

### GENERAL DESCRIPTION

The EVAL-AD8330EB is an easy-to-use accessory that enables a hands-on evaluation of the [AD8330](#) variable gain amplifier (VGA). It includes test pins for connections to all of the functional device inputs. Figure 1 is a full size photograph of the board.

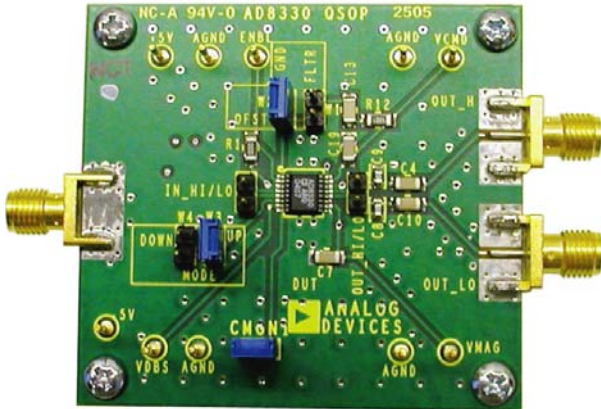


Figure 1. Photograph of the AD8330 Evaluation Board

### BASIC OPERATION

The input SMA connector IN is terminated with a 49.9  $\Omega$  resistor (see Figure 2). For convenience, the board includes an [AD8131](#) high speed differential amplifier to convert a single-ended signal source to the differential input of the AD8330. If desired, the AD8131 can be removed and the AD8330 can be driven at one of its inputs from a single-ended source.

The AD8330 output is observed at the SMA connectors OUT\_HI and OUT\_LO or by using the 2-pin header OUT\_HI/ OUT\_LO adjacent to the device.

The AD8330 requires only a +5 V power supply; however, because of the AD8131 buffer bipolar power supply requirements,  $\pm 5$  V supplies are required to power the board. The current required for the board is approximately 40 mA from the +5 V supply and 10 mA from the -5 V supply.

### OPTIONS

Table 1 lists the jumpers on the board and their functions. Consult the [AD8330](#) data sheet for further explanation of their functions.

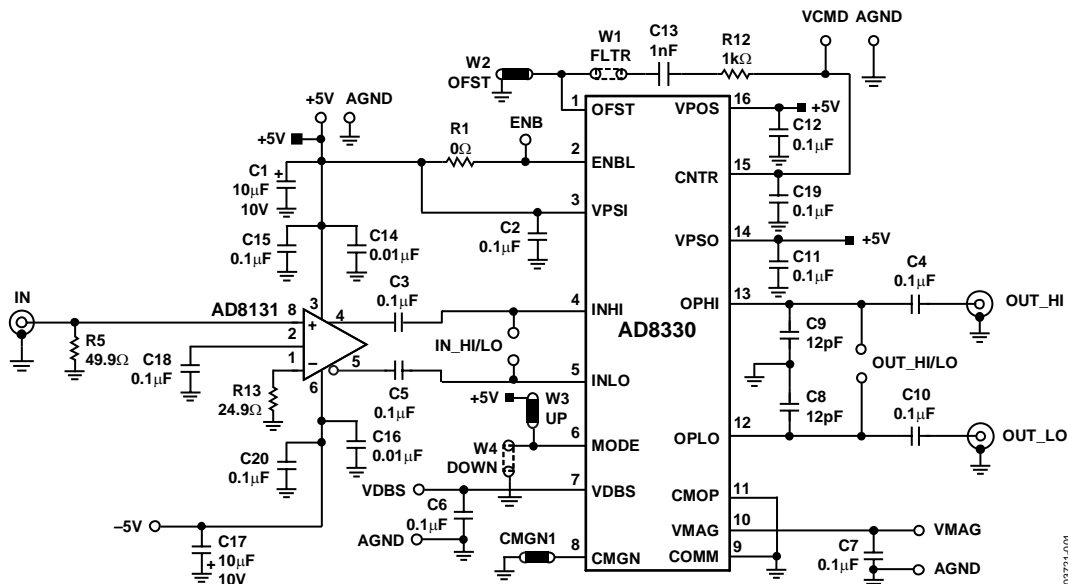


Figure 2. Schematic Diagram

### Rev. B

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# EVAL-AD8330EB

Table 1. Functions of Jumpers

| Name | Function   |
|------|--|
| W1   | Connects a high-pass filter to the offset control loop pin. This jumper is normally not installed. |
| W2   | Disables the offset correction loop. This jumper is installed for dc or low frequency operation.   |
| W3   | Mode up. Install for ascending gain with increasing VDBS gain control voltage.                     |
| W4   | Mode down. Install for descending gain with increasing VDBS gain control voltage.                  |

