5V Power Usage:

10 RGB * 0.015A = 0.15A
3.3V LDO = 0.80A

CN25
2
1
GND
GND

TP3
GND
GND

TP4
GND
GND

L?
3A
4.7uH

TP5
VBAT
VBAT
47uF
C35
10uF
16V
1206
C36
10uF
16V
1206
GND

Use ROMI pushbutton (VSW) to enable

CN24
2
1
PWR Switch

VSW
R71
0402
0.0
R70
100k
0402

VIN <17V
VOUT 5V, <3A

U14
VIN
EN
GND
SW
VBST
VFB
TPS563209DDCR
TPS563209DDCR
3A
TPS561208DDCR
TPS561208DDCR

C41
0603
0.1µF
16V

Rework 1 - 4.7nH
L1
3.3uH 5.5A

R13
56.2K
0603
R15
10k
0603
GND

47uF
47uF
47uF
47uF
C37
10uF
16V
1206
C38
10uF
16V
1206
C39
10uF
16V
1206
C40
10uF
16V
1206
GND

5V
TP6
5V
5V Out
R14
0603
1.0k
LED5
5V Green
2V 20mA
GND

5V
CN26
1
2
AUX 5V
GND

This will allow the system to be powered off usb debug or ROMI

5V
U15
VIN
VOUT
CE
GND
ST
NC
LM66100DCKT
GND

ORing Controllers
+/- 6V Max
1.5A CC Max

pg1 5V_USB

U17
VIN
VOUT
CE
GND
ST
NC
LM66100DCKT
GND

FB1
600 Ohm @ 100MHz

TP7
5V_OR

VOUT 3.3V, <800mA
U16 3.3V
VIN
GND
VOUT
TAB

C42
0.1µF
16V
0603
C43
1uF
25V
0603
C44
0.1µF
16V
0603
C45
1uF
25V
0603
C46
10uF
16V
1206
GND

TP8
3.3V
3.3V
3.3V Out
R16
100
0402
LED6
3.3V
Green
2V 20mA
GND

3.3V
CN27
1
2
AUX 3.3V
GND

Raspberry Pi Power

Ideal Diodes are used to power the pi off od the board voltages. This will prevent issues if the pi tries to backpower the board

5V
U7
VIN
VOUT
CE
GND
ST
NC
LM66100DCKT
GND

C52
0.1µF
16V
0603
C53
1uF
25V
0603
RPI_5V
GND

Title: Power		
Size: A	Number: *	Revision: A
Date: 9/18/2020	Sheet 4 of 5	
File: C:\github\..\STM32-ROMI_Rev_A_4_3V_Power.SchDoc	Drawn By: *	

