ABSTRACT

METHOD OF FORMING DUAL DAMASCENE PATTERN USING DUAL BOTTOM ANTI-REFLECTIVE COATINGS (BARC)

A method of forming a via-first type dual damascene structure in the absence of an etch stop layer and without via-edge erosion or via-bottom punch-through is described. The invention uses two organic films deposited within via hole prior to trench etching. A via hole over a lower level metal line is first etched in the dielectric film. Two, preferably organic, bottom anti-reflective coating (BARC) films, first one being the conformal type to coat the surfaces and the walls of the via and the second one being the planarizing type to at least partially fill the via, are then deposited. Using a mask aligned to via hole, a wiring trench of desired depth is etched in the top portion of the dielectric film. During trench etching, the conformal BARC-1 film protects the via-edges from eroding and the planarizing BARC-2 film prevents punch-through of the via-bottom. Desired metal such as aluminum or copper are deposited within said dual damascene pattern.

(Fig. 5)



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