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标题: Terahertz broadband antireflection photonic device with graded refractive indices
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摘要: High resistivity silicon is a very common optical component in a terahertz system. However, its high relative refractive index of 3.42 causes a large impedance mismatch at the silicon-to-air interface. This severely reduces the available power in a terahertz system which motivates researchers to find a good anti-reflection solution. In the terahertz region, the lack of proper materials for broadband anti-reflection severely hinders such a research development. A photonic grating with graded refractive indices is demonstrated on silicon. Compared wich the case of planar silicon wafer, the transmission is observed to increase from 0.2 THz to over 7.3 THz for a device with 15 mu m period, which covers most of the terahertz band. With a striking relative 3 dB bandwidth of 116.3%, the device is polarization-independent and can be used under a wide incidence angle.
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