

## 第五章、參考文獻

- A. R.J. Wassink, Soldering in Electronics, Electrochemical Pub. Ltd., p.99, 1984.
1. Intel Technology Journal, Vol. 9, Issue 4, 2005.
  2. V. B. Fiks, Soviet Physics – Solid State, Vol. 1, pp. 14-28, 1959.
  3. Tu K.N., Recent advances on electromigration in VLSI of interconnects, JAP, Vol. 94 ( 9 ) , pp. 5451-5473, 2003.
  4. Paul S Ho and Thomas Kwok, Electromigration in metals, Rep. Prog. Phys. 52, pp. 301-348, 1989.
  5. H. Wang, C. Bruynseraede, and K. Maex, Impact of current crowding on electromigration-induced mass transport, pp.517-519, APL V. 84, N. 4, 2004.
  6. I. A. Blech and C. Herring, Appl. Phys. Lett. 29, 131 ( 1976) .
  7. T. L. Shao, S. W. Liang, T. C. Lin, and Chih Chen, 3-D simulation c3. European Union Waste in Electrical and Electronic Equipment ( WEEE ) Directive, 3rd Draft, May 2000.
  8. Kuo Ning Chiang, Chien Chen Lee, Chang Chun Lee, and Kuo Ming Chen, Current crowding-induced electromigration in SnAg3.0Cu0.5 microbumps, APL 88, 072102, 2006.
  9. D. Gupta, K. Vieregg, and Gust, Interface Diffusion in eutectic Pb-Sn solder, Acta mater., V.47, No. 1, pp.5-12,1999
  10. Hua Ye, Cemal Basaran, Douglas C. Hopkins, Pb phase coarsening in eutectic Pb/Sn flip chip solder joints under electric current stressing,

- International journal of solids and structures, 41, pp. 2743-2755, 2004.
11. Jong-Kai Lin, Jin-Wook Jang, and Jerry White, Characterization of Solder Joint Electromigration for Flip Chip Technology, pp.816-821, ECTC 2003.
  12. Chien-Neng Liao, Chien-Ping Chung, and Wei-Tai Chen, Electromigration-induced Pb segregation in eutectic Sn-Pb molten solder, JMR, V. 20, N. 12, Dec 2005.
  13. Jae-Woong Nah, Jong Hoon Kim, Hyuck Mo Lee, Jyung-Wook Paik, Electromigration in flip chip solder bump of 97Pb-3Sn / 37Pb-63Sn combination structure, pp. 129-136, Acta Materialia 52 ,2004
  14. Liu YH, and Lin KL, Damages and microstructural variation of high-lead and eutectic SnPb composite flip chip solder bumps induced by electromigration, JMR, Vol. 20 ( 8 ) , pp. 2184-2193, Aug 2005.
  15. S. H. Chiu, T. L. Shao, and Chih Chen, Infrared microscopy of hot spots induced by Joule heating in Flip-chip SnAg solder joints under accelerated electromigration, APL 88, 022110, 2006.
  16. W. J. Choi, E. C. C. Yeh, and K. N. Tu, Mean-time-to failure study of flip chip solder joints on Cu / Ni ( V ) / Al thin-film under-bump-metallization, JAP, Vol. 94, N. 9, 2003.
  17. Y.H. Lin, Y.C. Hu, C.M. Tsai, C.R. Kao, K.N. Tu, In situ observation of the void formation-and-propagation mechanism in solder joints under current-stressing, pp. 2029-2035, Acta Materialia 53, 2005.
  18. T. Y. Lee, and K. N. Tu, Electromigration of eutectic SnPb and SnAg3.8Cu0.7 flip chip solder bumps and under-bump metallization, JAP, Vol. 90, N. 9, 2001.
  19. Lingyun Zhang, Shengquan Ou, Joanne Huang, and K. N. Tu, Effect of current crowding on void propagation at the interface between intermetallic compound and solder in flip chip solder joints, APL, Vol. 88, 012106, 2006
  20. H. Lin, C. M. Tsai, Y. C. Hu, Y. L. Lin, and C. R. Kao, Electromigration

- failure in flip chip solder joints due to rapid dissolution of copper, J. Electron. Mater. Vol. 34, 27, 2005.
- 21. C. Hu, Y. H. Lin, C. R. Kao, and K. N. Tu, J. Mater. Res. Vol. 18, 2544, 2003.
  - 22. C. Y. Liu, Lin Ke, Y. C. Chuang, and S. J. Wang, Study of electromigration-induced Cu consumption in the flip-chip Sn/Cu solder bumps, JAP Vol. 100, 083702, 2006.
  - 23. Everett C. C. Yeh and K. N. Tu, Numerical simulation of current crowding phenomena and their effects on electromigration in very large scale integration interconnects, JAP Vol. 88, N. 10, 2000.
  - 24. C. C. Yeh, W. J. Choi, K. N. Tu, P. Elenius, and H. Balkan, Current-crowding-induced electromigration failure in flip chip solder joints, Appl. Phys. Lett. Vol. 80, 580, 2002.
  - 25. Y.L. Lin, C.W. Chang, C.M. Tsai, C.W. Lee, and C.R. Kao, Electromigration-induced UBM consumption and Resulting Failure mechanisms in Flip-Chip Solder joints, JEM, V. 35, N. 5, 2006
  - 26. 關於吉時利科技公司相關資訊請參閱其官方網頁，網址：  
<http://www.keithley.com/>
  - 27. 關於安捷倫科技公司相關資訊請參閱其官方網頁，網址：  
<http://www.home.agilent.com/>
  - 28. 關於美國國家儀器公司相關資訊請參閱其官方網頁，網址：  
<http://www.ni.com/>