Supporting Information

Effect of Interlayer Spacing in Layered Perovskite on Resistive Switching Memory

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Figure S1. Line intercept method for estimating the average grain size of (a) (An)$_2$PbI$_4$, (b) (BzA)$_2$PbI$_4$, and (c) (PEA)$_2$PbI$_4$ films. The average grain sizes of (An)$_2$PbI$_4$, (BzA)$_2$PbI$_4$, and (PEA)$_2$PbI$_4$ films were determined to be 78.85 nm, 51.82 nm, and 47.92 nm, respectively.

Figure S2. Box-plotted (a) SET and (b) RESET voltages for (An)$_2$PbI$_4$, (BzA)$_2$PbI$_4$, and (PEA)$_2$PbI$_4$ resistive switching devices.
Figure S3. (a) Height of (BzA)$_2$PbI$_4$ film measured by α-step profiler. (b) I-V characteristics of (BzA)$_2$PbI$_4$ based memristor devices with different film thickness.

Figure S4. I-V characteristics of the Au/2D perovskite/Pt devices to analyze the electrochemical metallization mechanism. (a) (An)$_2$PbI$_4$, (b) (BzA)$_2$PbI$_4$, and (c) (PEA)$_2$PbI$_4$.

Figure S5. I-V characteristics of the Ag/PMMA/2D perovskite/Pt devices measured at 85 °C for (a) (An)$_2$PbI$_4$, (b) (BzA)$_2$PbI$_4$ and (c) (PEA)$_2$PbI$_4$. 
Figure S6. I-V characteristics of the Ag/PMMA/2D perovskite/Pt devices in ambient air condition under 50% humidity at 25 °C for (a) (An)$_2$PbI$_4$, (b) (BzA)$_2$PbI$_4$ and (c) (PEA)$_2$PbI$_4$. 