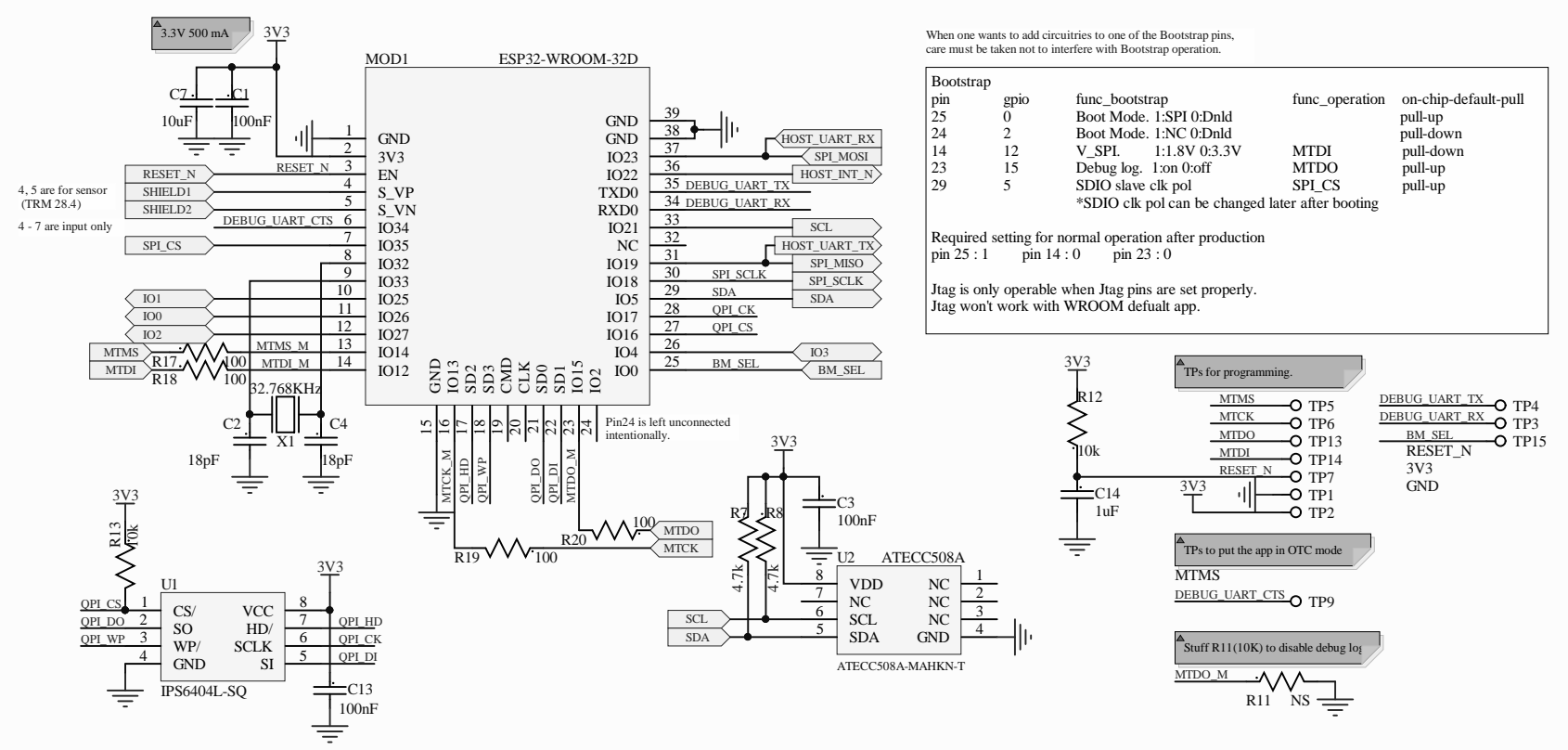


Minimum Circuit needed for production.

