

SERVICE

MANUAL

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CAUTION: THIS SERVICE MANUAL IS ONLY FOR PROFESSIONAL SERVICE PERSONNEL'S REFERENCE. BEFORE SERVICING THIS CHASSIS, PLEASE READ THE FOLLOWING NOTICE ITEMS.

SAFETY INSTRUCTION

Before servicing and aligning this equipment, please read the following **“X-RAY RADIATION PRECAUTION”**, **“SAFETY PRECAUTION”** and **“PRODUCT SAFETY NOTICE”**.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 29 or 26.5kV(20”) at zero beam current (minimum brightness) under 120V AC power source. the high voltage must not, under any circumstances, exceed 32kV.
2. Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of service record. It is important to use an accurate and reliable high voltage meter.
3. This receiver is equipped with a Fail Safe (FS) circuit which prevents the receiver from producing an excessively high voltage even if the B+ voltage increases abnormally. Each time the receiver is serviced, the FS circuit must be checked to determine that the circuit is properly functioning, following the FS CIRCUIT CHECK procedure in this manual.
4. The primary source of X-RAY RADIATION in this TV receiver is the picture tube. For continuous X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
5. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continuous safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING:

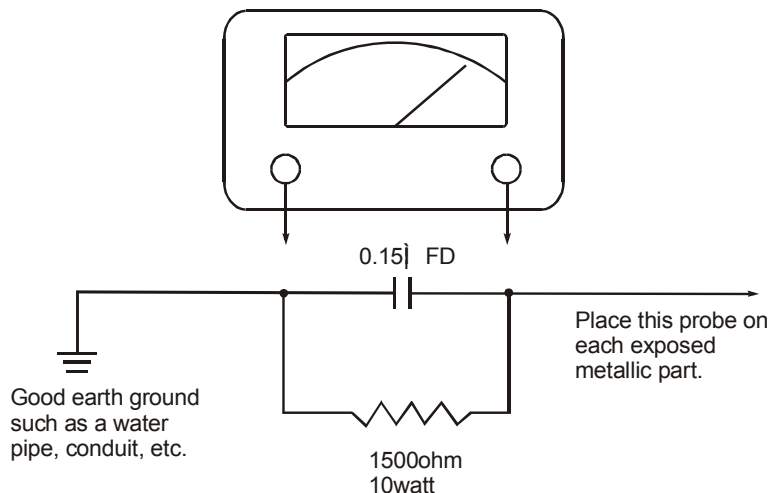
Service should not be attempted by anyone unfamiliar with the necessary precaution on this receiver. The following are the necessary precautions to be observed before servicing this chassis.

- 1) Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
- 2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
- 3) When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
- 4) When replacing parts or circuit boards, disconnect the power cord.
- 5) When replacing a high wattage resistor (oxide metal film resistor) on the circuit board, keep the resistor 10mm (1/2in) away from circuit board.
- 6) Connection wires must be kept away from components with high voltage or high temperature.
- 7) If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
- 8) Before returning the set to your customer, always perform an AC leakage current check on the exposed

metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner:

Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μ F, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 μ F capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

AC VOLTMETER



PRODUCT SAFETY NOTICE

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

B+ CHECK

- 1) Prepare the test equipment.
- 2) Use the DC voltmeter at DC 200V position to test B+ test point, i.e. B+.
- 3) Connect the power plug to AC 120V/60Hz, turn on the power switch, wait for normal raster, Check B⁺ = 100V $\pm$ 0.2V.

Test point	B+	B1-5V	B2-9V	B3-10V	B4-32V	TH-12V	TH-20V	TH-200V
DC(V)	100	5	9	12	32	12	20(22)	200

INSTALLATION AND SERVICE ADJUSTMENTS

GENERAL

In the majority of cases, a color television receiver will need only slight touch – up adjustment upon installation. Check the basic characteristics such as FS, EHV, and focus. Observe the picture for good black and white details without objectionable color shading. If color shading is evident, demagnetize the receiver.

If color shading still persists, perform purity and convergence adjustments. This should be all that is necessary to achieve optimum receiver performance.

FOCUS ADJUSTMENT

Adjust the FOCUS control (on T302) for well defined scanning lines on the picture screen.

HIGH VOLTAGE CHECK

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

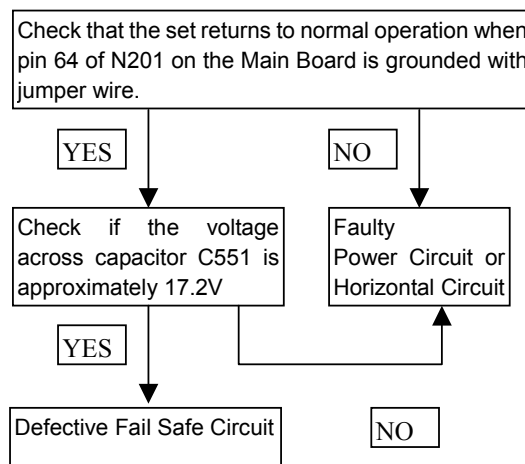
1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage will be measured below 9 (20")KV.
4. Vary the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

FS CIRCUIT CHECK

The Fail Safe (FS) circuit check is indispensable for the final check in the servicing. Checking should be done following the steps below.

1. Turn the power switch on and adjust customer controls for normal operation.
2. Temporarily short TP501 and TP502 on the Main Board with a jumper wire. Raster and sound will disappear.
3. The receiver must remain in this state even after removing the jumper wire. This is the evidence that the FS circuit is functioning properly.
4. To obtain a picture again, temporarily turn the receiver off and allow the FS circuit more than 30 seconds to reset. Then turn the power switch on to produce a normal picture.

Troubleshooting Guide for Fail Safe Circuit



General instruction

1. This chassis' EEPROM□N801 M24C08□ should copy standard data, if necessary, deal it with “factory adjustment”. If directly use blank EEPROM, should first preset I²C data, then go on other common alignment. For factory adjustment method, refer to **The appendix: factory menu**.
2. If without special indication, the alignment is conducted on the below condition:
 - a) AC power supply 120 V/60 Hz.
 - b) The whole unit is preheated for more than 30 min.
3. There is built-in auto degaussing circuit, it will degauss automatically within 1second after turning on.
4. If CRT is with magnetism and affects color purity and convergence, the internal degaussing can not degauss completely, can use degaussor to degauss externally. If color purity and convergence is still poor, then do color purity and convergence adjustment.

Alignment items and procedure

1. B+ voltage check
2. RF AGC voltage adjustment
3. Focus adjustment
4. Screen-grid voltage and white balance adjustment
5. Horizontal,vertical scan center adjustment
6. Horizontal,vertical scan amplitude adjustment
7. Pattern correction adjustment
8. The alignment flow chart see figure below.

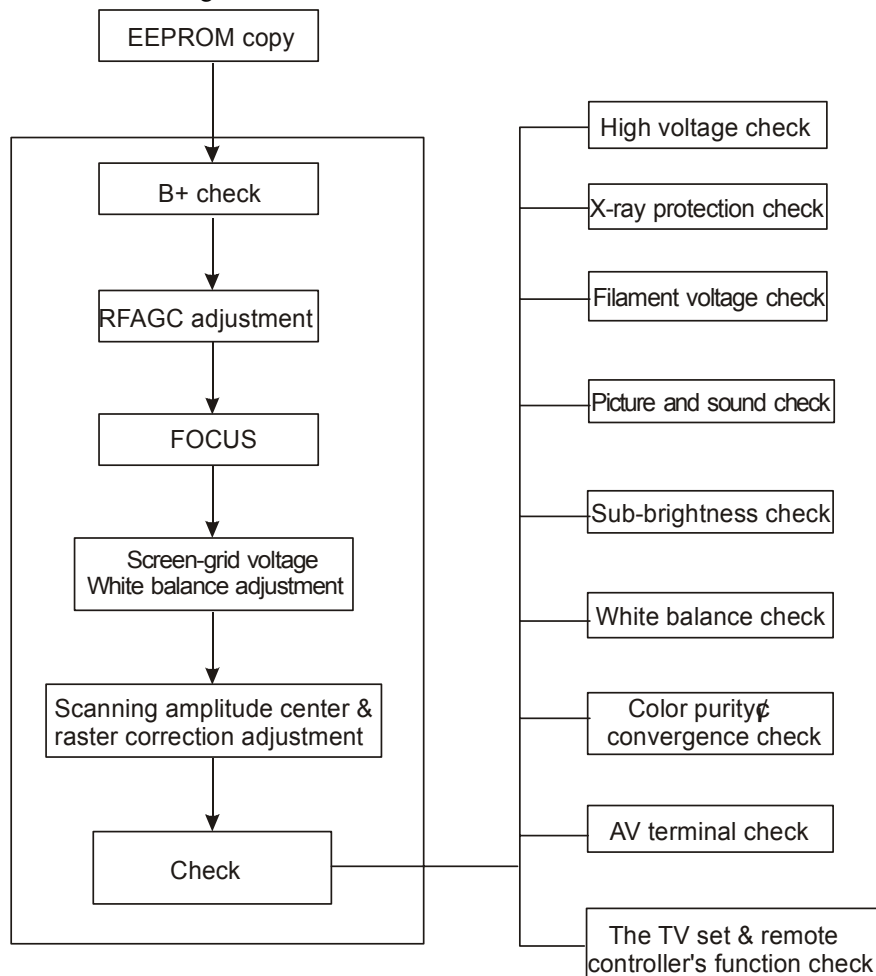


Figure 1: Alignment flow chart

Factory adjustment mode

1. B+ voltage test

- Make sure the AC power is 120 V/60 Hz
- Connect digital voltmeter to B+ test point, receive A-7 signal, set picture control to "MEMORY 2" state, test B+, the test voltage should be $100\text{ V} \pm 0.3\text{ V}$.

2. AGC adjustment

- Receive 60 dB split field A-7 signal.
- Use oscilloscope or digital voltmeter to monitor test N201 pin 43 voltage(AGC output).
- Press R-AGC button, by making use of [$\leftarrow$][$\rightarrow$] button, increase the value from low to high until the voltage just reach 4.0 V, at this time picture noisy spot should basically disappear, otherwise continue fine tune R-AGC button.

