

aLIGO BSC ISI Electronics FDR

3/30/2010

LIGO-G1000411

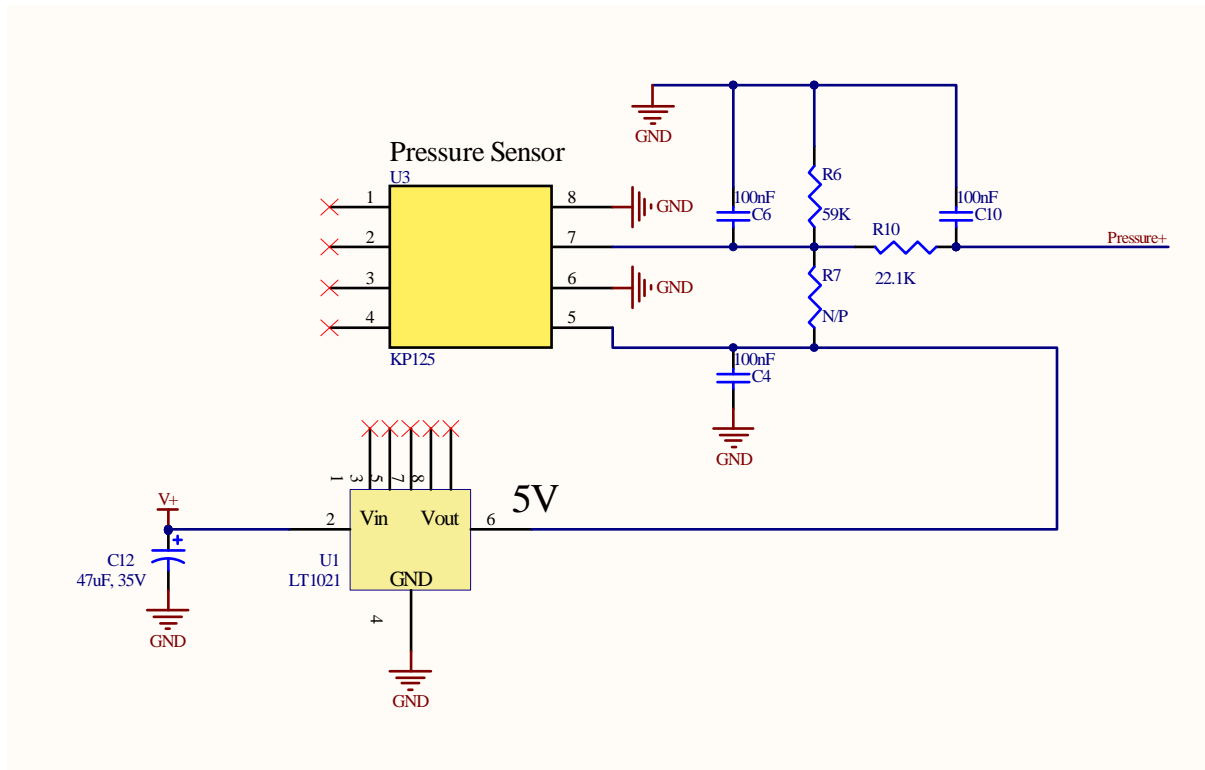
Ben Abbott, Brian Lantz

March 30, 2010

LIGO-G1000411-v3

aLIGO BSC ISI Electronics In-Vac Protection

KP125 Pressure Sensor (response = 53.3mV/KPa) is
Given its voltage reference from an LT1021-5

