Abstracts

Microwave PtSi-Si Schottky-barrier-detector diode fabrication using an implanted active layer on high-resistivity silicon substrate

Yunghong Wu, B.M. Armstrong, H.S. Gamble, Zhirun Hu, Qiang Chen, Suidong Yang, V.F. Fusco and J.A.C. Stewart. "Microwave PtSi-Si Schottky-barrier-detector diode fabrication using an implanted active layer on high-resistivity silicon substrate." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 641-646.

A surface-oriented planar Schottky diode for use as a detector diode on Si monolithic microwave integrated circuits (MMIC's) was developed. The active n-on-n/sup +/ and contact n/sup +/ regions were doped on the high-resistivity silicon substrate using phosphorus ion implantation. The PtSi-Si barrier was formed by metallurgical interaction between pure platinum film and silicon. The process technology developed for the Schottky-detector diode fabrication is precise, simple, and cheap, and is suitable for mass production. The typical measured cutoff frequency of a zero-biased fabricated Schottky diode is 118 GHz.

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