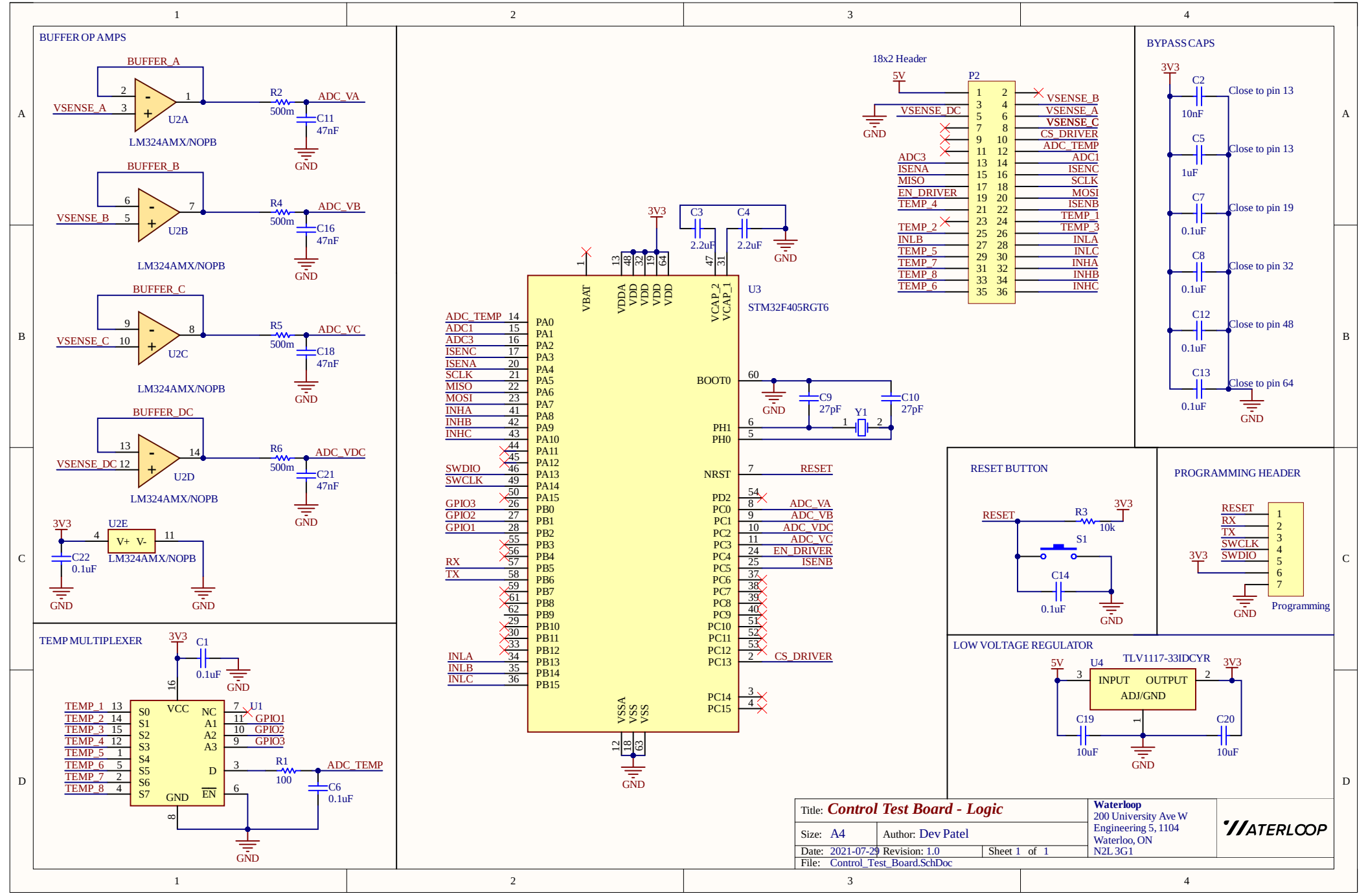
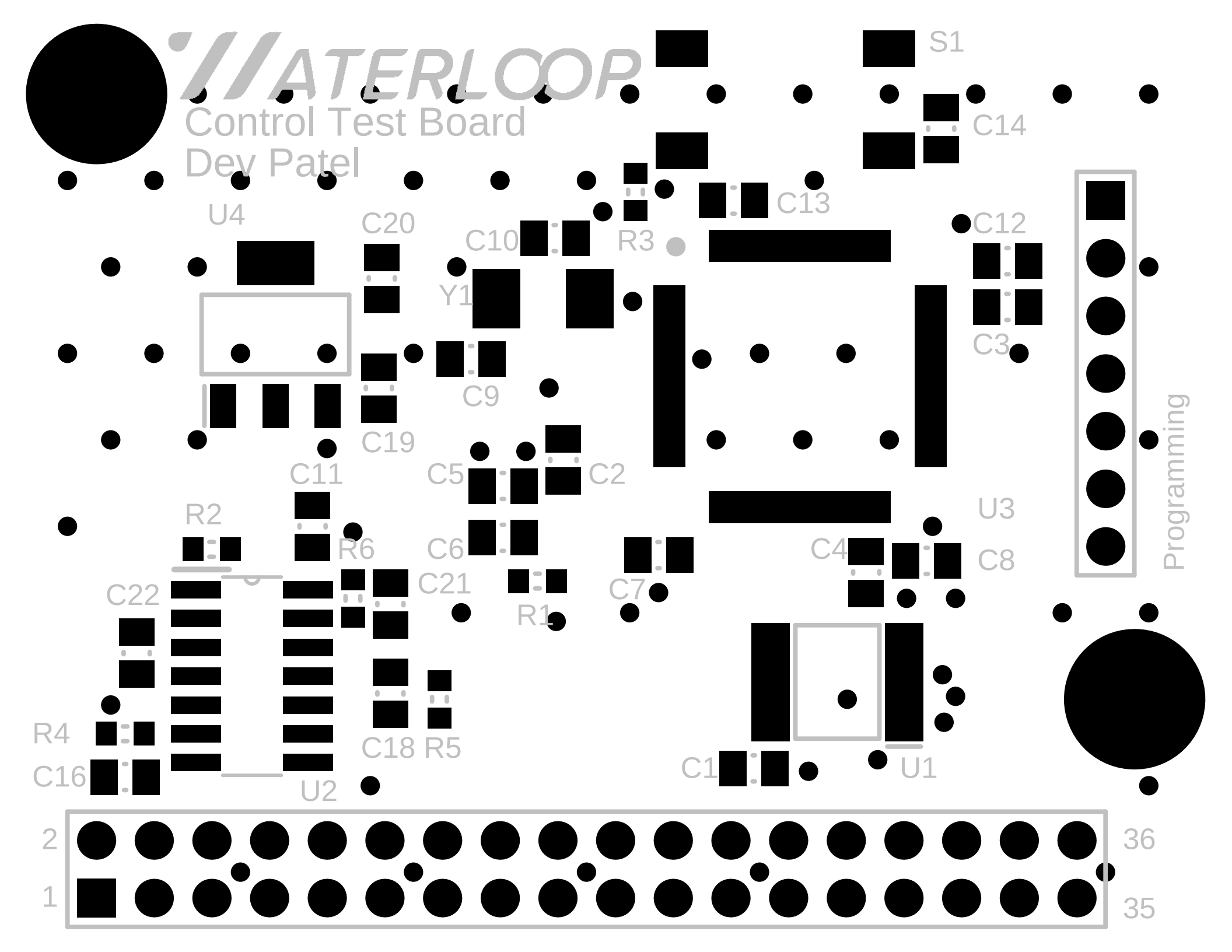
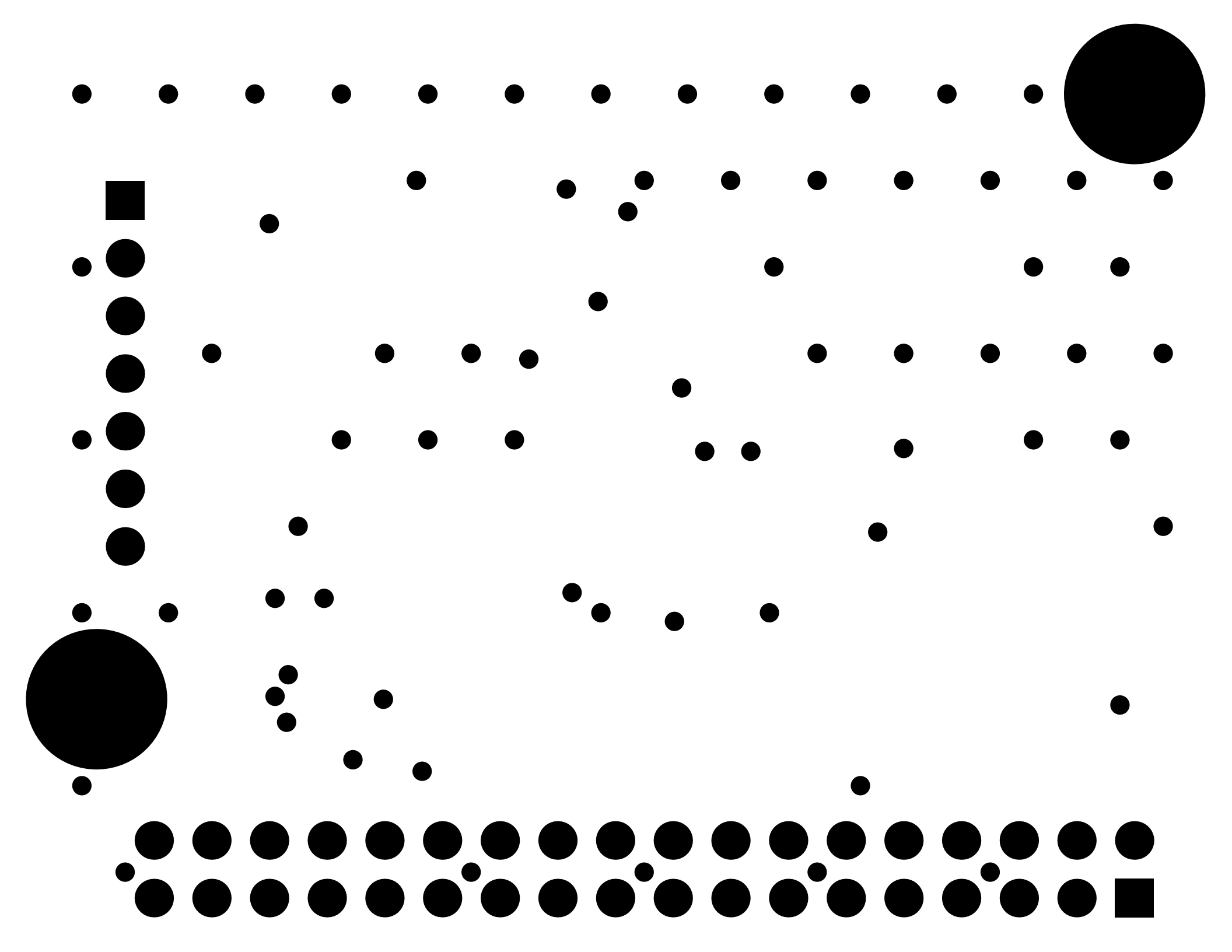
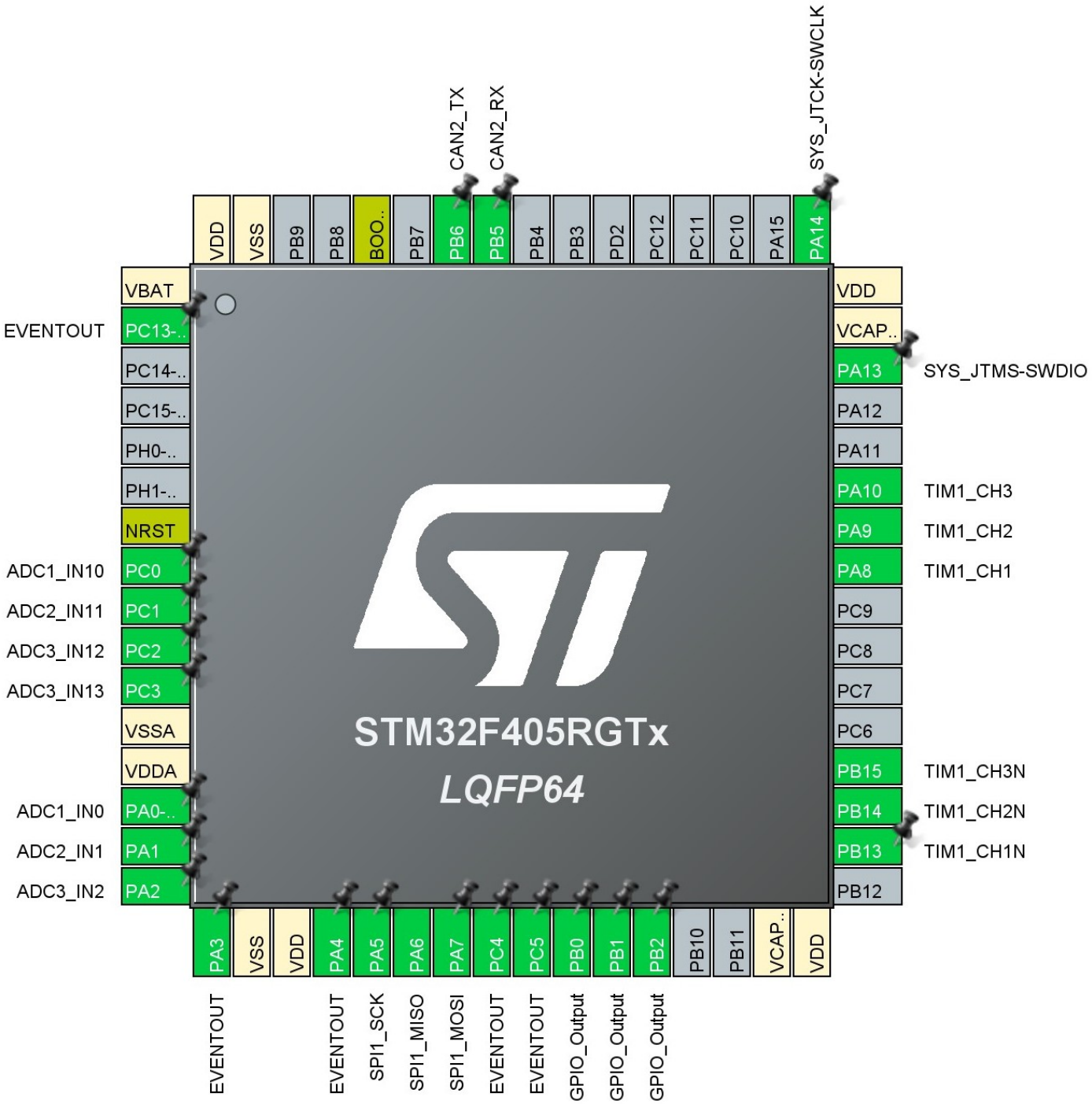
Designator	Value	Footprint	Manufacturer	Manufacturer Part Number	Supplier	Supplier Part Number	Quantity
C1, C6, C22	0.1uF	0805 - Capacitor				311-1141-1-ND	3
C2	10nF	0805 - Capacitor				311-1475-1-ND	1
C3, C4	2.2uF	0805 - Capacitor				311-3420-1-ND	2
C5	1uF	0805 - Capacitor				311-1456-1-ND	1
C7, C8, C12, C13, C14	0.1uF	0805 - Capacitor				311-1141-1-ND	5
C9, C10	27pF	0805 - Capacitor				311-1104-1-ND	2
C11, C16, C18, C21	47nF	0805 - Capacitor				311-1431-1-ND	4
C19, C20	10uF	0805 - Capacitor				13-CC0805KFX7R6BB106CT-ND	2
P2		HDR2X18					1
Programming		HDR1X7					1
