

Odax Technologies Inc
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ODAX EDA SB1

Datasheet

Product Summary

Electrodermal activity (EDA) / galvanic skin response (GSR) analog sensor board using the same circuit as the ODAX EDA Maker board in a 35 mm × 31 mm PCB form factor with four mounting holes. The board measures changes in skin conductance using two skin-contact electrodes and provides a ground-referenced analog output for a microcontroller ADC. Recommended supply is 3 to 5 V DC from a battery-powered system while electrodes contact skin. User solder connections are PWR (VIN), GND, and OUT (VOUT), with a 3.5 mm TS electrode jack.

Product family	EDA Maker Grade Analog
SKU / Part number	ODAX-EDA-SB1-100-BLK-R1
Document number	ODAX-EDA-SB1-R1
Revision	R1
Release date	2026-10-12
Status	Preliminary

1 Product Overview

1.1 Description

The ODAX EDA SB1 is an assembled analog sensor board for electrodermal activity (EDA) and galvanic skin response (GSR) experiments. It uses the same circuit and electrical routing as the ODAX EDA Maker board (ODAX-EDA-MB1-100-ASM-R1), in a different mechanical form factor. The SB1 PCB measures 35 mm × 31 mm and provides four corner mounting holes and three through-hole solder connections.

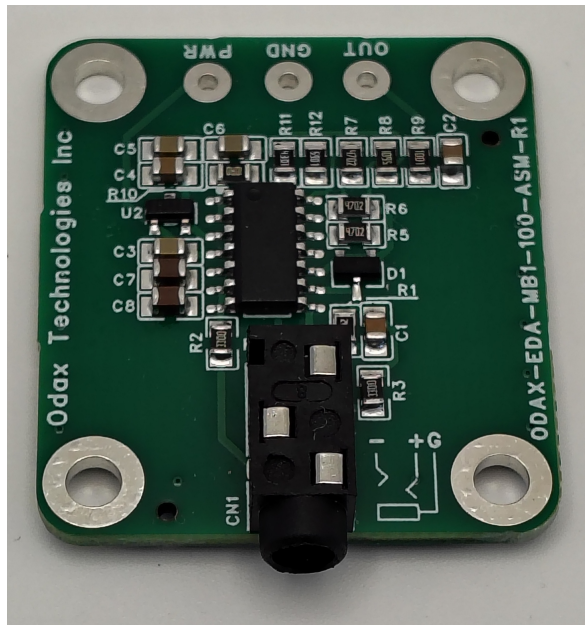
The board applies a low-voltage electrode bias, measures the resulting skin-current response with a transimpedance amplifier (TIA) analog front end, and produces a positive-slope, ground-referenced output voltage for a microcontroller ADC. Higher skin conductance produces a higher VOUT.

Use two skin-contact electrodes or ODAX EDA contact straps on adjacent fingers of the same hand. The board is intended for relative EDA/GSR trend measurement, event detection, biofeedback experiments, and custom firmware development. It is not a medical device and is not intended for diagnosis, monitoring, treatment, or safety-critical use.

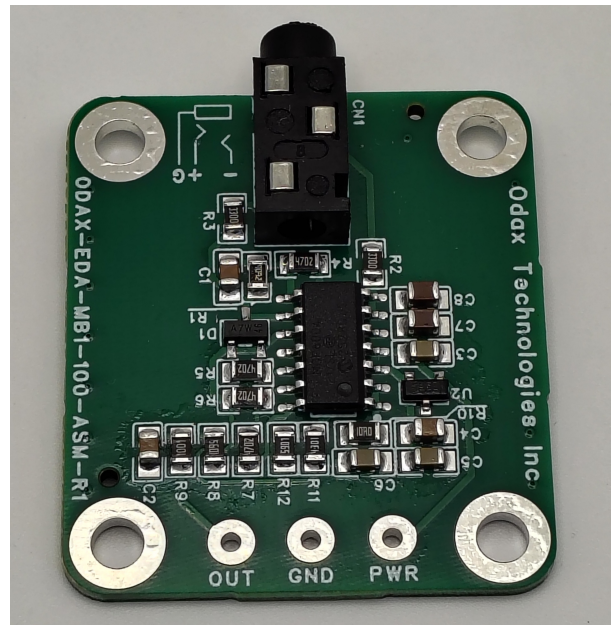
1.2 Applications

- EDA and GSR measurement for prototyping and makers
- Psychophysiology, HCI, affective computing, biometrics, and biofeedback experiments
- Wearable sensing prototypes using standard electrode lead sets
- Low-frequency analog bio-signal sensing

2 Product Photos



(a) Component side; electrode jack at bottom.



