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.

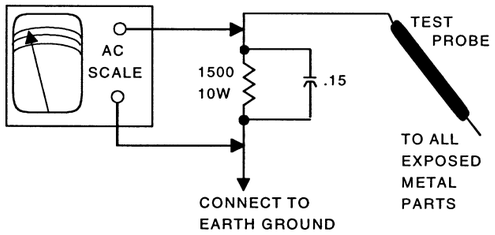
SAFETY CHECKS — FIRE AND SHOCK HAZARD

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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MODEL PT-51D30B (CHASSIS JP816)

PANASONIC

PHOTOFACT® GOLD *Technical Service Data*

INDEX

For Supplier Address, See PHOTOFACT Annual Index

PANASONIC

Model PT-51D30B (Chassis JP816)

Representative Model

Essential coverage for servicing a television receiver...

- **Schematics**
- **Component locations**
- **Parts list**

Coverage includes these additional models and chassis:

Models	Chassis
PT-51D30CB	JP816
PT-51G35B	KP816
PT-51G35CB	KP816

SAMS Technical Publishing

AUGUST 2002 PF GOLD 14

PF GOLD 14

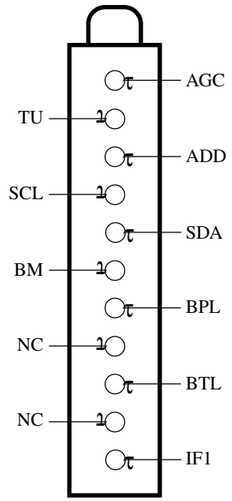
TUNER INFORMATION

MAIN TUNER VOLTAGE CHART

Pin	VHF Low Band	VHF High Band	UHF Band
AGC	4.5V	5.4V	4.5V
TU	1.0V	4.2V	4.5V
ADD	0V	0V	0V
SCL	3.4V	3.4V	3.4V
SDA	3.5V	3.5V	3.5V
BM	8.8V	8.8V	8.8V
BPL	5.0V	5.0V	5.0V
NC	0V	0V	0V
BTL	4.2V	7.4V	7.7V
NC	0V	0V	0V
IF1	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

MAIN TUNER TERMINAL GUIDE

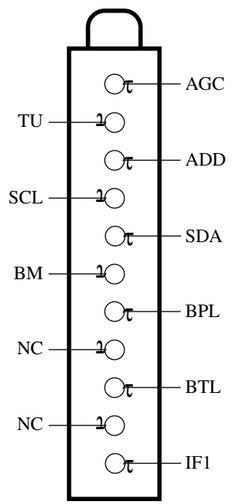


PIP TUNER VOLTAGE CHART

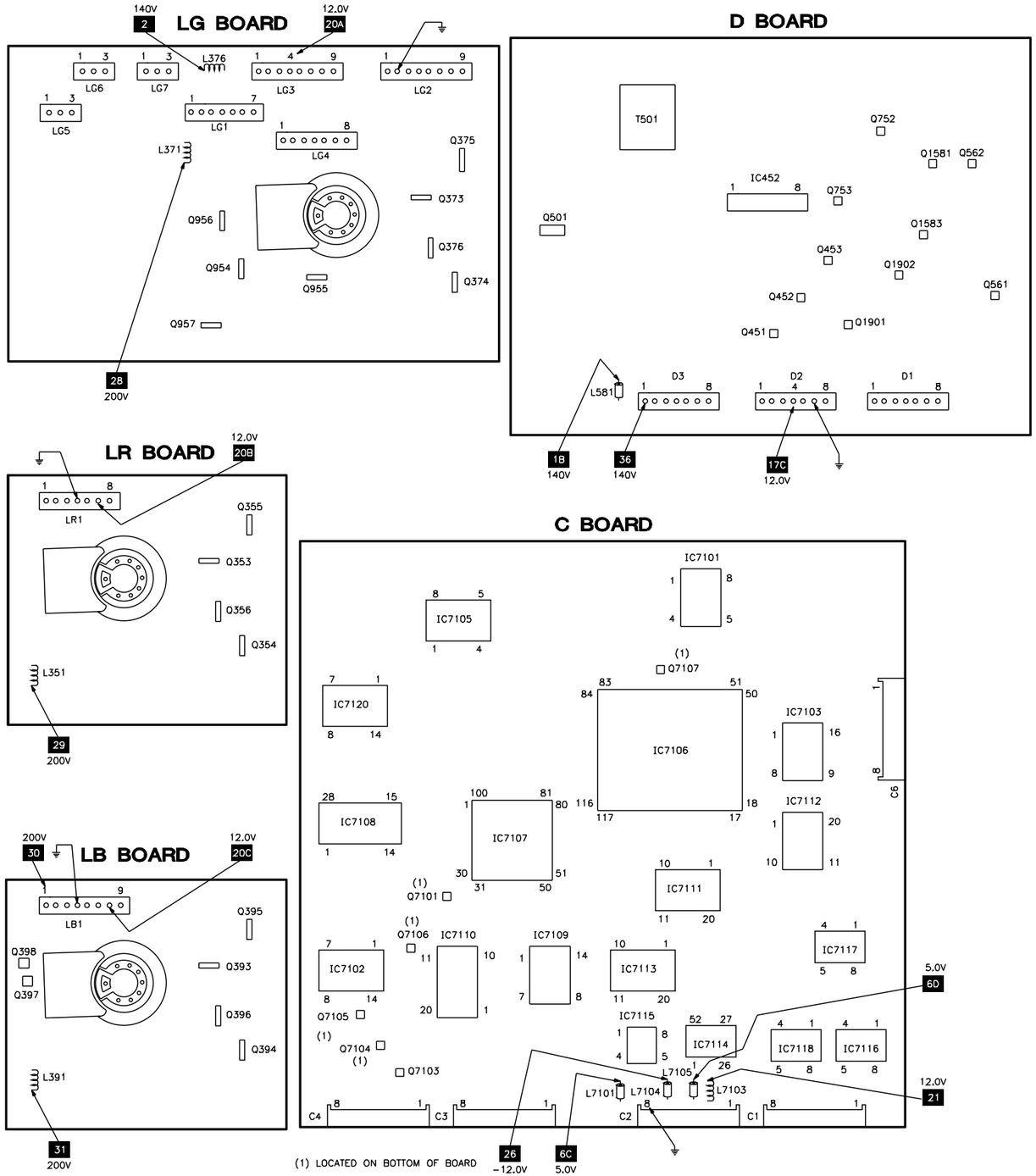
Pin	VHF Low Band	VHF High Band	UHF Band
AGC	4.5V	5.4V	4.5V
TU	1.0V	4.1V	4.6V
ADD	5.0V	5.0V	5.0V
SCL	3.4V	3.4V	3.4V
SDA	3.5V	3.5V	3.5V
BM	9.0V	9.0V	9.0V
BPL	5.0V	5.0V	5.0V
NC	0V	0V	0V
BTL	4.2V	7.3V	7.8V
NC	0V	0V	0V
IF1	0V	0V	0V

