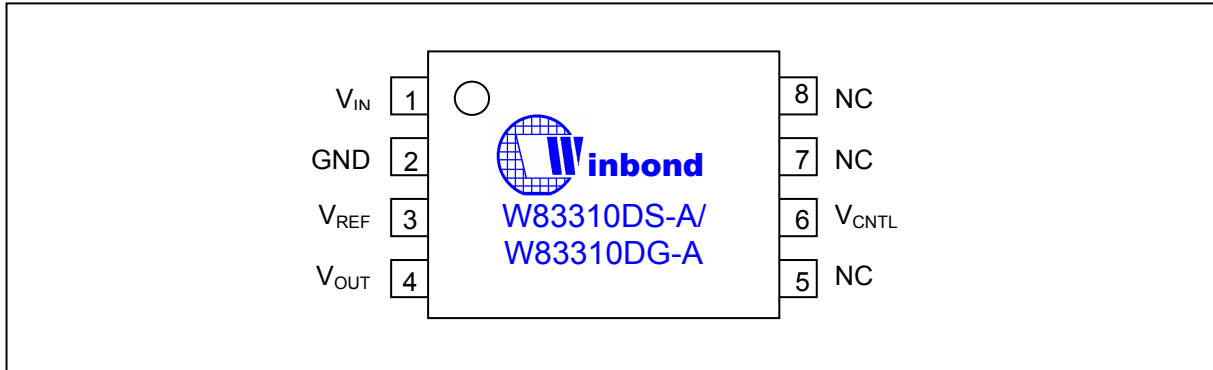
- DDR/DDRII Bus Termination Regulator
- Active Termination Bus
- Intel® Springdale GMCH- $V_{TT}$  Support
- SSTL-2
- SSTL-3

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## 4. PIN CONFIGURATION AND DESCRIPTION

### - W83310DS-A/W83310DG-A



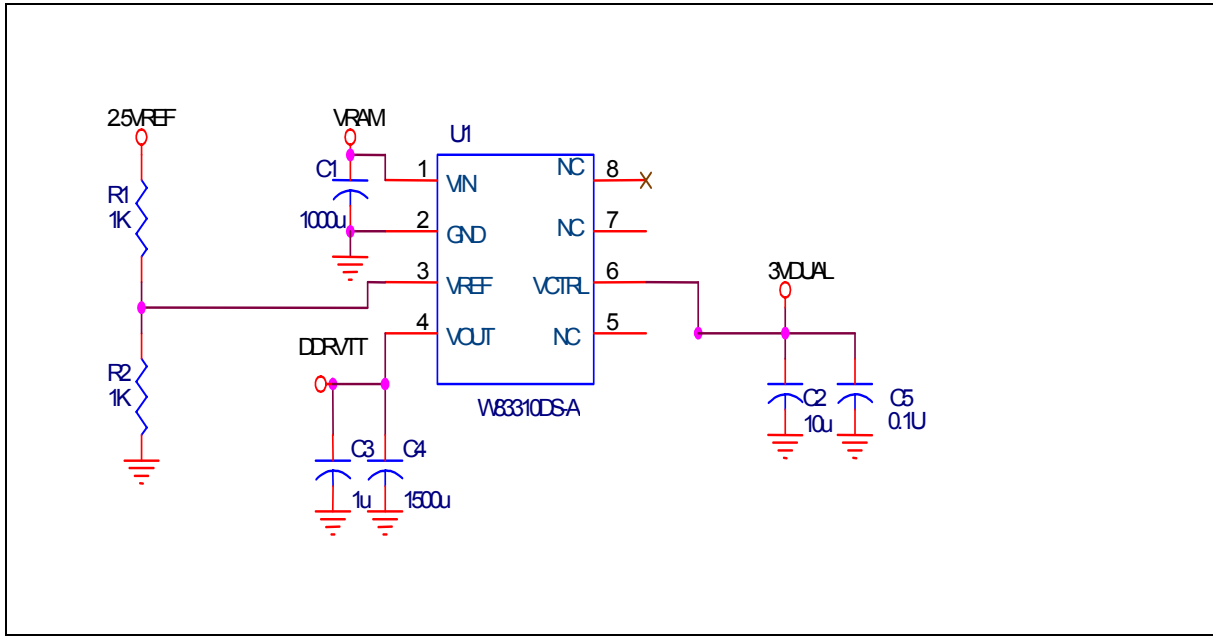
SYMBOL	PIN	FUNCTION
$V_{IN}$	1	Main power input pin.
GND	2	Power ground.
$V_{REF}$	3	Internal reference voltage source. Reference voltage on the pin will be referred with the value of pin
$V_{OUT}$	4	Voltage output pin.
NC	5	
$V_{CNTL}$	6	Power for internal control logic use
NC	7	
NC	8	

