

Supporting Information

Correlation of recombination and open circuit voltage in planar heterojunction perovskite solar cells

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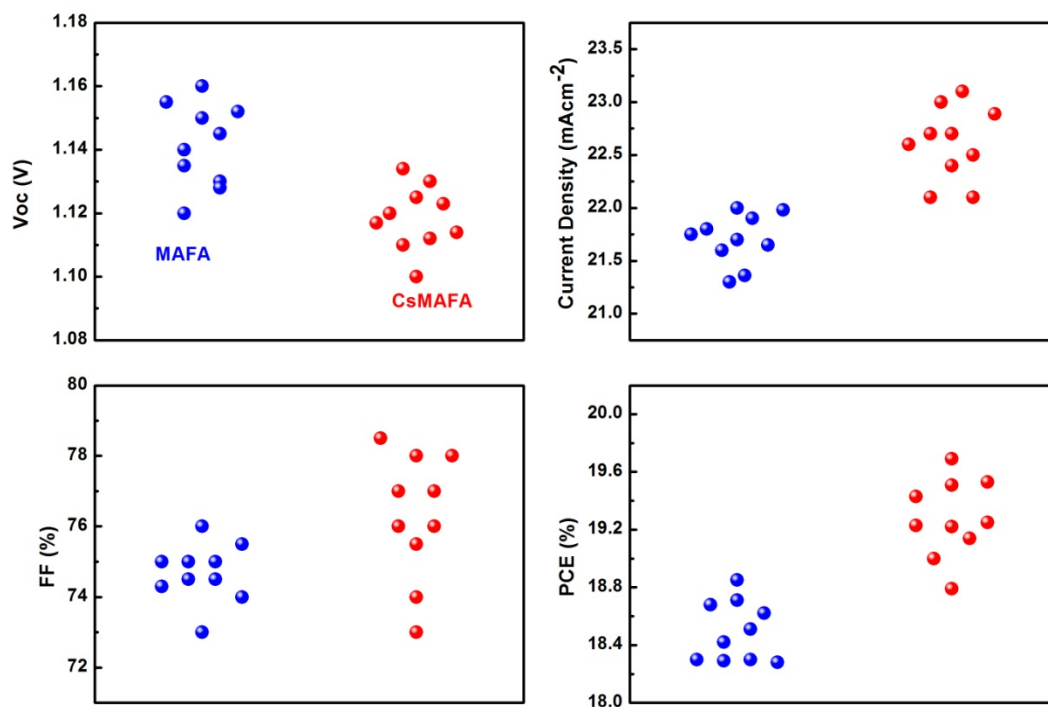


Figure S1. The statistical distributions of all collected photovoltaic parameters for the fabricated perovskite solar cells.

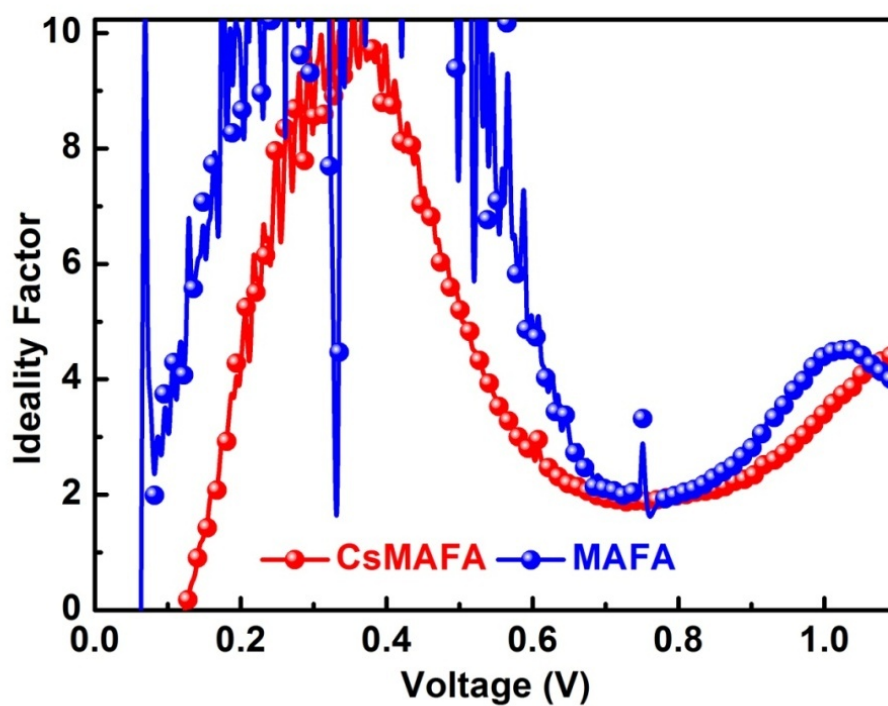


Figure S2. The plot of ideality factor versus voltage for the fabricated perovskite solar cells.

