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

LIFE SUPPORT APPLICATIONS

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Table of Contents-

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.

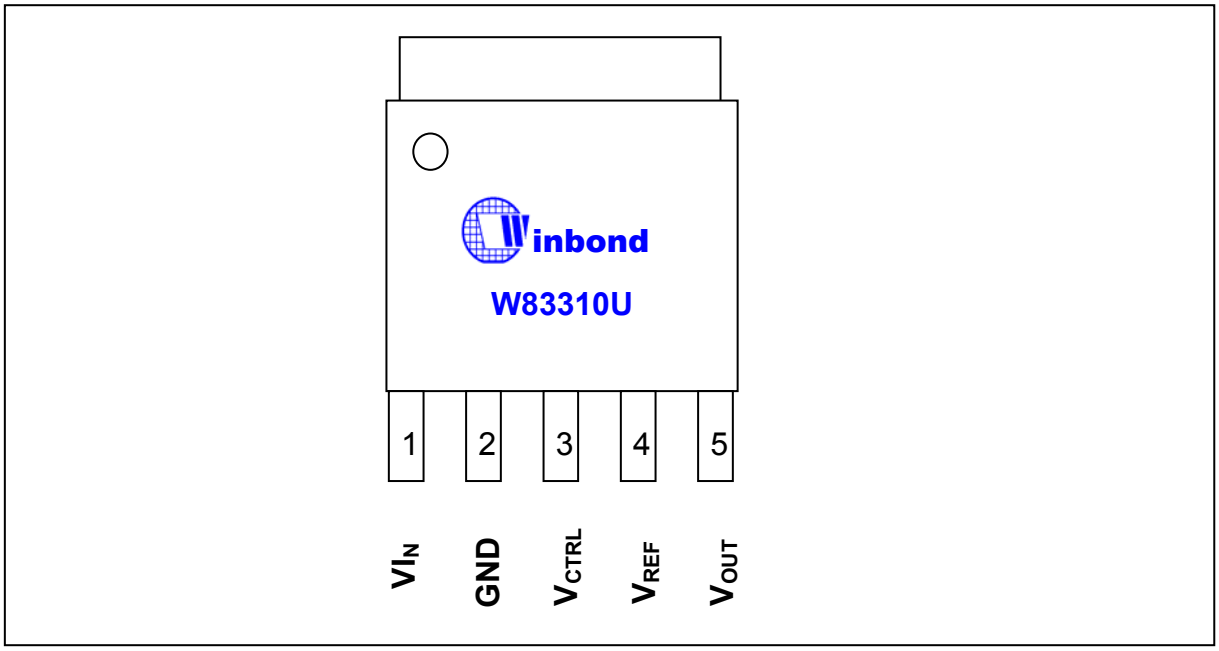
2. FEATURES

- 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

