

Halftone Phase Shift Photomask Blank,
Halftone Phase Shift Photomask and Pattern Exposure Method

ABSTRACT

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A halftone phase shift photomask blank comprising a transparent substrate and a halftone phase shift film is provided. The phase shift film consists of Si and N, or Si, N and O, and is free of transition metals. The phase shift
10 film has a thickness of 40-70 nm, offers a transmittance of 10-40% and a phase shift of 150-200° relative to light of wavelength up to 200 nm, and is resistant to cleaning chemicals.

15 (no figure)