AKIRA

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Colour TV
Service Manual

Model Group: CT-14XA9

CHASSIS: EX-1A1

MODEL:
CT-14XA9A

CONTENT

SPECIFICATIONS

Model Number		
RF system	Color system	PAL4.43, NTSC3.58, NTSC4.43, SECAM
	Sound system	D/K, I, M, B/G
Video system		PALA.43, NTSC3.58, NTSC4.43, PAL-M, PAL-N (50/60Hz)
Receiving channel	VHF	C1- C12 (49.75-85.25MHz, 168.25-216.25MHz)
	UHF	C 13-C57 (471.25-863.25MHz)
	CATV	Z1-*Z7* (111.0-167.0MHz)
		Z8-Z35 (223.0-447.0MHz)
Channels preset		236
Antenna input		75 ohm (unbalanced)
Picture tube Effective screen dimensions (Approx.)		406x305mm
Audio output (THD < OR = 7%)		4W+4W
Power source		110-240V AC, 50/60Hz
Weight (Approx.)		25kg
Dimensions (W x H x D) (Approx.)		566x450x477mm
Rated power consumption 220V AC, 50Hz		69W

Designs and specifications are subject to change without notice

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 TV is the CRT. The TV minimizes X-RAY radiation, which ensures safety during normal operation. To prevent X-ray radiation, the replacement CRT must be identical to the original fitted as specified in the parts list.

3. Some components used in this TV have safety related characteristics preventing the CRT from emitting X-ray radiation. For continued safety, replacement component should be made after referring the PRODUCT SAFETY NOTICE below.

4. Service and adjustment of the TV may result in changes in the nominal EHT voltage of the CRT anode. So ensure that the maximum EHT voltage does not exceed the rated value after service and adjustment.

SAFETY PRECAUTION

Warning: Refer Servicing to Qualified Service Personnel Only

1. The TV has a nominal working EHT voltage of 25kV. Extreme caution should be exercised when working on the TV with the back removed.
    a. Do not attempt to service this TV if you are not conversant with the~ precautions and procedures for working on high voltage equipment.
    b. When handling or working on the CRT, always discharge the anode to the TV chassis before removing the anode cap in ease of electric shock.
    c. The CRT, if broken, will violently expel glass fragments. Use shatterproof goggles and take extreme care while handling.
    d. Do not hold the CRT by the neck as this is a very dangerous practice.
2. It is essential that to maintain the safety of the customer all power cord forms be replaced exactly as supplied from factory.
3. Voltage exists between the hot and cold ground when the TV is in operation. Install a suitable isolating transformer of beyond rated overall power when servicing or connecting any test equipment for the sake of safety.
4. When replacing ICs, use specific tools or a static-proof electric iron with small power (below 35W)
5. Do not use a magnetized screwdriver when tightening or loosing the deflection yoke assembly to avoid electronic gun magnetized and attenuation in convergence of the CRT.
6. When remounting the TV chassis, ensure that all guard devices, such as nonmetal control buttons, switch, insulating sleeve, shielding cover, isolating resistors and capacitors, are installed on the original place.
7. Replace blown £uses within the TV with the fuse specified in the parts list.
8. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be the company-approved type and must be mounted as the original.
9. Keep wires away from high temperature components.

PRODUCT SAFETY NOTICE

Caution: For Your Protection, the Following Product Safety Notice Should Be Read Carefully Before Operating and Servicing This TV Set.

1. Many electrical and mechanical components in this 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 replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the circuit diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.
2. Do not slap or beat the cabinet or CRT, since this may result in fire or explosion.
3. Never allow the TV sharing a plug or socket with other large-power equipment. Doing so may result in too large load, causing fire.
4. Do not allow anything to rest on or roll over the power cord. Protect the power cord from being walked on, modified, cut or pinched, particularly at plugs.
5. Do not place any objects, especially heavy objects and lightings, on top of the TV set. Do not install the TV near any heat sources such as radiators, heat registers, stove, or other apparatus that produce heat.
6. Service personnel should observe the SAFETY INSTRUCTIONS in this manual during use and servicing of this TV set. Otherwise, the resulted damage is not protected by the manufacturer.

Safety Symbol Description

The lightning symbol in the triangle tells you that the voltage inside this product may be strong enough to cause an electric shock. Extreme caution should be exercised when working on the TV with the back removed.

This is an international hazard symbol, telling you that the components identified by the symbol have special safety-related characteristics.

This symbol tells you that the critical components identified by the FDA marking have special safety-related characteristics.

This symbol tells you that the critical components identified by the UL marking have special safety-related characteristics.

Maintenance

1. Install the TV set on a stable and level surface. Do not place the set near or over a radiator or heat register, or where it is exposed to direct sunlight.
2. Do not install the TV set in a place exposed to rain, water, excessive dust, mechanical vibrations or impacts.
3. Allow enough space (at least 10cm) between the TV and wall or enclosures for proper ventilation.
4. Slots and openings in the cabinet should never be blocked by clothes or other objects.
5. Please power off the TV set and disconnect it from the wall immediately if any abnormal phenomenon occurs, such as bad smell, belching smoke, sparkling, abnormal sound, no picture/sound/raster. Hold the plug firmly when disconnecting the power cord.
6. Unplug the TV set from the wall outlet before cleaning or polishing it. Use a dry soft cloth for cleaning the exterior of the TV set or CRT screen. Do not use liquid cleaners or aerosol cleaners.

ADJUSTMENTS

Set-up Adjustments

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

Perform the adjustments in the following order:

1. Color purity
2. Convergence
3. White balance

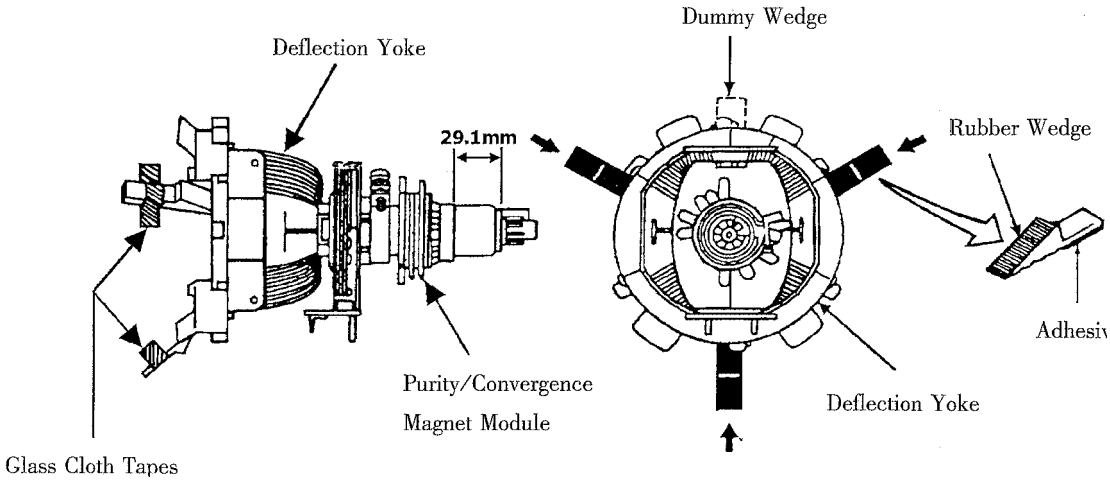
Notes:
(1) The purity/convergence magnet assembly and rubber wedges need mechanical positioning.
(2) For some picture tubes, purity/convergence adjustments are not required.

1. Color Purity Adjustment

Preparation:
Before starting this adjustment, adjust the vertical sync, horizontal sync, vertical amplitude and focus.

1.1 Face the TV set north or south.
1.2 Connect the power plug into the wall outlet and turn on the main power switch of the TV set.
1.3 Operate the TV for at least 15 minutes.
1.4 Degauss the TV set using a specific degaussing coil.
1.5 Set the brightness and contrast to maximum.
1.6 Counter clockwise rotate the R/B low brightness potentiometers to the end and rotate the green low brightness potentiometer to center.
1.7 Receive green raster pattern signals.
1.8 Loosen the clamp screw holding the deflection yoke assembly and slide it forward or backward to display a vertical green zone on the screen. Rotate and spread the tabs of the purity magnet around the neck of the CRT until the green zone is located vertically at the center of the screen.
1.9 Slowly move the deflection yoke assembly fox, yard or backward until a uniform green screen is obtained.
1.10 Tighten the clamp screw of the assembly temporarily. Check purity of the red raster and blue raster until purities of the three rasters meet the requirement.

Fig. 1


Dummy Wedge
Deflection Yoke
29.1mm
Rubber Wedge
Adhesiv
Purity/Convergence
Magnet Module
Deflection Yoke
Glass Cloth Tapes

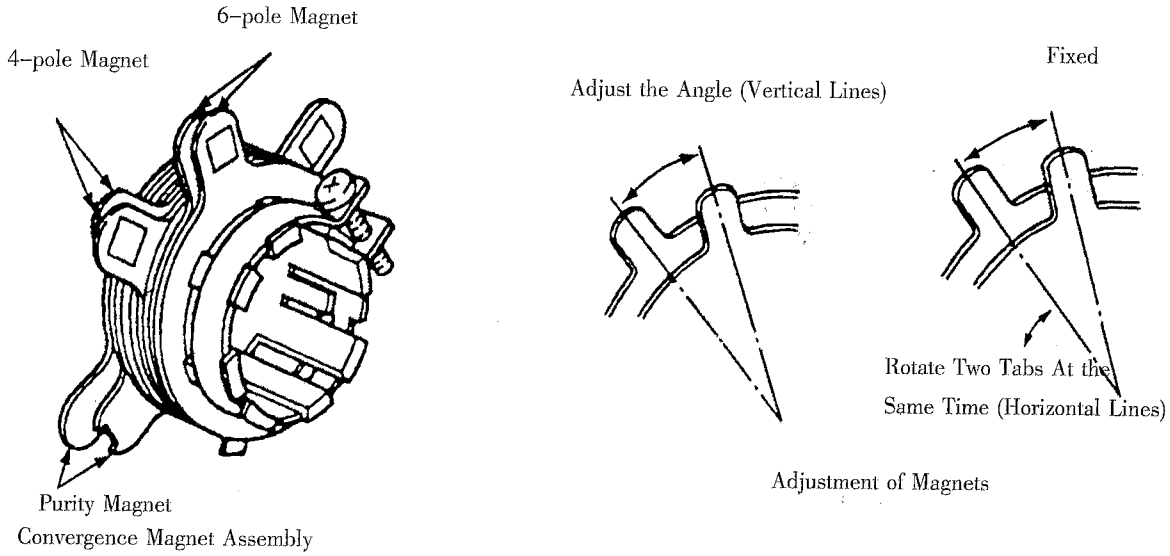

6-pole Magnet
4-pole Magnet
Fixed
Adjust the Angle (Vertical Lines)
Rotate Two Tabs At the
Same Time (Horizontal Lines)
Purity Magnet
Convergence Magnet Assembly
Adjustment of Magnets

Fig 2.

2. Convergence Adjustment

Preparation:

Before attempting any convergence adjustment, the TV should be operated for at least 15 minutes.

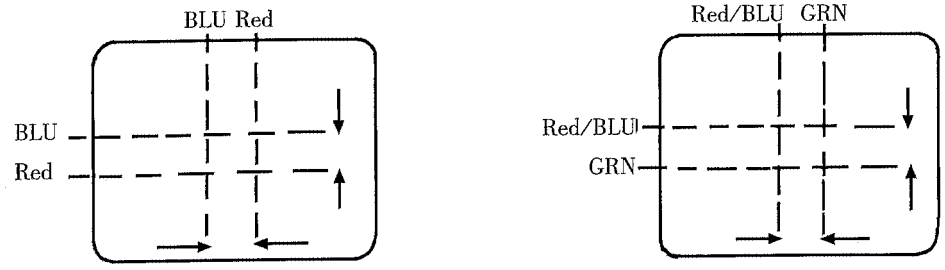
2.1 Center convergence adjustment

- 2.1.1 Receive dot pattern.
- 2.1.2 Adjust the brightness/contrast controls to obtain a sharp picture.
- 2.1.3 Adjust two tabs of the 4-pole magnet to change the angle between them and red and blue vertical lines are superimposed each other on the center of the screen.
- 2.1.4 Turn both tabs at the same time keeping the angle constant to superimpose red and blue horizontal lines on the center of the screen.
- 2.1.5 Adjust two tabs of the 6-pole magnet to superimpose red/blue lines and green line.
- 2.1.6 Remember red and blue movement. Repeat steps 2.1.3-~2.1.5 until optimal convergence is obtained.

2.2 Circumference convergence adjustment

- 2.2.1 Loosen the clamp screw holding the deflection yoke assembly and allow it tilting.
- 2.2.2 Temporarily put the first wedge between the picture tube and deflection yoke assembly. Move front of the deflection yoke up or down to obtain better convergence in circumference. Push the mounted wedge in to fix the yoke temporarily.
- 2.2.3 Put the second wedge into bottom.
- 2.2.4 Move front of the deflection yoke to the left or right to obtain better convergence in circumference.
- 2.2.5 Fix the deflection yoke position and put the third wedge in either upper space. Fasten the deflection yoke assembly on the picture tube.
- 2.2.6 Detach the temporarily mounted wedge and put it in either upper space. Fasten the deflection yoke assembly on the picture tube...
- 2.2.7 After fastening the three wedges, recheck overall convergence and ensure t6 get optimal convergence. Tighten the lamp screw holding the deflection yoke assembly.

Fig. 3



4–pole Magnet Movement

6–pole Magnet Movement

Center Convergence by Convergence Magnets

Incline the Yoke Up (or Down)

Incline the Yoke Right (or Left)

Circumference Convergence by DEF Yoke

3. White Balance Adjustment

Generally, white balance adjustment is made with professional equipment. It's not practical to get good white balance only through manual adjustment. For TVs with I2C bus control, change the bus data to adjust white balance.

Circuit Adjustments

Preparation:

Circuit adjustments should be made only after completion of set-up adjustments.
Circuit adjustments can be performed using the adjustable components inside the TV set. For TVs with I^2C bus control, first change the bus data.

1. Degaussing

A degaussing coil is built inside the TV set. Each time the TV is powered on, the degaussing coil will automatically degauss the TV. If the TV is magnetized by external strong magnetic field, causing color spot on the screen, use a specific degausser to demagnetize the TV in the following ways. Otherwise, color distortion will exist on the screen.

1.1 Power on the TV set and operate it for at least 15 minutes.
1.2 Receive red full-field pattern.
1.3 Power on the specific degausser and face it to the TV screen.
1.4 Turn on the degausser. Slowly move it around the screen and slowly take it away from the TV.
1.5 Repeat the above steps until the TV is degaussed completely.

2. Supply Voltage Adjustment

Caution: +B voltage has close relation to high voltage. To prevent X-ray radiation, set +B voltage to the rated voltage.

2.1 Make sure that the supply voltage is within the range of the rated Value.
2.2 Connect a digital voltmeter to the +B voltage output terminal of the TV set. Power on the TV and set the brightness and sub-brightness to minimum.
2.3 Regulate voltage adjustment components on the power PCB to make the voltmeter read 115+-IV.

3. High Voltage Inspection

Caution: No high voltage adjustment components inside the chassis. Please perform high voltage inspection in the following ways.

3.1 Connect a precise static high voltmeter to the second anode (inside the high voltage cap) of the picture tube.
3.2 Plug in the supply socket (220V, AC) and turn on the TV. Set the brightness and contrast to minimum.
3.3 The high voltage reading should be less than the maximum EHT voltage permissible.
3.4 Change the brightness from minimum to maximum, and ensure high voltage not beyond the limitation in any case.
Nominal EHT voltage: 26.5+0.8KV Maximum EHT voltage permissible: 29KV

4. Focus Adjustment

Caution: Dangerously high voltages are present inside the TV. Extreme caution should be exercised when working on the TV with the back removed.

4.1 After removing the back cover, look for the FBT on the main PCB. There should be a FCB on the FBT.
4.2 Power on the TV and preheat it for 15 rain.
4.3 Receive a normal TV signal. Rotate knob of the FCB until you get a sharp picture.

5. Safety Inspection

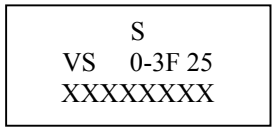
5.1 Inspection for insulation and voltage-resistant
Perform safety test for all naked metal of the TV. Supply high voltage of 3000V AC, 50Hz (limit current of 10mA) between all naked metal and cold ground. Test every point for 3 sec and ensure no arcing and sparking.

5.2 Requirements for insulation resistance
Measure resistance between naked metal of the TV and feed end of the power cord to be infinity with a DC-500 high resistance meter and insulation resistance between the naked metal and degaussing coil to be over 20M12.

6. DESIGN/SERVICE mode

6.1 To **enter the** USER SERVICE **mode**
Caution: The user service mode adjustment can be changed only when service personnel adjust the whole set data during servicing. As the control data have dramatic effects on functions and performance of the TV, service personnel should not tell user how to enter the SERVICE mode to avoid improper data settings.

6.1.1 Set the volume to 0. Then press and hold the MUTE button on the remote control, and press the
MENU button on the TV to enter the SERVICE mode. (In this case, the S mode cannot be stored in the EEPROM. To exit from the S mode, turn ~off the TV set).



6.1.2 After entering the S mode, Red *"S"* is displayed on the upper center of the screen and MENU1 is default. Use the POS+/- buttons to highlight an adjustment and the VOL+/- buttons to adjust it. The adjusted data are immediately output and stored in the EEPROM

6.2 Bus data in the S mode

Item	Bus Data	Description	Remarks
5PAR/6PAR	1F	Parallelogram correction (for large-screen only)	
5BOW/6BOW	1F	Curve correction (for large-screen only)	
5HSH/6HSH	Set to the optimal mode	Horizontal center in the TV mode for *50Hz/6OHz* For 50Hz, *"5HSH"* is displayed; for 60Hz, "6HSH" is displayed.	*
5HSR/6HSR	Set to the optimal mode	Horizontal center in the RGB mode for *50Hz/6OHz* For 50Hz, *"5HSR"* is displayed; for 60Hz, 6HSR is displayed.	*
5EWP/6EWP	1F	East-West parabola correction (for large-screen only)	
5EWW/6EWW	1F	East-West parabola correction (for large-screen only)	
5UCR/6UCR	1F	Upper corner parabola correction (for large-screen only)	
5LcR/6LCR	1F	Lower corner parabola correction (for large-screen only)	
5EWT/6EWT	1F	Trapezoidal correction (for large-screen only)	
5VSL/6VSL	1F	Vertical slope (for large-screen only)	*
5VAM/6VAM	1F	Vertical amplitude For 50Hz, "5VAM" is displayed; for 60Hz, *"6VAM""* is displayed.	*
5SCL/6SCL	Set to the optimal mode	S correction	*
5VSH/6VSH	Set to the optimal mode	Vertical center	*
5VOF/6VOF	Set to the optimal mode	OSD vertical center	*
VX	19	Vertical zoom (for large-screen only)	
RED	20	Red gun cutoff voltage	*
GRN	20	Green gun cutoff voltage	*
WPR	1F	Red gun drive voltage	*
WPG	1F	Green gun drive voltage	*
WPB	1F	Blue gun drive voltage	*
YDFP	07	PAL brightness delay time	
YDFN	07	NTSC brightness delay time	
YDFS	OF	SECAM brightness delay time	
YDAV	OF	AV brightness delay time	
TOP	1C	UOC AGC	*
VOL	32	UOC audio output amplitude	
IFFS	03 (02)	PIF (02-38.9MHz, 03-38 MHz)	
HDOL	00	Cathode drive level	
AGe	01	IF ACG speed	
VG2B	30	VG2 brightness	*
SBRI	1F	Sub brightness	
MBRI	2F	Max brightness	

Item	Bus Data	Description	Remarks
SCON	20	Sub contrast	*
MCON	39	Max contrast	*
SCOL	32	Sub color	*
OP1	FF	Option set byte 1	*
OP2	FF	Option set byte 2	*
OP3	FF	Option set byte 3	
OP4	FF	Option set byte 4	*
OP5	FF	Option set byte 5	*
OP6	FF	Option set byte 6	*
INIT		EEPROM initialization	*
VG2		Adjusting screen voltage with VG2	*
VSD		Vertical output off	
USER_LOGO		User logo write-in (valid when OP-USER-LOGO is 1)	
STS0/1/2		System status byte	

Notes:

1. The data marked with "*" have been adjusted in the MANUFACTURE mode. Take care when in service and adjustment.

2. To write in logo, use the ↓ / ↑ buttons to highlight an adjustment and the ← / → buttons to adjust.

3. The data sheet may differ dependent-on different models..
4. The data sheet may differ dependent on different CRTs for the same model.

6.3 Option set

With remote control system software TDA935X, all options can be set in the SERVICE mode and stored in EEPROM. Data related to picture, sound and geometric adjustment are also stored in EEPROM.

