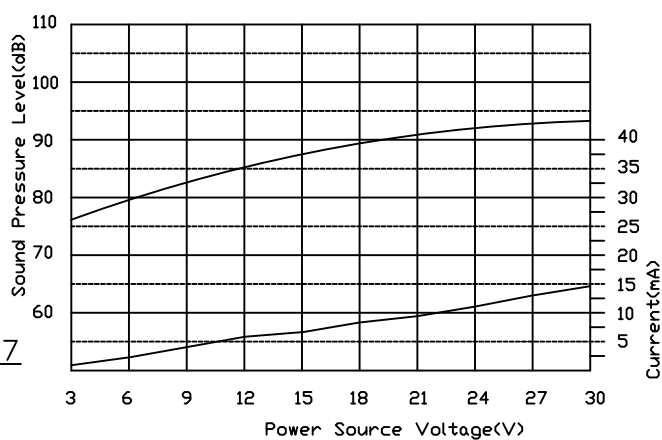
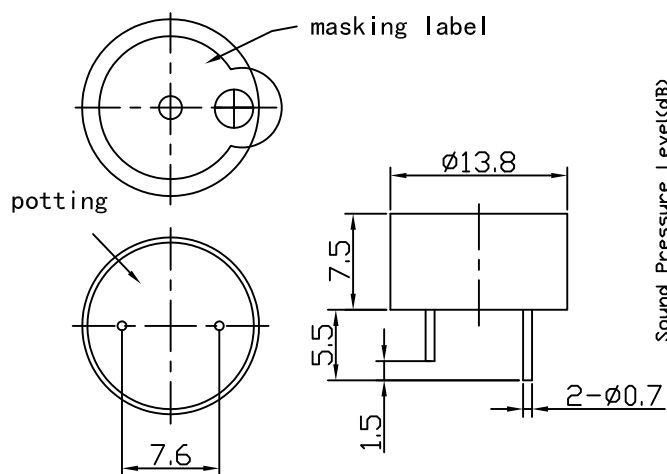


### ELECTRICAL SPECIFICATIONS:

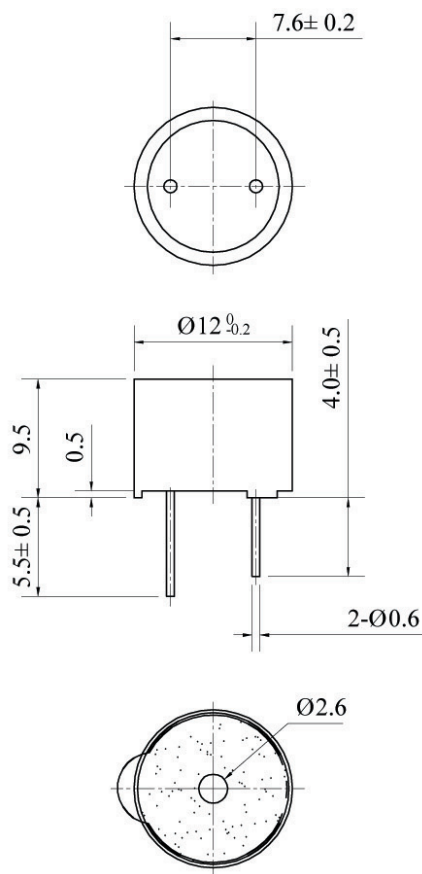
Type	Unit	CB14BD
Rated voltage	V	12
Operating Voltage	V	3 - 16
*Rated Current (MAX)	mA	7
* Min Sound Output at 10 cm	dB	80
*Resonant Frequency	Hz	4000 $\pm$ 500
Tone Nature	single	
Lead Wire/Lead pin material	Red copper	
Operating Temperature	° C	-20 - +70
Storage Temperature	° C	-30 - +80
Weight	g	1

\*Value Applying at Rated Voltage(DC).

DIMENSIONS UNIT:mm Tolerance: $\pm 0.5$ mm



HOUSING MATERIAL:NORYL WAVE SOLDER AND WASH ALLOWED.



## SPECIFICATION

1. Rated Voltage .....	5VDC
2. Operating Voltage .....	3~8VDC
3. Max. Rated Current .....	30mA/5VDC
4. Min. Sound Pressure Level .....	85dB/10cm
5. Resonant Frequency .....	2300 $\pm$ 300Hz
6. Response Time .....	50ms
6. Case Material .....	PBT
7. Operating Temperature .....	-20 $\sim$ +85 $^{\circ}$ C
8. Store Temperature .....	-20 $\sim$ +88 $^{\circ}$ C
9. Weight .....	2g

### SPECIFICATION

Electro-Magnetic Buzzer (With built-in oscillating circuit)

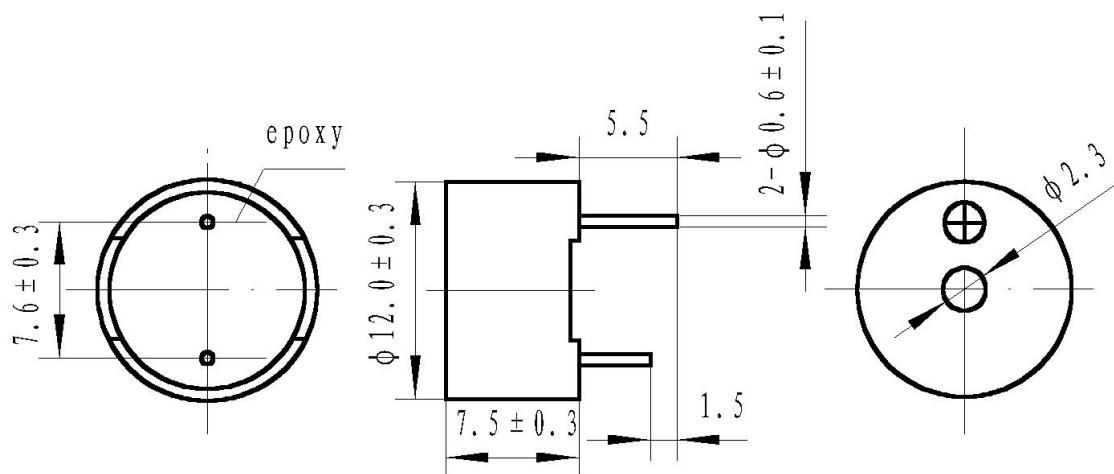
1	Model No.	MBS12B06LP
2	Rated Voltage (VDC)	5
3	Operating Voltage (VDC)	3~7
4	*Resonant Frequency (Hz)	2300± 300
5	*Sound Output at 10cm (dB)	≥ 85
6	*Current Consumption (mA)	≤ 30
7	Operating Temperature ( )	-20~+70
8	Storage Temperature ( )	-30~+80
9	Weight (g)	1.8

