THE DATASHEET OF

SSM6322CP-EBZ

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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

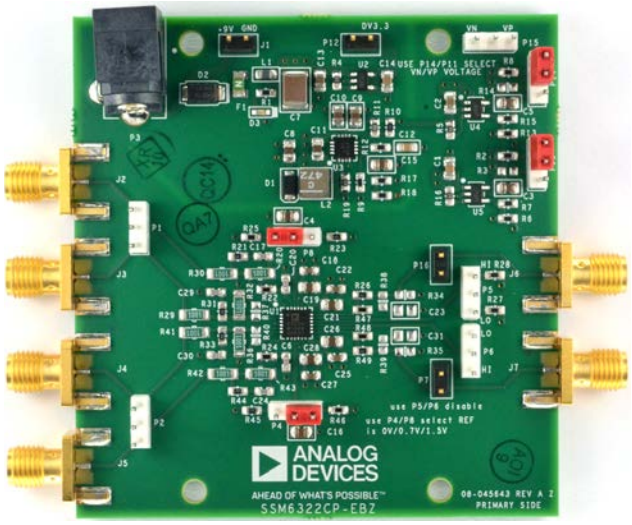

Figure 1. Component Side of the SSM6322CP-EBZ Evaluation Board

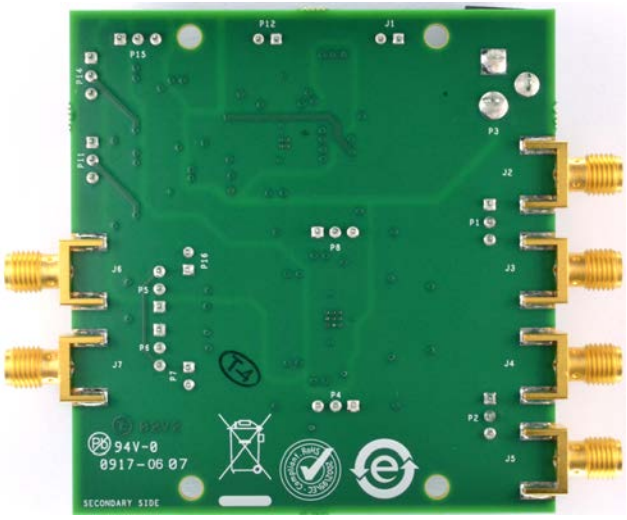

Figure 2. Circuit Side of the SSM6322CP-EBZ Evaluation Board

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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 (±5 V) for the SSM6322. ADP7118AUJZ-3.3 derives the 3.3 V power for the external circuit. P15 and P12 supply the ±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	ADP7118AUJZ
−5 (Avee)	Negative rail of amplifier	ADP5073 and ADP7182
+3.3 (DV3.3)	Power for external circuit	ADP7118AUJZ-3.3

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 t the SD and SD2 pins) enable the SSM6322.

