



Winbond
Bus Termination Regulator
W83310U
W83310UG



W83310U Data Sheet Revision History

	PAGES	DATES	VERSION	VERSION ON WEB	MAIN CONTENTS
1.		03/Mar.	0.5	N.A.	All versions before 0.5 are for internal use only
2.		04/Feb.	0.51	N.A.	Add the thermal data inside
3		05/Mar.	0.6	N.A	Update the package dimension data.
4		06/Jan.	0.7	N.A	Add pb-free part no:W83310UG

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LIFE SUPPORT APPLICATIONS

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1. GENERAL DESCRIPTION

The W83310U is a linear regulator which provides achieves continuous 2.0 Amp 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 W83310U is promoted with TO252 power package. With W83310U design, a high integration, high performance, and cost-effective solution is promoted.

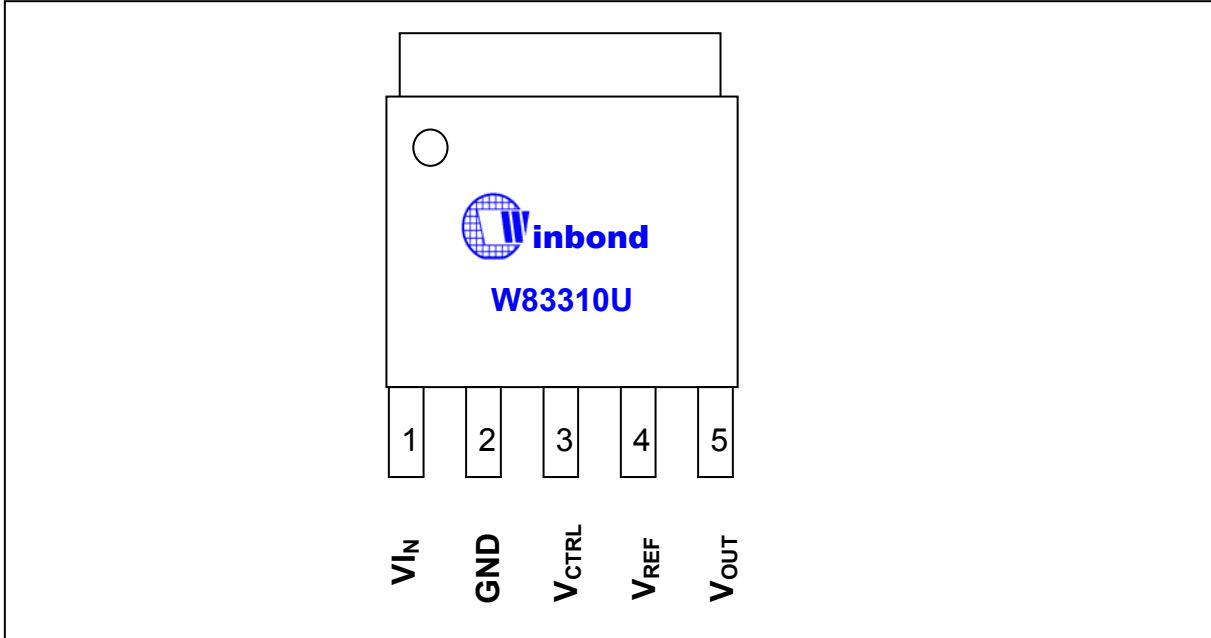
2. FEATURES

- Regulates a bi-directional power with driving and sinking capability
- Provides achieve continuous 2.0Amp driving and sinking current
- Power MOSFET integrated
- Low external component count
- Low output voltage offset
- Operates with +3.3V and +2.5V control power
- Power package TO252-5L
- Low cost and easy to use

3. APPLICATIONS

- DDR and DDR II Bus Termination Regulator
- Active Termination Bus
- SSTL-2
- SSTL-3

