DATA SHEET

PT SERIES
PIEZO TRANSDUCERS

Externally-driven piezoelectric transducers with rich sound quality and low frequency response

Applications

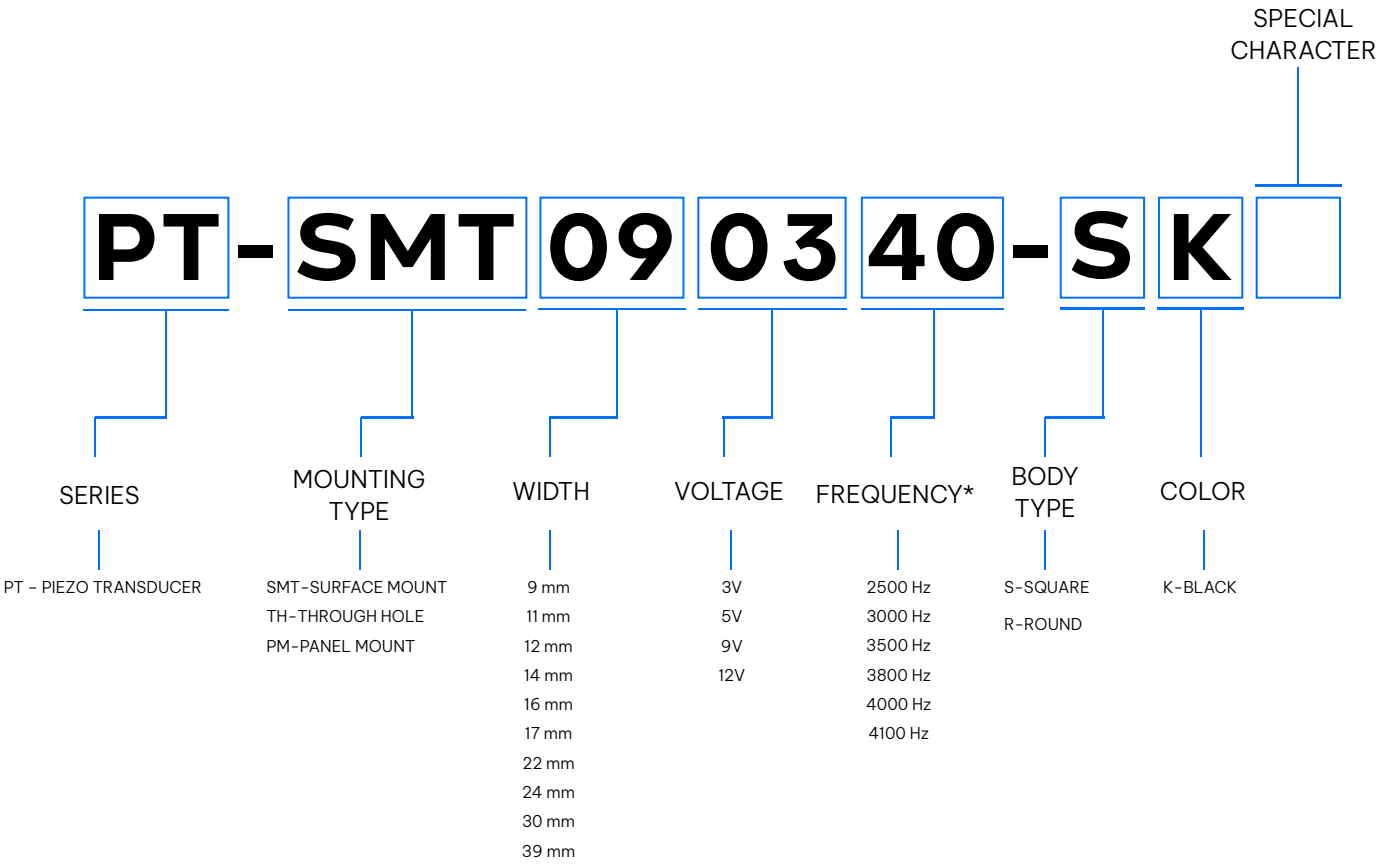
- Industrial
- Medical
- Automotive
- Automation & Controls
- Communications
- Robotics
- IoT
- Security Systems

Key Features

- External driving circuitry for flexible integration into existing designs
- Low-profile options
- Custom SPL (sound pressure level) capability
- High pitch tones, customization friendly
- Available sizes 9.0 to 39mm, round or square types
- SMD or Through-hole mounting options
- ROHS compliant

Ordering Data

SKU Offering



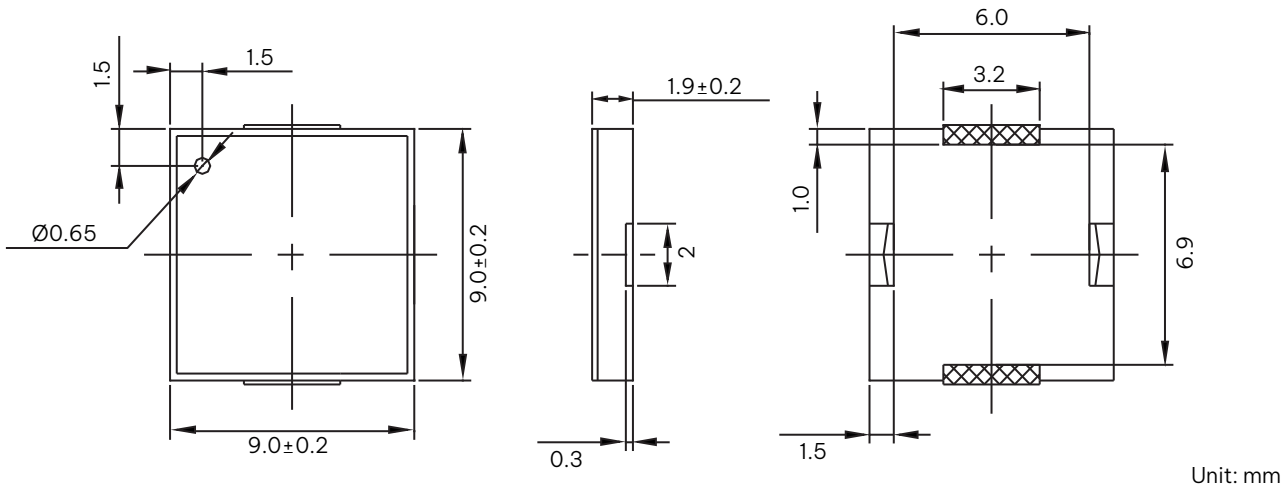
*The frequency is specified using a two-digit code. The code represents the frequency value in hundreds of Hertz (×100 Hz). Unless otherwise stated, all frequency codes follow this convention.

