TOSHIBA

FILE NO. 060-200407

SERVICE MANUAL

Color Television

S3E Chassis

21CSZ2R1

Feb. 2004 (YC/X)

TABLE OF CONTENTS

CHAPTER 1 **GENERAL ADJUSTMENTS**

SAFETY INSTRUCTIONS 3
SET-UP ADJUSTMENT 4
SERVICE MODE 6
DESIGN MODE 9
ELECTRICAL ADJUSTMENTS 10
CIRCUIT CHECK 12

CHAPTER 2 **SPECIFIC INFORMATIONS**

SETTING & ADJUSTING DATA 13
LOCATION OF CONTROLS 14
PROGRAMMING CHANNEL MEMORY 15
CHASSIS AND CABINET REPLACEMENT PARTS LIST 17
PC BOARDS BOTTOM VIEW 23
TERMINAL VIEW OF TRANSISTORS 26
CIRCUIT BLOCK DIAGRAM 28
SPECIFICATIONS ..... END
APPENDIX:
CIRCUIT DIAGRAM

CHAPTER 1 GENERAL ADJUSTMENTS

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is (A) kV at zero beam current (minimum brightness) under a (C) V AC power source. The high voltage must not, under any circumstances, exceed (B) kV.

   Refer to table-1 for high voltage (A), (B) & AC voltage (C). (See SETTING & ADJUSTING DATA on page 13)

   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some part in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-ray radiation or other hazards.

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

SET-UP ADJUSTMENT

■ The following adjustments should be made when a complete realignment is required or a new picture tube is installed. Perform the adjustments in order as follows :

1. Color Purity
2. Convergence
3. White Balance

Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning. Refer to figure 1.
Mounting position of the purity magnet assembly should fit to same position as old one because slightly difference to the position depend on a kind of tube.

***** There are no adjustment of purity and convergence in some picture tube (Unified with purity magnet)

COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Set the brightness and contrast to maximum.
3. Use a green raster from among the built-in test signals.
4. Loosen the clamp screw holding the yoke and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 2.) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, enter the raster vertically.
7. Slowly move the yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster.

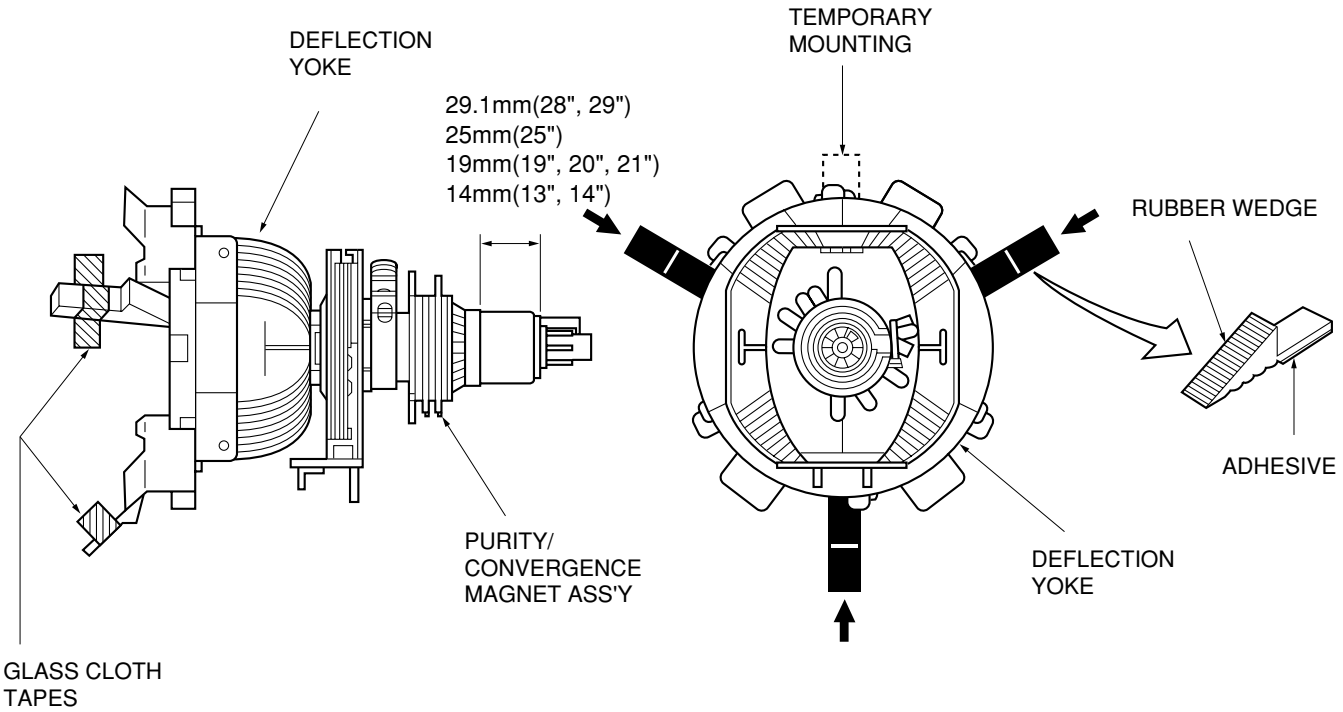


Figure 1.

CONVERGENCE ADJUSTMENTS

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ CENTER CONVERGENCE ADJUSTMENT

1. Use the cross-dot pattern from among the built-in test signals.
2. Set the brightness and contrast for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 2.) and superimpose red and blue vertical lines in the center area of the picture screen.
4. Turn the both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines at the center of the screen.
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual interaction and make dot movement complex.

■ CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of deflection yoke slightly to allow the yoke to tilt.
2. Temporarily put a wedge as shown in figure 1. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 3.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 3.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick three adhesive tapes on wedges as shown in figure 1.

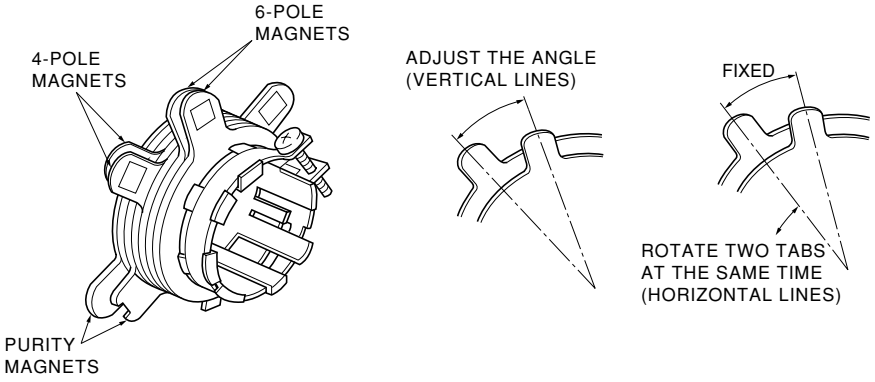
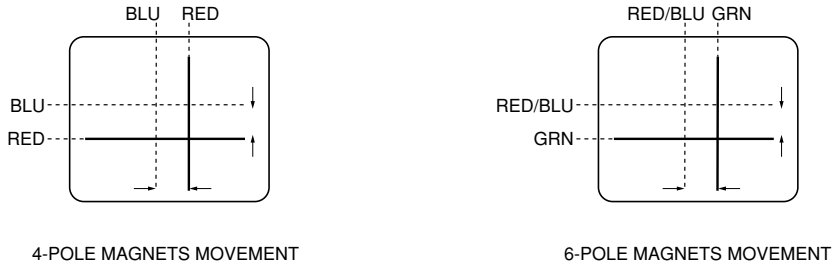


Figure 2.



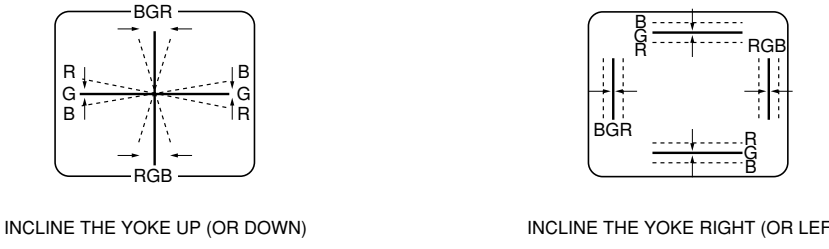


Figure 3. Dot Movement Pattern

SERVICE MODE

1. ENTERING TO SERVICE MODE

1) Press 🔇 button once on Remote Control.

2) Press 🔇 button again to keep pressing.

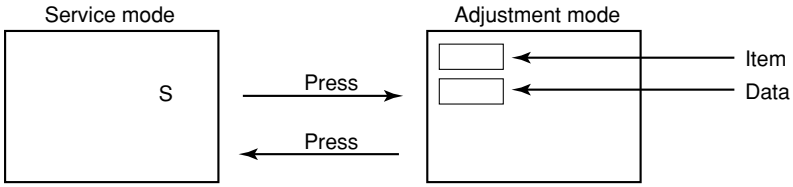
3) While pressing the 🔇 button, press MENU button on TV set.



(Service mode display)

2. DISPLAYING THE ADJUSTMENT MENU

1) Press MENU button on TV.



3. KEY FUNCTION IN THE SERVICE MODE

The following key entry during display of adjustment menu provides special functions.

A single horizontal line ON/OFF:	- / - - button (on Remote) or ⊖ button (on TV)
Test signal selection :	⊖ button (on Remote)
Selection of the adjustment items :	Channel ▲/▼ (on TV or Remote)
Change of the data value :	Volume ◿ +/– (on TV or Remote)
Adjustment menu mode ON/OFF :	MENU button (on TV)
Initialization of the memory (QA02) :	CALL + Channel button on TV (▲)
Reset the count of operating protect circuit to “00”:	CALL + Channel button on TV (▼)
“RCUT” selection :	1 button
“GCUT” selection :	2 button
“BCUT” selection :	3 button
“CNTX” (or “SCNT”) selection :	4 button
“COLC” selection :	5 button– – – – – Color thickness correction
“TNTC” selection :	6 button note: Displayed differently as shown below, depending on the setting of the receiving color system.
Test audio signal ON/OFF (1kHz) :	8 button
Self diagnostic display ON/OFF :	9 button

COLP (PAL)
COLC (NTSC)
COLS (SECAM)

CAUTION : Never try to perform initialization unless you have changed the memory IC.

4. SELECTING THE ADJUSTING ITEMS

1) Every pressing of CHANNEL ▲ button in the service mode changes the adjustment items in the order of table-2. (▼ button for reverse order)

Refer to table-2 for preset data of adjustment mode.
(See SETTING & ADJUSTING DATA on page 13)

5. ADJUSTING THE DATA

1) Pressing of VOLUME ◿ +/– button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

6. EXIT FROM SERVICE MODE

1) Pressing POWER button to turn off the TV once.

■ INITIALIZATION OF MEMORY DATA OF QA02

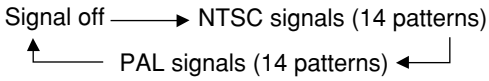
After replacing QA02, the following initialization is required.

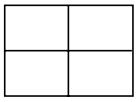
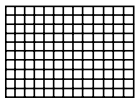
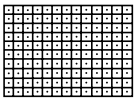
1. Enter the service mode, then select any register item.
2. Press and hold the CALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been complated.
3. Check the picture carefully. If necessary, adjust any adjustment item above. Perform “Auto search Memory” on the owner’s manual.

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

7. TEST SIGNAL SELECTION

1) Every pressing of ⊖ button on the Remote Control changes the built-in test patterns on screen as described below in SERVICE MODE.