4. PIN CONFIGURATION AND DESCRIPTION

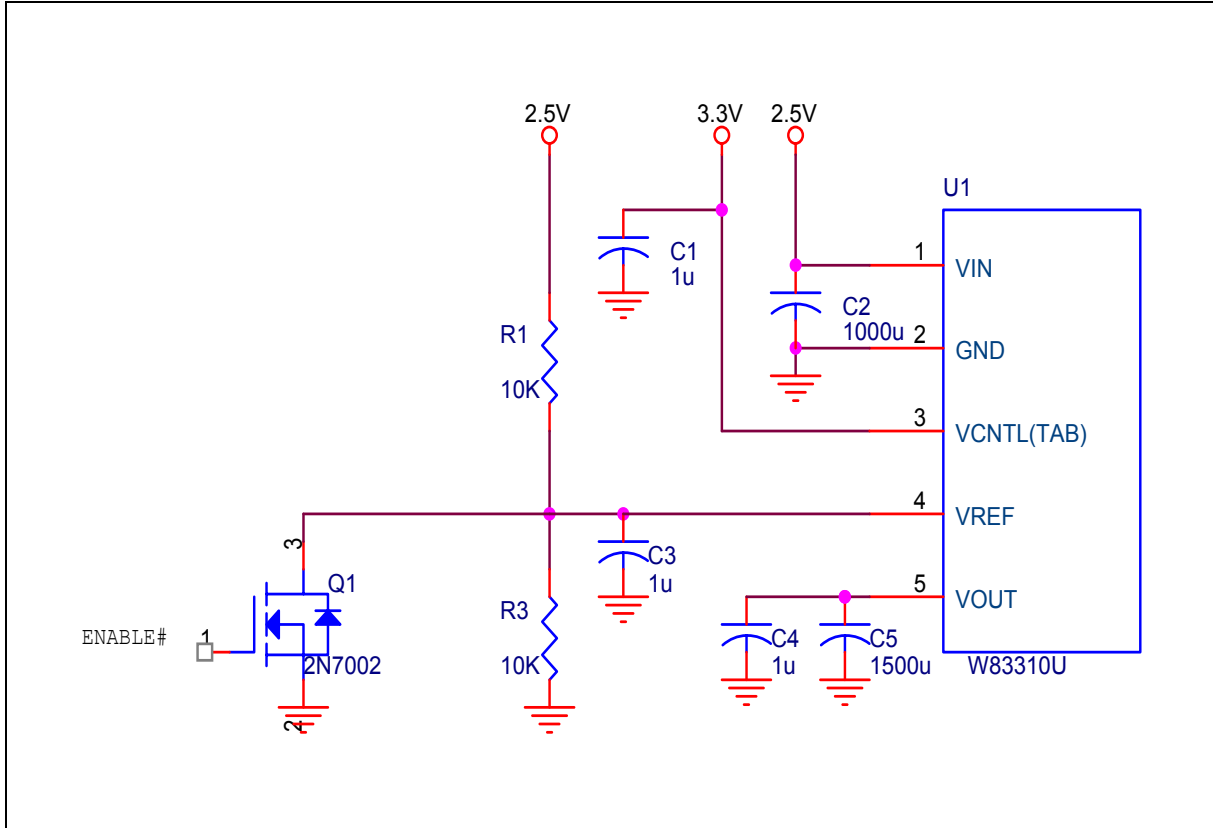


SYMBOL	PIN	FUNCTION
VIN	1	Power input pin.
GND	2	Ground.
VCNTL	3	Gate drive voltage.
VREF	4	Reference voltage and Chip enable.
VOUT	5	Output voltage.

