

The Winbond logo consists of a series of red slanted bars on the left, followed by the word "winbond" in a bold, italicized, red sans-serif font, and another series of red slanted bars on the right.

**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



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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

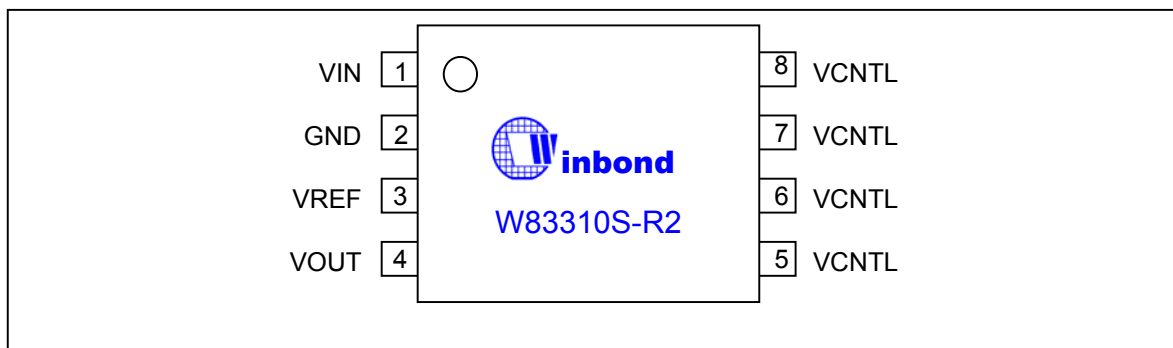
- DDR Bus Termination Regulator
- Active Termination Bus
- SSTL-2
- SSTL-3

