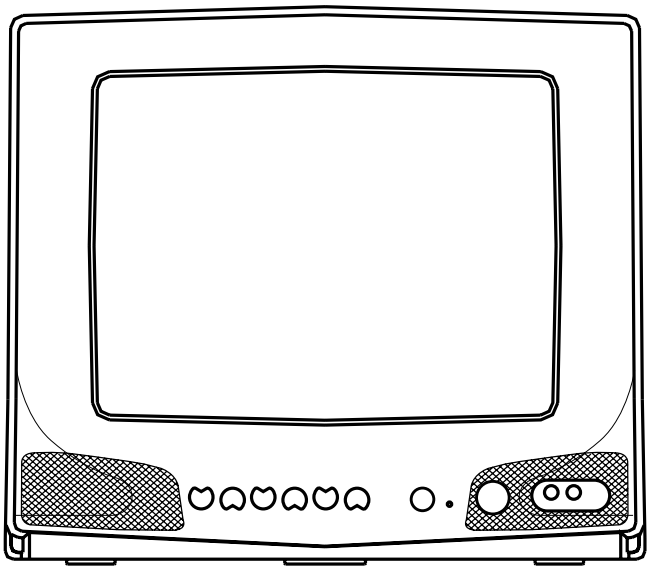
SERVICE MANUAL

"S" CHASSIS(NTSC)



CONTENTS

SAFETY PRECAUTION

● X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage in this receiver is 30KV. The high voltage must not exceed 35KV. Each time a receiver requires servicing, the high voltage should be checked according to the high voltage check procedure on this manual. It is recommended that the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this television is the picture tube. For continued X-RAY RADIATION protection, the replacement of tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this television have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.
4. Serviceman - WARNING : To Reduce the Risk of Possible Exposure to X-Radiation, take X-Radiation Protective Measures(See Service Manual) For Personnel During Servicing.

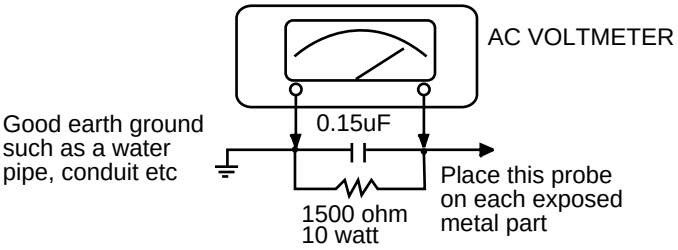
CAUTION *: SHORT ANODE LEAD ONLY TO CHASSIS.*
DO NOT PLACE THIS PRODUCT ON AN UNSTABLE CART, STAND, TRIPOD, BRACKET, OR TABLE. THE PRODUCT MAY FALL, CAUSING SERIOUS PERSONAL INJURY AND SERIOUS DAMAGE TO THE PRODUCT. USE ONLY WITH A CART, STAND, TRIPOD, BRACKET, OR TABLE RECOMMENDED BY THE MANUFACTURER, OR SOLD WITH THE PRODUCT. FOLLOW THE MANUFACTURER'S INSTRUCTIONS WHEN INSTALLING THE PRODUCT AND USE MOUNTING ACCESSORIES RECOMMENDED BY THE NUFACTURER. A PRODUCT AND CART COMBINATION SHOULD BE MOVED WITH CARE. QUICK STOPS, EXCESSIVE FORCE, AND UNEVEN SURFACES MAY CAUSE THE PRODUCT AND CART COMBINATION TO OVERTURN.

● SAFETY PRECAUTION

WARNING *: Service should not be attempted by anyone unfamiliar with the necessary precautions on this television. The followings are the necessary precautions to be observed before servicing.*

1. Since the chassis of this television is directly connected to the AC power line (Hot chassis),an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
2. Always discharge the picture tube anode to the CRT conductive coating before handing the picture tube. The picture tube is highly evacuated and, if broken, glass fragments will beviolently expelled. Use shatterproof goggles and keep picture tube away from the body while handing.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, insulating covers, shields isolation resistor-capacitor network, etc.
4. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet such as terminals, screwheads, metal overlays control shafts, etc. to insure that the set is safe to operate without danger of electrical shock.
5. Plug the AC line cord directly into a AC 120V AC outlet. (do not use a line isolation transformer during this check) Use an AC voltmeter having 5,000 ohm per volt or more sensitivity in the following manner, Connect a 1,500 ohm 10 watts resistor, paralleled by a 0.15uF, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time.

Measure the AC voltage across the combination of 1,500 ohm resistor and 0.15uF capacitor. Reverse the AC plug at the AC outlet and repeat. AC voltage measurements for each exposed metallic part.
Voltage measured must not exceed 0.75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



● PRODUCT SAFETY NOTICE

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

◑ DIRECTION FOR GENERAL USE

1. In the majority of cases, a color television receiver will need only slight touch-up adjustment upon installation.
   Check the basic characteristics such as height, vertical sync, horizontal sync and focus.
   Observe the picture for good black and white objectionable color shading. If color shading is evident, demagnetize the receiver. If color shading still persists, perform purity and convergence adjustments.
   This should be all that is necessary for optimum receiver performance.

2. THIS RECEIVER TRANSISTORIZED AND SPECIAL CARE MUST BE TAKEN. READ THE FOLLOWING NOTES BEFORE ATTEMPTING ALIGNMENT.
   1) Alignment requires an exacting procedure and should be undertaken only when necessary.
   2) An isolation transformer must be used to prevent a shock hazard.
   3) The test equipment specified or its equivalent is required to perform the alignment properly. Any use of equipment which does not meet these requirements may result in an improper alignment.
   4) A correct matching of the equipment is essential. A failure to use proper matching will result in responses which cannot represent the true operation of the receiver.
   5) An use of excessive signal from a sweep generator can cause overloading of receiver circuit. It should be avoided to obtain a true response curve. Insertion of markers from the maker generator should not cause distortion of the responses.
   6) Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
   7) Do not attempt to connect or disconnect any wire while the receiver is in operation. Make sure the power cord is disconnected before replacing any part in the receiver.

3. REFER TO FIGURES IN PAGE 8 FOR ALIGNMENT POINTS.

● AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the TV should be unnecessary. But the receiver must be properly degaussed upon installation. The degaussing coil operates for about 1 second after the power is switched ON. If the set is moved or turned in a different direction, the power should be OFF for at least 15 minutes.
If the chassis or parts of the cabinet become magnetized, it will result in a poor color purity. If this happens, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube and the sides and front of the receiver. Slowly withdraw the coil to a distance of about 6 feet before turning power OFF.
If color shading persists, perform the following Color Purity and Convergence adjustments.

● HIGH VOLTAGE CHECK

***CAUTION** : There is no high voltage adjustment on this chassis. The +B power supply should be +120 volts (with full color-bar input and normal picture level).*

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set bright and contrast controls to the minimum (zero beam current).
3. The high voltage must be measured below 34KV under any conditions.
4. Set sub-Bright DATA(SBR) minimum in FACTORY 1 MODE to ensure that the high voltage does not exceed the limit under any conditions.

● COLOR-PURITY ADJUSTMENT

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

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Set the Contrast and Bright controls to the maximum.
3. Adjust RCUT and BCUT data in service mode to provide only a green raster. Advance GCUT data if necessary.
4. Loosen the clamp screw holding the yoke and slide the yoke backward to provide vertical green belt (zone) in the picture tube. (See Figure 1)
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See Figure 2) around the neck of the picture tube until the ground belt is in the center of the screen. At the same time, center the raster vertically.
7. Move the yoke slowly until a forward uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster by adjusting the R/G/B cut and GDV/BDV data.
9. Obtain a white raster, referring to "WHITE BALANCE ADJUSTMENT".
10. Proceed with the convergence adjustment.

● CENTER CONVERGENCE ADJUSTMENT

1. Receive a crosshatch pattern from a color bar signal generator.
2. Adjust the Contrast and Bright controls for well defined pattern.
3. Adjust two tabs of the 4-pole magnets to change the angle between them (See Figure 2) and superimpose red and blue vertical lines in the center area of the picture screen. (See Figure 2)
4. Turn both tabs at the same line keeping constant the angle to superimpose the red and blue horizontal lines at the center of the screen. (See Figure 2)

5. Adjust two tabs of 6-pole magnets to superimpose the red and blue lines with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 keeping in mind red, green and blue movements, because 4-pole magnets and 6-pole magnets interact and make dot movement complex.

● CIRCUMFERENCE CONVERGENCE ADJUSTMENT

This adjustment requires 3 rubber wedges and 3 glass cloth tapes.

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

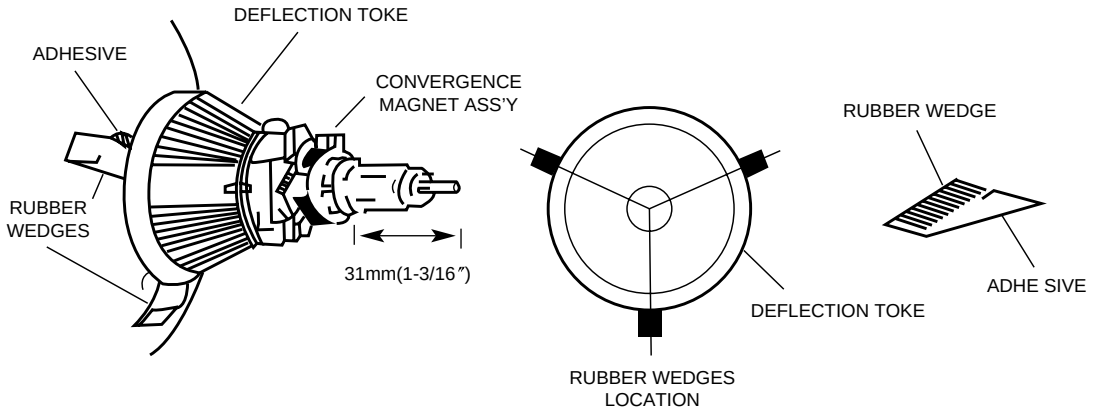
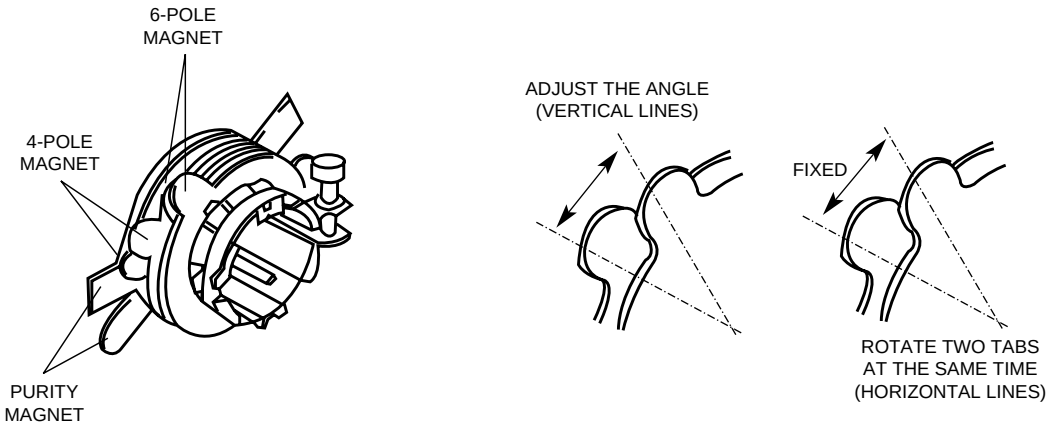


FIGURE 1. COLOR PURITY ADJUSTMENT



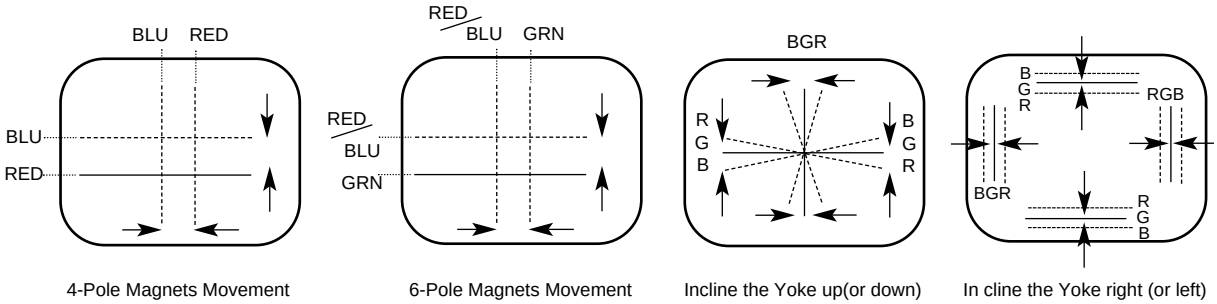


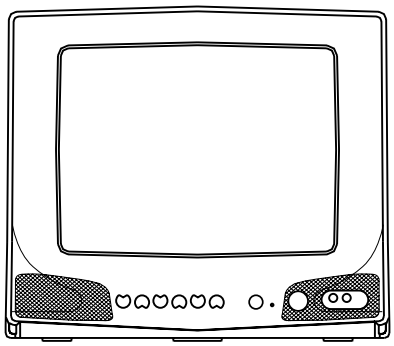
FIGURE 2. CONVERGENCE ADJUSTMENT

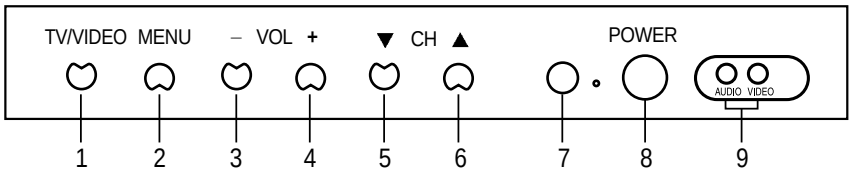
SPECIFICATIONS

RECEPTION SYSTEM	NTSC-M : TDA9377 NTSC-M, PAL-M, PAL-N : TDA9370
POWER REQUIREMENTS	AC 90~250V 50/60Hz(AUTO)
POWER CONSUMPTION	14" : 55W , 20" : 78W, 21" : 86W
STEREO	AV : PSEUDO RF STEREO RF : ZENITH
SOUND OUTPUT POWER	MONO : 4.5W AV STEREO : 5W(R) + 5W RF STEREO : 6.3W + 6.3W AT 10%, 1KHz
ANTENNA IMPEDANCE	75 OHM UNBALANCED TYPE
SCREEN SIZE	50.8 Cm (DIAGONAL 21 INCH)
OPERATING FREQUENCIES	VIDEO IF 45.75MHz SOUND IF 41.25MHz
RECEIVING CHANNELS	VHF CH : 2 TO 13 UHF CH : 14 TO 69 CATV CH : 1, 14 TO 125 TOTAL 181CH

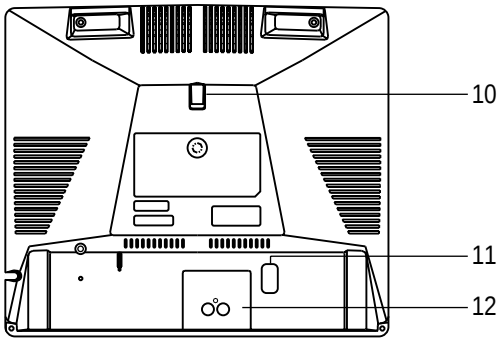
LOCATION AND FUNCTION OF CONTROLS

FRONT





REAR



1. TV/Video Key
2. Menu Key
3. Volume Down (-) Key
4. Volume Up (+) Key
5. Channel Down (▼) Key
6. Channel Up (▲) Key
7. Remote Control Sensor
8. Main Power Key
9. Audio/Video 2 In Jacks
10. Antenna Holder
11. Antenna Jack (75 ohm)
12. Audio/Video In Jacks

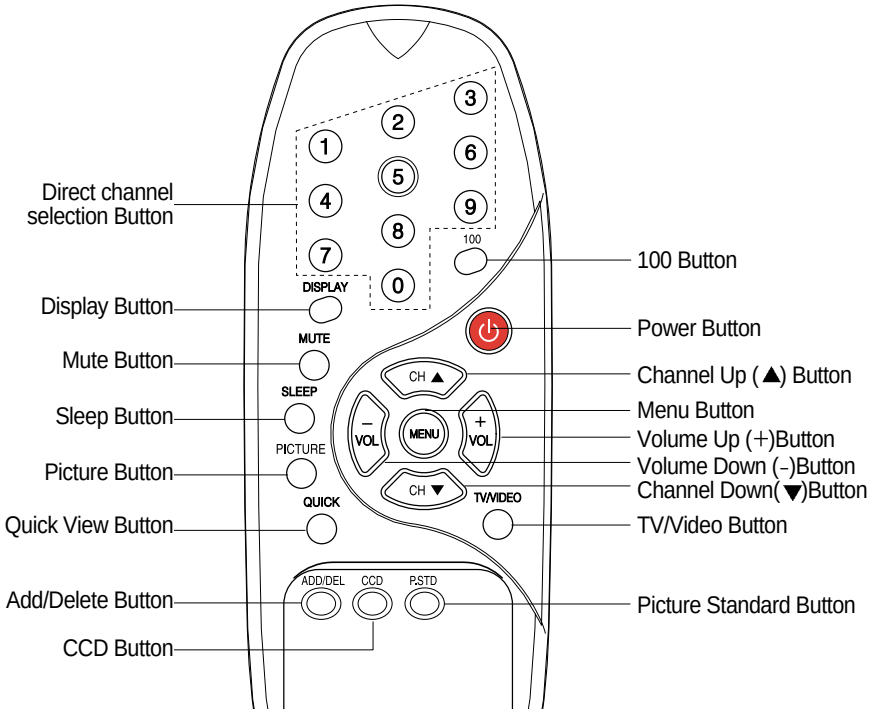
WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS TELEVISION TO RAIN OR MOISTURE.

REMOTE CONTROL OPERATION

BATTERY INSTALLATION

❖ Replace two batteries in the battery compartment at the same time.
❖ Insert "AAA" batteries, observing the polarity (+ or -) marked on the unit.

Batteries should last about a year under normal use. If the operation is unstable(either channel or volume does not change), replace the batteries. When the hand unit is not used for a long, or when the batteries are used up, take out the batteries to prevent possible leakage. To avoid any malfunction of the remote control, press only one button at a time.



※ Remocon depends on the option of model

GENERAL FEATURES AND ADJUSTMENTS

1. NOTE

①Because this is not a hot chassis, it is not necessary to use an isolation transfromer.
However, the use of isolation transformer will help protect test instrunents.
②Adjustment must be done in the correct order.
③Supply AC 90~260V, 50/60Hz in general.
Most of this chassis is designed to operate in the wide range of power supply.
④Automatic degaussing
The degaussing circuit operates for about 1 secord after the power is switched on.
If you change the direction of the TV set in a state of Power-On, any color-blur may happen.
In that case, plug it off and plug it on after 1 more hour.
If color shading still persists, perform purity and convergence adjustments.

2. EEPROM(Q002) REPLACEMENT

When Q002 is replaced, all values are reset to "INITAL MICRO-CONTROLLER DATA."
Because the pre-set data is reset after the replacement, above all, select factory mode and write down all the pre-set data befote the replacement.
After the replacement, select factory mode and set the initial data referring to the written-down data.
If you fogot to write down all the pre-set data or you can' t turn on TV, re-adjust the initial data according to the adjustment manual, follow the below procedure.

①Roplace the defective Q002 with a new one.
②In the Stand-by mode, Press DISPLAY + MENU + 3 + 8 + POWER(ON) button on the romote controller in sequence.
③And then, factory mode will be displayed on the screen.
④Input the signal like a color-bar pattern into antenna terminal, or input the current broadcasting signal into antenna terminal.

3. WHEN CRT IS REPLACED

Do the following adjustments in the factory made.
①SCREEN adjustment(SCREEN VOLTAGE)
②W.BAL adjustment (R-Cut, G-Cut, R-DRV, G-DRV, B-DRV)
③PICTURE adjustment (HRS(50), HRS(60), HEIGHT)

NOTE

∗You don' t need to select 8.EEPROM Rest and 9.UOC Control.
Two items are critical to the system operation.
∗Press TV/VIDEO or MTS button when you want to finish the factory adjustments.
TV/VIDEO button:the early state that you bought TV sets.
MTS button:the previous state before you enter the factory mode.

4.SIF VCO VOLTAGE CHECK

①Connect the (+) terminal of multi-meter to TP60(LS06) and check the SIF VCO Voltage within DC1.8±0.5V.

FACTORY/SERVICE ADJUSTMENTS

1. Procedure for the factory adjustment mode

①In the Stand-By mode, the factory(Service) mode is activated by pressing the "DISPLAY + MENU + 3 + 8 + POWER(ON) button in sequence on the remote controller.

②The menu of the factory mode will be displayed.

The factory mode consists of 9 componets:

1. SCREEN
2. W.BAL
3. PICTURE
4. SERVICE1 ;You do not need to Select it.
5. VOLUME TEST ;You do not need to Select it.
6. Device Check ;You do not need to Select it.
7. OPTION
8. EEPROM Reset ;You do not neet to Select it
9. UOC Control ;You do not need to Select it.
10. V-CHIP TEST ;You do not need to Select it.

③Select each adjustment mode by pressing CH up(▲)or CH down(▼) button.
And access it by pressing vol up(+)or vol down(-) button.

NO	PART	OSD	RANGE	INITIAL DATA	COMMENT
1	SCREEN				
2	W.BAL	R-CUT	0~63	32	
	(WHITE BALANCE)	G-CUT	0~63	32	
		R-DRV	0~63	32	
		G-DRV	0~63	32	
	WHITE	B-DRV	0~63	32	
3	PICTURE	HRS(50)	0~63	35	PAL N
		HRS(60)	0~63	45	NTSC M/PAL M
		HEIGHT	0~63	33	
		V-SLOPE	0~63	32	
		S-C	0~63	7	
		PIP-HRS	0~255	225	PIP MODEL
		PIP-VRS	0~240	20	PIP MODEL
		PIP-CON	0~15	15	PIP MODEL
		PIP-BRI	0~15	5	PIP MODEL
		PIP-COL	0~15	5	PIP MODEL
		PIP-TINT	0~63	54	PIP MODEL
		PIP-SCREEN	0~63	10	PIP MODEL
4	SERVICE1	CONTRAST	0~63	0 45 63	Min Cnt Max
		BRIGHT	0~63	8 25 47	
		COLOR	0~63	0 27 63	
		SHARPNESS	0~63	0 45 63	
		TINT	0~63	0 35 63	
		AGC	0~63	33	
5	VOLUME TEST		MIN/MAX	MIN	
6	Device Check	UOC		Connected	
		EEPROM		Connected	
		MSP34xx		-	depends on option
		TUNER		Connected	
		SDA9489x		-	depends on option
		TDA9859		-	depends on option
		ETC 00002		Disonnected	
		ETC 00003		Disonnected	

FACTORY/SERVICE ADJUSTMENTS

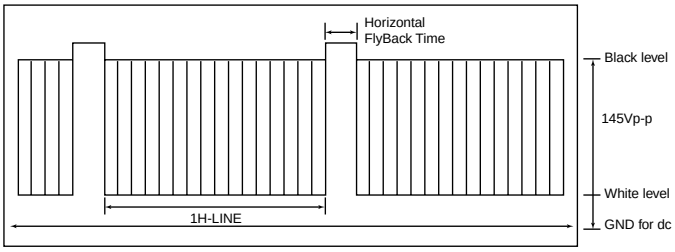
NO	PART	OSD	RANGE	INITIAL DATA	COMMENT
7	OPTION	Cable Mode	ALL/STANDARD	ALL	ALL : HRC/IRC/STD
		AUTO POWER	ON/OFF	ON	
		CCD	ON/OFF	ON	
		V CHIP	ON/OFF	ON	
		VIDEO MUTE	ON/OFF	ON	
		Initial Mode	CATV/TV	CATV	
		SYSTEM	TRI/NTSC	NTSC	
		NO SIG P OFF	ON/OFF	ON	
		YUV	ON/OFF	OFF	
		HALF TONE	ON/OFF	ON	OSD BACKGROUND
		VIDEO/POWER	VIDEO/POWER KEY	VIDEO KEY	
		BLUEBACK	ON/OFF	ON	
		LANGUAGE	4 LANGUAGE	ENGLISH	
8	EEPOM Reset				P/W: 3542
9	UOC Control				Don't select it
10	V CHIP TEST				Don't select it

2. SCREEN Voltage Adjustment

① Turn the TV set to receive a color bar pattern.(Standard picture)

② Connect the probe of oscilloscope to the RK (Red Cathode) of CPT Board.

