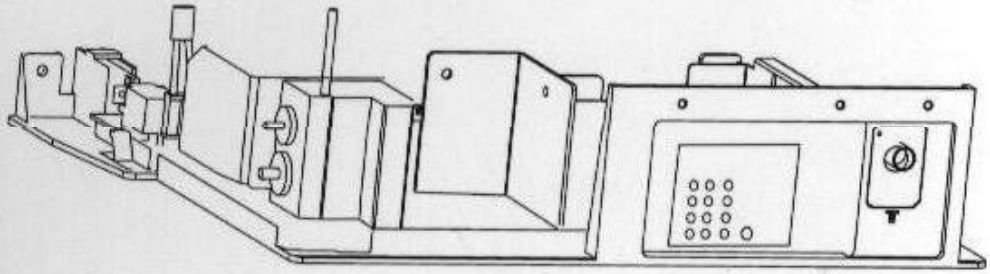
APEX

COLOR TELEVISION

SERVICE MANUAL

MODEL NO.: GT2415/GT2715/GT3215

CHASSIS NO.: CH-10C2



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SAFETY INSTRUCTIONS

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

X-RAY RADIATION PRECAUTION

1. The EHT must be checked every time the TV is serviced to ensure that the CRT does not emit X-ray radiation as result of excessive EHT voltage. The nominal EHT for this TV is 28.8±0.8KV at zero beam current (minimum brightness) operating at AC 120V. The maximum EHT voltage permissible in any operating circumstances must not exceed 31KV. 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 in this TV is the CRT. 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.

SAFETY PRECAUTION

1. The TV has a nominal working EHT voltage of 27.5KV. Extreme caution should be exercised when working on the TV with the back removed.

1) Do not attempt to service this TV if you are not conversant with the precautions and procedures for working on high voltage equipment.

2) When handling or working on the CRT, always discharge the anode to the TV chassis before removing the anode cap in case of electric shock.

3) The CRT, if broken, will violently expel glass fragments. Use shatterproof goggles and take extreme care while handling.

4) 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. Replace blown fuses within the TV with the fuse specified in the parts list.
5. 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 in the circuit diagram and parts list, it must be the company-approved type and must be mounted as the original.
6. Keep wires away from high temperature components.

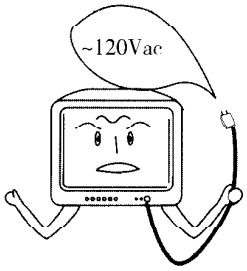
SAFETY INSTRUCTIONS (continued)

PRODUCT SAFETY NOTICE

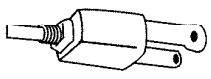
Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols in 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.

PRECAUTIONS

Power Sources-The TV set should be operated only from the type of power source indicated on the TV set or as indicated in the Service Manual. If you are not sure of the type of power supply in your home, consult your sales person or your local power company. For TV sets designed to operate from battery power, or other sources, refer to the operating instructions.

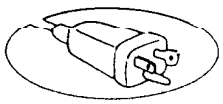


Grounding or Polarization-Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

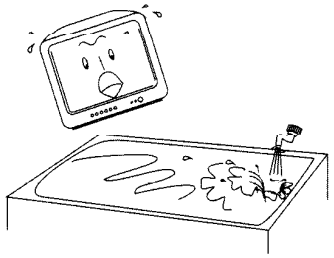


Wide blade
Lame large
Cuchilla ancha

Alternate Warnings-A three wire grounding type plug-a plug having a third (grounding) pin. This plug will only fit into grounding type power outlet.



Water and Moisture Warnings-Do not use the TV set near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like. The TV set shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the TV set.



Ventilation-Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the TV set and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the TV set on a bed, sofa, rug, or other similar surface. This TV set should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

SPECIFICATIONS

Model Number	GT2415	GT2715	GT3215
Television system	NTSC-M		
Channel coverage	VHF 2~13/UHF 14~69/CABLE TV: MID BAND (A-8~A-1, A~I) SUPER BAND (J~W) HYPER BAND (AA~ZZ, AAA, BBB) ULTRA BAND (65~94, 100~125)		
Channels preset	181		
Antenna input	75Ω (unbalanced)		
Picture tube Effective screen dimensions (Approx.)	478×363 mm 18.82×12.29 in.	540×405 mm 21.26×15.94 in.	640×478 mm 25.20×18.82 in.
Max. audio output	5W+5W		
Power source	~120Vac 60Hz		
Weight (Approx.)	31.5kg (69 lbs.)	45kg (99 lbs.)	71kg (156 lbs.)
Dimensions (W/H/D) (Approx.)	587×575×482 mm 23.10×22.62×18.98 in.	674×639×516 mm 26.54×25.16×20.31 in.	768×721×570 mm 30.24×28.39×22.44 in.
Packing Dimensions (W/H/D) (Approx.)	707×690×580 mm 27.83×27.12×22.83 in.	816×770×633 mm 32.13×30.13×24.92 in.	984×775×742 mm 38.71×30.51×29.21 in.
Rated power consumption	125W	135W	150W

Designs and specifications are subject to change without notice.

KEY ICS AND ASSEMBLIES

Table 1 Key ICs and Assemblies

Serial No.	Position No.	Type	Function Description
1	N301	OM8839PS	Small signal processor
2	N401	TDA8350-N6	Vertical output circuit
3	N601	TDA7057AQ	Sound power amplifier
4	N001	LC86F3248AU-DIP	Microcontroller
5	N002	AT24C08-10P	EEPROM
6	NQ821	STR-6626	Power thick-film circuit
7	NY01	TDA6108JF	Video amplifier
8	N606M	MSP3440	Audio demodulating and NICAM decoding circuit
9	NQ102	TDA9808T	IF signal processor
10	DS01	TA1219N	TV/Video switch circuit
11	DS02	TA78L009AP	Tri-terminal regulator
12	N103	TA78L009AP	Tri-terminal regulator
13	N402	LM317T	Tri-terminal regulator
14	N851	78L05	Tri-terminal regulator
15	N852	LM317	Tri-terminal regulator
16	N862	7805	Tri-terminal regulator
17	A101	TDQ-6F2-M	Tuner
18	Z101	M1958M	Surface acoustic wave filter
19	Z102	K3953	Surface acoustic wave filter
20	Z103	K9352	Surface acoustic wave filter

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS

CH-10C2 chassis mainly consists of an OM8839PS small signal processor together with a MSP3440 audio demodulating and processing circuit, TDA8350Q-N6 vertical output circuit, TDA7057AQ audio power amplifier, TA1219N TV/Video switch circuit, TDA9808T IF signal processor and TDA6008JF video amplifier. The following give descriptions of signal flow process for the chassis on basis of GT3215's tuner, video signal processor, audio signal processor and scan signal processor. Refer to Fig.1 about signal process of GT2415/GT2715/GT3215.

1. Tuner

The high frequency circuit comprises an A101 tuner. The RF TV signal received by the antenna is tuned, high-frequency amplified and converted in A101 tuner to develop IF TV signals which are output in two ways after amplified by V104: One set is sent to the audio signal processor and another set to the video signal processor.

2. Audio Signal Processor

The audio signal processor contains a V101 pre-IF amplifier, audio/video separator formed of Z102, Z103, TDA9808T IF processor, part of OM8839PS (including an audio IF amplitude-limit amplifier, PLL discriminator, audio amplifier, volume control and audio switch), MSP3440 audio demodulating and processing circuit, TDA7057AQ audio power amplifier and speaker.

1) Sound IF circuit

One set of IF TV signal amplified and output from V104 is output in two ways after amplified by V101: The first set is separated out sound IF signals to Pin19 and Pin20 of TDA9808T respectively by Z103 surface acoustic wave filter; the second set is separated out picture IF signals to Pin1 and Pin2 of TDA9808T respectively by Z102 SAW filter.

The picture IF signals are sent into the PLL voltage-control oscillator in the sync IC to develop a stable 45.75MHz signal for use of 4.5MHz second SIF signal. Externally connect Pin14 and Pin15 of TDA9808T to L110 tuning component of the voltage-control oscillator, Pin4 to PLL's low pass filtering circuit incorporating RP16 and CP14, Pin17 to the PIF AGC's filtering circuit incorporating CP05 and RP19, and Pin3 to RP13 and RP14 start-control adjustment resistors of RFAGC.

The sound IF signal input to Pin19 and Pin20 of TDA9808T is multi-sound IF amplified and double mixed to develop a second sound IF signal, which is then output from TDA9808T's Pin10. Externally connect Pin5 to CP03 filtering capacitor of the SIF AGC.

The second SIF signal from TDA9808T's Pin10 is sent to MSP3440's Pin17 after low-pass filtered by LP02, CP07, CP08. In MSP3440, the analog audio signal is converted into a digital audio signal through AGC control and A/D conversion, which later is processed into a digital stereo audio signal or digital dual sound signal to the related switch circuit after through FM demodulation and NICAM decoding. AV audio signals switched over and output from the AV PCB are input to Pin41 and Pin42 of MSP3440, which are also sent into the related switch circuit after through D/A conversion and proper amplification. The two audio signals are output in several ways after switchover in the switch circuit, of which one set is processed into analog audio signals and output from Pin24 and Pin25 to the audio power amplifier after through matrix processing, tone/loudness equalization/balance/volume controls and D/A conversion; another set is processed into analog audio signals to be output from Pin30 and

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

Pin31 to the AV PCB after through matrix processing, volume control, D/A conversion and switchover of the audio output switch and then output from the corresponding terminal after buffered by VS01 and VS02.

2) Audio switchover circuit

Part circuits of TA1219AN on the AV PCB perform audio switchover. From the circuit diagram, we can see that audio L1/R1 signals from the AV1 terminals are sent into Pin9 and Pin11 of TA1219AN respectively, audio L2/R2 signals from the AV2 terminals into Pin6 and Pin7 of TA1219AN respectively, and audio L/R signals from the front AV terminals into Pin3 and Pin4 of TA1219AN respectively, all of which are output from Pin31 and Pin33 to Pin41 and Pin42 of MSP3440 after switched over by TA1219AN. After digital processed in MSP3440, the signals are switched over with the TV digital audio signal, which are finally output from Pin24, Pin25, Pin30 and Pin31 of MSP3440 respectively.

3) Audio power amplifier

The audio power amplifier comprises a TDA7057AQ (N601). Two sets of audio signals from MSP3440's Pin24 and Pin25 are input to N601's Pin3 and Pin5 respectively, which are then output from Pin8, Pin10, Pin11 and Pin13 respectively to drive the speakers to output sound after though BTL power amplifying.

N601's Pin1 and Pin7, volume-control pins, function as mute control pins for the chassis. When Pin37 of N001 microcontroller outputs high level, V631A saturates and conducts and N601's Pin1 and Pin7 output low level to mute sound. The power-off mute circuit is formed of V632A, VD631A, C631A, R628A and R629A.

3. Video Signal Processor

1) Picture IF circuit

The video signal processor consists of a V104 pre-IF amplifier, Z101 picture IF SAW filter, OM8839PS small signal processor, TDA6108JF video amplifier and CRT.

Another set of IF signal output from A101 tuner is coupled to base of V104 by R139 and C101 and amplified by V104. Then the signal is IF filtered out a picture IF signal to OM8839PS's Pin48 and Pin49 by Z101. R102, R103 and R104 are bias resistors of DC operating point. L102 and resonator of the distributed capacitor are located near PIF to improve gain of PIF signal. R117 is a damping resistor to stretch frequency band of the amplifier. C105 is an AC bypass capacitor, and R101 and C106 are formed into a decoupling filter circuit.

The IF signals input from Pin48 and Pin49 of OM8839PS are filtered out a video signal as well as a second SIF signal after through fully IF amplifying and PLL sync detecting, which then are output from Pin6 after through video amplifying and video muting.

In OM8839PS, the detected video signals are output in two ways: One set is sent to the AGC circuit to develop DC control voltage differing depending on different levels of the antenna input signal and change automatically gain of the high-frequency amplifier and IF amplifier so that amplitudes of signals output from the end IF amplifier and video detector remain unchanged, ensuring the TV normal operation and sharp and stable pictures. Externally connect OM8839PS's Pin53 to C234 AGC filtering

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

capacitor of the IF amplifier. Pin54 is a RFAGC output terminal. AGCs of the IF amplifier and HF amplifier are set by the CPU through the I²C bus. The RFAGC voltage is sent to the AGC control terminal of A101 tuner to control auto gain after filtered by C235, R108, R100 and C104. R107 and R131 are bias resistors of A101 AGC control terminal to supply DC operating points for the HF amplifying triode in A101.

2) Second Audio Trap

The detecting signal output from OM8839PS' Pin6 is separated out a video signal by the second SIF trap formed of Z601 and L617 after buffered by V609 emitter follower. Then the video signal is sent into Pin13 of OM8839PS for video signal processing after buffered by V204, voltage-divided by R206 and R204 and coupled by C208.

3) TV/Video switch circuit

The TV/Video switch circuit includes part circuits of TA1219AN (NS01), a CVBS switch in OM8839PS. From the circuit diagram, it's seen that the luminance signal (or CVBS signal) and chroma signal are input into Pin10 and Pin12 of TA1219AN respectively from S-Video on the rear AV1 terminals, composite video signal (CVBS) into Pin8 of TA1219AN from the AV2 terminals, and composite video signal (CVBS) into Pin5 of TA1219AN from the front AV terminals.

After switched over by TA1219AN, the composite video signals (CVBS) from the AV1, AV2 and front AV terminals are output from Pin34 of TA1219AN to Pin17 of OM8839PS, then are sent into the color trap, color band pass filter and sync separator respectively after switched over with the CVBS signal input from Pin13 in the switch circuit of OM8839PS. After switching over Y/C signals input to TA1219AN's Pin30 and Pin32 from the S-Video terminals on the AV1, the signals are output from Pin30 and Pin32 of TA1219AN to Pin10 and Pin11 of OM8839PS, which then are switched over with Y/C signals from the color trap and color band pass filter in Switch 3 and Switch 4 of the internal switch circuit and sent to the luminance/chroma channels respectively.

4) Luminance channel

The luminance channel of the chassis is all integrated in OM8839PS which includes a black level stretcher, definition control circuit and coring circuit besides common circuits.

The black level stretcher is one of key circuits for improving picture quality. The circuit detects and compares light black level in luminance signal to the pedestal level. If the former is less than the latter, the circuit stretches to black level; if equals, it doesn't stretch. As a result, the light black part becomes dark black after stretched, thus improving the contrast, removing blurring picture and delivering more lifelike night scene. In OM8839PS, the TV improves gain of the luminance signal amplifier to stretch level and stretching differs depending on amplitudes and contrasts of input signals.

The definition controller in OM8839PS uses a delay crisping circuit with an on/off coring circuit (to decrease noise) built-in, in which a 6 bit D/A converter controls delay time of the luminance signal with crisping up to 63 levels. The crisping circuit decides delay amount and sharpening degree of the generated crisping signal according to amplitude of the luminance signal.

After processed, the luminance signal is output from Pin 28 of OM8839PS and then sent to Pin 27 of OM8839PS.

5) Chroma channel

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

The chroma channel in OM8839PS includes a ACC circuit, ACL circuit, sub-carrier restorer, PAL/NTSC/SECAM demodulator, 1H baseband delay line circuit, killer identification circuit and system detector, all of which are controlled by the I²C bus.

The chroma signal selected out by the Y/C switchover switch in OM8839PS is sent to the chroma channel for chroma amplifying and being controlled by ACC and ACL, and then output in four ways: First set is sent to the APC circuit which discriminates the color sync signal and sub-carrier signal output from VCXO. The error signal generated herefrom controls frequency and phase of VCXO. Externally connect OM8839PS' Pin36 to the filtering circuit (including C223, C224 and R218) of APC, Pin34 to Z202 3.58MHz crystal oscillator of VCXO.

Second and third sets of chroma signals are sent into the B-Y/ R-Y demodulators to demodulate out B-Y and R-Y color difference signals. Forth set is sent into the killer detector and system identification detector. The detecting result controls chroma signal processor through I²C bus. ACC and ACL detectors are also controlled by the I²C bus.

The demodulated R-Y and B-Y color difference signals are output from OM8839PS' Pin29 and Pin30 respectively after processed by the 1H baseband delay line, and then sent to Pin31 and Pin32 of OM8839PS..

6) RGB circuit

In OM8839PS (N301), the RGB circuit consists of a color difference matrix, chroma control, tint control, contrast control, dynamic skin tone adjustment, blue level stretching, black current continuous correction (dark balance auto correction) and RGB switch circuit.

The B-Y and R-Y color-difference signals input from OM8839PS' Pin31 and Pin32 are mixed out a G-Y color-difference signal in the color-difference matrix after through controls of contrast, chroma and dynamic skin tone. Then in the primary matrix, the three color-difference signals mix with the Y luminance signal input from Pin27 in a certain proportion to develop R, G, B primary color signals, which mix with character R, G, B signals input from Pin23, Pin24 and Pin25 and are output from Pin19, Pin20 and Pin21 to the video amplifier after through blue level stretching and white balance correction.

7) Video amplifier

The video amplifier of the chassis mainly contains a TDA6108JF.

G, R, B signals output from OM8839PS' Pin19, Pin20 and Pin21 are sent into the video amplifier through Pin1, Pin2 and Pin3 of TDA6108JF. After amplified by the differential circuit in TDA6108JF, the three signals are output from Pin7, Pin8 and Pin9 to regulate cathodes of the CRT and drive it to display pictures.

TDA6108JF's Pin5 outputs Iom black level detecting current to OM8839PS' Pin18 to complete auto dark balance correction.

NG01's Pin6 inputs +200V voltage to provide enough operating voltage for the video amplifying stage and ensure it wide dynamic range. RY04, RY04A, CY01, CY01A and CY02 are formed into a decoupling filtering circuit on the +200V voltage-supplying terminal.

4. Scan Signal Processor

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

The scan system includes horizontal/vertical scan circuits, which provides proper horizontal/vertical sawtooth current respectively synced by horizontal/vertical sync signals to the horizontal/vertical deflection yokes to control three electron beams in CRT to synchronously scan from left to right and up and down, thus ensuring correct aspect ratio and good-linear raster in CRT.

The scan circuit of the chassis comprises a scan small signal processor (in OM8839PS), line drive stage, horizontal output circuit stage, vertical output stage, high-voltage stabilizer, etc.

1) Sync separator

The sync separator is to separate out horizontal/vertical sync signals from the video signal to control horizontal/vertical scan respectively, thus obtaining stable pictures. In OM8839PS, the TV/Video switch circuit outputs luminance signals in two ways: One set of signal is sent to the sync separator for amplifying, clamping and compressing video signal, and then cutting sync pulse from first 50% sync amplitude, which is output after shaped and amplified. One set of sync pulse signal, as a reference signal, is sent to the AFC1 circuit; another is sent to the vertical sync separator to separate out a vertical sync signal.

2) Horizontal oscillator and horizontal AFC circuits

The horizontal oscillator in OM8839PS is a fully integrated voltage-control oscillator whose free oscillating frequency is 2fH. The oscillator is also controlled by the fsc sub-carrier frequency to adapt to multi-system reception. The horizontal scan circuit in OM8839PS is controlled by two AFC circuits for horizontal sync, of which AFC1 is used to lock oscillating frequency and phase of the horizontal oscillator and AFC2 to correct phase of line drive pulse output from Pin40 of OM8839PS.

The AFC1 circuit, horizontal oscillator, horizontal divider and low-pass filter externally connected to Pin43 are formed into the first phase-locked loop (PLL). AFC1 discriminator, mainly as a multiplier, has two input signals: One is a horizontal sync pulse sent by the sync separator which functions as a reference of horizontal scan frequency and phase from TV broadcast station; another is a 2 fH signal generated from the horizontal oscillator which later is divided to a horizontal frequency pulse. The signal functions as a comparison signal representing horizontal scan frequency and phase of the TV. After the two signals compare phase in AFC1, error current directly proportional to the phase difference is generated, which is processed into DC error control voltage to adjust oscillating frequency and phase of the horizontal oscillator after filtered by the low-pass filter comprising C231, R230 and R222 externally connected to Pin43 and finally lock the frequency. Time constant of the low-pass filter decides interference-proof ability of horizontal sync, horizontal sync hold range and sync input range.

The AFC2 circuit and phase shifter in the line pre drive stage are formed into the second phase-locked loop (PLL) to correct phase of the horizontal frequency signal output from Pin40. AFC2 mainly formed of a discriminator has also two input signals: One is a horizontal frequency pulse from the horizontal divider functioning as a reference signal for the frequency and phase in AFC1 PLL are locked by the horizontal sync pulse. Another is a comparison signal, a horizontal flyback pulse output from Pin1 of T402 FBT. The pulse is sent to the AFC2 circuit from Pin41 of TDA8844 after pulse shifted by C476, R443 and R446 and pulse shaped by VD481, VD482 and VD487. Through phase comparison, the two signals are processed into an error signal to control phase-shift angle and adjust the horizontal frequency pulse phase output from Pin40, thus controlling start time of the horizontal flyback and

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

positive/negative peak of the horizontal scan current.

3) Horizontal consistency detector

The circuit is used to check if the horizontal oscillating pulse is synchronous with the sync pulse in signal or not. If not, time constant of the filter controlling AFC1 control loop keeps small (in the Capture mode). Once sync, the time constant becomes big (in the Hold mode) after detected by the current. The detector is also used to identify receiving signal.

4) Vertical divider

The vertical divider is to divide the 2fH pulse provided by the horizontal oscillator to develop a vertical frequency pulse. Meanwhile vertical sync pulse output from the vertical sync separator resets the vertical divider, ensuring strict sync of the generated vertical frequency pulse. Thus a vertical oscillator is not required, neither is vertical sync adjustment. The strictly synced vertical frequency pulse is sawtooth-converted to a vertical sawtooth to drive the vertical drive stage after through geometric distortion correctness. Then OM8839PS' Pin46 and Pin47 output positive/negative sawtooths to the vertical output stage. Externally connect Pin51 to C233 sawtooth generation capacitor.

5) Line drive and horizontal output circuit

Similar to that of conventional TVs, the line drive and horizontal output stage comprises discrete components including a V432 line drive triode, V433 horizontal output triode, T431A line drive transformer and T402 FBT.

Line drive pulse output from OM8839PS' Pin40 is coupled to base of V433 by T431A after amplified and pulse shaped by V432 to control V433 on/off and develop sawtooth scan current in the horizontal deflection yoke so that electron beams in CRT scan horizontally and over 1KV horizontal flyback pulse is formed on collector of the FBT.

The same-type connection between primary and secondary of T431A line drive transformer should develop an invert-polarity drive relation between the line drive triode and horizontal output triode. Paralleled C432, C434 and R433 in primary of T431A are formed into a damping resistor to prevent primary of T431A from generating negative peak pulse during V432 cutoff and avoid breakdown of the line drive triode.

R456, R457, R458, R458A, R459, R460, VD457A, C479, C461, C462 and V436 are formed into an ABL circuit, of which V436 is a beam current detecting triode with base biasing voltage of 3.3V. With normal CRT brightness, the beam current is low enough to develop over 3.3V base voltage for V436 and cut off V436, thus the beam current control circuit in OM8839PS stopping operation. With too high CRT brightness, the beam current becomes higher, resulting in dropping of V436 base voltage and conducting of V436 to compel DC voltage for Pin19, Pin20 and Pin21 of OM8839PS to drop and CRT cathode voltage to rise through Pin22, thus decreasing brightness of the raster. V436 has a function of enlarging current to get wide current control range to OM8839PS' Pin22.

In addition, the horizontal flyback pulse output from T402's Pin8 is sent into OM8839PS' Pin50, of which high voltage alteration is fed back to Pin50 to control the geometric distortion corrector in OM8839PS, thus high voltage alteration not affecting its operation

VD481 and VD482 are formed into a two-way amplitude limiter, which stabilizes amplitude of the flyback pulse fed back to OM8839PS's Pin41 to avoid damage to OM8839PS caused by rising of pulse

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

amplitude due to sparking.

During horizontal scan flyback, large-amplitude flyback pulse is formed on collector of V433 horizontal output triode for the circuits' use after transformed by T402 FBT.

The horizontal flyback pulse is voltage-raised and rectified by high-voltage silicon rectifier stack to develop high voltage, focus voltage and screen voltage to supply the CRT.

The horizontal flyback pulse is output from Pin3 after T402 decreases its voltage and rectified by VD440 and filtered by C459 to develop +200V voltage for use in the video amplifying output stage.

One set of low voltage pulse from T402's Pin7 is rectified by VD437 and filtered by C449 to develop +16V-3 voltage to the vertical output stage. Another set is rectified by VD442 and filtered by C463 to develop a DC voltage to the power-off spot killer.

Low voltage pulse from T402's Pin5 is rectified by VD438 and filtered by C448 to develop +45V voltage to the vertical output stage and +33V generator.

Horizontal flyback pulse from T402's Pin1 is sent to Pin41 of OM8839PS after shaped and clamped.

6) Vertical output stage circuit

The chassis uses a TDA8350Q-N6 vertical output IC, a BTL bridge power amplifier. Positive and negative vertical sawtooth voltages output from Pin46 and Pin47 of OM8839PS are input to Pin2 and Pin1 of TDA8350Q respectively and output from Pin5 and Pin9 after though power amplification to the vertical deflection yoke on the CRT to develop sawtooth scan current in the vertical deflection yoke. Meanwhile, a scan magnetic field is formed around the vertical deflection yoke to control electron beams scanning vertically.

To improve efficiency of the vertical scanner, reduce power consumption and ensure vertical flyback time not to be delayed, the vertical output stage in TDA8350Q uses low supply voltage (+16V) during forward stroke and high supply voltage (+45V) during flyback, both of which are switched over by the flyback switch in TDA8350Q. Pin 4 is the +16V voltage supplying terminal and Pin8 is +45V voltage supplying terminal. After inverted and amplified by V001, the vertical flyback pulse voltage output from TDA8350Q's Pin10 is sent to Pin20 of N001 microcontroller to position characters.

