Product Document

Published by
ams OSRAM Group

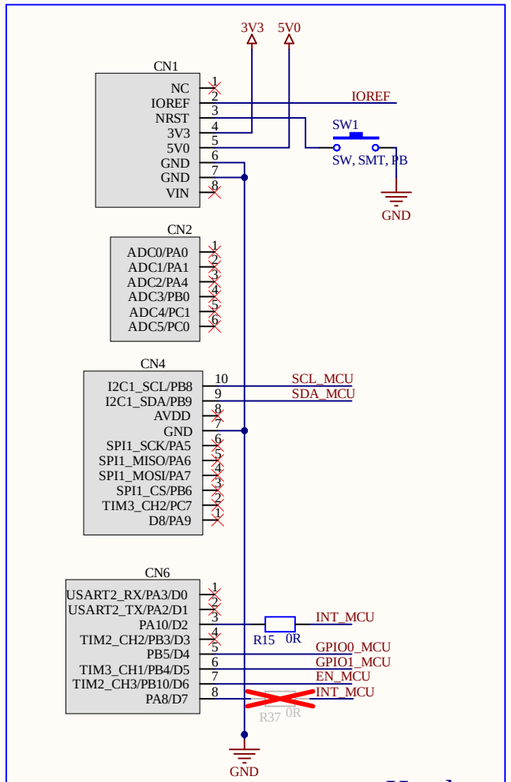
TMF8806 sensor shield

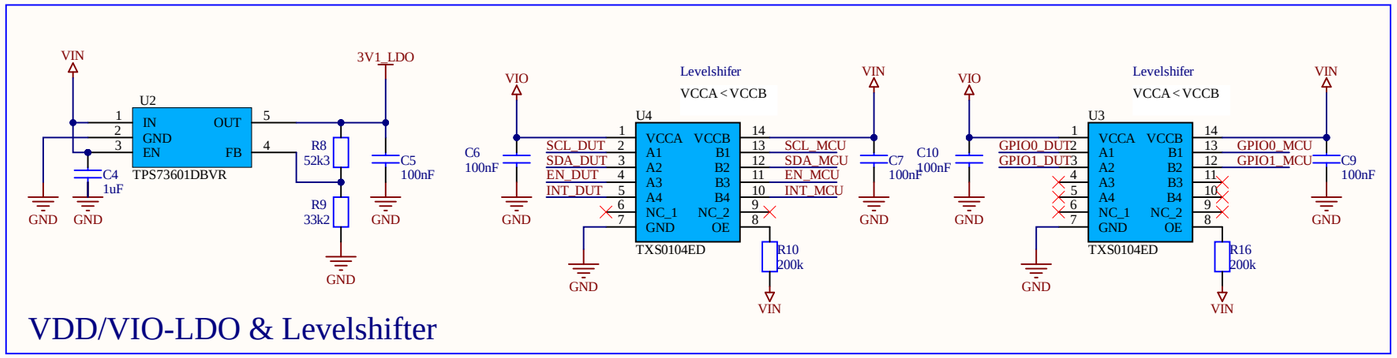
TMF8806 sensor shield

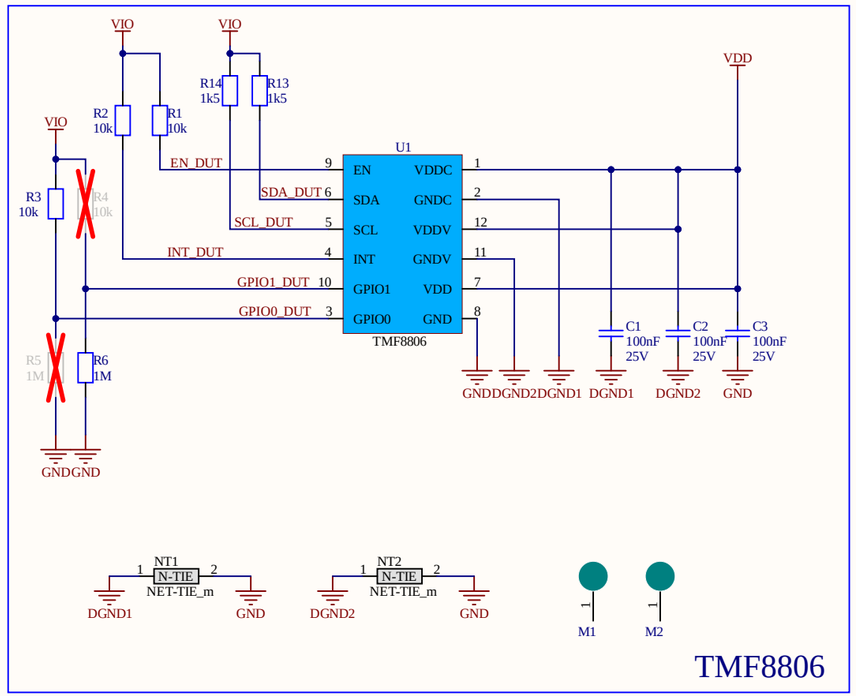
Table of Contents

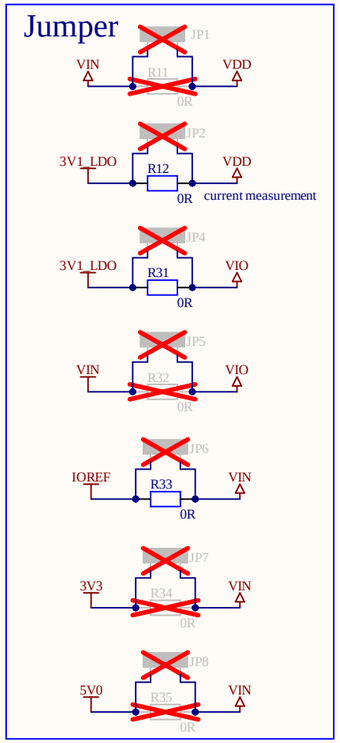
Revision History

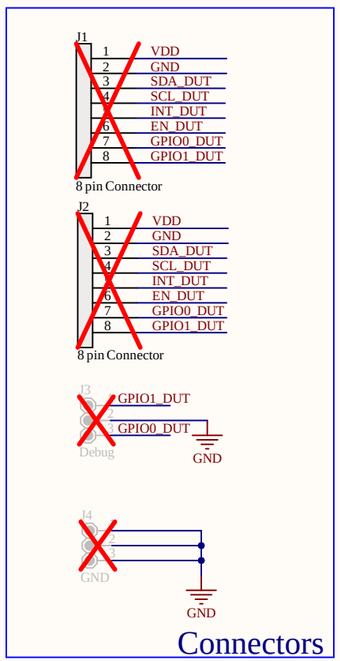
Title:	TMF8806 sensor shield	
Board Number:	MS-TMF8806_Shield-01	Rev: A
		Date: 12/03/2024
		Author: J.Dolic
		Sheet 2 of 3





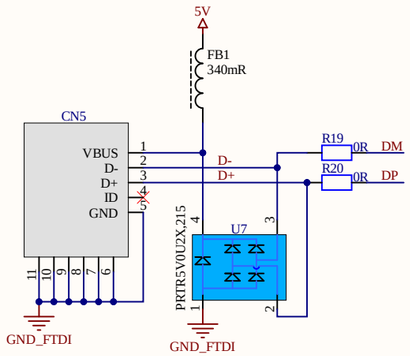


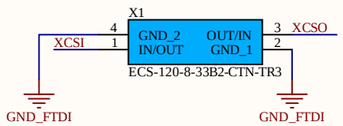


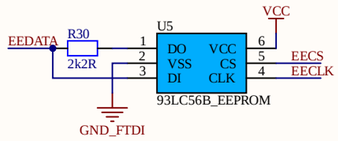


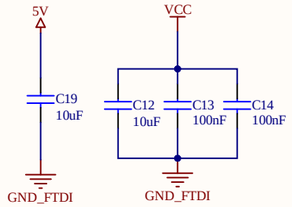
FTDI232H_Module
FTDI232H_Module.SchDoc

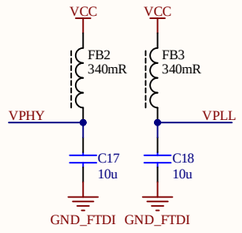
TITLE:	TMF8806 sensor shield			
NUMBER:	MS-TMF8806_Shield-01			REV: A
SIZE	SIZE			
B	1:1		DATE:	12/03/2024
VARIANT:	Default Build		DRAWN BY:	J.Dolic
ALTIUM VER:	23.10.1.27		SHEET:	3 of 3

