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# 深圳市耀泽电子有限公司

## Specification of Electret Condenser Microphone (RoHS Compliance & Halogen-Free)

Customer Name :

Customer Model :

Lang Sheng Model : YZ4013-6-42DB

| LangSheng                                 | CUSTOMER APPROVAL |
|---|-------------------|
| DESIGN      CHECK<br>STANDARD<br>APPROVAL |                   |

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# Restricted

## 1 Security warning

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## 2 Publication history

| Version | Date       | Description | Design | Approval |
|---------|------------|-------------|--------|----------|
| 1.0     | 2016.06.06 | New Design  | Ada    | Arden    |
|         |            |             |        |          |
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# PRODUCT SPECIFICATIONS

Type: Electret Condenser Microphone

Number: YZ4013-6-42DB

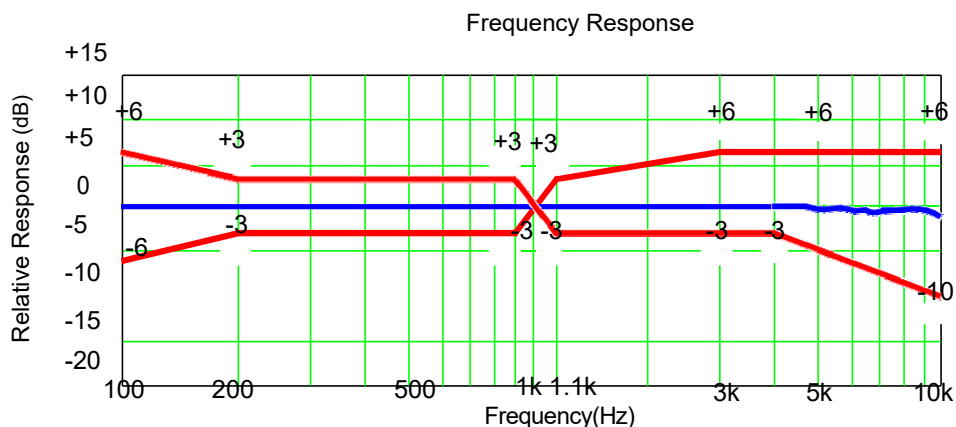
## 1 Test Condition (Vs=2.0V, RL=2.2kΩ, L=50 cm)

| Standard Conditions<br>(As IEC 60268-4) | Temperature   | Humidity      | Air pressure   |
|---|---------------|---------------|----------------|
| Environment Conditions                  | +15°C ~ +35°C | 25%RH ~ 75%RH | 86kPa ~ 106kPa |
| Basic Test Conditions                   | +20°C ± 2°C   | 60%RH ~ 70%RH | 86kPa ~ 106kPa |

