

TX-14S3T/W / TC-14S3R/W Service Manual

Safety

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Service Support

Service and repair of this product is supported by Panasonic's LUCI interface.

This interface provides a link between the TV and a standard PC to allow a number of diagnostic and control functions to be performed.

For more details contact your local Panasonic company.


BACK

EXIT

Audio/Video

Control

Power supply



BACK

E - PCB

Y - PCB



BACK

E - Schematics

Y - Schematic



BACK

Service Manual



Colour Television TX-14S3T TC-14S3R TX-14S3T/W TC-14S3R/W Z-7 Chassis

Specifications

Power Source :	220-240V AC, 50Hz	RCA IN	Video 1V p-p 75Ω
Power Consumption :	33 W	RCA IN	Audio 500mV rms, 10kΩ
Standby Power Consumption :	1 W	High Voltage :	23,5kV + 0,7kV / - 1kV (zero beam current)
Aerial Impedance :	75Ω unbalanced, Coaxial Type	Picture Tube :	A34EAC01X13 34 cm V 90° measured diagonally
Receiving System :	PAL-I (UHF), PAL-525/60, NTSC (AV Only)	Audio Output :	6 W (Music Power) 8 Ω Impedance
Receiving Channels :	UHF E21 - E69	Speaker	8 Ω Impedance
Intermediate Frequency :		Headphones	8 Ω Impedance
Video	39,5 MHz	Accessories supplied :	Remote Control 2 x R6 (UM3) Batteries
Sound	33,5 MHz	Dimensions :	
Colour	35,07 MHz	Height :	365 mm
Video / Audio Terminals :		Width :	388 mm
AV1 IN	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 10kΩ RGB (21 pin)	Depth :	380 mm
AV1 OUT	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 1kΩ	Net Weight :	10 kg

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.

IMPORTANT

This receiver uses a HOT chassis, after service please ensure that the chassis is returned to its correct position.
Particular care being taken to the position of the customer controls.
Failure to do so could endanger customer safety.

Panasonic

Panasonic CS (U.K.) Ltd.
WILLOUGHBY ROAD,
BRACKNELL
BERKS,
RG12 8FT.

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SAFETY PRECAUTIONS

GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the AC outlet.
5. Potentials as high as 24,2kV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture to the chassis before handling the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.
4. Check each exposed Metallic part and check the voltage at each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 1,4 Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2kΩ 10W resistor in series with an exposed metallic part on the receiver and an earth such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.

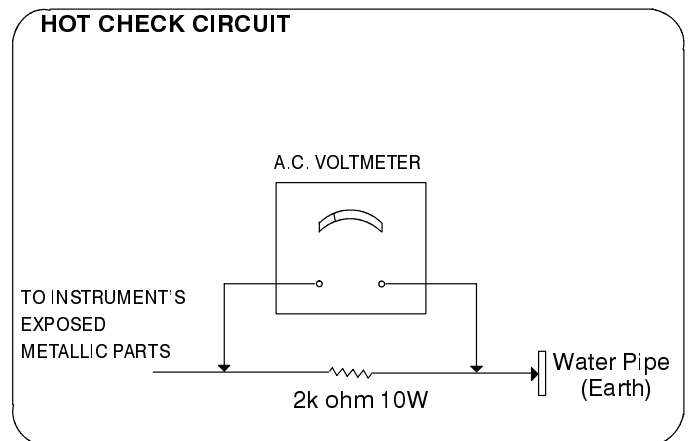


Fig.1.

X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service ensure that the jig is capable of handling 24,2kV without causing X-Radiation.

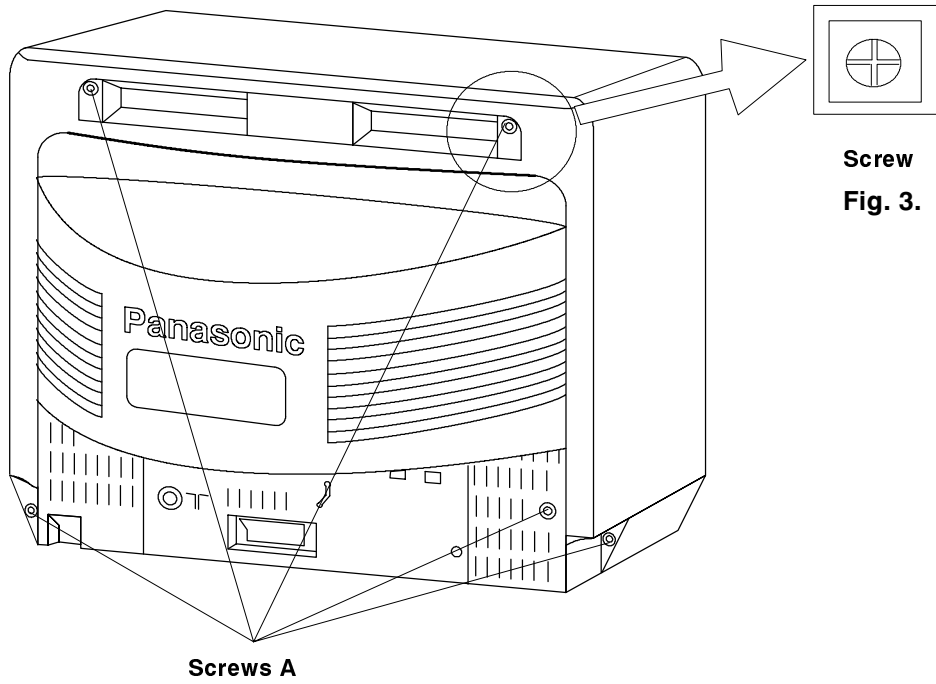
NOTE: It is important to use an accurate periodically calibrated high voltage meter

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate 23,5kV + 0,7kV / - 1kV if the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

SERVICE HINTS

HOW TO REMOVE THE REAR COVER

1. Remove the 5 screws (A) as shown in Fig.2./Fig.3.



Screws A

Fig. 2.

HOW TO MOVE THE CHASSIS INTO THE SERVICE POSITION

1. Hold and lift the rear of the E- PCB chassis and gently pull the chassis toward you.
2. Release the respective wiring clips and rotate the chassis clockwise, moving the EHT lead around the left side of the CRT neck.
3. Slide the lower edge of the chassis into the power cable holder case whilst sliding the upper edge of the board into the chassis holding block.
4. After servicing ensure all wiring is returned to its original position before returning the receiver to the customer.

