

A

B

C

D

A

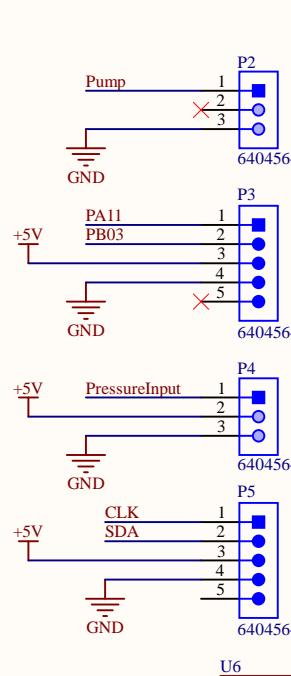
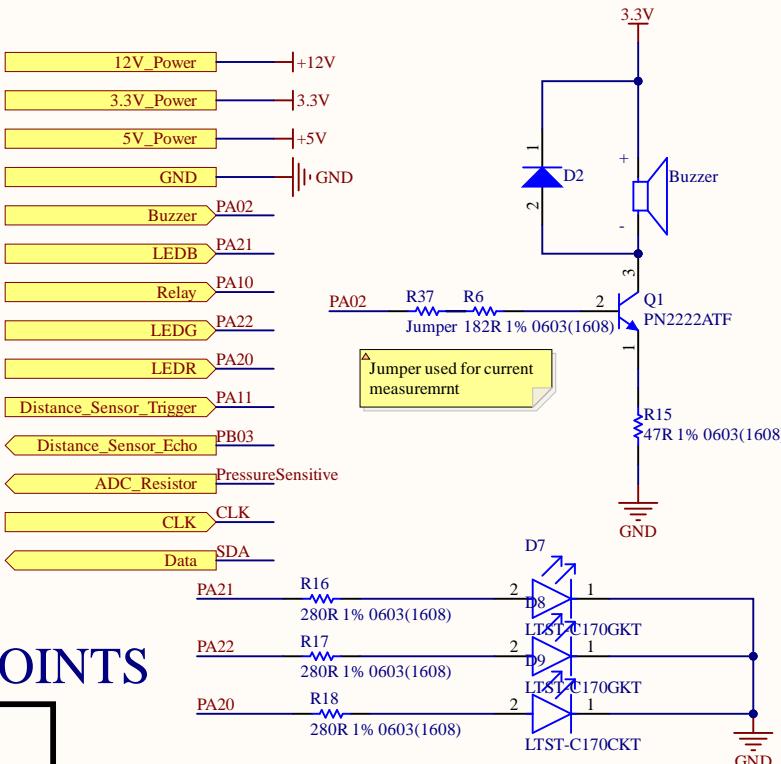
B

C

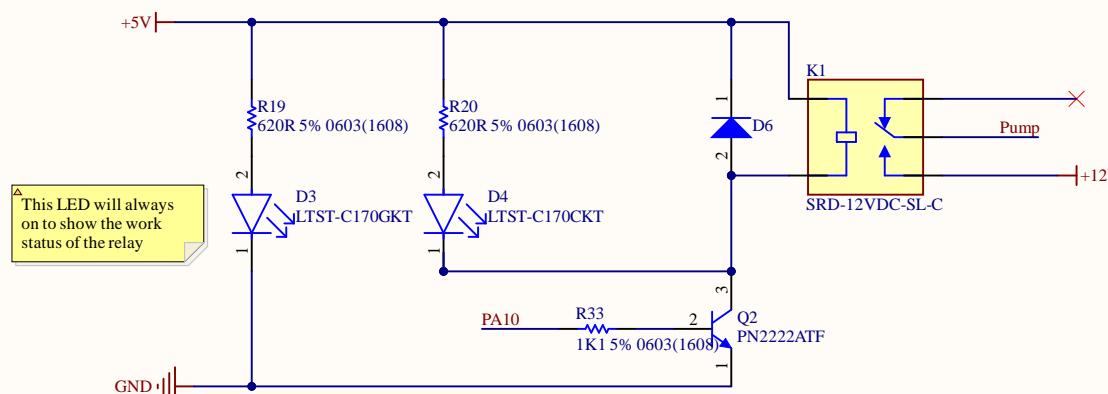
D

TEST POINTS

TP17	PressureInput
0.1" Pad	
TP18	PressureSensitive
0.1" Pad	



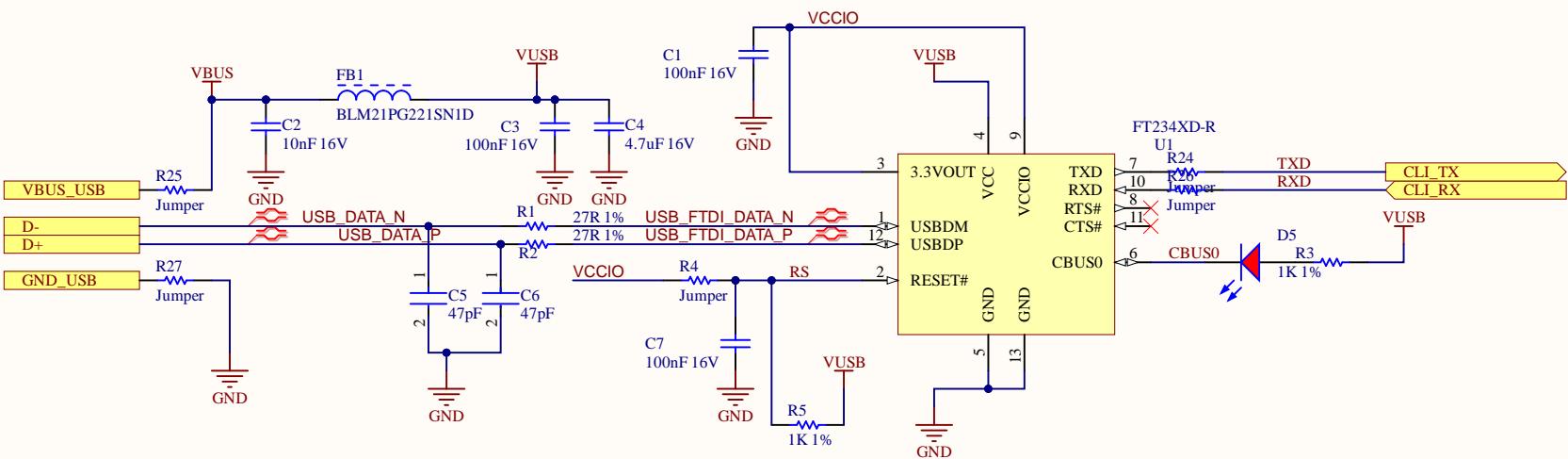
For P2, Pump is connected to the water pump (MPN: 1150)
For P3, PA11 is connected to distance sensor trigger (MPN: 4007); PB03 is connected to the distance sensor echo.
For P4, it is connected to connected to Pressure sensitive resistor (MPN: SEN-09375)



Title Sensors and Actuators Schematics of Whiskeypedia		
Size A4	Number Water Dispenser	Revision 1.2.2
Date: 3/12/2022		Sheet of Sensors and Actuators
File: D:\Upenn\..\ActuatorSensor.SchDoc		Drawn By: Xiyue Luo & Shuyi Ying

A

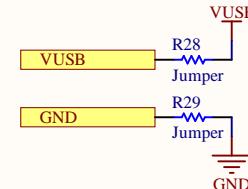
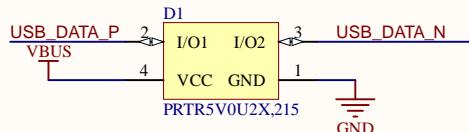
FTDI CHIP



△ Schematics follows Fig. 6.1 of Datasheet

△ Jumpers used for current measurement (remove and use a multimeter in current mode)

USB ESD PROTECTION

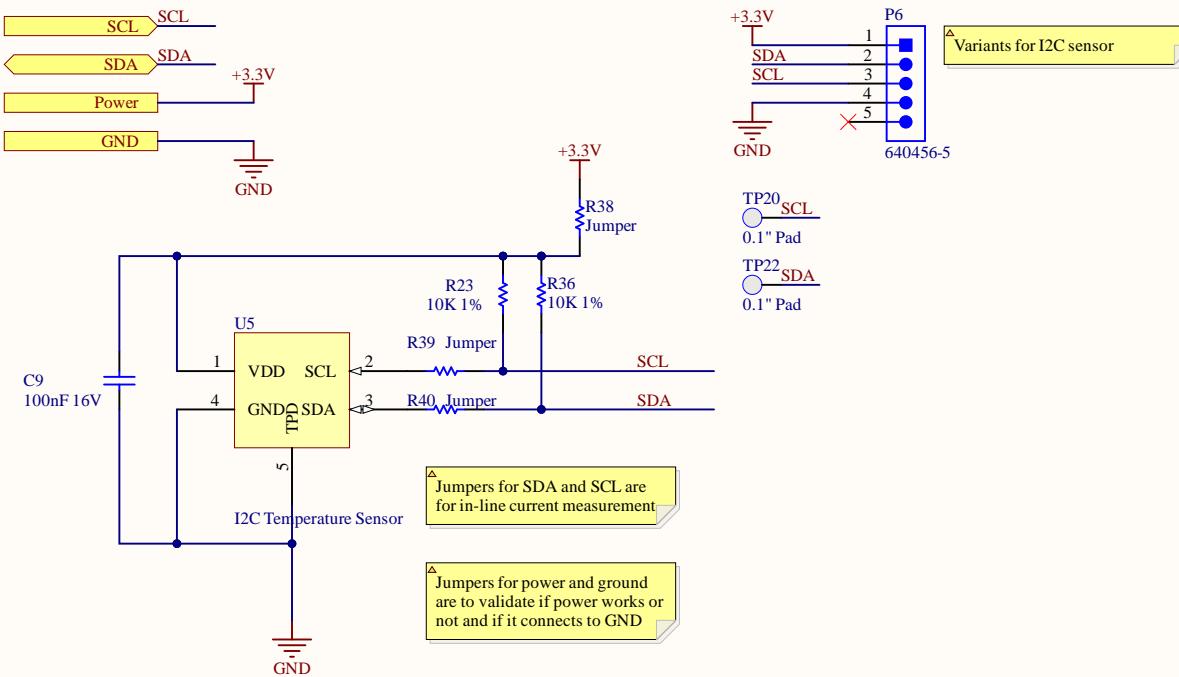


Title
FTDI Schematics of Whiskeypedia

Size	Number	Revision
A	Water Dispenser	1.2.2
Date:	3/12/2022	Sheet of FTDI
File:	D:\Upenn...\FTDI.SchDoc	Drawn By: Xiyue Luo & Shuyi Ying

A

A



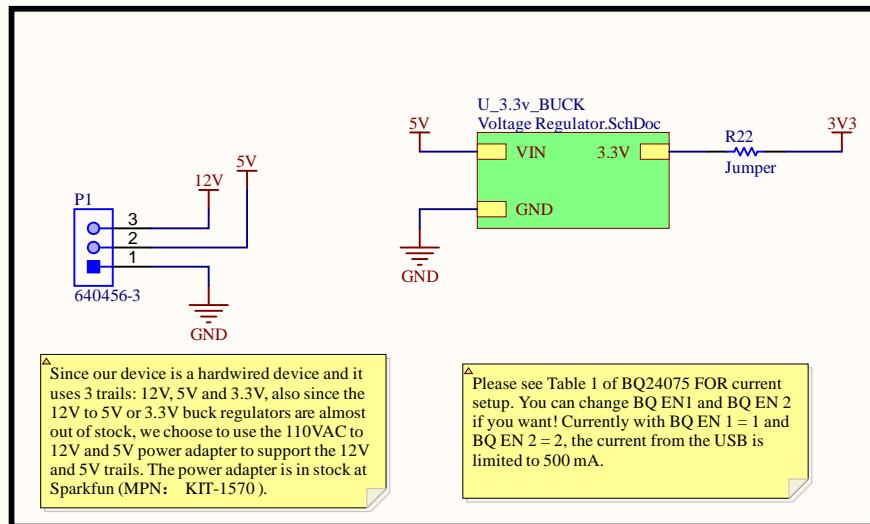
Water Dispenser

Water Dispenser

Title
I2C Temperature Sensor Schematics of Whiskeypedia

Size	Number	Revision
A4	Water Dispenser	1.2.2
Date:	3/12/2022	Sheet of I2C Temperature Sensor
File:	D:\Upenn\..\\I2CTemperature.SchDoc	Drawn By: Xiyue Luo & Shuyi Ying

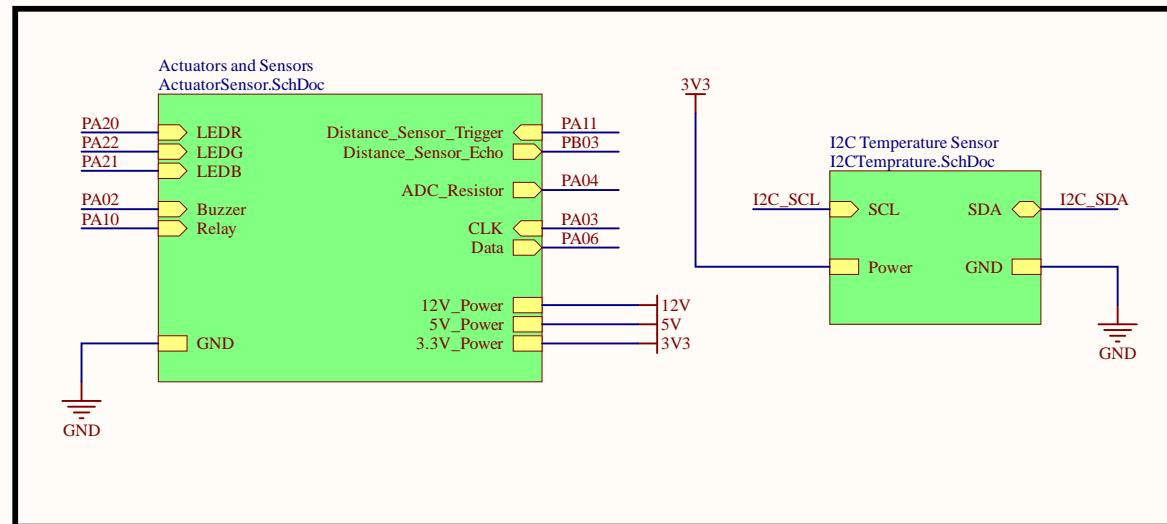
POWER SUPPLY



Since our device is a hardwired device and it uses 3 trials: 12V, 5V and 3.3V, also since the 12V to 5V or 3.3V buck regulators are almost out of stock, we choose to use the 110VAC to 12V and 5V power adapter to support the 12V and 5V trials. The power adapter is in stock at SparkFun (MPN: KIT-1570).

