Si8920ISO-EVB

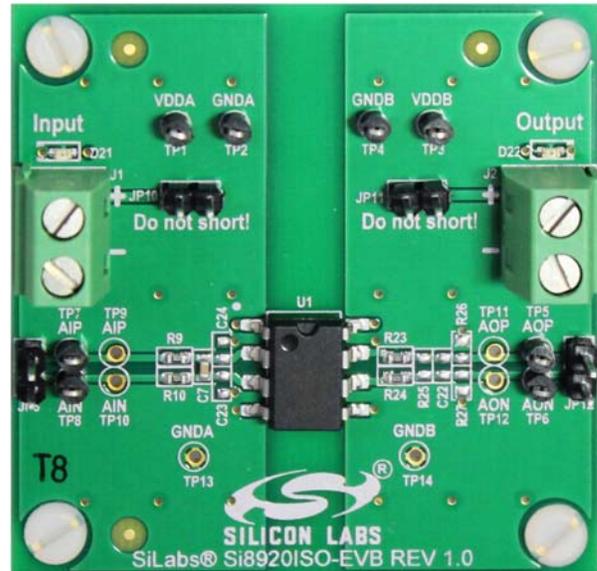## Si8920ISO-EVB USER'S GUIDE

Description

This document describes the operation of the Si8920ISO-EVB.

Kit Contents

■ The Si8920ISO Evaluation Kit contains the following items:

■ Si8920ISO-EVB.

■ Si8920BC-IP installed on the evaluation board.

Si8920ISO-EVB Overview

Si8920ISO-EVB

1. Hardware Overview and Setup

1.1. Connecting to the EVB

Power the EVB by applying isolated 3.0 to 5.5 V_{DC} supplies to terminal blocks J1 and J2. LEDs D21 and D22 will light up. Use separate test points TP1, TP2, TP3, and TP4 for observing VDDA, GNDA, VDDB, and GNDB, respectively.

Note: DO NOT place jumpers across JP10, JP11, or JP12. These are redundant test points for VDDA, VDDB, and AOP/AON, respectively.

There are three connection points for applying and observing differential signals to the inputs of Si8920:

1. Through a two conductor ribbon cable to 2x1 header JP8.
2. Clipping wires to test points TP7 and TP8.
3. Soldering wires directly to through holes located at TP9 and TP10.

The same connector options are available for observing and taking the output signals off circuit board:

1. Through a two conductor ribbon cable at 2x1 header JP12.
2. Clipping wires to test points TP5 and TP6.
3. Soldering wires directly through holes located at TP11 and TP12.

1.2. Driving Si8920 Inputs

Drive the inputs with a low impedance source. The Si8920 has a typical input impedance of 37.2 kΩ. A high source impedance will affect the gain error of the amplifier. The maximum specified differential voltage is 200 mV and the common mode must be within –250 mV to 1 V with respect to GNDA.

Note: When driving inputs from a single-ended source, short the unused input to GNDA. If driving AIP input, install 0 Ω resistor across C23 pads. If driving AIN input, install a 0 Ω resistor across C24 pads.

SILICON LABS

1.3. Input Configuration

To measure input offset, install a jumper (not provided) at JP8 to short AIP and AIN together, and measure the difference voltage between AOP and AON.

Si8920 has a channel bandwidth of approximately 750 kHz. R9-C7-R10 are populated providing low pass filtering with cutoff frequency of approximately 400 kHz. If a different cutoff frequency is desired, replace C7 per Table 1. If it is necessary to replace R9 and R10 for a specific cutoff frequency, ensure that R9 = R10 < 33 Ω.

Table 1. Input Filter Cutoff Frequency for Common Capacitor Values with R9 = R10 = 20 Ω

C7 (nF)	Cutoff Frequency (kHz)
10*	398
15	265
22	181
33	121
47	85
*Note: Installed value.	

Si8920 has excellent immunity to common mode transients. This EVB provides provisions for capacitors C23 and C24 (not populated) between each input pin and GNDA. Placing a small capacitor at C23 and C24 can assist with charge swapping between the inputs and GNDA during common mode transients. However, any mismatch between C23 and C24 will result as a gain error at the output.

1.4. Observing Si8920 Outputs

Use a differential probe when observing the output using an oscilloscope. Most differential oscilloscope probes will connect to the 2x1 headers JP12 without adapters. If only single-ended oscilloscope probes are available, use two and set oscilloscope to subtract the two channels as one channel will only show half of the output.

