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3.3.3.2 Calculation of Material Removal Rate; 3.3.4 Kinematics; 3.3.4.1 Sliding Velocity; 3.3.4.2 Equation for Streaks on a Work Piece; 3.3.4.3 Equations for Streaks on a Lap; 3.3.4.4 Effects of Different Parameters on Material Removal Rate; Effect of Lapping Pressure on the MRR; Effect of Abrasive Size on the MRR; 3.3.5 Types of Lapping (Focus: Double-Sided Lapping); 3.3.5.1 Double-Sided Lapping; 3.3.5.2 Mechanism; 3.3.5.3 Machine Set-up; 3.3.5.4 Process Cycle; 3.3.5.5 Advantages of Double-Sided Lapping; 3.3.5.6 Parameters of Double-Sided Lapping; 3.3.5.7 Lapping with Bonded Abrasives; 3.3.5.8 Process Capabilities for Lapping; 3.3.6 Abrasives and Lubricants; 3.3.6.1 Types of Abrasives; (1) Diamond; (2) Cubic Boron Nitride (CBN); (3) Norbide Abrasive; (4) Silicon Carbide; (5) Aluminum Oxide; (6) Fused Aluminas; (7) Corundum; (8) Garnet; (9) Unfused Alumina (hydrated-calcined); (10) Micro-Graded Flours; (11) Linde Powders; (12) Other Abrasive Materials; 3.3.7 Equipment; 3.3.7.1 Lapping Plate; 3.3.7.2 Charging of the Lapping Plate; 3.3.7.3 Different Types of Lapping Plate; 3.3.7.4 Carriers Used in Double-Sided Lapping; 3.3.7.5 Ultrasonic Cleaner; 3.3.8 Abrasive Slurry; 3.3.8.1 Abrasives; 3.3.9 Introduction to Silicon; 3.3.10 Lapping of Silicon Wafers - Experiments; 3.3.10.1 Mounting the Wafer; 3.3.10.2 Double-Sided Lapping Kinematics; 3.3.10.3 Lapping Process; 3.3.10.4 Effects of Lapping Wheels; 3.3.10.5 Slurry and Its Effects; 3.3.10.6 Silicon Machining; 3.3.10.7 Common Lapping Wheel Problems and Solutions; 3.3.11 Lapping Machine; 3.3.12 Experimental Set-up; 3.3.13 Experimental Results; Plots; Equations Used to Calculate the Material Removal Rate; Observations; 3.3.14 Conclusions; 3.4 Etching; 3.4.1 Acid Etching of Silicon; 3.4.2 Alkaline Etching of Silicon; 3.5 Ultra-Precision Polishing/CMP of Silicon Wafers

Sommario/riassunto

CMP and polishing are the most precise processes used to finish the surfaces of mechanical and electronic or semiconductor components. Advances in CMP/Polishing Technologies for Manufacture of Electronic Devices presents the latest developments and technological innovations in the field - making cutting-edge R&D accessible to the wider engineering community. Most of the applications of these processes are kept as confidential as possible (proprietary information), and specific details are not seen in professional or technical journals and magazines. This book makes these processes a
