



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 | REMARK |
|-------------------------------------|-------------------|--------------|---------|
| Electret Condenser Microphone | EM6018P-46BC10&33 | Ø6.0×1.8(mm) | D.S.PCB |

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

APPROVED BY:

DATE:

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Guangdong, China 518109

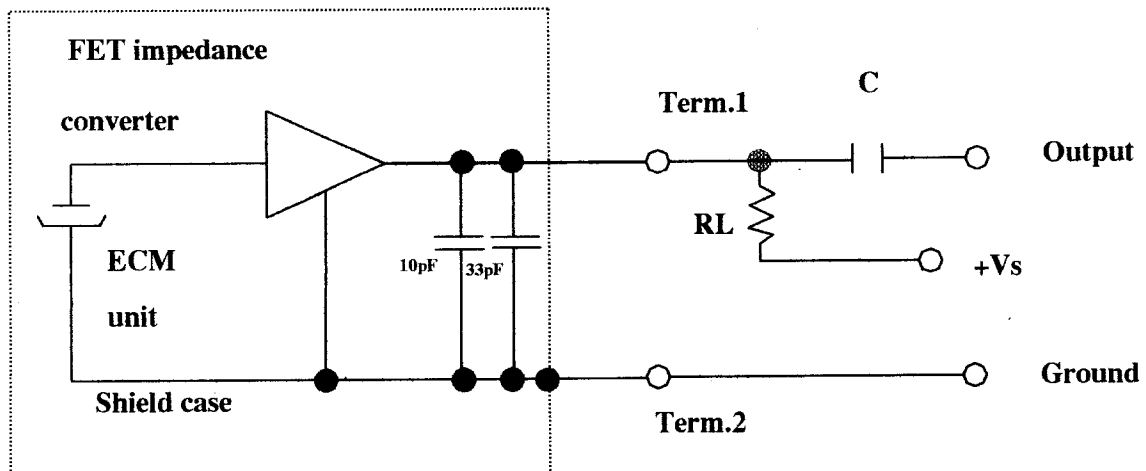
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SPECIFICATION

| Item | Symbol | Test conditions | Min | Standard | Max | Unit |
|----------------------------|-----------------|-------------------------------|-----|----------|-----|--------------------------------|
| Sensitivity | S | f=1KHz. Pin=1Pa | -48 | -46 | -44 | dB <small>0dB=1V/Pa</small> |
| Directivity | Omnidirectional | | | | | |
| Impedance | Zout | | | | 2.2 | KΩ |
| Input sound pressure level | S. P. L | | | | 100 | dB |
| Operation voltage | Vs | - | 1.0 | 2 | 10 | V |
| Current consumption | I | f=1KHz. Pin=1Pa | | | 500 | uA |
| Sensitivity reduction | ΔS | f=1KHz. Pin=1Pa. Vs=2→1.5V | | | -3 | dB |
| S/N ratio | S/N(A) | f=1KHz. Pin=1Pa A=curve | 60 | | | dB |

Measurement Circuit (Test Condition Vs=2V RL=2.2KΩ)

Ta=20°C R.H=65%)



