

The 3rd Patent from Prof. Santosh Kumar Vishvakarma's Reserach Group on Low Power

The IIT Indore patent on "HIGH PERFORMANCE DOUBLE GATE TUNNEL FIELD EFFECT TRANSISTOR FOR LOW POWER APPLICATIONS" is granted by the Patent Office, Government of India. The inventors, Dr. Vikas Vijayvargiya and Prof. Santosh Kumar Vishvakarma are from the Department of Electrical Engineering, Indian Institute of Technology Indore.

Now-a-days energy efficient electronics system need to realize the wide range internet of things (IoT) applications such as environmental sensing, health monitoring, bio-medical sensing, body sensing networks and cellular neural network. These IoT enabled system on chip (SoC) integrate analog/RF and digital blocks. However, in the sub-nanometer design era, power dissipation is the biggest issue to realize such application for SoC design. The tunnel field effect transistor gives better performance for supply voltages below 0.5 V because of steep subthreshold swing. For that, Inventor proposed a lateral asymmetric channel (LAC) doping profile for tunnel field effect transistor and the method of fabricating the same are disclosed. The present disclosure provides a lateral asymmetric channel (LAC) doping profile for a double gate tunnel field effect transistor to improve analog / RF performance for ultra-low power application. The proposed technique would be beneficial at the industrial & educational research center for development of next generation of integrated circuit (IC) for the said application to create smart India.

Dr. Vikas Vijayvargiya belongs to Gautampura (Tehasil Depalpur) and completed his Ph.D. from IIT Indore in 2016 and is currently Assistant Professor Sr- Grade 2, in Department of Micro and Nanoelectronics, Vellore Institute of Technology, Vellore. His research interests include device-circuit interactions using emerging devices for ultra-low power digital and analog/RF applications.

Prof. Santosh Kumar Vishvakarma is currently working as an Associate Professor, Department of Electrical Engineering, Indian Institute of Technology Indore. His research interests include Compute-efficient, Configurable VLSI Circuit Design for AI application, and Low Power and High-Performance In-Memory Computing VLSI Design. This is the 3rd patents from Dr. Vishvakarma's research group.



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