TDA8350Q's Pin3 is the vertical negative feedback input terminal to improve vertical linearity. R410 is a sampling resistor, and C406 a DC insulating capacitor. R409 and C405 are paralleled with two ends of the vertical deflection yoke respectively, having functions of phase compensation and damping to prevent the vertical deflection yoke from generating high frequency oscillation

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

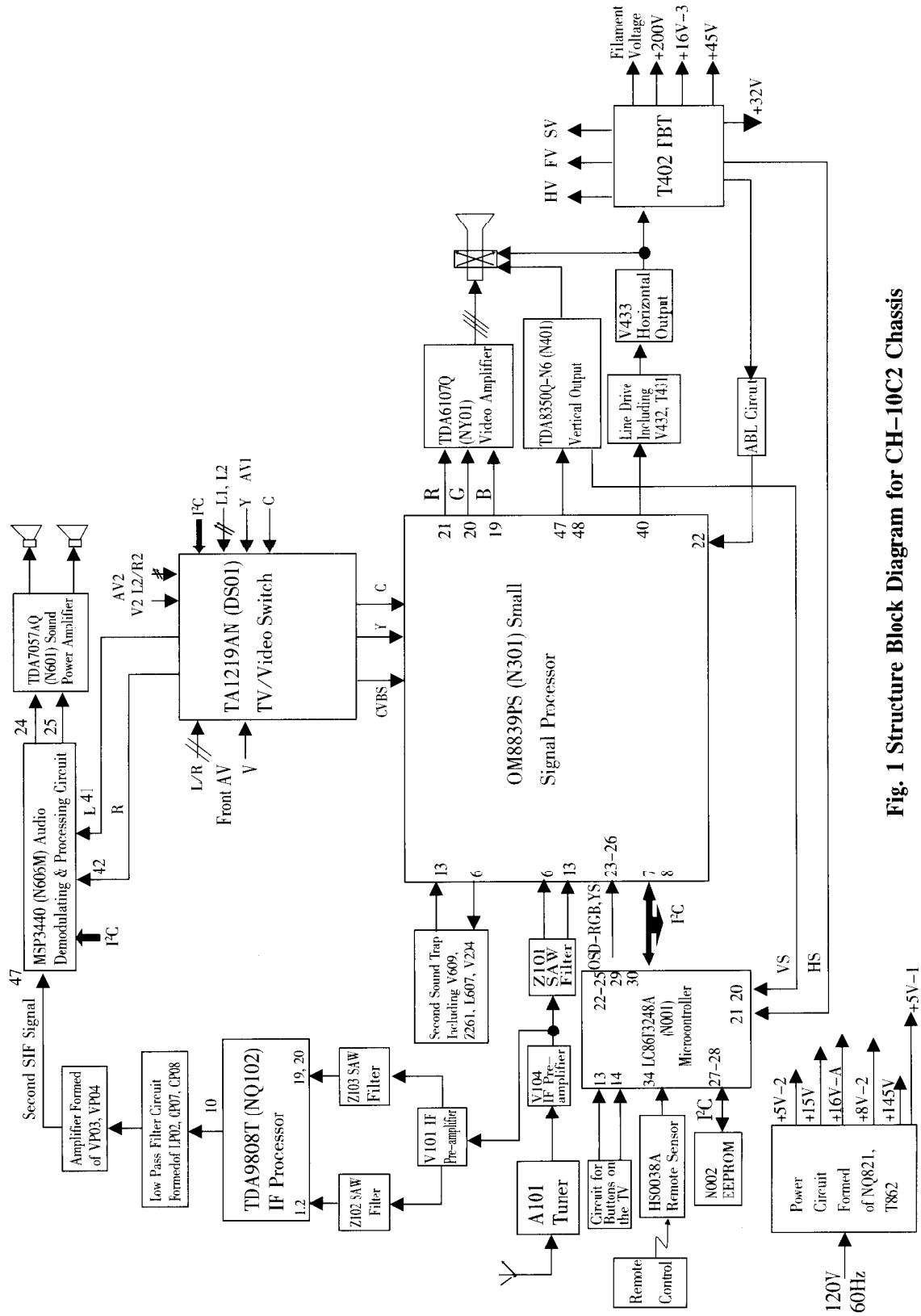


Fig. 1 Structure Block Diagram for CH-10C2 Chassis

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

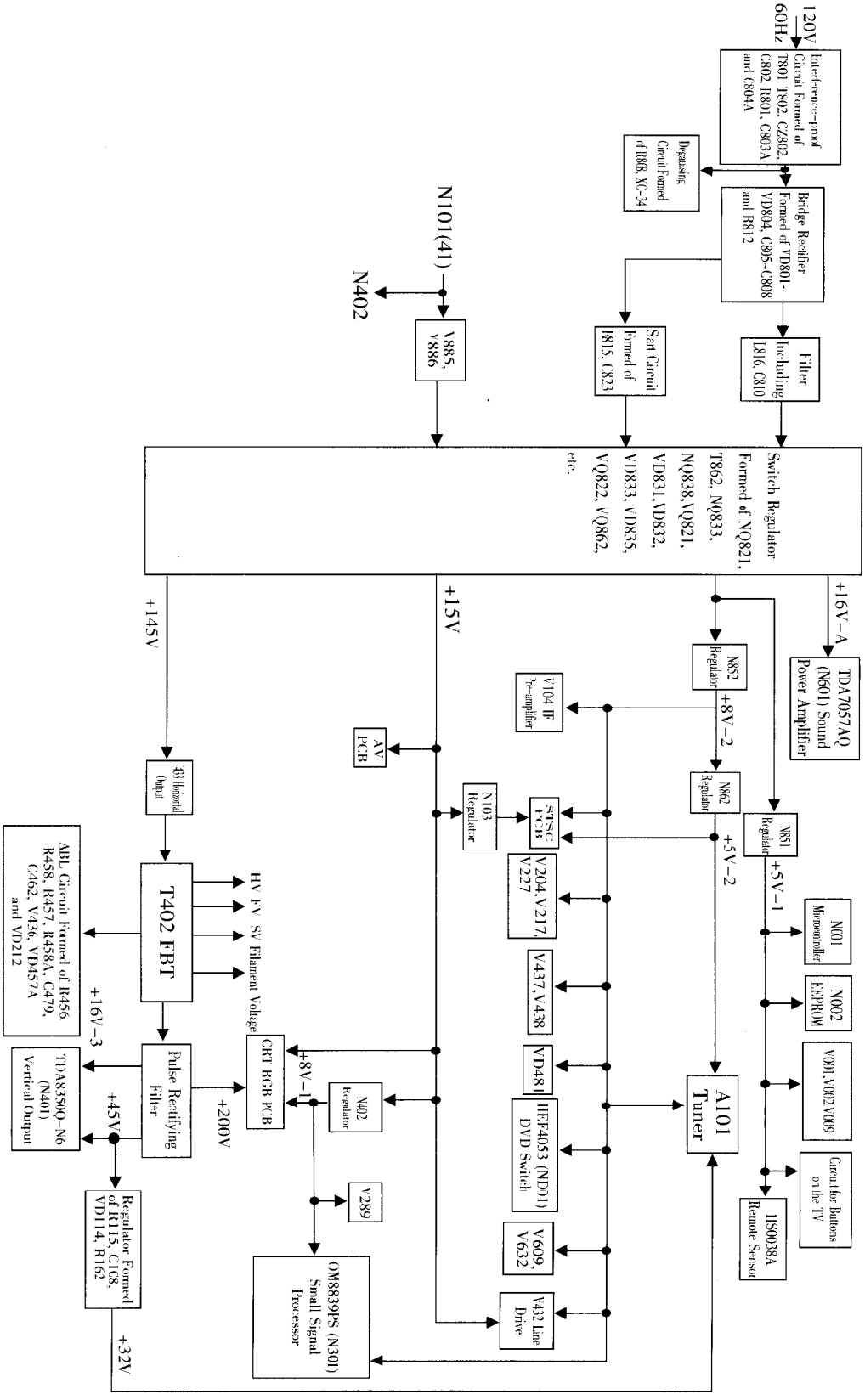


Fig. 2 Block Diagram for CH-10C2 Supply Voltage System

SIGNAL PROCESS AND SYSTEM BLOCK DIAGRAMS (continued)

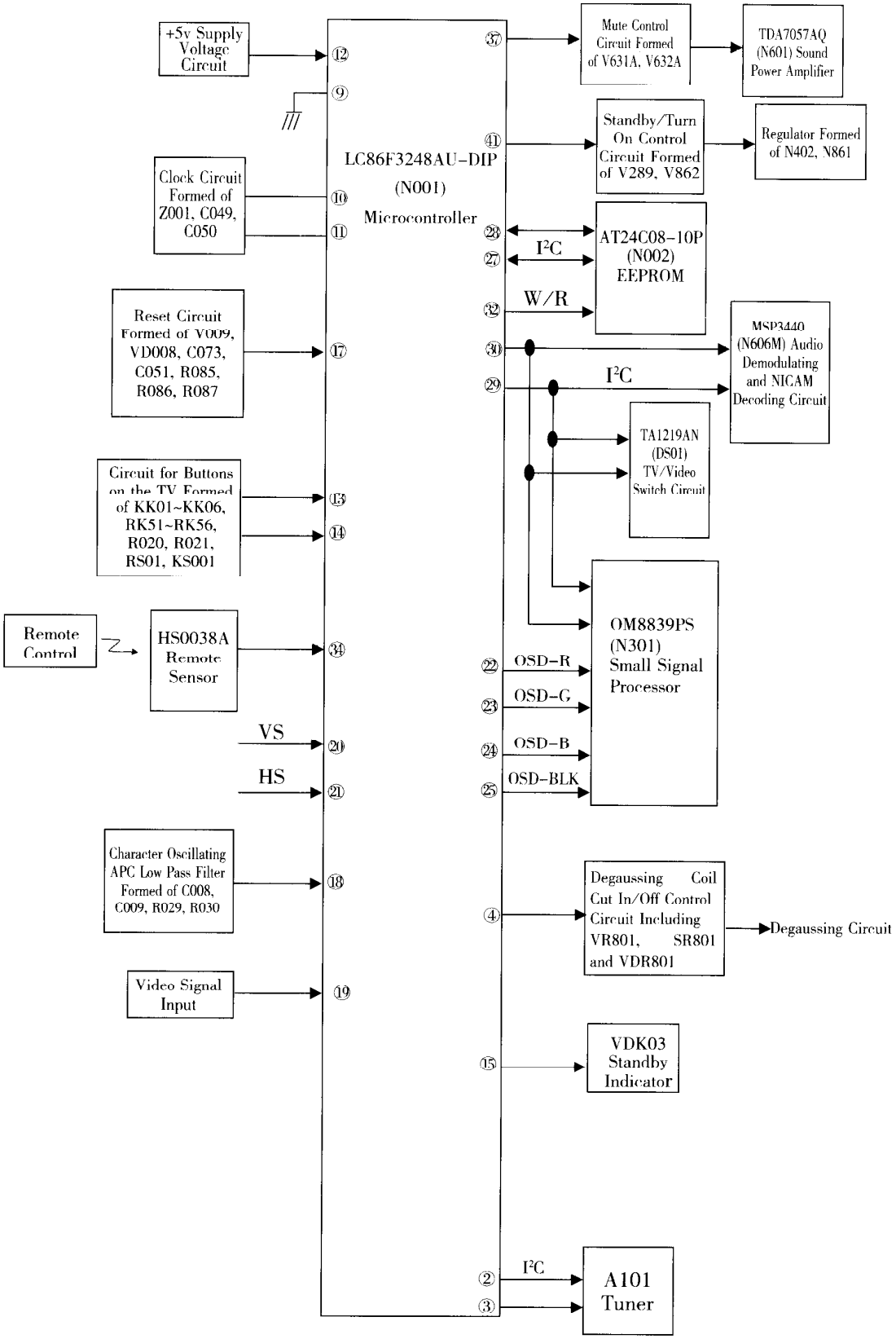


Fig. 3 Block Diagram for CH-10C2's Remote Control Structure

IC DATA AND WAVEFORMS OF KEY POINTS

STR-F6626 Power Thick-film Circuit

1. Features

STR-F6626 is one of Sanken STR-F66XX switch power thick-film hybrid ICs, which comprises a start circuit, oscillator, latch, driver, overcurrent protector, overvoltage protector and overheat protector.

2. Systcm Block Diagram

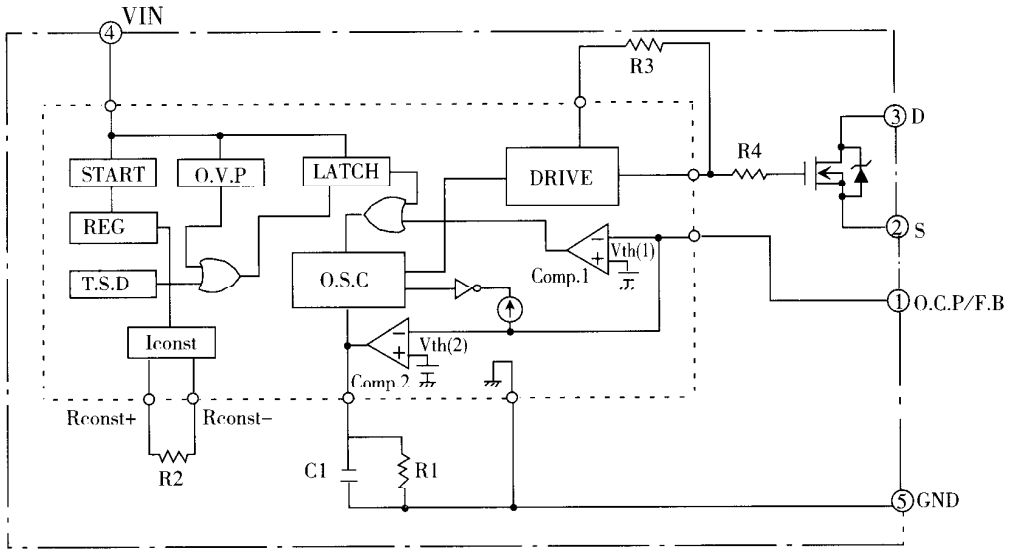


Fig. 4

3. Refer to Table 2 about Functions and Service Data of STR-F6626's Each Pin.

LC86F3248A (D701) 8-Bit Single Chip Microcontroller

1. Overview

The LC863264/56/48/40A are 8-bit single chip microcontrollers with the following on-chip functional blocks:

-CPU:Operable at a minimum bus cycle time of 0.424μs
-On-chip ROM capacity
  Program ROM:64K/56K/48K/40K bytes
  CGROM:16K bytes
-On-chip ROM capacity: 640 bytes
-OSD RAM: 352×9 bits
-Closed-Caption TV controller and the on-screen display controller
-Closed-Caption data slicer
-Four channels×8-bit AD Converter
-Three channels×7-bit PWM
-Two16-bit timer/counters, 14-bit base timer
-8-bit synchronous serial interface circuit
-IIC-bus compliant serial interface circuit (Multi-master type)
-ROM correction function
-16-source 10-vectored interrupt system
-Integrated system clock generator and display clock generator
  Only one X'tal oscillator (32.768kHz) for PLL reference is used for both generators
  TV control and the Closed Caption function
  All of the above functions are fabricated on a single chip

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

LC86F3248A (continued)

2. System Block Diagram

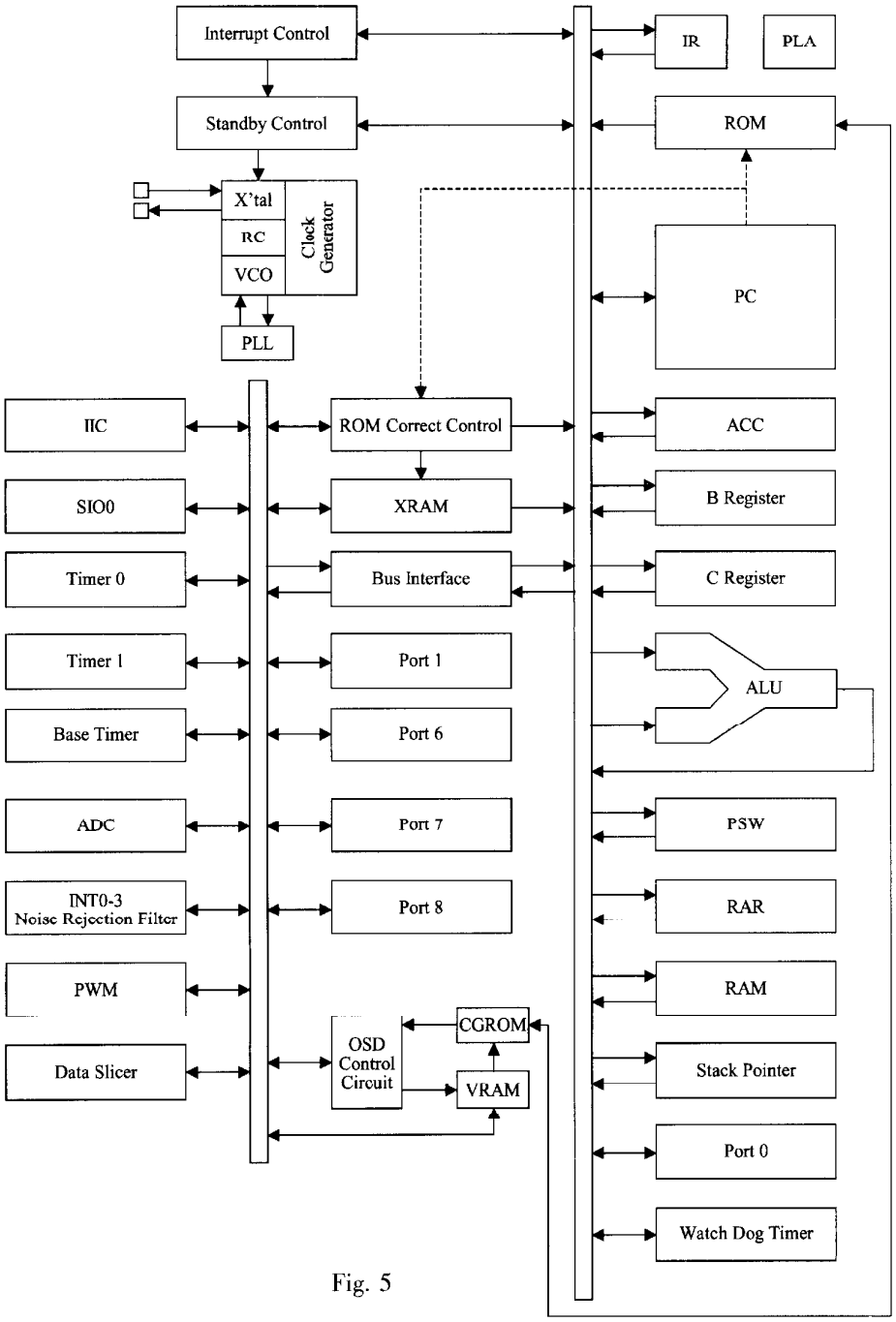


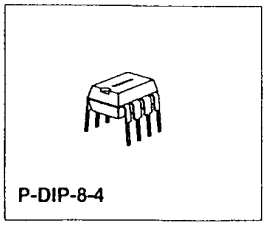
Fig. 5

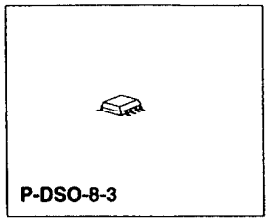
3. Refer to Table 3 about Functions and Service Data of LC86F3248AV's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

AT24C08 EEPROM

1. Features

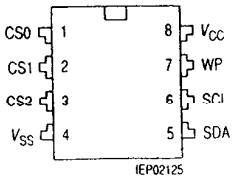




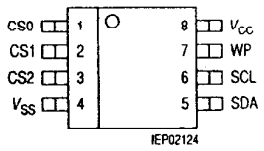
- Data EEPROM internally organized as 1024/2048 bytes and 64/128 pages×16 bytes
- Page protection mode, flexible page-by-page hardware write protection
  - Additional protection EEPROM of 64/128 bits, 1 bit per data page
  - Protection setting for each data page by writing its protection bit
  - Protection management without switching WP pin
- Low power CMOS
- Vcc=2.7 to 5.5V operation
- Two wire serial interface bus, I²C-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 10^6 cycles[1)]
  - Data retention 40 years[1)]
  - ESD protection 4000 V on all pins
- 8 pin DIP/DSO packages
- Available for extended temperature ranges
  - Industrial: -40℃ to +85℃
  - Automotive: -40℃ to +125℃

2. Pin Configuration

P-DIP-8-4



P-DSO-8-3



3. Block Diagram

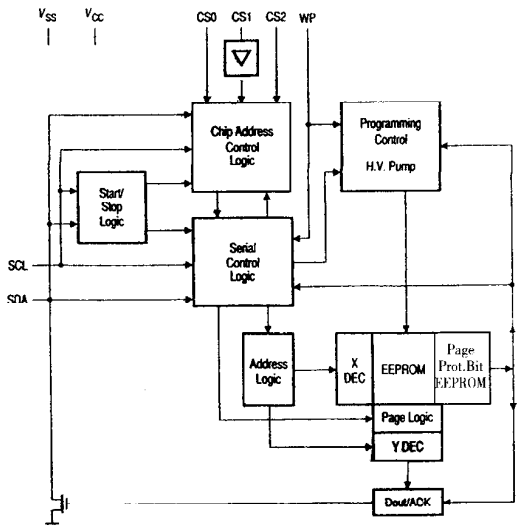


Fig. 6

4. Refer to Table 4 about Functions and Service Data of AT24C08's Pins.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8839

I²C-bus Controlled PAL/NTSC/SECAM TV Processors

1. Features

The following features are available in all IC's:

- Multi-standard vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y (CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a (defeatable) noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable centre frequency
- Dynamic skin tone control circuit
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue back" option when no video signal is available
- Horizontal synchronization with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- I²C-bus control of various functions
- Low dissipation (850 mW)

2. General Description

The various versions of the TDA 884X/5X series are I²C-bus controlled single chip TV processors which are intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers.

These IC's are nearly pin compatible with the TDA 837× TV processors but have a higher degree of integration because the delay line

(TDA4665 function) and the SECAM decoder have been intagrated.In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone ("flesh") control.

Functionally the IC series is split up in 3 categories, viz

- Versions intended to be used in economy TV receivers with all basic functions (envelope: S-DIP 56 and QFP64)
- Versions with additional features like E-W geometry control, H-V zoom function and YUV interface which are intended for TV receivers with 110° picture tubes (envelope: S-DIP 56)
- Versions which have in addition a second RGB input with saturation control and a second CVBS output (envelope:QFP 64)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8839 (continued)

3. Block Diagram

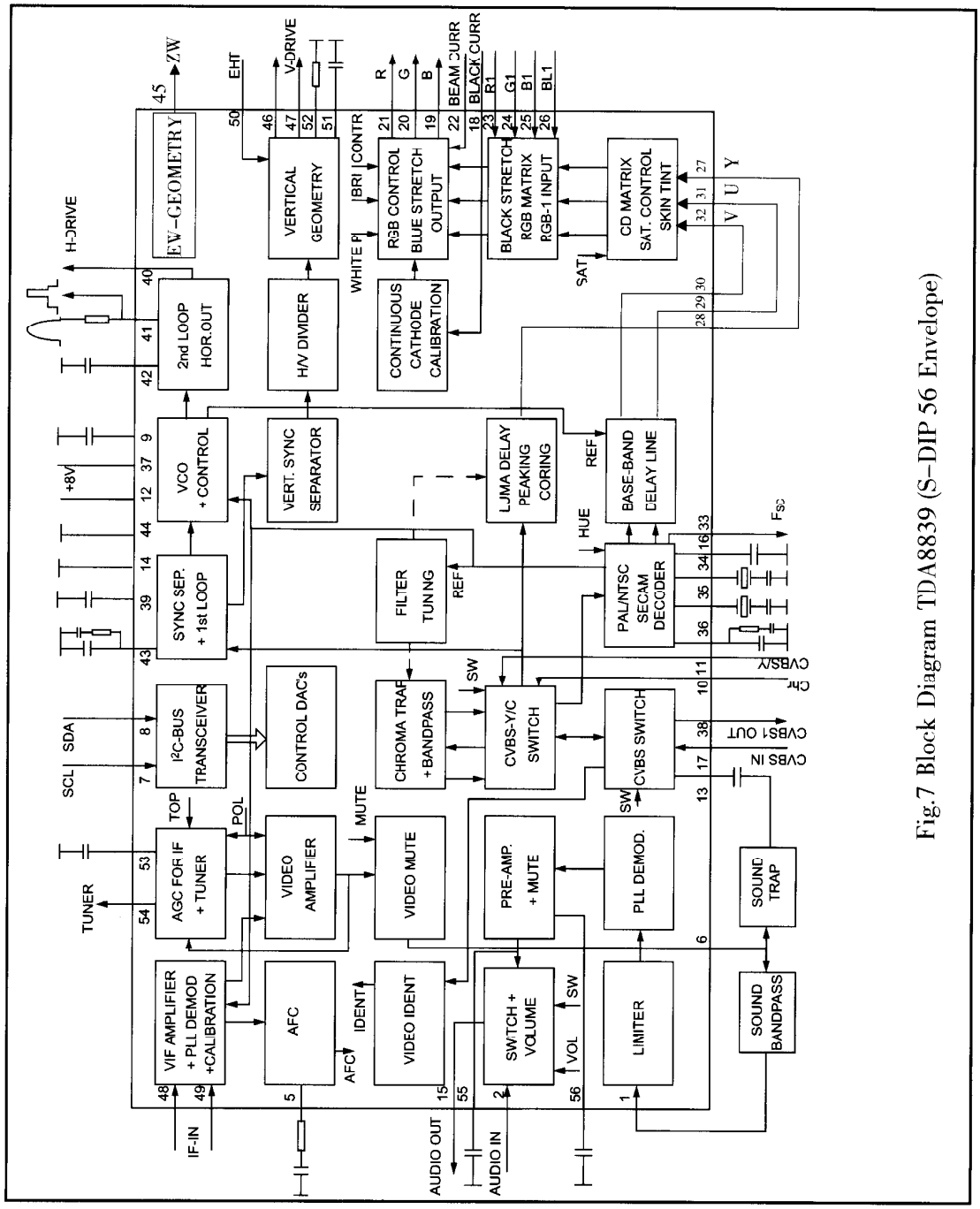


Fig.7 Block Diagram TDA8839 (S-DIP 56 Envelope)

4. Refer to Table 5 about Functions and Service Data of TDA8839's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA8350Q

DC-coupled Vertical Deflection and East-West Output Circuit

1. Features

- Few extemal componcnts
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins
  - short-circuit of the output pins to Vp
- High EMC immunity due to common mode inputs
- Temperature (thermal) protection
- East-West output stage with one single conversion resistor.

2. General Description

The TDA8350Q 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 and an East-West driver for sinking the diode modulator current.

3. Block Diagram

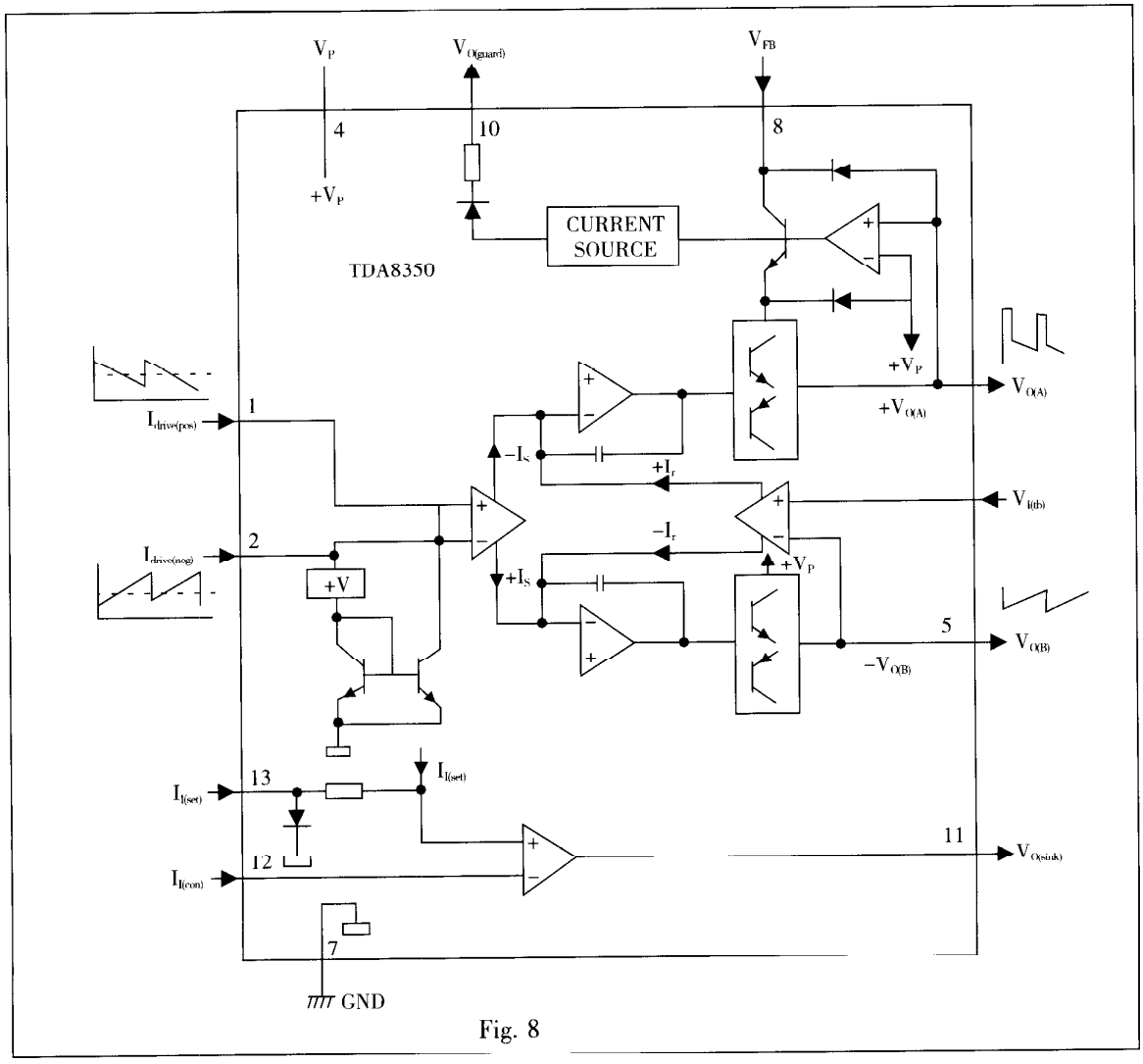


Fig. 8

4. Refer to Table 6 about Functions and Service Data of TDA8350Q's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA7057AQ

2×8W Stereo BTL Audio Output Amplifier with DC Volume Control

1. Features

- DC volume control
- Few external components
- Mute mode
- Thermal protection
- 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 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 100 mA allows for single-ended headphone applications.

