



AD8332-EVALZ

GENERAL DESCRIPTION

The AD8332-EVALZ is a platform for the test and evaluation of the [AD8332](#) variable gain amplifier (VGA). The board is shipped assembled and tested, and users only need to connect the signal and VGAIN sources to a single 5 V power supply. Figure 1 is a photograph of the component side of the board, and Figure 2 is the schematic.

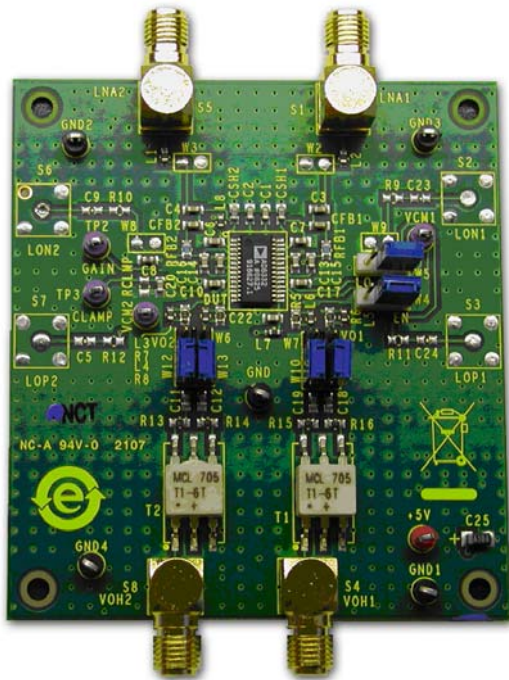


Figure 1. AD8332-EVALZ Photo of Component Side

USER-SUPPLIED OPTIONAL COMPONENTS

The board is built and tested using the components shown in black in Figure 2. Provisions are made for optional components (shown in gray) that can be installed for testing at the user's discretion. The default LNA input impedance is 50 Ω to match various signal generators and network analyzers. Input impedances up to 6 k Ω are realized by changing values of RFBx and CSHx. Consult the [AD8332](#) data sheet for more details on this circuit feature.

For reference, Table 1 lists the common input impedance values and corresponding adjustments. The board is designed for 0603-size, surface-mount components.

Table 1. LNA External Component Values for Common Source Impedances

| R_{IN} (Ω) | RFBx (Ω , Std 1% Value) | CSHx (pF) |
|-----------------------|---------------------------------|-----------|
| 50 | 274 | 22 |
| 75 | 412 | 12 |
| 100 | 562 | 8 |
| 200 | 1.13 k | 1.2 |
| 500 | 3.01 k | None |
| 6 k | ∞ | None |

SMA connectors, S2, S3, S6, and S7, are provided for access to the LNA outputs or the VGA inputs. If the LNA is used alone, 0.1 μ F coupling capacitors can be installed at locations C5, C9, C23, and C24. Resistors of 68 Ω to 100 Ω can be required if the load capacitances, as seen by the LNA outputs, are larger than approximately 10 pF.

A resistor can be inserted at RCLMP if output clamping is desired. The peak-to-peak clamping level is adjusted by installing one of the standard 1% resistor values listed in the [AD8332](#) data sheet.

A high frequency differential probe connected to the 2-pin headers VOx is the preferred method to observe a waveform at the VGA output. A typical setup is shown in Figure 3. Single-ended loads can be connected directly via the board edge SMA connectors. Note that the [AD8332](#) output amplifier is buffered with 237 Ω resistors; therefore, be sure to compensate for attenuation if low impedances are connected to the output SMAs.

MEASUREMENT SETUP

The basic board connections for measuring bandwidth are shown in Figure 3. A 5 V, 100 mA (minimum) power supply is required, and a low noise voltage reference supply is required for VGAIN.

