

## Evaluating the **SSM6322** High Fidelity Audio Amplifier

### FEATURES

- Enables quick prototyping
- Edge mounted SMA connector provisions
- Easy connection to test equipment and other circuits
- ±5 V and +3.3 V to supply the external circuit

### EVALUATION KIT CONTENTS

- SSM6322CP-EBZ** evaluation board
- Wall adapter

### GENERAL DESCRIPTION

The **SSM6322** evaluation board, the **SSM6322CP-EBZ**, evaluates the **SSM6322**, which is offered in a 24-lead LFCSP package. The **SSM6322CP-EBZ** evaluation board is a 4-layer printed circuit board (PCB) designed to quickly evaluate the performance of the device and reduce design time. The **SSM6322CP-EBZ** accepts SMA edge mounted connectors to test equipment or other circuitry.

Figure 1 shows the component side of the evaluation board, and Figure 2 shows the circuit side of the **SSM6322CP-EBZ**.

Complete specifications for the **SSM6322** device are provided in the **SSM6322** data sheet and should be consulted in conjunction with this user guide when using the evaluation board.

### EVALUATION BOARD PHOTOGRAPHS

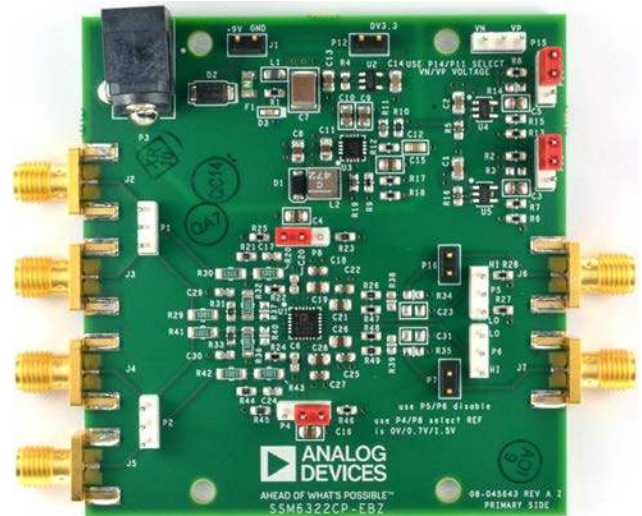


Figure 1. Component Side of the **SSM6322CP-EBZ** Evaluation Board

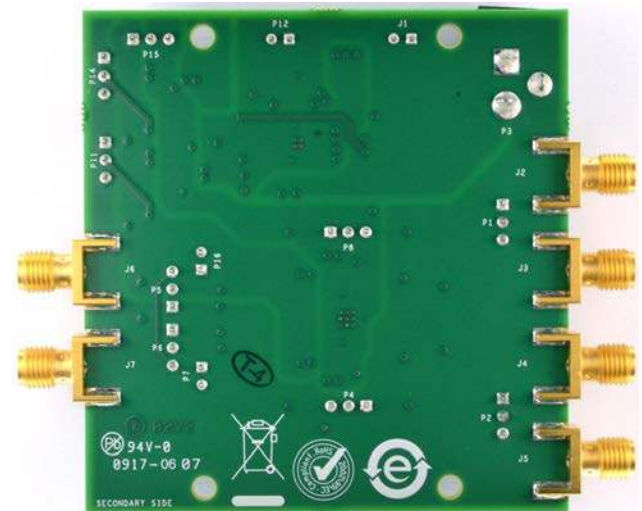


Figure 2. Circuit Side of the **SSM6322CP-EBZ** Evaluation Board

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**REVISION HISTORY**

**3/2017—Revision 0: Initial Version**

## EVALUATION BOARD HARDWARE

### POWER SUPPLIES

Figure 3 shows the functional block diagram of the [SSM6322CP-EBZ](#) evaluation board.

There are two ways to power the evaluation board: the user can either connect the wall adapter to P3 or connect the external bench power to J1. The on-board power supply is designed to operate at 9 V.

The [ADP7118](#), [ADP5073](#), and [ADP7182](#) derive the positive and negative supply ( $\pm 5$  V) for the [SSM6322](#). [ADP7118AUJZ-3.3](#) derives the 3.3 V power for the external circuit. P15 and P12 supply the  $\pm 5$  V and +3.3 V power to the external circuit (see Table 1).

