Advanced Materials Research, vol. 795, 2013, pages 174-181

The comparison between four PLCC packages and eight PLCC packages in personal computer (PC) using computational fluid dynamic (CFD), fluent software™ using epoxy moulding compound material (EMC)

Abstract

The paper present the three dimensional numerical analysis of heat and fluid flow through Plastic Plastic Leaded Chip Carrier (PLCC) packages in inline orientation horizontally mounted on a printed circuit board in a wind tunnel is carried out using a commercial CFD code, FLUENT™ by using Epoxy Moulding Compound (EMC) as a main material. The study was made for four and eight packages with different Reynolds Number and package chip powers. The results are presented in term of junction temperature for four and eight PLCC package under different conditions. It is observed the chip temperatures of eight PLCC packages have higher junction temperature compare to four PLCC packages due to effect of other PLCC because of space and gap between PLCC that have more number of PLCC is smaller. Hence it makes junction temperature of eight PLCC higher compare to four PLCC packages. Moreover, the junction temperature of the packages decreases with increase in Reynolds Number.

Keywords

Computational Fluid Dynamic (CFD); Epoxy Moulding Compound (EMC); Package chip powers; Plastic Leaded Chip Carrier (PLCC)