# DEM-OPA-MSOP-1B Demonstration Fixture

## 1 Description

The DEM-OPA-MSOP-1B demonstration fixture is an unpopulated printed circuit board (PCB) for single 2:1 multiplexers in MSOP-8 packages. Figure 1 shows the package pinout for this PCB. For more information on these op amps, and good PCB board layout techniques, see the individual amplifier data sheets.

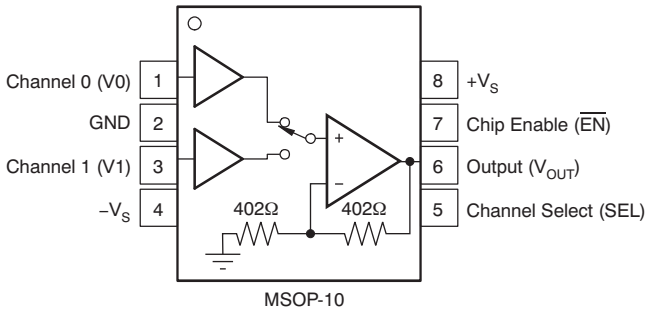



**Figure 1. Buffer Pinout Compatible with DEM-OPA-MSOP-1B**

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## 2 Circuit

The circuit schematic in Figure 2 shows the connections for all possible components.

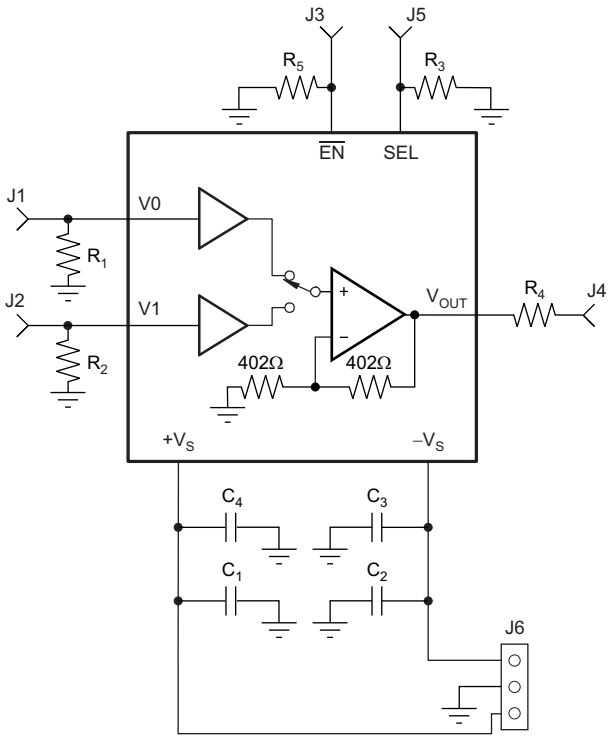



**Figure 2. Schematic for DEM-OPA-MSOP-1B**

## 3 Components

Components that have RF performance similar to those listed in Table 1 may be substituted.

**Table 1. Component Descriptions**

| PART | DESCRIPTION |
|---|---|
| $C_1$, $C_2$ | Tantalum Chip Capacitor, SMD EIA Size 3216, 20V |
| $C_3$, $C_4$ | Multi-Layer Ceramic Chip Capacitor, SMD 0603, 50V |
| J1, J2, J4 | SMA or SMB Board Jack (Amphenol 901-144-8) or Side Mount BNC Connection (Trompeter Electronics UCBJE20-1) |
| J3, J5 | SMA or SMB Board Jack (Amphenol 901-144-8) |
| J6 | Terminal Block, 3.5mm Centers (On-Shore Technology ED555/3DS) |
| $R_X$ | Metal Film Chip Resistor, SMD 0603, 1/8W |

Please refer to Figure 3 for the location of the following components:

- $R_1$, $R_2$, $R_4$ set the I/O impedance for the signal chain.
- $R_3$ and $R_5$ set the input impedance for the select and enable pins.
- $C_1$, $C_2$, $C_3$, and $C_4$ are supply bypass capacitors.