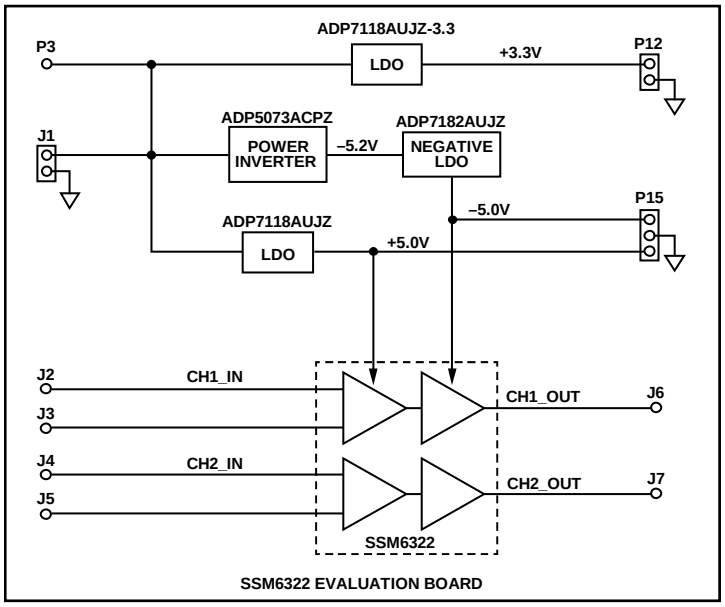

Figure 3. Functional Block Diagram

EVALUATION BOARD SCHEMATICS AND ARTWORK

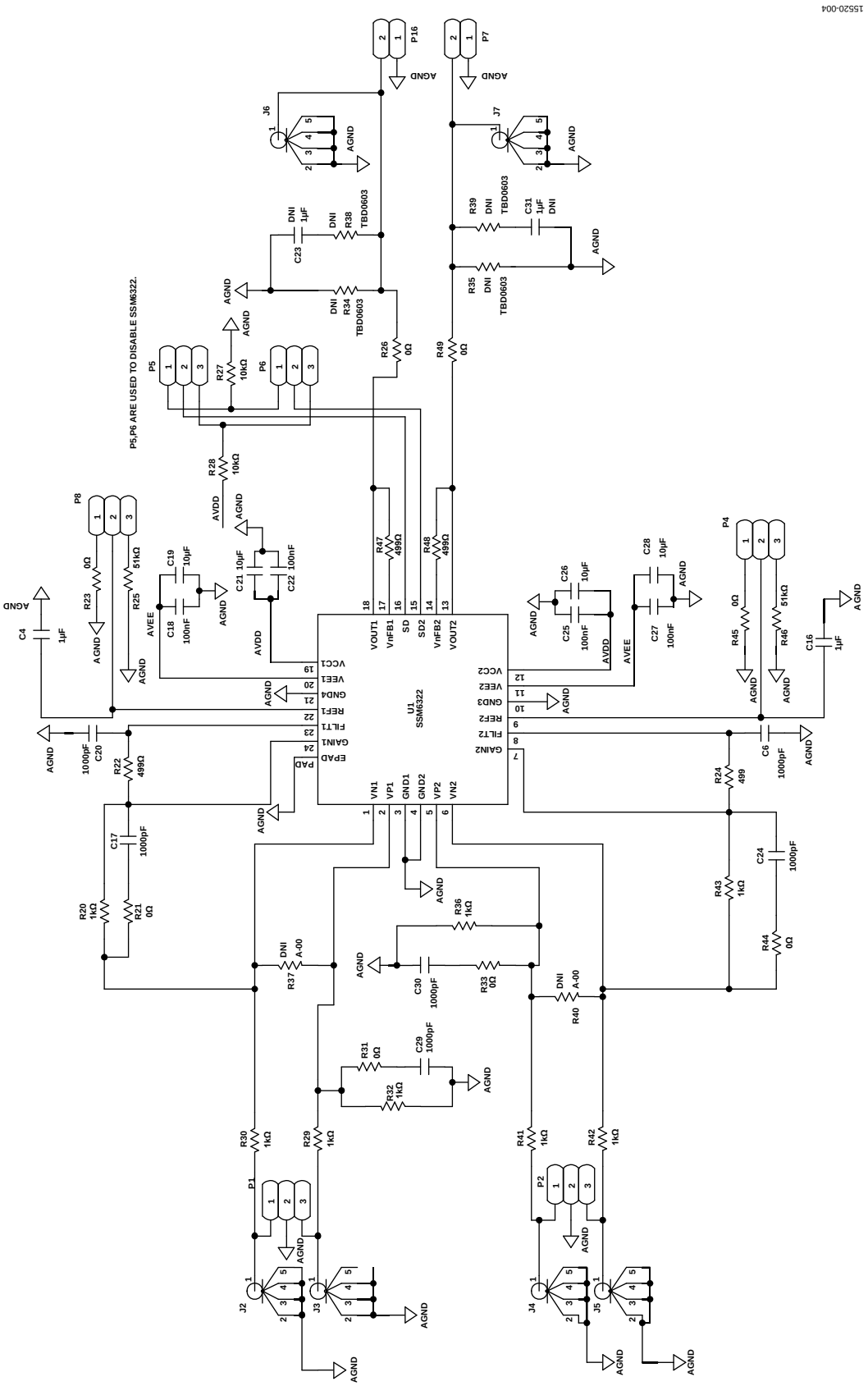

Figure 4. SSM6322 Evaluation Board SSM6322 Circuit

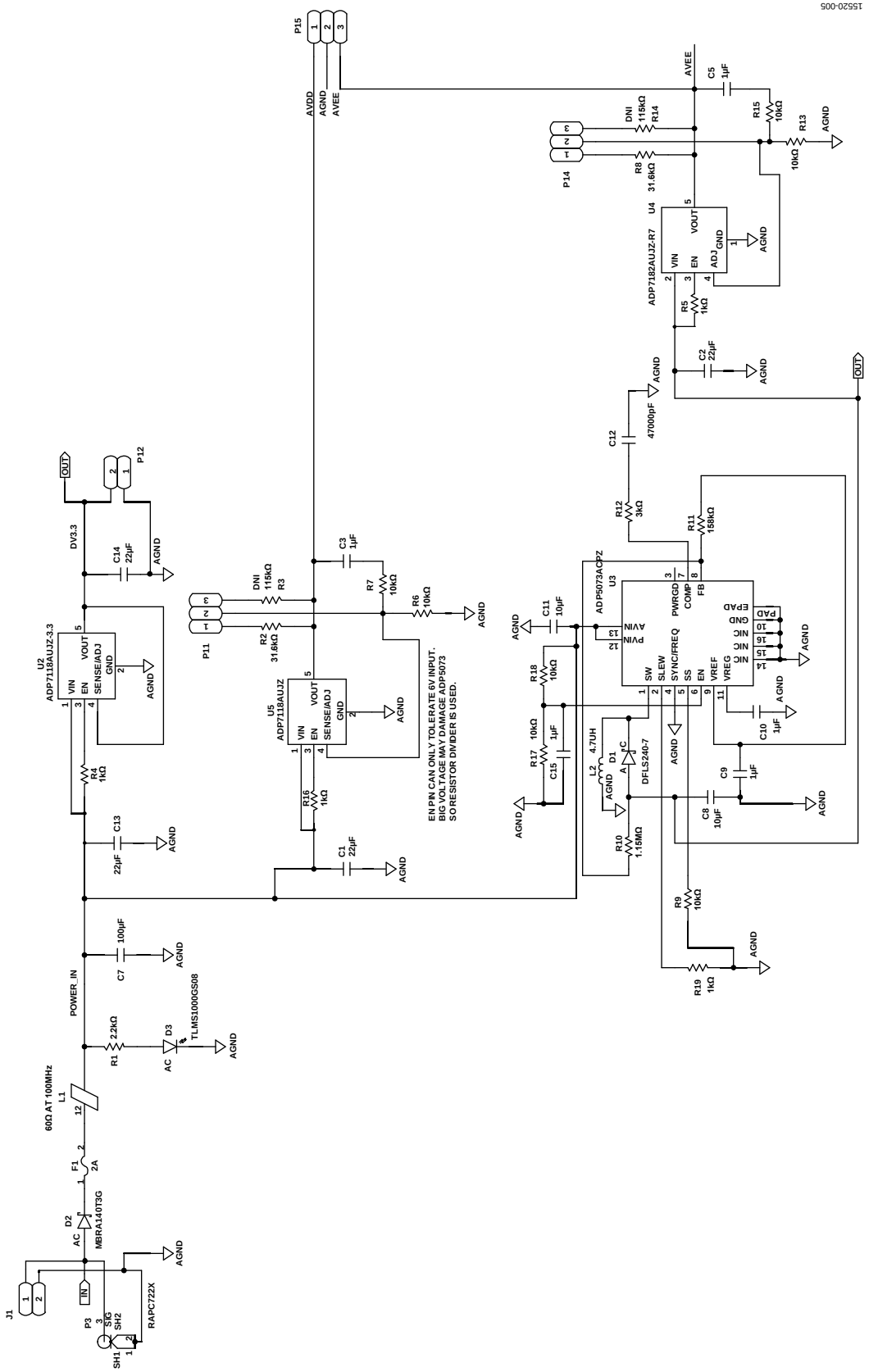

Figure 5. SSM6322 Evaluation Board Power Supply Circuit

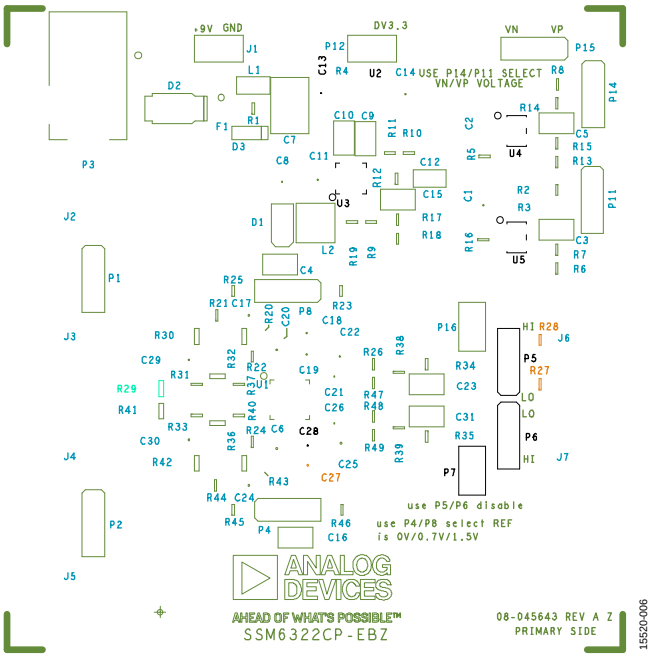

Figure 6. SSM6322 Evaluation Board Silkscreen, Top Layer

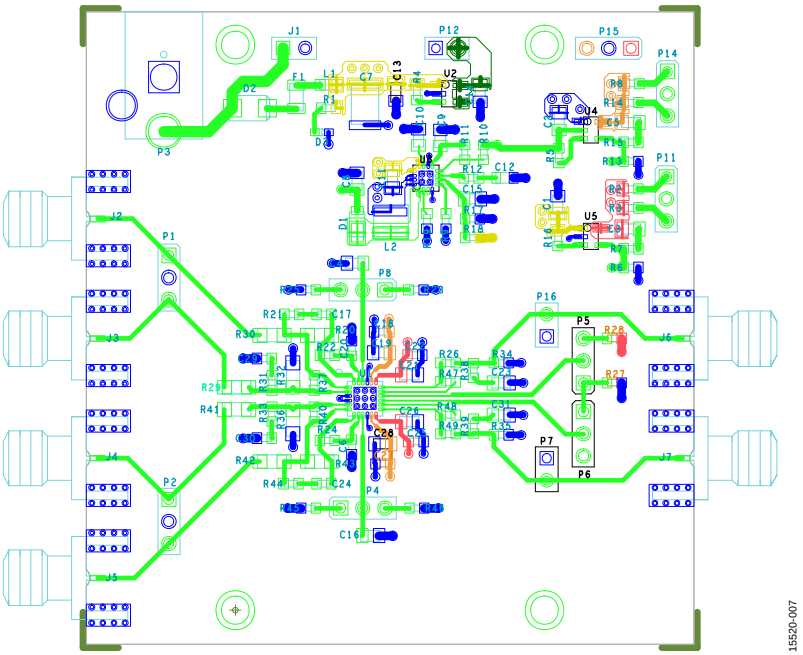