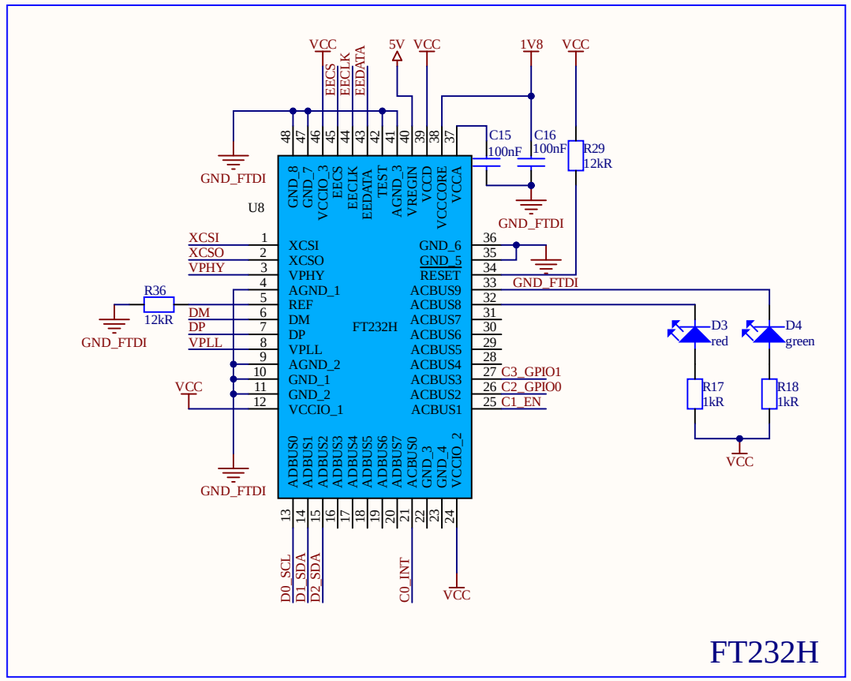




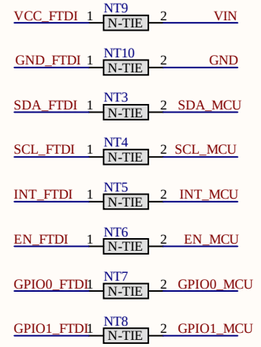


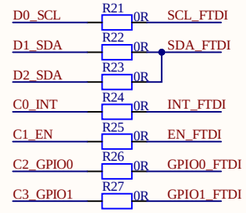


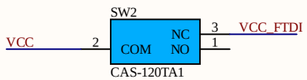




FT232H

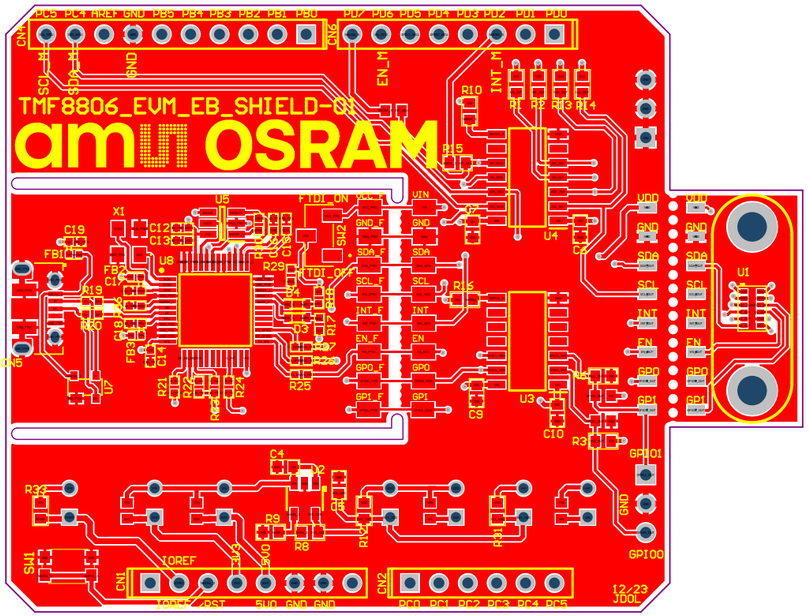






OSRAM	TITLE:	FTDI232H		
	NUMBER:	FTDI232H		REV A
	SIZE	SIZE		
	B	1:1	DATE:	12/03/2024
	VARIANT:	Default Build	DRAWN BY:	J.Dolic
	ALTIUM VER:	23.10.1.27	SHEET:	3 of 3

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

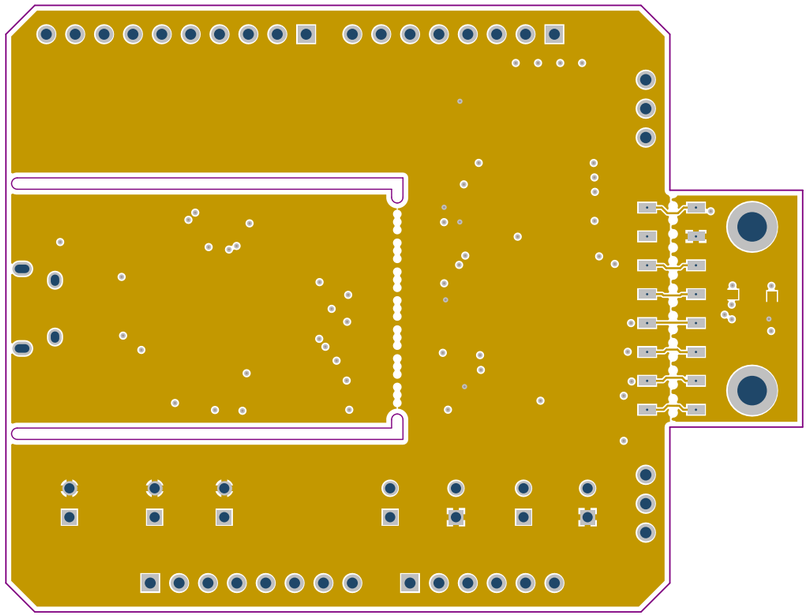
1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Layers Currently On

TOP	
