

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. 1.0.1 REV. SHT. | | REVISION | DESCRIPTION | DATE | APPROVED |
|--------------------------|--|----------|-------------|------|----------|
| | | | | | |

F

F

E

E

D

D

C

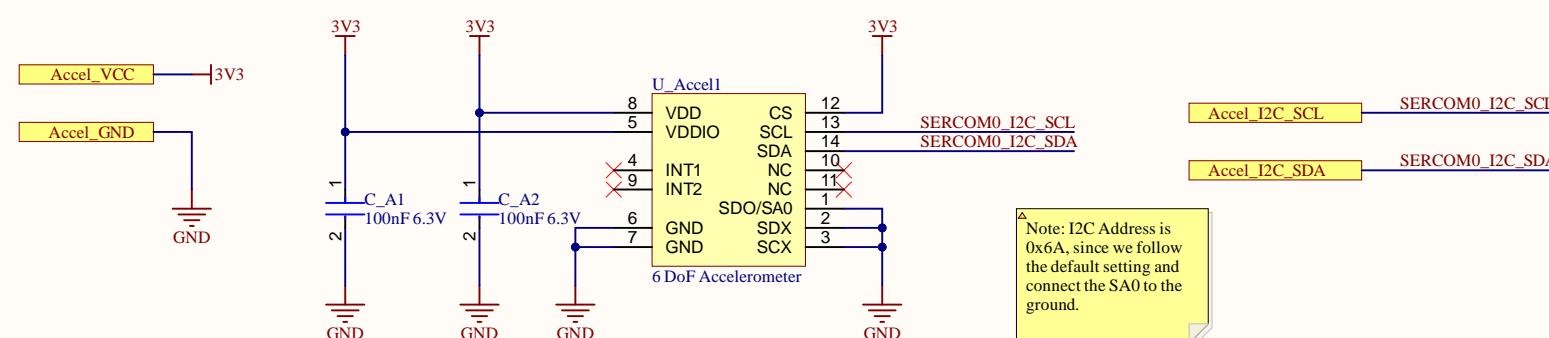
C

B

B

A

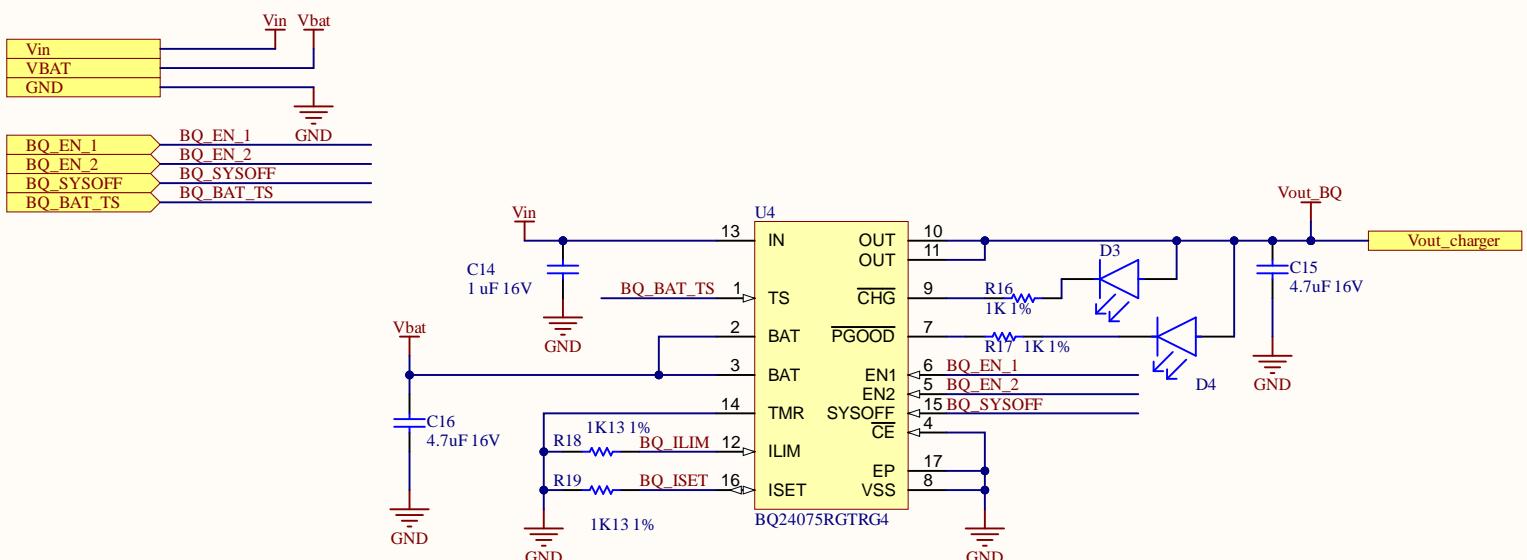
A



| | | | | | |
|---------------------|------|-------------------|--|--------------|----------------------|
| APPROVALS | DATE | PROJECT | Penn Engineering UNIVERSITY OF PENNSYLVANIA | | |
| ENG: * | | PROJECT REVISION: | DOCUMENT REVISION: | DESIGN ITEM: | * |
| DSN: * | | TITLE | | | |
| CHK: * | | Accelerometer | | | |
| REFERENCE DOCUMENTS | | BOM: | | | |
| ASSY DWG: | | | SIZE | CAGE CODE | DWG NO. |
| FAB DWG: | | | REV 1.0 | | |
| PCB DWG: | | | SCALE: | FILE NAME | Accelerometer.SchDoc |
| | | | SHEET | 1 | OF 1 |

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. 1.0.1 REV. SHT. | | REVISION | DESCRIPTION | DATE | APPROVED |
|--------------------------|--|----------|-------------|------|----------|
| | | | | | |



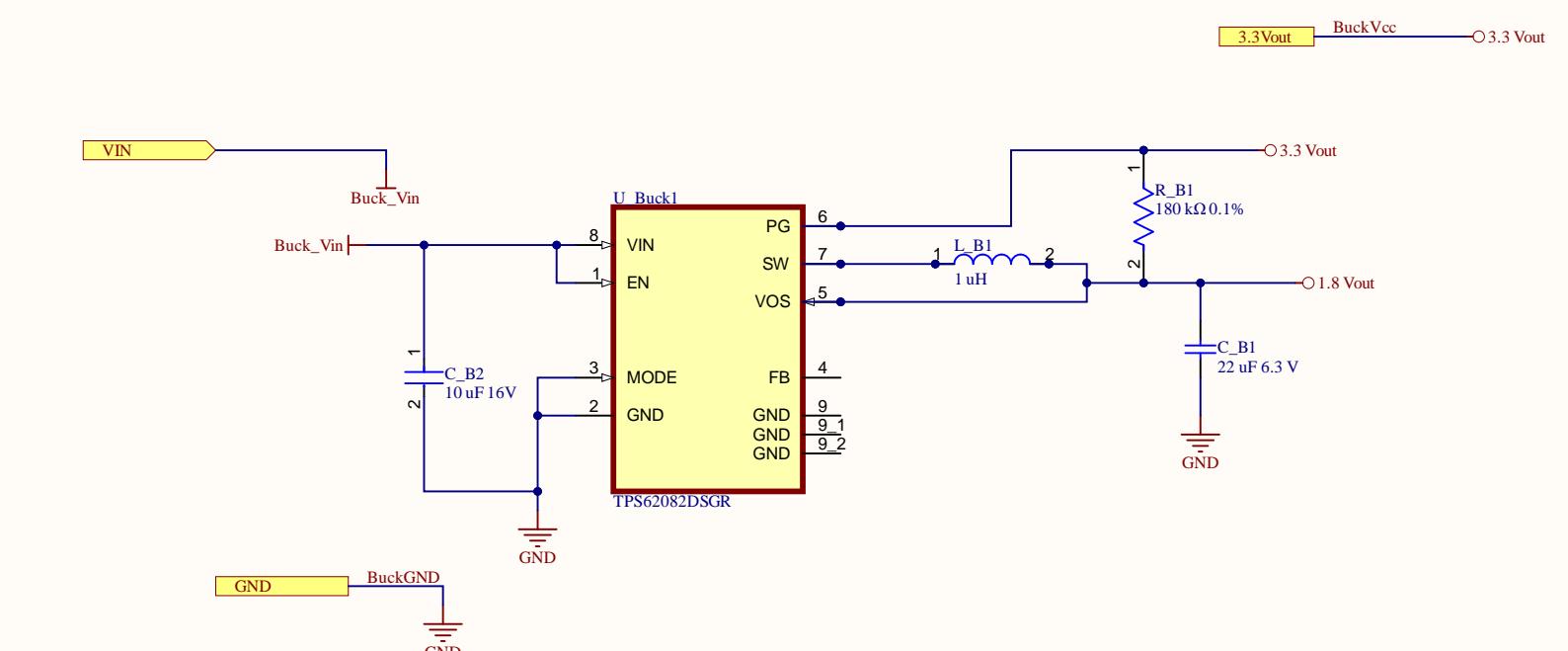
$i_{lim} = \text{Kilim}/R_{lim} \Rightarrow 1610/1130 = 1.42A$
(if EN2=1, EN1=0)

$ISET = \text{KISET}/RSET \Rightarrow 890/1130 = 0.788A$

| APPROVALS | DATE | PROJECT | Penn Engineering | * |
|---------------------|-----------|---------------------|------------------|--------|
| ENG: * | | | | * |
| DSN: * | | | | * |
| CHK: * | | | | * |
| REFERENCE DOCUMENTS | | | | |
| BOM: | | | | |
| ASSY DWG: | | | | |
| FAB DWG: | | | | |
| PCB DWG: | | | | |
| SIZE | CAGE CODE | DWG NO. | | REV |
| B | | | | 1.0 |
| SCALE: | FILE NAME | LiPo_Charger.SchDoc | SHEET | 1 OF 1 |

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.

| REVISION | DESCRIPTION | DATE | APPROVED |
|----------|-------------|------|----------|
| | | | |



| | | | | |
|---------------------|---------------------------------------|----------------------------|--------------------|--------------|
| APPROVALS | DATE | PROJECT | Penn Engineering | * |
| ENG: | * | UNIVERSITY OF PENNSYLVANIA | * | * |
| DSN: | * | PROJECT REVISION: | DOCUMENT REVISION: | DESIGN ITEM: |
| CHK: | * | TITLE | | |
| REFERENCE DOCUMENTS | | | | |
| BOM: | | | | |
| ASSY DWG: | | | | |
| FAB DWG: | | | | |
| PCB DWG: | | | | |
| SIZE | CAGE CODE | DWG NO. | | REV |
| B | | | | 1.0 |
| SCALE: | FILE NAME BuckConverter.SchDoc | | | SHEET 1 OF 1 |

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. 1.0.1 REV. SHT. | | REVISION | DESCRIPTION | DATE | APPROVED |
|--------------------------|--|----------|-------------|------|----------|
| | | | | | |

F

F

E

E

D

D

C

C

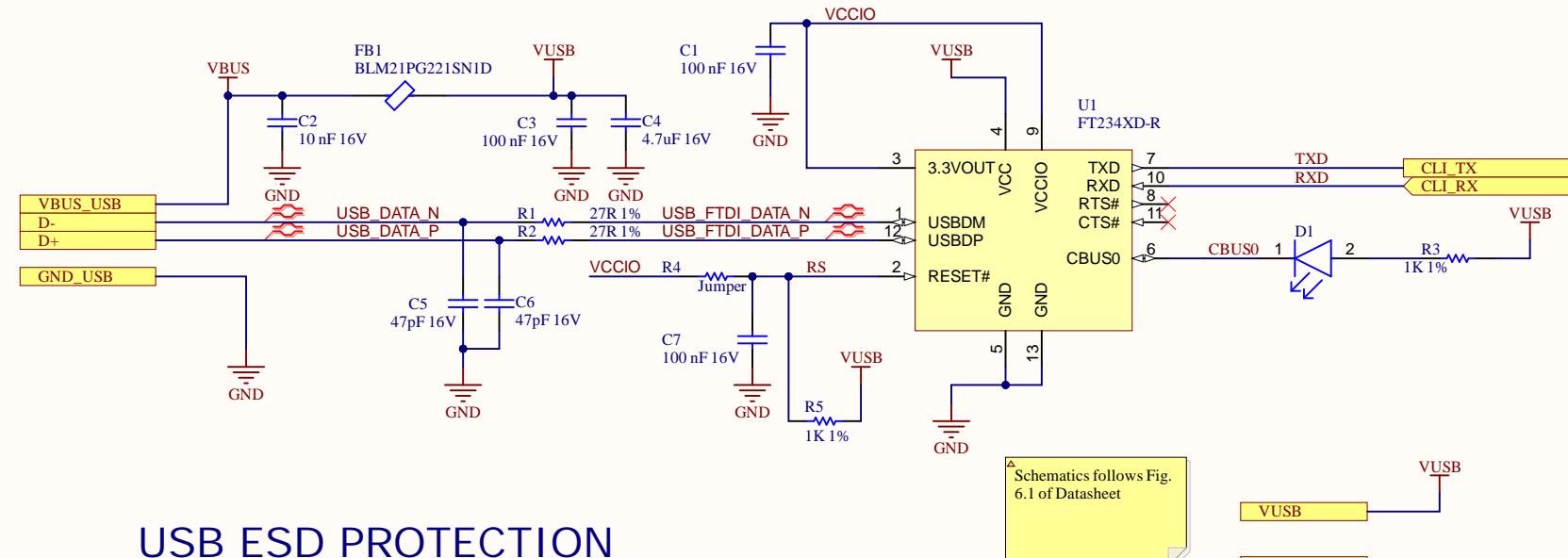
B

B

A

A

FTDI CHIP



USB ESD PROTECTION



| | | | | |
|---------------------|-----------------------|-------------------|----------------------------|--------------|
| APPROVALS | DATE | PROJECT | Penn Engineering | * |
| ENG: | | | UNIVERSITY OF PENNSYLVANIA | * |
| DSN: | | PROJECT REVISION: | DOCUMENT REVISION: | * |
| CHK: | | TITLE | | * |
| REFERENCE DOCUMENTS | | | | |
| BOM: | ASSY DWG: | | | REV |
| | | | | 1.0 |
| FAB DWG: | | | | |
| PCB DWG: | SIZE | CAGE CODE | DWG NO. | |
| | B | | | |
| SCALE: | FILE NAME FTDI.SchDoc | | | SHEET 1 OF 1 |