**Table 1. Power Supplies Provided on the Evaluation Board**

Power Supply and Designator (V)	Function	Components Used
+5 (Avdd)	Positive rail of amplifier	<a href="#">ADP7118AUJZ</a>
-5 (Avee)	Negative rail of amplifier	<a href="#">ADP5073</a> and <a href="#">ADP7182</a>
+3.3 (DV3.3)	Power for external circuit	<a href="#">ADP7118AUJZ-3.3</a>

Each supply is decoupled where it enters the [SSM6322CP-EBZ](#) and at each device. To avoid the [ADP5073](#) switching noise interfering with the analog circuit, the evaluation board is laid out using a star ground to make the ground current path of the [ADP5073](#) return back to the ground of the wall adapter directly (see Figure 8).

Users can power the [SSM6322](#) from a bench top power supply, P15. When using the bench power, U4 ( $-5$  V) and U5 ( $+5$  V) are not required and must be removed.

### THE SSM6322 CIRCUIT

The [SSM6322](#) input stage is configured as differential to single-ended conversion circuit. The output stage is a buffer. Edge mounted SMA connectors make performance evaluation easy, for example, evaluating the total harmonic distortion plus noise (THD + N).

P4 and P8 are 3-pin jumpers that can choose the voltage of the REF1 and REF2 pins. Shorting the first pin and second pin of the P4 and P8 jumpers configure the REF1 and REF2 voltages as 0 V; shorting the second pin and third pin of the jumper configure the REF1 and REF2 voltages as 0.7 V.

P5 and P6 are 3-pin jumpers, which can enable or disable the [SSM6322](#). Shorting the first pin and second pin of the P5 and P6 jumpers (low at the SD and SD2 pins) disable the [SSM6322](#); shorting the second pin and third pin of the P5 and P6 jumpers (high at the SD and SD2 pins) enable the [SSM6322](#).