R1	100	0603 - Resistor				311-100HRCT-ND	1
R2, R4, R5, R6	500m	0603 - Resistor				13-RL0603JR-070R5LCT-ND	4
R3	10k	0603 - Resistor				311-10.0KHRCT-ND	1
S1		6x6mm Switch					1
U1		SOP65P640X120-16N	NXP	NX3L4051PW,118	Digikey	568-12393-1-ND	1
U2		LM324AMX/NOPB	TI	LM324AMX/NOPB	Digikey	LM324AMX/NOPBCT-ND	1
U3		STM32F405RG	ST	STM32F405RG	Digikey	497-11767-ND	1
U4		TLV1117	Texas Instruments	TLV1117-33IDCYR	Digikey	296-21112-1-ND	1
Y1	16MHz	2-SMD NO LEAD CRSYSTAL				535-13460-1-ND	1


BUFFER OP AMPS
BUFFER_A
VSENSE_A
U2A
LM324AMX/NOPB
R2
500m
ADC_VA
C11
47nF
GND
BUFFER_B
VSENSE_B
U2B
LM324AMX/NOPB
R4
500m
ADC_VB
C16
47nF
GND
BUFFER_C
VSENSE_C
U2C
LM324AMX/NOPB
R5
500m
ADC_VC
C18
47nF
GND
BUFFER_DC
VSENSE_DC
U2D
LM324AMX/NOPB
R6
500m
ADC_VDC
C21
47nF
GND
3V3
U2E
V+ V-
