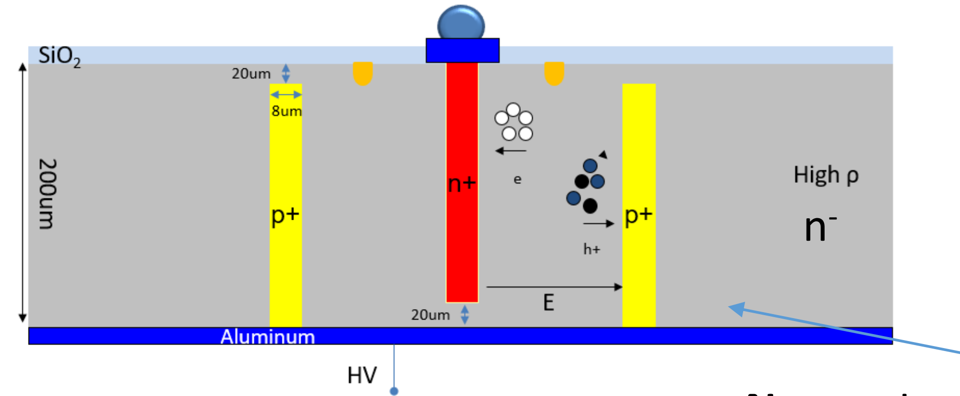
Run 10339

3D double side technology: n - on – n, 200um thick wafers



9 RD53 50x50um^2 (1-x)

9 RD53 25x100um^2 2E (2-x)

2 RD53 25x100um^2 1E (3-x)

9 Diodes 50x50um^2 (5-x)

16 Diodes (small) 50x50um^2 (6-x)

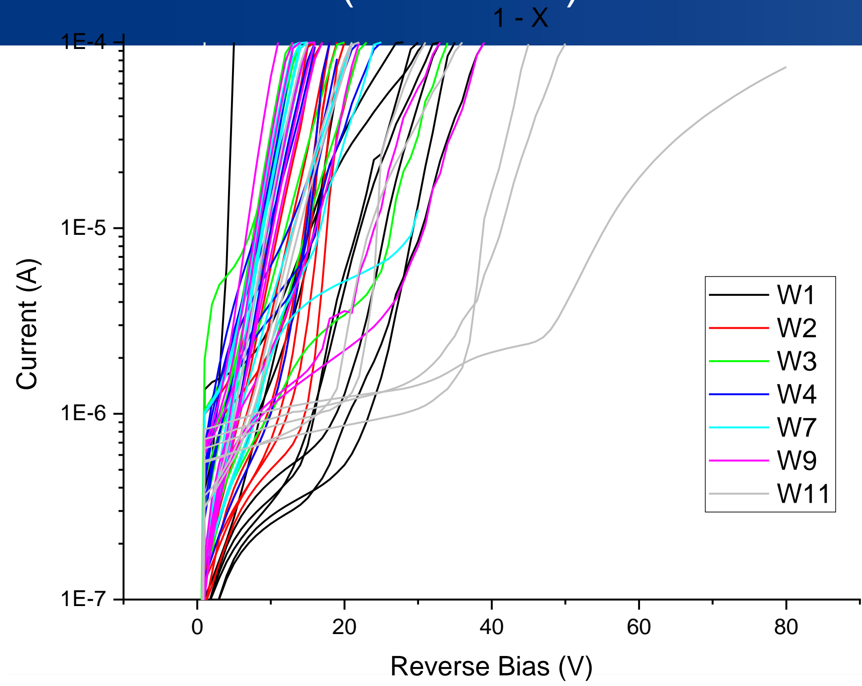
6 Diodes 25x50um (7-x)

