



Speaker Technologies

AN OVERVIEW OF SPEAKER ARCHITECTURE AND CHAMBER DESIGN

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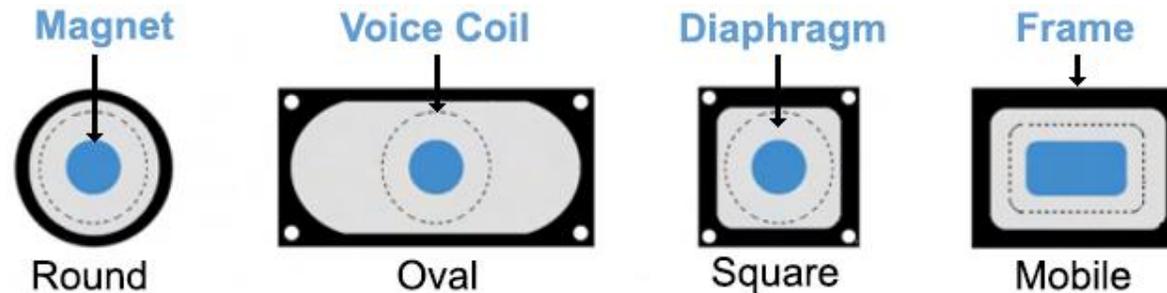
Sound Enhancing User Experience



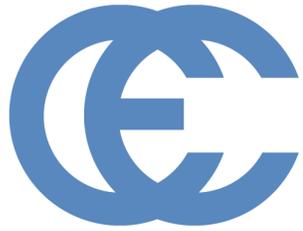


Speaker Architecture

- Every speaker contains four main components



- Current driven through the **Voice Coil** creates a dynamic magnetic field
- The **Magnet's** static magnetic field interacts with the dynamic magnetic field creating motion
- The **Voice Coil** attached to the Diaphragm translates the motion to a push/pull effect on the surrounding air
- The **Frame** provides structure, housing all the components and establishing basic airflow

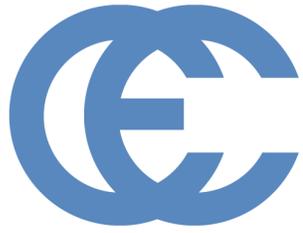


What is a Dynamic Micro Speaker?

Dynamic Micro speakers are distinguished by their compact size and efficient design. Speakers with defined frequency ranges can be selected for specific applications.

- Typically, round, square, or oval form factor
- Frequency ranges tend to be mid-range
- Simple to mount and deploy





Specialized Speakers: Built-In Chamber

Speakers with no rear vent for loud performance



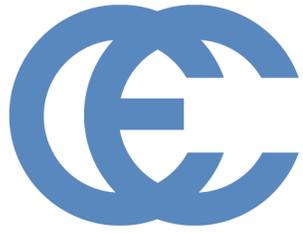
CS28-02W190-05-1X

- Mounting – Adhesive on Front Face
- Loud for it's Size



CS32-01W130-10-1X

- Fully IP67
- Rugged Applications



Specialized Speakers – Low Profile

Speakers with low height for compact applications



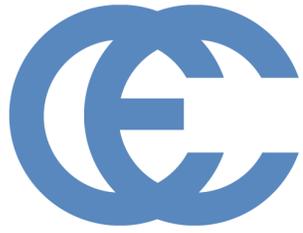
CS28-00W50-05-3

- Fully Automatic Production
- High Reliability



CS28-00W50-06-4X

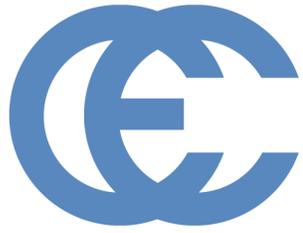
- IP67 Front Face
- Waterproof Mounting



What is a Mobile Speaker?

Mobile speakers, an improvement upon classic speaker design, use modern manufacturing techniques to enhance audio quality within a compact form.





Mobile Speaker Stack-Up

- Custom Oval Magnets
 - New manufacturing techniques allow for stronger magnets in a compact/defined form factor.
- Assembly Symmetry
 - Oval Voice Coil and Diaphragm + Rectangular Front Frame, Rear Frame & Back Plate create symmetry within the speaker assembly for cleaner acoustic performance.



