Copper Via Filling for SIP by Pulse Reverse Electroplating

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Abstract

Electroplating Cu is the important role in formation of 3-D stacking interconnection due to the system in package(SiP) is in the spotlight. There are a lot of investigations for bottom-up filling and superfilling as increasing demands for defect-free via/hole filling. Using direct current, defects such as seam and void, are formed during electrodeposition process. To prevent these defects, pulse current or pulse-reverse pulse current is applied for bottom-up filling. In this study, specimen was made by DRIE method with 100 ㎛ depth and 50 ㎛,75 ㎛,100 ㎛ in diameter. Seed layers were deposited by ion assisted sputtering method; TaN and Ta for diffusion barrier, Cu for conductive layer. Hole specimen was filled by electroplating Cu using DC, PC, PRC and observed the sections by SEM after electrodeposition process.