

SCS-SERIES (SONITRON Ceramic Speakers)



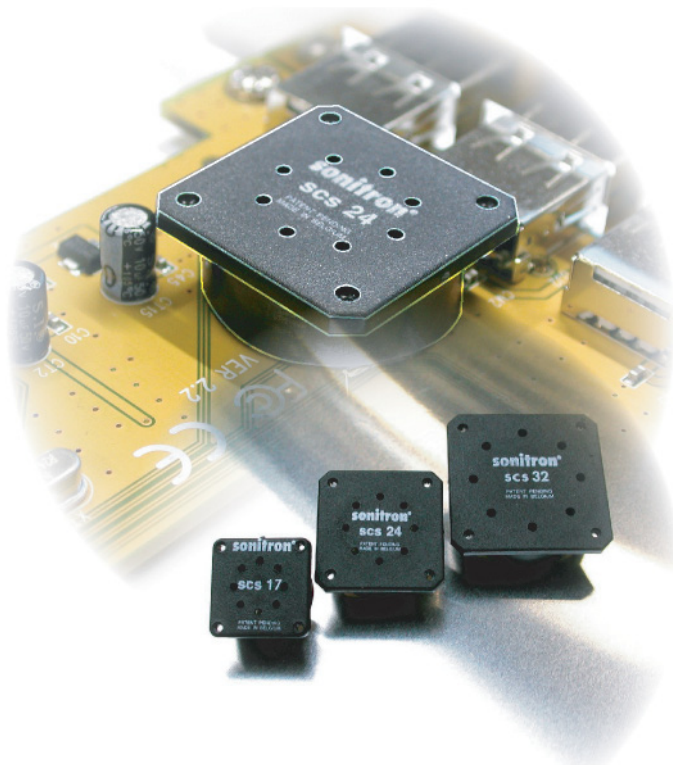
INTRODUCTION

Introduced as the first models of Sonitron's piezoceramic speakers, the SCS-series are still being used for numerous applications.

Good sound quality and limited distortion guarantee a clear reproduction of multiple tones, speech and music. The piezo speaker has 60% more net sound output per membrane surface than the electro-dynamic speaker in function of the average current drain and average sound pressure level. These loudspeakers are extremely reliable, have a robust design and can be used in difficult environmental conditions and applications because of resistance of the front to water, humidity, vibrations and dust.

The SCS-speaker can be mounted by soldering the SMD pads onto the PCB.

For a pin-version, the pins can be soldered onto the PCB. Extra stability against vibration is achieved by screwing the housing onto the application.



GENERAL OVERVIEW SCS-SERIES

| Model | Frequency range | Peak frequency SPL | Operating voltage |
|--------|-----------------|--|-------------------|
| SCS-17 | 1500 - 8000 Hz | 2200 Hz - 92 dB 5000 Hz - 91 dB | 5 to 30 Vpp |
| SCS-24 | 1000 - 8000 Hz | 800 Hz - 68 dB 1600 Hz - 95 dB 4000 Hz - 87 dB | 5 to 30 Vpp |
| SCS-32 | 500 - 8000 Hz | 650 Hz - 85 dB 2700 Hz - 100 dB 3700 Hz - 88 dB 7500 Hz - 80 dB | 5 to 30 Vpp |



ADVANTAGES & APPLICATIONS

ADVANTAGES:

- very flat and solid construction
- dust, water- and shockproof front panel
- resistant to temperature variations
- broad frequency range in small size
- combined use as speaker/microphone
- no electromagnetic field (EMC)
- little energy required at low frequencies
- less current consumption needed in the leads to the speaker
- 60% higher acoustic output in smaller speakers compared to electrodynamic speakers
- low weight
- high impedance
- can be driven directly by IC

APPLICATIONS:

- home equipment & domotics
- communication equipment
- home monitoring equipment
- talking buzzer & door bell
- computer equipment
- vending machines
- electronic wheelchair
- medical equipment
- multimedia equipment
- industrial equipment
- flight instrumentation
- portable voice recorders
- paging systems
- instrumentation