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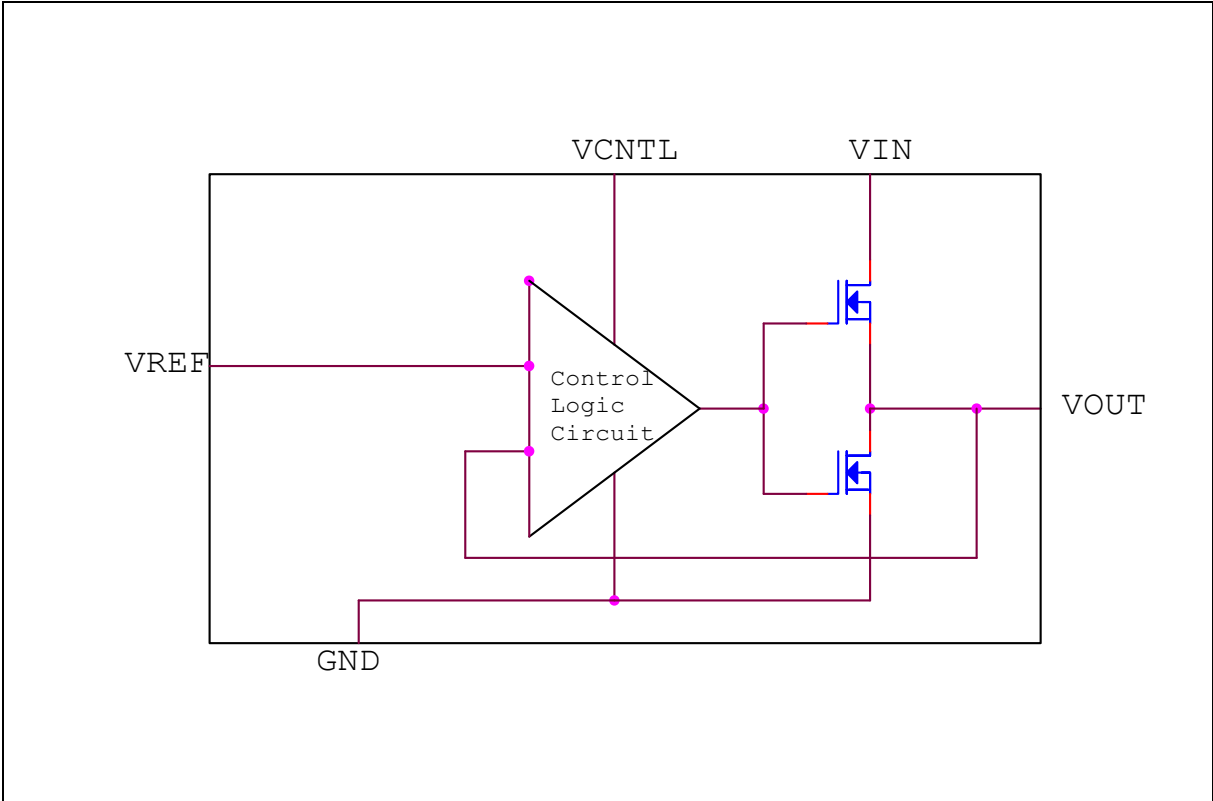


5. APPLICATION CIRCUIT





6. INTERNAL BLOCK DIAGRAM
- W83310U





7. ELECTRICAL CHARACTERISTICS

7.1 AC CHARACTERISTICS

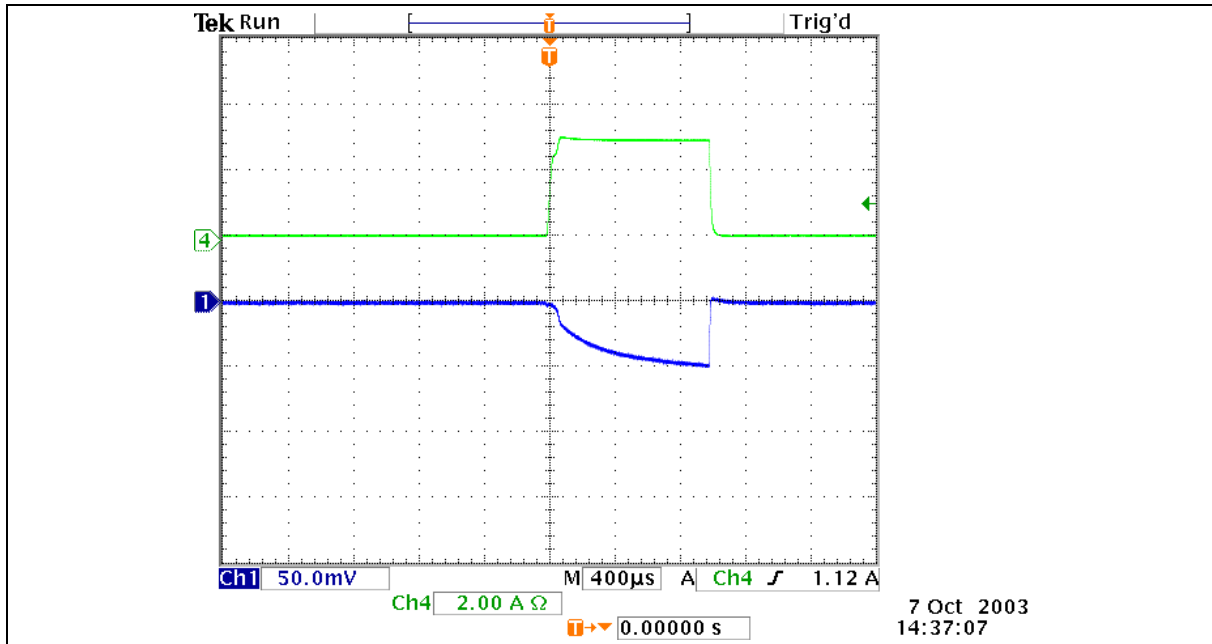
W83310U						
VIN=2.5V, VCNTL=3.3V, VREF=1.25V, Cout=100uF, TA = 0°C to +70°C						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Offset Voltage	V _{OS}	-5	0	+5	mV	I _{OUT} =0A
Load Regulation			1.0		%	Loading: 0A→2.0A
			1.0			Loading: 0A→-2.0A
Input Voltage Range	V _{IN}	1.62	2.5	3.63	V	
	V _{CNTL}		3.3	3.63		
Operating Current of VCNTL	I _{CNTL}		0.5	1.0	mA	No Load(I _{OUT} =0A)
Shutdown Threshold Trigger		0.8			V	Output=High
				0.2	V	Output=Low
Shutdown Current	I _{SHDN}		10		uA	VREF<0.2V Loading=0.7A
Short Current Limit	I _{LMT}	4.0			A	

