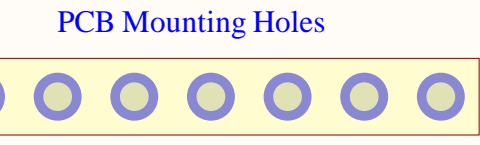


Last Edited: 9/1/2021

U_18V Power
18V Power.SchDoc

U_QPD Power Status
QPD Power Status.SchDoc

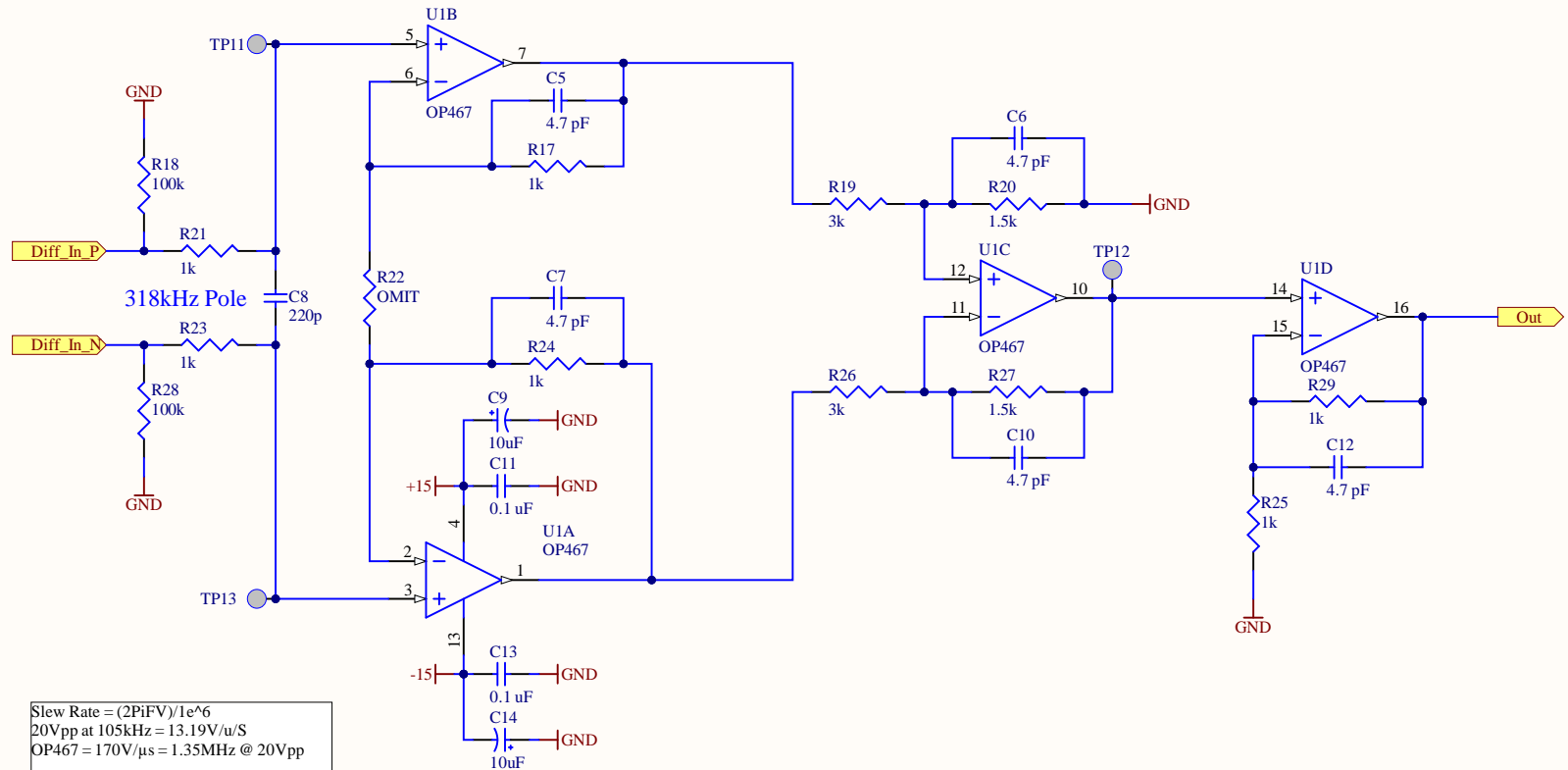
QPDA +15V_Good
QPDA -15V_Good
QPDA Bias_Reg_Good
QPDB +15V_Good
QPDB -15V_Good
QPDB Bias_Reg_Good



