

# MACIAS SENSORS MS-PCB-101-AU

## 1. DESCRIPTION

Macias Sensors' PCB electrodes are equipped with our proprietary coating technology to enable the use of printed circuit boards for developing electrochemical applications without interference from copper base metal.

Our PCB electrodes are suitable for working with microvolume sample droplets as well as by dipping into the target solution. Thus, they are an ideal platform to develop biosensors and chemosensors to be used at the point of need.

Furthermore, thanks to the gold surface, our electrodes can be readily functionalized with thiol-based ligands to develop electrochemical molecular diagnostics, immunosensors, ISE and more.

## 2. TECHNICAL SPECIFICATIONS

Dimensions: L25 x W10 x H0.6 mm

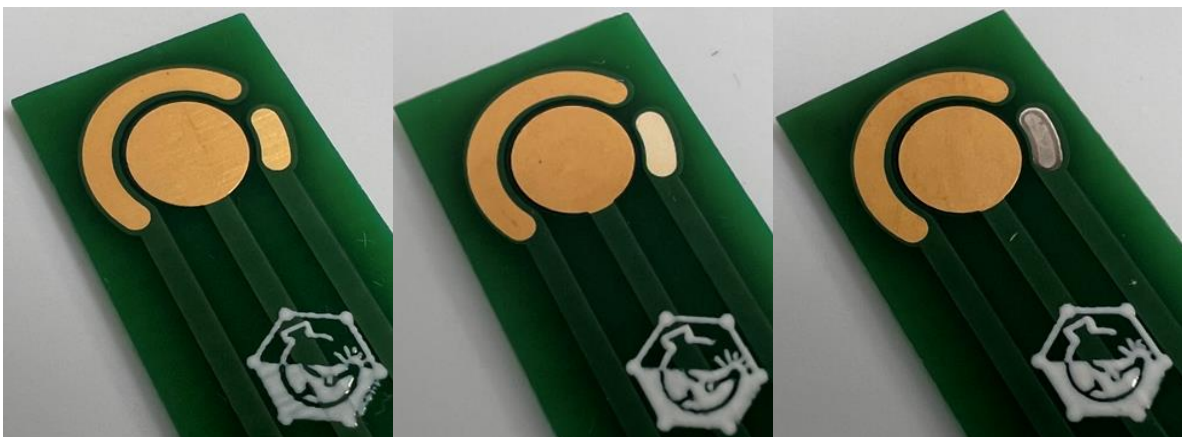
Substrate: FR4 with  $T_g > 130$  C

Working Electrode: Gold (4 mm in diameter)