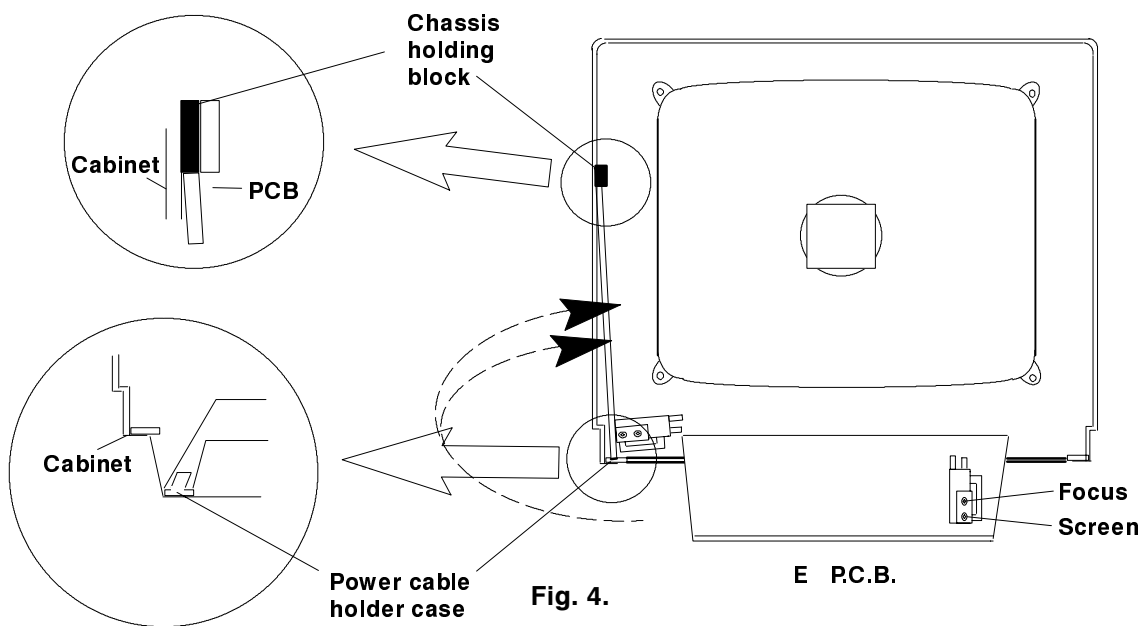


Fig. 4.

ALIGNMENT SETTINGS

1. Select program position 60 and set the sharpness to minimum.
2. Press the Off Timer button on the remote control and at the same time press the V (down) button on the customer controls at the front of the TV, this will place the TV into Service Mode.
3. Press the \wedge / \vee buttons to step up / down through the functions.
4. Press the + / - buttons to alter the function values.
5. Press the STORE button after each adjustment has been made to store the required values.
6. To exit Service Mode press the Normalisation button.

NOTE : The figures used below are nominal and used for representative purposes only.

Alignment Function		Settings / Special Features
1. Vertical amplitude	V-Amp 27	Optimum setting.
2. Vertical position	V-Pos 03	Optimum setting.
3. Horizontal centre	H-Ctr 07	Optimum setting.
4. Red cutoff	R-Cut 186	Optimum setting.
5. Green cutoff	G-Cut 220	Optimum setting.
6. Blue cutoff	B-Cut 213	Optimum setting.
7. Red drive	R-Drv 46	Optimum setting.
8. Blue drive	B-Drv 36	Optimum setting.
9. AGC	AGC 33	Optimum setting.
10. Sub contrast	S-Con 33	Optimum setting.
11. Sub colour	S-Col 39	Optimum setting.
12. Sub bright	S-Bri 40	Optimum setting.

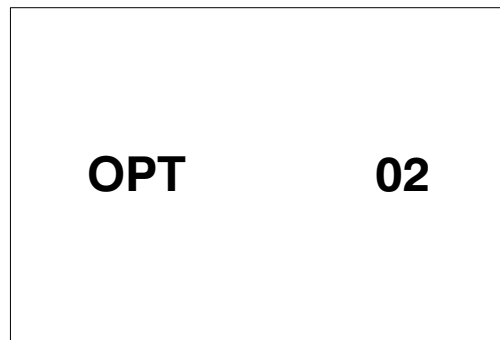
ADJUSTMENTS

ITEM/PREPARATION	ADJUSTMENT PROCEDURE
<p>B VOLTAGE</p> <p>1. Operate the TV set.</p> <p>2. Set controls :</p> <p>Bright minimum</p> <p>Sub Bright minimum</p> <p>Volume minimum</p> <p>Beam Current Zero</p>	<p>1. Confirm the indicated test points for the specified voltage.</p> <p>TPE 1: 10V ± 1V</p> <p>TPE 2: 5V ± 0,3V</p> <p>TPE 3: 12,5V ± 1V</p> <p>TPE 4: 22V ± 1,5V</p> <p>TPE 5: 5V ± 0,3V</p> <p>TPE 6: 9V ± 1V</p> <p>TPE 9: 30V ± 2,5V</p> <p>TPE 10: 135V ± 10V</p> <p>TPE 11: -13V ± 1V</p> <p>TPE 12: 12V ± 1,5V</p> <p>TPE 13: 104V ± 1,5V</p> <p>TPE 14: 8V ± 1V</p> <p>TPE 18: 8V ± 1V</p> <p>TPE 19: 31V ± 1,5V</p>

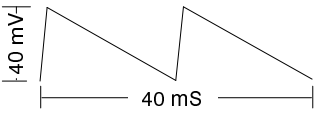
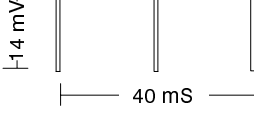
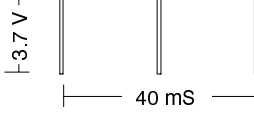
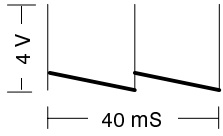
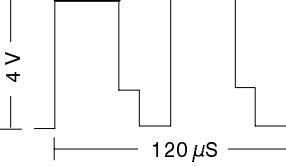
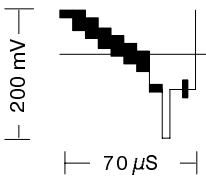
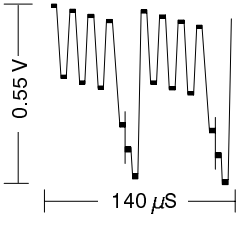
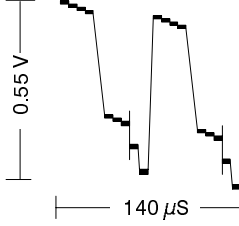
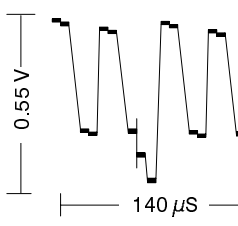
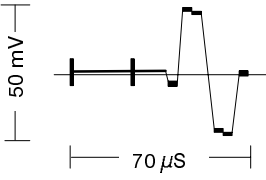
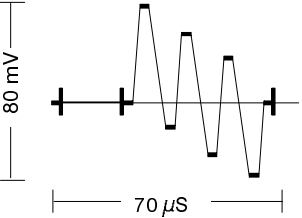
SELF CHECK

Self check is used to automatically check the Bus Lines Hexadecimal code of the TV set.

