

To search page

# 1990

## Shipment of large-scale computers using the MCC, a small package with high heat-dissipation

~ Packaging ~

Hitachi developed a mounting system called MCC (Micro Chip Carrier) for LSIs and released a water-cooled mainframe computer (M-880H) in 1990 by applying this technology.

MCC had a thin-film multilayer wiring on mullite ceramic substrate and a LSI component was flip-chip bonded with micro solder balls. The MCC had solder balls on the entire area, and 36~41 of them were solder ball connected to the 106mm square mullite module substrate with multilayer wiring. On the back side of the LSI, a ceramic cap was hermetically sealed and the MCC could be oil-cooled in this structure. 528 solder-ball terminals were formed with 0.45mm pitch on the back of the MCC substrate (with 6 layers of thick film conductor and 6 layers of thin film conductor) of 10 to 12 mm square, and the power consumption of the LSI was 21W. On the MCC, a comb shaped fin was attached, on which a water-cooling jacket made of copper in a comb shape was placed, and the entire system was structured to enhance cooling capacity.

The size of MCC was close to that of LSI, and it was a technology preceding the CSP era in the 1990s.

