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Proceedings of the 2018 7th International Conference on Computer and Communication Engineering, ICCCE 2018
16 November 2018, Article number 8539264, Pages 445-448
7th International Conference on Computer and Communication Engineering, ICCCE 2018; Kuala Lumpur; Malaysia; 19 September 2018 through 20 September 2018; Category numberCFP1839D-USB; Code 142740

Single Supply Differential Capacitive Sensor with Parasitic Capacitance and Resistance Consideration (Conference Paper)

Mustapha, N.A.C. ✉, Alam, A.H.M.Z. ✉, Khan, S. ✉, Azman, A.W. ✉

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Abstract

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A single supply differential capacitive sensing technique is presented in this paper with the focus of parasitic integration. In real application, any capacitive sensor should consider parasitic in its measurement. The aim of this paper is to analyze the effect of capacitive and resistive parasitic to the network circuit. The derivation theory of the differential capacitive sensor circuit is elaborated first. Then, comparison is made using simulation. Test was carried out using frequency from 40 k Hz up to 400 kHz. Result is presented and have shown good linearity of 0.99984 at 300 k Hz, R-squared value. Future application is expected to be used for capacitive sensor that is making use of energy harvesting application. © 2018 IEEE.

SciVal Topic Prominence ⓘ

Topic: Capacitive sensors | Sensors | capacitance-to-digital converter

Prominence percentile: 85.310 ⓘ

Author keywords

Capacitance -toVoltage Converter (CVC) Differential capacitive sensing Parasitic impedance

Indexed keywords

Engineering controlled terms: Capacitance Energy harvesting

Engineering uncontrolled terms: Capacitive sensing Differential capacitive sensors Future applications Parasitic capacitance Parasitic impedance Real applications Single supplies

Engineering main heading: Capacitive sensors

Funding details

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Funding text

This work is funded by the Research Initiative Grant Scheme (RIGS)-2018 (Ref: IIUM/504/G/14/3/1/1/ RIGS17-023-0598) by the Research Management Centre, International Islamic University Malaysia.

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ISBN: 978-153866991-4

DOI: 10.1109/ICCCE.2018.8539264

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Document Type: Conference Paper

Original language: English

Publisher: Institute of Electrical and Electronics Engineers Inc.

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