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PRODUCT INFORMATION

Part Numbers **CEM- NB6027D-443G-L01C01-00-0** **Revision** **0-2013**

Type **Noise Cancelling Back Electret Condenser Microphone**

Compliance

- **RoHS, Lead Free**
- **ISO 9001:2000**

Lead Free RoHS COMPLIANCE

Date	ECN #	Rev #	Description	Page	Prepared By	Approved By

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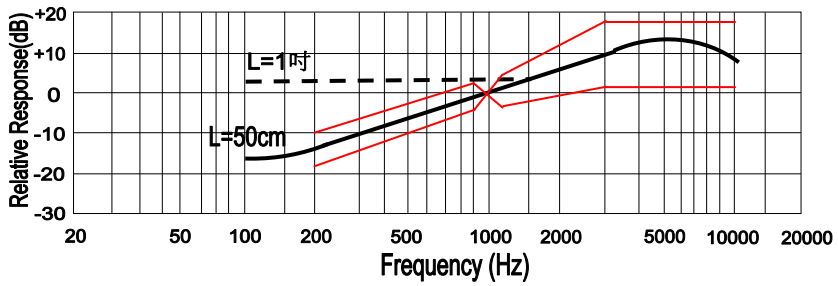
1. Electrical Characteristics

Test condition: Vs = 2.0 V, R_L = 2.2 K Ω at 20±2°C, Relative Humidity 65±5% unless otherwise specified

Parameter	Symbol	Condition	Limits			Unit
			Min.	Center	Max.	
Directivity		**Noise Cancelling Back Electret**				
Sensitivity	**S**	0 dB = 1 V/Pa, at 1 K Hz.	**- 47**	**- 44**	**- 41**	**dB**
Output impedance	**Z out**	F = 1 K Hz.			**2.2**	**K Ω**
Current Consumption	**I_{DSS}**	V_{CC} = 2.0 V, R_L= 2.2 K Ω			**500**	**μ A**
Signal to Noise Ratio	**S/N**	at 1 K Hz. S.P.L. = 1Pa (A- Weighted Curve)	**50**			**dB**
Decreasing Voltage	**ΔS**	V_{CC} = 3.0 V to 2.0 V			**-3**	**dB**
Operating Voltage			**1.0**		**10**	**V**
Maximum input S.P.L.					**110**	**dB**

2. Frequency Response Curve

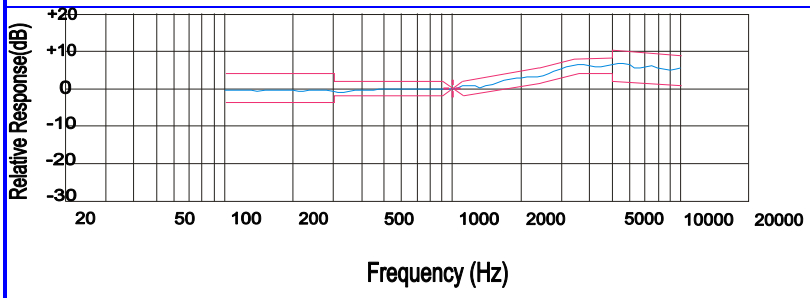
Frequency Response (L=50CM)



Microphone Response Tolerance Window

Frequency (Hz)	Lower Limit (dB)	Upper Limit (dB)
200	**-18**	**-10**
800	**-6**	**+2**
1,000	**0**	**0**
1,200	**-4**	**+4**
3,000	**+2**	**+18**
5,000	**+2**	**+18**
10,000	**+2**	**+18**

Frequency Response (L=2.54CM)



Frequency (Hz)	Lower Limit (dB)	Upper Limit (dB)
100	**-4**	**+4**
300	**-2**	**+2**
1,000	**0**	**0**
5,000	**+4**	**+8**
10,000	**+1**	**+9**

3. Operating and Storage Application

3.1. Temperature Condition

3.1.a. Storage temperature range: -40°C ~+85°C.

3.1.b. Operating temperature range: -40°C ~+85°C.

