

Measurement Report : Bonn Irradiated sensors

Pradeep Ghosh

1. Description of Sensors

- Sensors : FSD 01 Sensors (From CiS)
- Structure : Bo4nx type
- Schottky Contact width : Yes , 18um
- Passivation on Schottky : Open
- Guard rings : Single side only
- Biasing : punch + poly
- Width of poly resistor : 5um
- Number of Sensors : 4 (Four)
- Irradiated Sensors : 3 (namely 1E11, 1E12 and 1E13)
- Power bonds : On all for Bulk IV and CV measurement.

2. Measured values for Sensors

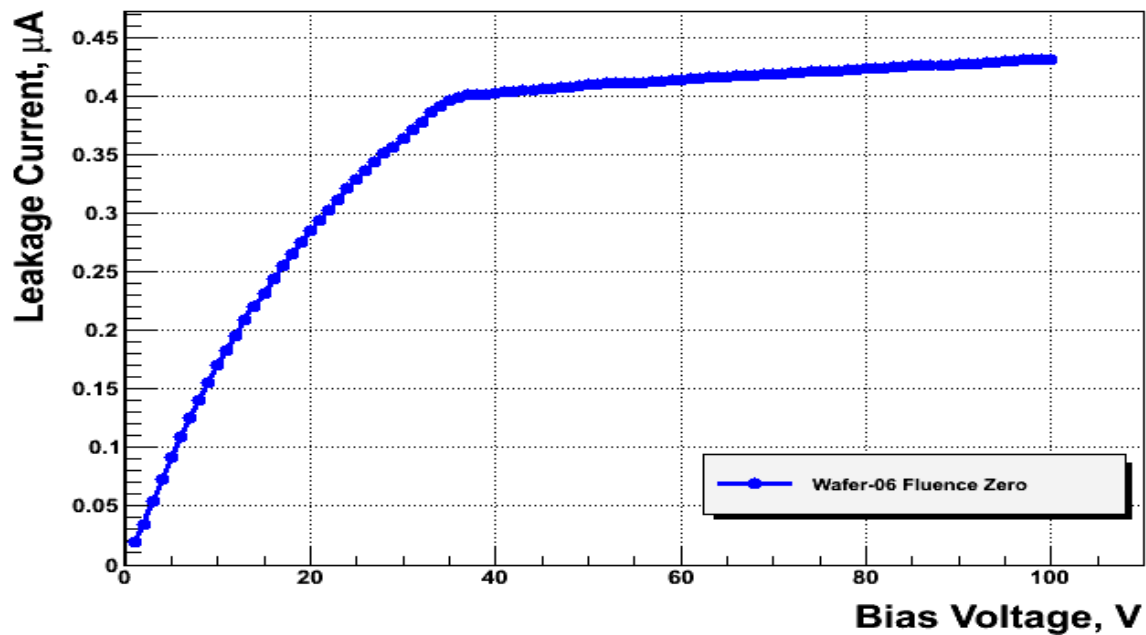
Bo4nx Wafer #	Fluence n_{eq}/cm^2	Full Depletion Voltage		Breakdown Volatge	Bulk Capcittance, pF	Expected Operating voltage
		$V_{FD(IV)}$	$V_{FD(CV)}$	V_{BD}	C_{Bulk}	V_{OP}
06	0,00E+00	35 V	~35 V	NO ^s till 100V	100pF	~70V
01	1,00E+11	NO ^s	~40 V	NO ^s till 100V	100pF	~80V
07	1,00E+12	NO ^s	~30 V	NO ^s till 100V	200pF	~60V
10	1,00E+13	NO ^s	~70 V	NO ^s till 100V	230pF	~140V

Note=> NO^s : Not Observed, See the IV & CV Plots below in Section 3 & 4 for more details.

