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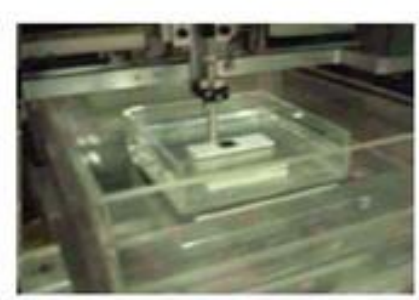
# 1985

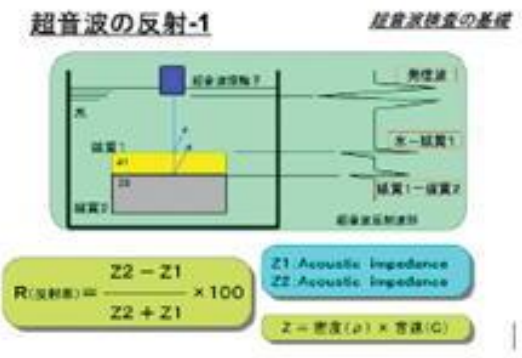
# Development of ultrasonic inspection technology

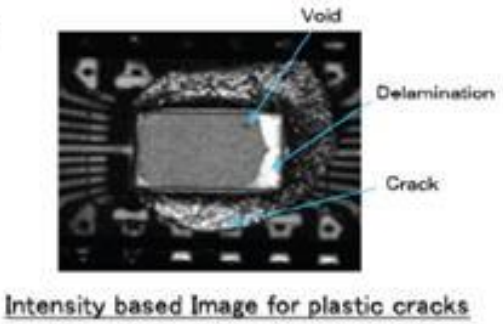
## ~ Packaging ~

In the surface mount type packages such as QFP and PLCC, the package may cracks or the gold wire may break in the soldering process to PCB. As a result of investigating the cause, it was found that the adhesion at the interface of resin and lead frame or LSI chip surface was poor, and the further precise investigation showed that it was caused by moisture absorption by mold resin.
Around 1985, engineers at Hitachi who were in charge of package process development thought that ultrasonic flaw detection method could be used as a method to investigate structural defects inside the package, and consulted with Hitachi Construction Machinery which had deep knowledge of material flaw detection. As a result, the ultrasonic flaw detector (SAT), AT5000, was developed and released, in which ultrasonic beams of 25MHz or 50MHz were sent and the reflected beam was received, thereby an image of the processed signals was obtained.
Thanks to this technology, development of resin materials and package structure with better adhesion properties dramatically advanced, and the reflow quality of the resin sealed type package was improved. Plastic molded microprocessors and memories which required high reliability were realized and cost reduction was achieved.

The figures below show a part of the machine on the left, the principle of ultrasonic flaw detection in the center, and a picture of a crack in DRAM on the right.



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