

# HUNSTON

## ELECTRONICS



## About Hunston Electronics

### A professional manufacturer of acoustic components– Hunston Electronics

Hunston Electronics is an expert in manufacturing full range of acoustic components, which include Magnetic Transducer, Magnetic Buzzer, Piezo Transducer, Piezo Buzzer, Mechanical Buzzer, External/ Internal Magnet Speaker, Dynamic Receiver, Condenser Microphone and Ultrasonic Sensor. With our excellent techniques and experience in design and engineering OEM products, we always offer customized products to serve our worldwide customers with diverse needs.

We treasure our customers. We believe that providing the best products and a pleasant servicing experience is equally important. Quick response to customer inquiries, offering competitive prices, ensuring on-time delivery and providing insightful recommendations are what we always aim for.

As a technology partner with our customers, we unremittingly updated to industrial trends to enhance their business growth. We have been developing wide varieties of miniature models, SMD products (SMD buzzer and SMD speaker) to meet different needs.

**Contact "Hunston" now to aim you for success.**

## Hunston Factory

Hunston Electronics focus on the acoustic components. After thirty years development, we included more than 1,000 product models. We have also improved the production machine to meet the increasing stock demands. The qualities of the products are more stabilized.



Our mainly production line :

- Piezo Element Production Line
- Microphone Production Line
- Speaker Production Line
- Buzzer Production Line



# CONTENTS

## BUZZER

|                   |          |
|-------------------|----------|
| Magnetic Buzzer   | P1 ~ 4   |
| Mechanical Buzzer | P5 ~ 9   |
| Piezo Buzzer      | P10 ~ 22 |

## TRANSDUCER

|                                 |          |
|---------------------------------|----------|
| Magnetic Transducer             | P23 ~ 34 |
| External Drive Piezo Transducer | P35 ~ 50 |
| Self Drive Piezo Transducer     | P51 ~ 55 |

## PIEZO ELEMENT

|                           |     |
|---------------------------|-----|
| External Drive Piezo Disc | P56 |
| Self Drive Piezo Disc     | P56 |
| Piezo Ultrasonic Disc     | P56 |

## SPEAKER

|               |          |
|---------------|----------|
| Loud Speaker  | P57 ~ 58 |
| Mylar Speaker | P59 ~ 60 |
| SMD Speaker   | P60      |

## MICROPHONE

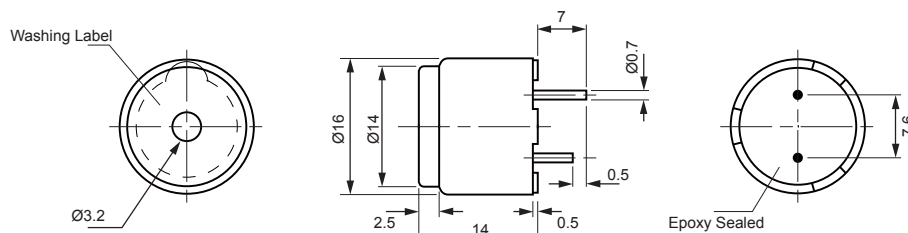
|                                    |          |
|------------------------------------|----------|
| Electret Condenser Microphone      | P61 ~ 62 |
| Micro Electrical Mechanical System | P63      |

## RECEIVER

|                  |          |
|------------------|----------|
| Dynamic Receiver | P64 ~ 68 |
|------------------|----------|

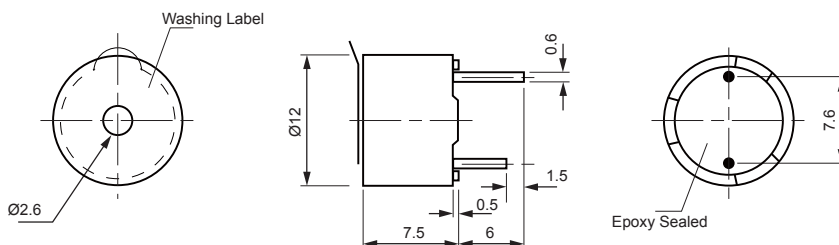
## ULTRASONIC

|                                   |          |
|-----------------------------------|----------|
| Open Structure Ultrasonic Sensor  | P69 ~ 70 |
| Close Structure Ultrasonic Sensor | P71 ~ 73 |
| Ultrasonic Speaker                | P74 ~ 75 |

**SERIES: MB1614**

**Electrical Specifications**

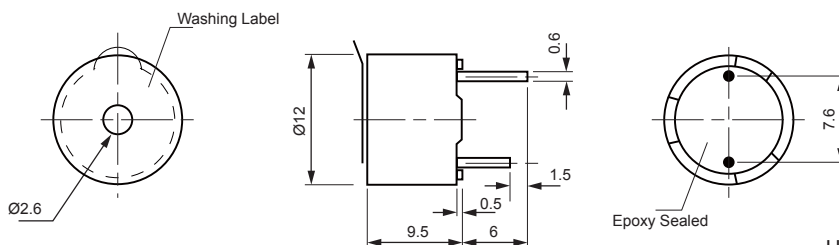
Unit : mm

| Part Number           | SA1P               | SA6P               | SA12P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.2 ~ 3 V          | 4 ~ 8 V            | 8 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 6 V                | 12 V               |
| Rated Current         | Max. 30 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 75 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

**SERIES: MB1208**

**Electrical Specifications**

Unit : mm

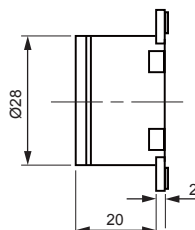
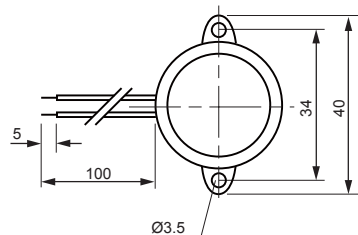
| Part Number           | SA1P               | SA5P               | SD12P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.4 ~ 2 V          | 3 ~ 7 V            | 9 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 5 V                | 12 V               |
| Rated Current         | Max. 25 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 75 dB , 10 cm | Min. 85 dB , 10 cm | Min. 83 dB , 10 cm |
| Resonant Frequency    | 2300 +/- 500 Hz    | 2300 +/- 400 Hz    | 3100 +/- 300 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

**SERIES: MB1210**

**Electrical Specifications**

Unit : mm

| Part Number           | SA1P               | SA3P               | SA12P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.3 ~ 2 V          | 2 ~ 4 V            | 8 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 3 V                | 12 V               |
| Rated Current         | Max. 30 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 75 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    |
| Operating Temperature | -20 ~ +70°C        | -40 ~ +85°C        | -40 ~ +85°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: MB2820

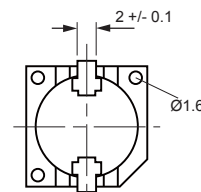
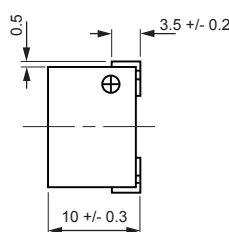
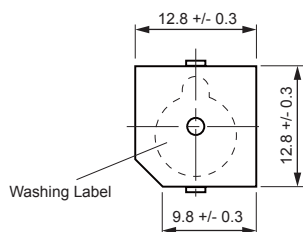


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | PC12W              |
| Operating Voltage     | 8 ~ 15 V           |
| Rated Voltage         | 12 V               |
| Rated Current         | Max. 15 mA         |
| Tone Nature           | Pulse              |
| Sound Output          | Min. 85 dB , 30 cm |
| Resonant Frequency    | 2900 +/- 300 Hz    |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: SMB1310

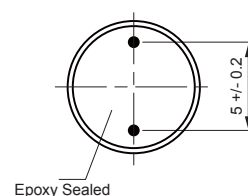
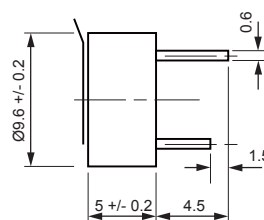
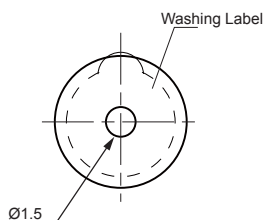


### Electrical Specifications

Unit : mm

|                       |                    |                    |
|-----------------------|--------------------|--------------------|
| Part Number           | SA5D               | SA12D              |
| Operating Voltage     | 4 ~ 7 V            | 8 ~ 15 V           |
| Rated Voltage         | 5 V                | 12 V               |
| Rated Current         | Max. 20 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    |
| Operating Temperature | -40 ~ +85°C        | -40 ~ +85°C        |
| Housing Material      | PPS                | PPS                |
| Colour                | Grey               | Grey               |

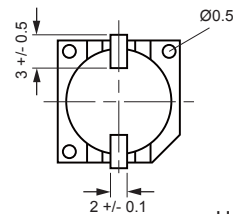
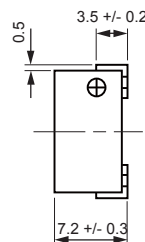
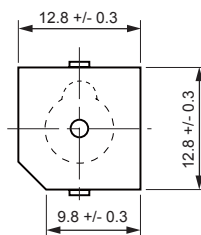
## SERIES: MB1005



### Electrical Specifications

Unit : mm

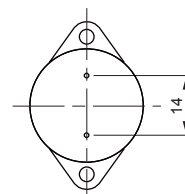
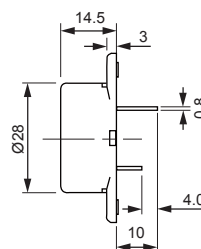
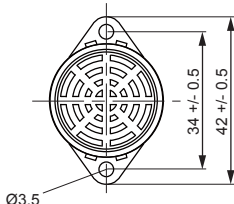
|                       |                    |
|-----------------------|--------------------|
| Part Number           | SB5P               |
| Operating Voltage     | 4 ~ 7 V            |
| Rated Voltage         | 5 V                |
| Rated Current         | Max. 30 mA         |
| Tone Nature           | Single             |
| Sound Output          | Min. 83 dB , 10 cm |
| Resonant Frequency    | 2700 +/- 300 Hz    |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

**SERIES: SMB1307**


Unit : mm

**Electrical Specifications**

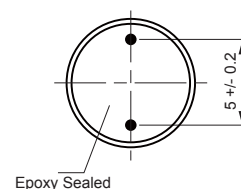
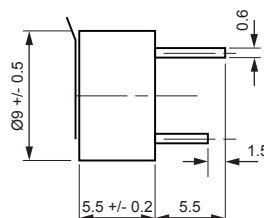
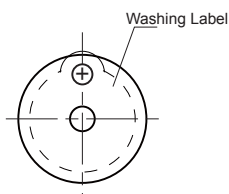
| Part Number           | SA3D               | SA5D               | SA12D              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 5 V            | 4 ~ 7 V            | 8 ~ 15 V           |
| Rated Voltage         | 3 V                | 5 V                | 12 V               |
| Rated Current         | Max. 30 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2400 +/- 400 Hz    | 2400 +/- 400 Hz    | 2400 +/- 400 Hz    |
| Operating Temperature | -30 ~ +80°C        | -30 ~ +80°C        | -30 ~ +80°C        |
| Housing Material      | PPS                | PPS                | PPS                |
| Colour                | Grey               | Grey               | Grey               |

**SERIES: MB2815**


Unit : mm

**Electrical Specifications**

| Part Number           | SC1P               | SC6P               | SC12P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 V            | 4 ~ 9 V            | 9 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 6 V                | 12 V               |
| Rated Current         | Max. 25 mA         | Max. 35 mA         | Max. 40 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 80 dB , 30 cm | Min. 85 dB , 30 cm | Min. 90 dB , 30 cm |
| Resonant Frequency    | 2800 +/- 300 Hz    | 2800 +/- 300 Hz    | 2800 +/- 300 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

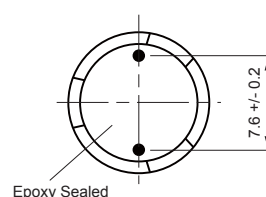
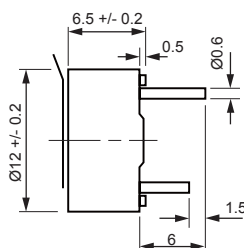
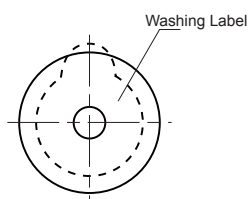
**SERIES: MB0906**


Unit : mm

**Electrical Specifications**

| Part Number           | SB5P               | SB12P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 4 ~ 7 V            | 9 ~ 15 V           |
| Rated Voltage         | 5 V                | 12 V               |
| Rated Current         | Max. 50 mA         | Max. 50 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2700 +/- 400 Hz    | 2700 +/- 400 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | PPO                | PPO                |
| Colour                | Black              | Black              |

## SERIES: MB1207

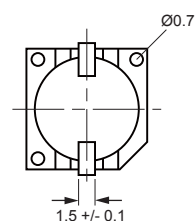
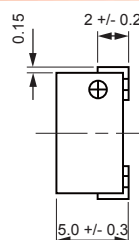
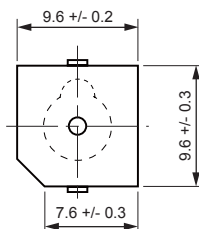


Unit : mm

### Electrical Specifications

| Part Number           | SA3P               | SA5P               | SA9P               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 5 V            | 4 ~ 7 V            | 7 ~ 12 V           |
| Rated Voltage         | 3 V                | 5 V                | 9 V                |
| Rated Current         | Max. 30 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 80 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    | 2300 +/- 300 Hz    |
| Operating Temperature | -20 ~ +80°C        | -20 ~ +80°C        | -20 ~ +80°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: SMB1005

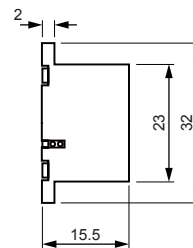
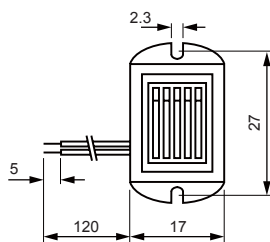


Unit : mm

### Electrical Specifications

| Part Number           | SB3D               | SB5D               | SB12D              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 5 V            | 4 ~ 7 V            | 8 ~ 15 V           |
| Rated Voltage         | 3 V                | 5 V                | 12 V               |
| Rated Current         | Max. 30 mA         | Max. 30 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2700 +/- 300 Hz    | 2700 +/- 300 Hz    | 2700 +/- 300 Hz    |
| Operating Temperature | -30 ~ +85°C        | -30 ~ +85°C        | -30 ~ +85°C        |
| Housing Material      | PPS                | PPS                | PPS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB231716

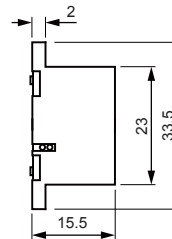
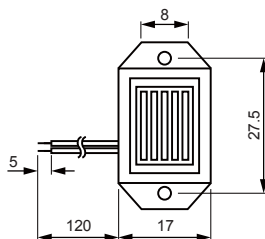


## Electrical Specifications

Unit : mm

| Part Number           | A1W                | A6W                | A12W               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 Vdc          | 4 ~ 8 Vdc          | 9 ~ 15 Vdc         |
| Rated Voltage         | 1.5 Vdc            | 6 Vdc              | 12 Vdc             |
| Rated Current         | Max. 20 mA         | Max. 25 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 20 cm | Min. 70 dB , 20 cm | Min. 75 dB , 20 cm |
| Frequency             | 400 +/- 50 Hz      | 400 +/- 50 Hz      | 400 +/- 50 Hz      |
| Operating Temperature | -20 ~ +65°C        | -20 ~ +65°C        | -20 ~ +65°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB231716A

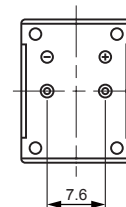
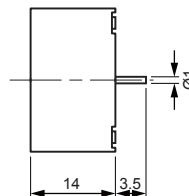
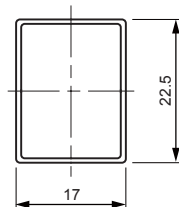


## Electrical Specifications

Unit : mm

| Part Number           | A1W                | A3W                | A9W                |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 Vdc          | 2 ~ 4 Vdc          | 6 ~ 12 Vdc         |
| Rated Voltage         | 1.5 Vdc            | 3 Vdc              | 9 Vdc              |
| Rated Current         | Max. 20 mA         | Max. 20 mA         | Max. 25 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm | Min. 75 dB , 30 cm |
| Frequency             | 400 +/- 50 Hz      | 400 +/- 50 Hz      | 400 +/- 50 Hz      |
| Operating Temperature | -20 ~ +65°C        | -20 ~ +65°C        | -20 ~ +65°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB231714

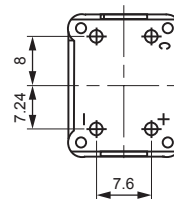
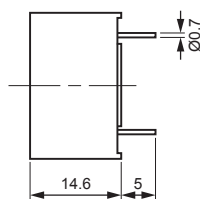
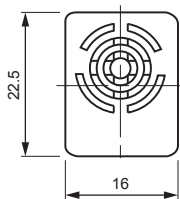


## Electrical Specifications

Unit : mm

| Part Number           | A3P                | A6P                | A9P                |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 4 Vdc          | 4 ~ 8 Vdc          | 6 ~ 12 Vdc         |
| Rated Voltage         | 3 Vdc              | 6 Vdc              | 9 Vdc              |
| Rated Current         | Max. 20 mA         | Max. 25 mA         | Max. 25 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 75 dB , 30 cm | Min. 75 dB , 30 cm |
| Frequency             | 400 +/- 50 Hz      | 400 +/- 50 Hz      | 400 +/- 50 Hz      |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB231615

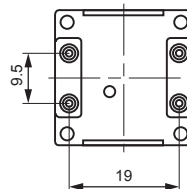
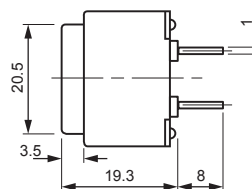
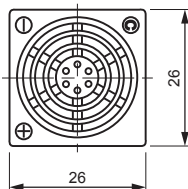


Unit : mm

### Electrical Specifications

| Part Number           | A3P                | A12P               | A24P               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 4 Vdc          | 8 ~ 16 Vdc         | 18 ~ 30 Vdc        |
| Rated Voltage         | 3 Vdc              | 12 Vdc             | 24 Vdc             |
| Rated Current         | Max. 20 mA         | Max. 20 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Grey               | Grey               | Grey               |

## SERIES: MEB262619

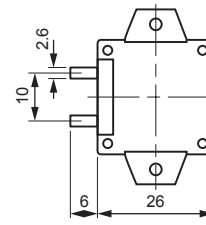
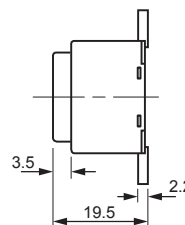
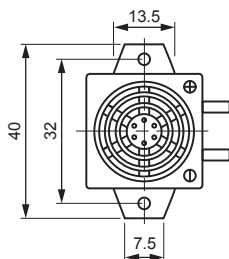


Unit : mm

### Electrical Specifications

| Part Number           | A6P                | A12P               | A24P               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 4 ~ 8 Vdc          | 8 ~ 16 Vdc         | 20 ~ 28 Vdc        |
| Rated Voltage         | 6 Vdc              | 12 Vdc             | 24 Vdc             |
| Rated Current         | Max. 35 mA         | Max. 35 mA         | Max. 35 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 95 dB , 10 cm | Min. 95 dB , 10 cm | Min. 95 dB , 10 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Grey               | Grey               | Grey               |

## SERIES: MEB262620

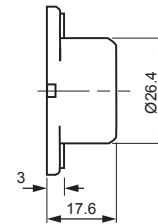
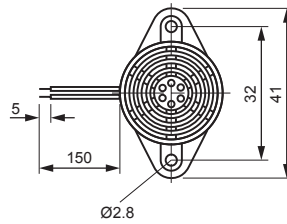


Unit : mm

### Electrical Specifications

| Part Number           | A6T                | A12T               | A24T               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 4 ~ 8 Vdc          | 8 ~ 16 Vdc         | 20 ~ 28 Vdc        |
| Rated Voltage         | 6 Vdc              | 12 Vdc             | 24 Vdc             |
| Rated Current         | Max. 35 mA         | Max. 35 mA         | Max. 35 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 95 dB , 10 cm | Min. 95 dB , 10 cm | Min. 95 dB , 10 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Ivory              | Ivory              | Ivory              |

## SERIES: MEB2618

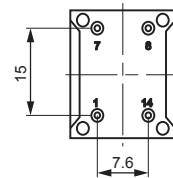
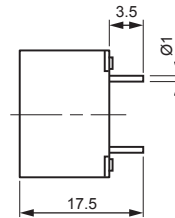
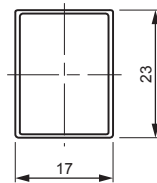


## Electrical Specifications

Unit : mm

| Part Number           | A12W              | A24W               | A48W               |
|-----------------------|-------------------|--------------------|--------------------|
| Operating Voltage     | 7 ~ 16 Vdc        | 20 ~ 28 Vdc        | 36 ~ 52 Vdc        |
| Rated Voltage         | 12 Vdc            | 24 Vdc             | 48 Vdc             |
| Rated Current         | Max. 23 mA        | Max. 21 mA         | Max. 20 mA         |
| Tone Nature           | Single            | Single             | Single             |
| Sound Output          | Min. 95 dB , 10cm | Min. 95 dB , 10 cm | Min. 95 dB , 10 cm |
| Frequency             | 400 +/- 100 Hz    | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C       | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS               | ABS                | ABS                |
| Colour                | White             | White              | White              |

## SERIES: MEB231714A

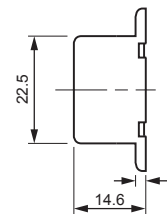
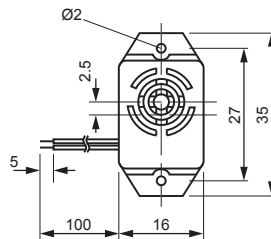


## Electrical Specifications

Unit : mm

| Part Number           | A1P                | A6P                | A12P               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 Vdc          | 4 ~ 8 Vdc          | 9 ~ 15 Vdc         |
| Rated Voltage         | 1.5 Vdc            | 6 Vdc              | 12 Vdc             |
| Rated Current         | Max. 20 mA         | Max. 25 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm | Min. 75 dB , 30 cm |
| Frequency             | 400 +/- 50 Hz      | 400 +/- 50 Hz      | 400 +/- 50 Hz      |
| Operating Temperature | -20 ~ +65°C        | -20 ~ +65°C        | -20 ~ +65°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB231615A

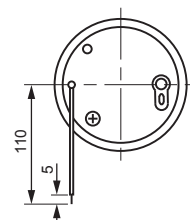
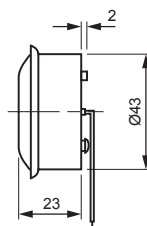
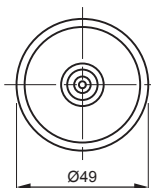


## Electrical Specifications

Unit : mm

| Part Number           | A1W                | A6W                | A12W               |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.1 ~ 2 Vdc        | 3 ~ 7 Vdc          | 8 ~ 16 Vdc         |
| Rated Voltage         | 1.5 Vdc            | 6 Vdc              | 12 Vdc             |
| Rated Current         | Max. 15 mA         | Max. 20 mA         | Max. 12 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm | Min. 70 dB , 30 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Grey               | Grey               | Grey               |

## SERIES: MEB4923

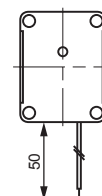
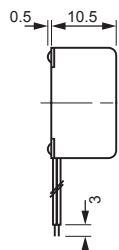
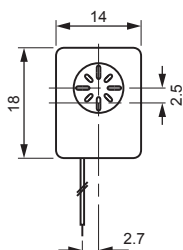


Unit : mm

### Electrical Specifications

|                       |                  |
|-----------------------|------------------|
| Part Number           | A6W              |
| Operating Voltage     | 4 ~ 8 Vdc        |
| Rated Voltage         | 6 Vdc            |
| Rated Current         | Max. 120 mA      |
| Tone Nature           | Single           |
| Sound Output          | Min. 85 dB , 3 m |
| Frequency             | 400 +/- 100 Hz   |
| Operating Temperature | -20 ~ +60°C      |
| Housing Material      | Copper           |
| Colour                | Golden / Silver  |

## SERIES: MEB181411

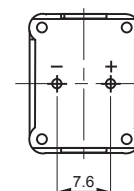
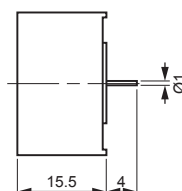
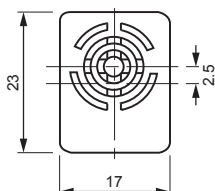


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | A1W                |
| Operating Voltage     | 1 ~ 2 Vdc          |
| Rated Voltage         | 1.5 Vdc            |
| Rated Current         | Max. 15 mA         |
| Tone Nature           | Single             |
| Sound Output          | Min. 80 dB , 10 cm |
| Frequency             | 400 +/- 50 Hz      |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: MEB231716B

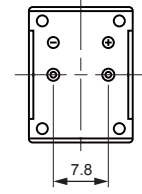
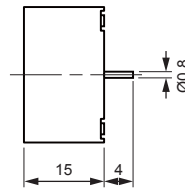
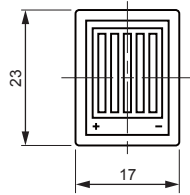


Unit : mm

### Electrical Specifications

|                       | A3P                | A9P                | A12P               |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | A3P                | A9P                | A12P               |
| Operating Voltage     | 2 ~ 4 Vdc          | 6 ~ 12 Vdc         | 9 ~ 15 Vdc         |
| Rated Voltage         | 3 Vdc              | 9 Vdc              | 12 Vdc             |
| Rated Current         | Max. 20 mA         | Max. 25 mA         | Max. 30 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 30 cm | Min. 75 dB , 30 cm | Min. 75 dB , 30 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Grey               | Grey               | Grey               |

## SERIES: MEB231715

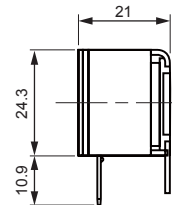
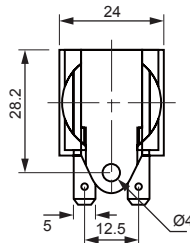
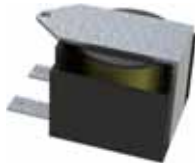


## Electrical Specifications

Unit : mm

| Part Number           | A1P                | A3P                | A6P                |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 2 Vdc          | 2 ~ 5 Vdc          | 4 ~ 8 Vdc          |
| Rated Voltage         | 1.5 Vdc            | 3 Vdc              | 6 Vdc              |
| Rated Current         | Max. 25 mA         | Max. 25 mA         | Max. 25 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 70 dB , 20 cm | Min. 75 dB , 20 cm | Min. 75 dB , 20 cm |
| Frequency             | 400 +/- 100 Hz     | 400 +/- 100 Hz     | 400 +/- 100 Hz     |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: MEB242421

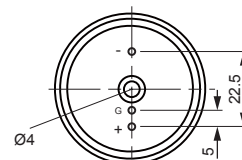
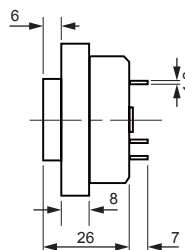
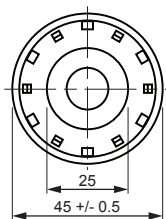


## Electrical Specifications

Unit : mm

| Part Number           | 120AT            | 230AT            |
|-----------------------|------------------|------------------|
| Operating Voltage     | 70 ~ 150 Vac     | 160 ~ 260 Vac    |
| Rated Voltage         | 120 Vac          | 230 Vac          |
| Rated Current         | Max. 30 mA       | Max. 30 mA       |
| Tone Nature           | Single           | Single           |
| Sound Output          | Min. 75 dB , 3 m | Min. 83 dB , 3 m |
| Frequency             | -                | -                |
| Operating Temperature | -20 ~ +60°C      | -20 ~ +60°C      |
| Housing Material      | PBT              | PBT              |
| Colour                | Black            | Black            |

## SERIES: PB4526

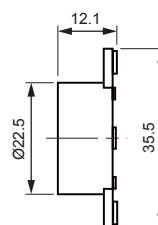
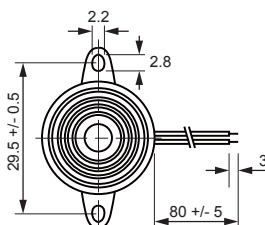


Unit : mm

### Electrical Specifications

| Part Number           | SC24P               | PC12P               | DC12P               |
|-----------------------|---------------------|---------------------|---------------------|
| Operating Voltage     | 3 ~ 28 V            | 3 ~ 18 V            | 3 ~ 18 V            |
| Rated Voltage         | 24 V                | 12 V                | 12 V                |
| Rated Current         | Max. 20 mA          | Max. 20 mA          | Max. 30 mA          |
| Tone Nature           | Single              | Pulse               | Single / Pulse      |
| Sound Output          | Min. 100 dB , 30 cm | Min. 100 dB , 30 cm | Min. 100 dB , 30 cm |
| Resonant Frequency    | 2900 +/- 500 Hz     | 2900 +/- 500 Hz     | 2900 +/- 500 Hz     |
| Operating Temperature | -20 ~ +70°C         | -20 ~ +70°C         | -20 ~ +70°C         |
| Housing Material      | ABS                 | ABS                 | ABS                 |
| Colour                | White               | White               | White               |

