TSV Process Development

Sequence for Improved TSV Processing

Industry Problem
Conventional TSV planarization has depended entirely on CMP for both overburden removal and planarization causing significant undesirable trade-offs such as:
- High process cost - relatively low material removal rates and associated low process throughput, and the high cost of slurry consumption based on slurry cost and long process times.
- High non-uniformity of material removal inherent with CMP, which leads to variation and/or loss of either the metal or substrate thicknesses, or both.

Axus Solution
Axus Technology has developed specialized process conditions and consumables that enable substantial improvements in TSV planarization results based on a combination of advanced thinning methods and optimized CMP processes. These processes typically consist of three primary process steps.
- Thinning, which itself may be a single- or dual-stage process
- CMP to remove the remaining metal overburden and improve the final surface finish from a ground surface to a polished surface
- Post-CMP cleaning to establish a particle- and corrosion-free surface, enabling suitable post-planarization processes, including wafer-scale bonding.