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Colour TV
Service Manual

Model Group: CT-21XF9

CHASSIS: CN-9EA

MODEL:
CT-21XF9A

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SPECIFICATIONS

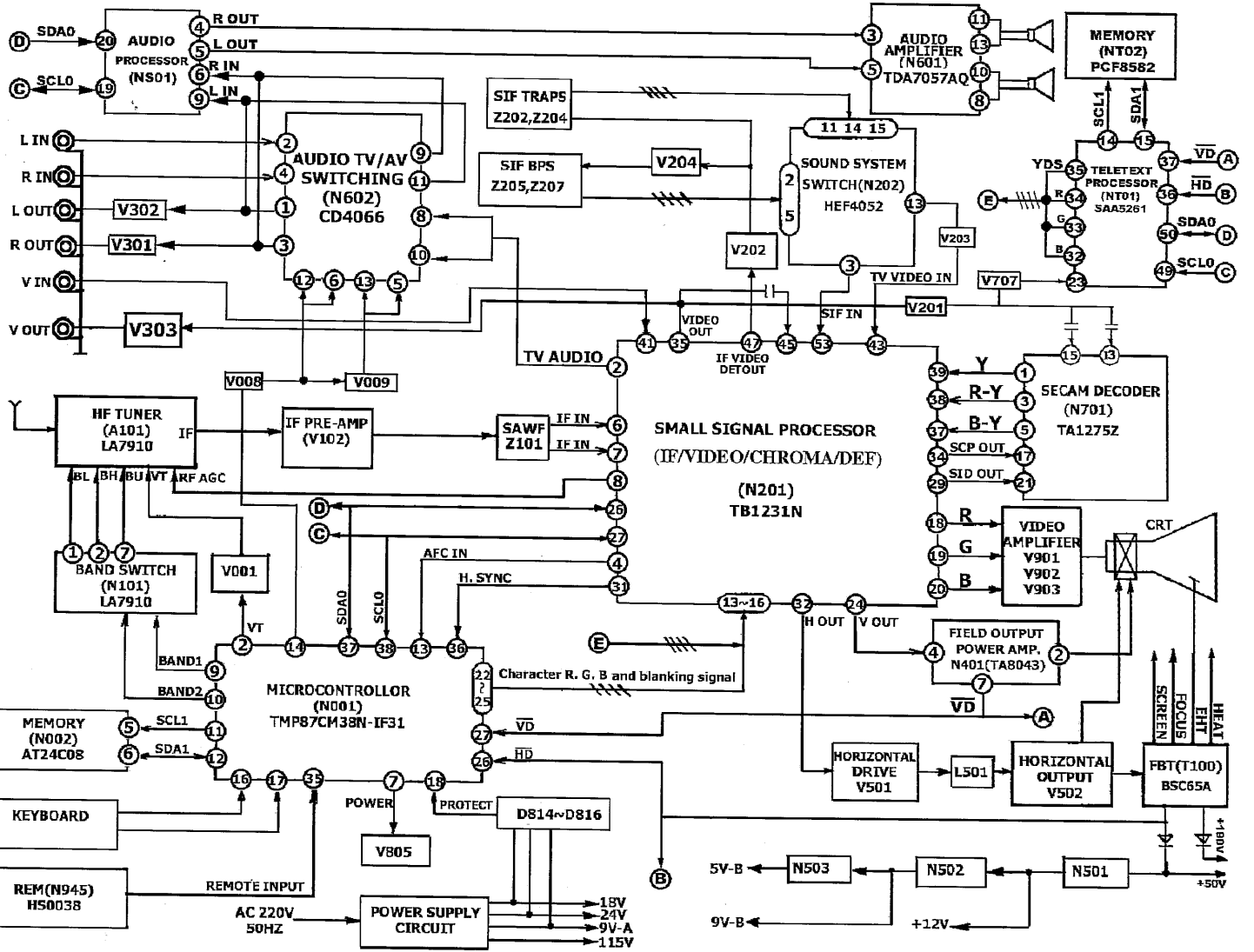
RF system:	Color system: PAIA.43, NTSC3.58, NTSC4.43, PAL-M, PAL-N Sound system: D/K, I, M, B/G
Video system:	PAL4.43, NTSC4.43, NTSC3.58, PAL-M, PAL-N (50/60Hz)
Receiving channel:	VHF: *Cl~C12 (49.75 ~ 85.25MHz,* 168.25 ~ 216.25MHz) UHF: C 13~C57 (471.25 ~ 863.25MHz) CATV: Zl~Z7 (111.0 ~ 167.0MHz) Z8~Z35 (223.0~447.0MHz)
Programs Preset:	236
Antenna. input:	75Ù (imbalance)
Picture tube:	Effective screen dimension: 406mmx305mm; Flat-square tube
Audio output:	Main channel: 5W+5W (THD=7%)
Power supply:	AC 150~260V (50Hz)
Weight:	~26kg
Dimensions:	566mm(w) x 455mm(h) x 480mm(d)
Power consumption:	~87W (AC 220V 50Hz)

GENERAL DESCRIPTION

Figure 1 shows the block diagram of CN-9 (21BM32).
Table 1 provides CN-9EA chassis main ICs and functions.
Figure 2 shows the whole set power supply system for CN-9EA chassis.
Figure 3 shows the system control circuit of CN-9EA chassis.

Table 1: 21BS32EA mainly ICs and functions

Location	Type	Mainly function
N001	CH08T0934	System control microprocessor
N002	AT24C08-10PI	Memory
N945	HS0038A	Remote control receiver
NM01	TC9028F-022	Remote control transmitter
N101	LA7910	Band decoder
N202	HEF4052	Sound system switching
N201	TB 1238AN	Small signal processing (IF/VIDEO/CHROMA/DEF)
N401	TA8403	Vertical output power amplifier
N601	TDA7057AQ	Audio power amplifier
N701	TA1275AZ	SECAM decoder
N602	HCF4066BE	Audio TV/AV switching
NS01	TDA7449	Audio processor
NT01	SAA5261	Teletext processor
NT02	PCF8582	Memory


AUDIO PROCESSOR (NS01)
SDA0
SCL0
R OUT
L OUT
R IN
L IN
AUDIO AMPLIFIER (N601) TDA7057AQ
MEMORY (NT02) PCF8582
SCL1
SDA1
SIF TRAPS Z202,Z204
SIF BPS Z205,Z207
V204
AUDIO TV/AV SWITCHING (N602) CD4066
V302
V301
V303
SOUND SYSTEM SWITCH(N202) HEF4052
V202
V203
TV VIDEO IN
V707
TELETEXT PROCESSOR (NT01) SAA5261
YDS
VD
HD
SDA0
SCL0
V201
SIF IN
VIDEO OUT
IF VIDEO DETOUT
TV AUDIO
V008
V009
HF TUNER (A101) LA7910
IF
IF PRE-AMP (V102)
SAWF Z101
IF IN
SMALL SIGNAL PROCESSOR
(IF/VIDEO/CHROMA/DEF)
(N201)
TB1231N
SECAM DECODER (N701) TA1275Z
Y
R-Y
B-Y
SCP OUT
SID OUT
BL
BH
BU
VT
RF AGC
BAND SWITCH (N101) LA7910
V001
AFC IN
H. SYNC
VIDEO AMPLIFIER V901 V902 V903
CRT
R
G
B
BAND1
BAND2
VT
MICROCONTROLLOR (N001) TMP87CM38N-IF31
Character R. G. B and blanking signal
13~16
H OUT
V OUT
FIELD OUTPUT POWER AMP. N401(TA8043)
MEMORY (N002) AT24C08
KEYBOARD
REM(N945) H50038
REMOTE INPUT
POWER
PROTECT
D814~D816
V805
AC 220V 50HZ
POWER SUPPLY CIRCUIT
18V
24V
9V-A
115V
HORIZONTAL DRIVE V501
L501
HORIZONTAL OUTPUT V502
FBT(T100) BSC65A
SCREEN
FOCUS
EHT
HEAT
+180V
+50V
5V-B
9V-B
+12V
N503
N502
N501

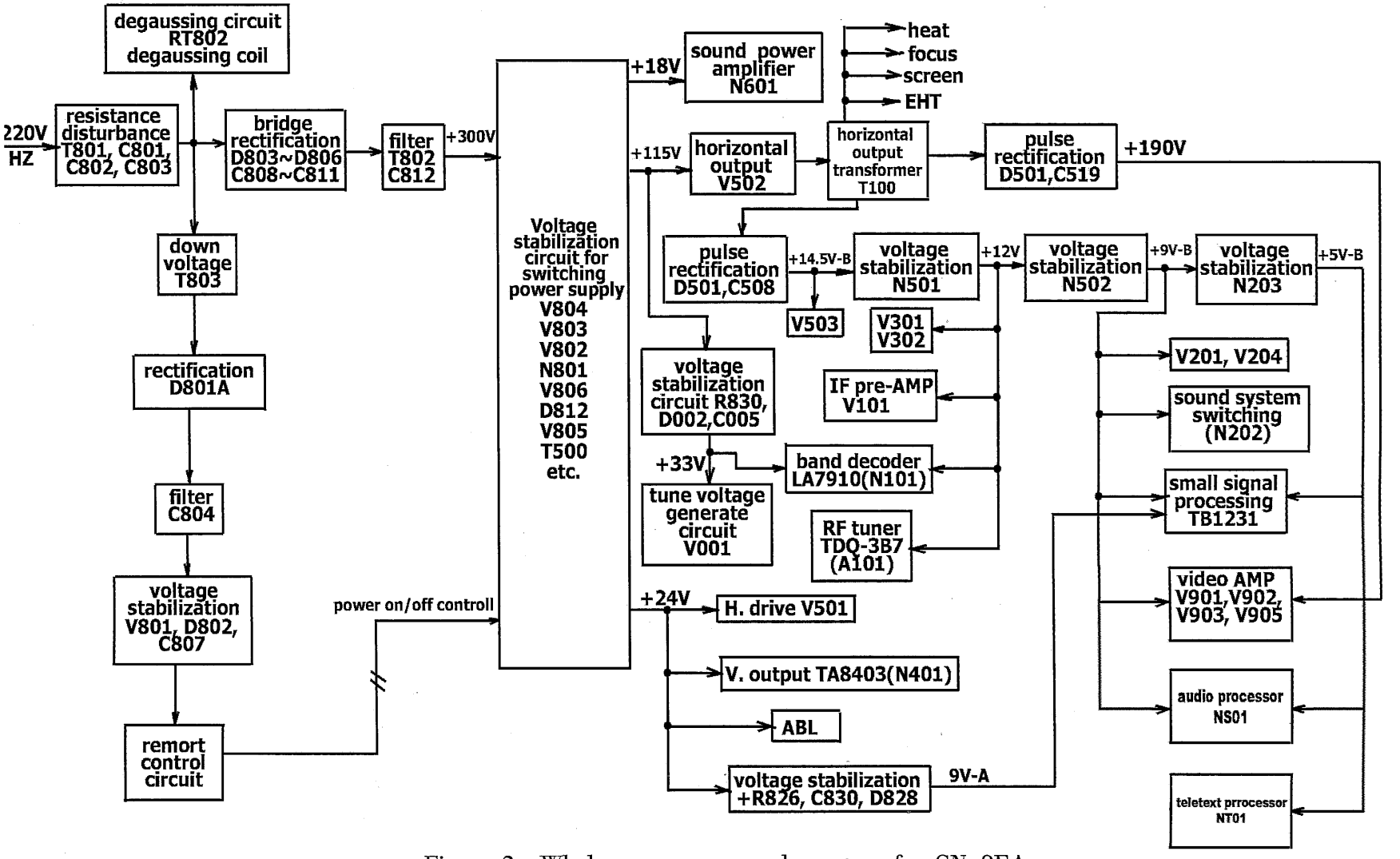


Figure 2 Whole set power supply system for CN–9EA

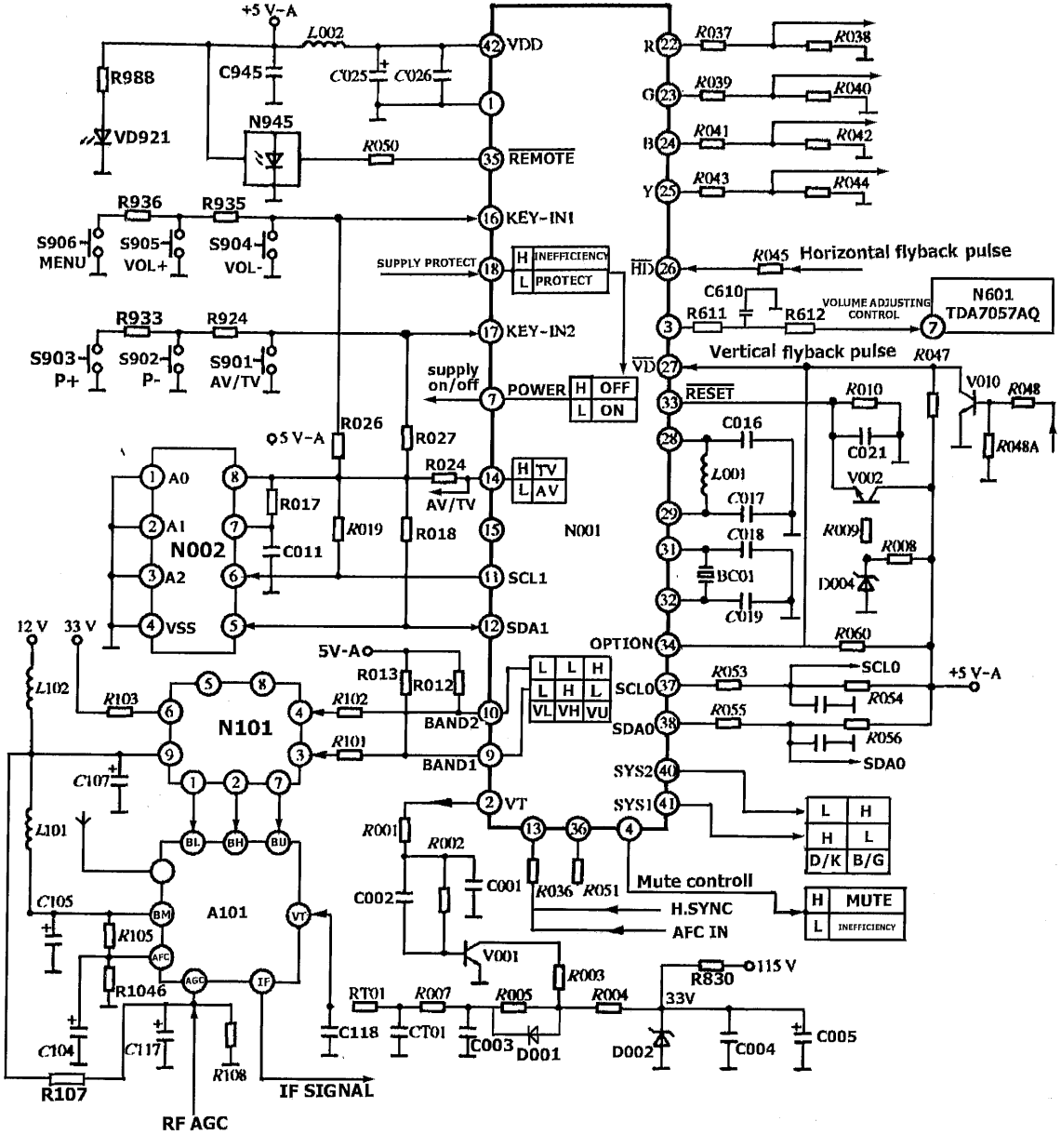


Figure 3 System control circurt for CN–9EA

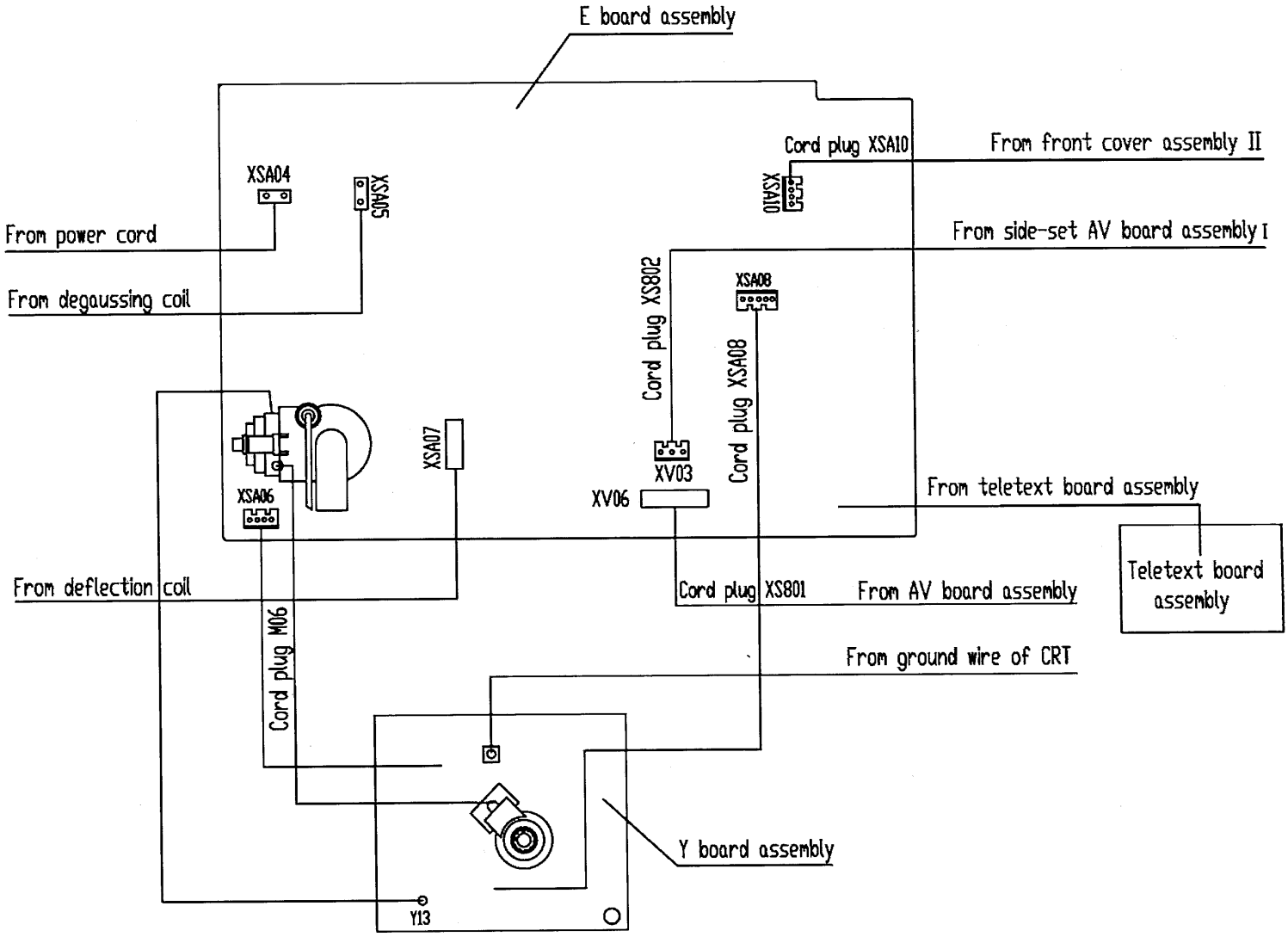


Figure 4 Wiring diagram of 21BM31

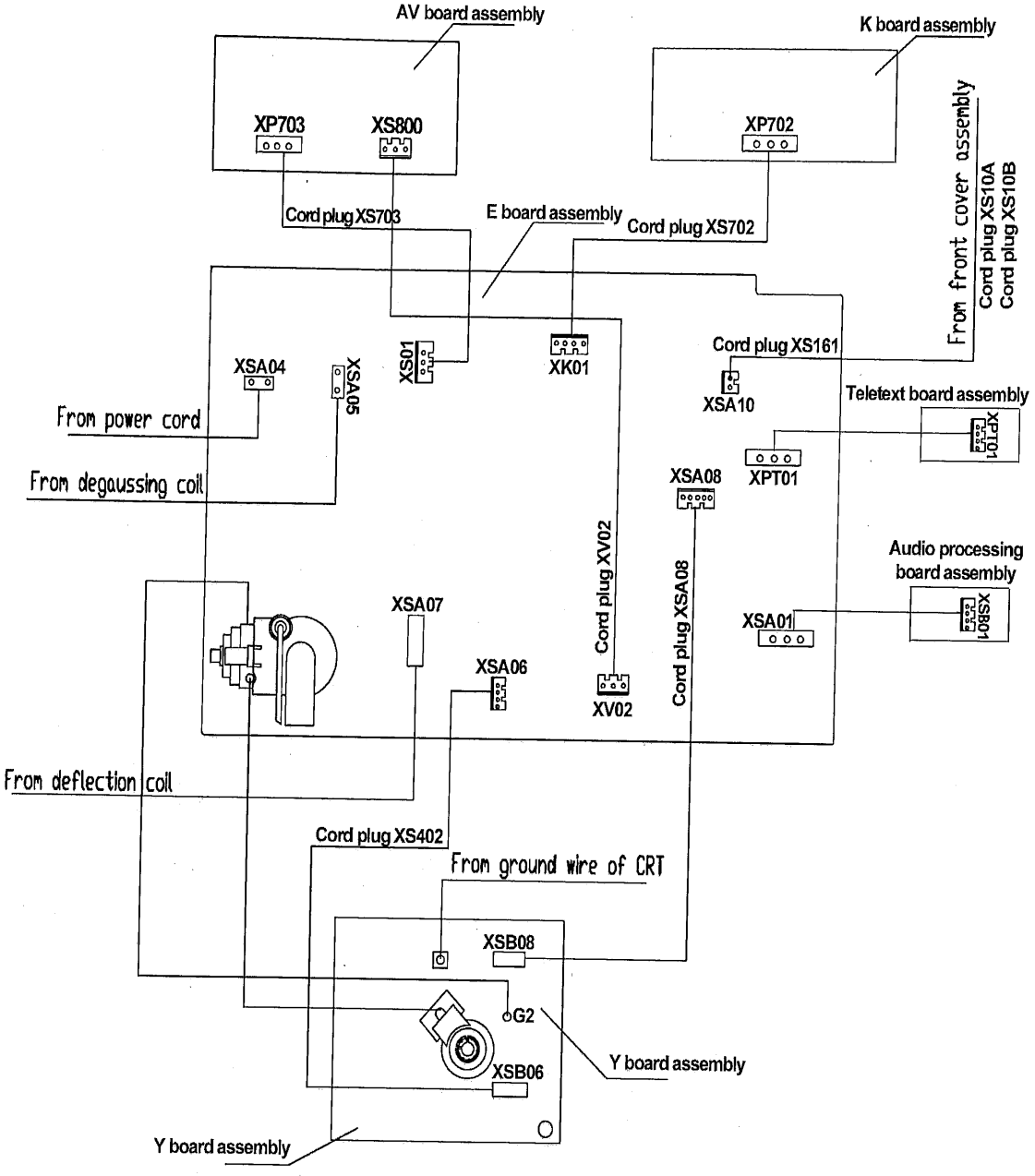


Figure 5 Wiring diagram of 21BM32

SAFETY INSTRUCTION

WARNING: BEFORE EXAMINING AND SERVICING THIS CHASSIS, READ CAREFULLY THE FOLLOWING SAFETY INSTRUCTIONS.

X-RAY RADIATION PRECAUTION

1. The EHT must be checked every time the receiver is serviced to ensure that the CRT does not emit X-ray radiation as result of excessive EHT voltage. The nominal EHT for this receiver is 27.5kv at zero beam current (minimum brightness) operating at AC 220V. The maximum EHT voltage permissible in any operating circumstances must not exceed 30KV. When checking the EHT, use the High Voltage Check procedure in this manual using an accurate EHT voltmeter.

2. The only source of X-RAY radiation in this receiver is the CRT to prevent X-ray radiation you should use the same type of CRT when replacing it.

3. Some components used in this receiver have safety-related characteristics preventing the CRT from emitting X-ray radiation. For continued safety, replacement component should only be made after referring the Product Safety notice below.

SAFETY PRECAUTION

1. The high voltage in the TV reaches to 27.5KV when the TV is in operation. Be more careful during opening the back cover.
    a. The high voltage existing in the TV is very dangerous. Refer servicing to qualified personnel only.
    b. Before removing the high voltage cap, discharge the anode of the CRT and the chassis in case of electric shock.
    c. Wear a pair of goggles when handling the CRT to void broken pieces damaging your eyes.
    d. Do not hold the CRT neck in case of causing damage to the CRT.
2. When the power cord needs replacing, use the same one as stated in this manual.
3. Voltage exists between the hot and cold ground when the TV is in operation. Install a separation transformer during repairing or connecting to any tester for the sake of safety. The power of the separation transformer should be beyond rated overall power.
4. When replacing a burnout fuse, use the one with the same specifications as the original.
5. When replacing old wire, wind new one round the shaft to weld. When replacing components with safety in performance, use the same type as that specified by this manual and install it in the former way.
6. Never place wire near high-temperature or high-voltage components.