Rev. D

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REVISION HISTORY

11/07—Rev. C to Rev. D

| | |
|--|---|
| Changes to Figure 1..... | 1 |
| Changes to Figure 2..... | 3 |
| Changes to Figure 3..... | 4 |
| Changes to Figure 4 and Figure 9..... | 5 |
| Changes to Table 2 and Ordering Guide..... | 6 |

5/06—Rev. B to Rev. C

| | |
|--|-----------|
| Updated Format..... | Universal |
| Changes to General Description and User-Supplied Optional Components Section | 1 |
| Inserted Figure 1..... | 1 |
| Changes to Figure 2..... | 3 |
| Changes to Figure 3..... | 4 |
| Changes to Figure 4 through Figure 9 | 5 |
| Changes to Table 2..... | 6 |

11/04—Rev. A to Rev. B

| | |
|--|---|
| Changes to User Supplied Optional Components Section | 1 |
| Changes to Measurement Setup Section | 1 |
| Changes to Figure 1..... | 1 |
| Changes to Figure 2 to Figure 5..... | 3 |
| Changes to Figure 6 and Figure 7..... | 4 |
| Changes to Figure 8..... | 5 |
| Changes to Table 2..... | 6 |

7/03—Rev. 0 to Rev. A

| | |
|--------------------------|---|
| Changes to Figure 1..... | 1 |
| Changes to Figure 2..... | 3 |
| Changes to Figure 3..... | 4 |
| Changes to Table 2..... | 6 |

