



A

B

C

D

1

2

3

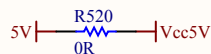
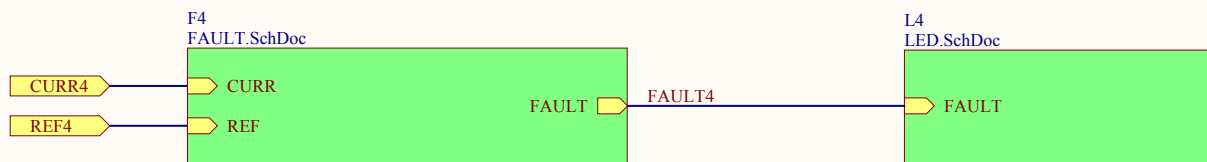
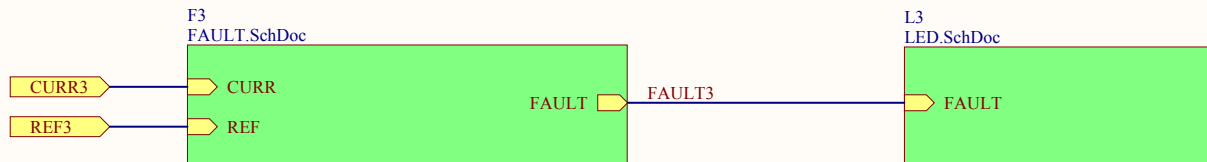
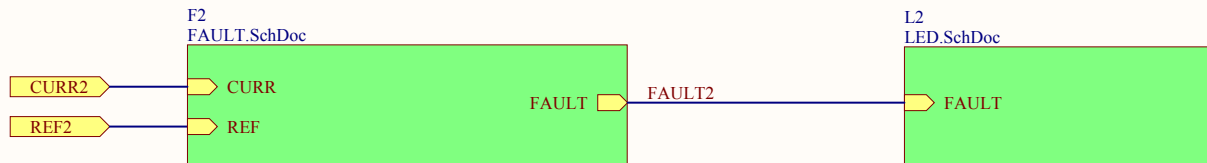
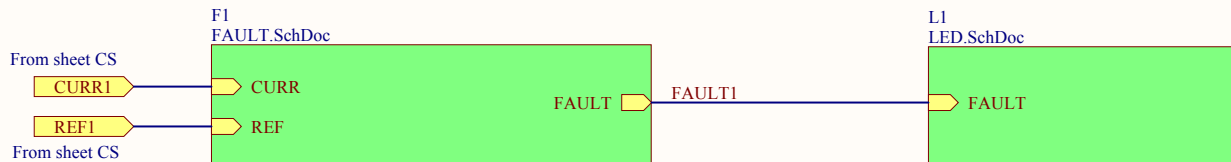
4


A

B

C

D



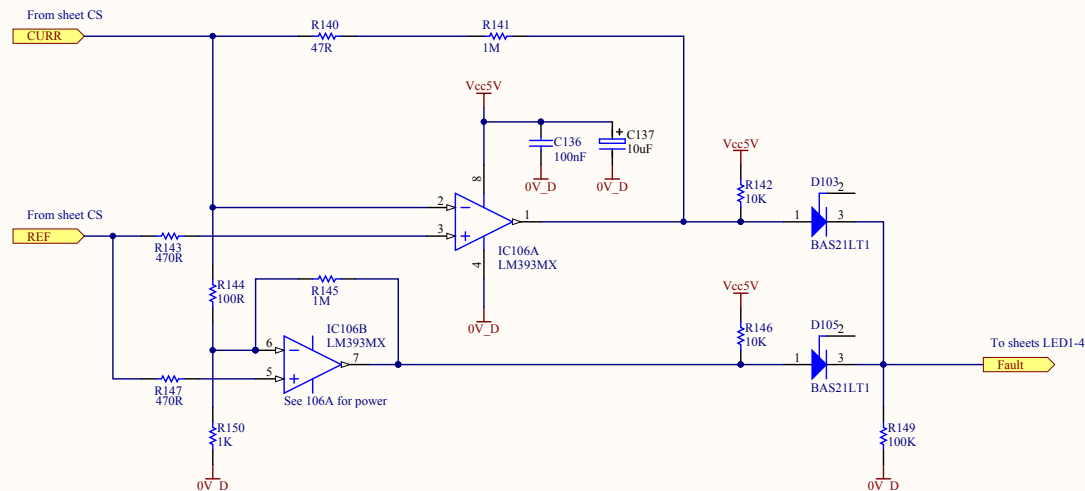
Title *			KAGRA Project ICRR University of Tokyo				
Size: A	Doc Number: *	SCH/PCB Revision: *		Engineer: *		Date: 2015/01/23	
File: EXT.SchDoc						Time: 16:57:59	
						Sheet * of *	

