

产品承认书 SPECIFICATION

| | |
|-----------------|--------------|
| 客户名称 CUSTOMER | |
| 产品名称 PRODUCTION | 超声波传感器 |
| 产品型号 MODEL | SY-US-18BRTD |
| 版本号 VERSION NO | A2.0 |

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广东赛亚传感股份有限公司

A. SCOPE

This specification applies Ultrasonic Sensor SY-US-18BRTD

B. Features

High S.P.L. and high sensitivity; Compact size ; Very thin ; Open type structure; Automatic soldering.

C. Applications

Object detection; Measuring the distance; Dynamic body detection

D. Overview

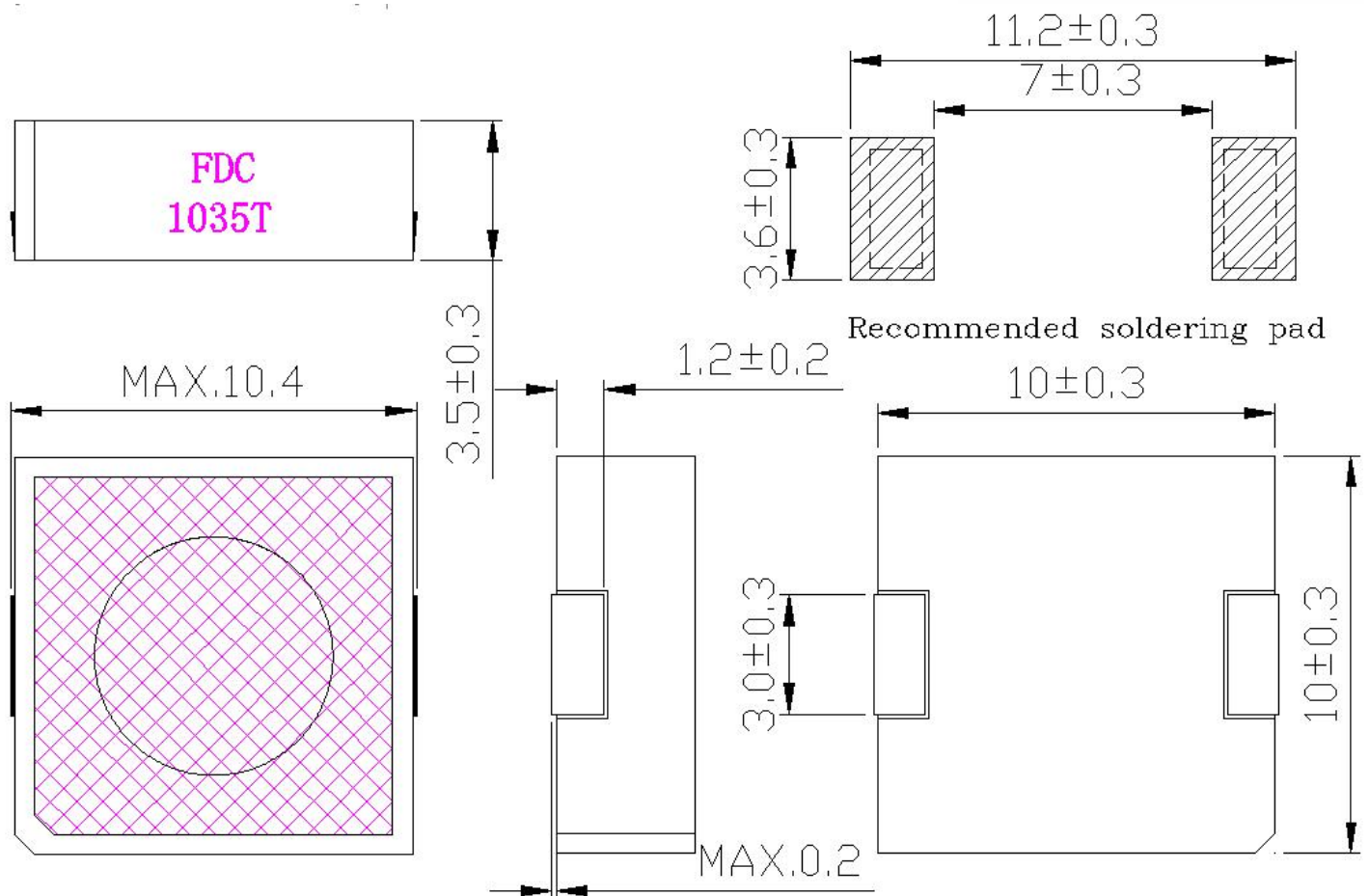
SY-US-18BR/SY-US-18BD are ultrasonic transducer for various detections. SY-US-18BRTD is used to transmit ultrasonic waves. SY-US-18BRTD is used to receive them. SY-US-18BR/SY-US-18BD consist of piezoelectric ceramics, metal plate, resonator and resin case. Resonator has like a funnel shape to transmit ultrasonic waves which is generated by vibration of resonator to the air efficiently(or to concentrate ultrasonic waves from the air on the center of resonance). Sound pressure level(S.P.L.) is the most important characteristic for ultrasonic transducers. For example, in measuring distance application, high S.P.L. transducer enables to detect the further distance.