	Bit	Item	Description	Default
OP1	0	OP_HOTEL	HOTEL mode	1
	1	OP_236	100/236 programs preset	0
	2	OP_NTSC	NTSC option set	1
	3	OP_AV2	Two set of AV terminals: 1-With AV2; 0-Without AV2	1A1-1 1A/1A2-0
	4	OP_SVHS	S-Video terminal	1A1-1 1A/1A2-0
	5	OP_DVD	DVD	1AI-1 1A/1A2-0
	6	OP_RGB	RGB: 1- RGB 0-No	1A1-0 1A/1A2-1
	7	OP_OSO	Switch off in vertical over scan	0

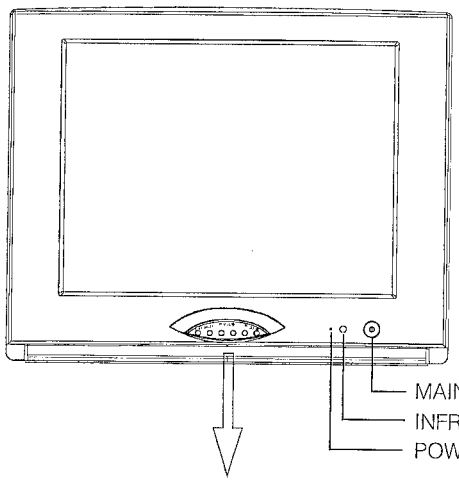
	Bit	Item	Description	Default
OP2	0	OP_AVL	AVL	1
	1	OP_AUTO_SOUND	Auto sound system test	1
	2	OP_NOT_1	National Option Set (OP-NOT-3/2/1): lXX-Arabie,011- Farsi, 010-Russian, 001 -Ukrainian, 000-Paneuro	0
	3	OP_NOT_2		0
	4	OP_NOT_3		0
	5	OP_USER_LOGO	User logo(prior to CHANGHONG logo)	0
	6	OP_ON_BACK	Auto test background options when power-on: 0-black; 1- blue.	0
	7	OP_FSL	Slicing level for vertical sync	0
OP3	0	OP_ENGLISH	English	1
	1	OP_FARSI	Farsi	1
	2	OP-ARABIC	Arabic	1
	3	OP-RUSSIAN	Russian	1
	4	OP-FRENCH	French	1
	5	OP-GERMAN	German	1
	6	OP-INDIA	Indonesian	1
	7	OP-MALAYSIA	Malayan	1
OP4	0	OP-FMWS	Window selection of sound pll: small/large window	0
	1	OP_DIRECT_ SWITCH_ON	Memory power-on (If turned off by the remote control, then the TV is turned on by the remote control; if turned off by the MAIN POWER SWITCH, then turned on by the MAIN POWER SWITCH.)	1
	2	OP_HCO	EHT tracking mode	0
	3	OP_CHH_LOGO	User logo display: l-Displayed without signal reception; 0- No	1
	4	OP_SOUND_DK	Sound system-DK option set	1
	5	OP_SOUND_BG	Sound system-BG option set	0
	6	OP_SOUND_I	Sound system-I option set	1
	7	OP_SOUND_M	Sound system-M option set	1
OP5	0	OP_TUNER	Tuner: l-Philips Tuner 0-Panasonie Tuner	0
	1	OP_AUTO_LANG0	Auto language option set: English - Farsi - Arabic- Russian - French - German - Indonesian - Malayan	1
	2	OP_AUTO_LANG1		0
	3	OP_AUTO_LANG2		0
	4	OP_FORF	Field frequency options (OP-FORS/FORF): O0-Auto60Hz, 01-KeepLast,10-Force60Hz, ll-Auto50Hz	0
	5	OP_FORS		
	6	OP_AVON	If AV off, then AV on	1
	7	OP_ONPOSITION	With HOTEL mode preset, on position is fixed to POS1.	0

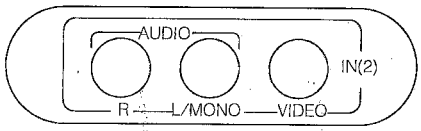
	Bit	Item	Description	Default
OP6	0	OP_AUTOTEST	Auto test when power-on	0
	1	OP_PSNS	Sensitivity	0
	2	OP_BSCREEN	Black screen when changing channels: 1-yes;0-No	1
	3	OP_SECAM	1: SECAM option	1
	4	OP_DFL	Disable flash, protection	0
	5	OP_SIF	External input for sound IF circuit	1
	6	OP_EXT_SIF0	Sound system options for external circuit: 00-DK, 01-BG, 10-I, 11-M (Valid when OP-SIF = 1)	1
	7	OP_EXT_SIF1		0

CONTROL BUTTONS

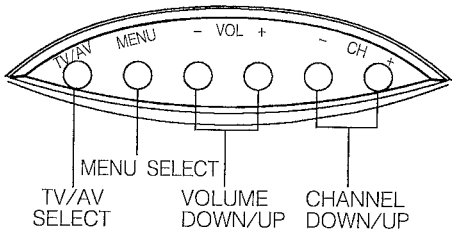
1 Control Buttons

1.1 Rear panel

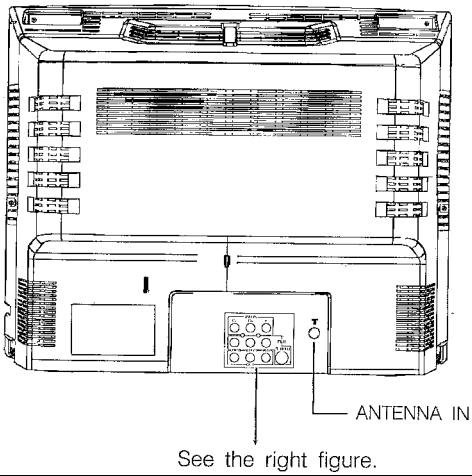




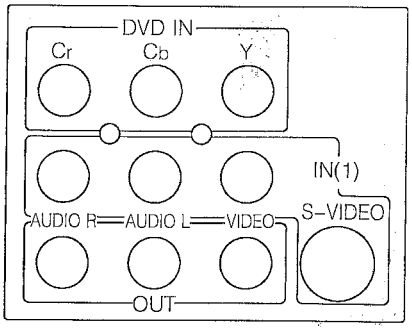
AV2 IN on the side panel



1.2 Front panel

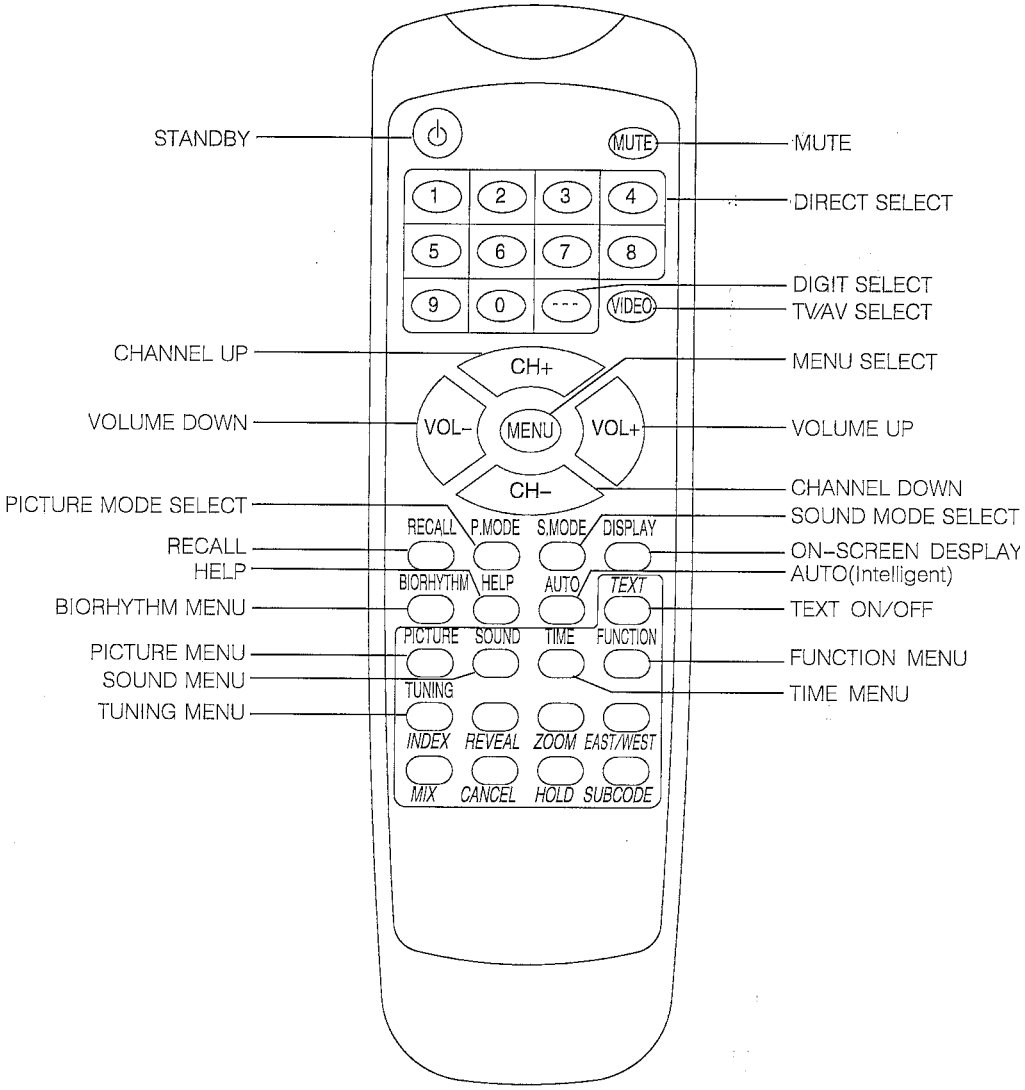


See the right figure.



2 Remote Control

2.1 Remote Control



- **The buttons in the frame act as TELETEXT function selection.**

- **The color and INDEX, buttons also function as fast menu selection in the TV mode.**

Notes:

1 When in operation, please point your remote control directly to the infrared sensor.
2 Do not expose the remote control to impacts, water or disassemble it.
3 Do not repeatedly press the buttons on the remote control. Allow interval of no less than two seconds.

2.2 Tuning in by the remote control

Menus

Press the MENU button repeatedly when watching TV programs, and the TV will display eight kinds of menus (including PICTURE~ SOUND° TIME, FUNCTION, TUNING, SWAP, BIORHYTHM and HOTEL) cyclically.

Press the CH+/CH- buttons to select an adjustment (the characters turn white to cyan), and press the *VOL-/VOL+* buttons to adjust. (Press the HELP button, and the operation hint will appear on the upper-right conner of the menu.)

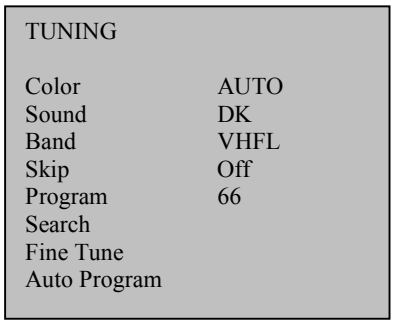
Menu display disappears 6 sec. after last selection.

Note:
In the AV mode, TUNING menu is not available.

Tuning in

This section gives descriptions about adjustment of items in the TUNING menu.

(1) Auto program
After select "Auto Program" in the TUNING menu, press the VOL+ button. The TV will search automatically in sequence. After auto search, the TV will store receivable channels and returns to POS 1. Unused position number is automatically set to Skip On.
During auto program, press the MENU button to stop searching.



(2) Search
In case the desired channel cannot be preset with the Auto Program function, or you would like to set the desired channels to specific channel numbers, please use the Search function.
After select ".Search" in the TUNING menu, press the VOL-/VOL+ buttons. The TV searches another lower/upper channel. To stop search, press the MENU button.

If the selected channel is not the one you want, press the buttons again until the desired channel is selected. If the TV does not stop searching when finding a channel, please use the Fine Tune function.

(3) Frequency fine-tuning
After select "Fine Tune" in the TUNING menu, press and hold down the VOL- or VOL+ button until you get the best sound and picture effect.
Press the DISPLAY button to check up the fine-tuned channel, and you will find that the position number turns to red.

(4) Color/Sound system selection (for 21C36/21C36EU only)
In ease the color/sound of a channel that you are watching is abnormal, please change the color/sound system.

You can select a suitable system from the following systems, which are displayed in a circular way.
Color: AUTO, PAL, NTSC, NTSC443, SECAM
Sound: D/K, B/G, I, M

(5) Skip
After Auto Program, there may be some repeated program or inferior signals received. Skipping the undesired program position can dramatically quicken channel selection.

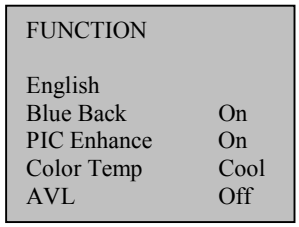
After select "Skip" in the TUNING menu, press the VOL-/VOL+ buttons to set "Skip On". When the TUNING menu has disappeared, press the CH-/CH+ buttons and you will find the channel number skipped. If you select the channel number by the Direct Select buttons, the channel/number has changed from green to yellow.

To resume the channel number that has been skipped, repeat the operations mentioned above. Then set "Skip Off".

Function Selection

To perform the following operation, press the MENU button repeatedly or FUNCTION button directly (in the TV/AV mode) to select the FUNCTION menu.

(1) Language selection
You may switch the language for the OSD to English, Farsi, Arabic, Russian, French, German, Indonesia or Malayan.



(2) Blue background
With this function on, the screen will display a mild blue background (logo) and mute automatically when no signal is received.

(3) Picture enhancement

If the picture of a certain channel is abnormal, use this function to improve picture.
It is recommended to select "PIC Enhance Off" when the signal being received is good in ease of influencing picture definition.

(4) Color temperature adjustment

You may select one of color of background as preferred among Normal, Cool and Warm mode. The adjusted Color Temp mode is automatically stored and remains unchanged until next adjustment.

(5) AVL (Auto Volume Leveling)

When the AVL is activated, it automatically stabilizes the audio output, signal to a certain level.

STRUCTURE AND CHASSIS FUNCTION DESCRIPTION

Structure Block Diagram

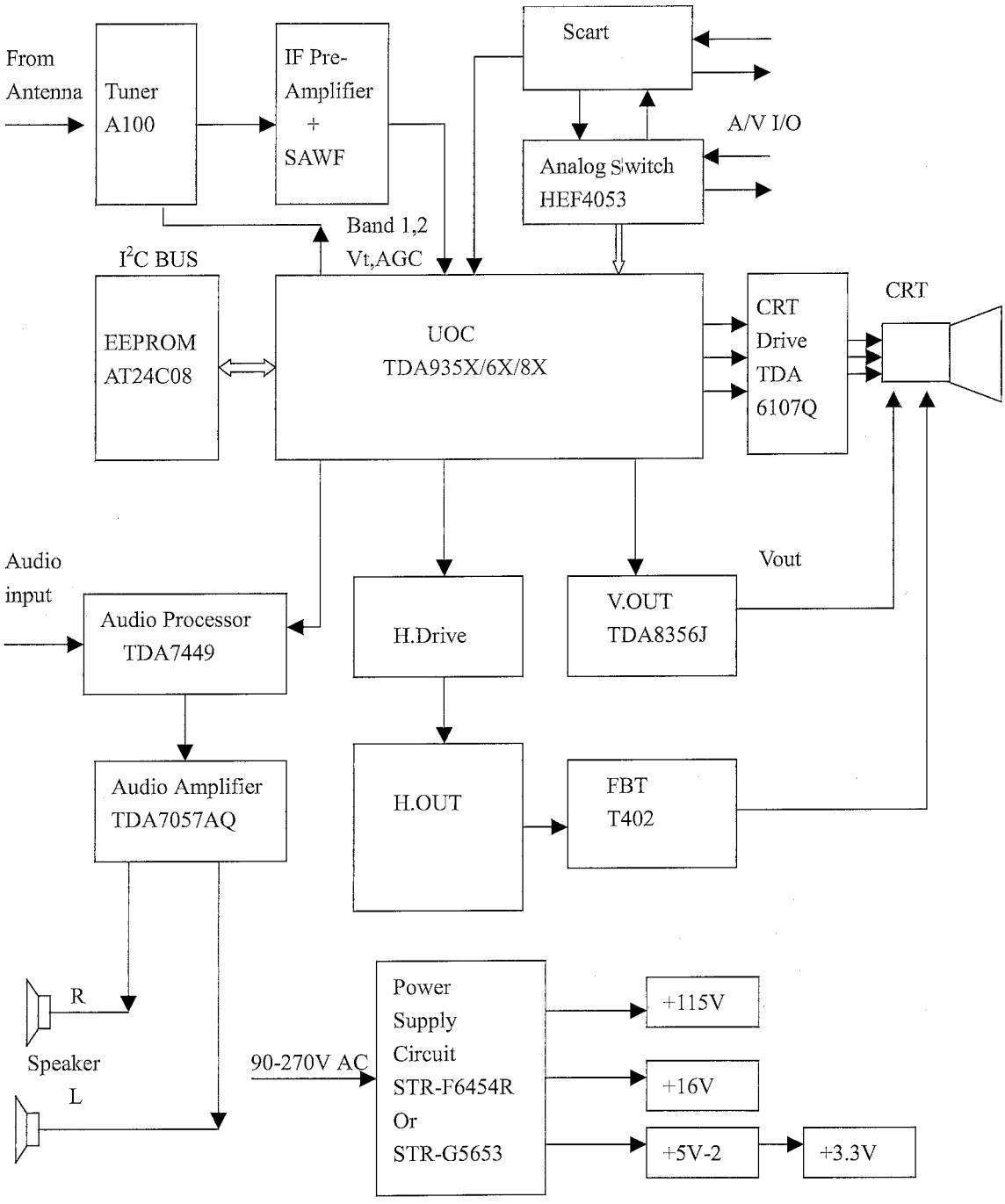
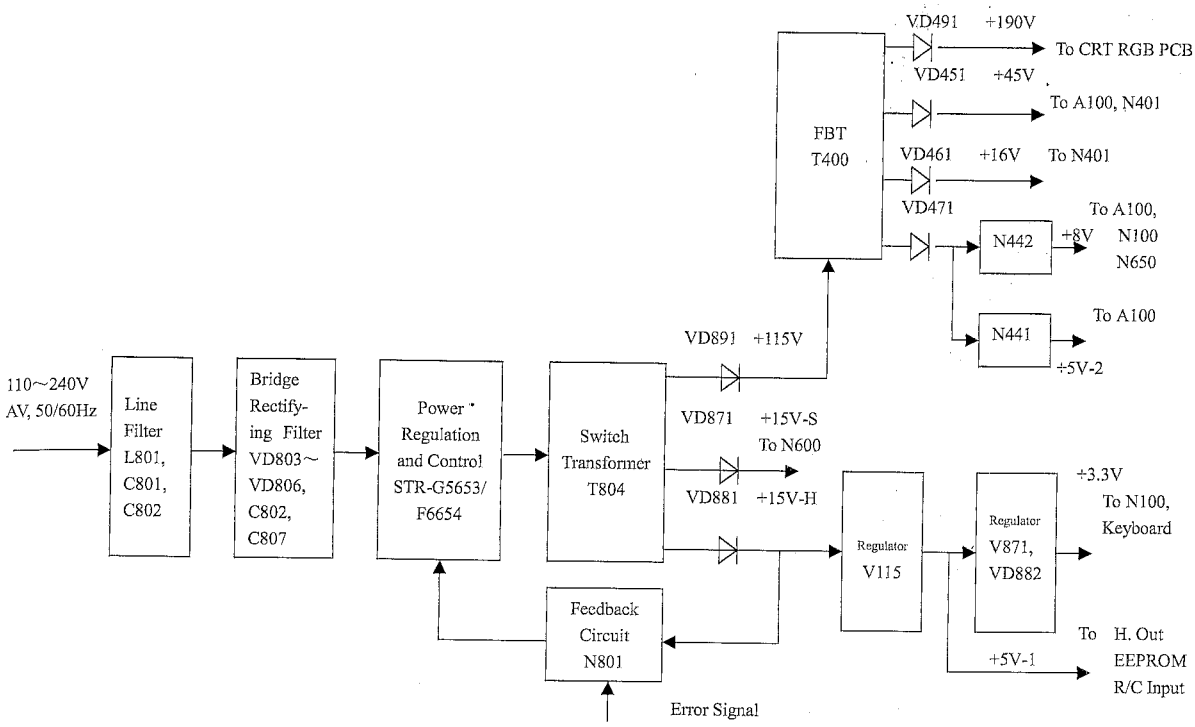


Fig.4 Structure Block Diagram for EX-1A1 Chassis Series.

Block Diagram For Supply Voltage System

Fig.5 Block Diagram for EX-1A/1A1/1A2 Supply Voltage System



Chassis Description

1. General Description

EX-1A1 chassis series are applied respectively which uses mainly. Philips" advanced UOC-ultimate chip TDA935X/6X/8X and I~C-bus controlled IC. With combination of micro controller and small signal processor, the TDA935X/6X/8X series feature high-integration, high-performance-to-price ratio and high-reliability and advanced functions with fewer external components, which provide much convenience for manufacturing and technical service.

The following features are available in the chassis series:

- PAL/NTSC/SECAM reception
- 100/236 programs preset
- Various input/output terminals including SCART, RCA and S-VIDEO
- Selectable picture/sound modes
- Multilingual on screen display
- TELETEXT option
- Audio effect processing
- Blue background and mute
- User logo
- Biorhythm
- Hotel video locking

2. The EX-1A/1A1/IA2 chassis series mainly use the following ICs and assemblies.

Table 1 Key ICs and Assemblies

Serial No.	Position	Type	Function Description
1	N 100	TDA935X/6X/8X	Micro controller and small signal processor (UOC)
2	N200	AT24C08	EEPROM
3	N650	TDA7449	Audio processor
4	N401	TDA8356/N6	Vertical scan output stage circuit
5	N600/N601	TDA7057AQ	Sound power amplifier
6	N861/N881	STR-G5653/F6654	Power supply circuit
7	N402	HEF4053	Analog switch
8	A100	TDQ-5B6M	Tuner

SERVICE DATA

Technical Data of Key ICs

1 Micro controller and small signal processor TDA935X/6X/8X

The super chips TDA935X/6X/SX are good in pins compatibility. Differences among them are shown as follows.