Slew-Rate Limit Protection

Differential-to-Single
Gain = 1/2

Fixed Gain
Gain = 2



Slew Rate = $(2\pi fV)/1e^6$
 20Vpp at 105kHz = 13.19V/uS
 OP467 = 170V/uS = 1.35MHz @ 20Vpp

OP467 Supply Current
 8mA - typical
 13mA - worst case

Title		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
Differential Receiver Amp		LIGO	
Size: A	DCC Number: D2100639	Revision: v1	Engineer: Dean Schaeztl

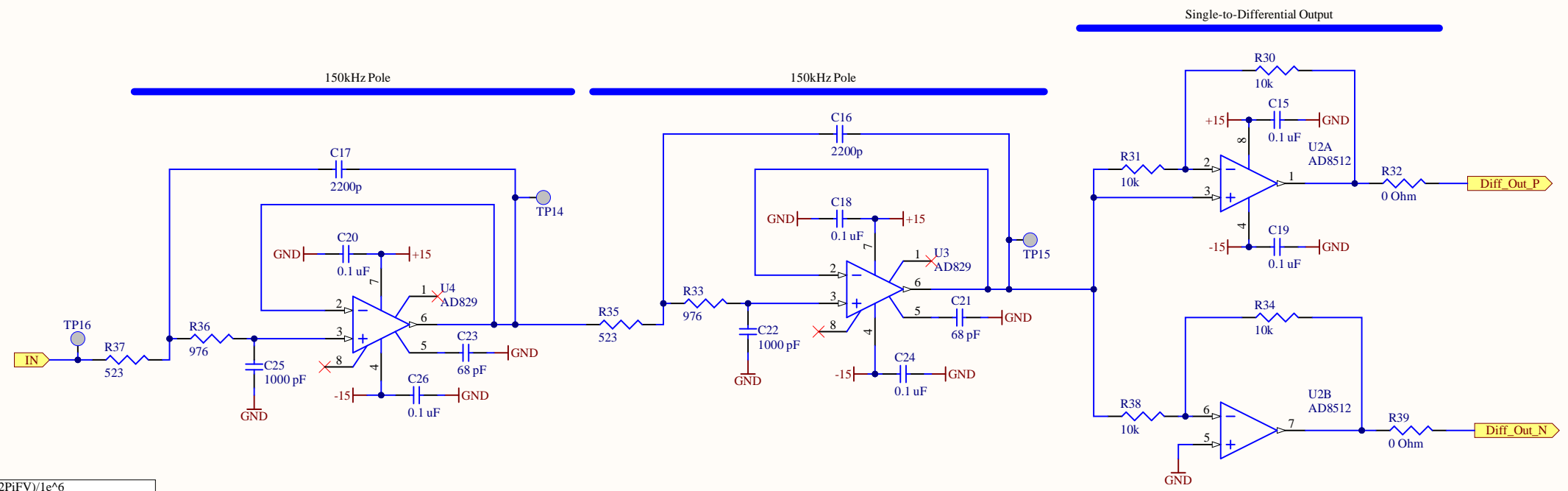
Last Edited: 9/1/2021	
Date: 9/1/2021	Time: 10:45:00 AM
Sheet 2 of 6	

A

B

C

D



Slew Rate = $(2\pi fV)/1e^6$
 20Vpp at 105kHz = 13.19V/u/s
 AD829 = $230V/\mu s = 1.83MHz @ 20Vpp$
 AD8512 = $20V/\mu s = 158kHz @ 20Vpp$

