Bump bonding

Liaoshan Shi

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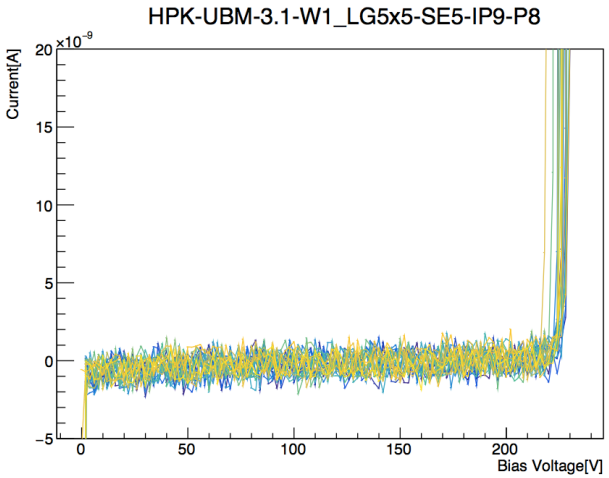
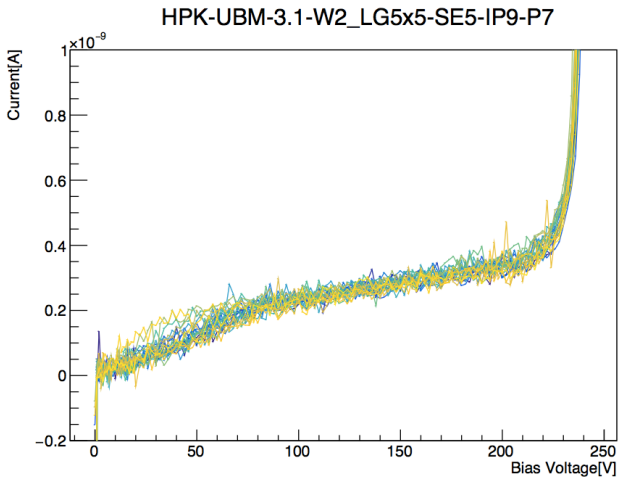
Introduction

- We sent two sensors and two ASIC chips to Institute of Microelectronics of CAS for bump bonding.
- Sensor information: HPK 5x5 with UBM, type 3.1 (50um, low doping)
  - EXX28995-WNo1 LG 5x5-SE5-IP9-P8
  - EXX28995-WNo2 LG 5x5-SE5-IP9-P7

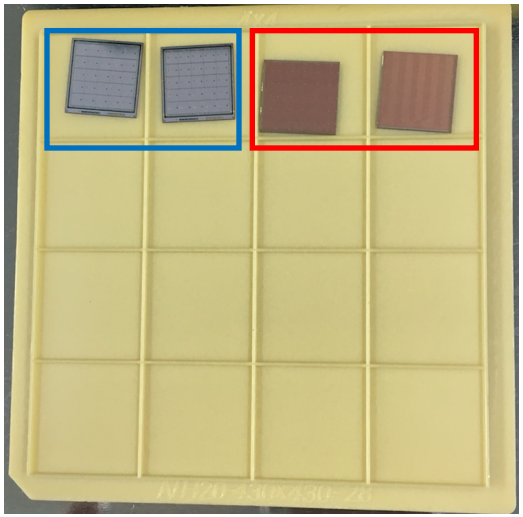
I-V before bump bonding (Expect similar performance between W1 and W2. The difference is mainly due to different measurement configurations):