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

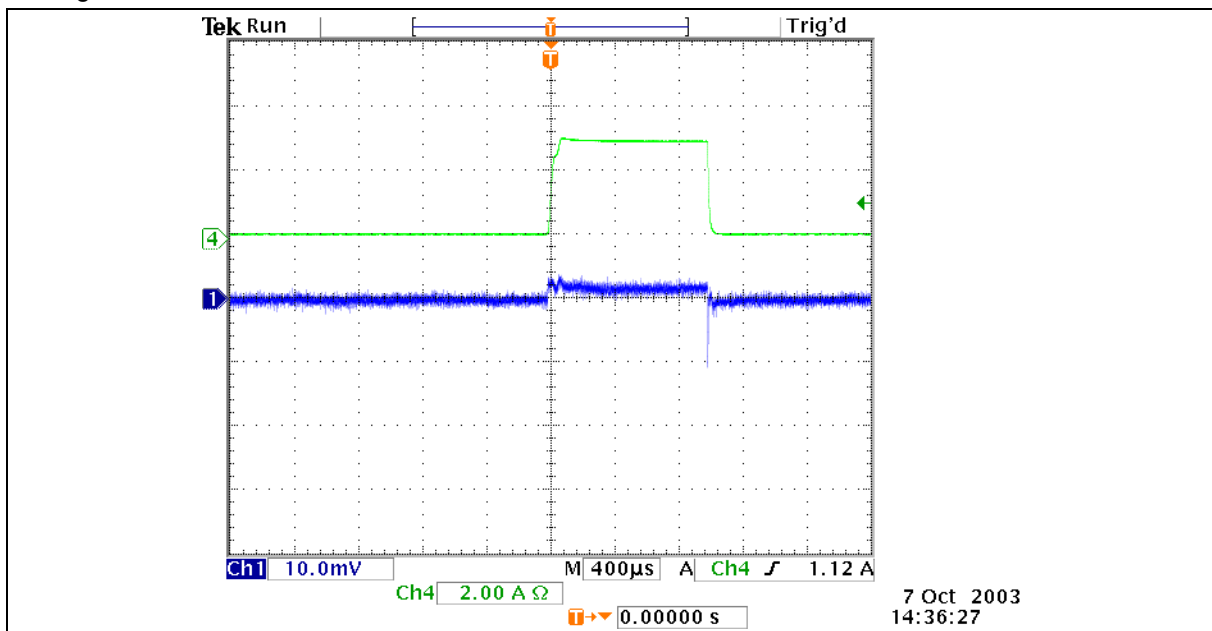


8. TYPICAL OPERATING WAVEFORM

-- Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 3.0Amp 1ms duty pulse driving current. $\Delta V \approx 50mV$.



