

Application Report

BRUSHWELLMAN
ENGINEERED MATERIALS

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Industry: Main Frame Computers Product: Beryllium Copper Plate

High density packaging of large scale integrated circuits (LSI) has been very successful in miniaturizing electronic products. However, dense packaging has an undesirable by-product: heat. In the thermal conduction module pictured, pistons establish contact between the chip and module housing, to create a path for heat to travel to a beryllium copper heat sink. The heat dissipating properties of the heat sink, in combination with circulating water inside the chamber, carry heat away from the circuitry to keep the system cool and operating efficiently.

Engineering Requirements

- Excellent Thermal Conductivity
- Excellent Machinability
- Good Dimensional Stability
- Good Corrosion Resistance

For this application, Brush Wellman supplies Alloy 3 HT plate for the cover and base plate of the heat sink that sits on top of the module body.

The most important property for the application is the material's thermal conductivity, which is 140 Btu/ft.hr. °F. Machinability is also important in milling the serpentine channels into the base plate. Since circulating water is used as a cooling medium inside the beryllium copper chamber, excellent corrosion resistance is also required.

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