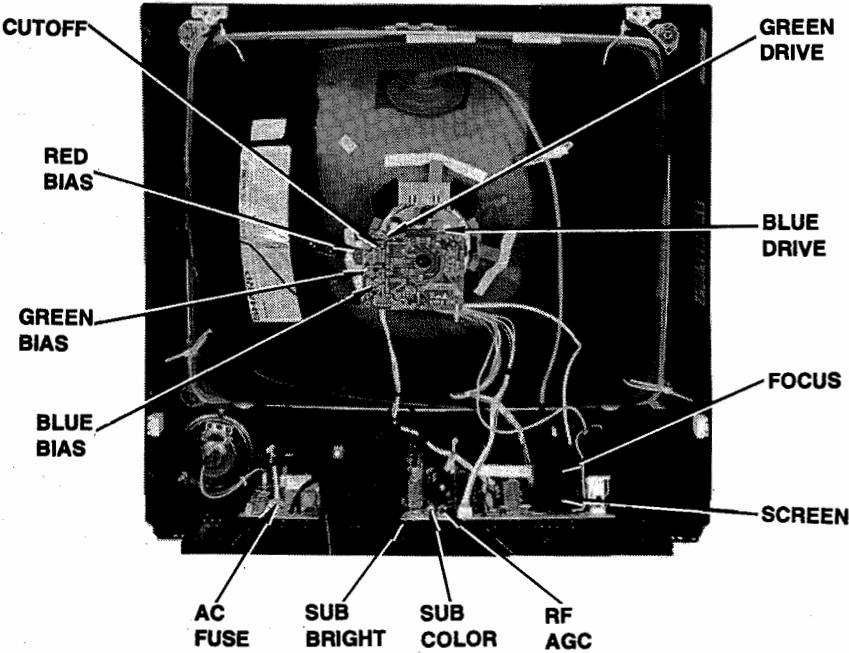


CABINET - REAR VIEW



Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	-	K	1	Red
Yoke	D4137		3	Blue
Yoke Setting	YP2A		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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93RB02409



3112

PHOTOFACT® Technical Service Data

SET 3112

MODELS 20C-M100 / M120 / M150, 19C-M100R

SHARP

Lined area for technical data or notes.

For Supplier Address,  
See PHOTOFACT Annual Index

SHARP  
Model 20C-M100



Essential coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts lists

Coverage includes these additional models:

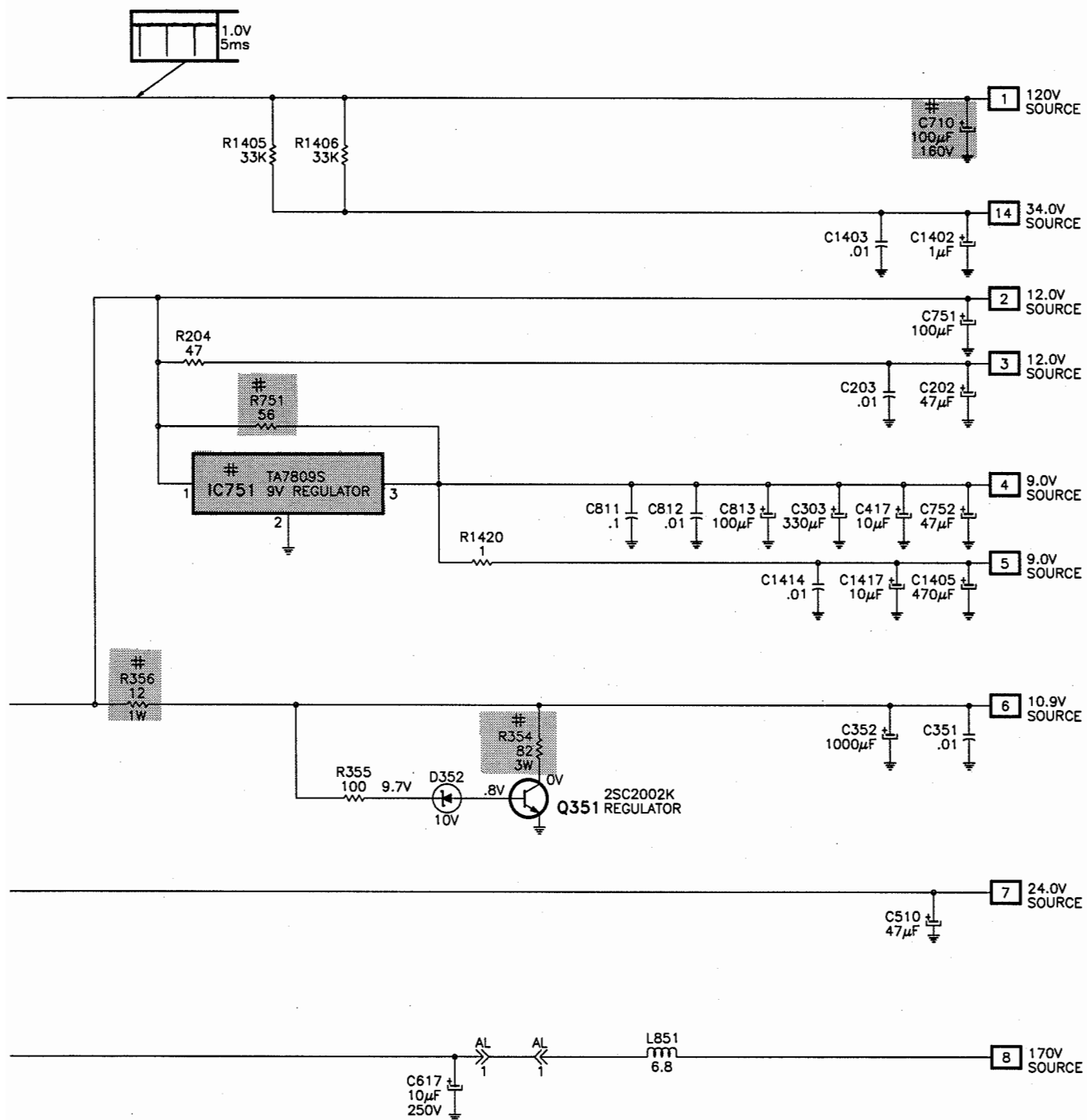
MODEL  
19C-M100R  
20C-M120  
20C-M150



HOWARD W. SAMS & COMPANY  
FEBRUARY 1993 SET 3112

3112

## POWER SUPPLY SCHEMATIC continued

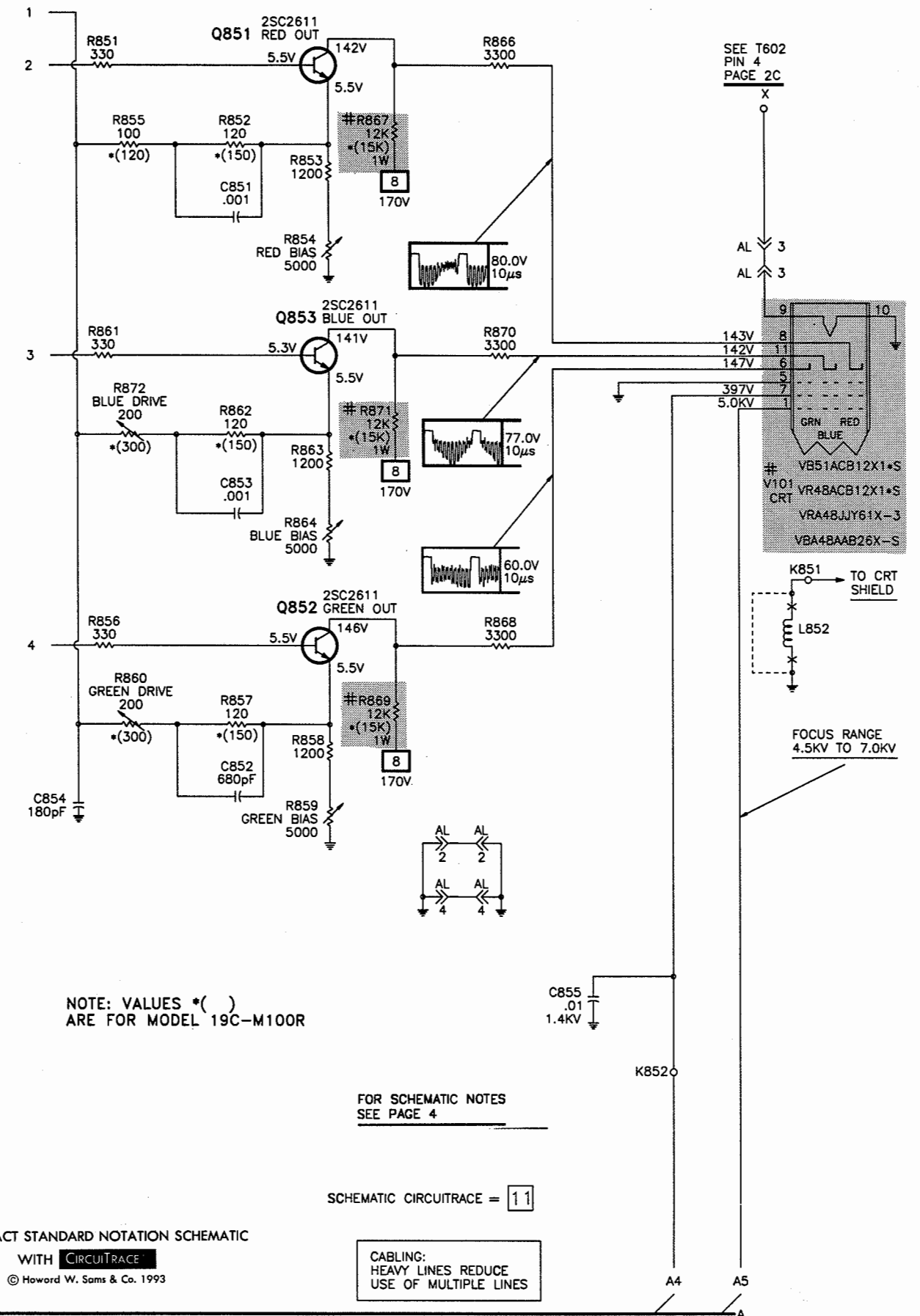


SCHEMATIC CIRCUITRACE = 11

FOR SCHEMATIC NOTES  
SEE PAGE 3

## G

## CRT SCHEMATIC



A PHOTOFAC<sup>®</sup> STANDARD NOTATION SCHEMATIC  
WITH CIRCUIT<sup>®</sup>TRACE  
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SCHEMATIC CIRCUITRACE = 11

**CABLING:**  
HEAVY LINES REDUCE  
USE OF MULTIPLE LINES

H

RESISTORS

Item No. Replacement	Rating	Mfr. Part No.	NTE
# PR701	12.5 Cold PTC	RMPTP0026CEZZ	-
# R354	82 5% 3W Oxide Film	VRS-SV3LB820J	3W082
# R356	12 5% 1W Oxide Film	VRS-VV3AB120J	1W012
# R435	6800 5% 1W Oxide Film	VRS-VV3AB682J	1W268
# R512	3.3 5% 1W Metal Film	VRN-VV3AB3R3J	1W3D3
	3.9 5% 1W Metal Film	VRN-VV3AB3R9J(1)	1W3D9
# R608	1500 5% 3W Oxide Film	VRS-SV3LB152J	3W215
# R609	8200 5% 3W Oxide Film	VRS-SV3LB822J	3W282
# R611	.22 5% 1W Metal Film	VRN-VV3ABR22J	1WD22
# R612	390 5% 2W Metal Film	VRS-VV3DB391J	2W139
# R613	6.8 10% 10W Wire Wound	VRW-KQ4AC6R8K	10W6D8
# R614	10 5% 1/2W Oxide Film	VRS-SV2HC100J	HW010
# R617	5600 10% 1/2W Carbon Film	VRC-MA2HG562K	HW256
# R618	10K 5% 1/2W Oxide Film	VRS-SV2HC103J	HW103
# R619	1.2 5% 1W Metal Film	VRN-VV3AB1R2J	1W1D2
# R623	1 5% 1W Metal Film	VRN-VV3AB1R0J(1)	1W1D0
	1.2 5% 1W Metal Film	VRN-VV3AB1R2J	1W1D2
# R651	27 5% 1/4W Carbon Film	VRD-RA2EE270J	QW027
# R653	1000 5% 1/8W Carbon Chip	VRD-MN2BE102J	-
# R655	15K 5% 1/8W Carbon Chip	VRD-MN2BE153J	-
# R656	6800 5% 1/8W Carbon Chip	VRD-MN2BE682J	-
# R701	2.7 10% 7W Wire Wound	VRW-KV3NC2R7K	-
# R702	820K 5% 1/2W Carbon Film	VRD-RM2HD824J	HW482
# R703	330 5% 3W Oxide Film	VRS-SV3LB331J	3W133
# R704	150 5% 1/2W Oxide Film	VRS-SV2HC151J	HW151
# R708	100K 2% 1/4W Carbon Film	VRD-RA2EE104G	QW410
# R709	5600 2% 1/4W Carbon Film	VRD-RA2EE562G	QW256
# R710	68K 5% 1/8W Carbon Chip	VRD-MN2BE683J	-
# R715	1.8 5% 2W Metal Film	VRN-VV3DB1R8J	2W1D8
	1.5 5% 2W Metal Film	VRN-VV3AB1R5J(1)	2W1D5
# R717	330 5% 5W Wire Wound	RR-WZ0116CEZZ	5W133
# R718	330 5% 5W Wire Wound	RR-WZ0116CEZZ	5W133
# R719	560 5% 3W Oxide Film	VRS-SV3LB561J	3W156
# R722	820 5% 1W Oxide Film	VRS-VV3AB821J	1W182
# R751	56 5% 1/2W Carbon Film	VRD-RM2HD560J	HW056
# R867	12K 5% 1W Oxide Film	VRS-VV3AB123J	1W312
	15K 5% 1W Oxide Film	VRS-VV3AB153J(1)	1W315
# R869	12K 5% 1W Oxide Film	VRS-VV3AB123J	1W312
	15K 5% 1W Oxide Film	VRS-VV3AB153J(1)	1W315
# R871	12K 5% 1W Oxide Film	VRS-VV3AB123J	1W312
	15K 5% 1W Oxide Film	VRS-VV3AB153J(1)	1W315
# R1403	22K 5% 1W Oxide Film	VRS-VV3AB223J	1W322

