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标题: Matching-Circuit-Integrated InGaAsP Schottky Barrier Diode for Zero-Biased Operation in the Sub-Millimeter-Wave Range
作者: Ito, H (Ito, Hiroshi); Muramoto, Y (Muramoto, Yoshifumi); Yamamoto, H (Yamamoto, Hiroshi); Ishibashi, T (Ishibashi, Tadao)
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摘要: An InP/InGaAsP Schottky barrier diode (SBD) for zero-biased operation in the sub-millimeter-wave range has been designed and fabricated. The SBD is monolithically integrated with a short-stub resonant matching circuit to increase the detection sensitivity around the designated frequency as well as to provide a biasing circuit. The fabricated device exhibits a small Schottky barrier height of about 0.37 eV, which is suitable for zero-biased operation. The SBD chip is mounted in a compact J-band (WR-3) rectangular-waveguide-input module to evaluate the high-frequency characteristics. The module exhibits a peak sensitivity at around 350 GHz due to the characteristics of the matching circuit, and good linearity of the output voltage against the input sub-mm-wave power. A record sensitivity of 1460V/W at 350 GHz is obtained for the InP-based zero-biased SBD. (C) 2012 The Japan Society of Applied Physics
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地址: [Ito, Hiroshi; Yamamoto, Hiroshi] Kitasato Univ, Ctr Nat Sci, Sagamihara, Kanagawa 2520373, Japan
[Ito, Hiroshi] Kitasato Univ, Grad Sch Med Sci, Sagamihara, Kanagawa 2520373, Japan
[Muramoto, Yoshifumi] NTT Corp, NTT Photon Labs, Atsugi, Kanagawa 2430198, Japan
[Ishibashi, Tadao] NTT Elect Corp, Atsugi, Kanagawa 2430198, Japan
通讯作者地址: Ito, H (通讯作者),Kitasato Univ, Ctr Nat Sci, Sagamihara, Kanagawa 2520373, Japan.
电子邮件地址: h.ito@kitasato-u.ac.jp
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