TOSHIBA

FILE NO. 060-9802

SERVICE MANUAL

COLOUR TELEVISION

S8E Chassis

21G3XHE, 21G3XR

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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 16)

   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.

* 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.

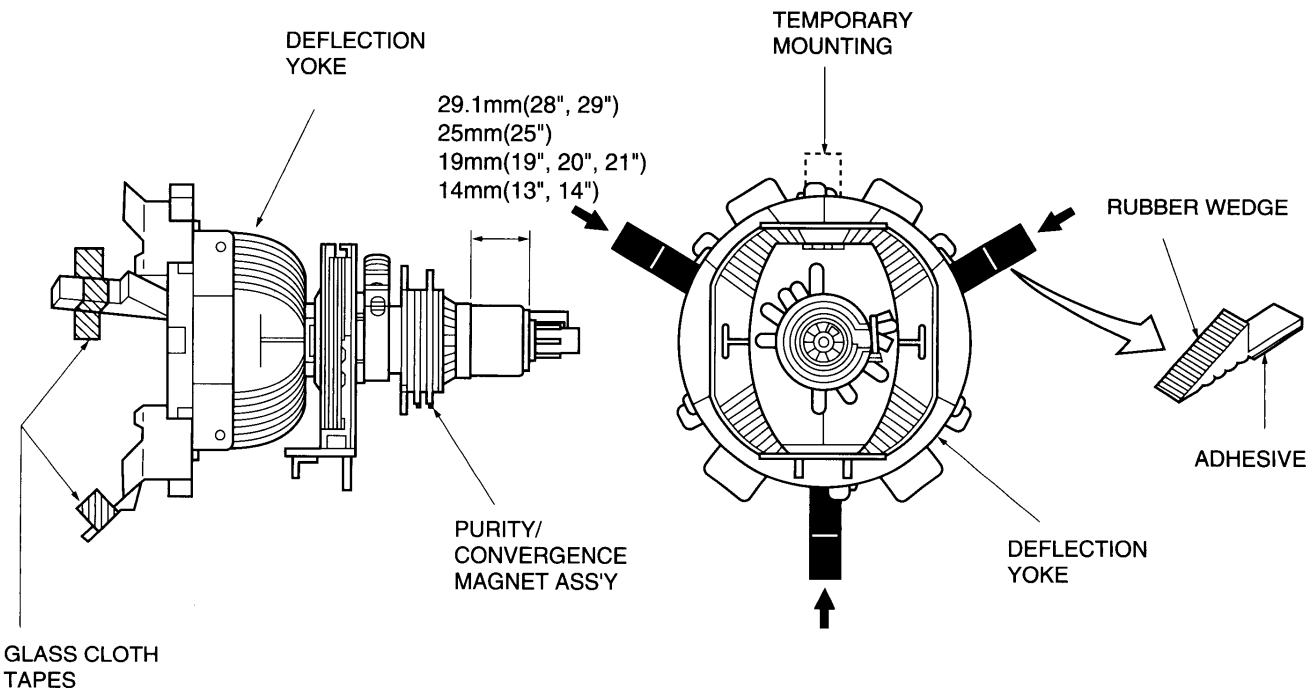


Figure 1.

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.

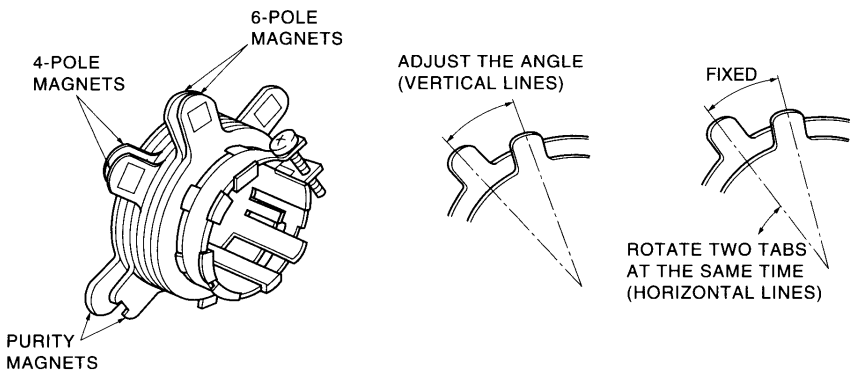
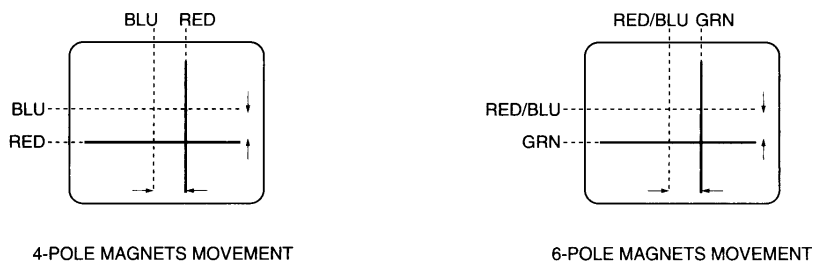


Figure 2.



Center Convergence by Convergence Magnets



Circumference Convergence by DEF Yoke

Figure 3. Dot Movement Pattern

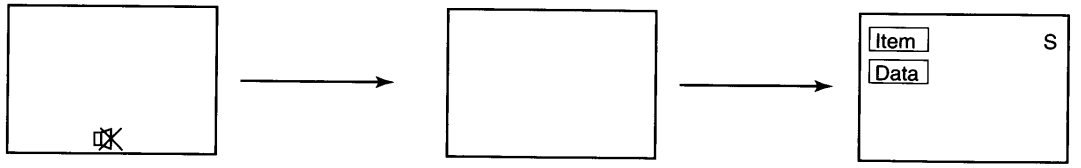
SERVICE MODE

1. ENTERING TO SERVICE MODE

1) Press 🔇 button once on Remote Control.

2) Press 🔇 button again to keep pressing.

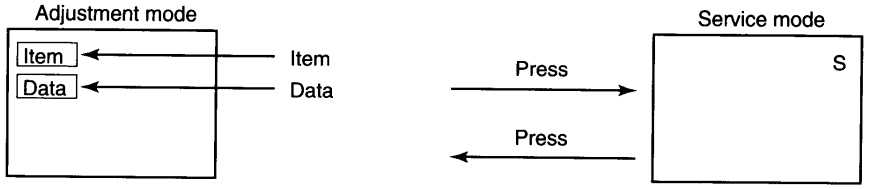
3) While pressing the 🔇 button, press MENU button on TV set.



(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 COLP (PAL)
Self diagnostic display ON/OFF :	9 button 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)

[redacted]

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.

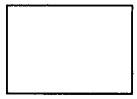
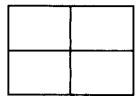
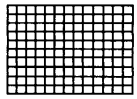
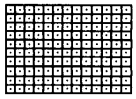
1. Enter the service mode, then select any register item.
2. Press and hold the CALL button on the Remote, then press the CHANNEL ▲ button on the TV. The initialization of QA02 has been complated.
3. Check the picture carefully. If necessary, adjust any adjustment item above. Perform "Auto search Memory"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

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

7. TEST SIGNAL SELECTION

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

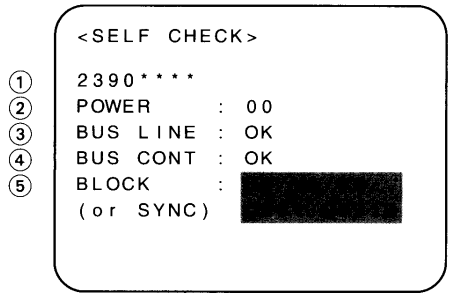
Signal off ⟶ NTSC signals (14 patterns)
↑ ⟵ PAL signals (14 patterns) ⟵ ┘

Signals	Picture
[redacted] • All Black • All White	
• Black & White	
• Black cross-bar • White cross-bar [redacted]	
• Black cross-hatch • White cross-hatch	
• Black cross-dot • White cross-dot	
[redacted]	

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

8. SELF DIAGNOSTIC FUNCTION

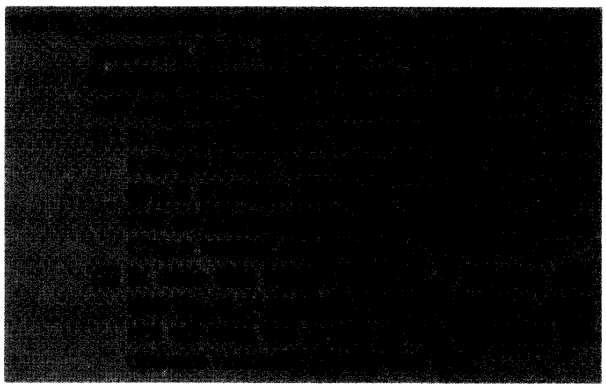
1) Press "9" button on Remote Control during display of adjustment menu in the service mode.
   The diagnosis will begin to check if interface among IC's are executed properly.
2) During diagnosis, the following displays are shown.

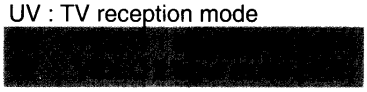


Indicated color of mode now selected : Green and Red
Indicated color of other modes : White

Green : Normal
Red : The microcomputer 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 including QV01.
QV01 : In case of indication green ---Normal
In case of indication red with input signal----
Failure may exist in output line including QV01.

① Part number of microcomputer (QA01)
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.
"SCL(SCL1)-GND" ..... SCL-GND short circuit
"SDA(SDA1)-GND" ..... SDA-GND short circuit
"SCL(SCL1)-SDA (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 ----"OK" is normal.
UV : TV reception mode



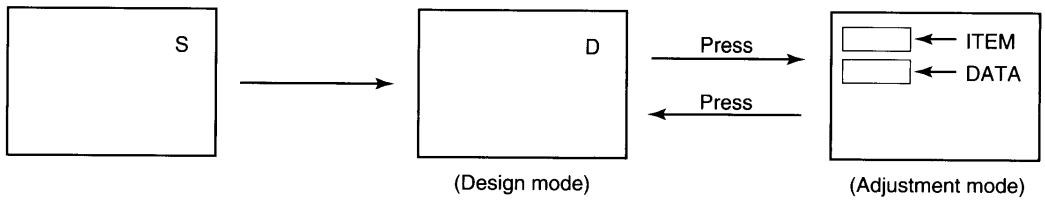


* The items marked with ■ are not usable to display in the SELF DIAGNOSTIC FUCTION for some model.

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

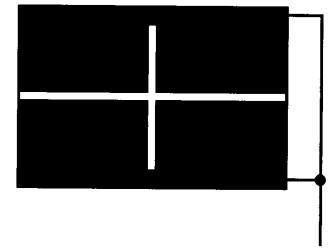
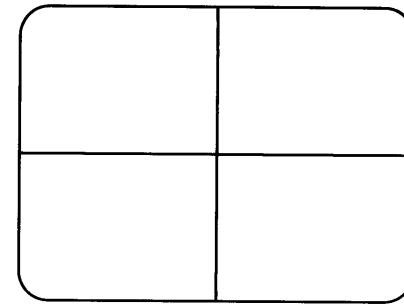
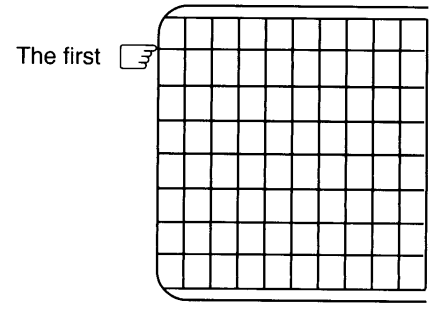
Every pressing of CHANNEL ▼ button in the design mode changes the adjustment items in the order of table-3.
(▲ button for reverse order)

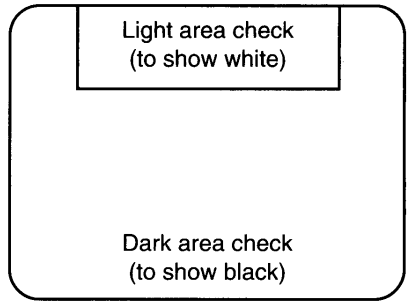


3. ADJUSTING THE DATA

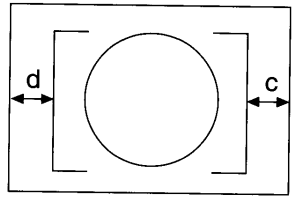
Pressing of VOLUME ▲ or ▼ (◿ +/–) button will change the value of data.

ELECTRICAL ADJUSTMENT

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 20, and to set GDRV and BDRV to 80 with VOLUME ◿ – /+ buttons. 4. Press VIDEO button on TV set and rotate Screen VR to get one slight horizontal line on screen. Note: Every pressing of VIDEO button provides Horizontal line picture and Normal picture alternately. 5. Press VIDEO 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. 

Model S8E Series (Reference factory adjustments)

Item	Name	Input signal	Adjustment signal	Adjustment condition and procedure
HIT VPOS	: HEIGHT : VERT. POSITION	Visual adjustment with a picture (Bus control)	WG Philips pattern Do not use the Philips pattern for France SECAM.	1. Condition : Cont. - max., Bright - cent., Color - cent. 2. Adjustment procedure a. Adjust V.Position by the sub-address VPOS so that the vertical center of the circle of the Philips pattern comes to the center of the screen. b. Adjust the screen by the sub-address HIT so that the top and bottom flags of the Philips pattern just go off the screen.
HPOS	: HORIZONTAL POSITION	Visual adjustment with a picture (Bus control) 	WG Philips pattern Do not use the Philips pattern for France SECAM.	1. Condition : Cont. - max., Bright - cent., Color - cent. 2. Adjustment procedure Adjust the screen by the sub-address HPOS so that d-c of the Philips pattern becomes minimum.