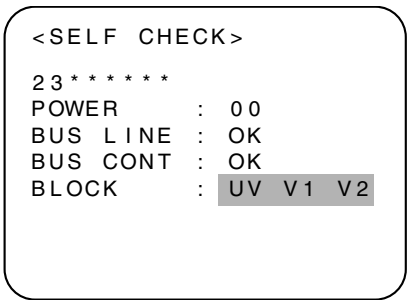


Signals	Picture
• Red raster • Green raster • Blue raster • All Black • All White	
• Black & White	
• Black cross-bar • White cross-bar • Black cross-bar on green raster	
• Black cross-hatch • White cross-hatch	
• Black cross-dot • White cross-dot	
• H signal (white) • H signal (black)	

***** The signals marked with ■ are not usable to display in the Test signal for some model.

8. SELF DIAGNOSTIC FUNCTION

1) Press “9” button on Remote Control during display of adjustment menu in the service mode.
   The diagnosis will begin to check if interface among IC’s are executed properly.
2) During diagnosis, the following displays are shown.



Indicated color of mode now selected : Green and Red
Indicated color of other modes : White

Green : Normal
Red : The microprocessor operates to provide judgement of no video signal. The red color is still indicated though the signal is input, failure may exist in input signal line.

① Part number of microprocessor (Q100)
② Operation number of protecting circuit ----“00” is normal.
   When indication is other than “00”, overcurrent apts to flow, and circuit parts may possibly be damaged.
③ BUS LINE CHECK ----“OK” is normal.
   “SDA1-GND” ---------- SDA-GND short circuit.
   “SCL1-GND” ---------- SCL-GND short circuit.
   “SCL1-SDA1” ---------- SCL-SDA short circuit.
④ BUS CONT ----“OK” is normal.
   When indication shows “Q ○○○ NG”, the device with the number may possibly be damaged.
⑤ BLOCK
   UV : TV reception mode
   V1 : VIDEO 1 input mode (→①)
   V2 : VIDEO 2 input mode (→②)

***** The items marked with ■ are not usable to display in the SELF DIAGNOSTIC FUNCTION for some model.

DESIGN MODE

1. ENTERING TO DESIGN MODE

1) Select the Service mode. 2) While pressing 🔇 (or CALL) button on Remote and press MENU button on TV. 3) Press MENU button on TV.



(Design mode) (Adjustment mode)

When QA02 is initialized, items “OPT0” and “OPT1” of DESIGN MODE are set to the data of the representative model of this chassis family.
Therefore, because ON-SCREEN specification remains in the state of the representative of model. This model is required to reset the data of items “OPT0” and “OPT1”.

2. SELECTING THE ADJUSTING ITEMS

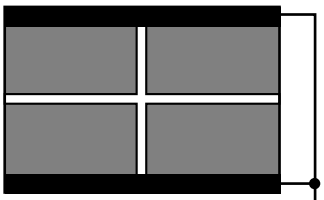
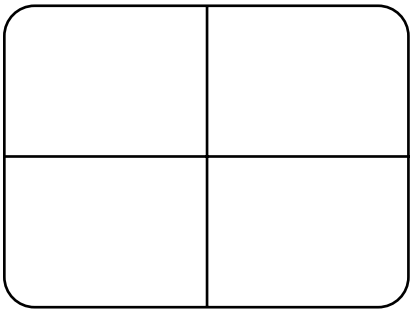
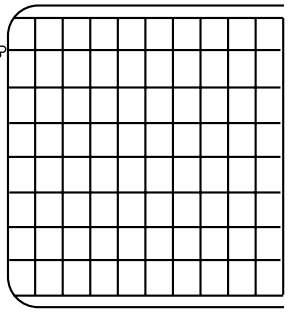
Every pressing of CHANNEL ▼ button in the design mode changes the adjustment items in the order of table-3.
(▲ button for reverse order)

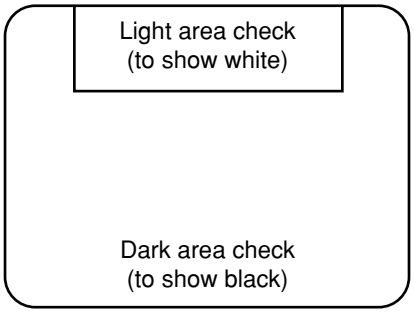
Refer to table-3 for data of design mode.
(See SETTING & ADJUSTING DATA on page 13)

3. ADJUSTING THE DATA

Pressing of VOLUME ▲ or ▼ button will change the value of data.

ELECTRICAL ADJUSTMENTS

ITEM	ADJUSTMENT PROCEDURE
FOCUS VR ADJ	1. Enter the service mode, then select any register item. 2. Press the TV/VIDEO button on the Remote until the black cross-bar pattern appears on the screen. 3. Adjust the FOCUS control (on T461) for well defined scanning lines on the picture screen.
SUB-BRIGHTNESS (BRTC) Note: Constrict the picture height until the vertical retrace line appears adjusting the item HIT (HEIGHT).	1. Set CONTRAST to minimum, and BRIGHTNESS to center by adjusting user controls. 2. Set the TV in service mode to get white cross-bar of inside pattern. 3. Select BRTC (brightness correction), and adjust the ◿ – /+ button to reduce the value so that white portion of inside pattern slightly light. 4. Adjust ◿ – /+ button to increase the data value of BRTC, and set it just before the difference between the belt of vertical retrace and the border of black portion of inside pattern is visible. After that, return vertical height and contrast.  Belt of vertical retrace
HORIZONTAL POSITION ADJUSTMENT (HPOS) VERTICAL POSITION ADJUSTMENT (VPOS)	1. Set the TV in service mode, and get black or white cross-bar signal with VIDEO button on remote hand unit. 2. Select either HPOS (Horizontal picture phase) or VPOS (Vertical picture phase) with CHANNEL ▲, ▼ buttons, and adjust horizontal or vertical picture position in the center of screen with VOLUME ◿ – /+ buttons. 
VERTICAL AMPLITUDE ADJUSTMENT (HIT)	1. Set the TV in service mode, and get black or white cross-hatch signal with VIDEO button on remote hand unit. 2. Select HIT (Vertical amplitude) with CHANNEL ▲, ▼ buttons, and adjust vertical amplitude with VOLUME ◿ – /+ buttons so that vertical amplitude lacks a little. 3. Adjust vertical amplitude with VOLUME ◿ – /+ buttons so that the first bar on cross-hatch signal touches edge of screen. The first ☞ 

ITEM	ADJUSTMENT PROCEDURE
WHITE BALANCE ADJUSTMENT ● CUTOFF ADJUSTMENT (RCUT) (GCUT) (BCUT) ● DRIVE ADJUSTMENT (GDRV) (BDRV)	1. Set Contrast to 40, and brightness to +20 by picture control. 2. Set the TV in service mode, and get the inside W/B adjusting signal with VIDEO button. 3. Select RCUT, GCUT and BCUT with CHANNEL ▲, ▼ buttons, to set individual values to Initial reference data, and to set GDRV and BDRV to Initial reference data with VOLUME ◿ – /+ buttons. 4. Press -/- - button on the remote control and rotate Screen VR to get one slight horizontal line on screen. Note: Every pressing of -/- - button provides Horizontal line picture and Normal picture alternately. 5. Press -/- - button to release horizontal line picture, and select the two other colors which did not light in the above step with CHANNEL ▲, ▼ buttons. Then tap VOLUME ◿ – /+ buttons so that three colors slightly light in the same level. ※ To correct white balance in light area, select GDRV and BDRV with CHANNEL ▲, ▼ buttons to adjust. ※ To correct white balance in dark area, perform fine adjustment of RCUT, GCUT and BCUT. 
NOTE: It is released built-in test pattern by changing the adjustment item for some model. In this case, select the adjustment item with channel ▲▼ buttons first and then select the built-in test pattern with -/- - button.	

CIRCUIT CHECK

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. Checking should be done following the steps below.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage must be measured below (B) kV.

Refer to table-1 for high voltage (B).
(See SETTING & ADJUSTING DATA on page 13)

4. Vary the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

CHAPTER 2 SPECIFIC INFORMATIONS

SETTING & ADJUSTING DATA

【 SAFETY INSTRUCTIONS 】

		21"
HIGH VOLTAGE AT ZERO BEAM:	(A)	29.7 kV
MAX HIGH VOLTAGE:	(B)	32.0 kV
AV VOLTAGE	(C)	220~240 V

Table-1

【 SERVICE MODE 】

ADJUSTING ITEMS AND DATA IN THE SERVICE MODE:

Item	Adjustment	Reference data	Data
RCUT	R CUTOFF (B/W)	20H	←
GCUT	G CUTOFF (B/W)	20H	←
BCUT	B CUTOFF (B/W)	20H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
BRTC	BRIGHTNESS CENTER	40H	←
COLC	COLOR CEN NTSC	30H	←
TNTC	TINT CENTER	45H	←
COLP	COLOR CEN PAL	09H	←
COLS	COLOR CEN SECAM	30H	←
SCNT	SUB CONTRAST	08H	07H
HPOS	50Hz H-POSITION	0DH	←
VPOS	V-POSITION 50Hz	04H	←
HIT	HEIGHT 50Hz	1EH	←
VLIN	V-LINEARITY 50Hz	0AH	←
SRY	SECAM R-Y	08H	←
SBY	SECAM-B-Y	08H	←
RAGC	RF AGC	2AH	←

Table-2

【 DESIGN MODE 】

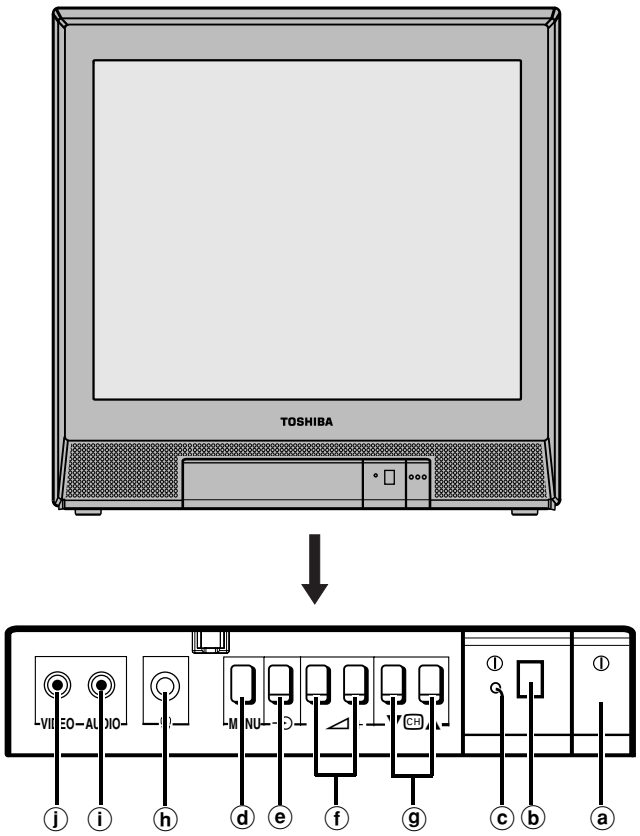
ADJUSTING ITEMS AND DATA IN THE DESIGN MODE:

Item	Name of adjustment		Data	Remarks
		Preset Data	21"	
OPT 0	OPTION 0	75H	←	
OPT 1	OPTION 1	15H	←	

