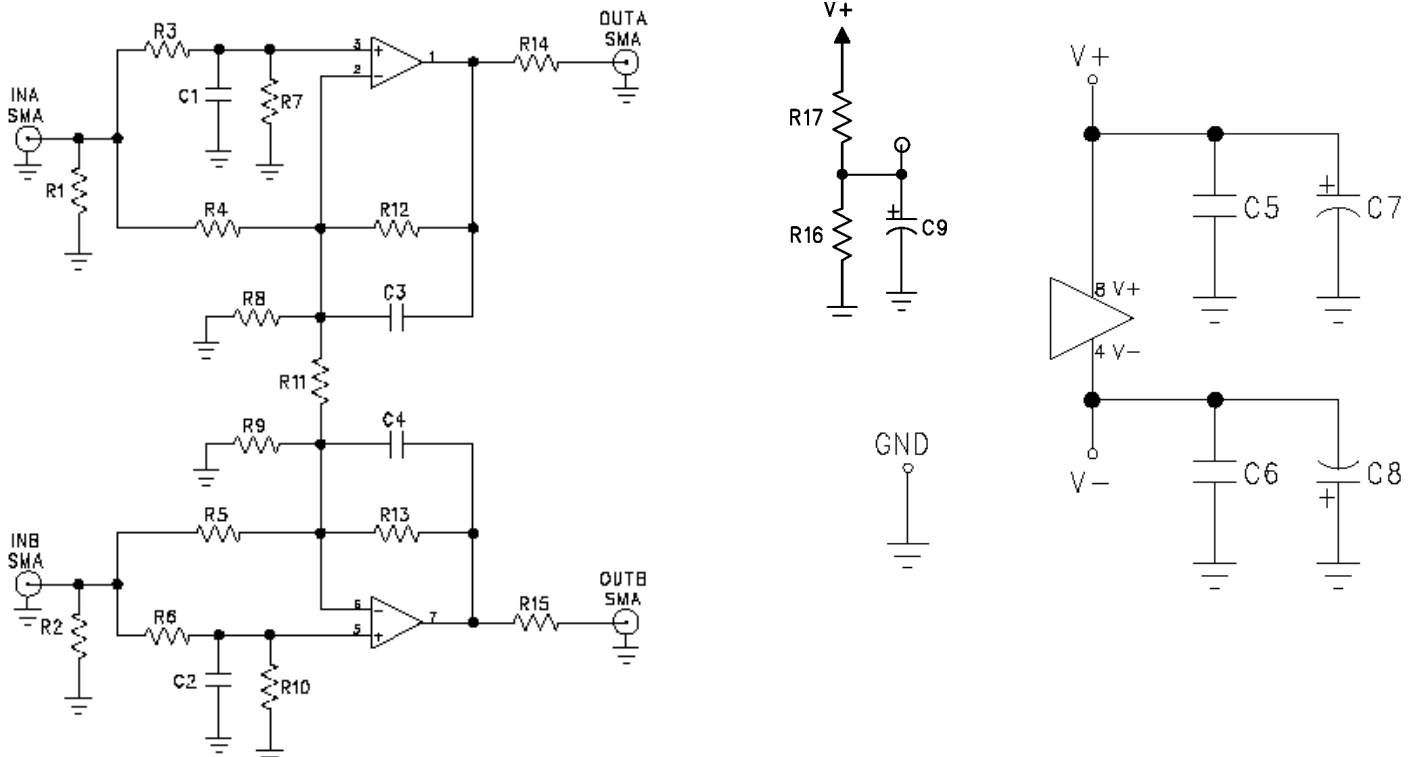


The CLC730114 evaluation board is designed to aid in the characterization of National's 8-pin Dual Op Amps in LLP package. This board uses all surface-mount components for maximum speed and performance.

Figure 1 shows the schematic:



**Figure 1: Complete Evaluation Board Schematic**

This board is designed with versatility in mind; that is, by selective insertion of components, the device can be put into an Inverting, non-inverting, or differential configuration. In addition, single supply operation can be tested with simple board modifications (please see below).

C5-8 (4 places) are de-coupling caps essential to be installed for good high frequency behavior. 0.1 $\mu$ F and 6.8 $\mu$ F are good values in most cases. Note that C7-8 are polar caps. Use Tantalum capacitors for lowest ESR.

The CLC730114 evaluation board uses a thermally dissipation pad soldered to the exposed die attach paddle (DAP) of the device under test (DUT) to enable heat transfer out of the package.

### SINGLE SUPPLY OPERATION:

In order to allow maximum flexibility, it is possible to test the Op Amp in a single supply arrangement as well. To do so, R16, R17, and C9 can be installed to form a "virtual ground" which would be tied to the non-inverting terminal as biasing. A convenient way to connect C9 (positive side) to the inputs is by performing the following:

1. Cut R7 and R10 connection to ground plane, on component side.
2. Install 0 $\Omega$  resistances for R7 and R10
3. Tie C9 (positive side) to the cut side of R7 and R10.