## SERIES: PB2312

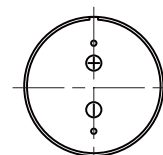
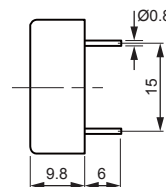
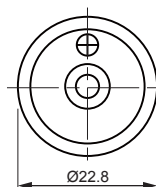


Unit : mm

### Electrical Specifications

| Part Number           | SD9W               | SD12W              | SF12W              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.5 ~ 15 V         | 1.5 ~ 15 V         | 1.5 ~ 15 V         |
| Rated Voltage         | 9 V                | 12 V               | 12 V               |
| Rated Current         | Max. 20 mA         | Max. 20 mA         | Max. 20 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 85 dB , 30 cm | Min. 85 dB , 30 cm | Min. 90 dB , 30 cm |
| Resonant Frequency    | 3300 +/- 500 Hz    | 3300 +/- 500 Hz    | 5200 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: PB2310

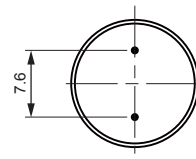
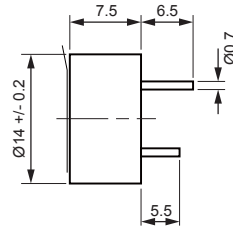
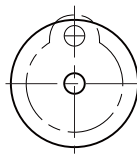


Unit : mm

### Electrical Specifications

| Part Number           | SD12P              | SD24P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 18 V           | 6 ~ 30 V           |
| Rated Voltage         | 12 V               | 24 V               |
| Rated Current         | Max. 10 mA         | Max. 15 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 85 dB , 30 cm | Min. 85 dB , 30 cm |
| Resonant Frequency    | 3500 +/- 500 Hz    | 3500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +70°C        |
| Housing Material      | PBT                | PBT                |
| Colour                | Black              | Black              |

## SERIES: PB1408

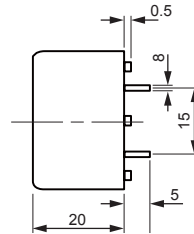
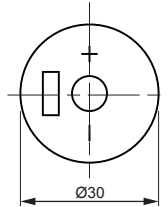


### Electrical Specifications

Unit : mm

| Part Number           | SE5P               | SE12P              | SE24P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 9 V            | 3 ~ 16 V           | 3 ~ 30 V           |
| Rated Voltage         | 5 V                | 12 V               | 24 V               |
| Rated Current         | Max. 10 mA         | Max. 10 mA         | Max. 20 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 75 dB , 10 cm | Min. 80 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 4000 +/- 500 Hz    | 4000 +/- 500 Hz    | 4500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +70°C        |
| Housing Material      | PBT                | PBT                | PBT                |
| Colour                | Black              | Black              | Black              |

## SERIES: PB3020

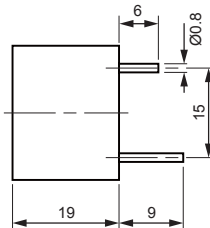
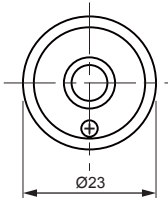


### Electrical Specifications

Unit : mm

| Part Number           | SD3P               | SD12P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 5 V            | 3 ~ 20 V           |
| Rated Voltage         | 3 V                | 12 V               |
| Rated Current         | Max. 9 mA          | Max. 10 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 90 dB , 10 cm | Min. 95 dB , 10 cm |
| Resonant Frequency    | 3500 +/- 500 Hz    | 3600 +/- 500 Hz    |
| Operating Temperature | -20 ~ +65°C        | -30 ~ +85°C        |
| Housing Material      | PBT                | PBT                |
| Colour                | Black              | Black              |

## SERIES: PB2319

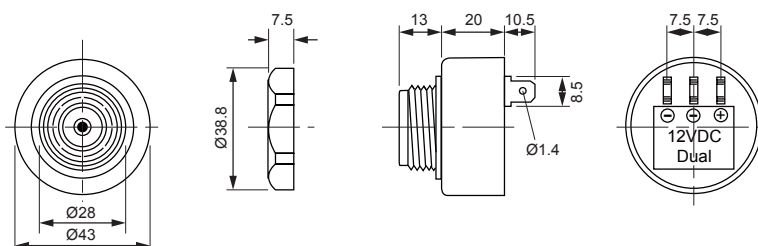


### Electrical Specifications

Unit : mm

| Part Number           | SD5P               | SD24P              | SD110AP            |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 18 V           | 18 ~ 28 V          | 96 ~ 144 Vac       |
| Rated Voltage         | 5 V                | 24 V               | 110 Vac            |
| Rated Current         | Max. 15 mA         | Max. 20 mA         | Max. 10 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 90 dB , 30 cm | Min. 90 dB , 30 cm | Min. 85 dB , 30 cm |
| Resonant Frequency    | 3300 +/- 500 Hz    | 3300 +/- 500 Hz    | 3300 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: PB4333

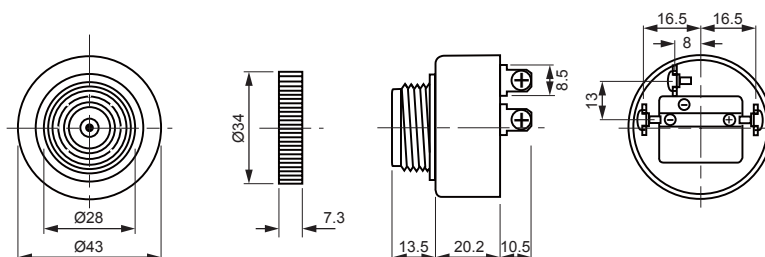


### Electrical Specifications

Unit : mm

| Part Number           | SC12G              | PC12G              | FDC12G              |
|-----------------------|--------------------|--------------------|---------------------|
| Operating Voltage     | 6 ~ 28 V           | 6 ~ 28 V           | 6 ~ 28 V            |
| Rated Voltage         | 12 V               | 12 V               | 12 V                |
| Rated Current         | Max. 20 mA         | Max. 20 mA         | Max. 20 mA          |
| Tone Nature           | Single             | Pulse              | Single / Fast Pulse |
| Sound Output          | Min. 80 dB , 30 cm | Min. 80 dB , 30 cm | Min. 80 dB , 30 cm  |
| Resonant Frequency    | 2900 +/- 500 Hz    | 2900 +/- 500 Hz    | 2900 +/- 500 Hz     |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C         |
| Housing Material      | ABS                | ABS                | ABS                 |
| Colour                | Black              | Black              | Black               |

## SERIES: PB4334

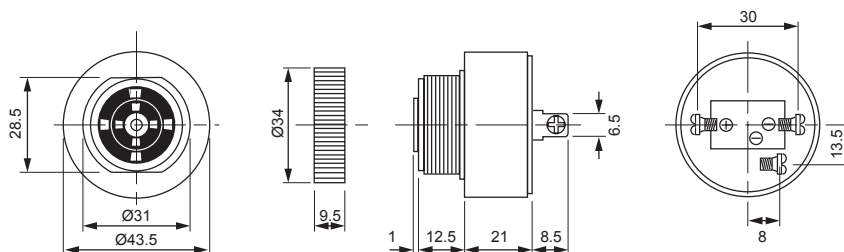


### Electrical Specifications

Unit : mm

| Part Number           | SC12T              | DC12T              | SD220AT            |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 6 ~ 28 V           | 6 ~ 28 V           | 180 ~ 240 Vac      |
| Rated Voltage         | 12 V               | 12 V               | 220 Vac            |
| Rated Current         | Max. 20 mA         | Max. 20 mA         | Max. 10 mA         |
| Tone Nature           | Single             | Single / Pulse     | Single             |
| Sound Output          | Min. 80 dB , 30 cm | Min. 80 dB , 30 cm | Min. 90 dB , 30 cm |
| Resonant Frequency    | 2900 +/- 500 Hz    | 2900 +/- 500 Hz    | 3000 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Black              | Black              | Black              |

## SERIES: PB4435



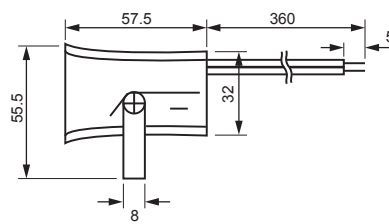
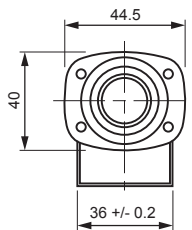
### Electrical Specifications

Unit : mm

| Part Number           | SC12T              | PC24T               | DC12T              |
|-----------------------|--------------------|---------------------|--------------------|
| Operating Voltage     | 3 ~ 18 V           | 6 ~ 28 V            | 3 ~ 18 V           |
| Rated Voltage         | 12 V               | 24 V                | 12 V               |
| Rated Current         | Max. 30 mA         | Max. 40 mA          | Max. 20 mA         |
| Tone Nature           | Single             | Pulse               | Single / Pulse     |
| Sound Output          | Min. 95 dB , 30 cm | Min. 100 dB , 30 cm | Min. 95 dB , 30 cm |
| Resonant Frequency    | 2900 +/- 500 Hz    | 2900 +/- 500 Hz     | 2900 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C         | -20 ~ +60°C        |
| Housing Material      | ABS                | ABS                 | ABS                |
| Colour                | Black              | Black               | Black              |



## SERIES: PB454058

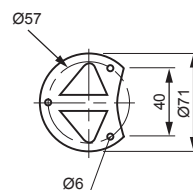
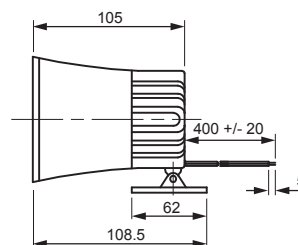
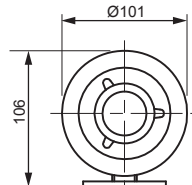


Unit : mm

### Electrical Specifications

| Part Number           | RC12W             | RD24W             |
|-----------------------|-------------------|-------------------|
| Operating Voltage     | 6 ~ 16 V          | 20 ~ 26 V         |
| Rated Voltage         | 12 V              | 24 V              |
| Rated Current         | Max. 200 mA       | Max. 250 mA       |
| Tone Nature           | Siren             | Siren             |
| Sound Output          | Min. 100 dB , 1 m | Min. 100 dB , 1 m |
| Resonant Frequency    | 2800 +/- 500 Hz   | 3500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +70°C       | -20 ~ +70°C       |
| Housing Material      | ABS               | ABS               |
| Colour                | Black             | Black             |

## SERIES: PB101105

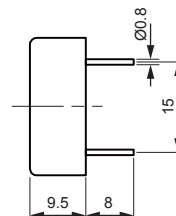
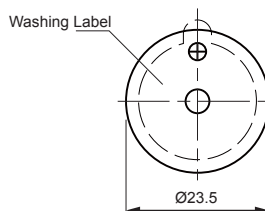


Unit : mm

### Electrical Specifications

| Part Number           | SB12W             | RD12W             |
|-----------------------|-------------------|-------------------|
| Operating Voltage     | 6 ~ 14 V          | 6 ~ 15 V          |
| Rated Voltage         | 12 V              | 12 V              |
| Rated Current         | Max. 700 mA       | Max. 700 mA       |
| Tone Nature           | Single            | Siren             |
| Sound Output          | Min. 108 dB , 1 m | Min. 108 dB , 1 m |
| Resonant Frequency    | 1500 +/- 500 Hz   | 3500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +65°C       | -20 ~ +65°C       |
| Housing Material      | ABS               | ABS               |
| Colour                | Black             | Black             |

## SERIES: PB2410

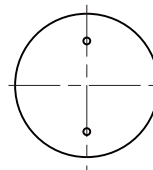
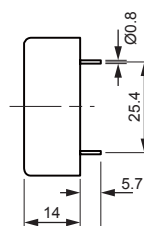
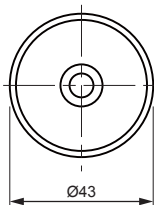


Unit : mm

### Electrical Specifications

| Part Number           | SD24P              |
|-----------------------|--------------------|
| Operating Voltage     | 3 ~ 30 V           |
| Rated Voltage         | 24 V               |
| Rated Current         | Max. 30 mA         |
| Tone Nature           | Single             |
| Sound Output          | Min. 95 dB , 10 cm |
| Resonant Frequency    | 3400 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

## SERIES: PB4314

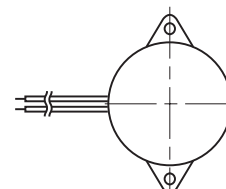
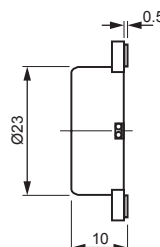
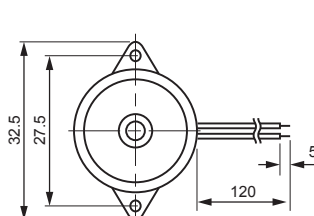


Unit : mm

## Electrical Specifications

|                       |                     |
|-----------------------|---------------------|
| Part Number           | SC12P               |
| Operating Voltage     | 3 ~ 20 V            |
| Rated Voltage         | 12 V                |
| Rated Current         | Max. 12 mA          |
| Tone Nature           | Single              |
| Sound Output          | Min. 100 dB , 30 cm |
| Resonant Frequency    | 2800 +/- 500 Hz     |
| Operating Temperature | -20 ~ +60°C         |
| Housing Material      | ABS                 |
| Colour                | Black               |

## SERIES: PB2310A

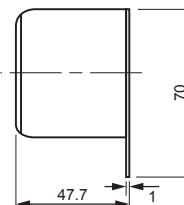
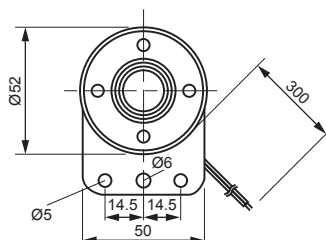


Unit : mm

## Electrical Specifications

|                       |                    |                    |
|-----------------------|--------------------|--------------------|
| Part Number           | SD12W              | SD24W              |
| Operating Voltage     | 3 ~ 24 V           | 12 ~ 28 V          |
| Rated Voltage         | 12 V               | 24 V               |
| Rated Current         | Max. 10 mA         | Max. 10 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 85 dB , 30 cm | Min. 85 dB , 30 cm |
| Resonant Frequency    | 3500 +/- 500 Hz    | 3500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | ABS                | ABS                |
| Colour                | Black              | Black              |

## SERIES: PB5248

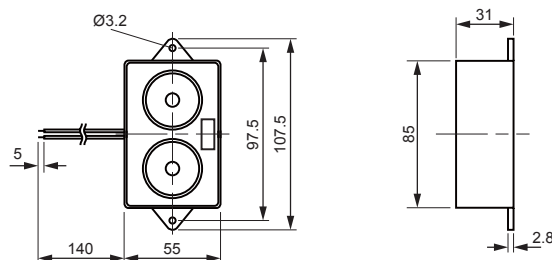


Unit : mm

## Electrical Specifications

|                       |                   |                   |
|-----------------------|-------------------|-------------------|
| Part Number           | RC12W             | RD24W             |
| Operating Voltage     | 8 ~ 15 V          | 18 ~ 26 V         |
| Rated Voltage         | 12 V              | 24 V              |
| Rated Current         | Max. 280 mA       | Max. 200 mA       |
| Tone Nature           | Siren             | Siren             |
| Sound Output          | Min. 105 dB , 1 m | Min. 105 dB , 1 m |
| Resonant Frequency    | 2800 +/- 500 Hz   | 3500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +65°C       | -30 ~ +70°C       |
| Housing Material      | ABS               | ABS               |
| Colour                | Black             | Black             |

## SERIES: PB855531

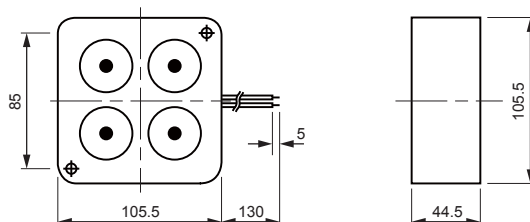
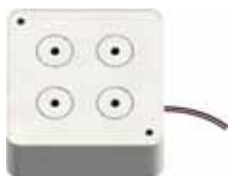


### Electrical Specifications

Unit : mm

|                       |                          |
|-----------------------|--------------------------|
| Part Number           | TCC12W                   |
| Operating Voltage     | 6 ~ 15 V                 |
| Rated Voltage         | 12 V                     |
| Rated Current         | Max. 100 mA              |
| Tone Nature           | Two                      |
| Sound Output          | Min. 106 dB , 1 m        |
| Resonant Frequency    | (2600 ~ 2800) +/- 500 Hz |
| Operating Temperature | -20 ~ +60°C              |
| Housing Material      | ABS                      |
| Colour                | White                    |

## SERIES: PB10610645

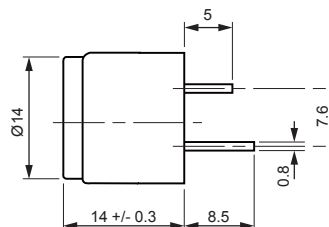
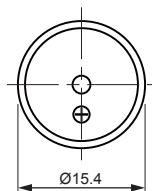


### Electrical Specifications

Unit : mm

|                       |                          |
|-----------------------|--------------------------|
| Part Number           | TCC12W                   |
| Operating Voltage     | 6 ~ 15 V                 |
| Rated Voltage         | 12 V                     |
| Rated Current         | Max. 190 mA              |
| Tone Nature           | Two                      |
| Sound Output          | Min. 102 dB , 1 m        |
| Resonant Frequency    | (2600 ~ 2800) +/- 500 Hz |
| Operating Temperature | -20 ~ +60°C              |
| Housing Material      | ABS                      |
| Colour                | White                    |

## SERIES: PB1514

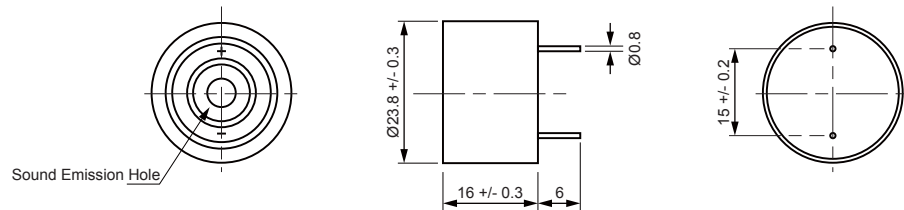


### Electrical Specifications

Unit : mm

|                       |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | SE3P               | SE5P               | SE12P              |
| Operating Voltage     | 1 ~ 12 V           | 1 ~ 12 V           | 1 ~ 18 V           |
| Rated Voltage         | 3 V                | 5 V                | 12 V               |
| Rated Current         | Max. 10 mA         | Max. 15 mA         | Max. 20 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 78 dB , 10 cm | Min. 83 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 4000 +/- 500 Hz    | 4000 +/- 500 Hz    | 4000 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -40 ~ +85°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

**SERIES: PB2416**

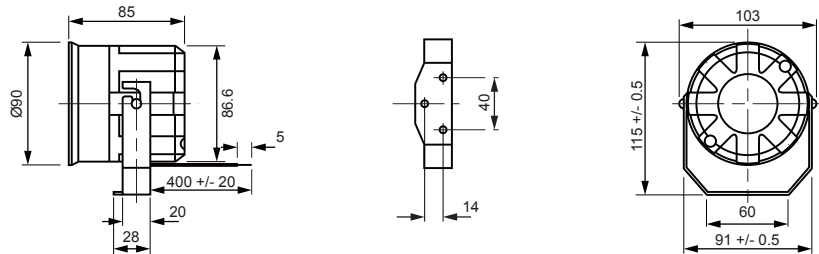


**Electrical Specifications**

Unit : mm

| Part Number           | SC6P               | SC12P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 18 V           | 3 ~ 20 V           |
| Rated Voltage         | 6 V                | 12 V               |
| Rated Current         | Max. 8 mA          | Max. 12 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 90 dB , 10 cm | Min. 98 dB , 10 cm |
| Resonant Frequency    | 2800 +/- 500 Hz    | 2800 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              |
| Colour                | Black              | Black              |

**SERIES: PB9085**

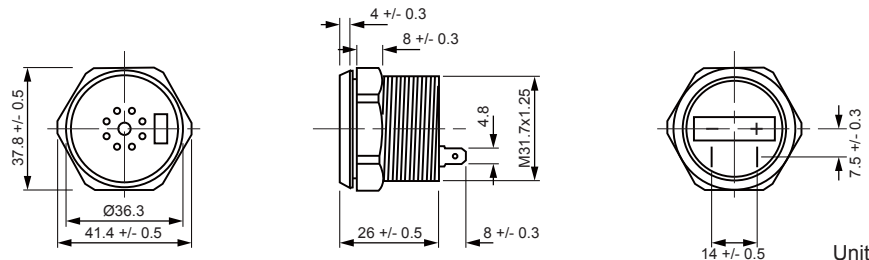


**Electrical Specifications**

Unit : mm

| Part Number           | RC12W             |
|-----------------------|-------------------|
| Operating Voltage     | 6 ~ 14 V          |
| Rated Voltage         | 12 V              |
| Rated Current         | Max. 750 mA       |
| Tone Nature           | Siren             |
| Sound Output          | Min. 105 dB , 1 m |
| Resonant Frequency    | 2800 +/- 500 Hz   |
| Operating Temperature | -20 ~ +60°C       |
| Housing Material      | ABS               |
| Colour                | Black             |

**SERIES: PB4126**

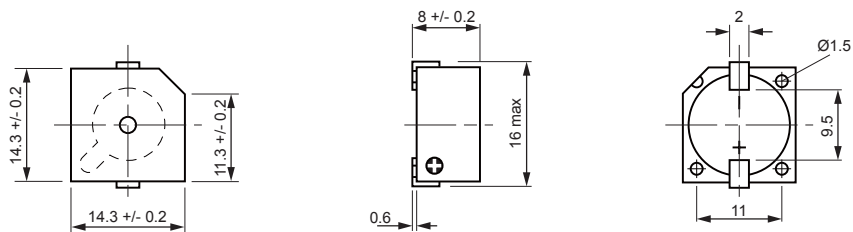


**Electrical Specifications**

Unit : mm

| Part Number           | SD12G            | SD24G            | PD24G            |
|-----------------------|------------------|------------------|------------------|
| Operating Voltage     | 5 ~ 28 V         | 6 ~ 28 V         | 6 ~ 28 V         |
| Rated Voltage         | 12 V             | 24 V             | 24 V             |
| Rated Current         | Max. 18 mA       | Max. 20 mA       | Max. 15 mA       |
| Tone Nature           | Single           | Single           | Pulse            |
| Sound Output          | Min. 85 dB , 1 m | Min. 85 dB , 1 m | Min. 85 dB , 1 m |
| Resonant Frequency    | 3000 +/- 500 Hz  | 3000 +/- 500 Hz  | 3000 +/- 500 Hz  |
| Operating Temperature | -20 ~ +60°C      | -20 ~ +60°C      | -20 ~ +60°C      |
| Housing Material      | ABS              | ABS              | ABS              |
| Colour                | Black            | Black            | Black            |

## SERIES: SPB1408

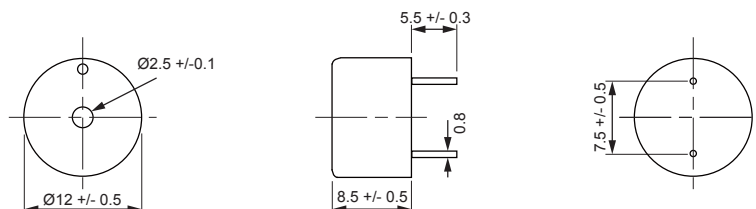


### Electrical Specifications

Unit : mm

| Part Number           | SE5D               | SE12D              | SE24D              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 16 V           | 3 ~ 16 V           | 9 ~ 28 V           |
| Rated Voltage         | 5 V                | 12 V               | 24 V               |
| Rated Current         | Max. 8 mA          | Max. 8 mA          | Max. 12 mA         |
| Tone Nature           | Single             | Single             | Single             |
| Sound Output          | Min. 85 dB , 10 cm | Min. 90 dB , 10 cm | Min. 90 dB , 10 cm |
| Resonant Frequency    | 4000 $\pm$ 500 Hz  | 4000 $\pm$ 500 Hz  | 4000 $\pm$ 500 Hz  |
| Operating Temperature | -40 ~ +85°C        | -40 ~ +85°C        | -40 ~ +85°C        |
| Housing Material      | LCP                | LCP                | LCP                |
| Colour                | Black              | Black              | Black              |

## SERIES: PB1209

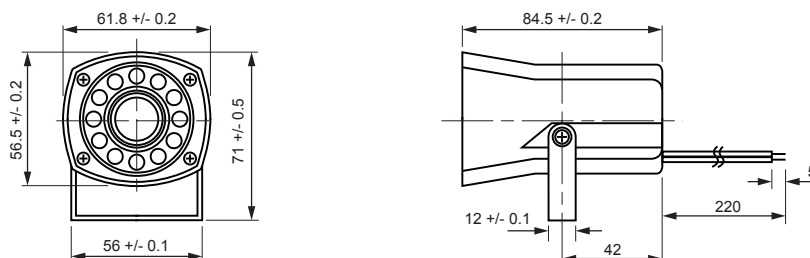


### Electrical Specifications

Unit : mm

| Part Number           | SF12P              |
|-----------------------|--------------------|
| Operating Voltage     | 3 ~ 18 V           |
| Rated Voltage         | 12 V               |
| Rated Current         | Max. 8 mA          |
| Tone Nature           | Single             |
| Sound Output          | Min. 75 dB , 30 cm |
| Resonant Frequency    | 5000 $\pm$ 1000 Hz |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | PBT                |
| Colour                | Black              |

## SERIES: PB625785

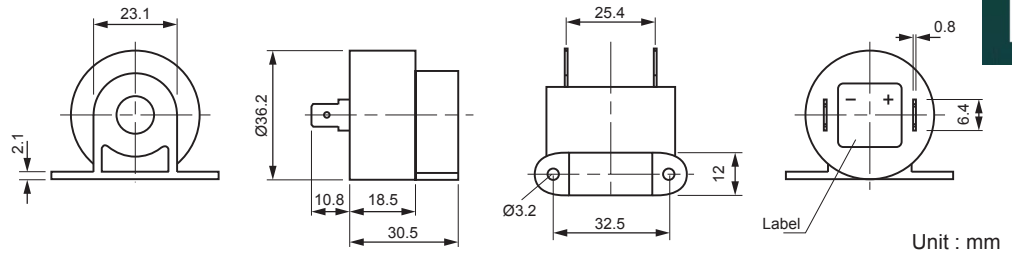


### Electrical Specifications

Unit : mm

| Part Number           | RC12W             |
|-----------------------|-------------------|
| Operating Voltage     | 6 ~ 15 V          |
| Rated Voltage         | 12 V              |
| Rated Current         | Max. 280 mA       |
| Tone Nature           | Siren             |
| Sound Output          | Min. 105 dB , 1 m |
| Resonant Frequency    | 2800 $\pm$ 500 Hz |
| Operating Temperature | -20 ~ +60°C       |
| Housing Material      | ABS               |
| Colour                | Black             |

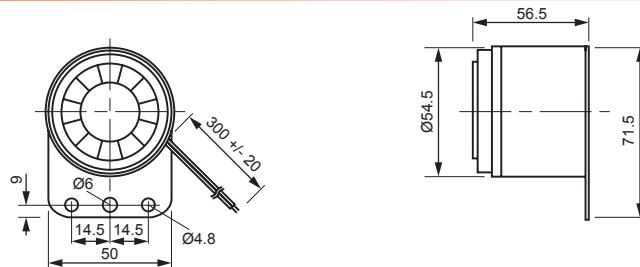
## SERIES: PB3631



### Electrical Specifications

| Part Number           | SC9G               | SC48G              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 9 ~ 64 V           | 9 ~ 64 V           |
| Rated Voltage         | 9 V                | 48 V               |
| Rated Current         | Max. 5 mA          | Max. 20 mA         |
| Tone Nature           | Single             | Single             |
| Sound Output          | Min. 72 dB , 30 cm | Min. 80 dB , 30 cm |
| Resonant Frequency    | 2800 +/- 500 Hz    | 2800 +/- 500 Hz    |
| Operating Temperature | -20 ~ +80°C        | -20 ~ +80°C        |
| Housing Material      | ABS                | ABS                |
| Colour                | Black              | Black              |

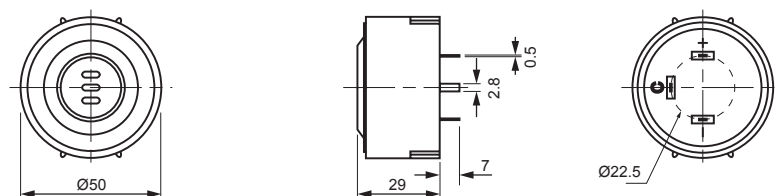
## SERIES: PB5557



### Electrical Specifications

| Part Number           | RD12W             |
|-----------------------|-------------------|
| Operating Voltage     | 6 ~ 15 V          |
| Rated Voltage         | 12 V              |
| Rated Current         | Max. 300 mA       |
| Tone Nature           | Siren             |
| Sound Output          | Min. 105 dB , 1 m |
| Resonant Frequency    | 3500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +60°C       |
| Housing Material      | ABS               |
| Colour                | Black             |

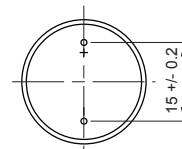
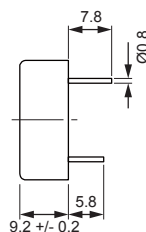
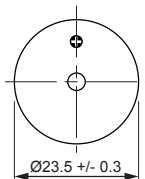
## SERIES: PB5029