Item	Name	Setting (User control)	Input signal	Measurement point	Adjustment method	Adjustment standard
SCNT	Sub-contract adjustment	Video mode 1 (→|1|←)	Sub-bright signal		No adjustment	
TNTC	Sub-tint adjustment	Video mode 1 (→|1|←)	Sub-bright signal (NTSC)		No adjustment	
COLC	Sub-color adjust-ment	Video mode 1 (→|1|←)	Sub-bright signal (PAL)	IC501 #20 B-OUT	1. Select COLC. 2. Adjust the upper half of the amplitude of the rainbow color bar signal output.	1.35V(o-p) ± 0.2V(o-p) p-p value of upper half
COLS	Sub-color SECAM adjustment	Video mode 1 (→|1|←)	SECAM color bar signal	IC501 #20 B-OUT	1. Select COLS. 2. Adjust amplitude of color bar output. (p-p value of Upper half). * Perform this step after COLC adjustment.	1.75V(p-p) ± 0.2V(o-p) p-p value of upper half
BELL	SECAM BELL filter adjustment		SECAM color bar signal		No adjustment	
SRY	SECAM black level adjustment R-Y axis	Video mode 1 (→|1|←)	SECAM color bar signal	IC501 #18 (R-OUT)	1. Select SRY. 2. Adjust level of no color part or color differential signal to match level of V-BLK part.	0 ±10mV(p-p)
SBY	SECAM black level adjustment B-Y axis	Video mode 1 (→|1|←)	SECAM color bar signal	IC501 #18 (R-OUT)	1. Select SBY. 2. Adjust level of no color part or color differential signal to match level of V-BLK part.	0 ±10mV(p-p)

Item	Name	Setting (User control)	Input signal	Measurement point	Adjustment method	Adjustment standard
RCUT GCUT BCUT GDRV BDRV Screen VR	Screen adjustment and white balance adjustment (R cutoff) (G cutoff) (B cutoff) (G drive) (B drive) (Screen)	RCUT GCUT BCUT 20H GDRV BDRV 40H Activate horizontal straight line mode.	Raster signal without color burst.	Screen adjustment	1. Set the conditions as shown left. 2. Gradually raise the screen brightness until either of R, G or B line starts to gleam slightly. 3. Determine that point as the screen VR adjustment position. 4. Using RCUT, GCUT and BCUT, raise the brightness of two lines except the one that gleamed in the step 2 until these lines start to gleam slightly. (i.e. make the screen almost white.) 5. Release the horizontal straight line mode. (Local video key) 6. Using the white balance checker, repeat the adjustment steps until both bright and dark parts becomes correct value. 7. The checker should be the type of matching brightness by changing modulation rate.	HIGH LIGHT (103cd/m²) 8750K –0.002uv DARK (17cd/m²) 8750K –0.002uv * Adjustment range is the same as before.
BRTC	Sub-bright adjustment	Video mode 1 (→|1|←)	Sub-bright signal	Screen adjustment	1. This item shall be adjusted after the screen VR adjustment and white balance adjustment. 2. Adjust the number of collapsed black lines of the sub-bright signal.	4 ± 1.5 lines
AFT	AFT fo adjustment	IF output pin (H001) 1000 pF load (IF slit round open.)	SG. CW f= 37.95 MHz 95 dBμV Input (75 ohm load value)	TP-13	1. Adjust L161 at the point that voltage changes critically.	2.5V ± 0.5V
RAGC	RF AGC DELAY adjustment	IF output pin (H001) 1000 pF load (IF slit round open.)	SG. CW f= 37.95 MHz 95 dBμV Input (75 ohm load value)	TP-15	2. Adjust the SUB data of [RAGC].	4.0V ± 2.0V

CIRCUIT CHECKS

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.



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】

		21G3XHE	21G3XR
HIGH VOLTAGE AT ZERO BEAM:	(A)	28.3kV	28.3kV
MAX HIGH VOLTAGE:	(B)	29.0 kV	29.0kV
AC VOLTAGE:	(C)	110V~240V	220~240V

Table-1

【SERVICE MODE】

ADJUSTING ITEMS AND DATA IN THE SERVICE MODE:

Item	Name of adjustment	Preset	Data
RCUT	R CUTOFF	20H	←
GCUT	G CUTOFF	20H	←
BCUT	B CUTOFF	20H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
SCNT	SUB-CONTRAST	05H	←
COLS	SUB COLOR SECAM	40H	←
BRTC	SUB-BRIGHT	40H	←
COLC	SUB-COLOR	40H	←
TNTC	SUB-TINT	3CH	←
HPOS	HORIZ. POSITION	11H	←

Item	Name of adjustment	Preset	Data
VPOS	VERT. POSITION	03H	←
HIT	HEIGHT	20H	←
LIN	V-LINEARITY	08H	←
SBY	SECAM B-Y	08H	←
SRY	SECAM R-Y	08H	←
RAGC	RF AGC	30H	←
VIOO	VOL 100%	7FH	←
PWR	CURR LIMIT CONT	00H	←
BUS	BUS LINE CONT	00H	←
MEM	MEMORY CHECK	00H	←

Table-2

【DESIGN MODE】

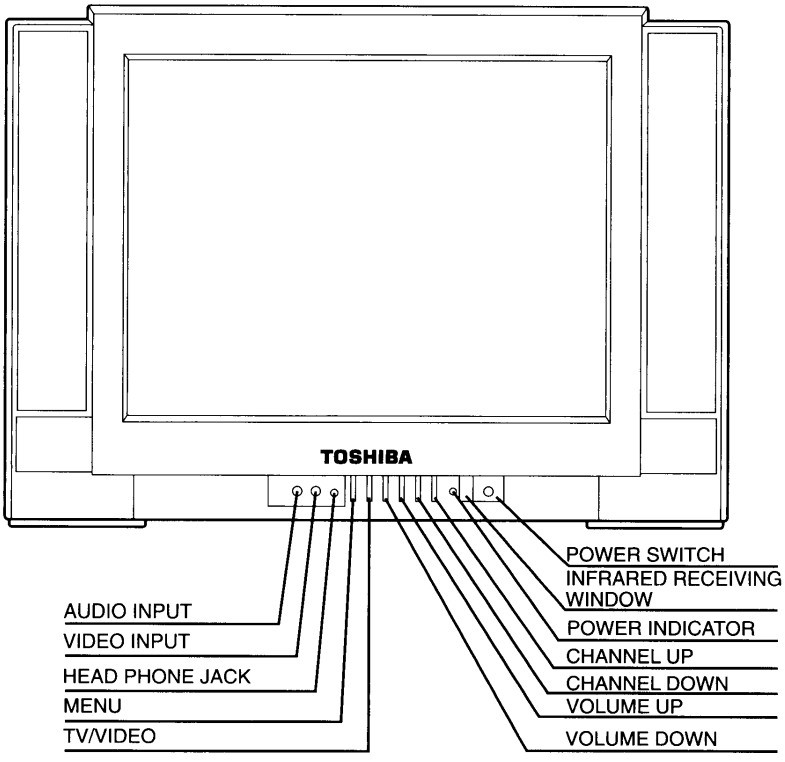
ADJUSTING ITEMS AND DATAS IN THE DESIGN MODE:

Item	Name of adjustment	Preset Data	Data	Remarks
			21"	
OPT	OPTION	07H	47H	

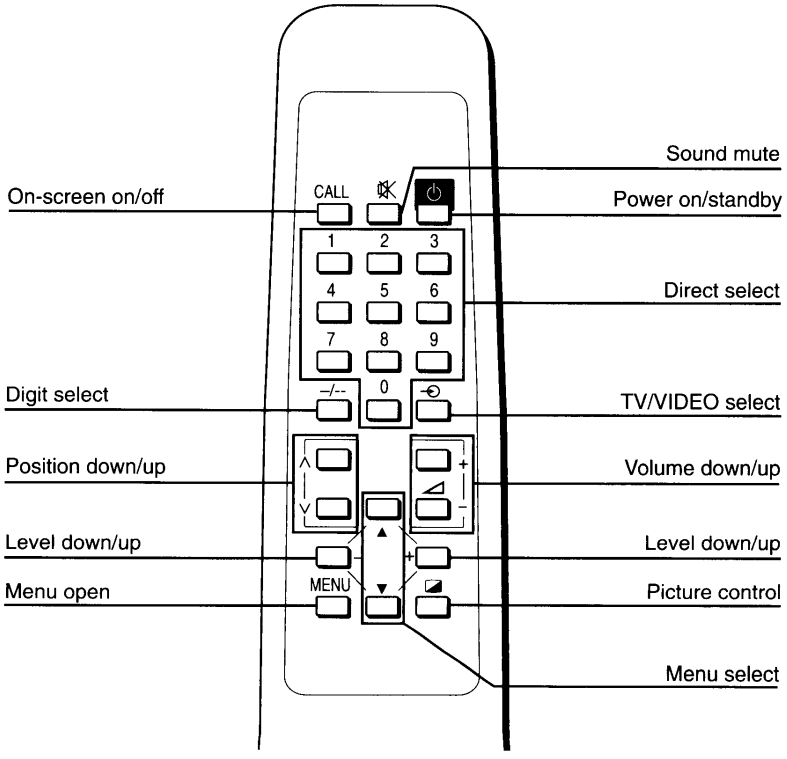
Table-3

LOCATION OF CONTROLS

Front



Remote



SPECIFIC INFORMATIONS

PROGRAMMING CHANNEL MEMORY

Auto search memory (ASM)

All the channels that can be received are preset automatically.

1 Select the position for starting ASM, (0~9) or (∨ / ∧).
2 Set the correct broadcast system for your region.
Press (MENU) repeatedly to call up the SET UP menu.
And set COLOR to AUTO and select the SOUND according to the table below by (▼/▲) and (–/+).
3 Select ASM, then press (+) to start the ASM. Return to the start position. This completes the procedure.

Broadcast Transmission Systems in Each Country

Area	Country	System	
		Colour	Sound
Asia M.E.	Bahrain, Kuwait, Israel, Oman, Qatar, United Arab Emirates, Yemen, etc. Indonesia, Malaysia, Singapore, Thailand, etc	PAL	B/G
	China, etc	PAL	D/K
	Hong Kong	PAL	I
	Iraq, Iran, Lebanon, Saudi Arabia, etc	SECAM	B/G
	Russian Federation, etc	SECAM	D/K
	Myanmar, etc	NTSC	M
Oceania	Australia, New Zealand, etc	PAL	B/G

Note.
"B/G" and "D/K" will be displayed as "BG" and "DK" on the screen. PAL, SECAM and 358NTSC are different colour signal broadcast transmission systems applicable to different countries. 443NTSC is used in special VTRs to playback NTSC recorded video tapes through PAL television equipment.
[358NTSC = NTSC 3.58MHz, 443NTSC = NTSC 4.43 MHz]

Manual Search and Changing the assigned position

(Example) Presetting Channel 12 to Position 12

(Method 1) — **When Channel 12 is not preset to either channel→ Manual Search**

1 Select Position 12.
Press (∨ / ∧) repeatedly until 12 is displayed.
Or, press (–/– –) once or twice to display – – on the screen.
Press 1 and 2 at remote in that order.

2 Press (MENU) several times to display the SET UP menu screen.
Press (▼/▲) and select ">>>". Press (–/+) to search.
Pressing "–" searches lower frequency channel; pressing "+" searches higher frequency channels.

3 When Channel 12 is set, press (▼/▲) to select " ⇔ ". Press "+" (–/+) to complete the presetting.

To turn off the menu function display instantly
Press the (CALL) button.

(Method 2) — **Store position**

1 Press (0~9) or (∨ / ∧) to find the position preset for Channel 12.

2 When Channel 12 is set, press (MENU) several times to display the SET UP menu screen. Press (▼/▲) to select the item "POSITION". And press (–/+) repeatedly to set the position number "P12". Pressing "–" displays a smaller number; pressing "+" displays a larger number.

3 When Position 12 is set, press (▼/▲) to select the item " ⇔ ". Press "+" (–/+) to complete the presetting.

To turn off the menu function display instantly
Press the (CALL) button.

Skip function
If you set SKIP ON for unnecessary position numbers, when you select channels with (∨ / ∧), that position is skipped.

(Example) Skipping position 13

1 Select Position 13.
Press (∨ / ∧) repeatedly until 13 is displayed.
Or, press (–/– –) once or twice to display – – on the screen.
Press 1 and 3 at remote in that order.

2 Press (MENU) several times to display the SET UP menu screen. Press (▼/▲) to select the item "SKIP". Press (–/+) to switch from OFF to ON. This completes the setting.

To turn off the menu function display instantly
Press the (CALL) button.

