

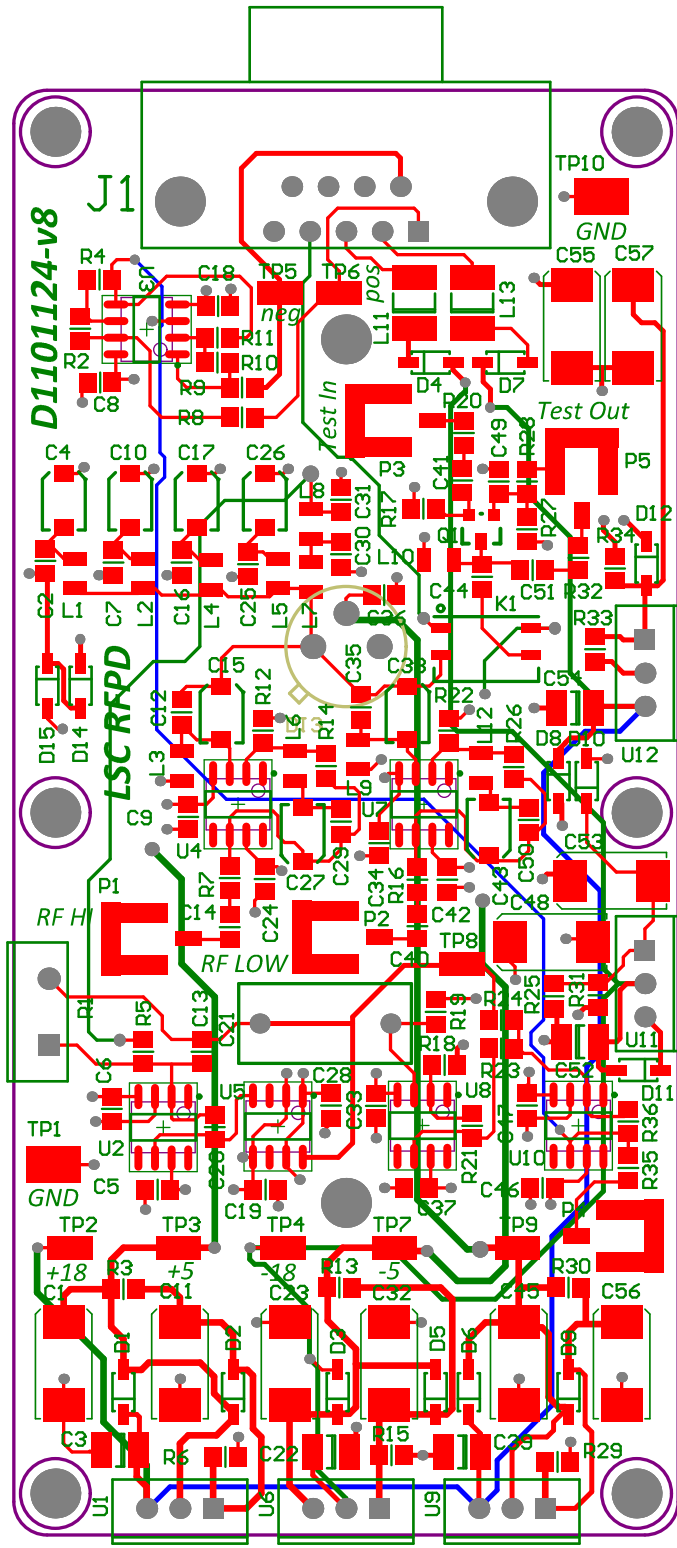
Design shown is for 9&45 MHz LSC. See T1200428 for variants.

Version Summary:
 Version 1 - Initial release
 Version 2 - Added whitening to DC readout
 Version 3 - Added input DC power conditioning and DC reverse polarity protection diodes
 Version 4 - Only a schematic change. Changed R27 from 750 to 909, R29 from 357 to 453. This was done to increase the voltage on the RF pump from +/- 5 volts DC to +/- 5.9 volts DC for greater dynamic range
 Version 5 - Reworked Bill of Materials to reflect actual parts used.
 Version 6 - Removed feedback notches from RF output amplifiers (by removing L6 and L12). The overall effect of these notches was not beneficial. Also, U3 can be substituted for an OP-27 without degradation of noise performance. This is sometimes desirable as the AD8675 is fragile, and fails in a high noise mode that otherwise still works.
 Version 7 - In response to the single supply failure mechanism the following components were changed: U2 from AD897 to LT1128, U8 & U10 from AD8675 to OP27, C31 removed to aid stability of LT1128. Reverse biased diodes are added across the main filter caps in the +/- 18VDC rails.
 Version 8 - Had to order more boards. Brought PCB up to revision 8 and incorporated single supply protection features listed in version 7. Went through entire bill of materials and created variants for Squeezes CLF and OPV detectors.