3. Block Diagram

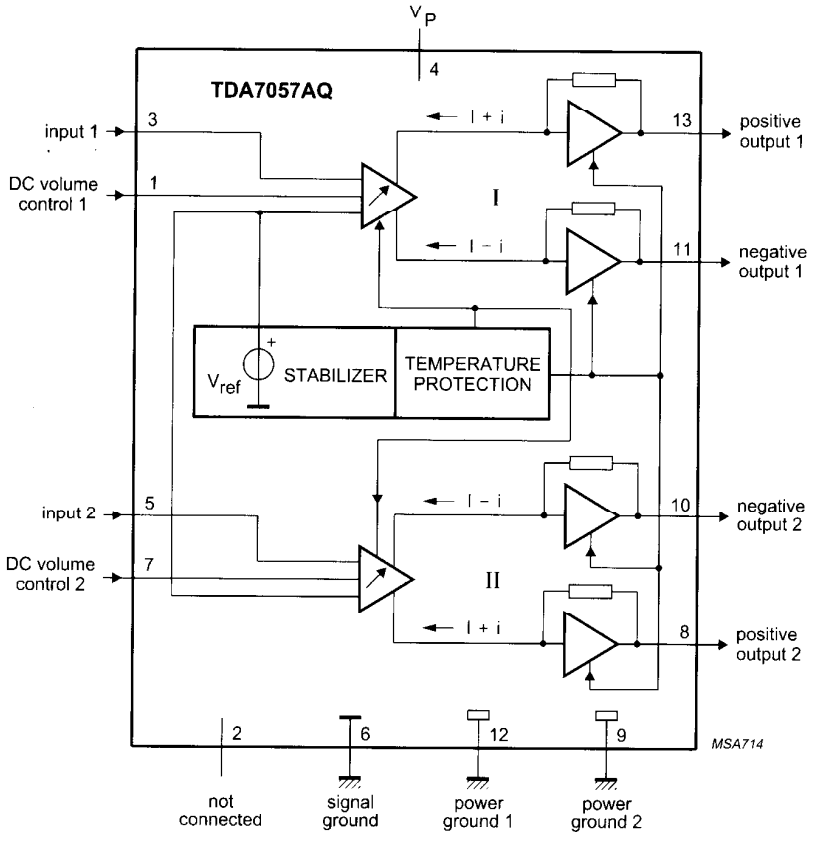


Fig. 9

4.Refer to Table 7 about Functions and Service Sata of TDA7057AQ's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA6108JF

Triple Video Output Amplifier

1. Features

- Typical bandwidth of 9.0 MHz for an output signal of 60 V (peak-to-peak value)
- High slew rate of 1850 V/μS
- No external components required
- Very simple application
- Single supply voltage of 200 V
- Internal reference voltage of 2.5 V
- Fixed gain of 51
- Black-Current Stabilization (BCS) circuit
- Thermal protection.

2. General Description

The TDA6108JF includes three video output amplifiers in one plastic DIL-bent-SIL 9-pin medium power (DBS9MPF) package (SOT 111-1), using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour CRT directly. To obtain maximum performance, the amplifier should be used with black-current control.

3. Ordering Information

Type Number	Package		
	Name	Description	Version
TDA6108JF	DBS9MPF	Plastic DIL-bent-SIL medium power package with fin; 9 leads	SOT111-1

4. Block Diagram

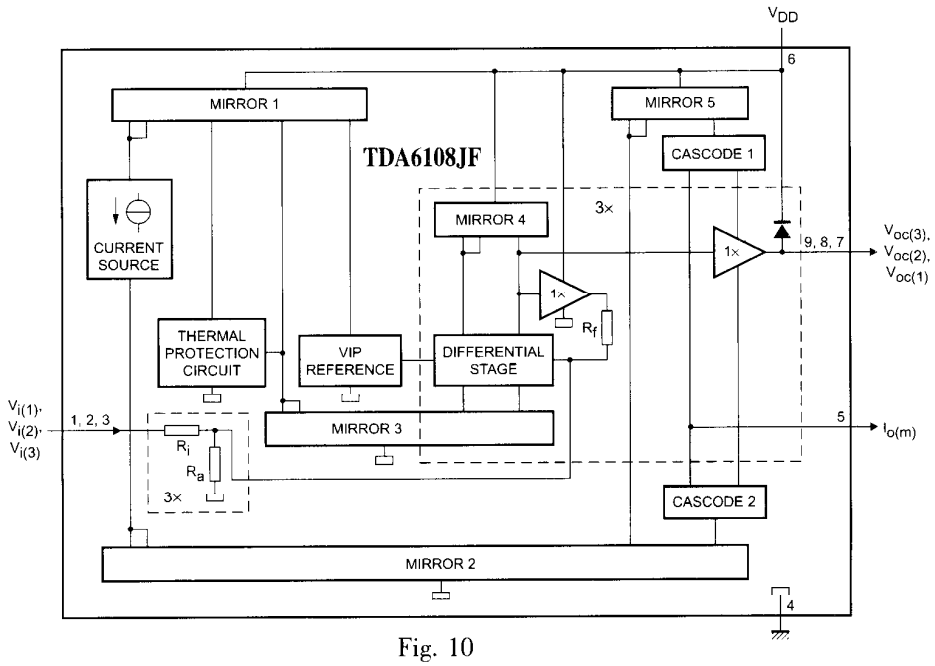


Fig. 10

4. Refer to Table 8 about Functions and Service Data of TDA6108JF's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

MSP34x0G

Multistandard Sound Processor Family

Release Note: Revision bars indicate significant changes to the previous edition. The hardware and software description in this document is valid for the MSP 34 x0G version B5 and following versions.

1. Introduction

The MSP34x0G family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure 13 shows a simplified functional block diagram of the MSP 34x0G.

This new generation of TV sound processing ICs now includes versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively MICRONAS Noise Reduction (MNR) is performed alignment free

Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J.
The MSP 34x0G has optimum stereo performance without any adjustments.

All MSP 34x0G versions are pin and software downward-compatible to the MSP 34x0D. The MSP34x0G further simplifies controlling software. Standard selection requires a single I^2C transmission only.

The MSP 34x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I^2C interaction is necessary (Automatic Sound Selection).

The ICs are produced in submicron CMOS technology.
The MSP34 x0G is available in the following packages: PLCC68, PSDIP64, PSDIP52 PQFP80 and PLQFP64.

2. Block Diagram

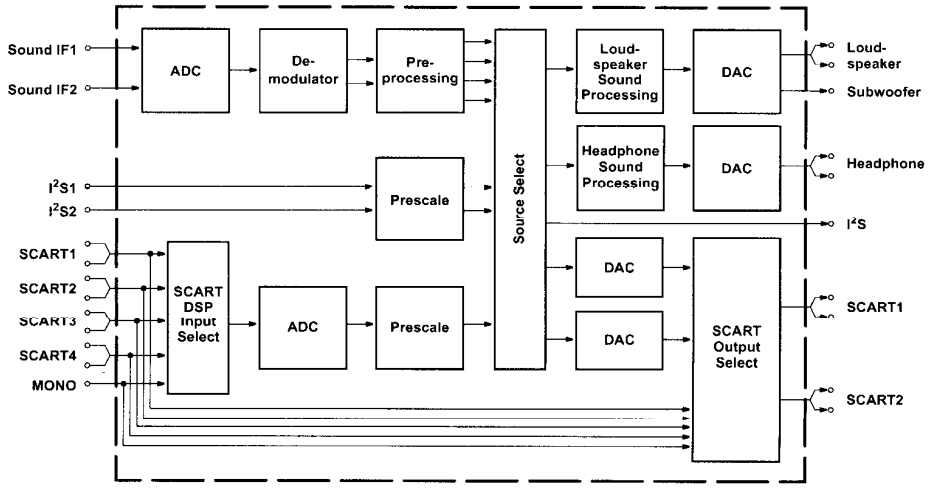


Fig. 11 Simplified Functional Block Diagram of the MSP 34x0G

3. Refer to Table 9 about Functions and Service Data of MSP 34X0G's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA9808T

Single Standard VIF-PLL with QSS-IF and FM-PLL Demodulator

1.Features

- 5V supply voltage (9V supply voltage for TDA9808(DIP20) only)
- Applicable for IFs (Intermediate Frequencies) of 38.9MHz, 45.75MHz and 58.75 MHz
- Gain controlled wide band Video IF (VIF)-amplifier (AC-coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for over-modulation better than 105% due to Phase Locked Loop (PLL)-bandwidth control at negative modulated standards
- VIF Automatic Gain Comtrol (AGC) detector for gain control, operating as peak sync detector
- Tuner AGC with adjustable TakeOver Point (TOP)
- Automatic Frequency Control (AFC) detector without extra reference circuit
- AC-coupled limiter amplifier for sound intercarrier signal
- Alignment-free FM-PLL demodulator with high linearity
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer for high performance
- Electrostatic Discharge (ESD) protection for all pins.

2.General Description

The TDA9808T is an integrated circuit for single standard (negative modulated) vision IF signal processing and FM demodulation, with single reference QSS-IF in TV and VTR sets.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TDA9808T (continued)

2. Block Diagram

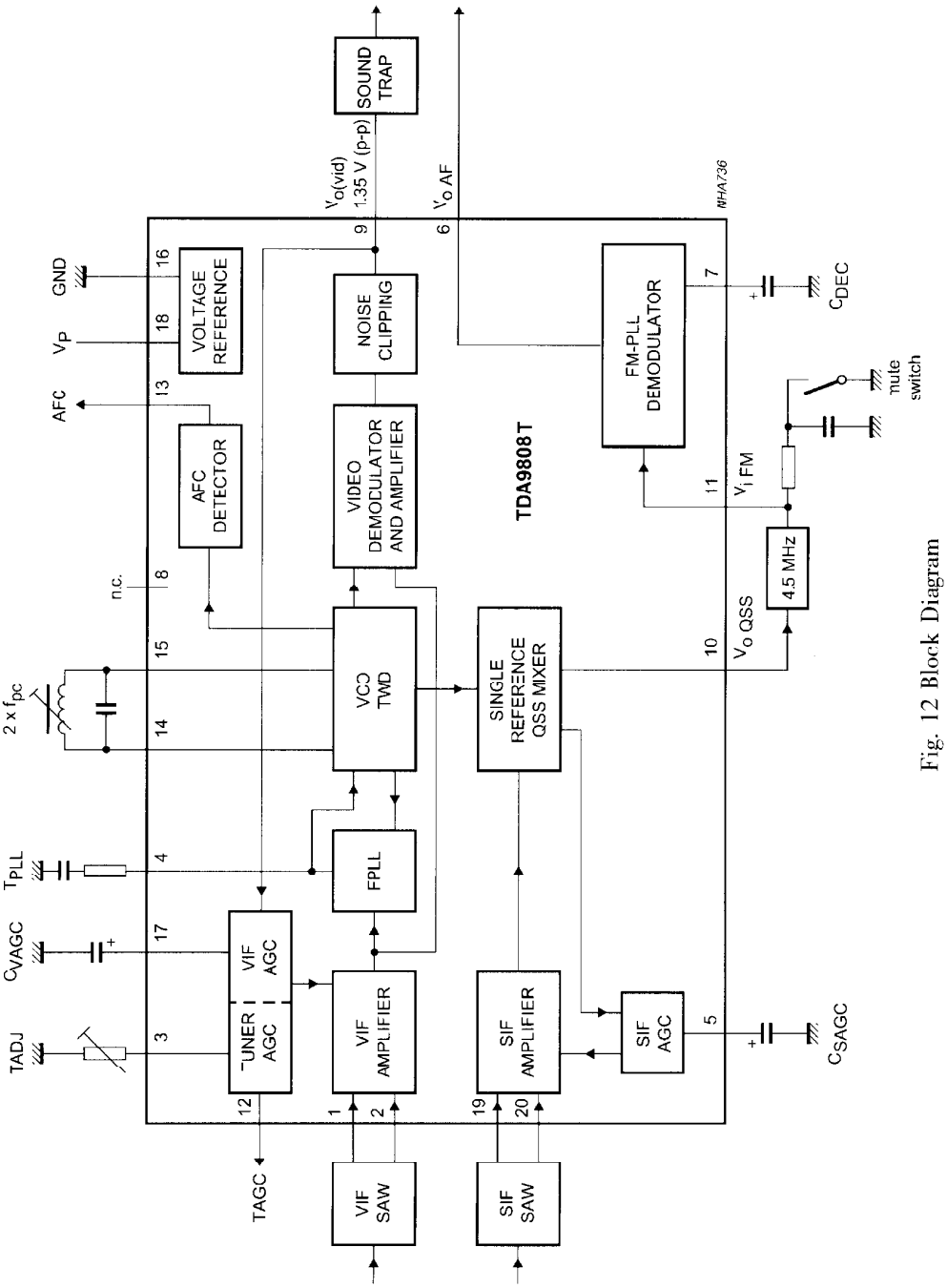


Fig. 12 Block Diagram

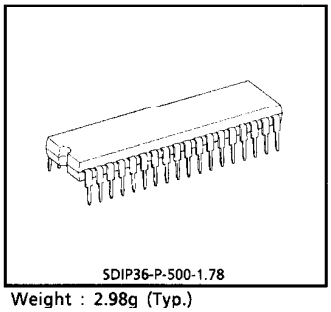
3. Refer to Table 10 about Functions and Service Data of TDA9808T's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TA1219AN

Audio/Video Switching IC for TVs

The TA1219AN is an audio/video switching IC for TV Sets. Conforming to I²C bus standards, it allows you to perform various switching operations through the bus lines by using a microcomputer. Furthermore, since the presence of a signal on its sync signal output pin can be determined by a microcomputer , it is possible to check each input/output channel (self-diagnosis).
This IC has the same pin assignments as the TA1218AN (SDIP42), a 2-channel output version of the TA1219AN, so these chips are pin compatible on pins 3 to 20 and 23 to 40 in TA1218AN.



Weight : 2.98g (Typ.)

1. Features

- I²C bus control
- Video: 5 channel inputs and 1 channel outputs (2 channels conforming to S system)
- Audio: 5-channel inputs and 2-channel outputs
- Self-diagnostic function
- ADC inputs based on European 21-pin standards
- ADC inputs based on S1/S2 terminal standards
- Switchable subaddress

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

TA1219AN (continued)

2. Block Diagram

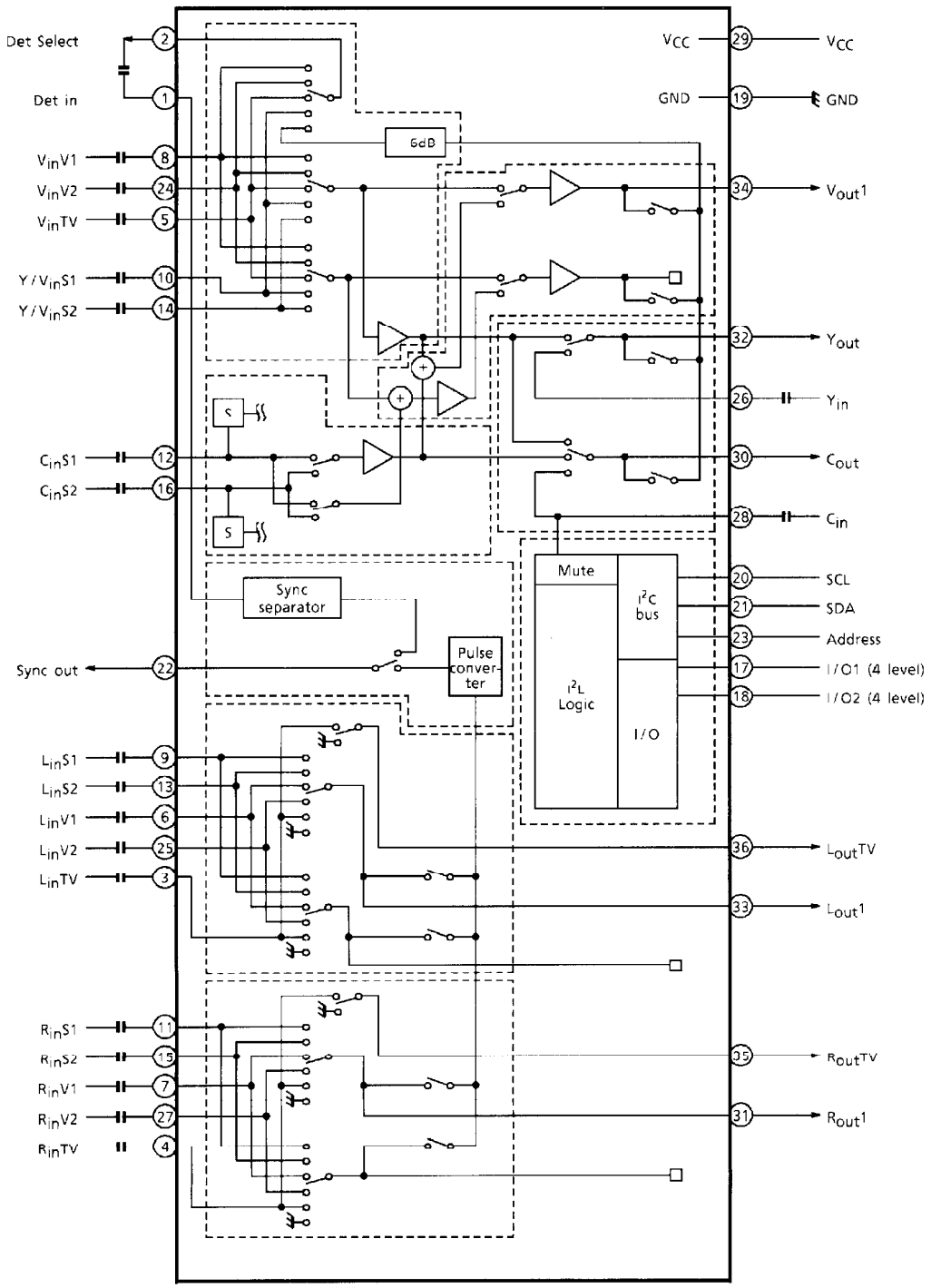


Fig. 13

3. Refer to Table 11 about Functions and Service Data of TA1219AN's Each Pin.

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 2 Functions and Service Data of STR-F6626 (NQ821)'s Pins

Pin No.	Function Description	Digital Multimeter			
		Pin Voltage (V)		Ground Resistance	
		Standby	Turn-on	Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Overcurrent detection & voltage stabilization control input	0.338	1.98	403	400
2	Switch transistor's source	0	0.05	0	0
3	Switch transistor's drain	312	300	∞	486
4	Control circuit power	16.9	19	∞	580
5	Control circuit ground	0	0	0	0

Table 3 Functions and Service Data of LC86F3248AV-DIP (N001)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Not connected	0.00	9.2	5.33
2	Clock line	4.85	9.47	5.07
3	Data line	4.82	9.47	5.05
4	Not connected	0.04	5.81	4.75
5	Not connected	0.01	9.47	5.3
6	Not connected	0.01	9.47	5.38
7	VM circuit control	4.94	9.37	5.19
8	Not connected	0	9.48	5.38
9	Ground	0.01	0.00	0.00
10	Input terminal for clock oscillating signal	1.87	9.44	6.03
11	Output terminal for clock oscillating signal	2.57	8.94	6
12	Supply voltage	4.94	3.49	3.25
13	Button-control voltage input terminal	4.94	9.4	5.28
14	Button-control voltage input terminal	4.94	9.42	5.27
15	Standby indicator control	4.94	9.5	5.45
16	Not connected	4.94	9.44	5.5
17	Reset	4.88	4.62	4.47
18	Filter	2.83	9.43	5.44
19	Video signal input terminal	2.65	9.45	5.99
20	Input terminal for vertical flyback pulse	4.72	8.65	5.08
21	Input terminal for horizontal flyback pulse	4.21	8.64	5.08
22	R character output terminal	0.00	2.12	2.11
23	G character output terminal	0.00	2.12	2.11
24	B character output terminal	0.00	2.12	2.11
25	Output terminal for fast blanking signal	0.00	1.99	1.99
26	Character level clamping	0.00	9.47	5.81
27	0 clock line	4.94	6.93	4.89
28	0 data line	4.94	6.98	5.1
29	1 clock line	3.73	6.87	4.54
30	1 data line	3.73	6.88	4.54
31	Overload detecting input terminal	4.94	3.59	3.34
32	Input terminal for selectable production modes	4.94	9.43	5.18

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

33	Not connected	0.00	9.47	5.46
34	Remote control input	0.00	9.47	5.43
35	Not connected	0.00	9.47	5.4
36	Comb filter direct-pass control	0.02	7.12	5.1
37	Mute	0.02	9.41	5.15
38	Not connected	0.00	9.44	5.34
39	Not connected	0.00	9.44	5.3
40	Not connected	0.00	9.44	5.38
41	Standby control	0.04	7.48	4.9
42	YUV switch control	0.04	6.07	4.93

Table 4 Functions and Service Data of AT24C08-10P (N002)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Address input	0.00	0.00	0.00
2	Address input	0.00	0.00	0.00
3	Address input	0.00	0.00	0.00
4	Common ground	0.00	0.00	0.00
5	Clock line	4.94	6.85	4.83
6	Data line	4.94	6.89	5.15
7	PW write protect	4.94	9.58	5.31
8	Supply voltage	4.94	3.5	3.25

Table 5 Functions and Service Data of OM8839PS (N301)'s

Pin No.	Pins Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	SIF signal input	0.00	8.8	6.03
2	External audio signal input	3.61	8.69	6.03
3	Reference frequency resonant coil terminal	0.00	∞	∞
4	Reference frequency resonant coil terminal	0.00	∞	∞
5	PLL filter	2.45	8.54	5.79
6	Video detection output	2.77	2.19	2.19
7	Clock line	3.85	6.88	4.56
8	Two-way transmission data line	3.91	6.87	4.56
9	Gap decoupling	6.62	7.57	5.66
10	SVHS chroma signal input	1.37	8.65	5.99
11	SVHS luminance signal input	3.85	8.65	5.88
12	Supply voltage	8.22	2.09	2.09
13	Composite video signal input terminal	3.69	8.65	5.88
14	Ground	0.00	0.00	0.01
15	Audio signal output	401	8.74	5.96
16	Decoupling capacitor connection	0.02	∞	∞
17	Video input	3.35	8.65	5.88
18	Black current control input	5.87	8.73	5.81
19	Blue (B) signal output	2.36	5.74	5.08
20	Green (G) signal output	2.41	5.74	5.08

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

21	Red (R) signal output	2.39	5.74	5.08
22	Beam current control	1.77	7.87	5.84
23	Red (R) signal input	3.62	8.61	5.95
24	Green (G) signal input	3.63	8.61	5.95
25	Blue (B) signal input	3.61	8.61	5.95
26	Selectable primary color signal input control	0.07	0.99	0.99
27	Luminance signal input	2.54	6.84	5.83
28	Luminance signal output	2.54	6.91	5.92
29	B-Y color difference signal output	2.35	6.89	5.9
30	R-Y color difference signal output	2.35	6.9	5.9
31	B-Y color difference signal input	2.36	6.8	5.93
32	R-Y color difference signal input	2.35	6.84	5.93
33	Sub-carrier output for SECAM demodulation	4.23	6.68	5.82
34	3.58MHz crystal oscillator	2.56	7.87	5.91
35	4.43MHz crystal oscillator	2.56	7.87	5.91
36	APC low pass filter	4.95	8.75	5.9
37	Horizontal starting supply voltage	8.22	2.09	2.09
38	Composite video output	2.54	7.32	5.96
39	Black level stretch	4.86	8.68	4.69
40	Line drive pulse output	0.38	2.82	2.81
41	Horizontal flyback pulse input/sandcastle pulse output	0.74	8.81	5.75
42	Line discriminator	3.33	8.44	5.87
43	Line discriminator	3.89	8.75	5.87
44	Ground	0.00	0.00	0.00
45	Vertical frequency parabola output	0.14	8.83	5.89
46	Field drive signal output	2.3	8.8	5.82
47	Field drive signal output	2.34	8.8	5.8
48	IF signal input	4.55	8.23	6.05
49	IF signal input	4.55	8.21	6.05
50	High voltage detection input	2.01	7.68	5.95
51	Vertical sawtooth generation	3.72	8.35	5.91
52	Vertical reference bias setting	3.83	8.33	5.96
53	AGC filter for IF amplifier	4.44	8.72	5.89
54	AGC output for IF amplifier	1.31	10.13	5.69
55	Audio deemphasis	2.86	8.5	5.87
56	Audio decoupling	3.57	8.78	5.89

Table 6 Functions and Service Data of TDA8350Q-N6 (N401)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Vertical drive input (positive)	2.33	8.82	5.8
2	Vertical drive input (negative)	2.28	8.83	5.83
3	Feedback input	8.52	5.74	4.71
4	Supply voltage	17.23	7.92	4.2
5	Output 1	8.5	5.83	4.71
6	Not connected	0.00	∞	∞

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

7	Ground	0.00	0.00	0.00
8	Pump supply voltage input	49.31	∞	∞
9	Output 2	0.00	5.87	4.7
10	Guard output	0.2	8.64	5.88
11	Pincushion output	0.07	9.79	5.24
12	Pincushion input (negative)	2.43	∞	6.97
13	Pincushion input (positive)	2.91	∞	6.88

Table 7 Functions and Service Data of TDA7057AQ (N601)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Volume control input	0.95	6.85	6.15
2	Not connected	0.00	∞	∞
3	Audio R signal input	2.38	12.59	6.51
4	Supply voltage	17.48	0.47	0.47
5	Audio L signal input	2.37	12.5	6.51
6	Ground	0.00	0.00	0.00
7	Volume control input	0.95	6.85	0.15
8	Left channel in-phase signal output	8016	6.46	5.59
9	Ground	0.00	0.00	0.00
10	Left channel inverting signal output	8.25	6.46	5.59
11	Right channel inverting signal output	8.24	6.46	5.59
12	Ground	0.00	0.00	0.00
13	Right channel in-phase signal output	8.13	6.46	5.59

Table 8 Functions and Service Data of TDA6108JF's Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	G inverting input	3.33	5.32	4.72
2	R inverting input	3.26	5.32	4.72
3	B inverting input	3.28	5.32	4.72
4	Ground	0.00	0.00	0.00
5	Black level current input	6.03	18.65	5.65
6	Supply voltage	199	∞	4.48
7	B output	69.9	∞	5.45
8	R output	69.18	∞	5.45
9	G output	65.9	∞	5.45