**DAP Connection:**

**IMPORTANT: BOARD MODIFICATIONS BELOW MUST BE MADE PRIOR TO APPLYING POWER TO THE BOARD**

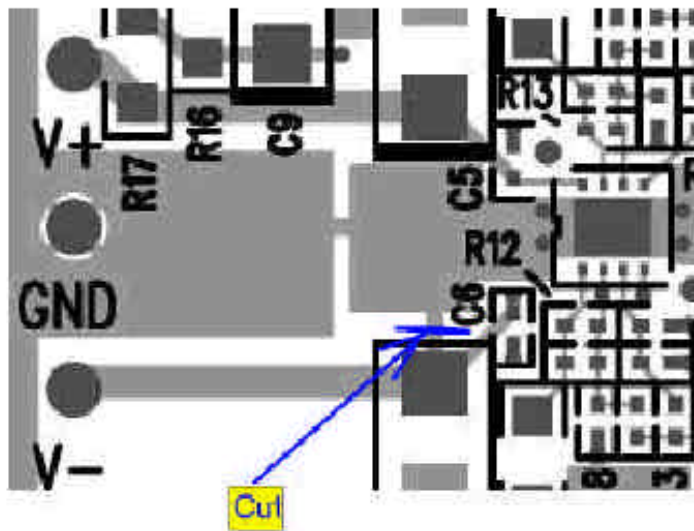
CLC730114 evaluation board can be used with two types of Op Amps:

1. Op Amp's with DAP internally floating. (see modification for "type 1" below)
2. Op Amp's with DAP internally tied to  $V^-$  (see modification for "type 2" below)

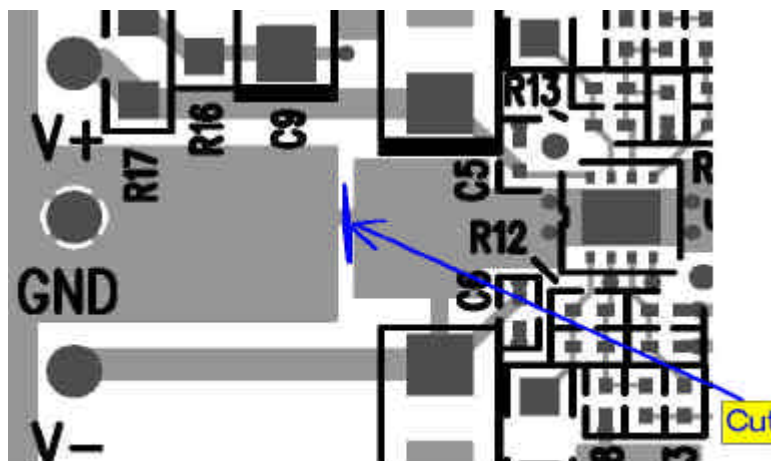
CLC730114 DAP heatsink connection is tied to both ground and  $V^-$ . It is very important to make the necessary modifications outlined below BEFORE powering up the board. **Otherwise, there will be excess current flow from  $V^-$  due to a direct short to ground through the copper under device used for heatsink.** Consult the data sheet for each device for information on DAP connection and which of the modifications below is required for the particular device.

