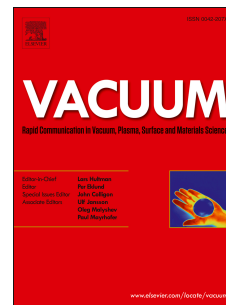


# Accepted Manuscript

Bipolar and rewritable switching of one diode–one resistor nonvolatile strontium titanate nickelate memory devices

Ke-Jing Lee, Yu-Chi Chang, Cheng-Jung Lee, Yeong-Her Wang



PII: S0042-207X(16)30939-3

DOI: [10.1016/j.vacuum.2016.12.004](https://doi.org/10.1016/j.vacuum.2016.12.004)

Reference: VAC 7224

To appear in: *Vacuum*

Received Date: 22 June 2016

Revised Date: 28 November 2016

Accepted Date: 1 December 2016

Please cite this article as: Lee K-J, Chang Y-C, Lee C-J, Wang Y-H, Bipolar and rewritable switching of one diode–one resistor nonvolatile strontium titanate nickelate memory devices, *Vacuum* (2017), doi: 10.1016/j.vacuum.2016.12.004.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Bipolar and Rewritable Switching of One Diode–One Resistor Nonvolatile Strontium Titanate Nickelate Memory Devices

Ke-Jing Lee<sup>a</sup>, Yu-Chi Chang<sup>a</sup>, Cheng-Jung Lee<sup>a</sup>, and Yeong-Her Wang<sup>a,\*</sup>

<sup>a</sup>*Institute of Microelectronics, Department of Electrical Engineering, National  
Cheng-Kung University, Tainan, 701 Taiwan.*

## Abstract

A bipolar-type one diode–one resistor (1D1R) memory device is proposed and demonstrated by integrating a Ni/TiO<sub>2</sub>/Ti diode and an Al/Strontium Titanate Nickelate (STN)/Pt bipolar resistive random access memory cell to suppress undesired sneak current in a cross-point array. Uniform self-compliance resistive-switching characteristics can be achieved by reverse bias current of the Ni/TiO<sub>2</sub>/Ti diode. Experimental results show that the bipolar 1D1R memory device has reproducible, uniform, and self-rectifying resistive-switching behavior in low-resistance state. High current ON/OFF ratio ( $>10^5$ ) and satisfactory retention ( $>>10^5$  s) are achieved. Therefore, the proposed device exhibits high potential for high-density integrated nonvolatile memory applications.

Keywords: bipolar, resistive switching, memory, one diode–one resistor (1D1R),

Download English Version:

<https://daneshyari.com/en/article/5468298>

Download Persian Version:

<https://daneshyari.com/article/5468298>

[Daneshyari.com](https://daneshyari.com)