OAK RIDGE NATIONAL LABORATORY
MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY
FACT SHEET

Application Specific Electronics for Sensor Systems

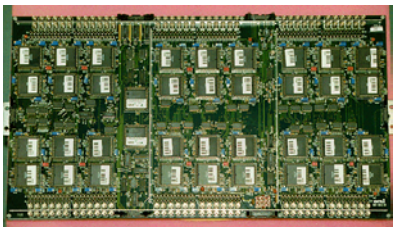
Enabling the Real-World Use of Sensors

Highly Integrated Electronics Enable Use of Novel Sensor Technologies

Many novel sensor technologies have been conceived and implemented at Oak Ridge National Laboratory to address a cadre of measurement problems. Moving those technologies from the laboratory to the real world has always required electronics to acquire the signal of interest from the sensor itself, perform some appropriate signal processing and then transform the processed signal to useful information. The laboratory has a rich history of electronics research and development dating all the way back to the days of early radiation detection instrumentation. That capability has always served as an enabler for measurements associated with important research and development projects. Today's sensor technologies are capable of providing highly sensitive measurements. The Lab's electronics capabilities have kept pace taking full advantage of even the most advanced, high performance sensors.

Highly Integrated Electronics Have Been Used in a Wide Variety of Measurement Applications

- Experimental Physics Detector Systems
- Bio-Science Instrumentation
- Distributed Sensor Systems
- Harsh Environment Sensor Systems
- Wireless Sensor Systems
- Radiation Detection Sensor Systems
- Interface to Nanoscale Sensors



144 Preamplifiers, 144 Shaping Amplifiers, 144 Time2Amplitude Converters, 288 Analog Memories and 288 Analog to Digital Converters

8 Channel Preamp and Programmable Gain Shaper Amp Chip

Advantages of Highly Integrated Electronics

- Data Efficient Measurement Techniques
  (data sparsification, etc.)
- Ultra Low Power
- High Level of Functional Integration
- High Performance
- Small Package Size
- Mixed-Signal System Approach
  (allows high degree of functional integration)

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