Auxiliary/Counter Electrode: Gold

Reference electrode: available in gold, silver and AgCl

Recommended shelf life: 1 year



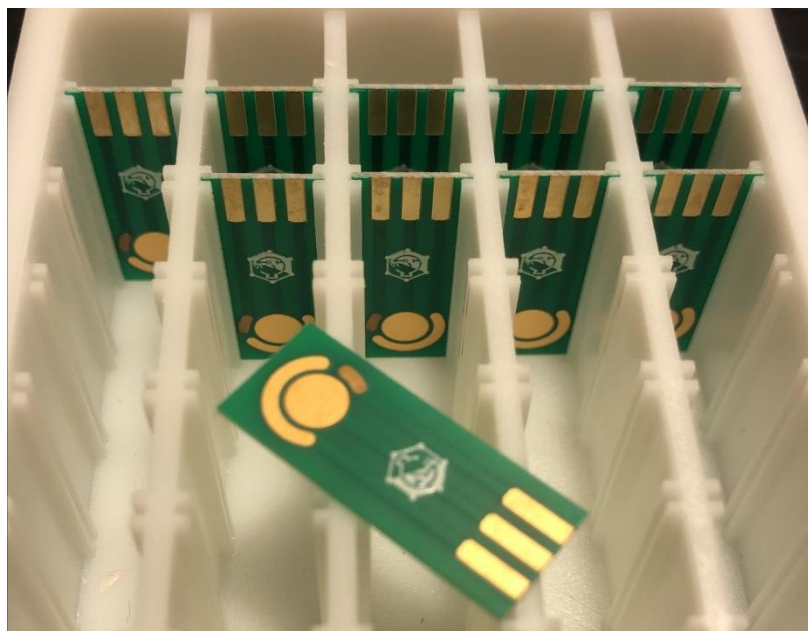
MSPCB101-AuAuAu

MSPCB101-AuAuAg

MSPCB101-AuAuAgCl



Dimensions, connections, and compatibility with edge connectors



PCB electrodes in re-usable box

### 3. KEY FEATURES

- High cycling stability
- Wide electrochemical stability window (-1.5 to +1 V vs Ag/AgCl in PBS pH 7.4)
- Compatible with 2.54 mm pitch edge connectors
- Reusable
- Recyclable

### 4. USE RECOMMENDATIONS

We recommend these electrodes to be used in the -1.5 to +0.8 V vs Ag/AgCl in chloride-based electrolytes like phosphate buffered saline (PBS) for continuous cycling and from -1.5 to +1V vs Ag/AgCl for just a few measurements.

#### 4.1. CLEANING RECOMMENDATIONS

Rinsing in DI water and N<sub>2</sub> drying is normally sufficient cleaning for most applications. But if you would like to use a harsher electrochemical cleaning, we recommend performing cyclic voltammetry in the range of -1 to +1.25 V vs Ag/AgCl using 0.1 M H<sub>2</sub>SO<sub>4</sub>.

## 5. MEASUREMENTS

### 5.1. CYCLIC VOLTAMMETRY IN PBS

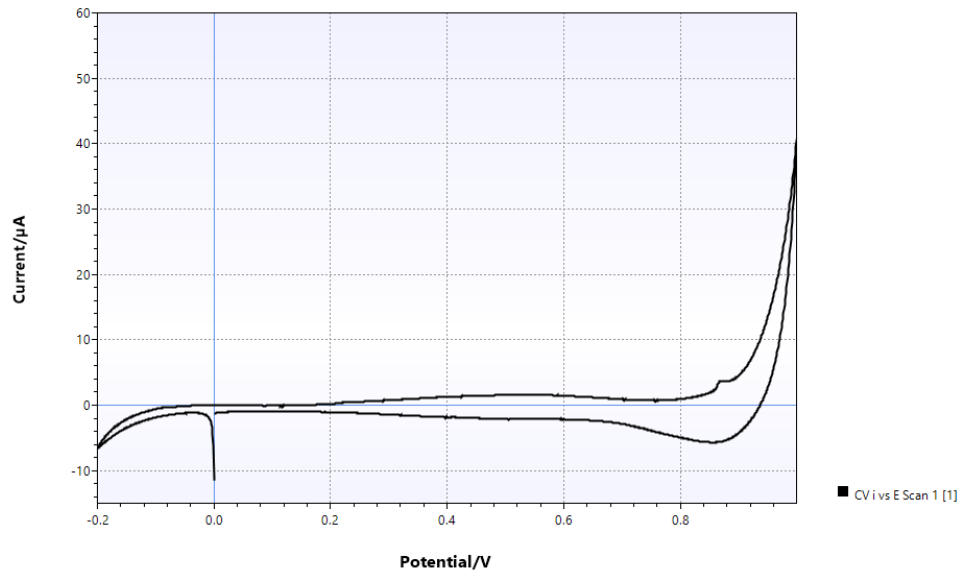


Figure 1. Cyclic Voltammetry response in 1x phosphate buffered saline at pH 7.4 vs Ag/AgCl.

