ABSTRACT

A NOVEL EMBEDDED METAL SCHEME FOR LIQUID CRYSTAL DISPLAY (LCD) APPLICATION

A process for forming a planarized metal layer by forming the plug and overlying metal interconnect simultaneously in order to maintain a uniform gap between the passivation layer of a bottom substrate and the top substrate of a LCD integrated circuit device is described. Semiconductor device structures in and on a semiconductor substrate wherein the semiconductor device structures are covered by an insulating layer. A trench is patterned into the insulating layer and a via opening is made within the trench through the insulating layer to one of the underlying semiconductor device structures. A metal layer is deposited overlying the insulating layer and within the trench and via opening. The metal layer overlying insulating layer is polished away leaving the metal layer within the trench to form a metal pixel and within the via opening to form an interconnect between the metal pixel and the underlying semiconductor device wherein the top surface of the substrate is planarized. A passivation layer is deposited overlying the top surface of the substrate. A liquid crystal material layer is formed overlying the passivation layer and sandwiched between the bottom substrate and a second semiconductor substrate to complete the fabrication of the liquid crystal display integrated circuit device.

(FIGURE 2 IS SUGGESTED FOR PUBLICATION)