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

PIP TUNER TERMINAL GUIDE

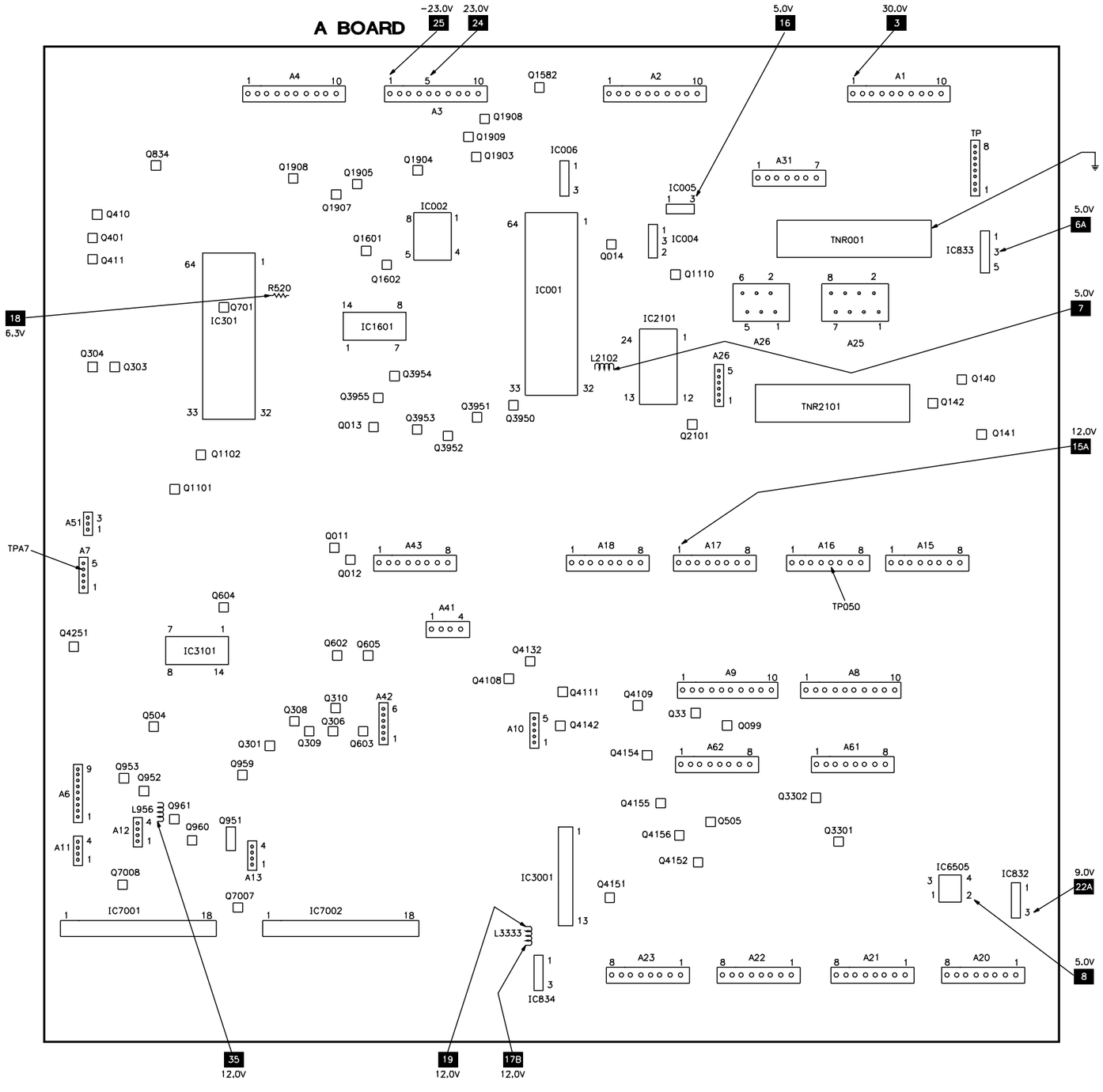


PLACEMENT CHART

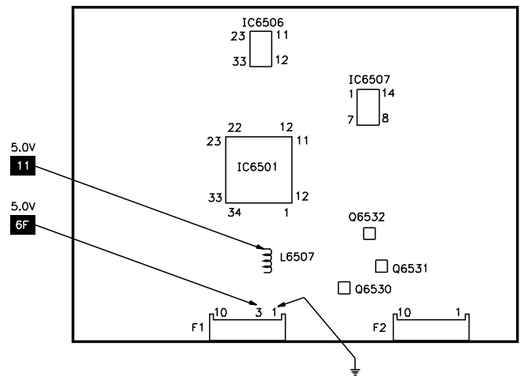


PLACEMENT CHART continued

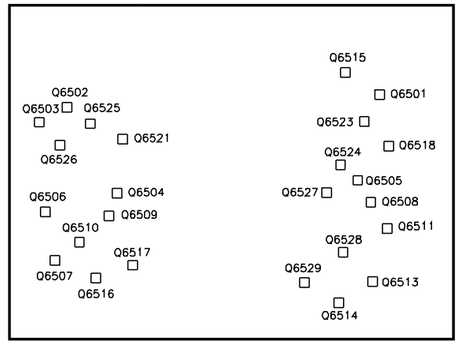
A BOARD



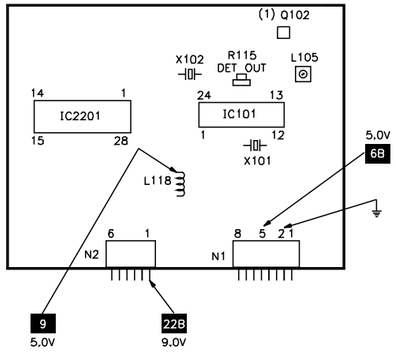
F2 BOARD - TOP VIEW



F2 BOARD - BOTTOM VIEW

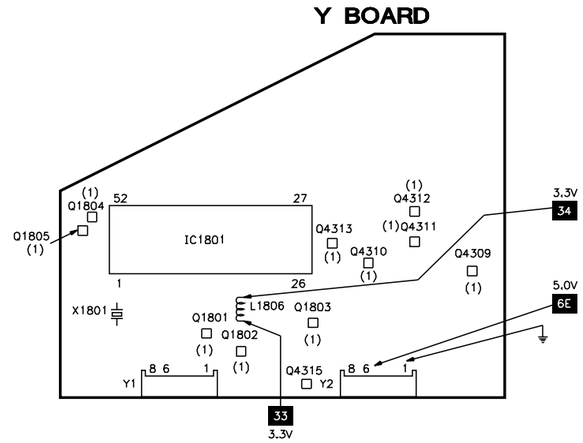


N BOARD



(1) LOCATED ON BOTTOM OF BOARD

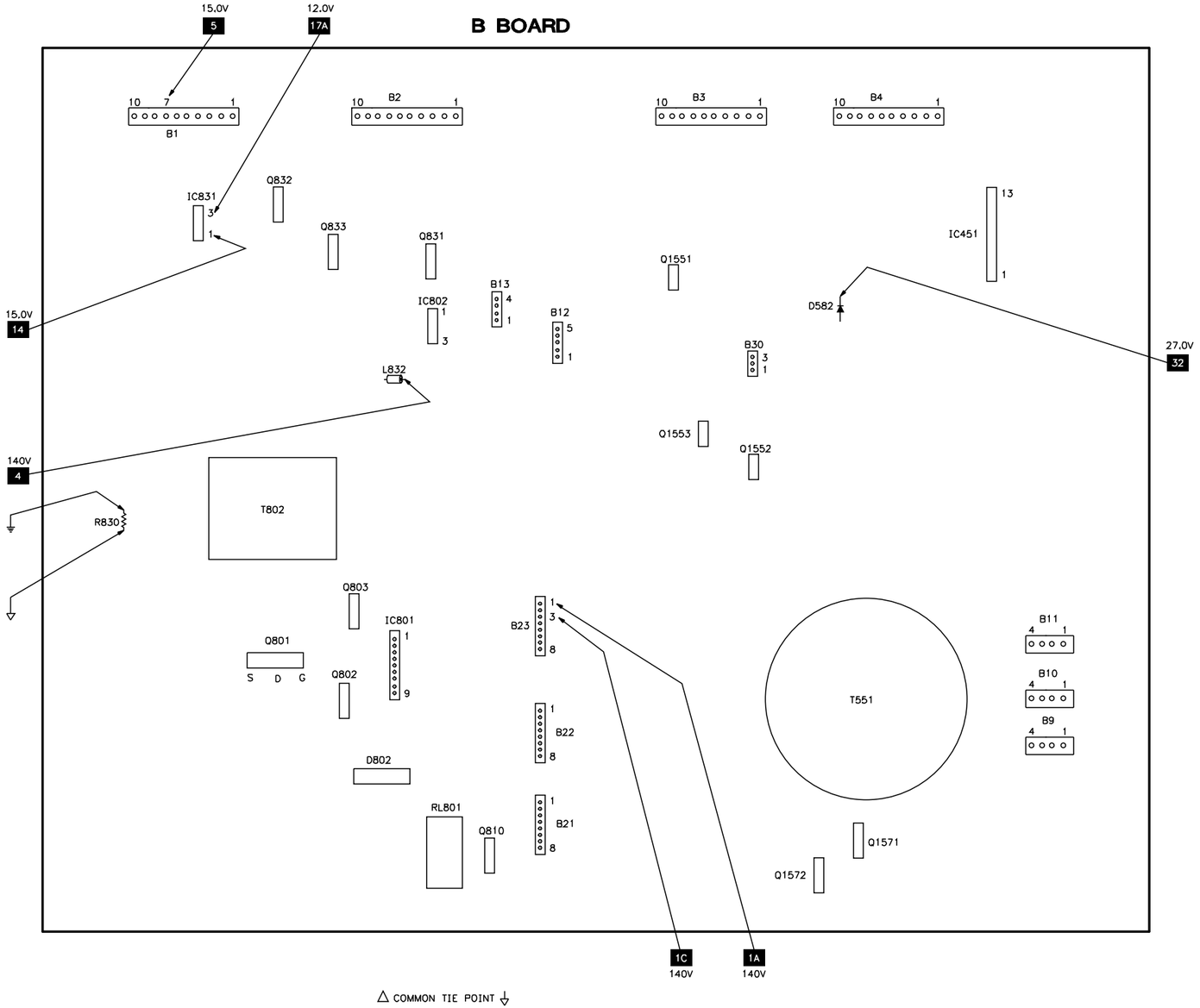
Y BOARD



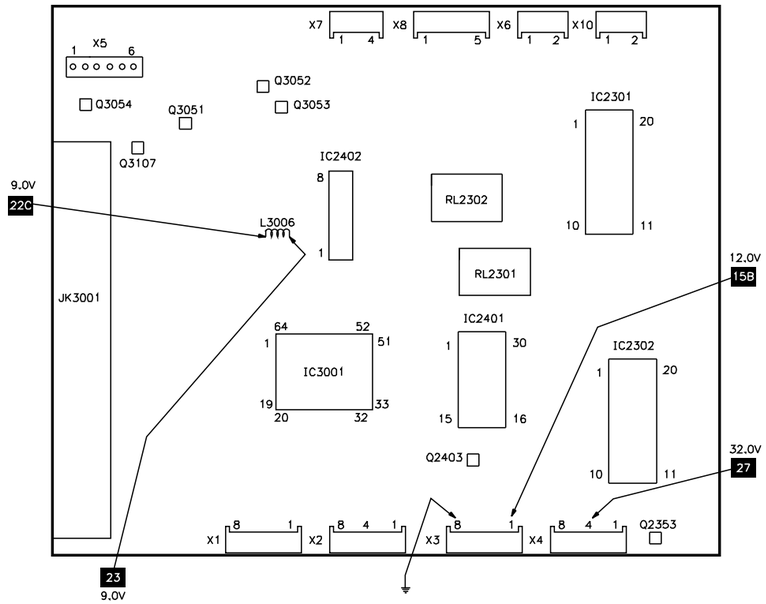
(1) LOCATED ON BOTTOM OF BOARD

PLACEMENT CHART continued

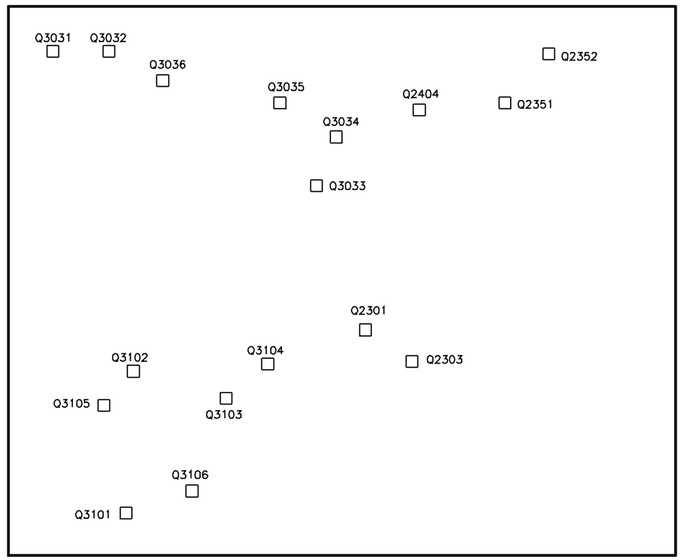
B BOARD



X BOARD - TOP VIEW

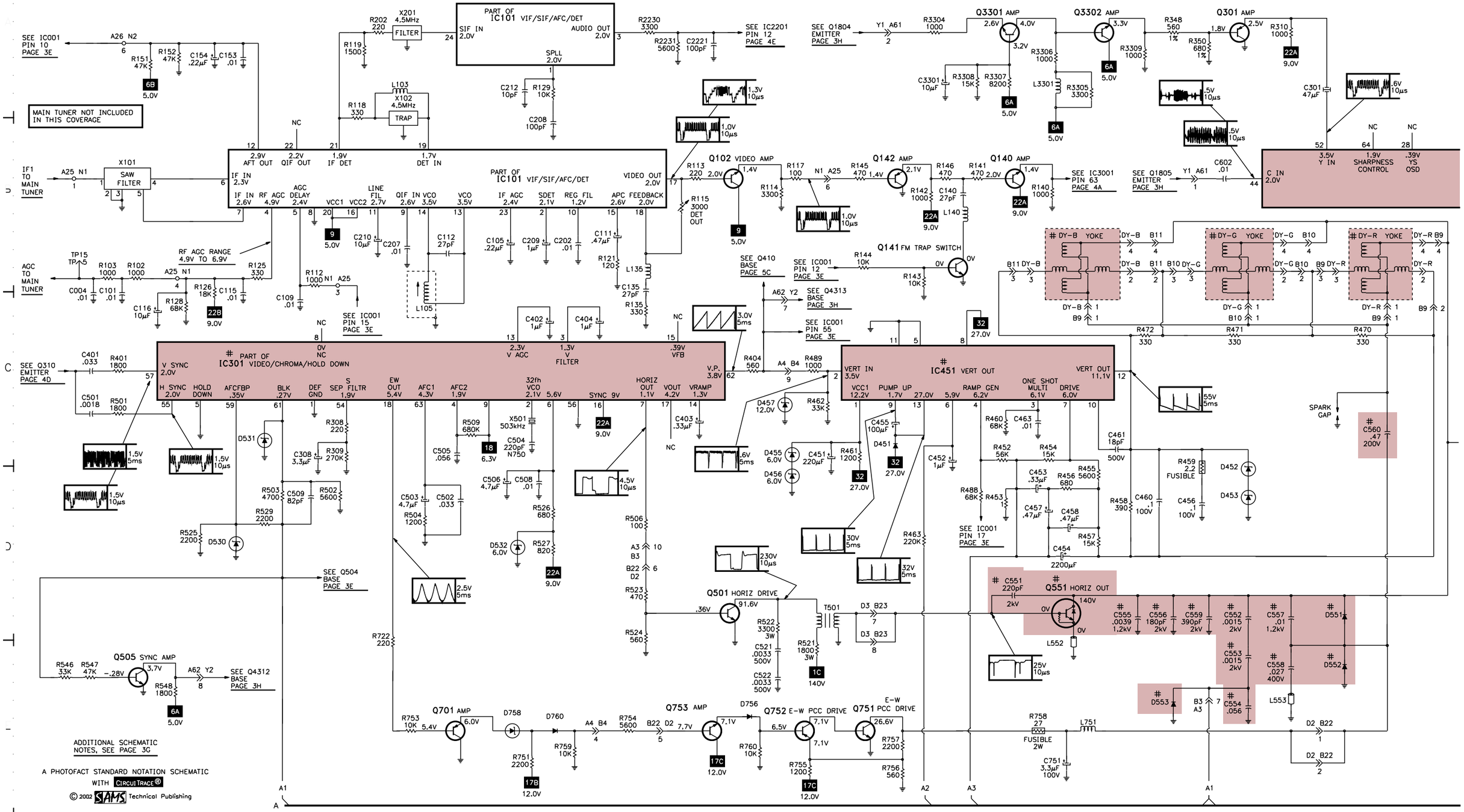


X BOARD - BOTTOM VIEW



PANASONIC MODEL PT-51D30B (CHASSIS JP816)

TELEVISION SCHEMATIC



TELEVISION SCHEMATIC continued

C D

SEE Q33 EMITTER PAGE 4B
SEE Q032 EMITTER PAGE 3F
SEE Q013 EMITTER PAGE 3F
SEE Q011 EMITTER PAGE 3F
SEE Q012 EMITTER PAGE 3F
SEE Q6530 BASE PAGE 4C
SEE IC001 PIN 58 PAGE 3E
SEE Q6522 EMITTER PAGE 4D
SEE IC001 PIN 59 PAGE 3E
SEE IC001 PIN 60 PAGE 3E

Q602 AMP
Q603 BUFFER
Q605 BUFFER
Q1102 YUV ON/OFF
Q1101 SWITCH
IC3101 SWITCH

R625 1000
R621 1000
R622 3600
C617 .01
R623 1500
R624 2700
R632 1000
R631 1000
R079 220
R093 330
R602 100
R616 1500
C610 1µF
C612 1µF
C611 1µF
R640 22
R639 22
R1117 33K
R1116 15K
R1113 22K
R1112 150K
R1115 22K
C620 1µF
R613 3300
C621 1µF
R614 3300
SEE Q6527 EMITTER PAGE 4D

R607 47
R608 1800
R611 47
R612 1800
R609 47
R610 1800

60 .8V SCP
39 NC
0V NC
PART OF IC301 VIDEO/CHROMA/HOLD DOWN
23 NC
0V NC
26 .06V YS OSD
27 2.7V B OSD
30 2.7V R OSD
29 2.8V G OSD
10 3.5V SDA
12 3.4V SCL
34 NC
0V NC
32 3.9V R-Y IN
35 2.9V R-Y OUT
36 2.8V B-Y OUT
31 3.9V B-Y OUT
20 2.9V R OUT
B OUT 2.2V
24
22 G OUT 2.9V

GND 2.8V
BLK D. ABL C 4.0V 3.4V
LOCK DET 5.7V
3.58 VCO 2.2V
FLESH TONE 3.4V
C. V. RGB GND
APC 2.6V
SC OUT 3.4V
K, FILTER 4.7V
WHT D 2.8V
ABL B APL. D 3.0V .58V
Y 5.2V
.5V
EHT 0V
BLMING DC 2.2V

11 53 21 50 51 58 37 42 33 38 40 41 48 43 47 49 19 45 25 46

R723 10K
C709 1µF
R724 4700
C317 4.7µF
R305 47K
C302 1µF
R302 1000
R301 5600
C315 22µF
D565
A3 B3 8
B21 D1 4
D564
R335 560K
C307 .022
R336 680K
SEE IC001 PIN 3 PAGE 3E
X601 3.58MHz
C607 9pF NPO
C615 33pF NPO
C616 .01
L601
C605 .01
C604 2.2µF
R606 3900
R618 3900
R628 470
R615 4700
R620 2.7M
C614 .1
C306 22µF
R306 82K
C304 1µF
C309 1µF
C316 4.7µF
R307 33K
Q303 AMP
Q304 AMP
R303 10K
R304 1650 1%
Q604 AMP
C625 .01
R633 470
R627 2200
C626 390pF
L602
SEE IC6501 PIN 13 PAGE 4C
TPB2
TP 6
C311 .01
C312 10µF
R327 2200 1%
R325 5600 1%

R557 33.2K 1%
R556 47.5K 1%
R560 3300
C564 22µF
Q561 ABL
R561 2200
1B 140V
17C 12.0V

D562
D561
R585 470
D583
R553 10K 1%
C586 .047 1250V
C561 2.2µF
D1 B21 2

SEE POWER SUPPLY PAGE 3D
SEE CRT FILAMENTS PAGE 2H
T551
TO CRT RED ANODE
TO CRT BLUE ANODE
TO CRT GREEN ANODE
36 140V
29V 10µs
X
10 9 8 6 5 2 3 1 12 11

R1581 33 FUSIBLE
D1581
R1582 17.8K 1%
C1582 47µF
C1583 22µF
R1584 7150 1%
C1584 47µF
D1583 6.0V
R1588 2200
D1 B21 3
D1585 # D1584
C1585 220µF
R1589 4700

Q1581 EHT PROTECTOR
R1586 10K
R1590 5600
Q1583 EHT PROTECTOR
R1585 2200
C1586 .01
R1593 6800
C1587 4.7µF
R1594 2200
D1 B21 1
B4 A4 10
Q1582 EHT PROTECTOR
R1591 220
C1588 .01
D1587
R036 10K
16 5.0V
SEE IC001 PIN 5 PAGE 3E

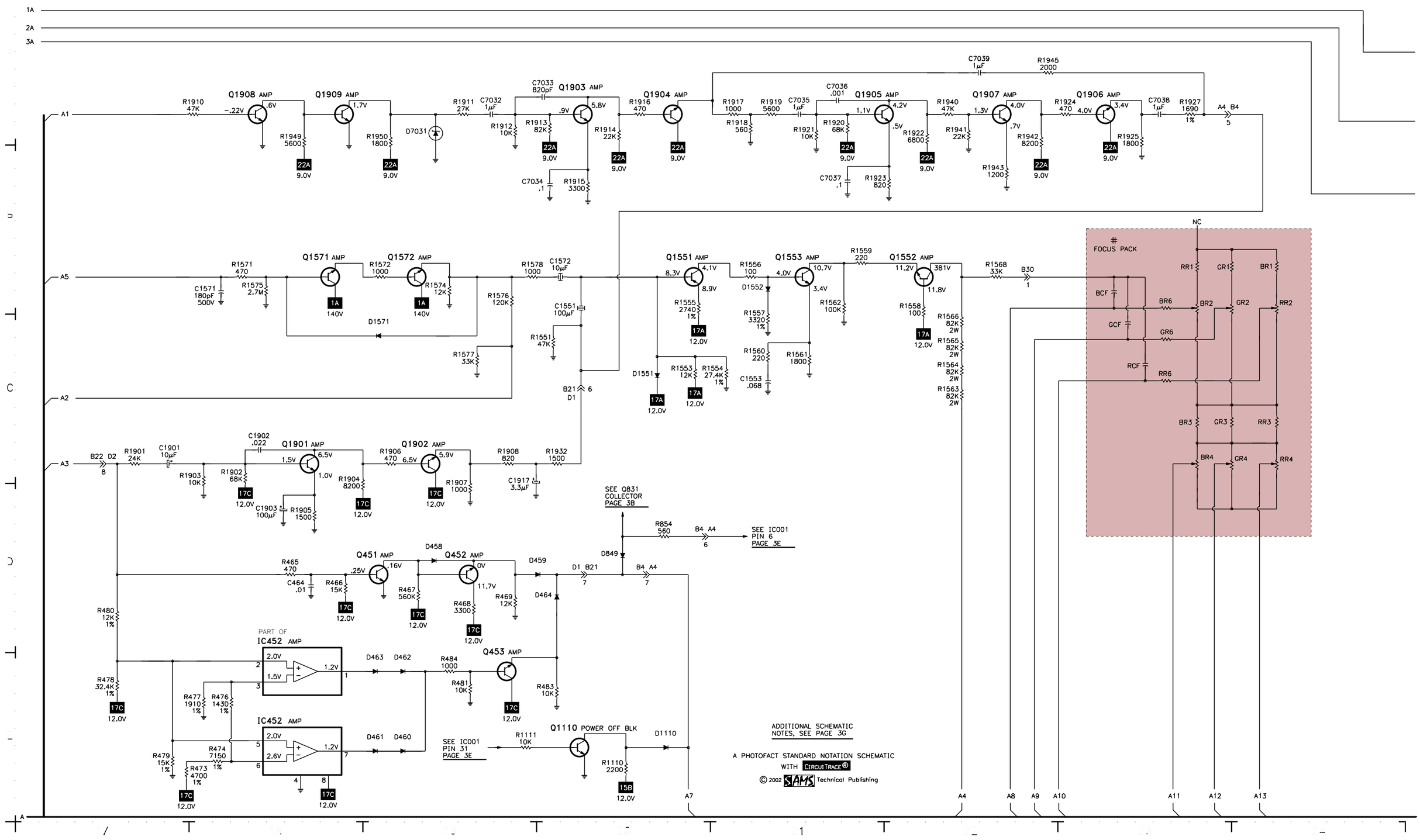
5.5V 10µs
5.6V 10µs
5.2V 10µs

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUIT TRACE®

A4 A5

TELEVISION SCHEMATIC continued



TELEVISION SCHEMATIC continued

G H

IC3301 DRIVE

SEE IC1601 PIN 1 PAGE 3F
SEE IC1601 PIN 8 PAGE 3F
SEE IC1601 PIN 4 PAGE 3F
SEE Q7103 EMITTER PAGE 5D
SEE Q7105 EMITTER PAGE 5D
SEE Q1704 EMITTER PAGE 5D
SEE Q7106 EMITTER PAGE 5D

Q4131 AMP
Q4132 RED AMP
Q4151 AMP
Q4152 BLUE AMP
Q4141 AMP
Q4142 GREEN AMP
Q4154 SWITCH
Q4108 SWITCH
Q4110 SWITCH
Q4109 SWITCH
Q4111 SWITCH
Q4156 AMP
Q4155 AMP
Q353 AMP
Q355 AMP
Q356 AMP
Q354 SWITCH
Q393 AMP
Q395 AMP
Q396 AMP
Q394 SWITCH
Q373 AMP
Q375 AMP
Q376 AMP
Q374 SWITCH
Q398 SWITCH
Q397 SWITCH

