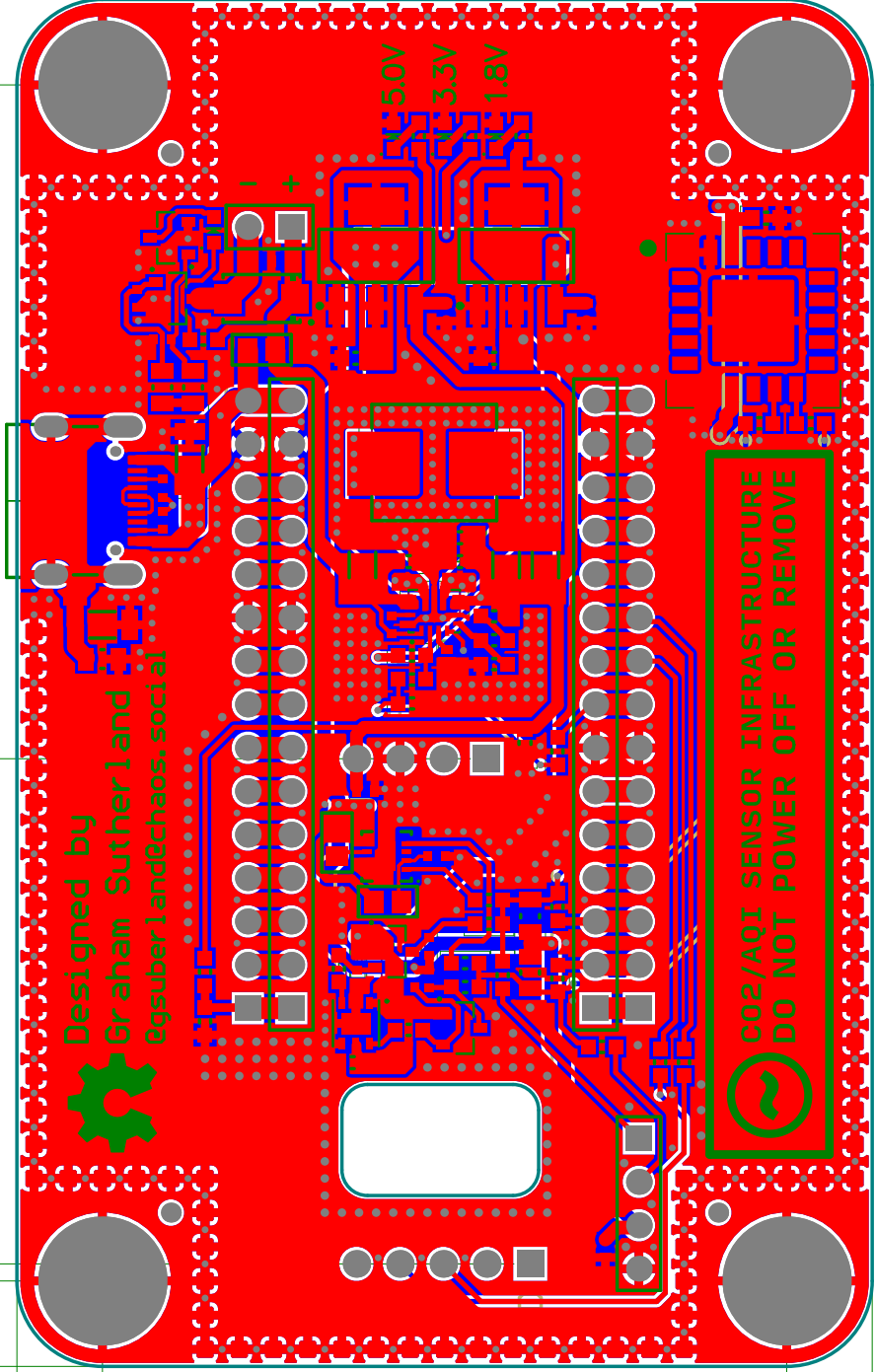


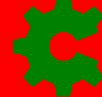
29.57

80.00

70.00



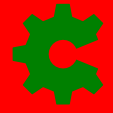
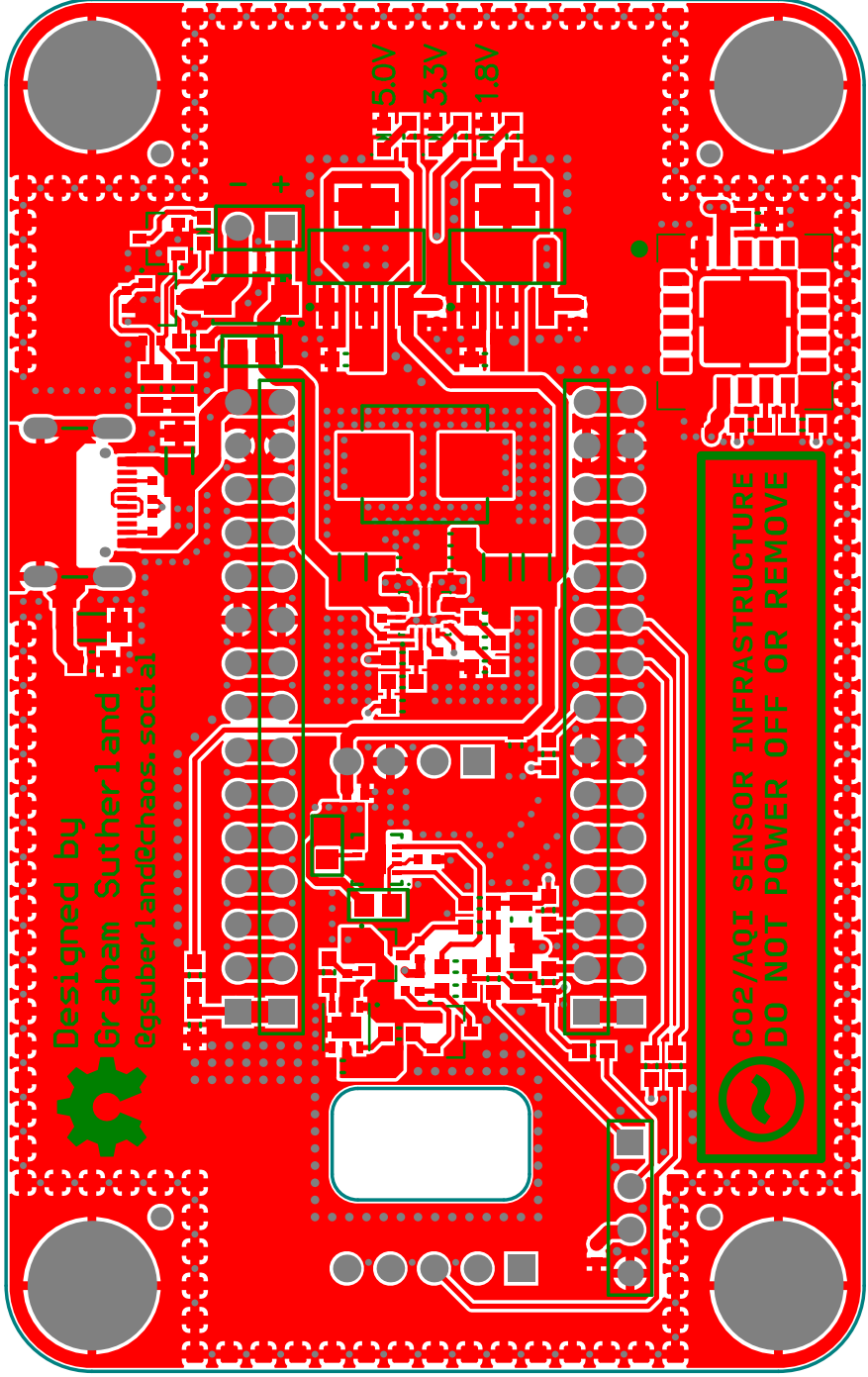
Designed by  
Graham Sutherland  
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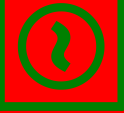
 CO2/AQI SENSOR INFRASTRUCTURE  
DO NOT POWER OFF OR REMOVE

