

Resistor and PCB Modeling and Validation for Tier 1 and Tier 2 Collaboration Using MBD

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In the thermal design of in-vehicle electrical equipment that is becoming smaller and more sophisticated, it is important to consider not only semiconductors but also the small components (R, C, etc.) in their peripheral circuits. In this study, a 1D model (coupled mechanical, electrical circuit, and thermal model) of an actuator drive circuit shared by WG members consisting of Tier1 and Tier2 was explained. Furthermore, CFD analyses were conducted based on the layout design data of the actual verification board. Using the results of these analyses, 1D board models were created, and its consistency with the CFD analysis was verified.

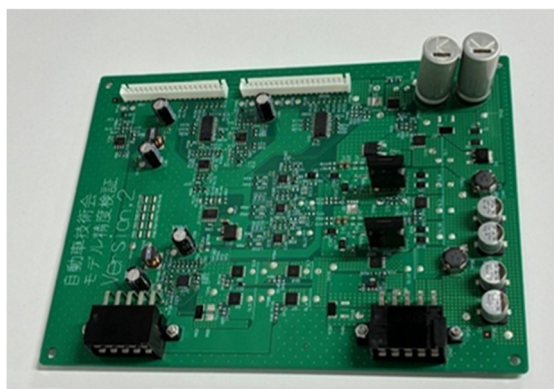


Fig.1 Picture of the verification board

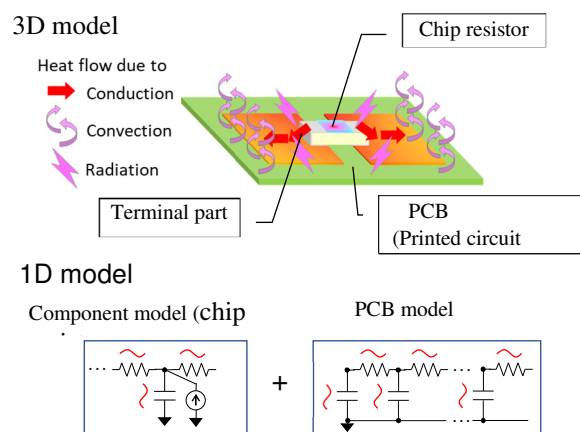


Fig. 2 Thermal model of a chip resistor and a PCB

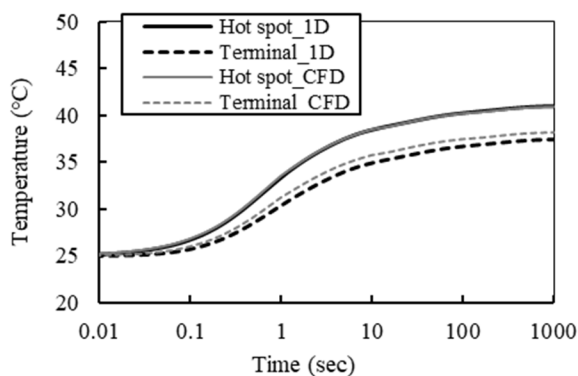


Fig. 3 Comparison between 1D and CFD (R62)

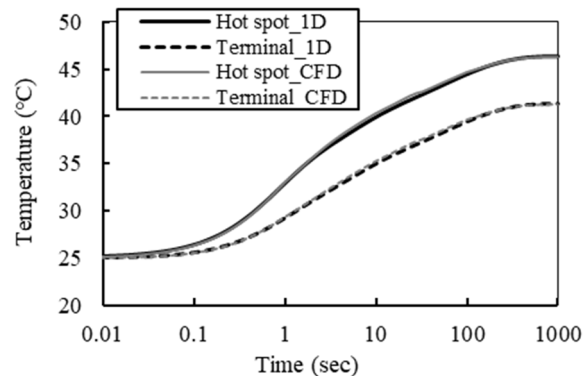


Fig. 4 Comparison between 1D and CFD (R7)