SEE IC001 PIN 19 PAGE 3E

SEE T551 PIN 2 PAGE 2C

M049 RED CRT
M047 BLUE CRT
M048 GREEN CRT

FOCUS RANGE 7kV TO 8kV

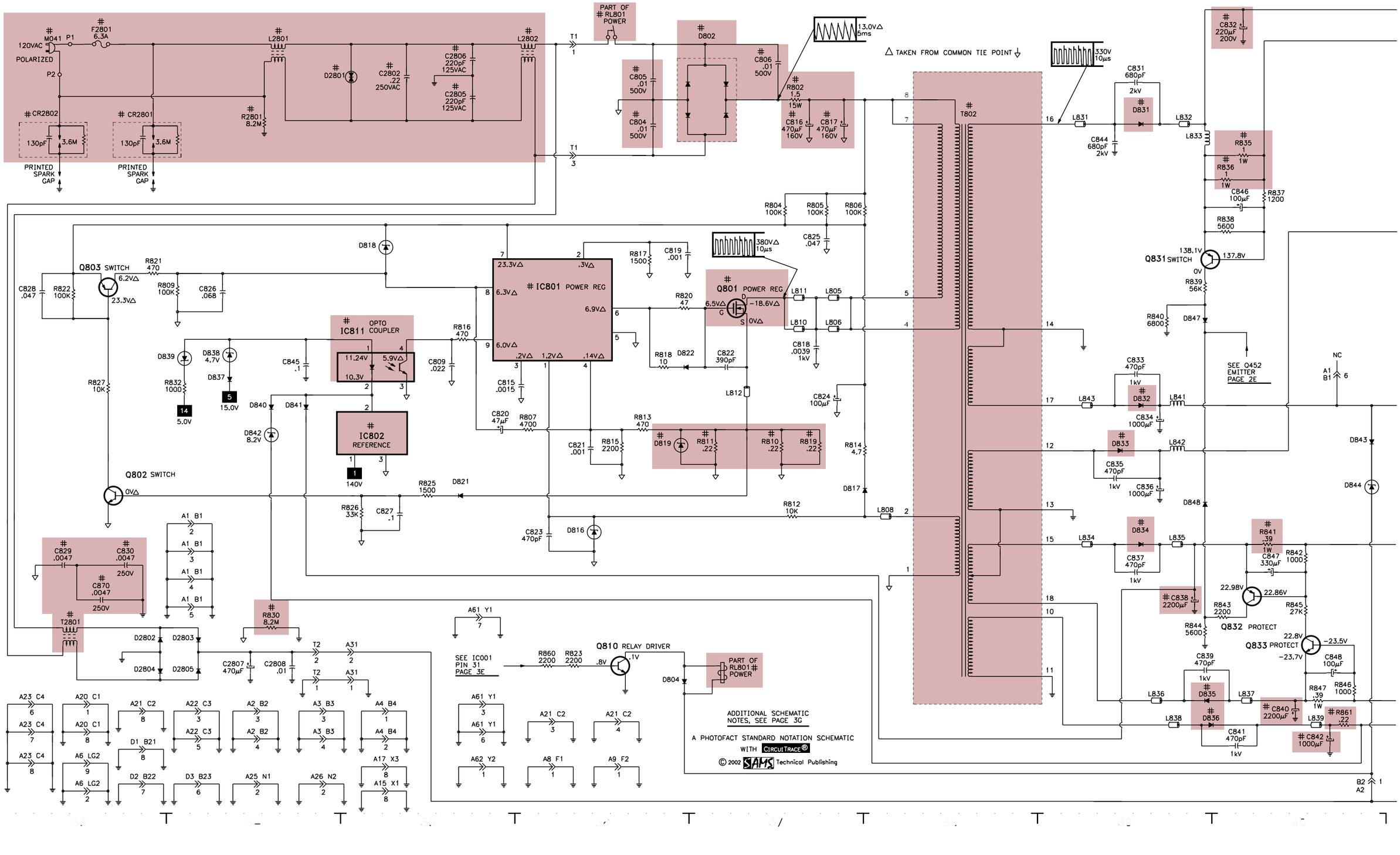
SEE Q4251 BASE PAGE 3E

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

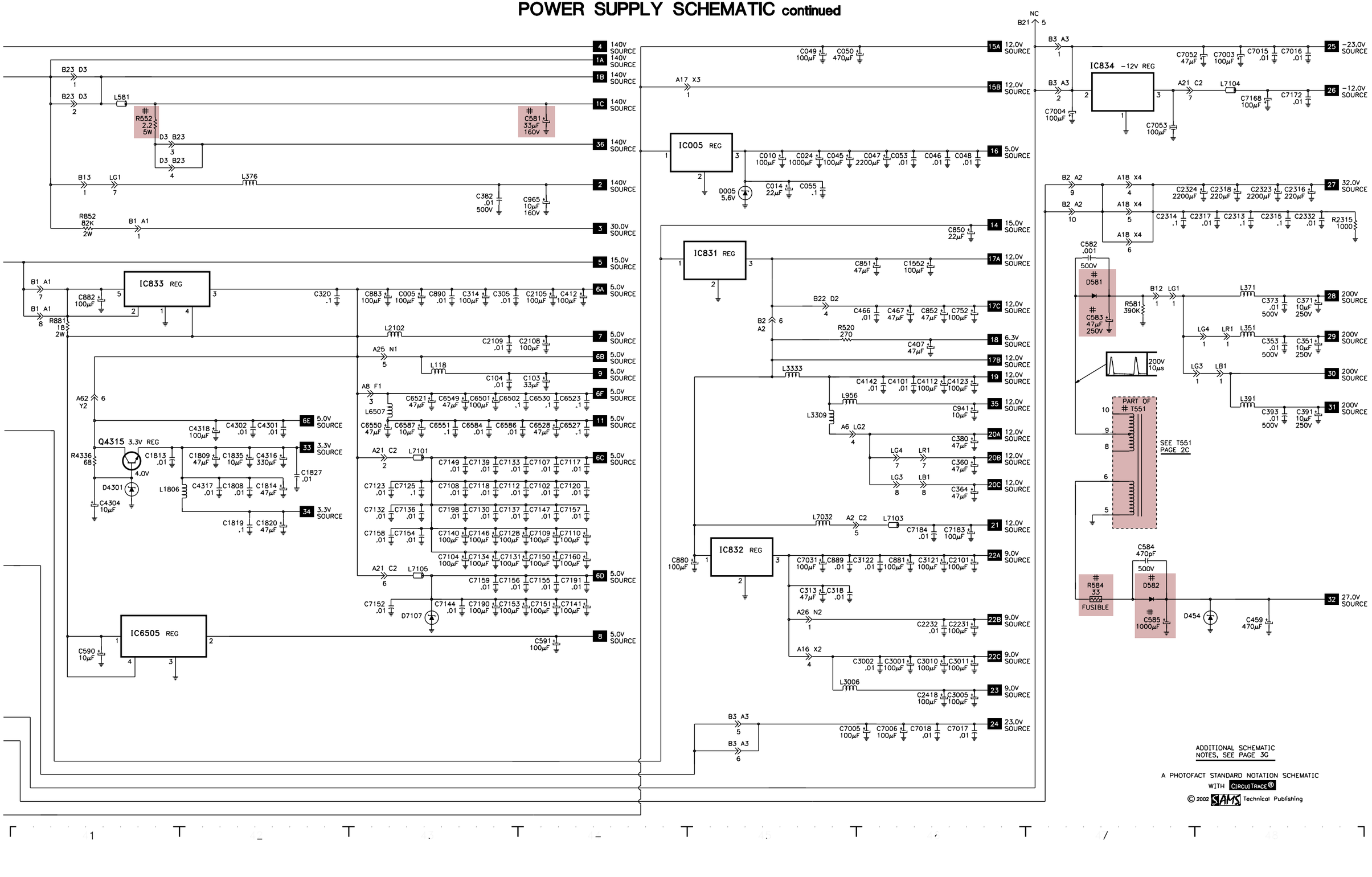
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

PANASONIC MODEL PT-51D30B (CHASSIS JP816)

POWER SUPPLY SCHEMATIC



POWER SUPPLY SCHEMATIC continued



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

SYSTEM CONTROL SCHEMATIC

E

F

RM002 REMOTE RECEIVER

IC001 CPU

IC002 I²C EEPROM

IC006 RESET

IC1601 TRANSPARENT

Q306 SYNC AMP

Q834 SWITCH

Q4251 AMP

Q504 HORIZ PULSE

Q011 SWITCH

Q012 SWITCH

Q013 SWITCH

Q014 2RF SWITCH

Q1601 SWITCH

Q032 AMP

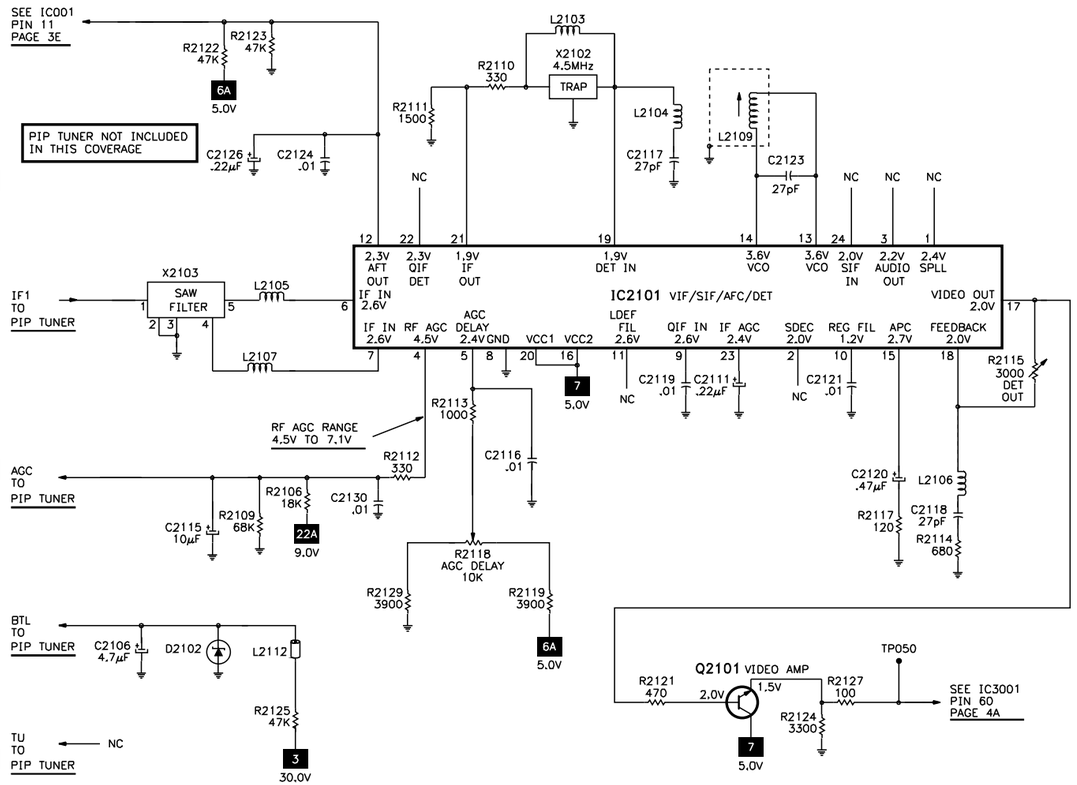
Q1602 SWITCH

MAIN AND PIP TUNERS NOT INCLUDED IN THIS COVERAGE

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

G
PIP IF SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®

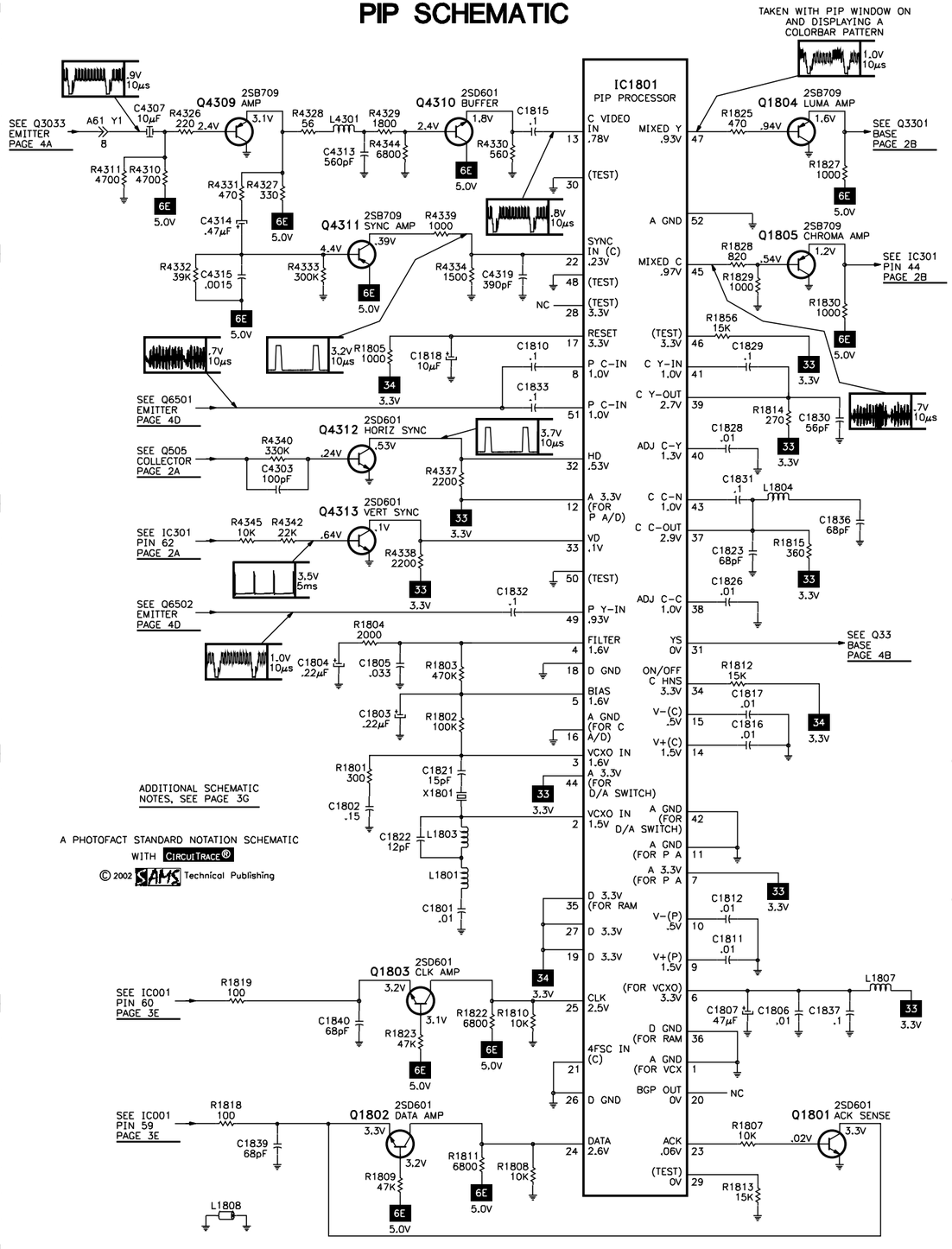
SCHEMATIC NOTES

= For SAFETY use only equivalent replacement part, see parts list.

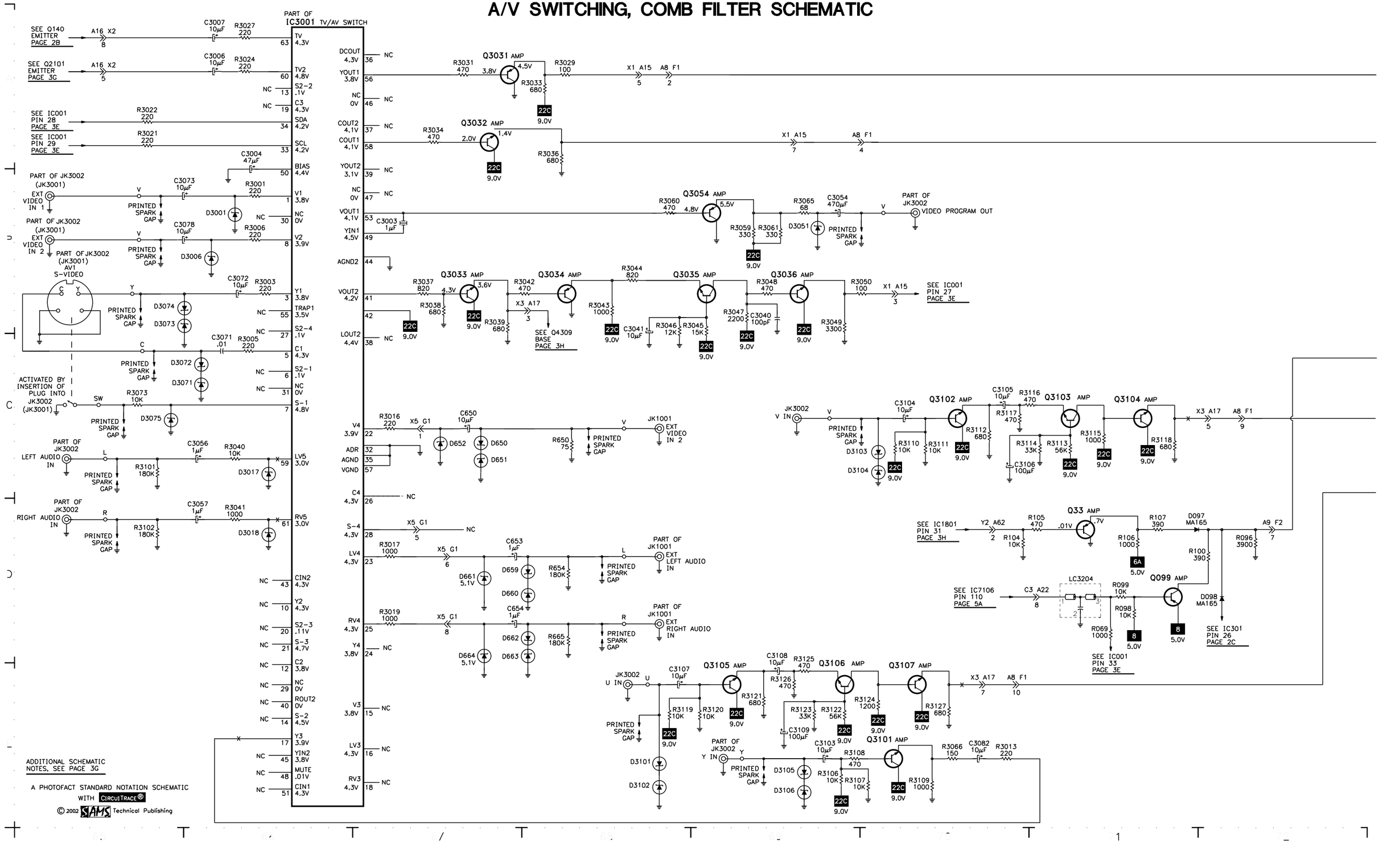
—✳— Circuitry not used in some versions.
- - - - Circuitry used in some versions.
⏚ Ground
Chassis ground
Common tie point
△ Taken from common tie point
3 Schematic CIRCUITRACE® Voltage source tie point.
A— Cabling: Heavy lines reduce use of multiple lines.

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.