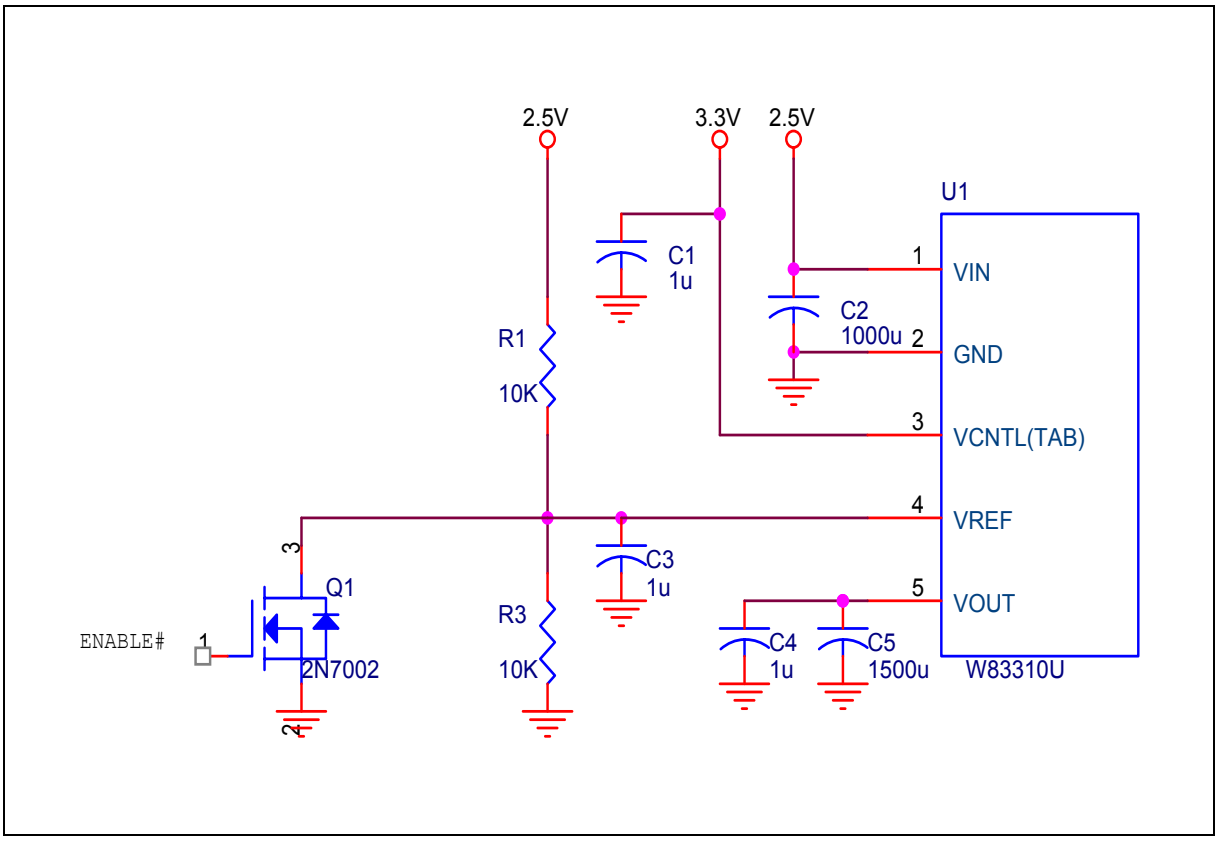
- DDR and DDR II Bus Termination Regulator
- Active Termination Bus
- SSTL-2
- SSTL-3

4. PIN CONFIGURATION AND DESCRIPTION



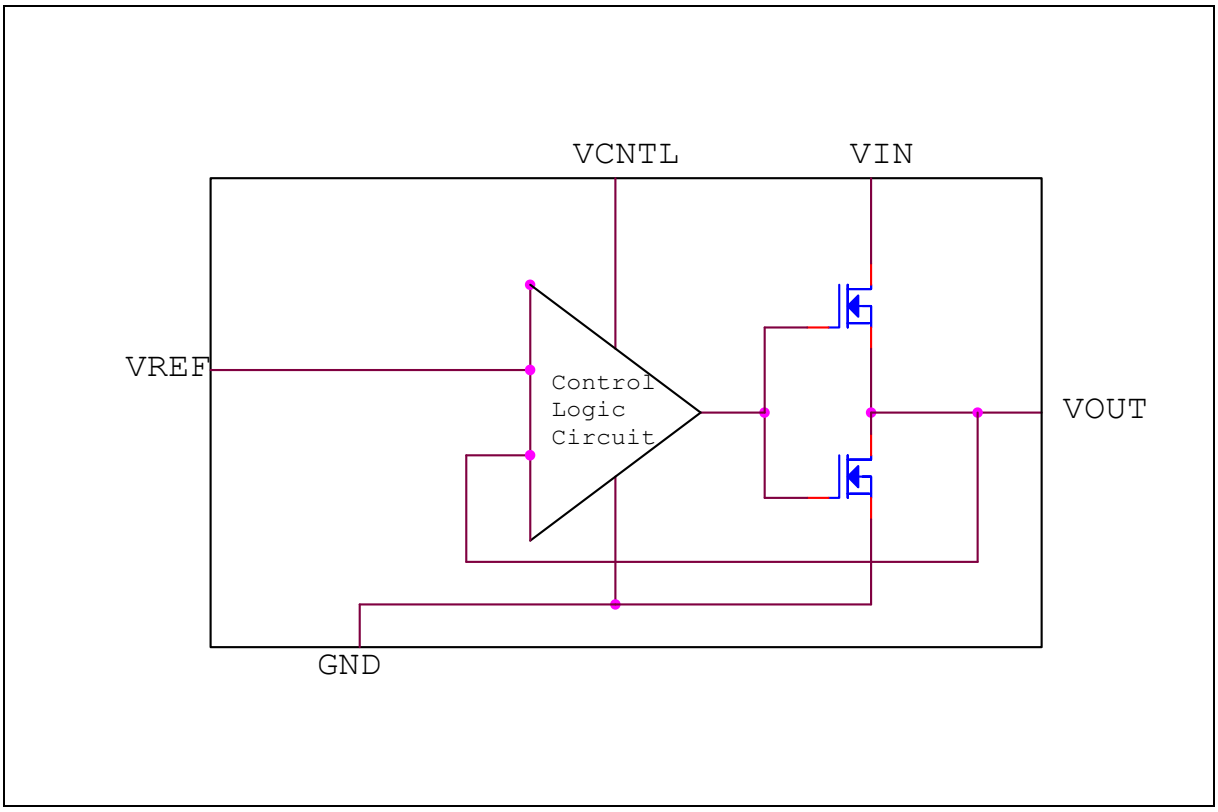
SYMBOL	PIN	FUNCTION
VIN	1	Power input pin.
GND	2	Ground.
VCNTL	3	Gate drive voltage.
VREF	4	Reference voltage and Chip enable.
VOUT	5	Output voltage.