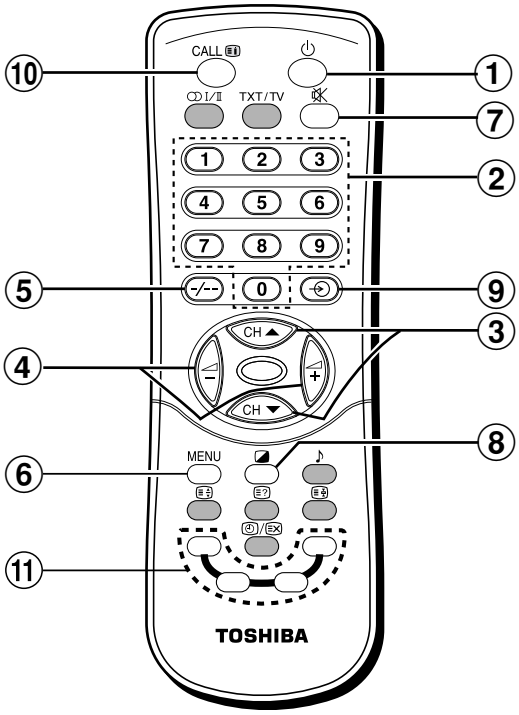
Table-3

LOCATION OF CONTROLS

Front



Remote



NAMES OF PARTS

TV Set			Remote Control		
ⓐ	⏻	Main power on/off	①	⏻	Power on/ standby
ⓑ		Infrared sensor	②	0~9	Direct select
ⓒ	⏻	Power indicator	③	CH▲/▼	Channel up/ down, Item select
ⓓ	MENU	Menu open			
ⓔ	⊖	TV/VIDEO select	④	◿ -/+	Volume down/ up, Menu select, Level adjust
ⓕ	−◿+	Volume down/ up, Menu select, Level adjust	⑤	-/--	Digit select
ⓖ	▼CH▲	Channel down/ up, Item select	⑥	MENU	Menu open
			⑦	🔇	Sound mute
			⑧	◪	Picture control
ⓗ	🎧	Headphone jack	⑨	⊖	TV/VIDEO select
ⓘ	AUDIO	Audio input terminal	⑩	CALL	On-screen on/ off
ⓙ	VIDEO	Video input terminal	⑪	RGYB	Game select Red/Green/ Yellow/Blue

Note: The shaded buttons are not available for your TV. If you press the button, "MODE NOT AVAILABLE" will appear on the screen.

PROGRAMMING CHANNEL MEMORY

- For easy Channel selection, the chosen Position should have the same number as Channel stored there. For this operation, you may use the “SEARCH” and “SKIP” functions.
  Example : Presetting Channel 12 to Position 12

Channel Preset

Auto search memory (ASM)

All the channels that can be received are preset automatically.

1 Select the starting position for ASM. Press (0~9) or **CH ▲/▼**.

2 Set the correct broadcast system for your region. Press **MENU** and ◿ –/+ to call up the “SET UP” menu D7. Set “COLOR” to “AUTO” and set “SOUND” according to the table above using **CH▲/▼** and ◿ –/+.

3 Press **MENU** and ◿ –/+ to call up the “TUNING” menu D8. Select “ASM”, then press ◿ + to start the search. When the TV screen returns to the start position, the procedure is complete.

Manual Search and Changing the assigned position

Manual Search

1 Select Position 12.
Press **CH ▲/▼** repeatedly until 12 is displayed. Or, press -/-- twice to display “--” on the screen then press the “1” and “2” buttons in this order.

2 Press **MENU** and ◿ –/+ to call up the “TUNING” menu D8. Press **CH ▲/▼** and select “SEARCH”.
Press ◿ –/+ to search. Pressing “-” searches for channels at lower frequencies while pressing “+” searches for channels at higher frequencies.

3 When Channel 12 is found, press **CH ▲/▼** to select “MEMORY”. Press “+” to complete the presetting.

Store Position

1 Select Channel 12.
Press (0~9) or **CH ▲/▼** to find the position preset for Channel 12.

2 When Channel 12 is selected, press **MENU** and ◿ –/+ to call up the “TUNING” menu D8 . Press **CH ▲/▼** and select “POSITION”. Press ◿ –/+ and set “POSITION” to P012. Pressing “-” and “+” respectively decreases and increases the position number.

3 When Position 12 is found, press **CH ▲/▼** to select “MEMORY”. Press “+” to complete the presetting.

- Under some reception conditions, fine tuning may be necessary to improve the picture quality. In such cases, adjust the manual fine tuning (MFT).
- If the signal frequency is unstable due to environmental conditions, use auto fine tuning.

Skip Function

If you set "SKIP ON" for unnecessary position numbers, these will be skipped when selecting channels using **CH ▲/▼**.
Example : Skipping Channel 13

1 Select Position 13 using the same method for selecting Position 12 (above).

2 Press **MENU** and ◿ –/+ to call up the "SET UP" menu D7. Press **CH ▲/▼** and select "SKIP".
Press ◿ –/+ to switch the "SKIP" setting from "OFF" to "ON". This completes the setting for skipping Position 13.

Note:
- When "SKIP" is ON, the Position number is prefixed by "*".
  Example: *13. To confirm this, select Position 13 using the -/-- and 0~9 buttons.
- If you want to restore a skipped position number, select it using the -/-- and 0~9 buttons then switch the "SKIP" setting to "OFF" as in step 2 above.

Manual fine tuning (MFT)

1 Press **MENU** and ◿ –/+ to call up the "TUNING" menu D8.

2 Press **CH ▲/▼** and select "MFT". Press ◿ –/+ to start fine tuning. Pressing "-" fine tunes to a lower frequency while pressing "+" fine tunes to a higher frequency.

Auto fine tuning (AFT)

1 Press **MENU** and ◿ –/+ to call up the "TUNING" menu D8.

2 Press **CH ▲/▼** and select "AFT". Press ◿ –/+ to switch it to "ON". This completes the setting.

Notes:
- When you operate MFT, AFT is switched OFF automatically. If you switch on AFT after fine tuning with MFT, MFT may be cancelled.
- AFT may be set independently for each Position.

CHASSIS AND CABINET REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 3 OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE. Do not degrade the safety of the receiver through improper servicing.

NOTICE:

- The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.
- The PC board assembly with ∗ mark is no longer available after the end of the production.

Model : 21CSZ2R1

Capacitors	CD	: Ceramic Disk	PF	: Plastic Film	EL	: Electrolytic
Resistors	CF	: Carbon Film	CC	: Carbon Composition	MF	: Metal Film
	OMF	: Oxide Metal Film	VR	: Variable Resistor	FR	: Fusible Resistor

(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Parts No.	Description
CAPACITORS		
C101	24203101	ELECTROLYTIC, 16V 100UF M 7L 3A
C102	24763221	ELECTROLYTIC, 16V 220UF M
C103	24109103	CERAMIC CHIP, 50V B 0.01UF K
C104	24105470	CERAMIC CHIP, 50V CH 47PF J
C105	24105220	CERAMIC CHIP, 50V CH 22PF J
C106	24205479	ELECTROLYTIC, 35V 4.7UF M 7L 3A
C107	24105220	CERAMIC CHIP, 50V CH 22PF J
C108	24503049	PLASTIC FILM, 63V 0.47UF J
C109	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C110	24109103	CERAMIC CHIP, 50V B 0.01UF K
C113	24109102	CERAMIC CHIP, 50V B 1000PF K
C114	24109102	CERAMIC CHIP, 50V B 1000PF K
C116	24109103	CERAMIC CHIP, 50V B 0.01UF K
C118	24109102	CERAMIC CHIP, 50V B 1000PF K
C120	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C121	24109103	CERAMIC CHIP, 50V B 0.01UF K
C123	24206010	ELECTROLYTIC, 50V 1.0UF M 7L 3A
C129	24109102	CERAMIC CHIP, 50V B 1000PF K
C130	24206479	ELECTROLYTIC, 50V 4.7UF M 7L 3A
C131	24814103	CERAMIC CHIP, 50V F 0.01UF Z
C132	24100104	CERAMIC CHIP, 25V F 0.1UF Z
C133	24105101	CERAMIC CHIP, 50V CH 100PF J
C135	24109222	CERAMIC CHIP, 50V B 2200PF K
C136	24206228	ELECTROLYTIC, 50V 0.22UF M 7L 3A CE04WS
C137	24100103	CERAMIC CHIP, 50V F 0.01UF Z
C141	24105101	CERAMIC CHIP, 50V CH 100PF J
C150	24814103	CERAMIC CHIP, 50V F 0.01UF Z
C166	24109103	CERAMIC CHIP, 50V B 0.01UF K
C167	24763101	ELECTROLYTIC, 16V 100UF M
C170	24109103	CERAMIC CHIP, 50V B 0.01UF K
C171	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C172	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C173	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C174	24105330	CERAMIC CHIP, 50V CH 33PF J
C175	24105330	CERAMIC CHIP, 50V CH 33PF J
C176	24105330	CERAMIC CHIP, 50V CH 33PF J
C189	24206478	ELECTROLYTIC, 50V 0.47UF M 7L 3A
C192	24206478	ELECTROLYTIC, 50V 0.47UF M 7L 3A
C216	24206010	ELECTROLYTIC, 50V 1.0UF M 7L 3A
C221	24105101	CERAMIC CHIP, 50V CH 100PF J
C222	24105101	CERAMIC CHIP, 50V CH 100PF J
C223	24105101	CERAMIC CHIP, 50V CH 100PF J
C224	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C226	24591104	PLASTIC FILM, 50V 0.1UF J
C227	24591104	PLASTIC FILM, 50V 0.1UF J

Location No.	Parts No.	Description
C231	24232103	CERAMIC DISC, 50V F 0.01UF Z
C232	24232103	CERAMIC DISC, 50V F 0.01UF Z
C304	24435330	CERAMIC DISC CC45 SL 500V33PF J
C305	24617915	ELECTROLYTIC, 50V 1UF K 3A LI
C306	24763102	ELECTROLYTIC, 16V 1000UF M
C307	24693473	PLASTIC FILM, 100V 0.047UF J
C308	24765101	ELECTROLYITC, 35V 100UF M
C312	24765102	ELECTROLYTIC CE04G 35V 1000UF M
C313	24082280	PLASTIC FILM, 100V 0.22UF J
C314	24212272	CERAMIC DISC, 50V B 2700PF K
C315	24503049	PLASTIC FILM, 63V 0.47UF J
C317	24214471	CERAMIC DISC, 500V B 470PF K
C320	24765101	ELECTROLYITC, 35V 100UF M
C410	24693472	PLASTIC FILM, 100V 4700PF J
C417	24214102	CERAMIC DISC, 500V B 1000PF K
C420	24203220	ELECTROLYTIC, 16V 22UF M 7L 3A
C421	24763470	16MV47HC +T 16MV47HC +T
C431	24206479	ELECTROLYTIC, 50V 4.7UF M 7L 3A
C432	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C433	24100103	CERAMIC CHIP, 50V F 0.01UF Z
C434	24100103	CERAMIC CHIP, 50V F 0.01UF Z
C435	24763102	ELECTROLYTIC, 16V 1000UF M
C436	24206478	ELECTROLYTIC, 50V 0.47UF M 7L 3A
C437	24109822	CERAMIC CHIP, 50V B 8200PF K
C440	24503213	PLASTIC FILM CF92 T 1500VH 1500PF H
C442	24082995	PLASTIC FILM, 250V 0.36 UF J
C444	24503278	PLASTIC FILM CF92 T 1500VH 8700PF H
C445	24693104	PLASTIC FILM, 100V 0.1UF J
C446	24679100	ELECTROLYTIC, 250V 10UF M 3A
C448	24073118	ELECTROLYTIC, 160V 33UF M
C449	24763471	ELECTROLYTIC, 16V 470UF M
C463	24109152	CERAMIC CHIP, 50V B 1500PF K
C464	24640872	ELECTROLYTIC, 100V 10UF M 3A
C467	24503157	PLASTIC FILM, 630V 0.033UF J
C470	24206220	ELECTROLYTIC, 50V 22UF M 7L 3A
C472	24503049	PLASTIC FILM, 63V 0.47UF J
C473	24206010	ELECTROLYTIC, 50V 1.0UF M 7L 3A
C479	24105271	CERAMIC CHIP, 50V CH 270PF J
C484	24591104	PLASTIC FILM, 50V 0.1UF J
C485	24591104	PLASTIC FILM, 50V 0.1UF J
C498	24591103	PLASTIC FILM, 50V 0.01UF J
C502	24591103	PLASTIC FILM, 50V 0.01UF J
C517	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C523	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C526	24109102	CERAMIC CHIP, 50V B 1000PF K
C528	24206478	ELECTROLYTIC, 50V 0.47UF M 7L 3A

