# Specification of Electret Condenser Microphone

(RoHS Compliance&Halogen-Free)

Customer Name : Foster

Customer Model : 557570

GoerTek Model : B4012AP422-003

| GoerTek | | CUSTOMER APPROVAL |
|---|---|---|
| **DESIGN** | Arthur Apr.17 2012 | |
| **CHECK** | Dave Apr.17 2012 | |
| **STANDARD** | Aimee Apr.17 2012 | |
| **APPROVAL** | Worden Apr.17 2012 | |

10644
ISO/TS16949:2002
2551
ISO14001:2004
2728
ISO9001:2000

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# Restricted

## 1 Security warning

1.1 The information contained in this document is the exclusive property of GoerTek Inc. and should not be disclosed to any third party without the written consent of GoerTek Inc.

1.2 This product and all of it's part are ROHS Compliance and observe halogen free and $Sb_2O_3$ free.

## 2 Publication history

| Version | Modified P/O No. | Date | Description | Design | Approval |
|---|---|---|---|---|---|
| 1.0 | / | 2012.04.17 | New Design | Arthur | Worden |
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# Contents

# PRODUCT SPECIFICATIONS

Type ： Electret Condenser Microphone

Model: B4012AP422-003

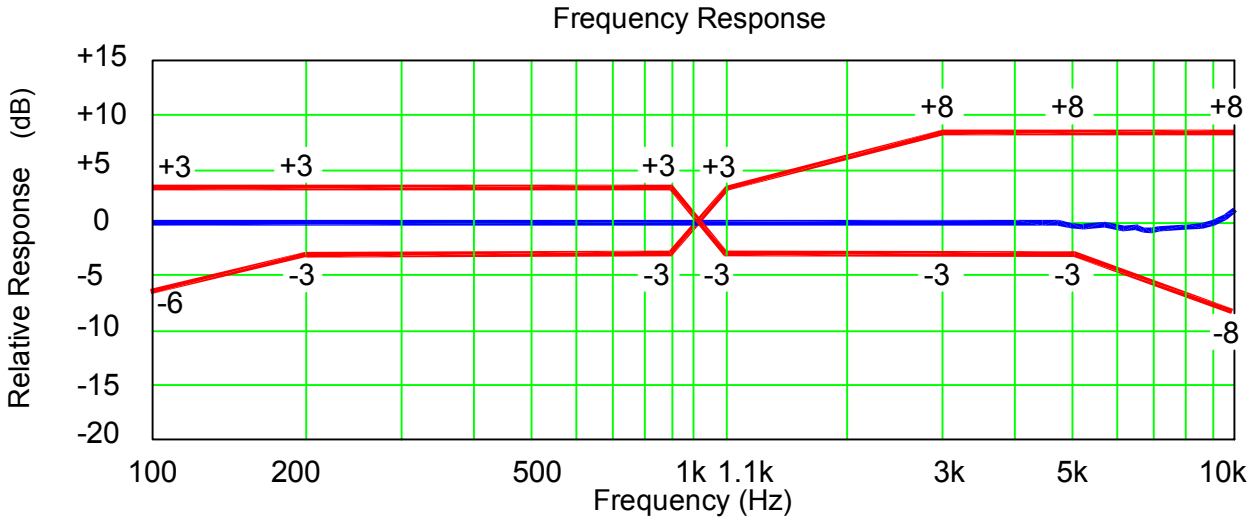
## 1 Test Condition (Vs=2.1V , RL=2.21kΩ, L=50cm)

| Standard Conditions (Re. IEC 60268-4) | Temperature | Humidity | Air pressure |
|---|---|---|---|
| Environment Conditions | +15℃～+35℃ | 25％RH～75%RH | 86kPa～106kPa |
| Judgement Conditions | +20℃±2℃ | 60％RH～70%RH | 86kPa～106kPa |

