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Title:Plasmonic terahertz detector response at high intensities
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Abstract:Recent work on plasmonic terahertz detection using field effect transistors (FETs) has yielded detectors with high responsivity. Therefore, deviation from small signal mode of operation, when the detector signal is simply proportional to the THz intensity, must be considered. This work presents a new analytical model to predict terahertz response in a FET at arbitrary intensity levels. The proposed analytical model was experimentally validated using a 0.13 μm InGaAs high electron mobility transistor and optically pumped COinf2/inf gas laser operating at 1.63 THz of varying output intensities. The model is suitable for implementation in circuit simulators and might be used for device optimization and THz circuit design. © 2012 American Institute of Physics.
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