RGB LEDS DRIVERS

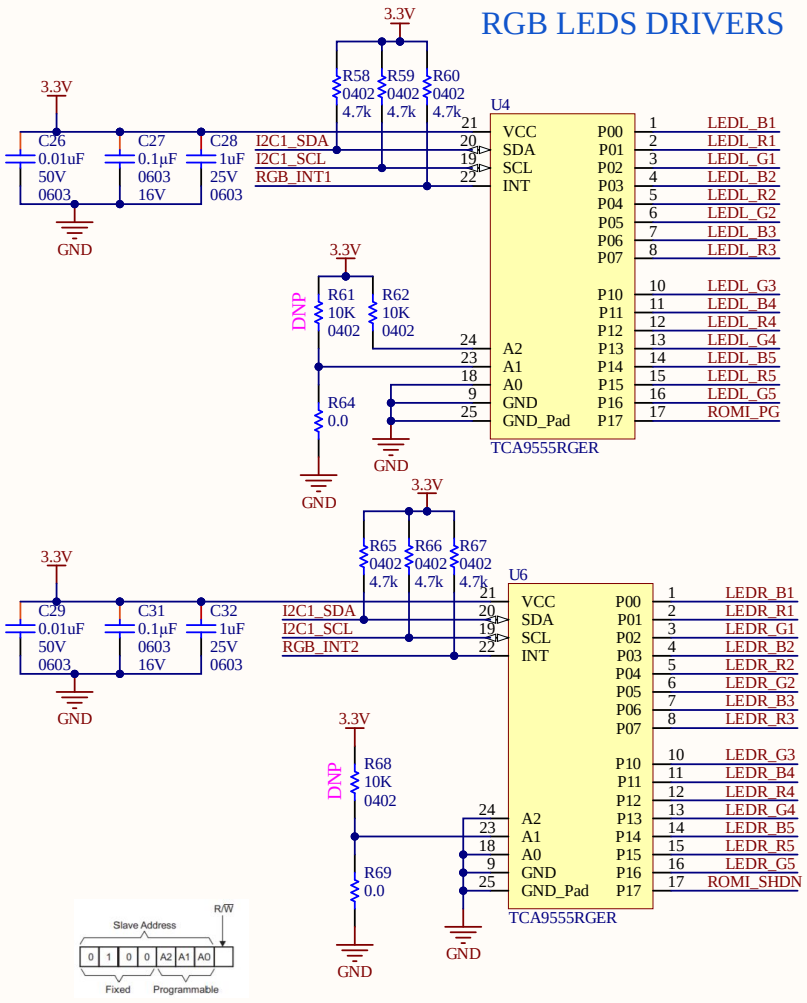
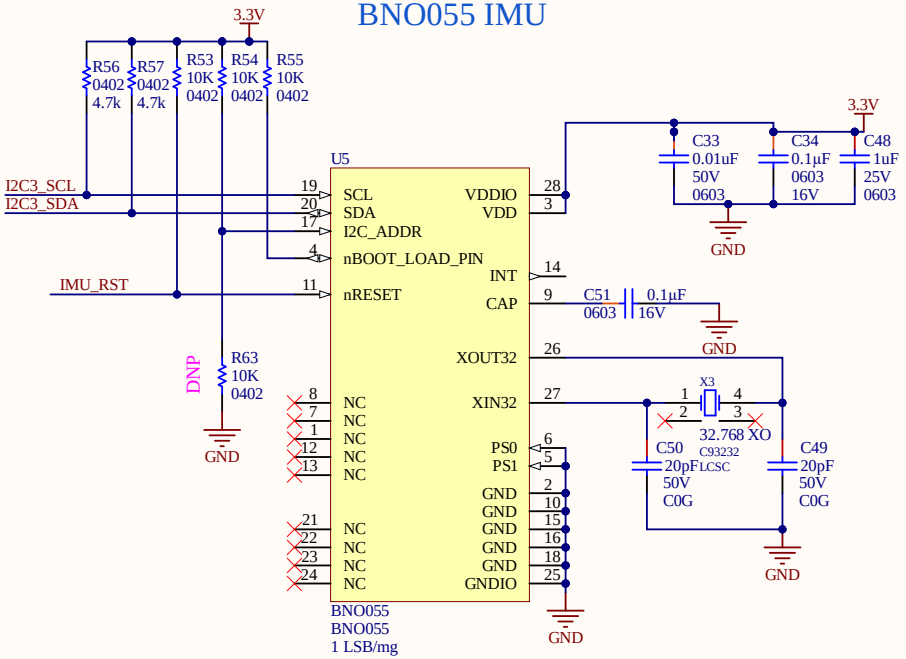


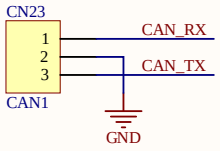
Table 2. Address Reference

INPUTS			I²C BUS SLAVE ADDRESS
A2	A1	A0	
L	L	L	32 (decimal), 20 (hexadecimal)
L	L	H	33 (decimal), 21 (hexadecimal)
L	H	L	34 (decimal), 22 (hexadecimal)
L	H	H	35 (decimal), 23 (hexadecimal)
H	L	L	36 (decimal), 24 (hexadecimal)
H	L	H	37 (decimal), 25 (hexadecimal)
H	H	L	38 (decimal), 26 (hexadecimal)
H	H	H	39 (decimal), 27 (hexadecimal)