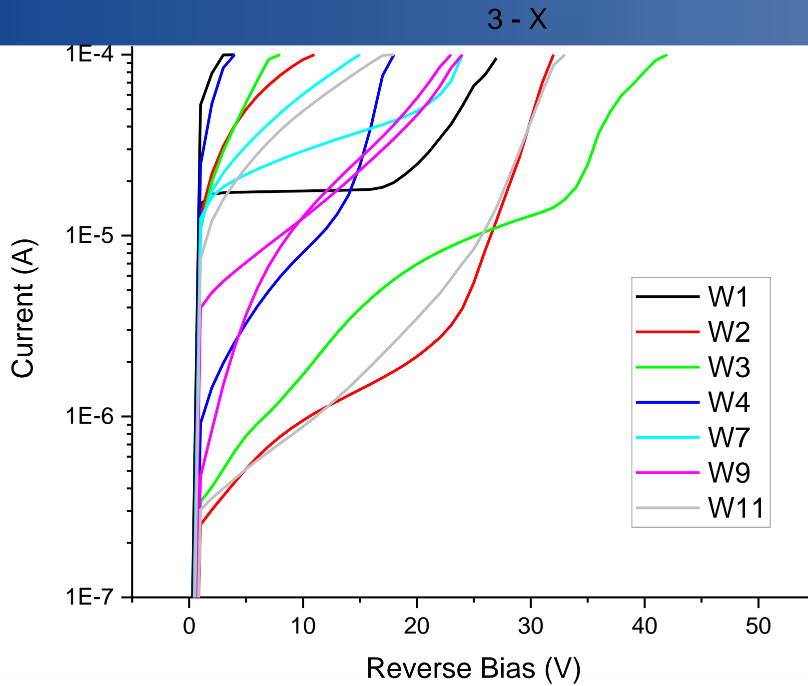
6 Diodes 25x100um^2 (8-x)

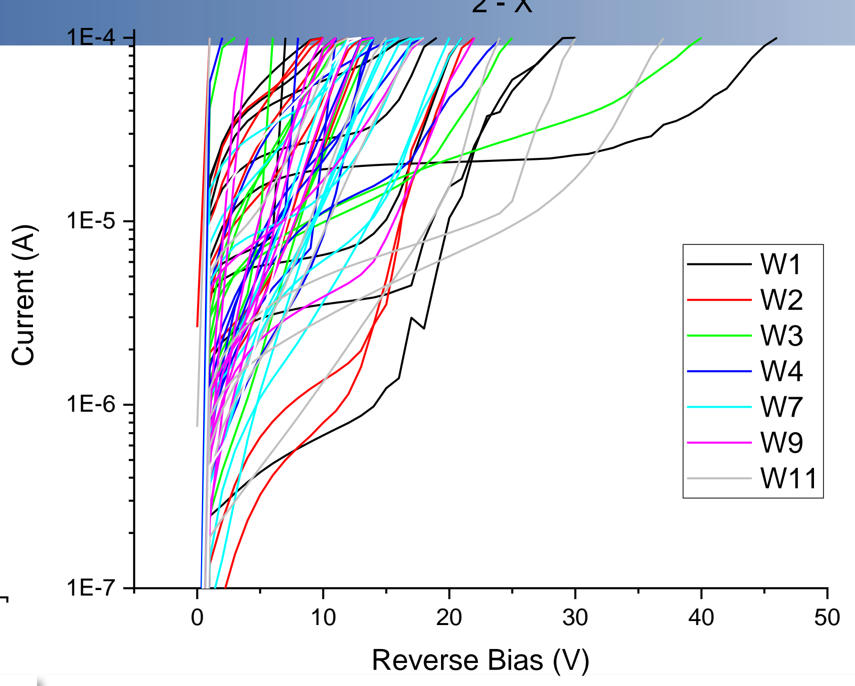
4 MOS (9-x)

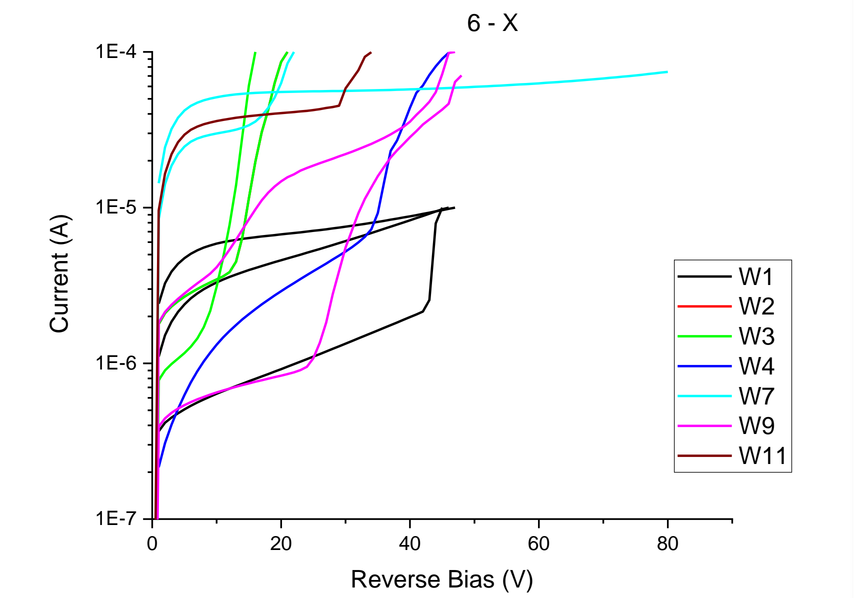
Note: Junction on this side, the detector starts to deplete from the back side. **High current expected** before the inversion of the substrate.

