

PATTERN SHEET, SEMICONDUCTOR INTERMEDIATE PRODUCT, AND HOLE ETCHING METHOD

ABSTRACT

The present disclosure discloses a pattern sheet, a semiconductor intermediate product, and a hole etching method. The pattern sheet includes a substrate, a dielectric layer, and a mask structure. The mask structure includes a multi-layer mask layer. An uppermost mask layer is a photoresist layer. A thickness of each layer of the mask layer and etching selectivity ratios between the layers below the mask layer satisfy that in each two neighboring layers of the mask layer, a lower layer of the mask layer is etched to form a through-hole penetrating a thickness of the lower layer of the mask layer, a remaining thickness of the upper layer of the mask layer is greater than or equal to zero. While the dielectric layer is etched to form a through-hole penetrating a thickness of the dielectric layer, a remaining thickness of all the mask layer above the dielectric layer is greater than zero. While the hole with the set depth is formed in the substrate, the remaining thicknesses of all the mask layer above the dielectric layer is greater than or equal to zero. By using the above technical solution, a hole with a larger depth can be formed in the substrate to meet the application requirements.

Fig. 3