SPECIFICATIONS

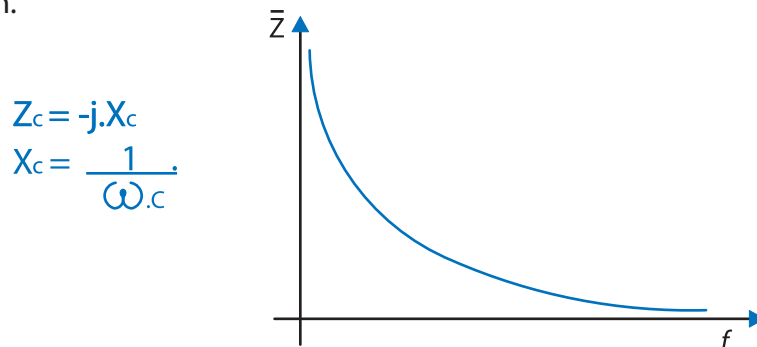
| | |
|--------------------------|--|
| Operating temperature: | -20°C to +60°C |
| Storage temperature: | -40°C to +60°C |
| Case material: | ABS (UL rating: 94 HB) for pin-versions), PPS (UL rating: 94 V0/5V) for SMD-versions) |
| Standard colour of case: | Black |

| Model | Frequency range | Peak frequency SPL | Capacitance ±20% | Operating voltage | Impedance @ 1KHz ±20% | Weight |
|--------|-----------------|--|------------------|-------------------|-----------------------|--------|
| SCS-17 | 1500 - 8000 Hz | 2200 Hz - 92 dB 5000 Hz - 91 dB | 20 nF | 5 to 30 Vpp | 7957 ohm | 1.7 g |
| SCS-24 | 1000 - 8000 Hz | 800 Hz - 68 dB 1600 Hz - 95 dB 4000 Hz - 87 dB | 37 nF | 5 to 30 Vpp | 4300 ohm | 4 g |
| SCS-32 | 500 - 8000 Hz | 650 Hz - 85 dB 2700 Hz - 100 dB 3700 Hz - 88 dB 7500 Hz - 80 dB | 66 nF | 5 to 30 Vpp | 2400 ohm | 5.9 g |

All measurements are made in free air @30 cm using a 30 Vpp sine wave.
The speakers were mounted in a box with dimensions 40x15x5 cm.