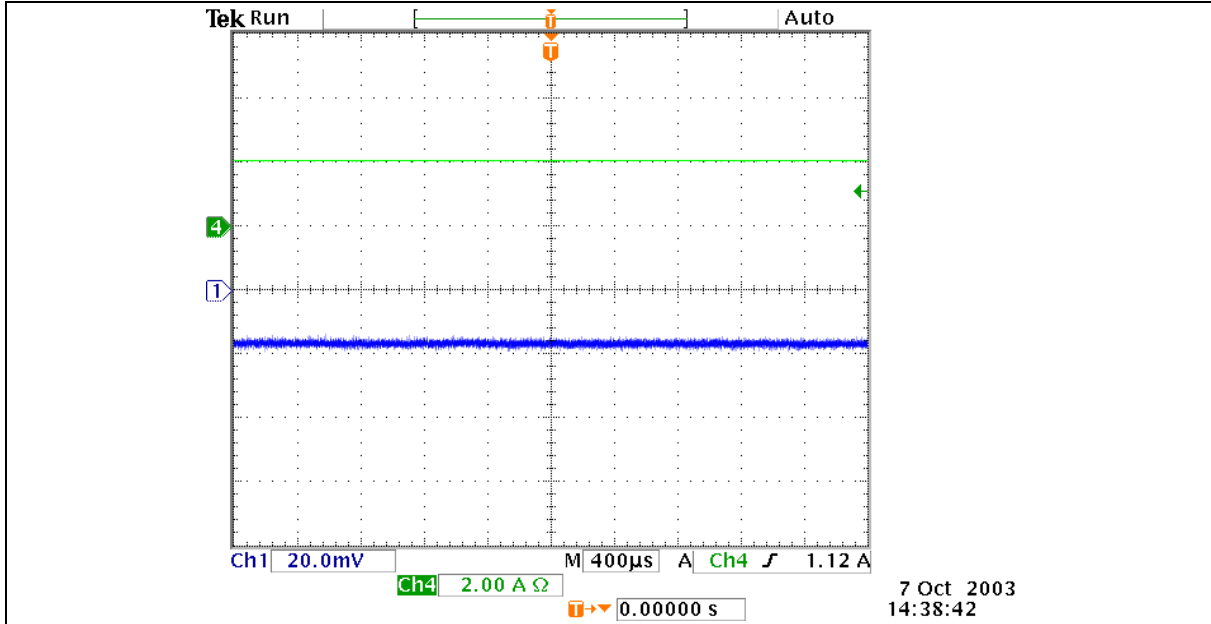
-- Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 3.0Amp 1ms duty pulse sinking current. $\Delta V \approx 5mV$.



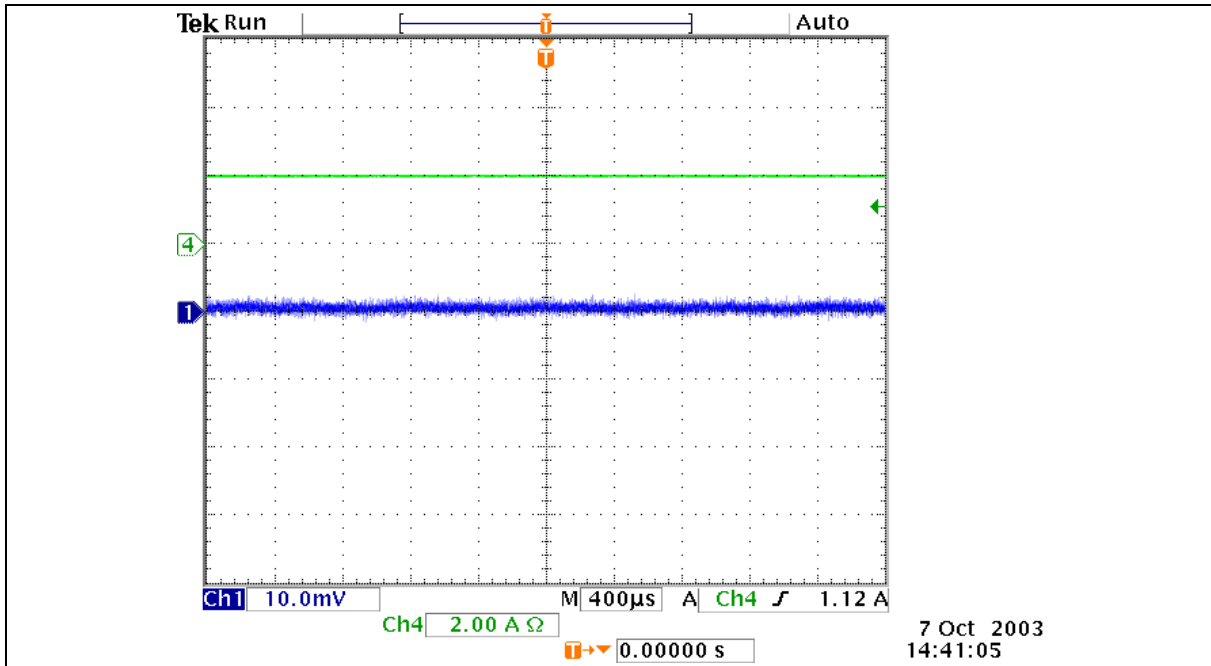
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-- Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp cont. driving current. $\Delta V \approx 20mV$.