3. Focus adjustment

- 1 Receive A-12 signal, set user control to "MEMORY 2" state.
- 2 Adjust FBT's focus potentiometer, to make the screen's B area's focus optimum.

4. Accelerating electrode adjustment method (use A-7 signal)

- 1 Roughly adjust white balance, fix RCUT value, adjust GCUT, BCUT, GDRV, BDRV's value to make white balance basically normal.
- 2 Set the color to 0, contrast to 30, use oscilloscope to adjust CRT's red gun's waveform (see below figure), adjust brightness to make the seventh step's (the darkest) DC level be 180V, adjust accelerating electrode to make the seventh step slightly light up (just can separate the seventh step and below dark field).

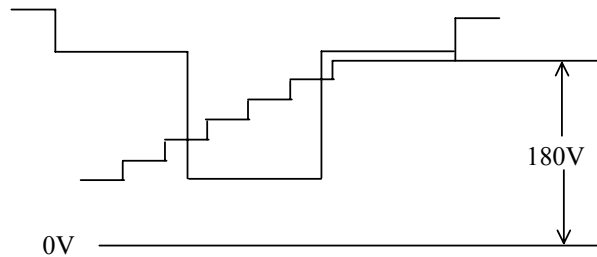


Fig 2: red gun waveform

- 3 Fine adjust white balance (color temperature: $12000\text{K} \pm 8\text{MPCD}$ $X=0.270 \pm 0.008$ $Y=0.283 \pm 0.008$)
- 4 Set contrast, brightness, color all to 0, adjust BRTN to make A-7's upper left 2 lattice slightly light up.

5. Horizontal, vertical scan center adjustment

5.1 Item adjustment

VLIN	50Hz V-linearity adjustment
VSC	50Hz Vertical S-correction
VLIS	60Hz V-linearity adjustment
VSS	60Hz Vertical S-correction

5.2 PAL(50 Hz) H-center, V-center adjustment

Receive D35 signal, set user control to "MEMORY 2" state, fine tune V-center VP50, H-center HPOS, to make picture's center be in accordance with screen's center.

5.3 NTSC(60Hz)H-center, V-center adjustment

Receive A6 signal, set user control to "MEMORY 2" state, adjust V-center VP60, H-center HPS to make picture's center be in accordance with screen's center.

6. Vertical scan amplitude adjustment

6.1 PAL(50 Hz)V-amplitude adjustment

Receive D35 signal, set user control to “MEMORY 2” state, adjust V-amplitude HIT, make picture’s upper and lower overscanning be screen size’s 8%.

6.2 NTSC(60 Hz)V-amplitude adjustment

Receive A 12 signal, set user control to “MEMORY 2” state, adjust V-amplitude HITS to make picture’s upper and lower overscanning be screen size’s 8%.

Checking point

1. High voltage check

- 1.1 Connect high voltage meter to CRT’s second anode and GND.
- 1.2 Receive A-7 signal, set user control to “MEMORY 1” state, the high voltage should be $29.0\text{ kV} \pm 1\text{ kV}$.
- 1.3 When brightness and contrast be set to minimum (zero beam current), the high voltage should not exceed 32 kV.

2. CRT filament voltage check

Receive A-7 signal, set picture control to “MEMORY 2” state, use effective value voltmeter to test CRT filament voltage, the reading should be $(6.3 \pm 0.3)\text{V}_{\text{rms}}$.

3. X-ray protection check

- 3.1 Receive A-7 signal, set user control to “MEMORY 2” state.
- 3.2 Short R554(TP501,TP502), X-ray protection circuit should effect.

4. Picture and sound check

- 4.1 Receive standard TV signal.
- 4.2 Making use of picture control buttons to check color,contrast,brightness,sharpness,tint’s control function.
- 4.3 Making use of sound control buttons to check volume control function.

5. Sub-brightness check

Receive A-7 signal, set color ,contrast,brightness all to 0, picture’s left side first grid slightly lights.

- 6. This set can produce 28 kinds of testing signal by itself. Press “SLEEP PIC DSP MENU AV” button, every time you press the buttons, one kind of testing signal will be produced. The first fourteen signals are NTSC signal and the other fourteen signals are PAL signal. After these signals are cycled for one time, it will return to original screen.

7. Color purity and convergence check(Use common regulation)

8. AV terminals (AV IN/OUT check)

9. Other control buttons (on the set and on the remote controller) function check.

Preset the following in factory

1. **Picture menu:**
 - CONTRAST 100
 - BRIGHTNESS 50
 - COLOR 50
 - SHARPNESS 50
 - TINT ± 00
 - PICTURE MEMORY 4
 - MODE
 - ▼MORE
2. **Volume preset to 30.**
3. **Set OSD language to English.**
4. **Color system preset to AUTO.**
5. **TV mode:channel position number 2.**
6. **Firstly press SHOP OUT D/K SPOUT out-factory button on the factory remote controller, “ready” will appear, wait for 8-10 seconds, the preset will be stored.**

Factory menu

1. **Enter into factory menu to operate.**
 - 1.1 Press “SLEEP PIC DSP MENU” button(The period of two-press should be within 5 seconds), enter into factory menu.
 - 1.2 Use MENU button to scroll the pages(P1,P2,P3).
 - 1.3 In factory menu status, press SLEEP button to exit.
2. **Factory menu contents(See below appendix 1.)**

Appendix 1 Factory menu

No	OSD character	Pre set	Adjustment item	Analogue setting	Input signal	Adjustment methods	Test point
01	RCUT	2F	Dark area white balance	Contrast 0 Color 0 Bright 50	Black/white signal Or horizontal bright line.	Make dark area obtain correct “white color”	screen
02	GCUT	4D					
03	BCUT	4B					
04	GDRV	41	Bright area white balance	MEMORY1	Black/white signal	Make dark area obtain correct “white color”	screen
05	BDRV	45					
06	HPOS	11	50Hz H-center	MEMORY2	D35		screen

07	VP50	06	50Hz V-center	MEMORY2	D35	Adjust to make picture's vertical and horizontal center be in accordance with CRT center.	
08	HIT	25	50Hz V-amplitude	MEMORY2	D35	Make V-amplitude meet checking standard	screen
09	VLIN	0B	V-linearity	MEMORY2	Cross-hatch signal (PAL)	Adjust to make screen's upper and lower cross-hatch height be equal.	screen
10	VSC	05	Vertical S-correction	MEMORY2	Cross-hatch signal (PAL)	Adjust to make screen's upper and middle and lower cross-hatch height be equal.	screen
11	HPS	03	60Hz H-center	MEMORY2	A6	Adjust to make picture's vertical and horizontal center be in accordance with CRT center.	screen
12	VP60	03	60Hz V-center	MEMORY2	A6		screen
13	HITS	02	60Hz V-amplitude	MEMORY2	A12	To make V-amplitude meet checking standard.	screen
14	VLIS	00	60Hz V-linearity fine tune	MEMORY2	Cross-hatch signal (NTSC)	Adjust to make screen's upper and lower cross-hatch height be equal.	screen
15	VSS	02	60Hz Vertical S-correction	MEMORY2	Cross-hatch signal □NTSC□	Adjust to make screen's upper and middle and lower cross-hatch height be equal.	Screen
16	RAGC	29	RF AGC adjustment	MEMORY2	A7	Adjust to make picture without noise	N20□43□
17	HAFC	03	1/2 AFC data adjustment		A12	Fix	
18	V25	42	25% volume adjustment		A21	Fix	
19	V50	4E	50% volume adjustment		A21	Fix	
20	TXCX	3F	YUV sub-color maximum value	Bright 50 Color 100 Contrast 50	In any signal will display MENU	Let character not defocusing	Screen
21	RGCN	16	YUV sub-color minimum value	Bright 50 Color 0 Contrast 50	Let picture without color	Let character clear	Screen
22	ABL	23	Auto brightness limitation	MEMORY1	A7	fix	Screen

23	DCBS	42	BIT4, 5 OSD character brightness level				
			BIT2, 3 Ygamma value				
			BIT 0,1 black level stretch value				
24	CNTX	50	Sub-contrast maximum value	MEMORY1	Gray scale	Fix	Screen
25	CNTC	3F	Sub-contrast middle value	Contrast 50	Gray scale	Fix	Screen
26	CNTN	0F	Sub-contrast minimum value	Contrast 0 Color 0 Bright 50	Gray scale	Fix	Screen
27	SCNT	0F	Sub-contrast	Natural	Gray scale	Fix	Screen
28	BRTX	1A	Sub-bright maximum value	Contrast 50 Bright 100 Color 0	A7	Fix	Screen
29	BRTC	2D	Bright middle value	MEMORY2	A7	Fix	Screen
30	BRTN	20	Sub-bright minimum value	Contrast 50 Bright 0 Color 0	A7	Fix	Screen
31	BRTS	1C	Sub-bright	Contrast 0 Bright 50 Color 0	A7	Fix	Screen
32	COLX	7F	Sub-color maximum value	Contrast 50 Bright 50 Color 100	D8 A7	Fix	Screen
33	COLC	40	Sub-color middle value	Natural	A7	Fix	Screen
34	COLP	00	PAL sub-color middle value	Natural	D8	Fix	Screen
35	COLN	00	Sub-color minimum value	Contrast 50 Bright 50 Color 0	A7	Let picture without color	Screen
36	TNTX	50	Sub-tint maximum value	Contrast 100 Bright 50 Color 50 Tint 100	A7	Fix	Screen
37	TNTC	50	Sub-tint middle value	Natural	A7	Fix	Screen
38	TNTN	50	Sub-tint minimum	Contrast 100	A7	Fix	Screen

			value	Bright 50 Color 50 Tint 0			
39	TNCD	40	DVD Tint middle value	Contrast 100 bright 50 Color 50 Tint 0	DVD	Fix	Screen
40	SHPX	3F	Sub-sharpness maximum value	Sharpness 100	A12	Fix	Screen
41	SHPN	10	Sub-sharpness minimum value	Sharpness 0	A12	Fix	Screen
42	ST3	2E	NTSC3.58 TV input signal's sharpness middle value	MEMORY1	Video input NTSC3.5 signal	Fix	Screen
43	SV3	2E	NTSC3.58 AV input signal's sharpness middle value.	MEMORY1	Video input NTSC3.5 signal	Fix	Screen
44	ST4	2E	Non NTSC3.58 TV input signal's sharpness middle value	MEMORY1	A12, B12	Fix	Screen
45	SV4	2E	Non NTSC 3.58 AV input signal's sharpness middle value.	MEMORY1	Video input PAL signal	Fix	Screen
46	SVD	19	DVD sharpness middle value			Fix	Screen
47	DEF	01	0:picture parallel 1:picture non-parallel		Cross-hatch signal	Fix	
48	STBY	00	Decoder intermediate amplifier STANDBY				
49	ASSH	00	Single side sharpness				
50	VBLK	00	Vertical blanking beginning point, ending point.				

