**Ultra small hearing aid electronic packaging enabled by chip-in-flex**

There has been a great advancement in the area of science and electronics in the past recent years. But most significantly the advancement can be greatly seen in the telecommunication devices with such a small size and great working. The hearing business which is a wireless product is taken into consideration here. The size of these products have been greatly reduced for public comfort and functionality has been increased. Here this paper examines the method of using the Chip-in-flex(embedded die packaging) to further decrease the size over what can be gained by using Chip-on-flex(ceramic hybrid based technologies). This also discusses performance improvement, size reduction, changes in supply chain, impact on wafer test, impact on device test and challenges of working with wafers instead of die. Also discusses results of extensive reliability testing including accelerated aging, thermal shock, pad integrity, drop tests, moisture sensitivity, ESD testing, light sensitivity and hearing aid assembly solder simulation testing.

References:

[1] K. L. Suk, K. W. Paik, "Embedded chip-in-flex (CIF) packages using wafer level package (WLP) with preapplied anisotropic conductive films (ACFs)", Proc. IEEE Electronic Components and Technol. Conf. (ECTC), pp. 1741-1748, May 26-29, 2009.

[2] M. J. Yim, K. W. Paik, "The contact resistance and reliability of anisotropic conductive film (ACF)",Advanced Packaging IEEE Transactions on, pp. 166-173, 1999.

[3] Y.C. Chan, D. Y. Luk, "Effects of bonding parameters on the reliabiliity performance of anisotropic conductive adhesive interconnects for flip-chip-on-flex packages assembly II. Different bonding pressure", Microelectronics Reliability, pp. 1195-1204, 2002.

[4] James Gere, Barry Goodno, "Mechanics of Materials", Cengage Learning, pp. 576-578, 2012.

[5] R. K. Bansal, "A Text Book of Strength of Materials", Laxmi Publications, pp. 327-332, 1996.

Group:7

Sathyavardhan Naidu Pitani

Sandeep Parlapalli

Udhaya Kiran Amilineni Raghupathi

Sai Srikanth Juvvalakanti