ESR 11 Update

Outline

Prototype status

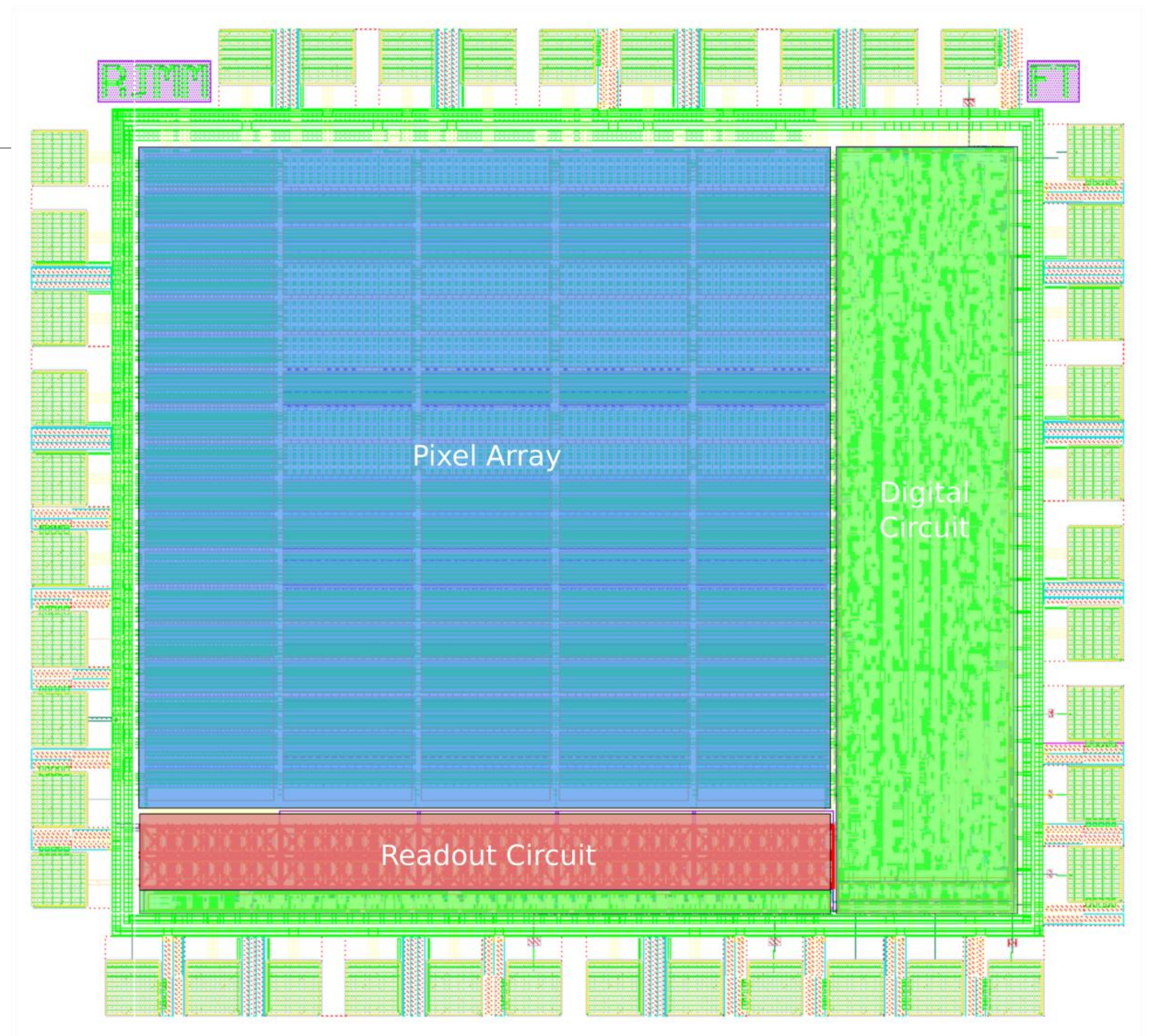
Current work

Future work

Prototype Status

Taped out a simple image sensor system with multiple test pixels last 21 Aug 2019

Chips arrived last week (9 Dec 2019)



Current work

PCB soldering

- Three types of PCB designs: all are already here, just need to solder components

Finishing test setup

- FPGA programming
- Scripts to automate testing of chip

Future work

Post-processing of chip
- January

Testing of chip
- January to April

Thermal annealing secondment
- April to May

Other irradiations

Future work: Post-processing of Chip

Need to do the following for the chip (January):

- Dicing of dies
- Grinding of dies
  - Experiments should be done first since a handle wafer will be used and the goal is too thin
- Passivation of backside
  - Needs to passivate backside with AlO2 after grinding

Future work: Testing of Chip

Base testing (without irradiation)

- Starts in January if everything went well in post-processing
- At KU Leuven: Campus Leuven

X-ray irradiation and testing (for TID effects)

- At KU Leuven: Campus Geel

Future work: Secondment

Secondment in Montpellier

- 4th week of April to 2nd week of May (3 weeks)
- Effects of thermal annealing

Could use Co60 for TID and then do thermal annealing

Future work: Other irradiations

May onwards

TID effects and displacement effects are the focus for the chip

- Digital cells in the chip are not radiation hardened (SEE)

Two-Laser Photon Absorption equipment in Geel will be used to check SEE in non-digital blocks

Possible tests for displacement damage

- High energy protons: 10-500MeV
- Neutrons: 1-20 MeV