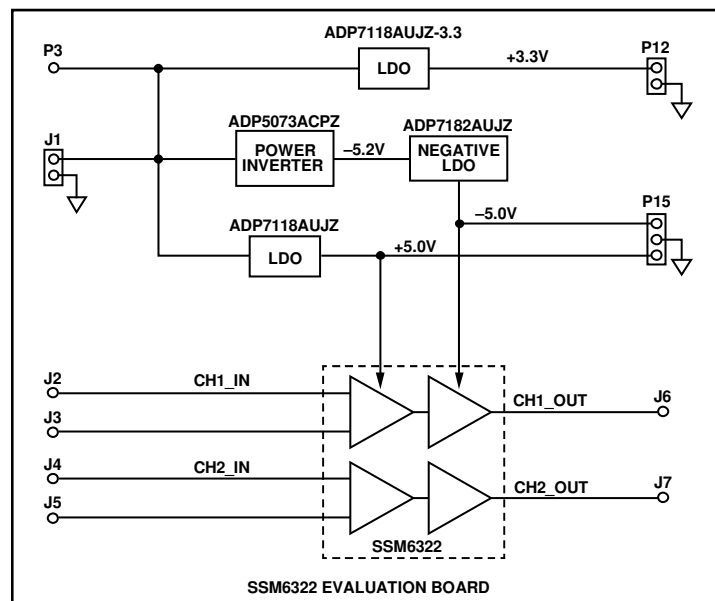


Figure 3. Functional Block Diagram

EVALUATION BOARD SCHEMATICS AND ARTWORK