SILICON LABS

Si8920ISO-EVB

1.5. Output Configuration

By default, R23 and R24 are populated with 0 Ω resistors that pass the output signal to the output connectors. If low pass filtering at the output is required, replace R23 and R24 and populate C22.

R25 can be populated to measure the differential output drive strength. R26 and R27 can be populated to measure the common mode drive strength to GNDB.

Table 2. Test Point Descriptions

Test Point	Description	Reference
TP1	VDDA	GNDA
TP2	GNDA	N/A
TP3	VDDB	GNDB
TP4	GNDB	N/A
TP5	AOP	GNDB
TP6	AON	GNDB
TP7	AIP	GNDA
TP8	AIN	GNDA
TP13	GNDA	N/A
TP14	GNDB	N/A

Table 3. Jumper Descriptions

Jumper	PIN 1	PIN 2	Default Position	Description
JP8	AIN	AIP	Not Installed	Analog Input Connector, Short to Measure Offset
JP10	VDDA	GNDA	Not Installed	**DO NOT SHORT** – test points only
JP11	VDDB	GNDB	Not Installed	**DO NOT SHORT** – test points only
JP12	AON	AOP	Not Installed	**DO NOT SHORT** – test points only

Rev. 0.1

2. Si8920ISO-EVB Schematics

Figure 1. Si8920ISO-EVB Schematic (1 of 2)

Output Side Power Supply
Valid range: 3.3V to 5V +/-10%

Input Side Power Supply
Valid range: 3.3V to 5V +/-10%

Output Connectors

Input Connectors

Do Not Short
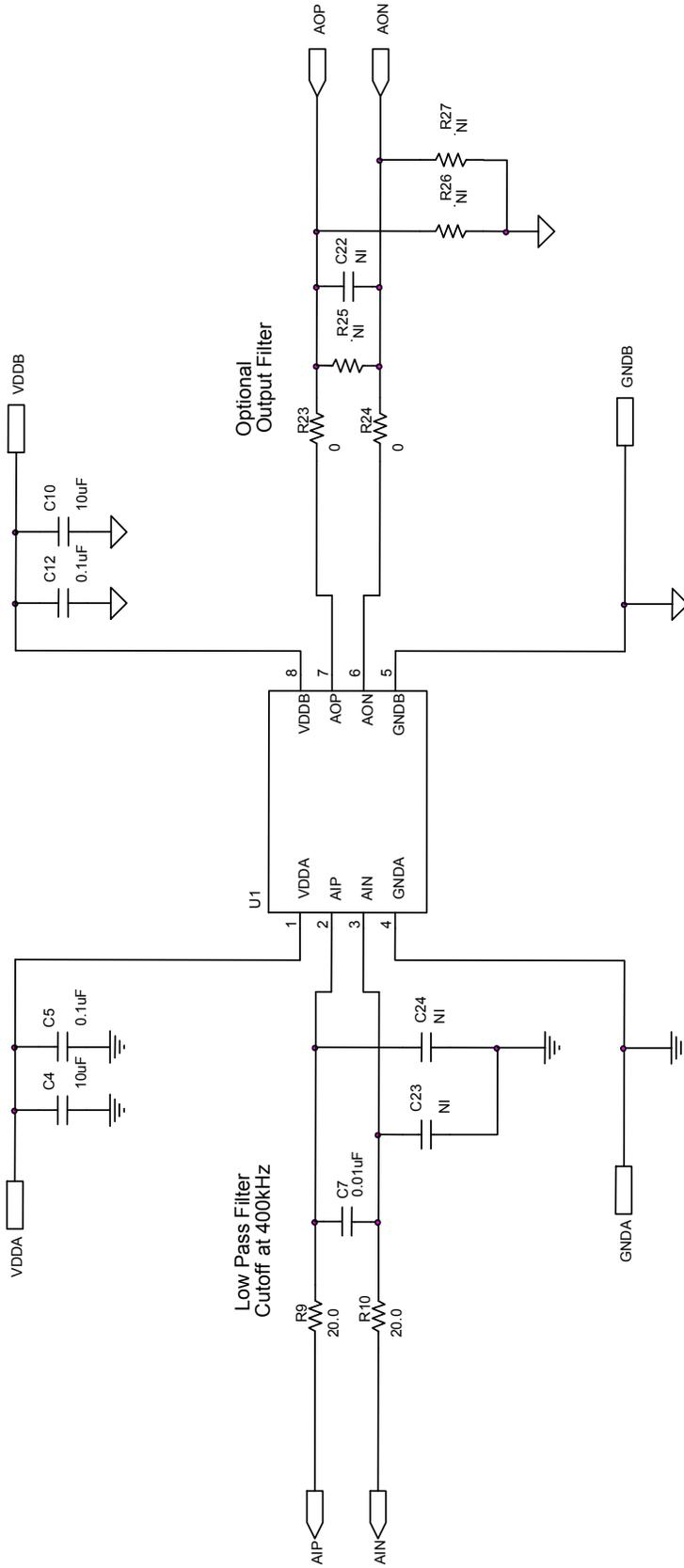
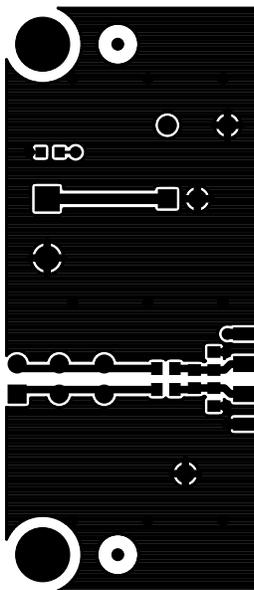**Figure 2. Si8920ISO-EVB Schematic (2 of 2)**

