

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 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 inner board wiring for pinched wires or wires contacting any high wattage resistors. Check that all knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	KX	1	Blue
Yoke	D4137		3	Red
Yoke Setting	YP1		4	Yellow
Comments	Focus Tap		5	Green

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

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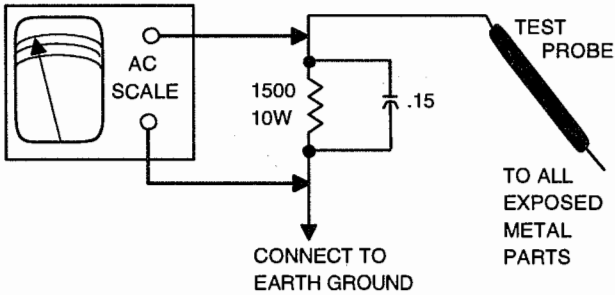
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

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.



HIGH VOLTAGE SHUTDOWN TEST	
Apply 120VAC, turn the receiver on, and set all customer controls for normal operation. Measure the voltage at TP7. Voltage should measure between 14.5V and 21.0V. If voltage exceeds this range the circuit must be repaired. Momentarily connect a jumper between TP7 and the cathode of D421. 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 and wait 30 seconds, then turn the receiver on.	



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PHOTOFACT® Technical Service Data

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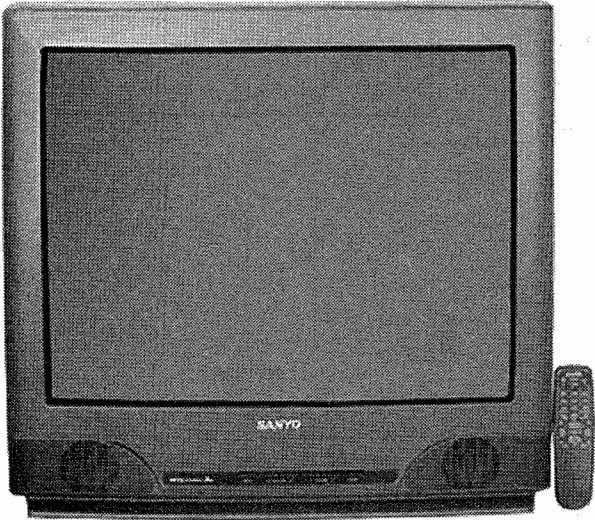
MODEL AVM-2756 (CHASSIS G3Y-27560)

SANYO

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SANYO
Model AVM-2756 (Chassis G3Y-27560)



Complete coverage
for servicing a television receiver...

- Schematics
- Parts list
- Component locations
- Troubleshooting guide

Coverage includes this additional model and

MODEL	CHASSIS
AVM-2756U	G3Y-2756



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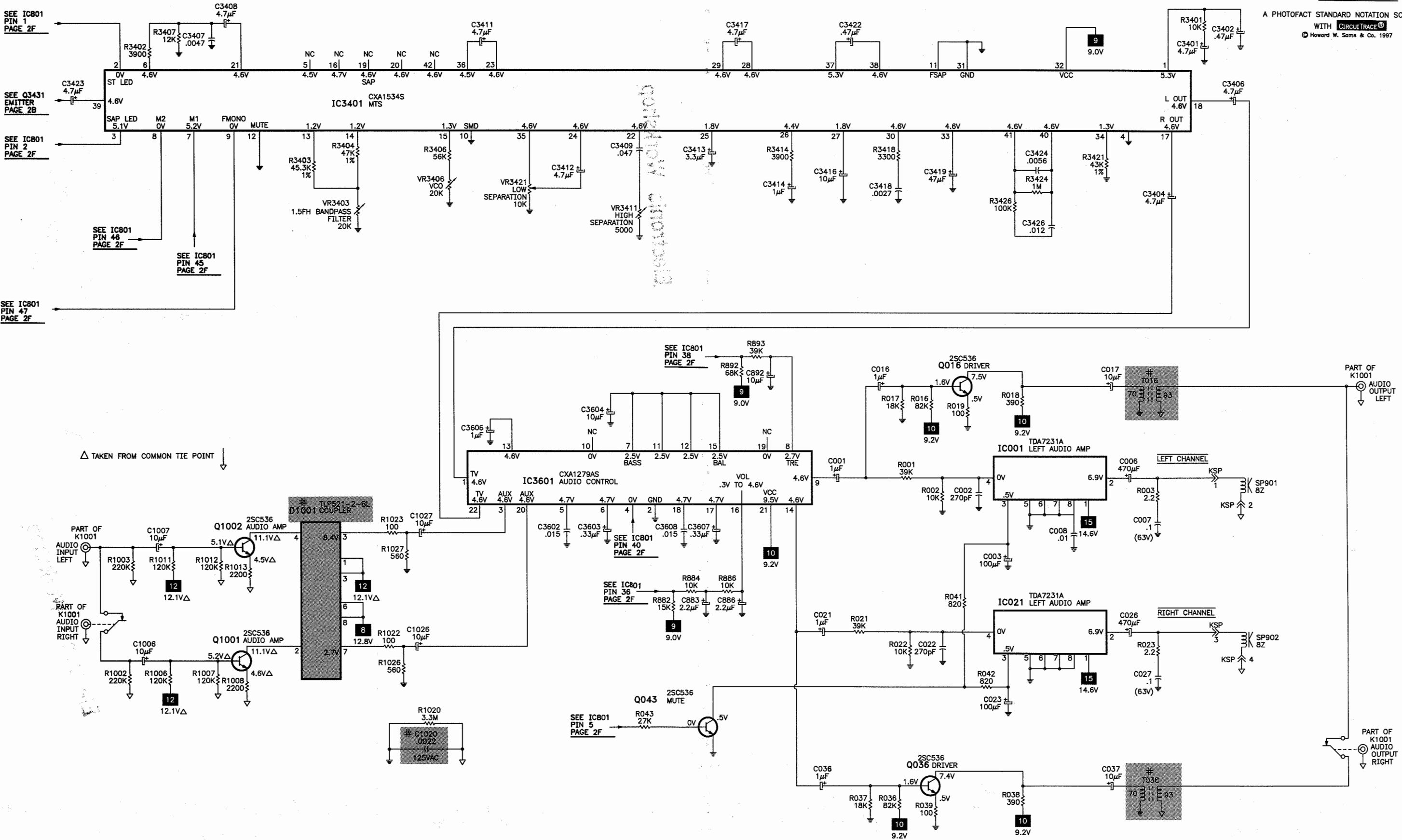
For Supplier Address,
See PHOTOFACT Annual Index

AUDIO SCHEMATIC

VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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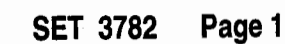
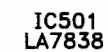
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MODEL AVM-2756 (CHASSIS G3Y-27560)