③ Adjust Screen Volume of FBT so that the waveform is the same as below figure.



The waveform of RK(Red Cathode) of CPT Board

FACTORY/SERVICE ADJUSTMENTS

3. Deflection Adjustments

- HRS(50) adjustment : Tune the TV set to a LION HEAD pattern signal with 50Hz of vertical frequency.
- HRS(60) adjustment : Tune the TV set to a LION HEAD pattern Signal with 60Hz of vertical ferquency.
- HEIGHT adjustment : Tune the TV set to a LION HEAD pattern Signal and adjust the vertical amplitude to 4 bars both the Top and the bottom.

4. WHITE BALANCE Adjustments(manual)

① Input "PURE WHITE" pattern into antenna terminal or into Video input terminal.

② Keep TV on for about 30 minutes prior to white balance adjustment.

③ Screen Voltage Adjustment (page 13)

④ Place the probe of CRT Analyzer at the center Position of picture screen.

⑤ Adjust CONTRAST & BRIGHTNESS until "Y" value of CRT analyzer becomes 35FL above roughly.

⑥ Select 2.W.BAL and press Vol(+) button.
And then "R-CUT 32" will be displayed.

1 button : R-CUT
5 button : G-CUT
9 button : R-DRV
0 button : G-DRV
100 button : B-DRV

⑦ Select R-DRV & G-DRV and adjust them to get the color coordinates below in the high light state.
In this case, fix the reference color(B-DRV) as possible as.

X COORDINATE	Y COORDINATE
0.261	0.268

FACTORY/SERVICE ADJUSTMENTS

5. Focus ADJUSTMENT

① Input "CROSS DOT" pattern into antenna terminal on video input terminal.

② Rotate the variable resistor of FOCUS terminal on the flyback transformer until the horizontal and vertical line becomes slim.

③ Check the surrounding FOCUS in the lion head pattern.

TECHNICAL INFORMATION

1. MICRO-CONTROLLER & MAIN PROCESSOR

TV signal processor-Closed Caption decoder with embedded μ-Controller

TDA937X PS/N2 series

GENERAL DESCRIPTION

The various versions of the TDA937X PS/N2 series combine the functions of a video processor together with a μ-Controller and US Closed Caption decoder. The ICs are intended to be used in economy television receivers with 90° and 110° picture tubes.

The ICs have supply voltages of 8 V and 3.3 V and they are mounted in an S-DIP 64 envelope.

FEATURES

TV-signal processor

- Multi-standard vision IF circuit with alignment-free PLL demodulator
- Internal (switchable) time-constant for the IF-AGC circuit
- A choice can be made between versions with mono intercarrier sound FM demodulator and versions with QSS IF amplifier.
- The mono intercarrier sound versions have a selective FM-PLL demodulator which can be switched to the different FM sound frequencies (4.5/5.5/6.0/6.5 MHz). The quality of this system is such that the external band-pass filters can be omitted.
- Source selection between 'internal' CVBS and external CVBS or Y/C signals
- Integrated chrominance trap circuit
- Integrated luminance delay line with adjustable delay time
- Picture improvement features with peaking (with variable positive/negative overshoot ratio), black stretching and Dynamic Skin Tone Control
- Integrated chroma band-pass filter with switchable centre frequency
- Only one reference (12 MHz) crystal required for the μ-Controller and the colour decoder
- PAL/NTSC colour decoder with automatic search system
- Internal base-band delay line
- RGB control circuit with 'Continuous Cathode Calibration', white point and black level offset adjustment so that the colour temperature of the dark and the light parts of the screen can be chosen independently.
- A linear RGB/YUV/YP_BP_R input with fast blanking for external RGB/YUV sources. The synchronisation circuit can be connected to the incoming Y signal. The Text/OSD signals are internally supplied from the μ-Controller.
- Contrast reduction possibility during mixed-mode of OSD and Text signals
- Horizontal synchronization with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimized for DC-coupled vertical output stages
- Horizontal and vertical geometry processing
- Horizontal and vertical zoom function for 16 : 9 applications
- Horizontal parallelogram and bow correction for large screen picture tubes
- Low-power start-up of the horizontal drive circuit

BLOCK DIAGRAM

TDA937X PS/N2 series

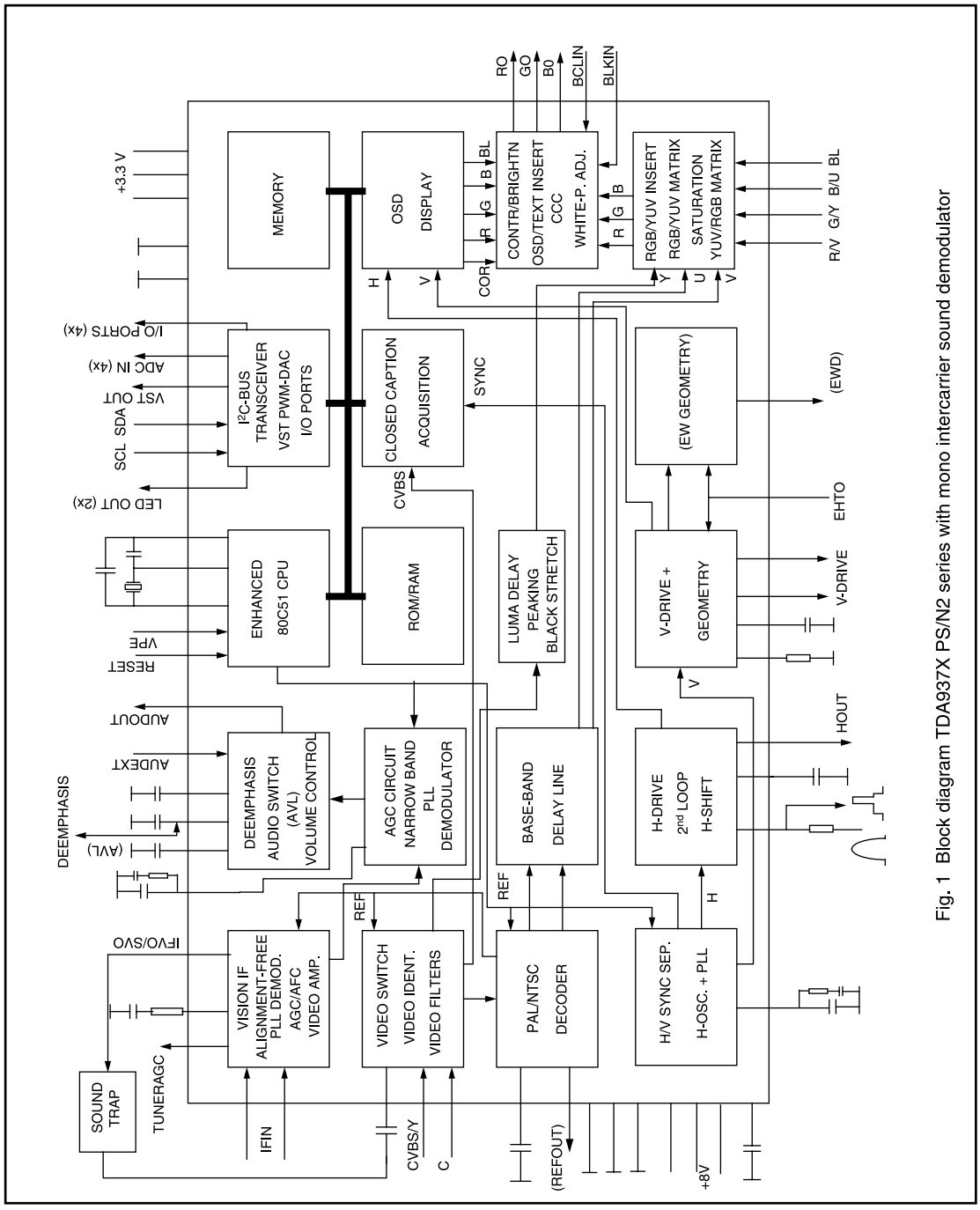


Fig. 1 Block diagram TDA937X PS/N2 series with mono intercarrier sound demodulator

TECHNICAL INFORMATION

PINNING

SYMBOL	PIN	DESCRIPTION
P1.3/T1	1	Power(ACTINE LOW) ON:LOW, STAND-BT:HIGH
P1.6/SCL	2	Serial CLOCK
P1.7/SDA	3	Serial DATA
P2.0/TPWN	4	SVHS MODE DETECTION INPUT(ACTIVE LOW)
P3.0/ADC0	5	NTSC SYSTEM CONVERSION OUTPUT(ACTIVE LOW)
P3.1/ADC1	6	AUDIO/VIDEO MODE SWITCH 1
P3.2/ADC2	7	CONTROL BUTTON KEY INPUT 1
P3.3/ADC3	8	CONTROL BUTTON KEY INPUT 2
VSSC/P	9	digital ground for μ-Controller core and periphery
P0.5	10	AUDIO/VIDEO MODE SWITH 2
P0.6	11	Swith Signal Video (status) input
VSSA	12	analog ground of Teletext decoder and digital ground of TV-Processor
SECPLL	13	SECAM PLL decoupling
VP2	14	2^{nd} supply voltage TV-processor(+8V)
DECDIG	15	decoupling digital supply of TV-processor
PH2LF	16	phase-2 filter
PH1LF	17	phase-1filter
GND3	18	ground 3 for TV-processor
DECBG	19	bandgap decoupling
AVL/EWD(1)	20	Automatic Volume Levelling/East-West drive output
VDRB	21	vertical drive B output
VDRA	22	vertical drive A output
IFIN1	23	IF input 1
IFIN2	24	IF input 2
IREF	25	reference current input
VSC	26	vertical sawtooth capacitor
TUNERAGC	27	tuner AGC output
AUDEEM/SIFIN1(1)	28	audio deemphasis of SIF input 1
DECSDEM/SIFIN2(1)	29	decoupling sound demodulator of SIF input 2
GND2	30	ground 2 for TV processor
SNDPLL/SIFAGC(1)	31	narrow band PLL filter/AGC sound IF
AVL/SNDIF/REF0/ AMOUT(1)	32	Automatic Volume Levelling/sound IF input/subcarrier reference output/AM output (non controlled)
HOUT	33	horizontal output
FBISO	34	flyback input/sandcastle output
AUDEXT/	35	external audio input/QSS intercarrier out/AM audio output(non controlled)
QSSO/AMOUT(1)		
EHTO	36	EHT/overvoltage protection input
PLLIF	37	IF-PLL loop filter
IFVO/SVO	38	IF video output/selected CVBS output
VP1	39	main supply voltage TV-processor(+8V)
CVBSINT	40	internal CVBS input
GND1	41	ground 1 for TV-processor
CVBS/Y	42	external CVBS/Y input
CHROMA	43	chrominance input (SVHS)
AUDOUT/AMOUT(1)	44	audio output /AM audio output(volume controlled)
INSSW2	45	2^{nd} RGB/YUV insertion input
R2/VIN	46	2^{nd} R input /V(R-Y)input
G2/YIN	47	2^{nd} G input/Y input
B2/UIN	48	2^{nd} B input/U(B-Y)input
BCLIN	49	beam current limiter input/(V-guard input, note 2)
BLKIN	50	black current input/(V-guard input, note2)
RO	51	Red output
GO	52	Green output
BO	53	Blue output
VDDA	54	analog supply of Teletext decoder and digital suppply of TV-processor(3.3V)
VPE	55	OTP Programming Voltage
VDDC	56	digital supply to core(3.3V)
OSCGND	57	oscillator gorund supply
XTAL IN	58	crystal oscillator input
XTAL OUT	59	crystal oscillator output
RESET	60	reset
VDDP	61	digital supply to periphery(+3.3V)
P1.0/INT1	62	Remote key matrix input
P1.1/T0	63	I^2C BUS STOP CONTROL PIN(LOW:BUS STOP)
P1.2/INT0	64	MUTE OUTPUT(ACTIVE LOW)

2.Saw filter(Z101) : IF filter for Intercarrier / Multe-standard Application

Standard

- M/N-FCC
  USA

Features

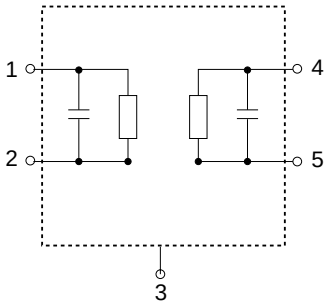
- TV IF filter with Nyquist slope and sound shelf
- Constant group delay

Terminals

- CuFe, tinned

Pin configuration

1 Input
2 Input-ground
3 Chip carrier-ground
4 Output
5 Output



Saw filter(Z102) : IF filter for Audio Applications (RF STEREO ONLY)

Standard

- M/N

Features

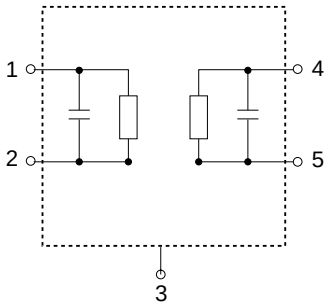
- TV IF audio filter with pass bands for picture carrier at 45.75MHz and sound carrier at 41.25MHz

Terminals

- Tinned CuFe alloy

Pin configuration

1 Input
2 Input-ground
3 Chip carrier-ground
4 Output
5 Output



3. Tuner(H001)

① features

Receiving System : NTSC M, PAL M/N

Channel :

		Air	CATV
VHF	Low	2~6ch	(A-8) A-5~Bch
	High	7~13ch	C~W+11ch
UHF		14~69ch	W+12~W+84ch

Intermediate Frequency PIF : (45.75)MHz
CIF : (42.17)MHz
SIF : (41.25)MHz

Input Impendance : UHF/VHF Terminal (75) Ω, Unbalanced

Output Impendance : 75 Ω, Un Balanced

Band Change Over System : (PLL Control System)

Tuning System : (Electronic Tuning System with PLL)

② Terminal For External Connection

NO	Terminal name	Description
1	AGC	AGC Voltage Supply
2	NC	not connected
3	SAS	Address Selection Line
4	SCL	Serial Clock Line
5	SDA	Serial Data Line
6	NC	not connected
7	BP	+B for PLL
8	NC	not connected
9	BT	Tuning Voltage Supply
10	NC	not connected
11	IF1	IF Output
12	ANT	VHF/UHF Signal Input

③ RECEIVING CHANNEL FREQUENCY TABLE

BAND	CH	PICTURE CARRIER FREQ. (MHz)	SOUND CARRIER FREQ. (MHz)	LOCAL OSC FREQ. (MHz)	IMAGE FREQ. (MHz)
VHF LOW	2	55.25	59.75	101	146.75
	3	61.25	65.75	107	152.75
	4	67.25	71.75	113	158.75
	5	77.25	81.75	123	168.75
	6	83.25	87.75	129	174.75
	A-5	91.25	95.75	137	182.75
	A-4	97.25	101.75	143	188.75
	A-3	103.25	107.75	149	194.75
	A-2	109.25	113.75	155	200.75
	A-1	115.25	119.75	161	206.75
	A	121.25	125.75	167	212.75
	B	127.25	131.75	173	218.75
VHF HIGH	C	133.25	137.75	179	224.75
	D	139.25	143.75	185	230.75
	E	145.25	149.75	191	236.75
	F	151.25	155.75	197	242.75
	G	157.25	161.75	203	248.75
	H	163.25	167.75	209	254.75
	I	169.25	173.75	215	360.75
	7	175.25	179.75	221	266.75
	8	181.25	185.75	227	272.75
	9	187.25	191.75	233	278.75
	10	193.25	197.75	239	284.75
	11	199.25	203.75	245	290.75
	12	205.25	209.75	251	296.75
	13	211.25	215.75	257	302.75
	J	217.25	221.75	263	308.75
	K	223.25	227.75	269	314.75
	L	229.25	233.75	275	320.75
	M	235.25	239.75	281	326.75
	N	241.25	245.75	287	332.75
	O	247.25	251.75	293	338.75
	P	253.25	257.75	299	344.75
	Q	259.25	263.75	305	350.75
	R	265.25	269.75	311	356.75
	S	271.25	275.75	317	362.75
	T	277.25	281.75	323	368.75
	U	283.25	287.75	329	374.75
	V	289.25	293.75	335	380.75
	W	295.25	299.75	341	386.75
	W+1	301.25	305.75	347	392.75
	W+2	307.25	311.75	353	398.75
	W+3	313.25	317.75	359	404.75
	W+4	319.25	323.75	365	410.75
	W+5	325.25	329.75	371	416.75
	W+6	331.25	335.75	377	422.75
	W+7	337.25	341.75	383	428.75
	W+8	343.25	347.75	389	434.75
	W+9	349.25	353.75	395	440.75
	W+10	355.25	359.75	401	446.75
	W+11	361.25	365.75	407	452.75

BAND	CH	PICTURE CARRIER FREQ. (MHz)	SOUND CARRIER FREQ. (MHz)	LOCAL OSC FREQ. (MHz)	IMAGE FREQ. (MHz)
UHF	W+12	367.25	371.75	413	458.75
	W+13	373.25	377.75	419	464.75
	W+14	379.25	383.75	425	470.75
	W+15	385.25	389.75	431	476.75
	W+16	391.25	395.75	437	482.75
	W+17	397.25	401.75	443	488.75
	W+18	403.25	407.75	449	494.75
	W+19	409.25	413.75	455	500.75
	W+20	415.25	419.75	461	506.75
	W+21	421.25	425.75	467	512.75
	W+22	427.25	431.75	473	518.75
	W+23	433.25	437.75	479	524.75
	W+24	439.25	443.75	485	530.75
	W+25	445.25	449.75	491	536.75
	W+26	451.25	455.75	497	542.75
	W+27	457.25	461.75	503	548.75
	W+28	463.25	467.75	509	554.75
	W+29	469.25	473.75	515	560.75
	14	471.25	475.75	517	562.75
	15	477.25	481.75	523	568.75
	16	483.25	487.75	529	574.75
	17	489.25	493.75	535	580.75
	18	495.25	499.75	541	586.75
	19	501.25	505.75	547	592.75
	20	507.25	511.75	553	598.75
	21	513.25	517.75	559	604.75
	22	519.25	523.75	565	620.75
	23	525.25	529.75	571	616.75
	24	531.25	535.75	577	622.75
	25	537.25	541.75	583	628.75
	26	543.25	547.75	589	634.75
	27	549.25	553.75	595	640.75
	28	555.25	559.75	601	646.75
	29	561.25	565.75	607	652.75

BAND	CH	PICTURE CARRIER FREQ. (MHz)	SOUND CARRIER FREQ. (MHz)	LOCAL OSC FREQ. (MHz)	IMAGE FREQ. (MHz)
UHF	30	567.25	571.75	613	658.75
	31	573.25	577.75	619	664.75
	32	579.25	583.75	625	670.75
	33	585.25	589.75	631	676.75
	34	591.25	595.75	637	682.75
	35	597.25	601.75	643	688.75
	36	603.25	607.75	649	694.75
	37	609.25	613.75	655	700.75
	38	615.25	619.75	661	706.75
	39	621.25	625.75	667	712.75
	40	627.25	631.75	673	718.75
	41	633.25	637.75	679	724.75
	42	639.25	643.75	685	730.75
	43	645.25	649.75	691	736.75
	44	651.25	655.75	697	742.75
	45	657.25	661.75	703	748.75
	46	663.25	667.75	709	754.75
	47	669.25	673.75	715	760.75
	48	675.25	679.75	721	766.75
	49	681.25	685.75	727	772.75
	50	687.25	691.75	733	778.75
	51	693.25	697.75	739	784.75
	52	699.25	703.75	745	790.75
	53	705.25	709.75	751	796.75
	54	711.25	715.75	757	802.75
	55	717.25	721.75	763	808.75
	56	723.25	727.75	769	814.75
	57	729.25	733.75	775	820.75
	58	735.25	739.75	781	826.75
	59	741.25	745.75	787	832.75
	60	747.25	751.75	793	838.75
	61	753.25	757.75	799	844.75
	62	759.25	763.75	805	850.75
	63	765.25	769.75	811	856.75
	64	771.25	775.75	817	862.75
	65	777.25	781.75	823	868.75
	66	783.25	787.75	829	874.75
	67	789.25	793.75	835	880.75
	68	795.25	799.75	841	886.75
	69	801.25	805.75	847	892.75

4. 3-INPUT VIDEO SWITCH,NJM2235L(QV02)

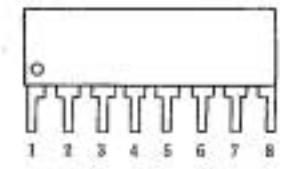
■ GENERAL DESCRIPTION

The NJM2235 is 3-input video switch for video and audio signal. It has clamp function and so is applied to fixed DC level of video signal. Its operating supply voltage range is 5 to 12V and bandwidth is 10MHz. Crosstalk is 70dB(at 4.43MHz).

■ FEATURES

- Operating Voltage (+4.75 ~ +13V)
- 3 Input-1 Output
- Internal Clamp Function
- Wide Operating Supply Voltage Range 4.75 ~ 13V
- Cross-talk 70dB (at 4.43MHz)
- Wide Frequency Range 10MHz
- Muting Function available
- Packange Outline DIP-8, DMP-8, SIP-8, SSOP-8
- Bipolar Technology

■ PIN CONFIGURATION

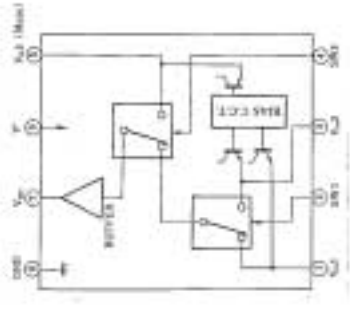


NJM2235L

PIN FUNCTION

1. $V_{IN}1$
2. SW1
3. $V_{IN}2$
4. SW2
5. $V_{IN}3$
6. V^+
7. Vout
8. GND

■ BLOCK DIAGRAM



■ INPUT CONTROL SIGNAL-OUTPUT SIGNAL

SW1	SW2	OUTPUT SIGNAL
L	L	$V_{IN}1$
H	L	$V_{IN}2$
L/H	H	$V_{IN}3$

5. PICTURE-IN-PICTURE IC(QP01)

PIP ONLY

General Description

SDA 9489X 'PIP IV Advanced' and SDA 9589X 'SOPHISTICUS' belong to a new generation of Picture-in Picture(PiP) processors that combine high-quality digital PIP signal processing, digital multistandard color decoding and AD/DA conversion on a single chip.Both devices are equipped with CVBS and Y/C input interfaces in addition the SDA SDA 9589X is also able to process YUV input signals for displaying high quality video signals e.g. coming from a DVD source.