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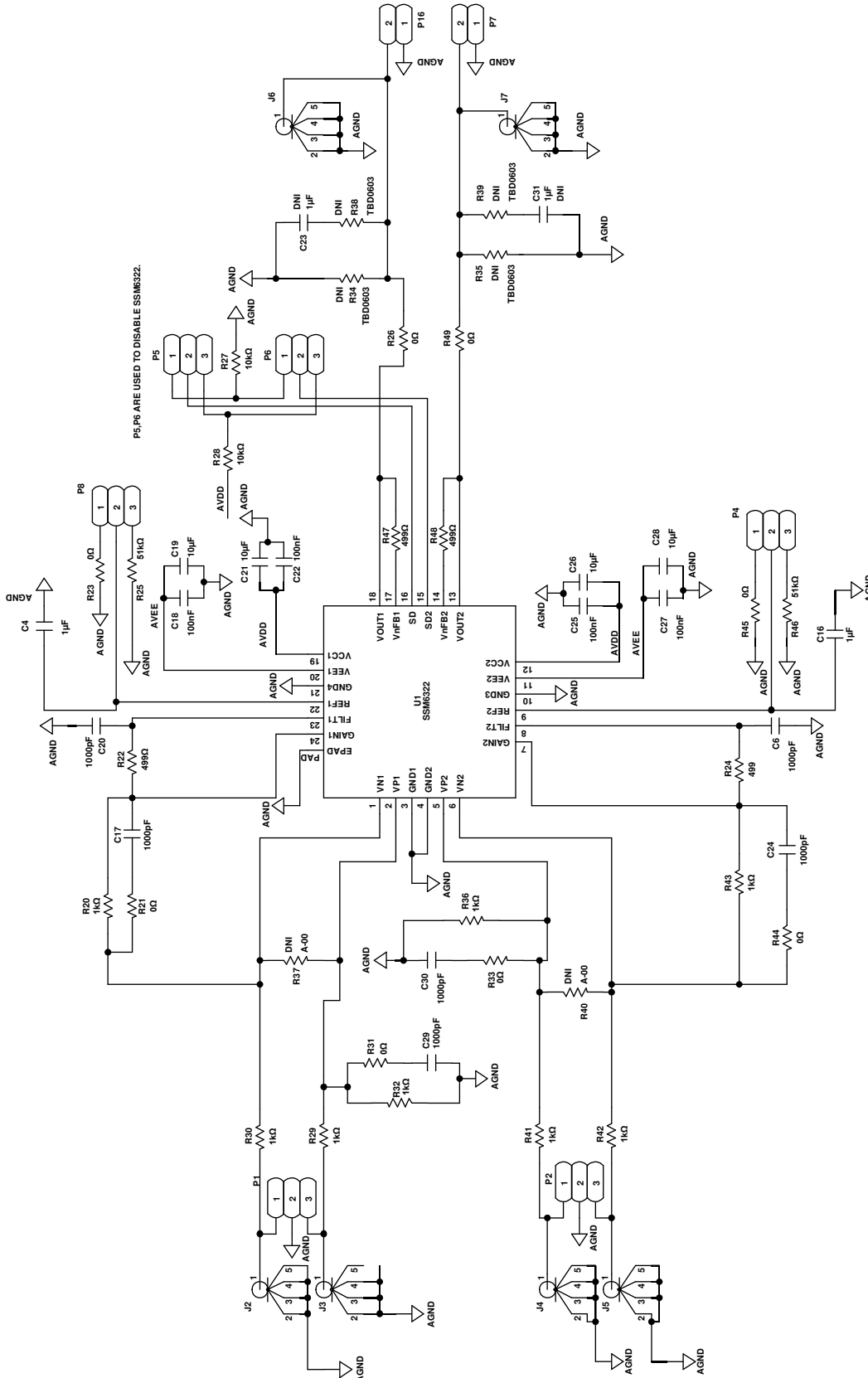
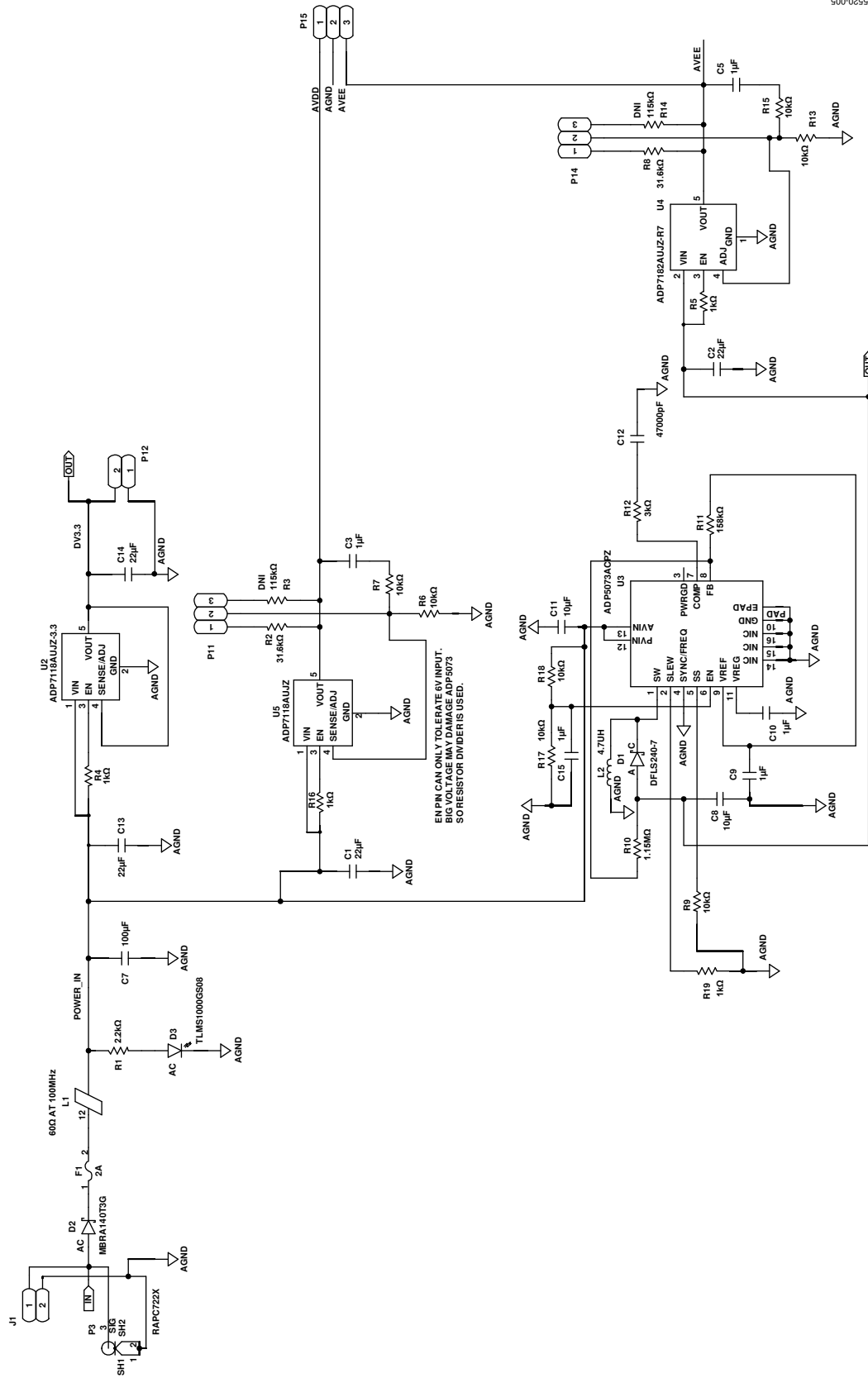


