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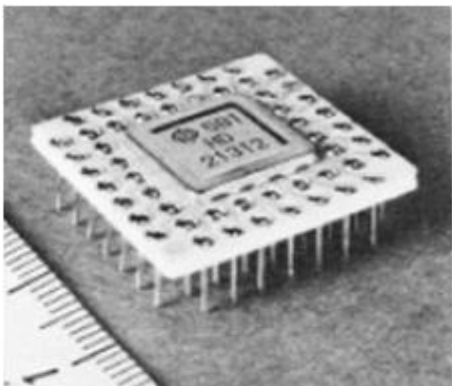
1975
Development of the PGA (world's first)
~ Packaging ~

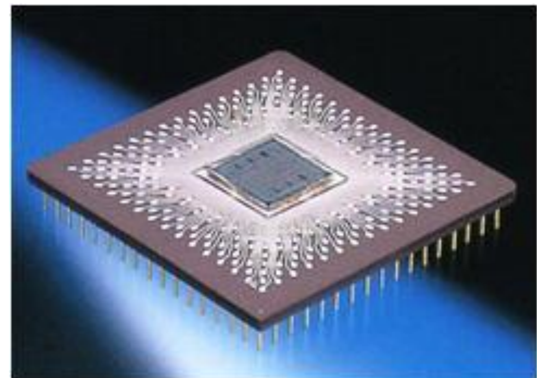
In the DIL type package, the number of pins was expanded to 42 pins and 64 pins, but the package outline became large and dimensional efficiency of PCB mount was becoming poor.

Therefore, instead of DIL type, 52-pin PGA (Pin Grid Array) type package with high mounting efficiency on PCB was developed at Musashi Works of Hitachi around 1975, and it was adopted for a logic LSI for a main frame computer. It was a seam welded sealing type package, and lead pins were formed on an alumina ceramic substrate, by forming holes by press in a green sheet, metallized and fired at a temperature of 1600℃, and then nail shaped lead pins being silver brazed to the holes.
Around 1985, the number of pins expanded to 240 in PGA at Hitachi. Wiring in the package was formed by photo-etching of metallized conductor, which realized multiple pin arrangement. Low melting point glass was used for sealing.

Thereafter, the wiring layer became two layers or three layers, and the PGA became a standard package of the many-terminal LSI. By the end of 1980, resin type substrate using copper conductors began to be used.



52-pin PGA



240-pin PGA

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