Location No.	Parts No.	Description
C565	24109103	CERAMIC CHIP, 50V B 0.01UF K
C566	24763471	ELECTROLYTIC, 16V 470UF M
C567	24109103	CERAMIC CHIP, 50V B 0.01UF K
C606	24206229	ELECTROLYTIC, 50V 2.2UF M 7L 3A
C607	24206229	ELECTROLYTIC, 50V 2.2UF M 7L 3A
C608	24206229	ELECTROLYTIC, 50V 2.2UF M 7L 3A
C609	24764101	ELECTROLYTIC, 25V 100UF M
C610	24591473	PLASTIC FILM, 50V 0.047UF J
C611	24766100	ELECTROLYTIC, 50V 10UF M
C612	24766220	ELECTROLYTIC, 50V 22UF M
C613	24766100	ELECTROLYTIC, 50V 10UF M
C614	24591473	PLASTIC FILM, 50V 0.047UF J
C615	24763101	ELECTROLYTIC, 16V 100UF M
C616	24764471	ELECTROLYTIC, 25V 470UF M
C629	24764101	ELECTROLYTIC, 25V 100UF M
C630	24764471	ELECTROLYTIC, 25V 470UF M
C631	24206478	ELECTROLYTIC, 50V 0.47UF M 7L 3A
C633	24591823	PLASTIC FILM, 50V 0.082UF J
C634	24591563	PLASTIC FILM, 50V 0.056UF J
C673	24109103	CERAMIC CHIP, 50V B 0.01UF K
C674	24109103	CERAMIC CHIP, 50V B 0.01UF K
⚠ C801	24503507	PLASTIC FILM, AC275V 0.22UF K
⚠ C802	24503507	PLASTIC FILM, AC275V 0.22UF K
C805	24092281	CERAMIC DISC, AC250V E 4700PF
C806	24092281	CERAMIC DISC, AC250V E 4700PF
C808	24765101	ELECTROLYITC, 35V 100UF M
C810	24086857	ELECTROLYTIC, 400V 560UF
⚠ C813	24092555	CERAMIC DISC, AC250V E 1000PF M
⚠ C814	24092555	CERAMIC DISC, AC250V E 1000PF M
C817	24092338	CERAMIC DISC, 2KV R 270PF K
C818	24092341	CERAMIC DISC, 2KV R 470PF K
C821	24214561	CERAMIC DISC, 500V B 560PF K
C822	24214102	CERAMIC DISC, 500V B 1000PF K
C823	24214471	CERAMIC DISC, 500V B 470PF K
C829	24212471	CERAMIC DISC, 50V B 470PF K
C830	24766100	ELECTROLYTIC, 50V 10UF M
C831	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
C832	24503045	PLASTIC FILM, 63V 0.22UF J
C862	24092339	CERAMIC DISC, 2KV 330PF K
C883	24214561	CERAMIC DISC, 500V B 560PF K
C884	24640018	ELECTROLYTIC, 160V 220UF
C885	24214471	CERAMIC DISC, 500V B 470PF K
C889	24764102	ELECTROLYTIC, 25V 1000UF M
C893	24092338	CERAMIC DISC, 2KV R 270PF K
⚠ C897	24092553	CERAMIC DISC, AC250V B 470PF K
C898	24214101	CERAMIC DISC, 500V B 100PF K
C899	24503049	PLASTIC FILM, 63V 0.47UF J
C902	24092347	CERAMIC DISC, 2KV R 1500PF K
C904	24436561	CERAMIC DISC, 50V SL 560PF J
C905	24436681	CERAMIC DISC, 50V SL 680PF J
C907	24436821	CERAMIC DISC, 50V SL 820PF J
C909	24679220	ELECTROLYTIC, 250V 22UF M 3A
C910	24766100	ELECTROLYTIC, 50V 10UF M
C912	24763221	ELECTROLYTIC, 16V 220UF M
C913	24203220	ELECTROLYTIC, 16V 22UF M 7L 3A
C915	24203220	ELECTROLYTIC, 16V 22UF M 7L 3A
C930	24214101	CERAMIC DISC, 500V B 100PF K
C931	24214101	CERAMIC DISC, 500V B 100PF K
CA01	24232103	CERAMIC DISC, 50V F 0.01UF Z
CA02	24105101	CERAMIC CHIP, 50V CH 100PF J
CA03	24105220	CERAMIC CHIP, 50V CH 22PF J
CA04	24105220	CERAMIC CHIP, 50V CH 22PF J
CA30	24105270	CERAMIC CHIP, 50V CH 27PF J
CA42	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
CA45	24109103	CERAMIC CHIP, 50V B 0.01UF K
CA51	24109272	CERAMIC CHIP, 50V B 2700PF K
CA52	24109152	CERAMIC CHIP, 50V B 1500PF K
CA53	24105181	CERAMIC CHIP, 50V CH 180PF J
CA54	24766330	ELECTROLYTIC, 50V 33UF M
CA55	24206010	ELECTROLYTIC, 50V 1.0UF M 7L 3A
CA58	24105101	CERAMIC CHIP, 50V CH 100PF J
CA60	24206229	ELECTROLYTIC, 50V 2.2UF M 7L 3A
CB01	24203470	ELECTROLYTIC, 16V 47UF M 7L 3A
CC01	24109103	CERAMIC CHIP, 50V B 0.01UF K
CC02	24109103	CERAMIC CHIP, 50V B 0.01UF K
CC08	24105330	CERAMIC CHIP, 50V CH 33PF J

Location No.	Parts No.	Description
CS01	24203220	ELECTROLYTIC, 16V 22UF M 7L 3A
CS02	24203100	CAPASITOR, ELECTORLYTIC, 16V 10UF M 7L 3A
CS04	24109102	CERAMIC CHIP, 50V B 1000PF K
CS05	24109102	CERAMIC CHIP, 50V B 1000PF K
CS07	24109102	CERAMIC CHIP, 50V B 1000PF K
CS15	24109102	CERAMIC CHIP, 50V B 1000PF K
CV10	24762471	ELECTROLYTIC, 10V 470UF M
CV11	24203220	ELECTROLYTIC, 16V 22UF M 7L 3A
RESISTORS		
R101	24011563	CHIP, METAL FILM, 1/20W 56K OHM J
R102	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
R105	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
R106	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R107	24011330	CHIP, 1/20W 33 OHM J
R108	24011272	CHIP, 1/20W 2.7K OHM J
R109	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R110	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R111	24011360	METAL FILM CHIP 1/20W 36 J
R112	24000445	CHIP JUMPER, 1608TYPE
R113	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R114	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R116	24011682	CHIP, METAL FILM, 1/20W 6.8K OHM J
R117	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R121	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R122	24000445	CHIP JUMPER, 1608TYPE
R124	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R130	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R131	24011221	CHIP, METAL FILM, 1/20W 220 OHM J
R132	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R133	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R134	24011561	CHIP, METAL FILM, 1/20W 560 OHM J
R135	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R136	24011513	CHIP, METAL FILM, 1/20W 51K OHM J
R139	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
R140	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R141	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
R142	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R143	24011333	CHIP, METAL FILM, 1/20W 33K OHM J
R144	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R145	24011303	CHIP, METAL FILM, 1/20W 30K OHM J
R146	24011224	CHIP, METAL FILM, 1/20W 220K OHM J
R147	24011152	CHIP, METAL FILM, 1/20W 1.5K OHM J
R148	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R149	24011684	CHIP, METAL FILM, 1/20W 680K OHM J
R150	24000445	CHIP JUMPER, 1608TYPE
R156	24553153	OXIDE METAL FILM, 1W 15K OHM J
R158	24011122	CHIP, METAL FILM, 1/20W 1.2K OHM J
R166	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R167	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R168	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R169	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R171	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R172	24011162	CHIP, METAL FILM, 1/20W 1.6K OHM J
R173	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R174	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R175	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R176	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R177	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R178	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R179	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
R180	24011473	CHIP, METAL FILM, 1/20W 47K OHM J
R181	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R182	24011162	CHIP, METAL FILM, 1/20W 1.6K OHM J
R190	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R191	24011330	CHIP, 1/20W 33 OHM J
R192	24011330	CHIP, 1/20W 33 OHM J
R194	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R196	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R217	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R227	24366123	CARBON FILM, 1/6W 12K OHM J
R228	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R229	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R230	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
R301	24366163	CARBON FILM, 1/6W 16K OHM J
R305	24323758	METAL FILM 2W R75 J

Location No.	Parts No.	Description
R306	24366823	CARBON FILM, 1/6W 82K OHM J
R307	24366103	CARBON FILM, 1/6W 10K OHM J
R312	24552152	OXIDE METAL FILM, 1/2W 1.5K OHM J
R313	24366513	CARBON FILM, 1/6W 51K OHM J
R316	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
R317	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
R333	24547829	FUSIBLE, 1W 8.2 OHM J
R333Z	24531120	FUSIBLE, 1/2W 12 OHM J
R336	24383121	OXIDE METAL FILM, 1/2W 120 OHM J
R410	24011181	CHIP, METAL FILM, 1/20W 180 OHM J
R411	24011561	CHIP, METAL FILM, 1/20W 560 OHM J
R412	24366560	CARBON FILM, 1/6W 56 OHM J
R416	24019323	OXIDE METAL FILM, 5W 1.8K OHM J
R421	24011391	CHIP, METAL FILM, 1/20W 390 OHM J
R430	24366103	CARBON FILM, 1/6W 10K OHM J
R431	24531120	FUSIBLE, 1/2W 12 OHM J
R432	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
R433	24011182	CHIP, METAL FILM, 1/20W 1.8K OHM J
R434	24552271	OXIDE METAL FILM, 1/2W 270 OHM J
R435	24011822	CHIP, METAL FILM, 1/20W 8.2K OHM J
R436	24011270	CHIP, 1/20W 27 OHM J
R441	24532102	FUSIBLE, 1W 1K OHM J
R447	24553472	OXIDE METAL FILM, 1W 4.7K OHM J
R448	24321228	OXIDE METAL FILM, 1/2W 0.22 OHM J
R462	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R469	24366183	CARBON FILM, 1/6W 18K OHM J
R470	24338758	OXIDE METAL FILM, 1W 0.75 OHM J
R471	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R472	24552301	OXIDE METAL FILM, 1/2W 300 OHM J
R473	24366183	CARBON FILM, 1/6W 18K OHM J
R474	24383151	OXIDE METAL FILM, 2W 150 OHM J
R475	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R476	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
R477	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
R478	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R479	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R480	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
R481	24011154	CHIP, METAL FILM, 1/20W 150K OHM J
R482	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R483	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R484	24011563	CHIP, METAL FILM, 1/20W 56K OHM J
R485	24382121	OXIDE METAL FILM, 1W 120 OHM J
R490	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R491	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R498	24011154	CHIP, METAL FILM, 1/20W 150K OHM J
R603	24011393	CHIP, METAL FILM, 1/20W 39K OHM J
R604	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
R605	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R606	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R607	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
R608	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
R609	24011220	CHIP, METAL FILM, 1/20W 22 OHM J
R611	24011104	CHIP, METAL FILM, 1/20W 100K OHM J
R612	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
R622	24000445	CHIP JUMPER, 1608TYPE
R630	24011152	CHIP, METAL FILM, 1/20W 1.5K OHM J
R631	24011273	CHIP, METAL FILM, 1/20W 27K OHM J
R632	24011272	CHIP, 1/20W 2.7K OHM J
R662	24552221	OXIDE METAL FILM, 1/2W 220 OHM J
R663	24552221	OXIDE METAL FILM, 1/2W 220 OHM J
⚠ R801	24009954	METAL FILN, 1/2W 2.2M OHM J
R802	24383104	OXIDE METAL FILM, 2W 100K OHM J
R803	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R805	24366681	CARBON FILM, 1/6W 680 OHM J
R807	24376684	CARBON RES B 1/2W 684J
⚠ R808	24019476	THERMISTOR, POSITIVE, AC290V 18 OHM M
R809	24366393	CARBON FILM, 1/6W 39K OHM J
R810	24007737	CERAMIC COVERED, 15W 2.2 OHM J
R811	24568271	CERAMIC COVERED, 7W 270 OHM J
R815	24366562	CARBON FILM, 1/6W 5.6K OHM J
R819	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
R820	24019463	METAL PLATE RK99 2W R22 J
R821	24310479	OXIDE METAL FILM, 1/2W 4.7 OHM J
R822	24366562	CARBON FILM, 1/6W 5.6K OHM J
R823	24376152	CARBON FILM, 1/2W 1.5K OHM J
R825	24011331	CHIP, METAL FILM, 1/20W 330 OHM J

