

SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver ground and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

HIGH VOLTAGE SHUTDOWN TEST

Momentarily short BC14901 (see Q14901 base) to ground. The receiver should lose raster and sound. If receiver does not lose raster and sound, the shutdown circuit should be repaired. To resume normal operation, remove AC power for approximately 30 seconds and then turn the receiver on.

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by SAMS Technical Publishing as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to SAMS Technical Publishing by the manufacturers of the specific type of replacement part listed.

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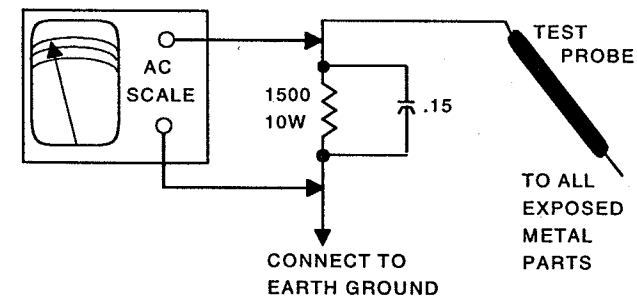
SAFETY CHECKS — FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15μF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500μA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



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PHOTOFACT® Technical Service Data

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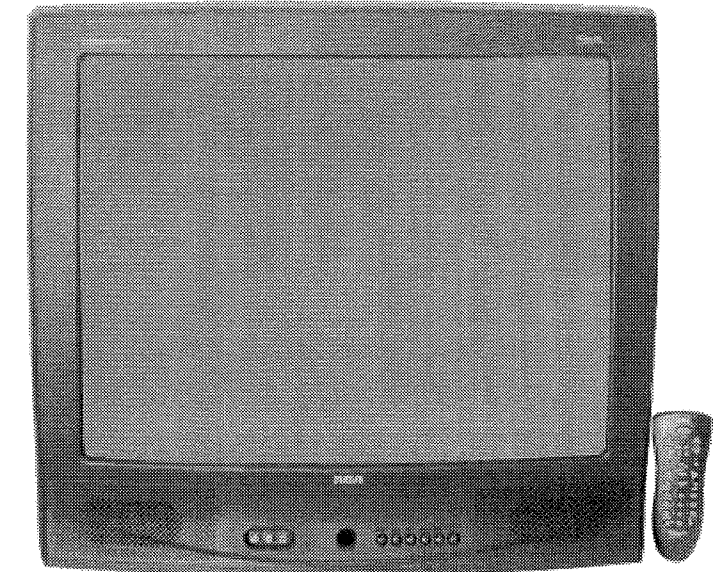
MODEL F27442TX51 (CHASSIS CTC203AD5)

RCA

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RCA Model F27442TX51 (Chassis CTC203AD5)



Essential coverage
for servicing a television receiver...

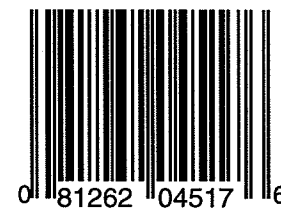
- Schematics
- Component locations
- Parts list

Coverage includes these additional models and chassis:

Models	Chassis
F25432TX1	CTC203AD
F25432TX41	CTC203AD4
F25432TX51	CTC203AD5
F25433TX1	CTC203AD
F27432TX1	CTC203AD
F27442TX1	CTC203AD
F27442TX41	CTC203AD4

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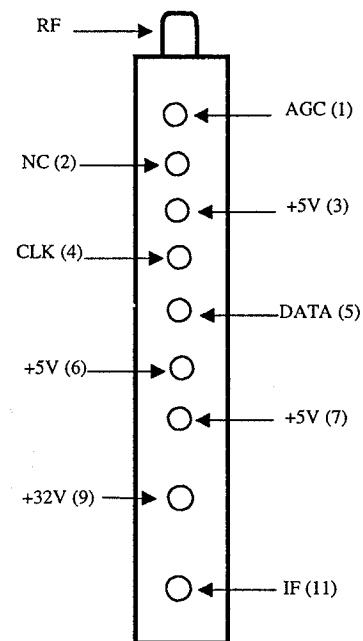
TUNER INFORMATION

TUNER VOLTAGE CHART

Function (Pin)	VHF Low Band	VHF High Band	UHF Band
AGC (1)	2.4V	4.0V	2.9V
NC (2)	1.3V	4.3V	5.6V
+5V (3)	5.2V	5.2V	5.2V
CLOCK (4)	5.2V	5.2V	5.2V
DATA (5)	5.2V	5.2V	5.2V
+5V (6)	5.2V	5.2V	5.2V
+5V (7)	5.2V	5.2V	5.2V
+32V (9)	34.2V	34.2V	34.2V
IF (11)	0V	0V	0V

NOTE: VHF Low Band voltages taken on channel 2.
 VHF High Band voltages taken on channel 7.
 UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE



MISCELLANEOUS ADJUSTMENTS

NOTE: All procedures require an antenna connected and power applied to the set.

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a high voltage probe to the CRT anode. High voltage should measure 26kV to 28kV.

SERVICE MENU

The following adjustment procedures are accessed thru a service menu. To access the service menu, turn the receiver on, press the menu button and hold it down while pressing the power button. While holding down the menu button, release the power button and press the volume + button. The screen will display a one line menu, on the left the parameter P0, and on the right the value of that parameter V0. Release buttons. Adjustments are made by selecting the proper parameter and changing the value of that parameter. To change the parameter number use channel up and down buttons. To adjust the current value of that parameter use volume + and - buttons. To access and change any of the adjustments, the proper parameter pass number must be entered. This information is listed at the beginning of the alignment. When these parameters are modified, the T-Chip and the corresponding EEPROM are updated. All service adjustments are bus controlled, except focus and screen.

NOTE: In order to adjust the RF AGC, audio or video levels, tuner, PIP, or stereo circuits, the ChipperCheck hardware and software must be used. This can be purchased from Thomson Electronics. Before making any changes to any of the values, record the On Set values.

COLOR TEMPERATURE

NOTE: See Service Adjustment Parameters to change drive and bias values.

Press menu button for collapsed raster service line. Disconnect the antenna. Preset the red, green, and blue drive values to 32. Adjust screen control for a service line that is just visible. Adjust red, green, and blue drives to obtain a white raster. Check the low light to high light gray scale tracking. Repeat the procedure, if necessary, to obtain the best performance.

SERVICE ADJUSTMENT PARAMETERS

Parameter No.	Parameter Name	On Set Value	Value Range	Comment
0	Pass number for service adjustment parameters.	Must set to 76	-	May not advance until value is set to 76.
1	Error Code 1	0	0 - 255	Displays the first error detected. Set to 0 before exiting. See Error Codes Chart.
2	Error Code 2	0	0 - 255	Displays the second error detected. Set to 0 before exiting. See Error Codes Chart.
3	Error Code 3	0	0 - 255	Displays the last error detected. Set to 0 before exiting. See Error Codes Chart.
4	Horizontal Phase	8	0 - 15	Tune in a crosshatch pattern, adjust to center the pattern on the screen.
5	EW DC (Width)	16	0 - 31	Tune in a crosshatch pattern, adjust for slight horizontal overscan.
6	EW Amplitude	8	0 - 15	Set value to 8.
7	EW Tilt	8	0 - 15	Set value to 8.
8	Top Corner Pin Correction	2	0 - 7	Set value to 2.
9	Bottom Corner Pin Correction	2	0 - 7	Set value to 2.
10	Vertical DC	32	0 - 63	Tune in a crosshatch pattern, adjust to center vertically.
11	Vertical Size	80	0 - 127	Tune in a crosshatch pattern, adjust for slight vertical overscan.
12	Vertical Countdown Mode	0	0 - 3	Set value to 0. (0 = Standard, 1 = Non-Standard, 2 = 50Hz, 3 = 48Hz)
13	Red Bias	35	0 - 127	Press menu button on the TV set for setup line.
14	Green Bias	18	0 - 127	Press menu button on the TV set for setup line.
15	Blue Bias	20	0 - 127	Press menu button on the TV set for setup line.
16	Red Drive	35	0 - 63	-
17	Green Drive	31	0 - 63	-
18	Blue Drive	29	0 - 63	-
19	Gemstar Horizontal OSD Position	162	0 - 255	Set value to 162.
20	Gemstar Vertical OSD Position	68	0 - 255	Set value to 68.
21	Gemstar PIP Horizontal Position	40	0 - 255	Set value to 40.
22	Gemstar PIP Vertical Position	43	0 - 255	Set value to 43.
23	Gemstar PIP Window Vertical Size	3	0 - 13	Set value to 3.

ERROR CODES CHART

Error Code DEC	HEX	Error Location	Condition Indicated
0	00	No error code	-
1	01	16.0V fault	16.0V STBY source is failing.
3	03	12.0V run fault	12.0V source is failing.
4	04	T4 Chip	Run supply failed.
8	08	T4 Chip	X-ray protection caused high voltage shutdown.
9	09	T4 Chip (POR)	Power supply problem at (POR) power on reset.
10	0A	F2 PIP module error (POR)	Power supply problem at (POR) power on reset/PIP.
11	0B	Stereo decoder (POR)	Power supply problem at reset/Stereo decoder.
16	10	Run IIC Bus held low	Run IIC clock or data held low.
18	12	Standby IIC Bus held low	Standby IIC clock or data held low.
23	17	Gemstar 4 Board	Guide fatal error on set using Gemstar 4 Board.
24	18	Gemstar 4 Board	Task monitor error on set using Gemstar 4 Board.
25	19	Gemstar 4 Board	Watchdog error on set using Gemstar 4 Board.
34	22	Gemstar Board	Gemstar fails to acknowledge.
44	2C	F2 PIP module error	F2PIP fails to acknowledge.
102	66	Octal DAC	Octal DAC fails to acknowledge.
128	80		

