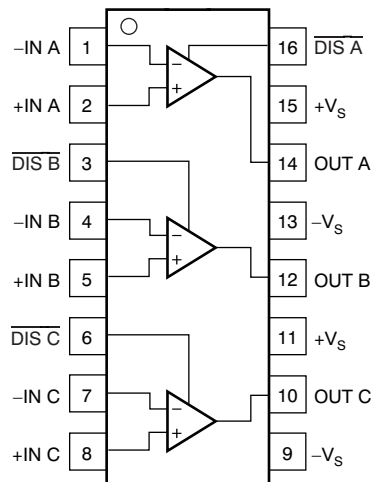


## **DEM-OPA-SSOP-3D Demonstration Fixture**

### **1 Description**

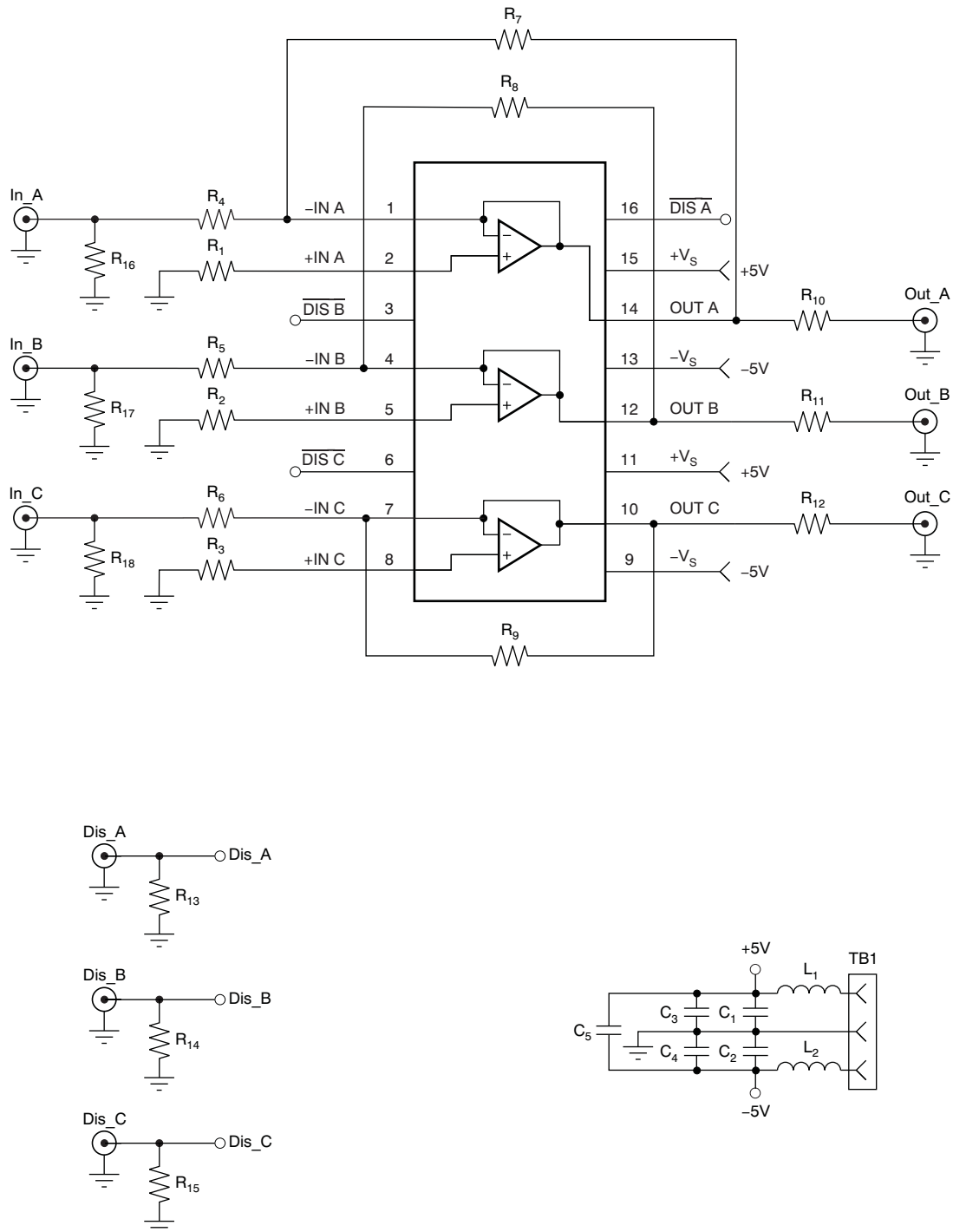
The DEM-OPA-SSOP-3D demonstration fixture is a generic, unpopulated printed circuit board (PCB) for high-speed triple operational amplifiers in SSOP-16 packages with a flow-through pinout. [Figure 1](#) shows the package pinouts supported by this PCB. For more information on specific op amps, as well as good PCB layout techniques, see the individual amplifier data sheets.



