

Signal Chain Power Series Thru-Board Configuration

DESCRIPTION

Demonstration circuit SCP-THRUBRD-EVALZ acts as a straight-through connection within a power tree. It mainly serves as a spacer in systems where the quantity of series connections differs among adjacent channels. Figure 2 shows an example of the board used this way.

Like all boards in the Signal Chain Power series, this board is designed to be easily plugged into other SCP boards to form a complete signal chain power system, enabling fast evaluation of low power signal chains. To evaluate this board, some universal SCP hardware is required, namely:

SCP-INPUT-EVALZ	SCP-FILTER-EVALZ
SCP-OUTPUT-EVALZ	SCP-1X2BKOUT-EVALZ
SCP-1X5BKOUT-EVALZ	SCP-5X1-EVALZ

To properly evaluate SCP series demo boards, you will need the SCP Configurator companion software. SCP Configurator can help you choose the right board and topology for your design.

Design files for this circuit board are available.

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Table 1. Performance Summary

SYMBOL	PARAMETER	NOTES	MIN	TYP	MAX	UNITS
$V_{IN(MAX)}$	Max Input Voltage				50	V
$V_{OUT(MAX)}$	Max Output Voltage	Output Capacitor Rating Limited Replace for higher V_{OUT}			50	V
$I_{OUT(MAX)}$	Max Output Current				2	A

BOARD IMAGE

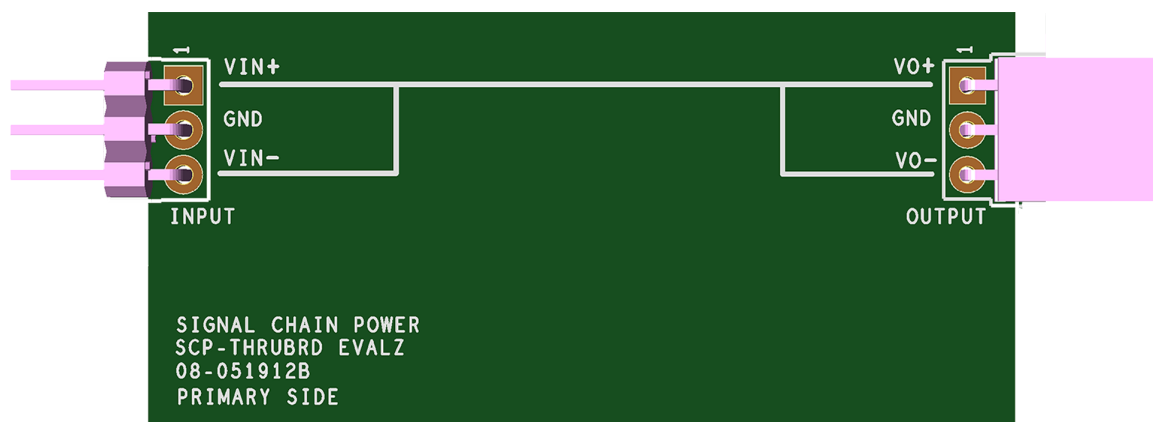


Figure 1. SCP-THRUBRD-EVALZ Evaluation Board

DEMO MANUAL SCP-THRUBRD-EVALZ

QUICK START PROCEDURE

Demonstration circuit SCP-THRUBRD-EVALZ is easy to set up to evaluate the performance of any SCP hardware configuration.

1. The SCP-THRUBRD-EVALZ is a simple pass-through board that allows you to fill the gap in a power tree solution.
2. Connect the SCP-INPUT-EVALZ and SCP-OUTPUT-EVALZ boards to the SCP board under evaluation and connect the input board to a voltage source, V_{SOURCE} . Connect the output board to a voltmeter or dynamic load. Slowly raise the input voltage until the SCP-THRUBRD-EVALZ powers up the device under test into regulation and sweep V_{SOURCE} through the desired range of operation.

NOTE: Make sure that the input voltage is always within spec. If using a dynamic load to measure output voltage, make sure the load is initially set to zero.

3. Check for proper output voltages. The output should be regulated at the programmed value ($\pm 5\%$).
4. Once the proper output voltage is established, power off V_{SOURCE} and similarly test other boards in the SCP system until all elements have been individually verified prior to assembling into the final circuit configuration.

NOTE: When measuring the input or output voltage ripple, use the optional SMA connector locations available on the input, output, 1×5 , 1×2 , and 5×1 breakout boards. Avoid using the test point connections with long scope leads.

