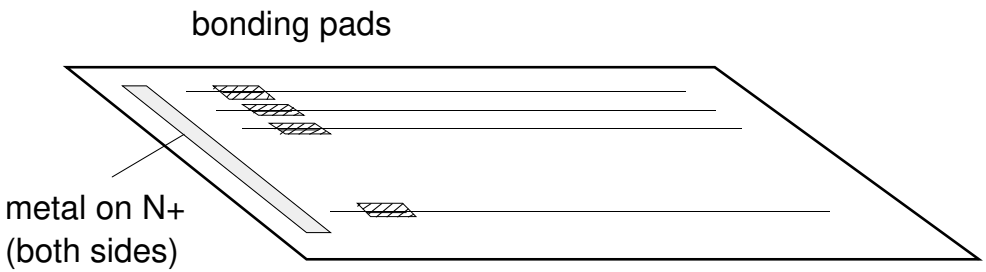
QC of Hamamatsu Prototype Sensors

1. Every Strip

1-1) dead/alive : AC characteristics can be probed by measuring the transient current when biased between the dedicated metal strip (see below: The strip is located on the same side of the probing metals outside the bias ring, which makes easier the probing procedure) and the probing AC metal. Hamamatsu has experienced this scheme and proved that it can tell broken capacitances and bad strip isolation.



1-2) leakage current (P-side only) : Using the dedicated metal strip, P-side can be biased and probed from top. Try to measure leakage current of each strip by probing the corresponding DC pad to judge whether this procedure is necessary for production sensors.

The same scheme is not applicable to N-side since no junction exists. If we are obliged to measure every leakage current, we need to develop a jig that can touch the P-side bias ring from bottom.

2. Every Sensor

2-1) I-V curve:

2-2) Al resistivity: measure R of test structures made on the sensor

3. Sampling (wire bond a fraction of strips on test board)

3-1) coupling capacitance: measure C (at 10 kHz) between AC and DC pads

3-2) isolation between strips: measure R between neighboring AC pads

3-3) interstrip capacitance: measure C between neighboring AC pads with strips at both sides grounded

3-4) C-V: use monitor pattern on the sensor or test boards