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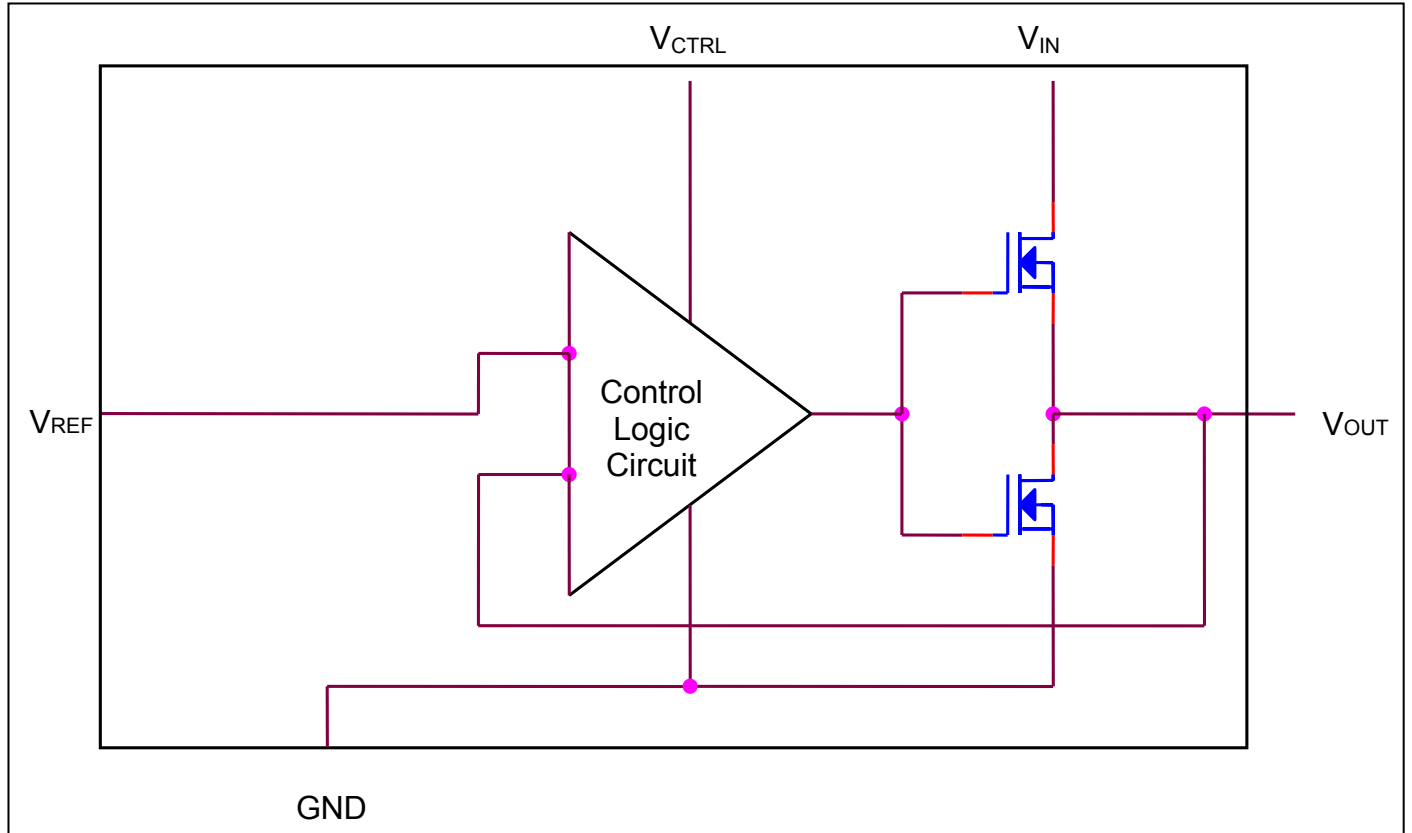
## 5. APPLICATION CIRCUIT

