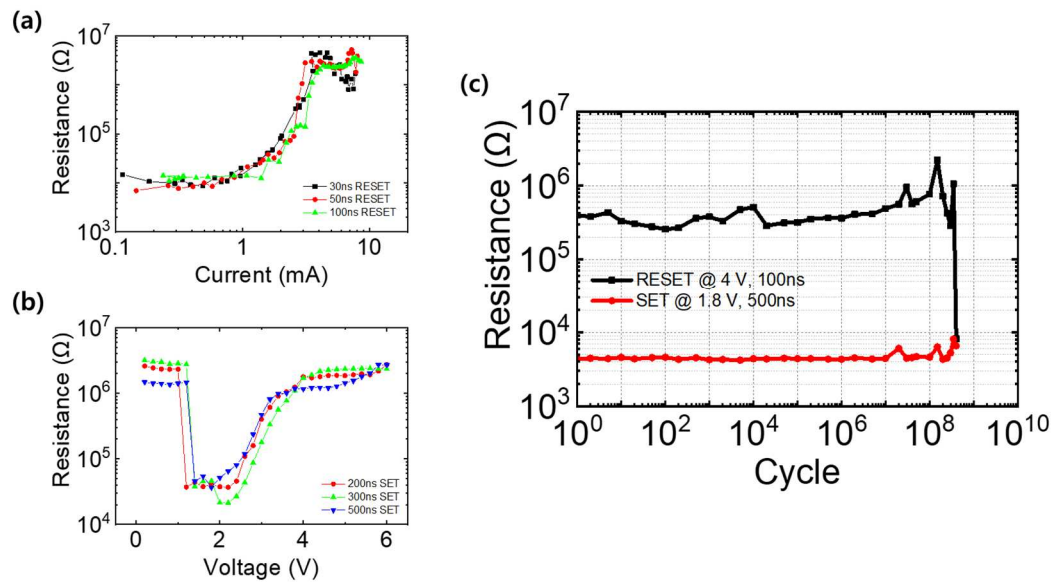


**Fig. 1. (a) Schematic diagram of V-PCM array structure (b) ALD of GST-225 films on vertical structure layered by metal and ILD SiO<sub>2</sub>**



**Fig. 2 The electrical characteristics of V-PCM (a) RESET pulse (b) SET pulse (c) Endurance test results**