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Abstract.

The invention relates to a monolithic integrated semiconductor structure comprising a carrier layer on the basis of doped Si or doped GaP and a III/V semiconductor disposed thereupon and having the composition $Ga_xIn_yNa_aAs_bP_cSb_d$, wherein $x = 70 - 100$ mole-%, $y = 0 - 30$ mole-%, $a = 0.5 - 15$ mole-%, $b = 67.5 - 99.5$ mole-%, $c = 0 - 32.0$ mole-% and $d = 0 - 15$ mole-%, wherein the total of x and y is always 100 mole-%, wherein the total of a , b , c and d is always 100 mole-%, and wherein the ratio of the totals of x and y on the one hand and of a to d on the other hand is substantially 1:1, to methods for the production thereof, new semiconductors, the use thereof for the production of luminescence diodes and laser diodes or also modulator and detector structures, which are monolithically integrated in integrated circuits on the basis of the Si or GaP technology.