

SPECIFICATION

FOR APPRONAL

Customer : _____

Product Name : MEMS Microphone _____

Model Name : VSM4737DT-S26-A1F _____

Drawing No. : VS20250111007 _____

Signature of Voise

Approved by	Checkde by	Issued by	Date

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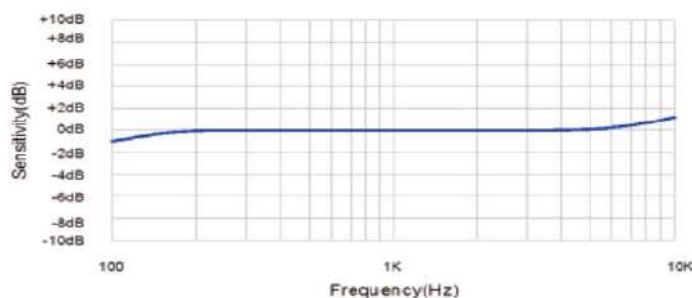
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1. Acoustic and Electrical Characteristics

Test conditions: Ta=23±2°C, RH=55±20% R.H., V_{DD}=1.8V, Clock Frequency = 2.048 MHz
Duty Cycle=50%, No Load Input sound pressure PIN = 94dB SPL@1kHz, Test room temperature Ta = 25°C, Room Humidity = 50±20% SNR & noise floor measurement is with A-Weighting filter applied

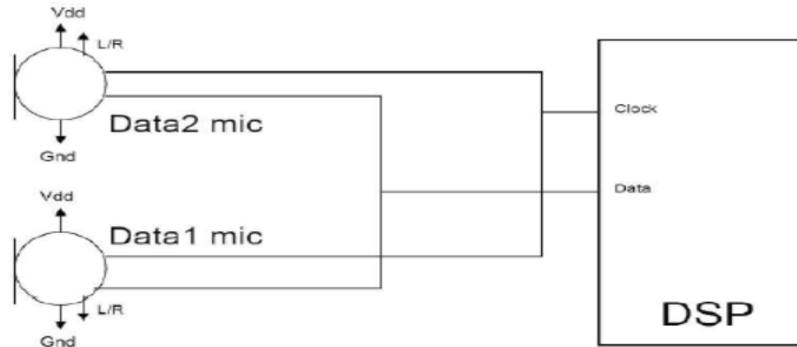
Item	Test Conditions	Min	Typ.	Max	Unit
Directivity	—	Omni-Directional			
Sensitivity	@1KHz (0 dB = 1V/Pa)	-27	-26	-25	dBFS
Signal-to-Noise Ratio	@1KHz (0 dB = 1V/Pa)	—	59	—	dB(A)
Total Harmonic Distortion (THD) @ 100dB SPL	@1KHz	—	0.2	0.5	%
Total Harmonic Distortion (THD) @ 115dB SPL	@1KHz	—	0.5	1	%
Max Input Sound Pressure	@1KHz, THD < 10%	—	120	—	dB SPL
Power Supply Rejection (PSR)	217Hz, 100mVpp square wave	—	-90	-80	dB (A)
INPUT CHARACTERISTICS					
Operating Frequency	—	1.024	2.048	3.072	MHz
Clock Duty Cycle	—	40	50	60	%
Power supply Voltage	—	1.6	—	3.6	V
Total Operation Current	1.6V-3.6V power supply voltage No load on DATA	—	580	—	μA
Standby Current	1.6V-3.6V power supply voltage, Clock off	—	3	4	μA
OUTPUT CHARACTERISTICS					
LOAD Capacitance	—	—	—	100	pF
Short Circuit Output Current	@1KHz (0 dB = 1 V/Pa)	1	—	10	mA
Data Format	—	1/2 Cycle 1-bit PDM			—
Lid to Ground Resistance	—	—	—	100	Ω

