

Programmable Analog Modulator/Demodulator (#3490)

A field-programmable analog array for rapidly prototyping analog systems

Georgia Tech inventors have created a large-scale field-programmable analog array (FPAA) for rapidly prototyping analog systems. The large-scale FPAA includes a floating-gate transistor array and a plurality of computational analog blocks (CABs), which may be adapted to set bias voltages for operational transconductance amplifiers (OTAs), adjust corner frequencies on the capacitively coupled current conveyors, set multiplier coefficients in vector-matrix multipliers, and a variety of other operations. The floating-gate transistors may be used as switch elements, programmable resistor elements, precision current sources, and programmable transistors. A notable feature of the present invention is the use of the transistors in the floating-gate transistor array as both switching elements for routing signals and as programmable elements for manipulating the signal being routed. By using the transistors as multi-purpose elements, greater flexibility may be achieved in implementing designs using the present invention.

Benefits/Advantages

- Flexible
- Quick
- Programmable

Potential Commercial Applications

- Analog circuit development
- Analog modulators/ demodulators

Background/Context for This Invention

Even in today's world of digital electronics, it is often desirable, or even necessary, to use and process analog signals. For example, most audio files, while typically stored in digital form such as MP3s and compact disks, must be converted to an analog signal in order to be heard through a speaker. Additionally, many other types of equipment depend on analog signals. It is often desirable to process the analog signals, and it may even be desirable to store the analog signals electronically. Currently, circuits used for analog processing and storage have a long development cycle and are typically large. It would be useful to create analog circuitry that allows for flexible analog design in a compact package.

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More Information

U.S. Patent Issued - [7439764](#)

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/programmable-analog-modulator-demodulator>

Images:

Programmable Arbitrary Waveform Generator

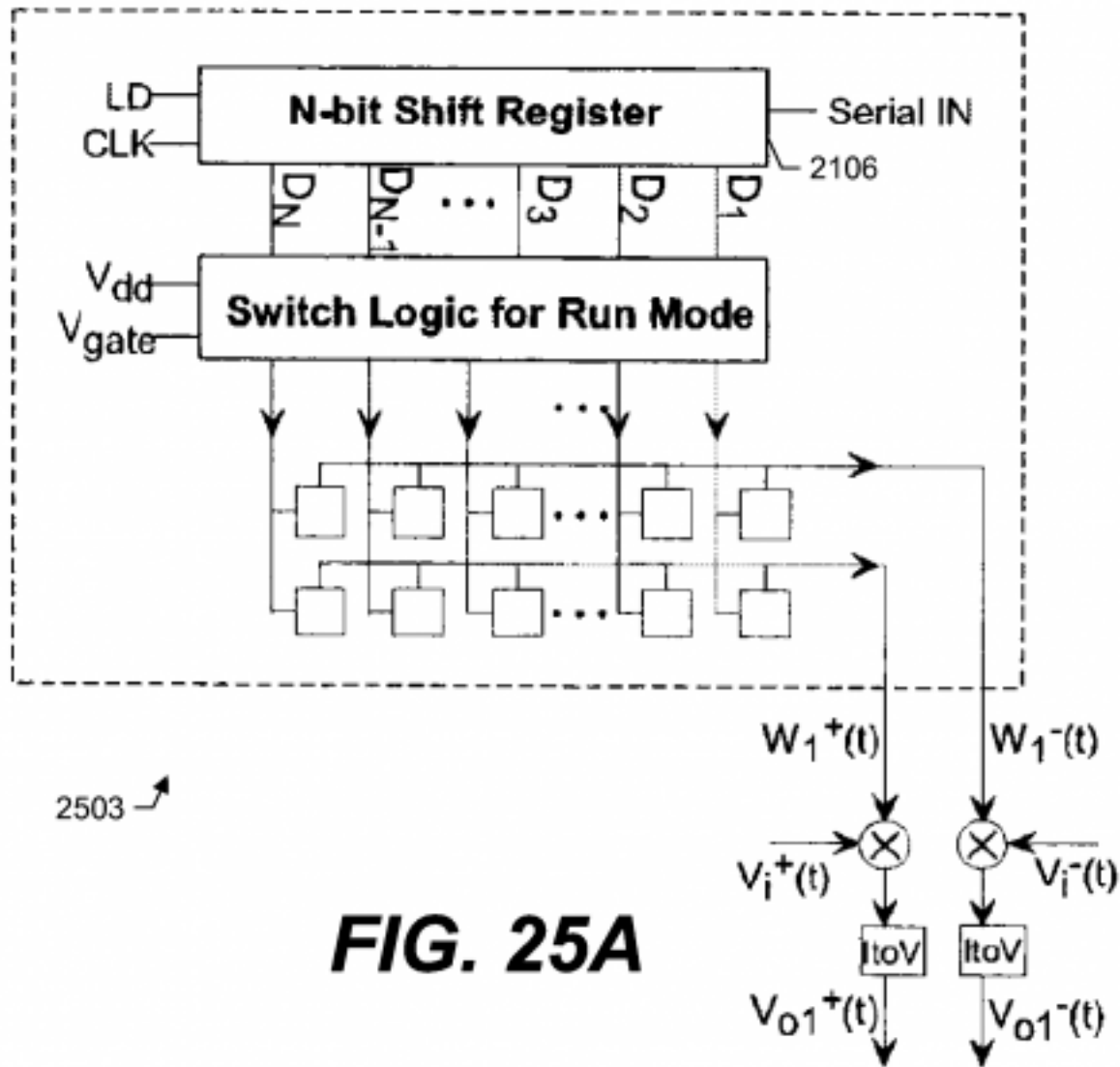


FIG. 25A