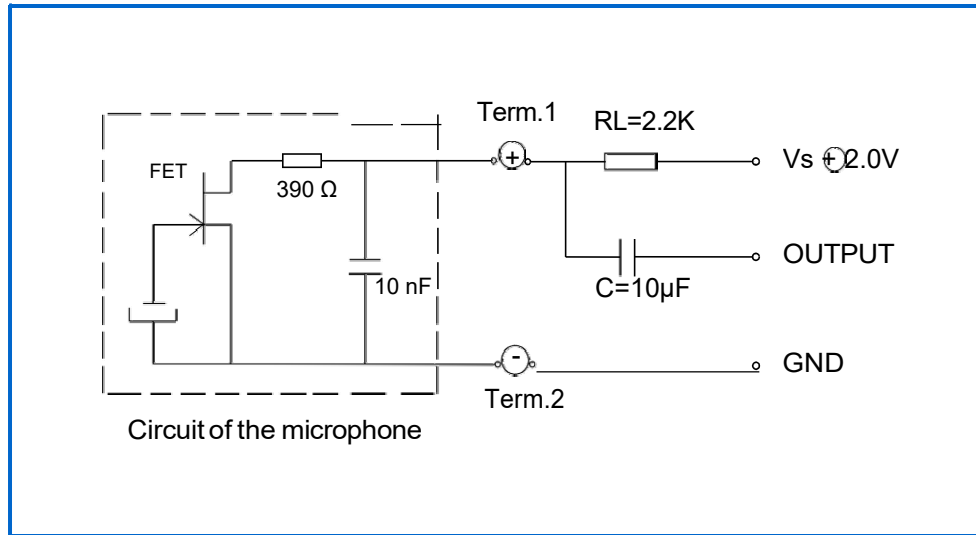
## 2 Electrical Characteristics

| Item                                 | Symbol              | Test Conditions                     | Min | Standard | Max  | Unit            |
|--------------------------------------|---------------------|-------------------------------------|-----|----------|------|-----------------|
| Sensitivity                          | S                   | f=1kHz, Pin=1Pa                     | -38 | -37      | -36  | dB<br>0dB=1V/Pa |
| Output Impedance                     | Zout                | f=1kHz, Pin=1Pa                     |     |          | 2.2k | Ω               |
| Directivity                          | D(θ)                | Omnidirectional                     |     |          |      | dB              |
| Current Consumption                  | I                   |                                     |     |          | 500  | μA              |
| S/N Ratio                            | S/N(A)              | f=1kHz, Pin=1Pa<br>A-Weighted Curve | 58  |          |      | dB              |
| Decreasing Voltage<br>Characteristic | $\frac{-S}{\Delta}$ | f=1kHz, Pin=1Pa<br>Vs=2.0--1.5V     |     |          | -3   | dB              |
| Operating Voltage<br>Range           | Vs                  |                                     | 1.0 |          | 10   | V               |
| Distortion                           | THD                 | f=1kHz, Pin=104dB                   |     |          | 3    | %               |

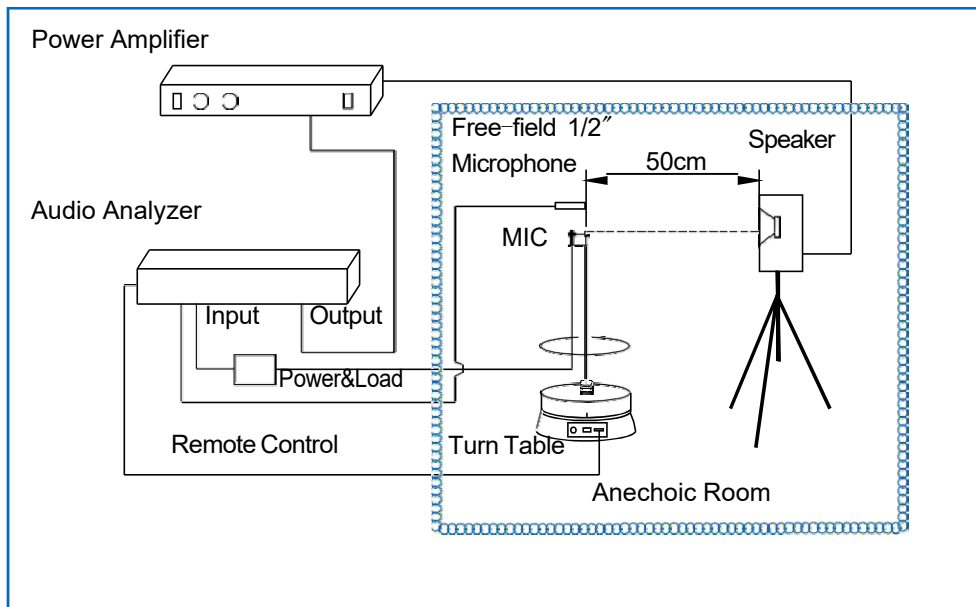
## 3 Frequency Response Curve and Limits