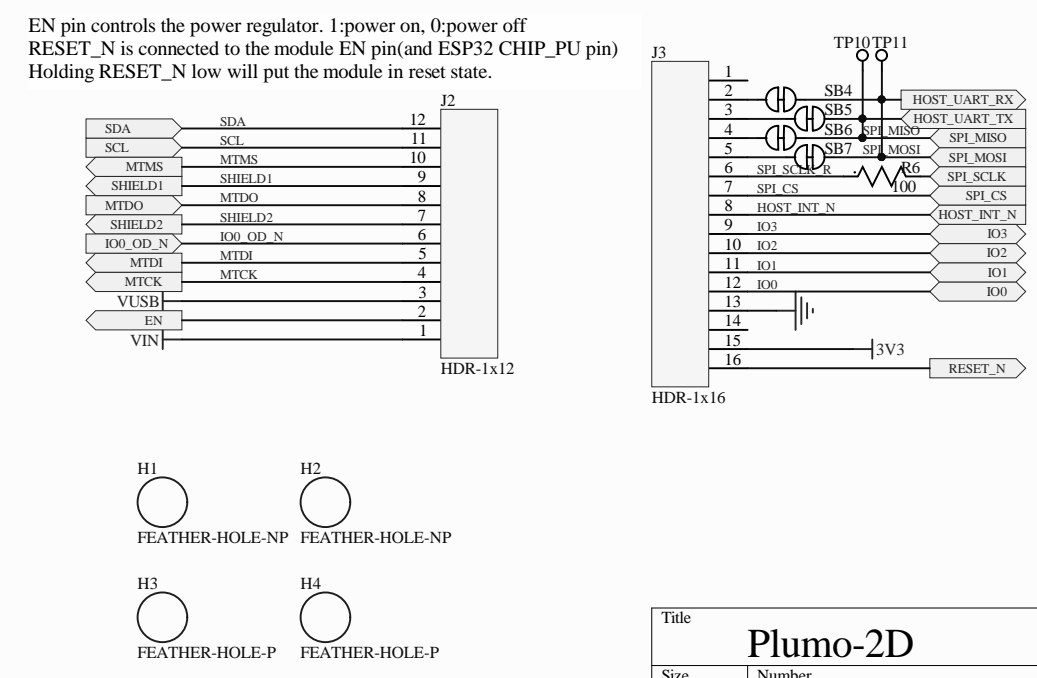
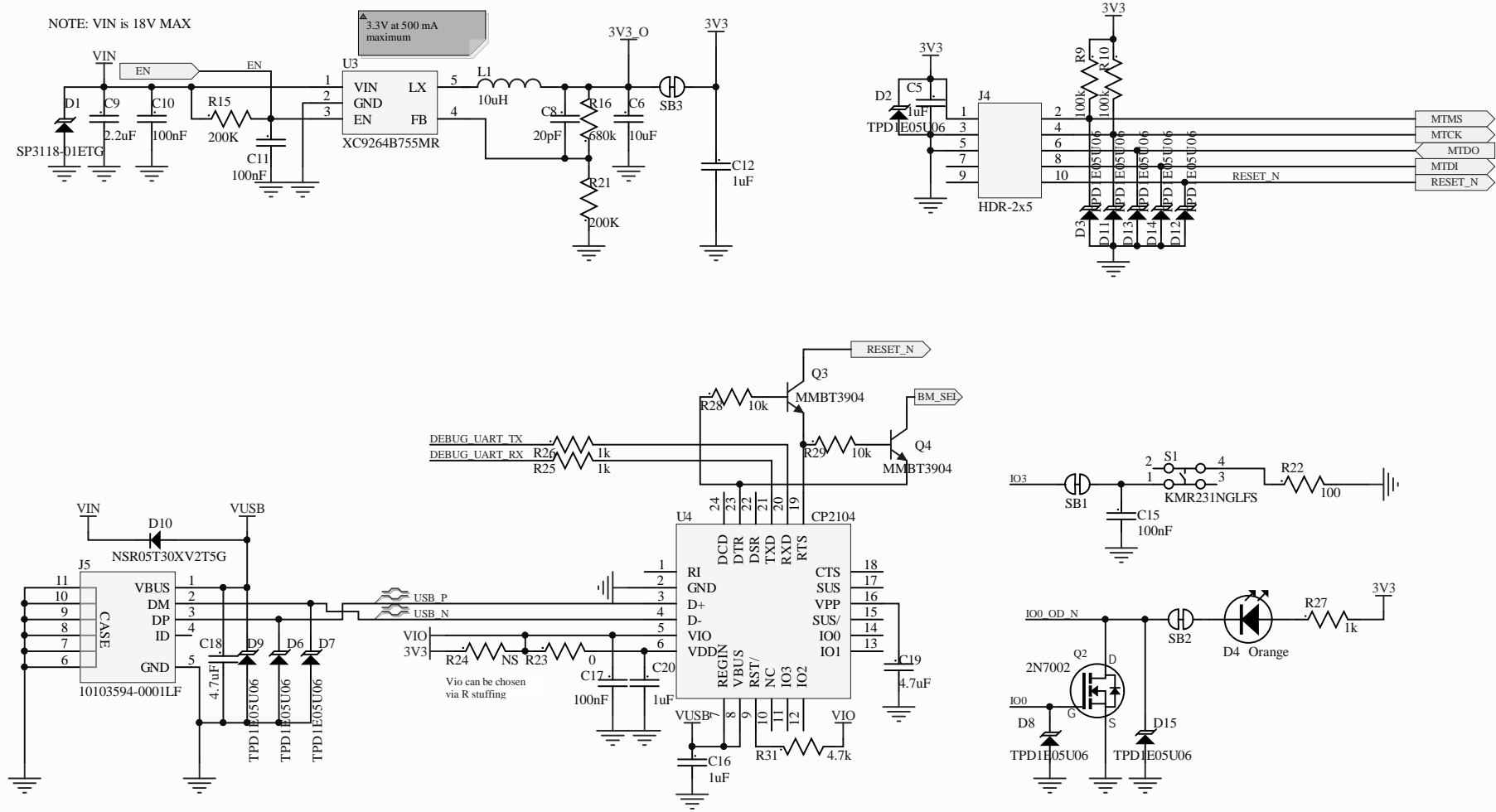


