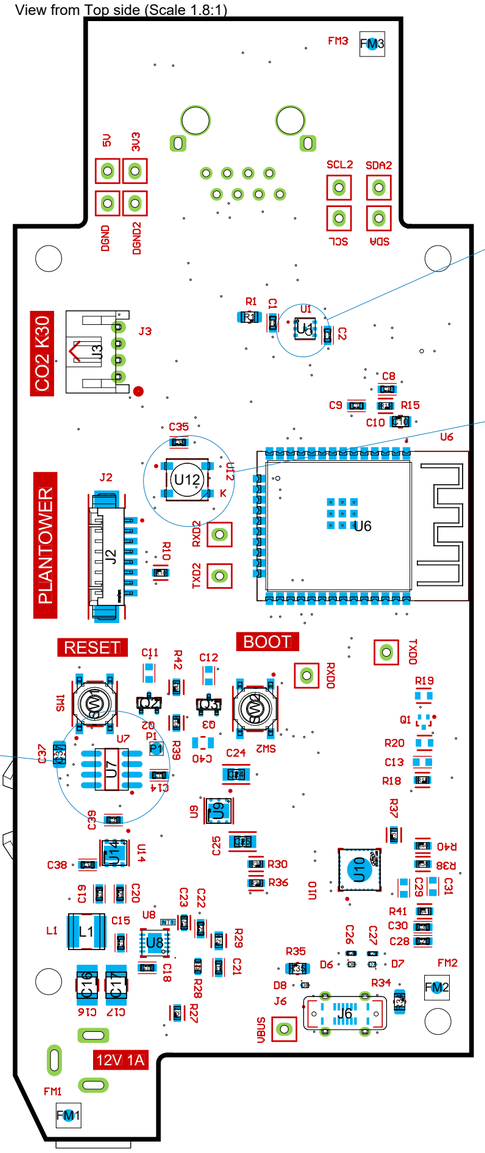
NOTE:
1. FM1, FM2, FM3, FM4, FM5, FM6 are global fiducial markers
2. For soldering of sensitive components (U1 SGP41, U4 OPT3001DNPR, U5 ICS-43434) see detailed views and sheet three for more information
3. U7 polarity mark - see detailed view A
4. U4 polarity mark - see detailed view C
5. BAT 1 polarity mark and position- see detailed view E
6. U12 polairty mark - see detailed view F

x4

View from Top side (Scale 1.8:1)

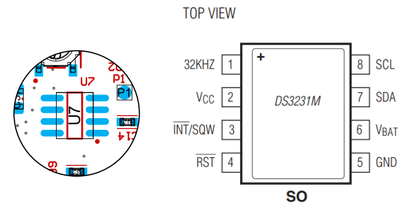


B- sensitive component

F - ambiguous polarity mark

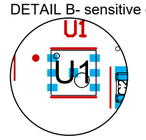
A - ambiguous polarity mark note

DETAIL A - ambiguous polarity mark note (Scale 2:1)



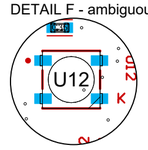
For aligning this chip, the polarity dot on the package may not be visible. However, the wider chamfer on the chip package marks the pin one side, as per the screenshot above.

DETAIL B- sensitive component (Scale 4:1)



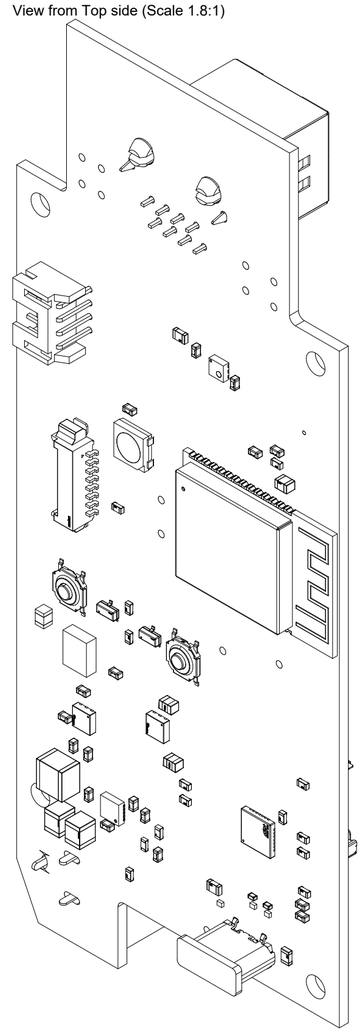
Datasheet for component U1 (SGP41) suggests specificl soldering instructions - see sheet 3 for datasheet extract.