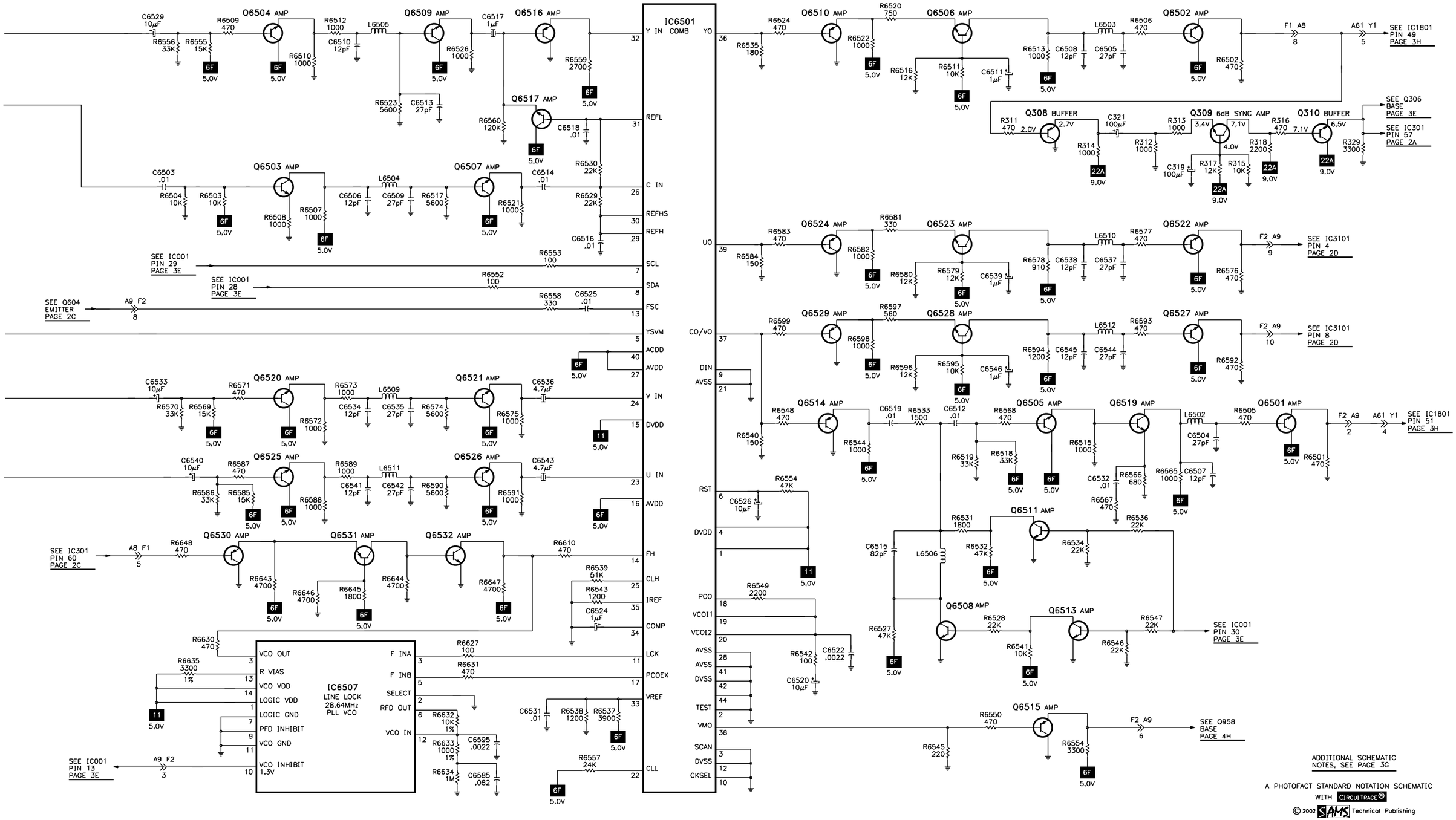
H
PIP SCHEMATIC



A/V SWITCHING, COMB FILTER SCHEMATIC

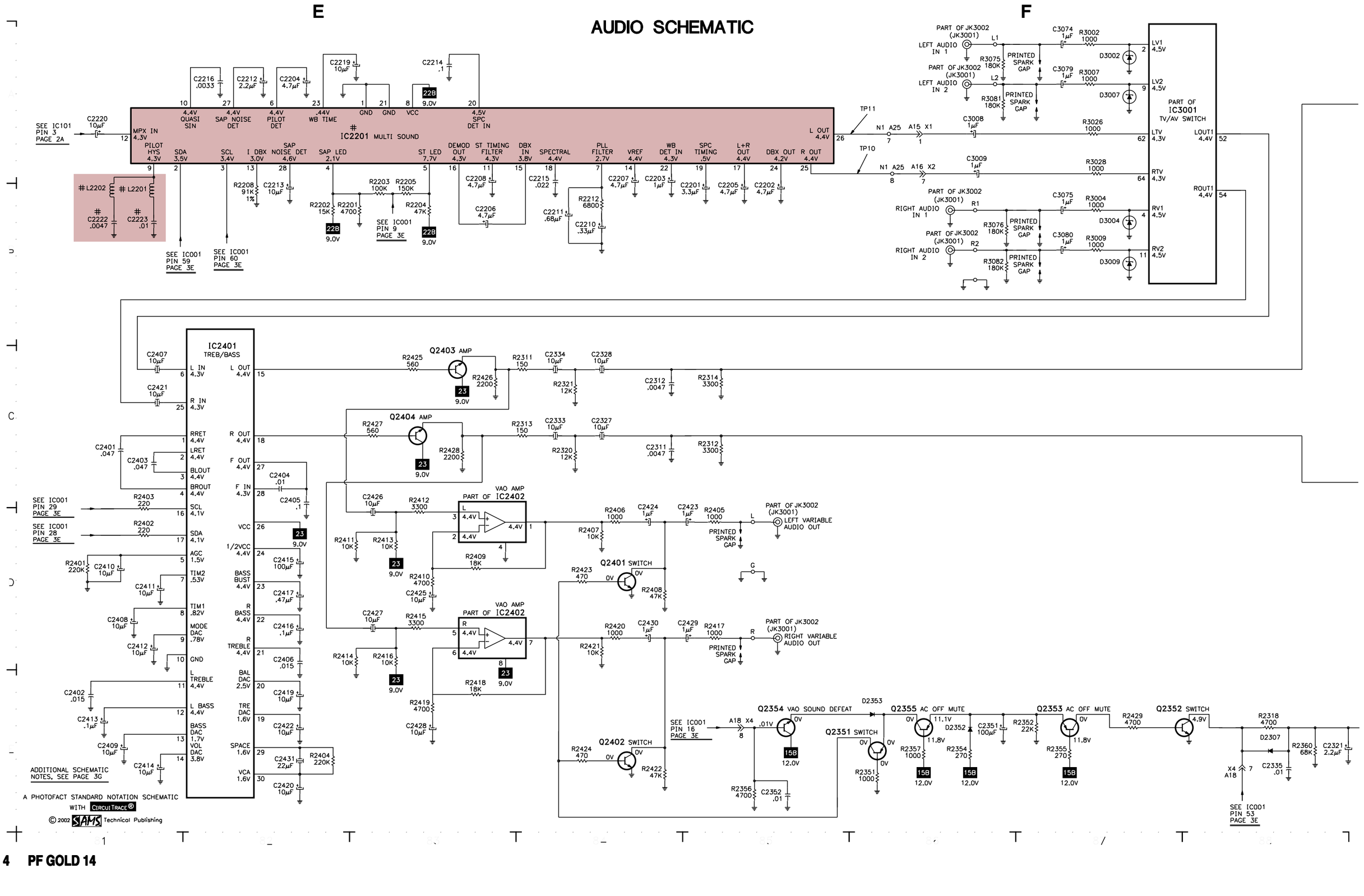


COMB FILTER SCHEMATIC continued

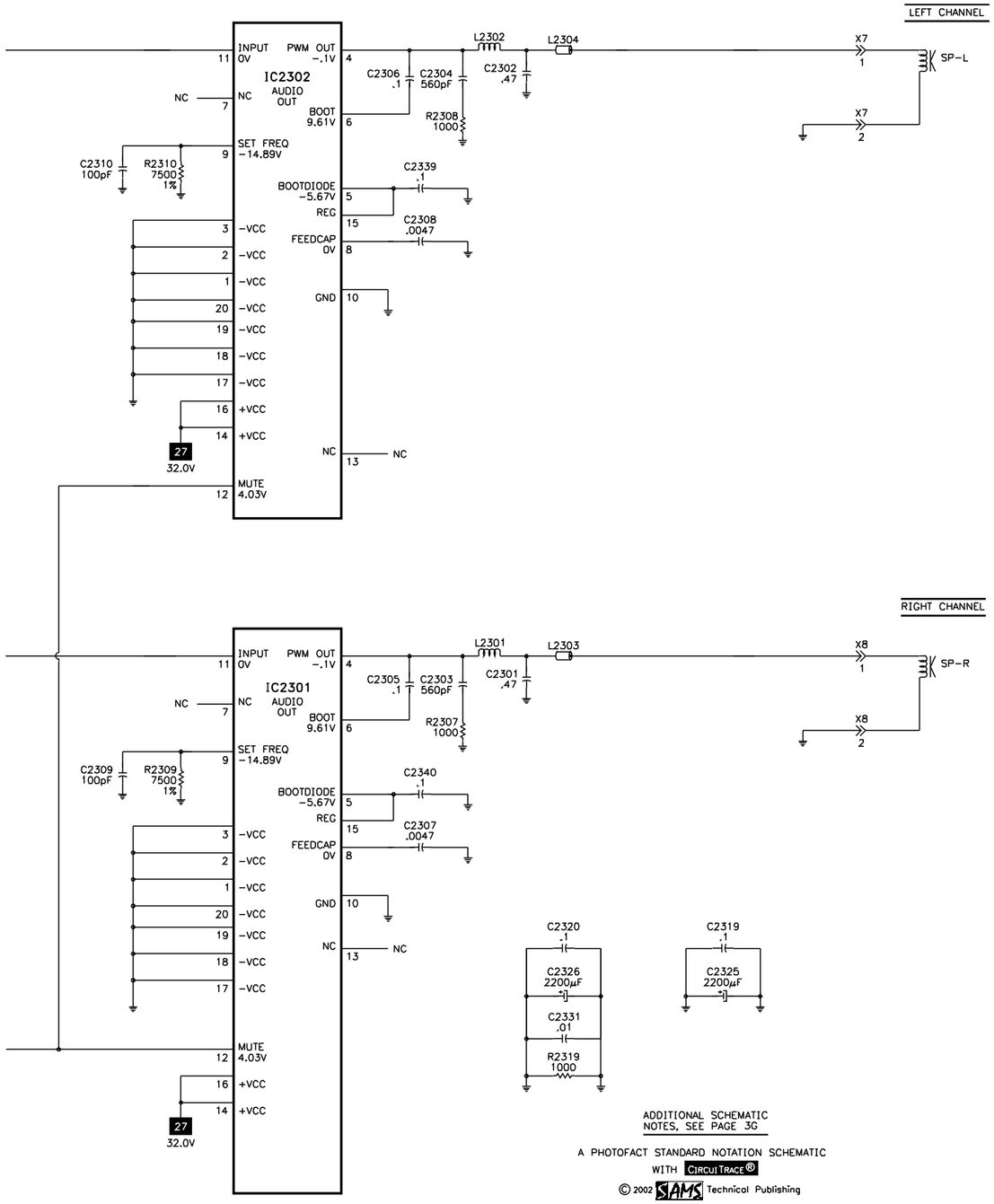


ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3C

AUDIO SCHEMATIC

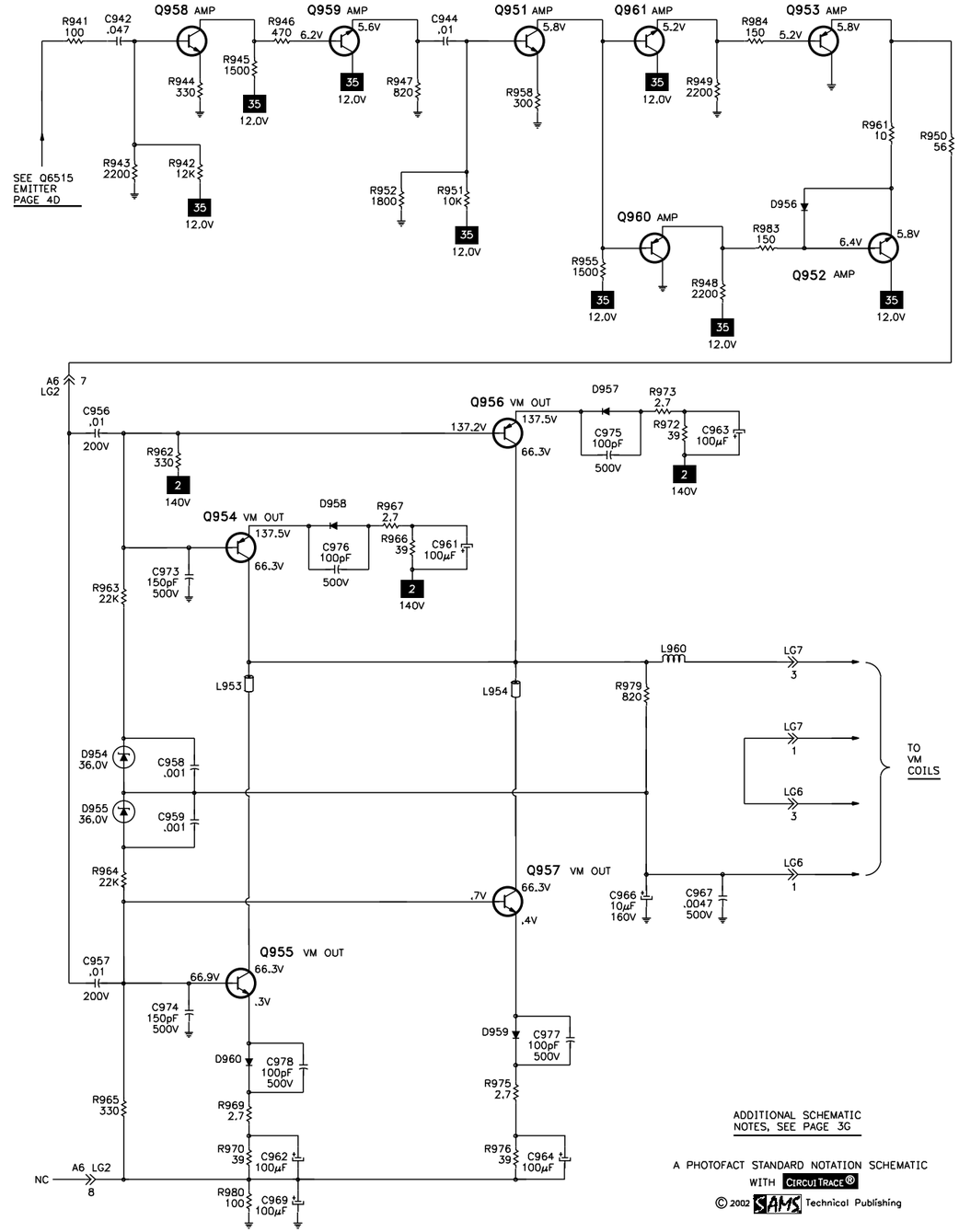


G
AUDIO SCHEMATIC continued



ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

H
VM SCHEMATIC



ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

CONVERGENCE SCHEMATIC

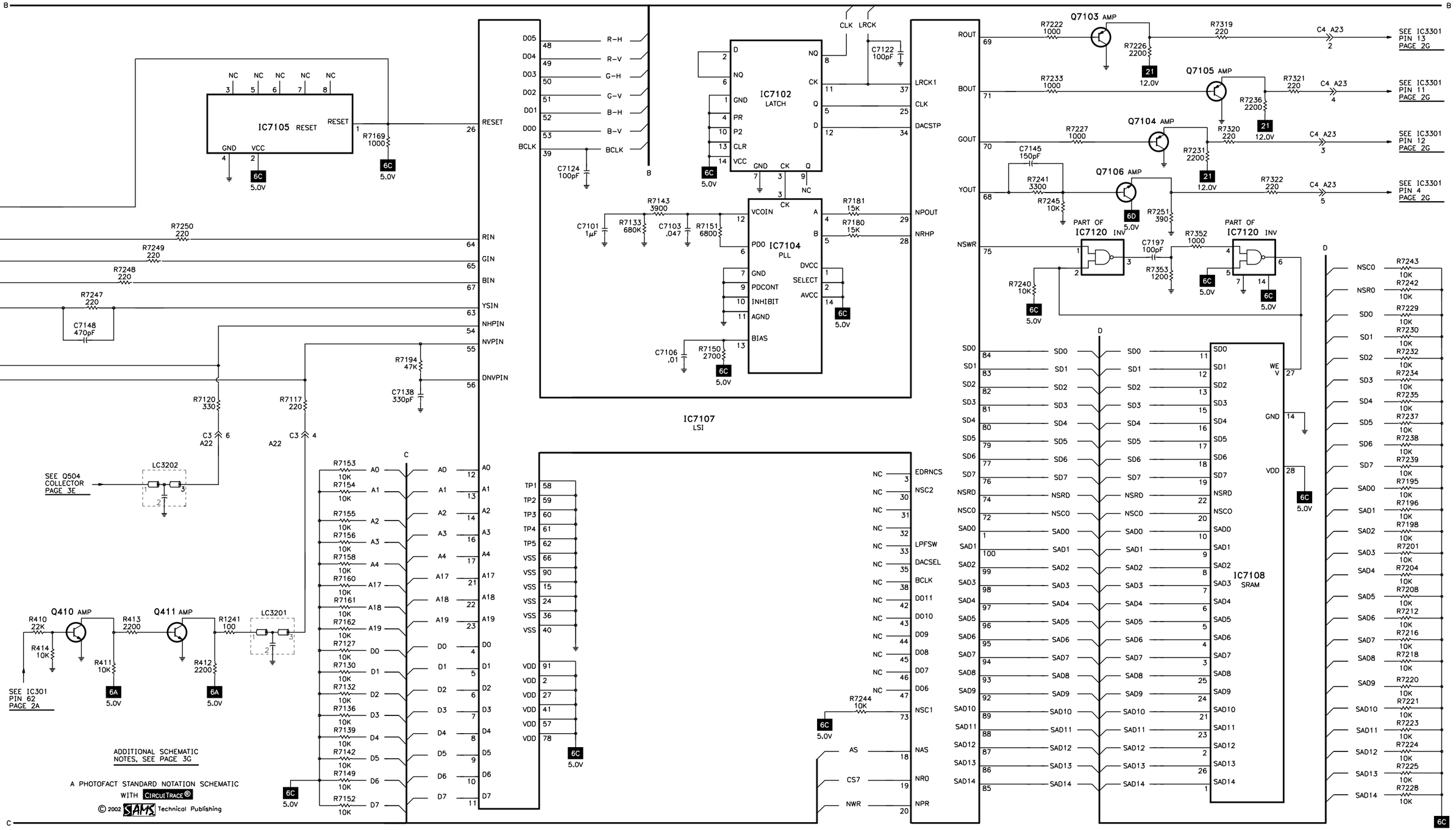
A

B

SEE IC001 PIN 1 PAGE 3E
R034 1000
Q031 AMP
R033 1500
6A 5.0V
LC3203
A22 C3 7
R7347 470
Q7107 AMP
R7348 1000
6C 5.0V
C6 6
R7108 330
IC7101 EEPROM
A0 A1 A2 VSS VSS VCC SCL SDA
R7159 10K
6C 5.0V
R7107 330
R7157 10K
C6 5
SEE IC001 PIN 60 PAGE 3E
A22 C3 1
R7118 100
SEE IC001 PIN 59 PAGE 3E
A22 C3 2
R7119 100
NC NC NC NC NC NC NC NC
P0 P1 P2 P3 P4 P5 P6 P7
IC7103 IIC
SCL2 SDA2 A1 A2 GND A0 VCC VDAC
R7140 220
R7116 330
SEE 0099 BASE PAGE 4B
IC7106 SUB CPU
PH0 ADR5 ADDR10 ADDR11 ADDR12 ADDR13 ADDR14 ADDR15 CLKOUT DSO DS1 FREEZE/QOUT IRQ2 DS CSBOUT
CTD4 SDA SCL A0 VEPE2 VFPE1 AN7 RS SD RD IRQ3 EXTAL XTAL XFC
CTS14A CTS12B CTS12A CTS10B CTS10A CTS8B CTS8A CTS6B CTS6A CTD5
VSSE VSS1 IRQ7 TXDB RXDB VSSE
AN1 AN0 VSSA CTM2C VSS1 VSSE VSSE VSS1
VDDE BG VDDA VDDE VDDE VSTBY VDDSYN VDD1 VDDE
ADR5 ADDR7 ADDR8 ADDR9
PH7 VSYN CTS16A CTS14B VSS1 IRQ7 IRQ5 ASP1 ASP0 IRQ4 CH6 IRQ6
R7213 10K
R7197 10K
R7205 10K
6C 5.0V
C6 9
R7345 220
R7236 10K
C6 3
R7112 330
C6 4
R7113 330
R7175 10K
R7172 10K
R7173 10K
6C 5.0V
C6 7
R7109 330
R7163 10K
C6 10
R7346 220
X7101
R7340 1M
R7341 1000
C7126 .01
R7184 10K
C7127 .1
ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G
AS CS7 NWR
R7164 10K
R7165 10K
R7166 10K
R7131 10K
R7148 10K
R7188 10K
R7193 10K
R7350 10K
R7349 10K
R7186 10K
R7192 10K
R7191 10K
R7190 10K
R7189 10K
R7177 10K
AS CS7 CS9 BERR DSCLK FAST REF CS0 BG BGACK HALT PE3 AVEC DSACK1 DSACK0 IRQ2
PH1 PH2 PH3 CS5 CS6 CSB CS10 CPNM18 CPNM19 VSYNC RESET FSEL SS PH6 PH5
IC7109 STATIC DAC
LD V CLK DATA GND VSS VDD VCC OUT3 OUT5 OUT1 OUT4 OUT6 OUT2
RHO BHO GHO RVO BVO GVO
6D 5.0V
6C 5.0V
R7219 10K
R7207 10K
R7217 10K
R7215 10K
R7211 10K
IC7110 OSD
HOLD CLK DATA STB BUSY TEST VR VG VB YS HSYNC VSUNC CKOUT VMON OSC IN OSC OUT GND VDD
C7143 22pF
L7106
C7142 22pF
ADDR0 ADDR1 ADDR2 ADDR3 ADDR4 ADDR16 ADDR17 ADDR18 ADDR19 DATA0 DATA1 DATA2 DATA3 DATA4 DATA5 DATA6 DATA7 CTS16B
A0 A1 A2 A3 A4 A17 A18 A19 D0 D1 D2 D3 D4 D5 D6 D7

