

Investigation of Polycrystalline silicon TFT's electrical characteristics

Hadjira Tayoub, Baya Zebentout, Zineb Benamara

Abstract : Low-temperature polycrystalline silicon thin film transistors (poly-Si TFT's) on plastic substrate have been studied because of their high performance in Active Matrix Liquid Crystal Displays (AMLCD's) and Active Matrix Organic Light-Emitting Diode (AMOLED) applications. The purpose of this work is to simulate the impact of varying the electrical and physical parameters (the interface states, active layer's thickness and BBT model) in the transfer characteristics of poly-Si TFT to extract the electrical parameters like threshold voltage, mobility and to evaluate the device performance. The device was simulated using the ATLAS software from Silvaco. The results show that the electrical and physical parameters of poly-Si TFT affect significantly its transfer characteristics.

Keywords : Poly-Si TFT, TCAD-ATLAS, electrical characteristics