

Sensitized monolayer MoS₂ phototransistors with ultrahigh responsivity

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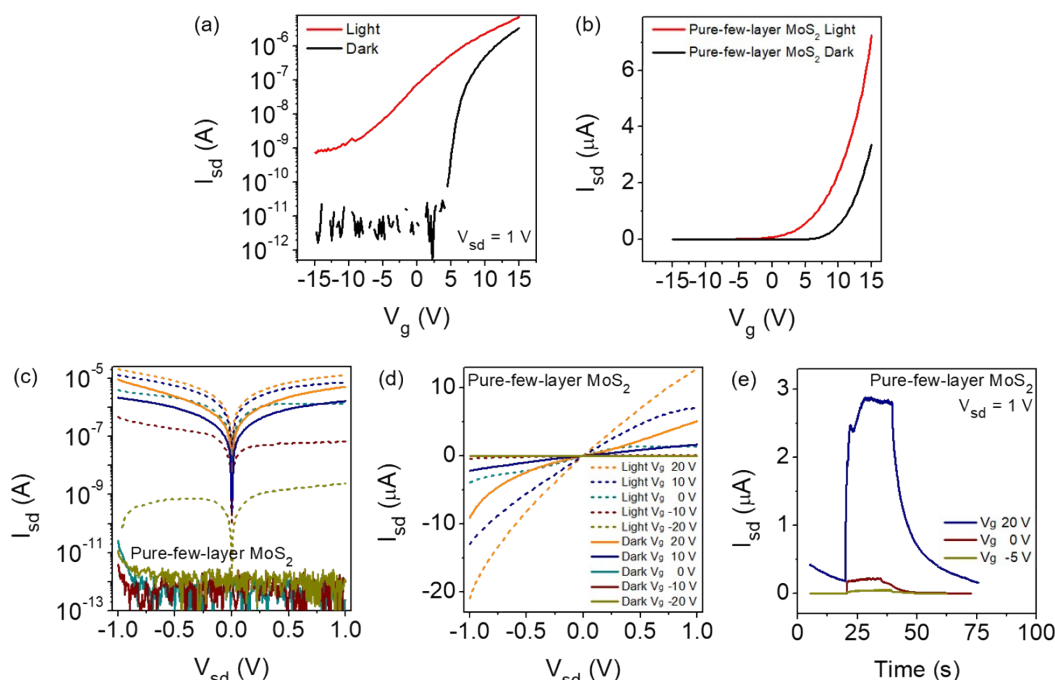


Fig. S1 (a) Transfer characteristics (I_{sd} - V_g) of the pure-few-layer MoS₂ based phototransistors under dark and light illumination in log scale. (b) The corresponding transfer curves in linear scale of y-axis. (c, d) Output characteristics I_{sd} - V_{sd} of few-layer MoS₂ device in dark and light illumination states in log and linear scale of y-axis, respectively. (e) Temporal response of the pure-few-layer MoS₂ at different back gate and a bias voltage V_{sd} of 1 V.

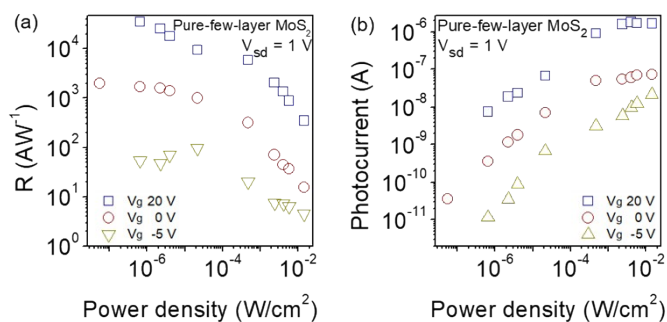


Fig. S2 (a) Responsivity and (b) photocurrent of pure-few-layer MoS₂ phototransistors at different back gate voltage and a bias voltage V_{sd} of 1 V as a function of light power density, respectively. Compared with the sensitized-MoS₂, the pure-few-layer MoS₂ device also exhibits a smaller responsivity and photocurrent at $V_{sd} = 1$ V.

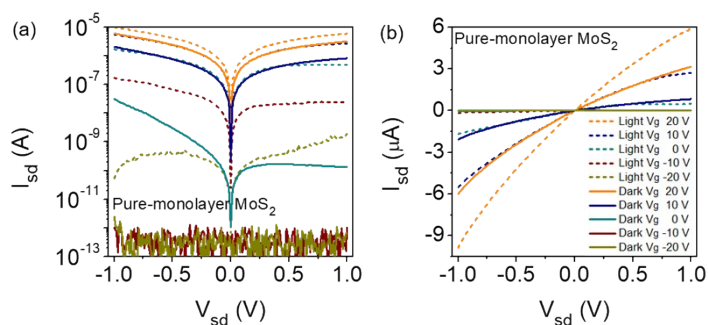


Fig. S3 (a) The output curves (I_{sd} - V_{sd}) of pure-monolayer MoS₂ device under dark and 14.4 mW/cm² illumination intensities for different back gate V_g in log scale. (b) Corresponding output curves with linear scale of y-axis. It can be observed that the drain current under both dark and illumination is also much smaller than that in sensitized-MoS₂ device.