(b) Alternate component-side view.

Figure 1: SB1 board form factor, showing the four mounting holes and PWR, GND, OUT solder connections.

The supplied photos and dimension drawing retain the ODAX-EDA-MB1-100-ASM-R1 silkscreen identifier. The product part number covered by this datasheet is ODAX-EDA-SB1-100-BLK-R1.

3 Electrical Specifications

Electrical values are carried over from the ODAX EDA Maker board datasheet because the SB1 uses the same circuit. Unless otherwise stated, values are preliminary and intended for maker-level use. End-system accuracy depends on electrode condition, skin condition, contact pressure, motion, firmware filtering, ADC resolution, and user calibration.

3.1 Recommended Operating Conditions and Characteristics

Table 1: Recommended operating conditions and preliminary electrical characteristics

Parameter	Symbol	Min	Typ	Max	Notes
Supply voltage, recommended	VIN	3.0 V	3.3 or 5.0 V	5.0 V	Battery-powered system while electrodes contact skin
Supply voltage, tolerated functional range	VIN	3.0 V		5.5 V	Not the recommended operating range; verify in end system
Analog output voltage, representative use	VOOUT	0.1 V		1.2 V	Maker-board resistor-substitution bench observations over practical range
Useful signal bandwidth	BW	DC		about 6 Hz	Intended for slow EDA/GSR signals, not high-speed biopotentials
Practical resistor-simulator range	R _{skin}	about 50 kΩ		about 1 MΩ	Representative range; skin and electrode behavior vary
ADC input impedance	Z _{ADC}	100 kΩ			Higher impedance preferred
Output response direction			Positive		Higher conductance produces higher VOOUT

3.2 Safety-Critical Electrical Restrictions

Use battery power only when electrodes contact skin. Do not power the board from a mains adapter while connected to a person. Do not connect the board, electrodes, or attached microcontroller to mains-referenced instruments unless the complete system has appropriate isolation designed and verified by a qualified person. Do not exceed 5.5 V on VIN, and do not drive VOOUT from another source.

3.3 Electrode Placement

Place two finger straps on adjacent fingers of the same hand. Keep strap pressure comfortable and consistent, and route the cable so that it does not pull on the straps during measurement. Motion, changing contact pressure, and inconsistent strap placement can be larger error sources than the electronic front end.

4 User Connections

The board labels PWR and OUT correspond to VIN and VOUT, respectively, in the maker-board documentation and the electrical specifications in Table 1. The electrical functions are unchanged.

Table 2: Board and electrode connections

Connection	Function	Description
PWR	VIN; input	DC supply input. Recommended 3 to 5 V from a battery-powered system while electrodes contact skin.
GND	Reference	Common ground for the board and the ADC system.
OUT	VOUT; output	Analog EDA/GSR output. Connect to a high-impedance ADC input.
3.5 mm jack tip	E+	Electrode drive contact. Connect to one skin contact strap/electrode.
3.5 mm jack sleeve	E-	Measurement return contact. Connect to the second skin contact strap/electrode.
3.5 mm jack ring	NC	If a TRS jack or plug is used mechanically, the ring contact is not used by the board.

With the component side facing the viewer and the electrode jack at the bottom (Figure 1a), the upper three solder connections are **PWR, GND, OUT from left to right**. Verify the labels on the supplied board before wiring. Do not intentionally connect either electrode contact to GND.

