Transport properties of heterostructures composed of Mo(S,Se)$_2$ on $h$-BN QIONG ZHOU, NIHAR PRADHAN, SHAHRIAR MERAMAN, DANIEL RHODES, LUIS BALICAS, National High Magnetic Field Laboratory and Florida State University — The thickness-dependent tunable band gap of transition metal dichalcogenides in the visible region has generated a lot of interest on their optoelectronic properties. Our single crystals of molybdenum disulphide (MoS$_2$) and molybdenum diselenide (MoSe$_2$) were grown though a chemical vapor transport technique. Few-layered flakes of MoS$_2$ and MoSe$_2$ were mechanically exfoliated and transferred onto $h$-BN flakes, with this stack subsequently transferred onto pre-evaporated molybdenum bottom gate(s). Here, we report the fabrication and temperature-dependent electrical transport properties of few-layered MoS$_2$ and MoSe$_2$ field-effect transistors on $h$-BN.