

## Chih-Cheng Hsieh National Tsing Hua University CMOS image sensor IC design

Low-power low-voltage ADC design

All	Since 2013
1086	621
16	13
25	17
	16

TITLE	CITED BY	YEAR
Focal-plane-arrays and CMOS readout techniques of infrared imaging systems CC Hsieh, CY Wu, FW Jih, TP Sun IEEE Transactions on Circuits and Systems for Video Technology 7 (4), 594-605	230	1997
A 2.4-to-5.2 fJ/conversion-step 10b 0.5-to-4MS/s SAR ADC with charge-average switching DAC in 90nm CMOS CY Liou, CC Hsieh Solid-State Circuits Conference Digest of Technical Papers (ISSCC), 2013	88	2013
A new cryogenic CMOS readout structure for infrared focal plane array CC Hsieh, CY Wu, TP Sun IEEE Journal of Solid-State Circuits 32 (8), 1192-1199	88	1997
High-performance CMOS buffered gate modulation input (BGMI) readout circuits for IR FPA CC Hsieh, CY Wu, TP Sun, FW Jih, YT Cherng IEEE journal of solid-state circuits 33 (8), 1188-1198	80	1998
A low-power electronic nose signal-processing chip for a portable artificial olfaction system KT Tang, SW Chiu, MF Chang, CC Hsieh, JM Shyu IEEE transactions on biomedical circuits and systems 5 (4), 380-390	37	2011
A 0.3 V 10-bit 1.17 f SAR ADC with merge and split switching in 90 nm CMOS  JY Lin, CC Hsieh IEEE Transactions on Circuits and Systems I: Regular Papers 62 (1), 70-79	36	2015
Design, optimization, and performance analysis of new photodiode structures for CMOS active-pixel-sensor (APS) imager applications CY Wu, YC Shih, JF Lan, CC Hsieh, CC Huang, JH Lu IEEE Sensors Journal 4 (1), 135-144	34	2004
A new rail-to-rail comparator with adaptive power control for low power SAR ADCs in biomedical application SM Chin, CC Hsieh, CF Chiu, HH Tsai Circuits and Systems (ISCAS), Proceedings of 2010 IEEE International	28	2010
Linear CMOS image sensor with time-delay integration and interlaced super-resolution pixel JH Chang, KW Cheng, CC Hsieh, WH Chang, HH Tsai, CF Chiu Sensors, 2012 IEEE, 1-4	25	2012
A 0.5 V 4.95 $\mu$ W 11.8 fps PWM CMOS imager with 82dB dynamic range and 0.055% fixed-pattern noise MT Chung, CC Hsieh Solid-State Circuits Conference Digest of Technical Papers (ISSCC), 2012	20	2012

TITLE	CITED BY	YEAR
A linear-logarithmic CMOS image sensor with pixel-FPN reduction and tunable response curve WF Chou, SF Yeh, CF Chiu, CC Hsieh IEEE Sensors Journal 14 (5), 1625-1632	18	2014
A new CMOS readout circuit design for the IR FPA with adaptive gain control and current-mode background suppression CC Hsieh, CY Wu, FW Jih, TP Sun, H Chang Circuits and Systems, 1996. ISCAS'96., Connecting the World., 1996 IEEE	18	1996
A 0.4 V 2.02 fJ/conversion-step 10-bit hybrid SAR ADC with time-domain quantizer in 90nm CMOS YJ Chen, CC Hsieh VLSI Circuits Digest of Technical Papers, 2014 Symposium on, 1-2	17	2014
New design techniques for a complementary metal-oxide semiconductor current readout integrated circuit for infrared detector arrays CY Wu, CC Hsieh Optical Engineering 34 (1), 160-169	17	1995
New share-buffered direct-injection readout structure for infrared detector CY Wu, CC Hsieh, FW Jih, TP Sun, SJ Yang Infrared Technology XIX 2020, 57-65	17	1993
New switch-current integration readout structure for infrared focal plane arrays CC Hsieh, CY Wu, FW Jih, TP Sun, SJ Yang Infrared Technology XX 2269, 718-727	16	1994
A 2.02–5.16 fJ/conversion step 10 bit hybrid coarse-fine SAR ADC with time-domain quantizer in 90 nm CMOS YJ Chen, KH Chang, CC Hsieh IEEE Journal of Solid-State Circuits 51 (2), 357-364	14	2016
Dept. of Electr. Eng., Nat. Tsing Hua Univ., Hsinchu, Taiwan SJ Tsai, YC Chen, CC Hsieh, WH Chang, HH Tsai, CF Chiu Sensors, 2012 IEEE, 1-4	14	* 2012
24.5 A 0.5 V 1.27 mW nose-on-a-chip for rapid diagnosis of ventilator-associated pneumonia KT Tang, SW Chiu, CH Shih, CL Chang, CM Yang, DJ Yao, JH Wang, Solid-State Circuits Conference Digest of Technical Papers (ISSCC), 2014	13	2014
A 0.5 V PWM CMOS imager with 82 dB dynamic range and 0.055% fixed-pattern-noise MT Chung, CL Lee, C Yin, CC Hsieh IEEE Journal of Solid-State Circuits 48 (10), 2522-2530	- 13	2013
A 0.8-V 4096-pixel CMOS sense-and-stimulus imager for retinal prosthesi CL Lee, CC Hsieh IEEE Transactions on Electron Devices 60 (3), 1162-1168	is 13	2013
A new CMOS image sensor readout structure for 3D integrated imagers SF Yeh, JY Lin, CC Hsieh, KY Yeh, CCJ Li Custom Integrated Circuits Conference (CICC), 2011 IEEE, 1-4	13	2011

