

1.3 μm High Speed PIN photodiode

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The specific property of frequency and sensitivity for a high-speed photodetector has been taken into consideration. Structure parameters of GaInAs/InP PIN photodiode are optimized. Key technologies of developing high-speed photodetectors have been worked out, such as epitaxy of high-pure and extra-thin GaInAs/InP material, shallow junction diffusing in active area, technology of double layer film passivation for reduction of leakage current, coupling of small light sensitivity area with fibre, and high speed photodetector microwave packaging with coaxial structure. As a result, a long wavelength high speed GaInAs/InP PIN photodetector has been developed, whose 3 dB bandwidth has reached 20 GHz, with the responsibility of >0.70 A/W, dark current of $<5\text{nA}$.

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