USB Slot + FTDI

F

F

E

E

D

D

C

C

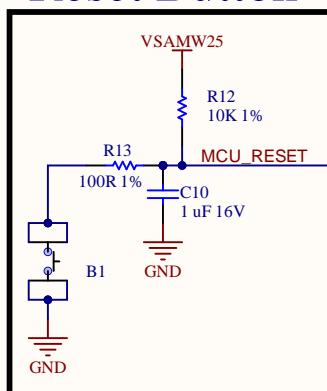
B

B

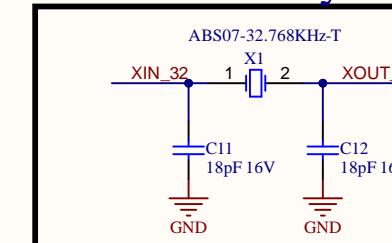
A

A

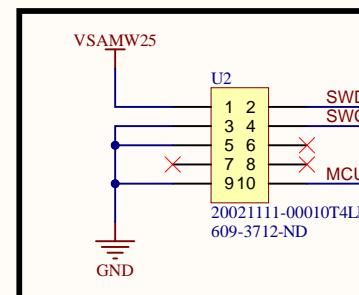
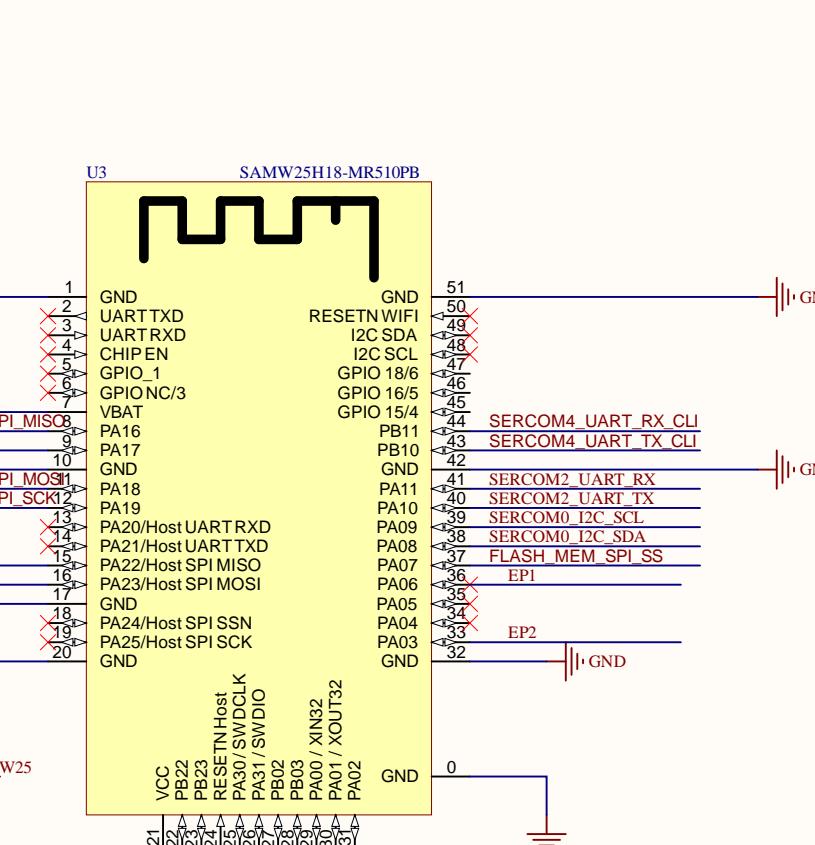
Reset Button



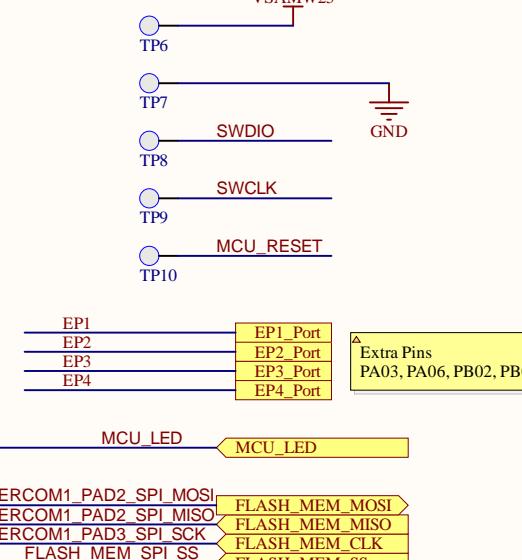
32.768 Crystal



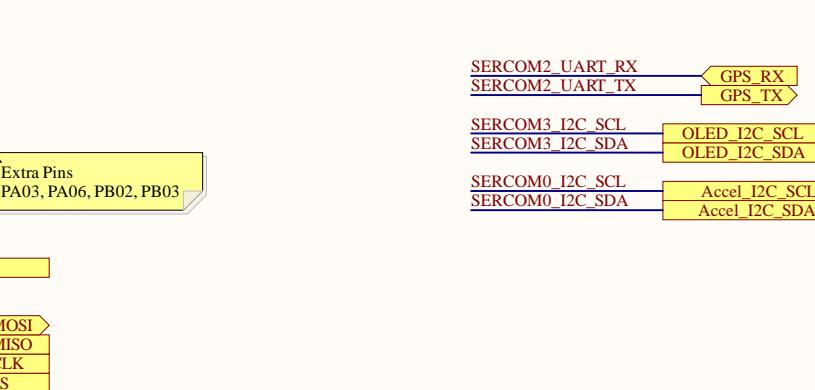
Calculation of crystal load capacitors:
 $C_{ext} = 2 \times (C_{crystal} - C_{para} - C_{pcb})$
 Ccrystal = 12.5pF (from crystal - Ccrystal)
 Cpara = 3.15pF (from MCU datasheet)
 Cpcb = 0.5pF (estimate)
 $C_{ext} = 2 \times (12.5pF - 3.15pF - 0.5pF) = 17.7pF$



DEBUGGER PORT



Extra Pins



| | | | |
|---------------------|-----------|--------------------|----------------------------|
| APPROVALS | DATE | PROJECT | Penn Engineering |
| ENG: | * | DOCUMENT REVISION: | UNIVERSITY OF PENNSYLVANIA |
| DSN: | * | DESIGN ITEM: | |
| CHK: | * | MCU Module | |
| REFERENCE DOCUMENTS | | | |
| BOM: | | | |
| ASSY DWG: | | | |
| FAB DWG: | | | |
| PCB DWG: | | | |
| SCALE: | FILE NAME | MCU.SchDoc | REV 1.0 |

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. | 1.0.1 | REV. SHT. | |
| REVISION | DESCRIPTION | DATE | APPROVED |

F

F

E

E

D

D

C

C

TESTPOINTS

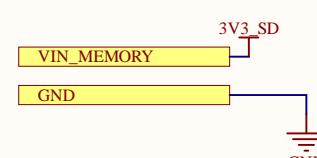
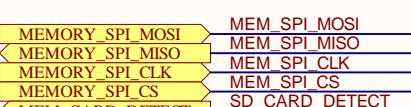
| | |
|------|----------------|
| TP11 | 3V3_SD |
| TP12 | SD_CARD_DETECT |
| TP13 | MEM_SPI_MOSI |
| TP14 | MEM_SPI_MISO |
| TP15 | MEM_SPI_CLK |
| TP16 | MEM_SPI_CS |

B

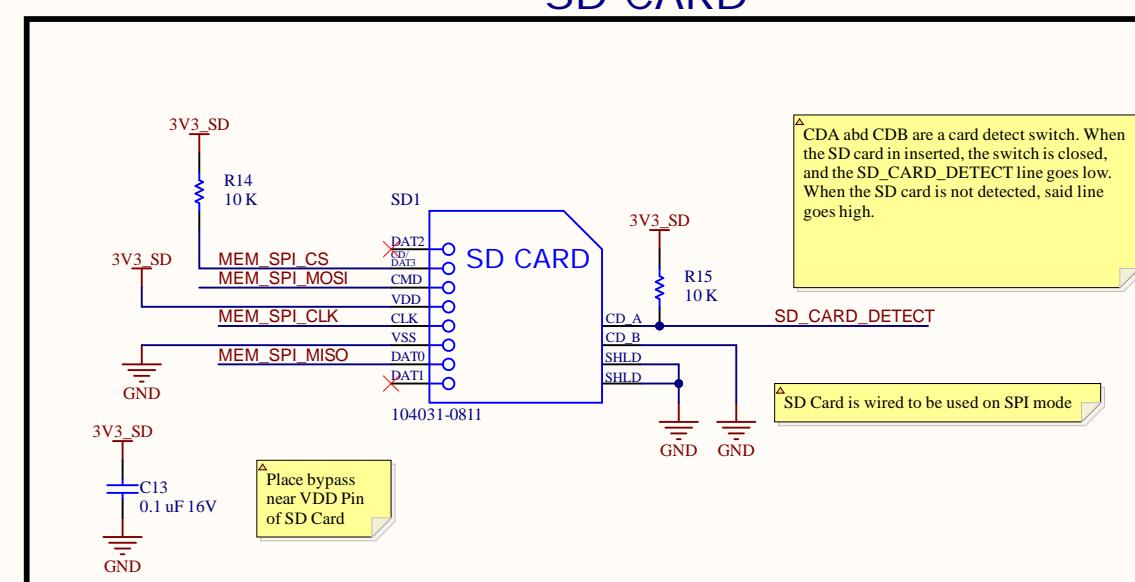
B

A

A



SD CARD

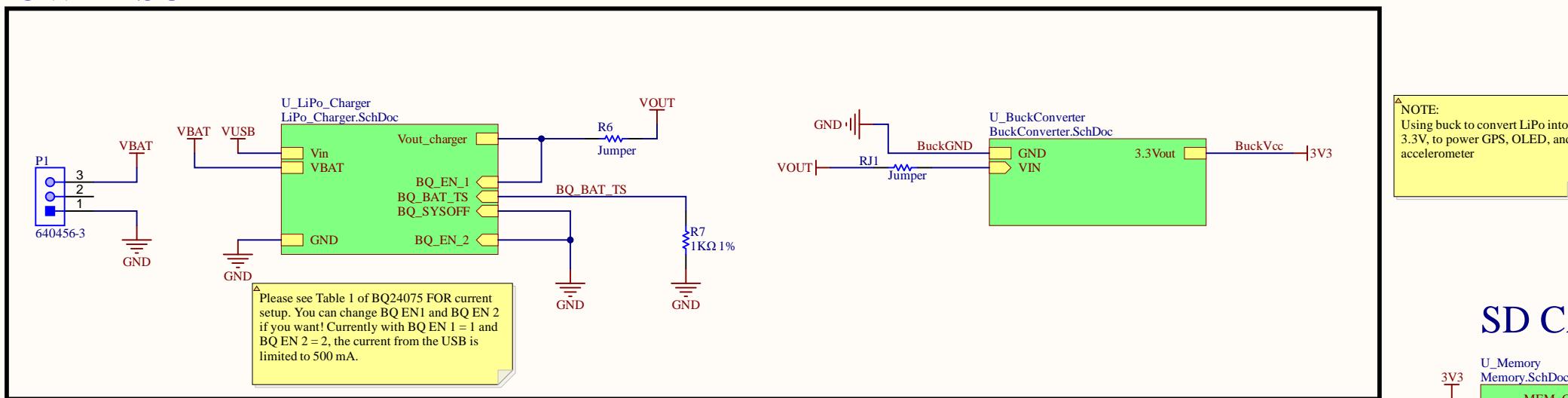


| | | | | |
|---------------------|-----------|-------------------|--------------------|--------------|
| APPROVALS | DATE | PROJECT | Penn Engineering | * |
| ENG: Weihsio Huang | | | | * |
| DSN: * | | PROJECT REVISION: | DOCUMENT REVISION: | DESIGN ITEM: |
| CHK: * | | | | |
| REFERENCE DOCUMENTS | | TITLE | SD Card Module | |
| BOM: | | | | |
| ASSY DWG: | | SIZE | CAGE CODE | DWG NO. |
| FAB DWG: | | | | |
| PCB DWG: | | REV | | 1.0 |
| SCALE: | FILE NAME | Memory.SchDoc | SHEET | 1 OF 1 |

