CIRCUITRY ON THIS PAGE IS WITHIN THE RF CAGE

L&C of TEST INPUT
produces a notch@~60MHz
three Rs were bypassed

Multiple resistors divide out the distributed capacitance between TEST INPUT and RF CIRCUIT

TEST INPUT SMA
R14 2.00K 1%
R15 2.00K 1%
R16 2.00K 1%
R17 2.00K 1%
R18 2.00K 1%
R3 49.9 1%

100nH
Coilcraft
1206CS_101

L4 ~~See table~~ 2-Omega Bandstop Filter
C34 ~~5.0-40pF~~
110MHz notch
3.5-50pF
nominal 20.5pF

R24 may not be installed. In the previous revision 100pF has been installed on the R3 pad in order to achieve 81/162 MHz operation.

At lower frequencies a resistor may be installed to impedance match the input and output of the Bandstop Filter.

C25 0.1uF
R24 See table
L3 ~~1.45uH~~
1uH Coilcraft
1812CS_102

C24 0.1uF
C21 1nF
U3 MAX4107ESA
R4 20
RF OUT SMA
RF Out, Gain = +10
50
R1 453 1%
C20 1nF
C22 0.1uF
22pF
R2 49.9 1%
40
prevent oscillation @250MHz

Output scale is +10.0 mV/°C
e.g., 0.25V = 25°C
TSENSE
C29 0.1uF
C28 0.1uF
U11 AD620BR
R31 200 1%
R32 6.81K 1%
U10 LM35AH
Aluminum Thermal Block Temp Sense
R30 200 1%

estimated
Cd=200pF
Rs=12Ω
C30642
D1
See Note 1
CASE
THERMBLOK ALUMINUM THERMAL BLOCK
4 screw holes connected to GND
C32 0.0056uF

1-omega Bandpass Filter
2 shield pins connected to GND
Resonance for 55.3MHz
Coilcraft 164-03A06SL
L5 3.5t 41~32nH
SHLDCOIL

+15V
+5V
-15V
-5V

C35 2.2uF
C15 0.01uF
U6
C30 10uF
C23 0.1uF
U4 OPA547F
E/S
R8 2.67K 1%
R7 124K
R10 2.67K 1%
R11 2.67K 1%
R12 2.67K 1%
R9 2.67K 1%
R21 1.33K 1%
C14 0.01uF
C36 2.2uF
Vc ADJUST
OP27GS
Summing Amplifier
Input allows for adjustment of the BIAS VOLTAGE to compensate for changes due to temperature, laser bandwidth, frequency-dependent RF circuit impedance, etc.

11MHz notch
C33 ~~0.0056uF~~
3900pF // 470pF
R22 10 1%
C39 2.2uF
C19 0.01uF
U8
OP27GS
C18 0.01uF
C40 2.2uF
C37 2.2uF
C17 0.01uF
U7
OP27GS
R6 20
DC_OUT
DC OUT is a transfer function
Vdc out / Ipd ⟹ 10 VDC = 150mA
GAIN = 66.7
20 Ohm resistors are line capacitance isolation resistors to prevent OP27GS from oscillating.
R5 20
DC OUT SMA
R13 2.67K 1%
R23 475 1%
C16 0.01uF
C38 2.2uF

