Multiple layer resist scheme implementing etch recipe particular to each layer

Abstract

Methods of forming a metal line and/or via critical dimension (CD) in a single or dual damascene process on a semiconductor substrate, and the resist scheme implemented, are disclosed. The method includes forming a multiple layer resist scheme including a first planarizing layer (122) of a first type material over the substrate (100), a second dielectric layer (124) of a second type material over the planarizing layer (122), and a third photoresist layer (126) of a third type material over the dielectric layer (124). The types of material alternate between organic and inorganic material. The third layer (126) is patterned for the metal line and/or via CD. Sequential etching to form the metal line and/or via critical dimension using a tailored etch recipe particular to each of the first photoresist layer, the second dielectric layer and the third planarizing layer as each layer is exposed is then used. Accurate CD formation and adequate resist budget are provided.

Fig. 4.



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