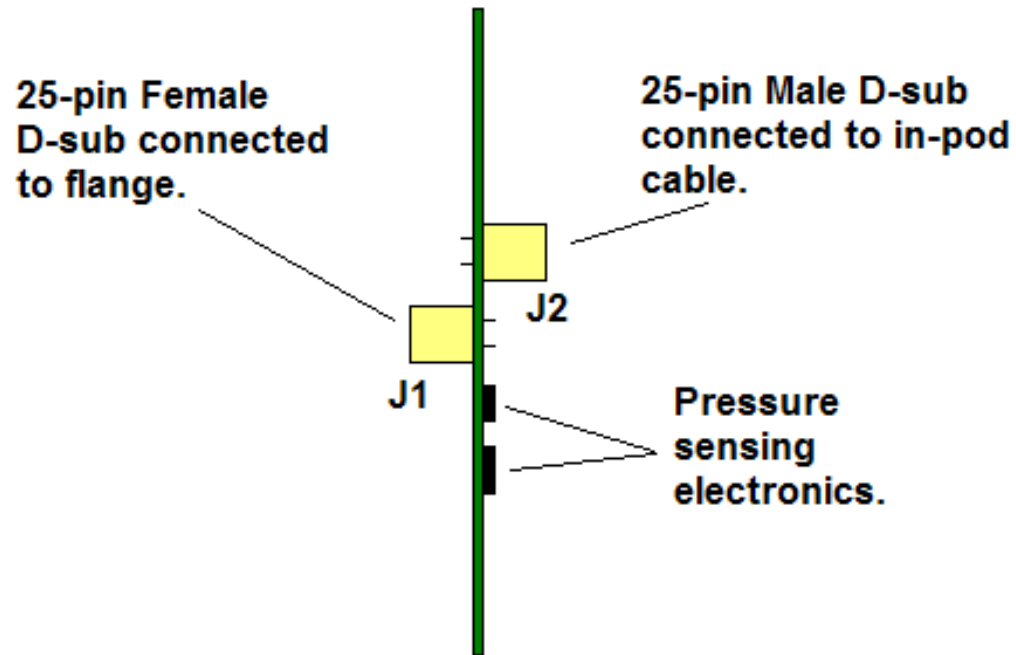


THE FAR SIDE • Gary Larson

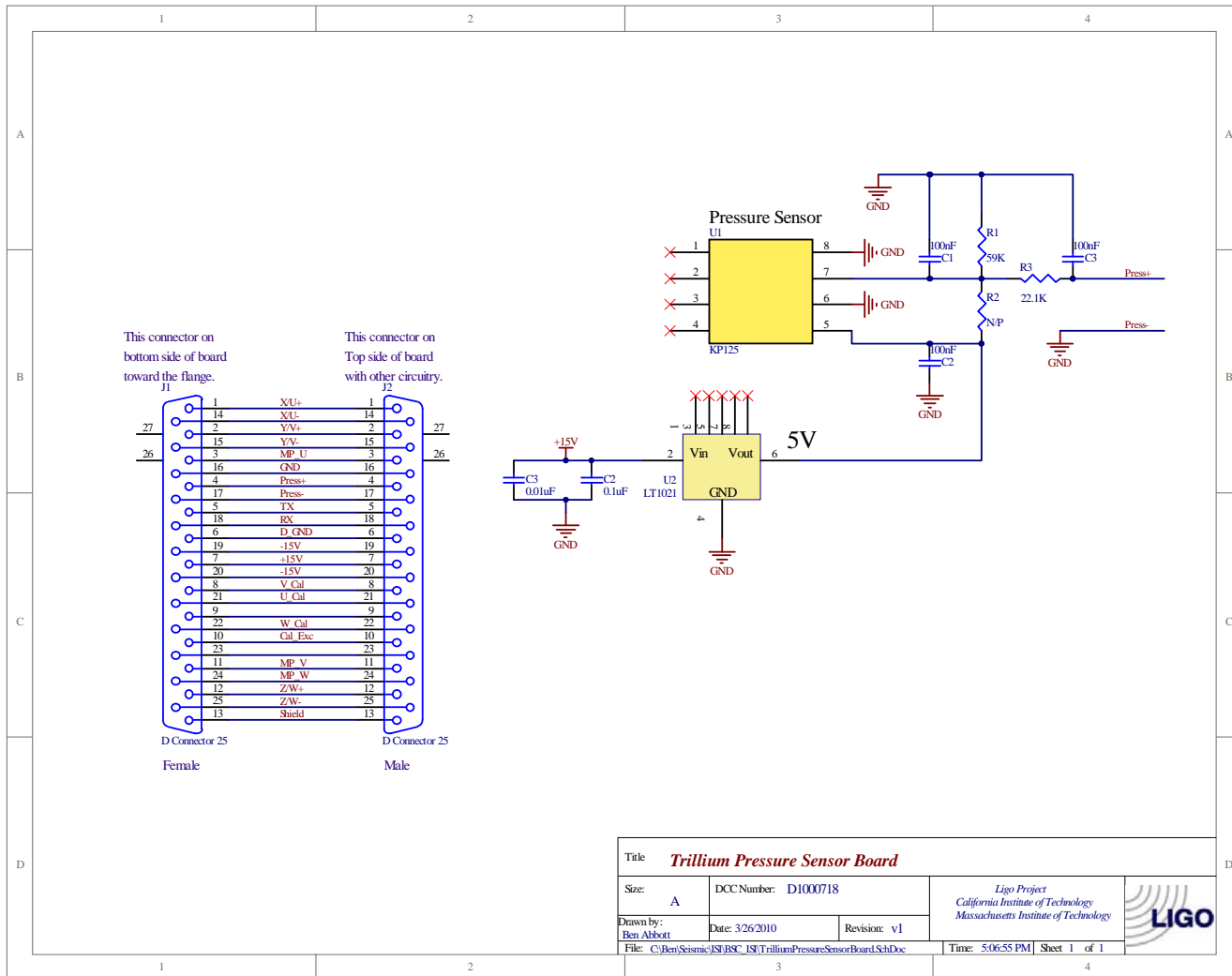


The woods were dark and foreboding, and Alice sensed that sinister eyes were watching her every step. Worst of all, she knew that Nature abhorred a vacuum.

