IVA-XXX08 Variable Gain Amplifier Demonstration Circuit Board

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Applications Bulletin

Introduction:

This board is designed for use with the IVA-05208 or the IVA-14208 MMICs. Figures 1-4 show how to configure the board for any combination of unbalanced or balanced input and output.

Assembly Notes:

Table 1 lists the parts that will be needed to assemble the board: B- balanced, U- unbalanced, I- input, O- output.

1) Use bypass capacitors on both the Vcc and Vgc lines. Chip capacitors of 1000 pF or more should be used to ensure adequate low frequency bypassing. Vcc should be set to 5 Volts. **It is strongly recommended that you do not exceed the maximum IC voltage ratings shown on the data sheets**.

2) For balanced inputs, just put blocking capacitors on the two input lines (see figures 1 and 3). For unbalanced input, use a blocking capacitor on one line and bypass the other input directly to ground (see figures 2 and 4) using the pads located alongside the IC pad. 1000 pF chip capacitors will perform well for most applications.

Table 1. Parts list for different assembly configurations.

BIBO Qty	UIBO Qty	BIUO Qty	UIUO Qty	Part description
1	1	1	1	IVA-XXX08 circuit board
1	1	1	1	IVA-05208 or IVA-14208 MMIC
6	6	6	6	1000 pf chip capacitor
0	0	1	1	47 or 50 Ohm chip resistor
4	3	3	2	SMA connectors (EF Johnson type 142)

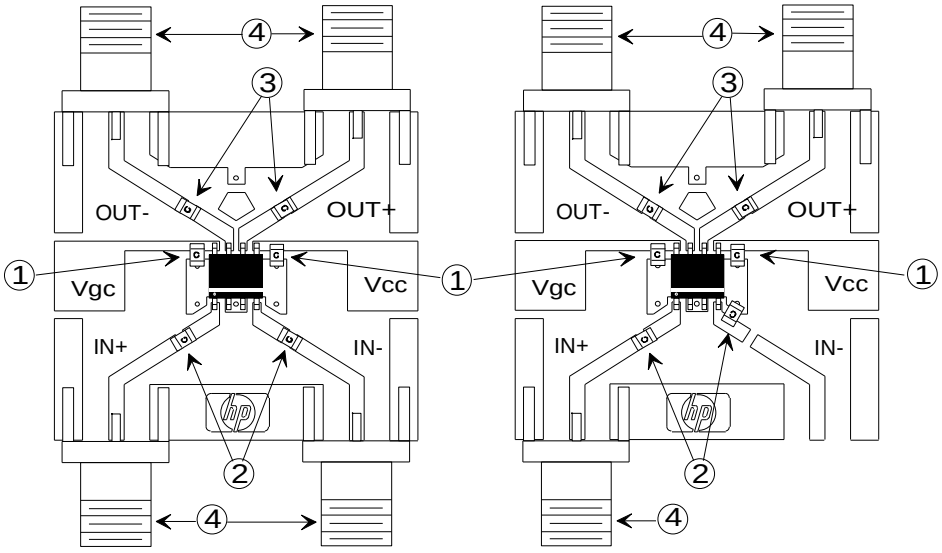

Figure 1. Balanced Input, Balanced Output

Figure 2. Unbalanced Input, Balanced Output

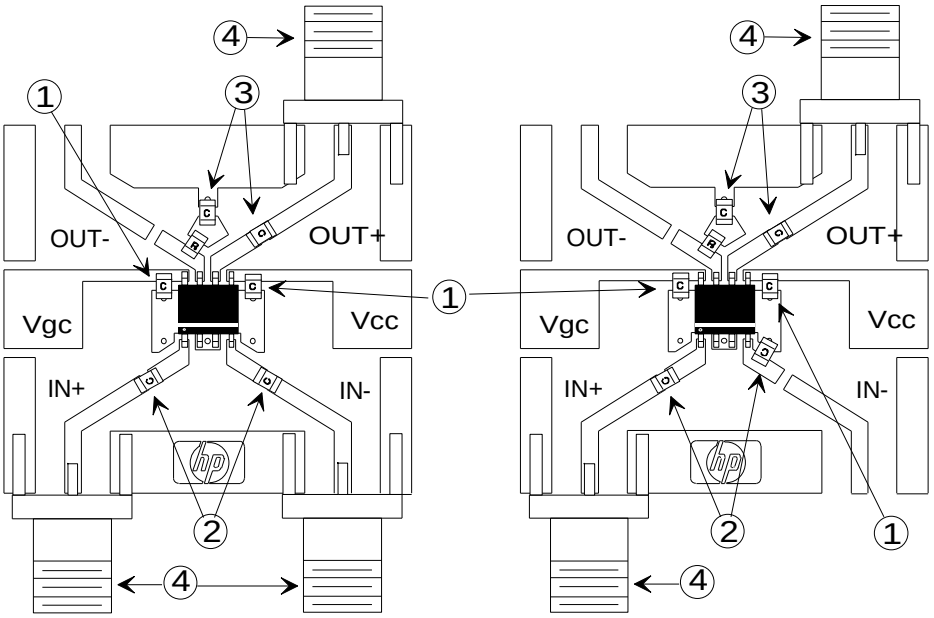

Figure 3. Balanced Input, Unbalanced Output

Figure 4. Unbalanced Input, Unbalanced Output

3) For balanced outputs, put blocking capacitors on the two output lines (see figures 1 and 2). For unbalanced operation, one of the outputs must be AC terminated into 50 Ohms. Put a blocking capacitor and 50 Ω resistor to ground using the pads located between the two output lines (see figures 3 and 4). Connect the resistor to the IC output pin (pin 6 or 7) and the capacitor to ground. Again, 1000 pF should be adequate for most applications.

4) The board has been designed to accommodate EF Johnson type 142-0701-801 SMA connectors. These connectors are readily available from Newark, Digi-Key and others for about $7 each. The connectors will just slip on to the edge of the board without any drilling. Be sure to solder the ground pins on the connector to the ground-planes on both sides of the board to ensure low ground inductance.