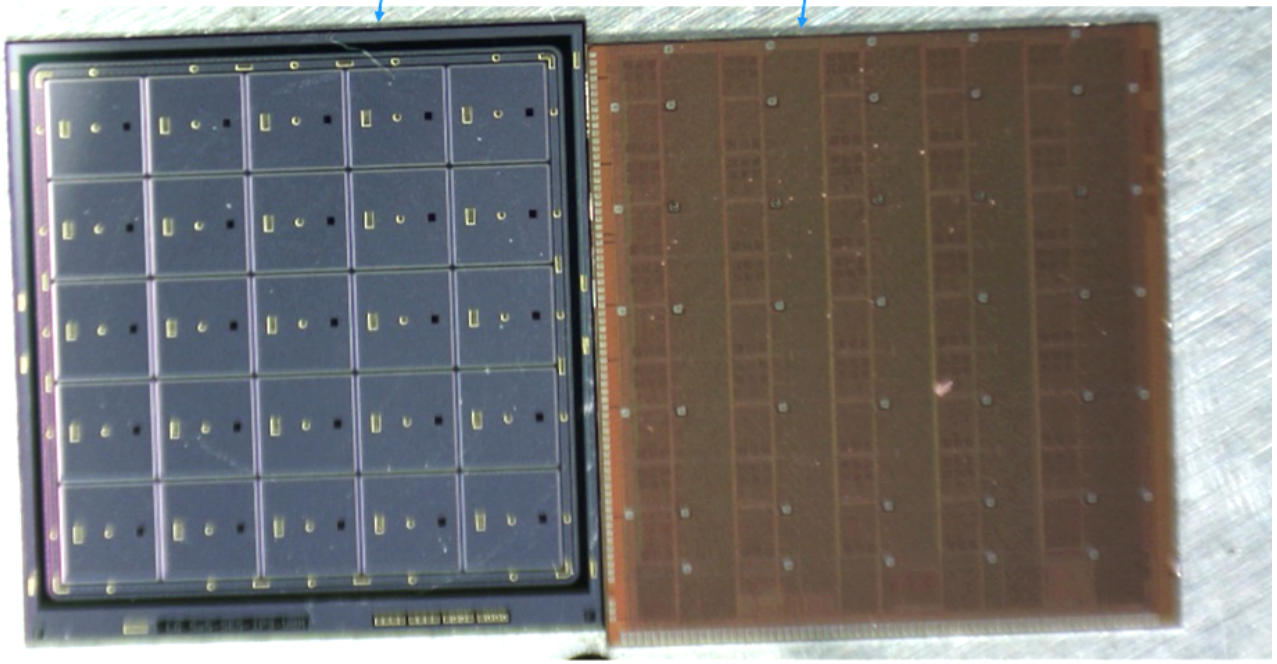
W1 measured with low resolution configuration.

