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SPECIFICATION FOR APPROVAL

Analog MEMS Microphone

Part Number	OWMMOA-271809A-S381FANC-BP
Note	This item is in compliance with the following requirements: 1. RoHS directive 2. REACH
Customer P/N	

		Prepared	Checked	Approved
Ole Wolff	Signature / Date	Guan Xue 2023.04.17	Li Tao 2023.04.17	

		Confirmation
Customer	Signature / Date	

REVISION NOTES:

Date	Rev.	Description of Revision
2023.4.17	A	Initial Release

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1. SCOPE

THIS SPECIFICATION IS APPLIED TO OLE WOLFF MINI SILICON MICROPHONE UNIT, MODEL NO.: OWMMOA-271809A-S381FANC-BP

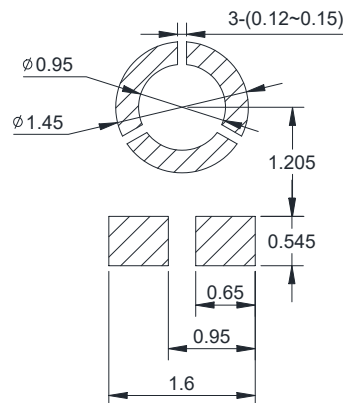
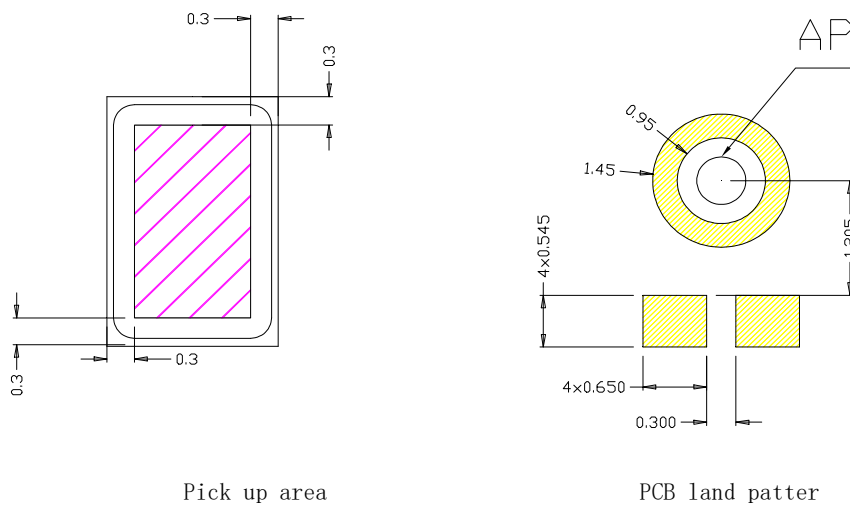
THE MEMS MICROPHONES ARE INTEGRATED WITH SPECIALIZED PRE-AMPLIFICATION ASIC TO PROVIDE HIGH SENSITIVITY, HIGH SNR OUTPUT FROM A CAPACITIVE AUDIO SENSOR. IT'S PACKAGED FOR SURFACE MOUNTING AND HIGH TEMPERATURE RE-FLOW ASSEMBLY.

2. DIMENSIONS AND MECHANICAL LAYOUT

DIMENSIONS: AS SHOWN IN FIGURE 6

WEIGHT: 0.011g

3. PICKUP TOOL PICK LOCATION & PCB SOLDER PAD LAYOUT (FIGURE 1)



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4. ELECTRICAL SPECIFICATIONS

Standard Conditions

Ordinary Temperature 15 to 35°C

Ordinary Humidity 45 to 85%

Ordinary air pressure 86 to 106kPa

Basic Test Conditions

Temperature 20 ± 2°C

Humidity 63 to 67%

Ordinary air pressure 86 to 106kPa

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit.
Directivity		Omni-directional				
Sensitivity Range	S	94dB SPL @1kHz,	-39	-38	-37	dB
Output Impedance	Z _{out}	94dB SPL @1kHz,			400	Ω
Current Consumption	I	94dB SPL @1kHz,		95	150	uA
S/N Ratio	SNR	94dB SPL @1kHz, A-Weighted		63		dB(A)
Operating Voltage	V _{DD}		1.6	2.0	3.6	V
Total Harmonic distortion	THD	94dB SPL @1kHz, S=Typ		0.1	0.5	%
Maximum input S.P.L	AOP	10% THD @1kHz S=Typ, V _{dd} =2V, R _{load} >2Kohm	126	128		dB
Power Supply Rejection Ratio	PSRR	200mV _{pp} Sine wave @1kHz, A-weighted	60	66		dB