aLIGO BSC ISI Electronics Trillium Pressure Sensor Board



aLIGO BSC ISI Electronics Trillium Pressure Sensor Board

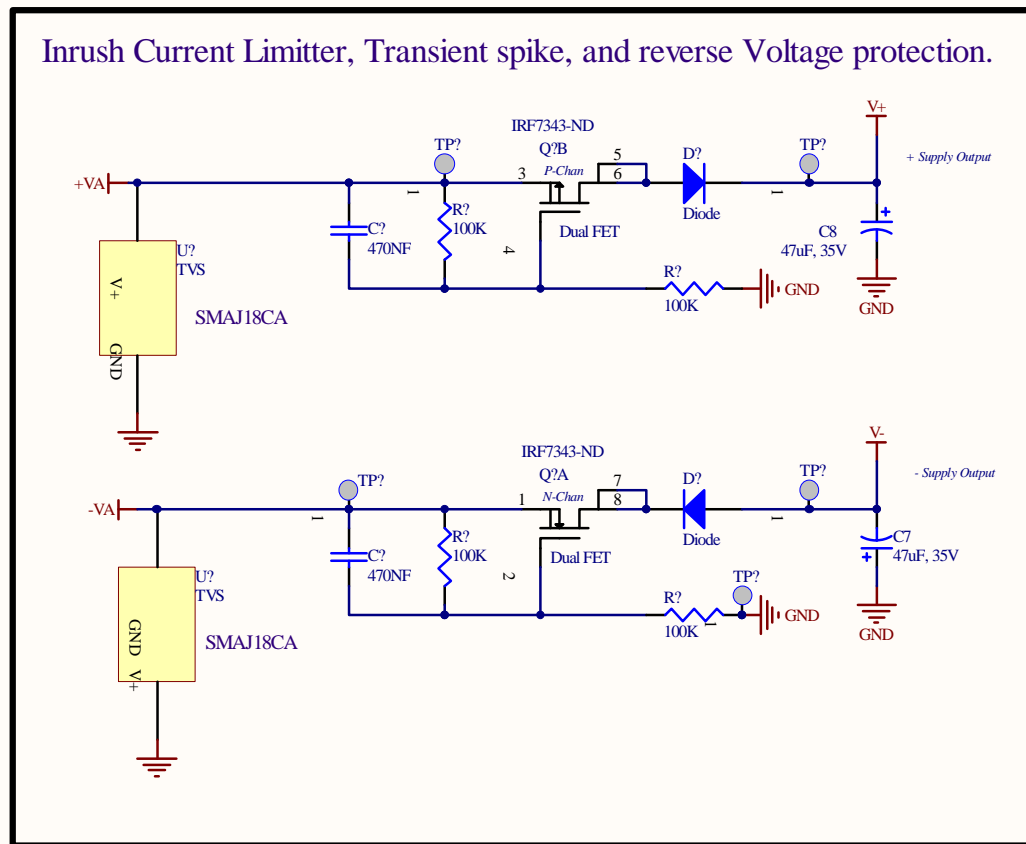


March 30, 2010

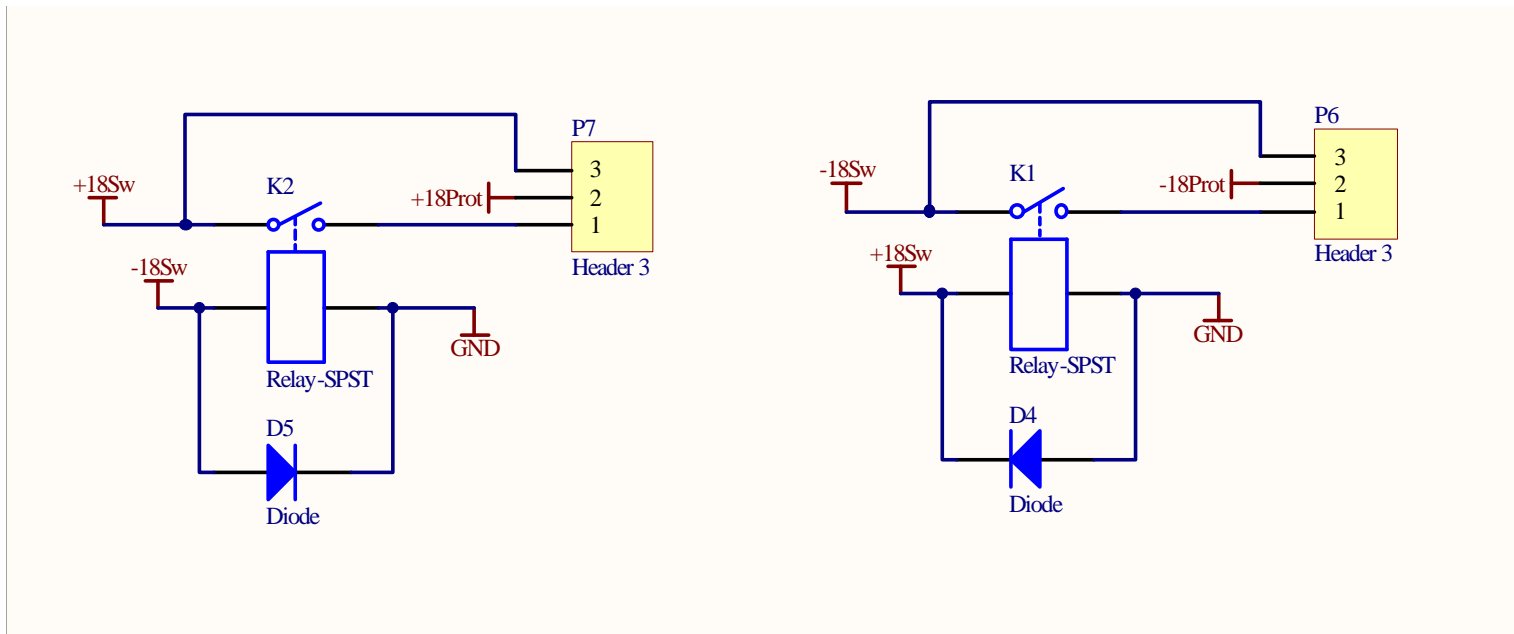
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aLIGO BSC ISI Electronics In-Vac Protection

In-vacuum pod voltage protection for GS-13s, T240s, and L4Cs per T0810012-v1

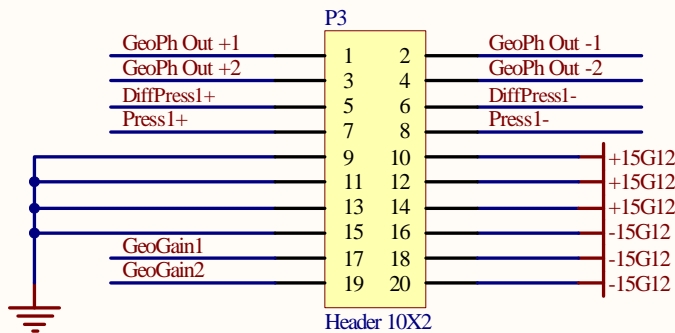


Single-Sided Supply Protection in ISI Interface Chassis



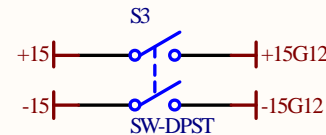
aLIGO BSC ISI Electronics Sensor Protection

From the Back Board of the ISI Interface Chassis, all of the in-vacuum pod pairs get their own switched power.

