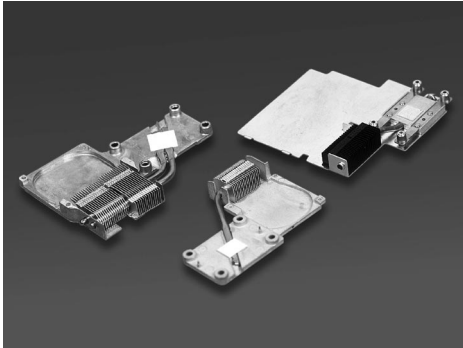


Slim Modular Fan Cooler

Designed to cool high power density portable electronics, requiring a slim geometric profile.



INTRODUCTION

In 1999, engineers at Enertron created the Slim Modular Fan Cooler (SMFC) for the ever thinning, high power density laptops. It was quickly discovered that the SMFC concept could be applied to a robust number of cooling applications.

As with all of Enertron's thermal solutions, the SMFC is custom-designed and manufactured to meet the customer's exact thermal requirements. In addition, SMFCs provide designers of mobile electronics a thermal solution that works within a confined space, with a thin profile.

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The trend of electronics has been to make devices smaller, however, the heat load has increased. In confined spaces, typical heat sinks can no longer meet the performance requirements. This need led Enertron engineers to design the Slim Modular Fan Cooler (SMFC).

The typical SMFC configuration consists of a heat collector, heat pipe, slim blower, and a pipe-through-fin heat exchanger. The heat collector mounts to the heat source and serves as the interface between the heat source and the heat pipe. The heat collector is often employed as the structural backbone for the unit and aids in heat spreading. The heat pipe transports the heat to the fin stack, where it is dissipated to the environment by forced convection. The fin stack is optimized for the blower and available space to maximize its performance. A wide range of commercially available "off-the-shelf" micro blowers can be utilized to provide the forced airflow, while maintaining a low profile. Generally, the overall profile is no taller than 15 mm.

There are several benefits of the SMFC over conventional heat sinks. Primarily, in applications with limited room above the heat source, a standard heat sink does not have sufficient height to dissipate the required heat. The low height of the SMFC allows it to fit where conventional solutions will not. Furthermore, the use of the heat pipe allows the designer to route the heat to a more convenient area. The high performance of the unit ensures that it will meet the performance requirements of most applications. Secondly, the SMFC is a quiet and lightweight product, making it an ideal solution for portable electronics. Finally, Enertron uses proprietary manufacturing processes that enable us to efficiently manufacture the SMFC to keep its cost low. Because of the simplicity of the unit, it is easily tailored to meet the requirements of new applications.

Specifications:

Dimensions:

Typical Height	10 to 20 mm
Blower	From 30 x 30 mm to 45 x 45 mm
Footprint	Depends on customer specifications

Typical heat dissipation range: 10 to 50 W per blower

Total thermal resistance: 1.0 to 3.0 °C/W, depending on size of blower and space available

Weight: 40 to 80 g

Advantages:

- High performance
- Low height requirement
- Fully contained solution
- Low weight
- Quiet, reliable performance
- Low cost

Best Applications:

- Mobile Computers
- Mobile Electronics
- Scientific and medical instruments
- High heat load electronics with limited space.

Enertron... A Powerful Thermal Management Team and a Skilled Production Partner

Enertron is both a powerful thermal management engineering service and a highly-skilled, cost effective production partner. Enertron offers custom thermal solutions at "off-the-shelf" prices and delivery times. Enertron's customers are Fortune 500 companies in the computer, microelectronics, aerospace, and defense industries. Enertron competes on its industrial expertise, timely service, and unerring commitment to excellence for its customers.

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