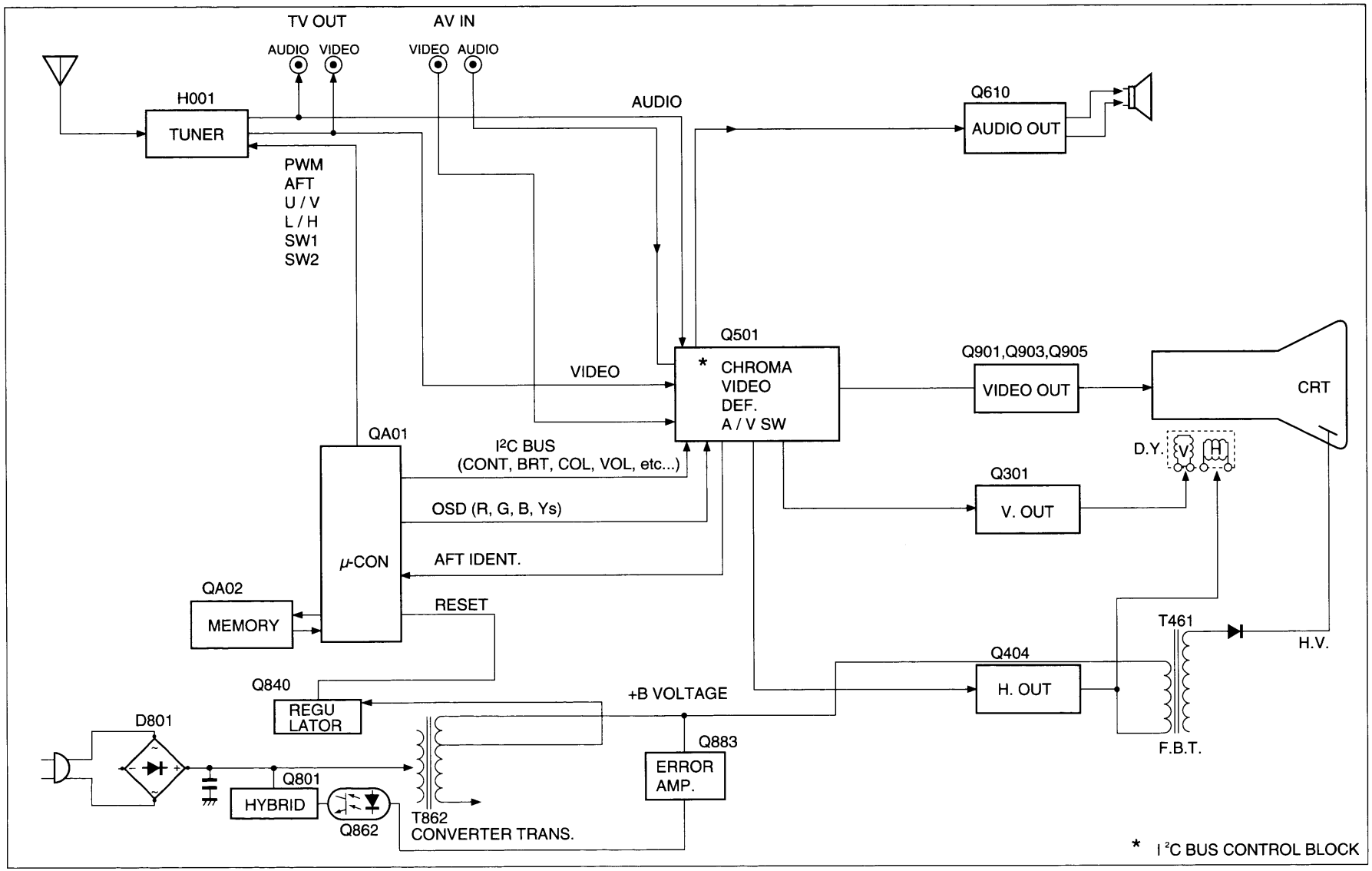
Note • When SKIP is on, "*"is added to the left of the position number. Example: *13
Select position 13 with (–/– –) and (1, 3) to confirm "*"mark.
• If you want to restore a skipped position number, select the skippied position number with (–/– –) and (1, 3) buttons and Switch from ON to OFF on step 2 above.

Manual fine tuning (MFT)
Press (MENU) several times to display the SET UP menu screen.
Press (▼/▲) and select MFT. Press (–/+) to start fine tuning.
Pressing "–" fine tunes to a lower frequency; pressing "+" fine tunes to a higher frequency.

To turn off the menu function display instantly
Press the (CALL) button.

※ **Please refer to owner's manual in detail.**

CIRCUIT BLOCK DIAGRAM



SPECIFIC INFORMATIONS

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.*

Models : 21G3XHE/21G3XR

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.	Part No.	Description
CAPACITORS		
C101	24794101	EL, 100μF, ±20%, 16V
C102	24794221	EL, 220μF, ±20%, 16V
C103	24797478	EL, 0.47μF, ±20%, 50V
C104	24797478	EL, 0.47μF, ±20%, 50V
C105	24232103	CD, 0.01μF, +80%, −20%
C106	24796479	EL, 4.7μF, ±20%, 35V
C108	24567474	PF, 0.47μF
C110	24474221	CD, 220pF, ±10%
C111	24232103	CD, 0.01μF, +80%, −20%
C112	24797100	EL, 10μF, ±20%, 50V
C113	24591104	PF, 0.1μF
C114	24591104	PF, 0.1μF
C115	24591104	PF, 0.1μF
C116	24591104	PF, 0.1μF
C117	24232103	CD, 0.01μF, +80%, −20%
C118	24474102	CD, 1000pF, ±10%
C120	24473470	CD, 47pF
C121	24473470	CD, 47pF
C122	24232103	CD, 0.01μF, +80%, −20%
C123	24232103	CD, 0.01μF, +80%, −20%
C129	24474102	CD, 1000pF, ±10%
C150	24232103	CD, 0.01μF, +80%, −20%
C161	24797478	EL, 0.47μF, ±20%, 50V
C162	24212332	CD, 3300pF, ±10%
C166	24232103	CD, 0.01μF, +80%, −20%
C167	24763101	EL, 100μF, ±20%, 16V
C168	24794100	EL, 10μF, ±20%, 16V
C169	24232103	CD, 0.01μF, +80%, −20%
C170	24232103	CD, 0.01μF, +80%, −20%
C180	24797010	EL, 1μF, ±20%, 50V
C181	24232103	CD, 0.01μF, +80%, −20%
C182	24763101	EL, 100μF, ±20%, 16V
C212	24797478	EL, 0.47μF, ±20%, 50V
C213	24085958	EL, 1.0μF, ±20%, 50V, NP
C216	24797478	EL, 0.47μF, ±20%, 50V
C221	24473100	CD, 10pF
C222	24473100	CD, 10pF
C223	24473100	CD, 10pF
C224	24797100	EL, 10μF, ±20%, 50V
C225	24591104	PF, 0.1μF

Location No.	Part No.	Description
C226	24591104	PF, 0.1μF
C301	24617915	EL, 1μF, ±10%, 50V
C303	24212152	CD, 1500pF, ±10%
C305	24617915	EL, 1μF, ±10%, 50V
C306	24073043	EL, 2200μF, ±20%, 16V
C307	24693473	PF, 0.047μF, 100V
C308	24668101	EL, 100μF, ±20%, 35V
C309	24591102	PF, 1000pF
C310	24796102	EL, 1000μF, ±20%, 35V
C311	24214681	CD, 680pF, ±10%, 500V
C313	24082057	PF, 0.22μF, 100V
C314	24591563	PF, 0.056μF
C317	24214471	CD, 470pF, ±10%, 500V
C320	24668101	EL, 100μF, ±20%, 35V
C323	24567474	PF, 0.47μF
C370	24794101	EL, 100μF, ±20%, 16V
C371	24794220	EL, 22μF, ±20%, 16V
C403	24591472	PF, 4700pF
C404	24797478	EL, 0.47μF, ±20%, 50V
C408	24591183	PF, 0.018μF
C409	24212221	CD, 220pF, ±10%
C410	24693472	PF, 4700pF, 100V
C417	24214102	CD, 1000pF, ±10%, 500V
C420	24666220	EL, 22μF, ±20%, 16V
C421	24666470	EL, 47μF, ±20%, 16V
C430	24232103	CD, 0.01μF, +80%, −20%
C431	24794102	EL, 1000μF, ±20%, 16V
C432	24232103	CD, 0.01μF, +80%, −20%
C433	24073015	EL, 47μF, ±20%, 10V
C435	24797479	EL, 4.7μF, ±20%, 50V
C439	24232103	CD, 0.01μF, +80%, −20%
C440	24082951	PF, 6000pF, ±3%, 1500V
C442	24082430	PF, 0.33μF, 250V
C444	24082934	PF, 1500pF, ±3%, 1500V
C445	24828563	PF, 0.056μF, 200V
C446	24679100	EL, 10μF, ±20%, 250V
C448	24640908	EL, 33μF, ±20%, 160V
C449	24666101	EL, 100μF, ±20%, 16V
C463	24212152	CD, 1500pF, ±10%
C467	24082095	PF, 0.018μF, ±3%, 630V
C470	24794220	EL, 22μF, ±20%, 16V

Location No.	Part No.	Description
C472	24567474	PF, 0.47μF
C511	24797478	EL, 0.47μF, ±20%, 50V
C512	24591104	PF, 0.1μF
C513	24591104	PF, 0.1μF
C516	24232103	CD, 0.01μF, +80%, -20%
C517	24763101	EL, 100μF, ±20%, 16V
C521	24591104	PF, 0.1μF
C522	24591104	PF, 0.1μF
C523	24591104	PF, 0.1μF
C524	24763101	EL, 100μF, ±20%, 16V
C525	24232103	CD, 0.01μF, +80%, -20%
C526	24591222	PF, 2200pF
C527	24353100	CD, 10pF, ±0.25pF
C528	24206228	EL, 0.22μF, 50V
C561	24591333	PF, 0.033μF
C562	24763101	EL, 100μF, ±20%, 16V
C563	24436101	CD, 100pF
C564	24085958	EL, 1.0μF, ±20%, 50V, NP
C565	24763101	EL, 100μF, ±20%, 16V
C566	24232103	CD, 0.01μF, +80%, -20%
C567	24797010	EL, 1μF, ±20%, 50V
C568	24794100	EL, 10μF, ±20%, 16V
C569	24232103	CD, 0.01μF, +80%, -20%
C570	24232103	CD, 0.01μF, +80%, -20%
C606	24797229	EL, 2.2μF, ±20%, 50V
C607	24667221	EL, 220μF, ±20%, 25V
C608	24797229	EL, 2.2μF, ±20%, 50V
C609	24591472	PF, 4700pF
C610	24667220	EL, 22μF, ±20%, 25V
C611	24591104	PF, 0.1μF
C612	24794470	EL, 47μF, ±20%, 16V
C613	24795471	EL, 470μF, ±20%, 25V
C614	24797478	EL, 0.47μF, ±20%, 50V
C615	24794220	EL, 22μF, ±20%, 16V
C621	24591152	PF, 1500pF
C623	24794220	EL, 22μF, ±20%, 16V
⚠C801	24082373	PF, 0.1μF, ±20%, AC250V (21G3XHE)
⚠C801	24082374	PF, 0.22μF, ±20%, AC250V (21G3XR)
C805	24092281	CD, 4700pF, ±20%, AC250V
C806	24092281	CD, 4700pF, ±20%, AC250V
C810	24086936	EL, 270μF, ±20%, 450V
⚠C813	24092555	CD, 1000pF, ±10%, AC250V
⚠C814	24092555	CD, 1000pF, ±10%, AC250V
C819	24567474	PF, 0.47μF
C832	24666470	EL, 47μF, ±20%, 16V
C841	24667100	EL, 10μF, ±20%, 25V
C842	24666100	EL, 10μF, ±20%, 16V
C843	24591104	PF, 0.1μF
C846	24567224	PF, 0.22μF
C860	24214102	CD, 1000pF, ±10%, 500V
C862	24082857	PF, 680pF, ±2%
C863	24567104	PF, 0.1μF
C864	24092335	CD, 150pF, ±10%, 2kV
C866	24669478	EL, 0.47μF, ±20%, 50V
C867	24591332	PF, 3300pF
C868	24669470	EL, 47μF, ±20%, 50V
C869	24678229	EL, 2.2μF, ±20%, 200V
C870	24820473	PF, 0.047μF, 630V
C871	24092345	CD, 1000pF, ±10%, 2kV
C873	24567224	PF, 0.22μF
C877	24667470	EL, 47μF, ±20%, 25V
C884	24640018	EL, 220μF, ±20%, 160V

Location No.	Part No.	Description
C885	24214471	CD, 470pF, ±10%, 500V
C886	24214471	CD, 470pF, ±10%, 500V
C889	24667102	EL, 1000μF, ±20%, 25V
C891	24082229	PF, 0.1μF, ±10%, 250V
C893	24092338	CD, 270pF, ±10%, 2kV
C894	24092338	CD, 270pF, ±10%, 2kV
C897	24212471	CD, 470pF, ±10%
C898	24567224	PF, 0.22μF
C899	24212271	CD, 270pF, ±10%
C902	24092345	CD, 1000pF, ±10%, 2kV
C904	24436331	CD, 330pF
C905	24436271	CD, 270pF
C907	24436391	CD, 390pF
C910	24794100	EL, 10μF, ±20%, 16V
C912	24794101	EL, 100μF, ±20%, 16V
C913	24794100	EL, 10μF, ±20%, 16V
C971	24794470	EL, 47μF, ±20%, 16V
CA10	24474331	CD, 330pF, ±10%
CA22	24473100	CD, 10pF
CA23	24473100	CD, 10pF
CA24	24473100	CD, 10pF
CA25	24473100	CD, 10pF
CA33	24232103	CD, 0.01μF, +80%, -20%
CA36	24474101	CD, 100pF, ±10%
CA37	24474101	CD, 100pF, ±10%
CA38	24474101	CD, 100pF, ±10%
CA42	24794100	EL, 10μF, ±20%, 16V
CA43	24591104	PF, 0.1μF
CA68	24794100	EL, 10μF, ±20%, 16V
CA69	24232103	CD, 0.01μF, +80%, -20%
CB01	24794470	EL, 47μF, ±20%, 16V
CB20	24436101	CD, 100pF
CB21	24212221	CD, 220pF, ±10%
CS02	24794100	EL, 10μF, ±20%, 16V
CS05	24794100	EL, 10μF, ±20%, 16V
CS08	24797229	EL, 2.2μF, ±20%, 50V
CV10	24793471	EL, 470μF, ±20%, 10V