Important Parts Information

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

Participating Vendors

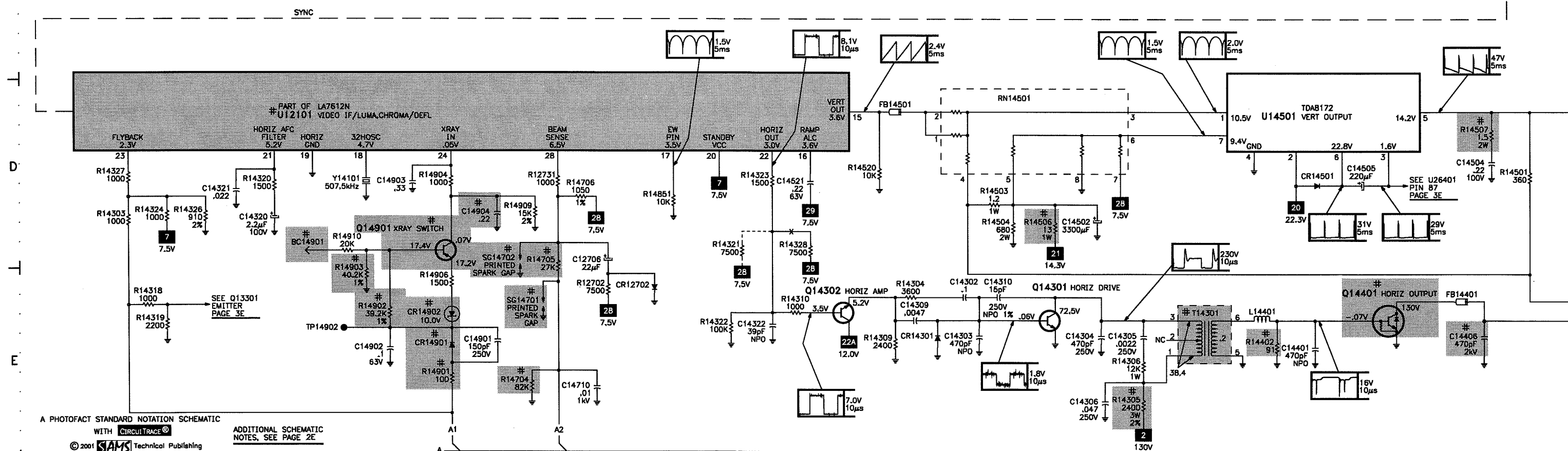
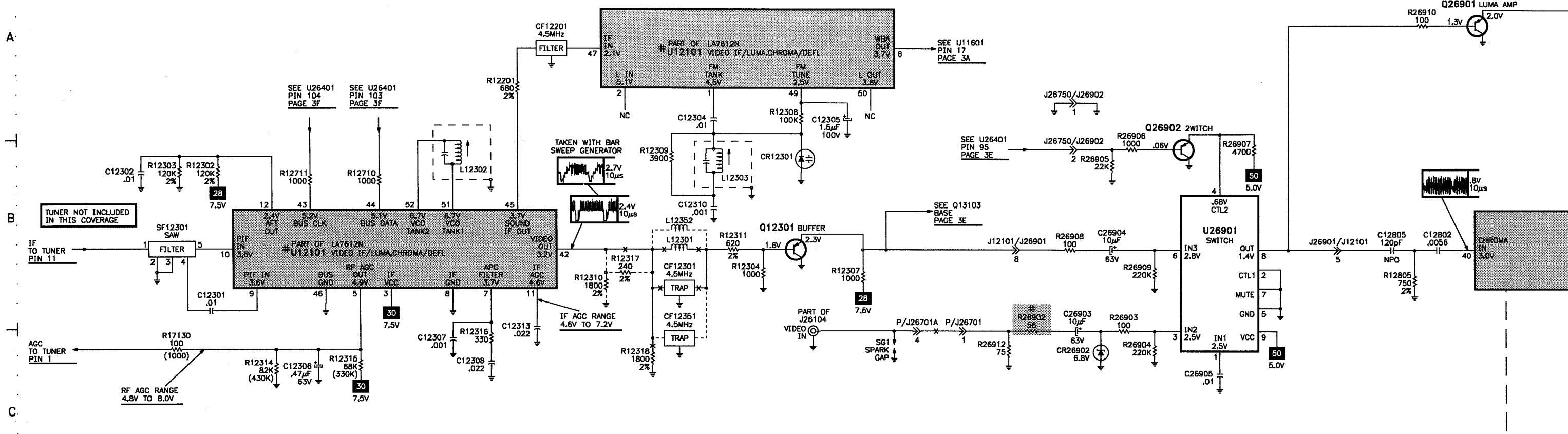
Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

- NTE Electronics, Inc. (NTE)
- Sencore, Inc.

A

TELEVISION SCHEMATIC

B



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITTRACE[®] ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E

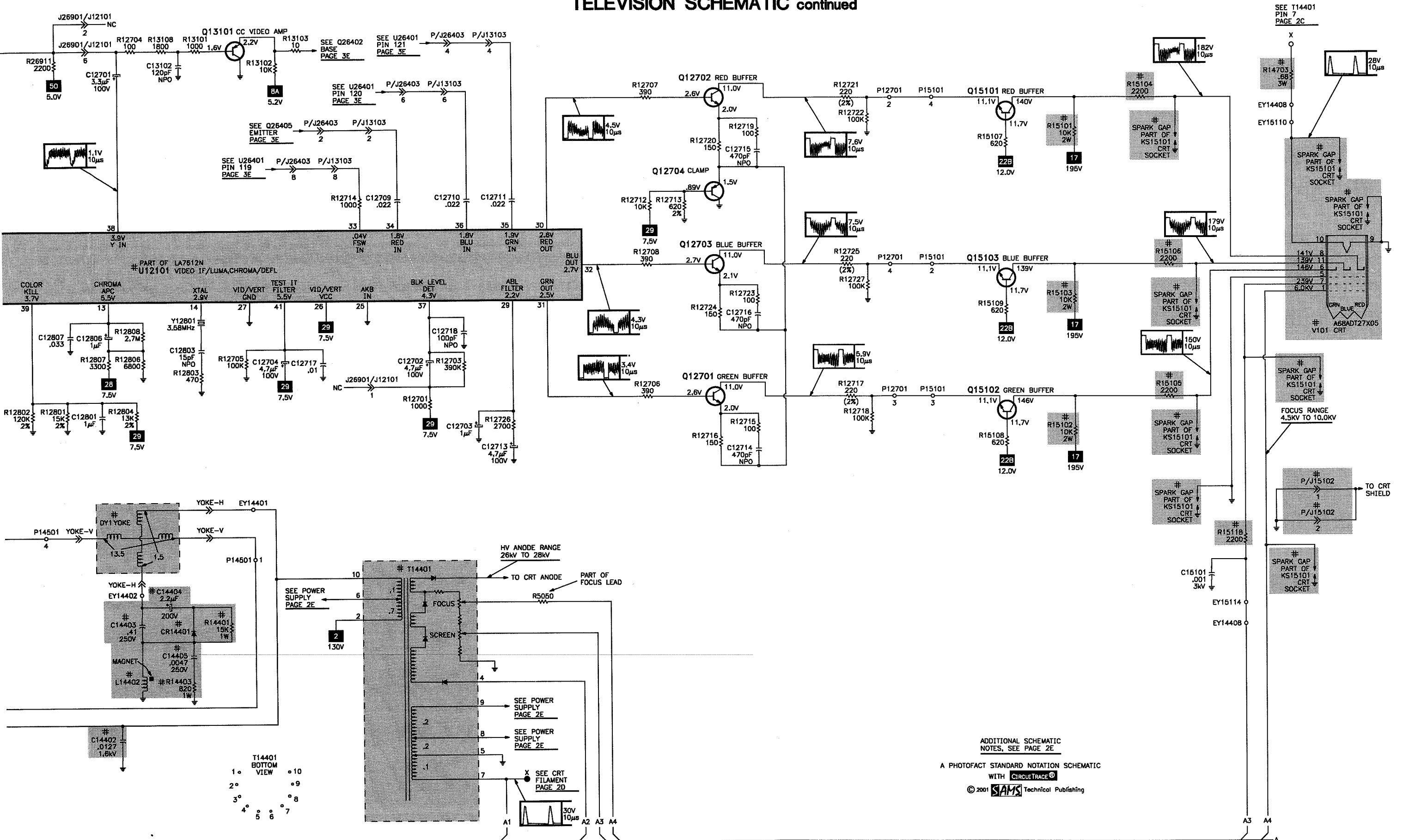
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1 2 3 4 5 6 7 8

