

Optimization of Annealing Conditions for Dual Damascene Cu Microstructures and Via Chain Yields

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Abstract

The effect of different post electroplating anneals on dual damascene Cu microstructures and via chain yields using both rapid thermal processing and furnace anneal were investigated. It was found the grain size, (111) texture, Cu line resistance, and dual damascene Cu via chain yields varied strongly with the annealing conditions. The minimum feature of trench width or height imposes physical limit to the average grain size. Via chain yield failure analysis were also carried out using SEM cross sections.