

**Challenge Electronics**

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• ISO 9001:2000

• ISO 14001:2004

• ISO/TS 16949:2002



# PRODUCT INFORMATION

**PART #****CEM-C9745JAD462P2.54R****Revision****0-2010**

## Omni-Directional Foil Electret Condenser Microphone

### DESCRIPTION

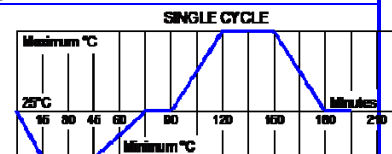
Omni-Directional Foil Electret Microphone, 9.7 mm diameter and 4.5 mm high, Power Supply 5.0 V max, External Resistance Loading of 680  $\Omega$ , and sensitivity of -44 dB. Terminated with 2 solder points, Lead Free RoHS Compliant

### SPECIFICATIONS:

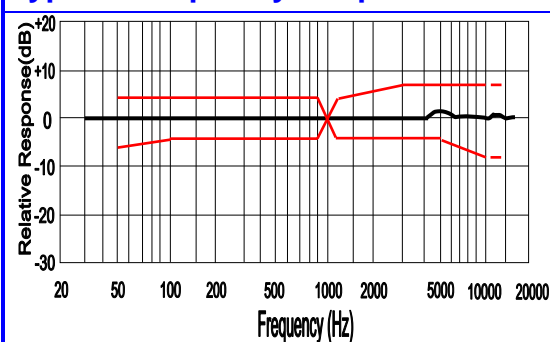
Direction	Omni Directional Foil Electret				Minimum Direction sensitivity				
Operating Voltage Range	Vs= 1.0 Vdc ~ 10.0 Vdc				Power Supply ( Vs )		1.5 V		
Frequency Range	100 ~ 10,000 Hz.				Maximum Current		0.5 mA		
Sensitivity	- 46 ± 2.0, ( 0 dB = 1V / Pa ) at 1K Hz.				Minimum Sensitivity to Noise Ratio		58 dB		
Sensitivity Reduction	3.0 V to 2.0 V -3 dB				Maximum input S.P.L.		110 dB at 1.0 KHz, THD <1%		
Operating Temperature	-20°C to + 60°C				Storage Temperature		-40°C to + 75°C		
Loading Resistance (RL)	External, 680 Ω at Vs = 1.5 V, Max. 2,200 Ω				Built in Capacitors		None		
Termination	PC Pins, 4.5 mm Long, 0.6 mm ø, 2.54 mm Spacing								
Dimensions	Length / Diameter	9.7 mm ø	Height	4.5 mm	Housing Material	Al-Mg Alloy.		Color	
Approximate Weight	0.7 grams	Options				Compliance		RoHS, Lead Free	

### Reliability

Thermal Operating Cycle Test	250 hours continuous operation at Rated Power, at Maximum Rated Operating Temperature *
	250 hours continuous operation at Rated Power, at Minimum Rated Operating Temperature *
Thermal Storage Cycle Test	Parts are subjected to 250 hours storage at Maximum Rated Storage Temperatures *
	Parts are subjected to 250 hours storage at Minimum Rated Storage Temperatures *
Thermal Shock Test:	Parts are subjected to five (5) cycles of Minimum and Maximum Operating Temperature. Each cycle shall be set per diagram below and is three (3) hours long *
Humidity Test	Parts are subjected to 240 Hours at +40°C $\pm$ 2°C. 90-95% RH *
Vibration Test	Parts are subjected to 2 Hours of at 1.5 mm with 10 to 55 Hz. vibration frequency to each of 3 perpendicular directions *
Drop Test	Parts are dropped naturally from 1 meter height onto the surface of 40 mm wooden board, 2 axes (X,Y) directions, 3 times (6 times total) *
Reliability Test Performance *	Parts should conform to original performance within $\pm$ 5 dB tested with Rated Power, after 3 hours of recovery period.
Termination Strength	Terminals should withstand a 1.0 Kg. pull test for up to 1 minute.
Life Test	At rated voltage in room temperature continuously for 1,000 hours
Warranty	For a period of one (1) year from date of shipping under normal operations conditions



