RADLogic
www.radlogic.com.au

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Mixed-Signal IC Design Services

From Concept To Reality
CMOS Analog, Digital and Mixed-Signal IC Design Services

- Incorporated in 1990, currently 5 engineers, extensive experience.
- Full or Partial Design Services, offered world-wide.
- Not a manufacturer, but can assist customers with Wafer Foundry Interface, etc.
- Technology & Applications determined by our customers
- 10,000 to 10M transistor complexity
- Typical Processes: CMOS 130nm & 180nm, 55nm, 6-layer metal
Capabilities

격 Full Chip Design and Development

 alunos and Digital IP Development

Test Development & Support

HDL (VHDL, Verilog), Analog Design, Simulation, Layout and Verification

RFID, RF, USB, Processor Architecture, Protocol Engines, Signal Processing.

Mentor, Cadence, Synopsys Design Tools
RFID

- Standard Protocols: ISO 14443, NFC, ISO 15693, ISO 18000-3 Modes 1,2, UHF EPC Gen2/ISO18000-6

- Characteristics:
  - RF Powered.
  - Low Power, Low Cost, Low Pin Count (2 pins), small chips.
  - ~30% Analog, 30% Digital, 30% Memory.
  - AFE includes Rectification, Voltage Regulation, Clock extraction/generation, Command demodulation, Reply modulation.
  - Digital includes Command Decoding, Protocol Engine, Memory Management, Security Features (e.g., SHA).

- Protocol Engine Generator: Rapidly creates low-power, minimal hardware that is extensible (interfaces to wired COMMS, security devices, etc).

- RADLogic licenses a synthesisable digital logic core for the EPC Gen2 UHF RFID Protocol, and also a UHF AFE design.
Example Applications

- **RFID:**
  - Authentication (Drugs, Security, Print Cartridges), Tracking (Medical, Aeronautical), Tagging (e.g., blood), Gaming (chips in chips), Meter Reading, ...

- **USB:** Hubs, Bridges & Peripherals

- **Medical:** Neural Stimulation and Response measurement

- **Sensors:** Temperature, Capacitive Touch, Optical, Frost, etc.

- **Controllers:** Display Controllers & Microcontrollers

- **Silicon Fingerprints:** Inherent process variation
Summary & Experience

- Analog Experience:
  - Power Supplies, PLL, DLL, Demodulators, modulators, Amplifiers, Filters & Comparators, ADC & DAC (Sigma-Delta, Switched Capacitor, Resistive), RF Transmission (900MHz), Memory Design (RAM, ROM, EEPROM/MTP), I/O Pads, ...

- Digital Experience:
  - Processor Architecture, State Machine & General Logic design, HDL Coding, Test benches, High Level Modelling, FPGA prototyping, Logic Synthesis, Place & Route, Timing Closure, etc.

- Other
  - High Voltage Processes
  - Printed Electronics (Silicon Ink)
  - Optical sensors (Photo-sensors and SPADs)
  - MEMS (Printer Ink Application)
  - Liquid Crystal on Silicon (LCOS)
Thankyou for Listening

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Chip Design on your doorstep, anywhere.