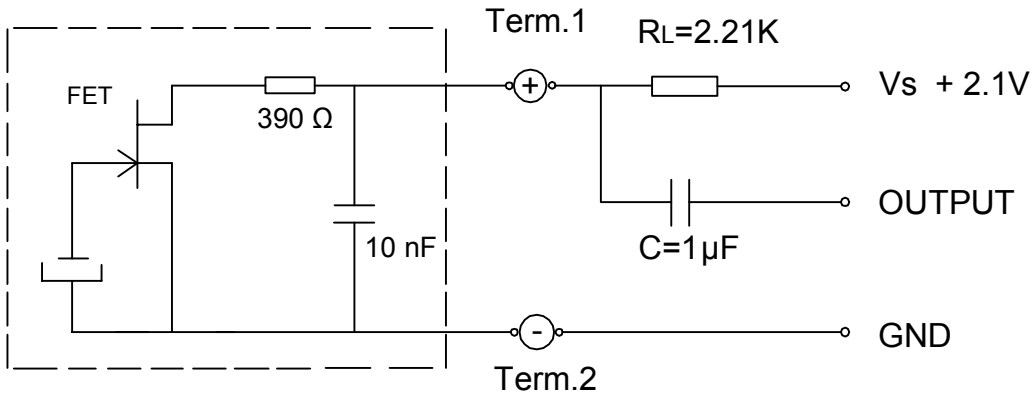
## 2 Electrical Characteristics

| Item | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Sensitivity | S | f=1kHz, Pin=1Pa | -44 | -42 | -40 | dB 0dB=1V/Pa |
| Output Impedance | Zout | f=1kHz, Pin=1Pa | | | 2.2k | Ω |
| Directivity | D(θ) | Omnidirectional | | | | dB |
| Current Consumption | I | Vs=2.1V , RL=2.21kΩ | 100 | | 260 | μA |
| S/N Ratio | S/N(A) | f=1kHz, Pin=1Pa A-Weighted Curve | 58 | | | dB |
| Decreasing Voltage Characteristic | ΔS | f=1kHz, Pin=1Pa Vs=2.0-- 1.5V | | | 3 | dB |
| Operating Voltage Range | Vs | | 1.1 | | 10 | V |
| Input SPL | | | | | 120 | dB |

