HR GaAs:Cr Test Structure 1

(TS1)

Outer size of the TS1 (figure 1) is $30.5 \times 10.25 \text{ mm}^2$. Twelve signal test pads of approximate size 7 x 3 mm² are placed as shown in the picture with the typical gaps between pads to be 200 µm. Two central pads have special distances to the neighbor pads: the upper one is from all sides surrounded by 300 µm gaps; the lower one has gaps of 100 µm from the left and from the right sides. It gives a possibility to study in details the efficiency of charge collection in between the metallized pads. The rest ten periphery pads are foreseen for the study of the pads



Figure 1. Test structure 1 (TS1)

operation as a function of the distance between the pad and the cutting edge of the sensor as well as an influence of the guard ring. For this particular TS the guard ring, wherever it is present, has 100 μ m trace width. It matches the 'standard' design, which is implemented for the main sector sensor, together with 100 μ m gaps between the pad outer edge and guard ring and also between guard ring and cutting edge. 'Standard' conditions are valid for the pad placed on '2 o'clock' position on TS. Other pads, in counter clock wise order, are:

'1 o'clock': guard ring -cutting edge gap 150 μm;

'12 o'clock': relaxed edge conditions;

'11 o'clock': extra guard ring, standard gaps '10 o'clock': small 50 μm gap sensor -guard ring;

'8 o'clock': both gaps are reduced to 50 μ m;

'7 o'clock': no guard ring, 150 μ m gap between pad and sensor cutting edge;

'6 o'clock': relaxed edge conditions, similar to central pads of the main sector sensor;

'5 o'clock': no guard ring, 200 μm gap between pad and sensor cutting edge;

'4 o'clock': guard ring is close to the cutting edge, only 50 μm gap left;

At the back side of the test structure one large continuous HV pad.