- Board History
- EVT1, 20190227
    - Initial release, layout by Andy.
    - Inherited FT230XQ as a USB2Serial IC from other Modulus which is different from ESP32 reference.
    - > Had to use external CP2104 and circuitries to program the device.
  - EVT2, 20190422
    - Layout by Seungwhan.
    - Replaced FT230XQ with CP2104. But used FET instead of BJT and resistor which caused timing issue.
    - Added external PSRAM which resulted in some pinmap change.
  - DVT, 20190515
    - Replaced FET with BJT and resistor. UART bootloader fully functional. Later discovered RESET\_N timing issue.
    - Fixed S1(tact switch) schematic library. Had been Always-Connected.
  - PVT, 20190816
    - Added external crystal and SB3 and SB4. Sharing pins with IO2 and IO3.
    - Changed C14(bypass cap on RESET\_N) from 100nF to 1uF. Better UART programming stability.
  - DVT2, 20190927
    - Major pinmap change to have 4 GPIOs, external crystal and Jtag.
    - Minor pinmap change of the header connectors(J2 and J3).
    - EN signal RC value change. (100K, 1uF) -> (200K, 100nF).
    - Added open drain copy of IO0, IO0\_OD\_N.
    - SHIELD1 and SHIELD2 can be used for shield can detect.
    - Either ESP32 internal pull-up or external pull-up(to be added by customer) can be used.
    - Feather Wing compatible in terms of UART and 3V3.
    - \* When piggy backed on Feather board, SB3 has to be cut, and USB has to be connected to either Feather or Plumo
  - PVT, 20191212
    - Tweaks to open-source design.
    - \* Move all components to integrated library
    - \* Add in Apache license to Schematic and all drawings
    - \* Update all drawings to say PVT
    - Fix silkscreen labels for mislabeled signals on backside
    - Add PVT silk label
    - Fix 508 PN to point to Afero PN.
    - \* NOTE: The Digkey PN listed is for the generic/blank 508.

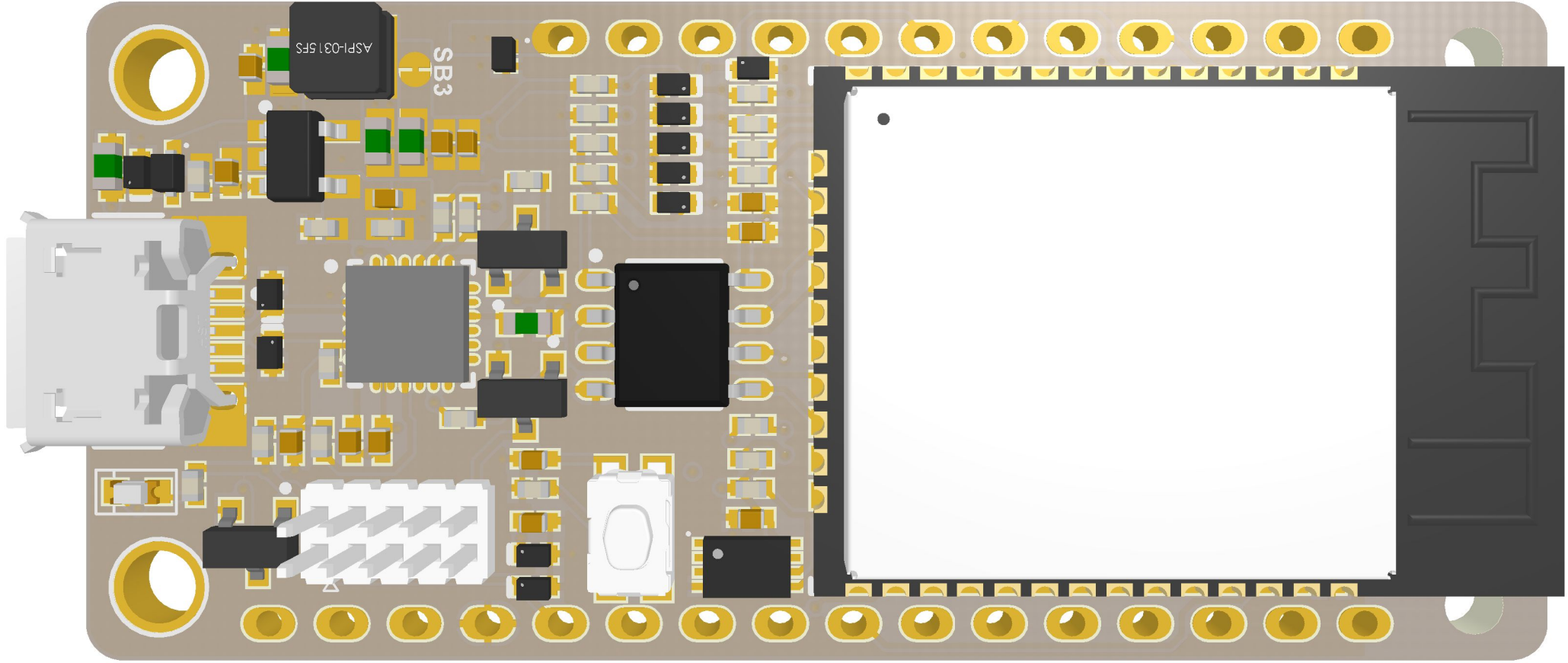
Copyright 2018, 2019 Afero, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software or hardware designs distributed under the License are distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.



