

**METHOD OF FORMING ELECTRICAL INTERCONNECTS
WITHIN INSULATING LAYERS THAT FORM
CONSECUTIVE SIDEWALLS**

ABSTRACT

Methods of forming integrated circuit device having electrical interconnects include forming an electrically insulating layer on a substrate and forming a hard mask on the electrically insulating layer. The hard mask and the electrically insulating layer are selectively etched in sequence using a mask to define an opening therein. This opening, which may be a via hole, exposes inner sidewalls of the hard mask and the electrically insulating layer. The inner sidewall of the hard mask is then recessed relative to the inner sidewall of the electrically insulating layer and a sacrificial reaction layer is formed on the inner sidewall of the electrically insulating layer. This reaction layer operates to recess the inner sidewall of the electrically insulating layer. The reaction layer is then removed to define a wider opening having relatively uniform sidewalls. This wider opening is then filled with an electrical interconnect.

Figure 8

15