

ABSTRACT

ADVANCED MICROELECTRONIC HEAT DISSIPATION PACKAGE AND METHOD FOR ITS MANUFACTURE

Heat dissipation during the operation of integrated circuit chips is an old problem that continues to get worse. The present invention significantly ameliorates this by placing an embedded heat pipe directly beneath the chip. Using powder injection molding, the lower portion of the package is formed first as an initial green part which includes one or more cavities. The latter are then lined with a feedstock that is designed to produce a porous material after sintering, at which time a working fluid is introduced into the porous cavities and sealed, thereby forming one or more heat pipes located directly below the chip. The latter is then sealed inside an enclosure. During operation, heat generated by the chip is efficiently transferred to points outside the enclosure. A process for manufacturing the structure is also described.

Fig. 4