TELEVISION SCHEMATIC continued

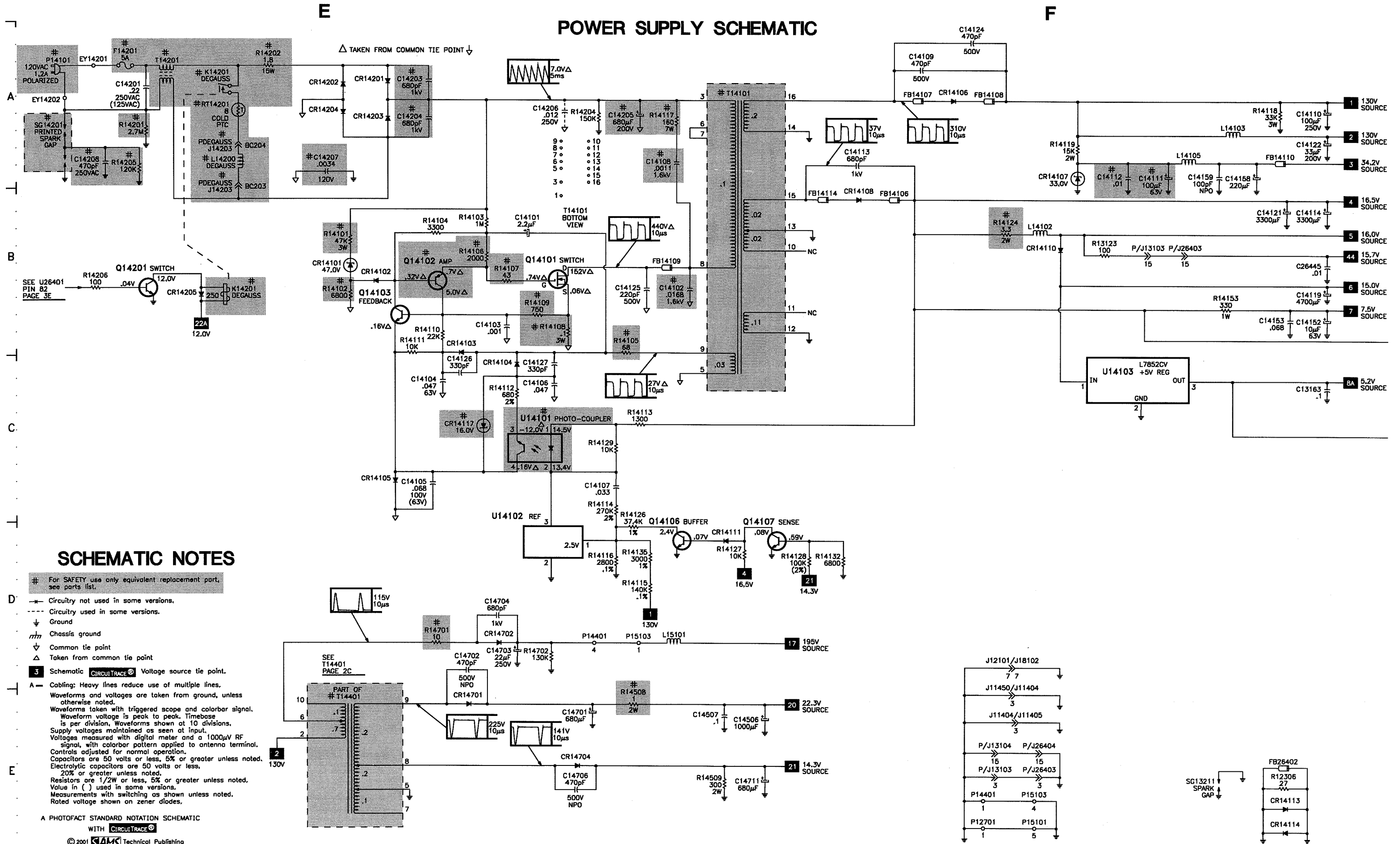
C

D



ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E
 A PHOTOFAC STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE
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POWER SUPPLY SCHEMATIC



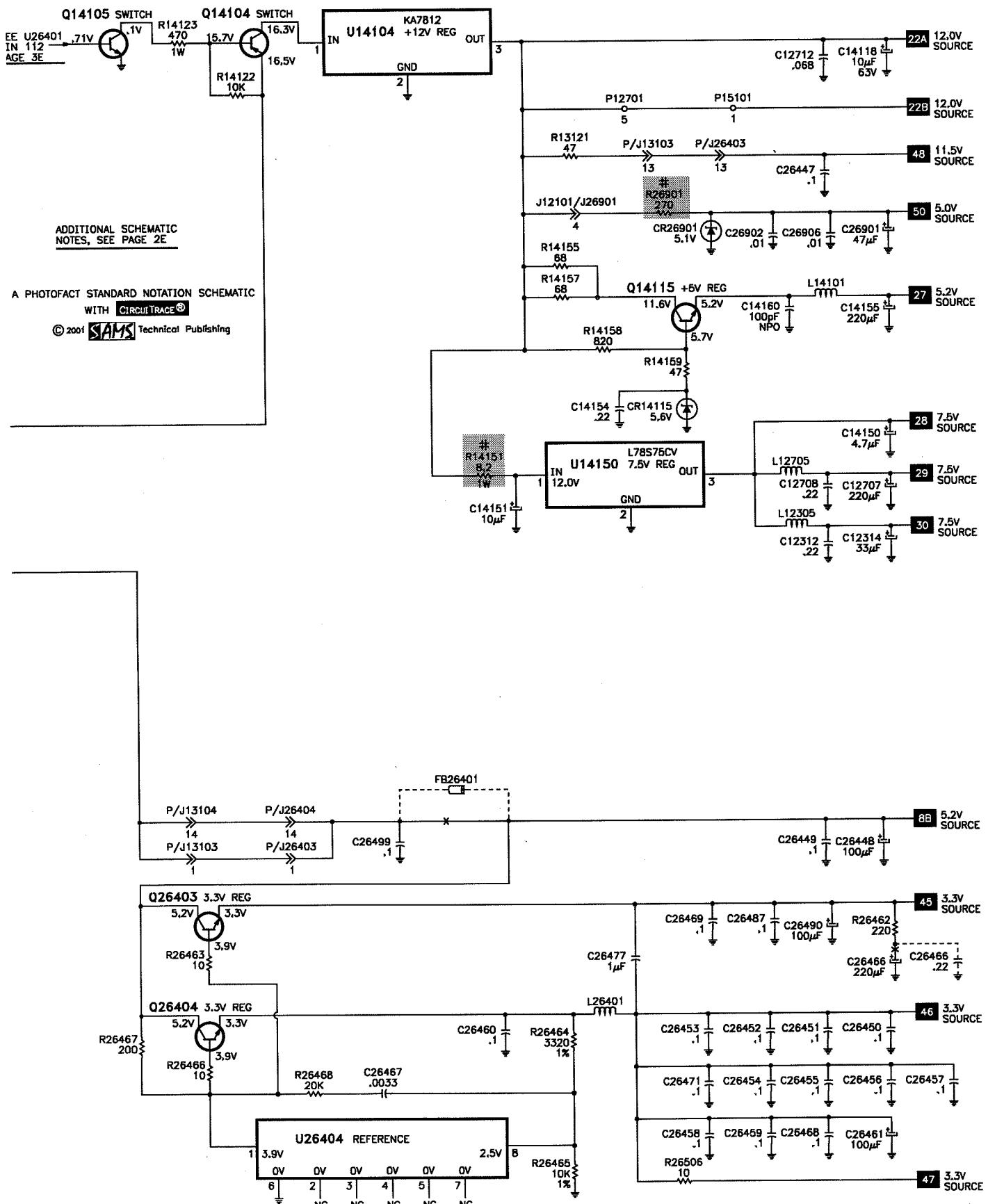
SCHEMATIC NOTES

- # For SAFETY use only equivalent replacement part, see parts list.
- Circuitry not used in some versions.
- - - Circuitry used in some versions.
- ⊥ Ground
- ⊥ Chassis ground
- ⊥ Common tie point
- △ Taken from common tie point
- 3 Schematic **CIRCUITRACE** Voltage source tie point.
- A Cabling: Heavy lines reduce use of multiple lines. Waveforms and voltages are taken from ground, unless otherwise noted. Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions. Supply voltages maintained as seen at input. Voltages measured with digital meter and a 1000μV RF signal, with colorbar pattern applied to antenna terminal. Controls adjusted for normal operation. Capacitors are 50 volts or less, 5% or greater unless noted. Electrolytic capacitors are 50 volts or less, 20% or greater unless noted. Resistors are 1/2W or less, 5% or greater unless noted. Value in () used in some versions. Measurements with switching as shown unless noted. Rated voltage shown on zener diodes.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC WITH **CIRCUITRACE**

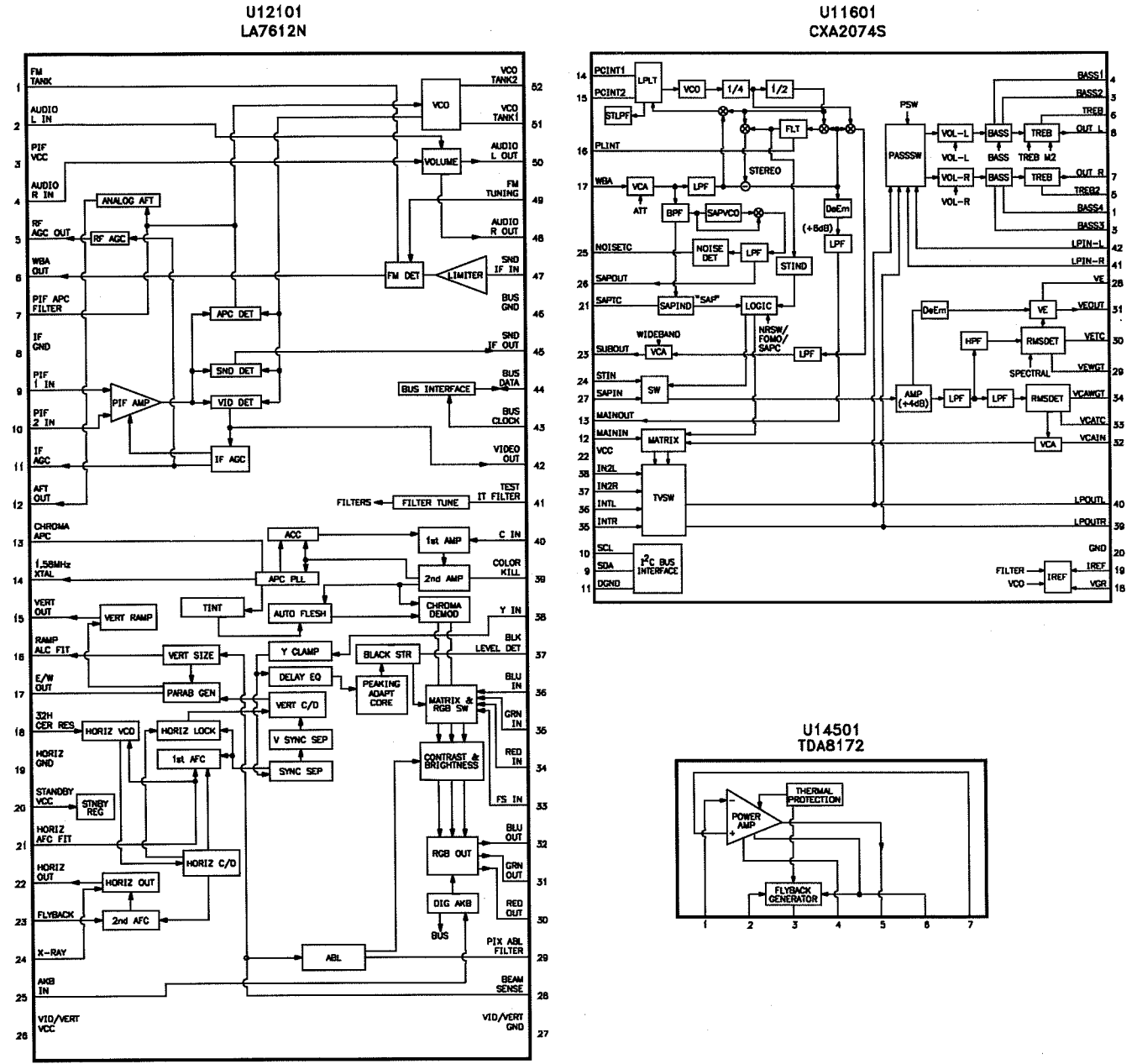
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G POWER SUPPLY SCHEMATIC continued



