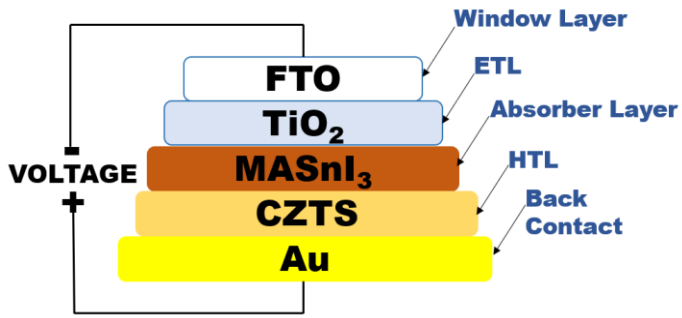
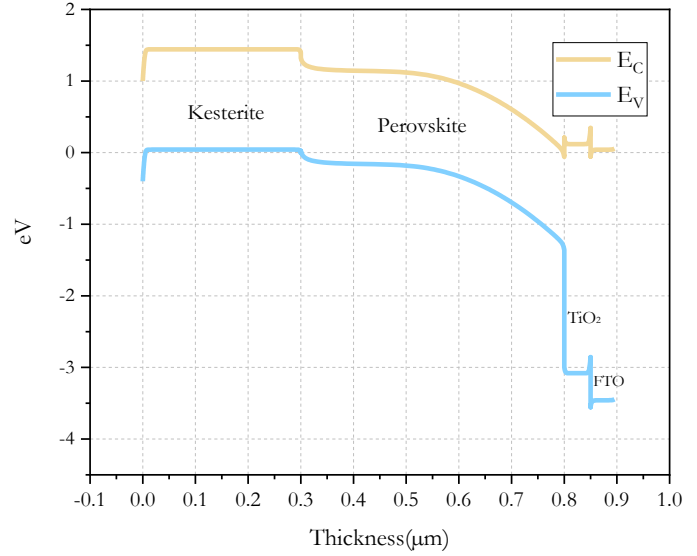


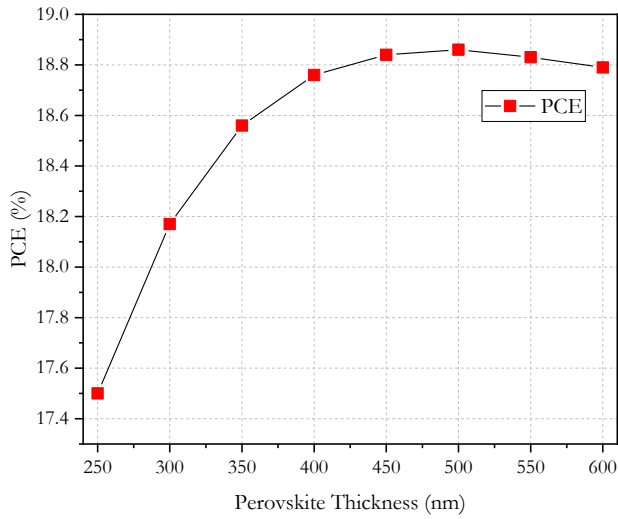
## FIGURES



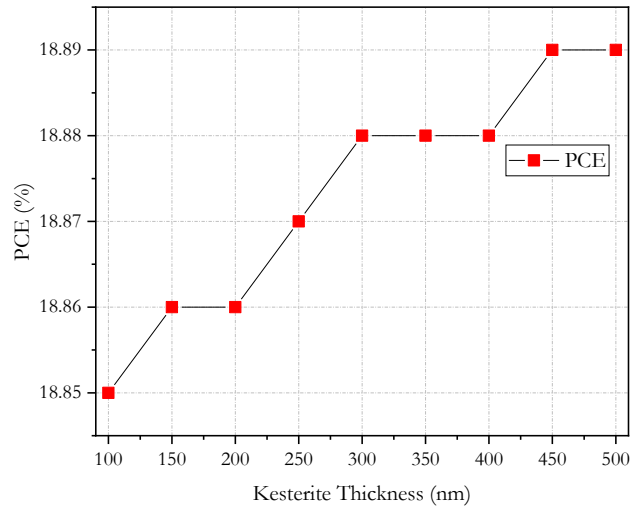
**Figure 1.** The *n-i-p* perovskite solar cell structure.



