

PHOTOLITHOGRAPHY METHOD AND PHOTOLITHOGRAPHY SYSTEM

Abstract

The present invention relates to a photolithography method and a
5 photolithography system. The method comprises: (1) forming a negative
photoresist layer on a substrate using a negative photoresist, and forming a
positive photoresist layer on the negative photoresist layer using a positive
photoresist; (2) patterning the negative photoresist layer and the positive
photoresist layer to form a positive pattern region on the positive photoresist
10 layer and a negative pattern region on the negative photoresist layer, wherein s
size of the positive pattern region is larger than a size of the negative pattern
region; (3) developing the positive photoresist layer with developer for positive
photoresist to remove the positive photoresist in the positive pattern region; and
(4) developing the negative photoresist layer with developer for negative
15 photoresist to remove the negative photoresist located near the negative pattern
region, thereby providing an exposed region associated with a size of the
positive pattern region and a size the negative pattern region, to expose the
substrate. Compared with existing single-exposure photolithography technology,
the method of the present invention is simple and a line width smaller than that
20 of the conventional technology can be achieved by pattern contouring. The
method can be widely used in semiconductor process and has extensive values
of research and application.

[Fig. 4]

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