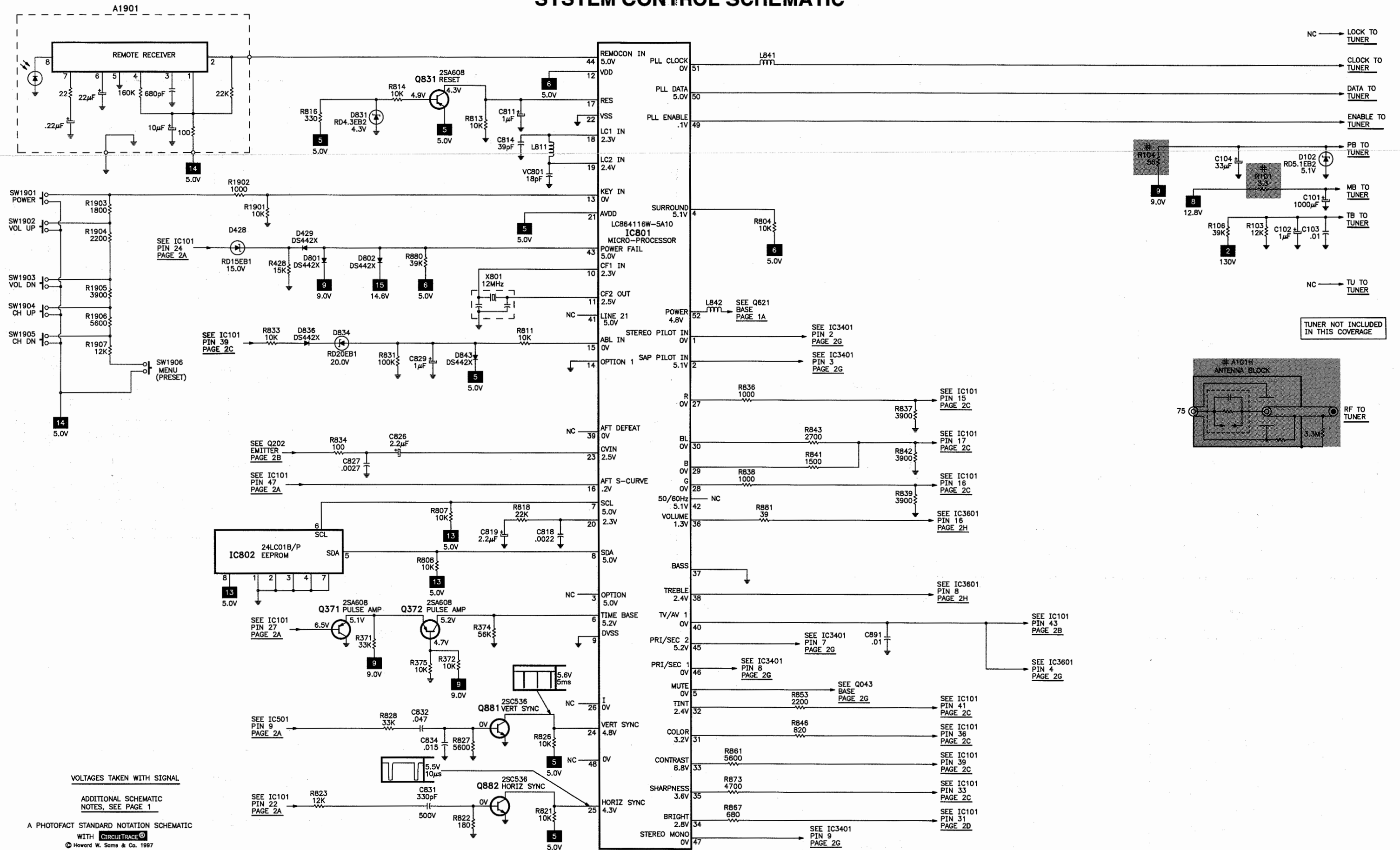
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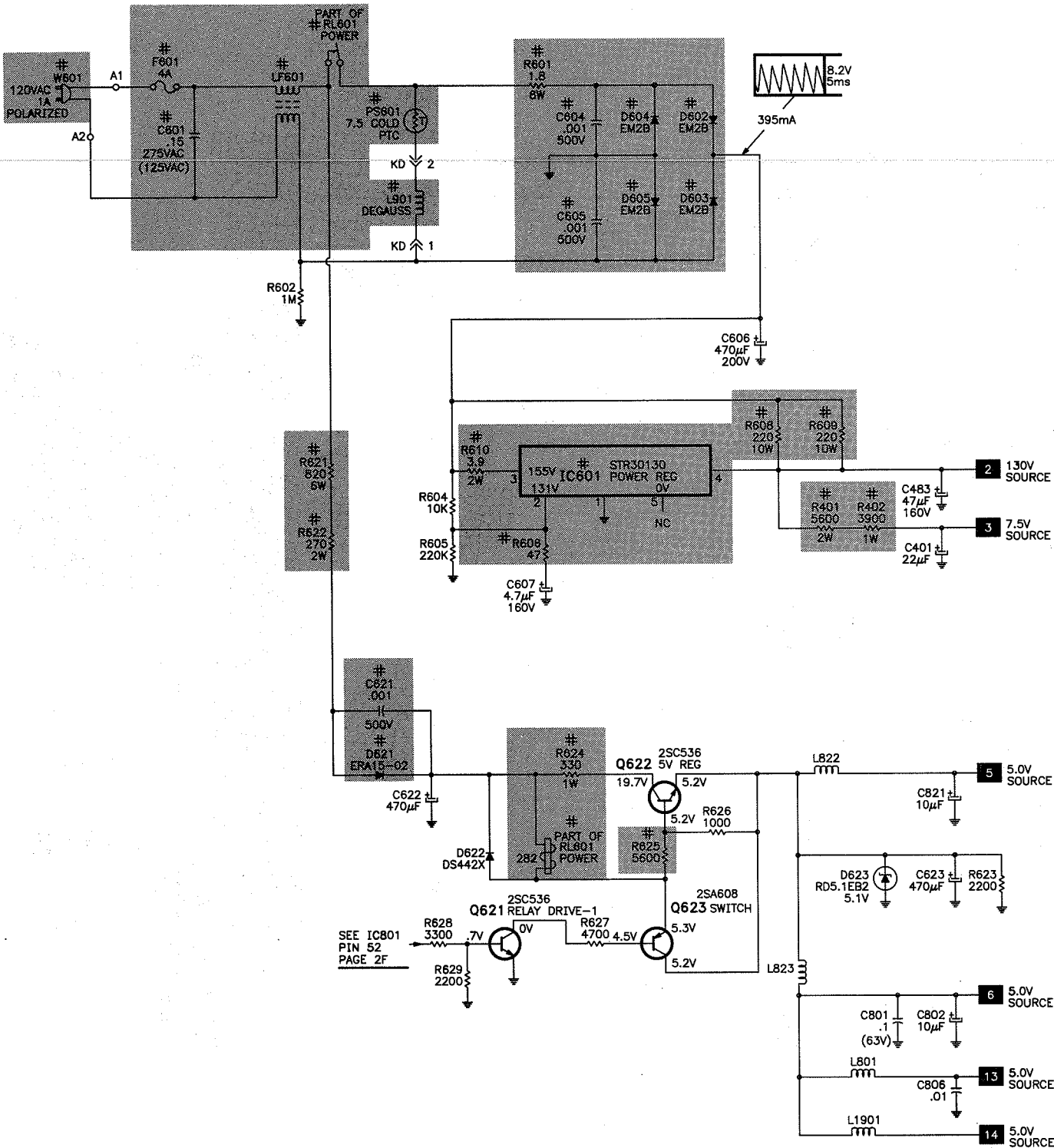
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MODEL AVM-2756 (CHASSIS G3Y-27560)



SYSTEM CONTROL SCHEMATIC



A
POWER SUPPLY SCHEMATIC



VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

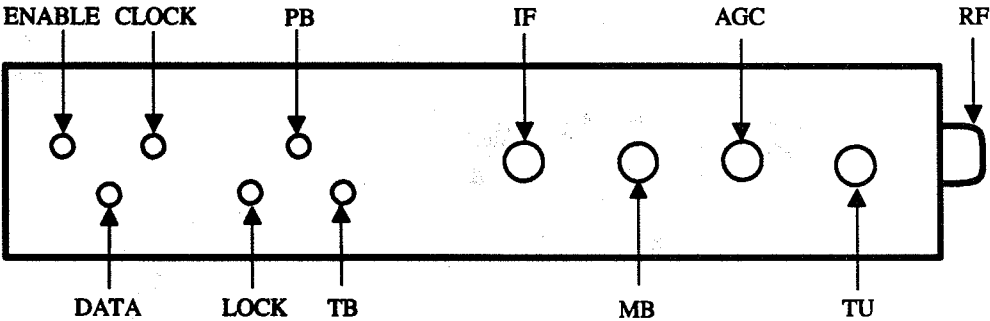
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TUNER INFORMATION

TUNER VOLTAGE CHART			
Pin	VHF Low Band	VHF High Band	UHF Band
TU	1.5V	4.4V	6.4V
AGC	6.5V	6.5V	6.5V
MB	8.9V	8.9V	8.9V
IF	0V	0V	0V
TB	21.6V	22.7V	23.4V
PB	5.1V	5.1V	5.1V
LOCK	.1V	.1V	.1V
CLOCK	0V	0V	0V
DATA	5.0V	5.0V	5.0V
ENABLE	.1V	.1V	.1V