LM324AMX/NOPB
C22
0.1uF
GND
GND
TEMP MULTIPLEXER
3V3
C1
0.1uF
GND
TEMP_1
TEMP_2
TEMP_3
TEMP_4
TEMP_5
TEMP_6
TEMP_7
TEMP_8
S0
S1
S2
S3
S4
S5
S6
S7
VCC
GND
NC
A1
A2
A3
D
EN
U1
GPIO1
GPIO2
GPIO3
R1
100
ADC_TEMP
C6
0.1uF
GND
3V3
C3
C4
2.2uF
2.2uF
GND
VBAT
VDDA
VDD
VDD
VDD
VDD
VCAP_2
VCAP_1
U3
STM32F405RGT6
ADC_TEMP
ADC1
ADC3
ISENC
ISENA
SCLK
MISO
MOSI
INHA
INHB
INHC
SWDIO
SWCLK
GPIO3
GPIO2
GPIO1
RX
TX
INLA
INLB
INLC
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PA8
PA9
PA10
PA11
PA12
PA13
PA14
PA15
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10
PB11
PB12
PB13
PB14
PB15
BOOT0
PH1
PH0
NRST
PD2
PC0
PC1
PC2
PC3
PC4
PC5
PC6
PC7
PC8
PC9
PC10
PC11
PC12
PC13
PC14
PC15
RESET
ADC_VA
ADC_VB
ADC_VDC
ADC_VC
EN_DRIVER
ISENB
CS_DRIVER
VSSA
VSS
VSS
GND
C9