#### 4 Measurement Circuit

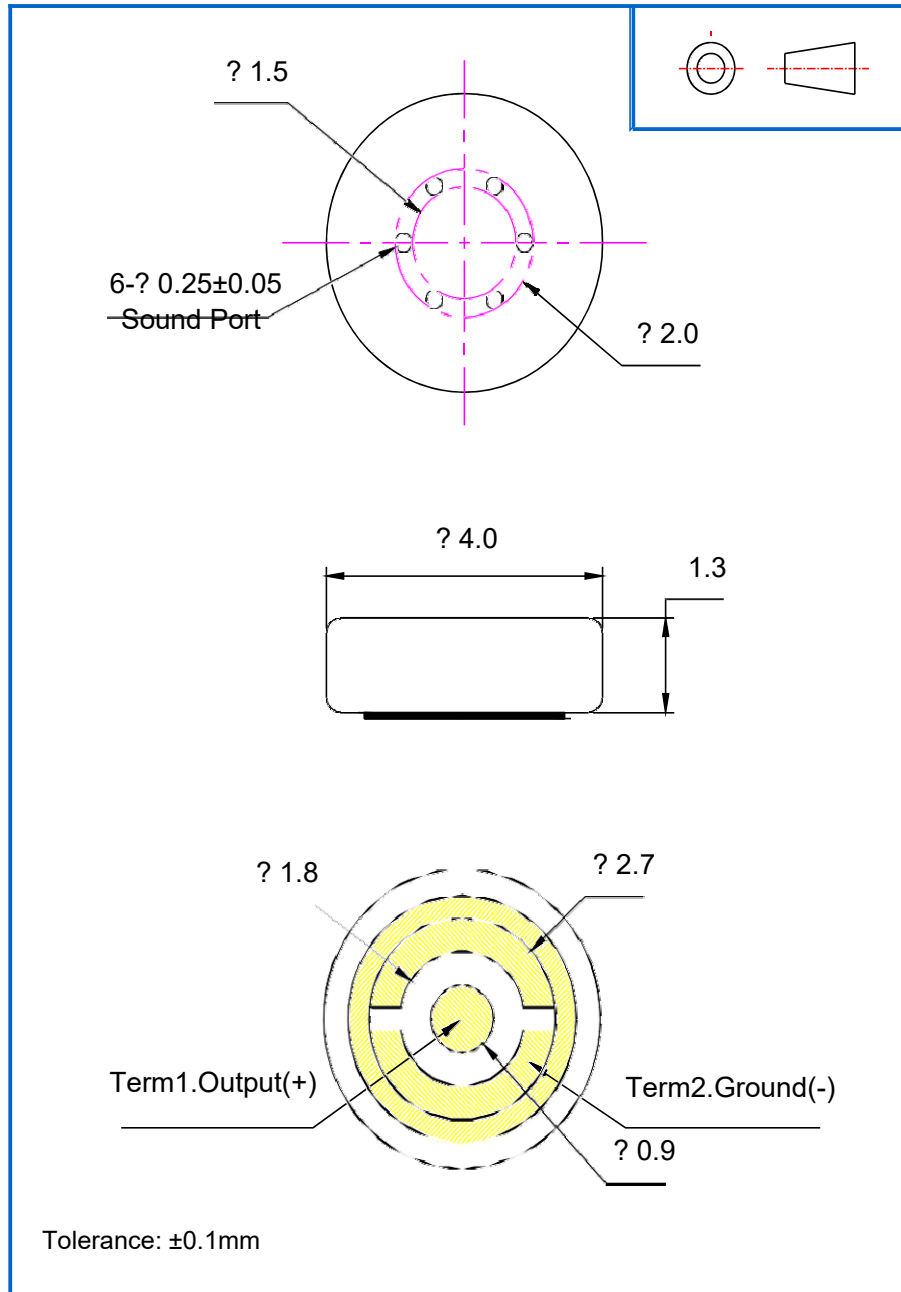


#### 5 Test setup Drawing



## 6 Mechanical Characteristics

### 6.1 Appearance Drawing(Unit: mm)



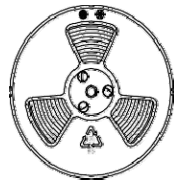
### 6.2 Weight

Less than 0.2g

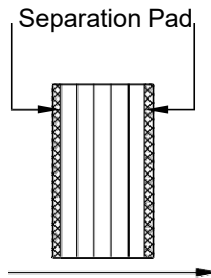
## 7 Reliability Test

|                                  |  |
|----------------------------------|--|
| 7.1<br>Vibration<br>Test         | To be no interference in operation after vibrations, 10Hz to 55 Hz for 1 minute full amplitude 1.52mm, for 2 hours at three axes in state of standard packing, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)   |
| 7.2<br>Drop<br>Test              | To be no interference in operation after dropped to steel plate each one time from 1.5 meter height, 12 times, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)   |
| 7.3<br>Temperature<br>Test       | a) After exposure at +85°C for 200 hours, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)<br>b) After exposure at -40°C for 200 hours, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%) |
| 7.4<br>Humidity<br>Test          | After exposure at +60°C and 90~95% relative humidity for 200 hours, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)  |