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

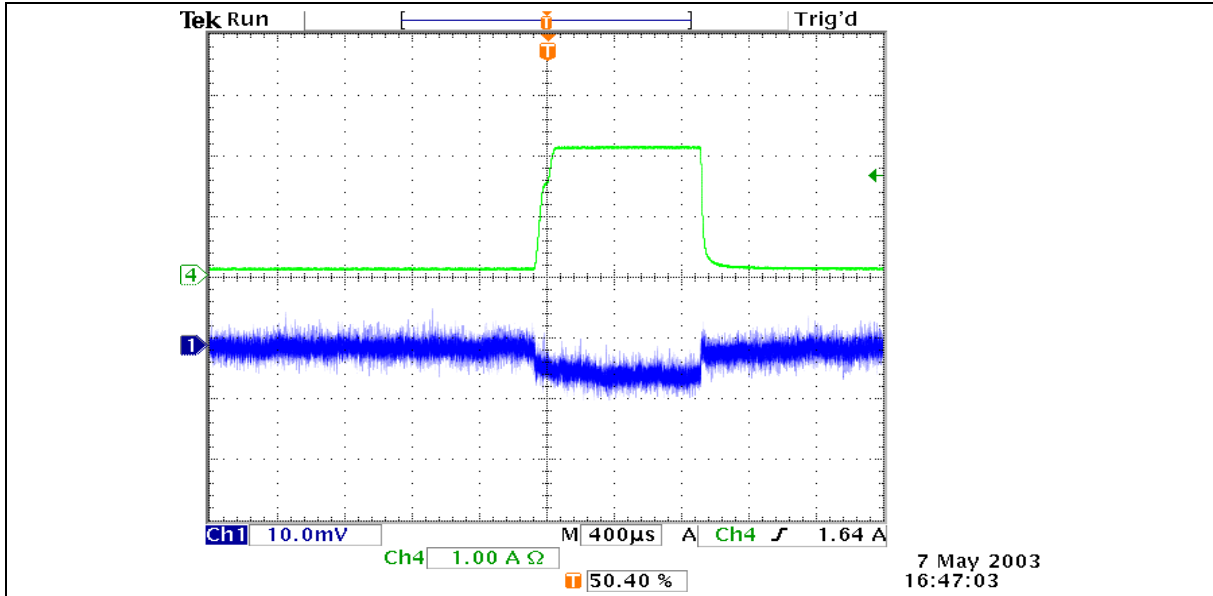
**Note:** Load regulation is tested by using a 1ms current pulse and V<sub>OUT</sub> measuring.



