

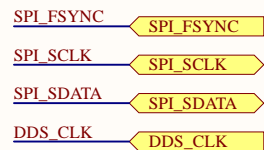
1

2

3

4

DDS Control Signals



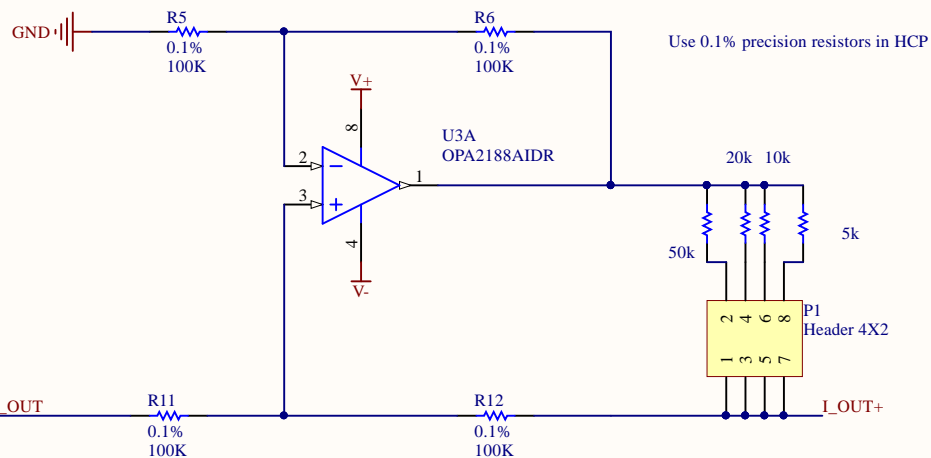
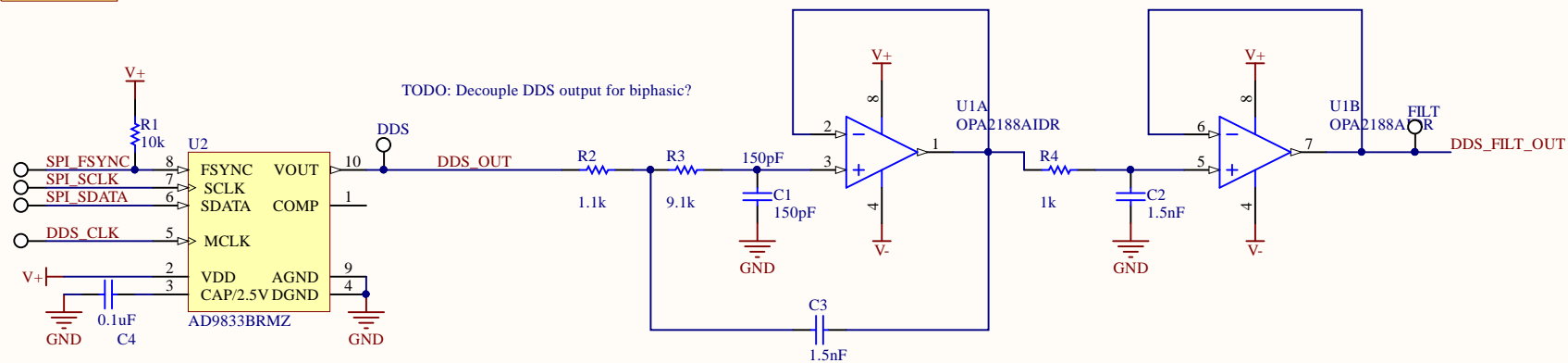
HCP Output



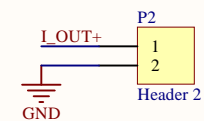
Filter designed using AD Filter Tool (<http://www.analog.com/designtools/en/filterwizard/>)
For -3dB @ 100kHz, -40dB @ 500kHz

Optimised for low noise

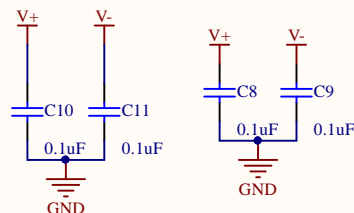
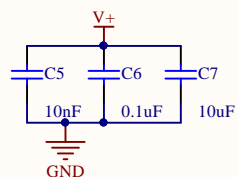
Values changed to closest PCBTrain free component values