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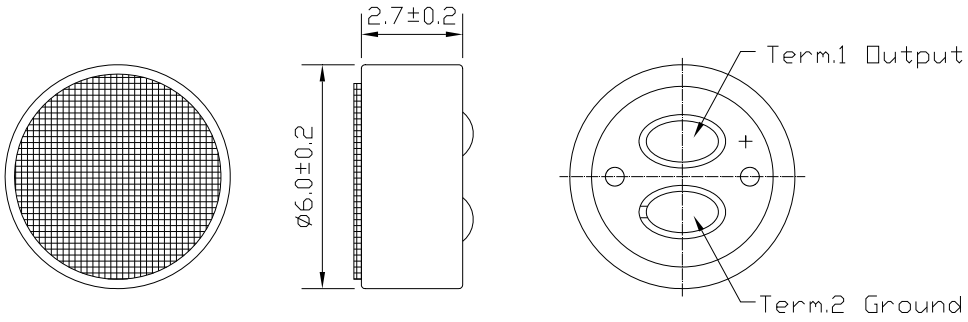
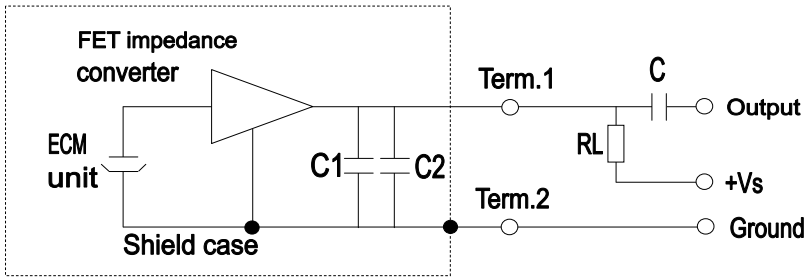
4. Mechanical Characteristics

4.1. Weight: 0.23 grams
4.2. All dimensions are: in millimeter (mm).
4.3. Tolerance: ±0.2 mm unless otherwise specified.
4.4. Microphone Dimensions: 6.0 mm x 2.7 mm

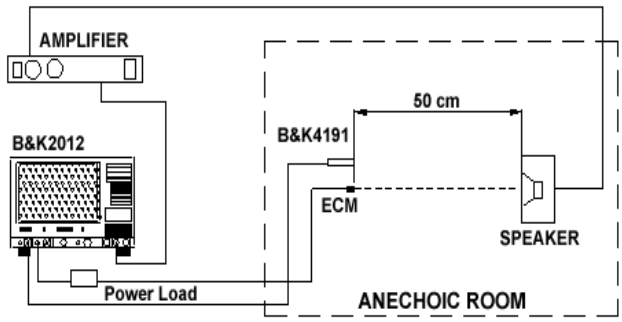


5. Measurement Circuit

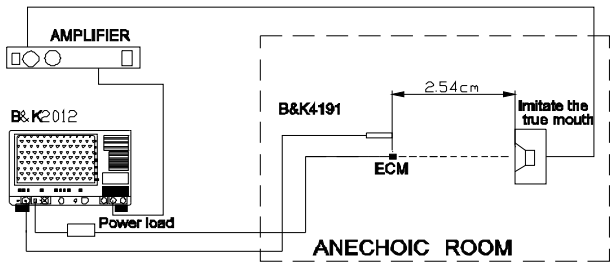


R_L = 2.2 K Ω
V_S = 2.0 V
C1 = 10 pF
C2 = 33 pF
C = 1 µF

L=50CM



L=2.54CM



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

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

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6. Soldering Condition

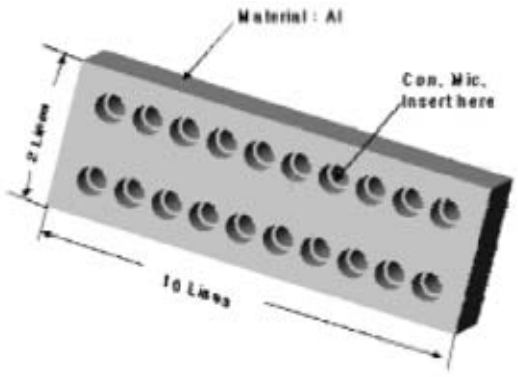
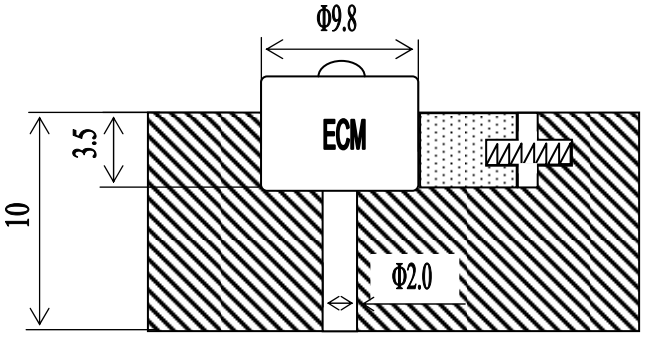
6.1. We suggest using anti-static welding machine which can control soldering temperature automatically.