## 3 Frequency Response Curve and Limits

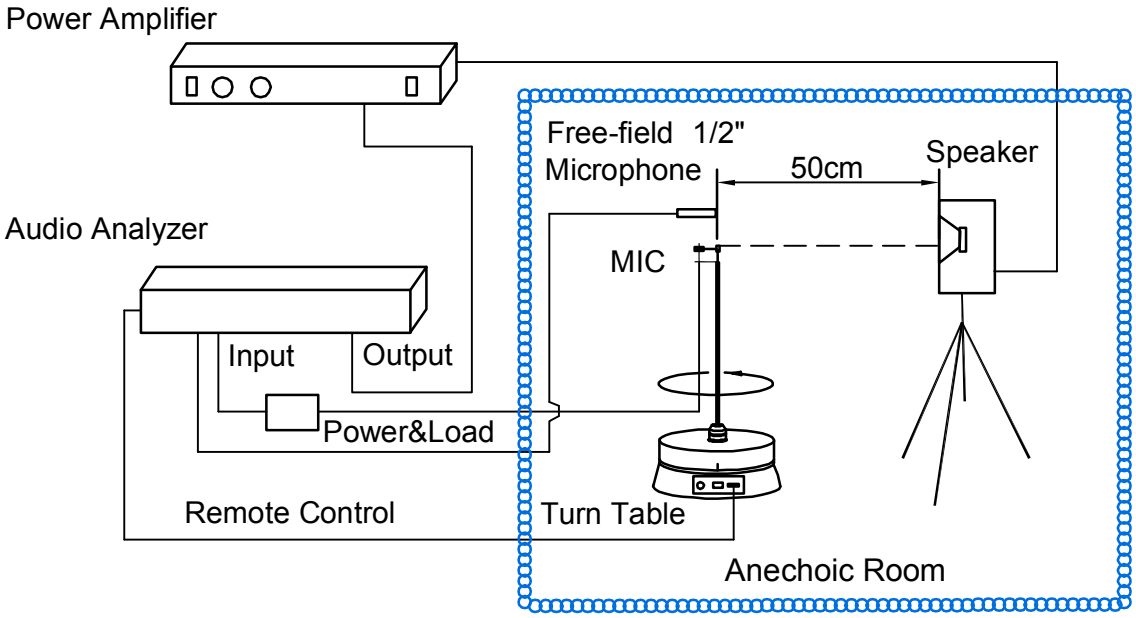


## 4 Measurement Circuit



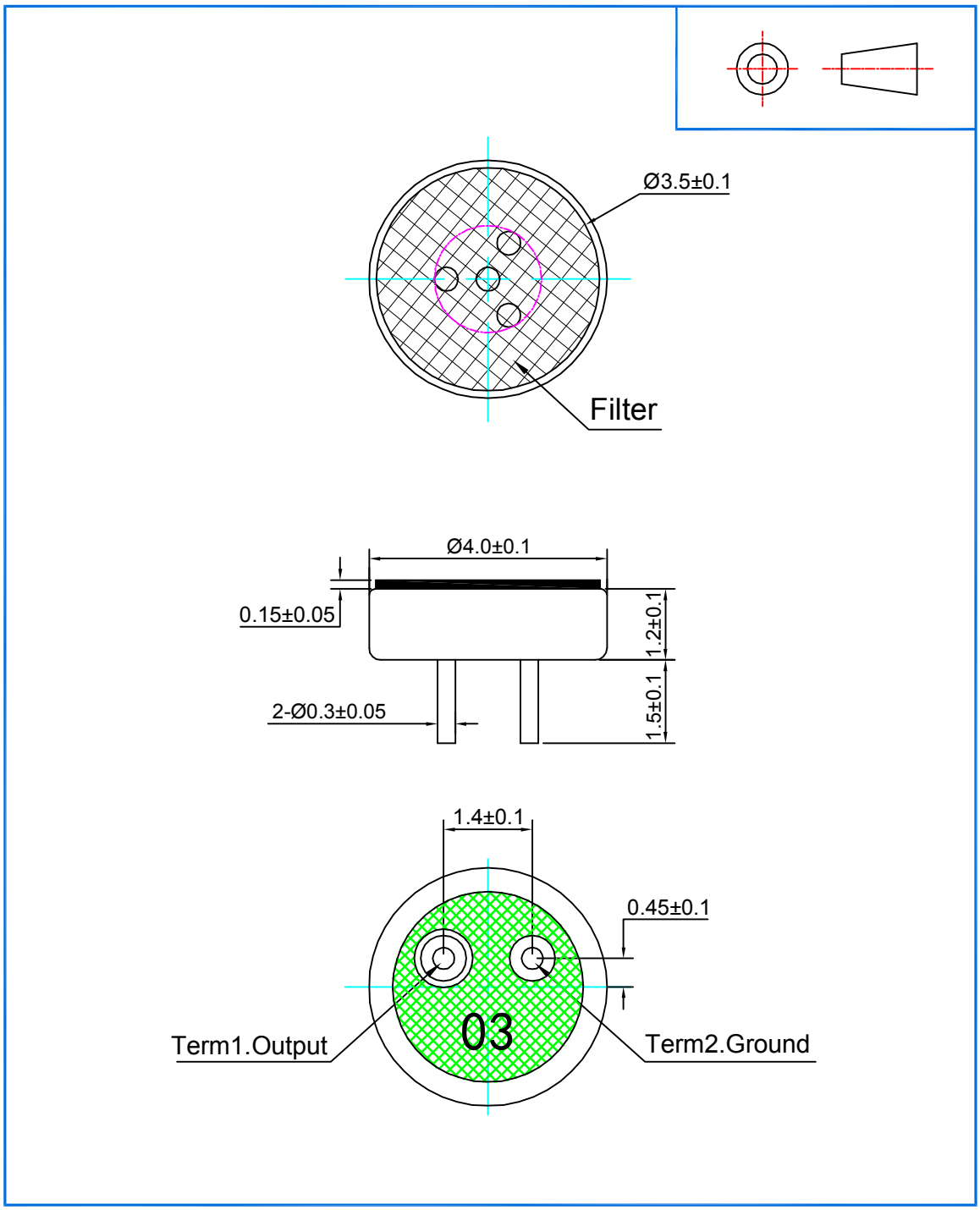

Circuit of the microphone

## 5 Test Setup Drawing



# 6 Mechanical Characteristics

## 6.1 Appearance Drawing (Unit: mm)

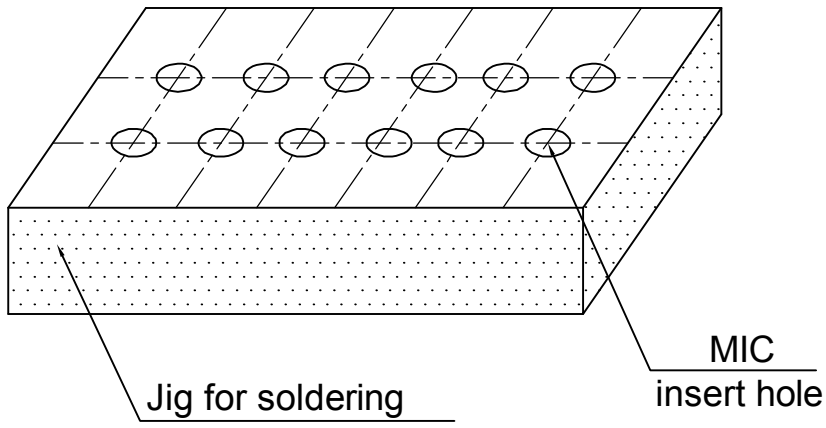


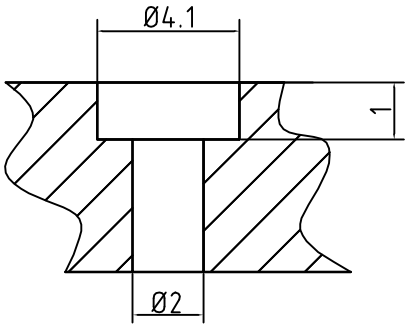

## 6.2 Weight

Less than 0.2g.