Ordering Data

Part Number	Mounting Type	Width	Voltage	Frecuency (Hz)	Body Type	Color	Page
PT-SMT09-0340-SK	Surface Mount	9.0mm x 9.0mm	3V	4000	Square	Black	**4**
PT-SMT11-0541-SK	Surface Mount	11.06mm x 9.0mm	5V	4100	Square	Black	**5**
PT-SMT12-0541-SK	Surface Mount	12.8mm x 12.8mm	5V	4100	Square	Black	**6**
PT-TH30-1225-RK	Through Hole	30mm	12V	2500 ± 500	Round	Black	**7**
PT-PM30-0530-RK	Panel Mount, Flange	30mm	5V	2500 ± 500	Round	Black	**8**
PT-TH24-0530-RK	Through Hole	24mm	5V	3000± 500	Round	Black	**9**
PT-TH39-0934-RK	Through Hole	39mm	9V	3500 ± 500	Round	Black	**10**
PT-PM24-0538-RK	Panel Mount, Flange	24mm	5V	3800 ± 500	Round	Black	**11**
PT-TH14-0540-RK	Through Hole	14mm	5V	4000 ± 500	Round	Black	**12**
PT-TH12-0540-RK	Through Hole	12.6mm	5V	4000 ± 500	Round	Black	**13**
PT-TH17-0540-RK	Through Hole	17mm	5V	4000 ± 500	Round	Black	**14**
PT-TH22-0540-RK	Through Hole	22mm	5V	4000 ± 500	Round	Black	**15**
PT-SMT12-0340-SK	Surface Mount	12mm x 12mm	3V	4000 ± 500	Square	Black	**16**
PT-SMT16-0340-SK	Surface Mount	16.0mm x 16.0mm	3V	4000 ± 500	Square	Black	**17**
PT-PM30-0545-RK	Panel Mount, Flange	30mm	5V	4000 ± 500	Round	Black	**18**

Product Dimensions

PT-SMT09-0340-SK



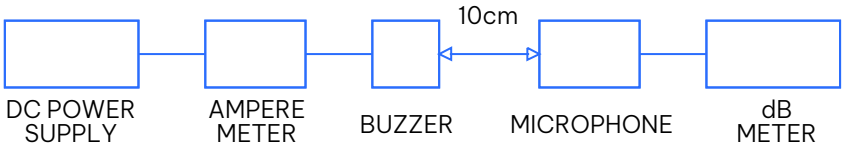
Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000
Operating Voltage (Vo-p/max)	1-25
Rated Voltage (Vo-p)	3.0
Current Consumption (mA/max)	1 at Rated Voltage
Current Consumption (mA/max)	5 at 12Vo-p
Sound Pressure Level (dB/min)	70 at 10cm at Rated Voltage
Sound Pressure Level (dB/min)	78 at 10cm at 12Vo-p
Capacitance (pF)	12,000±30%
Operating Temperature (°C)	-40 ~ +85
Storage Temperature (°C)	-40 ~ +85
Condition by reflow soldering (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

Material	
Housing	LCP plastic resin (Color : Black)
Leading Pin	Brass (DSn)
Weight (Gram)	0.2

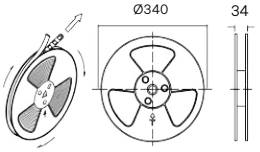
Testing Method

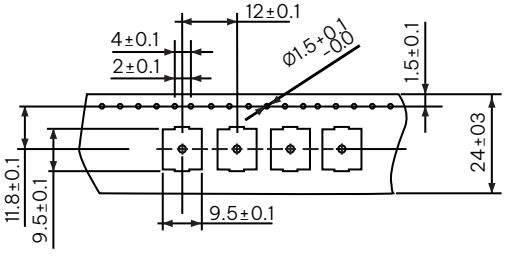
- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Package Method

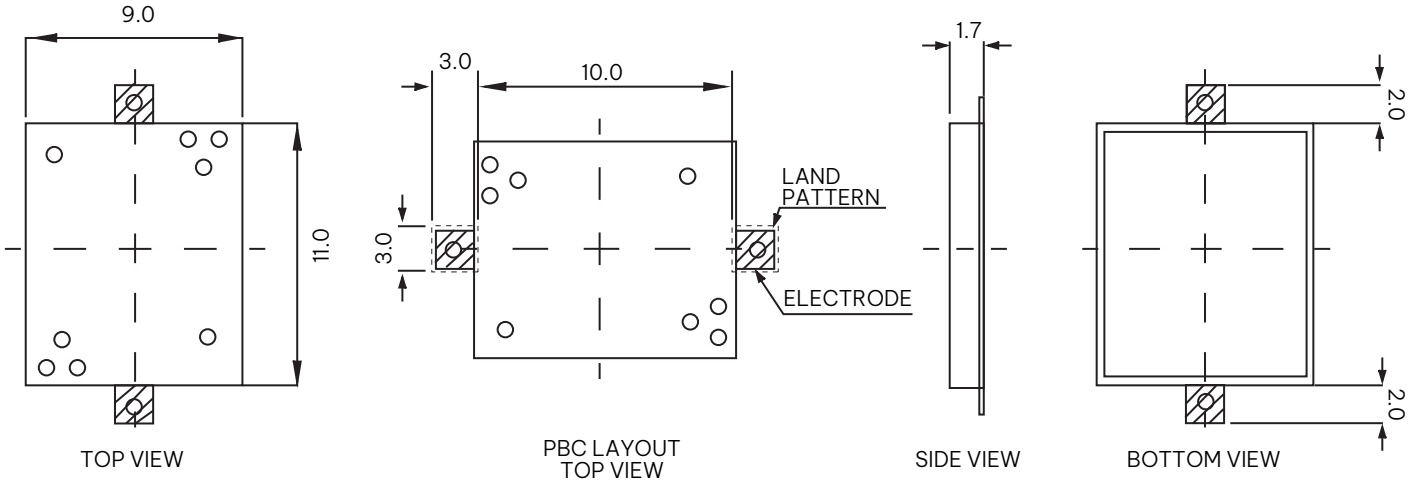
1000pcs per tape reel





Product Dimensions

PT-SMT11-0541-SK

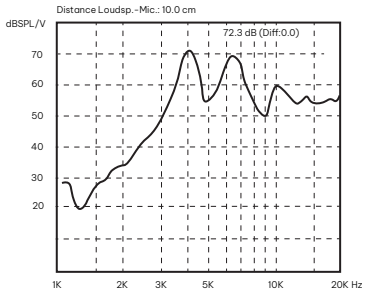


Unit: mm Tol: ±0.5

Electrical Characteristics	
Resonant Frequency (Hz)	4100
Operating Voltage (Vo-p/max)	25
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	3.5 at Rated Voltage
Sound Pressure Level (dB/min)	65 at 10cm at Rated Voltage
Capacitance (pF)	12,000±30% at 1000 Hz/1V
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80
Condition by reflow soldering (°C)	235°C / within 5sec
Condition by hand (°C)	350°C / within 5sec

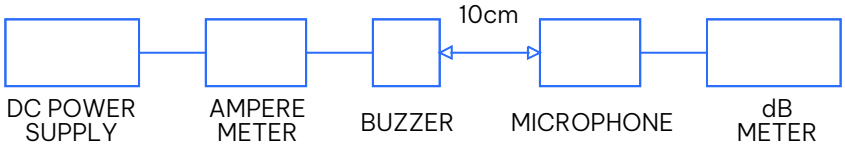
Material	
Housing	LCP plastic resin (Color : Black)
Weight (Gram)	0.2

Typical Frecuency Response Curve



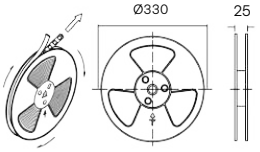
Testing Method

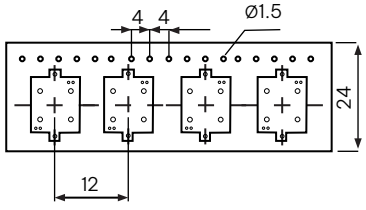
- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Package Method