## MEASUREMENT SETUP

The basic board connections for a typical measurement are shown in Figure 3. To minimize circuit-loading effects, a low capacitance FET probe is recommended for observing input or output waveforms. Dual circuit headers IN\_HI/LO and OUT\_HI/OUT\_LO are provided for this purpose. The SMA connectors OUT\_HI and OUT\_LO can also be used, but the user may need to account for load capacitance effects.

## EVAL-AD8330EB BOARD DESIGN

The EVAL-AD8330EB is a 4-layer design for maximum ground-plane area. The evaluation board side silkscreen and wiring patterns are shown in Figure 4 through Figure 9.

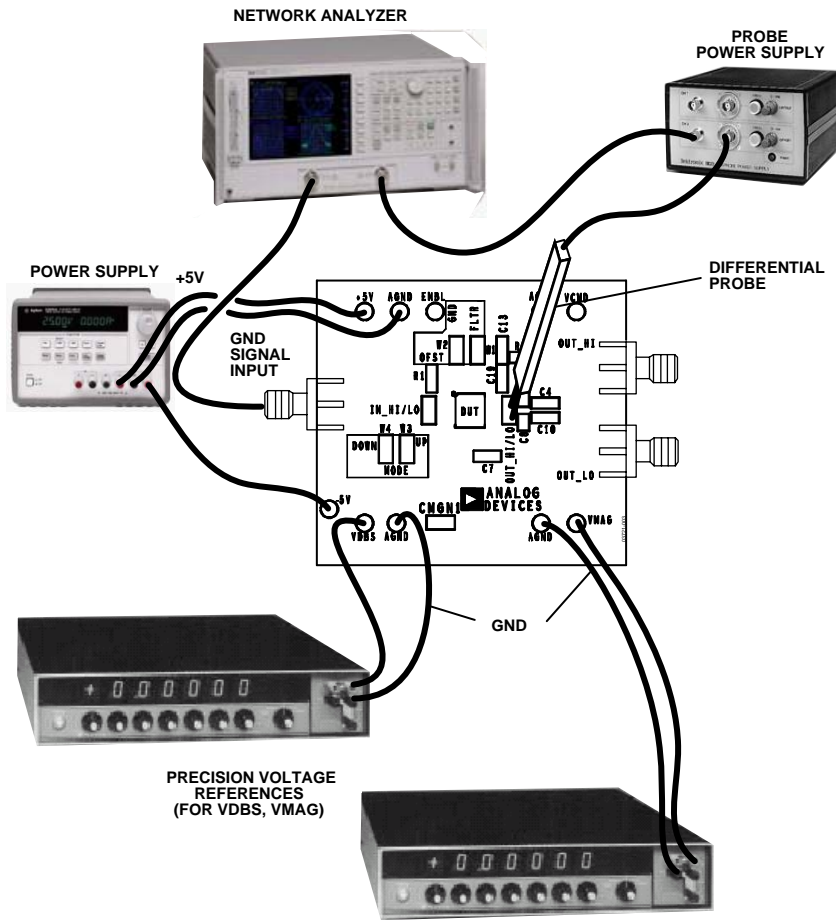


Figure 3. Typical Connections

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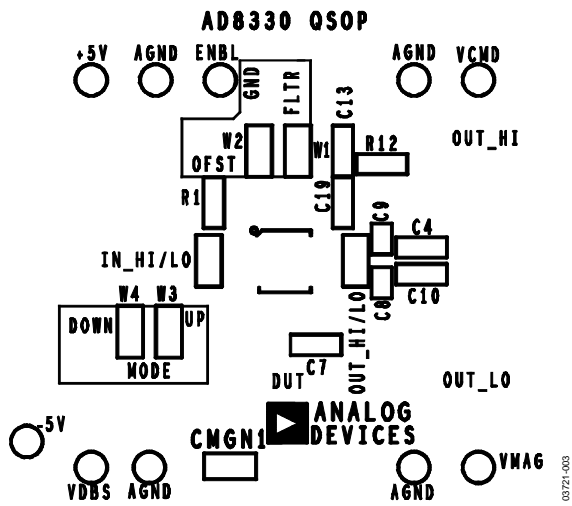


