

**EFFECTS OF THERMOPHYSICAL PROPERTIES AND ENTRANCE REGION ON THE  
DIMENSIONAL OPTIMIZATION OF MICROCHANNEL HEAT SINKS**

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**SUMMARY:** Dimensional optimization of silicon microchannel heat sinks is performed by minimizing the total thermal resistance. Intel Core i7-900 Desktop Processor of chip core dimensions of 1.891 cm × 1.44 cm is considered as a reference processor which is reported to dissipate 130 W of heat. The properties are evaluated at the area weighted average of the fluid inlet and iteratively calculated outlet temperatures. The effects of the thermal and hydrodynamic entrance regions on heat transfer and flow are also investigated. The results of the optimization code agreed very well with available ones in the literature.