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반사 신호를 이용한 용량 성 센서의 신호처리 및 이를 이용한 초정밀 간극 측정

Reflective Signal Based Signal Contioning of Capacitive Sensor and High Precision Gap Measurement

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Key Words : Reflective signal, Surface acoustic wave(SAW), Capacitive sensor, Gap measurement

ABSTRACT

High precision sensing is very important in various technologies. Especially, it is more important when it were applied to nano/micro meter level's sensing like AFM, storage, etc. And capacitive sensing is widely used method. To improve the measurement efficiency, many signal conditioners were studied and one of them was surface acoustic wave (SAW) device. SAW device is very widely used as a high frequency bandwidth filter. Due to the reflective characteristic of high frequency, the response of SAW device contains both propagative and reflective signal at the external impedance. In this paper, we used SAW device as signal conditioner of capacitive sensor. And high precision gap measurement was executed using capacitive load. Reference signal was reflective SAW response and the magnitude at the center frequency of SAW device by the change of impedance was checked. Finally, the attainable gap resolution was determined.

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