5. APPLICATION CIRCUIT



6. INTERNAL BLOCK DIAGRAM

- W83310U



7. ELECTRICAL CHARACTERISTICS

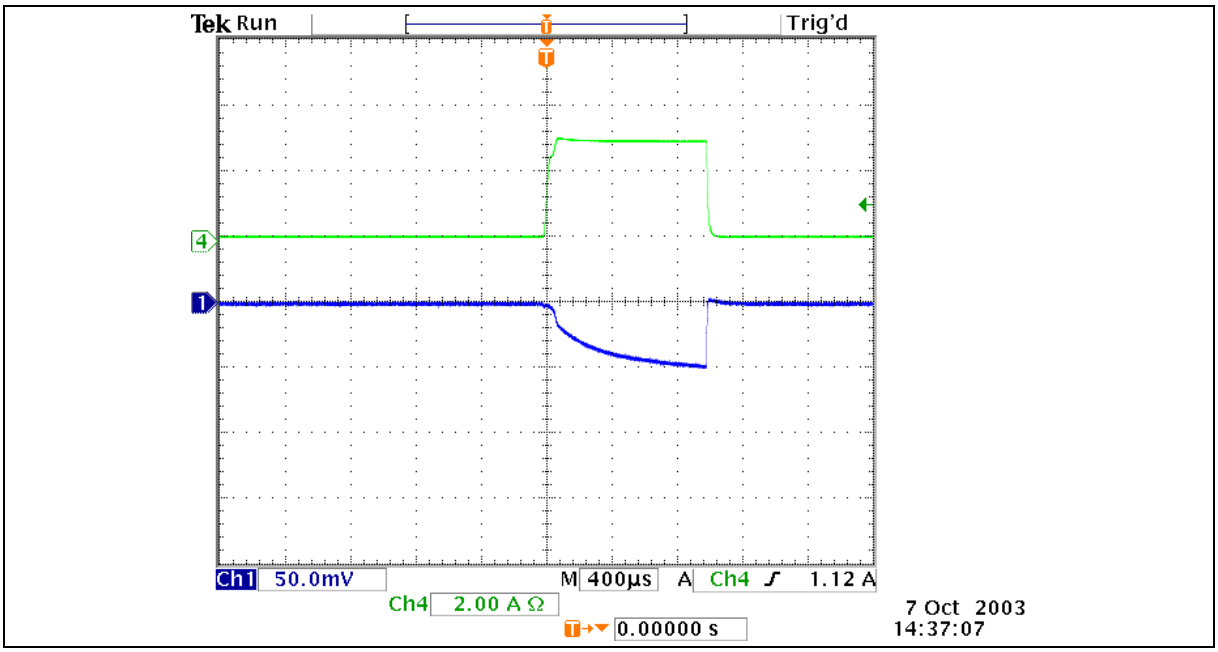
7.1 AC CHARACTERISTICS

W83310U						
VIN=2.5V,VCNTL=3.3V,VREF=1.25V,Cout=100uF, T_A = 0℃ to +70℃						
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	

