



# SPECIFICATION

## FOR APPRONAL

Customer : \_\_\_\_\_

Product Name : MEMS Microphone \_\_\_\_\_

Model Name : VSM3729AT-G32-A3F \_\_\_\_\_

Drawing No. : VS20190624019 \_\_\_\_\_

### Signature of Voise

Approved by	Checkde by	Issued by	Date



福爱斯电子有限公司  
VOISE ELECTRONICS CO.,LTD.

Office Add:Haoyangguang B-302# No.968 Baizhang Road,Ningbo China

Factory add: Shishan Industrial Park Moushan Town Yuyao City China

Tel:86-0574-87471601 Fax:86-0574-87471600 P.C.315040

Http://www.nbvoise.com E-mail:sales@nbvoise.com

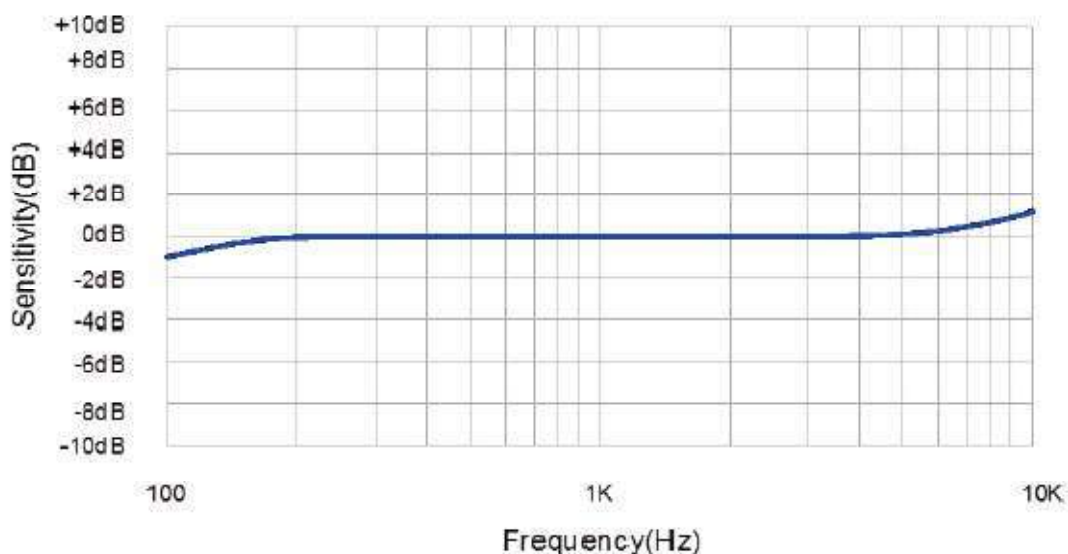
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## 1. Acoustic and Electrical Characteristics

(Test Conditions: 23±2°C, 55±20% R.H)

