

ABSTRACT

SUBSTRATE FOR MASK BLANK, SUBSTRATE WITH MULTILAYER REFLECTIVE FILM, REFLECTIVE MASK BLANK, REFLECTIVE MASK, METHOD OF MANUFACTURING FOR SUBSTRATE FOR MASK BLANK, METHOD OF MANUFACTURING FOR SUBSTRATE WITH MULTILAYER REFLECTIVE FILM, AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Provided is a substrate for a mask blank and the like, which is capable of effectively detecting critical defects since few false defects are detected, even in high sensitivity defect inspection device using various wavelengths of light. More specifically, provided is a substrate for a mask blank used in lithography, wherein the primary surface of the substrate for a mask blank on the side where a transfer pattern is formed is such that when measured using a white light interferometer with a resolution of 640 X 480 pixels, a 0.14 X 0.1 mm region exhibits a power spectral density of  $4 \times 10^6 \text{ nm}^4$  or less at a spectral frequency of  $1 \times 10^{-2}$  to  $1 \mu\text{m}^{-1}$ , and a 1 X 1  $\mu\text{m}$  region exhibits a power spectral density of  $10^4$  or less at a spectral frequency of  $1 \mu\text{m}^{-1}$  or higher.

Fig. 7