

OPTIMIZATION OF PACKAGE SAW PARAMETERS USING FULL FACTORIAL DESIGN IN QFN PACKAGES

A.E. Said, R. Rasid, S. Ahmad and U. Mokhtar.
*School of Applied Physic, Faculty of Science and Technology,
Universiti Kebangsaan Malaysia,
43600 UKM Bangi, Selangor.*

ABSTRACT

Quad Flat No-lead (QFN) presents an excellent example of a complex substrate composed of both ductile (copper) and brittle (plastic molding compound) materials, showing clear trends of reduction in package size and the combination ductile and brittle materials in the same sawing process which creates real challenges in term of sawing quality, blade life and throughput. This paper discussed on the effect of different blade rotation and cutting speed process parameters in package saw singulation. The objective of this study is to screen the effect on the output quality by increasing the throughput using existing blade. The design of experiment on singulating processes is evaluated for this study to get the optimal parameters for the process. The type of sawing process used was the single-pass tape saw method. The package shifting and burr level analysis were measured by using Smartscope Optical Gaging. The results showed that at higher cutting speed and lower blade rotation, less chipping, burr level and side smear were observed.

<http://journal.masshp.net/wp-content/uploads/Journal/2008/Jilid%202/A.E.%20Said%20264-271.pdf>

REFERENCES

- [1]. F.R. Wagner, A. Spiegel, N. Vago and B. Richerzhagen, (2006); Water-jet guided laser: possibilities and potential for singulation of electronic packages, Department of Atomic Physics, Budapest University of Technology and Economics.
- [2]. D.G. Yang, K.M.B. Jansen, L.J. Ernest, 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, 6th IEEE International Conference on Electronic Packaging Technology.
- [3]. D. Comley and P.Smith. (2002); The QFN Smaller, Faster and less Expensive, Carsem Inc., Ipoh, Malaysia and Scotts Valley, Calif.
- [4]. M. Vagus. (2003); Analysing Backside Chipping Issues of The Die at Wafer Saw” In Partial Fulfillment of MatE 234.
- [5]. D.V. Retuta, B.K Lim, and H.B. Tan. (2006); Design and Process Optimization for Dual Row QFN, Electronic Components and Technology Conference.