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CAUTION: The Bose® Lifestyle® SA-2 & SA-3 amplifiers contain no user-serviceable parts. To prevent warranty infractions, refer servicing to warranty service stations or factory service.

PROPRIETARY INFORMATION

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF BOSE CORPORATION WHICH IS BEING FURNISHED ONLY FOR THE PURPOSE OF SERVICING THE IDENTIFIED BOSE PRODUCT BY AN AUTHORIZED BOSE SERVICE CENTER OR OWNER OF THE BOSE PRODUCT, AND SHALL NOT BE REPRODUCED OR USED FOR ANY OTHER PURPOSE.

SAFETY INFORMATION

1. Parts that have special safety characteristics are identified by the  symbol on schematics or by special notes on the parts list. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the unit to the customer. Refer to UL6500 clause 9.1.1. Use the following checks to perform these measurements:

A. Leakage Current Hot Check-With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 "Leakage Current for Appliances" and Underwriters Laboratories (UL) 6500. With the unit AC switch first in the ON position and then in OFF position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the unit (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the unit power cord plug in the outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE UNIT TO THE CUSTOMER.

B. Insulation Resistance Test Cold Check-(1) Unplug the power supply and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the unit. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and each exposed metallic cabinet part on the unit. When the exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 Megohms. When there is no return path to the chassis, the reading must be "infinite". If it is not within the limits specified, there is the possibility of a shock hazard, and the unit must be repaired and rechecked before it is returned to the customer.

ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICE HANDLING

This unit contains ESDS devices. We recommend the following precautions when repairing, replacing or transporting ESDS devices:

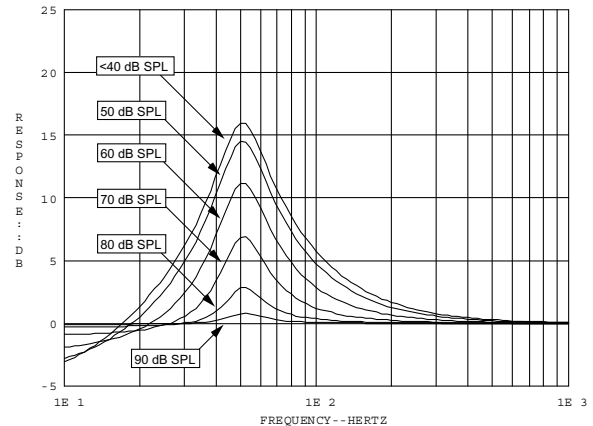
- Perform work at an electrically grounded work station.
- Wear wrist straps that connect to the station or heel straps that connect to conductive floor mats.
- Avoid touching the leads or contacts of ESDS devices or PC boards even if properly grounded. Handle boards by the edges only.
- Transport or store ESDS devices in ESD protective bags, bins, or totes. Do not insert unprotected devices into materials such as plastic, polystyrene foam, clear plastic bags, bubble wrap or plastic trays.

WARRANTY

The Bose® Lifestyle® SA-2 and SA-3 amplifiers are covered by a limited one year transferable warranty.

ELECTRICAL SPECIFICATIONS

Voltage Variations:	US:	120 Vrms
	International:	220-240 Vrms
Maximum Power:	SA-2:	40 Watts into 6 Ohms @ <0.1% THD 20 Hz to 10kHz
	SA-3:	100 Watts into 6 Ohms @ < 0.2%THD 20 Hz to 10 kHz
Frequency Response:		20 Hz - 20 kHz, +/- 0.5 dB (at full volume)
Dynamic Equalization:		



Voltage Gain (at 1 kHz):	SA-2:	34.2 dB +/- 0.5 dB
	SA-3:	38.2 dB +/- 0.5 dB
Input Impedance at (at 1 kHz):		10 k +/- 1 Ohms
Signal to Noise Ratio:		92 dB
Input Sensitivity:		0.3 Vrms at full volume produces rated output power
Compressor:	Range:	18 dB (minimum)
	Attack Time:	1 dB/ 700uS
	Release Time:	1 dB/10 mS
	Distortion:	<2%THD @100 Hz, 18 dB into compression
Turn-On Delay (to unmute):		1 second maximum at initial turn-on
		0.2 second maximum from standby
Volume Control Range:		0 to -80 dB in 1 dB steps
Output DC offset:		< 20 mVdc
Channel Balance:		+/- 0.5 dB
Output Short-Circuit Duration:		Infinite (with no damage)
Standby Power Consumption:		< 1 Watts (real power) at rated line voltage

MECHANICAL SPECIFICATIONS

Quiescent ON Power Consumption:	SA-2:	< 10 Watts
	SA-3:	< 15 Watts
Maximum Power Consumption:	SA-2:	< 220 Watts
	SA-3:	< 400 Watts
Size:	SA-2:	3½"H x 14 1/8"W x 5½"D (8.9cm x 35.9cm x 14cm)
	SA-3:	4¼"H x 14 1/8"W x 5½"D (11.4cm x 35.9cm x 14cm)
Weight; shipping:	SA-2:	7.6 lbs. (3.4 kg)
	SA-3:	11.1 lbs. (5 kg)
Enclosure Material:	Housing:	Die cast aluminum (A360)
	Bottom:	20 Ga. steel plate
	Finish:	Textured black powdercoat
Controls:		Power switch (International version only)
		Voltage select switch (Dual Voltage version only)

PRODUCT DESCRIPTION

The SA-2 Amplifier is a 2 x 40W stereo audio amplifier intended to power Bose® 161™, 191, 201®, or AM-3 indoor “zone 2” loudspeakers. It is the next generation version of SA-1, updated to work with the next generation media centers. It recognizes and responds to smart speaker II protocol commands. The SA-3 Amplifier is a 2 x 100W stereo audio amplifier intended to power Bose high SPL passive loudspeakers which can be used in second zone applications, specifically, 251® or FS-51 (outdoor), AM-5® or 301® (indoor). SA-3 is the higher power version of SA-2, with two additional features: local audio source input and mono/stereo switch. The SA-3 recognizes and responds to smart speaker I (CD-5, CD-20, MRI) or II (AV18 and AV48) protocol commands.

PART LIST NOTES

1. This part is not normally available from Customer Service. Approval from the Field Service Manager is required before ordering.
2. The individual parts located on the PCBs are listed in the Electrical Part List.
3.  This part is critical for safety purposes. Failure to use a substitute replacement with the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards.

PACKAGING PART LIST

Reference Designator	Description	Part Number	Note
1	8 TO 9 PIN DIN ADAPTER	273263	
2	BAG, POLY, 14 3/8X9 7/8X2 MIL	103351	
3	REGISTRATION & WARRANTY CARD	262933	
4	SHEET, SAFETY	275072	
5	OWNERS MANUAL, 3 LANGUAGE	275071	
6	PACKING, INSERT	275424	
7	CABLE, DIN-9, 20FT	272902-220	
8	LINE CORD, DETACH, BLK US/DUAL VOLTAGE 220-240V, EURO 240V, UK 240V, AUS	198603-001 148203 134725 134726	3 
9	PACKING, END CAP, EPS	275423	
10	CARTON, RSC	275422	
--	BAG, POLY, 12X20X4 MIL	197405	

