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Flip-Chip Bonding Fabrication Technique (Conference Paper) (Open Access)

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Abstract

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Military systems, outer space exploration and even in medical diagnosis and treatment used magnetic field detection. Low magnetic field detection is particularly important in tracking of magnetic. Traditional magnetometer tends to be bulky that hinders its inclusion into micro-scaled environment. This concern has brought the magnetometer into the trend of device miniaturization. Miniaturized magnetometer is usually fabricated using conventional microfabrication method particularly surface micromachining in which micro structures are built level by level starting from the surface of substrates upwards until completion of final structure. Although the miniaturization of magnetometer has been widely researched and studied, the process however is not. Thus, the process governing the fabrication technique is studied in this paper. Conventional method of fabrication is known as surface micromachining. Besides time consuming, this method requires many consecutive steps in fabrication process and careful alignment of patterns on every layer which increase the complexity. Hence, studies are done to improve time consuming and reliability of the microfabrication process. The objective of this research includes designing micro scale magnetometer and complete device fabrication processes. A micro-scale search coil magnetometer of 15 windings with 600µm thickness of wire and 300µm distance between each wire has been designed.

Indexed keywords

Engineering controlled terms:

Composite micromechanics Diagnosis Flip chip devices Magnetic fields Magnetism
Magnetometers Manned space flight Microanalysis Microfabrication Micromachining
Miniature instruments Space research Structures (built objects) Surface micromachining

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