Direct connection to HCP output



DDS Decoupling



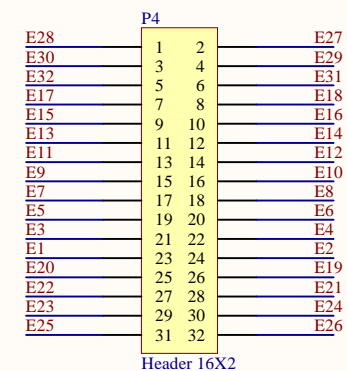
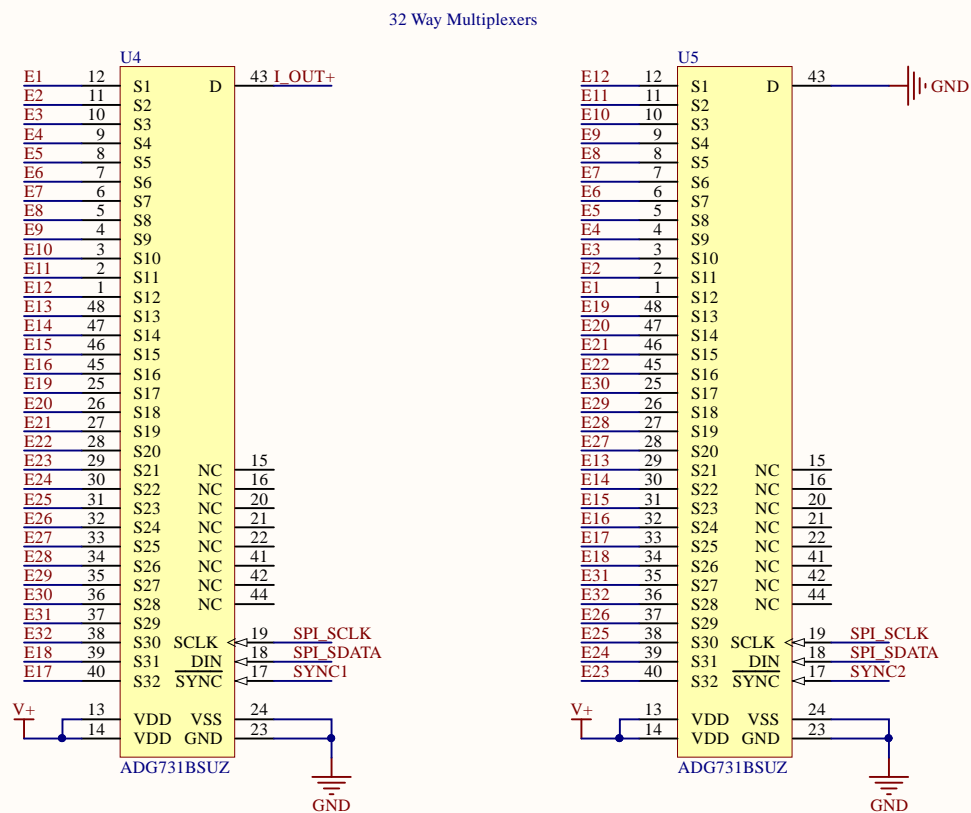
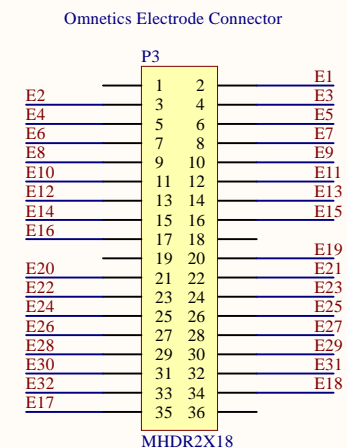
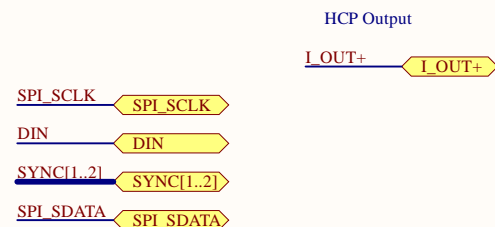
Title		
Single Ended Howland Current Pump		
Size	Number	Revision
A4		
Date:	22/03/2018	Sheet of
File:	D:\Documents\...\AD9833_Single_Ended_Howland_Pump	Sub By:

1

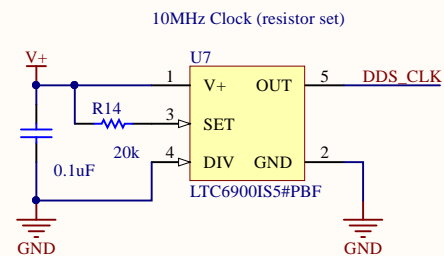
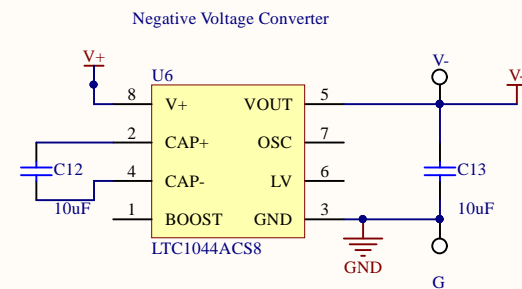
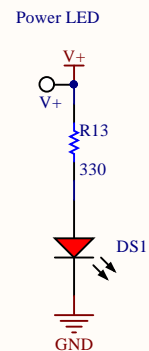
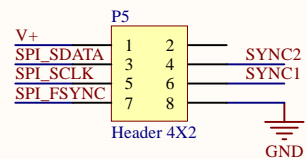
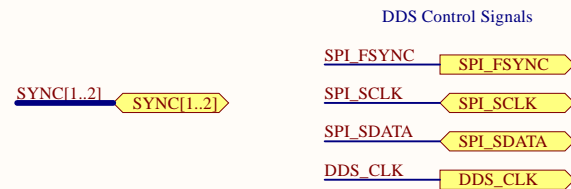
2

3

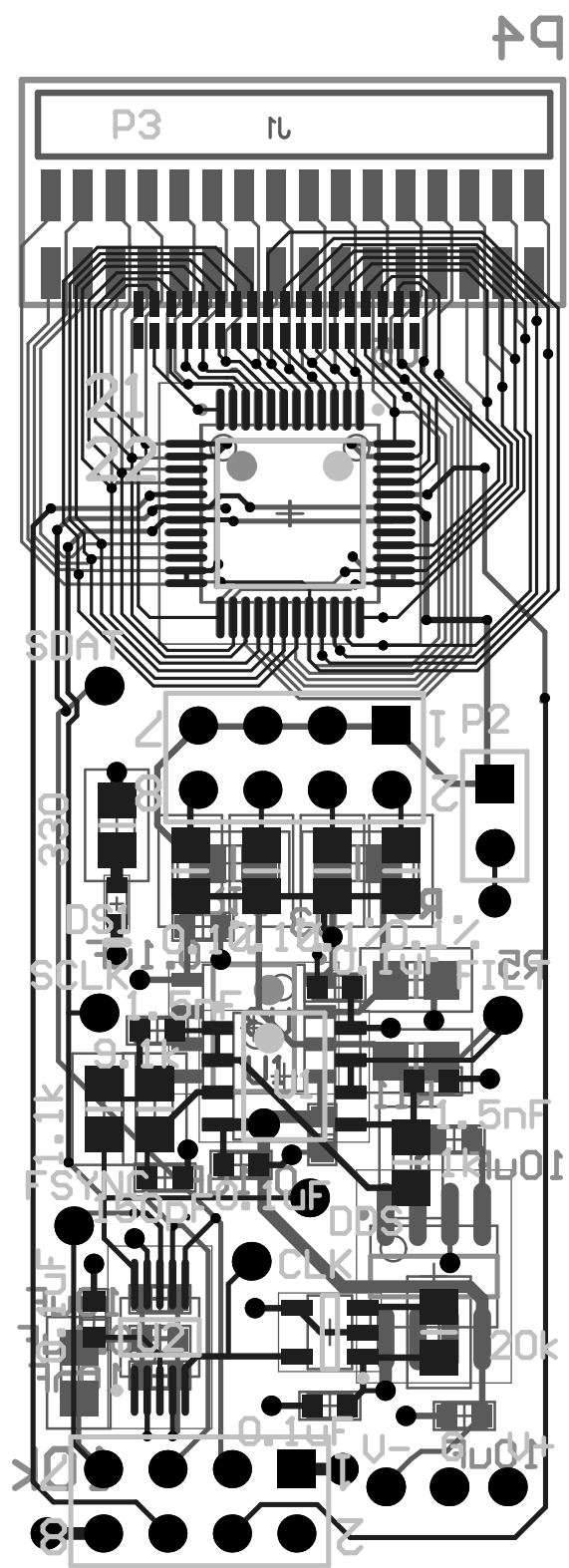
4



Title		
Size A4	Number	Revision
Date:	22/03/2018	Sheet of
File:	D:\Documents\...\adg731-switches.SchD6dDrawn By:	