RESISTORS

R101	24366682	CF, 6800 ohm
R102	24366121	CF, 120 ohm
R103	24366122	CF, 1200 ohm
R104	24366330	CF, 33 ohm (21G3XHE)
R104	24366360	CF, 36 ohm (21G3XR)
R105	24366681	CF, 680 ohm
R108	24000245	MF, 33k ohm, ±1%, 1/4W
R109	24000245	MF, 33k ohm, ±1%, 1/4W
R110	24366221	CF, 220 ohm
R111	24366223	CF, 22k ohm
R113	24366333	CF, 33k ohm
R114	24366333	CF, 33k ohm
R115	24366225	CF, 2.2M ohm
R116	24942226	CC, 22M ohm, 1/2W
R117	24366221	CF, 220 ohm
R118	24366153	CF, 15k ohm
R119	24366563	CF, 56k ohm
R120	24366101	CF, 100 ohm
R121	24366101	CF, 100 ohm
R122	24366101	CF, 100 ohm
R123	24366471	CF, 470 ohm
R124	24366471	CF, 470 ohm
R125	24366471	CF, 470 ohm
R126	24366101	CF, 100 ohm
R127	24366162	CF, 1600 ohm

Location No.	Part No.	Description
R128	24366221	CF, 220 ohm (21G3XHE)
R128	24366181	CF, 180 ohm (21G3XR)
R129	24366181	CF, 180 ohm
R130	24366331	CF, 330 ohm
R132	24366101	CF, 100 ohm
R134	24366221	CF, 220 ohm (21G3XHE)
R134	24366331	CF, 330 ohm (21G3XR)
R135	24366102	CF, 1k ohm
R136	24366103	CF, 10k ohm
R137	24366103	CF, 10k ohm
R138	24366103	CF, 10k ohm
R139	24366562	CF, 5600 ohm
R140	24366221	CF, 220 ohm
R143	24366471	CF, 470 ohm
R144	24366152	CF, 1500 ohm
R147	24366153	CF, 15k ohm
R148	24366221	CF, 220 ohm
R151	24366473	CF, 47k ohm
R152	24366472	CF, 4700 ohm
R153	24366103	CF, 10k ohm
R154	24366103	CF, 10k ohm
R156	24553153	OMF, 15k ohm, 1W
R157	24366473	CF, 47k ohm
R167	24366151	CF, 150 ohm
R170	24366221	CF, 220 ohm (21G3XHE)
R170	24366151	CF, 150 ohm (21G3XR)
R183	24366103	CF, 10k ohm
R190	24366101	CF, 100 ohm
R191	24366222	CF, 2200 ohm
R209	24366222	CF, 2200 ohm
R210	24366222	CF, 2200 ohm
R211	24366561	CF, 560 ohm
R212	24366102	CF, 1k ohm
R216	24366824	CF, 820k ohm
R218	24366104	CF, 100k ohm
R227	24366223	CF, 22k ohm
R228	24366271	CF, 270 ohm
R229	24366271	CF, 270 ohm
R230	24366271	CF, 270 ohm
R301	24366102	CF, 1k ohm
R304	24366393	CF, 39k ohm
R305	24322189	MF, 1.8 ohm, 1W
R306	24366223	CF, 22k ohm
R307	24366684	CF, 680k ohm
R308	24366102	CF, 1k ohm
R310	24552822	OMF, 8200 ohm, 1/2W
R312	24552272	OMF, 2700 ohm, 1/2W
R313	24366243	CF, 24k ohm
R333	24339569	MF, 5.6 ohm, 2W
R336	24383331	OMF, 330 ohm, 2W
R370	24310189	MF, 1.8 ohm, 1/2W
R371	24366562	CF, 5600 ohm
R372	24366392	CF, 3900 ohm
R373	24366102	CF, 1k ohm
R374	24366163	CF, 16k ohm
R402	24366102	CF, 1k ohm
R403	24366123	CF, 12k ohm
R405	24366104	CF, 100k ohm
R407	24366103	CF, 10k ohm
R408	24366472	CF, 4700 ohm
R410	24366181	CF, 180 ohm
R411	24366561	CF, 560 ohm
R412	24366560	CF, 56 ohm
R416	24019325	OMF, 2200 ohm, 5W

Location No.	Part No.	Description
R421	24366391	CF, 390 ohm
R430	24366103	CF, 10k ohm
R432	24531120	FR, 12 ohm, 1/2W
R433	24366472	CF, 4700 ohm
R434	24552121	OMF, 120 ohm, 1/2W
R435	24366182	CF, 1800 ohm
R441	24532102	FR, 1k ohm, 1W
R447	24553472	OMF, 4700 ohm, 1W
R448	24338278	OMF, 0.27 ohm, 1W
R470	24338688	MF, 0.68 ohm, 1W
R471	24552301	OMF, 300 ohm, 1/2W
R473	24366153	CF, 15k ohm
R474	24376393	CF, 39k ohm, 1/2W
R479	24552820	OMF, 82 ohm, 1/2W
R523	24366303	CF, 30k ohm
R526	24366821	CF, 820 ohm
R527	24366821	CF, 820 ohm
R528	24366821	CF, 820 ohm
R565	24366622	CF, 6200 ohm
R566	24366912	CF, 9100 ohm
R568	24366473	CF, 47k ohm
R603	24366162	CF, 1600 ohm
R604	24366562	CF, 5600 ohm
R605	24366339	CF, 3.3 ohm
R606	24366393	CF, 39k ohm
R607	24366332	CF, 3300 ohm
R608	24366104	CF, 100k ohm
R612	24366103	CF, 10k ohm
R621	24366222	CF, 2200 ohm
R622	24366101	CF, 100 ohm
R663	24552221	OMF, 220 ohm, 1/2W
⚠R801	24009954	Metal-Glazed Resistor, 2.2M ohm, 1/2W
⚠R808	24019340	PTC Thermistor, 18 ohm
R810	24569229	Cement, 2.2 ohm, 10W
R816	24366471	CF, 470 ohm
R817	24366331	CF, 330 ohm
R818	24366561	CF, 560 ohm
R819	24366102	CF, 1k ohm
R830	24546569	FR, 5.6 ohm, 1/2W
R831	24366471	CF, 470 ohm
R840	24531120	FR, 12 ohm, 1/2W
R841	24366752	CF, 7500 ohm
R846	24366332	CF, 3300 ohm
R848	24366470	CF, 47 ohm
R860	24383123	OMF, 12k ohm, 2W
R861	24383123	OMF, 12k ohm, 2W
R862	24552220	OMF, 22 ohm, 1/2W
R864	24552102	OMF, 1k ohm, 1/2W
R866	24552390	OMF, 39 ohm, 1/2W
R868	24366103	CF, 10k ohm
R870	24381201	OMF, 200 ohm, 1/2W
R871	24310109	MF, 1.0 ohm, 1/2W
R881	24366472	CF, 4700 ohm
R883	24552752	OMF, 7500 ohm, 1/2W
R884	24552752	OMF, 7500 ohm, 1/2W
R888	24546228	FR, 0.22 ohm, 1/2W
R891	24366102	CF, 1k ohm
⚠R899	24005014	MF, 8.2M ohm, 1W
R901	24552122	OMF, 1200 ohm, 1/2W
R902	24552122	OMF, 1200 ohm, 1/2W
R903	24552122	OMF, 1200 ohm, 1/2W
R904	24366472	CF, 4700 ohm
R905	24366150	CF, 15 ohm

Location No.	Part No.	Description
R914	24366101	CF, 100 ohm
R915	24366471	CF, 470 ohm
R917	24366102	CF, 1k ohm
R920	24000568	FR, 4.7 ohm, 1W
R921	24366101	CF, 100 ohm
R922	24366471	CF, 470 ohm
R925	24366102	CF, 1k ohm
R928	24366101	CF, 100 ohm
R929	24366471	CF, 470 ohm
R931	24366229	CF, 2.2 ohm
R936	24366272	CF, 2700 ohm
R937	24366102	CF, 1k ohm
R938	24552560	OMF, 56 ohm, 1/2W
R960	24383183	OMF, 18k ohm, 2W
R961	24554183	OMF, 18k ohm, 2W
R963	24383183	OMF, 18k ohm, 2W
R972	24366102	CF, 1k ohm
R974	24366102	CF, 1k ohm
R977	24366681	CF, 680 ohm
RA02	24366102	CF, 1k ohm
RA04	24366102	CF, 1k ohm
RA05	24366102	CF, 1k ohm
RA06	24366102	CF, 1k ohm
RA07	24366102	CF, 1k ohm
RA08	24366102	CF, 1k ohm
RA09	24366102	CF, 1k ohm
RA10	24366102	CF, 1k ohm
RA12	24366103	CF, 10k ohm
RA13	24366102	CF, 1k ohm
RA14	24366103	CF, 10k ohm (21G3XHE)
RA14	24366153	CF, 15k ohm (21G3XR)
RA15	24366752	CF, 7500 ohm (21G3XHE)
RA15	24366103	CF, 10k ohm (21G3XR)
RA16	24366102	CF, 1k ohm
RA17	24366102	CF, 1k ohm
RA18	24366102	CF, 1k ohm
RA19	24366221	CF, 220 ohm
RA21	24366821	CF, 820 ohm
RA22	24366682	CF, 6800 ohm
RA23	24366682	CF, 6800 ohm
RA24	24366682	CF, 6800 ohm
RA25	24366222	CF, 2200 ohm
RA26	24366102	CF, 1k ohm
RA27	24366102	CF, 1k ohm
RA31	24366681	CF, 680 ohm
RA32	24366681	CF, 680 ohm
RA33	24366471	CF, 470 ohm
RA35	24366102	CF, 1k ohm
RA36	24366223	CF, 22k ohm
RA37	24366331	CF, 330 ohm
RA38	24366331	CF, 330 ohm
RA40	24366102	CF, 1k ohm
RA41	24366102	CF, 1k ohm
RA60	24366103	CF, 10k ohm
RA61	24366103	CF, 10k ohm
RA62	24366103	CF, 10k ohm
RA64	24366333	CF, 33k ohm (21G3XR)
RA65	24366333	CF, 33k ohm (21G3XHE)
RA67	24366103	CF, 10k ohm
RA68	24366103	CF, 10k ohm
RA70	24366333	CF, 33k ohm
RA71	24366683	CF, 68k ohm
RA72	24366223	CF, 22k ohm
RA73	24366103	CF, 10k ohm
RA74	24366103	CF, 10k ohm
RA75	24366103	CF, 10k ohm
RA76	24366102	CF, 1k ohm
RB01	24366271	CF, 270 ohm
RB09	24366470	CF, 47 ohm
RB11	24366103	CF, 10k ohm
RB20	24366823	CF, 82k ohm
RB22	24366103	CF, 10k ohm
RB26	24366472	CF, 4700 ohm
RB27	24366103	CF, 10k ohm
RB28	24366104	CF, 100k ohm
RB30	24366103	CF, 10k ohm
RB43	24366103	CF, 10k ohm
RB44	24366682	CF, 6800 ohm
RB45	24366221	CF, 220 ohm
RB60	24366103	CF, 10k ohm
RB61	24366103	CF, 10k ohm
RS02	24366471	CF, 470 ohm
RS03	24366103	CF, 10k ohm
RS05	24366223	CF, 22k ohm
RS06	24366102	CF, 1k ohm
RV01	24366750	CF, 75 ohm
RV02	24366101	CF, 100 ohm
RV11	24366750	CF, 75 ohm
RV12	24366391	CF, 390 ohm
RV13	24366101	CF, 100 ohm

COILS & TRANSFORMERS

L101	23221803	Coil, Choke, TLN3040D
L102	23238560	Coil, Peaking, TRF4R68AJ
L103	23289478	Coil, Peaking, TRF4R47AF (21G3XHE)
L103	23289568	Coil, Peaking, TRF4R56AF (21G3XR)
L106	23289100	Coil, Peaking, TRF4100AF (21G3XHE)
L106	23289829	Coil, Peaking, TRF48R2AF (21G3XR)
L107	23289829	Coil, Peaking, TRF48R2AF
L108	23289180	Coil, Peaking, TRF4180AF (21G3XHE)
L110	23289150	Coil, Peaking, TRF4150AF (21G3XHE)
L110	23289180	Coil, Peaking, TRF4180AF (21G3XR)
L161	23262287	Coil, IF, TRF1239AV
L162	23289680	Coil, Peaking, TRF4680AF
L183	23289680	Coil, Peaking, TRF4680AF
L301	23103859	Coil (Ferrite Bead), TEM2011
L430	23289470	Coil, Peaking, TRF4470AF
L441	23233071	Coil, Linearity, TLN2112G
L462	23231054	Deflection Yoke, TDY-621UA
L499	23238713	Coil, Peaking, TRF4120AJ
L511	23289100	Coil, Peaking, TRF4100AF
L525	23289100	Coil, Peaking, TRF4100AF
L561	23289100	Coil, Peaking, TRF4100AF
L562	23289100	Coil, Peaking, TRF4100AF
L805	23248150	Coil, Choke, TLN3427
L806	23248150	Coil, Choke, TLN3427
L861	23103859	Coil (Ferrite Bead), TEM2011
L862	23103937	Coil (Ferrite Bead), TEM2004
L883	23103859	Coil (Ferrite Bead), TEM2011
L884	23103859	Coil (Ferrite Bead), TEM2011
L885	23221722	Coil, Choke, TLN3142D

Location No.	Part No.	Description
L886	23103859	Coil (Ferrite Bead), TEM2011
L887	23280016	Coil, Peaking, TRF4100AZ
L888	23103859	Coil (Ferrite Bead), TEM2011
⚠L901	23200316	Coil, Degaussing, TSB-2301AL
LA01	23289100	Coil, Peaking, TRF4100AF
LB01	23262682	Coil, IF, TRF1147T
T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠T461	23236481	Transformer, Flyback, TFB4125CH
⚠T801	23211696	Line, Filter, TRF3216AK (21G3XHE)
⚠T801	23211702	Line, Filter, TRF3221AM (21G3XR)
⚠T802	23211696	Line, Filter, TRF3216AK (21G3XHE)
⚠T862	23217276	Transformer, Converter, TPW3319AE

