DEVETECH ELECTRONICS CO. LTD

MEMS MICROPHONE
CUSTOMER: DACHS ELECTRONICA
P/N: DVZMSM38A2718H09

DESIGNED BY	
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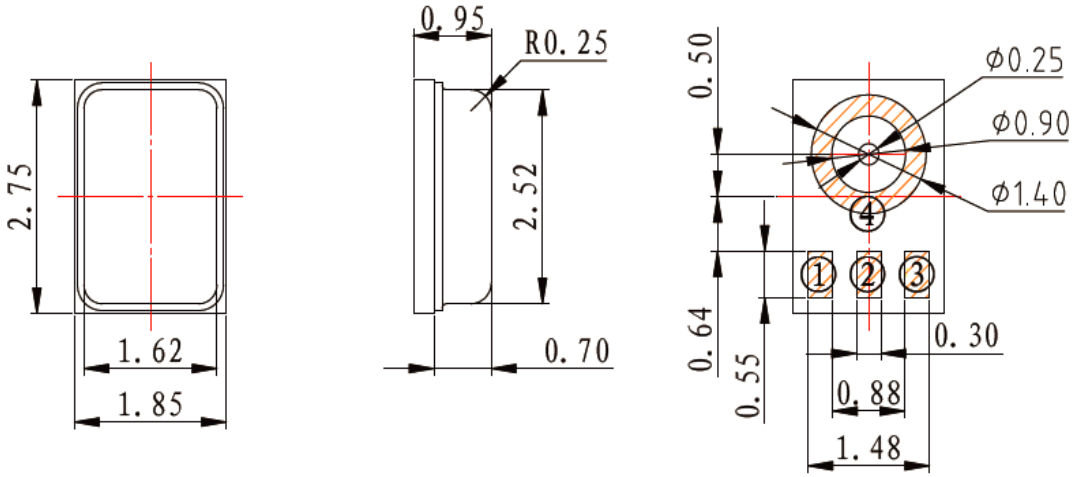
1. Circuit Diagram & Dimensions



Pin Definition and Function

Pin No.	Symbol	Function
1	OUT	Output
2	GND	Ground
3	V_{DD}	Power
4	GND	Ground

ITEM	Dimension	Tolerance	Untis
Length	2.75	±0.10	mm
Width	1.85	±0.10	mm
Height	0.95	±0.10	mm
Acoustic Port	Φ0.25	±0.10	mm

Maximum Ratings

Storage Temperature	T_{STG}	-40°C ~ 105 °C
Operating Temperature Range	T_A	-40°C ~ 85°C
Operating Voltage Range	V_{DD}	1.6 V~ 3.6 V

Typical robustness to electrostatic discharge

ESD capability all pins (HBM, JESD22-A114)	V_{ESD_HBM}	±2 kV
ESD capability all pins (MM, JESD22-A115)	V_{ESD_MM}	±200 V

2. Scope

This specification applies MEMS Microphone

3. General Characteristics

3.1 Out-Diameter : 2.75x1.85 mm

3.2 Height : 0.95 mm

3.3 Weight : 0.02 g

3.4 Operating Temperature : -40~+105℃ without loss of function

3.5 Store Temperature : -40~+85℃ without loss of function

4. Electrical and Acoustic Characteristics

Unless otherwise noted, typical test conditions are T_A = 25 °C, V_{DD} = 2.0 V and R.H.= 50 % measured in a pressure chamber test setup. All voltages refer to GND node

No	Items	Specification	Condition
1	Directivity	Omni-directional	
2	Sensitivity 1 kHz(S1kHz)	-38dB±3dB	1 kHz, 94 dB SPL
3	Output Impedance	300 Ω	f=1 kHz,
4	Current Consumption(Icc)	160 u A	V_{DD} = 2.0 V
5	Signal-to-Noise Ratio(SNR)	61dB	f=1 kHz,A-weighted Curve
6	Operating Voltage Range (V_{DD})	1.6 V~ 3.6 V	94 dB SPL, 1 kHz
7	Distortion (THD)	Max 0.2%	f=1 kHz, 94 dB SPL
8	Acoustic Overload Point(AOP)	124 dBSPL	10% THD @1kHz