BNO055 IMU



CAN BUS



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Size: A4	Number: 9152020	Revision: A	
Date: 9/18/2020	Time: 3:17:33 PM	Sheet 5 of 6	
File: C:\github\STM32-ROMI\Altium\Reworks\STM32-ROMI_Rev_A-Reworks\STM32-ROMI_Rev_A_5_IMU_IO.SchDoc			

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Frenchs Forest
NSW
Australia 2086

Altium

Title		
Size: A4	Number:	Revision:
Date: 9/18/2020 Time: 3:17:33 PM	Sheet of	
File: C:\github\STM32-ROMI\Altium\Reworks\STM32-ROMI_Rev_A-Reworks\STM32-ROMI_Rev_A_0_Title.SchDoc		

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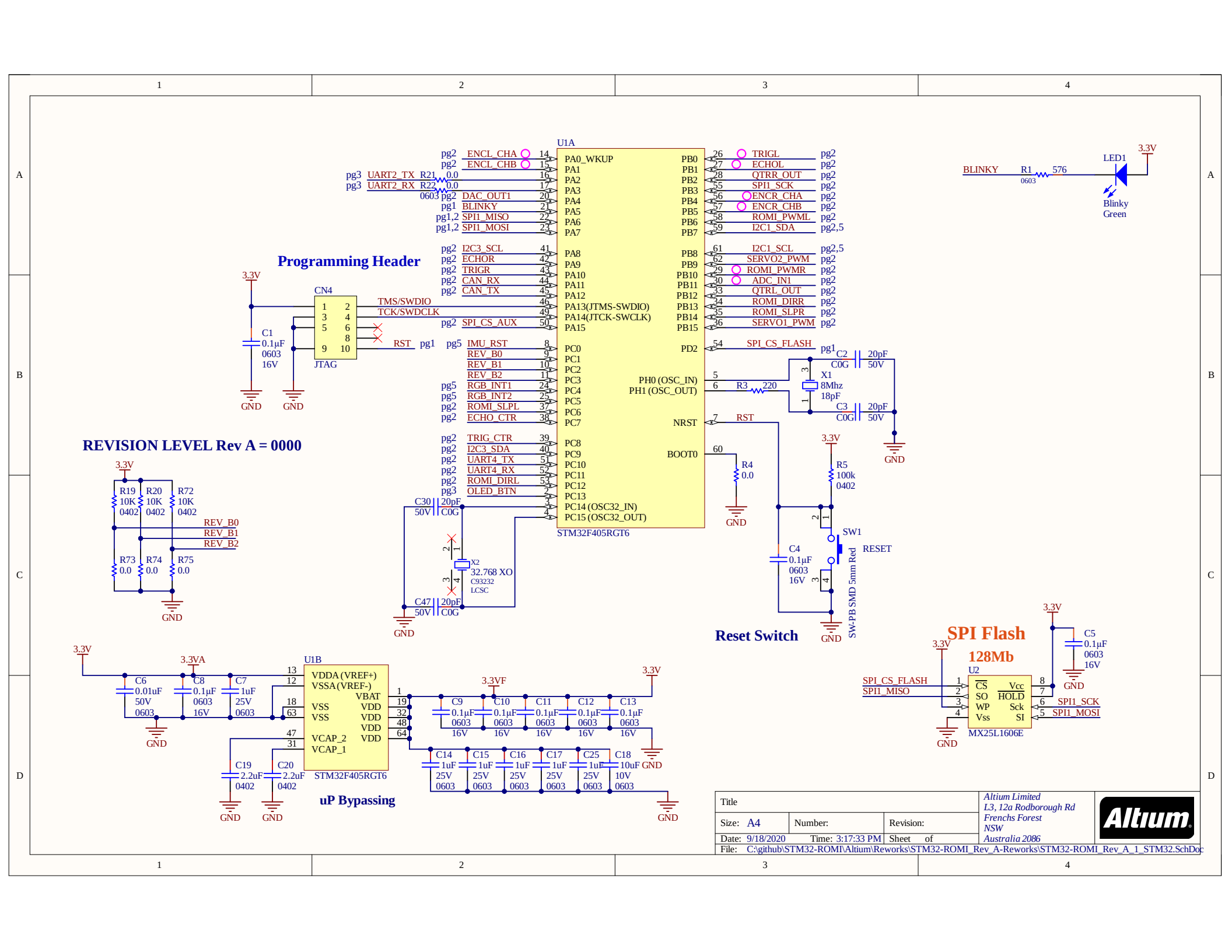
U1A
STM32F405RGT6
Programming Header
CN4
JTAG
REVISION LEVEL Rev A = 0000
Reset Switch
SW1
RESET
SW-PB SMD 5mm Red
X1
8Mhz
18pF
X2
32.768 XO
C93232
LCSC
LED1
Blinky
Green
SPI Flash
128Mb
U2
MX25L1606E
U1B
STM32F405RGT6
uP Bypassing
Title
Size: A4
Number:
Revision:
Date: 9/18/2020
Time: 3:17:33 PM
Sheet of
File: C:\github\STM32-ROMI\Altium\Reworks\STM32-ROMI_Rev_A-Reworks\STM32-ROMI_Rev_A_1_STM32.SchDoc
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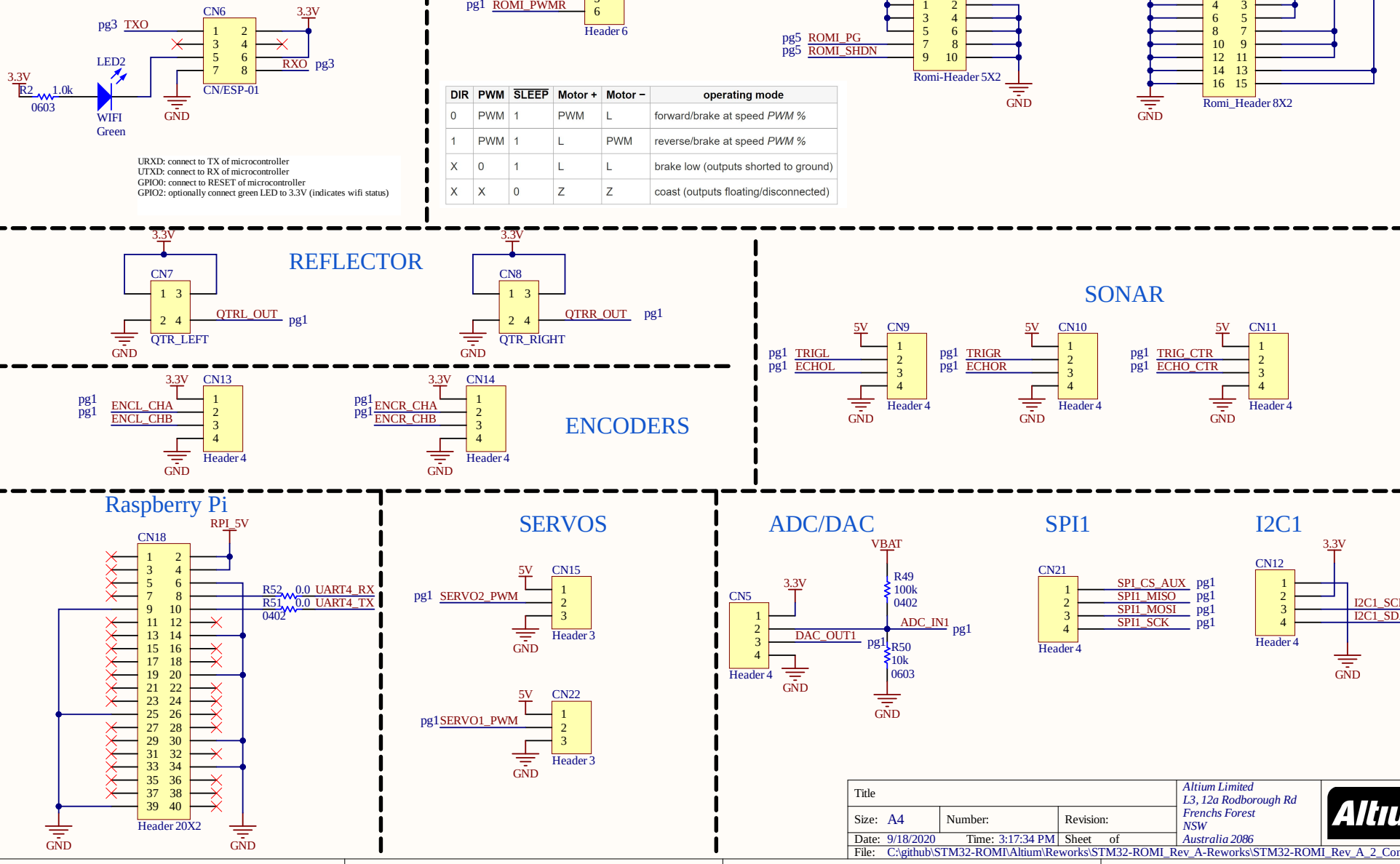
Altium


