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(54) Title: HIGH SPEED DIAMOND-BASED MACHINING OF SILICON SEMICONDUCTOR DIE IN WAFER AND PACKAGED FORM FOR BACKSIDE EMISSION MICROSCOPE DETECTION

(57) Abstract

Emission microscopy testing of semiconductor integrated circuits is accomplished from the back side of a packaged die or a wafer but selectively milling the back surface using high speed (e.g., 40,000-60,000 rpm) milling tool having a 150 grit 0.125 inch diameter laterally translated at 3 inches per minute and taking cuts up to approximately 0.00025 inch (6 microns). In milling a packaged die, a trench is first milled in the molding material holding the die in the package and surrounding the die so that the tool can momentarily pause to switch directions off the die face. The die or wafer can be thinned to less than 200 microns for the emission microscopy testing.