40.00

50.00

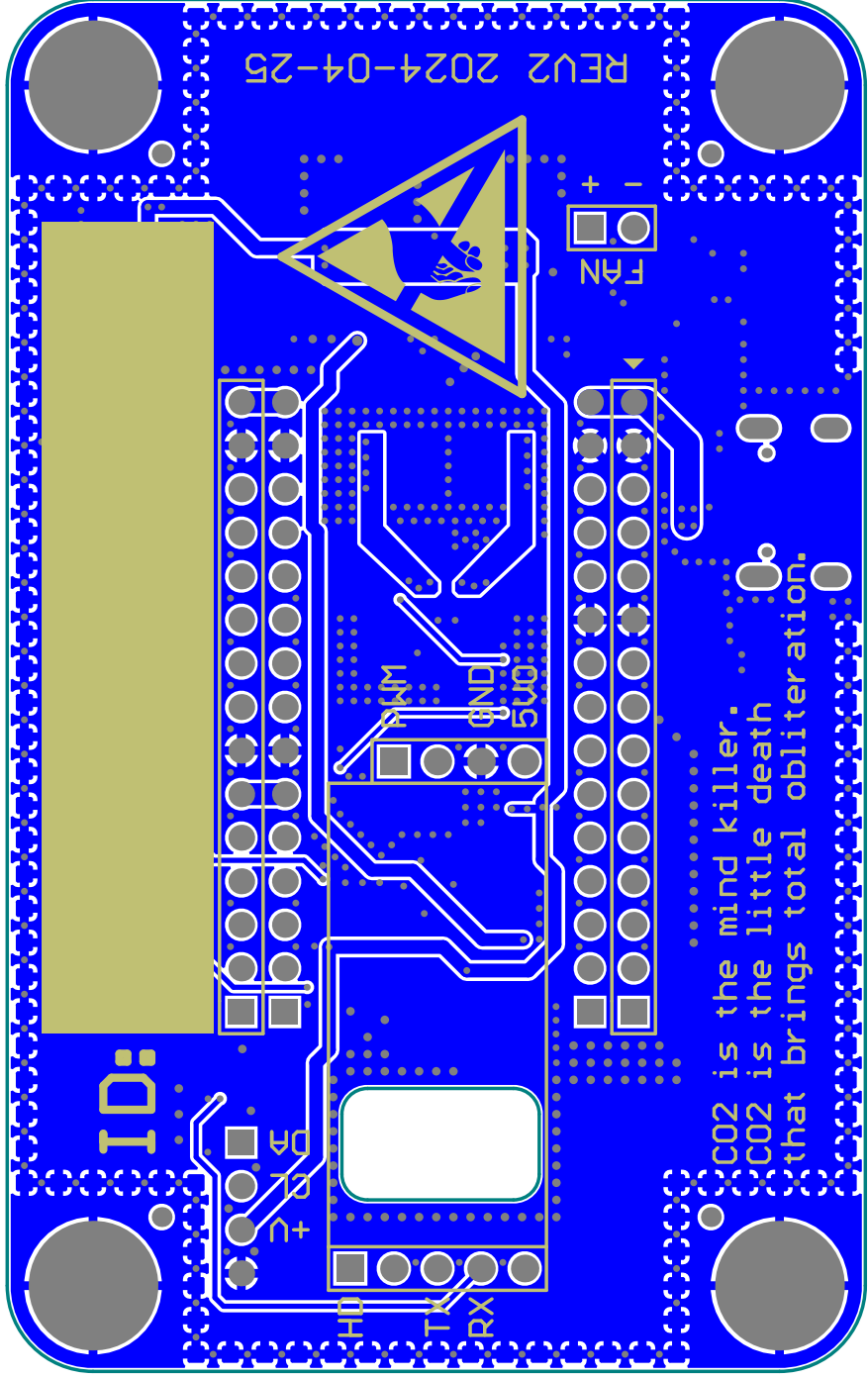


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Graham Sutherland  
@gsutherlandchaos.social