SEMICONDUCTORS

Q101	A6708871	Transistor, 2SC388ATM
Q102	23114528	Transistor, 2SC1740S-Q
Q105	23114528	Transistor, 2SC1740S-Q
Q106	23114528	Transistor, 2SC1740S-Q
Q107	23114528	Transistor, 2SC1740S-Q
Q108	23114530	Transistor, 2SA933S-Q
Q109	23114528	Transistor, 2SC1740S-Q
Q110	B0470522	IC, TC4052BP
Q111	23114528	Transistor, 2SC1740S-Q
Q112	23114528	Transistor, 2SC1740S-Q
Q130	A6342206	Transistor, 2SC2878-A(TE
Q209	23114528	Transistor, 2SC1740S-Q
Q210	23114530	Transistor, 2SA933S-Q
Q301	B0377890	IC, TA8403K
Q301B	72471081	Screw, BRDT2W3X8SZN
Q370	23114530	Transistor, 2SA933S-Q
Q402	A6330069	Transistor, 2SC2482 FA-1
Q404	23314375	Transistor, ON4409(508D)
Q404B	72471082	Screw, BRDT2W3X10 SZN
Q421	23314141	Transistor, 2SC3852
Q430	23314141	Transistor, 2SC3852
Q432	23114455	Transistor, DTC124E-S
Q470	A6547250	Transistor, 2SA1320
Q501	B0101491	IC, TB1231AN
Q560	B0386203	IC, TA1275AZ
Q610	23119668	IC, TDA2611A
Q610B	70391355	Screw, BITTB3X8SZN
Q611	A6342206	Transistor, 2SC2878-A(TE
Q612	23114530	Transistor, 2SA933S-Q
Q620	A6010040	Transistor, RN2004
Q621	23114528	Transistor, 2SC1740S-Q
Q801	23906039	IC, STR-Z2154B
Q801B	70391355	Screw, BITTB3X8SZN
Q817	23114528	Transistor, 2SC1740S-Q
Q818	A6012010	Transistor, RN2201
Q819	23114528	Transistor, 2SC1740S-Q
Q830	23314141	Transistor, 2SC3852
Q830B	70391355	Screw, BITTB3X8SZN
Q840	23318299	IC, L78MR05
Q843	A6002050	Transistor, RN1205
Q846	A6360200	Transistor, 2SC3333
⚠Q862	A8644773	Photo Coupler, TLP721F(D4-G
Q872	23314141	Transistor, 2SC3852
Q883	A6907777	IC, S1854 FA-4

Location No.	Part No.	Description
Q901	A6330059	Transistor, 2SC2482(C)
Q903	A6330059	Transistor, 2SC2482(C)
Q905	A6330059	Transistor, 2SC2482(C)
Q907	23114530	Transistor, 2SA933S-Q
Q908	A6321265	Transistor, 2SC2120-Y(TE)
QA01	23906601	IC, 87CK38N-3560
QA02	23904665	IC, NM24C04EN
QB01	23114528	Transistor, 2SC1740S-Q
QB09	23114528	Transistor, 2SC1740S-Q
QB10	23114528	Transistor, 2SC1740S-Q
QB20	23114457	Transistor, DTC143ES
QB21	23114528	Transistor, 2SC1740S-Q
QB30	23114528	Transistor, 2SC1740S-Q
QB40	23114528	Transistor, 2SC1740S-Q
QB60	23114528	Transistor, 2SC1740S-Q
QB61	23114528	Transistor, 2SC1740S-Q
QS01	A6342206	Transistor, 2SC2878-A(TE
QV10	23114530	Transistor, 2SA933S-Q
D101	23115922	Diode, Zener, μPC574J(M)
D102	23118859	Diode, 1SS133
D103	23118859	Diode, 1SS133
D110	23118859	Diode, 1SS133
D111	23316678	Diode, Zener, MTZJ6.8B
D150	23115636	Diode, 1SS110
D201	23316689	Diode, Zener, MTZJ10A
D224	23118859	Diode, 1SS133
D301	23118479	Diode, BYD33J
D302	23118479	Diode, BYD33J
D370	23316658	Diode, Zener, MTZJ3.6A
D403	23316667	Diode, Zener, MTZJ4.7C
D406	23118479	Diode, BYD33J
D408	23118479	Diode, BYD33J
D421	23316690	Diode, Zener, MTZJ10B
D431	23316690	Diode, Zener, MTZJ10B
D440	23316254	Diode, ERC06-15
D441	23316672	Diode, Zener, MTZJ5.6B
D444	23118338	Diode, RU4AM
D470	23316719	Diode, Zener, MTZJ12B
D498	23118859	Diode, 1SS133
D499	23118859	Diode, 1SS133
D610	23118859	Diode, 1SS133
D612	23118859	Diode, 1SS133
D620	23118859	Diode, 1SS133
D621	23118859	Diode, 1SS133
D622	23118859	Diode, 1SS133
D801	23118173	Diode, RBV-406M-LFA
D818	23316723	Diode, Zener, MTZJ13C
D830	23316669	Diode, Zener, MTZJ5.1B
D846	23316675	Diode, Zener, MTZJ6.2B
D862	23118094	Diode, EU2A
D864	23118094	Diode, EU2A
D872	23316732	Diode, Zener, MTZJ18C
D875	23316719	Diode, Zener, MTZJ12B
D876	23118859	Diode, 1SS133
D877	23316686	Diode, Zener, MTZJ9.1A
D878	23316747	Diode, Zener, MTZJ27C
D881	23118859	Diode, 1SS133
D883	23316813	Diode, EG1
D884	23316813	Diode, EG1
D885	23316813	Diode, EG1
D886	23316813	Diode, EG1
D901	23118859	Diode, 1SS133
D904	23118859	Diode, 1SS133
D905	23118859	Diode, 1SS133

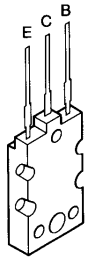
Location No.	Part No.	Description
D906	23118859	Diode, 1SS133
DA42	23316675	Diode, Zener, MTZJ6.2B
DB01	23358501	Diode (LED), SCL003URC5F
DB30	23118859	Diode, 1SS133
DS01	23118859	Diode, 1SS133
MISCELLANEOUS		
E912	23848729	Rubber Wedge
⚠F470	23144827	Fuse, 0.63A
F470A	23165433	Holder, Fuse
⚠F801	23144834	Fuse, 3.15A
F801A	23165433	Holder, Fuse
G218	24366182	CF, 1800 ohm
G303	24310109	MF, 1.0 ohm, 1/2W
G410	23103859	Coil (Ferrite Bead), TEM2011
G882	23316653	Diode, Zener, MTZJ2.7B
G883	23118859	Diode, 1SS133
G902	23118859	Diode, 1SS133
G903	23118859	Diode, 1SS133
GA02	24366470	CF, 47 ohm
KB01	23904946	Remote Sensor, RPM-676CBR-S
L462A	23997351	Compensator, DY, TC-O
L462A	23997351	Compensator, DY, TC-O
L462B	23199314	Compensator, DY, TC-E
L462B	23199314	Compensator, DY, TC-E
L462C	23993623	Compensator, DY, TC-L
P661	23365728	Jack, Earphone
⚠P801	23372024	Power Cord
P910	23164725	Plug, 2P
PV01	23365814	Jack, Phono
PV02	23365729	Jack, Phono
⚠S801	23344385	Switch, Power
SA01	23145227	Switch, Push, 1C1P
SA02	23145227	Switch, Push, 1C1P
SA03	23145227	Switch, Push, 1C1P
SA04	23145227	Switch, Push, 1C1P
SA05	23145227	Switch, Push, 1C1P
SA06	23145227	Switch, Push, 1C1P
V901M	23102409	Magnet, P/C, MAG-1070
W661	23351127	Speaker, SPK-1388, 60x120mm, 8 ohm
W662	23351127	Speaker, SPK-1388, 60x120mm, 8 ohm
X501	23153979	Crystal, 4.43MHz
XA01	23153436	Ceramic Resonator, EF0EC8004
Z101	23303188	Ceramic Trap, TCF1113
Z102	23303191	Ceramic Trap, TCF1116
Z103	23107928	Ceramic Trap, TCF1010
Z105	23107855	Ceramic Filter, 5.5MHz, TCF1031
Z106	23303071	Ceramic Filter, 6.0MHz, TCF1088
Z107	23303072	Ceramic Filter, 6.5MHz, TCF1089
Z108	23303027	Ceramic Filter, 4.5MHz, TCF1081
Z130	23303199	Filter, SAW, 38MHz, OFWK6269K (21G3XHE)
Z130	23303176	Filter, SAW, 38MHz, OFWK6269K (21G3XR)
ZP05	23144541	Protector, 3.15A

Location No.	Part No.	Description
PC BOARD ASSEMBLIES		
✻U902A		Main Board, PB8243-1 (21G3XHE)
✻U902A		Main Board, PB8244-1 (21G3XR)
✻U902B		CRT Drive Board, PB8243-2 (21G3XHE)
✻U902B		CRT Drive Board, PB8244-2 (21G3XR)
PICTURE TUBE		
⚠V901	23312780	Picture Tube, A51KSU73X(VM)
TUNER		
H001	23321269	Tuner, ECA14
ACCESSORIES		
K902	23306237	Remote Hand Unit, CT-9922
AT03	23588217	Battery Cover
Y101A	23563401	Owner's Manual, English, 21G3XHE
Y101B	23563402	Owner's Manual, Russian, 21G3XR
Y120	23943846	Cover, POLY

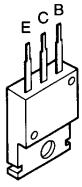
CABINET PARTS		
A201	23510518	Front Cover
A263	23430510	Filter
A264	23836494	Spring, Coil
A270	23445196	Key, Control
A271	23445197	Button, Power
A277	23035412	Screw, BTB4X12SZN
⚠A401	23427551	Back Cover
A511	23035412	Screw, BTB4X12SZN
A512	23035412	Screw, BTB4X12SZN
A521	23035412	Screw, BTB4X12SZN
A522	23035412	Screw, BTB4X12SZN
A525	23037312	Screw, PB4X07X10SBN

TERMINAL VIEW OF TRANSISTORS

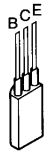
① 2SD2253
(old)
2SC5243



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



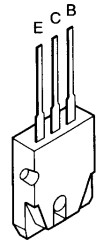
③ 2SC752GTM
2SC2482
2SC2655
2SC4721P



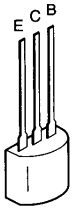
④ 2SC752
2SA562TM
2SA1015
2SC1815
2SC2878
2SC1740S
2SC2120
2SA9335



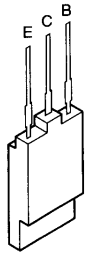
⑤ 2SA1788



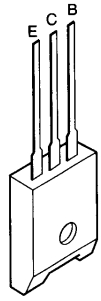
⑥ RN2203
RN2201
RN2004
RN1203
RN1204
RN2204
RN1205
RN1202
RN1201



⑦ 2SD1554
2SD2253
2SD1556
2SC5143



⑧ ON4409



SPECIFICATIONS

Television system and channel coverage (Aerial input) ● available – not available

SYSTEM	CHANNEL		21G3XHE	21G3XR
PAL B/G	CCIR	VHF 2-12, UHF 21-69, CATV*1	●	●
PAL D/K	CHINA	VHF 1-12, UHF 13-57, CATV*2	●	●
PAL I	UK	UHF 21-69	●	●
SECAM B/G	CCIR	VHF 2-12, UHF 21-69, CATV*1	●	●
SECAM D/K	OIRT	VHF 1-12, UHF 21-69, CATV*3	●	●
NTSC M	US	VHF 2-13, UHF 14-69, CATV*4	●	–
NTSC 4.43	–	5.5/6.0/6.5MHz	●	●
NTSC 3.58	–	5.5/6.0/6.5MHz	●	●
PAL 60Hz	–	5.5/6.0/6.5MHz	●	●
NTSC 3.58 50Hz	–	4.5MHz	●	●
		*1 X~Z+2, S1~S41	*2 Z-1~Z-38	
		*3 X1~X19	*4 A-6~A-1, A~W, AA~BBB	

Colour system (Video input)

PAL	50/60Hz	●	●
SECAM	50Hz	●	●
3.58NTSC	50/60Hz	●	●
4.43NTSC	50/60Hz	●	●

Power consumption (W) (at 220V AC, 50Hz)	70 (Approx)
Sound output (W)	3

Rated voltage: 110-240V AC 50/60Hz
(220-240V AC 50Hz for Model 21G3XR)

Terminals: Input: Video/Audio (monaural)
TV output:Video/Audio (monaural)

Speaker: 6×12cm (2)

Picture tube: Type 21 (54cm) Overall picture tube measured diagonally
(51cm) Viewable picture tube measured diagonally
90° deflection

Dimensions: 630 (W) × 465 (H) × 457 (D) mm

Mass: 20.0kg (Approx)

Supplied accessories: Remote controller (1)
Batteries size AA (R6) (2)

*Please refer to owner's manual in detail.

SCHEMATIC DIAGRAM MODEL : 21G3XHE / 21G3XR (1/2)

060-9802

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 page 3. Do not degrade the safety of the receiver through improper servicing.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal. Voltages reading may vary ±20%.
2. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
3. Waveforms are taken using a standard colour bar signal.
4. Make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position. Set other controls for best picture.

