

SCS SERIES (SONITRON Ceramic Speakers)



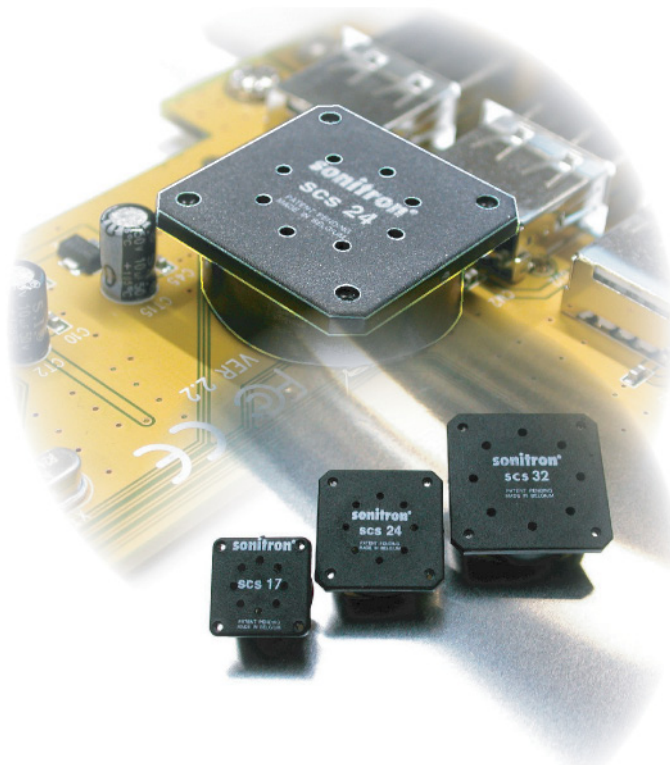
INTRODUCTION

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

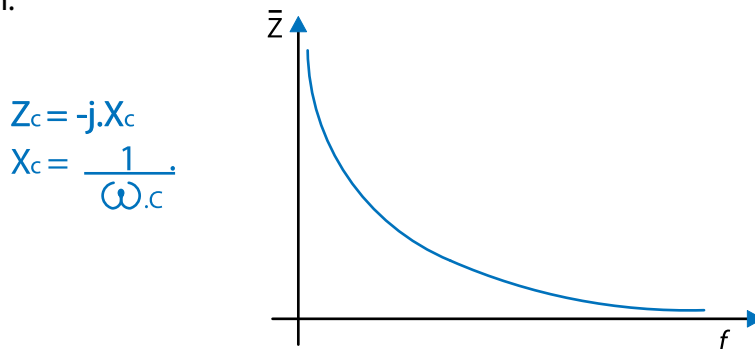
Operating temperature:	-40°C to +85°C
Storage temperature:	-40°C to +85°C
Case material:	PBT (UL rating: 94 HB) for pin-versions), PPS (UL rating: 94 V0/5V) for SMD-versions)
Standard colour of case:	Black

