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SHEAR STRESS ANALYSIS OF DIFFERENT STACKED DIE QFN PACKAGE USING FEM

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ABSTRACT

Package of stacked die QFN nowadays become more popular in semiconductor industry because of its lead less, good electrical performance and its small size. However, it is not an easy task to manufacture a robust stacked die QFN. Usually, die shear test will be conducted with specified condition to test the die strength. Die contains circuit that is significant part of the package. In this paper, Finite Element Method is used to perform the shear stress of the stacked die QFN package. Shear stresses are simulated to determine the die shear strength as to predict the integrity of materials used in stacked die QFN Package. Five different model which include one single die QFN package and other four model of stacked die QFN are developed in this study; they are conventional single die, two layers pyramidal stacked die, over hang stacked die with spacer, three layers and four layers stacked die with spacer. Some components of stress which also includes the shear stress of each package are determined to see the performance of the package. Comparison between few models of stacked die QFN shear stress result and effect of stacking die on the package are analyzed and discussed. Finally, it is suggested that finite element method can be used to simulate the shear stress of different stacked die QFN package.

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