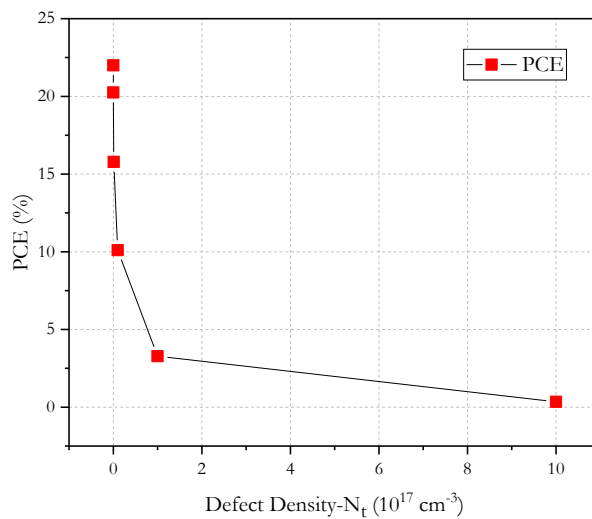
**Figure 2.** The band diagram of the *n-i-p* PSC at equilibrium.



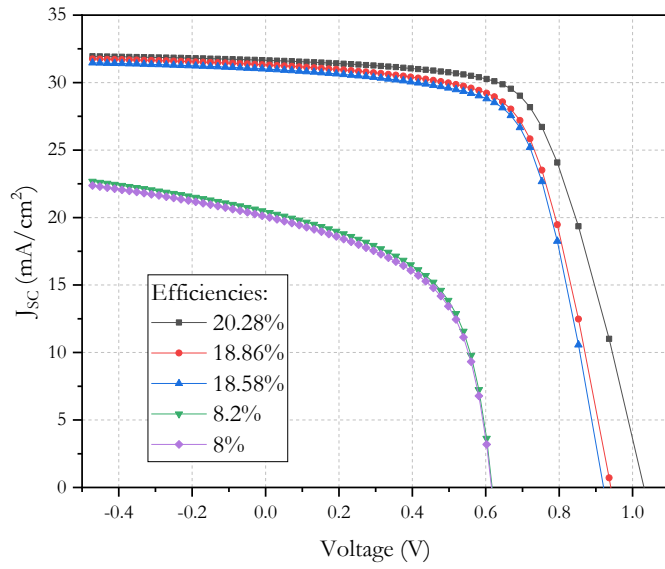
**Figure 3.** Absorber layer thickness versus PCE.



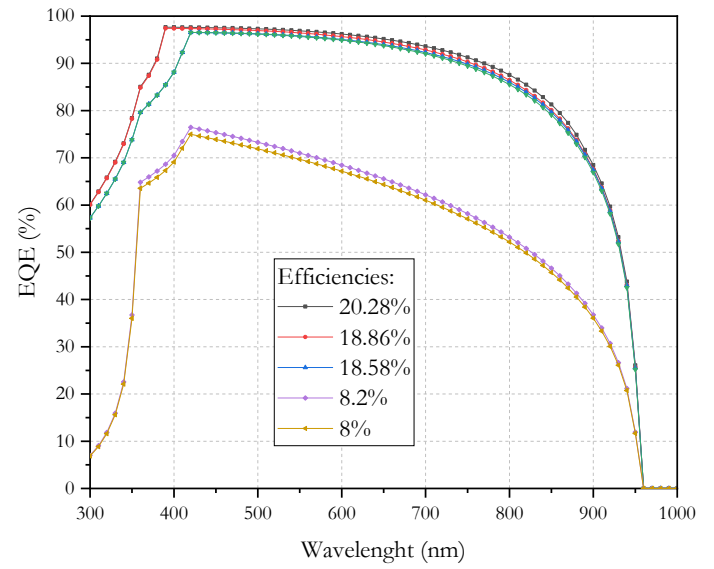
**Figure 4.** Kesterite layer thickness versus PCE.



**Figure 5.** Absorber layer defects  $N_t$  versus PCE.



**Figure 6.** *J-V* characteristics of the *n-i-p* PSC.



**Figure 7.** The external quantum efficiency of the PSC.