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

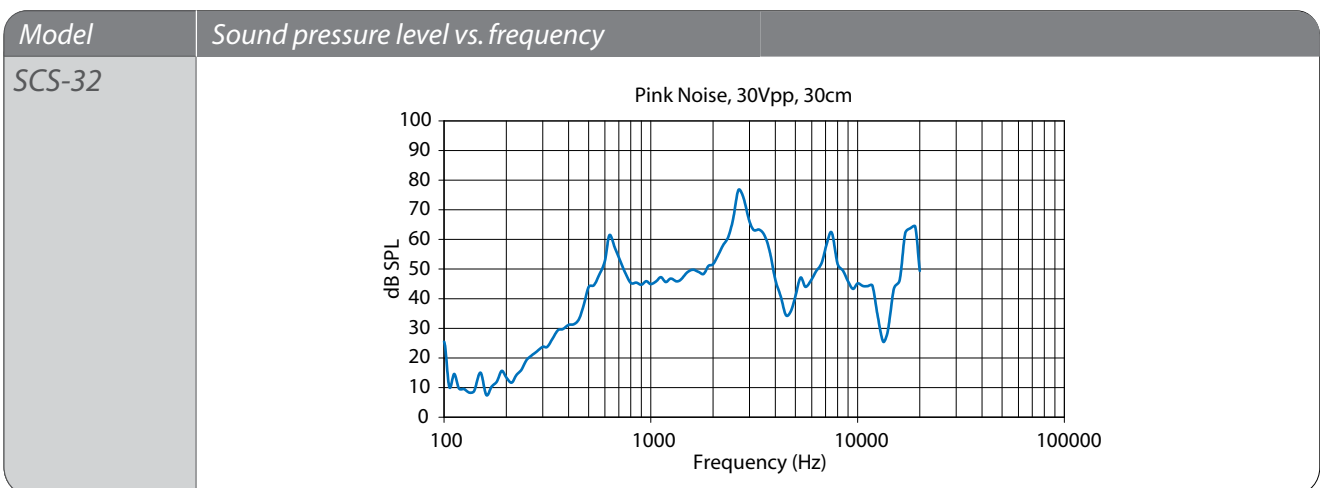
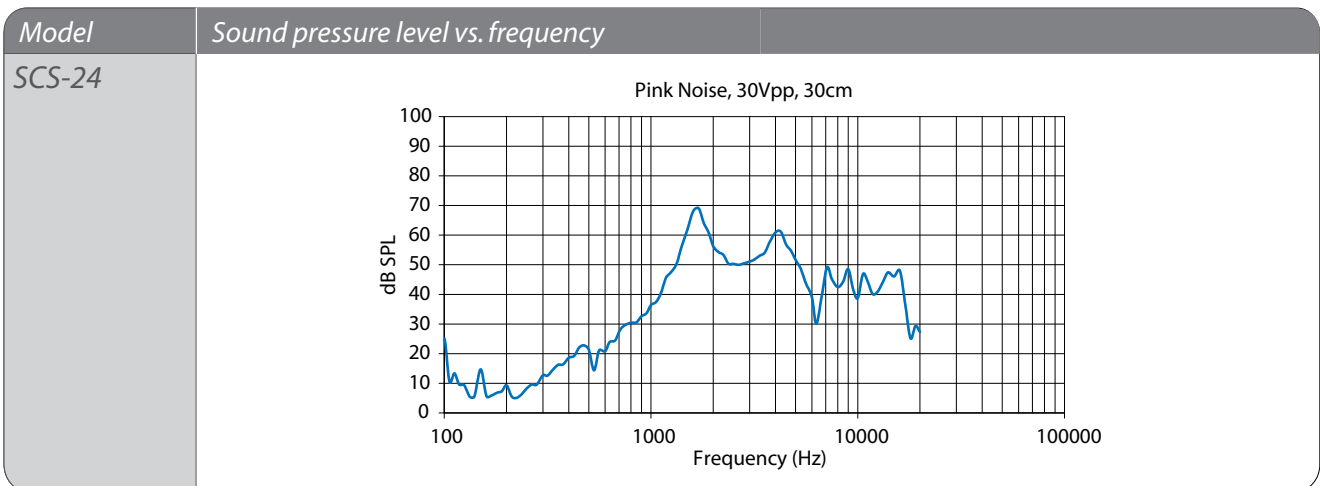
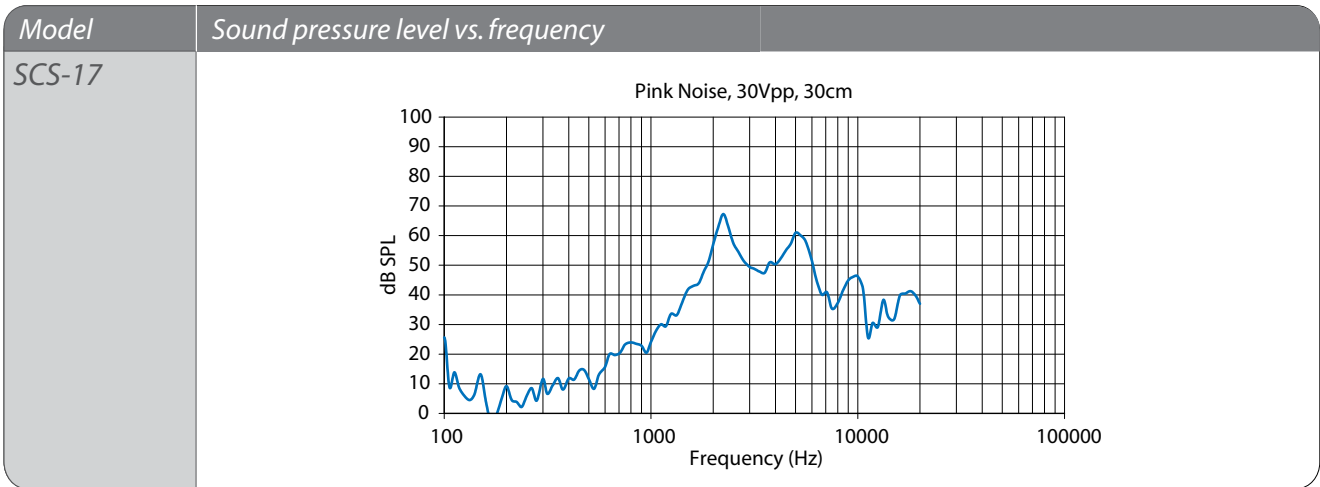
Theoretical the main impedance of the piezo speakers is a capacitive reactance and follows an asymptotic function.