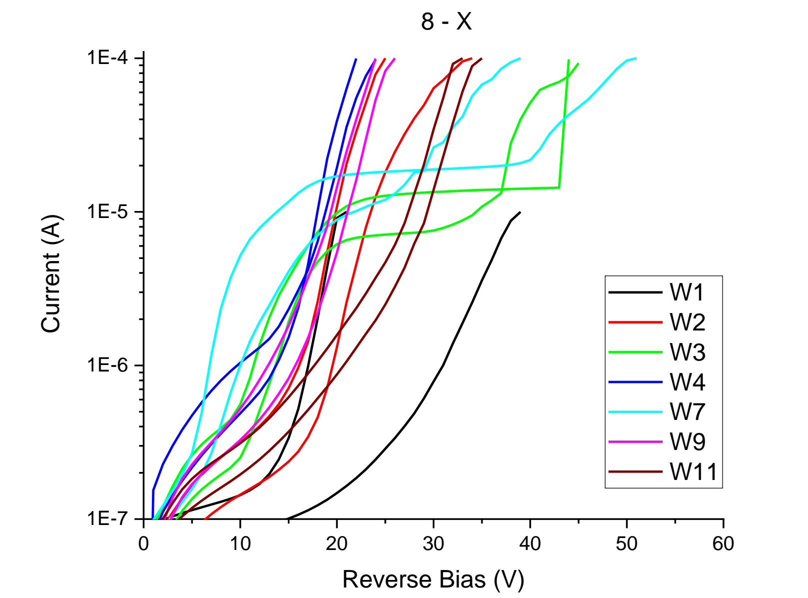
- 7 Wafers
- 1 wafer has been diced up

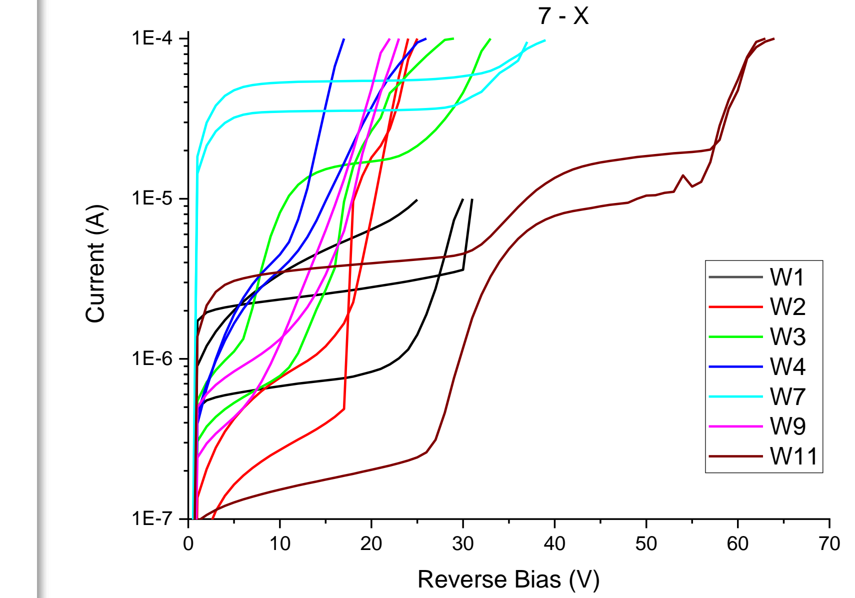

1 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11


3 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11


2 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11


6 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11

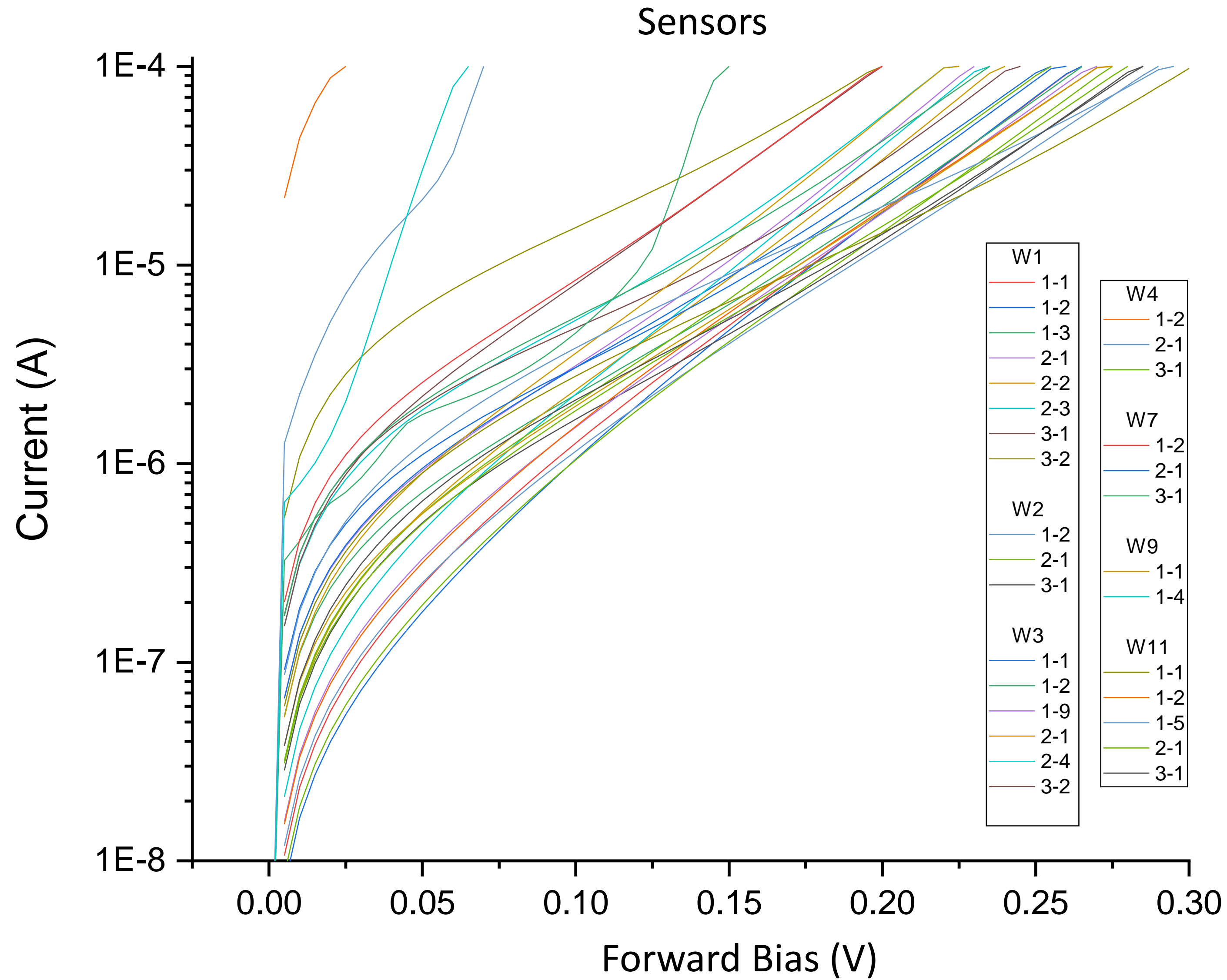

8 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11

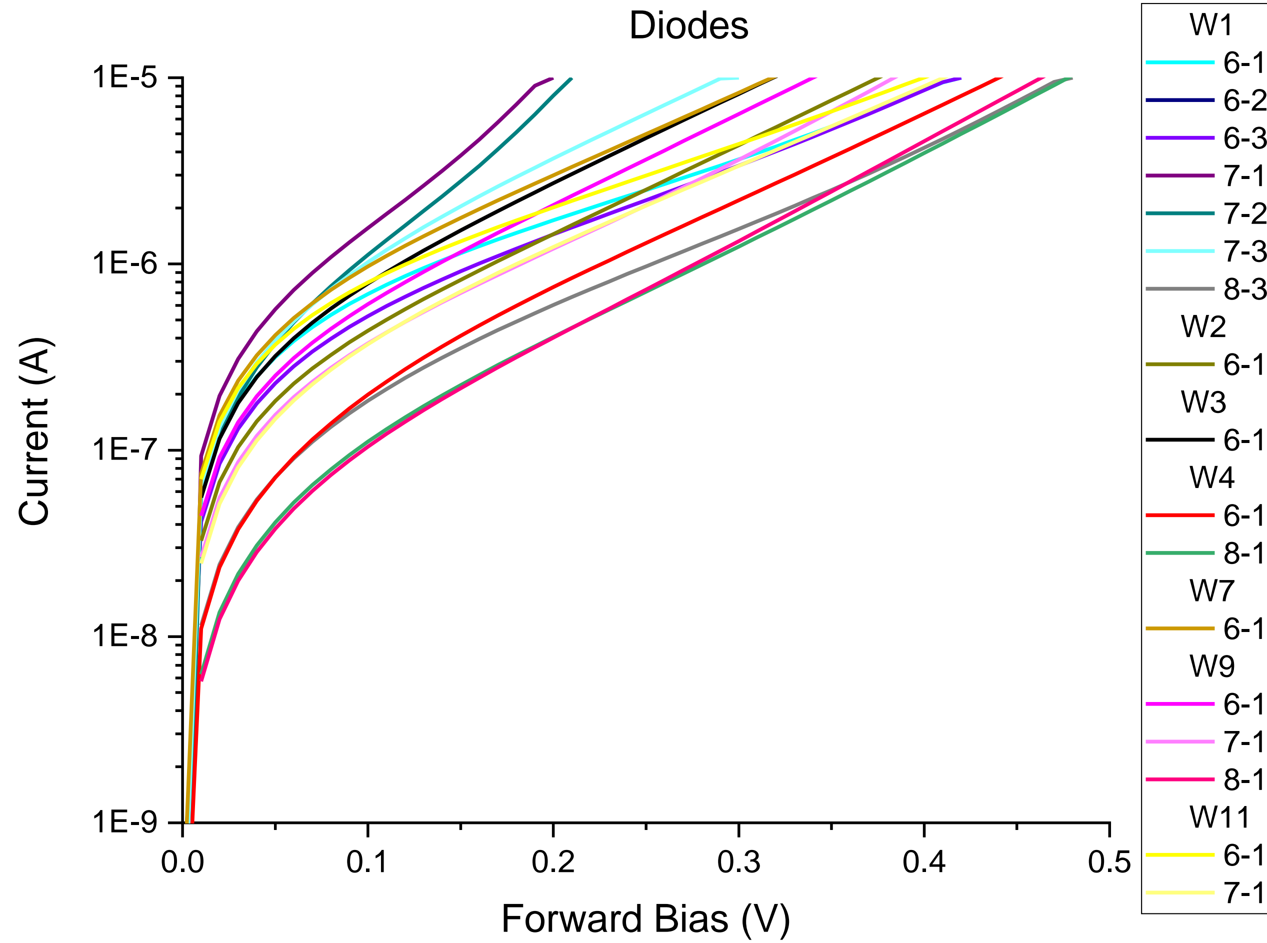

