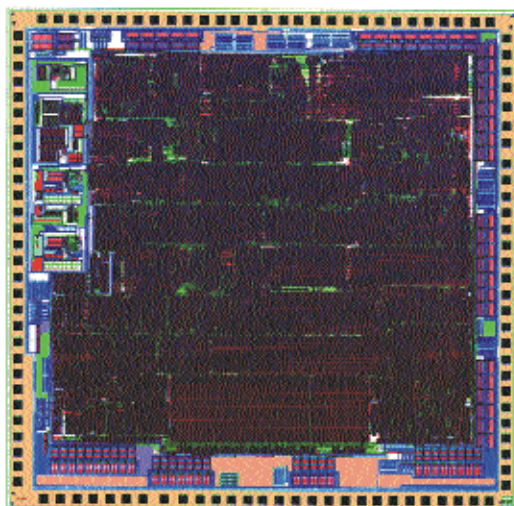
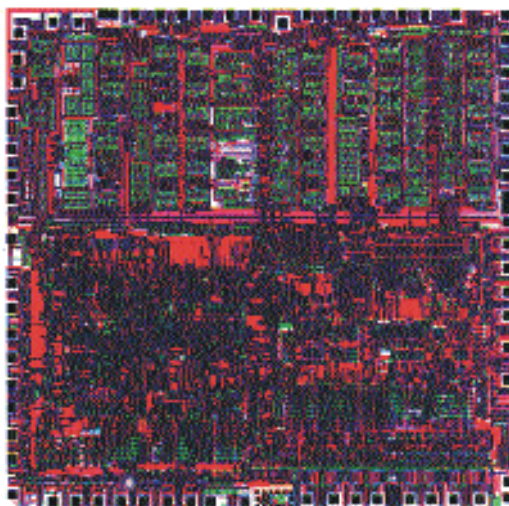




Creative Integrated Systems, Inc.



Network Processor IC



Multiband Audio Network IC

CREATIVE INTEGRATED SYSTEMS, INC.

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Creative Integrated Systems, Inc.

Creative Integrated Systems, Inc. (CIS) is an expert in all facets of VLSI design. CIS develops Custom Analog and Mixed Signal (including RF) circuits and High Speed Digital ASICs using state of the art design methodologies and industry standard CAD tools. CIS can work at all phases of Integrated Design (IC) from initial system and circuit design, to layout and verification, to final test.

CIS uses these skills to help our customers develop proprietary communication designs, components, systems, and products. Founded in 1985, CIS is located in Santa Ana California, 40 miles south east of Los Angeles.

Chip Engineering Services:

- Analog and Mixed Signal Integrated Circuit Engineering
- Digital ASIC VLSI Synthesis and Routing
- Custom Digital Cells & Circuit Design Engineering
- Test Programming and Testing Services for ICs
- Pathway to System-On-Chip (SoC) Solutions
- Wafer Foundry Interface, Compatibility and Migration Services

System Engineering Services:

- System Designs including DSP and Network Processor based Designs
- System Firmware and Software for Off the Shelf or Embedded Processors
- Test Programming and Testing Services for System Products

Products for OEM and Manufacture:

- Teligent Telecommunication System for the Small Business and Home Office
- Reference System Designs and Chips for Manufacturers
- Low Cost PC Based Testers for Manufacturing
- CIS' Intellectual Property, Patents

Analog and Mixed Signal Integrated Circuit Engineering Services

CIS is an expert in Analog and Mixed Signal Engineering, Design, and Layout. Our experts understand and practice all of the popular analog engineering techniques in Analog and Mixed Signal Designs and know how to minimize noise.

The layout of Analog and Mixed Signal circuits is often more important than the actual circuit design. Therefore it is important that the layout team has a great deal of experience. CIS has this experience.