CO2/AQI SENSOR INFRASTRUCTURE  
DO NOT POWER OFF OR REMOVE

5.0V  
3.3V  
1.8V



ID:

5V

GND

5V0

TX

RX

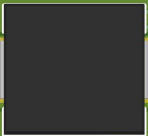
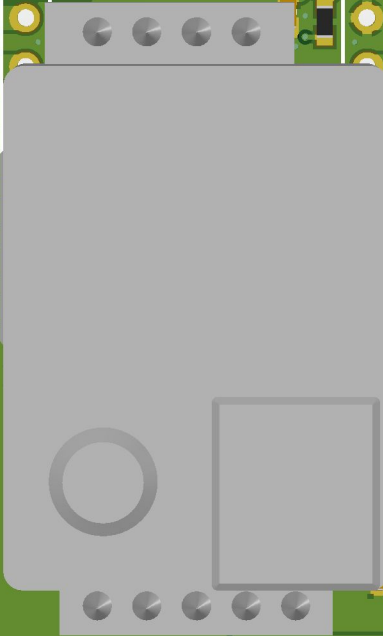
FN

REV2 2024-04-25

CO2 is the mind killer.  
CO2 is the little death  
that brings total obliteration.



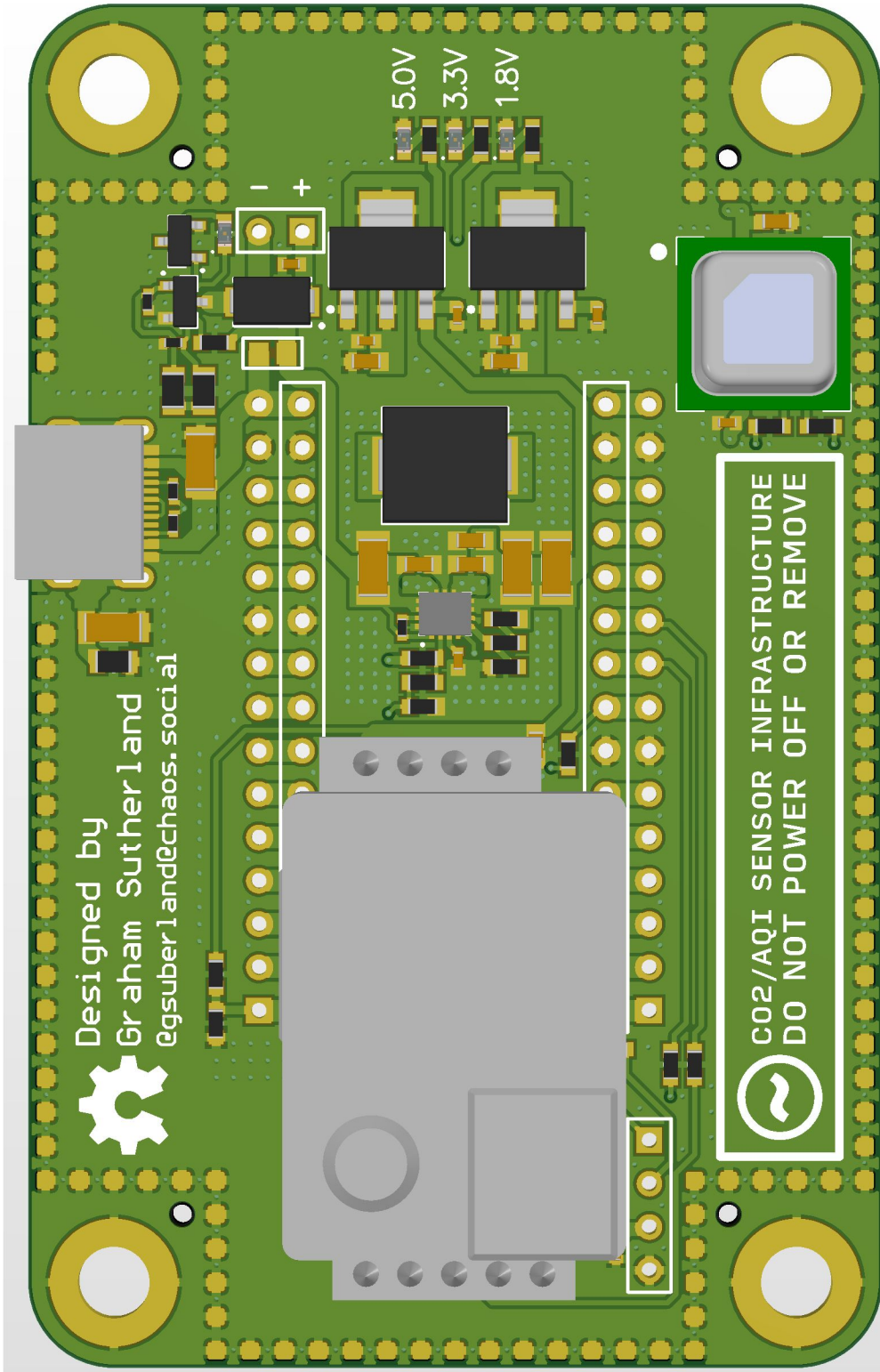
Designed by  
Graham Sutherland  
@gsutherland@chaos.social