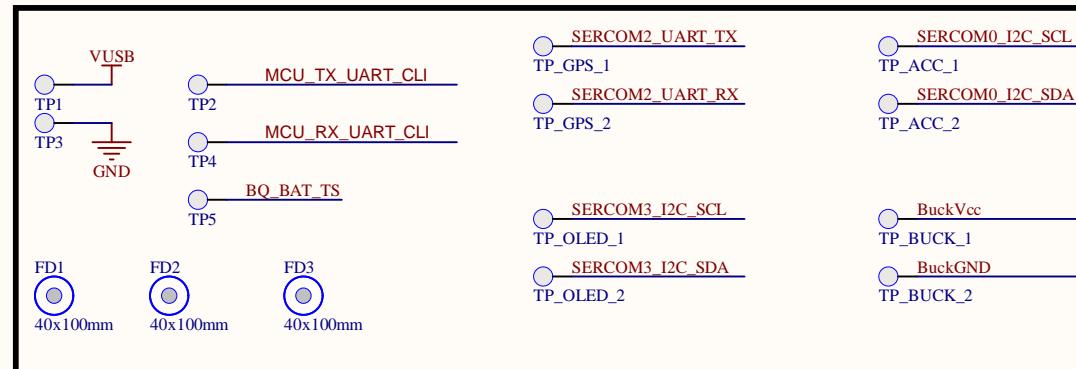
THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTIUM LIMITED AND MAY
BE FREELY DISTRIBUTED IN WHOLE. NO RIGHTS ARE
RESERVED OR EXPRESS OR IMPLIED WARANTEE GIVEN.

| DWG. NO. | REV. | SHT. | REVISION | DESCRIPTION | DATE | APPROVED |
|----------|------|------|----------|-------------|------|----------|
| 1.0.1 | | | | | | |

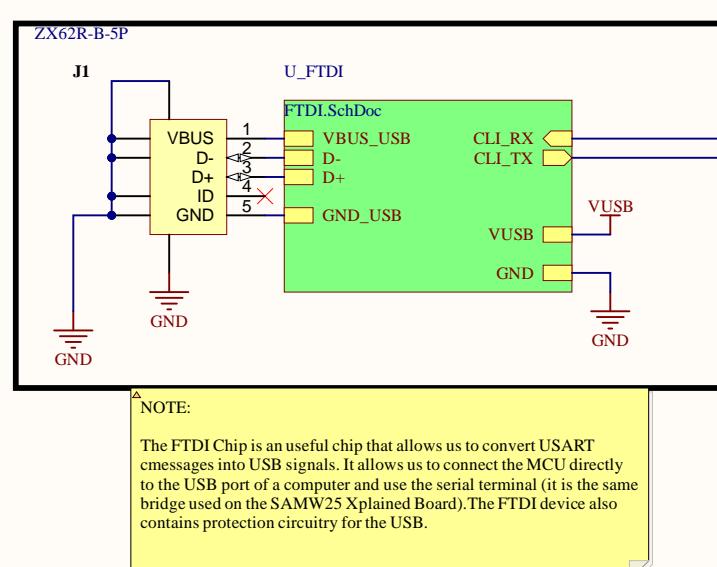
F POWER SUPPLY



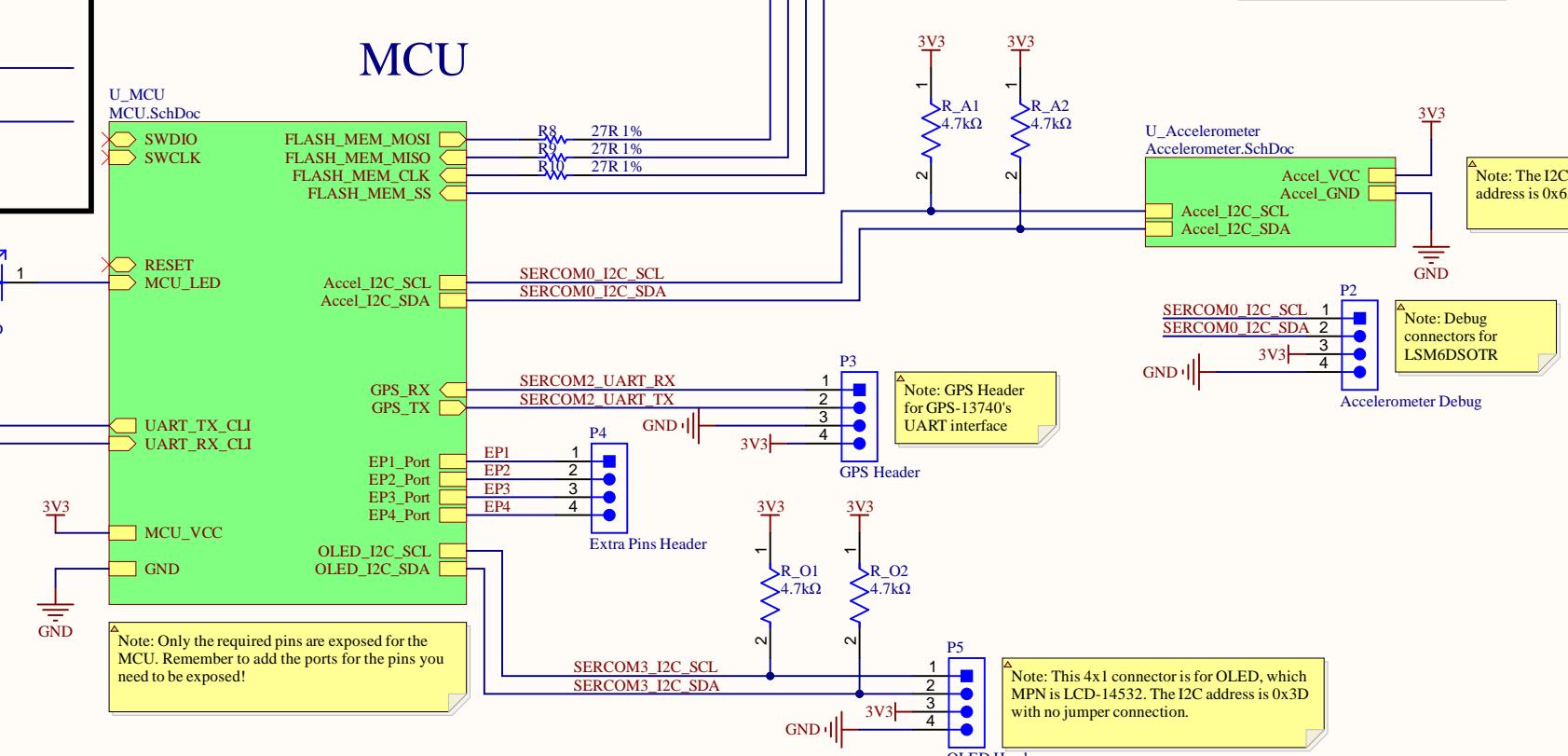
D TEST POINTS AND FIDUCIALS



B USB CONNECTOR + FTDI



C MCU



| APPROVALS | | DATE | PROJECT | Penn Engineering |
|---------------------|--------------|------|--------------------|----------------------------|
| ENG: | Weihao Huang | | | UNIVERSITY OF PENNSYLVANIA |
| DSN: | * | | | * |
| CHK: | * | | | * |
| REFERENCE DOCUMENTS | | | DOCUMENT REVISION: | DESIGN ITEM: |
| BOM: | | | | Mainboard |
| ASSY DWG: | | | | |
| FAB DWG: | | | | |
| PCB DWG: | | | | |
| SCALE: | | | FILE NAME | MAIN.SchDoc |
| | | | SHEET | 1 OF 1 |

A IoTracking_Main

Manufacturing Notes

Four (4) Layers

Dimensions: 70mm x 70mm

Thickness: 0.062"

Material: FR4

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

Scoring: None

Finished Thickness: 0.062 inches

Surface Finish: ENEPIG

Gold Fingers: No

Outer layer finish copper: 1 oz

Number of Holes: 183

Min. Hole Diameter = 0.508mm

Min. Trace (Outer Layer) = 0.006 inches

Min. Distance = 0.006 inches

Solder Mask Color: Red

Soilk Screen Sides: Both

Silk Screen Color: White

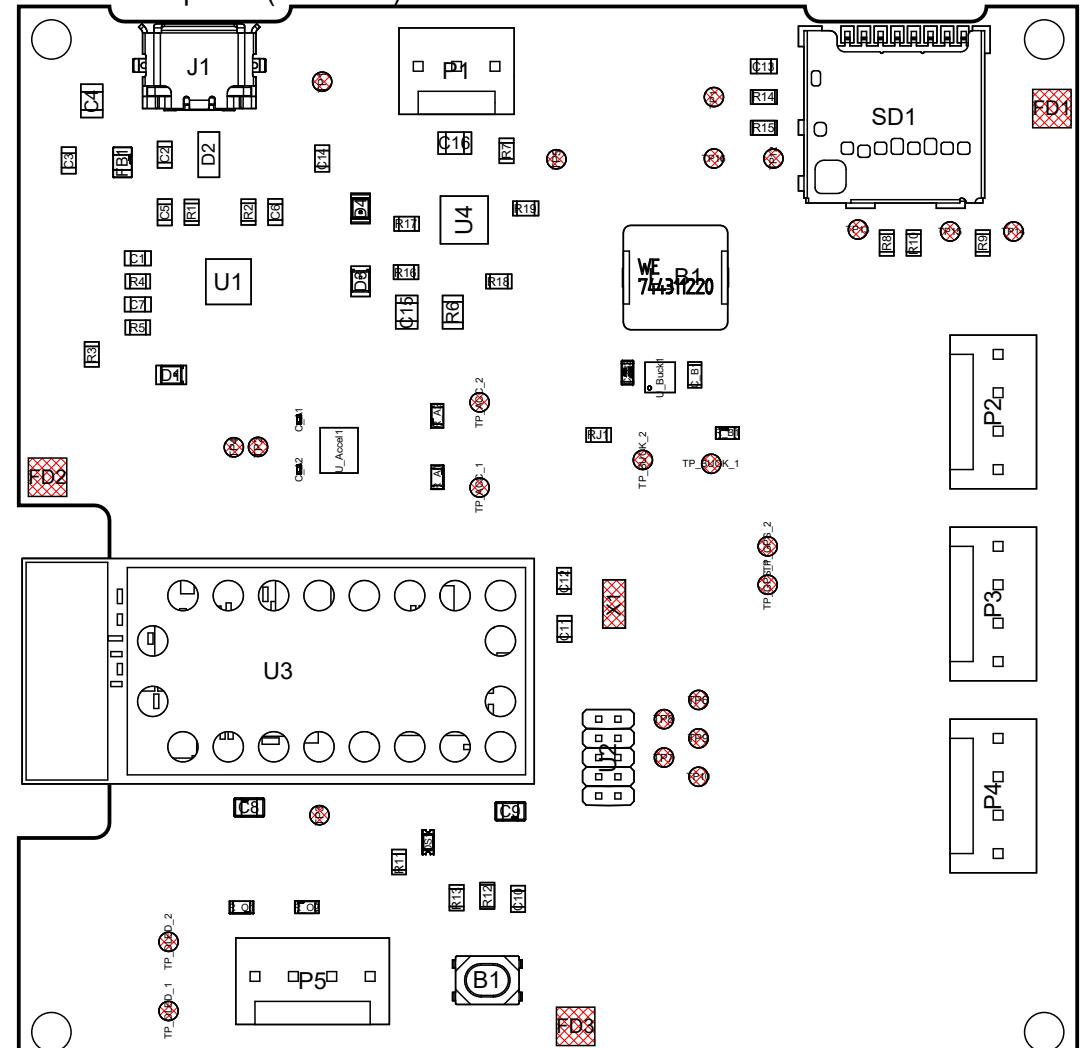
Thickness Tolerance: +/- 10%

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 |
| Prepreg | Top Layer | 0.04mm | | Signal | GTL |
| CF-001 | GroundPlane | 0.33mm | PP-006 | Dielectric | |
| CF-001 | Core | 0.02mm | | Signal | G1 |
| CF-001 | PowerPlane | 0.71mm | Core-009 | Dielectric | |
| Prepreg | PowerPlane | 0.02mm | | Signal | G2 |
| Copper | Bottom Solder | 0.33mm | PP-006 | Dielectric | |
| Surface Material | Bottom Layer | 0.04mm | Solder Resist | Signal | GBL |
| | Bottom Overlay | 0.03mm | | Solder Mask | GBS |
| | | | | Legend | GBO |

Total thickness: 1.53mm

View from Top side (Scale 2:1)