AD829 Supply Current
 5.3mA - typical
 9mA - worst case

AD8512 Supply Current
 2.2mA/amp - typical
 2.5mA/amp - worst case

Total Supply Current
 15mA - typical
 23mA - worst case

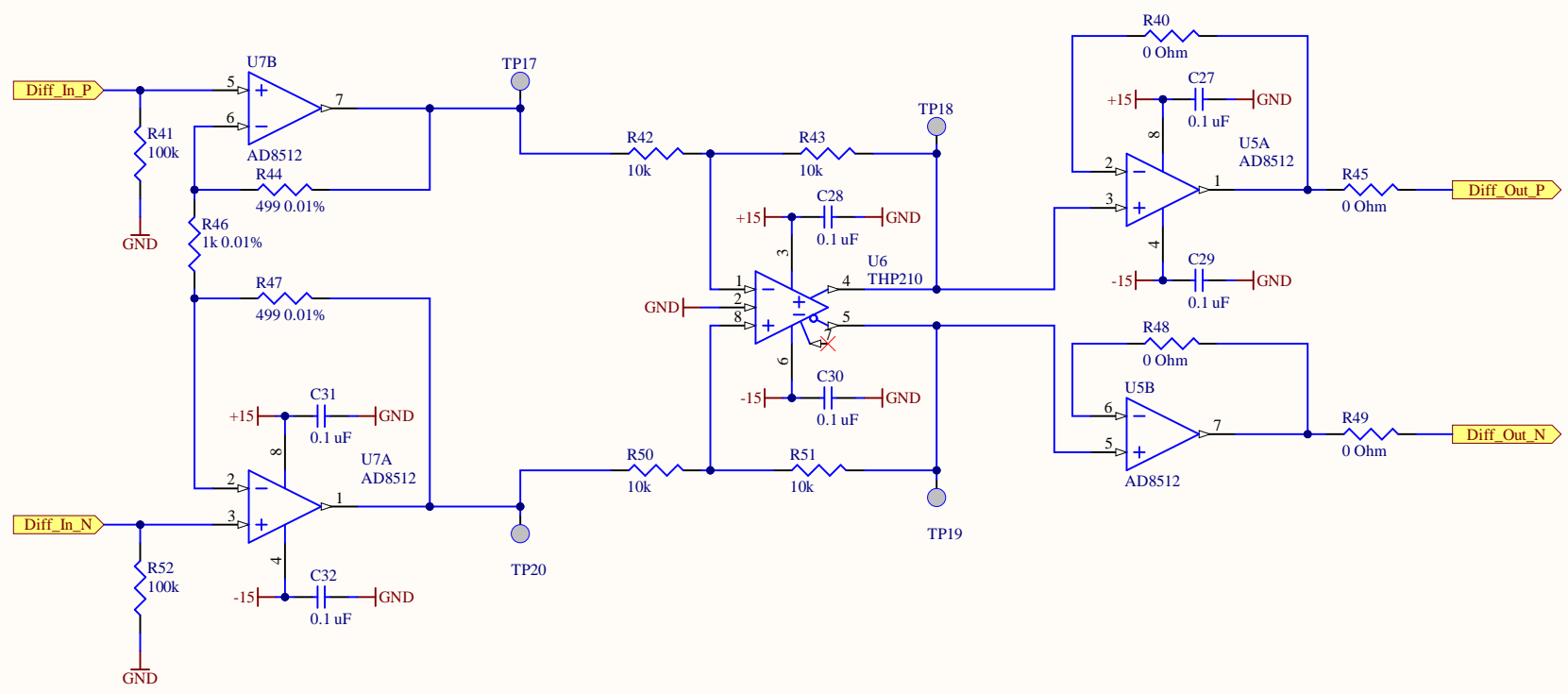
Last Edited: 9/1/2021

Title 150kHz LPF - Differential Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: B	DCC Number: D2100639-v1	Revision: v1	Engineer: Dean Schaefer	Date: 9/1/2021	Time: 10:45:00 AM
File: C:\Dean\A+\D2000552 ADC_Interface_Chassis\D2100639-v1 105kHz ADC Interface\150kHz-LPF_Differential-Out.SchDoc				Sheet 3 of 6	

Input Buffer (Optional Gain)

Differential Gain (Optional Gain)

