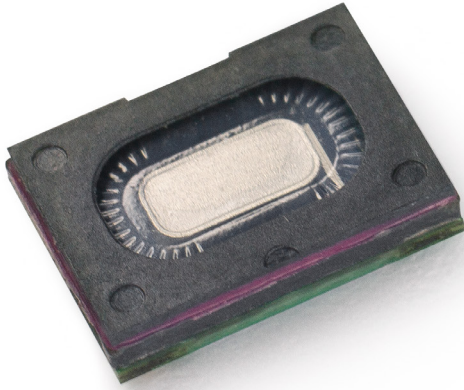


# MEMS SPEAKERS

## HANDLING GUIDE

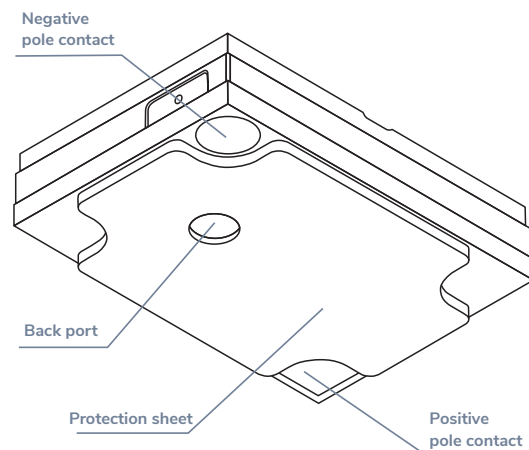
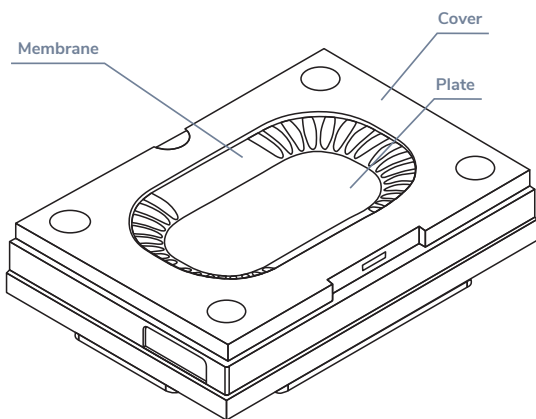
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The purpose of these handling instructions is to ensure the correct use of USound's MEMS speakers and to:

- avoid mechanical mishandling and especially bending
- avoid handling the speakers with the wrong tools
- avoid careless soldering practices
- provide proper electrical connection to the speaker

## MEMS SPEAKERS COMPONENTS



## HANDLING

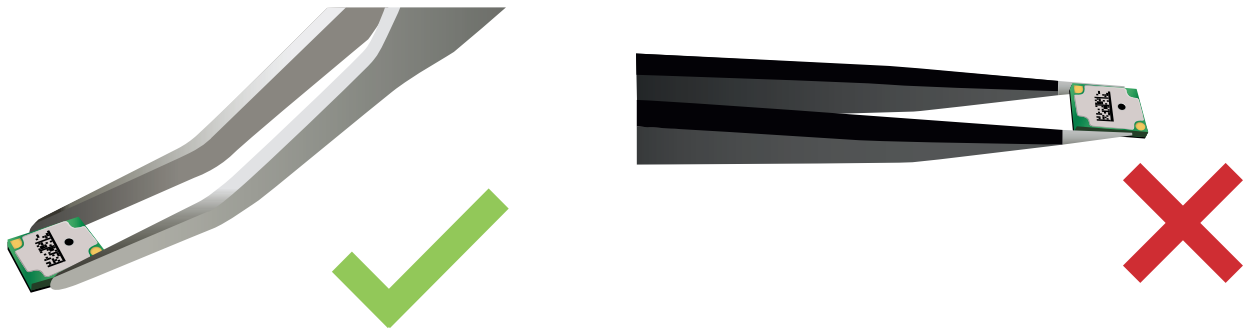
### GENERAL

It needs to be considered that MEMS devices consist of silicon structures, and therefore, they should be handled with care. Any bending of the MEMS speakers must be avoided while handling, during the assembly process and when permanently inside an application, otherwise the speaker can be damaged.

