Solid State Science and Technology, Vol. 16, No 2 (2008) 189-197
ISSN 0128-7389
Corresponding Author: umi_libra30@yahoo.com

INVESTIGATION OF WARPAGE INDUCED ON MOLDED STRIP OF QFN PACKAGE

U. Mokhtar1, R. Rasid[1], I. Ahmad[1], Z. Endut[2], S. Esa[2] and K. Krishnasamy[2]
[1]Advanced Semiconductor Packaging (ASPAC) Research Laboratory,
Universiti Kebangsaan Malaysia,
43600 UKM Bangi, Selangor, Malaysia
[2]AIC Semiconductor Sdn. Bhd.,
Kulim Hi-Tech Park, Kulim, Kedah, Malaysia.

ABSTRACT

Warpage is known to be one of the primary molding issues during assembly of QFN package. It affects the package sawing process, and cause reliability issues. The main cause of warpage of area array packages is the coefficient thermal expansion (CTE) mismatch between the moulding compound and other components inside the package. The objective of this study is to investigate the warpage induced on the moulded strip of QFN package, by using different mold compounds which have different CTE values. The effect of thermal properties and filler content is also investigated. In this study, the QFN strips are moulded with different mould compounds. Nonlinear large deformation finite element analysis is performed to compare with the experimental result. It shows that different mould compound properties will result in different warpage.

http://journal.masshp.net/wp-content/uploads/Journal/2008/Jilid%202/U.%20Mokhtar%20189-197.pdf

REFERENCES

[1]. L. C. Hong. (2004); Simulation of Warpage Considering Both Cure induced Shrinkage During Molding in IC Packaging, *Polytronic.*

[2]. K. Irving, C. J. Zhang, L. Rector and M. Todd, (2006); Low Warpage Molding Compound Development for Array Packages, *Electronic System integration Technology Conference Dresden, Germany.*

[3]. C.C. Ng, G. Govindasamy and T. M. Y. S. Tuan Ya, (2005); Warpage Analysis and Thermo-Mechanical Stress Modeling of QFN Molded Strip. *5th ASEAN ANSYS User Conference 2005*.

[4]. D. G.Yang, K. M. B. Jansen, L. J. Ernst, G. Q. Zhang, J. G. J. Beijer and J. H. J. Janssen, (2005); Numerical modeling of warpage induced in QFN Array Molding Process. *IEEE 6th International Conference on Electronic Packaging Technology*.

[5]. Y. T. Park, Y. K. Whang, J. K. Hong and K. Y. Byeon, (2006); Warpage Analysis of FBGA (Fine Ball Grid Array) Package by the Altered EMC (Epoxy Molding Compound) Filler contents. *Key Engineering Materials*. 306-308: 625-630.

[6]. D. G. Yang, K. M. B. Jansen, L. J. Ernst, G. Q. Zhang, J. G. J. Beijer and J. H. J. Janssen, (2005); Experimental and Numerical Investigation on Warpage of QFN Packages induced during the Array Molding Process. *IEEE 6th International Conference on Electronic Packaging Technology.*