ANALOG DEVICES

AN-751
APPLICATION NOTE

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High Speed Universal Op Amp Evaluation Board with Exposed Paddle

by John Ardizzoni

Analog Devices high speed universal evaluation boards are designed to help customers quickly prototype and evaluate new designs. This application note covers two evaluation boards, the EVAL-ADOPAMP-1CP-E (for 8-lead LFCSPs) and the EVAL-ADOPAMP-1R-E (for 8-lead SOICs). These evaluation boards are designed for amplifiers that require a voltage potential on the exposed paddle, such as the AD8045. However, they may also be used with standard SOIC and LFCSP packages as well. The evaluation boards, unlike other evaluation boards, have both an inverting and noninverting amplifier circuit on the same board. The two amplifier circuits are completely independent.

The separate sections allow for optimal performance in inverting or noninverting configurations and enables the designer even greater circuit flexibility. The schematics for the evaluation boards are shown in Figure 1 and Figure 2.

The evaluation board is a 2-layer board that accommodates edge-mounted SMA connectors on the inputs and outputs. The SMA connectors allow for efficient connection to test equipment or other circuitry. The boards also have pin connectors for supply voltages, grounds, and power down. The assembly drawings are shown in Figure 3 and Figure 4.

The ground plane, component placement, and supply bypassing have been laid out to minimize parasitic elements and provide optimum high frequency performance. The board SMT components are primarily 0603 case size, with the exception of electrolytic bypass capacitors C1 and C4. If designers want to incorporate any of the aspects of the evaluation board layout into their design, the board layout patterns are included, as shown in Figure 5 and Figure 6.

The evaluation boards allow the designer three options for the exposed paddle voltage: floating, no connection to a voltage potential, ground or the negative power supply. The exposed paddle voltage is selected via solder jumpers J1, J2, J11, and J12. The jumpers are shown in Figure 1 and Figure 2. To connect the exposed paddle to the appropriate voltage, simply apply solder between the two jumper pads; the pads are close enough that the solder makes the actual connection between the pads. There is no need for any additional components. This is one of the only times when a solder bridge is a good thing.