SAFETY CAUTIONS FOR PRODUCTS

Many electric and mechanical components in CN-9 chassis have special, safety performances, which are always neglected. Even if replacing them with some components with the same voltage and power, you can not get effective protection to X-ray. In the circuit diagram, these special electric components are indicated by the special mark ⚠, and on the shadow. When replacing any of them, use the one with the same specifications as the originals. Otherwise, it may cause X-ray radiation and damage to overall safety.

CIRCUIT ADJUSTMENTS

GENERAL INFORMATIONS

All adjustment are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in carton. Carefully draw out the receiver from the carton and remove all packing materials. Power cord into a convenient 220 volts 50 Hz AC two pin power outlet. Turn the receiver ON. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 30 minutes in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external-degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures.

POWER SUPPLY ADJUSTMENT

CAUTION: +B voltage has close relation to high voltage. To avoid X-ray radiation, +B voltage should be to +115V.

1. Set RV801 to the mechanical center and AC power supply to 220±2V.
2. Connect a digital voltmeter to two pins of C822, and then turn on the TV.
3. Receive Philips test signal.
4. Adjust RV81 to make the voltmeter read 115±0.5V.

HIGH VOLTAGE EXAMINATION

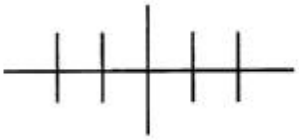
CAUTION: No high voltage adjustment should be done in CN-9EA chassis.

1. Connect a precise high voltmeter to the second anode of the CRT.
2. Turn on the TV and set the brightness and contrast to minimum (i.e. set beam current of the CRT to zero).
3. The high voltage tested should be 27.5 ± 0.5KV.
4. Set the brightness to minimum or maximum, and ensure high voltage not beyond limitation of 30KV in any case.

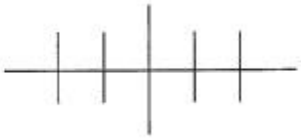
FOCUS ADJUSTMENT

1. Use the remote control to set the contrast to maximum and the brightness, chroma to medium.
2. Set H. V. lines near Philips picture center to thinnest with the focus adjustment potentiometer on the FBT. After finishing adjustment, ensure that no poor focusing exist near the center or around of the frame.

Before Adjusting



After adjusting



SET-UP ADJUSTMENT

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

1. Colour purity
2. Convergence
3. White Balance (See page 17)

Note: The PURITY/CONVERGENCE MAGNET assembly and rubber wedges need mechanical positioning. Refer to figure 6.

COLOUR PURITY ADJUSTMENT

NOTE: Before attempting any purity adjustment, 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. Receive the green raster test signal.
4. Loosen the clamp screw holding the deflection coil and slide, the 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 7) around the neck of the picture tube until the green belt is in the centre of the screen.
7. Slowly move the deflection coil forward or backward until a uniform green screen is obtained. Tighten the Clamp screw of the coil temporarily.
8. Check the purity of the red and blue raster.

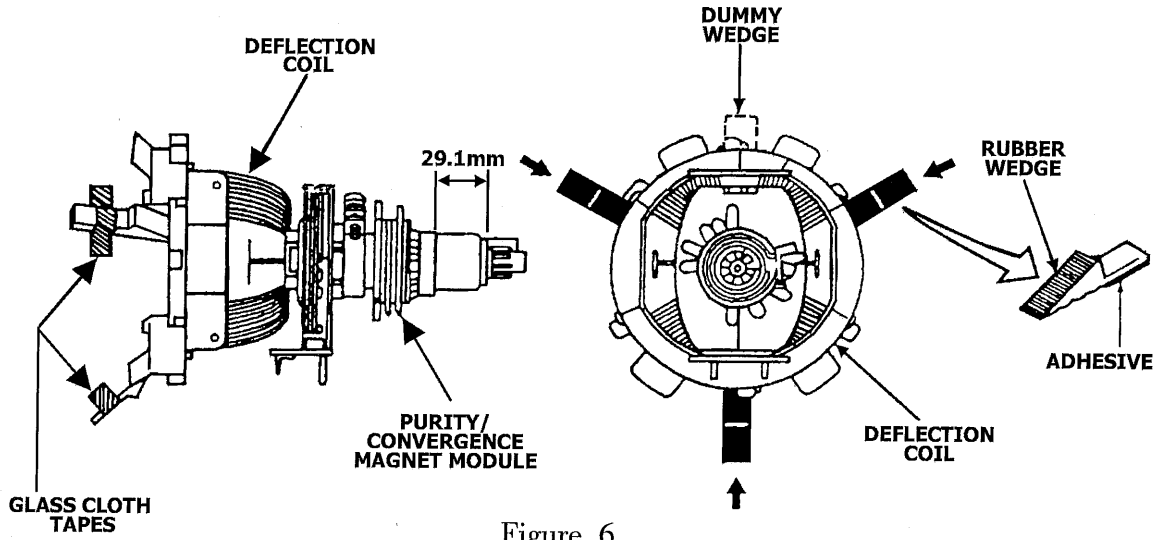


Figure 6

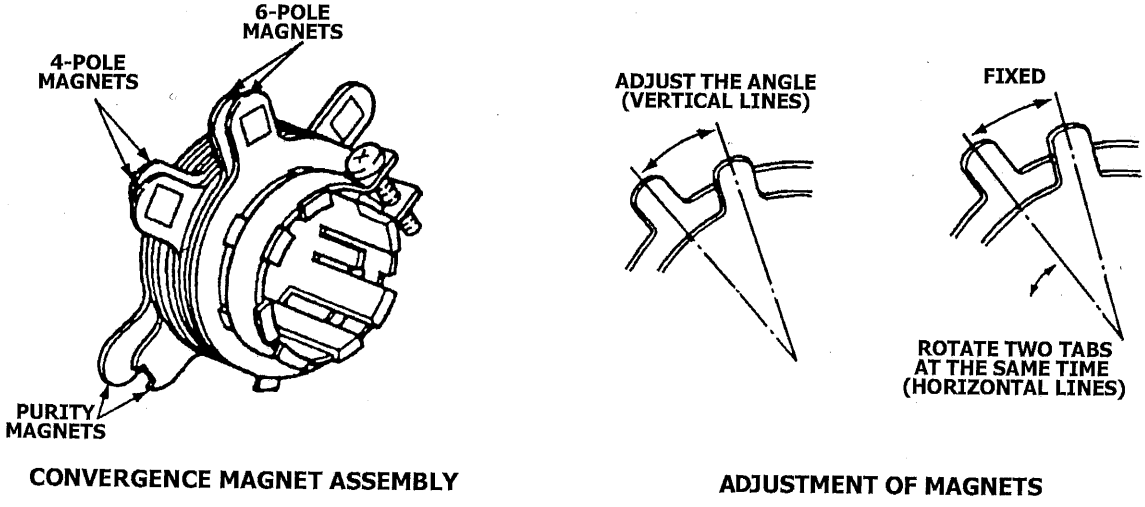


Figure 7

CONVERGENCE ADJUSTMENTS

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

CENTRE CONVERGENCE ADJUSTMENT

1. Receive the pane pattern test signal.
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 7) and superimpose red and blue vertical lines in the centre 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 centre of the screen.
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line (land green line. 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 defection coil slightly to allow the coil to tilt.
2. Temporarily put a wedge as shown in figure 6. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection coil up or down to obtain better convergence in circumference. (See figure 8) Push the mounted wedge into the space between picture tube and the coil to fix the coil temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the deflection coil right or left to obtain better convergence in circumference. (See figure 8)
6. Keep the deflection coil position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the coil.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the coil.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the coil and check the coil is firm.
9. Stick three adhesive tapes on wedges as shown in figure 6.

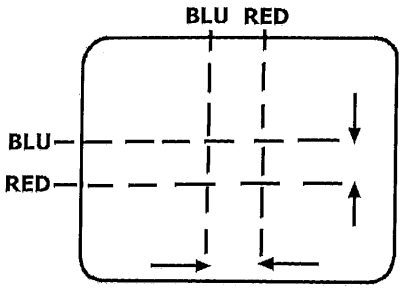
SERVICE MODE GENERAL INSTRUCTIONS

1. ENTERING TO SERVICE MODE

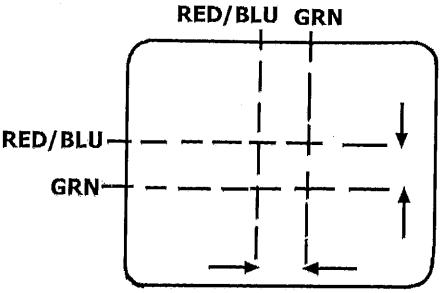
Use the user remote receiver K10N-C1. Set the volume to minimum. Press the MUTE button on Remote Control. Keep pressing the MUTE button, press MENU button on TV set until the character D and an adjustment item appears on the screen.

2. SELECTING THE ADJUSTING ITEMS

Every pressing of the RED or GREEN button on remote control transmitter changes the adjustment items in the following BUS DATA table.

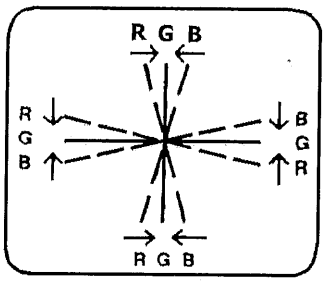


4-POLE MAGNETS MOVEMENT

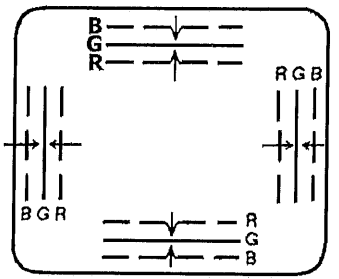


6-POLE MAGNETS MOVEMENT

Centre Convergence by Convergence magnets



INCLINE THE COIL UP(OR DOWN)



INCLINE THE COIL RIGHT(OR LEFT)

Circumference Convergence by DEF coil

Figure 8

Table 2 The BUS DATA FOR 21BM32

Number	Adjustment Item	Adjustment Function	Type Data
1	BCUT	Blue Dark Balance	60
2	RCUT	Red Dark Balance	4F
3	GCUT	Green Dark Balance	8D
4	MODE	Factory data	20
5	OPT	Option	F3
6	OSD	OSD position	06
7	ZHP		03
8	LANG		FF
9	VM2	TB1238AN V/C/D mode data	80
10	UHF-H	Factory ASM VT limit of UHF high byte	00
11	UHF-L	Factory ASM VT limit of UHF LOW byte	D8
12	VHFH-H	Factory ASM VT limit of VHFH high byte	00
13	VHFH-L	Factory ASM VT limit of VHFH low byte	F0
14	VHFL-H	Factory ASM VT limit of VHFL high byte	02
15	VHFL	Factory ASM VT limit of VHFL low byte	10
16	SNUM		20
17	PNUM	Protect number	7F
18	SELF COLN	Self adjust COLC initial data	10
19	SELF TNTC	Self adjust TNTC center initial data	00
20	SELF CNTC	Self adjust CNTC initial data	20
21	SELF BRTC	Self adjust BRTC initial data	80
22	SELF AGC	Self adjust AGC initial data	20
23	SELF VCO	Self adjust VCO initial data	80
24	SELF	TB1231N P40UT select	00
25	BRTS	Sub bright (difference)	00
26	V50	Volume 50%	57
27	V25	Volume 25%	3A
28	HAFC	AFC gain	00
29	AFT	PIF VCO center	48
30	RAGC	RF AGC	28
31	SRY	SECAM R-Y	08
32	SBY	SECAM B-Y	08
33	VLIS	Vertical line deflection of 50/60 Hz	0B
34	VSC	Vertical S correction	0C

Number	Adjustment Item	Adjustment Function	Type Data
35	HPS	Horizontal centering difference of 50/60Hz	10
36	HIT	Vertical line of 50 Hz	20
37	VP50	Vertical centering of 50Hz	05
38	HPOS	Horizontal center of 50 Hz	0C
39	VM1	V/C/D mode data 1	9F
40	VM0	V/C/D data 0	3C
41	RGCN	Text RGB contrast min	16
42	TXCX	Text RGB contrast max	2A
43	SHPN	Sub sharpness min (difference)	1C
44	SHPX	Sub sharpness max (difference)	1A
45	SV4	Sub sharp center (other AV)	20
46	ST4	Sub Sharp Center (other TV)	20
47	SV3	Sub sharp center (3.5BTSC AV)	20
48	ST3	Sub sharp center (3.58NTSC TV)	20
49	TNTN	Sub tint min (difference)	28
50	TNTX	Sub tint max (difference)	28
51	COLN	Sub color min	00
52	COLX	Sub color max (difference)	35
53	BRTN	Sub bright min (difference)	20
54	BRTX	Sub bright max (difference)	20
55	CNTN	Sub contrast min	08
56	CNTC	Sub contrast center	20
57	SCNT	Sub contrast	06
58	COLS	Sub color center (SECAM)	40
59	COLP	Sub color center (PAL difference)	00
60	TNTC	Sub tint center	40
61	COLC	Sub color center (NSTC)	40
62	BRTC	Sub-bright center	30
63	CNTX	Sub contrast max	3F
64	BDRV	Blue light Balance	40
65	GDRV	Green light Balance	40

3. ADJUSTMENT THE DATA

Pressing of the YELLOW or BLUE button on remote control transmitter will change the value of data, in the range from 00 to FF. The variable range depends on the adjusting item.

4. EXIT FROM SERVICE MODE

Use the keyboard on remote control transmitter or TV set to turn off the TV once.

SERVICE MODE ADJUSTMENT

1. SUB-BRIGHTNESS

1. Receive colour signals.
2. Set the contrast to maximum and the brightness to medium.
3. Set the chroma to medium.
   Enter the TV to the SERVICE mode. Select the BRTC item by pressing the item adjustment button on the remote transmitter, and set the data to 30 by pressing the data adjustment button. Operate the TV for 5 min in the mode.
4. Adjust the BRTC data until fuzzy picture does not appear on the high bright area of the screen and too dim picture not on the low-bright area.
5. Set the contrast and brightness to maximum or minimum, and then test normal picture alternation.
6. If the picture does not become dark when the contrast and brightness are set to minimum, or not become bright when set to maximum, then adjust the BRTC data to get normal picture.

2. WHITE BALANCE ADJUSTMENT

1. Turn on the TV and preheat it for over 7 minute.
2. Use the remote control to set the contrast to maximum and the brightness to medium.
   Set the chroma to minimum.
3. Enter the TV to the SERVICE mode, and set the following data without changing other items.

   RCUT 4F
   GCUT 8D
   BCUT 60
   GDRN 40
   BDRN 40

4. Pull out the external antenna and press the MUTE button once on the remote control until a bright horizontal line appears on the screen. Adjust the GCUT data to get 160V±0.5 green gun voltage across the Y board.
5. Adjust the RCUT and BCUT data according to the given at Step 4 so that the bright horizontal line turns to yellow, then to white.

3. HORIZONTAL CENTERING ADJUSTMENT

Enter the TV to the service mode, and receive Philips test signal. Select the HPOS or HPS item by pressing the item adjustment button on the remote control, and adjust horizontal picture position in the centre of screen by pressing the data, adjustment button.

4. VERTICAL CENTERING ADJUSTMENT

Enter the TV to the service mode, and receive Philips test signal. Select the VPS0 or VP60 item by pressing the item adjustment button on the remote transmitter, and adjust vertical picture position in the centre of screen by pressing the data adjustment button.

5. VERTICAL AMPLITUDE ADJUSTMENT

Enter the TV to the service mode, and receive pane test signals. Select the HIT item by pressing the item adjustment button on the remote transmitter, and adjust vertical amplitude by pressing the data, adjustment button so that vertical amplitude lacks a little. Continue to adjust vertical amplitude by pressing the data adjustment button until the first bar on pane signal touches edge of screen.

6. HORIZONTAL AMPLITUDE ADJUSTMENT

Receive Philips test signals. Adjust the horizontal amplitude adjustment inductance L506 so that the edge of the CRT covers the right and left borderlines of Philips picture by 1/3 grille.

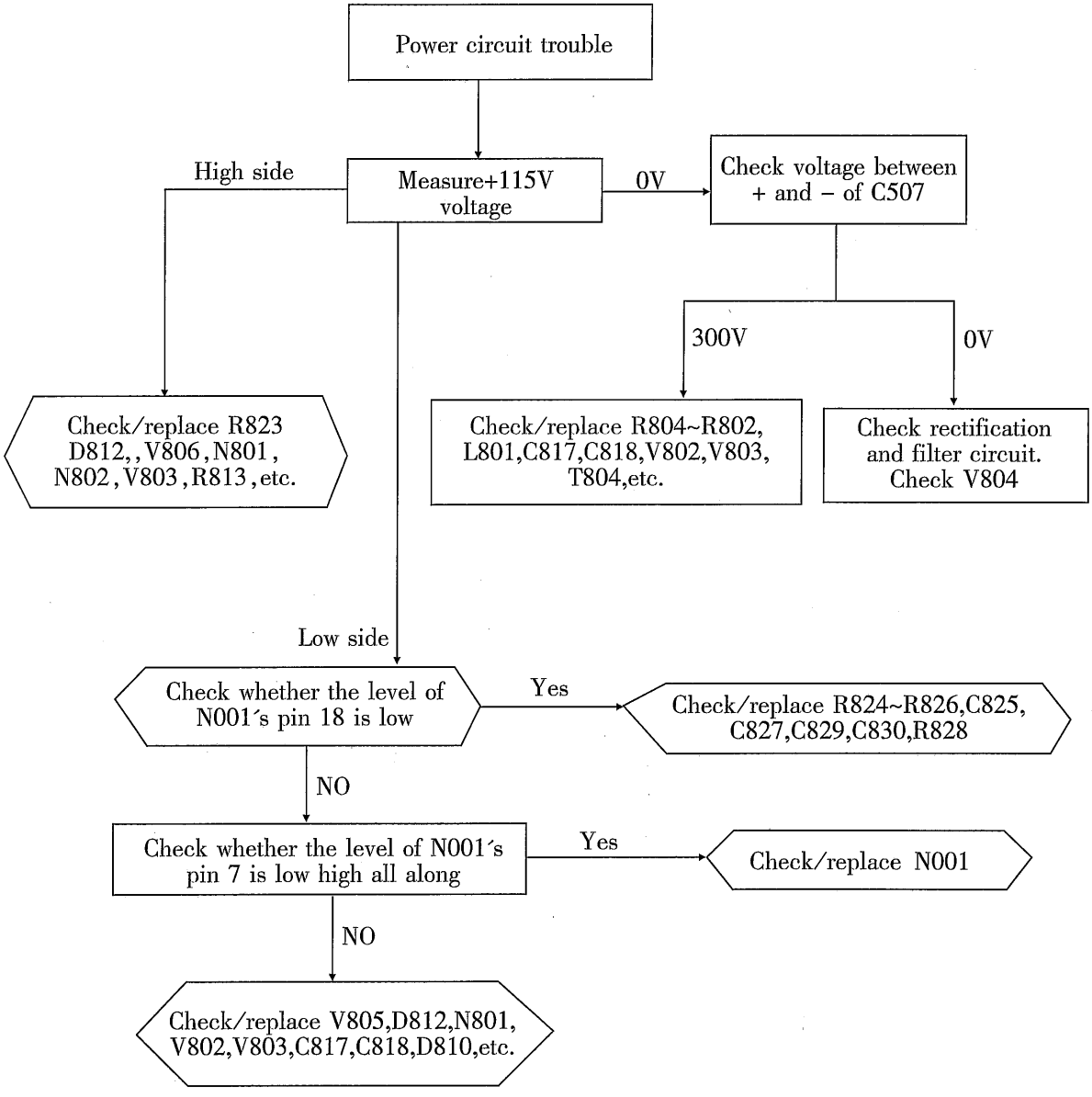
7. BUS DATA INITIALIZATION

When the BUS DATA of TV is confused, enter the TV to the service mode. Press the SLEEP button on the Remote Control will initialize the BUS DATAS for all adjustment items.

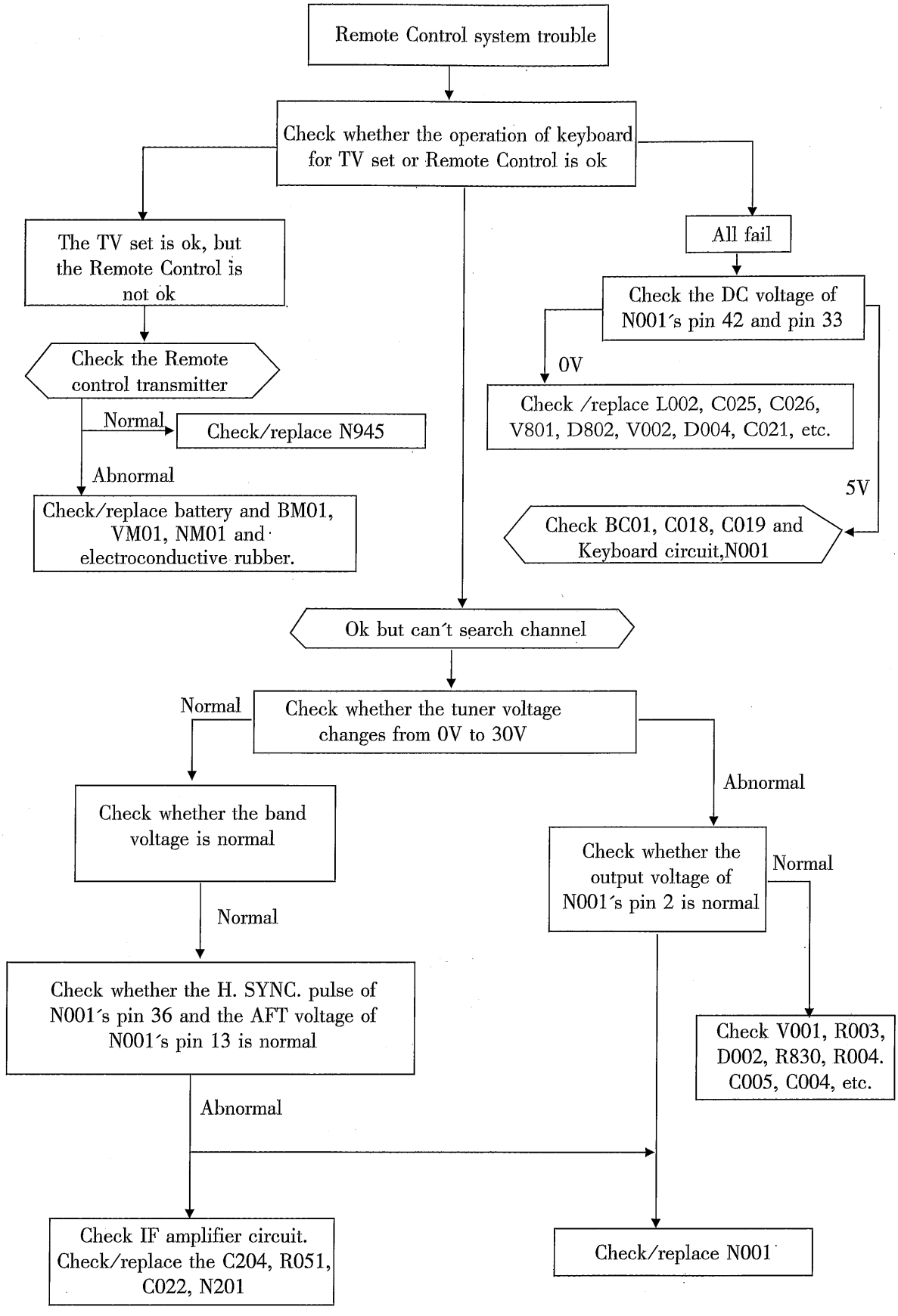
MAIN REPAIRING FLOW DIAGRAM

The following flow diagrams are for the corresponding troubleshooting, which can help you find the causes for troubles. Check as the order shown on the flow diagrams, you can find the defective component.

