

Supporting figures for:

**Multiple value storage based on a nano-electronic-mechanical mechanism using
graphene flakes**

Neng WAN¹, Wei PAN², Shao-chun TANG³

1. SEU-FEI Nano-Pico Center, Key Laboratory of MEMS of Ministry of Education,
School of Electrical Science and Engineering, Southeast University, 210096 Nanjing,
China

2. Laboratory of Condensed Matter Spectroscopy and Opto-Electronic Physics, and
Key Laboratory of Artificial Structures and Quantum Control (Ministry of Education),
Department of Physics and Astronomy, Shanghai Jiao Tong University, Shanghai,
China

3. National Laboratory of Solid State Microstructures, College of Engineering and
Applied Sciences, Nanjing University, 210093 Nanjing, China

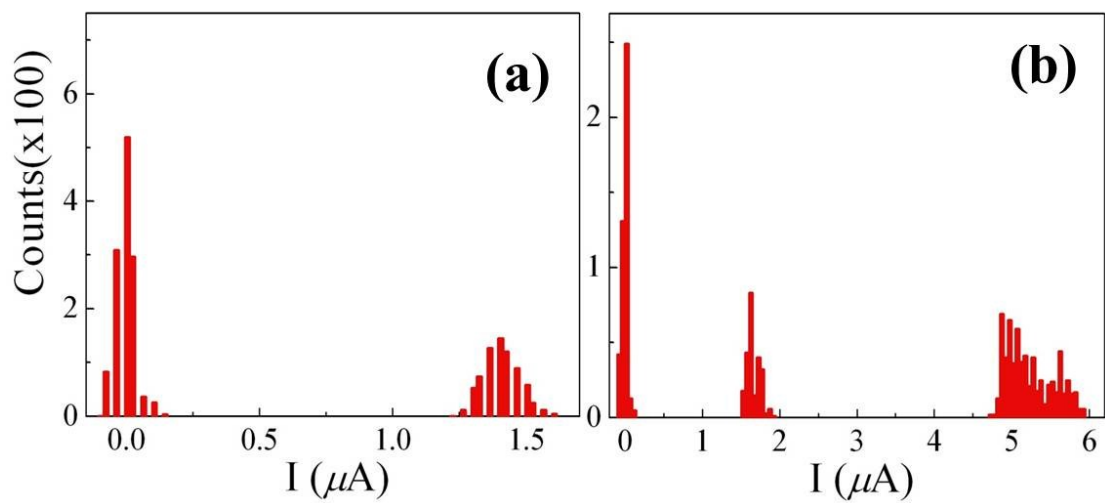


Figure S1. current level distribution of (a) the two-level storage mechanism and (b) the three-level storage mechanism.

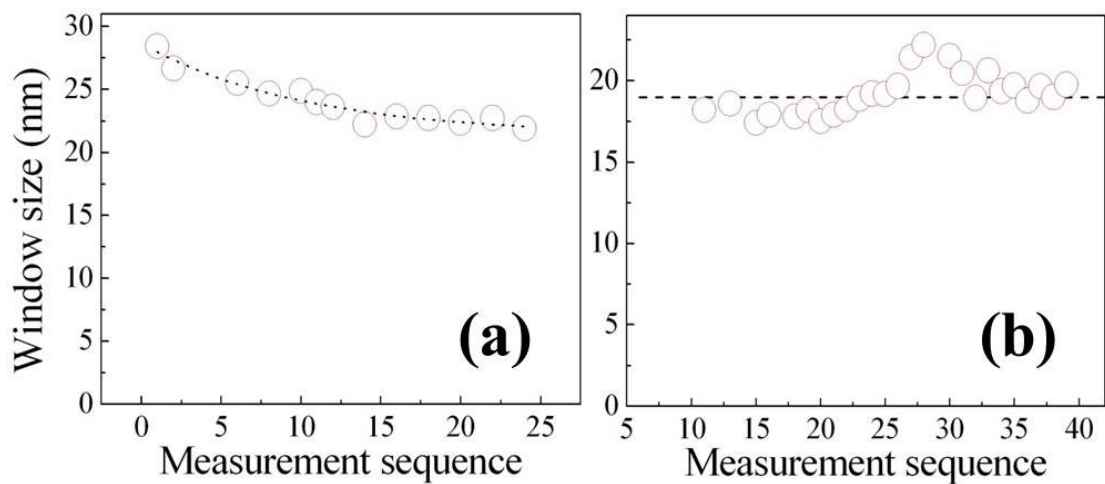


Figure S2. (a) window size change on the measurement sequence with an exponential dependence at the beginning. (b) window size variation around a averaged value when stabilized.

