

Address:  
Block 9, Shuiwei Ind Zone, Shuiwei New  
Village, Dalang, Longhua, Shenzhen,  
Guangdong, China 518109

Tel: (86)755-28121370/ 28121371/28109416/28109419  
Fax: (86)755-28109417  
E-mail: rd@horn.com.cn  
Website: www.horn.com.cn

**CUSTOMER: Digi-Key Corporation**

## APPROVAL SHEET

| PRODUCT NAME                        | PART NUMBER | DIMENSION     |  |
|-------------------------------------|-------------|---------------|--|
| Electret<br>Condenser<br>Microphone | EM1050-38   | Ø10.0×5.0(mm) |  |

| APPROVED BY | CHECKED BY                                                                          | ISSUED BY                                                                             |
|-------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|             |  |  |

**APPROVED BY**

**DATE:**

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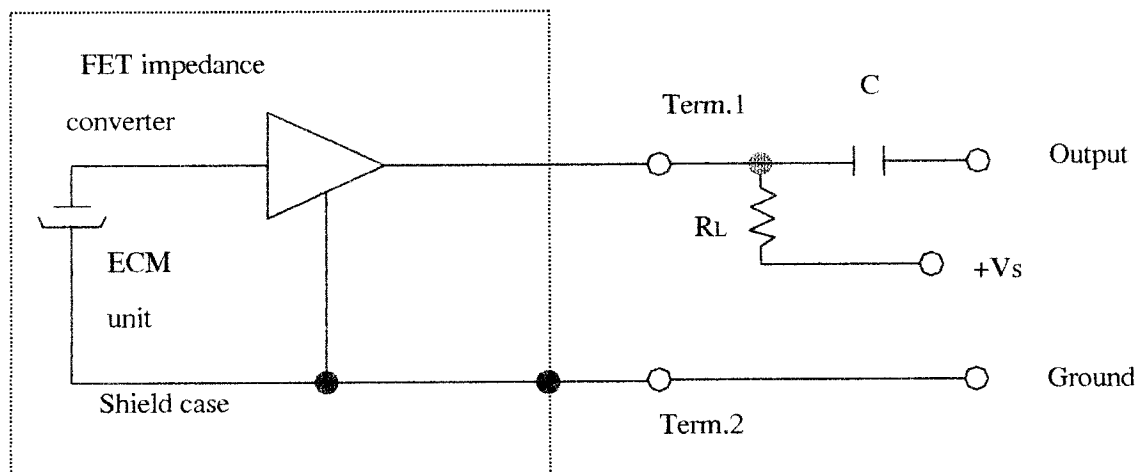
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## SPECIFICATION

| Item                       | Symbol     | Test conditions                               | Min | Standard | Max | Unit            |
|----------------------------|------------|-----------------------------------------------|-----|----------|-----|-----------------|
| Sensitivity                | S          | f=1KHz. Pin=1Pa                               | -40 | -38      | -36 | dB<br>0dB=1V/Pa |
| Directivity                |            | Omnidirectional                               |     |          |     |                 |
| Impedance                  | Zout       |                                               |     |          | 2.2 | K $\Omega$      |
| Input sound pressure level | S.P.L      |                                               |     |          | 100 | dB              |
| Operation voltage          | Vs         | -                                             | 1.0 | 4.5      | 10  | V               |
| Current consumption        | I          | f=1KHz. Pin=1Pa.                              |     |          | 500 | $\mu$ A         |
| Sensitivity reduction      | $\Delta$ S | f=1KHz. Pin=1Pa.<br>Vs=4.5 $\rightarrow$ 1.5V |     |          | -3  | dB              |
| S/N ratio                  | S/N(A)     | f=1KHz. Pin=1Pa.<br>A=curve                   | 60  |          |     | dB              |

### Measurement Circuit (Test Condition Vs=4.5V RL=2.2K $\Omega$ )

Ta=20 $^{\circ}$ C R.H=65%)



