

Abstracts

High-power high-frequency traveling-wave heterojunction phototransistors with integrated polyimide waveguide

D.C. Scott, D.P. Prakash, H. Erlig, D. Bhattacharya, M.E. Ali, H.R. Fetterman and M. Matloubian. "High-power high-frequency traveling-wave heterojunction phototransistors with integrated polyimide waveguide." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 284-286.

A high-power high-speed phototransistor has been demonstrated using a traveling-wave (TW) structure with an integrated polyimide optical waveguide. In our configuration, optical power transfer is distributed along the length of the device via leaky mode coupling of light from the polyimide waveguide to the active region of the phototransistor. The TW electrode design allows for an electrically long structure while maintaining high bandwidths. Due to the increased absorption volume, the optical power handling capabilities of the TW-heterojunction phototransistors (TW-HPT's) are improved over that of conventional lumped-element HPT detectors. The experimental results show no saturation of the fundamental at 60 GHz up to 50 mA of DC photocurrent.

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