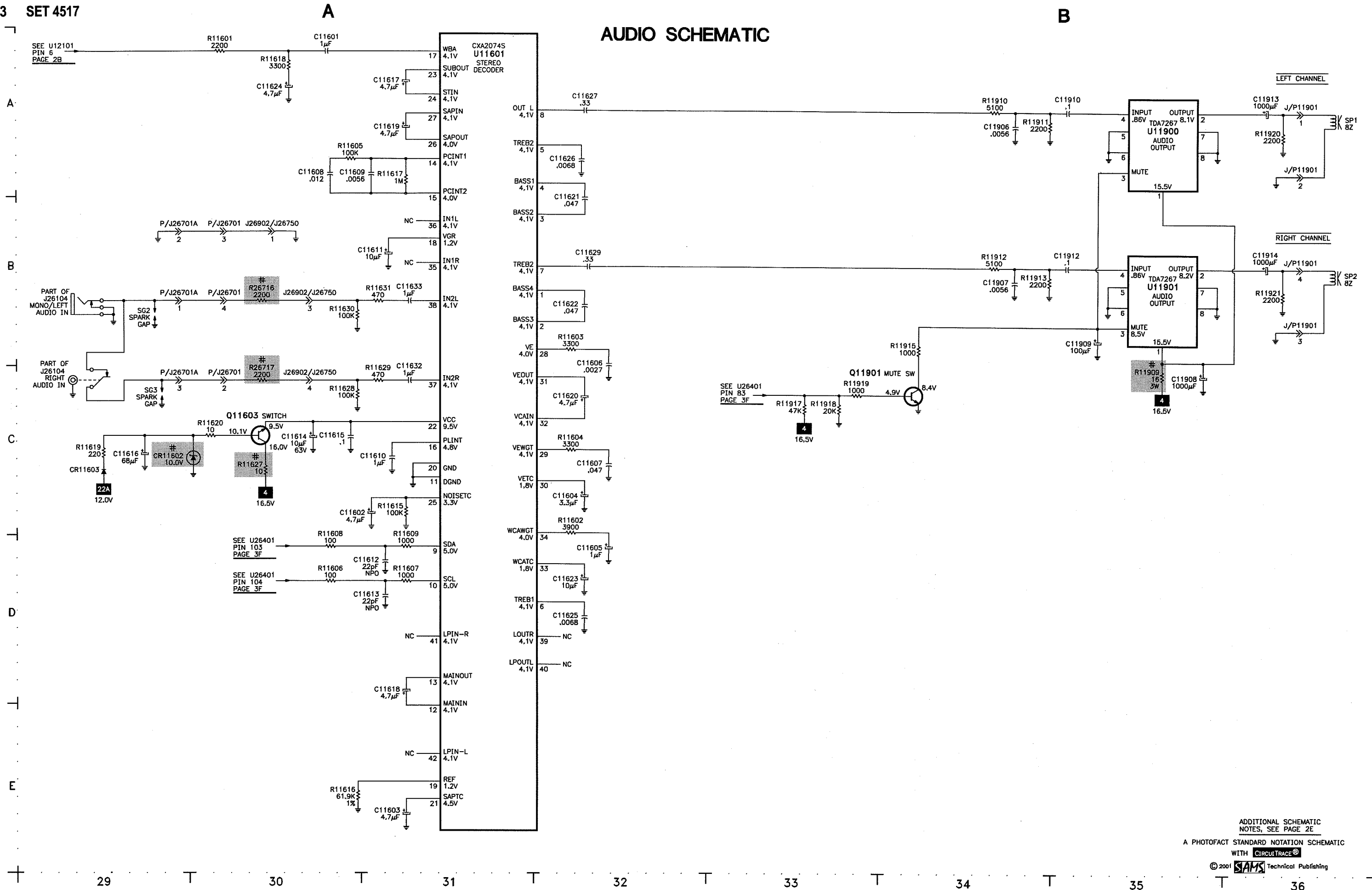
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E
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IC FUNCTIONS



RCA MODEL F27442TX51 (CHASSIS CTC203AD5)

AUDIO SCHEMATIC



ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E

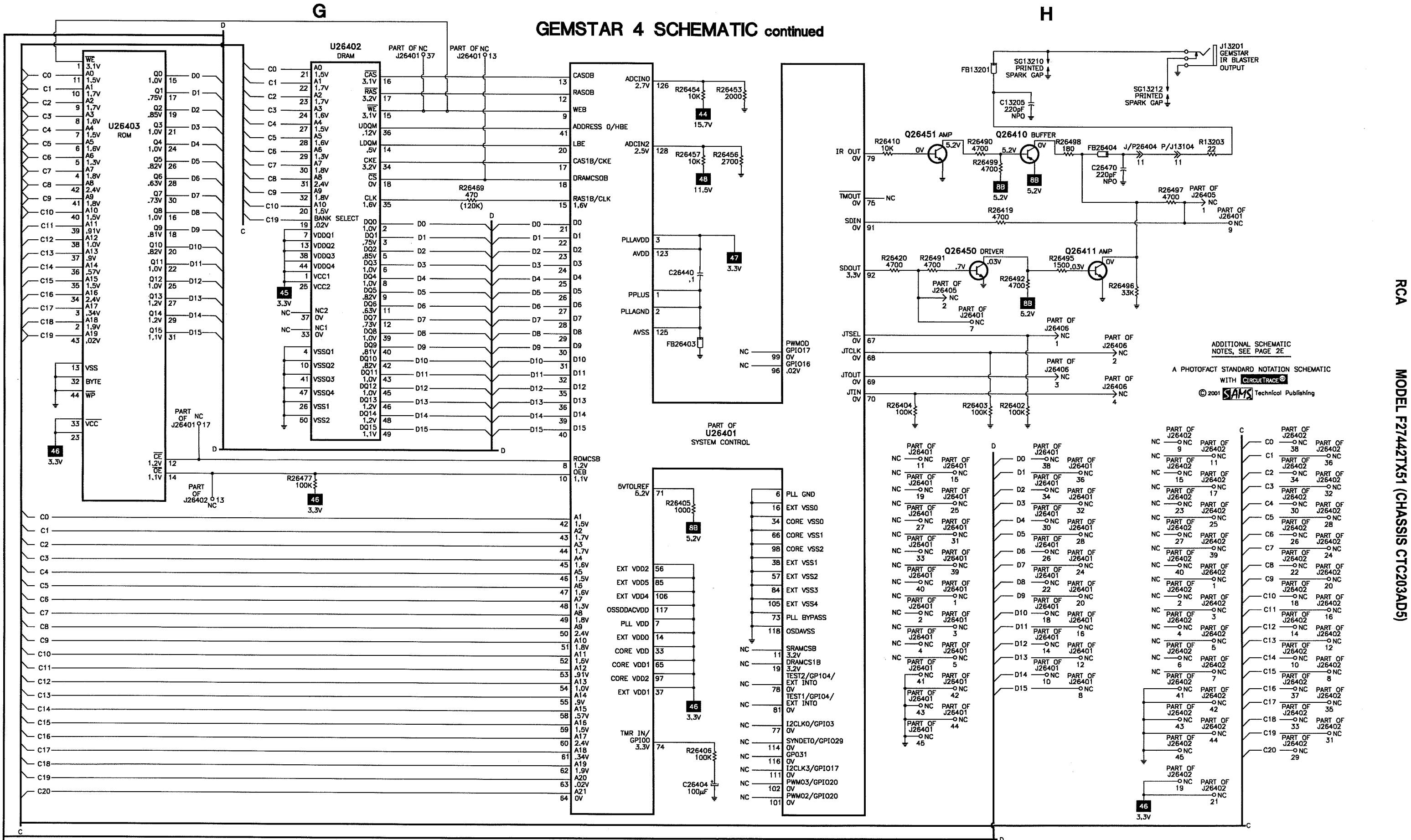
A PHOTOFACIT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE

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SCHEMATIC COMPONENT LOCATION GUIDE