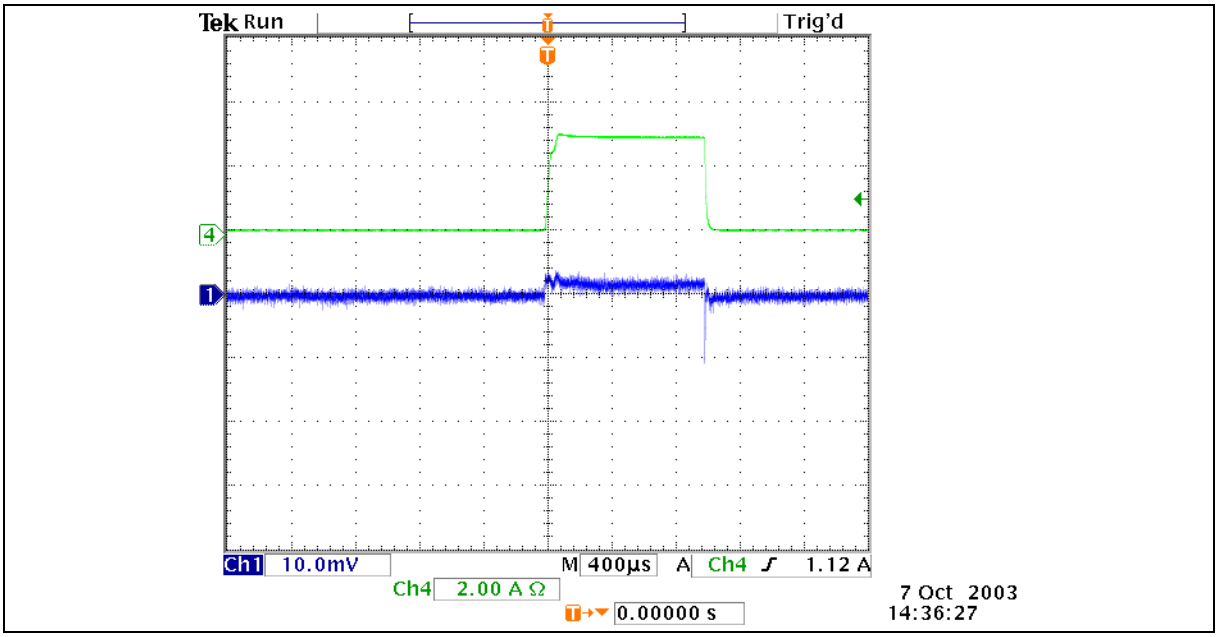
Note: Load regulation is tested with a 1ms duty pulse current and measuring V_{OUT}.