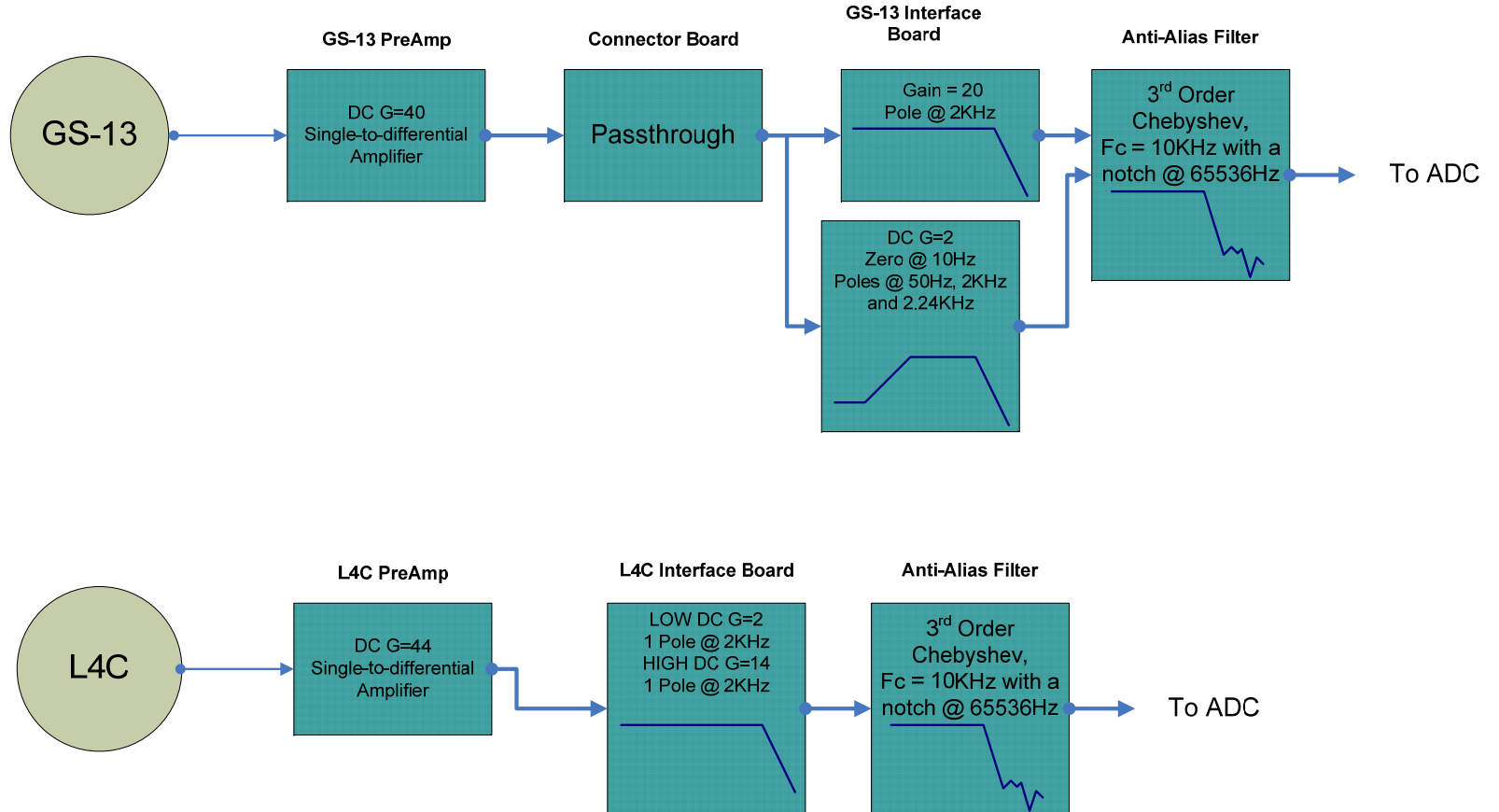


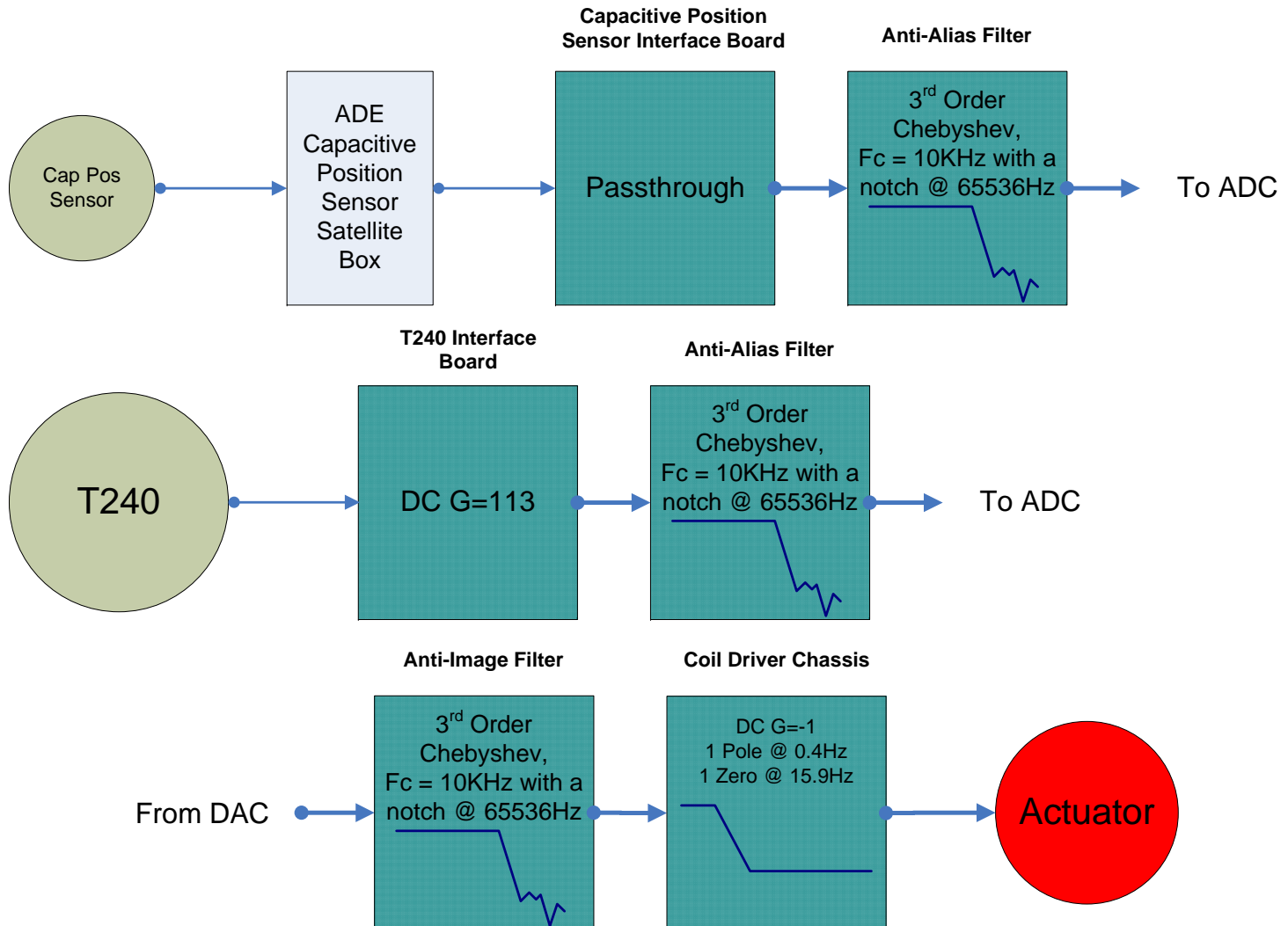
From Geophones 1&2

Geoph 1&2 Power Switch