Location No.	Parts No.	Description
R829	24988027	METAL FILM 1W R47 J
R831	24531120	FUSIBLE, 1/2W 12 OHM J
R863	24366132	CARBON FILM, 1/6W 1.3K OHM J
R881	24366102	CARBON FILM, 1/6W 1K OHM J
R888	24546228	FUSIBLE, 1/2W 0.22 OHM J
⚠ R899	24004718	METAL GLAZE 1/2W 8R2M J
R901	24376102	CARBON FILM, 1/2W 1K OHM J
R902	24376102	CARBON FILM, 1/2W 1K OHM J
R903	24376102	CARBON FILM, 1/2W 1K OHM J
R904	24366472	CARBON FILM, 1/6W 4.7K OHM J
R905	24366150	CARBON FILM, 1/6W 15 OHM J
R912	24366102	CARBON FILM, 1/6W 1K OHM J
R914	24366561	CARBON FILM, 1/6W 560 OHM J
R915	24366121	CARBON FILM, 1/6W 120 OHM J
R916	24366181	CARBON FILM, 1/6W 180 OHM J
R917	24366821	CARBON FILM, 1/6W 820 OHM J
R918	24366270	CARBON FILM, 1/6W 27 OHM J
R919	24366102	CARBON FILM, 1/6W 1K OHM J
R920	24000880	FUSIBLE, 1W 5.1 OHM J
R921	24366561	CARBON FILM, 1/6W 560 OHM J
R922	24366121	CARBON FILM, 1/6W 120 OHM J
R924	24366270	CARBON FILM, 1/6W 27 OHM J
R925	24366821	CARBON FILM, 1/6W 820 OHM J
R926	24366102	CARBON FILM, 1/6W 1K OHM J
R928	24366561	CARBON FILM, 1/6W 560 OHM J
R929	24366121	CARBON FILM, 1/6W 120 OHM J
R930	24366270	CARBON FILM, 1/6W 27 OHM J
R932	24366102	CARBON FILM, 1/6W 1K OHM J
R934	24366561	CARBON FILM, 1/6W 560 OHM J
R935	24366392	CARBON FILM, 1/6W 3.9K OHM J
R936	24552820	OXIDE METAL FILM, 1/2W 82 OHM J
R937	24366821	CARBON FILM, 1/6W 820 OHM J
R942	24366562	CARBON FILM, 1/6W 5.6K OHM J
R943	24366562	CARBON FILM, 1/6W 5.6K OHM J
R944	24366562	CARBON FILM, 1/6W 5.6K OHM J
R945	24366181	CARBON FILM, 1/6W 180 OHM J
R946	24366181	CARBON FILM, 1/6W 180 OHM J
R960	24383153	OXIDE METAL FILM, 2W 15K OHM J
R961	24383153	OXIDE METAL FILM, 2W 15K OHM J
R962	24383153	OXIDE METAL FILM, 2W 15K OHM J
R977	24366122	CARBON FILM, 1/6W 1.2K OHM J
R992	24366150	CARBON FILM, 1/6W 15 OHM J
RA01	24011331	CHIP, METAL FILM, 1/20W 330 OHM J
RA02	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA03	24000445	CHIP JUMPER, 1608TYPE
RA04	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RA05	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA06	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA07	24000445	CHIP JUMPER, 1608TYPE
RA35	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
RA36	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA37	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RA41	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RA42	24011222	CHIP, METAL FILM, 1/20W 2.2K OHM J
RA43	24011332	CHIP, METAL FILM, 1/20W 3.3K OHM J
RA51	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
RA52	24011392	CHIP, METAL FILM, 1/20W 3.9K OHM J
RA53	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RA54	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
RA55	24011683	CHIP, METAL FILM, 1/20W 68K OHM J
RA56	24011564	CHIP, METAL FILM, 1/20W 560K OHM J
RA57	24011681	CHIP, METAL FILM, 1/20W 680 OHM J
RA60	24011183	CHIP, METAL FILM, 1/20W 18K OHM J
RA61	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA62	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA63	24011123	CHIP, METAL FILM, 1/20W 12K OHM J
RA71	24367163	CARBON FILM, 1/6W 16K OHM G
RA72	24367113	CARBON FILM, 1/2W 11K OHM J
RA73	24367562	CARBON FILM, 1/6W 5.6K OHM G
RA74	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA75	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RA76	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RA77	24011472	CHIP, METAL FILM, 1/20W 4.7K OHM J
RA78	24367114	CARBON FILM, 1/6W 110K OHM G
RA79	24367303	CARBON FILM, 1/6W 30K OHM G
RA89	24000445	CHIP JUMPER, 1608TYPE

Location No.	Parts No.	Description
RB01	24011271	CHIP, METAL FILM, 1/20W 270 OHM J
RB09	24011470	CHIP, METAL FILM, 1/20W 47 OHM J
RB30	24011103	CHIP, METAL FILM, 1/20W 10K OHM J
RC02	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
RS02	24011471	CHIP, METAL FILM, 1/20W 470 OHM J
RS04	24011223	CHIP, METAL FILM, 1/20W 22K OHM J
RS06	24000445	CHIP JUMPER, 1608TYPE
RV02	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV11	24011750	CHIP, METAL FILM, 1/20W 75 OHM J
RV12	24011181	CHIP, METAL FILM, 1/20W 180 OHM J
RV13	24011101	CHIP, METAL FILM, 1/20W 100 OHM J
G101	24000445	CHIP JUMPER, 1608TYPE
G218	24366472	CARBON FILM, 1/6W 4.7K OHM J
GJ03	24000445	CHIP JUMPER, 1608TYPE
GJ06	24000445	CHIP JUMPER, 1608TYPE
GJ10	24000445	CHIP JUMPER, 1608TYPE
GJ11	24000445	CHIP JUMPER, 1608TYPE
GJ12	24000445	CHIP JUMPER, 1608TYPE
GJ15	24000445	CHIP JUMPER, 1608TYPE
GJ16	24000445	CHIP JUMPER, 1608TYPE
GJ17	24000445	CHIP JUMPER, 1608TYPE
GJ21	24000445	CHIP JUMPER, 1608TYPE
GJ22	24000445	CHIP JUMPER, 1608TYPE
GJ23	24000445	CHIP JUMPER, 1608TYPE
GJ25	24000445	CHIP JUMPER, 1608TYPE
GJ27	24000445	CHIP JUMPER, 1608TYPE
GJ30	24000445	CHIP JUMPER, 1608TYPE
GJ100	24000445	CHIP JUMPER, 1608TYPE
GL431	24000445	CHIP JUMPER, 1608TYPE
GL525	24000445	CHIP JUMPER, 1608TYPE
GR01	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
GR02	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
GR03	24011102	CHIP, METAL FILM, 1/20W 1K OHM J
GR160	24011470	CHIP, METAL FILM, 1/20W 47 OHM J
GR303	24321109	OXIDE METAL FILM, 1/2W 1 OHM J
GR400	24000445	CHIP JUMPER, 1608TYPE
JP119	24000445	CHIP JUMPER, 1608TYPE
JR001	24000576	JUMPER CHIP, 3216TYPE
JR002	24000445	CHIP JUMPER, 1608TYPE
JR003	24000445	CHIP JUMPER, 1608TYPE
JR004	24000445	CHIP JUMPER, 1608TYPE
JR155	24000445	CHIP JUMPER, 1608TYPE
COILS & TRANSFORMERS		
L101	23289929	COIL, PEAKING COIL 82MMH TRF4820AU
L102	23238562	COIL, PEAKING, TRF4109AJ
L103	23238503	COIL, PEAKING, TRF4129AJ
L104	23238506	COIL, PEAKING, TRF4229AJ
L105	23238506	COIL, PEAKING, TRF4229AJ
L106	23238713	COIL, PEAKING, TRF4120AJ
L107	23238713	COIL, PEAKING, TRF4120AJ
L108	23238709	COIL, PEAKING, TRF4270AJ
L162	23289928	COIL, PEAKING COIL 68MMH TRF4680AU
L301	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
L441	23233999	COIL, LINEALITY, TLN2215AY
L461	23248364	COIL, CHOKE 17X29H 680MMH 1.7A TLN3337AC
L462	23231375	COIL, DEFLECTION YOKE, TDY821AA
L462A	23993696	BOARD, CORRECTION
L462B	23949616	CONVER CORRECTOR, YV TC-R TC-R(YV)
L462C	23993081	METAL SHEET, CONV. CORRECTION TCRMXH01H
L462D	23948535	SHEET, MAGNETIC FERRITE
L462E	23948536	SHEET, MAGNETIC FERRITE
L514	23289919	COIL, PEAKING, TRF4120AU
L661	23221129	CHOKE COIL , TRF9240AC TRF9240AC
L662	23221129	CHOKE COIL , TRF9240AC TRF9240AC
L805	23248234	COIL, CHOKE, TLN3481AC
L806	23248234	COIL, CHOKE, TLN3481AC
L810	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
L811	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
L883	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
L884	23248230	COIL, CHOKE, TLN3142AC
L886	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
L887	23248087	COIL, CHOKE, TLN3312D
L900	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
⚠ L901	23200534	COIL, DG-0.37 TSB-2301AH
L902	23289934	COIL, PEAKING, TRF4221AU

