Update on the Common RD50 6" Project

Nov 16, 2005

Hartmut Sadrozinski, Gianluigi Casse, Tilman Rohe, Alberto Massineo, Donato Creanza, Claudio Piemonte, Micheal Moll

1) Wafers
   n-type MCz: Zheng Li has a supply of n-type MCz (in addition to the p-type MCz). He will see how many he can supply.
   FZ: the target for FZ should be about 1 kOhm for n-type and 3 kOhm for p-type

Wafer	bulk	#	Thickness [um]	SSD
MCz	p	7	300	n-on-p
DOFZ	p	5	300	n-on-p
FZ	p	5	300	n-on-p
MCz	n	3	300	p-on-n +n-on-n (no backside
Fz	n	2	300	p-on-n +n-on-n (no backside
MCz	n	3	200	p-on-n +n-on-n (no backside

2) Details of strip detectors
   Use Width/pitch ~ 0.30
   Combined P-stray [p-spray & p-stops]
   4 um overhang on both sides (instead of 3)
   Guard rings: number: 6 distance 800um

3) Layout on Wafer
   Common diodes with 4" : 5 mm x 5 mm
   Common for 4" MPI test structures
   Many 1 cm test structures for technology, isolation tests

4) Common detector: one common detector between 4" and 6".
To be replicated as often as space allows (3x for 6") to get enough detectors for testing.

Inst.	Device	# of dev.	Footprint	Pitch	# of strips	Length	Metal	Bias	Coupling	Isolation	w/p	p-implant
4"	Short strips	1	3.1 x 1.2	80	128	3	single	poly 1M	AC	Comb p	0.3	24

5) UCSC structures (changes in red)

Inst.	Device	# of dev.	Footprint	Pitch	# of strips	Length	Metal	Bias	Coupling	Isolation	w/p	p-implant
UCSC	Short strips	1	6.2 x 0.80	50	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	10
UCSC	Short strips	1	6.2 x 1.2	80	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	30
UCSC	Short strips	1	6.2 x 1.5	100	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	30
UCSC	Medium strips	1	6.2 x 1.2	80	128	6	Single	poly 1M	AC	Mod p	0.3	25

6) Pixel structures:

Are the Syracuse detectors identical to what Tilman proposes?

Updated List of SSD and Pads (much space to be filled with duplicates)

Inst.	Device	# of dev.	Footprint	Pitch	# of strips	Length	Metal	Bias	Coupling	Isolation	w/p	p-implant
UCSC	Short strips	1	6.2 x 0.80	50	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	10
UCSC	Short strips	1	6.2 x 1.2	80	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	30
UCSC	Short strips	1	6.2 x 1.5	100	128	2 x 3	Single	poly 1M	AC	Mod p	0.3	30
UCSC	Medium strips	1	6.2 x 1.2	80	128	6	Single	poly 1M	AC	Mod p	0.3	25
BNL	2-D	1	3.2 x 3	50	256	6	Single		DC	p-spray	0.6	
Ioffe	very short strips	3	1.2 x 1.2	100	64	~1		poly 1M	AC and DC	Mod p		
PSI etc	Pixel 1	2	1.04 x 0.98							Mod p		
PSI etc	Pixel 2	2	1.02 x 0.99							Mod p		
PSI etc	Pixel 3	2	0.62 x 0.54							Mod p		
Liverpool	Test structures	3	1 x 0.8	50	128	1	Single	poly 1M	AC	All?		
Liverpool	Test structures	4	1 x 1.2	80	128	1	Single	poly 1M	AC	All?		
Liverpool	Test structures	3	1 x 1.5	100	128	1	Single	poly 1M	AC	All?		
Syracuse	Pixel1x4	1	0.85x3.93	50	22x128x4		Single		dc	mod p		28um (n+ implant)
Syracuse	Pixel 1x1	3	0.85X1.14	50	22x128		Single		dc	Mod p		28um(n+ implant)
4"	Short strips	1	3.1 x 1.2	80	128	3	single	poly 1M	AC	Comnb p	0.3	24

Proposed 6” Wafer Mask Layout with free areas to be filled by Gianluigi

5 mm x 5 mm pads

Strips 3 cm long, 128 strips wide, common to 4” and 6”

2D strip detectors 3 cm x 3 cm

6 cm (2 x 3cm) strip detectors

Ioffe 1cm x1cm

6 cm strip detectors

PSI Pixel detectors

Liverpool 1 cm tests

major cut line

Syracuse pixel 4 x1, 1x1