

PHASE SHIFT MASK BLANK, MANUFACTURING METHOD OF PHASE SHIFT MASK, AND PHASE SHIFT MASK

ABSTRACT

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A phase shift mask blank including a transparent substrate, an etching protection film formed on the transparent substrate, and a phase shift film formed in contact with the etching protection film, for exposure light being ArF excimer laser. The etching protection film is composed of a material containing hafnium and oxygen or hafnium, silicon and oxygen, and has a thickness of 1 to 30 nm, and a transmittance of not less than 85% with respect the exposure light, and the phase shift film is composed of a material containing silicon and being free of hafnium, and has a thickness of 50 to 90 nm.

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[Figure 2]