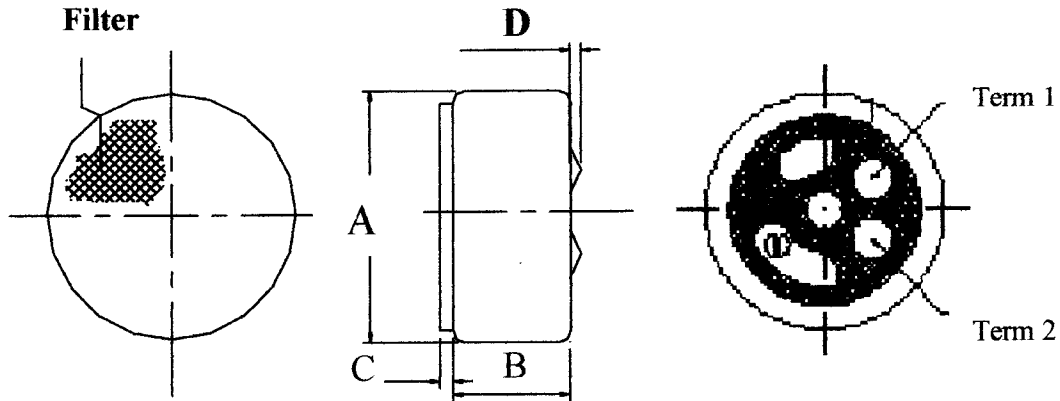
PART NUMBER : EM1050-38

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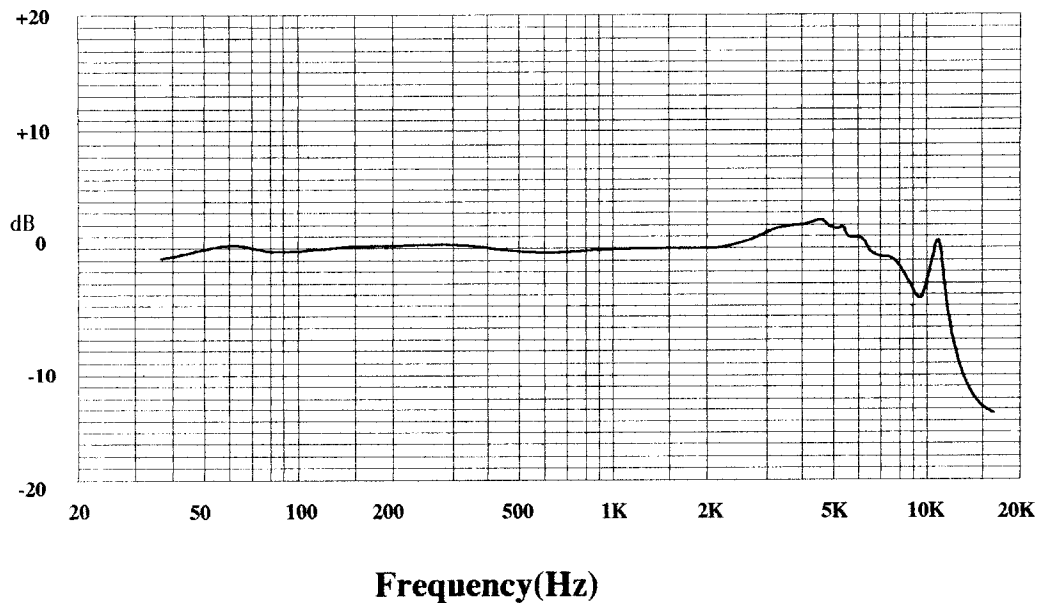
## Dimensional Drawing

unit: mm



| PART | MIN  | STANDARD | MAX   | REMARK |
|------|------|----------|-------|--------|
| A    | Ø9.8 | Ø10.0    | Ø10.2 |        |
| B    | 4.8  | 5.0      | 5.2   |        |
| C    | 0.1  | 0.2      | 0.3   |        |
| D    | -    | -        | 0.8   |        |

## Typical Frequency Response Curve



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## Ambient condition

### (1) Operating condition

Ambient temperature:  $-10^{\circ}\text{C} \sim +45^{\circ}\text{C}$   
Relative humidity:  $\leq 85\%$

### (2) Storage condition

Ambient temperature:  $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$   
Relative humidity:  $45\% \sim 75\%$

## Reliability Test

### 1) Vibration Test

To be no interference in operation after vibration of full amplitude 2mm for 30 minutes at three axis, the sensitivity to be within  $\pm 3\text{dB}$  from initial sensitivity.

