

Cu Voids Detection of Electron Beam Inspection at the 5nm Node

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Abstract : Electron beam inspection (EBI) has played an important role in detecting defects during the Fab process. The study focused on capturing buried Cu metal voids for 5nm technology nodes in Qualcomm Snapdragon mass production. This paper illustrates a case study where Cu metal voids can be detected without side effects with optimized EBI scanning conditions. The voids were buried in the VIA and not detected effectively by bright field inspection. EBI showed higher detectability, about 10 times that of bright fields, and a lower landing energy of EBI can avoid film damage. A comparison of detectability between EBI and bright field inspection was performed, and TEM confirmed voids that were detected by EBI. Therefore, a much higher detectability of buried Cu metal voids can be achieved without causing film damage.

Keywords : electron beam inspection, EBI, landing energy, Cu metal voids, bright field inspection

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