Title_Block	Board Outline Layer Stack
Multi-Layer	
Top Overlay	

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Top Layer	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

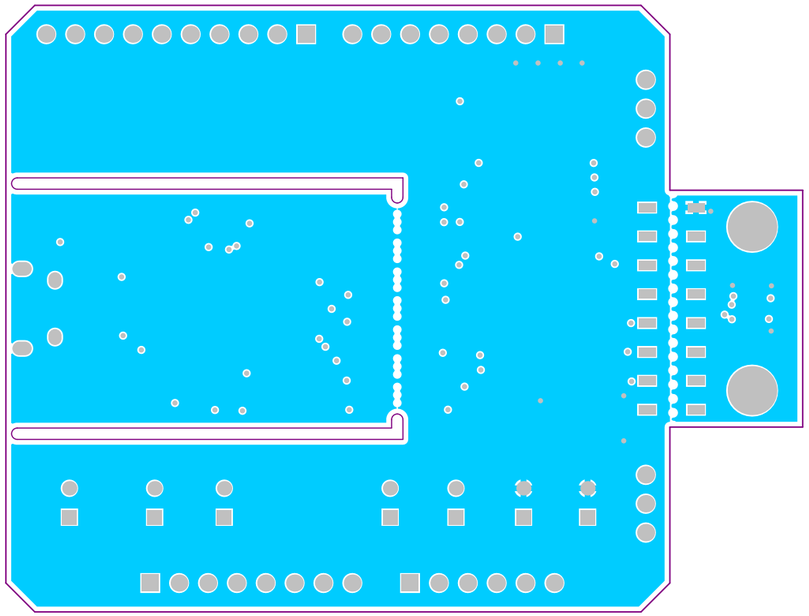
1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Layers Currently On

MID1	Board Outline
Title_Block	Layer Stack
Multi-Layer	

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Mid1 Layer - GND	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

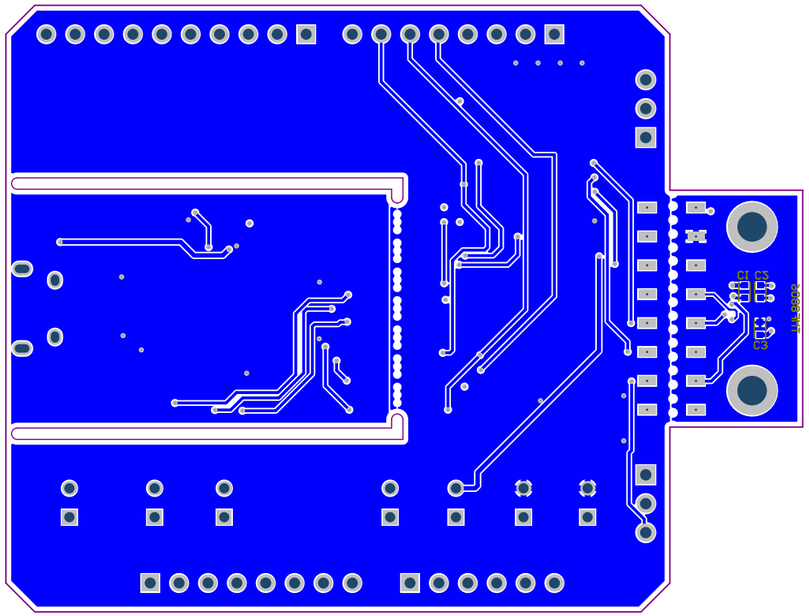
1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Layers Currently On

