

**臺灣崧宇科技有限公司**  
**SOUND-INN TECHNOLOGIES CO., LTD.**  
**東莞泉聲電子有限公司**  
**TRANSOUND ELECTRONICS CO., LTD.**

HF 無鹵素	工程
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**ECM APPROVAL SHEET**

编号:

客 戶 CUSTOMER		
產品型號 SPECIFICATIONS	TSB-4015AC1033Z3-HF	
外型尺寸 DIMENSIONAL	Ø4.0×1.5mm	
靈 敏 度 SENSITIVITY	-42±3dB (0dB=1V/Pa,at 1KHz) 2.0V      2.2KΩ	
客戶料號 / 機種 CUSTOMER MODEL		
<b>VENDOR</b>		<b>CUSTOMER</b>
<b>MADE BY</b>	<b>CHECKED BY</b>	<b>APPROVED BY</b>
<b>Revision level</b>	<b>Description of changes</b>	<b>Changed date</b>

**\* PLEASE SEND US A COPY, IF APPROVED**

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 Dist., New Taipei City 24158, Taiwan (R.O.C.)  
 TEL: 02-2999-8258  
 FAX: 02-2999-8759  
<http://www.transound.cn>  
 短信網址: 麦克风 (发送“麦克风”到 12114)

廣東生產基地 (Guangdong factory)  
 東莞市石碣鎮四甲第三工業區  
 THE THIRDLY INDUSTRIAL ZONE SIJIA VILLAGE  
 SHIJIE DONGGUAN GUANGDONG  
 TEL: 86-769-86325251/2    86361255/6  
 FAX: 86-769-86318642/81387982  
<http://www.transound.com>  
 Note web: microphone (send “microphone” to 12114)