SY-US-18BR/SY-US-18BD cannot be used in outdoor applications because they are open type structure .And they cannot be used for automotive applications. We can support only for consumer applications.

E. SPECIFICATION

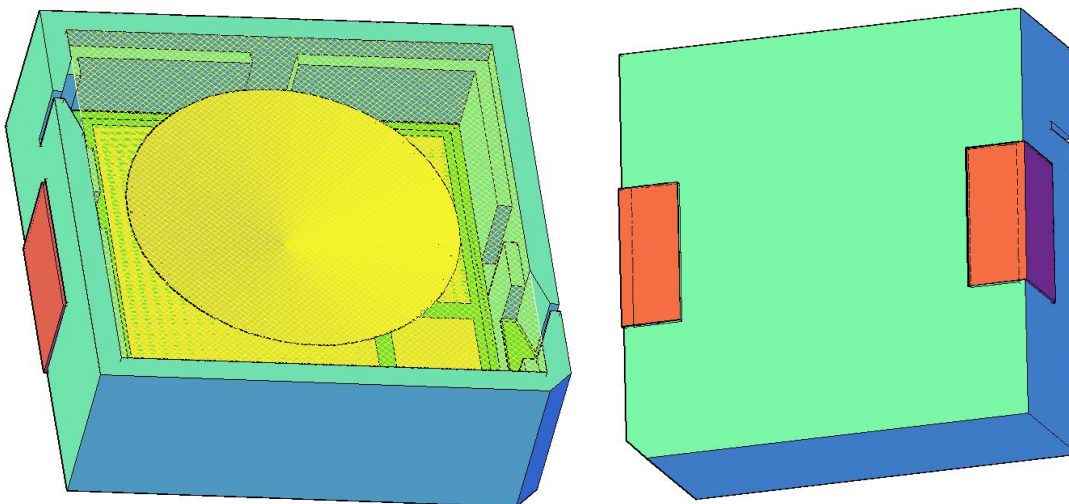
| No. | Item | Unit | specification | | |
|-----|-------------------------------------|------|---------------------------------|-------------|----------------------|
| | | | SY-US-18BR | SY-US-18BT | SY-US-18BD |
| 1 | Construction | | Open | | |
| 2 | Using method | | Receiver | Transmitter | Transmitter/Receiver |
| 3 | Nominal Frequency | Hz | 40.0±1K | | |
| 4 | Transmitting Sensitivity | dB | N/A | ≥105 | ≥105 |
| | | | at 40.0kHz/6Vp-p/15cm/0dB=20uPa | | |
| 5 | Receiving Sensitivity | dB | ≥-75 | N/A | ≥-75 |
| | | | at 40.0kHz/6Vp-p/15cm 0dB=1V/Pa | | |
| 6 | Directivity | deg | ±40° (80°, -6 dB) | | |
| 7 | Capacitance | pF | 12000±25%@1KHz | | |
| 8 | Allowable input voltage | Vrms | 30 Vrms @ 40KHz | | |
| 9 | Detectable range | m | 0.2-1.5 | | |
| 10 | Operating Temperature | ℃ | -30~ +80 | | |
| 11 | Storage Temperature | ℃ | -40 ~ +85 | | |
| 12 | Housing material | | LCP Plastic | | |
| 13 | Leading wire | | Tin Plated Brass(Sn) | | |
| 14 | Environmental Protection Regulation | | RoHS | | |

