Abstracts

Waveguide integrated photodiode for analog fiber-optics links

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We present the design, fabrication, and characterization of a vertically coupled 1.3-/spl mu/m wavelength waveguide integrated InGaAs photodiode with distributed absorption. This design, by employing an index-matching layer and a thick waveguiding layer, can yield a significant improvement in the optical power saturation, responsivity, and speed in the same device. The 1-dB compression point of the photodiode response at 20 GHz occurs at 10.2-mA continuous-wave photocurrent. Moreover, the same device exhibits a 47-GHz 3-dB bandwidth with a 50-/spl Omega/ microwave probe, and a 0.4-A/W microwave responsivity at 20 GHz without antireflection coating at the input facet. Its two-tone output referenced third-order intercept point is +20.32 dBm at 1 GHz and +5.25 dBm at 18 GHz.

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