Photodiode Current Positive Feedback Loop, GAIN = +2

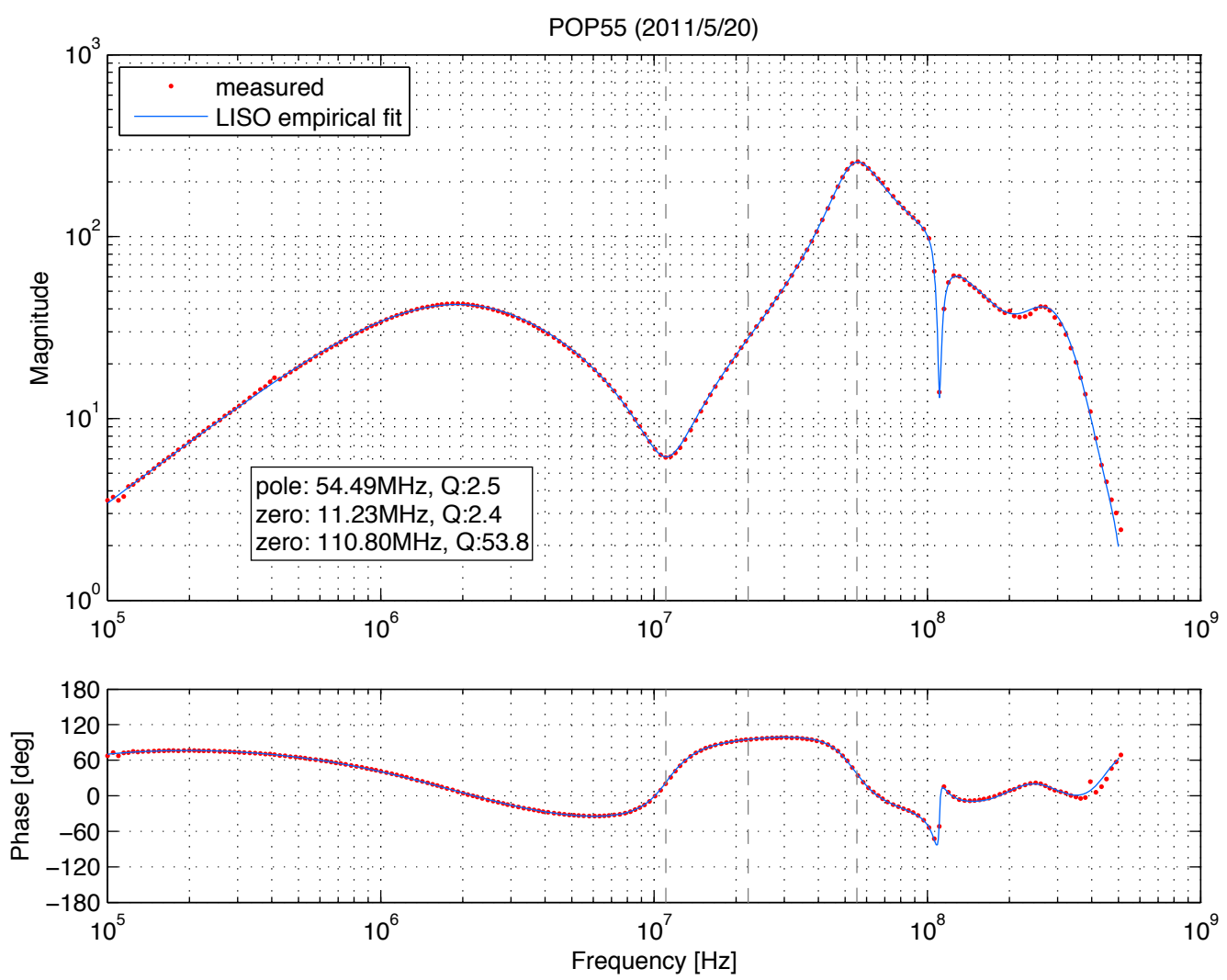
Photodiode Bias Voltage, Vi = 6.98Volts
U5 LM117H
R19 294 1%
C9 1uF
R20 1.33K 1%
C31 10uF
C26 0.1uF