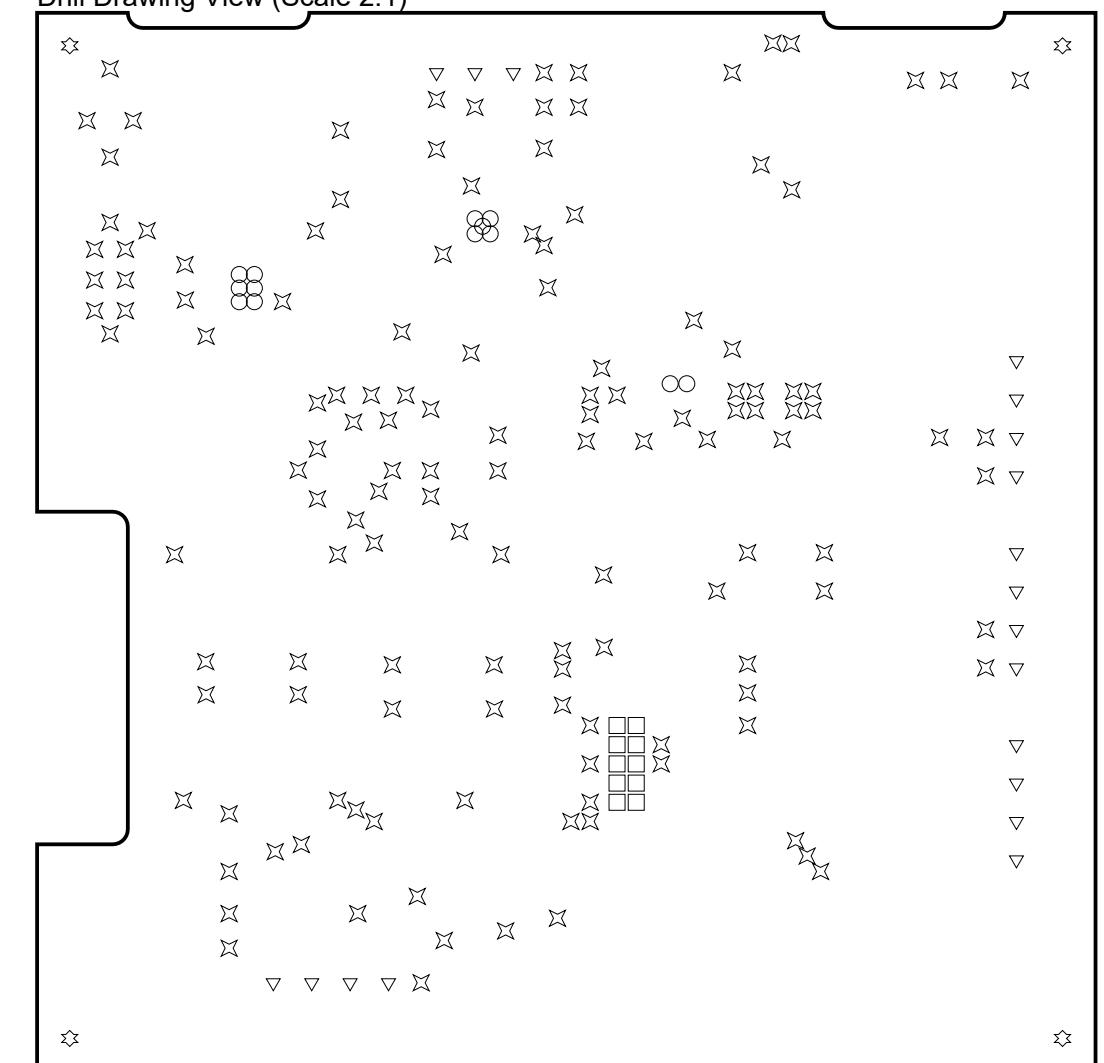
| | |
|--|------------|
| APPROVALS | DATE |
| ENGINEER: Weihao Huang | 2/26/2022 |
| DESIGNER: Weihao Huang | 2/26/2022 |
| CHECKER: Weihao Huang | 2/26/2022 |
| Reference Documents | |
| NEXT ASSY USED ON | |
| APPLICATION | |
| SIZE: B | DWG NO: |
| IoTracking Board Fabrication.PCBDw | |
| SCALE: 1 OF 12 | FILE NAME: |
| REV: 1 | DATE: |
| Altium | |
| DESIGN ITEM: PCB_Board DESIGN ITEM REVISION: 1.0 | |
| TITLE: IoTracking | |

| REV STATUS OF SHEETS | | | | REV | | | | | DWG NO: =DOC_NO_ASSY_DWG | REV: .ltc |
|-------------------------|--|--|--|-----|--|--|--|--|-----------------------------|--------------|
| SHEET | | | | | | | | | ZONE | REV |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

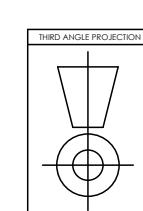
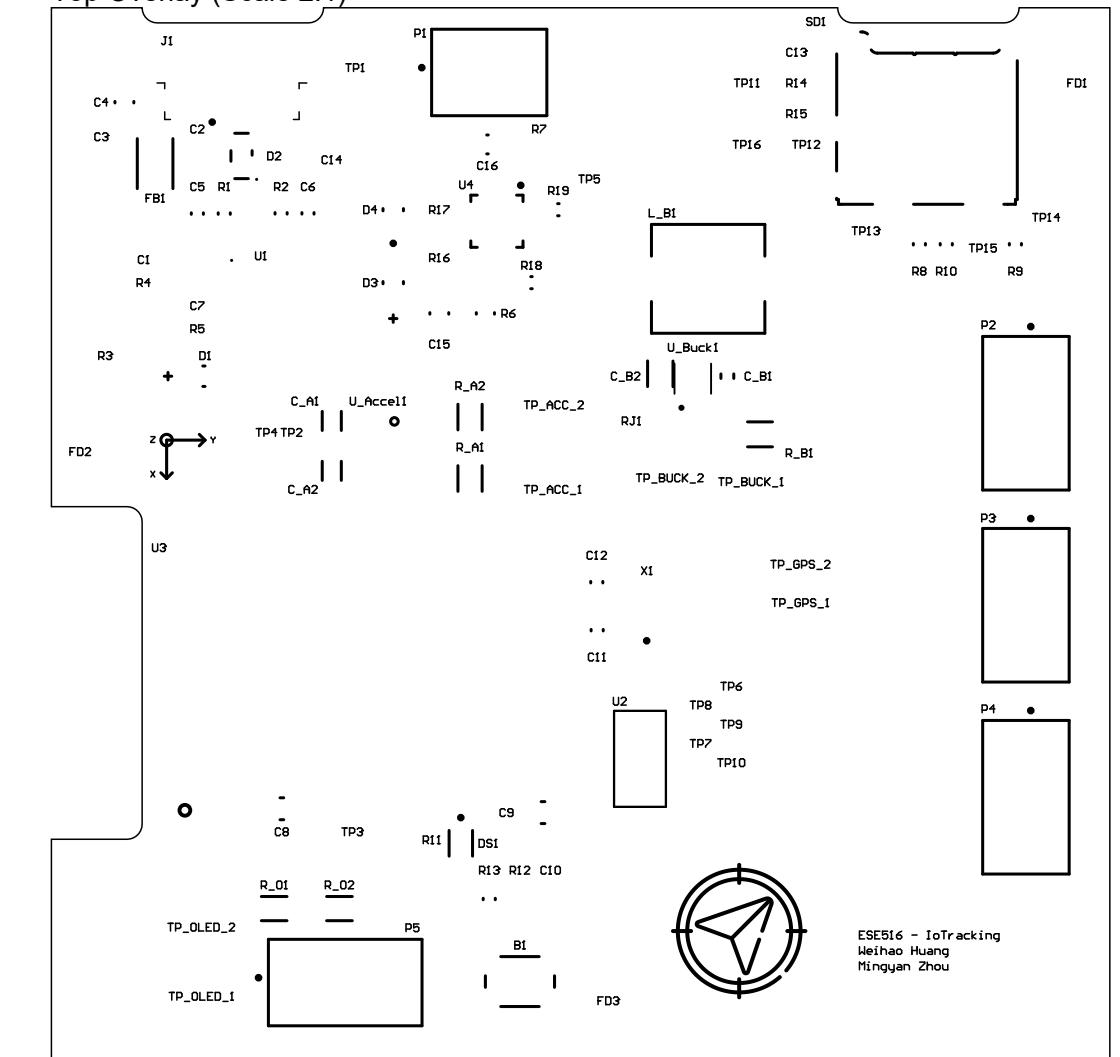
Drill Table

| Symbol | Count | Hole Size | Plated | Hole Tolerance |
|-----------|-------|-----------|--------|----------------|
| ○ | 13 | 0.20mm | Plated | |
| ✗ | 137 | 0.20mm | Plated | |
| □ | 10 | 0.65mm | Plated | |
| ▽ | 19 | 1.27mm | Plated | |
| ☆ | 4 | 2.70mm | Plated | |
| 183 Total | | | | |

Drill Drawing View (Scale 2:1)



Top Overlay (Scale 2:1)



| | | | | |
|---------------------|--------------|----------------------|------------------------------------|-----------|
| APPROVALS | DATE | | | |
| ENGINEER: | Weihao Huang | 2/26/2022 | | |
| DESIGNER: | Weihao Huang | 2/26/2022 | | |
| CHECKER: | Weihao Huang | 2/26/2022 | DESIGN ITEM: | PCB Board |
| | | | DESIGN ITEM REVISION: | 1.0 |
| Reference Documents | | TITLE: IoTracking | | |
| | | SIZE: | B | DWG NO: |
| | | SCALE: | IoTracking_Board_Fabrication.PCBDw | |
| | | FILE NAME: | SHEET: 1 OF 10 | |

A

B

C

D

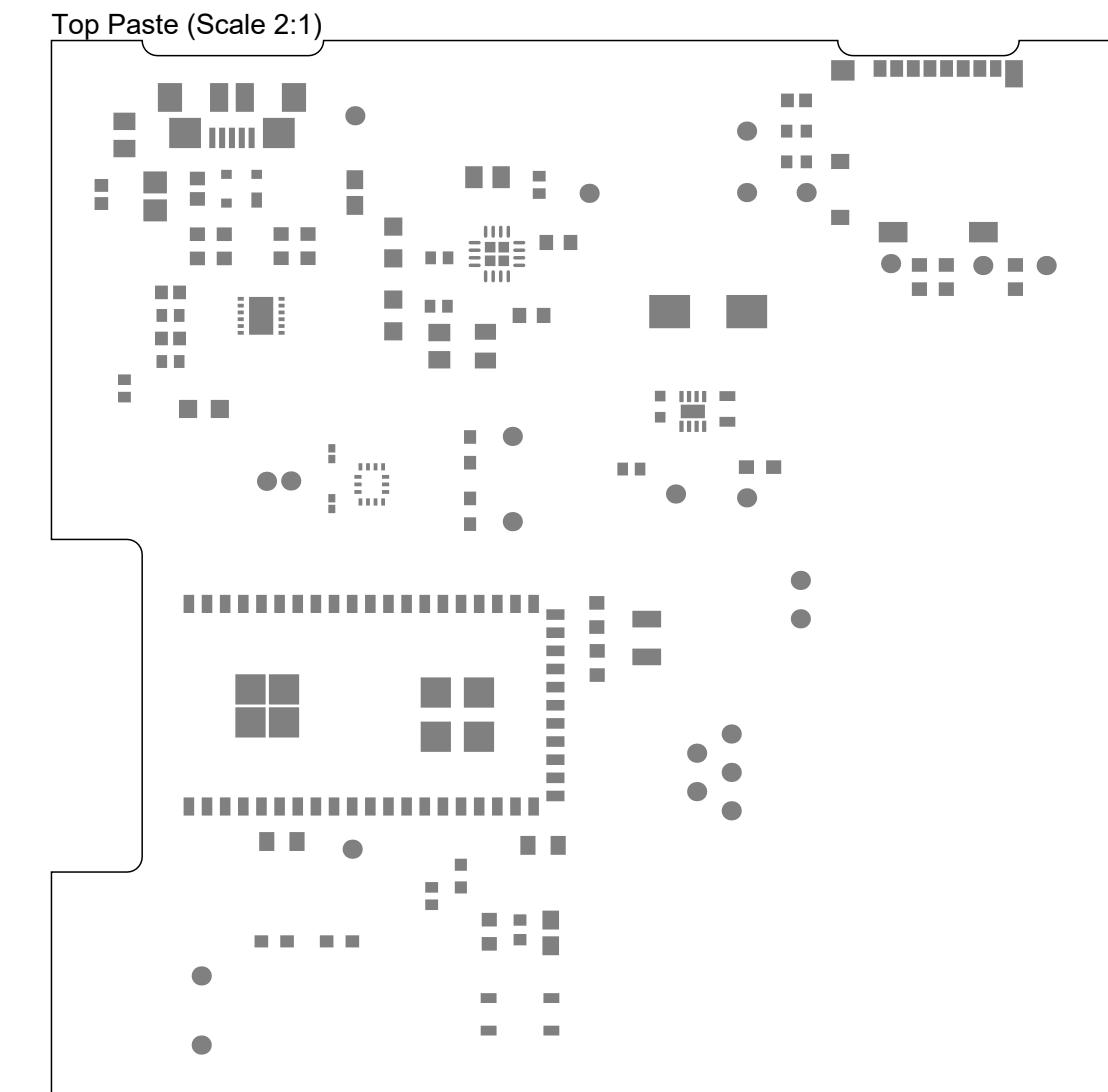
E

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 |
|-----------|--|-------------|------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



| | | |
|------------------------|---|---------------------|
| APPROVALS | DATE | Altium TM |
| ENGINEER: Weihao Huang | 2/26/2022 | |
| DESIGNER: Weihao Huang | 2/26/2022 | |
| CHECKER: Weihao Huang | 2/26/2022 | |
| DESIGN ITEM: PCB_Board | DESIGN ITEM REVISION: 1.0 | |
| TITLE: IoTracking | | |
| SIZE: B | DWG NO: | |
| REV: | | |
| NEXT ASSY | USED ON | |
| APPLICATION | | |
| SCALE: 5 OF 12 | FILE NAME: IoTracking_Board_Fabrication.PCBDw | |