6.2. Soldering temperature should be controlled under 320°C and soldering time for each terminal should be 1~2 seconds

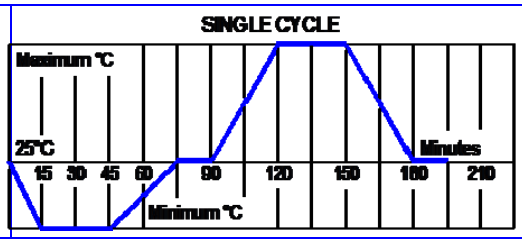
6.3. Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.

6.4. 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)

6.5. Heat Sink

6.5.a. Shape of heat sink	6.5.b. Shape of hole at fixed part
	

7. Reliability

Thermal Operating Temperature Test	**240 hours** continuous operation **at Rated Voltage**, at **Maximum Rated Operating Temperature** *
	240 hours continuous operation **at Rated Voltage**, at **Minimum Rated Operating Temperature** *
Thermal Storage Temperature Test	**96 hours** storage at **Maximum Rated Storage Temperatures** *
	96 hours storage at **Minimum Rated Storage Temperatures** *
Temperature Shock	**30 cycles** of **Minimum** and **Maximum Operating Temperature** Each cycle shell be set per diagram and is 3 hours long * 
Highly Accelerated Temperature and Humidity Stress Test (HAST)	The DUTs are soldered onto a test PCB. The PCB is placed in the oven and the input terminal leads are brought out and connected to the electrical power supply. The test PCB is powered up using the electrical power supply that is designed to maintain a constant voltage of the **maximum rated voltage** for the duration of the test. The oven is programmed to maintain a temperature of 110°C, 85% RH for **264 hours** with a pressure of 122 KPa introduced *
Humidity Test	Precondition at +25°C for **1 hour.** Then expose to +70°C with 90 to 95% relative humidity for **120 hours** *
ESD Sensitivity	Perform ESD sensitivity threshold measurements for each contact according to MIL-STD-883G, Method 3,015.7 for Human Body Model. Identify the ESD threshold levels indicating passage of 8,000V Human Body Model. *
Termination Strength	Maximum of 9.8 N (1.0 Kg) load pull test, applied to each terminal in axial direction for **1 minute**
Drop Test	Samples are mounted on a test PCB. The PCB itself was then glued onto a metal fixture slightly bigger than the PCB. The fixture was dropped naturally from the 1.5 m height onto a steel surface. The test was repeated in **six directions for three times, total 18 times** and inspected for mechanical damage *
Random Vibrations	Vibrate randomly along three perpendicular directions for **30 minutes in each direction**. The Power Spectral Density of the vibration had a + 3 dB/octave rise from 20 Hz to 80 Hz, a constant value of 0.053 g2/Hz from 80 Hz. to 350 Hz and finally a -3 dB/octave drop from 350 Hz to 2,000 Hz. Having subjected the units to vibration, they were tested for all electrical and acoustic parameters
Mechanical Shock	Subject samples to half sine shock pulses (3,000 g's ±15% for 0.3 ms) in each direction, totally **6 shocks**
Sinusoidal Vibration	Vibrate randomly from 10 Hz to 55 Hz, 1 octave/minute with 2 mm amplitude (peak to peak) for **2 hours in each direction** For this test are that the PCB must deflect at least 1mm before mechanical failure of the unit occurs

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Life Test	Subject samples to +125°C for **168 hours** under full **maximum rated voltage**
* **Reliability Test Performance**	**Parts should conform to original performance within ±3 dB, after 3 hours of recovery period**