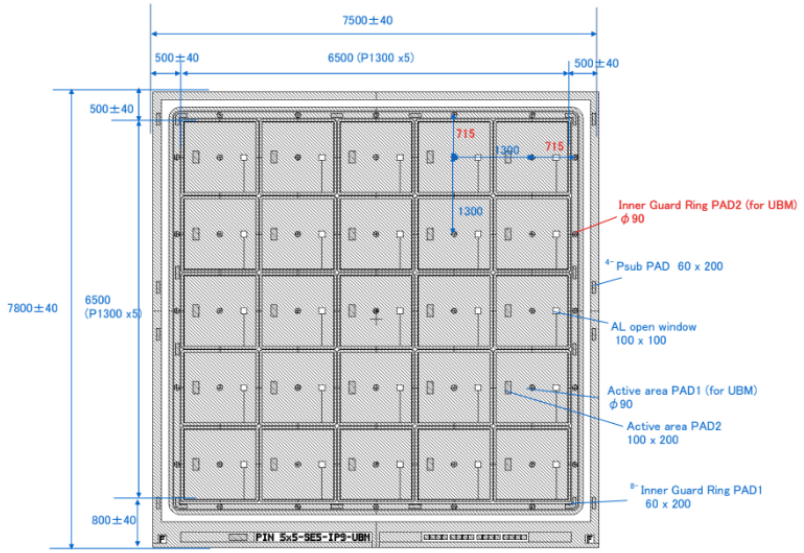


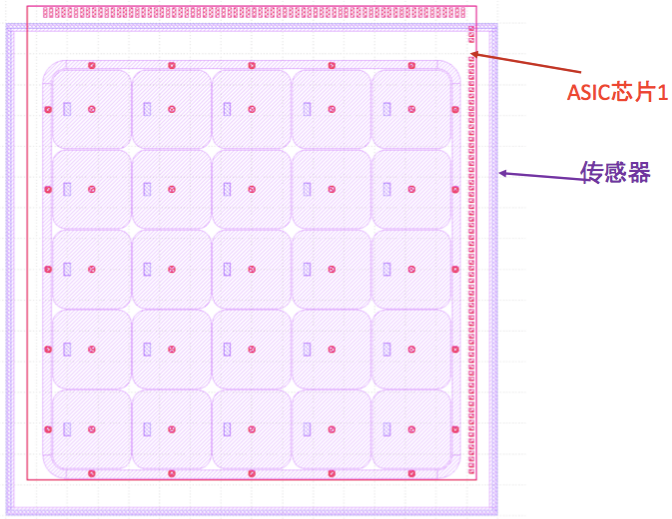
W2 measured with high resolution configuration.



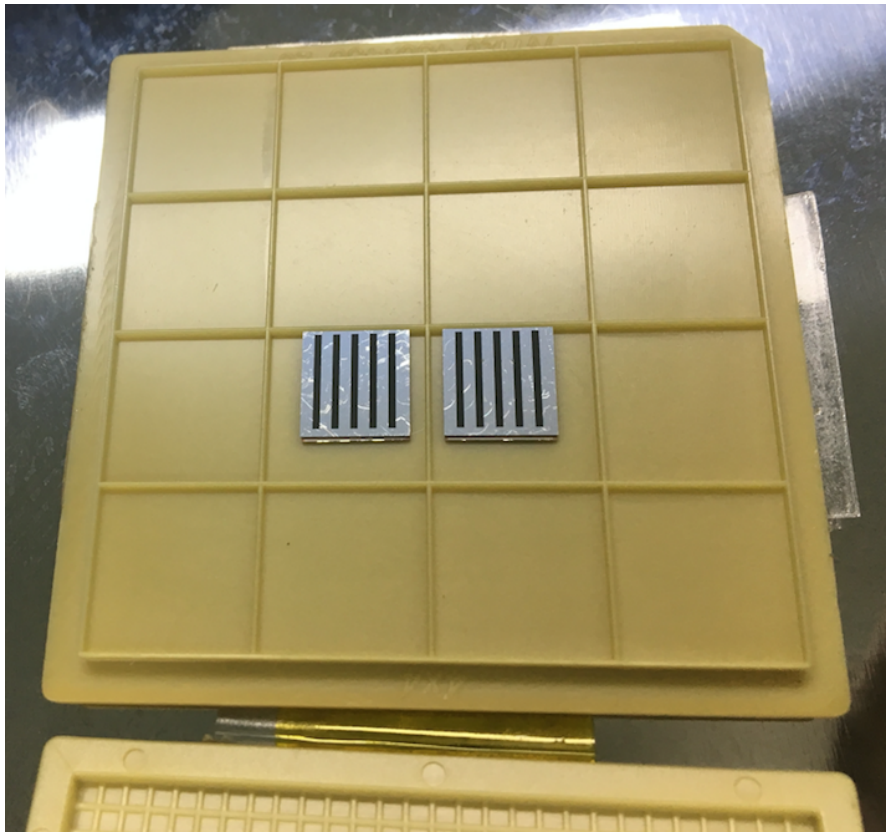
Layout


硅传感器
ASIC芯片1


7500±40
500±40
6500 (P1300 x5)
500±40
500±40
715
1300
715
1300
Inner Guard Ring PAD2 (for UBM)
ϕ90
Psub PAD 60 x 200
AL open window
100 x 100
Active area PAD1 (for UBM)
ϕ90
Active area PAD2
100 x 200
Inner Guard Ring PAD1
60 x 200
7800±40
6500
(P1300 x5)
800±40
PIN 5x5-SE5-IP5-UBM

