Electronic Supplementary Information

High-Performance photodetector based on inorganic

perovskite-ZnO heterostructure

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Fig. S1 Cross-sectional SEM image of the pristine CsPbBr₃ film on the glass substrate. It shows a similar thickness and morphology as on the ZnO layer.



Fig. S2 Normalized high-resolution photoresponse of the reference CsPbBr₃ photodetector. The rise time and decay time of the reference CsPbBr₃ photodetector are determined to be 130 and 150 µs, respectively.



Fig. S3 SEM images of the pristine $CsPbBr_3$ films on the glass substrates synthesized from the $CsBr:PbBr_2$ ratios of (a) 0.5, (b) 1.0, (c) 1.5, and (d) 2.0. The pristine $CsPbBr_3$ films deposited on glass showed nearly similar morphology as on the ZnO layer.



Fig. S4 (a) XRD spectrum and (b) SEM image of the CsPbBr₃/ZnO films prepared from the solution with the CsBr:PbBr₂ ratio of 3.0. Solid squares (\blacksquare) represent the peaks from the Cs₄PbBr₆ impurity phase. We suspect that the white particles observed in Figure S4b are Cs₄PbBr₆ grains.