TDA9351(48K) PAL/NTSC/SECAM+I PAGE TELETEXT
TDA9350(48K) PAL/NTSC+I PAGE TELETEXT
TDA9361 (64K) PAL/NTSC/SECAM+10 PAGE TELETEXT
TDA9360(64K) PAL/NTSC+10 'PAGE TELETEXT
TDA9380 (32K)PAL/NTSC
TDA9387 (32K)NTSC

(1) General Description

The various versions of the TDA935X/6X/8X PS/N2 series combine the functions of a TV signal processor together with a Ix-Controller and US Closed Caption decoder. Most versions have a Teletext decoder on board. The Teletext decoder has an internal RAM memory for 1 or 10 pages text.

The ICs are intended to be used in economy television receivers with 90° and 110° picture tubes.
The ICs have supply voltages of 8 V and 3.3 V and they are mounted in S-DIP envelope with 64 pins. The features are given in the following feature list.

(2) Features

TV-signal processor

- Multi-standard vision IF circuit with alignment-free PLL demodulator.
- Internal (switchable) time-constant for the IF-AGC circuit
- A choice can be made between versions with mono inter carrier sound FM demodulator and versions with QSS IF amplifier.
- The mono inter carrier sound versions have a selective FM-PLL demodulator which can be switched to the different. FM sound frequencies (4.5/5.5/6.0/6.5 MHz). The quality of this system is such that the external band-pass filters can be omitted.
- Source selection between "internal" CVBS and external CVBS or Y/C signals
- Integrated chrominanee trap circuit
- Integrated luminance delay line with adjustable delay time
- Picture improvement features with peaking (with variable centre frequency and positive/negative overshoot ratio) and black stretching
- Integrated chroma band-pass filter with switch able centre frequency
- Only one reference (12 MHz) crystal required for the Ix-Controller, Teletext- and the colour decoder
- PAL/NTSC or multi-standard colour decoder with automatic search system
- Internal base-band delay line
- RGB control circuit with "Continuous Cathode Calibration', white point and black level offset adjustment so that the colour temperature of the dark and the light parts of the screen can be chosen independently.
- Linear RGB or YUV input with fast blanking for external RGB/YUV sources" The Text/OSD signals are internally supplied from the Ix-Controller/Teletext decoder
- Contrast reduction possibility during mixed-mode of OSD and Text signals.

- Horizontal synchronization with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimized for DC-coupled vertical output stages
- Horizontal and vertical geometry processing
- Horizontal and vertical zoom function for 16 : 9 applications
- Horizontal parallelogram and bow correction for large screen picture tubes
- Low-power start-up of the horizontal drive circuit

TV signal processor-Teletext decoder with embedded M-Controller, TDA935X/6X/8X PS/N2 series

M-Controller

- 80C51 Ix-controller core standard instruction set and timing
- 1 mui-s machine cycle
- 16 - 128KxS-bit late programmed ROM
- 3 - 12Kx8-bit DATA RAM (shared between Display, Acquisition and Auxiliary Ram)
- Interrupt controller for individual enable/disable with two level priority.
- Two 16-bit Timer/Counter registers
- One 16 bit Timer with 8-bit Pre-scaler
- WatchDog timer
- Auxiliary RAM page pointer
- 16-bit Data pointer
- Stand-by, Idle and Power Down (PD) mode
- 14 bits PWM for Voltage Synthesis Tuning
- 8-bit A/D converter
- 4 pins which can be programmed as general I/O pin, ADC input or PWM (6-bit) output Data Capture
- Text memory for 0, 1 or 10 pages
- In the 10 page versions inventory of transmitted Teletext pages stored in .the Transmitted Page Table (TPT) and Subtitle Page Table (SPT)
- Data Capture for US Closed Caption
- Data Capture for 525/625 line WST, VPS (PDC system A) and Wide Screen Signalling (WSS) bit decoding.
- Automatic selection between 525 WST/625 WST.
- Automatic selection between 625 WST/VPS on line 16 of VBI.
- Real-time capture and decoding for WST Teletext in Hardware, to enable optimized miu-processor throughput
- Automatic detection of FASTEXT transmission
- Real-time packet 26 engine .in Hardware for processing accented, G2 and G3 characters
- Signal quality detector for video and WST/VPS data types
- Comprehensive teletext language coverage
- Full Field and Vertical Blanking Interval (VBI) data capture of WST data Display
- Teletext and Enhanced OSD modes.

- Features of level 1.5 WST and US Close Caption
- Serial and Parallel Display Attributes
- Single/Double/Quadruple Width and Height for characters
- Scrolling of display region
- Variable flash rate controlled by software
- Enhanced display features including overlining, underlining and italics
- Soft colours using CLUT with 4096 colour palette
- Globally selectable scan lines per row (9/10/13/16) and character matrix [12x10, 12x13, 12x16 (VxH)]
- Fringing (Shadow) selectable from N-S-E-W direction
- Fringe colour selectable
- Meshing of defined area
- Contrast reduction of defined area
- Cursor
- Special Graphics Characters with two planes, allowing four colours per character
- 32 software redefinable On-Screen display characters
- 4 WST Character sets (G0/G2) in single device (e.g. Latin, Cyrillic, Greek, Arabic)
- G1 Mosaic graphics, Limited G3 Line drawing characters
- WST Character sets and Closed Caption Character set in single device

Functional Difference between the Various IC Versions
IC Version (TDA) 9350 9351 9352 9353 9360 9361 9362 9363 9364 9365 9~66 9367 9380 9381 9382 9383 9384 9385 9386 9387 9388 9389

IC VERSION (TDA)	9350	9351	9352	9353	9360	9361	9362	9363	9364	9365	9366	9367	9380	9381	9382	9383	9384	9385	9386	9387	9388	9389
TV range	90°	90°	90°	110°	90°	90°	110°	110°	110°	110°	90°	90°	90°	90°	90°	110°	110°	110°	110°	90°	110°	110°
Mono intercarrier multi-standard sound demodulator (4.5 – 6.5 MHz) with switchable center frequency	√	√		√	√	√	√	√					√	√		√	√			√	√	
Audio switch	√	√			√	√	√	√					√	√		√	√			√	√	
Automatic Volume Levelling	√	√	√	√	√	√					√	√	√	√	√							
Automatic Volume Levelling or subcarrier output (for combfilter applications)							√	√	√	√						√	√	√	√	√	√	√
Qss sound IF amplifier with separate input and AGC circuit			√						√	√	√	√			√			√	√			√
AM sound demodulator without extra reference circuit										√									√			
PAL decoder	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√			
SECAM decoder		√	√	√	√	√		√		√		√		√	√		√		√			
NTSC decoder	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Horizontal geometry (E-W)				√			√	√	√	√						√	√	√	√		√	√
Horizontal and Vertical Zoom				√			√	√	√	√						√	√	√	√			√
ROM size	32-64K	32-64K	32-64K	32-64K	64-128K	64-128K	64-128K	64-128K	64-128K	64-128K	64-128K	64-128K	16-64K	16-64K	16-64K	16-64K	16-64K	16-64K	16-64K	16-64K	16-64K	16-64K
User RAM size	1K	1K	1K	1K	2K	2K	2K	2K	2K	2K	2K	2K	1K	1K	1K	1K	1K	1K	1K	1K	1K	1K
Teletext	1 page	1 page	1 page	1 page	10 page	10 page	10 page	10 page	10 page	10 page	10 page	10 page										
Closed captioning	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

(3) Block diagram

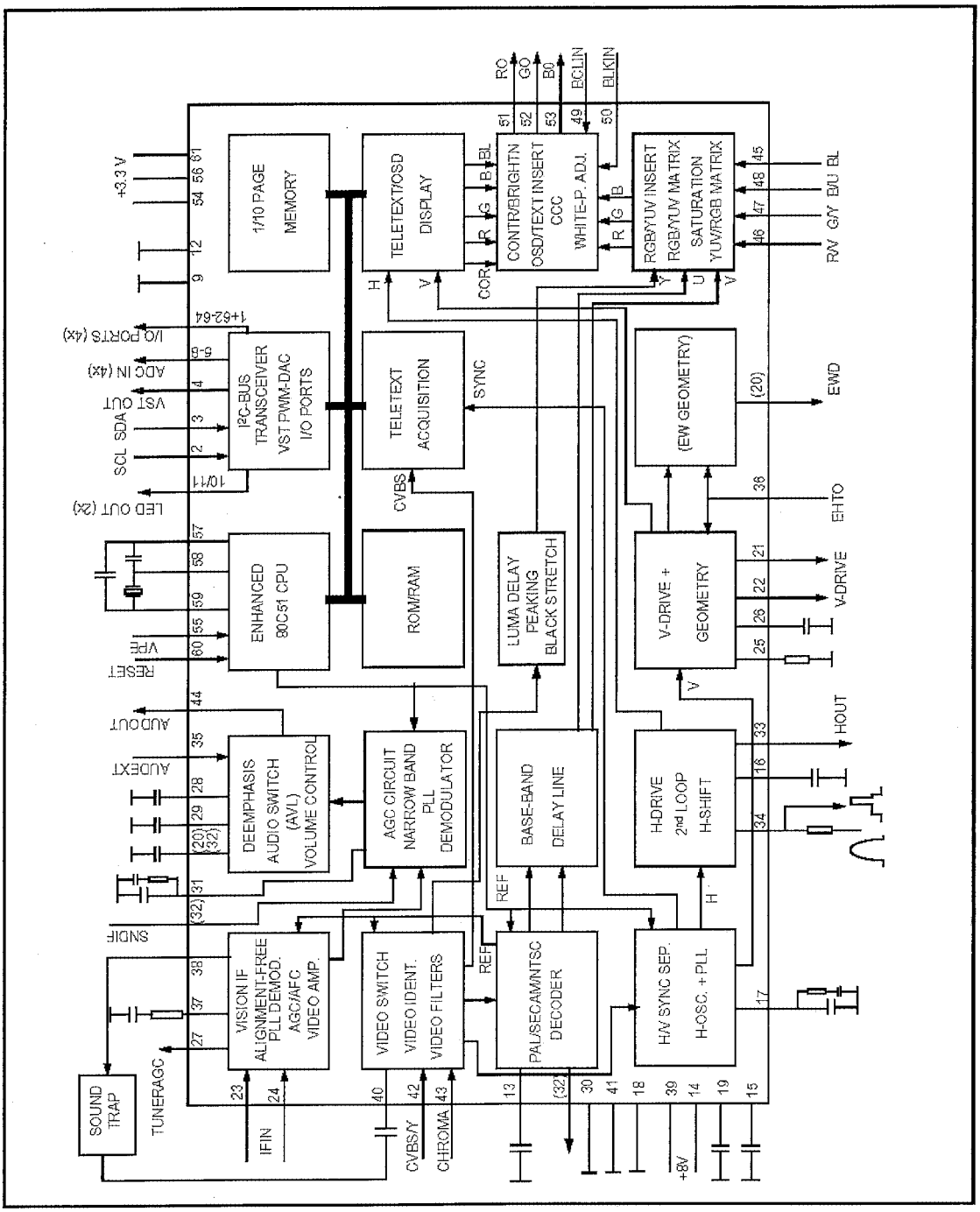


Fig.6 Block Diagram for TDA935x/6x8xPS/N2 with Mono Intercarrier Sound Demodulator

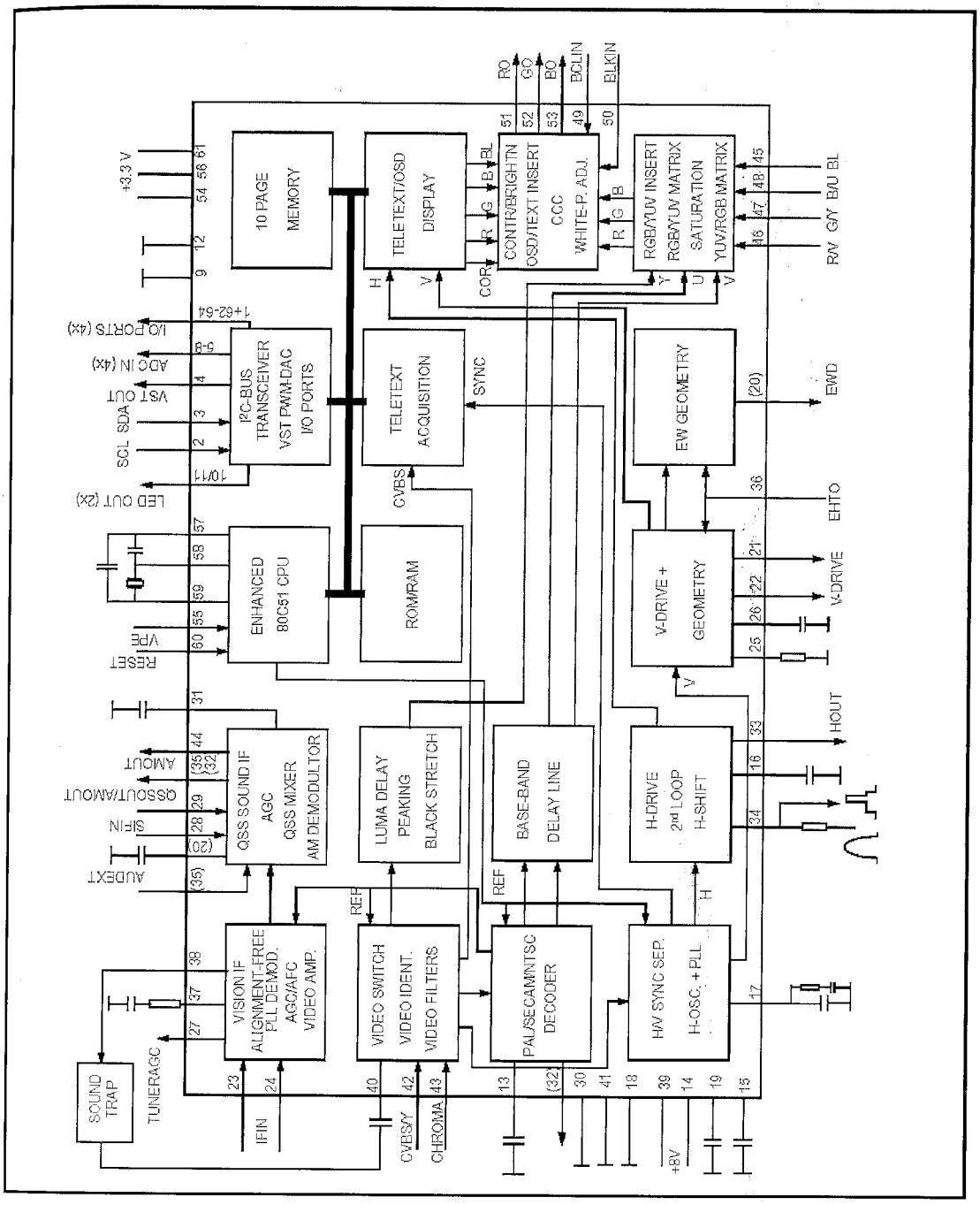


Fig.7 Block Diagram for TDA935x/6x8xPS/N2 with QSS IF Sound Channel

(4) Pinning

SYMBOL	PIN	DESCRIPTION
P1.3/T1	1	port 1.3 or Counter/Timer 1 input
P1.6/SCL	2	port 1.6 or I2C-bus clock line
P1.7/SDA	3	port 1.7 or I2C-bus data, line
P2.0/TPWM	4	port 2.0 or Tuning PWM output
P3.0/ADCO/PWMO	5	port 3.0 or ADC0 input or PWM0 output
P3.1/ADC1/PWM1	6	port 3.1 or ADC1 input or PWM1 output
P3.2/ADC1/PWM2	7	port 3.2 or ADC2 input or PWM2 output
P3.3/ADC3/PWM3	8	port 3.3 or ADC3 input or PWM3 output
VSSC/P	9	digital ground for Ix-Controller core and. periphery
P0.5	10	port '0.5 (8mA current sinking capability for direct drive of LEDs)
P0.6	11	port 0.6 (8mA current sinking capability for direct drive of LEDs)
VSSA	12	analog ground of Teletext decoder and digital ground of TV-processor
SECPLL	13	SECAM *PLL* decoupling
VP2	14	2nd supply voltage TV-processor (+SV)
DECDIG	15	decoupling digital supply of TV-processor
PH2LF	16	phase-2 filter
PH1LF	17	phase-1 filter
GND3	18	ground 3 for TV-processor
DECBG	19	bandgap decoupling
AVL/EWD(1)	20	Automatic Volume Levelling/East-West drive output
VDRB	21	vertical drive B output
VDRA	22	vertical drive A output
WIN1	23	IF input 1
IFIN2	24	IF input 2
IREF	25	reference current input
VSC	26	vertical saw tooth capacitor
TUNERAGC	27	tuner AGC output
AUDEEM/SIFIN1(1)	28	audio deemphasis or SIF input 1
DECSDEM/SIFIN2(1)	29	decoupling sound demodulator or SIF input2
GND2	30	ground 2 for TV processor
SNDPLL/SIFAGC(1)	31	narrow band PLL filter/AGC sound IF
AVL/SNDIF/REFO/ AMOUT(1)	32	Automatic Volume Levelling/sound IF input/subcarrier reference output/AM output (non controlled)
HOUT	33	horizontal output
FBISO	34	flyback input/sand castle output
AUDEXT/ QSSO/AMOUT(1)	35	external audio input/QSS intercarrier out/AM audio output (non controlled)
EHTO	36	EHT/over voltage protection input
PLLIF	37	IF-PLL loop filter
IFVO/SVO	38	IF video output/selected CVBS output
VP1	39	main supply voltage TV-processor (+SV)
CVBSINT	40	internal CVBS input
GND 1	41	ground 1 for TV-processor

SYMBOL	PIN	DESCRIPTION
CVBS/Y	42	external CVBS/Y input
CHROMA	43	chrominance input (SVHS)
AUDOUT/AMOUT(1)	44	audio output/AM audio output (volume controlled)
INSSW2	45	2nd RGB/YUV insertion input
R2/VIN	46	2nd R input/V (R-Y) input
G2/YIN	47	2nd g input/U input
B2/UIN	48	2nd B input/U (B-Y) input
BCLIN	49	beam current limiter input/(V-guard input, note2)
BLKIN	50	black current input/(V-guard input, note2)
RO	51	Red output
GO	52	Green output
BO	53	Blue output
VDDA	54	analog supply of Teletext decoder and digital supply of TV-processor (3.3V)
VPE	55	OTP programming Voltage
VDDC	56	digital supply to core (3.3V)
OSCGND	57	oscillator ground supply
XTALIN	58	crystal oscillator input
XTALOUT	59	crystal oscillator output
RESET	60	reset
VDDP	61	digital supply to periphery (+3.3V)
P1.0/INT1	62	port 1.0 or external interrupt 1 input
P1.1/TO	63	port 1.1 or Counter/Timer 0 input
P1.2/INTO	64	port 1.2 or external interrupt 0 input

Notes

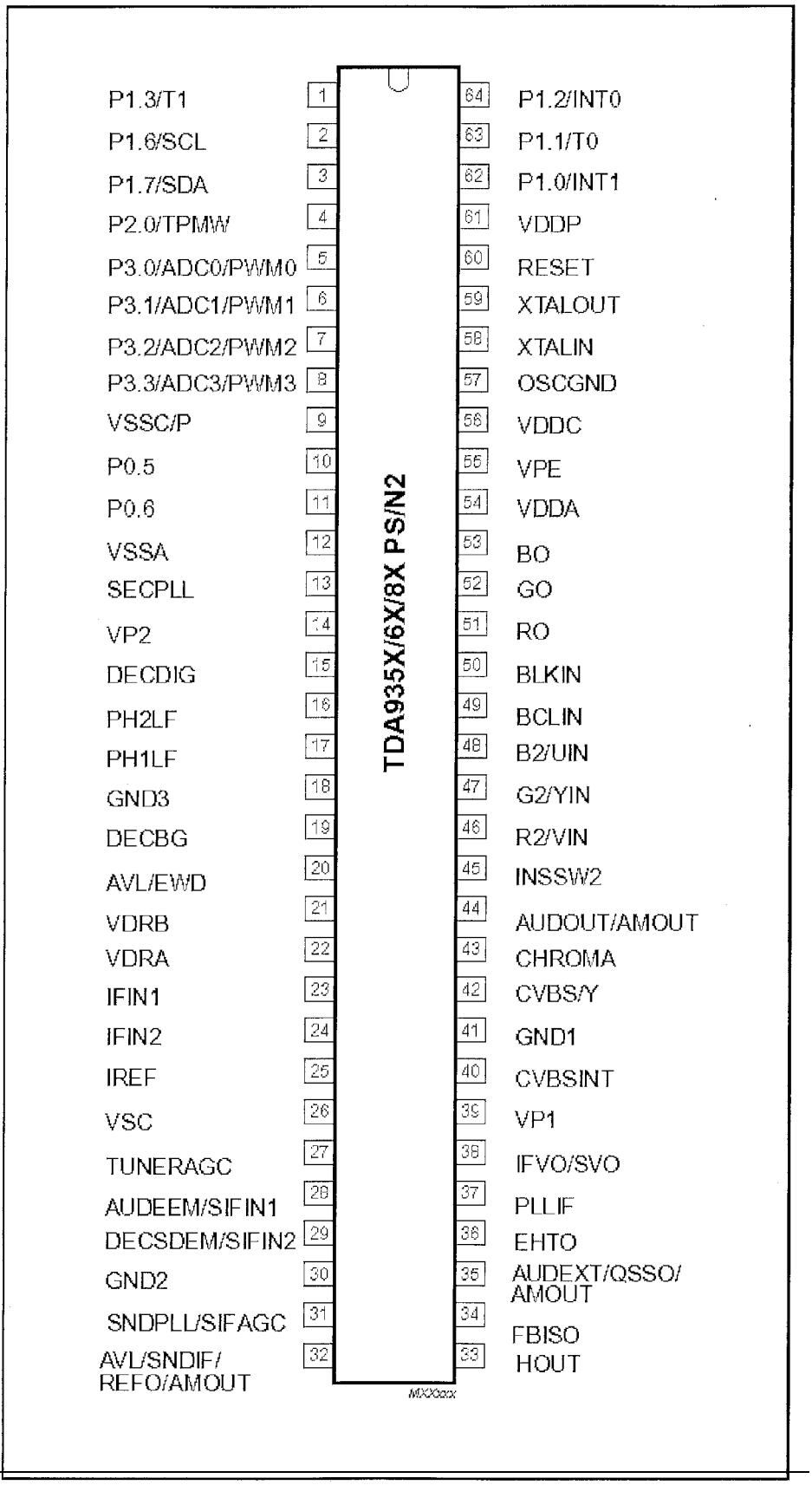
1. The function of pin 20, 28, 29, 31, 32, 35 and 44 is dependent on the IC version (mono inter carrier FM demodulator/QSS IF amplifier and East-West output or not) and on some software control bits. The valid combinations are given in table 1.
2. The vertical guard function can be controlled via pin 49 or pin 50. The selection is made by means of the IVG bit in sub address 2BH.