### Electrical Specifications

| Part Number           | SC12T               |
|-----------------------|---------------------|
| Operating Voltage     | 3 ~ 24 V            |
| Rated Voltage         | 12 V                |
| Rated Current         | Max. 70 mA          |
| Tone Nature           | Single              |
| Sound Output          | Min. 100 dB , 30 cm |
| Resonant Frequency    | 2500 +/- 500 Hz     |
| Operating Temperature | -40 ~ +85°C         |
| Housing Material      | Noryl               |
| Colour                | Black               |

## SERIES: PB2409

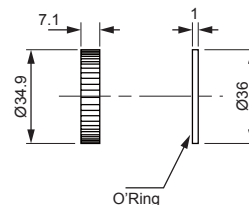
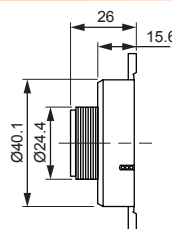
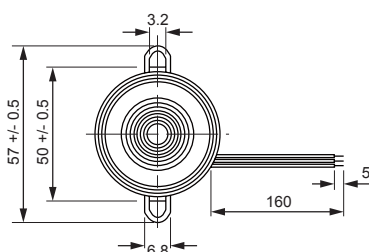


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | SD12P              |
| Operating Voltage     | 8 ~ 18 V           |
| Rated Voltage         | 12 V               |
| Rated Current         | Max. 20 mA         |
| Tone Nature           | Single             |
| Sound Output          | Min. 90 dB , 30 cm |
| Resonant Frequency    | 3500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | PBT                |
| Colour                | Black              |

## SERIES: PB4026

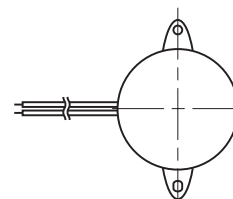
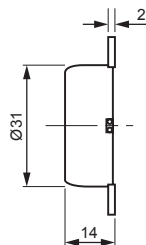
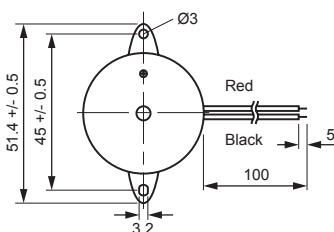


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | DC24W              |
| Operating Voltage     | 3 ~ 28 V           |
| Rated Voltage         | 24 V               |
| Rated Current         | Max. 20 mA         |
| Tone Nature           | Single / Pulse     |
| Sound Output          | Min. 90 dB , 30 cm |
| Resonant Frequency    | 2500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: PB3114



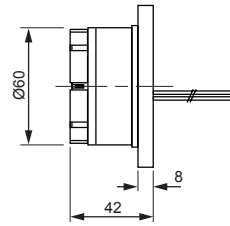
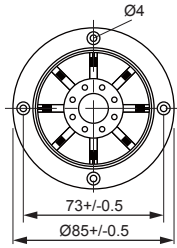
Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | SD9W               |
| Operating Voltage     | 3 ~ 20 V           |
| Rated Voltage         | 9 V                |
| Rated Current         | Max. 8 mA          |
| Tone Nature           | Single             |
| Sound Output          | Min. 95 dB , 30 cm |
| Resonant Frequency    | 3500 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | ABS                |
| Colour                | Black              |



**SERIES: PB8542**

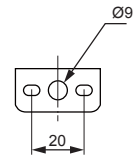
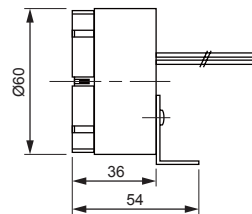
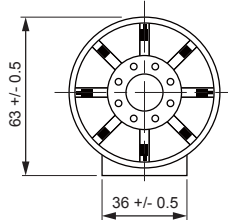


Unit : mm

**Electrical Specifications**

| Part Number           | TCC12W                   | RC24W             |
|-----------------------|--------------------------|-------------------|
| Operating Voltage     | 8 ~ 15 V                 | 15 ~ 30 V         |
| Rated Voltage         | 12 V                     | 24 V              |
| Rated Current         | Max. 300 mA              | Max. 300 mA       |
| Tone Nature           | Two                      | Siren             |
| Sound Output          | Min. 105 dB , 1 m        | Min. 100 dB , 1 m |
| Resonant Frequency    | (2600 ~ 2800) +/- 500 Hz | 2800 +/- 500 Hz   |
| Operating Temperature | -20 ~ +70°C              | -20 ~ +70°C       |
| Housing Material      | ABS                      | ABS               |
| Colour                | White                    | White             |

**SERIES: PB6036**

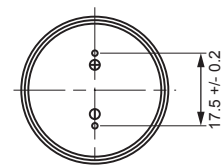
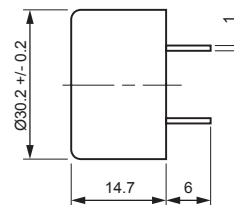
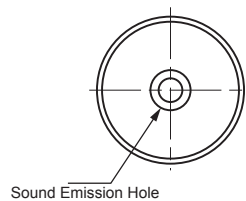


Unit : mm

**Electrical Specifications**

| Part Number           | TCD12W                   | PC24W             |
|-----------------------|--------------------------|-------------------|
| Operating Voltage     | 8 ~ 15 V                 | 15 ~ 30 V         |
| Rated Voltage         | 12 V                     | 24 V              |
| Rated Current         | Max. 200 mA              | Max. 300 mA       |
| Tone Nature           | Two                      | Pulse             |
| Sound Output          | Min. 105 dB , 1 m        | Min. 100 dB , 1 m |
| Resonant Frequency    | (2500 ~ 3500) +/- 500 Hz | 2800 +/- 500 Hz   |
| Operating Temperature | -20 ~ +70°C              | -20 ~ +70°C       |
| Housing Material      | ABS                      | ABS               |
| Colour                | Black                    | Black             |

**SERIES: PB3015**

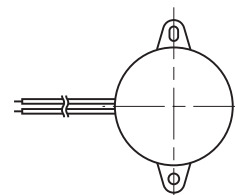
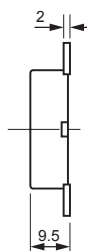
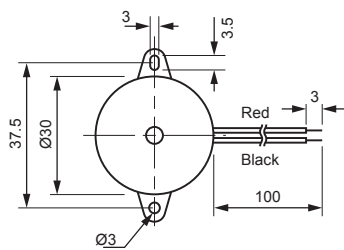


Unit : mm

**Electrical Specifications**

| Part Number           | SD12P               |
|-----------------------|---------------------|
| Operating Voltage     | 3 ~ 20 V            |
| Rated Voltage         | 12 V                |
| Rated Current         | Max. 10 mA          |
| Tone Nature           | Single              |
| Sound Output          | Min. 100 dB , 10 cm |
| Resonant Frequency    | 3200 +/- 500 Hz     |
| Operating Temperature | -20 ~ +60°C         |
| Housing Material      | ABS                 |
| Colour                | Black               |

## SERIES: PB3010

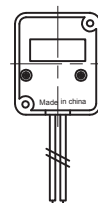
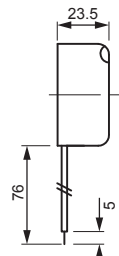
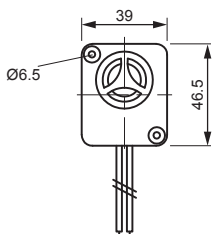


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | SD12W              |
| Operating Voltage     | 3 ~ 20 V           |
| Rated Voltage         | 12 V               |
| Rated Current         | Max. 12 mA         |
| Tone Nature           | Single             |
| Sound Output          | Min. 95 dB , 10 cm |
| Resonant Frequency    | 3400 +/- 500 Hz    |
| Operating Temperature | -30 ~ +80°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: PB473924

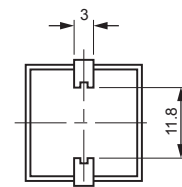
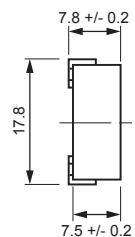
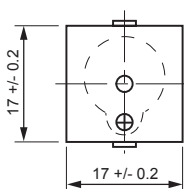


Unit : mm

### Electrical Specifications

|                       |                     |
|-----------------------|---------------------|
| Part Number           | RC12W               |
| Operating Voltage     | 6 ~ 15 V            |
| Rated Voltage         | 12 V                |
| Rated Current         | Max. 130 mA         |
| Tone Nature           | Siren               |
| Sound Output          | Min. 108 dB , 30 cm |
| Resonant Frequency    | 2800 +/- 500 Hz     |
| Operating Temperature | -20 ~ +60°C         |
| Housing Material      | ABS                 |
| Colour                | Black               |

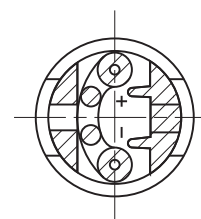
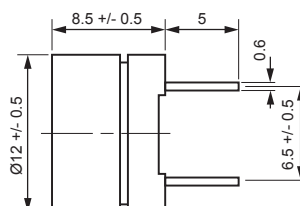
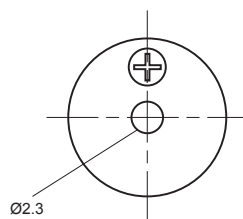
## SERIES: SPB1708



Unit : mm

### Electrical Specifications

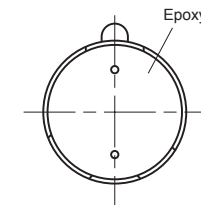
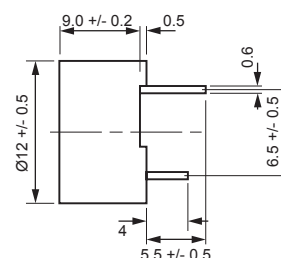
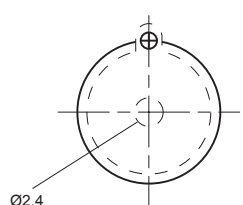
|                       |                    |
|-----------------------|--------------------|
| Part Number           | SE12D              |
| Operating Voltage     | 3 ~ 20 V           |
| Rated Voltage         | 12 V               |
| Rated Current         | Max. 8 mA          |
| Tone Nature           | Single             |
| Sound Output          | Min. 83 dB , 10 cm |
| Resonant Frequency    | 4000 +/- 500 Hz    |
| Operating Temperature | -30 ~ +70°C        |
| Housing Material      | PPS                |
| Colour                | Grey               |

**SERIES: MT1209**


Unit : mm

**Electrical Specifications**

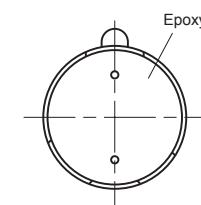
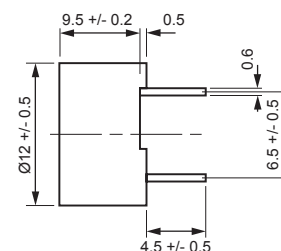
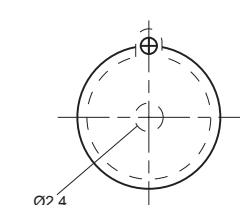
| Part Number           | 16B1P              | 16B3P              | 42G5P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 5 V            | 1 ~ 4 V            | 4 ~ 8 V            |
| Rated Voltage         | 1.5 V              | 3.6 V              | 5 V                |
| Rated Current         | Max. 30 mA         | Max. 60 mA         | Max. 50 mA         |
| Coil Resistance       | 16 +/- 4.5 ohm     | 16 +/- 4.5 ohm     | 42 +/- 5 ohm       |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            | 2048 Hz            | 4096 Hz            |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

**SERIES: MT1209A**


Unit : mm

**Electrical Specifications**

| Part Number           | 6.5B1P             | 47B5P              | 140D12P            |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 2 V            | 3 ~ 8 V            | 6 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 5 V                | 12 V               |
| Rated Current         | Max. 70 mA         | Max. 40 mA         | Max. 40 mA         |
| Coil Resistance       | 6.5 +/- 1 ohm      | 47 +/- 5 ohm       | 140 +/- 14 ohm     |
| Sound Output          | Min. 75 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            | 2048 Hz            | 2400 Hz            |
| Operating Temperature | -40 ~ +85°C        | -40 ~ +85°C        | -40 ~ +85°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

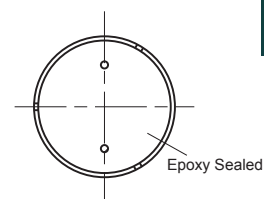
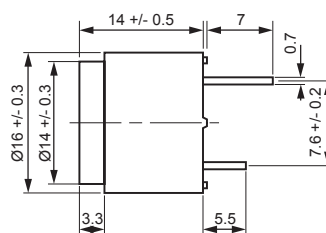
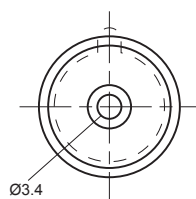
**SERIES: MT1210**


Unit : mm

**Electrical Specifications**

| Part Number           | 16D1P              | 140D12P            | 16H1P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 V            | 7 ~ 16 V           | 1 ~ 3 V            |
| Rated Voltage         | 1.5 V              | 12 V               | 1.5 V              |
| Rated Current         | Max. 30 mA         | Max. 40 mA         | Max. 30 mA         |
| Coil Resistance       | 16 +/- 3 ohm       | 140 +/- 10 ohm     | 16 +/- 3 ohm       |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2400 Hz            | 2400 Hz            | 2600 Hz            |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: MT1614

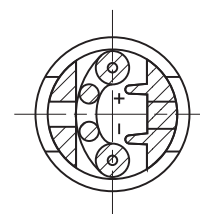
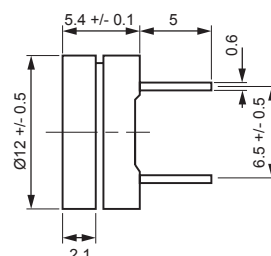
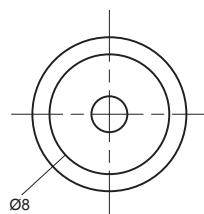


### Electrical Specifications

Unit : mm

| Part Number           | 27B1P              | 50B6P              | 115B12P            |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 2 V            | 4 ~ 8 V            | 9 ~ 15 V           |
| Rated Voltage         | 1.5 V              | 6 V                | 12 V               |
| Rated Current         | Max. 15 mA         | Max. 40 mA         | Max. 40 mA         |
| Coil Resistance       | 27 +/- 3 ohm       | 50 +/- 5 ohm       | 115 +/- 12 ohm     |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            | 2048 Hz            | 2048 Hz            |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: MT1205

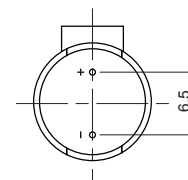
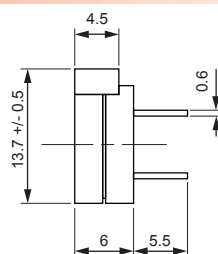
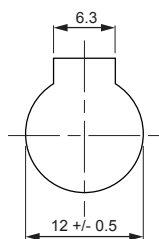


### Electrical Specifications

Unit : mm

| Part Number           | 16B1P              | 42B1P              | 50B1P              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 2 V            | 1 ~ 2 V            | 1 ~ 2 V            |
| Rated Voltage         | 1.5 V              | 1.5 V              | 1.5 V              |
| Rated Current         | Max. 30 mA         | Max. 15 mA         | Max. 10 mA         |
| Coil Resistance       | 16 +/- 4.5 ohm     | 42 +/- 5 ohm       | 50 +/- 7.5 ohm     |
| Sound Output          | Min. 75 dB , 10 cm | Min. 70 dB , 10 cm | Min. 70 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            | 2048 Hz            | 2048 Hz            |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: DMT1206

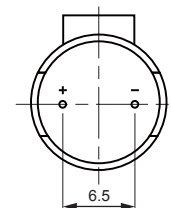
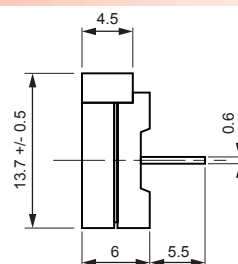
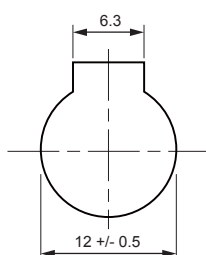


### Electrical Specifications

Unit : mm

| Part Number           | 6.5H1P             | 6.5E1P             |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 2 V            | 1 ~ 2 V            |
| Rated Voltage         | 1.5 V              | 1.5 V              |
| Rated Current         | Max. 70 mA         | Max. 70 mA         |
| Coil Resistance       | 6.5 +/- 1 ohm      | 6.5 +/- 1 ohm      |
| Sound Output          | Min. 90 dB , 10 cm | Min. 90 dB , 10 cm |
| Resonant Frequency    | 2500 Hz            | 2731 Hz            |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +70°C        |
| Housing Material      | Noryl              | Noryl              |
| Colour                | Black              | Black              |

# SERIES: DMT1206A

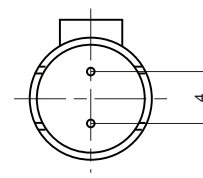
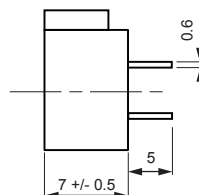
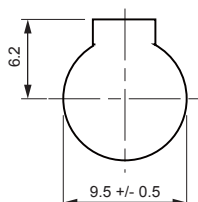


Unit : mm

## Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 6.5E1P             |
| Operating Voltage     | 1 ~ 2 V            |
| Rated Voltage         | 1.5 V              |
| Rated Current         | Max. 70 mA         |
| Coil Resistance       | 6.5 +/- 1 ohm      |
| Sound Output          | Min. 90 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

# SERIES: DMT1007

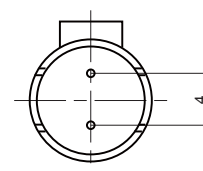
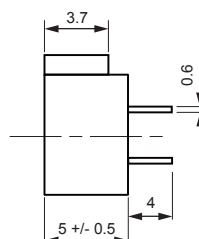
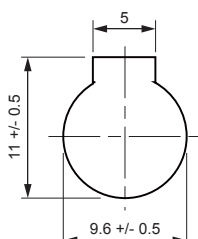


Unit : mm

## Electrical Specifications

|                       |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | 5.5E1P             | 40E5P              | 5.5F1P             |
| Operating Voltage     | 1 ~ 2 V            | 4 ~ 8 V            | 1 ~ 2 V            |
| Rated Voltage         | 1.5 V              | 5 V                | 1.5 V              |
| Rated Current         | Max. 80 mA         | Max. 100 mA        | Max. 80 mA         |
| Coil Resistance       | 5.5 +/- 1 ohm      | 40 +/- 7.5 ohm     | 5.5 +/- 1 ohm      |
| Sound Output          | Min. 80 dB , 10 cm | Min. 85 dB , 10 cm | Min. 80 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 2731 Hz            | 3100 Hz            |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

# SERIES: DMT1005

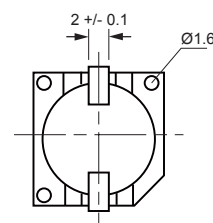
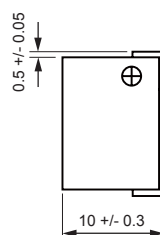
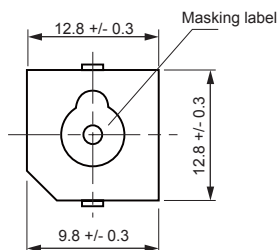


Unit : mm

## Electrical Specifications

|                       |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | 5.5E1P             | 40E5P              | 40F5P              |
| Operating Voltage     | 1 ~ 2 V            | 4 ~ 8 V            | 4 ~ 8 V            |
| Rated Voltage         | 1.5 V              | 5 V                | 5 V                |
| Rated Current         | Max. 80 mA         | Max. 100 mA        | Max. 100 mA        |
| Coil Resistance       | 5.5 +/- 1 ohm      | 40 +/- 7.5 ohm     | 40 +/- 7.5 ohm     |
| Sound Output          | Min. 80 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 2731 Hz            | 3100 Hz            |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +60°C        | -20 ~ +60°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: SMT1310

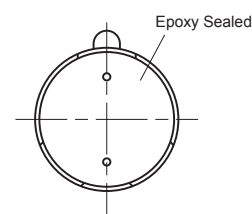
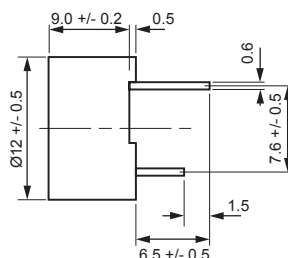
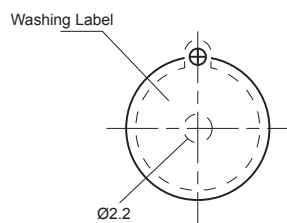


Unit : mm

### Electrical Specifications

|                       |                    |                    |
|-----------------------|--------------------|--------------------|
| Part Number           | 47D5D              | 140D12D            |
| Operating Voltage     | 3 ~ 8 V            | 6 ~ 15 V           |
| Rated Voltage         | 5 V                | 12 V               |
| Rated Current         | Max. 40 mA         | Max. 40 mA         |
| Coil Resistance       | 47 +/- 5 ohm       | 140 +/- 14 ohm     |
| Sound Output          | Min. 90 dB , 10 cm | Min. 90 dB , 10 cm |
| Resonant Frequency    | 2400 Hz            | 2400 Hz            |
| Operating Temperature | -40 ~ +85°C        | -40 ~ +85°C        |
| Housing Material      | PPS                | PPS                |
| Colour                | Grey               | Grey               |

## SERIES: MT1210A

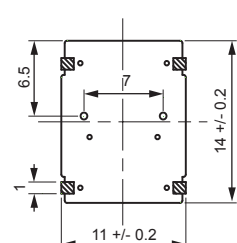
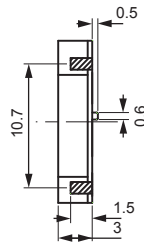
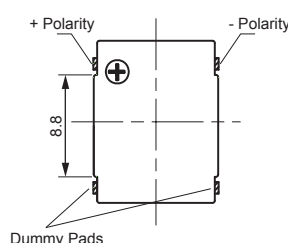
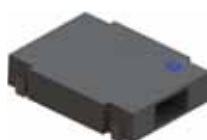


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 50C6P              |
| Operating Voltage     | 4 ~ 8 V            |
| Rated Voltage         | 6 V                |
| Rated Current         | Max. 40 mA         |
| Coil Resistance       | 50 +/- 5 ohm       |
| Sound Output          | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2200 Hz            |
| Operating Temperature | -40 ~ +85°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

## SERIES: SMT141103

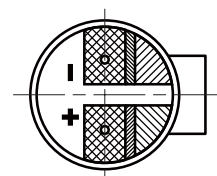
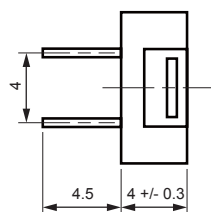
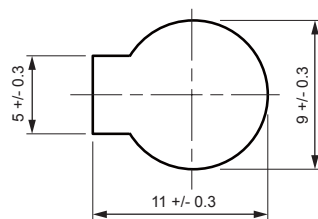


Unit : mm

### Electrical Specifications

|                       |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | 18E3D              | 9E1D               | 42F5D              |
| Operating Voltage     | 2 ~ 4 V            | 1 ~ 2 V            | 4 ~ 7 V            |
| Rated Voltage         | 3 V                | 1.5 V              | 5 V                |
| Rated Current         | Max. 80 mA         | Max. 80 mA         | Max. 80 mA         |
| Coil Resistance       | 18 +/- 3 ohm       | 9 +/- 2 ohm        | 42 +/- 4 ohm       |
| Sound Output          | Min. 87 dB , 10 cm | Min. 85 dB , 10 cm | Min. 87 dB , 10 cm |
| Resonant Frequency    | 2730 Hz            | 2731 Hz            | 3200 Hz            |
| Operating Temperature | -30 ~ +85°C        | -30 ~ +85°C        | -30 ~ +85°C        |
| Housing Material      | LCP                | LCP                | LCP                |
| Colour                | Black              | Black              | Black              |

# SERIES: DMT0904

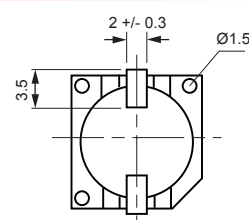
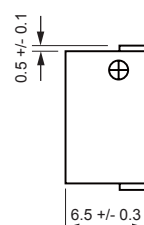
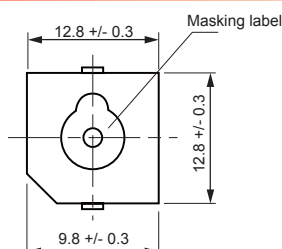


Unit : mm

## Electrical Specifications

|                       |                   |
|-----------------------|-------------------|
| Part Number           | 5.5E1P            |
| Operating Voltage     | 1 ~ 3 V           |
| Rated Voltage         | 1.5 V             |
| Rated Current         | Max. 80 mA        |
| Coil Resistance       | 5.5 +/- 1 ohm     |
| Sound Output          | Min. 85dB , 10 cm |
| Resonant Frequency    | 2731 Hz           |
| Operating Temperature | -20 ~ +70°C       |
| Housing Material      | Noryl             |
| Colour                | Black             |

# SERIES: SMT1307

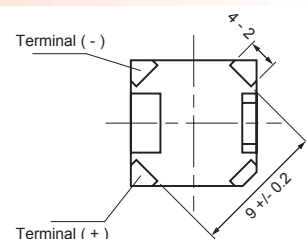
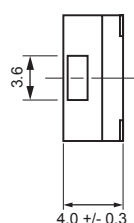
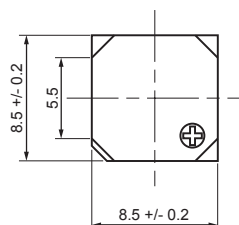
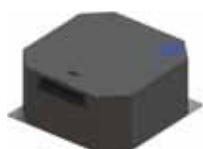


Unit : mm

## Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 50D5D              |
| Operating Voltage     | 4 ~ 7 V            |
| Rated Voltage         | 5 V                |
| Rated Current         | Max. 60 mA         |
| Coil Resistance       | 50 +/- 5 ohm       |
| Sound Output          | Min. 90 dB , 10 cm |
| Resonant Frequency    | 2400 Hz            |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | PPS                |
| Colour                | Grey               |

# SERIES: SMT0904

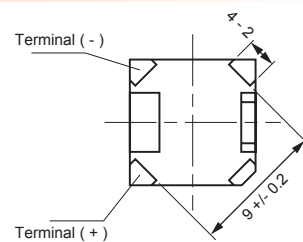
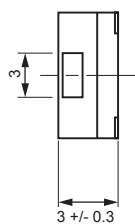
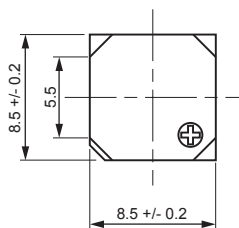


Unit : mm

## Electrical Specifications

|                       |                    |                    |                    |
|-----------------------|--------------------|--------------------|--------------------|
| Part Number           | 16D3D              | 16E3D              | 32F5D              |
| Operating Voltage     | 2 ~ 4 V            | 2 ~ 4 V            | 3 ~ 7 V            |
| Rated Voltage         | 3.6 V              | 3.6 V              | 5 V                |
| Rated Current         | Max. 90 mA         | Max. 90 mA         | Max. 80 mA         |
| Coil Resistance       | 16 +/- 3 ohm       | 16 +/- 3 ohm       | 32 +/- 3 ohm       |
| Sound Output          | Min. 88 dB , 10 cm | Min. 88 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2400 Hz            | 2731 Hz            | 3200 Hz            |
| Operating Temperature | -30 ~ +70°C        | -30 ~ +70°C        | -30 ~ +70°C        |
| Housing Material      | LCP                | LCP                | LCP                |
| Colour                | Black              | Black              | Black              |

## SERIES: SMT0903

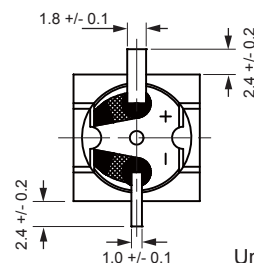
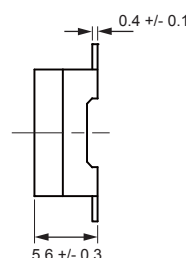
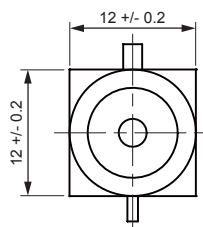


Unit : mm

### Electrical Specifications

| Part Number           | 16E3D              | 32E5D              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 2 ~ 4 V            | 3 ~ 7 V            |
| Rated Voltage         | 3.6 V              | 5 V                |
| Rated Current         | Max. 100 mA        | Max. 80 mA         |
| Coil Resistance       | 16 +/- 3 ohm       | 32 +/- 3 ohm       |
| Sound Output          | Min. 88 dB , 10 cm | Min. 88 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 2731 Hz            |
| Operating Temperature | -30 ~ +70°C        | -30 ~ +70°C        |
| Housing Material      | LCP                | LCP                |
| Colour                | Black              | Black              |

## SERIES: SMT1206

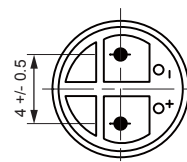
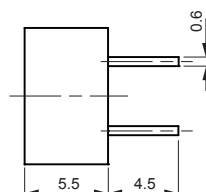
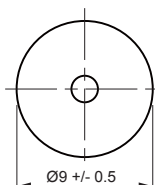