2. Frequency Response Curve



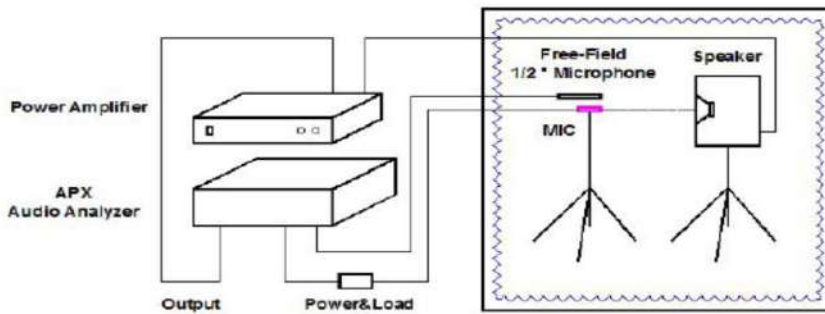
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3. Recommended Interface Circuit

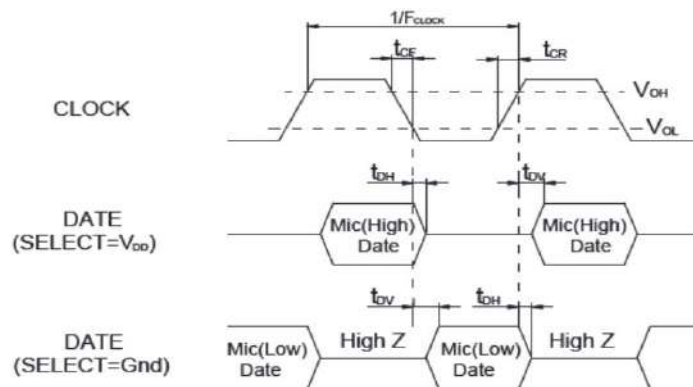


Label:	L/R:	Drives data after:	High-Z after:
Data2	High	Rising clock edge	Falling clock edge
Data1	Low	Falling clock edge	Rising clock edge

4. Test Setup Drawing



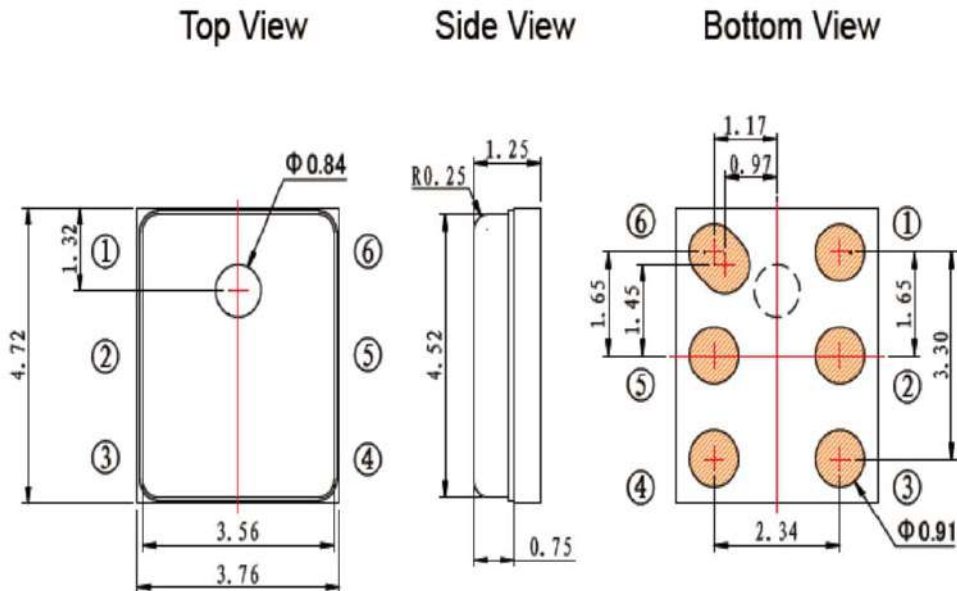
4.1 Timing Diagram



Microphone	Select (L/R)	Asserts DATA On	Latch DATA On
Mic(High)	V _{DD}	Rising clock edge	Falling clock edge
Mic(Low)	GND	Falling clock edge	Rising clock edge

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5. Mechanical Specifications



Item	Dimension	Tolerance	Units
Length(L)	4.72	± 0.10	mm
Width(W)	3.76	± 0.10	mm
Height(H)	1.25	± 0.10	mm
Acoustic port(AP)	$\Phi 0.84$	± 0.10	mm

Pin Output	
Pin#	Function
1	GND
2	L/R
3	GND
4	CLOCK
5	DATA
6	VDD

Note:

