



Winbond
Bus Termination Regulator
W83310S-R2
W83310G-R2

W83310S-R2/W83310G-R2



W83310S-R2

Data Sheet Revision History

	PAGES	DATES	VERSION	VERSION ON WEB	MAIN CONTENTS
1	N.A.	03/Mar.	0.5	N.A.	All versions before 0.5 are for internal use only
2	4	03/Jul.	0.51	N.A.	Recommend circuit update
3	All	05/Jan.	0.52	N.A	Add Pb-free part no:W83310G-R2
4	1,2	06/Jan.	0.53	N.A	Add description of supporting cont. 1.8 Amp driving and sinking current.

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LIFE SUPPORT APPLICATIONS

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W83310S-R2/W83310G-R2



1. GENERAL DESCRIPTION

The W83310S-R2 is a linear regulator which provides achieves peak 2.0 Amp/cont. 1.8 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 W83310S-R2 is promoted with small footprint 8-SOP 150mil package. With W83301S-R2 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 peak 2.0 Amp/cont. 1.8 Amp driving and sinking current
- Power MOSFET integrated
- Low external component count
- Low output voltage offset
- Operates with +3.3V and +2.5V control power
- Small package
- Low cost and easy to use

3. APPLICATIONS

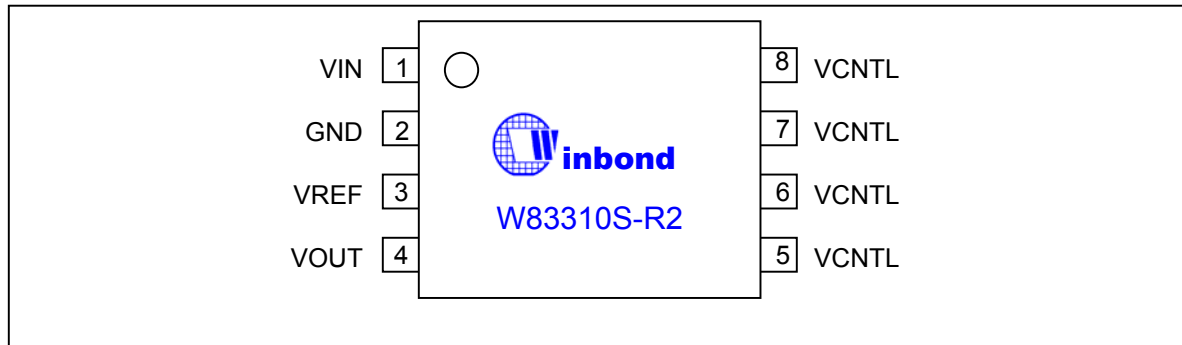
- DDR Bus Termination Regulator
- Active Termination Bus
- SSTL-2
- SSTL-3

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4. PIN CONFIGURATION AND DESCRIPTION

