

Supporting Information

Transformation of Threshold Volatile Switching to Quantum Point Contact Originated Nonvolatile Switching in Graphene Interface Controlled Memory Devices

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Figure S1: Performance comparison of MS mode with re-fabricated D2 devices.

Figure S2: Comparison of graphene film in D2 devices.

Figure S3: The TS in graphene-based devices.

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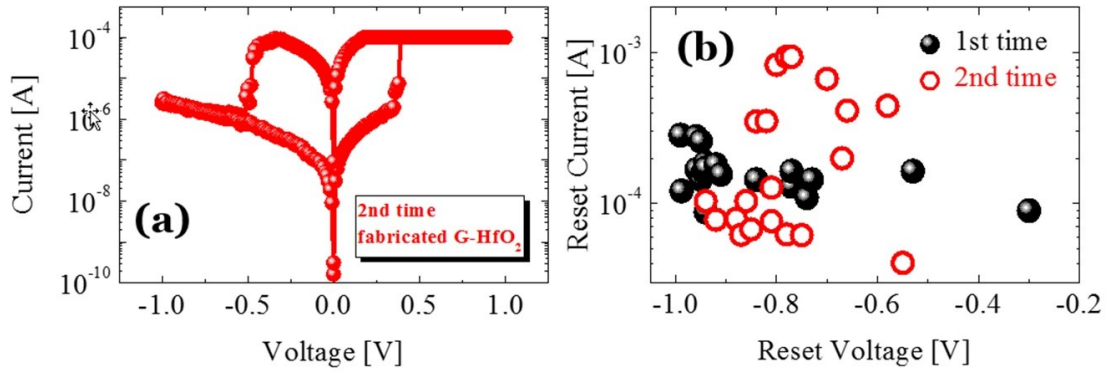


Figure S1: Performance comparison of MS mode with re-fabricated D2 devices. (a)

The I-V switching characteristics of the 2nd-time fabricated graphene-based D2 devices.

(b) The device-to-device variation of the reset current with reset voltage is showing symmetrical performances of the 1st-time and 2nd-time fabricated graphene-based D2 devices.