Front Frame



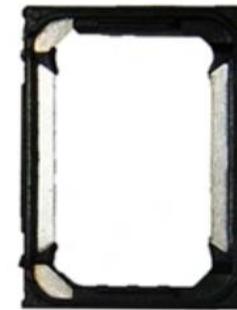
Diaphragm



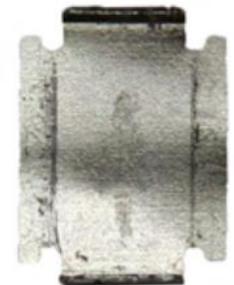
Magnet



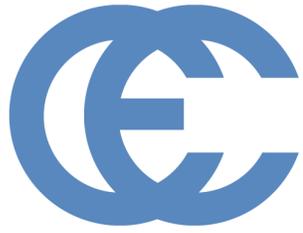
Voice Coil



Rear Frame



Back Plate



Chambered Speakers

Improved performance can be achieved through proper chambering providing:

- Tailored Frequency Range
- Enhanced Sound Quality
- Sound Routing – Top/Side Port

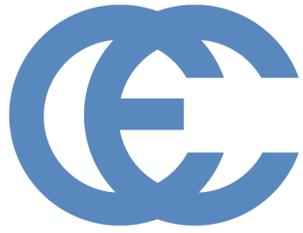


Top Port



Side Port

Mobile Speakers must be chambered while Micro Dynamic Speakers are optionally chambered



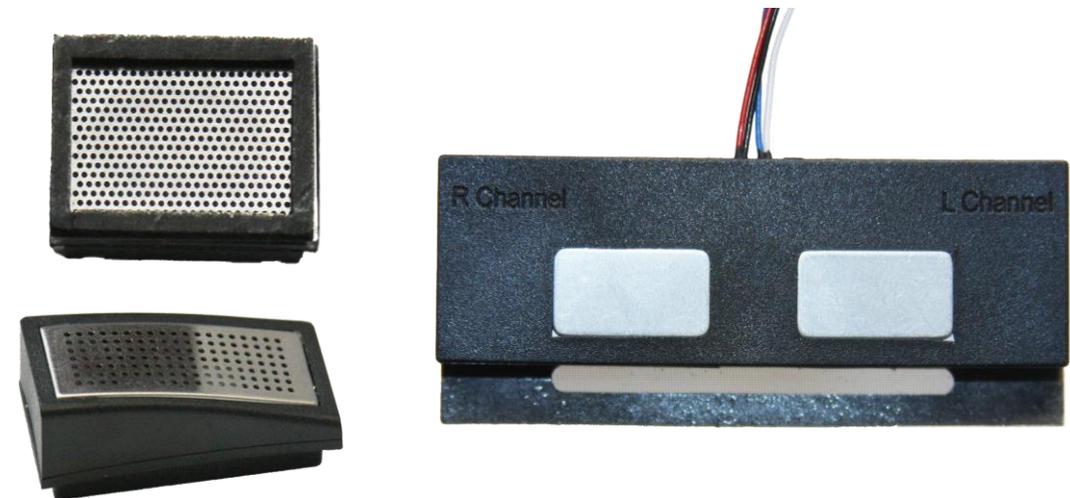
Additional Features and Highlights

Outer Adhesive Layer and Gasketing

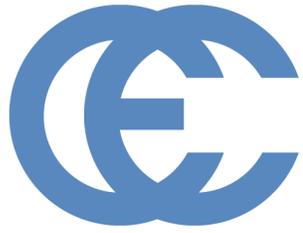


- Simple mounting
- Dampens unwanted vibrations
- Creates airtight seal between plastics

Protective Mesh



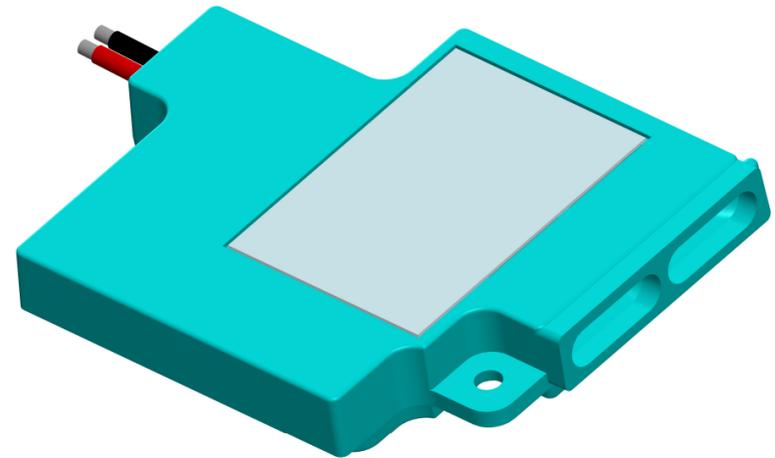
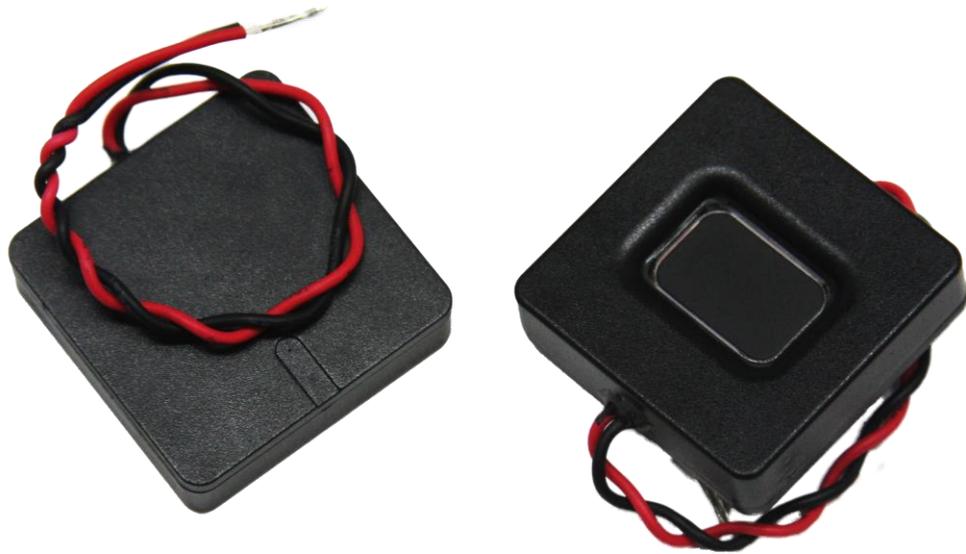
- Protection for sound port or diaphragm
- Adds IP Rating to protect against water and dust ingress