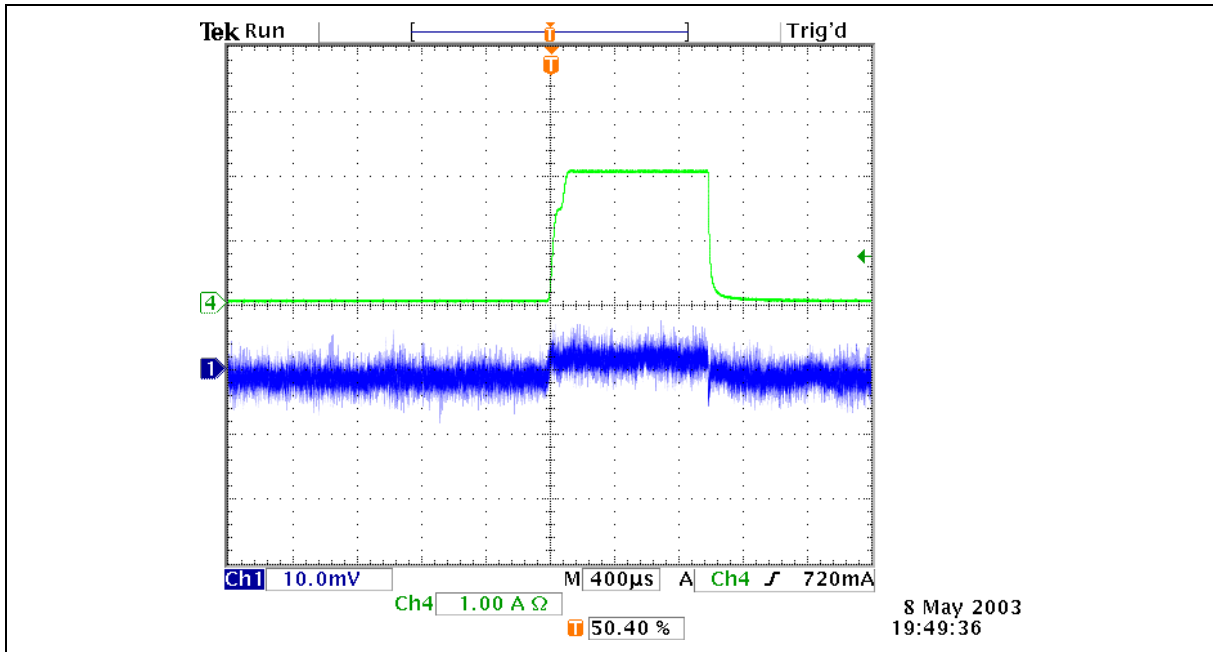


8. TYPICAL OPERATING WAVEFORM

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



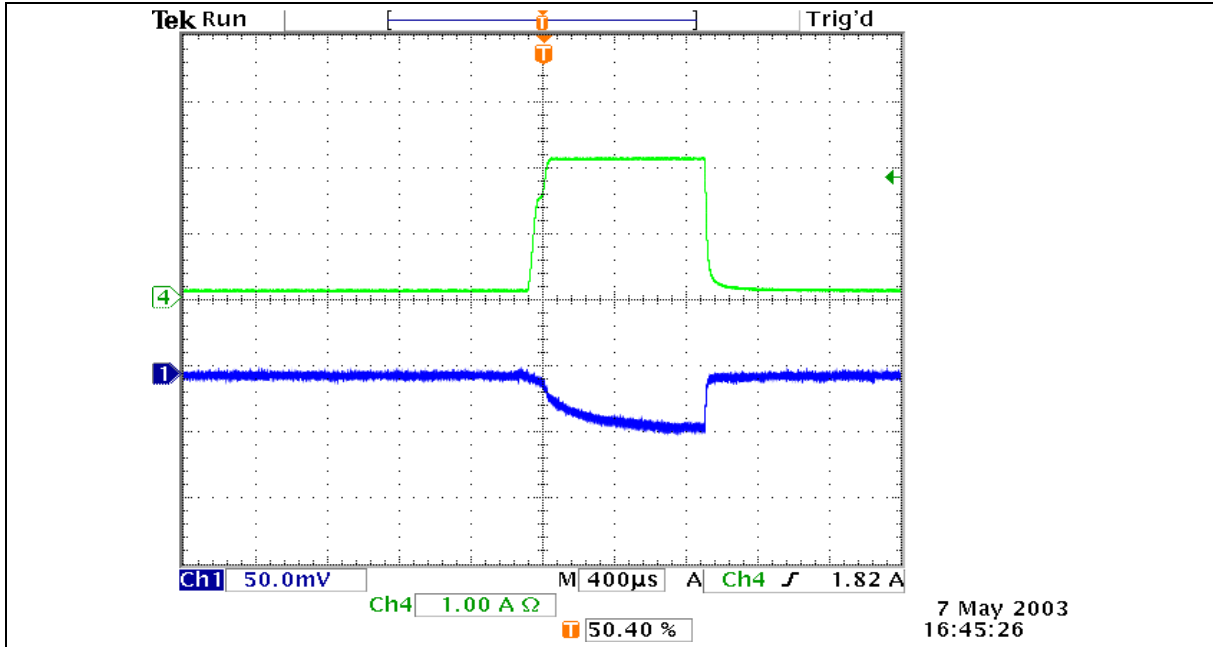
Load regulation with test condition -  $V_{CTRL}=3.3V$ ;  $V_{IN}=2.5V$ ;  $V_{OUT}=1.225V$ ; 2.0Amp pulse sinking current.