IMPEDANCE

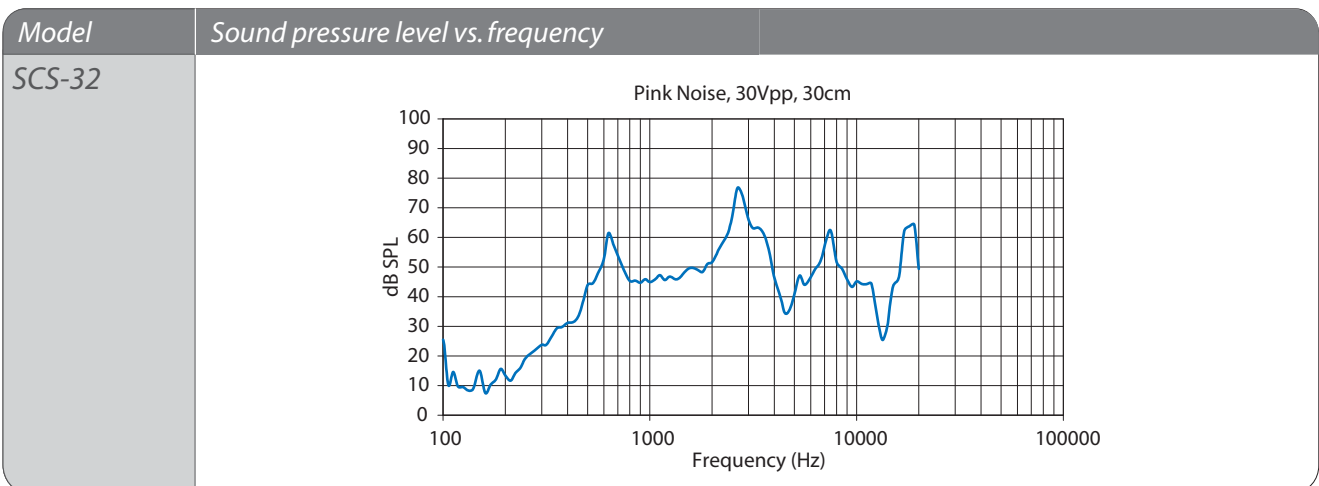
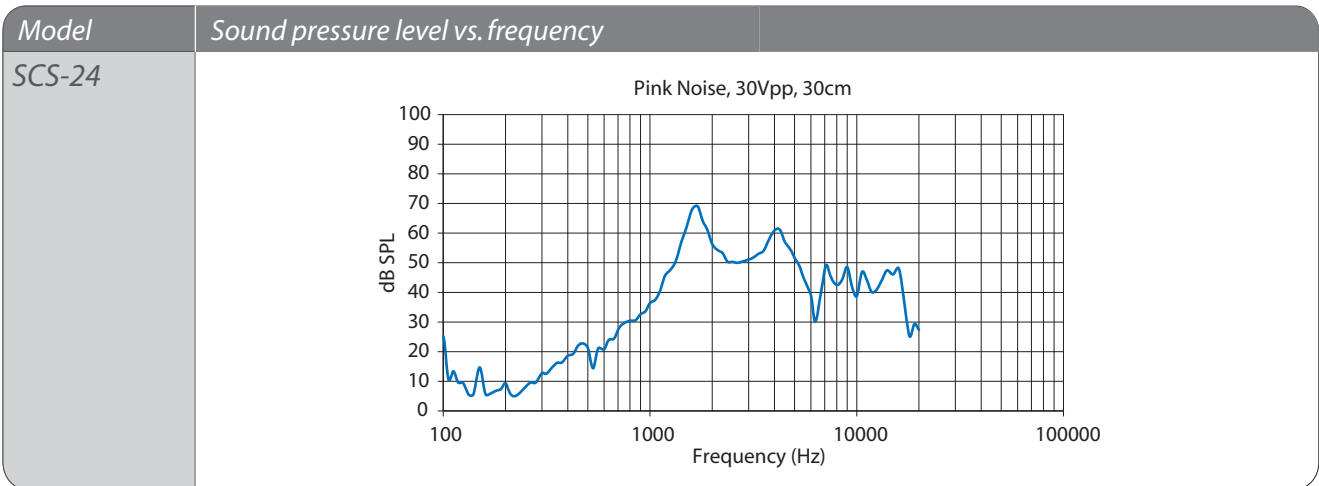
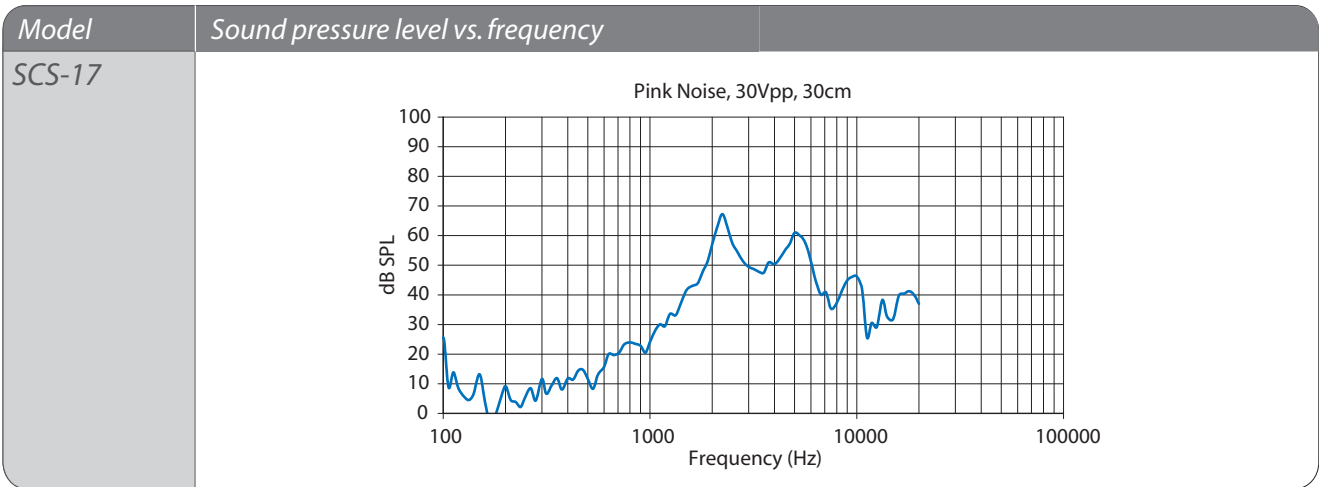
Theoretical the main impedance of the piezo speakers is a capacitive reactance and follows an asymptotic function.



