Acronyms

ADC analog-to-digital converter

BEOL back-end-of-line

CDF cumulative distribution function
CMOS complementary metal-oxide-semiconductor
CPU central processing unit
CR charge-redistribution
CS charge-sharing

DAC digital-to-analog converter
DNL differential nonlinearity

ENOB effective number of bits
EOC end-of-conversion

FFT Fast Fourier Transform
FOM figure-of-merit
FPGA Field Programmable Gate Array

GA genetic algorithm
GPS global positioning system
GPU graphics processing unit

INL integral nonlinearity
IR input range
ISF input sensitivity function
ISSCC International Solid-State Circuits Conference

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LSB least-significant bit
LTV linear time-varying
LVLP low-voltage low-power

MCS merged capacitor switching
MDAC multiplying digital-to-analog converter
MIM metal-insulator-metal
MOM metal-oxide-metal
MOS metal-oxide-semiconductor
MOSCAP metal-oxide-semiconductor capacitor
MOSFET metal-oxide-semiconductor field-effect transistor
MSB most-significant bit

NQS non-quasi static
NSGA-II Non-dominated Sorting Genetic Algorithm-II

PAC periodic-ac
PMU power management unit
PNOISE periodic noise
PSD power spectral density
PSS periodic steady-state
PVT process, voltage, temperature

RAM random access memory
RF radio-frequency

SAR successive approximation register
SFDR spurious-free dynamic ratio
SNDR signal-to-noise-and-distortion ratio
SNR signal-to-noise ratio
SOI silicon-on-insulator

TH track-and-hold
THD total harmonic distortion
TSPC true-single-phase-clocked

VB voltage booster
VLSIC Symposium on VLSI Circuits

WSN wireless sensor network

Symbols

Δ_{Cp} Parasitic capacitance mismatch
Δ_C Capacitance mismatch
Δ_G ADC gain error
α Capacitance ratio
$\hat{\alpha}$ Effective value of α
B Number of bits
C_0 Unitary capacitance
C_{CAL} Calibration capacitor
C_{DAC} Total DAC capacitance
C_{GB} Capacitance between the gate and the bulk of a MOSFET
C_{GD} Capacitance between the gate and the drain of a MOSFET
C_{GG} Total gate capacitance of a MOSFET
C_{GS} Capacitance between the gate and the source of a MOSFET
C_p Parasitic capacitance
C_{TH} Track-and-hold capacitor
C_{THN} Track-and-hold capacitor (negative terminal)
C_{THP} Track-and-hold capacitor (positive terminal)
ENOB Effective number of bits
E_{REF} Energy of the reference source
G_{ADC} ADC gain, defined by the ratio between the input range V_{IR} and the reference voltage V_{REF} or the precharge voltage V_{PC}
i Cycle in the conversion (0 corresponds to the MSB cycle)
I_{CAP} Capacitor current
I_{REF} Current of the reference source
K Conversion result, $K = k_{B-1}..., k_1, k_0$
Q_N Charge on the node corresponding to the comparator negative input
Q_P Charge on the node corresponding to the comparator positive input
Q_{THN} Charge on the track-and-hold negative terminal
Q_{THP} Charge on the track-and-hold positive terminal

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Q_{TOP} Charge on the top plate of the capacitor
SNDR Signal to noise-and-distortion ratio
V_{BIAS} Bias voltage
V_{CAL} Calibration voltage
V_{CM} Common-mode voltage
V_{DD} Positive supply voltage
V_{DIF} Differential voltage
V_{GS} Voltage between the gate and the source of a MOSFET
$V_{IN,CM}$ Common-mode voltage of the input
$V_{IN,DIF}$ Differential voltage at the ADC inputs
V_{INN} Voltage at the negative ADC input
V_{INP} Voltage at the positive ADC input
V_{IR} Input-range voltage
V_{LSB} Voltage of one LSB
V_N Voltage at the negative comparator input
V_{NOISE} Noise voltage
V_{OS} Input-referred comparator offset voltage
V_P Voltage at the positive comparator input
V_{PC} Precharge voltage source, used to charge the DAC capacitors in the beginning of the conversion
V_{PN} Differential voltage at the comparator inputs
V_{P-P} Volts peak-to-peak
V_{REF} Reference voltage
V_{SB} Voltage between the source and the bulk of a MOSFET
V_t Threshold voltage of a MOSFET
V_{TOP} Voltage on the top plate of the capacitor

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