# 7 Soldering

## 7.1 Jig for soldering (Unit: mm)




Shape of the individual hole

## 7.2 Cautions

7.2.1 We use antistatic welding machine which can control soldering temperature automatically during soldering process.

7.2.2 The temperature of the high-frequency electric welding machine is set at 310 ℃ and welding time less than 2 seconds.

7.2.3 ECM should be fixed on the soldering jig which has higher heat radiation effects during soldering process.

7.2.4 ECM may be destroyed by static electricity easily, so the measures for eliminating static electricity should be executed.

7.2.5 Don't do the X-ray inspection on ECM after being assembled on the main board.

7.2.6 Don't do the cleaning process with any kind of volatile solvent (Acetone, TCE, alcohol, etc.,), water, or detergent. Any dust or particle got into ECM can reduce the sensitivity of the microphone.

7.2.7 Process conditions may affect the acoustic characteristics.

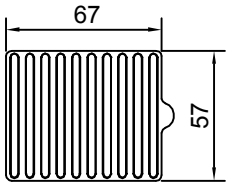
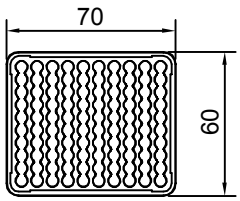
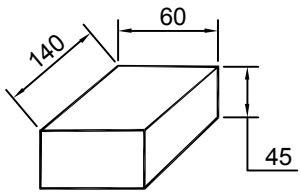
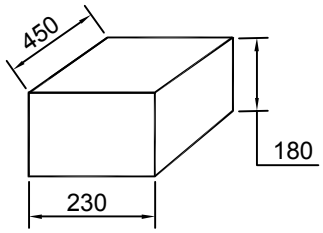
7.2.8 Wave soldering conditions may affect the acoustic characteristics.

# 8 Reliability Test

| | |
|---|---|
| 8.1 Vibration 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 axises in state of standard packing,sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.2 Drop Test | To be no interference in operation after dropped to concrete floor 6 time from 1 meter height in state of Outer packing,sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.3 High Temperature Test | After exposure at +85°C for 200 hours, sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.4 Low Temperature Test | After exposure at -40°C for 200 hours, sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.5 Humidity Test | After exposure at +50℃ and 95% relative humidity for 120 hours,sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.6 Temperature Cycle Test | After exposure at -25℃ for 30 minutes, at 20℃ for 10 minutes, at+70℃ for 30 minutes,at 20℃ for 10 minutes,5 cycles,sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.7 Temperature Shock Test | After exposure at -25℃ for 60 minutes, at+70℃ for 60 minutes(change time 20 seconds), 32 cycles,sensitivity to be within ±3dB from initial sensitivity.<br>(The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) |
| 8.8 ESD Shock Test | The microphone under test must be discharged between each ESD exposure without ground. (contact:±8kV,air:±15kV)<br>There is no interference in operation after 10 times exposure. |

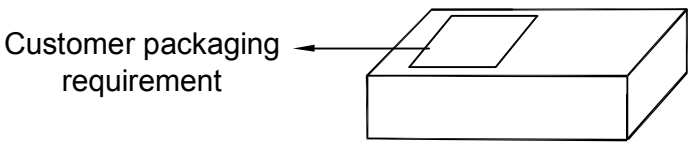
# 9 Packing

## 9.1 Packing Specification

| | Drawing(Unit: mm) | Qty(pcs.) | Material | Marking |
|---|---|---|---|---|
| **Packing** |  | 100 | Plastic Lid | |
| |  | 100 | Plastic Tray | |
| **Middle Box** |  | 20×100 | Paper | Particular for Customer's P.O |
| **Outer Box** |  | 30×2000 | Paper | Particular for Customer's P.O |

## 9.2 Packing explain

The Middle Box labeling




## 10 Stock and Transportation

10.1 Keep ECM in warehouse with less than 75% humidity and without sudden temperature change, acid air, any other harmful air or strong magnetic field.

10.2 The ECM with normal pack can be transported by ordinary conveyances.Please protect products against moist, shock, sunburn and pressure during transportation.

10.3 Storage Temperature Range： -25℃～+70℃

10.4 Operating Temperature Range： -25℃～+70℃

## 11 Output Inspection standard

Output inspection standard is excuted according to 《ISO2859-1:1999》.