## W83310S-R2/W83310G-R2



### 4. PIN CONFIGURATION AND DESCRIPTION

#### - W83310S-R2

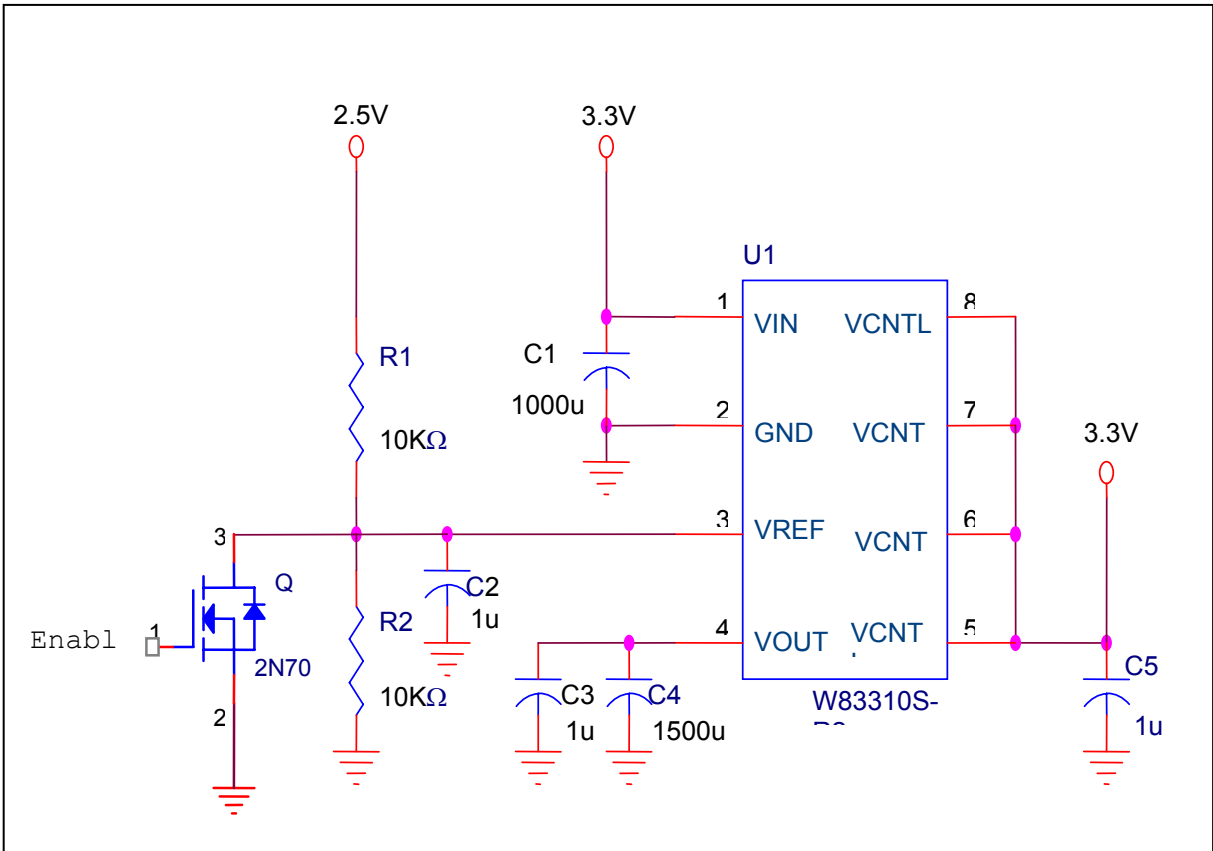


SYMBOL	PIN	FUNCTION
VIN	1	Power input pin.
GND	2	Ground.
VREF	3	Reference voltage and Chip enable.
VOUT	4	Output voltage.
VCNTL	5	Gate drive voltage.
VCNTL	6	Gate drive voltage.
VCNTL	7	Gate drive voltage.
VCNTL	8	Gate drive voltage.

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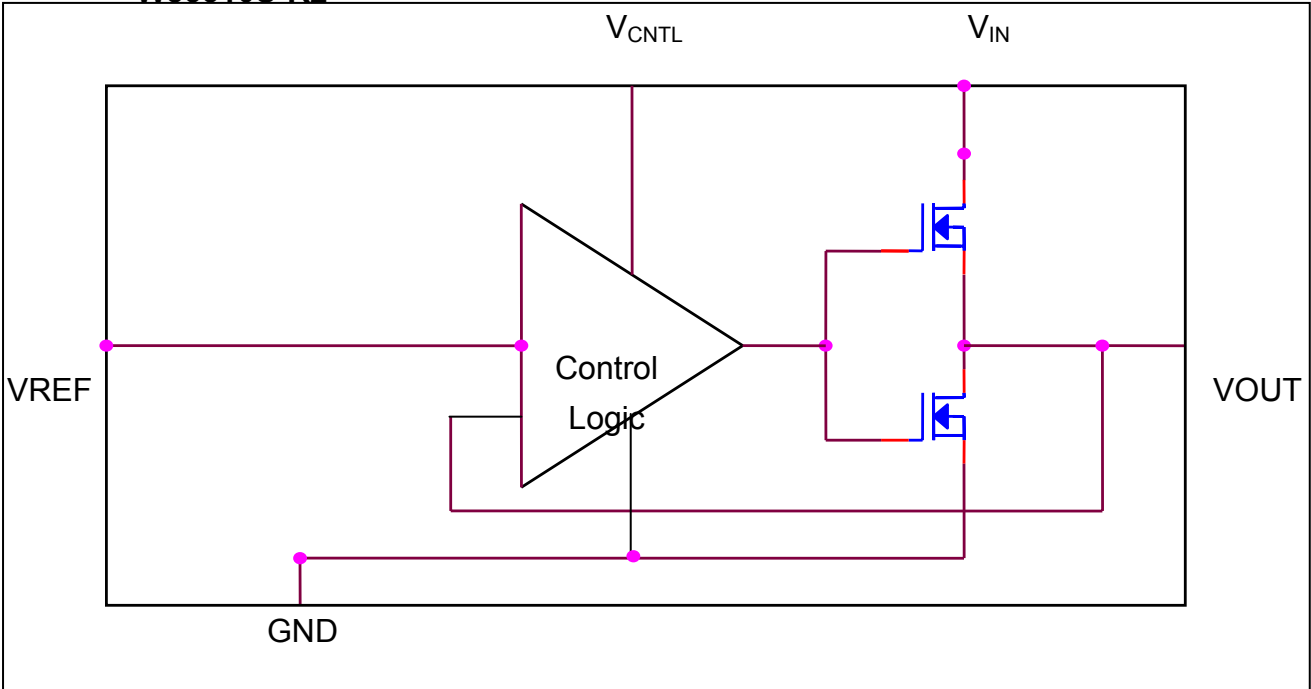
## 5. APPLICATION CIRCUIT



