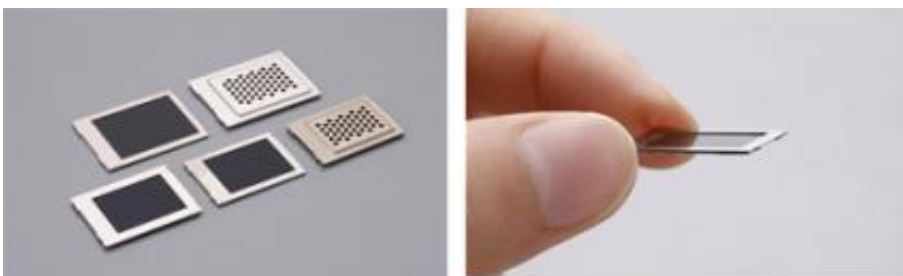


# Japanese company develops world's first ultra-thin piezoelectric waterproof speaker

June 15 2010, by Lin Edwards

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(PhysOrg.com) -- Murata Manufacturing Co., Ltd., a company based in Kyoto in Japan, has made what they claim to be the world's first ultra-thin (0.9 mm thick) waterproof piezoelectric speaker.

Mobile phones and other small portable devices that are not waterproofed can become damaged if they are exposed to water, which can erode components inside and affects the sound quality. Now the practice of waterproofing devices such as mobile phones is growing, with almost a quarter of new models announced for 2010 in Japan being waterproofed, but there are significant technical challenges to be overcome, especially in waterproofing of the speaker, which can be exposed to moisture entering via the sound output holes.

Traditional solutions such as covering sound output holes with thin

waterproof sheets of treated paper not only increases costs, but also usually lead to degradation of the sound quality. Murata has responded to this problem by developing a new piezoelectric speaker that is itself waterproof to IXP7 grade, which means the sound holes do not need to be covered.

Piezoelectric [speakers](#) make use of the mechanical resonance of piezoelectric ceramics. They can be much thinner than ordinary speakers, down to as thin as 0.5 mm. Their use can also dramatically reduce [power consumption](#), especially in the voice band.

The new speakers do not use waterproof sheets, and the manufacturing process is cheaper and does not result in loss of [sound quality](#) because the sound holes are not covered. The design of the sound holes has also been re-engineering to avoid ingress of moisture.

The speakers could be used in devices such as mobile phones, portable music players, ebook readers, digital video cameras, and military applications. Production is already running at around one million units per month, and the speakers are available for 250 Yen each (approximately \$2.70 US). They should start appearing in mobile devices in the near future.

**More information:** Murata's press release:  
[www.murata.com/new/news\\_relas ... 2010/0608/index.html](http://www.murata.com/new/news_relas...2010/0608/index.html)

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