8. TYPICAL OPERATING WAVEFORM

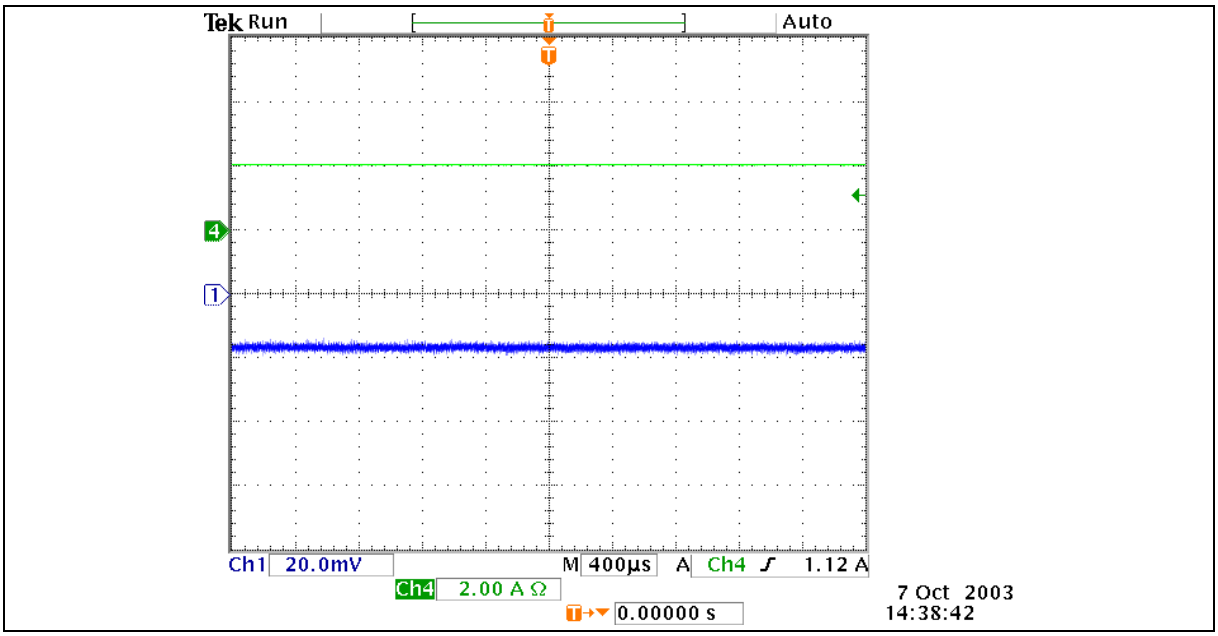
-- Load regulation with test condition - V_{CTRL}=3.3V; V_{IN}=2.5V; V_{OUT}=1.25V; 3.0Amp 1ms duty pulse driving current. $\Delta V \approx 50mV$.



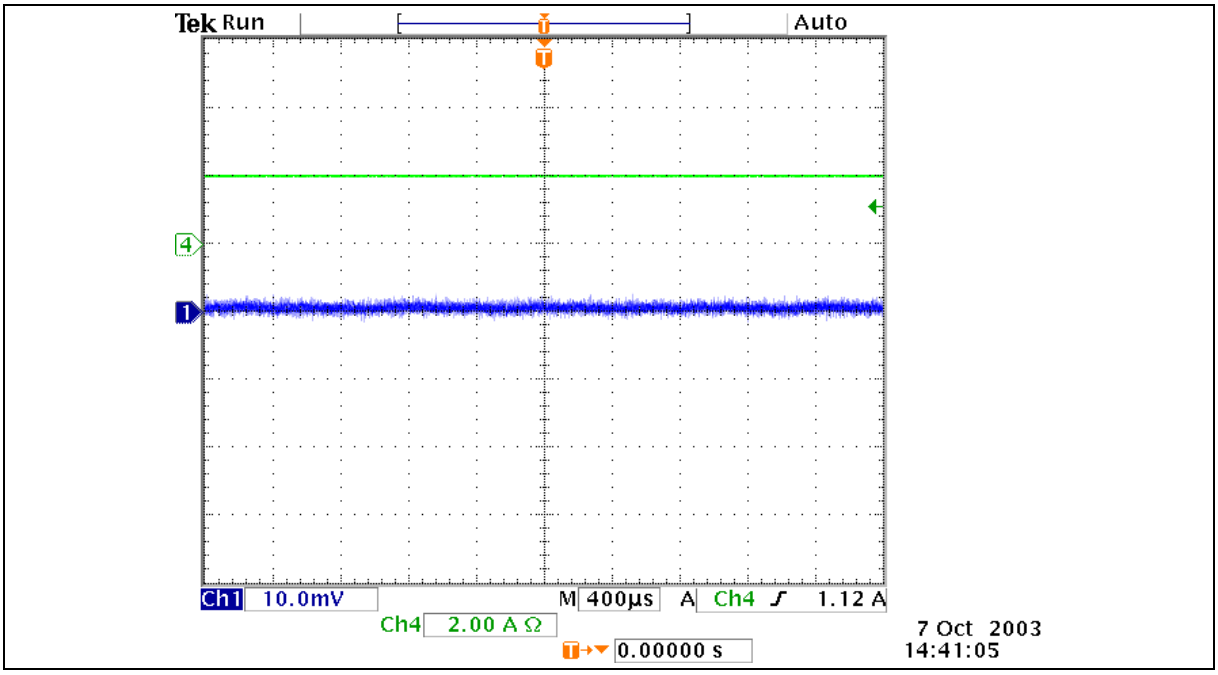
-- Load regulation with test condition - V_{CTRL}=3.3V; V_{IN}=2.5V; V_{OUT}=1.25V; 3.0Amp 1ms duty pulse sinking current. $\Delta V \approx 5mV$.



