



# PRODUCT INFORMATION

**PART #:** **CEM-UB4020MBAD503NR** **Revision: 0-2012**



## Uni Directional Back Electret Condenser Microphone

### DESCRIPTION:

Challenge Electronics Uni Direction Back Electret Condenser Microphone with a FET, **4.0** mm diameter and **2.0** mm high, **M** version PCB, **BA** = 2.0 V Power Supply, **-50 ± 3** dB sensitivity, **D** = 2.2 K Ω External Loading Resistance, **N** Solder Points termination, **RoHS** Lead Free Compliant.

### FEATURES:

- **RoHS, Lead Free Compliant**
- **ISO 9001 & ISO 14001 Certified**
- **Green Product**

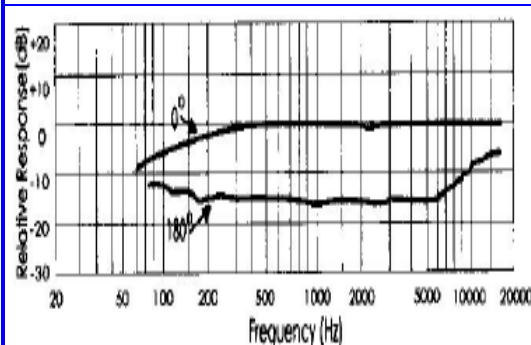
### SPECIFICATIONS

<b>Direction</b>	<b>Uni Directional Back Electret</b>			<b>Compliance</b>	<b>RoHS Lead Free</b>			
<b>Operating Voltage Range</b>	<b>1.0 Vdc ~ 10.0 Vdc</b>			<b>Power Supply ( Vs )</b>	<b>2.0 V</b>			
<b>Frequency Range</b>	<b>100 ~ 12,000 Hz.</b>			<b>Maximum Current</b>	<b>0.5 mA</b>			
<b>Sensitivity</b>	<b>- 50.0 ± 3.0, ( 0 dB = 1V / Pa ) at 1K Hz.</b>			<b>Minimum Signal to Noise Ratio</b>	<b>55</b>			
<b>Sensitivity Reduction</b>	<b>1.5 V Within -3 dB</b>			<b>Maximum input S.P.L.</b>	<b>110 dB at 1.0 KHz, THD &lt;1%</b>			
<b>Operating Temperature</b>	<b>-20°C to + 60°C</b>			<b>Storage Temperature</b>	<b>-40°C to + 75°C</b>			
<b>Loading Resistance ( RL )</b>	<b>External, 2.2 K Ohms, Vs =2.0 V</b>			<b>Built in Capacitors</b>				
<b>Termination</b>	<b>PCB Solder Points</b>							
<b>Housing Material</b>	<b>Aluminum / Magnesium Alloy</b>						<b>PCB Version Style #</b>	<b>M</b>
<b>Dimensions</b>	<b>Length / Diameter</b>	<b>4.0 mm Ø</b>	<b>Width</b>	<b>Height</b>	<b>2.0 mm</b>	<b>Approximate Weight</b>	<b>0.7 grams</b>	
<b>Options</b>								