3/03—Revision 0: Initial Version

EVALUATION BOARD SCHEMATIC

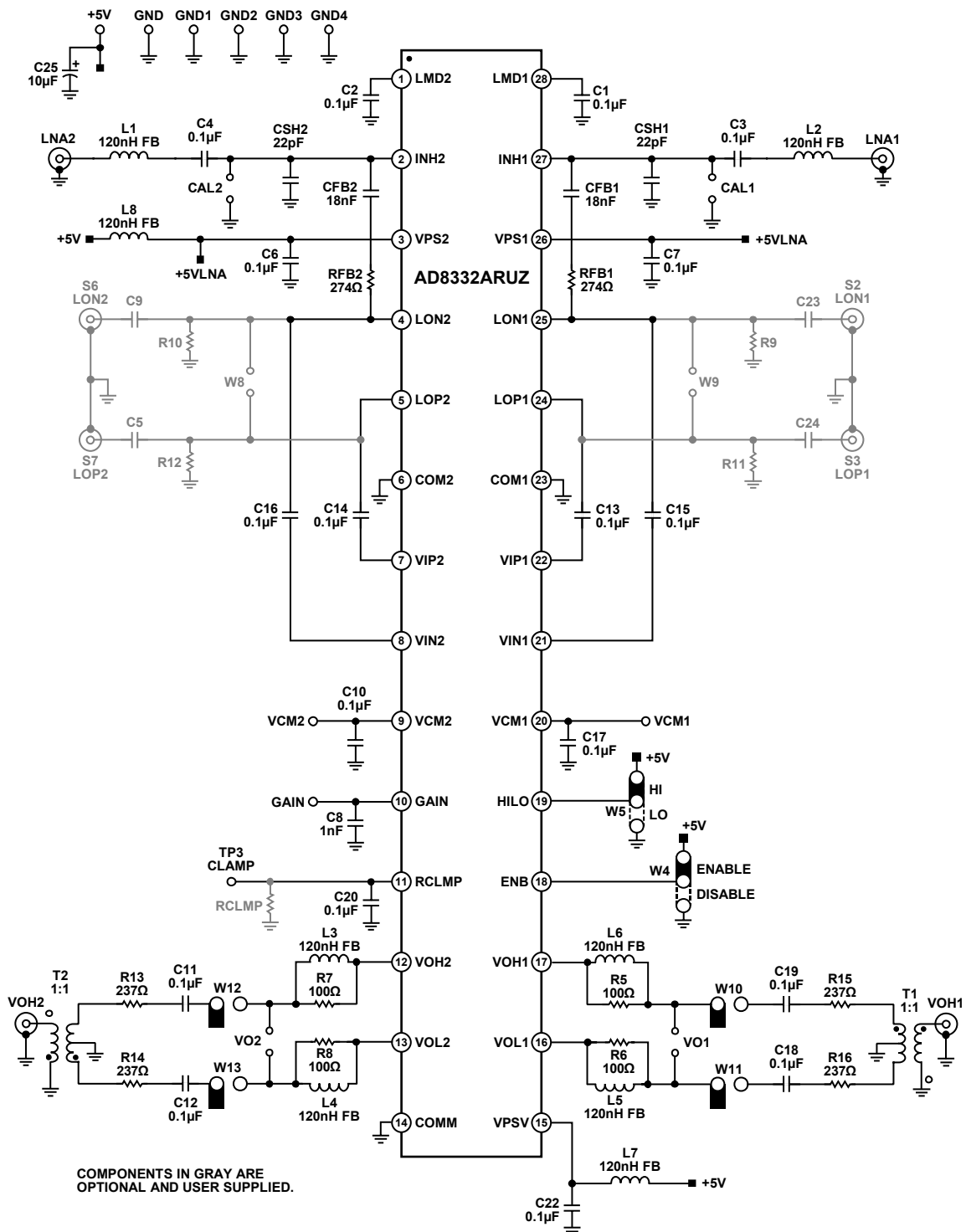


Figure 2. AD8332-EVALZ Schematic

03835-002

AD8332-EVALZ

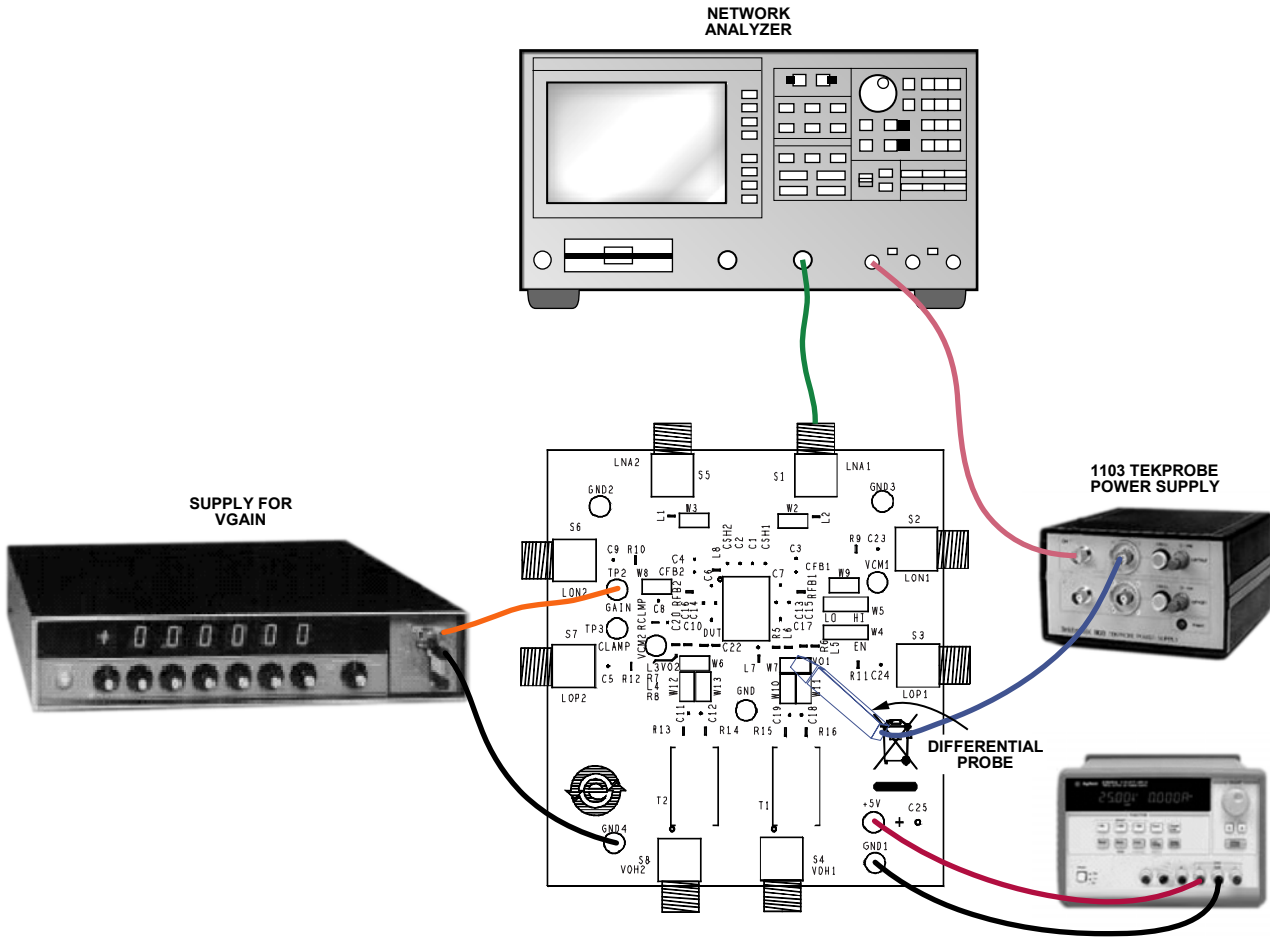


Figure 3. Typical Board Test Connections

BOARD LAYOUT AND PARTS LIST

The evaluation board circuitry uses four conductor layers. The two inner layers are