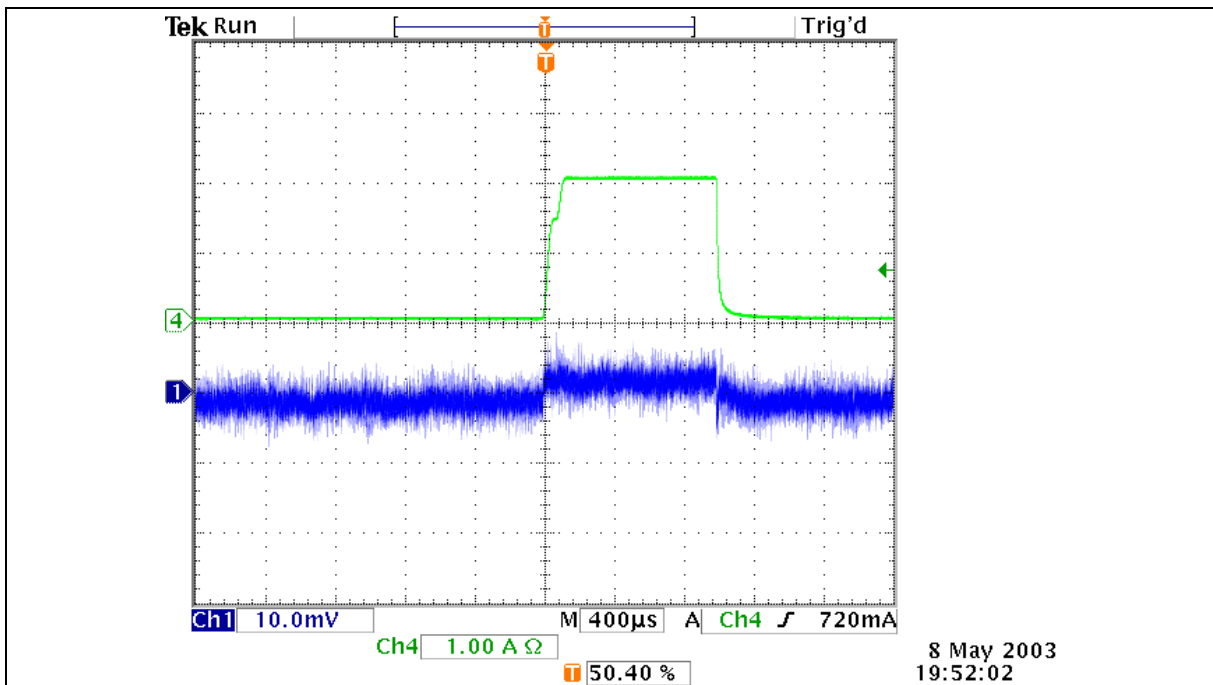
# W83310DS-A/W83310DG-A



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



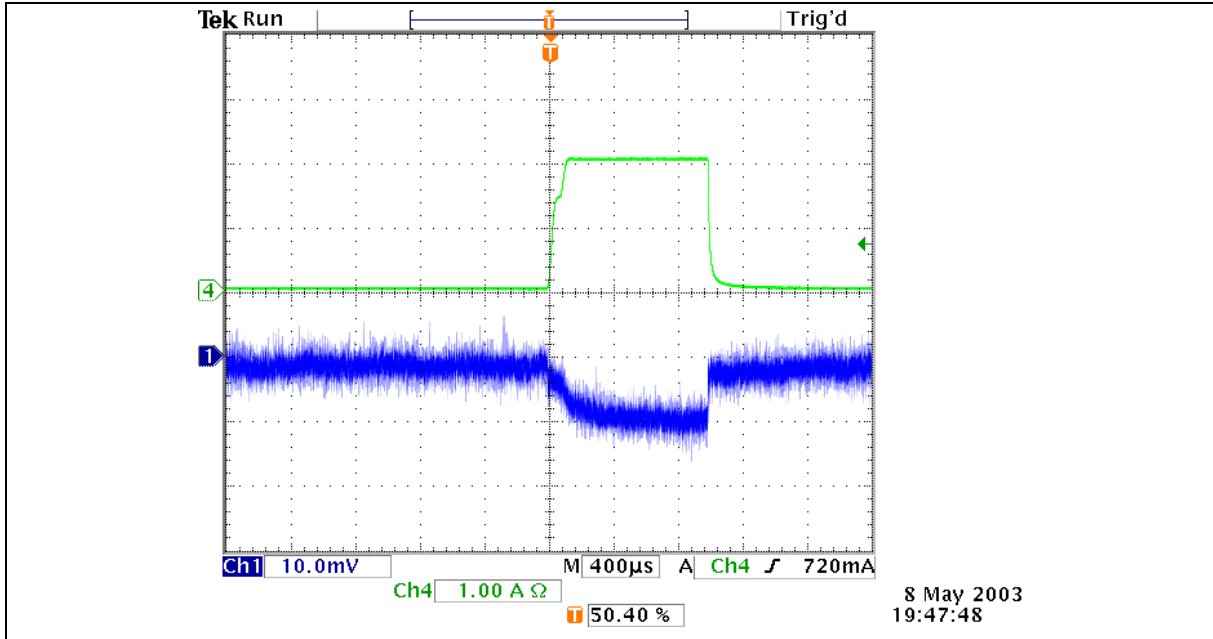
Load regulation with test condition -  $V_{CTRL}=3.3V$ ;  $V_{IN}=2.5V$ ;  $V_{OUT}=1.45V$ ; 2.0Amp pulse sinking current.