Title_Block	MID2
	Board Outline
Multi-Layer	Layer Stack

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Mid2 Layer - PWR	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

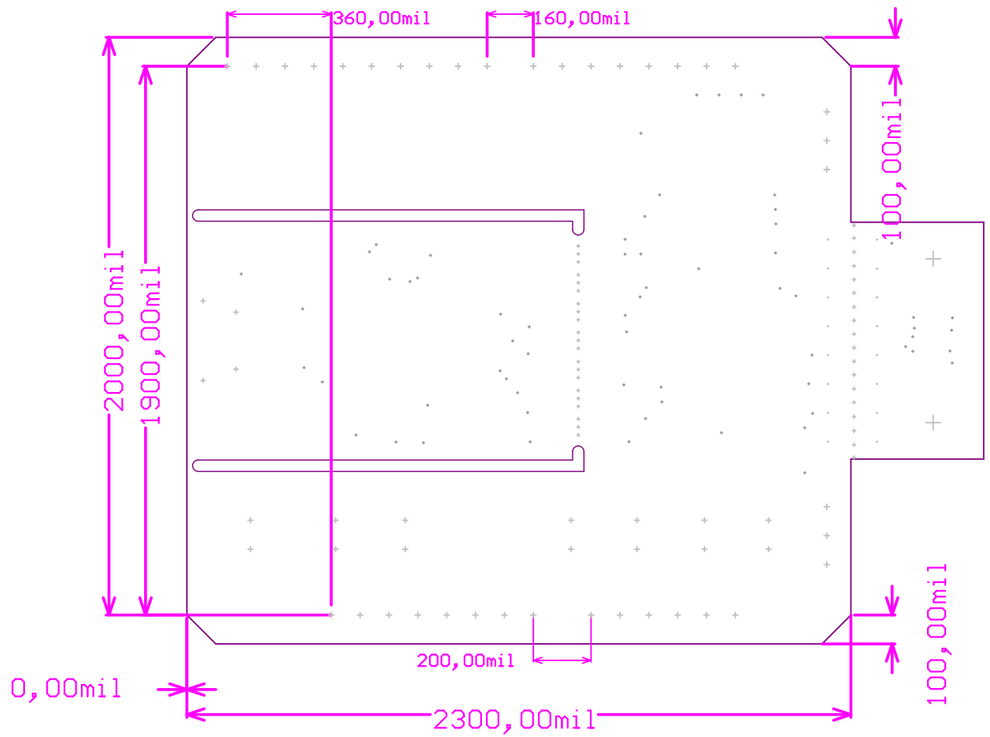
1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Layers Currently On

Title_Block	BOTTOM
	Board Outline
	Layer Stack
Multi-Layer	
	Bottom Overlay

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Bottom Layer	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

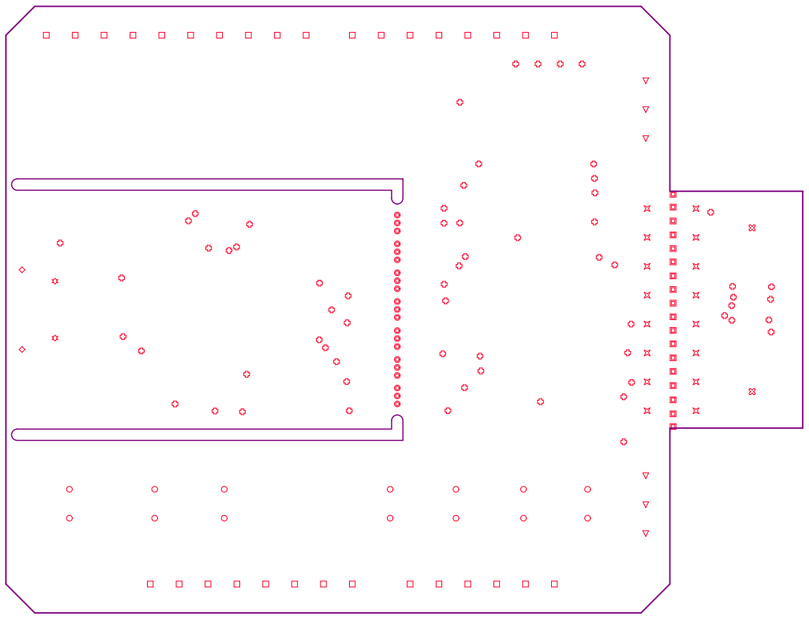
1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Layers Currently On

Dimensions	Board Outline
Title_Block	Layer Stack
	Drill Guide
Multi-Layer	Keep-Out Layer

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Board Dimensions	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

Layer	Name	Material	Thickness	Constant	Gerber
	Top Overlay				GTO
	Top Solder	Solder Resist	0,40mil	3.5	GTS
1	TOP		0,70mil		GTL
	Dielectric1	FR-4	8,00mil	4.5	
2	MID1		1,40mil		G1
	Dielectric2	FR-4	41,00mil	4.5	
3	MID2		1,40mil		G2
	Dielectric3	FR-4	8,00mil	4.5	
4	BOTTOM		0,70mil		GBL
	Bottom Solder	Solder Resist	0,40mil	3.5	GBS
	Bottom Overlay				GBO
Total board thickness:			62,00mil		