\*Applying rated voltage (VDC)

#### Dimensions

Unit: mm

Tolerance: ± 0.5mm Except Specified



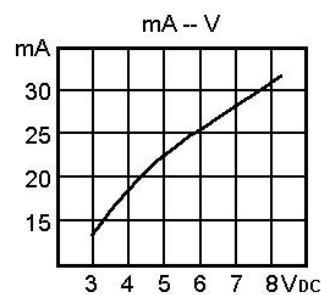
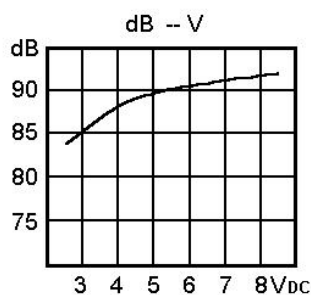
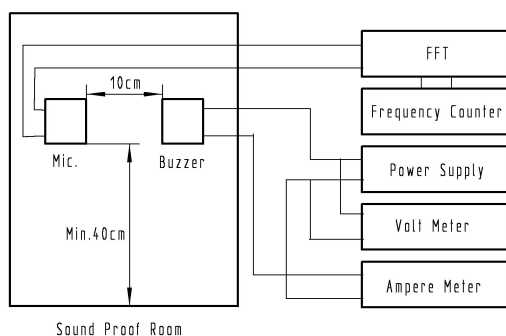
\*Housing Material: Noryl

#### Measurement

The electrical characteristics shall be measured at 20 to 25 & relative humidity 55% max.

Input Voltage VS.

Sound Pressure Level & Current Consumption



### SPECIFICATION

Electro-Magnetic Buzzer (With built-in oscillating circuit)

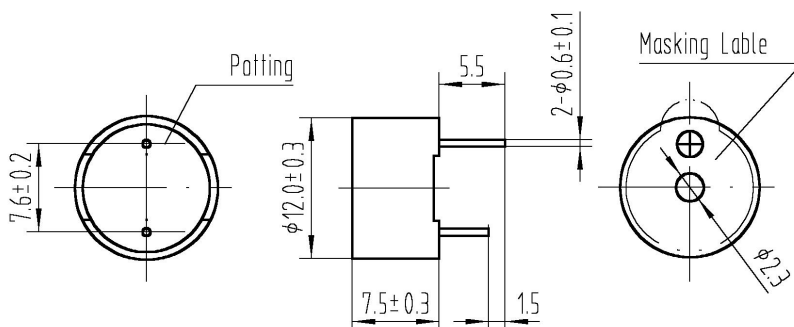
1	Model No.	MBS12B12LP
2	Rated Voltage (VDC)	12
3	Operating Voltage (VDC)	3~20
4	*Resonant Frequency (Hz)	2300± 300
5	*Sound Output at 10cm (dB)	≥ 85
6	*Current Consumption (mA)	≤ 30
7	Operating Temperature (°C)	-20~+70
8	Storage Temperature (°C)	-30~+75
9	Weight (g)	1.6

\*Applying rated voltage (VDC)

#### Dimensions

Unit: mm

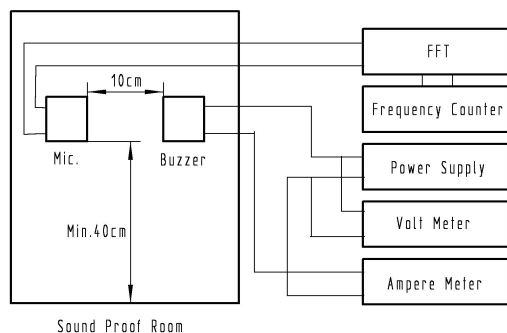
Tolerance: ± 0.5mm Except Specified



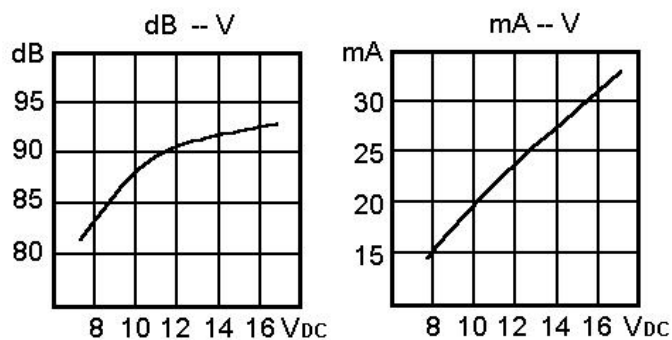
\*Housing Material: Noryl

#### Measurement

The electrical characteristics shall be measured at 20 to 25 & relative humidity 55% max.