Unit : mm

### Electrical Specifications

| Part Number           | 16B1D              |
|-----------------------|--------------------|
| Operating Voltage     | 1 ~ 3 V            |
| Rated Voltage         | 1.5 V              |
| Rated Current         | Max. 30 mA         |
| Coil Resistance       | 16 +/- 4 ohm       |
| Sound Output          | Min. 75 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | PPS                |
| Colour                | Grey               |

## SERIES: MT0906

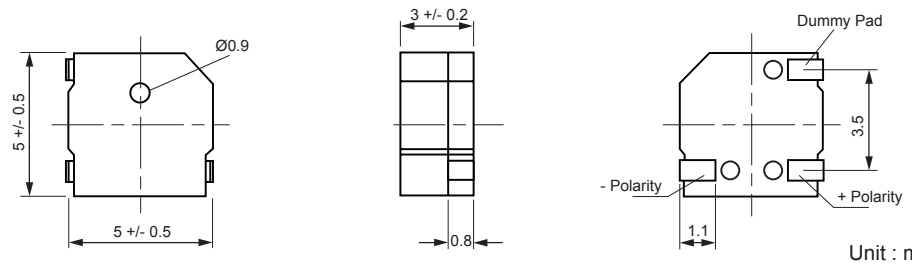


Unit : mm

### Electrical Specifications

| Part Number           | 40E5P              | 40F5P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 4 ~ 8 V            | 4 ~ 8 V            |
| Rated Voltage         | 5 V                | 5 V                |
| Rated Current         | Max. 70 mA         | Max. 100 mA        |
| Coil Resistance       | 40 +/- 5 ohm       | 40 +/- 7.5 ohm     |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 3100 Hz            |
| Operating Temperature | -20 ~ +70°C        | -20 ~ +60°C        |
| Housing Material      | Noryl              | Noryl              |
| Colour                | Black              | Black              |

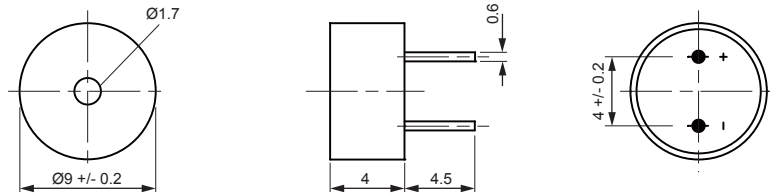
## SERIES: SMT0503



### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 17G3D              |
| Operating Voltage     | 2 ~ 4 V            |
| Rated Voltage         | 3 V                |
| Rated Current         | Max. 90 mA         |
| Coil Resistance       | 17 +/- 2 ohm       |
| Sound Output          | Min. 75 dB , 10 cm |
| Resonant Frequency    | 4000 Hz            |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

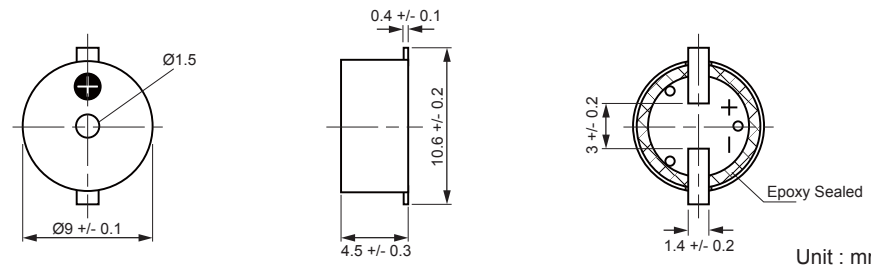
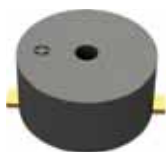
## SERIES: MT0904



### Electrical Specifications

|                       |                   |                   |
|-----------------------|-------------------|-------------------|
| Part Number           | 6E1P              | 5E5P              |
| Operating Voltage     | 1 ~ 2 V           | 4 ~ 6 V           |
| Rated Voltage         | 1.5 V             | 5 V               |
| Rated Current         | Max. 80 mA        | Max. 80 mA        |
| Coil Resistance       | 6 +/- 1 ohm       | 30 +/- 4.5 ohm    |
| Sound Output          | Min. 80dB , 10 cm | Min. 85dB , 10 cm |
| Resonant Frequency    | 2731 Hz           | 2731 Hz           |
| Operating Temperature | -20 ~ +70°C       | -20 ~ +70°C       |
| Housing Material      | Noryl             | Noryl             |
| Colour                | Black             | Black             |

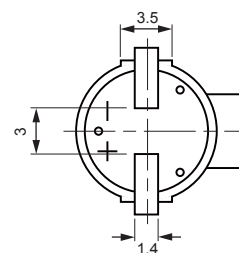
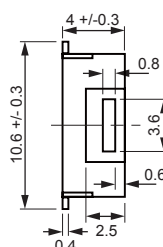
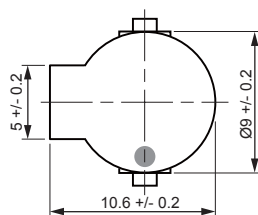
## SERIES: SMT0905



### Electrical Specifications

|                       |                    |                    |
|-----------------------|--------------------|--------------------|
| Part Number           | 16E3D              | 30E5D              |
| Operating Voltage     | 1.5 ~ 4 V          | 4 ~ 6 V            |
| Rated Voltage         | 3 V                | 5 V                |
| Rated Current         | Max. 80 mA         | Max. 80 mA         |
| Coil Resistance       | 16 +/- 3 ohm       | 30 +/- 3 ohm       |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 2731 Hz            |
| Operating Temperature | -30 ~ +70°C        | -30 ~ +70°C        |
| Housing Material      | LCP                | LCP                |
| Colour                | Black              | Black              |

## SERIES: DSMT0904

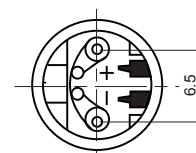
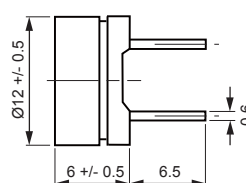
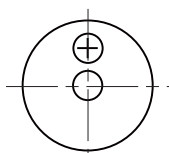


Unit : mm

### Electrical Specifications

| Part Number           | 16E3D              | 30E5D              | 10F3D              |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 1.5 ~ 4 V          | 3 ~ 7 V            | 1.5 ~ 4 V          |
| Rated Voltage         | 3 V                | 5 V                | 3 V                |
| Rated Current         | Max. 80 mA         | Max. 100 mA        | Max. 90 mA         |
| Coil Resistance       | 16 +/- 3 ohm       | 30 +/- 4 ohm       | 10 +/- 1 ohm       |
| Sound Output          | Min. 85 dB , 10 cm | Min. 98 dB , 10 cm | Min. 88 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 2731 Hz            | 3200 Hz            |
| Operating Temperature | -30 ~ +85°C        | -30 ~ +85°C        | -30 ~ +85°C        |
| Housing Material      | LCP                | LCP                | LCP                |
| Colour                | Black              | Black              | Black              |

## SERIES: MT1206

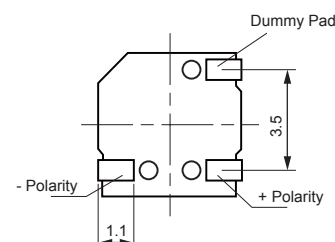
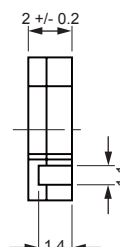
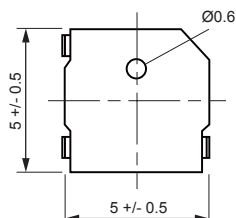


Unit : mm

### Electrical Specifications

| Part Number           | 16B1P              | 16B3P              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 1 ~ 3 V            | 2 ~ 4 V            |
| Rated Voltage         | 1.5 V              | 3 V                |
| Rated Current         | Max. 30 mA         | Max. 50 mA         |
| Coil Resistance       | 16 +/- 2 ohm       | 16 +/- 2 ohm       |
| Sound Output          | Min. 80 dB , 10 cm | Min. 86 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            | 2048 Hz            |
| Operating Temperature | -20 ~ +60°C        | -20 ~ +70°C        |
| Housing Material      | ABS / Noryl        | ABS / Noryl        |
| Colour                | Black              | Black              |

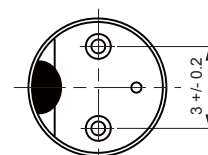
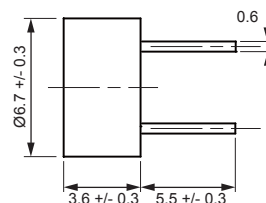
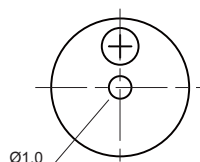
## SERIES: SMT0502



Unit : mm

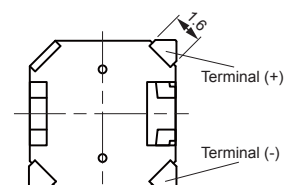
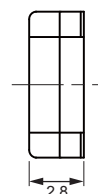
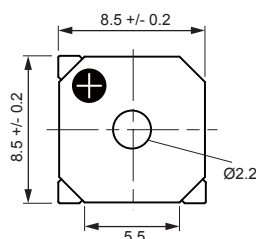
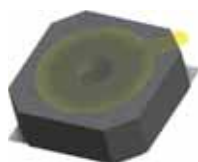
### Electrical Specifications

| Part Number           | 12G3D              |
|-----------------------|--------------------|
| Operating Voltage     | 2 ~ 4 V            |
| Rated Voltage         | 3 V                |
| Rated Current         | Max. 100 mA        |
| Coil Resistance       | 12 +/- 2.5 ohm     |
| Sound Output          | Min. 78 dB , 10 cm |
| Resonant Frequency    | 4000 Hz            |
| Operating Temperature | -30 ~ +70°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

**SERIES: MT0704**

**Electrical Specifications**

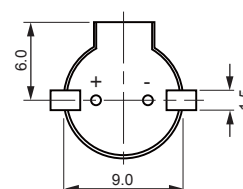
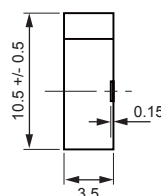
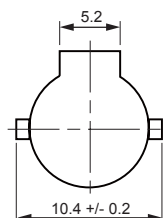
Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 18F3P              |
| Operating Voltage     | 2 ~ 5 V            |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 80 mA         |
| Coil Resistance       | 18 +/- 2 ohm       |
| Sound Output          | Min. 72 dB , 10 cm |
| Resonant Frequency    | 3200 Hz            |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

**SERIES: SMT0903A**

**Electrical Specifications**

Unit : mm

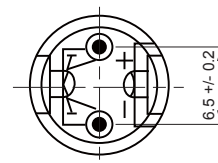
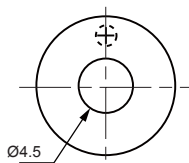
|                       |                    |
|-----------------------|--------------------|
| Part Number           | 15E3D              |
| Operating Voltage     | 2 ~ 4 V            |
| Rated Voltage         | 3 V                |
| Rated Current         | Max. 80 mA         |
| Coil Resistance       | 15 +/- 3 ohm       |
| Sound Output          | Min. 82 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            |
| Operating Temperature | -30 ~ +70°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

**SERIES: DSMT0904A**

**Electrical Specifications**

Unit : mm

|                       |                    |                    |
|-----------------------|--------------------|--------------------|
| Part Number           | 16E1D              | 16F3D              |
| Operating Voltage     | 1 ~ 2 V            | 2 ~ 4 V            |
| Rated Voltage         | 1.5 V              | 3 V                |
| Rated Current         | Max. 50 mA         | Max. 100 mA        |
| Coil Resistance       | 16 +/- 2 ohm       | 16 +/- 2 ohm       |
| Sound Output          | Min. 80 dB , 10 cm | Min. 82 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 3200 Hz            |
| Operating Temperature | -20 ~ +60°C        | -40 ~ +85°C        |
| Housing Material      | LCP                | LCP                |
| Colour                | Black              | Black              |

## SERIES: MT1206A

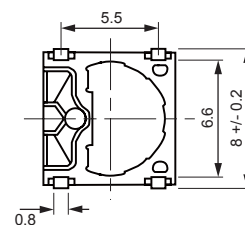
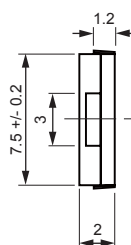
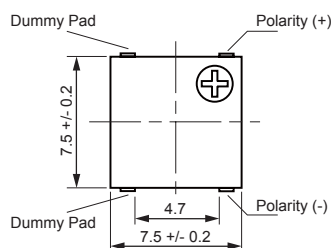


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 16B1P              |
| Operating Voltage     | 1 ~ 3 V            |
| Rated Voltage         | 1.5 V              |
| Rated Current         | Max. 30 mA         |
| Coil Resistance       | 16 +/- 4 ohm       |
| Sound Output          | Min. 75 dB , 10 cm |
| Resonant Frequency    | 2048 Hz            |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

## SERIES: SMT0802

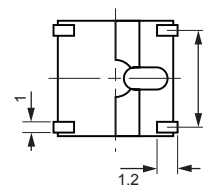
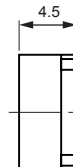
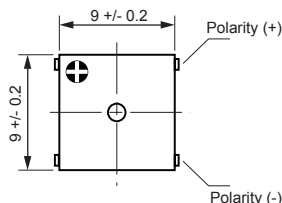


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 12E3D              |
| Operating Voltage     | 2.5 ~ 4.5 V        |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 120 mA        |
| Coil Resistance       | 12 +/- 2 ohm       |
| Sound Output          | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2700 Hz            |
| Operating Temperature | -30 ~ +70°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

## SERIES: SMT0905A

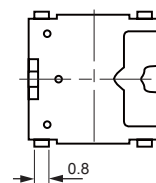
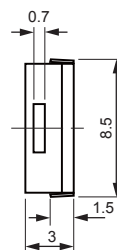
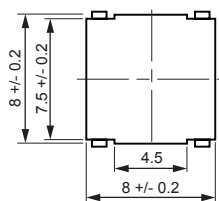


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 16H3D              |
| Operating Voltage     | 2.5 ~ 4.5 V        |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 100 mA        |
| Coil Resistance       | 16 +/- 3 ohm       |
| Sound Output          | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2670 Hz            |
| Operating Temperature | -30 ~ +80°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

## SERIES: SMT0803

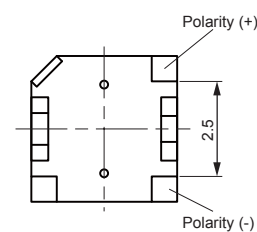
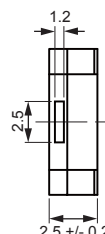
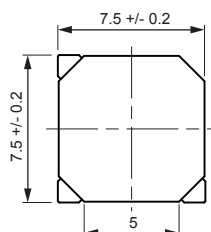


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 16E3D              |
| Operating Voltage     | 2 ~ 5 V            |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 90 mA         |
| Coil Resistance       | 16 +/- 3 ohm       |
| Sound Output          | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            |
| Operating Temperature | -40 ~ +85°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

## SERIES: SMT0803A

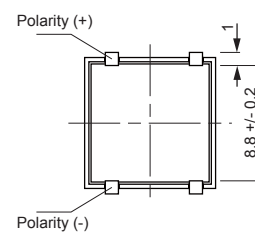
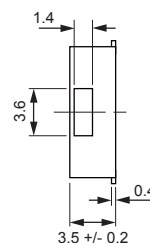
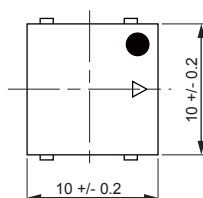


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 12E3D              |
| Operating Voltage     | 2 ~ 4.5 V          |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 100 mA        |
| Coil Resistance       | 12 +/- 3 ohm       |
| Sound Output          | Min. 85 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

## SERIES: SMT1004

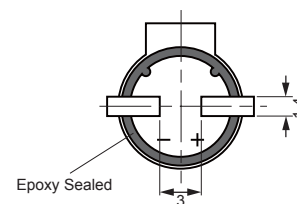
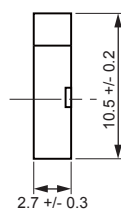
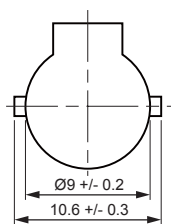


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 18E3D              |
| Operating Voltage     | 2 ~ 4 V            |
| Rated Voltage         | 3.6 V              |
| Rated Current         | Max. 80 mA         |
| Coil Resistance       | 18 +/- 3 ohm       |
| Sound Output          | Min. 93 dB , 10 cm |
| Resonant Frequency    | 2830 Hz            |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | LCP                |
| Colour                | Black              |

## SERIES: DSMT0903

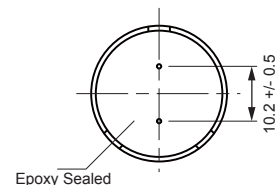
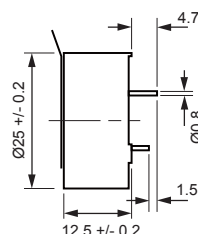
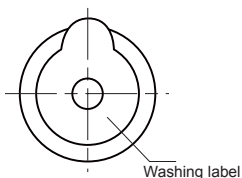


Unit : mm

### Electrical Specifications

| Part Number           | 15E3D              | 15F3D              |
|-----------------------|--------------------|--------------------|
| Operating Voltage     | 1.5 ~ 4 V          | 1.5 ~ 4 V          |
| Rated Voltage         | 3 V                | 3 V                |
| Rated Current         | Max. 90 mA         | Max. 90 mA         |
| Coil Resistance       | 15 +/- 3 ohm       | 15 +/- 3 ohm       |
| Sound Output          | Min. 82 dB , 10 cm | Min. 87 dB , 10 cm |
| Resonant Frequency    | 2731 Hz            | 3200 Hz            |
| Operating Temperature | -30 ~ +85°C        | -30 ~ +85°C        |
| Housing Material      | LCP                | LCP                |
| Colour                | Black              | Black              |

## SERIES: MT2513

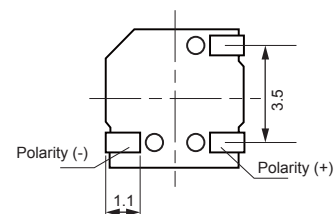
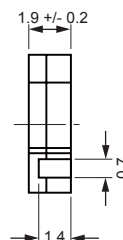
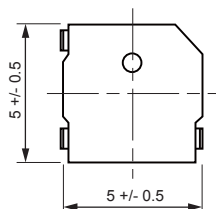


Unit : mm

### Electrical Specifications

| Part Number           | 27A5P              | 36A6P              | 120A12P            |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 7 V            | 3 ~ 8 V            | 8 ~ 14 V           |
| Rated Voltage         | 5 V                | 6 V                | 12 V               |
| Rated Current         | Max. 80 mA         | Max. 70 mA         | Max. 55 mA         |
| Coil Resistance       | 27 +/- 4 ohm       | 36 +/- 5 ohm       | 120 +/- 15 ohm     |
| Sound Output          | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm | Min. 85 dB , 10 cm |
| Resonant Frequency    | 960 Hz             | 960 Hz             | 960Hz              |
| Operating Temperature | -30 ~ +85°C        | -30 ~ +85°C        | -30 ~ +85°C        |
| Housing Material      | Noryl              | Noryl              | Noryl              |
| Colour                | Black              | Black              | Black              |

## SERIES: SMT0502A



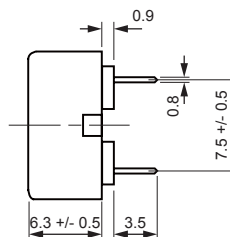
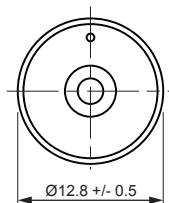
Unit : mm

### Electrical Specifications

| Part Number           | 12G3D              |
|-----------------------|--------------------|
| Operating Voltage     | 2 ~ 4 V            |
| Rated Voltage         | 3 V                |
| Rated Current         | Max. 110 mA        |
| Coil Resistance       | 12 +/- 3 ohm       |
| Sound Output          | Min. 73 dB , 10 cm |
| Resonant Frequency    | 4000 Hz            |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | LCP                |
| Colour                | Black              |



## SERIES: PT1306

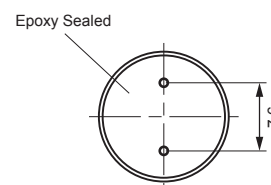
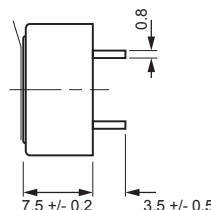
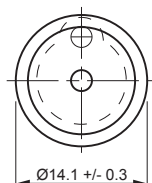


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-5P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 14000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | PBT                        |
| Colour                | Black                      |

## SERIES: PT1408

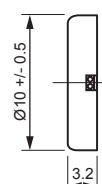
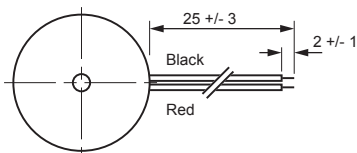


### Electrical Specifications

Unit : mm

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 40-12P                      |
| Max. Input Voltage    | 30 Vp-p                     |
| Rated Voltage         | 12 Vp-p (Square Wave)       |
| Capacitance           | 12000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 85 dB, 10 cm           |
| Resonant Frequency    | 4000 Hz                     |
| Operating Temperature | -20 ~ +80°C                 |
| Housing Material      | ABS                         |
| Colour                | Black                       |

## SERIES: PT1003

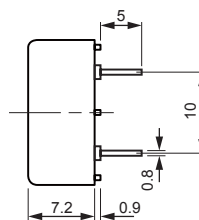
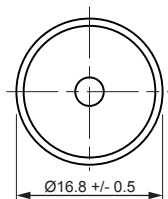


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 32-10W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 10 Vp-p (Square Wave)      |
| Capacitance           | 11000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 73 dB, 10 cm          |
| Resonant Frequency    | 3200 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT1707

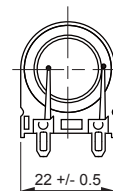
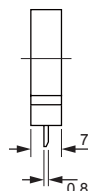
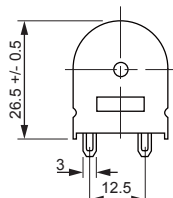


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-3P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         |
| Capacitance           | 10500 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | PBT                        |
| Colour                | Black                      |

## SERIES: PT272207

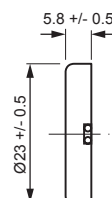
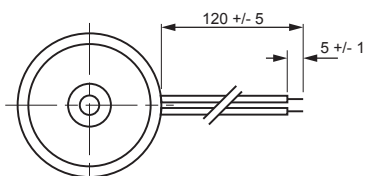


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 248-5P                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 18000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 2048 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | PBT                        |
| Colour                | Black                      |

## SERIES: PT2306

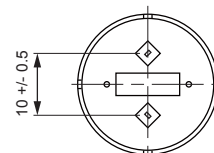
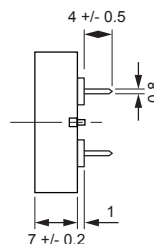
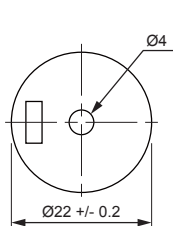


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 34-12W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 15000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 70 dB, 30 cm          |
| Resonant Frequency    | 3400 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT2207

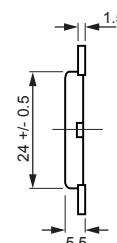
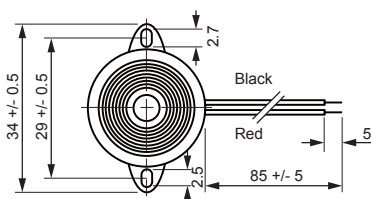


Unit : mm

### Electrical Specifications

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 40-3P                       |
| Max. Input Voltage    | 30 Vp-p                     |
| Rated Voltage         | 3 Vrms (Sine Wave)          |
| Capacitance           | 15000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm           |
| Resonant Frequency    | 4000 Hz                     |
| Operating Temperature | -30 ~ +70°C                 |
| Housing Material      | PBT                         |
| Colour                | Black                       |

## SERIES: PT2406

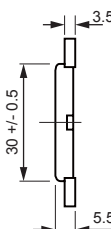
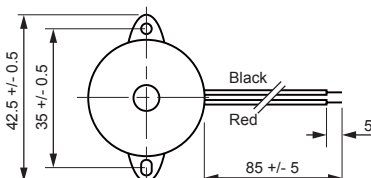


Unit : mm

### Electrical Specifications

|                       |                            |                            |
|-----------------------|----------------------------|----------------------------|
| Part Number           | 35-3W                      | 40-12W                     |
| Max. Input Voltage    | 30 Vp-p                    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         | 12 Vp-p (Square Wave)      |
| Capacitance           | 28000 pF +/- 30% at 120 Hz | 20000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          | Min. 85 dB, 30 cm          |
| Resonant Frequency    | 3500 Hz                    | 4000 Hz                    |
| Operating Temperature | -20 ~ +70°C                | -20 ~ +60°C                |
| Housing Material      | ABS                        | ABS                        |
| Colour                | Black                      | Black                      |

## SERIES: PT3006

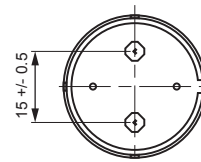
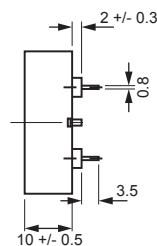
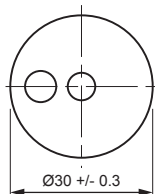


Unit : mm

### Electrical Specifications

|                       |                            |                            |
|-----------------------|----------------------------|----------------------------|
| Part Number           | 25-3W                      | 40-3W                      |
| Max. Input Voltage    | 30 Vp-p                    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         | 3 Vrms (Sine Wave)         |
| Capacitance           | 55000 pF +/- 30% at 120 Hz | 25000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 2500 Hz                    | 4000 Hz                    |
| Operating Temperature | -20 ~ +60°C                | -20 ~ +60°C                |
| Housing Material      | ABS                        | ABS                        |
| Colour                | Black                      | Black                      |

## SERIES: PT3010

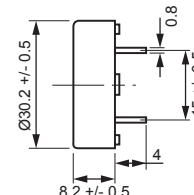
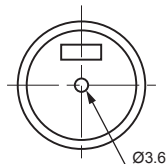


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 25-3P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         |
| Capacitance           | 25000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 2500 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | PBT                        |
| Colour                | White                      |

## SERIES: PT3008

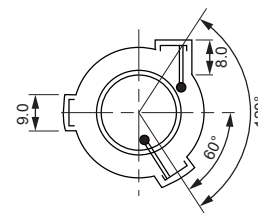
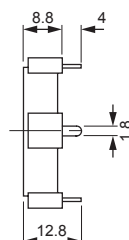
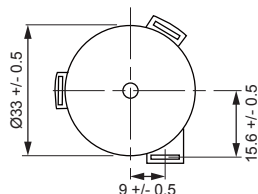


Unit : mm

### Electrical Specifications

|                       |                             |                             |
|-----------------------|-----------------------------|-----------------------------|
| Part Number           | 30-9P                       | 40-9P                       |
| Max. Input Voltage    | 40 Vp-p                     | 30 Vp-p                     |
| Rated Voltage         | 9 Vp-p (Square Wave)        | 9 Vp-p (Square Wave)        |
| Capacitance           | 35000 pF +/- 30% at 1000 Hz | 25000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm           | Min. 80 dB, 10 cm           |
| Resonant Frequency    | 3000 Hz                     | 4000 Hz                     |
| Operating Temperature | -20 ~ +70°C                 | -20 ~ +70°C                 |
| Housing Material      | PBT                         | PBT                         |
| Colour                | Black                       | Black                       |

## SERIES: PT3308

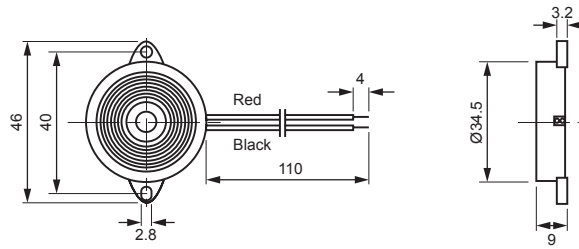


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 10-3T                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         |
| Capacitance           | 55000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 70 dB, 10 cm          |
| Resonant Frequency    | 1000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT3509

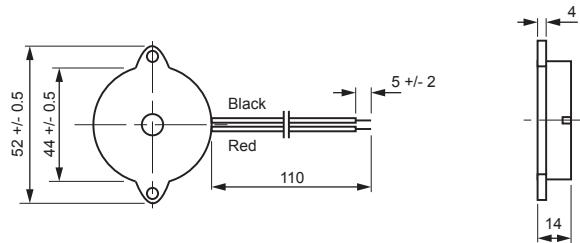


### Electrical Specifications

Unit : mm

|                       |                            |                            |
|-----------------------|----------------------------|----------------------------|
| Part Number           | 11-9W                      | 12-9W                      |
| Max. Input Voltage    | 30 Vp-p                    | 30 Vp-p                    |
| Rated Voltage         | 9 Vp-p (Square Wave)       | 9 Vp-p (Square Wave)       |
| Capacitance           | 55000 pF +/- 30% at 120 Hz | 50000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 1100 Hz                    | 1200 Hz                    |
| Operating Temperature | -20 ~ +60°C                | -20 ~ +60°C                |
| Housing Material      | ABS                        | ABS                        |
| Colour                | Black                      | Black                      |

## SERIES: PT4414

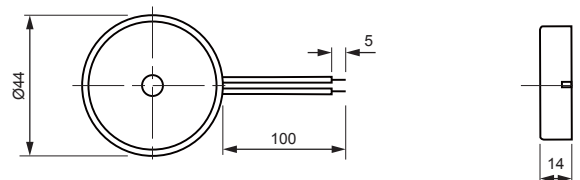


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 10-12W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 80000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 1000 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT4414A

