

High Heat Load

Design Goals and Constraints

- High heat flux package.
- Advanced thermal solution required.
- Small foot print required.
- Light weight, compact solution.

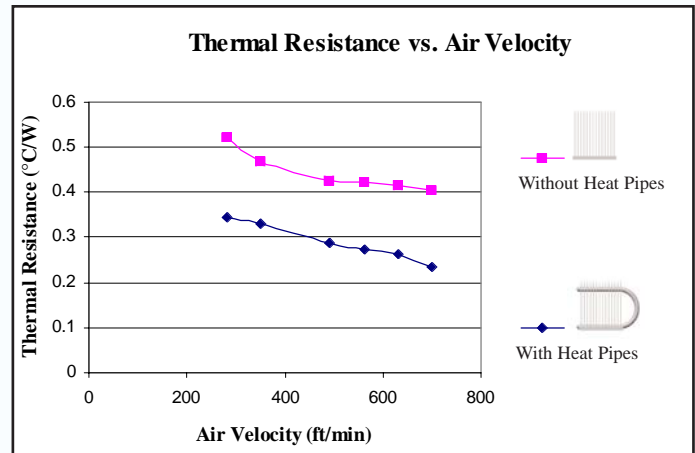


Figure 2: Experimental Comparison of Thermal Performance of a 64x62.5x75mm Power Heat Sink

Solution: The Power Heat Sink seen in Figure 1.



Figure 1: Power Heat Sink

The Power Heat Sink was designed to remove 150 Watts of heat, generated by a high heat flux package. Because the application demanded high performance in limited space, it required a highly efficient solution. Heat pipes were used to maximize the efficiency of the fins by taking the heat from the base and transferring it to the top of the fins. Secondly, the heat pipes increased heat spreading across the base, further increasing the overall efficiency. By adding heat pipes, the solution was able to dissipate 25-30% more heat at the same temperature increase.

Aluminum was used to maintain low weight as well as the low cost of the solution. The lower weight allows the Power Heat Sink to reduce the problem of excessive stress on the processor and PCB. To achieve cost effectiveness, Enertron has developed a proprietary fabrication process to manufacture Power Heat Sink.

Several other variations of the Power Heat Sink have since been designed. The Power Heat Sink is highly customizable for a variety of heat loads and space constraints.