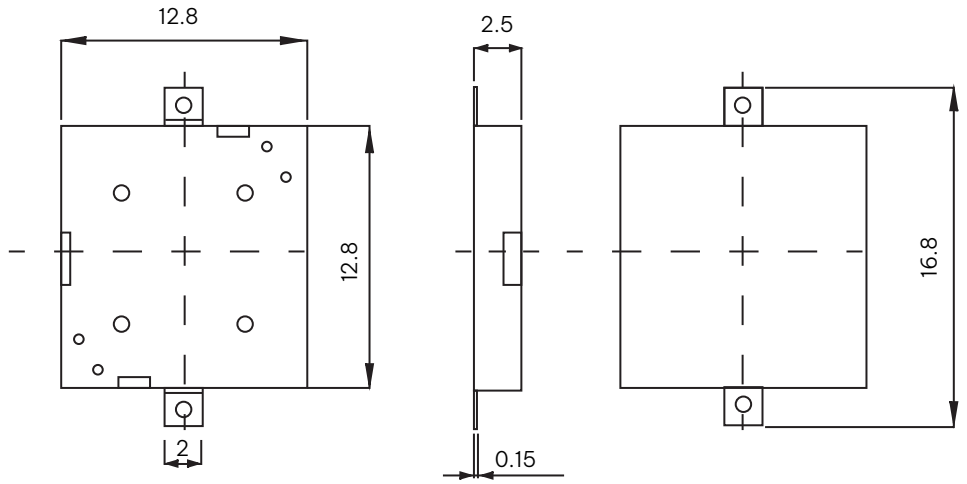
1000pcs per tape reel





Product Dimensions

PT-SMT12-0541-SK

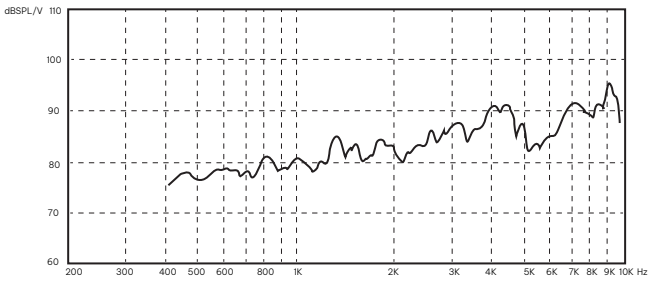


Unit: mm Tol:±0.3

Electrical Characteristics	
Resonant Frequency (Hz)	4100
Operating Voltage (Vo-p)	1 ~ 25
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	5 at rated Voltage (Continuous)
Sound Pressure Level (dB/min)	80 at 10cm at Rated Voltage
Operating Temperature (°C)	-20 ~ +60
Storage Temperature (°C)	-30 ~ +80
Condition by wave (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

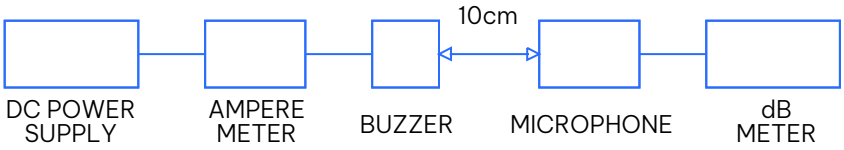
Material	
Housing	LCP (Color : Black)
Leading Pin	H62
Weight (Gram)	0.4

Typical Frecuency Response Curve



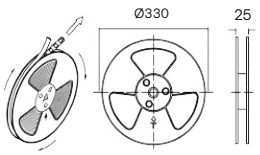
Testing Method

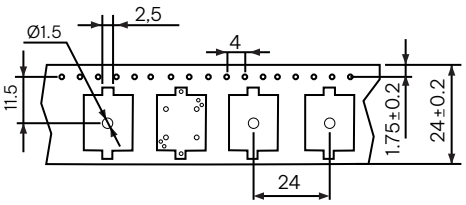
- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Package Method

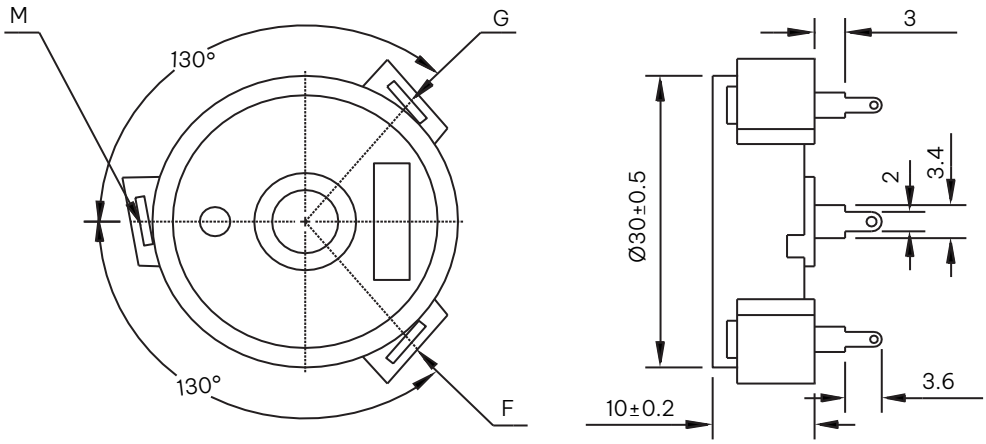
800pcs per tape reel





Product Dimensions

PT-TH30-1225-RK

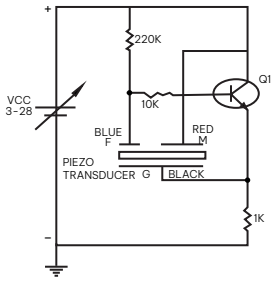


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	2500±500
Operating Voltage (Vdc/max)	3 ~ 28
Rated Voltage (Vdc)	12
Current Consumption (mA/max)	10 at Rated Voltage
Sound Pressure Level (dB/min)	85 at 30cm at Rated Voltage
Operating Temperature (°C)	-20 ~ +90
Storage Temperature (°C)	-30 ~ +100
Condition by reflow soldering (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

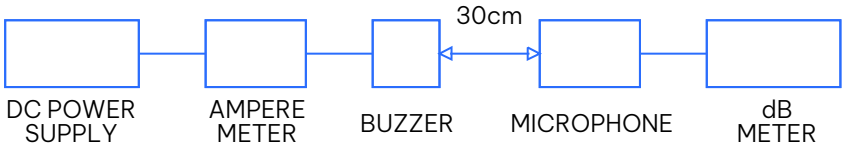
Material	
Housing	ABS plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	4.0

Recommended Driving Circuit



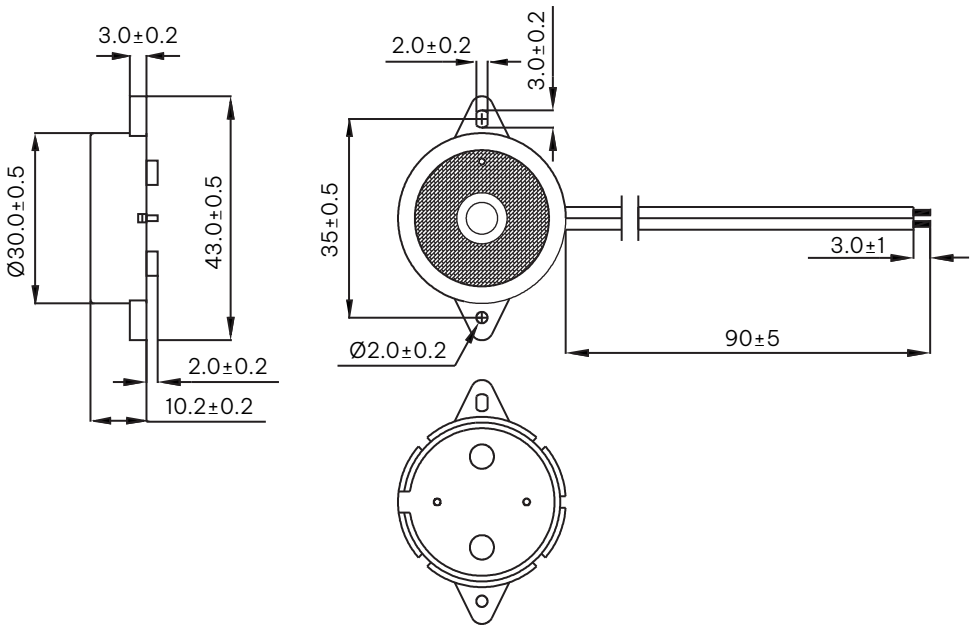
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-PM30-0530-RK