Input Voltage VS.  
Sound Pressure Level & Current Consumption



## SPECIFICATION

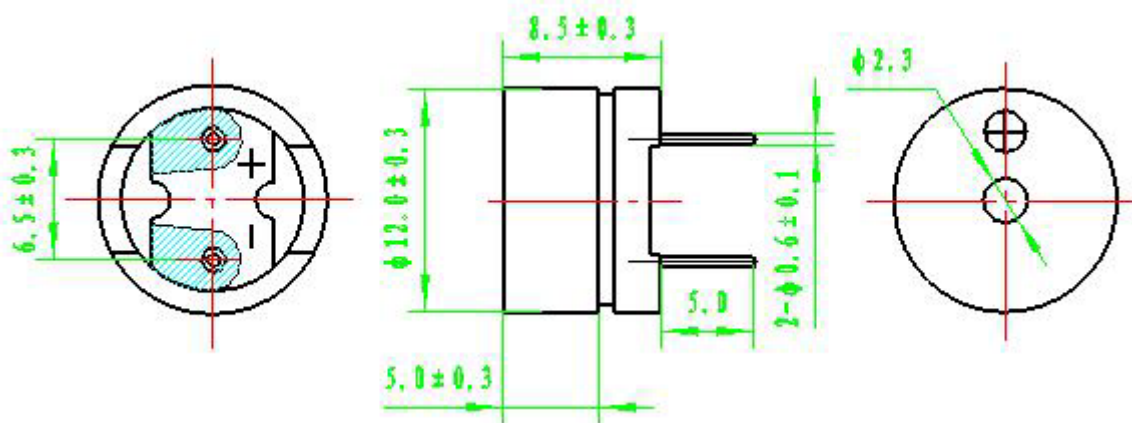
1	Model No.	TR12B
2	Rated Voltage (V)	1.5
3	Operating Voltage (V)	1~2
4	Resonant Frequency (Hz)	2048
5	Coil Resistance ( $\Omega$ )	$42 \pm 6$
6	*Sound Output at 10cm (dB)	$\geq 85$
7	*Current Consumption (mA)	$\leq 15$
8	Operating Temperature ( $^{\circ}\text{C}$ )	$-20 \sim +70$
9	Storage Temperature ( $^{\circ}\text{C}$ )	$-30 \sim +80$
10	Weight (g)	1.3

\*Applying rated voltage (Resonant frequency, 1/2 duty, Square wave)

### Dimensions

Unit: mm

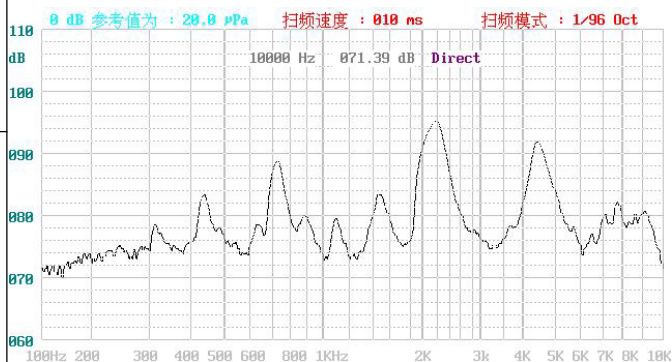
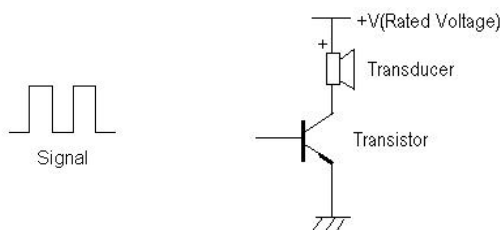
Tolerance:  $\pm 0.5\text{mm}$  Except Specified



\*Housing Material: PPO

### Recommended Driving Circuit

Resonant frequency, 1/2 duty cycle. Square wave.  
Signal amplitude should be large enough to saturate the transistor.



### SPECIFICATION

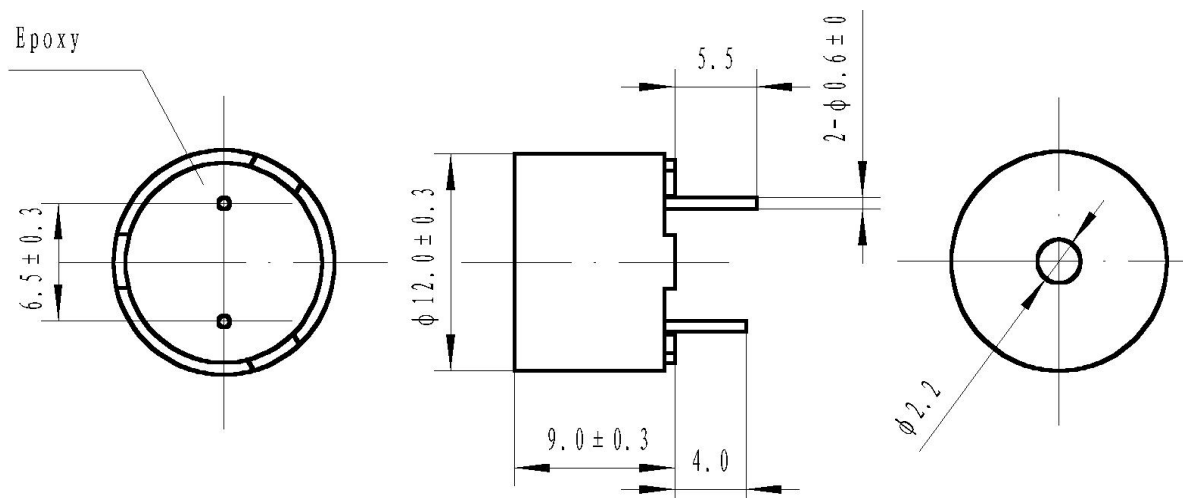
1	Model No.	TRS12B06
2	Rated Voltage (V)	5
3	Operating Voltage (V)	3~7
4	Resonant Frequency (Hz)	2400
5	Coil Resistance ( $\Omega$ )	47 $\pm$ 5
6	*Sound Output at 10cm (dB)	$\geq$ 85
7	*Current Consumption (mA)	$\leq$ 40
8	Operating Temperature ( $^{\circ}\text{C}$ )	-20~+70
9	Storage Temperature ( $^{\circ}\text{C}$ )	-30~+75
10	Weight (g)	1.5

\*Applying rated voltage (Resonant frequency, 1/2 duty, Square wave)

#### Dimensions

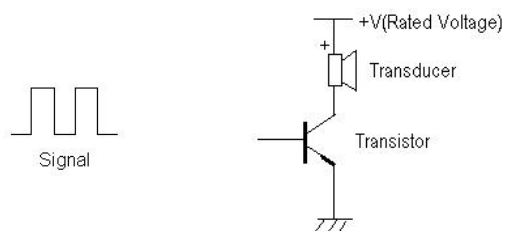
Unit: mm

Tolerance:  $\pm$  0.5mm Except Specified



#### Recommended Driving Circuit

Resonant frequency, 1/2 duty cycle. Square wave.  
Signal amplitude should be large enough to saturate the transistor.