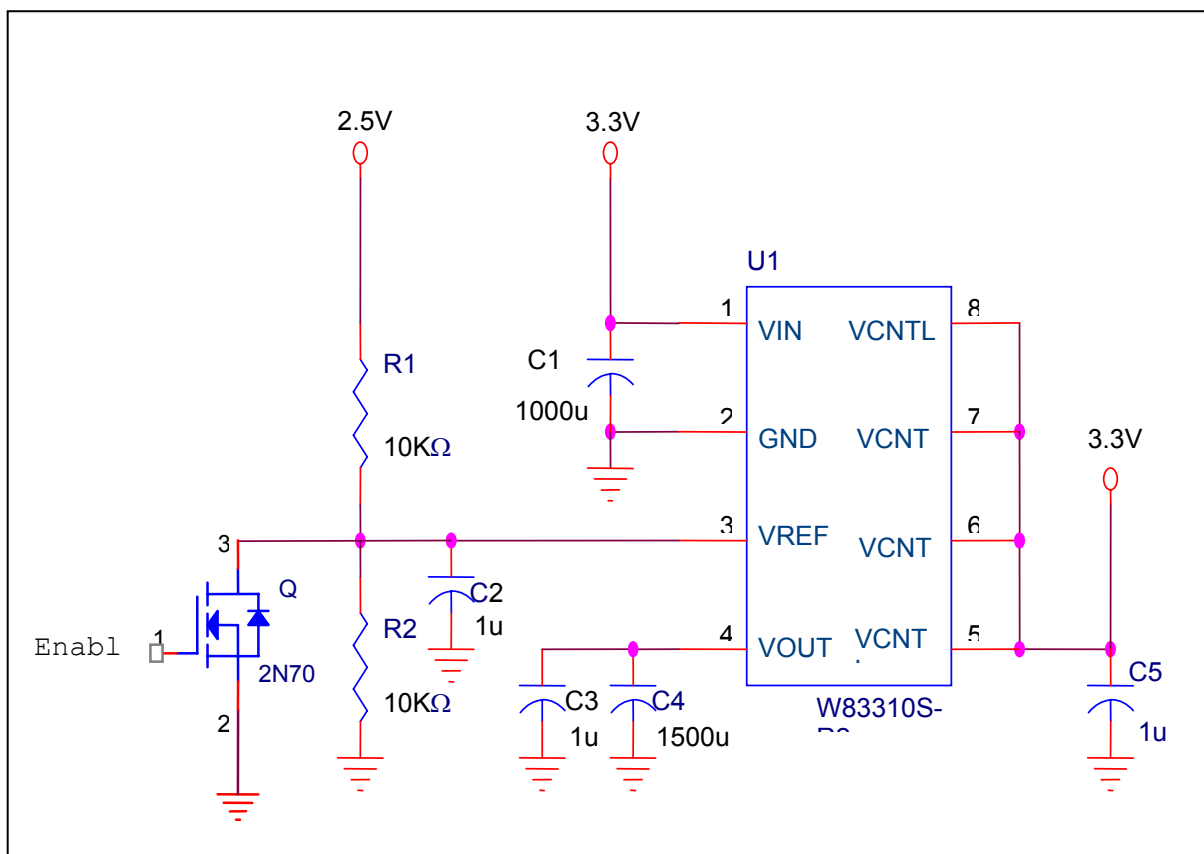
- W83310S-R2



SYMBOL	PIN	FUNCTION
VIN	1	Power input pin.
GND	2	Ground.
VREF	3	Reference voltage and Chip enable.
VOUT	4	Output voltage.
VCNTL	5	Gate drive voltage.
VCNTL	6	Gate drive voltage.
VCNTL	7	Gate drive voltage.
VCNTL	8	Gate drive voltage.



