Douglas R. Holberg, Ph.D.
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Education

B.S.E.E. - 1977, Texas A&M University, College Station, TX.

M.S.E. - 1989, The University of Texas, Austin, TX.

Ph.D. - 1992, The University of Texas, Austin, TX.

Experience

Intellectual Property Technical Consultant –

Apr 2013 – Present: Principal

Patent analysis for licensing and litigation (offensive and defensive)

Patent analysis and review for valuation

Inter Partes Review

Expert witness

Jan 2008 – Mar 2013

Patent analysis for licensing and litigation (offensive and defensive)

Technical support for patent prosecution

Patent analysis and review for valuation

Silicon Laboratories –

Jun 2005 – Jan 2008: V. P. of Technology

Dec 2003 – Jun 2005: Director of Engineering, MCU Products

Cygnal Integrated Products - Feb. 1999 to Dec 2003 (acquired by Silicon Labs Dec 2003)

Vice President of Engineering, Chief Technical Officer, Co-founder

Concurrent to the position at Cygnal, I served as Adjunct Assistant Professor at the University of Texas at Austin, and Technical Advisory Boards for Silicon Metrics and Celite Systems.

Adjunct Assistant Professor, University of Texas as Austin – 1995-2001

Taught "CMOS Analog Circuit Design" Graduate class: EE397K and Undergraduate class: EE338L

Crystal Semiconductor Corp. (Cirrus Logic) - Sep. 1996 to Feb. 1999

Director of Imaging and Video Products (CCD interface, CMOS imagers, TV encoders, etc.)

Crystal Semiconductor Corp. (Cirrus Logic) - Oct. 1992 to Sep. 1996

Design Manager for VLSI mixed-signal products including telecommunications and disk drive read channel devices.

Independent Consultant - Aug. 1987 to Oct. 1992

Taught a short-course entitled "CMOS Analog Integrated Circuit Design" in Berlin, Germany twice per year as a part of the "Berlin Continuing Engineering Education Program." In addition, this course was taught at Analog Devices BV, Ireland, Aug. 1990.

Lectured at Baylor University's Department of Engineering (Spring '89, Spring '91).

Consultant for Advanced Micro Devices, Crystal Semiconductor, and other companies on projects relating to switched-capacitor filters, operational amplifiers, latchup, and the ISDN analog interface.

Crystal Semiconductor Corp. - Oct. 1984 to Aug. 1987

Project leader on the CS7008 Universal Filter--a universal programmable filter using novel switched-capacitor techniques. This design was completed in a 3μm silicon-gate double-polysilicon CMOS process.

Texas Micro Engineering, Inc. - June 1980 to Oct. 1984

Project leader on TME3030 Sense Amplifier/Filter--a dual-channel switched-capacitor filter circuit to be used in a medical electronic application. Co-designed a gate-array platform customized for medical and consumer products. Performed extensive device characterization of MOS transistors. This work included characterization of noise performance and characterization of transistors operating in weak inversion.

Mostek, Inc., Carrollton, TX. - Jan. 1978 to June 1980

Circuit designer. Served as project leader on MK5387 DTMF generator.

Inventions

1.	8,010,819	Microcontroller unit (MCU) with power saving mode
2.	7,719,595	Preview mode low resolution output system and method
3.	7,660,968	Reconfigurable interface for coupling functional input/output blocks to limited number of I/O pins
4.	7,613,901	Comparators in IC with programmably controlled positive / negative hysteresis level and open-drain/push-pull output coupled to crossbar switch or rising/falling edge interrupt generation
5.	7,511,465	Digital pulse width modulated power supply with variable LSB
6.	7,504,902	Precision oscillator having linbus capabilities
7.	7,504,900	Integrated circuit package including programmable oscillators
8.	7,502,883	USB integrated module
9.	7,498,962	Analog-to-digital converter with low power track-and-hold mode
10.	7,441,131	MCU with power saving mode
11.	7,421,251	Precise frequency generation for low duty cycle transceivers using a single crystal oscillator
12.	7,382,181	Method and apparatus for tuning GMC filter
13.	7,323,855	Digital pulse width modulated power supply with variable LSB
14.	7,315,200	Gain control for delta sigma analog-to-digital converter
15.	7,304,679	Preview mode low resolution output system and method
16.	7,289,145	Correlated double sampling variable gain amplifier circuit for use in a digital camera
17.	7,286,176	CCD imager analog processor systems and methods
18.	7,256,611	Cross-bar matrix with LCD functionality
19.	7,171,542	Reconfigurable interface for coupling functional input/output blocks to limited number of i/o pins
20.	7,164,311	Method and apparatus for tuning GMC filter
21.	7,061,421	Flash ADC with variable LSB
22.	6,950,047	Method and apparatus for combining outputs of multiple DACs for increased bit resolution
23.	6,922,164	SAR analog-to-digital converter with abort function
24.	6,891,487	Capacitor calibration in SAR converter
25.	6,879,004	High voltage difference amplifier with spark gap ESD protection
26.	6,724,336	Segmented D/A converter with enhanced dynamic range
27.	6,720,999	CCD imager analog processor systems and methods
28.	6,686,957	Preview mode low resolution output system and method
29.	6,617,934	Phase locked loop circuits, systems, and methods
30.	6,448,917	DAC using current source driving main resistor string
31.	6,400,300	D/A converter street effect compensation
32.	6,384,763	Segemented D/A converter with enhanced dynamic range
33.	6,288,661	A/D converter with voltage/charge scaling
34.	6,285,536	High voltage input pad system
35.	6,172,361	Methods for mounting an imager to a support structure and circuitry and systems embodying the same
36.	6,038,116	High voltage input pad system
37.	4,849,662	Switched-capacitor filter having digitally-programmable capacitive element
38.	4,492,927	Offset voltage compensation circuit
39.	4,390,754	Tone generator circuit