## SPECIFICATION

### Electro-Magnetic Transducer

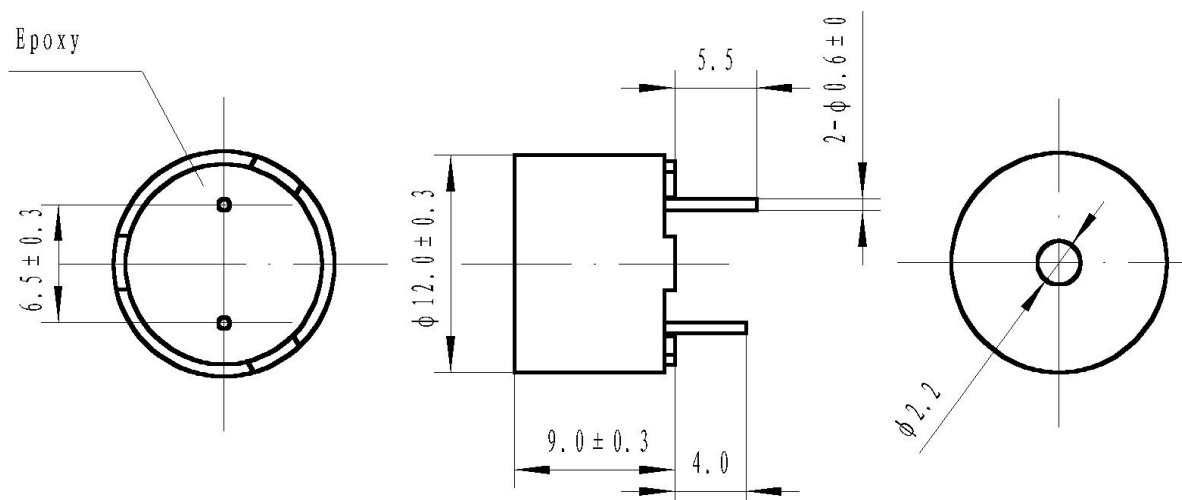
1	Model No.	TRS12B12
2	Rated Voltage (V)	12
3	Operating Voltage (V)	7~14
4	Resonant Frequency (Hz)	2400
5	Coil Resistance ( $\Omega$ )	140 $\pm$ 15
6	*Sound Output at 10cm (dB)	$\geq$ 90
7	*Current Consumption (mA)	$\leq$ 40
8	Operating Temperature ( $^{\circ}\text{C}$ )	-20 $\sim$ +70
9	Storage Temperature ( $^{\circ}\text{C}$ )	-30 $\sim$ +75
10	Weight (g)	1.5

\*Applying rated voltage (Resonant frequency, 1/2 duty, Square wave)

### Dimensions

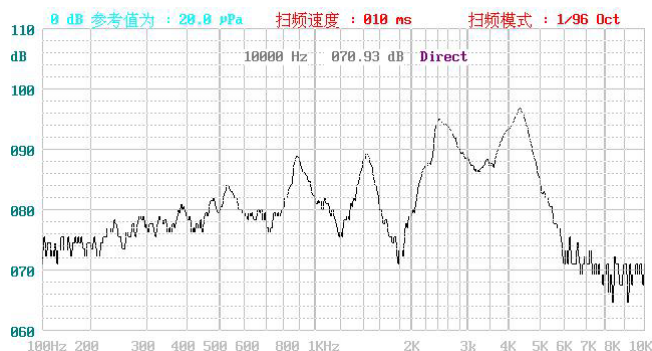
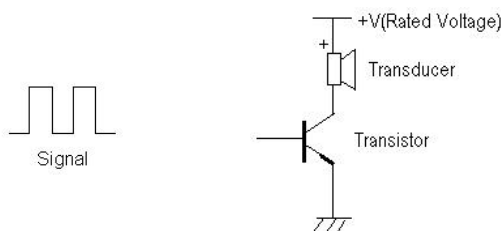
Unit: mm

Tolerance:  $\pm$  0.5mm Except Specified



### Recommended Driving Circuit

Resonant frequency, 1/2 duty cycle. Square wave.  
Signal amplitude should be large enough to saturate the transistor.



# SPECIFICATIONS

Model No.

TRS16B06

Page

1/5

## 1. ELECTRICAL AND ACOUSTICAL SPECIFICATION

	Item	Unit	Specifications
1-1	Rated Voltage (Square Wave)	V	6
1-2	Operating Voltage	V	4-8
1-3	* Rated Current (Max)	mA	40
1-4	* Min Sound Output at 10cm	dB	85
1-5	* Resonant Frequency	Hz	2048
1-6	Coil Resistance	$\Omega$	$50 \pm 5$
1-7	Operating Temperature	$^{\circ}\text{C}$	-30~+70
1-8	Storage Temperature	$^{\circ}\text{C}$	-40~+85
1-9	Weight	g	2.0
1-10	Housing Material	NORYL	
1-11	Lead Pin Material	Red Copper (DSn)	

\* Value Applying at Rated Voltage (resonant frequency, 1/2 duty, square wave)

		11.05.03	ZhuYu	Shi Cong	Wang Xue Wen
Issue No	Description	Date	Issue	Check	Approval

# SPECIFICATIONS

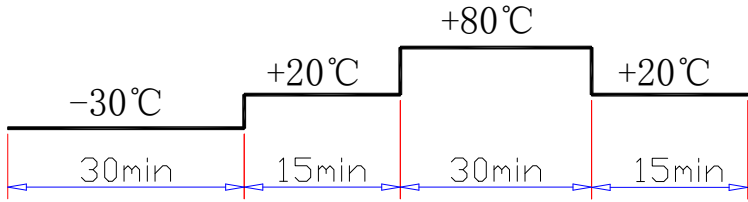
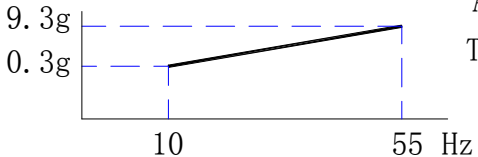
Model No.

