

Low Height Thin-Fin Forged Heat Sink

Introduction

Board space constraints and increased demands for thermal management control are challenges that engineers must consider with each new application. Unused input power is lost as heat, which can destroy critical components if not efficiently removed. Thermal management must be considered throughout project development.

Efficient thermal management through the use of heat sinks is often compromised by the space constraints imposed on the system design team. Lower profile passive heat sinks offer a needed solution to these space limitations.

Low Profile Forged Heat Sink Improves Performance

When compared to other heat sinks of equivalent size, the Low Height Forged heat sinks have better thermal performance. The CTS line of products now includes an “APF Series” thin fin, lower height forged heat sink. The APF Series heat sink is available in three heights: 6.3mm, 9.5mm, and 12.7mm and in three footprints: 19mm square, 30mm square, and 40mm square.

The heat sink can be easily attached to BGA, PGA, PLCC, and QFP packages with thermally conductive peel and stick tape. CTS A01 tape is a preferred method for most applications and CTS engineering can be contacted for advice on any special application requirements.



Series APF Low Height Thin-Fin Forged Heat Sink				
Part Number	Fin Matrix (Rows x Columns)	Length x Width x Height (mm)	Thermal Resistance (°C/Watt @ 200 LFPM)	Pressure Drop (Inches of Water)
APF19-19-06CB	12 X 2	19 x 19 x 6.3	7.05	.033
APF19-19-10CB	12 X 2	19 x 19 x 9.5	5.25	.033
APF19-19-13CB	12 X 2	19 x 19 x 12.7	3.95	.033
APF30-30-06CB	19 x 3	30 x 30 x 6.3	4.35	.039
APF30-30-10CB	19 x 3	30 x 30 x 9.5	3.25	.039
APF30-30-13CB	19 x 3	30 x 30 x 12.7	2.45	.039
APF40-40-06CB	26 x 4	40 x 40 x 6.3	3.30	.043
APF40-40-10CB	26 x 4	40 x 40 x 9.5	2.50	.043
APF40-40-13CB	26 x 4	40 x 40 x 12.7	1.90	.043

Table 1: APF Series Low Height Thin-Fin Forged Heat Sink Thermal Characteristics

These heat sinks provide a solution previously not available for applications with tight spacing. Expansion card slot-spacing of .800” for motherboards, is an example where heat sink heights of less than .500” with thermal resistances as low as 1.90°C/Watt, can provide a performance advantage for thermal management.

The designer must determine the available heat sink contact area, the air velocity across the heat sink, and the thermal resistance needed of the heat sink. Once the detailed thermal performance requirements for an application are determined, select the appropriate heat sink from the table above or contact CTS applications engineering.

Conclusion

The low-profile thin-fin forged heat sink provides an advantage over previous thermal solutions by reducing the system space necessary to provide adequate device cooling. It further provides a means for improving performance in existing designs by replacing poorer performing heat sinks, chosen with marginal capabilities because of space limitations.

Additional information on these products can be found at the following web link:

http://www.ctscorp.com/components/heat_sinks.asp#Forged