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

CONVERGENCE SCHEMATIC continued



CONVERGENCE SCHEMATIC continued

E

F

RHO
LRCK
R-H
R-V
BCLK
CLK
RVO

R7264 100K
R7265 100K
R7252 10K
R7280 10K
C7173 330pF
R7283 47K 1%
R7308 1000 1%
C7169 180pF
C7185 .0068
R7309 1000 1%
C7186 .0068
R7255 10K
C7164 100µF
C7161 100µF
R7257 22K
R7256 22K
R7295 10K
C7176 330pF
R7304 27K 1%
R7299 39K 1%
C7179 180pF
R7276 39K 1%
R7270 27K 1%
R7290 47K 1%

IC7111 DYNAMIC DAC
NC NC 11 19
REFL AGND FSEL 18 17 12
LRCK/WCLK 5
R-H(1) R-V(1) BCLK SYSCLK DVDC MODE1 MODE2 REFH AVDC REFL REFH RVOUT
6 7 8 9 10 13 14 3 4 16 2 20
RHOUT 1

IC7116 ACTIVE LPF
IN(+) 3
VEE VDD IN(+) IN(−) OUT2 IN(+)
4 8 5 6 7 2
OUT1 1

6C 5.0V
6D 5.0V
26 −12.0V
21 12.0V

C1 A20
R7019 1000
R7032 2200
C7010 150pF
C7001 2.2µF
R7009 4700
R7007 27K
Q7006 SWITCH
25 −23.0V
R7030 3.3 1W

PART OF IC7001 AMP
−.22V −.22V 14 13
+ −
−26.0V 11
3 5 10
24 23.0V
R7012 3300
R7051 270
A11 2
A11 1

PART OF # DY-R RED CONVERGENCE YOKE
HORIZ

PART OF IC7001 AMP
0V 0V 6 7
0V 9
1 2 4 8 12 17
25 −23.0V
R7011 3300
R7052 270
A11 3
A11 4
R7025 5.6 1W
C7009 150pF
C1 A20
R7018 5600
R7033 2200

PART OF # DY-R RED CONVERGENCE YOKE
VERT

BHO
LRCK
B-H
B-V
BCLK
CLK
BVO

R7268 100K
R7269 100K
R7260 10K
R7282 10K
C7175 330pF
R7285 47K 1%
R7311 1000 1%
C7171 180pF
C7188 .0068
R7312 1000 1%
C7189 .0068
R7261 10K
C7166 100µF
C7163 100µF
R7263 22K
R7262 22K
R7297 10K
C7178 330pF
R7306 27K 1%
R7301 39K 1%
C7181 180pF
R7278 39K 1%
R7273 27K 1%
R7294 47K 1%

IC7113 DYNAMIC DAC
NC NC 11 19
REFL AGND FSEL 18 17 12
LRCK/WCLK 5
R-H(1) R-V(1) BCLK SYSCLK DVDC MODE1 MODE2 REFH AVDC REFL REFH RVOUT
6 7 8 9 10 13 14 3 4 16 2 20
RHOUT 1

IC7118 ACTIVE LPF
IN(+) 3
VEE VDD IN(+) IN(−) OUT2 IN(+)
4 8 5 6 7 2
OUT1 1

6C 5.0V
6D 5.0V
26 −12.0V
21 12.0V

C1 A20
R7023 1000
R7026 2200
C7014 150pF
C7002 2.2µF
R7010 4700
R7008 27K
Q7007 SWITCH
25 −23.0V
R7050 3.3 1W

PART OF IC7002 AMP
−.22V −.22V 15 16
+ −
−26.0V 18
3
R7016 3300
R7055 270
A13 2
A13 1

PART OF # DY-B BLUE CONVERGENCE YOKE
HORIZ

PART OF IC7002 AMP
0V 0V 14 13
0V 11
1 2 4 8 12 17
25 −23.0V
R7015 3300
R7056 270
A13 3
A13 4
R7045 5.6 1W
C7013 150pF
C1 A20
R7022 5600
R7027 2200

PART OF # DY-B BLUE CONVERGENCE YOKE
VERT

GHO
LRCK
G-H
G-V
BCLK
CLK
GVO

R7266 100K
R7267 100K
R7258 10K
R7281 10K
C7174 330pF
R7284 47K 1%
R7298 1000 1%
C7170 180pF
C7182 .0068
R7310 1000 1%
C7187 .0068
R7259 10K
C7165 100µF
C7162 100µF
R7254 22K
R7253 22K
R7296 10K
C7177 330pF
R7305 27K 1%
R7300 39K 1%
C7180 180pF
R7277 39K 1%
R7272 27K 1%
R7292 47K 1%

IC7112 DYNAMIC DAC
NC NC 11 19
REFL AGND FSEL 18 17 12
LRCK/WCLK 5
R-H(1) R-V(1) BCLK SYSCLK DVDC MODE1 MODE2 REFH AVDC REFL REFH RVOUT
6 7 8 9 10 13 14 3 4 16 2 20
RHOUT 1

IC7117 ACTIVE LPF
IN(+) 3
VEE VDD IN(+) IN(−) OUT2 IN(+)
4 8 5 6 7 2
OUT1 1

6C 5.0V
6D 5.0V
26 −12.0V
21 12.0V

C1 A20
R7021 1000
R7028 2200
C7012 150pF
R7040 3.3 1W

PART OF IC7002 AMP
−.22V −.22V 6 7
−26.0V 9
5 10
24 23.0V
R7014 3300
R7053 270
A12 2
A12 1

PART OF # DY-G GREEN CONVERGENCE YOKE
HORIZ

PART OF IC7001 AMP
0V 0V 15 16
0V 18
R7013 3300
R7054 270
A12 3
A12 4
R7035 5.6 1W
C7011 150pF
C1 A20
R7020 5600
R7031 2200

PART OF # DY-G GREEN CONVERGENCE YOKE
VERT

ADDITIONAL SCHEMATIC NOTES, SEE PAGE 3G

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SCHEMATIC COMPONENT LOCATION GUIDE

C001	C56
C004	C1
C005	B43
C006	C56
C010	B45
C011	A51
C012	C53
C013	C53
C014	B45
C015	D51
C016	B51
C017	B51
C023	B51
C024	B45
C027	C51
C028	C51
C029	B52
C031	D53
C034	E53
C035	E51
C036	E51
C039	D51
C040	D51
C041	E53
C042	E53
C043	B55
C044	E51
C045	B45
C046	B46
C047	B46
C048	B46
C049	A45
C050	A45
C051	A49
C052	A50
C053	B46
C054	D53
C055	B45
C081	C55
C101	C1
C103	C44
C104	C43
C105	B3
C109	C2
C111	B4
C112	B3
C115	C2
C116	C1
C135	C4
C140	B6
C153	A2
C154	A2
C202	B4
C207	B3
C208	B3
C209	B3
C210	B3
C212	A3
C301	A8
C302	C9
C304	B13
C305	B43
C306	B12
C307	B10
C308	C2
C309	B13
C311	C13
C312	C14
C313	D45
C314	B43
C315	C9
C316	C13
C317	B9
C318	D45
C319	B79
C320	B42
C321	B79
C330	B51
C351	C48
C353	C48
C354	B30
C356	B32
C357	A31
C359	A32
C360	C46
C361	A29
C363	C32
C364	D46
C365	C29
C366	E29
C371	B48
C373	B48
C374	D30
C376	D32
C377	D31
C379	D32
C380	C46
C381	D29
C382	B43
C391	C48
C393	C48
C394	C30
C396	C32
C397	C31
C401	C1
C402	C3
C403	C4
C404	C4
C407	C46
C412	B44
C451	C5
C452	D6

C453	D6
C454	D6
C455	C5
C456	D7
C457	D6
C458	D6
C459	D48
C460	D7
C461	C7
C463	C6
C464	D18
C466	B46
C467	B46
C501	C1
C502	D3
C503	D3
C504	C3
C505	C3
C506	D3
C508	D3
C509	D2
C521	E5
C522	E5
C540	D50
C541	D50
C542	D50
C551	D6
C552	D7
C553	E7
C554	E7
C555	D7
C556	D7
C557	D8
C558	E8
C559	D7
C560	C8
C561	D9
C564	C9
C581	A44
C582	B47
C583	C47
C584	D47
C585	D47
C586	D9
C590	D41
C591	D44
C602	B7
C604	B11
C605	B11
C607	B11
C610	A11
C611	A11
C612	A11
C614	B12
C615	B11
C616	B11
C617	B9
C620	A14
C621	B14
C625	C12
C626	C13
C650	C67
C653	D67
C654	D67
C709	B9
C751	E6
C752	B46
C756	D50
C804	B36
C805	A36
C806	A37
C809	C35
C815	C35
C816	B37
C817	B37
C818	C37
C819	B36
C820	C35
C821	C36
C822	C37
C823	D36
C824	C37
C825	B37
C826	C34
C827	D35
C828	C33
C829	D33
C830	D33
C831	A39
C832	A40
C833	C39
C834	C39
C835	D39
C836	D39
C837	D39
C838	D39
C839	E39
C840	E40
C841	E40
C842	E40
C844	B39
C845	C34
C846	B40
C847	D40
C848	E40
C850	B46
C851	B46
C852	B46
C870	D33
C880	D45
C881	D46
C882	B41

C883	B43
C889	D45
C890	B43
C941	C46
C942	A93
C944	A94
C956	C93
C957	E93
C958	D93
C959	D93
C961	C94
C962	E94
C963	C95
C964	E95
C965	B44
C966	D95
C967	D95
C969	E94
C973	C93
C974	E93
C975	C95
C976	C94
C977	E95
C978	E94
C1149	C50
C1551	C20
C1552	B46
C1553	C21
C1571	B18
C1572	B20
C1582	E12
C1583	E12
C1584	E12
C1585	E13
C1586	E13
C1587	E13
C1588	E14
C1607	E54
C1608	D53
C1609	D54
C1801	D62
C1802	D62
C1803	C62
C1804	C62
C1805	C62
C1806	E64
C1807	E63
C1808	C42
C1809	C42
C1810	B63
C1811	D63
C1812	D63
C1813	C41
C1814	C42
C1815	A63
C1816	D63
C1817	C63
C1818	B62
C1819	D42
C1820	D42
C1821	D62
C1822	D62
C1823	C63
C1826	C63
C1827	C42
C1828	B63
C1829	B63
C1830	B64
C1831	C63
C1832	C62
C1833	B63
C1835	C42
C1836	C64
C1837	E64
C1839	E62
C1840	E62
C1901	C17
C1902	C18
C1903	D18
C1917	D19
C2101	D46
C2105	B44
C2106	C57
C2108	C44
C2109	C43
C2111	B59
C2115	C57
C2116	C58
C2117	B59
C2118	C60
C2119	B59
C2120	C59
C2121	B59
C2123	B59
C2124	B58
C2126	B57
C2130	C58
C2201	B85
C2202	B85
C2203	B84
C2204	A82
C2205	B85
C2206	B83
C2207	B84
C2208	B83
C2210	B84
C2211	B84
C2212	A82
C2213	B82
C2214	A83
C2215	B84
C2216	A82

C2219	A83
C2220	A81
C2221	A4
C2222	B81
C2223	B81
C2231	D46
C2232	D46
C2301	C90
C2302	A90
C2303	C90
C2304	A90
C2305	C90
C2306	A90
C2307	D90
C2308	B90
C2309	D89
C2310	B89
C2311	C84
C2312	C84
C2313	B48
C2314	B47
C2315	B48
C2316	B48
C2317	B48
C2318	B48
C2319	E91
C2320	E91
C2321	E88
C2323	B48
C2324	B48
C2325	E91
C2326	E91
C2327	C84
C2328	C84
C2331	E91
C2332	B48
C2333	C84
C2334	C84
C2335	E88
C2339	B90
C2340	D90
C2351	E86
C2352	E85
C2401	C81
C2402	E81
C2403	C81
C2404	C82
C2405	D82
C2406	D82
C2407	C81
C2408	D81
C2409	E81
C2410	D81
C2411	D81
C2412	D81
C2413	E81
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C2415	D82
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C2425	D83
C2426	D83
C2427	D83
C2428	E83
C2429	D84
C2430	D84
C2431	E82
C2802	A35
C2805	A35
C2806	A35
C2807	E34
C2808	E34
C3001	E46
C3002	E46
C3003	B67
C3004	B66
C3005	E46
C3006	A66
C3007	A66
C3008	A86
C3009	B86
C3010	E46
C3011	E46
C3040	B69
C3041	C68
C3054	B69
C3056	C66
C3057	D66
C3071	C66
C3072	B66
C3073	B65
C3074	A87
C3075	B87
C3078	B65
C3079	A87
C3080	B87
C3082	E70
C3103	E69
C3104	C70
C3105	C70
C3106	C70
C3107	E68
C3108	E69
C3109	E69
C3121	D46

C3122	D46
C3301	A6
C4101	C46
C4107	D25
C4108	D25
C4109	D25
C4110	C28
C4111	E28
C4112	C46
C4123	C46
C4131	A28
C4141	C27
C4142	C46
C4151	B27
C4251	E50
C4301	C42
C4302	C42
C4303	C62
C4304	D41
C4307	A61
C4313	A62
C4314	A61
C4315	B61
C4316	C42
C4317	C42
C4318	C42
C4319	B63
C6501	C43
C6502	C44
C6503	B73
C6504	C79
C6505	A79
C6506	B74
C6507	C79
C6508	A78
C6509	B75
C6510	A74
C6511	A78
C6512	C78
C6513	A75
C6514	B75
C6515	D77
C6516	B76
C6517	A75
C6518	B76
C6519	C77
C6520	E77
C6521	C43
C6522	D77
C6523	C44
C6524	D76
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C6539	B78
C6540	D73
C6541	D74
C6542	D75
C6543	D75
C6544	C79
C6545	C78
C6546	C78
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C6595	E75
C7001	B118
C7002	C118
C7003	A48
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C7005	E46
C7006	E46
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C7010	A118
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C7012	D118
C7013	C118
C7014	C118
C7015	A48
C7016	A48
C7017	E46
C7018	E46
C7031	D45
C7032	A19
C7033	A19
C7034	B20
C7035	A21
C7036	A21
C7037	B21
C7038	A23
C7039	A22
C7051	C49
C7052	A48
C7053	A47
C7101	B108
C7102	C44
C7103	B108

C7104	D43
C7106	C108
C7107	C44
C7108	C43
C7109	D44
C7110	D44
C7112	C44
C7117	C44
C7118	C43
C7120	C44
C7122	A109
C7123	C43
C7124	B108
C7125	C43
C7126	E99
C7127	E99
C7128	D44
C7130	D43
C7131	D44
C7132	D43
C7133	C44
C7134	D43
C7136	D43
C7137	D44
C7138	C107
C7139	C43
C7140	D43
C7141	D44
C7142	D104
C7143	C104
C7144	D43
C7145	B110
C7146	D43
C7147	D44
C7148	C105
C7149	C43
C7150	D44
C7151	D44
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C7160	D44
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C7168	A48
C7169	A117
C7170	D117
C7171	B117
C7172	A48
C7173	A116
C7174	D116
C7175	C116
C7176	A117
C7177	D117
C7178	C117
C7179	B117
C7180	E117
C7181	C117
C7182	D118
C7183	D46
C7184	D46
C7185	A118
C7186	B117
C7187	E117
C7188	C118
C7189	C117
C7190	D43
C7191	D44
C7197	B111
C7198	D43
CR2801	B33
CR2802	B33
D004	C56
D005	B45
D014	C55
D015	B55
D097	D71
D098	D72
D351	A30
D353	B29
D354	A29
D355	A29
D356	A30
D357	A31
D358	B31
D359	B30
D360	D30
D361	C30
D363	E28
D364	E29
D371	D30
D373	D29
D374	D29
D375	D29
D376	D30
D377	D30
D378	D31
D391	C30
D393	C29
D394	C29
D395	C29
D396	C30
D397	C30

D398	C31
D399	E30
D451	C5
D452	D7
D453	D7
D454	D48
D455	D5
D456	D5
D457	C5
D458	D19
D459	D19
D460	E19
D461	E19
D462	E19
D463	E19
D464	D20
D530	D2
D531	C2
D532	D3
D541	D50
D551	D8
D552	E8
D553	E7
D561	D9
D562	D9
D564	C9
D565	C9
D581	B47
D582	D47
D583	D9
D650	C67
D651	C67
D652	C67
D659	D67
D660	D67
D661	D67
D662	D67
D663	D67
D664	D67
D751	D50
D756	E5
D758	E3
D760	E3
D802	A37
D804	E36
D816	D36
D817	D37
D818	B35
D819	C36
D821	D35
D822	C36
D831	B39
D832	C39
D833	C39
D834	D39
D835	E39
D836	E39
D837	C34
D838	C34
D839	C34
D840	C34
D841	C34
D842	C34
D843	C40
D844	D40
D847	C39
D848	D39
D849	D20
D954	D93
D955	D93
D956	B95
D957	C95
D958	C94
D959	E94
D960	E93
D1110	E20
D1117	C51
D1551	C20
D1552	B21
D1571	C19
D1581	D12
D1583	E12
D1584	E12
D1585	E12
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DY-R	C8
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R4139	A27
R4140	A27
R4141	C26
R4142	C26
R4143	C27
R4144	C27
R4145	C27
R4146	C27
R4151	B26
R4152	B26
R4153	B27
R4154	B27
R4155	B27
R4156	B27
R4158	A25
R4162	C28
R4165	D28
R4166	D28
R4167	E27
R4168	C28
R4170	C28
R4195	B28
R4218	B28
R4244	A28
R4246	C28
R4250	E50
R4251	E50
R4253	E50
R4310	A61
R4311	A61
R4326	A61
R4327	A62
R4328	A62
R4329	A62
R4330	A62
R4331	A61
R4332	B61
R4333	B62
R4334	B62
R4336	C41
R4337	B62
R4338	C62
R4339	B62
R4340	B62
R4342	C62
R4344	A62
R4345	C61
R6501	C80
R6502	A79
R6503	B74
R6504	B73
R6505	C79
R6506	A79
R6507	B74
R6508	B74
R6509	A74
R6510	A74
R6511	A78
R6512	A74
R6513	A78
R6515	C78
R6516	A77
R6517	B75
R6518	C78
R6519	C78
R6520	A77
R6521	B75
R6522	A77
R6523	A75
R6524	A77

