

BBQ100 Bias Board

The bias board should protect the amplifier from applying any damaging voltage levels however **please take precautions for static damage as the bias board can not protect from static damage.**

HEX Amp Bias Board Test Points, Power supply connection, Adjust ports and Drain Bias Enable:

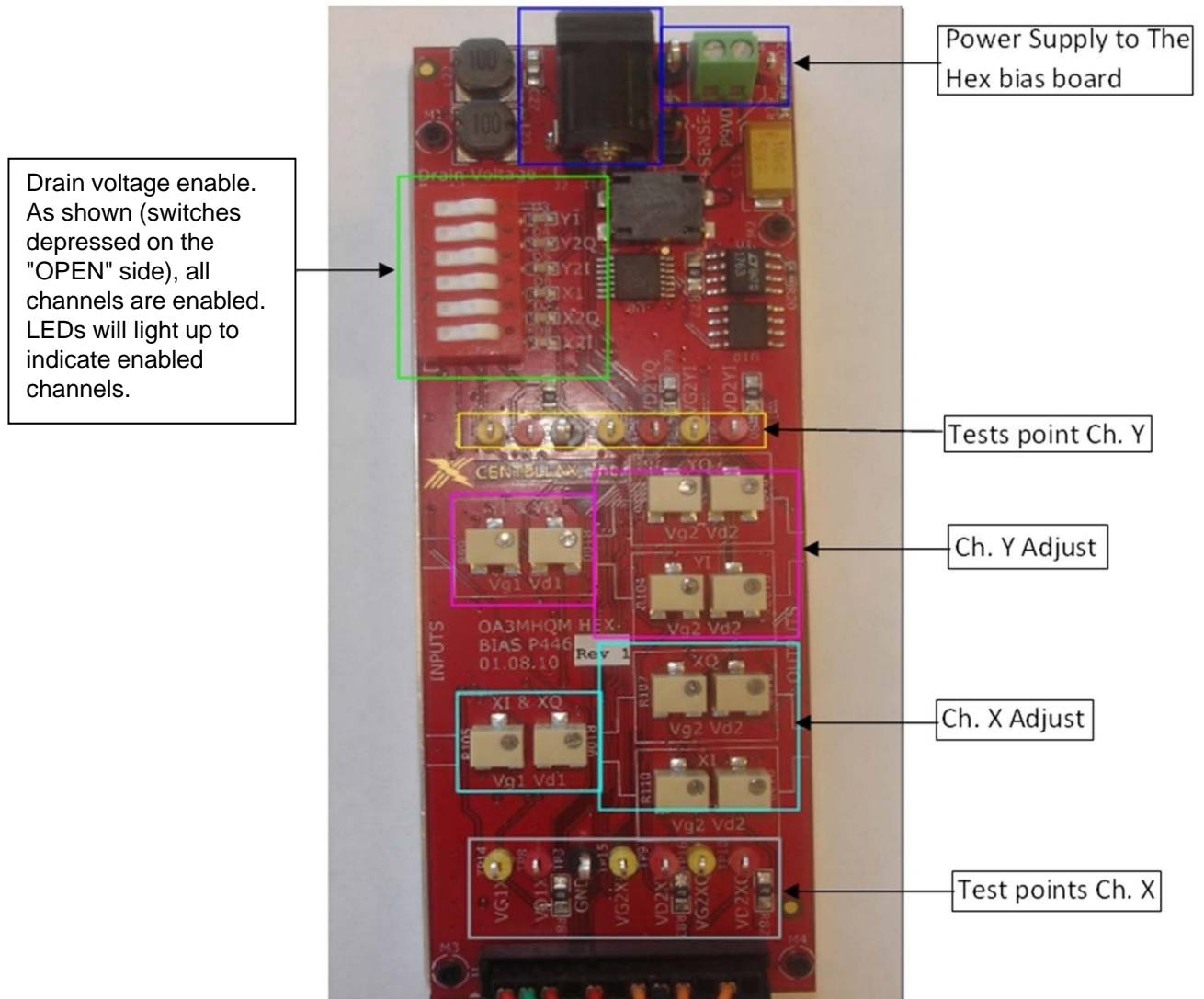


Figure 1: The BBQ100 bias board for the OA3MHQM

Application Notes

The BBQ100 bias board has 6 gate and 6 drain adjustments for controlling four different channels (a total of 12 adjustments). Each bias can be adjusted by using a small screwdriver on the potentiometers. A voltmeter can be used to read out the bias voltages.