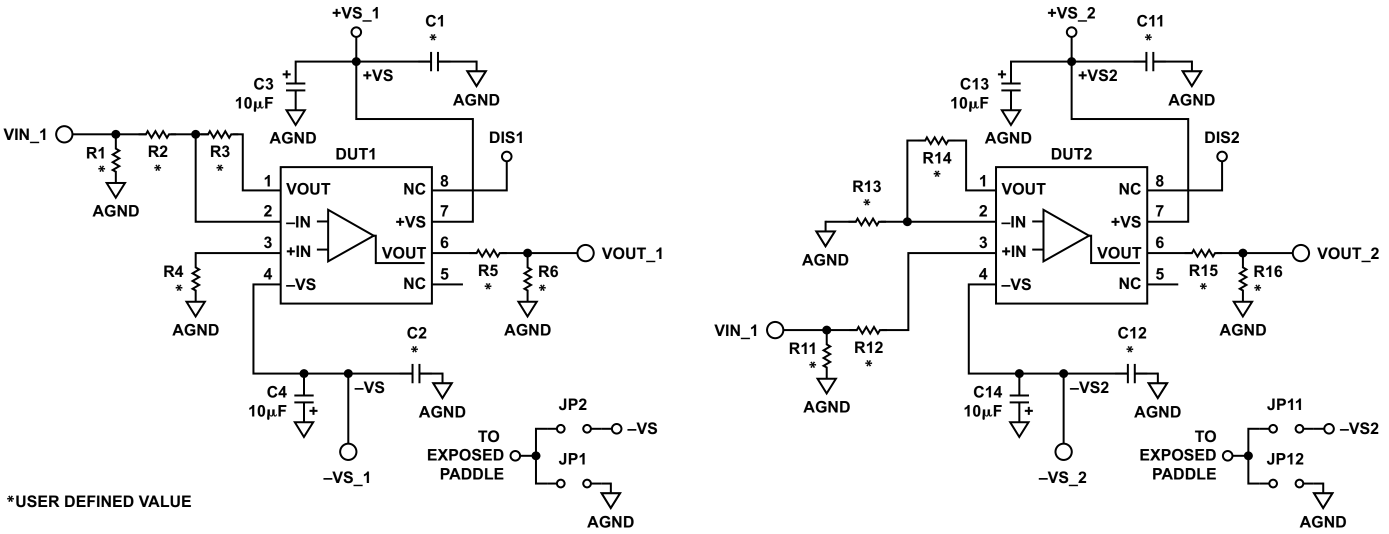
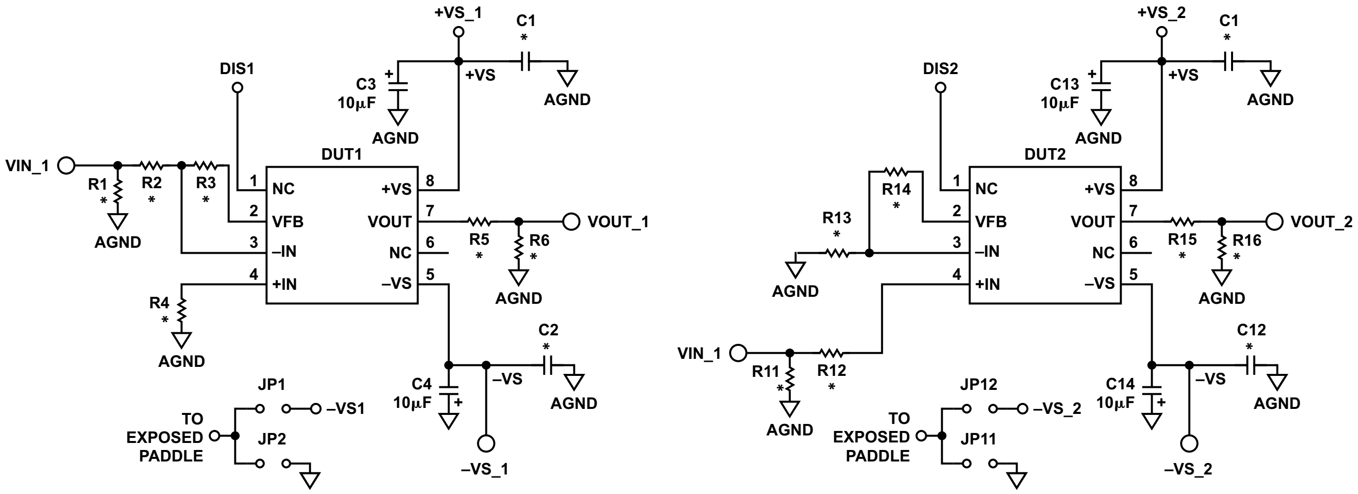