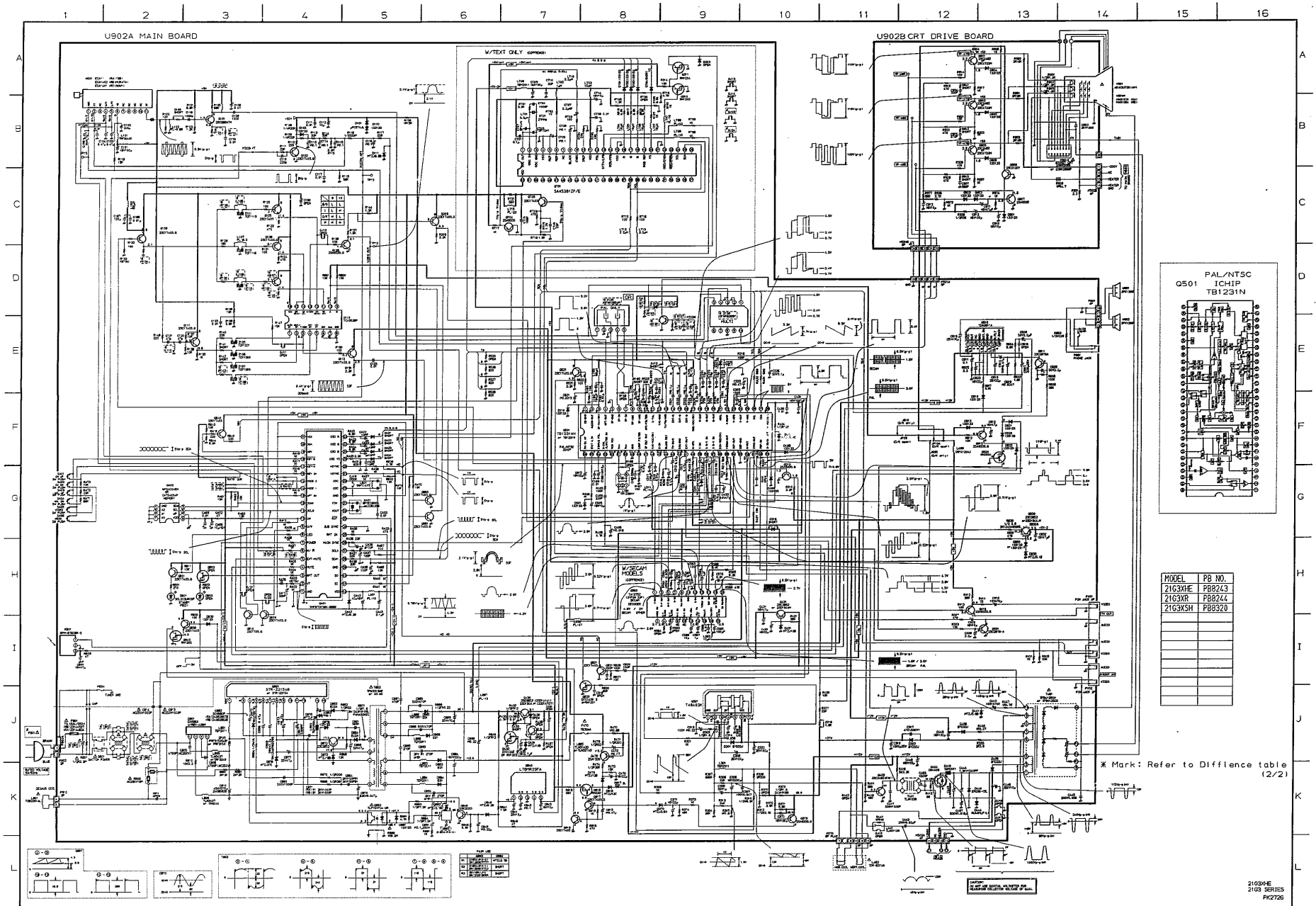
NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ⏚ : Solder links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.



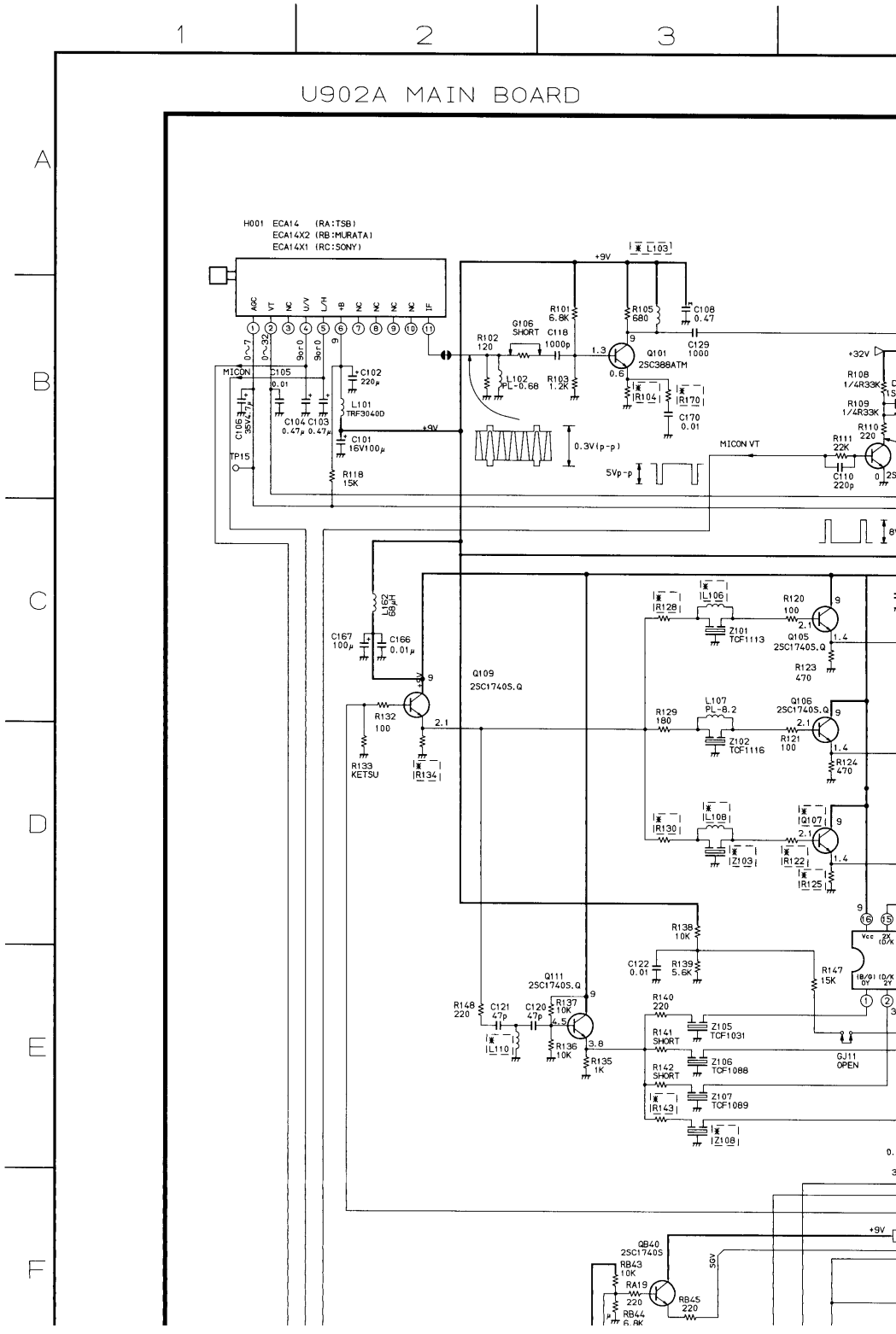
SCHEMATIC DIAGRAM MODEL : 21G3XHE / 21G3XR (1/2)

060-9802

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 page 3. Do not degrade the safety of the receiver through improper servicing.

OBSE

1. Volt
volt
2. All v
3. Wav
4. Mak
BRI
pict



(1/2)

to

age

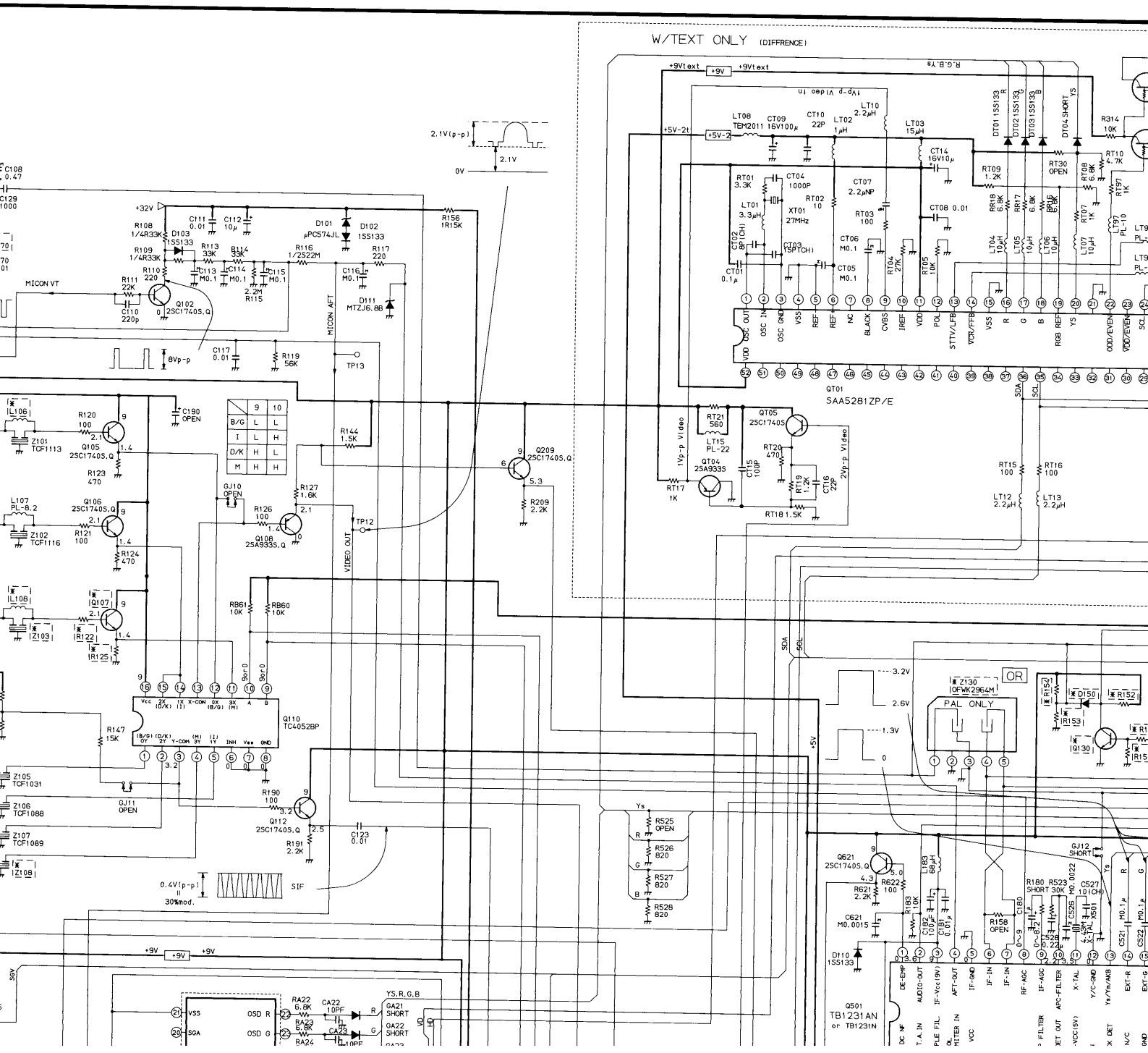
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2. The circuits are subject to
3. ● : Solder links.