51	MOD	03	Mode data				
52	UCOM	00	Chroma auto-phase control setting				
53	NOIS	01	Noise check				
54	SYCT	08	Sync signal check				
55	TUNR	02	Tuner selection				
56	CCD_OSD	50	CCD(concealed caption) OSD beginning position				
57	CCD_OSDF	50	CCD character size				
58	OSDF	4F	OSD character size				
59	OSD	15	OSD position				
60	OPT	07					
61	OPTM1	A3					
62	OPTM2	13					
Note 1:The original password CHILD LOCK MENU 0000, VCHIP PASSWORD 0000.							

CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence magnet assembly and rubber wedges need mechanical positioning. Refer to below figure 1.

COLOR 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 CONTRAST and BRIGHTNESS controls to the maximum.
3. Receive PM5515 monochromatic signal (such as G) to provide a green raster on the screen.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward 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 around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster.
9. Obtain a white raster, referring to "CRT WHITE BALANCE ADJUSTMENT".
10. Proceed with convergence adjustment.

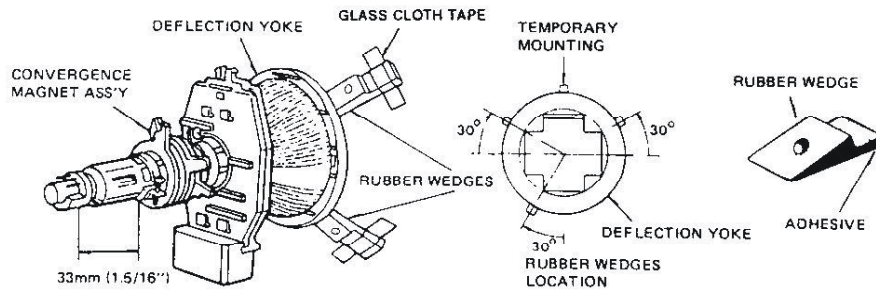


Fig. 1

FIG.3

CONVERGENCE ADJUSTMENT

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

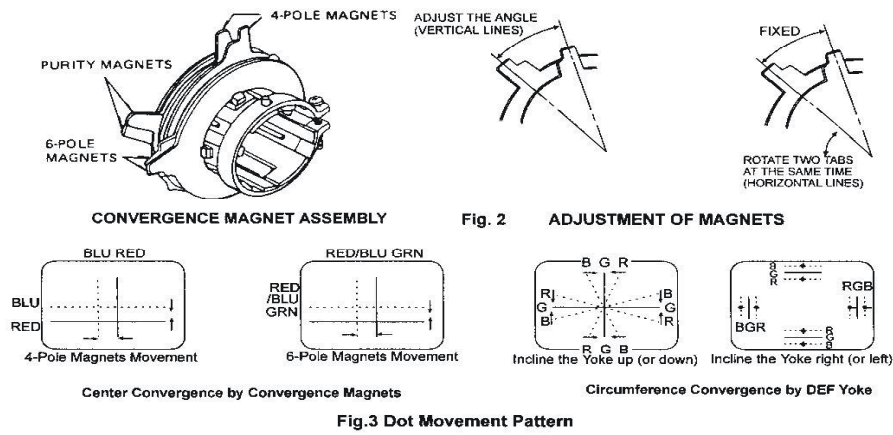
CENTER CONVERGENCE ADJUSTMENT

1. Receive crosshatch pattern with a color bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (see figure 4) and superimpose red and blue vertical lines in the center area of the picture screen. (see figure 5)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the center of the screen.(see figure 5)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3,4,5, keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets interact and make dot movement complex.

CIRCUMFERENCE CONVERGENCE ADJUSTMENT

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

9. Stick three adhesive tapes on wedges as shown in figure 3.



8

Fig5. Dot Movement Pattern

USA CHANNEL FREQUENCY TABLE (181 CH)

P IF=45.75 MHz

C IF=42.17MHz

S IF=41.25MHz

UNIT: MHz

BAN D	CHANNE L	P CARRIER	S CARRIER	LOCAL	BAN D	CHANN EL	P CARRIER	S CARRIER	LOC AL
VHF Low	2	55.25	59.75	101	UHF	W+11	361.25	365.75	407
	3	61.25	65.75	107		W+12	367.25	371.75	413
	4	67.25	71.75	113		W+13	373.25	377.75	419
	5	77.25	81.75	123		W+14	379.25	383.75	425
	6	83.25	87.75	129		W+15	385.25	389.75	431
	A-6	85.25	89.75	131		W+16	391.25	395.75	437
	A-5	91.25	95.75	137		W+17	397.25	401.75	443
	A-4	97.25	101.75	143		W+18	403.25	407.75	449
	A-3	103.25	107.75	149		W+19	409.25	413.75	455
	A-2	109.25	113.75	155		W+20	415.25	419.75	461
	A-1	115.25	119.75	161		W+21	421.25	425.75	467
	A	121.25	125.75	167		W+22	427.25	431.75	473
	B	127.25	131.75	173		W+23	433.25	437.75	479
VHF High	C	133.25	137.75	179		W+24	439.25	443.75	485
	D	139.25	143.75	185		W+25	445.25	449.75	491
	E	145.25	149.75	191		W+26	451.25	455.75	497
	F	151.25	155.75	197		W+27	457.25	461.75	503
	G	157.25	161.75	203		W+28	463.25	467.75	509
	H	163.25	167.75	209		W+29	469.25	473.75	515
	I	169.25	173.75	215		14	471.25	475.75	517
	7	175.25	179.75	221		15	477.25	481.75	523
	8	181.25	185.75	227		16	483.25	487.75	529
	9	187.25	191.75	233		17	489.25	493.75	535
	10	193.25	197.75	239		18	495.25	499.75	541
	11	199.25	203.75	245		19	501.25	505.75	547
	12	205.25	209.75	251		20	507.25	511.75	553
	13	211.25	215.75	257		21	513.25	517.75	559
	J	217.25	221.75	263		22	519.25	523.75	565
	K	223.25	227.75	269		23	525.25	529.75	571
	L	229.25	233.75	275		24	531.25	535.75	577
	M	235.25	239.75	281		25	537.25	541.75	583
	N	241.25	245.75	287		26	543.25	547.75	589
	O	247.25	251.75	293		27	549.25	553.75	595
	P	253.25	257.75	299		28	555.25	559.75	601
	Q	259.25	263.75	305		29	561.25	565.75	607
	R	265.25	269.75	311		30	567.25	571.75	613
	S	271.25	275.75	317		31	573.25	577.75	619
	T	277.25	281.75	323		32	579.25	583.75	625
	U	283.25	287.75	329		33	585.25	589.75	631
	V	289.25	293.75	335		34	591.25	595.75	637
	W	295.25	299.75	341		35	597.25	601.75	643
	W+1	301.25	305.75	347		36	603.25	607.75	649
	W+2	307.25	311.75	353		37	609.25	613.75	655
	W+3	313.25	317.75	359		38	615.25	619.75	661
	W+4	319.25	323.75	365		39	621.25	625.75	667
	W+5	325.25	329.75	371		40	627.25	631.75	673
	W+6	331.25	335.75	377		41	633.25	637.75	679
	W+7	337.25	341.75	383		42	639.25	643.75	685
	W+8	343.25	347.75	389		43	645.25	649.75	691
	W+9	349.25	353.75	395		44	651.25	655.75	697
	W+10	355.25	359.75	401		45	657.25	661.75	703

USA CHANNEL FREQUENCY TABLE (181 CH)