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



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

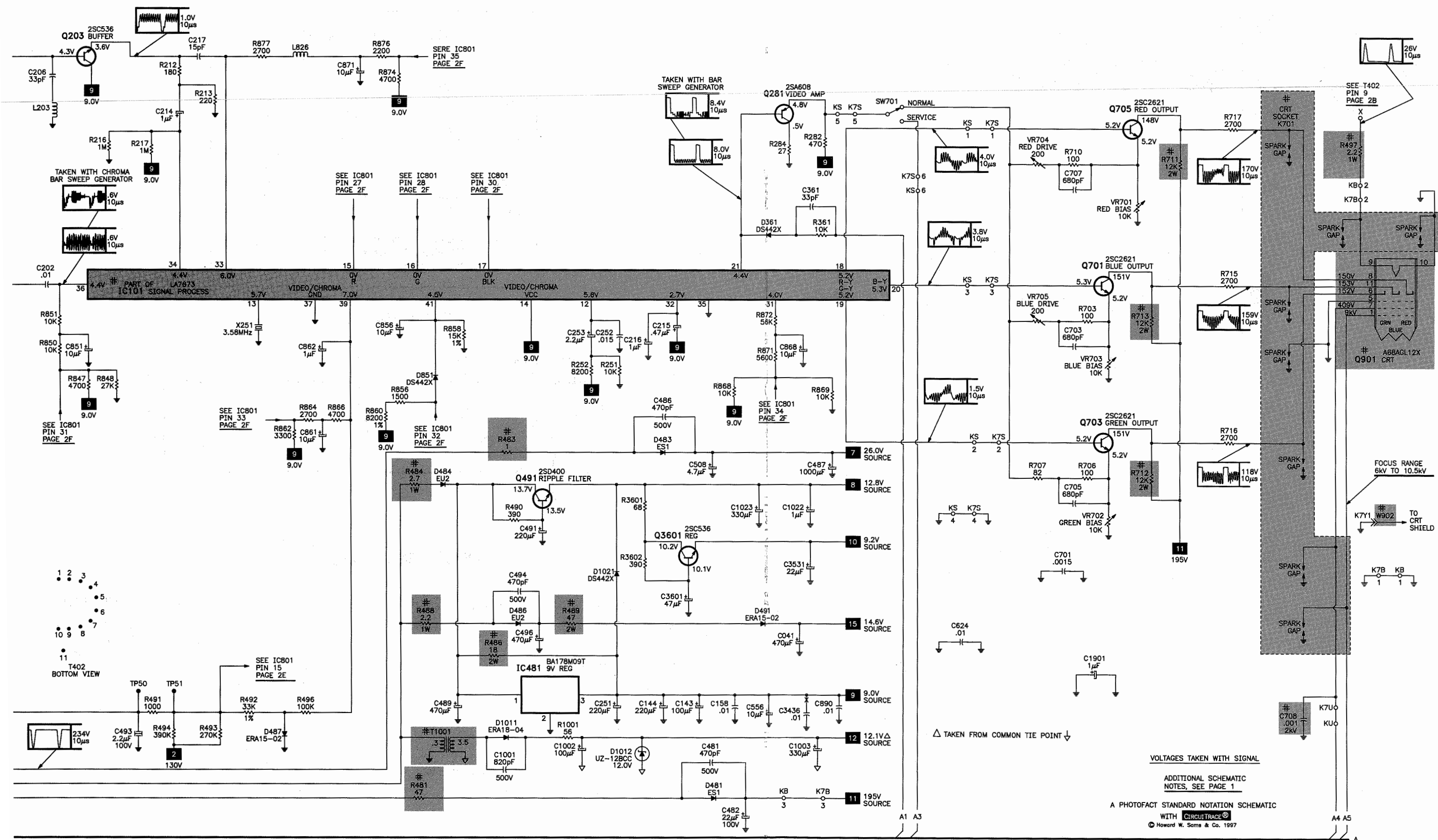
⬇ Common tie point

△ Taken from common tie point

3 Schematic CIRCUITTRACE®: Voltage source tie point.

A Cabling: Heavy lines reduce use of multiple lines.

Waveforms and voltages are taken from ground, unless noted otherwise.
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.

TELEVISION SCHEMATIC continued

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

Tune in a picture, set brightness, contrast, and color to minimum. Connect a high voltage probe to CRT anode. High voltage range should be between 26kV and 29.5kV.

B+ 130V CHECK

Turn receiver on and tune in an active station. Set picture and brightness to normal. Check the voltage at pin 4 of IC601, it should be 130V ±1V.

RF AGC

Turn receiver on and tune in an active station. Turn VR141 fully clockwise, then counterclockwise to a point where snow just disappears.

SUB BRIGHTNESS

NOTE: Perform RF AGC, white balance, and high voltage check adjustments before performing brightness level adjustment.

Tune in a color bar pattern. Set picture and brightness to normal. Connect positive lead of a digital voltmeter to TP51 and the negative lead to TP50. Disconnect AC line cord, while pressing the menu (preset) button on the front of the receiver, reconnect AC line cord. "SUBBRIGHT ADJUST" display appears on the screen. Adjust sub brightness level with volume up or down button for 520mV ± 10mV. Press the menu (preset) button on the receiver to turn off the subbright adjust display.

VERTICAL CENTERING

Tune in a crosshatch pattern. If pattern is low, install R513. If pattern is high, install R512.

VIDEO INPUT LEVEL

Inject a video signal at the video input, set the receiver to video mode, connect a scope to TP16A and ground. AdjustVR1023 for 1Vp-p. Set the receiver to TV mode, picture adjust mode to Auto. Check the brightness and contrast on the receiver, if the brightness and contrast are incorrect reset the bright level.

DISPLAY PLL

Turn receiver on and tune in an active station. Adjust VC801 for a stable channel display with no oscillation. Check every active channel, repeat the process if necessary.

WHITE BALANCE

Turn receiver on. Allow a 10 to 30 minute warm up time. Tune in an inactive channel. Set screen, VR703, VR702, and VR701 to minimum. Set VR704 and VR705 to midrange. Set SW701 to service position. Advance the screen control until a faint line of one predominant color appears on the screen. Adjust VR701, VR702, and VR703 for a dim white line. Set SW701 to normal position. Adjust VR704 and VR705 for best black and white picture on screen.

PURITY

NOTE: Operate the receiver for 15 minutes to allow warm-up of CRT.

Use a degaussing coil to demagnetize the CRT. Tune in a green raster. Loosen the clamp screw. Slide deflection yoke back as far as possible. Adjust purity tabs to center the vertical green band. Slide the deflection yoke forward to produce a uniform green screen. Tighten the clamp screw.

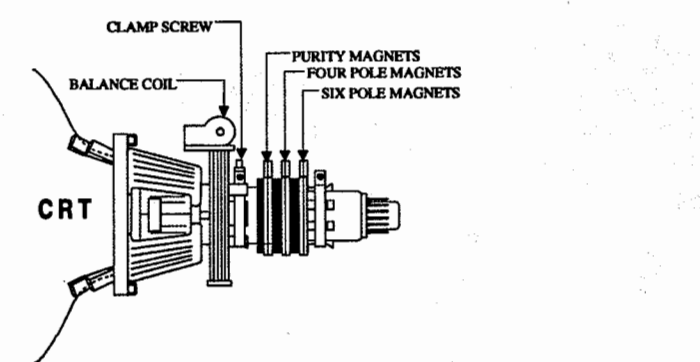
CONVERGENCE

Tune in a dot pattern. Loosen the clamp screw. Adjust the 4 pole magnets to converge the red and blue dots at the center of the screen. Adjust the 6 pole magnets to converge the red/blue dots over the green dots at the center of the screen.

NOTE: Rotate the two tabs of each set of magnets equally and opposite to converge vertically and rotate both tabs in the same direction to converge horizontally. The 4 and 6 pole magnets interact, repeat adjustment until center convergence is correct.

Tune in a crosshatch pattern. Remove the tilt adjustment wedges between deflection yoke and the CRT. Loosen the clamp screw. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal line at the top and bottom of the screen and the vertical line at the right and left sides of the screen. Adjust balance coil to correct misconvergence of red and blue horizontal lines at right and left sides of screen. Repeat convergence procedure if necessary to obtain best overall convergence. Replace the tilt adjustment wedges. Tighten the clamp screw.

CRT NECK ASSEMBLY



STEREO ADJUSTMENTS

All adjustments were made using an MTS TV/stereo generator connected to the antenna terminals. Set customer controls to normal listening levels.

1.5FH BPF

Select SAP mode on the receiver. Set generator to SAP, 1kHz, and L-R modulated signal. Connect oscilloscope to pin 42 of IC3401. Adjust VR3403 for maximum amplitude of waveform.

Stereo VCO

Set generator to pilot, 1kHz, and L-R modulated signal. Connect oscilloscope to pin 26 of IC3401. Adjust VR3406 for maximum amplitude of waveform.

Separation

Set generator to pilot, 300Hz, and left modulated signal. Connect oscilloscope to pin 17 of IC3401. Adjust VR3421 for minimum amplitude of waveform. Change to 8kHz and adjust VR3411 for minimum amplitude of waveform.

POWER SUPPLY

Check F601. If open, check D602 thru D605, C601, C604, C605, C606, Q402, and IC601. Apply 120VAC and check standby voltage 5.2V at the emitter of Q622. If the voltage is incorrect or missing, check D621, D623, and Q622. Turn receiver on and check for 130V at pin 4 of IC601. If voltage is missing, check IC601, Q621, Q623, RL601, R601, and D602 thru D605. If 130V is present, refer to "Horizontal" section of this Troubleshooting guide.

HIGH VOLTAGE SHUTDOWN

NOTE: Care should be taken in defeating the high voltage shutdown circuit as this may cause excessive X-Ray radiation and damage to the CRT and T402. Monitor the high voltage and troubleshoot.

The high voltage from T402 is monitored and rectified by D482. Should the high voltage increase, the voltage at the cathode of D422 will also increase and trigger D422 and D421. This will cause deflection portion of IC101 to shut down the horizontal drive signal at pin 23 of IC101, causing the receiver to lose sound and raster.

Voltagess Taken in Shutdown

IC101
Pin 22 0V
Pin 23 0V
Pin 24 .7V

HORIZONTAL

Determine if the receiver is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If receiver is not in shutdown, inject a horizontal signal at base of Q402. If horizontal deflection is now present, check Q401, T401, and pins 22 thru 27 of IC101. If horizontal deflection is still missing, check Q402, D483, D484, D486, D481, D1011, T1001, and T402. The high voltage rectifier is part of T402 and if defective will affect the performance of the horizontal circuits. Width or foldover problems may be caused by C411, C413, C414, C418, C473, and L413 being defective.

VERTICAL

Inject a vertical signal at pin 2 of IC501. If vertical deflection is present, check pin 28 of IC101. If there is still no vertical deflection, check IC501 and the deflection yoke. Vertical linearity or foldover problems may be caused by sweep shaping and bias circuits, check C501, C503, C504, C506, and C507.