The integrated digital color decoder is able to decode all analog TV standards(PAL, NTSC and SECAM) and detects the standard automatically. Therefore the IC is suited for world-wide use.

A picture reduciton from 1/4 to 1/81 of original size selectable in fine steps is possible. The transfer function of the decimation filters are optimally matched to the selected picture size reduction and can furthermore be adjusted to the viewer's requirements by a selectable peaking. A maximum of 324 luminance and 2x81 chrominance pixels per line are stored in the memory. The PIP supports split-screen applications as well as multi-PiP display

Features

- Single chip solution:
  -AD-conversion for CVBS or Y/C or YUV?, multistandard color decoding PLL for synchronization of inset channal decimation filtering embedded memory RGB-matrix, DA-conversion, RGB/YUV switch, data-slicer and clock generation integrated on chip
- Analog inputs:
  -3x CVBS or 1x CVBS and 1x Y/C or 1xYUV alternatively
  -Clamping of each input
  -All ADCs with 8bit amplitude resolution
  -Automatic Gain Control (AGC) for Y and CVBS
- Inset Synchronization
  -Multiple time constants for reliable synchronization
  -Automatic recognition of 625 lines/525 lines standard
- Color Decoder
  -PAL-B/G, PAL-M, PAL-N(Argentina), PAL60, NTSC-M, NTSC4.4 and SECAM
  -Adjustable color saturation
  -Hue control for NTSC
  -Automatic Chroma Control(-24dB...+6dB)
  -Automatic recognition of chroma standards: different search strategies selectable
  -Single crystal for all standards
  -IF-characteristic compensation filter
- Decimation
  -PIP sizes between 1/81 and 1/4 adjustable with steps of 2 lines and 4 pixel
  -Resolution up to 324 luminance and 2x81 chrominance pixels per inset line
  -Horizontal and vertical filtering dependent on picture size
  -Automatic zoom in/out possible with three speeds

TECHNICAL INFORMATION

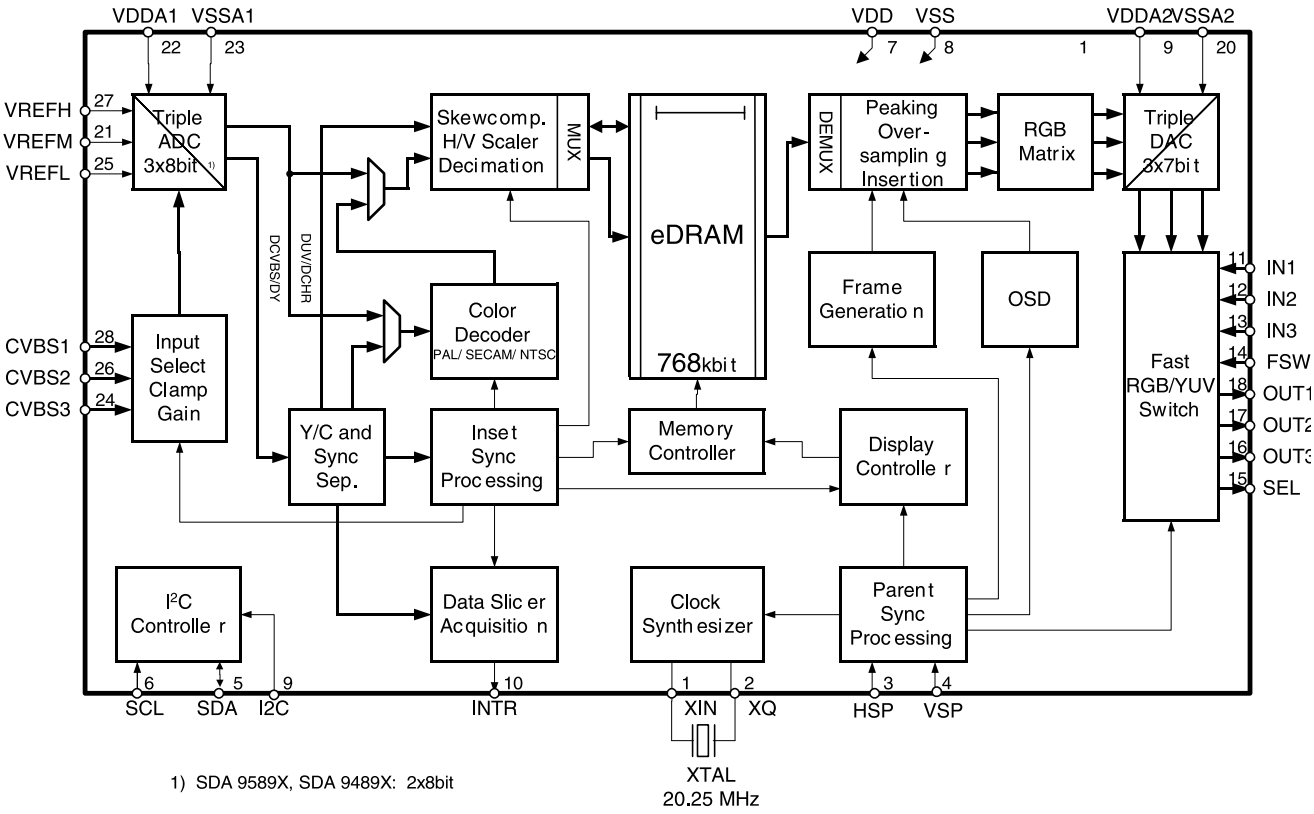
Display Features:

-7bit per pixel stored in memory
-Field and joint-line free frame mode display(even at 100/120Hz AABB with picture sizes<=1/9)
-Two 'split-screen' modes with horizontal decimation of 2 and vertical fo 1.5 or 1.0
-POP display
-Up to 12 pictures of 1/36th size(11 still and 1 moving)
-Up to 6 pictures of 1/16th size(5 still and 1 moving)
-Up to 3 Pictures of 1/9th size (2 still and 1 moving)
-Display on VGA and SVGA screen(f_H limited to 40kHZ)
-8 different read frequencies for 16:9 compatibility
-Line doubling mode for progressive scan applications
-Freeze picture
-Coarse positioning at 4 corners of the parent picture
-Fine positioning at steps of 4 pixels and 2 lines
-Wipe in/out programmable with 3 time periods

- Output signal processing:
  -7Bit DAC
  -RGB or YUV switch:insertion of an external source without PIP processing
  -Digital interpolation for anti-imaging
  -Adjustable transient improvement for luma(peaking)
  -Contrast, Brightness and Pedestal Level Adjustable
  -Analog outputs:Y, +(B-Y), +(R-Y), or Y, -(B-y), -(R-Y) or RGB
  -Three RGB matrices available:NTSC(Japan), NTSC(USA) or EBU
  -64 different background colors and 4096 different frame colors
  -Plain or 3D frame with variable width and height
- Data Slicing:
  -Slicing of closed-caption(CC)or wide-screen-signaling(WSS)data
  -Violence Blocking capability(V-chip)
  -Several filter for XDS data extraction
- On-screen display:
  -64 characters programmable
  -5 characters displayed in eyery PIP picture or 3 rows of 20 characters each
  -4 different character luminance values or frame color
  -4 background luminance values or (Semi-)transparent mode
- I^2C-BUS control(400kHz)
- High stability clock generation
- PDSO 28-1 package(SMD)
- Full SDA 9488X and SDA 9588X backward compatibility
- SDA 9388X/SDA 9389X pinout compatibility
- 3.3V supply voltage(5V input capable)

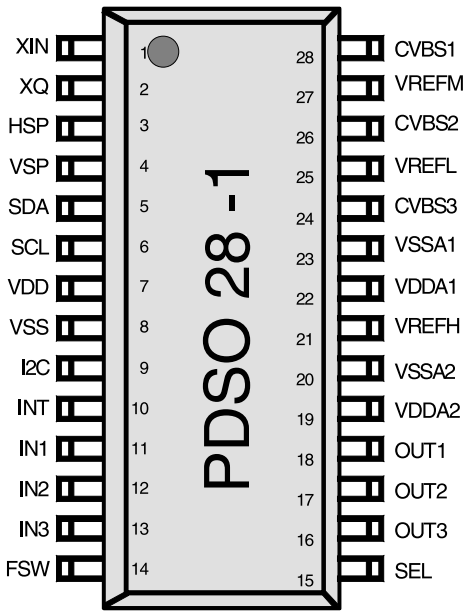
TECHNICAL INFORMATION

Block Diagram



1) SDA 9589X, SDA 9489X: 2x8bit

Pin Configuration



Pin Configuration

Number	Name	Type	Description
1	XIN	I	crystal oscillator (input) or external clock input
2	XQ	O	ctystal oscillator (output)
3	HSP	I/TTL	horizontal sync for parent channel
4	VSP	I/TTL	vertical sync for parent channel
5	SDA	I/O	I^2C-bus data
6	SCL	I	I^2C-bus clock
7	VDD	S	digital supply voltage
8	VSS	S	digital ground
9	12C	I	I^2C Address
10	INT	O/TTL	interrupt
11	IN1	I/ana	V/R input for external YUV/RGB source
12	IN2	I/ana	Y/G input for external YUV/RGB source
13	IN3	I/ana	U/B input for external YUV/RGB source
14	FSW	I	fast switch input for YUV/RGB switch
15	SEL	O	fast blanking output for PIP
16	OUT3	O/ana	analog output : chrominance signal +(B-Y) or -(B-Y) or B
17	OUT2	O/ana	analog output : luminance singnal Y or G
18	OUT1	O/ana	analog output : chrominance signal +(R-Y) or -(R-Y) or R
19	VDDA2	S	analog supply voltage for DAC
20	VSSA2	S	analog ground for DAC
21	VREFH	I/ana	upper reference voltage for ADC and DAC
22	VDDA1	S	analog supply voltage for ADC
23	VSSA1	S	analog ground for ADC
24	CVBS3	I/ana	CVBS3 or V (SDA 9589X) or C Input
25	VREFL	I/O	lower reference voltage for ADC
26	CVBS2	I/ana	CVBS2 or U (SDA 9589X) or Y (from Y/C) Input
27	VREFM	I/O	mid-level reference voltage for ADC
28	CVBS1	I/ana	CVBS1 or Y (from YUV, SDA 9589X) Input
I=Input / ana=analog / O=Output / TTL=Digital(TTL) / S=Supply voltage			

Input Selection

An analog inset CVBS signal can be fed to inputs CVBS1-3 of SDA 9589X / SDA 9489X. Each of these sources is selectable via I^2C bus (CVBSEL). CVBS2 and CVBS3 can be used as separate Y/C inputs. At SDA 9589X YUV sources can be connected to CVBS1, CVBS2 and CVBS3 provided YUV operation being enabled (YUVSEL). Using an external switch SDA 9589X can operate in applications with both YUV and CVBS signals.

CVBSEL		YUVSEL	Input			Remark
D1	D0		CVBS1	CVBS2	CVBS3	
0	0	0	CVBS			
0	1	0		CVBS		
1	0	0		Y(VBS)	C	Y/C mode
1	1	0			CVBS	
X	X	1	Y(VBS)	U(CB)	U(CR)	YUV mode *(only SDA 9589X)*

6. TRIPLE Video output amplifier, TDA6107Q(Q901)

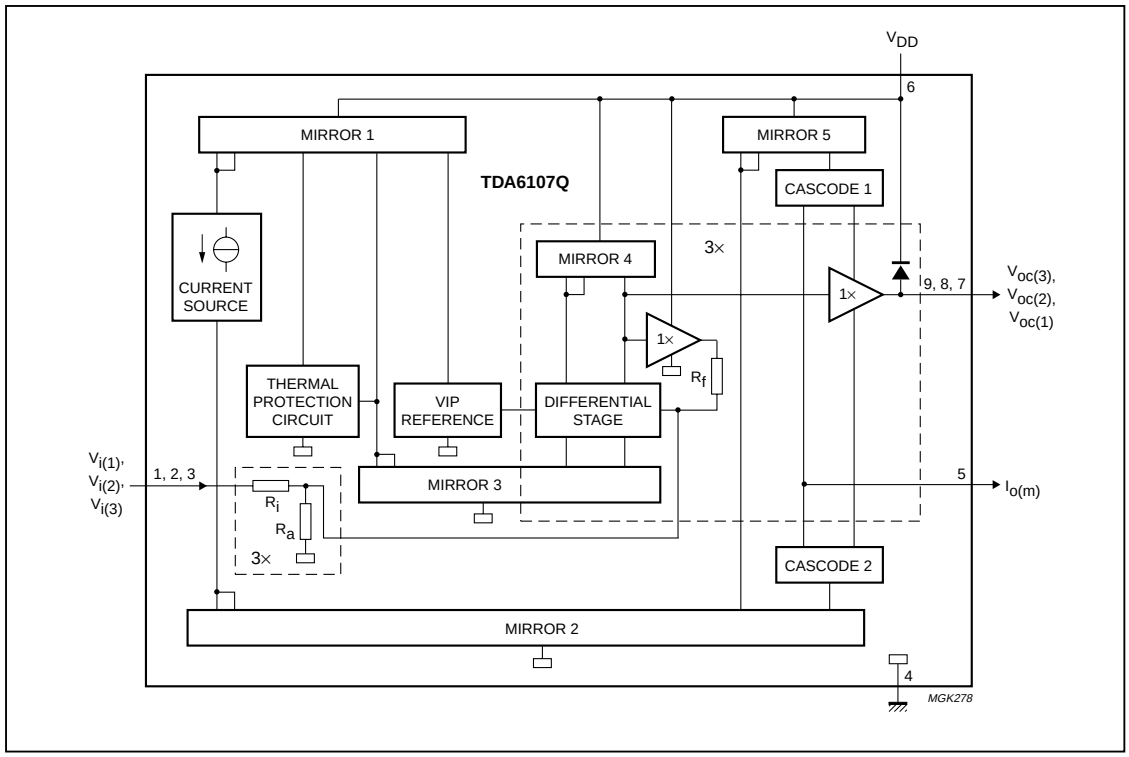
GENERAL DESCRIPTION

The TDA6107Q includes three video output amplifiers in one plastic DIL-bent-SIL9-pin medium power(DBS9MPF) package (SOT111-1), 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.

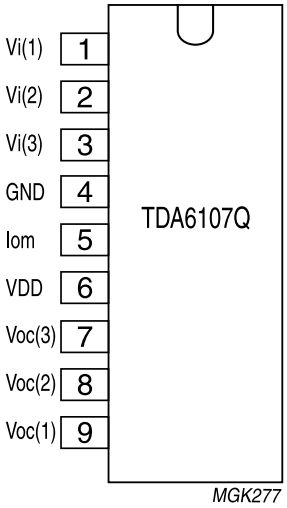
FEATURES

- Typical bandwidth of 5.5 MHz for an output signal of 60V (p-p)
- High slew rate of 900 V/μs
- No external components required
- Very simple application
- Single supply voltage of 200 V
- Internal reference voltage of 2.5V
- Fixed gain of 50
- Black-Current Stabilization (BCS) circuit
- Thermal protection

BLOCK DIAGRAM



TECHNICAL INFORMATION



SYMBOL	PIN	DESCRIPTION
$V_{i(1)}$	1	incerting input 1
$V_{i(2)}$	2	incerting input 2
$V_{i(3)}$	3	incerting input 3
GND	4	ground (fin)
Iom	5	black-current measurement output
V_{DD}	6	supply voltage
Voc(3)	7	cathode output3
Voc(2)	8	cathode output2
Voc(1)	9	cathode output1

7. POWER SWITCHING REGULATOR, STR-G 5653(Q801)

①DESCRIPTION

STR-G 5653 is a hybrid IC with a built-in MOS FET and control IC,
designed for a primary side regulation.

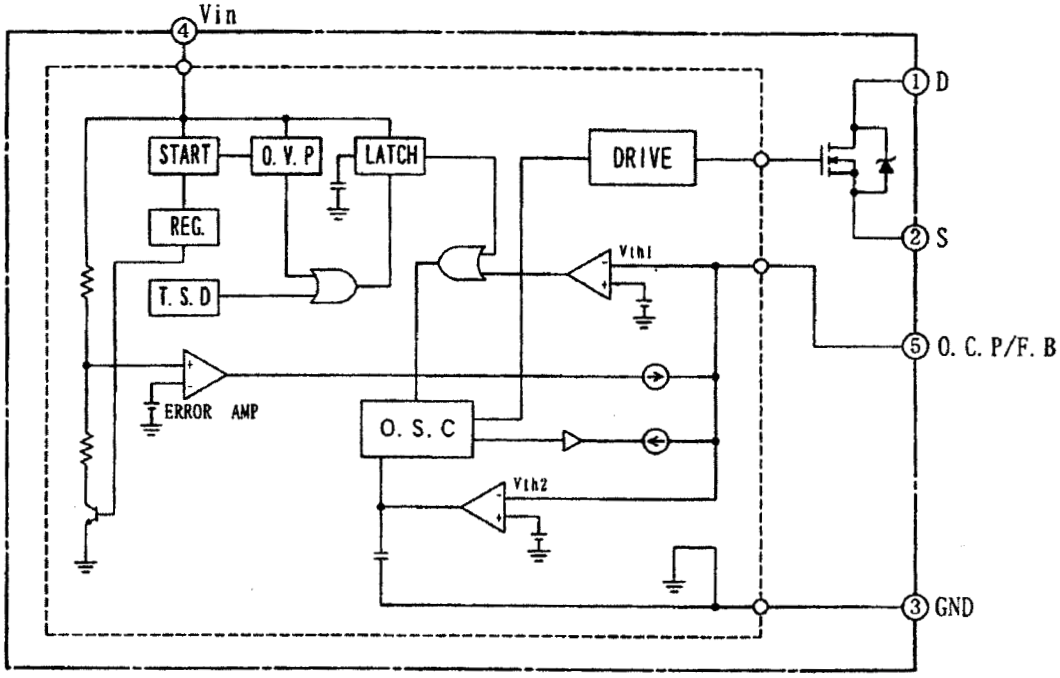
MANY PROTECTION FUNCTIONS

OVP(over voltage protection circuit)

OCP(over current protection circuit)

TSD(Thermal shutdown circuit)

②BLOCK DIAGRAM



③PIN CONFIGURATION

PIN	SYMBOL	Description	Functions
1	D	Drain Terminal	MOS FET DRAIN
2	S	Source Terminal	MOS FET SOURCE
3	GND	Ground Terminal	GROUND
4	VIN	Power supply Terminal	Input of power supply for control circuit
5	O.C.P / F.B	over current / Feedback terminal	Input of over current detection signal and constant voltage control signals

8. Vertical Delection Output IC, LA78040(Q301)

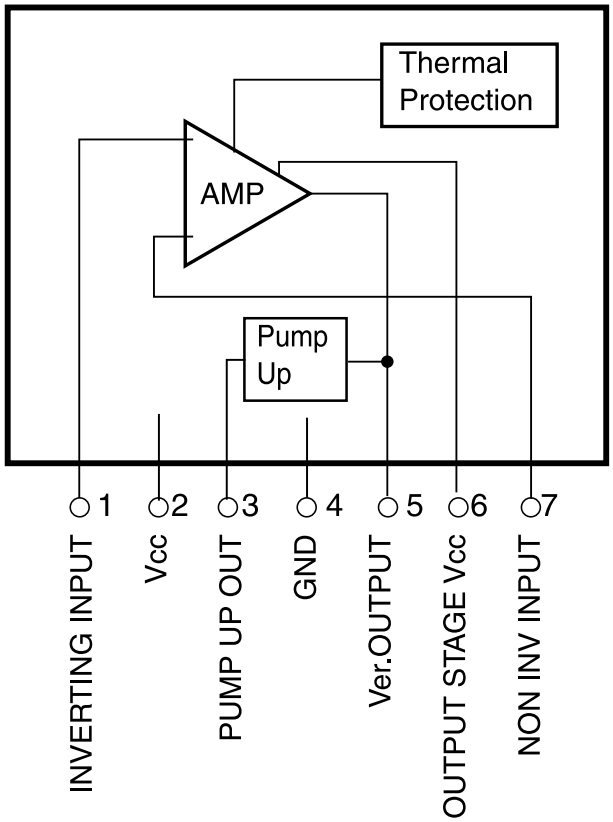
① Description

The LA78040 is a Vertical deflection output IC for TVs and CRT displays with excellent image quality.
This IC Can drive the direct(even including a DC component) deflection yoke with the sawtooth wave output.
Because the maximum deflection current is 1.8App, the LA78040 is suited for small and medium screen sets.

② Features

- Low power dissipation due to built-in pump-up circuit
- Vertical output circuit
- Thermal protection circuit built in
- Excellent crossover characteristics
- DC coupling possible

③ BLOCK DIAGRAM



TECHNICAL INFORMATION

9. HORIZONTAL DEFLECTION OUTPUT TRANSISTOR, KTD2499(Q404)

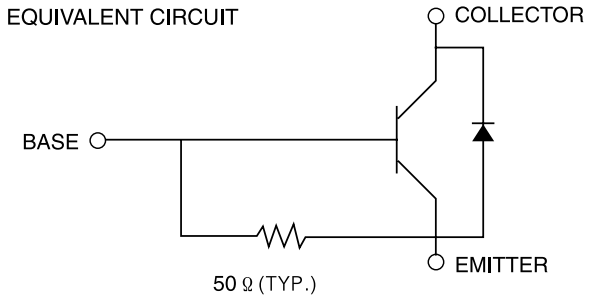
It is a horizontal deflection output transistor for color TV application.

FEATURES

- High Voltage : $V_{CBO} \geqq 1500V$
- Low Saturation Voltage : $V_{CE(SAT)}$=5V(Max.) (I_C=4A, I_B=0.8A)
- High Sheed : t_f =0.3μs(Typ.)
- Built-in Damper Diode.
- Collector Metal (Fin) is Fully Covered with Mold Resin.

MAXIMUM RATINGS (T_C=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	1500	V
Collector-Emitter Voltage		V_{CEO}	600	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	6	A
	Pulse	I_{CP}	12	
Base Current		I_B	3	A
Collector Power Dissipation		PC	50	W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~150	℃



10. Universal hi-fi audio processor for TV TDA9859(QA01)

AV STEREO ONLY

GENERAL DESCRIPTION

The TDA9859 provides control facilities for the main and the SCART channel of a TV set. Due to extended switching possibilities, signals from three stereo sources can be handled.

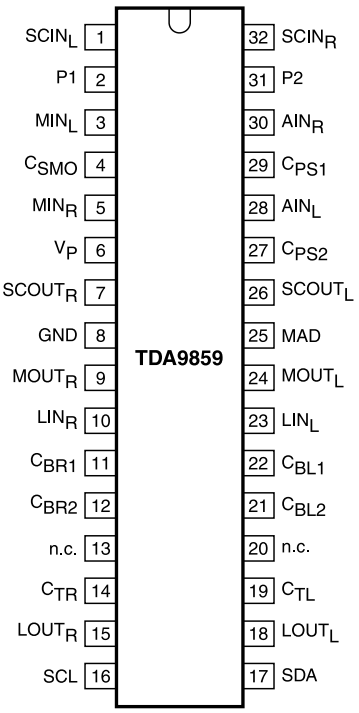
FEATURES

- Multi-source selector switches six AF inputs (three stereo sources or six mono sources)
- Each of the input signals can be switched to each of the outputs (crossbar switch)
- Outputs for loudspeaker channel and peri-TV connector(SCART)
- Switchable spatial stereo and pseudo stereo effects
- Audio surround decoder can be added externally
- Two general purpose logic output ports
- I^2C-bus control of all functions.

