

Winbond
Bus Termination Regulator
W83310DS-A/W83310DG-A

W83310DS-A/W83310DG-A
Datasheet Revision History

	Pages	Dates	Version	Version on Web	Main Contents
1		5/17/05	0.5	N.A.	First released
2					
3					
4					
5					
6					
7					
8					

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LIFE SUPPORT APPLICATIONS

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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

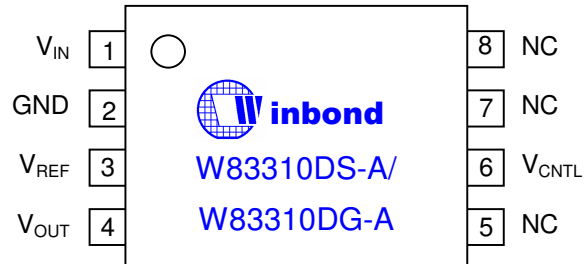
- ❖ Regulates a bi-directional power with driving and sinking capability
- ❖ Provides achieve continuous 2.0Amp driving and sinking current
- ❖ Power MOSFET integrated
- ❖ Low external component count
- ❖ Low output voltage offset
- ❖ VCNTL Operates with +3.3V & 2.5 V power
- ❖ 8-SOP 90mil small power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

4. Pin Configuration and Description

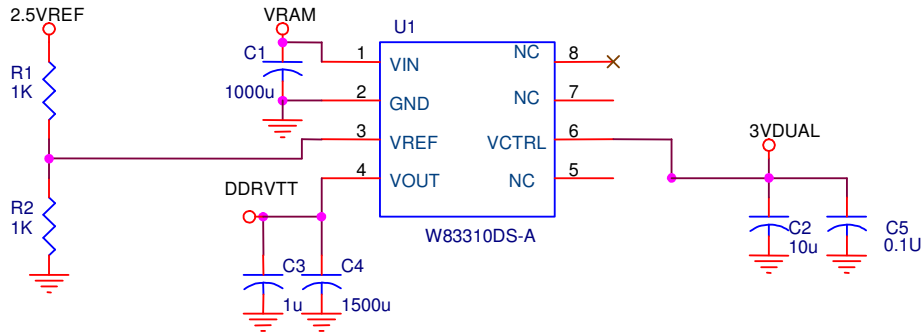
- W83310DS-A/W83310DG-A



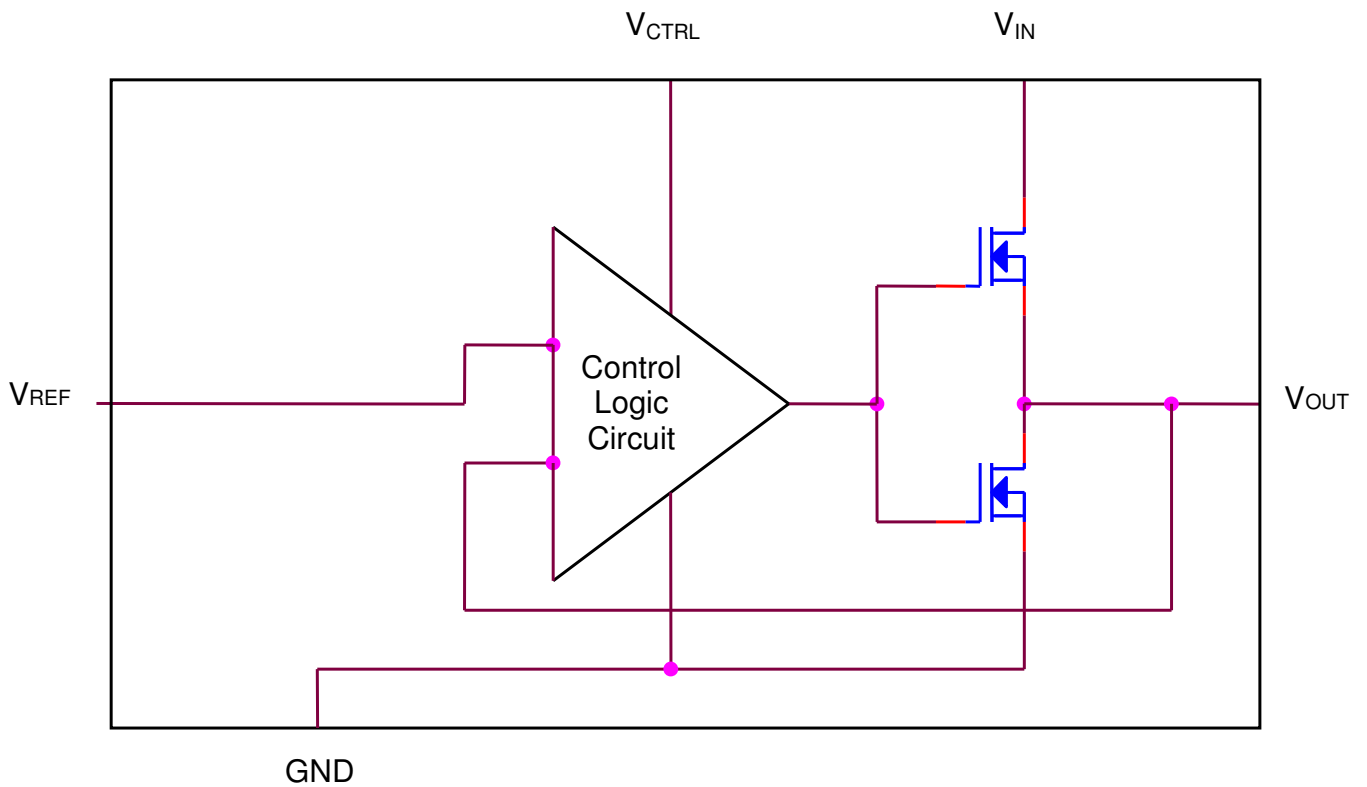
SYMBOL	PIN	FUNCTION
V_{IN}	1	Main power input pin.
GND	2	Power ground.
V_{REF}	3	Internal reference voltage source. Reference voltage on the pin will be referred with the value of pin
V_{OUT}	4	Voltage output pin.
NC	5	
V_{CNTL}	6	Power for internal control logic use
NC	7	
NC	8	

5. Application Circuit

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



6. Internal Block Diagram





7. Electrical Characteristics

AC CHARACTERISTICS

<i>C_{out}=1000uF, T_A = 0°C to +70°C</i>						
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	

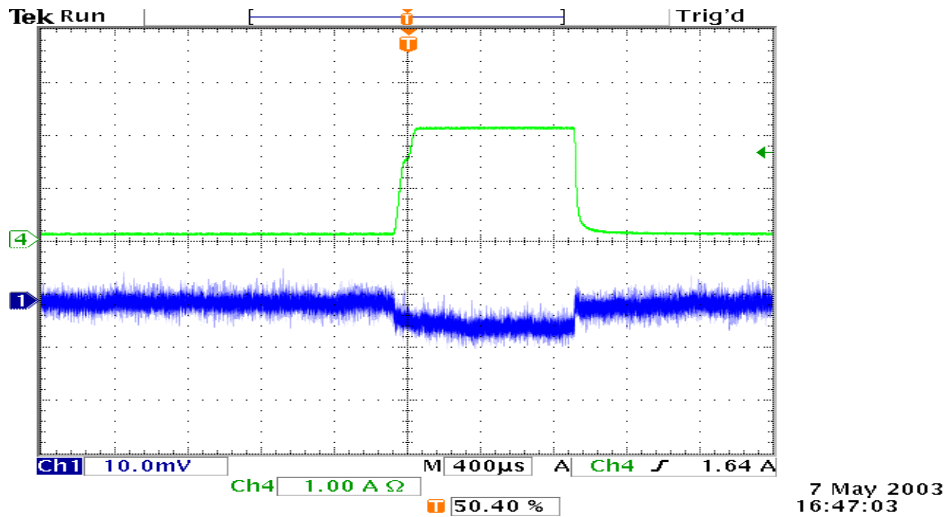
Note: Load regulation is tested by using a 1ms current pulse and V_{OUT} measuring.