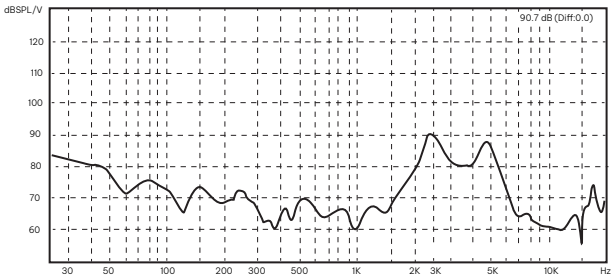


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	2500±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	1.5 at Rated Voltage
Sound Pressure Level (dB/min)	90 at 10cm at Rated Voltage
Capacitance (pF)	30,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80

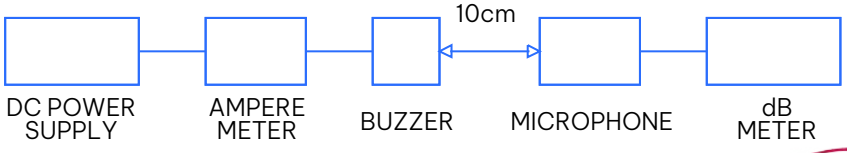
Material	
Housing	ABS plastic resin (Color : Black)
Leading Pin	28AWG (Red+Black)
Weight (Gram)	5

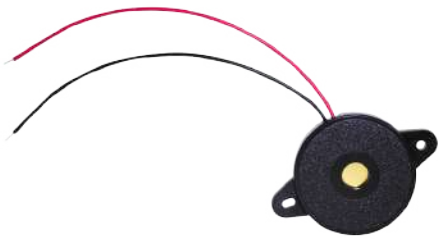
Typical Frecuency Response Curve



Testing Method

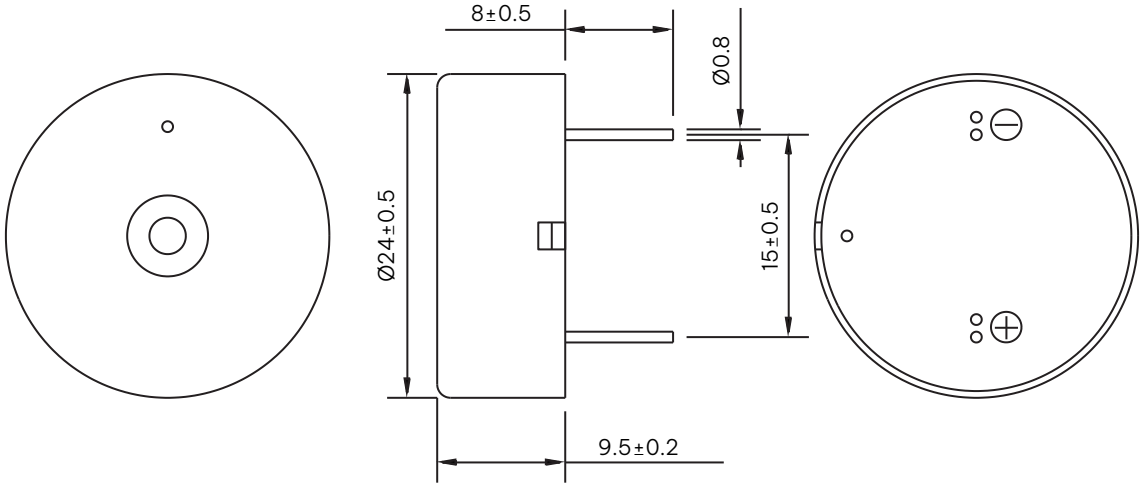
- **Standard Measurement conditions:** Temperature: 25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.





Product Dimensions

PT-TH24-0530-RK

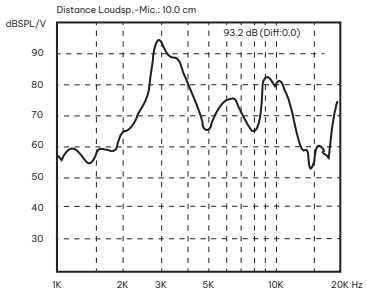


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	3000±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	5.0 at Rated Voltage
Sound Pressure Level (dB/min)	90 at 10cm at Rated Voltage
Capacitance (pF)	26,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +90
Storage Temperature (°C)	-30 ~ +100
Condition by wave (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±205°C / within 5sec

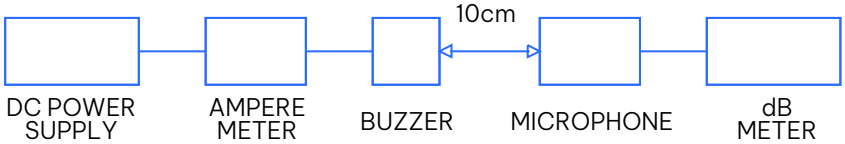
Material	
Housing	ABS plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	2.2

Typical Frecuency Response Curve



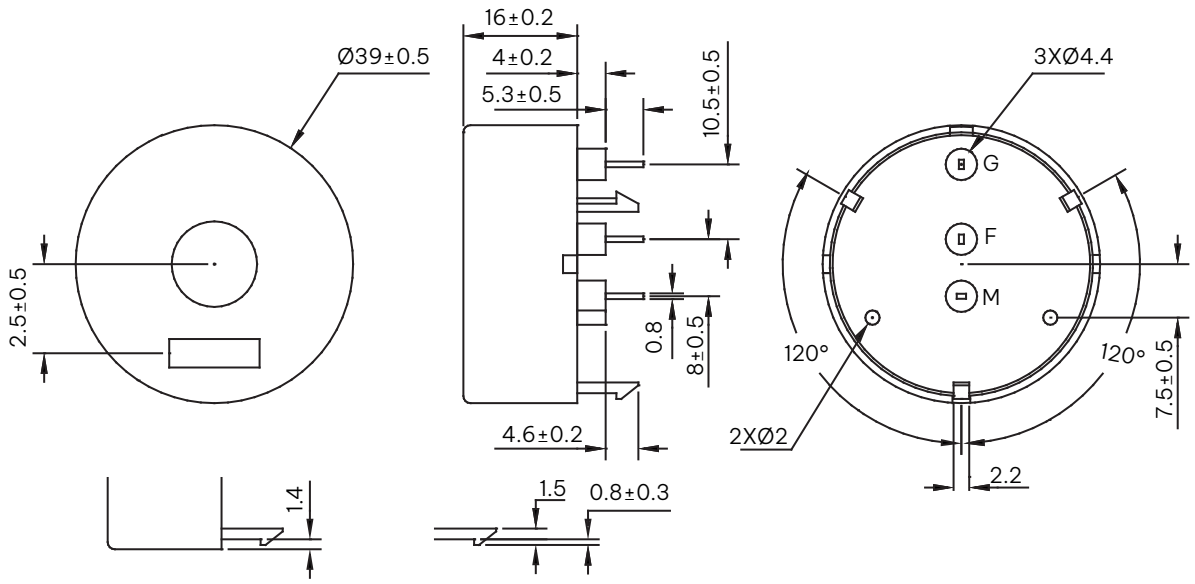
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-TH39-0934-RK