F. APPEARANCE DRAWING



Remark: T/Transmitter; R/Receiver; D/Transmitter/Receiver

Tol : ± 0.5 Unit: mm



G. TESTING METHOD

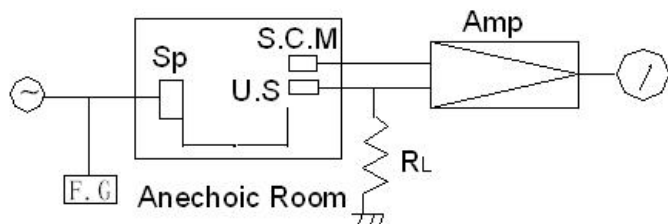
Standard Measurement conditions

Temperature: $25 \pm 2^\circ\text{C}$ Humidity: 45-65%

Acoustic Characteristics:

The oscillation frequency, current consumption and sound pressure are measured by the measuring instruments shown below

Receiver



RL: $3.9\text{K}\Omega$

U.S.: Ultrasonic Sensor

S.C.M.: Standard Capacitor Microphone

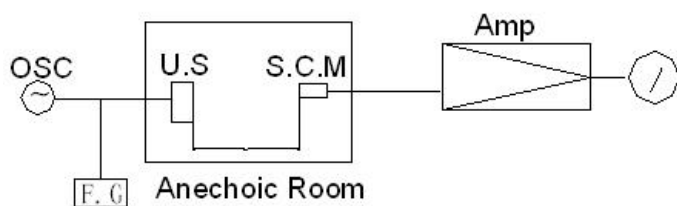
Amp.: Amplifier

OSC.: Oscillator

Sp.: Tweeter

F.C.: Frequency Counter

Transmitter



U.S.: Ultrasonic Sensor

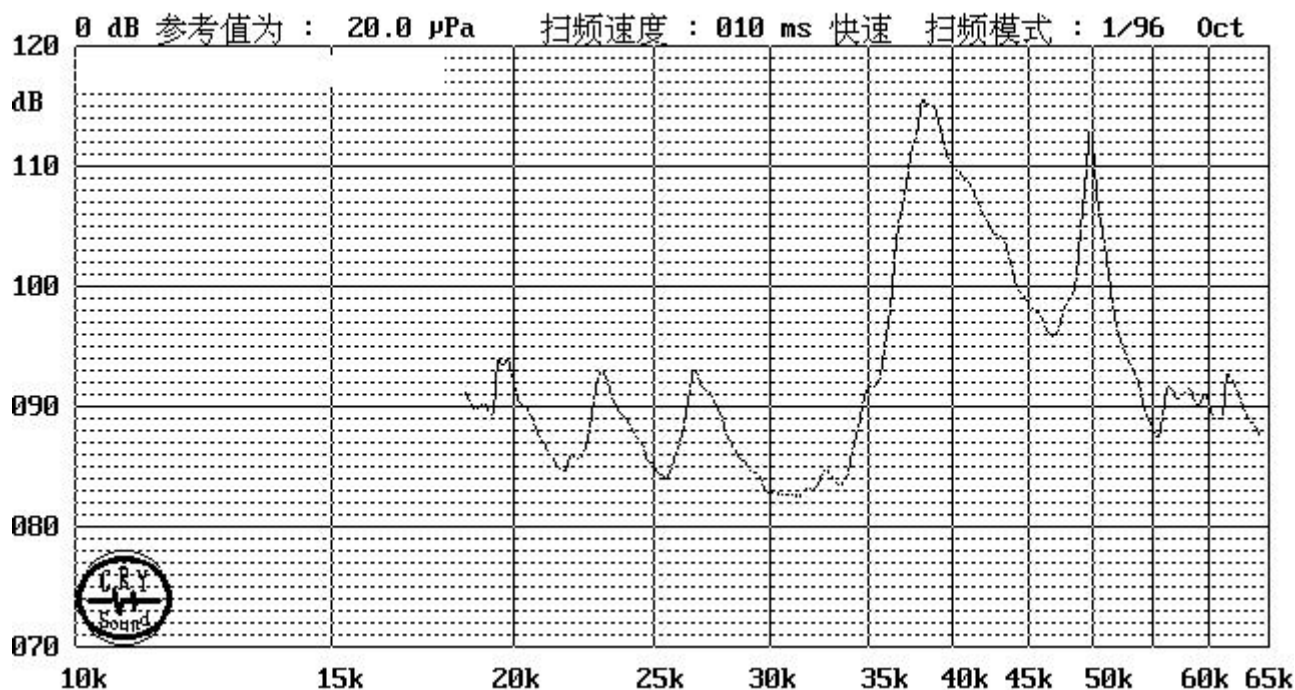
