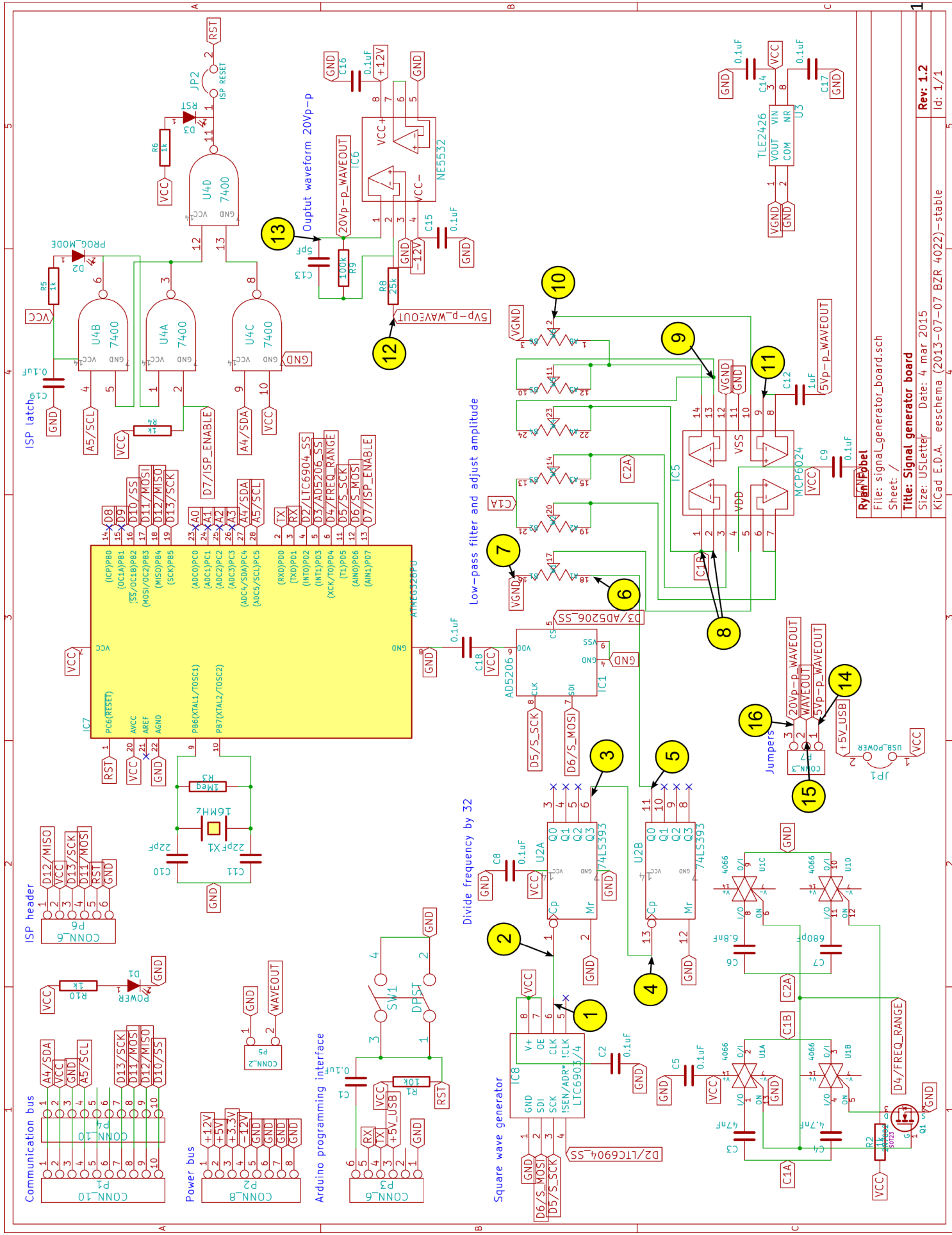


## **Signal generator board v1.2**

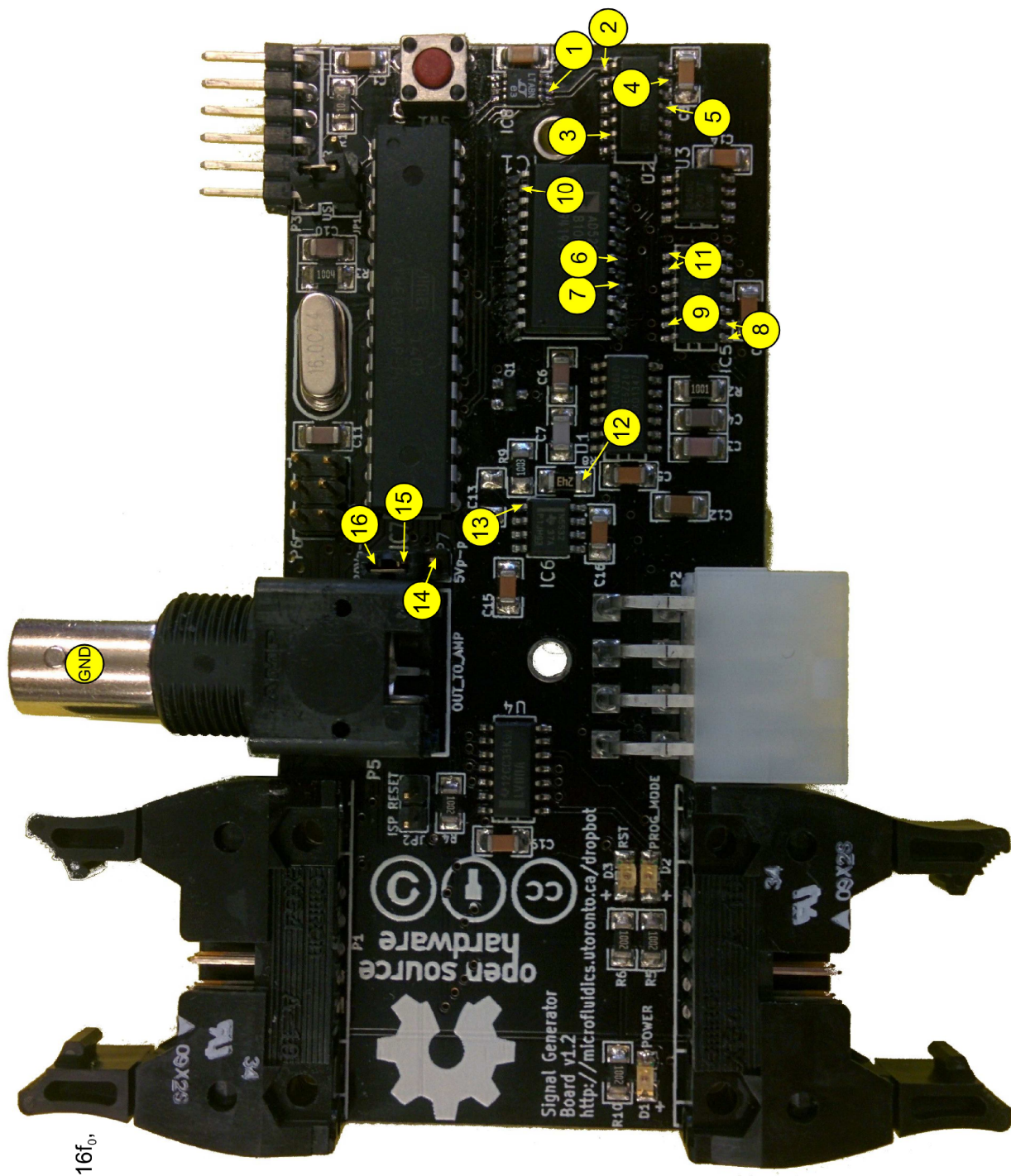
<http://microfluidics.utoronto.ca/trac/dropbot/wiki/SignalGeneratorBoard>

Document revision: 2

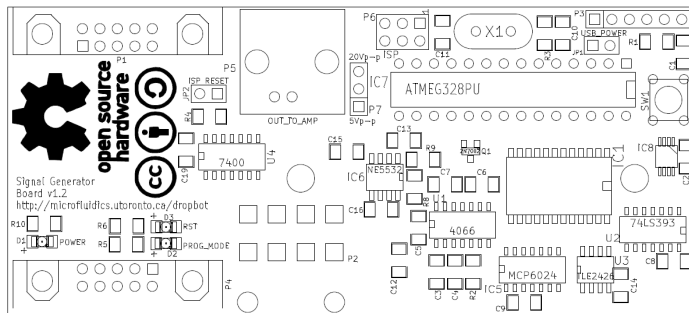
Last updated: 2015-03-12



## Signal Generator Board v1.2 Test Points



1. **CLKX16**  $\approx$  square wave,  $\text{freq} = 16f_0$ ,  
 $V_{p-p} \approx 4.4\text{--}5.3\text{ V}$
5. **CLK**  $\approx$  square wave,  $\text{freq} = f_0$ ,  
 $V_{p-p} \approx 4.4\text{--}5.3\text{ V}$
7. **VGND**  $\approx 2.2\text{--}2.6\text{ V}$
11. **5V SINE**  $\approx$  sine wave,  
 $\text{freq} = f_0$ ,  $\text{DC}_{\text{bias}} \approx 2.5\text{ V}$ ,  
 $V_{\text{rms}} \approx V_{\text{set}} / 4$
- 12&14. **5V SINE**  $\approx$  sine wave,  
 $\text{freq} = f_0$ ,  $\text{DC}_{\text{bias}} \approx 0\text{ V}$ ,  
 $V_{\text{rms}} \approx V_{\text{set}} / 4$
- 13&16. **20V SINE**  $\approx$  sine wave,  
 $\text{freq} = f_0$ ,  $\text{DC}_{\text{bias}} \approx 0\text{ V}$ ,  
 $V_{\text{rms}} \approx V_{\text{set}}$



