Abstract

**METHOD FOR INTEGRATED CIRCUIT FABRICATION USING PITCH MULTIPLICATION**

A mixed pattern, combining two separately formed patterns (177, 230), is formed on a single mask layer (160) and then transferred to the underlying substrate (110). The first of the separately formed patterns, (177), is formed by pitch multiplication and the second of the separately formed patterns, (230), is formed by conventional photolithography. The first of the separately formed patterns, (177), includes features (175) that are below the resolution of the photolithographic process used to form the second of the separately formed patterns, (230). A protective material (200) is deposited around the spacers (175). The spacers (175) are further protected using a hard mask (210) and then photoresist (220) is formed and patterned over the hard mask (210). The photoresist pattern (230) is transferred through the hard mask (210) to the protective material (200). The combination of the patterns (177 and 230) made out by the spacers (175) and the protective material (200) is then transferred to an underlying amorphous carbon hard mask layer (160). The combined pattern, having features of difference sizes, is then transferred to the underlying substrate (110).

Figure 11