### RELIABILITY

<b>Thermal Operating Temperature Test</b>	<b>240 hours</b> continuous operation <b>at Rated Power</b> , at <b>Maximum Rated Operating Temperature</b> *
	<b>240 hours</b> continuous operation <b>at Rated Power</b> , at <b>Minimum Rated Operating Temperature</b> *
<b>Thermal Storage Temperature Test</b>	<b>96 hours</b> storage at <b>Maximum Rated Storage Temperatures</b> *
	<b>96 hours</b> storage at <b>Minimum Rated Storage Temperatures</b> *
<b>Thermal Shock Test</b>	<p><b>5 cycles</b> of <b>Minimum and Maximum Operating Temperature</b>, Each cycle shall be set per diagram below and is three (3) hours long *</p>
<b>Humidity Test</b>	<b>240 Hours</b> at <b>+40°C±2°C. 90-95% RH</b> *
<b>Operation Life Test</b>	Must perform normal with program White Noise source <b>at Rated Power</b> for <b>100 Hours</b> per (EIA)
<b>Vibration Test</b>	<b>2 Hours</b> of at <b>1.5 mm</b> with <b>10 to 55 Hz.</b> vibration frequency to each of <b>3</b> perpendicular directions *
<b>Termination Strength</b>	Maximum pull of <b>0.5 kg</b> strength for <b>3 seconds</b>
<b>Drop Test</b>	Dropped naturally from <b>1 meter</b> height onto the surface of <b>40 mm</b> wooden board, <b>3 axes (X,Y,Z)</b> directions, <b>3 times</b> (6 times total) *
<b>Reliability Test Performance *</b>	<b>Parts should conform to original performance within ±5 dB</b> tested with <b>Rated Power</b> , after <b>3 hours</b> of recovery period
<b>Warranty</b>	For a period of one (1) year from date of shipping under normal operations conditions

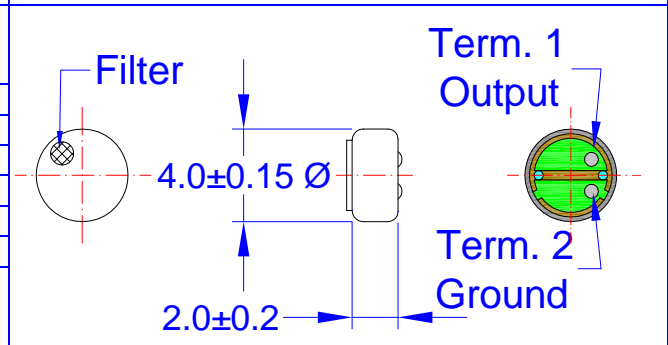
### TYPICAL FREQUENCY RESPONSE



Frequency (Hz)	Lower Limit (dB)	Upper Limit (dB)
100		
800		
1,000		
1,200		
3,000		
5,000		
10,000		

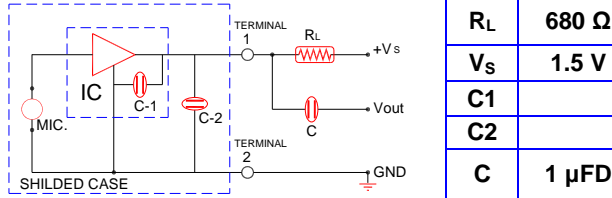
### DIMENSIONS

Units in: mm Tolerance: ±0.3 mm

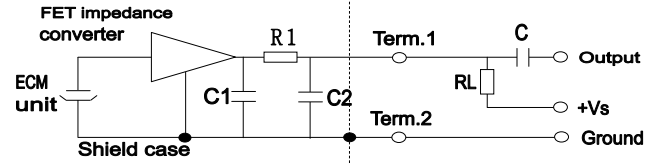




**CIRCUIT SCHEMATIC DRAWING**



**TESTING PROCEDURE**

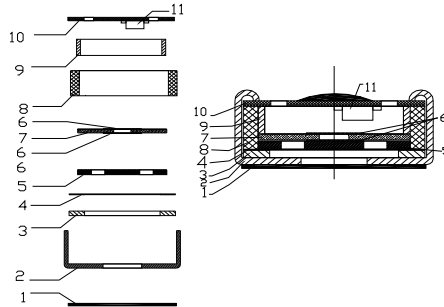


1. Measure the microphones under standard operating condition.
2. Put the microphone and standard microphone face to the sound source (speaker), the distance between sound source and microphone & standard microphone is 50cm. And keep the center distance 5cm between them to ensure that the change of sound pressure should be kept within ± 1dB.
3. Keep the sound source pressure within ± 1dB from speaker Measured by standard microphone.
4. The sensitivity of microphone can obtain its output voltage when sound source kept within 1,000Hz & 0.1Pa.