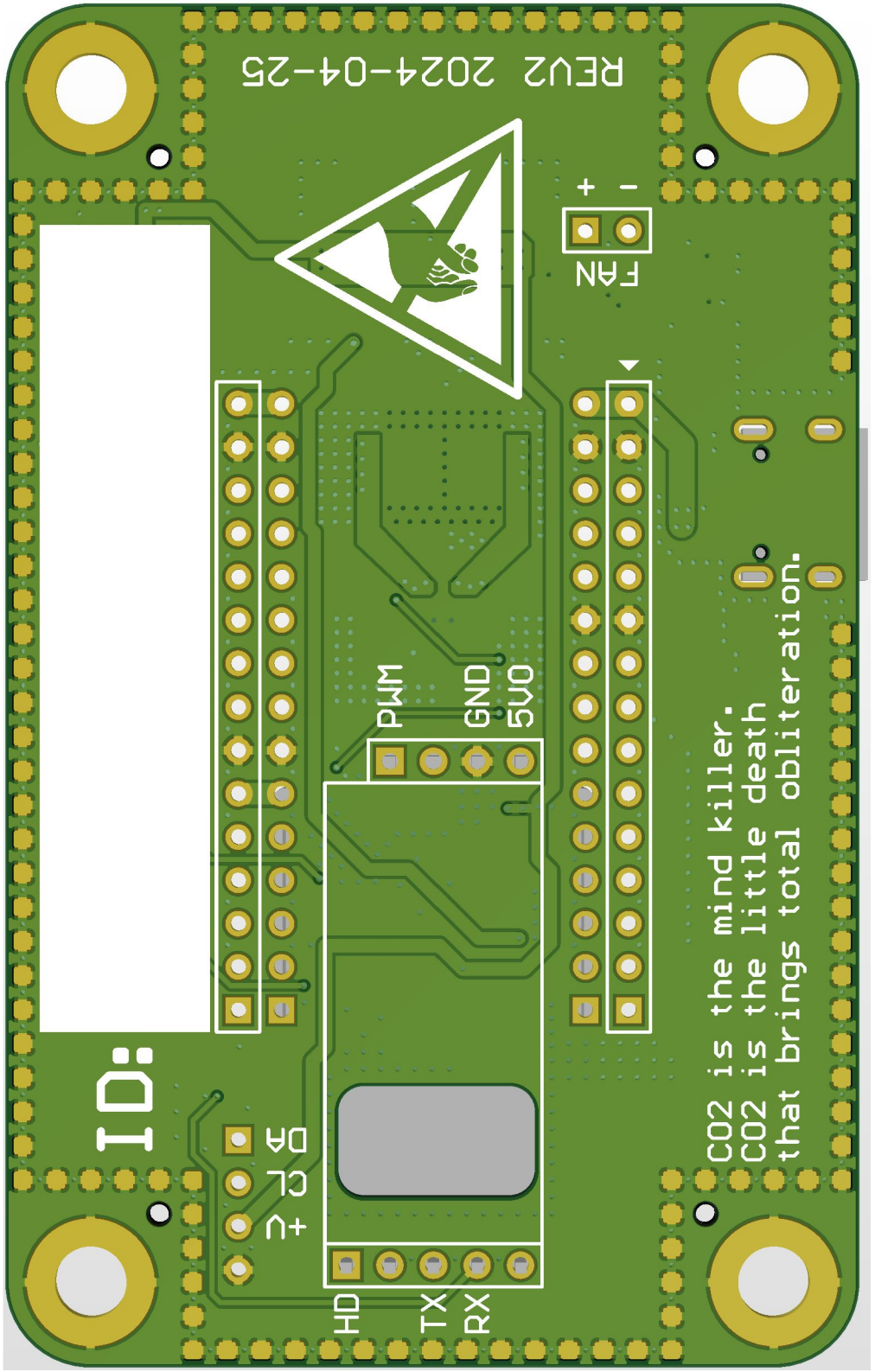


5.0V  
3.3V  
1.8V



CO2/AQI SENSOR INFRASTRUCTURE  
DO NOT POWER OFF OR REMOVE





REV2 2024-04-25



+ -  
FAN

ID:

+ CL DP

HD TX RX

PWM GND 5V0

CO2 is the mind killer.  
CO2 is the little death  
that brings total obliteration.