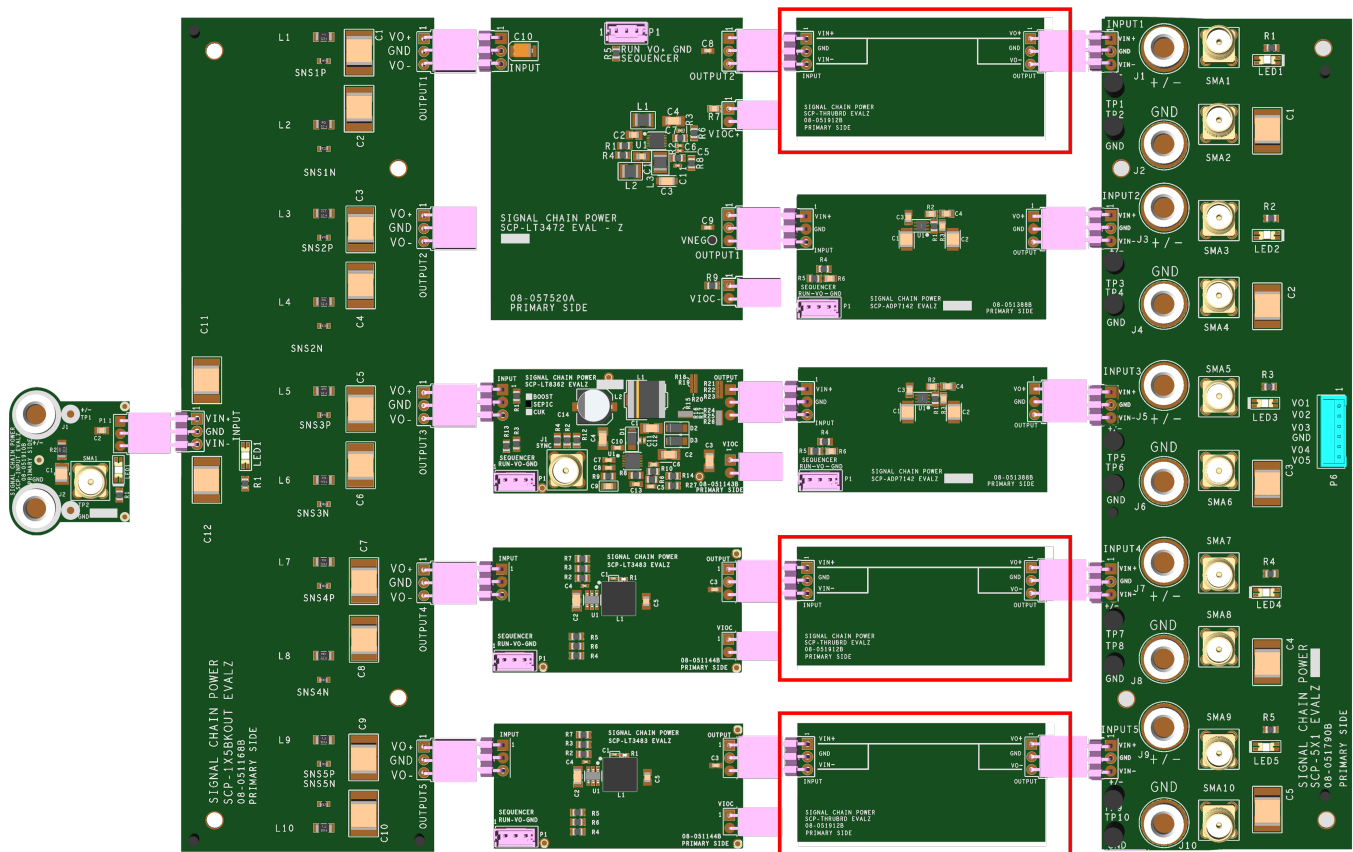


Figure 2. Sample Power tree solution using SCP boards, including the SCP-THRUBRD-EVALZ utilized as a spacer.

CONFIGURATION SETTINGS

Demonstration circuit SCP-THRUBRD-EVALZ acts as a straight-through connection within a power tree. It mainly serves as a spacer in systems where the quantity of series connections differs among adjacent channels. Figure 2 shows an example of the board used this way.

THROUGH BOARD CONFIGURATION

The thru board is designed to fill in blank spaces that can arise use when adjacent power rails require differing numbers of intermediate boards between 5:1 integration boards. There are no special configuration requirements for this board. It will carry power, negative or positive, on pins 1 and 3. Since the positive and negative rails are shorted, ensure any buck boards configured as inverting supplies are correctly configured prior to connecting.

FREQUENCY RESPONSE

The SCP-THRUBRD-EVALZ has a parasitic capacitance of roughly 38pF at 100MHz. This should be accounted for when making noise measurements as a difference with final application results.