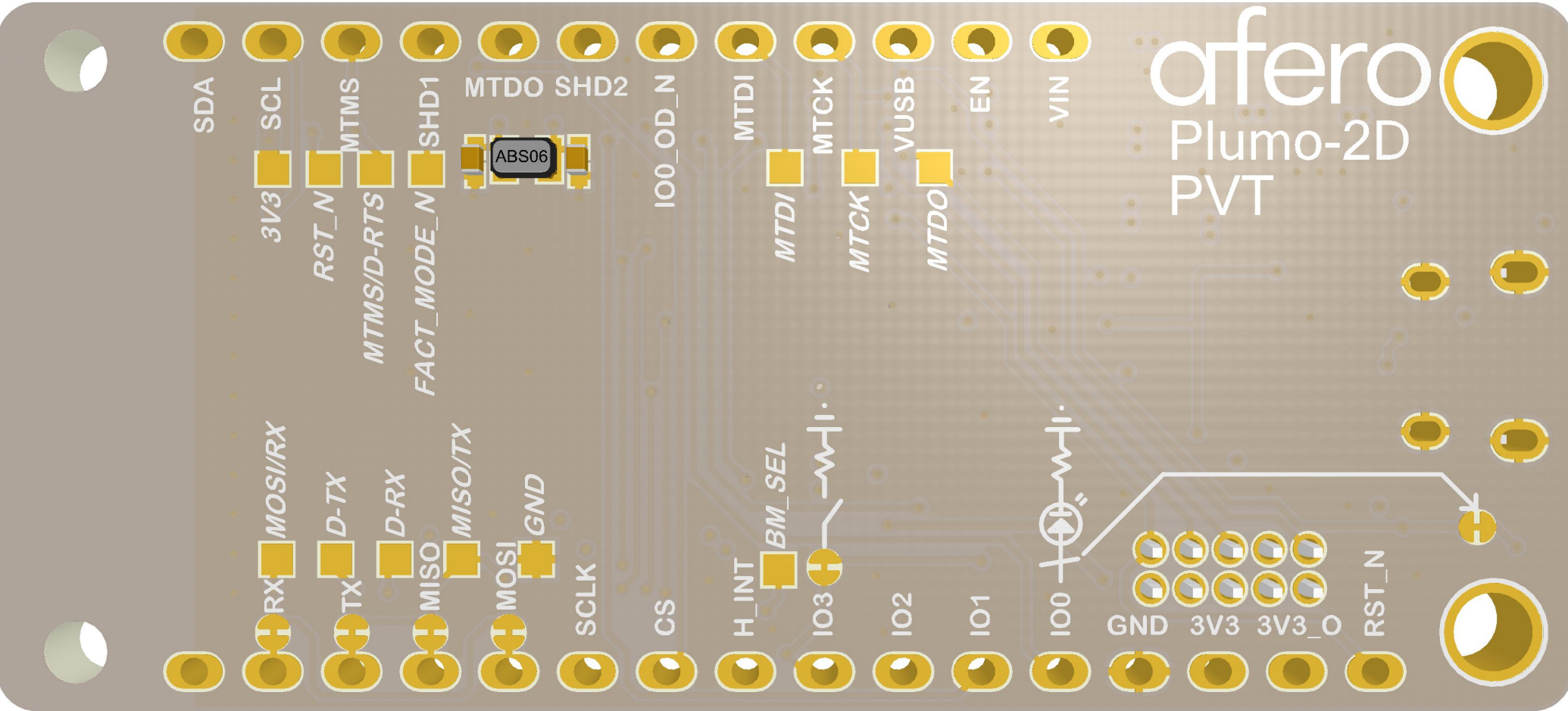
Title	Plumo-2D		Afero, Inc.	
Size	Number	Revision		
C		PVT		
Date:	12/16/19	Sheet of	1 1	
File:	Z:\wrk\..Plumo-2D.SchDoc	Drawn By:	SR/RSB	