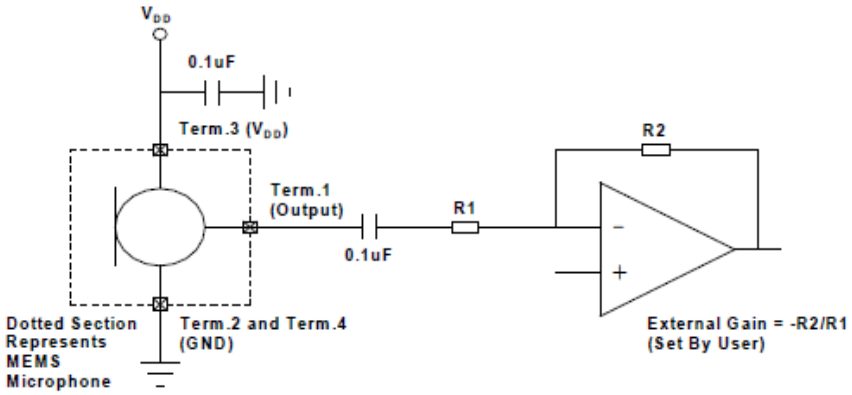
5. Reliability Test

Note: After test conditions are performed, the sensitivity of the microphone shall not deviate more than 3dB from its initial value.

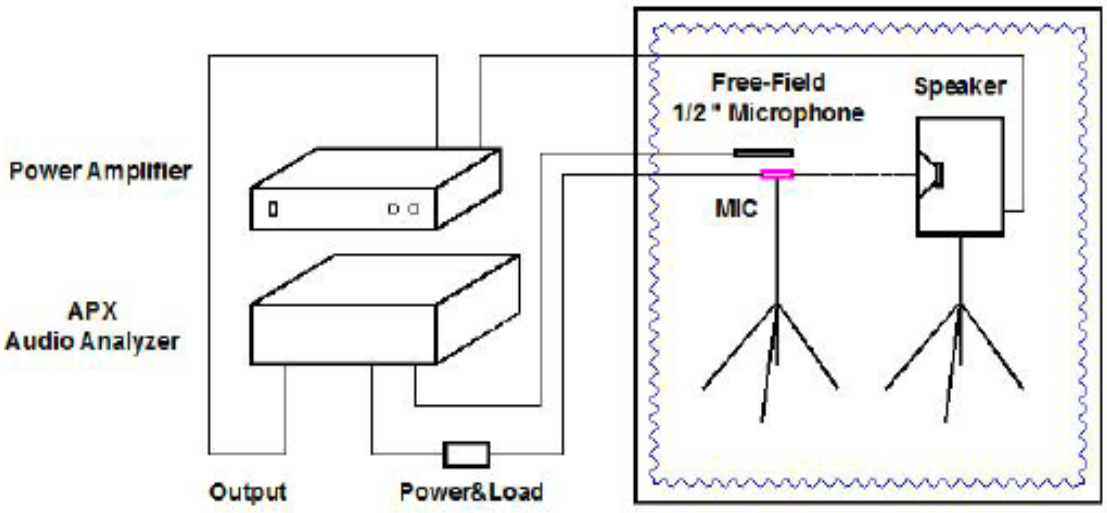
No	Items	Specification
1	High Temp.Test	Microphone unit must maintain sensitivity after storage at +105ºC for 240 hours. (IEC68-2-2 Test Ba)
2	Low Temp.Test	Microphone unit must maintain sensitivity after storage at –40ºC for 240 hours. (IEC68-2-1 Test Aa)
3	Humidity Test	Tested under Bias at 85ºC/85% R.H. for 240 hours. (JESD22-A101A-B)
4	Thermal Shock	Microphone unit must operate when exposed to air-to-air thermal shock 100cycles,from –40ºC to +105ºC. (IEC 68-2-4),
5	High Temperature Operating Test	Microphone unit must operate within sensitivity specifications for 240 hours at 105ºC.(IEC 68-2-2 Test Ba)
6	Low Temperature Operating Test	Microphone unit must operate within sensitivity specifications for 240 hours at –40ºC.(IEC 68-2-1 Test Aa)
7	Vibration Test	Microphone unit must operate under test condition: 4 cycles, from 20 to 2,000 Hz in each direction (x,y,z), 48 minutes, using peak acceleration of 20 G (+20%, -0%). (MIL 883E, method 2007.2, A)
8	Electrostatic Discharge	Tested to ±8kV contact to the case and tested to ±2kV contact to I/O terminals. 10times.Grounding Sensitivity should vary within ± 3dB from initial sensitivity.
9	Reflow test	Microphone is tested to 5 passes through reflow oven, with microphone mounted upside-down under conditions of 260ºC for 30 seconds maximum.
10	Mechanical Shock	Microphone must operate after exposure to shock test of 10,000 G per IEC 68-2-27, Ea.
11	Drop Test	To be no interference in operation after dropped to 1.0cm steel plate 12 times from1.5 meter height in state of JIG,JIG weight of 150g, Sensitivity should vary within ±3dB from initial sensitivty.