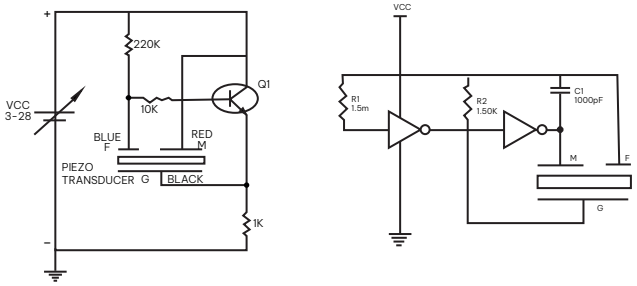


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	3400±500
Operating Voltage (Vo-p/max)	3 ~ 28
Rated Voltage (Vo-p)	9.0
Current Consumption (mA/max)	12 at Rated Voltage
Sound Pressure Level (dB/min)	105 at 10cm at Rated Voltage
Operating Temperature (°C)	-20 ~ +100
Storage Temperature (°C)	-30 ~ +110

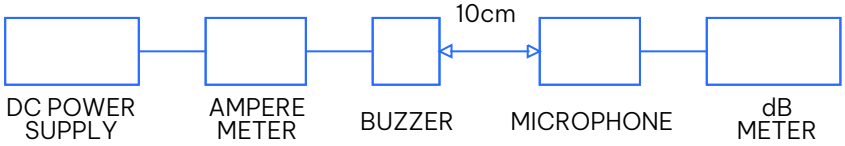
Material	
Housing	PC plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	12.0

Recommended Driving Circuit



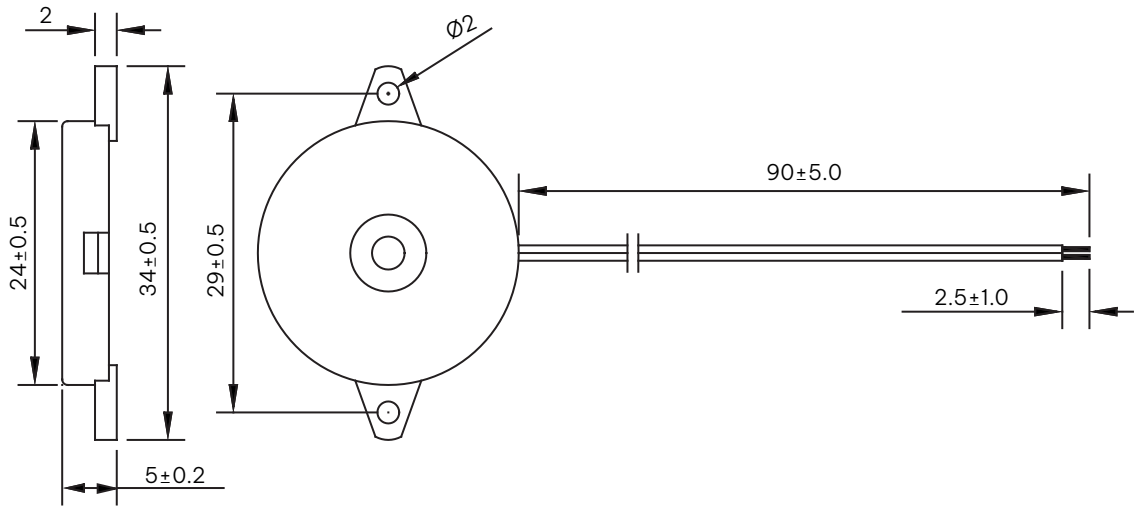
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-PM24-0538-RK

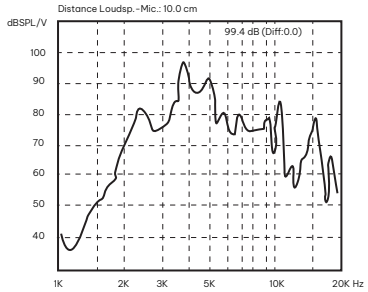


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	3800±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	5.0 at Rated Voltage
Sound Pressure Level (dB/min)	90 at 10cm at Rated Voltage
Capacitance (pF)	25,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80

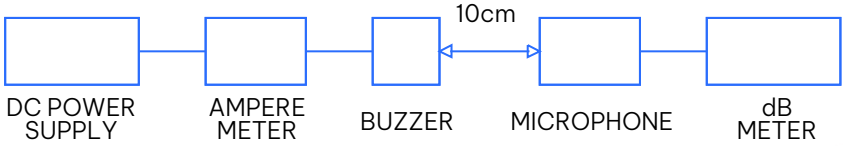
Material	
Housing	ABS plastic resin (Color : Black)
Leading Pin	32AWG
Weight (Gram)	2

Typical Frecuency Response Curve



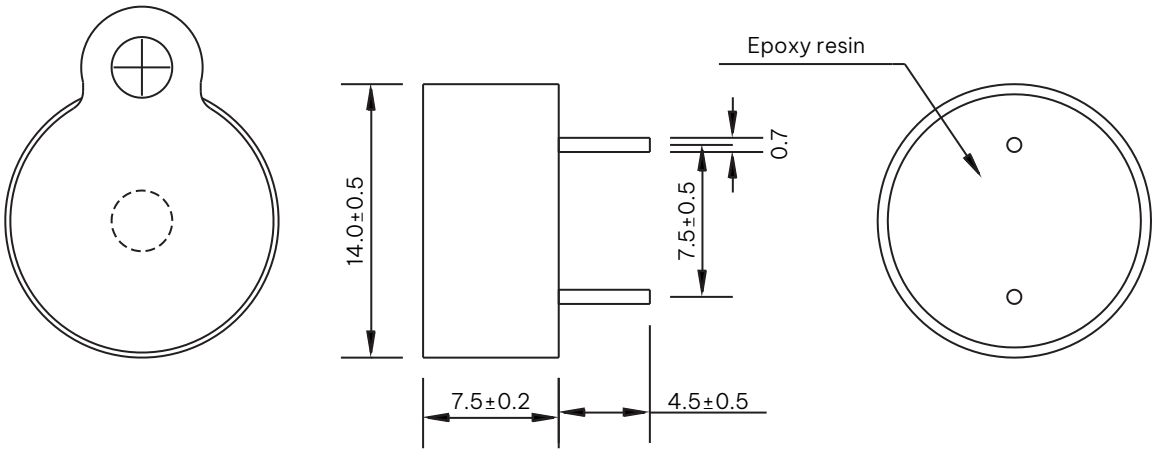
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-TH14-0540-RK

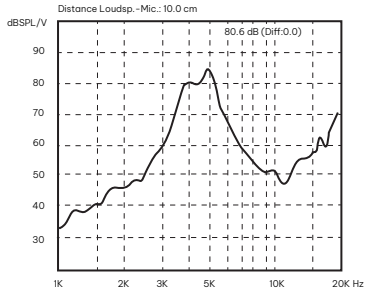


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	2.0 at Rated Voltage
Sound Pressure Level (dB/min)	80 at 10cm at Rated Voltage
Capacitance (pF)	17,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +100
Storage Temperature (°C)	-30 ~ +110
Condition by wave (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

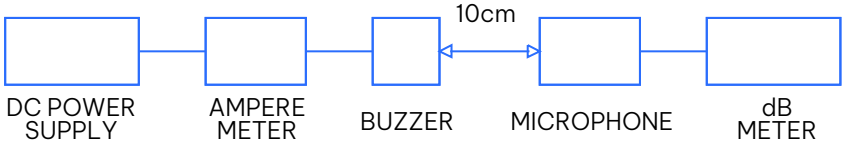
Material	
Housing	PBT plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	1.0

