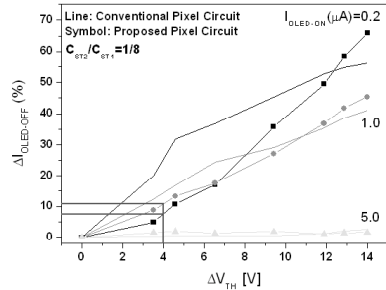
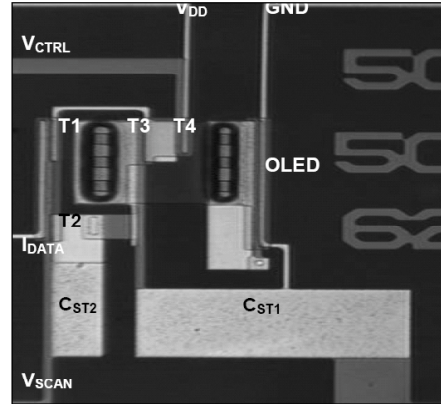

Current-Scaling a-Si:H TFT Pixel Electrode Circuit for AM-OLEDs

Hojin Lee, Yen-Chung Lin, and Jerzy Kanicki

Today, amorphous silicon thin-film transistor (a-Si:H TFT) active-matrix organic light-emitting displays (AM-OLEDs) emerge as very promising candidates for the next-generation flat-panel displays. In this project, we fabricated and characterized the a-Si:H TFT pixel electrode circuit with the current-scaling function that can be used for AM-OLEDs. The circuit consists of three switching TFTs (T1, T2, and T4), one driving TFT (T3), and two storage capacitors (C_{ST1} , C_{ST2}). This circuit showed an enhanced current-scaling performance for a high-resolution a-Si:H TFT AM-OLEDs in comparison to other types of current-driven pixel circuits. To evaluate the thermal and electrical stability of the fabricated pixel electrode circuits, we performed the current temperature stress experiments. In general, this circuit showed a better electrical and thermal stability for different OLED current levels in comparison to the conventional current-driven pixel-electrode circuit. The long-term goal of this project is to implement these pixel circuits in future AM-OLED prototypes. This project was partially supported by LG Philips LCD Research and Development Center, Korea.



H. Lee, Y. C. Lin, H. P. D. Shieh, and J. Kanicki, *IEEE Trans. Elec. Dev.*, 54 (2007) 2403.