

## SCS SERIES (SONITRON Ceramic Speakers)



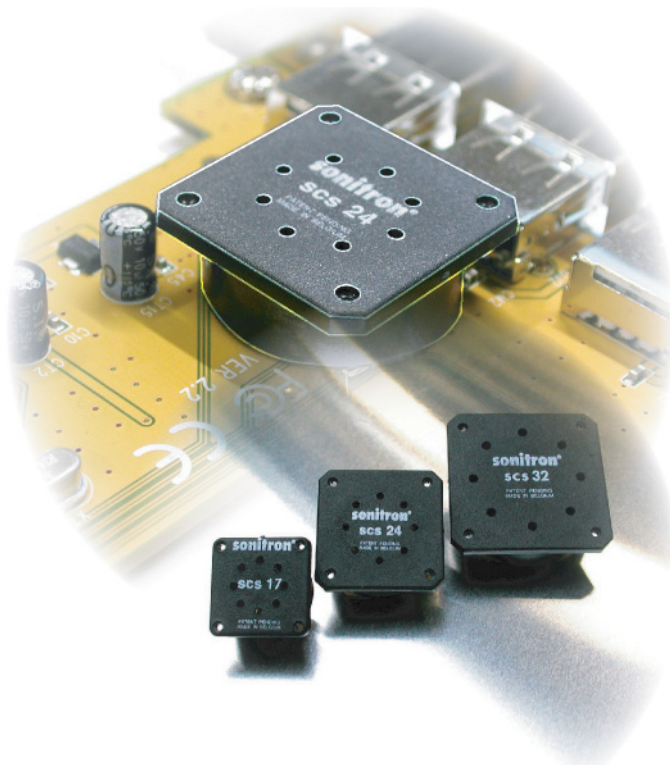
### INTRODUCTION

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

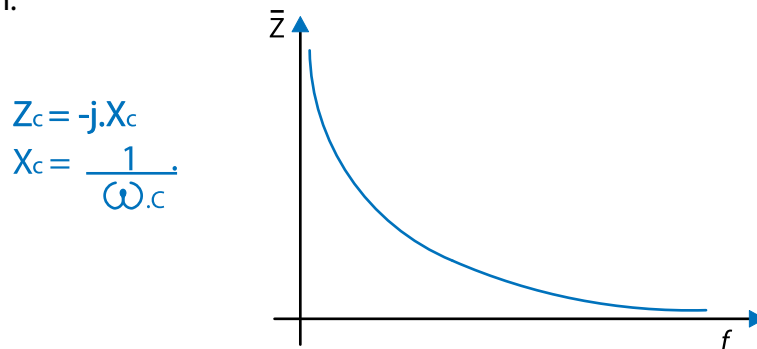
Operating temperature:	-40°C to +85°C
Storage temperature:	-40°C to +85°C
Case material:	PBT (UL rating: 94 HB) for pin-versions), PPS (UL rating: 94 V0/5V) for SMD-versions)
Standard colour of case:	Black