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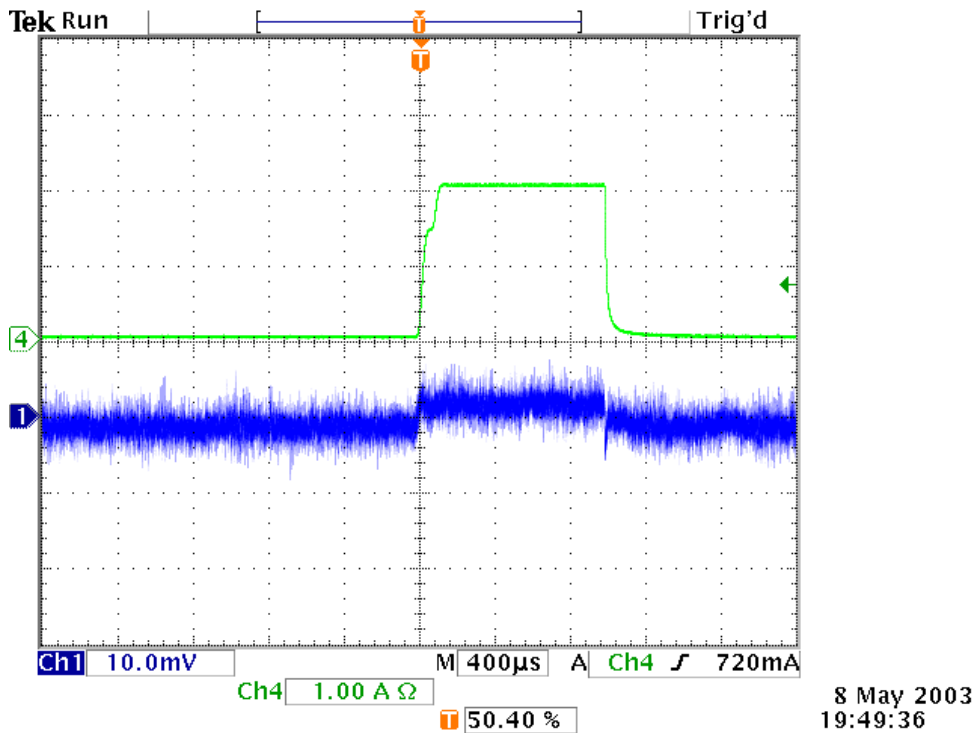
Note: Load regulation is tested by using a 1ms current pulse and V_{OUT} measuring.

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.



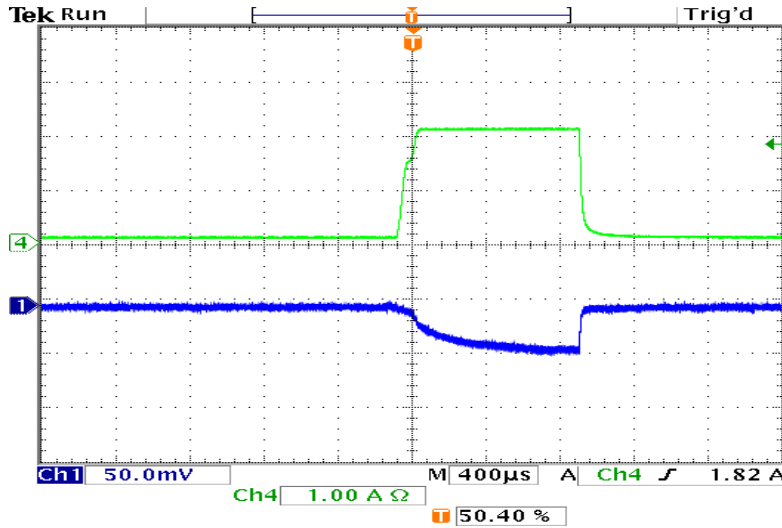
Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.225V$; 2.0Amp pulse sinking current.