### 2) Drop test

To be no interference in operation after dropped to concrete floor each time from 1 meter height of three directions in state of packing, the sensitivity to be within  $\pm 3\text{dB}$  from initial sensitivity.

### 3) High Temperature Storage:

To be no interference in operation after high temperature test  $70^{\circ}\text{C} \pm 3^{\circ}\text{C}$  for 48 hours. The sensitivity to be within  $\pm 3\text{dB}$  from initial sensitivity.

### 4) Isotherm & Iso-humidity Storage

To be no interference in operation after storage test at temperature  $60^{\circ}\text{C} \pm 2^{\circ}\text{C}$  and relative humidity ( $93 \pm 3\%$ ) for 48 hours, the sensitivity to be within  $\pm 3\text{dB}$  from initial sensitivity, the test is performed at temperature  $20^{\circ}\text{C}$  after operation for 6 hours.

### 5) Low Temperature Storage

To be no interference in operation after test at temperature  $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$  for 48 hours, the sensitivity to be within  $\pm 3\text{dB}$  from initial sensitivity.

### 6) Temperature Cycle Test

After exposure at  $+55 \pm 2^{\circ}\text{C}$  for 1 hour, at  $20 \pm 2^{\circ}\text{C}$  for 1 hour, at  $-10 \pm 2^{\circ}\text{C}$  for 1 hour, at  $20 \pm 2^{\circ}\text{C}$  for 1 hour, with 5 cycles. Change of sensitivity within  $\pm 3\text{dB}$  from initial measuring should be done after 2 hours exposed to  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .

### 7) Collision Test

After collided with the acceleration  $100 \pm 10\text{m/s}$ , at the vertical & horizontal directions for  $1000 \pm 10$  times. at the state of packing. Change of sensitivity within  $\pm 3\text{dB}$  from initial.



Electret Condenser Microphone Units

深圳市豪恩电声科技有限公司  
SHENZHEN HORN ELECTROACOUSTIC TECHNOLOGY CO.,LTD

## TEST RESULT OF SAMPLES

| NO. | 1KHz (dB) | CURRENT (mA) | NOTES            |
|-----|-----------|--------------|------------------|
| 1   | -37.8     | 0.19         | (1KHz、0dB=1V/Pa) |
| 2   | -38.6     | 0.17         |                  |
| 3   | -38.5     | 0.18         |                  |
| 4   | -38.4     | 0.19         |                  |
| 5   | -37.7     | 0.16         |                  |
| 6   | -38       | 0.19         |                  |
| 7   | -38.3     | 0.17         |                  |
| 8   | -37.8     | 0.17         |                  |
| 9   | -38.2     | 0.19         |                  |
| 10  | -38.2     | 0.19         |                  |
| 11  | -38.7     | 0.17         |                  |
| 12  | -38.6     | 0.15         |                  |
| 13  | -38.8     | 0.21         |                  |
| 14  | -38.7     | 0.21         |                  |
| 15  | -39.2     | 0.2          |                  |
|     |           |              |                  |
|     |           |              |                  |
|     |           |              |                  |
|     |           |              |                  |
|     |           |              |                  |



