$InAs_{0.7}Sb_{0.3}$ bulk photodiodes operating at thermoelectric-cooler temperatures

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Current-voltage and photoelectrical characteristics of the $InAs_{0.7}Sb_{0.3}$ photodiodes grown onto InAs substrates were investigated in the of 212-330 K interval or the "thermo-electrical temperature range". Impact of mesa diameter, buffer layer thickness, and cooling on zero bias resistance and spectral responsivity were described and analyzed. At low temperatures a domination of the dynamic zero bias resistance over the serial one took place with the result that specific detectivity at 6.5 μm at T=233 K was as high as $5.2 \cdot 10^8$ cm·Hz$^{1/2}$·W^{-1} for a flat plate photodiode.