# For SAFETY use only equivalent replacement part.  
(1) Used in Model 19C-M100R.

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
CF301	Sound Take-off	RFILC0029TAZZ(2) RFILC0001AJZZ(3)	-
CF401	Trap	RFILC0002AJZZ	4.5MHz Trap
CF601	Crystal	RFILA0034CEZZ	503kHz
DL401	Delay Line	RCILZ0792CEZZ	-
# F701	Fuse	QFS-B4023CEZZ	Fast Acting
	4Amp 125V AC	QFS-B4021GEZZ	-
FB601	Ferrite Bead	RBLN-0010CEZZ	-
FB602	Ferrite Bead	RBLN-0010CEZZ	-
FB603	Ferrite Bead	RBLN-0037CEZZ	-
FB701	Ferrite Bead	RBLN-0037CEZZ	-
# L701	Line Filter	RCILF0003PEZZ	-
# L702	Degaussing	RCILG0017PEZZ(2) RCILG0014MEZZ(3)	-
# P701	Cord	QACCD3014CESA	-
# RY701	Relay	RRLYU0024CEZZ RRLYU0032CEZZ(3)	-
S851	Switch	QSW-B0015CEZZ	-
S1001	Switch	QSW-K0068CEZZ	Power
S1002	Switch	QSW-K0068CEZZ	Volume Up
S1003	Switch	QSW-K0068CEZZ	Volume Down
S1004	Switch	QSW-K0068CEZZ	Channel Up
S1005	Switch	QSW-K0068CEZZ	Channel Down
S1006	Switch	QSW-K0068CEZZ	Video
S1007	Switch	QSW-K0068CEZZ	Set-Up
SF201	Filter	RFILC0137CEZZ	SAW
# V101	CRT	VB51ACB12X1*S(2) VR48ACB12X1*S(3) VRA48JY61X-3(3) VBA48AAB26X-S(3)	- - - -
X801	Crystal	RCRSB0001PEZZ	3.58MHz
X1001	Crystal	RCRSB0004PEZZ	4MHz
#	Board	QTANZ0122CEZZ(1)	Antenna Terminal
	Board	DUNTK7722WEV0(1)(2)	Mother
		DUNTK7231WEV6(1)(3)	-
	Board	DUNTK7723WEV0(1)(2)	CRT
		DUNTK7232WEV6(1)(3)	-
	Magnet Assembly	PMAGF3006CEZZ	Purity and Convergence
	Remote Receiver	RRMCU0195CEZZ	-
	R/C Transmitter	RRMCG0797CESA	-
	Socket	QSOCV0913CEZZ	For CRT
#	U/V Tuner	VTUVTSS6USZP(1)	-
	Wedge	PSPAG0012MEZZ	For Yoke (3 Used)

# For SAFETY use only equivalent replacement part.  
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.  
(2) Used in Models 20C-M120, 20C-M150, and 20C-M100.  
(3) Used in Model 19C-M100R.

CABINET PARTS

MODEL 20C-M100

Item	Mfr. Part No.
Complete Assembly	CCABA1131MES0
Cabinet Rear	GCABB1070MEKA
Button	JBTN-1026MEKA

MODEL 20C-M120

Item	Mfr. Part No.
Complete Assembly	CCBA1136MES0
Cabinet Rear	GCABB1070MEKA
Button	JBTN-1026MEKB

MODEL 20C-M150

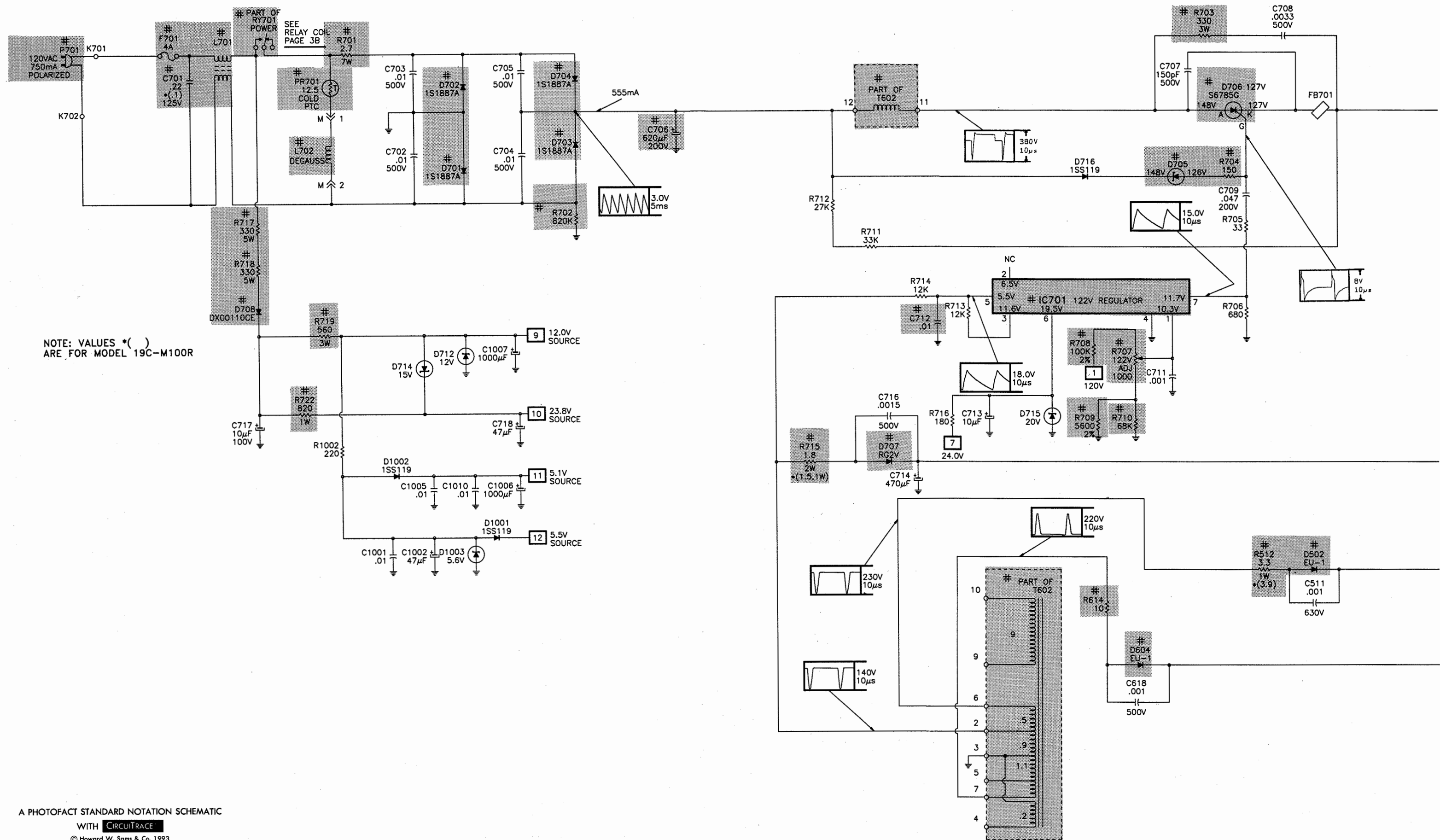
Item	Mfr. Part No.
Complete Assembly	CCABA1131MES1
Cabinet Rear	GCABB1070MEKB
Button	JBTN-1026MEKB