Comment	Description	Designator	Footprint	LibRef	Quantity	LCSC Part Number	JLPCB Part Number	Voltage Rating	Power Rating
CL05A106KA5NQNC	Capacitor, Ceramic (MLCC), 1uF, ±10%, 25V, X5R, ±10% SMD 0402	C1, C2, C3, C11, C12, C13, C15, C16, C19, C23	CAP-0402	CL05A106KA5NQNC	10		C52923	25V	
CL31A476MPHNNNE	Capacitor Ceramic, 47uF 10V X5R 1206	C4, C8, C9	CAP-1206	CL31A476MPHNNNE	3	C96123		10V	
CL10A106MA8NFRNC	Capacitor, Ceramic (MLCC), 10uF, ±20%, 25V, X5R, ±20% SMD 0603	C5, C6, C7, C14, C17, C18, C20, C24	CAP-0603	CL10A106MA8NFRNC	8		C96446	25V	
CL05B104K06NNNC	Capacitor, Ceramic (MLCC), 100nF, ±10%, 16V, X7R, ±10%, SMD 0402	C10	CAP-0402	CL05B104K06NNNC	1		C1525	16V	
CL31A106KBHNNNE	Capacitor, Ceramic (MLCC), 10uF, ±10%, 50V, X5R, ±10%, SMD 1206	C21	CAP-1206	CL31A106KBHNNNE	1		C13585	50V	
1206B102K020NT	Capacitor Ceramic, 1nF 200V X7R ±10% 1206 SMD RoHS	C22	CAP-1206	1206B102K020NT	1	C9196		2000V	
SS34	Schottky Barrier Diode 40V 550mV @3A SMA DO-214AC	D1	DO-214AC	SS34	1	C8678			
SMT Jumper (NO)	SMT Jumper, normal open (NO)	J1, J2, J3	SMT_JMP_NO	SMT Jumper (NO)	3				
MHCB06030-1R5M-C1	Inductor 1.5uH±20% 9A 18A 15mΩ Shielded SMD	L1	MHCB06030-R22M-C1	MHCB06030-1R5M-C1	1	C285811			
19-213/Y2C CQ2R2L/3T	SMD LED yellow 1.7...2.3V 0603, 19-213/Y2C CQ2R2L/3T, Everlight Electronics	LED1, LED2, LED3, LED4	LED0603	19-213/Y2C CQ2R2L/3T	4				60mW
Header 15	Header, 15-Pin	P1, P2, P6, P7	HDR1X15	Header 15	4				
Header 5	Header, 5-Pin	P3	HDR1X5	Header 5	1				
Header 4	Header, 4-Pin	P4, P5	HDR1X4	Header 4	2				
Header 2	Header, 2-Pin	P8	HDR1X2	Header 2	1				
TYPE-C-16PIN-2MD(073)	Connector, USB Type C, 5A, 16P, Right Angle, SMD, RoHS	P9	SHOU_HAN_TYPE_C.1 6P_073	TYPE-C-16PIN-2MD(073)	1	C2765186			
AC3400A	MOSFET N-CH 30V 5.7A 3-Pin SOT-23	Q1, Q2, Q3, Q4	SOT23-3_HD	AC3400A	4	C20917			
0603WAF2000T5E	Resistor, 200Ω, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R1, R9	RES-0603	0603WAF2000T5E	2		C8218	75V	100mW
0603WAF5103T5E	Resistor, 510kΩ, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R2	RES-0603	0603WAF5103T5E	1		C23192	75V	100mW
0603WAF1003T5E	Resistor, 100kΩ, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R3, R6	RES-0603	0603WAF1003T5E	2		C25803	75V	100mW