**Figure 1. SSOP-16 Package Pinout, Top View**

## 2 Circuit

The circuit schematic in [Figure 2](#) shows the connections for all possible components. Each configuration uses only some of the components.



**Figure 2. Schematic for DEM-OPA-SSOP-3D**

### 3 Components

Components that have RF performance similar to the ones listed in [Table 1](#) may be substituted.  $C_1$  and  $C_2$  need a larger voltage rating for  $\pm 15V$  dual supplies.

**Table 1. Component Descriptions**

PART	DESCRIPTION
$C_1, C_2$	Tantalum Chip Capacitor, SMD EIA Size 3528, 20V
$C_3, C_4$	Multilayer Ceramic Chip Capacitor, SMD 0603, 50V
$C_5$	Multilayer Ceramic Chip Capacitor, SMD 0805, 50V
IN_A, IN_B, IN_C, OUT_A, OUT_B, OUT_C, Dis_A, Dis_B, Dis_C	SMA or SMB Board Jack (Amphenol 901-144-8)
$L_1, L_2$	EMI-Suppression Ferrite Chip, SMD 0805 (Steward LI 0805 B 900 R)
TB <sub>1</sub>	Terminal Block, 3.5mm Centers (On-Shore Technology ED555/3DS)

$R_1$  through  $R_3$  and  $R_{10}$  through  $R_{18}$  set the I/O impedance,  $R_4$  through  $R_9$  set the gain, and  $C_1$  through  $C_5$  are supply bypass capacitors.  $C_5$  is optional; it adds a bypass between the supplies that improves distortion performance for some models.  $L_1$  and  $L_2$  are ferrite chips that can reduce interactions with the power supply at high frequencies. If not desired, they can be replaced with  $0\Omega$  resistors.

### 4 Board Layout

This demonstration fixture is a two-layer PCB. (See [Figure 3](#).) It uses a ground plane on the bottom, and signal and power traces on the top. The ground plane has been opened up around op amp pins sensitive to capacitive loading. Power-supply traces are laid out to keep current loop areas to a minimum. The SMA (or SMB) connectors may be mounted either vertically or horizontally.