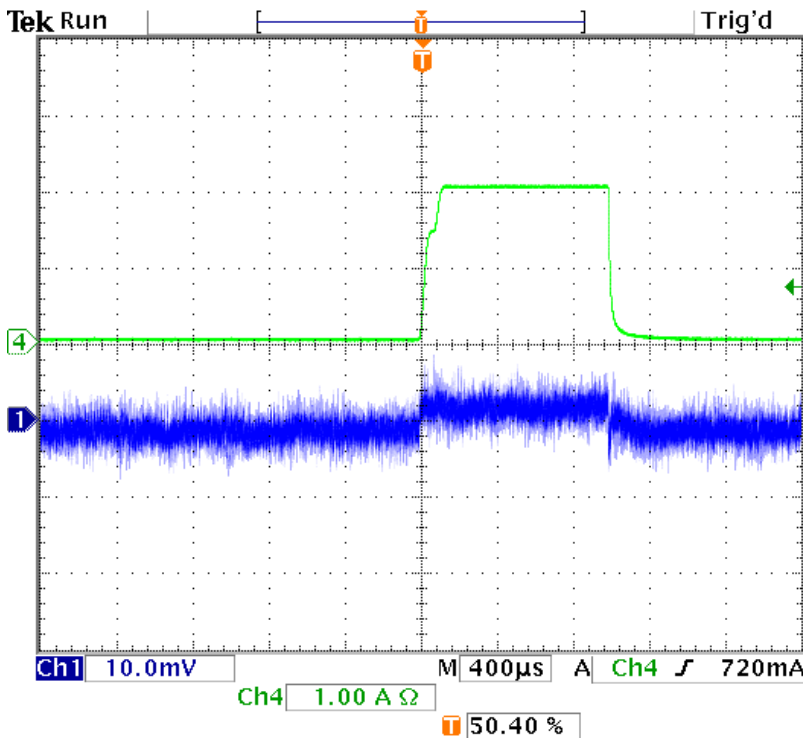


PRELIMINARY

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



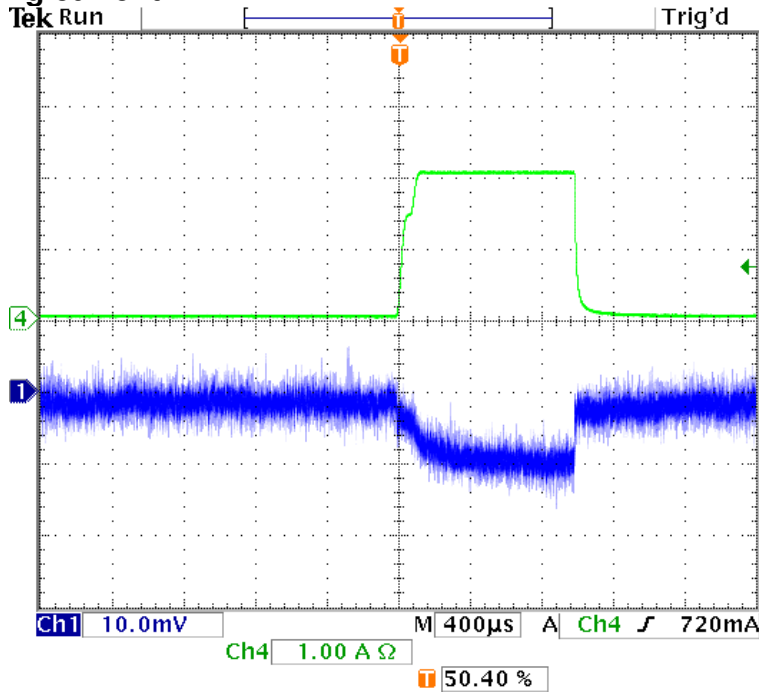
Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.45V$; 2.0Amp pulse sinking current.



