

Supporting Information

Two-dimensional Te/ReS₂ van der Waals heterostructure photodetector with high photoresponsivity and fast photoresponse

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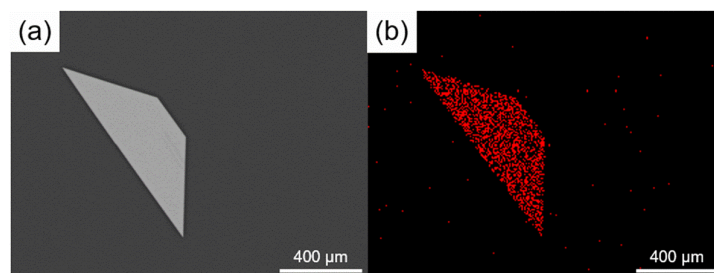


Figure S1 Basic characterization of 2D Te. (a) SEM image of synthesized 2D Te. (b) The corresponding EDS spectra of 2D Te shown in (a).

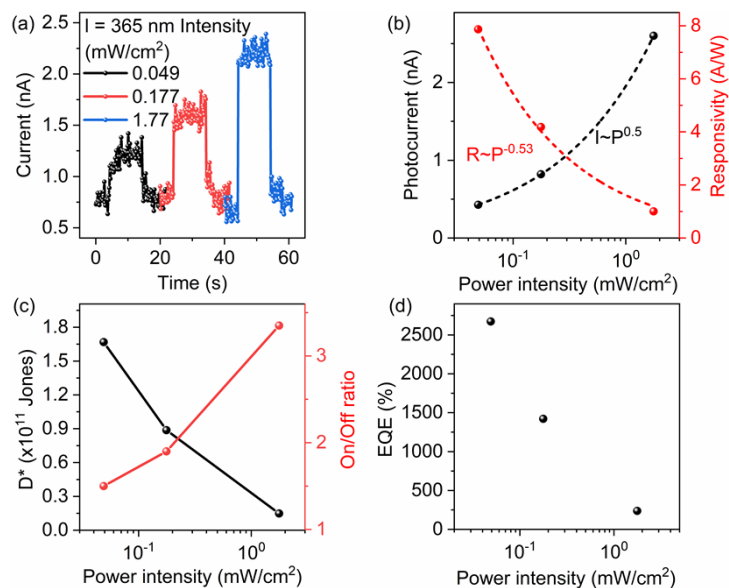


Figure S2 Photoresponse characteristics of the Te/ReS₂ vdWH device illuminated by 365 nm laser at a bias voltage of -1 V. (a) Time dependent photoresponse curves of the Te/ReS₂ vdWH device under different laser powers. (b) Photocurrent and responsivity of the device under different power intensities. (c) Specific detectivity (D^*) and photoresponse on/off ratio of the device. (d) External quantum efficiency (EQE) of the device under various laser intensities.

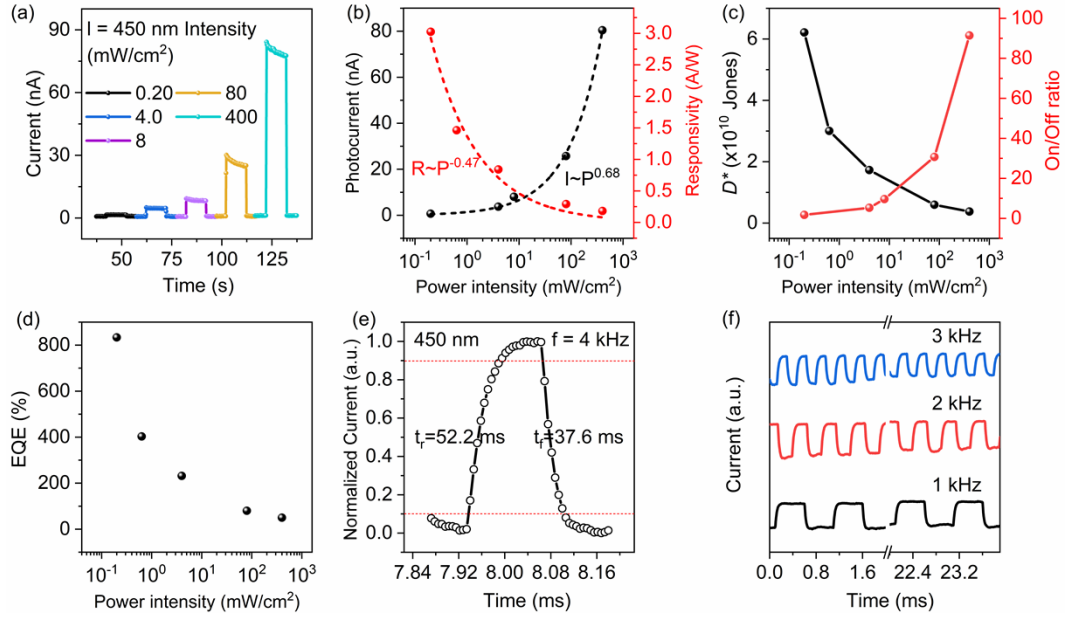


Figure S3 Photoresponse characteristics of Te/ReS₂ vdWH device under a 450 nm illumination at a bias voltage of -1 V. (a) Time dependent photoresponse curves of the Te/ReS₂ vdWH device under different laser powers. (b) Photocurrent and responsivity of the device under different power intensities. (c) Specific detectivity (D^*) and photoresponse on/off ratio of the device. (d) External quantum efficiency (EQE) of the device under various laser intensities. (e) Rise and decay time of the device under 4 kHz frequency. (f) Time dependent photocurrent of the device at various frequencies of the incident laser.