S.C.M.: Standard Capacitor Microphone

Amp.: Amplifier

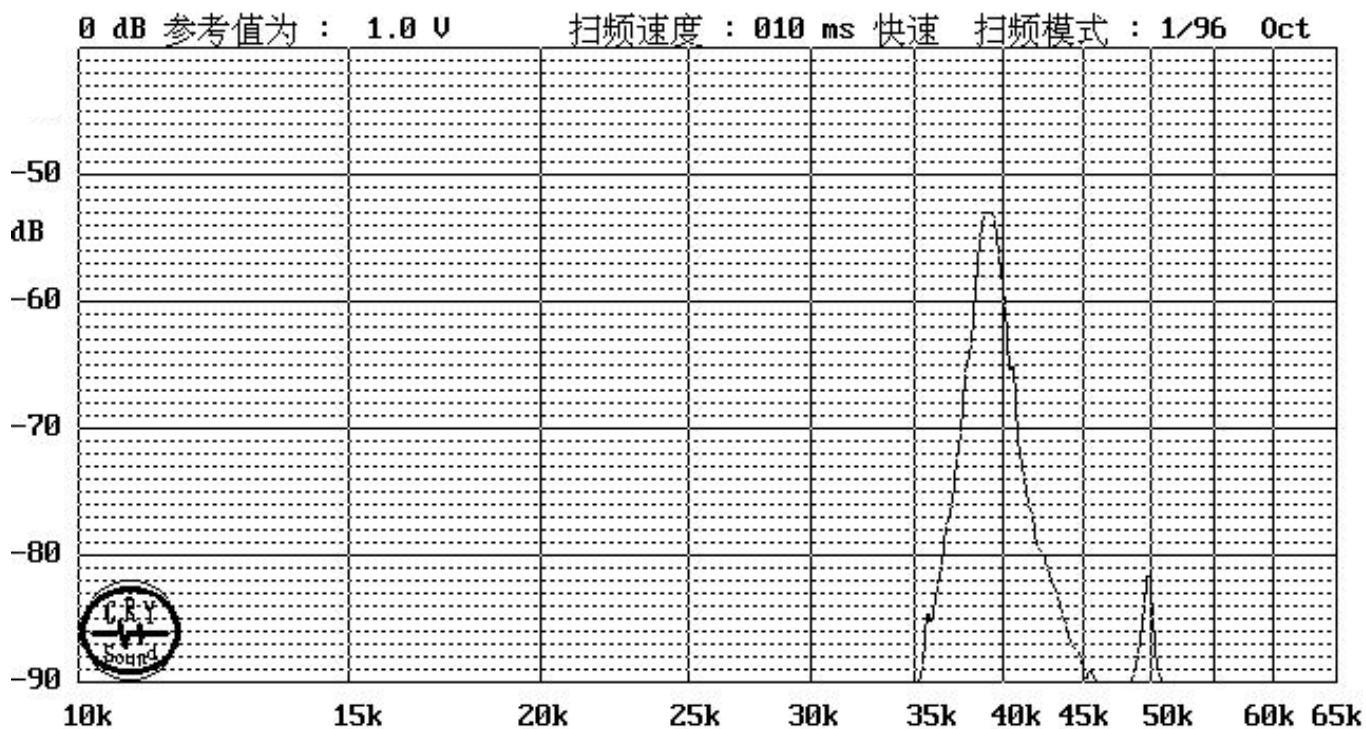
Input voltage: 10Vrms

F.C.: Frequency Counter

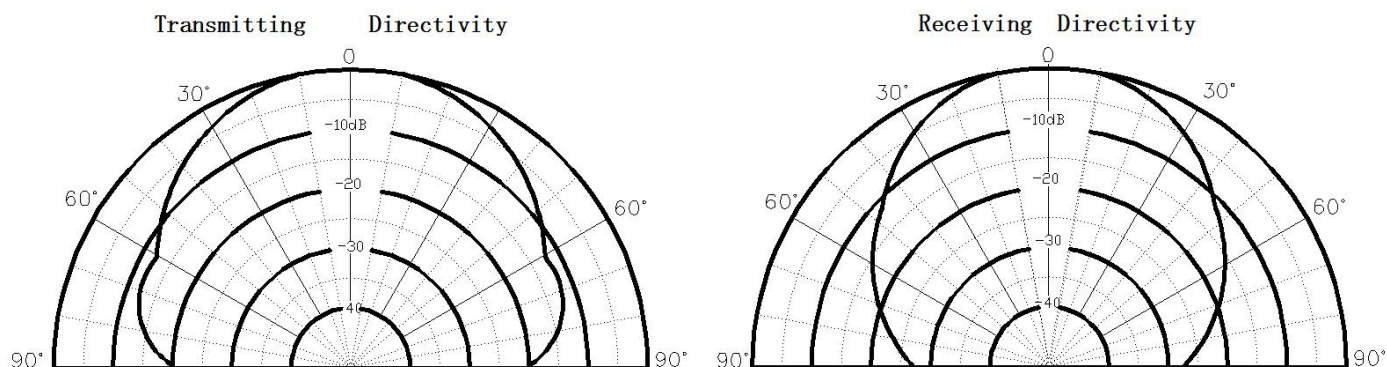
Frequency response characteristic of SPL



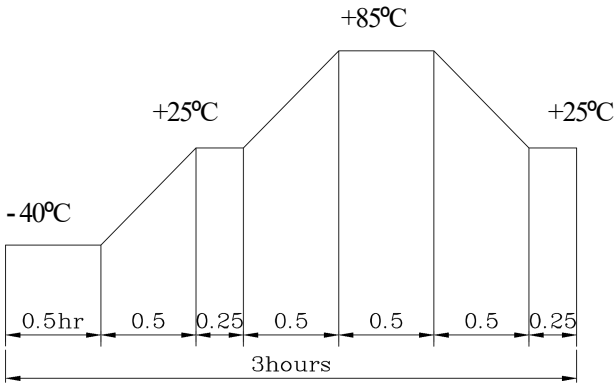
Frequency response characteristic of Sensitivity