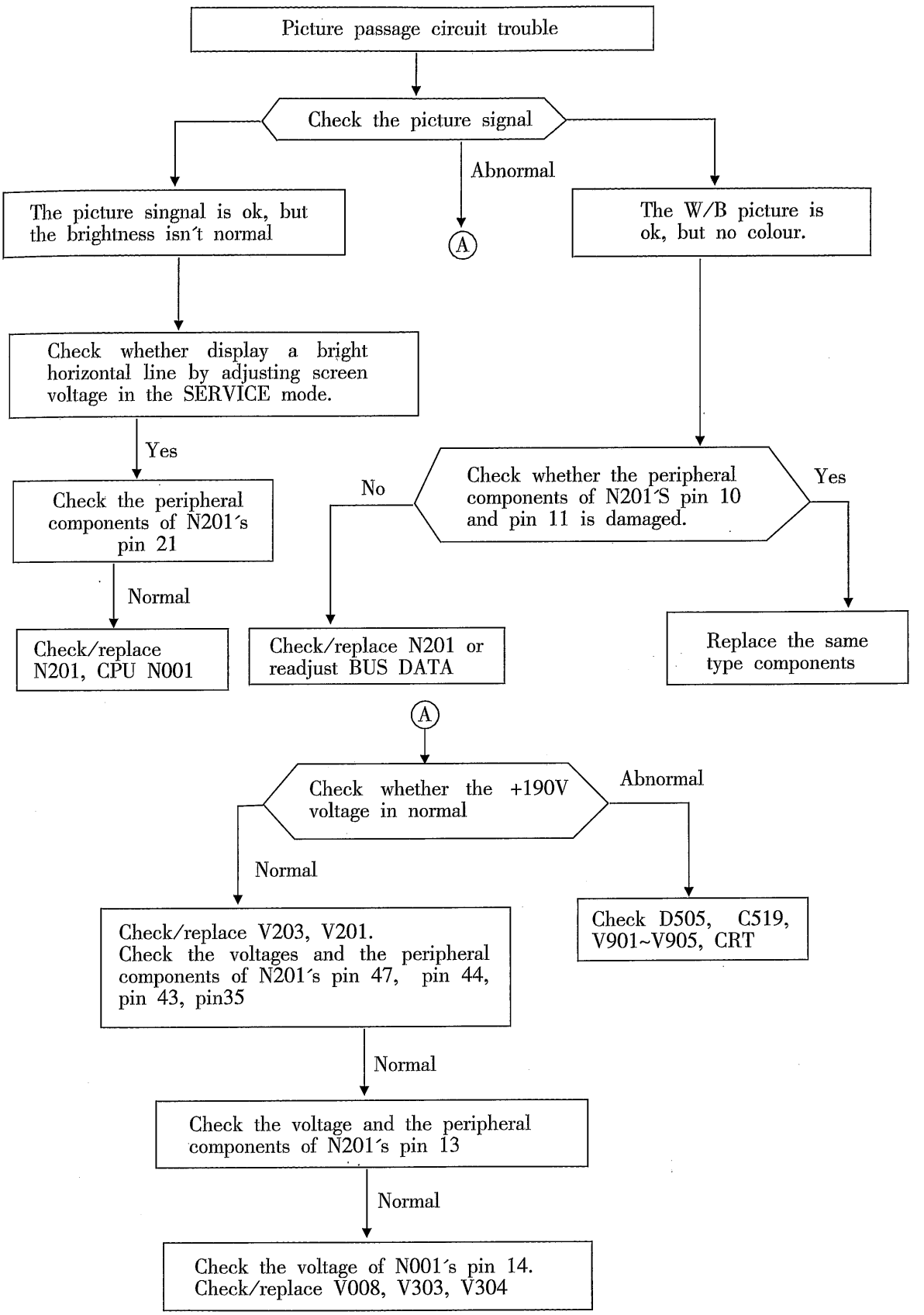
POWER SUPPLY CIRCUIT TROUBLESHOOTING



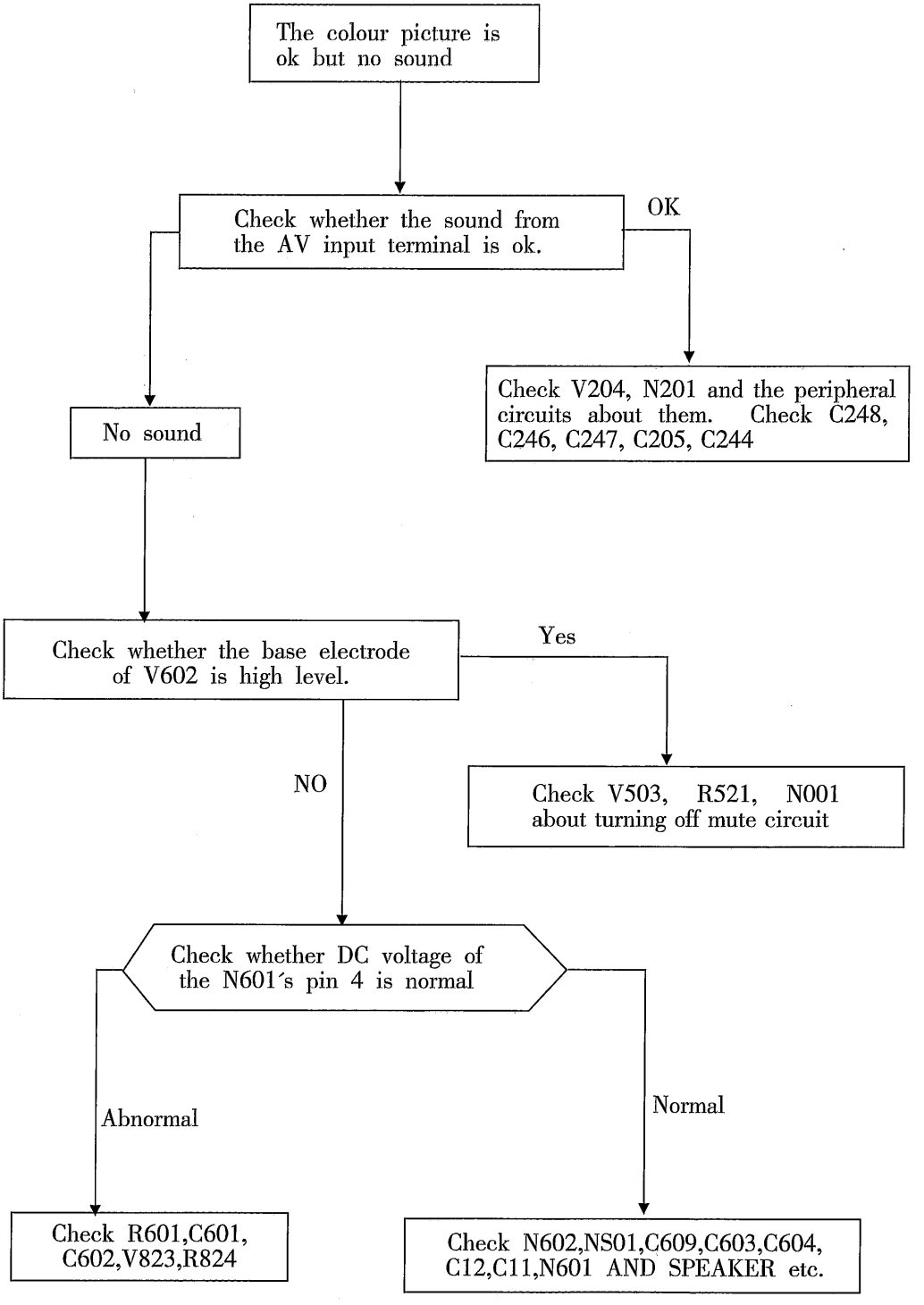
REMOTE CONTROL SYSTEM CIRCUIT TROUBLESHOOTING



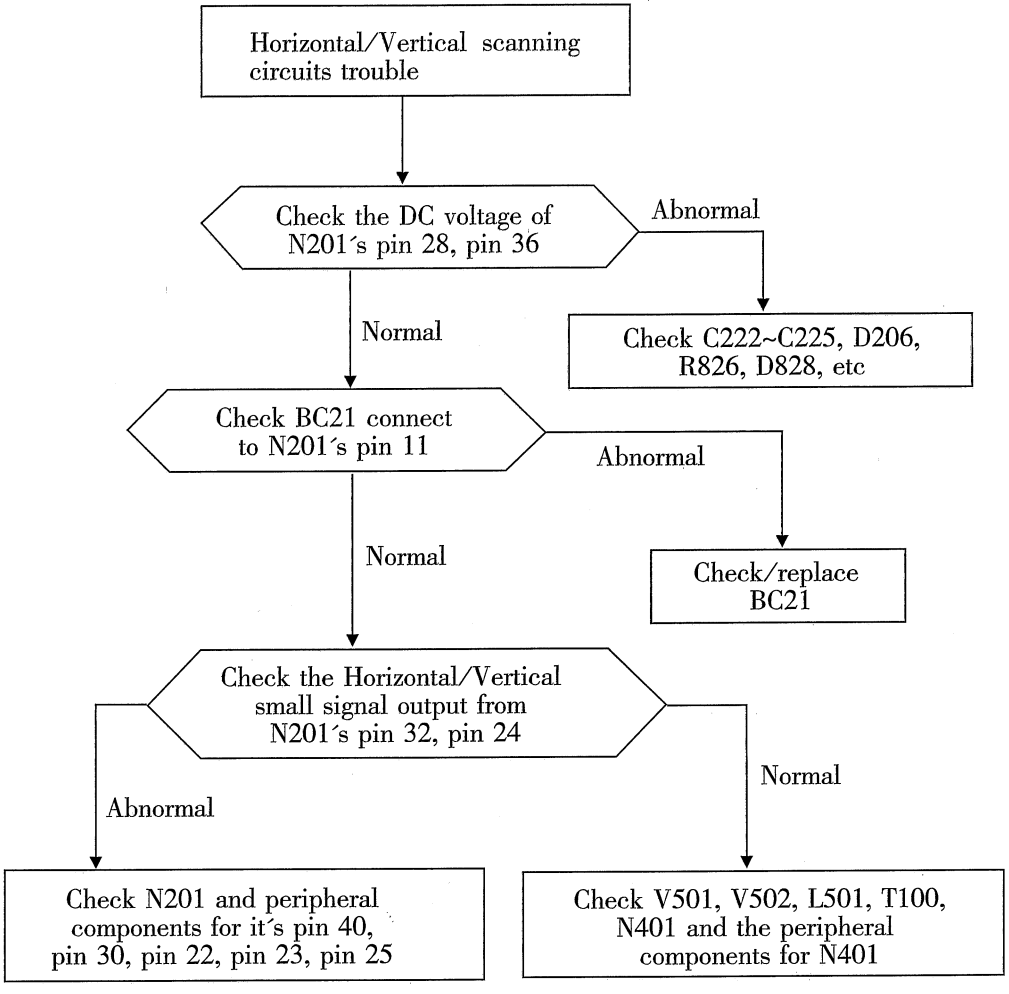
PICTURE SIGNAL PROCESSING PASSAGE CIRCUIT TROUBLESHOOTING



SOUND SIGNAL PROCESSING PASSAGE CIRCUIT TROUBLESHOOTING



HORIZONTAL/FRAME SCANNING CIRCUITS TROUBLESHOOTING



MAIN ICS DESCRIPTION AND REPAIR DATA OFFERING

1. INTRODUCTION FOR IC TB1238AN (N201)

TB1238AN is a PAL/NTSC system color TV specific monolithic IC currently developed by Toshiba Co., which is controlled by Inter IC Bus. TB1238AN includes a picture IF processing circuit, a sound IF processing circuit, PLL video detection circuit, PLL sound frequency discrimination circuit, a luminance signal processing circuit, PAL/NTSC chroma signal processing circuit and RGB signal processing circuit. TV/AV switching circuit and Horizontal/Vertical scanning small signal processing circuit etc.

Figure 7 shows the inner structure block diagram of TBI238AN.
The pin functions and repair data of TB1238AN is listed in the Table 3.

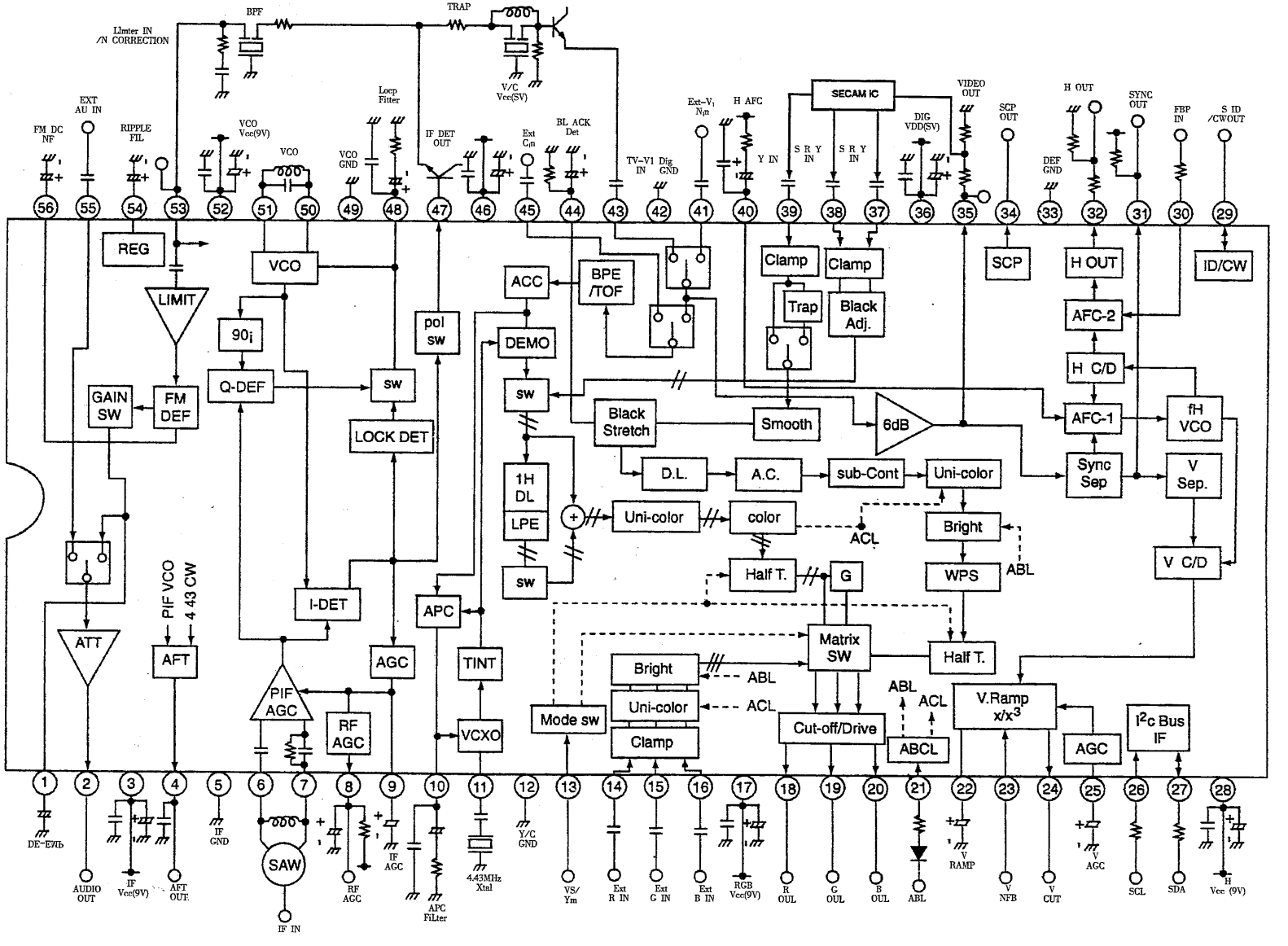


Figure7:TB1238AN inner structure block diagram

Table 3 Pin functions and repair data of TB1238AN

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			'Quiescent state (V)	Dynamic state (V)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	DE-EMP	Audio deemphasis capacitor connect pin	5	4.9	7.2	9.0
2	AUDIO OUT	Audio signal output	3.5	3.4	6.5	7.3
3	IF VCC	+9V supply input for IF amplify circuit	9	9	0.8	0.8
4	AFT OUT	AFT voltage output	2	1.7	6.2	8.3
5	IF GND	Ground for IF amplifier circuit	0	0	0	0
6	IF IN	IF signal input	0.20	0	6.8	11.2
7	IF IN	IF signal input	1.4	1.4	6.8	11.2
8	RF AGC	RF amplifier AGC control voltage output	7.2	5.6	7	10
9	IF AGC	IF amplifier AGC filter	6	4.4	7.2	11.2
10	APC FILTER	APC filtering	1.8	1.8	10	11.2
11	4.43MHZXTA	4.43MHZ crystal oscillating	2.2	2.2	7.4	120
12	Y/C GND	Ground (Y/C signal processor)	0	0	0	0
13	YS/YM	Y-switch signal input	0	0	1	2
14	EXT R IN	Character R signal input	0.9	0.9	7.2	11.2
15	EXT G IN	Character G signal input	0.9	0.9	7.2	11.2
16	EXT B IN	Character B signal input	0.9	0.9	7.2	11.2
17	RGB VCC	Supply input (RGB)	9	9	0.8	0.9
18	R OUT	R output	2.1	2.4	7	10
19	G OUT	G output	2	2.4	6.8	10
20	B OUT	B output	2.2	2.5	6.8	10
21	ABCL	automatic brightness, contrast control	5.3	5.4	7.4	11
22	V Ramp	vertical Ramp generator capacitor connect pin	5.4	4.4	7	11
23	V NFB	V NFB input	5	5	7	9.3
24	V OUT	vertical pulse signal output	1	1	1	1
25	V AGC	V AGC filter capacitor connect pin	0.2	0.3	7.2	18
26	SCL	(I2C) clock line	3.8	3.8	6	18.1
27	SDA	(I2C) data line	3.8	3.9	6	18.1

28	H VCC	Horizontal deflection supply input (+9V)	9.6	9.6	4	18.3
29	SID/CW OUT	SECAM identification/CW signal output	1.8	3.8	7.2	11.2
30	FBP IN	Horizontal flyback pulse input	4	4.8	6	11
31	SYNC OUT	SYNC pulse output	4	4.8	6	4
32	H VCC	Horizontal excitation output	2	2	0.8	1
33	DEF GND	Ground (detection circuit)	0	0	0	0
34	FBP IN	Sandcastle pulse output	1.5	1.4	7.2	11
35	VIDEO OUT	Video signal output	2.8	3	2	2.3
36	DIG. VD	Digital circuit Supply	5.3	5.3	4	5.9
37	S R-Y IN	SESECAM R-Y signal input CAM B-Y signal input	2.6	2.7	7.2	11
38	S B-Y IN	SECAM R-Y signal input	2.6	2.6	7.2	11
39	Y IN	Luminance signal input	1.1	1.1	7.2	12
40	H AFC	Connecting RC network for horizontal AFC filter	6.8	6.8	7.2	18.5
41	EXT.VIDEO/Y IN	External video/luminance signal input	1.6	1.6	7.2	11
42	DIG. GND	Digital circuit ground	0	0	0	0
43	TV.VIDEO IN	TV. Video signal input	2.8	3.2	7.2	11
44	BLACK DET	Black level detecting filter	3.2	2.4	7.2	12
45	EXT.CIN	External chroma signal input	2.9	2.9	7.2	11.5
46	Y/C VCC	+5V supply input (Y/C processing system)	5.2	5.2	1.6	2
47	IF DETOUT	IF video detected output	4.6	3.7	1	1.3
48	LOOP Filter	Connecting RC filter network for phase loop circuit	4	4.8	7.2	11
49	VCO GND	Ground (IF VCO circuit)	0	0	0	0
50	VCO	Voltage control oscillating coil connecting pin	8.1	8	1	0.7
51	VCO	Voltage control oscillating coil connecting pin	8	8	1	0.7
52	VCO VCC	+9V supply input (IF VCO circuit)	9	9	0.8	0.6
53	Limitter IN	Sound IF signal input	3.9	3.8	7.2	11
54	RIPPLE FILTER	Ripple filter circuit	5.8	4.8	7.2	10
55	EXT AUDIO	External audio signal input	3.4	3.4	7.2	11
56	FM DEC NF	FM direct current negative feedback filter capacitor con	necting pin	3.8	3.7	7

2. INTRODUCTION FOR CPU IC TMP87CM38N-3673 (N001)

The pin functions and repair data of TMP87CM38N-3673 is listed in the table 4.

Table 4 Pin functions and repair data of TMP87CM38N-3673

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			Quiescent state (v)	Dynamic state (v)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	Vss	Ground	0	0	0	0
2	VT	Tuning voltage output PWM phase-reversed wave.	1	0.1	6	19
3	KARA-ENA	NC	0	0	6	21.5
4	MUTE	Sound mute signal output, high level=Mute	4.9	0	6	21.5
5	EXT-MUTE	NC	0	0	6	13.5
6	S.ID	NC	0	0	6	23.5
7	POWER	Supply on/off control signal output, high level = off, low level = on	4.9	0	6	21.5
8	KARA-CLK	NC	0	0	6	23.5
9	BAND1	Tuner band switching control signal output	4.9	5	6	16.7
10	BAND2	Tuner band switching control signal output	0	0	6	14
11	SCL1	Inter IC Bus clock line	4.3	4.3	5.8	21.3
12	SDA1	Inter IC Bus data line 1	4.5	4.5	5.6	21.3
13	AFC IN	Automatic frequency control input	0	1.8	6	10
14	AV0	AV switch control signal O output	0	4	6	18
15	EXT G IN	NC	0	0	0	0
16	EXT B IN	Keypad analog voltage input 1	4.2	4.2	6	21.5
17	RGB VCC	Keypad analog voltage input 2	4.2	9	6	24.8
18	R OUT	Supply protect checkout signal input, low level= protect	1.8	4.9	6	24.8
19	G OUT	NC	0	0	6.4	28
20	B OUT	BUS on/off control output	4	3.9	6	21.5
21	ABCL	Ground	0	0	0	0
22	R OUT	OSD character It output	4.4	0	1.4	1.3
23	G OUT	OSD character G output	4.5	0	1.4	1.3
24	B OUT	OSD character B output	4.5	0	1.4	1.3
25	Y OUT	Character window signal/fast blanking signal for OSD	4.5	0	2	2

26	HD	Horizontal flyback for OSD	0	3.8	5.8	19
27	VD	Vertical sync pulse for OSD	4.9	4.7	5.6	14.8
28	OSC1	OSD character oscillator pin 1	4.8	4.9	5.6	23.8
29	OSC2	OSD character oscillator pin 2	4.8	4.9	5.6	24
30	TEST	Test pin	0	0	0	0
31	XIN	I0MHZ clock oscillation input	1.5	0.5	6.2	24.3
32	XOUT	10MHZ clock oscillation output	2.2	2.2	4.8	24.3
33	RESET	CPU reset pin	5	5	5.4	5
34	OPTION	Option pin	4.9	4.6	6	14.5
35	RMT IN	Remote control instructions input	3.5	3.4	6	24
36	H. SYNC	Picture identification signal input	1	4.5	6	15
37	SCL0	Inter IC Bus clock line0	4.7	0	6	23
38	SDA0	Inter IC Bus data line 0	4.7	4.8	6	23
39	KARA	ON/OFF NC	0	0	6	24
40	SYS0	Sound system switch control	0	0	6	11.3
41	SYS1	Sound system switch control	1.2	4	6	11.3
42	VDD	+5V supply input	5	5	6	8.3

3. Repair data for IC TDA7057AQ(N601)

TDA7057AQ is the audio power amplifier OF CN-9, the pin functions and repair data of it is listed in the table 5.

Table 5 Pin functions and repair data of TDA7057AQ

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			Quiescent state (v)	Dynamic state (v)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	VC1	Control pin for direct current volume	0.96	0.96	13.5	6.2
2	N.C.	No connected	0	0	□	□
3	VI(1)	Audio signal input 1	2.38	2.38	18.7	6.4
4	Vp	Supply input pin	15	15	12.8	3.9
5	VI(2)	Audio signal input 2	2.38	2.38	□	6.4
6	S-GND	Signal ground	0	0	0	0
7	VC2	Control pin for direct current volume	0.98	0.98	16.8	6.2
8	OUT2+	Audio signal output 2+	7.0	7.0	12.8	5.4
9	PGND2	Ground 2(supply circuit)	0	0	0	0
10	OUT2-	Audio signal output 2-	7.0	7.0	12.8	5.4
11	OUT1-	Audio signal output 1-	7.0	7.0	12.8	5.4
12	PGND1	Ground l(supply circuit)	0	0	0	0
13	OUT1+	Audio signal output 1+	7.0	7.0	12.8	5.4

4. Repair data for IC LA7910(N101)

LA7910 is the band decoder of CN-9, the pin functions and repair data of it is listed in the table 6.

Table 6 Pin functions and repair data of LA7910

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			Quiescent state (v)	Dynamic state (v)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	OUT1	Decoder output	0	0	2.1	2.1
2	OUT2	Decoder output 2	0	0	2.1	2.1
3	BD1	Band control level input 1	5	0	39	11
4	BD2	Band control level input 2	0	0	22	10
5	GND	Connect to ground	0	0	0	0
6	VC2	+33V supply input pin	33	13.5	5.8	25.5
7	OUT3	Decoder output 3	0	12	1.6	1.5
8	OUT4	Decoder output 4	0	0	0	12
9	VC1	+12V supply input pin	12	12	4.1	4.5

5. Repair data for IC TA8403(N401)

TA8403 is the vertical output power amplifier IC of CN-9, the pin functions and repair data of it is listed in the table 7.

Table 7 Pin functions and repair data of TA8403

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			Quiescent state (v)	Dynamic state (v)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	GND	Connect to ground	0	0	0	0
2	OUT	Field pulse output	15	15	4	9.5
3		Pump power supply input	24.5	24.5	4.4	2
4	IN	V sawtooth pulse input	1	1.1	2.2	2.2
5		Connet to Phase compensate capacitance	0:8	0.8	3.6	9.0
6	Vcc	Power supply pin	24.5	24.5	3.5	7.3
7		Pump power supply output	1.2	1.2	5.5	11

6. Repair data for IC AT24C08(N002)

AT24C08 is the Memory of CN-9, the pin functions and repair data of it is listed in the table 8.