IC version	FM-PLL version				QSS Version							
East-West Y/N	N		Y		N			Y				
CMB1/ CMBO bits	00	01/10/11	00	01/10/11	00	01/10/ 11		00	01/10/11			
AM bit	-	-	-	-	-	0	1	-	0	1		
Pin 20	AVL		EWD		AVL			EWD				
Pin 28	AUDEEM				SIFIN1							
Pin 29	DECSDEM				SIFIN2							
Pin 31	SNDPLL				SIFAGC							
Pin 32	SNDIR(1)	REFO(2)	AVL/SNDIF(1)	REFO(2)	AMOUT	REFO(2)		AMOUT	REFO(2)			
Pin 35	AUDEXT				AUDEXT	QSSO	AMOUT	AUDEXT	ESSO	AMOUT		
Pin44	AUDOUT				controlled AM or audio out							

Notes

1. When additional (external) selectivity is required for FM-PLL system pin 32 can be used as sound IF input. This function is selected by means of SIF bit in sub address 28H.
2. The reference output signal is only available for the CMB 1/CMBO setting of 0/1. For the other settings this pin is a switch output.

Fig. 8: Pin Configuration (SDIP 64)



2 Electronic switch circuit HEF4053

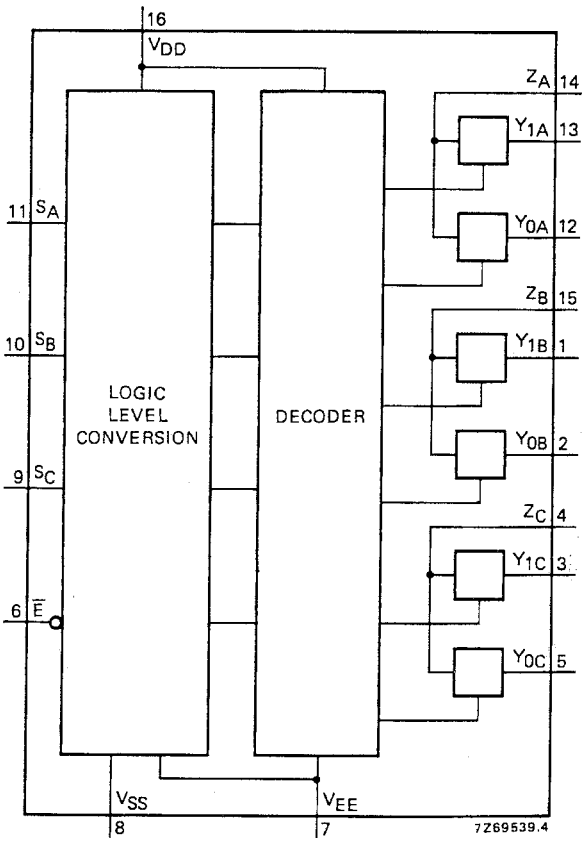
HEF4053

Triple 2-channel Analog Multiplexer/Demultiplexer

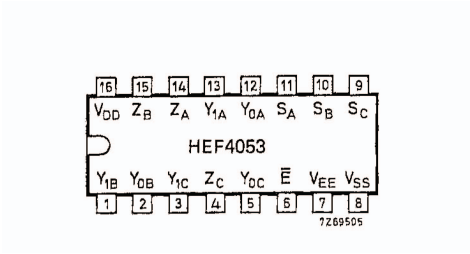
(1) Description

The HEF4053 is a triple 2-channel analog multiplexer/demultiplexer with a common enable input (E). Each multiplexer/demultiplexer has two independent inputs/outputs (Y0 and Y~), a common input/output (Z), and select inputs (Sn). Each also contains two-bidirectional analog switches, each with one side connected to an independent input/output (Y_0 and Y_1) and the other side connected to a common input/output(Z).

With (E) LOW, one of the two switches is selected (low impedance ON-state) by Sn. With E HIGH, all switches are in the high impedance OFF-state, independent of S_A, to S_C. V_{DD} to V_{SS} are the supply voltage connections for the digital control inputs (S~ to Sc and E-). The V_{DD} to V_{SS} range is 3 to 15V. The analog inputs/outputs (Y_0,Y_1 and Z) can wing between V_{DD} as a positive limit and V_{EE} as a negative V_{DD} -V_{EE} may not exceed 15 V. For operation as a digital multiplexer/ demultiplexer, V_{EE} is connected to V_{SS} (typically ground).



(2) Block Diagram



HEF4053P(N): 16-lead DIL; plastic (SOT38-1)
HEF4053D(F): 16-lead DIL; ceramic (cerdip) (SOT74)
HEF4053T(D): 16-lead SO; plastic (SOT109-1)

( ): Package Designator North America

Pinning

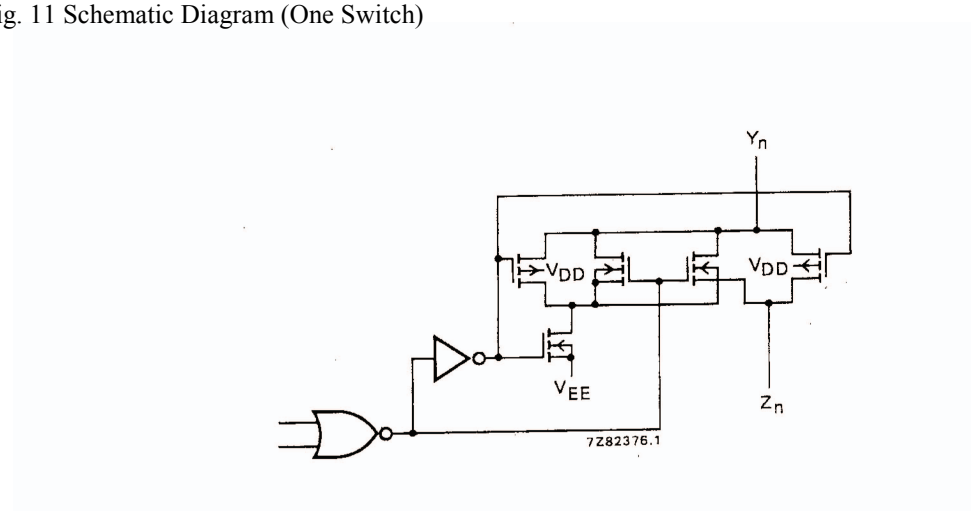
Y_{OA}, to Y_{OC}	Independent inputs/outputs
Y_{1A} to Y_{1C}	Independent inputs/outputs
S_A to S_C	Select inputs
E	Enable input (active LOW)
Z_A to Z_C	Common inputs/outputs

(3) Function Table

Inputs		Channel
E	Sn	On
L	L	Y0n-Zn
L	H	Y~n-Zn
H	X	none

Notes
H=HIGH state (the more positive voltage)
L=LOW state (the less positive voltage)
X=STATE is immaterial

Fig. 11 Schematic Diagram (One Switch)



Ratings
Limiting values in accordance with the Absolute Maximum System(IEC 134)
Supply voltage (with reference to V_{DD}) V_{EE} --18 to + 0,5 V

Note
To avoid drawing V~ current out of terminal Z, when switch current flows into terminals Y, the voltage drop across the bidirecctional switch must not exceed 0,4 V. If the switch current flows into terminal Z, no V_{DD} current will flow out of terminals Y, in this ease there is no limit for the voltage drop across the switch, but the voltages at Y and Z may not exceed V_{DD} or V_{EE}

3 Sound power amplifier TDA7057AQ

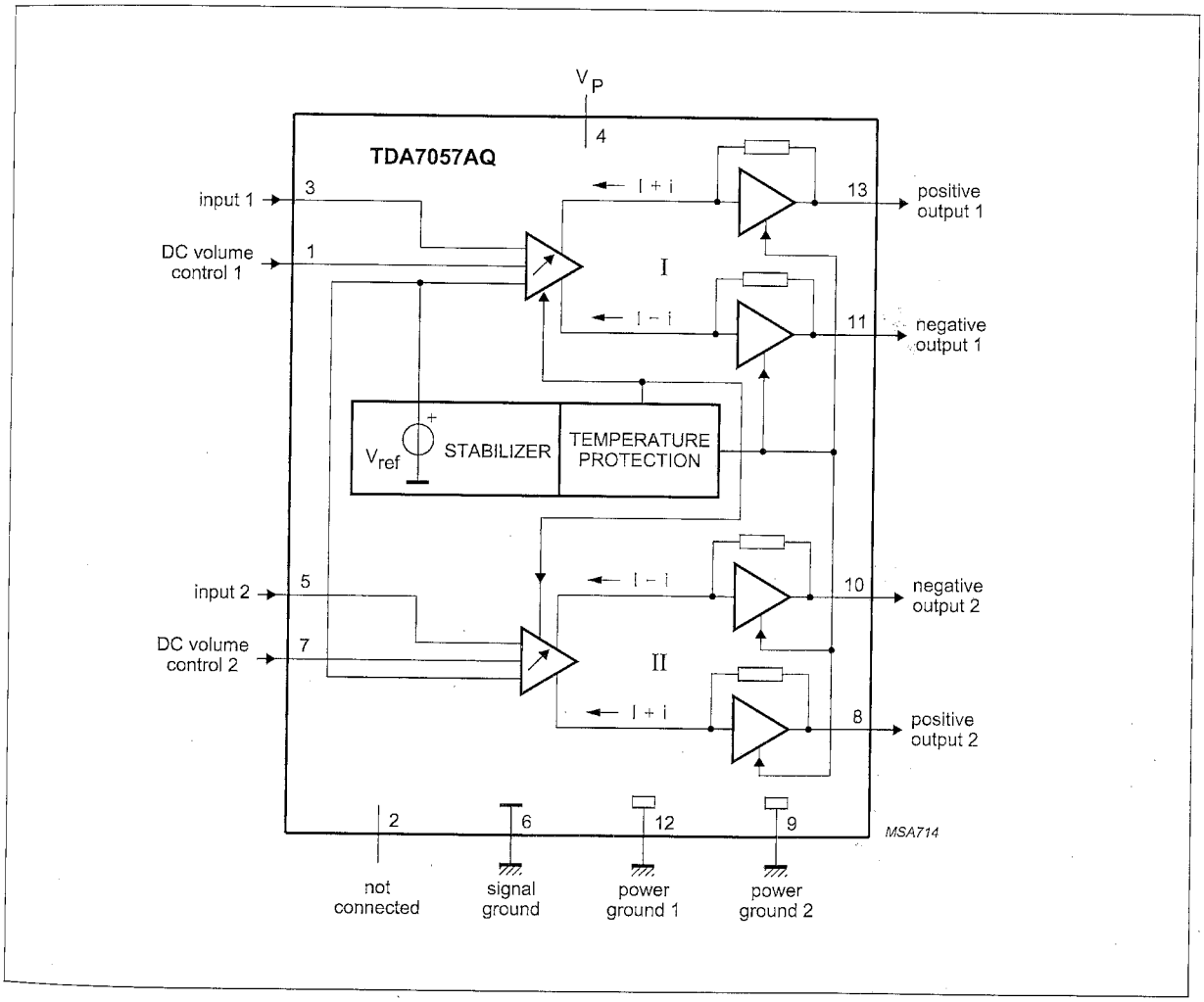
TDA7057AQ
2x8W Stereo BTL Audio Output Amplifier with DC Volume Control

(1) Features
- DC volume control
- Few external components
- Mute mode
- Short-circuit proof
- No switch -on and switch – off clicks
- Good overall stability
- Low power consumption
- Low HF radiation
- ESD protected on all pins

(2) General Description
The TDA7057AQ is a stereo BTL output amplifier with DC volume control. The device is designed for use in TVs and monitiors, but is also suitable for battery-fed portable, Thermal protection recorders and radios.

Missing Current Limiter (MCL)
A MCL protection circuit is built-in. The MCL circuit is activated when the difference in current between the output terminal of each amplifier exceeds 100 mA (typical 300 mA). This level of I00 mA allows for single-ended headphone applications.

Fig. 12


V P
4
TDA7057AQ
input 1
3
DC volume control 1
1
I + i
I
I − i
13
positive output 1
11
negative output 1
V ref
STABILIZER
TEMPERATURE PROTECTION
input 2
5
DC volume control 2
7
I − i
II
I + i
10
negative output 2
8
positive output 2
2
6
12
9
MSA714
not connected
signal ground
power ground 1
power ground 2

4 Vertical scan output stage circuit TDA8356/N6

(1) Features

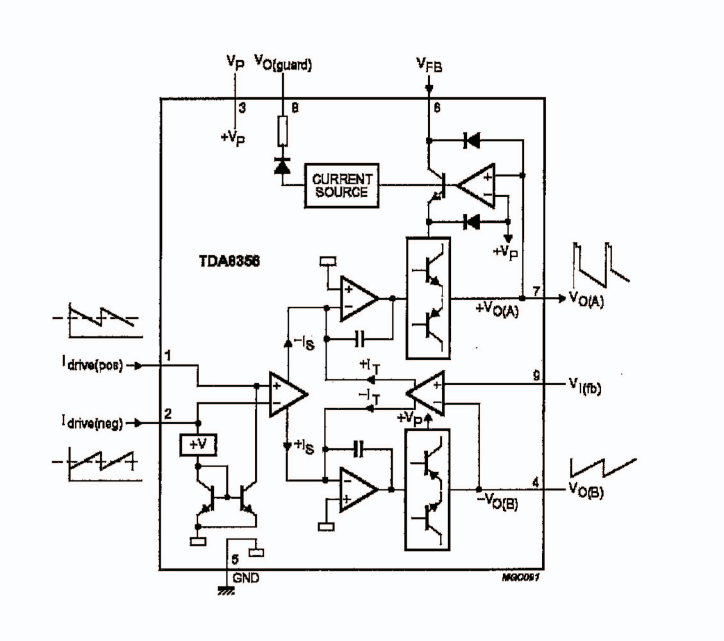
- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - Short-circuit of the output pins (7 and 4)
  - Short-circuit of the output pins to
- Temperature protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode.

(2) General Description

The TDA8356 is a power circuit for use in 90° and 110° colour deflection systems for field frequencies of 50 to 120 Hz. The circuit provides a DC driven vertical deflection output circuit, operating as a highly efficient class G system.

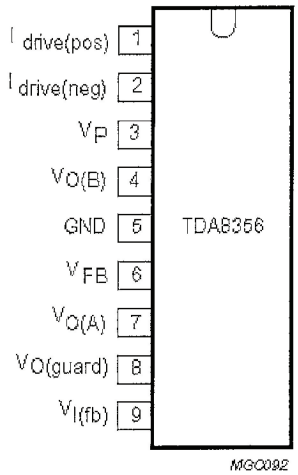
(3) Block Diagram

Fig. 13



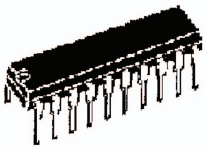
(4) Pinning

Fig. 14



SYMBOL	PIN	DESCRIPTION
Idrive(pos)	1	input power-stage (positive); includes II(sb) signal bias
Idrive(neg)	2	input power-stage (negative); includes II(sb) signal bias
VP	3	operating supply voltage
VO(B)	4	output voltage B
GND	5	ground
VFB	6	input flyback supply voltage
VO(A)	7	output voltage A
VO(guard)	8	guard output voltage
VI(fb)	9	input feedback voltage

5 Audio effect processor TDA7449



DIP20

(1) Features

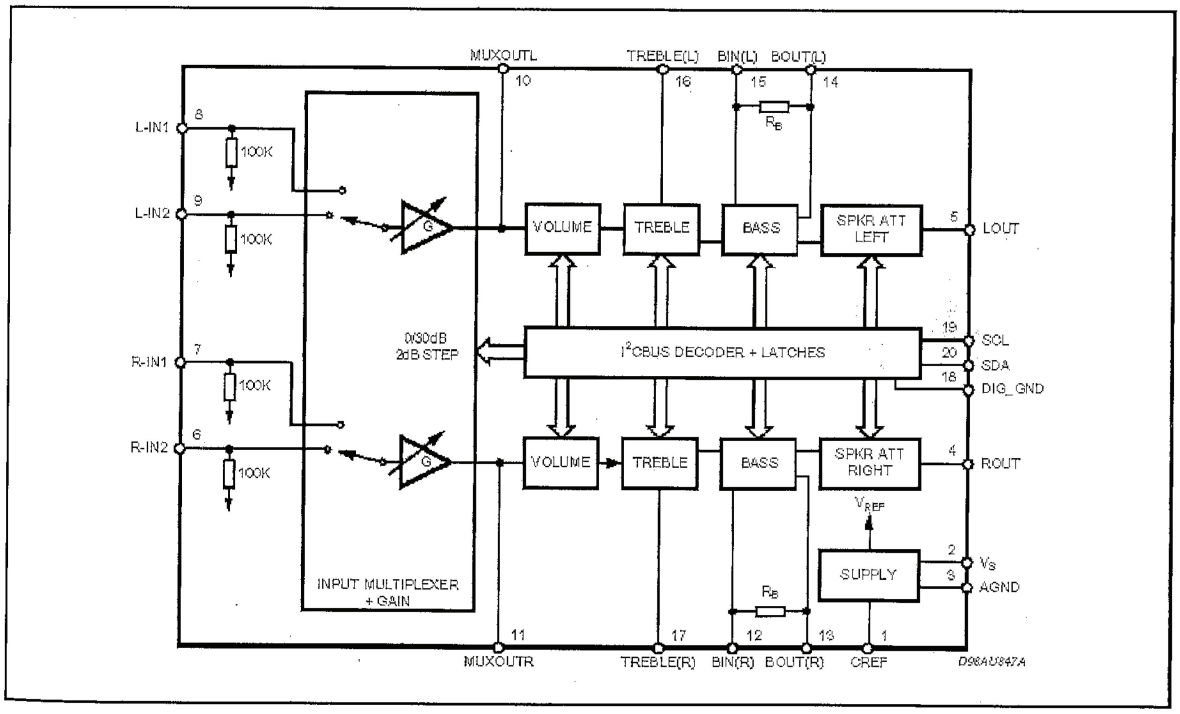
• Input Multiplexer
  - 2 Stereo Inputs
  - Selectable Input Gain For Optimal Adaptation to Different Sources
• One Stereo Output
• Treble, and Bass Control in 2.0dB Steps
• Volume Control in 1.0dB Steps
• Two Speaker Attenuators:
  - Two Independent Speaker Control in 1.0db Steps for Balance Facility
  - Independent Mute Function
• All Function Are Programmable via Serial Bus

(2) Description

The TDA7449 is a volume tone (bass and treble) balance (Left/Right) processor for quality audio applications in TV systems.
Selectable input gain is provided. Control of all the functions is accomplished by serial bus. The AC signal setting is obtained by resistor networks and switches combined with operational amplifiers. Thanks to the used BIPOLAR/CMOS Technology, Low Distortion, Low Noise and DC stepping are obtained.

