



SIC4340  
SIC4341  
SIC824B  
SIC4343



# SENSOR INTERFACE PRODUCTS



## SIC4340 ALVANOSTAT SENSOR

PRINCIPLE

Chip bias current and measure voltage in response to changes in resistance or capacitance across sensor

APPLICATION

Resistance, Capacitance, Temperature, Water TDS, etc.

## SIC4341 POTENTIOSTAT SENSOR

PRINCIPLE

Chip bias voltage to WE-RE and measure current across electrochemical sensor

APPLICATION

Heavy Metal, Glucose, Ketone, Uric acid, Cortisol, Hepatitis B Virus, Chemical Substances, Biomarkers, etc.



## SIC4343 VOLTAGE SENSOR

PRINCIPLE

Chip bias voltage and measure voltage in response to changes in resistance across sensor (open circuit potential)

APPLICATION

pH, Force, Strain, Ion Elements such as Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, Biomarkers, etc.

# G SIC4340 ALVANOSTAT

SENSOR



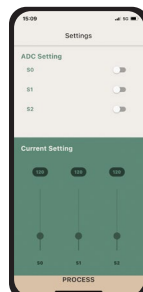
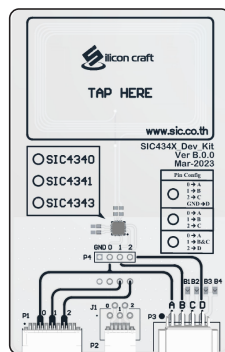
## SIC4340

NFC type 2 tag IC with built-in current source and ADC for galvanostat measurement.

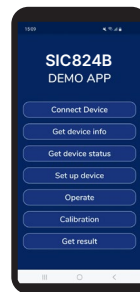
### SPECIFICATIONS

SPECIFICATIONS	SIC4340
Communication Interface	NFC Type 2 Tag
Product Form Factor	QFN, Sawn Wafer with Bump
Biasing Current Range	1 - 63 $\mu$ A with 1 $\mu$ A / Step 8 - 504 $\mu$ A with 8 $\mu$ A / Step
Bias Wave Form	<ul style="list-style-type: none"> <li>• DC</li> <li>• Square Wave with Selectable Frequency 300 Hz - 50 kHz</li> </ul>
Voltage Measurement Range	0.2 to 1.2 V
Measurement Accuracy	$\pm$ 1.2 mV
Voltage Limiter	1.28 V
Multiplexing	3 Channels
Application Example	Resistive Sensor Capacitive Sensor Temperature Sensor Water TDS (Total Dissolved Solid)

## DEVELOPMENT KIT



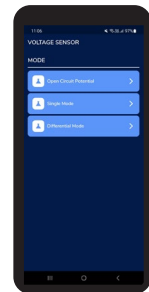
SIC4340



SIC824B



SIC4341



SIC4343

## SUPPORT MATERIAL

- Demo iOS/android application
- Reference PCB design and schematic diagram
- Reference antenna and antenna design tool

# P<sup>SIC4341</sup> POTENTIOSTAT SENSOR



## SIC4341

NFC Type 2 tag IC with built-in ADC and potentiostat sensor interface for electrochemical measurement