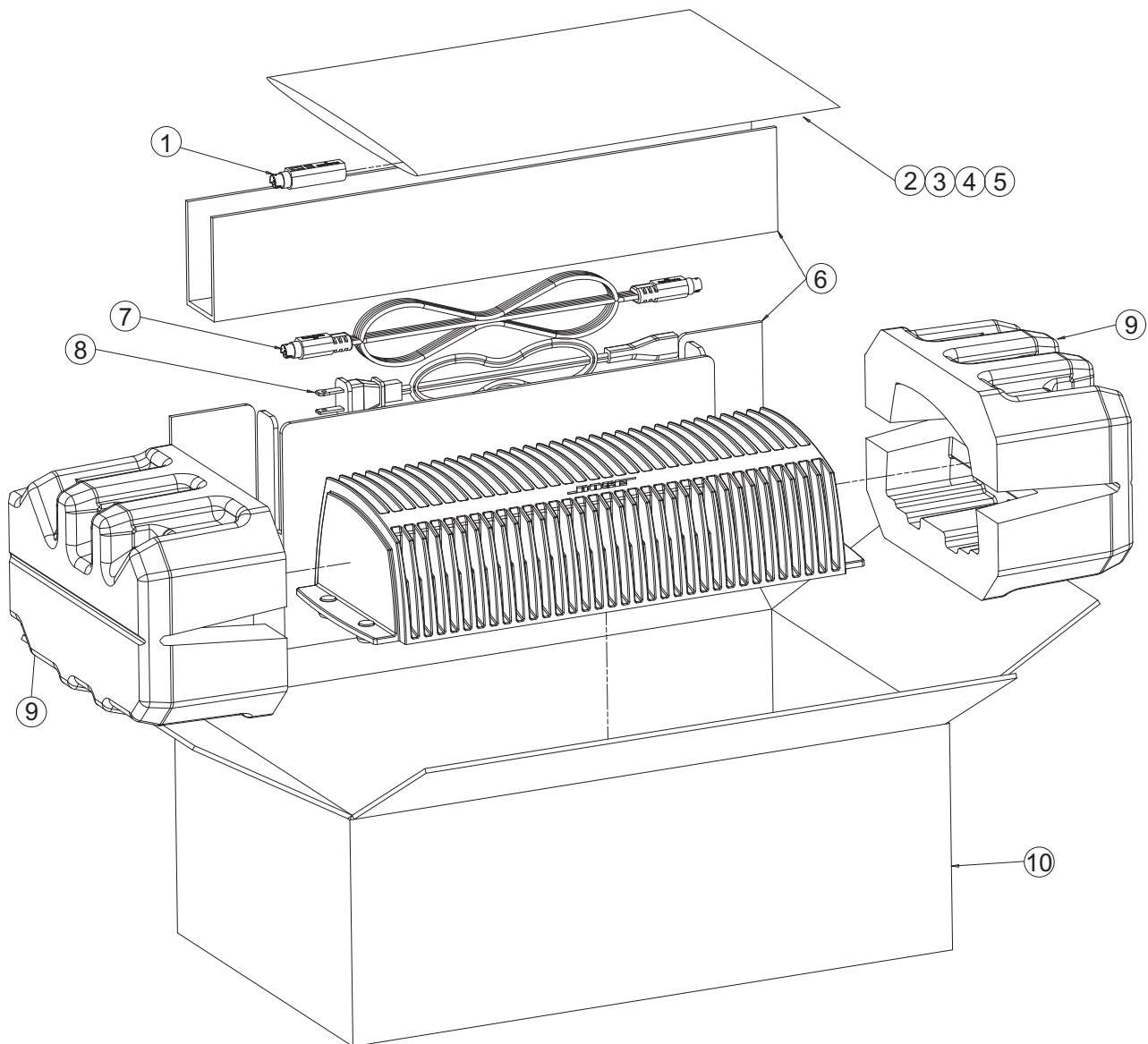


Figure 1. Lifestyle® SA-2 Packaging View

PACKAGING PART LIST

Reference Designator	Description	Part Number	Note
1	8 TO 9 PIN DIN ADAPTER	273263	
2	BAG, POLY, 14 3/8X9 7/8X2 MIL	103351	
3	REGISTRATION & WARRANTY CARD	262933	
4	SHEET, SAFETY	275072	
5	OWNERS MANUAL, 3 LANGUAGE	275071	
6	PACKING, INSERT	275424	
7	CABLE, DIN-9, 20FT	272902-220	
8	LINE CORD, DETACH, BLK US/DUAL VOLTAGE 220-240V, EURO 240V, UK 240V, AUS	198603-001 148203 134725 134726	3 ⚠
9	PACKING, END CAP, EPS	275423	
10	CARTON, RSC	276289	
--	BAG, POLY, 12X20X4 MIL	197405	

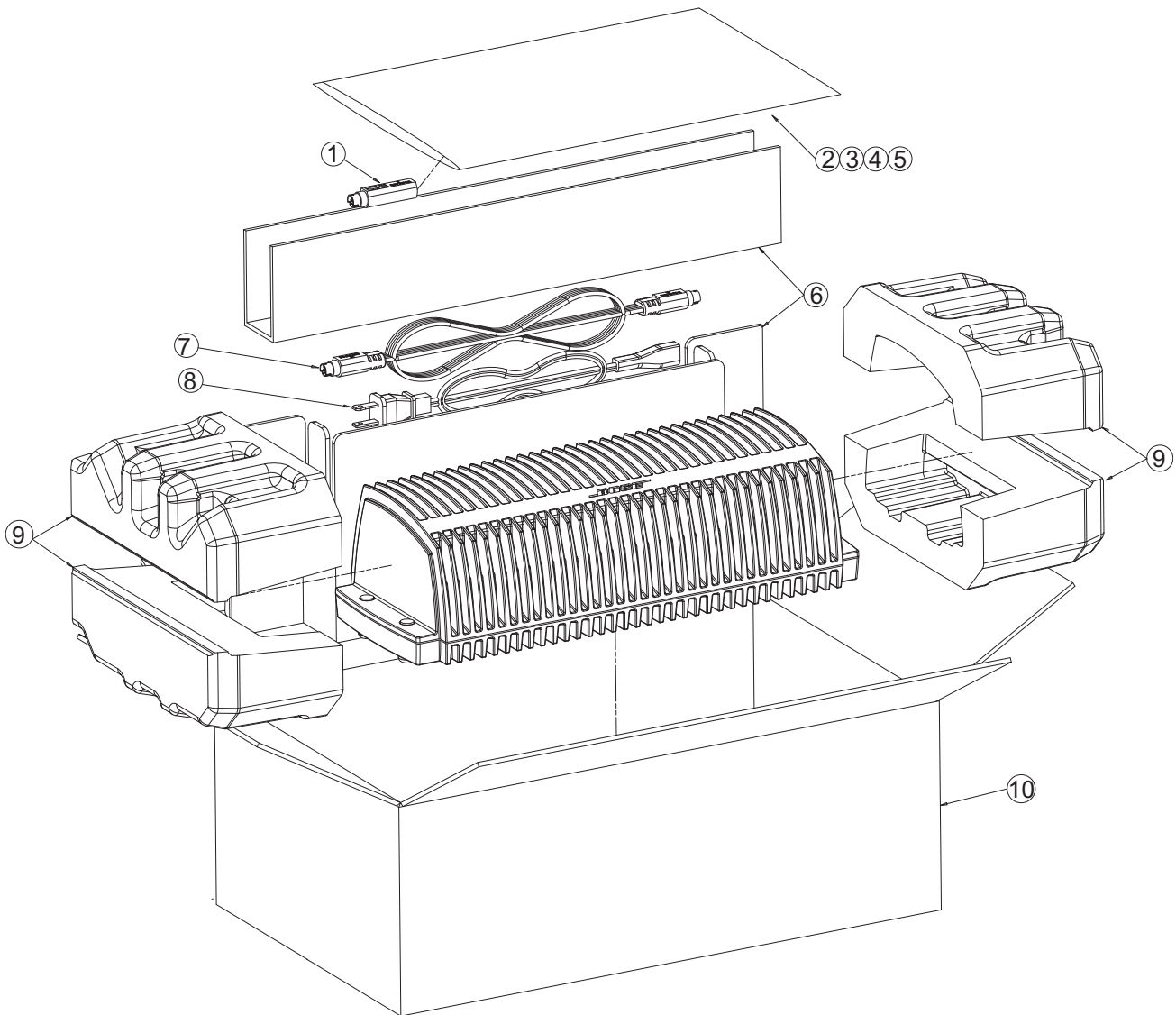


Figure 2. Lifestyle® SA- 3 Packaging View

MAIN PART LIST

Reference Designator	Description	Part Number	Qty.	Note
1	CONNECTOR, PLUG-IN, 4 PIN	272953-04	1	
2	CONNECTOR, PLUG-IN, 2 PIN	272953-02	1	
3	SCREW, HILO, 4-16x.375, PAN, XREC	181621-06	1	
4	HOUSING, AMPLIFIER	271724-02	1	1 !
5	FOOT, RUBBER, PRESS FIT	197418	4	
6	TAPE, PAD, INSULATING	328907-0010	1	
7	PCB ASSY, US/CANADA, 120V 288296-103S or 323980-011S PCB ASSY, EURO, UK, AUS, 220/240V 303198-203S or 323981-012S		1	2 !
8	PAD, THERMAL, AMP	320002-002	2	
9	HEATSINK BAR	319884-001		
10	TRANSFORMER, 120V TRANSFORMER, 230V	271727 271790	1	3 !
11	PANEL, BOTTOM	271725-001	1	
12	SCREW, TT, 8-32X0.5, PAN, XREC/SQ	255191-08	13	