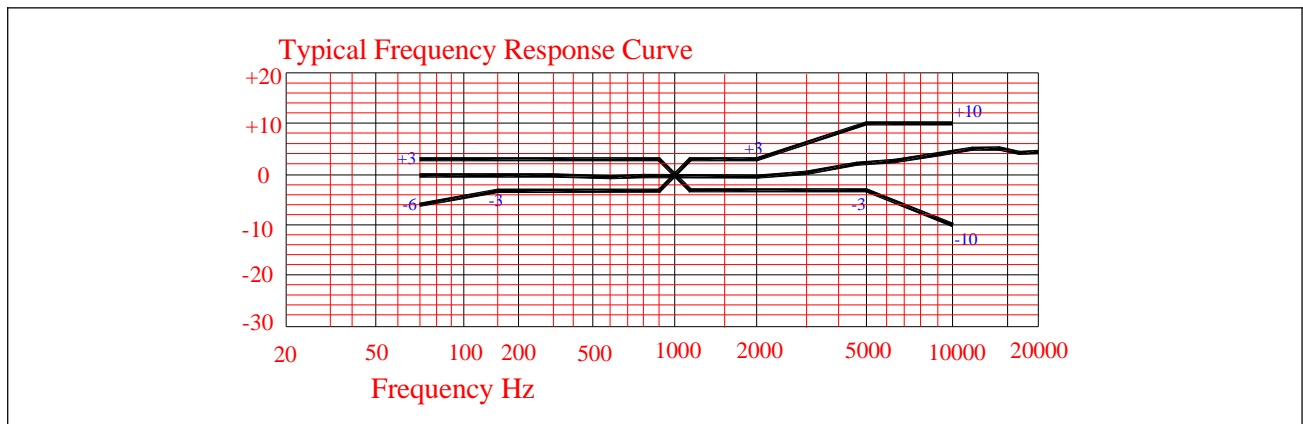
TYPE: TSB-4015AC1033Z3-HF

## 1. BACK ELECTRICAL CHARACTERISTICS

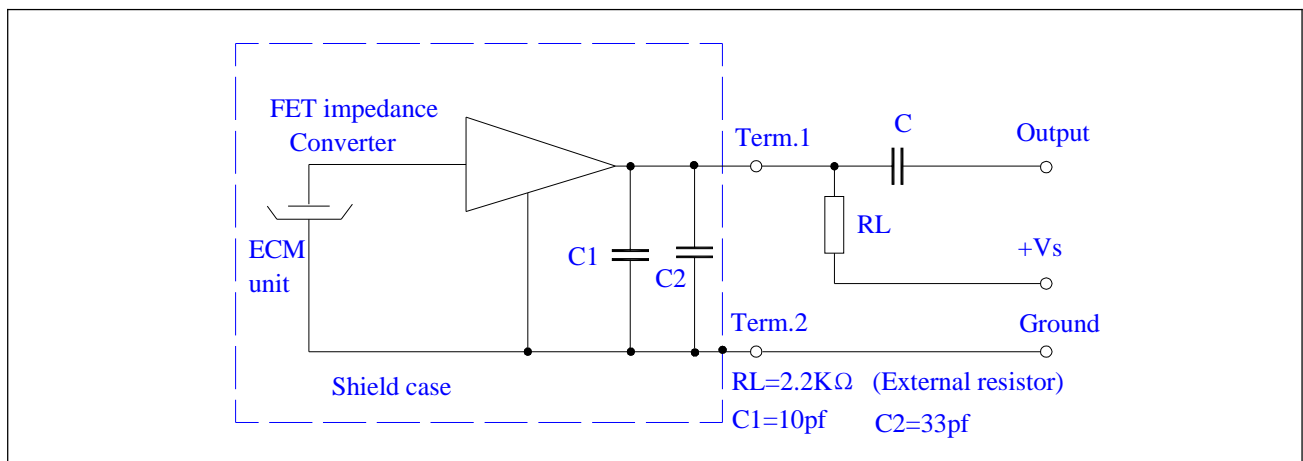
1.1 TEMP=20±2℃                      Room Humidity=65±5%

PARAMETER	SYMBOL	CONDITION	LIMITS			UNIT
			Min	Center	Max	
Sensitivity	S	F=1KHZ,S.P.L=1Pa 0dB=1V/Pa	-45	-42	-39	dB
Output impedance	Zout	F=1KHZ		2.2		KΩ
Current Consumption	IDss	VS=2.0V RL=2.2KΩ			180	μA
Directivity	Omnidirectional					
Signal to Noise Ratio	S/N	S:(f=1KHz,S.P.L=1Pa) N:(A-Weighted curve)	58			dB
Decreasing Voltage	ΔS-VS	VS=2.0V to 1.5V			-3	dB
Operating voltage			1.0		10	V
Maximum input S.P.L		F=1KHZ, THD<1%			110	dB