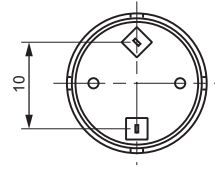
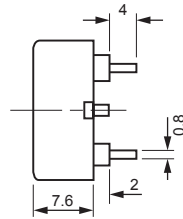
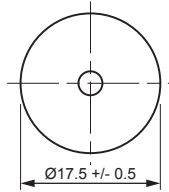


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 10-12W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 80000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 1000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT1808

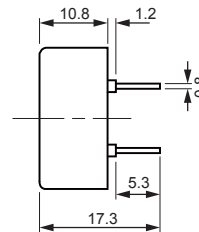
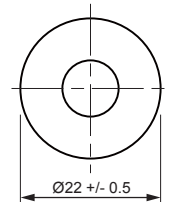


### Electrical Specifications

Unit : mm

|                       |                           |
|-----------------------|---------------------------|
| Part Number           | 40-3P                     |
| Max. Input Voltage    | 30 Vp-p                   |
| Rated Voltage         | 3 Vrms (Sine Wave)        |
| Capacitance           | 12000 pF +/- 30% at 120Hz |
| Sound Output          | Min. 85 dB, 10 cm         |
| Resonant Frequency    | 4000 Hz                   |
| Operating Temperature | -20 ~ +70°C               |
| Housing Material      | PBT                       |
| Colour                | Black                     |

## SERIES: PT2211

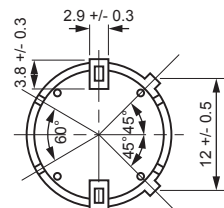
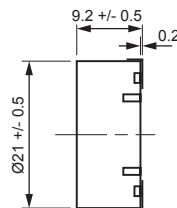
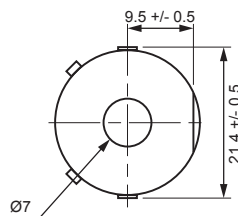


### Electrical Specifications

Unit : mm

|                       |                             |                             |
|-----------------------|-----------------------------|-----------------------------|
| Part Number           | 20-3P                       | 40-3P                       |
| Max. Input Voltage    | 30 Vp-p                     | 40 Vp-p                     |
| Rated Voltage         | 3 Vp-p (Square Wave)        | 3 Vp-p (Square Wave)        |
| Capacitance           | 30000 pF +/- 30% at 1000 Hz | 15000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 70 dB, 10 cm           | Min. 85 dB, 10 cm           |
| Resonant Frequency    | 2000 Hz                     | 4000 Hz                     |
| Operating Temperature | -30 ~ +70°C                 | -30 ~ +70°C                 |
| Housing Material      | PBT                         | PBT                         |
| Colour                | Black                       | Black                       |

## SERIES: SPT2109

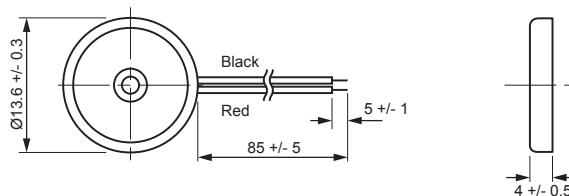


### Electrical Specifications

Unit : mm

|                       |                           |
|-----------------------|---------------------------|
| Part Number           | 40-3D                     |
| Max. Input Voltage    | 30 Vp-p                   |
| Rated Voltage         | 3 Vrms (Sine Wave)        |
| Capacitance           | 9000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 90 dB, 10 cm         |
| Resonant Frequency    | 4000 Hz                   |
| Operating Temperature | -20 ~ +70°C               |
| Housing Material      | PA46                      |
| Colour                | White                     |

## SERIES: PT1404

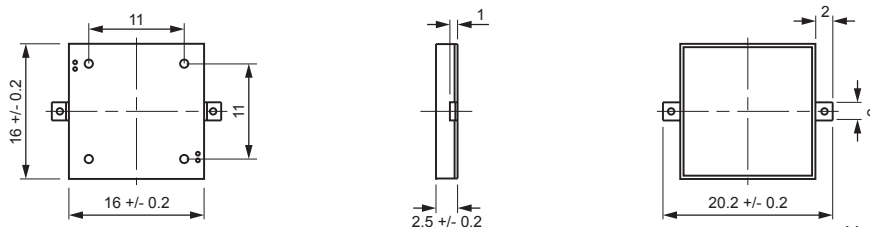


## Electrical Specifications

Unit : mm

|                       |                              |
|-----------------------|------------------------------|
| Part Number           | 48-9W                        |
| Max. Input Voltage    | 30 Vp-p                      |
| Rated Voltage         | 9 Vp-p (Square Wave)         |
| Capacitance           | 10000 pF $\pm$ 30% at 120 Hz |
| Sound Output          | Min. 80 dB, 10 cm            |
| Resonant Frequency    | 4800 Hz                      |
| Operating Temperature | -20 ~ +70°C                  |
| Housing Material      | ABS                          |
| Colour                | Black                        |

## SERIES: SPT1603

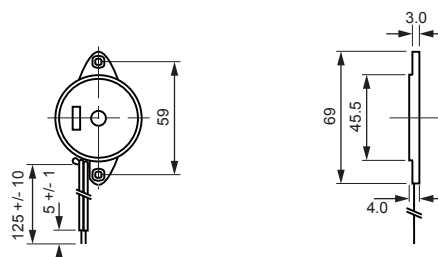


## Electrical Specifications

Unit : mm

|                       |                              |
|-----------------------|------------------------------|
| Part Number           | 40-5D                        |
| Max. Input Voltage    | 25 Vp-p                      |
| Rated Voltage         | 5 Vp-p (Square Wave)         |
| Capacitance           | 15000 pF $\pm$ 30% at 100 Hz |
| Sound Output          | Min. 75 dB, 10 cm            |
| Resonant Frequency    | 4000 Hz                      |
| Operating Temperature | -40 ~ +105°C                 |
| Housing Material      | LCP                          |
| Colour                | Black                        |

## SERIES: PT4604

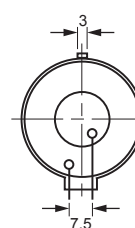
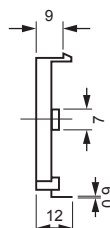
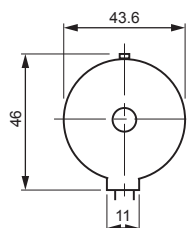


## Electrical Specifications

Unit : mm

|                       |                              |
|-----------------------|------------------------------|
| Part Number           | 12-12W                       |
| Max. Input Voltage    | 30 Vp-p                      |
| Rated Voltage         | 12 Vp-p (Square Wave)        |
| Capacitance           | 66000 pF $\pm$ 30% at 120 Hz |
| Sound Output          | Min. 80 dB, 30 cm            |
| Resonant Frequency    | 1200 Hz                      |
| Operating Temperature | -20 ~ +60°C                  |
| Housing Material      | ABS                          |
| Colour                | Black                        |

## SERIES: PT4409

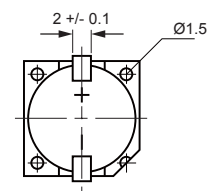
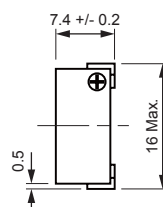
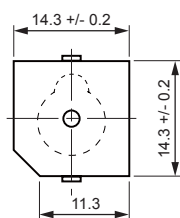


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 10-12P                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 66000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 70 dB, 30 cm          |
| Resonant Frequency    | 1000 Hz                    |
| Operating Temperature | -20 ~ +60°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: SPT1407

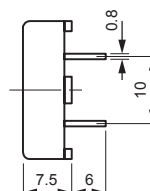
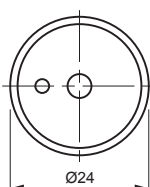
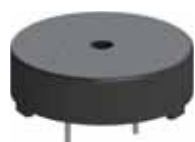


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-12D                     |
| Max. Input Voltage    | 20 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 15000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -30 ~ +85°C                |
| Housing Material      | PPS                        |
| Colour                | Black                      |

## SERIES: PT2408

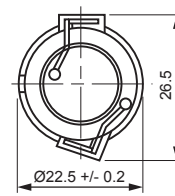
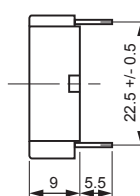
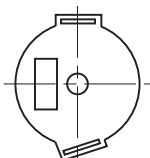


Unit : mm

### Electrical Specifications

|                       |                            |                            |
|-----------------------|----------------------------|----------------------------|
| Part Number           | 40-9P                      | 60-10P                     |
| Max. Input Voltage    | 30 Vp-p                    | 30 Vp-p                    |
| Rated Voltage         | 9 Vp-p (Square Wave)       | 10 Vp-p (Square Wave)      |
| Capacitance           | 17000 pF +/- 30% at 120 Hz | 17000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    | 6000 Hz                    |
| Operating Temperature | -20 ~ +60°C                | -20 ~ +60°C                |
| Housing Material      | ABS                        | Noryl                      |
| Colour                | Black                      | Black                      |

## SERIES: PT2309

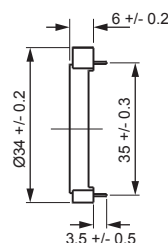
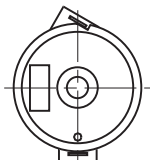


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 248-10P                    |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 10 Vp-p (Square Wave)      |
| Capacitance           | 24000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 2048 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | MPPO                       |
| Colour                | Grey                       |

## SERIES: PT3406

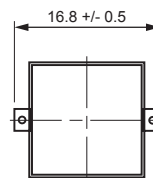
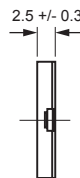
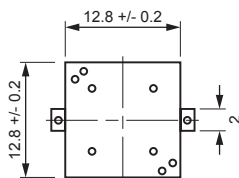


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 10-10P                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 10 Vp-p (Square Wave)      |
| Capacitance           | 40000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 1000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: SPT1303

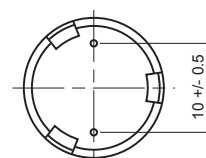
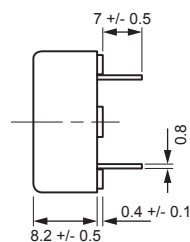
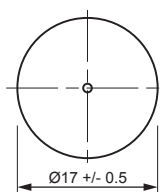


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-5D                      |
| Max. Input Voltage    | 25 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 15000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 72 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -40 ~ +150°C               |
| Housing Material      | LCP                        |
| Colour                | Black                      |

## SERIES: PT1709

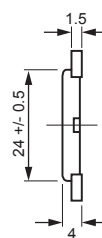
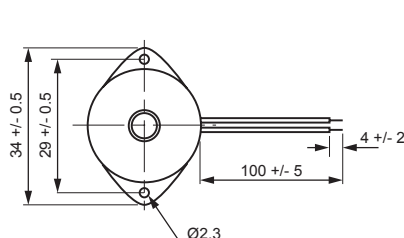


### Electrical Specifications

Unit : mm

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 20-9P                       |
| Max. Input Voltage    | 30 Vp-p                     |
| Rated Voltage         | 9 Vp-p (Square Wave)        |
| Capacitance           | 22000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 78 dB, 10 cm           |
| Resonant Frequency    | 2000 Hz                     |
| Operating Temperature | -20 ~ +65°C                 |
| Housing Material      | PBT                         |
| Colour                | Black                       |

## SERIES: PT2404

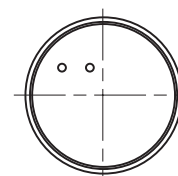
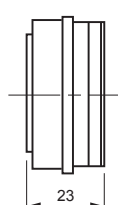
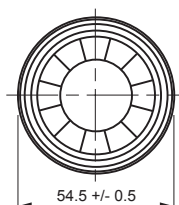


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 55-15W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 15 Vp-p (Square Wave)      |
| Capacitance           | 15000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 5500 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT5523

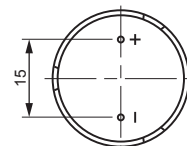
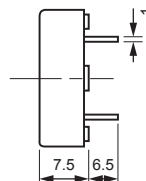
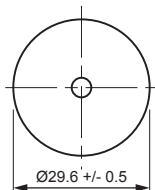


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 30-5S                      |
| Max. Input Voltage    | 50 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 30000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 98 dB, 10 cm          |
| Resonant Frequency    | 3000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT3008A

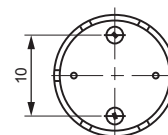
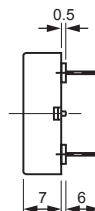
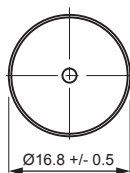


### Electrical Specifications

Unit : mm

|                       |                            |                            |
|-----------------------|----------------------------|----------------------------|
| Part Number           | 28-10P                     | 46-10P                     |
| Max. Input Voltage    | 30 Vp-p                    | 30 Vp-p                    |
| Rated Voltage         | 10 Vp-p (Square Wave)      | 10 Vp-p (Square Wave)      |
| Capacitance           | 25000 pF +/- 30% at 120 Hz | 15000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 90 dB, 10 cm          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 2800 Hz                    | 4600 Hz                    |
| Operating Temperature | -20 ~ +70°C                | -20 ~ +70°C                |
| Housing Material      | Noryl - PPO                | Noryl - MPPO               |
| Colour                | Black                      | Black                      |

## SERIES: PT1708

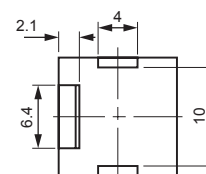
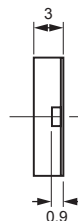
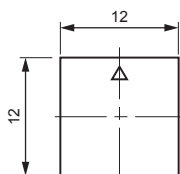
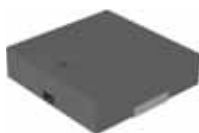


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-3P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 3 Vp-p (Square Wave)       |
| Capacitance           | 14000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -20 ~ +80°C                |
| Housing Material      | Noryl - MPPO               |
| Colour                | Black                      |

## SERIES: SPT1203

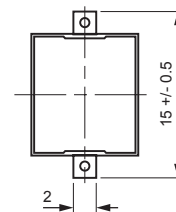
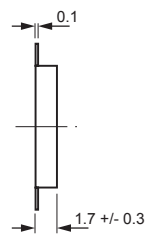
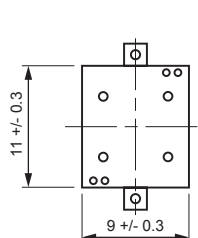


### Electrical Specifications

Unit : mm

|                       |                            |                             |
|-----------------------|----------------------------|-----------------------------|
| Part Number           | 40-5D                      | 40-3D                       |
| Max. Input Voltage    | 20 Vp-p                    | 20 Vp-p                     |
| Rated Voltage         | 5 Vp-p (Square Wave)       | 3 Vp-p (Square Wave)        |
| Capacitance           | 15000 pF +/- 30% at 100 Hz | 15000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 78 dB, 10 cm          | Min. 70 dB, 10 cm           |
| Resonant Frequency    | 4000 Hz                    | 4000 Hz                     |
| Operating Temperature | -30 ~ +85°C                | -20 ~ +70°C                 |
| Housing Material      | LCP                        | LCP                         |
| Colour                | Black                      | Black                       |

## SERIES: SPT110902

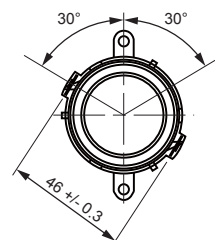
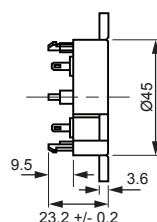
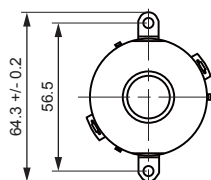


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 41-5D                      |
| Max. Input Voltage    | 20 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 15000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 70 dB, 10 cm          |
| Resonant Frequency    | 4100 Hz                    |
| Operating Temperature | -40 ~ +105°C               |
| Housing Material      | LCP                        |
| Colour                | Black                      |

## SERIES: PT4514

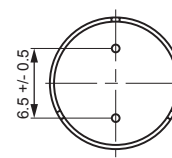
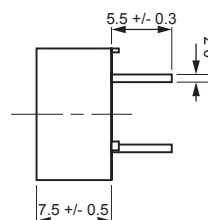
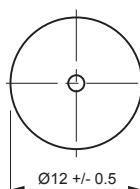


Unit : mm

### Electrical Specifications

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 25-12P                      |
| Max. Input Voltage    | 50 Vp-p                     |
| Rated Voltage         | 12 Vp-p (Square Wave)       |
| Capacitance           | 250000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 95 dB, 100 cm          |
| Resonant Frequency    | 2500 Hz                     |
| Operating Temperature | -30 ~ +95°C                 |
| Housing Material      | Nylon                       |
| Colour                | Black                       |

## SERIES: PT1208

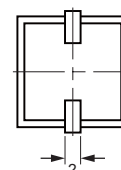
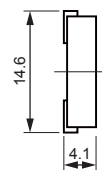
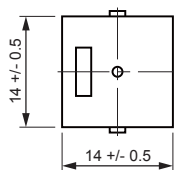
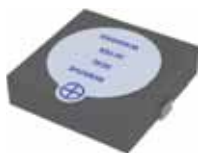


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 45-12P                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 6000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 4500 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | MPPO                       |
| Colour                | Black                      |

## SERIES: SPT1404

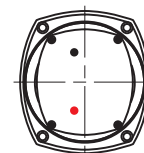
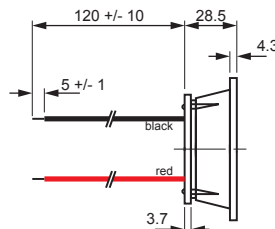
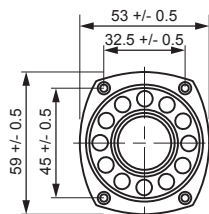


### Electrical Specifications

Unit : mm

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 40-12D                      |
| Max. Input Voltage    | 20 Vp-p                     |
| Rated Voltage         | 12 Vp-p (Square Wave)       |
| Capacitance           | 10000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm           |
| Resonant Frequency    | 4000 Hz                     |
| Operating Temperature | -20 ~ +85°C                 |
| Housing Material      | PPS                         |
| Colour                | Black                       |

## SERIES: PT595329

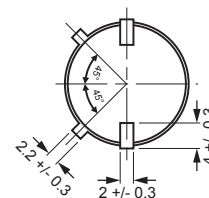
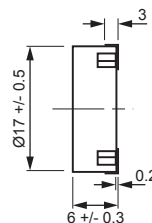
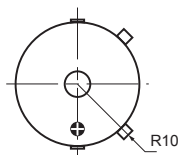


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 30-12W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 28000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 98 dB, 30 cm          |
| Resonant Frequency    | 3000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | White                      |

## SERIES: SPT1706

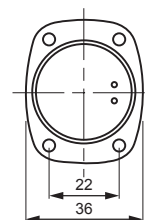
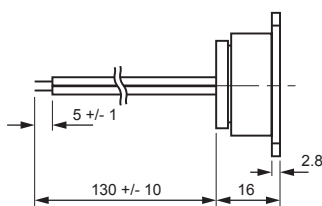
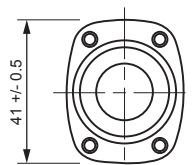


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-12D                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 15000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -20 ~ +85°C                |
| Housing Material      | PPS                        |
| Colour                | Black                      |

## SERIES: PT413616

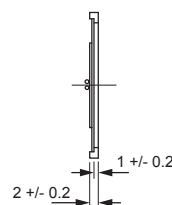
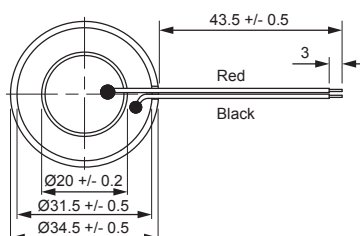


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 35-3W                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 3 Vrms (Sine Wave)         |
| Capacitance           | 25000 pF +/- 30% at 100 Hz |
| Sound Output          | Min. 80 dB, 10 cm          |
| Resonant Frequency    | 3500 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT3502

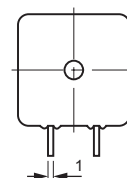
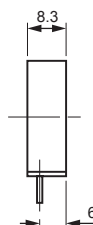
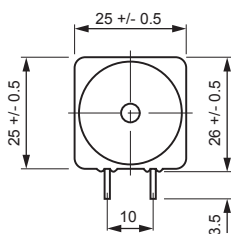


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 13-12W                     |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 12 Vp-p (Square Wave)      |
| Capacitance           | 50000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 75 dB, 10 cm          |
| Resonant Frequency    | 1300 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | Black                      |

## SERIES: PT2508

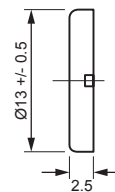
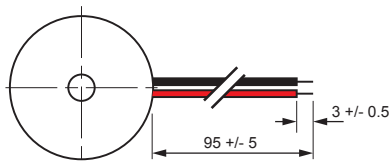


Unit : mm

### Electrical Specifications

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 20-8P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 8 Vp-p (Square Wave)       |
| Capacitance           | 22000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 85 dB, 10 cm          |
| Resonant Frequency    | 2000 Hz                    |
| Operating Temperature | -30 ~ +70°C                |
| Housing Material      | Nylon                      |
| Colour                | Black                      |

## SERIES: PT1303

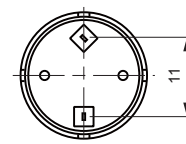
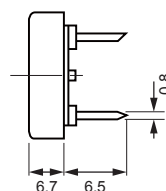
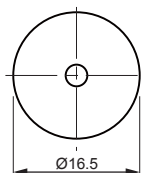


### Electrical Specifications

Unit : mm

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 48-9W                       |
| Max. Input Voltage    | 15 Vp-p                     |
| Rated Voltage         | 9 Vp-p (Square Wave)        |
| Capacitance           | 18000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm           |
| Resonant Frequency    | 4800 Hz                     |
| Operating Temperature | -25 ~ +70°C                 |
| Housing Material      | ABS                         |
| Colour                | Black                       |

## SERIES: PT1707A

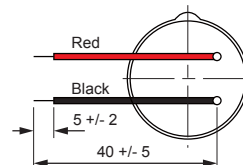
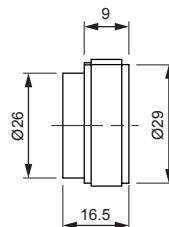
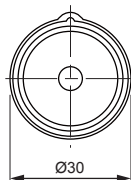


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 40-5P                      |
| Max. Input Voltage    | 30 Vp-p                    |
| Rated Voltage         | 5 Vp-p (Square Wave)       |
| Capacitance           | 10000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 83 dB, 10 cm          |
| Resonant Frequency    | 4000 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | Noryl                      |
| Colour                | Black                      |

## SERIES: PT3017

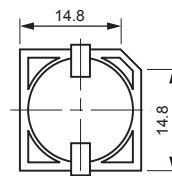
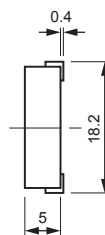
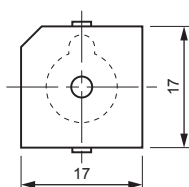


### Electrical Specifications

Unit : mm

|                       |                            |
|-----------------------|----------------------------|
| Part Number           | 34-9W                      |
| Max. Input Voltage    | 28 Vp-p                    |
| Rated Voltage         | 9 Vp-p (Square Wave)       |
| Capacitance           | 25000 pF +/- 30% at 120 Hz |
| Sound Output          | Min. 90 dB, 10 cm          |
| Resonant Frequency    | 3400 Hz                    |
| Operating Temperature | -20 ~ +70°C                |
| Housing Material      | ABS                        |
| Colour                | White                      |

## SERIES: SPT1705

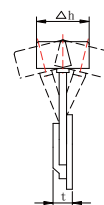
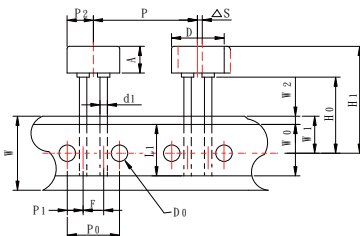


### Electrical Specifications

Unit : mm

|                       |                             |
|-----------------------|-----------------------------|
| Part Number           | 40-5D                       |
| Max. Input Voltage    | 25 Vp-p                     |
| Rated Voltage         | 5 Vp-p (Square Wave)        |
| Capacitance           | 15000 pF +/- 30% at 1000 Hz |
| Sound Output          | Min. 80 dB, 10 cm           |
| Resonant Frequency    | 4000 Hz                     |
| Operating Temperature | -20 ~ +70°C                 |
| Housing Material      | LCP                         |
| Colour                | Black                       |

## SERIES: PT1306A

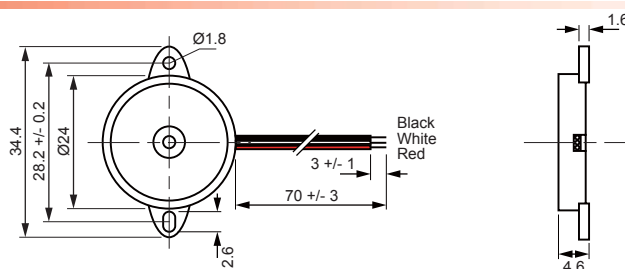


### Electrical Specifications

Unit : mm

|                                                               |                                                                     |
|---------------------------------------------------------------|---------------------------------------------------------------------|
| Part Number                                                   | 40-3P (AMMO)                                                        |
| Max. Input Voltage                                            | 30 Vp-p                                                             |
| Rated Voltage                                                 | 3 Vrms (Sine Wave)                                                  |
| Capacitance                                                   | 12000 pF +/- 30% at 1000 Hz                                         |
| Sound Output                                                  | Min. 75 dB, 10 cm                                                   |
| Resonant Frequency                                            | 4000 Hz                                                             |
| Operating Temperature                                         | -20 ~ +70°C                                                         |
| Housing Material                                              | PBT                                                                 |
| Colour                                                        | Black                                                               |
| Width of Diameter                                             | (D) Ø 12.8 +/- 0.5 mm                                               |
| Height of Resonator                                           | (A) 6 +/- 0.5 mm                                                    |
| Dimensions of Terminal                                        | (d1) Ø 0.5 +/- 0.1 mm                                               |
| Lead Length Under the Hold Down Tape                          | (L1) Min. 12.5 mm                                                   |
| Pitch of Component                                            | (P) 25.4 +/- 0.5 mm                                                 |
| Pitch of Sprocket                                             | (P0) 12.7 +/- 0.2 mm ; Tolerance for Pitches 10 x P0 = 127 +/- 2 mm |
| Length from Hole Center to Lead                               | (P1) 3.85 +/- 0.7 mm                                                |
| Length from Hole Center to Component Center                   | (P2) 6.35 +/- 0.7 mm                                                |
| Lead Spacing                                                  | (F) 5 +/- 0.5 mm                                                    |
| Slant to The Forward or Backward                              | ( h) 0 +/- 0.1 mm ; 360 : Max. 1 mm                                 |
| Width of Carrier Tape                                         | (W) 18 +/- 0.5 mm                                                   |
| Width of Hold Down Tape                                       | (W0) Min. 12.5 mm ; Hold Down tape does not exceed the carrier tape |
| Position of Sprocket Hole                                     | (W1) 9 +/- 0.5 mm                                                   |
| Gap of Hold Down Tape and Carrier Tape                        | (W2) Max. 2 mm                                                      |
| Distance Between the Center of Sprocket Hole and Lead Stopper | (H0) 19 +/- 0.5 mm                                                  |
| Total Height of Resonator                                     | (H1) Max. 26 +/- 0.2 mm                                             |
| Diameter of Sprocket Hole                                     | (D0) Ø 4 mm                                                         |
| Total Thickness of Tape                                       | (t) 0.6 +/- 0.2 mm                                                  |
| Body Tilt                                                     | ( S) 0 +/- 1 mm                                                     |

## SERIES: DTS2405

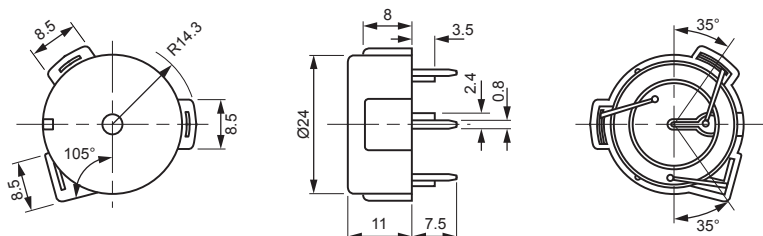


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 50-5W              |
| Operating Voltage     | 3 ~ 18 Vdc         |
| Rated Voltage         | 5 Vdc              |
| Rated Current         | Max. 5 mA          |
| Sound Output          | Min. 90 dB , 10 cm |
| Frequency             | 5000 +/- 700 Hz    |
| Operating Temperature | -25 ~ +70°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: DTS2411

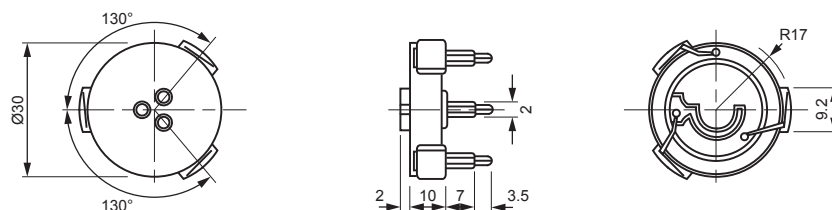


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 36-12P             |
| Operating Voltage     | 1.5 ~ 21 Vdc       |
| Rated Voltage         | 12 Vdc             |
| Rated Current         | Max. 15 mA         |
| Sound Output          | Min. 90 dB , 30 cm |
| Frequency             | 3600 +/- 500 Hz    |
| Operating Temperature | -20 ~ +85°C        |
| Housing Material      | PBT                |
| Colour                | Black              |