TRS16B06

Page

2/5

## 2.ENVIRONMENTAL TEST

	Item	Specifications
2-1	Storage in High temp.	Storage in $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ test box for 240 hours, then expose to the room temperature for 2 hours without applying power.
2-2	Storage in Lower temp.	Storage in $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ test box for 240 hours, then expose to the room temperature for 2 hours without applying power.
2-3	Storage in Humidity	Storage in $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 90-95%RH test box for 96 hours, then expose to the room temperature for 2 hours without applying power.
2-4	Thermal cycle test.	 <p>Make this test for 5 cycles without applying power, then expose to the room temperature for 2 hours.</p>
2-5	Vibration test	 <p>Amplitude: 1.5mm Time : 1min/axis</p> <p>Make this test for the directions of X, Y, Z for 2 hours each (total 6 hours).</p>
2-6	Drop test	Free drop a unit from the height 100cm to the surface of 10mm thick board, three directions(X, Y, Z).
2-7	Solderability test	Soldering temp.: $260 \pm 5^{\circ}\text{C}$ Heat applying time: $3 \pm 0.5\text{sec}$ .

PASS CRITERION :

After these tests , the change of S.P.L shall be within  $\pm 5\text{ dB}$  .

		11.05.03	ZhuYu	ShiCong	WangXueWen
Issue No	Description	Date	Issue	Check	Approval

SPECIFICATIONS	Model No.	TRS16B06
	Page	3/5

### 3.MEASURING METHOD(BUZZER MODE)

#### 3-1 .Test Condition

##### 3-1-1.STANDARD

Temperature :  $25 \pm 3^{\circ}\text{C}$

Relative humidity : 60% ~ 70%,

Atmospheric pressure : 860mbar to 1060mbar

##### 3-1-2.JUDGEMENT

Temperature :  $15 \sim 35^{\circ}\text{C}$

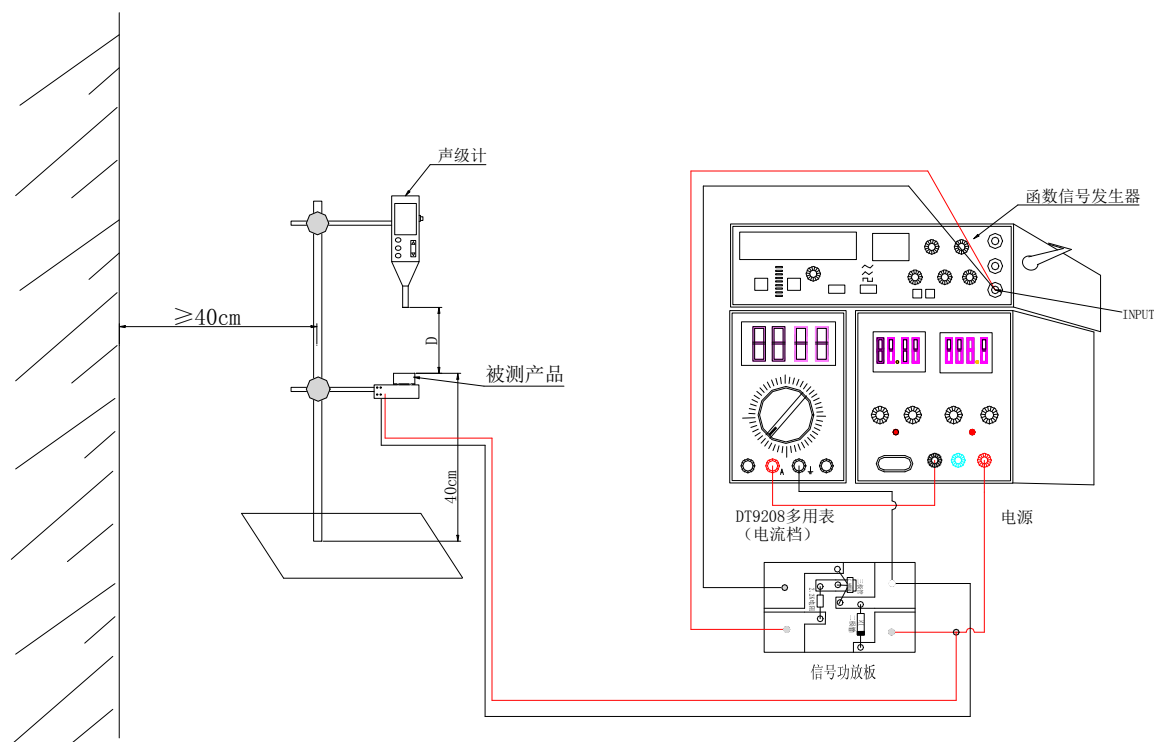
Relative humidity : 45% ~ 85%,

Atmospheric pressure : 860mbar to 1060mbar.

#### 3-2 . Standard Test Fixture

1.rated Voltage(Square wave):6V

2.Resonant Frequency:2048Hz



		11.05.03	ZhuYu	ShiCong	WangXueWen
Issue No	Description	Date	Issue	Check	Approval

# SPECIFICATIONS

Model No.

