

ABSTRACT

A halftone phase shift film containing Si and N and/or
5 O is deposited on a transparent substrate by reactive
sputtering of a Si-containing target with a reactive gas
containing N and/or O. One layer is sputter deposited while
the reactive gas flow rate is set equal to or lower than the
lower limit of the reactive gas flow rate in the hysteresis
10 region, and another layer is sputter deposited while the
reactive gas flow rate is set inside the lower and upper
limits of the reactive gas flow rate in the hysteresis region.
The phase shift film exhibits satisfactory in-plane
uniformity of optical properties.