6. Measurement Method & Frequency Response curve

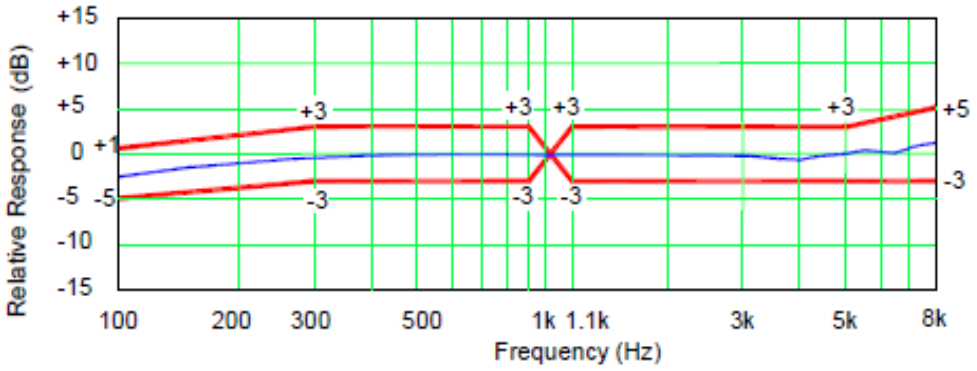
Measurment Circuit



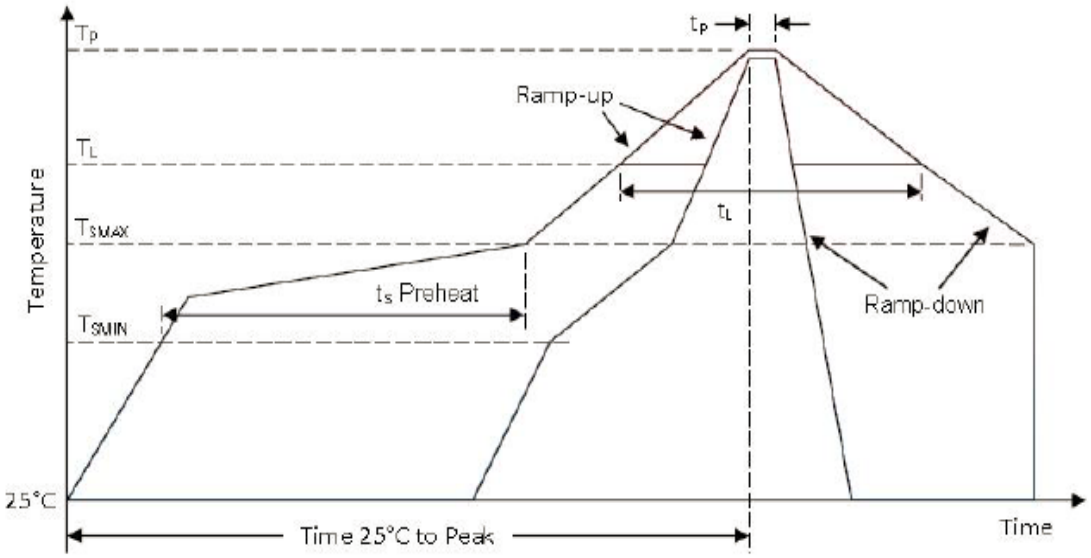
Test Setup Drawing



Frequency Response Curve and Limits



7. Solder Reflow Profile



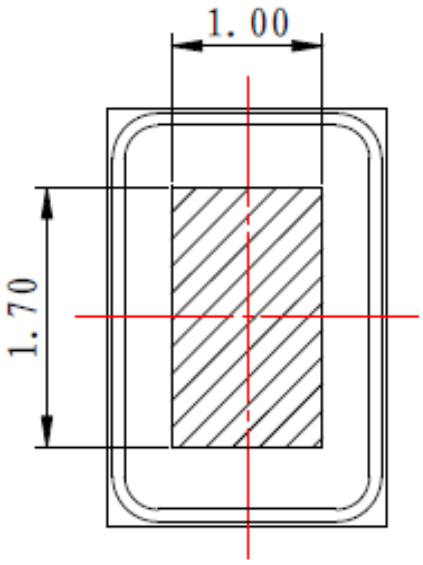
Key features of the profile

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