A

B

C

D

E

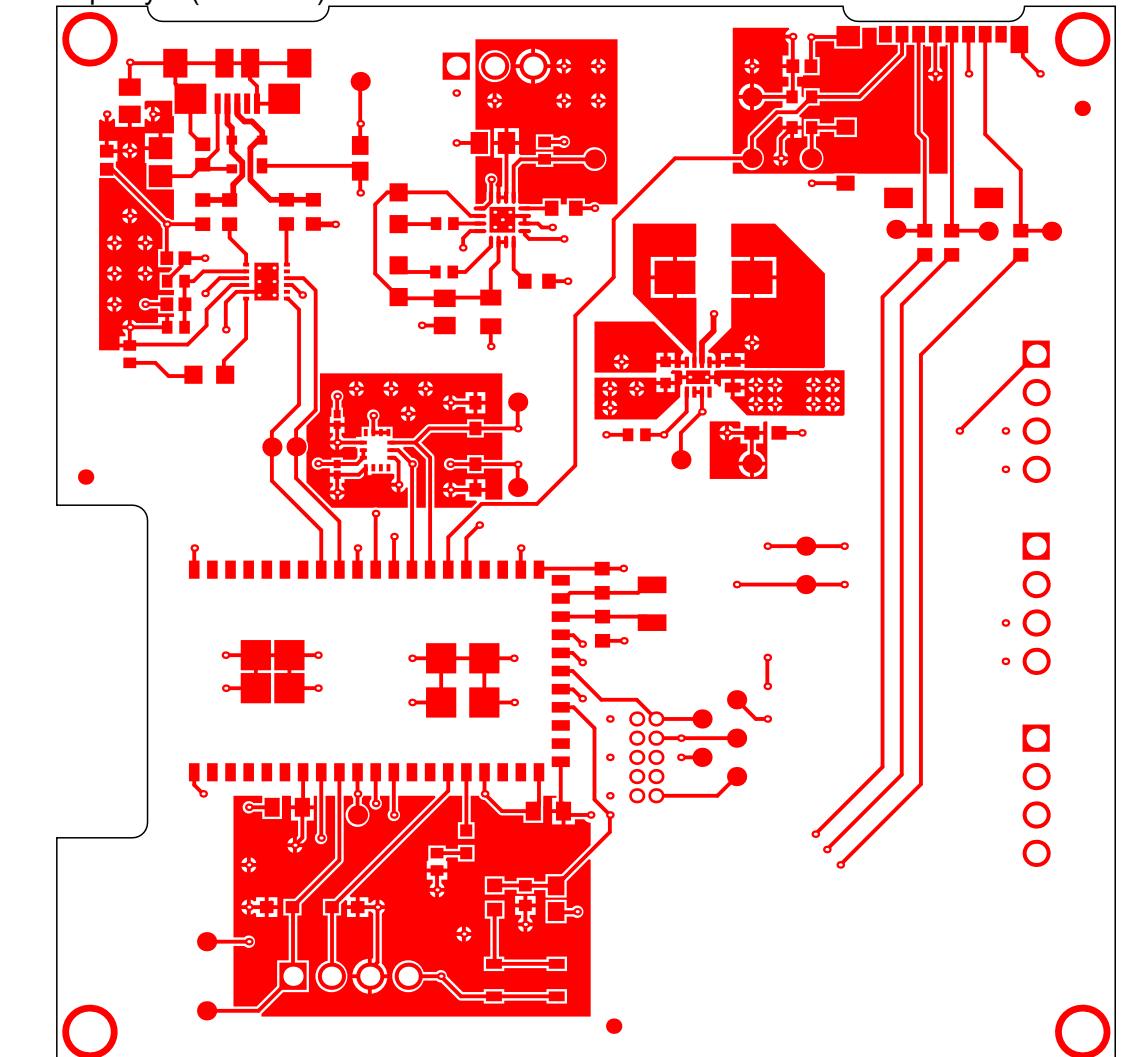
F

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 |
|-----------|--|-------------|------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Top Layer (Scale 2:1)



| | | |
|------------------------|---|---------------------|
| APPROVALS | DATE | Altium TM |
| ENGINEER: Weihao Huang | 2/26/2022 | |
| DESIGNER: Weihao Huang | 2/26/2022 | |
| CHECKER: Weihao Huang | 2/26/2022 | |
| DESIGN ITEM: PCB_Board | DESIGN ITEM REVISION: 1.0 | |
| TITLE: IoTracking | | |
| SIZE: B | DWG NO: | |
| REV: .lfe | FILE NAME: IoTracking_Board_Fabrication.PCBDw | |
| SCALE: 1:1 | FILE NAME: IoTracking_Board_Fabrication.PCBDw | |
| REV: .lfe | FILE NAME: IoTracking_Board_Fabrication.PCBDw | |
| Sheet: 6 of 12 | | |



A

B

C

D

E

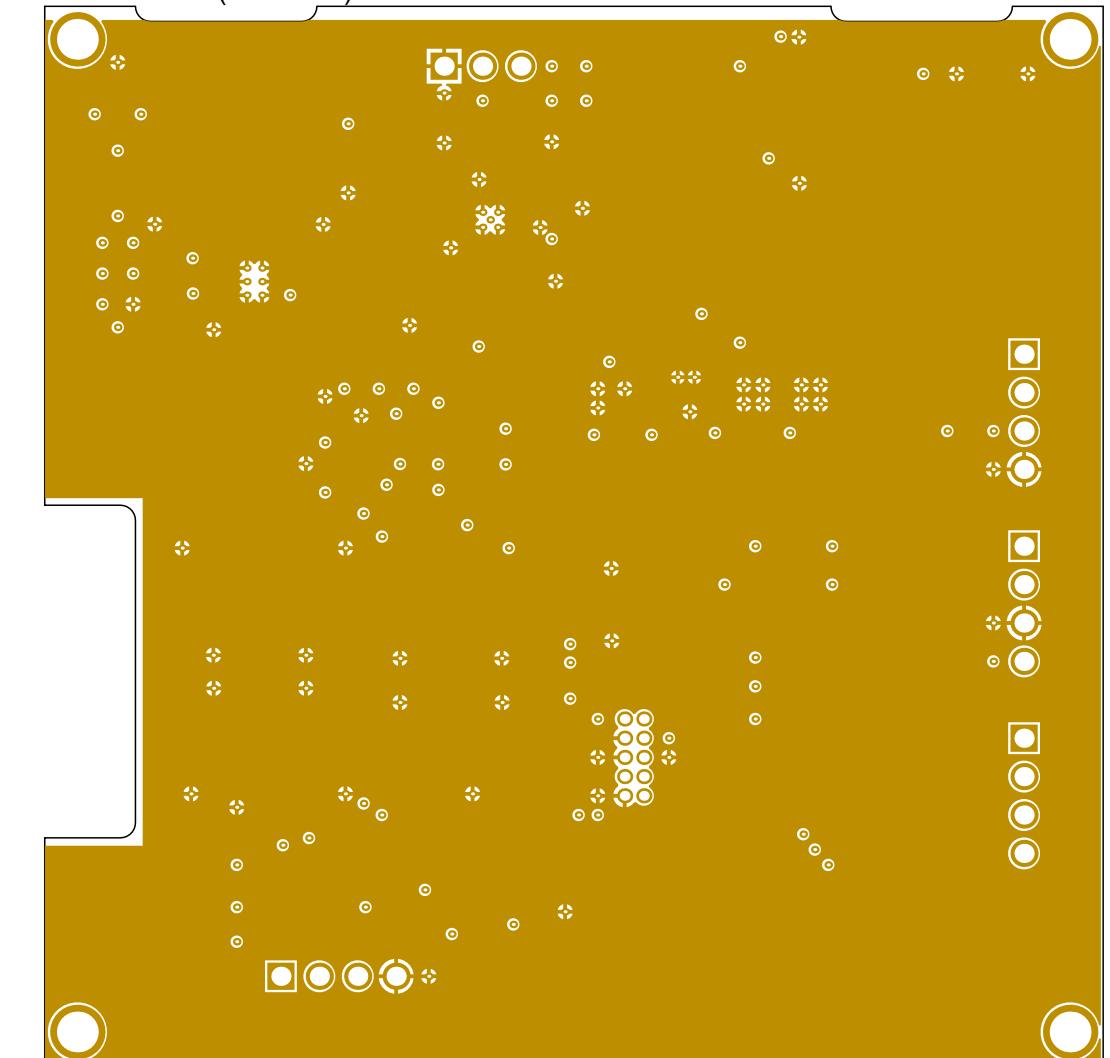
F

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.

| DWG NO: =DOC_NO_ASSY_DWG | REV: .lfe |
|-----------------------------|--------------|
| | |

| REVISIONS | | |
|-------------|------|----------|
| DESCRIPTION | DATE | APPROVED |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

GroundPlane (Scale 2:1)



| APPROVALS | | DATE | DESIGN ITEM: PCB_Board | DESIGN ITEM REVISION: 1.0 |
|------------------------|--------------|------------|------------------------------------|------------------------------|
| ENGINEER: | Weihao Huang | 2/26/2022 | | |
| DESIGNER: | Weihao Huang | 2/26/2022 | | |
| CHECKER: | Weihao Huang | 2/26/2022 | | |
| Reference Documents | | | | |
| THIRD ANGLE PROJECTION | | | | |
| | | | | |
| | | | | |
| NEXT ASSY | USED ON | | | |
| | | | | |
| APPLICATION | | | | |
| SIZE: | B | DWG NO: | | |
| SCALE: | | FILE NAME: | IoTracking_Board_Fabrication.PCBDw | |
| | | | | |

Altium

.lfe

1.0

IoTracking

PCB_Board

1.0

7 OF 12

A

B

C

D

E

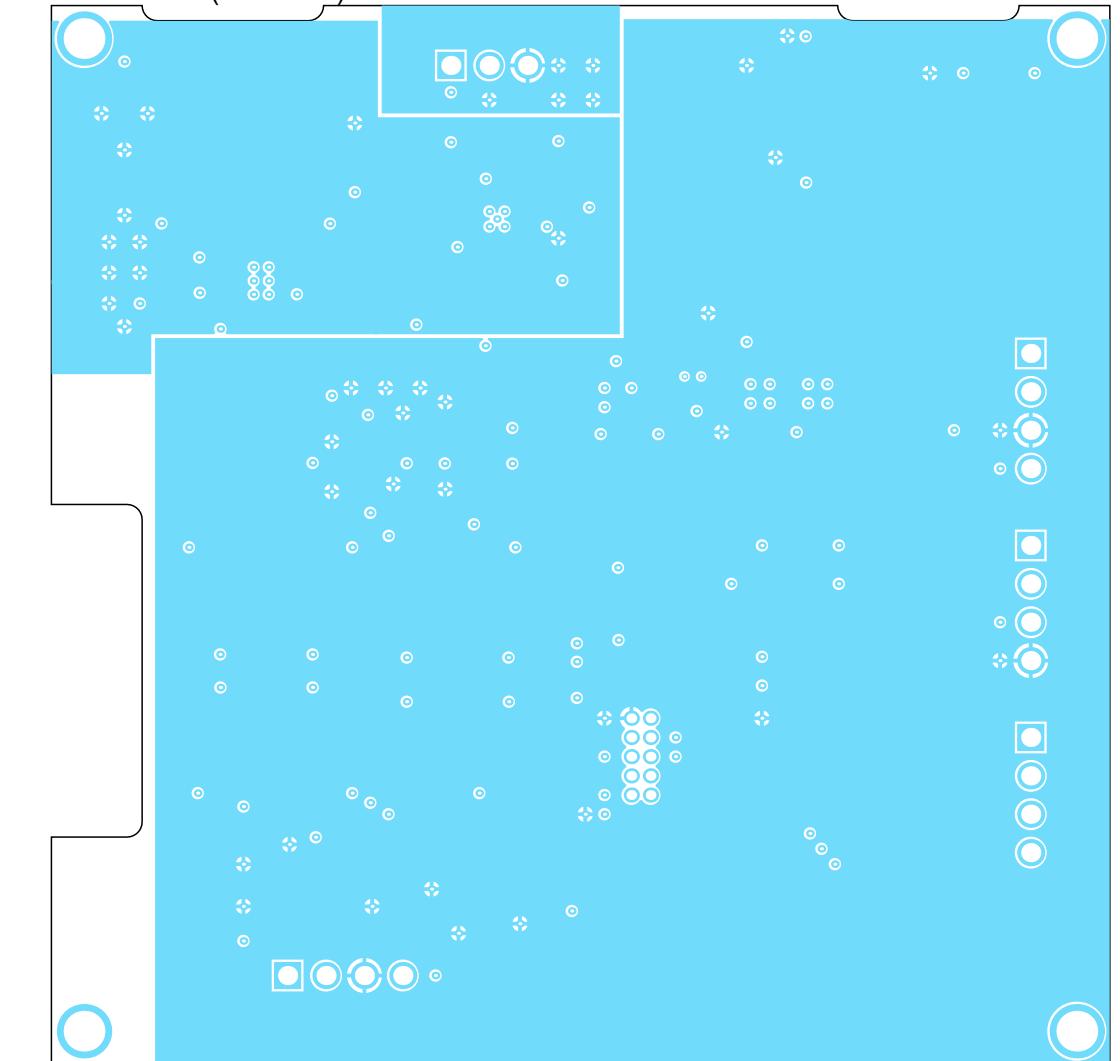
F

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.

