Radiation Hardened Mk x Nk CMOS Image Sensor for Space Applications

Historically, the development of radiation hardened CMOS imagers for space missions has been long and costly. SRI’s new Mk x Nk architecture enables accelerated development of space imagers in custom sizes from 1k x 1k to 10k x 10k using an existing, proven foundry mask set and fabrication process.

The Mk x Nk Imager reticle consists of four modular building blocks which are photocomposed (“stitched”) to create imagers of custom dimensions.

The modular Mk x Nk mask set supports:
- Custom array sizes in 1024 x 1024 increments
- Frontside (FSI) or backside (BSI) illumination
- NMOS and PMOS polarity pixels

The mask set and custom foundry process have been proven through several permutations of imager sizes. Imagers are available now for development and test, further reducing program risk and development costs.

Mk x Nk imagers have been successfully fabricated in these sizes:
- 1k x 1k (1024 x 1024)
- 4k x 2k (4096 x 2048)
- 4k x 4k (4096 x 4096)

Customizable Mk x Nk imager accelerates development—reducing program risk and costs
The Mk x Nk imager minimizes on-chip circuitry. Benefits for space applications include increased reliability and radiation hardness, and reduced imager cooling load.

Each 1k x 1k block includes four bottom ports for reading out its 1024 columns (M). Plus, the corner block includes a single output port, and other necessary connections to read out the entire Mk x Nk array at reduced frame rate. As a result, the same corner probe card or electrical connections can read out any permutation of Mk x Nk array size. This readout flexibility saves testing costs, and enables operating modes such as redundancy or built-in self-test (BIST) for space applications.

Contact us today to discuss the Mk x Nk imager for your latest space program.