


D101 is a default diode standing in for a Vishay S3G. It should have the same package and so should be OK for PCB generation.

To sheets Voltaref
2.5VREF
This output port, 2.5VREF, should appear only on cs1, not cs2-4.

To sheets EXT1-4
REF

The intended value and type of C114 is unclear. I have made it the same as C115. It was not fitted in the LIGO Sat Amps, and could be removed.

Title *			KAGRA Project ICRR University of Tokyo		
Size: B	Doc Number: *	SCH/PCB Revision: *		Engineer: *	
File: CS.SchDoc		Date: 2015/02/13 Time: 14:37:06 Sheet * of *			

A

B

C

D

A

B

C

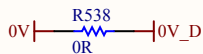
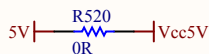
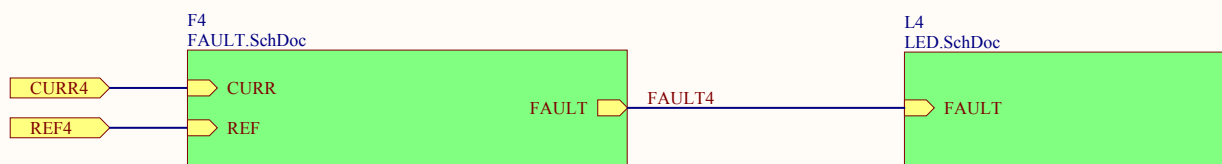
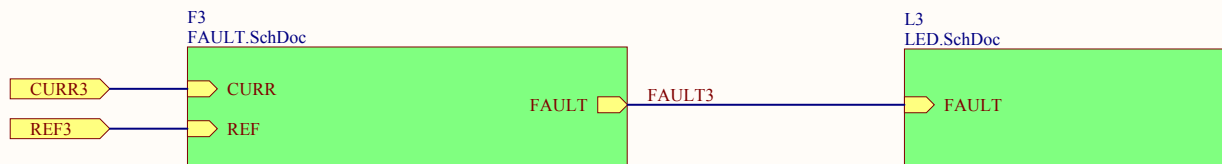
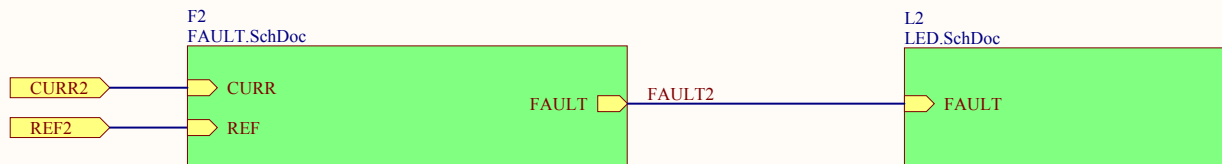
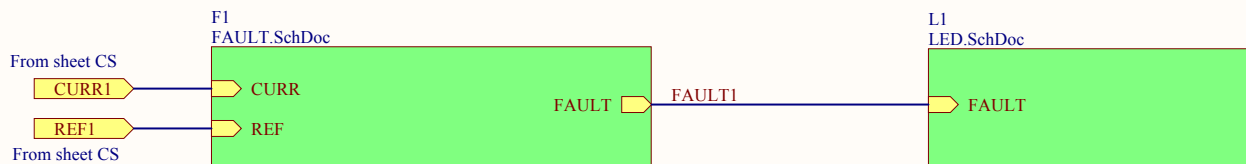
D