Table 9 Functions and Service Data of MSP3440(N606M)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	NC	0.00	15.32	5.3
2	NC	2.57	13.41	5.51
3	NC	0.00	15.32	5.57
4	NC	0.00	15.32	5.58
5	ADR-SEL	5.03	8.62	4.54
6	STANDBYQ	5.03	8.63	4.54

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

7	I2C-DC	3.8	6.98	4.44
8	I2C-DA	3.9	6.98	4.44
9	NC	2.5	15.32	6.24
10	NC	2.82	15.32	6.24
11	NC	2.5	15.32	6.24
12	NC	0.27	15.32	5.29
13	NC	0.2	15.32	5.59
14	NC	0.1	15.32	5.59
15	NC	0.1	15.32	5.59
16	DVSUP	5.04	8.6	4.54
17	DVSS	0.00	0.00	0.00
18	NC	0.00	15.32	5.31
19	NC	0.00	∞	∞
20	RESETQ	5	15.04	5.24
21	NC	0.00	3.54	3.54
22	NC	0.00	3.52	3.52
23	VREF2	0.00	0.00	0.00
24	DACM-R	2.03	3.52	3.52
25	DACM-L	2.04	3.54	3.54
26	NC	1.41	3.6	3.6
27	NC	3.81	13.8	5.92
28	NC	3.79	13.8	5.91
29	GND	0.00	0.00	0.00
30	SC1-OUT-R	3.8	12.8	5.91
31	SC1-OUT-L	3.79	12.8	5.92
32	CAPL-A	7.28	∞	6.04
33	AHVSUP	8.26	∞	4.59
34	CAPL-M	6.53	∞	6.04
35	AHVSS	0.00	0.00	0.00
36	ABNDC	3.74	∞	6.02
37	NC	3.77	∞	6.1
38	NC	3.77	∞	6.1
39	NC	3.77	∞	6.1
40	NC	3.77	∞	6.1
41	SC1-IN-L	3.77	∞	6.1
42	SC1-IN-R	3.77	∞	6.1
43	VREFTOP	2.61	1.63	1.63
44	NC	3.77	19.42	6.1
45	AVSS	0	0.00	0.00
46	AVSUP	5.13	8.62	4.53
47	ANA-IN1+	1.52	15.3	5.27
48	ANA-IN1-	1.52	15.3	5.26
49	ANA-IN2+	0.00	15.3	5.27
50	TESTEN	0.00	0.00	0.00
51	XTAL-IN	2.49	14.79	5.27
52	XTAL-OUT	2.49	14.63	5.3

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 10 Functions and Service Data of TDA9808T (NQ102)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	PIF signal input 1	3.2	7.46	6.03
2	PIF signal input 2	3.2	7.46	5.99
3	RFAGC start-control level adjust	0.96	6.82	5.85
4	PLL APC filter	2.47	8.32	6.3
5	Audio AGC filter	2.77	8.08	6.17
6	Audio output (NTSC 4.5MHz)	2.36	7.46	5.86
7	Filter	1.78	8.25	6.29
8	1/2VCC comparison voltage bias	0.00	∞	∞
9	Video output	2.61	7.89	6.09
10	Second SIF signal output	2.01	8.03	6.17
11	Second SIF signal input	2.79	5.2	4.99
12	RFAGC output	0.04	∞	6.1
13	AGC signal output	3.99	8.25	6.2
14	External connection for VCO oscillating LC network	2.74	7.25	6
15	External connection for VCO oscillating LC network	2.74	7.25	6
16	Ground	0.00	0.00	0.00
17	AGC filter	2.74	8.3	6.11
18	Supply voltage input terminal	8.57	2.79	2.7
19	SIF signal input	3.17	7.2	6.27
20	SIF signal input	3.17	7.2	6.27

Table 11 Functions and Service Data of TA1219AN (DS01)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Get Select	6.54	7.88	5.77
2	Get Select	3.69	7.99	5.73
3	Lin TV	5.12	7.49	5.89
4	RinTV	5.11	7.55	5.91
5	VinTV	5.13	7.52	5.89
6	LinTV1	5.12	7.63	5.89
7	RinTV1	5.12	7.63	5.89
8	VinTV1	5.13	7.52	5.89
9	LinS1	5.12	7.64	5.89
10	Y/VinS1	5.09	7.5	5.89
11	RinS1	5.1	7.64	5.88
12	CinS1	0.00	0.00	0.00
13	LinS2	5.08	7.64	5.87
14	Y/VinS2	5.13	7.62	5.87
15	RinS2	5.11	7.62	5.86
16	CinS2	5.12	7.66	5.64
17	I/O1	7.3	7.98	5.43
18	I/O2	0.02	7.9	5.44
19	GND	0.00	0.00	0.00

(Continued)

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

20	Scl	3.5	6.98	4.47
21	SDA	3.77	6.98	4.46
22	Sync out	0.02	7.88	5.45
23	Address	0.00	0.00	0.00
24	VinV2	5.11	7.53	5.81
25	LinTV2	5.1	7.64	5.82
26	Yin	5.1	7.76	5.82
27	RinV2	5.1	7.64	5.82
28	Vin	5.09	7.76	5.6
29	Vcc	8.86	5.45	4.1
30	Cout	3.46	0.2	0.2
31	Rout1	3.95	7.43	5.46
32	Yout	3.48	0.2	0.2
33	Lout1	3.96	7.43	5.46
34	Vout1	4.06	0.2	0.2
35	RoutTV	3.95	7.39	5.48
36	LoutTV	3.95	7.46	5.48

Table 12 Functions and Service Data of TA78L009AP (DS02)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	Bios fos ACD	1.46	0.42	0.42
2	GND for ACD	∞	∞	∞
3	VDD for ACD	4.85	0.91	0.91

Table 13 Functions and Service Data of TDQ-6F2M (A101)'s Pins

Pin No.	Function Description	Digital Multimeter		
		Reference Voltage (V)	Positive Resistance (20KΩ)	Negative Resistance (20KΩ)
1	AGC	0.98	9.56	6.04
2	NC	26.73	∞	6.85
3	NC	0.61	9.79	7.39
4	SCL	4.89	9.58	5.13
5	SDA	4.88	9.58	5.12
6	VDD	5	2.2	2.2
7	NC	4.9	2.2	2.2
8	NC	0	0	0
9	BT	30.21	∞	13.07
10	NC	0	0	0
11	IF	0	∞	∞

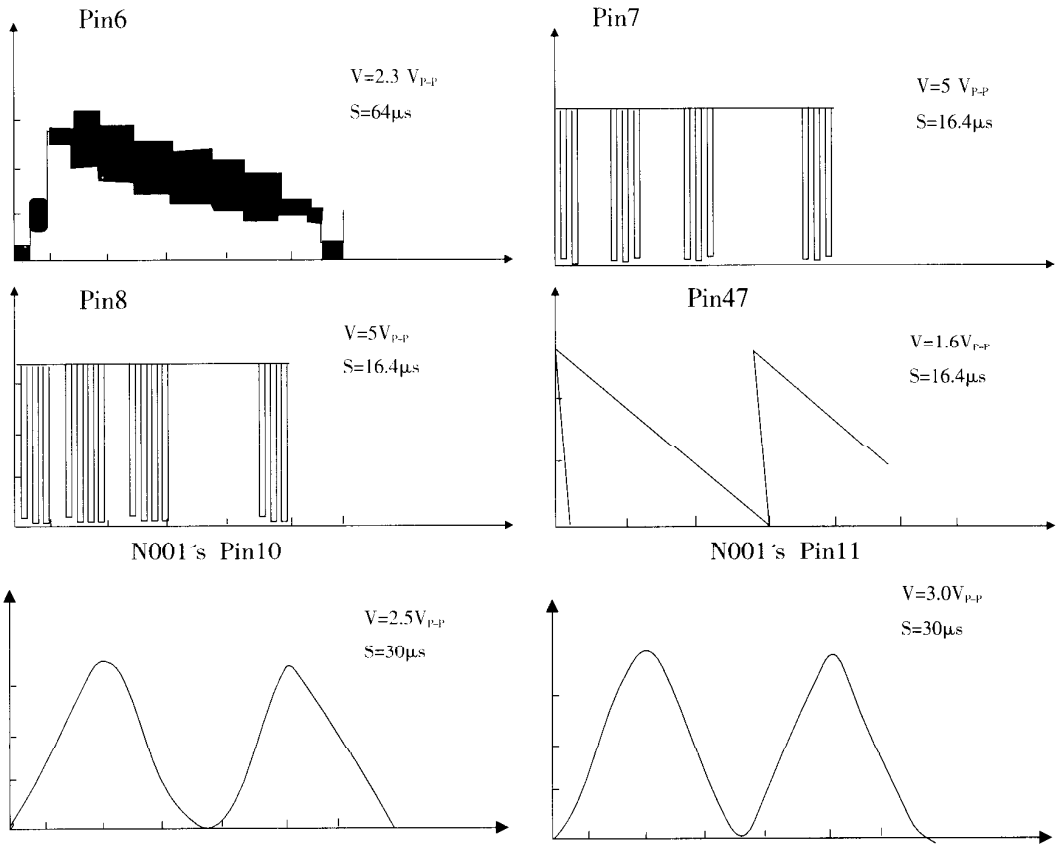
IC DATA AND WAVEFORMS OF KEY POINTS (continued)

Table 14 Each Electrode Voltage of Key Triodes

Description		DC Voltage(V)		
Serial No.	Parts	Base	Collector	Emitter
V001	C1851Y	0.01	4.71	0.01
V002	C1851Y	0.08	4.21	0.01
V217	C1815	4.22	7.96	3.54
V609	C1815	2.69	8.25	2.01
V204	C1815	1.82	5.17	1.16
V104	C388A	2.04	8.13	1.28
V227	C1851Y	2.53	8.25	1.9
V432	BSN274	0.55	26.74	0.01
V433	BU2720DF	0.03	113.94	0.00
V631A	C1851Y	0.2	0.95	0.00
V632A	C1851Y	8.32	0.1	8.1
VQ001	C1851Y	3.38	12.8	2.74
VQ002	2SA2878	0.73	0.04	0.04
VQ005	2SA2878	0.03	0.03	0.03
VQ019	2SA1837	1	59.52	110
VQ020	2SC4793	0.8	59.52	0.2
V513	2SC4423	−0.45	141.61	0
V512	2SC3807	0	−0.45	−0.76
V511	2SA1015	8.1	−0.76	8.57

IC DATA AND WAVEFORMS OF KEY POINTS (continued)

OM8839PS(N301)'s Pin6, Pin7, Pin8, Pin47

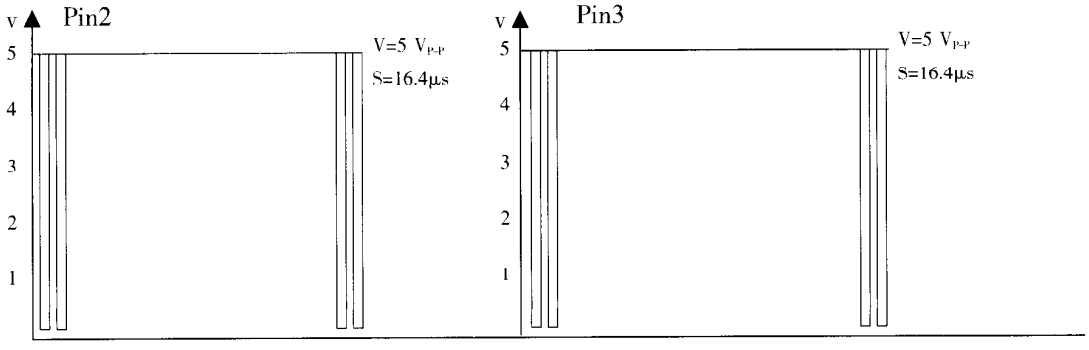


N001's Pin10

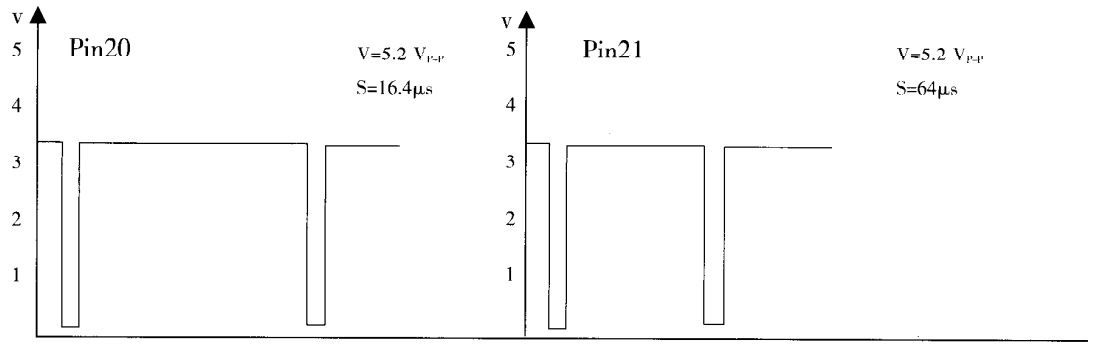
N001's Pin11

1. LC86F3248AU-DIP (N001)'s

Pin2, Pin3, Pin10, Pin11, Pin20, Pin21, Pin29, Pin30

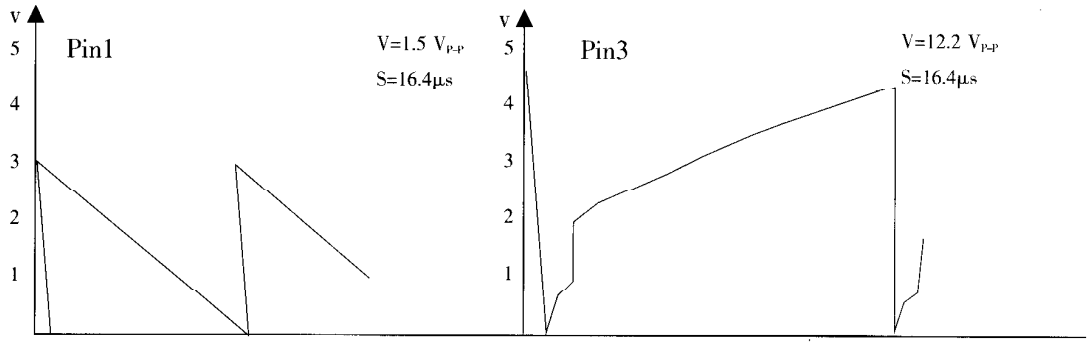


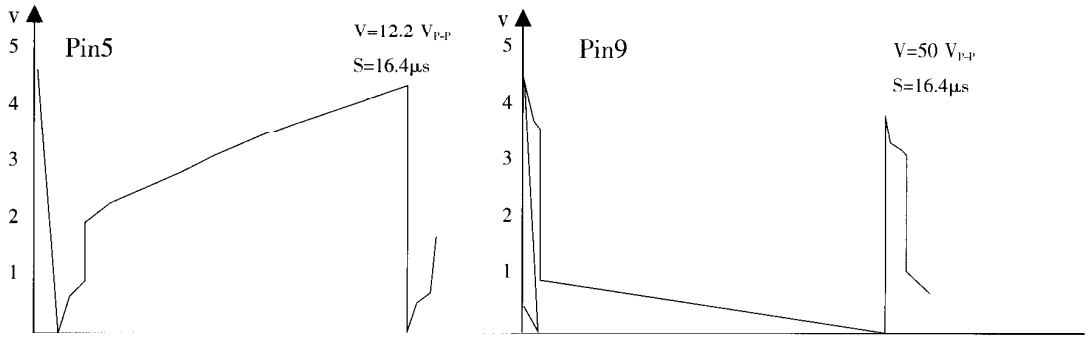
IC DATA AND WAVEFORMS OF KEY POINTS (continued)



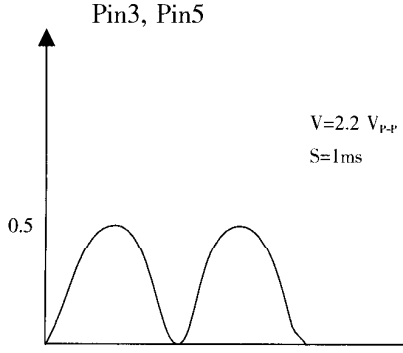
TDA8350Q(N401's)

Pin1, Pin3, Pin5, Pin9

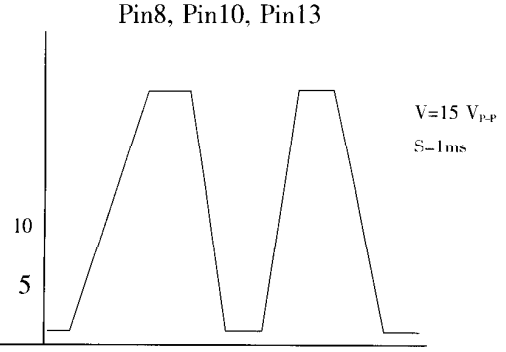




Pin3, Pin5



Pin8, Pin10, Pin13



Measure with a GOS-622G oscilloscope.

CIRCUIT ADJUSTMENTS

1. General Description

All adjustments are thoroughly checked and corrected before the TV outgoing. Therefore the TV should operate normally and deliver proper colour pictures upon installation. However, several minor adjustments may be required depending on the particular location where the TV is operated. This TV is shipped completely in carton. Carefully take out the TV from the carton and remove all packing materials. Connect the power cord into a 120V AC, 60Hz two-pin power outlet. Turn on the TV. Check and adjust all the customer controls such as brightness, contrast and colour to obtain natural colour pictures.

2. Automatic Degaussing

A degaussing coil is mounted around the CRT so that external degaussing after moving the TV is generally unnecessary, providing it is properly degaussed upon installation. The degaussing coil operates in about 1 second after power on. If the set is moved or faced to a different direction, the power switch must be switched off for at least 30 minutes in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external-degaussing coil. Slowly move the degaussing coil around the screen, the sides and front of the TV and slowly withdraw the coil to a distance of about 2m before unplug it. If colour shading still exists, perform the Colour Purity Adjustment and Convergence Adjustment procedures.

3. Supply Voltage Adjustment

Caution: +B voltage has close relation to high voltage. To avoid X-ray radiation, +B voltage should be +135V.

1) Set AC power supply to 120±2V.
2) Connect a digital voltmeter to two pins of C845, and then turn on the TV.
3) Receive Philips test pattern signals.
4) The voltmeter should read 135±0.5V.

4. High Voltage Inspection

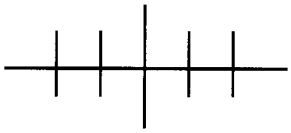
Caution: No high voltage adjustment should be done in the chassis.

1) Connect a precise high voltmeter to the second anode of the CRT.
2) Turn on the TV and set the brightness and contrast to minimum (i.e. set beam current of the CRT to zero).
3) The high voltage tested should be 28.8±0.8KV for 29″ and 26.5±0.8KV for 25″.
4) Set the brightness to minimum or maximum, and ensure high voltage not beyond limitation of 31KV in any case.

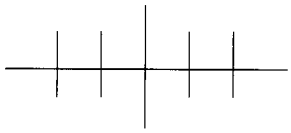
5. Focus Adjustment

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

CIRCUIT ADJUSTMENTS (continued)



Before Adjusting



After Adjusting

SET-UP ADJUSTMENTS

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

1. Colour purity
2. Convergence
3. White Balance

Note:

The purity/convergence magnet assembly and rubber wedges need mechanical positioning. Refer to Fig. 18.

1. Colour Purity Adjustment

Note:

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

1) Demagnetize the CRT and cabinet using a degaussing coil.
2) Set the brightness and contrast to maximum.
3) Receive the green raster test signals.
4) Loosen the clamp screw holding the deflection yoke and slide it backward or forward to display vertical green belt (zone) on the screen.
5) Remove the rubber wedge.
6) Rotate and spread the tabs of the purity magnet around the neck of the CRT until the green belt is on the centre of the screen.
7) Slowly move the deflection yoke forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8) Check purity of the red and blue raster.

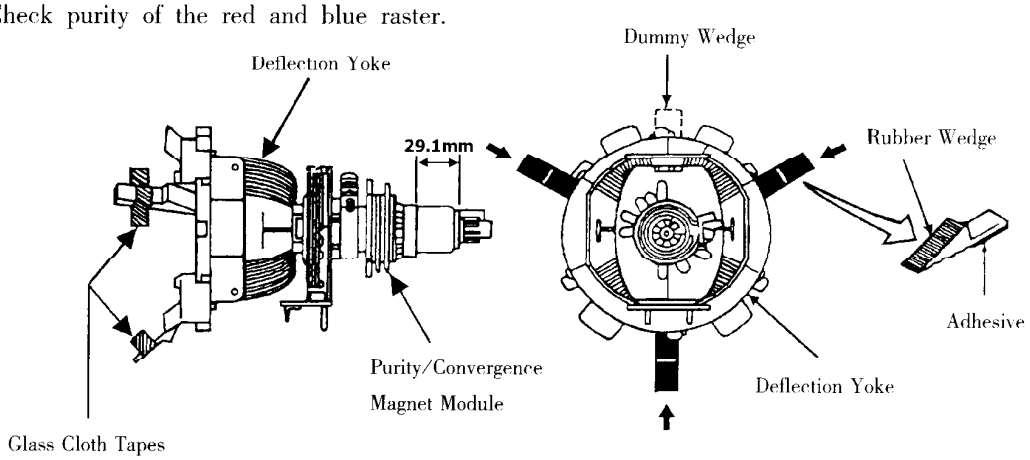


Fig. 14

SET-UP ADJUSTMENTS (continued)

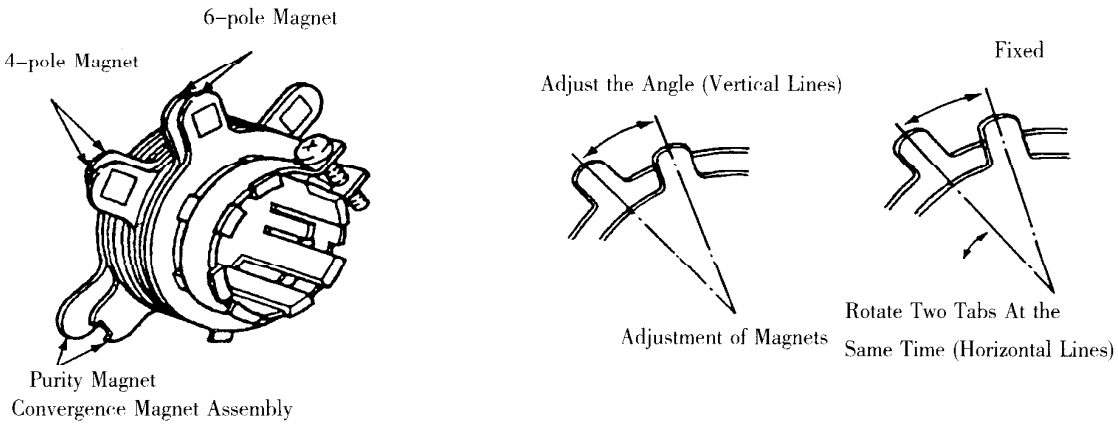


Fig. 15

2. Convergence Adjustment

Note:

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

• Center convergence adjustment

1) Receive the grille test pattern signals.
2) Set the brightness and contrast propely.
3) Adjust two tabs of the 4-pole magnet to change the angle between them and red and blue vertical lines are superimposed on the center area of the screen.
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.
5) Adjust two tabs of 6-pole magnet to superimpose red/blue line and green line. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6) Repeat steps 3)~5) keeping in mind red, green and blue movement. 4-pole magnet and 6-pole magnet interact each other, resulting in complicating and dot movement.

• Circumference convergence adjustment

1) Loosen the clamping screw of the defection yoke slightly to allow it to tilt.
2) Temporarily put a wedge as shown in Fig.14. (Do not remove cover paper on adhesive part of the wedge.)
3) Tilt front of the deflection yoke up or down to obtain better convergence in circumference. Push the mounted wedge into the space between the CRT and yoke to fix the yoke temporarily.
4) Put other wedge into bottom space and remove the cover paper to stick.
5) Tilt front of the deflection yoke right or left to obtain better convergence in circumference.
6) Keep the deflection yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on the CRT to fix the yoke.
7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on the CRT to fix the yoke.
8) After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check if the yoke is fixed.

SET-UP ADJUSTMENTS (continued)

9) Stick three adhesive tapes on wedges as shown in Fig. 14.

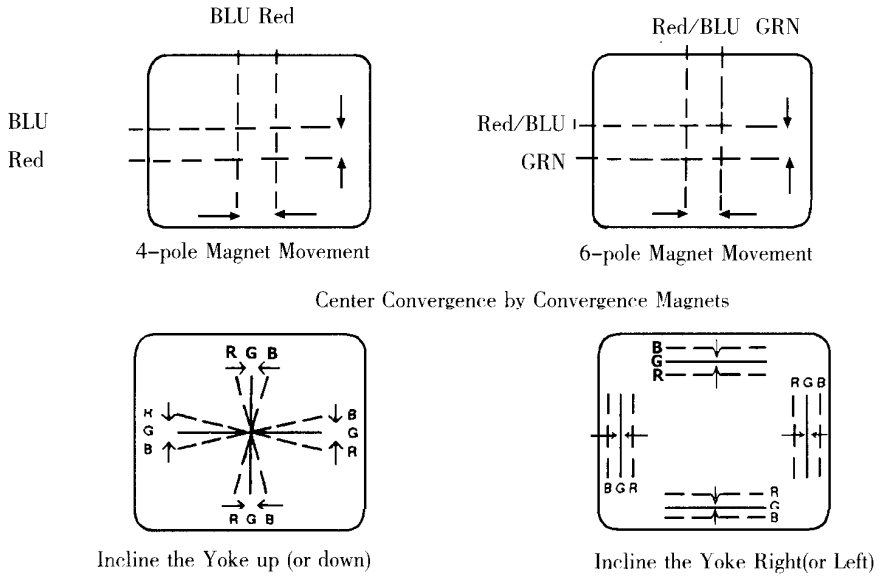


Fig. 16

SERVICE MODE AND BUS DATA

1. To Enter the Service Mode

1) Decrease the volume to 0 with the remote control.
2) Press the MUTE button on the remote control and VIDEO button on the TV at the same time. "S" appears on the TV screen and the TV enters the Service mode.
3) Press the CH-/CH+ buttons to highlight an adjustment, and VOL-/VOL+ buttons to adjust data.
4) Press the ⏻ button on the remote control to exit from the mode.

SERVICE MODE AND BUS DATA (continued)

2. Bus Data

MENU.00	
AFW: 240KHZ	1
IF-PLL	1
AFA: Inside	1
AFB: Below	0
AGC	Set to the optimal mode
IFS	0
MOD	0
MENU. 01	
FLXED AUDIO	1
SOUND MUTE	0
AUTO AUDIO LIMIT	0
VOLUME	12
MENU. 02	
BLANK HOB	0
De interla	0
H shift	Set to the optimal mode
H shift-50	32
E/W WIDE	Set to the optimal mode
PARABOLA	Set to the optimal mode
E/W CORNER	Set to the optimal mode
TRAPEZIUM	Set to the optimal mode
OSD H.POS	Set to the optimal mode
MENU. 03	
VER MODE	0
VER OUT	0
OVERSCAN	1
VER Protec	0
BLANK FIX	0
V Dividr	0
MENU. 04	
V CENTER	Set to the optimal mode
V AMP	Set to the optimal mode
S CORRECT	Set to the optimal mode
V SHIFT	Set to the optimal mode
V SHIFT-50	32
V ZOOM	25
V SCROLL	31
V HALF	0

SERVICE MODE AND BUS DATA (continued)

MENU. 05	
WHIT P RED	31
WHIT P GRE	Set to the optimal mode
WHIT P BLU	Set to the optimal mode
AKB	0
Y-DELAY	8
CATHOD LEV	5
MENU. 06	
BLUE Stret	1
BLACK Stre	1
Y-VALUE	0
SKIN ANGLE	0
SKIN TONE	1
B.B LEVEL	40
MENU. 07	
ACL	1
CB	0
CMB	0
BPS	0
MAT	0
OPT. AV3CH	0
OPT. AVC	1
OPT. VM	0
OPT. DCOM	0
OPT. BBK	1
MENU. 08	
SUB BRIGHT	31
LOUNDNESS	18
CNTRST MAX	63
CNTRST MID	31
CNTRST MIN	0
COLOR Corer	31
SUB TINT	28
MENU. 09	
BCO	1
XA. XB	1
STB	1
POC	0
CM2.1.0	3
MENU. 10	
VIM	1
STM	0
HCO	1
EVG	0

SERVICE MODE AND BUS DATA (continued)

PRD	1
COR	1
MENU. 11	
OSO	1
CS1. CS0	0
BB	1
AST	1
FFI	0
EBS	1
FCO	0
MENU. 12	
OPT. OVPT	0
OPT. AV3	1
OPT. AV4	0
OPT. COLOR	0
OPT. V-CHIP	1
OPT. CCD	1
OPT. PWR-ON	0
SRCH SPEED	0
ROM CORREC	0
MSP/YCbCr	0

Notes:

① The data sheet may differ dependent on different models.