Directivity



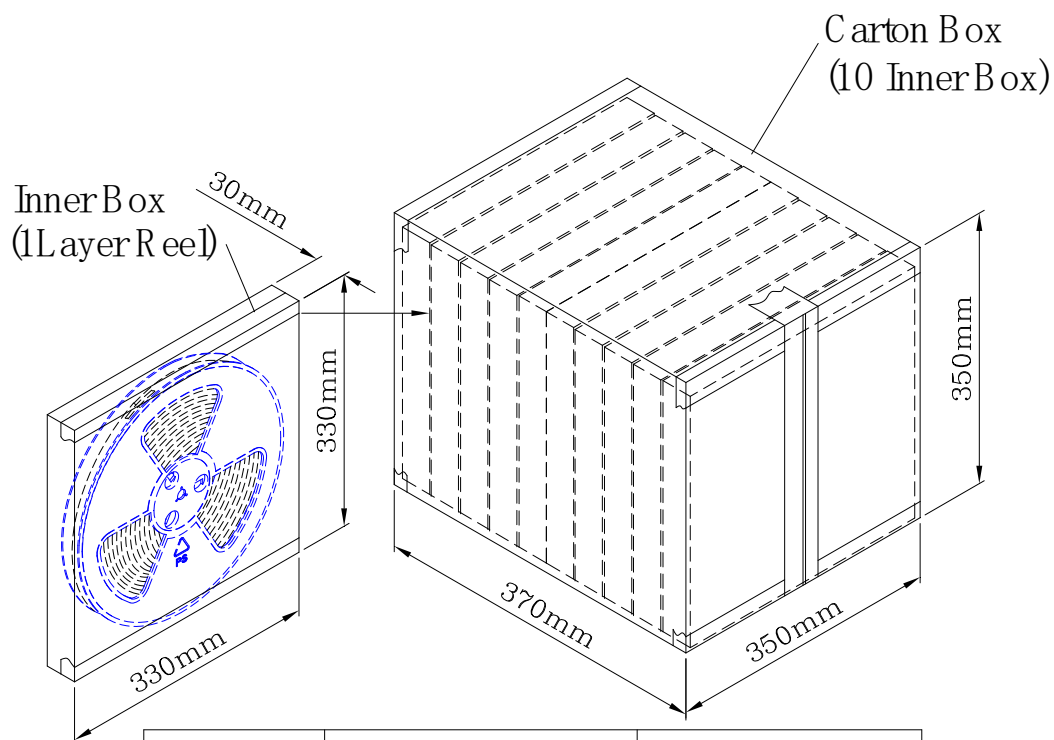
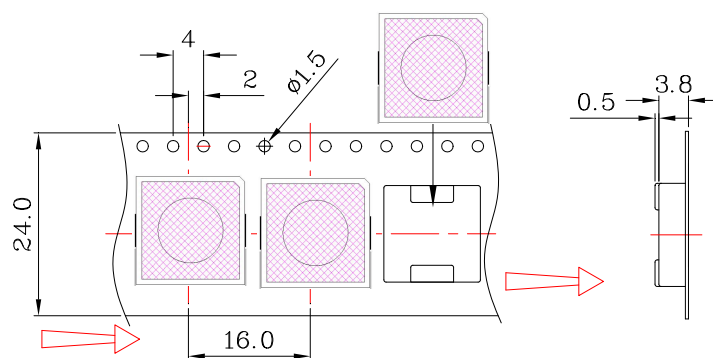
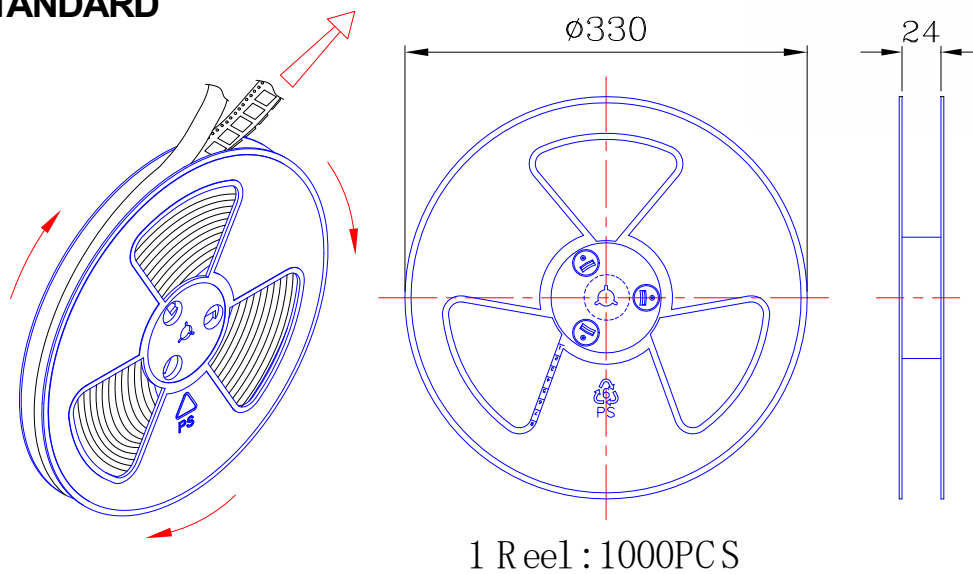
H. RELIABILITY TEST