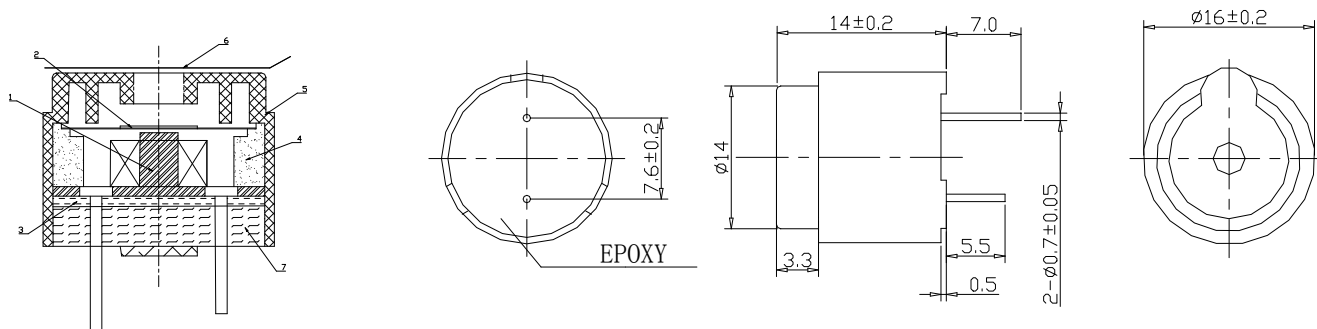
TRS16B06

Page

4/5

## 5.DIMENSIONS

Unless otherwise specified, tolerance:  $\pm 0.5$ (unit:mm)



Cadmium(Cd)/Cndmium Compounds	$\leq 100\text{ppm}$
Lead (Pb) / Lead Compounds	$\leq 800\text{ppm}$
Mercury (Hg) Merrcury Compounds	$\leq 800\text{ppm}$
Hexavalent-Chromium (Cr6+) Compounds	$\leq 800\text{ppm}$
PBB	$\leq 800\text{ppm}$
PBDE	$\leq 800\text{ppm}$

- 1) All parts must be meet to ROHS.
- 2) Wave solder and wash allowed.

Part No.	Part Name	Q'TY	Material	Remark
7	Potting		Exopy	
6	Masking label	1	Paper	
5	Housing	1	Noryl	
4	Magetism	1	Ferrite	
3	PCB	1	Exopy	
2	Diaphragm	1	Iron	
1	Coil Part	1	Copper And Iron	

		11.05.03	ZhuYu	ShiCong	WangXueWen
Issue No	Description	Date	Issue	Check	Approval

# SPECIFICATIONS

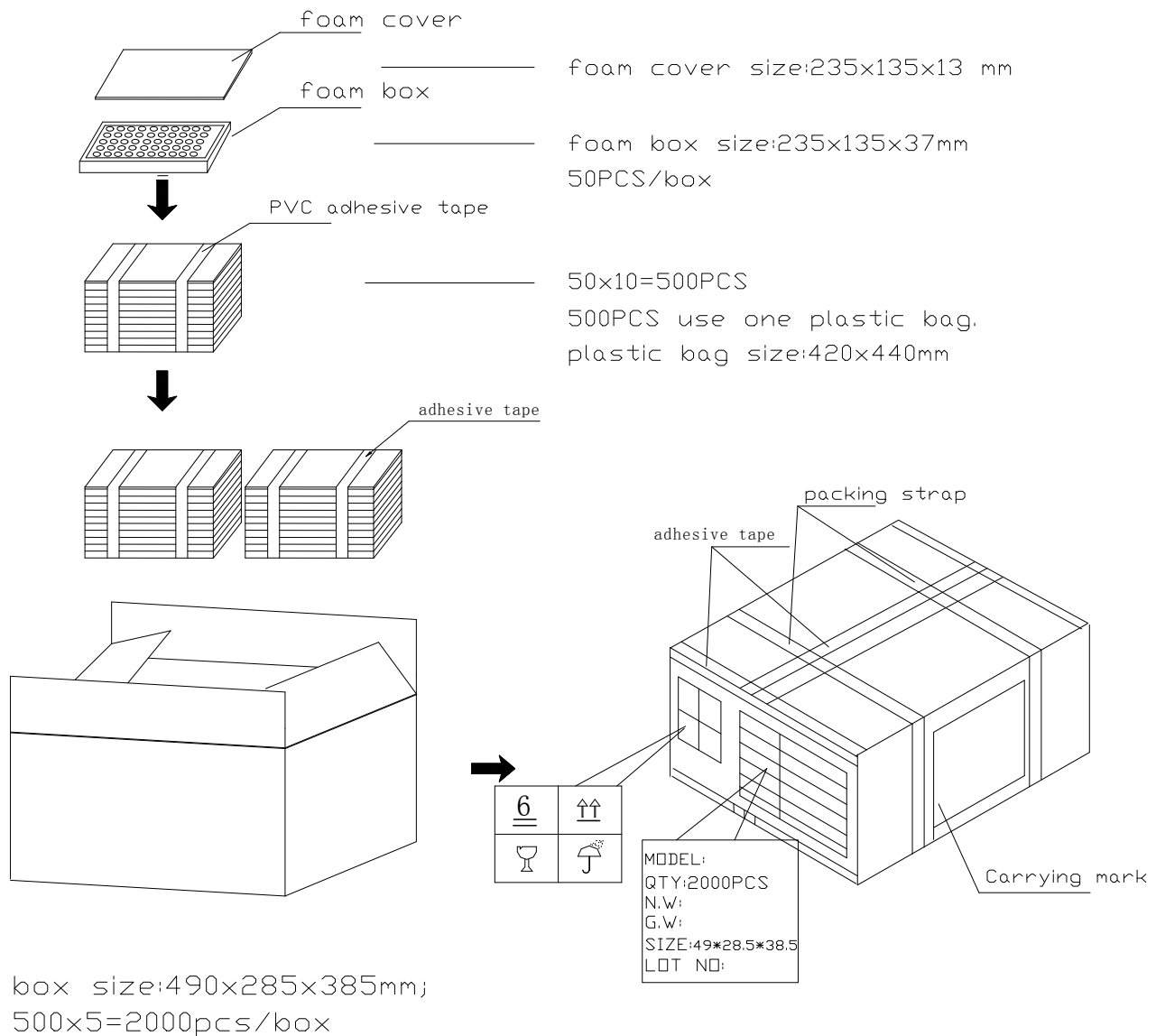
Model No.

