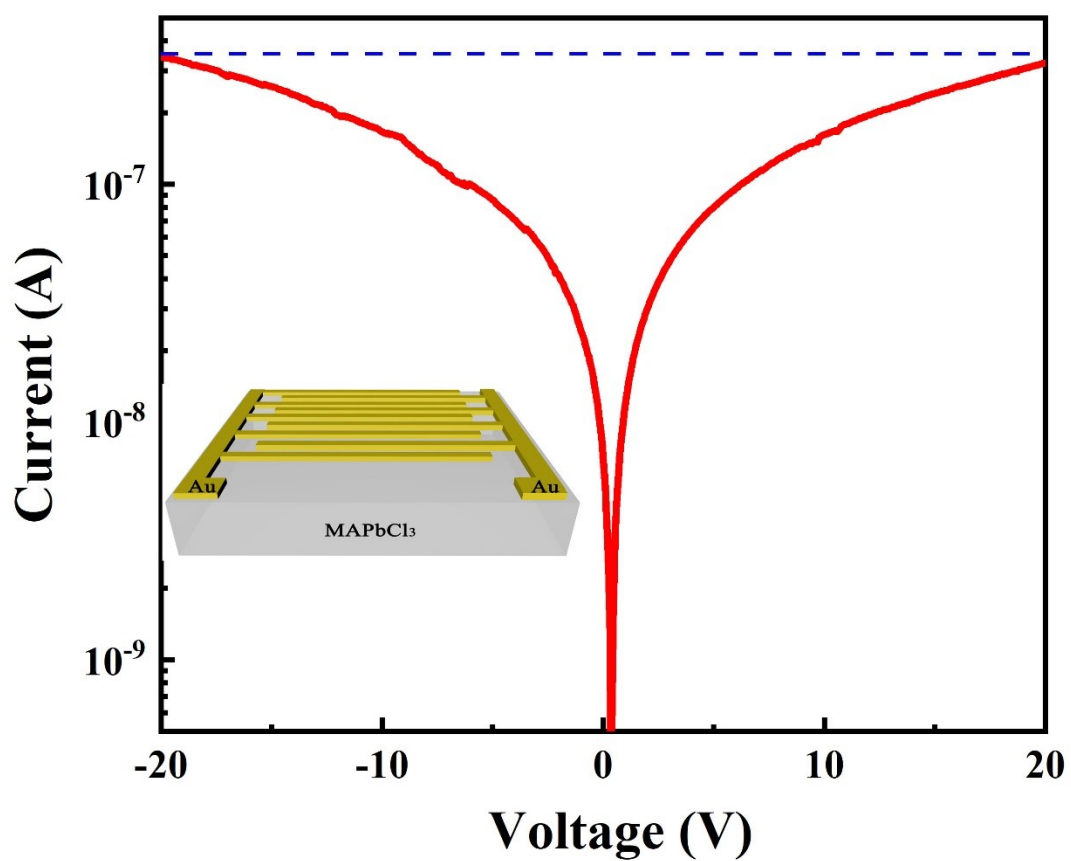


**Supplementary Fig. 1.** I-V curve of the photodetector based on the  $\text{CH}_3\text{NH}_3\text{PbI}_3$  single crystal with symmetrical Au electrodes measured under dark, with the inset showing a schematic diagram of the device structure.



**Supplementary Fig. 2.** (a) Responsivity of the Au/CH<sub>3</sub>NH<sub>3</sub>PbCl<sub>3</sub> single crystal/Ag structured photodetector tested at 0 V and 30 V after 6 months storage in a small round sample box under ambient conditions. The work stability of the device stored for 6 months 0 V (b) and 30 V (c) under the illumination of 415 nm.