1

2

3

4




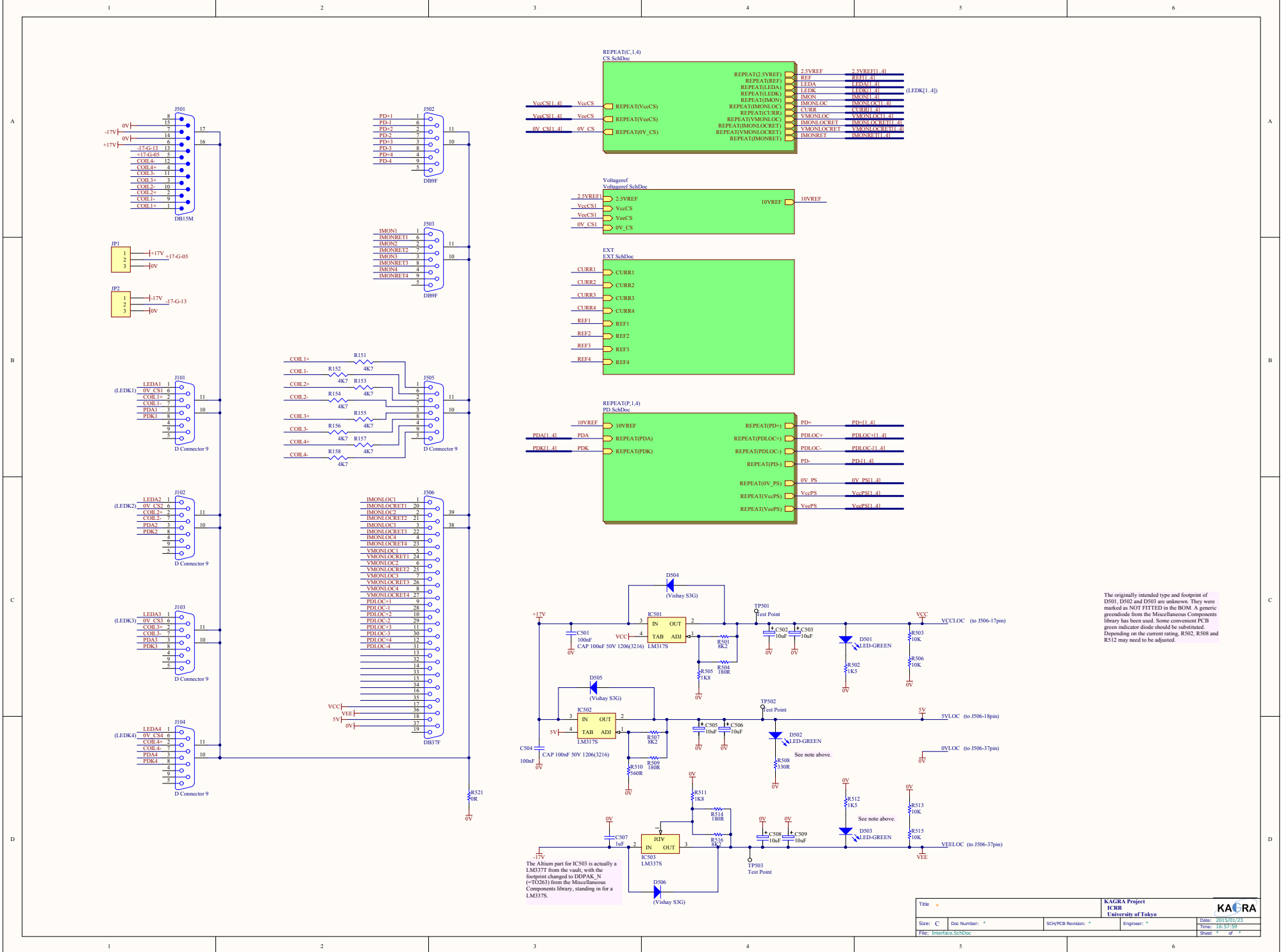
The originally intended type and footprint of D104 are unknown. It was marked as NOT FITTED in the BOM. A generic red diode from the Miscellaneous Components library has been used. Some convenient PCB red indicator diode should be substituted. Depending on the current rating, R139 may need to be adjusted.

