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Parameters comparison of p-i-n and quantum well solar cells

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Abstract

Double gallium arsenide quantum wells (2QW) were inserted within $\text{Al}_x\text{Ga}_{1-x}\text{As}$ barriers of the intrinsic layer of an ordinary solar cell. Structure parameters have strong influence on device performance and should be precisely controlled in order to obtain the enhancement of conversion efficiency. Computer simulations of solar cells were carried out by SimWindows program v. 1.5.0. Some parameters of optimized quantum well solar cells (QWSC) and reference p-i-n solar cell structures, like: series resistance R_s , shunt resistance R_{sh} , emission coefficients (n_1 and n_2), diffusion and recombination components of current (J_d and J_r) were compared.



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