5. APPLICATION CIRCUIT

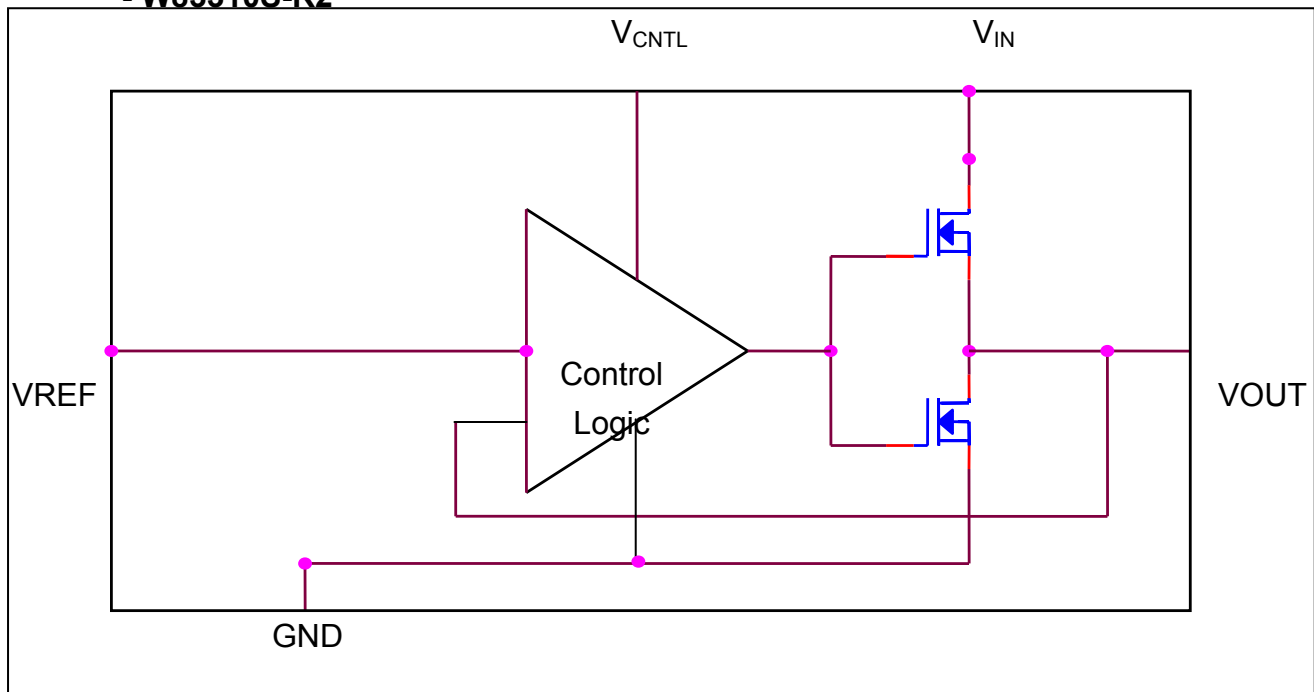


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6. INTERNAL BLOCK DIAGRAM

- W83310S-R2



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7. ELECTRICAL CHARACTERISTICS

7.1 AC CHARACTERISTICS

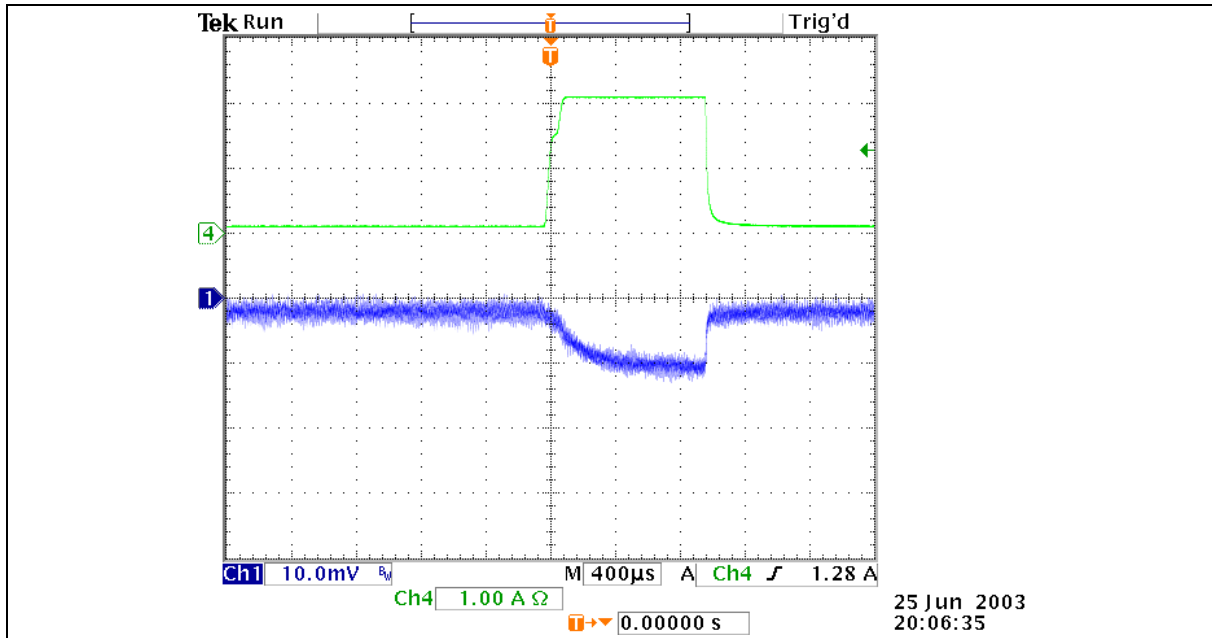
W83310S-R2						
VIN=2.5V, VCNTL=3.3V, VREF=1.25V, Cout=100uF, TA = 0 °C to +70 °C						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Offset Voltage	V _{OS}	-5	0	+5	mV	I _{OUT} =0A
Load Regulation			1.0		%	Loading: 0A→2.0A
			1.0			Loading: 0A→-2.0A
Input Voltage Range	V _{IN}		2.5	3.63	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}.