Figure 7. SSM6322 Evaluation Board, Top Layer

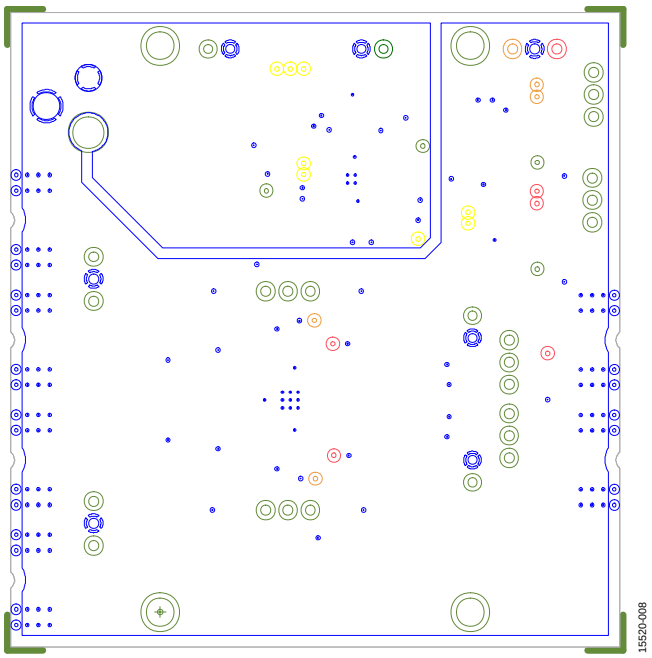

Figure 8. SSM6322 Evaluation Board, GND Layer

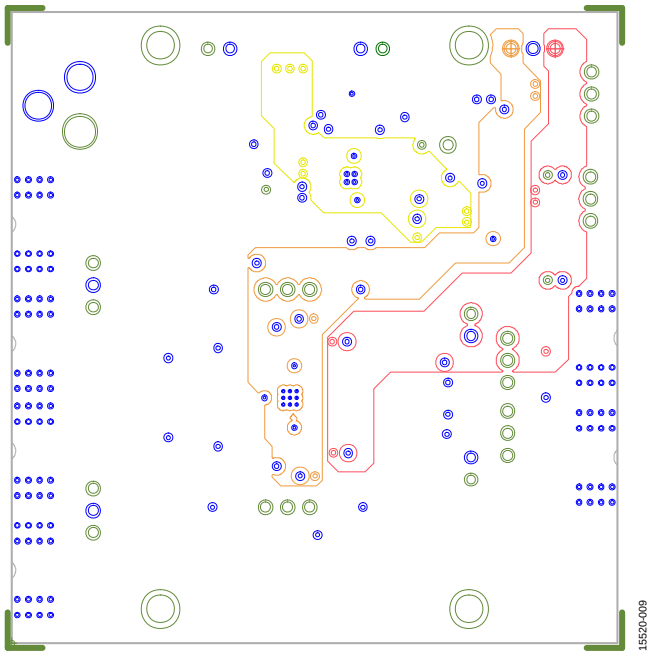

Figure 9. SSM6322 Evaluation Board, Power Layer

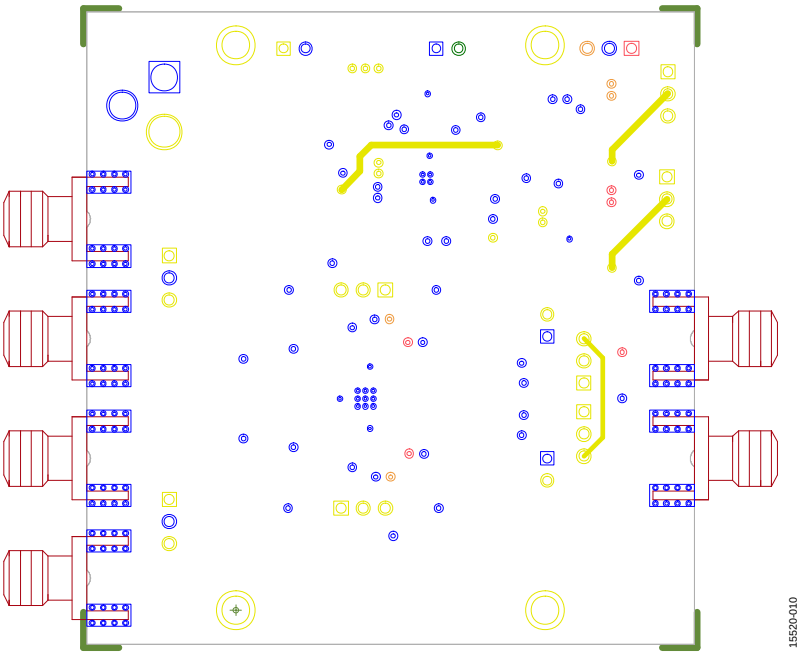

Figure 10. SSM6322 Evaluation Board, Bottom Layer

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 µF	Murata
7	C3 to C5, C9, C10, C16, C29	1 µF	Murata