P IF=45.75 MHz

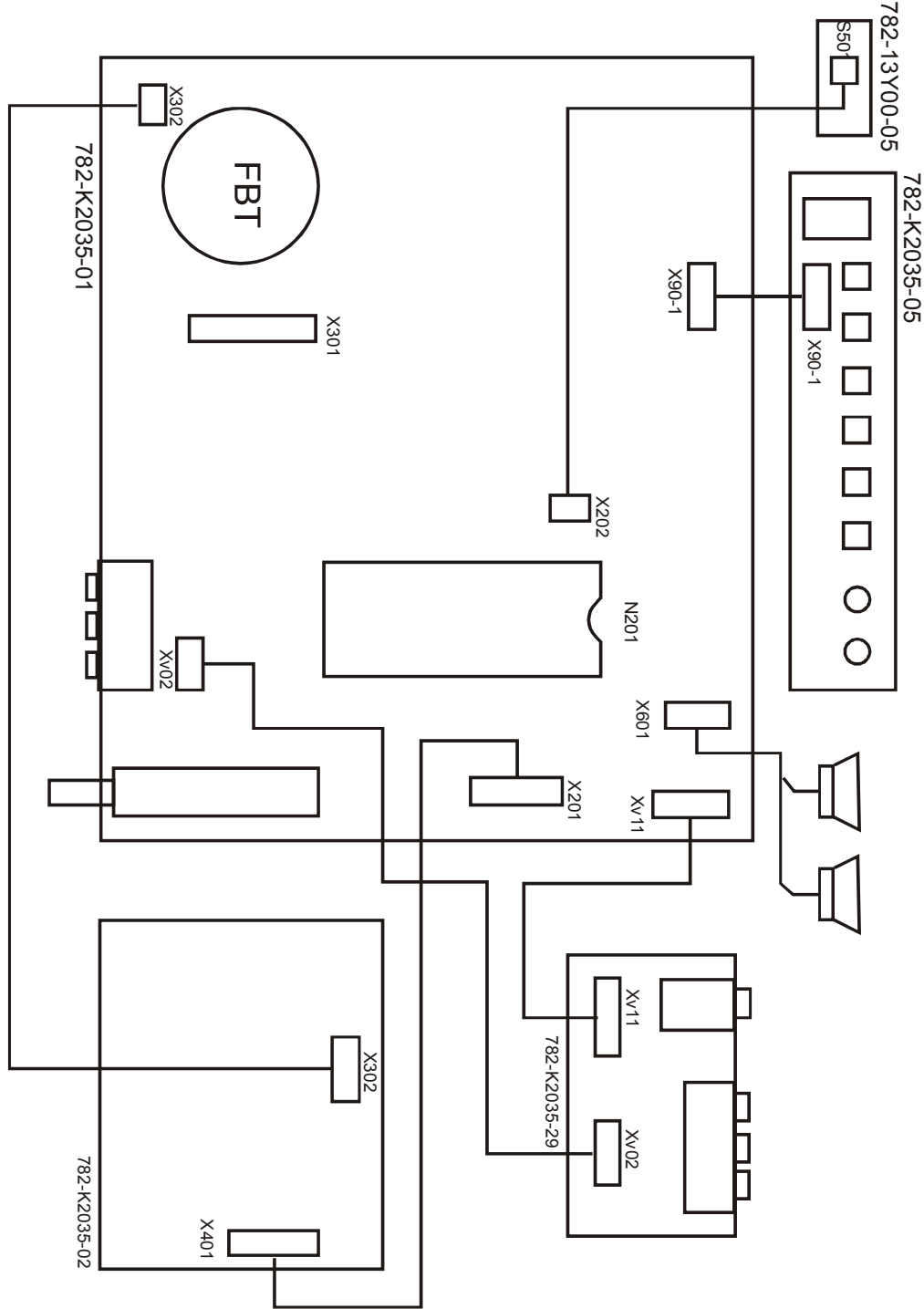
C IF=42.17MHz

S IF=41.25MHz

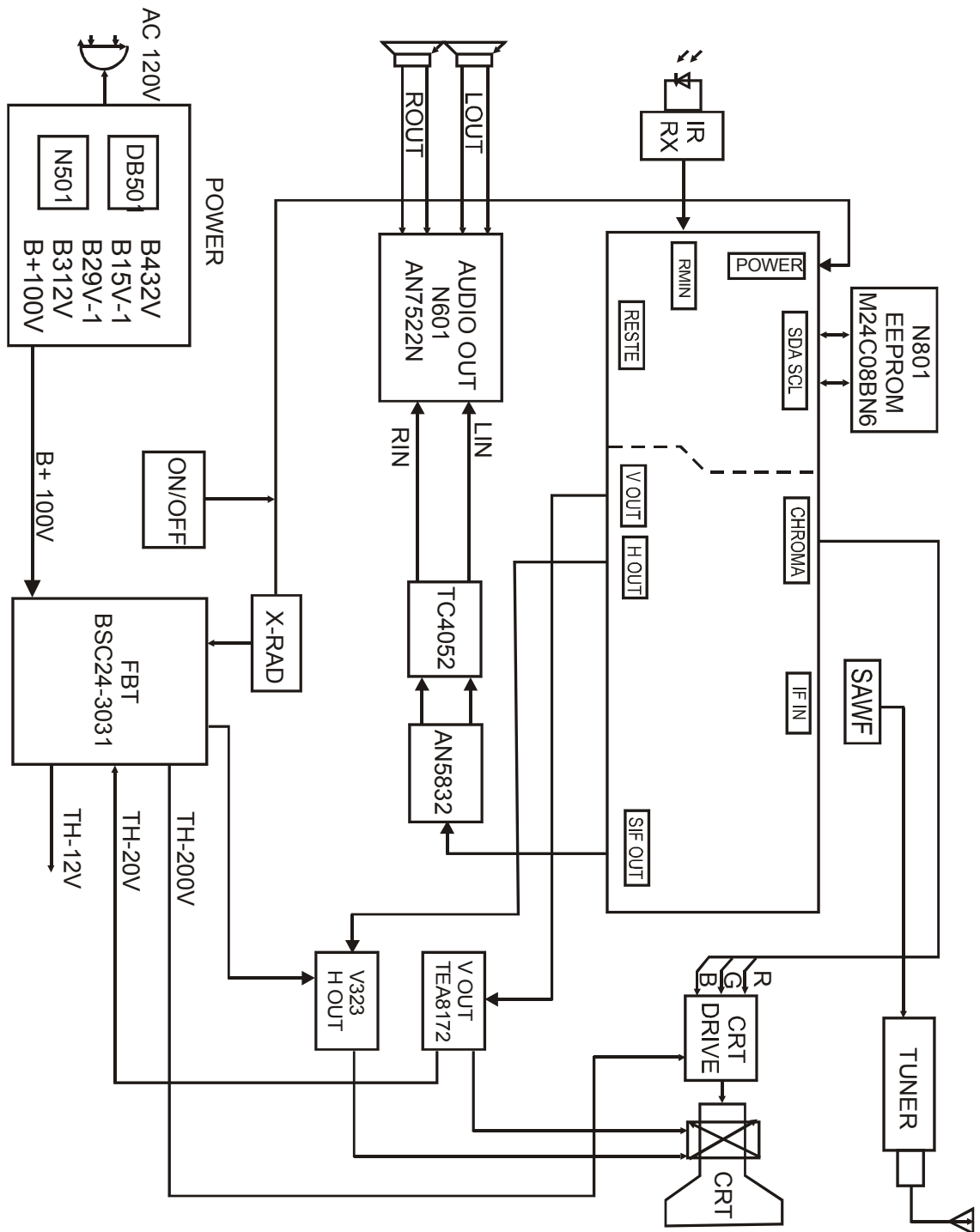
UNIT: MHz

BAND	CHANNEL	P CARRIER	S CARRIER	LOCAL
UHF	46	663.25	667.75	709
	47	669.25	673.75	715
	48	675.25	679.75	721
	49	681.25	685.75	727
	50	687.25	691.75	733
	51	693.25	697.75	739
	52	699.25	703.75	745
	53	705.25	709.75	751
	54	711.25	715.75	757
	55	717.25	721.75	763
	56	723.25	727.75	769
	57	729.25	733.75	775
	58	735.25	739.75	781
	59	741.25	745.75	787
	60	747.25	751.75	793
	61	753.25	757.75	799
	62	759.25	763.75	805
	63	765.25	769.75	811
	64	771.25	775.75	817
	65	777.25	781.75	823
	66	783.25	787.75	829
	67	789.25	793.75	835
	68	795.25	799.75	841
	69	801.25	805.75	847