DETAIL F - ambiguous polarity mark (Scale 5:2)



The corner notch of the LED should be aligned with the K silkscreen mark, NOT THE DOT.

View from Top side (Scale 1.8:1)



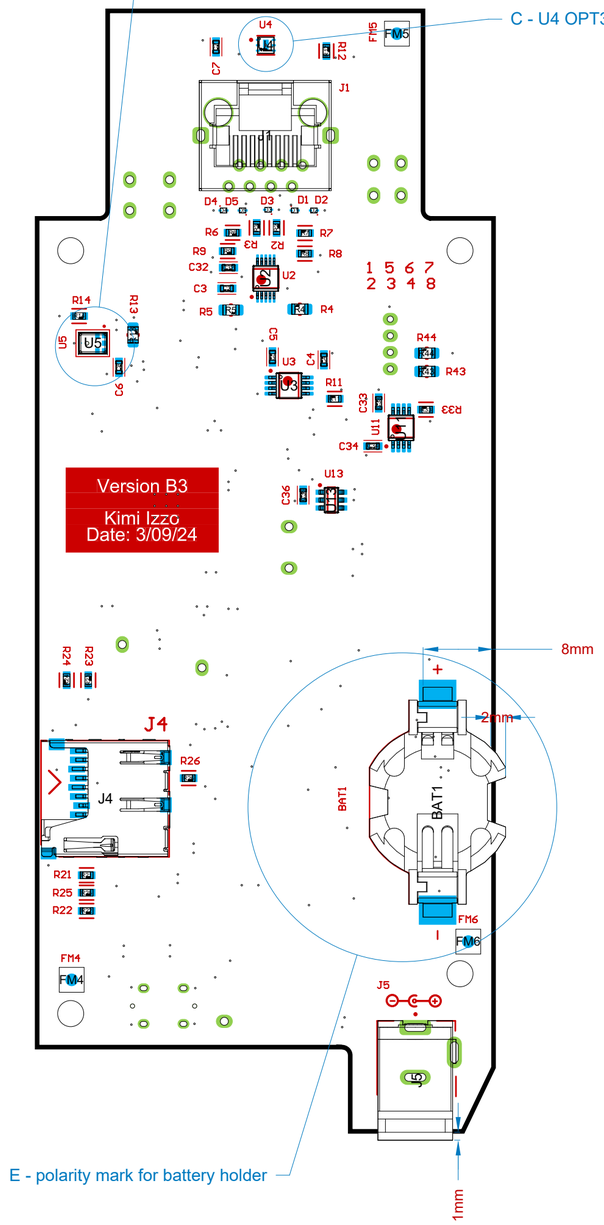
		UNLESS OTHERWISE SPECIFIED:		NAME / DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL± ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	13-Nov-24
			CHECKED	
			ENG APPR.	
		INTERPRET GEOMETRIC TOLERANCING PER:	MFG APPR.	
			Q.A.	
		MATERIAL	COMMENTS:	
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

TITLE: SAMBA PCB LANTERN REV B3 ASSEMBLY DRAWINGS PILOT RUN

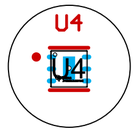
SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 3

D - U5 ICS-43434 SOLDER INSTRUCTIONS

View from Bottom side (Scale 1.8:1)



DETAIL C - U4 OPT3001DNPR SOLDER INSTRUCTIONS AND POLARITY MARK (Scale 4:1)



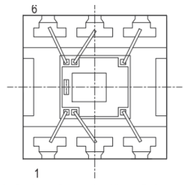


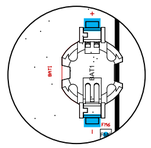
Figure 36. Package Orientation Visual Reference of Pin 1 (Top View)

Be careful with polarity mark , pin one located as per image. See sheet three for solder instructions from datasheet