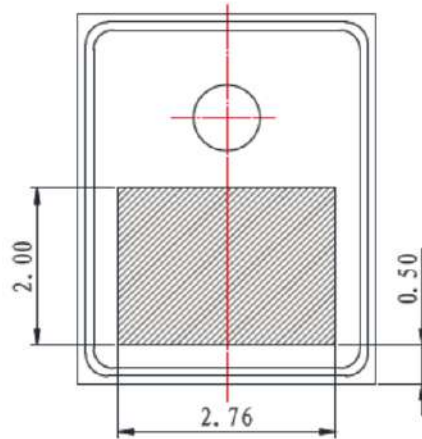
All dimensions are in millimeter(mm).

Tolerance: ± 0.1 mm unless otherwise specified.

Weight: $0.024 \pm 10\%$ g

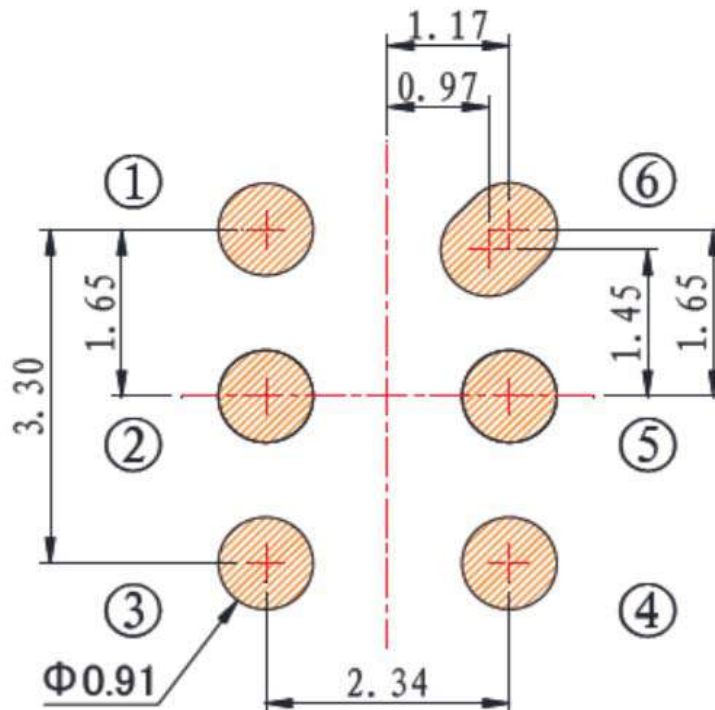
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6. Vacuum Nozzle pickup location



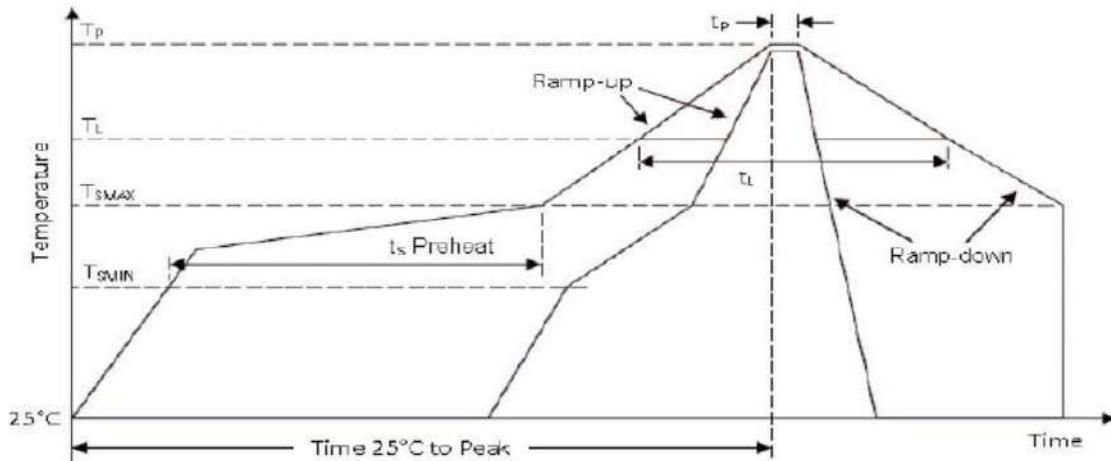
Recommended area for vacuum nozzle pickup location