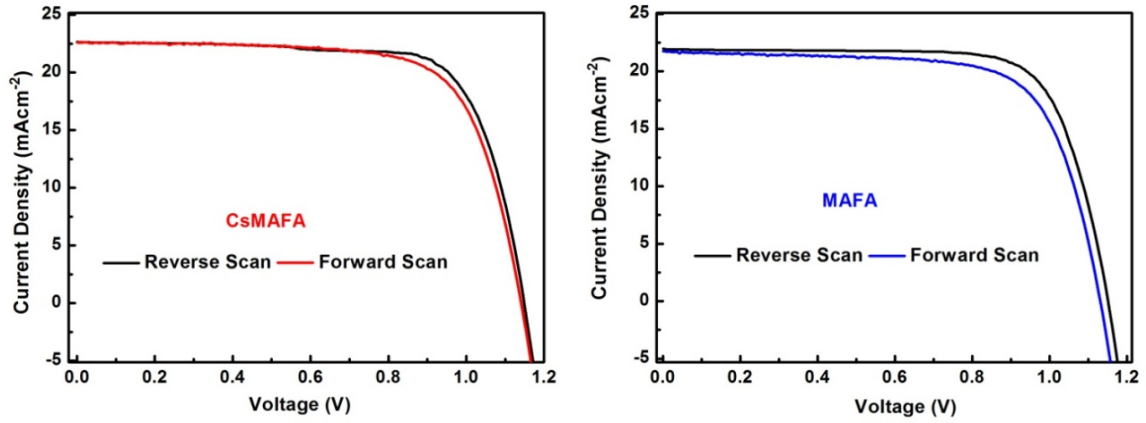


Figure S3. The J - V curves of the fabricated perovskite solar cells measured at 1 Sun illumination under forward and reverse scan directions.

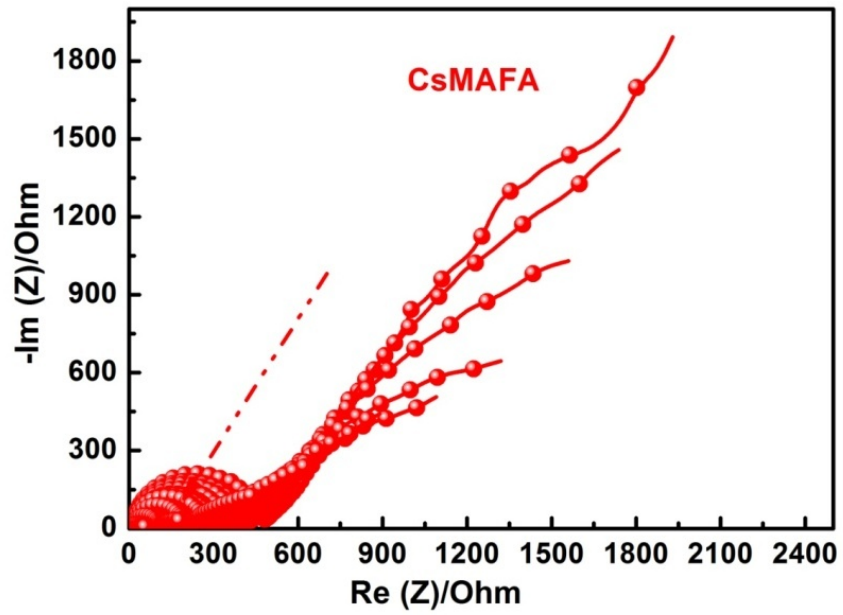


Figure S4. The IS spectra of CsMAFA PSCs measured under 1 Sun illumination as a function of applied bias.

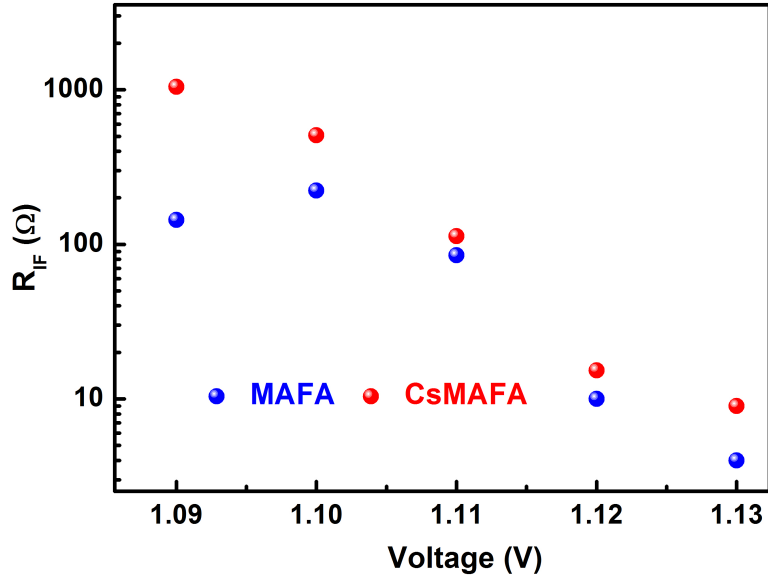


Figure S5. The extracted values of R_{if} for both the devices as a function of applied bias and measured at 1 Sun illumination.