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

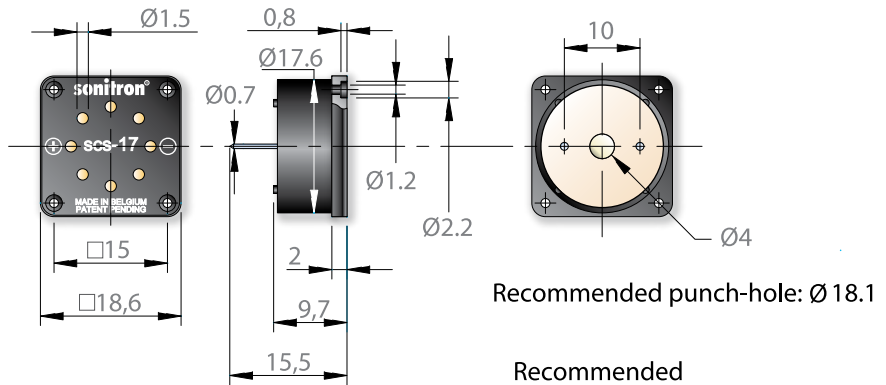


Pink noise measurements made in free air.
 The speakers were mounted in a box with dimensions 40x15x5 cm.

DIMENSIONS (All dimensions are in mm)

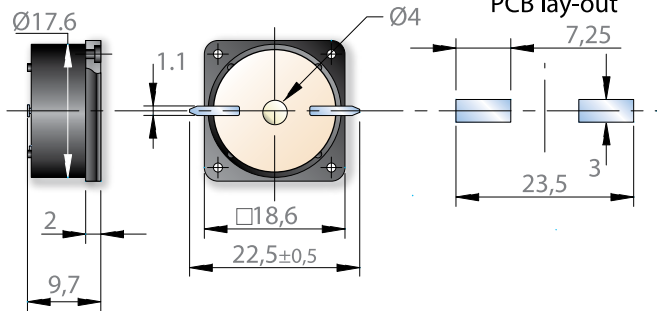
SCS-17-P10

Pin-version
(case in PBT)



