

IGZO-Based 2T-DRAM with Positive Threshold Voltage and Long Retention

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Abstract

We experimentally fabricated IGZO-based thin-film transistors (TFTs) with distinct film thicknesses and composition ratios to figure out the relation to threshold voltage (V_T) and on current. We utilized the TFT with positive V_T and relatively higher on current to further fabricate and demonstrate IGZO-based 2T-DRAM cells. The devices possess > 1000 s retention time and calculated off current $\sim 10^{-17}$ A/ μm with 0V biased WWL in read operation.

Keywords - Oxide semiconductors, IGZO, thickness, composition ratio, 2T-DRAM