Differential Output Driver

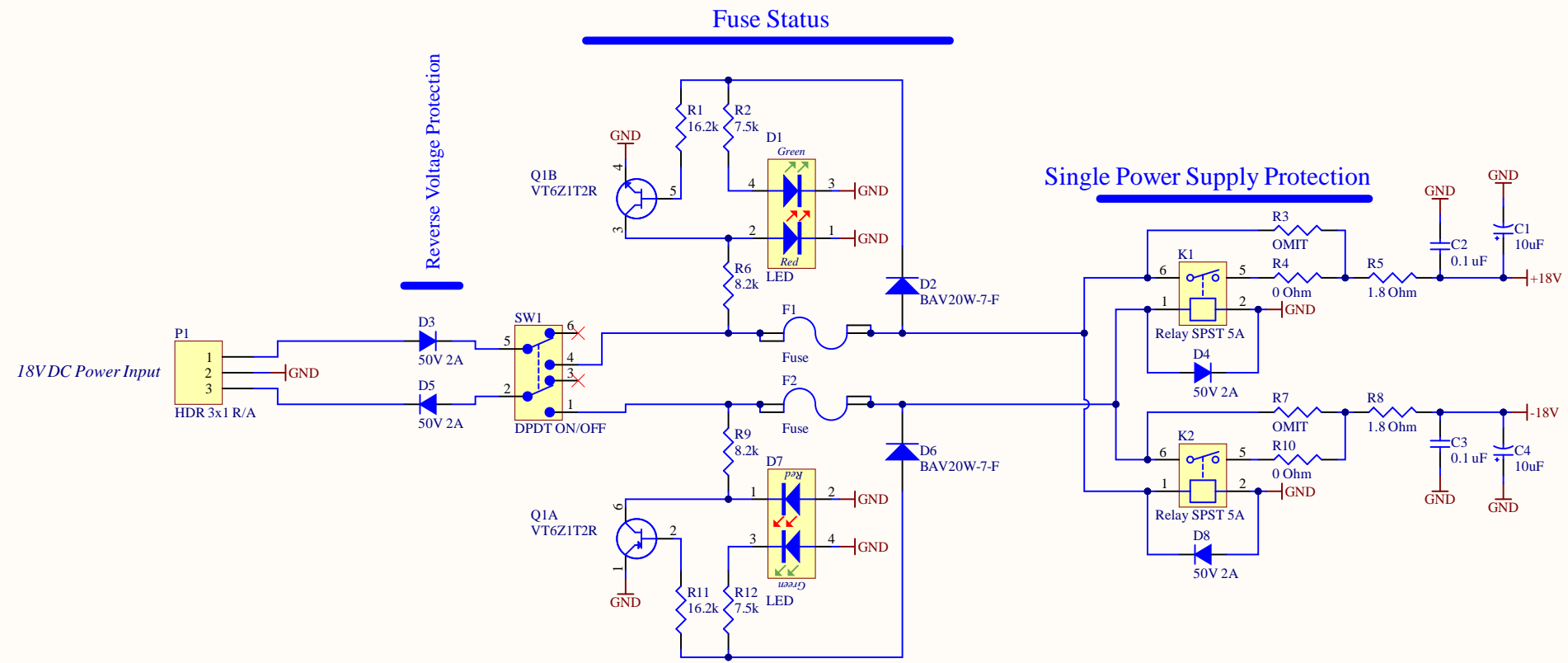


AD8512 Supply Current
 2.2mA/amp - typical
 2.5mA/amp - worst case

THP210 Supply Current
 0.95mA - typical
 1.4mA - worst case

Total Supply Current
 9.75mA - typical
 11.4mA - worst case

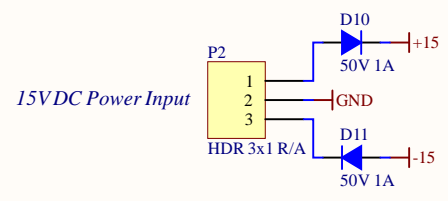
Title DC Differential		LIGO Laboratory California Institute of Technology*		Last Edited: 9/1/2021	
Size: A	DCC Number: D2100639	Revision: v1	Engineer: Dean Schaeztl	Date: 9/1/2021	LIGO
File: C:\Dean\A+D2000552 ADC_Interface_Chassis\D2100639-v1 105kHz ADC Interface\DC Differential.SchDoc			Time: 10:45:00 AM	Sheet 4 of 6	



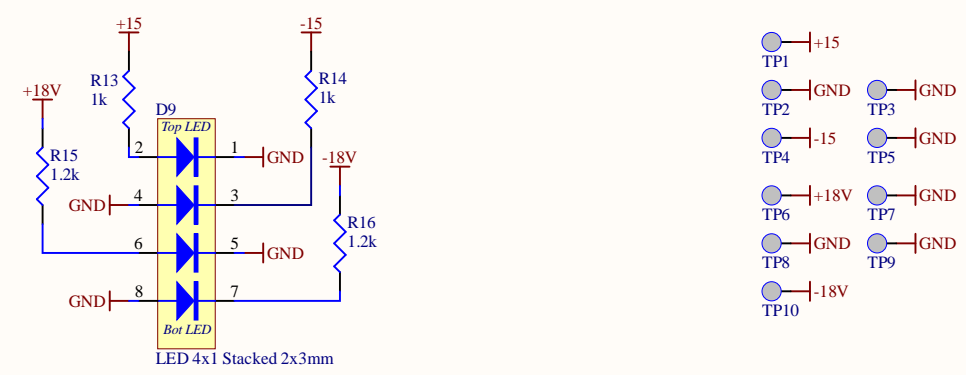
**15V Total Power:
Nominal = 16.23W
Worst Case = 20.02W**