A Please see Table 1 of BQ24075 FOR current setup. You can change BQ EN1 and BQ EN if you want! Currently with BQ EN 1 = 1 and BQ EN 2 = 2, the current from the USB is limited to 500 mA.

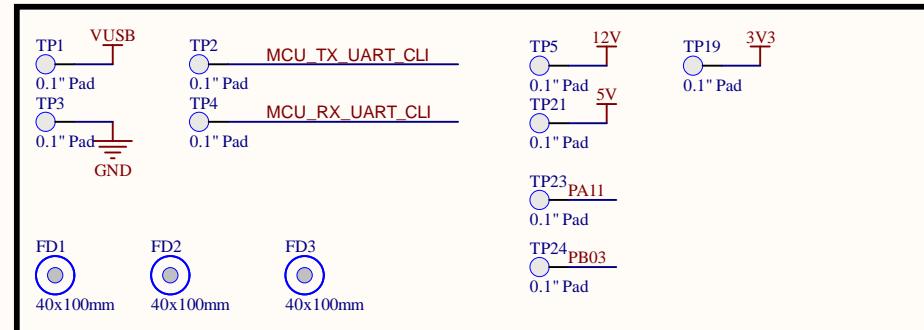
SENSORS AND ACTUATORS



Notes

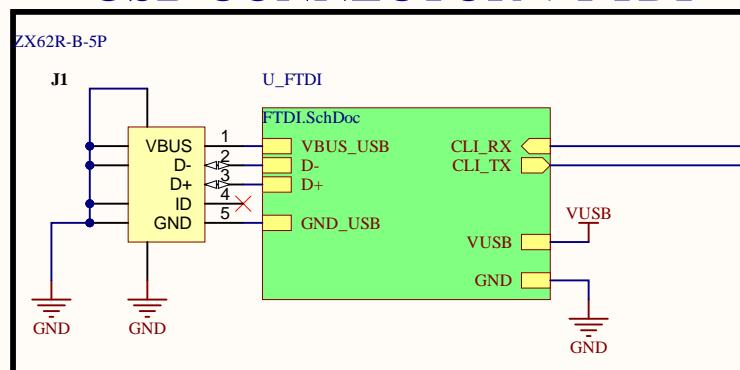
Section to add version notes or any other general information

TEST POINTS AND FIDUCIALS



3V3 LDO. iF USING for SD CARD, consider connecting the EN pin to the MCU so you can turn off the SD Card when in sleep.

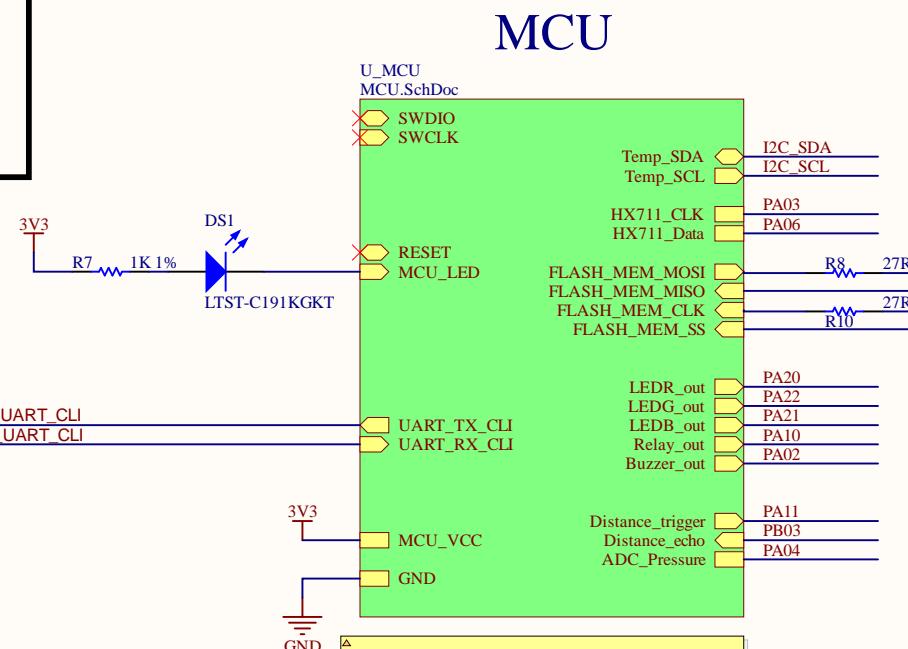
USB CONNECTOR + FTDI



NOT

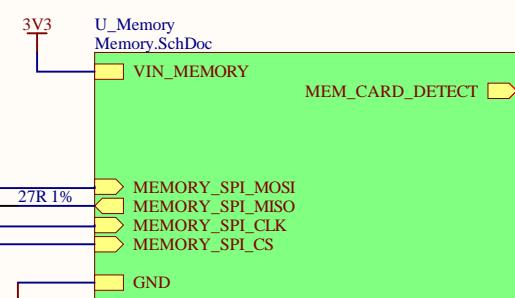
The FTDI Chip is an useful chip that allows us to convert USART messages into USB signals. It allows us to connect the MCU directly to the USB port of a computer and use the serial terminal (it is the same bridge used on the SAMW25 Xplained Board). The FTDI device also contains protection circuitry for the USB.

MCU



▲ Note: Only the required pins are exposed for the MCU. Remember to add the ports for the pins you need to be exposed!

SD CARD MEMORY



Note:
This is the SD Card, which we will use for our project.
PLEASE DO NOT ERASE! Connect a 3V3 rail to this SD Card.

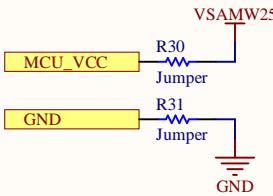
The SD CARD needs 100 mA (worst case, most common is 30mA). If your existing power supply cannot handle this added current, please use the 3V3 LDO found in this project to power your SD Card.

Title			
Main Schematics of Whiskeypedia			
Size	Number	Revision	
B	Water Dispenser	1.2.2	
Date:	3/12/2022	Sheet of	Main Schematic
File:	D:\Upenn\.\MAIN.SchDoc	Drawn By:	Xiyue Luo & Shuyi Ying

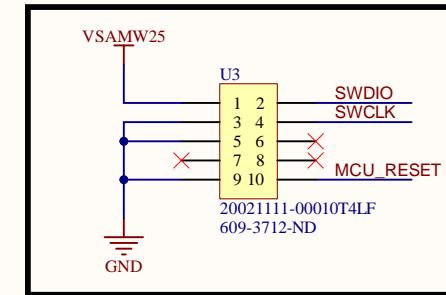
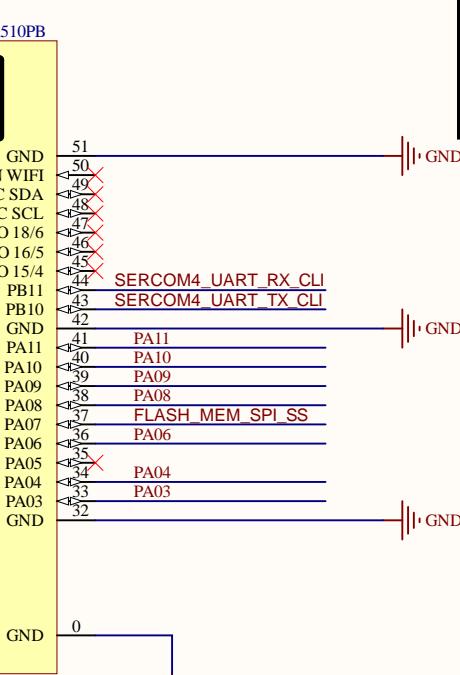
A

A

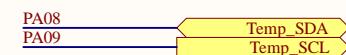
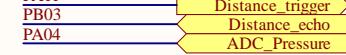
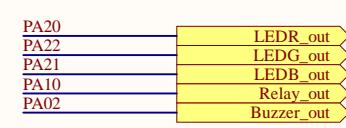
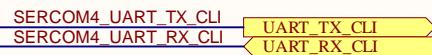
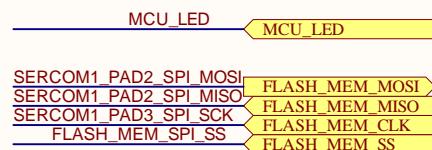
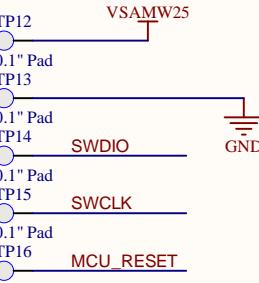
Jumpers for power and ground
are to validate if power works or
not and if it connects to GND

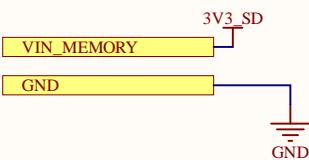
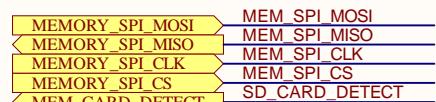


U4

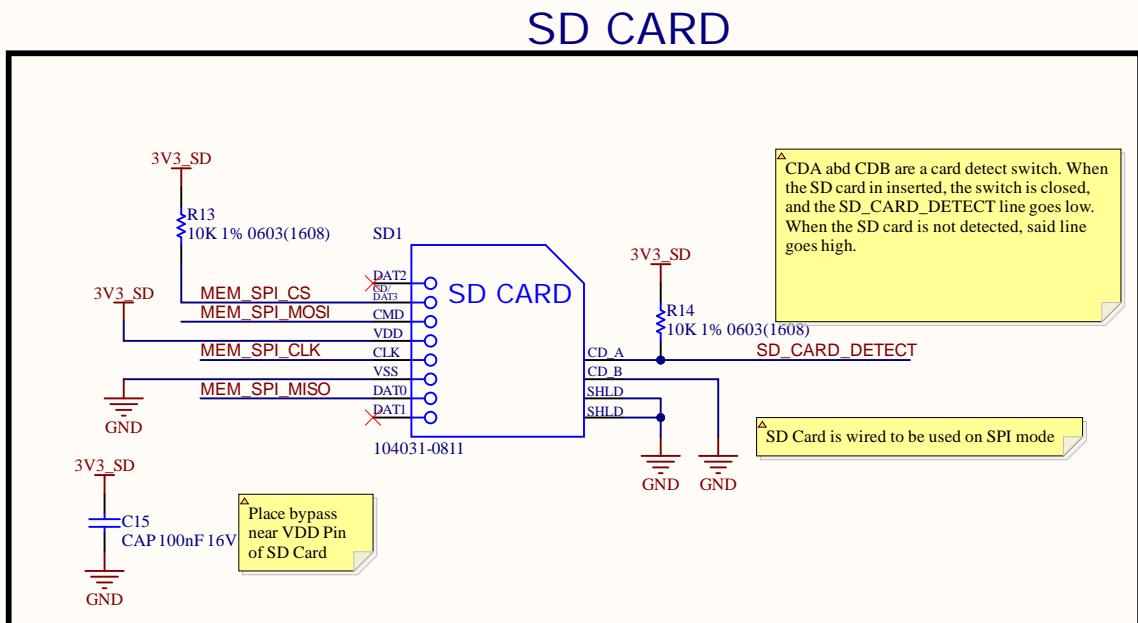
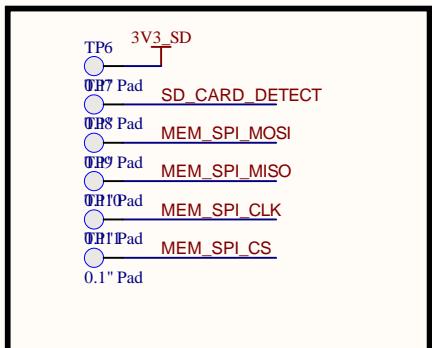


DEBUGGER PORT





TESTPOINTS



Title

Memory Schematics of Whiskeypedia

Size
ANumber
Water DispenserRevision
1.2.2

Date: 3/12/2022

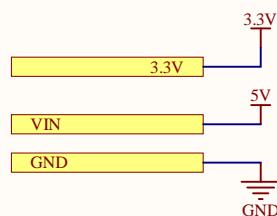
Sheet of Memory

File: D:\Upenn\..\Memory.SchDoc

Drawn By: Xiyue Luo & Shuyi Ying

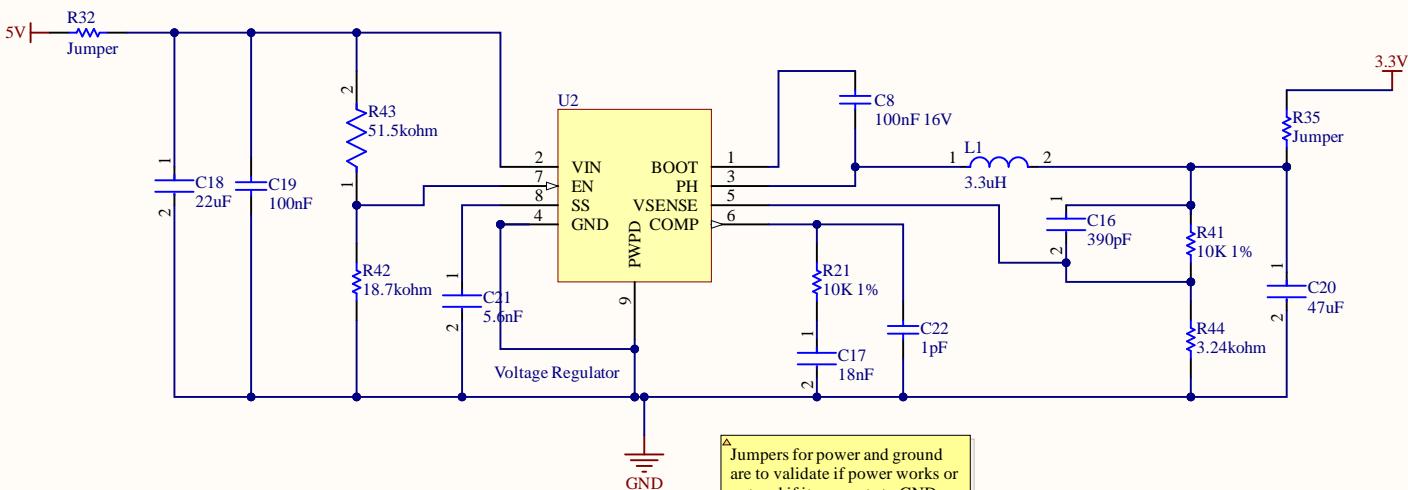
A

A



B

B



VIN: 4.8V to 5.2V
OUT: 3.3V up to 5A

C

C

Title

Power Schematics of Whiskeypedia

Size
ANumber
Water DispenserRevision
1.2.2

Date: 3/12/2022

Sheet of Voltage Regulator

File: D:\Upenn\...\Voltage Regulator.SchDoc

Drawn By: Xiyue Luo & Shuyi Ying

Manufacturing Notes:

Four (4) Layers

Dimensions: 60mm * 60mm

Thickness: 0.082"

Material: FR4

All layers are unmirrored - should be able to "see straight through"

Scoring: none

Finishes Thickness: 0.062 inches

Surface Finish: ENEPIG

Gold Fingers: No

Outer Layer Finish Coppers: 1Oz

Inner Copper : 0.5 Oz Inner

Number of Holes Per Board: 221

Minimum Hole Size: 0.008 Inches or more

Minimum Trace(Outer layer): 0.006Inches

Minimum Space(Outer layer): 0.006 Inches

Minimum Trace(inner layer): 0.006 Inches

Minimum Space(inner layer): 0.006 inches

Solder Mask: Yes

Solder Mask Sides: Top and Bottom

Solder Mask Color :Green

Solder Mask Type: LPI

Solder Mask Finish: Standard (Semi-Gloss)

Silk Screen: Yes

Silk Screen Sides: Both

Silk Screen Color: White

Internal Slots:None

Counter Sink: No

Counter Bore: No

Edge Plating: No

Route and Retain: Yes

Scoring: Yes

Controlled Impedance: None

Controlled Dielectric: No

Thru-Hole Via in Pad: Yes

Thickness Tolerance: Plus or Minus 10%

Logo Allowed: In copper or silk screen

UL Marking Required: Yes

Rohs Markinh: Yes

ITAR?: No

Layer Stack Legend

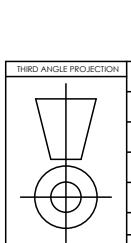
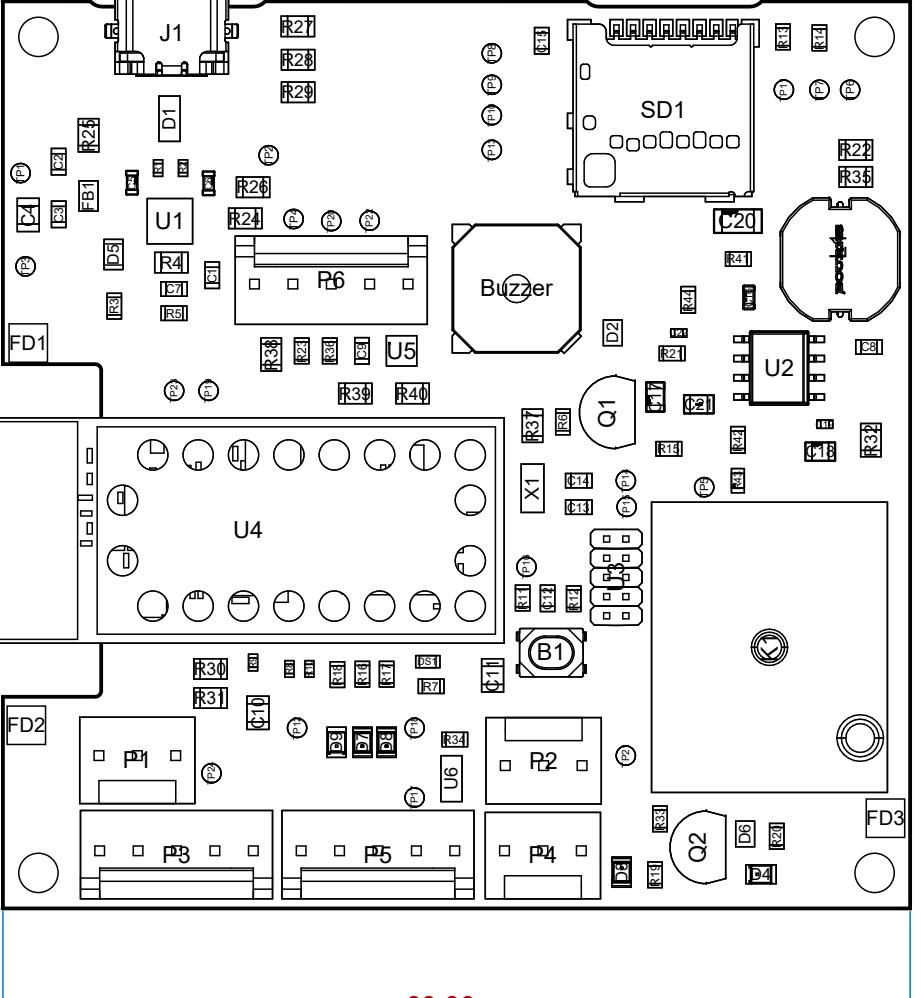
Material	Layer	Thickness	Dielectric Material	Type	Gerber
Surface Material	Top Overlay			Legend	GTO
Copper	Top Solder	0.03mm	Solder Resist	Solder Mask	GTS
	Top Layer	0.04mm		Signal	GTL
Prepreg		0.33mm	PP-006	Dielectric	
CF-004	GroundPlane	0.02mm		Signal	G1
Core		0.71mm	Core-009	Dielectric	
CF-004	PowerPlane	0.02mm		Signal	G2
Prepreg		0.33mm	PP-006	Dielectric	
Copper	Bottom Layer	0.04mm		Signal	GBL
Surface Material	Bottom Solder	0.03mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 1.53mm

REV STATUS OF SHEETS		REV					
DOC_NO	=DOC_NO_ASSY_DWG						
ZONE	REV						

REVISIONS				
DESCRIPTION	DATE	APPROVED		

View from Top side (Scale 2:1)



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEE

DESIGNER: =PCB_DESIGNER =PCB_DESIGNE

CHECKER: =PCB_CHECKER =PCB_CHECKE

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

PCB DOC: =PCB_DWG_NO

APPLICATION

Altium
TM

=Address1

=Address2

=Address3

=Address4

DESIGN ITEM: .Item

DESIGN ITEM REVISION: .ItemRevision

=PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO: B =CAGE_CO

REV: 1

FILE NAME: StarterBoardFabrication.PCBDwf

SCALE: 1 OF 12

A

B

C

D

E

F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

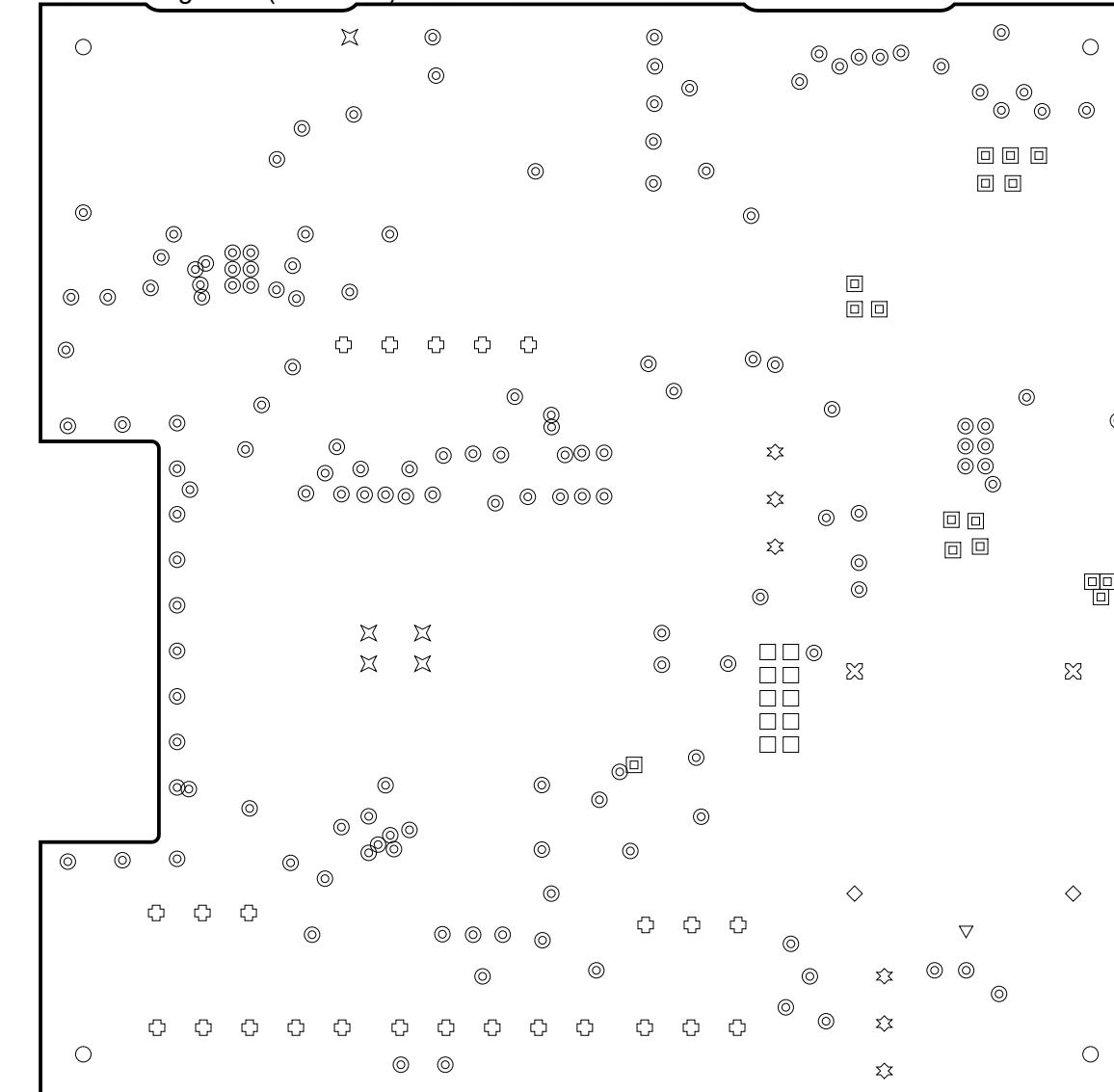
REV STATUS OF SHEETS		REV								DWG NO: =DOC_NO_ASSY_DWG	REV: .lfe
SHEET										ZONE	REV

REVISIONS		
DESCRIPTION	DATE	APPROVED

Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
○	151	0.20mm	Plated	
□	16	0.25mm	Plated	
✗	5	0.28mm	Plated	
□	10	0.65mm	Plated	
◇	2	0.80mm	Plated	
✧	6	1.05mm	Plated	
✗	2	1.20mm	Plated	
✚	24	1.27mm	Plated	
▽	1	1.30mm	Plated	
○	4	2.70mm	Plated	
221 Total				

Drill Drawing View (Scale 5:2)



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEER

DESIGNER: =PCB_DESIGNER =PCB_DESIGNER

CHECKER: =PCB_CHECKER =PCB_CHECKER

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO

APPLICATION

Altium
TM
=Address1
=Address2
=Address3
=Address4

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

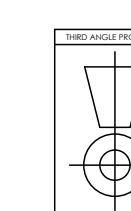
=PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO:

B =CAGE_CO

REV:



APPROVALS	DATE
ENGINEER: =PCB_ENGINEER	=PCB_ENGINEER
DESIGNER: =PCB_DESIGNER	=PCB_DESIGNER
CHECKER: =PCB_CHECKER	=PCB_CHECKER
Reference Documents	
BOM DOC: =DOC_NO_BOM	
ASSY DOC: =DOC_NO_FAB_DWG	
SCH DOC: =DOC_NO_SCH_DWG	
NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO	
APPLICATION	