C11601	A30	C12718	C11	C14322	E4	C26455	E28	FB13201	A50	Q15103	B14	R12708	B12	R13191	B38	R14306	E6	R26417	B42	R26903	C6
C11602	C31	C12801	C9	C14401	E7	C26456	E28	FB14106	B22	Q26401	C38	R12710	B2	R13192	D43	R14309	E5	R26418	A42	R26904	C6
C11603	E31	C12802	B8	C14402	E9	C26457	E28	FB14107	A22	Q26402	C38	R12711	B2	R13198	A40	R14310	E4	R26419	B50	R26905	B6
C11604	C32	C12803	C10	C14403	D9	C26458	E27	FB14108	A22	Q26403	D25	R12712	B12	R13201	A38	R14318	E1	R26420	B50	R26906	B6
C11605	D32	C12805	B8	C14404	D9	C26459	E27	FB14109	B20	Q26404	E25	R12713	B12	R13202	A37	R14319	E1	R26421	C39	R26907	B7
C11606	C32	C12806	C9	C14405	D10	C26460	E26	FB14110	A24	Q26405	B40	R12714	B11	R13203	A52	R14320	D2	R26422	D39	R26908	B6
C11607	C32	C12807	C9	C14406	E8	C26461	E28	FB14114	B21	Q26410	A51	R12715	C13	R13314	D38	R14321	D4	R26423	C38	R26909	B6
C11608	A30	C13102	A10	C14502	D6	C26466	E28	FB14401	E8	Q26411	B51	R12716	C13	R13315	D37	R14322	E4	R26427	D42	R26910	A8
C11609	A31	C13114	D37	C14504	D8	C26466	E28	FB14501	D5	Q26450	B50	R12717	C13	R13316	D38	R14323	D4	R26430	B42	R26911	A9
C11610	C31	C13119	B44	C14505	D7	C26467	E26	FB26401	D26	Q26451	A50	R12718	C13	R13317	E37	R14324	D1	R26431	C42	R26912	C6
C11611	B31	C13141	D41	C14506	E21	C26468	E28	FB26402	E24	Q26901	A8	R12719	A13	R13318	E37	R14326	D1	R26432	B39	R5050	D12
C11612	D31	C13163	C24	C14507	E21	C26469	D27	FB26403	B49	Q26902	B6	R12720	A13	R13319	E37	R14327	D1	R26433	C39	RN14501	D5
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C11614	C30	C13202	A37	C14701	E20	C26471	E27	IR13201	A37	R11602	D32	R12722	A13	R13321	E38	R14401	D10	R26435	B39	SF12301	B1
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C11616	C29	C13501	E40	C14703	D19	C26473	B41	J26104	B29	R11604	C32	R12724	B13	R13501	E40	R14403	E10	R26438	D41	SP2	B36
C11617	A31	C13502	E40	C14704	D19	C26474	D39	J26104	C29	R11605	A30	R12725	B13	R13503	E40	R14501	D8	R26439	D41	SW13201	B37
C11618	D31	C13503	E40	C14706	E20	C26477	E27	J26104	C5	R11606	D30	R12726	C11	R13504	E41	R14503	D5	R26441	D39	SW13202	B37
C11619	A31	C13504	D39	C14710	E3	C26487	D27	K14201	A18	R11607	D31	R12727	B13	R13505	D40	R14504	D6	R26443	C40	SW13203	B37
C11620	C32	C14101	B19	C14711	E21	C26490	D28	K14201	B18	R11608	D30	R12731	D3	R13508	D40	R14506	D6	R26444	B40	SW13204	B37
C11621	B32	C14102	B20	C14901	E3	C26499	D26	L12301	B4	R11609	D31	R12801	C9	R13510	D41	R14507	D8	R26445	B40	SW13205	B37
C11622	B32	C14103	B19	C14902	E2	C26901	B28	L12302	B3	R11615	C31	R12802	C9	R13511	E39	R14508	E20	R26446	B40	SW13206	B37
C11623	D32	C14104	C19	C14903	D3	C26902	B27	L12303	B4	R11616	E30	R12803	C10	R13512	D39	R14509	E21	R26447	D38	T14101	A21
C11624	A30	C14105	C19	C14904	D3	C26903	C6	L12305	C27	R11617	B31	R12804	C9	R14101	B18	R14520	D5	R26448	C38	T14201	A17
C11625	D32	C14106	C20	C15101	D15	C26904	B6	L12352	B4	R11618	A30	R12805	B8	R14102	B18	R14701	D19	R26449	C38	T14301	E7
C11626	A32	C14107	C20	C17416	B43	C26905	C7	L12705	C27	R11619	C29	R12806	C9	R14103	B19	R14702	D20	R26450	C38	T14401	D11
C11627	A32	C14108	A20	C17417	C43	C26906	B28	L14101	B28	R11620	C30	R12807	C9	R14104	B19	R14703	A16	R26451	C38	T14401	E18
C11629	B32	C14109	A22	C26401	C41	CF12201	A3	L14102	B22	R11627	C30	R12808	C9	R14105	C20	R14704	E3	R26452	C37	U11601	A31
C11632	C31	C14110	A24	C26402	D41	CF12301	B4	L14103	A24	R11628	C30	R13101	A10	R14106	B19	R14705	E3	R26453	A49	U11900	A35
C11633	B31	C14111	B23	C26404	E49	CF12351	C4	L14105	A23	R11629	C31	R13102	A10	R14107	B19	R14706	D3	R26454	A49	U11901	B35
C11906	A34	C14112	B23	C26408	A39	CR11602	C30	L14200	A18	R11630	B30	R13103	A10	R14108	B20	R14851	D4	R26455	E39	U12101	A4
C11907	B34	C14113	B21	C26409	A40	CR11603	C29	L14401	E7	R11631	B31	R13108	A9	R14109	B19	R14901	E3	R26456	A49	U12101	B2
C11908	C35	C14114	B24	C26410	D42	CR12301	B5	L14402	E9	R11909	C35	R13109	D37	R14110	B19	R14902	E2	R26457	A49	U12101	B9
C11909	B35	C14118	A28	C26411	A42	CR12702	E4	L15101	D20	R11910	A34	R13110	D37	R14111	C19	R14903	E2	R26458	C40	U12101	D2
C11910	A34	C14119	B24	C26412	D39	CR13501	E40	L26401	E27	R11911	A34	R13111	D38	R14112	C19	R14904	D3	R26459	B40	U13102	A44
C11912	B34	C14121	B24	C26413	E38	CR14101	B18	P14101	A17	R11912	B34	R13112	D38	R14113	C20	R14906	E3	R26460	B40	U14101	C19
C11913	A36	C14122	A24	C26414	B42	CR14102	B19	Q11603	C30	R11913	B34	R13113	C38	R14114	C20	R14909	D3	R26461	B41	U14102	D19
C11914	B36	C14124	A22	C26415	A42	CR14103	C19	Q11901	C34	R11915	B34	R13118	B38	R14115	D20	R14910	D2	R26462	D28	U14103	C23
C12301	C1	C14125	B20	C26418	D39	CR14104	C19	Q12301	B4	R11917	C33	R13119	B38	R14116	D20	R15101	A15	R26463	E25	U14104	A26
C12302	B1	C14126	C19	C26419	C38	CR14105	C19	Q12701	C13	R11918	C33	R13121	B27	R14117	A20	R15102	C15	R26464	E27	U14150	C27
C12303	D37	C14127	C20	C26422	D42	CR14106	A22	Q12702	A13	R11919	C33	R13122	A38	R14118	A24	R15103	B15	R26465	E27	U14501	D7
C12304	A4	C14150	C28	C26425	B42	CR14107	B23	Q12703	B13	R11920	A36	R13123	B23	R14119	A23	R15104	A15	R26466	E25	U26401	C40
C12305	A5	C14151	C26	C26426	C42	CR14108	B21	Q12704	B13	R11921	B36	R13124	C37	R14121	A40	R15105	C15	R26467	E25	U26401	C49
C12306	C2	C14152	B24	C26427	B38	CR14110	B23	Q13101	A10	R12201	A3	R13125	C37	R14122	A25	R15106	B15	R26468	E26	U26402	A47
C12307	C3	C14153	B24	C26428	C39	CR14111	D21	Q13103	D38	R12302	B2	R13126	B38	R14123	A25	R15107	A14	R26469	B47	U26403	A45
C12308	C3	C14154	B27	C26429	B39	CR14113	E24	Q13104	B43	R12303	B1	R13128	B43	R14124	B22	R15108	C14	R26475	E41	U26404	E26
C12310	B4	C14155	B28	C26430	B39	CR14114	E24	Q13105	B43	R12304	B4	R13130	C43	R14126	D20	R15109	B14	R26477	C46	U26901	B7
C12312	C28	C14158	B24	C26432	A40	CR14115	B27	Q13301	D37	R12305	D37	R13131	B43	R14127	D21	R15118	D16	R26478	C38	V101	C16
C12313	C3	C14159	B23	C26433	D41	CR14117	C19	Q13302	D38	R12306	E24	R13134	A43	R14128	D21	R17130	C1	R26484	B40	Y12801	B10
C12314	C28	C14160	B27	C26435	D39	CR14201	A19	Q13501	D40	R12307	B5	R13135	A43	R14129	C20	R17402	B43	R26486	B39	Y14101	D2
C12701	A9	C14201	A17	C26437	C40	CR14202	A18	Q13503	D40	R12308	A5	R13136	B43	R14132	D21	R17403	C43	R26487	B40	Y26401	C41
C12702	C11	C14203	A19	C26438	B40	CR14203	A19	Q14101	B20	R12309	B4	R13139	A44	R14135	D20	R17409	C43	R26488	B40		
C12703	C11	C14204	A19	C26439	B40	CR14204	A18	Q14102	B19	R12310	B4	R13142	A43	R14151	C26	R17411	C43	R26489	B40		
C12704	C10	C14205	A20	C26440	B49	CR14205	B18	Q14103	B19	R12311	B4	R13165	A40	R14153	B23	R26401	C41	R26490	A50		
C12706	D4	C14206	A20	C26441	C38	CR14301	E5	Q14104	A25	R12314	C2	R13166	B43	R14155	B27	R26402	C51	R26491	B50		
C12707	C28	C14207	B18	C26444	C37	CR14401	D10	Q14105	A25	R12315	C2	R13169	C43	R14157	B27	R26403	C50	R26492	B51		
C12708	C28	C14208	A17	C26445	B24	CR14501	D7	Q14106	D20	R12316	C3	R13176	B43	R14158	B27	R26404	C50	R26495	B51		
C12709	B11	C14302	E5	C26446	E38	CR14701	E19	Q14107	D21	R12317	B4	R13180	B43	R14159	B27	R26405	C49	R26496	B51		
C12710	B11	C14303	E5	C26447	D28	CR14702	D19	Q14115	B27	R12318	C4	R13181	B43	R14201	A17	R26406	E49	R26497	B51		
C12711	B11	C14304	E6	C26448	D28	CR14704	E20	Q14201	B17	R12701	C11	R13182	B42	R14202	A18	R26410	A50	R26498	A51		
C12712	A28	C14305	E6	C26449	D28	CR14901	E3	Q14301	E6	R12702	E4	R13183	E37	R14204	A20	R26411	A39	R26499	A50		
C12713	C11	C14306	E6	C26450	E28	CR14902	E3	Q14302	E5	R12703	C11	R13184	E37	R14205	A17	R26412	A39	R26506	E27		
C12714	C13	C14309	E5	C26451	E28	CR26901	B27	Q14401	E7	R12704	A9	R13185	E37	R14206	B17	R26413	D42	R26716	B30		
C12715	B13	C14310	E5	C26452	E27	CR26902	C6	Q14901	D3	R12705	C10	R13188	C38	R14303	D1	R26414	A42	R26717	C30		
C12716	B13	C14320	D2	C26453	E27	DY1	D9	Q15101	A14	R12706	C12	R13189									