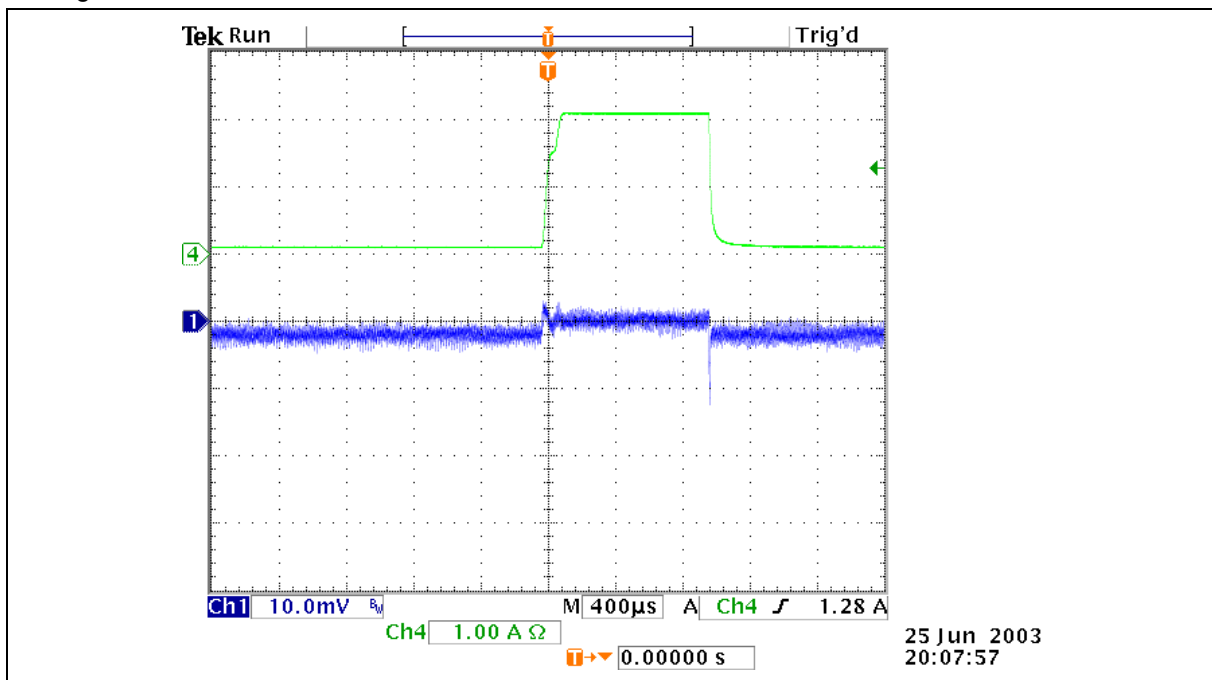


8. TYPICAL OPERATING WAVEFORM

Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp 1ms duty pulse driving current. $\Delta V \approx 9mV$.



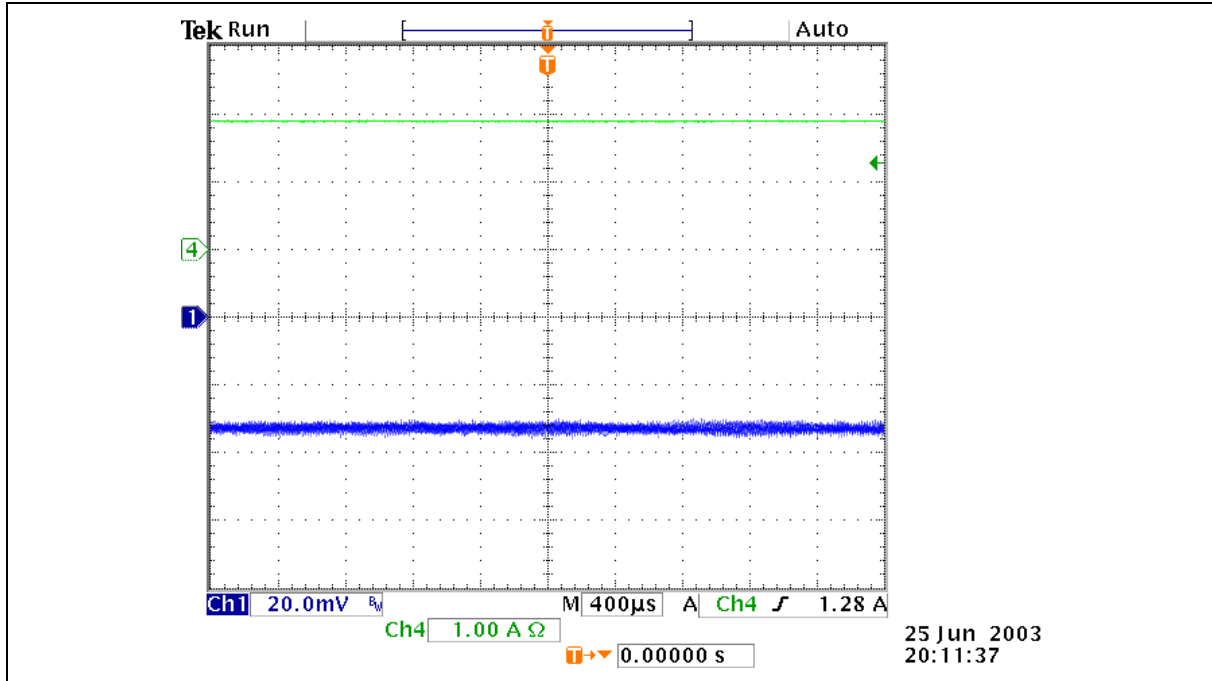
Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 2.0Amp 1ms duty pulse sinking current. $\Delta V \approx 4mV$.