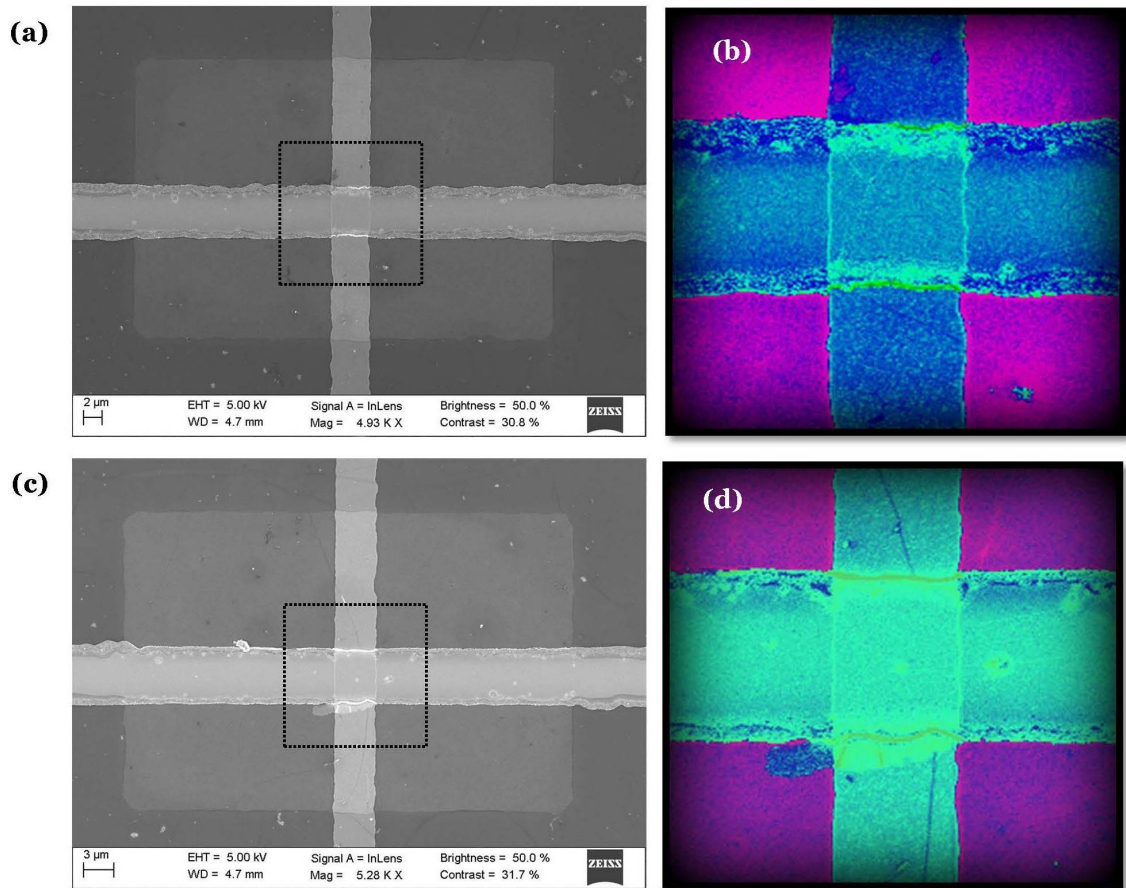


Figure S2: Comparison of graphene film in D2 devices. The SEM image of the D2 device (a) without and (c) with grain-boundary. Pseudo-colored SEM image of (b) a good cross-point and (d) a cross-point with prominent grain.

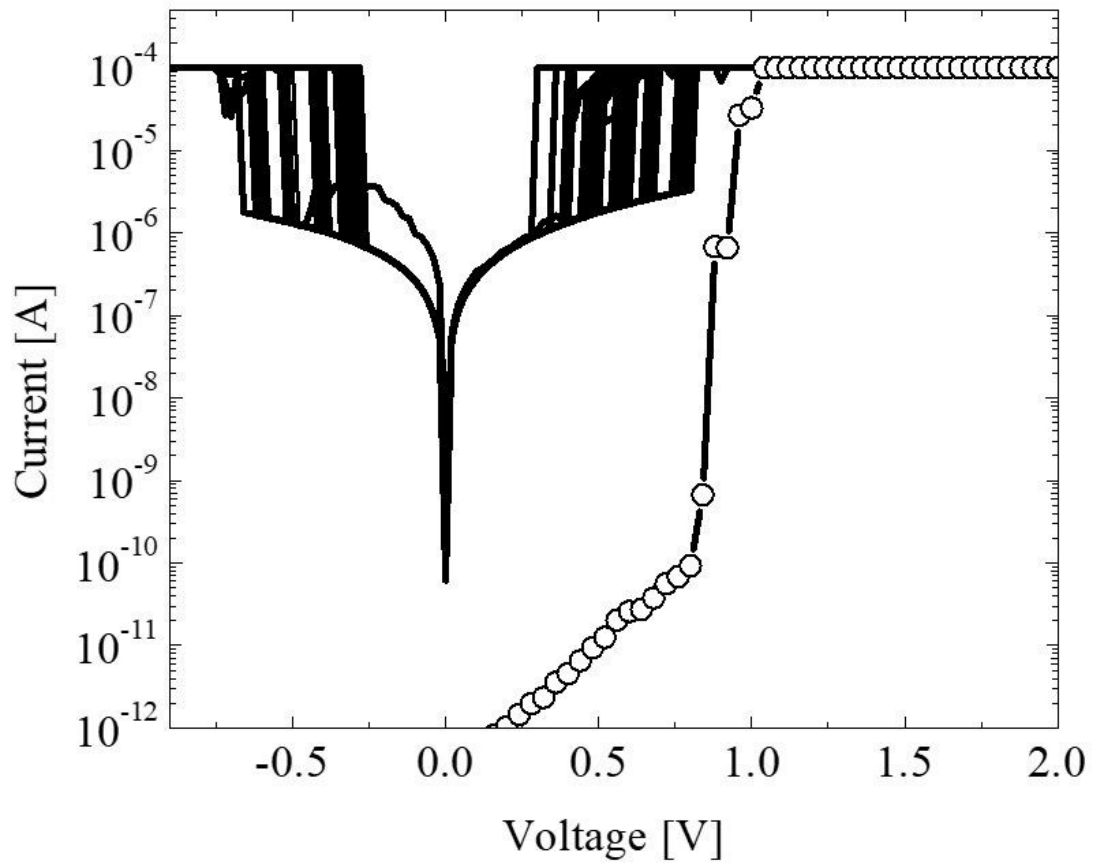


Figure S3: The TS in graphene-based devices. Defective graphene-barrier needed lower forming voltage $\sim +1$ V, can introduce bi-direction TS behavior in the graphene-based devices.