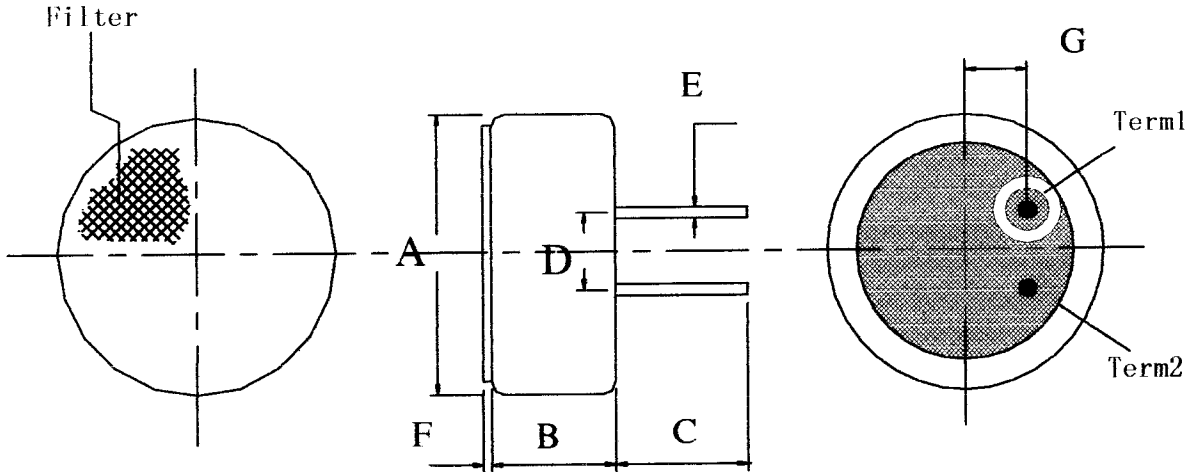
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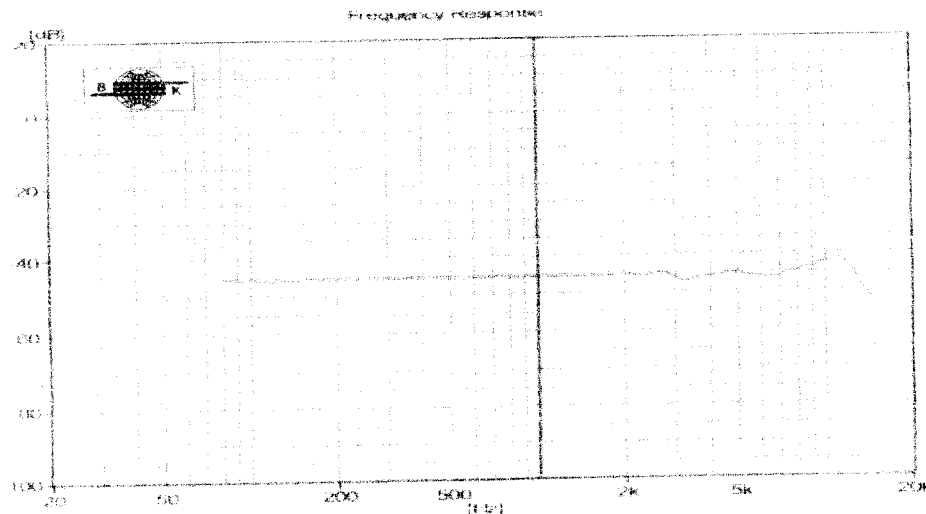
Dimensional Drawing

unit: mm



| PART | MIN | STANDAND | MAX | REMARK |
|------|------|----------|------|--------|
| A | Ø5.9 | Ø6.0 | Ø6.1 | |
| B | 1.7 | 1.8 | 1.9 | |
| C | 2.6 | 2.8 | 3.0 | |
| D | 1.8 | 1.9 | 2.0 | |
| E | - | - | Ø0.5 | |
| F | 0.1 | 0.2 | 0.3 | |
| G | 0.9 | 1.0 | 1.1 | |

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°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

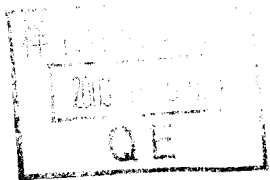
After exposure at $55 \pm 2^{\circ}\text{C}$ for 1 hour, at $20 \pm 2^{\circ}\text{C}$ for 1 hour, at $-10 \pm 2^{\circ}\text{C}$ for 1 hour, at $20 \pm 2^{\circ}\text{C}$ for 1 hour, with 5 cycles. Change of sensitivity within $\pm 3\text{dB}$ from initial measuring should be done after 2 hours exposed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

TEST RESULT OF SAMPLES

| NO. | 1KHz (dB) | CURRENT (mA) | NOTES |
|-----|-----------|--------------|------------------|
| 1 | -46.2 | 0.12 | (1KHz、0dB=1V/Pa) |
| 2 | -46.7 | 0.1 | |
| 3 | -45.8 | 0.1 | |
| 4 | -47 | 0.14 | |
| 5 | -47 | 0.1 | |
| 6 | -46.3 | 0.11 | |
| 7 | -46.8 | 0.12 | |
| 8 | -46.7 | 0.1 | |
| 9 | -47 | 0.1 | |
| 10 | -46.5 | 0.1 | |
| 11 | -46.5 | 0.13 | |
| 12 | -45.7 | 0.11 | |
| 13 | -46.2 | 0.11 | |
| 14 | -46.5 | 0.14 | |
| 15 | -46 | 0.11 | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Customer: Digi-Key Corporation