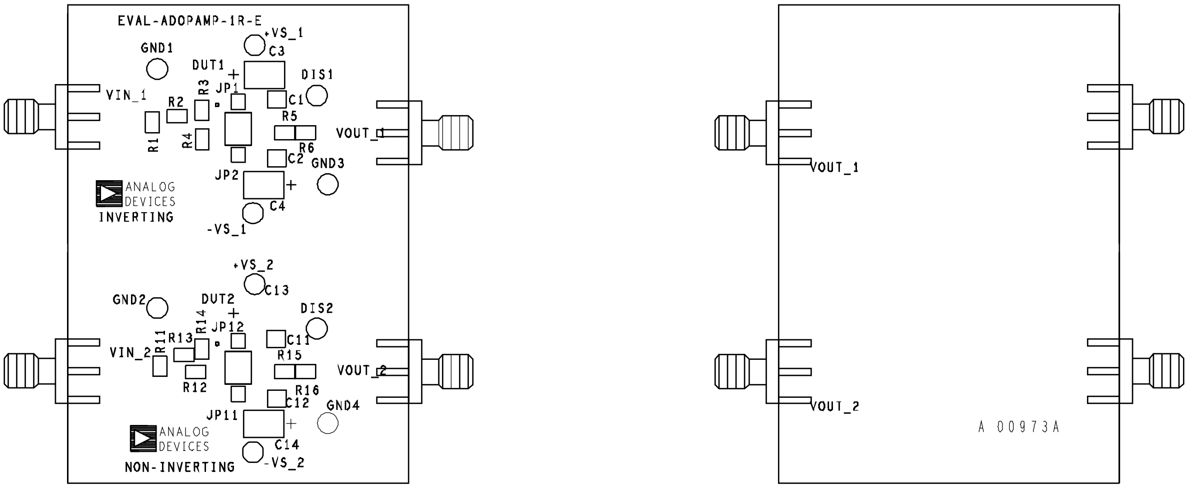
Figure 1. Universal Evaluation Board Schematic (LFCSP)

REV. 0



*USER DEFINED VALUE

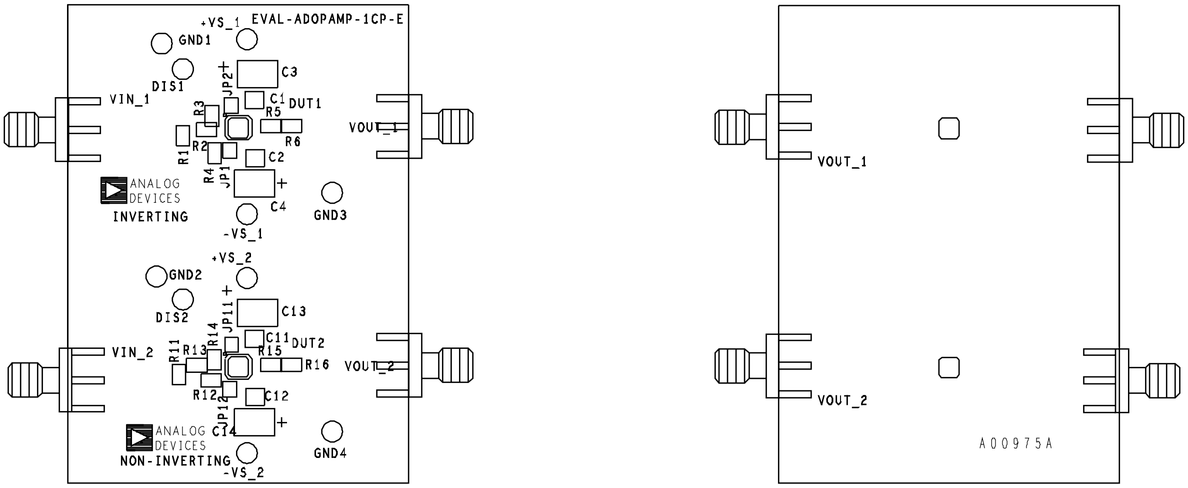
Figure 2. Universal Evaluation Board Schematic (SOIC)