| NO. | ITEM | TEST CONDITION AND REQUIREMENT |
|-----|---------------------------------|---|
| 1 | High Temperature Test (Storage) | After being placed in a chamber with $85\pm 2^{\circ}\text{C}$ for 100 hours and then being placed in normal condition for 2 hours. Allowable variation of SPL after test: $\pm 6\text{dB}$. |
| 2 | Low Temperature Test (Storage) | After being Placed in a chamber with $-40\pm 2^{\circ}\text{C}$ for 100 hours and then being placed in normal condition for 2 hours. Allowable variation of SPL after test: $\pm 6\text{dB}$. |
| 3 | Humidity Test | After being Placed in a chamber with 90-95% R.H. at $60\pm 2^{\circ}\text{C}$ for 100 hours and then being placed in normal condition for 2 hours. Allowable variation of SPL after test: $\pm 6\text{dB}$. |
| 4 | Temperature Cycle Test | <p>The part shall be subjected to 50cycles. One cycle shall be consist of:</p>  <p>Allowable variation of SPL after test: $\pm 6\text{dB}$.</p> |
| 5 | Drop Test | Drop on a hard wood board of 4cm thick, any directions ,6 times, at the height of 75cm . Allowable variation of SPL after test: $\pm 6\text{dB}$. |
| 6 | Vibration Test | After being applied vibration of amplitude of 1.5mm with 10 to 55 Hz band of vibration frequency to each of 3 perpendicular directions for 2 hours . Allowable variation of SPL after test: $\pm 6\text{dB}$. |
| 7 | Solderability Test | Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+260\pm 5^{\circ}\text{C}$ for 3 ± 1 seconds . 90% min. lead terminals shall be wet with solder (Except the edge of terminals). |
| 8 | Terminal Strength Pulling Test | The force of 9.8N(1.0kg) is applied to each terminal in axial direction for 10 seconds. No visible damage and cutting off. |

TEST CONDITION.

| | | | | |
|-------------------------|---|--|----------------------|----------------------------|
| Standard Test Condition | : | a) Temperature : $+5 \sim +35^{\circ}\text{C}$ | b) Humidity : 45-85% | c) Pressure : 860-1060mbar |
| 一般测试条件 | : | a) 温度 : $+5 \sim +35^{\circ}\text{C}$ | b) 湿度 : 45-85% | c) 气压 : 860-1060mbar |
| Judgment Test Condition | : | a) Temperature : $+25 \pm 2^{\circ}\text{C}$ | b) Humidity : 60-70% | c) Pressure : 860-1060mbar |
| 争议时测试条件 | : | a) 温度 : $+25 \pm 2^{\circ}\text{C}$ | b) 湿度 : 60-70% | c) 气压 : 860-1060mbar |

I. PACKING STANDARD



| | | |
|------------|-----------------------|----------------------|
| Inner Box | 330mm x 330mm x 30mm | 1x1000PCS=1000PCS |
| Carton Box | 350mm x 350mm x 370mm | 10x1000PCS=10,000PCS |