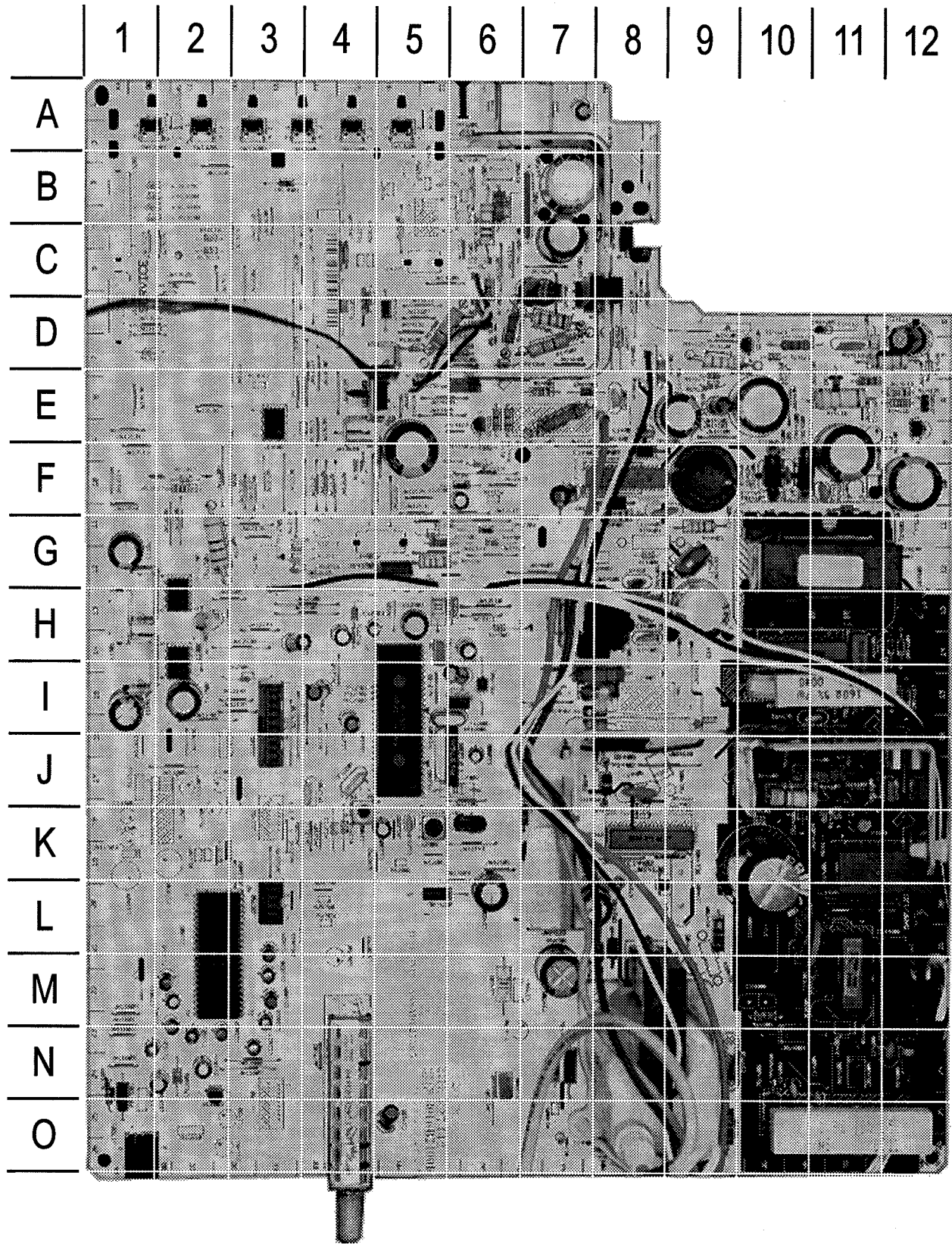
GEMSTAR 4 SCHEMATIC continued



ADDITIONAL SCHEMATIC NOTES, SEE PAGE 2E
 A PHOTOFAC STANDARD NOTATION SCHEMATIC WITH CIRCUITTRACE®
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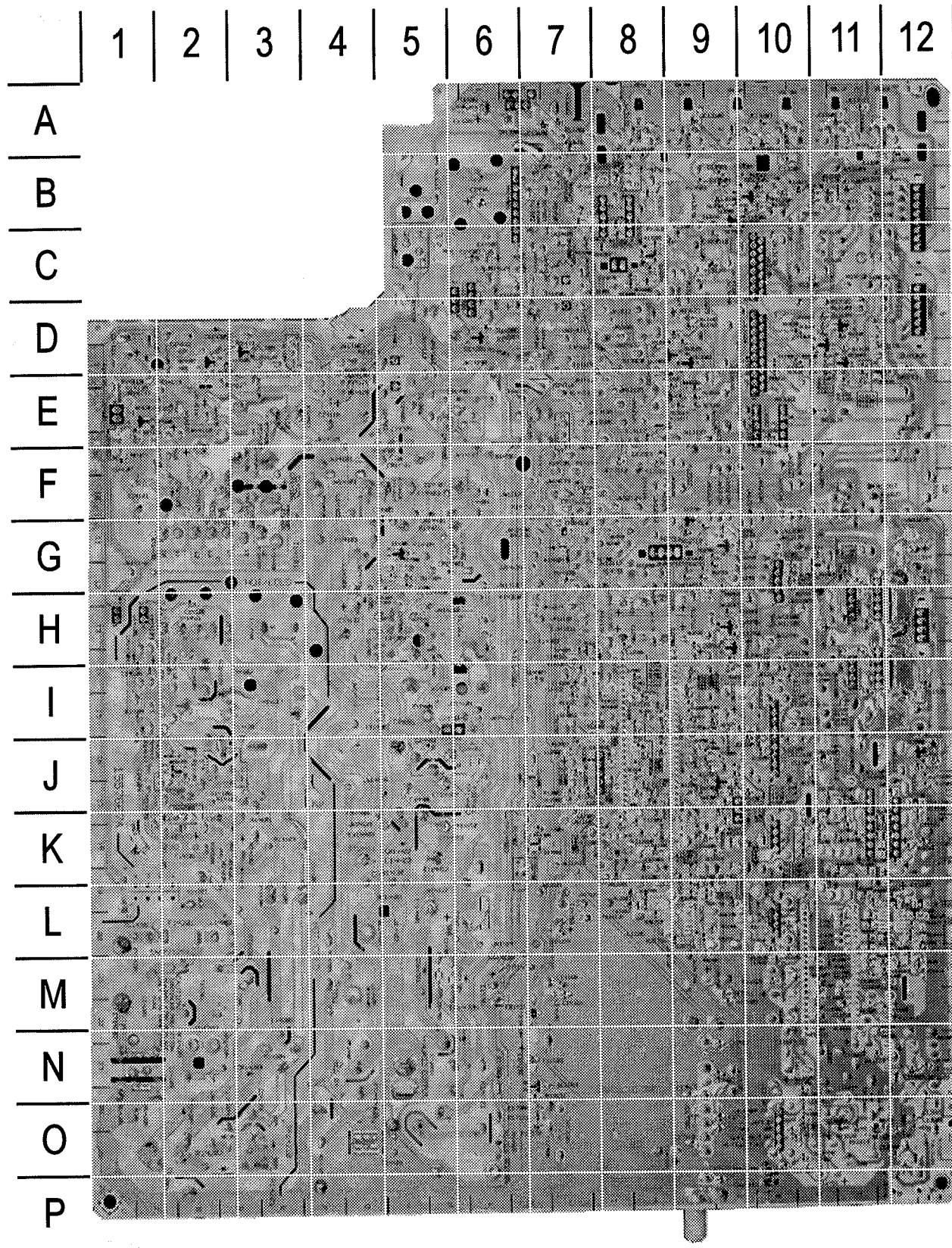
MAIN BOARD - TOP VIEW