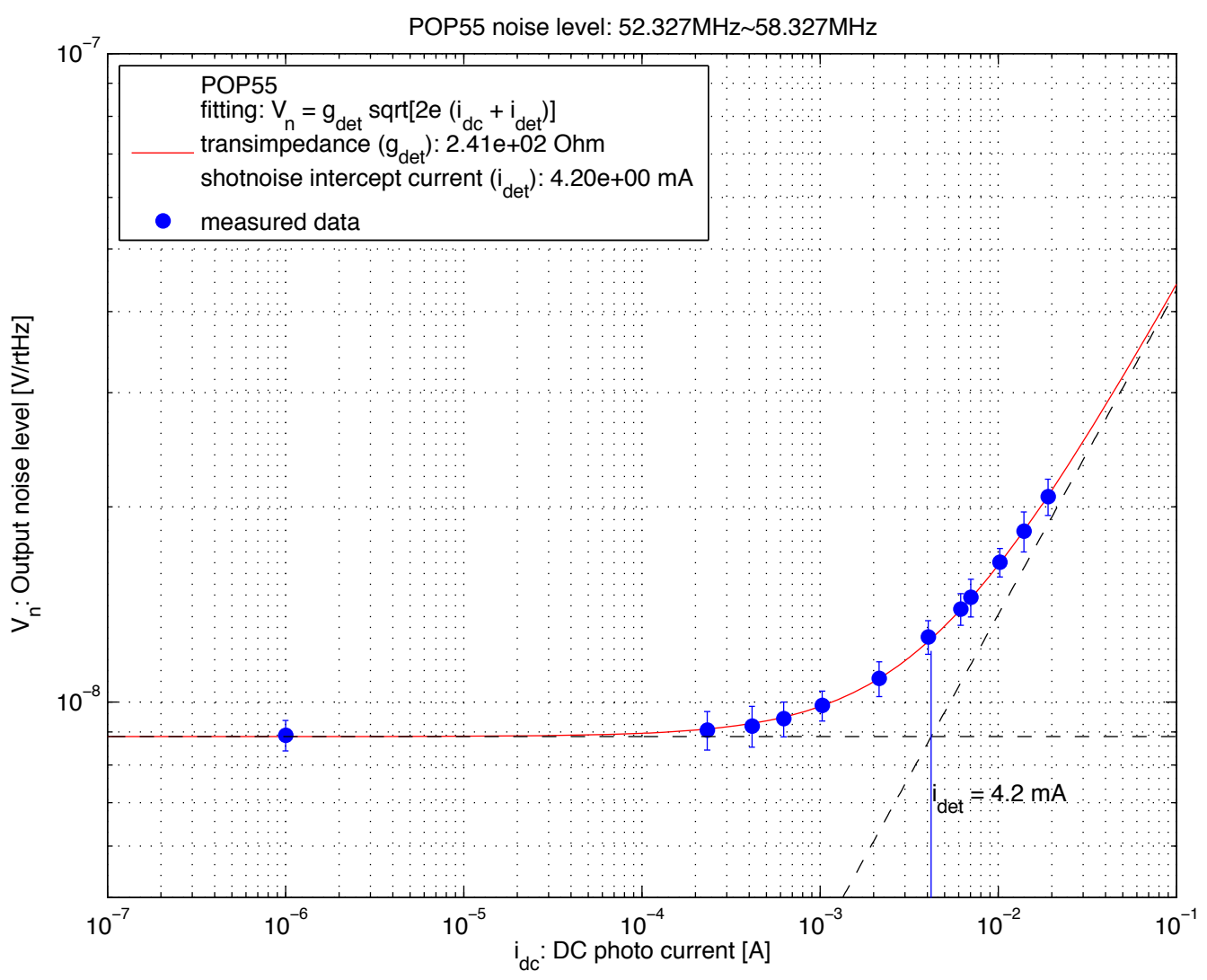
POP55 modification
by K. Arai May 20, 2011