1

2

3

4



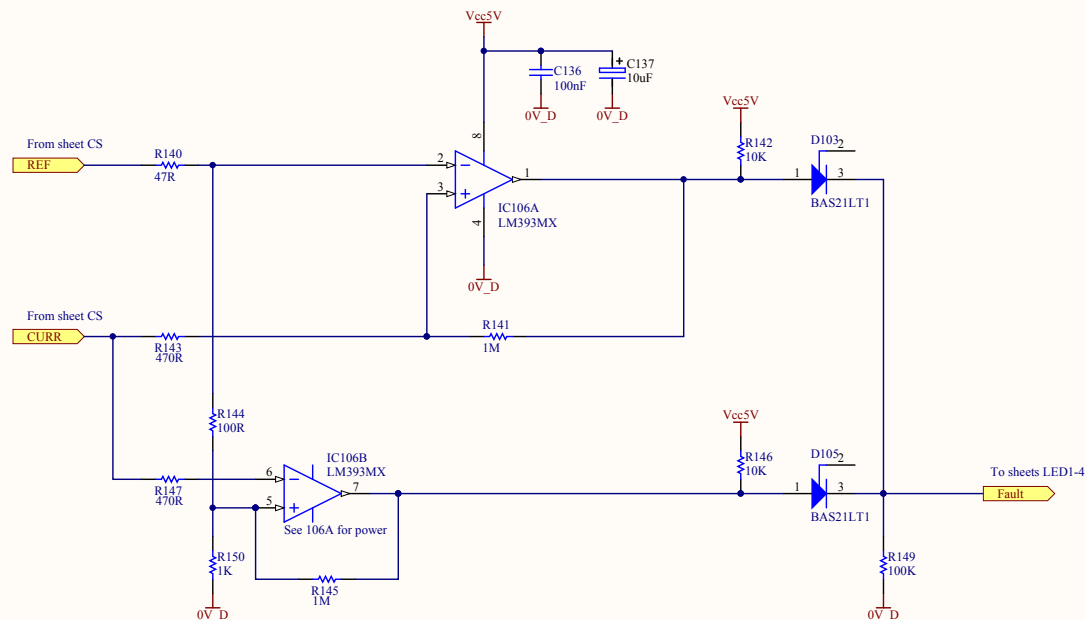
Title *			KAGRA Project ICRR University of Tokyo				
Size: A	Doc Number: *	SCH/PCB Revision: *		Engineer: *	Date: 2015/02/13	Time: 14:37:06	
File: EXT.SchDoc					Sheet * of *		

1

2

3

4




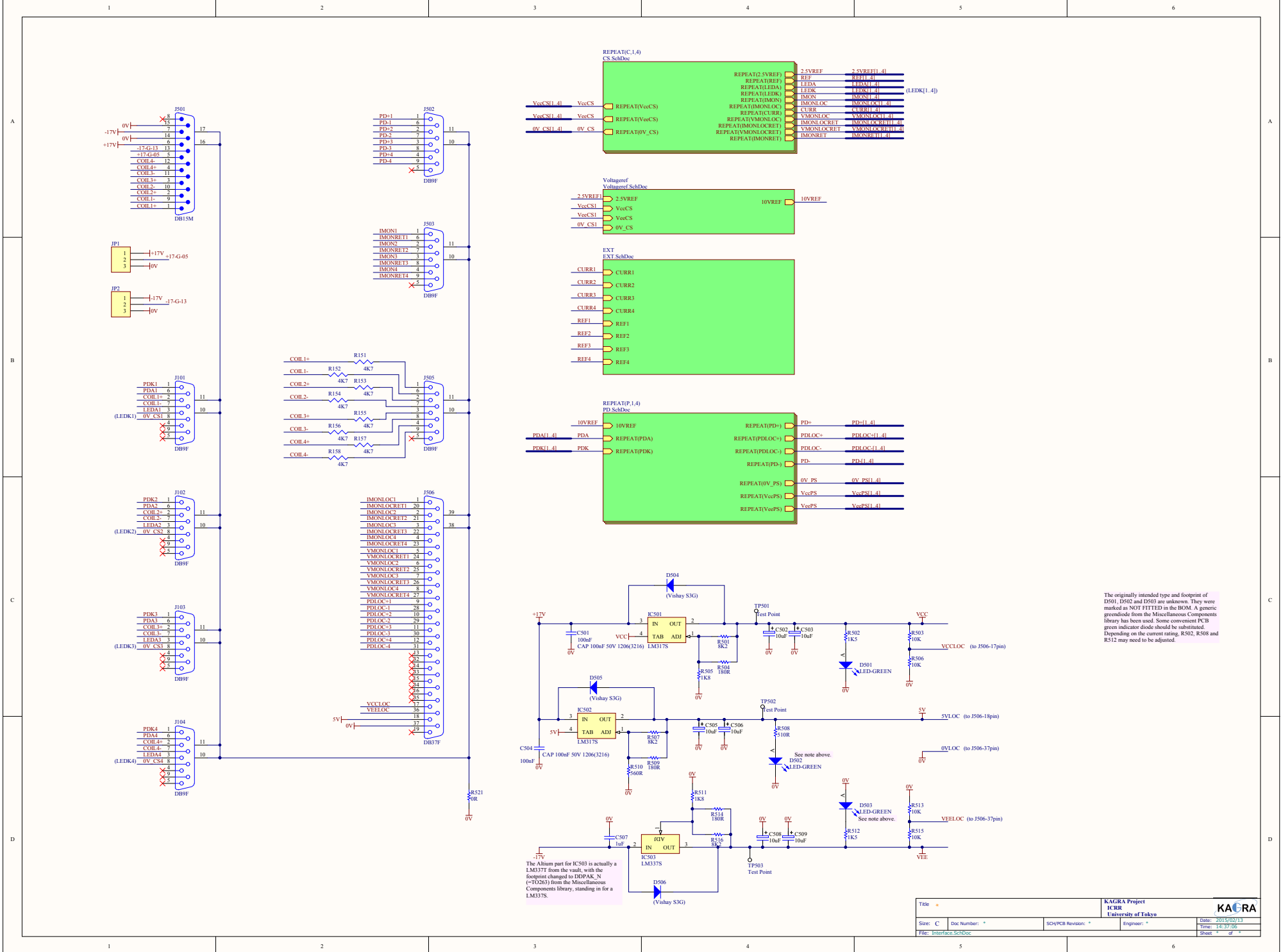
The originally intended type and footprint of D104 are unknown. It was marked as NOT FITTED in the BOM. A generic red diode from the Miscellaneous Components library has been used. Some convenient PCB red indicator diode should be substituted. Depending on the current rating, R139 may need to be adjusted.