## SERIES: DTS3012

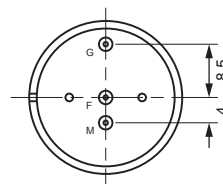
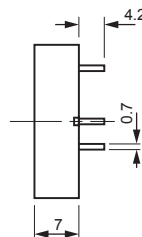
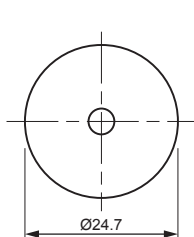


### Electrical Specifications

Unit : mm

|                       |                     |
|-----------------------|---------------------|
| Part Number           | 27-12P              |
| Operating Voltage     | 3 ~ 18 Vdc          |
| Rated Voltage         | 12 Vdc              |
| Rated Current         | Max. 6 mA           |
| Sound Output          | Min. 75 dB , 100 cm |
| Frequency             | 2700 +/- 500 Hz     |
| Operating Temperature | -20 ~ +70°C         |
| Housing Material      | PBT                 |
| Colour                | Black               |

## SERIES: DTS2507

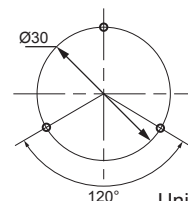
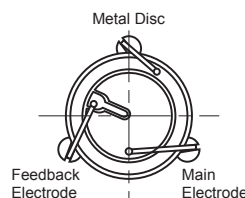
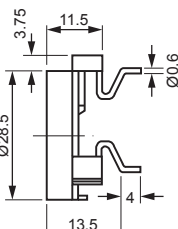
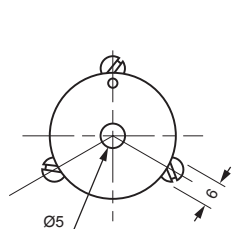


### Electrical Specifications

Unit : mm

| Part Number           | 33-12P             | 35-12P             | 68-12P             |
|-----------------------|--------------------|--------------------|--------------------|
| Operating Voltage     | 3 ~ 24 Vdc         | 3 ~ 24 Vdc         | 3 ~ 24 Vdc         |
| Rated Voltage         | 12 Vdc             | 12 Vdc             | 12 Vdc             |
| Rated Current         | Max. 18 mA         | Max. 18 mA         | Max. 18 mA         |
| Sound Output          | Min. 88 dB , 10 cm | Min. 88 dB , 10 cm | Min. 90 dB , 10 cm |
| Frequency             | 3300 +/- 500 Hz    | 3500 +/- 500 Hz    | 6800 +/- 500 Hz    |
| Operating Temperature | -20 ~ +85°C        | -20 ~ +85°C        | -20 ~ +80°C        |
| Housing Material      | ABS                | ABS                | ABS                |
| Colour                | Blue               | Blue               | Blue               |

## SERIES: DTS2912

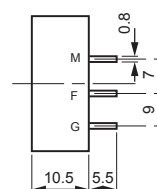
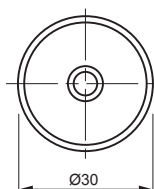
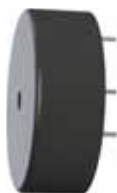


Unit : mm

### Electrical Specifications

| Part Number           | 30-12P             |
|-----------------------|--------------------|
| Operating Voltage     | 3 ~ 28 Vdc         |
| Rated Voltage         | 12 Vdc             |
| Rated Current         | Max. 8 mA          |
| Sound Output          | Min. 83 dB , 30 cm |
| Frequency             | 3000 +/- 500 Hz    |
| Operating Temperature | -30 ~ +85°C        |
| Housing Material      | ABS                |
| Colour                | White              |

## SERIES: DTS3011

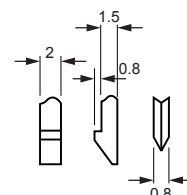
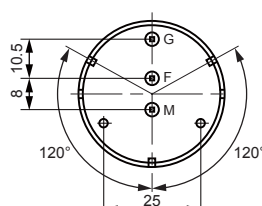
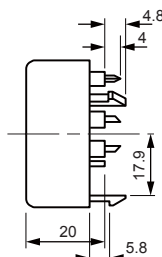
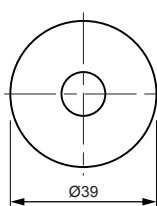


Unit : mm

### Electrical Specifications

| Part Number           | 36-12P             |
|-----------------------|--------------------|
| Operating Voltage     | 3 ~ 20 Vdc         |
| Rated Voltage         | 12 Vdc             |
| Rated Current         | Max. 10 mA         |
| Sound Output          | Min. 88 dB , 10 cm |
| Frequency             | 3600 +/- 500 Hz    |
| Operating Temperature | -20 ~ +70°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

## SERIES: DTS3914

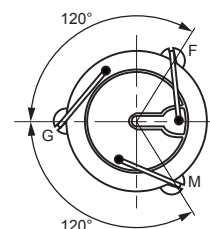
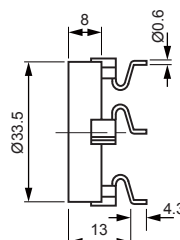
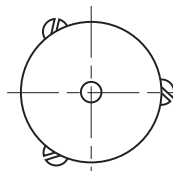


Unit : mm

### Electrical Specifications

|                       |                   |
|-----------------------|-------------------|
| Part Number           | 34-9P             |
| Operating Voltage     | 6 ~ 12 Vdc        |
| Rated Voltage         | 9 Vdc             |
| Rated Current         | Max. 20 mA        |
| Sound Output          | Min. 95 dB, 30 cm |
| Frequency             | 3400 +/- 500 Hz   |
| Operating Temperature | -20 ~ +120°C      |
| Housing Material      | Noryl             |
| Colour                | Black             |

## SERIES: DTS3408

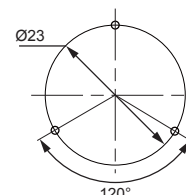
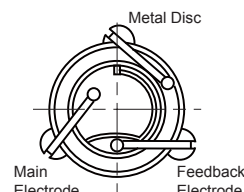
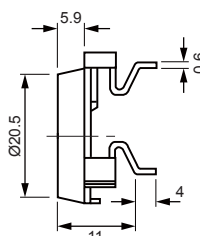
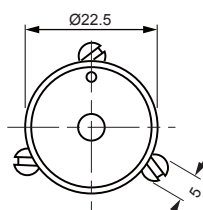


Unit : mm

### Electrical Specifications

|                       |                   |
|-----------------------|-------------------|
| Part Number           | 25-12P            |
| Operating Voltage     | 3 ~ 28 Vdc        |
| Rated Voltage         | 12 Vdc            |
| Rated Current         | Max. 7 mA         |
| Sound Output          | Min. 85 dB, 10 cm |
| Frequency             | 2500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +60°C       |
| Housing Material      | ABS               |
| Colour                | Black             |

## SERIES: DTS2306

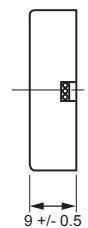
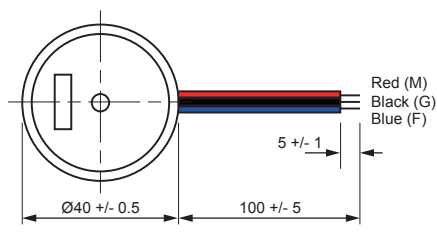
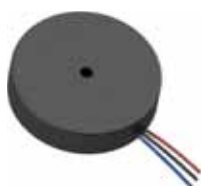


Unit : mm

### Electrical Specifications

|                       |                   |
|-----------------------|-------------------|
| Part Number           | 35-12P            |
| Operating Voltage     | 3 ~ 18 Vdc        |
| Rated Voltage         | 12 Vdc            |
| Rated Current         | Max. 12 mA        |
| Sound Output          | Min. 80 dB, 30 cm |
| Frequency             | 3500 +/- 500 Hz   |
| Operating Temperature | -20 ~ +60°C       |
| Housing Material      | ABS               |
| Colour                | Grey              |

## SERIES: DTS4009

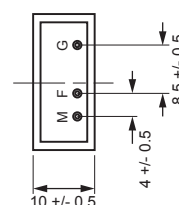
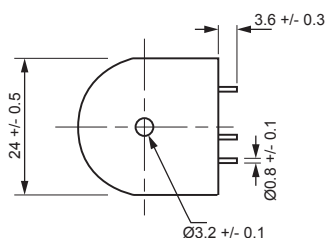


### Electrical Specifications

Unit : mm

|                       |                     |
|-----------------------|---------------------|
| Part Number           | 35-6W               |
| Operating Voltage     | 4 ~ 9 Vdc           |
| Rated Voltage         | 6 Vdc               |
| Rated Current         | Max. 10 mA          |
| Sound Output          | Min. 80 dB , 100 cm |
| Frequency             | 3500 +/- 500 Hz     |
| Operating Temperature | -20 ~ +70°C         |
| Housing Material      | ABS                 |
| Colour                | Black               |

## SERIES: DTS272410

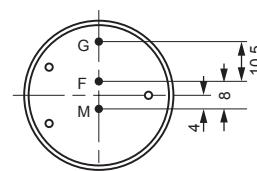
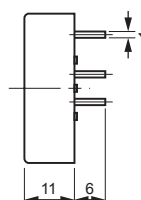
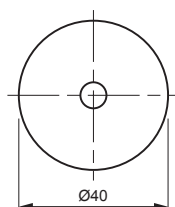


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 32-12P             |
| Operating Voltage     | 3 ~ 28 Vdc         |
| Rated Voltage         | 12 Vdc             |
| Rated Current         | Max. 7 mA          |
| Sound Output          | Min. 72 dB , 30 cm |
| Frequency             | 3200 +/- 500 Hz    |
| Operating Temperature | -20 ~ +105°C       |
| Housing Material      | PBT                |
| Colour                | Black              |

## SERIES: DTS4011

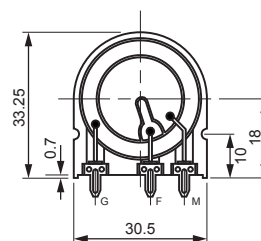
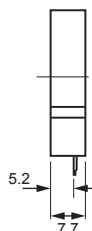
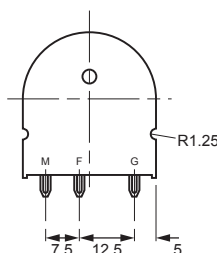


### Electrical Specifications

Unit : mm

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 36-5P              |
| Operating Voltage     | 4.5 ~ 12 Vdc       |
| Rated Voltage         | 5 Vdc              |
| Rated Current         | Max. 10 mA         |
| Sound Output          | Min. 95 dB , 30 cm |
| Frequency             | 3600 +/- 500 Hz    |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: DTS333108

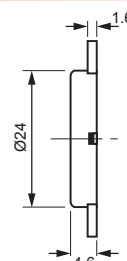
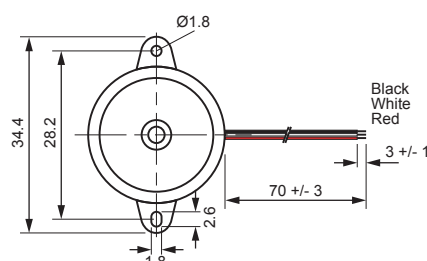


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 25-12P             |
| Operating Voltage     | 3 ~ 25 Vdc         |
| Rated Voltage         | 12 Vdc             |
| Rated Current         | Max. 20 mA         |
| Sound Output          | Min. 85 dB , 10 cm |
| Frequency             | 2500 +/- 500 Hz    |
| Operating Temperature | -40 ~ +85°C        |
| Housing Material      | Noryl              |
| Colour                | Black              |

## SERIES: DTS2405A

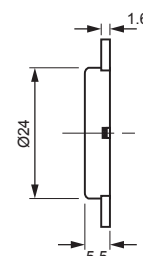
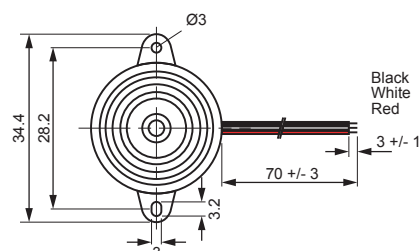


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 45-5W              |
| Operating Voltage     | 3 ~ 18 Vdc         |
| Rated Voltage         | 5 Vdc              |
| Rated Current         | Max. 5 mA          |
| Sound Output          | Min. 90 dB , 10 cm |
| Frequency             | 4500 +/- 700 Hz    |
| Operating Temperature | -25 ~ +70°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: DTS2406

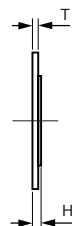
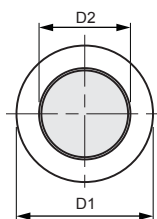


Unit : mm

### Electrical Specifications

|                       |                    |
|-----------------------|--------------------|
| Part Number           | 50-5W              |
| Operating Voltage     | 3 ~ 18 Vdc         |
| Rated Voltage         | 5 Vdc              |
| Rated Current         | Max. 4 mA          |
| Sound Output          | Min. 80 dB , 10 cm |
| Frequency             | 5000 +/- 700 Hz    |
| Operating Temperature | -20 ~ +60°C        |
| Housing Material      | ABS                |
| Colour                | Black              |

## SERIES: PDN (External Drive)

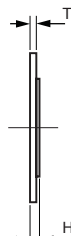
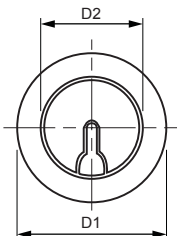


### Electrical Specifications

Unit : mm

| Part Number | D1 [mm] | D2 [mm] | T [mm] | H [mm] | Freq. [Hz]     | Resistance [ohm] | Capacitance [pF] | Metal Material          |
|-------------|---------|---------|--------|--------|----------------|------------------|------------------|-------------------------|
| PDN090860   | 9       | 6.5     | 0.05   | 0.12   | 8600 +/- 1500  | 1000             | 13000 +/- 30%    | Brass / Stainless Steel |
| PDN121850   | 12      | 9       | 0.2    | 0.44   | 18500 +/- 1500 | 500              | 5000 +/- 30%     | Brass / Stainless Steel |
| PDN150600   | 15      | 10      | 0.13   | 0.24   | 6000 +/- 1000  | 500              | 10000 +/- 30%    | Brass / Stainless Steel |
| PDN200650   | 20      | 15      | 0.2    | 0.4    | 6500 +/- 500   | 400              | 12000 +/- 30%    | Brass / Stainless Steel |
| PDN270300   | 27      | 20      | 0.15   | 0.38   | 3000 +/- 500   | 500              | 30000 +/- 30%    | Brass / Stainless Steel |
| PDN270440   | 27      | 20      | 0.25   | 0.52   | 4400 +/- 500   | 350              | 23000 +/- 30%    | Brass / Stainless Steel |
| PDN310280   | 31      | 20      | 0.2    | 0.46   | 2800 +/- 300   | 500              | 30000 +/- 30%    | Brass / Stainless Steel |
| PDN350290   | 35      | 25      | 0.3    | 0.58   | 2900 +/- 500   | 400              | 30000 +/- 30%    | Brass / Stainless Steel |
| PDN410080   | 41      | 25      | 0.1    | 0.22   | 800 +/- 300    | 1000             | 80000 +/- 30%    | Brass / Stainless Steel |
| PDN500110   | 50      | 30      | 0.2    | 0.41   | 1100 +/- 300   | 800              | 70000 +/- 30%    | Brass / Stainless Steel |

## SERIES: PDF (Self Drive)

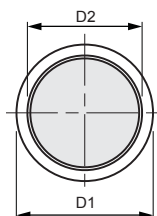


### Electrical Specifications

Unit : mm

| Part Number | D1 [mm] | D2 [mm] | T [mm] | H [mm] | Freq. [Hz]     | Resistance [ohm] | Capacitance [pF]     | Metal Material          |
|-------------|---------|---------|--------|--------|----------------|------------------|----------------------|-------------------------|
| PDF121650   | 12      | 9       | 0.2    | 0.41   | 16500 +/- 1500 | 800              | 5000 / 1000 +/- 30%  | Brass / Stainless Steel |
| PDF151050   | 15      | 11      | 0.2    | 0.39   | 10500 +/- 1000 | 500              | 8000 / 1000 +/- 30%  | Brass / Stainless Steel |
| PDF200690   | 20      | 15      | 0.2    | 0.44   | 6900 +/- 500   | 300              | 13000 / 1400 +/- 30% | Brass / Stainless Steel |
| PDF200700   | 20      | 15      | 0.2    | 0.46   | 7000 +/- 500   | 300              | 12000 / 1300 +/- 30% | Brass / Stainless Steel |
| PDF270300   | 27      | 20      | 0.15   | 0.32   | 3000 +/- 300   | 300              | 30000 / 3500 +/- 30% | Brass / Stainless Steel |
| PDF270440   | 27      | 20      | 0.25   | 0.51   | 4400 +/- 500   | 400              | 18000 / 1900 +/- 30% | Brass / Stainless Steel |
| PDF310280   | 31      | 20      | 0.2    | 0.46   | 2800 +/- 300   | 800              | 21000 / 2200 +/- 30% | Brass / Stainless Steel |
| PDF350290   | 35      | 25      | 0.25   | 0.49   | 2900 +/- 300   | 200              | 40000 / 4000 +/- 30% | Brass / Stainless Steel |
| PDF410150   | 41      | 25      | 0.2    | 0.44   | 1500 +/- 300   | 800              | 35000 / 4600 +/- 30% | Brass / Stainless Steel |
| PDF500130   | 50      | 30      | 0.2    | 0.46   | 1300 +/- 300   | 1000             | 54000 / 5500 +/- 30% | Brass / Stainless Steel |

## SERIES: PDU (Ultrasonic)



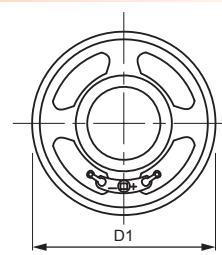
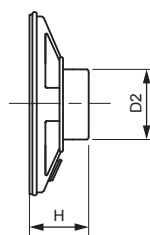
### Electrical Specifications

Unit : mm

| Part Number | D1 [mm] | D2 [mm] | T [mm] | Freq. [MHz] | Impedance [ohm] | Capacitance [pF] | Material | Loss [tgδ] | Coupling Coefficient [Kp] |
|-------------|---------|---------|--------|-------------|-----------------|------------------|----------|------------|---------------------------|
| PDU160170   | 16      | 11      | 1.2    | 1.2         | Max. 2.0        | 1200 +/- 20%     | Ceramic  | Max. 0.45% | Min. 45%                  |
| PDU200168   | 20      | 13.8    | 1.2    | 1.68        | Max. 2.0        | 1900 +/- 20%     | Ceramic  | Max. 0.45% | Min. 45%                  |
| PDU250102   | 25      | 23.6    | 2      | 1.02        | Max. 1.0        | 2500 +/- 20%     | Ceramic  | Max. 0.50% | Min. 53%                  |
| PDU500043   | 50      | 49      | 3.5    | 0.43        | Max. 5.0        | 6500 +/- 20%     | Ceramic  | Max. 0.50% | Min. 53%                  |

Remark: The above mentioned data is standardized. We could also tailor made the Piezo Elements for the customers.

## LOUD SPEAKER ( INTERNAL MAGNET TYPE )



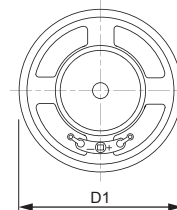
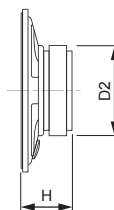
## Electrical Specifications

Unit : mm

| Part Number    | D1 [mm]   | D2 [mm] | H [mm] | Imp. [ohm] | Rated Power [W] | Resonant Freq. [Hz] | Sound Output [dB] | Shape       | Frame              |
|----------------|-----------|---------|--------|------------|-----------------|---------------------|-------------------|-------------|--------------------|
| LI3617-8R      | 36        | 18      | 16.5   | 8          | 0.5             | 280 +/- 20%         | 81                | Round       | Metal              |
| LI4011-50R     | 40        | 18.3    | 10.6   | 50         | 0.25            | 600 +/- 20%         | 78                | Round       | Metal              |
| LI4510-40R     | 45        | 18.2    | 9.5    | 40         | 0.25            | 680 +/- 20%         | 84                | Round       | Metal              |
| LI5012-8R      | 50        | 19.3    | 12     | 8          | 0.25            | 540 +/- 20%         | 86                | Round       | Metal              |
| LI5009-8R      | 50        | 15.5    | 8.5    | 8          | 1.5             | 500 +/- 20%         | 80                | Round       | Metal              |
| LI5013-32R     | 50        | 18      | 13     | 32         | 0.25            | 450 +/- 20%         | 86                | Round       | Metal              |
| LI5009-8RW     | 50        | 15.5    | 8.5    | 8          | 0.25            | 500 +/- 20%         | 83                | Round       | Metal              |
| LI5012-25R     | 50        | 18      | 12     | 25         | 0.25            | 360 +/- 20%         | 86                | Round       | Metal              |
| LI5009-8RWC    | 50        | 17      | 8.9    | 8          | 1               | 550 +/- 20%         | 84                | Round       | Metal              |
| LI5012-8RW     | 50        | 18      | 12     | 8          | 2               | 800 +/- 20%         | 85                | Round       | Metal              |
| LI5112-100S    | 50.5      | 18      | 12     | 100        | 0.5             | 450 +/- 20%         | 85                | Square      | Metal w/ 4 holes   |
| LI5012-50R     | 50        | 18      | 12     | 50         | 0.5             | 500 +/- 20%         | 85                | Round       | Metal              |
| LI5019-16RWC   | 50        | 22      | 18.5   | 16         | 1               | 500 +/- 20%         | 83                | Round       | Metal              |
| LI5012-22R     | 50        | 18      | 12     | 22         | 0.5             | 500 +/- 20%         | 87                | Round       | Metal              |
| LI5012-8RWC    | 50        | 17.3    | 12     | 8          | 0.5             | 450 +/- 20%         | 85                | Round       | Metal              |
| LI5013-8R      | 50        | 18      | 12.5   | 8          | 0.5             | 450 +/- 20%         | 85                | Round       | Metal              |
| LI5713-25R     | 57        | 18.5    | 13.3   | 25         | 0.5             | 350 +/- 20%         | 89                | Round       | Metal              |
| LI5719-8R      | 57        | 22      | 19     | 8          | 0.2             | 400 +/- 20%         | 83                | Round       | Metal              |
| LI5714-8R      | 57        | 18      | 13.5   | 8          | 0.5             | 450 +/- 20%         | 88                | Round       | Metal              |
| LI5713-32R     | 57        | 18.5    | 13     | 32         | 0.25            | 380 +/- 20%         | 90                | Round       | Metal              |
| LI5713-8R      | 57        | 18      | 13     | 8          | 0.5             | 380 +/- 20%         | 86                | Round       | Metal              |
| LI5713-8RW     | 57        | 18      | 13.1   | 8          | 0.5             | 400 +/- 20%         | 86                | Round       | Metal              |
| LI5720-32R     | 57        | 22      | 19.5   | 32         | 0.5             | 400 +/- 20%         | 85                | Round       | Metal              |
| LI5710-8R      | 57        | 17      | 9.5    | 8          | 0.25            | 450 +/- 20%         | 85                | Round       | Metal              |
| LI6622-8R      | 66        | 22      | 22     | 8          | 0.3             | 350 +/- 20%         | 87                | Round       | Metal              |
| LI6619-8R      | 66        | 22      | 19     | 8          | 0.5             | 360 +/- 20%         | 84                | Round       | Metal              |
| LI7718-8R      | 77        | 18      | 17.5   | 8          | 1               | 300 +/- 20%         | 86                | Round       | Metal              |
| LI7723-32RW    | 77        | 22      | 23     | 32         | 1               | 250 +/- 20%         | 85                | Round       | Metal              |
| LI7727-16R     | 78        | 22      | 27     | 16         | 3               | 250 +/- 20%         | 86                | Round       | Metal              |
| LI10236-4S     | 102       | 22      | 36     | 4          | 2               | 180 +/- 20%         | 88                | Square      | Metal w/ 4 holes   |
| LI251505-16E-P | 25 * 15   | 11.3    | 5      | 16         | 0.5             | 900 +/- 20%         | 82                | Rectangular | Plastic w/ 4 holes |
| LI251506-8E-P  | 25 * 15   | 11      | 5.5    | 8          | 0.5             | 900 +/- 20%         | 82                | Rectangular | Plastic w/ 2 holes |
| LI351606-8E-P  | 35 * 16   | 11.35   | 5.5    | 8          | 1               | 600 +/- 20%         | 83                | Rectangular | Plastic w/ 4 holes |
| LI351606-16E-P | 35 * 16   | 11.35   | 5.5    | 16         | 1               | 600 +/- 20%         | 83                | Rectangular | Plastic w/ 4 holes |
| LI351607-4E-P  | 35 * 16   | 11.3    | 6.7    | 4          | 1               | 600 +/- 20%         | 86                | Rectangular | Plastic w/ 4 holes |
| LI402008-8E-P  | 40 * 20   | 14.8    | 8      | 8          | 1               | 650 +/- 20%         | 85                | Rectangular | Plastic w/ 4 holes |
| LI402008-4E-P  | 40 * 20   | 14.7    | 7.8    | 4          | 1               | 650 +/- 20%         | 84                | Rectangular | Plastic w/ 4 holes |
| LI402006-8E    | 40 * 20   | 14.2    | 6      | 8          | 1               | 600 +/- 20%         | 83                | Rectangular | Metal w/ 4 holes   |
| LI402006-8EW   | 40 * 20   | 14.3    | 5.8    | 8          | 2               | 500 +/- 20%         | 79                | Rectangular | Metal w/ 4 holes   |
| LI402006-8EWC  | 40 * 20   | 14.3    | 5.8    | 8          | 2               | 400 +/- 20%         | 83                | Rectangular | Metal w/ 4 holes   |
| LI402008-8E-P  | 40 * 20   | 14.7    | 7.8    | 8          | 1               | 650 +/- 20%         | 84                | Rectangular | Plastic w/ 4 holes |
| LI402813-8E-P  | 40 * 28.4 | 16.8    | 12.5   | 8          | 1               | 300 +/- 20%         | 82                | Rectangular | Plastic w/ 4 holes |
| LI905038-16E   | 90 * 50   | 38      | 37.5   | 16         | 5               | 180 +/- 20%         | 86                | Rectangular | Metal w/ 4 holes   |
| LI905042-8E    | 90 * 50   | 48      | 42     | 8          | 10              | 200 +/- 20%         | 85                | Rectangular | Metal w/ 4 holes   |
| LI905042-4E    | 90 * 50   | 48      | 42     | 4          | 10              | 200 +/- 20%         | 90                | Rectangular | Metal w/ 4 holes   |
| LI905036-4E    | 90 * 50   | 38      | 36     | 4          | 3               | 200 +/- 20%         | 88                | Rectangular | Metal w/ 4 holes   |

Remark: The above mentioned data is standardized. We could also tailor made the Speaker Elements for the customers.