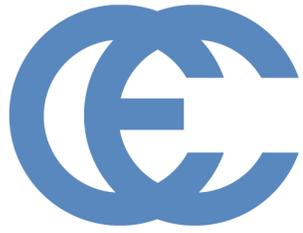


Designed to Fit Your Vision

Work with our design engineers during a free consultation to:

- Select an existing speaker box for seamless integration
- Create a new design aligned with your specific needs starting from a raw speaker

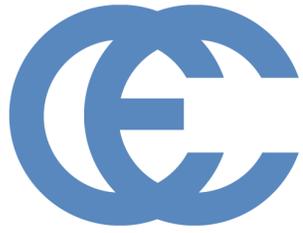




Design Considerations

- End-Product Application
- Desired Acoustic Application and Requirements
 - Voice / Music / Tone
 - SPL / F_0
- Electrical Requirements
 - Power / Impedance
- Space Allocation
 - 3D Model / XYZ Dimensions
- Production Timeline





Speaker Short-List

PN	Outer Dimensions [mm]	Nominal Power [W]	Max Power [W]	SPL @ 10cm @ Nominal Power [W]	f ₀ [Hz]	Termination	IP Capable
CS15-01R95-03-2X	15.0 × 11.0 × 3.5	1.00	1.20	99	950	Spring	Yes
CS17-01P100-03-1X	17.0 × 12.0 × 3.3	1.00	1.20	99	1000	Solder Point	Yes
CS18-02P110-03-1X	18.0 × 16.0 × 3.7	2.00	2.20	104	1100	Solder Point	Yes
CS25-02P95-05-1X	25.0 × 14.0 × 5.0	2.00	2.20	106	950	Solder Point	Yes
CS28-00W50-05-3	28.0 ∅ x 5.0	0.50	1.00	95	500	Wire	No
CS28-00W50-06-4X	28.0 ∅ x 5.0	0.50	1.00	95	500	Wire	Yes
CS28-02W190-05-1X	28.0 ∅ x 5.5	2.00	2.50	109	1900	Wire	Yes
CS32-01W130-10-1X	32.4 ∅ x 10.1	1.50	2.00	103	1300	Wire	Yes
CS34-01P70-03-1	34.0 × 11.0 × 3.8	1.50	2.00	97	700	Solder Point	Yes
CS40-01P60-05-3X	40.0 × 13.0 × 5.0	1.00	1.20	98	600	Solder Point	Yes



Chamber Assembly Short-List

PN	Outer Dimensions [mm]	Nominal Power [W]	Max Power [W]	SPL @ 10cm @ Nominal Power [W]	f ₀ [Hz]	Termination	IP Capable
CAC24-00W85-08-1	24.0 × 20.0 × 8.0	0.70	1.00	86	850	Wire Leaded	Yes
CAC25-02W100-10-1	25.0 × 19.0 × 10.0	2.00	2.20	102	1000	Wire Leaded	No
CAC27-00W85-04-1	27.0 ∅ × 4.9	0.80	1.00	90	850	Wire Leaded	Yes
CAC35-01W110-05-1	35.0 × 20.0 × 5.8	1.50	1.70	100	1100	Wire Leaded	No
CAC39-02W100-05-1	39.8 × 23.0 × 5.9	2.00	2.20	100	1000	Wire Leaded	No
CAC40-02W100-09-1	40.0 × 26.0 × 9.0	2.00	2.20	102	1000	Wire Leaded	No
CAC45-02W70-06-1	45.3 × 20.0 × 6.8	2.00	2.20	92	700	Wire Leaded	No

Schedule Your Design Consultation Now



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