Board Details

1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mils unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape
⛭	2	0.750mm (29.53mil)	PTH	Slot	TOP - BOTTOM	Pad	Rounded Rectangle
◇	2	0.750mm (29.53mil)	PTH	Slot	TOP - BOTTOM	Pad	Rounded Rectangle
⊠	2	2.600mm (102.36mil)	PTH	Round	TOP - BOTTOM	Pad	Rounded
▽	6	1.000mm (39.37mil)	PTH	Round	TOP - BOTTOM	Pad	Rounded
○	14	0.900mm (35.43mil)	PTH	Round	TOP - BOTTOM	Pad	(Mixed)
⊠	16	0.200mm (7.87mil)	PTH	Round	TOP - BOTTOM	Pad	Rectangle
⧈	18	0.600mm (23.62mil)	NPTH	Round	TOP - BOTTOM	Pad	Rounded
◎	21	0.500mm (19.69mil)	NPTH	Round	TOP - BOTTOM	Pad	Rounded
□	32	0.965mm (38.00mil)	PTH	Round	TOP - BOTTOM	Pad	(Mixed)
⌂	65	0.203mm (8.00mil)	PTH	Round	TOP - BOTTOM	Via	Rounded
	178 Total						

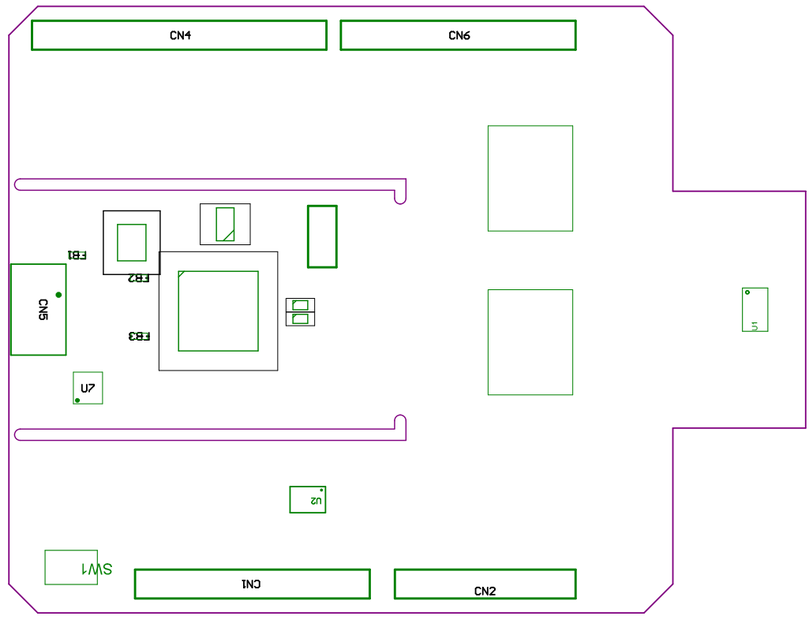
Slot definitions : Routed Path Length = Calculated from tool start centre position to tool end centre position.
Hole Length = Routed Path Length + Tool Size = Slot length as defined in the PCB layout

Layers Currently On

Title_Block
Drill Drawing

Board Outline
Layer Stack

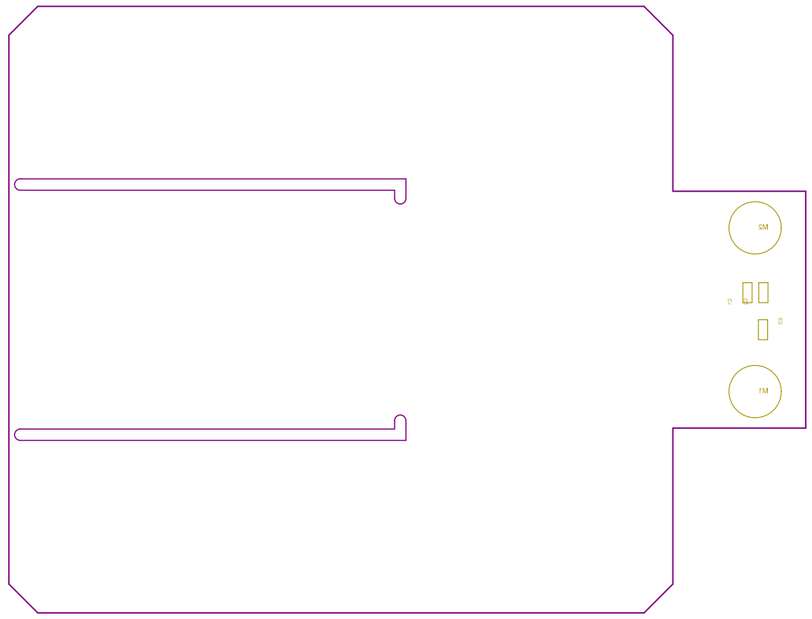
Title	TMF8806 sensor shield
Number	MS-TMF8806_Shield-01
Rev	A
Print Name	Drill Drawing
Variant: Default Build	Print Date: 12/03/2024
	Drawn By:J.Dolic



Layers Currently On

Title_Block	Board Outline
Multi-Layer	
Top Designator	

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	TOP Assembly	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic



Layers Currently On

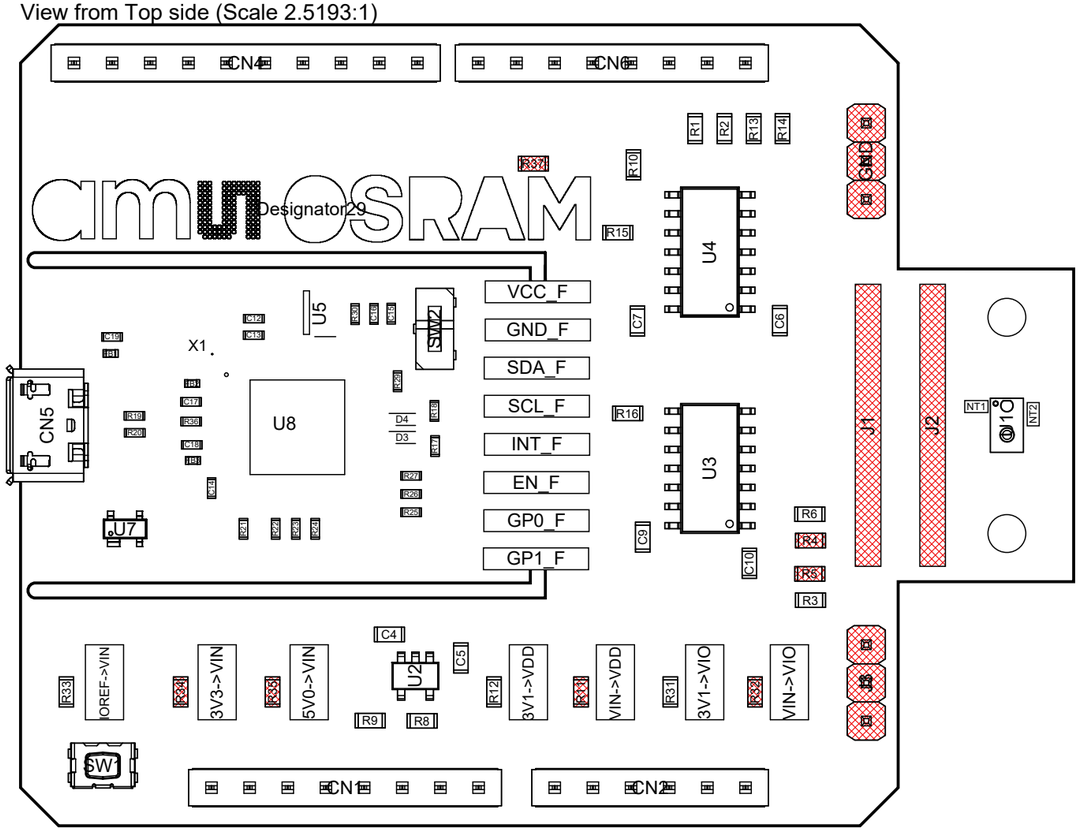
Title_Block	Board Outline
Multi-Layer	Bottom Designator

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	BOTTOM Assembly	
Variant: Default Build		Print Date: 12/03/2024
		Drawn By:J.Dolic

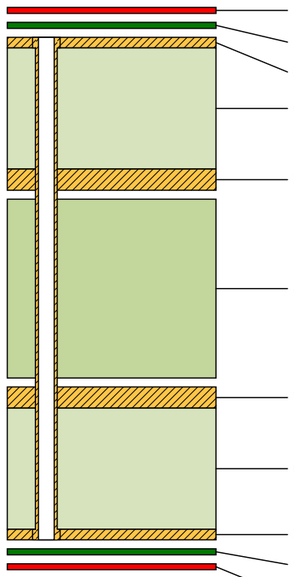
Fab Notes:

1. Board Size: 2309.27 mils x 2100 mils
2. Board Thickness: 62.00 mil
3. Board Material: FR-4
4. Board Finish: ENIG
5. Component count: 96
6. Pad Count: 376
7. Hole Count: 174
8. Soldermask Color: Black
9. Silkscreen Color: White
10. No Silkscreen over exposed copper.
11. Dimensions shown are in mm unless marked.
12. No additional silkscreen to be added.
13. Boards Shall be fabricated to IPC-600 Class 1
14. The PCB assembly shall be ROHS compliant.

View from Top side (Scale 2.5193:1)



Layer Stack Legend



Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
Copper	TOP	0.02mm		Signal	GTL
Core		*0.20mm*	*FR-4*	*Dielectric*	
Copper	MID1	0.04mm		Signal	G1
Prepreg		*1.04mm*	*FR-4*	*Dielectric*	
Copper	MID2	0.04mm		Signal	G2
Core		*0.20mm*	*FR-4*	*Dielectric*	
Copper	BOTTOM	0.02mm		Signal	GBL
Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 1.57mm

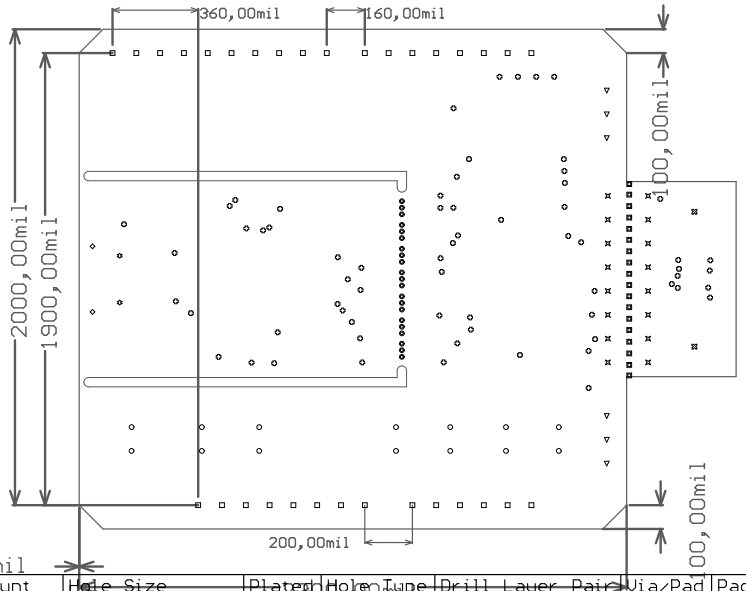
Title:	TMF8806 sensor shield New Text
Board Number:	MS-TMF8806_Shield-01
Date:	12/03/2024
Engineer:	J.Dolic New

Bill of Materials

Company:	ams-osram AG
Application Engineer:	<Parameter ApplicationEngi
Product Number:	NA
Boardtype & Version:	<Parameter BoardtypeVersi
Release Date:	<Parameter ReleaseDate no
Revision:	<Parameter RevisionNumbe
BOM Build Date	12/03/2024