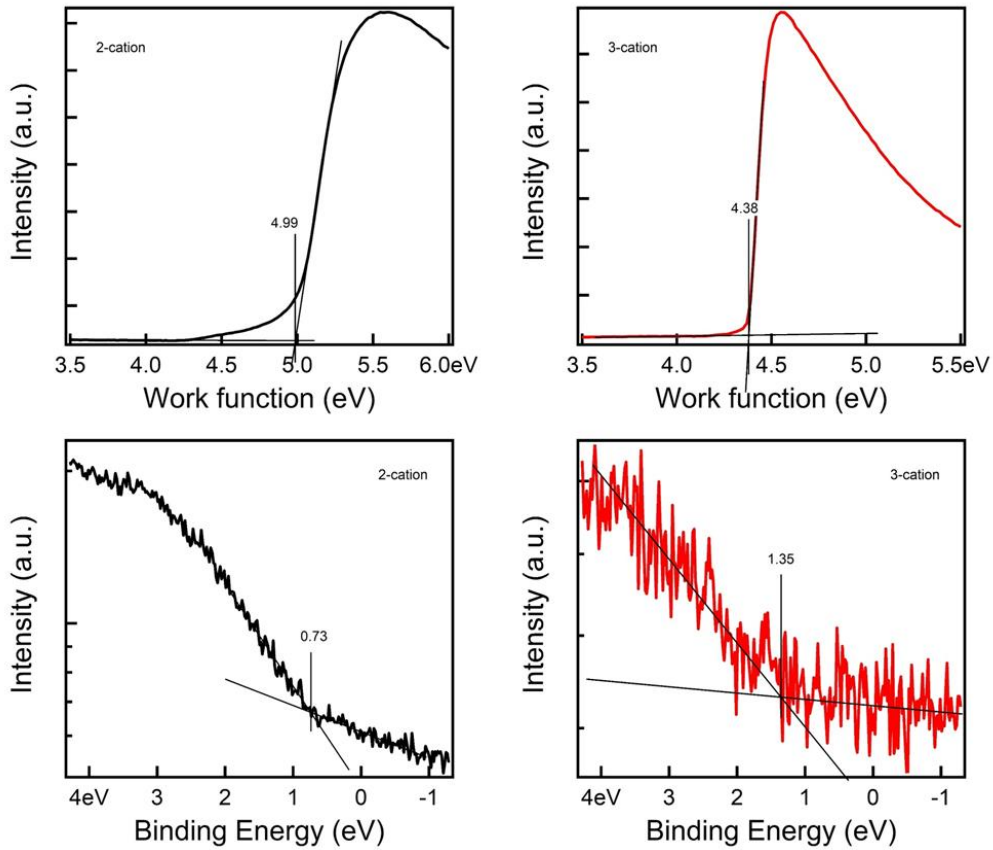


Figure S6. UPS measurement of both the MAFA and CsMAFA layers. Work function (a), (b) and valence band maximum (c), (d) measurements (lower) for double cation perovskite (left) and triple cation perovskites (right), respectively.

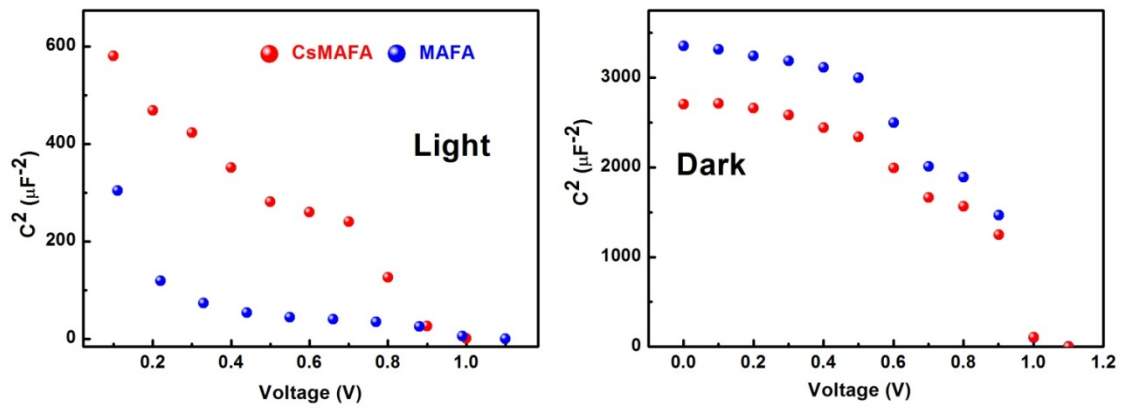


Figure S7. Mott-Schotky measurements of both the devices under illumination and dark conditions.