

## Silicon Drift Detectors with Improved High Throughput Performance

M. Zhang\*, S. Barkan, J. Wang, V. D. Saveliev, L. Feng B. Goolsby, E. V. Damron

Hitachi High-Technologies Science America, Inc. 20770 Nordhoff St., Chatsworth, CA 91311, USA.

\*Email: [melody.zhang@hitachi-hitec-science.us](mailto:melody.zhang@hitachi-hitec-science.us)

With the development of high speed synchrotron beam, the demand for high throughput x-ray detector is also rising. To achieve good performance at high count rate, silicon drift detectors (SDD) with shorter rise time is designed. In this report, an extensive study of silicon drift detectors (SDD) with improved high throughput performance is presented. Figure 1 illustrates how energy resolution changes as count rate increase. As the signal rise time improves, the resolution at high count rate is also improved. In addition, signal throughput, stability of Peak position and resolution will be discussed.

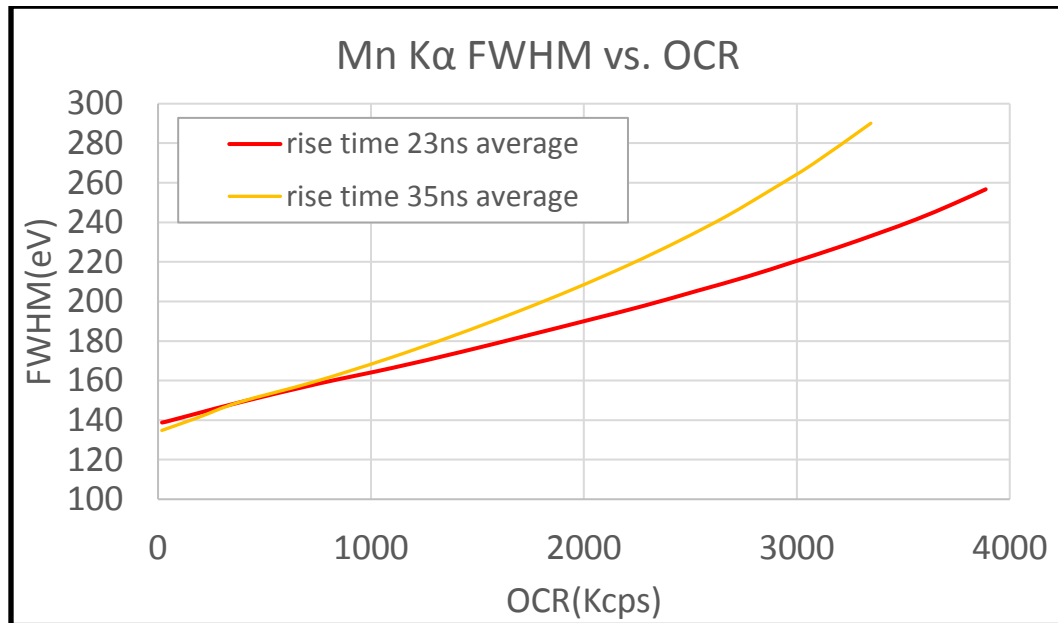


Figure 1. Resolution degrade as OCR increase. When signal rise time is improved from 35ns to 23ns, the resolution at super high count rate is also improved.