ADA4945-1CP-EBZ Differential Amplifier Evaluation Board

FEATURES
Enables quick breadboarding and prototyping
User defined circuit configuration

GENERAL DESCRIPTION
The Analog Devices, Inc., ADA4945-1CP-EBZ evaluation board allows the user to evaluate the performance of the ADA4945-1 fully differential amplifier. The ADA4945-1CP-EBZ evaluation board can be configured to accept either a single-ended or differential input signal.

The ADA4945-1CP-EBZ evaluation board uses several 2-pin and 3-pin headers to control various features of the ADA4945-1. Apply the proper jumpers to set the ADA4945-1 high and low output clamp levels, set the ADA4945-1 output common-mode voltage, choose high or low power mode for the ADA4945-1, and set the ADA4945-1 digital ground level.

Optimized power and ground planes ensure low noise and high speed operation. Component placement and power supply bypassing provide maximum circuit flexibility and performance. The ADA4945-1CP-EBZ evaluation board accepts 0402 surface mount technology (SMT) components, 0805 bypass capacitors, and 2.54 mm headers.

Input and output signals are brought to and from the board via 50 Ω, side launch Subminiature Version A (SMA) connectors.

Full specifications on the ADA4945-1 are available in the ADA4945-1 data sheet. Consult the data sheet in conjunction with this user guide when working with the ADA4945-1CP-EBZ evaluation board.

EVALUATION BOARD PHOTOGRAPH

Figure 1.
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REVISION HISTORY
8/2020—Rev. 0 to Rev. A
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3/2019—Revision 0: Initial Version
FUNCTIONALITY AND CONTROL

OUTPUT CLAMPS

Use the 3-pin P4 and P5 headers to set the ADA4945-1 output clamp voltage levels at the $+V_{CLAMP}$ pin and the $-V_{CLAMP}$ pin (see Figure 2 and Figure 3). To set the $+V_{CLAMP}$ voltage level to the positive supply (VCC), place a jumper across Pin 1 and Pin 2 of the P5 header. To set the $+V_{CLAMP}$ voltage level to any user defined level, apply an external voltage at Pin 2 of the P5 header. Pin 3 is connected to analog ground (AGND). Use the P4 header to set the $-V_{CLAMP}$ voltage level to the negative supply (VEE) or a user defined level.

SETTING THE DIGITAL GROUND (DGND) LEVEL

Use the 3-pin P2 header to set the logic reference (DGND) level to VEE, AGND, or a user defined level. To set the DGND level to VEE, place a jumper across Pin 1 and Pin 2 of the P2 header. To set the DGND level to AGND, place a jumper across Pin 2 and Pin 3 of the P2 header. If a different logic reference level is required, apply the desired voltage directly to Pin 2.

SUPPLIES, POWER MODES, AND DISABLE

The VCC and VEE power supplies are connected at the 3-pin P1 header.

Use the 3-pin P3 header to select full power operating mode or low power operating mode. Short Pin 1 and Pin 2 to place the ADA4945-1 in full power operating mode. Short Pin 2 and Pin 3 to place the ADA4945-1 in low power operating mode.

Short across the 2-pin PD header to place the ADA4945-1 in disable mode.

OUTPUT COMMON-MODE VOLTAGE

To set the output common-mode voltage ($V_{OCM}$) to a user defined level, apply the desired voltage to the loop style VOCM test point. When no voltage is applied to the VOCM test point, the ADA4945-1 $V_{OCM}$ defaults to an internally generated level midway between $+V_{CLAMP}$ and $-V_{CLAMP}$.
Figure 2. ADA4945-1CP-EBZ Evaluation Board Schematic

Figure 3. ADA4945-1CP-EBZ Evaluation Board Assembly Drawing, Primary Side

Figure 4. ADA4945-1CP-EBZ Evaluation Board Layout Pattern, Primary Side
ORDERING INFORMATION

BILL OF MATERIALS

Table 1. ADA4945-1CP-EBZ Bill of Materials

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Reference Designation</th>
<th>Manufacturer</th>
<th>Part Number</th>
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<tr>
<td>1</td>
<td>High speed, ±0.1 μV/°C offset drift, fully differential ADC driver</td>
<td>U1</td>
<td>Analog Devices</td>
<td>ADA4945-1</td>
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<td>5</td>
<td>0.1 μF ceramic capacitors, 0402</td>
<td>C7, C10 to C13</td>
<td>TDK</td>
<td>CGA2B1X7R1C104K050BC</td>
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<td>10 μF tantalum capacitors, 0805</td>
<td>C8, C9</td>
<td>Taiyo Yuden</td>
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<td>ERJ-2GEO00X</td>
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<td>ERJ-6GEY000V</td>
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<td>PD</td>
<td>Amphenol</td>
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<tr>
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<td>VO M</td>
<td>Components Corp.</td>
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<td>Connectors, side launch SMA</td>
<td>VINN, VINP, VOUTN, VOUTP</td>
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<td>SMA-J-P-H-ST-EM1</td>
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<td>Ceramic capacitors, 0402, DNI</td>
<td>C1 to C6</td>
<td>Not applicable</td>
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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.

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