Figure 4. Component-Side Silkscreen

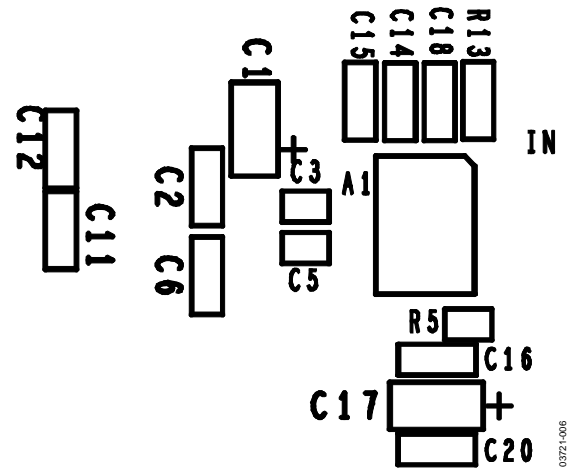


Figure 7. Wiring-Side Silkscreen

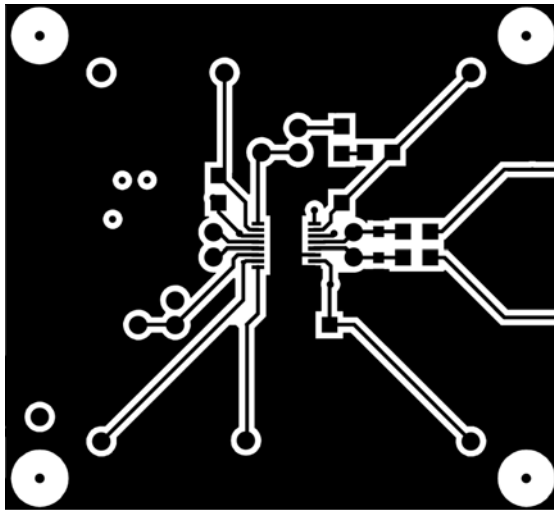


Figure 5. Component-Side Wiring

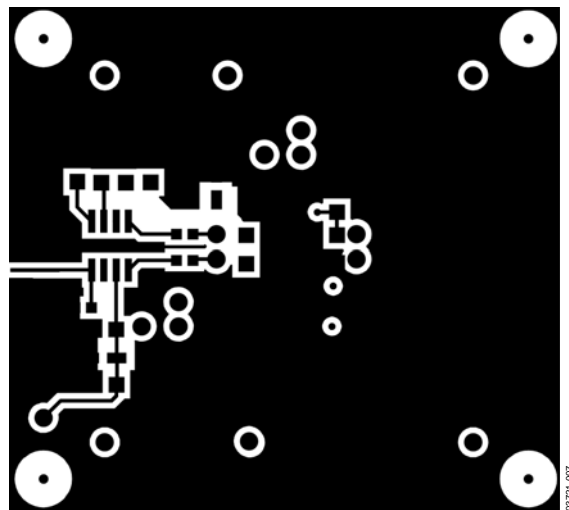


Figure 8. Wiring-Side Pattern

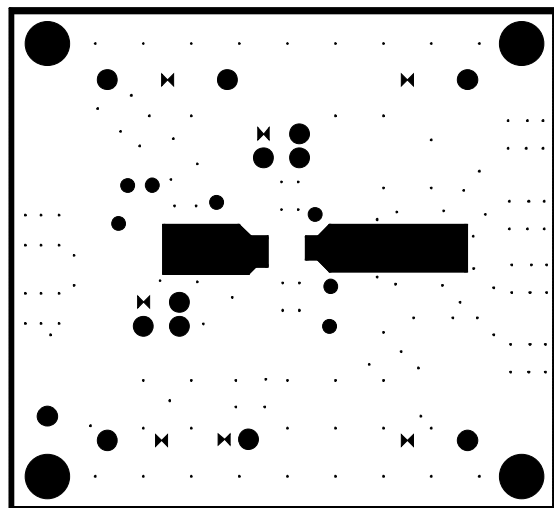


Figure 6. Inner Layer 1

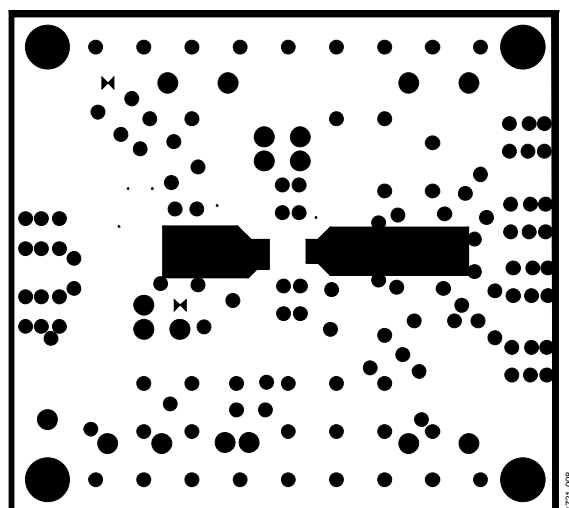


Figure 9. Inner Layer 2

# EVAL-AD8330EB

Table 2. AD8330 Parts List

| Pin No. | Quantity | Description                                   | Reference Designator   |
|---------|----------|---|--|
| 1       | 1        | Resistor SM, 49.9 $\Omega$ , 1%, 1/16 W, 0603 | R5   |
| 2       | 1        | Resistor SM, 24.9 $\Omega$ , 1%, 1/8 W, 1206  | R13  |
| 3       | 1        | Resistor SM, 0 $\Omega$ , 5%, 1/8 W, 1206     | R1   |
| 4       | 1        | Resistor SM, 1 k $\Omega$ , 1%, 1/8 W, 1206   | R12  |
| 5       | 11       | Capacitor SM, 0.1 $\mu$ F, 50 V, 1206         | C2, C4, C6, C7, C10, C11, C12, C15, C18, C19, C20            |
| 6       | 2        | Capacitor SM, 0.1 $\mu$ F, 16 V, 0603         | C3, C5   |
| 7       | 2        | Capacitor SM tantalum, 10 $\mu$ F, 10 V, A    | C1, C17  |