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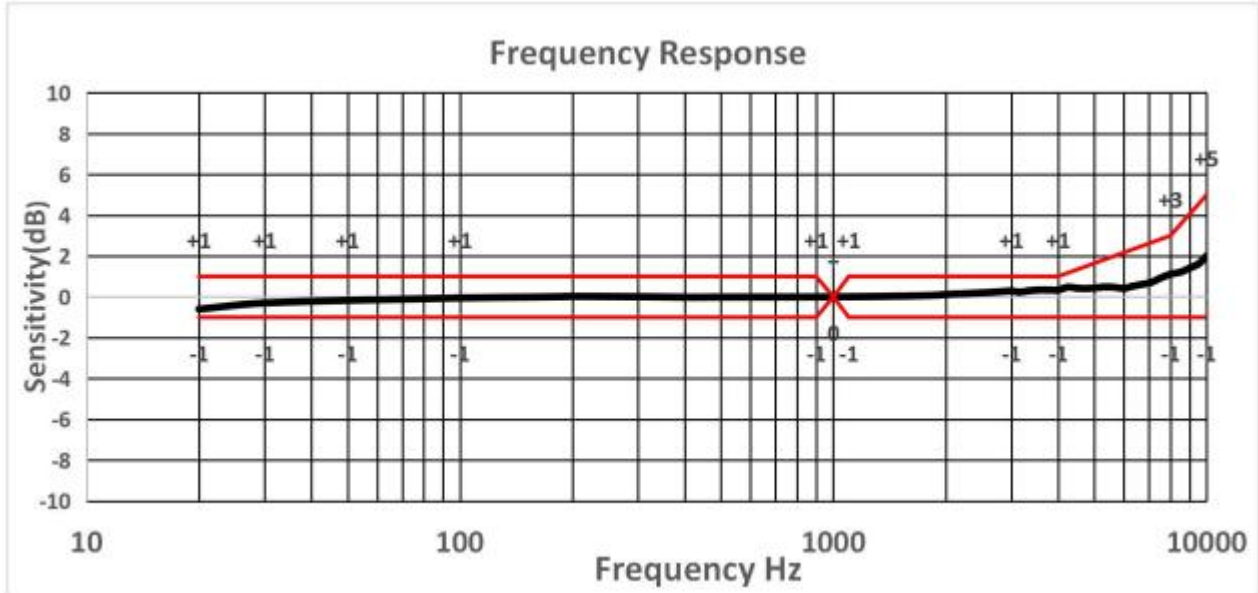
5. RELIABILITY TEST

Test Item	Description	Standard
Reflow	3 reflow cycles with peak temperature of +260°C	IPC-JEDEC J-STD-020D-01
High Temperature Storage	+105°C environment for 1,000 hours	IEC 68-2-2 Test Ba
Low Temperature Storage	-40°C environment for 1,000 hours	IEC 68-2-1 Test Aa
High Temperature Bias	+105°C environment while under bias for 1,000 hours	IEC 68-2-2 Test Ba
Low Temperature Bias	-40°C environment while under bias for 1,000 hours	IEC 68-2-1 Test Aa
High Temperature/Humidity Bias	+85±3°C/85±3% R.H. environment while under bias for 1,000 hours	JESD22-A101A-B
Thermal Shock	100 cycles of air-air thermal shock from -40°C to +125°C with 30 minute soaks	IEC 68-2-4
Tumble test	300 Random Drops of Test Box on to Steel Base from 1.0m, 10 Tumbles/Minute	IEC60068-2-32 Test Ed
Vibration	16 minutes in each X, Y, Z axis from 20 to 2,000 Hz with peak acceleration of 20 G	MIL 883E, Method 2007.2,A
Mechanical Shock	3 pulses of 10,000 G in each of the X, Y, and Z directions	IEC 68-2-27 Test Ea
Drop test	1.5meter height onto a concrete surface each time at three direction	IEC60068-2-32
ESD-MM	3 discharges of ±200V direct contact to IO pins	ESD STM5.2

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6. TYPICAL FREQUENCY RESPONSE (FIGURE 2)