Table 8 Pin functions and repair data of AT24C08

Pin	Symbol	Function	Index type multimeter (r=20k□)			
			Quiescent state (v)	Dynamic state (v)	Resistance for GND (RxlK)	
					Red pen measure	Black pen measure
1	A0	A0 address pin	0	0	0	0
2	A1	A1 address pin	0	0	0	0
3	A2	A2 address pin	0	0	0	0
4	Vss	Connect to ground	0	0	0	0
5	SDA	Inter IC Bus data line	4.5	4.5	5.6	22
6	SCL	Inter IC Bus clock line	4.3	4.3	5.8	22
7	TEST	Test terminal	0	0	0	0
8	YDD	+5V supply input	5	5	3.6	8.5

7. Introduction for IC TA1275Z

TA1275Z is the SECAM demodulation IC, which accomplishes a multicolor system with TB1231 series. This IC requires very few external parts.

Features

- Working with TB1231 series, which is PAL/NTSC PIF/VIF/VIDEO/CHROMA/DEF processor.
- Built-in FM demodulator with PLL circuit for color demodulation mad SECOM identification.
- DC voltage offset of demodulated signal adjuster.
- Input terminals for external R-Y/B-Y signals.

The pin functions and repair data of TA1275 is listed in the table 9. The inner structure block diagram of TA1275 is show as figure 8.

Table 9 Pin functions and repair data of TA1275

Pin	Symbol	Function	Digital multimeter (GDM8145)			
			Quiescent state (V)	Dynamic state (V)	Resistance for GND (Rx200KÙ)	
					Red pen measure	Black pen measure
1	YOUT	The output pin for Y signal. Standard output level is 1.0Vp-p. The 5.5MHz trap filter and delay line on the Y signal processing is controlled by the switch on pin #2. The output signal of the bell filter can be monitored on this pin by switching pin #13 for testing.	**1.18**	**2.24**	**3.0**	**2.9**
2	MODESW	The pin for controlling the Y processing mode. to Vcc : 5.5MHz trap open: 5.5MHz trap+DL to GND: DL	**5.02**	**5.02**	**1.5**	**1.5**
3	R-Y OUT	The output pin for demodulated R-Y signal. Standard output level is 0.7Vp -p with standard color bar signal. R-Y processor has a LPF to eliminate the carrier components.	**2.48**	**2.61**	**1.0**	**1.0**
4	R-Y BLSCK CONTOL	The pin for controlling the black offset level. Adjusting range is within +30mV(This pin should be opened in the ease of using with TB 1231, because TB 1231 has an IIC BUS control for SECAM black alignment)				

Pin	Symbol	Function	Digital multimeter (GDM8145)			
			Quiescent state (V)	Dynamic state (V)	Resistance for GND (Rx200KÙ)	
					Red pen measure	Black pen measure
5	B-Y OUT	The output pin for demodulated B-Y signal. Standard output level is 0.56Vp-p. B-Y processor has a LPF to eliminate, the carrier components.	**2.44**	**2.61**	**1.0**	**1.0**
6	B-Y BLACK CONTROL	The pin, for controlling the black offset level. Adjusting range is within +30mV. (This pin should be opened in the case of using with TB1231, because TB1231 has an IIC BUS control for SECAM black alignment)	**2.60**	**2.58**	**1.0**	**1.0**
7	S-ID FILTER	The pin for connecting the SECAM identification filter capacitor. A too big capacitor causes a time delay to get color signal on a picture, and a weak RF signal performance would getting worth if the capacitor is too small.	**2.07**	**2.07**	**1.0**	**1.0**
8	EXT.R-Y IN	The input pin for external R-Y signal. The gain of the internal amplifier is 0dB.	**2.59**	**2.58**	**1.0**	**1.0**
9	5V V_{cc}	The V_{cc} pin for Y/C processing block	**5.02**	**5.02**	**1.5**	**1.5**
10	EXT.B-Y IN	The input pin for external B-Y signal. The gain of the internal amplifier is 0dB.	**2.06**	**2.58**	**1.0**	**1.0**
11	GND	The GND pin	**0**	**0**	**0**	**0**
12	FO-ADJ FILTER	The pin for connecting a capacitor for automatic adjusting circuit. Too big capacitor causes a time delay to get color signal on a picture, and the picture noise, flicker would be appeared if the capacitor is too small.	**2.90**	**2.76**	**1.0**	**1.0**

Pin	Symbol	Function	Digital multimeter (GDM8145)			
			Quiescent state (V)	Dynamic state (V)	Resistance for GND (Rx200KÙ)	
					Red pen measure	Black pen measure
13	C IN	The chroma signal input pin. Apply composite signal through 100pF of coupling capacitor. Standard input signal level is 1Vp-p. The bell monitor switch for testing is overlaid on this pin. When connecting this pin to GND through 47K12, the bell filter outut is observed on the pin #1 (Y-OUT)	**2.90**	**2.76**	**1.0**	**1.0**
14	BELLADJ. FILTER	The pin for connection the filter .capacitor for the bell filter F0. 4.427MHz. A too big capacitor causes a time delay on bell filter F0 adjusting, and picture would be noisy if it is too small.	**2.39**	**2.49**	**1.0**	**1.0**
15	Y IN	The Y signal input pin. Apply the composite signal into this pin through a coupling capacitor. The standard input level is 1.0Vp-p.	**2.48**	**2.83**	**1.0**	**1.0**
17	SCP IN	The pin for input the sandcastle pulse.	**0.77**	**0.74**	**6.8**	**7.7**
18	5V Vc-c	Vc-c pin for logic block.	**2.02**	**5.02**	**1.5**	**1.5**
19	4.43 MHz CW In	The pin for input 4.43MHz of carrire wave for self-adjustment circuit. Input 500mVP -P sine wave through a coupling capacitor. The switch for changing the gate pulse width is overlaid on this pin. +200ns: to VC-C through 33k Ohm 0ns: open -200ns: to GND through 33k Ohm	**2.72**	**2.72**	**1.0**	**1.0**

Pin	Symbol	Function	Digital multimeter (GDM8145)			
			Quiescent state (V)	Dynamic state (V)	Resistance for GND (Rx200KÙ)	
					Red pen measure	Black pen measure
20	ID SW	The switch pin for selecting the ID detection mode. H+V : connected to Vc-c Auto seaeh : opened H : connected to GND	**5.02**	**2.50**	**18.3**	**18.3**
21	SECAM ID In / Out	The interface pin to the main processor TB 1231. This input/output interface pin sinks 7701xA of current when the TA1275Z recognizes the SECAM input signal turns the internal/external switch by the input DC voltage. Internal : gnd~2.5V External : 2.5V~ Vc-c	**1.78**	**3.75**	**1.0**	**1.0**

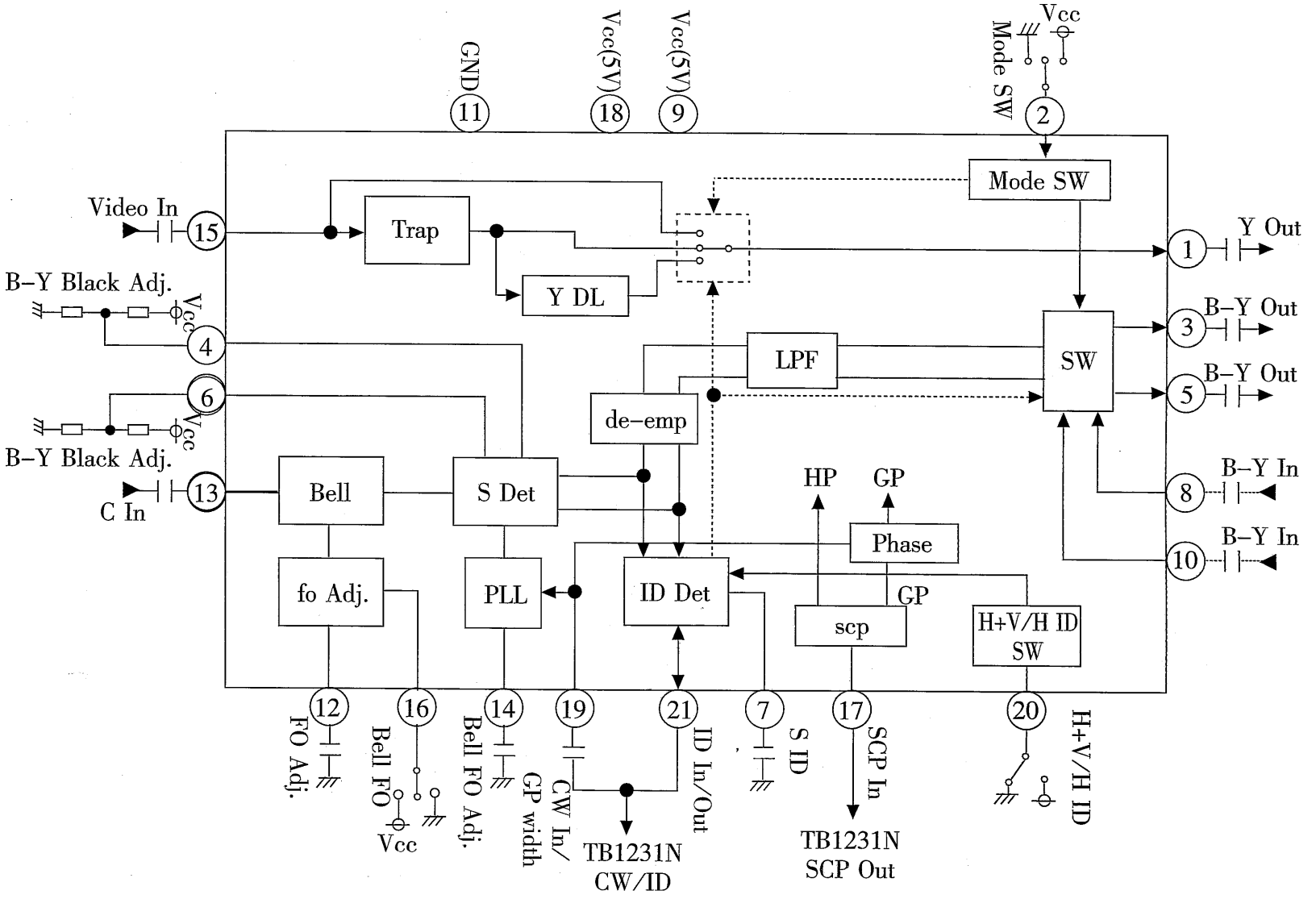


FIG.8: TA1275Z INNER STRUCTURE BLOCK DIGRAM

8. Introduction for ic TDA7449

The TDA7449 is a volume tone (bass and treble) balance (left/right) processor for quality audio application in TV system. Control of all the functions is accomplished by serial bus.
The pin functions and repair data of TDA7449 is listed in the table 10.
The inner structure block diagram of TDA7449 is show as figure 8.

Table 10 Pin functions and repair data of TDA7449

Pin	Symbol	Digital multimeter (GDM8145)			
		Quiescent state (V)	Dynamic state (V)	Resistance for GND (R x 200KÙ)	
				Red pen measure	Black pen measure
1	Cref	0.06	0.01	27.72	22.18
2	Vs	0.05	0.01	0.75	0.74
3	GND	0.07	0.01	0.00	0.00
4	Rout	0.07	0.01	31.37	22.48
5	Lout	0.09	0.01	31.39	22.43
6	R2	0.10	0.02	28.20	25.42
7	R1	1.24	0.23	28.07	26.30
8	L1	1.14	0.21	28.11	26.22
9	L2	0.09	0.01	28.22	27.15
10	L-M	0.10	0.01	24.41	22.62
11	R-M	0.11	0.01	24.44	22.53
12	B-Rin	0.07	0.01	27.74	27.02
13	B-Rout	0.07	0.01	27.67	21.42
14	B-Lout	0.06	0.01	27.66	21.33
15	B-Lin	0.07	0.01	27.76	27.04
16	T-L	0.06	0.01	29.94	28.25
17	T-R	0.06	0.01	29.97	28.23
18	GND	0.06	0.01	0.00	0.00
19	SCL	2.20	2.20	27.98	16.90
20	SDA	2.06	2.24	27.36	16.18

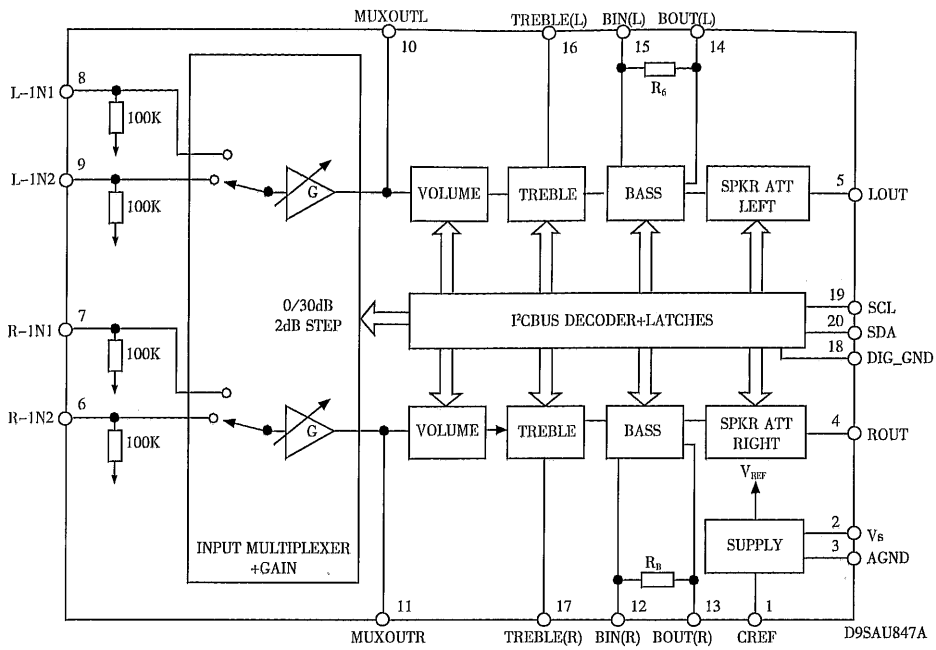


Figure 8 The inner structure block diagram of TDA7449

9. Repair data for IC SAA5261

The SAA5261 is a teletext signal processor.
The pin functions and repair data of TDA7449 is listed in the table 11

Table 11 **Pin functions and repair** data of SAA5261

Pin	Symbol	Digital multimeter (GDM8145)			
		Quiescent state (V)	Dynamic state (V)	Resistance for GND (R x 200KÙ)	
				Red pen measure	Black pen measure
1	VO	0.32	0.02	23.89	12.66
2	V1	0.29	0.12	24.92	13.15
3	V2	0.30	0.02	24.45	13.18
4	V3	0.26	0.02	23.80	13.20
5	V4	0.24	0.04	24.64	13.20
6	V5	0.25	0.04	21.44	13.21
7	V6	0.25	0.02	24.81	13.19
8	V7	0.24	0.05	23.90	13.25
9	RESERVED	0.24	0.04	27.32	13.24
10	RESERVED	0.25	0.05	26.22	13.32
11	RESERVED	0.13	0.04	20.63	13'24
12	RESERVED	0.31	0.07	20.97	13.08
13	VSS2	0.04	0.01	0.00	0.00
14	SCL1	2.81	1.70	□	15.14
15	SDA1	0.81	1.70	□	15.01
16	RESERVED	0.28	0.08	26.23	13.36
17	RESERVED	0.33	0.08	20.81	13.32
18	H.mode	0.09	0.01	20.53	13.35
19	V.mode	0.07	0.01	18.31	11.37
20	PDI	0.10	0.01	18.25	11.28
21	Ph. LOCKED	0.08	0.01	20.81	13.22
22	VSS1	0.11	0.01	0.00	0.00
23	CVBS0	0.06	0.17	36.16	14.16
24	CVBS1	5.73	0.01	36.19	14.26
25	BLACK	6.20	0.01	38.72	14.31
26	Iref	6.56	0.23	27.06	12.28
27	FRAME	0.01	0.01	36.32	14.46
28	VSS	0.01	0.01	0.00	0.00
29	/COR	0.01	1.13	20.98	13.03
30	PON	0.01	1.13	28.90	13.01
31	RGBref	0.01	0.01	15.67	10.01
32	B	0.01	0.01	1.00	1.00
33	G	0.01	0.01	1.00	0.99
34	R	0.01	0.01	1.00	1.00
35	VDS	0.01	0.01	17.03	14.88
36	HSYNC	0.19	0.83	44.19	12.75
37	VSYNC	0.01	0.66	40.32	12.92
38	VDD1	0.01	0.01	0.00	0.00
39	VDD2	0.01	0.01	15.69	10.00
40	OSDGND	0.01	0.01	0.01	0.01

Pin	Symbol	Digital multimeter (GDM8145)			
		Quiescent state (V)	Dynamic state (V)	Resistance for GND (R x 200KÙ)	
				Red pen measure	Black pen measure
41	XTAL	0.39	0.66	37.24	13.93
42	XTAL	0.01	0.37	41.81	13.93
43	RESET	0.01	0.01	□	14.47
44	VDDS	0.01	0.01	18.63	10.02
45	POWER-UP	0.02	0.01	24.86	13.03
46	DSR	0.01	0.03	24.79	13.13
47	0/30	0.02	0.01	25.97	12.96
48	LCB	0.01	0.03	24.42	12.65
49	SCL2	0.01	1.08	21.07	11.80
50	SDA2	0.01	1.08	20.58	11.70
51	TIME	0.02	0.01	24.00	12.68
52	RESERVED	0.02	0.02	25.01	12.78

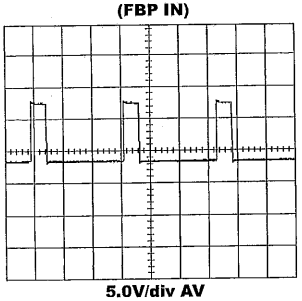
10. Voltage data of pin for main audion

Position / Pin	V00	V10	V20	V20	V20	V20	V30	V30	V30	V30	V50	V50
Ub(v)	0.4	1.8	1.2	4.4	1.9	3.2	4.9	0	2.5	-2.5	0.3	2.1
Uc(v)	3.5	11.5	0	6.6	0	6.6	11.5	11.5	11.5	8.4	15.2	125
Ue(v)	0	1.1	1.9	3.6	2.5	2.9	4.2	4.2	1.8	0	0	2.15

Position / Pin	V5.03	V602	VS01	V802	V803	V804	V805	V806	V901	V902	V903	V904	V905
Ub(v)	15.2	0.6	5.6	11.5	-0.5	-0.4	0	6.3	1.4	1.4	0	0	0.4
Uc(v)	4.5	0	15	-0.5	-0.4	290	36.5	36.5	110	110	120	4.3	0
Ue(v)	15	0	5	11.5	0	0	0	6.1	1.1	1.1	1.1	0.1	0.7

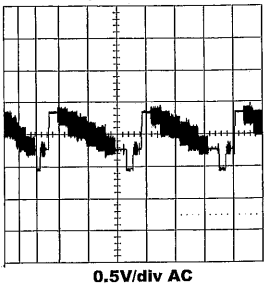
WAVEFORMS OF KEY POINTS

Pin 30 of N201
(FBP IN)



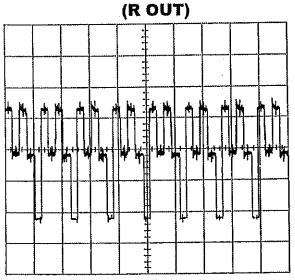
5.0V/div AV
20μs div

Pin 35 of N201
(Video OUT)



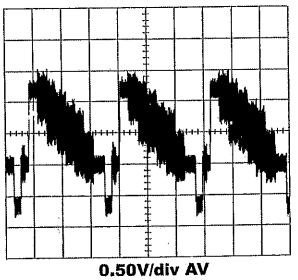
0.5V/div AC
20μs div

Pin 18 of N201
(R OUT)



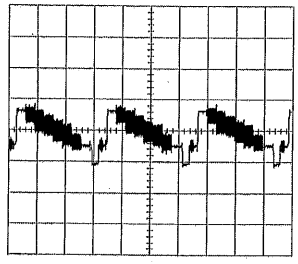
1.00V/div AC
20μs div

Pin 47 of N201
(IF Det. OUT)



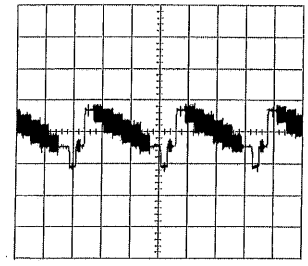
0.50V/div AV
20μs div

Pin 39 of N201
(Y IN)



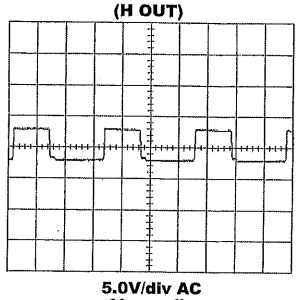
0.50V/div AC
20μs div

Pin 43 of N201
(TV Video IN)



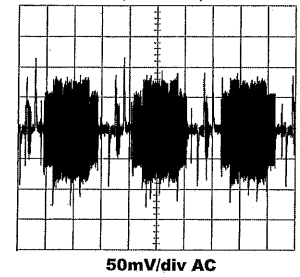
0.50V/div AC
20μs div

Pin 32 of N201
(H OUT)



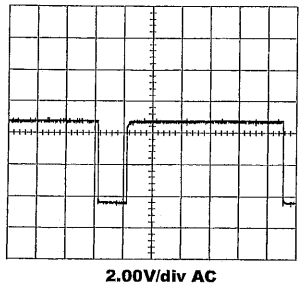
5.0V/div AC
20μs div

Pin 45 of N201
(EXT CIN)



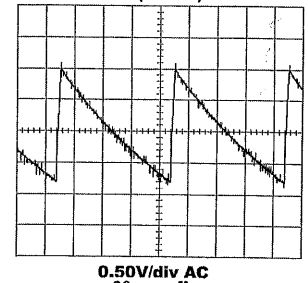
50mV/div AC
20μs div

Pin 2 of N001
(Vt)



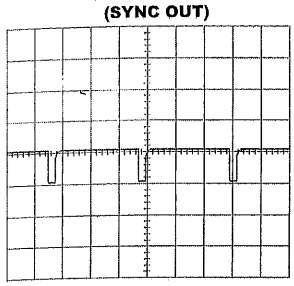
2.00V/div AC
20μs div

Pin 23 of N201
(V-NFB)



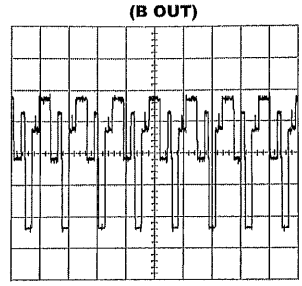
0.50V/div AC
20μs div

Pin 31 of N201
(SYNC OUT)



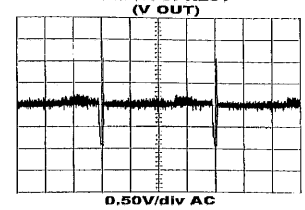
5.0V/div AC
20μs div

Pin 20 of N201
(B OUT)



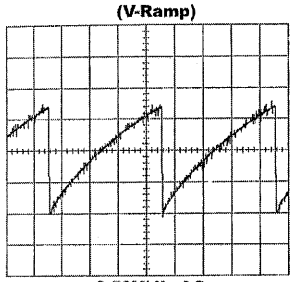
1.00V/div AC
20μs div

Pin 24 of N201
(V OUT)



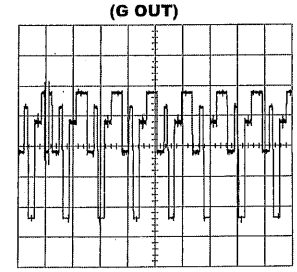
0.50V/div AC
20μS div

Pin 22 of N201
(V-Ramp)



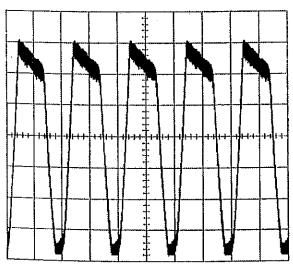
0.50V/div AC
20μs div

Pin 19 of N201
(G OUT)



