Abstract

RAM was a specialized electronic chip which multiple integrated circuits (ICs), semiconductor or other discrete components were packaged onto a unifying substrate. Facilitating their use as a single component (as though a larger IC). This paper presented model calculated the temperature distribution on four parallel memory modules and studied the effect of running a stream of cooling air. The density of the air domain depended on temperature, and introduced this influence with the ideal gas law. The inlet velocity of the air was given as a parabolic profile with a maximum velocities of 0.20, 0.21, 0.22, 0.23, 0.24 and 0.25 m/s, at this flow rates the flow will be laminar. This procedure yields average temperatures of 29.2, 32.4, 34.2 and 34.6 °C. The model defined the heat balance in the memory subdomains plus the air subdomain. The temperature field and flux were continued across these subdomains, which mean that there was no need specify any boundary conditions between the memory and the air subdomain. The model used material properties of the IC-package material FR4 for the memory modules, and in the surrounding subdomain it used the properties for air.
Computer Modeling to Predict the Impact of Cold Air Stream on Multi-Chip Memory

Index Terms

Computer Science

Applied Sciences
Keywords
Memory  air velocity  Heat source