

CCD-IMAGERS for HDTV

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High performance CCD-imagers for HDTV-applications require a high resolution combined with a high light sensitivity. These characteristics can be achieved by:

1. high pixel rates on large chips, and
2. simple cell construction with a high aperture ratio.

The paper to be presented will deal with a 1 inch frame-transfer CCD-imager suited for the European HDTV-standard (1250 lines, 50 fields, 2:1 interlacing). The following issues will be addressed:

the large RC-values of the poly-Si CCD-gates make a fast frame transfer impossible. How can this problem be solved, and how is it solved in FIT sensors?

high pixel rates require a high frequency of the output register and a high bandwidth output amplifier. These requirements can be relaxed by a charge packet multiplexing technique.

CCD-chips with details less than $1\mu\text{m}$ require a 5x or 10x stepper to minimise mask errors, but the large chips in combination with a 5x or 10x reticle require large field of view steppers. This problem can be solved by using separate reticles for the image and storage section of the sensor, and stitching them together on the wafer.

image cell geometry, which fulfills the function of light conversion site and CCD transport channel and which is built on the vertical anti-blooming and charge reset diffusions.