COMPONENT SIDE

CIRCUIT SIDE

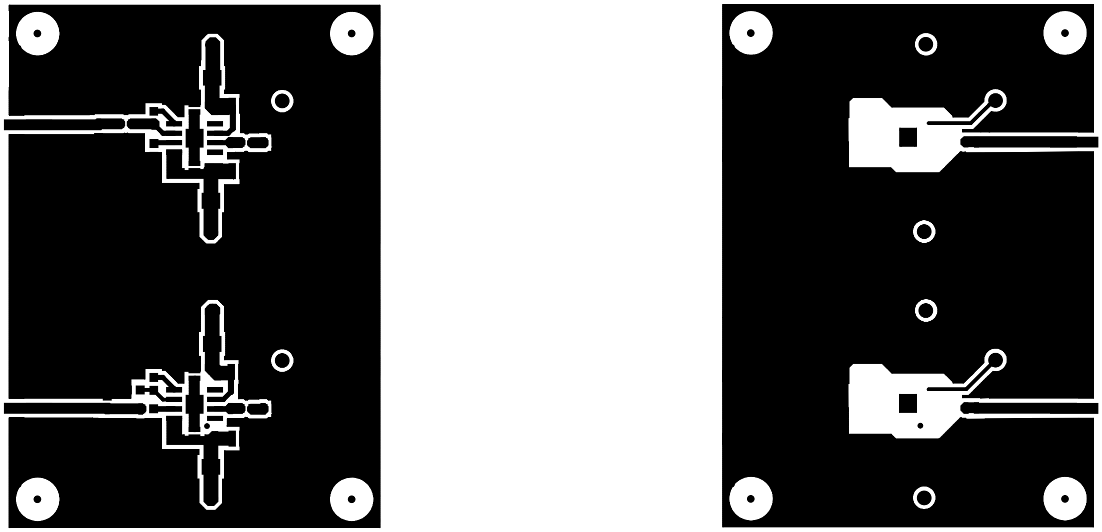
Figure 3. Board Assembly Drawings (SOIC)



COMPONENT SIDE

CIRCUIT SIDE

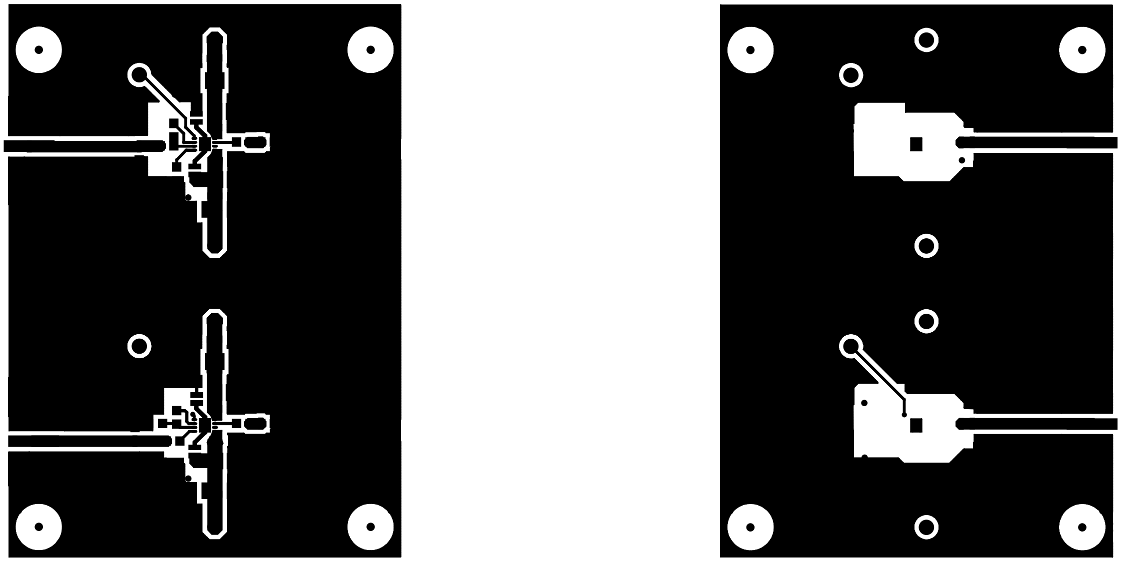
Figure 4. Board Assembly Drawings (LFSCP)



COMPONENT SIDE

CIRCUIT SIDE

Figure 5. Board Layout Patterns (SOIC)



COMPONENT SIDE

CIRCUIT SIDE

Figure 6. Board Layout Patterns (LFCSP)