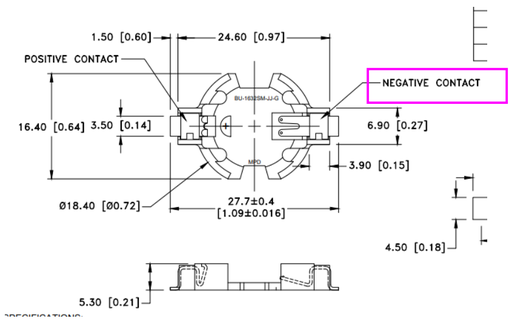
DETAIL D - U5 ICS-43434 SOLDER INSTRUCTIONS (Scale 2:1)

See sheet three for information on soldering instructions

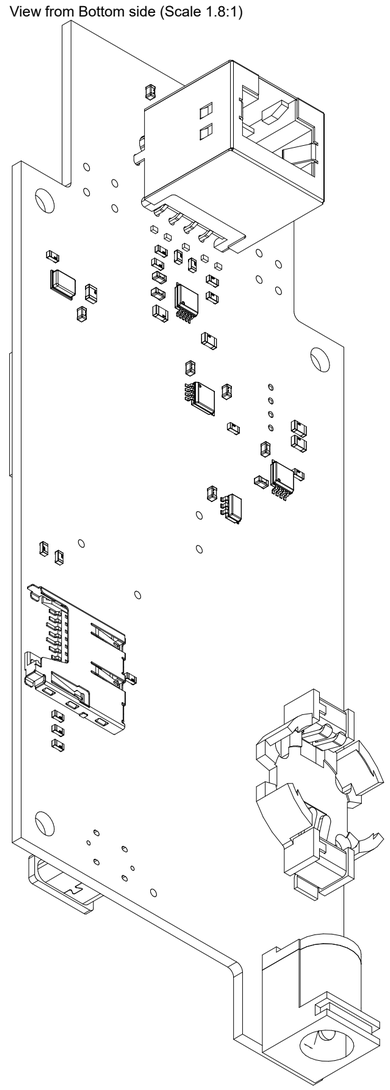
DETAIL E - polarity mark for battery holder (Scale 1:1.25)



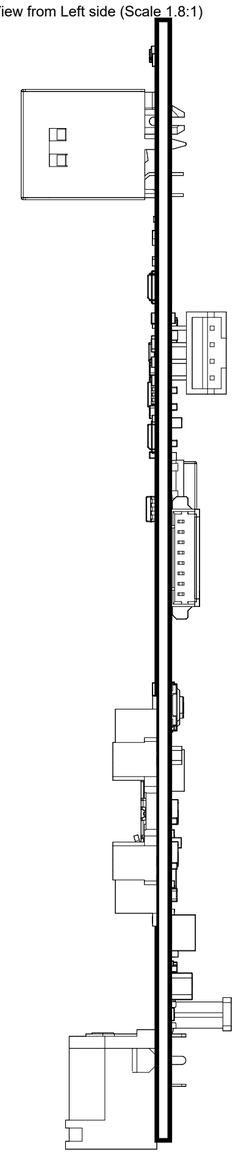
Take care in polarity mark - double prong indicated negative end. Battery holder is intended to overhang past pcb edge.



View from Bottom side (Scale 1.8:1)



View from Left side (Scale 1.8:1)



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL±	DRAWN		13-Nov-24
		ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE: SAMBA PCB LANTERN REV B3 ASSEMBLY DRAWINGS PILOT RUN

SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 2 OF 3

DETAIL B ,COMPONENT U1, SGP41 SOLDER INSTRUCTIONS

5.4 Soldering Instructions

Standard reflow soldering ovens and "no clean" type 3 solder paste (as specified in IPC J-STD-005A) should be used for soldering the SGP41. The sensors are designed to withstand a soldering profile according to IPC/JEDEC J-STD-020. Peak temperatures of T_P = 245 °C during up to t_P = 30 s for Pb-free assembly in IR/Convection reflow ovens (see **Figure 19**) are recommended. In addition, we also recommend a maximum ramp-down rate of <4 °C s^{-1}. Vapor phase or manual soldering should not be used in order to avoid damaging of the sensor. In case the PCB hosting the SGP41 chip passes through multiple solder cycles, it is recommended to assemble the SGP41 during the last solder cycle. Board wash and ultrasonic cleaning should be avoided. For general information (such as conformal coating), please also refer to the *Handling and Assembly Instructions for SGPxx Gas Sensors*.