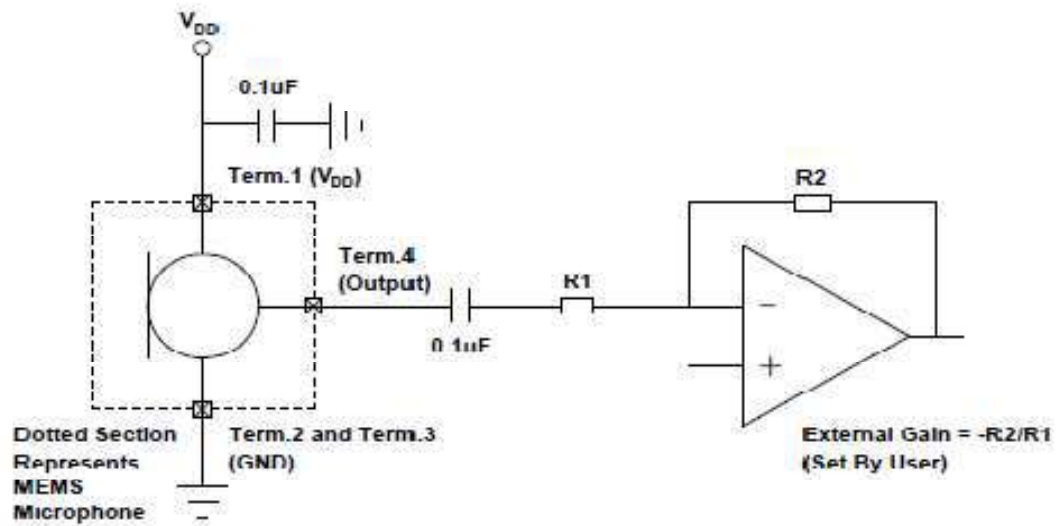
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Directivity	D(θ)	Omni-Directional				
Sensitivity	S	94dB SPL @1KHz	-45	-42	-39	dB
Supply Voltage	V <sub>DD</sub>		1.3	2.0	3.6	V
Current Consumption	I <sub>DSS</sub>	V <sub>DD</sub> =2.0V		160		uA
S/N Ratio	S/N	94dB SPL @1KHz (A-weighted)		57		dB
Total Harmonic Distortion	THD	94dB SPL @1KHz		0.2		%
Acoustic Overload Point	AOP	10% THD @ 1 kHz		125		dB SPL
Output Impedance	Z <sub>OUT</sub>	@1KHz			300	Ω

## 2. Frequency Response Curve

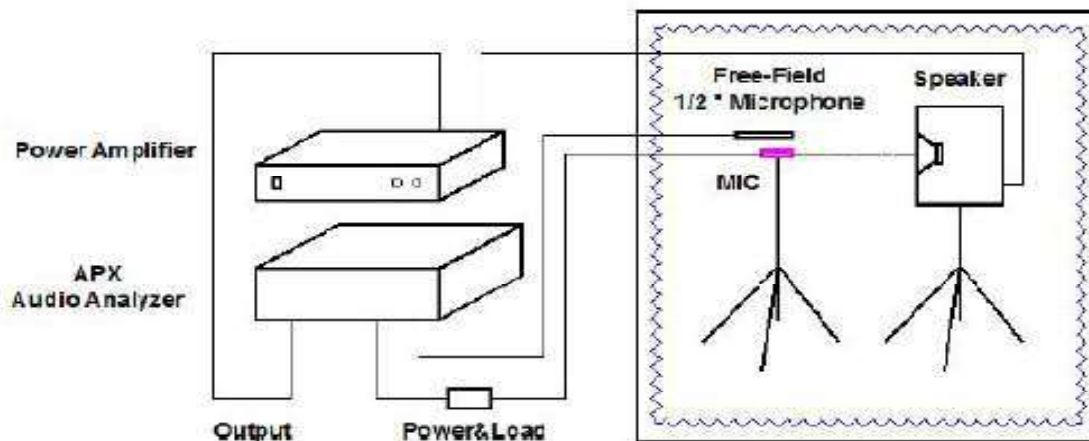


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### 3. Recommended Interface Circuit