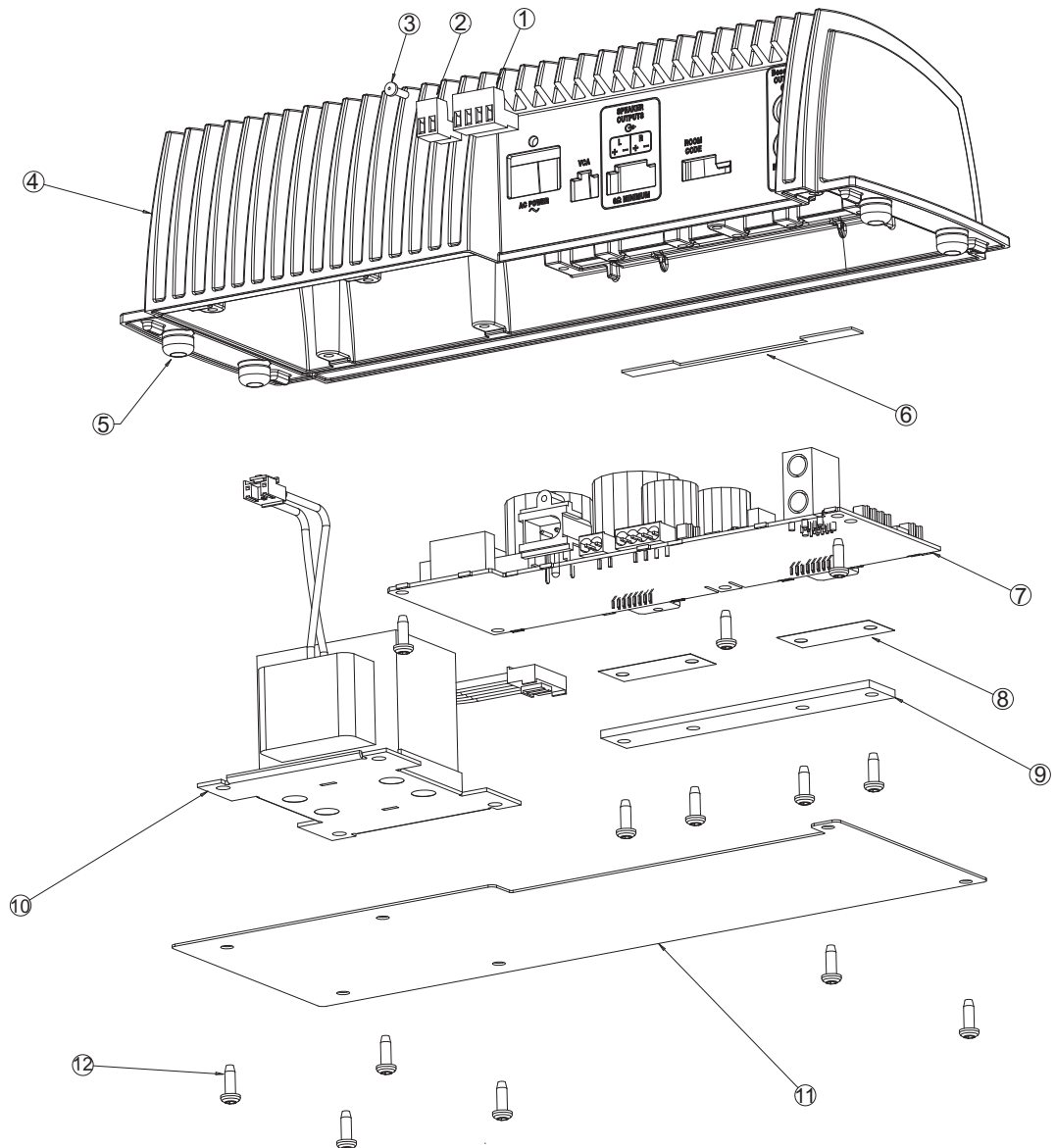


Figure 3. Lifestyle® SA-2 Exploded View

MAIN PART LIST

Reference Designator	Description	Part Number	Qty.	Note
1	CONNECTOR, PLUG-IN, 4 PIN	272953-04	1	
2	CONNECTOR, PLUG-IN, 2 PIN	272953-02	1	
3	SCREW, HILO, 4-16x.375, PAN, XREC	181621-06	2	
4	HOUSING, AMPLIFIER	271724-03	1	1
5	FOOT, RUBBER, PRESS FIT	197418	4	
6	TAPE, PAD, INSULATING	328907-0020	1	
7	PCB ASSY, US/CANADA, 120V 288286-103S or 323982-011S PCB ASSY, EURO, UK, AUS, 220/240V 303199-203S or 323983-012S		1	2
8	PAD, THERMAL, AMP	320002-001	1	
9	HEAT SINK BAR	319832-001		
10	TRANSFORMER, 120V TRANSFORMER, 230V	271728 271792	1	3
11	HOUSING, BOTTOM	271726-001	1	
12	SCREW, TT, 8-32X0.5, PAN, XREC/SQ	255191-08	16	

