



Document details

< Back to results | 1 of 1

↗ Export Download Print E-mail Save to PDF Add to List More... >

Full Text

View at Publisher

Bulletin of Electrical Engineering and Informatics
Volume 8, Issue 3, September 2019, Pages 985-993

Modeling and development of radio frequency planar interdigital electrode sensors (Article)

Yunos, M.F.A.B., Nordin, A.N. ✉, Zainuddin, A., Khan, S. 👤

Department of Electrical and Computer Engineering, Kuliyyah of Engineering, International Islamic University Malaysia, Malaysia

Abstract

View references (15)

The interdigital sensor has been implemented in various field of applications such as microwave device, chemical sensor and biological sensor. This work describes the design and fabrication of an interdigital sensor (IDS) design that has the potential of estimating blood glucose levels using capacitive measurements. The IDS was first designed using theoretical equations and later was optimized by using CST Microwave Studio®. The electrode widths of the sensor were varied from 0.5mm to 0.7mm and the S11 reflection characteristics were simulated. Upon completion of simulations, the sensor was fabricated using copper clad FR4 boards. The fabricated sensors were measured using a vector network analyzer (VNA) and produced resonance frequencies of 2.02, 2.11 and 2.14 GHz. The highest Q obtained was 11.72 from the 2.11 GHz sensor. © 2019 Institute of Advanced Engineering and Science. All rights reserved.

SciVal Topic Prominence ⓘ

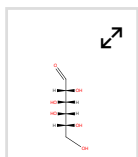
Topic: Sensors | Capacitive sensors | Planar electromagnetic

Prominence percentile: 85.413



Chemistry database information ⓘ

Substances



Author keywords

Capacitive sensors

CST microwave studio

Frequency response

Interdigital electrode

Permittivity sensors

Planar interdigital sensor

Radio frequency

Funding details

Metrics ⓘ View all metrics >



PlumX Metrics

Usage, Captures, Mentions,
Social Media and Citations
beyond Scopus.

Cited by 0 documents

Inform me when this document
is cited in Scopus:

Set citation alert >

Set citation feed >

Related documents

A self-calibration water level
measurement using an
interdigital capacitive sensor

Chetpattananondh, K. , Tapoanoi,
T. , Phukpattaranont, P.
(2014) *Sensors and Actuators, A:
Physical*

Non-invasive liquid recognition
based on interdigital capacitor

Vuković Rukavina, A.
(2015) *Sensors and Actuators, A:
Physical*

Interdigital capacitance sensing
of moisture content in rubber
wood

Chetpattananondh, P. ,
Thongpull, K. ,
Chetpattananondh, K.
(2017) *Computers and
Electronics in Agriculture*

View all related documents based
on references

Find more related documents in
Scopus based on:

Authors > Keywords >

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia		MOHE
Ministry of Higher Education, Malaysia		MOHE
Foundation for Fundamental Research on Matter		FOM

Funding text

This work is supported by Malaysia Ministry of Higher Education (MOHE) under the Fundamental Research Grant Scheme (FRGS) FRGS17-030-0596

ISSN: 20893191

Source Type: Journal

Original language: English

DOI: 10.11591/eei.v8i3.1513

Document Type: Article

Publisher: Institute of Advanced Engineering and Science

References (15)

[View in search results format >](#)

☐ All [Export](#) [!\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\) Print](#) [!\[\]\(182077db5bac9ff62bf376fe37ffa951_img.jpg\) E-mail](#) [!\[\]\(6ed6a340e0627314752774197e63f07e_img.jpg\) Save to PDF](#) [Create bibliography](#)

- ☐ 1 Mamishev, A.V., Sundara-Rajan, K., Yang, F., Du, Y., Zahn, M.

Interdigital sensors and transducers

(2004) *Proceedings of the IEEE*, 92 (5), pp. 808-844. Cited 340 times.

doi: 10.1109/JPROC.2004.826603

[View at Publisher](#)

- ☐ 2 Md Ralib, A.A.
Nordin. Silicon compatible acoustic wave resonators: Design, fabrication and performance
(2014) *IJUM Engineering Journal*, 15 (2). Cited 6 times.

- ☐ 3 Grate, J.W., Frye, G.C.
(1996) , 2, pp. 52-59. Cited 2 times.
H. Baltes, W. Göpel, J. Hesse (Eds.), *Sensors, Update*, Wiley, New York

- ☐ 4 (2015)
C. S. Operation, "Capacitive Sensor Operation and Optimization," no. November

- ☐ 5 Kitsara, M., Goustouridis, D., Chatzandroulis, S., Chatzichristidi, M., Raptis, I., Ganetsos, Th., Igreja, R., (...), Dias, C.J.

Single chip interdigitated electrode capacitive chemical sensor arrays

(2007) *Sensors and Actuators, B: Chemical*, 127 (1), pp. 186-192. Cited 73 times.

doi: 10.1016/j.snb.2007.07.021

[View at Publisher](#)