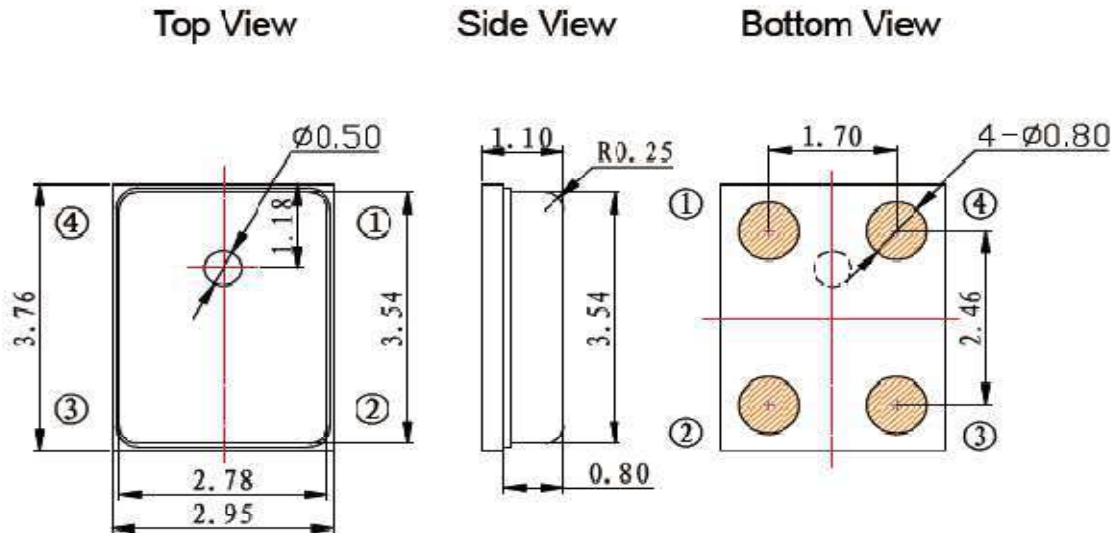


### 4. Test Setup Drawing



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## 5. Mechanical Specifications



Item	Dimension	Tolerance	Units
Length(L)	3.76	$\pm 0.10$	mm
Width(W)	2.95	$\pm 0.10$	mm
Height(H)	1.10	$\pm 0.10$	mm
Acoustic port(AP)	$\phi 0.50$	$\pm 0.10$	mm

Pin Output	
Pin#	Function
1	V <sub>DD</sub>
2	GND
3	GND
4	Output

### Note:

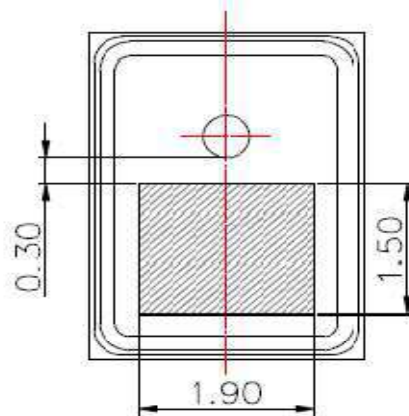
All dimensions are in millimeter(mm).

Tolerance:  $\pm 0.1$ mm unless otherwise specified.

Weight:  $0.024 \pm 10\%$ g

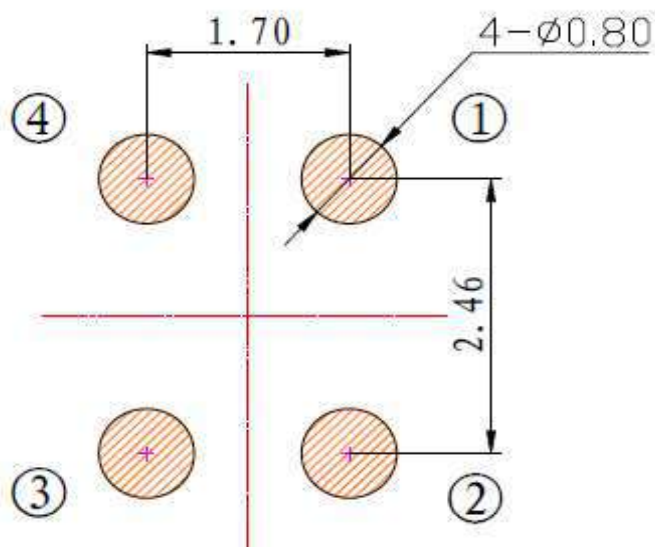
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## 6. Vacuum Nozzle pickup location