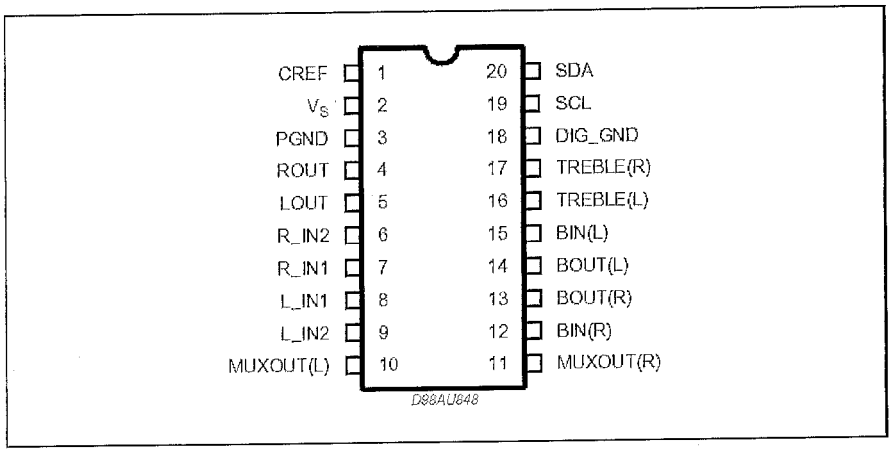
(3) Block Diagram

Fig. 15



(4) Pin Connection

Fig. 16



(5) Electrical Characteristics

ELECTRICAL CHARACTERISTICS
(refer to the test circuit Tamb = 25°C, VS = 9V, RL= 10K Ohm, RG = 600 Ohm, all controls flat (G = 0dB), unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
SUPPLY						
VS	Supply Voltage		6	9	10.2	V
IS	Supply Current			7		MA
SVR	Ripple Rejection		60	90		dB
INPUT STAGE						
RIN	Input Resistance			100		K Ohm
VCL	Clipping Level	THD = 0.3%	2	2.5		Vrms
SIN	Input Separation	The selected input is grounded through a 2.2m capacitor	80	100		dB
Ginmin	Minimum Input Gain		-1	0	1	dB
Ginman	Maximum Input Gain			30		DB
Gstep	Step Resolution			2		dB
VOLUME CONTROL						
CRANGE	Control Range		45	47	49	dB
AVMAX	Max. Attenuation		45	47	49	dB
ASTEP	Step Resolution		0.5	1	1.5	dB
EA	Attenuation Set Error	AV = 0 to -24dB	-1.0	0	1.0	dB
		AV =-24 to-47dB	-1.5	0	1.5	dB
ET	Tracking Error	AV = 0 to -24dB		0	1	dB
		AV =-24 to -47dB		0	2	DB
VDC	DC Step	adjacent attenuation steps from 0dB to AV max		0 0.5	3	mv my
Amute	Mute Attenuation		80	100		dB
BASS CONTROL (1)						
Gb	Control Range	Max. Boost/cut	±12.0	±14.0	±16.0	dB
BSTEP	Step Resolution		1	2	3	dB
RB	Internal Feedback Resistance		18.75	25	31.25	K Ohm
TREBLE CONTROL (1)						
Gt	Control Range	Max. Boost/cut	±13.0	±14.0	±15.0	dB
STEP	Step Resolution		1	2	3	dB
SPEAKER ATTENUATORS						
CRANGE	Control Range			76		dB
SSTEP	Step Resolution		0.5	1	1.5	dB
EA	Attenuation Set Error	AV 0 to -20dB	-1.5	0	1.5	dB
		AV = -20 to -56dB	-2	0	2	dB
VDC	DC Step	adjacent attenuation steps		0	3	My
Amute	Mute Attenuation		80	100		dB

Notes:

1) The device is functionally good at Vs = 5V. a step down, on Vs, to 4V doesn't reset the device.
2) BASS and TREBLE response: The center frequency and the response quality can be chosen by the external circuitry.

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
AUDIO OUTPUTS						
V_{CLIP}	Clipping Level	d=0.3 %	2.1	2.6		V_{RMS}
R_L	Output Load Resistance		2			K Ohm
R_o	Output Impedance		10	4.0	70	Ohm
V_{DC}	DC Voltage Level			3.8		V
GENERAL						
E_{NO}	Output Noise	All gains=OdB: BW=20Hz to 20KHz flat		5	15	MV
Et	Total Tracking Error	Av=-0to-24dB		0	1	dB
		Av=-24to-47dB		0	2	DB
S/N	Signal to Noise Ratio	All gains 0dB; Vo=IVRMs;		106		dB
Sc	Channel Separation Left/ Right		80	100		dB
d	Distortion	Av=0; VI=IVRMS;		0.01	0.08	%
BUS INPUT						
V_{IL}	Input Low Voltage				1	V
V_{IH}	Input High Voltage		3			V
I_{IN}	Input Current	V_{IN}=0.4V	-5		5	MV
V_O	Output Voltage SDA Acknowledge	Io=l.6mA		0.4	0.8	V

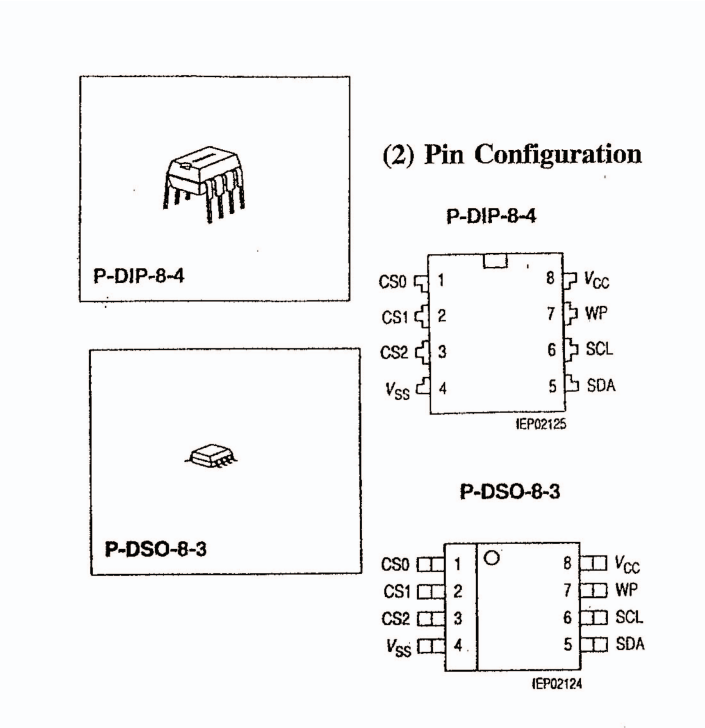
6 EEPROM AT24C08

1. Features

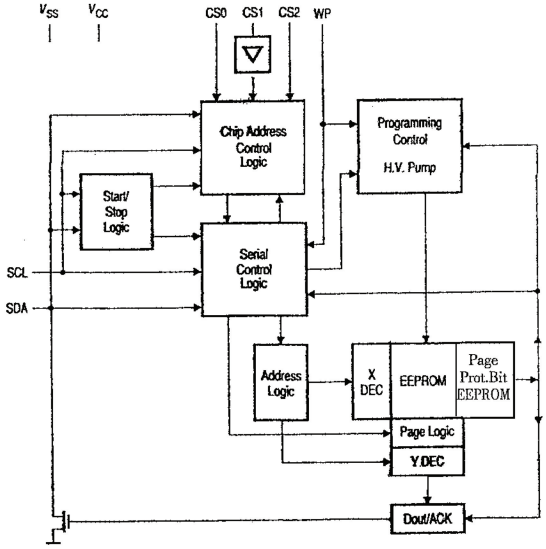
- Data EEPROM internally organized as 1024/2048 bytes and 64/128 pages x 16 bytes
- Page protection mode, flexible page-by-page hardware write protection
  - -Additional protection EEPROM of 64/128 bits, 1 bit per data page
  - -Protection setting for each data page by writing its protection bit
  - -Protection management without switching WP pin
- Low power CMOS
- Vcc=2.7 to 5.5V operation
- Two wire serial interface bus, I~C-Bus compatible
- Filtered inputs for noise suppression with Schmitt trigger
- Clock frequency up to 400 kHz
- High programming flexibility
  - -Internal programming voltage
  - -Self timed programming cycle including erase
  - -Byte-write and page-write programming, between 1 and 16 bytes
  - -Typical programming time 6 ms(<10ms) for up to 16 bytes
- High reliability
  - -Endurance 106 cycles1)
  - -Data retention 40 years~)
  - -ESD protection 4000 V on all pins
- 8 pin DIP/DSO packages'
- Available for extended temperature ranges
  - -Industrial: -40°C to +85°C
  - -Automotive:-40°C to +125°C

2. Pin Configuration

Fig. 17



3. Block Diagram



7 Power module STR-G5653/6454R

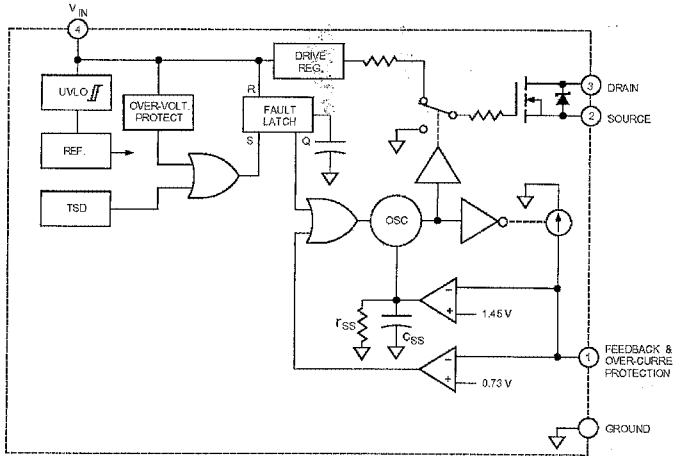
The Series STR-G5653/F6654 is specifically designed to satisfy the requirements for increased integration and reliability in off-line quasi-resonant flyback converters. The series incorporates a high-precise error amplifying control and drive circuit with discrete avalanche-rated power MOSFET, featuring fewer external components, small-size and standard power supply.
Covering the power range from below 25 watts up to 300 watts for 100/115/230 VAC inputs, and .up to 150 watts for 85 to 265 VAG universal input, these devices can be used in a range of applications, from battery chargers and set top boxes, to televisions, monitors, and industrial power supply units. Cycle-by-cycle current limiting., under-voltage lockout with hysteresis, over-voltage protection, and thermal shutdown protects the power supply during the normal overload and fault conditions. Low-current startup and a low-power standby mode selected from the secondary circuit completes a comprehensive suite of features. The series is provided in a five-pin over molded SIP style package, affording dielectric isolation without compromising thermal characteristics.

1 Features

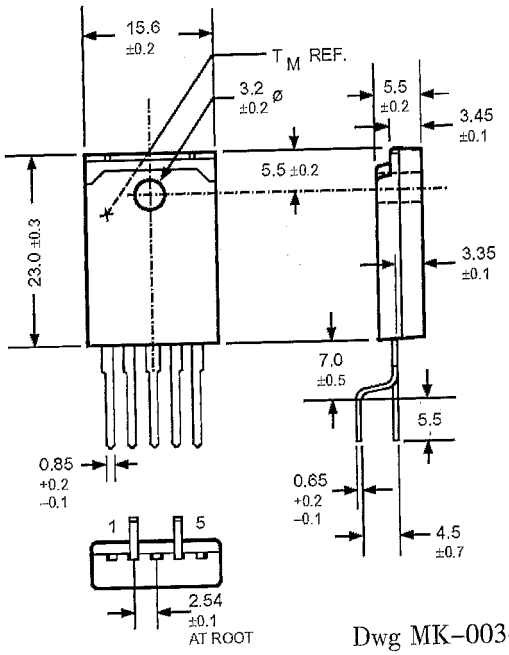
- Flyback Operation ~ith Quasi-Resonant Soft Switching for Low Power Dissipation and EMI
- Rugged Avalanche-Rated MOSFET Soft drive circuit MOSFET Adjustable MOSFET switching speed
- Choice of MOSFET Voltage and rDS(on)
- Full Over-Current Protection (no blanking)
- Under-Voltage Lockout with Hysteresis
- Over-Voltage Protection
- Direct Voltage Feedback
- Low Start-up Current (l00M Amax)
- Low-Frequency, Low-Power Standby Operation
- Over molded 5-Pin Package

2 Circuit Block Diagram

Fig. 19



3 Pin Configuration and Functions



Dwg MK−003−50mm

3.1 Pin function for STR-G5653

Pin No.	Symbol	Function Description
1	D	MOSFET drain
2	S	MOSFET source
3	GND	Ground
4	V_{IN}	Supply voltage.input for control circuit
5	OCP/FB	Over-current protection detection signal/voltage-limiting signal input

3.2 Pin function for STR-F6654

Pin No.	Symbol	Function Description
1	OCP/FB	Over-current protection detection signal/voltage-limiting signal input
2	S	MOSFET source
3	D	MOSFET drain
4	V_{IN}	Supply voltage input for control circuit
5	GND	Ground

4 Difference between STR-G5653 and STR-F6654

a. Different size: STR- F6654 is larger
b. Different pin functions
c. Different electric characteristics: Larger power output, switching current, avalanche-rated and internal allowable, power consumption for STR-F6654.

Replacement of Parts

1 Description

Many electrical and mechanical components in this chassis have special safety related characteristics. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols or UL, FCC, FDA or VDE marking on the circuit diagram and parts list. When replacing any of these components, substitute the one which has the same safety characteristics as specified in the manual.

2 Replacement Table of Parts

Position	Parts	Type
R051	Carbon film resistor	Circuit Parts List for 21.C36
R051	Carbon film resistor	1. Parts on Main PCB
R399	Carbon film resistor	RT13-0.166W-10 Ohm J
R399	Carbon film resistor	NAS1/6100J
R136B	Carbon film resistor	RT13-0.166W-10 Ohm J
R136B	Carbon film resistor	NAS1/6100J
R042	Carbon film resistor	RT13-0.166W-10 Ohm J
R042	Carbon film resistor	NAS 1/6100J
R242	Carbon film resistor	RT13-0.166W-47 Ohm J
R242	Carbon film resistor	NAS1/6470J
R262A	Carbon film resistor	RT13-0.166W-47 Ohm J
R262A	Carbon film resistor	NAS1/6470J
R048	Carbon film resistor	RT13-0.166W-68 Ohm J
R048	Carbon film resistor	NAS1/6680J
R302	Carbon film resistor	RT13-0.166W-68 Ohm J
R302	Carbon film resistor	NAS1/6680J
R303	Carbon film resistor	RT13-0.166W-75 Ohm J
R303	Carbon film resistor	NAS1/6750J
RAV2A	Carbon film resistor	RT13-0.166W-75 Ohm J
RAV2A	Carbon film resistor	NAS1/6750J
RAV2	Carbon film resistor	RT13-0.166W-75 Ohm J
RAV2	Carbon film resistor	NAS1/6750J
RA2	Carbon film resistor	RT13-0.166W-75 Ohm J
RA2	Carbon film resistor	NAS1/6750J
RB1	Carbon film resistor	RT13-0.166W-75 Ohm J
RB1	Carbon film resistor	NAS 1/6750J
RAVIA	Carbon film resistor	RT13-0.166W-75 Ohm J
RAV1A	Carbon film resistor	NAS1/6750J
RAV1	Carbon film resistor	RT13-0.166W-75 Ohm J
RAV1	Carbon film resistor	NAS1/6750J
R313	Carbon film resistor	RT13-0.166W-75 Ohm J
R313	Carbon film resistor	NAS1/6750J
R315	Carbon film resistor	RT13-0.166W-75 Ohm J
R315	Carbon film resistor	NAS1/6750J
R392	Carbon film resistor	RT13-0.166W-75 Ohm J
R392	Carbon film resistor	NAS1/6750J
R015	Carbon film resistor	RT13-0.166W-75 Ohm J
R015	Carbon film resistor	NAS1/6750J
R041	Carbon film resistor	RTI3-0.166W- 100 Ohm J
R041	Carbon -film resistor	NAS 1/6101J
RCLS	Carbon film resistor	RT13-0.166W- 100 Ohm J
RCLS	Carbon film resistor	NAS 1/6101J
RDAS	Carbon film resistor	RT13-0.166W-100 Ohm J
RDAS	Carbon film resistor	NAS1/6101J

Position	Parts	Type
R131	Carbon film resistor	RT13-0.166W-100 Ohm J
R131	Carbon film resistor	NAS1/6101J
R133	Carbon film resistor	RT13-0.166W-100 Ohm J
R133	Carbon film resistor	NAS1/6101J
R191	Carbon film resistor	RT13-0.166W- 100 Ohm J
R191	Carbon film resistor	NAS1/6101J
R192	Carbon film resistor	RT13-0.166W-100 Ohm J
R192	Carbon film resistor	NAS1/6101J
R193	Carbon film resistor	RT13-0.166W-100 Ohm J
R193	Carbon film resistor	NAS 1/6101J
R249	Carbon film resistor	RT13-0.16.6W-100 Ohm J
R249	Carbon film resistor	NAS 1/6101J
R251	Carbon film resistor	RT13-0.166W-100 Ohm J
R251	Carbon film resistor	NAS1/6101J
R251A	Carbon film resistor	RT13-0.166W-100 Ohm J
R251A	Carbon film resistor	NAS1/6101J
R264A	Carbon film resistor	RT13-0.166W-100 Ohm J
R264A	Carbon film resistor	NAS1/6101J
R305A	Carbon film resistor	RT13-0.166W-100 Ohm J
R305A	Carbon film resistor	NAS1/6i01J
R364	Carbon film resistor	RT13-0.166W-100 Ohm J
R364	Carbon film resistor	NAS 1/6101J
R430A	Carbon film resistor	RT13-0.166W-100 Ohm J
R430A	Carbon film resistor	NAS1/6101J
RCLM	Carbon film resistor	RTi3-0.166W-100 Ohm J
RCLM	Carbon film resistor	NAS1/6101J
RDAM	Carbon film resistor	RT13-0.166W-100 Ohm J
RDAM	Carbon film resistor	NAS1/6101J
R116	Carbon film resistor	RT 13-0.166W- 100 Ohm J
R116	Carbon film resistor	NAS1/6101J
R306	Carbon film resistor	RT13-0.166W-100 Ohm J
R306	Carbon film resistor	NAS1/6101J
R108	Carbon film resistor	RT13-0.166W-100 Ohm J
R108	Carbon film resistor	NAS1/6101J
R243A	Carbon film resistor	RT13-0.166W-120 Ohm J
R243A	Carbon film resistor	NAS1/6121J
R102	Carbon film resistor	RT13'0.166W-150 Ohm J
R102	Carbon film resistor	NAS1/6151J
R358	Carbon film resistor	RT13-0.166W-150 Ohm J
R358	Carbon film resistor	NAS1/6151J
R103	Carbon film resistor	RT13-0.166W-180 Ohm J
R103	Carbon film resistor	NAS1/6181J
R245A	Carbon film resistor	RT13-0.166W-200 Ohm J
R245A	Carbon film resistor	NAS1/6201J
R263	Carbon film resistor	RT13-0.166W-220 Ohm J
R263	Carbon film resistor	NAS 1/6221J

Position	Parts	Type
R354	Carbon film resistor	RT 13-0.166W-220 Ohm J
R354	Carbon film resistor	NAS1/6221J
R362	Carbon film resistor	RT13-0.166W-220 Ohm J
R362	Carbon film resistor	NAS1/6221J
R105	Carbon film resistor	RT13-0.166W-220 Ohm J
R105	Carbon film resistor	NAS1/6221J
R391	Carbon film resistor	RT13-0.166W-270 Ohm J
R391	Carbon film resistor	NAS1/6271J
R231	Carbon film resistor	RT13-0.166W-330 Ohm J
R231	Carbon film resistor	NAS1/6331J
R106	Carbon film resistor	RT13-0.166W-390 Ohm J
R106	Carbon film resistor	NAS1/6391J
R353	Carbon film resistor	RT13-0.166W-390 Ohm J
R353	Carbon film resistor	NAS1/6391J
R012	Carbon film resistor	RT13-0.166W-430 Ohm J
R012	Carbon film resistor	NAS1/6431J
R350	Carbon film resistor	RT13-0.166W-470 Ohm J
R350	Carbon film resistor	NAS1/6471J
R357	Carbon film resistor	RT13-0.166W-470 Ohm J
R357	Carbon film resistor	NAS1/6471J
R361	Carbon film resistor	RT13-0.166W-470 Ohm J
R361	Carbon film resistor	NAS 1/6471J
R879	Carbon film resistor	RT13-0.166W-470 Ohm J
R879	Carbon film resistor	NAS1/6471J
R107	Carbon film resistor	RT13-0.166W-470 Ohm J
R107	Carbon film resistor	NAS1/6471J
R263A	Carbon film resistor	RT13-0.166W-620 Ohm J
R263A	Carbon film resistor	NAS1/6621J
R264	Carbon film resistor	RT 13-0.166W-820 Ohm J
R264	Carbon film resistor	NAS 1/6821J
R049	Carbon film resistor	RT13~0.166W-820 Ohm J
R049	Carbon film resistor	NAS 1/6821J
R101A	Carbon film resistor	RT13-0.166W-lk Ohm J
R101A	Carbon film resistor	NAS1/6102J
R241	Carbon film resistor	RT13-0.166W-lk Ohm J
R241	Carbon film resistor	NAS 1/6102J
R261A	Carbon film resistor	RT13-0.166W-lk Ohm J
R261A	Carbon film resistor	NAS12'6102J
R606	Carbon film resistor	RT13-0.166W-1k Ohm J
R606	Carbon film resistor	NAS 1/6102J
R878	Carbon film resistor	RT13-0.166W-1k Ohm J
R878	Carbon film resistor	NAS 1/6102J
R895	Carbon film resistor	RT13-0.166W-lk Ohm J
R895	Carbon film resistor	NAS 1/6102J
R246	Carbon film resistor	RT13-0.166W-1k Ohm J
R246	Carbon film resistor	NAS 1/6102J