#	Designator	Comment	Name Error:' Component_De	Manufacturer	Manufacturer Part Number	Footprint	Supplier 1	Supplier Part Number 1	Quantity
1	C1, C2, C3	0.1uF,6V3, 0402, 10%		Murata	GRM155R71E104KE14D	0402Cap_aos_KW			3
2	C4	1uF		Murata	GRM188R71A105KA61D	C0603	Digi-Key	490-3899-2-ND	1
3	C5, C6, C7, C9, C10	0.1uF		Murata	GRM188R72A104KA35D	C0603			5
4	C12, C17, C18, C19	10u		Murata	GRM155R60J106ME15D	C0402			4
5	C13, C14, C15, C16	100nF		KEMET	C0402C104K4RAC-TU	C0402		80-C0402C104K4R	4
6	CN1, CN6	8Pin Arduino Conn		Samtec	SSQ-108-04-G-S	Header_1X8_100mil , samtec Arduino			2
7	CN2	6Pin Arduino Conn		Samtec	SSQ-106-04-G-S	HEADER_1X6_100MIL SAMTEC ARDUINO			1
8	CN4	10Pin Arduino Conn		Samtec	SSQ-110-04-G-S	Header_1X10_100mil Samtec Arduino			1
9	CN5	uUSB , SMT, JAE, DX4R005JJ2		JAE Electronics	DX4R005JJ2R1800	CONN RCPT USB2.0 MICRO AB SMD RA DX4R005JJ2R1800			1
10	D3	red		Osram Opto	LS L296-N1Q2-1-Z	LED_0603	Digi-Key	475-LSL296-N1Q2-1-ZTR-ND	1
11	D4	green		Osram Opto	LPL296-J2L2-25	LED_0603	Mouser	720-LPL296J2L225Z	1
12	FB1, FB2, FB3	FERRITE BEAD 600 OHM 0402 1LN		Murata	BLM15AX601SN1D	0402 IND TDK	Digi-Key	490-5441-1-ND	3
13	M1, M2	Mounting Hole		PennEngineering	SMTSO-M1.6-1ET	SMTSO-M1-1ET Mounting Nut			2
14	R1, R2, R3	10k		Vishay	CRCW060310K0FKEA	R0603			3
15	R6	1M		Vishay Dale	CRCW06031M00FKEAHP	R0603			1
16	R8	52k3		Vishay	CRCW060352K3FKEA	R0603			1
17	R9	33k2		Vishay	CRCW060333K2FKEA	R0603			1
18	R10, R16	200k		Vishay	CRCW0201200KFNED	R0603			2
19	R12, R15, R31, R33	0R		Multicomp	MC0.063W06030R	R0603	[NoParam], Farnell	[NoParam], 9331662	4
20	R13, R14	1k5		Vishay	CRCW06031K50FKEA	R0603			2
21	R17, R18	1kR		Vishay Dale	CRCW04021K00JNED	R0402			2
22	R19, R20, R21, R22, R23, R24	0R		Vishay	CRCW04020000Z0ED	R0402			9
23	R29, R36	12kR		Vishay	CRCW040212K0FKED	R0402	Mouser	71-CRCW0402-12K-E3	2
24	R30	2k2R		Vishay Dale	CRCW04022K20FKEDHP	R0402	Mouser	71-CRCW04022K20FKEDH	1
25	SW1	SW, SMT, PB		ITT / C&K Components	KMR221GLFS	SW, C&K, KMR221			1
26	SW2	CAS-120TA1		Nidec Copal	CAS-120TA1	CAS120TA1			1
27	U1	TOF		ams-OSRAM AG		TMF8805_LEICA_SM			1
28	U2	TPS73601DBVR		TI	TPS73601DBVR	SOT23-5_KRP			1
29	U3, U4	TXS0104ED		Texas Instruments	TXS0104ED	SOIC127P600X175-14N			2
30	U5	93LC56B_EEPROM		Microchip	93LC56BT-I/OT	SOT95P270X145-6N			1
31	U7	TVS DIODE 5.5VWM SOT143B		NXP Semiconductors	PRTR5V0U2X,215	SOT143B		568-4140-2-ND	1
32	U8	FT232H		FTDI	FT232HL-REEL	QFP50P900X900X160-48N			1
33	X1	ECS-120-8-33B2-CTN-TR3		ECS International	ECS-120-8-33B2-CTN-TR3	ECS120833B2CTNTR3			1

Approved by



Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape
☼	2	0.750mm (29.53mil)	PTH	Slot	TOP - BOTTOM	Pad	Rounded Rectangle
◇	2	0.750mm (29.53mil)	PTH	Slot	TOP - BOTTOM	Pad	Rounded Rectangle
⊠	2	2.600mm (102.36mil)	PTH	Round	TOP - BOTTOM	Pad	Rounded
▽	6	1.000mm (39.37mil)	PTH	Round	TOP - BOTTOM	Pad	Rounded
○	14	0.900mm (35.43mil)	PTH	Round	TOP - BOTTOM	Pad	(Mixed)
⌑	16	0.200mm (7.87mil)	PTH	Round	TOP - BOTTOM	Pad	Rectangle
▣	18	0.600mm (23.62mil)	NPTH	Round	TOP - BOTTOM	Pad	Rounded
◎	21	0.500mm (19.69mil)	NPTH	Round	TOP - BOTTOM	Pad	Rounded
□	32	0.965mm (38.00mil)	PTH	Round	TOP - BOTTOM	Pad	(Mixed)
⌖	65	0.203mm (8.00mil)	PTH	Round	TOP - BOTTOM	Via	Rounded
	178 Total						