IF AGC

Inject a video IF signal at the IF input and check for video on the CRT. If video is present, check the tuner and tuner control circuits. If video is missing on the CRT, check for a video waveform at pin 44 of IC101. If video waveform is present, refer to the "Video" section of this Troubleshooting guide. Apply AGC bias to pin 2 of IC101 and check for a video waveform at pin 44 of IC101. If video waveform is present, check pins 2, 10, 47, and 49 of IC101. If there is no video waveform, check IC101.

VIDEO

Inject a video signal at pin 44 of IC101 and check for video on CRT. If video is present, refer to the "IF AGC" section of this Troubleshooting guide. If there is no video on CRT, check for video waveform at pin 38 of IC101. If the waveform is missing, check pins 38 and 42 of IC101 and Q161. If the waveform is present, check for video waveform at pin 34 of IC101. If the waveform is missing,

check Q202 and Q203. If the waveform is present, check for video waveform at pin 21 of IC101. If the waveform is present, check Q281 and SW701. If the waveform is missing, check IC101.

RASTER

Check the CRT and CRT voltages. If red is missing, check pin 18 of IC101 and Q705. If green is missing, check pin 19 of IC101 and Q703. If blue is missing, check pin 20 of IC101 and Q701. If the raster has a keystone shape, check the deflection yoke. If the raster has height or width problems, refer to the "Vertical," "Horizontal," and "Power Supply" sections of this Troubleshooting guide.

CHROMA

Check for a chroma waveform at pin 36 of IC101. If the waveform is missing, refer to "Video" section of this Troubleshooting guide. If the waveform is present, check for the proper waveforms at pins 18, 19, and 20 of IC101. If the proper waveforms are missing, check pins 12 thru 20, 36, and 41 of IC101. Check for 3.58MHz at pin 13 of IC101. If the proper waveforms are present, refer to the "Raster" section of this Troubleshooting guide.

AUDIO

Tune in an active station transmitting a stereo signal and check for an MTS waveform at pin 39 of IC3401. If the MTS waveform is missing, check Q3431 and pins 1, 4, and 48 of IC101. If the waveforms is present, check for audio waveforms at pin 4 of IC001 and pin 4 of IC021. If audio waveforms are missing, check IC3401 and IC3601. If audio waveforms are present, check IC001, IC021, Q043, and pin 5 of IC801. Inject an audio signal at the left audio input and check for audio at the left speaker. If audio is missing, check Q1002, pin 3 of IC3601, and D1001. Inject an audio signal at the right audio input and check for audio at the right speaker. If missing, check Q1001, pin 20 of IC3601, and D1001.

POWER FAILURE DETECTOR

This receiver uses a power failure detector, pin 43 of IC801, which checks for an abnormal failure of power supply circuits. If an unexpected failure is caused by any one of three conditions, the receiver will shut itself off in about 2.5 seconds to prevent damage.

The three conditions are:

- Failure within the power supply.
- A short circuit on the load side of the power supply.
- Stoppage of horizontal oscillation caused by shutdown circuits.

The power will shut itself off within 2.5 seconds if any of these conditions remain uncorrected. To see if this circuit has been activated, check pin 3 of IC481 for a voltage of 9.0V.

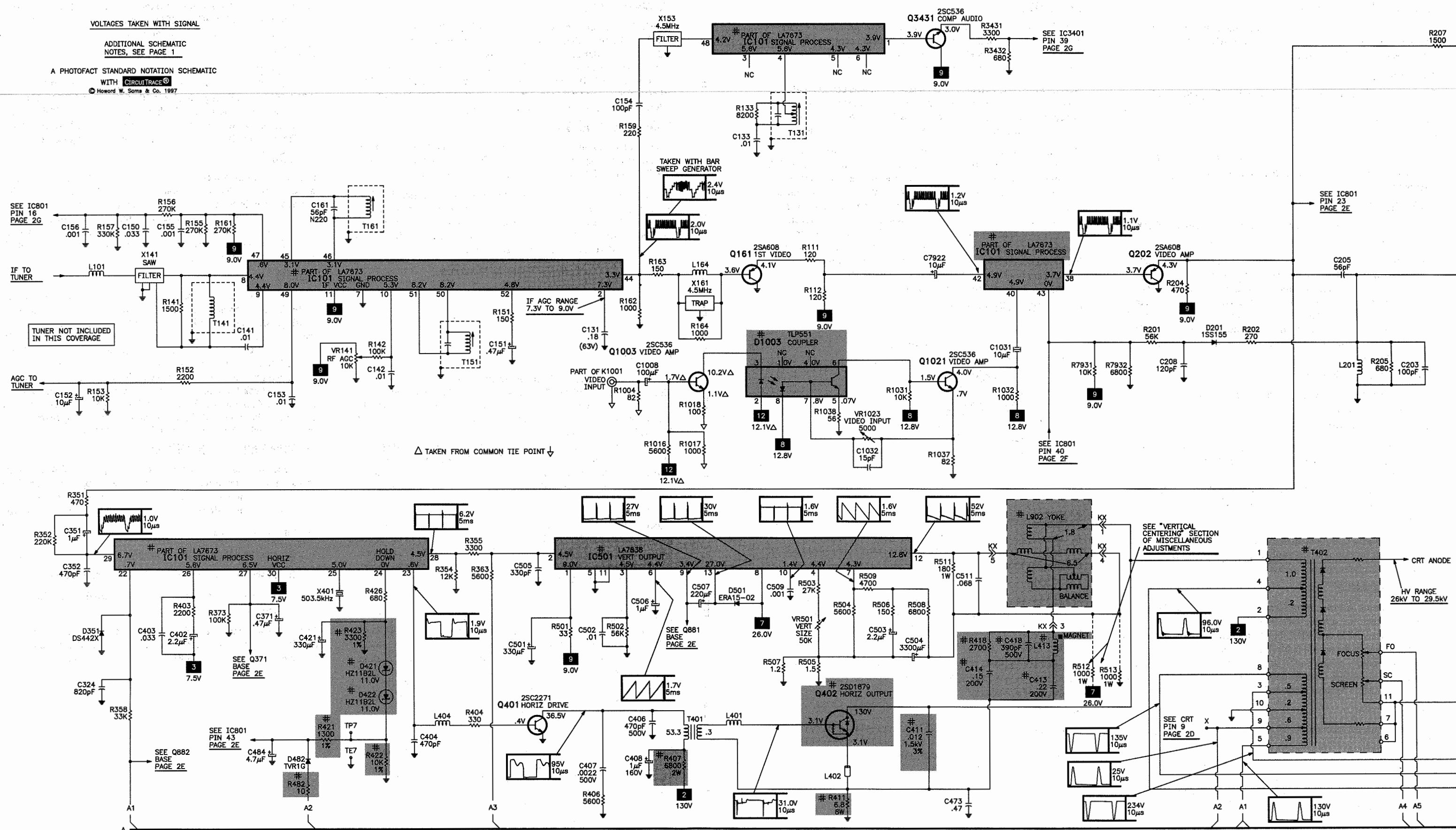
VOLTAGES TAKEN WITH SIGNAL

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

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PARTS LIST continued

CAPACITORS & ELECTROLYTICS

Item No.	Rating	Mfr. Part No.
C161	56pF 5% 50V N220	403 028 2019
# C411	.012 3% 1.5kV	404 057 8406
# C413	.22 5% 200V	403 082 8405
# C414	.15 5% 200V	403 082 7408
# C418	390pF 10% 500V	403 076 2917
C493	2.2µF 20% 100V NP	404 056 5307
# C601	.15 20% 275VAC	404 066 1900
	.15 20% 125VAC	404 047 3701
# C604	.001 10% 500V	403 075 7111
# C605	.001 10% 500V	403 075 7111
# C621	.001 10% 500V	403 075 7111
# C708	.001 +100% -0% 2kV	403 077 2718
	.001 +100% -0% 2kV	403 175 3419
# C1020	.0022 20% 125VAC	404 008 6802
C1031	10µF 20% 16V NP	403 085 4008
C3413	3.3µF 10% 10V Tantalum	403 090 6004
C3416	10µF 10% 10V Tantalum	403 090 3607
	10µF 10% 10V Tantalum	403 090 3706

For SAFETY use only equivalent replacement part.