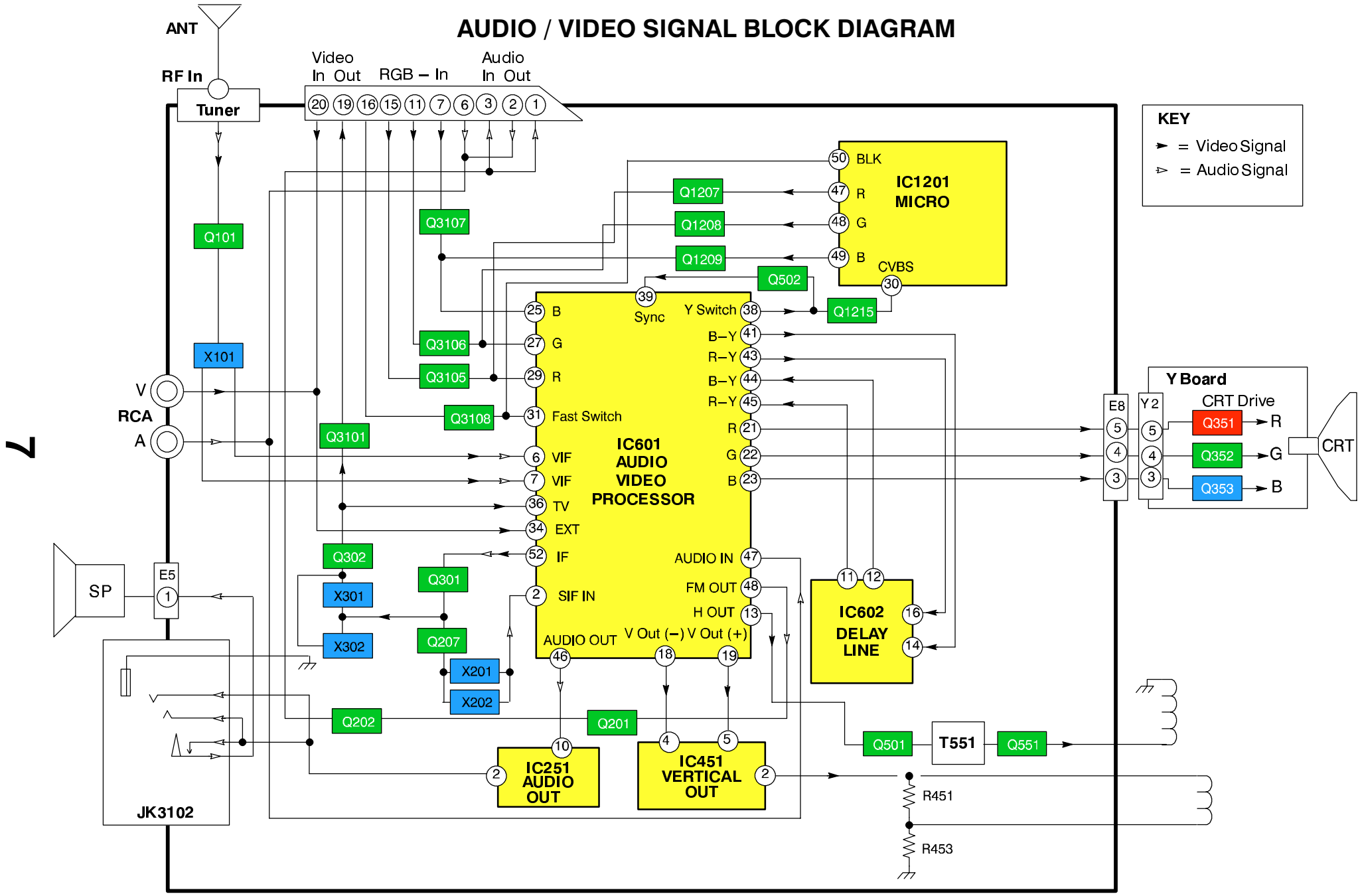
To get into the Self Check mode press the Status button on the Remote Control, followed by the V button on the customer controls at the front of the TV, and the screen will show:—



WAVEFORM PATTERN TABLE

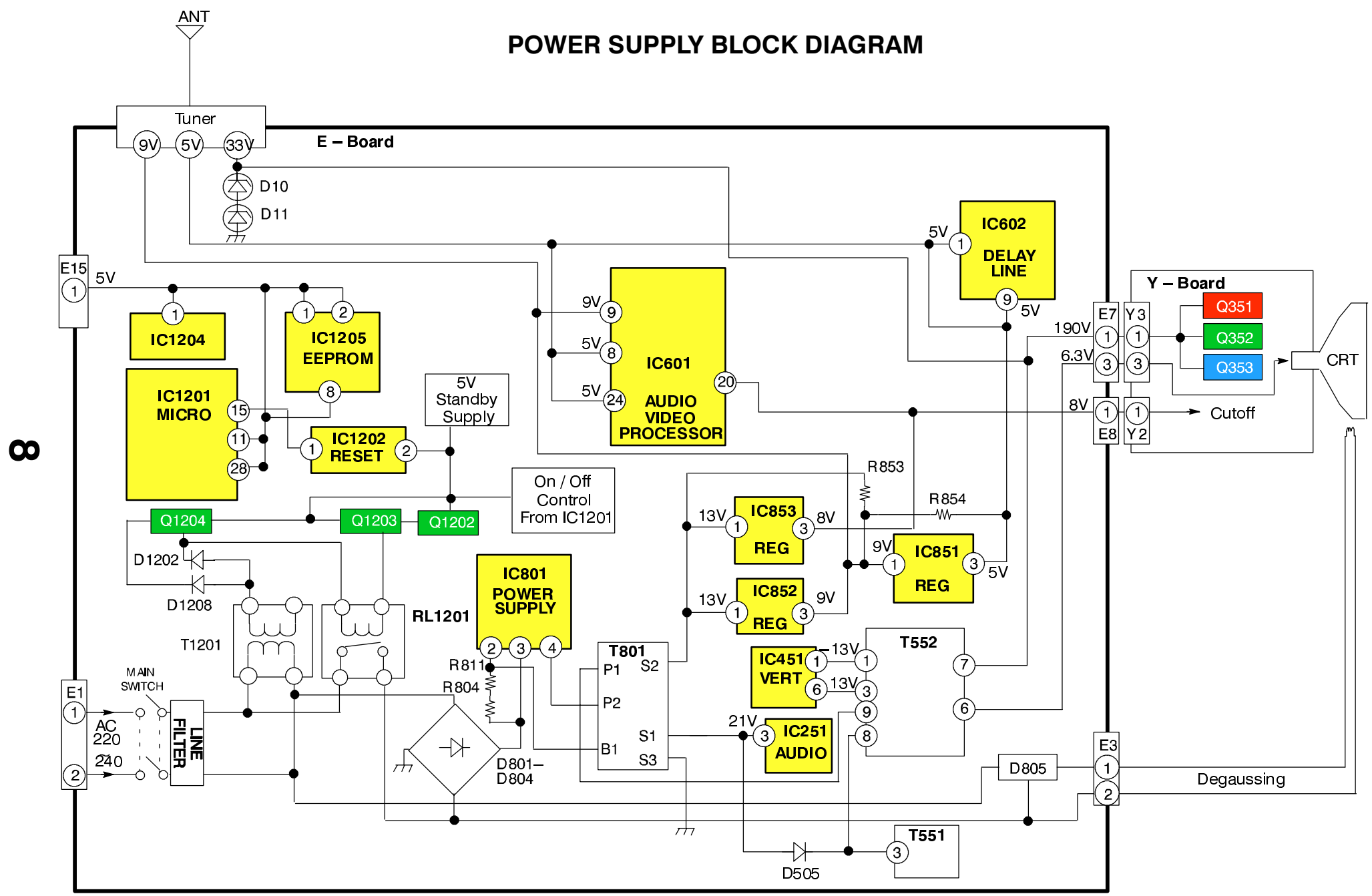
<p>Vert Out IC IN IC451 pin 4 5 mS 20 mV</p> 	<p>SDA IC601 pin 14 5 mS 5 mV</p> 	<p>SCL IC1201 pin 3 5 mS 1 V</p> 
<p>Vert Drive IC451 pin 2 5 mS 1 V</p> 	<p>H. Out IC601 pin 13 20 μS 1 V</p> 	<p>IF VO IC601 pin 52 20 μS 50 mV</p> 
<p>B Out TPE15 20 μS 0.1 V</p> 	<p>G Out TPE16 20 μS 0.1 V</p> 	<p>R Out TPE17 20 μS 0.1 V</p> 
<p>'RY' Out IC601 pin 43 20 μS 20 mV</p> 	<p>'BY' Out IC601 pin 41 20 μS 20 mV</p> 	