SILICON LABS

3. Si8920ISO-EVB Layout
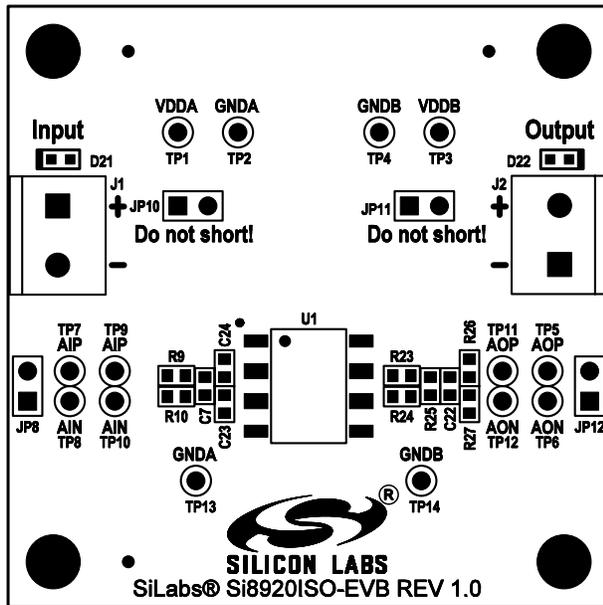
Top Silkscreen
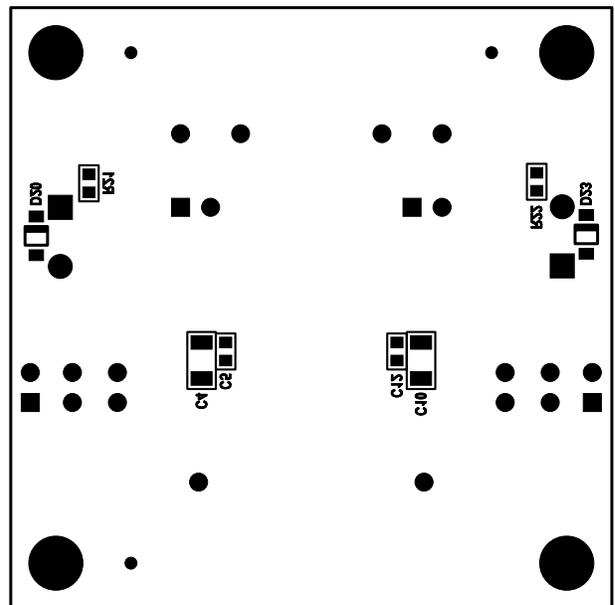
Bottom Silkscreen