MODEL 19C-M100R

Item	Mfr. Part No.
Complete Assembly	CCABA1108MES3
Cabinet Rear	GCABB1072MEKA
Button	JBTN-1018MEKA

SHARP  
MODELS 20C-M100 / M120 / M150, 19C-M100R

## POWER SUPPLY SCHEMATIC



### A PHOTOFACT STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE™

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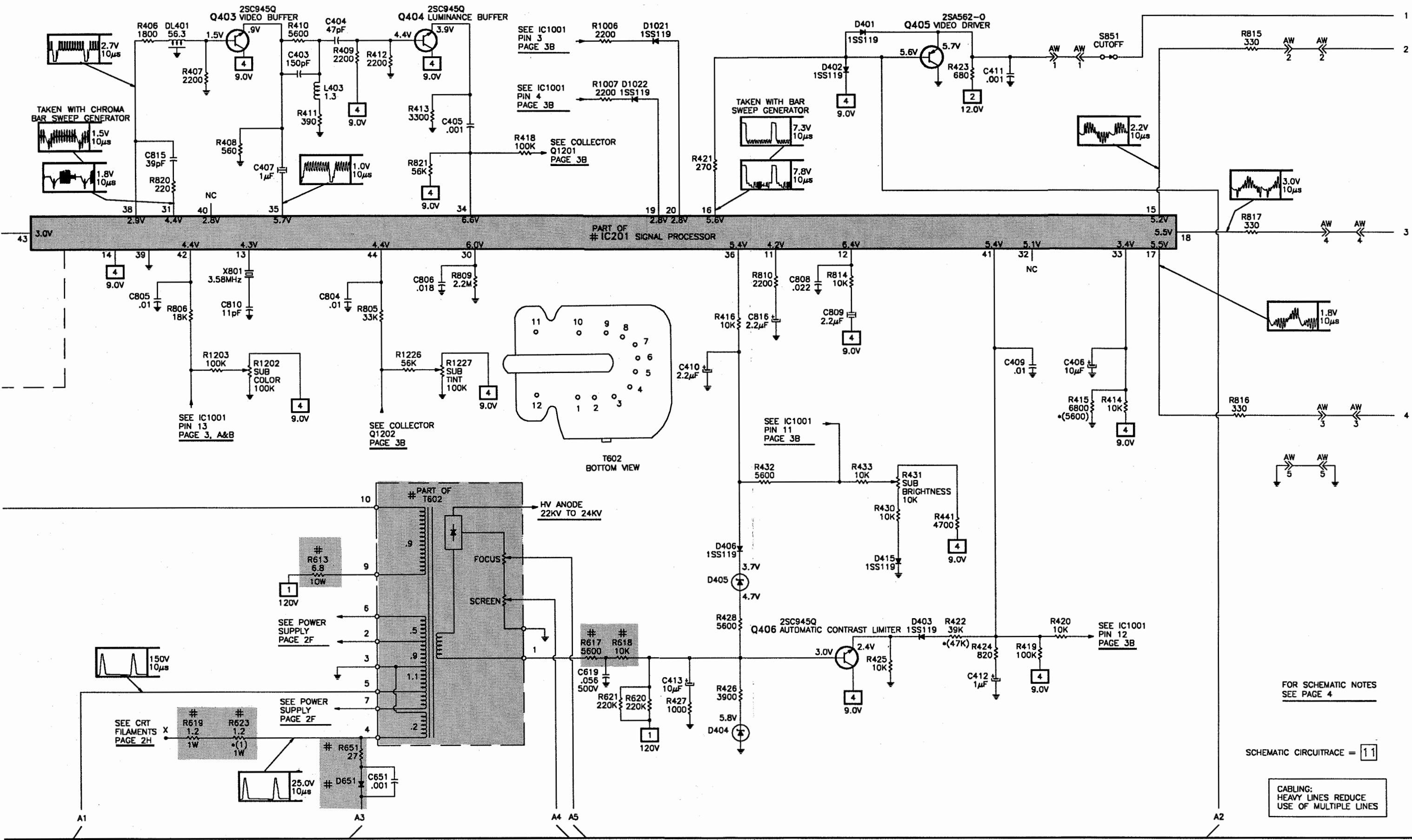
PARTS LIST

SEMICONDUCTORS					
(Select replacement for best results.)					
Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D201	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D352	-	RH-EX0314CEZZ	-	-	-
D401 - D403	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D404	-	RH-EX0300CEZZ	-	-	-
D405	-	RH-EX0294CEZZ	-	-	-
D406	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D408	1N34A	VHD1N34A///-1	NTE110MP	ECG110MP	SK3709
D409	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D412	1SS82	VHD1SS82///1A	NTE552	ECG552	SK9000
D415	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-EX0041TAZZ	NTE519	ECG519	SK3100
D501	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
	DS135C-AT	RH-DX0155CEZZ	NTE552	ECG552	SK9000
# D502	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
	TVR1G(TP)	RH-DX0126CEZZ	NTE552	ECG552	SK9000
D601	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D602	-	RH-EX0309CEZZ	-	-	-
# D603, 04	EU-1	RH-DX0131CEZZ	NTE552	ECG552	SK9000
	TVR1G	RH-DX0126CEZZ	NTE552	ECG552	SK9000
	RH1S	RH-DX0086TAZZ	NTE552	ECG552	SK9000
D605	-	RH-EX0200CEZZ	NTE5021A	ECG5021A	SK12A
# D651	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
# D654	-	RH-EX0091CEZZ	NTE5030A	ECG5030A	SK22A
# D701 - D704	1S1887A	RH-DX0154CEZZ	NTE552	ECG552	SK9000
# D705	-	RH-EX0084CEZZ	NTE5093A	ECG5093A	SK75V
# D706	S6785G	VHSS6785GLB2E	-	-	-
# D707	RG2V	RH-DX0181CEZZ	NTE580	ECG580	SK5036
	DS135C-AT	RH-DX0155CEZZ	NTE552	ECG552	SK9000
# D708	S5277G	RH-DX0110CEZZ	NTE116	ECG116	SK3312
	DS135C-AT	RH-DX0155CEZZ	NTE552	ECG552	SK9000
D711	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D712	-	RH-EX0022TAZZ	NTE5020A	ECG5020A	SK11A
D713	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D714	-	RH-EX0217CEZZ	NTE5023A	ECG5023A	SK14A
D715	-	RH-EX0592CEZZ	NTE5079A	ECG5079A	-
D716	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1001, 02	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1003	-	RH-EX0103CEZZ	NTE5011A	ECG5011A	SK5A6
# For SAFETY use only equivalent replacement part.					

