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SPECIFICATION FOR APPROVAL

Analog MEMS Microphone

Part Number	OWMMOA-271811A-S421QA
Note	This item is in compliance with the following requirements: 1. RoHS directive 2. REACH
Customer P/N	

Ole Wolff	Signature / Date	Prepared	Checked	Approved

Customer	Signature / Date	Confirmation		

REVISION NOTES:

Date	Rev.	Description of Revision
2021.9.8	00	Initial Release

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1. SCOPE

THIS SPECIFICATION IS APPLIED TO OLE WOLFF MINI SILICON MICROPHONE UNIT, MODEL NO.: OWMMOA-271811A-S421QA

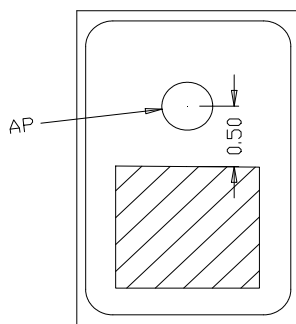
THE MEMS MICROPHONES ARE INTEGRATED WITH SPECIALIZED PRE-AMPLIFICATION ASIC TO PROVIDE HIGH SENSITIVITY, HIGH SNR OUTPUT FROM A CAPACITIVE AUDIO SENSOR. IT'S PACKAGED FOR SURFACE MOUNTING AND HIGH TEMPERATURE RE-FLOW ASSEMBLY.

2. DIMENSIONS AND MECHANICAL LAYOUT

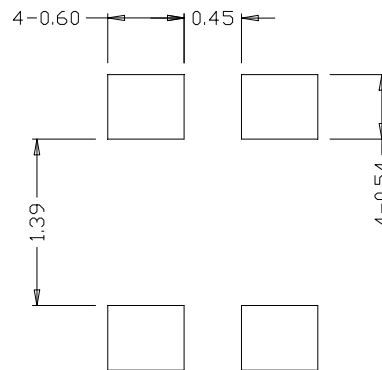
DIMENSIONS: AS SHOWN IN FIGURE 6

WEIGHT: 0.011g

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



Pick up area



PCB Land pattern

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4. ELECTRICAL SPECIFICATIONS

Standard Conditions

Ordinary Temperature 5 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

Test condition: Vdd=2.0V, no load, unless otherwise specified.

Specification	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Directivity			Omni-directional			
Sensitivity Range	S	94dB SPL @1kHz,	-43	-42	-41	dB
Output Impedance	Z _{out}	@1kHz,			400	Ω
Current Consumption	I	Vdd =2.0V		90	150	uA
S/N Ratio	SNR	94dB SPL @1kHz, A-Weighted BW=20-20kHz	61	63		dB(A)
Operating Voltage	V _{DD}		1.6	2.0	3.6	V
Total Harmonic distortion	THD	94dB SPL @1kHz, S=Typ			0.5	%
Acoustic Overload Point	AOP	10% THD @1kHz S=Typ		130		dB
Power Supply Rejection	PSR	100mVpp Square wave @217Hz, A-weighted		-95	-80	dB
Power Supply Rejection Ratio	PSRR	200mVpp Sine wave @1kHz, A-weighted		66		dB
Output load	C _{load}				150	pF
	R _{load}		10		100	KΩ

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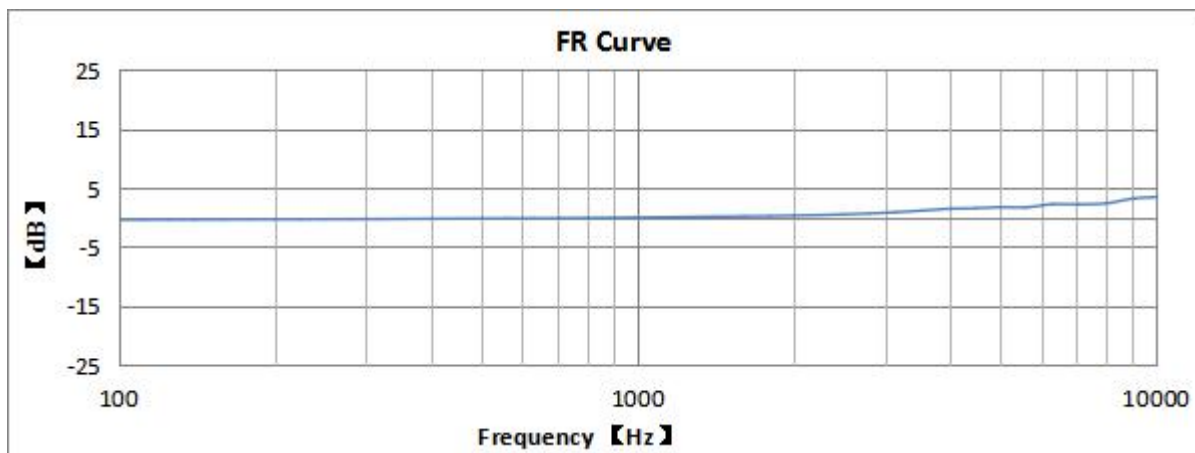
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5. RELIABILITY TEST