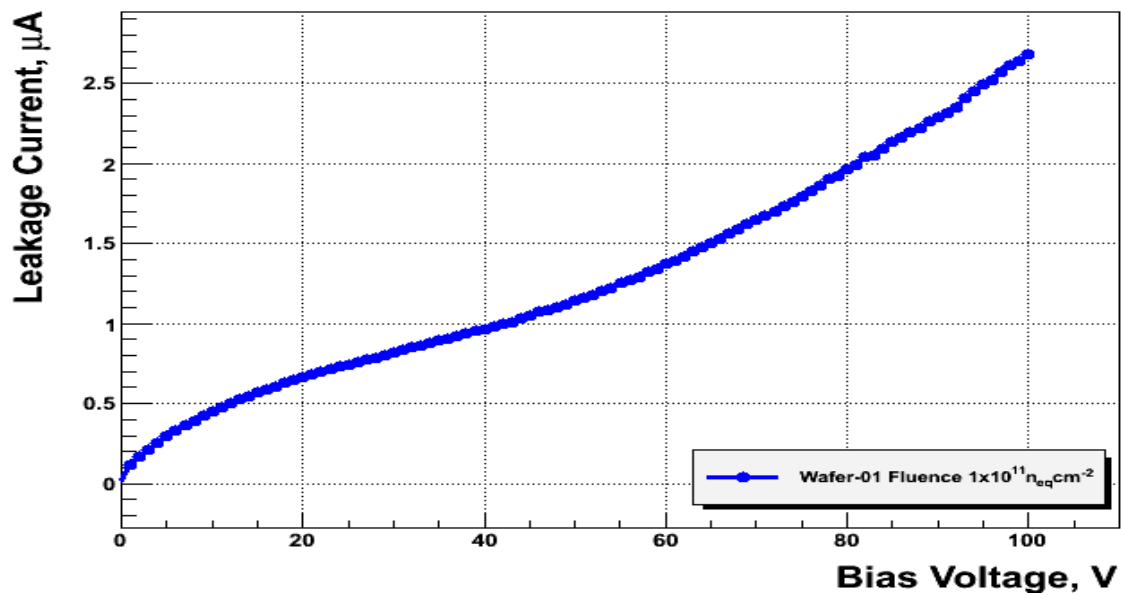
3. Plots for IV Curves

The IV measurement was done using Keithley 6487 source meter and associated LabVIEW program upto 100V for all the sensors.