R6526	A75
R6527	D77
R6528	D78
R6529	B76
R6530	B76
R6531	D78
R6532	D78
R6533	C77
R6534	D78
R6535	A77
R6536	D79
R6537	E76
R6538	E76
R6539	D76
R6540	C77
R6541	D78
R6542	E77
R6543	D76
R6544	C77
R6545	E78
R6546	D79
R6547	D79
R6548	C77
R6549	D77
R6550	E78
R6552	C75
R6553	B75
R6554	D77
R6554	E78
R6555	A74
R6556	A73
R6557	E76
R6558	C75
R6559	A76
R6560	B75
R6565	D79
R6566	D79
R6567	D79
R6568	C78
R6569	C74
R6570	C73
R6571	C74
R6572	C74
R6573	C74
R6574	C75
R6575	C75
R6576	B79
R6577	B79
R6578	B78
R6579	B78
R6580	B77
R6581	B77
R6582	B77
R6583	B77
R6584	B77
R6585	D74
R6586	D74
R6587	D74
R6588	D74
R6589	D74
R6590	D75
R6591	D75
R6592	C79
R6593	C79
R6594	C78
R6595	C78
R6596	C77
R6597	C77
R6598	C77
R6599	C77
R6610	D76
R6627	E75
R6630	D74
R6631	E75
R6632	E75
R6633	E75
R6634	E75
R6635	E73
R6643	D74
R6644	D75
R6645	D74
R6646	D74
R6647	D75
R6648	D73
R7007	B118
R7008	C118
R7009	B118
R7010	C118
R7011	B119
R7012	A119
R7013	E119
R7014	D119
R7015	D119
R7016	C119
R7018	B118
R7019	A118
R7020	E118
R7021	D118
R7022	C118
R7023	C118
R7025	B119
R7026	C118
R7027	C118
R7028	D118
R7030	B119
R7031	E118
R7032	A118
R7033	B118
R7035	E119
R7040	E119
R7045	D119
R7050	C119

R7051	A119
R7052	B119
R7053	D119
R7054	E119
R7055	C119
R7056	C119
R7107	B99
R7108	A99
R7109	D98
R7112	C98
R7113	D98
R7116	A100
R7117	C106
R7118	B97
R7119	C97
R7120	C106
R7127	D106
R7130	E106
R7131	D102
R7132	E106
R7133	B108
R7136	E106
R7139	E106
R7140	B99
R7142	E106
R7143	B108
R7148	D102
R7149	E106
R7150	C108
R7151	B108
R7152	E106
R7153	C106
R7154	D106
R7155	D106
R7156	D106
R7157	B99
R7158	D106
R7159	B99
R7160	D106
R7161	D106
R7162	D106
R7163	D98
R7164	C102
R7165	C102
R7166	D102
R7169	B107
R7172	D99
R7173	D99
R7175	D98
R7177	E102
R7180	B109
R7181	B109
R7184	E99
R7186	E102
R7188	D102
R7189	E102
R7190	E102
R7191	E102
R7192	E102
R7193	D102
R7194	C107
R7195	D112
R7196	D112
R7197	B102
R7198	D112
R7201	D112
R7204	D112
R7205	B102
R7207	C103
R7208	D112
R7211	C103
R7212	D112
R7213	B102
R7215	C103
R7216	D112
R7217	C103
R7218	D112
R7219	C103
R7220	E112
R7221	E112
R7222	A110
R7223	E112
R7224	E112
R7225	E112
R7226	A111
R7227	B110
R7228	E112
R7229	C112
R7230	C112
R7231	B111
R7232	C112
R7233	A110
R7234	C112
R7235	C112
R7236	A111
R7236	C99
R7237	C112
R7238	C112
R7239	C112
R7240	B110
R7241	B110
R7242	B112
R7243	B112
R7244	E109
R7245	B110
R7247	C105
R7248	B105
R7249	B105
R7250	B105
R7251	B111
R7252	A115
R7253	D114

R7254	D114
R7255	B115
R7256	B114
R7257	B114
R7258	D115
R7259	D115
R7260	C115
R7261	C115
R7262	C114
R7263	C114
R7264	A115
R7265	B114
R7266	D115
R7267	E115
R7268	B115
R7269	D115
R7270	B117
R7272	D117
R7273	C117
R7276	B117
R7277	D117
R7278	C117
R7280	A116
R7281	D116
R7282	C116
R7283	A117
R7284	D117
R7285	C117
R7290	B117
R7292	D117
R7294	C117
R7295	B116
R7296	D116
R7297	C116
R7298	D118
R7299	B117
R7300	E117
R7301	C117
R7304	B117
R7305	E117
R7306	C117
R7308	A117
R7309	B117
R7310	E117
R7311	C117
R7312	C117
R7319	A111
R7320	B111
R7321	A112
R7322	B111
R7340	D99
R7341	E99
R7345	C98
R7346	D98
R7347	A98
R7348	A99
R7349	D102
R7350	D102
R7352	B111
R7353	B111
RL801	A36
RL801	E37
RM002	A50
S010	B50
S011	B50
S012	B50
S013	B49
S014	B49
S015	B49
S016	B49
SP-L	A92
SP-R	C92
T501	D5
T551	C10
T551	C47
T802	A38
T2801	D33
TP050	C59
X001	D52
X101	B1
X102	B3
X201	A3
X501	C3
X601	B11
X1801	D62
X2102	A58
X2103	B57
X7101	D99

MISCELLANEOUS ADJUSTMENTS

ENTERING SERVICEMAN MODE

Turn on receiver and momentarily short pins 3 and 8 of connector TP. The letters “CHK” will appear in yellow on the upper right of the screen, volume up and down will adjust rapidly. Press the action button and volume up button on K board simultaneously. The receiver will enter the serviceman mode, the letters “CHK” will turn red, the volume up and down buttons will adjust normally and all customer controls are set to normal. Press power button on remote to select one of eight service modes.

B = VCJ Sub Adjustments
C = VCJ Cutoff Adjustments
D = Pincushion Adjustments
P = PIP Adjustments
S = S Option Adjustments
V = V Option Adjustments
X = X Option Adjustments
Y = Y Option Adjustments
CHK = Normal operation of channel and volume buttons

SERVICEMAN MODE QUICK ENTRY

From the on screen menu, select the setup icon and select cable mode. Select the timer icon and set sleep timer to 30. Press the action button twice. Press the volume down button. Tune to channel 124. Adjust the volume to minimum. Press the receiver volume down button. The set will enter the serviceman mode and the red letters “CHK” will appear on the screen.

EXIT SERVICEMAN MODE

NOTE: Always exit serviceman mode when finished making adjustments.

Press action and power buttons on receiver control panel simultaneously for approximately 2 seconds to exit serviceman mode. The receiver will display a self check menu with audio on channel 3.

PURITY CHECK

Press recall button on remote transmitter to enter purity check mode.

NOTE: Receiver must be in serviceman mode for purity colors to display on screen. Press recall button to cycle through white, red, green, blue, and normal screens.

VCJ SUB ADJUSTMENTS

NOTE: Write down original On-Set values in detail before making any adjustments in case a misadjustment occurs.

Press channel up or down buttons on remote to select any of adjustment addresses. Press volume up or down buttons on remote to change level of adjustment.

VCJ SUB ADJUSTMENT CHART

Adjustment	Range	Default Level	On-Set Value
Sub Color (B0)	0-63	18	25
Sub Tint (B1)	0-63	32	37
Sub Brightness (B2)	0-192	96	94
Sub Contrast (B3)	0-63	37	36
RF AGC (B4)	0-255	128	128
Sub Bright Al (B5)	0-192	96	96
VCJ Sharpness (B6)	0-127	5	5
Sub Color Al (B7)	0-15	5	5
Sub Tint Video (B8)	0-15	5	5
Sub Color Comp (B9)	-	32	32
Sub Color Compensate (BA)	-	5	5
Sub Tint Comp (BB)	-	32	32

Sub Contrast (B3)

NOTE: This adjustment is factory set, DO NOT adjust unless repairs are made to associated circuits, CRT board, or CRT is replaced.

Tune in a pattern with 87.5% modulation 70% saturated color bar with 100 IRE white and 7.5 black. Set picture to maximum, color to minimum, brightness and sharpness to center. Record levels of S1, S2, and S3 and set S1 and S2 levels to 0, and set S3 level to 15. Connect a jumper from pin 6 of connector TP to ground. Connect a jumper from TPD5 to TPDGND. Adjust B2 for 200V p-p ± 2V from white to black level at TPLG1. Adjust C0 for 200V p-p ± 2V from white to black level at TPLR1. Adjust C2 for 210V p-p ± 2V from white to black level at TPLB1. Adjust B3 for 100V p-p ± 2V from white to 7.5 IRE black level at TPLG1. Do not include sync tip in measurement. Set S1 level to 04, and S2 level to 07. Perform Sub Brightness (B2) adjustment.

Sub Brightness (B2)

This adjustment must be made after Sub Contrast (B3) or Color Temperature (C0, C1, C2, C5, C6) adjustments are made. DO NOT adjust Screen after sub brightness is set. Tune in a color bar signal with 100 IRE white and 7.5 IRE black. Switch generator color to off. Adjust B2 until the black bar starts to turn gray, then decrease adjustment until bar just turns black.

Sub Color (B0)

Normalize picture settings, set brightness to minimum, set auto color to off position. Tune in a color bar pattern, set the contrast to maximum. Enter serviceman mode. Select VCJ sub adjustments, select B0. Press volume up or down button for best color level on screen. Check all channels.

Sub Tint (B1)

Tune in a picture. Set color and brightness to midrange. Set the contrast to maximum. Activate the service adjustment mode. Select VCJ sub adjustments, select B1. Press the volume up or down button to adjust for best flesh tone. Check other channels.

RF AGC (B4)

Tune in a picture. Adjust B4 until snow appears in picture, then back until snow disappears.

RED, GREEN & BLUE CUTOFF

With no input signal, observe the Green picture tube and adjust the Green Screen control for minimum noise. Adjust the noise level for the Red and the Blue to match the noise level in the Green tube.

VCJ CUTOFF ADJUSTMENTS

Follow same procedure used for VCJ sub adjustments. Select VCJ cut off adjustments.

VCJ CUTOFF ADJUSTMENT CHART

Adjustment	Range	Default Level	On-Set Value
Red Cutoff (C0)	0-3 20-255	2 20	2 158
Green Cutoff (C1)	0-255	128	199
Blue Cutoff (C2)	0-3 20-255	2 20	2 158
Brightness (C3)	0-63	31	31
Sub Brightness (C4)	0-192	96	93
Red Drive (C5)	0-255	128	150
Blue Drive (C6)	0-255	128	158
R Drive Corr (cool) (C7)	0-63	12	12
B Drive Corr (cool) (C8)	0-63	12	12
R Drive Corr (wrm) (C9)	0-63	20	20
B Drive Corr (wrm) (CA)	0-63	12	12

Color Temperature (C0, C1, C2, C5, C6)

Observe low and high brightness areas of a B/W picture for proper tracking.

Enter serviceman mode and select VCJ cutoff adjustments. Set C0, C1, and C2 for a gray picture. Set C5 and C6 for correct white areas.

S OPTION ADJUSTMENTS

NOTE: Adjustment of S option adjustments that not listed is not recommended.

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode S. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

S OPTION ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Level
Pre & Overshoot (S0)	0-7	3	3
Black Expansion (S1)	0-15	4	4
White Gamma Level (S2)	0-15	15	7
White Gamma Gain (S3)	0-15	15	15
Small Gamma Level (S4)	0-15	7	7
Demodulation Angle (S5)	0-31	12	12
Demodulation Gain (S6)	0-63	27	25
G-Y Ratio (S7)	0-3	1	1
White Letter Compensation (S8)	0-15	4	4
White Letter Slice Voltage (S9)	0-15	5	5
Switches TV (SA)	0-255	36	36
Switches Video (SB)	0-255	36	36
Gradient of Contrast (SC)	0-255	90	90
Stereo Input Level (SD)	0-63	40	40
Stereo PLL VCO (SE)	0-63	36	44
Stereo Filter (SF)	0-63	26	33
Low Frequency Separation (S10)	0-63	37	41
High Frequency Separation (S11)	0-63	22	22
Clock Adjustment (S12)	0-255	128	130
S-Cutoff Red (S13)	0-28	14	14
S-Cutoff Blue (S14)	0-28	14	14
Loudness (S15)	0-15	7	7
Closed Caption Digital Filter (S16)	0-1	1	1
Closed Caption Scroll (S17)	0-2	1	1
Spatializer Effect (S18)	0-63	25	25

MISCELLANEOUS ADJUSTMENTS continued

Stereo PLL VCO (SE)

Tune in a stereo signal. Connect a frequency counter to pin 25 of IC2201, adjust SE level to obtain 15.734kHz ± 50Hz.

Stereo Filter (SF)

Tune in a stereo signal. On generator select 1kHz audio frequency, and L-R modulating signal. Connect a scope to pin 26 of IC2201, adjust SF for minimum amplitude on the scope.

Frequency Separation (S10 & S11)

On generator select pilot, 1kHz audio frequency, and right modulating signal. Connect an oscilloscope to pin 26 of IC2201. Adjust S10 for minimum amplitude of waveform. On generator select 8kHz audio frequency. Adjust S11 for minimum amplitude of waveform.

Stereo Input Level (SD)

On generator select pilot, 1kHz audio frequency, and L-R modulating signal. Connect oscilloscope to pin 25 of IC2201 adjust SD for 900mVp-p.

Clock Adjustment (S12)

Connect a frequency counter to pin 34 of TPS1. Turn receiver off. Record the frequency. Turn the receiver on and enter the serviceman mode and select S12. Adjust S12 based on the following formulas:

$$S12 = 128 + 1.35 \times 1000000 \times \{ \frac{[187.5 - (\text{recorded frequency})]}{187.5} \}$$

X OPTION ADJUSTMENTS

NOTE: Write down original on-set values in detail before making any adjustments in case a misadjustment occurs. X option adjustments apply only for some models.

X OPTION ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Level
Edge Correction (X0)	N/A	8	-
B Edge Correction (X1)	N/A	0	-
Correct Amnt on Edge (X2)	N/A	1	-
Y Delay Comp (X3)	N/A	3	-
Detail Correct Lmt Lvl (X4)	N/A	24	-
Coring Lvl of Edge Corr (X5)	N/A	41	-
Comp Det SW (X6)	N/A	0	-
Y Delay Adj (X7)	N/A	3	-
C Delay Adj RF (X8)	N/A	2	-
C Delay Adj Video(X9)	N/A	5	-
VM Limt Lvl (Xa)	N/A	90	-
VM Freq SW (Xb)	N/A	1	-
VM Coring Lvl (Xc)	N/A	8	-
VM SW/S BPF SW (Xd)	N/A	1	-
VMLM Correction Coeff (Xe)	N/A	255	-
Sharpness Offset Lvl (Xf)	N/A	90	-
C Delay Comp (X10)	N/A	10	-
Correct Clmp Strt Pos (X11)	N/A	211	-

V OPTION ADJUSTMENTS

Write down original on-set values in detail before making any adjustments in case a misadjustment occurs.

V OPTION ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Level
Static Digital Converg (V0)	N/A	0	0
Dynamic Digital Converg (V1)	N/A	0	0
VPS V Size (V2)	0-255	128	128
ABL Input Level (V3)	N/A	10	10
Blue Gamma (V4)	0-255	0	0
VMLM Switch (V5)	0-1	0	0
ABL Switch (V6)	0-1	0	0

PINCUSHION ADJUSTMENTS

NOTE: Write down original On-Set values in detail before making any adjustments in case a misadjustment occurs. Press channel up or down buttons on remote to select any of adjustment addresses. Press volume up or down buttons on remote to change level of adjustment.

PINCUSHION ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Value
Vertical Size (D0)	0-127	53	85
Vertical Linearity (D1)	0-63	37	41
S Compensation (D2)	0-63	45	25
Horizontal Size (D3)	0-63	53	41
Horizontal Centering (D4)	0-31	12	6
E-W Parabola (D5)	0-63	10	30
Trapezoid Compensation (D6)	0-63	29	36
E-W Corner 2 (D7)	0-15	13	15
E-W Corner 1 (D8)	0-15	13	15
Vertical EHT (D9)	0-15	8	8
Horizontal EHT (Da)	0-15	8	8
Vertical Position (Db)	0-63	32	32

Vertical Linearity (D1)

Tune in a crosshatch pattern. Adjust D1 so that boxes at top and bottom of screen are the same proportion.

Vertical Size (D0) and S Compensation (D2)

Tune in a crosshatch pattern. Adjust D0 for 1/2 inch overscan at top and bottom of screen. Adjust D2 so that the top and bottom boxes are the same proportion as the center boxes.

Horizontal Size (D3)

Tune in a crosshatch pattern. Adjust D3 so that the picture is just at the left and right edge of the screen and then increase the level by 3 digits.

Horizontal Centering (D4)

Tune in a crosshatch pattern. Adjust D4 so that pattern is centered.

E-W Pincushion Correction (D5, D7, D8)

Tune in a crosshatch pattern. Normalize picture settings. Set auto color to off. Adjust D5 for straight vertical lines at left and right side of screen. Adjust D7 for straight vertical lines at top of screen. Adjust D8 for straight vertical lines at bottom of screen.

Trapezoid Compensation (D6)

Tune in a crosshatch pattern. Adjust D6 so vertical lines are perpendicular to horizontal lines.

Vertical Position (Db)

Connect digital voltmeter to pin 2 of connector DY. Connect oscilloscope to pin 3 of connector DY. Tune in a monoscope pattern. Adjust Db for 13.0V ±.1V with no distortion at top and bottom of vertical waveform. Remove jumper.

PIP ADJUSTMENTS

NOTE: Adjustment of PIP adjustments not listed is not recommended.

Write down original values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments. Enter serviceman mode and select service mode P. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

PIP ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Level
PIP Color (P0)	0-127	92	92
PIP Tint (P1)	0-255	54	54
PIP Brightness (P2)	0-31	22	22
PIP Contrast (P3)	0-127	80	80
PIP Position 1/9 Upper (P4)	0-255	27	26
PIP Position 1/9 Lower (P5)	0-255	143	143
PIP Position 1/9 Left (P6)	0-255	12	10
PIP Position 1/9 Right (P7)	0-255	103	101
PIP Position 1/16 Upper (P8)	0-255	27	26
PIP Position 1/16 Lower (P9)	0-255	161	160
PIP Position 1/16 Left (PA)	0-255	12	10
PIP Position 1/16 Right (PB)	0-255	116	116
PIP Freerun (PC)	N/A	0	0
PIP Y Delay (PD)	0-15	4	4

PIP Color, Tint, Brightness, and Contrast (P0 thru P3)

Tune in a color bar pattern on the PIP and main picture. Adjust P0 to match the PIP color with the main picture color. Adjust P1 to match the PIP tint with the main picture tint. Adjust P2 to match the PIP brightness with the main picture brightness. Adjust P3 to match the PIP contrast with the main picture contrast.

MISCELLANEOUS ADJUSTMENTS continued

SECOND TUNER ADJUSTMENTS

Second Tuner VCO

Apply a colorbar signal to the video input. Connect a jumper between TPA7 (pin 4 of connector A7) and ground. Adjust L2109 to measure 2.4V ±.1V at pin 12 of IC2101. Connect a scope to TP050 and adjust R2115 to obtain a waveform of 1.0V ±.05Vp-p on the scope.