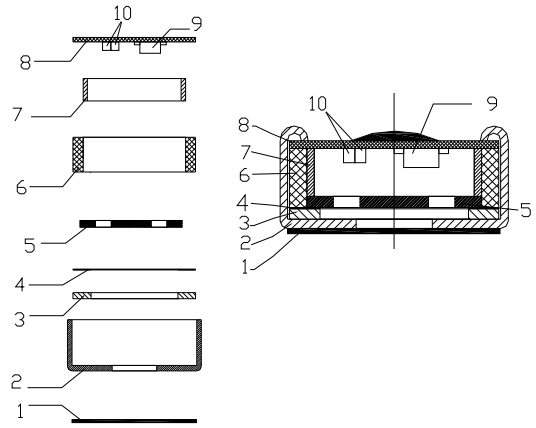
8. Concept of Unit

The difference between concept of **"PASCAL"** unit and the one unit **"µbar"** can be explained as follows:
In calibrating the sensitivity of ECMs, the sensitivity is manifested differently according as the units **"PASCAL"** or **"µbar".** For example:

-60 dB (0 dB = 1 V / µbar) - -42 dB (0 dB = 1 V / Pa)

9. Construction Materials

ITEM	PART NAME	MATERIAL	QTY
1	Dustproof gauze		1
2	Case	Al-Mg alloy	1
3	Diaphragm		1
4	Spacer		1
5	Electret Plate		1
6	Chamber		1
7	Ring	Copper	1
8	P.C.B	FR-4	1
9	FET		1



10. Part Number Description

ID	Description
CEM	**C**hallenge **E**lectronics **M**icrophone
N	**N**oise Canceling Microphone
60	**6.0** mm diameter
27	**2.7** mm High
D	PCB Version **D**
-	dash
443	Sensitivity –**44** ± **3** dB
G	Test Condition 2.2 K Ω / 2.0 V
-	dash
L01	Welding Point Style Microphone
C01	Capacitance：10PF+ 33PF
-	dash
00	No Rubber
-	dash
0	No especial requirements

11. Warranty

For a period of one (1) year from date of shipping under normal handling and operations conditions
This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair

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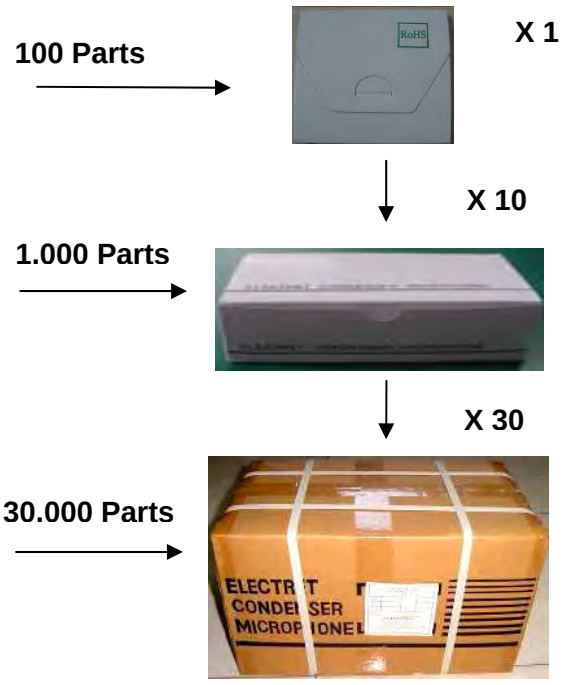
12. Packaging



MARKING	**Small Box**		
Middle Box	Dimensions	**X1**	**8 cm**
Part Number		**Y1**	**8 cm**
Other PN if required		**Z1**	**1 cm**
Quantity	Quantity		**100**
Lot and/or Date Code	**Middle Box**		
Bundle Number	Dimensions	**X2**	**17.5 cm**
Shipping Box		**Y2**	**8.5 cm**
Part Number		**Z2**	**5 cm**
Other PN (if required)	Quantity	**1,000**	
Quantity	**SHIPPING BOX**		
Lot and/or Date Code	Dimensions	**X3**	**55 cm**
PO Number		**Y3**	**23 cm**
Net Weight		**Z3**	**23.5 cm**
Gross Weight	Number of Bundles		**30**
Box Number of Boxes	Quantity		**30,000**
Made in China	Approximate Gross Weight		**9.9 Kg.**

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