TRIAD SEMICONDUCTOR

The End of High Priced ASICs.

Disruptive Via-Only™ Technology Makes it Possible.

Size, Weight and Power are Critical for Defense Applications

Defense industry applications such as secure software defined radios, man-packs, avionics, satellites, munitions, electronic vehicle health systems and mechanized vehicle electronics require small, light weight, and low power electronics. ASIC integration of electronics has been a key way to achieve size, weight, and power reductions while maintaining mission-critical performance and tamper-protecting critical electronics.

Unfortunately, mixed signal full-custom ASIC development has been an expensive, time-consuming, and risky endeavor.

VCA Technology Benefits

- Cut development time by 70%
- Cut development cost by 75%
- Low Risk
- 4-Week Fabrication
- IP Reuse

Announcing the End of High Priced ASICs

Triad's disruptive Via-Configurable Array (VCA) technology is a new way to design mixed signal ASICs using a single mask Via-Only™ fabrication process.

VCAs combine silicon proven analog and digital tiles on an integrated circuit die. These tiles are overlaid with a global routing fabric which covers the digital, memory, and analog resources throughout the VCA.

Vias placed between two of the metal layers are used to interconnect and configure all of the mixed signal resources throughout the VCA.

Wafers containing VCA die are partially processed at the foundry up to the via layer and these wafers are then staged at the foundry. Your mixed signal design is processed by TRIAD's patented design tools and converted into a single Via-Only™ mask which is then sent to the foundry to be processed against the staged wafers.

Defense Focused Engineering

- ITAR Compliant & 100% US-Citizens
- ASIC Design Experts with over 120 years experience
- 100+ Successful ASIC tape outs

Radiation-Hardened Arrays

- Via Configurable Digital & Mixed Signal Rad-Hard Arrays
- Rad-Hard by Process & Rad-Hard by Design Arrays
- Total Incident Dosage (TID) > 1 Meg rad
- We can create a custom Rad-Hard VCA for a specific application space

Analog Building Blocks

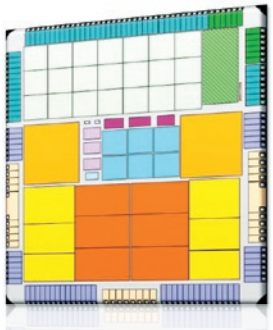
- Band gap, Brown-out detector
- Biquad sections
- Arrays of capacitors, resistors,
- Continuous time & switched switches, & transistors capacitor filters, Capacitive touch interface
- Op-amps, comparators, integrators, Sigma delta modulators

Data Converters

- High speed ADCs and DACs
- 8 to 24-bits resolutions

VCA Technology

- 5,000 to 1-million ASIC gates
- Distributed and block RAMs
- 1-KB to 128-KB EEPROM
- Configurable analog & digital I/O
- ARM® Cortex™-M0 32-bit Processor
- USB 1.1, USB 2.0
- IIC, SPI, UART, LIN, CAN
- Digital filters, FFT
- PLLs, delay lines, real-time-clock



VCA assembled from mixed signal building blocks.

Power Management

- 1.8V to 70V operation
- LDO, buck-boost regulator, charge pump
- LED driver, H-bridge, motor control

Getting Started

Whether you are using one of TRIAD's existing arrays or having us create an optimized array for your application, the best way to get started is to have one of our FAEs take a look at your design and help you explore your options. To get more information about getting your design on a VCA, email an FAE at info@triadsemi.com or give us a call at 336-774-2150.

VCA Selector Guide

Array	ASIC Gates	RAM	NVM	Digital I/O	Analog I/O	Analog IP
VCA-1	40,000	54-Kb	18-KB ROM	72	42	30+ op-amps plus discrete R,C, transistors. 2 8-bit DACs, 1 10-bit DAC.Band-gap, vref – 5V operation…
VCA-2	9,000	12-Kb	1-KB EEPROM	42	48	50V operation, 6 20V op-amp tiles, 1 50V ref tile, 6 50V regulator tiles, 4 3.6V op-amp tiles, 4 8-bit ADCs…
VCA-3	16,800	12-Kb	–	14	22	4 3.3V op-amp tiles, 2 fully differential op-amp tiles, 3 10-bit DACs, 1 8-bit ADC, band-gap
VCA-4	20,000	19-Kb	8-KB EEPROM	32	59	6 low-power, low-noise op-amp tiles, 2 fully differential op-amp tiles, band-gap, bias gen, 2 hi-resistance tiles, PLL
VCA-5	76,000	102-Kb	32-KB EEPROM	60	72	16 fully differential op-amp tiles, 20 3.3V op-amp tiles, 12 wideband tiles, 8 10-bit DACs, 10-bit 25MSPS ADC, DAC array
VCA-6	800,000	1.14-Mb	–	320	100	High speed pipelined ADC arrays, current steering DACs. 9 fully differential op-amp tiles, 12 3.3V op-amp tiles
VCA-201	385,000	380-Kb	46-KB ROM	239	–	RAD-HARD digital only, mixed signal 2nd half 2010. PCI I/O, LVDS I/O, CMOS-SOI, Dual Oscillators, TID > 1 M rad
Mocha-1	22,000	30-Kb	16-KB EEPROM	88	88	ARM Cortex-M0 32-bit processor with 8 fully differential op-amp tiles, 6 3.3V op-amp tiles, band gap, 3 10-bit DACs

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