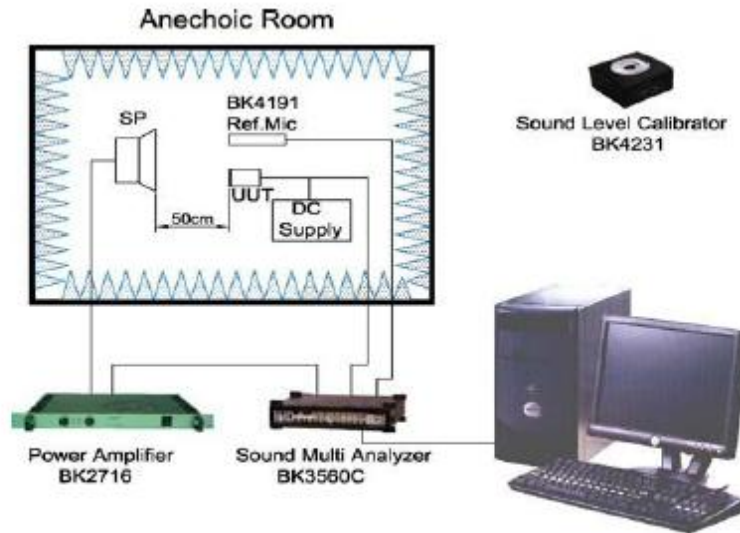


Frequency(Hz)	LSL	USL	Unit
100	-1	1	dB
900	-1	1	dB
1000	0	0	dB
1100	-1	1	dB
8000	-1	3	dB
10000	-1	5	dB

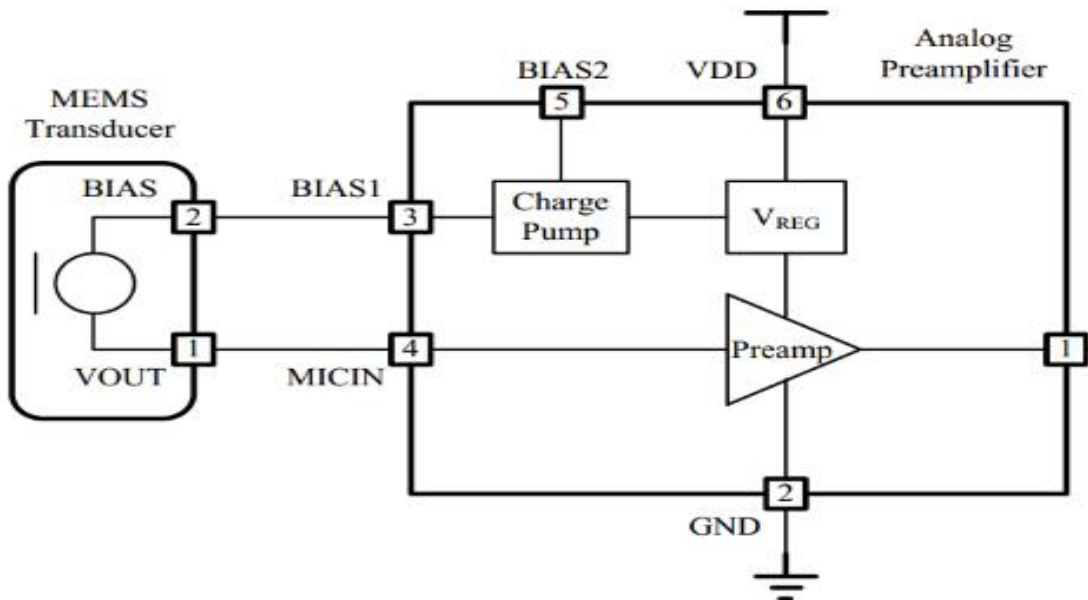
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7. MEASUREMENT CIRCUIT (FIGURE 3)



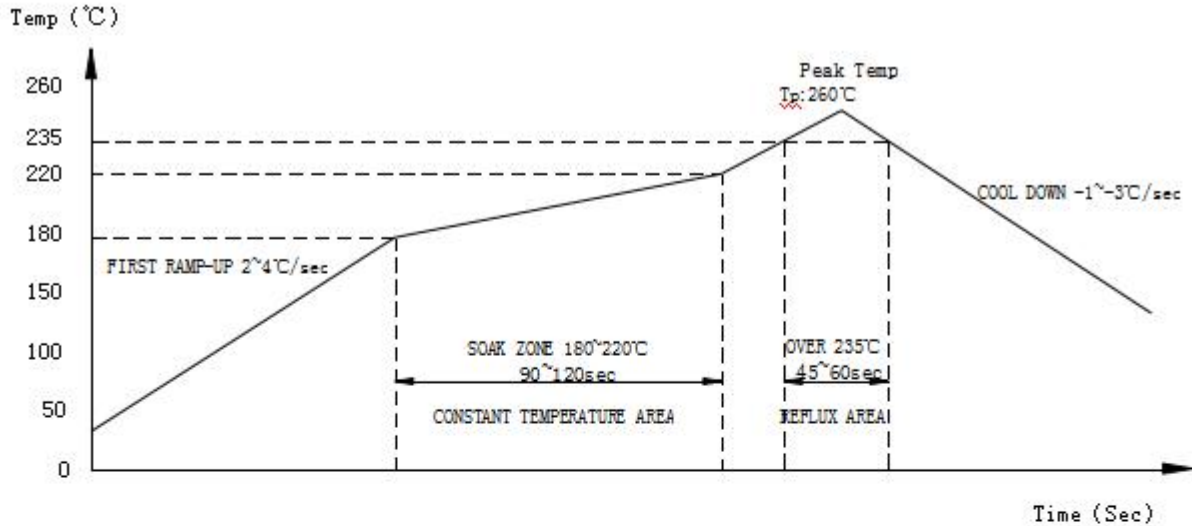
8. APPLICATION CIRCUIT (FIGURE 4)