4 5 6 7 8

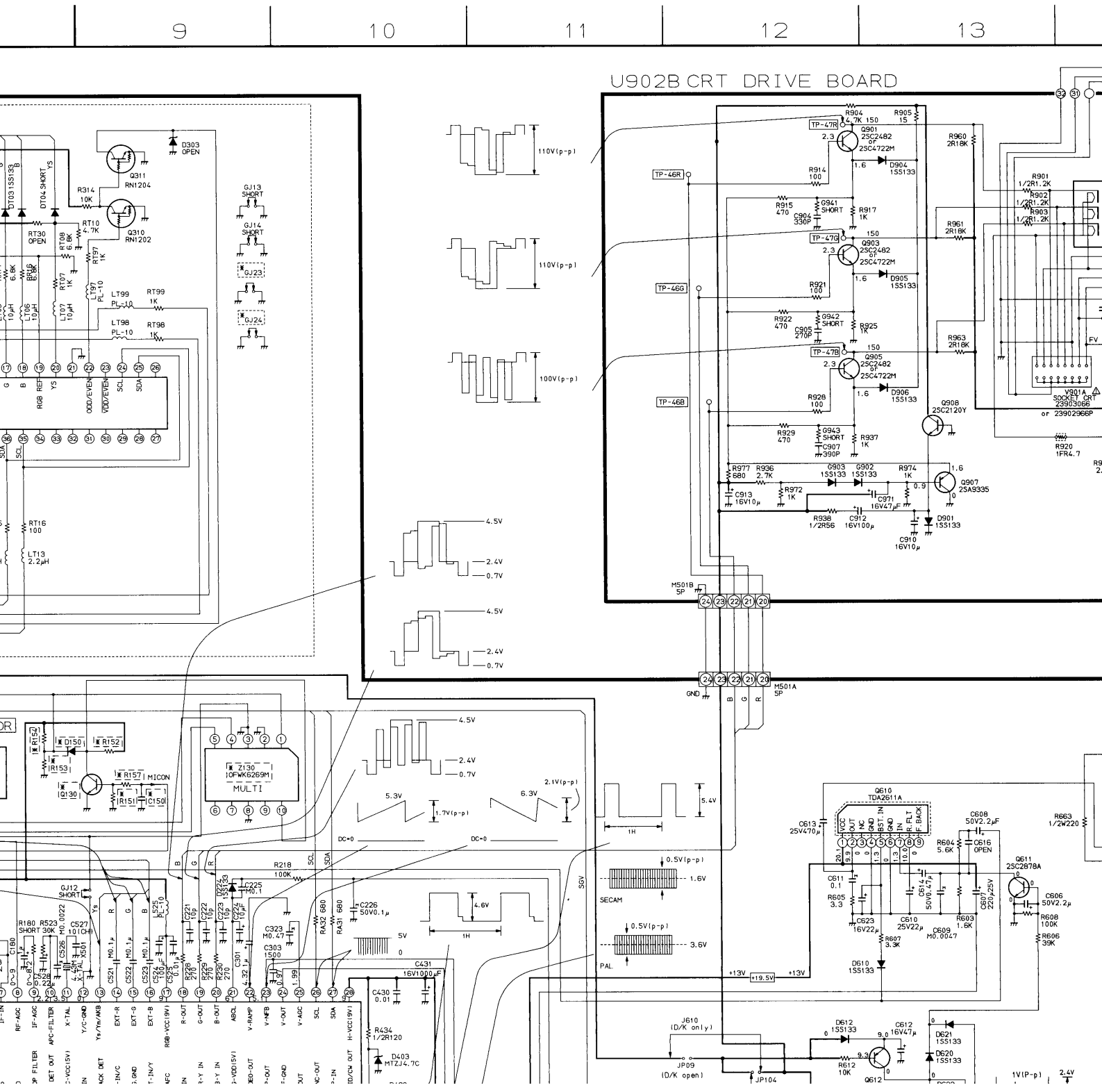


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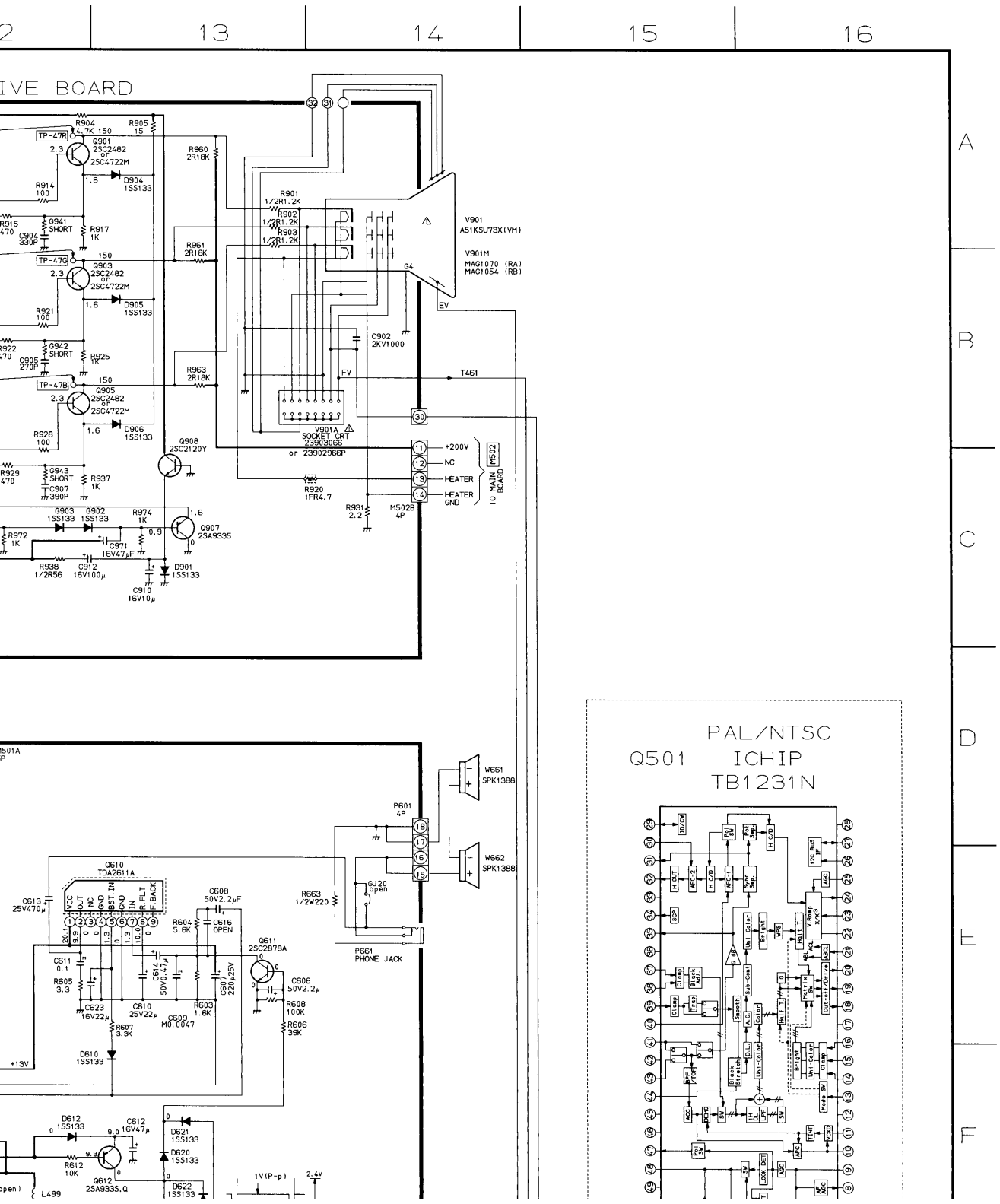
ON

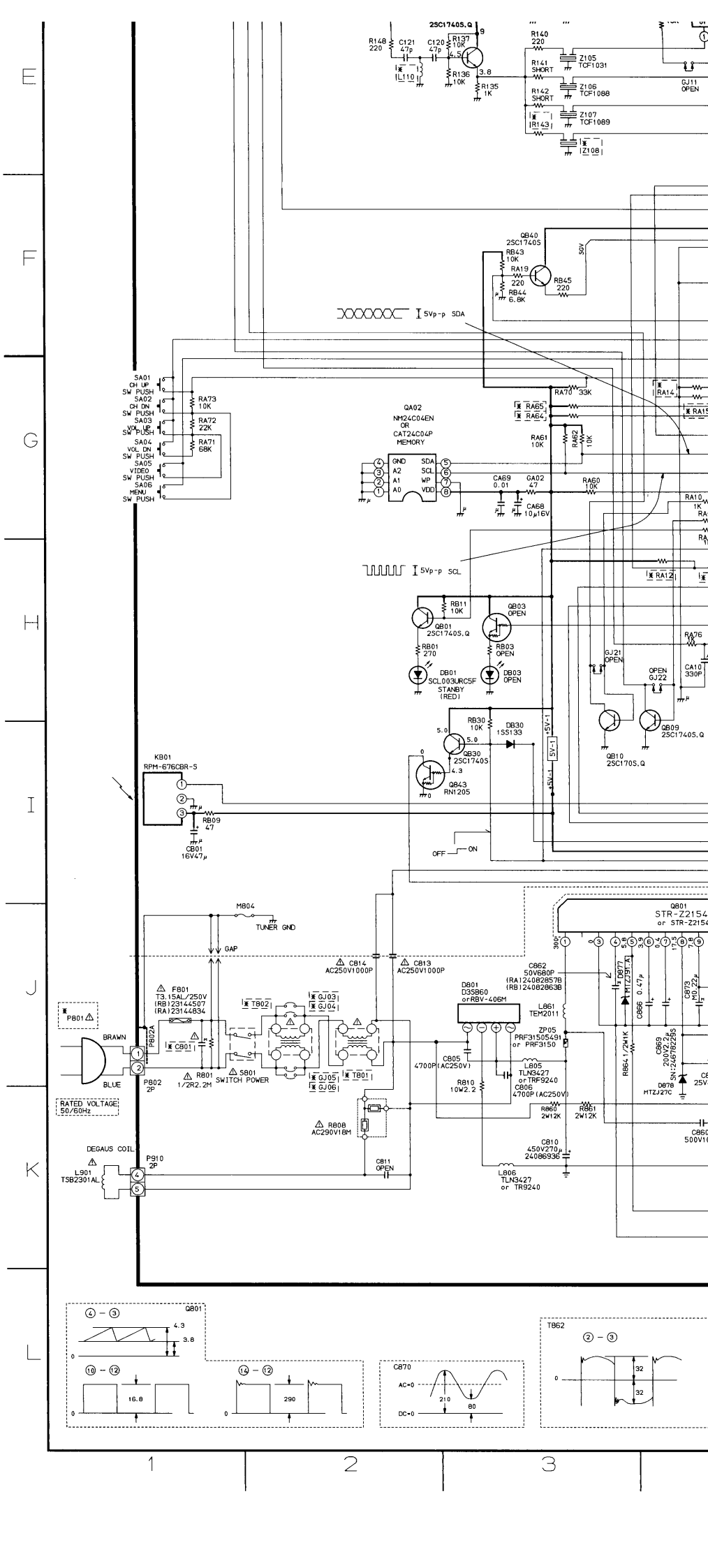
RESISTOR, CAPACITOR and INDUCTOR

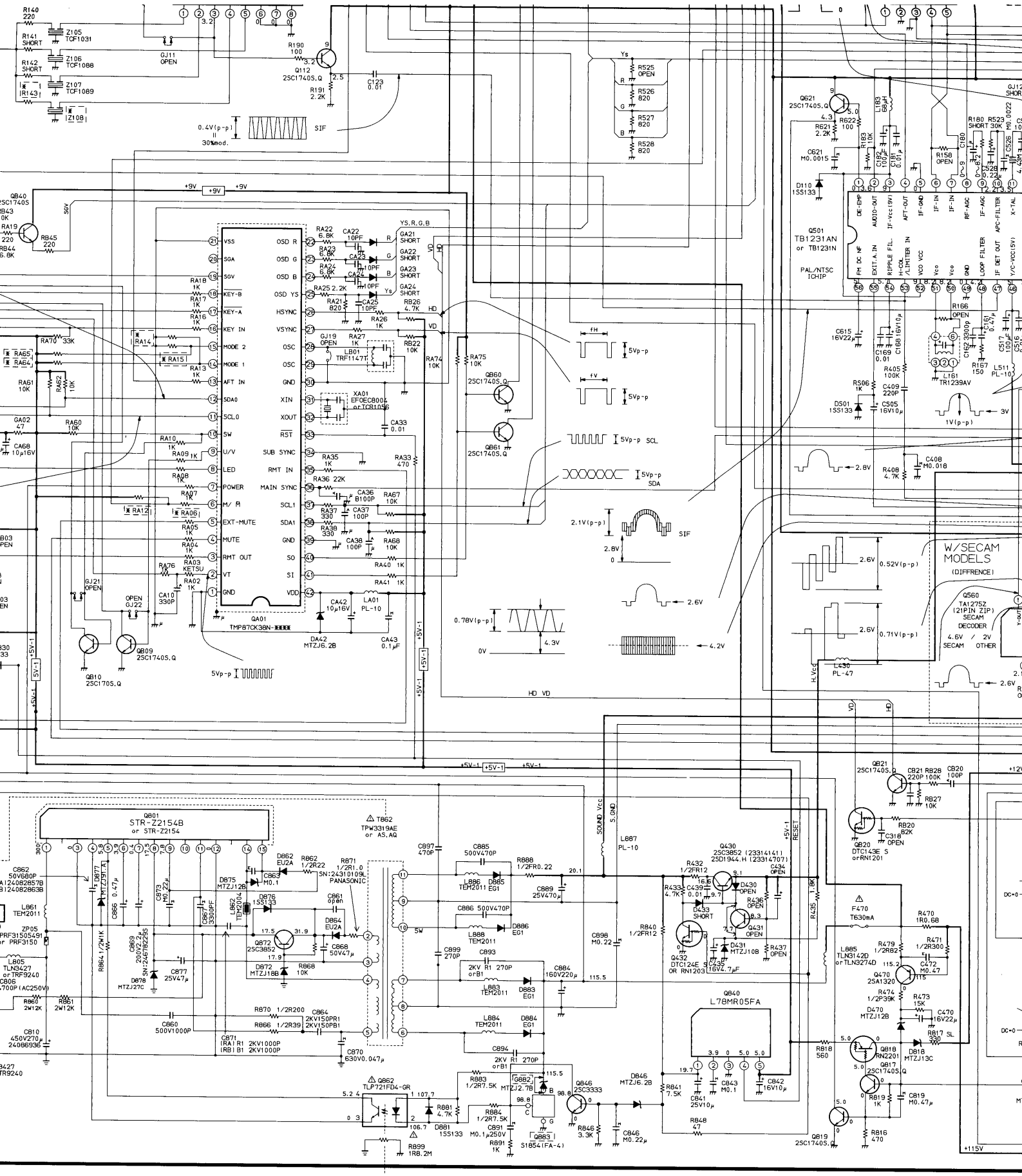
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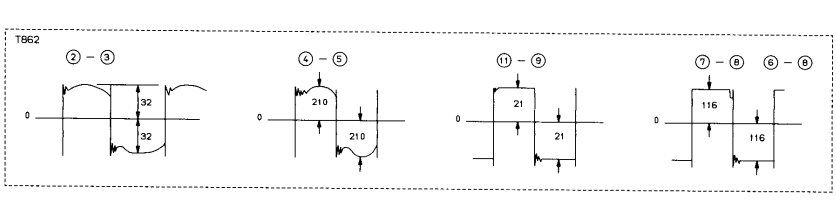
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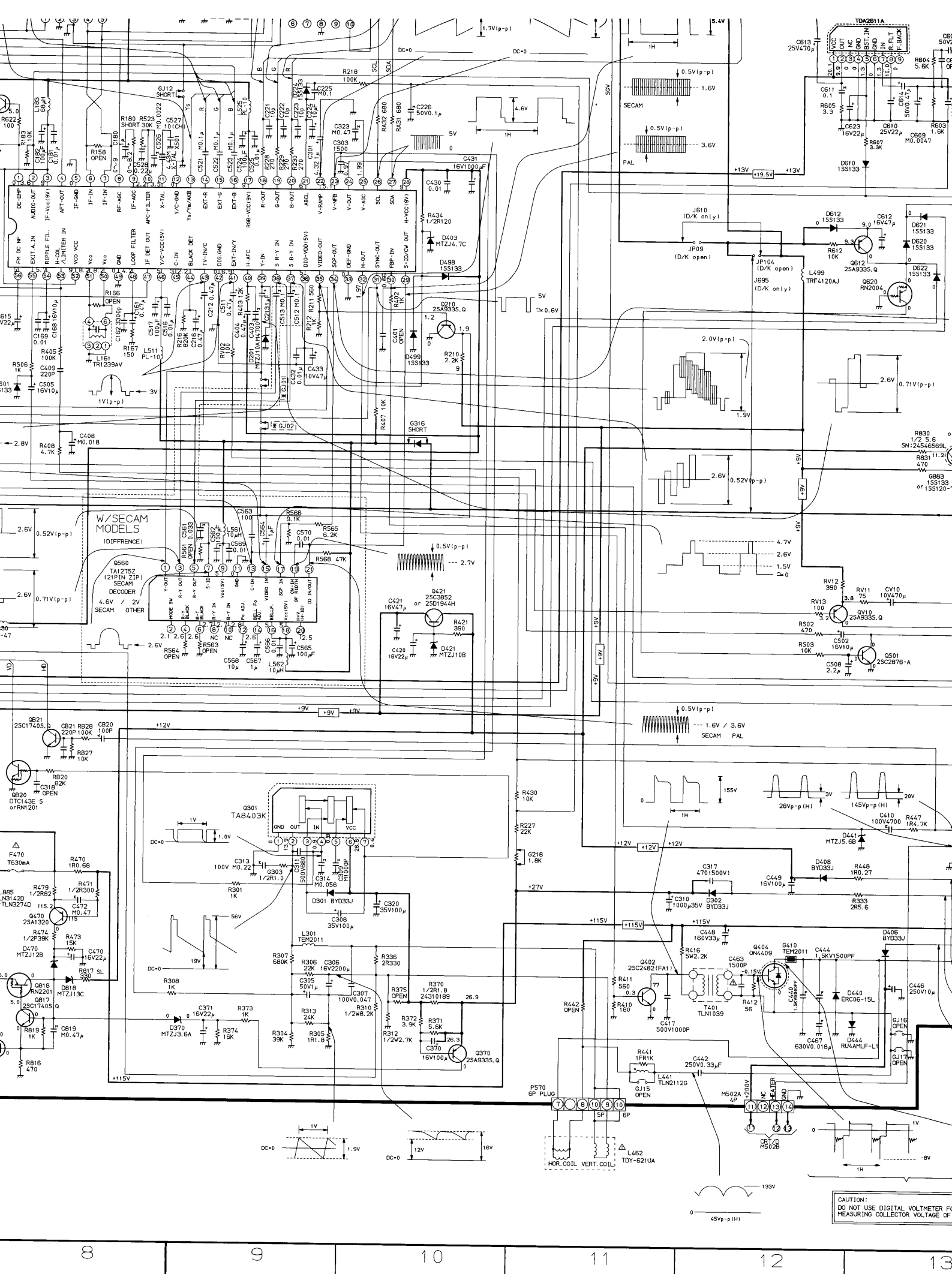