FUNCTIONAL DESCRIPTION

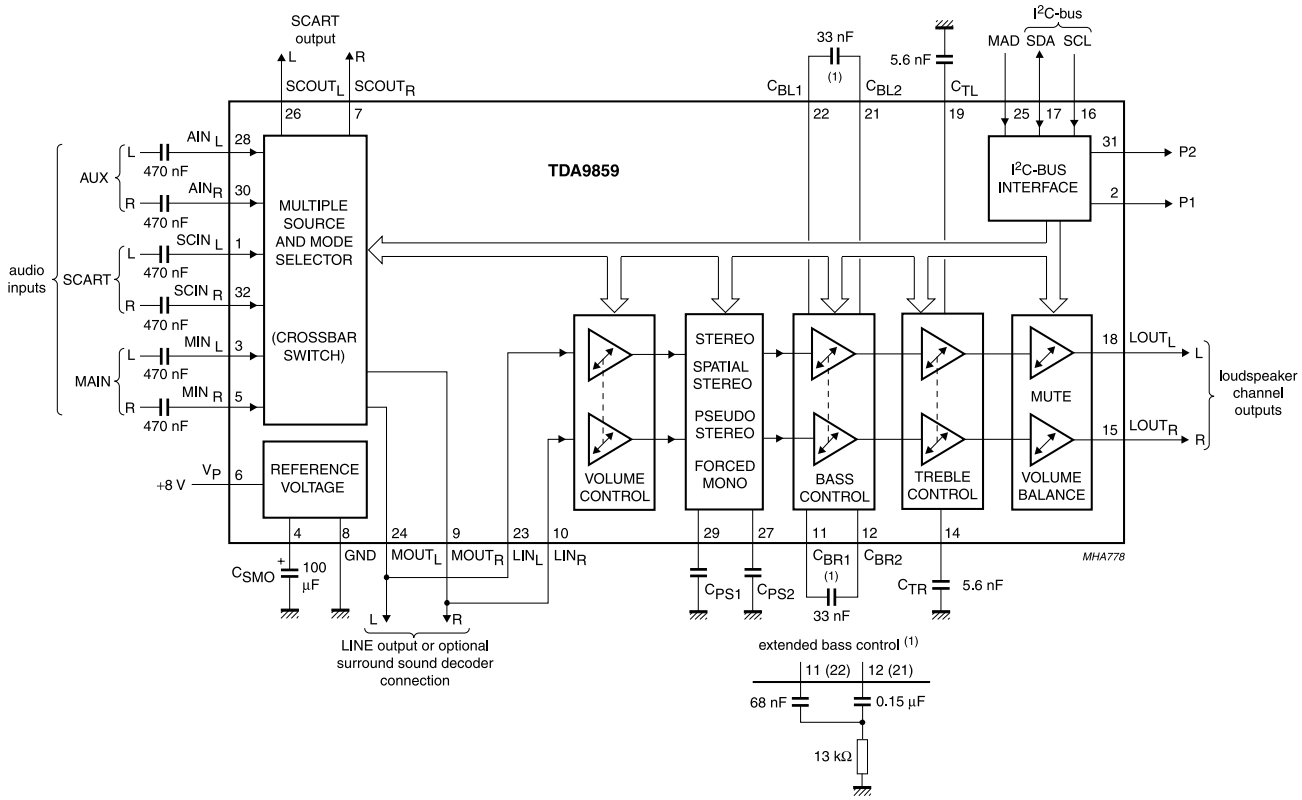
- The TDA9859 consists of the following functions:
- Source select switching block
- Loudspeaker channel with effect controls
- Two port outputs for general purpose
- I^2C-bus control.

PIN CONFIGURATION



SYMBOL	PIN	DESCRIPTION
$SCIN_L$	1	SCART input; left channel
P1	2	port 1 output
MIN_L	3	MAIN input; left channel
C_{SMO}	4	smoothing capacitor of reference voltage
MIN_R	5	MAIN input; right channel
V_P	6	supply voltage
$SCOUT_R$	7	SCART output; right channel
GND	8	ground
$MOUT_R$	9	MAIN output; right channel
LIN_R	10	input to right loudspeaker channel
C_{BR1}	11	bass capacitor connection 1; right channel
C_{BR2}	12	bass capacitor connection 2; right channel
n.c.	13	not connected
C_{TR}	14	treble capacitor connection; right channel
$LOUT_R$	15	loudspeaker output; right channel
SCL	16	serial clock input; I^2C-bus
SDA	17	serial data input/output; I^2C-bus
$LOUT_L$	18	loudspeaker output; left channel
C_{TL}	19	treble capacitor connection; left channel
n.c.	20	not connected
C_{BL2}	21	bass capacitor connection 2; left channel
C_{BL1}	22	bass capacitor connection 1; left channel
LIN_L	23	input to left loudspeaker channel
$MOUT_L$	24	MAIN output; left channel
MAD	25	module address select input
$SCOUT_L$	26	SCART output; left channel
C_{PS2}	27	pseudo stereo capacitor 2
AIN_L	28	AUX input; left channel
C_{PS1}	29	pseudo stereo capacitor 1
AIN_R	30	AUX input; right channel
P2	31	port 2 output
$SCIN_R$	32	SCART input signal RIGHT

BLOCK DIAGRAM



11. Quasi split-sound circuit and AM demodulator, TDA 3845(QS02)

→ RF STEREO ONLY

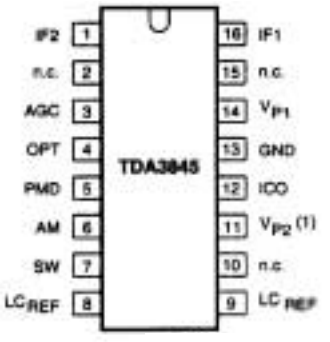
GENERAI DESCRIPTION

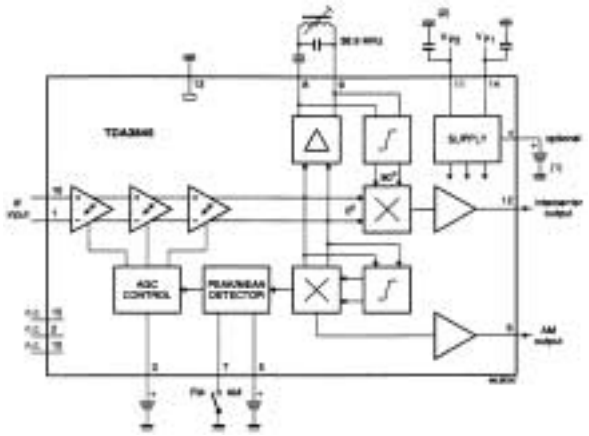
The TDA3845 is a quasi split-sound IF circuit which is designed to provide high performance television FM/AM sound.

FEATURES

- Power supply from 5V(200mW) to 8V source also an alternative 12V source (12V not for TDA3845T)
- Gain controlled wideband IF amplifier(AC coupled with three stages)
- High precision internal 90° phase shifter for quadrature demodulator
- Amplitude detector for gain control which operates as a peak detector for FM sound o and as a mean level detector for AM sound(switchable)
- In-phase wideband synchronous demodulator for AM detection
- Stabilizer circuit for ripple rejection and constant output signals
- ESD protection for all pins
- Suitable for all FM standards and L as well as L-accent standard
- NICAM compatible.

PIN configuration





SYMBOL	PIN	DESCRIPTION
IF2	1	IF amplifier input 2
n.c	2	not connected
AGC	3	AGC control capacitor
OPT	4	optional capacitor(see note 10 to the characteristics)
PMD	5	peak/mean detector capacitor
AM	6	AM output
SW	7	FM/AM switch
LCREF	8	LC reference circuit for the picture carrier
LCREF	9	LC reference circuit for the picture carrier
n.c	10	not connected
Vp2	11	positive supply voltage 2
		(+12V);note 1
ICO	12	intercarrier output
GND	13	ground(0V)
Vp1	14	positive supply voltage 1(+5V)
n.c	15	not connected
IF1	16	IF amplifier input 1

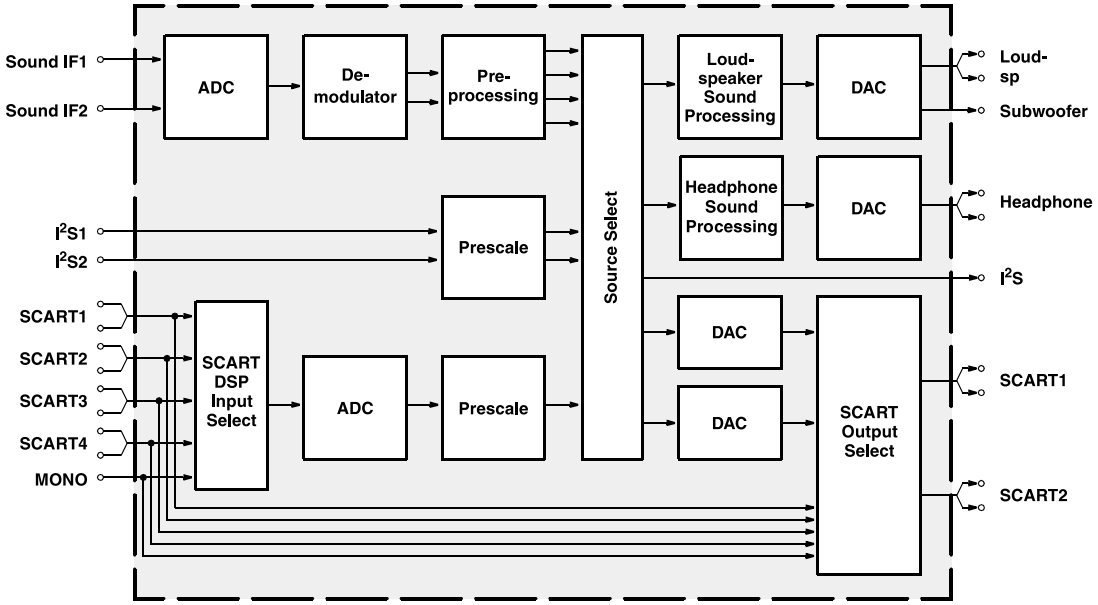
12. Multi-Standard sound processor, MSP3410G(QS01)

①Description

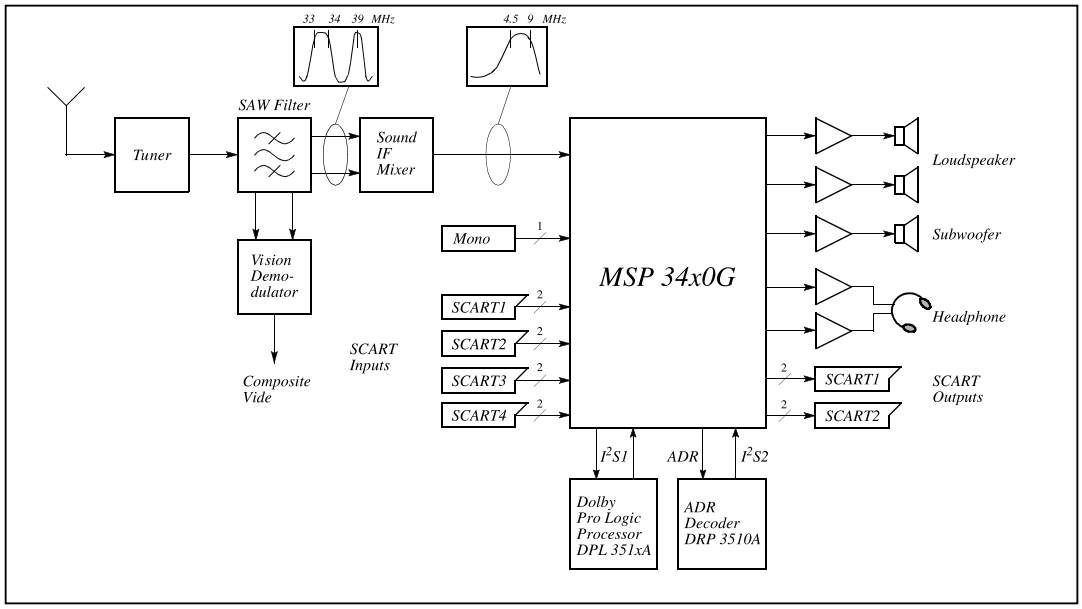
RF STEREO ONLY

The MSP 34x0G 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.

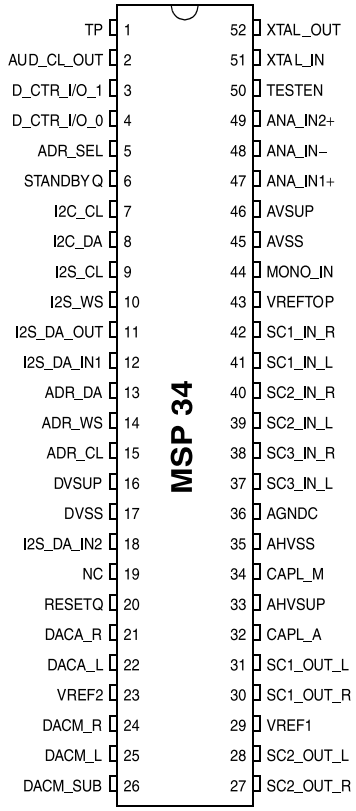
②BLOCK DIAGRAM



③Application



④ PIN configuration



Pin No. PSDIP 52-pin	Pin Name	Type	Connection	Short description
14	ADR_WS	OUT	LV	ADRword strobe
-	NC		LV	Not connected
13	ADR_DA	OUT	LV	ADR data output
12	I2S_DA_IN1	IN	LV	I^2S1 data input
11	I2S_DA_OUT	OUT	LV	I^2S data output
10	I2S_WS	IN/OUT	LV	I^2S word strobe
9	I2S_CL	IN/OUT	LV	I^2S clock
8	I2C_DA	IN/OUT	OBL	I^2C data
7	I2C-CL	IN/OUT	OBL	I^2C clock
-	NC		LV	Not connected
6	STANDBYQ	IN	OBL	Stand-by(low-active)
5	ADR_SEL	IN	OBL	I^2C Bus address select
4	D_CTR_I/O_0	IN/OUT	LV	D_CTR_I/O_0
3	D_CTR_I/O_1	IN/OUT	LV	D_CTR_I/O_1
-	NC		LV	Not connected
-	NC		LV	Not connected
-	NC		LV	Not connected
2	AUD_CL_OUT	OUT	LV	Audio clock output (18.432 MHz)
1	TP		LV	Test pin
52	XTAL_OUT	OUT	OBL	Crystal oscillator
51	XTAL_IN	IN	OBL	Crystal oscillator
50	TESTEN	IN	OBL	Test Pin
49	ANA_IN2+	IN	AVSSvia 56 pF/LV	IF input2(can be left vacant, only if IF input 1 is also not in use)
48	ANA_IN-	IN	AVSS via 56pF/LV	IF common(can be left vacant, only if IF input 1 is also not in use)

Pin No. PSDIP 52-pin	Pin Name	Type	Connection	Short description
47	ANA_IN1+	IN	LV	IF Input 1
46	AVSUP		OBL	Analog Power supply 5 V
-	AVSUP		OBL	Analog Power supply 5 V
-	NC		LV	Not connected
-	NC		LV	Not connected
45	AVSS		OBL	Analog ground
-	AVSS		OBL	Analog ground
44	MONO_IN	IN	LV	Mono input
-	NC		LV	Not connected
43	VREFTOP		OBL	Reference voltage IF A/D converter
42	SC1_IN_R	IN	LV	SCART 1 input, right
41	SC1_IN_L	IN	LV	SCART 1 input, left
-	ASG1		AHVSS	Analog Shield Ground1
40	SC2_IN_R	IN	LV	SCART2 input, right
39	SC2_IN_L	IN	LV	SCART2 input, left
-	ASG2		AHVSS	Analog Shield Ground 2
38	SC3_IN_R	IN	LV	SCART 3 input, right
37	SC3_IN_R	IN	LV	SCART 3 input, left
-	ASG4		AHVSS	Analong Shield Ground 4
-	SC4_IN_R	IN	LV	SCART 1 INPUT, right
-	SC4_IN_L	IN	LV	SCART 1 INPUT, left
-	NC		LV or AHVSS	Not connected
36	AGNDC		OBL	Analog reference voltage
35	AHVSS		OBL	Analog ground
-	AHVSS		OBL	Analog ground
-	NC		LV	Not connected
-	NC		LV	Not connected
34	CAPL_M		OBL	Volume capacitor MAIN
33	AHVSUP		OBL	Analog power supply 8V
32	CAPL_A		OBL	Volume capacitor AUX

Pin No. PSDIP 52-pin	Pin Name	Type	Connection	Short description
31	SC1_OUT_L	OUT	LV	SCART output 1, left
30	SC1_OUT_R	OUT	LV	SCART output 1, right
29	VREF1		OBL	Reference ground 1
28	SC2_OUT_L	OUT	LV	SCART output 2, left
27	SC2_OUT_R	OUT	LV	SCART output 2, right
-	NC		LV	Not connected
-	NC		LV	Not connected
26	DACM_SUB	OUT	LV	Subwoofer output
-	NC		LV	Not connected
25	DACM_L	OUT	LV	Loudspeaker out, left
24	DACM_R	OUT	LV	Loudspeaker out, right
23	VREF2		OBL	Reference ground 2
22	DACA_L	OUT	LV	Headphone out, left
21	DACA_R	OUT	LV	Headphone out, right
-	NC		LV	Not connected
-	NC		LV	Not connected
20	RESETQ	IN	OBL	Power-on-reset
-	NC		LV	Not connected
-	NC		LV	Not connected
19	NC		LV	Not connected
18	I2S_DA_IN2	IN	LV	I2S2-data input
17	DVSS		OBL	Digital ground
-	DVSS		OBL	Digital ground
-	DVSS		OBL	Digital ground
16	DVSUP		OBL	Digital power supply 5V
-	DVSUP		OBL	Digital power supply 5V
-	DVSUP		OBL	Digital power supply 5V
15	ADR_CL	OUT	LV	ADR clock

TECHNICAL INFORMATION

13. 6W Mono Bridge Tied Load(BTL) audio amplifier, TDA 8943SF(Q606)

FM MONO ONLY

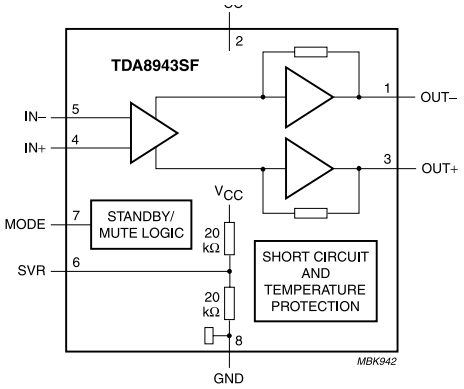
1. General description

The TDA8643SF is a single-channel audio power amplifier with an output power of 6W at an 8Ω load and a 12V supply. The circuit contains a Bridge Tied Load (BTL) amplifier with an all-NPN output stage and standby/mute logic. The TDA8943SF comes in a 9-lead single in-ine(SIL)medium power package. The TDA8943SF is printed-circuit board(PCB) compatible with all other types in the TDA894x family One PCB footprint accommodates both the mono and the stereo products.

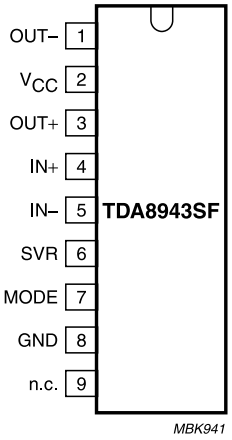
2. Features

- Few external componets
- Fixed gain
- Standby and mute mode
- No on/off switching plops
- Low standby current
- High supply voltage ripple rejection
- Outputs short-circuit Protected to ground supply and across the load
- Thermally Protected
- Printed-circuit board compatible

3. BLOCK DIAGRAM



4. PIN configuration



Symbol	Pin	Description
OUT-	1	Negative loudspeaker terminal
Vcc	2	supply voltage
OUT+	3	Positive loudspeaker terminal
IN+	4	Positive input
IN-	5	Negative input
SVR	6	Half supply voltage decoupling(ripple rejection)
MODE	7	mode selection input(standby, mute, operating)
GND	8	ground
n.c	9	not connented

14. 2x7W stereo Bridge Tied Load(BTL)audio amplifier, TDA 8944J(Q606)

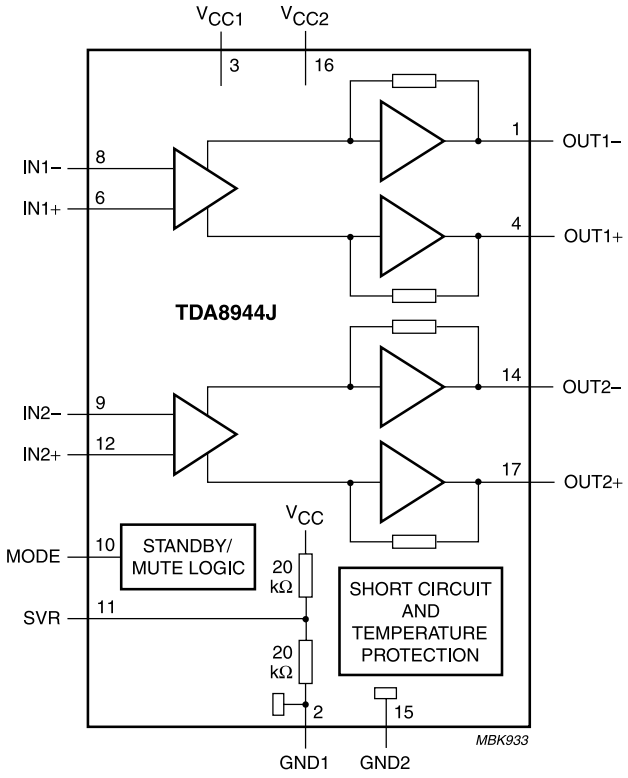
1. General description

The TDA8944J is a dual-channel audio power amplifier with an output power of 2x7W at an 8 Ω load and a 12V supply. The circuit contains a Bridge Tied Load (BTL) amplifiers with an all-NPN output stage and standby/mute logic. The TDA8944J comes in a 17-pin DIL-bent-SIL(DBS) power package. The TDA8944J is printed-circuit board(PCB) compatible with all other types in TDA894x family. One PCB footprint accommodates both the mono and the stereo products

2. Features

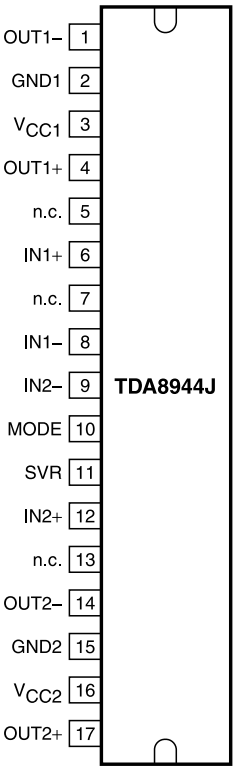
- Few external componets
- Fixed gain
- Standby and mute mode
- No on/off switching plops
- Low standby current
- High supply voltage ripple rejection
- Outputs short-circuit Protected to ground, supply and across the load
- Thermally Protected
- Printed-circuit board compatible