AUDIO / VIDEO SIGNAL BLOCK DIAGRAM

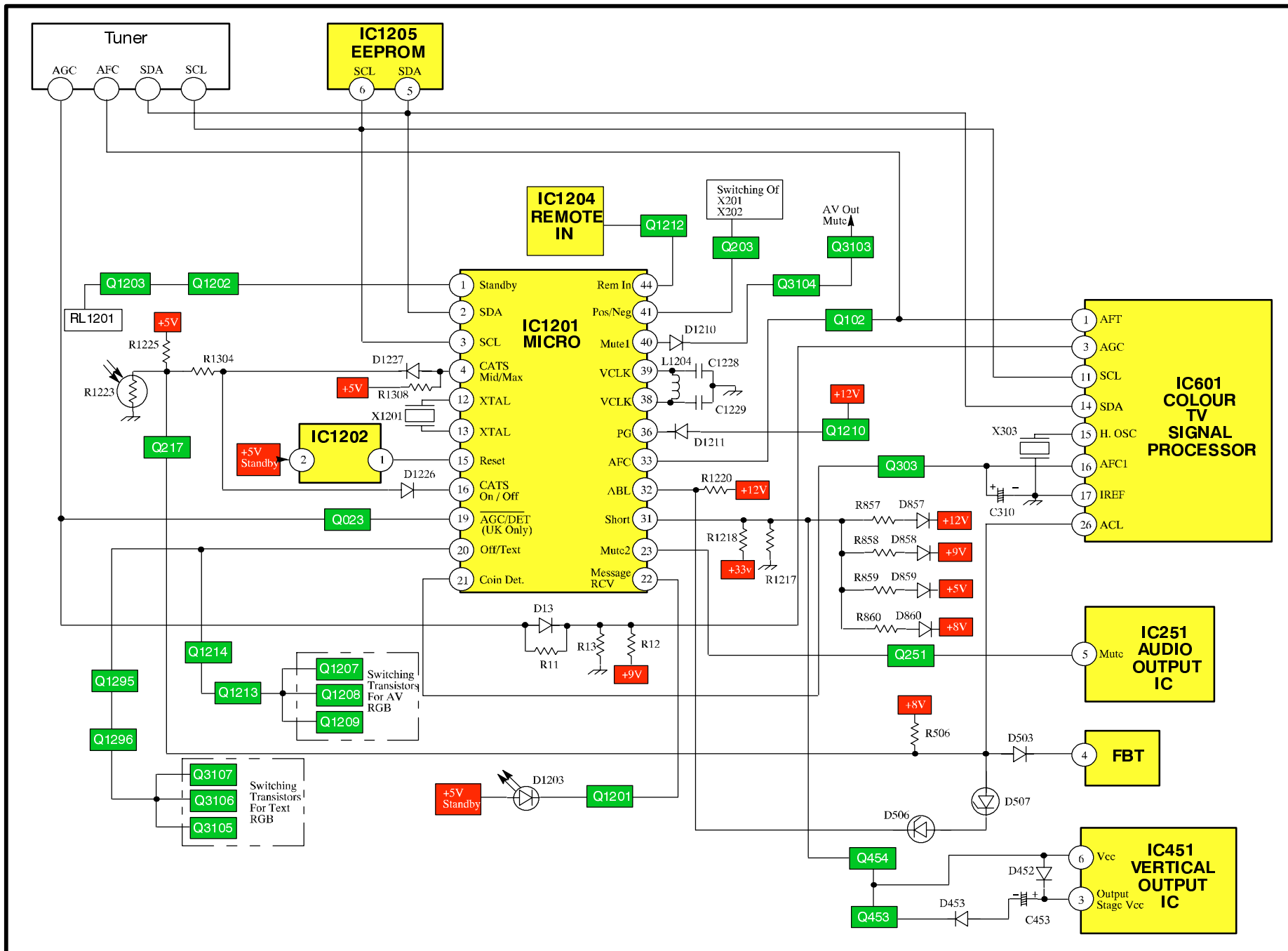


KEY
 ▶ = Video Signal
 ▷ = Audio Signal

POWER SUPPLY BLOCK DIAGRAM

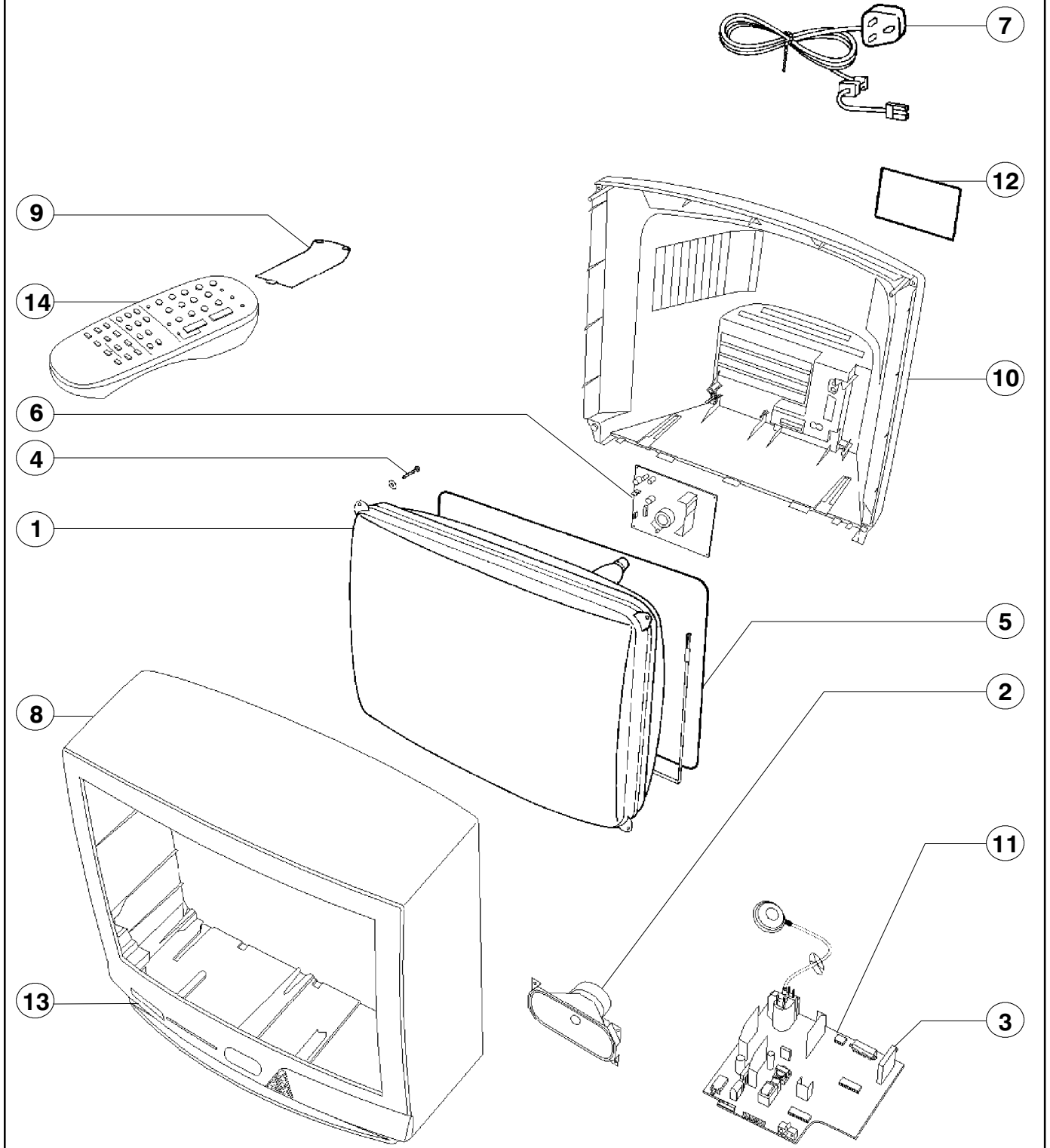


CONTROL LINE BLOCK DIAGRAM




PARTS LOCATION








NOTE :
The numbers on the exploded view below refer to the mechanical section of the Replacement Parts List.