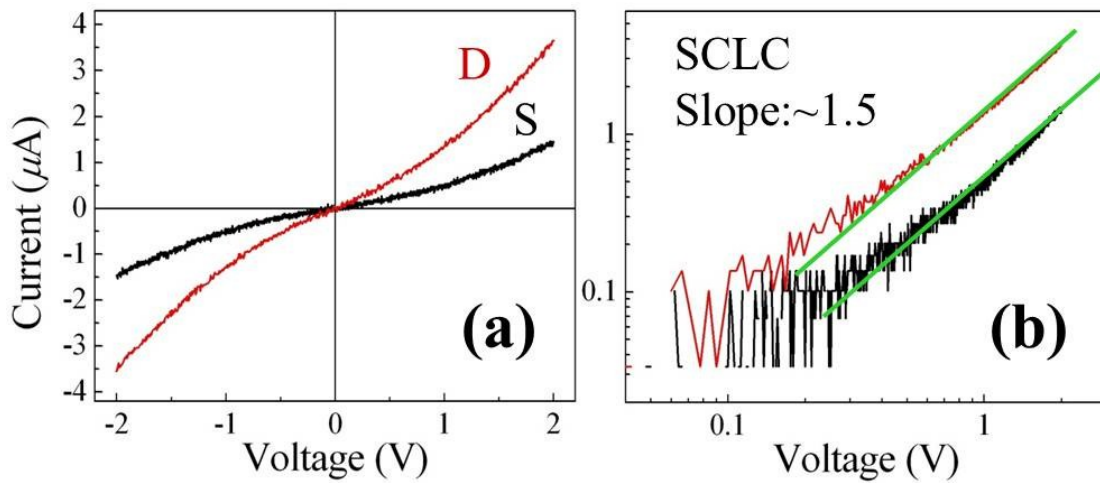


Figure S3. (a) I-V relationship of single contact (S) and the double contact (D), respectively. (b) log – log plot of the I-V relationship show a SCLC conducting mechanism with the slope of ~ 1.5 (green lines).

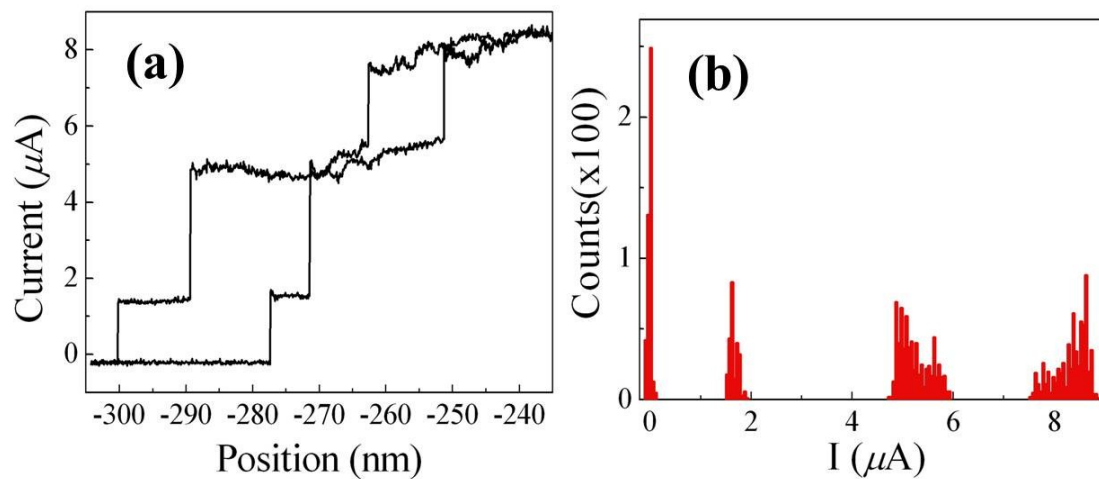


Figure S4. (a) A current – position relationship that failed to show four current-level storage mechanism but only a three current-level storage mechanism due to the lost of window overlapping. (b) Current level distribution from the current – position relationship.

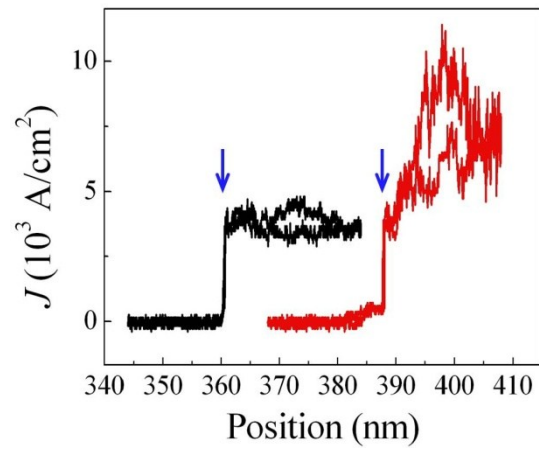


Figure S5. The lost of storage window in low current density condition. Low current density can be due to lower applied voltage. Arrows show positions of current level jumps. Two curves were shifted for a comparison.