Position	Parts	Type
R247	Carbon film resistor	RT13-0.166W-lk Ohm J
R247	Carbon film resistor	NAS1/6102J
R047	Carbon film resistor	RT13-0.166W-lk Ohm J
R047	Carbon film resistor	NAS1/6102J
R137	Carbon film resistor	RT13-0.166W-1.2K Ohm J
R137	Carbon film resistor	NAS1/6122J
R046	Carbon film resistor	RT13-0.166W- 1.5K Ohm J
R046	Carbon film resistor	NAS1/6152J
R430	Carbon film resistor	RT13-0.166W-1.8K Ohm J
R430	Carbon film resistor	NAS1/6182J
RBY1	Carbon film resistor	RT13-O.166W-1.5K Ohm J
RBY 1	Carbon film resistor	NAS 1/6182J
RBY2	Carbon film resistor	RT13-0.166W-2K Ohm J
RBY2	Carbon film resistor	NAS1/6202J
R621	Carbon film resistor	RT13-0.166W-2K Ohm J
R621	Carbon film resistor	NAS 1/6202J
R631	Carbon film resistor	RT13-O.166W-2K Ohm J
R631	Carbon film resistor	NAS1/6202J
R062	Carbon film resistor	RT13-0.166W-2K Ohm J
R062	Carbon film resistor	NAS1/6202J
R065	Carbon film resistor	RT13-0.166W-2.2K Ohm J
R065	Carbon film resistor	NAS1/6222J
R248	Carbon film resistor	RT13-0.166W-2.2K Ohm J
R248	Carbon film resistor	NAS1/6222J
R265	Carbon film resistor	RT13-0.166W-2.2K Ohm J
R265	Carbon film resistor	NAS1/6222J
R371	Carbon film resistor	RT13-0.166gr-2.2K Ohm J
R371	Carbon film resistor	NAS 1/6222J
R381	Carbon film resistor	RT13-0.166W-2.2K Ohm J
R381	Carbon film resistor	NAS 1/6222J
R138A	Carbon film resistor	RT13-O.166W-2.2K Ohm J
R138A	Carbon film resistor	NAS1/6222J
R171	Carbon film resistor	RT13-0.166W-2.2K Ohm J
R171	Carbon film resistor	NAS1/6222J
R132A	Carbon film resistor	RT13-0.166W-2.7K Ohm J
R132A	Carbon film resistor	NAS1/6272J
R133A	Carbon film resistor	RT13-0.166W-3.3K Ohm J
R133A	Carbon film resistor	NAS1/6332J
R135	Carbon film resistor	RT13-0.166W-3.3K Ohm J
R351	Carbon film resistor	NAS1/6332J
R356	Carbon film resistor	RT13-0.166W-3.3K Ohm J
R356	Carbon film resistor	NAS1/6332J
R360	Carbon film resistor	RT13-0.166W-3.3 K Ohm J
R360	Carbon film resistor	NAS1/6332J
RX204	Carbon film resistor	RT13-0.166W-3.3K Ohm J
RX204	Carbon film resistor	NAS1/6332J

Position	Parts	Type
R045	Carbon film resistor	RT13-0.166W-3.3K Ohm J
R045	Carbon film resistor	NAS1/6332J
R605	Carbon film resistor	RT13-0.166W-4.7K Ohm J
R605	Carbon film resistor	NAS1/6472J
R301S	Carbon film resistor	RT13-0.166W-4.7K Ohm J
R301S	Carbon film resistor	NAS1/6472J
R063	Carbon film resistor	RT13-0.166W-4.7K Ohm J
R063	Carbon film resistor	NAS1/6472J
R622	Carbon film resistor	RT13-0.166W-5.6K Ohm J
R622	Carbon film resistor	NAS1/6562J
R632	Carbon film resistor	R T13-0.166W-7.bK Ohm J
R632	Carbon film resistor	NAS1/6752J
RX200	Carbon film resistor	IlT13-0.166W-7.5K Ohm J
RX200	Carbon film resistor	NAS1/6752J
R005	Carbon film resistor	RT13-0.166W-8.2K Ohm J
R005	Carbon film resistor	NAS1/6822J
R007	Carbon film resistor	R T13-0.166W-10K Ohm J
R007	Carbon film resistor	NAS1/6103J
R008	Carbon film resistor	RT13-0.166W-10K Ohm J
R008	Carbon film resistor	NAS1/6103J
R009	Carbon film resistor	RT13-0.166W-10K Ohm J
R009	Carbon film resistor	NAS1/6103J
R137A	Carbon film resistor	RT13-0.166W-10K Ohm J
R137A	Carbon film resistor	NAS1/6103J
R137B	Carbon film resistor	RT13-0.166W-10K Ohm J
R137B	Carbon film resistor	NAS1/6103J
R139A	Carbon film resistor	RT13-0.166W-10K Ohm J
R139A	Carbon film resistor	NAS1/6103J
R140A	Carbon film resistor	RT13-0.166W-10K Ohm J
R140A	Carbon film resistor	NAS1/6103J
R141A	Carbon film resistor	RT13-0.166W-10K Ohm J
R141A	Carbon film resistor	NAS1/6103J
R141B	Carbon film resistor	RT13-0.166W-10K Ohm J
R141B	Carbon film resistor	NAS1/6103J
R195	Carbon film resistor	RT13-0.166W-10K Ohm J
R195	Carbon film resistor	NAS1/6103J
RA1	Carbon film resistor	RT13-0.166W- 10K Ohm J
RA1	Carbon film resistor	NAS 1/6103J
RB2	Carbon film resistor	RT13-0.166W-10K Ohm J
RB2	Carbon film resistor	NAS 1/6103J
R262	Carbon film resistor	RT13-0.166W-10K Ohm J
R262	Carbon film resistor	NAS1/6103J
R302A	Carbon film resistor	RT13-0.166W-10K Ohm J
R302A	Carbon film resistor	NAS 1/6103J
R303A	Carbon film resistor	RT13-0.166W-10K Ohm J
R303A	Carbon film resistor	NAS1/6103J

Position	Parts	Type
R352	Carbon film resistor	RT13-0.166W-10K Ohm J
R352	Carbon film resistor	NAS1/6103J
R355	Carbon film resistor	RT13-0.166W-10K Ohm J
R355	Carbon film resistor	N AS1/6103J
R359	Carbon film resistor	RT13-0.166W-10K Ohm J
R359	Carbon film, resistor	NAS1/6103J
R897	Carbon film resistor	RT13-0.166W-10K Ohm J
R897	Carbon film resistor	NAS1/6103J
R410	Carbon film resistor	RT13-0.166W-10K Ohm J
R410	Carbon film resistor	NAS1/6103J
R300S	Carbon film resistor	RT13-0.166W-10K Ohm J
R300S	Carbon film resistor	NAS1/6103J
R481	Carbon film resistor	RT13-0.166W-10K Ohm J
R481	Carbon film resistor	NAS1/6103J
R482	Carbon film resistor	RT13-0.166W- 10K Ohm J
R482	Carbon film resistor	NAS 1/6103J
R218A	Carbon film resistor	RT13-0.166W-10K Ohm J
R218A	Carbon film resistor	NAS1/6103J
RX202	Carbon film resistor	RT13-0.166W-10K Ohm J
RX202	Carbon film resistor	NAS1/6103J
RX205	Carbon film resistor	RT13-0.166W-10K Ohm J
RX205	Carbon film resistor	NAS 1/6103J
R002	Carbon film resistor	RT13-0.166W-10K Ohm J
R002	Carbon film resistor	NAS1/6103J
R158	Carbon film resistor	RT13-0.166W-12K Ohm J
R158	Carbon film resistor	NAS1/6123J
R011	Carbon film resistor	RT13-0.166W-15K Ohm J
R011	Carbon film resistor	NAS1/6153J
R013	Carbon film resistor	RT13-0.166W-15K Ohm J
R013	Carbon film resistor	NAS1/6153J
VD893B	Carbon film resistor	RT13-0.166W'15K Ohm J
VD893B	Carbon film resistor	NAS1/6153J
R215A	Carbon film resistor	RT13-O.166W-22K Ohm J
R215A	Carbon film resistor	NAS1/6223J
R215B	Carbon film resistor	RT13-0.166W-22K Ohm J
R215B	Carbon film resistor	NAS1/6223J
R260	Carbon film resistor	RT13-0.166W-22K Ohm J
R260	Carbon film resistor	NAS1/6223J
R396	Carbon film resistor	RT13-O.166W-22K Ohm J
R396	Carbon film resistor	NAS1/6223J
R233	Carbon film resistor	RT13-0.166W-22K Ohm J
R233	Carbon film resistor	NAS1/6223J
R235	Carbon film resistor	RT13-0.166W-27K Ohm J
R235	Carbon film resistor	NAS1/6273J
RX201	Carbon film resistor	RT13-0.166W-27K Ohm J
RX201	Carbon film resistor	NAS1/6273J

Position	Parts	Type
R894A	Carbon film resistor	RT13-0.166W-27K Ohm J
R894A	Carbon film resistor	NAS1/6273J
R115	Carbon film resistor	RT13-0.166W-33K Ohm J
Rl15	Carbon film resistor	NAS1/6333J
R893A	Carbon film resistor	RT13-0.166W-33K Ohm J
R893A	Carbon film resistor	NAS1/6333J
R135	Carbon film resistor	RT13-0.166W-39K Ohm J
R135	Carbon film resistor	NAS1/6393J
R135B	Carbon film resistor	RT13-0.166W-47K Ohm J
R135B	Carbon film resistor	NASl/6473J
R372	Carbon film resistor	RTI3-0.166W-47K Ohm J
R372	Carbon film resistor	NAS1/6473J
R373	Carbon film resistor	RT13-0.166W-47K Ohm J
R373	Carbon film resistor	NAS1/6473J
R382	Carbon film resistor	RT13-0.166W-47K Ohm J
R382	Carbon film resistor	NAS1/6473J
R383	Carbon film resistor	RT13-0.166W-47K Ohm J
R383	Carbon film resistor	NAS1/6473J
RX203	Carbon film resistor	RT13-0.166W-47K Ohm J
RX203	Carbon film resistor	NAS1/6473J
R003	Carbon film resistor	RT13-0.166W-68K Ohm J
R003	Carbon film resistor	NAS1/6683J
R006	Carbon film resistor	RT13-0.166W-100K Ohm J
R006	Carbon film resistor	NAS 1/6104J
R109	Carbon film resistor	RT13-0.166W-100K Ohm J
R109	Carbon film resistor	NAS1/6104J
R232	Carbon film resistor	RT13-0.166W-100K Ohm J
R232	Carbon film resistor	NAS 1/6104J
R395	Carbon film resistor	RT13-0.166W-100K Ohm J
R395	Carbon film resistor	NAS1/6104J
R485	Carbon film resistor	RT13-0.166W-100K Ohm J
R485	Carbon film resistor	NAS 1/6104J
R894	Carbon film resistor	RT13-0.166W-120K Ohm J
R894	Carbon film resistor	NAS1/6124J
R488	Carbon film resistor	RT13-0.166W-270K Ohm J
R488	Carbon film resistor	NAS1/6274J
R242A	Carbon film resistor	RT13-0.166W-680K Ohm J
R242A	Carbon film resistor	NAS1/6684J
R064	Carbon film resistor	RT14-0.25W-10 Ohm J
R064	Carbon film resistor	NAS 1/4100J
R165	Carbon film resistor	RT14-0.25W-47 Ohm J
R165	Carbon film resistor	NAS1/4470J
R166	Carbon film resistor	RT14-0.25W-100 Ohm J
R166	Carbon film resistor	NAS1/4101J
R890	Carbon film resistor	RT14-0.25W-100 Ohm J
R890	Carbon film resistor	NAS 1/4101J

Position	Parts	Type
R135A	Carbon film resistor	RT14-0.25W-100 Ohm J
R135A	Carbon film resistor	NAS1/4101J
R892	Carbon film resistor	RT14-O.25W-220 Ohm J
R892	Carbon film resistor	NAS1/4221J
R896	Carbon film resistor	RT14-O.25W-680 Ohm J
R896	Carbon film resistor	NAS 1/4681J
R024	Carbon film resistor	RT14-O.25W-1K Ohm J
R024	Carbon film resistor	NAS 1/4102J
R025	Carbon film resistor	RT14-0.25W-1k Ohm J
R025	Carbon film resistor	NAS 1/4102J
R001	Carbon film resistor	RT14-O.25W-1K Ohm J
R001	Carbon film resistor	NAS *1/4102J*
R887	Carbon film resistor	RT14-0.25W-2.2K Ohm J
R887	Carbon film resistor	NAS1/4222J
R899	Carbon film resistor	RT14-O.25W-2.2K Ohm J
R899	Carbon film resistor	NAS1/4222J
R891	Carbon film resistor	ItT14-O.25W-4.7K Ohm J
R891	Carbon film resistor	NAS 1/4472J
R883	Carbon film resistor	RT14-0.25W-4.7K Ohm J
R883	Carbon film resistor	NAS1/4472J
R872	Carbon film resistor	RT14-0.25W-4.7K Ohm J
R872	Carbon film resistor	NAS1/4472J
R872A	Carbon film resistor	RT14-0.25W-5.1K Ohm J
R872A	Carbon film resistor	NAS1/4512J
R403	Metal film resistor	RT14-0.25W-5.1K Ohm J
R167	Metal film resistor	NAS1/4512J
R505	Metal oxide film resistor	RJ14-0.25W-3K Ohm J
R505	Metal oxide film resistor	RJ14-0.25W-39K Ohm G
R463	Metal oxide film resistor	RY21-0.5W-IK Ohm J
R463	Metal oxide film resistor	MOS1/2W102J
R411	Metal oxide film resistor	RY21-0.5W-3.3K Ohm J
R411	Metal oxide film resistor	MOS1/2W332J
R412	Metal oxide film resistor	JY21-1W-2.7 Ohm J
R412	Metal oxide film resistor	MOSlW2P7J
R416	Metal oxide film resistor	RY21-1W-2.7 Ohm J
R416	Metal oxide film resistor	MOSlW2P7J
R418	Metal oxide film resistor	JY21- lW-2212J
R418	Metal oxide film resistor	MOSlW220J
R518	Metal oxide film resistor	JY21-1W-330 Ohm J
R518	Metal oxide film resistor	MOSlW331J
R881	Metal oxide film resistor	RY21-1W-2.2K Ohm J
R881	Metal oxide film resistor	MOS 1W222J
R890A	Metal oxide film resistor	JY21-2W-0.212 Ohm J
R890A	Metal oxide film resistor	
R893	Metal oxide film resistor	RY21-2W-22K Ohm J
R893	Metal oxide film resistor	MOS2W223J

Position	Parts	Type
R519	Metal oxide film resistor	RY21-2W-330K Ohm J
R519	Metal oxide film resistor	MOS2W334J
R504	Metal oxide film resistor	RY21-3W-5.6K Ohm J
R504	Metal oxide film resistor	MOS3W562J
R504A	Metal oxide film resistor	RY21-3W-12K Ohm J
R504A	Metal oxide film resistor	MOS3W123J
R893B	Class glazed resistor	RY21-3W-12K Ohm J
R452	Fuse resistor	MOS3W123J
L871	Fuse resistor	RTI40-0.5W- 1M Ohm J
R461	Fuse resistor	RF10-0.5W-0.27 Ohm J
R491	Fuse resistor	RF10-0.SW-0.27 Ohm J
R451	Fuse resistor	RFI0-0.5W-1 Ohm J
R405	Fuse resistor	RFI0-0.5W-1 Ohm J
R666	Fuse resistor	RF10-1W-0.27 Ohm J
R506	Wirewound resistor	RF10-1W-1 Ohm J
RT800	Wirewound resistor	RF10-2W-1 Ohm J
RT802B	Thermistor	RXC4-6W-3.9 Ohm K
C200	Ceramic capacitor	RXC6-H2-10W-2.2 Ohm J
C200A	Ceramic capacitor	MZ73-12 Ohm M
C260	Ceramic capacitor	CCl-63V-06a-SL-33PFJ
C261	Ceramic capacitor	CCl-63V-06a-SL-33PFJ
C005	Ceramic capacitor	CC 1-63V-06a-SL-47PFJ
C371A	Ceramic capacitor	CCl-63V-06a-SL-47PFJ
C381A	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C003	Ceramic capacitor	CC 1-63V-08a-C- 100PFJ
C882	Ceramic capacitor	CCl-63V-08a-C-100PFJ
C171A	Ceramic capacitor	CC 1-63V-08a-SL-220PFJ
C165	Ceramic capacitor	CT1-63V-06a-2B4-470PFK
C166	Ceramic capacitor	CT1-63V-06a-2B4-820PFK
C186A	Ceramic capacitor	CT1-63V-06a-2B4- 1000PFK
C233	Ceramic capacitor	CT1-63V-06a-2B4- 1000PFK
C401	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C430	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C884	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C302A	Ceramic capacitor	CT1 "63V-06a-2B4-1000PFK
C303A	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C236	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C194	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C157	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C047	Ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C048	Ceramic capacitor	CT1-63V-08a-2B4-2200PFK
C042	Ceramic capacitor	CTl-63V-08a-2B4-3300PFK
C061	Ceramic capacitor	CT1-63V-08a-2B4-3300PFK
C168	Ceramic capacitor	CT1-63V- 10a-2B4-4700PFK
C159	Ceramic capacitor	CT1-63V- 10a-2B4-4700PFK
C171	Ceramic capacitor	CT1-63V- 10a-2B4-4700PFK

Position	Parts	Type
C621	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C631	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C015	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C025	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C026	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C261A	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C262	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C603	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C666	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C893	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CBY8	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C064	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C300S	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C052	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C170	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C491	Ceramic capacitor	CT1-63V-12a-2F4-0.022MFZ
C503	Ceramic capacitor	CT1-63V-12a-2F4-0.022MFZ
C820	Ceramic capacitor	CT1-500V-06a-2B4-220PFK
C820A	Ceramic capacitor	CT1-500V-08a-2B4-820PFK
C820B	Ceramic capacitor	CT81-400VAC-11c-2E4-1000PFM-Y1
C808	Ceramic capacitor	CT81-400VAC-11c-2E4-1000PFM-Y1
C809	Ceramic capacitor	CT81-400VAC-11c-2E4-1000PFM-Y1
C810	Ceramic capacitor	CT81-1KV-10C-2B4-1000PFM
C811	Ceramic capacitor	CT81-1KV-10C-2B4-1000PFM
C871	Ceramic capacitor	CT81-1KV-10C-2B4-1000PFM
C891A	Ceramic capacitor	CT81-1KV-10C-2B4-1000PFM
C881	Ceramic capacitor	CT81-2KV-10c-2B4-470PFK
C886	Ceramic capacitor	CT81-2KV-10c-2B4-470PFK
C504	Ceramic capacitor	CT81-2KV-10c-2B4-470PFK
CBY6A	Polyester film capacitor	CT81-2KV-12c-2B4-680PFK
CBY7A	Polyester film capacitor	CT81-2KV-12c-2B4-1000PFK
C425	Polyester film capacitor	CL21X-50V-5600PFJ
C163	Polyester film capacitor	CL21X-50V-5600PFJ
C313	Polyester film capacitor	CL21X-50V-0.01MFJ
C370	Polyester film capacitor	CL21X-50V-0.O22MFJ
C373	Polyester film capacitor	CL21X-50V-0.022MFJ
C374	Polyester film capacitor	CL21X-50V-47nFJ
CX205	Polyester film capacitor	CL21X-50V-47nFJ
C007	Polyester film capacitor	CL21X-50V-47nFJ
C008	Polyester film capacitor	CL21X-50V-47nFJ
C032	Polyester film capacitor	CL21X-50V-0.1MFJ
C155	Polyester film capacitor	CL21X-50V-0.1MFJ
C181	Polyester film capacitor	CL21X-50V-0.1MFJ
C187	Polyester film capacitor	CL21X-50V-0.1MFJ
C189	Polyester film capacitor	CL21X-50V-0.1MFJ
C251A	Polyester film capacitor	CL21X-50V-0.1MFJ

