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高密度3次元実装技術を用いたマイクロカメラ視覚システム

山田　浩*，栂嵜　隆**，木村　正信***，貞本　敦史****，須藤　肇****

CCD Micro-Camera Visual Inspection System Based on High-Density 3D Packaging Technology

Hiroshi YAMADA*, Takashi TOGASAKI**, Masanobu KIMURA***, Atsushi SADAMOTO**** and Hajime SUDO****

*株式会社東芝研究開発センター個別半導体基盤技術ラボラトリー（〒212-8582　神奈川県川崎市幸区小向東芝町1）
**株式会社東芝生産技術センター実装技術研究センター（〒235-0017　神奈川県横浜市磯子区新磯子町33）
***株式会社東芝デジタルメディアネットワーク社コアテクノロジーセンター（〒198-8710　東京都青梅市末広町2-9）
****株式会社東芝研究開発センター機械・システムラボラトリー（〒212-8582　神奈川県川崎市幸区小向東芝町1）
*Advanced Discrete Semiconductor Technology Laboratory, Corporate Research & Development Center, Toshiba Corporation (1 Komukai Toshiba-cho, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8582)
**Microelectronics Packaging Research Center, Corporate Manufacturing Engineering Center, Toshiba Corporation (33 Shin-isogo-cho, Isogo-ku, Yokohama-shi, Kanagawa 235-0017)
***Core Technology Center, Digital Media Network Company, Toshiba Corporation (2-9 Suehiro-cho, Ome-shi, Tokyo 198-8710)
****Mechanical Systems Laboratory, Corporate Research & Development Center, Toshiba Corporation (1 Komukai Toshiba-cho, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8582

Abstract

A CCD micro-camera visual inspection system which consists of an experimental wireless micromachine for inspection of inner surface of 10 mmϕ tubes in electric power generators has been developed based on a high-density 3D packaging technology. The CCD imaging data transmission circuit has been packaged at high-density by developing a 3D sidewall interconnection technology which has sidewall footprints realized by high-aspect-ratio Cu wiring layers. The viewpoint changing mechanism for inspection of inner surface of tube was realized by 3D motion reflective mirror which incorporates 2 axial electrostatic wobble motors. The prototyped CCD micro-camera visual inspection system, which includes CCD imaging data transmission circuit and the viewpoint changing mechanism, operates satisfactorily and it has been confirmed that the output CCD images have high resolution which enables 20 μm objects to be distinguished inside 10 mmϕ tubes.

Key Words: *3D Packaging Technology, Sidewall Interconnection Technology, CCD Micro-Camera, Micromachine, Wobble Motor*