CONTROLS & RESISTORS continued

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
R860	6800 1% 1/6W	401 053 4708	-
R3403	45.3K 1% 1/6W	401 103 1503	-
R3404	47K 1% 1/6W	401 095 0409	-
R3421	43K 1% 1/6W	401 180 8006	-
VR141	10K RF AGC	645 001 9319	-
	10K RF AGC	645 006 5095	-
VR501	50K Vertical Size	645 001 9364	-
	50K Vertical Size	645 006 5217	-
VR701	10K Red Bias	610 020 9053	-
	10K Red Bias	610 020 9077	-
	10K Red Bias	610 020 9084	-
VR702	10K Green Bias	610 020 9053	-
	10K Green Bias	610 020 9077	-
	10K Green Bias	610 020 9084	-
VR703	10K Blue Bias	610 020 9053	-
	10K Blue Bias	610 020 9077	-
	10K Blue Bias	610 020 9084	-
VR704	200 Red Drive	610 020 8599	-
	200 Red Drive	610 020 8612	-
	200 Red Drive	610 020 8629	-
VR705	200 Blue Drive	610 020 8599	-
	200 Blue Drive	610 020 8612	-
	200 Blue Drive	610 020 8629	-
VR1023	5000 Video Input	645 006 2476	-
	5000 Video Input	645 006 5200	-
VR3403	20K 1.5FH Bandpass Filter	645 006 2421	-
	20K 1.5FH Bandpass Filter	645 006 5132	-
VR3406	20K VCO	645 006 2421	-
	20K VCO	645 006 5132	-
VR3411	5000 High Separation	645 006 2476	-
	5000 High Separation	645 006 5200	-
VR3421	10K Low Separation	645 001 9319	-
	10K Low Separation	645 006 5095	-

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.
Oscilloscope	SC3100
Generators	
RGB	CM2000
Multiburst Signal	VG91
Color Bar	VG91
TV Stereo	VG91
Digital VOM	SC3100
Frequency Meter	SC3100
Hi-Voltage Probe	HP200
Accessory Probes	TP212
Isolation Transformer	PR57
Capacitance Analyzer	LC101, LC102
CRT Analyzer	CR70
AC Leakage Tester	PR57
Inductance Analyzer	LC101, LC102
Flyback Yoke Tester	TVA92
TV Stereo Power Monitor	SR68, PA81
Field Strength Meter	SL750
Transistor Tester	TF46
Video Analyzer	VG91, TVA92

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.
L101	-	610 032 9386
L164	15µH	645 003 9713
	15µH	645 016 2657
L201	10µH	610 031 3873
	10µH	645 016 2534
L203	56µH	610 029 7784
	56µH	645 008 0234
L401	-	610 032 4381
	-	610 032 4404
L402	Ferrite Bead	610 031 9998
L404	120µH	645 008 2771
	120µH	645 016 2626
# L413	Horizontal Linearity	610 000 0858
	Horizontal Linearity	610 000 0872
L801	5.6µH	645 008 2894
	5.6µH	645 016 3104
L811	5.6µH	645 008 0180
L822, 23	5.6µH	645 008 2894
	5.6µH	645 016 3104
L826	120µH	645 008 2771
	120µH	645 016 2626
L841, 42	5.6µH	645 008 2894
	5.6µH	645 016 3104
# L901	Degaussing	645 002 1664
	Degaussing	645 002 1671
# L902	Yoke Horiz 1.4mH Vert 17.3mH	645 000 1147
L1901	5.6µH	645 008 2894
	5.6µH	645 016 3104
# LF601	Line Filter	610 031 5938
	Line Filter	610 223 1212
# T016, 36	Audio Output	645 009 0035
T131	Sound	610 037 7615
T141	IF 45.75MHz	645 000 5237
T151	Oscillator 45.75MHz	645 000 5206
T161	SIF	610 037 6564
T401	Horizontal Driver	610 000 1138
	Horizontal Driver	610 223 1663
# T402 (1)	Horizontal Output	645 000 0898
	Horizontal Output	645 004 7435
# T1001	Pulse	645 011 6032
	Pulse	645 011 8081
	Pulse	610 229 9007

For SAFETY use only equivalent replacement part.
(1) Focus and screen controls are part of T402.

CABINET PARTS

Item	Mfr. Part No.
Badge - SANYO	610 236 9274
Button Assembly	610 245 5816
Cabinet Front Assembly	610 254 3469
Cabinet Rear	610 245 2358
Decoration Sheet - Front	610 258 9856
Decoration Sheet - Rear	610 251 5695
Remote Transmitter	
Battery Cover	610 254 0550
Battery Cover	610 254 0581

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
# A101 (1)(2)	Tuner	645 012 2156	UHF/VHF, 1AV4F1BAM0100
# A101H	Block	645 011 9682	Antenna
A1901	Receiver	645 007 1546	Remote
# F601	Fuse	423 018 8101	4Amp, 125V, Fast Acting
	Fuse	423 007 1601	4Amp, 125V, Fast Acting
	Fuse	423 007 1809	4Amp, 125V, Fast Acting
# K701	Socket	610 010 4181	CRT
K1001	Jack	645 001 6097	Assembly
# Q901	CRT	413 007 7109	A68AGL12X
# RL601	Relay	645 000 4155	Power
	Relay	645 011 2713	Power
	Relay	645 015 8629	Power
SP901, 02	Speaker	610 055 6614	3" Round, 8 Ohms, 2W
SW701	Switch	610 011 4227	Service/Normal
SW1901	Switch	645 004 3062	Power
SW1902	Switch	645 004 3062	Volume Up
SW1903	Switch	645 004 3062	Volume Down
SW1904	Switch	645 004 3062	Channel Up
SW1905	Switch	645 004 3062	Channel Down
SW1906	Switch	645 004 3062	Menu (Preset)
# W601	Line Cord	610 222 9639	AC, Polarized
# W902	Connector	610 246 1633	CRT Shield
X141	Filter	421 001 9104	SAW
X153	Filter	610 015 2946	4.5MHz
X161	Trap	610 015 3066	4.5MHz
	Trap	610 015 3059	4.5MHz
X251	Crystal	610 204 4195	3.58MHz
	Crystal	610 245 9746	3.58MHz
	Crystal	610 012 0655	3.58MHz
X401	Crystal	610 012 2970	503.5kHz
	Crystal	645 003 4107	503kHz
X801	Crystal	645 000 5299	12MHz
	Fuse Holder	610 012 4356	For F601 (2 Used)
	Fuse Holder	645 006 4760	For F601 (2 Used)
	Magnet	610 217 7794	Purity/Convergence
	PC Board (1)	610 256 2217	CRT
	PC Board (1)	610 258 4769	Main
	PC Board (1)	610 259 0012	Remote Transmitter
	PC Board (1)	610 259 0029	Remote Transmitter
	Transmitter	645 012 6420	Remote
	Transmitter	645 012 6406	Remote
	Wedge	610 117 0154	Yoke Positioning (3 Used)
	Wedge	610 117 7924	Yoke Positioning (3 Used)

For SAFETY use only equivalent replacement part.
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.
(2) Contact TNI Electronics for replacement; order by part number on tuner.



Created with pride by the employees
of Howard W. Sams & Company.

J. Barker, N. Beck, A. Bonner,
B. Buchanan, T. Clensy,
G. Farrell, B. Fink, M. Herkless,
J. Kocho, F. Malek, B. Medaris,
R. Raus, B. Skinner

PARTS LIST

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.

- Custom Components Corporation (Chek-A-Color)
- NTE Electronics, Inc. (NTE)
- Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
- Sencore, Inc.
- Terrell & Nobis (TNI Electronics)
- Thomson Consumer Electronics, Inc. (SK, TCE)

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D102	RD5.1EB2	407 056 8002	NTE5010A	ECG5010A	SK5A1
	RD5.1EB3	407 056 8200	NTE5010A	ECG5010A	SK5A1
	UZ-5.1BCB	407 151 8402	-	-	-
	UZ-5.1BCC	407 163 8209	-	-	-
D201	DS442X	407 005 4505	NTE519	ECG519	SK3100
	GMA01	407 007 9904	NTE519	ECG519	SK3100
	1N4148	408 008 2406	NTE519	ECG519	SK3100
	1SS133	407 012 4406	NTE519	ECG519	SK3100
	1SS176	407 012 5809	NTE177	ECG177	SK9091
	1S1555	407 013 1206	NTE177	ECG177	SK9091
	1S2076	407 013 4207	NTE177	ECG177	SK9091
	1S2473	407 013 7109	NTE177	ECG177	SK9091
D351, 61	DS442X	407 005 4505	NTE519	ECG519	SK3100
	GMA01	407 007 9904	NTE519	ECG519	SK3100
	1N4148	408 008 2406	NTE519	ECG519	SK3100
	1SS133	407 012 4406	NTE519	ECG519	SK3100
	1SS176	407 012 5809	NTE177	ECG177	SK9091
	1S1555	407 013 1206	NTE177	ECG177	SK9091
	1S2076	407 013 4207	NTE177	ECG177	SK9091
	1S2473	407 013 7109	NTE177	ECG177	SK9091
	HZ11B2L	407 158 1307	NTE5020A	ECG5020A	SK11A
	RD15EB1	407 054 5706	-	-	-
D421, 22	UZ-15BCA	407 163 8100	-	-	-
	DS442X	407 005 4505	NTE519	ECG519	SK3100
	GMA01	407 007 9904	NTE519	ECG519	SK3100
	1N4148	408 008 2406	NTE519	ECG519	SK3100
D428	1SS133	407 012 4406	NTE519	ECG519	SK3100
	1SS176	407 012 5809	NTE177	ECG177	SK9091
	1S1555	407 013 1206	NTE177	ECG177	SK9091
	1S2076	407 013 4207	NTE177	ECG177	SK9091
	1S2473	407 013 7109	NTE177	ECG177	SK9091
	ERA18-04	407 124 6404	NTE552	ECG552	SK9000
	ES1	407 007 6606	NTE552	ECG552	SK9000
	RMPG06G	407 124 5506	NTE552	ECG552	SK9000
	TVR1G	407 011 4407	NTE552	ECG552	SK9000
	ERA18-04	407 124 6404	NTE552	ECG552	SK9000
D481	ES1	407 007 6606	NTE552	ECG552	SK9000
	RMPG06G	407 124 5506	NTE552	ECG552	SK9000
	EU2	407 007 7603	NTE552	ECG552	SK9000
	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
	1N4002ID	408 009 9404	NTE116	ECG116	SK3311
	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
D482	1N4002ID	408 009 9404	NTE116	ECG116	SK3311
	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
D483	1N4002ID	408 009 9404	NTE116	ECG116	SK3311
	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06G	407 124 5506	NTE552	ECG552	SK9000
	EU2	407 007 7603	NTE552	ECG552	SK9000
D484, 86	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
	1N4002ID	408 009 9404	NTE116	ECG116	SK3311
D487, 91	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
	1N4002ID	408 009 9404	NTE116	ECG116	SK3311
# D602 Thru	EM2B	407 005 7605	NTE125	ECG125	SK3081
	GP15G	408 008 8606	NTE125	ECG125	SK3081
	1S1887A	407 013 3200	NTE552	ECG552	SK9000
	ERA15-02	407 005 8602	NTE552	ECG552	SK9000
# D621	MPG06D	407 088 6502	NTE552	ECG552	SK9000
	S5277B	407 011 3004	NTE552	ECG552	SK9000
	1N4002ID	408 009 9404	NTE552	ECG552	SK9000
	DS442X	407 005 4505	NTE519	ECG519	SK3100
D622	GMA01	407 007 9904	NTE519	ECG519	SK3100
	1N4148	408 008 2406	NTE519	ECG519	SK3100
	1SS133	407 012 4406	NTE519	ECG519	SK3100
	1SS176	407 012 5809	NTE177	ECG177	SK9091
	1S1555	407 013 1206	NTE177	ECG177	SK9091
	1S2076	407 013 4207	NTE177	ECG177	SK9091
	1S2473	407 013 7109	NTE177	ECG177	SK9091
	DS442X	407 005 4505	NTE519	ECG519	SK3100
	GMA01	407 007 9904	NTE519	ECG519	SK3100
	1N4148	408 008 2406	NTE519	ECG519	SK3100

