



DEM-OPA26xxE EVALUATION FIXTURE

DESCRIPTION

The DEM-OPA26xxE evaluation board is an unpopulated PCB for dual, wideband op amps in MSOP-8 packages. It supports Burr-Brown's OPA2650E, OPA2658E and future MSOP-8 dual op amps. Figure 1 shows the pinout that this PCB supports.

For more information on component selection for a particular dual op amp, and good PCB layout techniques, see the op amp's data sheet.

The ordering number for this board is MKT-349. Limit of 5 per customer.

CIRCUIT SCHEMATIC

The circuit schematic in Figure 2 shows the connections for all possible components. Not all of the components are used for each possible configuration.

Table I below shows suggested component values for the OPA2650E in three different configurations: Non-Inverting Amplifier (NIA), Inverting Amplifier (IA) and Difference Amplifier (DA). The gain for the Difference Amp is the differential mode gain. Other dual op amps can also be easily set up; see their data sheets to select component values.

The resistors R_1 , R_4 , R_9 and R_{12} are used to set the input impedance. Resistors R_8 and R_{16} set the output impedance. The values in Table I support test equipment with 50Ω input and output impedances; other source and load impedances are easily accommodated.

C_1 and C_2 should be size 1206, multi-layer ceramic chip capacitors, or equivalent. C_3 and C_4 should be size 3528 16V tantalum capacitors. R_1 through R_{16} should be size 1206, metal film chip resistors, or equivalent. $J_1 - J_6$ are SMA or SMB connectors. P_1 and P_2 are power connectors, ED555/2DS from On-Shore Technology.

BOARD LAYOUT

This evaluation board is a two layer PCB. 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 connectors may be mounted vertically or horizontally.

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 8 and 4 on your PCB, and may be shared with other amplifiers.

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

MEASUREMENT TIPS

This evaluation board, and the component values shown, are designed to operate in a 50Ω environment. Most data sheet plots are obtained this way. It is easy to change the component values for different input and output impedance levels.

Do not use high impedance probes; they represent a heavy capacitive load to the op amps, and will alter their 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 100Ω resistor on the probe tip to isolate its capacitance from the circuit.

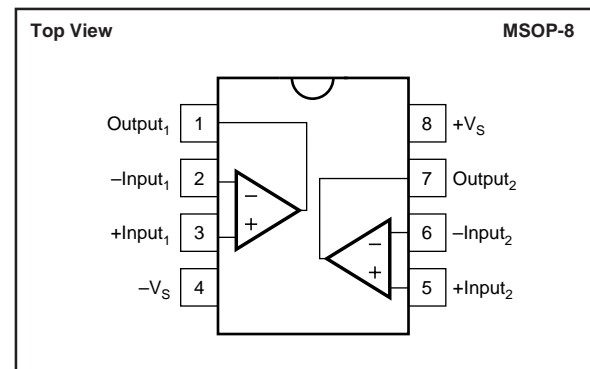


FIGURE 1. Pin Configuration.

CONFIGURATION	NIA	IA	DA
Gain	+2	-1	+1
C_1, C_2	0.1 μ F	0.1 μ F	0.1 μ F
C_3, C_4	4.7 μ F	4.7 μ F	4.7 μ F
R_1, R_9	49.9 Ω	Not Used	53.6 Ω
R_2, R_{10}	20.0 Ω	Not Used	402 Ω
R_3, R_{11}	Not Used	20.0 Ω	402 Ω
R_4, R_{12}	Not Used	56.2 Ω	61.9 Ω
R_5, R_{13}	Not Used	$R_G = 402\Omega$	$R_G = 402\Omega$
R_6, R_{14}	$R_G = 402\Omega$	Not Used	Not Used
R_7, R_{15}	$R_F = 402\Omega$	$R_F = 402\Omega$	$R_F = 402\Omega$
R_8, R_{16}	49.9 Ω	49.9 Ω	49.9 Ω

NOTES: (1) Values shown are for the OPA2650E dual op amp. See the data sheet for information on selecting these values. (2) R_F and R_G refer to the "feedback" and "gain-setting" resistors for current-feedback op amps.

TABLE I. Example Component Selection Guide with 50Ω I/O Impedance.