**Testing Condition**

In Normal Weather	In Arbitrate Weather
Environment Temperature: 5~+35°C	Environment Temperature: 20±2°C
Relative Humidity: 45 ~ 85%	Relative Humidity: 60 ~ 70%
Air Pressure: 86 ~ 106Kpa	Air Pressure: 86 ~ 106Kpa

**CONSTRUCTION MATERIALS**



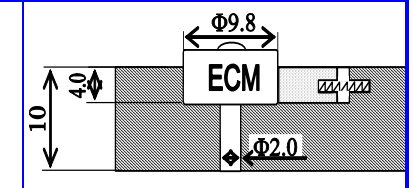
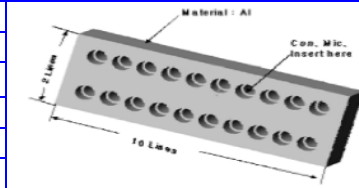
ITEM	PART NAME	MATERIAL	QTY
1	Felt (Dustproof gauze)	Non-weave cloth	1
2	Case	Al-Mg alloy PA	1
3	Polarized Diaphragm	DuPont	1
4	Spacer	Mylar	1
5	Electret Plate	Copper blank	1
6	Damping net		1
7	one bore pole blank		1
8	Chamber	Gather formaldehyde	1
9	Ring	Copper	1
10	P.C.B	FR-4 , # 8 Style	1
11	FET	3782	1

**SOLDERING INFORMATION**

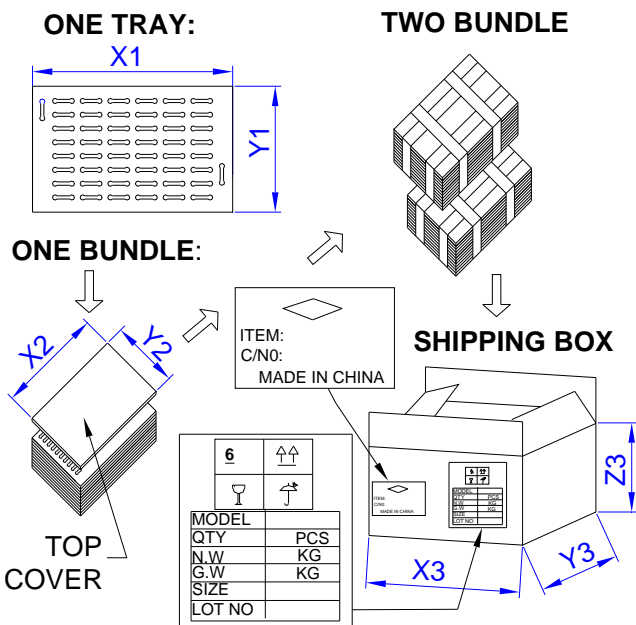
1. We recommend using anti-static welding machine which can control soldering temperature automatically.
2. Soldering temperature should be controlled under 320 °C and soldering time for each terminal should be 1~2 sec..
3. Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.
4. Microphone may easily be destroyed by the static electricity and the countermeasure for eliminating the static electricity shall be executed (worktable and human body shall be ground connection).

**Shape of heat sink**

**Single Pattern Heat Sink**



**PACKAGING**



**MARKING**

**SIZE**

Bundle	Tray / Small Box	
Customer PN	X1	cm
Other PN if required	Y1	cm
Quantity	Z1	cm
Lot and/or Date Code	Quantity	
Bundle Number	Bundle / Mid Size Boxes	
Shipping Box	X1	cm
Customer Part Number	Y1	cm
Other PN (if required)	Z1	cm
Quantity	Quantity	
Lot and/or Date Code	Shipping Box	
PO Number	X3	cm
Net Weight	Y3	cm
Gross Weighjt	Z3	cm
Box Number	Number of Bundles / Boxes	
of Number of Boxes	Quantity	
Made in China	Approximate Weight	kg