DESIGN YY

SPECIALIST DETECTORS FOR NUCLEAR PHYSICS

SILICON DETECTOR TYPE:	SILICON MICROSTRIP TRAPEZOID OR WEDGE SHAPE STRUCTURE		
TECHNOLOGY:	4 INCH SILICON		
DESIGN:	Ion implanted totally depleted series of detectors of wedge shape that subtends 22.5° or 45° for construction along 360° disc annular microstrip on both radial and axial direction. Both AC and DC designs in single and double sided format are available in the series for Heavy Ion and High Energy Physics applications.		
EXPERIEMNT:	IISN (Belgium)	Dθ (F Disc FERMI)	DELPHI (CERN)
PART DESIGNATION:	**YY1**	**YY2**	**YY3**
ACTIVE INNER DIMENSIONS:	55 mm	24 mm	71 mm
ACTIVE OUTER DIMENSIONS:	130 mm	103 mm	125 mm
Nº of JUNCTION ELEMENTS:	16	1024	496
Nº of OHMIC ELEMENTS:	1	1024 (30°)	1
ACTIVE AREA:	29 cm^2	27 cm^2	41 cm^2
Nº of SECTORS:	16	12	16
SECTOR SUBTENDS:	45°	30°	22.5°
DETECTOR EDGE SURROUND:	0.5 mm	1 mm	0.5 mm
JUNCTION PITCH:	5 mm	50 µm	1.7 mm
OHIMC PITCH:	N/A	50 µm	N/A
THICKNESS:	300 µm	300 µm	300 µm
THICKNESS TOLERANCE:	± 15 µm	± 15 µm	± 15 µm
THICKNESS UNIFORMITY:	± 5 µm	± 5 µm	± 5 µm
FULL DEPLETION (FD):	30 V typ, 50 V max	30 V typ, 50 V max	30V typ, 50 V max
OPERATING VOLTAGE:	FD to FD +30 V	FD to FD +30 V	FD to FD +30 V
BREAKDOWN VOLTAGE (10 µA):	> 2 x FD	> 2 x FD	> 2 x FD
ELEMENT CAPACITANCE:	50 pF	90 pF	100 pF
OTHER THICKNESS RANGE:	60 µm, 100 µm, 140 µm, 300 µm, 500 µm and 1000 µm		
ELEMENT LEAKAGE CURRENT:	20 nA typ, 100 nA max	1 nA typ, 10 nA max	10 nA typ, 50 nA max
GUARD RING:	N/A	1 µA max	1 µA max
TOTAL ALPHA RESOLUTION: (FWHM)/SECTOR	100 KeV	N/A	N/A
TOTAL NOISE (FWHM)/SECTOR:	75 KeV	N/A	N/A
PULSE RESPONSE TIME:	10 ns typ	10 ns typ	10 ns typ
METALLISING:	3000 Å	8000 Å	8000 Å
METALLISING TOLERANCE:	± 1000 Å	± 1000 Å ± 1000Å	
TYPE OF PACKAGE:	PCB	CHIP ONLY	CHIP ONLY
SUPPORT STRUCTURE:	Motherboard		
CONNECTOR:	IDC Header (2 x 17)	N/A	N/A
PACKAGE STRIP ACCURACY:	± 200 µm	N/A	N/A
DETECTOR STRIP ACCURACY:	± 2 µm	± 2 µm	± 2 µm
COUPLING CAPACITOR:	N/A	100 pF	100 pF
BIASING RESISTOR:	N/A	2 MΩ Polysilicon	100MΩ FOXFET
MIMIMUM ACCEPTANCE LEVEL:	100 %	100 %	100 %
INTERFACE ELECTRONICS:	Rutherford 16 Ch	Fermi SVXII	CERN Amplex
WIRE BONDING (Al/Si):	25 µm	17 - 25 µm	25 µm
RADIATION HARDNESS COEF:	10 A. cm	10 A.cm	10 A.cm
READOUT PITCH:	N/A	52 µm	N/A
EXPERIMENTAL RADIATION LEVEL:	10 ions	1 M Rads	1 M Rads
PASSIVATION COATING:	N/A	Silox	N/A
HOLES THRU DETECTOR FOR SCINTILLATING FIBRES:	N/A	N/A	16

EXPERIMENTS (YY1, LEDA): University of Edinburgh
University of York
INFN Catania, ITALY
TRIUMF, CANADA