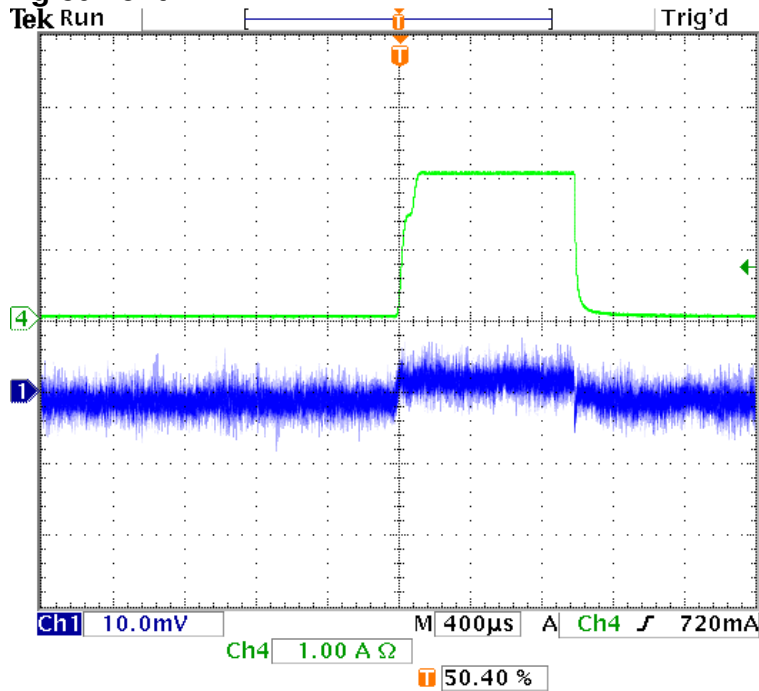


PRELIMINARY

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

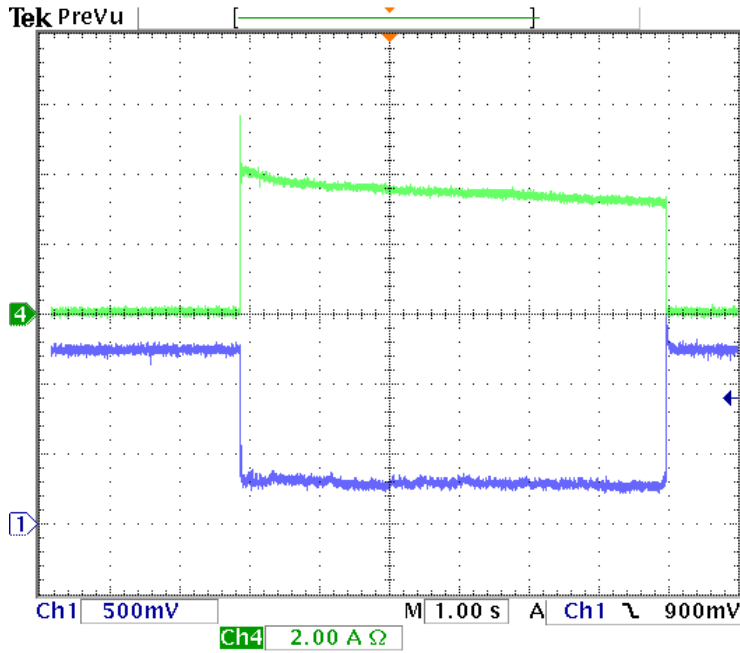


Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp pulse sinking current.



