



Contribution ID: 66

Type: Oral Presentation

Simulation of the electrical behavior of a fully printed current switch using PSPICE

In this work, fully printed and flexible current switches are demonstrated, an approach of simulating and predicting their electrical response using electronics simulator is also proposed. Planar printed flexible transistor operating as current switches were produced on plain paper (80 g/m^2), using silver as electrodes and silicon as the active material. The active material and the devices were characterized and an analytic model of their electrical operation was proposed.

The electrical behaviour of the switches were obtained experimentally, they operation were described by a triangle of varistors or a system of anti-parallel diodes. Subsequently, A novel approach to simulate and predict the electrical operation of such devices was demonstrated. Namely, a PSPICE circuit model of the devices was built using varistors from the EPCOS library and other conventional PSPICE components. The electrical characteristics of the simulated circuit were in extraordinary agreement with the experimental data. We employed different varistors in our model to predict the behaviour of future printed devices. We then produced and characterized the devices simulated with the varistor S07K140 and showed that their electrical behaviour was similar to the prediction. we concluded that this method of prediction could be generalized or explore for other types of printed electronics components, as to reduce the trial and error method, reduce the cost of production per device, improve the devices' performance and optimize their productions.

Authors: Dr ZAMBOU, Serges (Ecole d'Ingenierie Industrielle, Bagangte); Prof. ZEKENG, Serge Sylvain (University of Yaounde 1)

Presenter: Dr ZAMBOU, Serges (Ecole d'Ingenierie Industrielle, Bagangte)

Session Classification: Material Physics

Track Classification: Material Physics