ESP-01
pg3 TXO
CN6
3.3V
RXO pg3
LED2
3.3V
R2 1.0k
0603
WIFI
Green
GND
CN/ESP-01
URXD: connect to TX of microcontroller
UTXD: connect to RX of microcontroller
GPIO0: connect to RESET of microcontroller
GPIO2: optionally connect green LED to 3.3V (indicates wifi status)
pg1 ROMI_SLPL
pg1 ROMI_DIRL
pg1 ROMI_PWML
pg1 ROMI_SLPR
pg1 ROMI_DIRR
pg1 ROMI_PWMR
CN1
Header 6
DIR | PWM | SLEEP | Motor + | Motor − | operating mode
0 | PWM | 1 | PWM | L | forward/brake at speed PWM %
1 | PWM | 1 | L | PWM | reverse/brake at speed PWM %
X | 0 | 1 | L | L | brake low (outputs shorted to ground)
X | X | 0 | Z | Z | coast (outputs floating/disconnected)
ROMI CONNECTOR
ROMI_3V3
CN2
pg5 ROMI_PG
pg5 ROMI_SHDN
Romi-Header 5X2
GND
VBAT
VRP
VSW
CN3
GND
Romi_Header 8X2
REFLECTOR
3.3V
CN7
QTRL_OUT
pg1
QTR_LEFT
GND
CN8
QTRR_OUT
pg1