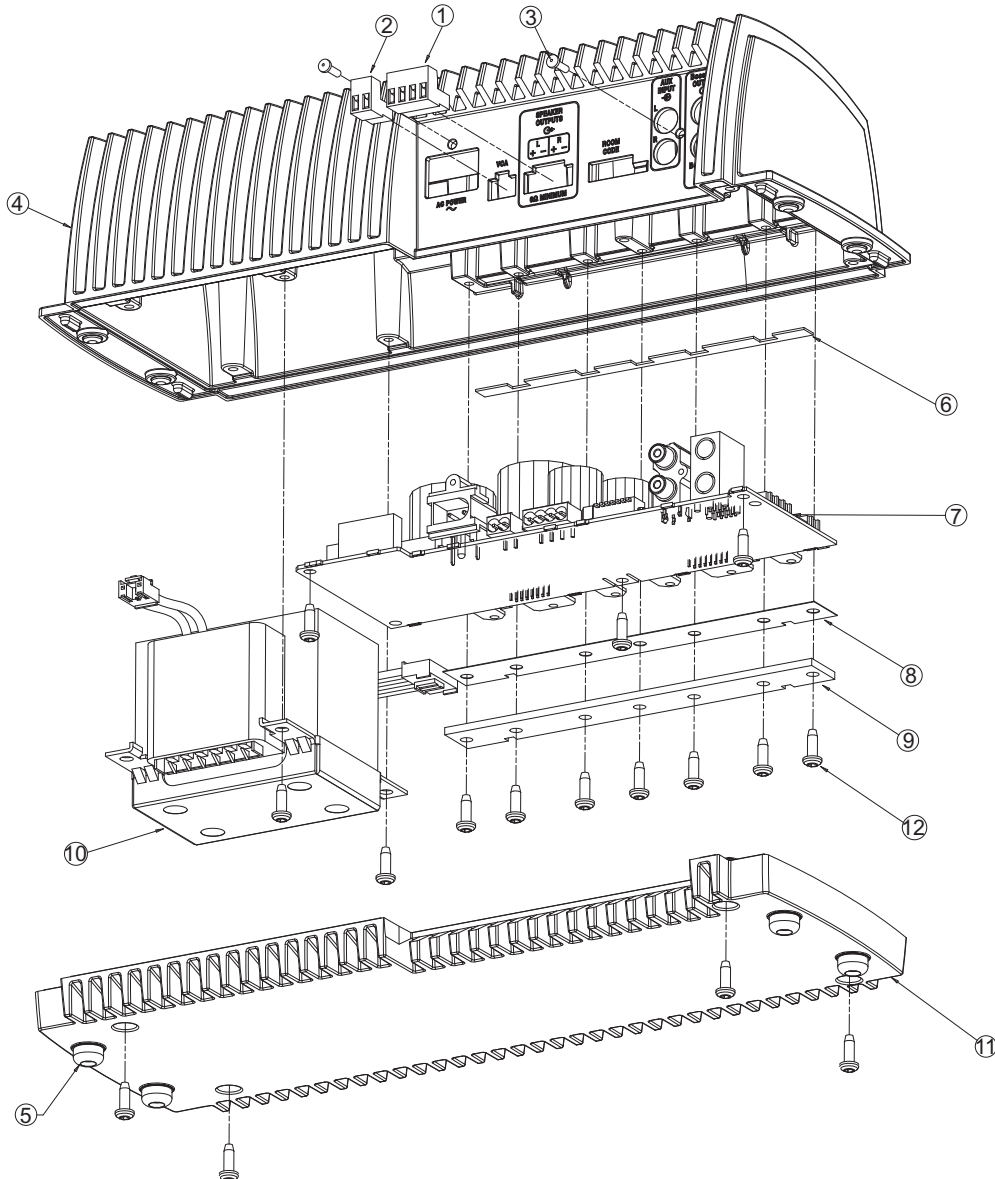


Figure 4. Lifestyle® SA-3 Exploded View

ELECTRICAL PART LIST

Resistors

Reference Designator	Description	Part Number	Note
RT1	THERMISTOR, 0805, 10K, 5%	197229	SA-3 Only
RT2	THERMISTOR, 0805, 10K, 5%	197229	
RT3	THERMISTOR, 0805, 10K, 5%	197229	
R1	100 OHM, 0603, .1W, 1%	191465-1000	
R2	10K, 0603, .1W, 1%	191465-1002	
R3	10K, 0603, .1W, 1%	191465-1002	
R4	100K, 0603, .1W, 1%	191465-1003	
R5	4.02K, 0603, .1W, 1%	191465-4021	
R6	4.02K, 0603, .1W, 1%	191465-4021	SA-3 Only
R7	100K, 0603, .1W, 1%	191465-1003	SA-3 Only
R8	JUMPER, 0805	133627	
R9	499 OHM, 0603, .1W, 1%	191465-4990	
R10	220 OHM, 2512, 1W, 5%	181895-2200	120V Only
	470 OHM, 2512, 1W, 5%	181895-4700	230V Only
R11	10K, 0603, .1W, 1%	191465-1002	
R12	200 OHM, 0603, .1W, 1%	191465-2000	
R13	432 OHM, 0603, .1W, 1%	191465-4320	
R14	2.0K, 0603, .1W, 1%	191465-2001	
R15	10K, 0603, .1W, 1%	191465-1002	
R16	10K, 0603, .1W, 1%	191465-1002	
R17	2.0K, 0603, .1W, 1%	191465-2001	
R18	100K, 0603, .1W, 1%	191465-1003	
R19	100K, 0603, .1W, 1%	191465-1003	
R20	1.0K, 0603, .1W, 1%	191465-1001	
R21	1.0K, 0603, .1W, 1%	191465-1001	SA-3 Only
R22	10K, 0603, .1W, 1%	191465-1002	
R23	100 OHM, 0603, .1W, 1%	191465-1000	
R24	100 OHM, 0603, .1W, 1%	191465-1000	
R25	10K, 0603, .1W, 1%	191465-1002	
R26	100 OHM, 0603, .1W, 1%	191465-1000	
R27	100 OHM, 0603, .1W, 1%	191465-1000	
R28	100K, 0603, .1W, 1%	191465-1003	
R29	100K, 0603, .1W, 1%	191465-1003	
R30	100K, ARRAY, SMT, 4 POS, 5%	186433-1044	
R31	20.0K, 0603, .1W, 1%	191465-2002	
R32	100K, 0603, .1W, 1%	191465-1003	
R33	200K, 0603, .1W, 1%	191465-2003	
R35	13.3K, 0603, .1W, 1%	191465-1332	
R36	1.0K, 0603, .1W, 1%	191465-1001	
R37	4.99K, 0603, .1W, 1%	191465-4991	
R38	4.99K, 0603, .1W, 1%	191465-4991	
R39	7.5K, 0603, .1W, 1%	191465-7501	
R40	49.9K, 0603, .1W, 1%	191465-4992	
R41	22 OHMS, 0603, .1W, 5%	199403-220	
R42	20.0K, 0603, .1W, 1%	191465-2002	
R44	10K, 0603, .1W, 1%	191465-1002	
R45	10K, 0603, .1W, 1%	191465-1002	
R47	100K, 0603, .1W, 1%	191465-1003	
R48	20.0K, 0603, .1W, 1%	191465-2002	
R49	330 OHM, 2512, 1W, 5%	181895-3300	
R50	100K, 0603, .1W, 1%	191465-1003	
R51	10K, 0603, .1W, 1%	191465-1002	
R52	100K, 0603, .1W, 1%	191465-1003	
R53	2.49K, 0603, .1W, 1%	191465-2491	

ELECTRICAL PART LIST

Resistors (continued)

Reference Designator	Description	Part Number	Note
R54	20.0K, 0603, .1W, 1%	191465-2002	
R55	100 OHM, 0603, .1W, 1%	191465-1000	
R56	100K, 0603, .1W, 1%	191465-1003	SA-2 Only
R56	100K, 0603, .1W, 5%	199403-104	SA-3 Only
R57	10K, 0603, .1W, 1%	191465-1002	SA-3 Only
R101	10.0K, 0805, 1%	133625-1002	
R102	10K, 0603, .1W, 1%	191465-1002	
R103	20.0K, 0603, .1W, 1%	191465-2002	
R104	7.5K, 0603, .1W, 1%	191465-7501	
R105	49.9K, 0603, .1W, 1%	191465-4992	
R106	2.49K, 0603, .1W, 1%	191465-2491	
R107	274 OHM, 0603, .1W, 1%	191465-2740	
R152	274 OHM, 0603, .1W, 1%	191465-2740	
R153	1.18K, 0603, .1W, 1%	191465-1181	
R154	200 OHM, 0603, .1W, 1%	191465-2000	
R155	100K, 0603, .1W, 5%	199403-104	SA-3 Only
R156	10K, 0603, .1W, 1%	191465-1002	
R157	100K, 0603, .1W, 5%	199403-104	SA-3 Only
R158	1.0K, 0603, .1W, 1%	191465-1001	SA-3 Only
R159	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R160	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R161	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R162	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R163	1.0K, 0603, .1W, 1%	191465-1001	SA-3 Only
R164	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R165	10K, 0603, .1W, 1%	191465-1002	
R166	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R167	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R168	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R169	330 OHM, 0805, 1/10W, 5%	133626-3315	SA-2 Only
R171	3.9OHM,2512,1W,5%	181895-3R90	
R172	1.0K, 1206, 1/4W, 5%	124895-1025	
R174	220 OHM, 0805, 1/10W, 5%	133626-2215	SA-3 Only
R175	220 OHM, 0805, 1/10W, 5%	133626-2215	SA-3 Only
R177	330 OHM, 0805, 1/10W, 5%	133626-3315	SA-3 Only
R201	10.0K, 0805, 1/10W, 1%	133625-1002	
R202	10K, 0603, .1W, 1%	191465-1002	
R203	20.0K, 0603, .1W, 1%	191465-2002	
R204	7.5K, 0603, .1W, 1%	191465-7501	
R205	49.9K, 0603, .1W, 1%	191465-4992	
R206	2.49K, 0603, .1W, 1%	191465-2491	
R207	274 OHM, 0603, .1W, 1%	191465-2740	
R252	1.0K, 0603, .1W, 1%	191465-1001	
R253	1.18K, 0603, 100MW, 1%	191465-1181	
R254	200 OHM, 0603, .1W, 1%	191465-2000	
R255	100K, 0603, .1W, 5%	199403-104	SA-3 Only
R256	10K, 0603, .1W, 1%	191465-1002	
R257	100K, 0603, .1W, 5%	199403-104	SA-3 Only
R258	1.0K, 0603, .1W, 1%	191465-1001	SA-3 Only
R259	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R260	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R261	10K, 0603, .1W, 5%	199403-103	SA-3 Only