3. BLOCK DIAGRAM



TECHNICAL INFORMATION

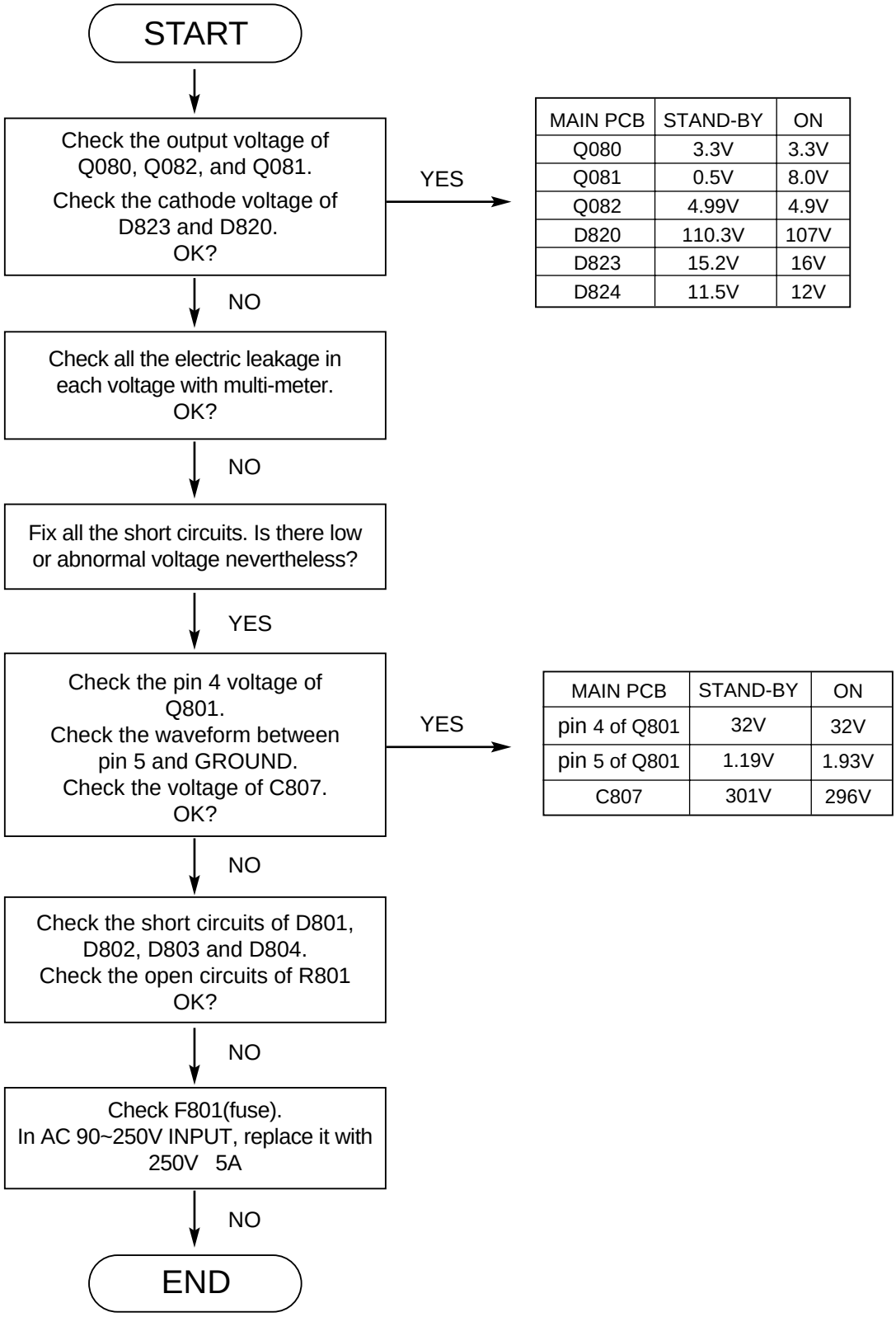
4.PIN configuration



Symbol	Pin	Description
OUT1-	1	negative loudspeaker terminal 1
GND1	2	ground channel 1
Vcc1	3	supply voltage channel 1
OUT1+	4	positive loudspeaker terminal1
n.c	5	cot connected
IN1+	6	positive input 1
n.c	7	not cnonnected
IN1-	8	negative input 1
IN2-	9	negative input 2
MODE	10	mode selection input(standby, mute, operating)
SVR	11	half supply voltage decoupling(ripple rejection)
IN2+	12	positive input 2
n.c.	13	not connected
OUT2-	14	negative loudspeaker terminal 2
GND2	15	ground channel 2
Vcc2	16	supply voltage channel 2
OUT2+	17	positive loudspeaker terminal 2

TROUBLE SHOOTING

1. NO POWER (The secondary of the SMPS transformer)

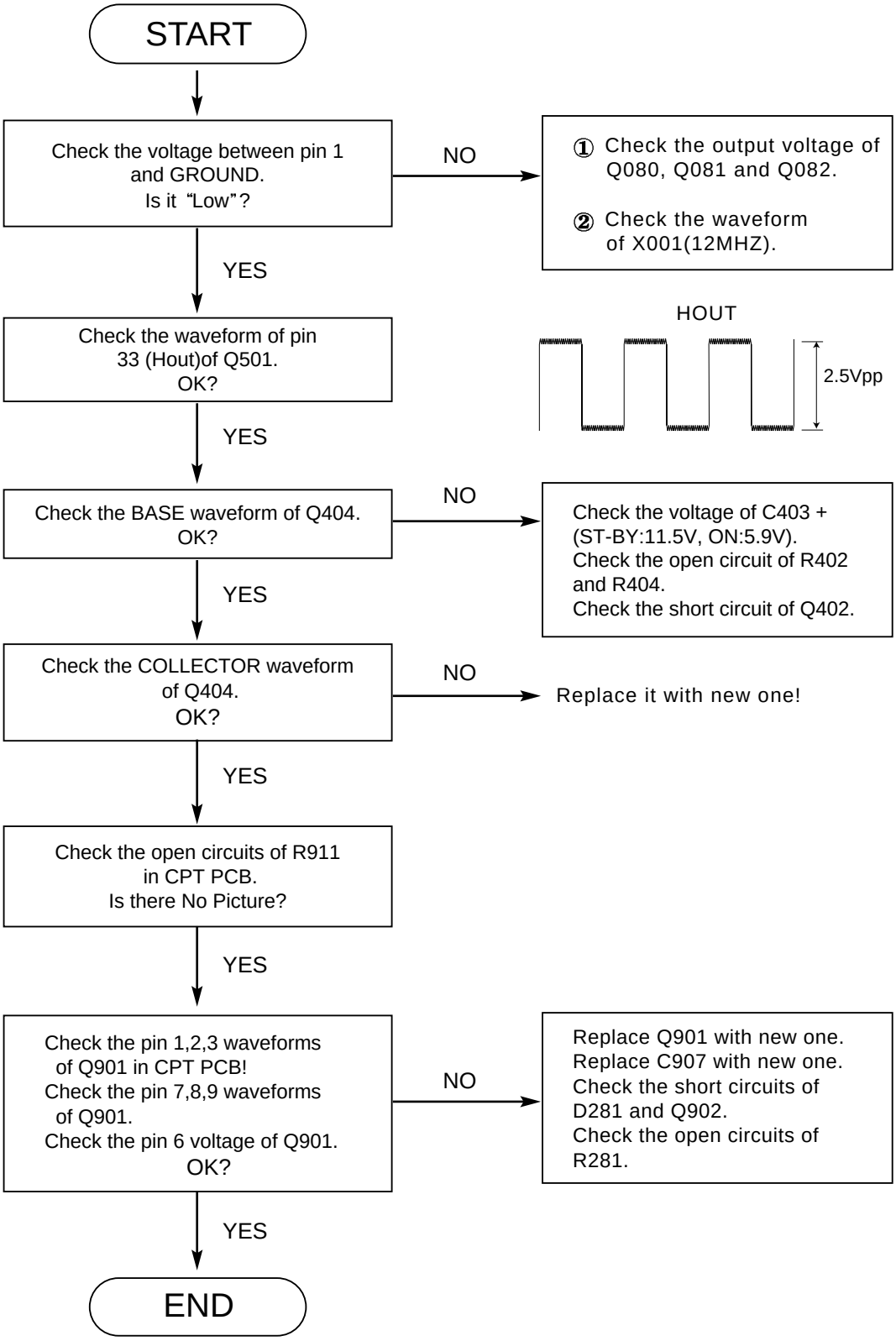


MAIN PCB	STAND-BY	ON
Q080	3.3V	3.3V
Q081	0.5V	8.0V
Q082	4.99V	4.9V
D820	110.3V	107V
D823	15.2V	16V
D824	11.5V	12V

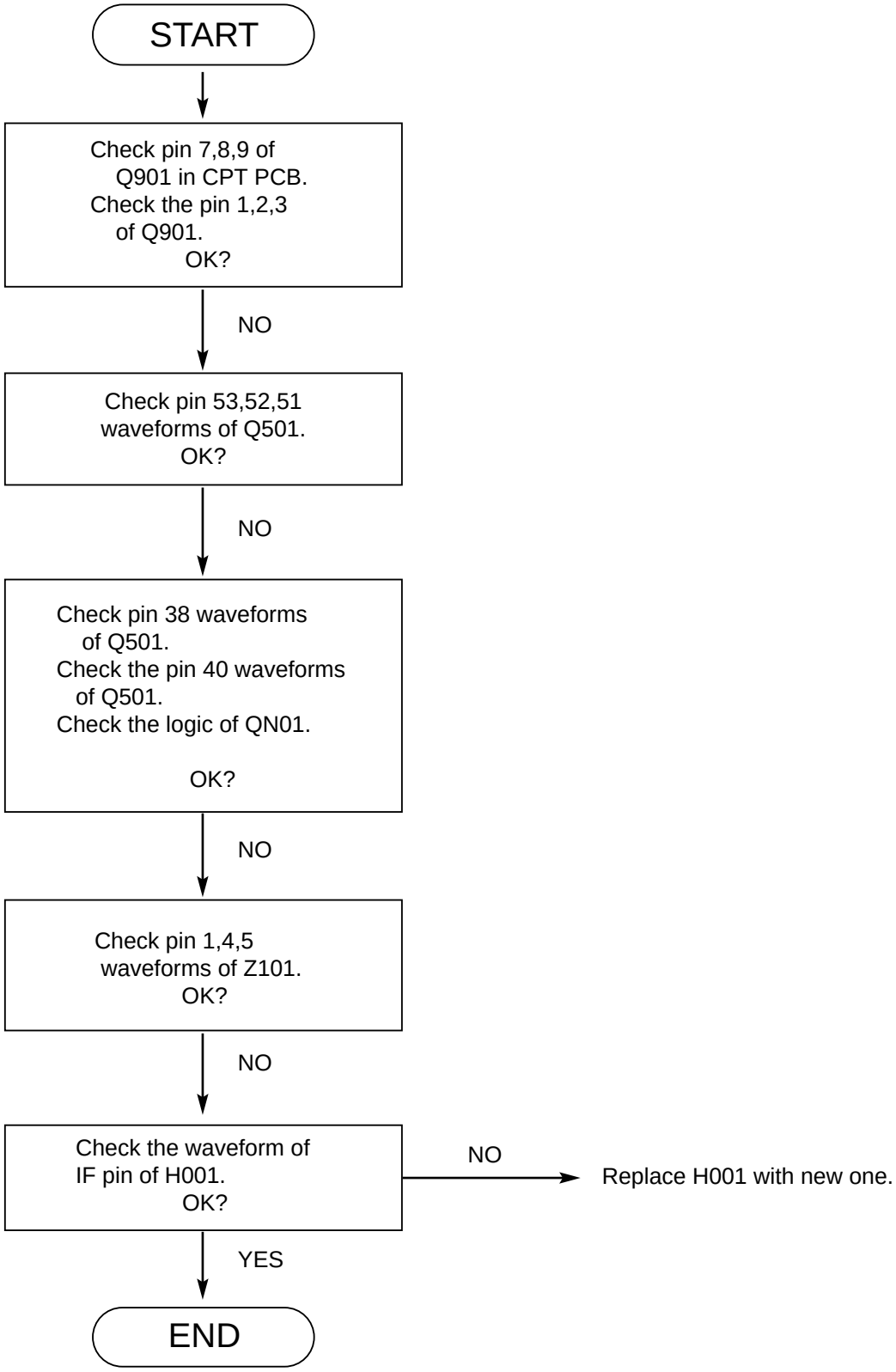
MAIN PCB	STAND-BY	ON
pin 4 of Q801	32V	32V
pin 5 of Q801	1.19V	1.93V
C807	301V	296V