WIRING DIAGRAM

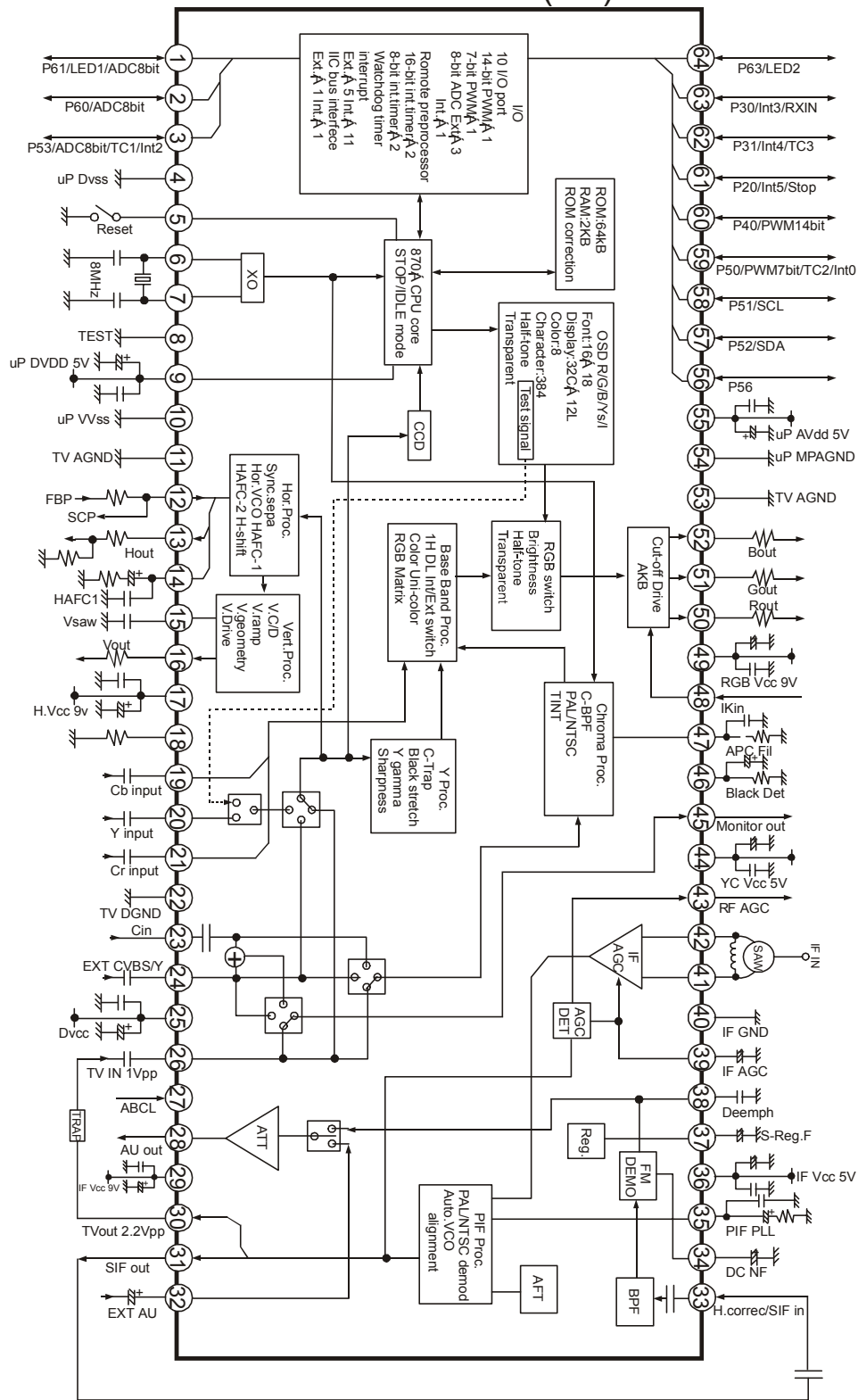


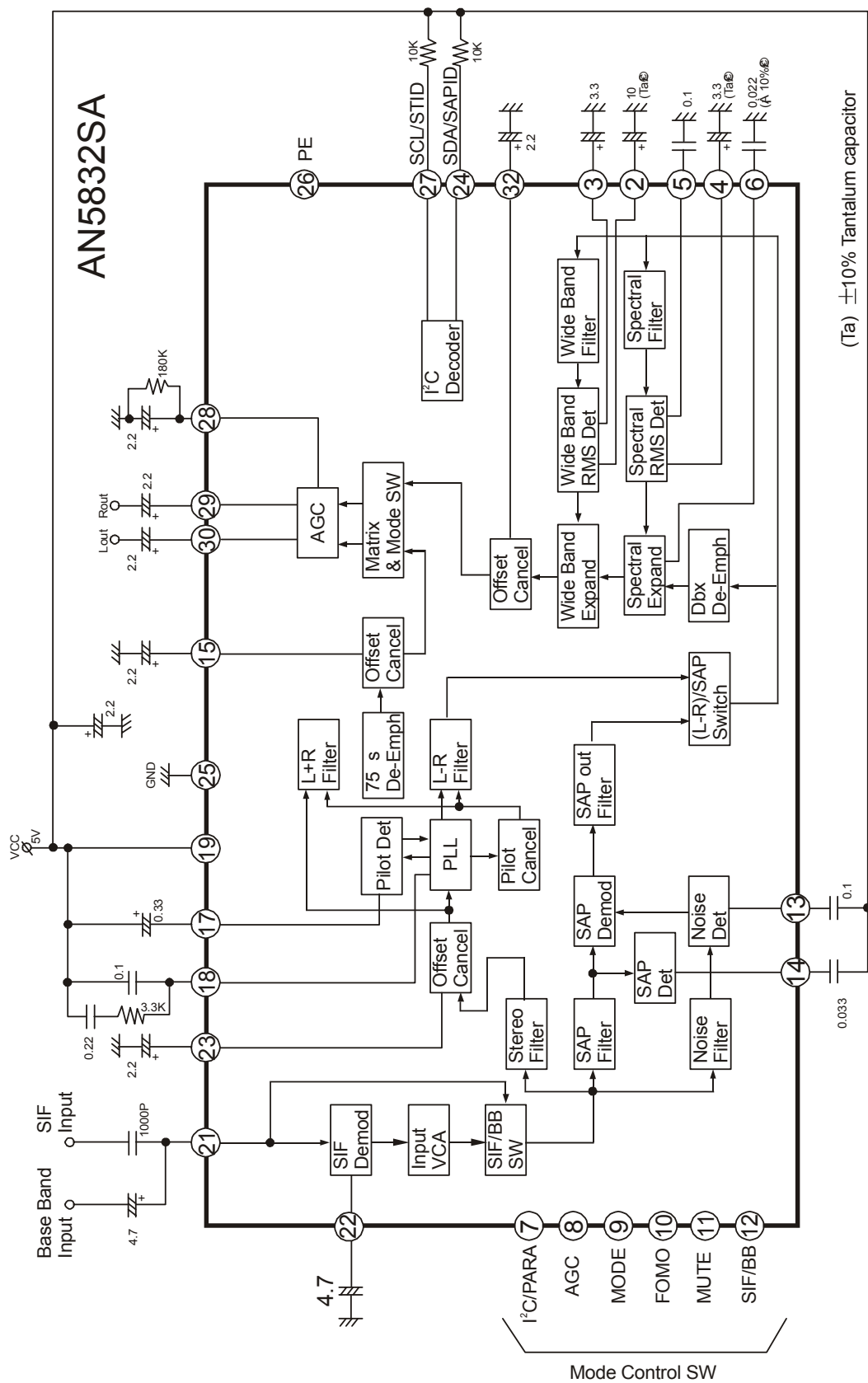
BLOCK DIAGRAM



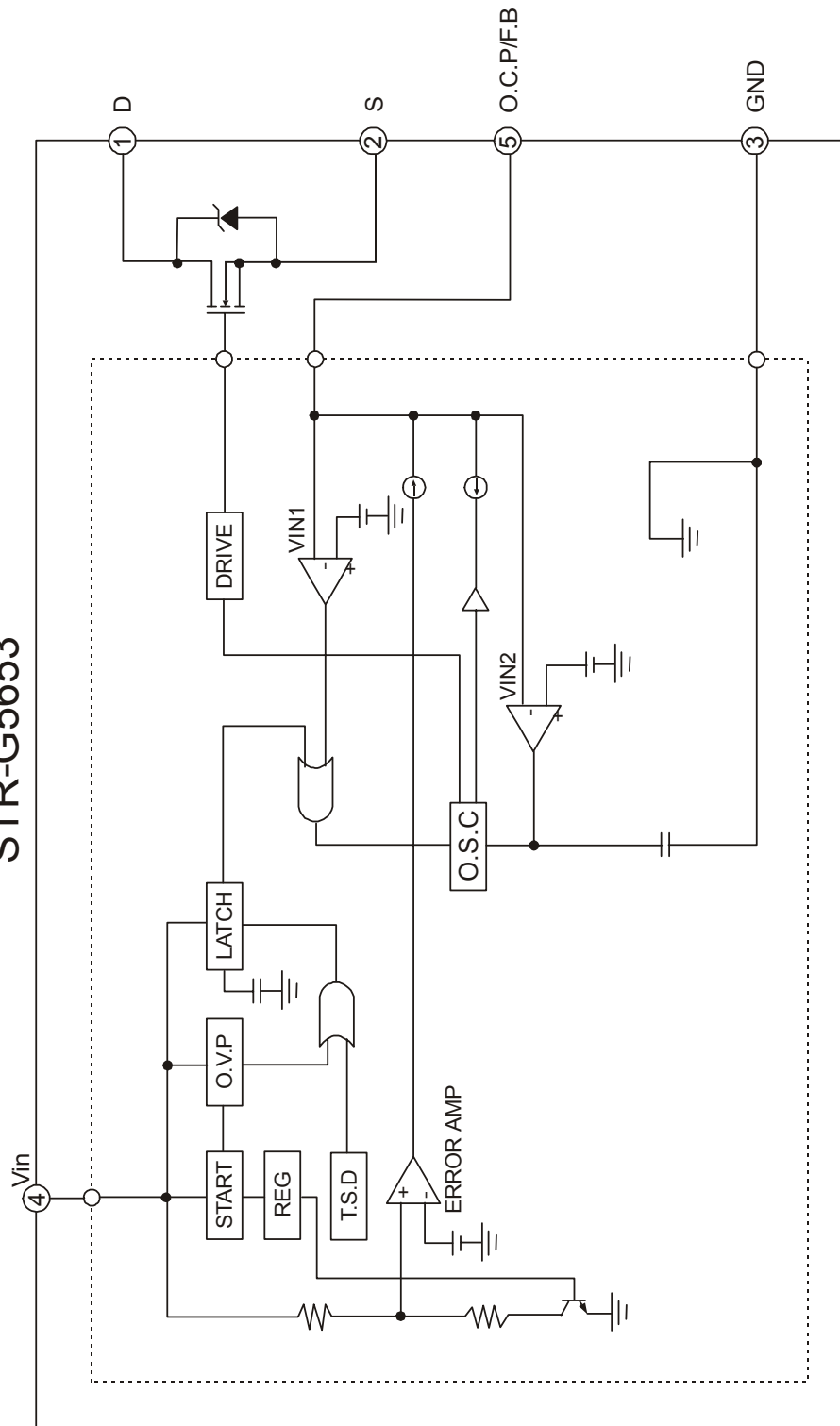
IC BLOCK DIAGRAM

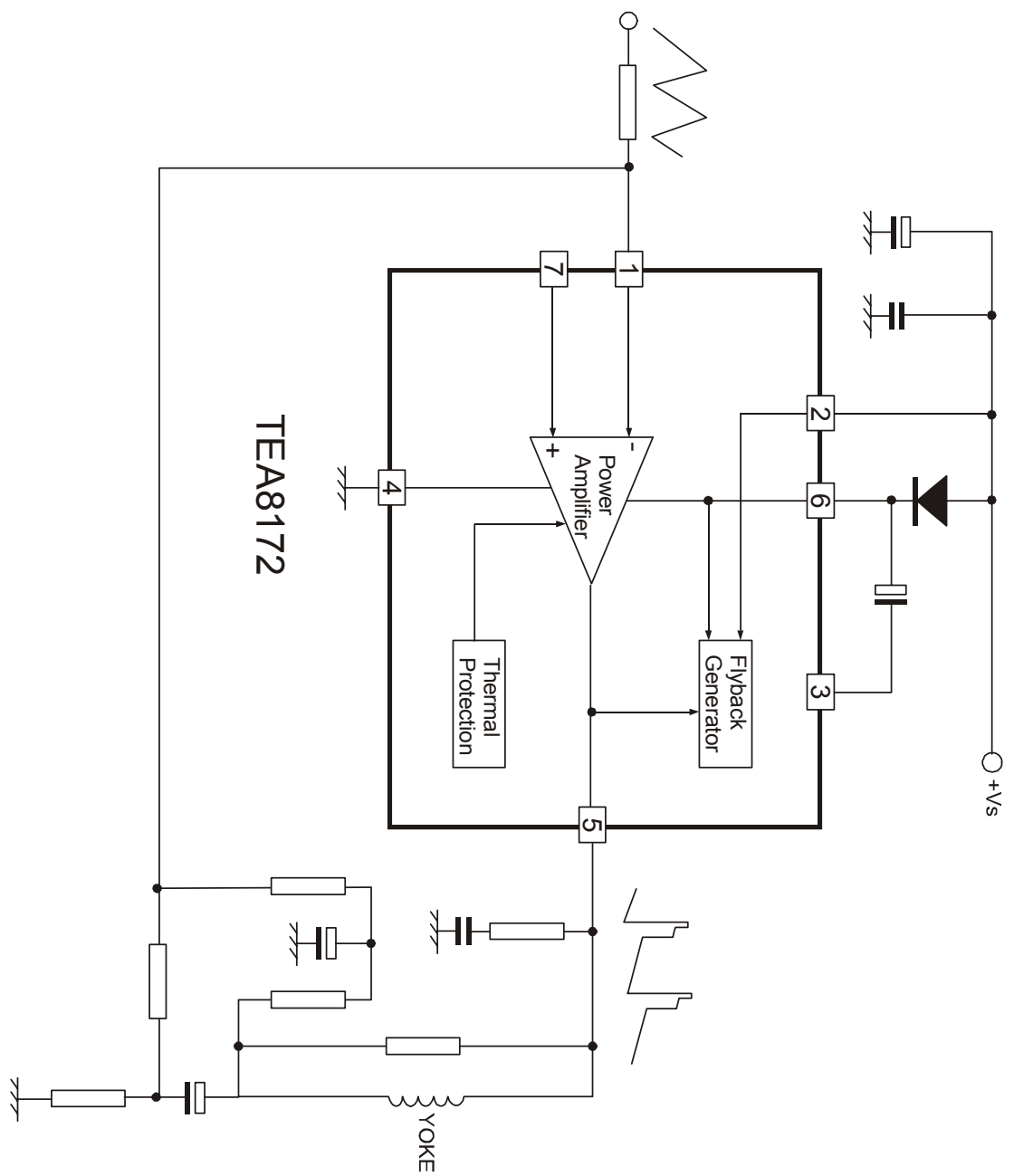
TMPA8801PSN(PN)

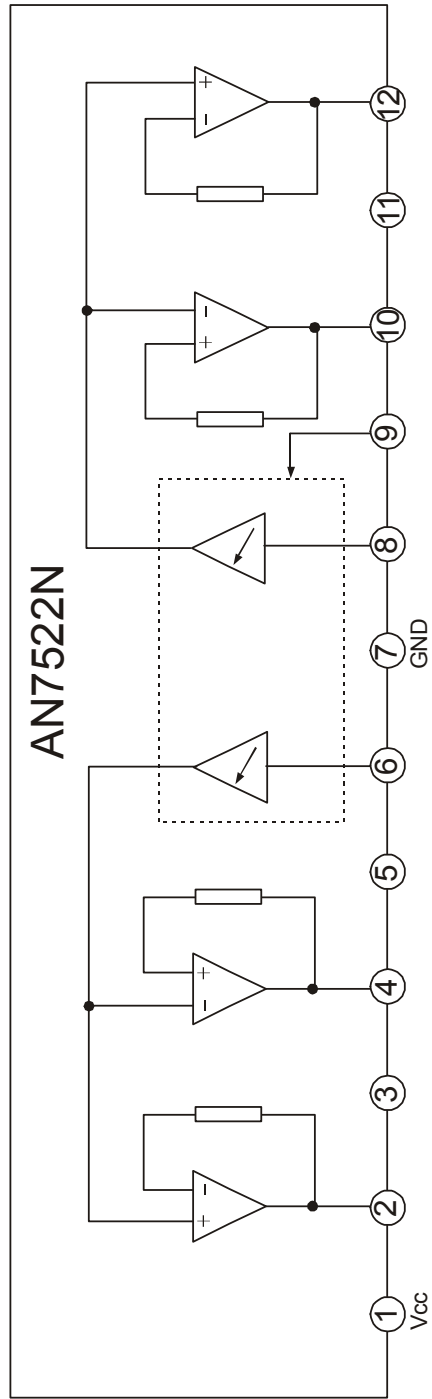




STR-G5653







THE IC PIN'S VOLTAGE IN NORMAL/STAND BY WORKING MODE (120V, PRESENT MODE)

1. TMPS8801(N201)

PIN	Voltage(V) Normal	Voltage (V) Stand by	PIN	Voltage(V) Normal	Voltage(V) Stand by
1	5.69	5.63	33	3.04	
2	5.69	5.62	34	2.55	
3	5.68	5.61	35	2.48	
4	0	0	36	5.20	
5	5.69	5.62	37	2.25	
6	2.52	5.60	38	4.5	
7	2.29	2.49	39	1.77	
8	0	2.26	40	0	
9	5.69	5.60	41	0.10	
10	0	0	42	0.10	
11	0		43	2.11	
12	1.06		44	5.19	
13	1.81		45	1.84	
14	6.81		46	2.46	
15	4.21		47	2.66	
16	5.03		48	1.37	
17	9.19		49	1.37	
18	0		50	9.23	
19	2.56		51	2.41	
20	2.57		52	2.48	
21	2.56		53	2.59	
22	0		54	0	0
23	0		55	5.70	5.60
24	2.55		56	0.06	5.56
25	3.52		57	5.33	5.54
26	2.77		58	5.23	5.50
27	4.71		59	0.01	0
28	3.60		60	2.20	5.56
29	9.24		61	0	0.04
30	3.73		62	5.04	5.50
31	1.91		63	5.64	5.55
32	0		64	0	1.04

2. AN5832(NS01)

PIN	Voltage(V)	PIN	Voltage(V)
1	Empty	17	3.23
2	0.73	18	3.58
3	2.76	19	5.20
4	0.60	20	Empty
5	2.45	21	3.67
6	2.03	22	3.48
7	5.20	23	2.25
8	Empty	24	5.14
9	Empty	25	0
10	Empty	26	Empty
11	Empty	27	4.90
12	Empty	28	1.89
13	3.45	29	2.22
14	3.46	30	2.22
15	2.28	31	Empty
16	Empty	32	2.12

3. AN7522N(N601)

PIN	Voltage(V)	
1	10.52	
2	4.66	
3	0	
4	4.68	
5	8.18	0.44
6	1.49	
7	0	
8	1.48	
9	0.43	
10	4.62	
11	0	
12	4.61	

4. TEA8172(N301)

PIN	Voltage
1	3.75
2	20.6
3	1.53
4	0.01
5	12.86
6	20.9
7	3.76

5. STR-G5653(N501)Voltage(V)

PIN	1	2	3	4	5
Standby	135	0	0	20	0