| 7.5<br>Temperature<br>Cycle Test | After exposure at -40°C for 30 minutes, at 20°C for 10 minutes, at +85°C for 30 minutes, at 20°C for 10 minutes, 5 cycles, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)   |
| 7.6<br>Temperature<br>Shock Test | After exposure at -40°C for 60 minutes, at +85°C for 60 minutes (change time 20 seconds), 32 cycles, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)   |
| 7.7<br>ESD Shock<br>Test         | The microphone under test must be discharged between each ESD exposure without ground. (contact: $\pm 8$ kV, air: $\pm 15$ kV)<br>There is no interference in operation after 10 times exposure.   |
| 7.8<br>Reflow<br>Test            | Adopt the reflow curve of item 11.3, after two reflows, sensitivity to be within $\pm 3$ dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15°C ~ +35°C, R.H 25% ~ 75%)  |

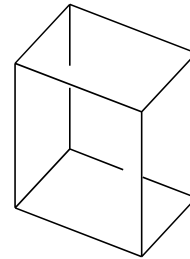
## 8 Package



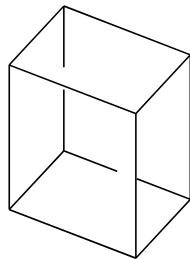
Packing (5000PCS)



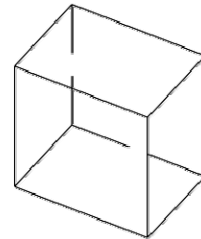
5 pcs reels



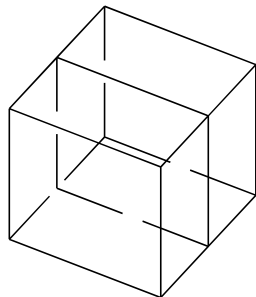
Plastic Bag (25000PCS)  
(336mm\*115mm\*450mm)



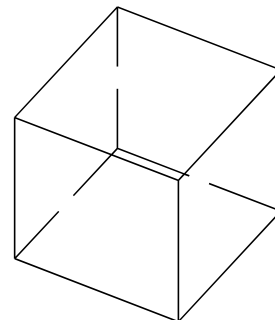
Plastic Bag (25000PCS)  
(336mm\*115mm\*450mm)



Inner Box (25000PCS)  
(340mm\*135mm\*355mm)



Two Inner Box(50000PCS)

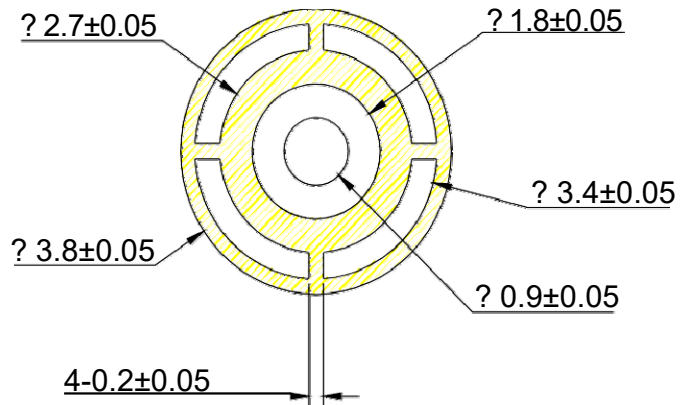


Outer Box(50000PCS)  
(370mm\*300mm\*390mm)

