Development of a Thermal Model Using COMSOL Multiphysics® Software

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Abstract

The Purpose of this paper is to develop a thermal model using COMSOL Multiphysics® software that aims to get an idea of the heat flow around the ASIC, as well as to address the thermal issues for integrated circuits at the tongue board. However, we need sources of heat simulations to map the tab to establish its thermal mapping. This led us to perform simulations at each ASIC of the tab that will allow us to understand thermal effect on the board and find real solutions on any tab in the light of the different layers around the ASIC, it is important to correct all the effects of temperature on the map, for example APD detection efficiency of light is strongly dependent on the ambient temperature, which is really needed in PET-based APD scanners. As a result we will begin analyzing our simple model eight tabs by both types of analyzes possible by circulating air, natural convection and forced convection. Also we used the COMSOL software to predict the thermal behavior of the tab 2D knowing that each tab contains two ASICs and each ASIC includes roughly 0.6 W.

Reference

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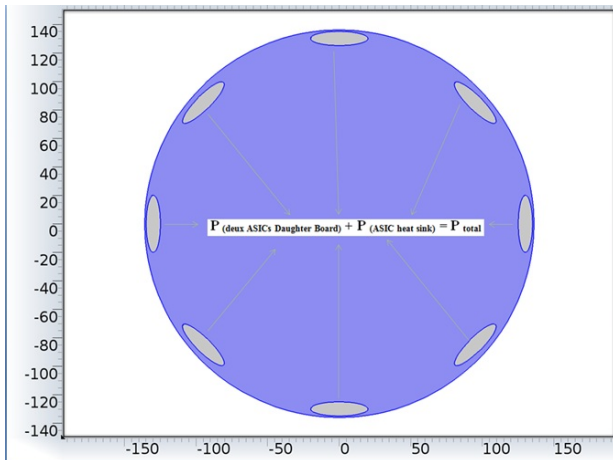
Figures used in the abstract
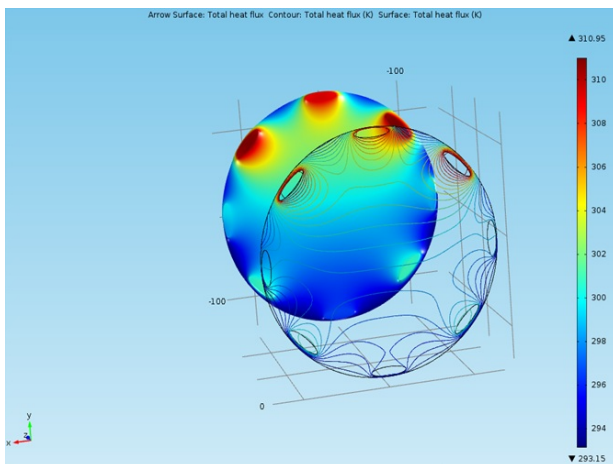

Figure 1: Presentation 8 tabs in COMSOL

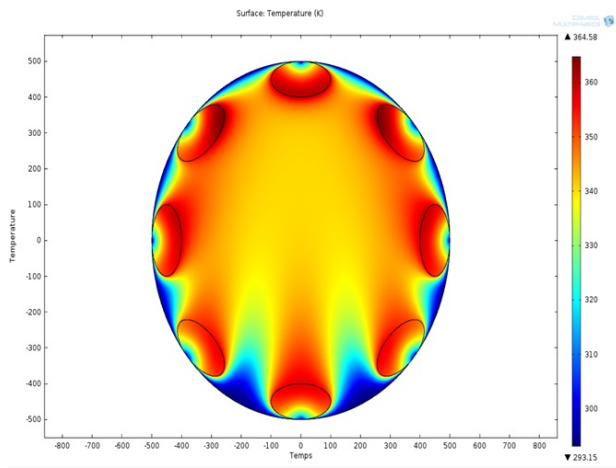**Figure 2**: Thermal evolution our model in COMSOL by natural convection

Figure 3: Evolution of the first thermal simulation of the eight tabs in COMSOL
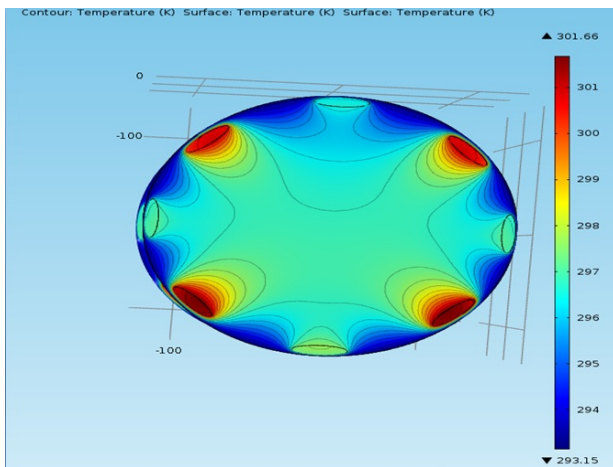

Figure 4: The thermal evolution of the model by forced convection in COMSOL