Signal Path for the GS-13 and L4C Geophones

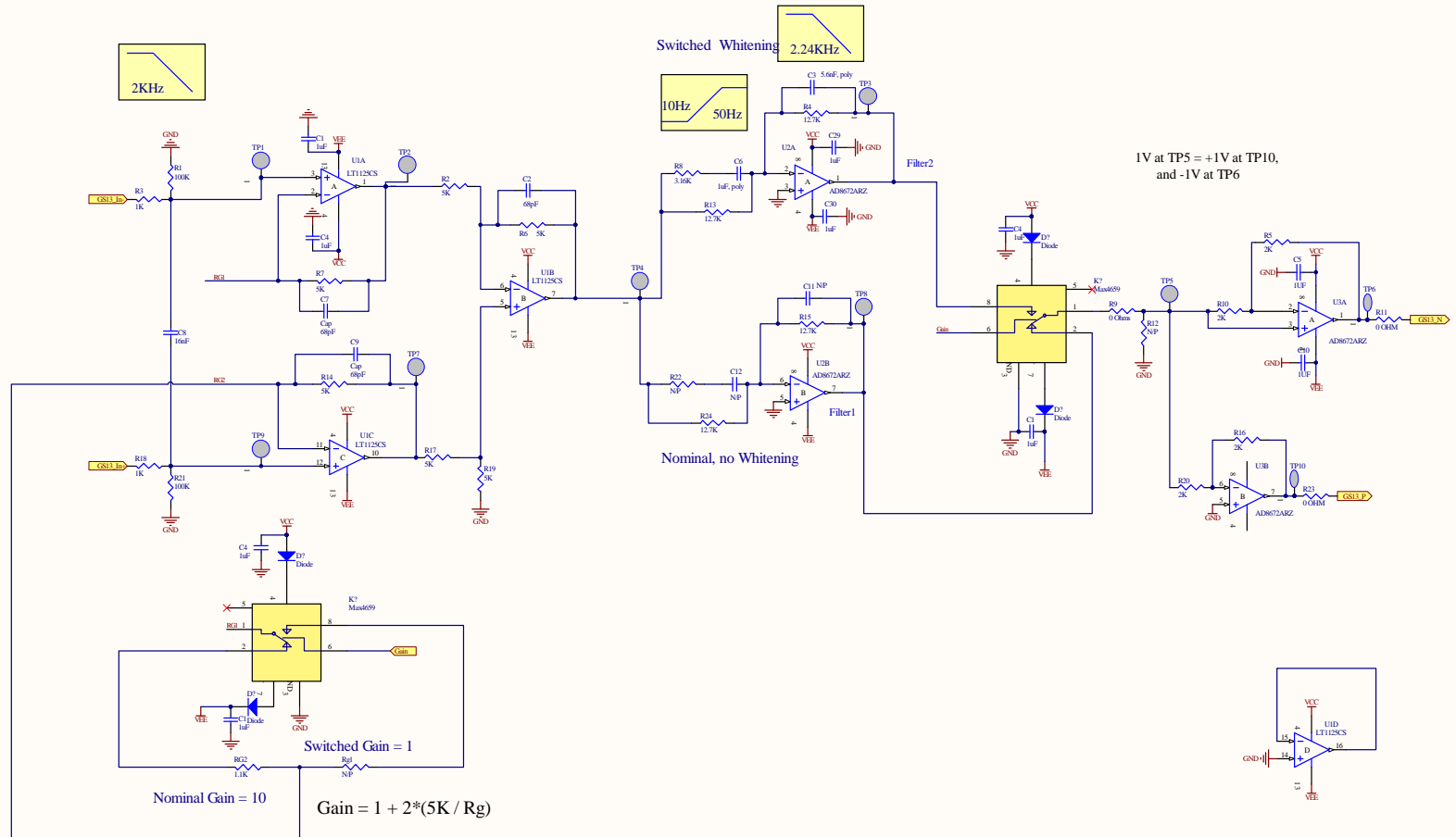




aLIGO BSC ISI Electronics GS-13 Channel

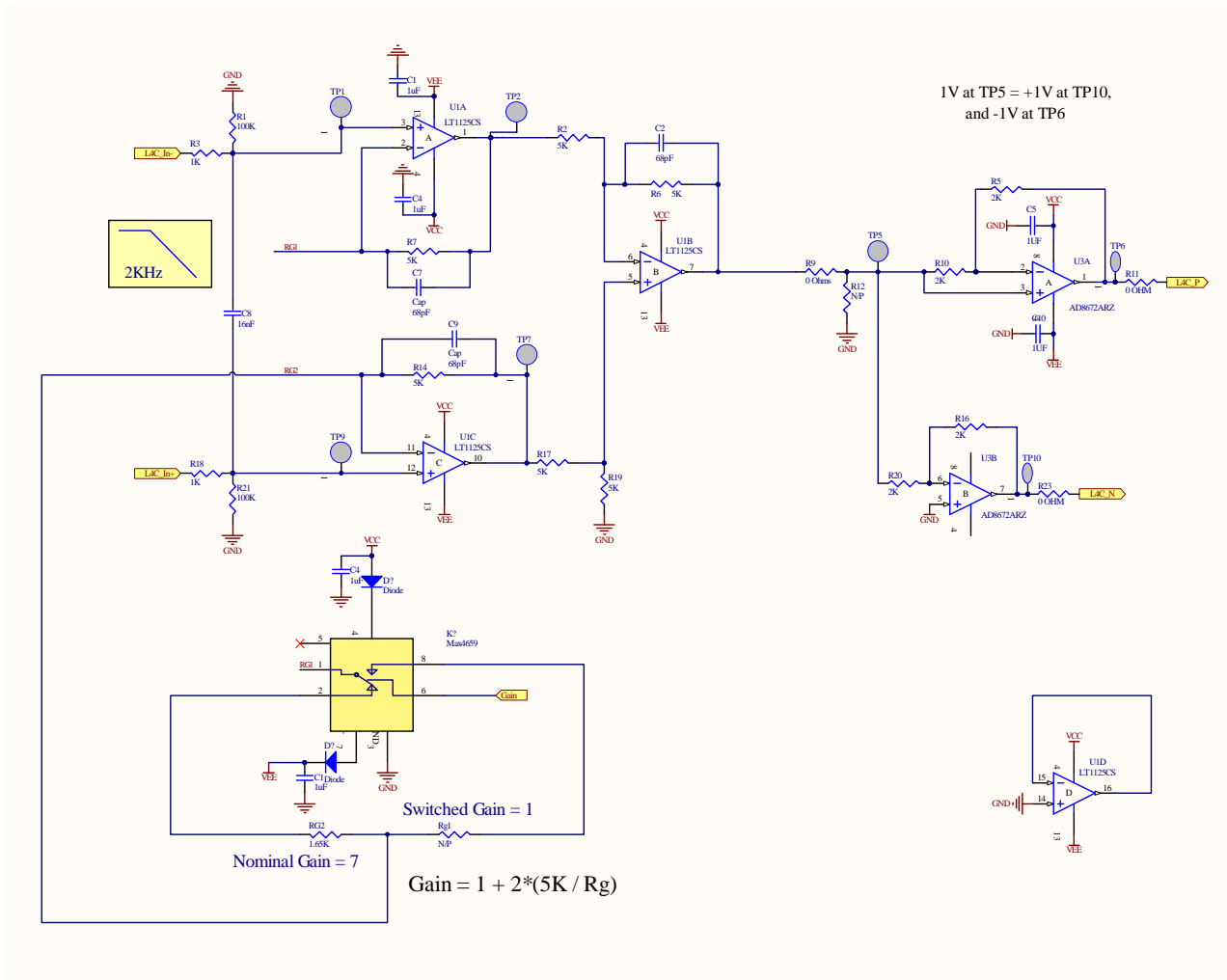
Nominal Whitening is a 10Hz Zero, and a 50Hz Pole. Overall gain=2 @DC.

There is also 1 pole @ 2KHz, and 1 pole @ 2.24KHz.



