

# Kevin Fronczak

Analog Designer

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## PROFESSIONAL

### Sony Electronics Inc.

Rochester, NY

*Staff Mixed Signal IC Design Engineer*

*July 2018 - Present*

- Involved in the Dynamic Voltage Scaling (DVS) power management architecture for next-gen image sensors
- Responsible for architecture and design of a sub-uW unconditionally stable capacitorless LDO supporting up to 10mA of load current in 40nm to support DVS efforts
- Responsible for the design of circuits to interface with a pixel array on a low-power CMOS imaging product

### Synaptics Inc.

Rochester, NY

*Sr. Mixed Signal IC Design Engineer*

*February 2014 - July 2018*

- Experience implementing various capacitive sensing front-ends for touch and fingerprint applications, with a focus in low-noise and low-power architectures
- Designed and implemented a small area and noise-optimized capacitive fingerprint AFE to enable a 50% in die cost without impacting performance in 55nm
- Designed an innovative continuous-time demodulation topology for SNR improvement in fingerprint AFEs
- Analyzed the impact of non-linearities in competing fingerprint AFE architectures to determine interference susceptibility, and proposed solutions to mitigate this risk
- Designed a noise-optimized switched capacitor demodulator and filter for high-volume touch AFEs
- Designed a passive mixer with built-in DAC capable of arbitrary waveform mixing
- Architected and implemented a sub- $\mu$ W power management architecture to reduce system power by 30% utilizing a long (100s of ms) sample-and-hold bandgap architecture
- Designed a nW-level time-to-digital (TDC) temperature sensor capable of sub-1°C resolution
- Designed and evaluated a low-jitter 1Gbps receiver front-end for MIPI DSI
- Led efforts to evaluate, track, and debug new silicon for risk evaluation of metal or all-layer spin
- Experience working closely and effectively with multidisciplinary teams to ensure smooth silicon design all the way through to production
- Focus on fundamental understanding of circuits for architectural comparisons is a strength

### Synaptics Inc.

Rochester, NY

*Analog Design and Silicon Validation Contractor*

*June 2013 - February 2014*

- Performed extensive verification and validation on LDOs, VCOM drivers, LCD level shifters, and MIPI DSI

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## EDUCATION

### Rochester Institute of Technology

Rochester, NY

M.S. and B.S. in Electrical Engineering, August 2013

GPA: 4.0

### Thesis

*Stability Analysis of Switched DC-DC Boost Converters for Integrated Circuits*

- Investigated small-signal modeling and stability requirements for boost converters, as well as a variety of OTA-based controller topologies, in order to aid in the measurement of boost converter stability on multiple ASICs. Also investigated the use of optimization algorithms as a way to improve controller design.

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## PATENTS AND PUBLICATIONS

- US 9,780,736 - Temperature compensated offset cancellation for high-speed amplifiers - Grant Oct. 3, 2017
- US 9,817,428 - Current-mode Bandgap Reference - Grant Nov. 14, 2017
- US 10,394,386 - Interference Detection - Grant Aug. 27, 2019
- US 15/685,937 - Mixer Circuit - Pending Feb. 28, 2019
- US 15/885,769 - Oscillator Temperature Coefficient Adjustment - Pending Jan. 31, 2018