### TWEEZERS

It is recommended to grab the speakers from the sides with blunt curved tweezers and avoid touching the membrane in any case to preserve its functionality and form. Using sharp tweezers while manipulating the speakers can lead to accidentally piercing the membrane and to a loss of functionality.

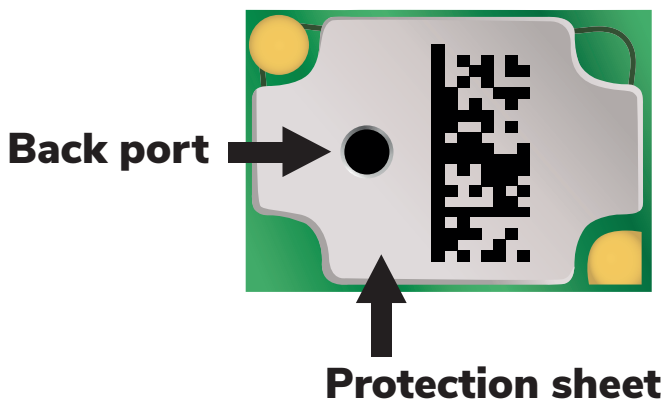
The risk to damage the speaker can be further minimized if the speaker is handled with the membrane facing down, as shown in the picture below.



### PROTECTION SHEET AND BACKPORT

The protection sheet on the backside of the speaker serves as mechanical protection of the MEMS and venting. It also includes a DMC code for tracking purposes. It is essential to preserve its integrity through the entire assembly and embedding process.

The purpose of the backport is to provide the connection to the back volume in the application; therefore, it shouldn't be airtightly covered. Sealing the backport would cause acoustic degradation.



## SOLDERING

Temperatures at which MEMS speakers are exposed during soldering can potentially damage the component if not done correctly. Apply soldering iron only on the electrical pads on the bottom side of the speaker during the soldering process. It's recommended to follow the standard IPC J-STD-001 "Requirements for Soldered Electrical and Electronic Assemblies." For inspection, it's suggested to follow IPC-A-610G.

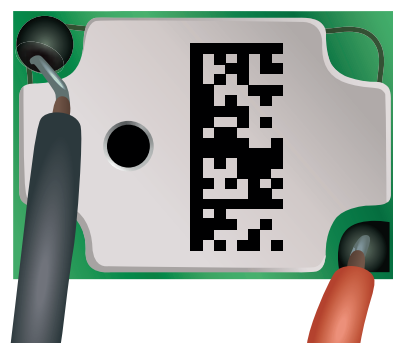
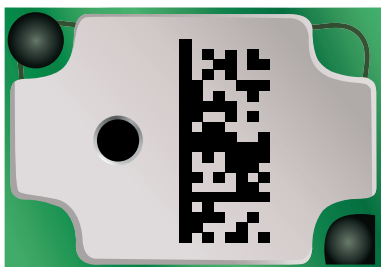
### RECOMENDATIONS

Type	Recommended Parameters	Comments
Soldering Temperature	340°C (Possible range: 290 - 400°C)	Adjust with the soldering station
Soldering Time	1-2 s (maximum 5 s)	Keep contact duration short
Soldering Iron Tip	Weller LT 1S 0.2 mm – 0.4 mm	Fine solder tip for precise soldering
Soldering Station	JBC DDE 2 Tools	User preference
Soldering Wire	RS-756-884 0.71 mm Lead Free EDSYN SU35100 with Flux EDSYN SSAC2010 0.2 mm Lead Free	Use lead-free soldering wire
Flux	Chemtronics CW8100 Flux Dispensing Pen	Avoid excess application

### SOLDERING PROCESS

1. Tin the copper wire or use pre-tinned wires to simplify the soldering process.
2. Locate the copper pads of the loudspeaker and apply solder on the speaker pads by using a soldering iron.
3. Solder the wire onto the pads of the speaker.

2. Locate the copper pads of the loudspeaker and apply solder on the speaker pads by using a soldering iron.



The materials of the protection sheet can melt during the soldering process. Make sure not to touch the protection sheet when soldering.

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