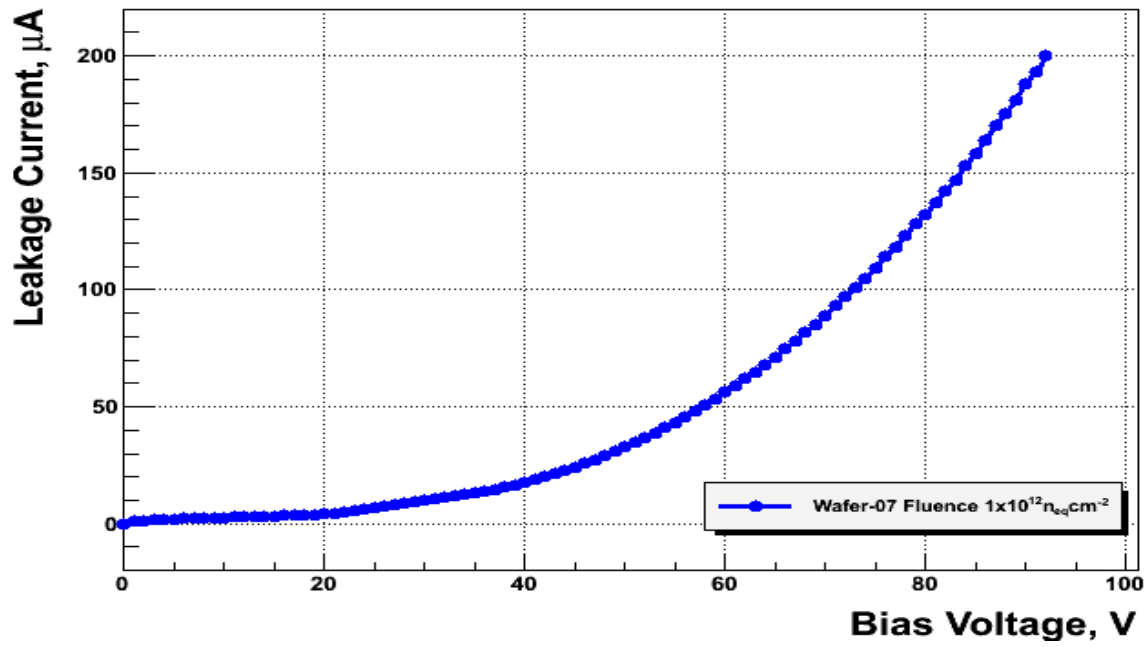
3.1 Wafer 06 bo4nx Zero Fluence



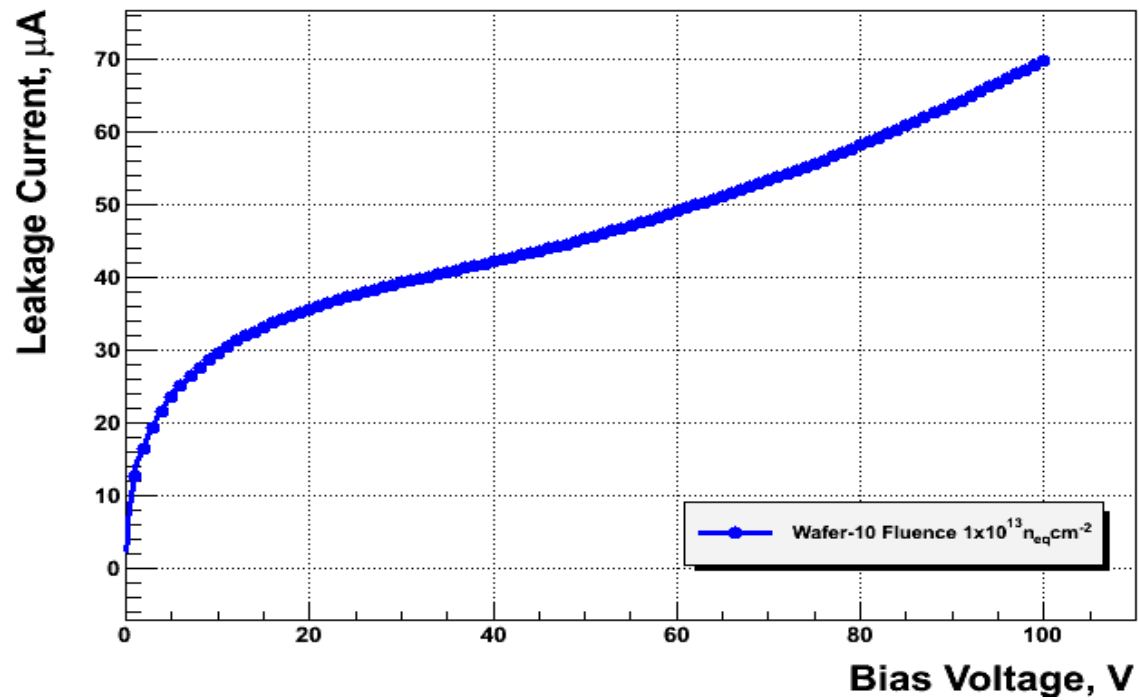
3.2 Wafer 01 bo4nx Fluence $1E11n_{eq}/cm^2$