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9. REFLOW PROFILE (FIGURE 5)



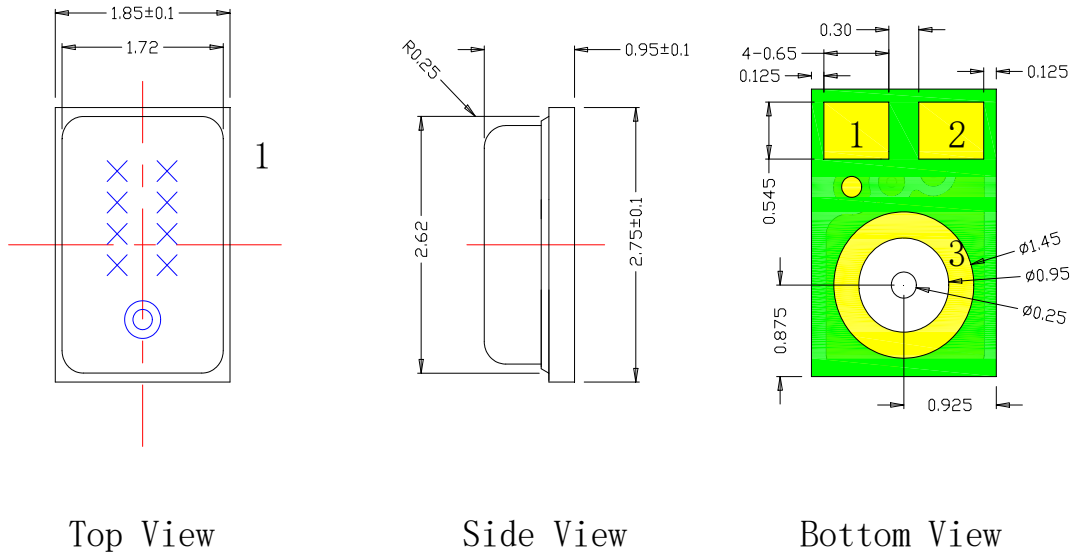
NOTE	The maximum temperature rise in the slope of 2~4°C/sec.
	The constant temperature is 180~220°C, Time:90~120sec.
	The <u>reflux</u> area temperature is above 235°C, Time:45~50sec.
	The maximum temperature is 260°C.
	The maximum temperature drop in the slope of -1~-3°C/sec.
REFLOW SOLDERING PROFILE (TBD)	Do not perform more than twice.
	After reflow soldering under following conditions in the first time, the sensitivity of the microphone shall be changed within 2dB from initial value. Can not sure the sensitivity can be in the scope of 2dB if reflow two times or more.

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10. APPEARANCE & DIMENSIONS (FIGURE 6)

The board surface cleaning pressure is 0.3Mpa limited



Item	Dimension	Tolerance(+/-)	Units
Length(L)	2.75	0.10	mm
Width(W)	1.85	0.10	mm
Height(H)	0.95	0.10	mm
Acoustic Port(AP)	Ø0.25	0.05	mm

Pin #	Pin Name	Type	Description
1	V _{DD}	Power	Power Supply
2	Output	Signal	Output Signal
3	GND	Ground	Ground