The typical practical impedance values (± 20%) for frequencies of 100 Hz up to 20 kHz of our speakers are as follows:

| Model | SCS-17 | SCS-24 | SCS-32 |
|--------------------|-----------|-----------|-----------|
| Capacitance (±20%) | 20 nF | 37 nF | 66 nF |
| Z (0.1 kHz) | 79577 ohm | 43000 ohm | 24114 ohm |
| Z (1 kHz) | 7957 ohm | 4300 ohm | 2411 ohm |
| Z (2 kHz) | 3978 ohm | 2150 ohm | 1205 ohm |
| Z (5 kHz) | 1591 ohm | 860 ohm | 482 ohm |
| Z (10 kHz) | 795 ohm | 430 ohm | 241 ohm |
| Z (15 kHz) | 530 ohm | 286 ohm | 161 ohm |
| Z (20 kHz) | 397 ohm | 215 ohm | 121 ohm |

FREQUENCY RESPONSE

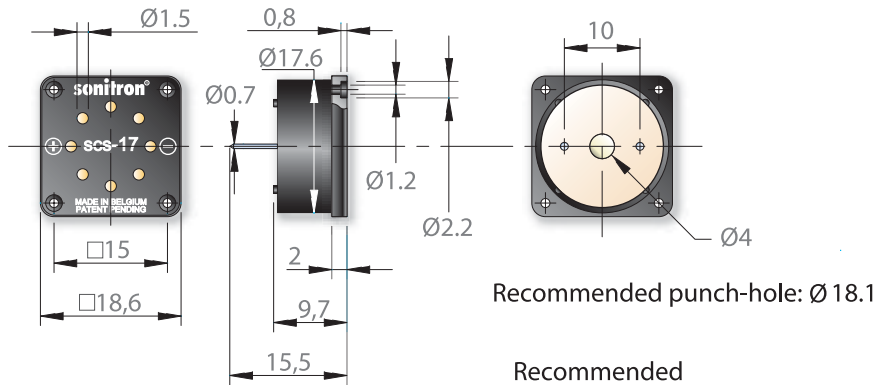


Pink noise measurements made in free air.
 The speakers were mounted in a box with dimensions 40x15x5 cm.

DIMENSIONS (All dimensions are in mm)

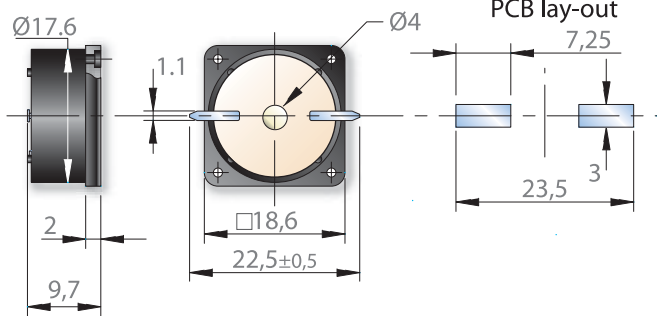
SCS-17-P10

Pin-version
(case in ABS)



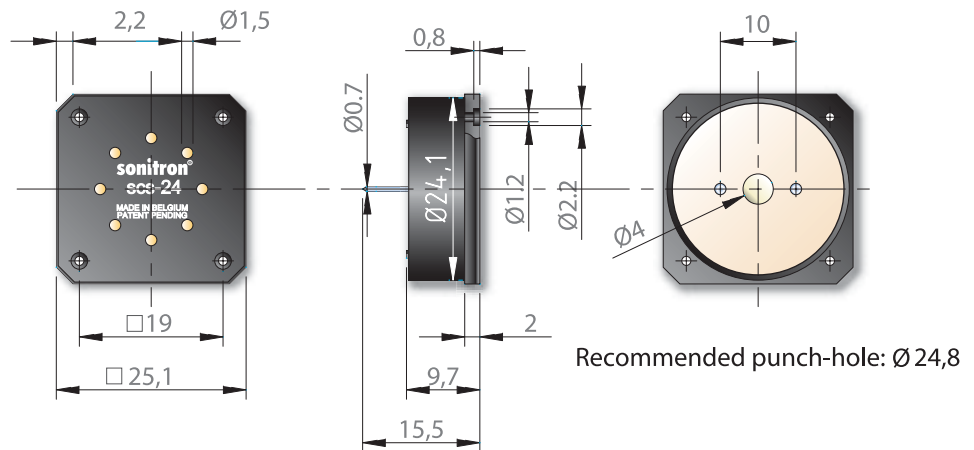
SCS-17-S

SMD-version
(case in PPS)