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6. INTERNAL BLOCK DIAGRAM  
- W83310S-R2



## W83310S-R2/W83310G-R2



### 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 <sub>OS</sub>	-5	0	+5	mV	I <sub>OUT</sub> =0A
Load Regulation			1.0		%	Loading: 0A→2.0A
			1.0			Loading: 0A→-2.0A
Input Voltage Range	V <sub>IN</sub>		2.5	3.63	V	
	V <sub>CNTL</sub>		3.3	3.63		
Operating Current of VCNTL	I <sub>CNTL</sub>		0.5	1.0	mA	No Load(I <sub>OUT</sub> =0A)
Shutdown Threshold Trigger		0.8			V	Output=High
				0.2	V	Output=Low
Shutdown Current	I <sub>SHDN</sub>		10		uA	VREF<0.2V Loading=0.7A
Short Current Limit	I <sub>LMT</sub>		4.0		A	

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

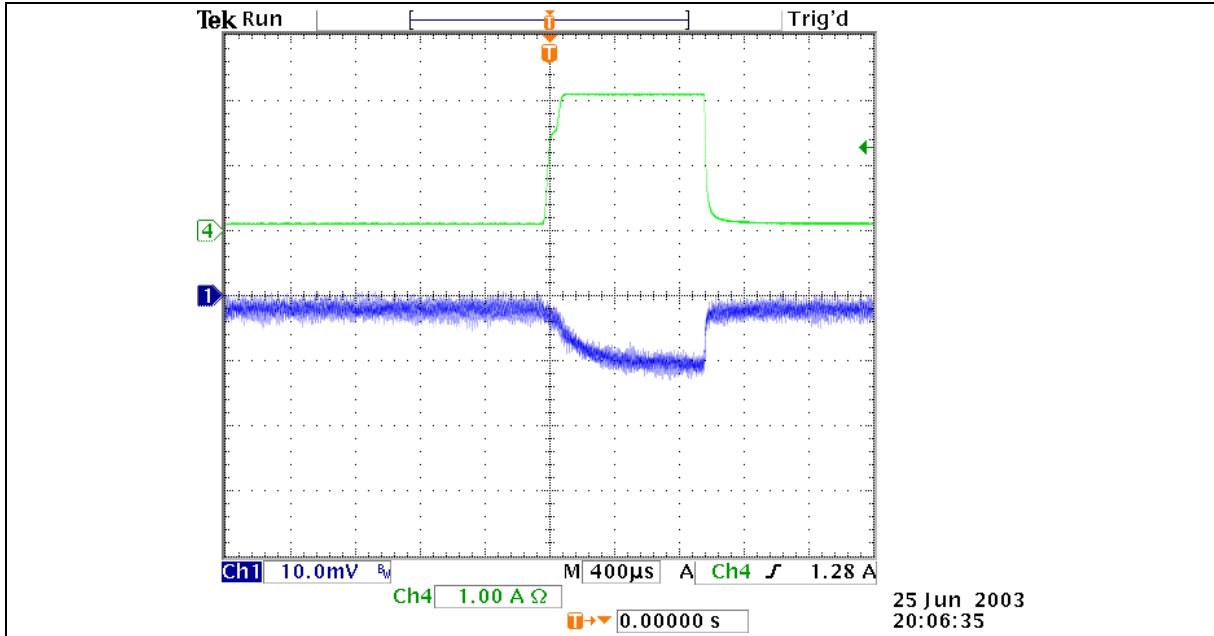


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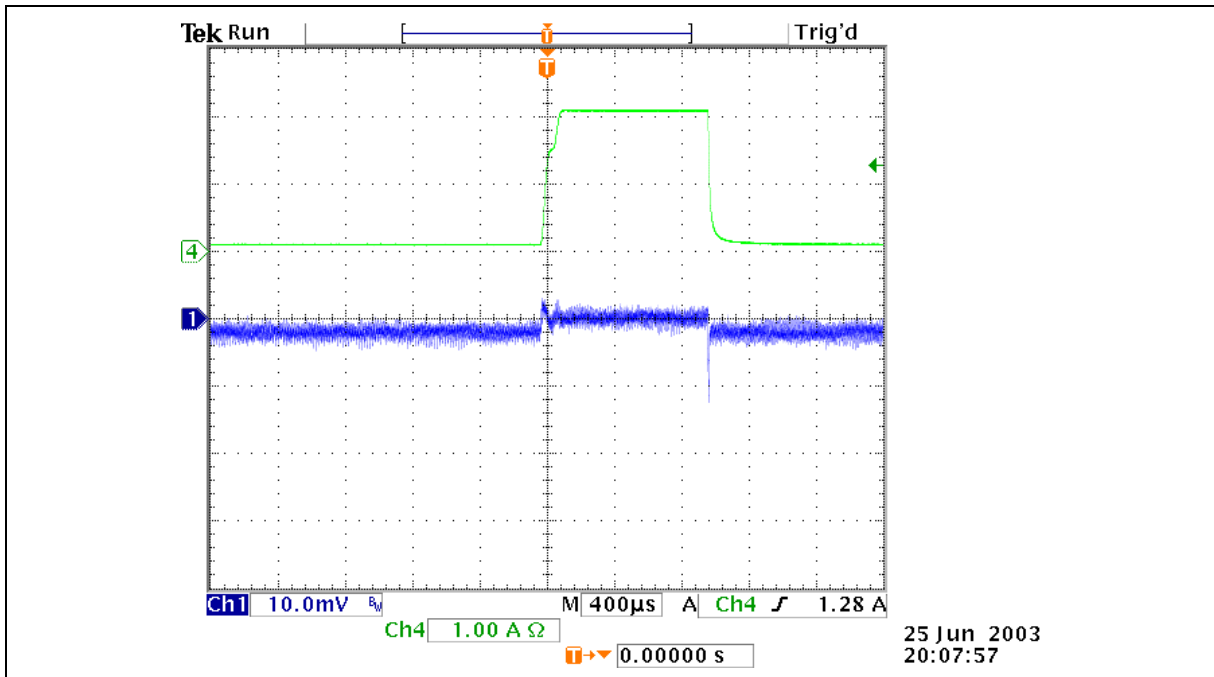


## 8. TYPICAL OPERATING WAVEFORM

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



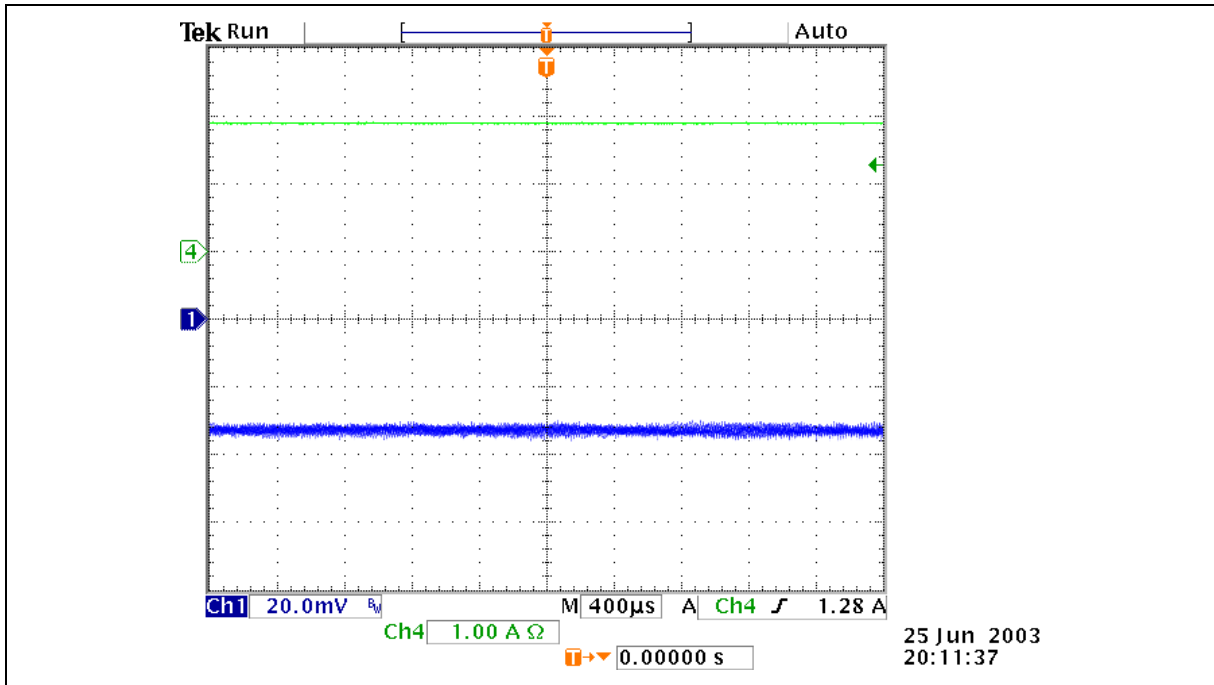
Load regulation with test condition -  $V_{CTRL}=3.3V$ ;  $V_{IN}=2.5V$ ;  $V_{OUT}=1.25V$ ; 2.0Amp 1ms duty pulse sinking current.  $\Delta V \approx 4mV$ .