Typical Frecuency Response Curve



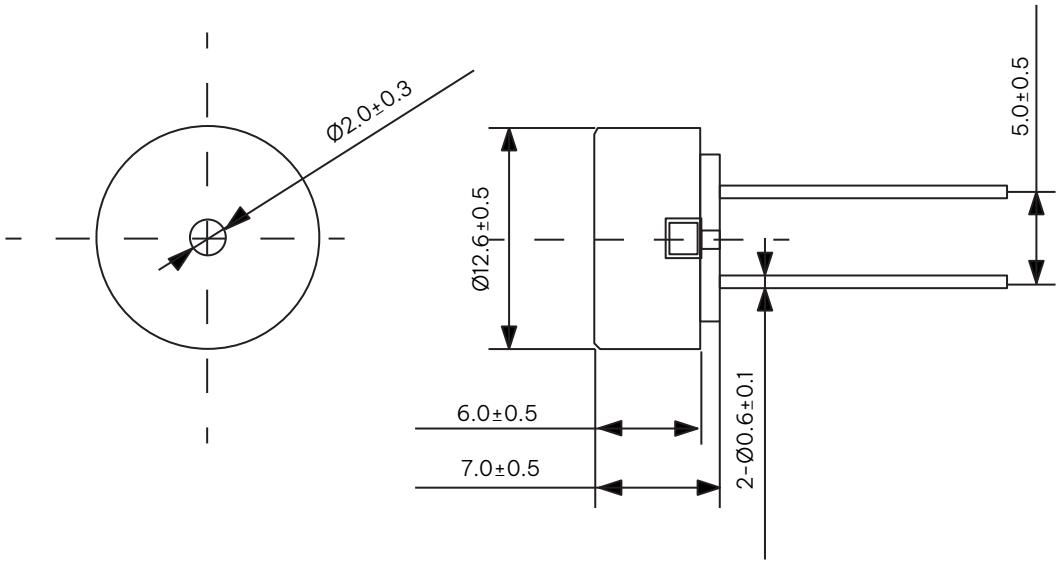
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-TH12-0540-RK



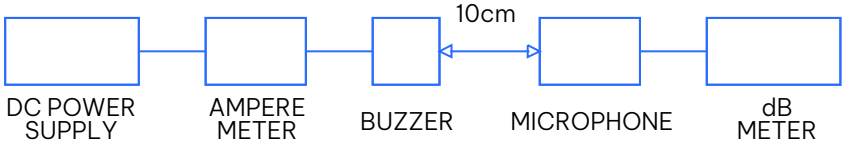
Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	1.0~30.0
Rated Voltage (Vo-p)	5.0
Sound Pressure Level (dB/min)	78 at 10cm at Rated Voltage
Capacitance (pF)	8,000±30%
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-20 ~ +70
Condition by wave (°C)	255±5°C / within 3sec
Condition by hand (°C)	350±20°C / within 3sec

Material	
Housing	PBT plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	0.76

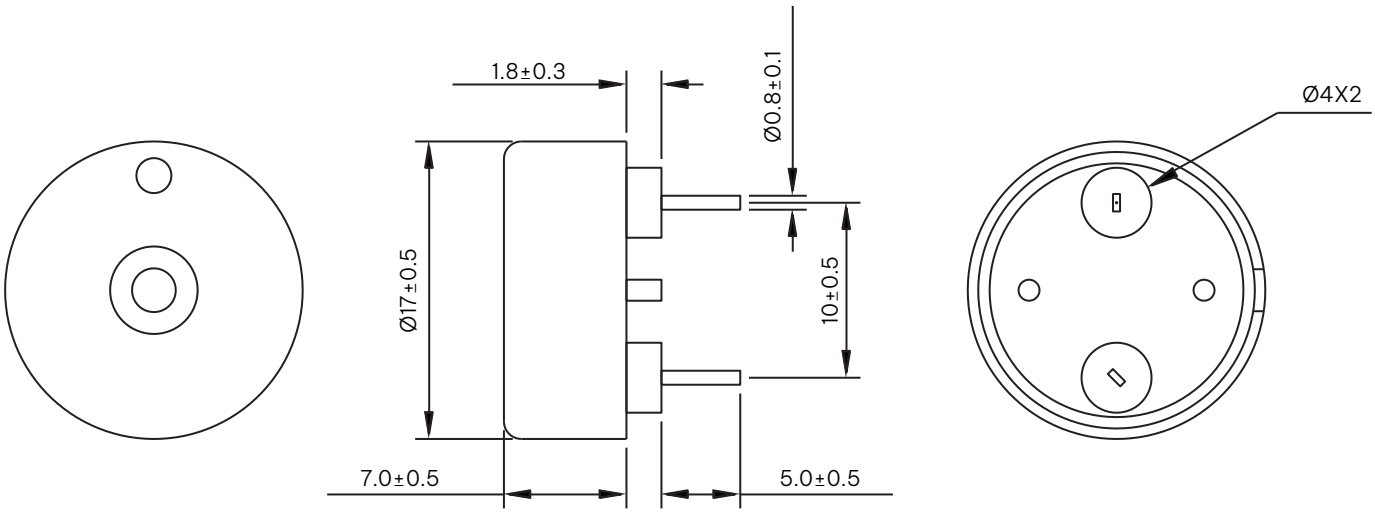
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-TH17-0540-RK

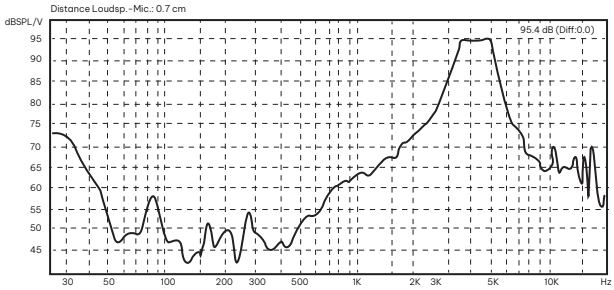


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	25
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	1.5 at Rated Voltage
Sound Pressure Level (dB/min)	85 at 10cm at Rated Voltage
Capacitance (pF)	14,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +100
Storage Temperature (°C)	-30 ~ +110
Condition by wave (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

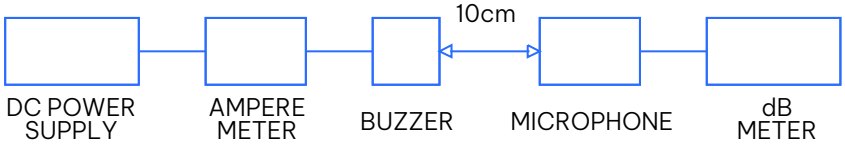
Material	
Housing	PBT plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	1.6

Typical Frecuency Response Curve



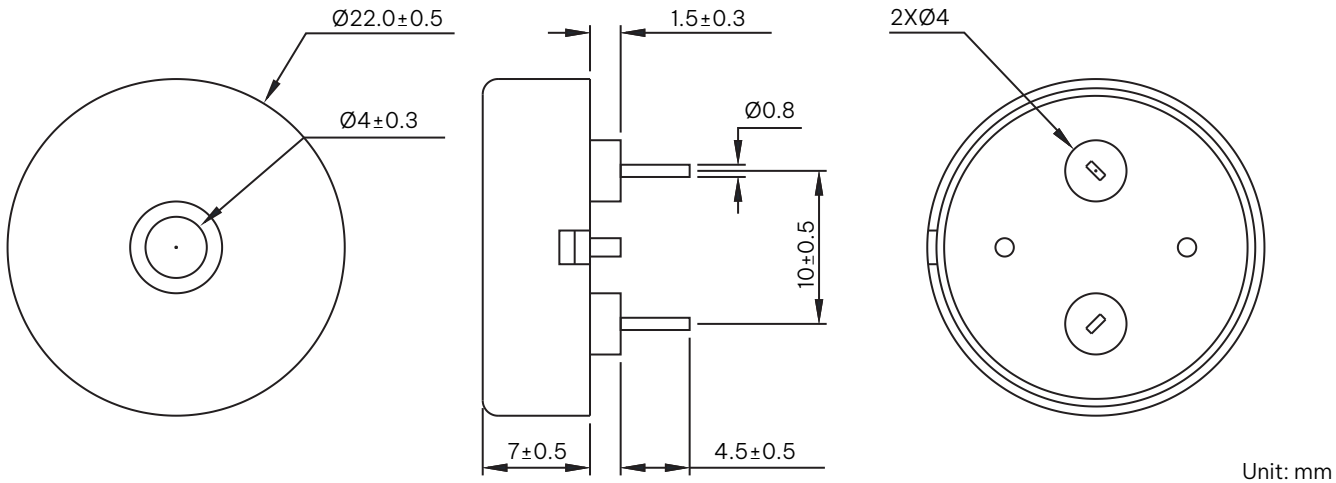
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-TH22-0540-RK