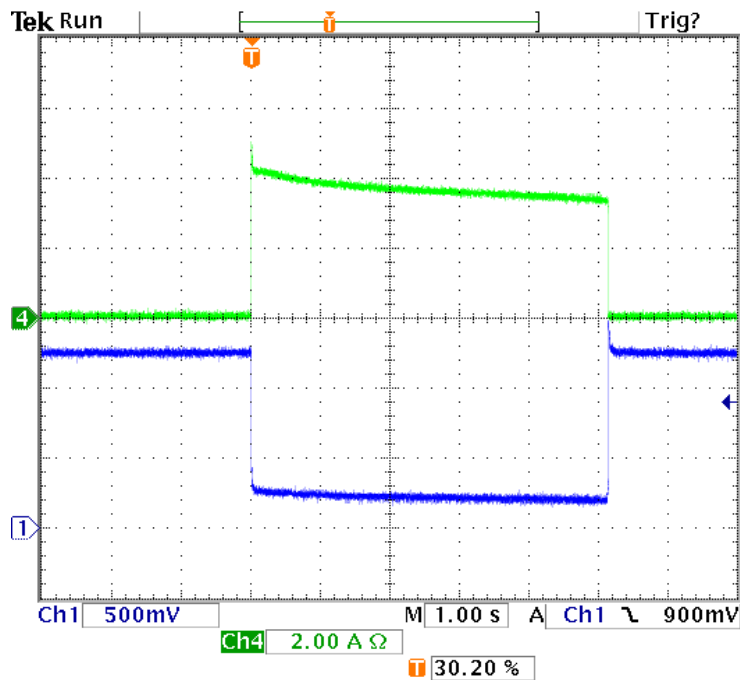
Short Current Limit

- $V_{CTRL} = 3.3V$



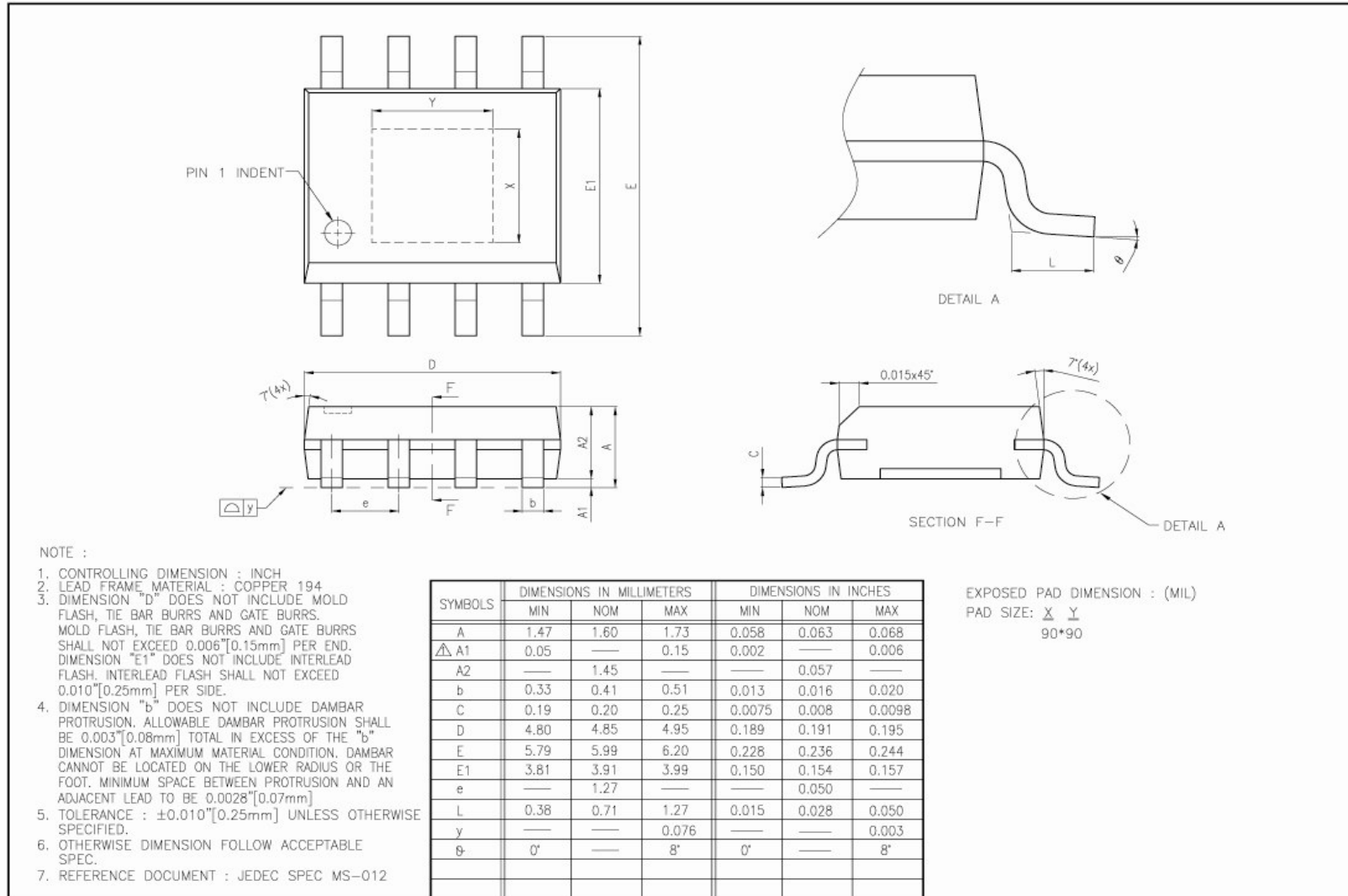
27 May 2003
19:31:21

- $V_{CTRL} = 3.6V$



27 May 2003
19:52:54

9. Package Dimension 8L Power SOP 150mil



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/DG

PRELIMINARY



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