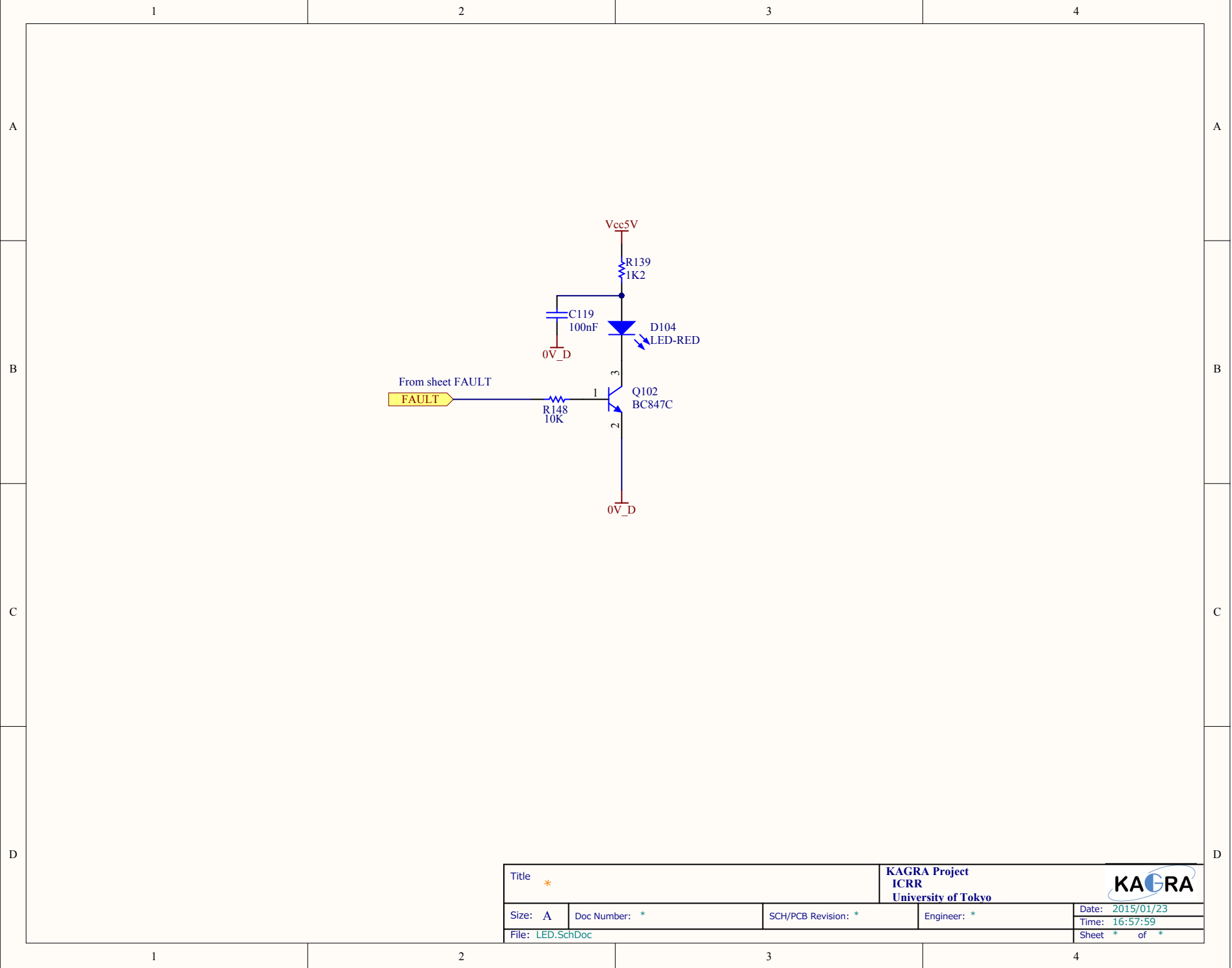
This sheet (etc1) is for one OSEM. When it has been finalized, three copies of it (etc2, etc3, etc4) need to be made, with part numbers incremented by 100 each, e.g., C137->C237, C337 and C437.