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

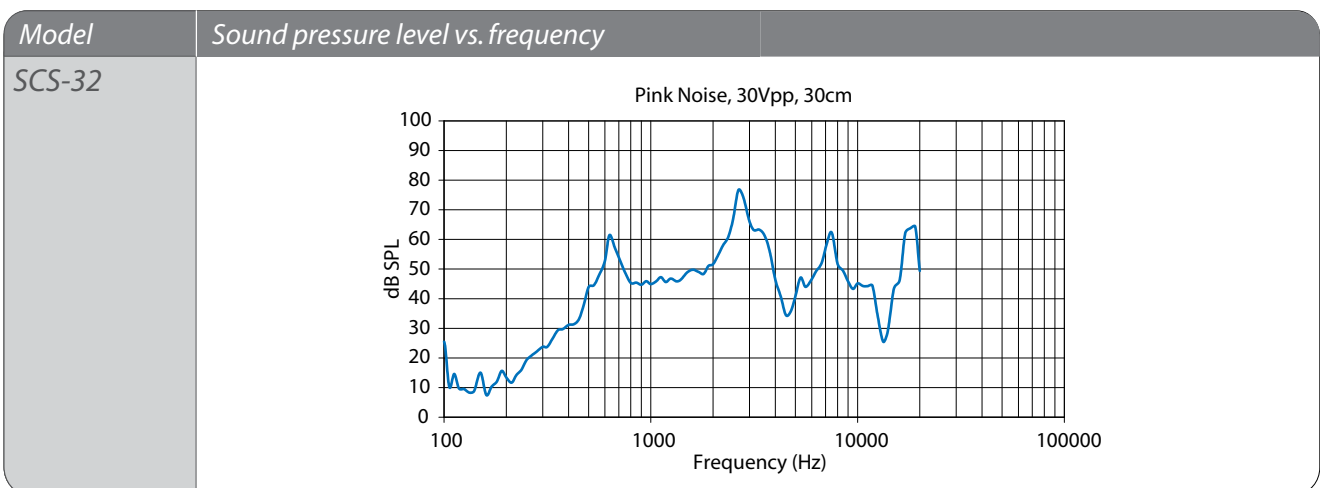
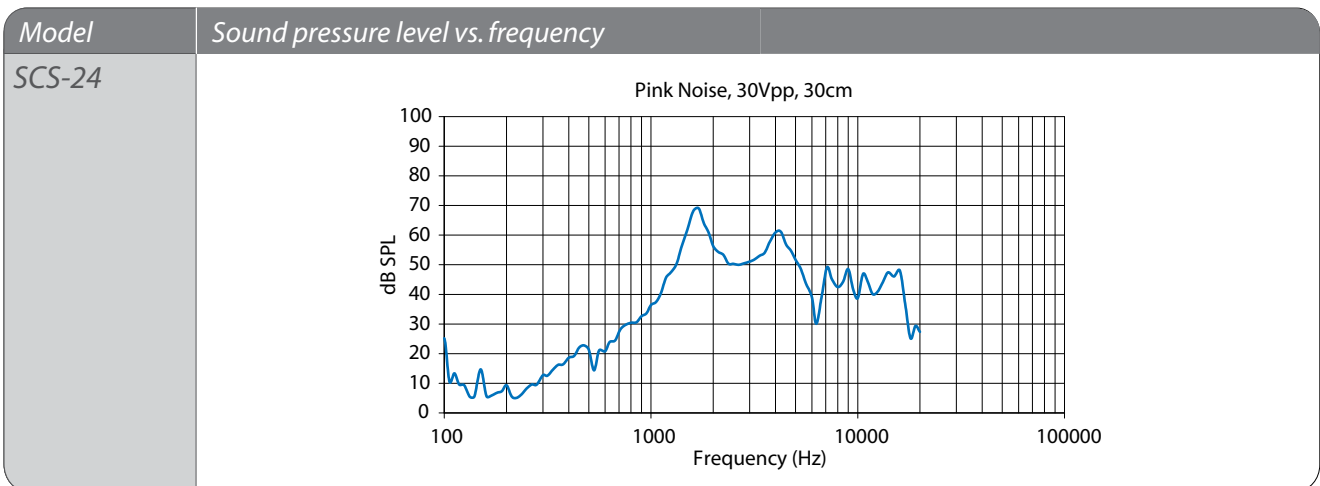
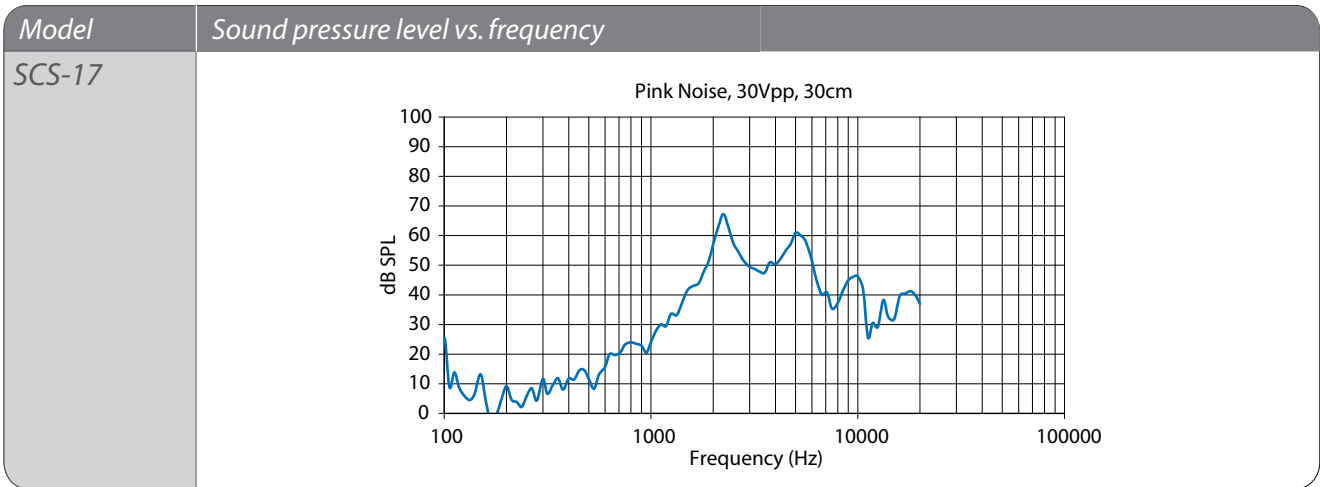
Theoretical the main impedance of the piezo speakers is a capacitive reactance and follows an asymptotic function.