ELECTRICAL PART LIST

Resistors (continued)

Reference Designator	Description	Part Number	Note
R262	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R263	1.0K OHM, 0603, .1W, 1%	191465-1001	SA-3 Only
R264	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R265	10K, 0603, .1W, 1%	191465-1002	
R266	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R267	10K, 0603, .1W, 5%	199403-103	SA-3 Only
R268	1K, 0603, .1W, 5%	199403-102	SA-3 Only
R269	330 OHM, 0805, 1/10W, 5%	133626-3315	SA-2 Only
R271	3.9OHM, 2512, 1W, 5%	181895-3R90	
R272	1.0K, 1206, 1/4W, 5%	124895-1025	
R274	220 OHM, 0805, 1/10W, 5%	133626-2215	SA-3 Only
R275	220 OHM, 0805, 1/10W, 5%	133626-2215	SA-3 Only
R277	330 OHM, 0805, 1/10W, 5%	133626-3315	SA-3 Only
R278	100K, 0603, .1W, 5%	199403-104	
R279	100K, 0603, .1W, 5%	199403-104	
R301	10.0K, 0805, 1/10W, 1%	133625-1002	
R302	10K, 0603, .1W, 1%	191465-1002	
R303	20.0K OHM, 0603, .1W, 1%	191465-2002	
R304	12.1K, 0603, .1W, 1%	191465-1212	
R305	10K, 0603, .1W, 1%	191465-1002	
R306	10K, 0603, .1W, 1%	191465-1002	
R307	22.1K, 0603, .1W, 1%	191465-2212	
R401	10.0K, 0805, 1/10W, 1%	133625-1002	
R402	10K, 0603, .1W, 1%	191465-1002	
R403	20.0K OHM, 0603, .1W, 1%	191465-2002	
R501	10.0K, 0805, 1/10W, 1%	133625-1002	
R502	10K, 0603, .1W, 1%	191465-1002	
R503	20.0K OHM, 0603, .1W, 1%	191465-2002	
R601	10.0K, 0805, 1/10W, 1%	133625-1002	SA-3 Only
R602	10K, 0603, .1W, 1%	191465-1002	SA-3 Only
R603	20.0K OHM, 0603, .1W, 1%	191465-2002	SA-3 Only
R701	10.0K, 0805, 1/10W, 1%	133625-1002	SA-3 Only
R702	10K, 0603, .1W, 1%	191465-1002	SA-3 Only
R703	20.0K OHM, 0603, .1W, 1%	191465-2002	SA-3 Only
R801	10.0K, 0805, 1/10W, 1%	133625-1002	SA-3 Only
R802	10K, 0603, .1W, 1%	191465-1002	SA-3 Only
R803	20.0K OHM, 0603, .1W, 1%	191465-2002	SA-3 Only

ELECTRICAL PART LIST

Capacitors

Reference Designator	Description	Part Number	Note
C1	.047UF, 0603, X7R, 50V	191470-473	
C2	.047UF, 0603, X7R, 50V	191470-473	
C3	.047UF, 0603, X7R, 50V	191470-473	SA-3 Only
C4	.047UF, 0603, X7R, 50V	191470-473	SA-3 Only
C5	.047UF, 0603, X7R, 50V	191470-473	
C6	.047UF, 0603, X7R, 50V	191470-473	
C7	10000uF, EL, 85, 50V, 20%	170215	
C8	4700UF, EL, 85, 25V, 20%	170216	SA-3 Only
C9	4700UF, EL, 85, 25V, 20%	170216	SA-3 Only
C10	10000uF, EL, 85, 50V, 20%	170215	
C11	.47uF, FILM, 10%, 250 VAC	250104-474A	SA-2 Only 120V
	.82UF, FILM, 10%, 250 VDC	250104-824A	SA-3 Only 120V
	.15uF, FILM, 10%, 400 VAC	306320-154A	SA-2 Only 230V
	.22uF, FILM, 10%, 275 VAC	306320-224A	SA-3 Only 230V
C12	1UF, EL, 85, 50V, 20%	177902-010H	
C13	47uF, EL, 5.5MM, 16V, 20%	177902-470C	
C14	.047UF, 0603, X7R, 50V	191470-473	
C15	.047UF, 0603, X7R, 50V	191470-473	
C16	39PF, 0603, COG, 50V, 5%	188454-390	
C17	39PF, 0603, COG, 50V, 5%	188454-390	
C18	10UF, EL, 85, 16V, 20%	177902-100C	
C19	10UF, EL, 85, 16V, 20%	177902-100C	
C20	10UF, EL, 85, 16V, 20%	177902-100C	
C21	.047UF, 0603, X7R, 50V	191470-473	
C23	100PF, 0603, COG, 50V, 5%	188454-101	
C24	.047UF, 0603, X7R, 50V	191470-473	
C25	.047UF, 0603, X7R, 50V	191470-473	
C26	.047UF, 0603, X7R, 50V	191470-473	
C28	1UF, EL, 85, 50V, 20%	177902-010H	
C29	.047UF, 0603, X7R, 50V	191470-473	
C30	.047UF, 0603, X7R, 50V	191470-473	SA-3 Only
C31	.047UF, 0603, X7R, 50V	191470-473	
C50	.047UF, 0603, X7R, 50V	191470-473	
C101	100PF, 0603, COG, 50V, 5%	188454-101	
C102	100PF, 0603, COG, 50V, 5%	188454-101	
C103	10UF, EL, 85, 16V, 20%	177902-100C	
C104	10UF, EL, 85, 16V, 20%	177902-100C	
C105	100PF, 0603, COG, 50V, 5%	188454-101	
C150	10UF, EL, 85, 16V, 20%	177902-100C	
C152	10UF, EL, 85, 16V, 20%	177902-100C	
C153	2700PF, 0603, X7R, 50V	191470-272	
C154	.01UF, 0603, X7R, 50V	191470-103	
C155	.01UF, 0603, X7R, 50V	191470-103	SA-3 Only
C156	.01UF, 0603, X7R, 50V	191470-103	SA-3 Only
C157	22UF, EL, 85, 35V, 20%	177902-220V	
C158	0.1UF, 0805, X7R, 50V	133624	
C159	1000PF, 0603, X7R, 50V	191470-102	
C160	1000PF, 0603, X7R, 50V	191470-102	
C201	100PF, 0603, COG, 50V, 5%	188454-101	

ELECTRICAL PART LIST

Capacitors (continued)

Reference Designator	Description	Part Number	Note
C202	100PF, 0603, COG, 50V, 5%	188454-101	
C203	10UF, EL, 85, 16V, 20%	177902-100C	
C204	10UF, EL, 85, 16V, 20%	177902-100C	
C205	100PF, 0603, COG, 50V, 5%	188454-101	
C250	10UF, EL, 85, 16V, 20%	177902-100C	
C251	1UF, EL, 85, 50V, 20%	177902-010H	
C252	10UF, EL, 85, 16V, 20%	177902-100C	
C253	2700PF, 0603, X7R, 50V	191470-272	
C254	.01UF, 0603, X7R, 50V	191470-103	
C255	.01UF, 0603, X7R, 50V	191470-103	SA-3 Only
C256	.01UF, 0603, X7R, 50V	191470-103	SA-3 Only
C257	22UF, EL, 85, 35V, 20%	177902-220V	
C258	0.1UF, 0805, X7R, 50V, (10%)	133624	
C259	1000PF, 0603, X7R, 50V	191470-102	
C260	1000PF, 0603, X7R, 50V	191470-102	
C301	100PF, 0603, COG, 50V, 5%	188454-101	
C302	100PF, 0603, COG, 50V, 5%	188454-101	
C303	10UF, EL, 85, 16V, 20%	177902-100C	
C304	.33uF, BOX, 85, 50V, 5%	137127-334	
C305	.33uF, BOX, 85, 50V, 5%	137127-334	
C401	100PF, 0603, COG, 50V, 5%	188454-101	
C402	100PF, 0603, COG, 50V, 5%	188454-101	
C403	10UF, EL, 85, 16V, 20%	177902-100C	
C501	100PF, 0603, COG, 50V, 5%	188454-101	
C502	100PF, 0603, COG, 50V, 5%	188454-101	
C601	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only
C602	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only
C603	10UF, EL, 85, 16V, 20%	177902-100C	SA-3 Only
C701	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only
C702	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only
C703	10UF, EL, 85, 16V, 20%	177902-100C	SA-3 Only
C801	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only
C802	100PF, 0603, COG, 50V, 5%	188454-101	SA-3 Only