REPLACEMENT PARTS LIST

Important Safety Notice

Components Identified by  mark have special characteristics important for safety.
 * When replacing any of these components, use only manufacturers specified parts.
 In case of ordering these spare parts, please always add the complete Model-Type number to your order.

Cct Ref	Parts Number	Description	
COMMON PARTS			
MECHANICAL PARTS			
1	A34EAC01X13	C.R.T.	
2	EASG9D541B2	SPEAKER	
3	ENV87D05G3	TUNER	
4	THE492-4	CRT FIXING SCREW	
5	TLK8E05134	DEGAUSS COIL	
6	TNP8EY011AP	Y P.C.B.	
7	TSX8E0036	POWER CORD	
MISCELLANEOUS COMPONENTS			
	TBM8E1727	PANASONIC BADGE	
	TKP8E1226	SMOKED PANEL	
	TPD8E665	BOTTOM CUSHION	
	TPD8E666	TOP CUSHION	
	UM-3DJ-2P	BATTERY PACK	
D805	232266296319	THERMISTOR	
MOE8	31221212478	FIX CLIP	
MOE2	31221212478	FIX CLIP	
MOE4	31221212478	FIX CLIP	
POE3	TMW8E015-2	LED HOLDER	
RL1201	TSE1885-1	RELAY	
R1223	P1201	SENSOR	
S351	0330660069	CRT SOCKET	
I.C.s			
IC251	LA4265	AUDIO OUTPUT	
IC451	LA7840	VERTICAL OUTPUT	
IC601	M52778SP-A	AUDIO VIDEO PROCESSOR	
IC602	U3666M-MDP	DELAY LINE	
IC801	STR58041A	POWER SUPPLY	
IC851	L78M05MRB	5V REGULATOR	
IC852	L78M09MRB	9V REGULATOR	
IC853	AN78M08LB	8V REGULATOR	
IC1202	MN1280R	RESET	
IC1204	RPM-637CBRS	RECEIVER	
FUSES			
F801	2153.15H	FUSE	
F8011	EYF52BC	FUSE HOLDER	
F8012	EYF52BC	FUSE HOLDER	
DIODES			
D010	MA4150	DIODE	
D011	MA4150	DIODE	
D304	1SS355TE-17	DIODE	
D306	MTZJT-774.7A	DIODE	
D307	MTZJT-774.7A	DIODE	
D351	MA165TA5	DIODE	

Cct Ref	Parts Number	Description
D352	MA165TA5	DIODE
D353	MA165TA5	DIODE
D354	MA165TA5	DIODE
D452	ERA15-02V3	DIODE
D453	MA165TA5	DIODE
D454	MA165TA5	DIODE
D455	MA165TA5	DIODE
D503	MA165TA5	DIODE
D504	MA165TA5	DIODE
D505	1SR124-4AT82	DIODE
D506	MTZJ33B	DIODE
D541	MA165TA5	DIODE
D542	MA165TA5	DIODE
D552	TVSRU2AMLFA5	DIODE
D553	1SR124-4AT82	DIODE
D554	1SR124-4AT82	DIODE
D555	ERA22-02V3	DIODE
D556	MA165TA5	DIODE
D557	1SR124-4AT82	DIODE
D801	EMO2BMV0	DIODE
D802	EMO2BMV0	DIODE
D803	EMO2BMV0	DIODE
D804	EMO2BMV0	DIODE
D808	1SR124-4AT82	DIODE
D809	1SR124-4AT82	DIODE
D810	RU3LFA1	DIODE
D811	1SR124-4AT82	DIODE
D812	R2KNLFA1	DIODE
D814	MA165TA5	DIODE
D815	1SR124-4AT82	DIODE
D816	1SR124-4AT82	DIODE
D851	TVSRU3AMLFA5	DIODE
D852	TVSRU2AMV1	DIODE
D857	MA165TA5	DIODE
D858	MA165TA5	DIODE
D859	MA165TA5	DIODE
D860	MA165TA5	DIODE
D861	MA165TA5	DIODE
D1202	1N4150T-77	DIODE
D1203	SLR56UR3FLF	LED
D1205	1N4150T-77	DIODE
D1207	MTZJT-778.2A	DIODE
D1208	1N4150T-77	DIODE
D1209	MTZJT-775.1C	DIODE
D1211	MA165TA5	DIODE
D1212	MA165TA5	DIODE
D1213	MA165TA5	DIODE
D1214	1N4150T-77	DIODE
D1217	MA165TA5	DIODE
D1218	MA165TA5	DIODE
D1219	MA165TA5	DIODE
D1220	MA165TA5	DIODE
D1221	MA165TA5	DIODE

Cct Ref	Parts Number	Description
D1222	MA165TA5	DIODE
D1224	MA165TA5	DIODE
D1226	MA700TA5	DIODE
D1227	MA700TA5	DIODE
D1301	MTZJT-775.1A	DIODE
D1311	MA165TA5	DIODE
D3101	MA165TA5	DIODE
TRANSISTORS		
	2SC1473-RN	TRANSISTOR
Q023	BC847B	TRANSISTOR
Q101	BF370-126	TRANSISTOR
Q102	BC847B	TRANSISTOR
Q201	BC847B	TRANSISTOR
Q202	BC847B	TRANSISTOR
Q251	BC847B	TRANSISTOR
Q301	BC847B	TRANSISTOR
Q302	BC847B	TRANSISTOR
Q303	BC847B	TRANSISTOR
Q351	TYMQ0003	TRANSISTOR
Q352	TYMQ0003	TRANSISTOR
Q353	TYMQ0003	TRANSISTOR
Q354	BC857B	TRANSISTOR
Q453	BC847B	TRANSISTOR
Q454	BC847B	TRANSISTOR
Q501	2SD2398-M2	TRANSISTOR
Q502	BC857B	TRANSISTOR
Q503	BC847B	TRANSISTOR
Q504	BC847B	TRANSISTOR
Q551	BU2506DFRB	TRANSISTOR
Q801	BC847B	TRANSISTOR
Q802	2SD965-R	TRANSISTOR
Q1201	BC847B	TRANSISTOR
Q1202	BC847B	TRANSISTOR
Q1203	BC847B	TRANSISTOR
Q1204	2SC1317-TA	TRANSISTOR
Q1205	BC847B	TRANSISTOR
Q1207	BC847B	TRANSISTOR
Q1208	BC847B	TRANSISTOR
Q1209	BC847B	TRANSISTOR
Q1210	BC857B	TRANSISTOR
Q1211	BC857B	TRANSISTOR
Q1212	BC847B	TRANSISTOR
Q1213	BC847B	TRANSISTOR
Q1217	2SD965-R	TRANSISTOR
Q1240	BC847B	TRANSISTOR
Q1295	BC857B	TRANSISTOR
Q1296	BC847B	TRANSISTOR
Q3101	2SC1318-S	TRANSISTOR
Q3103	2SD1328STX	TRANSISTOR
Q3104	BC857B	TRANSISTOR
Q3105	BC857B	TRANSISTOR
Q3106	BC857B	TRANSISTOR
Q3107	BC857B	TRANSISTOR
Q3108	BC857B	TRANSISTOR
TRANSFORMERS		
T551	ETH19Z169AZ	TRANSFORMER
T552	ZTFK33004A	F.B.T.
T801	ETS29AK237AC	TRANSFORMER
T1201	ETP35KAN617U	TRANSFORMER
COILS		
J208	EXCELSA39V	COIL
L010	EXCELSA35T	COIL
L012	EXCELSA35T	COIL
L102	EQL7EN025Q	COIL
L103	EQV7EN210Q	COIL