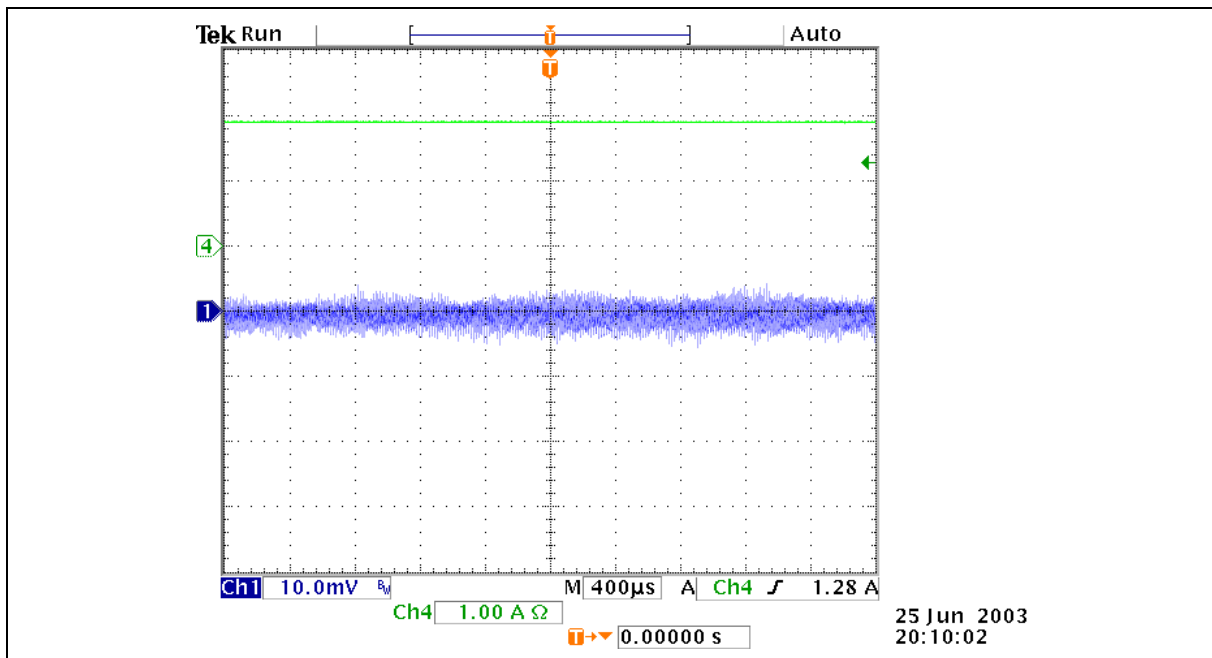
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Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 1.8Amp cont. driving current.
 $\Delta V \approx 32mV @ \sim 85^{\circ}C$.