0402WGF1002TCE	Resistor, 10kΩ, ±1%, 62.5mW, 50V, ±100ppm/°C, -55°C~+155°C, SMD 0402	R4, R19, R20, R27, R28, R32, R33	RES-0402	0402WGF1002TCE	7		C25744	50V	62.5mW
0603WAF1302T5E	Resistor, 13kΩ, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R5	RES-0603	0603WAF1302T5E	1		C22797	75V	100mW
0603WAF4702T5E	Resistor, 47kΩ, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R7, R8	RES-0603	0603WAF4702T5E	2		C25819	75V	100mW
0805W8F4701T5E	Resistor, 4.7kΩ ±1% 1/8W 0805 ROHS	R10, R11	RES-0805	0805W8F4701T5E	2		C17673		
0603WAF0000T5E	Resistor, 0Ω 1/10W ±1% 75V -55°C~+155°C 0603 Surface Mount RoHS	R12, R15, R18, R21, R22, R23, R24, R25, R29, R30, R31, R34, R40, R41, R42	RES-0603	0603WAF0000T5E	15		C21189		
0603WAF9102T5E	Resistor, 91kΩ, ±1%, 100mW, 75V, ±100ppm/°C, -55°C~+155°C, SMD 0603	R13, R14	RES-0603	0603WAF9102T5E	2		C23265	75V	100mW
0805W8F100JT5E	Resistor, 10Ω, ±1%, 125mW, 150V, ±200ppm/°C, -55°C~+155°C, SMD 0805	R16, R17	RES-0805	0805W8F100JT5E	2		C17415	150V	125mW
0402WGF4701TCE	Resistor, 4.7kΩ, ±1%, 62.5mW, 50V, ±100ppm/°C, -55°C~+155°C, SMD 0402	R26	RES-0402	0402WGF4701TCE	1		C25900	50V	62.5mW
0603WAF1000T5E	Resistor, 100Ω, ±1%, 100mW, 75V, ±200ppm/°C, -55°C~+155°C, SMD 0603	R35	RES-0603	0603WAF1000T5E	1		C22775	75V	100mW
0603WAF470KT5E	Resistor, 4.7Ω, ±1%, 100mW, 75V, ±400ppm/°C, -55°C~+155°C, SMD 0603	R36	RES-0603	0603WAF470KT5E	1		C23164	75V	100mW
0805W8F4703T5E	Resistor, 470kΩ, ±1%, 125mW, 150V, ±100ppm/°C, -55°C~+155°C, SMD 0805	R37	RES-0805	0805W8F4703T5E	1		C17709	150V	125mW
0402WGF5101TCE	Resistor, 5.1kΩ, ±1%, 62.5mW, 50V, ±100ppm/°C, -55°C~+155°C, SMD 0402	R38, R39	RES-0402	0402WGF5101TCE	2		C25905	50V	62.5mW
TPS33070RNM/R	Wide input voltage (2V-16V) buck-boost converter 15-V QFN HR-40 to 125	U1	VREG_TPS33070RNM/R	TPS33070RNM/R	1		C109322		
SH-T35-DISB	SENSOR HUM/TEMP 5V I2C 1.5% SMD	U2	SH-T35-DISB-DFN8	SH-T35-DISB	1	C90161			
AMS1117-3.3	3.3V 1A Low Dropout Voltage Regulator	U3	SOT223-AMS1117	AMS1117-3.3	1	C6186			
AMS1117-1.8	Voltage Regulator, LDO, Fixed 1.8V/1A	U4	SOT223-AMS1117	AMS1117-1.8	1	C6185			
SGP30-2.5K	Sensor, Air Quality, TVOC, CO2eq, 1.8V/60mA (48mA typ) DFN6 RoHS	U5	SGP30-2.5K_SBN	SGP30-2.5K	1	C514454			
SCD40-D-R2	CO2 Gas Sensor	U6	SCD4x	SCD40-D-R2	1	C3659421			