Recommended area for vacuum nozzle pickup location

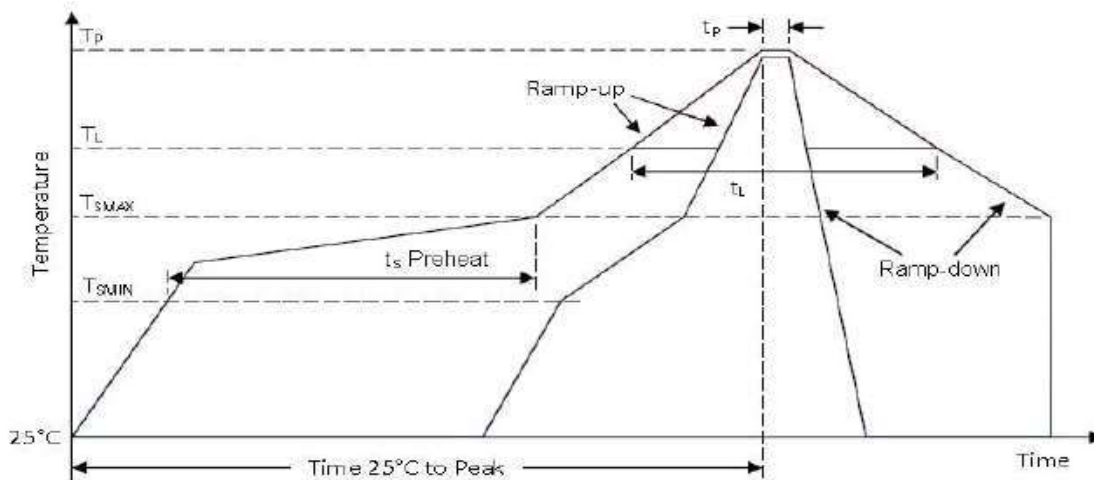
## 7. Example solder stencil pattern





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## 8. Reflow Guarantee



Profile Feature	Pb-Free
Average Ramp-up rate ( $T_{SMAX}$ to $T_P$ )	3°C/second max.
Preheat	
Temperature Min ( $T_{SMIN}$ )	150°C
Temperature Max ( $T_{SMAX}$ )	200°C
Time ( $T_{SMIN}$ to $T_{SMAX}$ ) ( $t_s$ )	60-180 seconds
Time maintained above:	
Temperature ( $T_L$ )	217°C
Time ( $t_L$ )	60-150 seconds
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Ramp-down rate( $T_P$ to $T_{SMAX}$ )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max

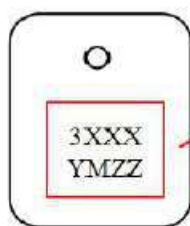
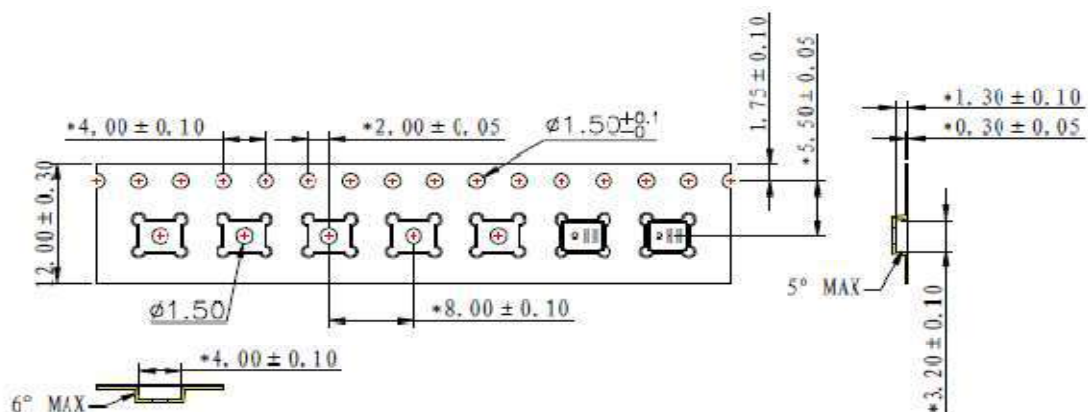
### Notes:

1. Vacuuming over acoustical hole of the microphone is not allowed, because the Devices can be damaged by vacuum.
2. Washing the board after reflow process is not allowed, because board washing and Cleaning agents can damage the device. A device should not be exposed to ultrasonic processing or cleaning.
3. Recommended number of reflow is no more than 5 times.