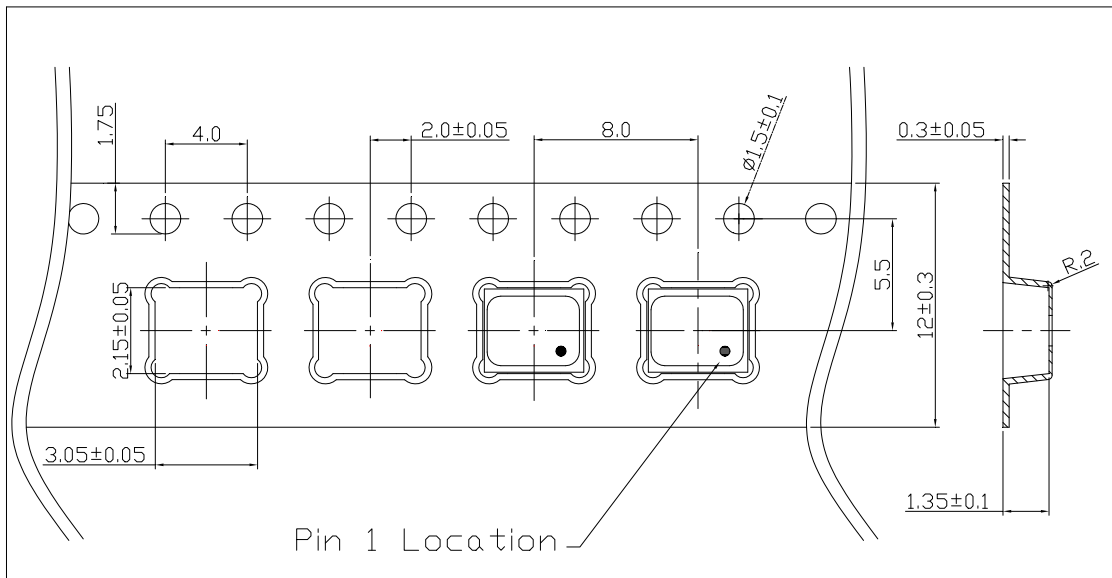
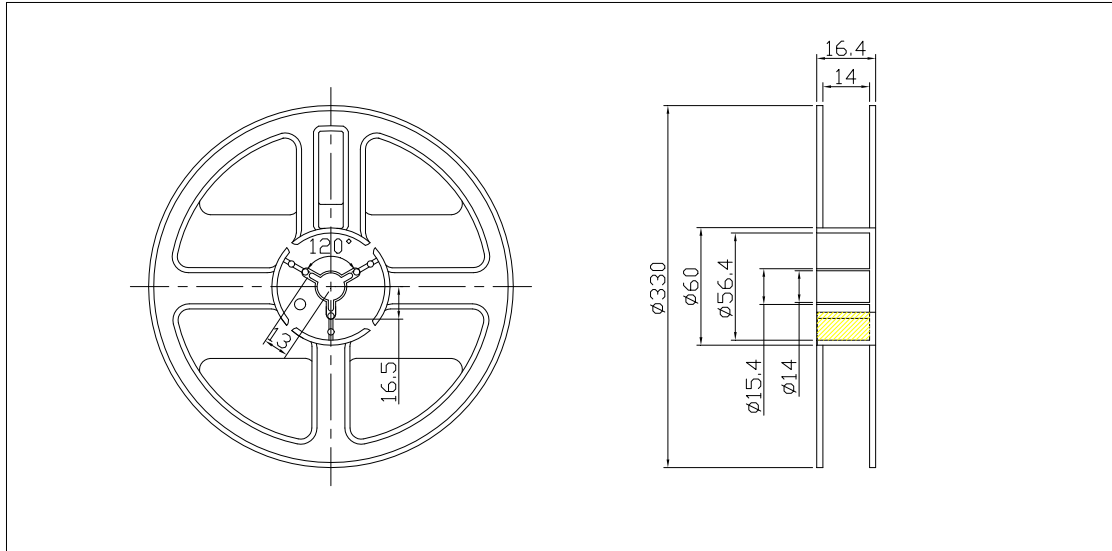
Note:

All Ground Pin must be connected to the ground in end application

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11. PACKING (UNIT: MM) (FIGURE 7)



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CAUTIONS WHEN USING MEMS MIC

12.1 Board Wash Restrictions

It is very important not to wash this silicon microphone; otherwise this could damage the microphone.

12.2 Sound Hole Protection

It is very important not to operate vacuum and air blow into sound hole (without any covering over sound holes), otherwise this could damage the microphone. And it is necessary to be careful about substances into sound hole inside silicon microphone.

12.3 ESD Protection

The microphone is sensitive element, it is necessary to be careful when using. Otherwise this maybe damage the microphone.

12.4 Ultrasonic Restrictions

It is very important not to use ultrasonic process. Otherwise this could damage the microphone.

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