## LOUD SPEAKER ( EXTERNAL MAGNET TYPE )



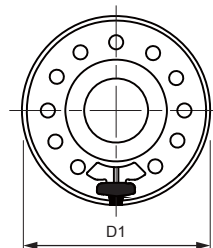
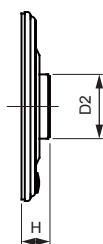
### Electrical Specifications

Unit : mm

| Part Number  | D1 [mm] | D2 [mm] | H [mm] | Imp. [ohm] | Rated Power [W] | Resonant Freq. [Hz] | Sound Output [dB] | Shape  | Frame            |
|--------------|---------|---------|--------|------------|-----------------|---------------------|-------------------|--------|------------------|
| LE4015-8R    | 40      | 27      | 14.5   | 8          | 0.2             | 800 +/- 20%         | 80                | Round  | Metal            |
| LE4016-8R-P  | 40      | 32      | 16     | 8          | 0.25            | 600 +/- 20%         | 84                | Round  | Plastic          |
| LE4515-8R    | 45      | 32      | 15     | 8          | 0.25            | 700 +/- 20%         | 92                | Round  | Metal            |
| LE4515-8RWC  | 45      | 32      | 15     | 8          | 0.5             | 600 +/- 20%         | 85                | Round  | Metal            |
| LE5016-32RW  | 50      | 32      | 16     | 32         | 0.25            | 400 +/- 25%         | 86                | Round  | Metal            |
| LE5016-32R   | 50      | 32      | 16     | 32         | 0.5             | 530 +/- 20%         | 84                | Round  | Metal            |
| LE5017-8R    | 50      | 32      | 17     | 8          | 0.25            | 450 +/- 20%         | 80                | Round  | Metal            |
| LE5016-8R    | 50      | 32      | 16     | 8          | 0.25            | 550 +/- 20%         | 92                | Round  | Metal            |
| LE5016-16R   | 50      | 32      | 16     | 16         | 0.25            | 460 +/- 20%         | 90                | Round  | Metal            |
| LE5016-8RW   | 50      | 32      | 16     | 8          | 0.5             | 500 +/- 20%         | 85                | Round  | Metal            |
| LE5016-50R   | 50      | 32      | 16     | 50         | 0.5             | 500 +/- 20%         | 82                | Round  | Metal            |
| LE5017-8RW   | 50      | 32      | 17     | 8          | 0.5             | 450 +/- 20%         | 88                | Round  | Metal            |
| LE5016-45R   | 50      | 32      | 16     | 45         | 0.25            | 450 +/- 20%         | 82                | Round  | Metal            |
| LE5015-8R    | 50      | 32      | 15     | 8          | 1               | 550 +/- 20%         | 85                | Round  | Metal            |
| LE5717-8R    | 57      | 32      | 17     | 8          | 0.25            | 450 +/- 20%         | 82                | Round  | Metal            |
| LE5718-8R    | 57      | 32      | 18     | 8          | 0.5             | 500 +/- 20%         | 85                | Round  | Metal            |
| LE5718-16R   | 57      | 32      | 18     | 16         | 1               | 450 +/- 20%         | 78                | Round  | Metal            |
| LE5717-50R   | 57      | 36      | 17     | 50         | 0.5             | 450 +/- 20%         | 84                | Round  | Metal            |
| LE5718-50R   | 57      | 36      | 17.5   | 50         | 0.5             | 460 +/- 20%         | 83                | Round  | Metal            |
| LE5717-50RW  | 57      | 32      | 17     | 50         | 0.25            | 430 +/- 20%         | 83                | Round  | Metal            |
| LE5717-50RWC | 57      | 32      | 17     | 50         | 0.25            | 400 +/- 20%         | 88                | Round  | Metal            |
| LE5718-32R   | 57      | 36      | 17.5   | 32         | 0.5             | 460 +/- 20%         | 83                | Round  | Metal            |
| LE6629-8R    | 66      | 45      | 28.8   | 8          | 5               | 450 +/- 11%         | 92                | Round  | Metal            |
| LE6620-8R    | 66      | 32      | 20     | 8          | 1               | 280 +/- 20%         | 85                | Round  | Metal            |
| LE6621-8R    | 66      | 32      | 21     | 8          | 0.5             | 350 +/- 20%         | 85                | Round  | Metal            |
| LE6619-64R   | 66      | 32      | 19     | 64         | 0.5             | 280 +/- 20%         | 90                | Round  | Metal            |
| LE6623-64R   | 66      | 32      | 22.5   | 64         | 0.2             | 550 +/- 20%         | 83                | Round  | Metal            |
| LE6619-8R    | 66      | 32      | 19     | 8          | 1               | 350 +/- 20%         | 86                | Round  | Metal            |
| LE6619-25R   | 66      | 32      | 19     | 25         | 0.3             | 400 +/- 20%         | 86                | Round  | Metal            |
| LE7020-8R    | 70      | 32      | 19.5   | 8          | 0.5             | 320 +/- 20%         | 87                | Round  | Metal            |
| LE7022-4R    | 70      | 35      | 21.5   | 4          | 1               | 200 +/- 20%         | 89                | Round  | Metal            |
| LE7721-8R    | 77      | 32      | 21     | 8          | 1               | 350 +/- 20%         | 87                | Round  | Metal            |
| LE7722-4R    | 77      | 32      | 22     | 4          | 1               | 300 +/- 20%         | 85                | Round  | Metal            |
| LE7730-8R    | 77      | 40      | 29.6   | 8          | 3               | 150 +/- 20%         | 85                | Round  | Metal            |
| LE7733-6R    | 77      | 45      | 32.5   | 6          | 3               | 185 +/- 20%         | 92                | Round  | Metal            |
| LE7938-4S    | 79      | 51      | 38     | 4          | 7               | 115 +/- 20%         | 87                | Square | Metal w/ 4 holes |
| LE8633-8S    | 86      | 60      | 33     | 8          | 8               | 450 +/- 20%         | 90                | Square | Metal w/ 4 holes |
| LE10230-4R   | 102     | 45      | 30     | 4          | 3               | 200 +/- 20%         | 90                | Round  | Metal            |
| LE10230-8R   | 102     | 45      | 30     | 8          | 3               | 200 +/- 20%         | 85                | Round  | Metal            |
| LE10235-4S   | 102     | 40      | 35     | 4          | 2               | 140 +/- 20%         | 88                | Square | Metal w/ 4 holes |
| LE10236-8R   | 102     | 45      | 35.5   | 8          | 2               | 140 +/- 20%         | 87                | Round  | Metal            |
| LE10235-8S   | 102     | 45      | 34.5   | 8          | 3               | 210 +/- 20%         | 86                | Square | Metal w/ 4 holes |

Remark: The above mentioned data is standardized. We could also tailor made the Speaker Elements for the customers.

## MYLAR SPEAKER ( INTERNAL MAGNET TYPE )



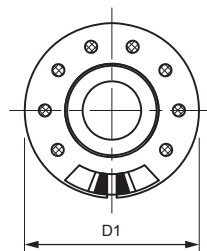
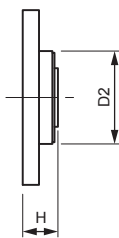
## Electrical Specifications

Unit : mm

| Part Number     | D1 [mm] | D2 [mm] | H [mm] | Imp. [ohm] | Rated Power [W] | Resonant Freq. [Hz] | Sound Output [dB] | Shape       | Frame              |
|-----------------|---------|---------|--------|------------|-----------------|---------------------|-------------------|-------------|--------------------|
| MI1004-16R-C    | 10      | 7.3     | 3.5    | 16         | 0.008           | 1900 +/- 20%        | 78                | Round       | Metal w/ Cover     |
| MI1004-8R       | 10      | 6.6     | 3.7    | 8          | 0.003           | 1100 +/- 20%        | 118 (IEC318)      | Round       | Metal              |
| MI1003-8RW-C    | 10      | 7       | 3.2    | 8          | 0.003           | 950 +/- 20%         | 73                | Round       | Metal w/ Cover     |
| MI1302-8R-C     | 13      | 13      | 2.3    | 8          | 0.2             | 1000 +/- 20%        | 82                | Round       | Metal w/ Cover     |
| MI1505-16R-C    | 15      | 9.5     | 4.85   | 16         | 0.008           | 400 +/- 20%         | 93                | Round       | Metal w/ Cover     |
| MI1505-64R-C    | 15      | 9       | 5      | 64         | 0.005           | 900 +/- 20%         | 90                | Round       | Metal w/ Cover     |
| MI1504-32R      | 15      | 9       | 4.1    | 32         | 0.001           | 300 +/- 20%         | 111 (IEC318)      | Round       | Metal              |
| MI1606-16R-C    | 16      | 9.5     | 6.2    | 16         | 0.01            | 800 +/- 20%         | 95                | Round       | Metal w/ Cover     |
| MI1804-8R-P-C   | 18      | 12.8    | 3.6    | 8          | 0.1             | 1000 +/- 20%        | 87                | Round       | Plastic w/ Cover   |
| MI2004-32RW-P   | 20      | 9.5     | 4      | 32         | 0.25            | 650 +/- 20%         | 91                | Round       | Plastic            |
| MI2003-16R      | 20      | 11.2    | 3      | 16         | 0.25            | 750 +/- 20%         | 83                | Round       | Metal              |
| MI2003-8RW      | 20      | 11      | 3.3    | 8          | 0.5             | 850 +/- 20%         | 89                | Round       | Metal              |
| MI2304-8R       | 23      | 10      | 4      | 8          | 0.5             | 850 +/- 20%         | 82                | Round       | Metal              |
| MI2604-32R      | 26      | 13.3    | 3.8    | 32         | 0.25            | 350 +/- 20%         | 88                | Round       | Metal              |
| MI2604-16R      | 26      | 13.2    | 4.2    | 16         | 0.6             | 800 +/- 20%         | 83                | Round       | Metal              |
| MI2604-8R       | 26      | 13.2    | 4.2    | 8          | 1               | 1200 +/- 20%        | 86                | Round       | Metal              |
| MI2705-8R-P     | 27      | 18      | 5      | 8          | 0.25            | 500 +/- 20%         | 83                | Round       | Plastic            |
| MI2805-32R      | 28      | 16      | 4.8    | 32         | 0.5             | 500 +/- 20%         | 82                | Round       | Metal              |
| MI2805-8R       | 28      | 16      | 4.8    | 8          | 1               | 700 +/- 20%         | 86                | Round       | Metal              |
| MI2804-16R      | 28      | 13.2    | 4      | 16         | 0.5             | 600 +/- 20%         | 86                | Round       | Metal              |
| MI2905-16R-P    | 29      | 18      | 5      | 16         | 0.25            | 600 +/- 20%         | 82                | Round       | Plastic            |
| MI3005-4R       | 30      | 13.1    | 5      | 4          | 0.15            | 400 +/- 20%         | 90                | Round       | Metal              |
| MI3005-8R       | 30      | 13.8    | 4.8    | 8          | 0.5             | 550 +/- 20%         | 94                | Round       | Metal              |
| MI3005-32R      | 30      | 13.8    | 4.8    | 32         | 0.5             | 700 +/- 20%         | 82                | Round       | Metal              |
| MI3005-16R      | 30      | 15.8    | 5.2    | 16         | 0.5             | 500 +/- 20%         | 82                | Round       | Metal              |
| MI3006-8RW-P    | 30      | 16      | 5.7    | 8          | 0.5             | 300 +/- 20%         | 92                | Round       | Plastic            |
| MI3204-8R       | 32      | 16.2    | 4      | 8          | 0.5             | 700 +/- 20%         | 89                | Round       | Metal              |
| MI3205-16R      | 32      | 15.5    | 4.6    | 16         | 1               | 550 +/- 20%         | 84                | Round       | Metal              |
| MI3605-32R      | 36      | 16.6    | 4.8    | 32         | 0.5             | 550 +/- 20%         | 82                | Round       | Metal              |
| MI3605-25R-P    | 36      | 17      | 4.5    | 25         | 0.2             | 450 +/- 20%         | 80                | Round       | Plastic            |
| MI3605-8R       | 36      | 16.2    | 4.6    | 8          | 0.5             | 480 +/- 20%         | 90                | Round       | Metal              |
| MI4005-8R       | 40      | 16.6    | 4.8    | 8          | 0.5             | 550 +/- 20%         | 88                | Round       | Metal              |
| MI4006-32R-P    | 40      | 18      | 6.2    | 32         | 0.15            | 100 +/- 20%         | 82                | Round       | Plastic            |
| MI4511-24R      | 45      | 18      | 11     | 24         | 0.5             | 800 +/- 20%         | 84                | Round       | Metal              |
| MI4505-8R       | 45      | 16.6    | 5.1    | 8          | 1               | 450 +/- 20%         | 84                | Round       | Metal              |
| MI5010-8R-P     | 50      | 30      | 9.4    | 8          | 1               | 360 +/- 20%         | 80                | Round       | Plastic            |
| MI5012-8S       | 50      | 18      | 12     | 8          | 0.5             | 450 +/- 20%         | 85                | Square      | Metal w/ 4 holes   |
| MI5018-45RT-P   | 50      | 31.4    | 18     | 45         | 0.5             | 360 +/- 20%         | 83                | Round       | Plastic            |
| MI5010-8R       | 50      | 17      | 9.5    | 8          | 0.5             | 620 +/- 20%         | 86                | Round       | Metal              |
| MI6618-8R       | 66      | 19      | 17.5   | 8          | 1               | 350 +/- 20%         | 85                | Round       | Metal              |
| MI181304-16OW-P | 18 * 13 | -       | 4.1    | 16         | 0.25            | 1000 +/- 20%        | 84                | Oval        | Plastic            |
| MI201404-8OW-P  | 20 * 14 | 9       | 4      | 8          | 0.5             | 750 +/- 20%         | 87                | Oval        | Plastic            |
| MI714128-8ET    | 71 * 41 | 22      | 28     | 8          | 2               | 450 +/- 20%         | 86                | Rectangular | Metal w/ 4 holes   |
| MI2812-8ST-P    | 28 * 28 | 21.5    | 12     | 8          | 2               | 450 +/- 20%         | 90                | Square      | Plastic w/ 4 holes |
| MI2813-8ST      | 28 * 28 | 25      | 13.2   | 8          | 2               | 450 +/- 20%         | 87                | Square      | Metal w/ 4 holes   |
| MI3416-8ST-P    | 34 * 34 | 25.7    | 15.5   | 8          | 2               | 200 +/- 20%         | 84                | Square      | Plastic w/ 4 holes |
| MI5018-8RT-P    | 50      | 31      | 18     | 8          | 0.5             | 320 +/- 20%         | 84                | Round       | Plastic            |
| MI6419-8RT-P    | 64      | 31.4    | 19.4   | 8          | 0.5             | 360 +/- 20%         | 88                | Round       | Plastic            |

Remark: The above mentioned data is standardized. We could also tailor made the Speaker Elements for the customers.

## MYLAR SPEAKER ( EXTERNAL MAGNET TYPE )



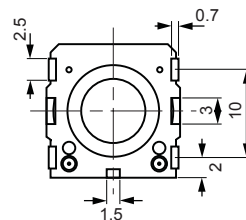
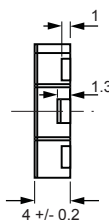
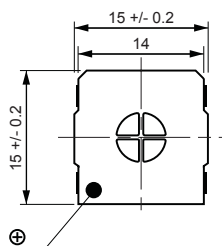
### Electrical Specifications

Unit : mm

| Part Number  | D1 [mm] | D2 [mm] | H [mm] | Imp. [ohm] | Rated Power [W] | Resonant Freq. [Hz] | Sound Output [dB] | Shape  | Frame            |
|--------------|---------|---------|--------|------------|-----------------|---------------------|-------------------|--------|------------------|
| ME2107-8R-P  | 21      | 16      | 7      | 8          | 0.1             | 700 +/- 20%         | 86                | Round  | Plastic          |
| ME2107-8RW-P | 21      | 16      | 7      | 8          | 0.25            | 850 +/- 20%         | 80                | Round  | Plastic          |
| ME2107-16R-P | 21      | 16      | 7      | 16         | 0.25            | 800 +/- 20%         | 85                | Round  | Plastic          |
| ME2109-16R-P | 21      | 16      | 9      | 16         | 0.25            | 750 +/- 20%         | 83                | Round  | Plastic          |
| ME2707-8R-P  | 27      | 16      | 7      | 8          | 0.1             | 600 +/- 20%         | 80                | Round  | Plastic          |
| ME2709-8R-P  | 27      | 16      | 9      | 8          | 0.25            | 750 +/- 20%         | 82                | Round  | Plastic          |
| ME2707-32R-P | 27      | 15      | 7      | 32         | 0.25            | 750 +/- 20%         | 78                | Round  | Plastic          |
| ME2709-64R-P | 27      | 16      | 9      | 64         | 0.25            | 750 +/- 20%         | 78                | Round  | Plastic          |
| ME2909-8R-P  | 29      | 16      | 9      | 8          | 0.25            | 600 +/- 20%         | 90                | Round  | Plastic          |
| ME2907-8R-P  | 29      | 16      | 7      | 8          | 0.1             | 750 +/- 20%         | 85                | Round  | Plastic          |
| ME3611-8R-P  | 36      | 23      | 10.5   | 8          | 0.25            | 280 +/- 20%         | 85                | Round  | Plastic          |
| ME3611-16R-P | 36      | 23      | 10.5   | 16         | 0.25            | 280 +/- 20%         | 82                | Round  | Plastic          |
| ME4012-8R-P  | 39.5    | 23      | 11.5   | 8          | 0.25            | 550 +/- 20%         | 79                | Round  | Plastic          |
| ME4011-8R-P  | 40      | 23      | 10.5   | 8          | 0.25            | 400 +/- 20%         | 85                | Round  | Plastic          |
| ME4010-8R-P  | 40      | 16      | 10.2   | 8          | 0.25            | 400 +/- 20%         | 90                | Round  | Plastic          |
| ME4011-8RW-P | 40      | 23      | 10.5   | 8          | 0.25            | 550 +/- 20%         | 85                | Round  | Plastic          |
| ME4515-32R   | 45      | 32      | 14.5   | 32         | 0.5             | 800 +/- 20%         | 82                | Round  | Metal            |
| ME5718-64R   | 57      | 32      | 18.3   | 64         | 0.5             | 500 +/- 20%         | 82                | Round  | Metal            |
| ME6620-8R    | 66      | 32      | 20     | 8          | 0.3             | 450 +/- 20%         | 83                | Round  | Metal            |
| ME7722-8R    | 77      | 32      | 21.6   | 8          | 1               | 330 +/- 20%         | 85                | Round  | Metal            |
| ME7721-8R    | 77      | 32      | 21     | 8          | 0.5             | 320 +/- 20%         | 88                | Round  | Metal            |
| ME8633-8S    | 86      | 60      | 33     | 8          | 12              | 450 +/- 20%         | 87                | Square | Metal w/ 4 holes |
| ME10239-4S   | 102     | 60      | 39     | 4          | 10              | 450 +/- 20%         | 90                | Square | Metal w/ 4 holes |

Remark: The above mentioned data is standardized. We could also tailor made the Speaker Elements for the customers.

## SERIES: OS1515D

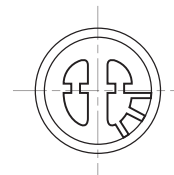
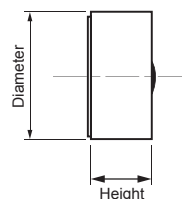
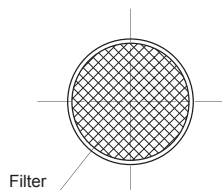


### Electrical Specifications

Unit : mm

|                         |                                  |
|-------------------------|----------------------------------|
| Part Number             | 8S                               |
| Max. Input Power        | 0.8 W                            |
| Rated Input Power       | 0.5 W                            |
| Impedance               | 8 ohm +/- 20% [ at 2KHz, 0.5 V ] |
| Sound Output            | 87 +/- 3 dB                      |
| Resonant Frequency [Fo] | 850 Hz +/- 20%                   |
| Frequency Response      | Fo ~ 20KHz                       |
| Operating Temperature   | -30 ~ +85°C                      |
| Weight                  | 1.6 g                            |

## Omnidirectional Electret Condenser Microphone ( CMO )

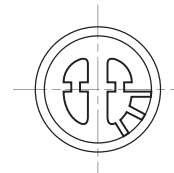
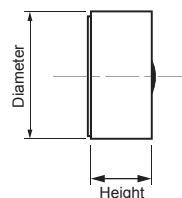
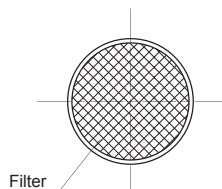


### Electrical Specifications

Unit : mm

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| Series                          | CMO                                                   |
| Directivity                     | Omnidirectional                                       |
| Diameter                        | 3 / 4 / 4.5 / 5.8 / 6 / 8 / 9.4 / 9.7 / 10 mm         |
| Height                          | 1.1 to 6.7 mm                                         |
| Sensitivity [ 0 db = 1 V / Pa ] | -38 / -40 / -42 / -44 / -45/ -46 dB +/-3              |
| Resistance Loading [ RL ]       | 680 / 1K / 1.5K / 2.2K / 3K ohm                       |
| Voltage Supply [ Vs ]           | 1.5 / 2 / 3 / 4.5V                                    |
| Capacitance                     | 10 / 33 pF are available                              |
| Frequency                       | 100 ~ 10000 / 20 ~ 16000 Hz                           |
| Voltage Range                   | 1 ~ 10 V                                              |
| Current Consumption             | Max. 0.5 mA                                           |
| Sensitivity Reduction           | Within -3dB at 1 / 1.5 V                              |
| S/N ratio                       | >60 dB                                                |
| Terminal                        | Pin / Wire / Solder Pad / SMD / FPC Board / Connector |
| Housing Material                | Aluminum                                              |
| Colour                          | Silver / Gold                                         |

## Unidirectional Electret Condenser Microphone ( CMU )



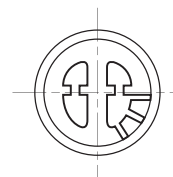
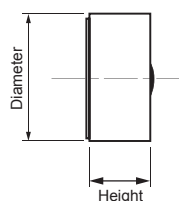
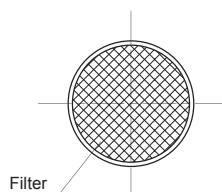
### Electrical Specifications

Unit : mm

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| Series                          | CMU                                                   |
| Directivity                     | Unidirectional                                        |
| Diameter                        | 3 / 4 / 4.5 / 5.8 / 6 / 8 / 9.4 / 9.7 mm              |
| Height                          | 1.1 to 5.0 mm                                         |
| Sensitivity [ 0 db = 1 V / Pa ] | -38 / -40 / -42 / -44 / -46 dB +/-3                   |
| Resistance Loading [ RL ]       | 680 / 1K / 1.5K / 2.2K / 3K ohm                       |
| Voltage Supply [ Vs ]           | 1.5 / 2 / 3 / 4.5 V                                   |
| Capacitance                     | 10 / 33 pF are available                              |
| Frequency                       | 50 ~ 16000 Hz                                         |
| Voltage Range                   | 1 ~ 10 V                                              |
| Current Consumption             | Max. 0.5 mA                                           |
| Sensitivity Reduction           | Within -3 dB at 1 / 1.5V                              |
| S/N ratio                       | >60 dB                                                |
| Terminal                        | Pin / Wire / Solder Pad / SMD / FPC Board / Connector |
| Housing Material                | Aluminum                                              |
| Colour                          | Silver                                                |

Remark: The above mentioned data is standardized. We could also tailor made the MICROPHONE elements for the customers.

## Noise Cancelling Electret Condenser Microphone ( CMN )



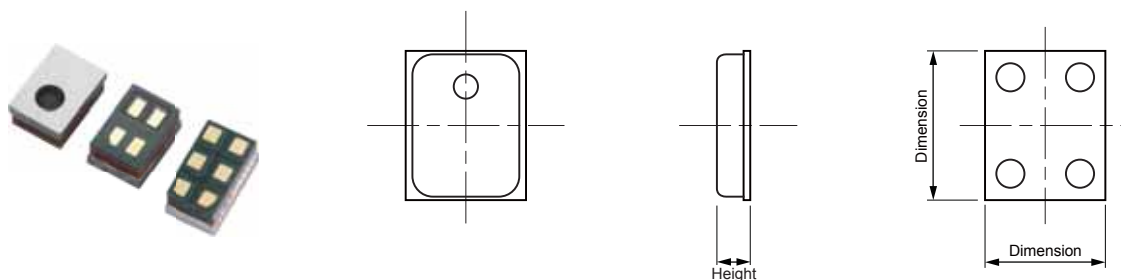
### Electrical Specifications

Unit : mm

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| Series                          | CMN                                                   |
| Directivity                     | Noise Cancelling                                      |
| Diameter                        | 4 / 4.5 / 5.8 / 6 / 8 / 9.7 mm                        |
| Height                          | 1.1 to 5.0 mm                                         |
| Sensitivity [ 0 db = 1 V / Pa ] | -45 / -47 / -48 / -50 / -51 / -54 dB +/-4             |
| Resistance Loading [ RL ]       | 680 / 2.2K ohm                                        |
| Voltage Supply [ Vs ]           | 1.5 / 2 / 3 V                                         |
| Capacitance                     | 10 / 33 pF are available                              |
| Frequency                       | 100 ~ 10000 Hz                                        |
| Voltage Range                   | 1 ~ 10 V                                              |
| Current Consumption             | Max. 0.5 mA                                           |
| Sensitivity Reduction           | Within -3dB at 1 / 1.5 V                              |
| S/N ratio                       | >55 dB                                                |
| Terminal                        | Pin / Wire / Solder Pad / SMD / FPC Board / Connector |
| Housing Material                | Aluminum                                              |
| Color                           | Silver / Gold                                         |

Remark: The above mentioned data is standardized. We could also tailor made the MICROPHONE elements for the customers.

## Micro Electrical Mechanical System ( CMM )



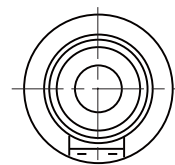
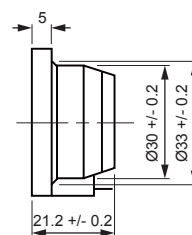
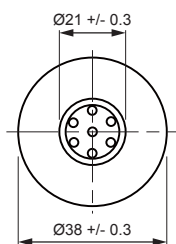
## Electrical Specifications

Unit : mm

|                           |                                   |
|---------------------------|-----------------------------------|
| Series                    | CMM                               |
| Directivity               | Omnidirectional                   |
| Dimension                 | 4.3*4.3 / 3.61*4.57 / 3.61*6.0 mm |
| Height                    | 1.25 / 1.4 mm                     |
| Sensitivity [ 0db=1V/Pa ] | -32 / -42 dB +/-3                 |
| Resistance Loading [ RL ] | 2.2K ohm                          |
| Voltage Supply [ Vs ]     | 2 / 2.2 V                         |
| Capacitance               | 10 / 33 pF are available          |
| Frequency                 | 100 ~ 10000 Hz                    |
| Voltage Range             | 1 ~ 5.5 V                         |
| Current Consumption       | Max. 0.25 / 0.35 mA               |
| Sensitivity Reduction     | Within -3dB at 2 V                |
| S/N ratio                 | >55 / >58 dB                      |
| Terminal                  | SMD                               |
| Housing Material          | Aluminum                          |
| Colour                    | Silver                            |

Remark: The above mentioned data is standardized. We could also tailor made the MICROPHONE elements for the customers.

## SERIES: DR3821

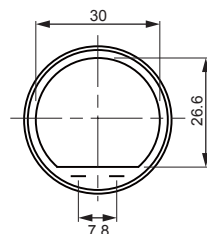
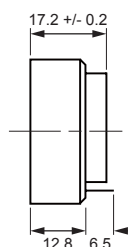
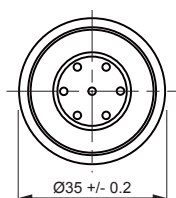


Unit : mm

### Electrical Specifications

| Part Number                    | 982T                 | 982HT                |
|--------------------------------|----------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 98 +/- 2 dB at 1 KHz | 96 +/- 2 dB at 1 KHz |
| Rated Input Power              | 60 mV                | 60 mV                |
| Frequency Range                | 300 ~ 3400 Hz        | 300 ~ 3400 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 20%      | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   | YES                  |
| Operating Temperature          | -20 ~ +60°C          | -20 ~ +60°C          |
| Housing Material               | ABS                  | ABS                  |
| Colour                         | Ivory                | Ivory                |

## SERIES: DR3517

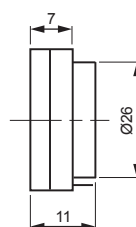
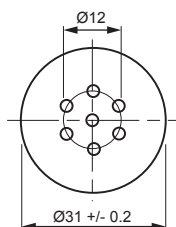


Unit : mm

### Electrical Specifications

| Part Number                    | 992T                 | 992HT                |
|--------------------------------|----------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 99 +/- 2 dB at 1 KHz | 98 +/- 2 dB at 1 KHz |
| Rated Input Power              | 60 mV                | 60 mV                |
| Frequency Range                | 300 ~ 4000 Hz        | 300 ~ 4000 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 20%      | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   | YES                  |
| Operating Temperature          | -20 ~ +60°C          | -20 ~ +60°C          |
| Housing Material               | ABS + Aluminium      | ABS + Aluminium      |
| Colour                         | Ivory + Silver       | Ivory + Silver       |

## SERIES: DR3111

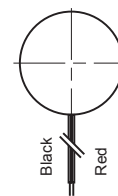
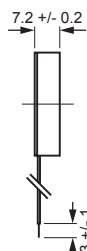
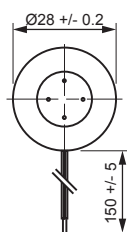


Unit : mm

### Electrical Specifications

| Part Number                    | 982T                 | 982HT                |
|--------------------------------|----------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 98 +/- 2 dB at 1 KHz | 92 +/- 2 dB at 1 KHz |
| Rated Input Power              | 60 mV                | 60 mV                |
| Frequency Range                | 300 ~ 4000 Hz        | 300 ~ 4000 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 20%      | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   | YES                  |
| Operating Temperature          | -20 ~ +60°C          | -20 ~ +60°C          |
| Housing Material               | ABS                  | ABS                  |
| Colour                         | Ivory                | Ivory                |

## SERIES: DR2807

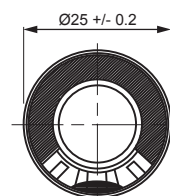
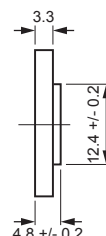
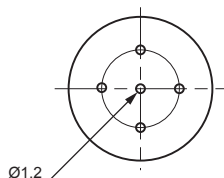


Unit : mm

### Electrical Specifications

| Part Number                    | 942W                 | 942HW                |
|--------------------------------|----------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 94 +/- 2 dB at 1 KHz | 93 +/- 2 dB at 1 KHz |
| Rated Input Power              | 60 mV                | 60 mV                |
| Frequency Range                | 200 ~ 5000 Hz        | 300 ~ 3400 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 15%      | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   | YES                  |
| Operating Temperature          | -10 ~ +55°C          | -20 ~ +60°C          |
| Housing Material               | ABS                  | ABS                  |
| Colour                         | Ivory                | Ivory                |

## SERIES: DR2505

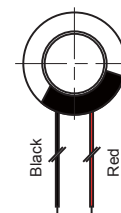
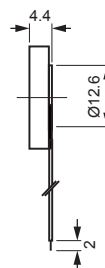
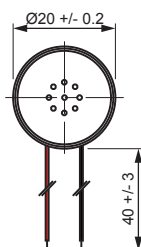


Unit : mm

### Electrical Specifications

| Part Number                    | 942                  |
|--------------------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 94 +/- 2 dB at 1 KHz |
| Rated Input Power              | 60 mV                |
| Frequency Range                | 300 ~ 3400 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   |
| Operating Temperature          | -25 ~ +65°C          |
| Housing Material               | ABS                  |
| Colour                         | Black                |