② The data sheet may differ dependent on different CRTs for the same model.

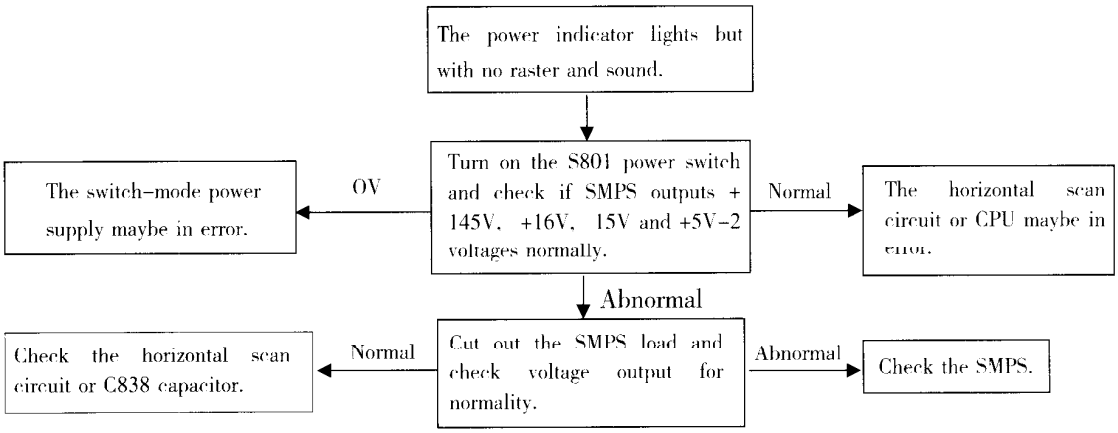
③ Do not adjust I^2C data with the remote jig unless necessary.

④ The remote jigs on neighboring work position cannot affect each other.

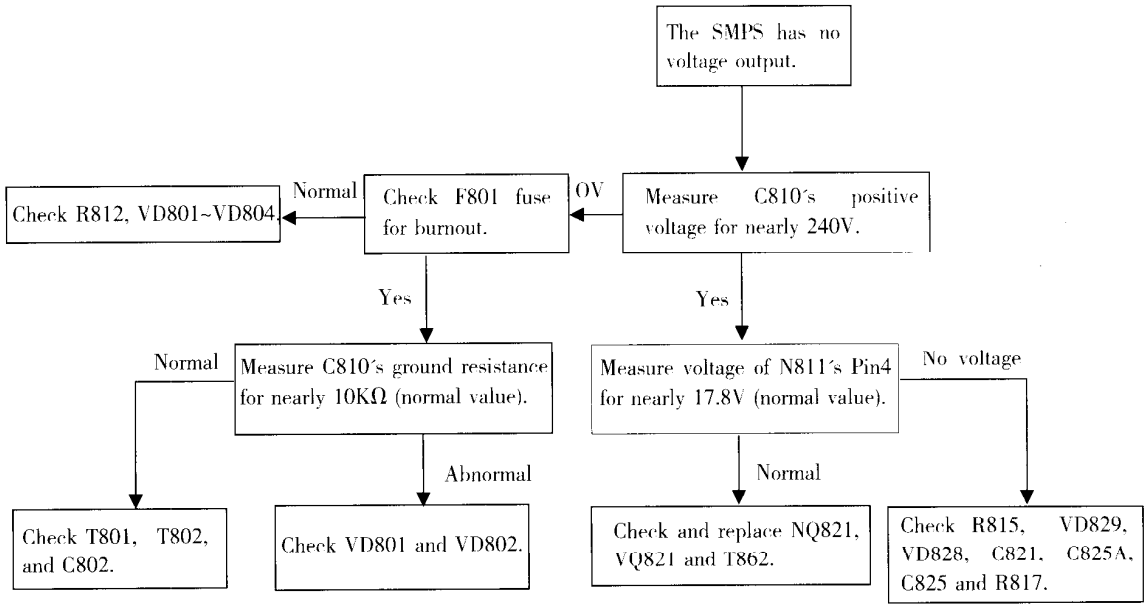
TROUBLESHOOTING FLOW CHARTS

1. Power On/Off

1.1 The power indicator lights but with no raster and sound.

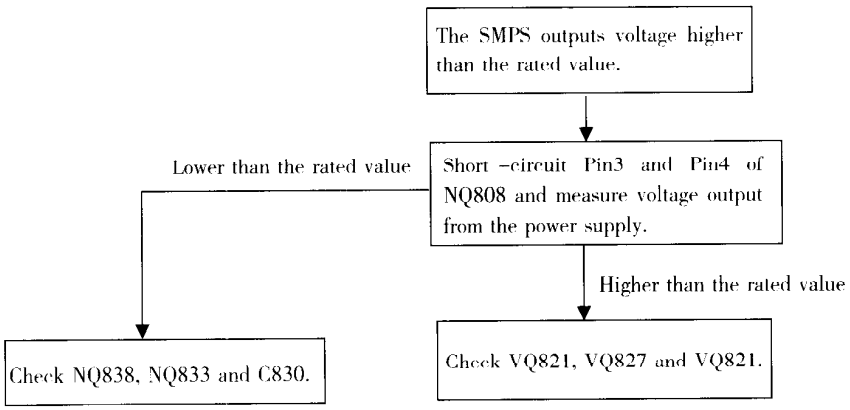


1.2 The SMPS has no voltage output.

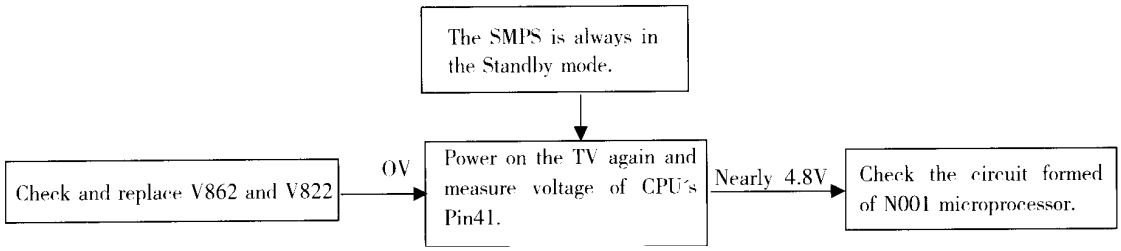


TROUBLESHOOTING FLOW CHARTS (continued)

1.3 The SMPS outputs voltage higher than the rated value.

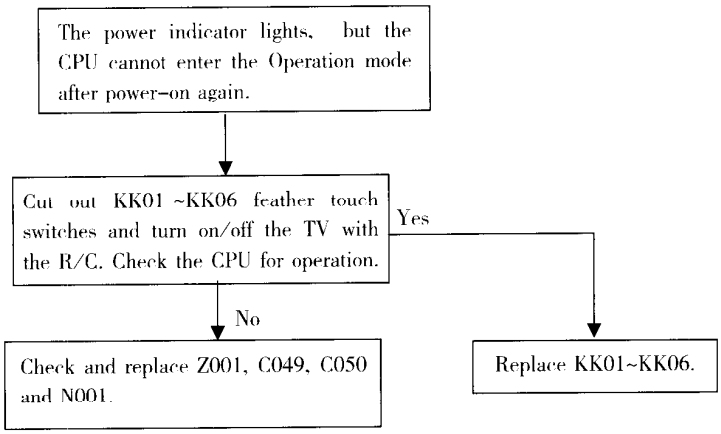


1.4 The power indicator lights, but the SMPS is still in the Standby mode.



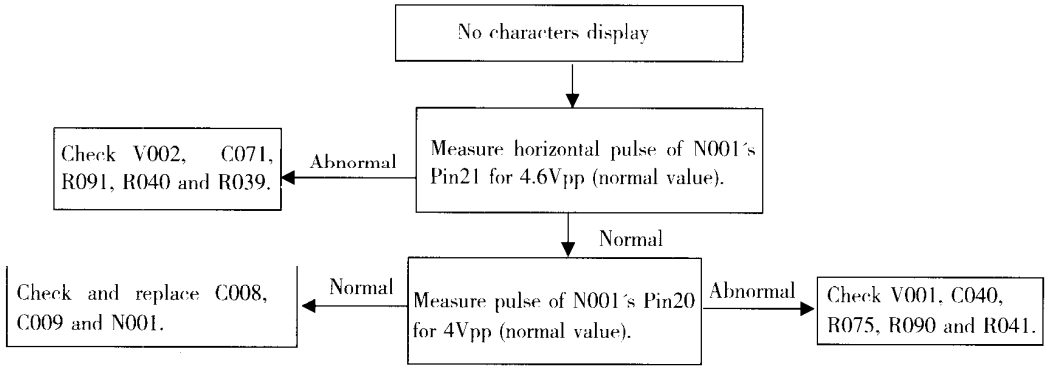
2. Control System

2.1 The power indicator lights, but the CPU cannot enter the Operation mode after power-on again.

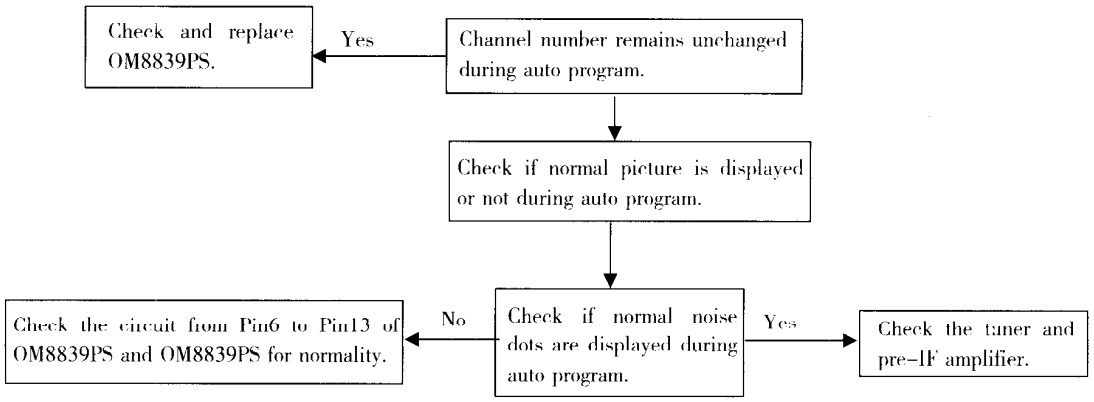


TROUBLESHOOTING FLOW CHARTS (continued)

2.2 No characters display

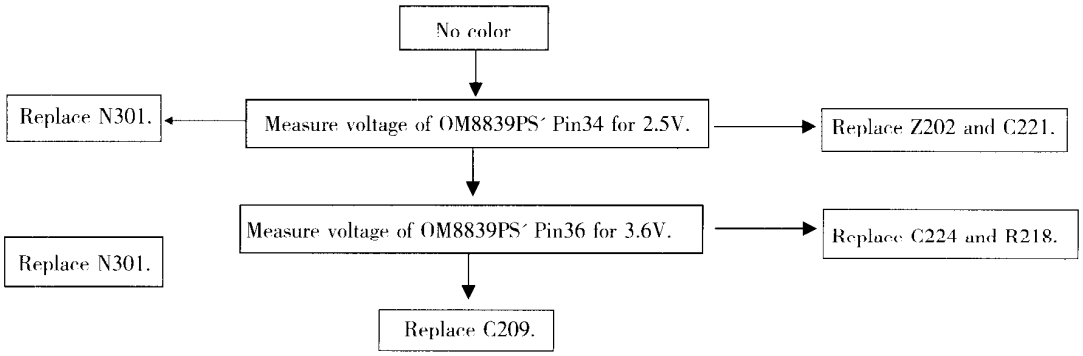


2.3 Channel number remains unchanged during auto program.



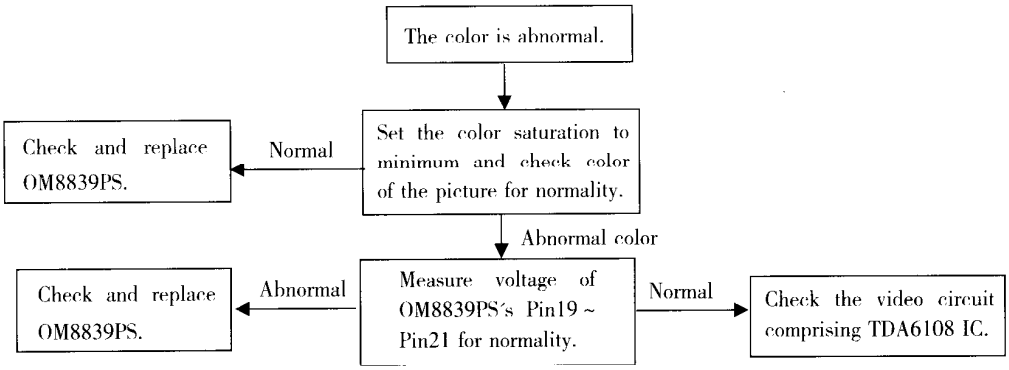
3. Video Signal Processor

3.1 No color



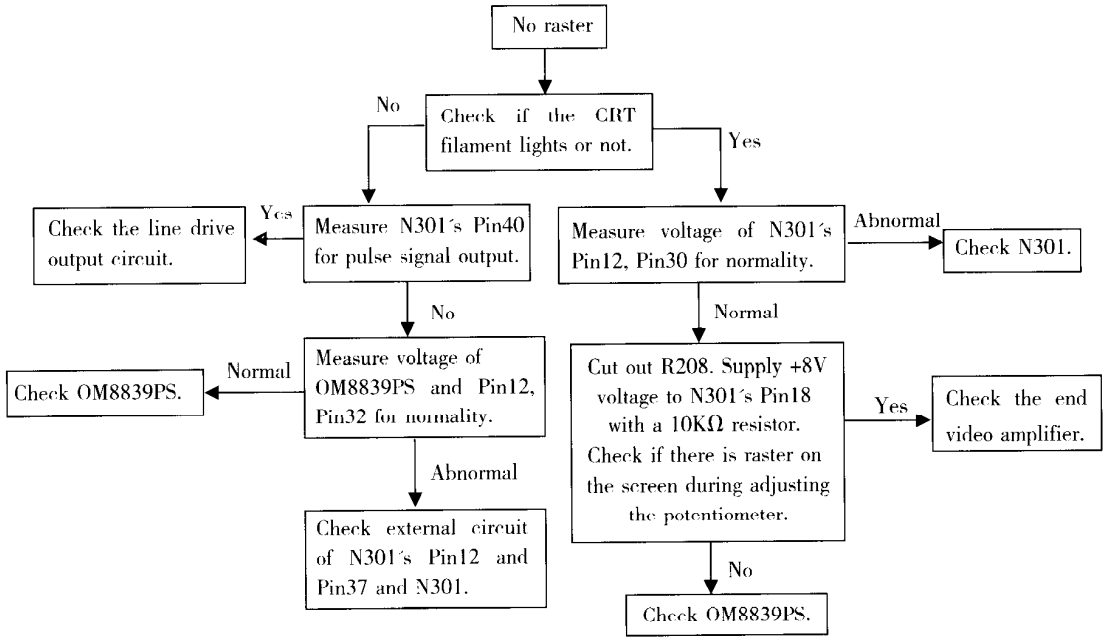
TROUBLESHOOTING FLOW CHARTS (continued)

3.2 The color is abnormal.



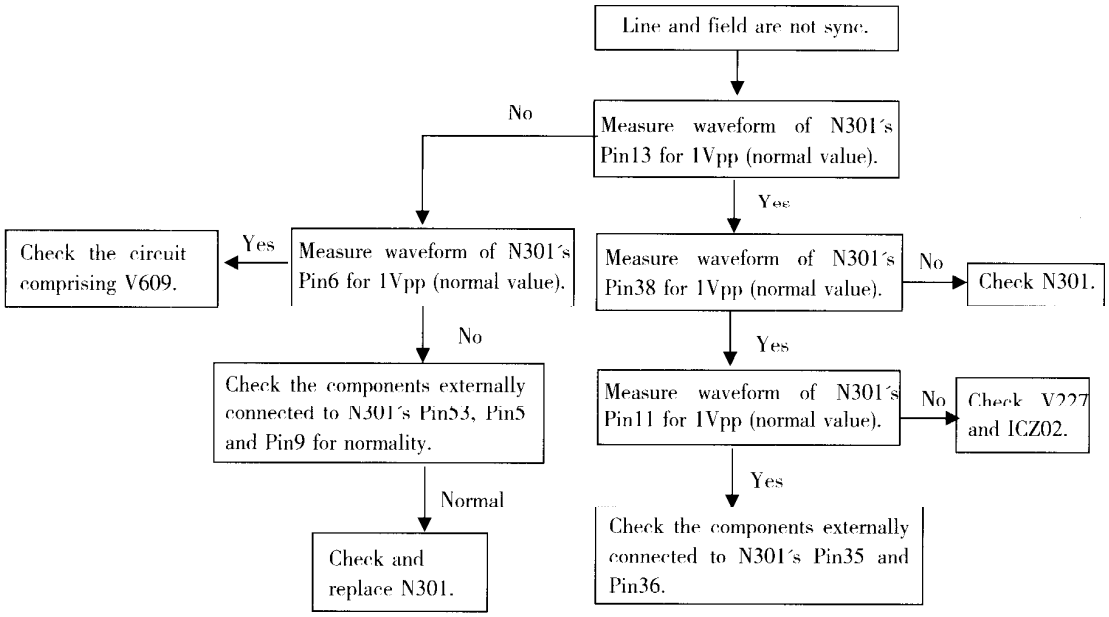
4. Horizontal/Vertical Scan Circuit

4.1 No raster

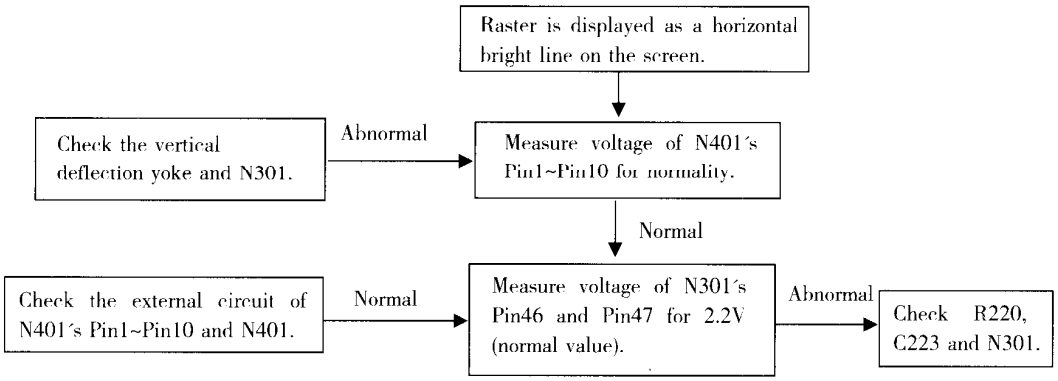


TROUBLESHOOTING FLOW CHARTS (continued)

4.2 Line and field are not sync.

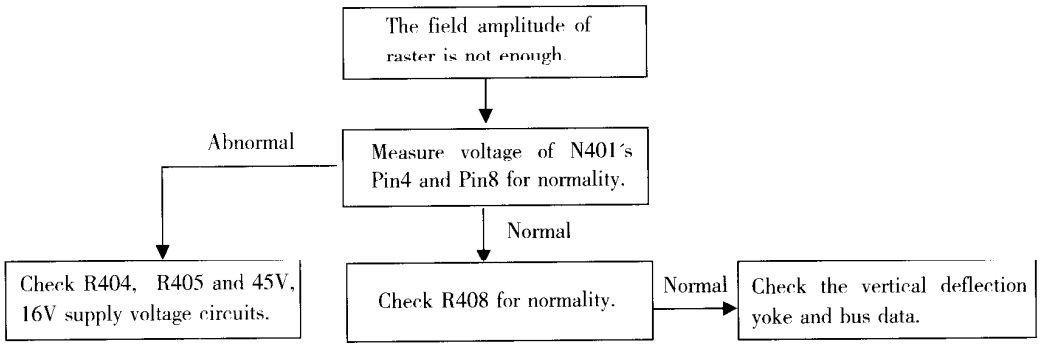


4.3 Raster is displayed as a horizontal bright line on the screen.

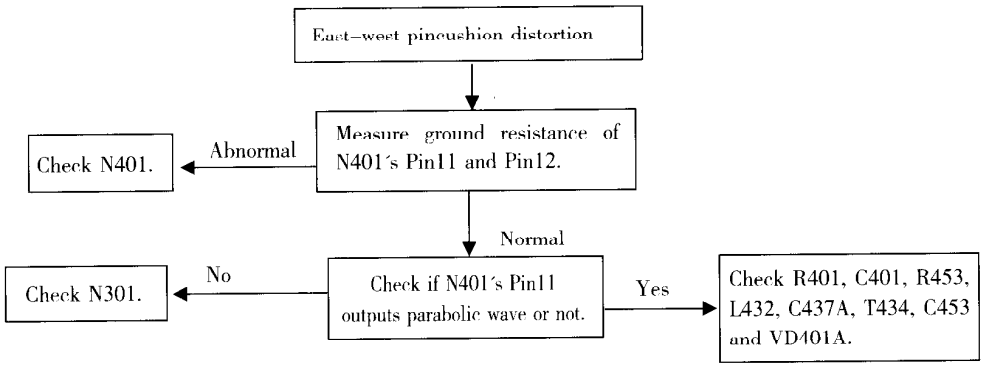


TROUBLESHOOTING FLOW CHARTS (continued)

4.4 The field amplitude of raster is not enough.

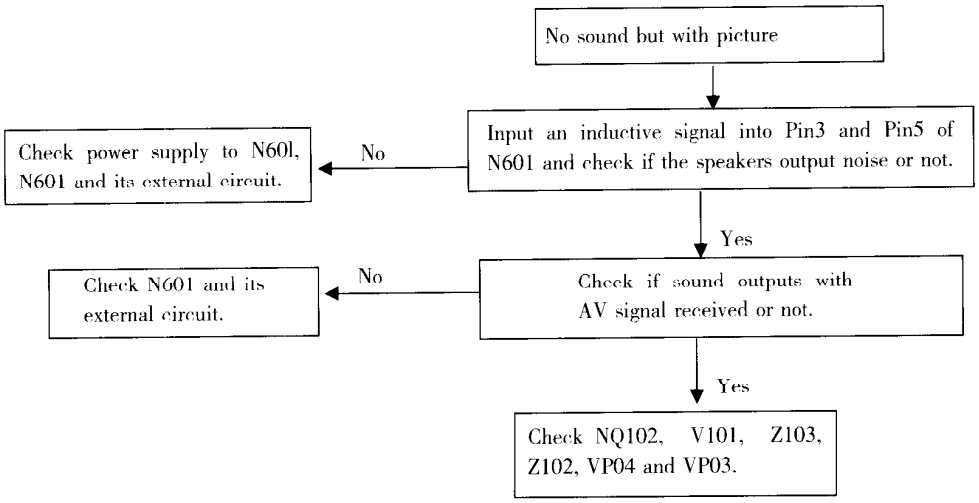


4.5 East-west pincushion distortion



5. Audio System

5.1 No sound



PARTS LIST

Position	Parts	Type
		Parts List for GT3215
		1. Parts on Main PCB
R618	Carbon film resistor	RT13-0.166W-4.7ΩJ
R618	Carbon film resistor	NAS1/64R7J
R101	Carbon film resistor	RT13-0.166W-10ΩJ
R101	Carbon film resistor	NAS1/6100J
R104	Carbon film resistor	RT13 0.166W 27ΩJ
R104	Carbon film resistor	NAS1/6270J
R139	Carbon film resistor	RT13-0.166W-47ΩJ
R139	Carbon film resistor	NAS1/6470J
R240A	Carbon film resistor	RT13-0.166W-47ΩJ
R240A	Carbon film resistor	NAS1/6470J
R401	Carbon film resistor	RT13-0.166W-47ΩJ
R401	Carbon film resistor	NAS1/6470J
R402	Carbon film resistor	RT13-0.166W-47ΩJ
R402	Carbon film resistor	NAS1/6470J
R109	Carbon film resistor	RT13-0.166W-47ΩJ
R109	Carbon film resistor	NAS1/6470J
R032	Carbon film resistor	RT13-0.166W-100ΩJ
R032	Carbon film resistor	NAS1/6101J
R006B	Carbon film resistor	RT13-0.166W-100ΩJ
R006B	Carbon film resistor	NAS1/6101J
R056	Carbon film resistor	RT13-0.166W-100ΩJ
R056	Carbon film resistor	NAS1/6101J
R060	Carbon film resistor	RT13-0.166W-100ΩJ
R060	Carbon film resistor	NAS1/6101J
R061	Carbon film resistor	RT13-0.166W-100ΩJ
R061	Carbon film resistor	NAS1/6101J
R065	Carbon film resistor	RT13-0.166W-100ΩJ
R065	Carbon film resistor	NAS1/6101J
R067	Carbon film resistor	RT13-0.166W-100ΩJ
R067	Carbon film resistor	NAS1/6101J
R068	Carbon film resistor	RT13-0.166W-100ΩJ
R068	Carbon film resistor	NAS1/6101J
R105	Carbon film resistor	RT13-0.166W-100ΩJ
R105	Carbon film resistor	NAS1/6101J
R202	Carbon film resistor	RT13-0.166W-100ΩJ
R202	Carbon film resistor	NAS1/6101J
R203	Carbon film resistor	RT13-0.166W-100ΩJ
R203	Carbon film resistor	NAS1/6101J
R205	Carbon film resistor	RT13-0.166W-100ΩJ
R205	Carbon film resistor	NAS1/6101J
R212A	Carbon film resistor	RT13-0.166W-100ΩJ

PARTS LIST (continued)