DWG NO:
=DOC_NO_ASSY_.lfeREV:
.lfe

FILE NAME: StarterBoardFabrication.PCBDwf SHEET: 2 OF 12

A

B

C

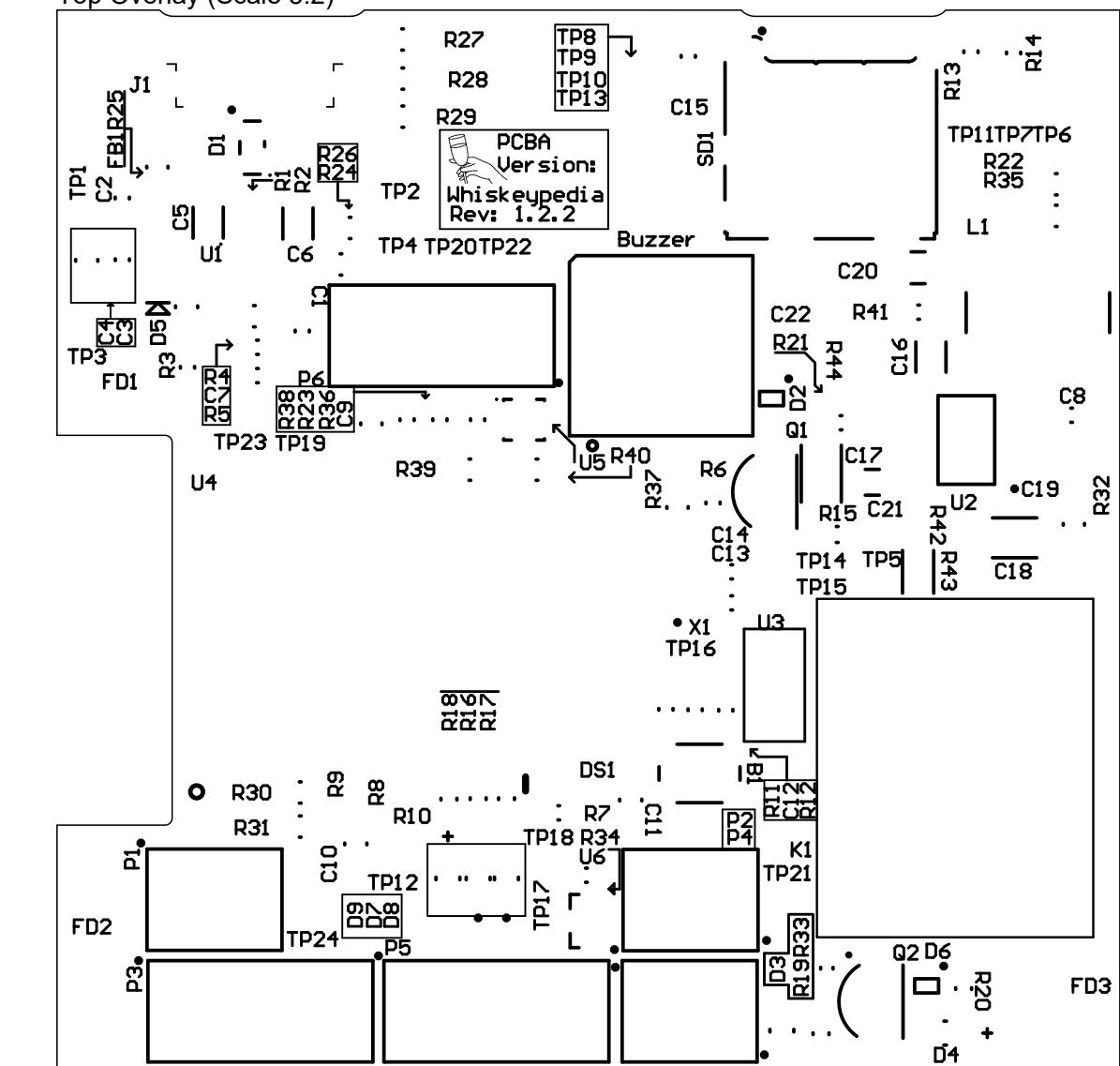
D

E

F

.lt

Top Overlay (Scale 5:2)

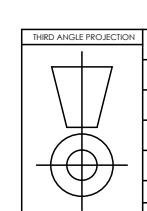


PART NO. BCB PART NUMBER

PART NO.: =PCB_PART_NUMBER				
APPROVALS	DATE			
ENGINEER: =PCB_ENGINEER	=PCB_ENGINEER	=Address1 =Address2 =Address3 =Address4		
DESIGNER: =PCB_DESIGNER	=PCB_DESIGNER			
CHECKER: =PCB_CHECKER	=PCB_CHECKER	DESIGN ITEM: .Item	DESIGN ITEM REVISION: .ItemRevision	
Reference Documents				
BOM DOC: =DOC_NO_BOM	TITLE: =PCB_TITLE_1			
ASSY DOC: =DOC_NO_FAB_DWG	=PCB_TITLE_2			
SCH DOC: =DOC_NO_SCH_DWG	SIZE: B	CAGE CODE: =CAGE_CO	DWG NO:	REV:
PCB DOC: =PCB_DWG_NO	SCALE:	FILE NAME: StarterBoardFabrication.PCDBdwf	SHEET: 3	OF 12

Altium

=Address1
=Address2
=Address3
=Address4



A

B

C

D

E

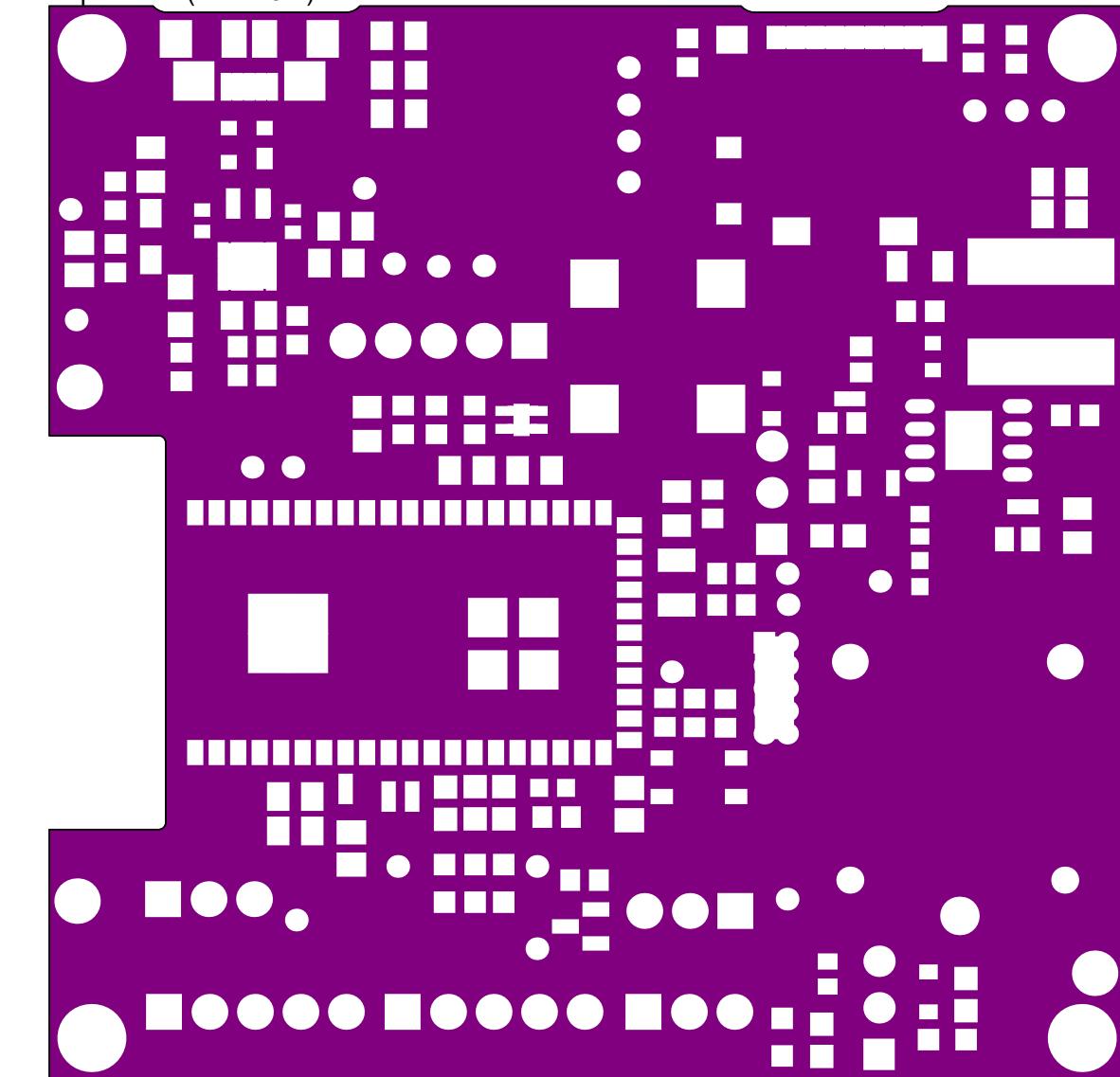
F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

DWG NO:		=DOC_NO_ASSY_DWG	REV:	.lfe
REV STATUS OF SHEETS	SHEET			

REVISIONS		
DESCRIPTION	DATE	APPROVED

Top Solder (Scale 5:2)



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEER

DESIGNER: =PCB_DESIGNER =PCB_DESIGNER

CHECKER: =PCB_CHECKER =PCB_CHECKER

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO

APPLICATION

=Address1

=Address2

=Address3

=Address4

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO:

B =CAGE_CO REV:

FILE NAME: StarterBoardFabrication.PCBDwf SHEET: 4 OF 12

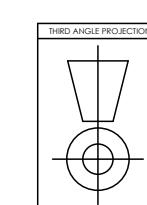
Altium™

=Address1

=Address2

=Address3

=Address4



.lt

DWG NO:
=DOC_NO_ASSY_.lfe

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

A

B

C

D

E

F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

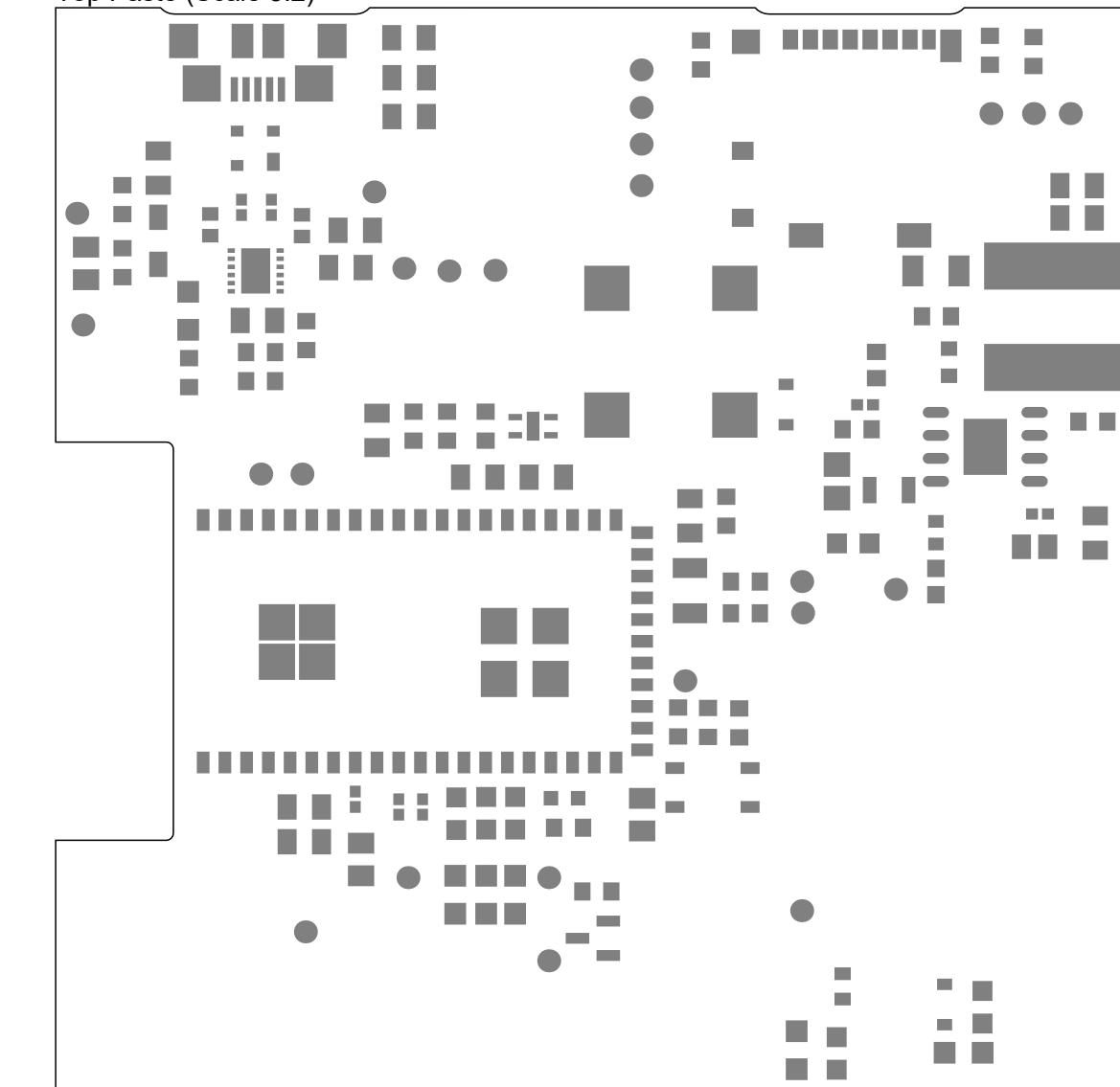
REV STATUS OF SHEETS		REV						DWG NO: =DOC_NO_ASSY_DWG	REV: .lfe
SHEET									

REVISIONS		DESCRIPTION	DATE	APPROVED

1

1

Top Paste (Scale 5:2)



2

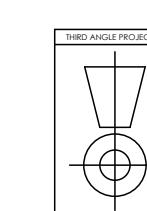
2

3

3

4

4



PART NO: =PCB_PART_NUMBER

APPROVALS

DATE

ENGINEER:

=PCB_ENGINEER

=PCB_ENGINEER

DESIGNER:

=PCB_DESIGNER

=PCB_DESIGNER

CHECKER:

=PCB_CHECKER

=PCB_CHECKER

Reference Documents

BOM DOC:

=DOC_NO_BOM

ASSY DOC:

=DOC_NO_FAB_DWG

SCH DOC:

=DOC_NO_SCH_DWG

NEXT ASSY

USED ON

PCB DOC:

=PCB_DWG_NO

APPLICATION

AltiumTM

=Address1

=Address2

=Address3

=Address4

DESIGN ITEM: .Item

DESIGN ITEM REVISION: .ItemRevision

TITLE: .

=PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO:

B =CAGE_CO

REV:

SCALE: FILE NAME: StarterBoardFabrication.PCBDwf

SHEET: 5 OF 12

A

B

C

D

E

F

A

B

C

D

E

F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

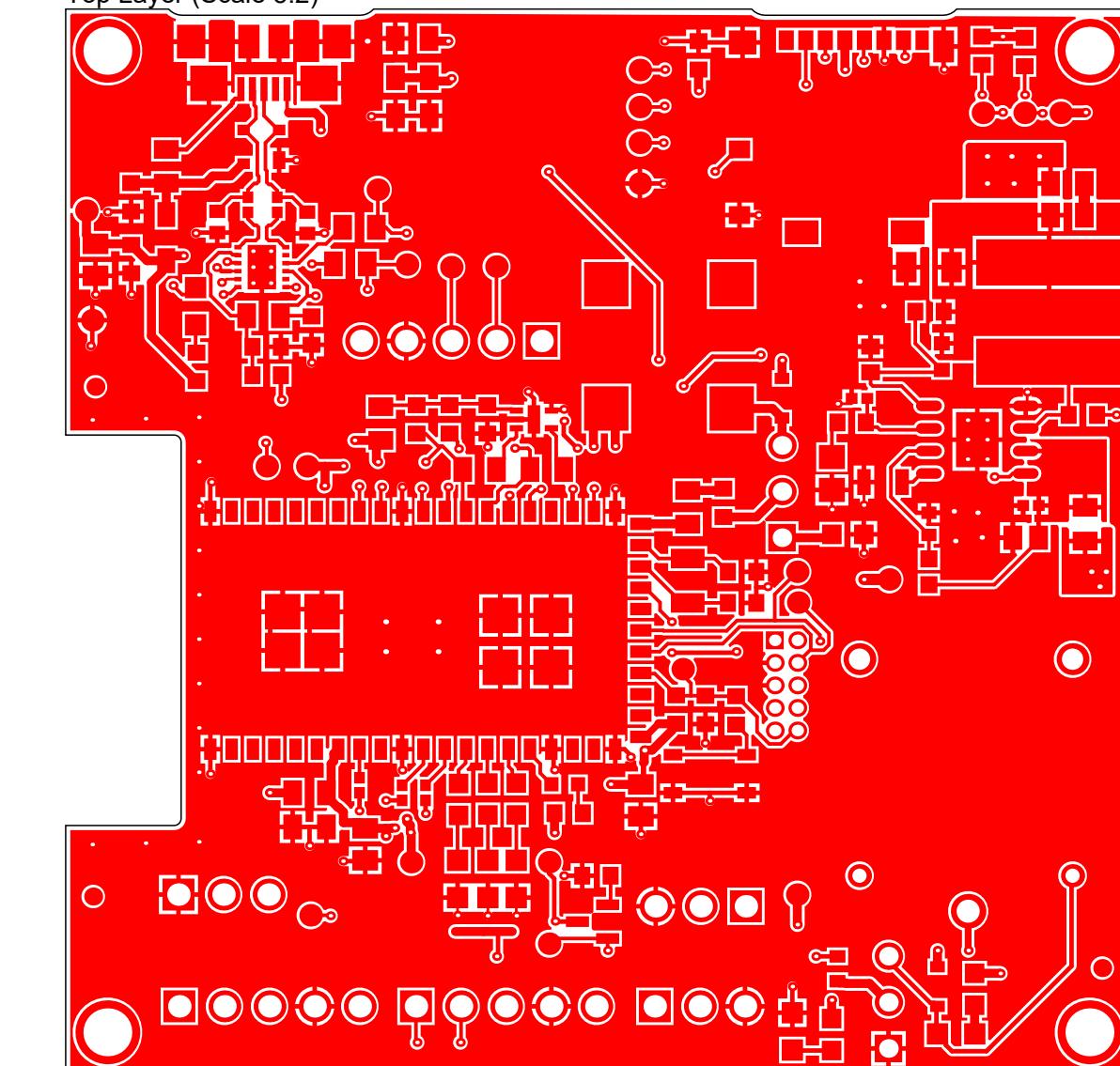
REV STATUS OF SHEETS		REV					DWG NO: =DOC_NO_ASSY_DWG	REV: .lfe
SHEET								

REVISIONS		DESCRIPTION	DATE	APPROVED

1

1

Top Layer (Scale 5:2)



2

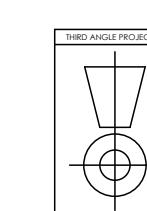
2

3

3

4

4



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEER

DESIGNER: =PCB_DESIGNER =PCB_DESIGNER

CHECKER: =PCB_CHECKER =PCB_CHECKER

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO

APPLICATION

=Address1
=Address2
=Address3
=Address4

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO:

B =CAGE_CO

REV:

FILE NAME: StarterBoardFabrication.PCBDwf

SCALE: SHEET: 6 OF 12

Altium™

A

B

C

D

E

F

A

B

C

D

E

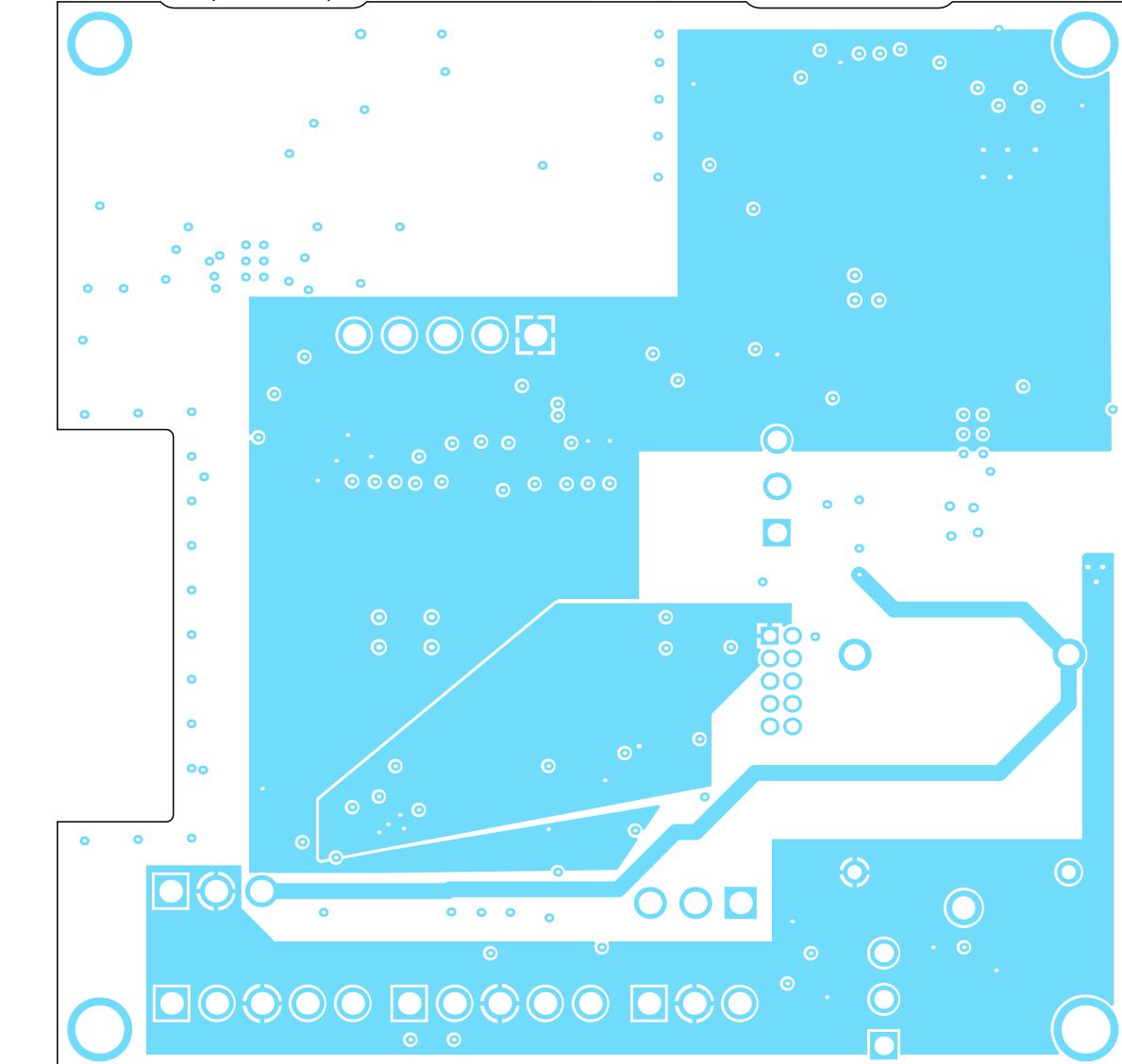
F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

REV STATUS OF SHEETS		REV										
SHEET												

REVISIONS		DESCRIPTION	DATE	APPROVED

PowerPlane (Scale 5:2)



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEER

DESIGNER: =PCB_DESIGNER =PCB_DESIGNER

CHECKER: =PCB_CHECKER =PCB_CHECKER

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO

APPLICATION

Altium
 TM

 =Address1
 =Address2
 =Address3
 =Address4

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1

=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO:

B =CAGE_CO

REV:

SCALE: FILE NAME: StarterBoardFabrication.PCBDwf

FILE NAME:

8

OF

12

A

B

C

D

E

F

A

B

C

D

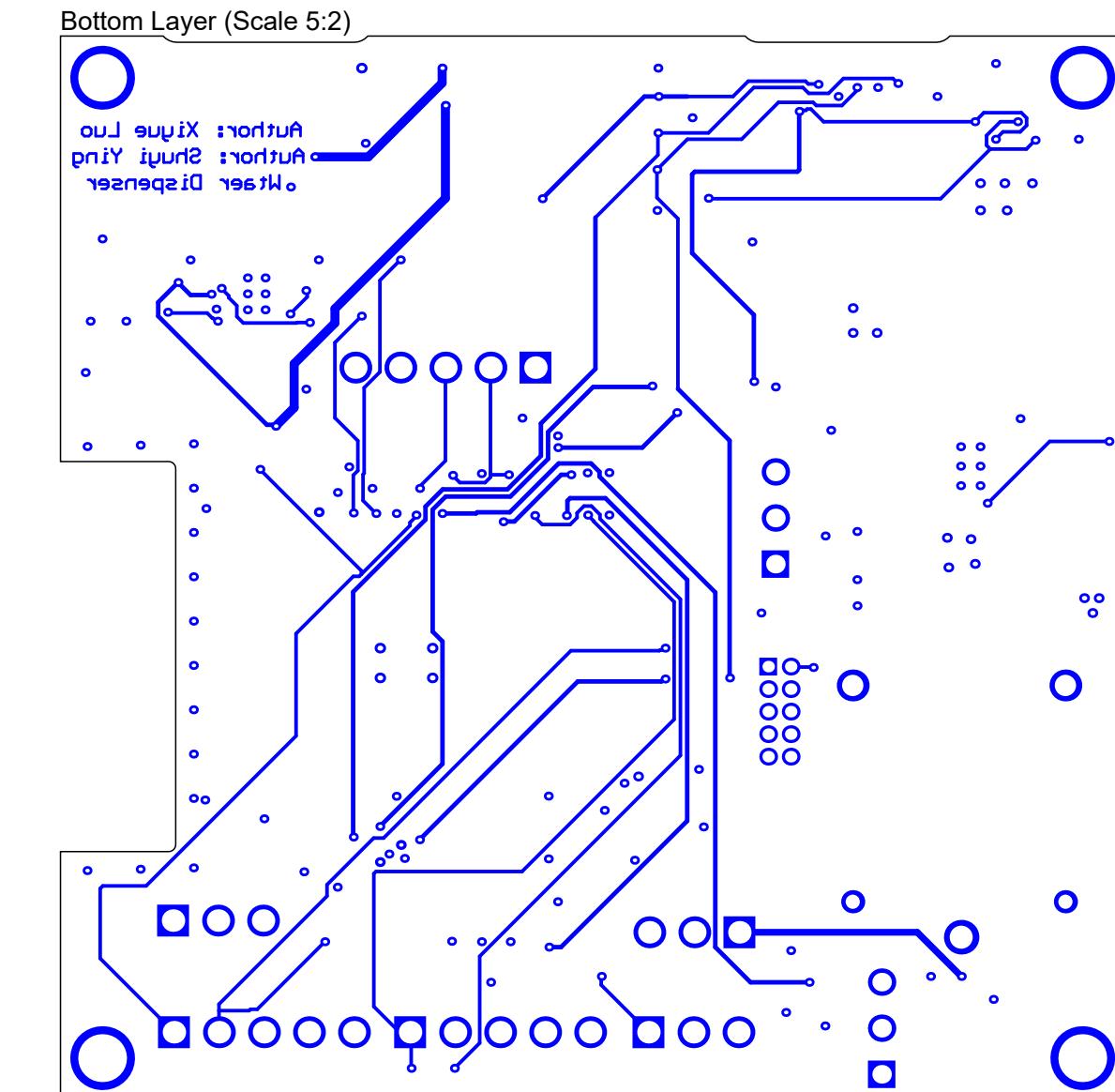
E

F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

REV STATUS OF SHEETS		REV					DWG NO: =DOC_NO_ASSY_DWG	REV: .lfe
SHEET								

REVISIONS		DESCRIPTION	DATE	APPROVED



PART NO: =PCB_PART_NUMBER	APPROVALS	DATE	Altium =Address1 =Address2 =Address3 =Address4
ENGINEER: =PCB_ENGINEER	=PCB_ENGINEER		
DESIGNER: =PCB_DESIGNER	=PCB_DESIGNER		
CHECKER: =PCB_CHECKER	=PCB_CHECKER		
Reference Documents		TITLE: .Item	DESIGN ITEM REVISION: .ItemRevision
BOM DOC: =DOC_NO_BOM			
ASSY DOC: =DOC_NO_FAB_DWG			
SCH DOC: =DOC_NO_SCH_DWG			
NEXT ASSY	USED ON	PCB DOC: =PCB_DWG_NO	SIZE: CAGE CODE: DWG NO: REV:
			B =CAGE_CO
APPLICATION		SCALE: FILE NAME: StarterBoardFabrication.PCBDwf	9 OF 12

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND
MAY NOT BE COPIED OR REPRODUCED IN WHOLE OR
PART, NOR MAY IT BE TRANSFERRED TO A THIRD PARTY
WITHOUT THE WRITTEN CONSENT OF ALTIUM LIMITED.
ALTIUM LIMITED MAKES NO WARRANTIES, EXPRESS
OR IMPLIED, WITH RESPECT TO THE ACCURACY OF THE
INFORMATION CONTAINED HEREIN.

A

三

F

1

1

Bottom Paste (Scale 5:)

1

3

2

11

4

4

A technical drawing illustrating Third Angle Projection. It features a front view of a truncated cone positioned above a top view circle. The two views are aligned horizontally, centered on a vertical reference line. The front view shows the upper and lower circular faces of the truncated cone. The top view shows a single circle representing the object's footprint.

