Abstracts

High-power high-speed photodetectors-design, analysis, and experimental demonstration

L.Y. Lin, M.C. Wu, T. Itoh, T.A. Vang, R.E. Muller, D.L. Sivco and A.Y. Cho. "High-power high-speed photodetectors-design, analysis, and experimental demonstration." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1320-1331.

A novel velocity-matched distributed photodetector (VMDP) is proposed to simultaneously achieve high saturation photocurrent and broad bandwidth. Theoretical analysis on the tradeoff between saturation power and bandwidth shows that the VMDP offers fundamental advantages over conventional photodetectors. A comprehensive theoretical model has been developed for the design and simulation of the VMDP. Experimentally, the VMDP with very high saturation (56-mA) photocurrent and instrument-limited 3-dB bandwidth (49 GHz) has been demonstrated. The theoretical analysis and experimental results show that the VMDP is very attractive for high-performance microwave photonic links and high-power optical microwave applications.

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