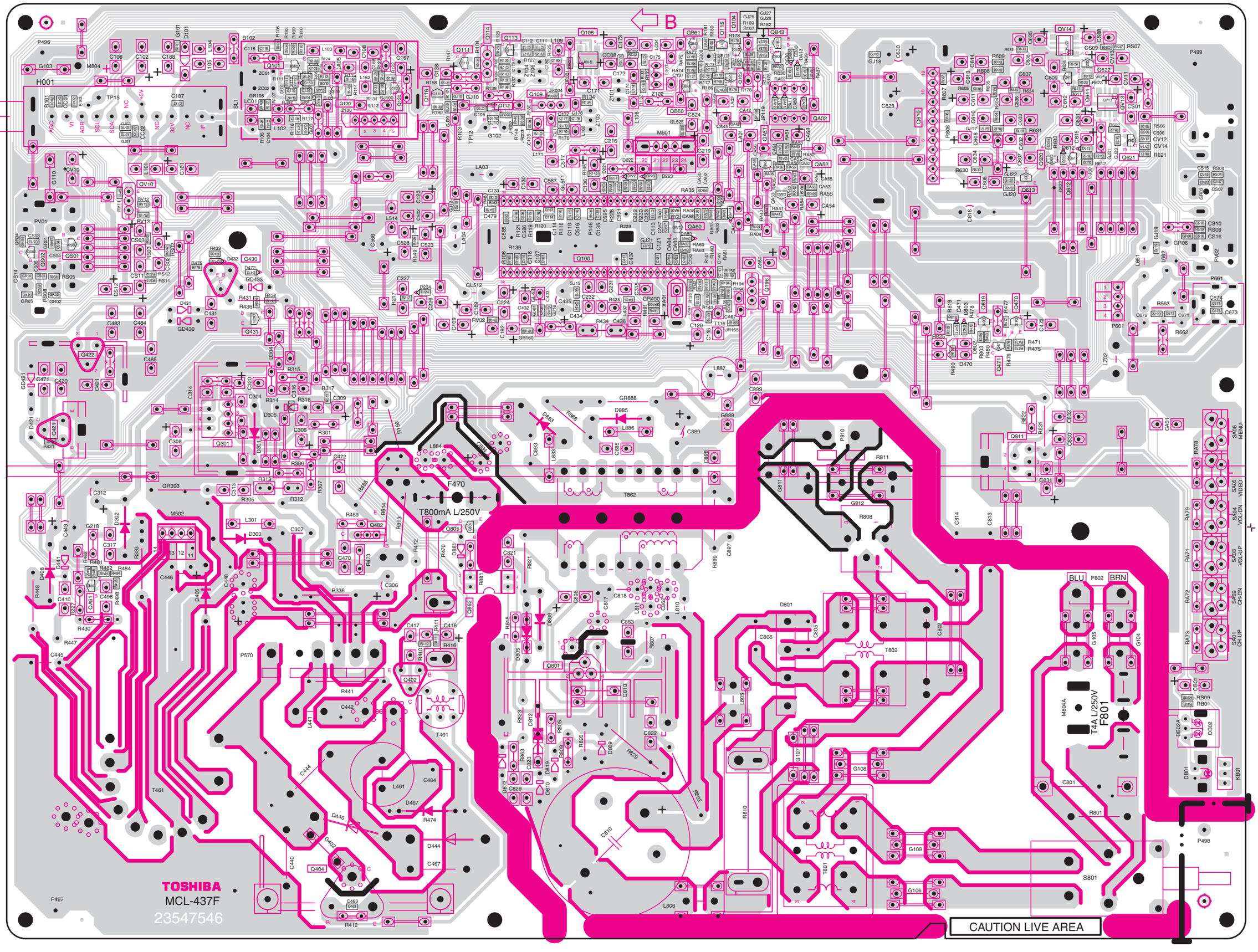
Location No.	Parts No.	Description
L903	23289934	COIL, PEAKING, TRF4221AU
L904	23289934	COIL, PEAKING, TRF4221AU
L905	23289925	COIL, PEAKING, TRF4390AU
L906	23289925	COIL, PEAKING, TRF4390AU
L907	23289925	COIL, PEAKING, TRF4390AU
LA03	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
LA04	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
LA05	23289918	COIL, PEAKING, TRF4100AU
LC01	23238513	COIL, PEAKING, TRF4R22AJ
LC04	23289918	COIL, PEAKING, TRF4100AU
LZ02	23221129	CHOKE COIL , TRF9240AC
T401	23224391	TRANSFORMER, DRIVE, TLN1104AH
⚠ T461	23236829	TRANSFORMER, FLY-BACK TFB4213AH
⚠ T801	23211731	COIL, LINE FILTER, TRF3164AC
⚠ T802	23211777	COIL, LINE FILTER 37X40H 4.7MH TRF3202AR
⚠ T862	23217664	TRANSFORMER, CONVERTER TPW3543AC
G102	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
G103	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G104	23248234	COIL, CHOKE, TLN3481AC
G105	23248234	COIL, CHOKE, TLN3481AC
G106	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G107	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G108	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G109	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G110	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G402	23103249	CORE, FERRITE BEAD 3.5X4.5, TEM2011AO
G889	23289918	COIL, PEAKING, TRF4100AU
GL511	23289918	COIL, PEAKING, TRF4100AU
GL512	23103279	FILTER, FERRITR CHOKE 3.5X5X2 TEM2014AO
SEMICONDUCTORS		
Q100	23009668	IC, P/N 2IN1 VCD MICRO
Q101	23114611	TRANSISTOR, 2SC3357
Q103	23205006	TRANSISTOR, KTC4075Y
Q104	23205006	TRANSISTOR, KTC4075Y
Q108	70200984	IC, A/V SW 3IN1X1 SOP-8C MM1113XF
Q109	23205081	TRANSISTOR, 2SA1980-Y
Q112	23205006	TRANSISTOR, KTC4075Y
Q115	23205006	TRANSISTOR, KTC4075Y
Q116	23205005	TRANSISTOR, KTA2014Y
Q130	23205204	TRANSISTOR, NPN VEBO=25V KTC2875B-RTK
Q196	23205085	TRANSISTOR, 2SC5343-Y
Q301	23009352	IC, AN5522
Q402	23114755	TRANSISTOR, 2SC2482FA-1
Q404	23314970	TRANSISTOR, 2SD2539(FA)
	23314375	TRANSISTOR, ON4409
Q421	23314141	TRANSISTOR, 2SC3852
Q422	23009843	IC, REGULATOR +5V 4% S7805PI
Q430	23314980	TRANSISTOR, 2SD2549 P
Q431	23205209	TRANSISTOR, NPN R1=2.2K R2=47K SRC1205S (SOT-23)
Q470	23205005	TRANSISTOR, KTA2014Y
Q471	23205006	TRANSISTOR, KTC4075Y
Q482	23205257	TRANSISTOR, PNP VCBO=-150V KTA1024-Y
Q610	23000867	IC, AN5274
Q612	23205005	TRANSISTOR, KTA2014Y
Q613	23205006	TRANSISTOR, KTC4075Y
Q801	23009322	IC, POW SW.REG.IC VDS=650V,PO= STR-G8656
Q805	23205209	TRANSISTOR, NPN R1=2.2K R2=47K SRC1205S (SOT-23)
Q811	23318299	IC, L78MR05-FA
Q819	23205006	TRANSISTOR, KTC4075Y
⚠ Q862	23906937	IC, PHOTO COUPLER, ON3171-R
Q901	23314780	TRANSISTOR, 2SC4544
Q902	23205085	TRANSISTOR, 2SC5343-Y
Q903	23314780	TRANSISTOR, 2SC4544
Q904	23205085	TRANSISTOR, 2SC5343-Y
Q905	23314780	TRANSISTOR, 2SC4544
Q906	23205085	TRANSISTOR, 2SC5343-Y
Q907	23205081	TRANSISTOR, 2SA1980-Y
Q908	23205202	TRANSISTOR, 2SC5344Y 2SC5344Y
QA02	23009646	IC, 8K BIT CMOS EEPROM AT24C08A-10PI-2.7
QA51	23205006	TRANSISTOR, KTC4075Y
QA52	23205005	TRANSISTOR, KTA2014Y
QA53	23205005	TRANSISTOR, KTA2014Y
QA60	23205006	TRANSISTOR, KTC4075Y
QA61	23205006	TRANSISTOR, KTC4075Y
QB30	23205006	TRANSISTOR, KTC4075Y

Location No.	Parts No.	Description
QB43	23205209	TRANSISTOR, NPN R1=2.2K R2=47K SRC1205S (SOT-23)
QB60	23205006	TRANSISTOR, KTC4075Y
QB61	23205006	TRANSISTOR, KTC4075Y
QV10	23205081	TRANSISTOR, 2SA1980-Y
QV13	23000359	IC, MM1111XF
D101	23316411	DIODE, ZENER, HZT33-12
D150	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D224	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D301	23357372	DIODE, AXIAL EU2JGF-41U2
D302	23357372	DIODE, AXIAL EU2JGF-41U2
D303	23316794	DIODE, SC570A
D406	23357372	DIODE, AXIAL EU2JGF-41U2
D408	23357372	DIODE, AXIAL EU2JGF-41U2
D421	23118622	DIODE, ZENER, RD10ES B2
D431	23118515	DIODE, ZENER, RD11ESA B1
D432	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D440	23316254	DIODE, ERC06-15
D441	23118516	DI0DE, ZENER, RD9.1ES B3
D444	23357364	DIODE, RU4JGF- M2 RU4JGF- M2
D467	23357372	DIODE, AXIAL EU2JGF-41U2
D470	23357267	DIODE, DZ5.6 BS B
D471	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D472	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D612	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D622	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D801	23357237	DIODE, TS4B05G-A1
D802	23357295	DIODE, ZENER, DZ13 BS C
D803	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
D805	23357012	DIODE, 1SS244
D806	23357372	DIODE, AXIAL EU2JGF-41U2
D809	23118529	DIODE, ZENER, RD5.6ES B2
D810	23118616	DIODE, ZENER, RD27ESA B2
D812	23357450	DIODE, VRM=90V IO=130MA ISS133
D819	23118526	DIODE, ZENER, RD6.8ES B2
D872	23118511	DIODE, ZENER, RD12ES B2
D881	23357273	DIODE, ZENER, DZ6.8 BS B
D883	23357336	DIODE, RL3A LF014-3
D885	23316714	DIODE, RL2Z
D901	23357450	DIODE, VRM=90V IO=130MA ISS133
D903	23357450	DIODE, VRM=90V IO=130MA ISS133
D904	23357450	DIODE, VRM=90V IO=130MA ISS133
D905	23357450	DIODE, VRM=90V IO=130MA ISS133
D906	23357450	DIODE, VRM=90V IO=130MA ISS133
D907	23357450	DIODE, VRM=90V IO=130MA ISS133
D908	23357450	DIODE, VRM=90V IO=130MA ISS133
D909	23357450	DIODE, VRM=90V IO=130MA ISS133
D910	23357450	DIODE, VRM=90V IO=130MA ISS133
D911	23357449	DIODE, DIODE IO=1.0A ERB10JGR-41A-1AU
DB02	23358567	LED, LAMP RED/GREEN L-59EGW
DB30	23357447	DIODE, SWITCH SILICON KDS160-RTK/USC
KB01	23009490	IC, REMOCON RECEIVER, PIC-TB19
MISCELLANEOUS		
⚠ F470	23144646	FUSE, CARTRIDGE 5X20 250V 0.8A
F470A	23165469	FUSE HOLDER, FUSE HOLDER 5.2 DFH-001
⚠ F801	23144508	FUSE, CARTRIDGE 5.2X20, 250V 4.0A
F801A	23165469	FUSE HOLDER, FUSE HOLDER 5.2 DFH-001
N724	23965900	TAPE, GLASS-CLOTH, W/ADHESIVE W=18 T=0.18
N728	23960101	SILICONE RUBBER, TSE-382 RTV
P661	23023116	PLUG, HEAD PHONE JACK 3.5MM PJ3-14-7
⚠ P801	23372052	POWER CORD, 250V2.5A
P802	23368249	POWER CORD, 2P 11.88MM VH-JST
P900	23164725	CONNECTOR, PLUG 2P
P910	23164725	CONNECTOR, PLUG 2P
PV01	23023198	JACK, 4P (NO SW) DAV4-31B01110S01
PV02	23023195	JACK, PIN JACK 2P DMD AV2-43-001
⚠ S801	23344385	SWTCH, POWER, PUSH 2C1P TV5, OMRON
SA01	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA02	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA03	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA04	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA05	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
SA06	23344443	SWITCH, TACTING SWITCH TSV TYP TSVB-1
⚠ V901A	23903147	SOCKET, ISH46S-E ICE 29MM
V901B	23102959	MAGNET, RUBBER
V901M	23102424	CONVERGENCE MAGNET, MAG-1082