2SC1740S,Q
R148 220
C121 47p
C120 47p
R137 10K
4.5
3.8
R136 10K
R135 1K
L110
R140 220
R141 SHORT
R142 SHORT
R143
Z105 TCF1031
Z106 TCF1088
Z107 TCF1089
Z108
GJ11 OPEN
QB40 2SC1740S
RB43 10K
RA19
RB45 220
RB44 6.8K
5V
5Vp-p SDA
SA01 CH UP SW PUSH
SA02 CH DN SW PUSH
SA03 VOL UP SW PUSH
SA04 VOL DN SW PUSH
SA05 VIDEO SW PUSH
SA06 MENU SW PUSH
RA73 10K
RA72 22K
RA71 68K
QA02 NM24C04EN OR CAT24C04P MEMORY
GND SDA A2 SCL A1 WP A0 VDD
CA69 0.01
GA02 47
CA68 10μ16V
RA70 33K
RA65
RA64
RA61 10K
RA62 10K
RA60 10K
RA14
RA15
RA10 1K
5Vp-p SCL
RA12
RB11 10K
QB01 2SC1740S,Q
QB03 OPEN
RB01 270
RB03 OPEN
DB01 SCL003URCSF STANBY (RED)
DB03 OPEN
RA76
GJ21 OPEN
OPEN GJ22
CA10 330P
RB30 10K
DB30 1SS133
QB30 2SC1740S
QB43 RN1205
QB09 2SC1740S,Q
QB10 2SC1740S,Q
+5V-1
5V-1
KB01 RPM-676CBR-S
RB09 47
CB01 16V47μ
OFF
ON
M804
TUNER GND
GAP
C814 AC250V1000P
C813 AC250V1000P
Q801 STR-Z2154 or STR-Z2154
F801 T3.15AL/250V (RB)23144507 (RA)23144834
T802
GJ03
GJ04
GJ05
GJ06
T801
D801 D3SB60 orRBV-406M
L861 TEM2011
C862 50V680P (RA)24082857B (RB)24082863B
D877 MTZJ39V-A
C866 0.47μ
C873 10V22μ
ZP05 PRF31505491 or PRF3150
C805 4700P(AC250V)
L805 TLN3427 or TRF9240
C806 4700P(AC250V)
R810 10W2.2
R860 2W12K
R861 2W12K
R864 1/2W1K
C869 200V2200P 2246762255
D878 MTZJ27C
C810 450V270μ 24086936
L806 TLN3427 or TR9240
P801
BRAWN
BLUE
P802 2P
P802A
CB01
R801 1/2R2.2M
S801 SWITCH POWER
RATED VOLTAGE 50/60Hz
R808 AC290V18M
DEGAUS COIL
L901 TSB2301AL
P910 2P
CB11 OPEN
Q801
4 – 3
4.3
3.8
0
10 – 12
16.8
14 – 12
290
C870
AC=0
210
80
DC=0
T862
2 – 3
32
32
E
F
G
H
I
J
K
L
1
2
3



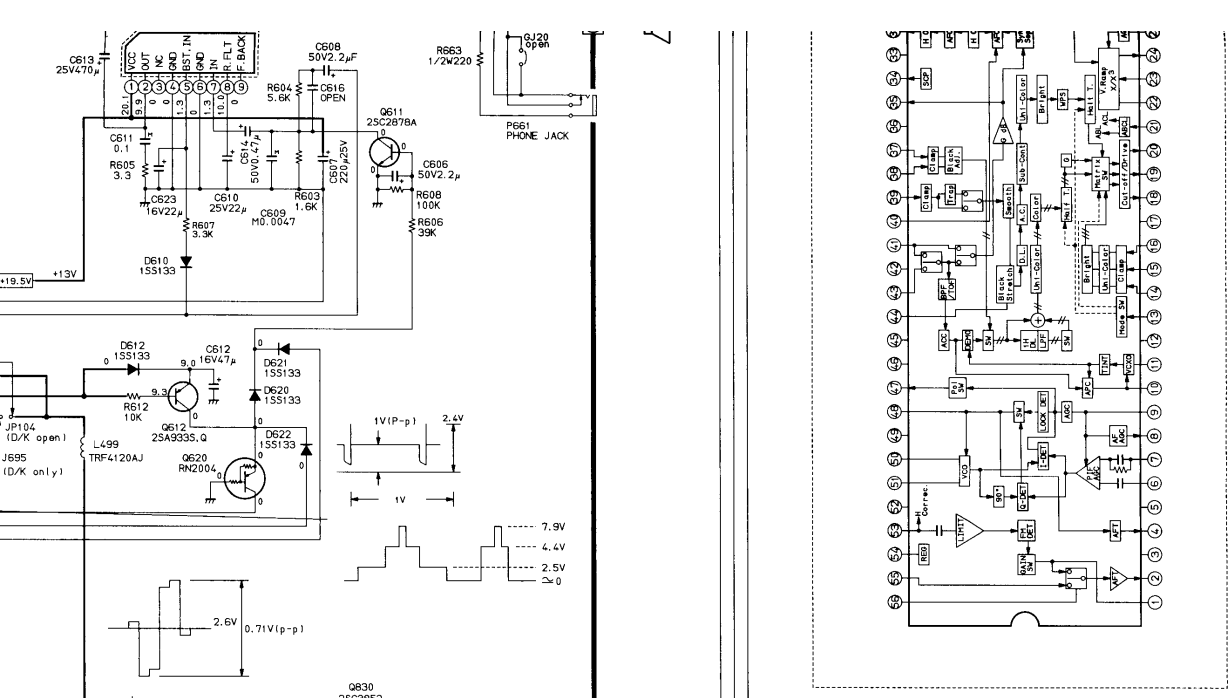


PAIR USE

	Q883	Q882
R1	S1854(FA-4) SN:36907777	MTZJ2.7B
R2	S1854(FA-1) SN:36907752	SHORT
R3	SE116N,LF4 SN:23319693	SHORT


W/SECAM MODELS
(DIFFRENCE)
Q560 TA1275Z (21PIN ZIP) SECAM DECODER
4.6V / 2V SECAM OTHER
Q403 MTZJ4.7C
Q498 1SS133
Q499 1SS133
Q210 2SA9335.Q
Q421 2SC3852 or 2SD1944H
D421 MTZJ10B
Q301 TA8403K
GND OUT IN VCC
Q821 2SC1740S.Q
Q820 DTC143E S or RN1201
Q470 2SA1320
Q818 RN2201
Q817 2SC1740S.Q
D470 MTZJ12B
D818 MTZJ13C
D370 MTZJ3.6A
D301 BYD33J
D302 BYD33J
D408 BYD33J
D406 BYD33J
D441 MTZJ5.6B
Q402 2SC2482(FA1)
Q404 ON4409
Q370 2SA9335.Q
Q612 2SA9335.Q
Q620 RN2004
Q883 1SS133 or 1SS120
Q501 2SC2878-A
Q502 16V10μ
D610 1SS133
D612 1SS133
D621 1SS133
D620 1SS133
D622 1SS133
L499 TRF4120AJ
L161 TR1239AV
L511 PL-10
L301 TEM2011
G410 TEM2011
T401 TLN1039
L441 TLN2112G
L462 TDY-621UA
TDA2611A
JP09 (D/K open)
JP104 (D/K open)
J610 (D/K only)
J695 (D/K only)
P570 6P PLUG
M502A 4P
CRT/D M502B
HOR.COIL VERT.COIL
+13V
+19.5V
+12V
+9V
+27V
+115V
5.4V
5V
9V
1.7V(p-p)
0.5V(p-p)
1.6V
3.6V
4.6V
2.6V
0.52V(p-p)
0.71V(p-p)
2.0V(p-p)
1.9V
1V(p-p)
3V
155V
28Vp-p(H)
145Vp-p(H)
133V
45Vp-p(H)
SECAM
PAL
CAUTION:
DO NOT USE DIGITAL VOLTMETER FO
MEASURING COLLECTOR VOLTAGE OF

8 9 10 11 12 13



MODEL	PB NO.
21G3XHE	PB8243
21G3XR	PB8244
21G3XSH	PB8320

✳ Mark: Refer to Difflence table (2/2)

CAUTION:
DO NOT USE DIGITAL VOLTMETER FOR MEASURING COLLECTOR VOLTAGE OF Q404.

21G3XHE
21G3 SERIES
PK2726

E F G H I J K L

12 13 14 15 16

SCHEMATIC DIAGRAM **MODEL : 21G3XHE / 21G3XR (2/2)**

060-9802

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TG1-H(A1) S8E CHASSIS DIFFERENCE LIST
(*) MARK DIFFERENCE LIST

LOC. NO.	21G3XHE (LJ113)	21G3XR (LJ114)
MAIN UNIT NO.	PB8243	PB8244
TEXT BLK	OPEN	OPEN
SECAM BLK	USED	USED
GJ01	OPEN	OPEN
GJ02	OPEN	OPEN
L103	PL-0.47	PL-0.56
R104	1/6W 33	1/6W 36
R170	1/6W 220	1/6W 150
*	*	*
L106	PL-10	TRF482AF
L108	PL-18	OPEN
L110	PL-15	PL-18
Q107	2SC1740S, Q	OPEN
R122	1/6W 100	OPEN
R125	1/6W 470	OPEN
R128	1/6W 220	1/6W 180
R130	1/6W 330	OPEN
R134	1/6W 220	1/6W 330
R143	1/6W 470	OPEN
Z103	TCF1010	OPEN
Z108	TCF1081	OPEN
*	*	*
RA06	1/6W 1k	OPEN
RA12	1/6W 10k	OPEN
RA14	1/6W 10k	1/6W 15k
RA15	1/6W 7.5k	1/6W 10k
RA64	DELETION	1/6W 33k
RA65	1/6W 33k	OPEN
*	*	*
GJ03-GJ06	DELETION	SHORT
T801	TRF3216AK	TRF3221AM
T802	TRF3216AK	OPEN
C801	250V 0.1	250V 0.22
*	*	*
C150	0.01	OPEN
D150	1SS110	OPEN
Q130	2SC2878-A	OPEN
R151	1/6W 47k	OPEN
R152	1/6W 4.7k	OPEN
R153	1/6W 10k	OPEN
R154	1/6W 10k	OPEN
R157	1/6W 47k	OPEN
Z130	OFWK6292K	OFWK2964M
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
*	*	*
RATED VOLTAGE	110V - 240V	220V - 240V
LOC. NO.	21G3XHE	21G3XR