power and ground planes, and all interconnecting circuitry is located on the outer layers. Figure 5, Figure 6, Figure 7, and Figure 8 illustrate the copper patterns.

EVALUATION BOARD PCB LAYERS

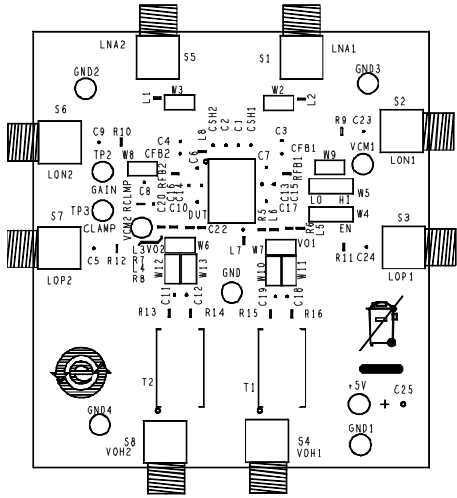


Figure 4. AD8332-EVALZ Assembly

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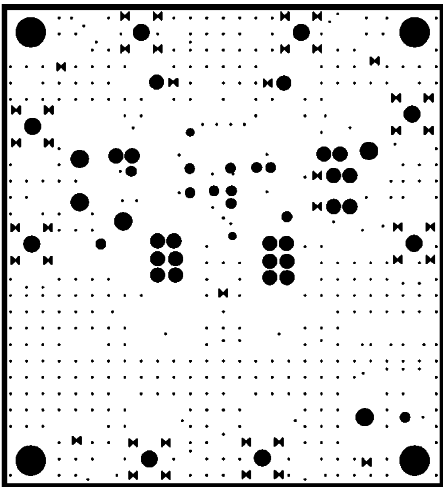