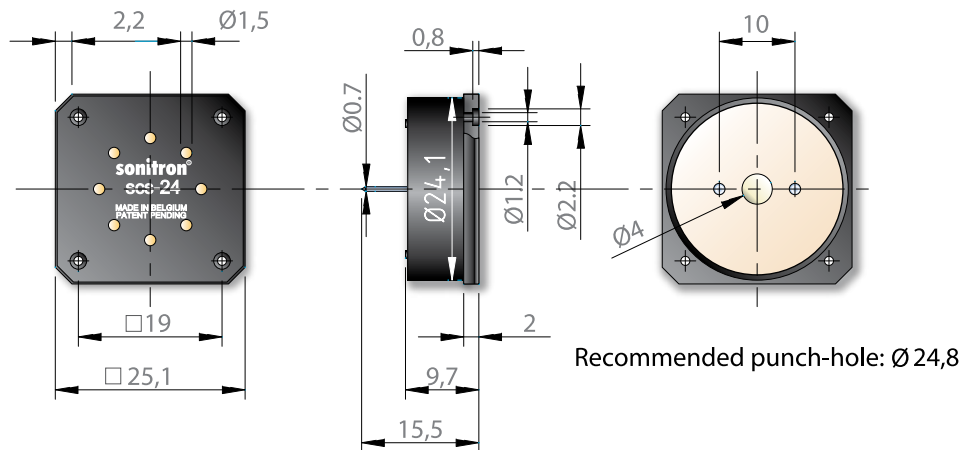
SCS-17-S

SMD-version
(case in PPS)



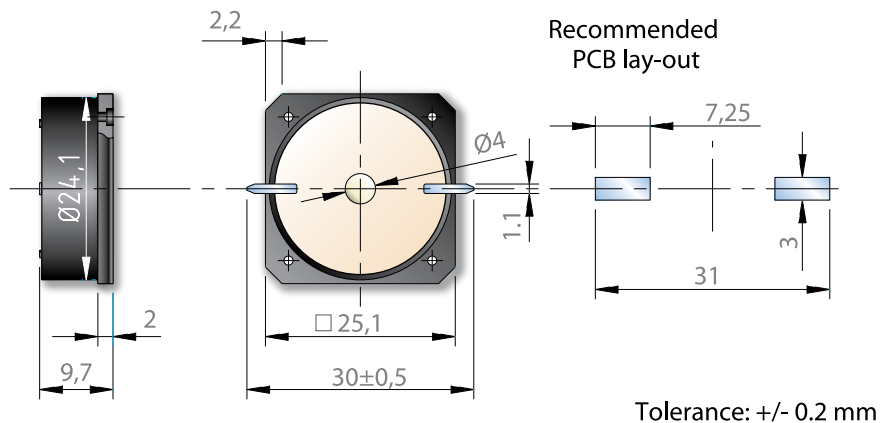
SCS-24-P10

Pin-version
(case in PBT)

