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Section 4: Photolithography for Photo/EtchSection 5: Hard Mask Formation Using Plasma Etch; 5.1 Hard Mask Overview; 5.2 Plasma Etch Overview; 5.3 Etch Chemistry: Silicon Dioxide and Silicon Nitride; Section 6: Form Trenches in Silicon with Plasma Etch; Section 7: Fill Trenches with Silicon Dioxide; Section 8: Chemical Mechanical Polishing (CMP) to Remove Excess Dioxide; Section 9: Wet Etch Removal of Silicon Nitride and Pad Oxide; Chapter 5: Building the Transistors; Section 1: Introduction; Section 2: Thin Film Formation; 2.1 Gate Dielectric Oxidation
2.2 Polycrystalline Silicon (Poly) Deposition2.3 Nitride Cap Deposition; Section 3: Poly Gate Formation; 3.1 Photoresist Patterning; 3.2 Plasma Etch; Section 4: Source/Drain Formation; 4.1 Introduction; 4.2 Shallow Implant; 4.3 Spacer Formation; 4.4 High-Dose Implant; 4.5 Anneal; Section 5: Salicide Formation; 5.1 Sputter Cobalt; 5.2 RTP Reaction Forming Silicide; 5.3 Strip Residual Cobalt; 5.4 Anneal the Silicide; Chapter 6: First Level Metallization; Section 1: Introduction; Section 2: Nitride and Oxide Depositions; 2.1 Nitride Deposition; 2.2 Oxide Deposition; Section 3: CMP Planarization
Section 4: Photo/Etch for Contact Holes

Sommario/riassunto

This book takes the reader through the actual manufacturing process of making a typical chip, from start to finish, including a detailed discussion of each step, in plain language. The evolution of today's technology is added to the story, as seen through the eyes of the engineers who solved some of the problems. The authors are well suited to that discussion since they are three of those same engineers. They have a broad exposure to the industry and its technology that extends all the way back to Shockley Laboratories, the first semiconductor manufacturer in Silicon Valley.The CMOS (C