### 5.2. CYCLIC VOLTAMMETRY IN FERRI/FERROCYANIDE IN 0.1M KCL

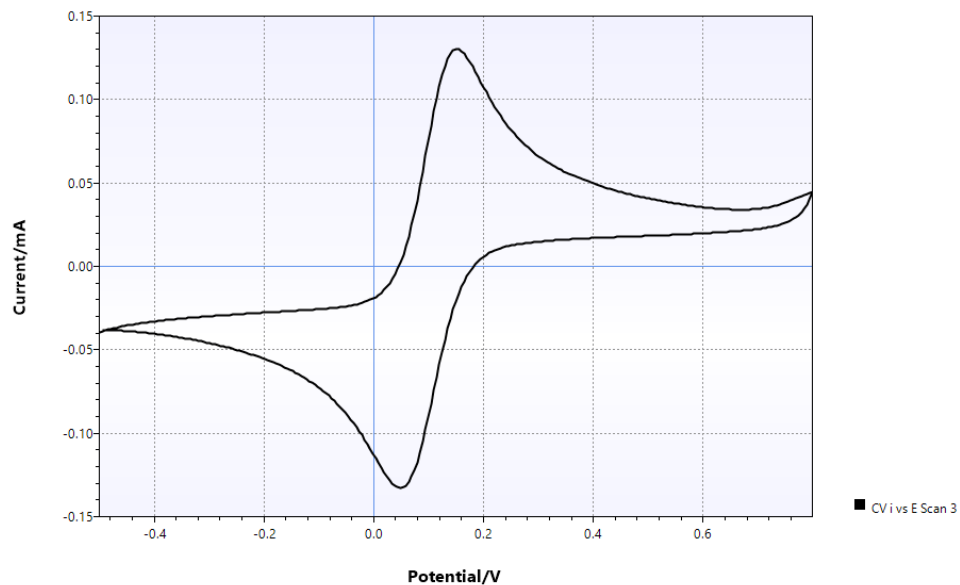


Figure 2. Cyclic Voltammetry response in a solution containing 2.5 mM  $K_3[Fe(CN)_6]$ , 2.5 mM  $K_4[Fe(CN)_6]$ , and 0.1 mM KCl vs Ag/AgCl.

### 5.3. ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY IN FERRI/FERROCYANIDE IN 0.1M KCl

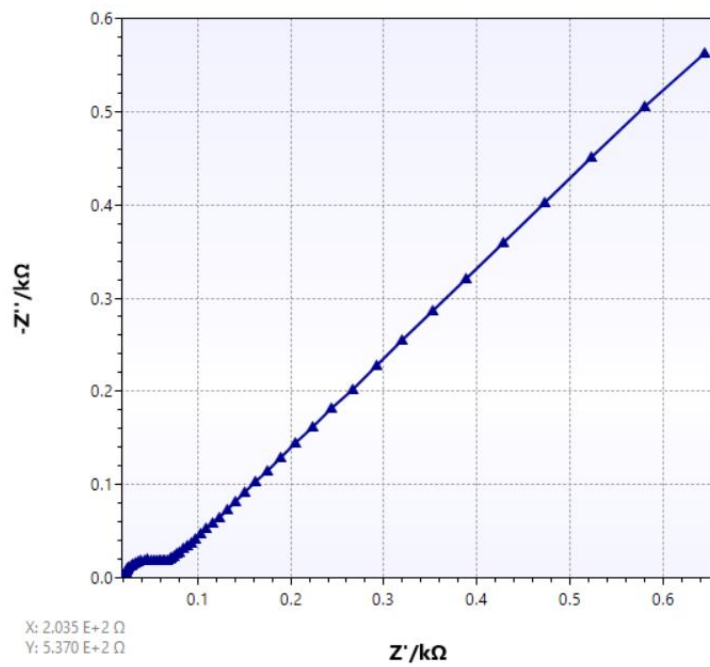


Figure 3. EIS response in a solution containing 2.5 mM  $K_3[Fe(CN)_6]$ , 2.5 mM  $K_4[Fe(CN)_6]$ , and 0.1 mM KCl vs Ag/AgCl. Edc: OCP, Eac: 10mV, 0.1 Hz to 100 kHz.