TRS16B06


Page

5/5

## 7.PACKING



		11.05.03	ZhuYu	ShiCong	WangXueWen
Issue No	Description	Date	Issue	Check	Approval

	DATE	12-04-12	SPECIFICATION
	PAGE	1/6	
	MODEL NAME: TRS16B12		

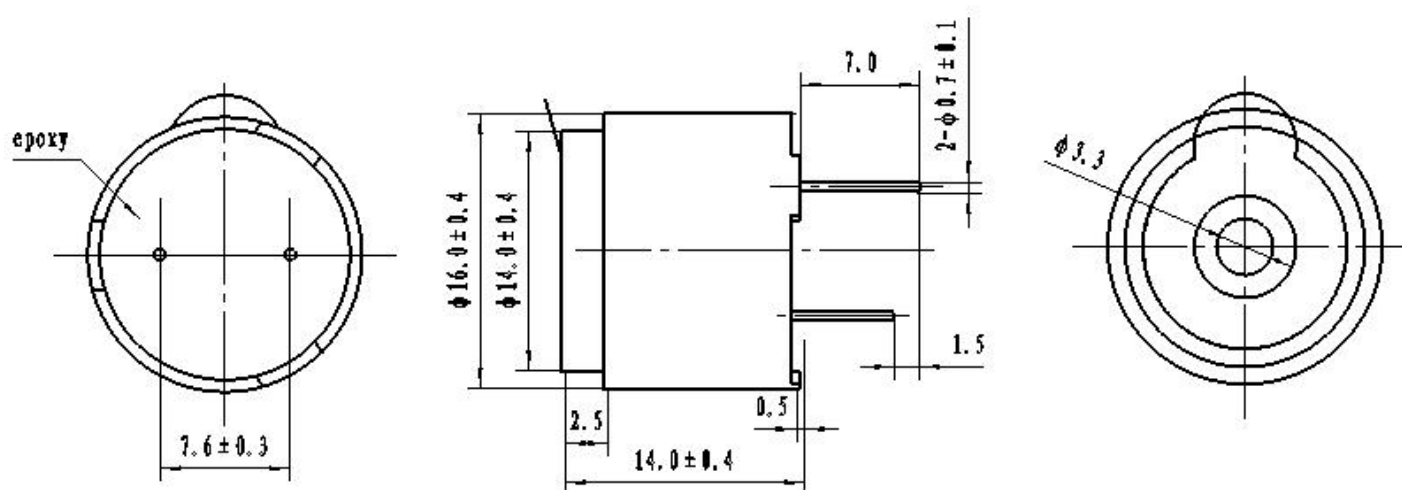
## ELECTRO-MAGNETIC TRANSDUCER

1	Rated Voltage (V)	12
2	Operating Voltage (V)	7~15
3	Coil Resistance ( $\Omega$ )	$115 \pm 16$
4	*Sound Output at 10cm (dB)	$\geq 90$
5	*Current Consumption (mA)	$\leq 40$
6	Resonant Frequency (Hz)	2048
7	Operating Temperature (°C)	-20~+70
8	Storage Temperature (°C)	-30~+75
9	Weight (g)	4.6


\*Applying rated voltage (Resonant frequency, 1/2 duty, Square wave)

### DIMENSIONS (UNIT: mm)

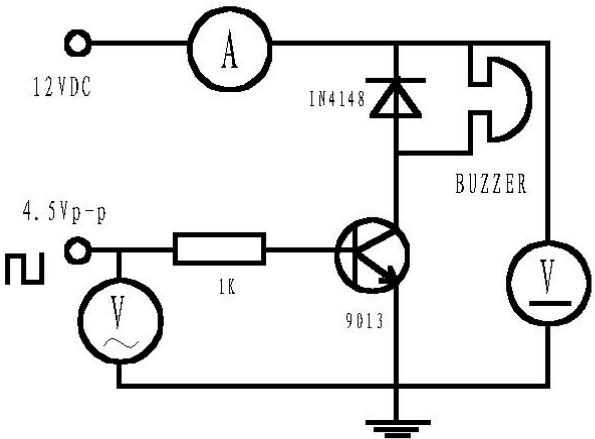
Tolerance:  $\pm 0.5\text{mm}$  Except Specified