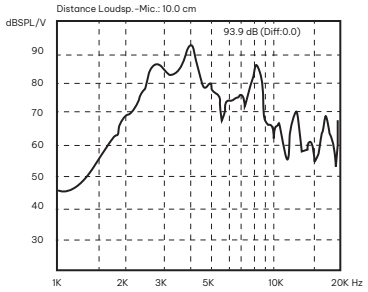


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	1.5 at Rated Voltage
Sound Pressure Level (dB/min)	90 at 10cm at Rated Voltage
Capacitance (pF)	25,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +100
Storage Temperature (°C)	-30 ~ +110
Condition by wave (°C)	260±5°C / within 5sec
Condition by hand (°C)	350±20°C / within 5sec

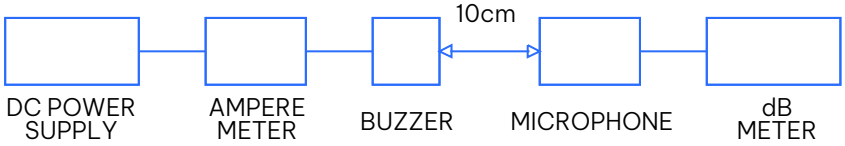
Material	
Housing	PBT plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	2.4

Typical Frecuency Response Curve



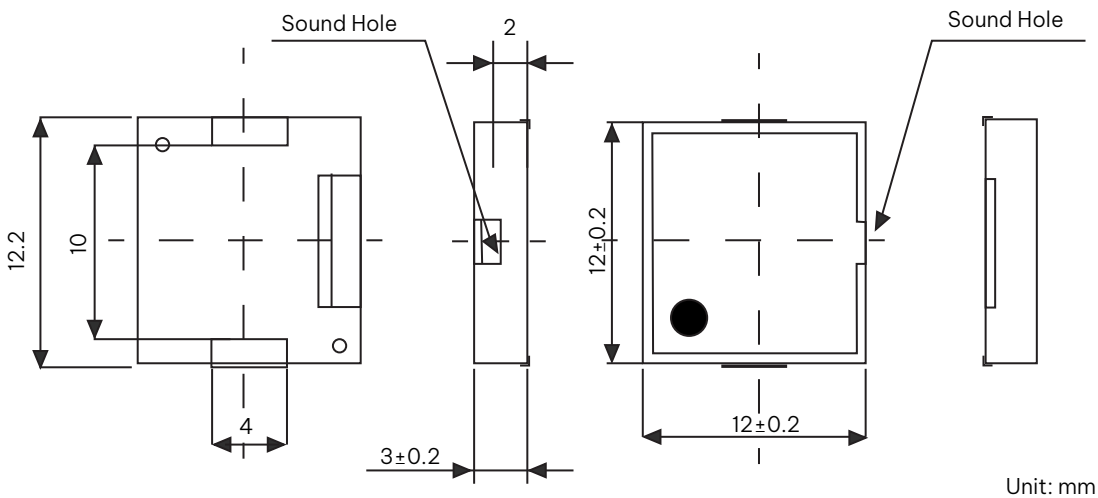
Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Product Dimensions

PT-SMT12-0340-SK

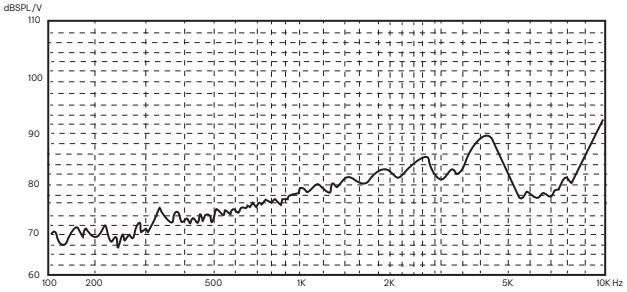


Unit: mm TOL: ±0.3mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	1 ~ 25
Rated Voltage (Vo-p)	3.0
Current Consumption (mA/max)	5 at Rated Voltage
Sound Pressure Level (dB/min)	75 at 10cm at Rated Voltage
Capacitance (pF)	16,000±30%
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80

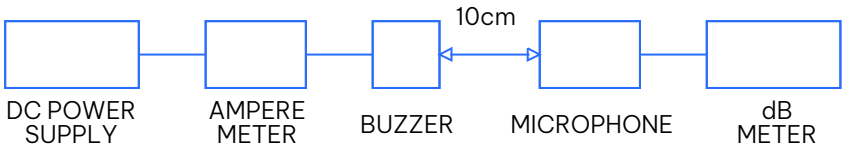
Material	
Housing	LCP plastic resin (Color : Black)
Leading Pin	Tin Plated Brass
Weight (Gram)	0.4

Typical Frecuency Response Curve



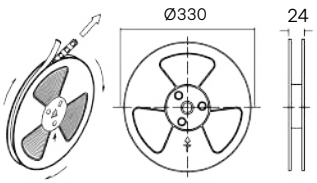
Testing Method

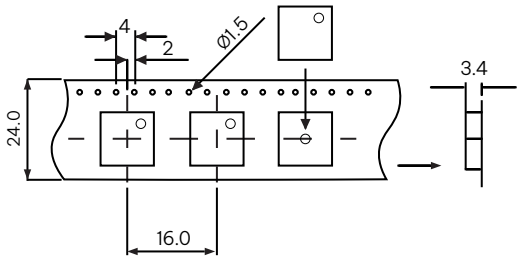
- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Package Method