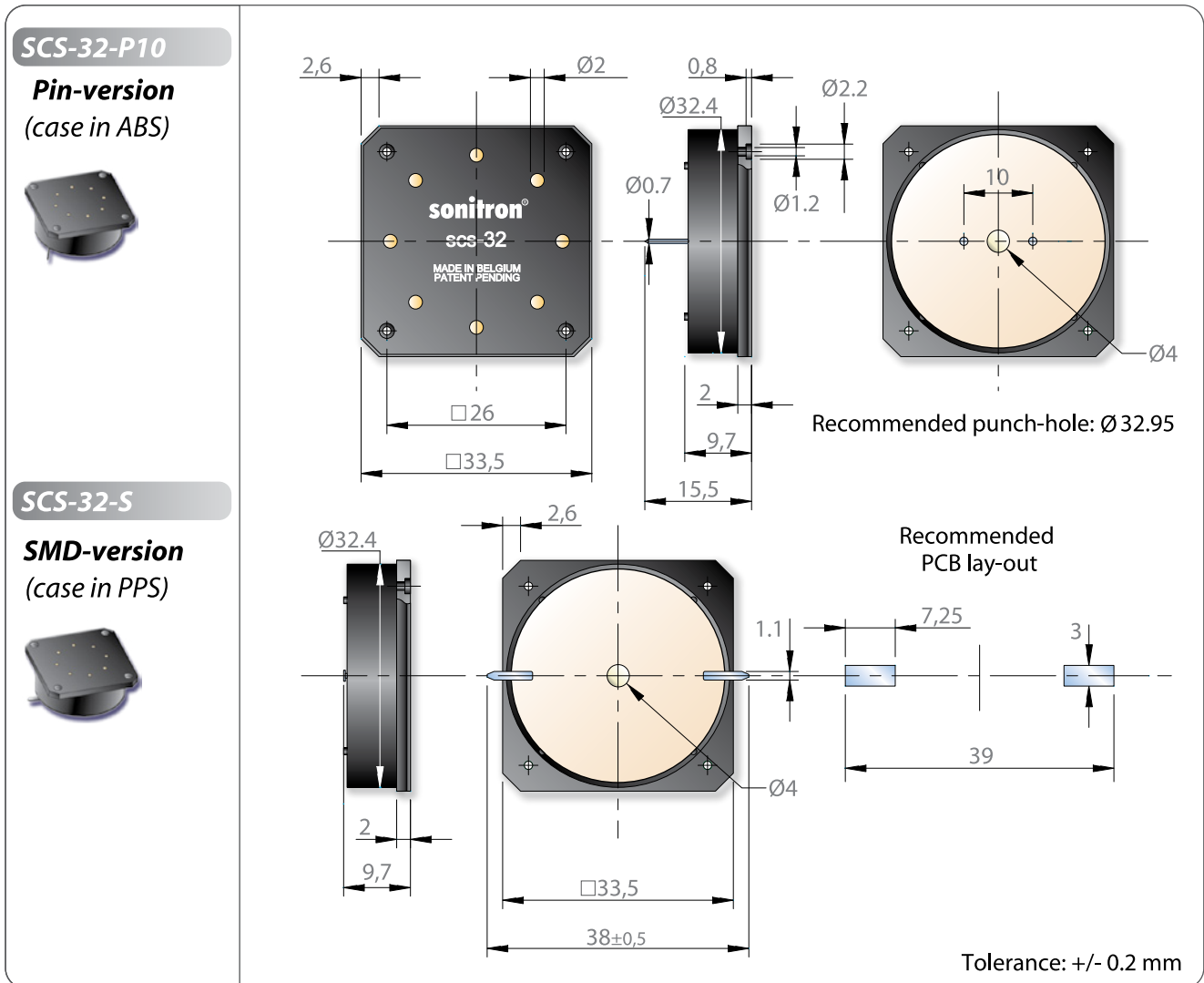


SCS-24-S

SMD-version
(case in PPS)



DIMENSIONS (All dimensions are in mm)

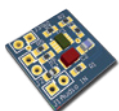


PRODUCT OPTIONS

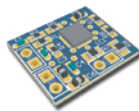
Option Code	example	Description
SP02	SCS-32-P10/ SP02	Contains heavy duty wires (plastic insulation), connection sealed with silicone.
FP17S	SCS-24-S- FP	Acoustic stabilization Foam Patch, easy to stick. For: SCS-24-P10 SCS-24-S
FP24S	SCS-32-S- FP	Acoustic stabilization Foam Patch, easy to stick. For: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

Recommended Piezo Audio Amplifiers

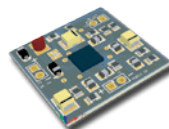
Sonitron production models



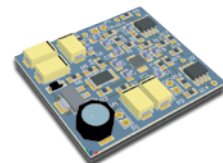
PAA-LT3469-01



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

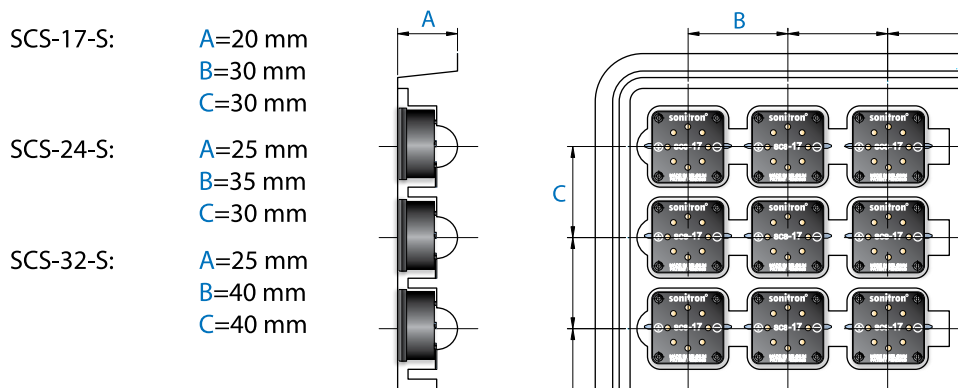
All speakers with through hole pins, are packed on a polystyrene board (245 L x 245 W) and sold in boxes with dimensions of 250 L x 250 W x 125 H.

