

Analysis and computer simulation of junctionless tunneling field effect transistor in Silvaco to investigate the effect of hetrostructures on On-state, Off-state and ambipolar currents

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Abstract In this research, a junctionless tunnel field effect transistor (JLTFET) is simulated. Using the idea of heterostructure of compound, the source of this device was suggested by germanium. The results showed better on-state current.

Accordingly, the convert of drain into germanium and further the structures with drain and channel germanium and then drain and source germanium were proposed, simulated and analyzed. Specifically, the device with germanium source and drain due to the improvement of source-channel and drain conditions has excellent performance in terms of high on-state and low off-state current. So the JLTFET with the structure of Ge-Si-Ge is suggested by this research. **Keywords:** Ambipolar behavior, On-state current, Off-state current, JLTFET, Heterostructure.

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