CERN-GE p-on-n set up

hybrid for barrel detectors, center tapped geometry

circuitry 6 electrical layers (8 μm gold) and 5 insulation layers

substrate Alumina (Al_2 O_3)

biasing network

from bias		to detector	
10K		1K	detect. backplane
	100 nF		
0k		0k	to GND

grounding just one ground (GND)

definition: hcr $\equiv$ high current region (preamp=220.8 μA, shaper=20.4 μA)

definition: lcr $\equiv$ low current region (preamp=156.4 μA, shaper=20.4 μA)

ABCD-2 p-on-n							
	Number	M0	S1	S2	S3	S4	E5
	wafer,x-y	w6,0-10	w3,5-7	w3,6-11	w4,3-3	w6,1-8	w6,3-6
CERN	QF	3.33	2.67	2.7	2.61	3.24	3.28
CERN	gain	59	60	61	59	60	60
CERN-GE	QF (hcr)	8.3	12.3	7.6	7.8	8	8.6
CERN-GE	gain (hcr)	140	149	141	145	140	145
CERN-GE	QF (lcr)	6.5	4.8	5	5.1	6.7	6.2
CERN-GE	gain (lcr)	79	83	79	85	77	77

comment QF and gain given by Cern refer, for technical reasons, to front end values close to the lcr

detector 2 CSEM barrel detectors (6 cm strips)

connections Configuration 1:

bias the two detectors backplane wires are connected to the HV independently at the same point on the hybrid

bias return and guard the two detectors bias return and guard pads are connected to GND independently

strips

number	128	640	0
length	12	6	0

measurements

noise in the hcr and detector HV=+100V			
length	12	6	0
noise (el)	instability	instability	-

noise in the lcr and detector HV=+100V			
length	12	6	0
noise (el)	1500	900	-

comments the instability in the hcr appears for detector bias > 20 V

connections Configuration 2:

bias just one detector (the one under the hybrid) backplane wire is connected to the HV

bias return and guard just one detector (the one under the hybrid) bias return and guard pads are connected to GND

strips

number	0	768	0
length	12	6	0

measurements

noise in the hcr and detector HV=+100V			
length	12	6	0
noise (el)	-	950	-