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

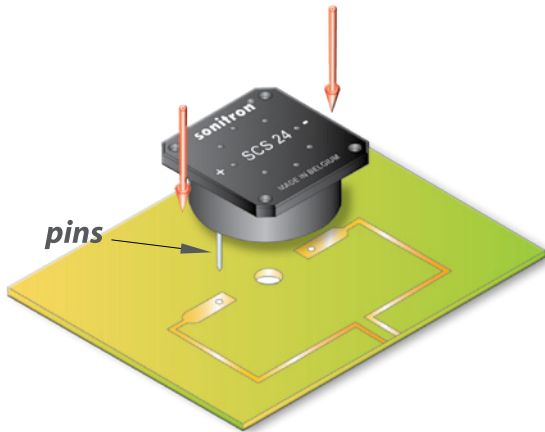
Dimensions of the tray and position of the SMD components of the models SCS-17-S, SCS-24-S and SCS-32-S are illustrated below:



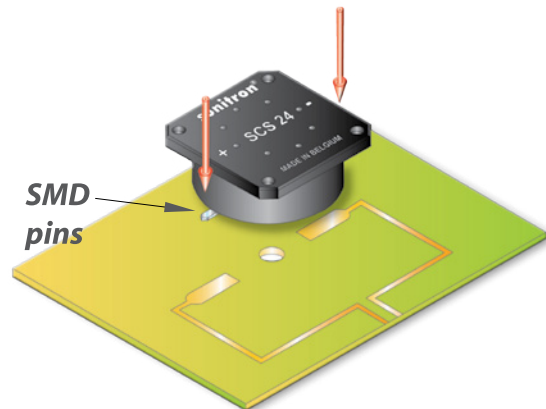
ACOUSTIC MOUNTING INSTRUCTIONS FOR SCS-SPEAKERS

- 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.

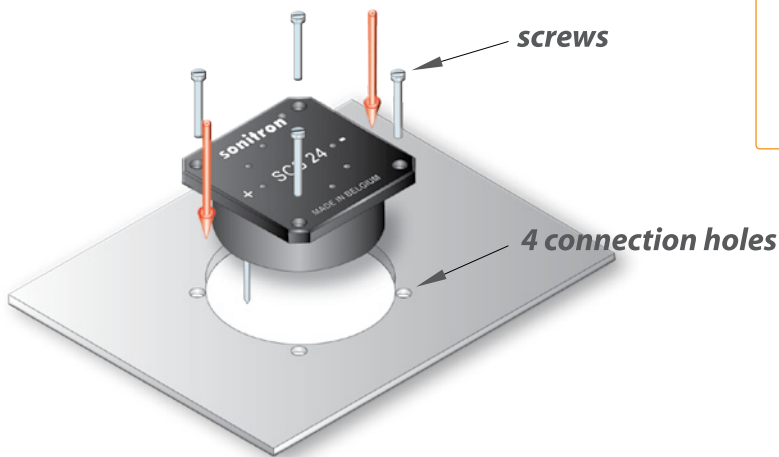
Soldered with pins on the PCB



SMD soldered on the PCB



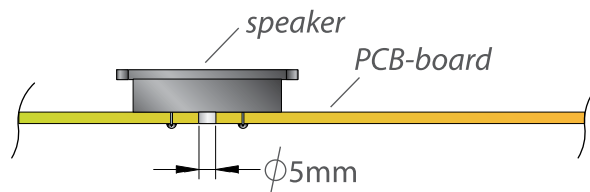
Panel mounting, secured with 4 screws



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...