SEMICONDUCTORS continued					
(Select replacement for best results.)					
Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D1004	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1005	-	RH-EX0138CEZZ	NTE5014A	ECG5014A	SK6A8
D1006, 07	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1015	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1017 - D1019	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE19	ECG519	SK3100
D1021, 22	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1301, 03	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1401	1SS119	VHD1SS119//-1	NTE519	ECG519	SK3100
	1N4148	RH-DX0045GEZZ	NTE519	ECG519	SK3100
D1402	-	RH-EX0297CEZZ	-	-	-
D1403	-	RH-EX0161CEZZ	NTE5015A	ECG5015A	SK7A5
D1404	-	RH-EX0302CEZZ	-	-	-
D1405	-	RH-EX0294CEZZ	-	-	-
D1901	-	RH-EX0296CEZZ	NTE5011T1	ECG5011T1	-
# IC201	-	RH-iX1712CEZZ	-	ECG7010	-
IC351	TDA7052	VHITDA7052/-1	-	-	-
# IC501	-	RH-iX0238CEZZ	NTE1676	ECG1676	SK7653
# IC701	-	RH-iX0137CEZZ	NTE1751	ECG1751	-
# IC751	TA7809S	VHITA7809S/-1	-	-	-
IC1001	-	RH-iX1709CEZZ	-	-	-
IC1401	UPC1486C	VHIUPC1486C-1	NTE15042	ECG7019	SK10488
Q201	2SC1906	VS2SC1906//1E	NTE107	ECG107	SK3293
Q351	2SC2002K	-	NTE85	ECG85	SK3449
	2SC2002	VS2SC2002-K1A	NTE85	ECG85	SK3449
	2SC2002L	-	NTE85	ECG85	SK3449
Q401 - Q404	2SC945Q	-	NTE85	ECG85	SK3124A
	2SC945A(Q)	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q405	2SA562-O	-	NTE290A	ECG290A	SK3114A
	2SA562T(O)	VS2SA562TO/-1	NTE290A	ECG290A	SK3114A
	2SA854(Q)	VS2SA854-Q/1E	NTE290A	ECG290A	SK3841
Q406	2SC945Q	-	NTE85	ECG85	SK3124A
	2SC945A(Q)	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q601	2SC2482	VS2SC2482//1	NTE399	ECG399	SK9352
	2SC2610(BK)	VS2SC2610/-1E	NTE399	ECG399	SK9352
# Q602	2SD2095	VS2SD2095//1E	NTE2331	ECG2331	SK10088
Q851 - Q853	2SC2611	VS2SC2611/-1E	NTE157	ECG157	SK3747
	2SC2610	VS2SC2610/-1E	NTE399	ECG399	SK9352
	2SC2482	VS2SC2482//1	NTE399	ECG399	SK9352
# For SAFETY use only equivalent replacement part.					



TELEVISION SCHEMATIC continued



FOR SCHEMATIC NOTES  
SEE PAGE 4

SCHEMATIC CIRCUITRACE = 11

CABLING:  
HEAVY LINES REDUCE  
USE OF MULTIPLE LINES

PARTS LIST continued

SEMICONDUCTORS continued

(Select replacement for best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q1201, 02	2SC945Q	-	NTE85	ECG85	SK3124A
	2SC945A(Q)	VS2SC945AQ/-1	NTE85	ECG85	SK3124A
	2SC1815(Y)	VS2SC1815YW-1	NTE85	ECG85	SK3124A
Q1401	2SA1015Y	-	NTE290A	ECG290A	SK9132
	2SA1015(Y)	VS2SA1015Y/1E	NTE290A	ECG290A	SK9132
Q1701	2SC945P	-	NTE85	ECG85	SK3124A
	2SC945A(P)	VS2SC945AP/-1	NTE85	ECG85	SK3124A
	2SC1815(GR)	VS2SC1815GW-1	NTE85	ECG85	SK3124A

COILS & TRANSFORMERS

Item No.	Function	Mfr. Part No.	On-Unit No.
# DY601	Yoke 90 °	Horiz 2.46mH	RCiLH0060MEZZ(1) -
		Vert 33.3 mH	RCiLH0054MEZZ(2) -
T601	Horiz Driver	RTRNZ0367CEZZ	-
# T602	Horiz Output	RTRNF0074PEZZ(1)(3)	-
		RTRNF0059PEZZ(2)(3)	-

# For SAFETY use only equivalent replacement part.  
(1) Used with models 20C-M100 /M120 /M150.  
(2) Used with model 19C-M100R.  
(3) Focus and Screen controls are part of Horizontal Outout Transformer T602

SPEAKER

Item No.	Description	Mfr. Part No.
SP1	3" Rd 32 Ohm 2W	VSP0080P-G3YB 80P-GY3B(1)

(1) Number on unit.



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

B. Bryant, G. Farrell, B. Fink,  
M. Herkless, J. Kocha,  
F. Malek, B. Medaris, B. Skinner,  
J. Watson

CONTROLS

(All wattages 1/2 watt or less, unless otherwise listed.)

Item No.	Function	Resistance	Mfr. Part No.
R213	RF-AGC	10K	RVR-B5328CEZZ
R431	Sub-Brightness	10K	RVR-B5328CEZZ
R509	Vert-Size	20K	RVR-B5266CEZZ
# R707	122 V Adjust	1000	RVR-B5261CEZZ
R854	Red Bias	5000	RVR-B5411CEZZ
R859	Green Bias	5000	RVR-B5411CEZZ
R860	Green Drive	300	RVR-B5197CEZZ(1)
		200	RVR-B5464CEZZ
R864	Blue Bias	5000	RVR-B5411CEZZ
R872	Blue Drive	300	RVR-B5197CEZZ(1)
		200	RVR-B5464CEZZ
R1202	Sub Color	100K	RVR-B5269CEZZ
R1227	Sub Tint	100K	RVR-B5269CEZZ

# For SAFETY use only equivalent replacement part.  
(1) Used in Model 19G-M100R.

CAPACITORS

Item	Rating	Mfr. Part No.
# C610	680 2KV	RC-KZ0039CEZZ
	470 2KV	RC-KZ0038CEZZ(1)
# C612	.0043 1.6KV 5%	VCFFPD3CA432J
	.0047 1.6KV 5%	VCFFPD3CA472J(1)
# C613	.0047 1.6KV 5%	VCFFPD3CA472J
# C701	.22 125V AC	RC-QZ0220CEZZ
		RC-QZ030DCEZZ
		RC-QZ027DCEZZ
		RC-QZ029DCEZZ(1)
		RC-QZ026DCEZZ(1)
# C712	.1 125V AC	RC-QZ029DCEZZ(1)
		VCQYTA1HM103K
# C712	.01 50V	VCQYTA1HM103K

# For SAFETY use only equivalent replacement part.  
(1) Used in Model 19C-M100R.

COILS (RF-IF)