7 - X
Current (A)
Reverse Bias (V)
W1
W2
W3
W4
W7
W9
W11

Upcoming work

- Measurements with TCT: Charge collection efficiency and timing
- Send diodes for irradiation:
  - 1 RD53A sensor for each geometry with temporary metal, 4 small diodes of each geometry, small (1pixel) test structures
  - 6 different fluences ($10^{14}cm^{-2}$; $10^{15}cm^{-2}$; $5{\cdot}10^{15}cm^{-2}$; $10^{16}cm^{-2}$; $5{\cdot}10^{16}cm^{-2}$; $10^{17}cm^{-2}$)
- Electrical characterization after irradiation.
- Better performance after irradiation is expected because of substrate inversion.

Backup


Sensors
Current (A)
1E-4
1E-5
1E-6
1E-7
1E-8
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Forward Bias (V)
W1
1-1
1-2
1-3
2-1
2-2
2-3
3-1
3-2
W2
1-2
2-1
3-1
W3
1-1
1-2
1-9
2-1
2-4
3-2
W4
1-2
2-1
3-1
W7
1-2
2-1
3-1
W9
1-1
1-4
W11
1-1
1-2
1-5
2-1
3-1


Diodes
Current (A)
1E-5
1E-6
1E-7
1E-8
1E-9
0.0
0.1
0.2
0.3
0.4
0.5
Forward Bias (V)
W1
6-1
6-2
6-3
7-1
7-2
7-3
8-3
W2
6-1
W3
6-1
W4
6-1
8-1
W7
6-1
W9
6-1
7-1
8-1
W11
6-1
7-1