Position	Parts	Type
R212A	Carbon film resistor	NAS1/6101J
R228	Carbon film resistor	RT13-0.166W-100ΩJ
R228	Carbon film resistor	NAS1/6101J
R229	Carbon film resistor	RT13-0.166W-100ΩJ
R229	Carbon film resistor	NAS1/6101J
R332A	Carbon film resistor	RT13-0.166W-100ΩJ
R332A	Carbon film resistor	NAS1/6101J
R015	Carbon film resistor	RT13-0.166W-100ΩJ
R015	Carbon film resistor	NAS1/6101J
R206	Carbon film resistor	RT13-0.166W-100ΩJ
R206	Carbon film resistor	NAS1/6101J
R204	Carbon film resistor	RT13-0.166W-150ΩJ
R204	Carbon film resistor	NAS1/6151J
R017	Carbon film resistor	RT13-0.166W-180ΩJ
R017	Carbon film resistor	NAS1/6181J
R018	Carbon film resistor	RT13-0.166W-180ΩJ
R018	Carbon film resistor	NAS1/6181J
R608	Carbon film resistor	RT13-0.166W-180ΩJ
R608	Carbon film resistor	NAS1/6181J
R029	Carbon film resistor	RT13-0.166W-220ΩJ
R029	Carbon film resistor	NAS1/6221J
R619D	Carbon film resistor	RT13-0.166W-220ΩJ
R619D	Carbon film resistor	NAS1/6221J
R629A	Carbon film resistor	RT13-0.166W-220ΩJ
R629A	Carbon film resistor	NAS1/6221J
R072	Carbon film resistor	RT13-0.166W-330ΩJ
R072	Carbon film resistor	NAS1/6331J
R073	Carbon film resistor	RT13-0.166W-330ΩJ
R073	Carbon film resistor	NAS1/6331J
R076	Carbon film resistor	RT13-0.166W-330ΩJ
R076	Carbon film resistor	NAS1/6331J
R207	Carbon film resistor	RT13-0.166W-330ΩJ
R207	Carbon film resistor	NAS1/6331J
R201	Carbon film resistor	RT13-0.166W-390ΩJ
R201	Carbon film resistor	NAS1/6391J
R218A	Carbon film resistor	RT13-0.166W-390ΩJ
R218A	Carbon film resistor	NAS1/6391J
R433	Carbon film resistor	RT13-0.166W-390ΩJ
R433	Carbon film resistor	NAS1/6391J
R020	Carbon film resistor	RT13-0.166W-470ΩJ
R020	Carbon film resistor	NAS1/6471J
R028	Carbon film resistor	RT13-0.166W-470ΩJ
R028	Carbon film resistor	NAS1/6471J

PARTS LIST (continued)

Position	Parts	Type
R022	Carbon film resistor	RT13-0.166W-470ΩJ
R022	Carbon film resistor	NAS1/6471J
R040	Carbon film resistor	RT13-0.166W-470ΩJ
R040	Carbon film resistor	NAS1/6471J
R041	Carbon film resistor	RT13-0.166W-470ΩJ
R041	Carbon film resistor	NAS1/6471J
R050	Carbon film resistor	RT13-0.166W-470ΩJ
R050	Carbon film resistor	NAS1/6471J
R053	Carbon film resistor	RT13-0.166W-470ΩJ
R053	Carbon film resistor	NAS1/6471J
R054	Carbon film resistor	RT13-0.166W-470ΩJ
R054	Carbon film resistor	NAS1/6471J
R209	Carbon film resistor	RT13-0.166W-470ΩJ
R209	Carbon film resistor	NAS1/6471J
R210	Carbon film resistor	RT13-0.166W-470ΩJ
R210	Carbon film resistor	NAS1/6471J
R211	Carbon film resistor	RT13-0.166W-470ΩJ
R211	Carbon film resistor	NAS1/6471J
R108	Carbon film resistor	RT13-0.166W-680ΩJ
R108	Carbon film resistor	NAS1/6681J
R038	Carbon film resistor	RT13-0.166W-1KΩJ
R038	Carbon film resistor	NAS1/6102J
R074	Carbon film resistor	RT13-0.166W-1KΩJ
R074	Carbon film resistor	NAS1/6102J
R117	Carbon film resistor	RT13-0.166W-1KΩJ
R117	Carbon film resistor	NAS1/6102J
R220	Carbon film resistor	RT13-0.166W-1KΩJ
R220	Carbon film resistor	NAS1/6102J
R221	Carbon film resistor	RT13-0.166W-1KΩJ
R221	Carbon film resistor	NAS1/6102J
R609	Carbon film resistor	RT13-0.166W-1KΩJ
R609	Carbon film resistor	NAS1/6102J
R630A	Carbon film resistor	RT13-0.166W-1KΩJ
R630A	Carbon film resistor	NAS1/6102J
R118	Carbon film resistor	RT13-0.166W-1.2KΩJ
R118	Carbon film resistor	NAS1/6122J
R085	Carbon film resistor	RT13-0.166W-1.5KΩJ
R085	Carbon film resistor	NAS1/6152J
R035	Carbon film resistor	RT13-0.166W-1.8KΩJ
R035	Carbon film resistor	NAS1/6182J
R036	Carbon film resistor	RT13-0.166W-1.8KΩJ
R036	Carbon film resistor	NAS1/6182J
R037	Carbon film resistor	RT13-0.166W-1.8KΩJ

PARTS LIST (continued)

Position	Parts	Type
R037	Carbon film resistor	NAS1/6182J
R103	Carbon film resistor	RT13-0.166W-1.8KΩJ
R103	Carbon film resistor	NAS1/6182J
R432	Carbon film resistor	RT13-0.166W-1.8KΩJ
R432	Carbon film resistor	NAS1/6182J
R205A	Carbon film resistor	RT13-0.166W-2.2KΩJ
R205A	Carbon film resistor	NAS1/6222J
R609A	Carbon film resistor	RT13-0.166W-2.2KΩJ
R609A	Carbon film resistor	NAS1/6222J
R099	Carbon film resistor	RT13-0.166W-3.3KΩJ
R099	Carbon film resistor	NAS1/6332J
R016	Carbon film resistor	RT13-0.166W-3.3KΩJ
R016	Carbon film resistor	NAS1/6332J
R058	Carbon film resistor	RT13-0.166W-3.3KΩJ
R058	Carbon film resistor	NAS1/6332J
R063	Carbon film resistor	RT13-0.166W-3.3KΩJ
R063	Carbon film resistor	NAS1/6332J
R043	Carbon film resistor	RT13-0.166W-4.7KΩJ
R043	Carbon film resistor	NAS1/6472J
R044	Carbon film resistor	RT13-0.166W-4.7KΩJ
R044	Carbon film resistor	NAS1/6472J
R006A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R006A	Carbon film resistor	NAS1/6472J
R059	Carbon film resistor	RT13-0.166W-4.7KΩJ
R059	Carbon film resistor	NAS1/6472J
R087	Carbon film resistor	RT13-0.166W-4.7KΩJ
R087	Carbon film resistor	NAS1/6472J
R102	Carbon film resistor	RT13-0.166W-4.7KΩJ
R102	Carbon film resistor	NAS1/6472J
R212	Carbon film resistor	RT13-0.166W-4.7KΩJ
R212	Carbon film resistor	NAS1/6472J
R252	Carbon film resistor	RT13-0.166W-4.7KΩJ
R252	Carbon film resistor	NAS1/6472J
R458A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R458A	Carbon film resistor	NAS1/6472J
R459A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R459A	Carbon film resistor	NAS1/642J
R006	Carbon film resistor	RT13-0.166W-10KΩJ
R006	Carbon film resistor	NAS1/6103J
R007	Carbon film resistor	RT13-0.166W-10KΩJ
R007	Carbon film resistor	NAS1/6103J
R031	Carbon film resistor	RT13 0.166W-10KΩJ
R031	Carbon film resistor	NAS1/6103J

PARTS LIST (continued)

Position	Parts	Type
R055	Carbon film resistor	RT13-0.166W-10KΩJ
R055	Carbon film resistor	NAS1/6103J
R208	Carbon film resistor	RT13-0.166W-10KΩJ
R208	Carbon film resistor	NAS1/6103J
R223	Carbon film resistor	RT13-0.166W-10KΩJ
R223	Carbon film resistor	NAS1/6103J
R465	Carbon film resistor	RT13-0.166W-10KΩJ
R465	Carbon film resistor	NAS1/6103J
R466	Carbon film resistor	RT13-0.166W-10KΩJ
R466	Carbon film resistor	NAS1/6103J
R467	Carbon film resistor	RT13-0.166W-10KΩJ
R467	Carbon film resistor	NAS1/6103J
R483	Carbon film resistor	RT13-0.166W-10KΩJ
R483	Carbon film resistor	NAS1/6103J
RK51	Carbon film resistor	RT13-0.166W-10KΩJ
RK51	Carbon film resistor	NAS1/6103J
RK54	Carbon film resistor	RT13-0.166W-10KΩJ
RK54	Carbon film resistor	NAS1/6103J
R628	Carbon film resistor	RT13-0.166W-10KΩJ
R628	Carbon film resistor	NAS1/6103J
R634	Carbon film resistor	RT13-0.166W-10KΩJ
R634	Carbon film resistor	NAS1/6103J
R162	Carbon film resistor	RT13 0.166W-12KΩJ
R162	Carbon film resistor	NAS1/6123J
R075	Carbon film resistor	RT13-0.166W-15KΩJ
R075	Carbon film resistor	NAS1/6153J
R086	Carbon film resistor	RT13-0.166W-15KΩJ
R086	Carbon film resistor	NAS1/6153J
R222	Carbon film resistor	RT13-0.166W-15KΩJ
R222	Carbon film resistor	NAS1/6153J
R629	Carbon film resistor	RT13-0.166W-15KΩJ
R629	Carbon film resistor	NAS1/6153J
R633	Carbon film resistor	RT13-0.166W-15KΩJ
R633	Carbon film resistor	NAS1/6153J
R107	Carbon film resistor	RT13-0.166W-18KΩJ
R107	Carbon film resistor	NAS1/6183J
R131	Carbon film resistor	RT13-0.166W-18KΩJ
R131	Carbon film resistor	NAS1/6183J
R435	Carbon film resistor	RT13-0.166W-18KΩJ
R435	Carbon film resistor	NAS1/6183J
R039	Carbon film resistor	RT13-0.166W-22KΩJ
R039	Carbon film resistor	NAS1/6223J
R026	Carbon film resistor	RT13-0.166W-22KΩJ

PARTS LIST

Position	Parts	Type
R026	Carbon film resistor	NAS1/6223J
R628A	Carbon film resistor	RT13-0.166W-22KΩJ
R628A	Carbon film resistor	NAS1/6223J
R634A	Carbon film resistor	RT13-0.166W-22KΩJ
R634A	Carbon film resistor	NAS1/6223J
R457	Carbon film resistor	RT13-0.166W-10KΩJ
R457	Carbon film resistor	NAS1/6103J
R230	Carbon film resistor	RT13-0.166W-27KΩJ
R230	Carbon film resistor	NAS1/6273J
R225	Carbon film resistor	RT13-0.166W-33KΩJ
R225	Carbon film resistor	NAS1/6333J
R610	Carbon film resistor	RT13-0.166W-33KΩJ
R610	Carbon film resistor	NAS1/6333J
R027	Carbon film resistor	RT13-0.166W-47KΩJ
R027	Carbon film resistor	NAS1/6473J
R090	Carbon film resistor	RT13-0.166W-47KΩJ
R090	Carbon film resistor	NAS1/6473J
R289C	Carbon film resistor	RT13-0.166W-47KΩJ
R289C	Carbon film resistor	NAS1/6473J
R464	Carbon film resistor	RT13-0.166W-56KΩJ
R464	Carbon film resistor	NAS1/6563J
R437A	Carbon film resistor	RT13-0.166W-68KΩJ
R437A	Carbon film resistor	NAS1/6683J
R218	Carbon film resistor	RT13-0.166W-100KΩJ
R218	Carbon film resistor	NAS1/6104J
R224	Carbon film resistor	RT13-0.166W-100KΩJ
R224	Carbon film resistor	NAS1/6104J
R091	Carbon film resistor	RT13-0.166W-100KΩJ
R091	Carbon film resistor	NAS1/6104J
R446	Carbon film resistor	RT13-0.166W-150KΩJ
R446	Carbon film resistor	NAS1/6154J
R458	Carbon film resistor	RT13-0.166W-220KΩJ
R458	Carbon film resistor	NAS1/6224J
R632A	Carbon film resistor	RT13-0.166W-240KΩJ
R632A	Carbon film resistor	NAS1/6244J
R013	Carbon film resistor	RT13-0.166W-390KΩJ
R013	Carbon film resistor	NAS1/6394J
R459	Carbon film resistor	RT13-0.166W-680KΩJ
R459	Carbon film resistor	NAS1/6684J
R030	Carbon film resistor	RT13-0.166W-1MΩJ
R030	Carbon film resistor	NAS1/6105J
R440	Carbon film resistor	RT14 0.25W-10ΩJ
R440	Carbon film resistor	NAS1/4100J

PARTS LIST (continued)

Position	Parts	Type
R413	Carbon film resistor	RT14-0.25W-47ΩJ
R413	Carbon film resistor	NAS1/4470J
R460	Carbon film resistor	RT14-0.25W-220ΩJ
R460	Carbon film resistor	NAS1/4221J
R434	Carbon film resistor	RT14-0.25W-1KΩJ
R434	Carbon film resistor	NAT1/4102J
R456	Carbon film resistor	RT14-0.25W-1KΩJ
R456	Carbon film resistor	NAT1/4102J
R115	Carbon film resistor	RT14-0.25W-2.2KΩJ
R115	Carbon film resistor	NAT1/4222J
R412	Carbon film resistor	RT14-0.25W-10KΩJ
R412	Carbon film resistor	NAS1/4103J
R453A	Carbon film resistor	RT14-0.25W-68KΩJ
R453A	Carbon film resistor	NAS1/4683J
R289A	Metal film resistor	RJ14 0.25W 470ΩG
R289B	Metal film resistor	RJ14-0.25W-2.7KΩG
R403	Metal film resistor	RJ14-0.25W-3KΩJ
R443	Metal film resistor	RJ14-0.25W-3.3KΩJ
R226	Metal film resistor	RJ14-0.25W-39KΩG
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-1.2ΩJ
R407	Metal oxide film resistor	MOS1/2W1R2J
R404	Metal oxide film resistor	RY21-0.5W-10ΩJ
R404	Metal oxide film resistor	MOS1/2W100J
R410	Metal oxide film resistor	RY21-0.5W-22ΩJ
R410	Metal oxide film resistor	MOS1/2W220J
W260	Metal oxide film resistor	RY21-2W-15ΩJ
W260	Metal oxide film resistor	MOS2W150J
R442	Metal oxide film resistor	RY21-1W-1KΩJ
R442	Metal oxide film resistor	MOS1W102J
R477	Metal oxide film resistor	RY21-1W-10KΩJ
R477	Metal oxide film resistor	MOS1W103J
R637	Metal oxide film resistor	RY21-2W-1ΩJ
R637	Metal oxide film resistor	MOS2W1R0J
R405	Metal oxide film resistor	RY21-2W-1ΩJ
R405	Metal oxide film resistor	MOS2W1R0J
R471	Metal oxide film resistor	RY21-2W-10ΩJ
R471	Metal oxide film resistor	MOS2W100J
R401A	Metal oxide film resistor	RY21-2W-10ΩJ
R437	Metal oxide film resistor	RY21-1W-33ΩJ
R437	Metal oxide film resistor	MOS1W330J
R409	Metal oxide film resistor	RY21-2W-150ΩJ

PARTS LIST (continued)

Position	Parts	Type
R409	Metal oxide film resistor	MOS2W151J
R449	Fuse resistor	RF10-0.5W-0.27ΩJ
R450	Fuse resistor	RF10-0.5W-0.68ΩJ
R453	Fuse resistor	RF10-0.5W-0.68ΩJ
R448	Fuse resistor	RF11-2W-1ΩJ
C049	Ceramic capacitor	CC1-63V-06a-C-15PFJ
C221	Ceramic capacitor	CC1-63V-06a-C-18PFJ
C050	Ceramic capacitor	CC1-63V-06a-C-18PFJ
C252	Ceramic capacitor	CC1-63V-06a-C-33PFJ
C035	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C036	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C037	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C038	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C040	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C056	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C060	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C071	Ceramic capacitor	CC1-63V-08a-C-100PFJ
C461	Ceramic capacitor	CC1-63V-08a-SL-220PFJ
C205	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C240	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C241	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
CK09	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
CK10	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C699	Ceramic capacitor	CT1-63V-06a-2B4-1200PFK
C251	Ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C231	Ceramic capacitor	CT1-63V-08a-2B4-2200PFK
C401B	Ceramic capacitor	CT1-63V-08a-2B4-2200PFK
C101	Ceramic capacitor	CT1-63V-08a-2B4-4700PFK
C103	Ceramic capacitor	CT1-63V-08a-2B4-4700PFK
C656	Ceramic capacitor	CT1-63V-08a-2B4-4700PFK
C661A	Ceramic capacitor	CT1-63V-08a-2B4-4700PFK
C102	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C105	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C104A	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C114	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C289C	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C432	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C051	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C063	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C066	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C106	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C212	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C213	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ

PARTS LIST (continued)

Position	Parts	Type
C214	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C225	Ceramic capacitor	CT1-63V-12c-2F4-0.022μFZ
C451	Ceramic capacitor	CT1-500V-06c-2B4-220PFK
C452	Ceramic capacitor	CT1-500V-06c-2B4-220PFK
C458	Ceramic capacitor	CT1-500V-06c-2B4-220PFK
C471	Ceramic capacitor	CT1-500V-10c-2B4-1000PFK
C436	Ceramic capacitor	CT81-2KV-10c-2B4-560PFK
C439A	Ceramic capacitor	CT81-2KV-16c-2B4-1800PFK
C437A	Ceramic capacitor	CT81-2KV-16c-2R4-2200PFK
C401	Polyester film capacitor	CL12X-50V-1000PFJ
C224	Polyester film capacitor	CL21X-50V-4700PFJ
C229	Polyester film capacitor	CL21X-50V-4700PFJ
C120A	Polyester film capacitor	CL21X-50V-6800PFJ
C405	Polyester film capacitor	CL21X-50V-0.01μFJ
C407	Polyester film capacitor	CL21X-50V-0.01μFJ
C202	Polyester film capacitor	CL21X-50V-0.022μFJ
C235	Polyester film capacitor	CL21X-50V-0.022μFJ
C485	Polyester film capacitor	CL21X-50V-0.047μFJ
C201	Polyester film capacitor	CL21X-50V-0.1μFJ
C204	Polyester film capacitor	CL21X-50V-0.1μFJ
C207	Polyester film capacitor	CL21X-50V-0.1μFJ
C223	Polyester film capacitor	CL21X-50V-0.1μFJ
C227A	Polyester film capacitor	CL21X-50V-0.1μFJ
C228	Polyester film capacitor	CL21X-50V-0.1μFJ
C233	Polyester film capacitor	CL21X-50V-0.1μFJ
CD04	Polyester film capacitor	CL21X-50V-0.1μFJ
C403	Polyester film capacitor	CL21X-50V-0.1μFJ
C409	Polyester film capacitor	CL21X-50V-0.1μFJ
C460	Polyester film capacitor	CL21X-50V-0.1μFJ
C472	Polyester film capacitor	CL21X-50V-0.1μFJ
C484	Polyester film capacitor	CL21X-50V-0.1μFJ
C654	Polyester film capacitor	CL21X-50V-0.1μFJ
C658	Polyester film capacitor	CL21X-50V-0.1μFJ
C401A	Polyester film capacitor	CL21X-50V-0.1μFJ
C209	Polyester film capacitor	CL21X-50V-0.22μFJ
C232	Polyester film capacitor	CL21X-50V-0.22μFJ
C406	Polyester film capacitor	CL21X-50V-0.22μFJ
C671A	Polyester film capacitor	CL21X-50V-0.22μFJ
C208	Polyester film capacitor	CL21X-50V-0.47μFJ
C210	Polyester film capacitor	CL21X-50V-0.47μFJ
C234	Polyester film capacitor	CL21X-50V-0.47μFJ
C434	Polyester film capacitor	CL21X-50V-0.47μFJ
C475	Polyester film capacitor	CL21X-100V-0.056μFJ

PARTS LIST (continued)

Position	Parts	Type
C479	Polyester film capacitor	CL21X-250V-0.1μFJ
C483	Polyester film capacitor	CL21X-250V-0.1μFJ
C442	Polypropylene capacitor	CBB13-400V-0.47μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C476	Polypropylene capacitor	CBB81-1.6KV-2200PFJ
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
C676A	Aluminum electrolytic capacitor	CD110-16V-4.7μFM
C072	Aluminum electrolytic capacitor	CD110-16V-10μFM
C009	Aluminum electrolytic capacitor	CD110-16V-10μFM
C431	Aluminum electrolytic capacitor	CD110-16V-10μFM
C617	Aluminum electrolytic capacitor	CD110-16V-10μFM
C104	Aluminum electrolytic capacitor	CD110-16V-22μFM
C289A	Aluminum electrolytic capacitor	CD110-16V-22μFM
C211	Aluminum electrolytic capacitor	CD110X-16V-47μFM
C462	Aluminum electrolytic capacitor	CD110X-16V-47μFM
C107	Aluminum electrolytic capacitor	CD110X-16V-47μFM
CD03	Aluminum electrolytic capacitor	CD110X-16V-47μFM
CD05	Aluminum electrolytic capacitor	CD110X-16V-47μFM
C062	Aluminum electrolytic capacitor	CD110X-16V-100μFM
C206	Aluminum electrolytic capacitor	CD110X-16V-100μFM
C226	Aluminum electrolytic capacitor	CD110X-16V-100μFM
C631A	Aluminum electrolytic capacitor	CD110X-16V-220μFM
C115	Aluminum electrolytic capacitor	CD110X-16V-220μFM
C289B	Aluminum electrolytic capacitor	CD110X-16V-2200μFM
C480	Aluminum electrolytic capacitor	CD110X-25V-100μFM
C404	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C449	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C666A	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C008	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C227	Aluminum electrolytic capacitor	CD110-50V-1μFM
C230	Aluminum electrolytic capacitor	CD110-50V-1μFM
C634A	Aluminum electrolytic capacitor	CD110-50V-1μFM
C203	Aluminum electrolytic capacitor	CD110-50V-2.2μFM
C108	Aluminum electrolytic capacitor	CD110X-50V-47μFM
C402A	Aluminum electrolytic capacitor	CD110X-63V-22μFM
C448	Aluminum electrolytic capacitor	CD110X-63V-100μFM
C477	Aluminum electrolytic capacitor	CD110-250V-1μFM
C450	Aluminum electrolytic capacitor	CD110X-250V-10μFM
C450	Aluminum electrolytic capacitor	UVR2E100MPAANH
C459	Aluminum electrolytic capacitor	CD110X-250V-10μFM
C459	Aluminum electrolytic capacitor	UVR2E100MPAANH
C453	Aluminum electrolytic capacitor	CD5-50V-1μFM

PARTS LIST (continued)

Position	Parts	Type
L206	Fixed inductor	LGA0307-22μHK
L219	Fixed inductor	LGA0307-22μHK
L102	Fixed inductor	LGB0606-1μHK
L617	Fixed inductor	LGB0606-8.2μHJ
R106	Fixed inductor	LGB0606-56μHJ
L433A	Fixed inductor	LGT-100uH-K
L432	Fixed inductor	LGT-14mH-K
T434	Fixed inductor	LGT-1.5mH-K
L401	Feed-through inductor	TEM2011
L402	Feed-through inductor	TEM2011
L431	Feed-through inductor	TEM2011
L433	Horizontal linear coil	HXT30(JU4.756.022)
T431	Line drive transformer	BCT-8(JUB4.739.003)
T402	FBT	BSC70C(JU4.799.024-6)
VD111	Diode	2CK75D
VD111	Diode	1N4148
VD112	Diode	2CK75D
VD112	Diode	1N4148
VD113	Diode	2CK75D
VD113	Diode	1N4148
VD120A	Diode	2CK75D
VD120A	Diode	1N4148
VD457A	Diode	2CK75D
VD457A	Diode	1N4148
VD478	Diode	2CK75D
VD478	Diode	1N4148
VD631A	Diode	2CK75D
VD631A	Diode	1N4148
VD634A	Diode	2CK75D
VD634A	Diode	1N4148
VD481	Diode	2CK75D
VD481	Diode	1N4148
VD482	Diode	2CK75D
VD482	Diode	1N4148
VD431	Diode	2CK75D
VD431	Diode	1N4148
VD402	Diode	BAV21
VD443	Diode	BAV21
VD475	Diode	BAV21
VD402A	Diode	BAV21
VD437	Diode	2CZRU2
VD438	Diode	2CZRU2
VD440	Diode	2CZRU2

PARTS LIST (continued)

Position	Parts	Type
VD477	Diode	2CZRU2
VD433	Diode	BY359F-1500
VD434	Diode	BYW96D
VD434	Diode	BYW96E
VD008	Diode	W05Z3.6A
VD439	Diode	W05Z8.2B
VD401A	Diode	BZD23-C33
VD401A	Diode	BZT03-C33
VD401A	Diode	BZT33
V009	Triode	3CG1015-Y
V009	Triode	2SA1015-Y
V009	Triode	2PA1015GR
V436	Triode	3CG1015-Y
V436	Triode	2SA1015-Y
V436	Triode	2PA1015GR
V437	Triode	3CG1015-Y
V437	Triode	2SA1015-Y
V437	Triode	2PA1015GR
V632A	Triode	3CG1015-Y
V632A	Triode	2SA1015-Y
V632A	Triode	2PA1015GR
V204	Triode	3DG1815-Y
V204	Triode	2SC1815-Y
V204	Triode	2PC1815GR
V227	Triode	3DG1815-Y
V227	Triode	2SC1815-Y
V227	Triode	2PC1815GR
V289	Triode	3DG1815-Y
V289	Triode	2SC1815-Y
V289	Triode	2PC1815GR
V438	Triode	3DG1815-Y
V438	Triode	2SC1815-Y
V438	Triode	2PC1815GR
V609	Triode	3DG1815-Y
V609	Triode	2SC1815-Y
V609	Triode	2PC1815GR
V631A	Triode	3DG1815-Y
V631A	Triode	2SC1815-Y
V631A	Triode	2PC1815GR
V001	Triode	3DG1815-Y
V001	Triode	2SC1815-Y
V001	Triode	2PC1815GR
V002	Triode	3DG1815-Y

PARTS LIST (continued)

Position	Parts	Type
V002	Triode	2SC1815-Y
V002	Triode	2PC1815GR
V104	Triode	3DG388ATM
V104	Triode	2SC388ATM
V104	Triode	KSC388C-Y
V433	Triode	BU2720DX
V432	Field effect transistor	BSN274
V432	Field effect transistor	BSN304
N002	IC	AT24C08-10PI
N002	IC	MC24C08-BN6
N601	IC	TDA7057AQ
N401	IC	TDA8350Q-N6
N301	IC	TDA8843-N2
N301	IC	OM8839PS
N001	IC	CH04T1004
VD114	IC	KA33V
VD114	IC	μPC574J
VD114	IC	CW574CS
N402	IC	LM317T
N103	IC	TA78L009AP
Z202	Crystal oscillator	JA18A1-3.579545MHz
Z001	Crystal oscillator	JA18D-32.768KHz
A101	Electronic tuner	TDQ-6F2-M
Z601	Ceramic trap	TPSRA4M50B00-B0
Z601	Ceramic trap	XT4.5MB
Z101	Surface acoustic wave filter	M1958M
BC603	Electric speaker	YDT813-C6-10W-8Ω
BC604	Electric speaker	YDT813-C6-10W-8Ω
		Manual jumper
W207	Jumper	10mm
W209	Jumper	10mm
		Auto jumper
L204B	Jumper	5mm
L203	Jumper	5mm
L204	Jumper	5mm
L205	Jumper	5mm
L049	Jumper	5mm
R047	Jumper	5mm
W035	Jumper	5mm
W225	Jumper	5mm
W262	Jumper	5mm
W202	Jumper	5mm
W202A	Jumper	5mm

PARTS LIST (continued)

