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Title

The plasmonic resonant absorption in GaN double-channel high electron mobility transistors

Source

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Abstract

We have investigated the plasmonic oscillations in GaN double-channel (DC) high electron mobility transistors (HEMTs). It is shown that the absorption peaks of DC-HEMT can exist in wider frequency regions than that of single channel HEMT. These absorption peaks appear as a result of excitation of elementary plasmon modes supported by separate channels and can be tuned for the entire terahertz domain. Significant resonant enhancement is also observed after varying the two-dimensional electron gas density in DC-HEMTs. These promising properties indicate that DC-HEMTs can have important applications as voltage tunable broadband terahertz detectors, intensity modulators, and filters. (28 References).