The photographed SB1 uses through-hole solder connections without a fitted terminal block. Solder suitable wires or compatible pins to these connections as required. Avoid damage to PCB pads and nearby components during soldering.

5 Ordering Information

Use the part number below when identifying the SB1 board. Contact straps are listed as accessories. See www.odaxtechnologies.com/products for product information.

Table 3: Ordering information

SKU	Description	Packaging
ODAX-EDA-SB1-100-BLK-R1	ODAX EDA SB1 assembled EDA/GSR analog sensor board	Single board
ODAX-EDA-T1-100-BLK-R1	ODAX EDA Contact Strap – Black	Strap
ODAX-EDA-T1-100-WHT-R1	ODAX EDA Contact Strap – White	Strap
ODAX-EDA-MT1-100-BLK-R1	ODAX EDA Contact Strap – Maker Grade – Black	Strap

For a typical finger EDA/GSR setup, use two contact straps connected to the two electrode lead contacts.

6 Mechanical Information

Table 4: Mechanical characteristics of the SB1 form factor

Parameter	Nominal	Unit	Notes
PCB length	35.0	mm	Board outline; excludes jack projection
PCB width	31.0	mm	Board outline
Mounting holes	4		One at each corner
Mounting-hole diameter	3.2	mm	As shown in the dimension drawing
Mounting-pad outside diameter	6.2	mm	Circular pad around each mounting hole
Hole spacing, along length	28.0	mm	Center to center
Hole spacing, across width	24.0	mm	Center to center
Board format	Assembled PCB		Four-hole mounting pattern
Electrode connector	3.5 mm jack		Used as TS for two electrode lead contacts
User electrical interface	PWR, GND, OUT		Three through-hole solder connections

6.1 Dimension Drawing

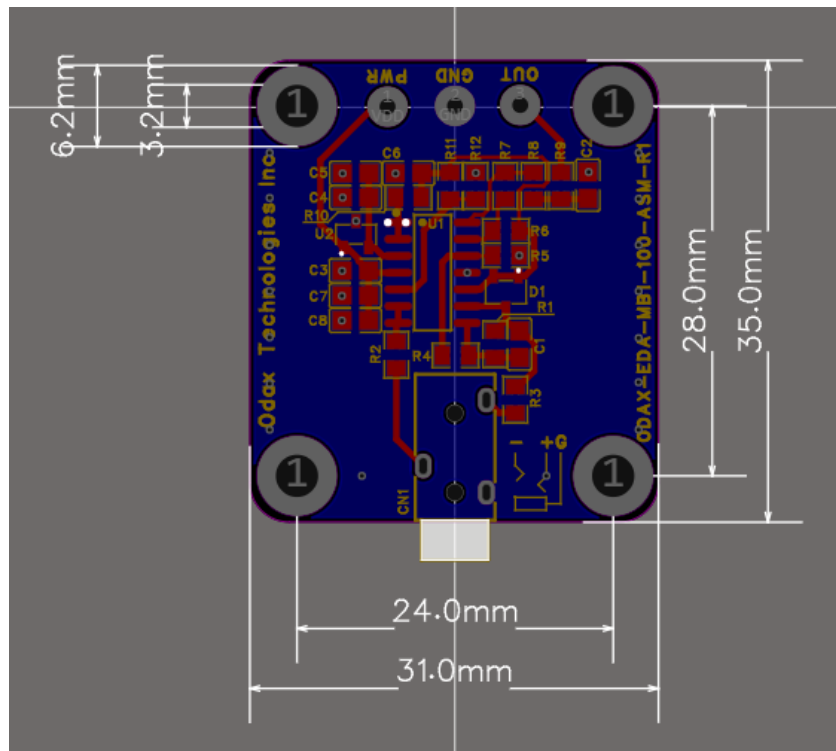


Figure 2: Supplied dimension drawing for the SB1 form factor. Dimensions are in millimeters; mounting-hole spacings are center to center.

Dimensions are nominal. PCB thickness, assembled height, connector projection, and mechanical tolerances are not specified in the supplied drawing. Allow clearance for the electrode jack and inserted plug when designing an enclosure.