BBQ100 Bias Board

The bias board can be operated from any 9V DC supply which provides enough current, about 2.8A total. Power can be provided through any of the connectors along the top edge of the board, labeled P9VO: green screw terminal block, clip leads, etc.

NOTE: No Drain current is provided to a channel unless the drain voltage switches (see pg. 1) are enabled!

To measure the applied bias voltages use a digital volt meter to probe the appropriate test point on the bias board:

- To probe the gate voltages, measure the indicated gate test points.
- To probe the drain voltages, measure the indicated drain test points.

The bias board should protect the amplifier from applying any damaging voltage levels however **please take precautions for static damage as the bias board can not protect from static damage.**

BBQ100 Bias Board

Using the OA3MHQM and BBQ100 bias board

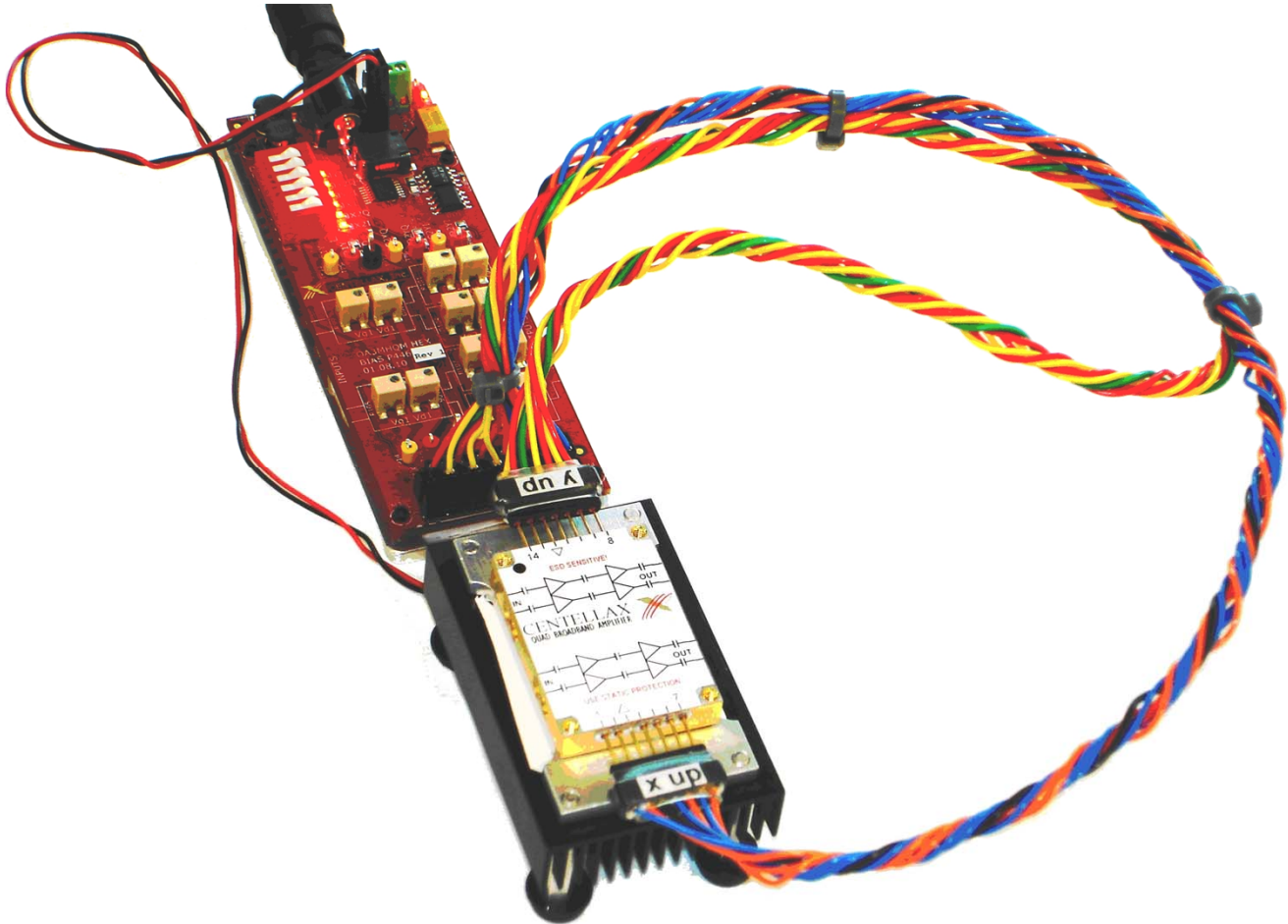


Figure 2: The BBQ100 connected to the OA3MHQM

Set-up

Connect cables from bias board to modulator driver as shown. The 'Y UP' cable routes to channel YQ and YI (top edge) of the module; the 'X UP' cable routes to channel XQ and XI (bottom edge). The letters 'Y UP' and 'X UP' must be facing up to orient the connectors correctly.

CRITICAL – Cables must be routed as shown to prevent damage to the module.

The module must be attached to either the provided heat sink with the fan connected to the bias board as shown or to a user preferred heat sink! Thermal paste or light pressure should be used to maintain contact between the module and the heatsink. **The module must not be operated without a heatsink.**

Connect MUX outputs to driver inputs YQ, YI, XQ, XI and outputs YQ, YI, XQ, XI to modulator inputs.

Operation