Currently have 1 pending application at the PTO.

Publications

Ka Y. Leung, Kafai Leung, Douglas R. Holberg, "A Dual Low Power ½ LSB INL 16b/1Msamples/s SAR A/D Converter with on-chip Microcontroller, *Proc. 2006 Asian Solid State Circuits Conference*, Nov 2006.

Welland, D.; Phillip, S.; Tuttle, T.; Ka Leung; Dupuie, S.; Holberg, D, et al., "Implementation of a digital read/write channel with EEPR4 detection," IEEE Transactions on Magnetics, Volume: 31 , Issue: 2, 1995.

Welland, D.; Phillip, S.; Ka Leung; Anderson, K.; Armstrong, A.; Tuttle, T.; Dupuie, S.; Holberg, D.; et al. , "An EEPR4 Read/Write Channel," Digest of the Magnetic Recording Conference 1994.

D. Welland, S. Phillip, K. Leung, G. Tuttle, S. Dupuie, D. Holberg, et al., "A Digital Read/Write Channel with EEPR4 Detection," *Proc. IEEE International Solid-State Circuits Conference,* Feb. 1994.

Welland, D.; Phillip, S.; Tuttle, T.; Ka Leung; Dupuie, S.; Holberg, D.; Jack, R.; Sooch, N.; Behrens, R.; Anderson, K.; Armstrong, A.; Bliss, W.; Dudley, T.; Foland, B.; Glover, N.; King, L., "Implementation of a digital read/write channel with EEPR4 detection," *IEEE Transactions on Magnetics,* Vol 31, No. 2, Mar. 1995.

Ronn B. Brashear, Douglas R. Holberg, M. Ray Mercer, and Lawrence Pillage, "ETA: Electrical-Level Timing Analysis," *Proc. IEEE International Conference on Computer-Aided Design*, Nov. 1992.

Ashok Balivada, Douglas R. Holberg, Lawrence T. Pillage, "Calculation and Application of Time-Domain Waveform Sensitivities in Asymptotic Waveform Evaluation," Custom Integrated Circuits Conference, May 1991.

Douglas R. Holberg, Santanu Dutta, Lawrence Pillage, "DC Parameterized Piecewise-Function Transistor Models for Bipolar and MOS Logic Stage Delay Evaluation," Proc. IEEE International Conference on Computer-Aided Design, Nov. 1990.

Douglas R. Holberg, "Digitally Programmable Filter Based on Standard Cell Design," IEEE Analog/Digital VLSI Workshop, Sept. 1986.

Tom Dille, Douglas Holberg, and Roger Taylor, "Programmable Filter Chip and its PC-Based Tools Offer New Analog Solutions," Electronic Design, May 29, 1986.

Books

Phillip E. Allen and Douglas R. Holberg, CMOS Analog Circuit Design, New York: Holt Rinehart, and Winston, ©1987.

Phillip E. Allen and Douglas R. Holberg, CMOS Analog Circuit Design, 2nd Ed, Oxford University Press, ©2002.

Phillip E. Allen and Douglas R. Holberg, CMOS Analog Circuit Design, 3rd Ed, Oxford University Press, ©2011.

Other Professional Activities

Served on the "Industrial Electronics Advisory Committee" for the University of Texas Instruction and Materials Center, University of Texas, Austin, 1988-1989.

Baylor University Board of Advocates, 2001 to 2003.

Member of IEEE