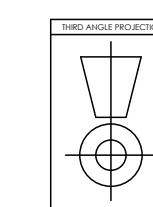
| REV STATUS OF SHEETS | | REV | | | | | | DWG NO: =DOC_NO_ASSY_DWG | REV: .lfe |
|-------------------------|--|-----|--|--|--|--|--|-----------------------------|--------------|
| SHEET | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | |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

| REVISIONS | | DESCRIPTION | DATE | APPROVED |
|-----------|--|-------------|------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

PowerPlane (Scale 2:1)



| | | |
|------------------------|---|--|
| APPROVALS | DATE | Altium PCB Board IoTracking |
| ENGINEER: Weihao Huang | 2/26/2022 | |
| DESIGNER: Weihao Huang | 2/26/2022 | |
| CHECKER: Weihao Huang | 2/26/2022 | |
| Reference Documents | | |
| SIZE: B | DWG NO: | |
| SCALE: 1.0 | FILE NAME: IoTracking_Board_Fabrication.PCBDw | REV: 8 OF 12 |



APPROVALS DATE
ENGINEER: Weihao Huang 2/26/2022
DESIGNER: Weihao Huang 2/26/2022
CHECKER: Weihao Huang 2/26/2022
Reference Documents
SIZE: B DWG NO:
SCALE: 1.0 FILE NAME: IoTracking_Board_Fabrication.PCBDw
REV: 8 OF 12

A B C D E F

A

B

C

D

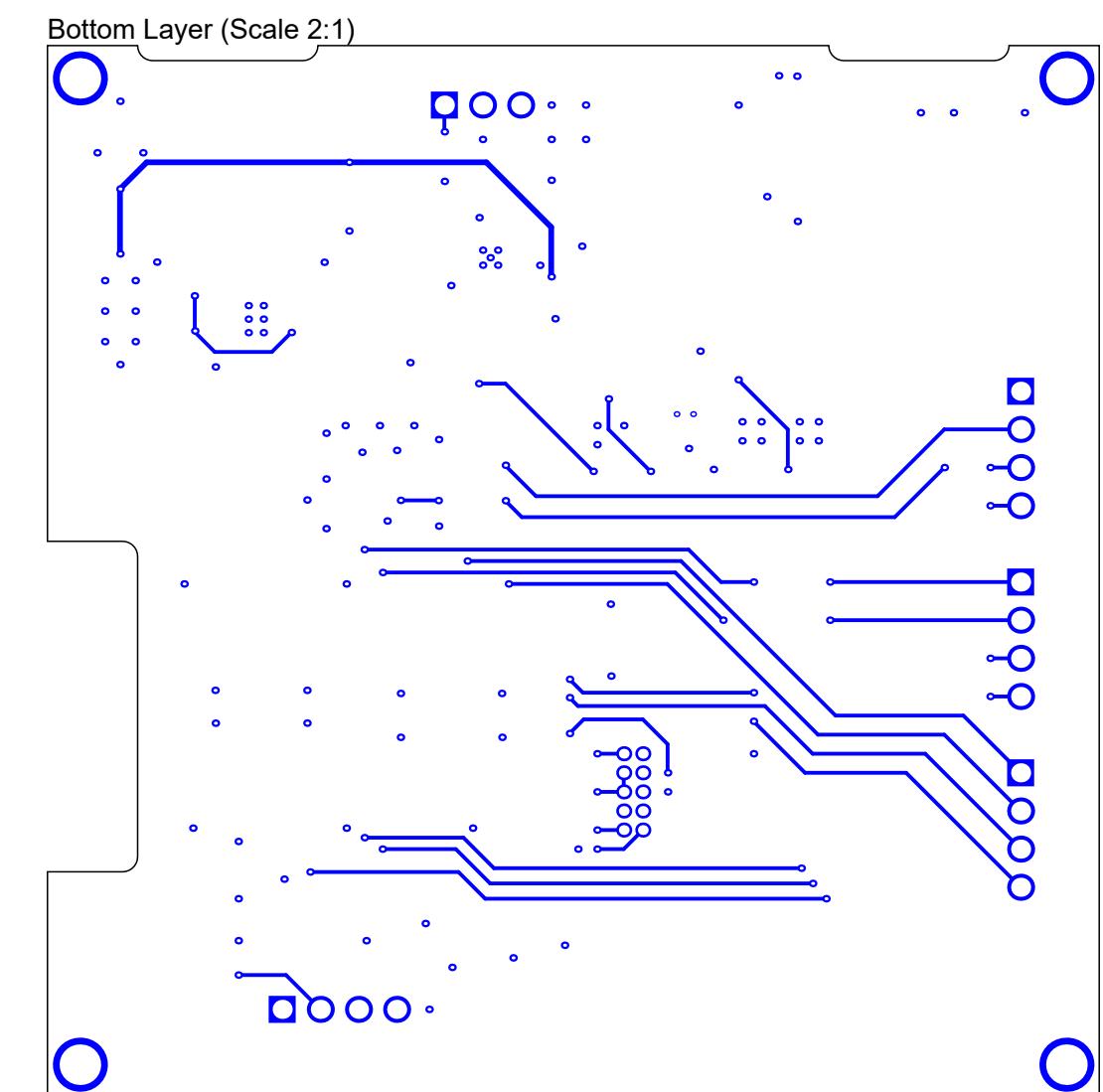
E

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 |
|-----------|--|-------------|------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



| | | |
|--|------------|---------------------|
| APPROVALS | DATE | Altium TM |
| ENGINEER: Weihao Huang | 2/26/2022 | |
| DESIGNER: Weihao Huang | 2/26/2022 | |
| CHECKER: Weihao Huang | 2/26/2022 | |
| Reference Documents | | |
| DESIGN ITEM: PCB_Board DESIGN ITEM REVISION: 1.0 | | |
| TITLE: IoTTracking | | |
| SIZE: B | DWG NO: | |
| IoTracking_Board_Fabrication.PCBDw | | |
| SCALE: | FILE NAME: | |
| REV: 9 OF 12 | | |

THIRD ANGLE PROJECTION

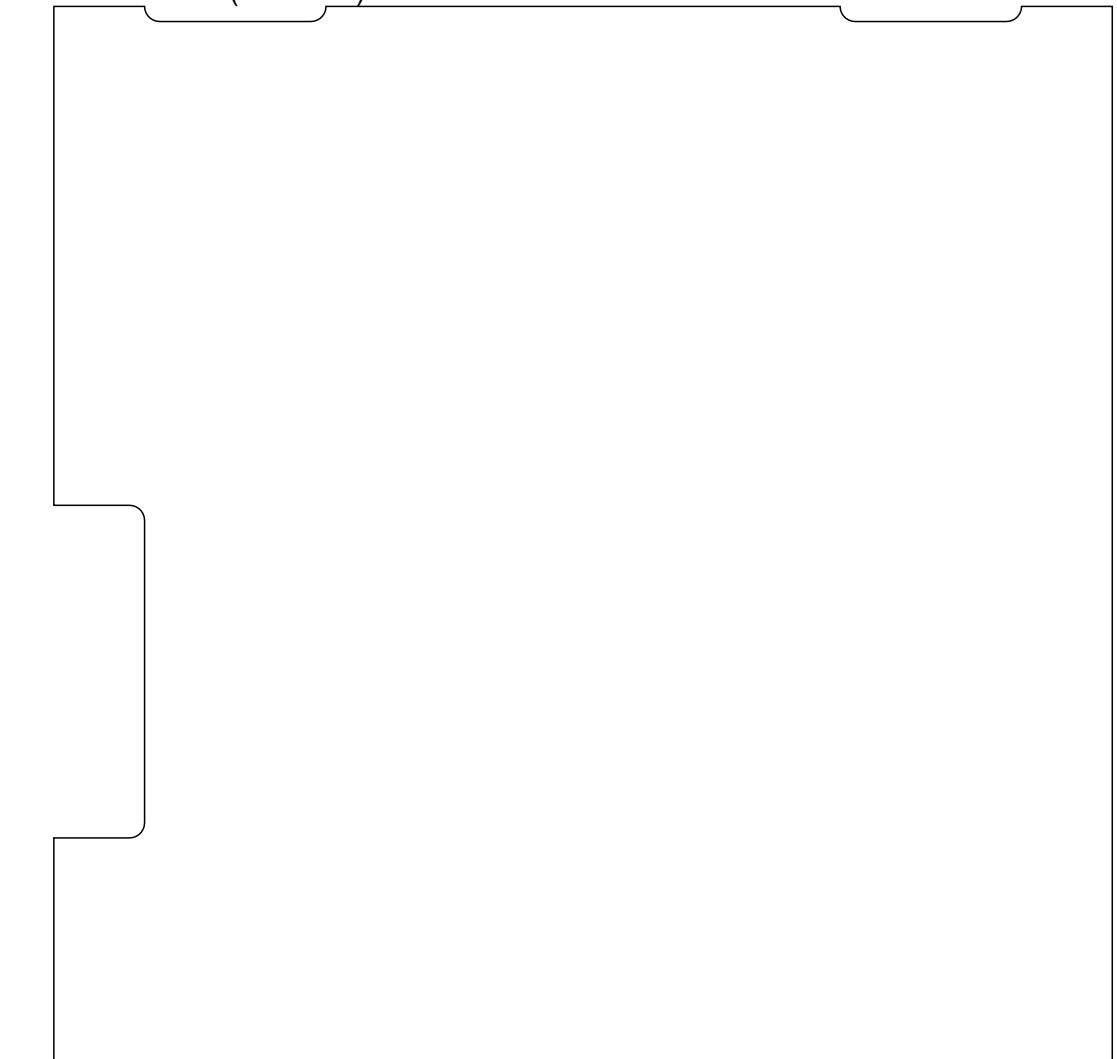
NEXT ASSY USED ON APPLICATION

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

A

F

Bottom Paste (Scale 2:1)



1

1

1

1

REV.

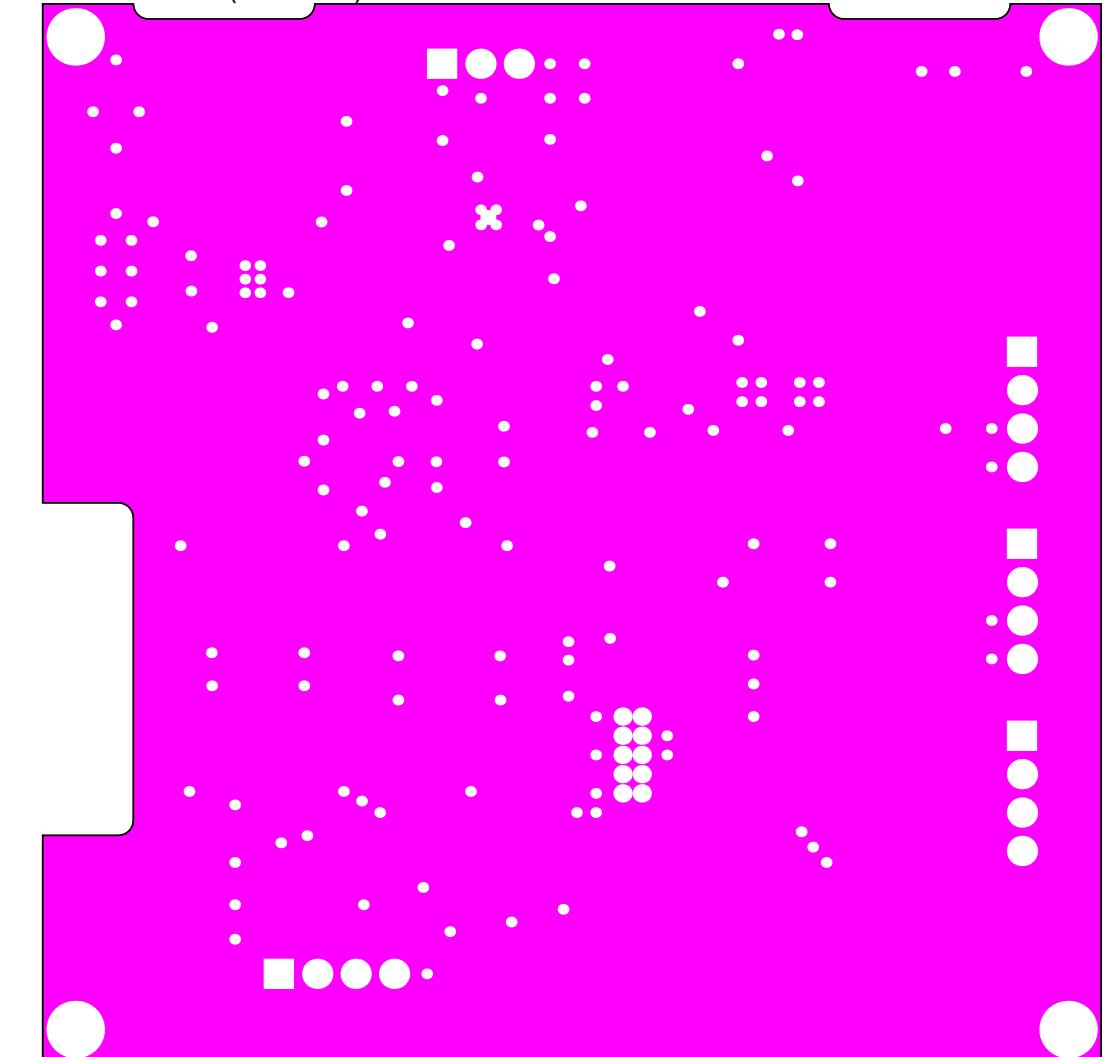
REV.