MAIN BOARD - TOP VIEW, GRIDTRACE LOCATION GUIDE

C11601	N2	C14112	D11	C14710	N9	FB14110	L5	R11909	G2	R14115	E11	R14701	N7
C11602	N2	C14113	F11	C14711	L8	FB14114	F10	R11917	F2	R14116	E12	R14702	D8
C11603	N2	C14114	F11	C14901	E8	FB14401	J8	R12702	G5	R14117	I11	R14703	E7
C11604	M3	C14118	E9	C14902	E8	FB14501	I6	R12704	I3	R14118	E11	R14704	O9
C11611	M2	C14119	F5	CF12201	J4	IR13201	A6	R12710	K4	R14119	D12	R14705	L9
C11614	N2	C14121	F12	CF12301	J4	J11901	H1	R12711	K4	R14121	E9	R14706	G5
C11616	N2	C14122	H9	CR11602	N2	J12101	I3	R12717	G3	R14122	D10	R14901	E7
C11617	N3	C14124	F10	CR12702	G6	J13101	D1	R12721	G3	R14123	D10	R14902	K7
C11618	M2	C14125	I11	CR13501	B3	J13103	E3	R12725	G3	R14124	D9	R14903	N7
C11619	M3	C14150	G5	CR14103	H12	J13104	D3	R12731	H4	R14128	E9	R14904	G6
C11620	M3	C14151	G4	CR14104	H12	J13201	O1	R13101	D1	R14135	E12	RN14501	B7
C11623	M3	C14152	H6	CR14105	J12	J13202	C1	R13102	D2	R14151	G5	RT14201	L11
C11624	N1	C14155	O5	CR14106	F10	J14101	E12	R13103	D2	R14153	E6	SF12301	J6
C11908	I2	C14158	L6	CR14107	D12	J26750	L3	R13108	F3	R14155	E6	SW13201	A1
C11909	H2	C14201	M12	CR14108	F10	K14201	K12	R13118	C2	R14157	E6	SW13202	A2
C11913	I1	C14203	N10	CR14110	D5	L12302	K4	R13119	C2	R14158	F6	SW13203	A3
C11914	G1	C14204	N11	CR14111	E11	L12303	K5	R13123	D4	R14159	F6	SW13204	A3
C12305	K5	C14205	L10	CR14115	F6	L12305	J6	R13125	B1	R14201	N12	SW13205	A4
C12306	N6	C14207	O11	CR14117	I12	L12705	H5	R13188	D4	R14202	O11	SW13206	A5
C12310	K5	C14208	N11	CR14201	O10	L14101	M6	R13189	B1	R14204	M10	T14101	G11
C12314	K6	C14304	H8	CR14202	O11	L14102	D6	R13190	B1	R14205	N12	T14201	M11
C12701	I4	C14305	H8	CR14203	N10	L14103	G9	R13191	B1	R14303	H6	T14301	H8
C12702	I4	C14306	H8	CR14204	N11	L14105	D11	R13201	A6	R14305	I8	T14401	O8
C12703	H5	C14310	G8	CR14205	D11	L14401	I8	R13203	N1	R14306	H8	TU17101	O4
C12704	H3	C14320	I6	CR14301	G9	L14402	F9	R13320	D5	R14309	G8	U11601	L2
C12706	F6	C14402	K8	CR14401	F8	P12701	G3	R13322	F4	R14310	H7	U11900	I2
C12707	H5	C14403	F8	CR14501	C7	P14401	D8	R14101	K10	R14318	D6	U11901	H2
C12713	H4	C14404	F7	CR14701	L8	P14501	C6	R14102	J11	R14319	D6	U12101	J5
C12806	J6	C14405	F8	CR14702	F8	Q11603	N2	R14103	K10	R14401	F8	U13102	E3
C13202	A7	C14406	J8	CR14704	L8	Q14101	J11	R14104	K11	R14402	I8	U14101	H12
C14101	K11	C14502	B7	CR14901	E7	Q14102	J12	R14105	H11	R14403	G9	U14102	E12
C14102	H10	C14504	B6	CR14902	J7	Q14103	J11	R14106	K11	R14501	C6	U14103	E5
C14104	J12	C14505	C7	F14201	L12	Q14104	D10	R14107	J11	R14503	B6	U14104	C8
C14105	J12	C14506	C7	FB13201	N1	Q14115	E6	R14108	J11	R14504	D7	U14150	G5
C14108	H11	C14521	H5	FB14106	F10	Q14301	H9	R14109	J11	R14506	D6	U14501	C7
C14109	F10	C14701	M7	FB14107	F10	Q14401	J8	R14110	I12	R14507	B6	Y12801	I6
C14110	E10	C14703	E9	FB14108	F10	Q14901	K7	R14111	I12	R14508	D5	Y14101	I6
C14111	D12	C14704	E8	FB14109	I11	R11627	F2	R14113	F11	R14509	D7		

MAIN BOARD - BOTTOM VIEW



MAIN BOARD - BOTTOM VIEW, GRIDTRACE LOCATION GUIDE

C11605	L11	C12715	G9	C14507	C6	R11604	M11	R12314	J8	R13113	B11	R13504	B10
C11606	M11	C12716	H9	C14702	M5	R11605	M11	R12315	J8	R13121	D9	R13505	B9
C11607	M11	C12717	J8	C14706	M5	R11606	M11	R12316	J8	R13122	E9	R13508	B10
C11608	M11	C12718	I8	C14903	I8	R11607	M11	R12318	J9	R13124	C9	R13510	C9
C11609	M11	C12801	I8	C14904	K7	R11608	M11	R12701	I9	R13126	C10	R13511	B10
C11610	M11	C12802	J9	C17416	K9	R11609	M11	R12703	I9	R13128	D11	R13512	B10
C11612	M11	C12803	J9	C17417	K9	R11615	M11	R12705	I8	R13130	B11	R14112	H2
C11613	M11	C12805	J9	CR11603	O11	R11616	M11	R12706	I9	R13131	B11	R14114	E1
C11615	M11	C12807	I8	CR12301	K8	R11617	M11	R12707	I9	R13134	E11	R14126	E1
C11621	L11	C13102	E12	CR14101	K10	R11618	N11	R12708	I9	R13135	D11	R14127	E2
C11622	L11	C13114	D11	CR14102	K10	R11619	O11	R12712	G9	R13136	E10	R14129	H1
C11625	L11	C13119	F10	CR14113	P10	R11620	O11	R12713	G9	R13139	E11	R14132	D2
C11626	L11	C13141	B9	CR14114	P10	R11628	L10	R12714	I9	R13142	E11	R14206	D6
C11627	L11	C13163	F8	L12301	J9	R11629	M10	R12715	H9	R13165	D11	R14304	G5
C11629	L11	C13201	A6	Q11901	J12	R11630	L10	R12716	G9	R13166	A10	R14320	I8
C11632	M10	C13205	O12	Q12301	J9	R11631	L10	R12718	G10	R13169	B9	R14322	I7
C11633	L10	C13501	B9	Q12701	H9	R11910	I11	R12719	G9	R13176	E10	R14323	I8
C11906	I11	C13502	B10	Q12702	G9	R11911	H11	R12720	G9	R13180	D11	R14324	H7
C11907	I11	C13503	B10	Q12703	H9	R11912	H11	R12722	G10	R13181	D11	R14326	I7
C11910	H11	C13504	B9	Q12704	G9	R11913	H11	R12723	I9	R13182	D11	R14327	H7
C11912	G11	C14103	K2	Q13101	E11	R11915	J12	R12724	H9	R13183	D9	R14328	G7
C12301	J8	C14106	H2	Q13103	D11	R11918	J12	R12726	H9	R13184	D9	R14520	I8
C12302	J8	C14107	F1	Q13104	D11	R11919	J12	R12727	G10	R13185	E9	R14851	I8
C12303	J8	C14126	I1	Q13105	D11	R11920	I12	R12801	I8	R13192	C9	R14906	J7
C12304	K8	C14127	H1	Q13301	D9	R11921	G12	R12802	I8	R13198	D10	R14909	I7
C12307	J8	C14153	I8	Q13302	D9	R12201	J9	R12803	J7	R13202	A7	R14910	O6
C12308	J8	C14154	F7	Q13501	B10	R12302	J7	R12804	I9	R13314	E9	R17130	O7
C12312	J8	C14159	L7	Q13503	B9	R12303	J8	R12805	J9	R13315	D9	R17402	K9
C12313	J8	C14160	M7	Q14105	D3	R12304	J9	R12806	J7	R13316	E9	R17403	K9
C12708	H8	C14302	G5	Q14106	E1	R12305	J9	R12807	J7	R13317	E9	R17409	M9
C12709	I9	C14303	G5	Q14107	D2	R12306	J8	R12808	J10	R13318	E9	R17411	M9
C12710	I9	C14309	G5	Q14201	D6	R12307	J10	R13109	E11	R13319	D8		
C12711	I9	C14321	I8	Q14302	G5	R12308	K8	R13110	C11	R13321	F8		
C12712	G10	C14322	I7	R11602	M11	R12309	K8	R13111	E11	R13501	B9		
C12714	G9	C14401	J5	R11603	M11	R12311	J9	R13112	D11	R13503	B9		