## SERIES: DR2004

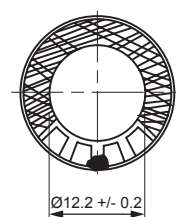
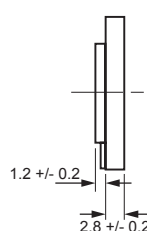
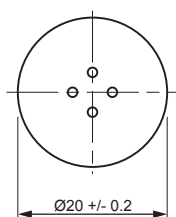


Unit : mm

### Electrical Specifications

| Part Number                    | 903HW                |
|--------------------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 90 +/- 3 dB at 1 KHz |
| Rated Input Power              | 10 mW                |
| Frequency Range                | 300 ~ 4500 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 15%      |
| H.A.C. Compatible              | YES                  |
| Operating Temperature          | -20 ~ +60°C          |
| Housing Material               | Metal                |
| Colour                         | Silver               |

## SERIES: DR2004A

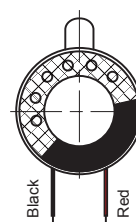
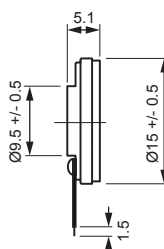
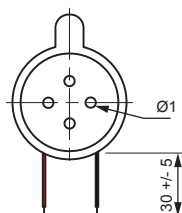


Unit : mm

### Electrical Specifications

| Part Number                    | 932                  | 922H                 |
|--------------------------------|----------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 93 +/- 2 dB at 1 KHz | 92 +/- 2 dB at 1 KHz |
| Rated Input Power              | 10 mW                | 10 mW                |
| Frequency Range                | 300 ~ 3400 Hz        | 300 ~ 3400 Hz        |
| AC. Impedance at 1KHz          | 150 ohm +/- 20%      | 150 ohm +/- 20%      |
| H.A.C. Compatible              | NO                   | YES                  |
| Operating Temperature          | -25 ~ +65°C          | -25 ~ +65°C          |
| Housing Material               | ABS                  | ABS                  |
| Colour                         | Black                | Black                |

## SERIES: DR1505

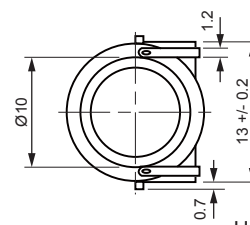
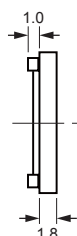
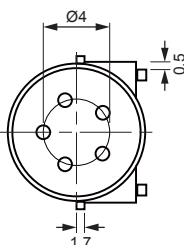


Unit : mm

### Electrical Specifications

| Part Number                    | 992HW                |
|--------------------------------|----------------------|
| Sensitivity [ IEC318 Coupler ] | 99 +/- 2 dB at 1 KHz |
| Rated Input Power              | 30 mW                |
| Frequency Range                | 300 ~ 4000 Hz        |
| AC. Impedance at 1KHz          | 38 ohm +/- 15%       |
| H.A.C. Compatible              | YES                  |
| Operating Temperature          | -10 ~ +55°C          |
| Housing Material               | Metal                |
| Colour                         | Silver               |

## SERIES: DR1303

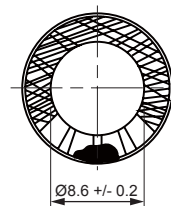
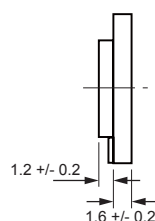
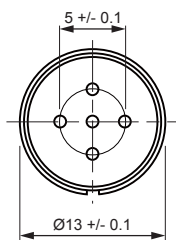


Unit : mm

### Electrical Specifications

| Part Number                    | 1003S                 |
|--------------------------------|-----------------------|
| Sensitivity [ IEC318 Coupler ] | 100 +/- 3 dB at 1 KHz |
| Rated Input Power              | 10 mW                 |
| Frequency Range                | 300 ~ 3400 Hz         |
| AC. Impedance at 1KHz          | 32 ohm +/- 10%        |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -40 ~ +70°C           |
| Housing Material               | ABS + Metal           |
| Colour                         | Black + Silver        |

## SERIES: DR1303A

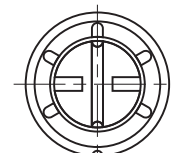
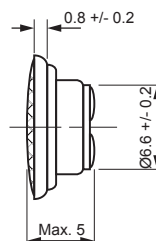
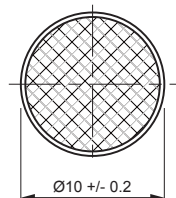


Unit : mm

### Electrical Specifications

|                                |                       |
|--------------------------------|-----------------------|
| Part Number                    | 1023                  |
| Sensitivity [ IEC318 Coupler ] | 102 +/- 3 dB at 1 KHz |
| Rated Input Power              | 10 mW                 |
| Frequency Range                | 300 ~ 3400 Hz         |
| AC. Impedance at 1KHz          | 32 ohm +/- 10%        |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -40 ~ +70°C           |
| Housing Material               | Metal                 |
| Colour                         | Silver                |

## SERIES: DR1005

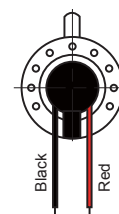
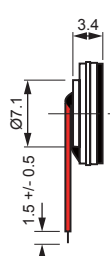
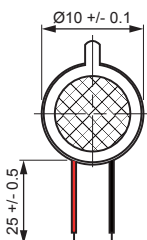


Unit : mm

### Electrical Specifications

|                                |                       |
|--------------------------------|-----------------------|
| Part Number                    | 1043                  |
| Sensitivity [ IEC318 Coupler ] | 104 +/- 3 dB at 1 KHz |
| Rated Input Power              | 5 mW                  |
| Frequency Range                | 200 ~ 4000 Hz         |
| AC. Impedance at 1KHz          | 32 ohm +/- 15%        |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -20 ~ +60°C           |
| Housing Material               | Metal                 |
| Colour                         | Silver                |

## SERIES: DR1003

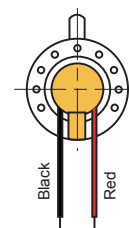
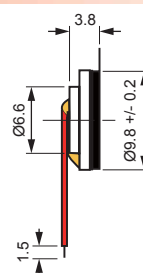
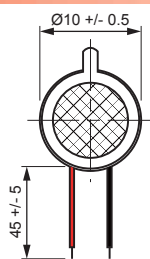


Unit : mm

### Electrical Specifications

|                                |                       |
|--------------------------------|-----------------------|
| Part Number                    | 1143W                 |
| Sensitivity [ IEC318 Coupler ] | 114 +/- 3 dB at 1 KHz |
| Rated Input Power              | 30 mW                 |
| Frequency Range                | Fo ~ 5000 Hz          |
| AC. Impedance at 1KHz          | 32 ohm +/- 15%        |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -20 ~ +60°C           |
| Housing Material               | Metal                 |
| Colour                         | Silver                |

## SERIES: DR1004

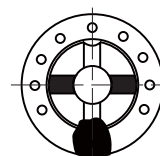
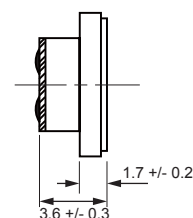
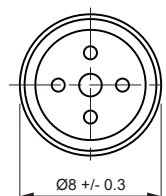


Unit : mm

### Electrical Specifications

|                                |                       |
|--------------------------------|-----------------------|
| Part Number                    | 1143W                 |
| Sensitivity [ IEC318 Coupler ] | 114 +/- 3 dB at 1 KHz |
| Rated Input Power              | 30 mW                 |
| Frequency Range                | Fo ~ 5000 Hz          |
| AC. Impedance at 1KHz          | 8 ohm +/- 15%         |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -30 ~ +60°C           |
| Housing Material               | Metal                 |
| Colour                         | Silver                |

## SERIES: DR0804

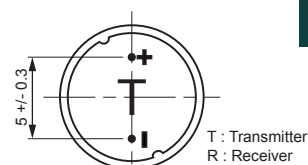
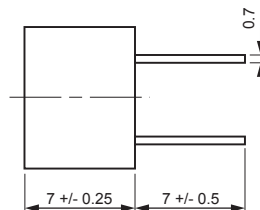
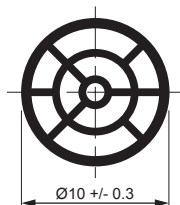


Unit : mm

### Electrical Specifications

|                                |                       |
|--------------------------------|-----------------------|
| Part Number                    | 1103                  |
| Sensitivity [ IEC318 Coupler ] | 110 +/- 3 dB at 1 KHz |
| Rated Input Power              | 30 mW                 |
| Frequency Range                | 300 ~ 3400 Hz         |
| AC. Impedance at 1KHz          | 32 ohm +/- 20%        |
| H.A.C. Compatible              | NO                    |
| Operating Temperature          | -20 ~ +60°C           |
| Housing Material               | Metal                 |
| Colour                         | Silver                |

## SERIES: UPO1007

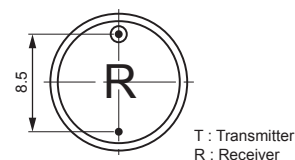
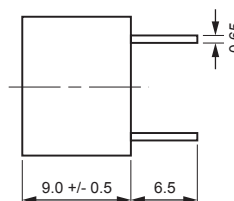
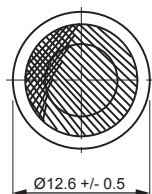


Unit : mm

### Electrical Specifications

| Part Number                         | T40B                  | R40B                  |
|-------------------------------------|-----------------------|-----------------------|
| Function                            | Transmitter           | Receiver              |
| Center Frequency                    | 40 +/- 1 KHz          | 40 +/- 1 KHz          |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                     | Min. -70 dBA          |
| Sound Pressure Level [ at 10 Vrms ] | Min. 103 dBA at 30 cm | -                     |
| Direction                           | Max. 80 Degree        | Max. 80 Degree        |
| Capacitance at 1KHz                 | 2800 pF +/- 20%       | 2800 pF +/- 20%       |
| Input Voltage                       | Max. 20 V p-p         | -                     |
| Detectable Range                    | Min. 0.2 m & Max. 6 m | Min. 0.2 m & Max. 6 m |
| Operating Temperature               | -20 ~ +70°C           | -20 ~ +70°C           |

## SERIES: UPO1309

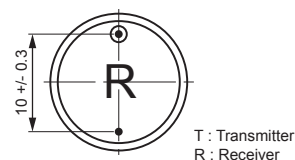
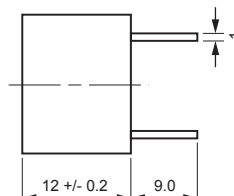
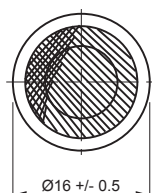


Unit : mm

### Electrical Specifications

| Part Number                         | T40B                  | R40B                  |
|-------------------------------------|-----------------------|-----------------------|
| Function                            | Transmitter           | Receiver              |
| Center Frequency                    | 40 +/- 1 KHz          | 40 +/- 1 KHz          |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                     | Min. -75 dBA          |
| Sound Pressure Level [ at 10 Vrms ] | Min. 110 dBA at 30 cm | -                     |
| Direction                           | Max. 80 Degree        | Max. 80 Degree        |
| Capacitance at 1KHz                 | 2200 pF +/- 25%       | 2200 pF +/- 25%       |
| Input Voltage                       | Max. 20 V p-p         | -                     |
| Detectable Range                    | Min. 0.2 m & Max. 4 m | Min. 0.2 m & Max. 4 m |
| Operating Temperature               | -20 ~ +70°C           | -20 ~ +70°C           |

## SERIES: UPO1612

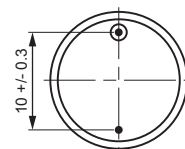
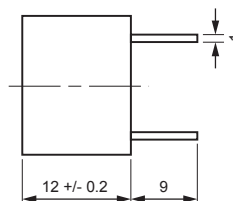
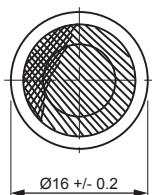


Unit : mm

### Electrical Specifications

| Part Number                         | T40S                  | R40S                  |
|-------------------------------------|-----------------------|-----------------------|
| Function                            | Transmitter           | Receiver              |
| Center Frequency                    | 40 +/- 1 KHz          | 40 +/- 1 KHz          |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                     | Min. -65 dBA          |
| Sound Pressure Level [ at 10 Vrms ] | Min. 115 dBA at 30 cm | -                     |
| Direction                           | Max. 50 Degree        | Max. 50 Degree        |
| Capacitance at 1KHz                 | 2400 pF +/- 25%       | 2400 pF +/- 25%       |
| Input Voltage                       | Max. 20 Vp-p          | -                     |
| Detectable Range                    | Min. 0.2 m & Max. 4 m | Min. 0.2 m & Max. 4 m |
| Operating Temperature               | -30 ~ +85°C           | -30 ~ +85°C           |

## SERIES: USO1612

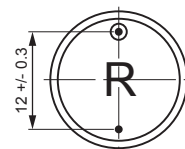
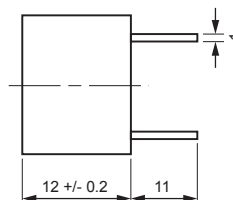
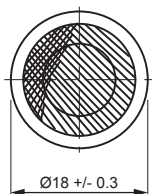


### Electrical Specifications

Unit : mm

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40S                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -65 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 117 dBA at 30 cm  |
| Direction                           | Max. 55 Degree         |
| Capacitance at 1KHz                 | 2400 pF +/- 25%        |
| Input Voltage                       | Max. 150 Vp-p          |
| Detectable Range                    | Min. - m & Max. 18 m   |
| Operating Temperature               | -30 ~ +85°C            |

## SERIES: UPO1812



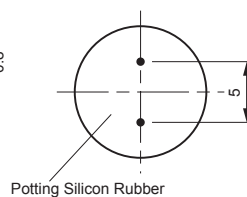
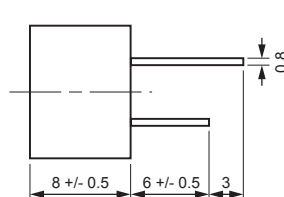
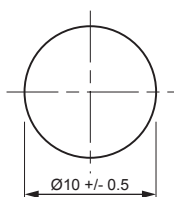
T : Transmitter  
R : Receiver

### Electrical Specifications

Unit : mm

|                                     | T25S                  | R25S                  |
|-------------------------------------|-----------------------|-----------------------|
| Part Number                         | T25S                  | R25S                  |
| Function                            | Transmitter           | Receiver              |
| Center Frequency                    | 25 +/- 1 KHz          | 25 +/- 1 KHz          |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                     | Min. -65 dBA          |
| Sound Pressure Level [ at 10 Vrms ] | Min. 112 dBA at 30 cm | -                     |
| Direction                           | Max. 85 Degree        | Max. 90 Degree        |
| Capacitance at 1KHz                 | 2400 pF +/- 25%       | 2400 pF +/- 25%       |
| Input Voltage                       | Max. 20 Vp-p          | -                     |
| Detectable Range                    | Min. 0.2 m & Max. 4 m | Min. 0.2 m & Max. 4 m |
| Operating Temperature               | -30 ~ +85°C           | -30 ~ +85°C           |

## SERIES: USC1008

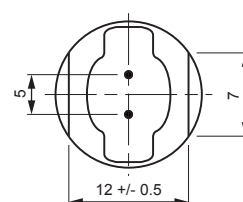
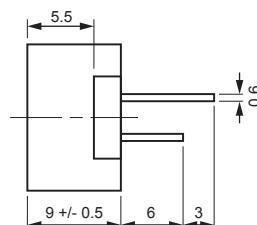
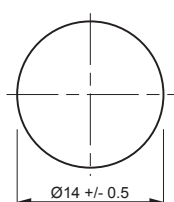


Unit : mm

## Electrical Specifications

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40B                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -80 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 90 dBA at 30 cm   |
| Direction                           | Max. 80 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 120 Vp-p          |
| Detectable Range                    | Min. 0.2 m & Max. 2 m  |
| Operating Temperature               | -20 ~ +60°C            |

## SERIES: USC1409

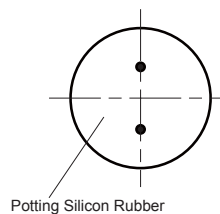
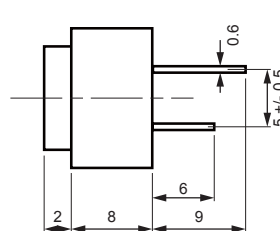
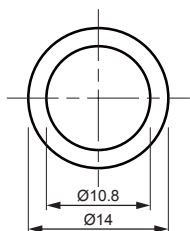


Unit : mm

## Electrical Specifications

|                                     |                                                    |
|-------------------------------------|----------------------------------------------------|
| Part Number                         | 40S                                                |
| Function                            | Transmitter & Receiver                             |
| Center Frequency                    | 40 +/- 1 KHz                                       |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -75 dBA                                       |
| Sound Pressure Level [ at 10 Vrms ] | Min. 95 dBA at 30 cm                               |
| Direction                           | X-axis 120 +/- 15 Degree & Y-axis 60 +/- 15 Degree |
| Capacitance at 1KHz                 | 2000 pF +/- 25%                                    |
| Input Voltage                       | Max. 100 Vp-p                                      |
| Detectable Range                    | -                                                  |
| Operating Temperature               | -30 ~ +85°C                                        |

## SERIES: USC1410



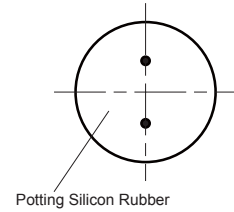
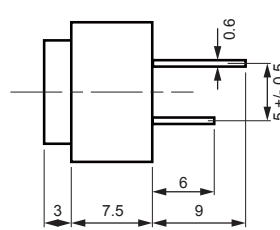
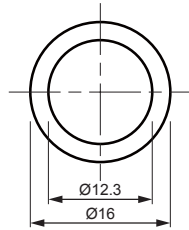
Unit : mm

## Electrical Specifications

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40S                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -74 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 95 dBA at 30 cm   |
| Direction                           | Max. 80 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 140 Vp-p          |
| Detectable Range                    | Min. 0.2 m & Max. 2 m  |
| Operating Temperature               | -30 ~ +85°C            |

# CLOSE STRUCTURE ULTRASONIC SENSOR

## SERIES: USC1611

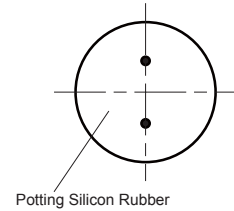
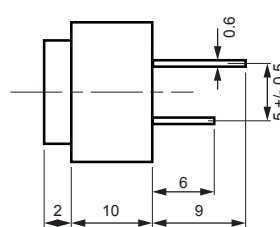
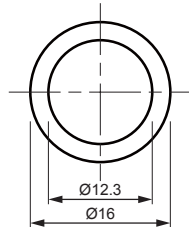


Unit : mm

### Electrical Specifications

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40B                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -75 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 95 dBA at 30 cm   |
| Direction                           | Max. 75 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 140 Vp-p          |
| Detectable Range                    | Min. 0.2 m & Max. 4 m  |
| Operating Temperature               | -30 ~ +85°C            |

## SERIES: USC1612

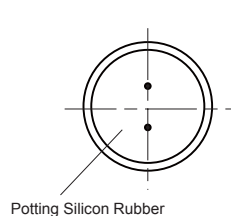
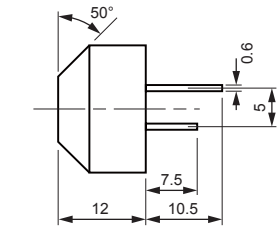
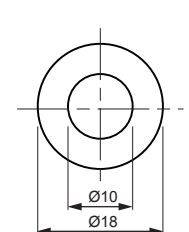


Unit : mm

### Electrical Specifications

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40B                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -75 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 95 dBA at 30 cm   |
| Direction                           | Max. 75 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 120 Vp-p          |
| Detectable Range                    | Min. 0.2 m & Max. 4 m  |
| Operating Temperature               | -30 ~ +85°C            |

## SERIES: USC1812

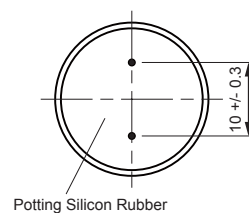
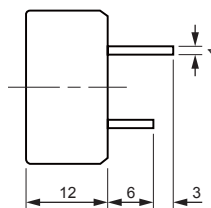
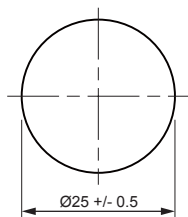


Unit : mm

### Electrical Specifications

|                                     |                        |
|-------------------------------------|------------------------|
| Part Number                         | 40B                    |
| Function                            | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -70 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 100 dBA at 30 cm  |
| Direction                           | Max. 80 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 140 Vp-p          |
| Detectable Range                    | -                      |
| Operating Temperature               | -40 ~ +85°C            |

## SERIES: UPC2512

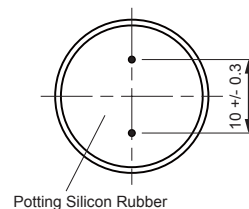
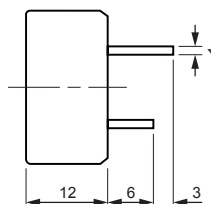
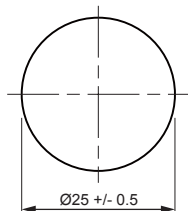


Unit : mm

## Electrical Specifications

| Part Number                         | T40S                  | T25S                  | R40S            |
|-------------------------------------|-----------------------|-----------------------|-----------------|
| Function                            | Transmitter           | Transmitter           | Receiver        |
| Center Frequency                    | 40 +/- 1 KHz          | 25 +/- 1 KHz          | 40 +/- 1 KHz    |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                     | -                     | Min. -73 dBA    |
| Sound Pressure Level [ at 10 Vrms ] | Min. 105 dBA at 30 cm | Min. 100 dBA at 30 cm | -               |
| Direction                           | Max. 60 Degree        | Max. 70 Degree        | Max. 60 Degree  |
| Capacitance at 1KHz                 | 2000 pF +/- 25%       | 2000 pF +/- 25%       | 2000 pF +/- 25% |
| Input Voltage                       | Max. 30 Vp-p          | Max. 30 Vp-p          | -               |
| Detectable Range                    | -                     | -                     | -               |
| Operating Temperature               | -30 ~ +85°C           | -30 ~ +85°C           | -30 ~ +85°C     |

## SERIES: USC2512

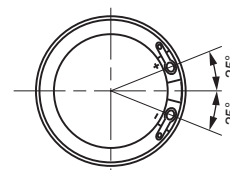
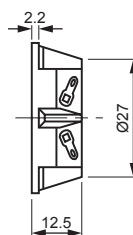
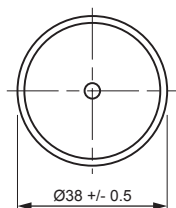


Unit : mm

## Electrical Specifications

| Part Number                         | 40S                    | 22S                    |
|-------------------------------------|------------------------|------------------------|
| Function                            | Transmitter & Receiver | Transmitter & Receiver |
| Center Frequency                    | 40 +/- 1 KHz           | 22 +/- 1 KHz           |
| Sensitivity [ 0 dB = 1V / ubar ]    | Min. -73 dBA           | Min. -75 dBA           |
| Sound Pressure Level [ at 10 Vrms ] | Min. 110 dBA at 30 cm  | Min. 100 dBA at 30 cm  |
| Direction                           | Max. 30 Degree         | Max. 70 Degree         |
| Capacitance at 1KHz                 | 2000 pF +/- 25%        | 2000 pF +/- 25%        |
| Input Voltage                       | Max. 30 Vrms           | Max. 30 Vrms           |
| Detectable Range                    | -                      | -                      |
| Operating Temperature               | -30 ~ +85°C            | -30 ~ +85°C            |

## ULTRASONIC SPEAKER

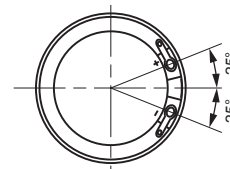
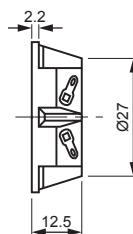
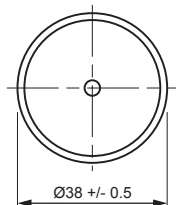


Unit : mm

### Electrical Specifications

|                                      |                       |
|--------------------------------------|-----------------------|
| Part Number                          | USPK3813T             |
| Function                             | Transmitter           |
| Center Frequency                     | 25 +/- 5 KHz          |
| Sensitivity [ 0 dB =1V / ubar ]      | -                     |
| Sound Pressure Level [ at 5.5 Vp-p ] | Min. 100 dBA at 50 cm |
| Input Voltage                        | Max. 30 Vp-p          |
| Operating Temperature                | -20 ~ +70°C           |
| Housing                              | ABS                   |
| Colour                               | Black                 |

## ULTRASONIC SPEAKER

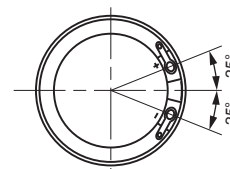
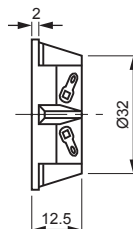
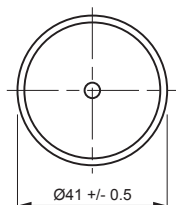


Unit : mm

### Electrical Specifications

|                                      |                       |
|--------------------------------------|-----------------------|
| Part Number                          | USPK3813TU            |
| Function                             | Transmitter           |
| Center Frequency                     | 25 +/- 5 KHz          |
| Sensitivity [ 0 dB =1V / ubar ]      | -                     |
| Sound Pressure Level [ at 5.5 Vp-p ] | Min. 100 dBA at 50 cm |
| Input Voltage                        | Max. 30 Vp-p          |
| Operating Temperature                | -20 ~ +70°C           |
| Housing                              | ABS                   |
| Colour                               | Black with Undertint  |

## ULTRASONIC SPEAKER



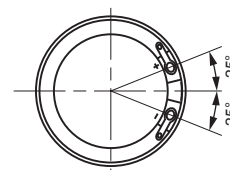
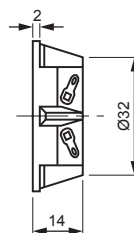
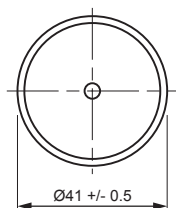
Unit : mm

### Electrical Specifications

|                                       |                      |
|---------------------------------------|----------------------|
| Part Number                           | USPK4113T            |
| Function                              | Transmitter          |
| Center Frequency                      | 22 +/- 1 KHz         |
| Sensitivity [ 0 dB = 1V / ubar ]      | -                    |
| Sound Pressure Level [ at 2.83 Vrms ] | Min. 90 dBA at 50 cm |
| Input Voltage                         | Max. 10 Vrms         |
| Operating Temperature                 | -10 ~ +50°C          |
| Housing                               | ABS                  |
| Colour                                | Black                |



## ULTRASONIC SPEAKER

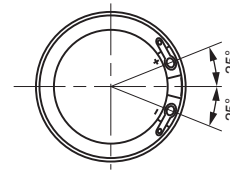
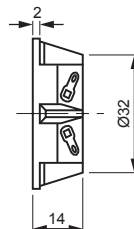
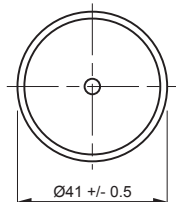


Unit : mm

### Electrical Specifications

|                                       |                      |
|---------------------------------------|----------------------|
| Part Number                           | USPK4114T            |
| Function                              | Transmitter          |
| Center Frequency                      | 22 +/- 1 KHz         |
| Sensitivity [ 0 dB = 1V / ubar ]      | -                    |
| Sound Pressure Level [ at 2.83 Vrms ] | Min. 90 dBA at 50 cm |
| Input Voltage                         | Max. 10 Vrms         |
| Operating Temperature                 | -10 ~ +50°C          |
| Housing                               | ABS                  |
| Colour                                | Black                |

## ULTRASONIC SPEAKER

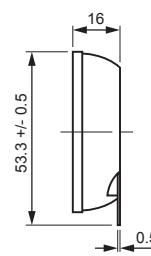
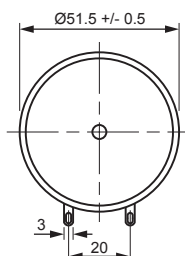


Unit : mm

### Electrical Specifications

|                                       |                      |
|---------------------------------------|----------------------|
| Part Number                           | USPK4114TU           |
| Function                              | Transmitter          |
| Center Frequency                      | 20 +/- 3 KHz         |
| Sensitivity [ 0 dB = 1V / ubar ]      | -                    |
| Sound Pressure Level [ at 2.83 Vrms ] | Min. 90 dBA at 50 cm |
| Input Voltage                         | Max. 10 Vrms         |
| Operating Temperature                 | -20 ~ +70°C          |
| Housing                               | ABS                  |
| Colour                                | Black with Undertint |

## ULTRASONIC SPEAKER



Unit : mm

### Electrical Specifications

|                                     |                      |
|-------------------------------------|----------------------|
| Part Number                         | USPK5216T            |
| Function                            | Transmitter          |
| Center Frequency                    | 22 +/- 1 KHz         |
| Sensitivity [ 0 dB = 1V / ubar ]    | -                    |
| Sound Pressure Level [ at 10 Vp-p ] | Min. 92 dBA at 10 cm |
| Input Voltage                       | Max. 30 Vp-p         |
| Operating Temperature               | -20 ~ +70°C          |
| Housing                             | PBT                  |
| Colour                              | Black                |

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