TITLE	CITED BY	YEAR
Regulated-cascode amplifier with clamping circuit CC Hsieh US Patent 6,377,120	12	2002
Novel single-slope ADC design for full well Capacity expansion of CMOS image sensor SF Yeh, CC Hsieh IEEE Sensors Journal 13 (3), 1012-1017	11	2013
A wearable electronic nose SoC for healthier living KT Tang, SW Chiu, MF Chang, CC Hsieh, JM Shyu Biomedical Circuits and Systems Conference (BioCAS), 2011 IEEE, 293-296	10	2011
Time-delay integration readout with adjacent pixel signal transfer for CMOS image sensor KW Cheng, C Yin, CC Hsieh, WH Chang, HH Tsai, CF Chiu VLSI Design, Automation, and Test (VLSI-DAT), 2012 International Symposium	9	2012
A 0.4 V 1.94 fJ/conversion-step 10 bit 750 kS/s SAR ADC with input-range adaptive switching PC Lee, JY Lin, CC Hsieh IEEE Transactions on Circuits and Systems I: Regular Papers 63 (12), 2149-2157	e- 8	2016
CMOS image sensor CW Chen, CC Hsieh, CC Huang US Patent 7,436,011	8	2008
Method for fabricating CMOS image sensor CW Chen, CC Hsieh, CC Huang US Patent 7,323,378	8	2008
Solid-state image sensor for improving sensing quality and manufacturing method thereof CC Huang, CC Hsieh US Patent 7,169,633	8	2007
A 0.44 fJ/conversion-step 11b 600KS/s SAR ADC with semi-resting DAC SE Hsieh, CC Hsieh VLSI Circuits (VLSI-Circuits), 2016 IEEE Symposium on, 1-2	7	2016
A 0.4 V self-powered CMOS imager with 140dB dynamic range and energy harvesting AYC Chiou, CC Hsieh VLSI Circuits (VLSI Circuits), 2015 Symposium on, C86-C87	ју 7	2015
A fully integrated nose-on-a-chip for rapid diagnosis of ventilator-associated pneumonia SW Chiu, JH Wang, KH Chang, TH Chang, CM Wang, CL Chang, IEEE transactions on biomedical circuits and systems 8 (6), 765-778	7	2014
A dual-exposure single-capture wide dynamic range CMOS image sensor with columnwise highly/lowly illuminated pixel detection SF Yeh, CC Hsieh, CJ Cheng, CK Liu IEEE Transactions on Electron Devices 59 (7), 1948-1955	7	2012

