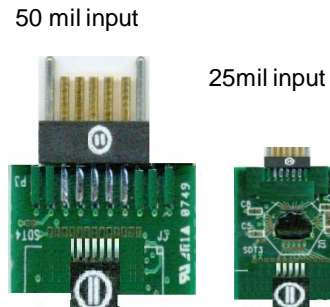




Triangle BioSystems, Int'l.



## 4 Channel Tethered Gain 20 and 100 Headstages

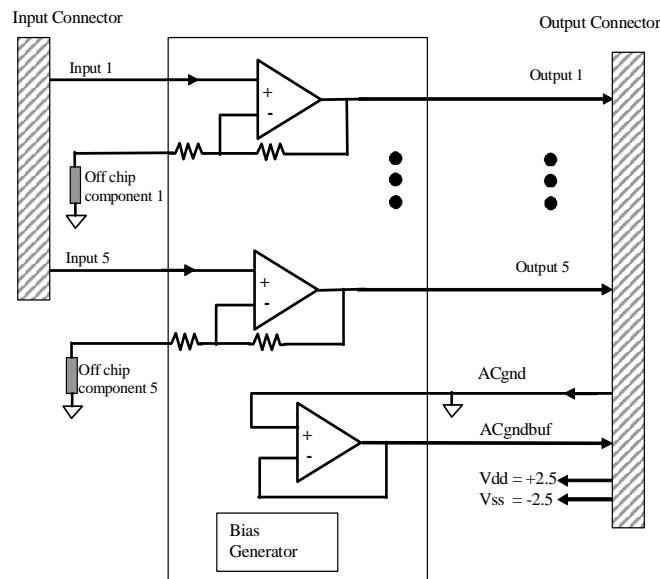
### Headstage Features

- Custom VLSI circuit provides small size & reduced weight
- Weight < 0.6 grams
- 5 channels (4ch plus 1 reference)
- Available with gain of 20 and 100
- Unity gain ground buffer output
- Selectable bandpass filtering per channel
- 3v/5v operation
- Size for Gain 20 & 100:  
5x25x17mm for 50mil Input Omnetics  
5x19x11mm for 25mil Input Omnetics

Triangle BioSystems, Int'l. offers a family of 8-channel analog headstage subassemblies that are used to provide a wired connection between implanted electrodes and neural recording and analysis equipment. The main function of the headstage is to precondition the neuron pulse signals and provide a buffered connection over a low impedance cable. Each headstage design is based on a custom, low power VLSI developed by TBSI. The result is a solution with superior performance in a very small form-factor with less weight.

The 4-channel headstages are available with gains of 20 and 100. An all headstages include a selectable bandpass filter. A gain 1000 is also available that is the size and weight of the 8 channel headstage

### Block Diagram

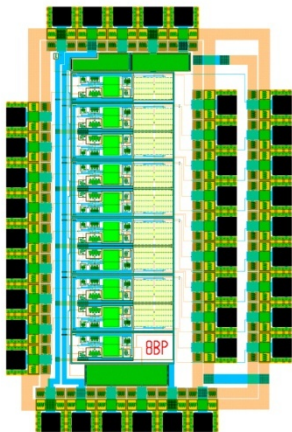


\*does not apply to gain 1000 version

# Headstage Specifications

## Electrical

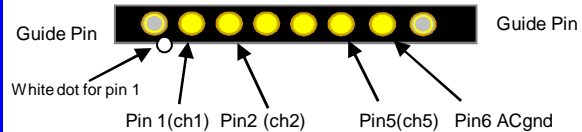
Parameter	Min	Typ	Max	Units	Notes
<b>Power Supply</b>					
3 volt supply	3.0	3.3	3.6	Volts	3.3v Bipolar power supply (+/- 1.65v)
Average Icc 3v	5.6	6.1	6.7	ma	
5 volt supply	4.5	5	5.5	Volts	5v Bipolar power supply (+/- 2.5v)
Average Icc 5v	6.8	7.5	8.5	ma	
<b>Analog Channel</b>					
Input voltage range (5v)	-1.2	0	1.8	Volts	For 5v Bipolar power supply
Input voltage range (3.3v)	-6		.8	Volts	For 3.3v Bipolar power supply
Common mode center		0		Volts	For bipolar power supplies only
dc Offset	-10	0	10	mVolts	For bipolar power supplies only
Gain 20	19	20	21		Factory selectable gain
Gain 100	95	100	105		Factory selectable gain
Gain 1000	950	1000	1050		Factory selectable gain
G20 BW @ 5v	.8		54	kHz	-3dB input signal level BW
G100,G1000 BW @ 5v	.8		22	kHz	-3dB input signal level BW
Input impedance		22		Mohms	At 1kHz
Output impedance		158		ohms	At 1kHz
Input referred noise		6.2		$\mu$ Vrms	for DC - 10kHz frequency with all inputs grounded
THD			-63	dB	@ 5kHz and 1 volt p-p input
Phase Delay		30		uSecs	@ 5 kHz input
Settling Time		5.5		uSecs	With 1v step input
<b>Mechanical Specs</b>					
Length		15		mm	Edge to Edge of connector pins
Width		14		mm	
Height		3.0		mm	
Weight			.6	grams	
<b>Miscellaneous</b>					
Reference Bias Current		78		uA	Included inside headstage
Junction Temperature	-40	25	100	C	



Gain 20 & 100 die

## Electrode Side Omnetics Connector

Looking At Input Electrode Connector (50mil or 25mil available)



Electrode mating 25 mil connector is available  
Electrode mating 50 mil connector is available

Recorder side headstage cables come pre-wired and attached and can be ordered with different lengths up to 3 feet.

## Ordering Information

Part No.	Gain	BP Filter
Neuro4BPG20	Gain 20	Yes
Neuro4BPG100	Gain 100	Yes
Neuro4BPG1000	Gain 1000	Yes

