Title (en)

PARAMETERISED SEMICONDUCTOR STRUCTURE COMPRISING INTEGRATED DOPING CHANNELS, METHOD FOR PRODUCING SAID STRUCTURE AND USE THEREOF

Title (de)

HALBLEITERSTRUKTUR MIT INTEGRIERTEN DOTIERUNGSKANÄLEN.

Title (fr)

STRUCTURE COMPOSITE A SEMI-CONDUCTEUR PARAMETREE COMPRENANT DES CANAUX DE DOPAGE INTEGRES, PROCEDE POUR LA PRODUIRE ET SON UTILISATION

Publication

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Application

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Abstract (en)

[origin: WO2004109807A2] Known parameterised semiconductor composite structures operate in a monofunctional manner. To obtain the greatest degree of flexibility and maximise its universal applicability, the inventive parameterised semiconductor composite structure (TEMPOS) has nanoscalar pores (VP) acting as doping channels and a high-ohmic coating of electrically conductive material (ECM), which also extends between the pores (VP), on the surface of the layer (EIL) that consists of an electrically insulating material. An electric resistance is generated, said resistance supporting the vertical migration of additional charge carriers into the semiconductor composite structure (PSC) but preventing horizontal migration between the equilateral electrodes (o, w). Fundamental parameters for regulating the function of the semiconductor composite structure (TEMPOS), which can also comprise a differentially negative resistance behaviour (NERPOS), relate to the configuration of the pores (VP) and the electrically conductive material (ECM). Preferably, the pores (VP) can be created by ion irradiation and subsequent etching, the etching duration determining the pore depth and pore diameter. The conductive material (ECM) preferably consists of conductive nanoclusters (DNP) or moisture-sensitive fullerenes (MOSBIT). Areas of application for the invention include electronic, optoelectronic, hygroscopic electronic and sensory semiconductor components with active and passive, thermal, resistive, capacitive, frequency-dependent, chemical and/or radiation-resistant behaviour and an analogue or digital configuration.

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