CIS Analog and Mixed Signal Engineering Experience:

- RF Design
 - AM/FM
 - LNA
 - Mixers
- Low Voltage Analog Designs
 - Op Amp, Transconductor Amp, Comparator
 - VCO, and PLL Designs
 - Continuous and Switched Capacitor Filter Design
 - Analog to Digital Converter Design
- Analog Engineering Techniques
 - Cascoding to improve gain and PSRR
 - Cascoding to improve current mirror performance
 - Matching circuits for bias current or voltage generation
 - Differential circuits for common mode noise rejection
 - Switched capacitor techniques for low power design
 - Sigma Delta techniques
 - PLL techniques

Digital ASIC VLSI Synthesis and Routing Engineering Services

The staff at CIS has extensive experience designing ASIC using a wide range of EDA tools. CIS staff works with either the client's tools or CIS' tools, as needed.

A typical ASIC layout design flow:

Logic Synthesis (translation of behavioral to structural Verilog code)

Note: our customers often perform this step.

Floor planning and placement of I/O and major macro blocks (ROMs, RAMs, PLLs, etc.)

Timing driven Place and Route of standard cells

Clock Tree Synthesis, Timing Analysis

Layout editing as needed

Delay Calculation (SDF output)

Back-annotation of post layout timing delays

Final timing check

Physical verification (DRC, LVS, ESD-Latch up, Soft-tie/ERC, Stress, Antenna)

ASIC Design Step

Synthesis & Optimization

Floor planning

Place and Route

Layout Editing

Physical Verification

Timing Analysis

Verilog Logic Simulation

Tools Used and Mastered by CIS

Mentor Graphics (MG) Leonardo

Avant! Apollo, Silicon Valley Research (SVR) GARDS

Avant! Apollo, Synopsis Physical Compiler, SVR GARDS

Cadence Virtuoso, MG IC Station, IC Editors ICED

Mentor Graphics Calibre, Cadence Dracula

Avant! Apollo, Mentor Graphics Leonardo

SimuCAD Silos

An Example Completed Tapeout:

A 0.18 μ mixed mode 5 metal layer design with 7.5 million gates (4 million standard cell gates), over 100 memory blocks, 4 PLLs and a DAC in a 23mm² core area and with a maximum clock speed of 200MHz.

Custom Digital Cells and Circuit Design Engineering Services

The dramatic advances in ASIC digital design has made custom digital chip design a thing of the past, but some digital circuits cannot be completed efficiently with an existing ASIC cell set. CIS has extensive experience in digital and analog engineering design and can design and layout area-efficient circuits compatible to ASIC interfaces, cell formats and design methodology.

CIS Custom Digital Circuit Design Experience:

- I/O Circuit Design
 - ESD and Latch-Up Tolerant Designs
 - SCSI and ATA Designs
- Memory Designs (especially ROM and RAM)
- Special ASIC Compatible Cells for Speed Path or Density Improvement
- ASIC Interface to Analog or Electronically Incompatible IP Cells
- System Level Design including:
 - Chip Architecture and Logic Design
 - DSP, RISC, and Microprocessor Programming and Integration
 - Embedded Controller Software Development
 - Test Specifications and Pattern Generation
- Micro-probing and Debug Services
- Chip Photographic, Analysis and Reversal Service.

CIS Testing Services

CIS has extensive experience in test and debug of existing VLSI and integrated systems. CIS is an expert in chip level test and qualification as well as system level test, formal qualification and certification.

Test Areas that CIS has Experience In:

- Chip Qualification and Test
- Chip microprobe and debug service.
- Chip production wafer test
- Chip production final test
- System design, qualification and test
- System Production in circuit test
- System Production final test
- Test lab interface for FCC and UL formal qualification

PC Based Testers:

CIS has extensive experience in building small system testers configured from a standard PC and a DAC expansion board and programmed using the high level Agilent VEE test language. This provides an excellent, easy to assemble, flexible, and low cost approach to production testing.

CIS Intellectual Property, Patents

CIS has developed a considerable portfolio of patents and inventions focused on Mixed Signal and High Speed Digital VLSI CMOS Circuits for telecommunications, data communications and high-density memory products. The following is a list of patents.

List of Patents:

Memory Circuit Technology patents: 16

Telecommunication Technology patents: 5