

Supplementary Information

Human-interactive multi-functional electronic wallpaper integrated with sensors and memory

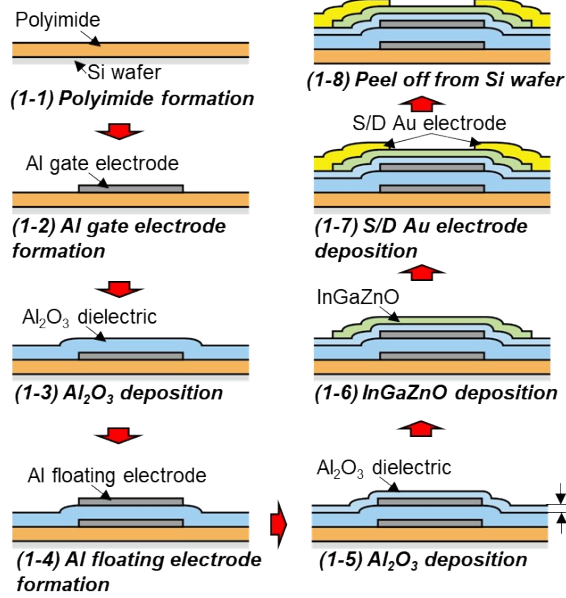
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Flexible floating gate memory



Temperature sensor & tactile sensor

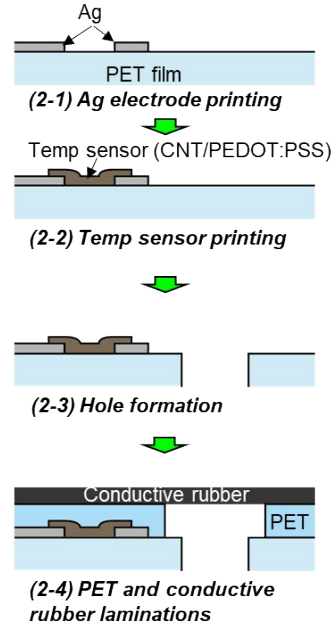


Figure S1. Schematic images of the fabrication process of a flexible FGRAM, tactile touch sensor, and temperature sensor.

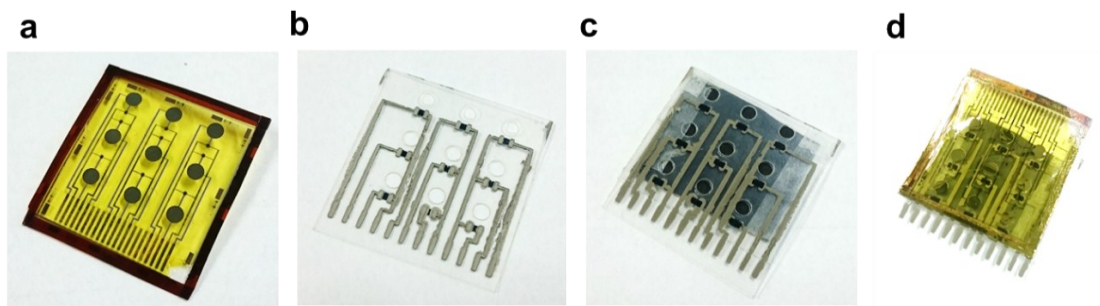


Figure S2. Photo of each layer. (a) Flexible FGRAM array, (b) temperature sensor array, (c) tactile touch sensor array laminated with a temperature sensor array, and (d) final device laminated with all layers.