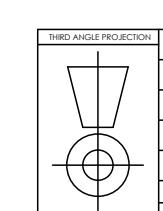
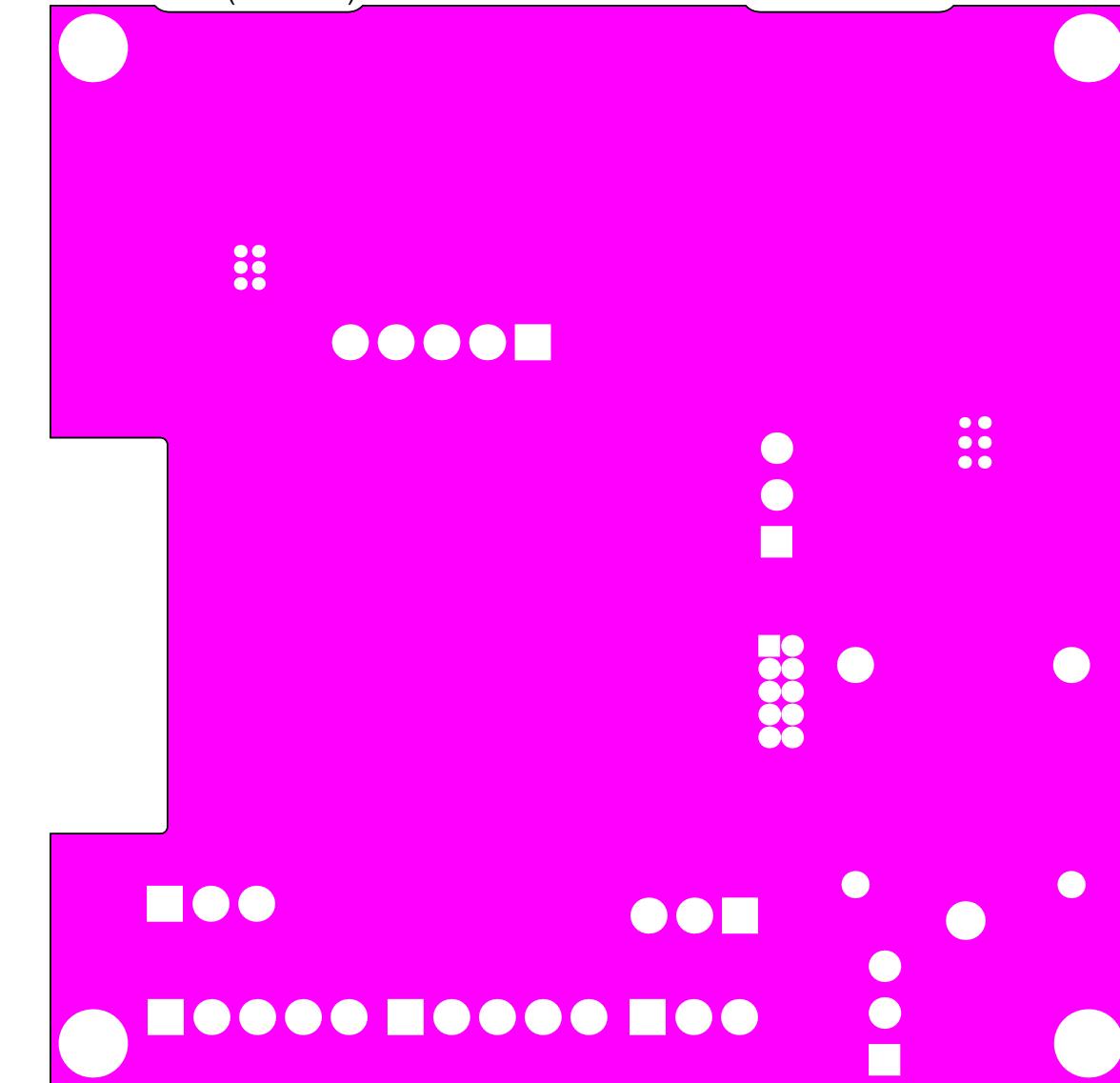
PART NO: =PCB_PART_NUMBER			
APPROVALS	DATE		
ENGINEER:	=PCB_ENGINEER	=Address1	
DESIGNER:	=PCB_DESIGNER	=Address2	
CHECKER:	=PCB_CHECKER	=Address3	
		=Address4	
Reference Documents		DESIGN ITEM:	.Item
BOM DOC:		DESIGN ITEM REVISION:	
=DOC_NO_BOM		.ItemRevision	
ASSY DOC:			
=DOC_NO_FAB_DWG			
SCH DOC:			
=DOC_NO_SCH_DWG			
PCB DOC:			
=PCB_DWG_NO			
SCALE:		FILE NAME:	StarterBoardFabrication.PCDBdwf
		SHEET: 10 OF 12	



DWG NO:		=DOC_NO_ASSY_DWG	REV:	.lfe
REV STATUS OF SHEETS	SHEET			

REVISIONS		
DESCRIPTION	DATE	APPROVED

Bottom Solder (Scale 5:2)



PART NO: =PCB_PART_NUMBER

APPROVALS DATE

ENGINEER: =PCB_ENGINEER =PCB_ENGINEER

DESIGNER: =PCB_DESIGNER =PCB_DESIGNER

CHECKER: =PCB_CHECKER =PCB_CHECKER

Reference Documents

BOM DOC: =DOC_NO_BOM

ASSY DOC: =DOC_NO_FAB_DWG

SCH DOC: =DOC_NO_SCH_DWG

NEXT ASSY USED ON PCB DOC: =PCB_DWG_NO

APPLICATION

Altium
TM

=Address1
=Address2
=Address3
=Address4

DESIGN ITEM: .Item

DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1
=PCB_TITLE_2

SIZE: CAGE CODE:

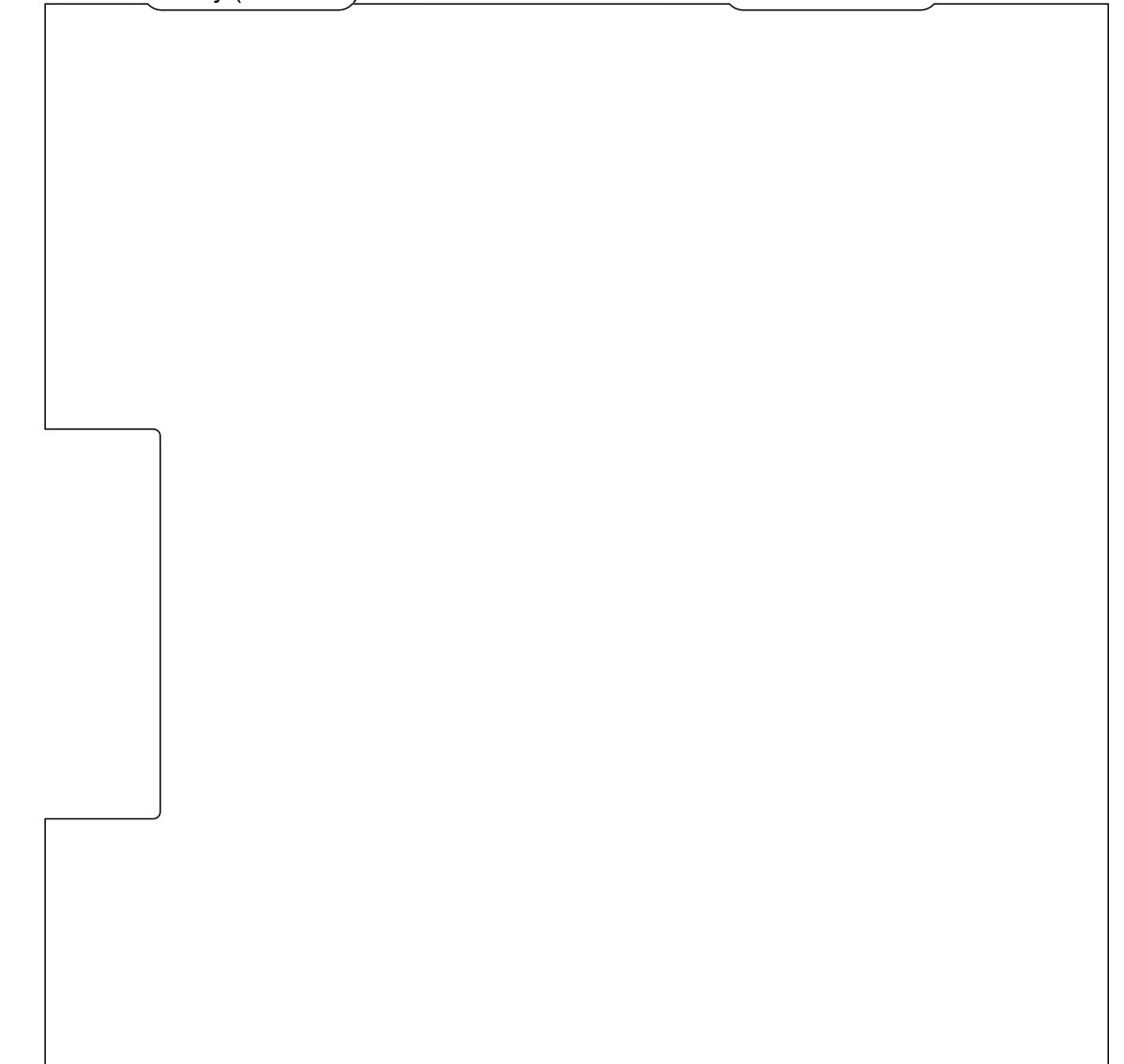
DWG NO:

B =CAGE_CO

REV:

DWG NO: =DOC_NO_ASSY_DWG		REV: .lfe	REVISIONS		
REV STATUS OF SHEETS	SHEET	ZONE	REV	DESCRIPTION	DATE

Bottom Overlay (Scale 5:2)



.lt

DWG NO:
=DOC_NO_ASSY_

.lfe

4

PART NO: =PCB_PART_NUMBER

APPROVALS	DATE
ENGINEER: =PCB_ENGINEER	=PCB_ENGINEER
DESIGNER: =PCB_DESIGNER	=PCB_DESIGNER
CHECKER: =PCB_CHECKER	=PCB_CHECKER
Reference Documents	
BOM DOC:	=DOC_NO_BOM
ASSY DOC:	=DOC_NO_FAB_DWG
SCH DOC:	=DOC_NO_SCH_DWG
NEXT ASSY	USED ON
PCB DOC:	=PCB_DWG_NO
APPLICATION	

Altium™

=Address1
=Address2
=Address3
=Address4

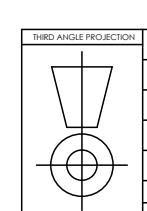
DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1
=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO: REV:

B =CAGE_CO

SCALE: FILE NAME: StarterBoardFabrication.PCBDwf SHEET: 12 OF 12



1

1

2

2

3

3

4

4

A

B

C

D

E

F

A

B

C

D

E

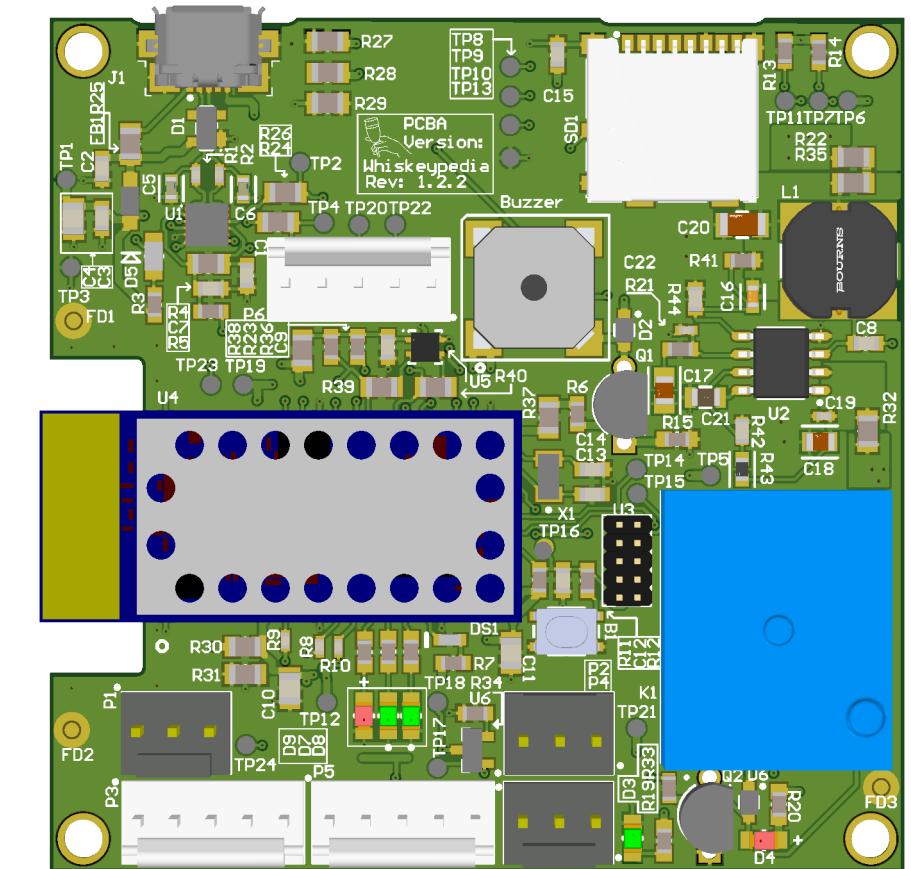
F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