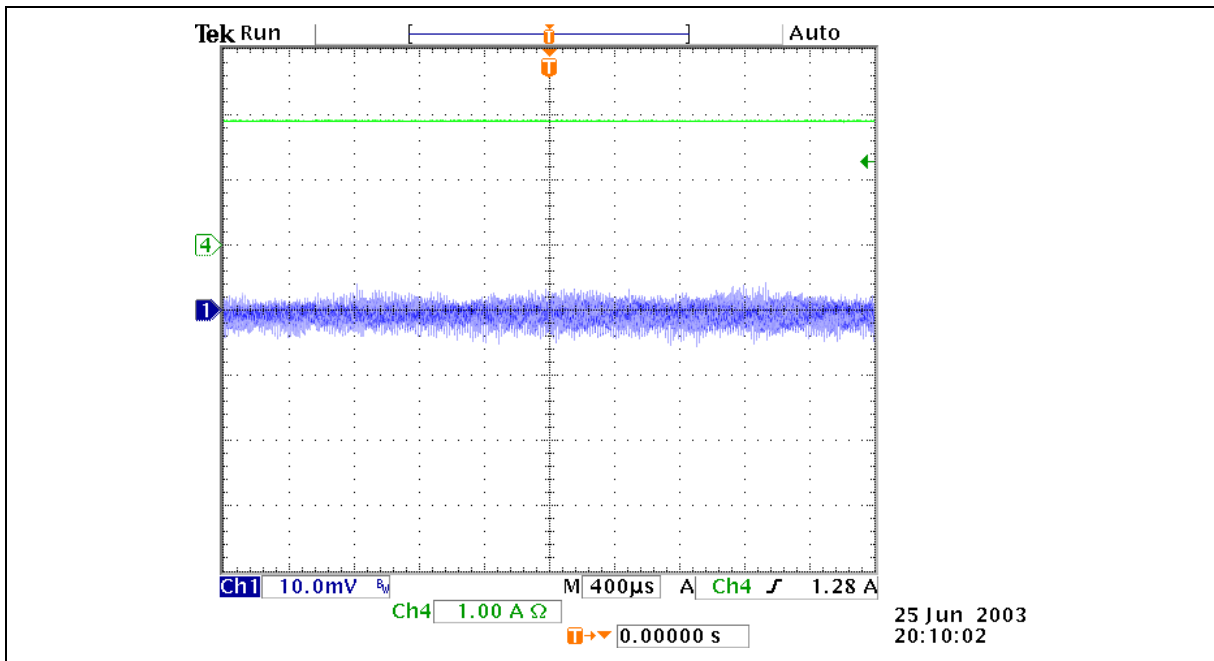
# W83310S-R2/W83310G-R2



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.  
 $\Delta V \approx 2mV @ \sim 85^{\circ}C$ .