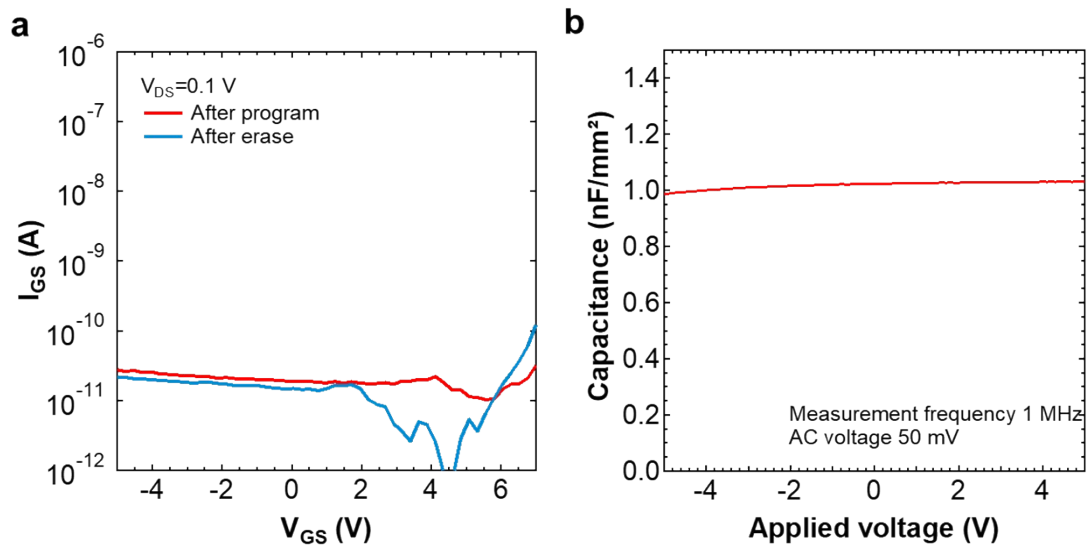


Figure S3. (a) Gate leakage current (I_{GS}) after applying an erasing voltage (-15 V) and a programming voltage (10 V). (b) Dielectric capacitance used in this study measured at 1 MHz frequency and 50 mV AC voltage.

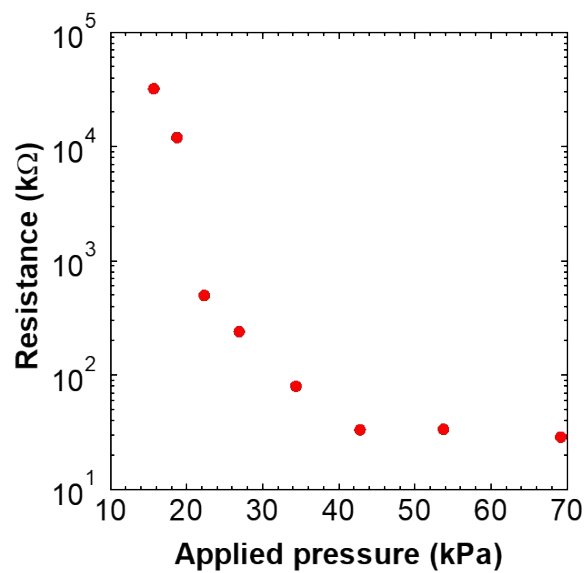


Figure S4. Resistance change of a tactile touch sensor as a function of applied pressure.