Position	Parts	Type
C218	Polyester film capacitor	CL21X-5OV-0.l MFJ
C231	Polyester film capacitor	CL21X-50V-0.l MFJ
C410	Polyester film capacitor	CL21X-5OV-0.1 MFJ
C411	Polyester film capacitor	CL21X-5OV-0.1 MFJ
C125A	Polyester film capacitor	CL21X-50V-0.1 MFJ
CX203	Polyester film capacitor	CL21X-50V-0.1 MFJ
CX204	Polyester film capacitor	CL21X-50V-0.1 MFJ
C167	Polyester film capacitor	CL21X-5OV-0.1 MFJ
CBY2	Polyester film capacitor	CL21X-5OV-0.1MFJ
CBY7	Polyester film capacitor	CL21X-50V-0.1 MFJ
C151	Polyester film capacitor	CL21X-5OV-0.15 MFJ
C156	Polyester film capacitor	CL21X-50V-0.15 MFJ
C372	Polyester film capacitor	CL21X-50V-0.22 MFJ
C382	Polyester film capacitor	CL21X-50V-0.22MFJ
C623	Polyester film capacitor	CL21X-50V-0.22MFJ
C633	Polyester film capacitor	CL21X-50V-0.22MFJ
CBY3	Polyester film capacitor	CL21X-50V-0.22MFJ
CBY6	Polyester film capacitor	CL21X-50V-0.22MFJ
C009	Polyester film capacitor	CL21X-50V-330nFJ
CBY10	Polyester film capacitor	CL21X-50V-330nFJ
C493	Polyester film capacitor	CL21X-50V-470nFJ
CX201	Polypropylene capacitor	CL21X-50V-470MFJ
C481	Polyester film capacitor	CL21X-100V-0.22MFJ
C512	Polypropylene capacitor	CBB21-160V-0.056MFJ
C801	Polypropylene capacitor	CL21X-250V-0.1MFJ
C802	Polypropylene capacitor	CBB 13-400V-0.31MFJ
CX200	Polypropylene capacitor	CBB62-250VAC-0.1MFK
C505	Polypropylene capacitor	CBB62-250VAC-0.1 MFK
C486	Aluminum electrolytic capacitor	CBB81-1.6KV-2200PFJ
C013	Aluminum electrolytic capacitor	CBB8l-l.6KV-7200PFJ
C137A	Aluminum electrolytic capacitor	CD110-16V-4.7MFM
C169	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C302	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C303	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C305	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C306	Aluminum electrolytic capacitor	CD110X-16V-10MFM
CA3	Aluminum electrolytic capacitor	CD110X-16V-10MFM
CB3	Aluminum electrolytic capacitor	CD110X-16V-10MFM
CAV1	Aluminum electrolytic capacitor	CD110X-16V-10MFM
CAV2	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C371	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C381	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C391	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C399	Aluminum electrolytic capacitor	CD110X-16V-10MFM
CBY11	Aluminum electrolytic capacitor	CD110X-16V-10MFM
C396B	Aluminum electrolytic capacitor	CD110X-16V-10MFM

Position	Parts	Type
C001	Aluminum electrolytic capacitor	CD 110X- 16V- 10MFM
C051	Aluminum electrolytic capacitor	CD 110X- 16V- 10MFM
C004	Aluminum electrolytic capacitor	CD 110X- 16V-47MFM
C125	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C242	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C311	Aluminum electrolytic capacitor	CD 110X- 16V-47MFM
C399A	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C318B	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C892	Aluminum electrolytic capacitor	CD 110X 216V-47MFM
C031	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C031A	Aluminum electrolytic capacitor	CD 110X-16V-47MFM
C153	Aluminum electrolytic capacitor	CD 110X- 16V- 100MFM
C187A	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C188	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C217	Aluminum electrolytic capacitor	CD 110X- 16V- 100MFM
C350	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C475	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
CBY9	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C392A	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
Cl15	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C476	Aluminum electrolytic capacitor	CD 110X-16V-100MFM
C477	Aluminum electrolytic capacitor	CD 110X-16V-220MFM
C453	Aluminum electrolytic capacitor	CD 110X-16V-220MFM
C116	Aluminum electrolytic capacitor	CD 110X-16V-220MFM
C462	Aluminum electrolytic capacitor	CD 110X-16V-220MFM
C414	Aluminum electrolytic capacitor	CD 110X-16V-470MFM
C666A	Aluminum electrolytic capacitor	CD 110X-25V-220MFM
C872	Aluminum electrolytic capacitor	CD 110X-25V-220MFM
C882A	Aluminum electrolytic capacitor	CD 110X-25V- 1000MFM
C161	Aluminum electrolytic capacitor	CD 110X-25V- 1000MFM
C158	Aluminum electrolytic capacitor	CD 110-35V-470MFM
C162	Aluminum electrolytic capacitor	CD 110X-50V-0.47MFM
C883	Aluminum electrolytic capacitor	CD 110X-50V-1MFM
C411B	Aluminum electrolytic capacitor	CD 110X-50V-2.2MFM
C452	Aluminum electrolytic capacitor	CD 110X-50V-47MFM
C524	Aluminum electrolytic capacitor	CD 110X-63V-22MFM
C502	Aluminum electrolytic capacitor	CD 110X-63V-100MFM
C89	Aluminum electrolytic capacitor	CD 110X-160V-4.7MFM
C890	Aluminum electrolytic capacitor	CD 110X-160V-4.7MFM
C492	Aluminum electrolytic capacitor	CD 288-160V-220MFM
C506	Aluminum electrolytic capacitor	CD 110X-250V-3.3MFM
C807	Aluminum electrolytic capacitor	CD 288-250V-10MFM
C807	Aluminum electrolytic capacitor	CD 288-250V- 10MFM
L049	Fixed inductor	CD 293-400V-220MFM
L241	Fixed inductor	CD 289-400V-220MFM
L260	Fixed inductor	LGB0606-0.33MHK

Position	Parts	Type
L371	Fixed inductor	LGB0606-6.8MHJ
L381	Fixed inductor	LGB0606-8.2MHJ
L302	Fixed inductor	LGB0606-10MHJ
L303	Fixed inductor	LGB0606-10MHJ
L181	Fixed inductor	LGB0606-10MHJ
L187	Fixed inductor	LGB0606-10MHJ
L152	Fixed inductor	LGB0606-22MHK
L051	Fixed inductor	LGB0606-22MHK
L031	Fixed inductor	LGB0606-22MHJ
L350	Fixed inductor	LGB0606-22MHJ
L221	Fixed inductor	LGB0606-56MHK
L881	Feed-through inductor	LGB0606-56MHK
L891	Feed-through inductor	LGA0307-22MHJ
IA21	Feed-through inductor	TEM2000
IA22	Feed-through inductor	TEM2000
L502	Feed-through inductor	TEM2011
L506	Horizontal linear inductor	TEM2011
L505	Width coil	ZZ008
VD882	Diode	HXT49
D895	Diode	HFT-270
D895	Diode	W05Z2.7A
VD448A	Diode	W05Z4.7B
VD448A	Diode	GDZJ4.7B
VDX202	Diode	W05Z8.2A
D886	Diode	GDZJS.2A
D886	Diode	W05ZS.2B
VD890	Diode	W05Z15C
VD890	Diode	GDZJ15C
VD892	Diode	2CK75D
VD892	Diode	1N4148
VD065	Diode	2CK75D
VD065	Diode	1N4148
V485	Diode	2CK75D
V485	Diode	1N4148
VD401	Diode	2CK75D
VD402	Diode	1N4148
VD896	Diode	BAV21
VD131	Diode	BAV21
VD133	Diode	BAV21
VDX200	Diode	BAV21
VDX201	Diode	BAV21
VD451	Diode	BAV21
VD471	Diode	BAV21
VD461	Diode	2CZRU2
VD491	Diode	2CZRU2
VD881	Diode	2CZRU2

Position	Parts	Type
VD871	Diode	2CZRU4Z
VD891	Diode	RG2
VD803	Diode	BY254
VD804	Diode	BY254
VD805	Diode	BY254
VD806	Diode	BY254
D524	Diode	RM11C
D881	Diode	AK03
D884	Diode	AU01Z
D885	Diode	AU01Z
D888	Diode	AU01Z
V246	Triode	2SA1015-Y
V246	Triode	3CG1015-Y
V246	Triode	2PA1015-Y
V247	Triode	2SA1015-Y
V247	Triode	3CG1015-Y
V247	Triode	2PA1015-Y
V353	Triode	2SA1015-Y
V353	Triode	3CG1015-Y
V353	Triode	2PA1015-Y
V890	Triode	2SA1015-Y
V890	Triode	3CG1015-Y
V890	Triode	2PAI015-Y
V251	Triode	2SA1015-Y
V251	Triode	3CG1015-Y
V251	Triode	2PA1015-Y
VX200	Triode	2SA1015-Y
VX200	Triode	3CG1015-Y
VX200	Triode	2PA1015-Y
V112	Triode	3DG1815-Y
V112	Triode	2SC1815-Y
V112	Triode	2PC1815-Y
V241	Triode	3DG1815-Y
V241	Triode	2SC1815-Y
V241	Triode	2PC1815-Y
V201A	Triode	3DG1815-Y
V201A	Triode	2SC1815-Y
V201A	Triode	2PC1815-Y
V300S	Triode	3DG1815-Y
V300S	Triode	2SC1815-Y
V300S	Triode	2PC1815-Y
V260	Triode	3DG1815-Y
V260	Triode	2SC1815-Y
V260	Triode	2PC1815-Y
V261	Triode	3DG1815-Y
V261	Triode	2SC1815-Y

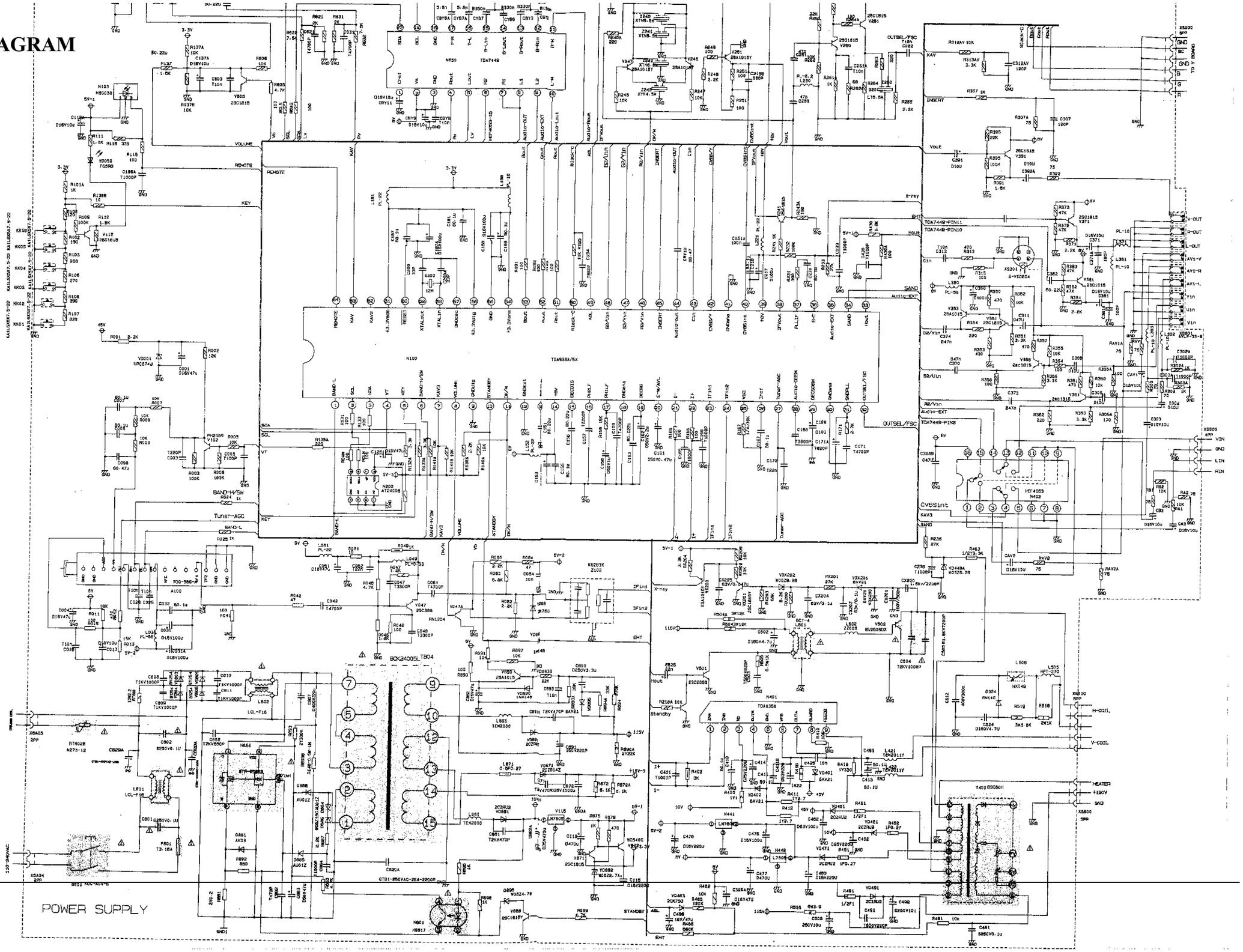
Position	Parts	Type
V261	Triode	2PC1815-Y
V351	Triode	3DG1815-Y
V351	Triode	2SC1815-Y
V351	Triode	2PC1815-Y
V356	Triode	3DG1815-Y
V356	Triode	2SC1815-Y
V356	Triode	2PC 1815-Y
V361	Triode	3DG1815-Y
V361	Triode	2SC1815-Y
V361	Triode	2PC1815-Y
V371	Triode	3DG1815-Y
V371	Triode	2SC1815-Y
V371	Triode	2PC 1815-Y
V381	Triode	3DG1815-Y
V381	Triode	2SC1815-Y
V381	Triode	2PC1815-Y
V391	Triode	3DG1815-Y
V391	Triode	2SC1815-Y
V391	Triode	2PC 1815-Y
V605	Triode	3DG1815-Y
V605	Triode	2SC1815-Y
V605	Triode	2PC1815-Y
V871	Triode	3DG18i5-Y
V871	Triode	2SC1815-Y
V871	Triode	2PC1815-Y
V888	Triode	3DG1815-Y
V888	Triode.	2SC1815-Y
V888	Triode	2PC1815-Y
VX201	Triode	3DG1815-Y
VX201	Triode	2SC 1815-Y
VX201	Triode	2PC 1815-Y
V872	Triode	BC548C
V047A	Triode	RN 1204
V501	Triode	2SC2688-L
V501	Triode	3DG2688-L
V501	Triode	3DA2688
V 102	Triode	PH2369
V047	Triode	2SC388ATM
V047	Triode	KSC388C-Y
V502	Triode	BU2508DX
N200	IC	AT24C08-10PI
N600	IC	TDA7057AQ
N401	IC	TDA8356/N6
N100	IC	TDA9381PS/N2/3I
VD001	IC	M PC574J
VD001	IC	CW574CS

Position	Parts	Type
VD001	IC	KA33V
N441	IC	L7805CV
V115	IC	L7805CV
N442	IC	L7808CV
N801	IC	HS817
N861	IC	STR-G5653
N650	IC	TDA7449
N402	IC	HEF4053BP
N402	IC	MC14053BCP
N402	IC	MC14053BCP
G200	Crystal oscillator	9922 520 00169 12MHZ
A100	Electronic tuner	TDQ-5B6-M
Z240	Ceramic trap	TPSRA6M50B00-B0
Z241	Ceramic trap	TPSRA6M00B00-B0
Z242	Ceramic trap	TPSRA5M50B00-B0
Z243	Ceramic trap	TPSRA4M50B00-B0
Z260	Ceramic trap	SFSRA6M50CF00-B0
Z102	SAW filter	K6283K
L501	Line drive transformer	BCT-4 (JU4.739.029)
L801	Filter inductor	LCL-F15
L802	Filter inductor	LCL-F16
T804	Switch transformer	BCK-24005L (JUB4.726.083)
F801	Delay fuse	RT20-250V-3.15A
XS801	AV terminals	AYLP-33-9YUV
T401	FBT	BSC60H(JUB4.799.044-1)
XS301	S terminals	PH-S
KK01	Feather touch switch	KA3L6x5x7.5-22-15
KK04	Feather touch switch	KA3L6x5x7.5-22-15
		2. Parts on Side-set AV PCB
CA1	Capacitor	CC 1-63 V-08a-C- 100PFJ
CA2	Capacitor	CC1-63V-08a-C-l00PFJ
XS800C	AV terminals	AV-1-3PH
		3. Parts on KZ PCB
R988	Carbon film resistor	RT13-0.166W-3.9KD.J
R988	Carbon film resistor	NAS1/6392J
R987	Carbon film resistor	RT13-0.166W-15K Ohm J
R987	Carbon film resistor	NAS1/6153J
CE01	Aluminum, electrolytic capacitor	CD 1 IOX- 16V- 1
VD921	Diode	FG5RD
N945	IC	HS0038
N945	IC	HS0038A
N945	IC	HS0038A2
N945	IC	SFH506-38
N945	IC	HRM3800
		4. Parts on CRT RGB PCB
RY05	Carbon film resistor	RT13-0.166W-47Dd

Position	Parts	Type
RY05	Carbon film resistor	NAS1/6470J
RY06	Carbon film resistor	RT13-0.166W-47 Ohm J
RY06	Carbon film resistor	NAS1/6470J
RY08	Carbon film resistor	RT13-0.166W-47 Ohm J
RY08	Carbon film resistor	NAS1/6470J
RY04	Carbon film resistor	RT13-0.166W-270 Ohm J
RY04	Carbon film resistor	NAS1/6271J
RY07	Carbon film resistor	RT13-0.166W-270 Ohm J
RY07	Carbon film resistor	NAS1/6271J
RY09	Carbon film resistor	RT13-0.166W-270 Ohm J
RY09	Carbon film resistor	NAS 1/6271J
RY01	Carbon film resistor	RT13-0.166W-lK Ohm J
RY01	Carbon film resistor	NAS1/6103J
RY02	Carbon film resistor	RT13-0.166W- 1K Ohm J
RY02	Carbon film resistor	NAS1/6103J
RY03	Carbon film resistor	RT13-0.166W-1K Ohm J
RY03	Carbon film resistor	NASI/6103J
RY14	Carbon film resistor	RT14-0.25W-220 Ohm J
RY14	Carbon film resistor	NAS1/4221J
RY15	Carbon film resistor	RT14-0.25W'220 Ohm J
RY15	Carbon film resistor	NAS1/4221J
RY16	Carbon film resistor	RT14-0.25W-220 Ohm J
RY16	Carbon film resistor	NAS1/4221J
RY17	Carbon film resistor	RT14-0.25W-330 Ohm J
RY17	Carbon film resistor	NAS1/4331J
RY18	Carbon film resistor	R.T14-0.25W-330 Ohm J
RY18	Carbon film resistor	NAS1/4331J
RY19	Carbon film resistor	RT14-0.25W-330 Ohm J
RY19	Carbon film resistor	NAS1/4331J
RY11	Metal oxide film resistor	RY21-2W-15K Ohm J
RY11	Metal oxide film resistor	MOS2W153J
RY12	Metal oxide film resistor	RY21-2W-15K Ohm J
RY12	Metal oxide film resistor	MOS2W153J
RY13	Metal oxide film resistor	RY21-2W-15K Ohm J
RY13	Metal oxide film resistor	MOS2W153J
RY21	Glass glazed resistor	RI40-0.5W-1.5K Ohm K
RY22	Glass glazed resistor	RI40-0.5W-I.5K Ohm K
RY23	Glass glazed resistor	RI40-0.5W-I.5K Ohm K
RY20	Fuse resistor	RF10-2W-1.8 Ohm J
CY01	Ceramic capacitor	CC 1-63V-08a-SL220PFJ
CY02	Ceramic capacitor	CC 1-63V-08a-SL-220PFJ
CY03	Ceramic capacitor	CC 1-63V-08a-SL-220PFJ
CY04	Polypropylene capacitor	CBB81-1.6KV-2200PFK
CY05	Polyester film capacitor	CL21X-250V-0.1 MFJ
CY06	Aluminum electrolytic capacitor	CD 110X-250V- 10MFM
VDY01	Diode	2CK75D

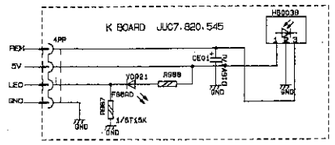
Position	Parts	Type
VDY01	Diode	1N4148
VDY02	Diode	2CK75D
VDY02	Diode	1N4148
VDY03	Diode	2CK75D
VDY03	Diode	1N4148
VDY04	Diode	BAY21
VDY04A	Diode	BAV21
VDY05	Diode	BAV21
VDY05A	Diode	BAY21
VDY06	Diode	BAV21
VDY06A	Diode	BAY21
VDY07	Diode	W05ZS.2A
VDY07	Diode	GDZJS.2A
VY01	Triode	3DA2688F
VY01	Triode	2SC2688-L
VY02	Triode	3DA2688F
VY02	Triode	2SC2688-L
VY03	Triode	3DA2688F
VY03	Triode	2SC2688-L
VY04	Triode	BF422
VY06	Triode	BF422
VY08	Triode	BF422
VY05	Triode	BF423
VY07	Triode	BF423
VY09	Triode	BF423
SY01	GZS CRT socket	GZS 10-2-AC2
		5. Other Parts
XSA04A	Power cord	RVVZ-CH1-W240-ZH1
S801	Power switch	KDC-AO4-MU 171
AY01	21" CRT	A51QAE320X02
BC641	Electric speaker	YDT513-A3-10W-8fl
BC642	Electric speaker	YDT513-A3-10W-8fl
XSA05	Degaussing coil	XC-2118