March 30, 2010

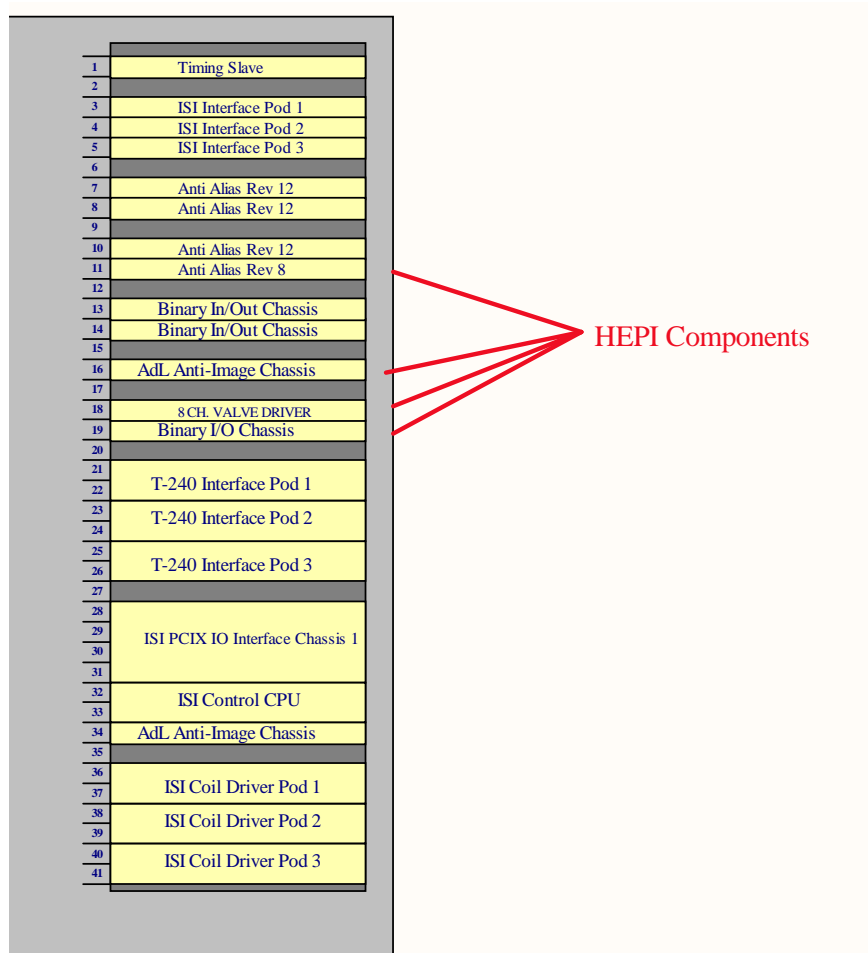
aLIGO BSC ISI Electronics L4C Channel



March 30, 2010

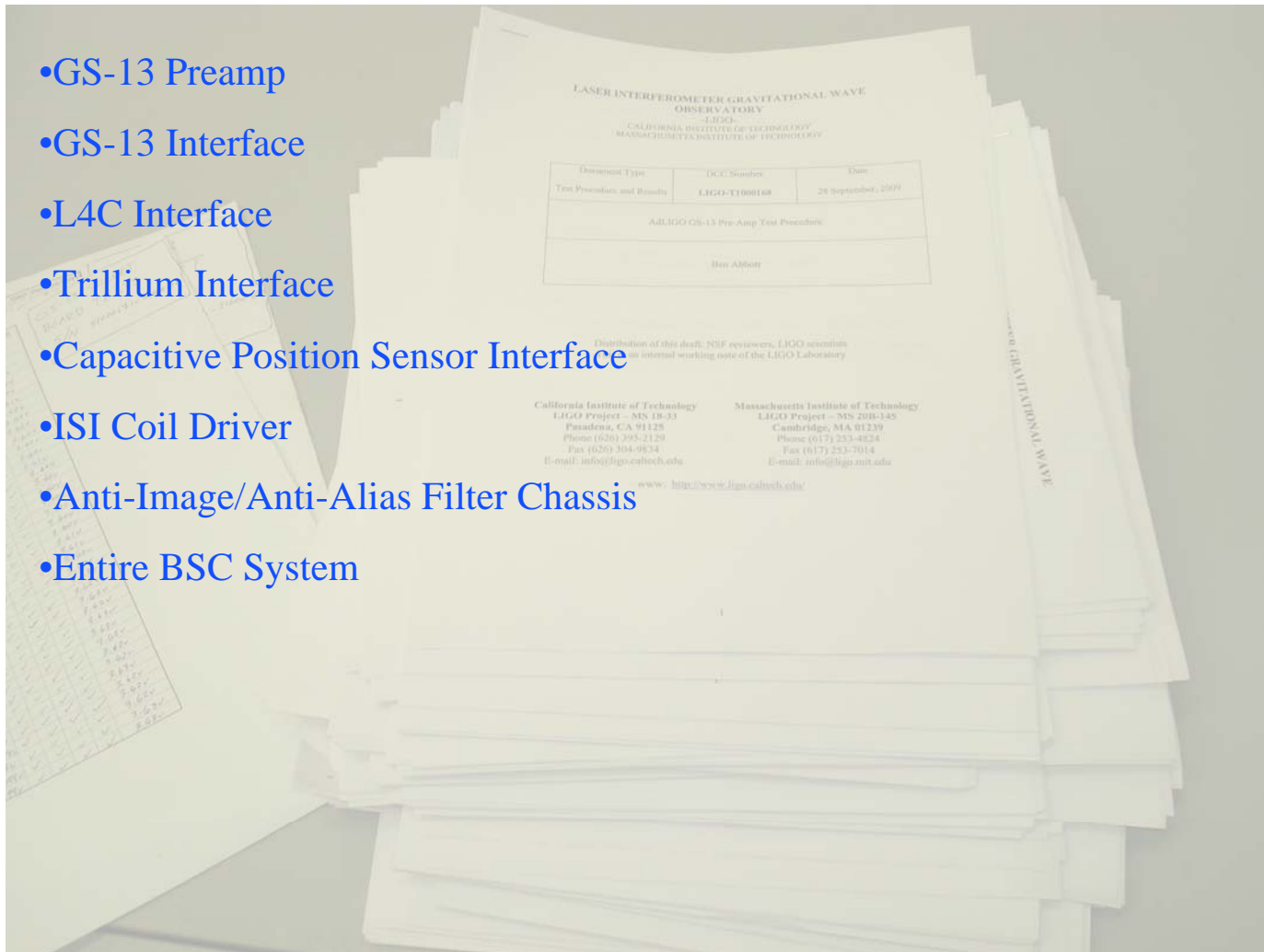
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aLIGO BSC ISI Electronics Rack Layout



