

INVESTIGATION OF RELAXATION FOR TERMINALS OF CPU SOCKET CONNECTORS

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ABSTRACT

Terminals of a CPU socket connector dominate signal transmission between the CPU and the motherboard. Contact forces between the terminal of an electronic connector and the corresponding counterparts generally play an important role in signal transmissions. The contact forces of these terminals, however, could decay gradually due to the stress relaxation effect under the high temperature conditions. A finite element analysis is carried out to examine the relaxation phenomenon of the terminal in the present study. Beryllium bronze alloy with an assumption of isotropy is selected for the terminal material. The Prony series is adopted to account for the relaxation behavior of the terminal material. According to the field life acceleration test specifications established by the Electronic Industry Association (EIA), relationships between the calculated contact force and duration period are constructed. Moreover, the contact force of the terminal subjected to thermal cycling test is also investigated. The Williams-Landel-Ferry (WLF) model is implemented into the simulations to incorporate influences of the varying temperature on the material characteristics. Calculations show that the decreased amount of the contact force is rather limited.