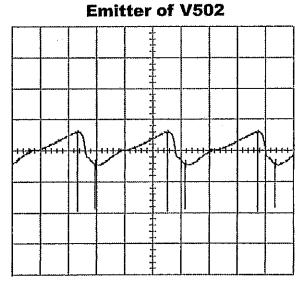
1.00V/div AC
20μs div

Base electrode of V881



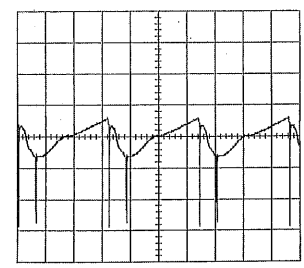
50.00V/div AC
20μs div

Emitter of V502



10.0V/div AC
20μs div

Base electrode of V502



10.0V/div AC
20μs div

SPARE PARTS LIST OF 21BS32EA

Main-board/AV-boa rd/K-board

Location No.	Part No.	Name	Type
R112	51113470JU0	carbon film resistor	RT13-0.166W-47 ohm J
R112	51153470JUY	carbon film resistor	NAS 1/6470J
R307	51113470JU0	carbon film resistor	RT13-0.166W-47 ohm J
R307	51153470JUY	carbon film resistor	NAS1/6470J
R116	51113560JU0	carbon film resistor	RT13-0.166W-56 ohm J
R116	51153560JUY	carbon film resistor	NAS1/6560J
R115	51113680JU0	carbon film resistor	RT13 -0.166W-68 ohm J
R115	51153680JUY	carbon film resistor	NAS 1/6680J
R081	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R081	51153101JUY	carbon film resistor	NAS1/6101J
R228	51113101JU0	carbon film resistor	RT13-0.166W- 1001 ohm J
R228	51153101JUY	carbon film resistor	NAS1/6101J
R229	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R229	51153101JUY	carbon film resistor	NAS1/6101J
R301	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R301	51153101JUY	carbon film resistor	NAS 1/6101J
W275	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
W275	51153101JUY	carbon film resistor	NAS 1/6101J
R230	51113221JU0	carbon film resistor	RT13 -0.166W-2201 ohm J
R230	51153221JUY	carbon film resistor	NAS 1/6221J
R231	51113221JU0	carbon film resistor	RT13-0.166W-220 ohm J
R231	51153221JUY	carbon film resistor	NAS 1/6221J
R232	51113221JU0	carbon film resistor	RT13-0.166W-220 ohm J
R232	51153221JUY	carbon film resistor	NAS1/6221J
R241	51113221JU0	carbon film resistor	RT13 -0.166W-220 ohm J
R241	51153221JUY	carbon film resistor	NAS1/6221J
R242	51113221JU0	carbon film resistor	RT13-01166W-220 ohm J
R242	51153221JUY	carbon film resistor	NAS1/6221J
R244	51113221JU0	carbon film resistor	RT13 -0.166W-220 ohm J
R244	51153221JUY	carbon film resistor	NAS 1/6221J
R038	51113391JU0	carbon film resistor	RT13-0.166W-390 ohm J
R038	51153391JUY	carbon film resistor	NAS1/6391J
R040	51113391JU0	carbon film resistor	RT13-0.166W-390 ohm J
R040	51153391JUY	carbon film resistor	NAS 1/6391J
R042	51113391JU0	carbon film resistor	RT13-0.166W-390 ohm J

Location No.	Part No.	Name	Type
R042	51153391JUY	carbon film resistor	NAS1/6391J
R217	51113561JU0	carbon film resistor	RT13 -0.166W-560 ohm J
R217	51153561JUY	carbon film resistor	NAS1/6561J
R 114	51113681JU0	carbon film resistor	RT13 -0.166W-680 ohm J
R114	51153681JUY	carbon film resistor	NAS1/6681J
R226	51113471JU0	carbon film resistor	RT13-0.166W-470 ohm J
R226	51113471JUY	carbon film resistor	NAS1/6471J
R001	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R001	51153102JUY	carbon film resistor	NAS 1/6102J
R037	51113102JU0	carbon film resistor	RT13-0.166W-lK ohm J
R037	51153102JUY	carbon film resistor	NAS1/6102J
R039	51113102JU0	carbon film resistor	RT13 -0.166W- 1K ohm J
R039	51153102JUY	carbon film resistor	NAS1/6102J
R041	51113102JU0	carbon film resistor	RT13-0.166W-lK ohm J
R041	51153102JUY	carbon film resistor	NAS1/6102J
R043	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R043	51153102JUY	carbon film resistor	NAS1/6102J
R044	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R044	51153102JUY	carbon film resistor	NAS1/6102J
R057	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R057	51153102JUY	carbon film resistor	NAS1/6102J
R058	51113102JU0	carbon film resistor	RT13-0.166W-1K ohm J
R058	51153102JUY	carbon film resistor	NAS 1/6102J
R219	51113102JU0	carbon film resistor	RT13-0.166W-lK ohm J
R219	51153102JUY	carbon film resistor	NAS 1/6102J
R220	51113102JU0	carbon film resistor	RT13 -0.166W- 1K ohm J
R220	51153102JUY	carbon film resistor	NAS1/6102J
R225	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R225	51153102JUY	carbon film resistor	NAS1/6102J
R240	51113102JU0	carbon film resistor	RT13-0.166W-1K ohm J
R240	51153102JUY	carbon film resistor	NAS1/6102J
R306	51113102JU0	carbon film resistor	RT13 -0.166W- 1K ohm J
R306	51153102JUY	carbon film resistor	NAS 1/6102J
R111	51113122JU0	carbon film resistor	RT13-0.166W-l.2K ohm J
R111	51153122JUY	carbon film resistor	NAS1/6122J
R113	51113122JU0	carbon film resistor	RT13-0.166W-l.2K ohm J
R113	51153122JUY	carbon film resistor	NAS 1/6122J
R216	51113272JU0	carbon film resistor	RT13-0.166W-2.7K ohm J
R216	51153272JUY	carbon film resistor	NAS 1/6272J

Location No.	Part No.	Name	Type
R050	51113102J20	carbon film resistor	RT13-0.166W-1K ohm J
R050	51153102J2Y	carbon film resistor	NAS1/6102J
R104	51113682JU0	carbon film resistor	RT13-0.166W-6.SK ohm J
R104	51113682JUY	carbon film resistor	NAS1/6682J
R010	51113472JU0	carbon film resistor	RT13-0.166W-4.7K ohm J
R010	51153472JUY	carbon film resistor	NAS 1/6472J
R062	51113472JU0	carbon film resistor	RT13-0.166W-4.7K ohm J
R062	51153472JUY	carb6n film resistor	NAS1/6472J
R048A	51113472JU0	carbon film resistor	RT13-0.166W-6.8K ohm J
R048A	51153472JUY	carbon film resistor	NAS1/6472J
R009	51113472JU0	carbon film resistor	RT13-0.166W-8.2K ohm J
R009	51153d72JUY	carbon film resistor	NAS1/6822J
R012	51113103JU0	carbon film resistor	RT13 -0.166W- 10K ohm J
R012	51153103JUY	carbon film resistor	NAS1/6103J
R013	51113103JU0	carbon film resistor	RT13 -0.166W- 10K ohm J
R013	51153103JUY	carbon film resistor	NAS1/6103J
R018	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
R018	51153103JUY	carbon film resistor	NAS1/6103J
R019	51113103JU0	carbon film resistor	RT13-0.166W-10K ohm J
R019	51153103JUY	carbon film resistor	NAS1/6103J
R082	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
R082	51153103JUY	carbon film resistor	NAS1/6103J
R201	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
R201	51153103JUY	carbon film resistor	NAS1/6103J
R238	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
R238	51153103JUY	carbon film resistor	NAS1/6103J
R239	51113103JU0	carbon film resistor	RT13 -0.166W- 10K ohm J
R239	51153103JUY	carbon film resistor	NAS1/6103J
W 102	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
W 102	51153103JUY	carbon film resistor	NAS1/6103J
R025	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J
R025	51153103JUY	carbon film resistor	NAS1/6103J
R028	51113103JU0	carbon, film resistor	RT13-0.166W- 10K ohm J
R028	51153103JUY	carbon film resistor	NAS1/6103J
R221	51113123JU0	carbon film resistor	RT13-0.166W- 12K ohm J
R221	51153123JUY	carbon film resistor	NAS1/6123J
R002	51113223JU0	carbon film resistor	RT13-0.166W-22K ohm J
R002	51153223JUY	carbon film resistor	NAS1/6223J
R607A	51113473JU0	carbon film resistor	RT13-0.166W-47K ohm J

Location No.	Part No.	Name	Type
R607A	51153473JUY	carbon film resistor	NAS1/6473J
R027	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R027	51153333JUY	carbon film resistor	NAS1/6333J
R048	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R048	51153333JUY	carbon film resistor	NAS1/6333J
R203	51113333JU0	carbon film resistor	RT13-0.166W-47K ohm J
R203	51153333JUY	carbon film resistor	NAS1/6473J
R607	51113393JU0	carbon film resistor	RT13-0.166W-39K ohm J
R607	51153393JUY	carbon film resistor	NAS1/6393J
R107	51113623JU0	carbon film resistor	RT13-0.166W-62K ohm J
R107	51153623JUY	carbon film resistor	NAS1/6623J
R014	51113683JU0	carbon film resistor	RT13-0.166W-68K ohm J
R014	51153683JUY	carbon film resistor	NAS1/6683J
R209	51113104JU0	carbon film resistor	RT13-0.166W- 100K ohm J
R209	51153104JUY	carbon film resistor	NAS1/6104J
R222	51113224JU0	carbon film resistor	RT13 -0.166W-220K ohm J
R222	5 l'153224JUY	carbon film resistor	NAS1/6224J
R070	51113474JU0	carbon film resistor	RT13-0.166W-470K ohm J
R070	51153474JUY	carbon film resistor	NAS1/6474J
R071	51113474JU0	carbon film resistor	RT13 -0.166W-470K ohm J
R071	51153474JUY	carbon film resistor	NAS1/6474J
R072	51113474JU0	carbon film resistor	RT13-0.166W-470K ohm J
R072	51153474JUY	carbon film resistor	NAS1/6474J
R227	51113225JU0	carbon film resistor	RT13-0.166W-2.2M ohm J
R227	51153225JUY	carbon film resistor	NAS1/6225J
R223	51113275JU0	carbon film resistor	RT13-0.166W-2.7M ohm J
R223	51153275JUY	carbon film resistor	NAS1/6275J
R109	51124100JU0	carbon film resistor	RT14-0.25W- 10 ohm J
R109	51154100JUY	carbon film resistor	NAS1/4100J
R808	51124220JU0	carbon film resistor	RT14-0.25W-22 ohm J
R808	51154220JUY	carbon film resistor	NAS1/4220J
R305	51124750JU0	carbon film resistor	RT14-0.25W-75 ohm J
R305	51154750JUY	carbon film resistor	NAS1/4750J
R245	51124101JU0	carbon film resistor	RT14-0.25W- 100 ohm J
R245	51154101JUY	carbon film resistor	NAS1/4101J
R503	51124101JU0	carbon film resistor	RT14-0.25W- 100 ohm J
R503	51154101JUY	carbon film resistor	NAS1/4101J
R501B	51124151JU0	carbon film resistor	RT 14-0.25W- 150 ohm J
R501B	51154151JUY	carbon film resistor	NAS1/4151J

Location No.	Part No.	Name	Type
R053	51124331JU0	carbon film resistor	RT14-0.25W-3301 ohm J
R053	5115433 IJUY	carbon film resistor	NAS1/4331J
R055	51124331JU0	carbon film resistor	RT14-0.25W-3301 ohm J
R055	51154331JUY	carbon film resistor	NAS1/4331J
R059	51124471JU0	carbon film resistor	RT14-0.25W-4701 ohm J
R059	51154471JUY	carbon film resistor	NAS1/4471J
R236	51124471JU0	carbon film resistor	RT14-0.25W-4701 ohm J
R236	51154471JUY	carbon film resistor	NAS1/4471J
R988	51124681J20	carbon film resistor	RT14-0.25W-680 ohm J
R988	51124681J2Y	carbon film resistor	NAS1/6681J
R036	511241.02JU0	carbon film resistor	RT14-0.25W-lK ohm J
R036	51154102JUY	carbon film resistor	NAS1/4102J
R045	51124102JU0	carbon film resistor	RT14-0.25W-1K ohm J
R045	51154102JUY	carbon film resistor	NAS1/4102J
R403	51124102JU0	carbon film resistor	RT14-0.25W-1K ohm J
R403	51154102JUY	carbon film resistor	NAS1/4102J
R411	51124102JU0	carbon film resistor	RT14-0.25W- 1K ohm J
R411	51154102JUY	carbon film resistor	NAS1/4102J
W205	51124102JU0	carbon film resistor	RT14-0.25W- 1K ohm J
W205	51154102JUY	carbon film resistor	NAS1/4102J
R008	51124152JU0	carbon film resistor	RT14-0.25W-1.5K ohm J
R008	51154152JUY	carbon film resistor	NAS1/4152J
R224	51124222JU0	carbon film resistor	RT14-0.25W-2.2K ohm J
R224	51154222JUY	carbon film resistor	NAS1/4222J
R103	51124392JU0	carbon film resistor	RT14-0.25W-3.9K ohm J
R103	51154392JUY	carbon film resistor	NAS1/4392J
R110	51124562JU0	carbon film resistor	RT14-0.25W-5.6K ohm J
R110	51154562JUY	carbon film resistor	NAS1/4562J
R105	51124562JU0	carbon film resistor	RT14-0.25W-5.6K ohm J
R105	51154562JUY	carbon film resistor	NAS1/4562J
R051	51124822JU0	carbon film resistor	RT14-0.25W-8.2K ohm J
R051	51154822JUY	carbon film resistor	NAS1/4822J
R047	51124103JU0	carbon film resistor	RT14-0.25W-10K ohm J
R047	51154103JUY	carbon film resistor	NAS 1/4103J
R054	51124103JU0	carbon film resistor	RT14-0.25W- 10K ohm J
R054	51154103JUY	carbon film resistor	NAS 1/4103J
R056	51124103JU0	carbon film resistor	RT14-0.25W-10 ohm J
R056	51154103JUY	carbon film resistor	NAS1/4103J
R102	51124103JU0	carbon film resistor	RT14-0.25W- 10K ohm J

Location No.	Part No.	Name	Type
R102	51154103JUY	carbon film resistor	NAS1/4103J
R511	51124103JU0	carbon film resistor	RT14-0.25W-10K ohm J
R511	51154103JUY	carbon film resistor	NAS1/4103J
R515	51124103JU0	carbon film resistor	RT14-0.25W- 10K ohm J
R515	51154103JUY	carbon film resistor	NASl/4103J
R521	51124103JU0	carbon film resistor	RT14-0.25W- 10K ohm J
R521	51154103JUY	carbon film resistor	NASI/4103J
R004	51124123JU0	carbon film resistor	RT14-0.25W-12 ohm J
R004	51154123JUY	carbon film resistor	NAS1/4123J
R409	51124183JU0	carbon film resistor	RT14-0.25W- 18K ohm J
R409	51124183JUY	carbon film resistor	NAS1/4183J
R924	51124183J20	carbon film resistor	RT14-0.25W- 18K ohm J
R924	51124183J2Y	carbon film resistor	NAS1/4183J
R935	51124183J20	carbon film resistor	RT14-0.25W- 18K ohm J
R935	51124183J2Y	carbon film resistor	NAS 1/4183J
R005	51124223JU0	carbon film resistor	RT14-0.25W-22K ohm J
R005	51154223JUY	carbon film resistor	NAS1/4223J
R101	51124223JU0	carbon film resistor	RT14-0.25W-22K ohm J
R101	51154223JUY	carbon film resistor	NAS1/4223J
R406	51124303JU0	carbon film resistor	RT14-0.25W-30K ohm J
R406	51154303JUY	carbon film resistor	NAS1/4303J
R007	51124333JU0	carbon film resistor	RTI4-0.25W-33K ohm J
R007	51154333JUY	carbon film resistor	NAS1/4333J
R026	51124333JU0	carbon film resistor	RT14-0.25W-33 K ohm J
R026	51154333JUY	carbon film resistor	NAS1/4333J
R510	51124563J30	carbon film resistor	RT14-0.25W-56K ohm J
R510	51154563J3Y	carbon film resistor	NAS1/4563J
R933	51124632J20	carbon film resistor	RT14-0.25W-62K ohm J
R933	51154623J2Y	carbon film resistor	NAS1/4623J
R936	51124623JU0	carbon film resistor	RT14-0.25W-62K ohm J
R936	51154623JUY	carbon film resistor	NAS1/4623J
R404	51124683JU0	carbon film resistor	RT14-0.25W-68K ohm J
R404	51154683JUY	carbon film resistor	NAS 1/4683J
R405	51124683JU0	carbon film resistor	RT14-0.25W-68K ohm J
R405	51154683JUY	carbon film resistor	NAS1/4683J
R402	51124124JU0	carbon film resistor	RT14-0.25W- 120K ohm J
R402	51154124JUY	carbon film resistor	NAS1/4124J
R509	51124124JU0	carbon film resistor	RT14-0.25W- 120K ohm J
R509	51154124JUY	carbon film resistor	NAS1/4124J

Location No.	Part No.	Name	Type
R108	51124184JU0	carbon film resistor	RT14-0.25W- 180K ohm J
R108	51154184JUY	carbon film resistor	NAS1/4184J
R520	51124224JU0	carbon film resistor	RT14-0.25W-220K ohm J
R520	51154224JUY	carbon film resistor	NAS1/4224J
R505	51135102J50	carbon film resistor	RT15-0.5W- 1K ohm J
R898	51124221JU0	carbon film resistor	RT14-0.25W-220 ohm J
R001A	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R001A	5111310 IJUY	carbon film resistor	NAS1/6101J
R892	51124681JU0	carbon film resistor	RT14-0.25W-680 ohm J
R823	51124681JU0	carbon film resistor	RT14-0.25W-680 ohm J
R895	51124102JU0	carbon film resistor	RT14-0.25W-1K ohm J
R896	51124102JU0	carbon film resistor	RT14-0.25W-1K ohm J
R833	51124272JU0	carbon film resistor	RT14-0.25W-2.7K ohm J
R887	51124272JU0	carbon film resistor	RT14-0.25W-2.7K ohm J
R889	51124392JU0	carbon film resistor	RT14-0.25W-3.9K ohm J
R899	51124472JU0	carbon film resistor	RT14-0.25W-4.7K ohm J
R831	51124473JU0	carbon film resistor	RT14-0.25W-47K ohm J
R832	51124473JU0	carbon film resistor	RT14-0.25W-47K ohm J
R002A	51113102J20	carbon film resistor	RT13-0.166W-1K ohm J
R002A	51113102J2Y	carbon film resistor	NAS1/6102J
R003A	51113102j20	carbon film resistor	RT13 -0.166W- 11K ohm J
R003A	51113102J2Y	carbon film resistor	NAS1/6102J
R004A	51113102J20	carbon film resistor	RT13-0.166W-1K ohm J
R004A	51113102J2Y	carbon film resistor	NAS1/6102J
R243	51113221JU0	carbon film resistor	RT13-0.166W-220 ohm J
R243	51113221JUY	carbon film resistor	NAS1/6221J
R311	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R311	51153101JUY	carbon film resistor	NAS1/6101J
R312	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R312	51153101JUY	carbon film resistor	NAS1/6101J
R302	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R302	51153102JUY	carbon film resistor	NAS1/6102J
R310	51113102JU0	carbon film resistor	RT13-0.166W- 1K ohm J
R310	51153102JUY	carbon film resistor	NAS1/6102J
R611	51113182JU0	carbon film resistor	RT13-0.166W- 1.8K ohm J
R611	51153182JUY	carbon film resistor	NAS1/6182J
R303	51113472JU0	carbon film resistor	RT13-0.166W-4.7K ohm J
R303	51153472JUY	carbon film resistor	NAS1/6472J
R024	51113103JU0	carbon film resistor	RT13-0.166W- 10K ohm J

Location No.	Part No.	Name	Type
R024	51153103JUY	carbon film resistor	NAS1/6103J
R099	51113103JU0	carbon film resistor	RT13-0.166W-10K ohm J
R099	51153103JUY	carbon film resistor	NAS1/6103J
R606	51113103JU0	carbon film resistor	RT13-0.166W-10K ohm J
R606	51153103JUY	carbon film resistor	NAS1/6103J
R603	51113153JU0	carbon film resistor	RT13-0.166W-15K ohm J
R603	51113153JUY	carbon film resistor	NAS1/6153J
R605	51113153JU0	carbon film resistor	RT13 -0.166W- 15K ohm J
R605	51113153JUY	carbon film resistor	NAS1/6153J
R613	51113183JU0	carbon film resistor	RT13-0.166W- 18K ohm J
R613	51153183JUY	carbon film resistor	NAS1/6183J
R035	51113333JU0	carbon film resistor	RT13 -0.166W-33K ohm J
R035	51153333JUY	carbon film resistor	NAS1/6333J
R309	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R309	51153333JUY	carbon film resistor	NAS1/6333J
R313	51113333JU0	carbon film resistor	RT13 -0.166W-33K ohm J
R313	51153333JUY	carbon film resistor	NAS1/6333J
R314	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R314	51153333JUY	carbon film resistor	NAS1/6333J
R316	51113333JU0	carbon film resistor	RT13 -0.166W-33K ohm J
R316	51153333JUY	carbon film resistor	NAS1/6333J
R317	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R317	51153333JUY	carbon film resistor	NAS1/6333J
R035	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R035	51113333J36	carbon film resistor	NAS1/6333J
R309	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R309	51113333J36	carbon film resistor	NAS1/6333J
R313	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R313	51113333J36	carbon film resistor	NAS1/6333J
R314	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R314	51113333J36	carbon film resistor	NAS1/6333J
R316	51113333JU0	carbon film resistor	RT13-0.166W-33 K ohm J
R316	51113333J36	carbon film resistor	NAS1/6333J
R317	51113333JU0	carbon film resistor	RT13-0.166W-33K ohm J
R317	51113333J36	carbon film resistor	NAS1/6333J
R612	51113513JU0	carbon film resistor	RT13-0.166W-51K ohm J
R612	51153513JUY	carbon film resistor	NAS1/6513J
R315	51113104JU0	carbon film resistor	RT13-0.166W-100K ohm J
R315	51153104JUY	carbon film resistor	NAS1/6104J

Location No.	Part No.	Name	Type
R701	51113622J20	carbon film resistor	RT13-0.166W-6.2K ohm J
R701	51113622J26	carbon film resistor	NAS1/6622J
R702	51113103J20	carbon film resistor	RT3-0.166W-10K ohm J
R702	51113103J26	carbon film resistor	NAS1/6103J
R893	51731513J20	glass glaze film resistor	RI40-2W-51K ohm J
R893A	51731513J20	glass glaze film resistor	RI40-2W-51K ohm J
R883	51731754J20	glass glaze film resistor	RI40-1W-750K ohm J
R212	51315121JH0	metal oxide film resistor	RY21-0.5W- 120 ohm J
R212	51325121JHY	metal oxide film resistor	MOS1/2W121J
R410B	51315222JH0	metal oxide film resistor	RY21-0.5W-2.2K ohm J
R410B	51325222JHY	metal oxide film resistor	MOS1/2W222J
R512	51315472JH0	metal oxide film resistor	RY21-0.SW-4.7K ohm J
R512	51325472JHY	metal oxide film resistor	MOS1/2W472J
R407	513161*SJK0	metal oxide film resistor	RY21-1W- 1.5 ohm J
R407	513261*5JKY	metal oxide film resistor	MOS1W1R5J
R408	51316241JK0	metal oxide film resistor	RY21-1W-240 ohm J
R408	51326241JKY	metal oxide film resistor	MOS1W241J
R518	51316102JK0	metal oxide film resistor	RY21-1W-1K ohm J
R518	51326102JKY	metal oxide film resistor	MOS1W102J
R802	51316102JK0	metal oxide film resistor	RY21-1W-1K ohm J
R802	51326102JKY	metal oxide film resistor	MOS1W102J
R504	51317391JL0	metal oxide film resistor	RY21-2W-390 ohm J
R504	51327391JLY	metal oxide film resistor	MOS2W391J
R519	51317102JL0	metal oxide film resistor	RY21-2W-1K ohm J
R519	51327102JLY	metal oxide film resistor	MOS2W102J
R830	51317682JM0	metal oxide film resistor	RY21-2W-6.8K ohm J
R885	51315100J J0	metal oxide film resistor	RY21-0.5W-10 ohm J
R818	51315100J J0	metal oxide film resistor	RY21-0.SW-10 ohm J
R410	51315222JK0	metal oxide film resistor	RY21-0.5W-2.2K ohm J
R888	51315332JK0	metal oxide film resistor	RY21-0.5W-3.3K ohm J
R881	51316*15JK0	metal oxide film resistor	RY21-1W-0.15 ohm J
R601	513172*2JK0	metal oxide film resistor	RY21-3W- l ohm J
R502	5144GS*2K00	wire-wound resistor	RXG4-6W-8.2 ohm K
R900	5148C2P2J00	wire-wound resistor	RXG6-H2-10W-2.2 ohm J
R507	51515*82J40	fuse resistor	RF 10-0.5W-0.82 ohm J
R513	515162*7J70	fuse resistor	RF10-1W-2.7 ohm J
R825	515284*3J70	fuse resistor	RF11-3W-4.3 ohm J
R824	51527010JB0	fuse resistor	RF11-2W- 1 ohm J
RT802	51C20120M00	thermistor	MZ73-12 ohm M

