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(54) Title: INSPECTION METHOD

(57) Abstract

An inspection system (10) and method use a ring illumination apparatus (20) to illuminate one or more reflective elements (12), such as solder balls on an electronic component (14) or other protruding surfaces or objects. The ring illumination apparatus (20) includes a substantially ring–shaped light source (24) that provides a substantially even illumination across the one or more reflective elements (12). An illumination detection device (30) detects light beams (32) reflecting off of the illuminated reflective elements (12) for forming a reflected image. A method of processing the reflected image includes locating one or more points on each reflected image element (110) representing an illuminated reflective element. The points on the reflected image elements are used to locate the pattern of the reflected image elements and/or to fit an outline (120) around each image element corresponding to a known percentage of the true dimensions of each solder ball or other reflective element. The inspection system and method thereby determine various characteristics (130) such as the absence/presence, location, pitch, size and shape of each reflective element.