Item No.	Rating	Mfr. Part No.
L202	.82uH	VP-MKR82M0000
L203	.68uH	VP-MKR68M0000
L204	.27uH	VP-XFR27K0000
L205	PIF Detector	RCiLi0448CEZZ
L206	AFT	RCiLi0547CEZZ
L303	Sound Detector	RCiLi0374CEZZ
L401	80MHz	RCiLP0094CEZZ
L402	10uH	VP-MK100K0000
L403	27uH	VP-MK270K0000
L404	10uH	VP-XF100K0000
L601	82uH	VP-MK820K0000
L851	220uH	VP-MK221K0000
L852	4.7uH	VP-CF4R7K0000(1)
L1001	Sign Position	RCiLB0035CEZZ
L1402	10uH	VP-MK100K0000

(1) Used in Models 20C-M100  
20C-M120  
20C-M150

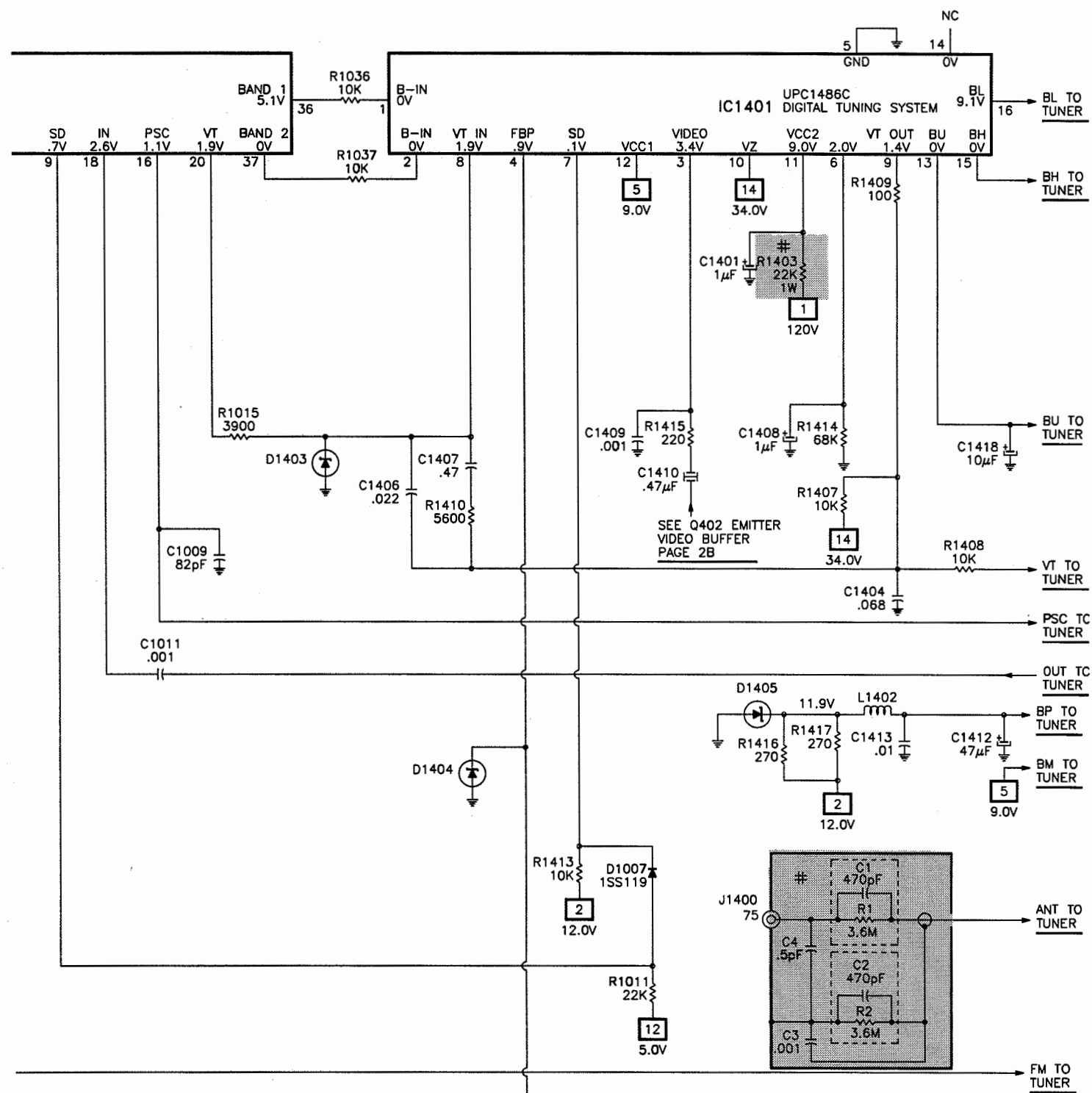
ELECTROLYTIC CAPACITORS

Item	Rating	Mfr. Part No.
C308	4.7 50V NP	VCE9AA1HW475M
C407	1 50V NP	VCE9AA1HW105M
C417	10 16V	VCSATA1CE106K
C501	4.7 16V	VCSATA1CE475K
C507	.68 35V	VCSATA1VE684K
# C706	820 200V	RC-EZ0183CEZZ
# C710	100 160V	VCEAAH2CW107M
C809	2.2 50V NP	VCE9AA1HW225M
C1410	.47 50V NP	VCE9AA1HW474M
C1417	10 16V	VCSATA1CE106K

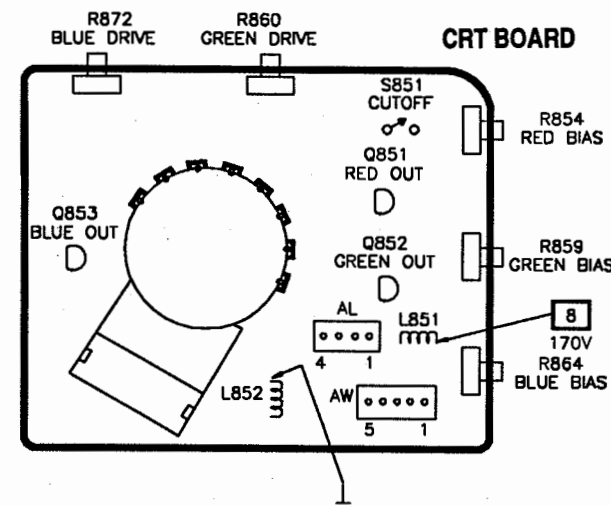
# For SAFETY use only equivalent replacement part.