3.3 Wafer 07 bo4nx Fluence $1E12n_{eq}/cm^2$



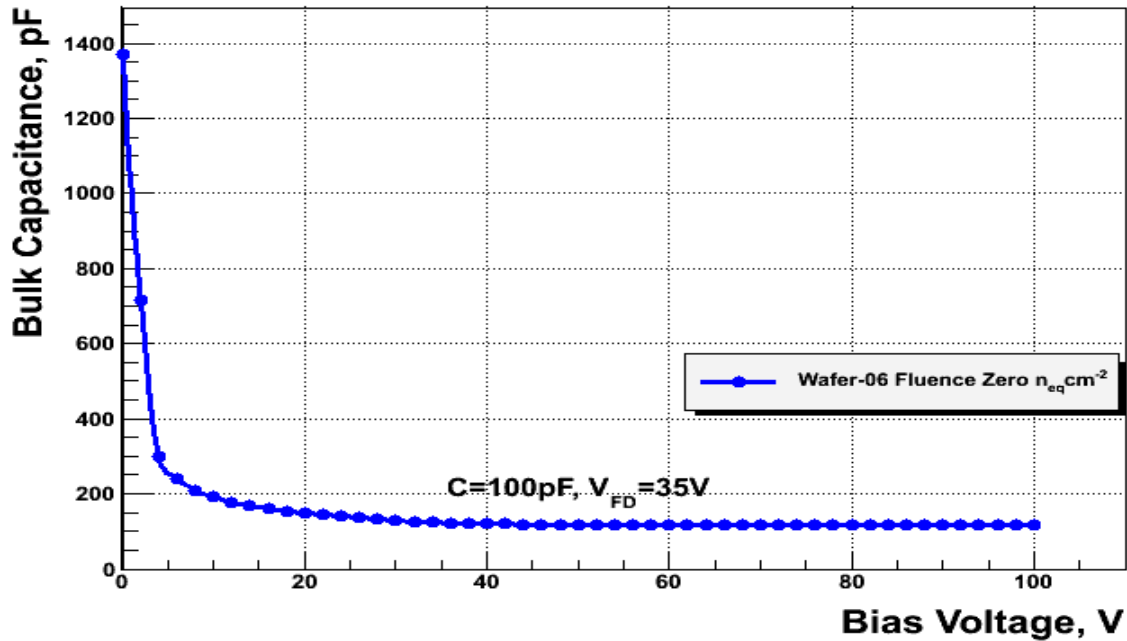
3.4 Wafer 10 bo4nx Fluence $1E13n_{eq}/cm^2$