Second Tuner RF AGC

Tune in a color bar pattern through the second tuner. Adjust R2118 fully counter-clockwise, snow will appear on the picture, and then adjust R2118 clockwise for best snow free picture. Check all other available channels for proper adjustment.

Y OPTION ADJUSTMENTS

Write down original on-set values in detail before making any adjustments in case a misadjustment occurs. Always exit serviceman mode after making adjustments.

Enter serviceman mode and select service mode Y. Press channel up and down buttons on remote to select adjustment. Press volume up and down buttons on remote to change level of adjustment.

Y OPTION ADJUSTMENTS CHART

Adjustment	Range	Default Level	On-Set Level
Sync Separation (Y0)	0-7	4	4
Sync Separation (Y1)	0-255	24	24
Sync Separation (Y2)	0-255	12	12
Sync Separation (Y3)	0-255	12	12
V Comp Hold start (Y4)	0-7	2	2
V Comp Hold end (Y5)	0-15	6	6
H Clamp Mode Level (Y6)	0-255	64	64
V Edge Coring Level (Y7)	0-31	22	22
V Edge Corr Limit Lev (Y8)	0-15	3	3
3D NStand Level (Y9)	0-15	15	15
3D Stand Level (YA)	0-15	2	1
1F2F Mdet High Level (YB)	0-15	5	5
1F2F Mdet Low Level (YC)	0-15	9	9
Mdet Set (YD)	0-15	12	12
Mdet Set (YE)	0-1	0	0
V Edge Gain (YF)	0-3	1	3
1F Color MLevel Set (Y10)	0-15	14	14
1F Color MLevel Set (Y11)	0-15	12	12
Mdet Set (Y12)	0-15	15	15
Color MEdge Det Lev (Y13)	0-15	5	5
1F Mdet Level (Y14)	0-15	8	8
2F Mdet Level (Y15)	0-15	2	2
1F Mdet Filter SW (Y16)	0-1	0	0
1F Mdet Edge Sens (Y17)	0-1	1	1
1F Mdet Sens (Y18)	0-15	15	15
1F Mdet High Level (Y19)	0-15	8	8
1F Mdet Low Level (Y1A)	0-15	4	4
2F Mdet High Level (Y1B)	0-15	3	3
2F Mdet Low Level (Y1C)	0-15	1	1
Mdet Edge Det Level (Y1D)	0-15	7	7
AI V Sampling start (Y1E)	0-31	4	4
AI V Sampling stop (Y1F)	0-63	30	30
AI H Sampling start (Y20)	0-31	5	5
AI H Sampling stop (Y21)	0-63	22	22
BGP Position (Y22)	0-255	16	16
B Exp APL Thresh L (Y23)	0-63	20	20
Pedestal Comp (Y24)	0-7	3	3
B Exp APL Calc (Y25)	0-31	6	6

Y OPTION ADJUSTMENTS CHART continued

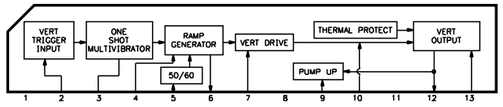
Adjustment	Range	Default Level	On-Set Level
B Comp Var Limiter (Y26)	0-15	4	4
Luminance Diff Gain (Y27)	0-3	3	3
Pseudo Contour Killer (Y28)	0-1	0	0
B Exp APL Reflection (Y29)	0-1	0	0
Base Value (Y2A)	0-15	15	15
B Exp Var Reflection (Y2B)	0-3	2	2
ALine Stand/Nstand Dt Sw (Y2C)	0-63	0	0
S1 Histogram Limiter (Y2D)	0-63	30	30
S2 Histogram Limiter (Y2E)	0-63	30	30
S3 Histogram Limiter (Y2F)	0-63	30	30
S4 Histogram Limiter (Y30)	0-63	30	30
Ymin Det Offset (Y31)	0-7	4	4
Ymin Det Gain (Y32)	0-3	2	2
Ymin Limiter (Y33)	0-63	42	42
Ymax Limit Value (Y34)	0-63	39	39
AI Fleshtone SW (Y35)	0-1	1	1
APL Corr Limiter (Y36)	0-63	10	10
APL Corr SW Point (Y37)	0-127	37	37
Col Cont Level L APL (Y38)	0-63	28	28
Col Cont Gain L APL (Y39)	0-3	0	0
Col Cont Gain H APL (Y3A)	0-63	54	54
AI Col Corr Gain (Y3B)	0-3	2	2
Color Det Gain (Y3C)	0-3	1	1
Color Det Threshold (Y3D)	0-63	39	39
DSC Noise Removal (Y3E)	0-63	4	4
DSC Delay SW (Y3F)	0-1	0	0
DSC Off SW (Y40)	0-1	0	0
DSC Limit Level (Y41)	0-255	112	112
Clip point Edge Corr (Y42)	0-15	8	8
BPF SW RF (Y43)	0-3	2	2
BPF SW Video (Y44)	0-3	0	0
DSC Gain SW big sig (Y45)	0-3	1	1
DSC Limit SW big sig (Y46)	0-63	12	12
DSC Gain SW sm sig (Y47)	0-3	1	1
DSC Limit SW sm sig (Y48)	0-63	24	24
Edge Corr Gain SW (Y49)	0-15	8	8
Detail corr Limit Lev (Y4A)	0-15	8	8
B corr Gain on Edge (Y4B)	0-3	2	2

Y OPTION ADJUSTMENTS CHART continued

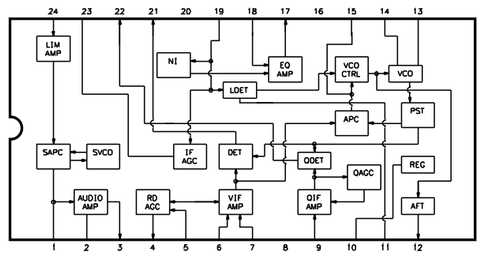
Adjustment	Range	Default Level	On-Set Level
Coring Level on Edge (Y4C)	0-63	8	8
VM Freq SW (Y4D)	0-1	1	1
VM Coring Level (Y4E)	0-15	8	8
VM Limit Level (Y4F)	0-127	67	67
VM B corr SW (Y50)	0-1	0	0
Y Delay Adj (Y51)	0-7	3	3
C Delay Adj RF (Y52)	0-15	6-13	6
C Delay Adj Video (Y53)	0-15	6-10	6
DCOR corr COEFFI A (Y54)	0-255	10	10
DCOR corr COEFFI B (Y55)	0-255	200	200
DCOR corr COEFFI C (Y56)	0-255	100	100
VMLM corr COEFFI A (Y57)	0-255	255	255
VMLM corr COEFFI B (Y58)	0-255	200	200
Sharp Offset Level (Y59)	0-127	32	32
WECOR Thresh s sig (Y5A)	0-255	28	28
WECOR Thresh w sig (Y5B)	0-255	34	34
Burst in 16msXn (Y5C)	0-255	12	12
Burst out 16msXn (Y5D)	0-255	0	0
SD Threshold on (Y5E)	0-255	226	226
SD Threshold off (Y5F)	0-255	226	226
VP Threshold max (Y60)	0-255	127	127
VP Threshold min (Y61)	0-255	107	107
VP (NG—OK) 16msXn (Y62)	0-255	12	12
VP (OK—NG) 16msXn (Y63)	0-255	12	12
Std time 16msXn (Y64)	0-255	6	6
SD (NG—OK) 16msXn (Y65)	0-255	12	12
SD (OK—NG) 16msXn (Y66)	0-255	12	12
Freq Avg Quantity (Y67)	0-4	3	3
C Del Adj Comp (Y68)	N/A	6-23	6
DSC/DVC Det Slic Level (Y69)	N/A	8	8
DVC Stand Det Sw (Y6A)	N/A	0	0
Line Stand/Nstand Dt Lvl (Y6B)	N/A	127	127
H-Mode Sett Wt Int/Cmp (Y6C)	N/A	0	0
Line Stand/Nstand Dt Sw (Y6D)	N/A	1	1

IC FUNCTIONS

IC451
LA7838



IC101, IC2101
AN5170K



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.

PARTS LIST

Item No.	Type No.	Mfr. Part No.	NTE Part No.
D004	-	MA4330H	-
D005	-	MA4056M	NTE5011A
D014, 15	-	MA4051M	NTE5010T1
D097, 98	-	MA152K	NTE593
D351	-	ERA15-10	NTE125
D353 Thru			
D357	-	MA165	NTE519
D358	-	AU01Z	NTE552
D359, 60, 61	-	MA165	NTE519
D363	-	MA4091M	NTE5018A
D364	-	MA167	NTE519
D371	-	ERA15-10	NTE125
D373 Thru			
D377	-	MA165	NTE519
D378	-	AU01Z	NTE552
D391	-	ERA15-10	NTE125
D393 Thru			
D397	-	MA165	NTE519
D398	-	AU01Z	NTE552
D399	-	TVSRM1	NTE116
D451	-	ERA15-01	NTE116
D452, 53	-	MA2330-B	-
D454	-	MA4360M	NTE5037A
D455, 56	-	MA4062L	NTE5012A
D457	-	MA4120M	NTE5021T1
D458 Thru			
D464	-	MA165	NTE519
D530, 31	-	MA4039H	-
# **D532**	-	MA4062L	NTE5012A
D541	-	MA152K	NTE593
# **D551**	-	RH3FLFS1	-
# **D552**	-	S2L60P1518	-
# **D553**	-	MA4270M	NTE146A
D561	-	MA165	NTE519
D562	-	MA4039M	-
D564	-	MA165	NTE519
D565	-	MA152K	NTE593
# **D581**	-	ERA22-04	NTE552
# **D582**	-	AU02	NTE552
# **D583**	-	RP1H	NTE525
D650, 51, 52	-	MA4110M	-
D659, 60	-	MA4110M	-
D661	-	MA4051M	NTE5010T1
D662, 63	-	MA4110M	-
D664	-	MA4051M	NTE5010T1
D751	-	MA3047M	-
D756	-	MA156	NTE519 N3
D758	-	MA4030L	-
D760	-	MA152K	NTE593
# **D802**	-	RBV-408	NTE5311
D804	-	MA165	NTE519
D816	-	MA700	NTE584
D817	-	AU01Z	NTE552
D818	-	MA4220L	-
# **D819**	-	TMPG10G3	-
D821	-	MA165	NTE519
D822	-	ERA22-02	NTE552
# **D831**	-	RU30ALFS1	NTE580
# **D832**	-	RU3YX-M	NTE588
# **D833**	-	RU3YX-MLF-C4	NTE588
# **D834, 35**	-	RL3ZLFS1	-
# **D836**	-	RL4ZLF-L1	-
D837	-	MA165	NTE519
D838	-	MA4047L	NTE5009A
D839	-	MA4033M	-
D840	-	MA167	NTE519
D841	-	MA165	NTE519
D842	-	MA4082M	NTE5016A
D843	-	MA165	NTE519
D844	-	MA4020	-
D847, 48, 49	-	MA165	NTE519
D954, 55	-	MA4360M	NTE5037A
D956	-	MA28WTX	-
D957 Thru			
D960	-	MA165	NTE519
D1110	-	MA152K	NTE593
D1117	-	MA3051	-
D1551	-	MA165	NTE519
D1552	-	MA29-B	-
D1571	-	MA165	NTE519
# **D1581**	-	AS01	NTE552
# **D1583**	-	MA4062L	NTE5012A
# **D1584, 85**	-	MA4330M	-
D1587	-	MA3082M	-
D2102	-	MA4330H	-
D2307, 52, 53	-	MA152K	NTE593
D2802 Thru			
D2805	-	ERA15-01	NTE116
D3001	-	MA3110M	-
D3002, 04	-	MA3051M	-
D3006	-	MA3110M	-
D3007, 09	-	MA3051M	-
D3017, 18	-	MA3051M	-
D3051	-	MA3110M	-
D3071 Thru			
D3075	-	MA3110M	-
D3101 Thru			
D3106	-	MA3110M	-
D4103, 04, 05	-	MA152K	NTE593
D4106	-	MA3056M	-
D4107	-	MA152K	NTE593
D4109 Thru			
D4112	-	MA152K	NTE593
D4134, 44, 54	-	MA152K	NTE593
D4301	-	MA3036H	-
D7031	-	MA3091M	-
D7051, 52	-	MA152K	NTE593
D7107	-	MA4056M	NTE5011A
# **IC001**	-	MN102L35GTC2	-
IC002	-	24LC08BIP	-
IC005	-	AN78M05	NTE960
IC006	-	MN1280R	NTE15044
IC101	-	AN5170K	-
# **IC301**	-	AN5308NK	-
# **IC451**	-	LA7838	NTE7039
IC452	-	BA15218N	NTE778S
# **IC801**	-	AN8026	-
# **IC802**	-	SE139NLF4	-
# **IC811**	-	TLP621GR	NTE3098
IC831	-	AN7812	NTE966
IC832	-	AN7809	NTE1910
IC833	-	SI-3050CA	-
IC834	-	AN79M12	NTE967
IC1601	-	MC14066BFEL	-
IC1801	-	M65617SP	-
IC2101	-	AN5170K	-
# **IC2201**	-	AN5819K	-
IC2301, 02	-	TDA7480	-
IC2401	-	AN7396K	-
IC2402	-	BA15218N	NTE778S
IC3001	-	CXA2079Q	-
IC3101	-	MC14066BFEL	-
IC3301	-	AN5862K	-
IC6501	-	MN82831	-
IC6505	-	PQ3RD13B	-
IC6507	-	TLC2932IPWL	-
IC7001, 02	-	STK392-110	-
IC7101	-	24LC32TI/SM	-
IC7102	-	SN74HC74NSTL	-
IC7103	-	JLC1562BFEL	-
IC7104	-	TLC2932IPWL	-
IC7105	-	MC33064D-5R2	-
IC7106	-	SC430409CFC	-
IC7107	-	11350-501	-
IC7108	-	TVSA0342	-
IC7109	-	M62354FP-E2	-
IC7110	-	TVSA0036	-
IC7111, 12, 13	-	LC78815M-TLM	-
IC7116, 17, 18	-	UPC4570G2-E2	-
IC7120	-	SN74HC00NSL	-
Q011, 12, 13	-	2SB709ARTX	NTE2409
Q014	-	2SD601ARTX	NTE2408
Q031	-	2SB709ARTX	NTE2409
Q032	-	2SD601ARTX	NTE2408
Q33	-	2SB709ARTX	NTE2409
Q099	-	2SB709ARTX	NTE2409
Q102	-	2SD601ARTX	NTE2408
Q140, 41	-	2SD601ARTX	NTE2408
Q142	-	2SB709ARTX	NTE2409
Q301, 03	-	2SB709ARTX	NTE2409
Q304, 06	-	2SD601ARTX	NTE2408
Q308	-	2SB709ARTX	NTE2409
Q309, 10	-	2SD601ARTX	NTE2408
Q353, 54	-	2SC3063	NTE157
Q355, 56	-	2SB1011	-
Q373, 74	-	2SC3063	NTE157
Q375, 76	-	2SB1011	-
Q393, 94	-	2SC3063	NTE157
Q395, 96	-	2SB1011	-
Q397, 98	-	2SC1473A	NTE399
Q410, 11	-	2SD601ARTX	NTE2408
Q451, 52, 53	-	2SC1685QRS	NTE85
Q501	-	2SC4212H	NTE2501
Q504, 05	-	2SD601ARTX	NTE2408
# **Q551**	-	2SD2553MA	-
Q561	-	2SC1685QRS	NTE85
Q602, 03	-	2SB709ARTX	NTE2409
Q604, 05	-	2SD601ARTX	NTE2408
Q701	-	2SB709ARTX	NTE2409
Q751	-	2SD1499P	NTE54
Q752	-	2SA564AQRSTA	NTE290A
Q753	-	2SC1685QRS	NTE85
# **Q801**	-	FS18SM-10-AB	-
Q802	-	2SC1685QRS	NTE85
Q803	-	2SA564AQRSTA	NTE290A
Q810	-	2SC1685QRS	NTE85
Q831	-	2SA1961QAHW	-
Q832	-	2SA564AQRSTA	NTE290A
Q833	-	2SC1473RTA	-
Q834	-	2SB709ARTX	NTE2409
Q951	-	2SC1685QRS	NTE85
Q952	-	2SD601ARTX	NTE2408
Q953	-	2SB709ARTX	NTE2409
Q954	-	2SB940P	NTE398
Q955	-	2SD1264P	NTE375
Q956	-	2SB940P	NTE398
Q957	-	2SD1264P	NTE375
Q958, 59	-	2SD601ARTX	NTE2408
Q960	-	2SB709ARTX	NTE2409
Q961	-	2SD601ARTX	NTE2408
Q1101, 02, 10	-	2SD601ARTX	NTE2408
Q1551	-	2SA564AQRSTA	NTE290A
Q1552	-	2SC4635-YB7	-
Q1553	-	2SC1685QRS	NTE85
Q1571, 72	-	2SC1473R	NTE399
Q1581	-	2SC1685QRS	NTE85
Q1582	-	2SD601ARTX	NTE2408
Q1583	-	2SA564AQRSTA	NTE290A
Q1601, 02	-	2SD601ARTX	NTE2408
Q1801, 02, 03	-	2SD601ARTX	NTE2408
Q1804, 05	-	2SB709ARTX	NTE2409
Q1901, 02	-	2SC1685QRS	NTE85
Q1903 Thru			
Q1909	-	2SD601ARTX	NTE2408
Q2101	-	2SD601ARTX	NTE2408
Q2351	-	2SB709ARTX	NTE2409
Q2352	-	2SD601ARTX	NTE2408
Q2353	-	2SB709ARTX	NTE2409
Q2354	-	2SD601ARTX	NTE2408
Q2355	-	2SB709ARTX	NTE2409

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PARTS LIST continued

Item No.	Type No.	Mfr. Part No.	NTE Part No.
Q2401 Thru			
Q2404	-	2SD601ARTX	NTE2408
Q3031	-	2SB709ARTX	NTE2409
Q3032, 33	-	2SD601ARTX	NTE2408
Q3034	-	2SB709ARTX	NTE2409
Q3035, 36	-	2SD601ARTX	NTE2408
Q3054	-	2SB709ARTX	NTE2409
Q3101 Thru			
Q3107	-	2SD601ARTX	NTE2408
Q3301, 02	-	2SD601ARTX	NTE2408
Q4108 Thru			
Q4111	-	2SD601ARTX	NTE2408
Q4131	-	2SB709ARTX	NTE2409
Q4132	-	2SD601ARTX	NTE2408
Q4141	-	2SB709ARTX	NTE2409
Q4142	-	2SD601ARTX	NTE2408
Q4151	-	2SB709ARTX	NTE2409
Q4152	-	2SD601ARTX	NTE2408
Q4154	-	2SB709ARTX	NTE2409
Q4155	-	2SD601ARTX	NTE2408
Q4156	-	2SB709ARTX	NTE2409
Q4251	-	2SB709ARTX	NTE2409
Q4309	-	2SB709ARTX	NTE2409
Q4310	-	2SD601ARTX	NTE2408
Q4311	-	2SB709ARTX	NTE2409
Q4312, 13	-	2SD601ARTX	NTE2408
Q4315	-	2SC1384Q	NTE293
Q6501 Thru			
Q6509	-	2SD601ARTX	NTE2408
Q6510	-	2SB709ARTX	NTE2409
Q6511, 13	-	2SD601ARTX	NTE2408
Q6514, 15, 16	-	2SB709ARTX	NTE2409
Q6517, 19	-	2SD601ARTX	NTE2408
Q6520 Thru			
Q6523	-	2SD601ARTX	NTE2408
Q6524	-	2SB709ARTX	NTE2409
Q6525 Thru			
Q6528	-	2SD601ARTX	NTE2408
Q6529, 30, 31	-	2SB709ARTX	NTE2409
Q6532	-	2SD601ARTX	NTE2408
Q7006	-	2SD601ARTX	NTE2408
Q7007	-	2SD601ARTX	NTE2408
Q7103, 04, 05	-	2SB709ARTX	NTE2409
Q7106, 07	-	2SD601ARTX	NTE2408

