

A TiO₂-based Volatile Threshold Switching Selector Device with 10⁷ non linearity and sub 100 pA Off Current.

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ABSTRACT

ReRAM crossbar arrays are known to be susceptible to the presence of the sneak current issue during the readout operations which undermines crossbar scaling. This problem can be solved by the addition of an highly non-linear two-terminal selector device. In this work we present a 5 nm thick TiO₂-based selector which exploits a volatile threshold resistive switching, so far unreported for this material. The device shows a current density up to 100 kA/cm², 10⁷ current non-linearity and a 4 V voltage margin, the highest reported for TiO₂-based selectors and sub 100 pA off current.