27pF
C10
27pF
Y1
18x2 Header
5V
GND
P2
VSENSE_B
VSENSE_A
VSENSE_C
CS_DRIVER
ADC_TEMP
ADC1
ISENC
SCLK
MOSI
ISENB
TEMP_1
TEMP_3
INLA
INLC
INHA
INHB
INHC
BYPASS CAPS
3V3
C2
10nF
Close to pin 13
C5
1uF
Close to pin 13
C7
0.1uF
Close to pin 19
C8
0.1uF
Close to pin 32
C12
0.1uF
Close to pin 48
C13
0.1uF
Close to pin 64
GND
RESET BUTTON
RESET
R3
10k
3V3
S1
C14
0.1uF
GND
PROGRAMMING HEADER
RESET
RX
TX
SWCLK
SWDIO
3V3
GND
Programming
LOW VOLTAGE REGULATOR
5V
U4
TLV1117-33IDCYR
INPUT
OUTPUT
ADJ/GND
3V3
C19
10uF
C20
10uF
GND
Title: Control Test Board - Logic
Size: A4
Author: Dev Patel
Date: 2021-07-29
Revision: 1.0
Sheet 1 of 1
File: Control_Test_Board.SchDoc
Waterloop
200 University Ave W
Engineering 5, 1104
Waterloo, ON
N2L 3G1
WATERLOOP


WATERLOOP