SEMICONDUCTORS continued

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.	
Q016, 36, 43	2SC536	-	NTE85	ECG85	SK3245	
	2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122	
	2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122	
	2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122	
	2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A	
	2SC1815-O	405 012 2101	NTE85	ECG85	SK3124A	
	2SC1815-Y	405 012 2309	NTE85	ECG85	SK3124A	
	2SC536-E-NP	405 019 1909	NTE85	ECG85	SK3245	
	2SC536-F-NP	405 019 2708	NTE85	ECG85	SK3245	
	2SC536-G-NP	405 019 3804	NTE85	ECG85	SK3245	
	2SC945A-PA	405 020 7501	NTE85	ECG85	SK3124A	
	2SC945A-QA	405 020 7709	NTE85	ECG85	SK3124A	
	2SC945A-RA	405 020 7907	NTE85	ECG85	SK3124A	
	Q161	2SA1015Y	-	NTE290A	ECG290A	SK9132
2SA1015-O(SAN)		405 001 7407	NTE290A	ECG290A	SK9132	
2SA1015-Y(SAN)		405 001 7605	NTE290A	ECG290A	SK9132	
2SA564A-Q(CU)		405 004 3109	NTE290A	ECG290A	SK3932	
2SA564A-R(CU)		405 004 3208	NTE290A	ECG290A	SK3932	
2SA608-E-CTV-NP		405 004 4205	NTE290A	ECG290A	SK3114A	
2SA608-F-CTV-NP		405 004 4809	NTE290A	ECG290A	SK3114A	
2SA933S-Q		405 006 1707	NTE290A	ECG290A	SK9132	
2SA933S-R		405 006 1806	NTE290A	ECG290A	SK9132	
Q202		2SA1015Y	-	NTE290A	ECG290A	SK9132
		2SA1015-O(SAN)	405 001 7407	NTE290A	ECG290A	SK9132
		2SA1015-Y(SAN)	405 001 7605	NTE290A	ECG290A	SK9132
		2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932
		2SA564A-R(CU)	405 004 3208	NTE290A	ECG290A	SK3932
	2SA608-E-CTV-NP	405 004 4205	NTE290A	ECG290A	SK3114A	
	2SA608-F-CTV-NP	405 004 4809	NTE290A	ECG290A	SK3114A	
	2SA933S-Q	405 006 1707	NTE290A	ECG290A	SK9132	
	2SA933S-R	405 006 1806	NTE290A	ECG290A	SK9132	
	Q203	2SC536	-	NTE85	ECG85	SK3245
		2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122
		2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122
		2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122
		2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A
2SC1815-O		405 012 2101	NTE85	ECG85	SK3124A	
2SC1815-Y		405 012 2309	NTE85	ECG85	SK3124A	
2SC536-E-NP		405 019 1909	NTE85	ECG85	SK3245	
2SC536-F-NP		405 019 2708	NTE85	ECG85	SK3245	
2SC536-G-NP		405 019 3804	NTE85	ECG85	SK3245	
2SC945A-PA		405 020 7501	NTE85	ECG85	SK3124A	
2SC945A-QA		405 020 7709	NTE85	ECG85	SK3124A	
2SC945A-RA		405 020 7907	NTE85	ECG85	SK3124A	
Q281		2SA1015Y	-	NTE290A	ECG290A	SK9132
	2SA1015-O(SAN)	405 001 7407	NTE290A	ECG290A	SK9132	
	2SA1015-Y(SAN)	405 001 7605	NTE290A	ECG290A	SK9132	
	2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932	
	2SA564A-R(CU)	405 004 3208	NTE290A	ECG290A	SK3932	
	2SA608-E-CTV-NP	405 004 4205	NTE290A	ECG290A	SK3114A	
	2SA608-F-CTV-NP	405 004 4809	NTE290A	ECG290A	SK3114A	
	2SA933S-Q	405 006 1707	NTE290A	ECG290A	SK9132	
	2SA933S-R	405 006 1806	NTE290A	ECG290A	SK9132	
	2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932	
	Q371, 72	2SA1015Y	-	NTE290A	ECG290A	SK9132
		2SA1015-O(SAN)	405 001 7407	NTE290A	ECG290A	SK9132
		2SA1015-Y(SAN)	405 001 7605	NTE290A	ECG290A	SK9132
		2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932
2SA564A-R(CU)		405 004 3208	NTE290A	ECG290A	SK3932	
2SA608-E-CTV-NP		405 004 4205	NTE290A	ECG290A	SK3114A	
2SA608-F-CTV-NP		405 004 4809	NTE290A	ECG290A		