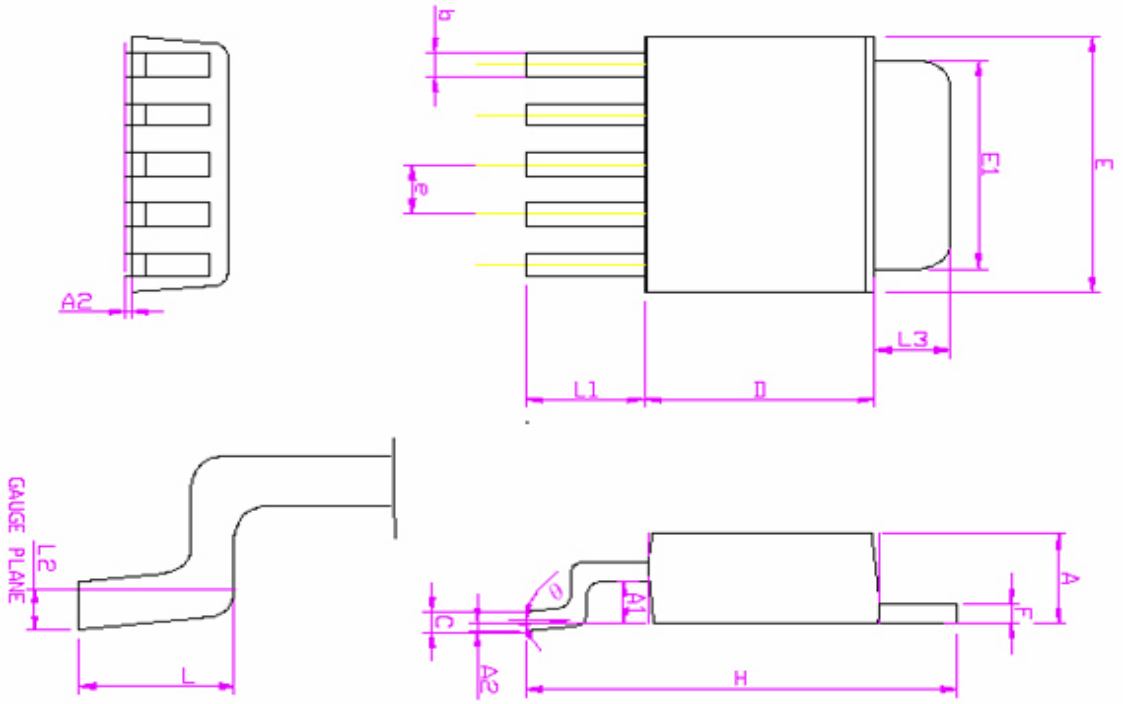
-- Load regulation with test condition - V_{CTRL}=3.3V; V_{IN}=2.5V; V_{OUT}=1.25V; 2.0Amp cont. driving current. $\Delta V \approx 20mV$.



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



9. PACKAGE DIMENSION (TO252-5L)



SYMBOL	MILLIMETER		INCH	
	MIN.	**MAX.**	**MIN.**	**MAX.**
A	2.19	2.38	0.086	0.094
A1	0.89	1.27	0.035	0.050
A2	0.00	0.13	0.000	0.005
b	0.64	0.89	0.025	0.035
C	0.46	0.58	0.018	0.023
D	5.36	5.61	0.211	0.221
E	6.35	6.73	0.250	0.265
E1	5.21	5.46	0.205	0.215
e	1.27BSC		0.050BSC	
F	0.46	0.58	0.018	0.023
L	1.40	1.78	0.055	0.070
L1	2.20	2.80	0.087	0.110
L2	0.51BSC		0.020BSC	
L3	1.52	2.03	0.060	0.080
H	9.40	10.4	0.370	0.410
θ	0°	4°	0°	4°

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 03', 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/

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

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

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