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Cct Ref	Parts Number	Description
L105	ELESNR22KA	COIL
L106	TLTACT6R8K	COIL
L107	TLTACT6R8K	COIL
L201	TLTACT150K	COIL
L202	TLTACT4R7K	COIL
L301	TLTACT100K	COIL
L303	TLTACT150K	COIL
L351	TLTACT331K	COIL
L352	TLTACT331K	COIL
L353	TLTACT331K	COIL
L451	EXCELSA35T	COIL
L552	ELC08D682E	COIL
L803	EXCELSA35T	COIL
L851	EXCELSA35T	COIL
L852	EXCELSA35T	COIL
L1201	EXCELSA35T	COIL
L1202	TLTACT331K	COIL
L1203	TLTACT100K	COIL
L1204	ERJNA6R8GF	COIL
L1207	TLTACT100K	COIL
L1208	TLTACT100K	COIL
L1209	EXCELSA35T	COIL
FILTERS		
L801	ELF15N005A	LINE FILTER
X101	F1045A	FILTER
X104	EFCV4155A3	CERAMIC FILTER
X201	EFC6S6R0MS5	FILTER
X301	EFCWS6004T	CERAMIC FILTER
X303	TAFCSB503F6	FILTER
CRYSTALS		
X601	TSS116M6	CRYSTAL
X1201	CSA18.00MXZ	CRYSTAL
RESISTORS		
C016	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
C630	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
JEPK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC31	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC11	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JYAK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC12	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC13	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC20	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC21	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC22	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC23	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEZK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC26	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC7	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC9	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEAKK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEANK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEGK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEJK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC1	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JEXK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
JC35	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
JC25	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
JC8	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
JC14	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
JC28	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
R010	ERJ6GEYJ153	S.M.CARB 0.1W 5% 15K Ω
R011	ERJ6GEYJ271	S.M.CARB 0.1W 5% 270 Ω
R013	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22K Ω
R014	ERG2SJS273	METAL 2W 5% 27K Ω △
R016	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100 Ω

Cct Ref	Parts Number	Description				
R017	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R018	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R024	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K Ω	
R025	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R101	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R103	ERJ6GEYJ272	S.M.CARB	0.1W	5%	2K7 Ω	
R104	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω	
R105	ERJ6GEYJ220	S.M.CARB	0.1W	5%	22 Ω	
R106	ERJ6GEYJ821	S.M.CARB	0.1W	5%	820 Ω	
R107	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R108	ERJ6GEYJ124	S.M.CARB	0.1W	5%	120K Ω	
R109	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R110	ERJ6GEYJ392	S.M.CARB	0.1W	5%	3K9 Ω	
R112	ERJ8GEY0R00	S.M.CARB	.125W	5%	0 Ω	
R113	ERJ6GEYJ124	S.M.CARB	0.1W	5%	120K Ω	
R114	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K Ω	
R115	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R116	ERJ8GEYJ152	S.M.CARB	.125W	5%	1K5 Ω	
R117	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R202	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R203	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2 Ω	
R205	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R206	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8 Ω	
R221	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R226	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R227	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R251	ERJ6GEYJ3R3	S.M.CARB	0.1W	5%	3R3 Ω	
R252	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R254	ERJ6GEYJ560	S.M.CARB	0.1W	5%	56 Ω	
R255	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270 Ω	
R256	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R257	ERQ1CJP120	FUSIBLE	1W	5%	12 Ω	△
R259	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω	
R260	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R261	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R301	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R302	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R303	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω	
R304	ERJ6ENF2201	S.M.CARB	0.1W	1%	2K2 Ω	
R305	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R306	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R307	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R309	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8 Ω	
R310	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R311	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180 Ω	
R312	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180 Ω	
R313	ERQ14AJ470	METAL	0.25W	5%	47 Ω	△
R314	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R315	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R316	ERQ14AJ470	METAL	0.25W	5%	47 Ω	△
R317	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R318	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R319	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R320	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R323	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R351	ERG1SJ123E	METAL	1W	5%	12K Ω	
R352	ERG1SJ123E	METAL	1W	5%	12K Ω	
R353	ERG1SJ123E	METAL	1W	5%	12K Ω	
R366	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω	
R367	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω	
R368	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω	
R369	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R370	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R371	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R372	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R373	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390 Ω	

Cct Ref	Parts Number	Description				
R374	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R375	ERDS1TJ182	CARBON	0.5W	10%	1K8 Ω	
R386	ERDS1TJ182	CARBON	0.5W	10%	1K8 Ω	
R387	ERDS1TJ182	CARBON	0.5W	10%	1K8 Ω	
R401	ERJ6ENF9100	S.M.CARB	0.1W	1%	910 Ω	
R402	ERJ6ENF8201	S.M.CARB	0.1W	1%	8K2 Ω	
R403	ERJ6ENF6801	S.M.CARB	0.1W	1%	6K8 Ω	
R451	ERDS1TJ331	CARBON	0.5W	5%	330 Ω	
R452	ERJ6GEYJ1R0	S.M.CARB	0.1W	5%	1 Ω	
R453	ERDS1TJ1R5	CARBON	0.5W	5%	1R5 Ω	
R454	ERJ6GEYF153V	S.M.CARB	0.1W	5%	15K Ω	
R456	ERO25CKF5601	METAL	0.25W	1%	6K1 Ω	△
R457	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R458	ERD25TJ683	CARBON	0.25W	5%	68K Ω	
R459	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R460	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R461	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R462	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R501	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390 Ω	
R502	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω	
R503	ERG3SJS101	METAL	3W	5%	10 Ω	△
R504	ERG2ANJ471	METAL	2W	5%	470 Ω	△
R505	ERJ6GEYJ433	S.M.CARB	0.1W	5%	43K Ω	
R506	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K Ω	
R508	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K Ω	
R510	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560 Ω	
R511	ERJ6GEYJ334	S.M.CARB	0.1W	5%	330K Ω	
R513	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R515	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R516	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R518	ERJ6ENF1302	S.M.CARB	0.1W	1%	13K Ω	
R519	ERJ6GEYJ754	S.M.CARB	0.1W	5%	750K Ω	
R520	ERJ6GEYJ334	S.M.CARB	0.1W	5%	330K Ω	
R521	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R522	ERJ6GEYJ394	S.M.CARB	0.1W	5%	390K Ω	
R541	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R542	ERJ6GEYJ242	S.M.CARB	0.1W	5%	2K4 Ω	
R543	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R551	ERDS1TJ1R5	CARBON	0.5W	5%	1R5 Ω	
R552	ERDS1TJ1R5	CARBON	0.5W	5%	1R5 Ω	
R554	ERQ14AJW151	FUSIBLE	0.25W	10%	150 Ω	△
R555	ERQ1CJP1R0	FUSIBLE	1W	5%	1 Ω	△
R557	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R560	ERDS1TJ304	CARBON	0.5W	5%	300K Ω	
R601	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R602	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R603	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R604	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω	
R605	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R606	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R611	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R612	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R613	ERJ6GEYJ395	S.M.CARB	0.1W	5%	3M9 Ω	
R614	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R801	ERF5ZK2R7	WOUND	5W	20%	2R7 Ω	△
R804	ERDS1TJ224	CARBON	0.5W	5%	220K Ω	
R805	ERW2PKR33	WOUND	2W	20%	R33 Ω	△
R806	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R807	ERG2ANJ101	METAL	0.5W	5%	100 Ω	△
R808	ERG12SJ561P	METAL	0.5W	5%	650 Ω	
R809	ERG2ANJP560H	METAL	2W	5%	56 Ω	△
R810	ERQ12HJ100	FUSIBLE	0.5W	5%	10 Ω	△
R811	ERDS1TJ224	CARBON	0.5W	5%	220K Ω	
R813	ERJ6GEYJ202	S.M.CARB	0.1W	5%	2K Ω	
R814	ERD75TAJ825	CARBON	0.75W	5%	8M2 Ω	△
R819	ERDS1TJ104	CARBON	0.5W	5%	100K Ω	