# afero

## Plumo-2D

### PVT

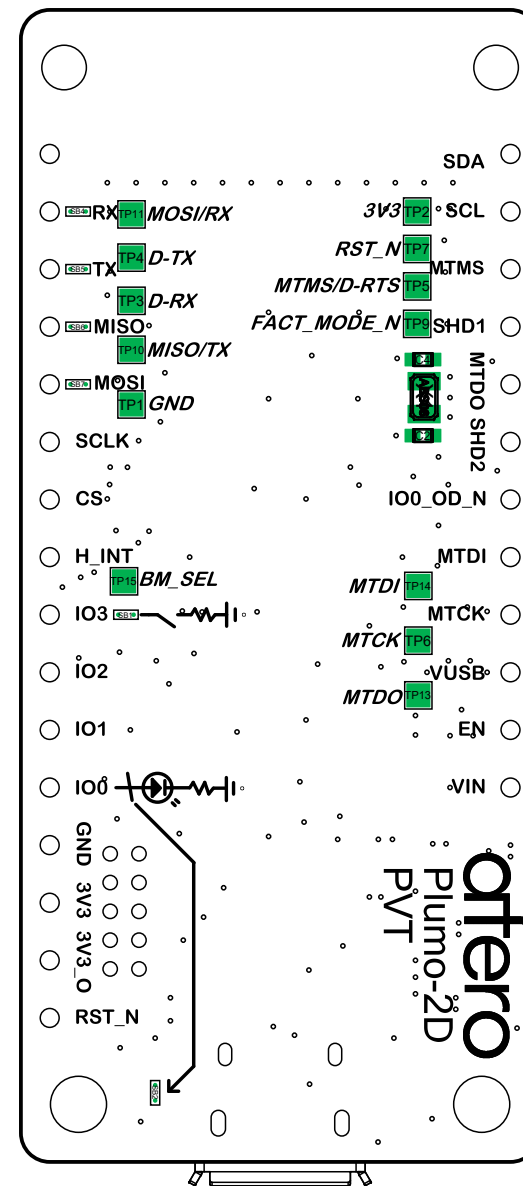
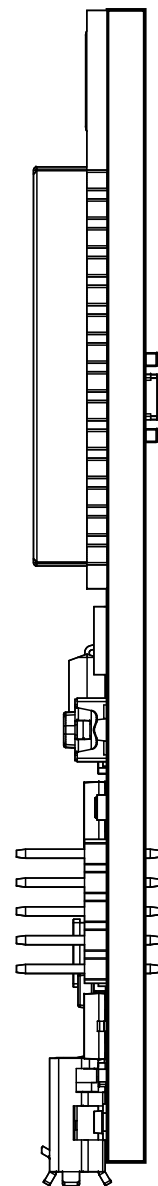
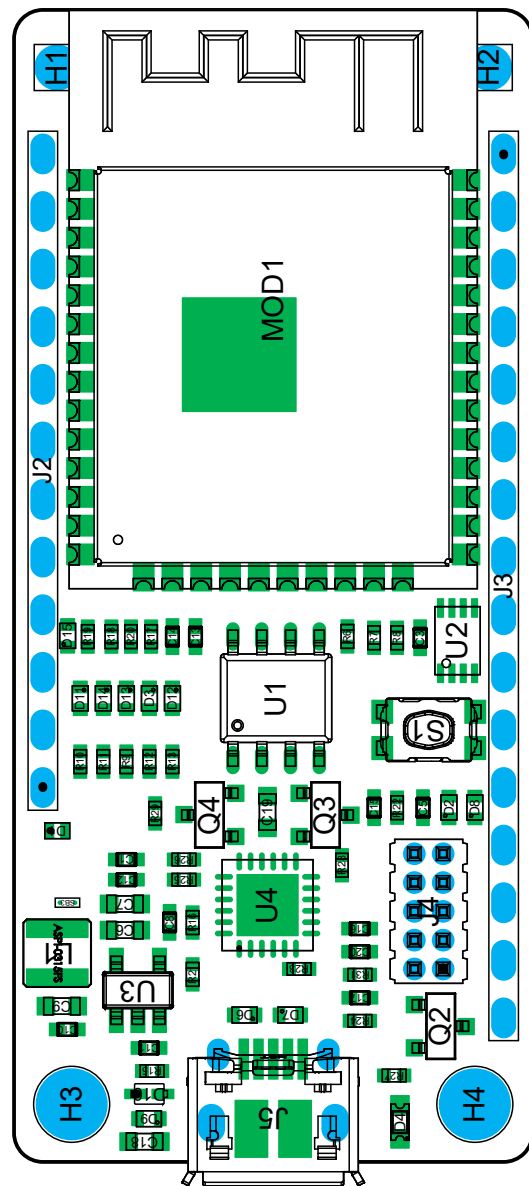