6	C8, C11, C33, C46, C49, C52	10 µF	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 µF	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 Ω at 100 MHz	Murata
1	L2	4.7 µH	Coilcraft
9	P1, P2, P4 to P6, P8, P11, P14, P15	MOLEX22-03-2031	Molex
1	P3	RAPC722X	Switchcraft
1	R1	2.2 kΩ	Panasonic
1	R10	1.15 MΩ	Vishay
1	R11	158 kΩ	Yageo
1	R12	3 kΩ	Panasonic
9	R6, R7, R9, R13, R15, R26, R45, R47, R48	10 kΩ	Multicomp
2	R2, R8	31.6 kΩ	Panasonic
4	R24, R44, R65, R66	499 Ω	Susumu
8	R29, R30, R32, R36, R49, R50, R52, R56	1 kΩ	Vishay Precision Group
6	R31, R33, R43, R51, R53, R64	0 Ω	Vishay Precision Group
4	R4, R5, R37, R41	1 kΩ	Multicomp (SPC)
2	R62, R63	51 kΩ	Panasonic
2	R73, R74	0 Ω	Multicomp
1	U1	SSM6322	Analog Devices, Inc.
1	U2	ADP7118AUJZ-3.3	Analog Devices
1	U3	ADP5073ACPZ	Analog Devices
1	U4	ADP7182AUJZ	Analog Devices
1	U5	ADP7118AUJZ	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.

UG15520-0-3/17(0)

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