Load regulation with test condition - $V_{CTRL}=3.3V$; $V_{IN}=2.5V$; $V_{OUT}=1.25V$; 1.8Amp cont. sinking current.
 $\Delta V \approx 2mV @ \sim 85^{\circ}C$.

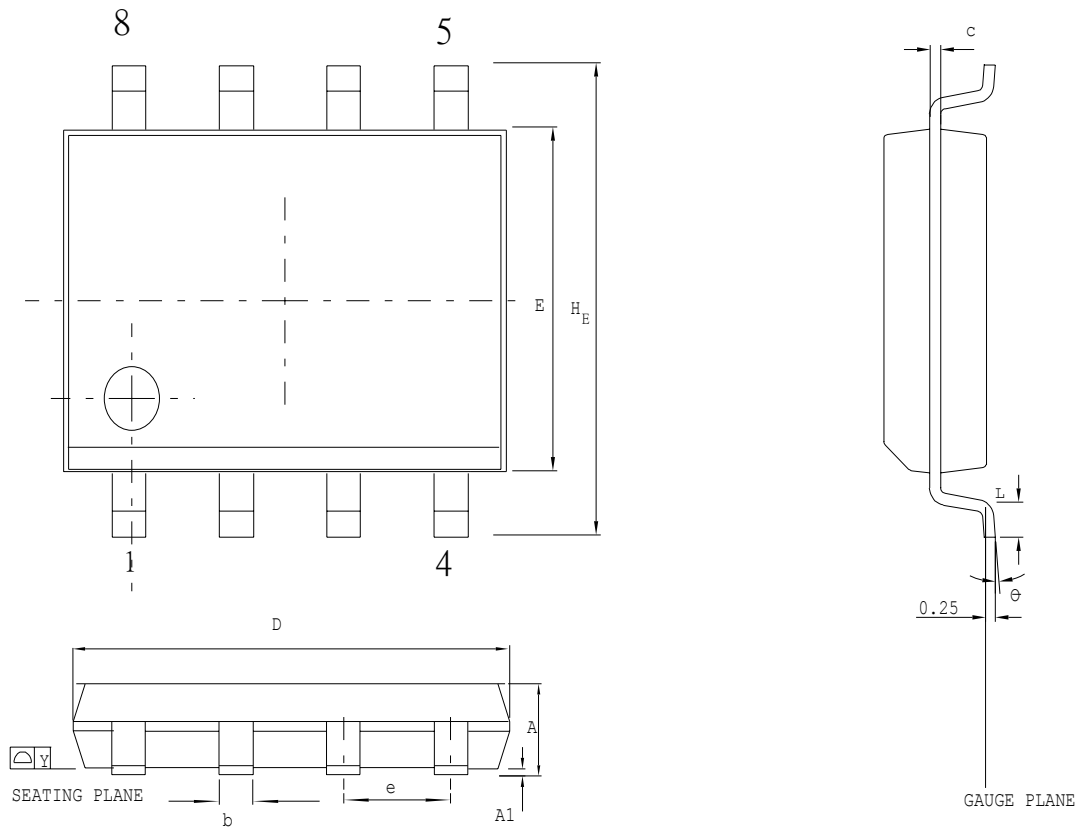


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9. PACKAGE DIMENSION

8L SOP 150mil



Control demensions are in milimeters .

SYMBOL	DIMENSION IN MM		DIMENSION IN INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
b	0.33	0.51	0.013	0.020
c	0.19	0.25	0.008	0.010
E	3.80	4.00	0.150	0.157
D	4.80	5.00	0.188	0.196
e	1.27 BSC		0.050 BSC	
H_E	5.80	6.20	0.228	0.244
Y	—	0.10	—	0.004
L	0.40	1.27	0.016	0.050
θ	0	10	0	10

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10. ORDERING INFORMATION

PART NUMBER	PACKAGE TYPE	PRODUCTION FLOW
W83310S-R2	8 PIN SOP	Commercial, 0°C to +70°C
W83310G-R2	8 PIN SOP(Pb-free package)	Commercial, 0°C to +70°C

11. HOW TO READ THE TOP MARKING



Left line: Winbond logo

1st & 2nd line: W83310S-R2 – the part number , W83310G-R2-the Pb-free part number

3rd line: Tracking code Tracking code 249 O A

249: packages assembled in Year 02', week 49

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

B: the IC version



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