A

B

C

D



1

1

2

2

Copyright 2018, 2019 Afero, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software or hardware designs distributed under the License are distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Afero, Inc.. ANY REPRODUCTION IN PART OR PROPRIETARY AND CONFIDENTIAL

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Afero, Inc.	
		DIMENSIONS ARE IN INCHES	DRAWN	SR/RSB	12/16/19	TITLE <b>Plumo-2D Assy Drawing</b>
		TOLERANCES:	CHECKED			
		FRACTIONAL ±	ENG APPR.			
		ANGULAR: MACH ± BEND ±	MFG APPR.			
		TWO PLACE DECIMAL ±	Q.A.			SIZE DWG. NO. <b>PVT</b>
		THREE PLACE DECIMAL ±	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:1 WEIGHT: SHEET 1 OF 1
		MATERIAL				
	NEXT ASSY	USED ON				
		FINISH				
		DO NOT SCALE DRAWING				

A

B

C

D

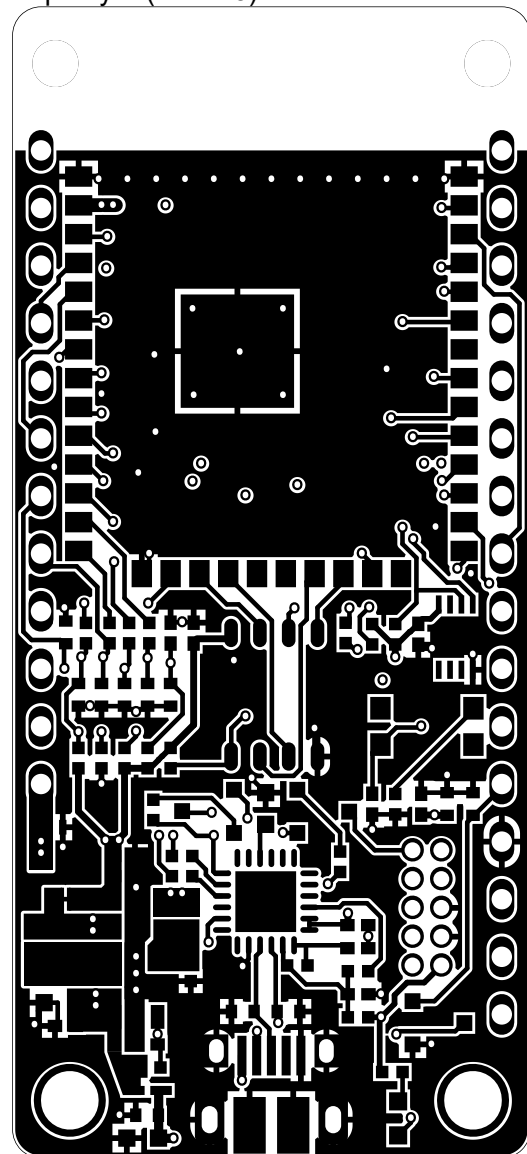
A

B

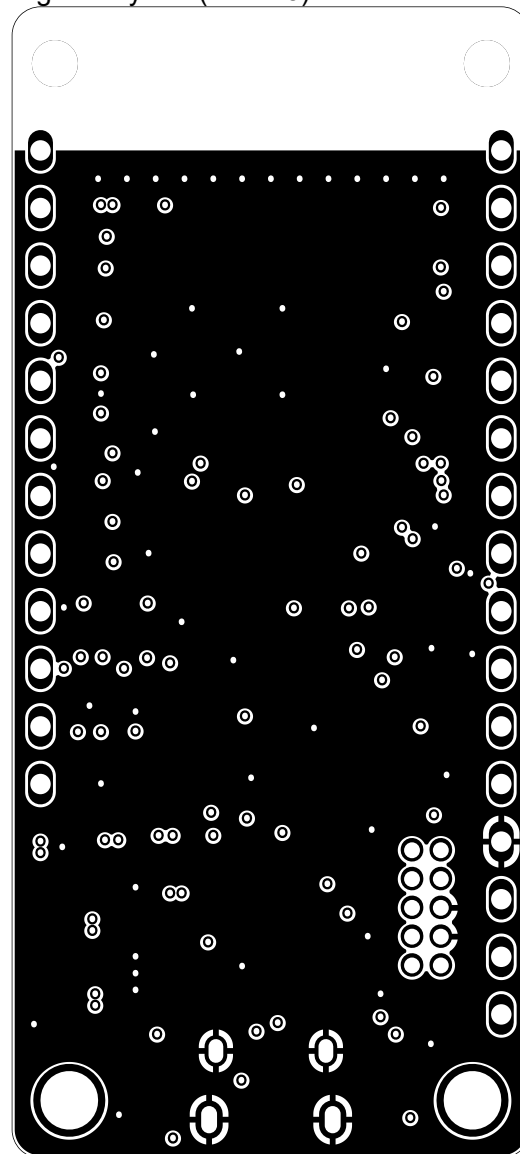
C

D

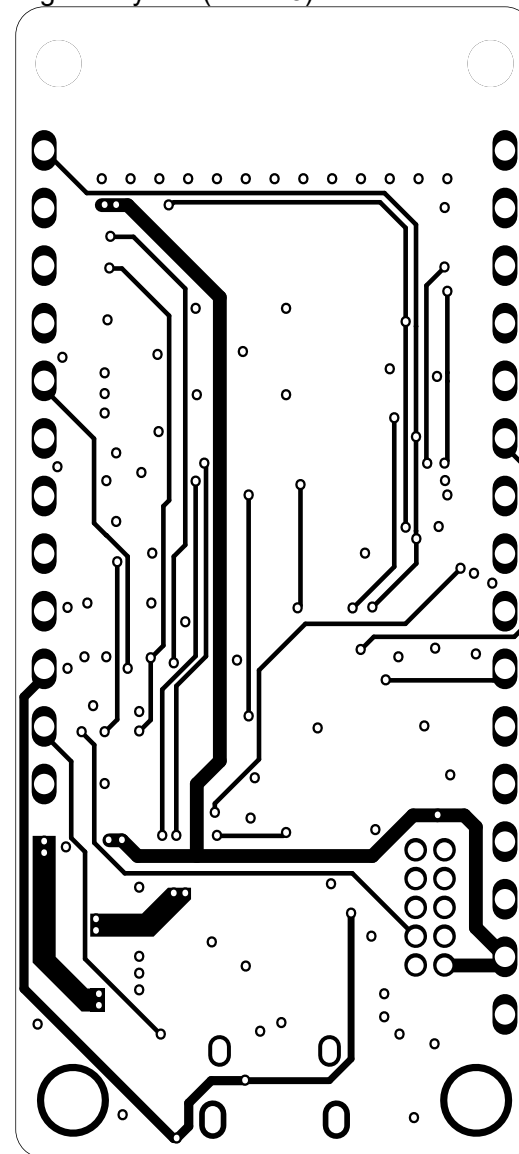
Top Layer (Scale 3)



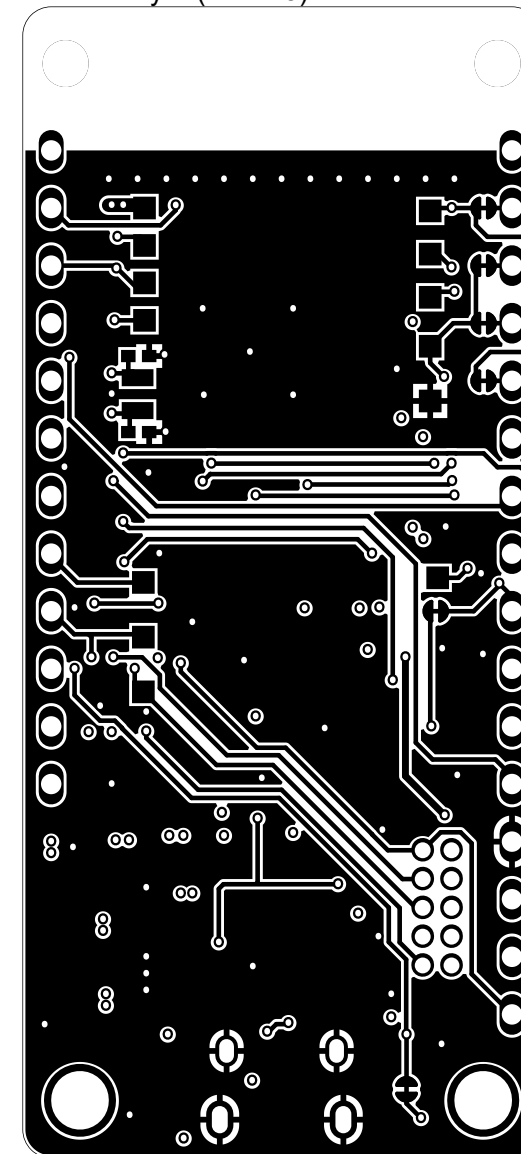
Signal Layer 1 (Scale 3)



Signal Layer 2 (Scale 3)



Bottom Layer (Scale 3)



Copyright 2018, 2019 Afero, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software or hardware designs distributed under the License are distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Afero, Inc.. ANY REPRODUCTION IN PART OR PROPRIETARY AND CONFIDENTIAL