High Temperature Test	After exposure at 105°C for 1000 hours, the sensitivity should be within ± 3 dB from the initial value.
Low Temperature Test	After exposure at -40°C for 1000 hours, the sensitivity should be within ± 3 dB from the initial value.
High Humidity & High Heat Test	After exposure at 85 \pm 3°C and 85% relative humidity for 1000 hours, the sensitivity should be within ± 3 dB from the initial value.
Thermal Shocking Test	100 cycles air-to-air thermal shock from -40°C to +125°C with 15 minute soaks. the sensitivity should be within ± 3 dB from the initial value.
Vibration Test	4 cycles of 20 to 2,000 Hz sinusoidal sweep with 20 G peak acceleration lasting 12 minutes in X, Y, and Z directions.
Drop Test	Height: 1.5m Fixture Weight: 150g (Sound Hole Diameter in the fixture is ≥ 0.8 mm) Reference Surface: slippery marble floor Duration: 4 corners*4 times, 6 faces*4 times The sensitivity change should be less than 1dB after testing
ESD Test	3 discharges of ± 8 kV direct contact to lid while unit is grounded. (According to standard of IEC61000-4-2) 3 discharges of ± 2.5 kV direct contact to I/O pins. (HBM mode) 3 discharges of ± 200 V direct contact to I/O pins. (MM mode)
Mechanical Shock	3 pulses of 10,000 G in the X, Y, and Z direction
Reflow	3 reflow cycles with peak temperature of +260°C

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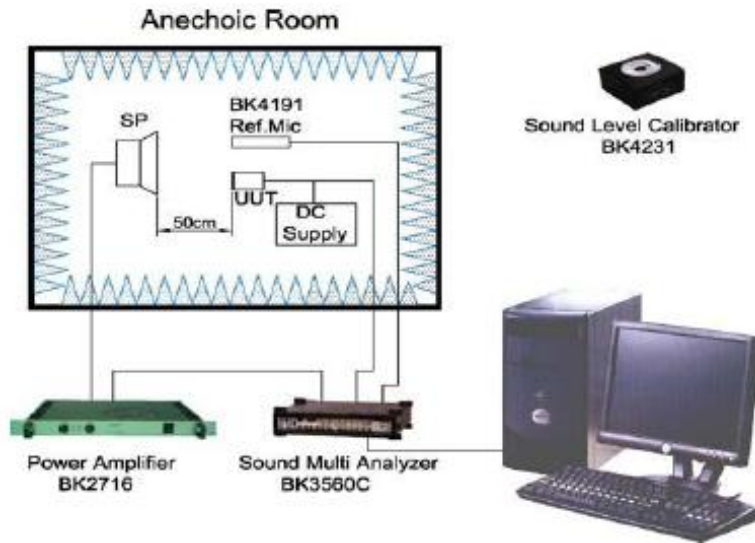
6. TYPICAL FREQUENCY RESPONSE (FIGURE 2)



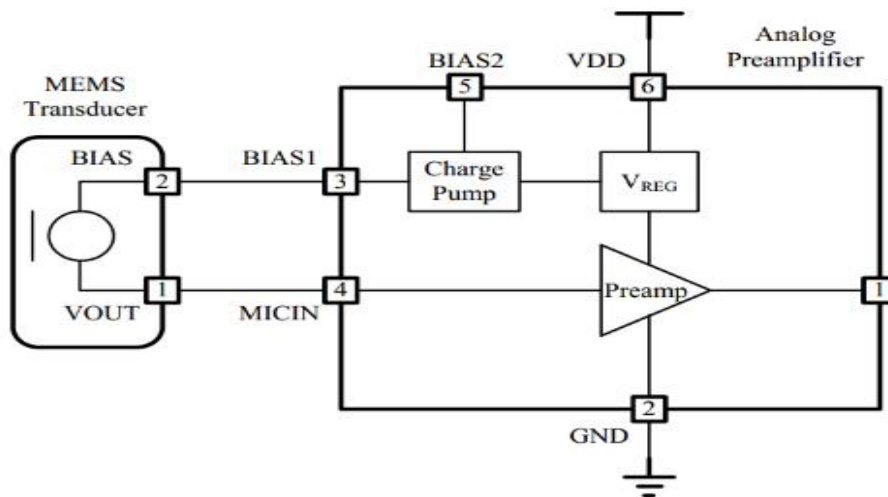
Frequency (Hz)	LSL	USL	Unit
100	-1	1	dB
900	-1	1	dB
1000	0	0	dB
1100	-1	1	dB
8000	-1	4	dB
10000	0	9	dB

