

Halftone Phase Shift Photomask Blank, Making Method, and
Halftone Phase Shift Photomask

ABSTRACT

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A halftone phase shift photomask blank is provided comprising a transparent substrate and a halftone phase shift film thereon having a phase shift of 150-200° and a transmittance of 9-40%. The halftone phase shift film
10 consists of a transition metal, Si, O and N, has an average transition metal content of at least 3 at%, and is composed of a plurality of layers including a stress relaxation layer having an oxygen content of at least 3 at% and a phase shift
15 adjusting layer having a higher oxygen content of at least 5 at%.

(No suitable figure)