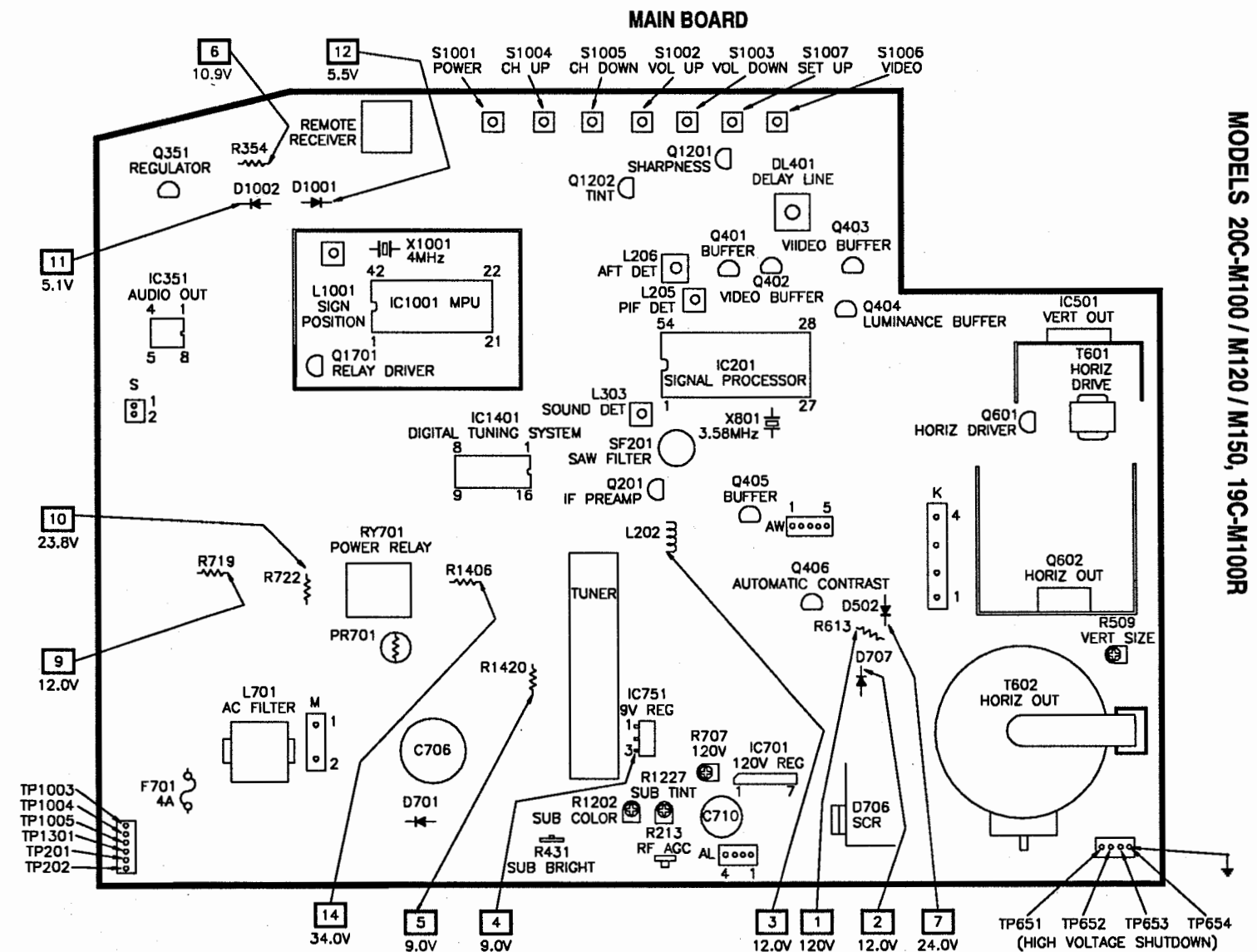


A PHOTOFACT STANDARD NOTATION SCHEMATIC  
WITH CIRCUITRACE  
© Howard W. Sams & Co., 1993



## HIGH VOLTAGE SHUTDOWN TEST

After any servicing relating to the high voltage circuits, horizontal deflection circuits, or B+ circuits, test shutdown by momentarily applying 25.5V, through an isolation diode, to TP652. The set should lose raster and sound. If the set fails to go into shutdown, the high voltage shutdown circuit requires repair. To restore operation, remove power, wait 30 seconds, then restore power.



# SAFETY PRECAUTIONS

## SERVICE WARNING

ONLY qualified service technicians who are familiar with safety checks and guidelines should perform service work. For continued SAFETY:

1. Before replacing parts, disconnect power source to protect electrostatically sensitive parts.
2. Do not attempt to modify any circuit unless so recommended by the manufacturer.
3. When servicing chassis, use an isolation transformer between the line cord and power receptacle.

## SERVICING HIGH VOLTAGE AND PICTURE TUBE

Use EXTREME CAUTION when servicing the High Voltage circuits.

1. To discharge static High Voltage, connect a 10 kilohm resistor in series with a test lead between chassis and picture tube anode lead.
2. DO NOT lift picture tube by the neck.
3. ALWAYS wear shatterproof goggles when handling picture tube 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 picture tube is the only potential source of x-rays.

1. Keep an accurate High Voltage meter available at all times. Check meter calibration periodically.
2. Whenever servicing a chassis, check High Voltage at various brightness levels to be sure it is regulating properly.
3. 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.
4. When troubleshooting a set with excessive High Voltage, avoid close contact with picture tube. DO NOT operate set longer than necessary. To locate the cause of excessive High Voltage, use a variable AC transformer to regulate voltage.
5. In present chassis, 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.

## SAFETY CHECKS -- FIRE AND SHOCK HAZARD

### Cold Leakage Checks for Sets with Isolated Ground

1. Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch ON.
2. Use an ohmmeter to measure the resistance between the jumpered 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 200 kilohms and 5 megohms. Parts without a return path must register infinity.

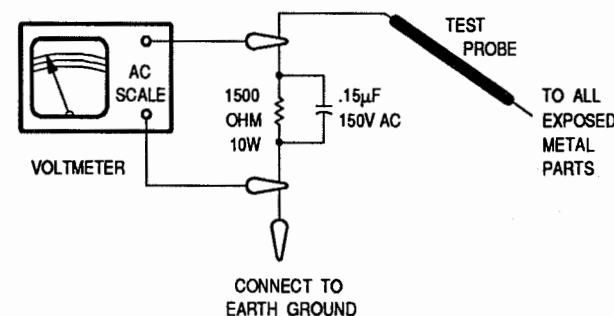
### Hot Leakage Current Check

1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
2. Use a 1500-ohm, 10-watt resistor in parallel with a .15-microfarad 150 Volts AC capacitor to connect between any exposed metal parts on the set and a good earth ground. (See figure below.)
3. Use an AC voltmeter with at least 1000 ohms-per-volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point.
4. Voltage readings should not exceed .75 volts RMS (5 milliamps AC). Any value exceeding this limit constitutes a potential shock hazard and must be corrected.
5. If AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.

## GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning set to customer.

1. Check repaired area for poorly soldered or de-soldered connections, and check entire circuit board for solder splashes.
2. Check inner board wiring for pinched wires or wires contacting any high-wattage resistors.
3. 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.