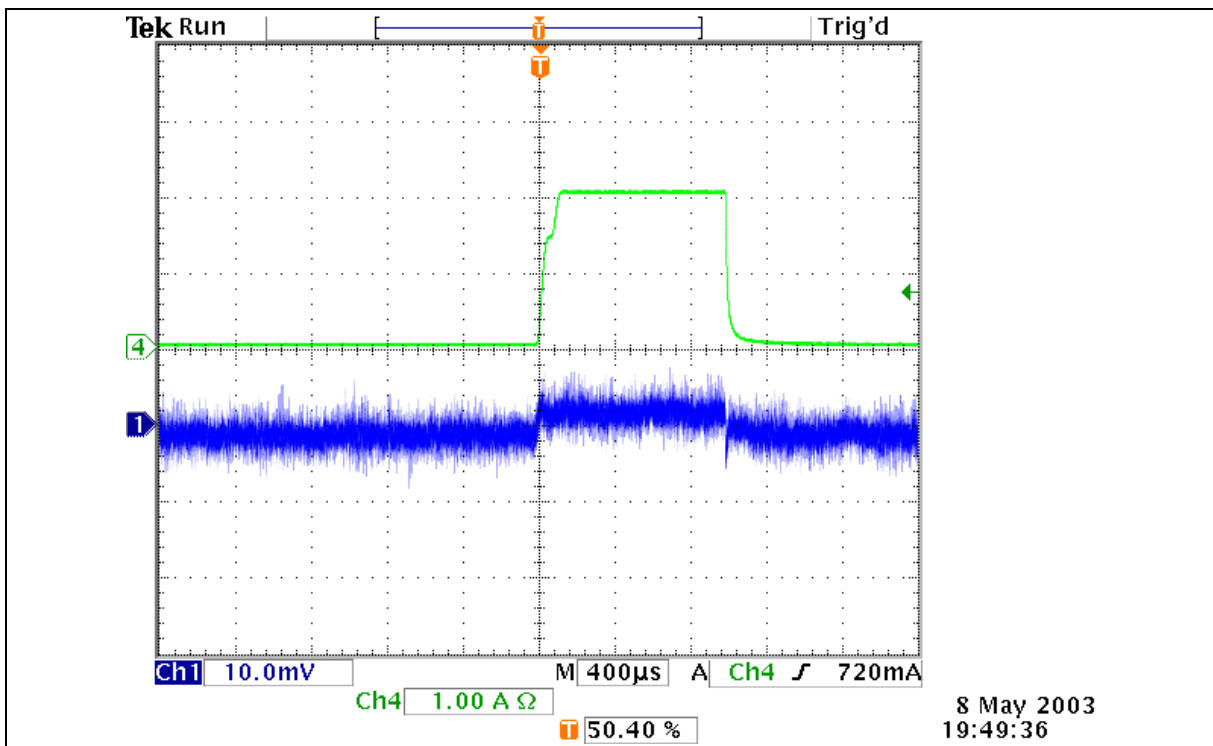
# W83310DS-A/W83310DG-A



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.