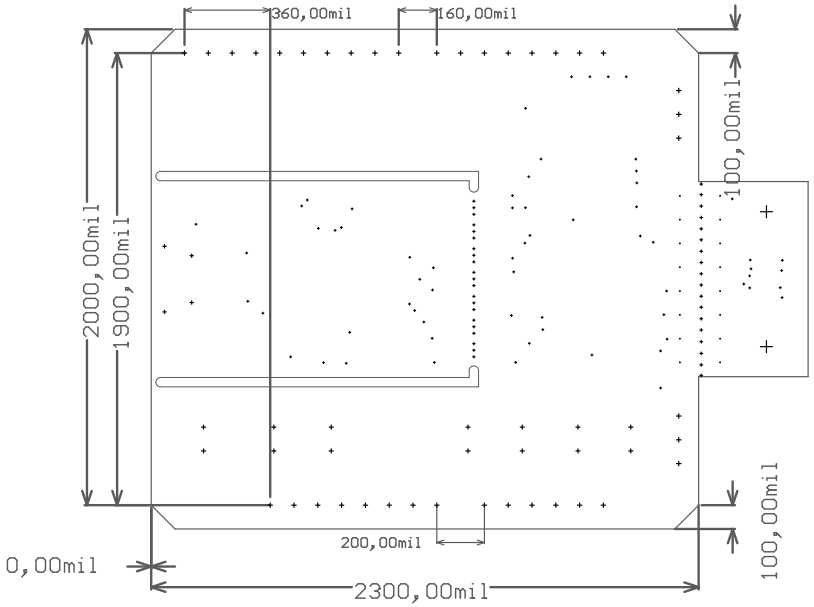
Slot definitions : Routed Path Length = Calculated from tool start centre position to tool end centre position.
Hole Length = Routed Path Length + Tool Size = Slot length as defined in the PCB layout

Layers Currently On

Dimensions
Title_Block
Drill Drawing

Board Outline

Title	TMF8806 sensor shield
Number	MS-TMF8806_Shield-01
Rev	A
Print Name	Drill Drawing For (BOTTOM,TOP)
Variant: [No Variations]	Print Date: 12/03/2024
	Drawn By:J.Dolic



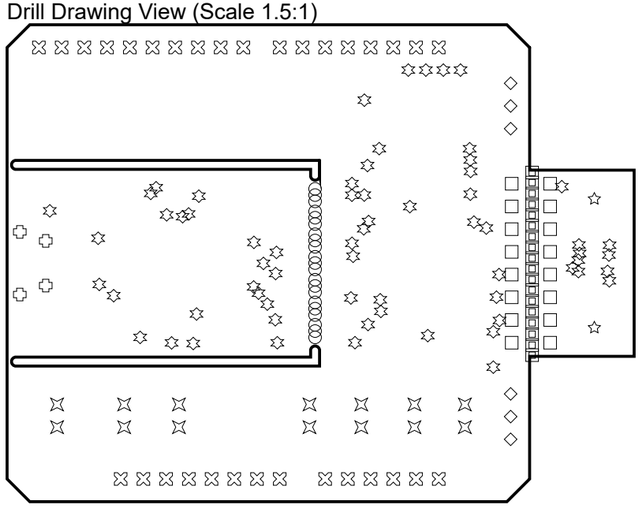
Layers Currently On

Dimensions **Title_Block**	**Board Outline** **Drill Guide**

Title	TMF8806 sensor shield	
Number	MS-TMF8806_Shield-01	Rev A
Print Name	Drill Guide For (BOTTOM,TOP)	
Variant: [No Variations]	Print Date: 12/03/2024	
	Drawn By:J.Dolic	

MS-TMF8806_Shield-01 Rev: A

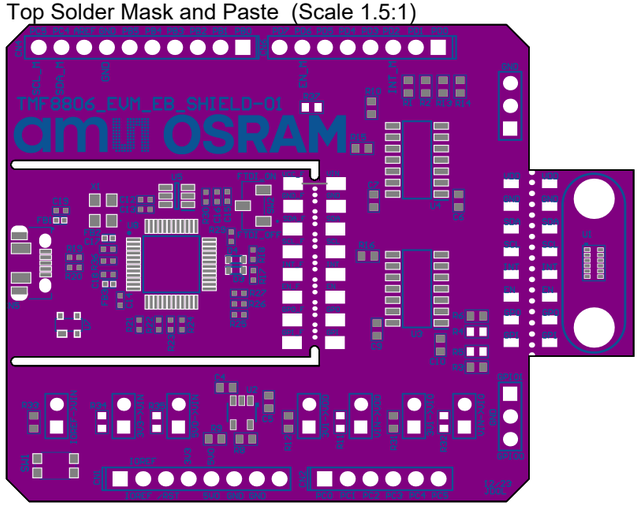
Drill Drawing View (Scale 1.5:1)



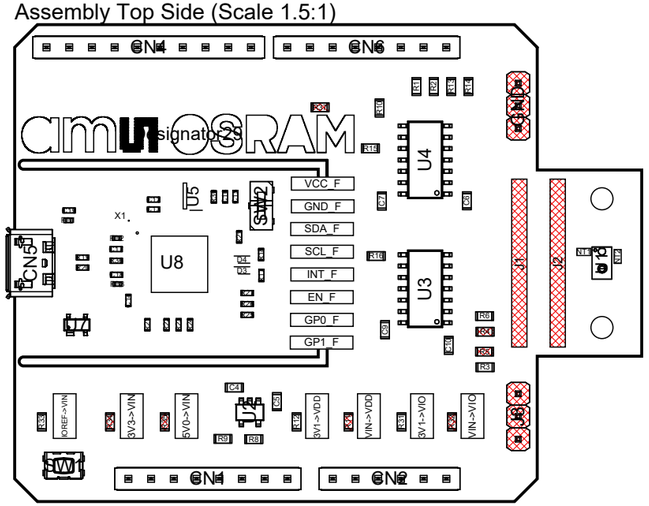
Drill Table

Symbol	Count	Hole Size	Plated	Hole Type	Via / Pad	Hole Tolerance	Hole Length
☆	2	102.36mil(3mm)	Plated	Round	Pad		
⌖	4	29.53mil(1mm)	Plated	Slot	Pad		(Mixed)
◇	6	39.37mil(1mm)	Plated	Round	Pad		
⌑	14	35.43mil(1mm)	Plated	Round	Pad		
□	16	7.87mil(0mm)	Plated	Round	Pad		
⧈	18	23.62mil(1mm)	Non-Plated	Round	Pad		
○	21	19.69mil(0mm)	Non-Plated	Round	Pad		
⊠	32	38.00mil(1mm)	Plated	Round	Pad		
✡	65	8.00mil(0mm)	Plated	Round	Via		
	178 Total						

Top Solder Mask and Paste (Scale 1.5:1)



Assembly Top Side (Scale 1.5:1)



Realistic View