Position	Parts	Type
W207A	Jumper	5mm
W208A	Jumper	5mm
W208	Jumper	5mm
W026	Jumper	5mm
W292	Jumper	5mm
W246	Jumper	5mm
W472	Jumper	5mm
W412	Jumper	5mm
W264	Jumper	5mm
W265	Jumper	5mm
RP21	Jumper	5mm
RP22	Jumper	5mm
W431A	Jumper	5mm
W231	Jumper	7.5mm
W233	Jumper	7.5mm
W114	Jumper	7.5mm
W209A	Jumper	7.5mm
W220	Jumper	7.5mm
W230	Jumper	7.5mm
W312	Jumper	7.5mm
W217	Jumper	7.5mm
W215	Jumper	7.5mm
W235	Jumper	7.5mm
W221	Jumper	7.5mm
W074	Jumper	7.5mm
W270	Jumper	7.5mm
W272	Jumper	7.5mm
W006A	Jumper	7.5mm
W064	Jumper	7.5mm
W030	Jumper	7.5mm
W031	Jumper	7.5mm
W033	Jumper	7.5mm
W216A	Jumper	7.5mm
W217A	Jumper	7.5mm
W101	Jumper	7.5mm
W261	Jumper	7.5mm
W636	Jumper	7.5mm
W627	Jumper	7.5mm
W118A	Jumper	7.5mm
W118B	Jumper	7.5mm
W131	Jumper	7.5mm
W606	Jumper	7.5mm
W019	Jumper	7.5mm

PARTS LIST (continued)

Position	Parts	Type
W001	Jumper	7.5mm
W043	Jumper	7.5mm
W015	Jumper	7.5mm
W023	Jumper	7.5mm
W024	Jumper	7.5mm
W011	Jumper	7.5mm
W012	Jumper	7.5mm
W020	Jumper	7.5mm
W013	Jumper	7.5mm
W025	Jumper	7.5mm
W002	Jumper	7.5mm
W067	Jumper	7.5mm
W614	Jumper	7.5mm
W055	Jumper	7.5mm
W256A	Jumper	7.5mm
W257	Jumper	7.5mm
W481	Jumper	7.5mm
W629	Jumper	7.5mm
W490	Jumper	7.5mm
W489	Jumper	7.5mm
W402	Jumper	7.5mm
W402A	Jumper	7.5mm
W497	Jumper	7.5mm
W403	Jumper	7.5mm
W613	Jumper	7.5mm
W452	Jumper	7.5mm
W432	Jumper	7.5mm
W422	Jumper	7.5mm
W424	Jumper	7.5mm
W054	Jumper	7.5mm
W092	Jumper	7.5mm
W092A	Jumper	7.5mm
W090	Jumper	7.5mm
W005	Jumper	7.5mm
VD044	Jumper	7.5mm
W231B	Jumper	10mm
W230A	Jumper	10mm
L204A	Jumper	10mm
W077	Jumper	10mm
W228	Jumper	10mm
W274	Jumper	10mm
W301B	Jumper	10mm
W304A	Jumper	10mm

PARTS LIST (continued)

Position	Parts	Type
W305A	Jumper	10mm
W016	Jumper	10mm
W273	Jumper	10mm
W030B	Jumper	10mm
W031B	Jumper	10mm
W106	Jumper	10mm
W219A	Jumper	10mm
W219B	Jumper	10mm
W203	Jumper	10mm
W601	Jumper	10mm
W605	Jumper	10mm
W611	Jumper	10mm
W009A	Jumper	10mm
RD01	Jumper	10mm
W209B	Jumper	10mm
WP10	Jumper	10mm
W034	Jumper	10mm
W130	Jumper	10mm
W410	Jumper	10mm
W085	Jumper	10mm
W021	Jumper	10mm
R077	Jumper	10mm
W006	Jumper	10mm
W268	Jumper	10mm
W018B	Jumper	10mm
W010B	Jumper	10mm
R064	Jumper	10mm
W256	Jumper	10mm
W283	Jumper	10mm
VD212	Jumper	10mm
W036A	Jumper	10mm
W003	Jumper	10mm
W494	Jumper	10mm
W495	Jumper	10mm
W280	Jumper	10mm
W279	Jumper	10mm
W291	Jumper	10mm
W444A	Jumper	10mm
W301A	Jumper	12.5mm
W227	Jumper	12.5mm
VD031	Jumper	12.5mm
VD032	Jumper	12.5mm
VD033	Jumper	12.5mm

PARTS LIST (continued)

Position	Parts	Type
VD034	Jumper	12.5mm
W017	Jumper	12.5mm
W271	Jumper	12.5mm
W081C	Jumper	12.5mm
W082C	Jumper	12.5mm
W028	Jumper	12.5mm
W027	Jumper	12.5mm
W255	Jumper	12.5mm
W285	Jumper	12.5mm
W290	Jumper	12.5mm
W644	Jumper	12.5mm
W476	Jumper	12.5mm
W451	Jumper	12.5mm
W431	Jumper	12.5mm
W407	Jumper	12.5mm
W040	Jumper	15mm
W041	Jumper	15mm
W052	Jumper	15mm
W039	Jumper	15mm
W275	Jumper	15mm
W219	Jumper	15mm
W260A	Jumper	15mm
W433	Jumper	15mm
W057	Jumper	15mm
W051	Jumper	15mm
W022	Jumper	15mm
W406	Jumper	15mm
W079	Jumper	15mm
W444	Jumper	15mm
W421	Jumper	15mm
R448A	Jumper	15mm
W210A	Jumper	15mm
W247	Jumper	17.5mm
W628	Jumper	17.5mm
W050	Jumper	17.5mm
W118	Jumper	17.5mm
W266	Jumper	17.5mm
W278	Jumper	17.5mm
W437	Jumper	17.5mm
W635	Jumper	20mm
W632	Jumper	20mm
W263	Jumper	20mm
W267	Jumper	20mm

PARTS LIST (continued)

Position	Parts	Type
W624	Jumper	20mm
W625	Jumper	20mm
W032	Jumper	20mm
W049	Jumper	20mm
W496	Jumper	20mm
W072	Jumper	20mm
W062	Jumper	20mm
W028A	Jumper	20mm
W080B	Jumper	20mm
W081B	Jumper	20mm
W286	Jumper	20mm
W478	Jumper	20mm
W439	Jumper	20mm
W419	Jumper	20mm
W417	Jumper	20mm
W464	Jumper	20mm
W453	Jumper	20mm
		2. Parts on Power PCB
R832	Carbon film resistor	RT13-0.166W-220ΩJ
R832	Carbon film resistor	NAS1/6221J
R821A	Carbon film resistor	RT13-0.166W-680ΩJ
R821A	Carbon film resistor	NAS1/6681J
R831	Carbon film resistor	RT13-0.166W-1KΩJ
R831	Carbon film resistor	NAS1/6102J
R835	Carbon film resistor	RT13-0.166W-1KΩJ
R835	Carbon film resistor	NAS1/6102J
R818	Carbon film resistor	RT13-0.166W-2.7KΩJ
R818	Carbon film resistor	NAS1/6272J
RR802	Carbon film resistor	RT13-0.166W-3.3KΩJ
RR802	Carbon film resistor	NAS1/6332J
RR801	Carbon film resistor	RT13-0.166W-15KΩJ
RR801	Carbon film resistor	NAS1/6153J
R834	Carbon film resistor	RT14-0.25W-1.2KΩJ
R863	Metal film resistor	RJ14 0.25W-360ΩC
R862	Metal film resistor	RJ14-0.25W-2KΩG
R817	Metal oxide film resistor	RY21-0.5W-10ΩJ
R817	Metal oxide film resistor	MOS1/2W100J
R820	Metal oxide film resistor	RY21-0.5W-3.3KΩJ
R820	Metal oxide film resistor	MOS1/2W332J
R819	Metal oxide film resistor	RY21-0.5W-10KΩJ
R819	Metal oxide film resistor	MOS1/2W103J
R824	Metal oxide film resistor	RY21-0.5W-220KΩJ
R824	Metal oxide film resistor	MOS1/2W224J

PARTS LIST (continued)

Position	Parts	Type
R816A	Metal oxide film resistor	RY21-0.5W-1.2MΩJ
R816A	Metal oxide film resistor	MOS1/2W125J
R822	Metal oxide film resistor	RY21-2W-0.15ΩJ
R822	Metal oxide film resistor	MOS2W0R15J
R822A	Metal oxide film resistor	RY21-2W-0.15ΩJ
R822A	Metal oxide film resistor	MOS2W0R15J
R823	Metal oxide film resistor	RY21 2W 47ΩJ
R823	Metal oxide film resistor	MOS2W470J
R815	Metal oxide film resistor	RY21-2W-68KΩJ
R815	Metal oxide film resistor	MOS3W683J
R812	Metal oxide film resistor	RXG6-H2-15W-2.2ΩJ
R808	Thermistor	232266296709(BC96709)
R801	Glass glazed resistor	232224213275
R801	Glass glazed resistor	RI81-0.5W-2.7MΩ
C822	Ceramic capacitor	CT1-63V-06a-2B4-470PFK
C846	Ceramic capacitor	CT1-63V-06a-2B4-100PFK
C848	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
CR802	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C821	Ceramic capacitor	CT1-500V-06c-2B4-220PFK
C831	Ceramic capacitor	CT1-500V-06c-2B4-470PFK
C832	Ceramic capacitor	CT1-500V-06c-2B4-470PFK
C833	Ceramic capacitor	CT1-500V-06c-2B4-470PFK
C805	Ceramic capacitor	CT1-500V-12c-2E4-4700PFP
C806	Ceramic capacitor	CT1-500V-12c-2E4-4700PFP
C807	Ceramic capacitor	CT1-500V-12c-2E4-4700PFP
C808	Ceramic capacitor	CT1-500V-12c-2E4-4700PFP
C890	Ceramic capacitor	CT81-250VAC-2E4-4700PFM
C890A	Ceramic capacitor	CT81-250VAC-2E4-4700PFM
C835	Ceramic capacitor	CT81-2KV-10c-2B4-470PFK
C826	Ceramic capacitor	CT81-2KV-14c-2B4-1500PFK
C803A	Ceramic capacitor	CT81-250VAC-2B4-470PFK
C804A	Ceramic capacitor	CT81-250VAC-2B4-470PFK
C824	Polyester film capacitor	CL21X-50V-1500PFJ
C830	Polyester film capacitor	CL21-100V-0.1μFK
C823	Polyester film capacitor	CL21X-50V-0.1μFJ
C847	Polyester film capacitor	CL21X-50V-0.01μFJ
C802	Polypropylene capacitor	222233550104
CZ802	Polypropylene capacitor	222233550104
C827	Polypropylene capacitor	CBB13-630V-0.01μFH
CR801	Aluminum electrolytic capacitor	CD110-16V-10μFM
C849	Aluminum electrolytic capacitor	CD110X-16V-220μFM
C866	Aluminum electrolytic capacitor	CD110X-16V-220μFM
C868	Aluminum electrolytic capacitor	CD110X-16V-470μFM

PARTS LIST (continued)

Position	Parts	Type
C836	Aluminum electrolytic capacitor	CD110X-25V-470μFM
C844	Aluminum electrolytic capacitor	CD110X-25V-470μFM
C838	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C839	Aluminum electrolytic capacitor	CD110X-25V-2200μFM
C825	Aluminum electrolytic capacitor	CD110X-50V-47μFM
C825A	Aluminum electrolytic capacitor	CD110X-50V-100μFM
C845	Aluminum electrolytic capacitor	CD289H-200V-330μFM
C845	Aluminum electrolytic capacitor	CD293H-200V-330μFM
C845	Aluminum electrolytic capacitor	LLK2D331MHSA
C810	Aluminum electrolytic capacitor	CD293-200V-820μFM
L820	Fixed inductor	TLN2026-11μHK
L838	Fixed inductor	TLN2026-11μHK
L839	Fixed inductor	TLN2026-11μHK
L836	Fixed inductor	TLN3155D-100μHK
L816	Feed-through inductor	TEM2011
L831	Feed-through inductor	TEM2011
L832	Feed-through inductor	TEM2011
L833	Feed-through inductor	TEM2011
L821	Feed-through inductor	TEM2001
L822	Feed-through inductor	TEM2001
L823	Feed-through inductor	TEM2001
T802	Line filter	TRF3196
T801	Line filter	LCL-F11(JU4.757.030)
XP910A	Degaussing coil	XC-34
T862	Switch transformer	BCK-24908L(JUB4.726.103)
VDR801	Diode	2CK75D
VDR801	Diode	1N4148
VD836	Diode	W05Z6.8B
VD826	Diode	W05Z18C
VD827	Diode	W05Z18C
VD829	Diode	MTZJ24C
VD829	Diode	W05Z24C
VD821	Diode	AK03
VD822	Diode	SARS01
VD824	Diode	AU01Z
VD825A	Diode	AU01Z
VD828	Diode	AU01Z
VD831	Diode	2CZRU4Z
VD832	Diode	2CZRU4Z
VD833	Diode	2CZRU4Z
VD835	Diode	2CZRU4AM
VD835	Diode	RU4AM(LF-LI)
VD801	Diode	BY56

PARTS LIST (continued)

Position	Parts	Type
VD802	Diode	BY56
VD803	Diode	BY56
VD804	Diode	BY56
VQ821	Triode	2SC2655-Y
VR801	Triode	2SC2655-Y
V862	Triode	RN1204
VQ822	Triode	RN1204
SR801	Relay	JZC-36F(5)
NQ821	IC	STR-F6626
NQ833	IC	SE140N
N852	IC	LM317T
N862	IC	L7805CV
N862	IC	MC7805CT
N851	IC	L7805CV
N851	IC	MC7805CT
NQ838	IC	LTV-816A
XS801	Power cord	RVVZ-CH2-ZA560-TJC1-3Y
ZP831	Direct-solder fuse	PRF5000F008
ZP832	Direct-solder fuse	PRF5000F008
ZP833	Direct-solder fuse	PRF5000F008
F801	Delay fuse	U/C/T 51S 5A 125V
F803	Delay fuse	U/C/T 51S 1.25A 250V
	Auto jumper	
J844	Jumper	7.5mm
J825	Jumper	7.5mm
J804	Jumper	7.5mm
J805	Jumper	7.5mm
R833	Jumper	7.5mm
J809	Jumper	7.5mm
J843	Jumper	10mm
J817	Jumper	10mm
J808	Jumper	10mm
L835	Jumper	10mm
J842	Jumper	12.5mm
J841	Jumper	12.5mm
J818	Jumper	12.5mm
J807	Jumper	15mm
J820	Jumper	17.5mm
J812	Jumper	17.5mm
J810	Jumper	20mm
J810A	Jumper	20mm
J822	Jumper	20mm
J821	Jumper	25mm

PARTS LIST (continued)

Position	Parts	Type
		3. Parts on AV PCB
RS15	Carbon film resistor	RT13-0.166W-75ΩJ
RS15	Carbon film resistor	NAS1/6750J
RS01	Carbon film resistor	RT13-0.166W-82ΩJ
RS01	Carbon film resistor	NAS1/6820J
RS07	Carbon film resistor	RT13-0.166W-82ΩJ
RS07	Carbon film resistor	NAS1/6820J
RS08	Carbon film resistor	RT13-0.166W-82ΩJ
RS08	Carbon film resistor	NAS1/6820J
RS11	Carbon film resistor	RT13-0.166W-82ΩJ
RS11	Carbon film resistor	NAS1/6820J
RS43	Carbon film resistor	RT13-0.166W-82ΩJ
RS43	Carbon film resistor	NAS1/6820J
RS48	Carbon film resistor	RT13-0.166W-82ΩJ
RS48	Carbon film resistor	NAS1/6820J
RS50	Carbon film resistor	RT13-0.166W-82ΩJ
RS50	Carbon film resistor	NAS1/6820J
RS18	Carbon film resistor	RT13-0.166W-100ΩJ
RS18	Carbon film resistor	NAS1/6101J
RS29	Carbon film resistor	RT13-0.166W-100ΩJ
RS29	Carbon film resistor	NAS1/6101J
RS33	Carbon film resistor	RT13-0.166W-100ΩJ
RS33	Carbon film resistor	NAS1/6101J
RS35	Carbon film resistor	RT13-0.166W-100ΩJ
RS35	Carbon film resistor	NAS1/6101J
RS37	Carbon film resistor	RT13-0.166W-100ΩJ
RS37	Carbon film resistor	NAS1/6101J
RS40	Carbon film resistor	RT13-0.166W-100ΩJ
RS40	Carbon film resistor	NAS1/6101J
RS41	Carbon film resistor	RT13-0.166W-100ΩJ
RS41	Carbon film resistor	NAS1/6101J
RS42	Carbon film resistor	RT13-0.166W-100ΩJ
RS42	Carbon film resistor	NAS1/6101J
RS44	Carbon film resistor	RT13-0.166W 100ΩJ
RS44	Carbon film resistor	NAS1/6101J
RS46	Carbon film resistor	RT13-0.166W-100ΩJ
RS46	Carbon film resistor	NAS1/6101J
RS47	Carbon film resistor	RT13-0.166W-120ΩJ
RS47	Carbon film resistor	NAS1/6121J
RS49	Carbon film resistor	RT13-0.166W-120ΩJ
RS49	Carbon film resistor	NAS1/6121J
RS51	Carbon film resistor	RT13-0.166W-120ΩJ
RS51	Carbon film resistor	NAS1/6121J

PARTS LIST (continued)

Position	Parts	Type
RS19	Carbon film resistor	RT13-0.166W-470ΩJ
RS19	Carbon film resistor	NAS1/6471J
RS21	Carbon film resistor	RT13-0.166W-470ΩJ
RS21	Carbon film resistor	NAS1/6471J
RS34	Carbon film resistor	RT13-0.166W-1KΩJ
RS34	Carbon film resistor	NAS1/6102J
RS36	Carbon film resistor	RT13-0.166W-1KΩJ
RS36	Carbon film resistor	NAS1/6102J
RS38	Carbon film resistor	RT13-0.166W-1KΩJ
RS38	Carbon film resistor	NAS1/6102J
RS39	Carbon film resistor	RT13-0.166W-1KΩJ
RS39	Carbon film resistor	NAS1/6102J
RS17	Carbon film resistor	RT13-0.166W-1.5KΩJ
RS17	Carbon film resistor	NAS1/6152J
RS23	Carbon film resistor	RT13-0.166W-1.5KΩJ
RS23	Carbon film resistor	NAS1/6152J
RS28	Carbon film resistor	RT13-0.166W-1.5KΩJ
RS28	Carbon film resistor	NAS1/6152J
RS62	Carbon film resistor	RT13-0.166W-10KΩJ
RS62	Carbon film resistor	NAS1/6103J
RS63	Carbon film resistor	RT13-0.166W-10KΩJ
RS63	Carbon film resistor	NAS1/6103J
RS24	Carbon film resistor	RT13-0.166W-33KΩJ
RS24	Carbon film resistor	NAS1/6333J
RS26	Carbon film resistor	RT13-0.166W-33KΩJ
RS26	Carbon film resistor	NAS1/6333J
RS25	Carbon film resistor	RT13-0.166W-47KΩJ
RS25	Carbon film resistor	NAS1/6473J
RS27	Carbon film resistor	RT13-0.166W-47KΩJ
RS27	Carbon film resistor	NAS1/6473J
RS02	Carbon film resistor	RT13-0.166W-100KΩJ
RS02	Carbon film resistor	NAS1/6104J
RS03	Carbon film resistor	RT13-0.166W-100KΩJ
RS03	Carbon film resistor	NAS1/6104J
RS09	Carbon film resistor	RT13-0.166W-100KΩJ
RS09	Carbon film resistor	NAS1/6104J
RS10	Carbon film resistor	RT13-0.166W-100KΩJ
RS10	Carbon film resistor	NAS1/6104J
RS20	Carbon film resistor	RT13-0.166W-100KΩJ
RS20	Carbon film resistor	NAS1/6104J
RS22	Carbon film resistor	RT13-0.166W-100KΩJ
RS22	Carbon film resistor	NAS1/6104J
CS21	Ceramic capacitor	CT1-63V-08a-2F4-0.01μFZ

PARTS LIST (continued)

Position	Parts	Type
CS23	Ceramic capacitor	CT1-63V-08a-2F4-0.01μFZ
CS34	Ceramic capacitor	CT1-63V-08a-2F4-0.01μFZ
CS14	Aluminum electrolytic capacitor	CL21X-50V-0.01μFJ
CS08	Aluminum electrolytic capacitor	CD110-50V-1μFM
CS09	Aluminum electrolytic capacitor	CD110-50V-1μFM
CS31	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS15	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS16	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS17	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS18	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS19	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS20	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS29	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS33	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS35	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS36	Aluminum electrolytic capacitor	CD110-16V-10μFM
CS06	Aluminum electrolytic capacitor	CD110-16V-47μFM
CS22	Aluminum electrolytic capacitor	CD110-16V-47μFM
CS24	Aluminum electrolytic capacitor	CD110-16V-47μFM
CS37	Aluminum electrolytic capacitor	CD110-16V-47μFM
CS07	Aluminum electrolytic capacitor	CD110-16V-47μFM
VS05	Diode	2CK75D
VS05	Diode	1N4148
VS01	Triode	2SC1815-Y
VS01	Triode	3DG1815-Y
VS01	Triode	2PC1815GR
VS02	Triode	2SC1815-Y
VS02	Triode	3DG1815-Y
VS02	Triode	2PC1815GR
VS07	Triode	2SC1815-Y
VS07	Triode	3DG1815-Y
VS07	Triode	2PC1815GR
VS08	Triode	RN1204
VS09	Triode	RN1204
DS01	IC	TA1219AN
DS02	IC	TA78L009AP
XS01	AV terminals	AVW-33-6R-1S-A
XS02	AV terminals	AVW-23-3R
	Auto jumper	
CS04	Jumper	5mm
005	Jumper	5mm
LS08	Jumper	5mm
LS09	Jumper	5mm

PARTS LIST (continued)

Position	Parts	Type
LS10	Jumper	5mm
LS11	Jumper	5mm
LS01	Jumper	5mm
LS02	Jumper	5mm
LS03	Jumper	5mm
LS07	Jumper	5mm
LS16	Jumper	5mm
LS17	Jumper	5mm
LS18	Jumper	5mm
006	Jumper	7.5mm
		4. Parts on Stereo PCB
R108A	Carbon film resistor	RT13-0.166W-10ΩJ
R108A	Carbon film resistor	NAS1/6100J
R105A	Chip resistor	CR1/10270JV
R105A	Chip resistor	RC05K270JT
R106A	Chip resistor	CR1/10470JV
R106A	Chip resistor	RC05K470JT
RP15	Chip resistor	CR1/10470JV
RP15	Chip resistor	RC05K470JT
R648M	Chip resistor	CR1/10101JV
R648M	Chip resistor	RC05K101JT
R649M	Chip resistor	CR1/10101JV
R649M	Chip resistor	RC05K101JT
R653M	Chip resistor	CR1/10101JV
R653M	Chip resistor	RC05K101JT
R654M	Chip resistor	CR1/10101JV
R654M	Chip resistor	RC05K101JT
RP13	Chip resistor	CR1/10101JV
RP13	Chip resistor	RC05K101JT
RP16	Chip resistor	CR1/10181JV
RP16	Chip resistor	RC05K181JT
R104A	Chip resistor	CR1/10102JV
R104A	Chip resistor	RC05K102JT
R107A	Chip resistor	CR1/10122JV
R107A	Chip resistor	RC05K122JT
R103A	Chip resistor	CR1/10182JV
R103A	Chip resistor	RC05K182JT
R102A	Chip resistor	CR1/10472JV
R102A	Chip resistor	RC05K472JT
R650M	Chip resistor	CR1/10103JV
R650M	Chip resistor	RC05K103JT
R651M	Chip resistor	CR1/10103JV
R651M	Chip resistor	RC05K103JT

PARTS LIST (continued)

Position	Parts	Type
R652M	Chip resistor	CR1/10103JV
R652M	Chip resistor	RC05K103JT
RP14	Chip resistor	CR1/10103JV
RP14	Chip resistor	RC05K103JT
RP17	Chip resistor	CR1/10683JV
RP17	Chip resistor	RC05K683JT
RP18	Chip resistor	CR1/10683JV
RP18	Chip resistor	RC05K683JT
RP19	Chip resistor	CR1/10225JV
RP19	Chip resistor	RC05K225JT
C680M	Chip capacitor	CRM40CK010C50PT
C680M	Chip capacitor	0805CG1R0C500NT
C681M	Chip capacitor	GRM40CH100D50PT
C681M	Chip capacitor	0805CG100D500NT
CP07	Chip capacitor	0805CG330J500NT
CP08	Chip capacitor	0805CG390J500NT
C678M	Chip capacitor	0805CG560J500NT
C677M	Chip capacitor	0805CG560J500NT
C652M	Chip capacitor	0805CG221J500NT
C651M	Chip capacitor	0805CG471J500NT
C674M	Chip capacitor	0805CG471J500NT
C662M	Chip capacitor	0805CG471J500NT
C655M	Chip capacitor	0805CG102J500NT
C658M	Chip capacitor	0805CG102J500NT
C650M	Chip capacitor	ECUV1H152KBN
C650M	Chip capacitor	0805CG152K500NT
C663M	Chip capacitor	ECUV1H152KBN
C663M	Chip capacitor	0805CG152K500NT
C675M	Chip capacitor	ECUV1H152KBN
C675M	Chip capacitor	0805CG152K500NT
CP15	Chip capacitor	ECUV1H152KBN
CP15	Chip capacitor	0805CG152K500NT
C102A	Chip capacitor	ECUV1H472KBG
C102A	Chip capacitor	0805CG472K500NT
C106A	Chip capacitor	0805B103K500NT
C107A	Chip capacitor	0805B103K500NT
C108A	Chip capacitor	0805B103K500NT
CP06	Chip capacitor	0805B103K500NT
CP04	Chip capacitor	0805B103K500NT
CP13	Chip capacitor	0805B103K500NT
C654M	Chip capacitor	0805B103K500NT
CP05	Chip capacitor	0805B104K500NT
C667M	Chip capacitor	0805B104K500NT

PARTS LIST (continued)

Position	Parts	Type
C673M	Chip capacitor	0805B104K500NT
C684M	Chip capacitor	0805B104K500NT
CP03	Polyester film capacitor	CL21X-50V-0.1μFJ
CP14	Polyester film capacitor	CL21X 50V 0.22μFJ
C656M	Aluminum electrolytic capacitor	CD110-50V-1μFM
C657M	Aluminum electrolytic capacitor	CD110-50V-1μFM
C666M	Aluminum electrolytic capacitor	CD110-16V-3.3μFM
C653M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C661M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C665M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C670M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C671M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C672M	Aluminum electrolytic capacitor	CD110-16V-10μFM
C659M	Aluminum electrolytic capacitor	CD110-16V-22μFM
C660M	Aluminum electrolytic capacitor	CD110-16V-22μFM
CP12	Aluminum electrolytic capacitor	CD110-16V-47μFM
C649M	Aluminum electrolytic capacitor	CD110-16V-100μFM
C664M	Aluminum electrolytic capacitor	CD110-16V-100μFM
C676M	Aluminum electrolytic capacitor	CD110-16V-100μFM
C683M	Aluminum electrolytic capacitor	CD110-16V-100μFM
C685M	Aluminum electrolytic capacitor	CD110-16V-100μFM
L101	Fixed inductor	LGB0606-1μHJ
LP02	Fixed inductor	LGB0606-22μHJ
L651M	Fixed inductor	LGB0606-22μHJ
L108	Fixed inductor	LGB0606-68μHJ
L650M	Fixed inductor	LGB0606-100μHJ
L652M	Fixed inductor	LGB0606-100μHJ
VD650M	Diode	W05Z4.3A
V650M	Triode	3DG1815-Y
V650M	Triode	2SC1815-Y
V650M	Triode	2PC1815GR
V101	Triode	3DG388ATM
V101	Triode	2SC388ATM
V101	Triode	KSC388C-Y
L110	IF transformer	ST6037
Z102	Surface acoustic wave filter	M3953M
Z103	Surface acoustic wave filter	M9352M
NQ102	IC	TDA9808/V4
N606M	IC	MSP3440C-PO-B8-V3
Z650M	Crystal oscillator	JA18A1-18.432MHz
	Manual jumper	
W002M	Jumper	5mm
W001M	Jumper	7.5mm