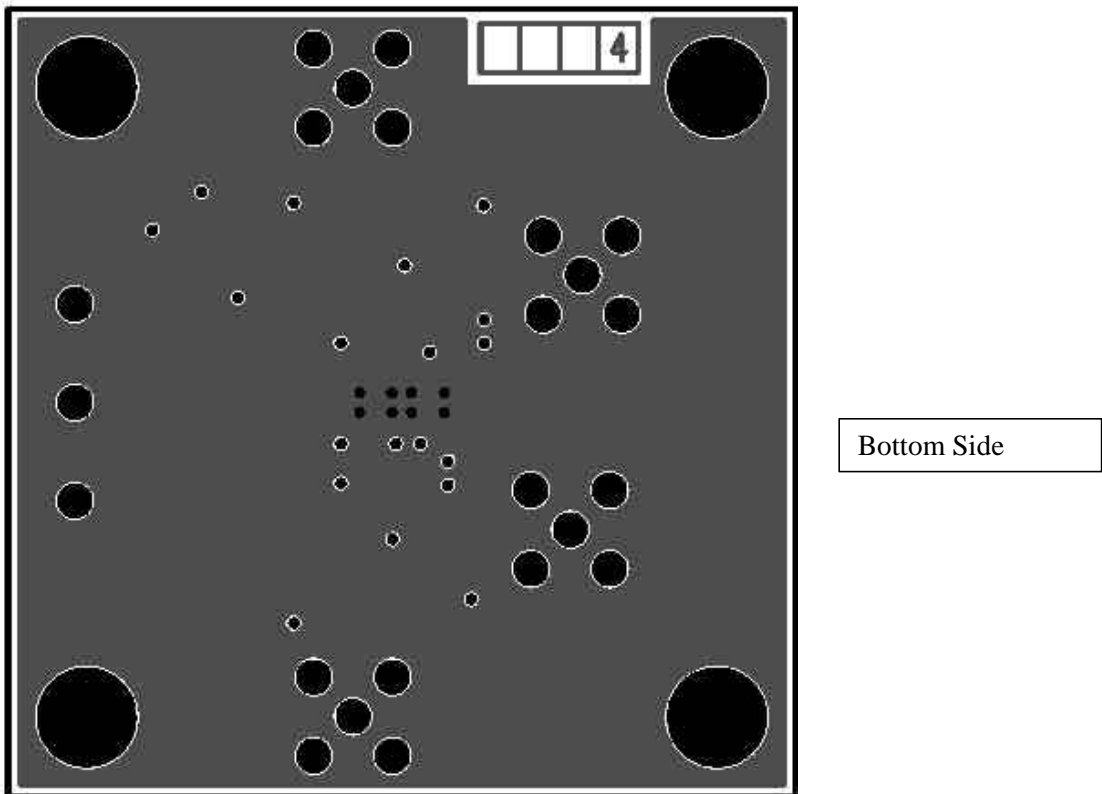
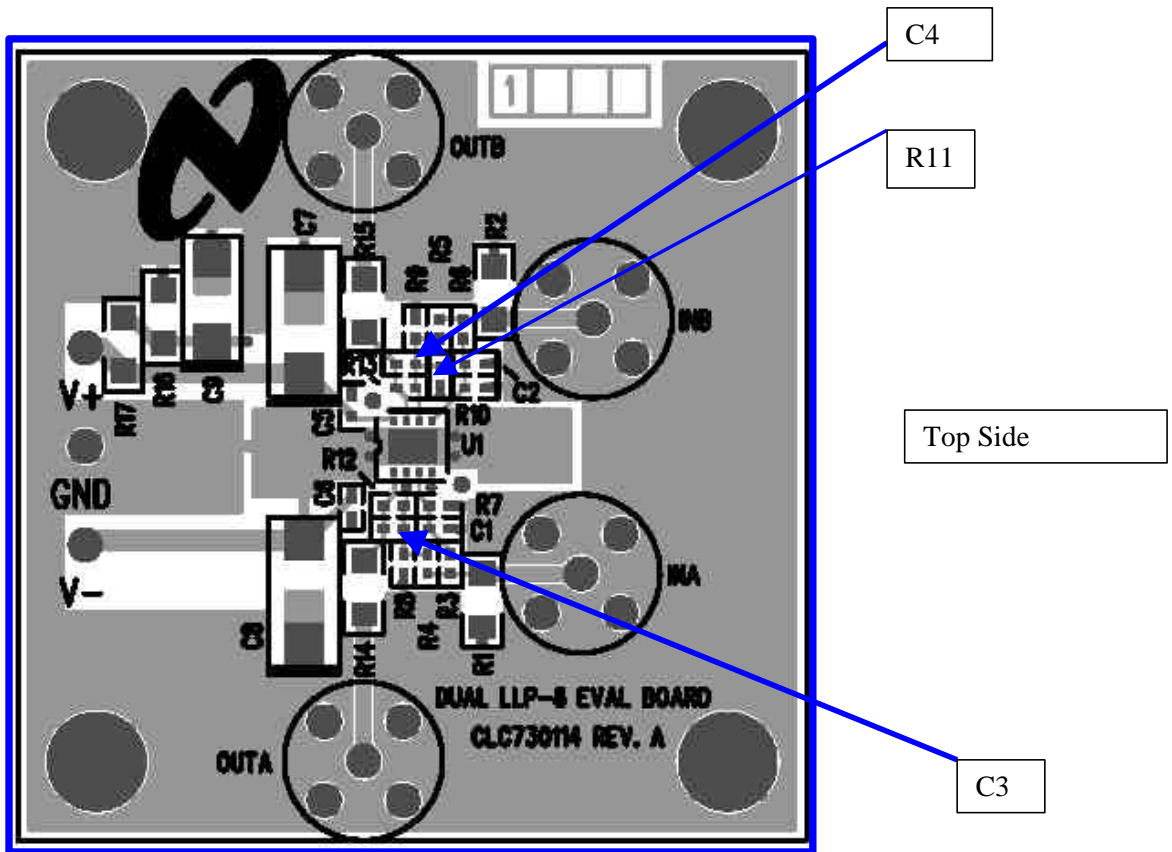
**BOARD MODIFICATION FOR PROPER BIASING ON DAP:**

"TYPE 1" MODIFICATION



"TYPE 2" MODIFICATION





## LIFE SUPPORT POLICY

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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