



( 1 )

# Novel Technique for Reducing the Comparator Delay Dispersion in 45nm CMOS Technology for Level-Crossing ADCs

K. Khalil, M. Abbas and M. Abdel-Gawad

## Abstract:

This paper demonstrates a new technique to reduce the comparator delay dispersion caused by variable input overdrive. In the proposed technique, the conventional comparator circuit is modified by adding a variable driving-current block (VDCB) which is used such that it supplies the output node of the differential amplifier with a current that is inversely proportional with the level of input signal. Therefore the overdrive- caused delay dispersion is effectively reduced. The technique incurs small area overhead (only three transistors) compared with the previous works. The proposed circuit is implemented in 45nm technology. The effect of process variation on the performance of the proposed technique is studied by simulation. The results show that the overdrive-related propagation delay dispersion of the proposed technique is 26% of its counterpart in the conventional comparator for an input frequency up to 500MHz. The power consumption is 220  $\mu$ W at 200MHz.

## Keywords:

Comparator , Levelcrossing ADCs , Propagation delay dispersion

## Published In:

Oral presentaion in ISCDG2012, Grenoble- France , , 21 - 24



( 2 )

# CMOS Flash TDC with 0.84 $\mu$ 1.3 ps Resolution Using Standard Cells

T. J. Yamaguchi, S. Komatsu<sup>1</sup>, M Abbas, K. Asada<sup>1</sup>, N. Khanh and J. Tandon

## Abstract:

This paper proposes a new flash time-to-digital converter (TDC) design, which incorporates deterministic, variable delay into the decision elements. These are implemented with cross-coupled NAND standard cells of variable transistor widths. Both experiment and simulation are used to validate this new design, which provides variable time-difference ranges by controlling the input slew rate. It is also possible to use the proposed flash TDC as a soft macro.

## Keywords:

arbiter , deterministic variable delay , flash TDC , slope control

## Published In:

RFIC 2012, Montreal- Canada , ,



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( 3 )

# -A 23ps resolution Time-to-Digital converter implemented on low cost FPGA platform

Mohamed Abbas, Kasem Khalil

**Abstract:**

**Keywords:**

**Published In:**

Signals, Circuits and Systems (ISSCS), 2015 International Symposium on , , 1-4



( 4 )

## Transferring Electromyogram Signal between Limbs

Ehab A. Hamed, Mohamed Atef, Mohamed Abbas, R. R. Gharieb

### Abstract:

This paper introduces a sensing and stimulation system to transfer the electromyogram (EMG) signal from one limb to another, aiming to enable self-electro-physical therapy. The presented technique depends on sensing EMG signal from one limb muscle and, simultaneously, stimulating the corresponding muscle in the other limb by this signal. The technique has been implemented on a standalone cheap microcontroller. The sensing and stimulating circuits have been implemented using off-shelf components. The delivery of the stimulating signal has been done noninvasively through surface electrodes.

### Keywords:

Electromyogram, EMG, Electrical Stimulation, Rehabilitation, Peripheral nerve injury, Electro-physical therapy

### Published In:

Fourth International Japan-Egypt Conference on Electronics, Communications and Computers (JEC-ECC) , NULL , 141-144



( 5 )

## An Ultralow-Power High-Gain Biopotential Amplifier for Electromyogram Signal Recording.

Ehab A. Hamed, Mohamed Atef and Mohamed Abbas

### Abstract:

This paper introduces a design for an ultralowpower electromyogram (EMG) signal amplifier with low noise operation. The design consists of two stages, the first stage is highly efficient but supply-sensitive single ended amplifier and the second stage is differential, to improve the supply rejection ratio and common mode rejection ratio. Each stage is configured with cascode MOSFET transistors to increase the gain value. The proposed design is simulated by 130 nm CMOS, and its results are reported. The design achieves 60.62 dB mid-band gain with bandwidth of 1.72kHz. Using a supply voltage of 1.1 V, the amplifier consumes 1.03  $\mu$ A of current. Input referred noise is 3.006  $\mu$ Vrms. The common mode and power supply rejection ratios are above 49.05 dB and 55.72 dB respectively.

### Keywords:

Electromyogram, EMG, power supply rejection ratio (PSRR), Common mode rejection ratio (CMRR), ultralow power, current-reuse complimentary input (CRCI).

### Published In:

Electronics, Communications and Computers (JAC-ECC), 2017 Japan-Africa Conference , NULL , NULL



( 6 )

# A Low Power Programmable Gain Integrated Front-End for Electromyogram Signal Sensing

Ehab A. Hamed, Mohamed Atef and Mohamed Abbas.

## Abstract:

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## Keywords:

NULL

## Published In:

25th International Conference Mixed Design of Integrated Circuits and Systems , NULL , 103-108



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( 7 )

# Fully integrated wide dynamic range optical receiver for Near Infrared Spectroscopy

Ahmed Atef, Mohamed Atef, Mohamed Abbas, Elsayed Esam M. Khaled, Guoxing Wang,

## Abstract:

NULL

## Keywords:

NULL

## Published In:

Microelectronics Journal , pp. 92-97 , pp. 92-97



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( 8 )

## Current-reuse transimpedance amplifier with active inductor

Abd-Elrahman, Diaa; Atef, Mohamed; Abbas, Mohamed; Abdelgawad, Mohamed

### Abstract:

NULL

### Keywords:

NULL

### Published In:

ISSCS 2015 - International Symposium on Signals, Circuits and Systems , NULL , NULL





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( 9 )

## -A 23ps resolution Time-to-Digital converter implemented on low cost FPGA platform

Abbas, Mohamed; Khalil, Kasem

### Abstract:

NULL

### Keywords:

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### Published In:

ISSCS 2015 - International Symposium on Signals, Circuits and Systems , NULL , NULL



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( 10 )

# Low-cost methodology for fault diagnosis and localization in pipelined ADCs

Abbas, Mohamed; Ramadan, Ashraf

## Abstract:

NULL

## Keywords:

NULL

## Published In:

Integration , v 63 , p 64-73



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( 11 )

# Defect diagnoses and localization methodology for pipelined ADCs

Ramadan, Ashraf; Abbas, Mohamed

## Abstract:

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## Keywords:

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## Published In:

2016 IEEE 21st International Mixed-Signal Testing Workshop, IMSTW 2016 , NULL , NULL