PARTS LIST

Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Type No.	Mfr. Part No.	NTE Part No.	Item No.	Function/Rating	Mfr. Part No.	Notes
# CR11602	-	159429	NTE5019T1	U11601	CXA2074S	237930		FB13201	Ferrite Bead	226467	-
CR11603	-	232709	-	U11900, 01	TDA7267	244225		FB14106, 07, 08	Ferrite Bead	237504	-
CR12301	-	227051	-	# U12101 (1)(2)	LA7612N	241266		FB14109, 10	Ferrite Bead	226467	-
CR12702	-	198589	NTE519	# U12101 (3)	-	252842		FB14114	Ferrite Bead	237504	-
CR13501	-	164874	NTE177	U13102 (1)(2)	-	251271		FB14401	Ferrite Bead	161237	-
CR14101	-	232221	-	U13102 (3)	-	251160		FB14501	Ferrite Bead	215547	-
CR14102	-	198589	NTE519	# U14101	-	223653		FB26401	Ferrite Bead	239201	-
CR14103, 04	-	139706	NTE177	U14102	-	231525		FB26402	Ferrite Bead	226467	-
CR14105	-	198589	NTE519	U14103	L7852CV	241752		FB26403, 04	Ferrite Bead	239201	-
CR14106	-	243636	-	U14104	KA7812	162394		IR13201	Receiver	244227	Remote
CR14107	-	217306	-	U14150	L78S75CV	231526		J13201	Jack	214609	IR Blaster Output
CR14108	-	243636	-	U14501 (1)(2)	TDA8172	215531		J26104	Jack	243610	Assembly
CR14110	-	155276	NTE116	U14501 (3)	-	232109		# K14201	Relay	190490	Degaussing
CR14111	-	198589	NTE519	U26401	-	-		# KS15101	Socket	233120	CRT
CR14113, 14	-	232709	-	U26402	-	243436		L12301 (2)(3)	18μH	243894	-
CR14115	-	215488	NTE136A	U26403	-	-		L12302	VCO	215502	-
# CR14117	-	244224	-	U26404	-	237664		L12303	FM	233056	-
CR14201 Thru	-	-	-	U26901	LA7221	227354		L12305	10μH	175409	-
CR14204	-	147015	NTE125					L12352 (1)	18μH	195711	-
CR14205	-	198589	NTE519	Item No.	Function/Rating	Mfr. Part No.	Notes	L12705	10μH	175409	-
CR14301	-	176296	NTE552	C11612, 13	22pF 5% 50V NPO	194903	-	L14101	100μH	160186	-
# CR14401	-	140971	NTE558	C12303	120pF 5% 50V NPO	194902	-	L14102	27μH	190017	-
CR14501	-	155276	NTE116	C12714, 15, 16	470pF 5% 50V NPO	214732	-	L14103	22μH	215504	-
CR14701	-	241304	-	C12718	100pF 5% 50V NPO	193340	-	L14105	47μH	244222	-
CR14702	-	176296	NTE552	C12803	15pF 5% 50V NPO	200538	-	# L14200	Degaussing	214679	-
CR14704	-	207878	NTE519	C12805	120pF 5% 50V NPO	194902	-	L14401	6.8μH	191141	-
# CR14901	-	157301	NTE177	C13102	120pF 5% 50V NPO	194902	-	# L14402	Horizontal Linearity	192844	-
# CR14902	-	159429	NTE5019T1			174414	-	L15101	100μH	160186	-
CR26901	-	198602	-	C13205	220pF 5% 50V NPO	178188	-	L26401	4.7μH	158726	-
CR26902	-	232710	-			205551	-	# PW14101	Line Cord	241251	AC, Polarized
Q11603	-	177788	NTE31	# C14102	.0168 1.6kV	237355	-	R11616	61.9K 1% 1/10W	225705	-
Q11901 (1)(2)	-	215495	-	# C14108	.0011 1.6kV	244208	-	# R11627	10 5% 1/4W	241259	-
Q11901 (3)	-	216434	NTE2408	# C14111	100μF 20% 63V	237425	-	# R11909	16 5% 3W	244213	-
Q12301	-	215496	-	# C14112	.01 10% 50V	240934	-	R12201	680 2% 1/10W	195939	-
Q12701 (1)(2)	-	215495	-	C14113	680pF 20% 1kV	190538	-	R12302, 03	120K 2% 1/10W	207834	-
Q12701 (3)	-	216434	NTE2408	C14159, 60	100pF 5% 50V NPO	193340	-	R12310	1800 2% 1/10W	197903	-
Q12702 (1)(2)	-	215495	-	# C14201	.22 20% 250VAC	-	-	R12311	620 2% 1/10W	205339	-
Q12702 (3)	-	216434	NTE2408	# C14203, 04	.22 20% 125VAC	231451	-	R12317	240 2% 1/10W	197624	-
Q12703 (1)(2)	-	215495	-	# C14205	680pF 20% 1kV	190538	-	R12318	1800 2% 1/10W	197903	-
Q12703 (3)	-	216434	NTE2408	# C14207	680μF 20% 200V	190560	-	R12713	620 2% 1/10W	205339	-
Q12704	-	215496	-	# C14208	.0034 20% 120V	223330	-	R12717, 21, 25	220 2% 1/4W	175324	-
Q13101, 03, 04	-	215496	-	C14303	470pF 5% 50V NPO	214732	-	R12801	15K 2% 1/10W	205354	-
Q13105 (1)(2)	-	215495	NTE2408	C14310	15pF 1% 250V NPO	223899	-	R12802	120K 2% 1/10W	207834	-
Q13105 (3)	-	216434	-	C14322	39pF 5% 50V NPO	202905	-	R12804	13K 2% 1/10W	205353	-
Q13301	-	215496	-	C14401	470pF 5% 50V NPO	195918	-	R12805	750 2% 1/10W	202914	-
Q13302 (1)(2)	-	215495	-	# C14402	470pF 5% 50V NPO	214732	-	R13111	27K 2% 1/10W	205245	-
Q13302 (3)	-	216434	NTE2408	# C14403	.0127 1.6kV	246497	-	R13503	64.9K 1% 1/10W	247691	-
Q13501	-	215496	-	# C14404	.41 5% 250V	214752	-	R13504	100K 1% 1/10W	215221	-
Q13503 (1)(2)	-	215495	-	# C14405	2.2μF 20% 200V	247673	-	# R14101	47K 5% 3W	232213	-
Q13503 (3)	-	216434	NTE2408	# C14406	.0047 10% 250V	142765	-	# R14102	6800 5% 1/2W	179248	-
# Q14101	-	244223	-	C14702	470pF 5% 2kV	227068	-	# R14105	68 5% 1/4W	175039	-
# Q14102	-	147665	NTE159	C14704	470pF 10% 500V NPO	227050	-	# R14106	2000 5% 1/4W	175321	-
Q14103	-	232218	-	C14704	680pF 20% 1kV	190538	-	# R14107	43 5% 1/4W	244214	-
Q14104	-	243955	-	C14706	470pF 10% 500V NPO	227050	-	# R14108	.1 5% 3W Wirewound	244215	-
Q14105 (1)(2)	-	215495	NTE2408	C14710	.01 20% 1kV	137583	-	# R14109	750 5% 1/4W	179317	-
Q14105 (3)	-	216434	-	# C14904	.22 25V	217298	-	R14112	680 2% 1/10W	195939	-
Q14106 (1)(2)	-	215495	NTE2408	C15101	.001 10% 3kV	120696	-	R14114	270K 5% 1/10W	195934	-
Q14106 (3)	-	216434	-	C17416, 17	43pF 5% 50V NPO	214029	-	R14115	270K 2% 1/10W	205375	-
Q14107 (1)(2)	-	215495	NTE2408	C26401	27pF 5% 50V NPO	246955	-	R14116	140K .1% 1/4W	249013	-
Q14107 (3)	-	216434	-	C26402	30pF 5% 50V NPO	243467	-	# R14117	2800 .1% 1/4W	244217	-
Q14115	-	177788	NTE31	C26411, 12, 15	100pF 10% 50V NPO	243218	-	R14118	160 5% 7W Wirewound	227958	-
Q14201	-	219412	-	C26422	200pF 10% 50V NPO	247000	-	# R14124	3.3 5% 2W Nonflammable	223680	-
Q14301	-	146851	NTE287	C26425, 26, 35	100pF 10% 50V NPO	243218	-	R14126	37.4K 1% 1/10W	215215	-
Q14302 (1)(2)	-	215495	-	C26437, 38	47pF 5% 50V NPO	244069	-	R14128	100K 5% 1/4W	175044	-
Q14302 (3)	-	216434	NTE2408	C26439, 44	47pF 5% 50V NPO	244069	-	R14135	100K 2% 1/8W	176816	-
# Q14401	-	242224	-	C26470	220pF 5% 50V NPO	249036	-	# R14151	3000 1% 1/4W	248594	-
# Q14901	-	147665	NTE159	C26473	47pF 5% 50V NPO	244069	-	# R14201	8.2 5% 1W	235378	-
Q15101, 02, 03	-	215497	NTE2501	CF12201	Filter	195702	4.5MHz	# R14202	2.7M 20% 1/2W	217662	-
Q26401	-	215496	-	CF12301 (2)(3)	Filter	181125	4.5MHz	# R14205	1.8 10% 15W Wirewound	200444	-
Q26402	-	216434	NTE2408	CF12351 (1)	Filter	181125	4.5MHz	# R14305	120K 20% 1/2W	238903	-
Q26403, 04	-	177788	NTE31	# DY1 (4)	Yoke	-	Horiz 1.3mH, Vert 10mH	-	-	-	-
Q26405, 10	-	215496	-	# F14201	Fuse	175425	5Amp, 125V, Fast Acting	-	-	-	-
Q26411, 50, 51	-	216434	NTE2408								
Q26901, 02	-	215496	-								

PARTS LIST continued

Item No.	Function/Rating	Mfr. Part No.	Notes
R14326	910 2% 1/10W	197627	-
# R14401	15K 5% 1W	190557	-
# R14402	91 5% 1/2W	227249	-
# R14403	820 5% 1W	175349	-
# R14506	13 5% 1W	231508	-
# R14507	1.5 5% 2W	237441	-
# R14508	1 5% 2W Wirewound	215577	-
# R14701	10 20% 1/2W	241261	-
# R14703	.68 5% 3W Wirewound	244221	-
# R14704	82K 10% 1/2W	239116	-
# R14705	27K 10% 1/2W	238958	-
R14706	1050 1% 1/4W	231511	-
# R14901	100 5% 1/4W	198667	-
# R14902	39.2K 1% 1/4W	190469	-
# R14903	40.2K 1% 1/4W	219026	-
R14909	15K 2% 1/10W	205354	-
# R15101, 02, 03	10K 5% 2W Nonflammable	176656	-
# R15104, 05	2200 5% 1/2W	247669	-
# R15106, 18	2200 5% 1/2W	247669	-
R26464	3320 1% 1/6W	249040	-
R26465	10K 1% 1/10W	252355	-
# R26716, 17	2200 5% 1/2W	246613	-
# R26901	270 5% 1/2W	192410	-
# R26902	56	247610	-
RN14501	Resistor Network	215499	-
# RT14201	8 Cold PTC	207768	-
SF12301	Filter	217318	SAW
SP1, 2	Speaker	243873	60 X 125mm, 8 Ohms, 1.5W
	Speaker	243893	60 X 90mm, 8 Ohms, 1.5W
SW13201	Switch	215500	Power
SW13202	Switch	215500	Volume Up
SW13203	Switch	215500	Volume Down
SW13204	Switch	215500	Channel Up
SW13205	Switch	215500	Channel Down
SW13206	Switch	215500	Menu
# T14101	SMT	244228	-
# T14201	Line Choke	190507	-
# T14301 (1)(2)	Horizontal Driver	215541	-
# T14301 (3)	Horizontal Driver	252843	-
# T14401 (5)	Horizontal Output	244229	-
# TU17101 (1)	Tuner	249035	UHF/VHF
# TU17101 (2)	Tuner	251129	UHF/VHF
# TU17101 (3)	Tuner	248782	UHF/VHF
# V101	CRT	HA68ADT275	A68ADT27X05
	CRT	HA63ADT159	A63ADT15X09
Y12801	Crystal	161235	3.58MHz
Y14101	Resonator	227064	507.5kHz
Y26401	Crystal	217322	8MHz
#	Fuse Holder	176642	For F14201 (2 Used)
#	Module(1)	249017	Gemstar 4
#	Module (2)(3)	253023	Gemstar 4
#	PC Board	249057	Audio/Video
#	PC Board	244468	CRT
#	PC Board	251837	Video
	Transmitter	242778	Remote, CRK17201
	Transmitter	247050	Remote, CRK17TF1

For SAFETY use only equivalent replacement part.

- (1) Used in chassis CTC203AD.
- (2) Used in chassis CTC203AD4.
- (3) Used in chassis CTC203AD5.
- (4) Bonded part of CRT.
- (5) Screen and focus controls are part of T14401.

TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.			
Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR570
Generators		Capacitance Analyzer	LC102
RGB	CM2125	CRT Analyzer	CR7000
Multiburst Signal	VG91	AC Leakage Tester	PR570
Color Bar	VG91	Inductance Analyzer	LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	Field Strength Meter	SL753
Frequency Meter	SC3100	Transistor Tester	TF46
Hi-Voltage Probe	HP200	Horizontal Analyzer	HA-2500
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

RCA

MODEL F27442TX51 (CHASSIS CTC203AD5)