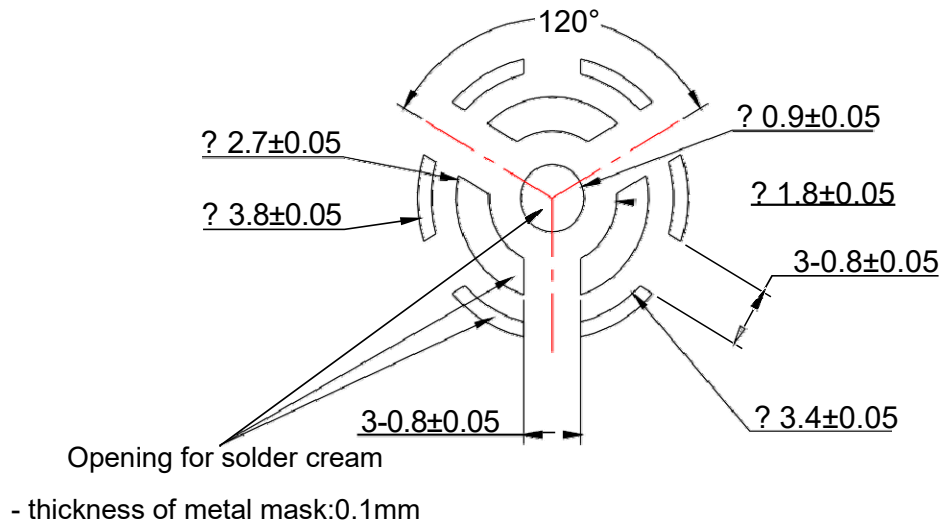


## 9 Land Pattern Recommendation (Unit: mm)

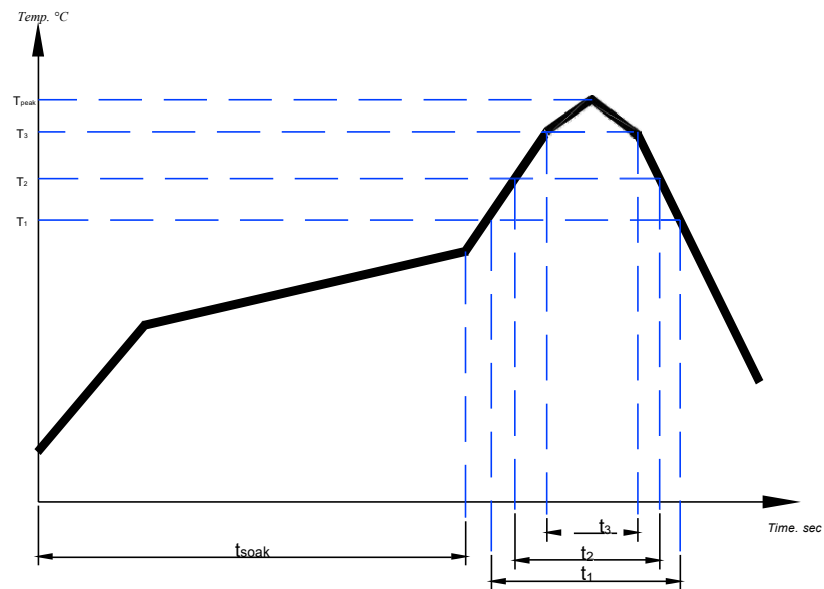
### 9.1 Soldering Surface - Land Pattern



### 9.2 Metal Mask Pattern



## 10 Reflow Profile



### Pb-free reflow profile requirements for soldering heat resistance

| Parameter                                  | Reference  | Specification   |
|--|------------|-----------------|
| Average Temperature Gradient in Preheating | ---        | 2.5°C/s         |
| Soak Time                                  | $t_{soak}$ | 2-3 Minutes     |
| Time Above 217°C                           | $t_1$      | Max 60s         |
| Time Above 230°C                           | $t_2$      | Max 50s         |
| Time Above 240°C                           | $t_3$      | Max 8s          |
| Peak Temperature In Reflow                 | $T_{peak}$ | 255°C (-0/+5°C) |
| Temperature Gradient In Cooling            | ---        | Max -5°C/s      |

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