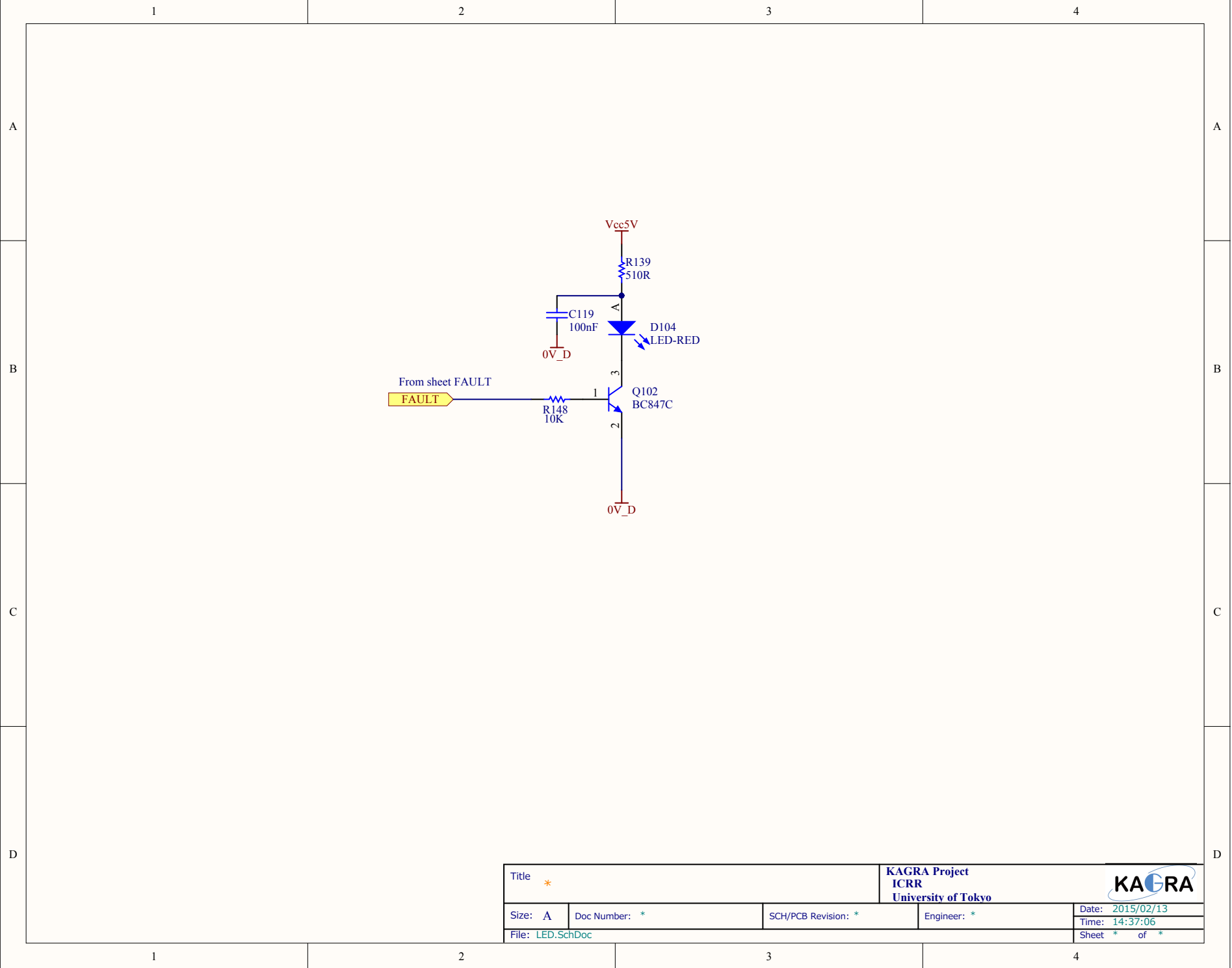
This sheet (etc1) is for one OSEM. When it has been finalized, three copies of it (etc2, etc3, etc4) need to be made, with part numbers incremented by 100 each, e.g., C137->C237, C337 and C437.


