AMD Geode™ Solutions
EBGA Package Clarification

1.0 Scope

Some AMD Geode™ devices are available in an EBGA (Enhanced Ball Grid Array) package. This document provides clarification on the EBGA package. The data book(s) do not specify any electrical condition pertaining to the metal top. Through the epoxy die attach process used for the Geode devices, the metal top (heat sink) of the EBGA package can be electrically open or connected to V_{SS}.

2.0 Discussion

The Geode devices are packaged in 352-terminal and 432-terminal cavity-down EBGA substrates. Each has separate planes for V_{SS}, V_{IO}, and V_{CORE}. Signal traces are microstripline with V_{SS} as the reference plane. The V_{SS} ring is connected to the V_{SS} plane using the plated sidewall of the cavity. In order to allow for adequate thermal dissipation, a conductive (silver-impregnated) die attach epoxy is used to connect the die directly to the heat sink.

As a result of the cavity size tolerance in addition to the assembly process controls, it is possible for the die attach epoxy to bridge the die edge and heat sink to the sidewall, and short the die backside and heat sink to V_{SS}. The volume resistivity of the die attach epoxy is ~ 0.3 Ω-cm.

In summary, the epoxy bridging is inherent to the manufacturing process. Some devices have been in high-volume production for well over two years. Furthermore, AMD's dynamic operational-life results (1,600 units representing over 75,000 device-hours) along with the Customer DPPM performance does not suggest that the epoxy bridging adversely affects product quality or reliability. If any questions arise, contact you local AMD support representative.

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