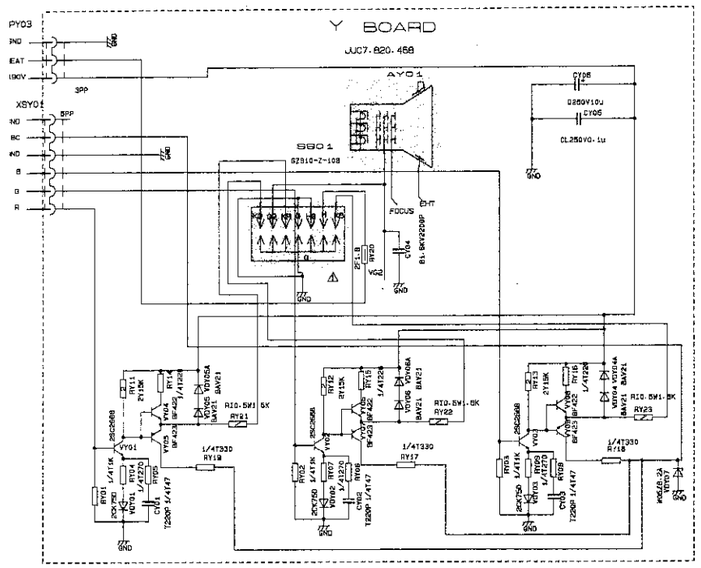
CIRCUIT DIAGRAM



Model no.: CT-14XA9A
Version: 1.0

CIRCUIT DIAGRAM





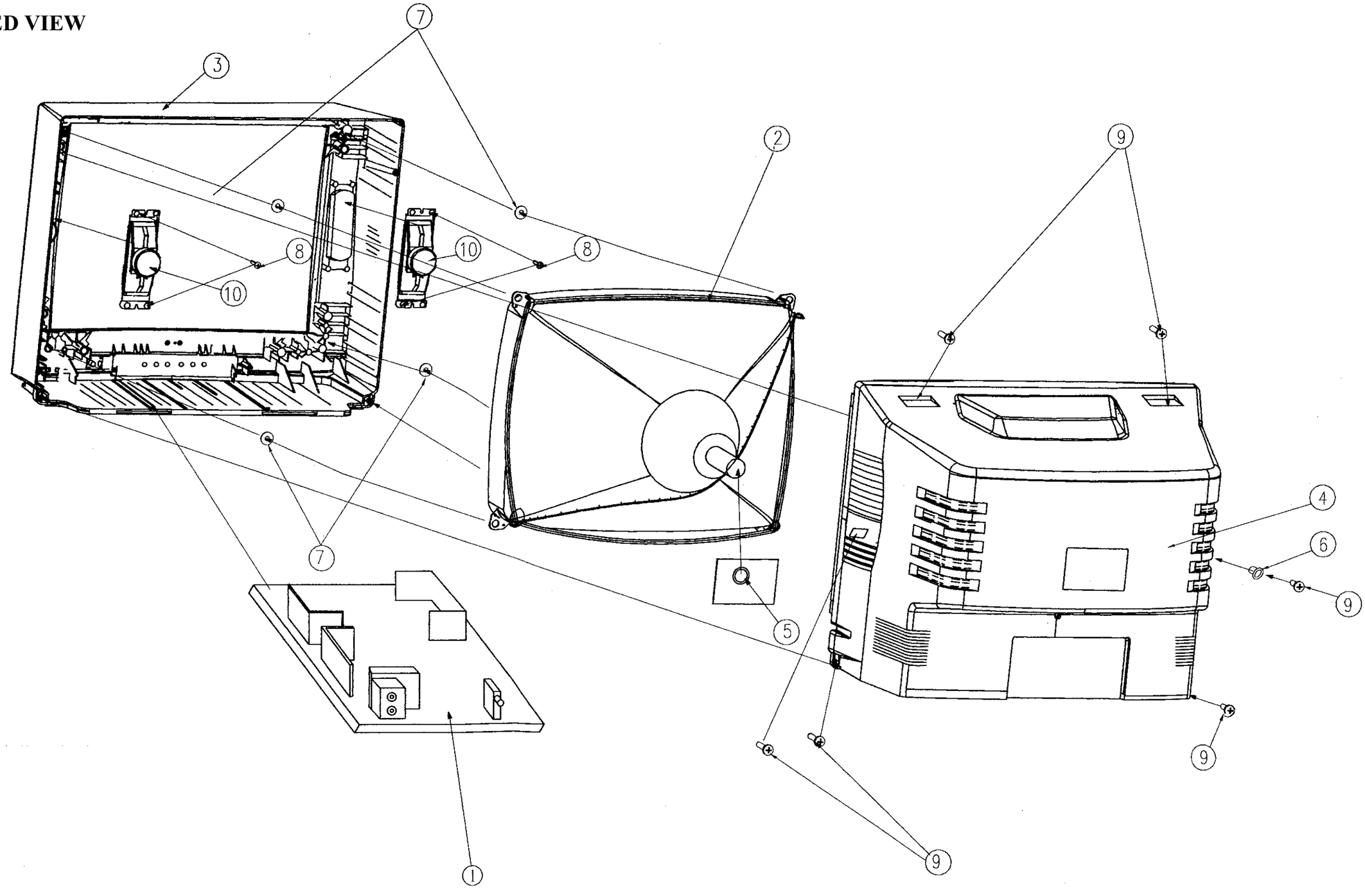
The circuit diagram is only for reference

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

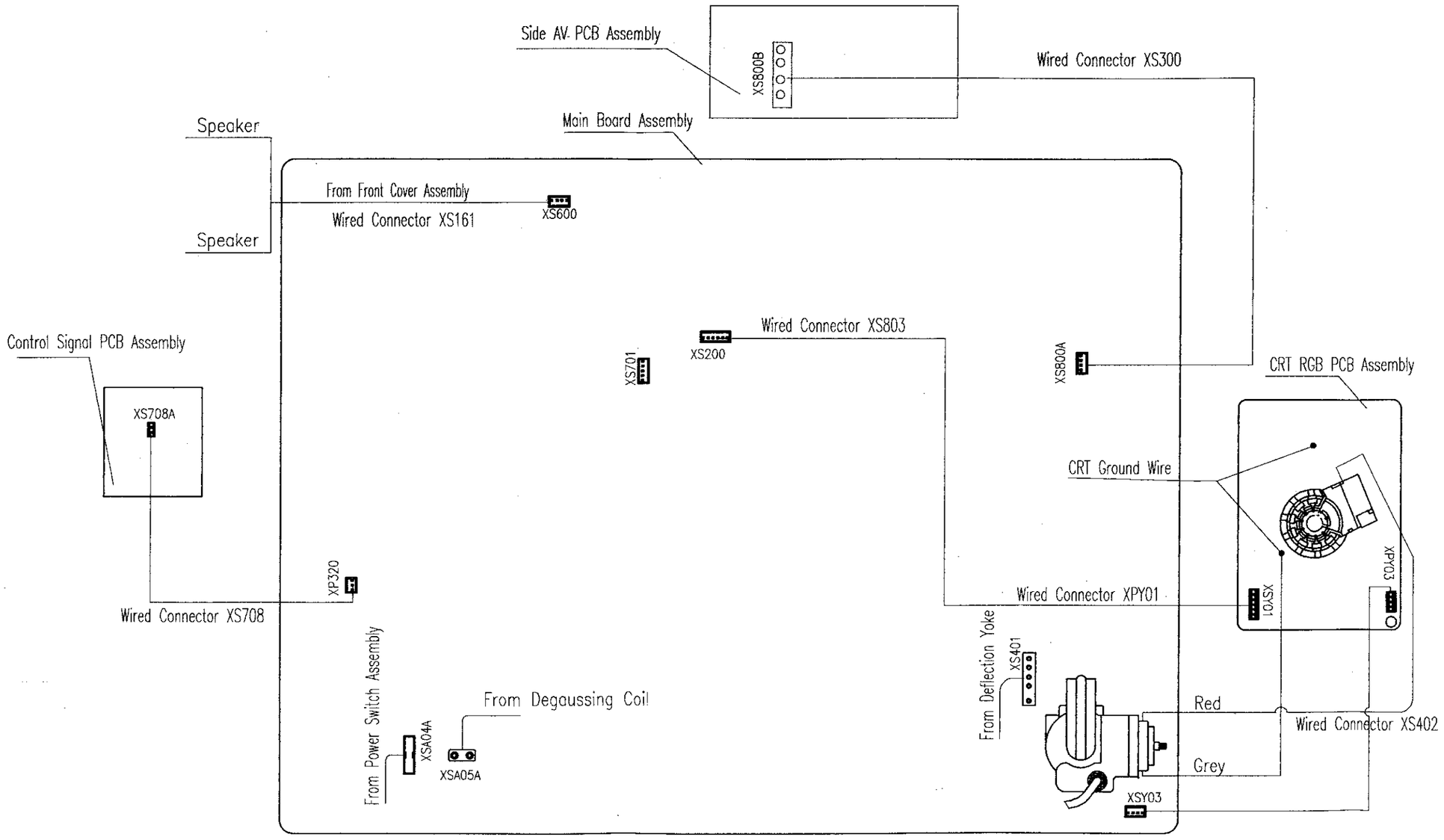
EXPLODED VIEW



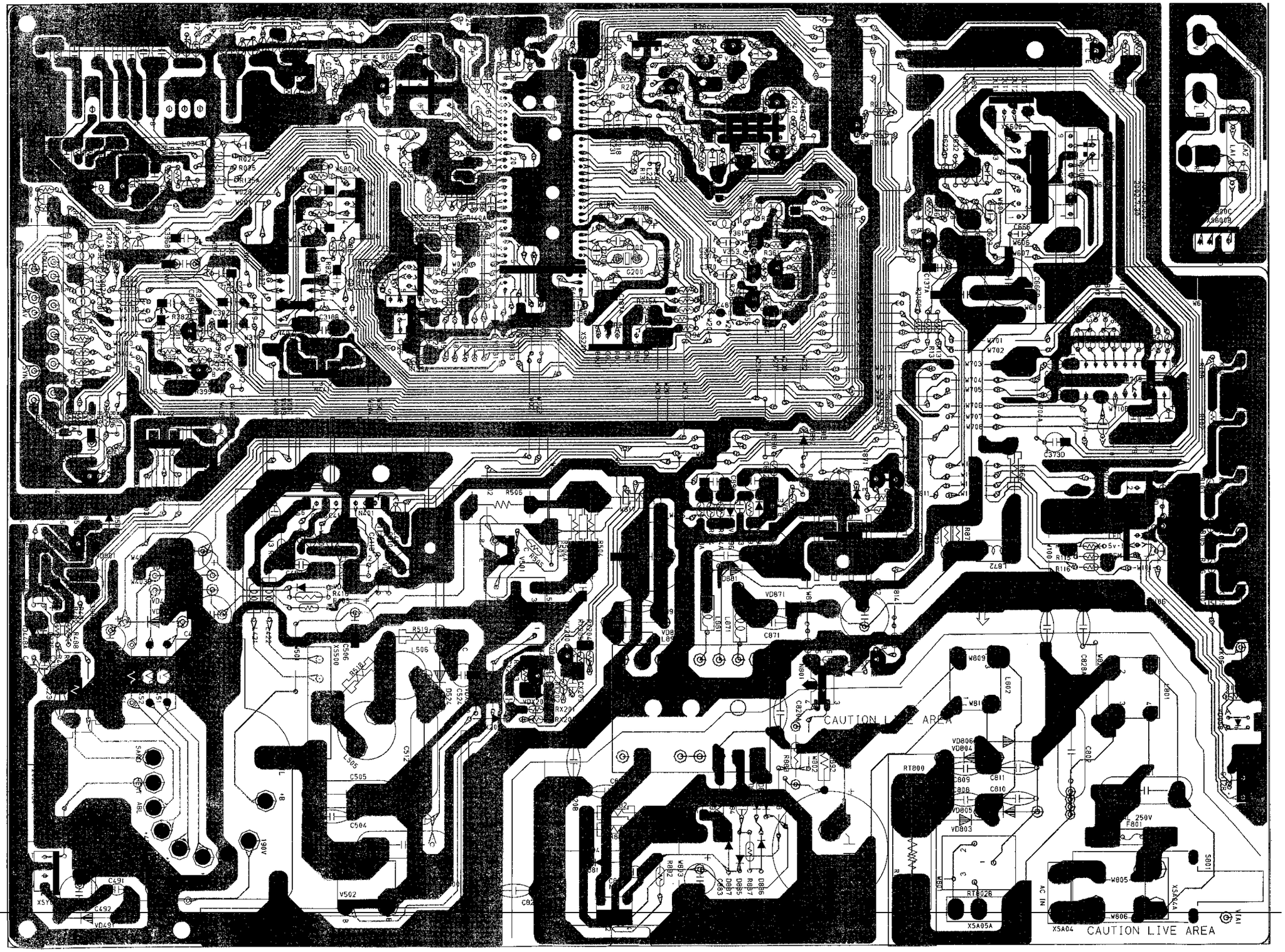
PART LIST

NO	PART NAME	QTY
1	Main board assembly	1
2	CRT assembly	1
3	Front cover	1
4	Back cover	1
5	CRT RGB PCB assembly	1
6	Seal cap	1
7	Rubber spacer	4
8	Tapping screw 4 x 12BTHO	4
9	Tapping screw 4 x 20BAHO	4
10	Speaker	2

WIRING DIAGRAM



PBC BOARD



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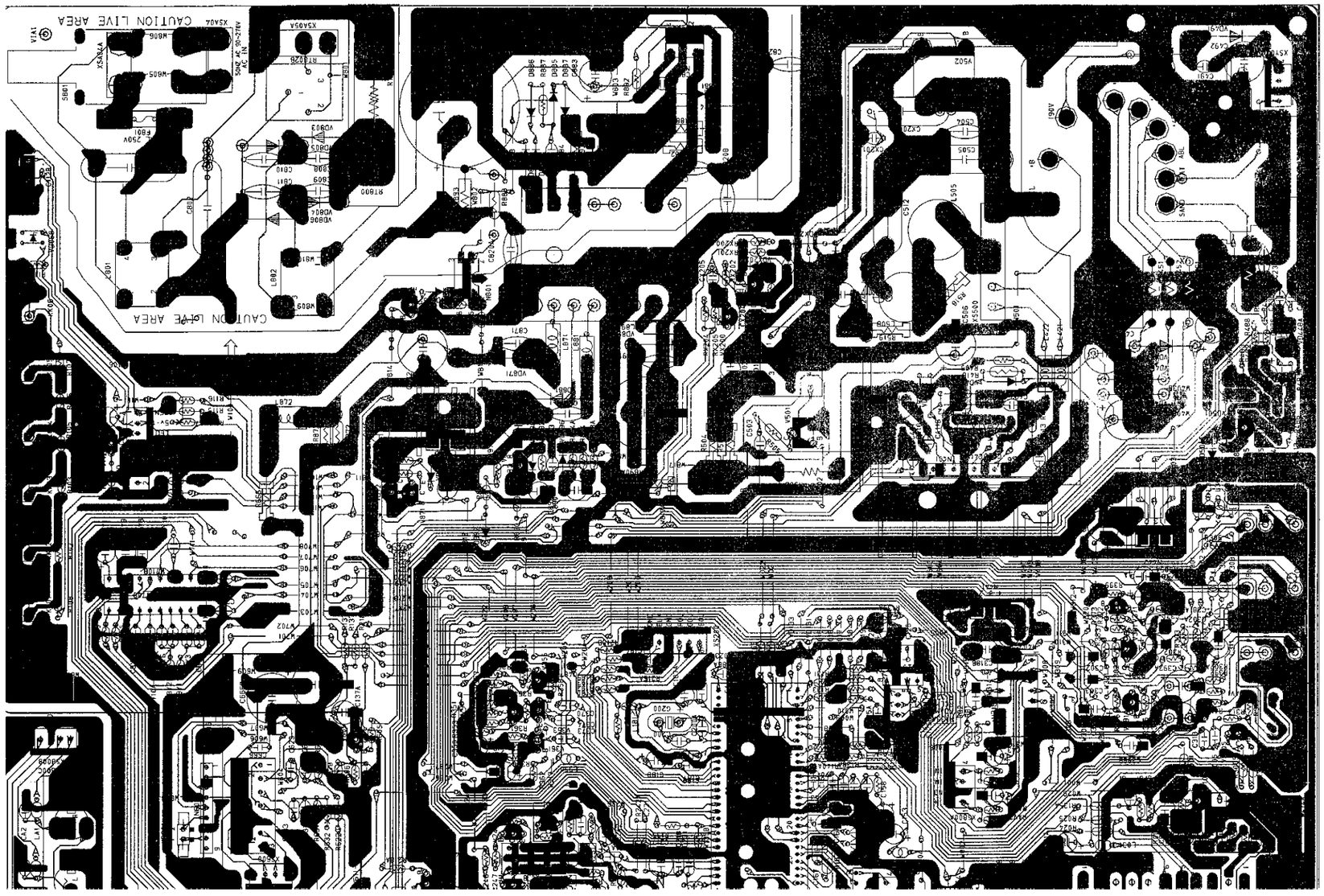

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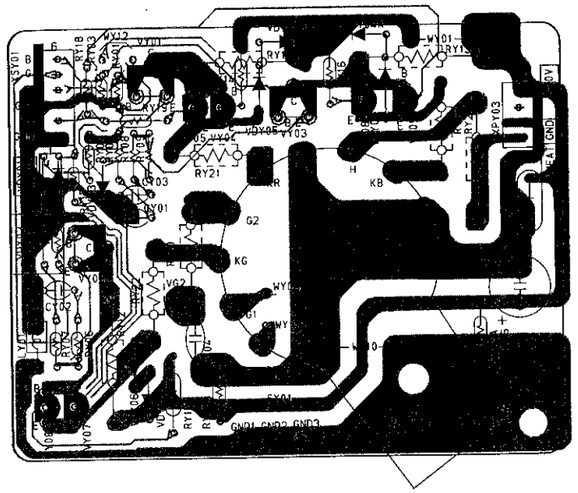

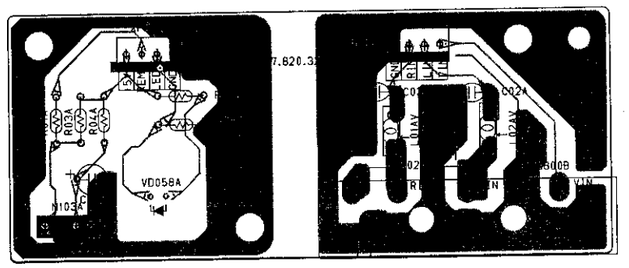

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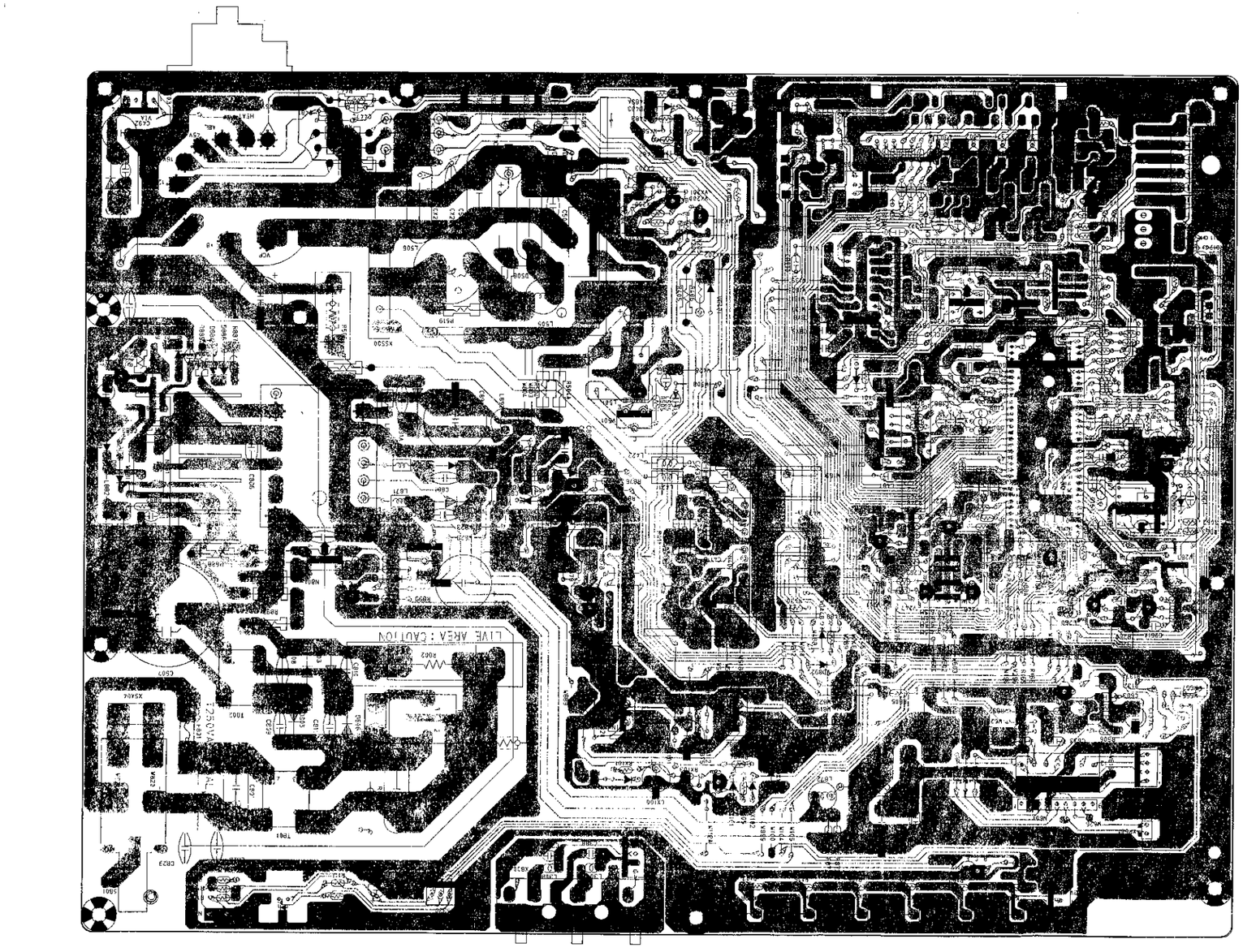

PBC BOARD