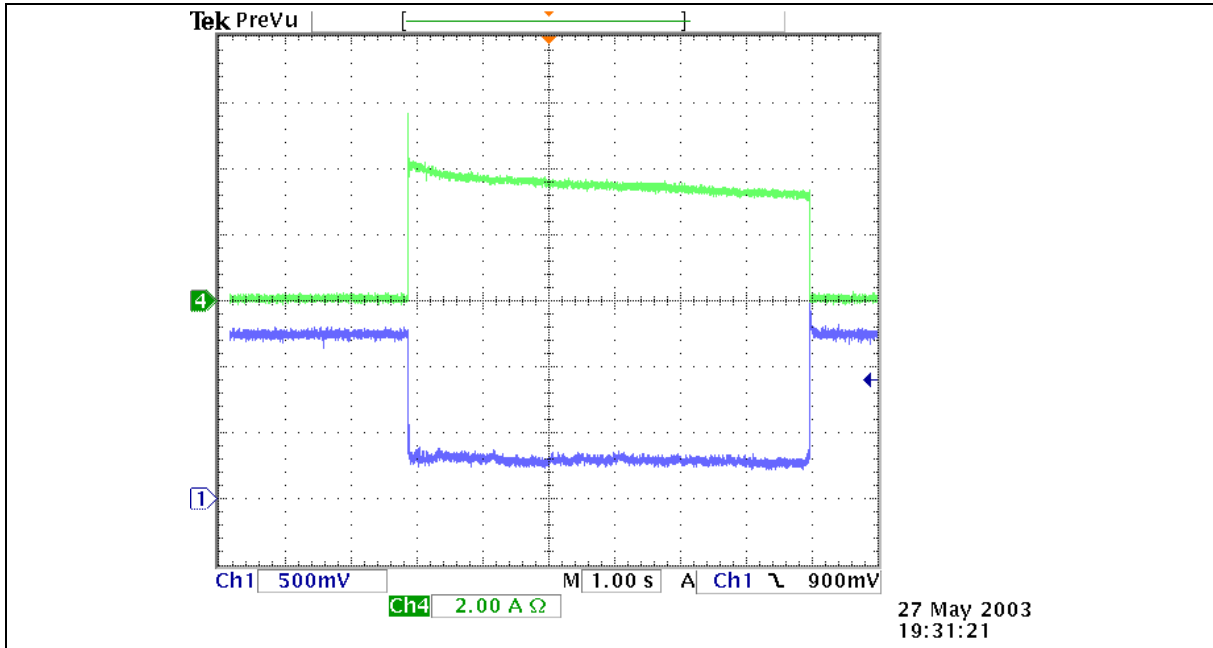


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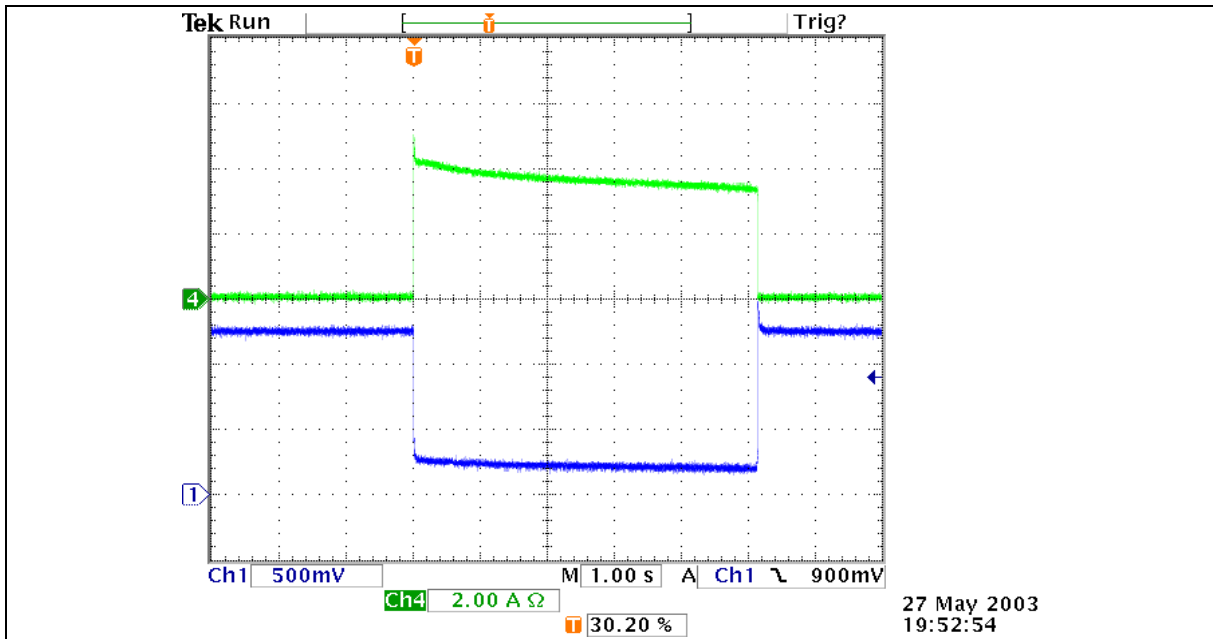