Date: 2003.12.09

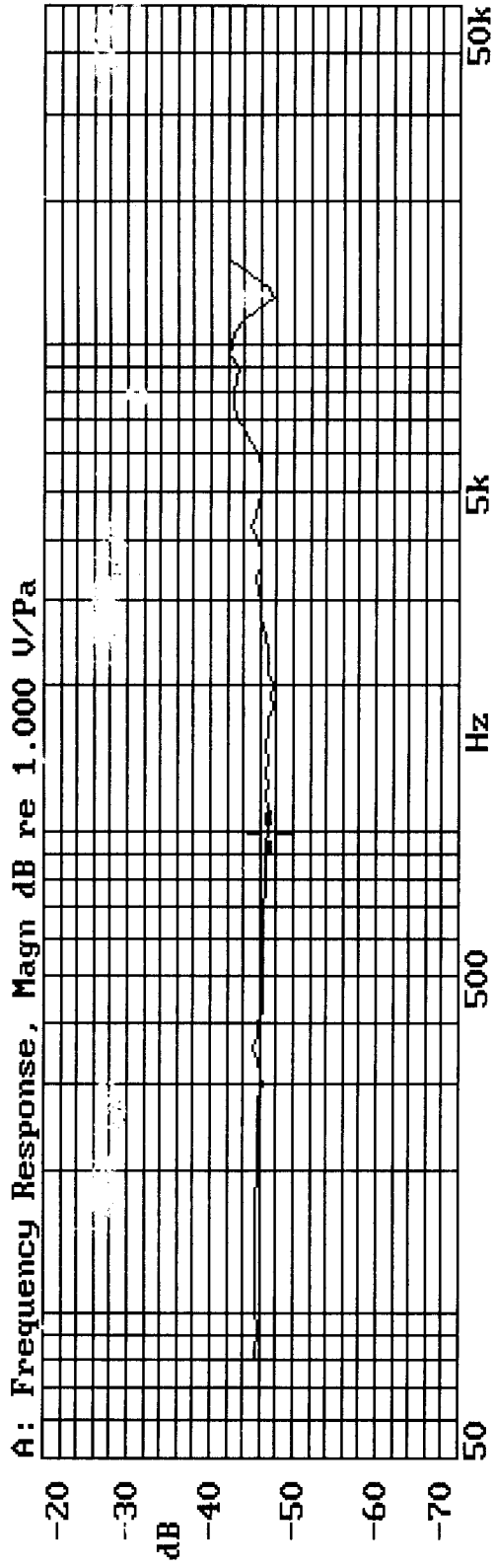
Part number: EM6018P-46BC10&33

Sensitivity: -46±2dB

Test condition: 2.2K Ω 2V

Tester: G1

SHENZHEN HORN ELECTROACOUSTIC TECHNOLOGY CO.,LTD.
X:1.0000kHz *Y:-46.86dB* ZA:Live Curve SSR Fund.



MODEL: EM6018P-46BC10&33
CODE: 7#
SENSITIVITY: -46.86dB (1kHz)
TEST CONDITION: 2.2KΩ 2V

08-DEC-2003 15:54:23

Mode: SSR





Electret Condenser Microphone Units

深圳市豪恩电声科技有限公司

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Certificate of Confirmed Products

Date: Dec. 07. 2003

NO: W031206005

| | | | | |
|--------------------------------|--------------------------------|----------------------------------|------------------------------|--|
| SUPPLIER | HORN | BUYER | Digi-Key Corporation | |
| TITLE | ECM | MODEL | EM6018P-46BC10&33 | |
| SIZE | $\phi 6.0 \times 1.8\text{mm}$ | TEST CONDITION | 2.2K Ω 2V | |
| QUANTITY | | SAMPLE: 15PCS | | |
| SPECIFICATIONS | | | | |
| Sensitivity | | -46 \pm 2dB (0dB=1V/Pa. 1KHz) | | |
| Directivity | | Omnidirectional | | |
| Impedance | | Low impedance | | |
| Standard operation voltage | | 2V | | |
| 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 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! *****