PARTS LIST (continued)

Position	Parts	Type
W003M	Jumper	7.5mm
W004M	Jumper	12.5mm
		Parts on CRT RGB PCB
RY01A	Carbon film resistor	RT14-0.25W-330ΩJ
RY01A	Carbon film resistor	NAS1/4331J
RY02A	Carbon film resistor	RT14-0.25W-330ΩJ
RY02A	Carbon film resistor	NAS1/4331J
RY03A	Carbon film resistor	RT14-0.25W-330ΩJ
RY03A	Carbon film resistor	NAS1/4331J
RY14	Carbon film resistor	RT14-0.25W-560ΩJ
RY14	Carbon film resistor	NAS1/4561J
RY09A	Carbon film resistor	RT14-0.25W-1KΩJ
RY09A	Carbon film resistor	NAS1/4120J
RY13	Carbon film resistor	RT14-0.25W-3KΩJ
RY13	Carbon film resistor	NAS1/4302J
RY08	Carbon film resistor	RT14-0.25W-10KΩJ
RY08	Carbon film resistor	NAS1/4103J
RY13A	Carbon film resistor	RT14-0.25W-10KΩJ
RY13A	Carbon film resistor	NAS1/4103J
RY14A	Carbon film resistor	RT14-0.25W-10KΩJ
RY14A	Carbon film resistor	NAS1/4103J
RY09	Carbon film resistor	RT14-0.25W-2.7KΩJ
RY09	Carbon film resistor	NAS1/4272J
RY10	Carbon film resistor	RT14-0.25W-560KΩJ
RY10	Carbon film resistor	NAS1/4563J
RY06	Metal film resistor	RJ14-0.25W-10MΩJ
RY07	Metal oxide film resistor	RY21-1W-100KΩJ
RY01	Glass glazed resistor	RI40-0.5W-1.5KΩK
RY02	Glass glazed resistor	RI40-0.5W-1.5KΩK
RY03	Glass glazed resistor	RI40-0.5W-1.5KΩK
RY04	Metal oxide film resistor	RY21-1W-68ΩJ
RY04	Metal oxide film resistor	MOS1W680J
RY04A	Fuse resistor	RF10-0.5W-47ΩJ
RY12	Fuse resistor	RF10-2W-2.7ΩJ
CY04	Ceramic capacitor	CT1-500V-14c-2B4-4700PFK
CY02	Polyester film capacitor	CL21X-250V-0.1μFJ
CY05	Polypropylene capacitor	CBB81-1.6KV-2200PFJ
CY14	Aluminum electrolytic capacitor	CD110X-25V-470μFM
CY01	Aluminum electrolytic capacitor	CD110X-250V-10μFM
CY01	Aluminum electrolytic capacitor	UVR2E100MPAANH
CY01A	Aluminum electrolytic capacitor	CD110X-250V-10μFM
CY01A	Aluminum electrolytic capacitor	UVR2E100MPAANH
CY03	Aluminum electrolytic capacitor	CD110X-250V-10μFM

PARTS LIST (continued)

Position	Parts	Type
CY03	Aluminum electrolytic capacitor	UVR2E100MPAANH
VDY11	Diode	2CK75D
VDY11	Diode	1N4148
VDY12	Diode	2CK75D
VDY12	Diode	1N4148
VDY13	Diode	2CK75D
VDY13	Diode	1N4148
VDY14	Diode	2CK75D
VDY14	Diode	1N4148
VDY01A	Diode	BAV21
VDY02A	Diode	BAV21
VDY03A	Diode	BAV21
VDY30	Diode	W05Z5.1B
VDY01	Diode	2CZ5295G
VY14	Triode	2SA1015-Y
VY14	Triode	3CG1015-Y
VY14	Triode	2PA1015GR
VY01	Triode	2SC1815-Y
VY01	Triode	3DG1815-Y
VY01	Triode	2PC1815GR
VY02	Triode	2SC2482
VY02	Triode	3DG2482
NY01	IC	TDA6108JF
SY01	GZS CRT socket	GZS10-2-108A
AY01	34" CRT	A80LTM350X10
		Manual jumper
WY02	Jumper	7.5mm
	Auto jumper	
WY04	Jumper	7.5mm
WY12	Jumper	7.5mm
RY15	Jumper	10mm
RY05	Jumper	15mm
RY11	Jumper	15mm
		5. Parts on Control Buttons PCB
RK52	Carbon film resistor	RT13-0.166W-6.2KΩJ
RK52	Carbon film resistor	NAS1/6622J
RK56	Carbon film resistor	RT13-0.166W-6.2KΩJ
RK56	Carbon film resistor	NAS1/6622J
RK53	Carbon film resistor	RT13-0.166W-10KΩJ
RK53	Carbon film resistor	NAS1/6103J
RK55	Carbon film resistor	RT13-0.166W-18KΩJ
RK55	Carbon film resistor	NAS1/6183J
KK01	Feather touch switch	KA1L6×5×7.5-22

PARTS LIST (continued)

Position	Parts	Type
KK02	Feather touch switch	KA1L6×5×7.5-22
KK03	Feather touch switch	KA1L6×5×7.5-22
KK04	Feather touch switch	KA1L6×5×7.5-22
KK05	Feather touch switch	KA1L6×5×7.5-22
KK06	Feather touch switch	KA1L6×5×7.5-22
		6. Parts on Front-set AV PCB
RV03	Carbon film resistor	RT13-0.166W-82ΩJ
RV03	Carbon film resistor	NAS1/6820J
RV01	Carbon film resistor	RT13-0.166W-100KΩJ
RV01	Carbon film resistor	NAS1/6104J
RV02	Carbon film resistor	RT13-0.166W-100KΩJ
RV02	Carbon film resistor	NAS1/6104J
XE01	AV terminals	AV-1-3PE
		7. Parts on Remote Control PCB
RK07	Carbon film resistor	RT13-0.166W-330ΩJ
RK07	Carbon film resistor	NAS1/6331J
RK08	Carbon film resistor	RT13 0.166W-33KΩJ
RK08	Carbon film resistor	NAS1/6333J
CK08	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CK07	Aluminum electrolytic capacitor	CD110-16V-47μFM
NK07	IC	HS0038
NK07	IC	HS0038A
NK07	IC	HS0038A2
		8. Parts on Indicator PCB
RK09	Carbon film resistor	RT13-0.166W-1KΩJ
RK09	Carbon film resistor	NAS1/6102J
VDK03	Diode	FG5RD
		9. Parts on Power Switch PCB
RS001	Carbon film resistor	RT13-0.166W-13KΩJ
RS001	Carbon film resistor	NAS1/6133J
KS001	Feather touch switch	KA1W6×5-41
		10. Add a dynamic focus PCB.
CD01	Polypropylene capacitor	CF99M4Z102KB
CD01	Polypropylene capacitor	CDF1K
LD02	Fixed inductor	TLN3155D-100ūHK
TD01	Dynamic focus transformer	TLN2168
LD01	Dynamic focus width coil	TLN2184A
		When using Samsung A80QEA891X001 CRT, change the
		parts on base of those when using Toshiba CRT.
		1. Remove the following parts from the main PCB.

PARTS LIST (continued)

Position	Parts	Type
R457	Carbon film resistor	RT13-0.166W-10KΩJ
R457	Carbon film resistor	NAS1/6103J
R477	Metal oxide film resistor	RY21-1W-10KΩJ
R477	Metal oxide film resistor	MOS1W103J
C437A	Ceramic capacitor	CT81-2KV-16c-2R4-2200PFK
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C442	Polypropylene capacitor	CBB13-400V-0.47μFJ
C439A	Ceramic capacitor	CT81-2KV-16c-2B4-1800PFK
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
L433A	Fixed inductor	LGT-100uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC70C(JU4.799.024-6)
		Add the following parts to the main PCB.
R457	Carbon film resistor	RT13-0.166W-6.8KΩJ
R457	Carbon film resistor	NAS1/6103J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
C440	Polypropylene capacitor	CBB13-400V-0.3μFJ
C442	Polypropylene capacitor	CBB13-400V-0.33μFJ
C437	Polypropylene capacitor	CBB81-1.6KV-0.015μFH
C439	Polypropylene capacitor	CBB13-630V-0.015μFH
L433A	Fixed inductor	LGT-150uH-K
L433	Horizontal linear coil	HXT20
T402	FBT	BSC73J
		2. Remove the following parts from the CRT RGB PCB.
SY01	GZS CRT socket	GZS10-2-108A
AY01	34″ CRT	A80LTM350X10
WY02	Jumper	7.5mm
		Add the following parts to the CRT RGB PCB.
SY01	GZS CRT socket	GZS10-301-G2
SY01	GZS CRT socket	GZS10-301-2
AY01	34″ CRT	A80QEA891X001
		3. Remove the following parts from the power PCB.
R808	Thermistor	232266296709(PH96709)
XP910A	Degaussing coil	XC-34
		Add the following parts to the power PCB.
R808	Thermistor	T563-B60-A110(B59563-760-B110)
XP910A	Degaussing coil	XC-34 (With A)
		4. Remove the following parts from the dynamic focus PCB.
CD01	Polypropylene capacitor	CF99M4Z102KB
CD01	Polypropylene capacitor	CDF1K

PARTS LIST (continued)

Position	Parts	Type
		Circuit Parts List for GT2415
		GT2415's circuit parts list changes as follows on basis of that of GT3215.
		1. Change installing code of the main PCB to JUC6.672.804.
		Change installing code of the speakers to JUC6.116.471.
		Change parts on the main PCB as follows.
		Remove the following parts from the main PCB.
R458A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R458A	Carbon film resistor	NAS1/6472J
R459A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R459A	Carbon film resistor	NAS1/6472J
R457	Carbon film resistor	RT13-0.166W-10KΩJ
R457	Carbon film resistor	NAS1/6103J
R465	Carbon film resistor	RT13-0.166W-10KΩJ
R465	Carbon film resistor	NAS1/6103J
R039	Carbon film resistor	RT13-0.166W-22KΩJ
R039	Carbon film resistor	NAS1/6223J
R477	Metal oxide film resistor	RY21-1W-10KΩJ
R477	Metal oxide film resistor	MOS1W103J
R409	Metal oxide film resistor	RY21-2W-150KΩJ
R409	Metal oxide film resistor	MOS2W151J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R405	Metal oxide film resistor	RY21-2W-1ΩJ
R405	Metal oxide film resistor	MOS2W1R0J
R407	Metal oxide film resistor	RY21-0.5W-1.2ΩJ
R407	Metal oxide film resistor	MOS1/2W1R2J
R437	Metal oxide film resistor	RY21-1W-33ΩJ
R437	Metal oxide film resistor	MOS1W330J
C436	Ceramic capacitor	CT81-2KV-10e-2B4-560PFK
C439A	Ceramic capacitor	CT81-2KV-16e-2B4-1800PFK
C437A	Ceramic capacitor	CT81-2KV-16e-2R4-2200PFK
C442	Polypropylene capacitor	CBB13-400V-0.47μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
L433A	Fixed inductor	LGT 100uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC70C(JU4.799.024-6)
BC603	Electric speaker	YDT813-C6-10W-8Ω
BC604	Electric speaker	YDT813-C6-10W-8Ω
		Add the following parts to the main PCB.
R465	Carbon film resistor	RT13-0.166W-11KΩJ

PARTS LIST (continued)

Position	Parts	Type
R465	Carbon film resistor	NAS1/6113J
R405	Metal oxide film resistor	RY21-2W-2.2ΩJ
R405	Metal oxide film resistor	MOS2W2R2J
R039	Carbon film resistor	RT13-0.166W-10KΩJ
R039	Carbon film resistor	NAS1/6103J
R437	Metal oxide film resistor	RY21-1W-68ΩJ
R437	Metal oxide film resistor	MOS1W680J
BC601	Electric speaker	YDT613-A1-10W-8Ω
BC602	Electric speaker	YDT613-A1-10W-8Ω
R409	Metal oxide film resistor	RY21-2W-220ΩJ
R409	Metal oxide film resistor	MOS2W221J
		2. Change installing code of the power PCB to JUC6.672.803.
		Change parts on the power PCB as follows.
		Remove the following parts from the power PCB.
C810	Aluminum electrolytic capacitor	CD293-200V-820μFM
VD801	Diode	BY56
VD802	Diode	BY56
VD803	Diode	BY56
VD804	Diode	BY56
XP910A	Degaussing coil	XC-34
XS801	Power cord	RVVZ-CH2-ZA560-TJC1-3Y
		Add the following parts to the power PCB.
C810	Aluminum electrolytic capacitor	CD289-200V-560μFM
VD801	Diode	Z5A6
VD802	Diode	Z5A6
VD803	Diode	Z5A6
VD804	Diode	Z5A6
XS801	Power cord	RVVZ-CH2-W260-TJC1-3Y
XP910A	Degaussing coil	XC-25
		3. The AV PCB is the same as that of GT3215.
		4. The stereo PCB is the same as that of GT3215.
		5. Change installing code of the CRT RGB PCB to JUC6.672.80
		Change parts on the CRT RGB PCB as follows.
		Remove the following parts from the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-2.7ΩJ
SY01	GZS CRT socket	GZS10-2-108A
AY01	34" CRT	A80LTM350X10
	Manual jumper	
WY02	Jumper	7.5mm
		6. Change installing code of the control buttons PCB to JUC6.672.72
		Change parts on the control buttons PCB as follows..
		Remove the following parts from the control buttons PCB.
KK01	Feather touch switch	KA11.6×5×7.5-22

PARTS LIST (continued)

Position	Parts	Type
KK02	Feather touch switch	KA1L6×5×7.5-22
KK03	Feather touch switch	KA1L6×5×7.5-22
KK04	Feather touch switch	KA1L6×5×7.5-22
KK05	Feather touch switch	KA1L6×5×7.5-22
KK06	Feather touch switch	KA1L6×5×7.5-22
		Add the following parts to the control buttons PCB.
KK01	Feather touch switch	KA1W6×5-41
KK02	Feather touch switch	KA1W6×5-41
KK03	Feather touch switch	KA1W6×5-41
KK04	Feather touch switch	KA1W6×5-41
KK05	Feather touch switch	KA1W6×5-41
KK06	Feather touch switch	KA1W6×5-41
		7. Change installing code of the front-set AV PCB to JUC6.672.725.
		Change parts on the front-set AV PCB as follows.
		Add the following parts to the front-set AV PCB.
WV01	Jumper	7.5mm
WV02	Jumper	10mm
		8. The remote control PCB is the same as that of GT3215.
		Change installing code of the remote control PCB to JUC6.672.727.
		9. The indicator PCB is the same as that of GT3215.
		Change installing code of the indicator PCB to JUC6.672.726.
		10. The power switch PCB is the same as that of GT3215.
		Change installing code of the power switch PCB to JUC6.672.771.
		11. Parts related to the CRT change as follows.
		1) When using LG CRT, the parts change as follows.
		Add the following parts to the main PCB.
R458A	Carbon film resistor	RT13-0.166W-9.1KΩ
R458A	Carbon film resistor	NAS1/6912J
R459A	Carbon film resistor	RT13-0.166W-9.1KΩG
R459A	Carbon film resistor	NAS1/6912J
R457	Carbon film resistor	RT13-0.166W-7.5KΩJ
R457	Carbon film resistor	NAS1/6752J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W 1.8ΩJ
R407	Metal oxide film resistor	MOS1/2W1R8J
C436	Ceramic capacitor	CT81-2KV-14c-2B4-1500PFJ
C439A	Ceramic capacitor	CT81-2KV-14c-2B4-1800PFK
C442	Polypropylene capacitor	CBB13-400V-0.27μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH

PARTS LIST (continued)

Position	Parts	Type
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
L433A	Horizontal amplitude inductor	LGT-100uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC68E
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-2.2ΩJ
SY01	GZS CRT socket	GZS10-2-AC3
AY01	25″ CRT	A59QDC259X54
		2) When using Samsung A59QDF891X002 CRT, the parts
		change as follows.
		Add the following parts to the main PCB.
R458A	Carbon film resistor	RT13-0.166W-7.5KΩJ
R458A	Carbon film resistor	NAS1/6752J
R459A	Carbon film resistor	RT13-0.166W-7.5KΩJ
R459A	Carbon film resistor	NAS1/6752J
R457	Carbon film resistor	RT13-0.166W-10KΩJ
R457	Carbon film resistor	NAS1/6103J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-1.8ΩJ
R407	Metal oxide film resistor	MOS1/2W1R8J
C436	Ceramic capacitor	CT81-2KV-14c-2B4-1200PFK
C439A	Ceramic capacitor	CT81-2KV-14c-2B4-1800PFK
C442	Polypropylene capacitor	CBB13-400V-0.39μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.015μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
L433A	Horizontal amplitude inductor	LGT-150uH-K
L433	Horizontal linear coil	HXT25(JU4.756.038)
T402	FBT	BSC68E
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-2.2ΩJ
SY01	GZS CRT socket	GZS10-2-AC3
AY01	25″ CRT	A59QDF891X002
		Remove the dynamic focus PCB.

PARTS LIST (continued)

Position	Parts	Type
		Circuit Parts List for GT2715
		GT2715's circuit parts list changes as follows on basis of that of GT3215.
		1. Change installing code of the main PCB to JUC6.672.804.
		Change installing code of the speakers to JUC6.116.496
		Change the parts as follows.
		Remove the following parts from the main PCB.
R458A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R458A	Carbon film resistor	NAS1/6472J
R459A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R459A	Carbon film resistor	NAS1/6472J
R457	Carbon film resistor	RT13-0.166W-10KΩJ
R457	Carbon film resistor	NAS1/6103J
R465	Carbon film resistor	RT13-0.166W-10KΩJ
R465	Carbon film resistor	NAS1/6103J
R039	Carbon film resistor	RT13-0.166W-22KΩJ
R039	Carbon film resistor	NAS1/6223J
R477	Metal oxide film resistor	RY21-1W-10KΩJ
R477	Metal oxide film resistor	MOS1W103J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R409	Metal oxide film resistor	RY21-2W-150ΩJ
R409	Metal oxide film resistor	MOS1/2W151J
R407	Metal oxide film resistor	RY21-0.5W-1.2ΩJ
R407	Metal oxide film resistor	MOS1/2W1R2J
R405	Metal oxide film resistor	RY21-2W-1ΩJ
R405	Metal oxide film resistor	MOS1/2W1R0J
C436	Ceramic capacitor	CT81-2KV-10c-2B4-560PFK
C439A	Ceramic capacitor	CT81-2KV-16c-2B4-1800PFK
C437A	Ceramic capacitor	CT81-2KV-16c-2R4-2200PFK
C442	Polypropylene capacitor	CBB13-400V-0.47μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFH
L433A	Fixed inductor	LGT-100uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC70C(JU4.799.024-6)
		Add the following parts to the main PCB.
R465	Carbon film resistor	RT13-2W-11KΩJ
R465	Carbon film resistor	NAS1/6113J
R409	Metal oxide film resistor	RY21-2W-220ΩJ
R409	Metal oxide film resistor	NAS1/6113J
R039	Carbon film resistor	RT13-0.166W-10KΩJ

PARTS LIST (continued)

Position	Parts	Type
R039	Carbon film resistor	NAS1/6103J
R405	Metal oxide film resistor	
R405	Metal oxide film resistor	
		2. Change installing code of the power PCB to JUC6.672.803.
		Change parts on the power PCB as follows.
		Remove the following parts from the power PCB.
R834	Carbon film resistor	RT14-0.25W-1.2KΩJ
R834	Carbon film resistor	NAS1/6122J
VD801	Diode	BY56
VD802	Diode	BY56
VD803	Diode	BY56
VD804	Diode	BY56
T862	Switch transformer	BCK-24908L(JUB4.726.102)
XS801	Power cord	RVVZ-CH2-ZA560-TJC1-3Y
XP910A	Degaussing coil	XC-34
NQ833	IC	SE140N
		Add the following parts to the power PCB.
VD801	Diode	Z5A6
VD802	Diode	Z5A6
VD803	Diode	Z5A6
VD804	Diode	Z5A6
T862	Switch transformer	BCK-24907L(JUB4.726.103)
XS801	Power cord	RVVZ-CH2-W260-TJC1-3Y
XP910A	Degaussing coil	XC-29
NQ833	IC	SE135N
	Manual jumper	
R834	Jumper	10mm
		3. The AV PCB is the same as that of GT3215.
		4. The stereo PCB is the same as that of GT3215.
		5. Change installing code of the CRT RGB PCB to JUC6.672.805.
		Change parts on the CRT RGB PCB as follows.
		Remove the following parts from the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-2.7ΩJ
SY01	GZS CRT socket	GZS10-2-108A
AY01	34" CRT	A80LTM350X10
	Auto jumper	
WY02	Jumper	7.5mm
		6. Change installing code of the control buttons PCB to JUC6.672.724.
		Change parts on the control buttons PCB as follows.
		Remove the following parts from the control buttons PCB.
KK01	Feather touch switch	KA1L6×5×7.5-22
KK02	Feather touch switch	KA1L6×5×7.5-22
KK03	Feather touch switch	KA1L6×5×7.5-22

PARTS LIST (continued)

Position	Parts	Type
KK04	Feather touch switch	KA1L6×5×7.5-22
KK05	Feather touch switch	KA1L6×5×7.5-22
KK06	Feather touch switch	KA1L6×5×7.5-22
		Add the following parts to the control buttons PCB.
KK01	Feather touch switch	KA1W6×5-41
KK02	Feather touch switch	KA1W6×5-41
KK03	Feather touch switch	KA1W6×5-41
KK04	Feather touch switch	KA1W6×5-41
KK05	Feather touch switch	KA1W6×5-41
KK06	Feather touch switch	KA1W6×5-41
		7. Change installing code of the front-set AV PCB to JUC6.672.725.
		Change parts on the front-set AV PCB as follows.
		Add the following parts to the front-set AV PCB.
WV01	Jumper	7.5mm
WV02	Jumper	10mm
		8. The remote control PCB is the same as that of GT3215.
		Change installing code of the remote control PCB to JUC6.672.727.
		9. The indicator PCB is the same as that of GT3215.
		Change installing code of the indicator PCB to JUC6.672.726.
		10. The power switch PCB is the same as that of GT3215.
		Change installing code of the power switch PCB to JUC6.672.771.
		11. Parts related to the CRT change as follows.
		1) When using Changsha LG CRT or Korea LG CRT, the parts
		change as follows.
		Add the following parts to the main PCB.
R458A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R458A	Carbon film resistor	NAS1/6562J
R459A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R459A	Carbon film resistor	NAS1/6562J
R457	Carbon film resistor	RT13-0.166W-8.2KΩJ
R457	Carbon film resistor	NAS1/6822J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-2.2ΩJ
R407	Metal oxide film resistor	MOS1/2W2R2J
C436	Ceramic capacitor	CT81-2KV-14c-2B4-1200PFK
C436A	Ceramic capacitor	CT81-2KV-08c-2B4-220PFK
C439A	Ceramic capacitor	CT81-2KV-14c-2B4-1800PFK
C442	Polypropylene capacitor	CBB13-400V-0.39μFJ
C440	Polypropylene capacitor	CBB13-400V-0.36μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH

PARTS LIST (continued)

Position	Parts	Type
C437	Polypropylene capacitor	CBB81-1.6KV-0.015μFH
L433A	Horizontal amplitude inductor	LGT-50uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC73H
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-1.8ΩJ
SY01	GZS CRT socket	GZS10-301-G2
SY01	GZS CRT socket	GZS10-301-2
AY01	29″ CRT	A68QCU259X550
AY01	29″ CRT	A68QCU259X55
		2) When using Samsung A68QCP891X001 CRT, the parts
		change as follows.
		Add the following parts to the main PCB.
R458A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R458A	Carbon film resistor	NAS1/6562J
R459A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R459A	Carbon film resistor	NAS1/6562J
R457	Carbon film resistor	RT13-0.166W-8.2KΩJ
R457	Carbon film resistor	NAS1/6822J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R407	Metal oxide film resistor	MOS1/2W1R5J
C436	Ceramic capacitor	CT81-2KV-10e-2B4-470PFJ
C439A	Ceramic capacitor	CT81-2KV-12e-2B4-820PFK
C442	Polypropylene capacitor	CBB13-400V-0.39μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.022μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.015μFH
L433A	Horizontal amplitude inductor	LGT-50uH-K
L433	Horizontal linear coil	HXT25(JU4.756.038)
T402	FBT	BSC73H
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-1.0ΩJ
SY01	GZS CRT socket	GZS10-301-G2
SY01	GZS CRT socket	GZS10-301-2
AY01	29″ CRT	A68QCP891X001
		3) When using Orion A68QDL080X013 (B) CRT, the parts
		change as follows.
		Add the following parts to the main PCB.

PARTS LIST (continued)

Position	Parts	Type
R458A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R458A	Carbon film resistor	NAS1/6562J
R459A	Carbon film resistor	RT13-0.166W-5.6KΩJ
R459A	Carbon film resistor	NAS1/6562J
R457	Carbon film resistor	RT13-0.166W-8.2KΩJ
R457	Carbon film resistor	NAS1/6822J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R407	Metal oxide film resistor	MOS1/2W1R5J
C437A	Ceramic capacitor	CT81-2KV-14e-2B4-820PFJ
C439A	Ceramic capacitor	CT81-2KV-14e-2B4-820PFJ
C436	Ceramic capacitor	CT81-2KV-12e-2B4-1000PFJ
C436A	Ceramic capacitor	CT81-2KV-12e-2B4-1000PFJ
C442	Polypropylene capacitor	CBB13-400V-0.36μFJ
C440	Polypropylene capacitor	CBB13-400V-0.33μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.012μFJ
L433A	Jumper	10mm
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC73H
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-2.2ΩJ
SY01	GZS CRT socket	GZS10-301-G2
SY01	GZS CRT socket	GZS10-301-2
AY01	29″ CRT	A68QDL080X013(B)
		4) When using Toshiba CRT, the parts change as follows.
		Add the following parts to the main PCB.
R458A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R458A	Carbon film resistor	NAS1/6472J
R459A	Carbon film resistor	RT13-0.166W-4.7KΩJ
R459A	Carbon film resistor	NAS1/6472J
R457	Carbon film resistor	RT13-0.166W-6.8KΩJ
R457	Carbon film resistor	NAS1/6682J
R477	Metal oxide film resistor	RY21-1W-4.7KΩJ
R477	Metal oxide film resistor	MOS1W472J
R408	Metal oxide film resistor	RY21-0.5W-1.5ΩJ
R408	Metal oxide film resistor	MOS1/2W1R5J
R407	Metal oxide film resistor	RY21-0.5W-2.2ΩJ
R407	Metal oxide film resistor	MOS1/2W2R2J
C436	Ceramic capacitor	CT81-2KV-14e-2B4-560PFK

PARTS LIST (continued)

Position	Parts	Type
C436A	Ceramic capacitor	CT81-2KV-08c-2B4-220PFK
C442	Polypropylene capacitor	CBB13-400V-0.39μFJ
C440	Polypropylene capacitor	CBB13-400V-0.39μFJ
C439	Polypropylene capacitor	CBB13-630V-0.018μFH
C437	Polypropylene capacitor	CBB81-1.6KV-0.015μFH
L433A	Horizontal amplitude inductor	LGT-100uH-K
L433	Horizontal linear coil	HXT30(JU4.756.022)
T402	FBT	BSC70C(JU4.799.024-6)
		Add the following parts to the CRT RGB PCB.
RY12	Fuse resistor	RF10-2W-1.0ΩJ
SY01	GZS CRT socket	GZS10-2-AC3
AY01	29" CRT	A68LTF356X07
		Auto jumper
WY02	Jumper	5mm
		Remove the dynamic focus PCB.