# An effective vision technique for microchip lead inspection

**Author(s):** Nazim Mir-Nasiri, Haitham HL Al-Obaidy, Momoh JE Salami, Shamsuddin Amin

**Abstract**

A new effective method for the microchip lead inspection for the chip manufacturing industry has been developed in this work. In contrast to the gray scale pattern matching technique this approach employs selected parameters of binary blobs to perform fault detection and measurements. This leads to a significant reduction of image processing time. A special combination of gray level filtering techniques with gray morphological operations enhances the borders of the lead images. Newly developed threshold calibration technique significantly improves the measurement accuracy. A unique statistical analysis has been developed to identify all possible lead defects in the chips. This method is rotationally and scale invariant and able to detect defective leads for the chips with different specifications. The minimum required information about the microchip is the number of leads.

**Keywords:** Inspection, Semiconductor device measurement, Manufacturing industries, Pattern matching, Performance evaluation, Fault detection, Image processing, Filtering, Morphological operations, Calibration

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