Location No.	Part No.	Name	Type
C211	5251C 120JV0	ceramic capacitor	CC1-63V-06a-C-12PFJ
CC01	5251C 180JV0	ceramic capacitor	CC1-63V-06a-C- 18PFJ
C111	5251C300JV0	ceramic capacitor	CC1-63V-06a-C-30PFJ
C018	5251C300JV0	ceramic capacitor	CC1-63V-06a-C-30PFJ
C019	5251C300JV0	ceramic capacitor	CC1-63V-06a-C-30PFJ
C114	5251C470JV0	ceramic capacitor	CC1-63V-06a-C-47PFJ
C246	5251C470JV0	ceramic capacitor	CC1-63V-06a-C-47PFJ
C247	5251C470JV0	ceramic capacitor	CC1-63V-06a-C-47PFJ
C110	5251C820JV0	ceramic capacitor	CC1-63V-08a-C-82PFJ
C022	5251C101J10	ceramic capacitor	CC1-63 V- 12L-C-100PFJ
C080	5251C101JV0	ceramic capacitor	CC1-63 V-08a-C-100PFJ
C081	5251C101JV0	ceramic capacitor	CC1-63V-08a-C-100PFJ
C109	5251C101JV0	ceramic capacitor	CC1-63V-08a-C-100PFJ
C002	5251C221JV0	ceramic capacitor	CC1-63V-12C-C-220PFJ
C001	5251S331JVO	ceramic capacitor	CC1-63V-10a-SL-330PFJ
C514	52532471KV0	ceramic capacitor	CT1-63V-06a-2B4-470PFK
C530	52532471KV0	ceramic capacitor	CT1-63V-06a-2B4-470PFK
C112	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C113	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C116	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C204	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C220	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C236	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C404	52532102KV0	ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C115	52532152KV0	ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C201	52532152KV0	ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C210	52532222KV0	ceramic capacitor	CT1-63V-08a-2B4-2200PFK
C518	52532472K11	ceramic capacitor	CTl-63V210e-2B4-4700PFK
C021	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C026	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C028	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C202	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C207	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C212	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C213	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C214	5253F103ZU0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C215	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C218	5253FiO3ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C223	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4-10nFZ

Location No.	Part No.	Name	Type
C225	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C233	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C242	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C248	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C509	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C511	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C602	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C805	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C238	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C237	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C108	5253F223Z10	ceramic capacitor	CT1-63V-12c-2F4 -0.022 mui FZ
C251	5253F223Z10	ceramic capacitor	CT1-63V-12c-2F4 -0.022 mui FZ
C507	52542221K10	ceramic capacitor	CT1-500V-06c-2B4 -220PFK
C402	52542391K10	ceramic capacitor	CT1-500V-06c-2B4 -390PFK
C824	52542471K10	ceramic capacitor	CT1-500V-06c-2B4 -470PFK
C826	52542471K10	ceramic capacitor	CT1-500V-06c-2B4 -470PFK
C501	5254210JK10	ceramic capacitor	CT1-500V-10c-2B4 -1000PFK
C503	52542392K20	ceramic capacitor	CT1-500V-14c-2B4 -3900PFK
C808	52582102M30	ceramic capacitor	CT81-1KV-10c-2B4 -1000PFM
C808	52582102M31	ceramic capacitor	CT7-250VAC-10C-2B4 -1000PFK
C809	52582102M30	ceramic capacitor	CT81-1KV-10c-2B4 -1000PFM
C809	52582102M31	ceramic capacitor	CT7-250VAC-10C-2B4 -1000PFK
C810	52582102M30	ceramic capacitor	CT81-1KV-10c-2B4 -1000PFM
C810	52582102M31	ceramic capacitor	CT7-250VAC-10C-2B4 -1000PFK
C811	52582102M30	ceramic capacitor	CT81-1KV-10c-2B4 -1000PFM
C811	52582102M31	ceramic capacitor	CT7-250VAC-10C-2B4 -1000PFK
C821	52592471K20	ceramic capacitor	CT81-2KV-10c-2B4 -470PFK
C505	52592152K30	ceramic capacitor	CT81-2KV-14c-2B4 -1500PFK
C882	52532471KV0	ceramic capacitor	CT1-63V-06a-2B4 -470PFK
C833	5253F103ZV0	ceramic capacitor	CT1-63V-08a-2F4 -10nFZ
C820	52572222K90	ceramic capacitor	CT7-400VAC-2E4-2200PFM
C886	52592681K30	ceramic capacitor	CT81-2KV- 12c-2B4 -680PFK
C610	5251C101JV0	ceramic capacitor	CC1-63V-08a-C-100PFJ
C605	52532472KV0	ceramic capacitor	CT1-63V-06a-2B4 -4700PFK
C607	52532472KV0	ceramic capacitor	CT1-63V-06a-2B4 -4700PFK
C704	5253F103Z10	ceramic capacitor	CT1-63V-08c-2F4 -10nFZ
C706	5253F103Z10	ceramic capacitor	CT1-63V-08c-2F4 -10nFZ
C708	5253F103Z10	ceramic capacitor	CT1-63V-08c-2F4 -10nFZ
C709	5253F103Z10	ceramic capacitor	CT1-63V-08c-2F4 -10nFZ

Location No.	Part No.	Name	Type
C228	52367472J10	mylar capacitor	CL21X-50V-4700PFJ
C403	52367563J10	mylar capacitor	CL21X-50V-0.056 mui FJ
C003	52367104J 10	mylar capacitor	CL21X-50V-0.1 mui FJ
C118	52367104J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C226	52367104J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C229	52367104J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C230	52367104J10	mylar capacitor	CL21X-50V-0.1
C235	52367104J10	mylar capacitor	CL21X-50V-0.1
C816	52367104J 10	mylar capacitor	C L21X-50V-0.1 mui FJ
CT01	52367104J 10	mylar capacitor	C L21X-50V-0.1 mui FJ
C523	52367474J10	mylar capacitor	CL21X-50V-0.47mui FJ
C520	5236C104J10	mylar capacitor	CL21X-250V-0.1mui FJ
C209	5236C104J10	mylar capacitor	CL21X-250V-0.1mui FJ
C221	5236C104J10	mylar capacitor	CL21X-250V-0.1mui FJ
C817	52337183J10	mylar capacitor	CL12-50V-0.018uFJ
C409	52329473J10	mylar capacitor	CL11X-100V-0.047 mui FJ
C883	52367104J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C887	52367104J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C884	52367121J10	mylar capacitor	CL21X-50V-1200PFJ
C604	52367224J10	mylar capacitor	CL21X-50V-0.22 mui FJ
C609	52367224J10	mylar capacitor	CL21X-50V-0.22 mui FJ
C701	52367224J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C702	52367224J10	mylar capacitor	CL21X-50V-0.1 mui FJ
C703	52367224J10	mylar capacitor	CL21X-50V-0.033 mui FJ
C801	5246Q104M50	polypropylene capacitor	CBB62-250VAC-0.1 mui FM
C801	5246Q104MY5	polypropylene capacitor	RE104K
C801	5246Q104MY6	polypropylene capacitor	R46-275VAC
C801	5246Q104M55	polypropylene capacitor	222233554104
C802	5246Q104M50	polypropylene capacitor	CBB62-250VAC-0.11 mui FM
C802	5246Q104MY5	polypropylene capacitor	RE104K
C802	5246Q104MY6	polypropylene capacitor	R46-275VAC
C802	5246Q104M55	polypropylene capacitor	222233554104
C512	5241D334JD0	polypropylene capacitor	CBB13-400V-0.33 mui FJ
C504	5248K722JB0	polypropylene capacitor	CBB81-1.6KV-7200PFJ
C008	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C010	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C025	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C205	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C217	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM

Location No.	Part No.	Name	Type
C241	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C249	52513100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C304	52513100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C305	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C104	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C101	52613100M10	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C244	52613220MV0	aluminum electrolytic capacitor	CD110-16V-22 mui FM
C603	52613220MV0	aluminum electrolytic capacitor	CD110-16V-22 mui FM
C105	52623470MV0	aluminum electrolytic capacitor	CD110X-16V-47 mui FM
C234	52623470MV0	aluminum electrolytic capacitor	CD110X-16V-47 mui FM
C526	52623470MV0	aluminum electrolytic capacitor	CD110X-16V-47 mui FM
C203	52623470M10	aluminum electrolytic capacitor	CD110X-16V-47 mui FM
C239	52623470M10	aluminum electrolytic capacitor	CD110X-16V-47 mui FM
C216	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C222	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C232	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C513	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C806	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C807	52623101MV0	aluminum electrolytic capacitor	CD110X-16V-100 mui FM
C224	52623101M10	aluminum electrolytic capacitor	CD110X-16V-100 muiFM
C510	52623471M10	aluminum electrolytic capacitor	CD110X-16V-470 mui FM
C601	52624101M10	aluminum electrolytic capacitor	CD110X-25V-100 mui FM
C408	52624102M10	aluminum electrolytic capacitor	CD110X-25V-1000 mui FM
C508	52624102M10	aluminum electrolytic capacitor	CD110X-25V-1000 mui FM
C502	52626470MV0	aluminum electrolytic capacitor	CD110X-35V-47 mui FM
C405	52626101M10	aluminum electrolytic capacitor	CD110X-35V-100 mui FM
C406	52626101M10	aluminum electrolytic, capacitor	CD110X-35V-100 mui FM
C825	52626102M10	aluminum electrolytic capacitor	CD110X-35V-1000 mui FM
C227	52617*47MV0	aluminum electrolytic capacitor	CD110-50V-0.47 mui FM
C208	52617010MV0	aluminum electrolytic capacitor	CD110-50V-1 mui FM
C219	52617010MV0	aluminum electrolytic capacitor	CD110-50V-1 mui FM
C231	52617010MV0	aluminum electrolytic capacitor	CD110-50V-1 mui FM
C606	526172*2MV0	aluminum electrolytic capacitor	CD110-50V-2.2 mui FM
C117	526174*7MV0	aluminum electrolytic capacitor	CD110-50V-4.7 mui FM
C407	526174"7MV0	aluminum electrolytic capacitor	CD110-50V-4.7 mui FM
C005	52617100MV0	aluminum electrolytic capacitor	CD110-50V-10 mui FM
C822	5268A221MA0	aluminum electrolytic capacitor	CD293-160V-220 mui FM
C524	526AA4*7M10	aluminum electrolytic capacitor	CDSI-160V-4.7 mui FM
C519	5262C100M10	aluminum electrolytic capacitor	CD110X-250V-10 mui FM

Location No.	Part No.	Name	Type
C506	526EA100MlO	aluminum electrolytic capacitor	CD288H-160V-10 mui FM
C831	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C827	52624102M10	aluminum electrolytic capacitor	CD110X-25V-1000 mui FM
C832	526174*7MV0	aluminum electrolytic capacitor	CD110-50V-4.7 mui FM
C885	52617101MV0	aluminum electrolytic capacitor	CD110-50V-100 mui FM
C507	5168D221MA0	aluminum electrolytic capacitor	CD293-450V-220 mui FM
C507	5168D221MA1	aluminum electrolytic capacitor	CD289-450V-220 mui FM
C302	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C308	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C309	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C608	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C705	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C710	52613100MV0	aluminum electrolytic capacitor	CD110-16V-10 mui FM
C707	52613100MV0	aluminum electrolytic capacitor	CD110-50V-1 mui FM
C711	52613100MV0	aluminum electrolytic capacitor	CD110-50V-1 mui FM
C712	52613100MV0	aluminum electrolytic capacitor	CD110-50V- 1 mui FM
L104	55632*33K10	invariablenes inductor	LGB0606-0.33 mui HK
L206	556328*2J10	invariablenes inductor	LGBO606-8.2 mui HJ
L207	556328*2J10	invariablenes inductor	LGB0606-8.2 mui HJ
L205	55632120J10	invariablenes inductor	LGB0606-12 mui HJ
L208	55632120J10	invariablenes inductor	LGB0606-12 mui HJ
L202	55632680J10	invariablenes inductor	LGB0606-68 mui HJ
L002	55632101J10	invariablenes inductor	LGB0606-100 mui HJ
L102	55632101J10	invariablenes inductor	LGB0606-100 mui HJ
L201	55632101J10	invariablenes inductor	LGB0606-100 mui HJ
L204	55632101J10	invariablenes inductor	LGB0606-100 mui HJ
L806	55646101K70	invariablenes inductor	LGB-W1216-100 mui HK
L806	84757001600	invariablenes inductor	LGB-1216-100 mui HK
W214	55632101J10	invariablenes inductor	LGB0606-100uHJ
L502	555756106A6	feed-through inductor	ZZ008
L503	555756106A0	feed-through inductor	ZZ008
L882	55572011085	feed-through inductor	TEM2011
L883	55572011085	feed-through inductor	TEM2011
L505	55986216570	H. Line inductor	SCC-2165
L505	52367121J10	H. Line inductor	HX65
TS01		filter inductor	LCL-F15(JUB4.757.001)
T802		filter inductor	LCL-F16(JUB4.757.001)
Z208	5731345MBOY	ceramic filter	SFSH4.5MCB
Z208	57311045MH5	ceramic filter	LT4.5MH

Location No.	Part No.	Name	Type
Z208	57311045MJ5	ceramic filter	LT4.5MJ
Z206	5731360MB0Y	ceramic filter	SFSH6.0MCB
Z206	57311060MH5	ceramic filter	LT6.0MH
Z206	57311060M J5	ceramic filter	LT6.0MJ
Z205	5731365MB0Y	ceramic filter	SFSH6.5MCB
Z205	51311065MH5	ceramic filter	LT6.5MH
Z205	51311065MJ5	ceramic filter	LT6.5MJ
Z207	5731355MB0Y	ceramic filter	SFSH5.5MCB
Z262	5741455MB0Y	ceramic filter	TPS5.5MB
Z203	5741445MB0Y	ceramic filter	TPS4.5MB
Z203	5741145MB05	ceramic filter	XT4.5MB
Z201	5741460MB0Y	ceramic filter	TPS6.0MB
Z201	5741160MB05	ceramic filter	XT6.0MB
Z204	5741465MB0Y	ceramic filter	TPS6.5MB
Z204	5741165MB05	ceramic filter	XT6.5MH
Z101	57111387800	SAWF	LBN-38-78
L506	55A13027000	wide-adjustment	HFT-270
	8475900010B	degaussing coil	XC-2118(JUB4.759.001)
L203	55891239AV0	mid-frequency transformer	TRF1239AV
L103	5589767950Y	mid-frequency transformer	TRF767950
LO01	55891166T10	mid-frequency transformer	TRF1166T1
T100	5931165A000	mid-frequency transformer	BSC65A
L501	59331000100	H. Drive transformer	AD-0001
L501	84739003100	H. Drive transformer	BCT-5(JU4.739.031)
T804	8472600310B	switch transformer	BCK-24314L
D005	61411075DU0	diode	2CK75D
D005	614144148U0	diode	1N4148
D101	61411075DU0	diode	2CK75D
D101	614144148U0	diode	1N4148
D204	61411075DU0	diode	2CK75D
D204	614144148U0	diode	1N4148
D508A	61411075DU0	diode	2CK75D
D508A	614144148U0	diode	1N4148
D508	61411075DU0	diode	2CK75D
D508	614144148U0	diode	1N4148
D506	61131011C6Y	diode	RM11C
D506		diode	2CZRM 11C
D402	61112529G50	diode	2CZ5295G
V821	611308RG27Y	diode	RG2

Location No.	Part No.	Name	Type
V821	611308RG257	diode	S2L60
D507	61411075D40	diode	2CK75D
D507	61414414840	diode	1N4148
V822	611120RU260	diode	2CZRU2
V823	611120RU260	diode	2CZRU2
D501	611120RU260	diode	2CZRU2
D505	611120RU260	diode	2CZRU2
D004	61212036AU0	diode	W05Z3.6A
D004	612180361UY	diode	RD3.6EL
D004	61212036AV0	diode	W05Z3.6A
D206	61212051BU0	diode	W05Z5.1B
D802	61212056BU0	diode	W05Z5.6B
D201	61212056BU0	diode	W05Z5.6B
D202	61212056BU0	diode	W05Z5.6B
D203	61212056BU0	diode	W05Z5.6B
D504	612120912U0	diode	W05Z9.1B
VD921	61512050R00	diode	FG5RD
D214	61411075DU0	diode	2CK75D
D214	61411075DU6	diode	1N4148
D215	61411075DU0	diode	2CK75D
D215	61411075DU6	diode	1N4148
D216	61411075DU0	diode	2CK75D
D216	61411075DU6	diode	1N4148
D217	61411075DU0	diode	2CK75D
D217	61411075DU6	diode	1N4148
D833	61411075DU0	diode	2CK75D
D833	61411075DU6	diode	1N4148
D834	61411075DU0	diode	2CK75D
D834	61411075DU6	diode	1N4148
D895	61212068BU5	diode	W05Z6.8B
D835	612120912U5	diode	W05Z9.1B
D886	61212180C25	diode	W05Z18C
D887	61212180C25	diode	W05Z18C
D889	61212240B21	diode	W05Z24C
D803	614145408A0	diode	BY254
D804	614145408A0	diode	BY254
D805	614145408A0	diode	BY254
D806	614145408A0	diode	BY254
D881	61100103025	diode	AK03

Location No.	Part No.	Name	Type
D884	61100111025	diode	AU01Z
D885	61100111025	diode	AU01Z
D888	61100111025	diode	AU01Z
D102	61411075DU0	diode	2CK75D
D102	61411075DU6	diode	1N4148
V002	62210150YW0	audion	3CG1015-Y
V002	62510150YWY	audion	2SA1015-Y
V201	62210150YW0	audion	3CG1015-Y
V201	62510150YWY	audion	2SA1015-Y
V203	62210150YW0	audion	3CG1015-Y
V203	62510150YWY	audion	2SA1015-Y
V503	62210150YW0	audion	3CG1015-Y
V503	62510150YWY	audion	2SA1015-Y
V001	62118150YW0	audion	3DG1815-Y
V001	62418150YWY	audion	2SC1815-Y
V010	62118150YW0	audion	3DG1815-Y
V010	62418150YWY	audion	2SC1815-Y
V202	62118150YW0	audion	3DG1815-Y
V202	62418150YWY	audion	2SC1815-Y
V204	62118150YW0	audion	3DG1815-Y
V204	62418150YWY	audion	2SC1815-Y
V301	62118150YW0	audion	3DG1815-Y
V301	62418150YWY	audion	2SC1815-Y
V303	62118150YW0	audion	3DG1815-Y
V303	62418150YWY	audion	2SC1815-Y
V602	6242878A0WY	audion	2SC2878-A
V102	62103882040	audion	3DG388ATM
V102	6240388204Y	audion	2SC388ATM
V102	64762388Y4Y	audion	KSC388C-Y
V101	626120400WY	audion	RN1204
V801	62126880L60	audion	3DG2688-L
V801	62126880204	audion	3DA2688
V501	62123830040	audion	3DG2383-0
V501	62123830Y40	audion	3DG2383-Y
V501	6242383004Y	audion	2SC2383-0
V501	62423830Y4Y	audion	2SC2383-Y
V501	6476238304Y	audion	KSC2383-0
V501	64762383Y4Y	audion	KSC2383-Y
V501	62123830Y40	audion	3DG2383-Y

Location No.	Part No.	Name	Type
V502	649250830YY	audion	BU2508DX
V502	6442499000Y	audion	2SD2499
V502	64424990003	attdion	3DD2499
V502	64424990003	audion	3DD2499
V831	62118150YW6	audion	2SC1815-Y
V831	62118150YW0	audion	3DG1815-Y
Q888	62118150YW6	audion	2SC1815-Y
Q888	62118150YW0	audion	3DG1815-Y
V003	62118150YW6	audion	2SC1815-Y
V003	62118150YW0	audion	3DG1815-Y
V881	62426550Y45	audion	2SC2655-Y
V832	62126880L60	audion	3DG2688-L
V009	62418150YWY	audion	2SC1815-Y
V302	62418150YWY	audion	2SC1815-Y
V008	62118150YW6	audion	2SC1815-Y
D002	67312574J1Y	integrate circuit	mui PC574J
D002	67311574C1Y	integrate circuit	CW574CS
N203	6724178055Y	integrate circuit	L7805CV
N502	6724178095Y	integrate circuit	L7809CV
N501	6724178125Y	integrate circuit	L7812CV
N501	6724278125Y	integrate circuit	MC7812CT
N101	67113791CPY	integrate circuit	LA7910CP(LA7910)
N101	6710379100	integrate circuit	HD14052BP
N202	671304052BY	integrate circuit	HEF4052BP
N202	671071405CY	integrate circuit	MC14052BCP
N401	671098403KY	integrate circuit	TA8403K
N201	671401238NY	integrate circuit	TB1238AN
N945	671320038AY	integrate circuit	HS0038A
N945	672250638YY	integrate circuit	SFH506-38
N945	67132003804	integrate circuit	HRM3800
N881	67138645405	integrate circuit	STR-F6454
VQ887	67136811505	integrate circuit	SE113N
N001	67213873495	integrate circuit	CH08T0934
N002	6721224C18Y	integrate circuit	AT24C08-10PI
N601	671107057AS	integrate circuit	TDA7057AQ
N602	671294066BY	integrate circuit	HCF4066BE
N701	671091275A5	integrate circuit	TA1275AZ
F801	59817124005	fuse tube	RT1-20-4A
BC01	58310800080	crystal oscillator	JA18A-8MHz

Location No.	Part No.	Name	Type
BC21	583D0443380	crystal oscillator	JA18A1-4.433619MHz
S801	54111A04S00	power swich	KDC-A04-S
S901	54167605410	light touch switch	KA1W6x5-41
S902	54167605410	light touch switch	KA1W6x5-41
S903	54167605410	light touch switch	KA1W6x5-41
S904	54167605410	light touch switch	KA1W6x5-41
S905	54167605410	light touch switch	KA1W6xS-41
S906	54167605410	light touch switch	KA1W6x5-41
NS01	67146062105	pholoelectricity coupler	TLP621GR
N801	66114681705	pholoelectricity coupler	HS817
BC641	56233310080	speaker	YDT513-A3-10W-8 ohm
BC642	56233310080	speaker	YDT513-A3-10W-8 ohm
XPS01	53411000210	power-line with a socket	RVVZ-2P205-C2143
A101	82891001100	electric tuner	TDQ-3A9-C
A101	82891001130	electric tuner	TDQ-3A9-C1
XV01	5384206PZ00	audio and video socket	AV-2-6PZ
X901	5384102PA00	audio mad video socket	AV-1-2PH
X902	5384101PY00	audio and video socket	AV-I-IPH
	68121150310	21" C11T	54SX503Y22-DC01

AUDIO PROCESSING BOARD

R3	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R3	51153101JUY	carbon film resistor	NAS1/6101J
R4	51113101JU0	carbon film resistor	RT13-0.166W-100 ohm J
R4	51153101JUY	carbon film resistor	NAS1/6101J
R1	51113102JU0	carbon film resistor	RT13-0.166W-2K ohm J
R1	51153102JUY	carbon film resistor	NAS1/6202J
R2	51113102JU0	carbon film resistor	RT13-0.166W-2K ohm J
R2	51153102JUY	carbon film resistor	NAS1/6202J
R5	51113102JU0	carbon film resistor	RT13-0.166W-150K ohm J
R5	51153102JUY	carbon film resistor	NAS1/6154J
R6	51113102JU0	carbon film resistor	RT13-0.166W-150K ohm J
R6	51153102JUY	carbon film resistor	NAS1/6154J
C13	5251C101JV0	ceramic capacitor	CC1-63V-08a-2F4-10nFZ
C14	52532472KV0	ceramic capacitor	CT1-63V-06a-2B4-4700PFK
C15	52532472KV0	ceramic capacitor	CT1-63V-06a-2B4-4700PFK
C9	52367224J10	mylar capacitor	CL21X-50V-5600PFJ
C10	52367224J10	mylar capacitor	CL21X-50V-5600PFJ
C5	52367224J10	mylar capacitor	CL21X-50V-0.015 mui FJ

Location No.	Part No.	Name	Type
C7	52367224J10	mylar capacitor	CL21X-50V-0.015 mui FJ
C6	52367224J10	mylar capacitor	CL21X-50V-330nFJ
C8	52367224J10	mylar capacitor	CL21X-50V-330nFJ
C1	52367224J10	mylar capacitor	CL21X-50V-470nFJ
C4	52367224J10	mylar capacitor	CL21X-50V-470nFJ
C11	52613100MV0	aluminum capacitor	CD110-16V-10 mui FM
C12	52613100MV0	aluminum capacitor	CD110X-16V-47 mui FM
L1	55632680J10	invariablenes capacitor	LGB0606-10 mui HJ
NS01	67110744905	integrate circuit	TDA7449