Figure 4. SSM6322 Evaluation Board SSM6322 Circuit  
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Figure 5. SSM6322 Evaluation Board Power Supply Circuit

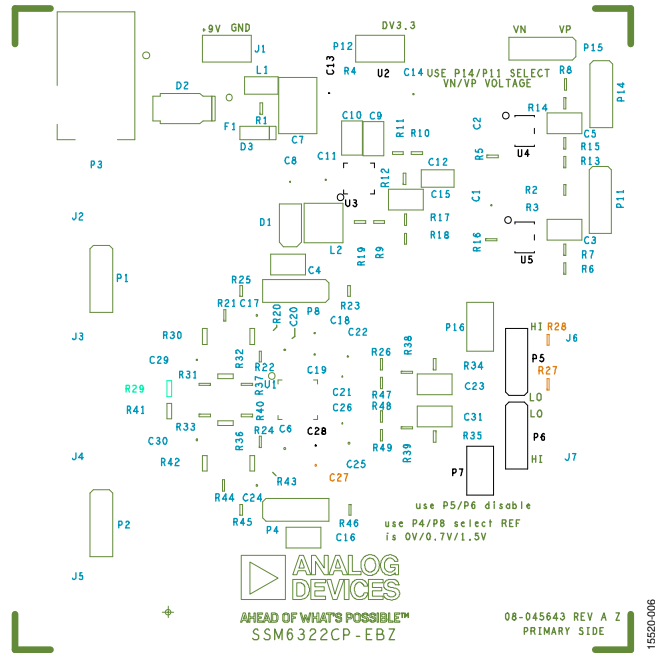


Figure 6. SSM6322 Evaluation Board Silkscreen, Top Layer

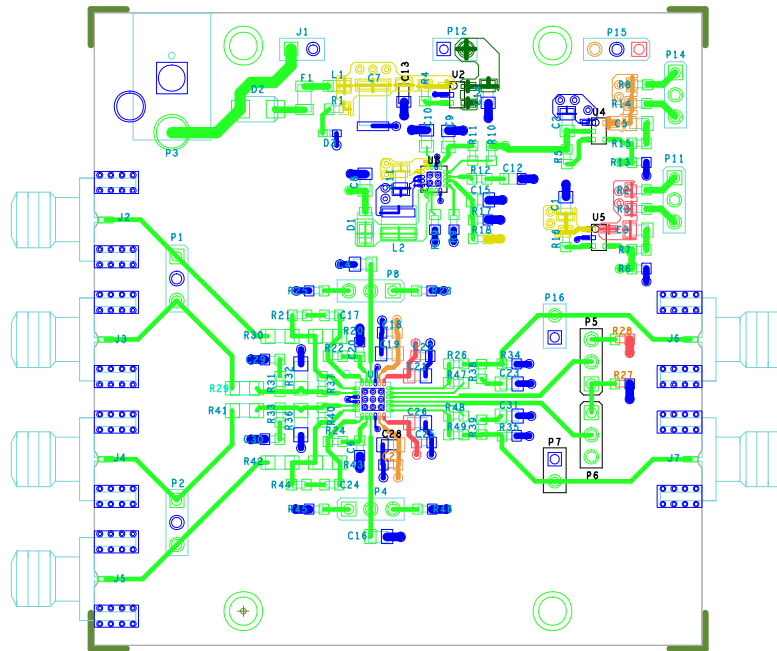


Figure 7. SSM6322 Evaluation Board, Top Layer

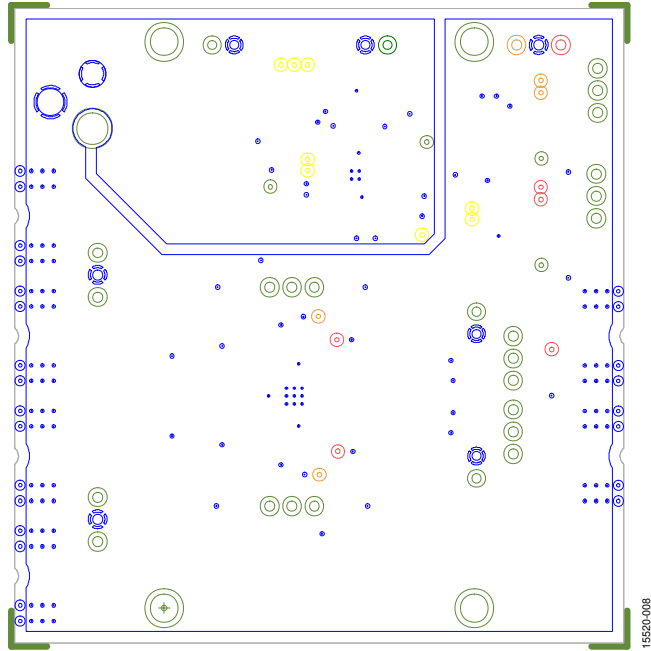


Figure 8. SSM6322 Evaluation Board, GND Layer

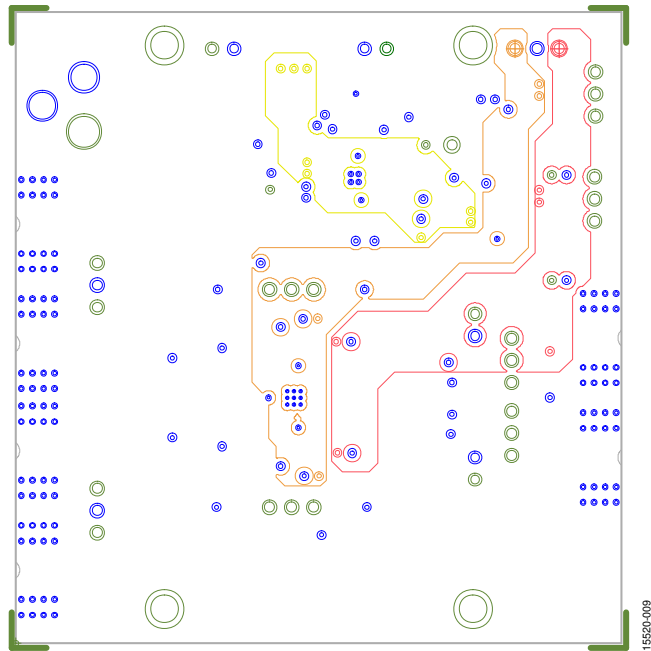
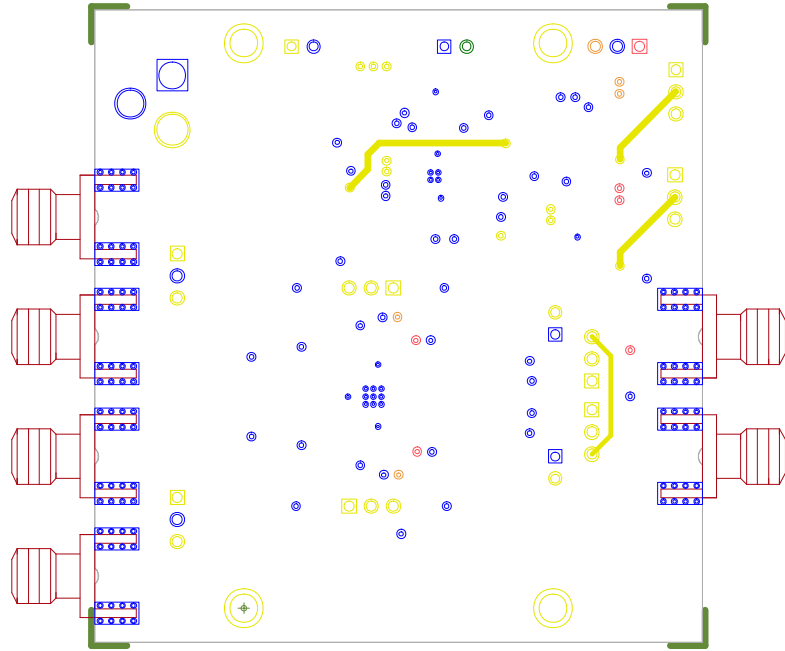


Figure 9. SSM6322 Evaluation Board, Power Layer



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Figure 10. SSM6322 Evaluation Board, Bottom Layer



## ORDERING INFORMATION

### BILL OF MATERIALS

Table 2. Bill of Materials for the [SSM6322](#) Evaluation Board

Qty	Reference Designator	Description	Manufacturer
4	C1, C2, C34, C38	22 $\mu$ F	Murata
7	C3 to C5, C9, C10, C16, C29	1 $\mu$ F	Murata
6	C8, C11, C33, C46, C49, C52	10 $\mu$ F	TDK
1	C12	47,000 pF	Wurth Elektronik
6	C6, C31, C35, C44, C53, C56	1000 pF	TDK
4	C32, C37, C48, C50	100 nF	Dielectric Labs
1	C41	100 $\mu$ F	TDK
1	D1	DFLS240-7	Diodes Incorporated
1	D10	MBRA140T3G	On Semiconductor
