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Title

Room temperature GaN/AlGaN self-mixing terahertz detector enhanced by resonant antennas Source

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Abstract

This letter focuses on the fabrication and characterization of a terahertz detector integrated with a group of low pass filters and resonant antennas. The detector operates as a self-mixer on GaN/AlGaN high electron mobility transistor (HEMT). At room temperature, a strong dc photocurrent is produced with the aid of the antennas and filters. The responsivity of our HEMT device is estimated to be 53 mA/W and a noise equivalent power of 1 nW/Hz can be achieved at 300 K. In addition, the sensor properties of a similar HEMT detector without filter are tested as a comparison. (16 References).