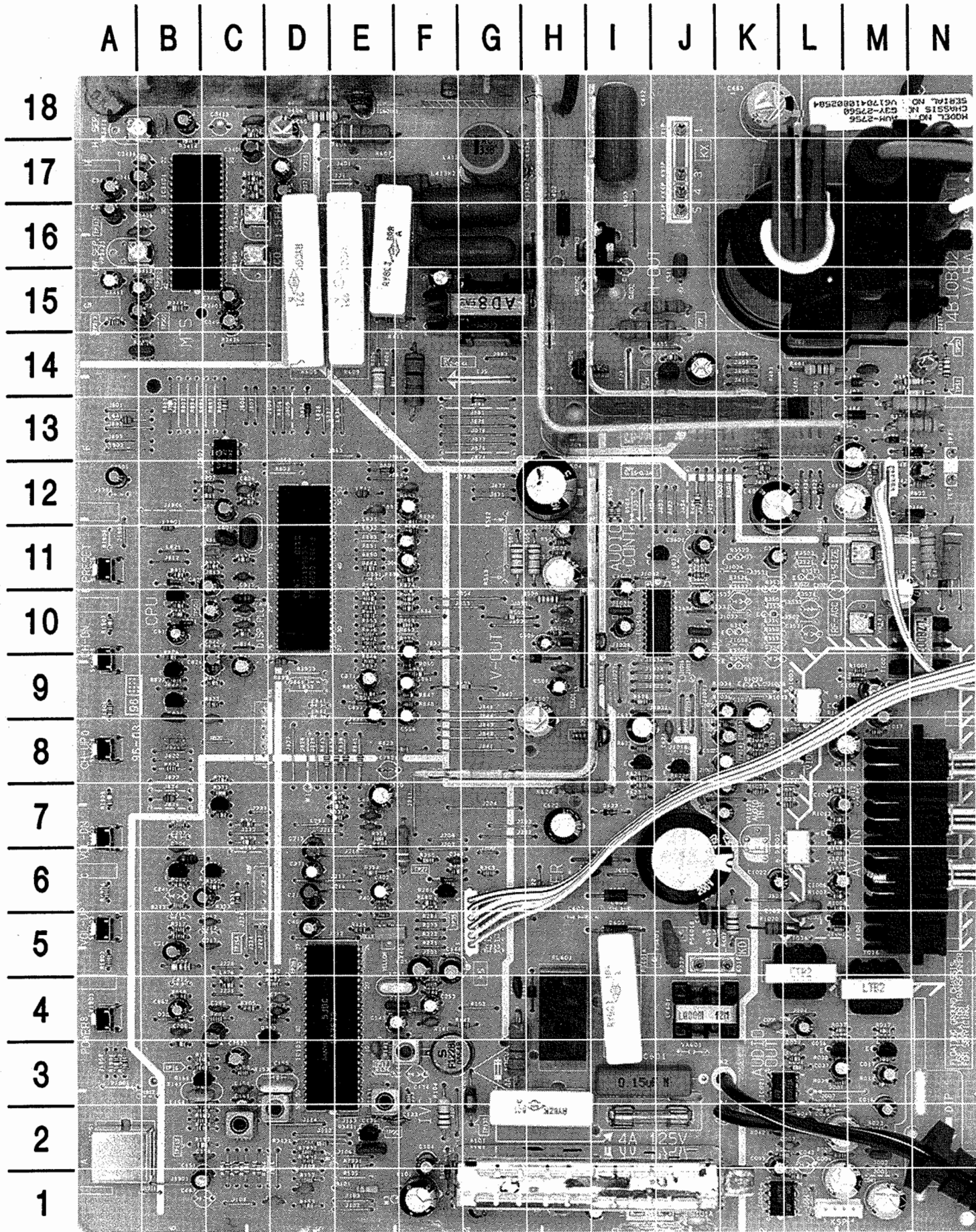
Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q401	2SC2271D	-	NTE399	ECG399	SK9352
	2SC2271-D-CTV	405 013 6207	NTE399	ECG399	SK9352
	2SC2271-E-CTV	405 013 6306	NTE399	ECG399	SK9352
# Q402	2SD1879	-	NTE2331	ECG2331	SK10088
	2SD1879-CTV-YB	405 082 2407	NTE2331	ECG2331	SK10088
Q491	2SD400F	-	NTE382	ECG382	SK3849
	2SD400-E-MP	405 023 5009	NTE382	ECG382	SK3849
	2SD400-F-MP	405 023 5306	NTE382	ECG382	SK3849
Q621, 22	2SC536	-	NTE85	ECG85	SK3245
	2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122
	2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122
	2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122
	2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A
	2SC1815-O	405 012 2101	NTE85	ECG85	SK3124A
	2SC1815-Y	405 012 2309	NTE85	ECG85	SK3124A
	2SC536-E-NP	405 019 1909	NTE85	ECG85	SK3245
	2SC536-F-NP	405 019 2708	NTE85	ECG85	SK3245
	2SC536-G-NP	405 019 3804	NTE85	ECG85	SK3245
	2SC945A-PA	405 020 7501	NTE85	ECG85	SK3124A
	2SC945A-QA	405 020 7709	NTE85	ECG85	SK3124A
	2SC945A-RA	405 020 7907	NTE85	ECG85	SK3124A
Q623	2SA1015Y	-	NTE290A	ECG290A	SK9132
	2SA1015-O(SAN)	405 001 7407	NTE290A	ECG290A	SK9132
	2SA1015-Y(SAN)	405 001 7605	NTE290A	ECG290A	SK9132
	2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932
	2SA564A-R(CU)	405 004 3208	NTE290A	ECG290A	SK3932
	2SA608-E-CTV-NP	405 004 4205	NTE290A	ECG290A	SK3114A
	2SA608-F-CTV-NP	405 004 4809	NTE290A	ECG290A	SK3114A
	2SA933S-Q	405 006 1707	NTE290A	ECG290A	SK9132
	2SA933S-R	405 006 1806	NTE290A	ECG290A	SK9132
Q701, 03, 05	2SC2621E	-	NTE157	ECG157	SK3747
	2SC3620(LB-SAN-1)	406 000 3605	NTE157	ECG157	SK3747
	2SC2621-C-RA	405 066 4304	NTE157	ECG157	SK3747
	2SC2621-D-RA	405 041 6507	NTE157	ECG157	SK3747
	2SC2621-E-RA	405 041 6705	NTE157	ECG157	SK3747
	2SC2688(1)-K	405 066 9903	NTE157	ECG157	SK3747
	2SC2688(1)-L	405 067 0008	NTE157	ECG157	SK3747
	2SC2688(1)-M	405 067 0107	NTE157	ECG157	SK3747
Q831	2SA1015Y	-	NTE290A	ECG290A	SK9132
	2SA1015-O(SAN)	405 001 7407	NTE290A	ECG290A	SK9132
	2SA1015-Y(SAN)	405 001 7605	NTE290A	ECG290A	SK9132
	2SA564A-Q(CU)	405 004 3109	NTE290A	ECG290A	SK3932
	2SA564A-R(CU)	405 004 3208	NTE290A	ECG290A	SK3932
	2SA608-E-CTV-NP	405 004 4205	NTE290A	ECG290A	SK3114A
	2SA608-F-CTV-NP	405 004 4809	NTE290A	ECG290A	SK3114A
	2SA933S-Q	405 006 1707	NTE290A	ECG290A	SK9132
	2SA933S-R	405 006 1806	NTE290A	ECG290A	SK9132
Q881, 82	2SC536	-	NTE85	ECG85	SK3245
	2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122
	2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122
	2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122
	2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A
	2SC1815-O	405 012 2101	NTE85	ECG85	SK3124A
	2SC1815-Y	405 012 2309	NTE85	ECG85	SK3124A
	2SC536-E-NP	405 019 1909	NTE85	ECG85	SK3245
	2SC536-F-NP	405 019 2708	NTE85	ECG85	SK3245
	2SC536-G-NP	405 019 3804	NTE85	ECG85	SK3245
	2SC945A-PA	405 020 7501	NTE85	ECG85	SK3124A
	2SC945A-QA	405 020 7709	N		

For SAFETY use only equivalent replacement part.

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.	
Q1001, 02, 03	2SC536	-	NTE85	ECG85	SK3245	
	2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122	
	2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122	
	2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122	
	2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A	
	2SC1815-O	405 012 2101	NTE85	ECG85	SK3124A	
	2SC1815-Y	405 012 2309	NTE85	ECG85	SK3124A	
	2SC536-E-NP	405 019 1909	NTE85	ECG85	SK3245	
	2SC536-F-NP	405 019 2708	NTE85	ECG85	SK3245	
	2SC536-G-NP	405 019 3804	NTE85	ECG85	SK3245	
	2SC945A-PA	405 020 7501	NTE85	ECG85	SK3124A	
	2SC945A-QA	405 020 7709	NTE85	ECG85	SK3124A	
	2SC945A-RA	405 020 7907	NTE85	ECG85	SK3124A	
	Q1021	2SC536	-	NTE85	ECG85	SK3245
2SC1740-R		405 011 7404	NTE85	ECG85	SK3122	
2SC1740-S		405 011 7503	NTE85	ECG85	SK3122	
2SC1740S-R		405 011 8500	NTE85	ECG85	SK3122	
2SC1740S-S		405 011 8609	NTE85	ECG85	SK3122	
2SC1815-GR		405 012 2002	NTE85	ECG85	SK3124A	
2SC536-F-NP		405 019 2708	NTE85	ECG85	SK3245	
2SC536-G-NP		405 019 3804	NTE85	ECG85	SK3245	
2SC945A-PA		405 020 7501	NTE85	ECG85	SK3124A	
Q3431		2SC536	-	NTE85	ECG85	SK3245
		2SC1740S-Q	405 011 8401	NTE85	ECG85	SK3122
		2SC1740S-R	405 011 8500	NTE85	ECG85	SK3122
		2SC1740S-S	405 011 8609	NTE85	ECG85	SK3122
		2SC1815-GR	405 012 2002	NTE85	ECG85	SK3124A
	2SC1815-O	405 012 2101	NTE85	ECG85	SK3124A	
	2SC1815-Y	405 012 2309	NTE85	ECG85	SK3124A	
	2SC536-E-NP	405 019 1909	NTE85	ECG85	SK3245	
	2SC536-F-NP	405 019 2708	NTE85	ECG85	SK3245	
	2SC536-G-NP	405 019 3804	NTE85	ECG85	SK3245	
	2SC945A-PA	405 020 7501	NTE85	ECG85	SK3124A	
	2SC945A-QA	405 020 7709	NTE85	ECG85	SK3124A	
	2SC945A-RA	405 020 7907	NTE85	ECG85	SK3124A	
	Q3601	2SC536	-	NTE85	ECG85	SK3245
2SC1740S-Q		405 011 8401	NTE85	ECG85	SK3122	
2SC1740S-R		405 011 8500	NTE85	ECG85	SK3122	
2SC1740S-S		405 011 8609	NTE85	ECG85	SK3122	
2SC1815-GR		405 012 2002	NTE85	ECG85	SK3124A	
2SC1815-O		405 012 2101	NTE85	ECG85	SK3124A	
2SC1815-Y		405 012 2309	NTE85	ECG85	SK3124A	
2SC536-E-NP		405 019 1909	NTE85	ECG85	SK3245	
2SC536-F-NP		405 019 2708	NTE85	ECG85	SK3245	
2SC536-G-NP		405 019 3804	NTE85	ECG85	SK3245	
2SC945A-PA		405 020 7501	NTE85	ECG85	SK3124A	
2SC945A-QA		405 020 7709	NTE85	ECG85	SK3124A	
2SC945A-RA		405 020 7907	NTE85	ECG85	SK3124A	