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7. MEASUREMENT CIRCUIT (FIGURE 3)



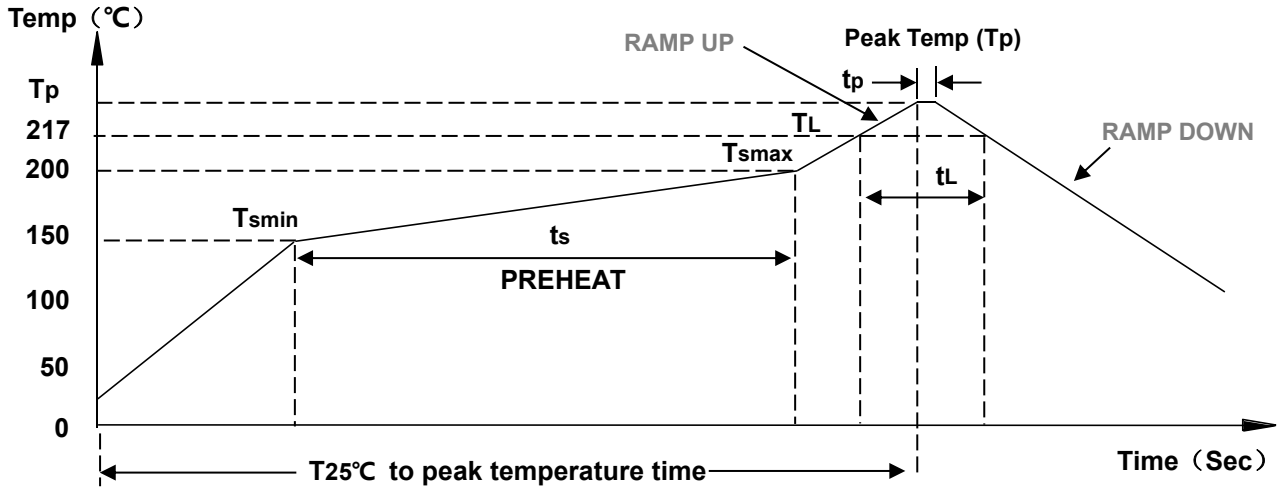
8. APPLICATION CIRCUIT (FIGURE 4)



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9. REFLOW PROFILE (FIGURE 5)



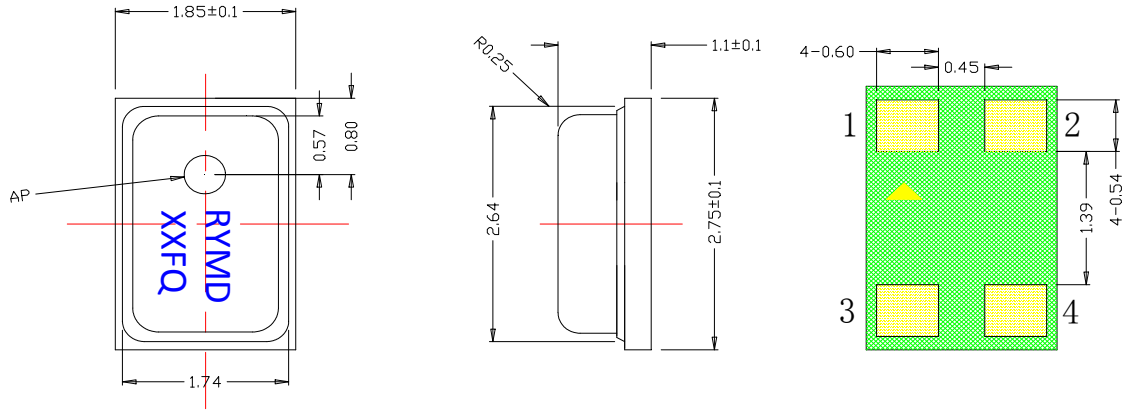
Parameter		Reference	Specification
Average Ramp Rate		T_{smax} to T_P	3°C/sec max
Preheat	Minimum Temperature	T_{smin}	150°C
	Maximum Temperature	T_{smax}	200°C
	Time T_{smin} to T_{smax}	t_s	60 sec to 180 sec
Time Maintained Above Liquidous		t_L	60 sec to 150 sec
Liquidous Temperature		T_L	217°C
Peak Temperature		T_P	260°C +0°C/-5°C
Time Within +5°C of Actual Peak Temperature		t_p	20 sec to 40 sec
Ramp-Down Rate		T_P to T_{smax}	3°C/sec max
Time +25°C ($t_{25^\circ\text{C}}$) to Peak Temperature			8 min max

