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Electrical transport measurements on few-layer MX₂ ZAIYAO FEI, JOE FINNEY, PAUL NGUYEN, BOSONG SUN, XIAODONG XU, DAVID COBDEN, Department of Physics, University of Washington — Transition metal dichalcogenides (MX₂) have recently been shown to have excellent optical properties, but their intrinsic electrical properties remain undetermined mainly due to a lack of good electrical contacts to these materials, especially at lower temperatures. We investigated a range of device geometries and contact techniques to improve the situation. So far we have achieved ambipolar gating of the linear-response conductance persisting at temperatures down to 4 K with contact resistance for both carrier of around 50 kilohm at room temperature. Four terminal Hall-bar measurements is also been made to separate the contact resistance, sheet resistivity, carrier density and mobility.

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