QTR_RIGHT
GND
SONAR
5V
CN9
pg1 TRIGL
pg1 ECHOL
GND
Header 4
CN10
pg1 TRIGR
pg1 ECHOR
CN11
pg1 TRIG_CTR
pg1 ECHO_CTR
ENCODERS
CN13
pg1 ENCL_CHA
pg1 ENCL_CHB
Header 4
CN14
pg1 ENCR_CHA
pg1 ENCR_CHB
Raspberry Pi
RPI_5V
CN18
R52 0.0 UART4_RX
R51 0.0 UART4_TX
0402
Header 20X2
SERVOS
5V
CN15
pg1 SERVO2_PWM
Header 3
CN22
pg1 SERVO1_PWM
ADC/DAC
VBAT
3.3V
CN5
R49
100k
0402
ADC_IN1
pg1
DAC_OUT1
R50
10k
0603
SPI1
CN21
SPI_CS_AUX pg1
SPI1_MISO pg1
SPI1_MOSI pg1
SPI1_SCK pg1
I2C1
CN12
I2C1_SCL pg1
I2C1_SDA pg1
Title
Size: A4
Number:
Revision:
Date: 9/18/2020
Time: 3:17:34 PM
Sheet of
File: C:\github\STM32-ROMI\Altium\Reworks\STM32-ROMI_Rev_A-Reworks\STM32-ROMI_Rev_A_2_Connectors.SchDoc
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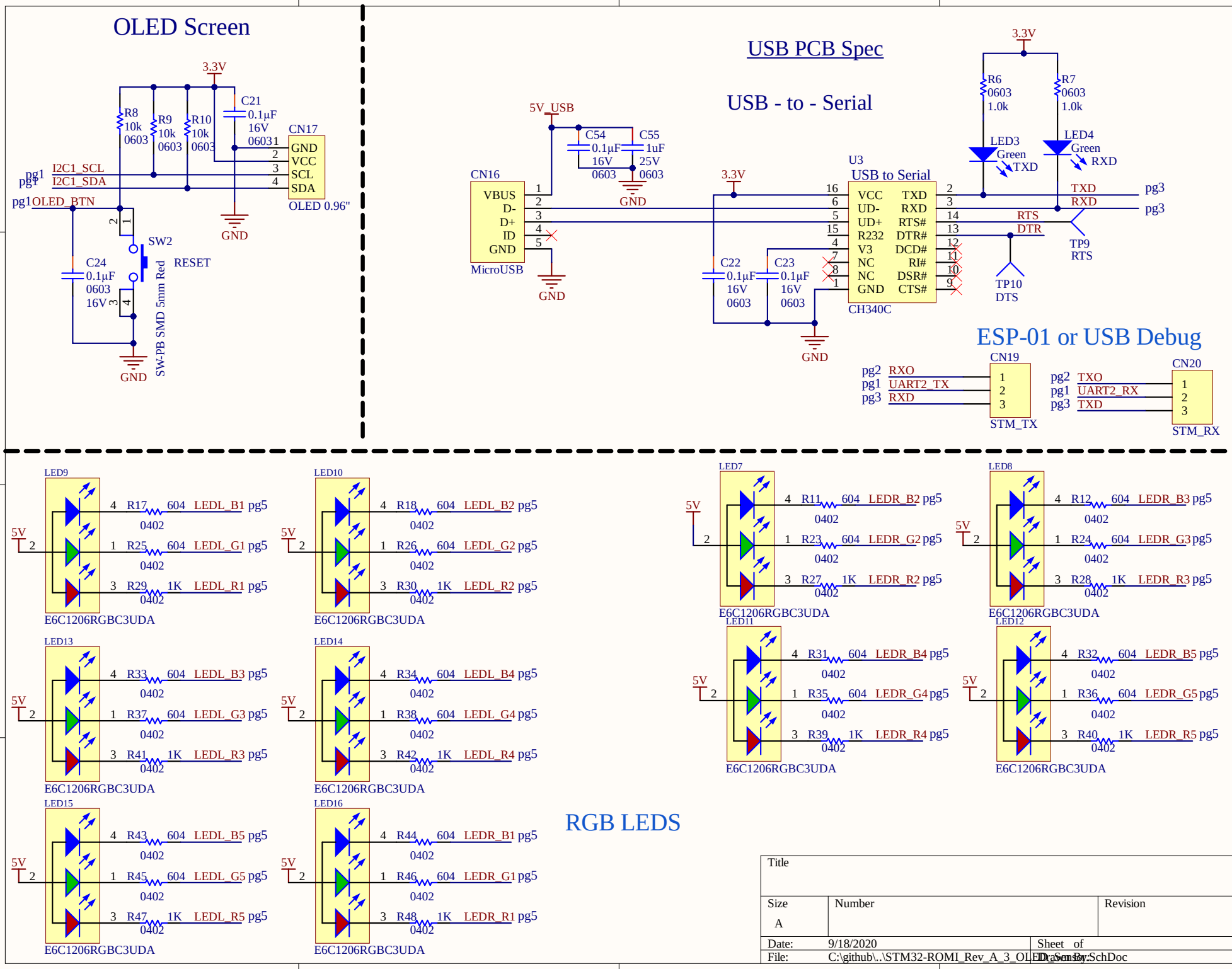
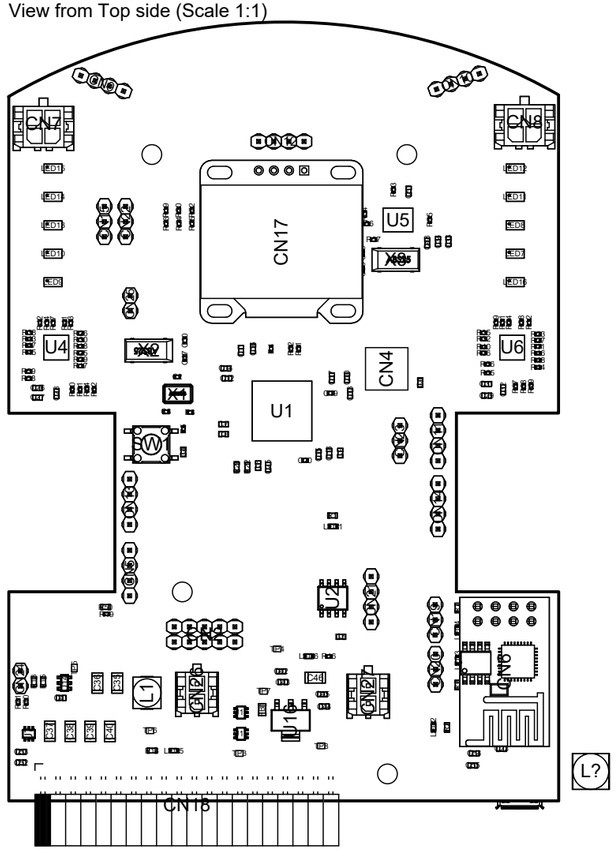

