

**TECH OFFER**

**Ultra-thin, Flexible and High-Quality Sheet Type Speaker**



**KEY INFORMATION**

TECHNOLOGY CATEGORY:

Electronics - Interconnects

Infocomm - Speech/Audio Processing

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175109**

**OVERVIEW**

With the spread of smart home appliances, the demand for diverse audio notifications is rising. Traditional dynamic speakers and buzzers in consumer electronics, often built with rigid or bulky frames, are difficult to mount on curved or irregular surfaces and fit into compact spaces, thus reducing design flexibility. These components are also vulnerable to environmental damage such as dust, moisture, and shock, requiring additional protective measures that increase costs. Acoustically, buzzers can only emit single-frequency sounds, while dynamic speakers suffer from sound congestion and rapid frequency attenuation when embedded within devices. Despite offering better sound quality, dynamic speakers are more expensive than buzzers.

To address these challenges, the technology owner has developed an ultra-thin, flexible, and cost-effective sheet type speaker that combines the advantages of both dynamic speakers and buzzers. This speaker produces high-quality sound across a broad range of frequencies. Its thin and flexible profile allows for seamless integration into various devices, significantly expanding design possibilities and fostering creative implementations. Additionally, its robust environmental resistance improves durability and reliability for long-term use in smart home appliances. This cost-effective solution also enables manufacturers to incorporate

superior audio features without a significant price increase, paving the way for integrating sound as a key value-add in consumer electronics to enhance the user experience (UX).

The technology owner is seeking R&D collaboration with industrial partners interested in incorporating this sheet type speaker into their products and applications.

## TECHNOLOGY FEATURES & SPECIFICATIONS

### Cost Effective:

- Optimisation of original technology reduces costs
- Constructed from inexpensive materials such as thin metals, resins, and ceramics

### Design Flexibility:

- Ultra-thin and flexible profile: 0.2 mm thick and 20 x 20 mm - 30 x 30 mm square
- Versatile mounting: it can be mounted on various surfaces, including curved surfaces and narrow bands

### High Sound Quality:

- Broad audible range from 500 Hz onwards and wideband sound reproduction
- Sound pressure level (SPL): 80 – 90 dB at 2 kHz / 0.1 m

### Good Environmental Resistance:

- Special protective film: protects against dust, moisture, shock, etc.
- Water resistance: meets the IP68 waterproofing rating
- Heat and cold resistance: functions in temperatures ranging from -20 to 85 °C

## POTENTIAL APPLICATIONS

Potential applications include, but are not limited to:

- **Home appliances:** vibration detection in washing machines and coffee makers, voice notification in refrigerators and ovens, etc.
- **On-vehicle applications:** announcements in public transportation, navigation guidance and battery warnings for e-scooters and e-bikes, etc.
- **Amusement applications:** interactive displays for gaming, information signage in museums or galleries, etc.
- **Wearable devices:** medical alerts in health-monitoring wristbands, emergency alerts in safety gear, etc.

## UNIQUE VALUE PROPOSITION

- Cost-effective with superior sound quality
- Ultra-thin design and structural flexibility
- Good environmental resistance
- Versatility in design and implementation for various applications