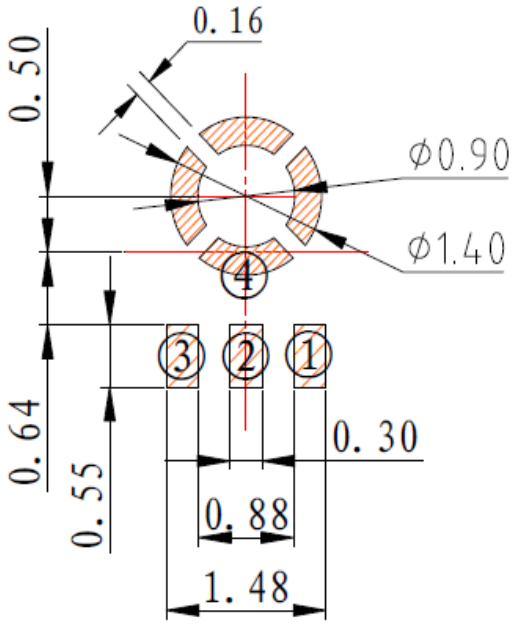
When MEMS MIC is soldered on PCB, the reflow profile is set according to soder paste and the thickness of PCB etc.

8. Land Pattern Recommendation

Recommended area for vacuum nozzle pickup location

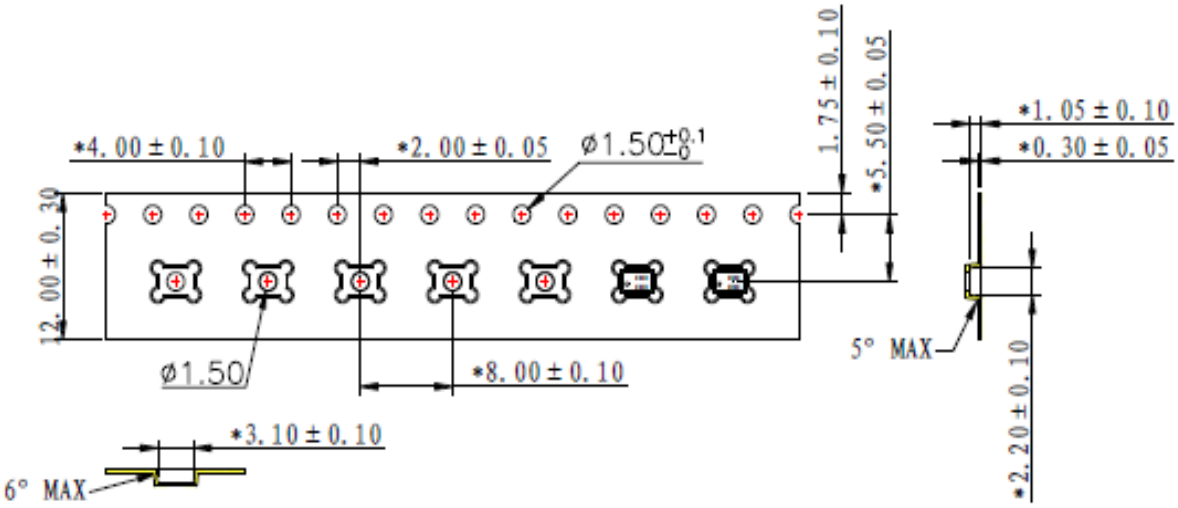


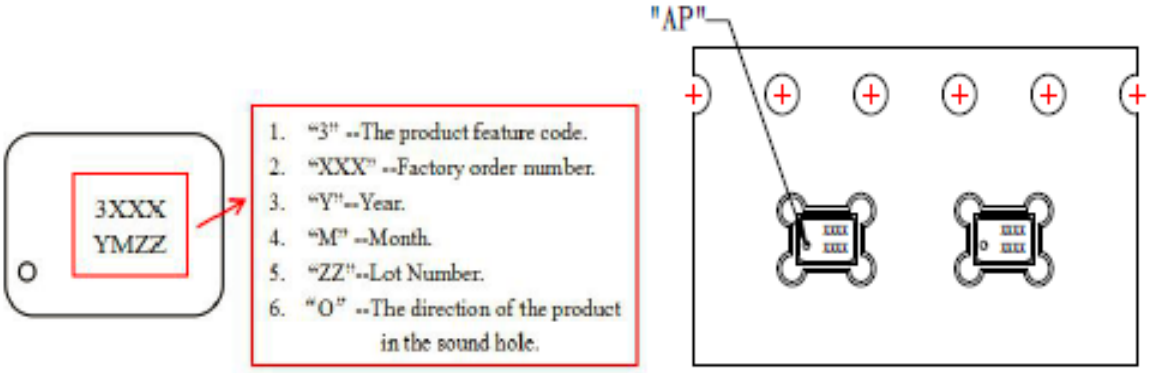
Recommended SolderingSurface Land Pattern