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

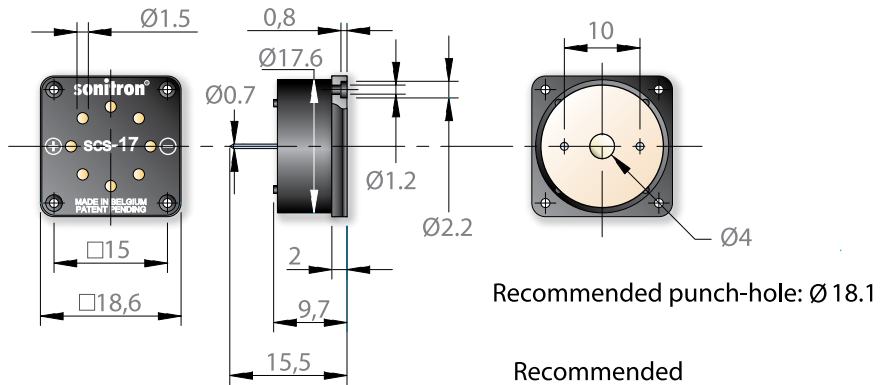


Pink noise measurements made in free air.  
 The speakers were mounted in a box with dimensions 40x15x5 cm.

**DIMENSIONS** (All dimensions are in mm)

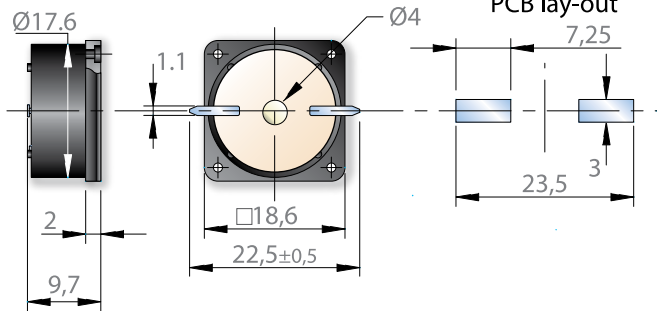
**SCS-17-P10**

**Pin-version**  
(case in PBT)



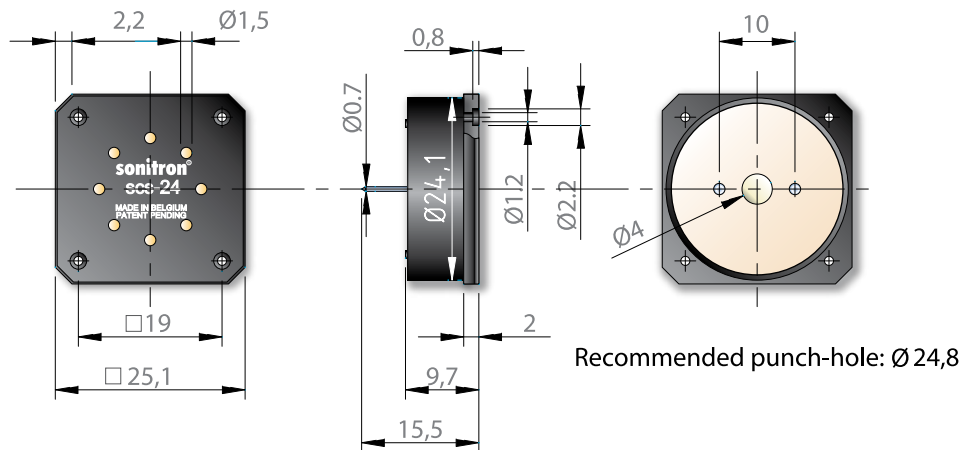
**SCS-17-S**

**SMD-version**  
(case in PPS)



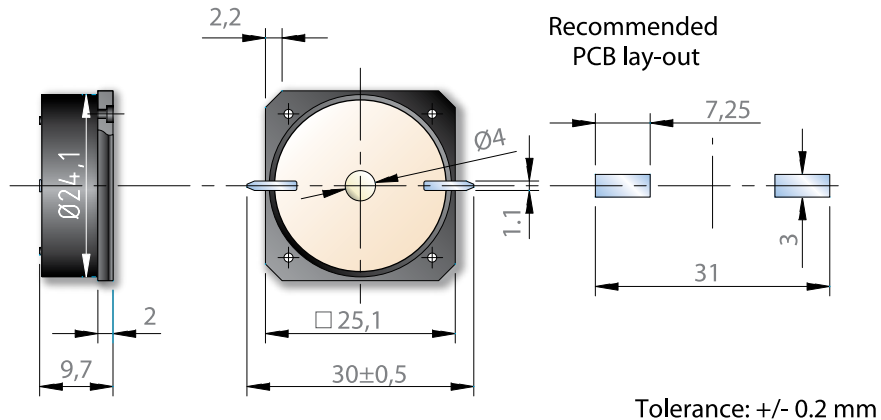
**SCS-24-P10**

**Pin-version**  
(case in PBT)



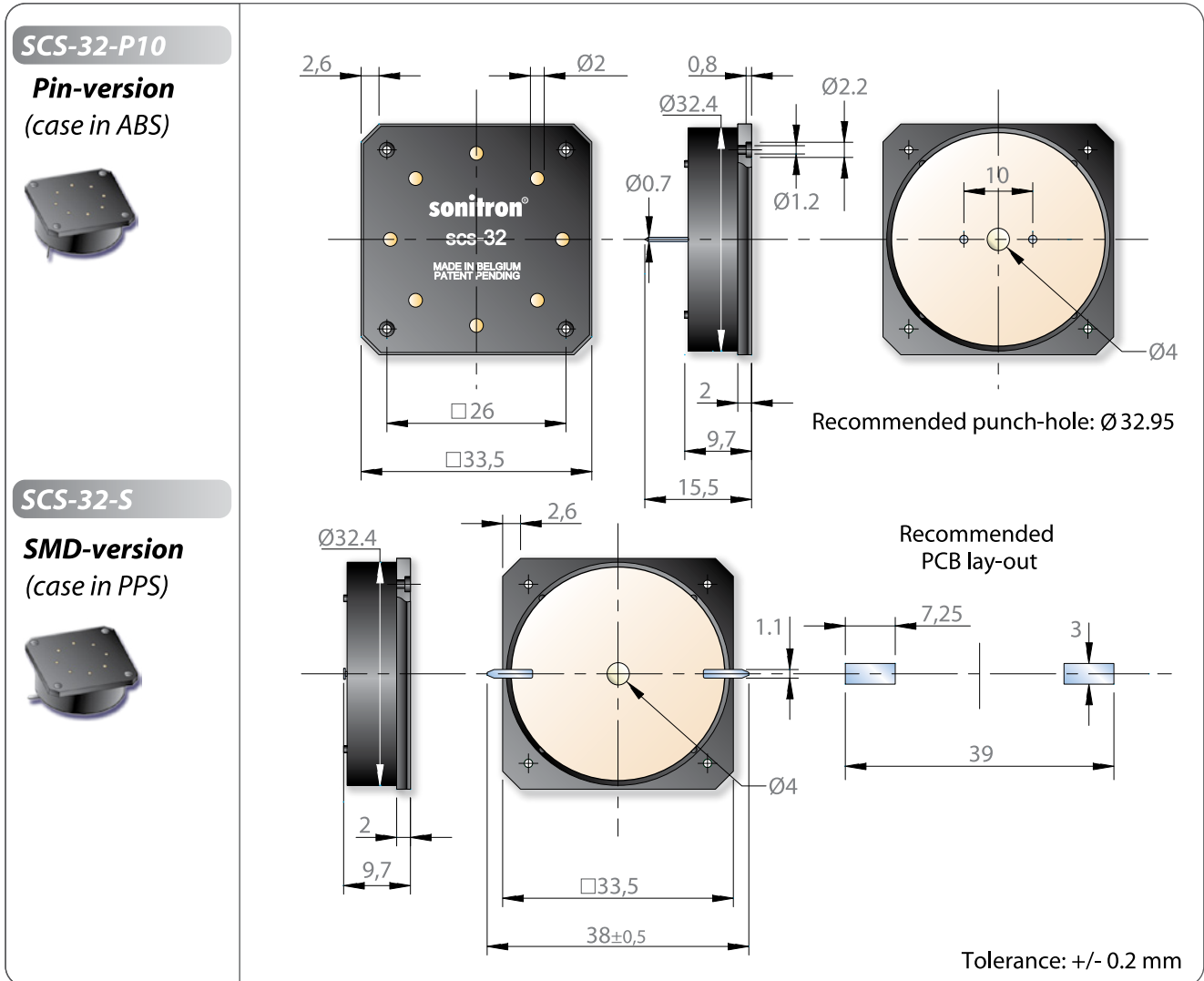
**SCS-24-S**

**SMD-version**  
(case in PPS)



Tolerance: +/- 0.2 mm