### 1.2 TYPICAL FREQUENCY RESPONSE CURVE

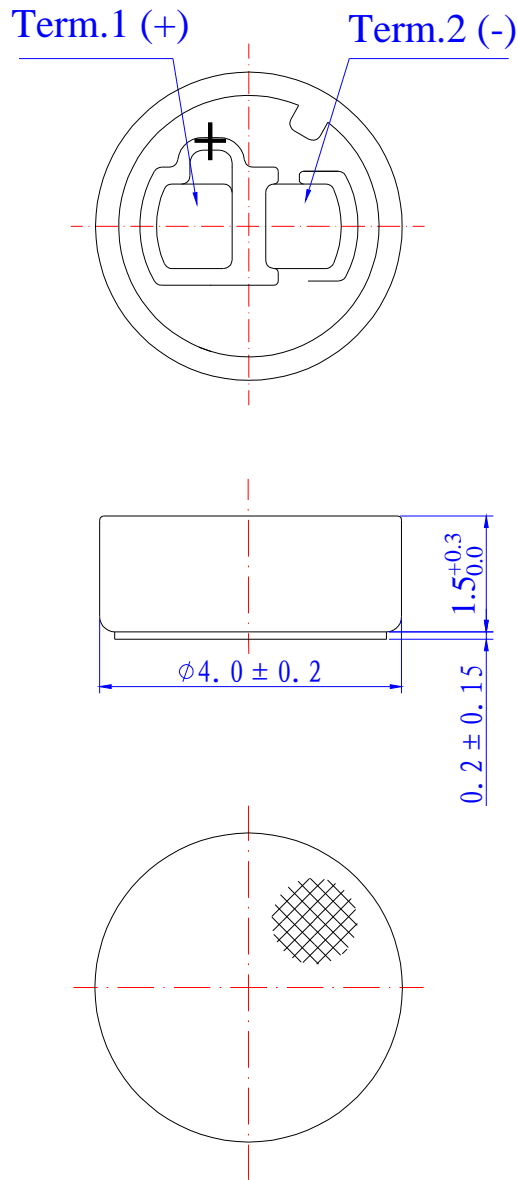


## 2. MEASUREMENT CIRCUIT



3. APPEARANCE & DIMENSIONS

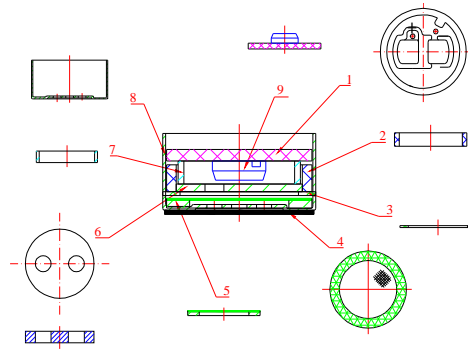
Unit: mm



DIMENSIONS:  $\phi 4.0 \times 1.5\text{mm}$

ECM: TSB-4015AC1033Z3-HF

4. MICROPHONE STRUCTURE



ITEM	PART NAME	MATERIAL	QTY	SUPPLIER
1	P.C.B	FR-4	1	LOCAL
2	CHAMBER	POM	1	LOCAL
3	SPACER	POLYESTER	1	LOCAL
4	SCREEN	NON-FIBRECORD	1	LOCAL
5	DIAPHRAGM	POLYESTER AND STAINLESS STEEL	1	U.S.A
6	PLATE	FEP AND METAL	1	TAIWAN
7	RING	BRASS	1	LOCAL
8	CASE	ALUMINUM	1	LOCAL
9	FET		1	
10	CAPACITANCE		2	

**REMARK:**

- 1.To ensure leadership of the products, our company will upgrade components layout and color adjustments. After Technology update, we won't notice again, if you have any questions, please contact our marketing department.
2. Color difference is a result of different purchase batches, which will not affect function, so it is not considered as acceptance criteria.
3. The percentage of assigned Sensitivity entering Adjacent range is less than 30%.

## 5. MECHANICAL CHARACTERISTICS

Soldering Heat Shock	To be no interference in operation after soldering Heat shock, temperature $320^{\circ}\text{C} \pm 20^{\circ}\text{C}$ for $2 \pm 1$ seconds
Terminal Mechanical Strength	To be no interference in operation after pulled the terminal with 0.5 kg strength for 3 seconds.

## 6. RELIABILITY TEST

All tests are to be carried out on the same test batch in the order listed.

The sensitivity should be within  $\pm 3\text{dB}$  from initial sensitivity after 3 hours recovering on the conditioning of  $20^{\circ}\text{C}$ .

Temperature Test	After exposure at $60^{\circ}\text{C}$ for 200 hours, the sensitivity should be within $\pm 3\text{ dB}$ from the initial value.
	After exposure at $-25^{\circ}\text{C}$ for 200 hours, the sensitivity should be within $\pm 3\text{ dB}$ from the initial value.
Humidity Test	After exposure at $40^{\circ}\text{C}$ and 90~95% relative humidity for 200 hours, the sensitivity should be within $\pm 3\text{ dB}$ from the initial value.
Temperature Cycle Test	After exposure at $-25^{\circ}\text{C}$ for 30 minutes, at $20^{\circ}\text{C}$ for 10 minutes, at $60^{\circ}\text{C}$ for 30 minutes, at $20^{\circ}\text{C}$ for 10 minutes, for 5 cycles, the sensitivity should be within $\pm 3\text{ dB}$ from the initial value.
Vibration Test	To ensure no effect on use after vibrations, 10 Hz to 50 Hz for 1-minute at full amplitude of 1.52 mm, for 2 hours at 3 anises test are carried out.
Drop Test	To ensure no effect on use after being dropped, the test microphone in its packaging is dropped on a concrete floor from a height of 1-meter on 3 faces of the packaging.