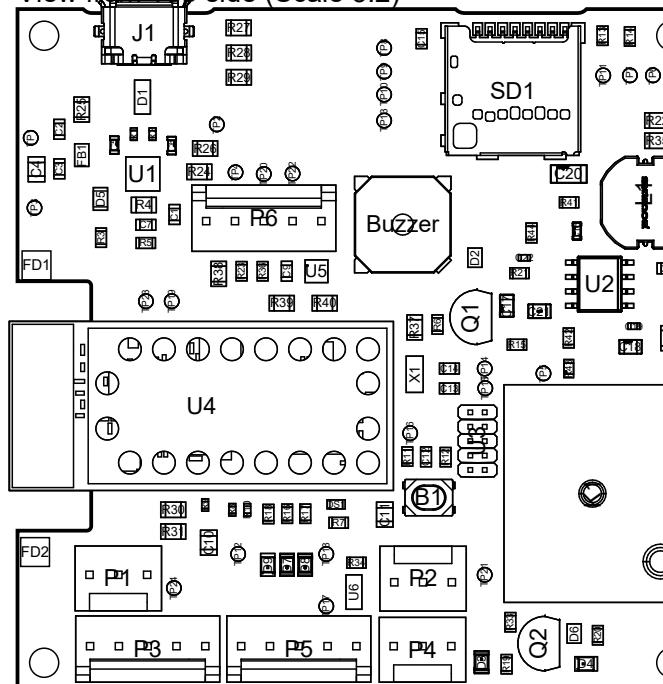
Notes:

1. This item is electrostatic sensitive and shall be handled accordingly.

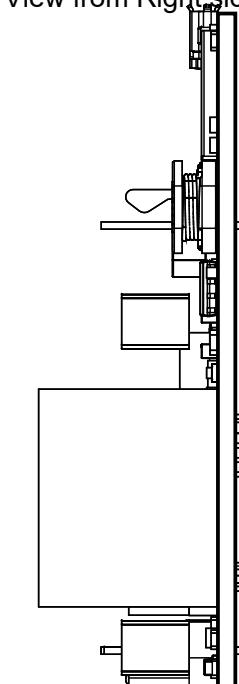
Realistic View



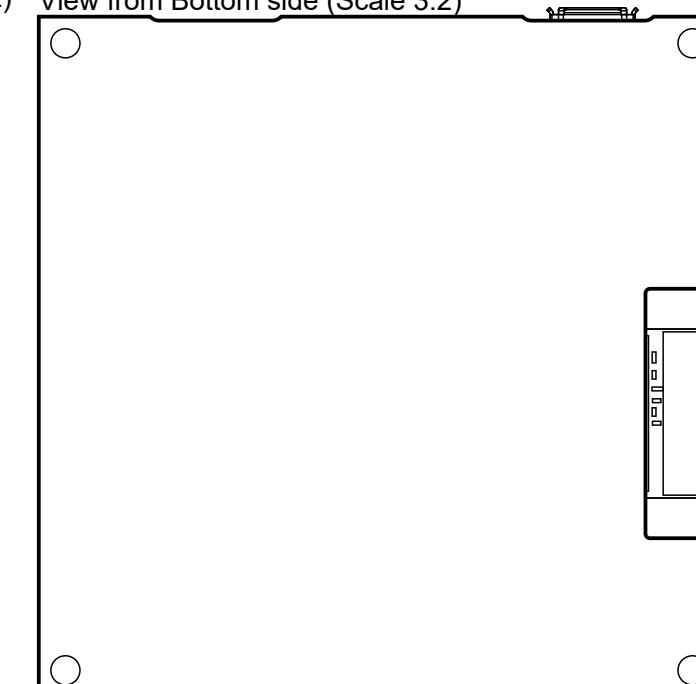
View from Top side (Scale 3:2)



View from Right side (Scale 3:2)



View from Bottom side (Scale 3:2)



REV STATUS
OF SHEETS

REV
SHEET

DWG NO.: =DOC_NO_ASSY_DWG REV: .lfe

ZONE

REV

REVISIONS

DESCRIPTION

DATE APPROVED

PART NO: =PCB_PART_NUMBER		APPROVALS	DATE
ENGINEER:	=PCB_ENGINEER	=PCB_ENGINEER	
DESIGNER:	=PCB_DESIGNER	=PCB_DESIGNER	
CHECKER:	=PCB_CHECKER	=PCB_CHECKER	
BOM DOC:	=DOC_NO_BOM	Reference Documents	
ASSY DOC:	=DOC_NO_FAB_DWG		
SCH DOC:	=DOC_NO_SCH_DWG		
NEXT ASSY	USED ON	PCB DOC:	=PCB_DWG_NO
APPLICATION		SCALE:	FILE NAME: StarterBoardAssembly.PCBDwf SHEET: 1 OF 2

Altium

=Address1
=Address2
=Address3
=Address4

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision
TITLE: =PCB_TITLE_1
=PCB_TITLE_2
SIZE: CAGE CODE: DWG NO: B =CAGE_CO REV:
DWG NO: .lfe

A

B

C

D

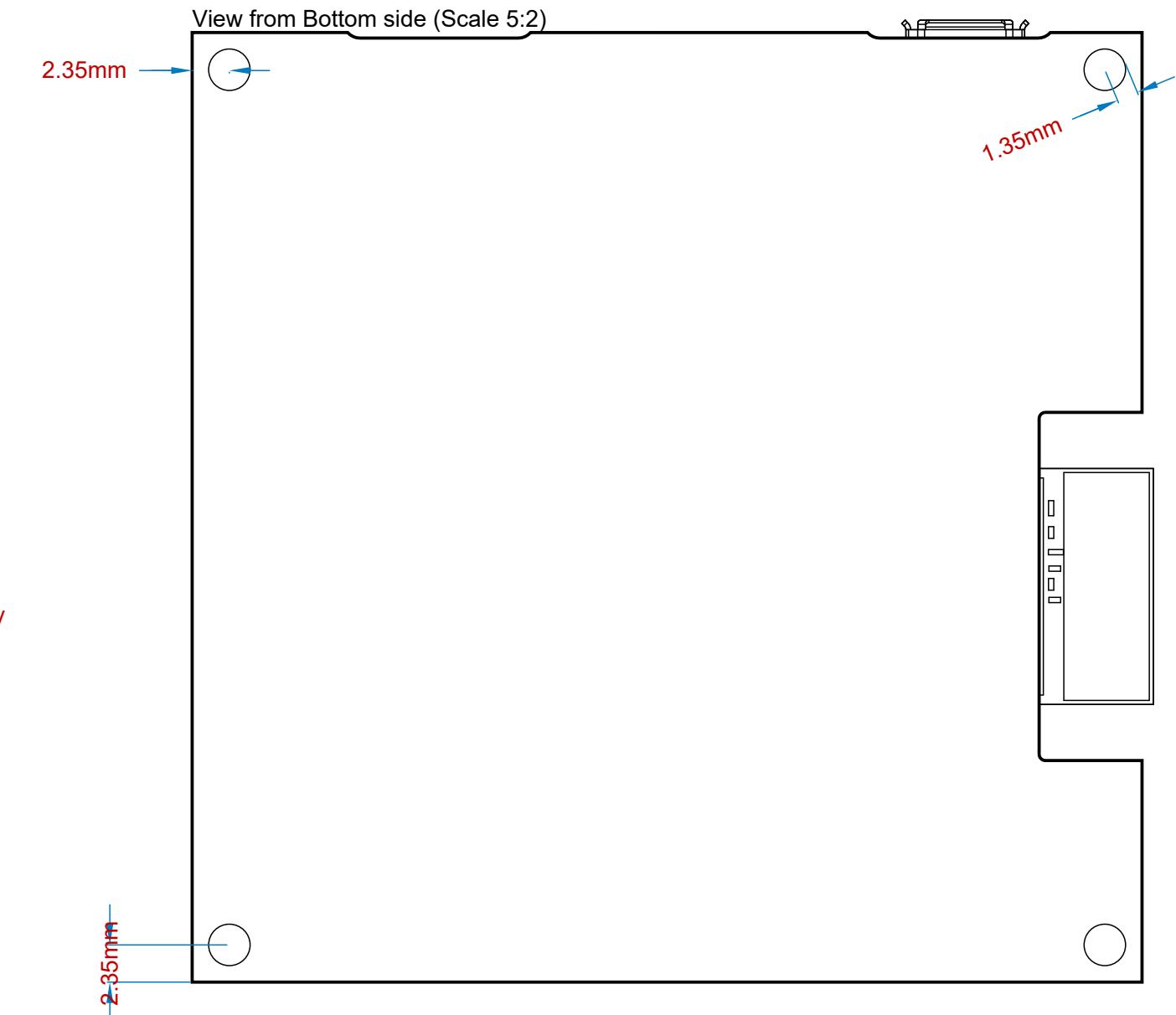
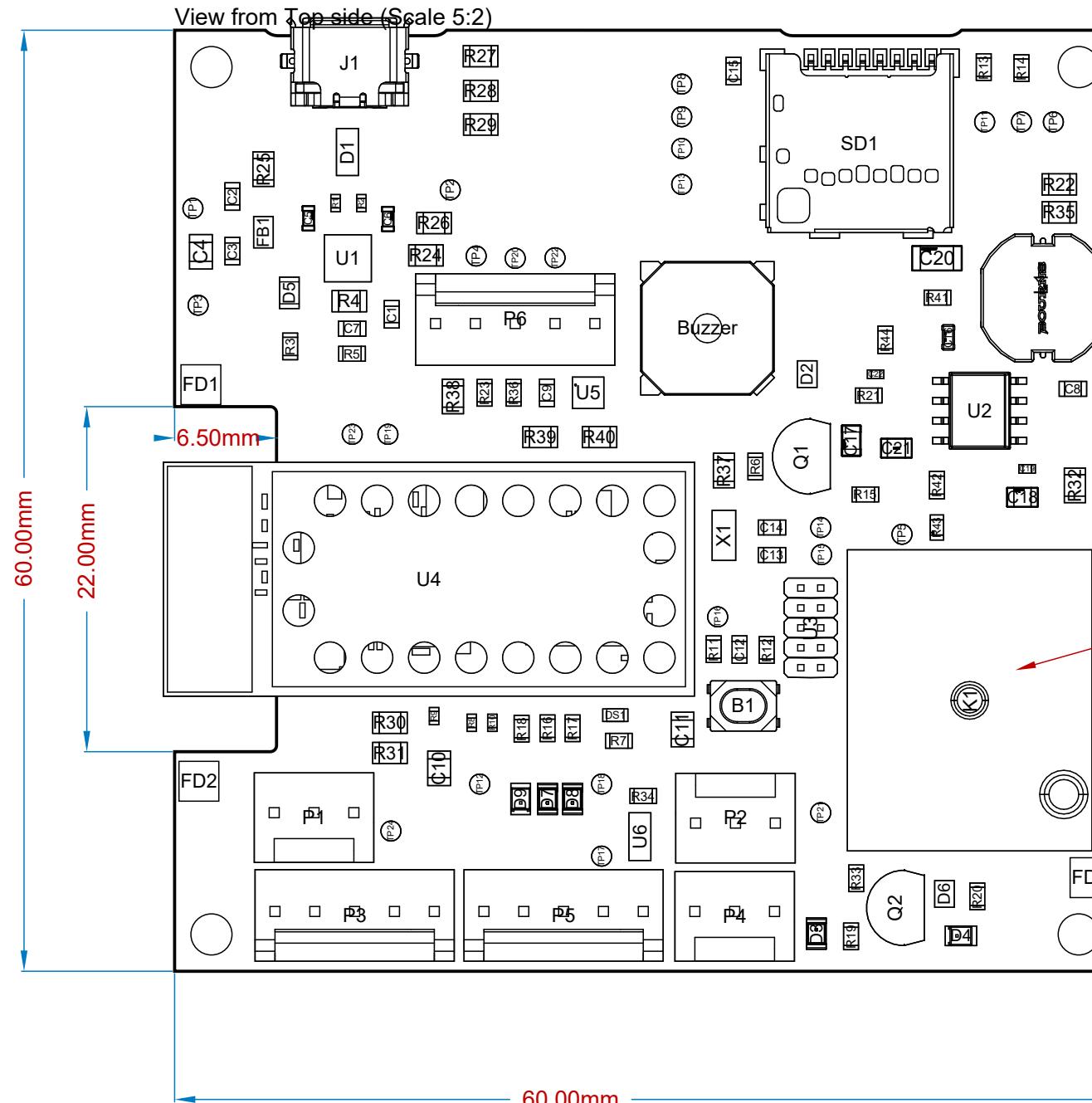
E

F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

REV STATUS OF SHEETS		REV				DWG NO.: =DOC_NO_ASSY_DWG	REV: .lfe
SHEET					ZONE	REV	

REVISIONS		
DESCRIPTION	DATE	APPROVED



PART NO: =PCB_PART_NUMBER	APPROVALS	DATE	Altium =Address1 =Address2 =Address3 =Address4
ENGINEER: =PCB_ENGINEER	=PCB_ENGINEER		
DESIGNER: =PCB_DESIGNER	=PCB_DESIGNER		
CHECKER: =PCB_CHECKER	=PCB_CHECKER		
BOM DOC: =DOC_NO_BOM	Reference Documents		
ASSY DOC: =DOC_NO_FAB_DWG			
SCH DOC: =DOC_NO_SCH_DWG			
PCB DOC: =PCB_DWG_NO			
APPLICATION			

