METHODS FOR ENHANCING PHOTOLITHOGRAPHY PATTERNING

ABSTRACT

A method for fabricating a a semiconductor device that includes: providing a substrate prepared with a photoresist layer; providing a photomask comprising a first and a second pattern having a respective first and second pitch range; providing a composite aperture comprising a first and a second off-axis illumination aperture pattern, the first off-axis aperture pattern having a configuration that improves the process window of the first pitch range and the second off-axis aperture pattern having a configuration that improves the process window for a second pitch range; exposing the photoresist layer on the substrate with radiation from an exposure source through the composite aperture and the photomask; and developing the photoresist layer to pattern the photoresist layer.

Figure 3