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}) Temperature Max (T_{SMAX}) Time (T_{SMIN} to T_{SMAX}) (t_s)	150°C 200°C 60-180 seconds
Time maintained above: Temperature (T_L) Time (t_L)	217°C 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

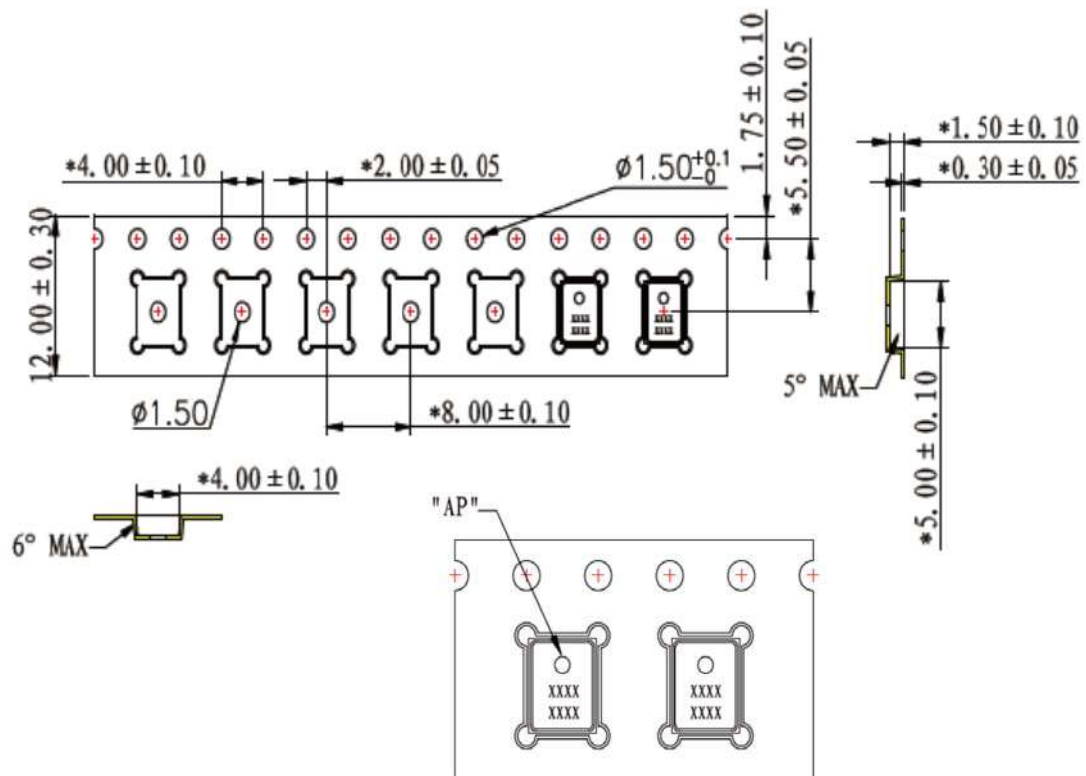
Notes:

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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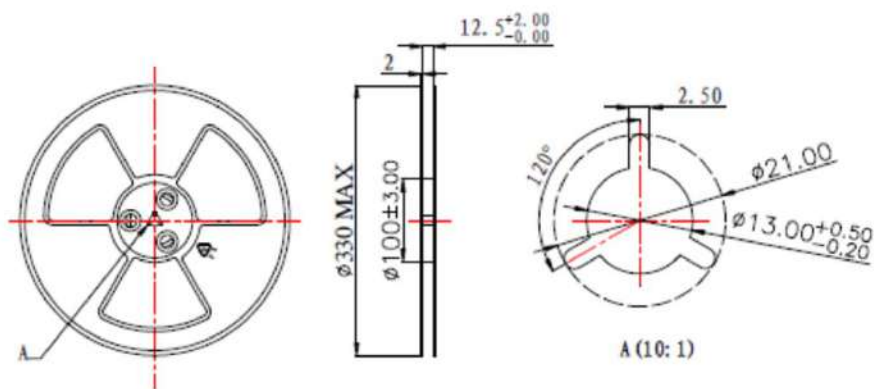
9.Packaging Spcifications