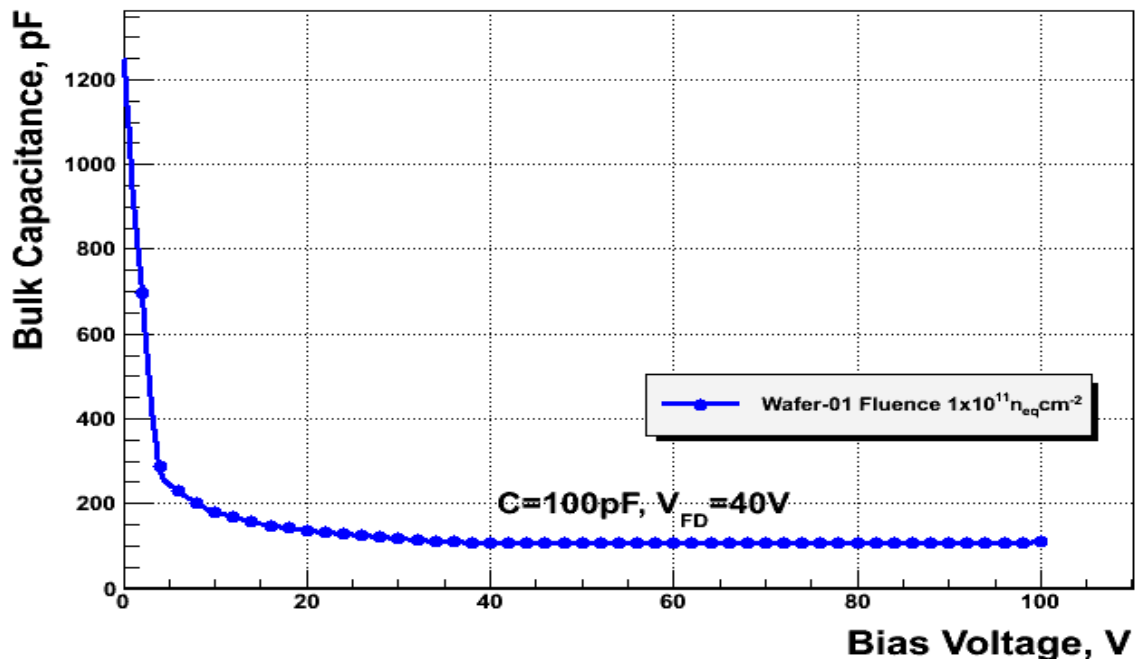
4. Plots for CV Curves

The CV measurement was done using Keithley 6487 source meter and associated LabVIEW program at 5kHz frequency till 100V for all the sensors.

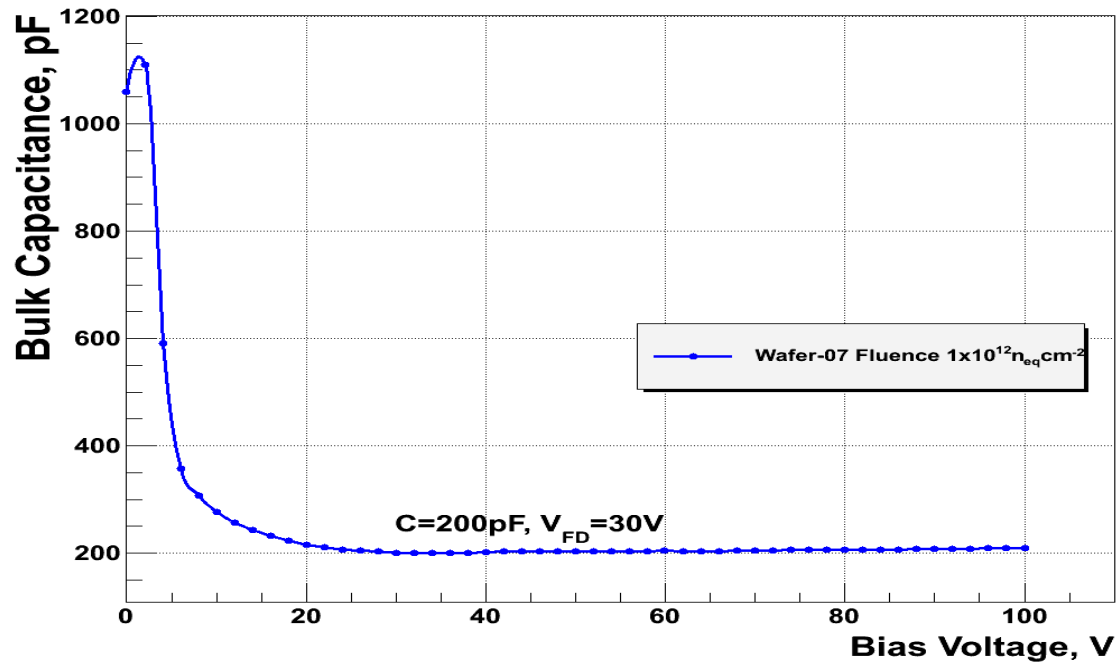
4.1 Wafer 06 bo4nx Zero Fluence



4.2 Wafer 01 bo4nx Fluence $1E11 n_{eq}/cm^2$



4.3 Wafer 07bo4nx Fluence $1E12$ n_{eq}/cm^2



4.4 Wafer 10 bo4nx Fluence $1E13$ n_{eq}/cm^2