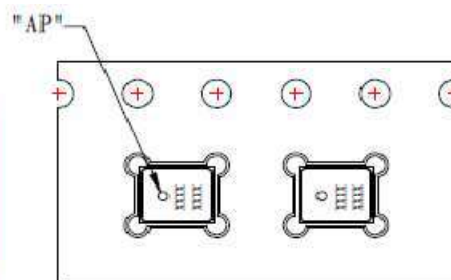
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## 9. Packaging Specifications

### 9.1 Tape Specification

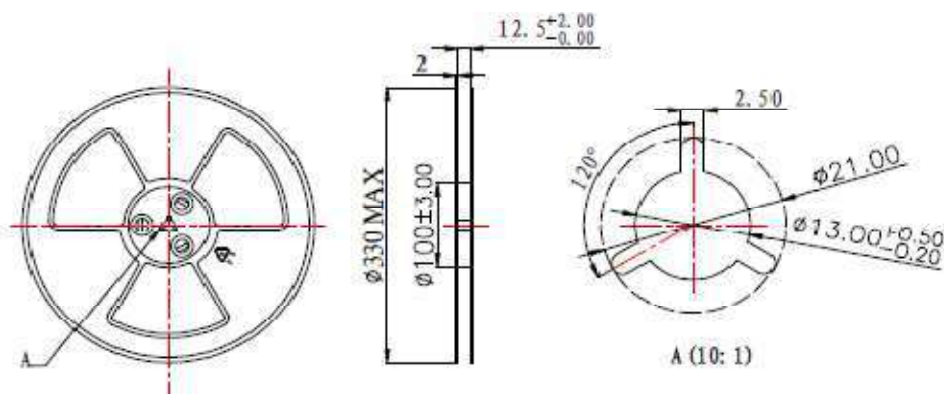


1. "3" --The product feature code.
2. "XXX" --Factory order number.
3. "Y" --Year.
4. "M" --Month.
5. "ZZ" --Lot Number.



