

HEAT SINK FOR ELECTRONIC CIRCUITRY

Abstract

A thermally balanced electronic circuit having an element mounted on a suitable support base, a heat-sink having a bottom portion contacting the element and at least one flange projecting from the bottom portion, and a stress-balancing insert positioned on the bottom portion of the heat-sink and at least partially coextensive with the element, said bottom portion of the heat sink being secured to the element and to the insert by means of an adhesive. The insert is of a material having a coefficient of thermal expansion (TCE), α_1 , different from the TCE, α_2 , of the heat sink. The TCE of the insert may be intermediate the TCE of the heat sink and the TCE, α_3 , of the material of the element. Preferably, the TCE of the insert approximately matches or is equal to the TCE of the material of the element.

The element, the bottom portion of the heat-sink, the insert and the adhesive layers form a balanced "sandwich" structure. Such a structure will exhibit planar thermal expansion equivalent to the outer skins of the sandwich structure, e.g. of the element and the insert. Expansion of the structure normal to the element and the insert accommodates the balance of the absolute volumetric change of components of the sandwich structure not accounted for in the skins.

This Sheet Has Been Replaced