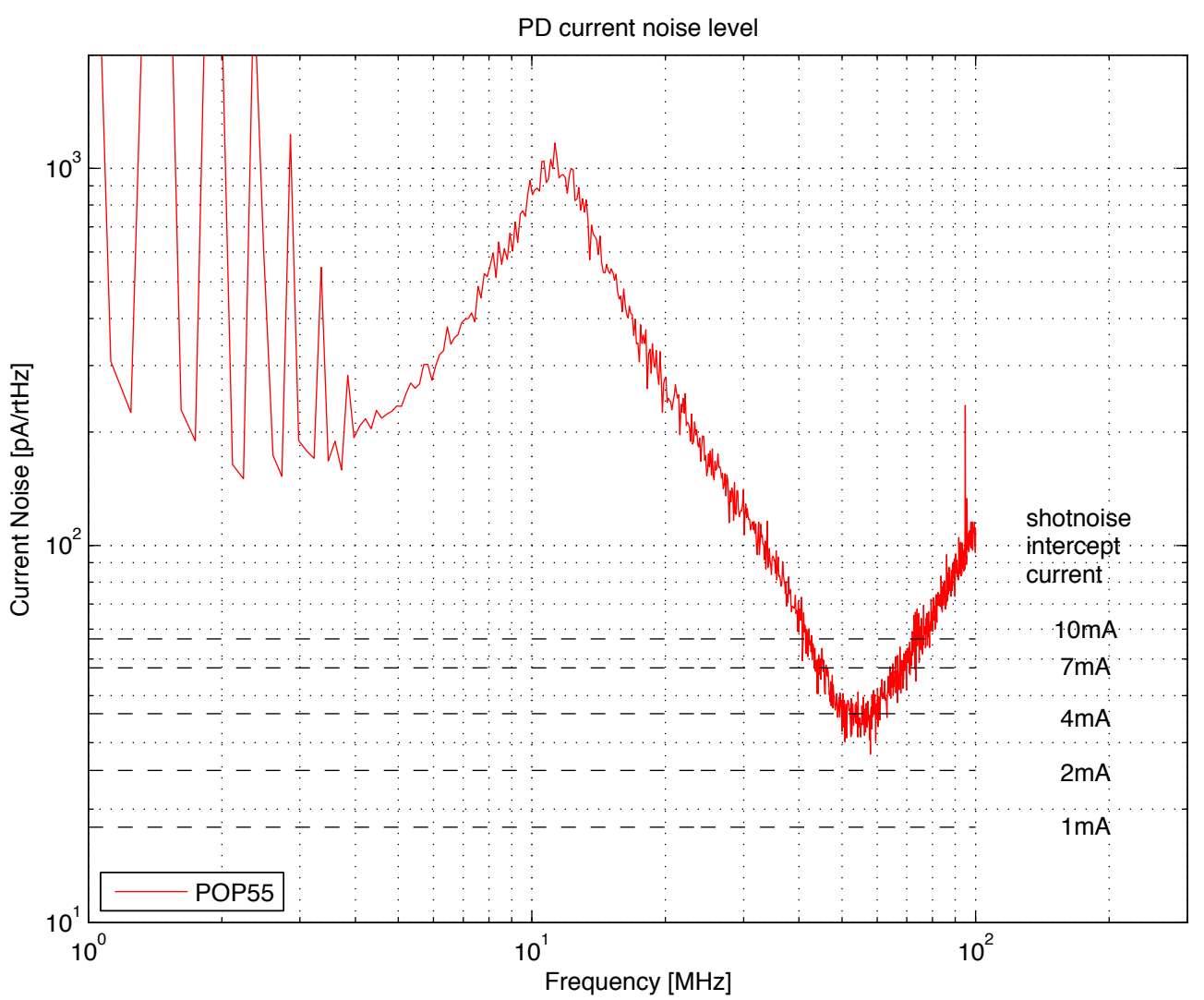
NOTES:
1) The same TO-5 footprint accomodates the following diodes: C30642, GAP2000
2) See table on page 3 for frequencies and values of L4, L5, R24.

U9-14 U9-7 U9A U9B U9C U9D SN74HC05D
U9E U9F SN74HC05D
R29 1K 1%
C27 0.1uF
R26 1K 1%
R25 1K 1%
R27 1K 1%
R28 1K 1%
ENABLE IN
STATUS/OTEMP
E/S = TTL logic HIGH ENABLES the OPA547F Op Amp
E/S

Title: *LSC Photodiode*				Date Last Modified: 17-May-99	
				LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	LIGO
Size: B	DCC Number: D980454-01-C	PCB / SCH Revision: B / 1	Engineer: J. Suina D. Ouimette	Date: 12-Aug-1999	
File: S:\SYSTEMS\LSC\PHOTOD~1\FINAL\SCHEMA~1\8045401A.SCH				Time: 16:56:25	
				Sheet 2 of 2	


POP55 (2011/5/20)
measured
LISO empirical fit
pole: 54.49MHz, Q:2.5
zero: 11.23MHz, Q:2.4
zero: 110.80MHz, Q:53.8
Magnitude
Phase [deg]
Frequency [Hz]


POP55 noise level: 52.327MHz~58.327MHz
POP55
fitting: $V_n = g_{det}$ sqrt[2e ($i_{dc} + i_{det}$)]
transimpedance (g_{det}): 2.41e+02 Ohm
shotnoise intercept current (i_{det}): 4.20e+00 mA
measured data
i_{det} = 4.2 mA
V_n: Output noise level [V/rtHz]
i_{dc}: DC photo current [A]
10^{-7}
10^{-8}
10^{-6}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}


PD current noise level
Current Noise [pA/rtHz]
Frequency [MHz]
10^3
10^2
10^1
10^0
10^1
10^2
shotnoise
intercept
current
10mA
7mA
4mA
2mA
1mA
POP55