9. Packing-Tape

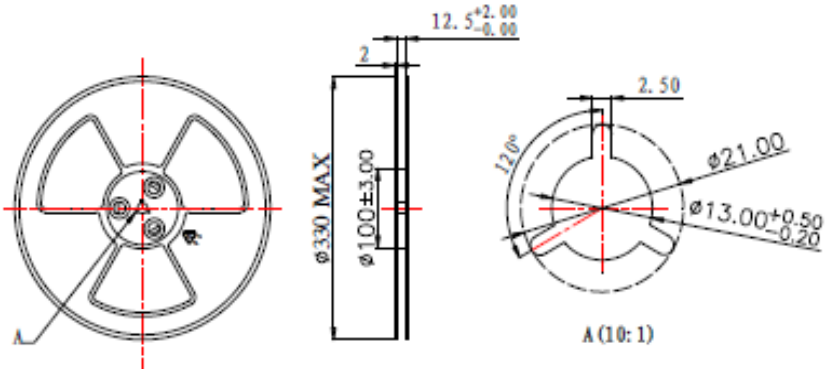
Tape Specification



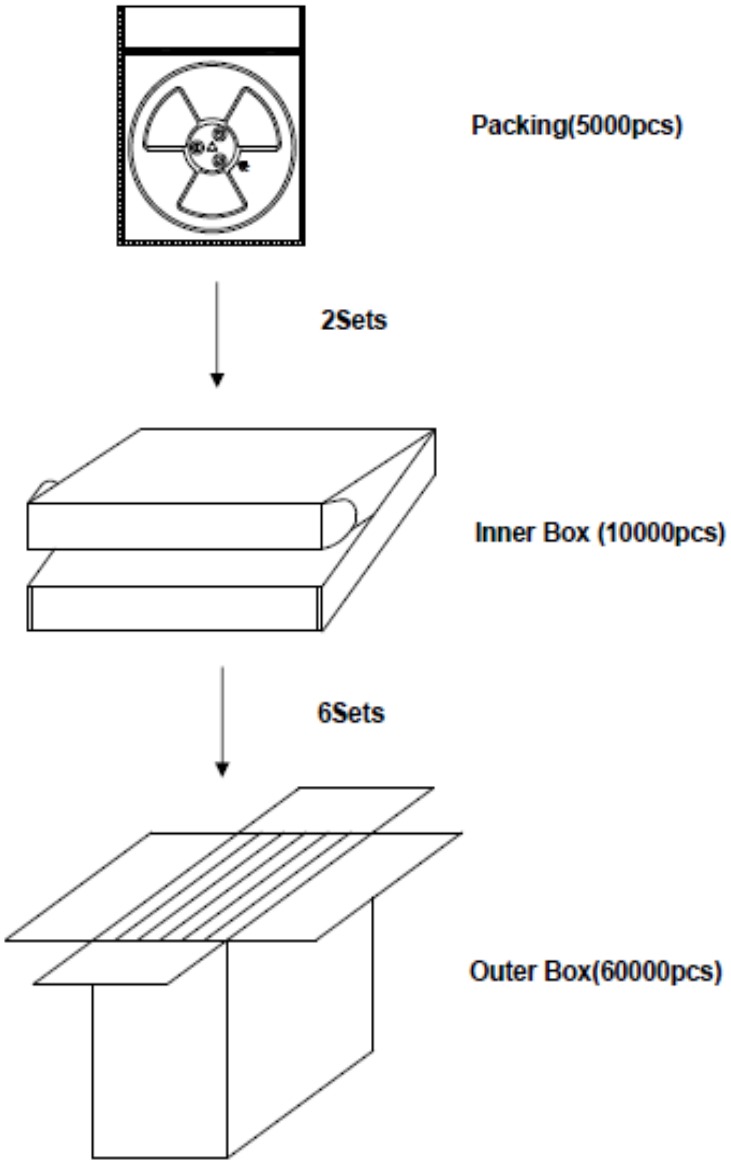


The Dimensions as Follows

13" reel dimensions (unit:mm)



9. Packing-Reel



Qty/ Reel	Qty/ One Inner Box	Qty/ Outer Box（Six Inner Box）
5000 pcs	10,000 pcs	60,000 pcs
Φ330mm	355×340×45mm	365×290×370mm

NOTES