Voltage	18	0	0	32	5

6. TC4052(TV)

PIN	Voltage	PIN	Voltage
1	4.30	9	0.05
2	0.27	10	0.01
3	0.75	11	0
4	Empty	12	0.74
5	0.22	13	0.74
6	0	14	0.6
7	0	15	0.13
8	0	16	9.23

7. TDQ-3B8GN(A101)

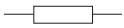
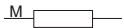
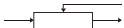
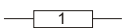
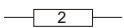
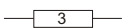
1	3	4	5	6/7	9	11
AGC	AS	SCL	SDA	BM1/2	BT	IF
2.1	5.0	5.7	5.3	5.03	32	0

The triode pin's voltage in normal working mode (120V, PRESENT Mode. Parenthesis means stand by)

Symbol	Type	Voltage		
		C	E	B
V101	2SC2717	7.38	0.24	1
V206	C1815Y	9.23	1.97	2.59
V207	C1815Y	9.23	1.85	2.48
V208	C1815Y	9.23	1.79	2.41
V401	2SC2688	164.6	1.46	1.77
V402	2SC2688	161.4	1.53	1.84
V403	2SC2688	156.4	1.64	1.95
V404	2SC1815Y	2.81	0.01	0.01
V801	2SA1015	0	2.52	1.84
V802	2SA1015	2	9.16	9.18
V803	C1815	4.95	0	0.24
V810	A562TM-0	5.7	5.71	5.03
V601	C1815-Y	0.55	0	0
V509	2SA1015	0	13.06	13.13
V508	SFORIB42	0.01	0.03	0.01
V201	C1815Y	9.24	3.02	3.72
V205	2SA1015Y	0	3.75	3.07
VV01	2SA1015	0	0.7	0.03
V203	C1815Y	9.24	3.68	4.34
V501	2SA1015	9.89(7.41)	13.14(7.56)	12.56(6.77)
V502	2SC1815-Y	12.56(0)	0.01(0)	0.03(0.68)
V505	2SC3807	13.14(7.5)	9.21(0)	9.77(0.13)
V507	2SC3807	9.89(7.3)	5.72(5.5)	6.26(6.0)
V506	2SC1815-BL	9.77(0.2)	0.01(0)	0.03(0.7)
V324	C3807	7.03	5.33	5.89
V322	C2383-0	21.2	0.01	0.4
N303	78M09	13(1 Pin)	0(2Pin)	9(3Pin)

CAUTION: All the parts in the schematic diagram marked with red frame and the signs of  are extremely important a safety. In case of replacement of any part of the components. Be sure to consult the service manual carefully.

