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(54) **EXTREME ULTRA-VIOLET (EUV)
LITHOGRAPHY PROCESSES FOR
PATTERNING PHOTORESIST AND
PHOTOLITHOGRAPHY MASKS USED
THEREIN**

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(57) **ABSTRACT**

An extreme ultra-violet (EUV) lithography process includes lithographically patterning first through fourth photoresist regions on respective first through fourth regions of a semiconductor substrate, in sequence, using a mask. This mask includes a main area in which a main pattern is defined, a first dummy area in which a first dummy pattern is defined, a second dummy area in which a plurality of second sub-dummy patterns are defined at corresponding corners of the mask, and an alignment area including an alignment pattern therein that is spaced farther from a center of the main area relative to the first and second dummy areas. During the lithographically patterning, at least part of the alignment area on the first region of the substrate is exposed at least three times to EUV light, using the mask.