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.

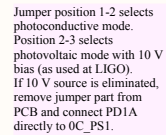
Title *			KAGRA Project ICRR University of Tokyo		
Size: B	Doc Number: *	SCH/PCB Revision: *	Engineer: *	Date: 2015/01/23	
File: FAULT.SchDoc				Time: 16:57:59	
				Sheet * of *	






Title *			KAGRA Project ICRR University of Tokyo		KAGRA	
Size: A	Doc Number: *	SCH/PCB Revision: *	Engineer: *	Date: 2015/01/23	Time: 16:57:59	
File: LED.SchDoc				Sheet *	of *	

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.



Title *			KAGRA Project ICRR University of Tokyo			
Size: B	Doc Number: *	SCH/PCB Revision: *	Engineer: *	Date: 2015/01/23		
File: PD_SchDoc				Time: 16:57:59		
				Sheet * of *		

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.

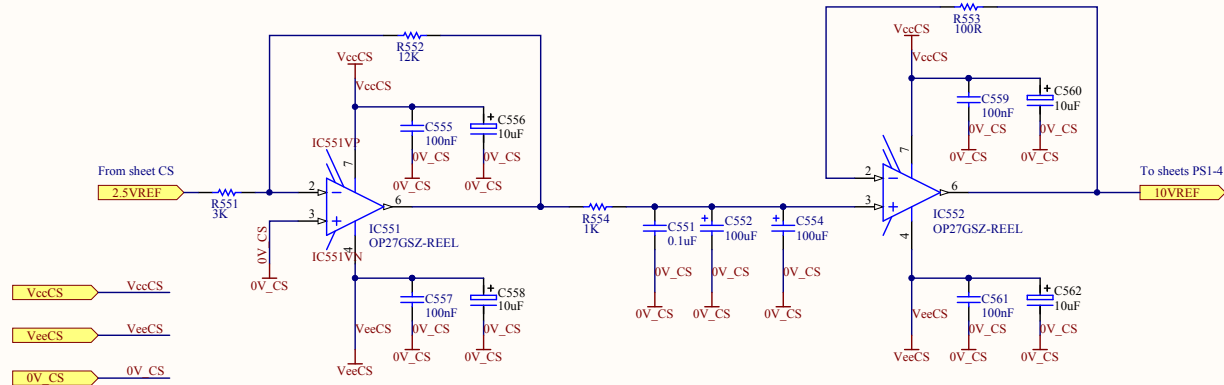
The bias is applied by setting jumpers J105, J205, J305 and/or J405.

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: 2015/01/23	
File: Voltageref.SchDoc				Time: 16:57:59	
				Sheet * of *	

