## **Supplementary Information**

## Tunable interlayer coupling and Schottky barrier in graphene and Janus MoSSe heterostructures by applying external field

Yi Li<sup>a,b</sup>, Jiajun Wang<sup>\*,c</sup>, Baozeng Zhou<sup>\*,a</sup>, Fang Wang<sup>a</sup>, Yinping Miao<sup>a</sup>, Junqing Wei<sup>a</sup>, Baojun Zhang<sup>a</sup>, Kailiang Zhang<sup>\*,a</sup>

<sup>a</sup> Tianjin Key Laboratory of Film Electronic & Communicate Devices, School of Electrical and Electronic Engineering, Tianjin University of Technology, Tianjin 300384, China

<sup>b</sup> School of Materials Science and Engineering, Tianjin University of Technology, Tianjin 300384, China

<sup>c</sup> Tianjin Key Laboratory of Structure and Performance for Functional Molecules; Key Laboratory of Inorganic-Organic Hybrid Functional Materials Chemistry, Ministry of Education; College of Chemistry, Tianjin Normal University, Tianjin 300387, China

<sup>\*</sup>Corresponding author: <u>hxxywjj@tjnu.edu.cn</u>; <u>baozeng@tju.edu.cn</u>; <u>kailiang\_zhang@163.com</u>



Fig. S1. Electrostatic potential difference of MoSSe monolayer.



Fig. S2. HSE06 calculated band structures of all considered systems. The Fermi level is set to zero.