1. The schematic diagram is characteristic. The various values in the electric circuits are basic data, which are changeable according to the various basic circuits.
2. Testing waves are obtained by inputting the standard color bar of the signed.
3. Resistance unit is in Ohm, namely:
K=1000 M=1000K
Capacitance unit is in μF .
P= $\mu\mu\text{F}$ ($\mu=10^{-6}$)
4. Unless otherwise noted inside, all resistors are 1/6W, the withstand voltage of all capacitor are 50V.
5. Inductance unit is in μH .
6. The mark  in the diagram means Ferrite ring.
7. The symbols of various types of resistors and capacitors are listed as follows:

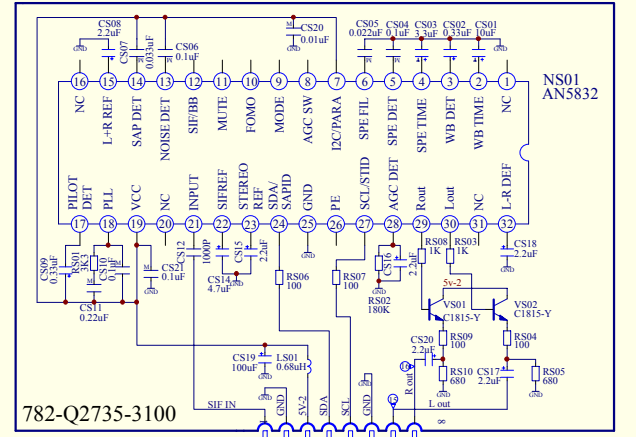
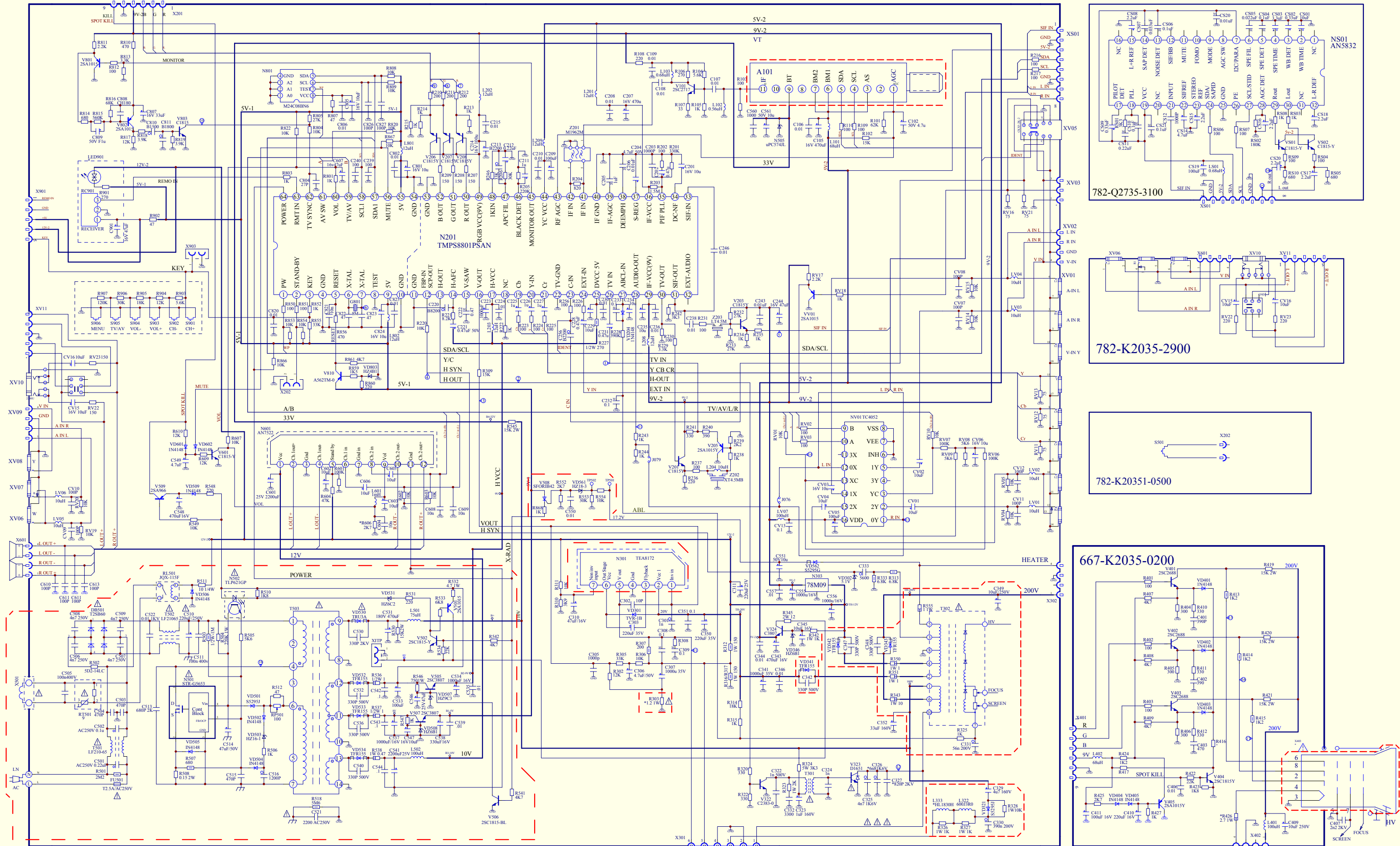
Carbon Film	
Metal Film	
Potentiometer	
1/2W	
1W	
2W	
3W	
Ceramic	
AC Ceramic	
Ployester	
Ploypropylene	
Metal Polyester	
Aluminium	
Tantalum	

NTSC

2001.11.26

SCHEMATIC DIAGRAM

782-K2035-0100



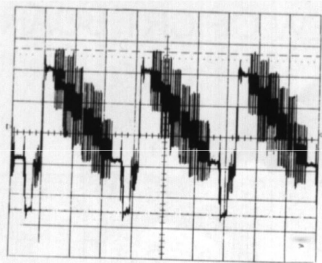
782-Q2735-3100

782-K2035-2900

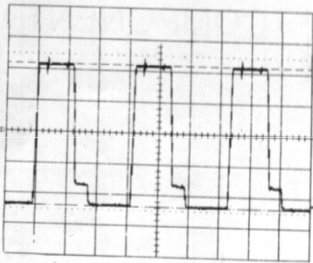
782-K20351-0500

667-K2035-0200

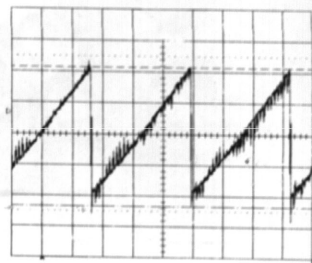
2002.04.22



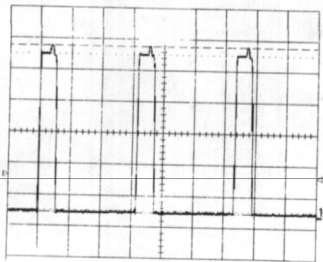
(1) 1V_{p,p}



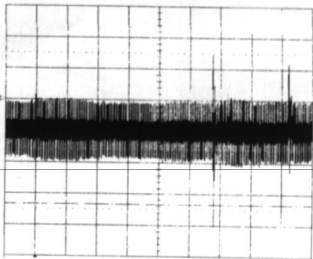
(2) 4.5V_{p,p}



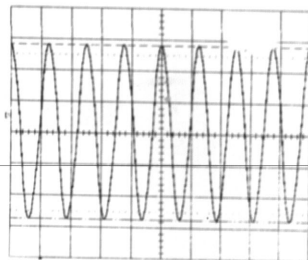
(3) 2.2V_{p,p}



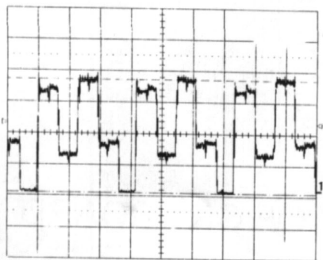
(4) 5.3V_{p,p}



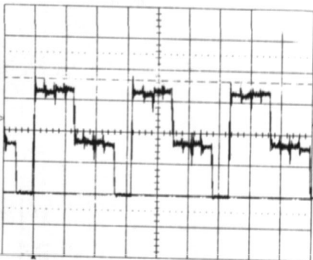
(5) 200mV_{p,p}



(6) 5.5V_{p,p}



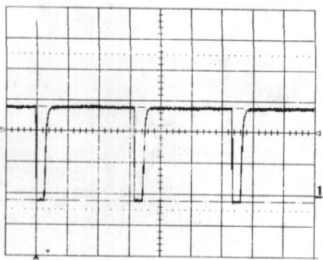
(7) 3.6V_{p,p}



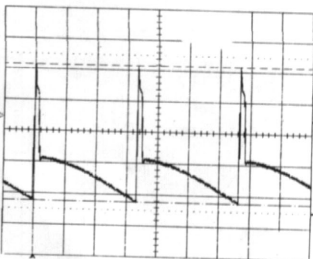
(8) 3.7V_{p,p}



(9) 3.7V_{p,p}



(10) 6V_{p,p}

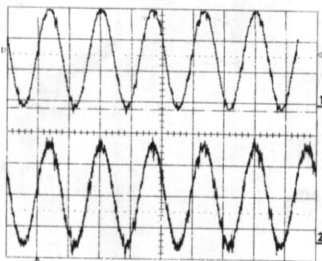


(11) 44V_{p,p}

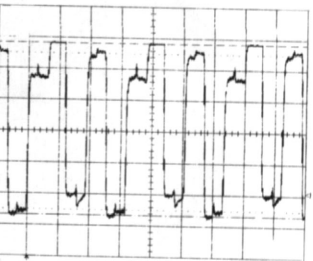


(12) 862V_{p,p}

(14) 1.6V_{p,p}(L)



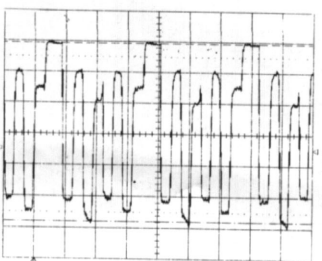
(13) 1.86V_{p,p}(R)



(15) 110V_{p,p}



(16) 101V_{p,p}



(17) 114V_{p,p}



(18) 444V_{p,p}

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE “X-RAY RADIATION PRECAUTION”, “SAFETY PRECAUTION” AND “PRODUCT SAFETY NOTICE” ON PAGE 1&2 OF THIS MANUAL.

CAUTION: 1. The shaded areas makes in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with type identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2.
2. Do not degrade the safety of the receiver through improper servicing.