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Afero, Inc.		
		DIMENSIONS ARE IN INCHES	DRAWN	SR/RSB	12/16/19	TITLE  Plumo-2D Fab Drawing	
		TOLERANCES:	CHECKED				
		FRACTIONAL ±	ENG APPR.				
		ANGULAR: MACH ± BEND ±	MFG APPR.				
		TWO PLACE DECIMAL ±	Q.A.			SIZE	DWG. NO.
		THREE PLACE DECIMAL ±	COMMENTS:			PVT	
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:1	WEIGHT:
		MATERIAL				SHEET 1 OF 2	
	NEXT ASSY	USED ON					
	APPLICATION		FINISH				
			DO NOT SCALE DRAWING				

A

B

C

D

1

2

1

2

A

B

C

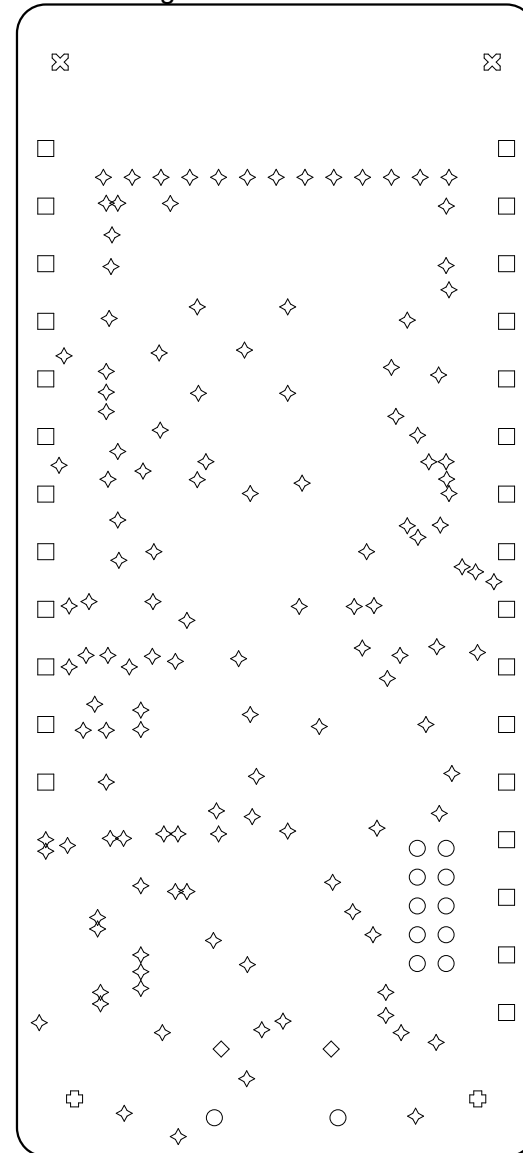
D

Copyright 2018, 2019 Afero, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software or hardware designs distributed under the License are distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Drill Drawing View



Layer Stack Legend

Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Paste			Paste Mask	GTP
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.010mm(0.40mil)	Solder Resist	Solder Mask	GTS
Copper	Top Layer	0.036mm(1.40mil)		Signal	GTL
Core		0.170mm(6.70mil)	FR408	Dielectric	
Copper	Signal Layer 1	0.018mm(0.71mil)		Signal	G1
Prepreg		1.194mm(47.00mil)	FR408	Dielectric	
Copper	Signal Layer 2	0.018mm(0.71mil)		Signal	G2
Core		0.170mm(6.70mil)	FR408	Dielectric	
Copper	Bottom Layer	0.036mm(1.40mil)		Signal	GBL
Surface Material	Bottom Solder	0.010mm(0.40mil)	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
	Bottom Paste			Paste Mask	GBP

Total thickness: 1.662mm(65.42mil)

- 1) Fab material: Isola FR408 or 370HR or equivalent lead free process capable material.
- 2) Lead free ENIG finish.
- 3) Solder Mask color : Grey
- 4) Silkscreen color : White
- 5) Vias are to be filled with non-conductive material

Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
□	28	0.90	Plated	None
○	12	0.70	Plated	None
◇	2	0.65	Plated	None
⊗	2	2.03	Non-Plated	None
⊕	2	2.54	Plated	None
◇	130	0.25	Plated	None

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Afero, Inc.. ANY REPRODUCTION IN PART OR PROPRIETARY AND CONFIDENTIAL

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Afero, Inc.		
		DIMENSIONS ARE IN INCHES	DRAWN	SR/RSB	12/16/19	TITLE  Plumo-2D Fab Drawing	
		TOLERANCES:	CHECKED				
		FRACTIONAL ±	ENG APPR.				
		ANGULAR: MACH ± BEND ±	MFG APPR.				
		TWO PLACE DECIMAL ±	Q.A.			SIZE	DWG. NO.
		THREE PLACE DECIMAL ±	COMMENTS:			PVT	
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING			SCALE: 1:1	WEIGHT:	SHEET 2 OF 2

A

B

C

D