TROUBLE SHOOTING

2. NO RASTER (The power is normal but the heater voltage is “LOW”)

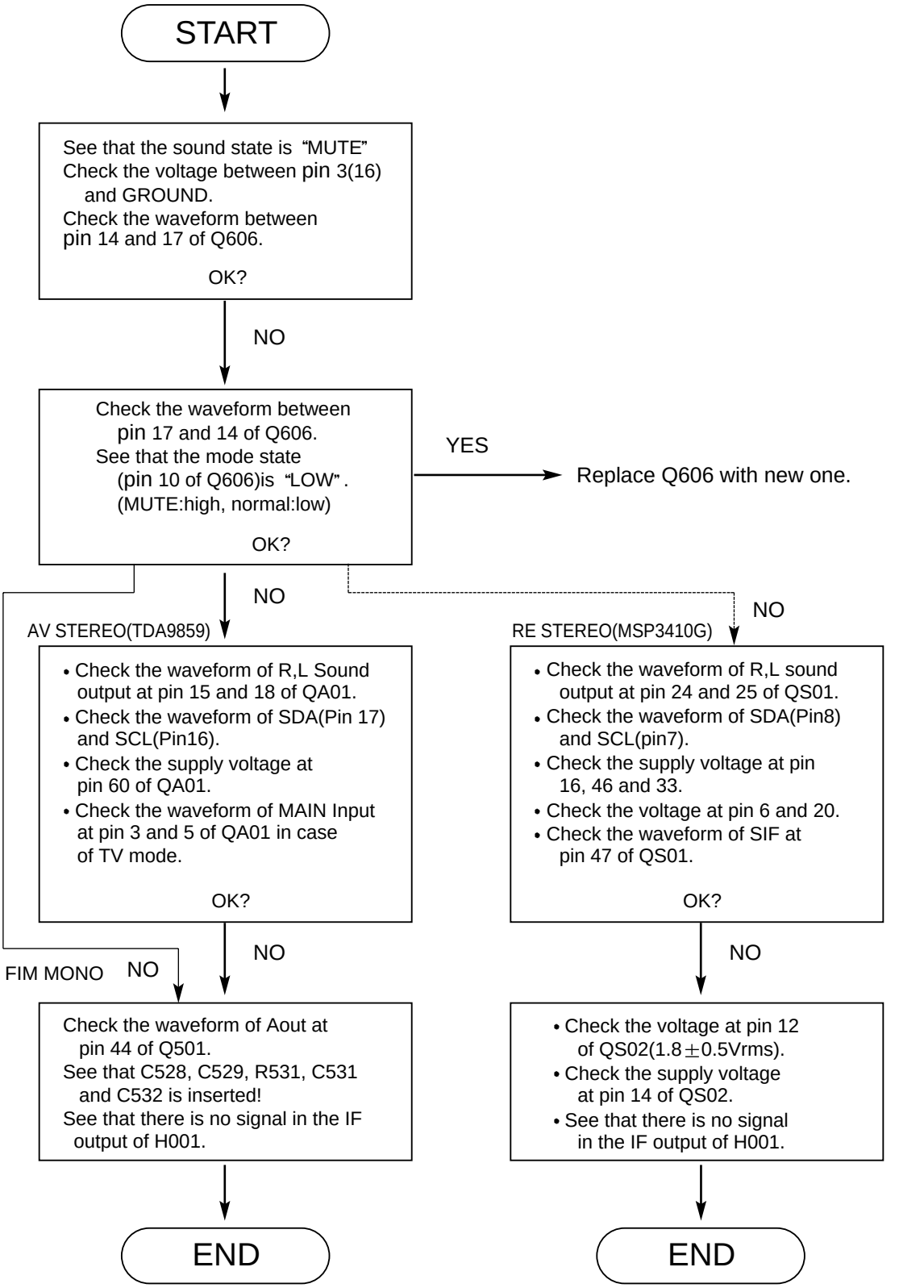


3. NO PICTURE (SOUND is OK)

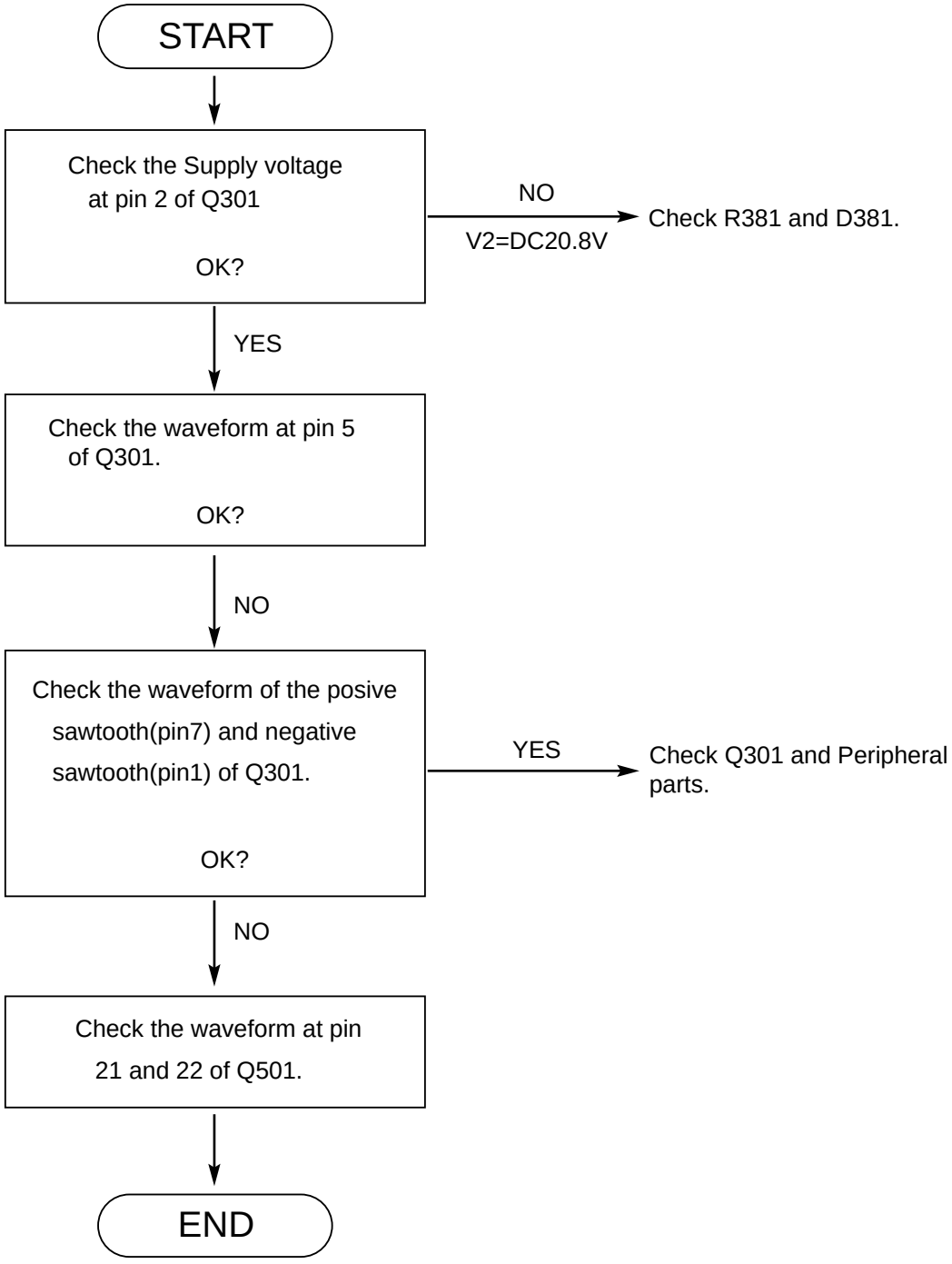


TROUBLE SHOOTING

4. NO SOUND (PICTURE is “OK”)

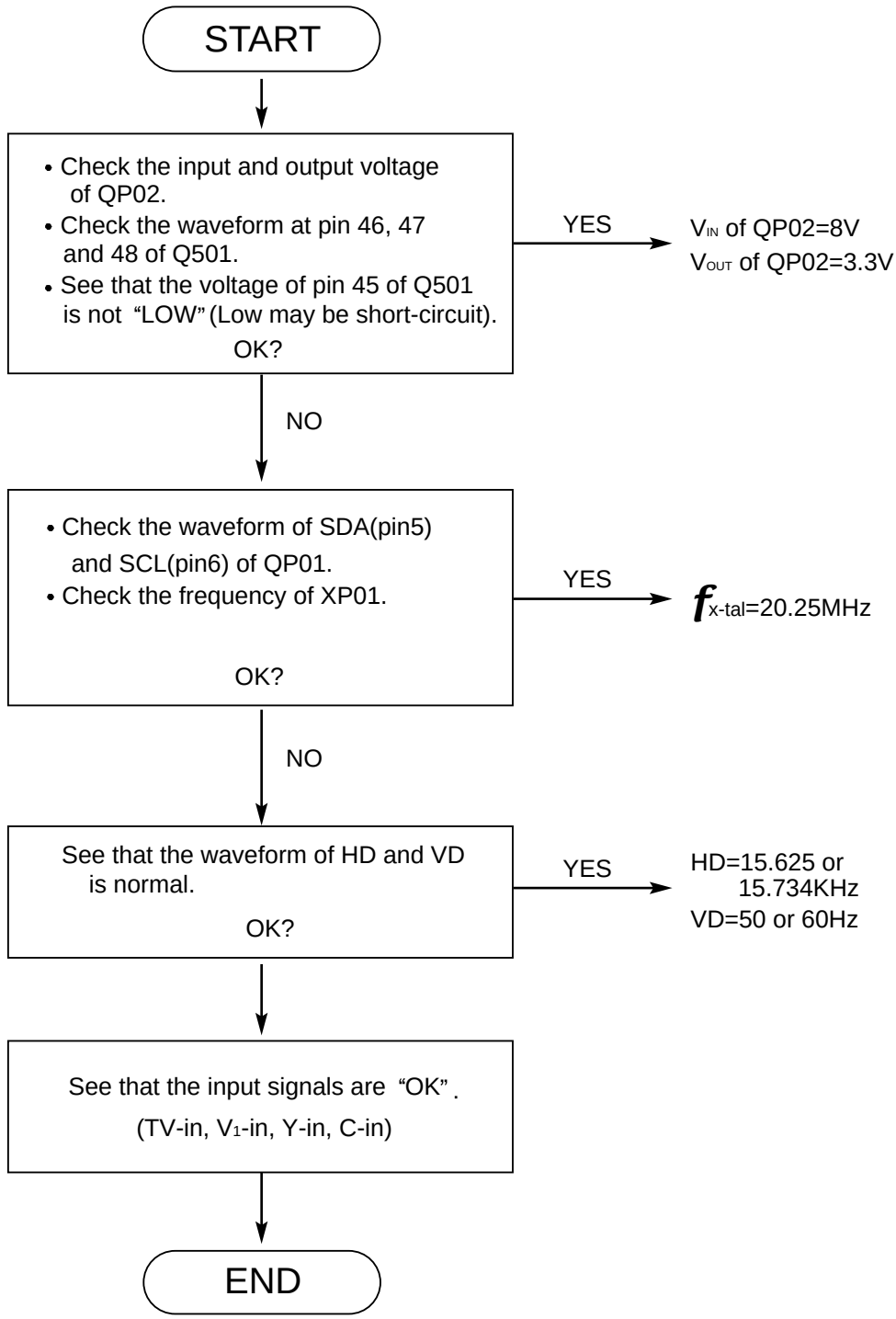


5. Vertical Line

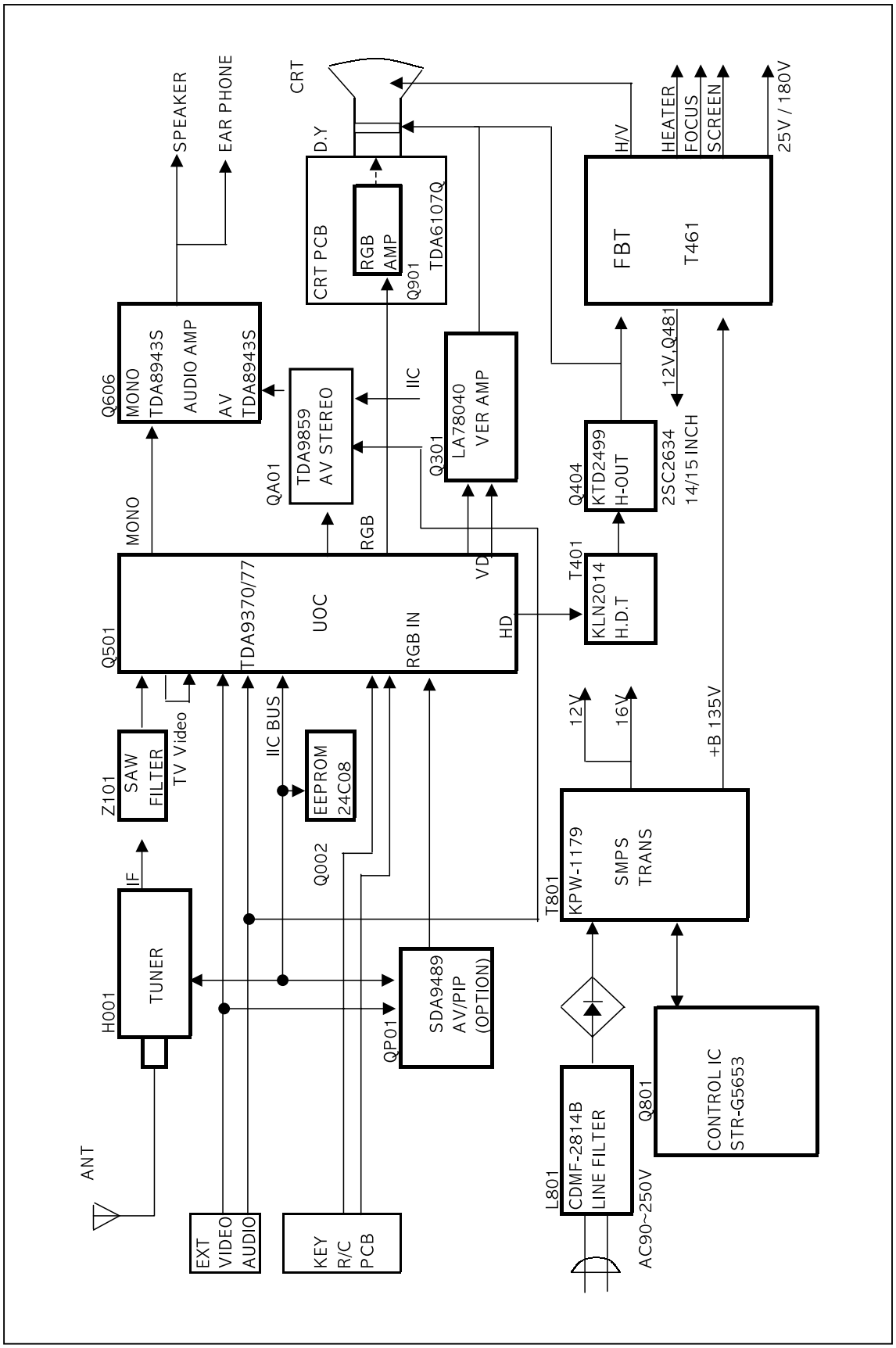


TROUBLE SHOOTING

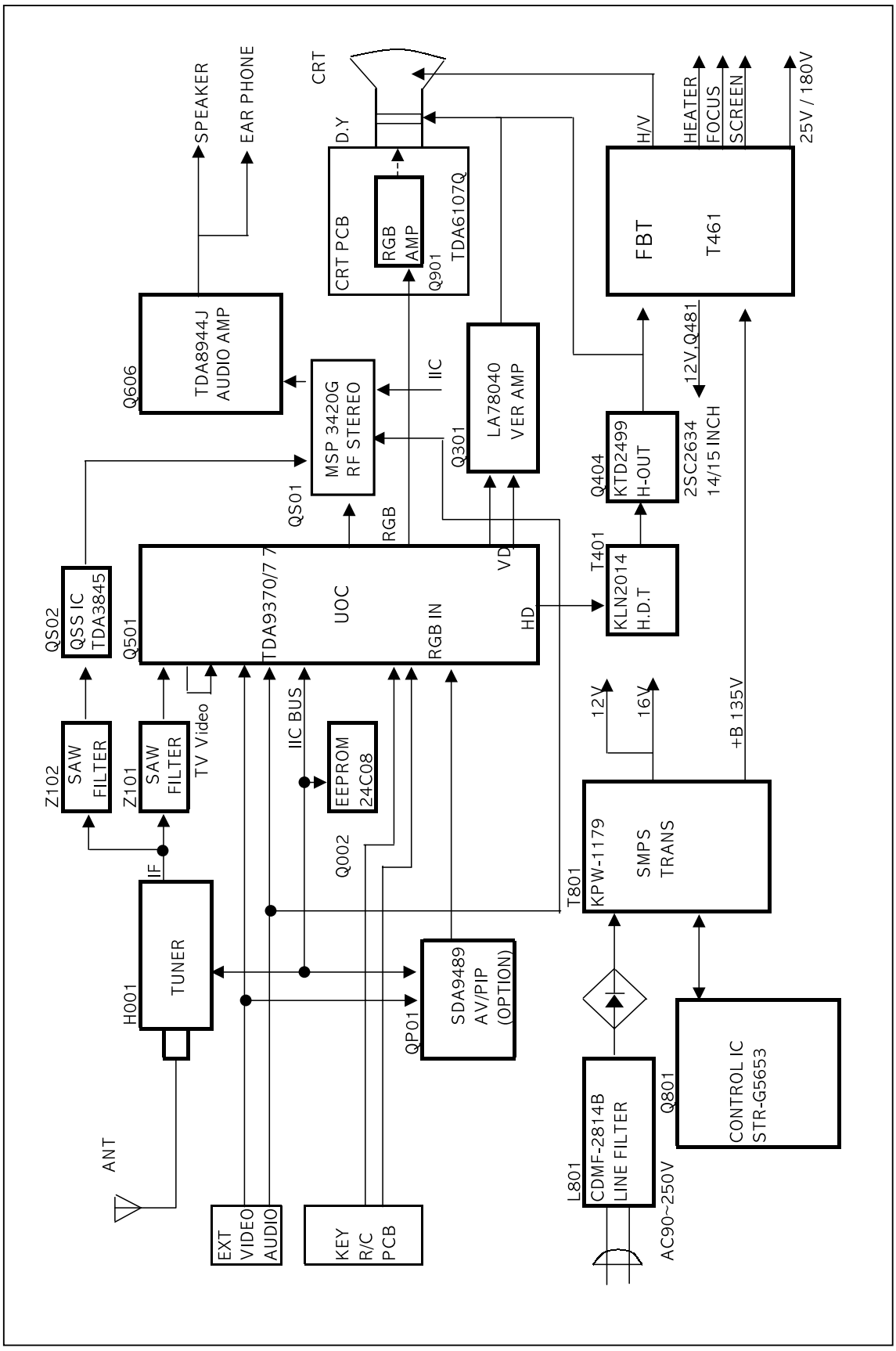
6. NO PIP(Option)



BLOCK DIAGRAM(AV STEREO)



BLOCK DIAGRAM(RF STEREO)



PCB LAYOUT(MAIN)

OPTION LIST

1. MAIN

Part No.	ITEM-CODE	Description	14"	20"	21"
C306	12085055T	"CHEMICON,50V 0.47MF LL 85C(5*11)"	1	0	0
	12085056T	"CHEMICON,50V 1MF LL 85C(5*11)"	0	0	1
C306V1	12085055T	"CHEMICON,50V 0.47MF LL 85C(5*11)"	0	1	0
C404	12828274B	"P/ CAP, T 200V 0.27MF J PFU"	1	0	1
C404V1	12828244B	"P/ CAP, T 200V 0.24MF J PFU"	0	1	0
C421	12094216T	"CERA-CAPA, DG3DHR471K825 (2KV470)"	1	1	0
C422V1	12094216T	"CERA-CAPA, DG3DHR471K825 (2KV470)"	0	1	0
EL08	11061303	"EYELET, HTR 2.80*2.9 SNI"	0	1	1
EL09	11061303	"EYELET, HTR 2.80*2.9 SNI"	0	1	1
ES20	11061202	"EYELET, HTR 2.11*2.8 SNI"	0	1	1
ES27	11061202	"EYELET, HTR 2.11*2.8 SNI"	1	0	0
L401RA	11222140A	"COIL, LINEARITY KLN-5167A(310MH)"	0	0	1
L401RB	C1222020	"COIL, LIN CKLN2045 125UH (DR 10*10)"	1	0	0
M902	300924035C	"HARNESS, 9P 350MM (5264-5395)"	1	0	0
	E00924045E	"HARNESS, 9P 450MM (5264-5395) ETL"	0	1	1
Q404A	11865775	"HEAT SINK, 29HG (55MM)"	0	1	1
Q404B	11032382	"SCREW, TTB 3*10 SZN"	0	1	1
Q404C	11971010	"COMPOUND SILICON, YG6260"	0	0.025	0.025
Q404Z	150500542	"HEAT SINK, ASS'Y KTD2499 20US500"	0	1	1
R309	12321109T	"OXIDE RESISTOR, B 1/2W 1 OHM J"	0	0	1
	12321159T	"OXIDE RESISTOR, B 1/2W 1.5 OHM J"	1	0	0
R309V1	12321129T	"OXIDE RESISTOR, B 1/2W 1.2 OHM J"	0	1	0
R326	12321101T	"OXIDE RESISTOR, B 1/2W 100 OHM J"	1	0	0
	12321271T	"OXIDE RESISTOR, B 1/2W 270 OHM J"	0	1	1
R402	12322270S	"OXIDE RESISTOR, B 1W 27 OHM J"	0	1	1
	12322390S	"OXIDE RESISTOR, B 1W 39 OHM J"	1	0	0
R404	12322270S	"OXIDE RESISTOR, B 1W 27 OHM J"	0	1	1
	12322390S	"OXIDE RESISTOR, B 1W 39 OHM J"	1	0	0
R409	12321221T	"OXIDE RESISTOR, B 1/2W 220 OHM J"	1	0	0
	12323561S	"OXIDE RESISTOR, B 2W 560 OHM J"	0	1	1
R485	12321123T	"OXIDE RESISTOR, B 1/2W 12K OHM J"	1	0	0
	12321822T	"OXIDE RESISTOR, B 1/2W 8.2K OHM J"	0	1	1
R486	12321159T	"OXIDE RESISTOR, B 1/2W 1.5 OHM J"	1	0	0
	12323159S	"OXIDE RESISTOR, B 2W 1.5 OHM J"	0	0	1
R486V1	12323159S	"OXIDE RESISTOR, B 2W 1.5 OHM J"	0	1	0
R902	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"	0	1	1
R903	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"	0	1	1
R914	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"	1	0	0
R915	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"	1	0	0
V901A	C1116435	"SOCKET CRT, GZS 10-2-5 20" 28MM"	0	1	1
	C1116436	"SOCKET CRT, GZS 8-6-8 14" 22MM"	1	0	0

OPTION LIST

2. SOUND

Part No.	ITEM-CODE	Description	A/V STEREO	MTS STEREO	MONO
C528	12692222T	“PLASTIC CAPACITOR, M 50V 2200PF J”	1	0	1
C529	12797100T	“CHEMICON, 50V 10MF 85C 5*11”	1	0	1
C531	12692122T	“PLASTIC CAPACITOR, M 50V 1200PF J”	1	0	1
C532	12436331T	“CERAMIC CAPACITOR, SL 50V 330PF J”	1	0	1
C535	12797229T	“CHEMICON, 50V 2.2MF 85C 5*11”	0	0	1
C619	12692224T	“PLASTIC CAPACITOR, M 50V 0.22MF J”	1	1	0
C620	12692224T	“PLASTIC CAPACITOR, M 50V 0.22MF J”	1	1	0
C622	12692272T	“PLASTIC CAPACITOR, M 50V 2700PF J”	1	1	0
C651	12692682T	“PLASTIC CAPACITOR, M 50V 6800PF J”	1	1	0
C677	12797109T	“CHEMICON, 50V 1MF 85C 5*11”	1	1	0
C825	12087017T	“CHEMICON, 25V 2200UF SMG(12.5*25)”	1	1	0
CA01	12692224T	“PLASTIC CAPACITOR, M 50V 0.22MF J”	1	0	0
CA02	12692224T	“PLASTIC CAPACITOR, M 50V 0.22MF J”	1	0	0
CA03	12794101T	“CHEMICON, 16V 100MF 85C 6.3*11”	1	0	0
CA04	12794470T	“CHEMICON, 16V 47MF 85C 5*11”	1	0	0
CA05	12692223T	“PLASTIC CAPACITOR, M 50V 0.022MF J”	1	0	0
CA06	12692683T	“PLASTIC CAPACITOR, M 50V 0.068MF J”	1	0	0
CA07	12692154T	“PLASTIC CAPACITOR, M 50V 0.15MF J”	1	0	0
CA08	12692562T	“PLASTIC CAPACITOR, M 50V 5600PF J”	1	0	0
CA09	12797479T	“CHEMICON, 50V 4.7MF 85C 5*11”	1	0	0
CA10	12797479T	“CHEMICON, 50V 4.7MF 85C 5*11”	1	0	0
CA11	12692562T	“PLASTIC CAPACITOR, M 50V 5600PF J”	1	0	0
CA12	12692154T	“PLASTIC CAPACITOR, M 50V 0.15MF J”	1	0	0
CA13	12692683T	“PLASTIC CAPACITOR, M 50V 0.068MF J”	1	0	0
CA14	12692562T	“PLASTIC CAPACITOR, M 50V 5600PF J”	1	0	0
CA16	12692473T	“PLASTIC CAPACITOR, M 50V 0.047MF J”	1	0	0
CA18	12692224T	“PLASTIC CAPACITOR, M 50V 0.22MF J”	1	0	0
CS01	12353180T	“CERAMIC CAPACITOR, CH 50V 18PF J”	0	1	0
CS02	12353180T	“CERAMIC CAPACITOR, CH 50V 18PF J”	0	1	0
CS03	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS04	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS05	12473470T	“CERAMIC CAP, SL 50V 47PF J AXIAL”	0	1	0
CS06	12474101T	“CERAMIC CAP, B 50V 100PF K AXIAL”	0	1	0
CS07	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS09	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS10	12797109T	“CHEMICON, 50V 1MF 85C 5*11”	0	1	0
CS11	12797109T	“CHEMICON, 50V 1MF 85C 5*11”	0	1	0
CS12	12797109T	“CHEMICON, 50V 1MF 85C 5*11”	0	1	0
CS19	12797339T	“CHEMICON, 50V 3.3MF 85C 5*11”	0	1	0
CS20	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS21	12797100T	“CHEMICON, 50V 10MF 85C 5*11”	0	1	0
CS22	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS23	12683471T	“CHEMICON, 16V 470MF SHL,SD (8*11.5)”	0	1	0

OPTION LIST

Part No.	ITEM-CODE	Description	A/V STEREO	MTS STEREO	MONO
CS31	12497103T	“CERAMIC CAP, F 25V 0.01MF Z AXIAL”	0	1	0
CS32	12794220T	“CHEMICON, 16V 22MF 85C 5*11”	0	1	0
CS33	12692103T	“PLASTIC CAPACITOR, M 50V 0.01MF J”	0	1	0
CS34	12797479T	“CHEMICON, 50V 4.7MF 85C 5*11”	0	1	0
CS35	12797100T	“CHEMICON, 50V 10MF 85C 5*11”	0	1	0
CS37	12353270T	“CERAMIC CAPACITOR, CH 50V 27PF J”	0	1	0
CS41	12797229T	“CHEMICON, 50V 2.2MF 85C 5*11”	0	1	0
CS42	12793331T	“CHEMICON, 10V 330MF 85C 8*12”	0	1	0
CS61	12497223T	“CERAMIC CAP, F 25V 0.022MF Z AXIAL”	0	1	0
CS62	12497223T	“CERAMIC CAP, F 25V 0.022MF Z AXIAL”	0	1	0
CS63	12797478T	“CHEMICON, 50V 0.47MF 85C 5*11”	0	1	0
CS64	12797478T	“CHEMICON, 50V 0.47MF 85C 5*11”	0	1	0
D632	11115641T	“ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W”	1	1	0
D651	11115641T	“ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W”	1	1	0
D652	11115641T	“ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W”	1	1	0
D823	11115788	“DIODE, F-REC SF-54 (FOR-20MM SH)”	1	1	0
DA01	11115638T	“ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W”	1	0	0
DS01	11115638T	“ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W”	0	1	0
EL18	11061303	“EYELET, HTR 2.80*2.9 SNI”	1	1	0
EL19	11061303	“EYELET, HTR 2.80*2.9 SNI”	1	1	0
EL20	11061303	“EYELET, HTR 2.80*2.9 SNI”	1	1	0
EL21	11061303	“EYELET, HTR 2.80*2.9 SNI”	1	1	0
ES12	11061202	“EYELET, HTR 2.11*2.8 SNI”	1	1	0
ES13	11061202	“EYELET, HTR 2.11*2.8 SNI”	1	1	0
ES39	11061202	“EYELET, HTR 2.11*2.8 SNI”	0	0	1
ES40	11061202	“EYELET, HTR 2.11*2.8 SNI”	0	0	1
J007	11183004	“PLATING WIRE, 0.6MM”	1	0	0
J010	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J011	11183004	“PLATING WIRE, 0.6MM”	0	0	1
J012	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J013	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J014	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J016	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J017	11183004	“PLATING WIRE, 0.6MM”	1	0	1
J018	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J019	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J021	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J024	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J025	11183004	“PLATING WIRE, 0.6MM”	1	0	1
J030	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J032	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J033	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J043	11183004	“PLATING WIRE, 0.6MM”	1	1	0

OPTION LIST

Part No.	ITEM-CODE	Description	A/V STEREO	MTS STEREO	MONO
J049	11183004	“PLATING WIRE, 0.6MM”	0	0	1
J065	11183004	“PLATING WIRE, 0.6MM”	0	0	1
J070	11183004	“PLATING WIRE, 0.6MM”	0	0	1
J075	11183004	“PLATING WIRE, 0.6MM”	0	0	1
J086	11183004	“PLATING WIRE, 0.6MM”	0	1	0
J112	11183004	“PLATING WIRE, 0.6MM”	1	0	1
J134	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J148	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J149	11183004	“PLATING WIRE, 0.6MM”	1	1	0
J156	11183004	“PLATING WIRE, 0.6MM”	1	0	1
J721	11183004	“PLATING WIRE, 0.6MM”	1	1	0
JS12	11183004	“PLATING WIRE, 0.6MM”	0	1	0
JV01	11163140	“JACK,PJ6037B 6P YL-RDS-WH/YL-RDS-WH”	1	1	0
	11163212	“JACK, PPJ145-01 2P (L CHASSIS)”	0	0	1
JV02	11163163	“JACK, RCA S-456G 2P”	0	0	1
	11163164	“JACK, S-456K 3P”	1	1	0
L801RA	C1211003A	“COIL,LINEFILTER CKRF3004H 1.2MH MIN”	0	0	1
L801RB	11211003A	“COIL,LINE FILTER KRF3004H 1.2MH MIN”	1	1	0
L825	11103049T	“B-CORE, ZBF503M-00TA-(K)-02”	1	1	0
LA01	11237100T	“COIL, AXIAL LAL02TB 10UH K”	1	0	0
LS01	11237330T	“COIL, AXIAL LAL02TB 33UH K”	0	1	0
LS06	11183004	“PLATING WIRE, 0.6MM”	0	1	0
LS07	11237100T	“COIL, AXIAL LAL02TB 10UH K”	0	1	0
LS15	11237109T	“COIL, AXIAL LAL02TB 1UH K”	0	1	0
LS20	11262136	“COIL, KRF-A543 SIF”	0	1	0
LV80	11183004	“PLATING WIRE, 0.6MM”	0	1	0
MV03	E00524020	“HARNESS, 5P 200MM (5264-5395) ETL”	0	0	1
	E00724020A	“HARNESS, 7P 200MM (5264-5395) ETL”	1	1	0
P601	11164121	“PLUG, 2P 5267-02AX”	0	0	1
	11164123	“PLUG, 4P 5267-04AX”	1	1	0
PV03	11164124	“PLUG, 5P 5267-05AX”	0	0	1
	11164126	“PLUG, 7P 5267-07AX”	1	1	0
Q606	11118469	IC. TDA8943SF/N1 MONO AMP	0	0	1
	11118470	IC. TDA8944J/N1 STEREO AMP	1	1	0
Q606A	11865542	“HEAT SINK,(PLATE) (55MM)”	0	0	1
	11865882	“HEAT SINK, 20A1L (45MM)”	1	1	0
Q606B	11032381	“SCREW, TTB 3*8 SZN”	0	0	1
	11032388	“SCREW, TTBW 3*10 SZN”	2	2	0
Q606Z	150500480	“HEAT SINK, ASS’Y TDA8943SF 14A1L”	0	0	1
	150500482	“HEAT SINK, ASS’Y TDA8944 21QL”	1	1	0
QA01	11118471	IC. S.PROC. TDA9859/V2	1	0	0
QS01	11118436A	“IC,MSP3420G-PO-B8-V3.IC PSDIP52P”	0	1	0
QS02	11118473	IC. QSSIC TDA3845/V3	0	1	0