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
DATA CONTAINED HEREIN.

DWG NO: 00000000 REV: H

Bottom Solder (Scale 2:1)



11

A

B

C

D

E

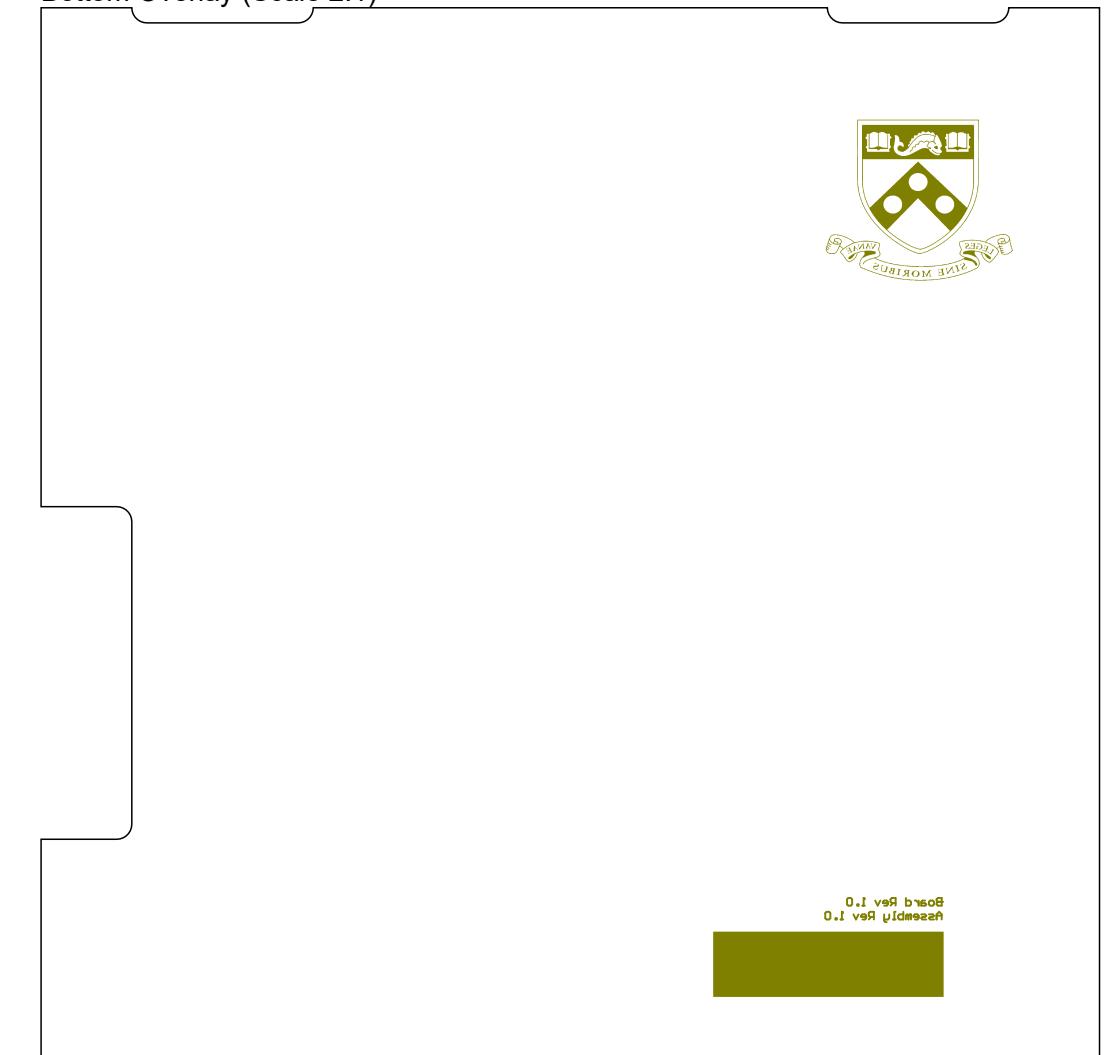
F

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR
HEREWITH IS THE PROPERTY OF ALTUM 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 |
|-----------|--|-------------|------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Bottom Overlay (Scale 2:1)



| | | | |
|------------------------|--------------|---------------------|--|
| APPROVALS | DATE | Altium TM | |
| ENGINEER: | Weihao Huang | 2/26/2022 | |
| DESIGNER: | Weihao Huang | 2/26/2022 | |
| CHECKER: | Weihao Huang | 2/26/2022 | DESIGN ITEM: PCB_Board DESIGN ITEM REVISION: 1.0 |
| Reference Documents | | | |
| THIRD ANGLE PROJECTION | | | TITLE: IoTracking |
| | | | SIZE: B DWG NO: |
| | | | REV: |
| | | | |
| NEXT ASSY | USED ON | | |
| | | | |
| APPLICATION | | | IoTracking_Board_Fabrication.PCBDw |
| SCALE: | FILE NAME: | | Sheet: 12 of 12 |

| REV STATUS OF SHEETS | REV | | | | | | | | | | | |
|----------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| REVISIONS | |
|-------------|------|
| DESCRIPTION | DATE |
| | |
| | |
| | |

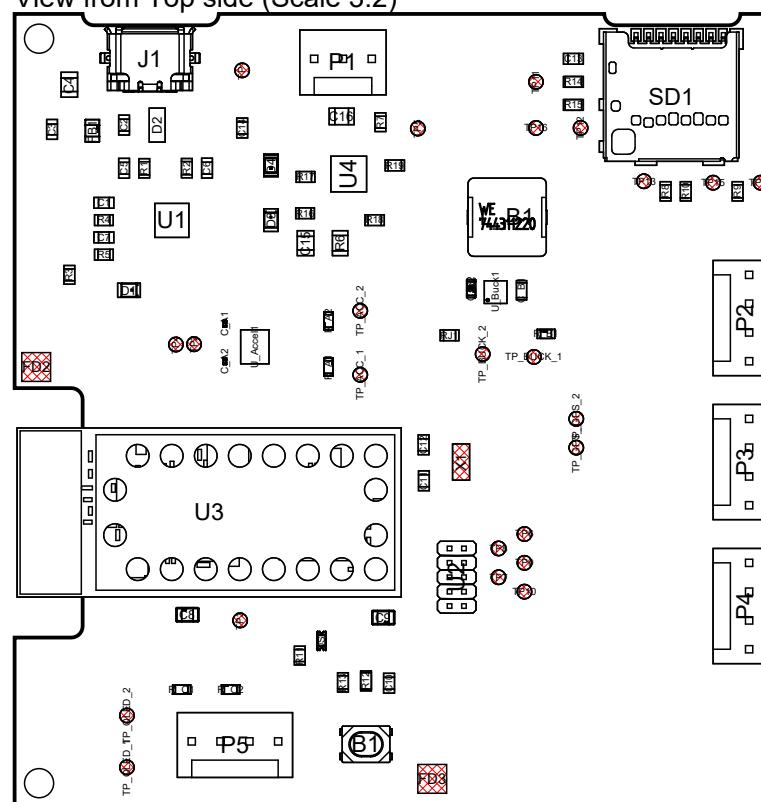
1

1

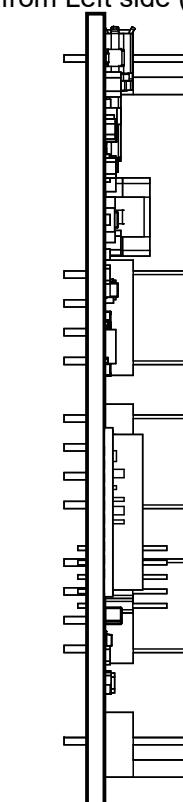
NOTES (unless otherwise specified):

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

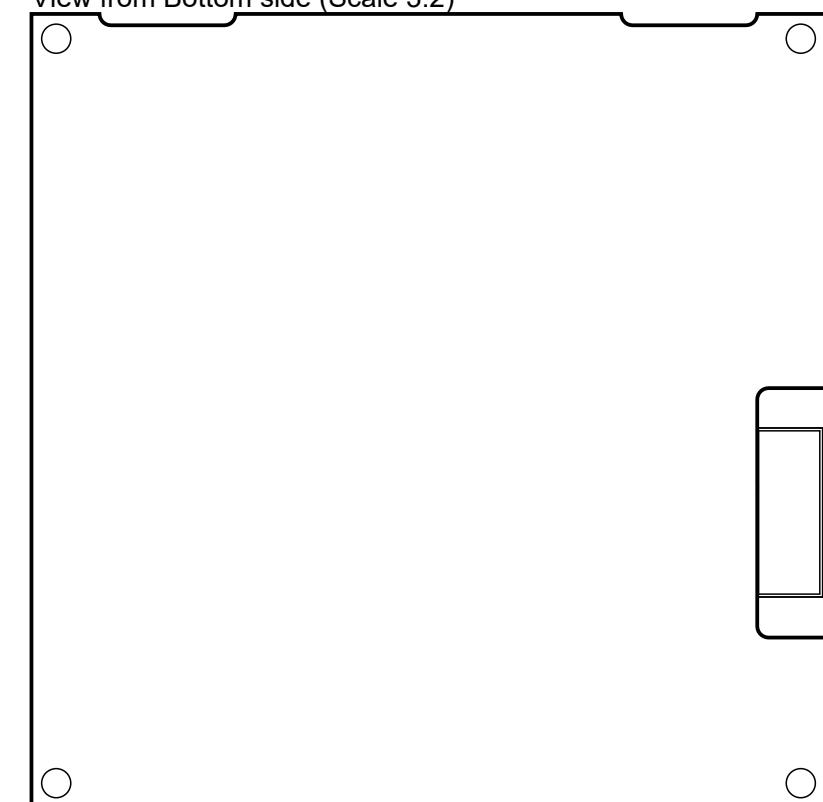
View from Top side (Scale 3:2)



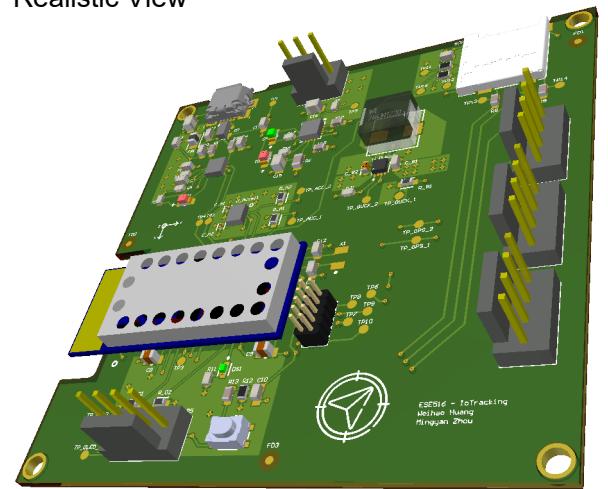
View from Left side (Scale 3:2)



View from Bottom side (Scale 3:2)