Top
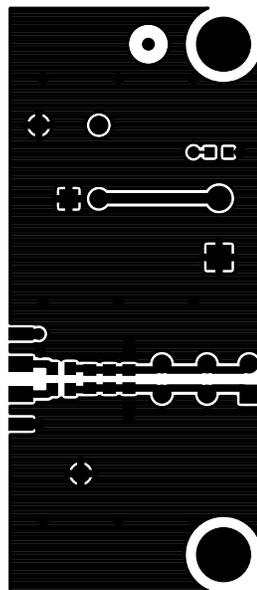
Bottom

Figure 3. Si8920ISO-EVB Layout

4. Bill of Materials

Table 4. Si8920ISO-EVB Bill of Materials

Part Reference	Description	Manufacturer	Manufacturer Part Number
C4, C10	CAP, 10 µF, 10 V, ±20%, X7R, 1206	Venkel	C1206X7R100-106M
C5, C12	CAP, 0.1 µF, 10 V, ±10%, X7R, 0603	Venkel	C0603X7R100-104K
C7	CAP, 0.01 µF, 16 V, ±10%, X7R, 0603	Venkel	C0603X7R160-103K
D20, D23	DIO, ZENER, 28 V, 500 mW, SOD123	On Semi	MMSZ5255BT1G
D21, D22	LED, RED, 631 nM, 20 mA, 2 V, 54mcd, 0603	Lite-On	LTST-C190KRKT
J1, J2	CONN, TERM BLOCK 2POS, 5MM PCB	Phoenix Contact	1729018
JP8, JP10, JP11, JP12	Header, 2x1, 0.1" pitch, Tin Plated	Samtec	TSW-102-07-T-S
MH1, MH2, MH3, MH4	HDW, Screw, 4-40 x 1/4" Pan Head, Slotted, Nylon	Richco Plastic Co	NSS-4-4-01
R9, R10	RES, 20.0 Ω, 1/10 W, ±1%, ThickFilm, 0603	Venkel	CR0603-10W-20R0F
R21, R22	RES, 10 K, 1/10 W, ±5%, ThickFilm, 0603	Venkel	CR0603-10W-103J
R23, R24	RES, 0 Ω, 1A, ThickFilm, 0603	Venkel	CR0603-16W-000
SO1, SO2, SO3, SO4	HDW, STANDOFF, 1/4" HEX, 4-40x3/4", NYLON	Keystone	1902D
TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8	TESTPOINT, BLACK, PTH	Kobiconn	151-203-RC
U1	IC, ISOLATED AMPLIFIER FOR CURRENT SHUNT MEASUREMENT, 8PIN SMD GULL WING	Silicon Labs	Si8920BC-IP

SILICON LABS

5. Ordering Guide

Table 5. Si8920ISO-EVB Ordering Guide

Ordering Part Number (OPN)	Description
Si8920ISO-KIT	Si8920 Analog isolator evaluation board kit

SILICON LABS

Si8920ISO-EVB

CONTACT INFORMATION

Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
Tel: 1+(512) 416-8500
Fax: 1+(512) 416-9669
Toll Free: 1+(877) 444-3032

Please visit the Silicon Labs Technical Support web page:
https://www.siliconlabs.com/support/pages/contacttechnicalsupport.aspx
and register to submit a technical support request.

Patent Notice

Silicon Labs invests in research and development to help our customers differentiate in the market with innovative low-power, small size, analog-intensive mixed-signal solutions. Silicon Labs' extensive patent portfolio is a testament to our unique approach and world-class engineering team.

SILICON LABS

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Amplifier IC Development Tools *category:*

Click to view products by Silicon Labs *manufacturer:*

Other Similar products are found below :

EVAL-ADCMP566BCPZ EVAL-ADCMP606BKSZ AD8013AR-14-EBZ AD8033AKS-EBZ AD8044AR-EBZ AD8225-EVALZ ADA4859-3ACP-EBZ ADA4862-3YR-EBZ DEM-OPA-SO-2B AD744JR-EBZ AD8023AR-EBZ AD8030ARJ-EBZ AD8040ARU-EBZ AD8073JR-EBZ AD813AR-14-EBZ AD848JR-EBZ ADA4858-3ACP-EBZ ADA4922-1ACP-EBZ 551600075-001/NOPB DEM-OPA-SO-2E THS7374EVM EVAL-ADCMP553BRMZ EVAL-ADCMP608BKSZ MIOP 42109 EVAL-ADCMP609BRMZ MAX9928EVKIT+ MAX9636EVKIT+ MAX9611EVKIT MAX9937EVKIT+ MAX9934TEVKIT+ MAX44290EVKIT# MAX2644EVKIT MAX2634EVKIT MAX4073EVKIT+ DEM-OPA-SO-2C MAX2643EVKIT ISL28158EVAL1Z MAX40003EVKIT# MAX2473EVKIT MAX2472EVKIT MAX4223EVKIT MAX9700BEVKIT MADL-011014-001SMB DC1685A DEM-OPA-SO-2D MAX2670EVKIT# DEM-OPA-SO-1E AD8137YCP-EBZ EVAL-ADA4523-1ARMZ MAX44242EVKIT#