TITLE	CITED BY	YEAR
A novel single slope ADC design for wide dynamic range CMOS image sensors SF Yeh, CC Hsieh, CJ Cheng, CK Liu Sensors, 2011 IEEE, 889-892	7	2011
A cost and benefit study of esophagectomy for patients with esophageal cancer CC Hsieh, CW Chien Journal of Gastrointestinal Surgery 13 (10), 1806-1812	7	2009
A high performance linear current mode image sensor CC Hsieh, WY Chen, CY Wu Circuits and Systems, 2009. ISCAS 2009. IEEE International Symposium on	7	2009
A 9.2 b 47fJ/conversion-step asynchronous SAR ADC with input range prediction DAC switching HY Huang, JY Lin, CC Hsieh, WH Chang, HH Tsai, CF Chiu Circuits and Systems (ISCAS), 2012 IEEE International Symposium on, 2353-2356	6	2012
An information sensor with in-pixel-processing for geriatric nursing C Yin, CC Hsieh, WH Chang, YZ Juang, CF Chiu Sensors, 2011 IEEE, 1503-1506	6	2011
A 0.5 V 34.4 uW 14.28 kfps 105dB smart image sensor with array-level analog signal processing C Yin, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2013 IEEE Asian, 97-100	5	2013
A 3 Megapixel 100 Fps 2.8\$\mu \$ m Pixel Pitch CMOS Image Sensor Layer With Built-in Self-Test for 3D Integrated Imagers SF Yeh, CC Hsieh, KY Yeh IEEE Journal of Solid-State Circuits 48 (3), 839-849	5	2013
Image sensor and sensing method thereof CC Hsieh, SF Yeh, KY Yeh US Patent App. 13/086,362	5	2012
Integrated image capturing device CC Hsieh US Patent App. 10/905,000	5	2005
Image sensing device for improving image quality and reducing color shift effect CC Hsieh, CC Huang US Patent App. 10/904,742	5	2005
Method and apparatus for defect compensation in an image sensor CC Hsieh US Patent App. 10/634,850	5	2004
A 0.3 V 10-bit SAR ADC with first 2-bit guess in 90-nm CMOS JY Lin, CC Hsieh IEEE Transactions on Circuits and Systems I: Regular Papers 64 (3), 562-572	4	2017
Pixel array module with self-test function and method thereof CC Hsieh, SF Yeh, KY Yeh US Patent 9,007,078	4	2015

TITLE	CITED BY	YEAR
A 143dB 1.96% FPN linear-logarithmic CMOS image sensor with threshold-voltage cancellation and tunable linear range WF Chou, SF Yeh, CC Hsieh Sensors, 2012 IEEE, 1-4	4	2012
A 1.8 V readout integrated circuit with adaptive transimpedance control amplifier for IR focal plane arrays LW Huang, CC Hsieh, WH Chang, YZ Juang, CF Chiu Sensors, 2011 IEEE, 1145-1148	4	2011
An 8-bit column-shared SAR ADC for CMOS image sensor applications JY Lin, KH Chang, CC Kao, SC Lo, YJ Chen, PC Lee, CH Chen, C Yin, Circuits and Systems (ISCAS), 2015 IEEE International Symposium on, 301-304	3	2015
A 1.2 V 1MS/s 7.65 fJ/conversion-step 12-bit hybrid SAR ADC with time-t digital converter SE Hsieh, CK Ho, CC Hsieh Circuits and Systems (ISCAS), 2015 IEEE International Symposium on, 2429-2432	0- 3	2015
A 0.8 V 80.3 dB SNDR stage-shared $\Delta\Sigma$ modulator with chopper- embedded switched-opamp for biomedical application CH Hsiao, WL Chen, CC Hsieh Solid State Circuits Conference (A-SSCC), 2012 IEEE Asian, 253-256	3	2012
A 0.05 mm 2 0.6 V 500kS/s 14.3 fJ/conversion-step 11-bit two-step switching SAR ADC for 3-dimensional stacking CMOS imager JY Lin, HY Huang, CC Hsieh, HI Chen Solid State Circuits Conference (A-SSCC), 2012 IEEE Asian, 165-168	3	2012
A column-parallel SA ADC with linearity calibration for CMOS imagers SJ Tsai, YC Chen, CC Hsieh, WH Chang, HH Tsai, CF Chiu Sensors, 2012 IEEE, 1-4	3	2012
High Definition Image Pre-Processing System for Multi-Stripe Satellites' Image Sensors TJ Chen, H Chiueh, CC Hsieh, C Yin, WH Chang, HH Tsai, CF Chiu IEEE Sensors Journal 12 (9), 2859-2865	3	2012
A 0.8 V 64× 64 CMOS imager with integrated sense-and-stimulus pixel for artificial retina applications CL Lee, CC Hsieh Solid State Circuits Conference (A-SSCC), 2011 IEEE Asian, 193-196	r 3	2011
A 0.6 V CMOS image sensor with in-pixel biphasic current driver for biomedical application CL Lee, CC Hsieh Circuits and Systems (ISCAS), 2011 IEEE International Symposium on, 1455-1458	3	2011
An image lag free CMOS image sensor with constant-residue reset SF Yeh, CC Hsieh, CF Chiu, HH Tsai VLSI Design, Automation and Test (VLSI-DAT), 2011 International Symposium on	3	2011
Method and Apparatus for Driving a Light Emitting Device CC Hsieh, SY Lai US Patent App. 11/422,332	3	2007

TITLE	CITED BY	YEAR
A 12 bit 150 MS/s 1.5 mW SAR ADC with adaptive radix DAC in 40 nm CMOS KH Chang, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2016 IEEE Asian, 157-160	2	2016
A 137 dB Dynamic Range and 0.32 V Self-Powered CMOS Imager With Energy Harvesting Pixels AYC Chiou, CC Hsieh IEEE Journal of Solid-State Circuits 51 (11), 2769-2776	2	2016
Microcontroller implementation of low-power compression for wearable biosignal transmitter CT Chang, CM Nien, R Rieger VLSI Design, Automation and Test (VLSI-DAT), 2016 International Symposium on	2	2016
A 0.5 V, 14.28-kframes/s, 96.7-dB Smart Image Sensor With Array-Level Image Signal Processing for IoT Applications C Yin, CF Chiu, CC Hsieh IEEE Transactions on Electron Devices 63 (3), 1134-1140	2	2016
A dual-mode CMOS image sensor for optical wireless communication CH Lin, CC Hsieh, CC Lin, RJ Chen VLSI Design, Automation and Test (VLSI-DAT), 2014 International Symposium on	2	2014
A 1V 14kfps smart CMOS imager with tracking and edge-detection modes for biomedical monitoring C Yin, CC Hsieh VLSI Design, Automation, and Test (VLSI-DAT), 2013 International Symposium	2	2013
Active pixel sensor circuit and related controlling method CC Hsieh US Patent App. 11/420,007	2	2007
Readout circuit with on-sensor-chip two-dimensional interpolation CC Hsieh US Patent App. 10/325,308	2	2004
A 0.5 V 12-bit SAR ADC using adaptive timedomain comparator with noise optimization CC Kao, SE Hsieh, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2017 IEEE Asian, 213-216	1	2017
A Hybrid Analog-to-Digital Conversion Algorithm With Sub-Radix and Multiple Quantization Thresholds KH Chang, CC Hsieh IEEE Transactions on Circuits and Systems I: Regular Papers 64 (6), 1400-1408	1	2017
A 32-Stage 15-b Digital Time-Delay Integration Linear CMOS Image Sensor With Data Prediction Switching Technique C Yin, T Liao, KL Liu, CC Kao, CF Chiu, CC Hsieh IEEE Transactions on Electron Devices 64 (3), 1167-1173	1	2017
A 0.3 V 0.705 fJ/conversion-step 10-bit SAR ADC with shifted monotonie switching scheme in 90nm CMOS SE Hsieh, CC Hsieh Circuits and Systems (ISCAS), 2016 IEEE International Symposium on, 2899-2899	1	2016

TITLE	CITED BY	YEAR
A 0.5 V/1.8 V high dynamic range CMOS imager for artificial retina applications CL Lee, CC Hsieh IEEE Sensors Journal 15 (12), 6833-6838	1	2015
A signal acquisition and processing chip with built-in cluster for chemiresistive gas sensor array SW Chiu, JH Wang, KH Chang, HC Wu, H Chen, CC Hsieh, MF Chang, New Circuits and Systems Conference (NEWCAS), 2014 IEEE 12th International	1	2014
An inverter-based capacitive trans-impedance amplifier readout with offse cancellation and temporal noise reduction for IR focal plane array HH Chen, CC Hsieh International Symposium on Photoelectronic Detection and Imaging 2013	t 1	2013
Exploration of Second-Order Effects in High-Performance Continuous- Time \$\Sigma\Delta \$ Modulators Using Discrete-Time Models WL Chen, CC Hsieh IEEE Transactions on Circuits and Systems I: Regular Papers 59 (12), 2890-2900	1	2012
Active pixel sensor with isolated photo-sensing region and peripheral circuit region CC Hsieh US Patent App. 10/904,572	1	2006
Integrated auto-focusing device CC Hsieh US Patent App. 10/904,999	1	2005
A 0.4 V 13b 270kS/S SAR-ISDM ADC with an opamp-less time-domain integrator SE Hsieh, CC Hsieh Solid-State Circuits Conference-(ISSCC), 2018 IEEE International, 240-242		2018
Multiple physiological signals sensing chip and the multiple physiological signals sensing method thereof CC Hsieh, AYC Chiou US Patent App. 15/263,189		2018
A CMOS time of flight (TOF) depth image sensor with in-pixel background cancellation and sensitivity improvement using phase shifting readout technique T Liao, NA Lee, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2017 IEEE Asian, 133-136		2017
A CMOS imaging platform using single photon avalanche diode array in standard technology TH Hsu, CC Hsieh SENSORS, 2017 IEEE, 1-3		2017
A 0.3-V 0.705-fJ/Conversion-Step 10-bit SAR ADC With a Shifted Monotonic Switching Procedure in 90-nm CMOS SE Hsieh, CC Hsieh IEEE Transactions on Circuits and Systems II: Express Briefs 63 (12), 1171-1175		2016

TITLE	CITED BY	YEAR
An integrated CMOS optical sensing chip for multiple bio-signal detections AYC Chiou, SE Hsieh, YQ Pan, CC Kuo, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2016 IEEE Asian, 197-200	;	2016
A time delay multiple integration linear CMOS image sensor for multispectral satellite telemetry KL Liu, CC Hsieh, SY Lai, CF Chiu Solid-State Circuits Conference (A-SSCC), 2016 IEEE Asian, 37-40		2016
Electric Hum Signal Readout Circuit for Touch Screen Panel Applications PYL Lee, CW Lu, CC Hsieh, TY Chang, JYC Liu, HC Liang, HN Wu Journal of Display Technology 12 (11), 1444-1450		2016
Design of a 0.5 V 1.68 mW nose-on-a-chip for rapid screen of chronic obstructive pulmonary disease TI Chou, SW Chiu, KH Chang, YJ Chen, CT Tang, CH Shih, CC Hsieh, Biomedical Circuits and Systems Conference (BioCAS), 2016 IEEE, 592-595		2016
A 12b 10MS/s 18.9 fJ/conversion-step sub-radix-2 SAR ADC KH Chang, CC Hsieh VLSI Design, Automation and Test (VLSI-DAT), 2016 International Symposium on		2016
A 132dB DR readout IC with pulse width modulation for IR focal plane arrays CC Kuo, CC Hsieh Solid-State Circuits Conference (A-SSCC), 2015 IEEE Asian, 1-4		2015
Optical recognition system and method thereof CC Hsieh, SF Yeh, CK Liu, CJ Cheng US Patent 9,029,753		2015
An in-pixel equalizer with kTC noise cancellation and FPN reduction for time-of-flight CMOS image sensor ZW Huang, CF Chiu, CC Hsieh VLSI Design, Automation and Test (VLSI-DAT), 2015 International Symposium on		2015
Design of Low-voltage Low-power CMOS Imager (Low-power technologies, 2nd Asian Image Sensors and Imaging Systems Symposium) CC Hsieh, C Yin, AYC Chiou, CL Lee ITE Technical Report 38.47, 17-18		2014
Circuit sharing time delay integrator CF Chiu, HH Tsai, WH Chang, CC Hsieh, KW Cheng US Patent 8,704,580		2014
Live demonstration: The prototype of real-time image pre-processing system for satellites' remote sensing TJ Chen, CH Weng, H Chiueh, CC Hsieh, SF Yeh, WH Chang, YZ Juang, Circuits and Systems (ISCAS), 2011 IEEE International Symposium on, 1992-1996		2011
The Prototype of Real-Time Image Pre-Processing System for Satellites' Remote Sensing TJ Chen, CH Weng, H Chiueh, CC Hsieh, SF Yeh, WH Chang, YZ Juang, 2011 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS (ISCAS), 1993-1996		2011

TITLE	CITED BY	YEAR
A wearable electronic nose SoC with integrated sensors and adaptive interface for healthier living KT Tang, SW Chiu, MF Chang, CC Hsieh, JM Shyu 2011 Symposium on VLSI Circuits, Kyoto, Japan, June 13-16, 2011		2011
Pinned photodiode sensor with gate-controlled silicon-controlled rectifier transfer switch and method of formation CC Huang, CC Hsieh, CW Chen US Patent 7,705,367		2010
A Pulse Frequency Modulation CMOS Image sensor for Biomedical Application CL Lee, CC Hsieh 2010 VLSI Design/CAD Symposium, Kaohsiung, Taiwan, Aug. 3-6, 2010		2010
Method for controlling well capacity of a photodiode MC Su, CC Huang, CC Hsieh US Patent App. 11/380,660		2006
New switch-current integration readout structure for infrared focal plane arrays [2269-57] CC Hsieh, CY Wu, FW Jih, TP Sun PROCEEDINGS-SPIE THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING 718-718	),	1994
New share-buffered direct-injection readout structure for infrared detector [2020-08] CY Wu, CC Hsieh, FW Jih, TP Sun PROCEEDINGS-SPIE THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING 57-57	j,	1993