## 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

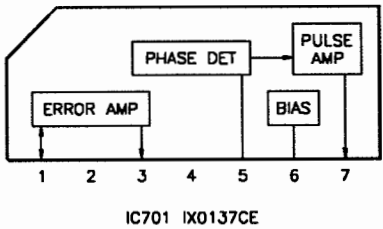
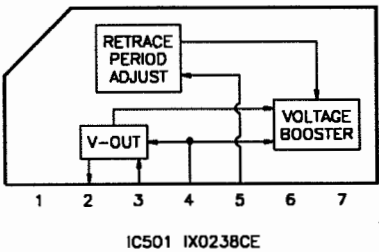
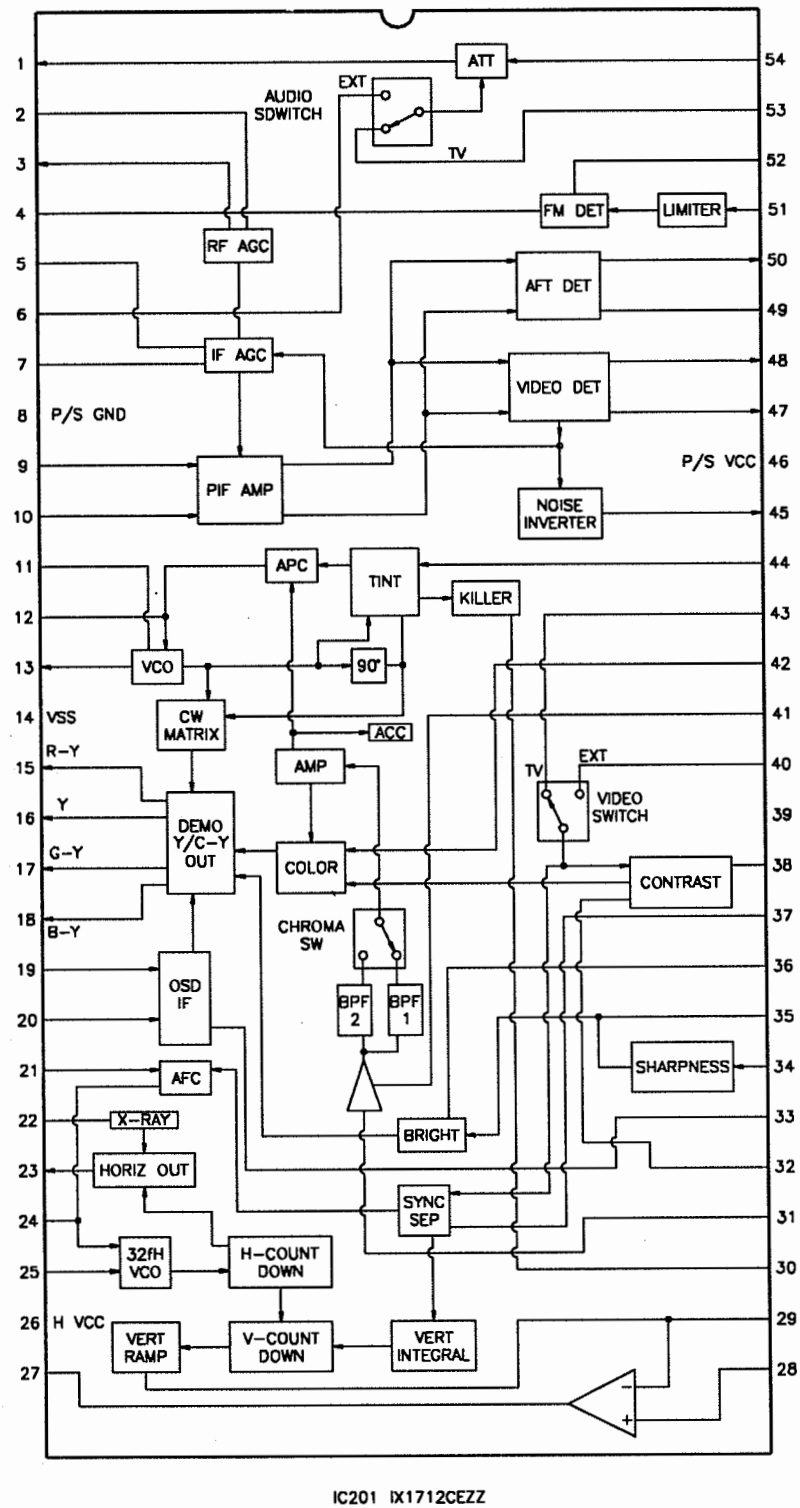
Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

## Participating Vendors

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



IC FUNCTIONS



SCHEMATIC NOTES

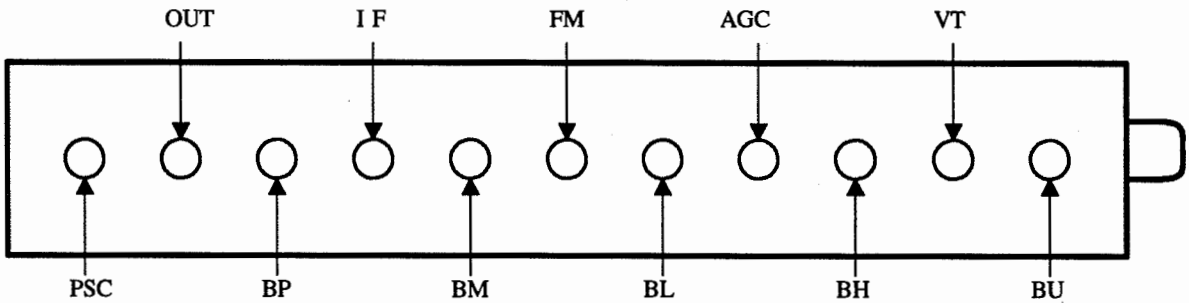
- # For SAFETY use only equivalent replacement part, see parts list.
  - \* Circuitry not used in some sets.
  - Circuitry used in some versions.
  - ⊥ Ground
  - ⏏ Chassis ground
  - ▽ Common tie point
- Waveforms and voltages are taken from ground, unless noted otherwise.
- Waveforms taken with triggered scope and keyed rainbow generator. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.
- Item numbers in rectangle appear in adjustment instructions.
- Supply voltages maintained as seen at input.
- Voltages measured with digital meter and no signal.
- 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 1/2 W or less, 5% or greater unless noted.
- Value in ( ) used in some versions.
- Measurements with switching as shown, unless noted.

TUNER INFORMATION

TUNER VOLTAGE CHART			
Pin	VHF Low Band	VHF High Band	UHF Band
BU	0V	.1V	9.0V
VT	1.8V	4.5V	6.6V
BH	0V	9.0V	1.0V
AGC	6.9V	6.9V	6.9V
BL	9.0V	8.2V	.4V
FM	1.5V	1.4V	0V
BM	9.0V	9.0V	9.0V
BP	5.2V	5.2V	5.2V
PSC	1.1V	.3V	.2V

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



TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3080	Isolation Transformer	PR57
Generators		Capacitance Analyzer	LC101, LC102
RGB	CM2000	CRT Analyzer	CR70
Multiburst Signal	VG91	AC Leakage Tester	PR57
Color Bar	VG91	Inductance Analyzer	LC101, LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3080	TV Stereo Power Monitor	SR68, PA81
Frequency Meter	SC3080	Field Strength Meter	SL750
Hi-Voltage Probe	HP200	Transistor Tester	TF46
Accessory Probes	TP212	Video Analyzer	VG91, TVA92