## SIC824B

Potentiostat sensor module with bluetooth® 5.2 for electrochemical measurement

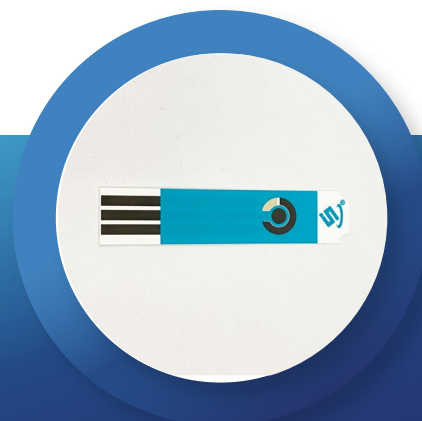


### SPECIFICATIONS

	<b>SIC4341</b> Potentiostat Sensor Interface	<b>SIC824B</b> Potentiostat Sensor Module
Communication Interface	NFC Type 2 Tag	Bluetooth® 5.2
Product Form Factor	QFN, Sawn Wafer with Bump	PCB
Bias Voltage Range	-0.8 to +0.8 V	- 1.6V to 1.6V (1.6V Dynamic Range) ● - 1.6 to 0 V ● - 0.8 to + 0.8 V ● 0 to + 1.6 V
Bias Voltage Resolution	5 mV/Step	5 mV/Step
Current Measurement Range	Selectable ± 2.5 µA ± 20 µA	Hardware fix Customizable Maximum ± 500 µA
Pin Configuration	Configurable WE, RE, CE	Fixed Position
Measurement Accuracy	± 5 nA for ± 2.5 µA Range ± 20 nA for ± 20 µA Range	± 0.1% of Current Range
Compatible Analysis Technique	Amperometry Voltammetry	Amperometry Voltammetry Open Circuit Potential (OCP)
Application Example	Chemical Sensor Biochemical Sensor	Chemical Sensor Biochemical Sensor Potentiometric Sensor

### Screen-Printed Electrode (SPE) on PET Substrate 3 Electrodes Including;

- Working Electrode: Graphene (Size: Diameter 3 mm)
- Counter Electrode: Graphene
- Reference Electrode: Ag/AgCl







# V<sup>SIC4343</sup> VOLTAGE SENSOR



## SIC4343

NFC type 2 tag IC with built-in DACs and ADC for voltage measurement which can be configured to single-ended or differential-ended mode.

Single Ended Voltage Sensor Interface Chip

Differential Ended Voltage Sensor Interface Chip

### SPECIFICATION

Communication Interface	NFC Type 2 Tag	
Product Form Factor	QFN, Sawn wafer with bump	
DAC Resolution	8-bit	
Bias Voltage	0.2 to 1.2 V	
Measurement Method	Measure voltage with respect to GND	Measure voltage between 2 pins
Voltage Measurement Range		
Input Buffer in Enable	0.2 to 1.2 V	-1 to +1 V
Input Buffer in Disable	0 to 1.2 V	-1.2 to +1.2 V
Measurement Accuracy	± 1.2 mV	
Sampling Rate	10 sps	
Application Example	Industrial Sensor Chemical Sensor Biochemical Sensor	

## REFERENCE CASES

Year	Application	Author	Affiliation	Journal	Reference
2023	Hydroquinone	Charles S. Henry	Colorado State University, US	Electroanalysis	Electroanalysis.2023;35:e202200552
2023	Cortisol	Fabiana Arduini	University of Rome Tor Vergata, Italy	Sensors and Actuators B: Chemical	Sensors & Actuators: B. Chemical 379 (2023) 133258
2023	Breast cancer sensor	Warakorn Limbut	Prince Songkla University, Thailand	Microchimica Acta	Microchimica Acta (2023) 190:232
2022	Formaldehyde sensor	Warakorn Limbut	Prince Songkla University, Thailand	Talanta	Talanta 254 (2023) 124169
2022	Multi-detection, COVID & antibiotic drug	Can Dincer	University of Freiburg, Germany	Materialstoday	Materials Today (2022) 61:129-138
2022	Leptospirosis	Sudkate Chaiyo	Chulalongkorn University, Thailand	Analytical Chemistry	Anal.Chem.(2022) 94: 14583-14592
2022	Heavy metals (As(III), Cr(VI), Hg(II), Pb (II), Cd (II))	Orawon Chailapakul	Chulalongkorn University, Thailand	Microchimica Acta	Microchimica Acta (2022) 189: 191
2022	Pesticides	Chanchana Thanachayanont	National Metal & Materials Technology Center (MTEC), Thailand	IEEE	19th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON) (2022)
2021	Hepatitis-B	Orawon Chailapakul	Chulalongkorn University, Thailand	Sensors and Actuators B: Chemical	Sensors & Actuators: B. Chemical 326 (2021) 128825
2021	NFC-based sensing technologies article	Firat Güder	Imperial College London, UK	Nature Reviews Materials	Nature Reviews Materials volume 6, pages (2021) 286-288