

高穩定度積體式非晶矽薄膜電晶體之閘極驅動電路

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摘 要

非晶矽薄膜電晶體(a-Si TFTs)為大面積面板電路之主流元件,由於其製程上低溫低成本以及在電性與空間上的均勻分佈等優點,在平面顯示器,或者影像陣列等大面積面板電路當中,皆以非晶矽薄膜電晶體作為畫素電路。近年來,為了實現將系統整合於面板之上(System-on-Panel),積體式非晶矽薄膜電晶體閘極驅動電路在液晶顯示器(Liquid Crystal Display, LCD)上的應用備受關注,不僅符合低成本製程,同時也能節省 LCD 水平掃描線驅動 IC 的成本。在本論文中,提出了一個高穩定度的非晶矽薄膜電晶體之移位暫存器,適用於主動陣列液晶顯示器(Active Matrix LCD)的水平掃描驅動電路,且根據使用於電路中的非晶矽薄膜電晶體元件可靠度的量測,預估此電路的操作壽命將超過 15000 小時。

Highly Reliable Integrated Amorphous Silicon Thin Film Transistors Gate Driver

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Abstract

The amorphous silicon thin-film transistors (a-Si TFTs) technology is the mainstay of large area electronics such as flat panel displays, and imaging arrays due to its spatial uniformity and low-temperature processing cost benefits. Recently, integrated driver circuit using a-Si:H TFTs on glass is gaining attention in liquid crystal display LCD technology, since it can reduce fabrication cost by eliminating driver ICs and related processes. In this thesis, a reliable shift register consisted of amorphous silicon thin film transistors is proposed for scan driver circuit of active matrix liquid crystal display (AMLCD). The lifetime of proposed circuit is evaluated based on the reliability measurement data of the a-Si TFTs used and it is estimated to over 15000 hours. Therefore, a highly reliable scanning circuit can be achieved.

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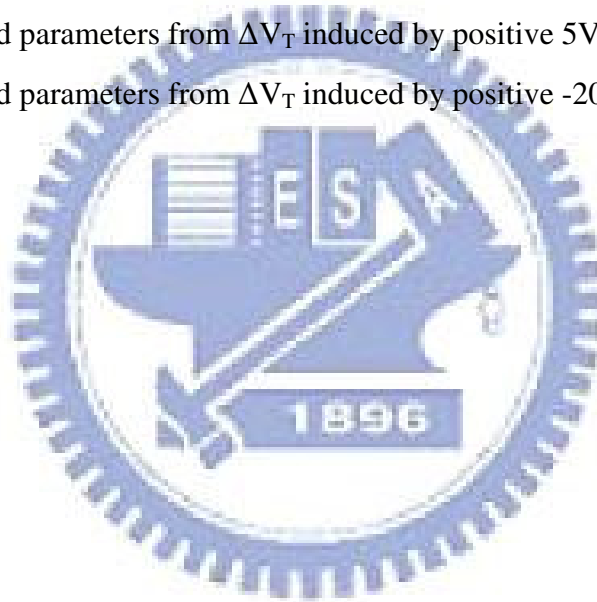


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