## DIMENSIONS (All dimensions are in mm)

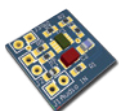


## PRODUCT OPTIONS

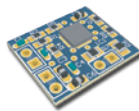
Option Code	example	Description
<b>SP02</b>	SCS-32-P10/ <b>SP02</b>	Contains heavy duty wires (plastic insulation), connection sealed with silicone.
<b>FP17S</b>	SCS-24-S- <b>FP</b>	Acoustic stabilization Foam Patch, easy to stick. For: SCS-24-P10 SCS-24-S
<b>FP24S</b>	SCS-32-S- <b>FP</b>	Acoustic stabilization Foam Patch, easy to stick. For: SCS-32-P10 SCS-32-S

## Recommended Piezo Audio Amplifiers

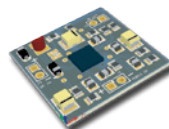
**Sonitron production models**



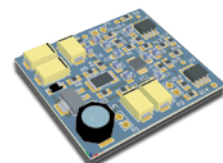
PAA-LT3469-01



PAA-MAX-9788-01



PAA-LM4960SQ-02



PAA-StepUpBTL-01

## PRODUCT CODIFICATION

SCS ↓ Sonitron Ceramic Speaker	SCS-17 SCS-24 SCS-32 ↓ Square diameter (mm)	P S ↓ P: Pin distance (mm) S: SMD-connection
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## LIST OF AVAILABLE PRODUCT TYPES

SCS-17-P10 SCS-17-S	SCS-24-P10 SCS-24-S	SCS-32-P10 SCS-32-S
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## PACKAGING

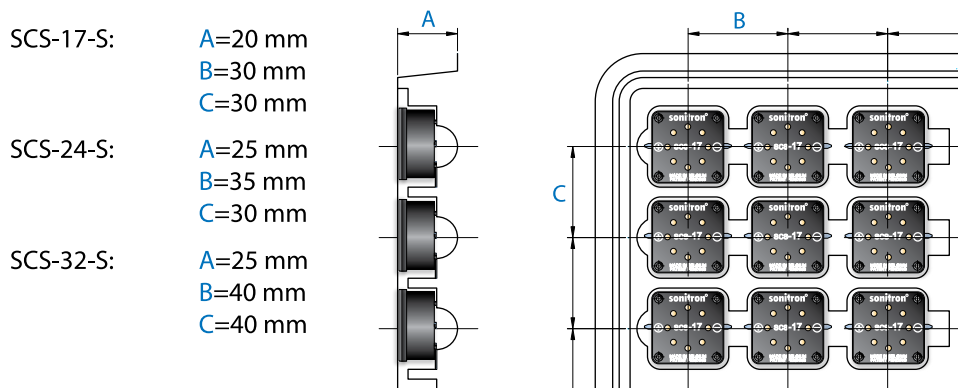
All speakers with through hole pins, are packed on a polystyrene board (245 L x 245 W) and sold in boxes with dimensions of 250 L x 250 W x 125 H.