TELETEXT BOARD

RT31	51911750JW6	chip resistor	RC05K750JT
RT37	51911101JW6	chip resistor	RC05K101JT
RT38	51911102JW6	chip resistor	RC05K102JT
RT39	51911102JW6	chip resistor	RC05K102JT
RT40	51911102JW6	chip resistor	RC05K102JT
RT32	51911221JW6	chip resistor	RC05K221JT
RT35	51911221JW6	chip resistor	RC05K221JT
RT36	51911221JW6	chip resistor	RC05K221JT
RT01	51911472JW6	chip resistor	RC05K472JT
RT02	51911472JW6	chip resistor	RC05K472JT
RT03	51911472JW6	chip resistor	RC05K472JT
RT04	51911472JW6	chip resistor	RC05K472JT
RT05	51911472JW6	chip resistor	RC05K472JT
RT06	51911472JW6	chip resistor	RC05K472JT
RT07	51911472JW6	chip resistor	RC05K472JT
RT08	51911472JW6	chip resistor	RC05K472JT
RT09	51911472JW6	chip resistor	RC05K472JT
RT10	51911472JW6	chip resistor	RC05K472JT
RT11	51911472JW6	chip resistor	RC05K472JT
RT12	51911472JW6	chip resistor	RC05K472JT
RT13	51911472JW6	chip resistor	RC05K472JT
RT14	51911472JW6	chip resistor	RC05K472JT
RT15	51911472JW6	chip resistor	RC05K472JT
RT16	51911472JW6	chip resistor	RC05K472JT
RT17	51911472JW6	chip resistor	RC05K472JT
RT18	51911472JW6	chip resistor	RC05K472JT
RT19	51911472JW6	chip resistor	RC05K472JT
RT20	51911472JW6	chip resistor	RC05K472JT

Location No.	Part No.	Name	Type
RT21	51911472JW6	chip resistor	RC05K472JT
RT22	51911472JW6	chip resistor	RC05K472JT
RT23	51911472JW6	chip resistor	RC05K472JT
RT24	51911472JW6	chip resistor	RC05K472JT
RT25	51911472JW6	chip resistor	RC05K472JT
RT26	51911472JW6	chip resistor	RC05K472JT
RT33	51911472JW6	chip resistor	RC05K472JT
RT34	51911472JW6	chip resistor	RC05K472JT
RT30	51911273JW6	chip resistor	RC05K273JT
RT55	51911223JW6	chip resistor	RC05K223JT
RT57	51911223JW6	chip resistor	RC05K223JT
RT56	51911473JW6	chip resistor	RC05K473JT
RT54	51911563JW6	chip resistor	RC05K563JT
CT06	52A11181J05	chip capacitor	0805CH56JS00NT
CT07	52A11181 J05	chip capacitor	0805CH56J500NT
CT03	52A12104Z05	chip capacitor	0805F104Z500NT
CT04	52A12104Z05	chip capacitor	0805F104Z500NT
CT12	52A12104Z05	chip capacitor	0805F104Z500NT
CT10	52613100MV0	aluminum electrolytic capacitor	CD110X-16V-10 mui FM
CT05	52613100MV0	aluminum electrolytic capacitor	CDl10X-50V-2.2 mui FM
VDT01	61411075D60	diode	2CK75D
VDT02	61212400A00	diode	W05Z40A
VT02	62418150YWY	audion	2SC 1815-Y
VT03	62418150YWY	audion	2SC 1815-Y
VT01	62418150YWY	audion	2SC2688
LT01	55632680J10	inductance	LGB0606-10 mui HJ
G01	58341120084	crystal oscillator	JA18AS-12MHz
NT01		integrate circuit	SAA5264

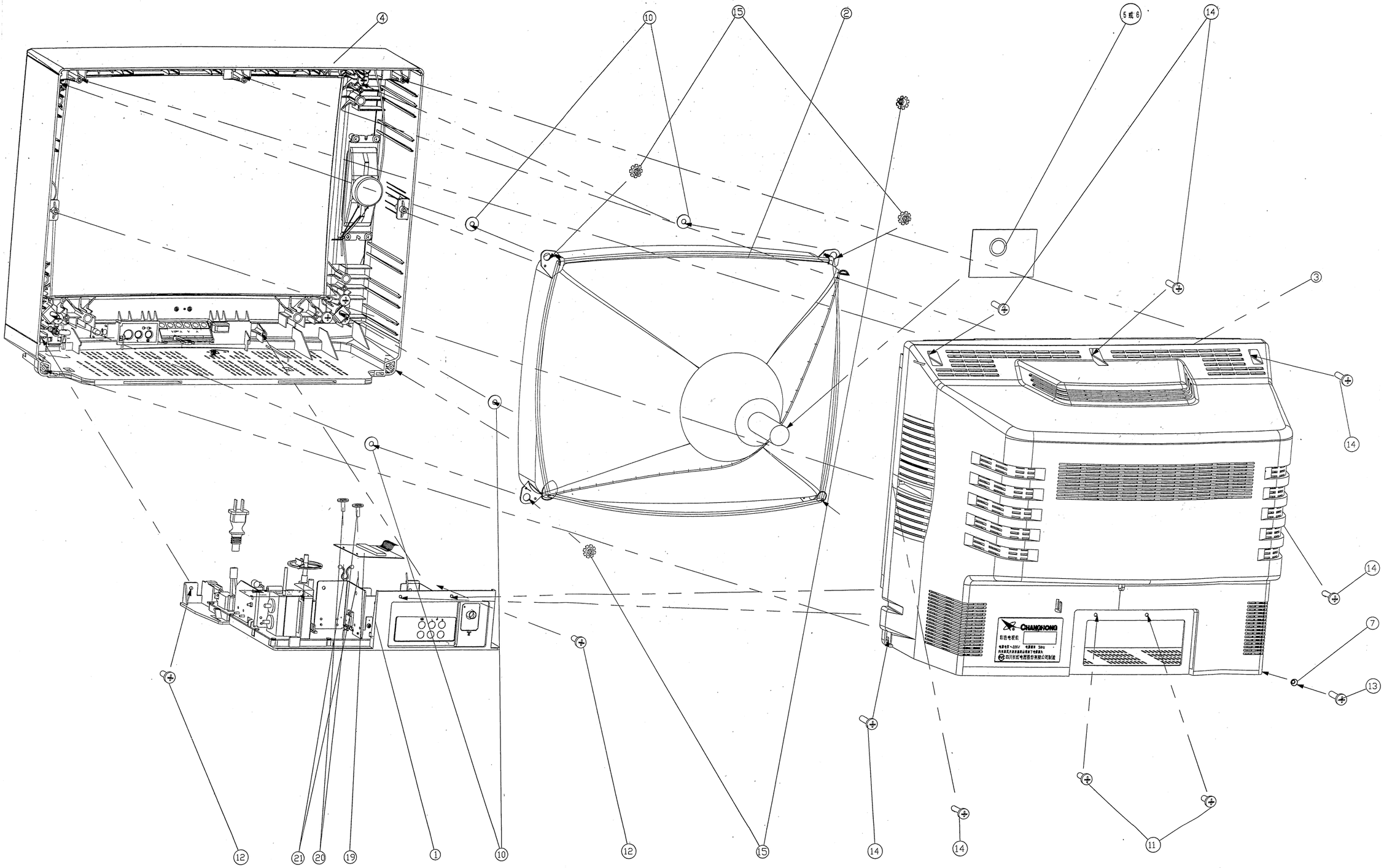
Y BOARD

RW01	51113561J20	carbon resistor	RT13-0.166W-560 ohm J
RW01	51113561JU6	carbon resistor	NAS1/6561J
RW02	51113561J20	carbon resistor	RT13-0.166W-560 ohm J
RW02	51153561J2Y	carbon resistor	NAS 1/6561J
RW03	51113561J20	carbon resistor	RT13-0.166W-560 ohm J
ItW03	51153561J2Y	carbon resistor	NAS 1/6561J
R902	51124200JU0	carbon resistor	RT14-0.25W-20 ohm J
R902		carbon resistor	NAS1/4200J

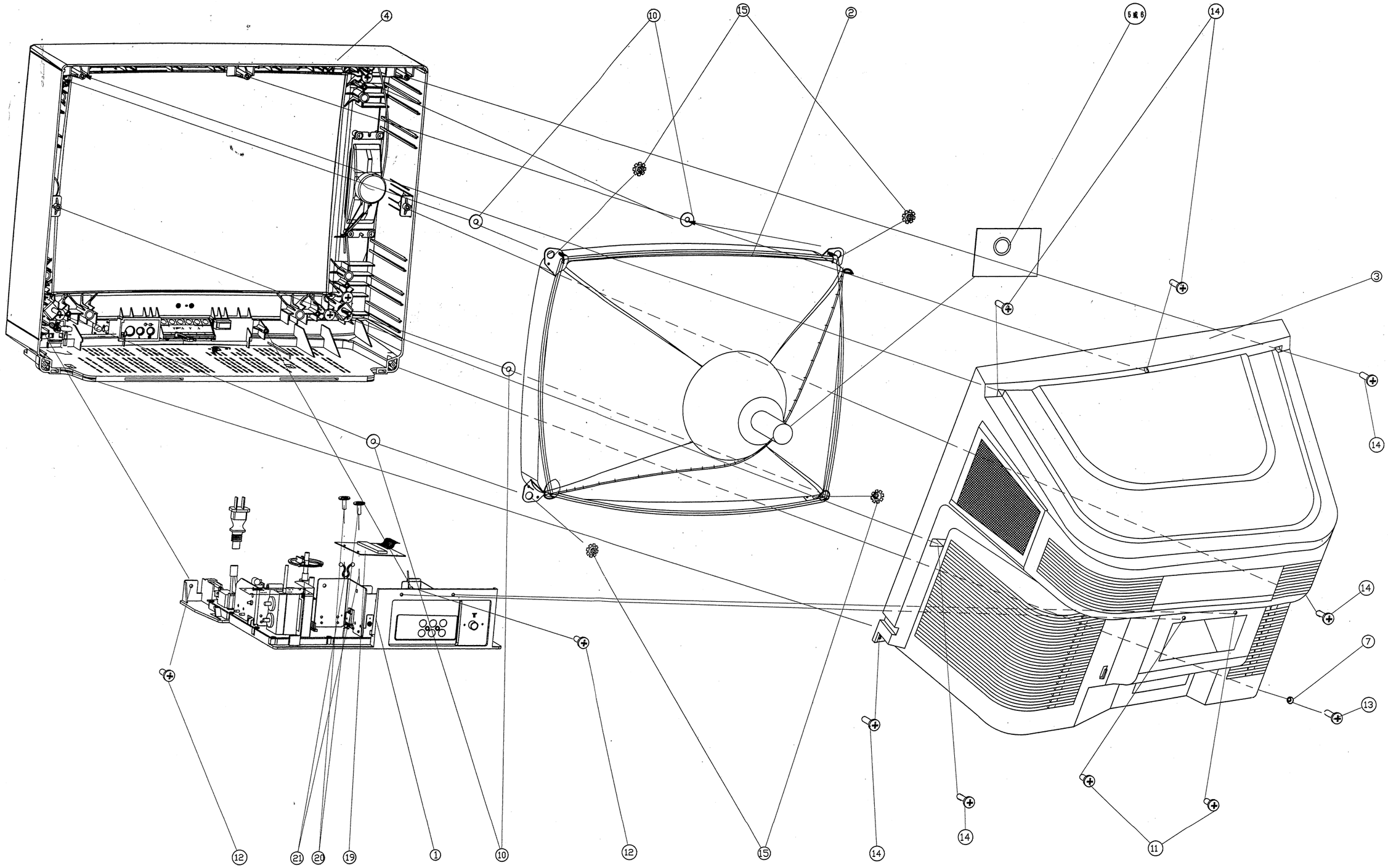
Location No.	Part No.	Name	Type
R903	51124471J30	carbon resistor	RT14-0.25W-470 ohm J
R903	51154471J3Y	carbon resistor	NAS 1/4471J
R905	51124471J30	carbon resistor	RT14-0.25W-470 ohm J
R905	51154471J3Y	carbon resistor	NAS 1/4471J
R907	51124471J30	carbon resistor	RT14-0.25W-470 ohm J
R907	51154471J3Y	carbon resistor	NAS 1/4471J
R909	51113681JU0	carbon resistor	RT13-0.166W-680 ohm J
R909	51113681JU6	carbon resistor	NAS 1/6681J
R904	51124102J30	carbon resistor	RT13-0.25W- 1K ohm J
R904	51154 l02J3Y	carbon resistor	NAS 1/4102J
R906	51124102J30	carbon resistor	RT13-0.25W- 1K ohm J
R906	51154102J3Y	carbon resistor	NAS 1/4102J
R908	51124102J30	carbon resistor	RT13 -0.25W- 1K ohm J
R908	51154102J3Y	carbon resistor	NAS1/4102J
R911	51124102J30	carbon resistor	RT 13 -0.25W- 1K ohm J
R911	51154102J3Y	carbon resistor	NAS 1/4102J
R912	51124102J30	carbon resistor	RT13 -0.25W- 1K ohm J
R912	51154102J3Y	carbon resistor	NAS 1/4102J
R910	51113272JU0	carbon resistor	RT13 -0.25W-2.7K ohm J
R910	51113272JU6	carbon resistor	NAS 1/4272J
R901	51113472JU0	carbon resistor	11T13-0.25W-4.7K ohm J
R901	51113472JU6	carbon resistor	NAS 1/4472J
R917	51135122J50	carbon resistor	RT15-0.5W-1.2K ohm J
R918	51135122J50	carbon resistor	RT15-0.5W- 1.2K ohm J
R919	51135122J50	carbon resistor	RT15-0.5W- 1.2K ohm J
R913	51315680JH0	metal oxide film resistor	RY21-0.5W-18K ohm J
R913	51315680JH6	metal oxide film resistor	MOS1/2W680J
R914	51317183JL0	metal oxide film resistor	RY21-2W- 18K ohm J
R914	51317183JK6	metal oxide film resistor	MOS2W183J
R915	51317183JL0	metal oxide film resistor	RY21-2W- 18K ohm J
R915	51317183JK6	metal oxide film resistor	MOS2W183J
R916	51317183JL0	metal oxide film resistor	RY21-2W- 18K ohm J
R916	51317183JK6	metal oxide film resistor	MOS2W 183J
C901	00000000000	ceramic capacitor	CT1-63V-06c-2B4-390PFK
C902	00000000000	ceramic capacitor	CT1-63V-06c-2B4-390PFK
C903	00000000000	ceramic capacitor	CT1-63V-06c-2B4-470PFK
C909	00000000000	ceramic capacitor	CT81-2KV-12c-2B4-1000PFK
C904	52613100M10	aluminum electrolytic capacitor	CDll0-16V-10 mui FM

Location No.	Part No.	Name	Type
C905	52613220M10	aluminum electrolytic capacitor	C D 110-16V-22 mui FM
C906	52613471M11	aluminum electrolytic capacitor	CD 110X- 16V-470 mui FM
L901	55632101K10	invariablenes inductor	LGB0606-100 mui HK
D901	61411075DU0	diode	2CK75D
I)901	61411075DU6	diode	1N4148
D902	61411075DU0	diode	2CK75D
D902	61411075DU6	diode	1N4148
D903	61411075DU0	diode	2CK75D
D903	61411075DU6	diode	1N4148
D904	61411075DU0	diode	2CK75D
D904	61411075DU6	diode	1N4148
D905	61411075DU0	diode	2CK75D
D905	61411075DU6	diode	1N4148
D906	61411075DU0	diode	2CK75D
D906	61411075DU6	diode	1 N4148
V905	62210150Y40	audion	3CG1015-Y
V905	62210150Y46	audion	2SA1015-Y
V904	62118150Y40	audion	3DG1815-Y
V904	62118150Y46	audion	2SC1815-Y
V901	62124821060	audion	3DG2482(FA- 1)
V901	62124821006	audion	2SC2482(FA- 1)
V902	62124821060	audion	3DG2482(FA-1)
V902	62124821006	audion	2SC2482(FA- 1)
V903	62124821060	audion	3DG2482(FA- 1)
V903	62124821006	audion	2S C2482(FA- 1)
GZ01	53610210800	CRT socket	GZSS-6-1F

Exploded view of 21BM32



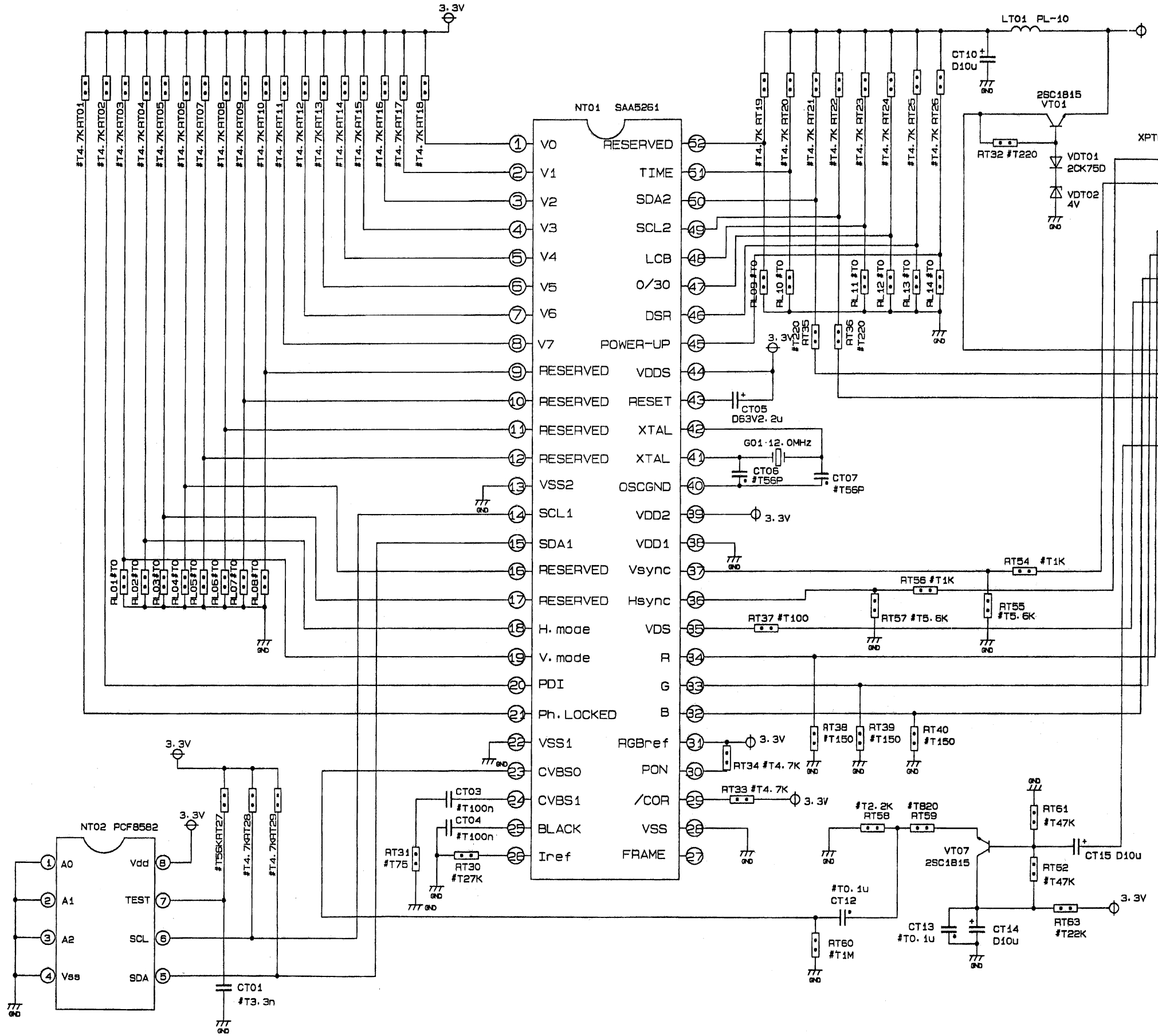
Exploded view of 21BM31



Description:

1. Install the CRT assembly (2) into the front cover assembly (4) with fixing torque of 3.5 ~ 4.5 Nm.
2. Connect cord plugs in the set according to the wiring diagram and position and tie leads according to engineering cards.
3. Remove cover of the CRT socket and solder focus wire fixedly. Then close the cover and solder the screen wire fixedly wire according to the wiring diagram. Finally bind together the two wires on the Y board assembly with the wire clip (8).
4. Bind together the cord plugs XS601, XS402 and high voltage wire, screen wire and focus wire of FBT with the wire clip (9).
5. Insert the power plug into the socket XS501 and power cord card into slot on the lower left corner of the front cover.
6. Bind together the cord plug KDY (JU6.604.375) with the wire clip (16) and fix the wire on upper internal part of radiating plate (JU5.861.190).
7. After adjustment, seal potentiometers on the FBT with white nitro magnetic paint Q04-3 (18).
8. Put the seal cap (7) onto the screw (13) after close the back cover. After inspection, seal it with plasticine and mark it.
9. Check and make sure that no scratch and foreign objects exist on / in the set, label plates are stuck fixedly and button can work normally.
10. Mount the teletext board assembly (19) onto the radiating flange of the chassis board and secure it with M3 screws (20) and M3 nuts (21)

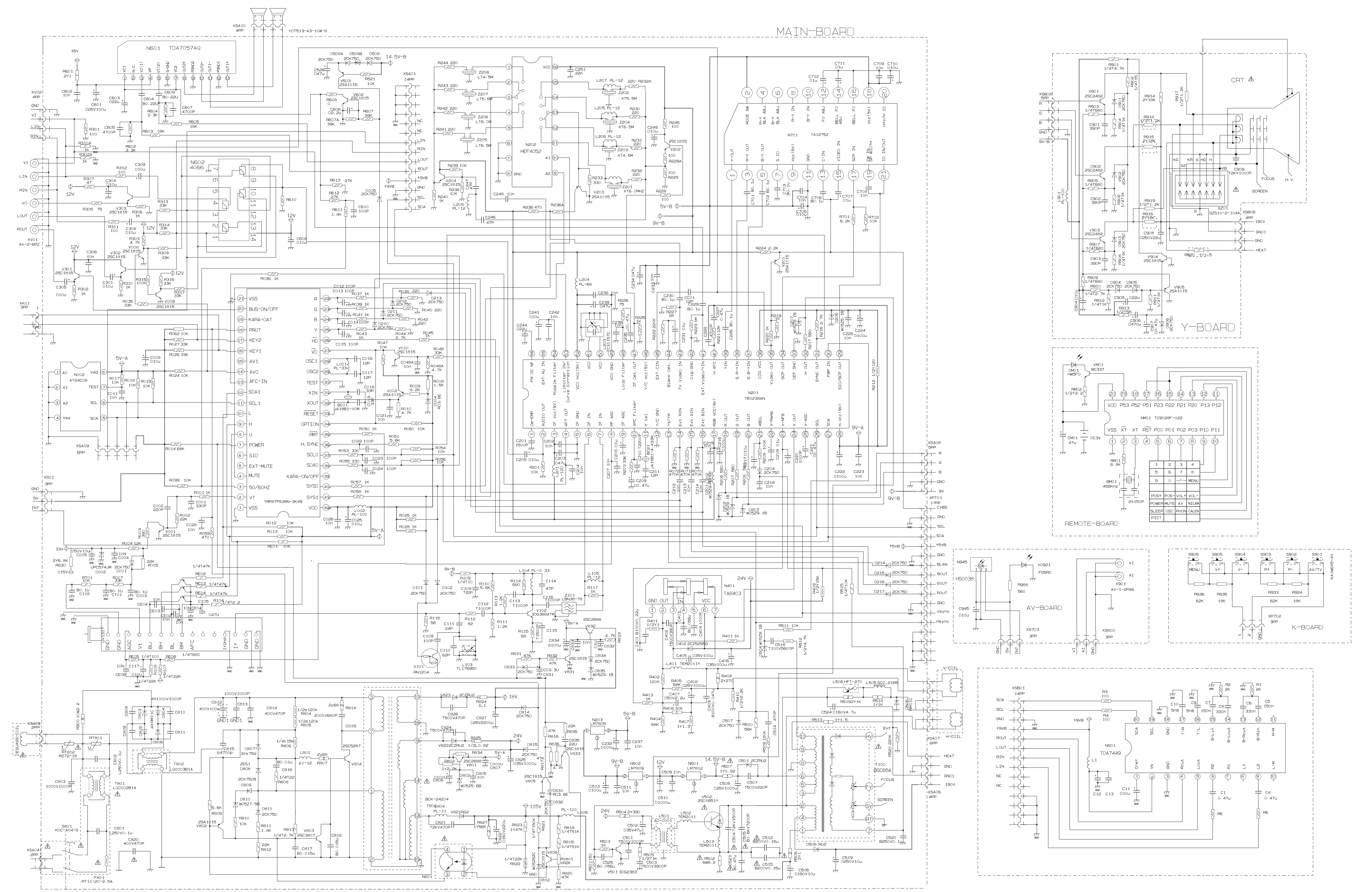
No	Code No.	Description	Quantity	Remarks
1	JU5.049.270	Chassis assembly	1	
2	JU5.370.083	CRT assembly	1	
3	JU6.116.712	Back cover assembly	1	
4	JU6.116.720	Front cover assembly	1	
5	JU6.672.1172	Y board assembly	1	For large-neck CRT
6	JU6.672.1173	Y board assembly	1	For small-neck CRT
7	T/JU8.634.115	Seal cap	1	
8	T/JU8.667.310	Wire clip	1	
9	T/JU8.667.328	Wire clip	1	
10	T/JU8.942.264	Washer	4	
11	Japan standard	Tapping screw 4 x 15BAH0	2	
12	Japan standard	Tapping screw 4 x 15BAHCh	2	
13	GB845-76	Cross panhead tapping screw 4 x 20	1	
14	Japan standard	Tapping screw 4 x 20BAH0	6	
15		Notched washer nut M5	4	
16		Wire clip M04107	1	
17		Plasticine		
18	ZBG51053-87	White nitro magnetic paint Q04-3		
19	JUC7.820.330	Teletext board assembly	1	
20	GB818-85	Cross panhead tapping screw	2	
21	GB6170-85	T hexagon nut	2	



This circuit diagram is only for reference.
specifications are subject to change without notice.