Location No.	Parts No.	Description
W661	23351239	SPEAKER, 60X90 8-OHM 3W ONKYO SPK-1452AO
W662	23351239	SPEAKER, 60X90 8-OHM 3W ONKYO SPK-1452AO
XA01	23153571	CRYSTAL, 8.000 MHZ
Z101	23303136	CERAMIC TRAP, TCF1097
Z102	23303085	CERAMIC TRAP, TCF1092
Z103	23303271	FILTER, TRAP 4.5MHZ, TCF1138AM
Z130	23303230	FILTER, 38MHZ MULTI F816KPL F816KPL
ZC01	23303166	CERAMIC TRAP, 39.5MHZ TCF1107
ZC02	23303224	CERAMIC TRAP, TCF1120AM
PC BOARD ASSEMBLIES		
✻ U901	23761794	PC BOARD ASSY, PD0607E CRT/D TSP2003082892
✻ U902	23761824	PC BOARD ASSY, PD1675 MAIN TSP2003092324
PICTURE TUBE		
⚠ V901	23312954	PICTURE TUBE, A51LVV896X, 21FFG02
TUNER		
H001	23321450	TUNER, ASIA HYPER FS D-J, ENV59DA7G3
ACCESSORIES		
K902	23306459	REMOCON HAND UNIT IR, CTVPAL CT-90119
Y101A	23566255	OWNERS MANUAL, 21SZ2R1/M1/M2
Y101B	23566262	OWNERS MANUAL, 21SZ2R1, RUS
Y120	23943846	BAG, POLY
CABINET PARTS		
A201	23532535	COVER, FRONT COVER
A267	23445755	BUTTON, BUTTON POWER
A268	23929509	HOLDER, BUTTON
A270	23428230	DOOR, DOOR PROPER
A271	23451868	PUSH CATCH
A401	23532500	COVER, BACK COVER P
A530A	23929521	PIECE, WASHER T=0.5
A530B	23929522	PIECE, WASHER T=1.0
A701	23067594	CARTON, BOX
A702A	23946609	PACKING, TOP PACKING
A702B	23946610	PACKING, BOTTOM PACKING
AT03	23588765	REMOCON PART, BATTERY COVER, CT-90119
E501	23198694	WIRE, CRT EARTH, 21D7DXE
E912	23848729	WEDGE, YOKE HOLDING, 3 REQUIRED

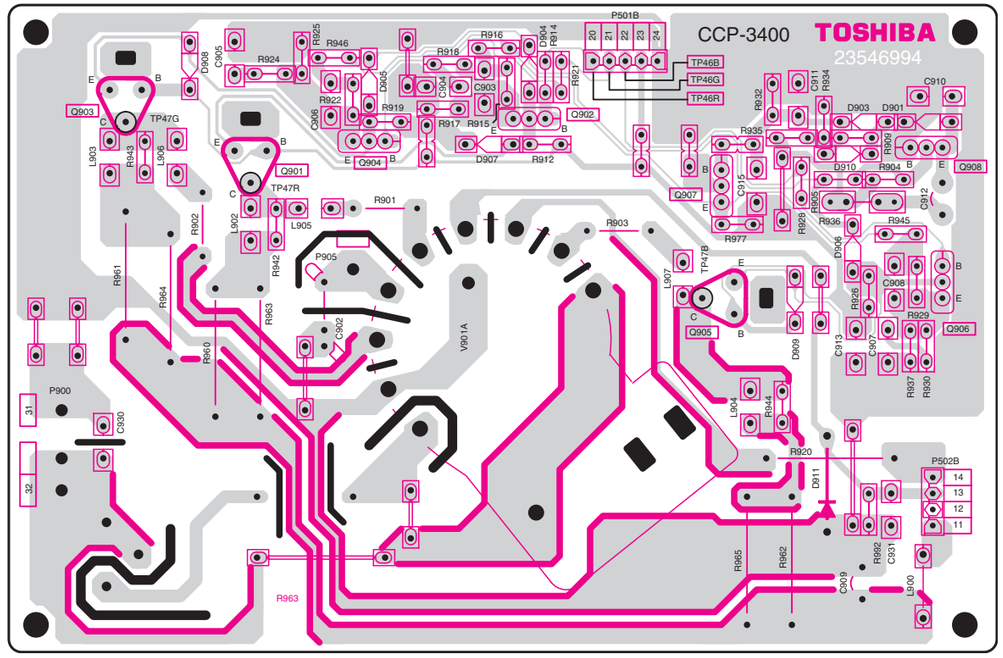
MAIN BOARD PD1675 (U902)

BOTTOM (FOIL) SIDE



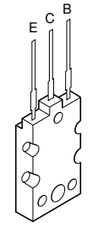
CRT/D BOARD PD0607E (U901)

BOTTOM (FOIL) SIDE

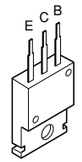


TERMINAL VIEW OF TRANSISTORS

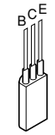
① 2SD2253
(old)
2SC5243



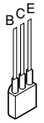
② 2SC3852
2SD1763A
2SC1569
2SC4544
2SA1788
2SA1306
2SA1186A



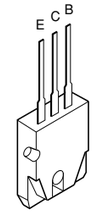
③ 2SC752GTM
2SC2482
2SC2655
2SC4721P



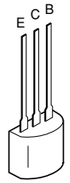
④ 2SC752
2SA562TM
2SA1015
2SC1815
2SC2878
2SC1740S
2SC2120
2SA9335



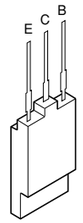
⑤ 2SA1788



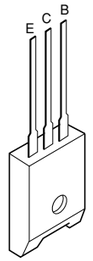
⑥ RN2203
RN2201
RN2004
RN1203
RN1204
RN2204
RN1205
RN1202
RN1201



⑦ 2SD1554
2SD2253
2SD1556
2SC5143
2SD2553



⑧ ON4409



SCHEMATIC DIAGRAM

MODEL : 21CSZ2R1

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON THE MANUAL FOR THIS MODEL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on the MANUAL for this model. Do not degrade the safety of the receiver through improper servicing.

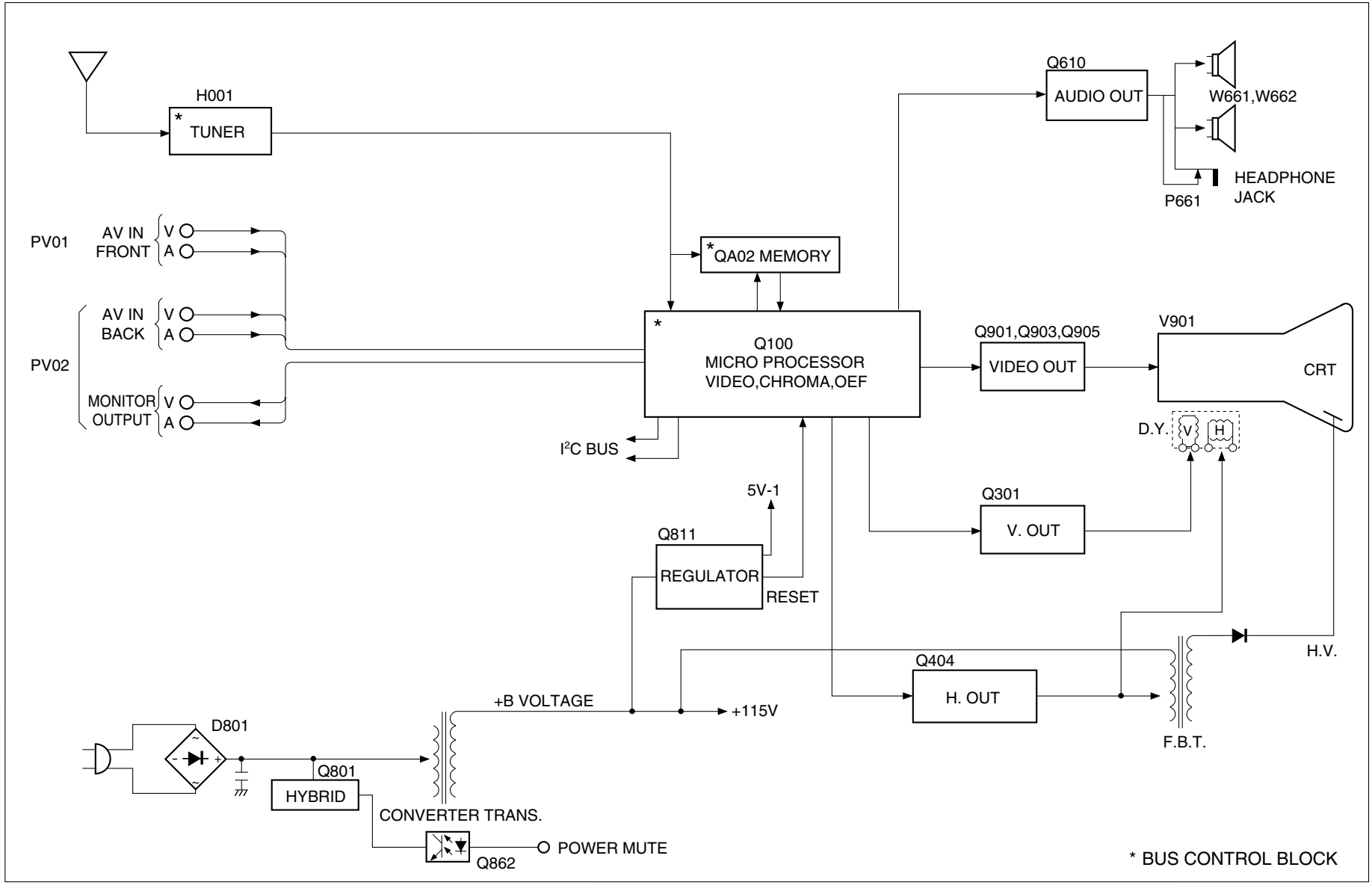
NOTE:

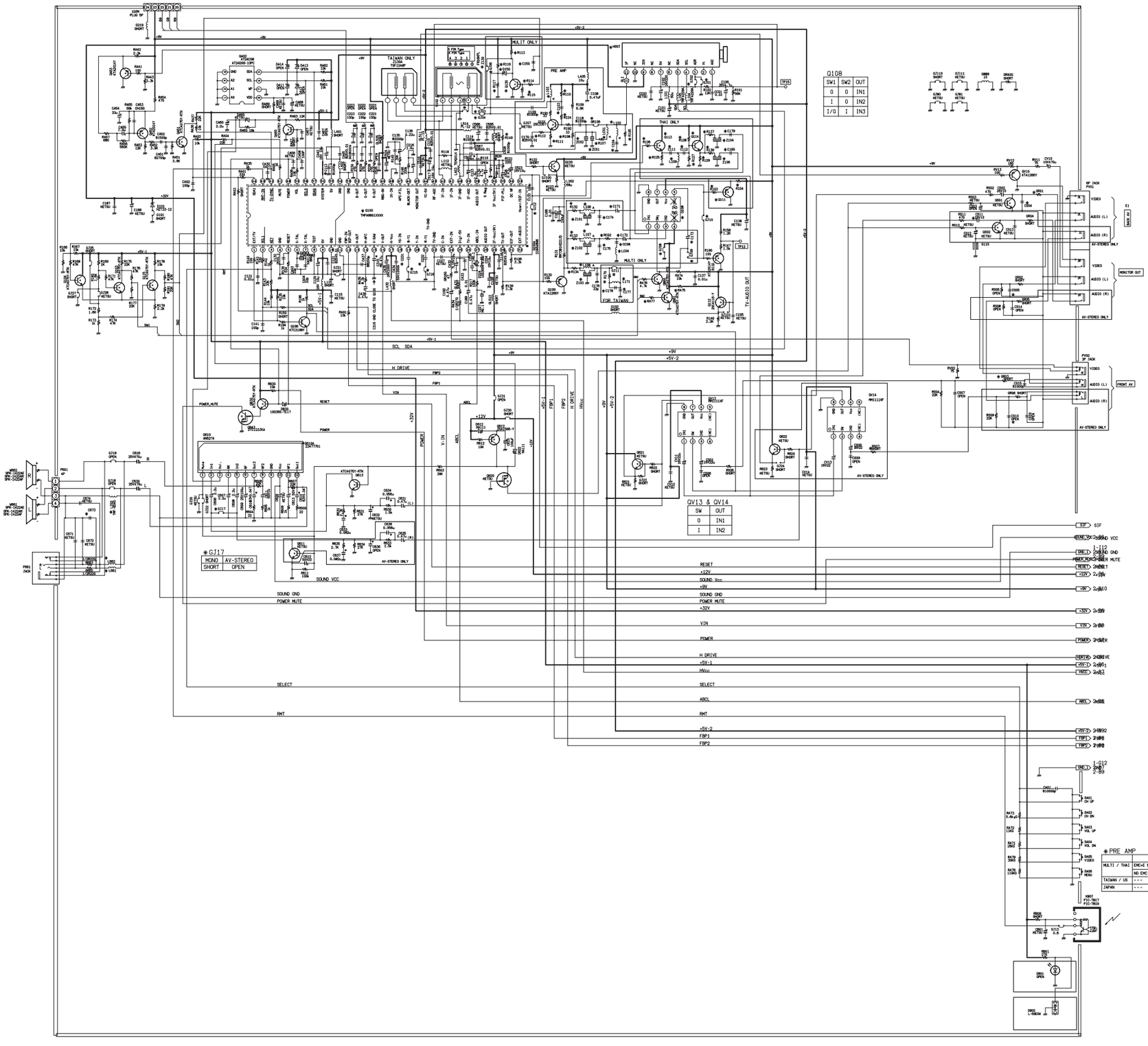
1. RESISTOR Resistance is shown in ohm [K = 1.000, M = 1.000.000]. All resistors are 1/6W and 5% tolerance carbon resistor, unless otherwise noted as the following marks.
   1/2R = Metal or Metal oxide of 1/2 watt
   1/2S = Carbon compsistion of 1/2 watt
   1RF = Fuse resistor of 1 watt
   10W = Cement of 10 watt
   K = ±10% G = ±2% F = ±1%
2. CAPACITOR Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF, and the values more than 1 in pF.
   All capacitors are ceramic 50V, unless otherwise noted as the following marks.
   —|(+)|— Electolytic capacitor —|(M)|— Mylar capacitor
3. The parts indicated with "⚠" have special characteristics, and should be replaced with identical parts only.
4. Voltages read with DIGITAL MULTI-METER from point indicated to chassing ground, using a color bar signal with all controls at normal, line voltage at 220 volts.
5. Waveforms are taken receiving color bar signal with enough sensitivity.
6. Voltage reading shown are nominal values and may vary ±20% except H.V.

■ SCHEMATIC DIAGRAM STRUCTURE:

MAIN Circuit [SHEET– 1/2] 1/3
[SHEET– 2/2] 2/3
CRT-D Circuit 3/3

CIRCUIT BLOCK DIAGRAM





LOCATION	21"FLAT
V901	A51LVV896X
V901M	MAG-1082
R920	1M5.1
E501	23198694

✱Z130

		GJ03	GJ04	GJ05	GJ06	GJ07	PRE AMP
MULTI	F816KPL (5PIN)	0	X	X	0	X	0
TAIWAN / US							
THAI							
JAPAN							

✱H001

		GJ01	GJ02	REMARKS
ASIA MODELS	ECA33LXC (R1) (23321473)	OPEN	OPEN	SANYO
	ECA33LX8 (R2) (23321452)	OPEN	OPEN	SAMSUNG
	ECA33LX6 (R3) (23321417)	4.7K	4.7K	LG
	ECA33LX8 (R4) (23321428)	OPEN	OPEN	SANYO
VIETNAM MODELS	ECA33LX1 (RA) (23321357)	OPEN	OPEN	PANASONIC
	ECA33LX8 (RB) (23321428)	OPEN	OPEN	SANYO
TAIWAN MODELS	ECA51LX7 (RA) (23321456)	OPEN	OPEN	PANASONIC
	ECA51L (RB) (23321368)	OPEN	OPEN	TDL
RUSSIAN MODELS	ENV59DA7G3 (23321450)	OPEN	OPEN	PANASONIC

✱SIF FILTER

	Q108	Z103	GJ08	GJ09	GJ10	GJ11	GJ12	CIRCUIT AREA MULTI	THAI	TAIWAN
MULTI	MM1113XF	TCF1138AM (RA) TPS4.5MCI (RB) TCF1010 (RC)	X	X	O	O	O	O	X	X
TAIWAN / US /JAPAN										
THAI										

✱PRE AMP

MULTI / THAI	EMC-E MODEL	R105	L102	C104	GR106	LC01	ZC01	ZC02	R108	C103	R124	R110	L103	R191	R111	R112	C170	R118	L112	R107
		330	1uH	47pF	KETSU	0.22uH	30.5M(TCF1107)	30.0M(TCF1120)	2.7K	0.01u	1K	1K	1.2u	33	36	SHORT	0.01u	KETSU	KETSU	33
	NO EMC																			
TAIWAN / US	---																			
JAPAN	---																			

21CSZ2R1
MAIN
SHEET-1/2

(1/3)

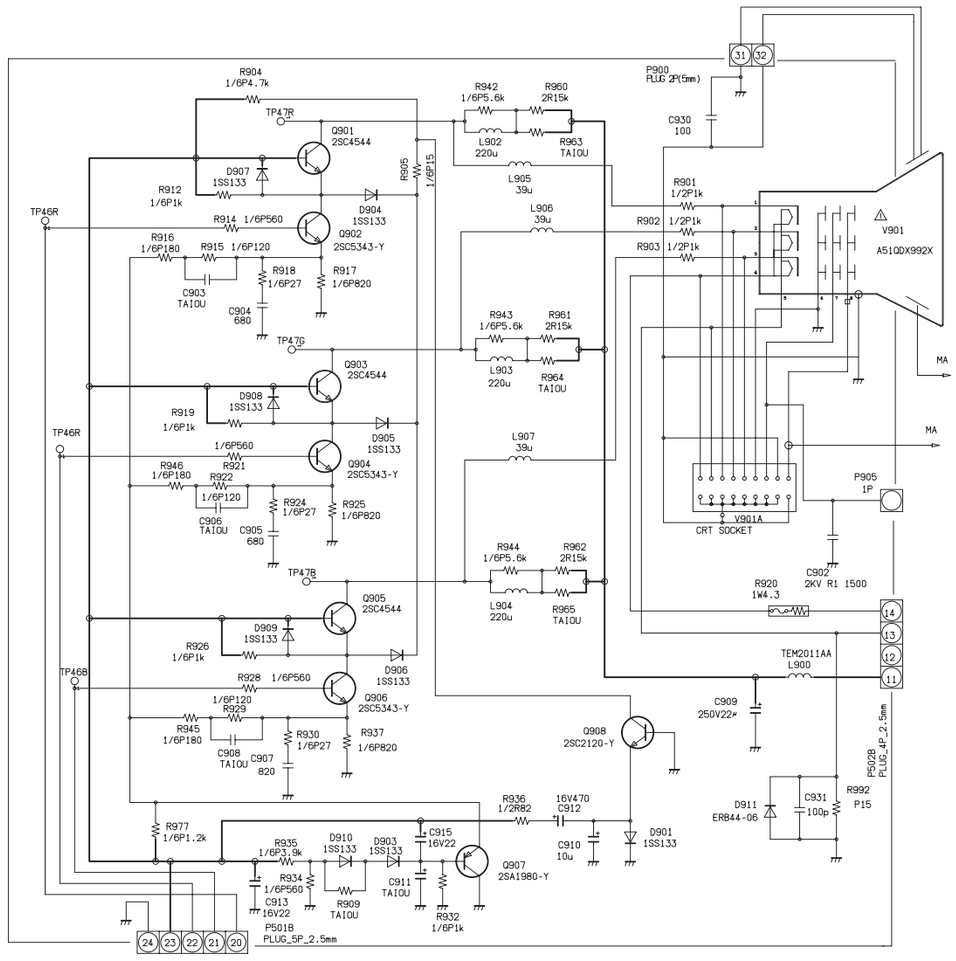
•P801 - POWER CORD

ASIA / EAST EUROPE	250V 2.5A
HONG KONG	250V 13A
MIDDEL EAST	250V 6A / 127V 7.5A
AUSTRALIA	250V 7.5A
TAIWAN	125V 7A

	R1	R2
Q404	2SD2539(FA) (23314970)	ON4409 (23314375)
R412	KETSU	56 Ohm

R441	1W1K
L441	TLN2210AC (23233999) (RA)
L441	TLN2210AY (23233989) (RB)
C442	250V0.36u (240829958)
Q404A	(23477926)
C440	1500V 1000P (245031938)
C444	1500V 910P (245032798)
D444	RU4J0F-M2/RU-4AM LF-1
C467	630V 0.033uF (248203338)

21CSZ2R1
MAIN
SHEET-2/2



21CSZ2R1
CRT-D

SPECIFICATIONS

MODEL		21CSZ2R1
Rated voltage		~ 220 - 240V, 50Hz
Power consumption (at ~ 220V 50Hz)		92W
Dimensions (Width x Depth x Height)		500(W) X 477(D) X 478(H) mm
Mass		22.9kg
Picture Tube		Type 21 Flat square picture tube (549.1mm) Overall picture tube measured diagonally (505.5mm) Viewable picture tube measured diagonally 90° deflection
Television system (Aerial input)	Channel coverage	**System** **Channel** **VHF** **UHF** **CATV** PAL B/G CCIR 2 - 12 21 - 69 X~Z+2, S1~S41 PAL I UK — 21 - 69 — PAL D/K CHINA 1 -12 13 - 57 Z-1~ Z-38 SECAM B/G CCIR 2 - 12 21 - 69 X~Z+2, S1~S41 SECAM D/K OIRT 1 -12 21 - 69 X1~X19 NTSC M US 2 -13 14 - 69 A-6~A-1, A~W, AA~ZZ, AAA, BBB NTSC M JAPAN 1 -12 13 - 62 M-1~M-10, S1~41
	Special RF signal	**Color system** **Sound system** NTSC4.43 5.5/6.0/6.5 MHz PAL 60Hz 5.5/6.0/6.5 MHz
Color system		PAL / SECAM / NTSC4.43 / NTSC3.58
Sound output		2.5 W x 2
Terminals		Input: Video/Audio (monaural) Monitor output: Video/Audio (monaural)
Speaker		6 x 9cm (2)

* Please refer to owner's manual in detail.

– END –

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN