Basic information:

* Each wafer is divided into several hundred dies;
* Each die contains a complete set of test structures;
* Test structures differ from each other for dimension and purpose   
  (resistance, capacitance, open, shorts, etc.)

Case 1: I-V measurements

* What we do:
  + We apply a varying voltage to a device and record the “output” current.
    - Sweeps for positive voltages (0 V ), and sweeps for negative voltages (0 V ) are performed on different devices.
    - Raw data between BOD and EOD
  + We measure multiple devices within a die (always).
  + We measure multiple dies within a wafer (sometimes).
* What we get:
  + A txt file in which all the pairs of current-voltage values are stored.
* What we want:
  + Split the txt file and group the data by structure and die and save them in an Excel file.
  + Plot all the I-V or J-V curves and save them in a Power Point presentation.
    - Users decides between I-V or J-V.
  + Extract Breakdown Voltage, i.e. voltage value at which current reaches compliance
  + Additional Features: Wafer maps, data extraction without Power Point, etc.

Raw Data File

wafer : AL213656\_D02 FJYWD251TM

chipX : 7

chipY : -14

testdeviceModule : BEOL1050L

testdeviceID : CAP-BEOL10\_23-50\_50-BEOL10

testdeviceType : pmos\_capacitor

testdeviceWidth : 1

testdeviceLength : 1

testdeviceArea : 2.5e-09

testdevicePerimeter : 4

testdeviceTox : 4e-08

testdeviceNsub : 1e+15

testdeviceSpacerWidth : 0

testdeviceDeltaL : 0

testdeviceDeltaW : 0

testdeviceNumDividerStages : 1

testdeviceNumInverterStages : 1

procNr : 43668

procedureName : oxide\_breakdown

temperature : 294

bottom start : 0 V

bottom stop : 50 V

bottom nmbr points : 100

leakage current : 1e-09 A

breakdown current density : 3000 A/m^2

breakdown field : 1.13e+09 V/m

early injection current density : 10 A/m^2

early injection field : 1e+08 V/m

Ebd : 5.555e+08 V/m

Ibd : 1.191e-09 A

fit : 1

operator : PETERSW

author : barbarin

date : Sun Sep 25 06:11:07 2022

KD : 01491

domain : 38199

KC : 45290

Lot\_ID : AL213656

Design\_ID : CAPA2SING

Session\_ID : IV40-80301

curveValue : 0

BOD

0 5e-13

0.505 -1.5e-12

1.01 0

1.515 -5e-13

2.02 -5e-13

2.525 -1.5e-12

3.03 -1.5e-12

3.535 -5e-13

4.04 -1.5e-12

4.545 -1.5e-12

5.05 -1e-12

5.555 -5e-13

6.06 -1.5e-12

6.565 -1.5e-12

7.07 -2e-12

7.575 -1.5e-12

8.08 -5e-13

8.585 -2.5e-12

9.09 -1.5e-12

9.595 -1e-12

10.1 -1e-12

10.605 -2e-12

11.11 -1e-12

11.615 -3e-12

12.12 -1.5e-12

12.625 -5e-13

13.13 -2.5e-12

13.635 -2.5e-12

14.14 -3e-12

14.645 -2.5e-12

15.15 -3e-12

15.655 -1.5e-12

16.16 -2.5e-12

16.665 -2e-12

17.17 -2.5e-12

17.675 -4e-12

18.18 -3e-12

18.685 -4e-12

19.19 -8e-12

19.695 -1.4e-11

20.2 -3.4e-11

20.705 -7.65e-11

21.21 -1.765e-10

21.715 -4.22e-10

22.22 -1.191e-09

22.725 -5.914e-09

23.23 -1.9e-07

23.735 -5.1865e-06

24.24 -6.9255e-06

24.745 -1.212e-05

25.255 -1.9025e-05

25.76 -2.5755e-05

26.265 -0.009986

26.77 -0.009986

27.275 -0.0099865

27.78 -0.009986

28.285 -0.0099865

28.79 -0.009986

29.295 -0.009986

29.8 -0.009986

30.305 -0.0099855

30.81 -0.009986

31.315 -0.009987

31.82 -0.009986

32.325 -0.009986

32.83 -0.009986

33.335 -0.009986

33.84 -0.009986

34.345 -0.009986

34.85 -0.009986

35.355 -0.0099865

35.86 -0.0099875

36.365 -0.009987

36.87 -0.009986

37.375 -0.0099865

37.88 -0.009986

38.385 -0.0099865

38.89 -0.009986

39.395 -0.009986

39.9 -0.009986

40.405 -0.009986

40.91 -0.0099865

41.415 -0.009986

41.92 -0.009986

42.425 -0.009986

42.93 -0.009986

43.435 -0.009986

43.94 -0.0099855

44.445 -0.009986

44.95 -0.009986

45.455 -0.009986

45.96 -0.009986

46.465 -0.009986

46.97 -0.009986

47.475 -0.009986

47.98 -0.009986

48.485 -0.009986

48.99 -0.0099865

49.495 -0.009986

50 -0.009986

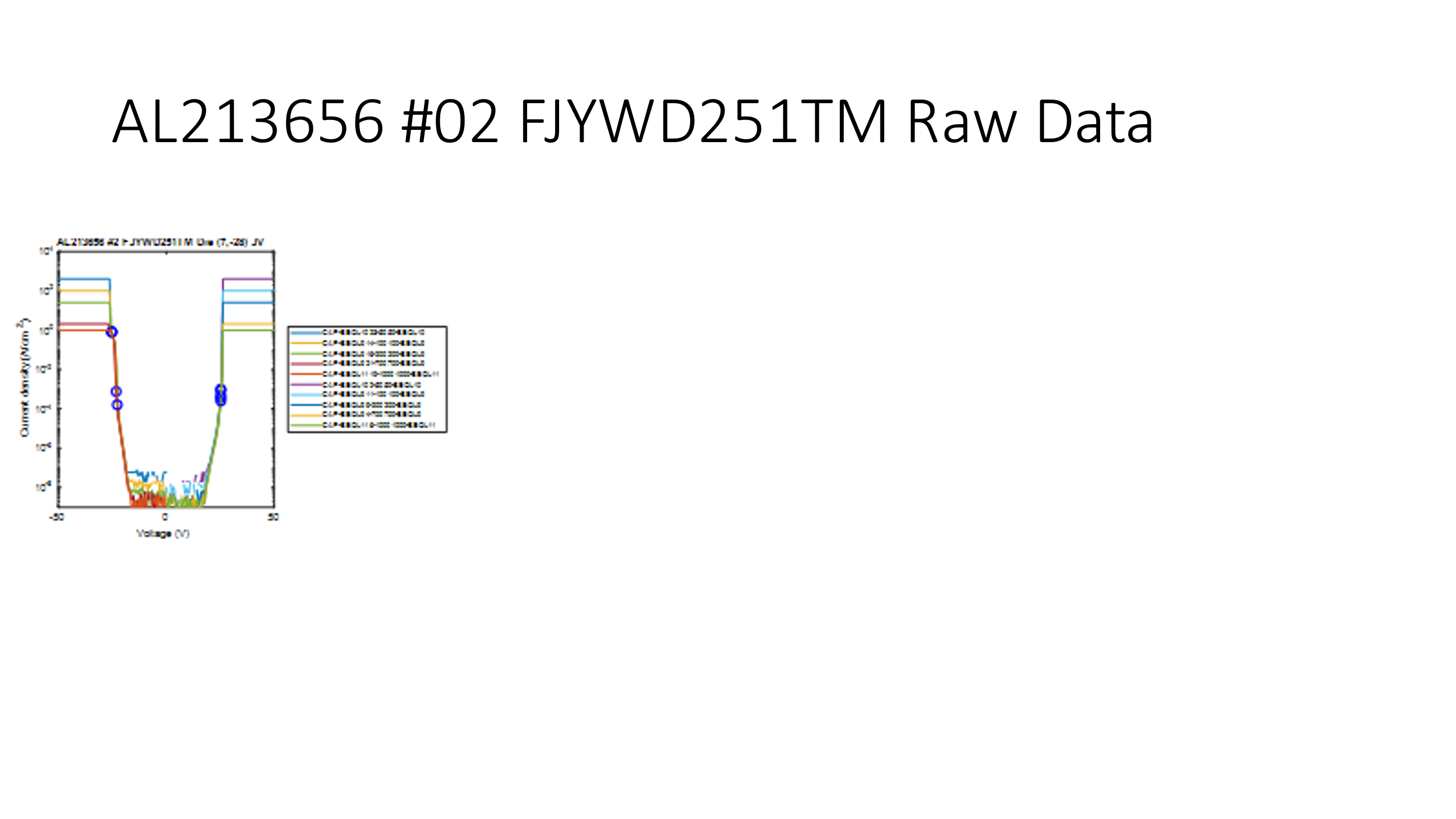
EOD

A screenshot of a spreadsheet

Description automatically generated with medium confidence

A picture containing text, screenshot, diagram, design

Description automatically generated



A screenshot of a spreadsheet

Description automatically generated with medium confidence