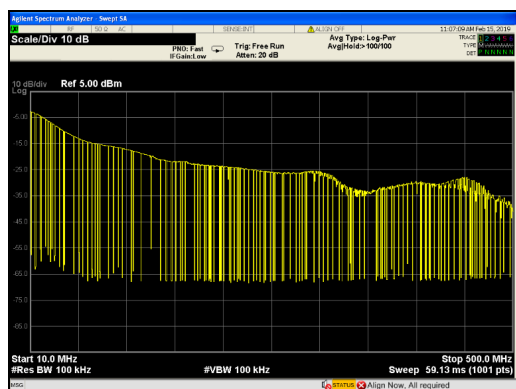
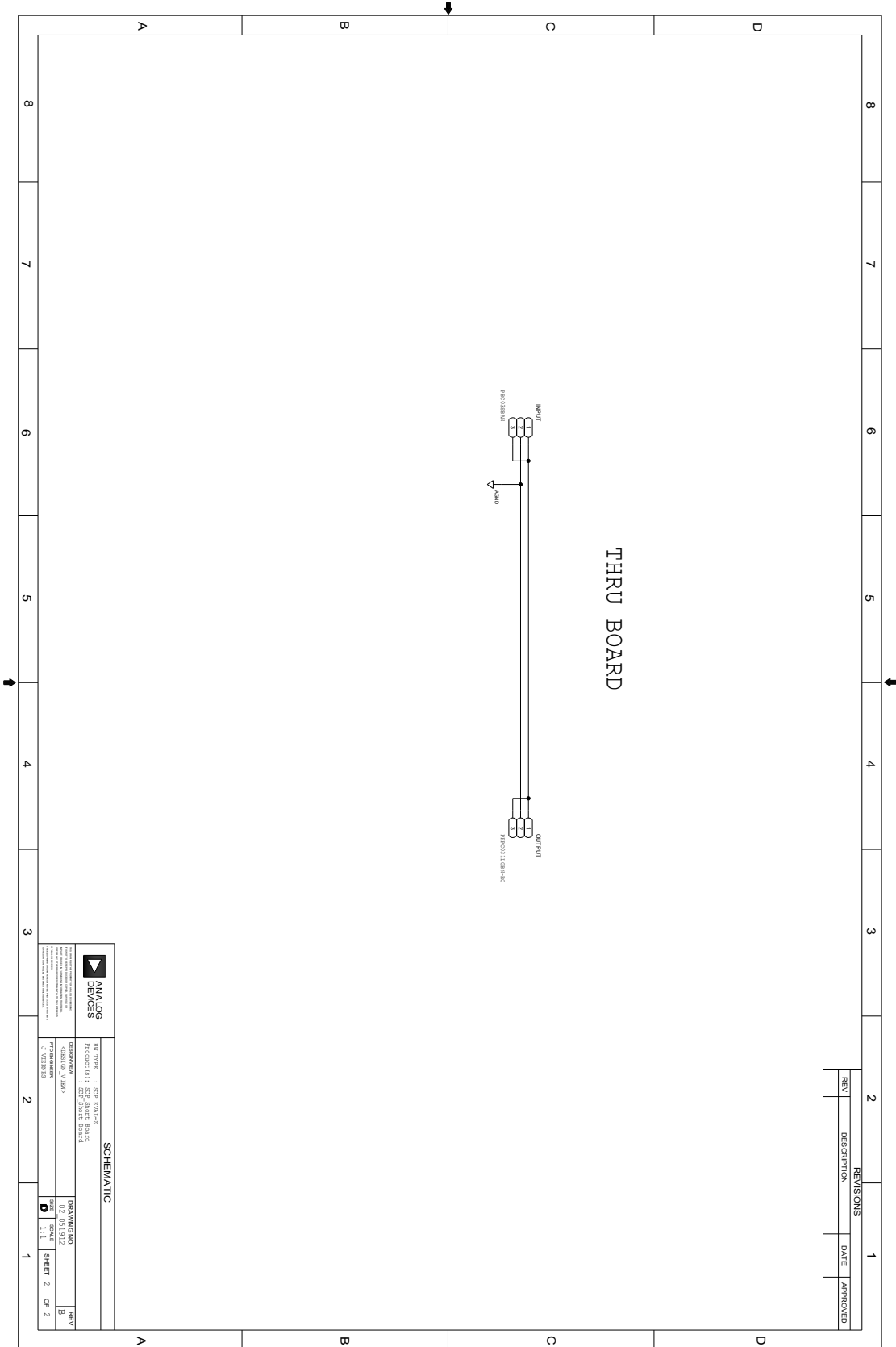


Figure 3. Swept spectrum power plot of filter board; series components shorted across; RBW: 100kHz; VBW: 100kHz.

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
1	1	PCB	PCB	ANALOG DEVICES 08_051912b
2	1	INPUT	CONN MALE 3POS 2.54MM PITCH R/A	SULLINS PBC03SBAN
3	1	OUTPUT	CONN FEMALE 3POS 2.54MM PITCH R/A	SULLINS PPPC031LGBN-RC

SCHEMATIC DIAGRAM



DEMO MANUAL SCP-THRUBRD-EVALZ



ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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