15V Total Idle Current Draw - Nominal:
 150kHz Differential Receivers = $8\text{mA} * 16 = 128\text{mA}$
 150kHz Differential Outputs = $15\text{mA} * 16 = 240\text{mA}$
 DC Differential = $9.75\text{mA} * 8 = 78\text{mA}$
 Indicators = 30mA
 $208\text{mA} + 240\text{mA} + 78\text{mA} + 30\text{mA} = 541\text{mA}$
 $541\text{mA} * 30\text{Vpp} = 16.23\text{W}$

15V Total Idle Current Draw - Worst Case:
 150kHz Differential Receivers = $13\text{mA} * 16 = 208\text{mA}$
 150kHz Differential Outputs = $23\text{mA} * 16 = 368\text{mA}$
 DC Differential = $11.4\text{mA} * 8 = 91.2\text{mA}$
 Indicators = 30mA
 $208\text{mA} + 368\text{mA} + 91.2\text{mA} + 30\text{mA} = 667.2\text{mA}$
 $667.2\text{mA} * 30\text{Vpp} = 20.02\text{W}$

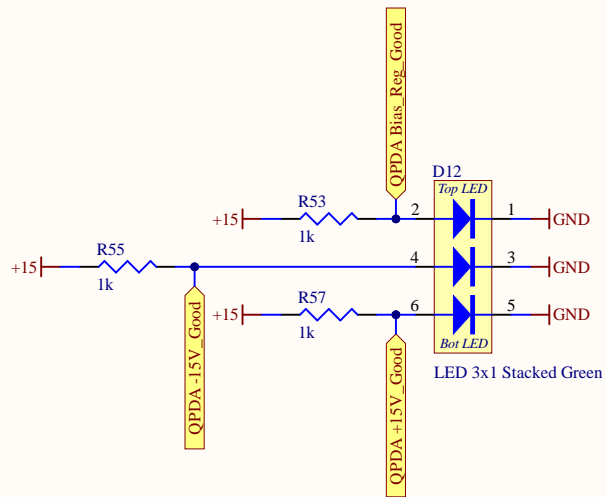


Power On Indicators

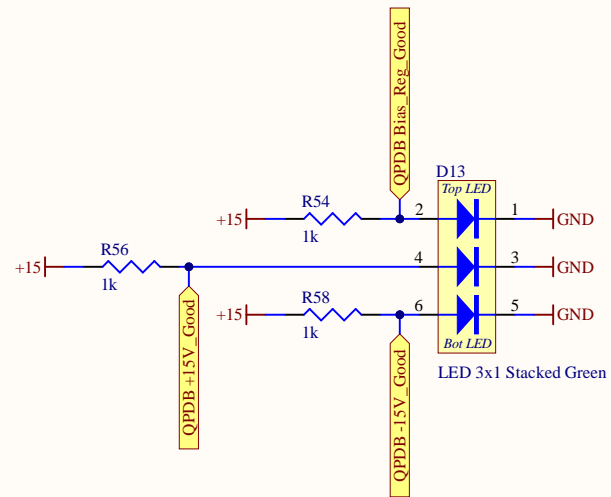


Title 18V Power		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 9/1/2021	
Size: B	DCC Number: D2100639	Revision: v1	Engineer: R. Abbott	Date: 9/1/2021	Time: 10:45:00 AM
File: C:\Dean\A+\D2000552 ADC_Interface_Chassis\D2100639-v1 105kHz ADC Interface\18V Power.SchDoc				Sheet 5 of *	

WFS 1 In-Vacuum Power Regulator Status



WFS 2 In-Vacuum Power Regulator Status



▲ Power Good is a normally open drain.
Closes when regulator power drops below
14V or 4.7V

Title <i>QPD Power Status</i>		LIGO * * * *
Size: A	Number: D2100639	
Date: 9/1/2021	Revision: v1	
File:	Time: 10:45:00 AM Sheet 6 of 6	