OPTION LIST

Part No.	ITEM-CODE	Description	A/V STEREO	MTS STEREO	MONO
QS10	11119282	“IC, REGU. 1[A] KIA7805PI(7805API)”	0	1	0
QS20	11119699T	“IC, VOLTAGE DETECTOR KIA7042AP”	0	1	0
R006	12368101T	“CARBON RESISTOR, SB 1/6W 100 OHM J”	0	0	1
R009	12368101T	“CARBON RESISTOR, SB 1/6W 100 OHM J”	0	0	1
R016	12368332T	“CARBON RESISTOR, SB 1/6W 3.3K OHM J”	0	0	1
R019	12368332T	“CARBON RESISTOR, SB 1/6W 3.3K OHM J”	0	0	1
R309	12321129T	“OXIDE RESISTOR, B 1/2W 1.2 OHM J”	1	1	0
R309V1	12321129T	“OXIDE RESISTOR, B 1/2W 1.2 OHM J”	0	0	1
R325	12321331T	“OXIDE RESISTOR, B 1/2W 330 OHM J”	0	0	1
	12321391T	“OXIDE RESISTOR, B 1/2W 390 OHM J”	1	1	0
R486	12323109S	“OXIDE RESISTOR, B 2W 1 OHM J”	1	1	0
R486V1	12323159S	“OXIDE RESISTOR, B 2W 1.5 OHM J”	0	0	1
R531	12368392T	“CARBON RESISTOR, SB 1/6W 3.9K OHM J”	1	0	1
R534	12368201T	“CARBON RESISTOR, SB 1/6W 200 OHM J”	0	0	1
R544	12061633T	“CARBON-VR, 0.2W B 5K OHM FB”	0	0	1
	12368101T	“CARBON RESISTOR, SB 1/6W 100 OHM J”	1	0	0
R611	12368201T	“CARBON RESISTOR, SB 1/6W 200 OHM J”	1	0	0
	12368271T	“CARBON RESISTOR, SB 1/6W 270 OHM J”	0	0	1
	12368272T	“CARBON RESISTOR, SB 1/6W 2.7K OHM J”	0	1	0
R612	12368201T	“CARBON RESISTOR, SB 1/6W 200 OHM J”	1	0	0
	12368272T	“CARBON RESISTOR, SB 1/6W 2.7K OHM J”	0	1	0
	12368561T	“CARBON RESISTOR, SB 1/6W 560 OHM J”	0	0	1
R651	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	1	1	0
R652	12368224T	“CARBON RESISTOR, SB 1/6W 220K OHM J”	1	1	0
R691	12323159S	“OXIDE RESISTOR, B 2W 1.5 OHM J”	1	1	0
	12323229S	“OXIDE RESISTOR, B 2W 2.2 OHM J”	0	0	1
RA01	12368133T	“CARBON RESISTOR, SB 1/6W 13K OHM J”	1	0	0
RA02	12368391T	“CARBON RESISTOR, SB 1/6W 390 OHM J”	1	0	0
RA03	12368391T	“CARBON RESISTOR, SB 1/6W 390 OHM J”	1	0	0
RA04	12368133T	“CARBON RESISTOR, SB 1/6W 13K OHM J”	1	0	0
RS01	12368101T	“CARBON RESISTOR, SB 1/6W 100 OHM J”	0	1	0
RS02	12368101T	“CARBON RESISTOR, SB 1/6W 100 OHM J”	0	1	0
RS10	11183004T	“PLATING WIRE,(TAPPING) 0.6MM 52MM”	0	1	0
RS21	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	0	1	0
RS61	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	0	1	0
RS62	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	0	1	0
RV54	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	1	1	0
RV55	12368224T	“CARBON RESISTOR, SB 1/6W 220K OHM J”	1	1	0
RV71	12368102T	“CARBON RESISTOR, SB 1/6W 1K OHM J”	0	0	1
RV72	12368221T	“CARBON RESISTOR, SB 1/6W 220 OHM J”	0	0	1
RV73	12368681T	“CARBON RESISTOR, SB 1/6W 680 OHM J”	0	0	1
XS01	11153276	“CRYSTAL,18.43200MHZ 16PF HC-49U 4.5”	0	1	0
Z101	C1107310	“SAW FILTER, HDIF45A4M NTSC”	1	0	1
	C1107313	“SAW FILTER, HDIF45A12M NT”	0	1	0
Z102	C1107312	“SAW FILTER, HDAF45A1M NT”	0	1	0

ELECTRICAL PARTS LIST

P / No.	ITEM No.	ITEM NAME
A001	150012944	"MAIN, NTSC PTSM02 21ES200"
A001A	150012945	"MAIN, NTSC PTSM02-1 21ES200"
AA01R	150610801	"MAIN, RHU PTSM02-1 21ES200"
AA01U	150111396	"MAIN, AUTO PTSM02-1 21ES200"
AA01A	150211514	"MAIN, AXIAL PTSM02-1 21ES200"
C054	12497103T	"CERAMIC CAP, F 25V 0.01MF Z AXIAL"
C060	12474102T	"CERAMIC CAP, B 50V 1000PF K AXIAL"
C061	12474102T	"CERAMIC CAP, B 50V 1000PF K AXIAL"
C062	12474102T	"CERAMIC CAP, B 50V 1000PF K AXIAL"
C161	12497103T	"CERAMIC CAP, F 25V 0.01MF Z AXIAL"
C162	12497103T	"CERAMIC CAP, F 25V 0.01MF Z AXIAL"
C163	12497103T	"CERAMIC CAP, F 25V 0.01MF Z AXIAL"
C521	12477104T	"CERAMIC CAP, F 50V 0.1MF Z AXIAL"
C522	12477104T	"CERAMIC CAP, F 50V 0.1MF Z AXIAL"
C525	12477104T	"CERAMIC CAP, F 50V 0.1MF Z AXIAL"
C536	12477104T	"CERAMIC CAP, F 50V 0.1MF Z AXIAL"
C569	12497223T	"CERAMIC CAP, F 25V 0.022MF Z AXIAL"
D050	11115623T	"ZD, MTZJ5.1B (VZ4.94-5.20) 0.5W"
D052	11115686T	"ZD, MTZJ33B (VZ30.32-31.88) 0.5W"
D063	11115623T	"ZD, MTZJ5.1B (VZ4.94-5.20) 0.5W"
D111	11115024T	"SILICON DIODE, 1N4148"
D231	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D232	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D281	11115790T	"DIODE, F-REC RGP15J (SH)"
D301	11115003T	"SILICON DIODE, 1N4004"
D354	11115686T	"ZD, MTZJ33B (VZ30.32-31.88) 0.5W"
D355	11115686T	"ZD, MTZJ33B (VZ30.32-31.88) 0.5W"
D356	11115686T	"ZD, MTZJ33B (VZ30.32-31.88) 0.5W"
D381	11115458T	"DIODE, FAST RECOVERY UF-156"
D433	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
D482	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
D483	11115790T	"DIODE, F-REC RGP15J (SH)"
D514	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
D522	11115024T	"SILICON DIODE, 1N4148"
D534	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
D539	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
D550	11115635T	"ZD, MTZJ7.5B (VZ7.07-7.45) 0.5W"
D570	11115024T	"SILICON DIODE, 1N4148"
D631	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D632	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D651	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D652	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
D681	11115024T	"SILICON DIODE, 1N4148"
D801	11115464T	"DIODE, RECTIFIER 1N5398E"
D802	11115464T	"DIODE, RECTIFIER 1N5398E"
D803	11115464T	"DIODE, RECTIFIER 1N5398E"
D804	11115464T	"DIODE, RECTIFIER 1N5398E"
D805	11115003T	"SILICON DIODE, 1N4004"
D811	11115787T	"DIODE, F-REC SF-14 (SH)"
D812	11115787T	"DIODE, F-REC SF-14 (SH)"
D813	11115787T	"DIODE, F-REC SF-14 (SH)"
DA01	11115638T	"ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W"
DV51	11115641T	"ZD, MTZJ9.1B (VZ8.57-9.01) 0.5W"
EL01	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL02	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL03	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL04	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL05	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL06	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL07	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL08	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL09	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL12	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL13	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL14	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL15	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL18	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL19	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL20	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL21	11061303	"EYELET, HTR 2.80*2.9 SNI"
ES01	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES02	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES03	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES04	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES05	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES06	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES07	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES08	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES09	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES10	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES11	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES12	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES13	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES14	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES15	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES16	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES17	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES18	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES19	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES20	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES21	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES22	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES23	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES24	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES25	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES26	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES28	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES29	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES30	11061202	"EYELET, HTR 2.11*2.8 SNI"
ES35	11061202	"EYELET, HTR 2.11*2.8 SNI"
J002	11183004	"PLATING WIRE, 0.6MM"
J003	11183004	"PLATING WIRE, 0.6MM"
J004	11183004	"PLATING WIRE, 0.6MM"
J005	11183004	"PLATING WIRE, 0.6MM"
J006	11183004	"PLATING WIRE, 0.6MM"
J007	11183004	"PLATING WIRE, 0.6MM"
J009	11183004	"PLATING WIRE, 0.6MM"
J012	11183004	"PLATING WIRE, 0.6MM"
J013	11183004	"PLATING WIRE, 0.6MM"
J014	11183004	"PLATING WIRE, 0.6MM"
J015	11183004	"PLATING WIRE, 0.6MM"
J017	11183004	"PLATING WIRE, 0.6MM"
J020	11183004	"PLATING WIRE, 0.6MM"
J022	11183004	"PLATING WIRE, 0.6MM"
J024	11183004	"PLATING WIRE, 0.6MM"
J025	11183004	"PLATING WIRE, 0.6MM"
J026	11183004	"PLATING WIRE, 0.6MM"
J027	11183004	"PLATING WIRE, 0.6MM"
J028	11183004	"PLATING WIRE, 0.6MM"
J031	11183004	"PLATING WIRE, 0.6MM"
J032	11183004	"PLATING WIRE, 0.6MM"
J033	11183004	"PLATING WIRE, 0.6MM"
J034	11183004	"PLATING WIRE, 0.6MM"
J035	11183004	"PLATING WIRE, 0.6MM"
J037	11183004	"PLATING WIRE, 0.6MM"
J038	11183004	"PLATING WIRE, 0.6MM"
J039	11183004	"PLATING WIRE, 0.6MM"
J041	11183004	"PLATING WIRE, 0.6MM"
J042	11183004	"PLATING WIRE, 0.6MM"
J043	11183004	"PLATING WIRE, 0.6MM"
J044	11183004	"PLATING WIRE, 0.6MM"
J046	11183004	"PLATING WIRE, 0.6MM"
J047	11183004	"PLATING WIRE, 0.6MM"
J048	11183004	"PLATING WIRE, 0.6MM"
J050	11183004	"PLATING WIRE, 0.6MM"
J052	11183004	"PLATING WIRE, 0.6MM"
J053	11183004	"PLATING WIRE, 0.6MM"
J054	11183004	"PLATING WIRE, 0.6MM"

ELECTRICAL PARTS LIST

P / No.	ITEM No.	ITEM NAME
J055	11183004	"PLATING WIRE, 0.6MM"
J056	11183004	"PLATING WIRE, 0.6MM"
J057	11183004	"PLATING WIRE, 0.6MM"
J058	11183004	"PLATING WIRE, 0.6MM"
J059	11183004	"PLATING WIRE, 0.6MM"
J060	11183004	"PLATING WIRE, 0.6MM"
J061	11183004	"PLATING WIRE, 0.6MM"
J062	11183004	"PLATING WIRE, 0.6MM"
J063	11183004	"PLATING WIRE, 0.6MM"
J066	11183004	"PLATING WIRE, 0.6MM"
J067	12368561T	"CARBON RESISTOR, SB 1/6W 560 OHM J"
J068	11183004	"PLATING WIRE, 0.6MM"
J069	11183004	"PLATING WIRE, 0.6MM"
J071	11183004	"PLATING WIRE, 0.6MM"
J073	11183004	"PLATING WIRE, 0.6MM"
J074	11183004	"PLATING WIRE, 0.6MM"
J076	11183004	"PLATING WIRE, 0.6MM"
J077	11183004	"PLATING WIRE, 0.6MM"
J078	11183004	"PLATING WIRE, 0.6MM"
J079	11183004	"PLATING WIRE, 0.6MM"
J080	11183004	"PLATING WIRE, 0.6MM"
J089	11183004	"PLATING WIRE, 0.6MM"
J090	11183004	"PLATING WIRE, 0.6MM"
J091	11183004	"PLATING WIRE, 0.6MM"
J099	11183004	"PLATING WIRE, 0.6MM"
J101	11183004	"PLATING WIRE, 0.6MM"
J102	11183004	"PLATING WIRE, 0.6MM"
J106	11183004	"PLATING WIRE, 0.6MM"
J107	11183004	"PLATING WIRE, 0.6MM"
J108	11183004	"PLATING WIRE, 0.6MM"
J112	11183004	"PLATING WIRE, 0.6MM"
J114	11183004	"PLATING WIRE, 0.6MM"
J115	11183004	"PLATING WIRE, 0.6MM"
J120	11183004	"PLATING WIRE, 0.6MM"
J125	11183004	"PLATING WIRE, 0.6MM"
J126	11183004	"PLATING WIRE, 0.6MM"
J130	11183004	"PLATING WIRE, 0.6MM"
J134	11183004	"PLATING WIRE, 0.6MM"
J135	11183004	"PLATING WIRE, 0.6MM"
J138	11183004	"PLATING WIRE, 0.6MM"
J140	11183004	"PLATING WIRE, 0.6MM"
J141	11183004	"PLATING WIRE, 0.6MM"
J145	11183004	"PLATING WIRE, 0.6MM"
J146	11183004	"PLATING WIRE, 0.6MM"
J147	11183004	"PLATING WIRE, 0.6MM"
J148	11183004	"PLATING WIRE, 0.6MM"
J149	11183004	"PLATING WIRE, 0.6MM"
J152	11183004	"PLATING WIRE, 0.6MM"
J153	11183004	"PLATING WIRE, 0.6MM"
J154	11183004	"PLATING WIRE, 0.6MM"
J156	11183004	"PLATING WIRE, 0.6MM"
J161	11183004	"PLATING WIRE, 0.6MM"
J162	11183004	"PLATING WIRE, 0.6MM"
J200	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
J201	11183004	"PLATING WIRE, 0.6MM"
J500	11183004	"PLATING WIRE, 0.6MM"
J721	11183004	"PLATING WIRE, 0.6MM"
J801	11183004	"PLATING WIRE, 0.6MM"
J802	11183004	"PLATING WIRE, 0.6MM"
J804	11183004	"PLATING WIRE, 0.6MM"
L054	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L056	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L061	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L161	11237109T	"COIL, AXIAL LAL02TB 1UH K"
L162	11237688T	"COIL, AXIAL LAL02TB 0.68UH K"
L202	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L322	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L323	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L404	11103041T	"B-CORE, BF40 BTL3.5*7B-AG(0.62X63)"
L405	11183004	"PLATING WIRE, 0.6MM"
L514	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L539	11237100T	"COIL, AXIAL LAL02TB 10UH K"
L551	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
L552	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
L553	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
L803	11183004	"PLATING WIRE, 0.6MM"
L804	11103041T	"B-CORE, BF40 BTL3.5*7B-AG(0.62X63)"
L805	11103041T	"B-CORE, BF40 BTL3.5*7B-AG(0.62X63)"
L806	11103041T	"B-CORE, BF40 BTL3.5*7B-AG(0.62X63)"
L807	11103041T	"B-CORE, BF40 BTL3.5*7B-AG(0.62X63)"
LA01	11237100T	"COIL, AXIAL LAL02TB 10UH K"
N001A	11965057	"TAPE, YW-5006 6.2MM*2000M ROLL"
N001B	11965058	"TAPE, TESAKREPP-4387 6.0MM*2000M"
R001	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R002	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R003	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R004	11183004	"PLATING WIRE, 0.6MM"
R005	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R007	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R008	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R011	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R012	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R013	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R014	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R015	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R017	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R018	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R020	12368513T	"CARBON RESISTOR, SB 1/6W 51K OHM J"
R021	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R022	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R026	12368471T	"CARBON RESISTOR, SB 1/6W 470 OHM J"
R031	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R032	12368162T	"CARBON RESISTOR, SB 1/6W 1.6K OHM J"
R033	12368242T	"CARBON RESISTOR, SB 1/6W 2.4K OHM J"
R034	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R054	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R058	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R059	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R063	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R064	12368332T	"CARBON RESISTOR, SB 1/6W 3.3K OHM J"
R070	12368103T	"CARBON RESISTOR, SB 1/6W 10K OHM J"
R080	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R111	12368243T	"CARBON RESISTOR, SB 1/6W 24K OHM J"
R112	12368104T	"CARBON RESISTOR, SB 1/6W 100K OHM J"
R113	12368103T	"CARBON RESISTOR, SB 1/6W 10K OHM J"
R161	12368122T	"CARBON RESISTOR, SB 1/6W 1.2K OHM J"
R162	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R163	12368471T	"CARBON RESISTOR, SB 1/6W 470 OHM J"
R164	12368270T	"CARBON RESISTOR, SB 1/6W 27 OHM J"
R165	12368121T	"CARBON RESISTOR, SB 1/6W 120 OHM J"
R170	12321560T	"OXIDE RESISTOR, B 1/2W 56 OHM J"
R171	12321560T	"OXIDE RESISTOR, B 1/2W 56 OHM J"
R201	12368121T	"CARBON RESISTOR, SB 1/6W 120 OHM J"
R202	12368121T	"CARBON RESISTOR, SB 1/6W 120 OHM J"
R204	12368151T	"CARBON RESISTOR, SB 1/6W 150 OHM J"
R205	12368331T	"CARBON RESISTOR, SB 1/6W 330 OHM J"
R206	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R221	12368153T	"CARBON RESISTOR, SB 1/6W 15K OHM J"
R222	12368223T	"CARBON RESISTOR, SB 1/6W 22K OHM J"
R223	12368151T	"CARBON RESISTOR, SB 1/6W 150 OHM J"
R224	12368220T	"CARBON RESISTOR, SB 1/6W 22 OHM J"
R225	12368750T	"CARBON RESISTOR, SB 1/6W 75 OHM J"
R281	12321228T	"OXIDE RESISTOR, B 1/2W 0.22 OHM J"
R302	12368511T	"CARBON RESISTOR, SB 1/6W 510 OHM J"
R303	12368752T	"CARBON RESISTOR, SB 1/6W 7.5K OHM J"
R304	12368623T	"CARBON RESISTOR, SB 1/6W 62K OHM J"
R305	12321109T	"OXIDE RESISTOR, B 1/2W 1 OHM J"
R306	12368683T	"CARBON RESISTOR, SB 1/6W 68K OHM J"

ELECTRICAL PARTS LIST

P / No.	ITEM No.	ITEM NAME
R307	12368114T	"CARBON RESISTOR, SB 1/6W 110K OHMJ"
R308	12321331T	"OXIDE RESISTOR, B 1/2W 330 OHM J"
R309	12321129T	"OXIDE RESISTOR, B 1/2W 1.2 OHM J"
R310	12368114T	"CARBON RESISTOR, SB 1/6W 110K OHMJ"
R311	12368242T	"CARBON RESISTOR, SB 1/6W 2.4K OHM J"
R325	12321391T	"OXIDE RESISTOR, B 1/2W 390 OHM J"
R326	12321271T	"OXIDE RESISTOR, B 1/2W 270 OHM J"
R381	12321109T	"OXIDE RESISTOR, B 1/2W 1 OHM J"
R391	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R392	12368391T	"CARBON RESISTOR, SB 1/6W 390 OHM J"
R393	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R394	12368272T	"CARBON RESISTOR, SB 1/6W 2.7K OHM J"
R401	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R403	12368750T	"CARBON RESISTOR, SB 1/6W 75 OHM J"
R405	12368270T	"CARBON RESISTOR, SB 1/6W 27 OHM J"
R407	12321152T	"OXIDE RESISTOR, B 1/2W 1.5K OHM J"
R431	12368302T	"CARBON RESISTOR, SB 1/6W 3K OHM J"
R432	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R433	12368153T	"CARBON RESISTOR, SB 1/6W 15K OHM J"
R434	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R483	12321103T	"OXIDE RESISTOR, B 1/2W 10K OHM J"
R484	12321563T	"OXIDE RESISTOR, B 1/2W 56K OHM J"
R485	12321822T	"OXIDE RESISTOR, B 1/2W 8.2K OHM J"
R517	12368153T	"CARBON RESISTOR, SB 1/6W 15K OHM J"
R521	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R525	12368393T	"CARBON RESISTOR, SB 1/6W 39K OHM J"
R527	12368681T	"CARBON RESISTOR, SB 1/6W 680 OHM J"
R531	12368392T	"CARBON RESISTOR, SB 1/6W 3.9K OHM J"
R536	12368333T	"CARBON RESISTOR, SB 1/6W 33K OHM J"
R537	12368391T	"CARBON RESISTOR, SB 1/6W 390 OHM J"
R538	12368221T	"CARBON RESISTOR, SB 1/6W 220 OHM J"
R544	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R550	12368103T	"CARBON RESISTOR, SB 1/6W 10K OHM J"
R567	12368104T	"CARBON RESISTOR, SB 1/6W 100K OHM J"
R570	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
R571	12368563T	"CARBON RESISTOR, SB 1/6W 56K OHM J"
R611	12368201T	"CARBON RESISTOR, SB 1/6W 200 OHM J"
R612	12368201T	"CARBON RESISTOR, SB 1/6W 200 OHM J"
R618	12368243T	"CARBON RESISTOR, SB 1/6W 24K OHM J"
R619	12368681T	"CARBON RESISTOR, SB 1/6W 680 OHM J"
R625	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
R651	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R652	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
R655	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
R656	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
R681	12368392T	"CARBON RESISTOR, SB 1/6W 3.9K OHM J"
R682	12368392T	"CARBON RESISTOR, SB 1/6W 3.9K OHM J"
R683	12368202T	"CARBON RESISTOR, SB 1/6W 2K OHM J"
R684	12368223T	"CARBON RESISTOR, SB 1/6W 22K OHM J"
R685	12368153T	"CARBON RESISTOR, SB 1/6W 15K OHM J"
R803	12321513T	"OXIDE RESISTOR, B 1/2W 51K OHM J"
R804	12321513T	"OXIDE RESISTOR, B 1/2W 51K OHM J"
R811	12321339T	"OXIDE RESISTOR, B 1/2W 3.3 OHM J"
R812	12321472T	"OXIDE RESISTOR, B 1/2W 4.7K OHM J"
R813	12977228T	"RES, NKN1WSJT-52 0R22 OHM (PRN)"
R814	12321681T	"OXIDE RESISTOR, B 1/2W 680 OHM J"
R821	12321153T	"OXIDE RESISTOR, B 1/2W 15K OHM J"
R822	12321153T	"OXIDE RESISTOR, B 1/2W 15K OHM J"
R850	12005825T	"SURGE RES(VDE),1/2W 8.2M OHM"
R859	12321100T	"OXIDE RESISTOR, B 1/2W 10 OHM J"
R860	12368103T	"CARBON RESISTOR, SB 1/6W 10K OHM J"
R862	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
R892	12919105T	"CARBON RESISTOR, SB 1/2W 1M OHM J"
RA01	12368133T	"CARBON RESISTOR, SB 1/6W 13K OHM J"
RA02	12368391T	"CARBON RESISTOR, SB 1/6W 390 OHM J"
RA03	12368391T	"CARBON RESISTOR, SB 1/6W 390 OHM J"
RA04	12368133T	"CARBON RESISTOR, SB 1/6W 13K OHM J"
RN06	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"
RN07	12368472T	"CARBON RESISTOR, SB 1/6W 4.7K OHM J"