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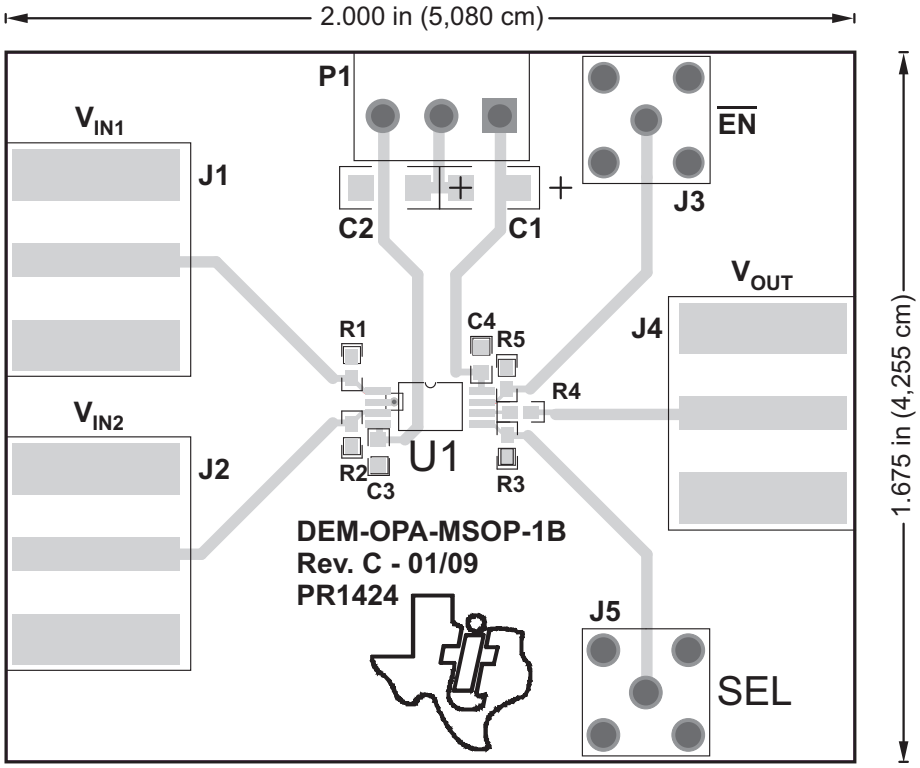
## 4 Board Layout

This demonstration board is a two-layer PCB. It has separate ground and power planes in the inner layers. The ground plane has been opened up around op amp pins sensitive to capacitive loading. Power-supply planes are laid out to keep current-loop areas to a minimum. J1, J2 and J4 are to be mounted horizontally onto the board edge. J3, and J4 are to be mounted vertically onto the board. The location and type of capacitors used for power-supply bypassing are crucial to high-frequency amplifiers. The tantalum capacitors, $C_3$ and $C_4$, do not need to be as close to pins 1 and 5 on the PCB and may be shared with other amplifiers. See the individual amplifier data sheets for more information on proper board layout techniques and component selection.

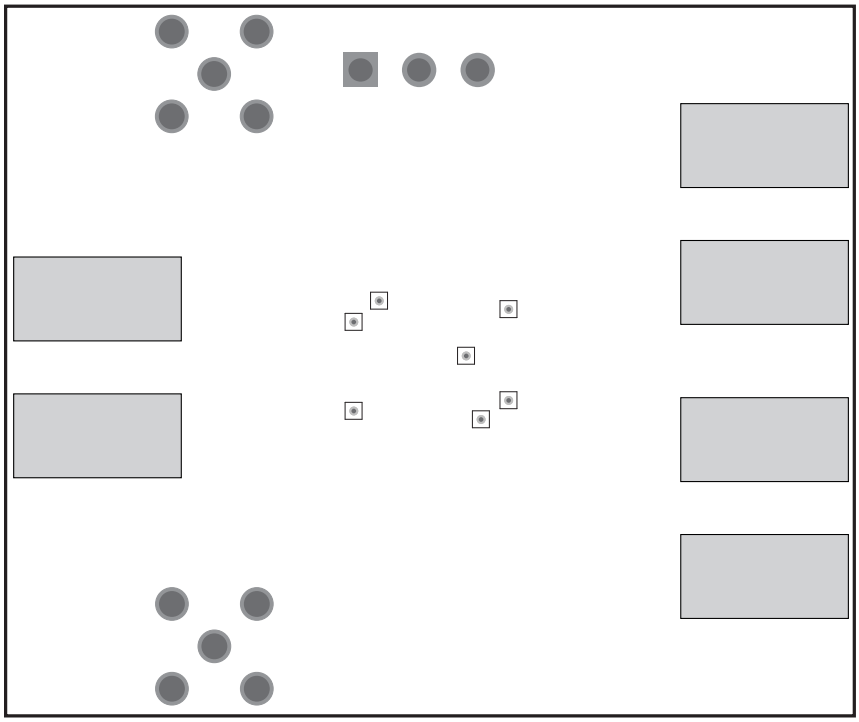
## 5 Measurement Tips

This demonstration board, and the component values shown, is designed to operate in a 75Ω environment for the input and output and 50Ω environment for the $\overline{EN}$ and SEL control pins. Most data sheet plots are obtained under these conditions. It is easy to change the component values for different input and output impedance levels. Do not use very high impedance probes; they represent a heavy capacitive load to the amplifier and will alter their response. Instead, use low-impedance (≤ 500Ω) probes with adequate bandwidth. The probe input capacitance and resistance set an upper limit on the measurement bandwidth. If a high-impedance probe must be used, place a 100Ω resistor on the probe tip to isolate its capacitance from the circuit.


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(a) Top layer



(b) Bottom layer (negative image shown for clarity)

**Figure 3. DEM-OPA-MSOP-1B Demonstration Fixture Layout**



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