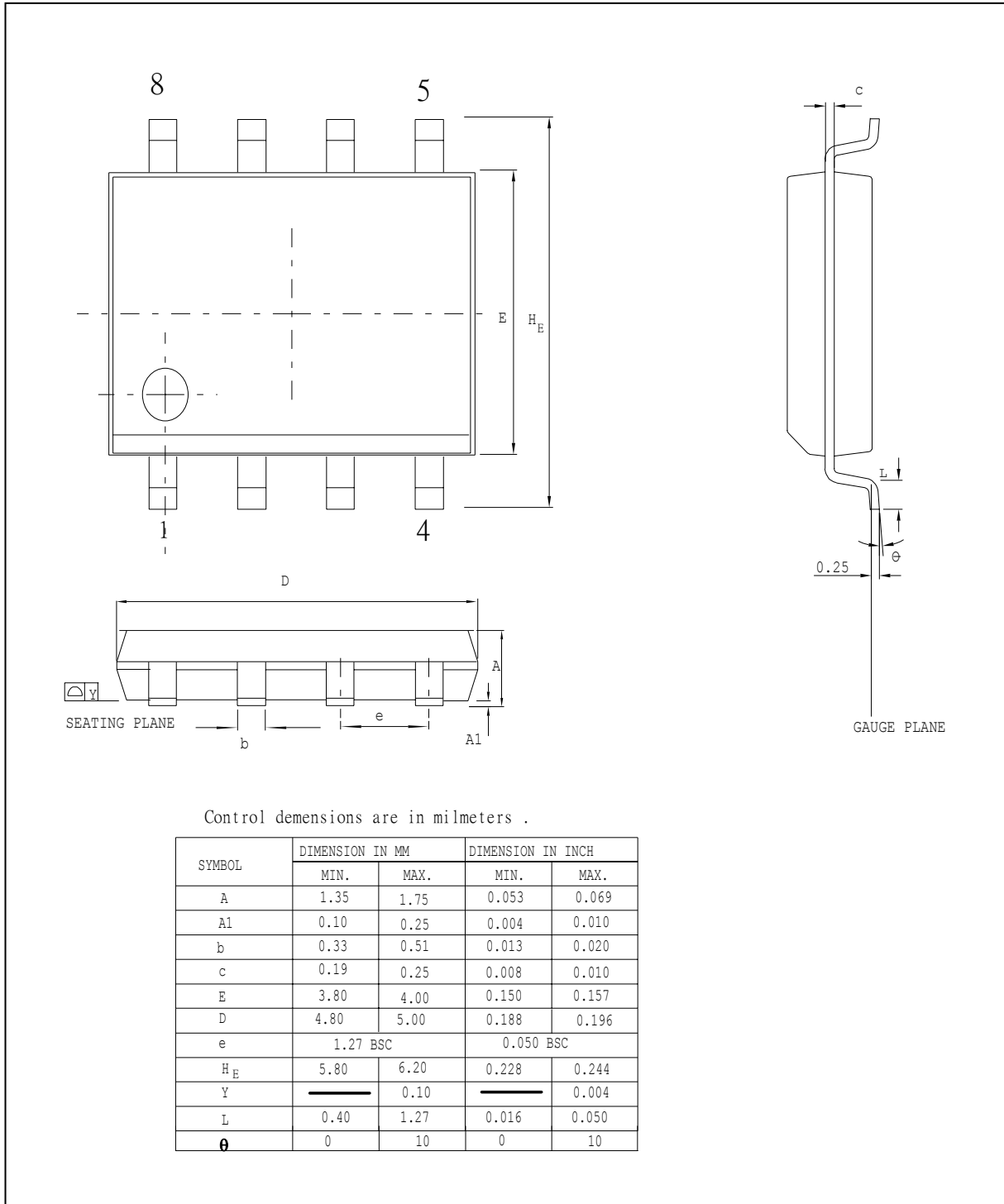


# W83310S-R2/W83310G-R2



## 9. PACKAGE DIMENSION

### 8L SOP 150mil



## W83310S-R2/W83310G-R2



### 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

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

W83310S-R2/W83310G-R2



### Important Notice

Winbond products are not designed, intended, authorized or warranted for use as components in systems or equipment intended for surgical implantation, atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for other applications intended to support or sustain life. Further more, Winbond products are not intended for applications wherein failure of Winbond products could result or lead to a situation wherein personal injury, death or severe property or environmental damage could occur.

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