## 7. CONCEPT OF UNIT

The difference between the unit “Pascal” and the unit “ $\mu\text{bar}$ ” can be explained as follows. In order to calibrate the sensitivity of ECMs the sensitivity is manifested differently according to the unit “Pascal” or “ $\mu\text{bar}$ ”. That is, the sensitivity will be increased by 20 dB when using of the unit “Pascal”.

Example:  $-60\text{ dB}$  ( $0\text{ dB} = 1\text{ V} / \mu\text{bar}$ ) =  $-40\text{ dB}$  ( $0\text{ dB} = 1\text{ V} / \text{Pa}$ )

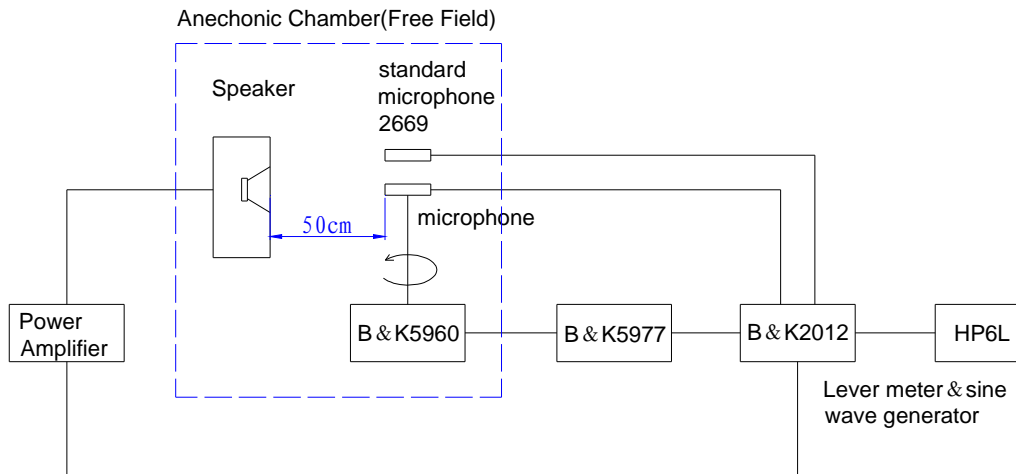
## 8.SENSITIVITY STANDARD TESTING

### 8.1 SENSITIVITY

### 8.2 REQUIREMENT:

The tolerance of sensitivity is within  $\pm 3$  dB to the reference microphone.

### 8.3 TESTING METHOD:



#### 8.3.1 Testing microphone with standard operating condition.

8.3.2 Put the microphone and standard microphone to face the sound output place(speaker), the distance from sound output to microphone & standard microphone is 50cm. And keep the center distance 5cm between each other to ensure the sound pressure change should be keep in  $\pm 1$ dB.

8.3.3 Keep the sound source pressure within  $\pm 1$  dB from speaker(Measured by the reference microphone).

8.3.4 The sensitivity of microphone can obtain its output voltage when sound source kept within 1000 Hz and 1 Pa.

### 8.4 Testing Condition

#### In Normal Weather

Environment Temperature	:	5 ~ 35°C
Relative Humidity	:	45 ~ 85%
Air Pressure	:	86 ~ 106 KPa

#### In Arbitrate Weather

Environment Temperature	:	20 $\pm$ 2°C
Relative Humidity	:	60 ~ 70%
Air Pressure	:	86 ~ 106 KPa

## 9. REGARDING THE SOLDERING OPERATION

MIC is a kind of very sensitive components for temperature and static impacting because there is a FET and a vibrant diaphragm, and FET can be destroyed by strong heat and static; Diaphragm can be destroyed by strong heat. If the operation is unsuitable or bad protection during the soldering process, it will affect MIC function and even destruction, So pay attention to the following request when soldering :

### 9.1. Solder temperature and time

9.1.1. Suggest Iron of constant temperature;

9.1.2. Suggest lead-free soldering temperature range  $320^{\circ}\text{C} \pm 20^{\circ}\text{C}$  (external soldering temperature of Iron needle);

9.1.3. the actual temperature of the user is according to PCB layers and soldering way to adjust soldering temperature.

9.1.4. soldering skill: soldering time of single point is within 2 seconds; Don't continue soldering same mic (please repair soldering once badly after cooling it)

9.1.5. Belongs to normal phenomenon that the sensitivity of the microphone change 0.5dB to 1dB within stipulating soldering temperature and time range.