1. Any components identified by ⚠ have special safety-related characteristics.
   Use replacement components which have the same characteristics as the original parts.
2. ⏚ Cold ground ⊥ Hot ground

CIRCUIT DIAGRAM FOR 21BM36/PF21BM50/PF21BM98

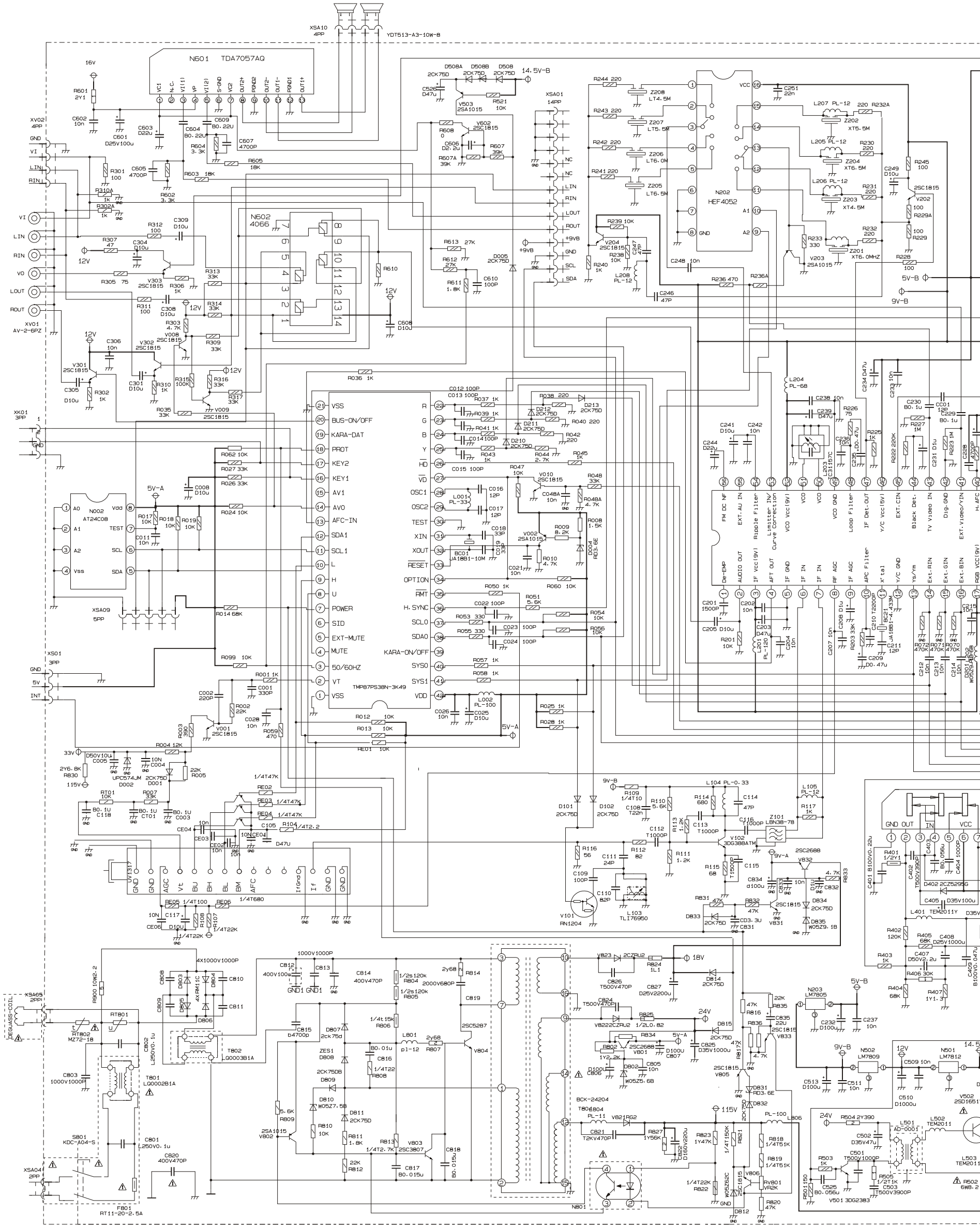


This circuit diagram is only for reference.
Specification are subject to change without notice.

1. Any components identified by ⚠ have special safety-related characteristics.
   Use replacement components which have the same characteristics as the original parts.

2. ⫫ Cold ground   ⊥ Hot ground

CIRCUIT DIAGRAM FOR 21BM36/PF2

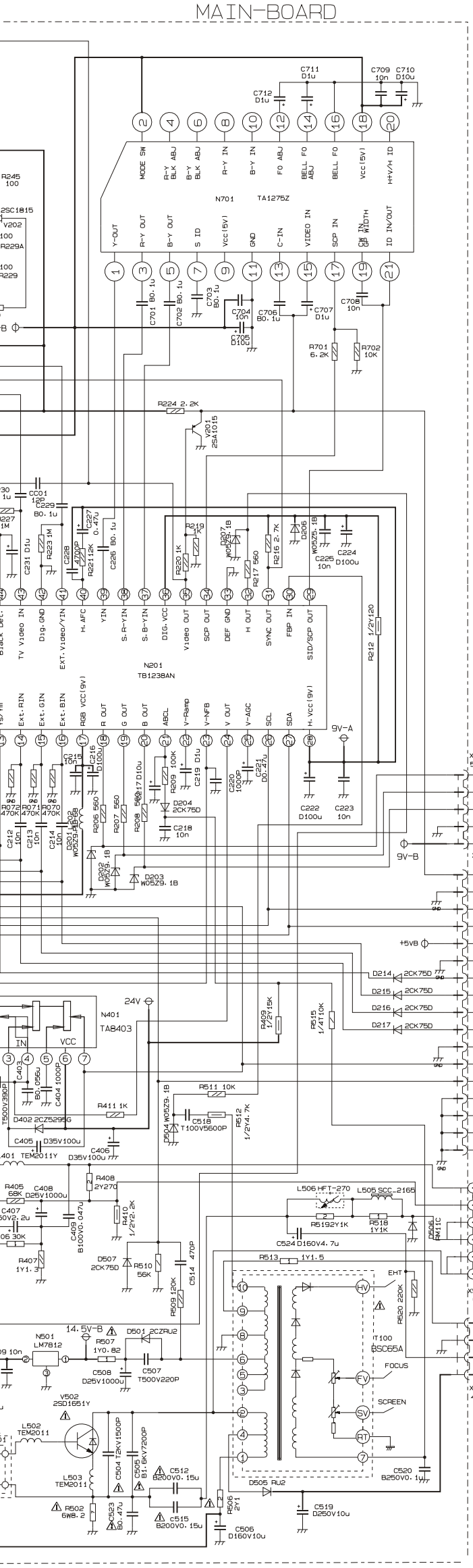


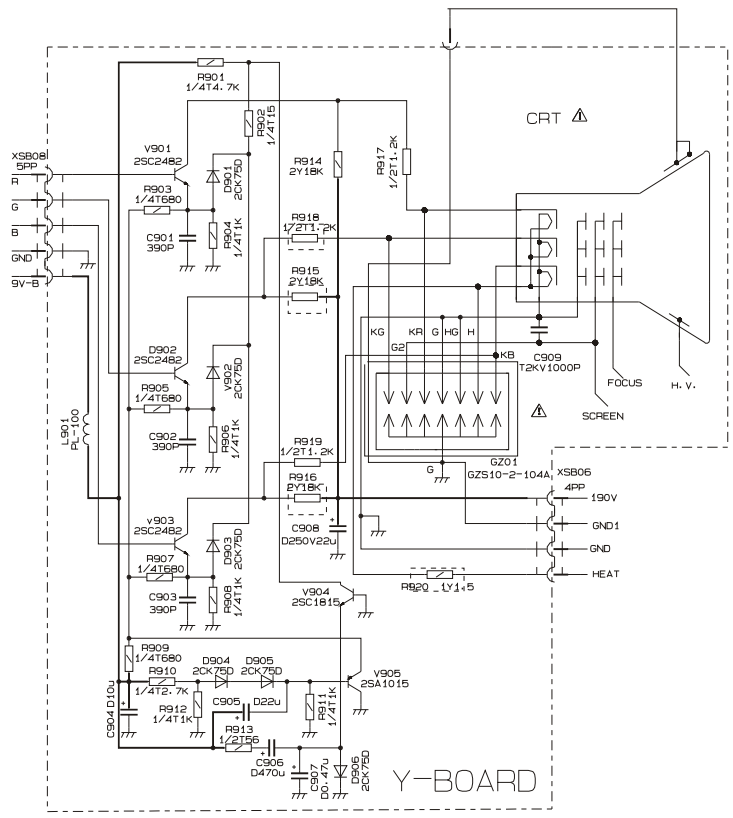
This circuit diagram is only for reference.
Specification are subject to change without notice.

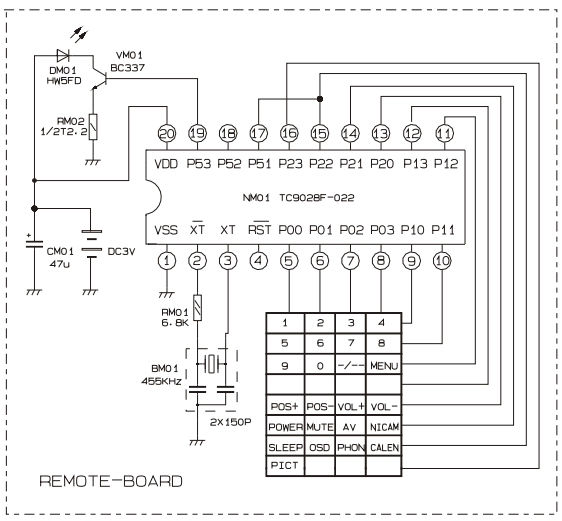
1. Any components identified by
   Use replacement components wh

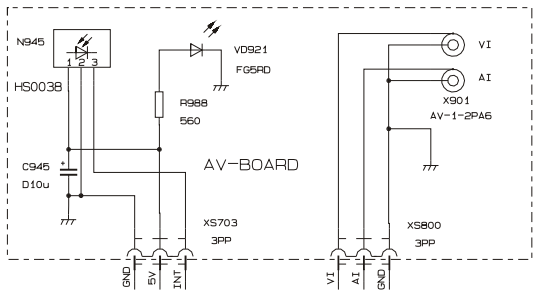
2. ⏚ Cold ground ⊥ Hot ground

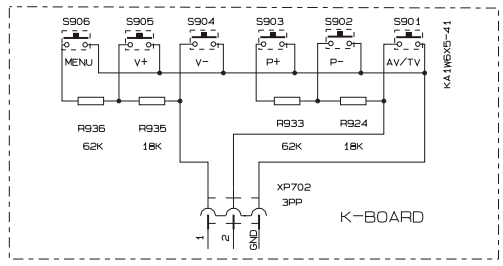
PF21BM50/PF21BM98

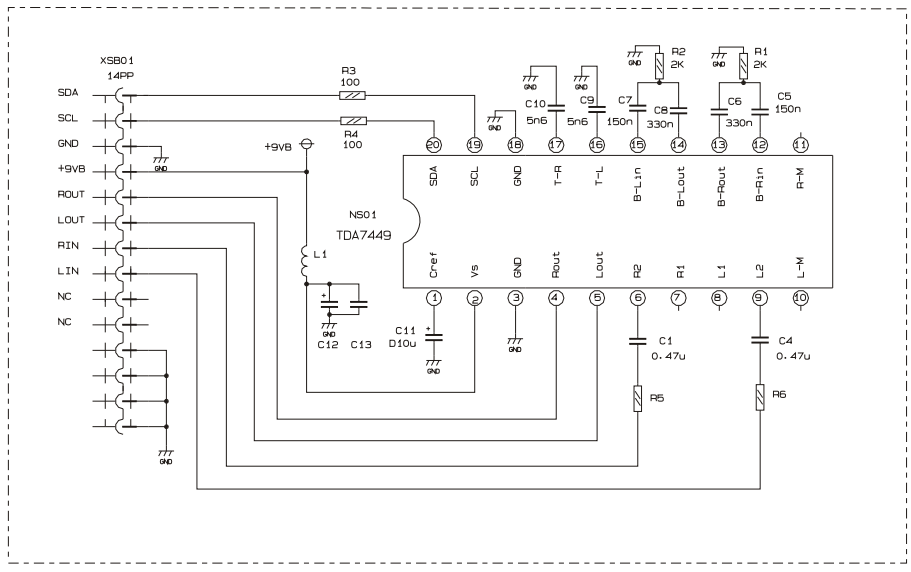








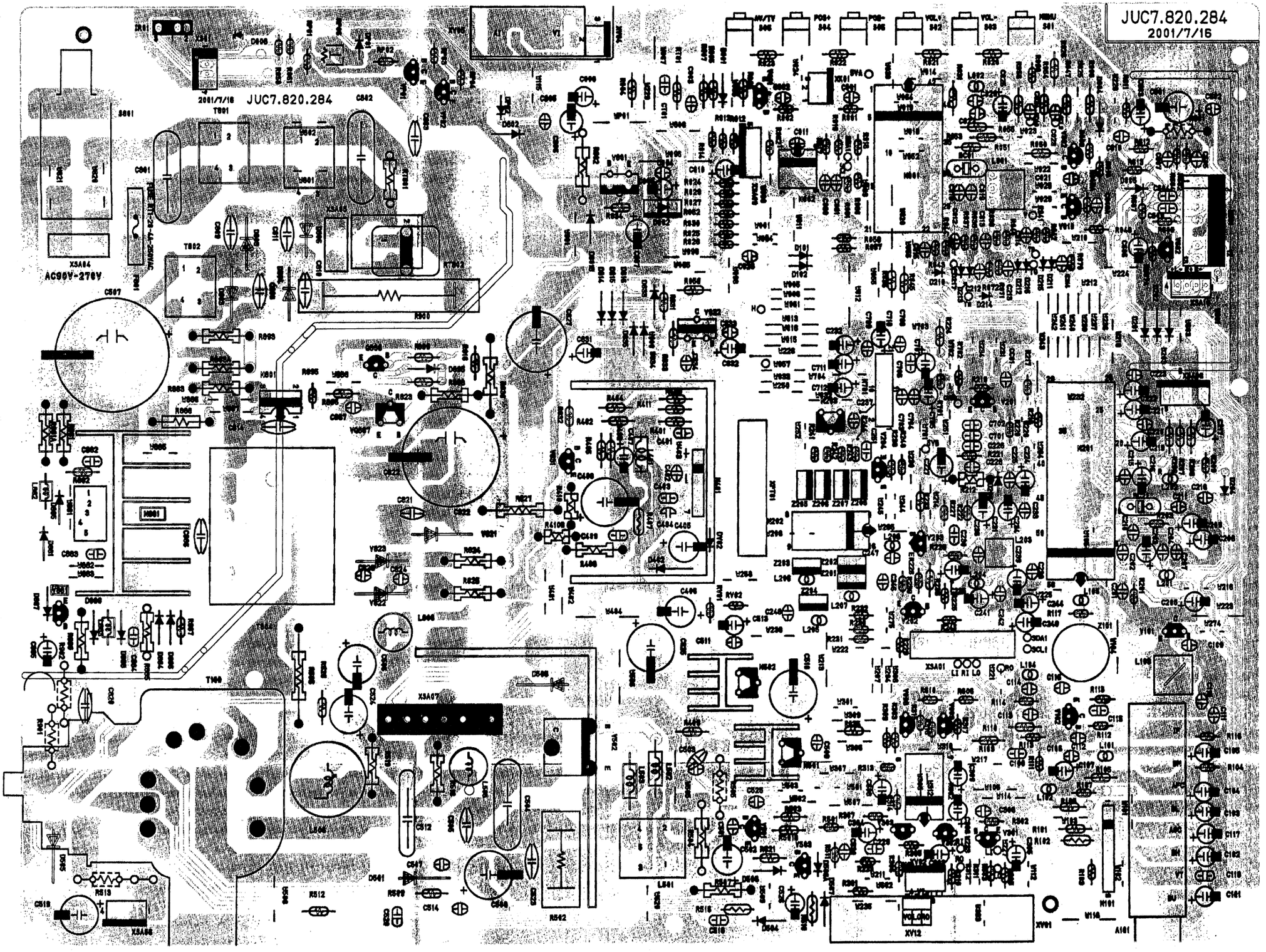


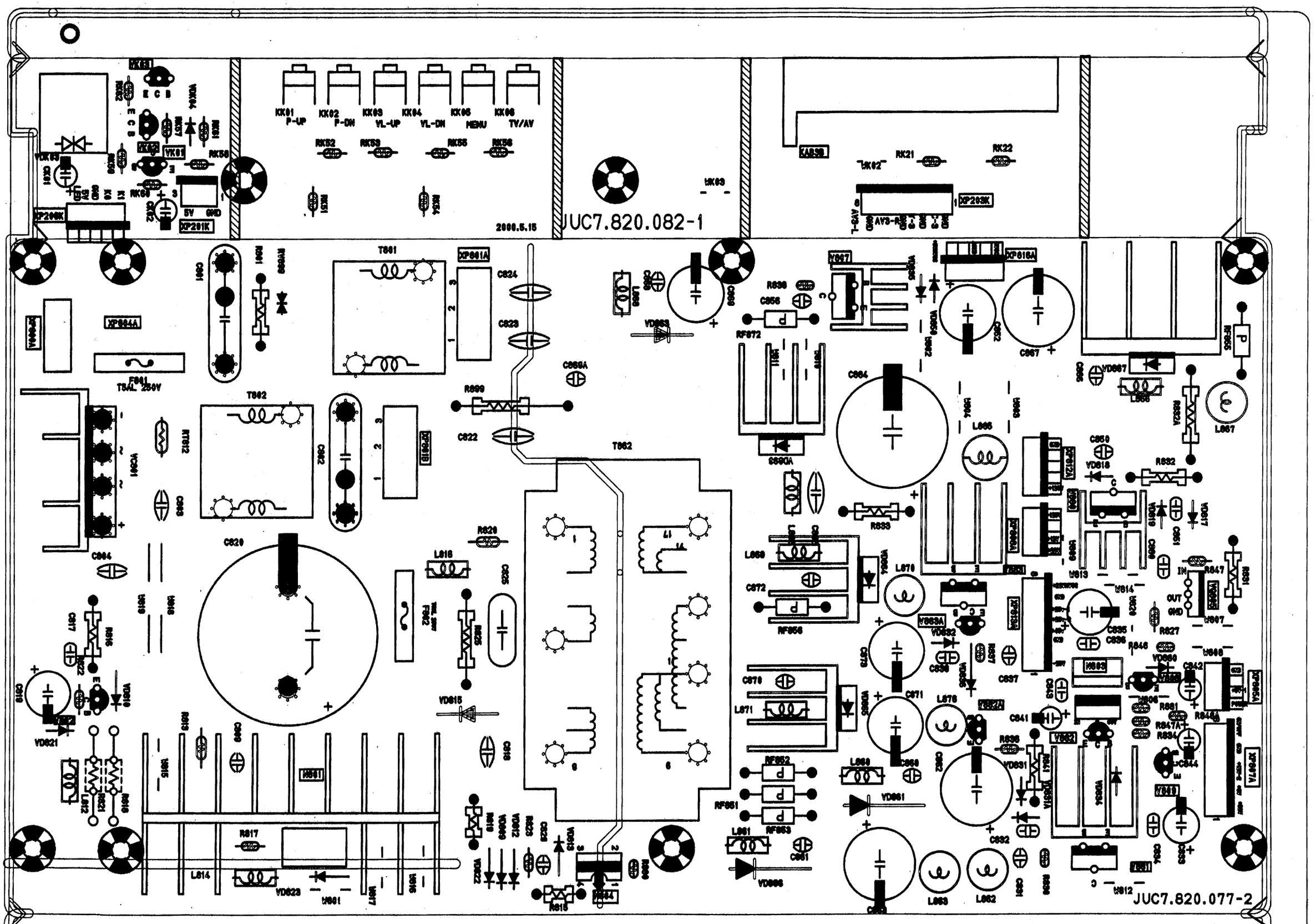


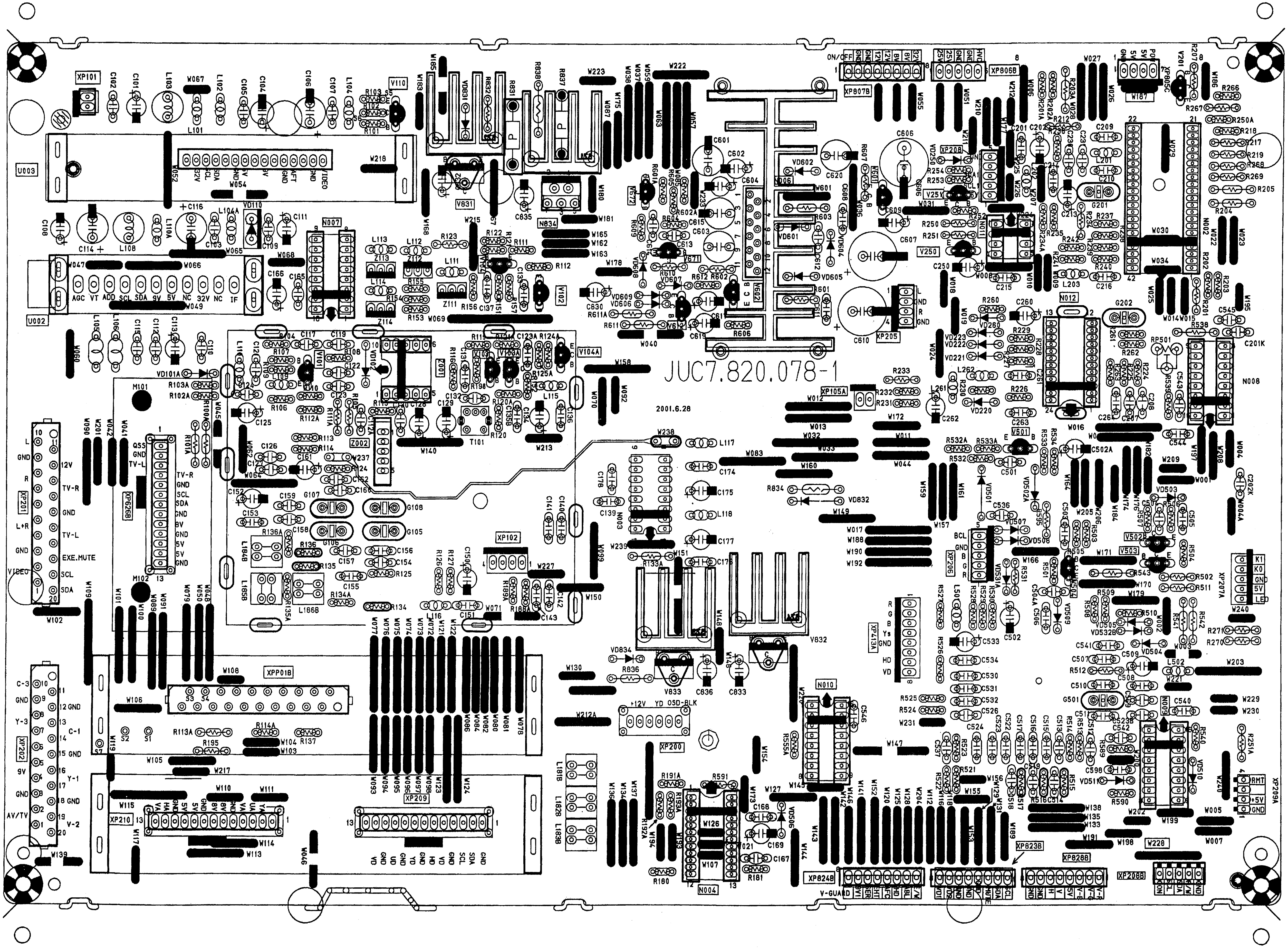
fied by ⚠ have special safety-related characteristics.
nents which have the same characteristics as the original parts.

ot ground

print lay – out of main board for 21BM32




JUC7.820.082-1
2000.5.15
KK01 P-UP
KK02 P-DN
KK03 VL-UP
KK04 VL-DN
KK05 MENU
KK06 TV/AV
XP206K
XP201K
XP804A
XP801A
XP802A
XP816A
XP203K
T801
T802
T803
F801
T5AL 250V
JUC7.820.077-2


JUC7.820.078-1
2001.6.28

JUC7.820.079-1
BPBT SCAN BOARD