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

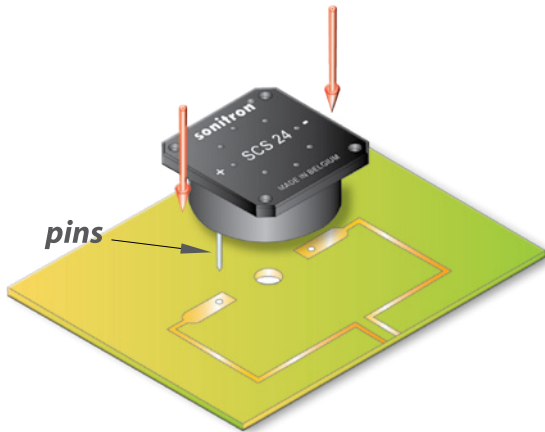
Dimensions of the tray and position of the SMD components of the models SCS-17-S, SCS-24-S and SCS-32-S are illustrated below:



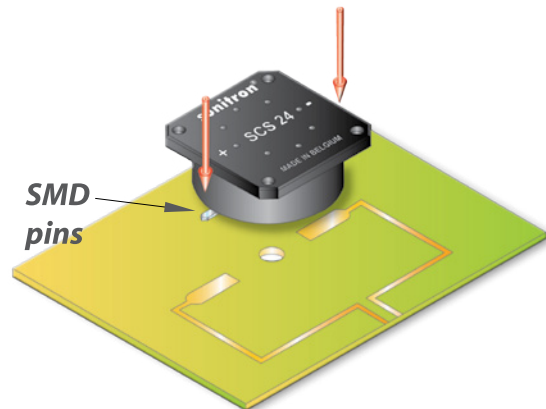
## ACOUSTIC MOUNTING INSTRUCTIONS FOR SCS-SPEAKERS

- Fundamental mounting recommendations see page 110.
- 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.

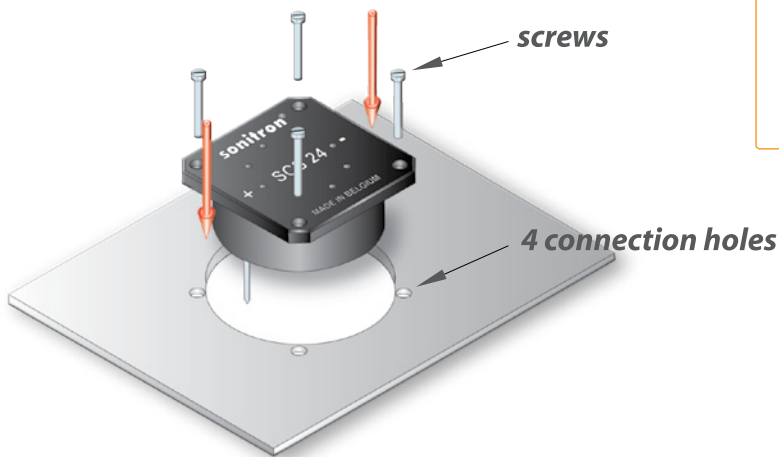
**Soldered with pins on the PCB**



**SMD soldered on the PCB**



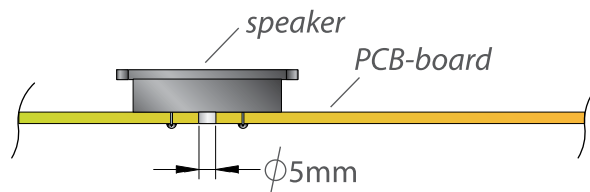
**Panel mounting, secured with 4 screws**



**Product Options available:**

- SP02
  - Foam Patch FP
- (see page 132)

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



**Other methods...**