Voltage Regulator Equations
 $LM337 V_o = -1.25(1+R_{adj}/120)/(50\mu A \cdot R_{adj})$
 $LM317 V_o = 1.25(1+R_{adj}/249)/(100\mu A \cdot R_{adj})$

SPICE File Located: C:\Rich's Files\LT Spice\PhotodiodeAnalysis\lsc_rfps\aligo_LSC_2011_9_45_LSC_v4.asc

Title		Last Edited: 6 February 2013	
alLIGO LSC RFPD		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
Size: C	DCC Number: D1101124	SCH / PCB Revision: v8	Engineer: R. Abbott
File: C:\Rich's Files\Mvcs\aligo_LSC\SPICE\Version 7\aligo_LSC_v4.v8.SchDoc		Date: 3/28/2017	Time: 3:49:47 PM
		Sheet 1 of 1	



LIGO Bill of Materials

Source Data From: aLIGO_LSC_pd_v8.PrfPCB
 Board Designed By: R. Abbott
 Board D-number: D1101124
 Board Revision: v8
 Variant: None

Creation Date: 3/28/2017 3:49:51 PM
 Print Date: 28-Mar-17 3:49:56 PM

Designator	Comment	#Column Name Error:Description	Digikey Part Number	mn Name Error:Manufacturers Part Nu	Quantity
C1, C11, C23, C32, C45, C48, C53, C55, C56, C57	10UF Tantalum, 35V		478-1722-1-ND		10
C2	180pF				1
C3, C22, C39, C52, C54	1UF Tantalum, 50V		478-3075-1-ND		5
C4, C10, C38	68 pF				3
C5, C6, C8, C18, C19, C28, C33, C37, C46, C47	1uF		399-7409-1-ND		10
C7	82pF				1
C9, C24, C34, C42	1uF		445-1364-ND		4
C12	22pF				1
C13	4.7pF		478-1300-1-ND		1
C14, C36, C40, C41, C44, C49, C51	10nF		490-1664-1-ND		7
C15, C26	20pF, 68 pF				2
C16	68pF				1
C17, C27, C43	30pF, 68 pF				3
C20	100pF				1
C21	3.3uF		495-1129-ND		1
C25, C31	20pF, omit				2
C29, C50	omit				2
C30	100nF		490-1666-1-ND		1
C35	150pF				1
D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12	RB160M-60		RB160M-60CT-ND		12
D13	Photo Diode				1
D14, D15	SM4007PL-TP		SM4007PL-TPMSCT-ND		2
J1	D Connector 9		6E17C-009P-AJ-121-ND		1
K1	RF Relay		306-1197-ND		1
L1, L3	Inductor				2
L2	Inductor				1
L4, L5	Inductor				2
L6, L12	Inductor				2
L7	Inductor				1
L8, L10	Inductor				2
L9	Inductor				1
L11, L13	10UH		495-1754-1-ND		2
P1, P2, P3, P4, P5	SMP		ARF1594-ND		5
Q1	MMBT5179		MMBT5179CT-ND		1
R1	100		PF2203-100-ND		1
R2, R4, R10, R11	2K		P2.0KDACT-ND		4
R3, R30, R33	249		TNP249ABCT-ND		3
R5	4.7 ohm		A103215CT-ND		1
R6	909		A103523CT-ND		1
R7, R12, R16, R20, R22	49.9 ohms		TNP49.9ABCT-ND		5
R8, R9	10		989-1135-1-ND		2
R13, R31	120		P120DACT-ND		2
R14, R15, R26	453		A103445CT-ND		3
R17	1.37K		A103350CT-ND		1
R18	20		A103665CT-ND		1
R19	20K		P20KDACT-ND		1
R21	200		P200DACT-ND		1
R23, R24, R32, R36	1K		P1.0KDACT-ND		4
R25	1.33K		RG20P1.33KBCT-ND		1
R27	1.5K		P1.5KDACT-ND		1
R28	402		P402DACT-ND		1
R29	750		P750DACT-ND		1
R34	2.67K		A103870CT-ND		1
R35	499		RG20P499BCT-ND		1
TP1, TP10	TESTPT		5016KCT-ND		2
TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9	TESTPT		5015KCT-ND		8
U1, U9, U12	LM317T		LM317TFS-ND		3
U2	LT1128		LT1128CS8#PBF-ND		1
U3	AD8672ARZ		AD8672ARZ-ND		1
U4, U7	LMH6624AH		LMH6624MA-ND		2
U5	HA3-5002-5		HA9P5002-5Z-ND		1
U6, U11	LM337BT		LM337TFS-ND		2
U8, U10	OP-27		OP27GSZ-ND		2