Check complete set-up; GPPO cables to inputs YQ, YI, XQ, XI from MUX and from outputs YQ, YI, XQ, XI to modulator.

BBQ100 Bias Board

Note: The first stage gate and drain biases are common for XI and XQ (Pins 1 & 2) and for YI and YQ (Pins 14 & 13) to reduce module size and complexity.

Vd1 YI & YQ and Vd1 XI & XQ, the first stage drain biases, are set to 6V.

Vd2 YI & Vd2 YQ and Vd2 XI & Vd2 XQ, the second stage drain biases, are each set to 8V for maximum amplitude. Adjust for desired output amplitude.

Vg1 YI & YQ and Vg1 XI & XQ, the first stage gate biases, are used to adjust the first stage gates for optimum amplitude.

Vg2 YQ & Vg2 YI and Vg2 XQ & Vg2 XI, the second stage gate biases, are used to adjust the second stage gates for cross-over.

Bias settings

Name	Function	Use	Range
RFin	RF input sides YI, YQ, XI & XQ	GPPO	
RFout	RF output sides YI, YQ, XI & XQ	GPPO	
14: (Vg1_Y)	1 st stage gate bias, side YI & YQ	adjust for amplitude	-0.5V to 0.2V
13: (Vd1_Y)	1 st stage drain bias, side YI & YQ		6V to 7V
12: (Gnd)	supply ground	power supply ground	
11: (Vg2_YQ)	2 nd stage gate bias, side YQ	adjust for crossover	-1V to 0.2V
10: (Vd2_YQ)	2 nd stage drain bias, side YQ	eye amplitude	5V to 8V
9: (Vg2_YI)	2 nd stage gate bias side YI	adjust for crossover	-1V to 0.2V
8: (Vd2_YI)	2 nd stage drain bias, side YI	eye amplitude	5V to 8V
1: (Vg1_X)	1 st stage gate bias, side XI & XQ	adjust for amplitude	-0.5V to 0.2V
2: (Vd1_X)	1 st stage drain bias, side XI & XQ		6V to 7V
3: (Gnd)	supply ground	power supply ground	
4: (Vg2_XI)	2 nd stage gate bias, side XI	adjust for crossover	-1V to 0.2V
10: (Vd2_XI)	2 nd stage drain bias, side XI	eye amplitude	5V to 8V
9: (Vg2_XQ)	2 nd stage gate bias side XQ	adjust for crossover	-1V to 0.2V
8: (Vd2_XQ)	2 nd stage drain bias, side XQ	eye amplitude	5V to 8V