Power objects and input/output ports should be renumbered similarly, e.g., REF1-> REF2, REF3 and REF4.

These capacitors should be placed as near as practical to the power pins on the IC.

Title *			KAGRA Project ICRR University of Tokyo		
Size: B	Doc Number: *	SCH/PCB Revision: *		Engineer: *	
File: FAULT.SchDoc					
					Date: 2015/02/13 Time: 14:37:06 Sheet * of *

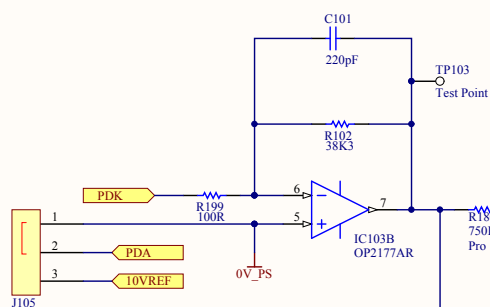




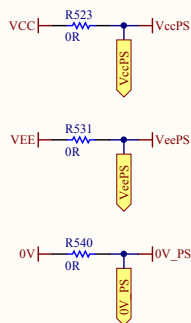
Title *			KAGRA Project ICRR University of Tokyo			
Size: A	Doc Number: *	SCH/PCB Revision: *	Engineer: *	Date: 2015/02/13		
File: LED.SchDoc				Time: 14:37:06		
				Sheet * of *		

C101 was 220pF in LIGO, to give a 4.5 kHz corner frequency with R101 = 161K. It would need to be increased by a factor of at least 4 to keep the corner frequency the same with R102 = 38K, and Fabian and Sekiguchi-san want to reduce the corner frequency, so allow for 10 nF.