Customer: Digi-Key Corporation

Date: 2003.12.09

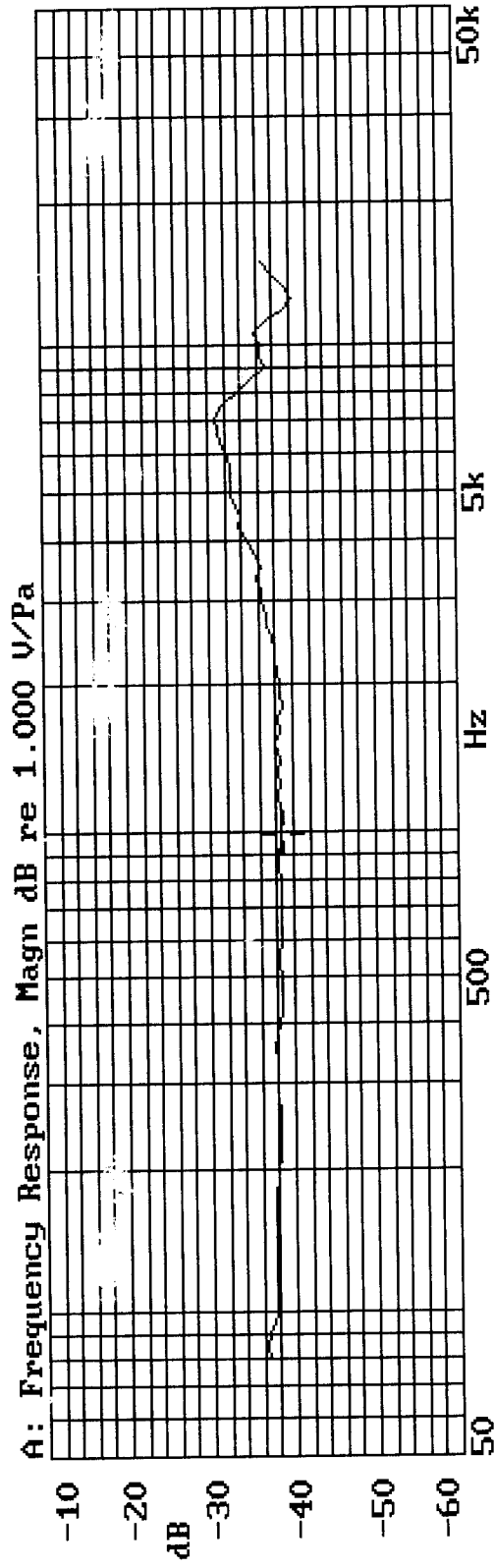
Part number: EM1050-38

Sensitivity: -38±2dB

Test condition: 2.2K Ω 4.5V

Tester: G1

SHENZHEN HORN ELECTROACOUSTIC TECHNOLOGY CO.,LTD.  
X:1.0000kHz \*Y:-38.52dB\* ZA:Live Curve SSR Fund.



MODEL: EM1050-38  
CODE: 3#  
SENSITIVITY: -38.52dB (1kHz)  
TEST CONDITION: 2.2KΩ 4.5V

08-DEC-2003 16:09:15

Mode: SSR





Electret Condenser Microphone Units

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## Certificate of Confirmed Products

Date: Dec. 07. 2003

NO: W031206008

|                                   |                                 |                                         |                             |  |
|-----------------------------------|---------------------------------|-----------------------------------------|-----------------------------|--|
| SUPPLIER                          | HORN                            | BUYER                                   | <b>Digi-Key Corporation</b> |  |
| TITLE                             | ECM                             | MODEL                                   | <b>EM1050-38</b>            |  |
| SIZE                              | $\phi 10.0 \times 5.0\text{mm}$ | TEST CONDITION                          | 2.2K $\Omega$ 4.5V          |  |
| QUANTITY                          |                                 | SAMPLE: 15PCS                           |                             |  |
| <b>SPECIFICATIONS</b>             |                                 |                                         |                             |  |
| Sensitivity                       |                                 | $-38 \pm 2\text{dB}$ (0dB=1V/Pa. 1KHz ) |                             |  |
| Directivity                       |                                 | Omnidirectional                         |                             |  |
| Impedance                         |                                 | Low impedance                           |                             |  |
| Standard operation voltage        |                                 | 4.5V                                    |                             |  |
| Operation voltage                 |                                 | 1.0-10V                                 |                             |  |
| Current consumption               |                                 | Max 500uA                               |                             |  |
| Maximum input S.P.L               |                                 | 100dB                                   |                             |  |
| S/N ratio                         |                                 | More than 60 dB                         |                             |  |
| Sensitive reduction               |                                 | within-3dB at 1.5V                      |                             |  |
| The test result<br>from customers |                                 | Signature: _____ . _____ . 2003         |                             |  |
| Final confirmed                   | Pass                            | Refuse                                  | Accepted basis on           |  |
| Remarks                           |                                 |                                         |                             |  |

\*\*\*\*\* The form must be confirmed by return fax after your test as your best regards! \*\*\*\*\*