1	D16	LNJ208R8ARA, red	Panasonic
1	F1	2 A	Littelfuse
4	J1, P7, P12, P16	69157-102HLF	Amphenol FCI
6	J2 to J7	142-0701-851	Cinch Connectivity
1	L1	60 $\Omega$ at 100 MHz	Murata
1	L2	4.7 $\mu$ H	Coilcraft
9	P1, P2, P4 to P6, P8, P11, P14, P15	MOLEX22-03-2031	Molex
1	P3	RAPC722X	Switchcraft
1	R1	2.2 k $\Omega$	Panasonic
1	R10	1.15 M $\Omega$	Vishay
1	R11	158 k $\Omega$	Yageo
1	R12	3 k $\Omega$	Panasonic
9	R6, R7, R9, R13, R15, R26, R45, R47, R48	10 k $\Omega$	Multicomp
2	R2, R8	31.6 k $\Omega$	Panasonic
4	R24, R44, R65, R66	499 $\Omega$	Susumu
8	R29, R30, R32, R36, R49, R50, R52, R56	1 k $\Omega$	Vishay Precision Group
6	R31, R33, R43, R51, R53, R64	0 $\Omega$	Vishay Precision Group
4	R4, R5, R37, R41	1 k $\Omega$	Multicomp (SPC)
2	R62, R63	51 k $\Omega$	Panasonic
2	R73, R74	0 $\Omega$	Multicomp
1	U1	<a href="#">SSM6322</a>	Analog Devices, Inc.
1	U2	<a href="#">ADP7118AUJZ-3.3</a>	Analog Devices
1	U3	<a href="#">ADP5073ACPZ</a>	Analog Devices
1	U4	<a href="#">ADP7182AUJZ</a>	Analog Devices
1	U5	<a href="#">ADP7118AUJZ</a>	Analog Devices

## NOTES

**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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