OLED Screen
3.3V
R8 10k 0603
R9 10k 0603
R10 10k 0603
C21 0.1µF 16V 0603
CN17
GND
VCC
SCL
SDA
OLED 0.96"
pg1 I2C1_SCL
pg1 I2C1_SDA
pg1 OLED_BTN
SW2
RESET
SW-PB SMD 5mm Red
C24 0.1µF 0603 16V
GND
USB PCB Spec
USB - to - Serial
5V_USB
C54 0.1µF 16V 0603
C55 1uF 25V 0603
CN16
VBUS
D-
D+
ID
GND
MicroUSB
3.3V
U3
USB to Serial
VCC
UD-
UD+
R232
V3
NC
NC
GND
TXD
RXD
RTS#
DTR#
DCD#
RI#
DSR#
CTS#
CH340C
C22 0.1µF 16V 0603
C23 0.1µF 16V 0603
R6 0603 1.0k
R7 0603 1.0k
LED3 Green TXD
LED4 Green RXD
TXD
RXD
RTS
DTR
TP9 RTS
TP10 DTS
pg3
ESP-01 or USB Debug
CN19
pg2 RXO
pg1 UART2_TX
pg3 RXD
STM_TX
CN20
pg2 TXO
pg1 UART2_RX
pg3 TXD
STM_RX
LED9
LED10
LED7
LED8
LED11
LED12
LED13
LED14
LED15
LED16
5V
R17 604 LEDL_B1 pg5
R25 604 LEDL_G1 pg5
R29 1K LEDL_R1 pg5
R18 604 LEDL_B2 pg5
R26 604 LEDL_G2 pg5
R30 1K LEDL_R2 pg5
R11 604 LEDR_B2 pg5
R23 604 LEDR_G2 pg5
R27 1K LEDR_R2 pg5
R12 604 LEDR_B3 pg5
R24 604 LEDR_G3 pg5
R28 1K LEDR_R3 pg5
R33 604 LEDL_B3 pg5
R37 604 LEDL_G3 pg5
R41 1K LEDL_R3 pg5
R34 604 LEDL_B4 pg5
R38 604 LEDL_G4 pg5
R42 1K LEDL_R4 pg5
R31 604 LEDR_B4 pg5
R35 604 LEDR_G4 pg5
R39 1K LEDR_R4 pg5
R32 604 LEDR_B5 pg5
R36 604 LEDR_G5 pg5
R40 1K LEDR_R5 pg5
R43 604 LEDL_B5 pg5
R45 604 LEDL_G5 pg5
R47 1K LEDL_R5 pg5
R44 604 LEDR_B1 pg5
R46 604 LEDR_G1 pg5
R48 1K LEDR_R1 pg5
0402
E6C1206RGBC3UDA
RGB LEDS
Title
Size A
Number
Revision
Date: 9/18/2020
Sheet of
File: C:\github\..\STM32-ROMI_Rev_A_3_OLED_Dra...
Drawn By:

STM32-ROMI

Rework 1 - 3.3uH changed to 4.7uH
Rework 2 - 5V buck is wrong version
Rework 3 - CN20 silk flipped

Title			*Altium Limited* *L3, 12a Rodborough Rd* *Frenchs Forest* *NSW* *Australia 2086*
Size: A4	Number:	Revision:	
Date: 9/18/2020	Time: 3:17:34 PM	Sheet of	
File: C:\github\STM32-ROMI\Altium\Reworks\STM32-ROMI_Rev_A-Reworks\STM32-ROMI_Rev_A_6_Reworks.SchDoc			

View from Top side (Scale 1:1)

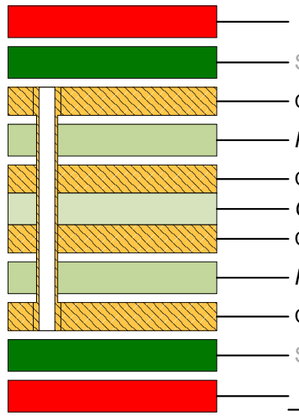


		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL±	DRAWN		9/18/2020
		ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	CHECKED		
			ENG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	MFG APPR.		
		MATERIAL	Q.A.		
			COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE

SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 3

Layer Stack Legend



Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Mask	0.02mm	Solder Resist	Solder Mask	GTS
Copper	Top Copper	0.04mm		Signal	GTL
Prepreg		*0.10mm*	*2313*	*Dielectric*	
Copper	GND1	0.02mm		Signal	G1
Core		*1.26mm*	*FR-4*	*Dielectric*	
Copper	Power1	0.02mm		Signal	G2
Prepreg		*0.10mm*	*2313*	*Dielectric*	
Copper	Bottom Copper	0.04mm		Signal	GBL
Surface Material	Bottom Mask	0.02mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 1.60mm

NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL±
ANGULAR: MACH± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
DO NOT SCALE DRAWING

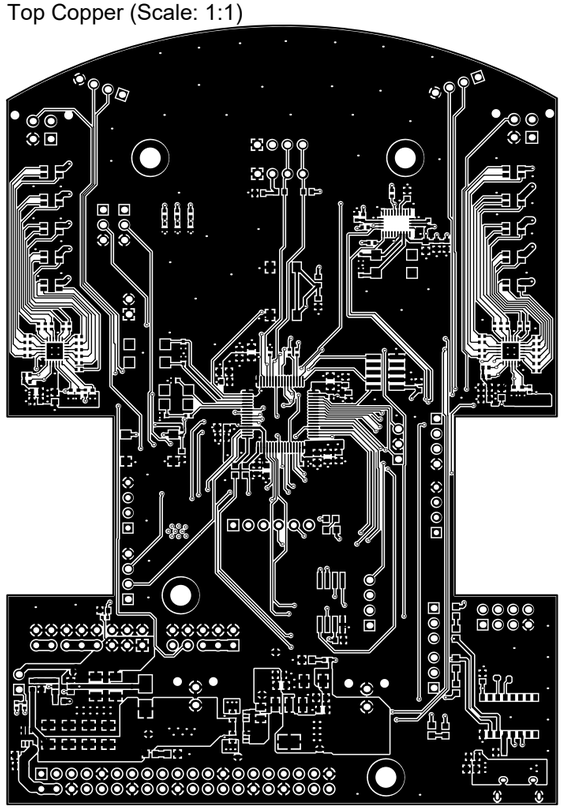
	NAME	DATE
DRAWN		9/18/2020
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE

SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 2 OF 3

Top Copper (Scale: 1:1)



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL± ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN		9/18/2020	
			CHECKED			TITLE
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			SIZE / DWG. NO.
NEXT ASSY	USED ON	FINISH				SCALE: 1:1 / WEIGHT: / SHEET 3 OF 3
APPLICATION		DO NOT SCALE DRAWING				