DESIGN ITEM: .Item DESIGN ITEM REVISION: .ItemRevision

TITLE: =PCB_TITLE_1
=PCB_TITLE_2

SIZE: CAGE CODE: DWG NO: B =CAGE_CO

REV: .lfe

FILE NAME: StarterBoardAssembly.PCBDwf SHEET: 2 OF 2

Line #	Name	Description	Designator	Quantity	Manufacturer 1	Manufacturer Part Number 1	Manufacturer Lifecycle 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Supplier Subtotal 1	Fitted
1	PTS810 SJK 250 SMT LFS	SWITCH TACTILE SPST - NO 0.05A 16V Tactile Switch SPST - NO Top Actuated Surface Mount	B1	1	ITT C&K	PTS810SJK250SMTRLFS	Volume Production	Digi-Key	CKN10503CT-ND	0.34	0.34	Fitted
2	Buzzer	8.5 mm, 5 Vo-p, 100 dB, Surface Mount (SMT), Magnetic Audio Transducer Buzzer	Buzzer	1	CUI Devices	CMT-8504-100-SMT-TR	Unknown	Digi-Key	102-CMT-8504-100-SMT-CT-ND	1.58	1.58	Fitted
3	CAP 100nF 16V 0603(1608)	CAP 100nF 16V ±10% 0603 (1608 Metric) Thickness 1mm SMD	C1, C3, C7, C8, C9, C15	6	Yageo	CC0603KRX7R7BB104	Volume Production	Mouser	603-CG603KRX7R7BB104	0.028	0.28	Fitted
4	CAP 10nF 16V 0603(1608)	CAP 10nF 16V ±10% 0603 (1608 Metric) Thickness 1mm SMD	C2	1	Yageo	CC0603KRX7R7BB103	Volume Production	Digi-Key	311-3369-1-ND	0.1	0.1	Fitted
5	CAP 4.7uF 16V 0805(2012)	CAP 4.7uF 16V -20% to +80% 0805 (2012 Metric) Thickness 1.45mm SMD	C4	1	Yageo	CC0805ZKY7VBB475	Volume Production	Digi-Key	311-1907-1-ND	0.25	0.25	Fitted
6	C0603C4704GAC7867	CAP CER 47PF 16V NPO 0603	C5, C6	2	KEMET	C0603C4704GAC7867	Volume Production	Digi-Key	399-15404-1-ND	0.25	0.5	Fitted
7	CAP 10uF 16V 0805(2012)	CAP 10uF 16V ±10% 0805 (2012 Metric) Thickness 1.45mm SMD	C10, C11	2	Yageo	CC0805MX7R7BB106	Unknown	Digi-Key	311-3508-1-ND	0.64	1.28	Fitted
8	CAP 1uF 16V 0603(1608)	CAP 1uF 16V ±5% 0603 (1608 Metric) Thickness 1mm SMD	C12	1	Yageo	CC0603JRX7R7BB105	Unknown	Digi-Key	311-3485-1-ND	0.26	0.26	Fitted
9	CAP 18pF 16V 0603(1608)	CAP 18pF 16V ±5% 0603 (1608 Metric) Thickness 1mm SMD	C13, C14	2	KEMET	C0603C180J4GACTU	Volume Production	Digi-Key	399-O0603C180J4GACTU7CT-ND	0.25	0.5	Fitted
10	CC0603KRX7R7BB391	CAP CER 390PF 50V X7R 0603	C16	1	Yageo	CC0603JRX7R7BB391	Volume Production	Digi-Key	311-4016-1-ND	0.12	0.12	Fitted
11	GRM21B5C1H183J0A01K	Chip Multilayer Ceramic Capacitors for General Purpose, 0805, 18000pF, COG, 30ppm/°C, 5%, 50V	C17	1	Yageo	CC0805JRX7R7BB183	Volume Production	Digi-Key	13-CC0805JRX7R7BB183CT-ND	0.19	0.19	Fitted
12	GRM21BR61A226ME44L	Chip Multilayer Ceramic Capacitors for General Purpose, 0805, .22uF, X5R, 15%, 20%, 10V	C18	1	Murata	GRM21B61A226ME44L	Volume Production	Mouser	81-GRM21B61A226ME44L	0.54	0.54	Fitted
13	GRM15R70104KA01D		C19	1	Murata	GRM15R70104KA01D	Unknown	Digi-Key	490-6319-1-ND	0.1	0.1	Fitted
14	GRM31CR601476ME19L	Chip Multilayer Ceramic Capacitors for General Purpose, 1206, 47uF, X5R, 15%, 20%, 6.3V	C20	1	Murata	GRM31CR601476ME19L	Unknown	Digi-Key	490-3907-1-ND	0.79	0.79	Fitted
15	CGA4C2CG01H562J060A A	Cap Ceramic 5.6nF 50V CGG 5% Pad SMD 0805 +125°C Automotive T/R	C21	1	Yageo	CC0805KRX7R7BB562	Volume Production	Digi-Key	311-1134-1-ND	0.14	0.14	Fitted
16	GRM1555C1H1R0CA01D		C22	1	Murata	GRM1555C1H1R0CA01D	Unknown	Digi-Key	490-3199-1-ND	0.1	0.1	Fitted
17	PRTR5V0U2X,215	Ultra Low Capacitance Double Rail-to-Rail ESD Protection Diode, 5.5 V, 1 pF, -40 to 85 degC, 4-Pin SOT143B, RoHS, Tape and Reel	D1	1	NXP Semiconductors	PRTR5V0U2X215	Volume Production					Fitted
18	BAS16HT1G	Switching Diode, 2-Pin SOD-323, Pb-Free, Tape and Reel	D2, D6	2	ON Semiconductor / Fairchild	BAS16HT1G	Volume Production	Mouser	863-BAS16HT1G	0.14	0.28	Fitted
19	LTST-C170GKT	LED GREEN CLEAR SMD	D3, D7, D8	3	Vishay Lite-On	LTST-C170GKT	Volume Production	Mouser	859-LTST-C170GKT	0.29	0.87	Fitted
20	LTST-C170CKT	LED RED CLEAR SMD	D4, D9	2	Lumex	SML-LX0805SIC-TR	Volume Production	Digi-Key	67-1636-1-ND	0.61	1.22	Fitted
21	LTST-C170CKT	LED Uni-Color Red, 100 mW, 200 mA, -55 to 85 degC, 2-Pin SMD, RoHS, Tape and Reel	D5	1	Lumex	SML-LX0805SIC-TR	Volume Production	Digi-Key	67-1636-1-ND	0.61	0.61	Fitted
22	LTST-C191KGKT	Chip LED, Green, 5.74 mm, 40 pF, -55 to 85 degC, 2-Pin SMD, RoHS, Tape and Reel	D51	1	Vishay Lite-On	LTST-C191KGKT	Volume Production	Mouser	859-LTST-C191KGKT	0.26	0.26	Fitted
23	BLM21PG221SN1D	Chip Ferrite Bead for Power Lines, 220 Ohm, 2000 mA, -55 to 125 degC, 2 x 125 x 1.05 mm SMD, Tape and Reel	FB1	1	Bourns	MH2029-221Y	Volume Production	Mouser	652-MH2029-221Y	0.1	0.1	Fitted
24	ZX62R-B-5P	Connector: USBMicro-B,reverse type, SMT; 5 Position: Right Angle	J1	1	Hirose	ZX62R-B-5P	Unknown					Fitted
25	SRD-12VDC-SL-C	General Purpose Non Latching 12VDC SPDT Through Hole Relays, RoHS	K1	1								Fitted
26	SRN8040-3R3Y	FIXED IND 3.3UH 5.6A 21 MOHM SMD	L1	1	Bourns	SRN8040-3R3Y	Volume Production	Mouser	652-SRN8040-3R3Y	0.77	0.77	Fitted
28	640456-3	Male Header, Pitch 2.54 mm, 1 x 3 Position, Height 10.03 mm, Tall Length 3.56 mm, -55 to 105 degC	P1, P2, P4	3	TE Connectivity	640456-3	Volume Production	Mouser	571-6404563	0.2	0.6	Fitted
29	640456-5	Male Header, Pitch 2.54 mm, 1 x 5 Position, Height 10.03 mm, Tall Length 3.56 mm, -55 to 105 degC, RoHS, Bulk	P3, P5, P6	3	TE Connectivity	640456-5	Volume Production	Digi-Key	A19471-ND	0.38	1.14	Fitted
30	PN2222ATF	NPN General-Purpose Amplifier, 40 V, -55 to 150 degC, 3-Pin Pb-To-Gnd, RoHS, Tape and Reel	Q1, Q2	2	ON Semiconductor / Fairchild	PN2222ATF	Volume Production	Mouser	512-PN2222ATF	0.35	0.7	Fitted
31	MC00625W0402127R		R1, R2, R8, R9, R10	5	Stackpole Electronics	RMCF0402FT27R0	Volume Production	Digi-Key	RMCF0402FT27R0CT-ND	0.015	0.15	Fitted
32	1K 1% 0603(1608)	1K 0.1W 1% 0603 (1608 Metric) SMD	R3, R5, R7	3	Stackpole Electronics	RMCF0603FT1K00	Volume Production	Digi-Key	RMCF0603FT1K00CT-ND	0.017	0.17	Fitted
33	Jumper 0805(2012)	Jumper 0805 (2012 Metric)	R4, R22, R24, R25, R26, R27, R28, R29, R30, R31, R32, R35, R37, R38, R39, R40	16	Bourns	CR0805-J/-000ELF	Volume Production	Digi-Key	CR0805-J/-000ELFCT-ND	0.019	0.304	Fitted
34	182R 1% 0603(1608)	182R 0.1W 1% 0603 (1608 Metric) SMD	R6	1	Stackpole Electronics	RMCF0603FT182R	Volume Production	Digi-Key	RMCF0603FT182RCT-ND	0.1	0.1	Fitted
35	10K 1% 0603(1608)	10K 0.1W 1% 0603 (1608 Metric) SMD	R11, R13, R14, R21, R23, R36, R41	7	Stackpole Electronics	RMCF0603FT10K0	Volume Production	Digi-Key	RMCF0603FT10K0CT-ND	0.017	0.17	Fitted
36	100R 1% 0603(1608)	100R 0.1W 1% 0603 (1608 Metric) SMD	R12	1	Yageo	RC0603FR-07100RL	Volume Production	Mouser	603-RC0603FR-07100RL	0.1	0.1	Fitted
37	47R 1% 0603(1608)	47R 0.1W 1% 0603 (1608 Metric) SMD	R15	1	Yageo	RC0603FR-0747RL	Volume Production	Digi-Key	311-47-04R0CT-ND	0.1	0.1	Fitted
38	280R 1% 0603(1608)	280R 0.1W 1% 0603 (1608 Metric) SMD	R16, R17, R18	3	Stackpole Electronics	RMCF0402FT1K00	Volume Production	Digi-Key	RMCF0402FT1K00TR-ND	0.00171	17.1	Fitted
39	620R 5% 0603(1608)	620R 0.1W 5% 0603 (1608 Metric) SMD	R19, R20	2	Stackpole Electronics	RMCF0603FT620R	Volume Production	Digi-Key	RMCF0603FT620RCT-ND	0.017	0.17	Fitted
40	1K1 5% 0603(1608)	1K1 0.1W 5% 0603 (1608 Metric) SMD	R33	1	Stackpole Electronics	RMCF0603FT1K10	Volume Production	Digi-Key	RMCF0603FT1K10CT-ND	0.1	0.1	Fitted
41	3K3 5% 0603(1608)	3K3 0.1W 5% 0603 (1608 Metric) SMD	R34	1	Stackpole Electronics	RMCF0603FT3K30	Volume Production	Digi-Key	RMCF0603FT3K30CT-ND	0.1	0.1	Fitted
42	ERJ-3EKF1872V		R42	1	Stackpole Electronics	RMCF0603FT18K7	Volume Production	Digi-Key	RMCF0603FT18K7CT-ND	0.1	0.1	Fitted
43	CRCW060351K1FKEAHP	RES Thick Film, 51.1kΩ, 1%, 0.33W, 100ppm/°C, 0603	R43	1	Stackpole Electronics	RMCF0603FT51K1	Volume Production	Digi-Key	RMCF0603FT51K1CT-ND	0.1	0.1	Fitted
44	ERJ-3EKF241V		R44	1	Stackpole Electronics	RMCF0603FT3K24	Volume Production	Digi-Key	RMCF0603FT3K24CT-ND	0.1	0.1	Fitted
45	104031-0811	Micro SD Card, RA, -25 to 85 degC, 8-Pin SMD, RoHS, Tape and Reel	SD1	1	Molex	1040310811	Volume Production	Mouser	538-104031-0811	2.07	2.07	Fitted
46	FT234XD-R	FT234XD USB to BASIC UART IC, -40 to +85 degC, 12-Pin DFN, Pb-Free, Tape and Reel	U1	1	FTDI	FT234XD-R	Volume Production					Fitted
47	Voltage Regulator	TPS5432 2.95V to 6V Input, 3A Sy	U2	1	Texas Instruments	TPS5432DDAR	Volume Production	Mouser	595-TPS5432DDAR	0.92	0.92	Fitted
48	20021111-000104LF	CONN HEADER 10POS UNSHLD VERT T/H	U3	1	Amphenol ICC / FCI	20021111-000104LF	Unknown	Digi-Key	609-3712-ND			Fitted
49	SAMW25H18-MR510PB	RF TXRX MODULE WiFi TRACE ANT	U4	1	Microchip	ATSAMW25H18-MR510PB	Unknown	Digi-Key	ATSAMW25H18-MR510PB-ND			Fitted
50	I2C Temperature Sensor	Relative Humidity & Temperature Sensor, consumer focus	U5	1	Sensirion	SHTC3-TR-2.5KS	Unknown	Digi-Key	1649-SHTC3-TR-2.5KSCT-ND	3.66	3.66	Fitted
51	MAX5491LA01000-T	30k 2 kV ESD Precision-Matched Resistor-Divider, -40 to 85 degC, 3-pin SOT (U3-2), Tape and Reel	U6	1	Maxim	MAX5491LA01000+T	Unknown	Mouser	700-MAX5491LA01000T	8.02	8.02	Fitted
52	ABS07-32.768kHz-T	Crystal, 32.768 kHz 125 pF, -40 to 85 degC, SMD Low Profile 3.2 x 1.5 x 0.9 mm, Tape and Reel	X1	1	Abraccon	ABS07-32.768KHZ-T	Volume Production	Mouser	815-ABS07-32.768KHZT	1.12	1.12	Fitted
53	Power Adapter	From 110V AC to 5V/12V DC	Z1	1	OI XIN ELECTRONICS	QX36D-2(Dual output)	Manual Solution	Sparkfun	KIT-15701	17.95	17.95	
54	Distance Sensor	Ultrasonic Distance Sensor - 3V or 5V	Z2	1	Adafruit Industries	4007	Unknown	Digi-Key	1528-2832-ND	3.95	3.95	
55	Water Pump	Peristaltic Liquid Pump with Silicone Tubing - 12V DC Power	Z3	1	Adafruit	1150	Manual Solution	Adafruit	1150	24.95	24.95	
56	Pressure Sensitive Resistor	force sensitive resistor with a round, 0.5" diameter, sensing area.	Z4	1	Interlink Electronics	FSR 402	Manual Solution	Sparkfun	SEN-09375	6.95	6.95	

