READ ME File For ‘Dataset :Selectively biased tri-terminal vertically-integrated memristor configuration’

ReadMe Author: Vasileios Manouras, University of Southampton

This dataset supports the publication:

Authors:Vasileios Manouras¹, Spyros Stathopoulos¹, Alex Serb¹and Themis Prodromakis¹

Title: Selectively biased tri-terminal vertically-integrated memristor configuration

Corr. authorVasileios Manouras (v.manouras@soton.ac.uk)

Institution 1 University of Southampton

Department Electronics and Computer Science

Group Centre for Electronics Frontiers

Address Highfield Campus, Southampton, SO17 1BJ, UK

Period of data collection July 2021to February 2022

Manuscript submitted 30Mar 2022

Revision #1 submitted 4May 2022

Manuscript accepted 6June 2022

Journal Scientific Reports

Data DOI : 10.5258/SOTON/D2257

##############################################################################

Instructions on reading the provided data

=========================================

Data for each figure is contained within its respective folder.

Figure 1

---------------

Data contained inside folderFigure 1.

For subfigure (e) data is in comma separated values. Cycle\_xis Voltage in Volts, Cycle\_yis current in mA. Data is plotted as a typical IV with voltage in the X axis and Current in the Y axis. Each CSV file corresponds to an IV line. States and device orientation are described on each separate CSV file.

No data associated with subfigures (a)-(d)

Figure 2

--------

Data contained inside folder Figure 2.

For subfigures (b),(c),(d) data is in Comma separated values, in excel sheet “Top stable device”. Resistance is in Ω.

Subfigure (b) is plotted by using state number in X axis (provided in column A) against Top resistance states (Column C).

Subfigure (c) is plotted by using state number in X axis (provided in column A) against Bottom resistance states (Column B).

Subfigure (d) is plotted by using state number in X axis (provided in column A) against Total resistance states (Column D).

For subfigures (f),(g),(h) data is in Comma separated values, in excel sheet “Bottom stable device”. Resistance is in Ω.

Subfigure (f) is plotted by using state number in X axis (provided in column A) against Top resistance states (Column C).

Subfigure (g) is plotted by using state number in X axis (provided in column A) against Bottom resistance states (Column B).

Subfigure (h) is plotted by using state number in X axis (provided in column A) against Total resistance states (Column D).

No data associated with subfigures (a) and (e)

Figure 3

--------

Data contained inside folder Figure 3

For subfigure (a) data is in Comma separated values, in excel sheet “Bot retention only Retention values for states”. Resistance is in Ω.

Resistance states are plotted in the Y axis against time in the X axis, in seconds.

For subfigure (b) data is in Comma separated values, in excel sheet “Top retention only Retention values for states”. Resistance is in Ω.

Resistance states are plotted in the Y axis against time in the X axis, in seconds.

Subfigure (c) is produced by generating a Bottom\_states X Top\_states (62X42) additive table using the mean values of each state and then plotting them in a 3D plot with X axis being the bottom device states, Y axis being the Top device states and Z axis being resistance in Ohms.

Figure 4

--------

Data contained inside folder Figure 4.

For subfigures (b),(c),(d) data is in Comma separated values, in excel sheet “Complete device Pt-TiO2-Pt-TiO2-Pt switching”. Resistance is in Ω.

Subfigure (b) is plotted by using state number in X axis (provided in column A) against Total resistance states (Column D).

Subfigure (c) is plotted by using state number in X axis (provided in column A) against Top resistance states (Column C).

Subfigure (d) is plotted by using state number in X axis (provided in column A) against Bottom resistance states (Column B).

No data associated with subfigure (a)

Figure 5

--------

Data contained inside folder Figure 5.

For subfigures (b),(c),(d) data is in Comma separated values, in excel sheet “Complete device Pt-TiO2-Al2O3-Pt-TiO2-Pt switching”. Resistance is in Ω.

Subfigure (b) is plotted by using state number in X axis (provided in column A) against Total resistance states (Column D).

Subfigure (c) is plotted by using state number in X axis (provided in column A) against Top resistance states (Column C).

Subfigure (d) is plotted by using state number in X axis (provided in column A) against Bottom resistance states (Column B).

No data associated with subfigure (a)

Supplementary4

--------

Data contained inside folder Supplementary 4.

For subfigures (a),(b),(c) data is in Comma separated values, in excel sheet “Supplementary 4”. Resistance is in Ω.

Subfigure (a) is plotted by using state number in X axis (provided in column A) against Total resistance states (Column D).

Subfigure (b) is plotted by using state number in X axis (provided in column A) against Top resistance states (Column C).

Subfigure (c) is plotted by using state number in X axis (provided in column A) against Bottom resistance states (Column B).