| 8       | 2        | Capacitor SM, 10 nF, 50 V, 1206               | C14, C16   |
| 9       | 2        | Capacitor SM, 12 pF, 5%, NPO, 0603            | C8, C9   |
| 10      | 1        | Capacitor SM, 1 nF, 50 V, 5%, 1206            | C13  |
| 11      | 7        | Header, 2 pin                                 | CMGN1, IN_HI/LO, OUT_HI/ OUT_LO, W1, W2, W3, W4              |
| 12      | 3        | Shunt   | CMGN1, W2, W3  |
| 13      | 1        | IC, VGA, AD8330ARQ                            | DUT  |
| 14      | 1        | IC, differential amplifier, AD8131AR          | A1   |
| 15      | 3        | Connector, SMA fem end launch                 | In, out high, out low  |
| 16      | 10       | Test point                                    | +5V, -5V, AGND1, AGND2, AGND3, 1GND4, ENBL, VCMD, VDBS, VMAG |
| 17      | 1        | Board, PC, A00471C                            |  |
| 18      | 4        | Standoff aluminum round 4 to 40 $\times$ 1/2" |  |
| 19      | 4        | Pan head screw 4 to 40 $\times$ 1/4"          |  |

## ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.



## ORDERING GUIDE

| Model       | Description      |
|-------------|------------------|
| AD8330-EVAL | Evaluation Board |