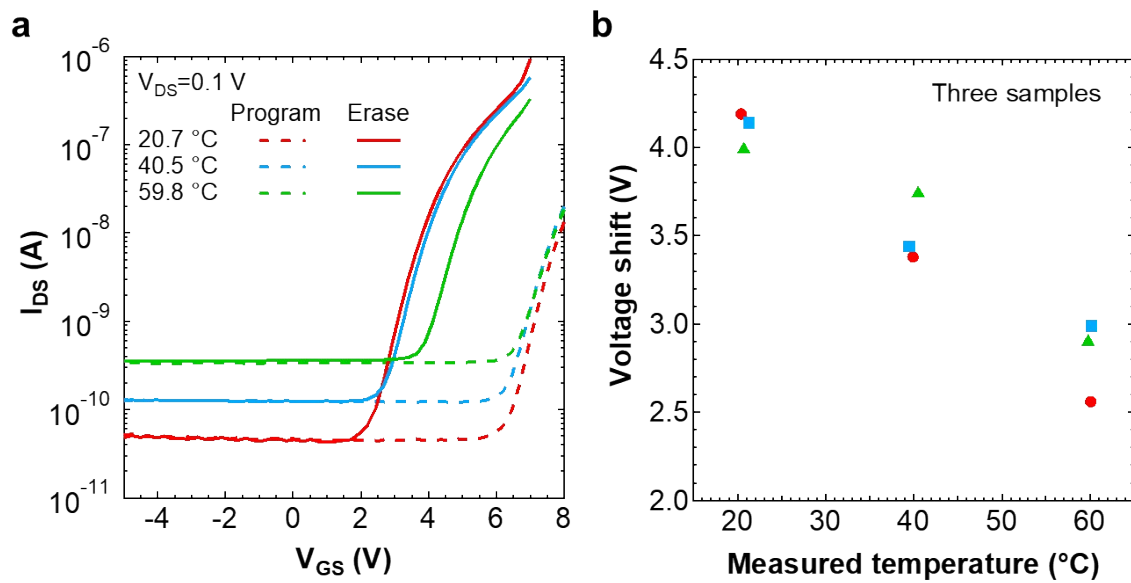


Figure S5. (a) I_{DS} - V_{GS} curves of the FGRAM at different temperature. (b) Compiled voltage shift of three samples at the measured temperature.

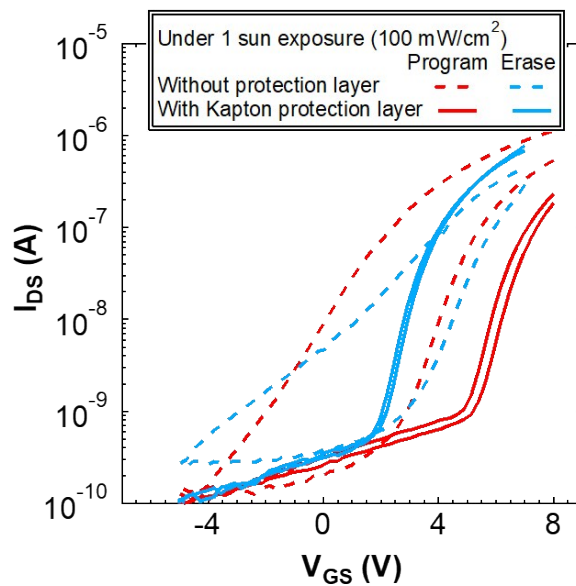


Figure S6. I_{DS} - V_{GS} curves of the FGRAM under 1 sun exposure with and without a UV protection layer.

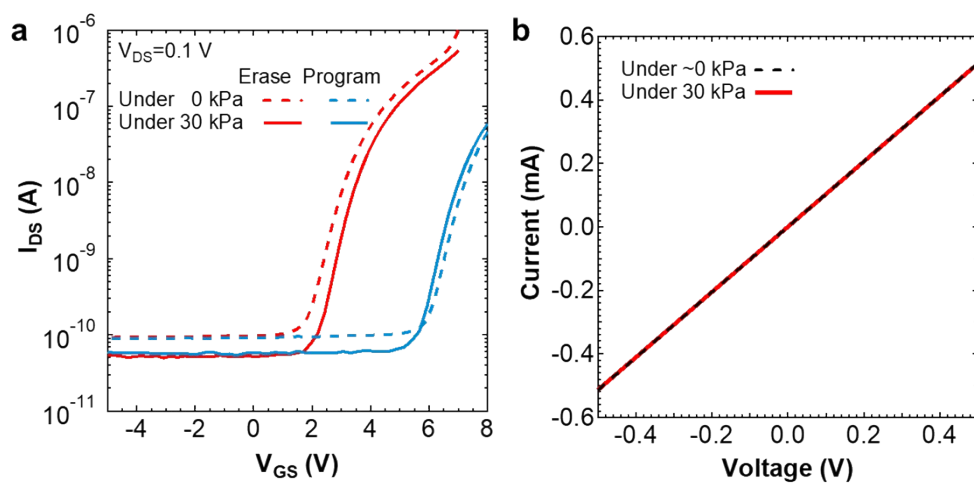


Figure S7. (a) I_{DS} - V_{GS} curves of the FGRAM and (b) I-V curves of the temperature sensor at room temperature under high outer pressure (30 kPa).