Realistic View



2

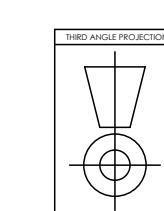
2

3

3

4

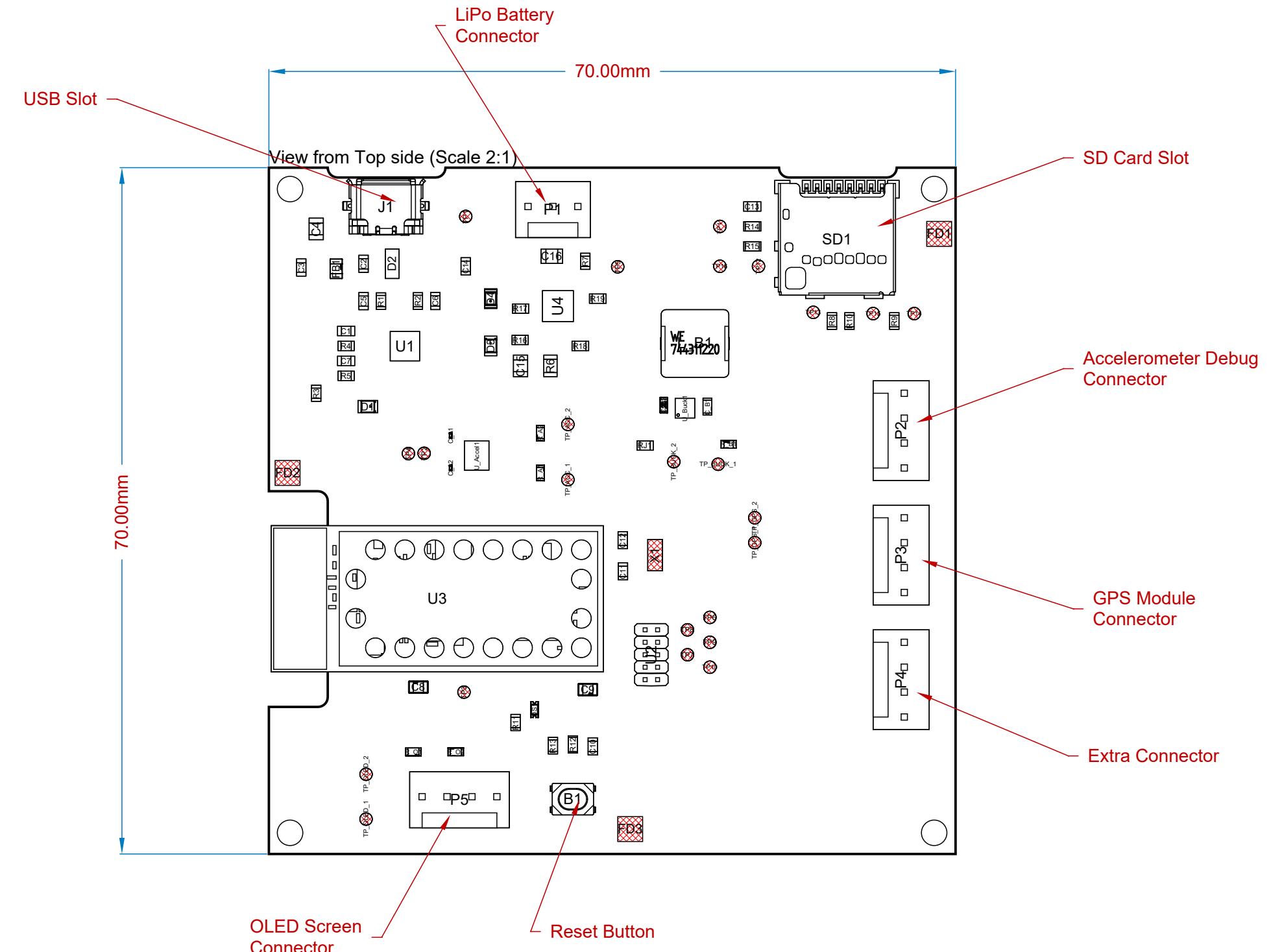
4

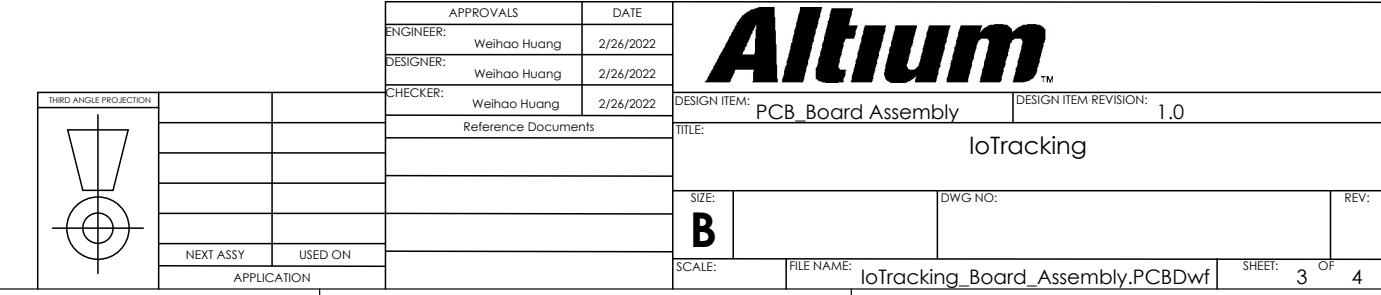
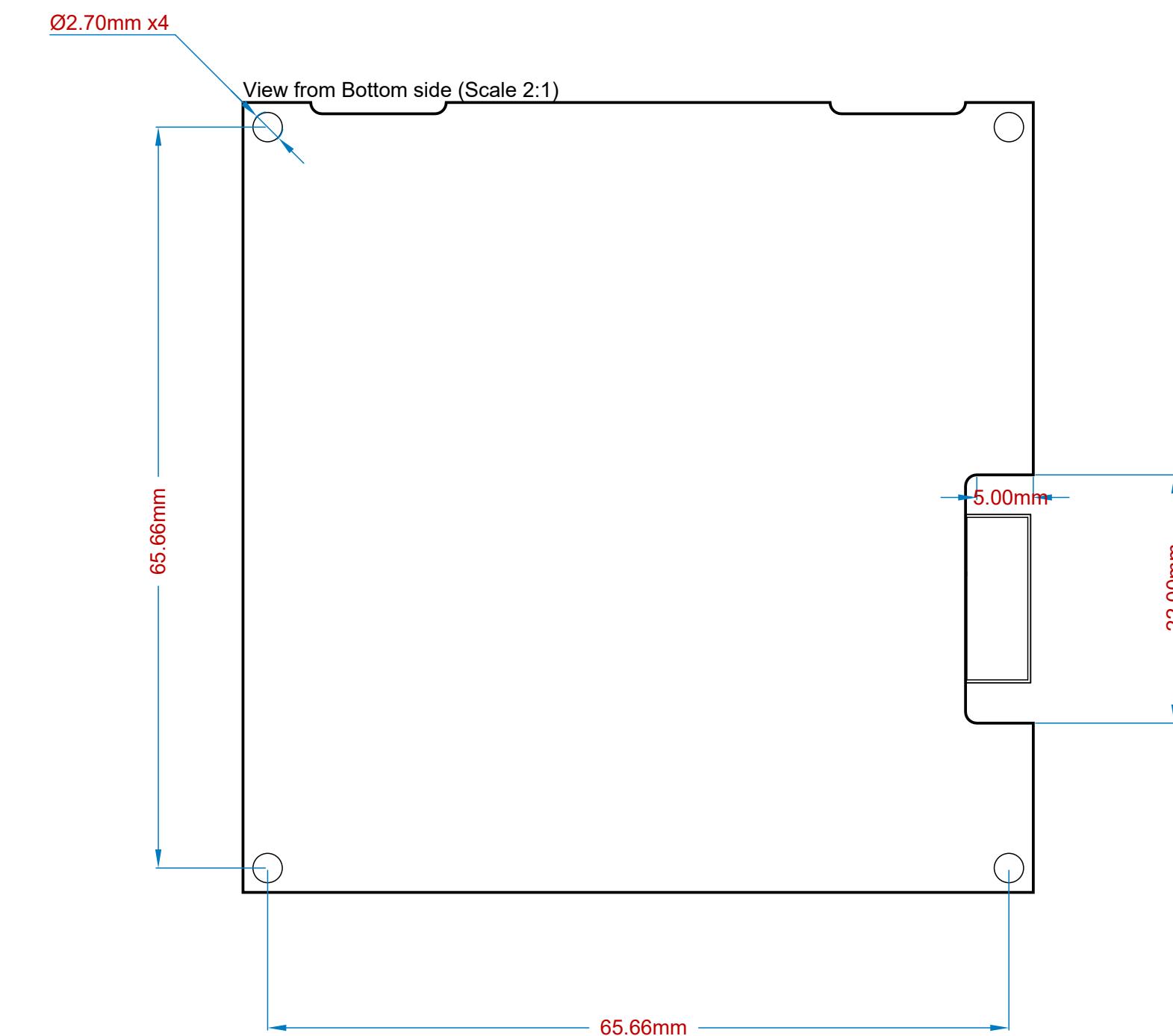


| APPROVALS | DATE |
|------------------------|-----------|
| ENGINEER: Weihao Huang | 2/26/2022 |
| DESIGNER: Weihao Huang | 2/26/2022 |
| CHECKER: Weihao Huang | 2/26/2022 |
| Reference Documents | |
| | |
| | |
| | |
| | |
| NEXT ASSY | USED ON |
| APPLICATION | |

DESIGN ITEM: PCB Board Assembly DESIGN ITEM REVISION: 1.0
TITLE: IoTTracking
SIZE: B DWG NO:
SCALE: FILE NAME: IoTTracking_Board_Assembly.PCBDwf SHEET: 1 OF 4

Altium





Bill Of Materials

| Line # | Designator | Name | Quantity |
|--------|---------------------------|--------------------------|----------|
| | U_Accel1 | 6 DoF Accelerometer | 1 |
| | GPS_Module1 | GPS 13740 | 1 |
| 27 | U1 | FT234XD-R | 1 |
| 36 | U3 | SAMW25H18-MR510PB | 1 |
| 28 | R4, RJ1 | CRCW06030000Z0EC | 2 |
| | C_A1, C_A2 | GRM033C80J104ME15D | 2 |
| 6 | R12, R14, R15 | ERJ3EKF1002V | 3 |
| 3 | R3, R5, R7, R11, R16, R17 | CRCW06031K00FKEB | 6 |
| 11 | R1, R2, R8, R9, R10 | 27R 1% 0603(1608) | 5 |
| 16 | C1, C3, C7, C13 | VJ0603Y104KXJCW1BC | 4 |
| | R_A1, R_A2, R_O1, R_O2 | AT0603DRD074K7L | 4 |
| | R_B1 | CPF0603B180KE | 1 |
| 2 | R18, R19 | 1K13 1% 0603(1608) | 2 |
| 7 | C2 | C0603C103K4RACTU | 1 |
| 17 | R13 | 100R 1% 0603(1608) | 1 |
| 24 | FB1 | BLM21PG221SN1D | 1 |
| 29 | R6 | Jumper 0805(2012) | 1 |
| 20 | P1 | 640456-3 | 1 |
| | P2, P3, P4, P5 | 640456-4 | 4 |
| 4 | C10, C14 | 0603YC105JAT2A | 2 |
| 5 | C4, C15, C16 | CAP 4.7uF 16V 0805(2012) | 3 |
| 9 | C11, C12 | CAP 18pF 16V 0603(1608) | 2 |
| 14 | C5, C6 | CAP 47pF 16V 0603(1608) | 2 |
| 32 | DS1 | LTST-C191KGKT | 1 |
| 31 | D4 | LTST-C170GKT | 1 |
| 35 | B1 | PTS810 SJK 250 SMTR LFS | 1 |
| 30 | D1, D3 | LTST-C170CKT | 2 |
| 34 | D2 | PRTR5V0U2X,215 | 1 |
| | C_B2 | C1608X5R1C106M080AB | 1 |
| 21 | U2 | 20021111-00010T4LF | 1 |
| 39 | J1 | ZX62R-B-5P | 1 |
| 8 | C8, C9 | 0805YD106KAT2A | 2 |
| | U_Buck1 | TPS62082DSGR | 1 |
| 19 | SD1 | 104031-0811 | 1 |
| 25 | U4 | BQ24075RGTRG4 | 1 |
| | L_B1 | 744311100 | 1 |
| | LCD1 | OLED LCD Screen | 1 |
| | Battery1 | LiPo Battery | 1 |
| | C_B1 | C1608X5R0J226M080AC | 1 |

| REV STATUS OF SHEETS | | REV | DWG NO. =DOC_NO_ASSY_DWG | | REV | REVISIONS | | | | |
|----------------------|--|-----|--------------------------|--|-----|-----------|-----|-------------|------|----------|
| SHEET | | | | | | ZONE | REV | DESCRIPTION | DATE | APPROVED |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | | | |
|---------------------|---|---|---|
| APPROVALS | | DATE |  |
| ENGINEER: | Weihao Huang | 2/26/2022 | |
| DESIGNER: | Weihao Huang | 2/26/2022 | |
| CHECKER: | Weihao Huang | 2/26/2022 | |
| Reference Documents | | DESIGN ITEM: PCB_Board Assembly DESIGN ITEM REVISION: 1.0 | |
| NEXT ASSY | | USED ON | TITLE: IoTracking |
| APPLICATION | | | SIZE: B DWG NO: |
| SCALE: | FILE NAME: IoTracking_Board_Assembly.PCBDwf | | REV: 4 OF 4 |