Item No.	Function/Rating	Mfr. Part No.	Notes
C027	.47µF 20% 50V NP	ECEA1HNR47U	-
C301	47µF 16V NP	ECEA1CN470U	-
C309	1µF 50V NP	ECEA1HN010U	-
C356	.0033 10% 2kV	ECKD3D332KB	-
C359, 63	.001 10% 2kV	ECKD3D102KB	-
C376	.0033 10% 2kV	ECKD3D332KB	-
C379	.001 10% 2kV	ECKD3D102KB	-
C396	.0033 10% 2kV	ECKD3D332KB	-
C402	1µF 25V Tantalum	ECSF1EE105	-
C403	.33µF 35V Tantalum	ECSF1VE334	-
C452	1µF 25V Tantalum	ECSF1EE105	-
C504	220pF 5% 50V N750	ECJ2VU1H221J	-
# **C551**	220pF 5% 2kV	ECKD3D221JB	-
# **C552, 53**	.0015 5% 2kV	ECKD3D152JB	-
# **C554**	.056 5% 50V	ECQB1H563JM	-
# **C555**	.0039 5% 1.2kV	ECWH12H392JS	-
# **C556**	180pF 5% 2kV	ECKD3D181JB	-
# **C557**	.01 5% 1.2kV	ECWH12H103JS	-
# **C558**	.027 5% 400V	ECQF4273JZH	-
# **C559**	390pF 5% 2kV	ECKD3D391JB	-
# **C560**	.47 200V	TAC7A2D474JC	-
C561	2.2µF 50V NP	ECEA1HN2R2U	-
C564	22µF 16V NP	ECEA1CN220U	-
# **C581**	33µF 160V	ECEA160V33Z	-
# **C583**	47µF 250V	ECA2EM470	-
# **C585**	1000µF 35V	ECA1VM102	-
C586	.047 10% 1.25kV	ECQE12473KF	-

Item No.	Function/Rating	Mfr. Part No.	Notes
C604	2.2µF 50V NP	ECEA1HN2R2U	-
C607	9pF ±.5pF 50V NPO	ECJ2VC1H090D	-
C610, 11, 12	1µF 50V NP	ECEA1HN010U	-
C615	33pF 5% 50V NPO	ECJ2VC1H330J	-
C620, 21	1µF 50V NP	ECEA1HN010U	-
# **C804, 05, 06**	.01 +80% - 20% 500V	ECKD2H103ZF	-
# **C816, 17**	470µF 160V	EC0S2DA471BB	-
C818	.0039 10% 1kV	ECKD3A392KB	-
# **C829, 30**	.0047 20% 250V	ECKCNB472ME	-
C831	680pF 10% 2kV	ECKD3D681KB	-
# **C832**	220µF 200V	ECES2DU221E4	-
C833, 35, 37	470pF 10% 1kV	ECKD3A471KB	-
# **C838**	2200µF 35V	ECA1VM222	-
C839	470pF 10% 1kV	ECKD3A471KB	-
# **C840**	2200µF 35V	ECA1VM222	-
C841	470pF 10% 1kV	ECKD3A471KB	-
# **C842**	1000µF 50V	ECA1HM102	-
C844	680pF 10% 2kV	ECKD3D681KB	-
# **C870**	.0047 20% 250V	ECKCNB472ME	-
C1551	100µF 25V NP	ECEA1EN101U	-
C1572	10µF 50V NP	ECEA1HN100U	-
# **C1582**	47µF 50V	ECA1HM470	-
# **C1584**	47µF 35V	ECA1VM470	-
C2201	3.3µF 16V Tantalum	AP335K016CAE	-
C2219	10µF 16V Tantalum	AP106K016CAE	-
# **C2222**	.0047 10% 50V	ECJ2VB1H472K	-
# **C2223**	.01 10% 50V	TCUX1H103KBN	-
C2327, 28	10µF 16V NP	ECEA1CKN100	-
C2333, 34	10µF 16V NP	ECEA1CKN100	-
C2407	10µF 50V NP	ECEA1HN100U	-
C2421, 26, 27	10µF 50V NP	ECEA1HN100U	-
C2431	22µF 50V NP	ECEA1HN220U	-
# **C2802**	.22 20% 250VAC	ECQU2A224MV	-
# **C2805, 06**	220pF 125VAC	-	-
C3003	1µF 50V NP	ECEA1HN010U	-
C4307	10µF 16V NP	ECEA1CKN100	-
C6517	1µF 50V NP	ECEA1HN010U	-
C6521	4.7µF 16V NP	ECEA1CKA470	-
C6536, 43	4.7µF 50V	ECEA1HN4R7U	-
C7053	100µF 16V NP	ECEA1CN101U	-
# **CR2801, 02**	130pF/3.6M	EXNG131P365	-
# **D2801**	Varistor	ERZC10VK361G	-
# **DY-B**	Yoke	KDY2AS631F	-
# **DY-G**	Yoke	KDY2AS631F	-
# **DY-R**	Yoke	KDY2AS631F	-
# **F2801**	Fuse	0BA1C63NU100	6.3Amp, 125V
JK1001	Jack	TJB2AA00102	Assembly
JK3001	Jack	TJB2AA0122	Assembly
JK3002	Jack	TJB2AA0112	Assembly
L001	39µH	ELESN390KA	-
L002	Ferrite Bead	EXCELSA35	-
L010	Ferrite Bead	EXCELSA35	-
L012, 13	10µH	TLUABTA100K	-
L015, 16	10µH	TLUABTA100K	-
L017	Ferrite Bead	EXCELSA35T	-
L103	15µH	ELESN150JA	-
L105	VCO	EIV7EN053B	-
L118	15µH	ELESN150JA	-
L135	56µH	ELESN560JA	-
L140	33µH	ELESN330KA	-
L351	100µH	ELEBD101KA	-
L352, 53, 54	82µH	TLTACT820K	-
L355	Ferrite Bead	EXCELSA35T	-
L371	100µH	ELEBD101KA	-
L372, 73, 74	82µH	TLTACT820K	-
L375	Ferrite Bead	EXCELSA35T	-
L376, 91	100µH	ELEBD101KA	-
L392, 93, 94	82µH	TLTACT820K	-
L395	Ferrite Bead	EXCELSA35T	-
L552, 53	Ferrite Bead	EXCELSA35B	-
L581	Ferrite Bead	EXCELDR35C	-
L601	82µH	TLUABTA820K	-
L602	4.7µH	TLTACT4R7J	-
L751	Phasing	TLH15733M	-

Item No.	Function/Rating	Mfr. Part No.	Notes
L805, 06	Ferrite Bead	EXCELSA35T	-
L808	Ferrite Bead	EXCELDR35	-
L810, 11	Ferrite Bead	EXCELSA35T	-
L812, 31	Ferrite Bead	EXCELSA35B	-
L832	Ferrite Bead	EXCELSA39E	-
L833	Choke	TLP15103S	-
L834 Thru			
L839	Ferrite Bead	EXCELSA35T	-
L841	Filter	ELEIN220KA	-
L842	Filter	ELEIN220KA	-
L843	Ferrite Bead	EXCELSA35T	-
L953, 54	Ferrite Bead	EXCELSA35T	-
L956	100µH	ELESN101JA	-
L960	1µH	TLTACT1R0K	-
L1109	10µH	TLTACT100J	-
L1110	10µH	TLTACT100K	-
L1801	1.5µH	ELESN1R5KA	-
L1803	2.2µH	ELESN2R2K	-
L1804	15µH	ELESN150KA	-
L1806, 07	1µH	ELESN1R0KA	-
L1808	Ferrite Bead	EXCELDR25	-
L2102	10µH	TLTACT100K	-
L2103	15µH	TLTACT150K	-
L2104	33µH	TLTACT330K	-
L2105	1.2µH	TLTACT1R2K	-
L2106	56µH	TLTACT560K	-
L2107	1.2µH	TLTACT1R2K	-
L2109	VCO	EIV7EN053B	-
L2112	Ferrite Bead	EXCELSA35	-
# **L2201**	1000µH	ELESN102JA	-
# **L2202**	470µH	ELESN471JA	-
L2301, 02	Filter	ELC10E680	-
L2303	Ferrite Bead	EXCELDR35	-
L2304	Ferrite Bead	EXCELDR35	-
# **L2801**	Line Filter	ELF18D850B	-
# **L2802**	Line Filter	ELF18D650M	-
L3006	10µH	TLTACT100K	-
L3301	33µH	TLTACT330K	-
L3309, 33	10µH	TLTACT100K	-
L4301	3.9µH	ELESN3R9KA	-
L6502 Thru			
L6505	33µH	ELESN330JA	-
L6506	15µH	ELESN150JA	-
L6507	15µH	ELESN150KA	-
L6509 Thru			
L6512	33µH	ELESN330JA	-
L7032	1µH	TLTACT1R0K	-
L7101, 03	Ferrite Bead	EXCELDR35	-
L7104, 05	Ferrite Bead	EXCELDR35	-
L7106	33µH	TLTACT330J	-
LC3201 Thru			
LC3204	L-C Network	EXCEMT101BTS	-
M002	RF Splitter	ENPE627	-
# **M014**	Socket	TJS1A5160	CRT
M018	Lens	TKGF5005	PTV
M022	Screen	TKG2AH50201	Lenticular
M023	Screen	TKG2AH50211	Fresnel
# **M041**	Line Cord	TSX2AA0131	AC, Polarized
# **M047**	CRT	TXFCRT85SER	Blue
# **M048**	CRT	TXFCRT86SER	Green
# **M049**	CRT	TXFCRT87SER	Red
M050	Mirror	TXFKG01BSER	-
R040, 64, 66	150 1% 1/10W	ERJ6ENF1500	-
R115	3000 Detector Out	EVND2AA03B33	-
R304	1650 1% 1/10W	ERJ6ENF1651	-
R325	5600 1% 1/10W	ERJ6ENF5601	-
R327	2200 1% 1/10W	ERJ6ENF2201	-
R348	560 1% 1/10W	ERJ6ENF5600	-
R350	680 1% 1/10W	ERJ6ENF6800	-
R360	3900 1% 1/4W	ER0S2CKF3901	-
R363, 64	5600 5% 3W	ERG3SJ562H	-
R370	3900 1% 1/4W	ER0S2CKF3901	-
R373, 74	5600 5% 3W	ERG3SJ562H	-
R380	3900 1% 1/4W	ER0S2CKF3901	-

PARTS LIST continued

	Item No.	Function/Rating	Mfr. Part No.	Notes
	R383, 84	5600 5% 3W	ERG3SJ562H	-
	R459	2.2 5% 1/4W Fusible	ERQ14AJ2R2	-
	R473	4700 1% 1/4W	ER0S2CKF4701	-
	R474	7150 1% 1/4W	ER0S2CKF7151	-
	R476	1430 1% 1/4W	ER0S2CKF1431	-
	R477	1910 1% 1/4W	ER0S2CKF1911	-
	R478	32.4K 1% 1/4W	ER02SCKF3242	-
	R479	15K 1% 1/4W	ER0S2CKF1502	-
	R480	12K 1% 1/4W	ER0S2CKF1202	-
	R521	1800 5% 3W	ERQ3CJ182L	-
	R522	3300 5% 3W	ERG3SJ332	-
#	**R552**	2.2 10% 5W Wirewound	ERF5ZK2R2	-
	R553	10K 1% 1/4W	ER0S2CKF1002	-
	R556	47.5K 1% 1/4W	ER0S2CKF4752	-
	R557	33.2K 1% 1/4W	ER0S2CKF3322	-
#	**R583**	1 5% 2W Fusible	ERQ2CJP1R0	-
#	**R584**	.33 1% 1/2W Fusible	ERQ12HKR33	-
	R758	27 5% 2W Fusible	ERQ2CJ270L	-
#	**R802**	1.5 5% 15W Wirewound	TAR26FJ1R5Z	-
#	**R810, 11, 19**	.22 5% 1/2W	ERX12SJR22	-
#	**R830**	8.2M 20% 1/2W	ERC12ZGM825	-
#	**R835, 36**	1 5% 1W	ERX1SJ1R0	-
#	**R841**	.39 5% 1W	ERX1SJR39	-
#	**R861**	.22 10% 1/2W	ERQ12HKR22	-
	R1554	27.4K 1% 1/4W	ER0S2CKF2742	-
	R1555	2740 1% 1/4W	ER0S2CKF2741	-
	R1557	3320 1% 1/4W	ER0S2CKF3321	-
#	**R1581**	33 1% 1/2W Fusible	ERQ12HJ330	-
#	**R1582**	17.8K 1% 1/4W	ER0S2CKF1782	-
#	**R1584**	7150 1% 1/4W	ER0S2CKF7151	-
	R1927	1690 1% 1/10W	ERJ6ENF1691	-
	R2115	3000 Detector Out	EVND8AA03B33	-
	R2118	10K AGC Delay	EVND8AA03B14	-
	R2208	91K 1% 1/10W	ERJ6ENF9102	-
	R2309, 10	7500 1% 1/10W	ERJ6ENF7501	-
#	**R2801**	8.2M 20% 1/2W	ERC12ZGM825	-
	R4134	390 1% 1/10W	ERJ6ENF3900	-
	R4135	1800 1% 1/10W	ERJ6ENF1801	-
	R4138	1910 1% 1/10W	ERJ6ENF1911	-
	R4144	390 1% 1/10W	ERJ6ENF3900	-
	R4145	1910 1% 1/10W	ERJ6ENF1911	-
	R4154	464 1% 1/10W	ERJ6ENF4640	-
	R4155	1800 1% 1/10W	ERJ6ENF1801	-
	R4170	1200 1% 1/10W	ERJ6ENF1201	-
	R6632	10K 1% 1/10W	ERJ6ENF1002	-
	R6633	1000 1% 1/10W	ERJ6ENF1001	-
	R6635	3300 1% 1/10W	ERJ6ENF3301	-
	R7270, 72, 73	27K 1% 1/10W	ERJ6ENF2702	-
	R7276, 77, 78	39K 1% 1/10W	ERJ6ENF3902	-
	R7283, 84, 85	47K 1% 1/10W	ERJ6ENF4702	-
	R7290, 92, 94	47K 1% 1/10W	ERJ6ENF4702	-
	R7298	1000 1% 1/10W	ERJ6ENF1001	-
	R7299	39K 1% 1/10W	ERJ6ENF3902	-
	R7300, 01	39K 1% 1/10W	ERJ6ENF3902	-
	R7304, 05, 06	27K 1% 1/10W	ERJ6ENF2702	-
	R7308 Thru			
	R7312	1000 1% 1/10W	ERJ6ENF1001	-
#	**RL801**	Relay	TSEH8007	Power
	RM002	Receiver	RPM-637CBRL	Remote
	S010	Switch	EVQQVC13T	Power
	S011	Switch	EVQQVC13T	Volume Down
	S012	Switch	EVQQVC13T	Volume Up
	S013	Switch	EVQQVC13T	Channel Down
	S014	Switch	EVQQVC13T	Channel Up
	S015	Switch	EVQQVC13T	TV/Video
	S016	Switch	EVQQVC13T	Action
	SP-L	Speaker	EASG12P525A2	-
	SP-R	Speaker	EASG12P525A2	-
	T501	Horizontal Driver	ETH19Y70AYM	-
#	**T551** (1)	Horizontal Output	KFT7AQ051F	-
#	**T802**	Power	ETS42AD365AC	-
#	**T2801**	Power	ETP28Z439AF	-
#	**TNR001**	Tuner	ENV56D36G3	-
#	**TNR2101**	Tuner	ENV56D36G3	-

	Item No.	Function/Rating	Mfr. Part No.	Notes
	X001	Crystal	TSSA096	12MHz
	X101	Filter	M1972M	SAW
	X102	Trap	EFCS4R5MW5BA	4.5MHz
	X201	Filter	SFSH4R5MDB	4.5MHz
	X501	Crystal	EF0A503KS4KT	503kHz
	X601	Crystal	TSS816-N2X	3.58MHz
	X1801	Crystal	TSSA092	-
	X2102	Trap	EFCS4R5MW5BA	4.5MHz
	X2103	Filter	EFCKM1958M	SAW
	X7101	Crystal	EF0EC4004T4	-
#		Focus Pack	TNX2A1001	-
		Fuse Holder	XCST13301	For F2801(2 Used)
		Magnet	TLHX015	Static Convergence
		PC Board	TNP2AH0021AA	A
		PC Board	TNPH0121AG	B
		PC Board	TNPA1513	C
		PC Board	TNPA0609AB	D
		PC Board	TNP2AA056AA	F2
		PC Board	TNP2AA049	G
		PC Board	TNP2AA050	K
		PC Board	TNPA0784AB	LB
		PC Board	TNPA0783AB	LG
		PC Board	TNPA0782AB	LR
		PC Board	TNP2AA027AB	N
		PC Board	TNPA0615	R
		PC Board	TNP2AA045D	T
		PC Board	TNP2AA063AA	X
		PC Board	TNPA1059AC	Y
		Transmitter (2)	EUR511500	Remote
		Transmitter (3)	EUR511510	Remote

 # For SAFETY use only equivalent replacement part.
% Use insulating hardware supplied with replacement.
(1) Screen and focus controls are part of T551.
(2) Used in models PT-51D30B, PT-51D30CB.
(3) Used in models PT-51G35B, PT-51G35CB

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	CM2125
Multiburst Signal	VG91
Color Bar	VG91
TV Stereo	VG91
Digital VOM	SC3100
Frequency Meter	SC3100
Hi-Voltage Probe	HP200
Accessory Probes	TP212
Isolation Transformer	PR570
Capacitance Analyzer	LC102
CRT Analyzer	CR7000
AC Leakage Tester	PR570
Inductance Analyzer	LC102
Flyback Yoke Tester	TVA92
Field Strength Meter	SL753
Transistor Tester	TF46
Horizontal Analyzer	HA-2500
Video Analyzer	VG91, TVA92

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