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10. APPEARANCE & DIMENSIONS (FIGURE 6)

The board surface cleaning pressure is 0.3Mpa limited



Top View

Side View

Bottom View

Item	Dimension	Tolerance(+/-)	Units
Length(L)	2.75	0.10	mm
Width(W)	1.85	0.10	mm
Height(H)	1.1	0.10	mm
Acoustic Port(AP)	Ø0.5	0.1	mm

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

Notes:

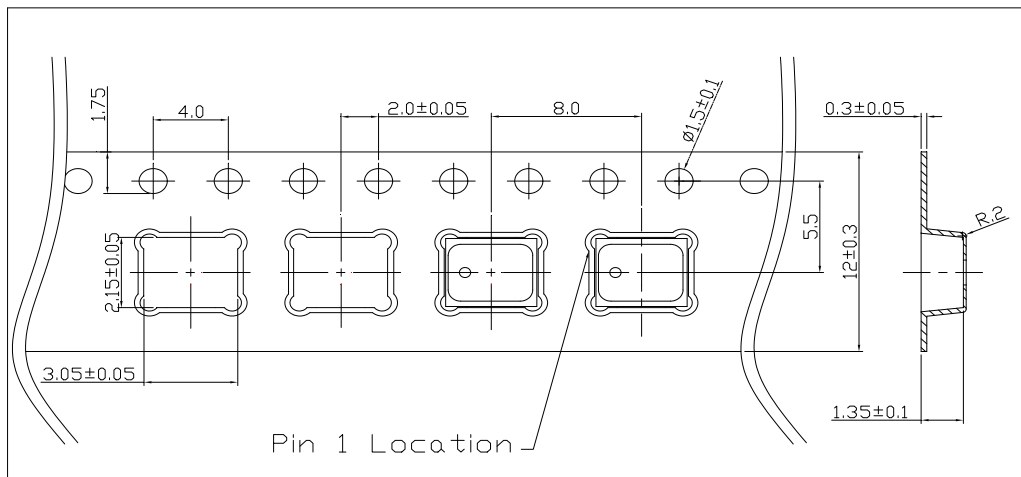
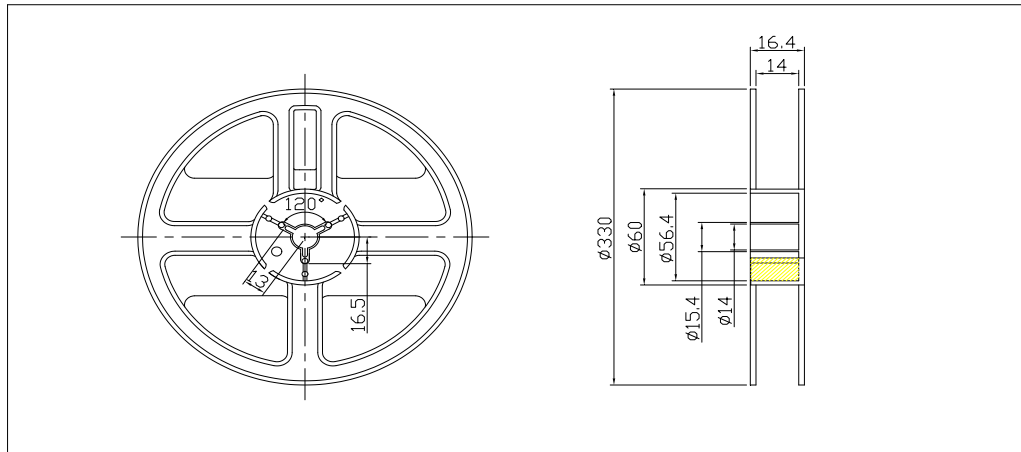
All dimensions are in millimeter (mm).

Tolerance±0.15mm unless otherwise specified.

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



5 000 p c s

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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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