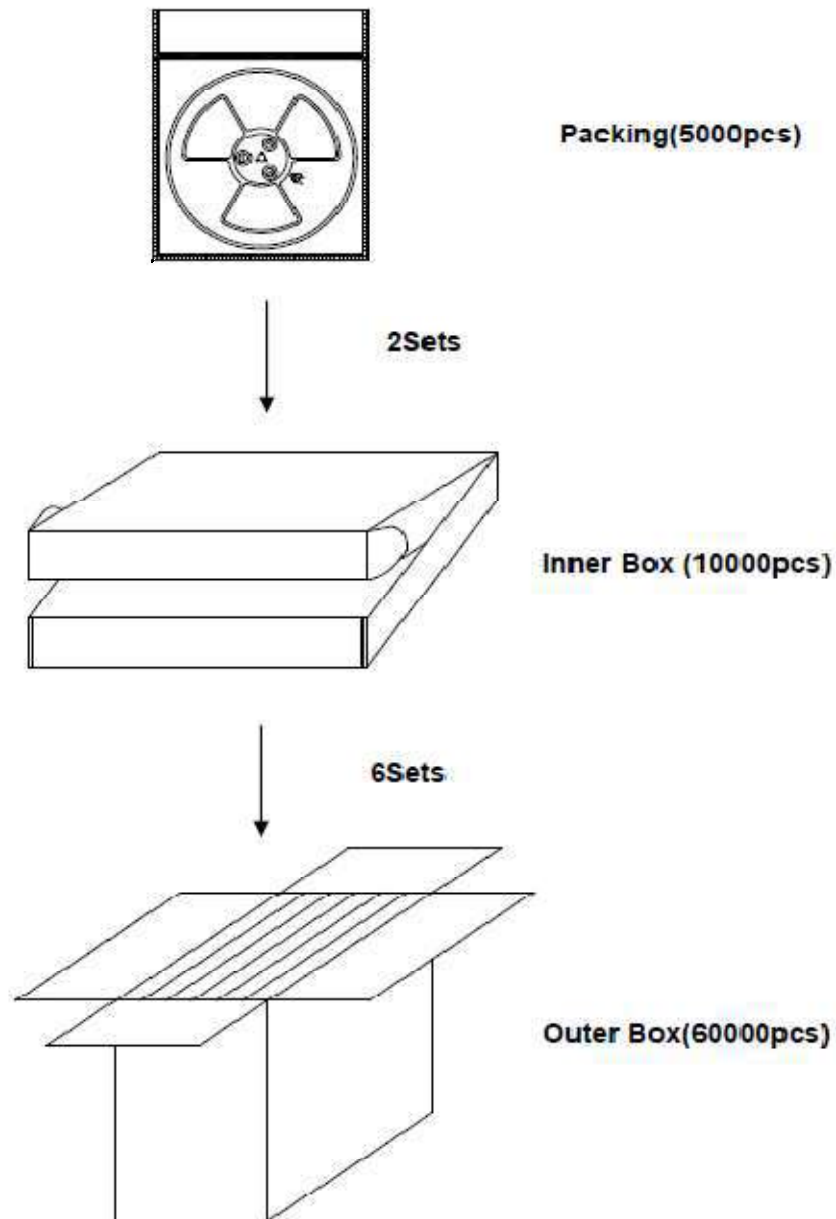
### 9.2 Reel Dimension

#### 13" reel dimensions (unit:mm)



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9.3.The Content of Box(13" reel)



Qty/ Reel	Qty/ One Inner Box	Qty/ Outer Box (Six Inner Box)
5000 pcs	10,000 pcs	60,000 pcs
Φ 330mm	355 × 340 × 45mm	365 × 290 × 370mm



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## 10. Storage and Transportation

1. Keep MEMS MIC in warehouse with less than 75% humidity and without sudden temperature change, acid air, any other harmful air or strong magnetic field.
2. Recommend storage period no more than 1 year and floor life(out of bag) at factory no more than 4 weeks.
3. The MEMS MIC with normal pack can be transported by ordinary conveyances. Please protect products against moist, shock, sunburn and pressure during transportation.
4. Storage Temperature Range:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$  (Microphone units with package)
5. Operating Temperature Range:  $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$

## 11. Reliability Specifications

Note: The microphone sensitivity after stress must deviate by no more than  $\pm 3\text{dB}$  from the initial value.

Test Item	Detail
Thermal Shock Test	100 cycles of air-air thermal shock from $-40^{\circ}\text{C}$ to $+105^{\circ}\text{C}$ with 15 minute soaks.
High Temperature Test	$+105^{\circ}\text{C}$ environment while under bias for 240 hours.
Low Temperature Test	$-40^{\circ}\text{C}$ environment while under bias for 240 hours.
Humidity Test	$+85^{\circ}\text{C}/85\%$ R.H. environment while under bias for 240 hours.
Vibration Test	16 minutes in each X, Y, Z axis from 20 to 2,000 Hz with peak acceleration of 20G
Drop Test	1.5-meter height onto a concrete surface each time at three directions in state of packaging.
Reflow Test	5 reflow cycles with peak temperature of $+260^{\circ}\text{C}$ .
ESD Test	Under $C=150\text{pF}$ , $R=330\text{ohm}$ . Tested to $\pm 8\text{KV}$ contact to the case and tested to $\pm 2\text{kV}$ contact to I/O terminals. 10 times. Grounding.