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Title:Terahertz metamaterial modulators based on absorption
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Abstract:Metamaterial absorbers can perfectly absorb an incident wave in a narrow frequency band. In this paper, metamaterial absorbers are used to construct a terahertz modulator. By controlling the carrier density in the n-doped semiconductor spacer between a patterned metallic superstructure and a metallic ground with different applied voltage bias, the absorption varies sensitively, and the reflected wave amplitude acting as the modulated signal can be strongly modulated. Two types of modulators are investigated, one of which possesses an array of metallic crosses as the superstructure, and the other has a complementary superstructure. Compared with the former, the latter may give a better modulation performance.
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