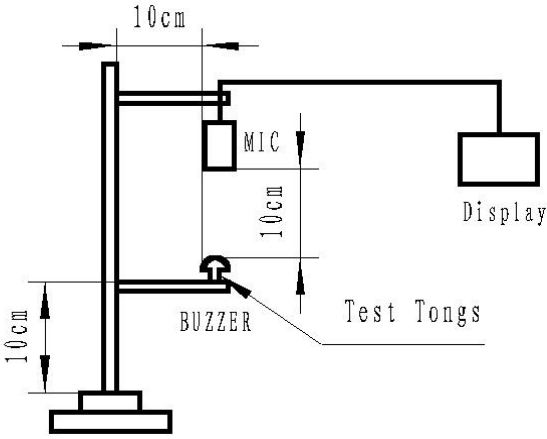
\*Housing Material: PPO

	DATE	12-04-12	SPECIFICATION
	PAGE	1/6	
	MODEL NAME: TRS16B12		

### TEST METHOD:

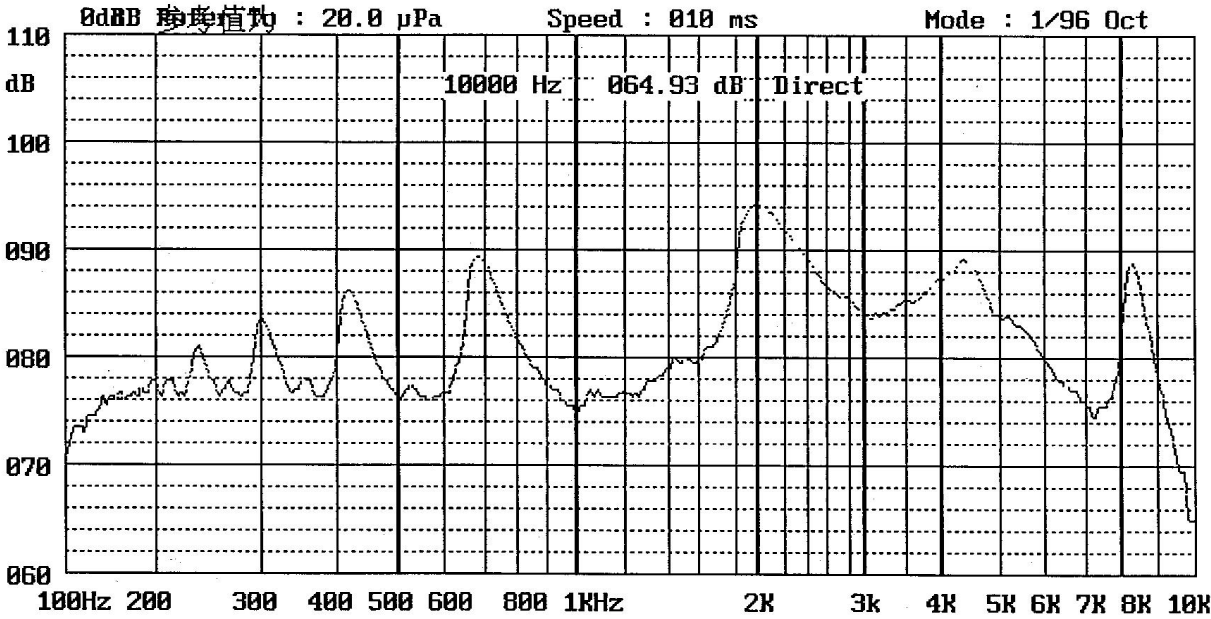



Test Circuit



Test Equip


### FREQUENCY RESPONSE:



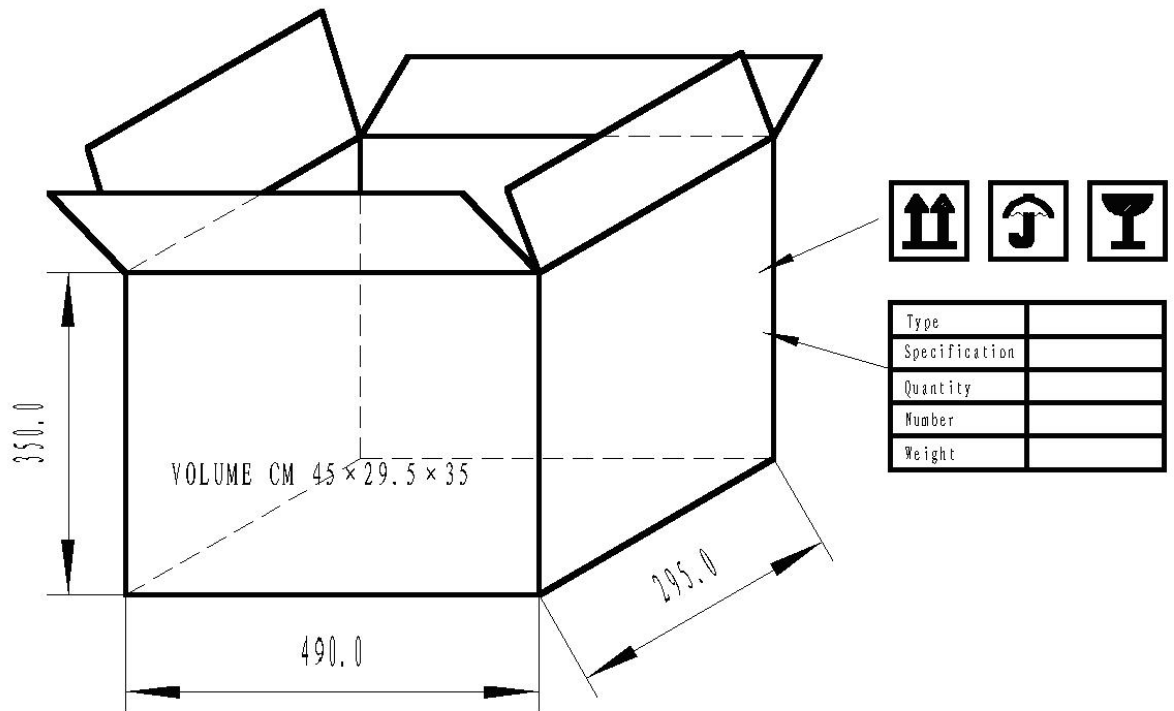
	DATE	12-04-12	SPECIFICATION
	PAGE	1/6	
	MODEL NAME: TRS16B12		

### RELIABLY TEST:

NO.	ITEM	TESTING CONDITION	VARIANCE AFTER TEST
1	Humidity	$40 \pm 2^{\circ}\text{C}$ , 93(+2/-3)%RH, 96HRS	All specifications must be satisfied after the test.
2	High temp.	$+75 \pm 2^{\circ}\text{C}$ , 96HRS	
3	Low temp.	$-30 \pm 2^{\circ}\text{C}$ , 96HRS	
4	Temperature Cycling	$-30 \pm 2^{\circ}\text{C}$ , 30minutes room temp. 15 minutes $+75 \pm 2^{\circ}\text{C}$ , 30 minutes room temp. 15 minutes 5 cycles	
5	Drop test	3 times from height of 70cm onto the surface of 10mm thick wooden board.	
6	Vibration test	Make the test for the directions of X Y and Z (total 0.5 hours). To-and-fro. sweep time (from 10 to 55 Hz and then from 55 to 10Hz ) under single amplitude of 1.0mm is 1 minute.	
7	Solder heat resistance	The part leads (pins) shall be immersed in molten solder maintained at $250 \pm 10^{\circ}\text{C}$ for a period of 30 seconds.	After the test part shall meet specifications without any degradation in appearance and performance.

	DATE	12-04-12	<b>SPECIFICATION</b>
	PAGE	1/6	
	<i>MODEL NAME: TRS16B12</i>		

### PACKING:



### NOTES:

- 1.50 PCS per box
- 2.Total 40 boxes per carton
- 3.Total 2000 PCS carton
- 4.Volume:49 × 29.5 × 35cm