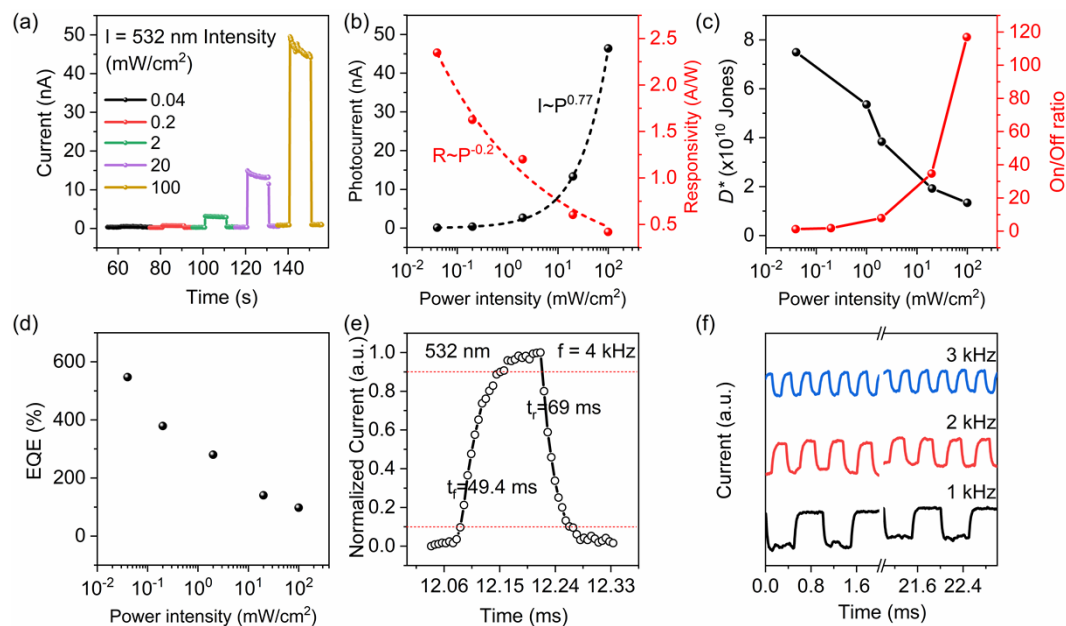


Figure S4 Photoresponse characteristics of Te/ReS₂ vdWH device under a 532 nm illumination at a bias voltage of -1 V. (a) Time dependent photoresponse curves of the Te/ReS₂ vdWH device under different laser powers. (b) Photocurrent and responsivity of the device under different power intensities. (c) Specific detectivity (D^*) and photoresponse on/off ratio of the device. (d) External quantum efficiency (EQE) of the device under various laser intensities. (e) Rise and decay time of the device under 4 kHz frequency. (f) Time dependent photocurrent of the device at various frequencies of the incident laser.

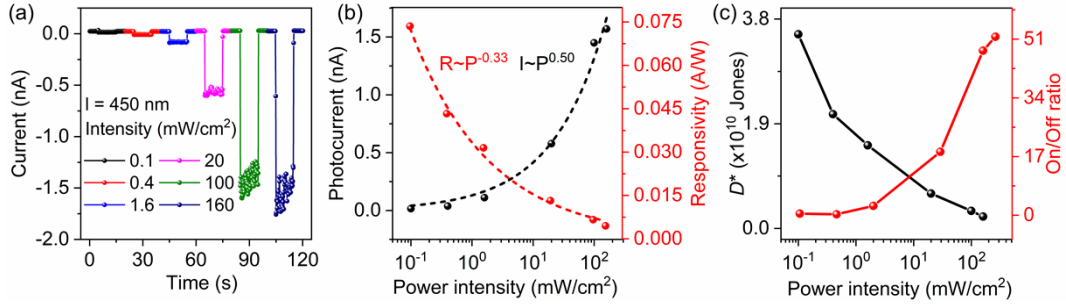


Figure S5 Photoresponse characteristics of the Te/ReS₂ vdWH device illuminated by 450 nm laser at 0 V bias voltage. (a) Time dependent photocurrents of the device under various incident light intensities. (b-c) Photocurrent, responsivity, D^* and on/off ratio of the device under various incident light intensities.

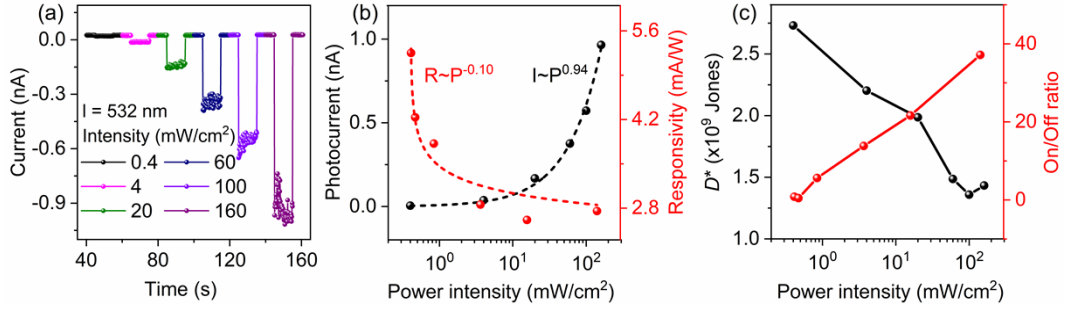


Figure S6 Photoresponse characteristics of the Te/ReS₂ vdWH device illuminated by 532 nm laser at 0 V bias voltage. (a) Time dependent photocurrents of the device under various incident light intensities. (b-c) Photocurrent, responsivity, D^* and on/off ratio of the device under various incident light intensities.