aLIGO BSC ISI Electronics Test Procedures

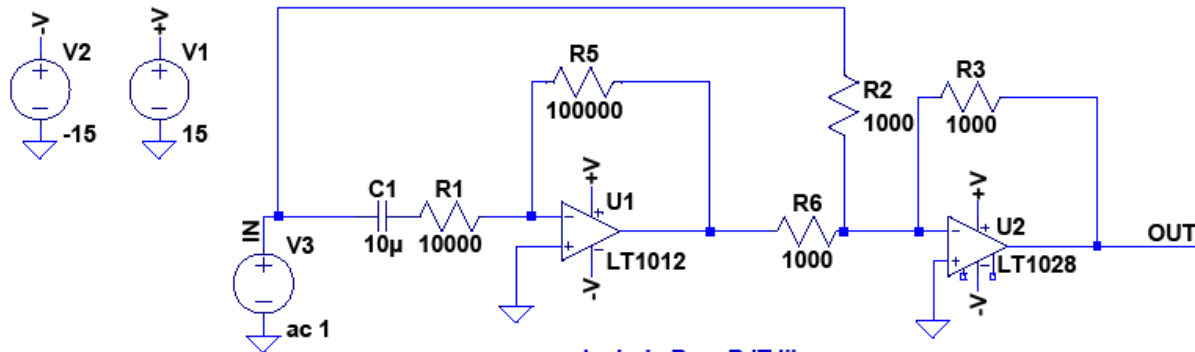
- GS-13 Preamp
- GS-13 Interface
- L4C Interface
- Trillium Interface
- Capacitive Position Sensor Interface
- ISI Coil Driver
- Anti-Image/Anti-Alias Filter Chassis
- Entire BSC System



March 30, 2010

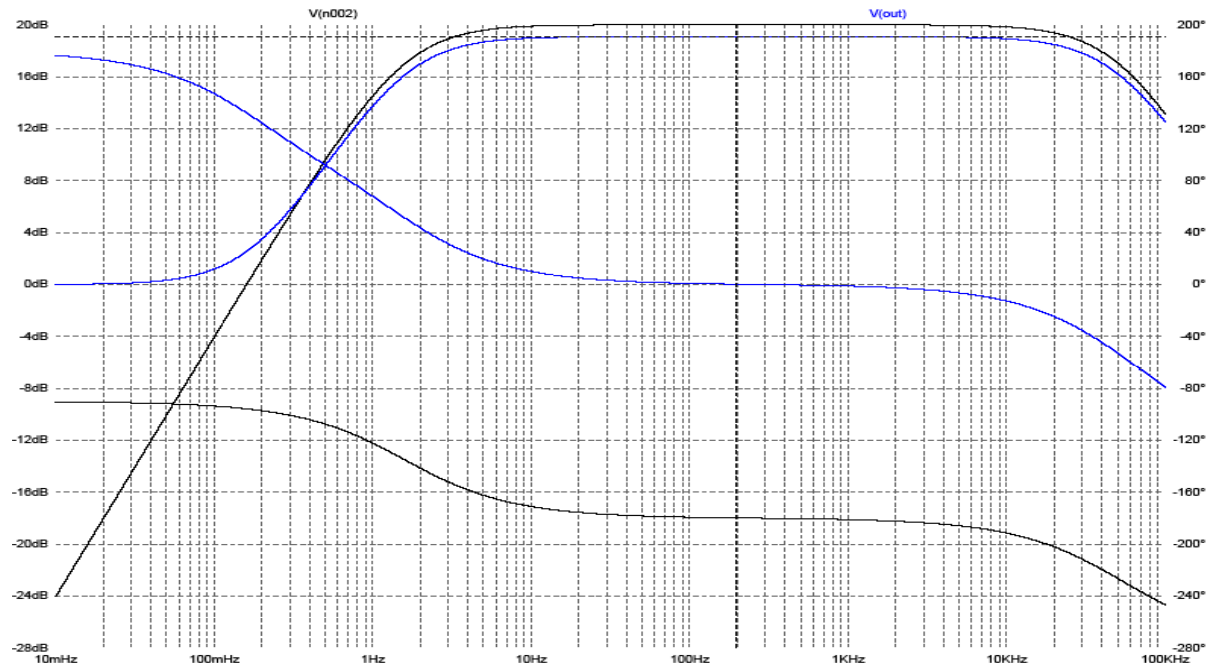
LIGO-G1000411-v3

Low Frequency Zero Filter



```
.include BensBJT.lib
.SUBCKT MAT03 1 2 3 5 6 7
Q1 1 2 3 PMAT
.MODEL PMAT PNP (IKF=160E-3)
.ENDS .ac oct 100 .01 100K
```

Low Frequency Zero Filter Frequency Response



March 30, 2010

LIGO-G1000411-v3

- **GS-13 PreAmp D0902056-v1**
- **GS-13 Socket Board D0902011-v3**
- **GS-13 Interface Board D1000755-v1**
- **L4C PreAmp D1000059-v1**
- **L4C Interface Board D1000757-v1**
- **Trillium Pressure and Connector Board G0900662-v2**
- **Trillium Interface Board D1000749-v2**
- **Capacitive Position Sensor Interface D1000057-v1**
- **Coarse/Fine Coil Driver D0901039-v2**
- **AA/AI Interface Board D070081-v2**
- **ISI Interface Back Board D1000060 -v1**
- **Overall BSC ISI Wiring Drawing D0901301-v2**