Cct Ref	Parts Number	Description				
R853	ERG2ANJ270	METAL	2W	5%	27 Ω	△
R857	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R858	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R859	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R860	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R861	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R1201	ERQ1CJP2R2	FUSIBLE	1W	10%	2R2 Ω	△
R1202	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1203	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1204	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1205	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1206	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1208	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1211	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1212	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1214	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1217	ERJ6ENF1202	S.M.CARB	0.1W	1%	1K2 Ω	
R1218	ERO50PKF6203	METAL	0.5W	1%	620K Ω	△
R1219	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1220	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω	
R1221	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270 Ω	
R1222	ERJ6GEYJ330	S.M.CARB	0.1W	5%	33 Ω	
R1224	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K Ω	
R1225	ERJ6GEYJ433	S.M.CARB	0.1W	5%	43K Ω	
R1226	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1227	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1228	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1229	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1231	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1232	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1233	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1235	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5 Ω	
R1236	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R1237	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R1238	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1239	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1240	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1243	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1244	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1246	ERD25TJ272	CARBON	0.25W	5%	2K7 Ω	
R1247	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R1248	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R1249	ERDS1TJ121	CARBON	0.5W	5%	120 Ω	
R1250	ERDS1TJ560	CARBON	0.5W	5%	56 Ω	
R1252	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1255	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1257	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1258	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R1259	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1261	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2 Ω	
R1263	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2 Ω	
R1265	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2 Ω	
R1266	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1267	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1268	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1269	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1270	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1271	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1272	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1273	ERJ6GEYJ333	S.M.CARB	0.1W	5%	33K Ω	
R1274	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R1276	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1279	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R1280	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R1282	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1283	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	

Cct Ref	Parts Number	Description				
R1284	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1285	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R1286	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R1287	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R1288	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R1289	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1293	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1294	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1295	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1296	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1297	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R1298	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1303	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R1304	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K Ω	
R1305	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K Ω	
R1308	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1309	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R1311	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R3101	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R3102	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R3103	ERJ6GEYJ564	S.M.CARB	0.1W	5%	560K Ω	
R3104	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R3105	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R3106	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R3107	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R3108	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R3109	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R3110	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R3111	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R3114	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R3115	ERDS1TJ750	CARBON	0.5W	5%	75 Ω	
R3120	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R3121	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6 Ω	
R3122	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R3123	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R3124	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R3125	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω	
R3126	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω	
R3127	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R3128	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω	
R3130	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R3132	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R3133	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R3134	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R3136	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R3137	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R3138	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R3140	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R3141	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R3142	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R3143	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180 Ω	
CAPACITORS						
C010	ECUV1H103KBX	S.M. CAP	50V		10nF	
C011	ECA1CM100GB	ELECT	16V		10μF	
C012	ECUV1H103KBX	S.M. CAP	50V		10nF	
C014	ECUV1H080DCX	S.M. CAP	50V		80pF	
C015	ECA1HM330B	ELECT	50V		33μF	
C017	ECUV1H100DCX	S.M. CAP	50V		10pF	
C019	ECUV1H103KBX	S.M. CAP	50V		10nF	
C020	ECA1HM010GB	ELECT	50V		1μF	
C102	ECUV1H101JCX	S.M. CAP	50V		100pF	
C103	ECUV1H103KBX	S.M. CAP	50V		10nF	
C105	ECUV1H103KBX	S.M. CAP	50V		10nF	
C107	ECA1HMR22GB	ELECT	50V		10nF	
C108	ECUV1H103KBX	S.M. CAP	50V		10nF	
C109	ECA1HMR47GB	ELECT	50V		10nF	

