Abstracts

Diluted- and distributed-absorption microwave waveguide photodiodes for high efficiency and high power

S. Jasmin, N. Vodjdani, J.-C. Renaud and A. Enard. "Diluted- and distributed-absorption microwave waveguide photodiodes for high efficiency and high power." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1337-1341.

We propose a new microwave photodetector with high responsivity, which can handle both high optical power and deliver high microwave-output power. The distributed-absorption waveguide photodiode (DWGPD) is specially designed to equally distribute the photocarriers over the maximum surface area available in order to reduce the nonlinearities of electrical response due to electric-field screening effects. The expected calculated performances of this DWGPD is compared to other types of broad-band photodetectors in terms of linear microwave-output power, quantum efficiency, and thermal behavior. The fabricated DWGPDs have a responsivity of 1 A/W, cutoff frequency of 29 GHz, and linear response up to 8 mA limited in this experiment by contacting electrodes.

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