

Characterization of robust alignment mark to improve alignment performance

Overlay requirement is one of the biggest obstacles in achieving a very small feature. With the continued growth of small feature size, overlay requirement becomes tighter. Such a tight requirement requires a very high performance in alignment. Alignment performance is greatly dependent on alignment signal quality. Variation in metal deposition thickness, polishing time, and mark depth may deteriorate the alignment signals quality. In this paper, different types of alignment mark was used to evaluate the alignment performance in various process environment. Based from the findings, two grating alignment mark gives the worst alignment performance, which clearly indicates the unsuitability to use in production environment.