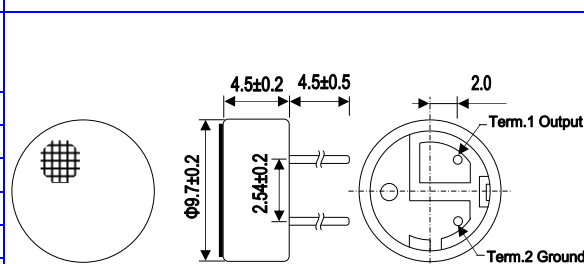
### Typical Frequency Response



### Microphone Response Tolerance Window

Frequency (Hz)	Lower Limit (dB)	Upper Limit (dB)
50	-6	+3
100	-3	+3
800	-3	+3
1000	0	0
1200	-3	+3
3000	-3	+8
5000	-3	+8
10000	-8	+8

### Dimensions

Units in: mm Tolerance:  $\pm$ 0.3 mm



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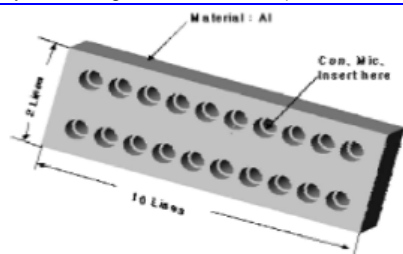


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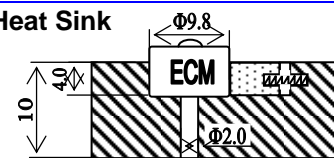
## Soldering Instructions

1. Soldering temperature should be controlled under 320 and soldering time for each terminal should be 1~2 sec..
2. Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.
3. Microphone may easily be destroyed by the static electricity. All countermeasure for eliminating static electricity must be executed (worktable and human body shall be ground connection)

### Shape of heat sink

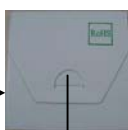


### Shape of hole at fixed part Heat Sink

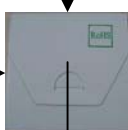


## Packaging

### 1.1 Anti-Static Bag Parts



### 1.2 Small Box 100 Parts



X 60

### 1.3 Middle Box 6,000 Parts



X 2

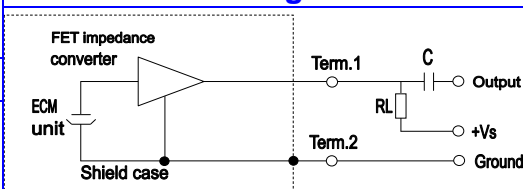
### 1.4 Shipping Carton 12,000 Parts



### 4. Shipping Label

1. Dimensions:	Length	Width	Height
1.1 Anti-Static Bag:	mm	mm	mm
1.2 Small Box:	100 mm	100 mm	5 mm
1.3 Middle Box:	450 mm	280 mm	135 mm
1.3 Carton Size:	550 mm	230 mm	235 mm
2. Quantity:	2.1 In Anti Static Box	100 parts	
	2.2 In mid. Size box	6,000 parts.	
	2.3 In master box	12,000 parts	
3. Weight:	3.1 One Part:	0.7 gram	
	3.2 Net Weight:	8.4 kg	
	3.3 Gross Weight:	12 kg	
4. Label Directions:	4.1 Contents should be visible clearly.		

## Schematic Drawing



$$R_L = 680 \Omega$$

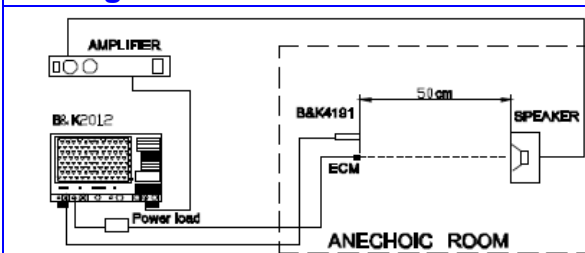
$$V_S = 1.5 V$$

$$C = 1 \mu F$$

## Construction Materials

#	Name	Material	QTY
1	Dustproof gauze		1
2	Case	Al-Mg Alloy	1
3	Diaphragm	DUPONT	1
4	Spacer		1
5	Electret Plate	Copper blank	
6	Housing Chamber		1
7	PCB	FR4	1
8	FET		1
9	PC Pins		2

## 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  $\pm 1$  dB.
3. Keep the sound source pressure within  $\pm 1$  dB from speaker Measured by standard microphone.

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%
Pressure: 86 ~ 106Kpa	Air Pressure: 86 ~ 106Kpa



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Электрон  
Связь**

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