Figure 7. Ground Plane

03835-007

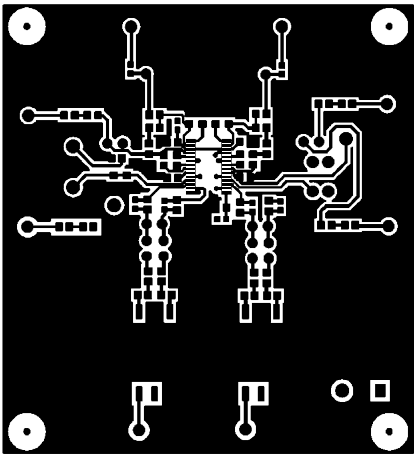


Figure 5. Primary Side Copper

03835-005

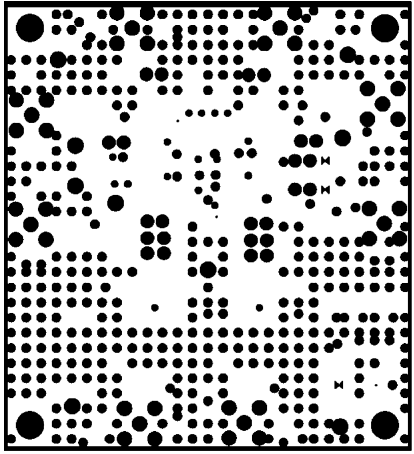


Figure 8. Power Plane

03835-008

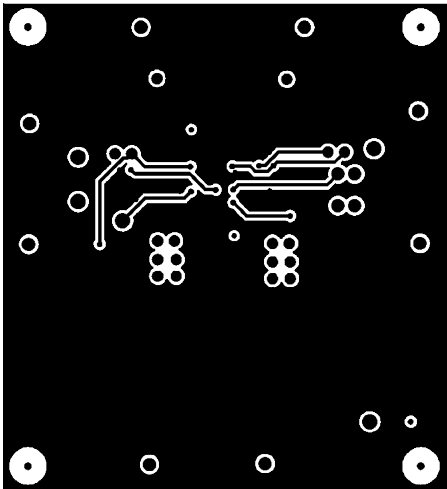


Figure 6. Secondary Side Copper

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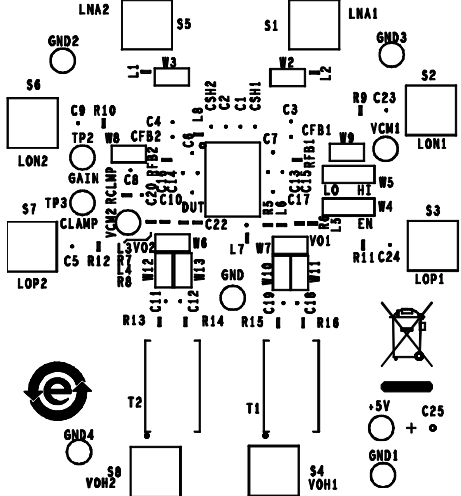


Figure 9. Component Side Silkscreen

03835-009

AD8332-EVALZ

ORDERING INFORMATION

PARTS LIST

Table 2.

| Qty. | Name | Description | Reference Designation | Mfg. | Mfg. Part Number |
|------|-------------|-----------------------------|--|-----------------|------------------|
| 8 | Inductor | Ferrite Bead, 120 nH, 0603 | L1, L2, L3, L4, L5, L6, L7, L8 | Murata | BLM18BA750SN1D |
| 2 | Resistor | SM, 274 Ω, 1%, 1/10 W, 0603 | RFB1, RFB2 | Panasonic | ERJ-3EKF2740V |
| 4 | Resistor | SM, 237 Ω, 1%, 1/10 W, 0603 | R13, R14, R15, R16 | Panasonic | ERJ-3EKF2370V |
| 4 | Resistor | SM, 100 Ω, 1%, 1/16 W, 0603 | R5, R6, R7, R8 | Panasonic | ERJ-3EKF1 |
| 2 | Capacitor | SM, 18 nF, 10%, 50 V, 0603 | CFB1, CFB2 | Panasonic | ECJ-1VB1E183K |
| 18 | Capacitor | SM, 0.1 μF, 10%, 0603 | C1, C2, C3, C4, C6, C7, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C22 | Panasonic | C0603C104K4RAC |
| 1 | Capacitor | SM, 1 nF, 50 V, 0603 | C8 | Panasonic | ECJ-1VB2A102K |
| 2 | Capacitor | SM, 22 pF, 50 V, 0603 | CSH1, CSH2 | Panasonic | ECJ-1VC1H220J |
| 1 | Capacitor | SM, 10 μF | C25 | Nichicon | F931A106MAA |
| 2 | Transformer | RF | T1, T2 | Mini-Circuits | T1-6T |
| 6 | Header | 2-Pin | VO1, VO2, W10, W11, W12, W13 | Molex | 22-10-2021 |
| 2 | Header | 3-Pin | W4, W5 | Molex | 22-10-2031 |
| 4 | Connector | SMA, PC Mount, Right Angle | LNA1, LNA2, VOH1, VOH2 | Amphenol | 901-143-6RFX |
| 4 | Test Point | Violet | VCM1, VCM2, GAIN, CLAMP | Components Corp | TP104-01-07 |
| 1 | Test Point | Red | +5V | Components Corp | TP104-01-02 |
| 5 | Test Point | Black | GND, GND1, GND2, GND3, GND4 | Components Corp | TP104-01-00 |

ORDERING GUIDE

| Model | Description |
|---------------------------|------------------|
| AD8332-EVALZ ¹ | Evaluation Board |

¹ Z = RoHS Compliant Part.

ESD CAUTION



ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

NOTES

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