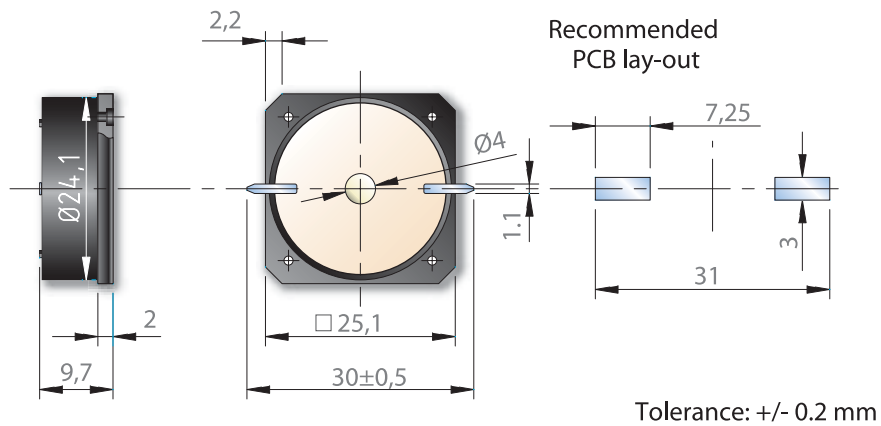
SCS-24-P10

Pin-version
(case in ABS)