ELECTRICAL PARTS LIST

MAIN BOARD

SYMBOL	PART NO.	DESCRIPTION
	782-K2035-0100	MAIN PCB
CRYSTAL		
G801	329-58001-00	8MHZ
DIODE		
VD204	340-00001-003	1N4148
VD504	340-00001-003	1N4148
VD505	340-00001-003	1N4148
VD506	340-00001-003	1N4148
VD502	340-00001-003	1N4148
VD601	340-00001-003	1N4148
VD602	340-00001-003	1N4148
VD509	340-00001-003	1N4148
VD321	340-00005-003	S5295J
VD501	340-00005-003	S5295J
VD301	340-00086-003	TVR-1B
VD343	340-00288-003	TFR155
VD562	340-00005-00	S5295J
VD342	340-00288-00	TFR155
VD341	340-00288-00	TFR155
VD532	340-00288-00	TFR155
VD533	340-00288-00	TFR155
VD530	340-00292-00	TRU3A
VD534	340-00291-00	TEU2YX

SYMBOL	PART NO.	DESCRIPTION
REGULATED DIODE		
VD510	340-51180-00	HZ12A1
VD803	340-50380-003	HZ4B1
VD302	340-50910-003	HZ9C1
VD531	340-50610-003	HZ6C2
VD507	340-50950-003	HZ9C3
VD503	340-51560-003	* HZ16-1
VD561	340-51850-003	HZ18-3
VD346	340-50560-003	HZ6B1
VD508	340-50560-003	HZ6B1
REDTIFIER		
DB501	340-80022-00	T2SB60
TRANSISTOR		
V508	343-00420-404	SFORIB42
V810	343-05620-604	2SA562TM-O
V205	343-10150-104	2SA1015Y Pr2.5
V501	343-10150-104	2SA1015Y Pr2.5
V801	343-10150-104	2SA1015Y Pr2.5
V802	343-10150-104	2SA1015Y Pr2.5
VV01	343-10150-104	2SA1015Y Pr2.5
V509	343-10150-104	2SA1015Y Pr2.5
V201	343-18150-104	2SC1815-Y
V203	343-18150-104	2SC1815-Y
V502	343-18150-104	2SC1815-Y
V601	343-18150-104	2SC1815-Y
V803	343-18150-104	2SC1815-Y
V206	343-18150-104	2SC1815-Y
V207	343-18150-104	2SC1815-Y
V208	343-18150-104	2SC1815-Y
V506	343-18150-204	2SC 1815-BL
V323	343-18030-80	ST1803DHI
V322	343-23830-60	2SC2383-0
V101	343-27170-00	2SC2717
V505	343-38070-00	2SC3807
V507	343-38070-00	2SC3807
V324	343-38070-00	2SC3807
IC		
N505	352-05740-00	uPC574 (D)
N502	352-06210-7Q	TLP621-GB(UL) (O)
N801	352-24080-50	M24C08BN6 (M)

SYMBOL	PART NO.	DESCRIPTION
NV01	352-40520-60	TC4052BP (M)
N501	352-56530-00	STR-G5653 (M)
N601	352-75220-00	AN7522N (M)
N303	352-78009-10	TA78L009AP (D)
N301	352-81720-10	TDA8172 (M)
N201	352-88030-00	TMPA8803CSBNG-3VJ0
S-VIDEO		
XV05	364-91202-00	CKX5-2K-2
AV SOCKET		
XV01	364-98205-00	AV901-6
RELAY		
RL501	457-12019-90	JQX-14FF-012-1HS
SAW FILTER		
Z201	458-07008-00	M1962M
CERAMIC CAPACITOR		
C503	459-B147M-20	ECK-DNS471MBX
C504	459-B147M-20	ECK-DNS471MBX
C521	459-B222M-20	ECK-DNS222MEX
C506	459-B247R-00	DE0807F472ZAC250V
C507	459-B247R-00	DE0807F472ZAC250V
C508	459-B247R-00	DE0807F472ZAC250V
C509	459-B247R-00	DE0807F472ZAC250V
THIN-FILM CAPACITOR		
C502	462-2B410-M0V	250VAC-0.1uF-M
C501	462-2B422-M0V	250VAC-0.22uF-M
METAL RESISTOR		
R313	467-2E268-H0	1/2W-6.8kΩ-JL
R532	467-2FA47-H0	1W-4.7Ω-JL
R546	467-2F175-H0	1W-750Ω-JL
R326	467-2F210-H0	1W-1KΩ-JL
R323	467-2F220-H0	1W-2KΩ-JL
R328	467-2F310-H0	1W-10kΩ-JL
R504	467-2F422-H0	1W-220K-JL
R508	467-2GB15-H0	2W-0.15Ω-JL
R345	467-2G012-H0	2W-12Ω-JL
R530	467-2G315-H0	2W-15kΩ-JL
R545	467-2G315-H0	2W-15kΩ-JL
R307	467-2E120-H0	1/2W-200Ω-JL
R227	467-2E127-H0	1/2W-270Ω-JL
R507	467-2E168-H0	1/2W-680Ω-JL

SYMBOL	PART NO.	DESCRIPTION
R342	467-2E210-H0	1/2W-1kΩ-JL
MELTABLE RESISTOR		
R536	467-4E001-H0	1/2W-1Ω-JL
R537	467-4E001-H0	1/2W-1Ω-JL
R350	467-4FB33-H0	1W-0.33Ω-JL
R351	467-4FB33-H0	1W-0.33Ω-JL
R538	467-4FB33-H0	1W-0.33Ω-JL
R555	467-4F001-H0	1W-1Ω-JL
R343	467-4F010-H0	1W-10Ω-JL
WIRE-ROUND RESISTOR		
R303	467-6FA12-H0	RX21-1-1.2Ω-J
CEMENT RESISTOR		
R324	467-50233-H8	RY27-3Z-5W-3.3K-J
CARBON RESISTOR		
R503	467-8E510-H0A	1/2W-1MΩ-J
R501	467-8E522-H0A	1/2W-2.2M-J
R518	467-8E556-H0A	1/2W-5.6MΩ-J
THERMISTOR		
RT501	469-10023-00	96708 (9Ω)
R502	469-40004-00	5D2-14LC
SWITCH TRANSFORMER		
T503	470-00272-00	SR3601B
POTENTIOMETER		
RP501	468-01108-00	GVA061-100Ω±20%
INDUCTANCE WITH COLOUR CODES		
LV01	471-2010K-003	SPT0305-100K-5
LV02	471-2010K-003	SPT0305-100K-5
LV03	471-2010K-003	SPT0305-100K-5
LV04	471-2010K-003	SPT0305-100K-5
L801	471-2012K-003	SPT0305-120K-5
L201	471-2012K-003	SPT0305-120K-5
L202	471-2012K-003	SPT0305-120K-5
L208	471-2012K-003	SPT0305-120K-5
L209	471-2012K-003	SPT0305-120K-5
L101	471-2068K-003	SPT0305-680K-5
LV07	471-2110K-003	SPT0305-101K-5
L102	471-2B56K-00	SPT0305-R56K-5
L103	471-2B68K-00	SPT0305-R68K-5
L204	471-2010K-00	SPT0305-100K-5
L601	471-2210K-10	LGA0410-1000uH-K

SYMBOL	PART NO.	DESCRIPTION
L802	471-2012K-00	SPT0305-120K-5
L203	471-2012K-00	SPT0305-120K-5
H-DRIVE TRANSFORMER		
T301	472-10038-00	DE1939
FBT		
T302	472-2411B-00	BSC25-3368
CERAMIC FILTER		
Z203	475-15451-00	LT4.5MH
CERAMIC TRAP FILTER		
Z202	475-25451-00	XT4.5MB
H-LINEARITY COIL		
L333	477-00083-00	LX221
POWER FILTER		
T501	477-20028-00	LF21065
T502	477-20028-00	LF21065
FIXED INDUCTANCE		
L501	477-40031-00	LG750
L502	477-40164-00	LGB1012-L100
FBT		
T302	472-24206-00	BSC24-3031!
OTHER		
TUNER(A101)	590-40707-00	115-B-8035AZ
POWER CORD	491-702D0-02	UL
FUSE(FU501)	569-16101-90	51S 2.5A/250V
CRT	335-2112K-00U	CRT54SX503Y22-DC01
DEGAUSSING COIL	477-12102-00	BD-204A
CRT SOCKET(X403)	364-58204-00	GZS8-17(UL)

FRONT AV BOARD

SYMBOL	PART NO.	DESCRIPTION
	782-K2025-2900	FRONT AV PCB
AV SOCKET		
XV06	364-93202-00	AV306-2
ELECTROLYTIC CAPACITOR		
CV15	464-6D610-M0	CD110-16V-10uF-M
CV16	464-6D610-M0	CD110-16V-10uF-M
CARBON RESISTOR		
RV22	467-1D115-H0	RT14-1/4W-150Ω-J
RV23	467-1D115-H0	RT14-1/4W-150Ω-J

CRT BOARD

SYMBOL	PART NO.	DESCRIPTION
	782-J2130-0200	CRT PCB
DIODE		
VD401	340-00001-00	1N4148
VD402	340-00001-00	1N4148
VD403	340-00001-00	1N4148
TRANSISTOR		
V404	343-18150-10	2SC1815-Y
V401	343-26880-60	2SC2688M
V402	343-26880-60	2SC2688M
V403	343-26880-60	2SC2688M
METAL RESISTOR		
R419	467-2G315-H0	2W-15kΩ-JL
R420	467-2G315-H0	2W-15kΩ-JL
R421	467-2G315-H0	2W-15kΩ-JL
MELTABLE RESISTOR		
R426	467-4F003-H0	1W-3Ω-JL
INDUCTANCE WITH COLOUR CODES		
L401	471-1110K-00	EL0606SKI-101K
L402	471-2068K-10	LGA0410-68uH-K

STEREO BOARD

SYMBOL	PART NO.	DESCRIPTION
	782-Q2735-310A	STEREO PCB
IC		
NS01	352-58320-50	AN5832SA (D)
TRANSISTOR		
VS01	343-18150-104	2SC1815-Y
VS02	343-18150-104	2SC1815-Y
INDUCTANCE WITH COLOUR CODES		
LS01	471-2068K-103	LGA0410-68uH-K