9.1 Tape Specification



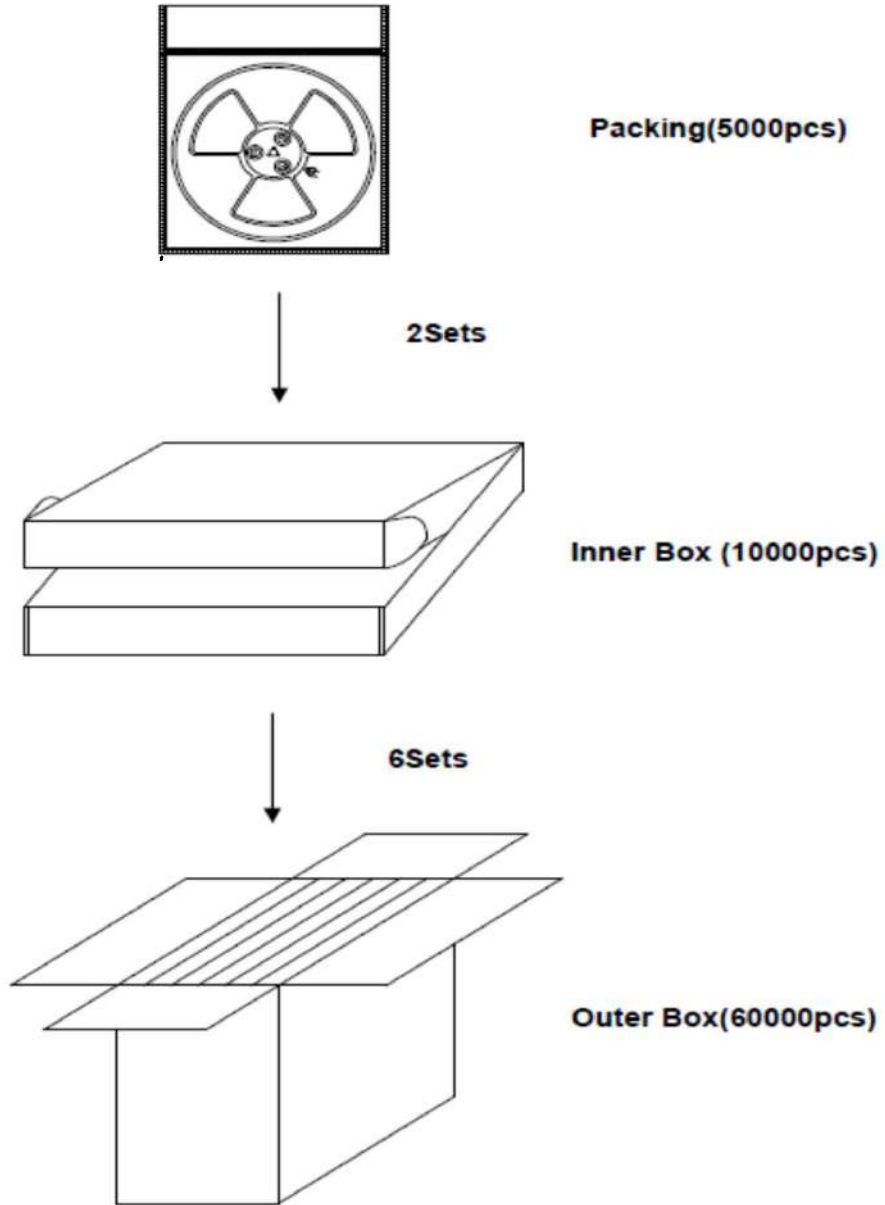
9.2 Reel Dimension

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) atfactory 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℃~+85℃ (Microphone units with package)
5. Operating Temperature Range: -40℃~+105℃

11. Reliability Specifications

Note: The microphone sensitivity after stress must deviate by no more than ± 3 dB from the initial value.

Test Item	Detail
Thermal Shock Test	100 cycles of air-air thermal shock from -40℃ to +105℃ with 15 minute soaks.
High Temperature Test	+105℃ environment while under bias for 240 hours.
Low Temperature Test	-40℃ environment while under bias for 240 hours.
Humidity Test	+85℃/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℃.
ESD Test	Under C=150pF, R=330ohm. Tested to ± 8 KV contact to the case and tested to ± 2 kV contact to I/O terminals. 10 times. Grounding.