# Design Rules Verification Report

Filename : N:\Electronics\ALTIIUM\CO2SensorBoardMk2\CO2SensorBoardMk2\CO2SensorBoardMk2.PcbDoc

Warnings 0  
Rule Violations 0  
Waived Violations 2

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=0.2mm) (All),(All)	0
Clearance Constraint (Gap=0.203mm) (OnLayer('Top Layer')),(All)	0
Clearance Constraint (Gap=0.203mm) (OnLayer('Bottom Layer')),(All)	0
Short-Circuit Constraint (Allowed=No) (All),(All)	0
Un-Routed Net Constraint ( All )	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=0.089mm) (Max=2.54mm) (Preferred=0.381mm) (All)	0
Power Plane Connect Rule(Direct Connect )(Expansion=0.25mm) (Conductor Width=0.254mm) (Air Gap=0.127mm)	0
Minimum Annular Ring (Minimum=0.3mm) (All)	0
Minimum Annular Ring (Minimum=0.05mm) (IsVia)	0
Hole Size Constraint (Min=0.2mm) (Max=6.35mm) (All)	0
Hole Size Constraint (Min=0.2mm) (Max=1mm) (IsVia)	0
Hole To Hole Clearance (Gap=0.254mm) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0.1mm) (All),(All)	0
Silk To Solder Mask (Clearance=0.1mm) (IsPad),(All)	0
Silk to Silk (Clearance=0.1mm) (All),(All)	0
Net Antennae (Tolerance=0mm) (All)	0
Board Clearance Constraint (Gap=0mm) (All)	0
Room C O2SensorBoardMk2 (Bounding Region = (1mm, 28mm, 149mm, 125mm)	0
Height Constraint (Min=0mm) (Max=25.4mm) (Preferred=12.7mm) (All)	0
Total	0

Waived Violations	
Un-Routed Net Constraint ( All )	2
Total	2

Un-Routed Net Constraint ( All )	
Un-Routed Net Constraint: Net ESP_3V3 Between Pad P1-11(66.04mm,86.36mm) on Multi-Layer And Pad P2-15(83.82mm,96.52mm) on Multi-Layer	
Un-Routed Net Constraint: Net ESP_3V3 Between Pad P2-6(83.82mm,73.66mm) on Multi-Layer And Pad P2-15(83.82mm,96.52mm) on Multi-Layer	



# Electrical Rules Check Report

Class	Document	Message
		Successful Compile for