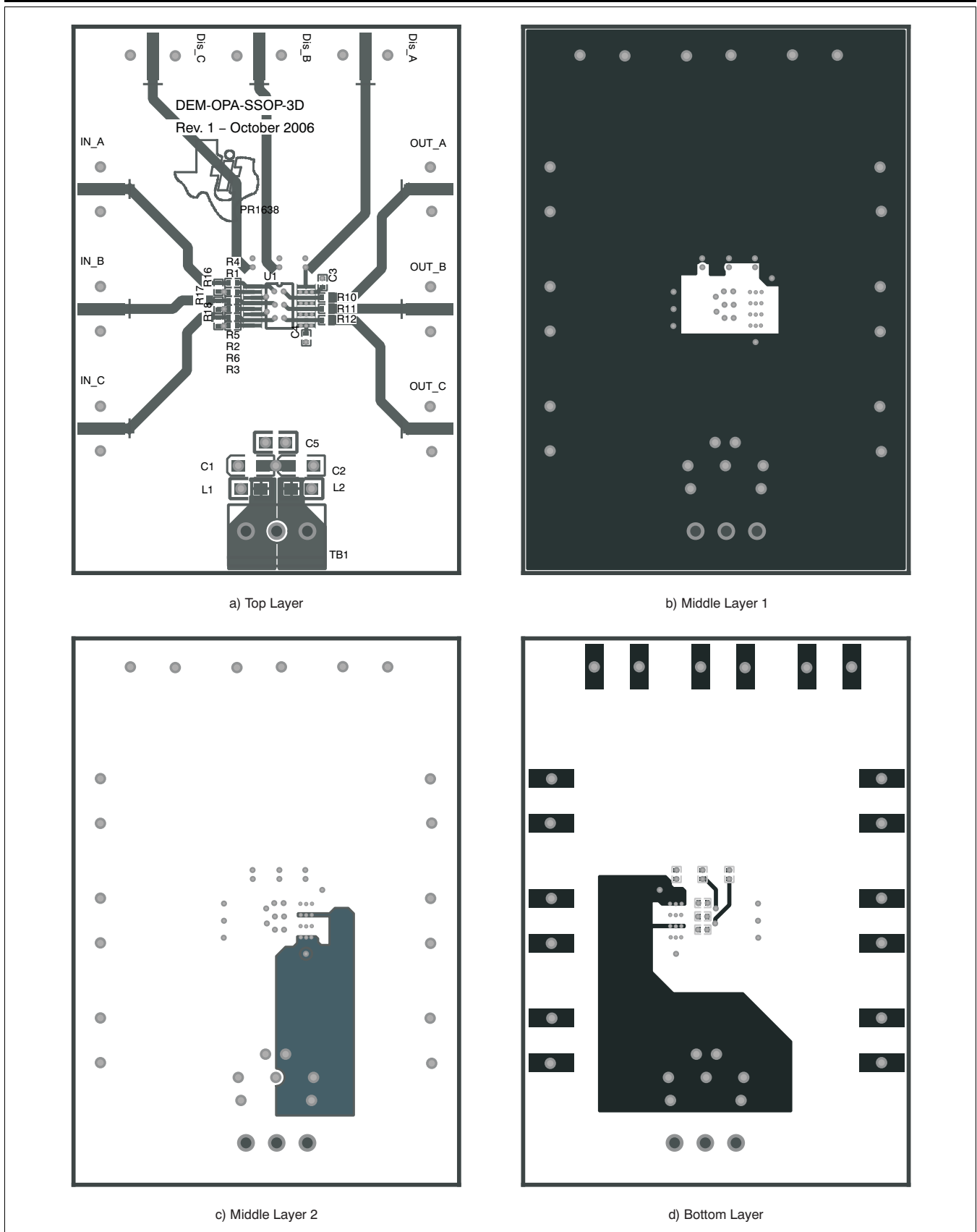
The location and type of capacitors used for power-supply bypassing are crucial to high-frequency amplifiers. The tantalum capacitors,  $C_1$  and  $C_2$ , do not need to be as close to pins 7 and 4 on the PCB, and may be shared with other amplifiers.

See the individual op amp data sheet for more information on proper board layout techniques and component selection.

### 5 Measurement Tips

This demonstration fixture, with the component values shown, is designed to operate in a  $50\Omega$  environment; most data sheet plots are obtained under these conditions. It is easy to change the component values for different input and output impedance levels. However, do not use high-impedance probes; they represent a heavy capacitive load to the op amp, and will alter the amplifier response. Instead, use low-impedance ( $\leq 500\Omega$ ) 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  $100\Omega$  resistor on the probe tip to isolate its capacitance from the circuit.

Measurement Tips



**Figure 3. DEM-OPA-SSOP-3D Demonstration Board Layout**

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