ELECTRICAL PART LIST

Diodes

Reference Designator	Description	Part Number	Note
BR1	RECTIFIER, BRIDGE, 100V, 6A	170214	
BR2	RECTIFIER, BRIDGE, 100V, 6A	170214	SA-3 Only 
D1	BAV99, SOT23	147239	
D3	BAV99, SOT23	147239	SA-3 Only
D5	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	
D6	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-2 Only
D7	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-2 Only
D8	ZENER, SOT23, 5%, 5.1V	135247-5231	SA-3 Only
D12	BAV99, SOT23	147239	
D13	BAV99, SOT23	147239	
D14	ZENER, SOT23, 5%, 5.1V	135247-5231	
D16	BAV70, SOT-23	147249	
D17	BAV70, SOT-23	147249	
D18	BAV99, SOT23	147239	
D19	BAV99, SOT23	147239	
D150	BAV99, SOT23	147239	SA-3 Only
D152	S10D, 10A, 200V	256405-200	SA-3 Only
D153	S10D, 10A, 200V	256405-200	SA-3 Only
D154	BAV99, SOT23	147239	
D250	BAV99, SOT23	147239	SA-3 Only
D252	S10D, 10A, 200V	256405-200	SA-3 Only
D253	S10D, 10A, 200V	256405-200	SA-3 Only
D254	BAV99, SOT23	147239	
D255	BAV99, SOT23	147239	
DS1	LED, GREEN	256781-002	
ZR150	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-3 Only
ZR151	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-3 Only
ZR250	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-3 Only
ZR251	1N5246, ZEN, 12V, 225MW, 5%	135247-5242	SA-3 Only

ELECTRICAL PART LIST

Transistors

Reference Designator	Description	Part Number	Note
Q1	TRIAC, 8A, 600V, D2PAK	197226	
Q2	NPN, SOT, 47K	146817	
Q3	PNP, SOT, 47K	146818	
Q4	PNP, SOT, MMBT3906	148596	
Q5	PNP, SOT, MMBT3906	148596	SA-3 Only
Q6	PNP, SOT, MMBT3906	148596	
Q7	NPN, SOT, MMBT3904	146819	
Q8	NPN, SOT, 47K	146817	
Q9	NPN, SOT, MMBT3904	146819	
Q10	PNP, SOT, MMBT3906	148596	
Q11	NPN, SOT, MMBT3904	146819	
Q12	NPN, SOT, MMBT3904	146819	
Q13	P, SOT, 2.2K, 2SA1521	180789	
Q14	BPLR, N, 40V, 200MA, SOT23	179639	
Q15	PNP, SOT, 47K	146818	
Q16	NPN, SOT, 47K	146817	
Q17	PNP, SOT, 47K	146818	
Q150	PNP, SOT, MMBT3906	148596	SA-3 Only
Q151	NPN, SOT, MMBT3904	146819	SA-3 Only
Q152	NPN, SOT, MMBT3904	146819	SA-3 Only
Q153	PNP, SOT, MMBT3906	148596	SA-3 Only
Q154	DARL, TIP146T	172285	SA-3 Only
Q155	DARL, TIP141T	172284	SA-3 Only
Q250	PNP, SOT, MMBT3906	148596	SA-3 Only
Q251	NPN, SOT, MMBT3904	146819	SA-3 Only
Q252	NPN, SOT, MMBT3904	146819	SA-3 Only
Q253	PNP, SOT, MMBT3906	148596	SA-3 Only
Q254	DARL, TIP146T	172285	SA-3 Only
Q255	DARL, TIP141T	172284	SA-3 Only

Integrated Circuits

Reference Designator	Description	Part Number	Note
U1	QUAD OP AMP, TLO74D, SO	186112	
U2	OP AMP, DUAL, TL072	187619-001	SA-3 Only
U3	VOL CNTRL, SO20, TDA7309D	188941-001	
U4	MICRO, ST72324, TQFP, 32K, PROG	303687-001	
U5	TRANS, DUAL, SO-16, NJM13700	188650-001	
U6	QUAD OP AMP, TLO74D, SO	186112	
U7	RELAY SSR, HI-RON, 6-PIN, SMT	253843	
U8	VOLT REG, POS, SOT89, +8V	258167-08	
U9	VOLT REG, NEG, 7908, SOT89	260688-08	
U10	VOLT REG, POS, SOT89, +5V	258167-05	
U150	POWER AMP, AUDIO, TDA7294	170156	SA-2 Only
U150	POWER AMP, AUDIO, TDA7293 HS	275177-001	SA-3 Only
U250	POWER AMP, AUDIO, TDA7294	170156	SA-2 Only
U250	POWER AMP, AUDIO, TDA7293 HS	275177-001	SA-3 Only

ELECTRICAL PART LIST

Miscellaneous

Reference Designator	Description	Part Number	Note
F1	FUSE, 5X20MM, SLO-BLO, 3.15A	177311-03150	3 
F1A	FUSECLIP, 5MM	178548	
F1B	FUSECLIP, 5MM	178548	
J1	CONN, AC POWER	146563	120V Only 3
	CONN, AC POWER	145306	220/240V Only 
J2	CONN, HEADER, LOCKING, TOP ENTRY	193369-002	3 
J3	HEADER, MED CURRENT, 5 PIN	133220-05	3 
J4	CONN, PIN JACK, DUAL, VERTICAL	273167	SA-3 Only
J5	CONN, DUAL, DIN	199553 or 268894-002	
J6	CONNECTOR, RIGHT ANGLE	272952-02	
J7	CONNECTOR, RIGHT ANGLE	272952-04	
J8	CONN, HEADER, X2, VERT, .1SP, 10P	260636-10	
JP1	JUMPER	124896	SA-2 Only
JP2	JUMPER	124896	SA-2 Only
JP3	JUMPER	124896	SA-2 Only
JP4	JUMPER	124896	SA-2 Only
L1	330 OHM, FERRITE BEAD, 0603	268373-331	
S1	SW, DIP, SIDE ACTUATED, LSA-2	274837-005	SA-2 Only
S1	SW, DIP, SIDE ACTUATED, LSA-3	274837-007	SA-3 Only
Y1	XTAL, SMD, 105, AT41CD2, 12.2880MZ	269923-12R2C20	

SA-2 DISASSEMBLY PROCEDURES

1. PCB Disassembly and Transformer Removal

1.1 On the rear panel, remove the phillips-head screw identified below that secures the AC power jack to the amplifier housing.



1.2 Remove the six phillips-head screws indicated to remove the amplifier housing bottom panel. Lift off the bottom panel.