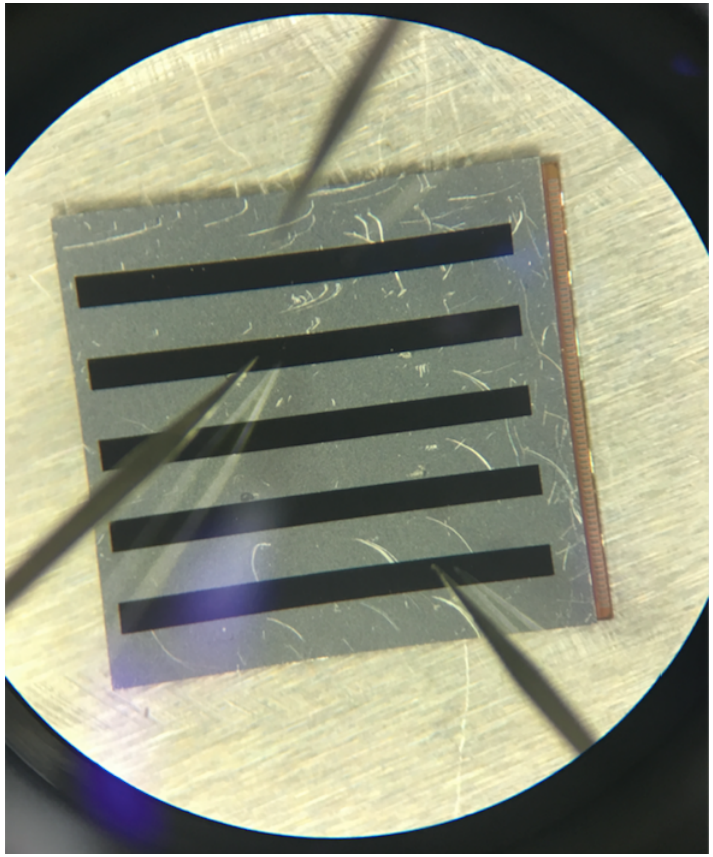

ASIC芯片1
传感器

After bump bonding

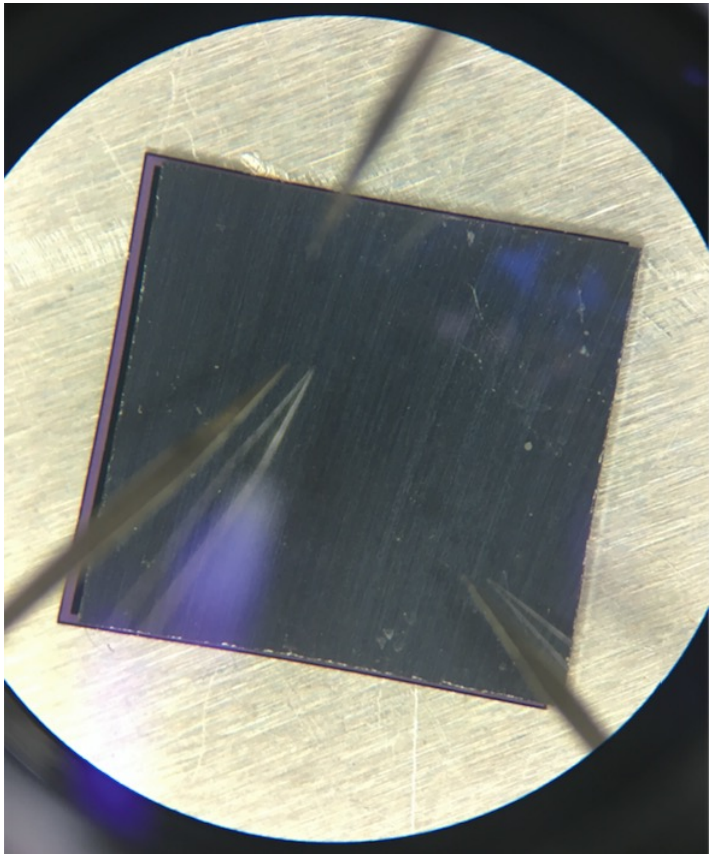


Sensor 1 after bump bonding

Sensor side

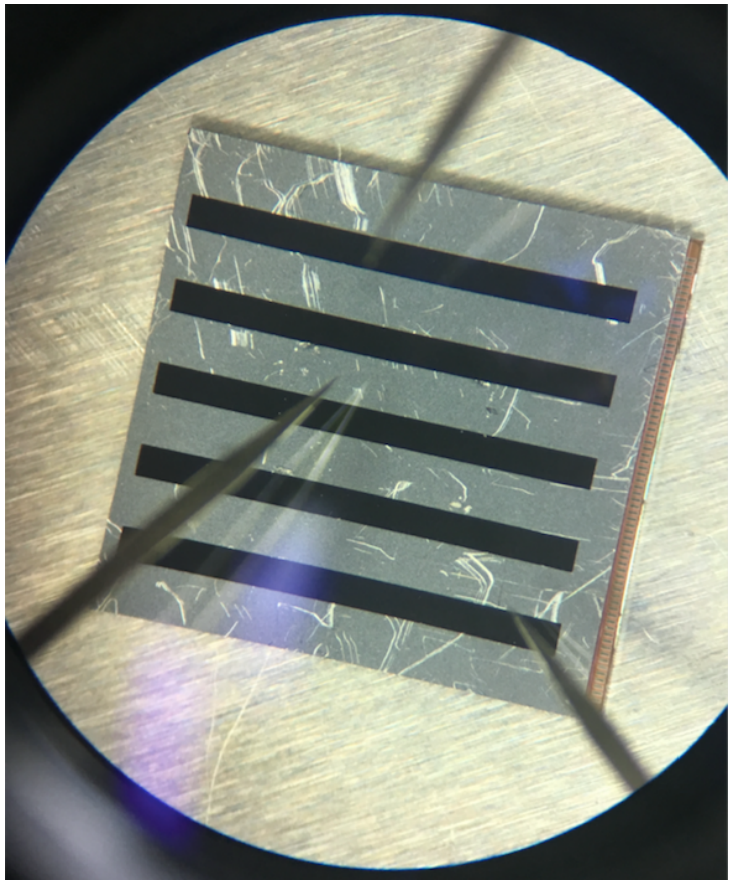


ASIC side

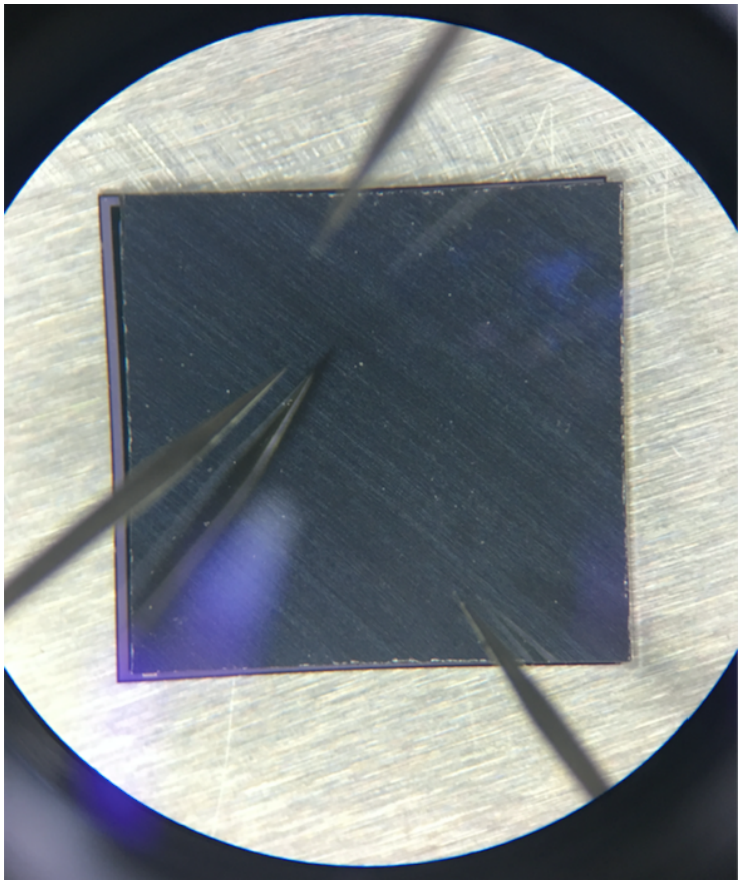


Sensor 2 after bump bonding

Sensor side



ASIC side



The sensor is not perfectly parallel to the ASIC.
We can see a small tilt angle by comparing their edges.
Suggest to perform an ultrasonic scan to check the bonding quality.