Ryan Fobel		
File: signal_generator_board.kicad_pcb		
Sheet: 1/1		
Title: Signal generator board		
Size: USLetter	Date:	Rev: 1.2
KiCad E.D.A. pcbnew (2013-07-07 BZR 4022)-stable		Id: 1/1



Qty	Reference Designator	Description	Manufacturer	Part No.
11	C1-2, C5, C8-9, C14-19	Capacitor, Ceramic, 0.1uF, 10%, 50V, X7R	KEMET ELECTRONICS CORPORATION	C1206C104K5RACTU
1	C12	Capacitor, Ceramic, 1uF, 100V, X7R, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31B105KCHSNNE
2	C10-11	Capacitor, Ceramic, 22pF, 100V, X7R, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31C220JCCNNNC
1	C3	Capacitor, Ceramic, 0.047uF, 50V, 5%, NPO, 1206	TDK Corporation	C3216NP01H473J115AA
1	C4	Capacitor, Ceramic, 4700pF, 50V, 5%, NPO, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31C472JBFNFNE
1	C6	Capacitor, Ceramic, 6800pF, 50V, 5%, NPO, 1206	SAMSUNG ELECTRO-MECHANICS AMERICA, INC	CL31C682JBHNNNE
1	C7	Capacitor, Ceramic, 680pF, 630V, 5%, NPO, 1206	TDK Corporation	C3216C0G2J681J085AA
5	R1, R4-6, R10	Resistor, Metal Film, 10k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT10K0
1	R2	Resistor, Metal Film, 1k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT1K00
1	R3	Resistor, Metal Film, 1M, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT1M00
1	R8	Resistor, Metal Film, 24k, 5%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206JT24K0
1	R9	Resistor, Metal Film, 100k, 1%, 1/4W, 1206	STACKPOLE ELECTRONICS INC	RMCF1206FT100K
3	D1-3	LED, Vis, Solid State, Green, 1206	KINGBRIGHT COMPANY LLC	APL3015SGC-F01
1	IC1	IC DGTL POT 256POS 100K	ANALOG DEVICES INC	AD5206BRZ100
1	IC5	IC, Opamp, Quad, R-R, 14-SOIC	MICROCHIP TECHNOLOGY	MCP6024-I/SL
1	IC6	IC, Opamp, GP, 10MHz Dual, 8SOIC	TEXAS INSTRUMENTS	NE5532DR
1	IC7	IC, MCU 8bit 32KB FLASH 28DIP	ATMEL	ATMEGA328P-PU
1	IC8	IC, Programmable Oscillator, SPI, 8-MSOP	LINEAR TECHNOLOGY	LTC6903CMS8#PBF
2	P1, P4	Connector, PCB, Right Angle, 10 Position	OMRON ELECTRONICS INC	XG4A-1034
1	P2	Mini-Fit Jr Connection header, 8POS 4.2MM R/A TIN	MOLEX INC	39301080
1	P3	Male Headers Pins, 0.1" spacing, 6x1, R/A	SULLINS CONNECTOR SOLUTIONS	NRPN061PARN-RC
1	P5	Connector, PCB, Right Angle, BNC	TYCO ELECTRONICS	5227161-2
1	P6	Male Headers Pins, 0.1" spacing, 3x2	HARWIN INC	M20-9980346
1	P7	Male Headers Pins, 0.1" spacing, 3x1	OMRON ELECTRONICS INC	XG85-0331
2	JP1-2	Male Headers Pins, 0.1" spacing, 2x1	HARWIN INC	M20-9990246
1	Q1	MOSFET N-CH 60V SOT-23	NXP SEMICONDUCTORS	2N7002P,215
1	SW1	Switch Tactile, SPST-NO, 0.05A 12V	C&K Components	PTS645SK43 LFS
1	U1	IC, SWITCH QUAD 1X1	NXP SEMICONDUCTORS	74HCT4066D
1	U2	DUAL 4BIT BINRY COUNTR	TEXAS INSTRUMENTS	SN74HC393DR
1	U3	IC VREF GND REF PREC ADJ	TEXAS INSTRUMENTS	TLE2426CD
1	U4	IC Quad 2-IN NAND Gate	TEXAS INSTRUMENTS	SN74LV00ADR
1	X1	CRYSTAL 16MHZ 18PF THRU	CITIZEN FINETECH MIYOTA	HC49US-16.000MABJ-UB
	S1-3	SHUNT JUMPER .1"	3M	969102-0000-DA

C13 and S1-3 do not need to be placed