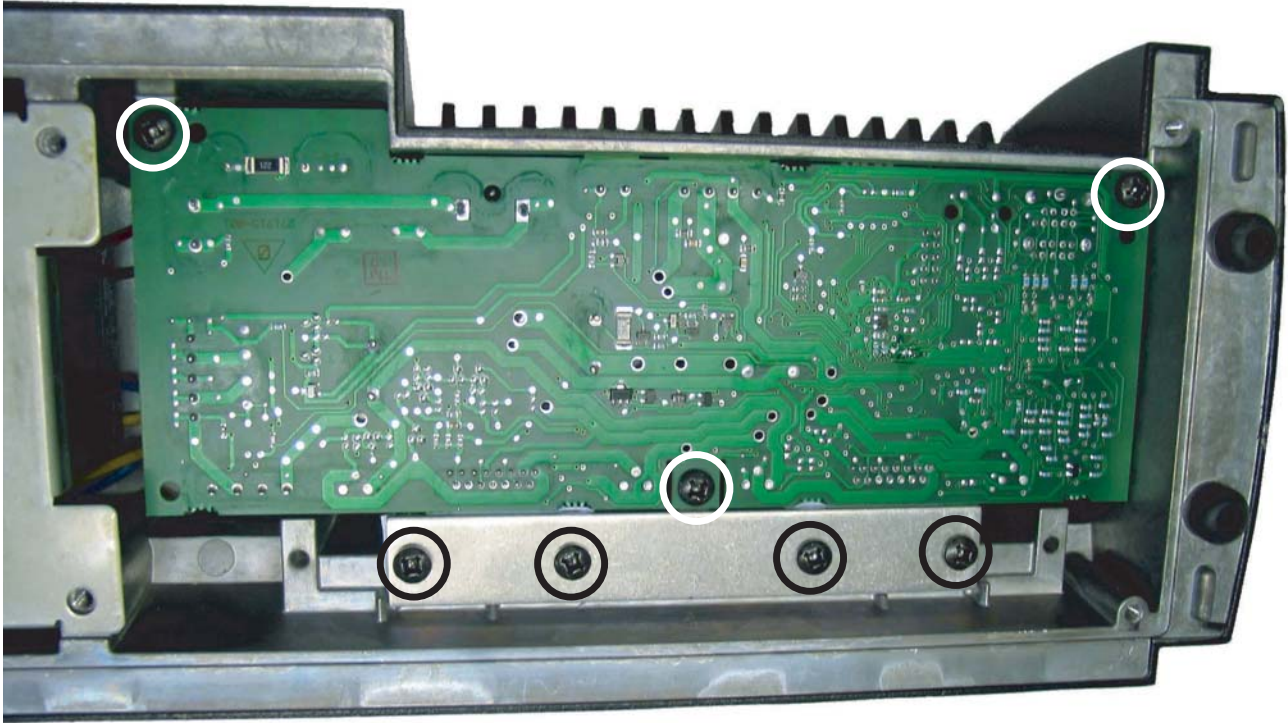
Note: The transformer is secured to the amplifier housing by four of these screws.



SA-2 DISASSEMBLY PROCEDURES

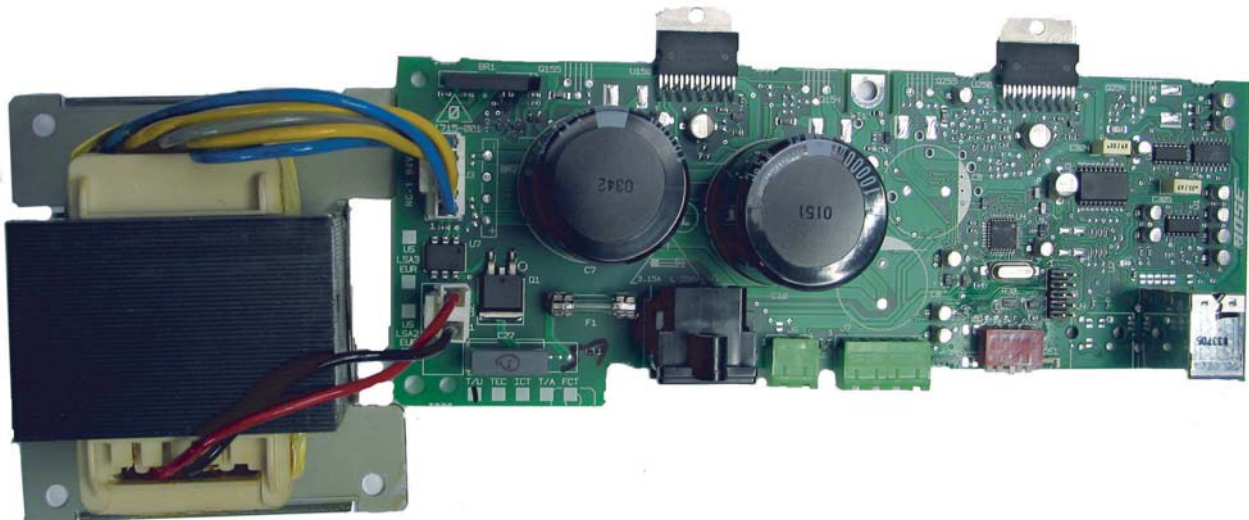
1.3 Remove the four phillips-head screws that secure the IC pressure bar to the amplifier housing. Lift off the pressure bar.

1.4 Remove the three phillips-head screws that secure the PCB assembly to the amplifier housing.



1.5 Lift the PCB assembly and transformer up and out of the amplifier housing. Make sure that the rear panel connectors clear the housing.

1.6 Make a note of how the transformer is plugged into the PCB assembly and remove the two transformer cables from the PCB assembly jacks at J2 and J3.



SA-3 DISASSEMBLY PROCEDURES

1. PCB Disassembly and Transformer Removal

1.1 On the rear panel, remove the phillips-head screws identified below that secures the AC power jack to the amplifier housing as identified below.



1.2 Remove the four phillips-head screws indicated to remove the bottom panel to the amplifier housing. Lift off the bottom panel.

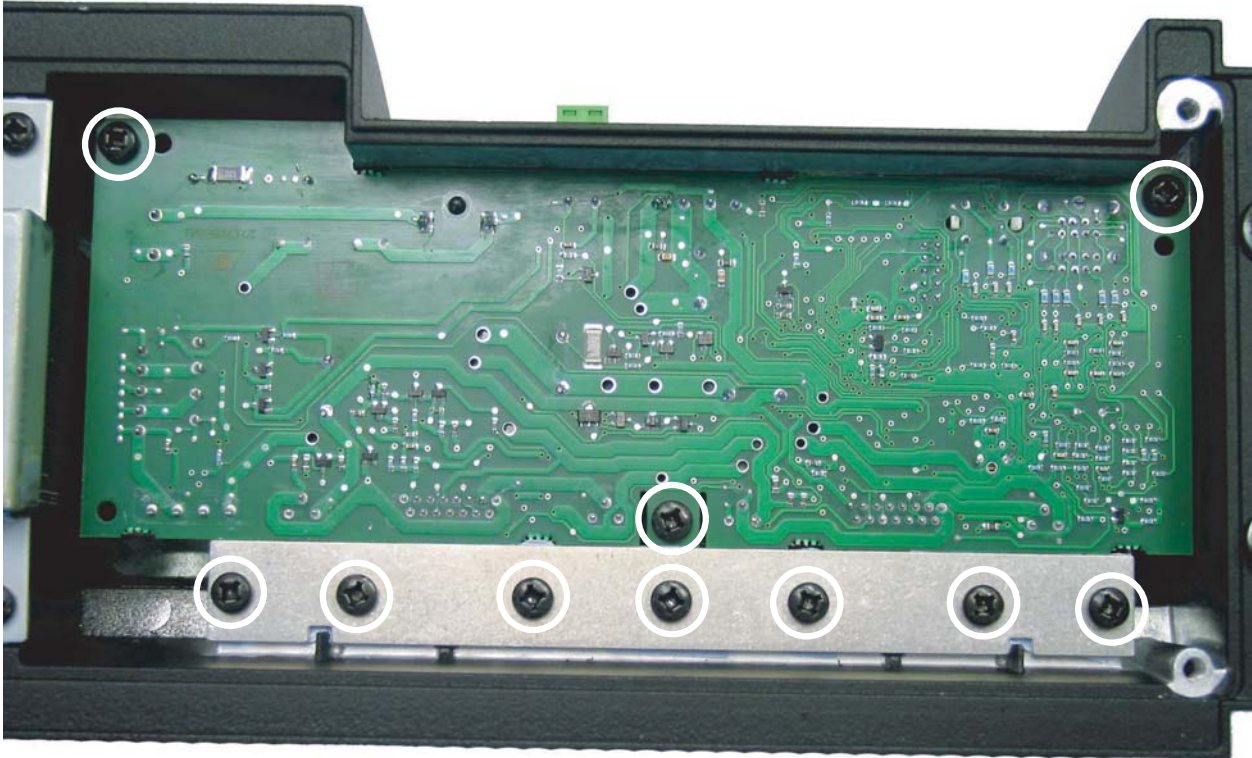
Note: The transformer is secured to the amplifier housing by two of these screws.