Control Test Board
Dev Patel
S1
C14
C13
C12
U4
C20
C10
R3
Y1
C3
C9
C19
C11
C5
C2
R2
U3
R6
C6
C4
C8
C22
C21
C7
R1
Programming
R4
C18
R5
C16
U2
C1
U1
2
36
1
35




CAN2_TX
CAN2_RX
SYS_JTCK-SWCLK
VDD
VSS
PB9
PB8
BOO..
PB7
PB6
PB5
PB4
PB3
PD2
PC12
PC11
PC10
PA15
PA14
VBAT
EVENTOUT
PC13-..
PC14-..
PC15-..
PH0-..
PH1-..
NRST
ADC1_IN10
PC0
ADC2_IN11
PC1
ADC3_IN12
PC2
ADC3_IN13
PC3
VSSA
VDDA
ADC1_IN0
PA0-..
ADC2_IN1
PA1
ADC3_IN2
PA2
STM32F405RGTx
LQFP64
VDD
VCAP..
PA13
SYS_JTMS-SWDIO
PA12
PA11
PA10
TIM1_CH3
PA9
TIM1_CH2
PA8
TIM1_CH1
PC9
PC8
PC7
PC6
PB15
TIM1_CH3N
PB14
TIM1_CH2N
PB13
TIM1_CH1N
PB12
PA3
VSS
VDD
PA4
PA5
PA6
PA7
PC4
PC5
PB0
PB1
PB2
PB10
PB11
VCAP..
VDD
EVENTOUT
EVENTOUT
SPI1_SCK
SPI1_MISO
SPI1_MOSI
EVENTOUT
EVENTOUT
GPIO_Output
GPIO_Output
GPIO_Output