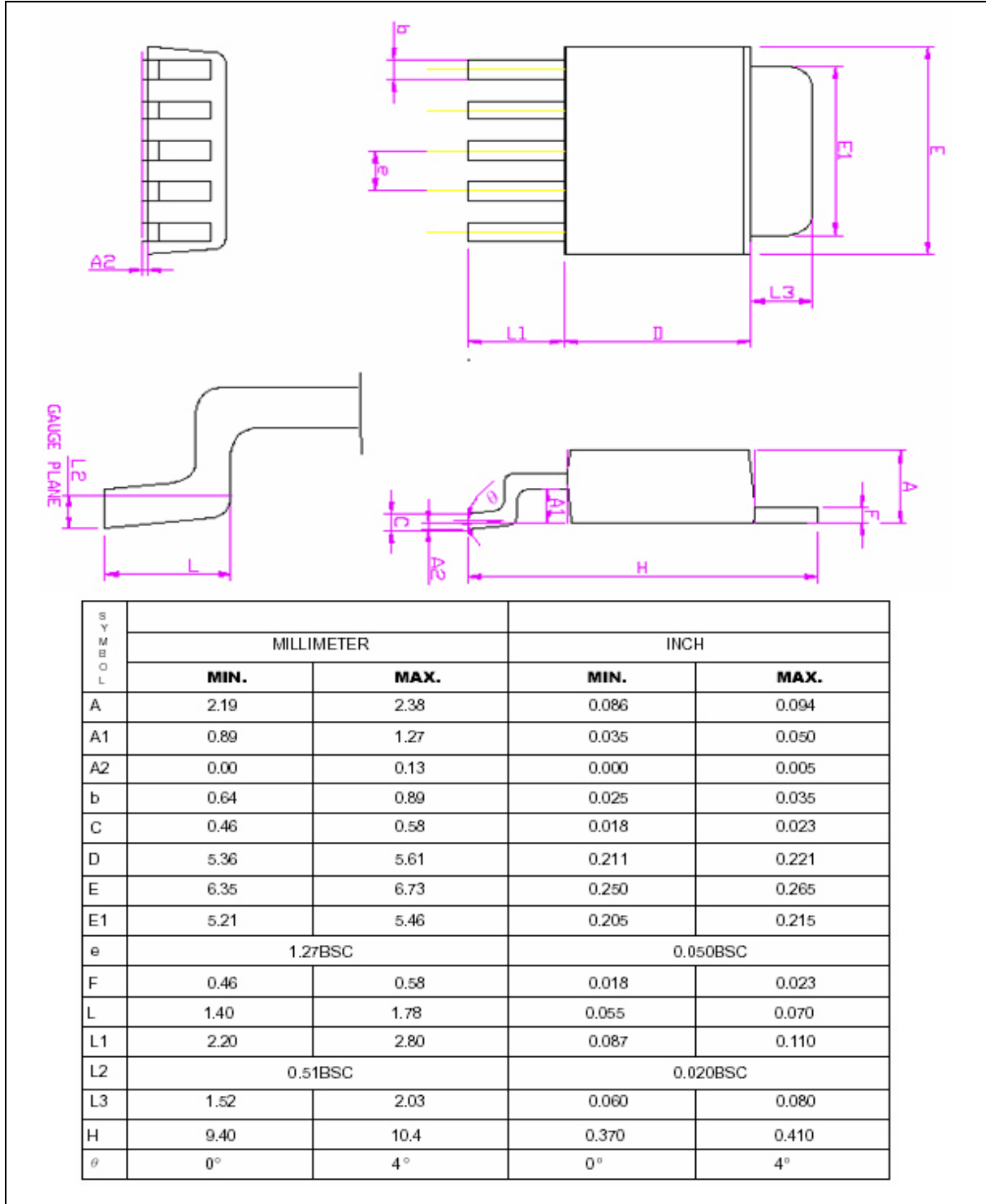
-- Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp cont. sinking current. $\Delta V \approx 2mV$



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9. PACKAGE DIMENSION (TO252-5L)



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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	
TO-252-5L	3.18	96	145	79	78	25	15.5

11. ORDERING INFORMATION

PART NUMBER	PACKAGE TYPE	PRODUCTION FLOW
W83310U	5L TO-252	

12. HOW TO READ THE TOP MARKING



Left line: Winbond logo

1st line: W83310U, W83310UG (Pb-free package) – the part number

2nd line: Tracking code Tracking code 316 G B

316: Packages assembled in Year 03rd, week 16

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

B: The IC version



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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

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