Title		
Size A4	Number	Revision
Date:	22/03/2018	Sheet of
File:	D:\Documents\...\Power_Supply_and_Bu...	Drawn by



Bill of Materials

<Parameter Title not found>

Source Data From:	Mini_CS.PrjPcb
Project:	Mini_CS.PrjPcb
Variant:	None

Creation Date:	22/03/2018	13:24:58
Print Date:	22-Mar-18	1:25:06 PM

Footprint	Comment	LibRef	Designator	Description	Quantity
1608[0603]	150pF	Cap Semi	C1	Capacitor (Semiconductor SIM Model)	1
1608[0603]	1.5nF	Cap Semi	C2, C3	Capacitor (Semiconductor SIM Model)	2
1608[0603]	0.1uF	Cap Semi	C4, C6, C8, C9, C10, C11, C14	Capacitor (Semiconductor SIM Model)	7
1608[0603]	10nF	Cap Semi	C5	Capacitor (Semiconductor SIM Model)	1
1608[0603]	10uF	Cap Semi	C7, C12, C13	Capacitor (Semiconductor SIM Model)	3
TestPointVia	TESTPOINT_W	TESTPOINT_W	CLK, DDS, FILT, FSYNC, G, SCLK, SDAT, V+, V-		9
	HITE	HITE			
VISH-TLMS1100_V	TLMS1100-GS08	CMP-1666-00027-1	DS1	LED, RED, 2.1 V, -40 to 100 degC, 2-Pin SMD (0603), RoHS, Tape and Reel	1
HDR2X4	Header 4X2	Header 4X2	P1, P5	Header, 4-Pin, Dual row	2
HDR1X2	Header 2	Header 2	P2	Header, 2-Pin	1
A79025-001	MHDR2X18	MHDR2X18	P3	Header, 18-Pin, Dual row	1
FTSH-117-XX-XXX-DH	Header 16X2	Header 16X2	P4	Header, 16-Pin, Dual row	1
6-0805_M	10k	Res1	R1	Resistor	1
6-0805_M	1.1k	Res1	R2	Resistor	1
6-0805_M	9.1k	Res1	R3	Resistor	1
6-0805_M	1k	Res1	R4	Resistor	1
6-0805_M	0.1%	Res1	R5, R6, R7, R8, R9, R10, R11, R12	Resistor	8
6-0805_M	330	Res1	R13	Resistor	1
6-0805_M	20k	Res1	R14	Resistor	1
D0008A_L	OPA2188AIDR	CMP-0272-00241-3	U1, U3	0.03 uV/degC, 6 uV Vos, Low Noise, Rail-to-Rail Output, Zero-Drift Operational Amplifier, 4 to 36 V, -40 to 105 degC, 8-pin SOIC (D8), Green (RoHS & no Sb/Br)	2
ADI-RM-10_M	AD9833BRMZ	CMP-0293-00077-1	U2	Low Power, 12.65 mW, 2.3 V to 5.5 V, Programmable Waveform Generator, 10-Bit, Serial, RM-10, 50 Tube, Pb-Free	1
ADI-SU-48_N	ADG731BSUZ	CMP-0798-00240-1	U4, U5	1.8 to 5.5 V / +/-2.5 V, 4 Ohm, Serially Controlled, 32-Channel Analog Multiplexer, 40 to 85 degC, 48-pin QFP (SU-48), Tray	2
LT-S8-8_M	LTC1044ACS8	CMP-0475-00491-1	U6	12 V CMOS Voltage Converter, 8-pin SOIC (S8-8), 0 to 70 degC	1
LT-TSOT-23-5_V	LTC6900IS5#PBF	CMP-2000-06612-1	U7	Low Power, Resistor Set Oscillator, 1 KHz to 20 MHz, 2.7 to 5.5 V, -40 to 85 degC, 5-Pin SOT-23 (S5), Pb-Free	1
					50
Approved		Notes			