Thermal Aging Study At 150 °C And 200 °C: Gold Ball Bonds To Aluminum Bond Pad

Abstract

This paper presents the study of the thermal aging of the gold ball bonds and aluminum bond pad at 150 °C and 200 °C for various interval times. Process decapsulation and Field Emission Scanning Electron Microscopy (FESEM) are used to reveal the intermetallic coverage and Kirkendall voiding. Energy Dispersive X-Ray (EDX) is then used to determine the intermetallic phase. The results shows that under thermal aging, the Kirkendall voids are seen, various intermetallic phases are detected and the intermetallic thickness increased tremendously at 200° C after 168 hrs as compared to 150 °C exposure times.

Keywords

Intermetallic growth
Thermal aging
Wire bonding
Field emission
Semiconductor materials
Aluminum
Light metals