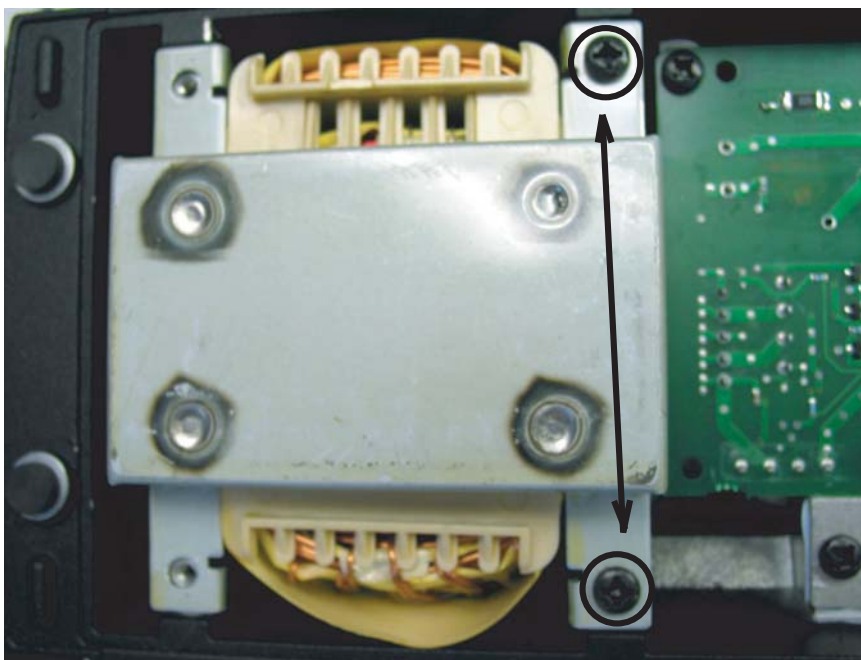
SA-3 DISASSEMBLY PROCEDURES

1.3 Remove the seven phillips-head screws that secure the plate clamp to the amplifier housing. Lift off the plate clamp.

1.4 Remove the three phillips-head screws that secure the PCB assembly to the amplifier housing.



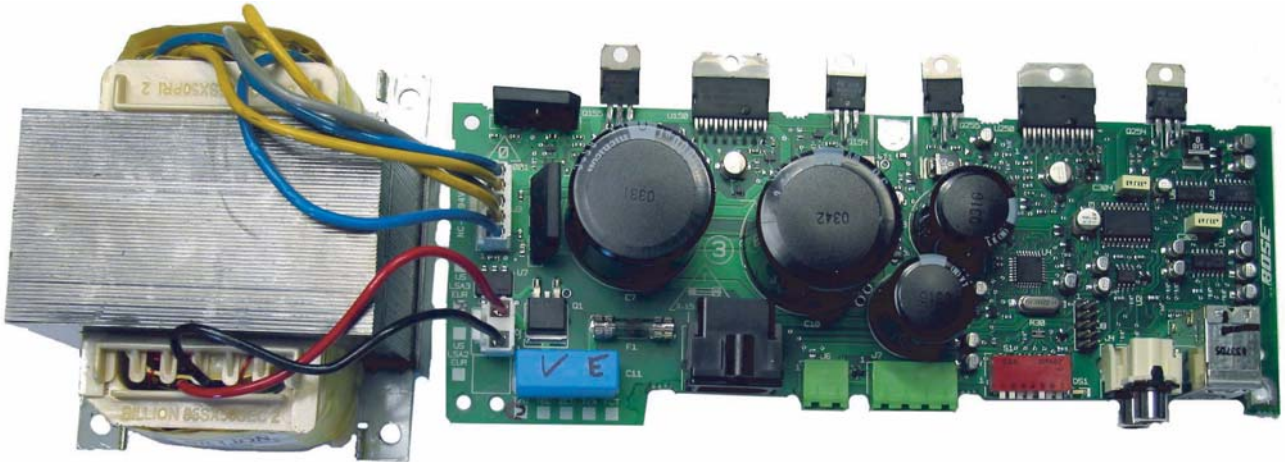
1.5 Remove the two phillips-head screws identified, these are the remaining two screws that secure the transformer to the amplifier housing.



SA-3 DISASSEMBLY PROCEDURES

1.6 Lift the PCB assembly and transformer up and out of the amplifier housing. Make sure that the rear panel connectors clear the housing.

1.7 Remove the two transformer cables from the PCB assembly jacks at J2 and J3.



TEST SET-UP

Equipment Needed:

- DC Power Supply
- Audio signal generator
- 2 - 6 Ohm, 100 Watt load resistors
- Audio input cable part number 278128
- Connector plug part number 272953-04

DIP Switch Settings



- A** Up Stereo/Mono switch (up is stereo mode)
- B** Down Enable/Disable auto-detect of RCA audio input (down is disabled)
- C** Down Slave/Master switch (down is master mode)
- 6** Down Room Address 1st bit (MSB)
- 7** Down Room Address 2nd bit
- 8** Down Room Address 3rd bit
- 9** Up Room Address 4th bit (LSB)

Note: "DIP switch settings only take effect after the unit has been powered OFF for 30 □ seconds, then turned ON"

Set up the unit under test as described below.

1. Set the DIP Switches as described above.
2. Connect the DIN connector of cable part number 278128 to the amplifier Bose® link DIN input connector.
3. Connect the left and right RCA connectors to a signal generator.
4. Load the left and right outputs with a 6 Ohm, 100W resistor by using connector plug part number 272953-04.
5. With the unit unpowered apply +2.5 VDC to the ring (middle conductor) of the 3.5mm stereo mini plug. Connect the ground of the power sleeve to the sleeve (long conductor) of the plug.

Note: The microcontroller will respond by placing the unit in a special test mode. The unit will power ON (LED will turn to solid green), source channel 2 will be selected, volume level will be set to maximum and the amplifier outputs will unmute.

6. Apply AC Power.

Note: The 2.5 VDC must be applied before AC voltage is applied.

LED Status Indicator

The green LED, located next to the dip switches on the rear of the unit, indicates the operational mode of the amplifier.

LED activity	Mode
Constant slow blinking	Power off (Standby)
Continuously lit	Power on
Lit but rapidly flickering	Slave
Blinking Quickly	Receiving commands

TEST PROCEDURES

1. Channel Gain Test

- 1.1 Apply a 100 mVrms, 1 kHz signal to the left and right channel inputs.
- 1.2 Reference a dB meter to the applied signal.
- 1.3 Measure the output level at the left and right channel.
 - 1.3.1 Left Channel Output: 34.9 +/- 1.5dB (5.5 +/- 0.5 Vrms)
 - 1.3.2 Right Channel Output: 34.9 +/- 1.5dB (5.5 +/- 0.5 Vrms)

2. Output Noise (A weighted, inputs shorted)

- 2.1 Short the left and right channel inputs.
- 2.2 Measure the left and right outputs.
 - 2.2.1 Left Channel: <500 uVrms
 - 2.2.1 Left Channel: <500 uVrms

3. Large Signal Distortion

- 3.1 Apply a 250 mVrms, 1 kHz signal to the left and right channel inputs.
- 3.2 Measure the THD + Noise (400 - 30kHz bandwidth).
 - 3.2.1 Left Channel: < 0.2%
 - 3.2.2 Right Channel: < 0.2%

4. Compressor Distortion

- 4.1 Apply an 875 mVrms, 1 kHz signal to the left and right channel inputs.
- 4.2 Measure the output level at the left and right channel.
 - 4.2.1 Left Channel: < 6.0%
 - 4.2.2 Right Channel: < 6.0%



Figure 9. Lifestyle® SA-2 & SA-3 Amplifier PCB Rev. 0 SMD Etch and Component Layout Diagram

Lifestyle® SA-2 & SA-3 Stereo Amplifier



SA-2



SA-3

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

Bose Corporation
The Mountain
Framingham Massachusetts USA 01701
Reference Numbers 271720 & 271721-SM Rev. 01 10/2009
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