9.1.6. If soldering temperate of the mic increase and prolong time, Sensitivity will have a big change, and even destroy inner structure, performance.

### 9.2. Soldering Quality

The soldering point can't leave sand hole or empty hole after soldering. (sand hole or empty hole will affect sensitivity and performance)、continuous soldering phenomena.

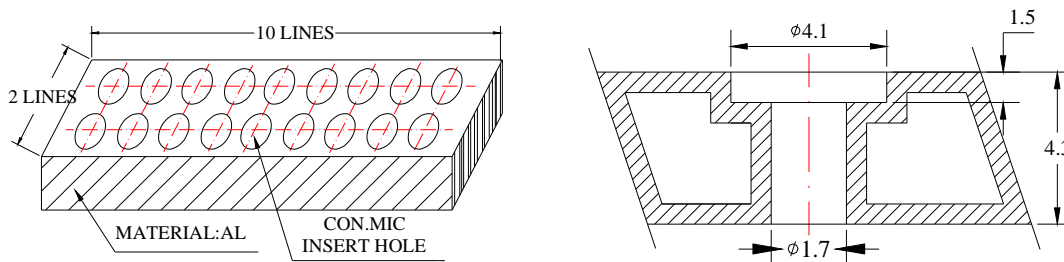
### 9.3. Static protecting

electric iron、test machine work stand、soldering tool must effectively connect earth. The operator must wear ring of resisting static.

### 9.4. heat scattered defending

9.4.1. Using heat scattered tool, Choose Al or Cooper, Please refer the following drawing

9.4.2. The heat scattered tool of user, whose shape need according to actual the position of soldering product and space to design or increase blow air tool for scattering heat.



## 10. STOCK AND TRANSPORTATION

10.1 A good package will help Mic. on using normal transportation. Pls pay more attention to prevent humid, shake, sunlight and heavy press.

10.2 The full packed Mic. Should be store at warehouse in  $-25 \sim +70^{\circ}\text{C}$ , and the relative humidity not bigger than 90%. The warehouse must keep constant temperature, without acid or any other poisonous gas, and not caused any influence from strong magnetic field.

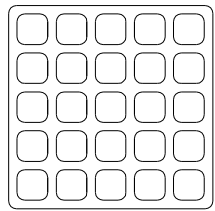
10.3 Storage Temperature Range :  $-25^{\circ}\text{C} \sim +70^{\circ}\text{C}$

Operating Temperature Range :  $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

## 11.PACKAGING

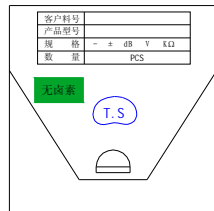
MODEL NO: TSB-4015AC1033Z3-HF

UNIT: mm



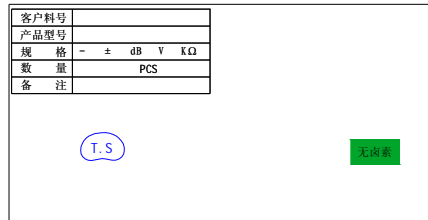
Part No: TS-XZ-4530-P01  
Size: 60×60×5  
Q'TY: 100PCS

into  
the box



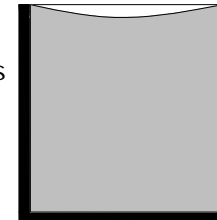
Part No: TS-XZ-6050-Z04  
Size: 61×61×6  
Q'TY: 100PCS

10 boxes



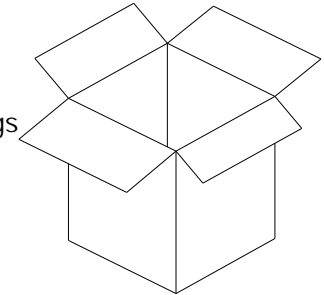
Part No: TS-ZZ-6050-Z02  
Size: 127×64×85  
Q'TY: 2000PCS

2 boxes



Part No: TS-ZZ-4015-S02  
Size: 297×187  
Q'TY: 4000PCS

10 bags



Part No: TS-DZ-6027-Z01  
Size: 220×215×275  
Q'TY: 40000PCS