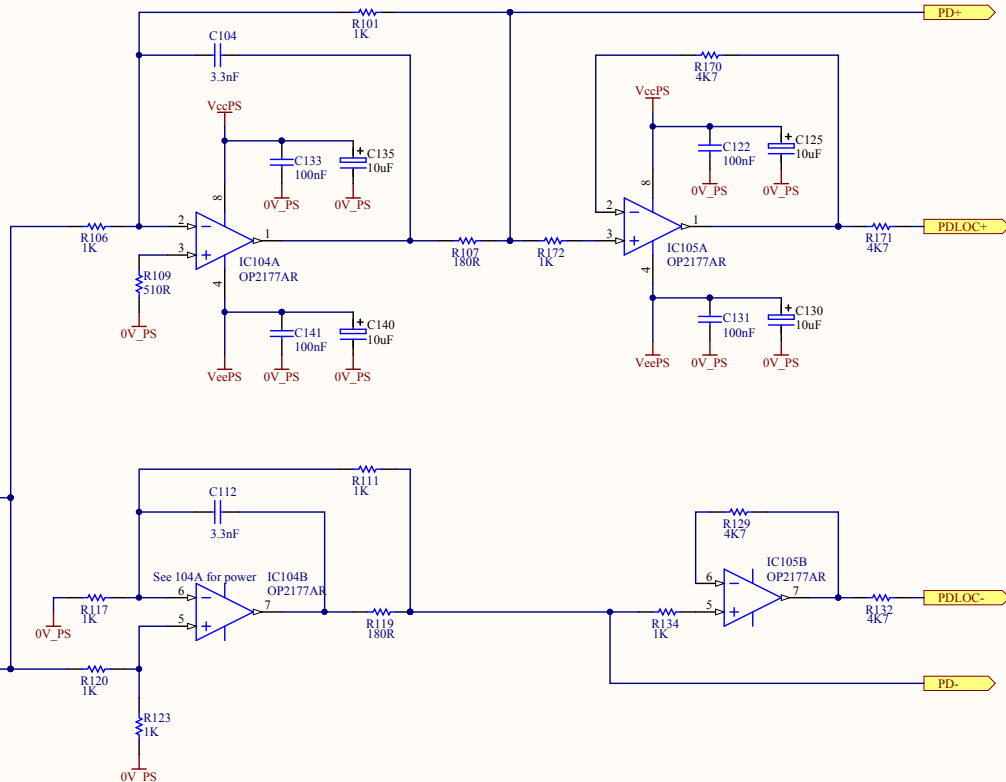
Fabian: Resistor R101 and capacitor C101 should be easily replaceable with different values. We will choose the most suitable values when we test the circuit with the OSEM prototypes.



Jumper position 1-2 selects photoconductive mode. Position 2-3 selects photovoltaic mode with 10 V bias (as used at LIGO). If 10 V source is eliminated, remove jumper part from PCB and connect PD1A directly to 0V_PS1.



All these capacitors should be placed as near as practical to the power pins on the respective ICs.



This sheet is an extension of cs1 and generates the optional 10V bias that can be used on all PDs (not just PD1).

The circuit was on sheet 5 of the LIGO schematic and took power and the 2.5 V reference from current source 4, but has been moved to 1.

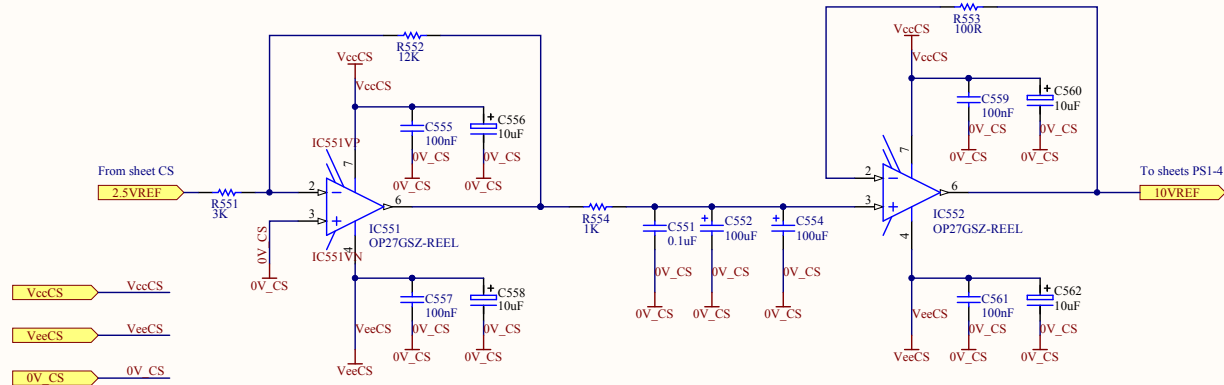
The bias is applied by setting jumpers J105, J205, J305 and/or J405.

It is possible to run the PDs with or without bias, so this subcircuit is a candidate for elimination.

Using the bias (as done at LIGO) improves the gain by about 10% - see LIGO-G1100856-v5.

It may also improve the response speed at the expense of some noise.

IC551 and IC552 were originally AD797 but were changed to OP27 per ECR LIGO-E1100767.



All these capacitors should be placed as near as practical to the power pins on the respective ICs.

Title *			KAGRA Project ICRR University of Tokyo		
Size: B	Doc Number: *	SCH/PCB Revision: *	Engineer: *	Date: 2015/02/13	
File: Voltageref.SchDoc				Time: 14:37:07	
				Sheet * of *	