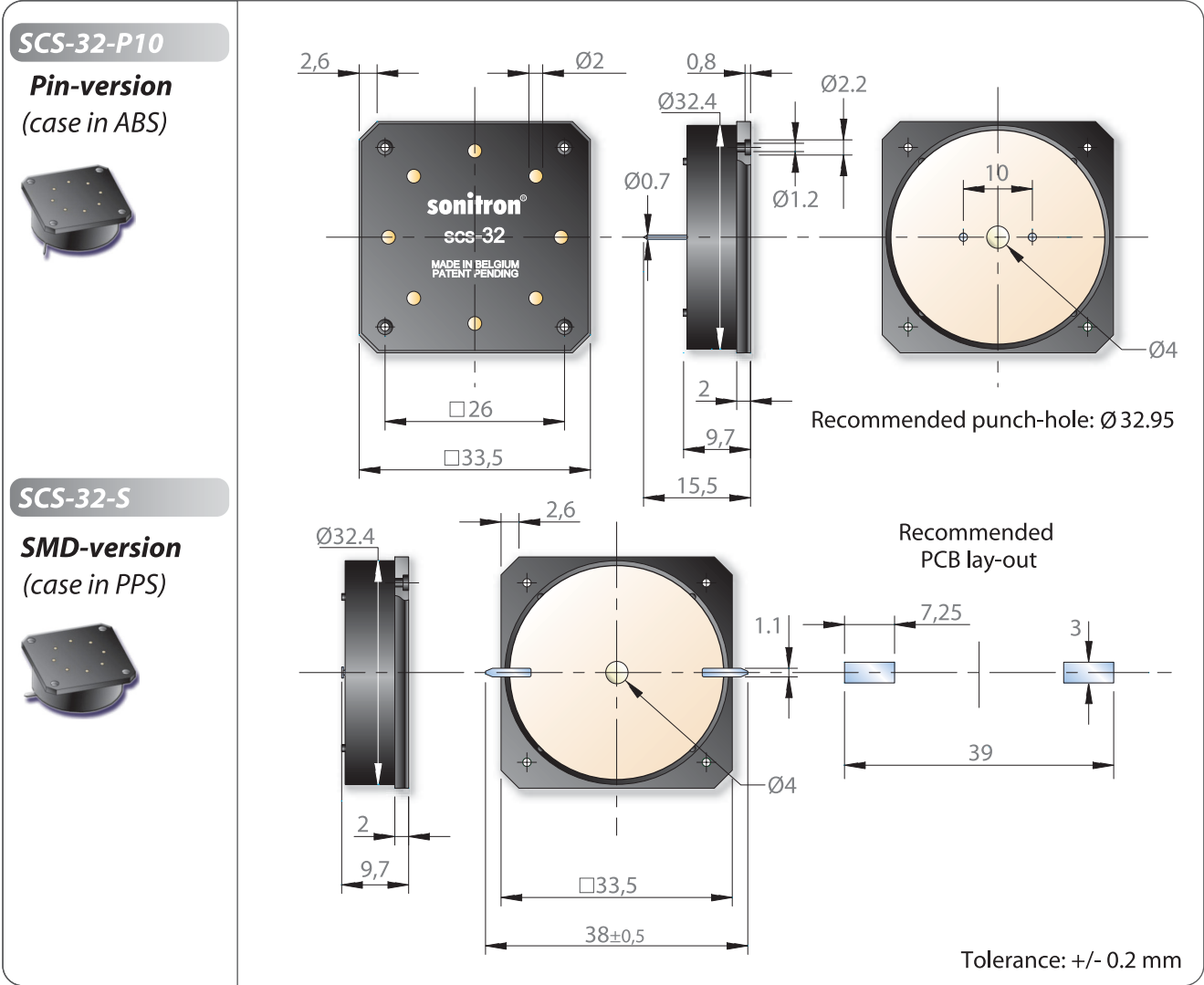


SCS-24-S

SMD-version
(case in PPS)



DIMENSIONS (All dimensions are in mm)



Recommended Piezo Audio Amplifiers (see page 104, 105, 106)

Sonitron production models

PAA-MAX-9788-01

PAA-LM4960SQ-02

PAA-StepUpBTL-01

PRODUCT CODIFICATION

| | | |
|---|--|---|
| <p>SCS</p> <p>↓</p> <p>Sonitron Ceramic Speaker</p> | <p>SCS-17 SCS-24 SCS-32</p> <p>↓</p> <p>Square diameter (mm)</p> | <p>P S</p> <p>↓</p> <p>P: Pin distance (mm) S: SMD-connection</p> |
|---|--|---|

LIST OF AVAILABLE PRODUCT TYPES

| | | |
|--------------------------------|--------------------------------|--------------------------------|
| <p>SCS-17-P10 SCS-17-S</p> | <p>SCS-24-P10 SCS-24-S</p> | <p>SCS-32-P10 SCS-32-S</p> |
|--------------------------------|--------------------------------|--------------------------------|

PACKAGING

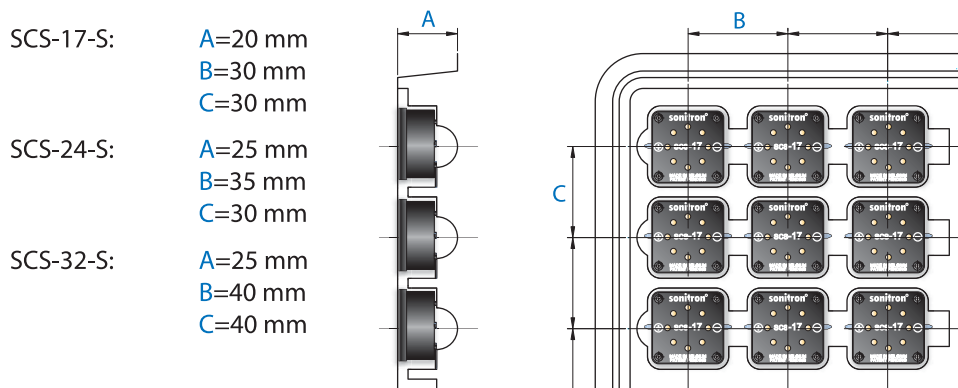
All speakers with through hole pins, are packed on a polystyrene board (245 L x 245 W) and sold in boxes with dimensions of 250 L x 250 W x 125 H.

| Number | SCS-17 P10 | SCS-24 P10 | SCS-32 P10 |
|-----------|----------------|---------------|---------------|
| per board | 100 | 81 | 49 |
| per box | (5x100) 500 | (5x81) 405 | (5x49) 245 |