## Short Current Limit

-  $V_{CTRL} = 3.3V$



-  $V_{CTRL} = 3.6V$

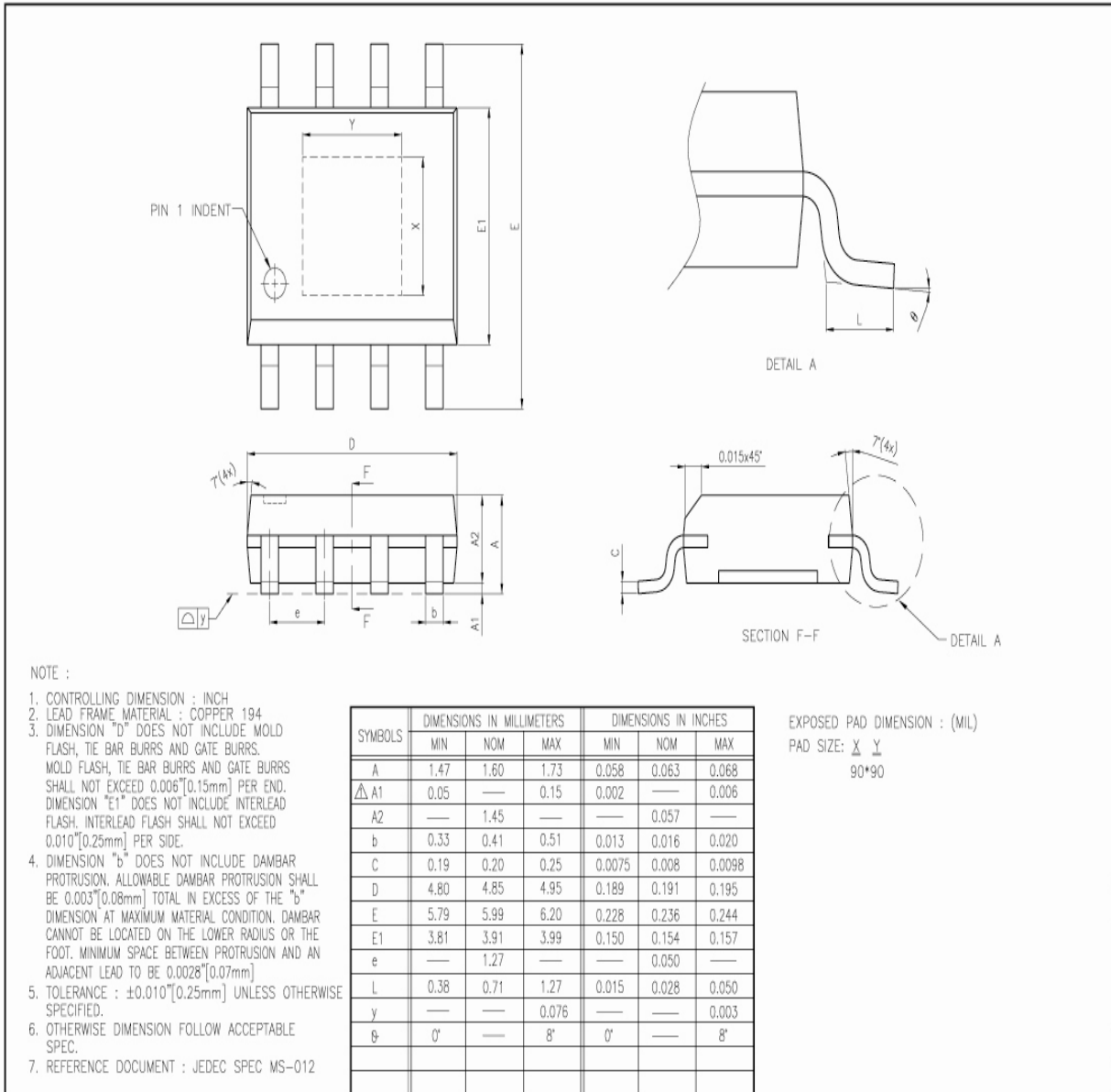


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## 9. PACKAGE DIMENSION

### 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

1<sup>st</sup> & 2<sup>nd</sup> 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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