ENERTRON

Total Thermal Management Solutions

Compact CPU Cooler

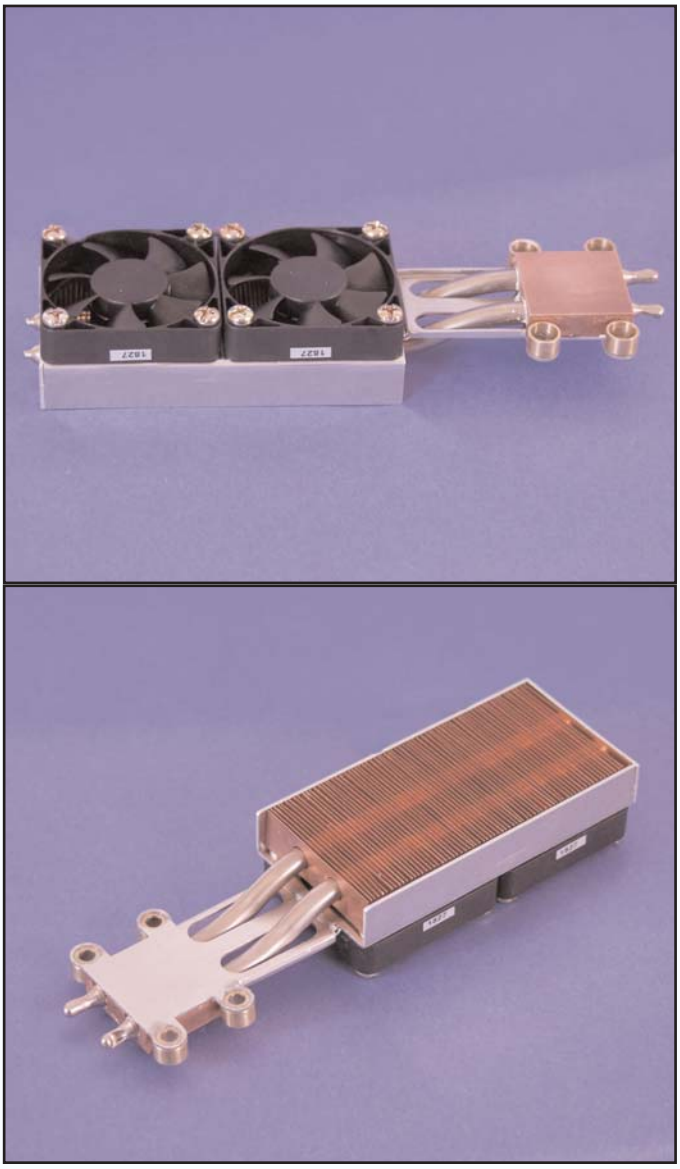

Figure 1: Compact CPU Cooler (top and bottom view)

Design Goals and Constraints

- Processors produce as much as 70 Watts of heat
- Maximum junction temperature of 74°C
- Compact design required
- For use in all-in-one desktop system
- Route heat to vented area

Solution: *Compact CPU cooler shown in Figure 1.*

Enertron engineers worked closely with the customer to determine the available space for the thermal solution. Due to the compact nature of the all-in-one desktop computer design, space was very limited. Enertron engineers chose to use heat pipes to carry the heat from the processor to the heat sink. The heat sink was comprised of an array of copper fins, through which the heat pipes passed. The copper fins provide high fin efficiency while remaining very thin. Due to the high density of fins, a large convective surface area was created. Two 40 x 40 mm axial fans were used to provide the required airflow. The total thermal resistance (θ) of the solution was 0.60°C/W.

To provide a strong mechanical backbone to the system, an aluminum housing was designed. The housing mechanically joined the heat collector to the heat sink, thus preventing stress on the heat pipes. The fans were fastened to the housing, thus creating a single thermal solution, ready to be installed into the system.

ENERTRON, Inc 2915 N. Nevada St., Chandler, AZ 85225, U.S.A.
Toll Free: 1-877-ENERTRON (363-7876) Tel: 480-649-5400 Fax: 480-649-5434
Asia Contact: ENERTRON International, Inc Tel:886-2-8512-2600 Fax: 866-2-8512-2606
www.enertron-inc.com; e-mail: info@enertron-inc.com