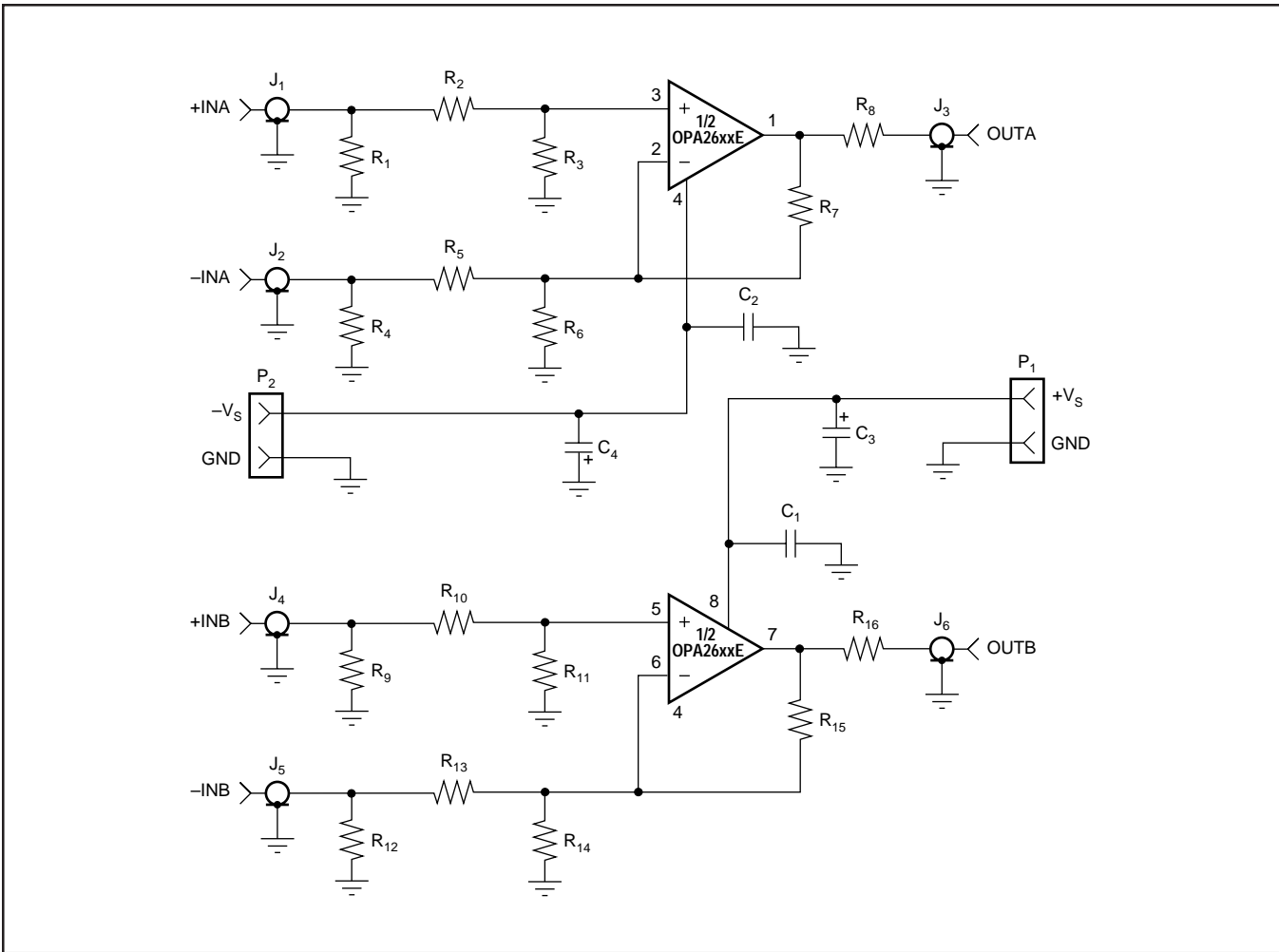


FIGURE 2. Circuit Schematic for DEM-OPA26xxE.

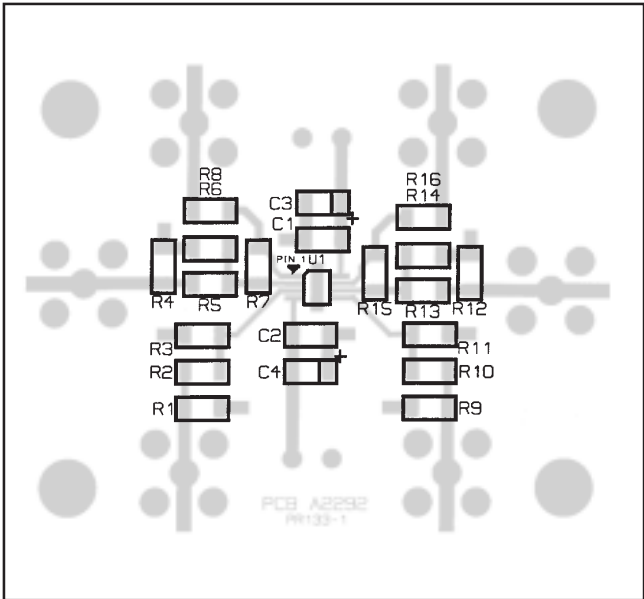


FIGURE 3. Top Layout with Silk-Screen (top view).

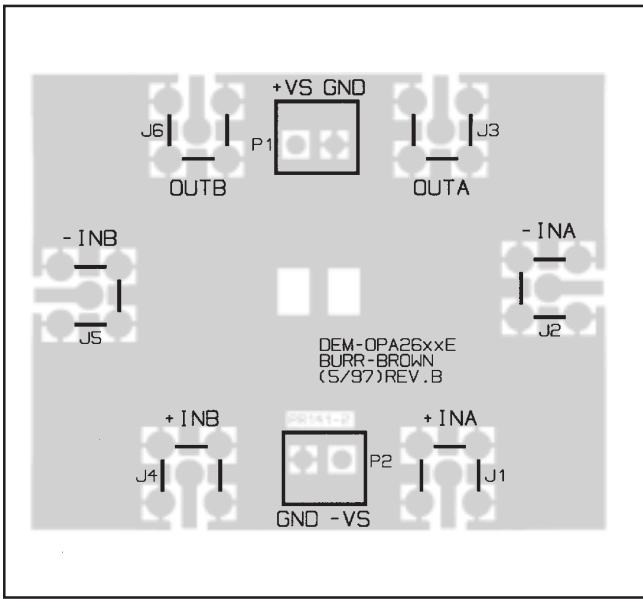


FIGURE 4. Bottom Layout with Silk-Screen (bottom view).

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