

**METHOD OF GENERATING A PHOTOLITHOGRAPHY PATTERNING DEVICE,
COMPUTER PROGRAM, PATTERNING DEVICE, METHOD OF DETERMINING THE
POSITION OF A TARGET IMAGE ON OR PROXIMATE A SUBSTRATE,
MEASUREMENT DEVICE, AND LITHOGRAPHIC APPARATUS**

ABSTRACT

A method of generating a photolithography patterning device for transferring a pattern formed in the patterning device onto a substrate utilizing a lithographic projection apparatus includes defining features within the pattern formed in the device, wherein the features have dimensions and orientations chosen to create a desired image on the substrate during pattern transfer; and adjusting the dimensions of the features to compensate the desired image for displacement and dimension errors introduced by the effective shadow angle of the radiation on the features during pattern transfer or correlated to the position of the features within the exposure slit during pattern transfer. A measurement device for determining the position of a target image on or proximate a substrate in a lithographic projection apparatus, wherein the target image is formed by features on a patterning device, includes a detector configured to measure the position of the target image on or proximate the substrate, wherein the detector compensates the measured position of the target image for displacement and dimension errors introduced by the effective shadow angle of the radiation on the features of the patterning device during pattern transfer or correlated to the position of the features within the exposure slit during pattern transfer. A lithographic apparatus includes a measurement device.

Figure 6