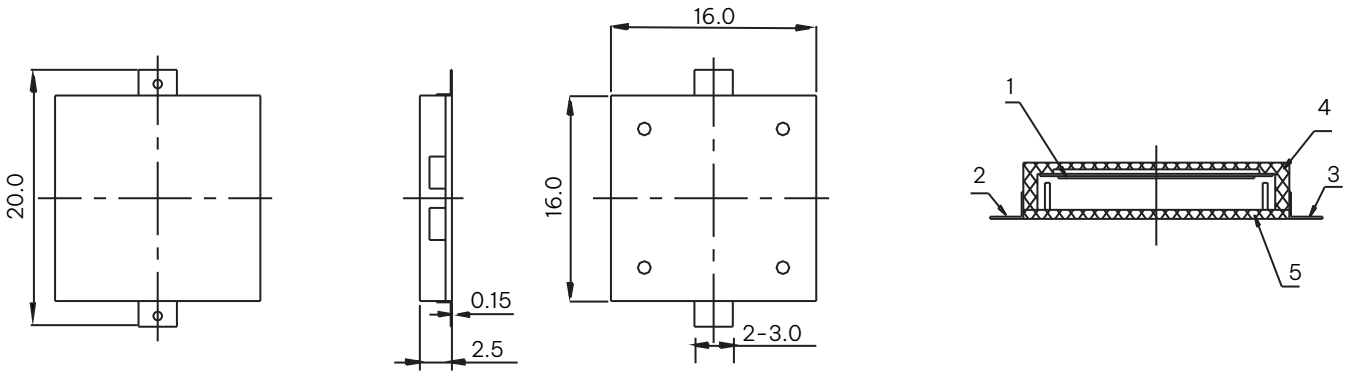
1000pcs per tape reel





Product Dimensions

PT-SMT16-0340-SK



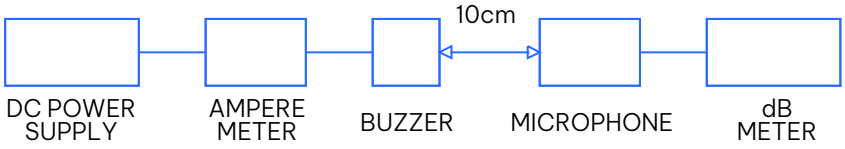
Unit: mm Tolerance: ±0.5mm

Electrical Characteristics	
Resonant Frequency (Hz)	4000±500
Operating Voltage (Vo-p/max)	1-25
Rated Voltage (Vo-p)	3.0
Current Consumption (mA/max)	3.0 at Rated Voltage
Sound Pressure Level (dB/min)	70 at 10cm at 4Khz
Capacitance (pF)	14,000±30% at 1.0K Hz
Lead wire/lead pin material	Ni-alloy
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80
Condition by reflow soldering (°C)	250±5°C / within 10sec
Condition by hand (°C)	350±20°C / within 5sec

Material	
Housing	LCP plastic resin (Color : Black)
Weight (Gram)	1

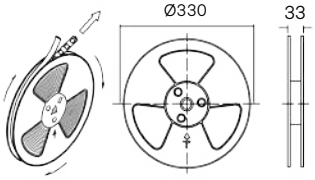
Testing Method

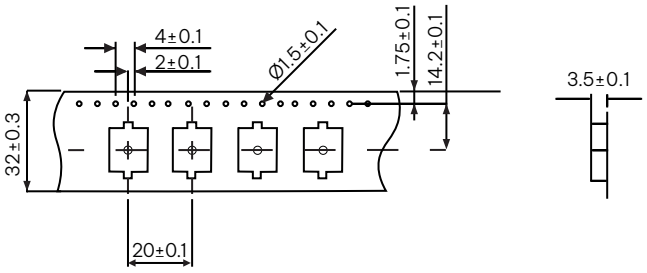
- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.



Package Method

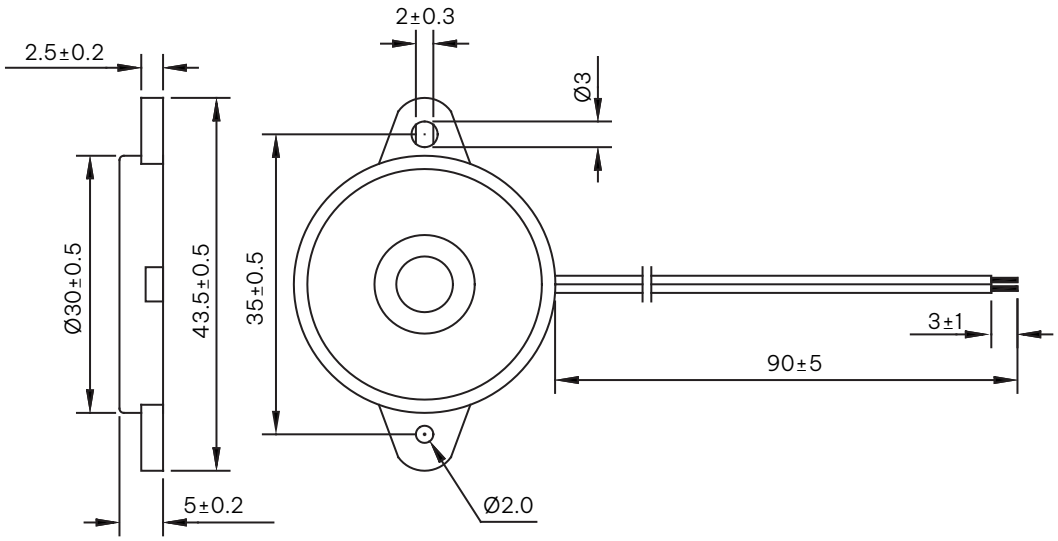
800pcs per tape reel





Product Dimensions

PT-PM30-0545-RK

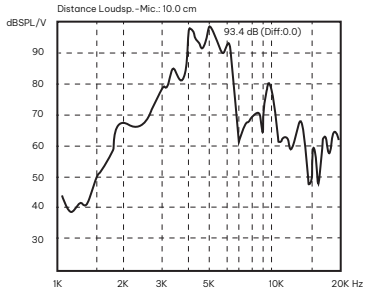


Unit: mm

Electrical Characteristics	
Resonant Frequency (Hz)	4500±500
Operating Voltage (Vo-p/max)	30
Rated Voltage (Vo-p)	5.0
Current Consumption (mA/max)	1.5 at Rated Voltage
Sound Pressure Level (dB/min)	90 at 10cm at Rated Voltage
Capacitance (pF)	20,000±30% at 120 Hz
Operating Temperature (°C)	-20 ~ +70
Storage Temperature (°C)	-30 ~ +80

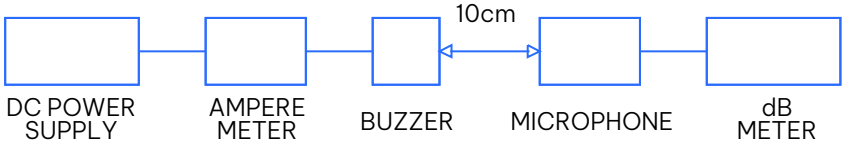
Material	
Housing	ABS plastic resin (Color : Black)
Leading Wire	28AWG
Weight (Gram)	4.6

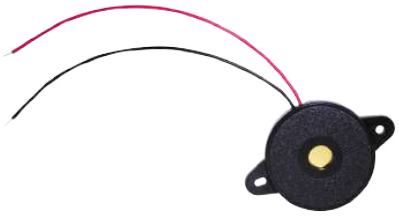
Typical Frecuency Response Curve



Testing Method

- **Standard Measurement conditions:** Temperature:25± 2°C Humidity:45-60%.
- **Acoustic Characteristics:** The oscillation frecuency, current consumption and sound pressure are measured by the measuring instruments shown below.





Reliability

ITEMS	METHOD OF TEST AND MEASUREMENTS	PERFORMANCE
Coldness withstanding	After 98 hours of being exposed to -30°C environment, should be returned to normal environment for 2 hours, then re-proceed to test. *PT-SMT09-0340-SK needs to be exposed to -40°C *PT-TH12-0540-RK needs to be exposed to -20°C	No abnormality shall exist
Hotness withstanding	After 98 hours of being exposed to +80°C environment, should be returned to normal environment for 2 hours, then re-proceed to test.	No abnormality shall exist
Humidity withstanding	After 98 hours of being exposed to 40°C 95%RH environment in actual operation, should be returned to normal environment for 2 hours, then re-proceed to test.	No abnormality shall exist
Durability	Testing after 98 hours actual continuous operation. (at standard measurement conditions)	No abnormality shall exist
Drop withstanding	A natural drop from 75cm high down to the ground.	No abnormality shall exist
Vibration withstanding	Vibration of 2,000 cycles per minute, 2mm amplitude, applied in X, Y and Z directions for 30 minutes each.	No abnormality shall exist

Compliances and approvals

RoHS COMPLIANT