

Racyics® Voltage and Temperature Sensor

GlobalFoundries® 22FDX®

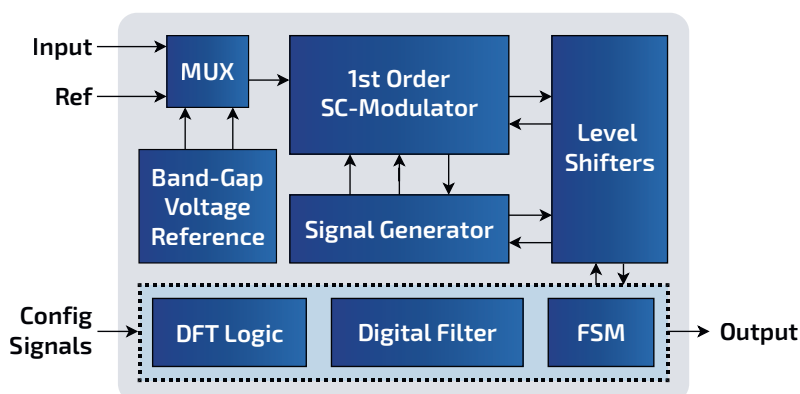
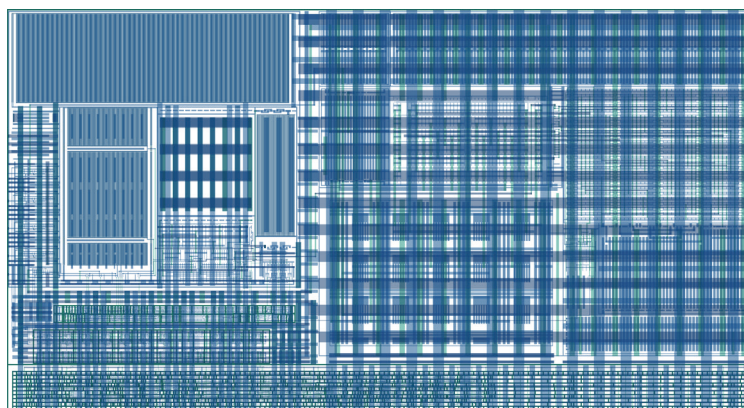
Racyics

DESCRIPTION

ri_vtsens_gf22fdx is an integrated (supply-) voltage and temperature sensor IP with integrated ADC and band-gap voltage reference. The delta-sigma analog-to-digital converter (ADC) has 4 input channels and a 1st order SC-modulator. One input channel is used as a reference voltage and cannot be used for external measurement. The configurable oversampling ratio (OSR) offers different resolutions with adjusted conversion time. The analog part of the circuit operates from a supply of 1.62 V to 1.98 V ($\pm 10\%$ of 1.8 V IO supply). Target application are voltage and temperature monitoring in systems-on-chip. The IP is divided into a full-custom part and a RTL description of state machine and decimation filter.

KEY FACTS

- ▶ Voltage and temperature monitoring
- ▶ 3 single-ended voltage measurement inputs
- ▶ Operating temperature range: -40°C to 150°C
- ▶ Temperature measurement with accuracy up to $1^{\circ}\text{K} \pm 1^{\circ}\text{K}$ change in temperature
- ▶ Measure voltage up to supply rail with voltage accuracy up to 2 mV change
- ▶ 1st order Delta-Sigma ADC with configurable oversampling ratio
- ▶ Resolution up to 12 bit
- ▶ Conversion time ≈ 3.1 ms for OSR of 1024
- ▶ Typical power consumption: active = $60 \mu\text{W}$, standby = $0.3 \mu\text{W}$
- ▶ Integrated voltage reference source
- ▶ Register interface for data readout
- ▶ Delivered as hard IP
- ▶ Total size: $139.4 \mu\text{m} \times 75.28 \mu\text{m} = 10,494.032 \mu\text{m}^2$



DESIGN VIEWS

- ▶ Datasheet with integration guidelines
- ▶ APL views for EMIR analysis
- ▶ GDSII layout
- ▶ LEF abstract
- ▶ .lib/.db timing files
- ▶ LVS netlist
- ▶ Verilog behavioral simulation model

IP SPECIFICATION

IP	Supplier	Description	Supply Voltage [V]	ZBB	ABB	Ready for Evaluation	Ready for Testchip	Ready for Production
ri_vtsens_gf22fdx	Racyics	Voltage and Temperature Sensor	core 0.80 IO 1.80	yes	no	now	now	01/27



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