P / No.	ITEM No.	ITEM NAME
RV51	12368750T	"CARBON RESISTOR, SB 1/6W 75 OHM J"
RV52	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
RV53	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
RV54	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
RV55	12368224T	"CARBON RESISTOR, SB 1/6W 220K OHM J"
U111	C1893322A	"PCB, MAIN PTSM02 (14/20AS)FR1=1Y"
C050	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C051	12692103T	"PLASTIC CAPACITOR, M 50V 0.01MF J"
C052	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C053	12793470T	"CHEMICON, 10V 47MF 85C 5*11"
C056	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C058	12353220T	"CERAMIC CAPACITOR, CH 50V 22PF J"
C059	12353220T	"CERAMIC CAPACITOR, CH 50V 22PF J"
C070	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C080	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C081	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C110	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C164	12353120T	"CERAMIC CAPACITOR, CH 50V 12PF J"
C221	12794101T	"CHEMICON, 16V 100MF 85C 6.3*11"
C222	12683471T	"CHEMICON, 16V 470MF SHL,SD (8*11.5)"
C302	12692102T	"PLASTIC CAPACITOR, M 50V 1000PF J"
C305	12796101T	"CHEMICON, 35V 100MF 85C 8*12"
C306	12085056T	"CHEMICON,50V 1MF LL 85C(5*11)"
C311	12692473T	"PLASTIC CAPACITOR, M 50V 0.047MF J"
C315	12692223T	"PLASTIC CAPACITOR, M 50V 0.022MF J"
C381	12214102T	"CERAMIC CAPACITOR, B 500V 1000PF K"
C401	12692104T	"PLASTIC CAPACITOR, M 50V 0.1MF J"
C402	12797109T	"CHEMICON, 50V 1MF 85C 5*11"
C403	12795101T	"CHEMICON, 25V 100MF 85C 6.3*11"
C491	12799010T	"CHEMICON, 160V 1MF 85C 6.3*11"
C492	12214222T	"CERAMIC CAPACITOR, B 500V 2200PF K"
C511	12825224T	"PLASTIC CAP,EB(NON IND)50V 0.22MF J"
C512	12692223T	"PLASTIC CAPACITOR, M 50V 0.022MF J"
C513	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C514	12797229T	"CHEMICON, 50V 2.2MF 85C 5*11"
C515	12692222T	"PLASTIC CAPACITOR, M 50V 2200PF J"
C516	12692222T	"PLASTIC CAPACITOR, M 50V 2200PF J"
C517	12797109T	"CHEMICON, 50V 1MF 85C 5*11"
C518	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C519	12692104T	"PLASTIC CAPACITOR, M 50V 0.1MF J"
C520	12797109T	"CHEMICON, 50V 1MF 85C 5*11"
C527	12692332T	"PLASTIC CAPACITOR, M 50V 3300PF J"
C528	12692222T	"PLASTIC CAPACITOR, M 50V 2200PF J"
C529	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C531	12692122T	"PLASTIC CAPACITOR, M 50V 1200PF J"
C532	12436331T	"CERAMIC CAPACITOR, SL 50V 330PF J"
C537	12692104T	"PLASTIC CAPACITOR, M 50V 0.1MF J"
C539	12793101T	"CHEMICON, 10V 100MF 85C 5*11"
C540	12692473T	"PLASTIC CAPACITOR, M 50V 0.047MF J"
C549	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C617	12692272T	"PLASTIC CAPACITOR, M 50V 2700PF J"
C618	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
C619	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
C620	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
C621	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
C622	12692272T	"PLASTIC CAPACITOR, M 50V 2700PF J"
C623	12692104T	"PLASTIC CAPACITOR, M 50V 0.1MF J"
C625	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
C651	12692682T	"PLASTIC CAPACITOR, M 50V 6800PF J"
C652	12692682T	"PLASTIC CAPACITOR, M 50V 6800PF J"
C676	12797109T	"CHEMICON, 50V 1MF 85C 5*11"
C677	12797109T	"CHEMICON, 50V 1MF 85C 5*11"
C681	12797229T	"CHEMICON, 50V 2.2MF 85C 5*11"
C682	12794470T	"CHEMICON, 16V 47MF 85C 5*11"
C811	12436471T	"CERAMIC CAPACITOR, SL 50V 470PF J"
C812	12797470T	"CHEMICON, 50V 47MF 85C 6.3*11"
C813	12436471T	"CERAMIC CAPACITOR, SL 50V 470PF J"
C819	12683471T	"CHEMICON, 16V 470MF SHL,SD (8*11.5)"
C860	12692103T	"PLASTIC CAPACITOR, M 50V 0.01MF J"

ELECTRICAL PARTS LIST

P / No.	ITEM No.	ITEM NAME
C861	12793471T	"CHEMICON, 10V 470MF 85C 8*12"
CA01	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
CA02	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
CA03	12794101T	"CHEMICON, 16V 100MF 85C 6.3*11"
CA04	12794470T	"CHEMICON, 16V 47MF 85C 5*11"
CA05	12692223T	"PLASTIC CAPACITOR, M 50V 0.022MF J"
CA06	12692683T	"PLASTIC CAPACITOR, M 50V 0.068MF J"
CA07	12692154T	"PLASTIC CAPACITOR, M 50V 0.15MF J"
CA08	12692562T	"PLASTIC CAPACITOR, M 50V 5600PF J"
CA09	12797479T	"CHEMICON, 50V 4.7MF 85C 5*11"
CA10	12797479T	"CHEMICON, 50V 4.7MF 85C 5*11"
CA11	12692562T	"PLASTIC CAPACITOR, M 50V 5600PF J"
CA12	12692154T	"PLASTIC CAPACITOR, M 50V 0.15MF J"
CA13	12692683T	"PLASTIC CAPACITOR, M 50V 0.068MF J"
CA14	12692562T	"PLASTIC CAPACITOR, M 50V 5600PF J"
CA16	12692473T	"PLASTIC CAPACITOR, M 50V 0.047MF J"
CA18	12692224T	"PLASTIC CAPACITOR, M 50V 0.22MF J"
CV31	12797100T	"CHEMICON, 50V 10MF 85C 5*11"
L491	11275682T	"PEAKING COIL, EL0607RA-682J"
L820	11103049T	"B-CORE, ZBF503M-00TA-(K)-02"
L821	11103049T	"B-CORE, ZBF503M-00TA-(K)-02"
L825	11103049T	"B-CORE, ZBF503M-00TA-(K)-02"
L826	11103049T	"B-CORE, ZBF503M-00TA-(K)-02"
Q070	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
Q161	11114066T	"TR, KTC388A-TM (KTC3197)"
Q201	11114045T	"TR, KTA562TM-Y (KTA1270-Y)"
Q202	11114045T	"TR, KTA562TM-Y (KTA1270-Y)"
Q221	11114119T	"TR, KTC200-Y"
Q391	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
Q392	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
Q402	11114491T	"TR, KTD1028-B"
Q681	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
Q682	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
Q683	11114049T	"TR, KTA1015-Y (KTA1266-Y)"
Q860	11114056T	"TR, KTC1815-Y (KTC3198-Y)"
C082	12794102T	"CHEMICON, 16V 1000MF 85C 10*20"
C281	12700100T	"CHEMICON, 250V 10MF SMS,SG (10*20"
C304	12794222T	"CHEMICON, 16V 2200MF 85C 13*25"
C308	12692274T	"PLASTIC CAPACITOR, M 50V 0.27MF J"
C382	12796102T	"CHEMICON, 35V 1000MF 85C 13*25"
C421	12094215T	"CERA-CAPA, DG3DHR391K825 (2KV390)"
C481	12095062T	"P/ CAP, 250V 0.1MF J TNU"
C626	12795102T	"CHEMICON, 25V 1000MF 85C 13*20"
C805	12094169T	"CERA-CAPA, AC250V E 2200PF M AA"
C806	12094169T	"CERA-CAPA, AC250V E 2200PF M AA"
C808	12095239T	"P/ CAP, PSU 391J 2KV DC"
C820	12214101T	"CERAMIC CAPACITOR, B 500V 100PF K"
C821	12799330T	"CHEMICON, 160V 33MF 85C 10*20"
C825	12087017T	"CHEMICON, 25V 2200UF SMG(12.5*25)"
C827	12794102T	"CHEMICON, 16V 1000MF 85C 10*20"
C831	12799330T	"CHEMICON, 160V 33MF 85C 10*20"
C841	12799101T	"CHEMICON,160V 100MF 85C 16*25"
F801	11144208T	"FUSE, 250V 3.15A SR-5 S/V/T/UL/C/J"
SW01	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
SW02	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
SW03	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
SW04	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
SW05	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
SW06	11145228BT	"SWITCH, TACT KPT-1115VM(TAP)"
VR31	12061630T	"CARBON-VR, 0.2W B 1K OHM FB"
Z203	11107013T	"C/TRAP,TPSRA4M50C00-A0(MURATA)"
C404	12828274B	"P/ CAP, T 200V 0.27MF J PFU"
C405	12095517B	"P/ CAP, T 1.6KV 7500PF J PSU"
C526	12828104B	"P/ CAP, T 200V 0.1MF J PFU"
C801	12095246C	"PLASTIC CAP,LE-224C AC275V 0.22MF K"
C807	12086026	"CHEMICON, HC 400V 150MF(22*35)"
C807	C2086026	"CHEMI CON, 69W 400V 150MF(22*35)"
C850	12095207B	"CERA-CAPA, DA2GYE222MK617 NK"
D820	11115789	"DIODE, RECT SF-38 (FOR-20MM SH)"
D823	11115788	"DIODE, F-REC SF-54 (FOR-20MM SH)"
D824	11115788	"DIODE, F-REC SF-54 (FOR-20MM SH)"
DL01	11113005	"LED, SLR114 RED•'5 DIFF. STOPPER"
DL01A	11826442	"LED HOLDER, 20LX"
H001	11121261	"TUNER, DT5-NF20FT NTSC IIC F20MM"
JV01	11163140	"JACK,PJ6037B 6P YL-RDS-WH/YL-RDS-WH"
L401	11222140A	"COIL, LINEARITY KLN-5167A(310MH)"
L401	C1222140	"COIL, LINEARITY CKLN-5167(310MH)"
L801	C1211003A	"COIL,LINEFILTER CKRF3004H 1.2MH MIN"
L801	11211003A	"COIL,LINE FILTER KRF3004H 1.2MH MIN"
N101	11961024	"SOLDER WIRE, ENERGIZED 63SN 1.2MM"
N102	11961013	"SOLDER BAR, 63SN S63S"
N103	11964033	"SOLVENT, IPA4520"
N103	11961044	"SOLVENT, IM-1000(IPA4520)"
N104	11961042	"FLUX, DF-98TV"
P401	11164726	"PLUG, YFW500-624"
P501A	11164124	"PLUG, 5P 5267-05AX"
P501B	11164123	"PLUG, 4P 5267-04AX"
P601	11164123	"PLUG, 4P 5267-04AX"
P801	11164034	"PLUG, 2P LARGE 5289-2A 7.5MM"
P802	11164595	"PLUG, 2P YPW500-2"
PF01	11164124	"PLUG, 5P 5267-05AX"
PV03	11164126	"PLUG, 7P 5267-07AX"
Q002	11118502	"IC, EEPROM-8K AT24C08A-10PI-2.7"
Q080	11118370A	"IC, KIA78R33API 1A/3.3V PIN4 KEC"
Q081Z	150500463	"HEAT SINK, ASS'Y KIA278R08PI 21SK"
Q081	11118484	IC REGU KIA278R08PI-U 2A/8V KEC
Q081A	11865602	"HEAT SINK, 20LX (45MM)"
Q081B	11032381	"SCREW, TTB 3*8 SZN"
Q081C	11971010	"COMPOUND SILICON, YG6260"
Q083	11118662	"IC, REGU. 1[A] LM7805CZ 3PIN"
Q301Z	150500454	"HEAT SINK, ASS'Y LA78040 (Q301)"
Q301	11118463	"IC, VERTICAL LA78040"
Q301	11118551	IC. VERTICAL STV9302A
Q301A	11865857	"HEAT SINK, 14B1J (45MM)"
Q301B	11032381	"SCREW, TTB 3*8 SZN"
Q301C	11971010	"COMPOUND SILICON, YG6260"
Q404Z	150500542	"HEAT SINK, ASS'Y KTD2499 20US500"
Q404	11114663	"TR, H-OUT ST1803DFX (1500V 10A)"
Q404A	11865775	"HEAT SINK, 29HG (55MM)"
Q404B	11032382	"SCREW, TTB 3*10 SZN"
Q404C	11971010	"COMPOUND SILICON, YG6260"
Q501	11118524B	"IC,UOC TDA9370PS/N3/A/1577 (TRI)"
Q606Z	150500482	"HEAT SINK, ASS'Y TDA8944 21QL"
Q606	11118470	IC. TDA8944J/N1 STEREO AMP
Q606A	11865882	"HEAT SINK, 20A1L (45MM)"
Q606B	11032388	"SCREW, TTBW 3*10 SZN"
Q606C	11971010	"COMPOUND SILICON, YG6260"
Q801Z	150500465	"HEAT SINK, ASS'Y STR-GS5653 21SK"
Q801	11118487	IC SMPS STR-G5653 (LF1129)
Q801A	11865881	"HEAT SINK,21SK (50MM)"
Q801B	11032382	"SCREW, TTB 3*10 SZN"
Q801C	11971010	"COMPOUND SILICON, YG6260"
QA01	11118471	IC. S.PROC. TDA9859/V2
R081	12323159S	"OXIDE RESISTOR, B 2W 1.5 OHM J"
R402	12322270S	"OXIDE RESISTOR, B 1W 27 OHM J"
R404	12322270S	"OXIDE RESISTOR, B 1W 27 OHM J"
R409	12323561S	"OXIDE RESISTOR, B 2W 560 OHM J"
R486	12323109S	"OXIDE RESISTOR, B 2W 1 OHM J"
R691	12323159S	"OXIDE RESISTOR, B 2W 1.5 OHM J"
R801	12007106	"CEMENT RES, RWR 5W 1 OHM J PD"
R802	12000091	"PTC, 290V-3P-4.5ßŸJ503P61D4R5Q290"
S801	11145253A	"S/W,JPP-1197B-3"
T401	11224027A	"TRANS, H.D.T KLN2014"
T401	C1224027A	"TRANS, H.D.T KLN2014"
T461	C1226253	"FBT, BSC24-3309J"
T801	11213400	"TRANS,SMPS KPW-1179 14A1L500"
T801	C1213400	"TRANS,SMPS CKPW-1179 14A1L500"
X001	11153025A	"CRYSTAL, 12.000000MHZ 16PF-FD HC 13"

ELECTRICAL PARTS LIST

P / No.	ITEM No.	ITEM NAME
X001	11153273	"CRYSTAL, 12.00000MHZ 16PF HC-49U 13"
Z101	C1107310	"SAW FILTER, HDIF45A4M NTSC"
ZB01	11132045	"RX MODULE, ROM-N338KT 38KHZ"
A001B	150032533	"CRT, PAL PTSM02-2 21ES500"
AB01R	150630627	"CRT, RHU PTSM02-2 21ES600"
AB01U	150131073	"CRT, AUTO PTSM02-2 21ES600"
AB01A	150231173	"CRT, AXIAL PTSM02-2 21ES600"
D901	11115635T	"ZD, MTZJ7.5B (VZ7.07-7.45) 0.5W"
D902	11115003T	"SILICON DIODE, 1N4004"
D903	11115024T	"SILICON DIODE, 1N4148"
D904	11115024T	"SILICON DIODE, 1N4148"
D905	11115024T	"SILICON DIODE, 1N4148"
D907	11115781T	"DIODE, HV SWITC PSS244"
D908	11115781T	"DIODE, HV SWITC PSS244"
D909	11115781T	"DIODE, HV SWITC PSS244"
D917	11115781T	"DIODE, HV SWITC PSS244"
D918	11115781T	"DIODE, HV SWITC PSS244"
D919	11115781T	"DIODE, HV SWITC PSS244"
EL90	11061303	"EYELET, HTR 2.80*2.9 SNI"
EL91	11061303	"EYELET, HTR 2.80*2.9 SNI"
J901	11183004	"PLATING WIRE, 0.6MM"
J902	11183004	"PLATING WIRE, 0.6MM"
R902	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R903	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R904	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R906	12919225T	"CARBON RESISTOR, SB 1/2W 2.2M OHM J"
R917	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R918	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R919	12368101T	"CARBON RESISTOR, SB 1/6W 100 OHM J"
R944	12368102T	"CARBON RESISTOR, SB 1/6W 1K OHM J"
C908	12436471T	"CERAMIC CAPACITOR, SL 50V 470PF J"
L902	11103049T	"B-CORE, ZBF503M-00TA-(K)-02"
L910	11261020T	"COIL, ELC0607RA-180K(KRF9200)"
C902	12095062T	"P/ CAP, 250V 0.1MF J TNU"
C903	12700479T	"CHEMICON, 250V 4.7MF SMS,SG (10*13"
C904	12094210T	"CERA-CAPA, DM3DYB222K725 (2KV2200)"
M902	E00924045E	"HARNESS, 9P 450MM (5264-5395) ETL"
Q901Z	150500476	"HEAT SINK, ASS'Y TDA6107Q/N2 21M1J"
Q901	11118138B	"IC, VIDEO TDA6107JF/N3"
Q901A	11865543	"HEAT SINK,(PLATE) (30MM)"
Q901B	11032382	"SCREW, TTB 3*10 SZN"
Q901C	11971010	"COMPOUND SILICON, YG6260"
R907	12322152S	"OXIDE RESISTOR, B 1W 1.5K OHM J"
R908	12322152S	"OXIDE RESISTOR, B 1W 1.5K OHM J"
R909	12322152S	"OXIDE RESISTOR, B 1W 1.5K OHM J"
V901A	C1116435	"SOCKET CRT, GZS 10-2-5 20"" 28MM"
A001C	150032534	"A/V, PAL PTSM02-3 21ES500"
JV02	11163164	"JACK, S-456K 3P"
MV03	E00724020A	"HARNESS, 7P 200MM (5264-5395) ETL"
E001	151000797	"COMPLETE CHASSIS, 20A1L"
B201	23962032	HOTMELT
P881	11176158	"CORD AC, KKP-419C/B-286 GP"
P881	C1176158	"CORD AC, WP-202(IU1P-3008-01A) GP"
K001	152002984	"CABINET, 21ES500"
K100	152102953	"FRONT COVER SUB, ASS'Y 21ES500"
K101	39617084	"F/COVER, ASS'Y 21ES500(S-006)"
K101A	23965173	"TAPE, MASKING W40"
K101B	23962006	"BOND, DONG-A"
K101D	11826588	"KNOB, POWER 21EX"
K101E	11836117	"SPRING, FOR POWER 14XR"
K101F	11826587	"KNOB, BLOCK 21EX"
K101G	11037312	"SCREW, BTBW 3*12 SZN"
K101I	11826589	"SENSOR COVER, 21EX"
K101J	11816888	LED LENS
K101K	11827405	"PLATE, A/V-3 EARPHONE 21EF(GM-001)"
K102	11031017	"SCREW, PBW 3*10 SZN"
K109	152300277	"SPEAKER SYSTEM, SKP1175 21ES"
M661	E00425255B	"HARNESS, 4P 550MM (5264-) ETL"
NW01	11961024	"SOLDER WIRE, ENERGIZED 63SN 1.2MM"

P / No.	ITEM No.	ITEM NAME
W661	11151183	"SPEAKER, SPK1175 90*50MM 8 OHM"
W661	C1151183A	"SPEAKER, CSPK1175E 50*90 8•ÿ MAX 8W"
W661A	11847244	"SPACER, 80*12*1T(BLK)"
W662	11151183	"SPEAKER, SPK1175 90*50MM 8 OHM"
W662	C1151183A	"SPEAKER, CSPK1175E 50*90 8•ÿ MAX 8W"
W662A	11847244	"SPACER, 80*12*1T(BLK)"
K109A	11037312	"SCREW, BTBW 3*12 SZN"
L901	11200064B	"COIL DEGAUS, KSB-2186 21 YEONHO"
L901	C1200064B	"COIL DEGAUS, CSB-2186 21""(TDC051A)"
NK01	11845001	QUICK TIE
V901	15124G2103	"CPT ASS'Y, G.S A51QAE020X (+300MG)"
V901K	11112446	"CPT,21"" L/G A51QAE020X(FREE)"
V901L	11227126	"COIL, DY SHO-2191"
V901L	C1227126	"COIL DY QPC2990-1407A (21""LPD)"
V901M	11102059	"MAGNET, CPM JH291-036"
V901N	11848189	"RUBBER, WEDGE DY 55 SR"
V901O	11965113	"INSULATION TAPE, SWT-750RT(WHT)"
V901P	11965114	"INSULATION TAPE, SGT-730(BK)0.25*19"
V901Q	11962028	"SILICON BOND, X-86-EX"
V901R	11963173	"MARKING PEN, WHITE"
V901T	11102035	"MAGENET PIECE, 500-600 GAUSS"
V901	1111236703	"CPT SAMSUNG, A51KQJ63(+300MG)"
V901B	11037630A	"SCREW, HTTBW 6*30 SZN"
V901E	3700202105	"CRT EARTH, ASS'Y 21"" 21CR"
V901E	C700202105	"CRT EARTH, ASS'Y 21"" C/TV"
K400	153002762	"BACK COVER, ASS'Y 21ES500"
K401	39676075	"B/C BODY ASSY, (HB)A/V STEREO 21EU"
K401A	11847921	"SPACER, (300*20*0.5T)BLK"
K415	11035416	"SCREW, BTB 4*16 SZN"
K416	11036316	"SCREW, BTBW 3*16 SBN"
K007	154002731	"PACKING MATERIAL 1SET, 21ES500"
K701	11928005	"CARTON BOX, 21ES500"
K702	11934068	"PACKING, 1 SET 21EX"
K702A	11934073	PACKING PAD (500X230X32)
K703	11943020	POLY BAG(0.015*1100*1050)
K704	23968001	"STAPLE, 35*19"
K707	11941023	"PROTECTIVE SHEET 1,600*250"
Y001	154602720	"ACCESSORY 1SET, 21ES500"
Y104	11142044	"MATCHING UNIT, KC-408"
Y104	11142044C	"MATCHING UNIT, TV-503N (PAL)W/O CAP"
Y105	11943051	"POLY BAG, W230 H360"
Y106	23968006	STAPLE
Y201	C1124079	"ROD-ANT, 4SEC 800MM (2POLE) F660MM"
Y201	C1124053	"ROD-ANT, 4SEC 800MM (2POLE) F660MM"

MEMO

14-21-21 "S" - Chassis (NTSC)
Part No. 11906855
May 2005

NOTE

1. ALL RESISTORS 1/6W CARBON FILM RESISTOR UNLESS OTHERISE LISTED
   THE RESISTANCE UNIT IS OHM. K=1,000 M=1,000,000
   1/2R : METAL OR METAL OXIDE 1/2W. 1/2S : SOLID 1/2W.
   1/2F : FUSE RESISTOR 1/2W. 5W : CEMENT RESISTOR 5W
2. ALL CAPACITORE ARE 50V CERAMIC CAPACITOR UNLESS OTHERWISE LISTED.
   THE CAPACITANCE LESS THAN 1 IS pF.
3. VOLTAGE IS MEASURED WITH DVM FROM POINT INDICATED TO CHASSIS GROUND,
   INPUTTING COLOR BAR SIGNAL INTO THE TUNER.
   THE STATE OF PICTURE AND SOUND IS P.STD AND S.STD!
4. WAVEFORMS ARE MEASURED WITH A OSCILLOSCOPE FROM POINT INDICATED
   TO CHASSIS GROUND!
   THE STATE OF PICTURE AND SOUND IS P.STD AND S.STD!

COLOR TV RECEIVER SCHEMATIC DIAGRAM

DRAWING BY : L.J.E 2005.04.01		MODEL	20US200/21ES200
DESIGNED BY :		DOMESTIC MODEL NO.	
CHECKED BY :		CHASSIS NO.	
APPROVED BY :	2005. 04. 01	KTV GLOBAL CORP.	
FIN. APPROVED BY :		DRAWING NO.	