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MAIN BOARD



MAIN BOARD, GRIDTRACE LOCATION GUIDE

A101	G-2	C418	G-18	C1008	M-9	D834	D-13	Q1003	M-9	R374	C-7	R821	C-9	R1032	K-8
A1901	A-2	C421	E-7	C1020	L-6	D836	G-13	Q1021	K-8	R375	C-7	R822	C-9	R1037	K-8
C001	K-7	C473	E-16	C1022	K-6	D843	B-11	Q3431	E-2	R401	F-14	R823	F-8	R1038	K-8
C003	K-2	C482	M-13	C1026	K-8	D1001	L-6	Q3601	J-11	R402	F-6	R826	B-9	R1901	A-3
C006	L-1	C483	K-18	C1027	K-8	D1003	L-8	R001	L-3	R403	E-6	R827	B-9	R1902	A-3
C007	M-2	C484	N-12	C1031	K-9	D1011	N-9	R002	L-1	R404	E-14	R828	G-9	R1903	A-5
C008	K-4	C486	K-13	C1032	L-8	D1012	M-9	R003	L-2	R406	E-15	R831	C-11	R1904	A-6
C016	M-2	C487	K-12	C1901	A-12	D1021	L-11	R016	M-3	R407	F-17	R833	N-13	R1905	A-7
C017	M-3	C489	M-12	C3401	C-15	F601	I-2	R017	M-4	R411	E-15	R834	B-8	R1906	A-9
C021	K-7	C491	J-14	C3402	C-15	IC001	L-1	R018	M-3	R418	G-17	R836	E-8	R1907	A-10
C022	L-3	C493	N-14	C3404	D-17	IC021	L-3	R019	M-4	R421	N-12	R837	E-7	R3401	C-15
C023	K-2	C494	M-12	C3406	D-17	IC101	E-2	R021	L-4	R422	N-12	R838	E-8	R3402	C-18
C026	L-2	C496	M-10	C3407	C-18	IC481	L-13	R022	L-3	R423	K-12	R839	E-7	R3403	C-17
C027	M-2	C501	H-11	C3408	C-17	IC501	H-9	R023	M-2	R426	E-5	R841	E-8	R3404	C-17
C036	L-4	C502	H-10	C3409	B-18	IC601	G-18	R036	L-4	R428	M-12	R842	E-7	R3406	C-17
C037	L-3	C503	H-11	C3411	A-15	IC801	D-12	R037	L-4	R481	L-14	R843	D-8	R3407	C-18
C041	M-1	C504	H-12	C3412	A-17	IC802	C-13	R038	L-3	R482	N-13	R846	E-9	R3414	B-17
C101	F-1	C505	H-10	C3413	C-18	IC3401	C-15	R039	L-3	R483	K-13	R847	F-9	R3418	B-17
C102	G-1	C506	H-10	C3414	B-18	IC3601	I-10	R041	L-2	R484	M-13	R848	F-9	R3421	B-15
C103	H-1	C507	H-9	C3416	B-17	K1001	M-5	R042	K-2	R486	I-15	R850	E-9	R3424	A-15
C104	F-2	C508	H-9	C3417	B-17	KB	M-12	R043	L-2	R488	N-11	R851	C-4	R3426	B-14
C131	E-2	C509	H-9	C3418	B-16	KD	K-5	R101	E-1	R489	N-11	R853	E-10	R3431	D-2
C133	E-2	C511	J-16	C3419	A-16	KS	G-5	R103	H-1	R490	J-14	R856	F-10	R3432	D-2
C141	E-3	C556	F-9	C3422	A-15	KSP	L-1	R104	F-2	R491	N-14	R858	B-4	R3601	J-11
C142	F-4	C601	I-3	C3423	A-15	KX	J-18	R106	E-14	R492	N-13	R860	F-9	R3602	J-11
C143	E-4	C604	I-6	C3424	B-14	L101	G-2	R111	B-3	R493	N-14	R861	E-10	R7931	E-2
C144	F-5	C605	J-5	C3426	B-14	L164	B-3	R112	B-3	R494	N-14	R862	F-10	R7932	D-2
C150	C-11	C606	J-6	C3436	A-16	L201	D-4	R133	F-3	R496	J-12	R864	E-10	RL601	H-4
C151	B-1	C607	D-18	C3531	K-11	L203	B-6	R141	E-3	R497	M-13	R866	F-9	SW1901	A-4
C152	I-1	C621	G-4	C3601	J-11	L401	H-15	R142	G-4	R501	G-10	R867	E-10	SW1902	A-5
C153	D-1	C622	H-7	C3602	I-10	L402	H-16	R151	C-1	R502	H-10	R868	F-10	SW1903	A-7
C154	C-3	C623	I-8	C3603	I-11	L404	E-7	R152	D-1	R503	I-12	R869	F-10	SW1904	A-8
C155	D-3	C624	J-8	C3604	I-10	L413	G-17	R153	D-1	R504	I-12	R871	E-10	SW1905	A-9
C156	B-2	C801	C-11	C3606	J-10	L801	C-12	R155	C-1	R505	H-11	R872	D-4	SW1906	A-11
C158	D-1	C802	C-12	C3607	J-10	L811	C-10	R156	C-1	R506	H-11	R873	E-10	T016	M-4
C161	C-3	C806	C-12	C3608	J-10	L822	D-9	R157	B-2	R507	G-11	R874	F-10	T036	L-5
C202	D-4	C811	B-10	C7922	C-3	L823	B-7	R159	C-3	R508	H-10	R876	E-10	T131	E-3
C203	D-4	C814	C-11	D102	F-1	L826	C-4	R161	C-1	R509	G-11	R877	D-4	T141	F-3
C205	C-4	C818	C-10	D201	B-4	L841	A-13	R162	B-2	R511	J-15	R880	B-13	T151	D-2
C206	B-6	C819	C-10	D351	E-6	L842	E-12	R163	B-2	R601	I-4	R881	E-10	T161	C-2
C208	B-4	C821	C-9	D361	F-6	L1901	B-11	R164	B-2	R602	K-5	R882	F-11	T401	G-15
C214	B-5	C826	C-9	D421	K-12	LF601	J-4	R201	B-3	R604	E-18	R884	E-11	T402	L-16
C215	D-6	C827	C-10	D422	L-12	PS601	J-5	R202	C-4	R605	E-18	R886	F-11	T1001	N-10
C216	D-6	C829	C-11	D428	M-13	Q016	M-3	R204	B-5	R606	D-18	R892	F-12	TE7	N-12
C217	C-5	C831	C-8	D429	L-13	Q036	L-3	R205	C-4	R608	D-15	R893	F-12	TP7	N-13
C251	F-5	C832	B-8	D481	M-14	Q043	L-2	R207	B-7	R609	E-15	R1001	M-9	TP50	N-14
C252	E-4	C834	B-8	D482	N-13	Q161	B-3	R212	B-6	R610	E-18	R1002	L-6	TP51	N-14
C253	F-4	C851	E-9	D483	K-13	Q202	C-4	R213	B-6	R621	H-2	R1003	L-7	VC801	C-10
C324	E-7	C856	C-4	D484	M-13	Q203	B-6	R216	B-5	R622	G-3	R1004	L-8	VR141	M-10
C351	B-6	C861	F-9	D486	N-12	Q281	F-6	R217	B-5	R623	I-7	R1006	L-6	VR501	M-11
C352	C-5	C862	B-4	D487	M-13	Q371	C-6	R251	F-4	R624	H-7	R1007	L-6	VR1023	L-8
C361	F-6	C868	F-10	D491	N-11	Q372	C-7	R252	F-4	R625	I-7	R1008	L-5	VR3403	C-16
C371	D-6	C871	E-9	D501	H-9	Q401	F-15	R282	F-6	R626	I-8	R1011	L-7	VR3406	C-16
C401	D-5	C883	F-11	D602	I-5	Q402	I-16	R284	F-6	R627	J-8	R1012	L-7	VR3411	A-18
C402	E-6	C886	F-11	D603	I-6	Q491	J-14	R351	C-6	R628	I-9	R1013	L-6	VR3421	A-16
C403	E-5	C890	F-12	D604	I-6	Q621	J-8	R352	C-6	R629	I-8	R1016	L-8	X141	F-3
C404	E-7	C891	E-12	D605	J-5	Q622	I-8	R354	E-6	R804	C-13	R1017	M-8	X153	D-3
C406	F-15	C892	F-12	D621	H-4	Q623	J-7	R355	F-6	R807	C-12	R1018	M-8	X161	B-3
C407	F-15	C1001	N-9	D622	H-6	Q831	B-10	R358	E-7	R808	C-12	R1020	K-5	X251	E-4
C408	F-15	C1002	M-9	D623	I-7	Q881	B-9	R361	F-6	R811	B-11	R1022	L-7	X401	E-5
C411	I-17	C1003	M-8	D801	E-12	Q882	B-9	R363	G-6	R813	C-11	R1023	L-7	X801	C-11
C413	F-16	C1006	L-6	D802	M-11	Q1001	L-5	R371	C-7	R814	B-10	R1026	K-8		
C414	F-16	C1007	L-7	D831	B-10	Q1002	L-7	R372	C-8	R816	B-10	R1027	K-7		
								R373	C-7	R818	C-10	R1031	K-8		