All SMD models are packed in trays (245 L x 245 W) and sold in boxes with dimensions of 250 L x 250 W x 125 H.

| Number | SCS-17-S | SCS-24-S | SCS-32-S |
|-----------|---------------|---------------|---------------|
| per board | 49 | 42 | 25 |
| per box | (7x49) 343 | (5x42) 210 | (6x25) 150 |

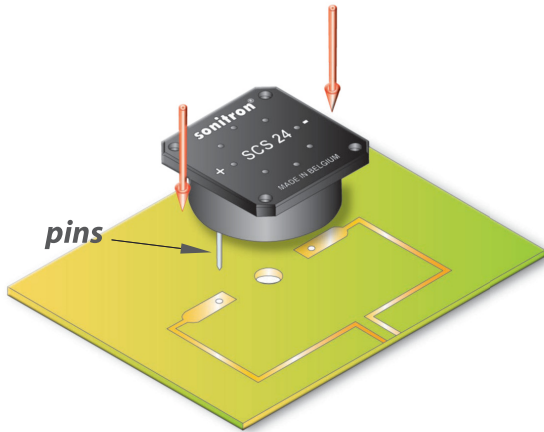
Dimensions of the tray and position of the SMD components of the models SCS-17-S, SCS-24-S and SCS-32-S are illustrated below:



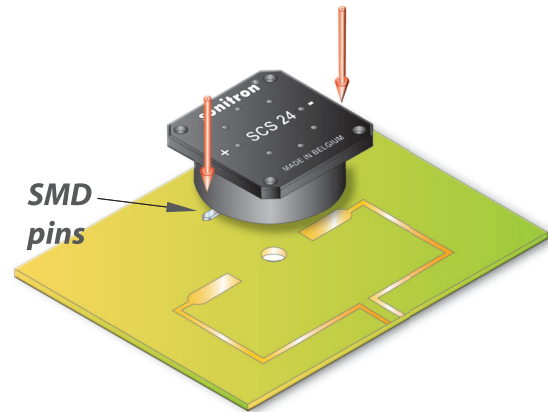
ACOUSTIC MOUNTING INSTRUCTIONS FOR SCS-SPEAKERS

- Fundamental mounting recommendations see page 102.
- The SCS speakers can be mounted in several different ways. The recommended mounting methods illustrated below are the best ways to mount all the SCS speaker models.

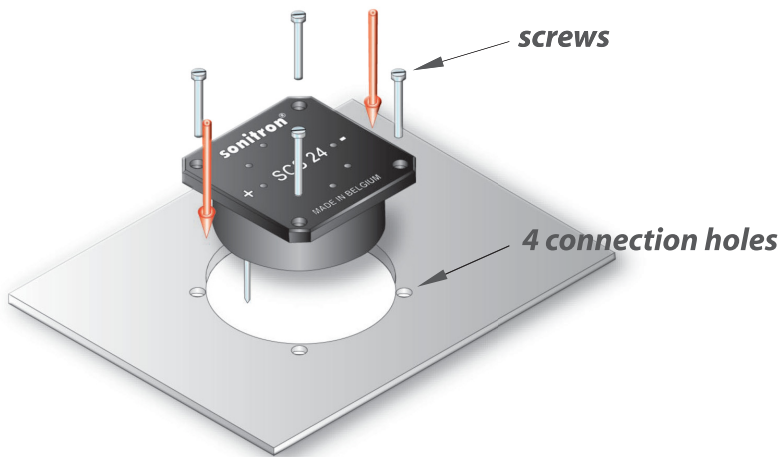
Soldered with pins on the PCB



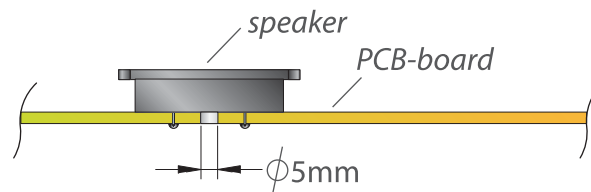
SMD soldered on the PCB



Panel mounting, secured with 4 screws



When mounted on a PC-board, a central hole in the PC-board of minimum 5 mm diameter is recommended.



Other methods...