Solid State Science and Technology, Vol. 16, No 2 (2008) 49-57
ISSN 0128-7389
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EFFECT OF DIE CONFIGURATIONS ON WARPAGE ISSUES FOR QFN PACKAGES

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ABSTRACT

One of the latest developments in packaging technology is QFN (Quad Flat Non-lead) package. This paper describes a warpage study on a QFN package. The objectives of this study to investigate the warpage issues for QFN package with different die sizes. It was found that the balance between the bending at the edge size region and the die attach region controls the package warpage. The warpage was attributed to a large mismatch of coefficient of thermal expansion (*CTE*). The QFN package of 7 mm x 7mm with different die size were prepared to study the effect of die size on warpage issues and two types of mold compounds were prepared to study the effect of the coefficient of thermal expansion (*CTE*). The Finite element analysis was also presented in this paper. In these studies the effect of post mold cure on package warpage was also examined and the warpage of the QFN package was measured by using Smartscope Optical Gaging. The measurements were done after molding and after post mold cure process. The results showed that warpage is larger for stacked die package as compared to single die package and that the die size of 2mm x 2mm has the minimum warpage.

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