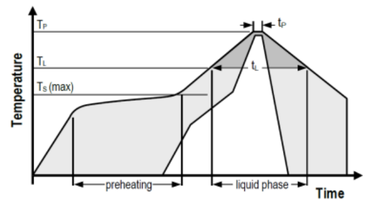


Figure 19 Soldering profile according to JEDEC standard. Recommended conditions are T_P = 245°C and $t_P \leq 30$ s for Pb-free assembly, T_L < 220°C and t_L < 150 s. Ramp-up rate <3°C s^{-1} and ramp-down rate <4°C s^{-1}.

DETAIL C ,COMPONENT U4 OPT3001DNPR, SOLDER INSTRUCTIONS

Soldering and Handling Recommendations (continued)

As with most optical devices, handle the OPT3001 with special care to ensure optical surfaces stay clean and free from damage. See the *Do's and Don'ts* section for more detailed recommendations. For best optical performance, solder flux and any other possible debris must be cleaned after soldering processes.

8.3 Do's and Don'ts

As with any optical product, special care must be taken into consideration when handling the OPT3001. Although the OPT3001 has low sensitivity to dust and scratches, proper optical device handling procedures are still recommended.

The optical surface of the device must be kept clean for optimal performance in both prototyping with the device and mass production manufacturing procedures. Tweezers with plastic or rubber contact surfaces are recommended to avoid scratches on the optical surface. Avoid manipulation with metal tools when possible. The optical surface must be kept clean of fingerprints, dust, and other optical-inhibiting contaminants.

If the device optical surface requires cleaning, the use of de-ionized water or isopropyl alcohol is recommended. A few gentle brushes with a soft swab are appropriate. Avoid potentially abrasive cleaning and manipulating tools and excessive force that can scratch the optical surface.

If the OPT3001 performs less than optimally, inspect the optical surface for dirt, scratches, or other optical artifacts.

DETAIL D ,COMPONENT U5 ICS-43434, SOLDER INSTRUCTIONS

See document https://invensense.tdk.com/wp-content/uploads/2017/06/AN-100-00-MEMS-Microphone-Handling-and-Assembly-Guide-v1.5.pdf for more detailed care instructions

InvenSense ICS-43434

SOLDERING PROFILE

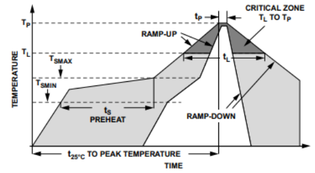


Figure 2. Recommended Soldering Profile Limits

TABLE 7. RECOMMENDED SOLDERING PROFILE

PROFILE FEATURE		Sn63/Pb37	Pb-Free
Average Ramp Rate (T_L to T_P)		1.25°C/sec max	1.25°C/sec max
Preheat	Minimum Temperature (T_{SMIN})	100°C	100°C
	Minimum Temperature (T_{SMIN})	150°C	200°C
	Time (T_{SMIN} to T_{SMAX}), t_S	60 sec to 75 sec	60 sec to 75 sec
Ramp-Up Rate (T_{SMAX} to T_L)		1.25°C/sec	1.25°C/sec
Time Maintained Above Liquidous (t_L)		45 sec to 75 sec	~50 sec
Liquidous Temperature (T_L)		183°C	217°C
Peak Temperature (T_P)		215°C +3°C/−3°C	260°C +0°C/−5°C
Time Within +5°C of Actual Peak Temperature (t_P)		20 sec to 30 sec	20 sec to 30 sec
Ramp-Down Rate		3°C/sec max	3°C/sec max
Time +25°C ($t_{25°C}$) to Peak Temperature		5 min max	5 min max

**The reflow profile in* Table 7 *is recommended for board manufacturing with InvenSense MEMS microphones. All microphones are also compatible with the J-STD-020 profile*

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL± ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN		13-Nov-24
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE

SAMBA PCB LANTERN REV B3 ASSEMBLY DRAWINGS PILOT RUN

SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 3 OF 3