

Advanced Macroscopic Transport Models

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Abstract

As the dimensions of modern semiconductor devices have reached the deca-nanometer regime, the drift-diffusion model has become more and more inaccurate. As has been pointed out in several publications, for engineering purposes higher-order transport models systematically derived from Boltzmann's transport equation are promising candidates to cover the important gate length range from 100nm down to about 25nm. An investigation of higher-order transport models, both in the bulk and in the inversion layer regime will be given.