Cct Ref	Parts Number	Description		
C110	ECA1HM0R1B	ELECT	50V	0R1μF
C111	ECUV1H103KBW	S.M. CAP	50V	10nF
C112	ECA1HMR47GB	ELECT	50V	10nF
C113	ECUV1H103KBX	S.M. CAP	50V	10nF
C114	ECA1HM010GB	ELECT	50V	1μF
C116	ECJ2YB1H104K	ELECT	350V	100nF
C203	ECUV1H220JCX	S.M. CAP	50V	22pF
C204	ECUV1H220JCX	S.M. CAP	50V	22pF
C207	ECEA1CN100	ELECT	16V	10μF
C208	ECA1CM100GB	ELECT	16V	10μF
C216	ECUV1H272KBX	S.M. CAP	50V	2.7nF
C251	ECA1EM471GB	ELECT	25V	470μF
C252	ECA1HM010GB	ELECT	50V	1μF
C253	ECA1EHG470B	ELECT	50V	47pF
C254	ECUV1H272JCX	S.M. CAP	50V	2.7nF
C255	B32529-C224	FILM	50V	220nF
C256	ECQM1H224J	FILM	50V	220nF
C257	ECQM1H474J	FILM	50V	470nF
C258	ECA1EHG101B	ELECT	50V	100nF
C260	ECA1EM102GB	ELECT	25V	100μF
C261	ECUV1H471JCX	S.M. CAP	50V	470pF
C301	ECA1HM101GB	ELECT	50V	100μF
C302	ECJ2VF1H104Z	ELECT	350V	100nF
C303	ECA1CM471GB	ELECT	16V	470μF
C304	ECJ2VF1H104Z	ELECT	350V	100nF
C305	ECA1HM101GB	ELECT	50V	100μF
C307	ECA1HM101GB	ELECT	50V	100μF
C308	ECUV1H104ZFW	S.M. CAP	50V	100nF
C309	ECUV1H103KBX	S.M. CAP	50V	10nF
C310	ECA1HM010GB	ELECT	50V	1μF
C311	ECJ2VF1H104Z	ELECT	350V	100nF
C312	ECJ2VF1H104Z	ELECT	350V	100nF
C313	ECJ2VF1H104Z	ELECT	350V	100nF
C314	ECEA1HNR47UB	ELECT	50V	100nF
C315	ECEA1HN2R2UB	ELECT	50V	2.2μF
C316	ECA1HM101GB	ELECT	50V	100μF
C317	ECA1HM101GB	ELECT	50V	100μF
C318	ECEA1HNR47UB	ELECT	50V	100μF
C319	ECJ2VF1H104Z	ELECT	350V	100nF
C323	ECUV1H102JCX	S.M. CAP	50V	1nF
C351	ECUV1H101JCX	S.M. CAP	50V	100pF
C352	ECUV1H101JCX	S.M. CAP	50V	100pF
C353	ECUV1H121JCX	S.M. CAP	50V	120pF
C355	ECKC3D152J	CERAMIC	2KV	1.5nF
C357	ECKC2H152J	CERAMIC	500V	1.5nF
C362	ECUV1H102ZFX	S.M. CAP	50V	1nF
C368	ECEA2EU010	ELECT	250V	1μF
C370	ECA1CM220GB	ELECT	16V	22μF
C371	ECA1CM221GB	ELECT	16V	220μF
C401	ECUV1H223KBX	S.M. CAP	50V	22nF
C402	ECUV1H472KBX	S.M. CAP	50V	4.7nF
C403	ECA1HM010GB	ELECT	50V	1μF
C404	ECJ2VF1H103Z	ELECT	350V	10nF
C452	ECQM1H274J	FILM	50V	270nF
C453	ECEA1HU101	ELECT	50V	100μF
C454	ECA1HM2R2GB	ELECT	50V	2.2μF
C457	ECQM1H394J	FILM	50V	390nF
C461	ECUV1H100CCX	S.M. CAP	50V	10pF
C501	ECA1HM0R1B	ELECT	50V	0R1μF
C502	ECUV1H223KBX	S.M. CAP	50V	22nF
C503	ECUV1H391JCX	S.M. CAP	50V	390pF
C504	ECEA1HN010UB	ELECT	50V	1μF
C505	ECUV1H331JCX	S.M. CAP	50V	330pF
C506	ECQM1273KZW	FILM	100V	27nF
C507	ECA1HHG100B	ELECT	50V	10μF
C541	ECEA1EN4R7UB	ELECT	25V	4.7μF

Cct Ref	Parts Number	Description		
C550	ECA1VM471GB	ELECT	35V	470μF
C551	ECWH12H822J	FILM	1250V	8.2nF
C552	ECQE6104K	FILM	600V	100nF
C554	ECKC3D331J	CERAMIC	2KV	330pF
C556	ECEA2CGR47	ELECT	160V	330pF
C557	ECWF2H474J	FILM	500V	470nF
C558	ECEA2CG010	ELECT	160V	1μF
C559	ECKC2H471J	CERAMIC	500V	470pF
C560	ECKC2H471J	CERAMIC	500V	470pF
C561	ECEA2EU100	ELECT	250V	10μF
C562	ECKC2H471J	CERAMIC	500V	470pF
C563	ECA1VM471GB	ELECT	35V	470μF
C564	ECA1CM471GB	ELECT	16V	470μF
C565	ECA1VM471GB	ELECT	35V	470μF
C566	ECKC2H471J	CERAMIC	500V	470pF
C567	ECA1VM471GB	ELECT	35V	470μF
C601	ECJ2YB1H473K	ELECT	350V	47nF
C602	ECUV1H153KBX	S.M. CAP	50V	15nF
C603	ECA1HM010GB	ELECT	50V	1μF
C605	ECUV1H150JCX	S.M. CAP	50V	15pF
C606	ECJ2VF1H104Z	ELECT	350V	100nF
C607	ECJ2VF1H104Z	ELECT	350V	100nF
C608	ECUV1H470JCX	S.M. CAP	50V	47pF
C609	ECUV1H470JCX	S.M. CAP	50V	47pF
C610	ECA1HM101GB	ELECT	50V	100μF
C611	ECJ2VF1H104Z	ELECT	350V	100nF
C612	ECUV1H103KBX	S.M. CAP	50V	10nF
C613	ECUV1H103KBX	S.M. CAP	50V	10nF
C614	ECJ2VF1H104Z	ELECT	350V	100nF
C623	ECUV1H104ZFW	S.M. CAP	50V	100nF
C624	ECUV1H560JCX	S.M. CAP	50V	56pF
C625	ECUV1H560JCX	S.M. CAP	50V	56pF
C626	ECUV1H560JCX	S.M. CAP	50V	56pF
C627	ECUV1H560JCX	S.M. CAP	50V	56pF
C628	ECUV1H390JCX	S.M. CAP	50V	39pF
C802	ECQU2A823MNB	FILM	200V	82nF
C803	ECKC2H472J	CERAMIC	500V	4.7nF
C804	ECKC2H472J	CERAMIC	500V	4.7nF
C805	ECKC2H472J	CERAMIC	500V	4.7nF
C806	ECKC2H472J	CERAMIC	500V	4.7nF
C807	ECOS2GA101BB	ELECT	400V	100μF
C808	ECQB1H333J	FILM	50V	33nF
C810	ECA1VM101GB	ELECT	35V	100μF
C811	ECA1JM100GB	ELECT	63V	10μF
C812	ECA2CHG221E	ELECT	160V	220μF
C817	ECA1VM101GB	ELECT	35V	100μF
C820	ECKWNA332MEC	CERAMIC	250V	3.3nF
C853	ECA1EM102GB	ELECT	25V	100μF
C854	ECA1HHG471E	ELECT	50V	470μF
C855	ECJ2VF1H104Z	ELECT	350V	100nF
C856	ECJ2VF1H104Z	ELECT	350V	100nF
C857	ECA1HM101GB	ELECT	50V	100μF
C858	ECA1AM222B	ELECT	10V	100μF
C859	ECJ2VF1H104Z	ELECT	350V	100nF
C860	ECA1HM101GB	ELECT	50V	100μF
C861	ECA1CM102B	ELECT	16V	100μF
C1201	ECA1EM102GB	ELECT	25V	100μF
C1202	ECA1EM101GB	ELECT	25V	100μF
C1203	ECA1EM471GB	ELECT	25V	470μF
C1204	ECUV1H471KBX	S.M. CAP	50V	470pF
C1205	ECUV1H471KBX	S.M. CAP	50V	470pF
C1206	ECUV1H471KBX	S.M. CAP	50V	470pF
C1207	ECUV1H471KBX	S.M. CAP	50V	470pF
C1208	ECUV1H471KBX	S.M. CAP	50V	470pF
C1210	ECJ2YB1H473K	ELECT	350V	47nF
C1218	ECA1HM010GB	ELECT	50V	1μF

Cct Ref	Parts Number	Description			
C1219	ECJ2VF1H104Z	ELECT	350V	100nF	
C1220	ECA0JM101G	ELECT	6.3V	100µF	
C1221	ECUV1H331JCX	S.M. CAP	50V	330pF	
C1226	ECJ2VF1H104Z	ELECT	350V	100nF	
C1227	ECA1HM101GB	ELECT	50V	100µF	
C1228	ECUV1H560GCG	S.M. CAP	50V	56pF	
C1229	ECUV1H470GCG	S.M. CAP	50V	47pF	
C1232	ECJ2VF1H104Z	ELECT	350V	100nF	
C1234	ECJ2VF1H104Z	ELECT	350V	100nF	
C1241	ECA1HM101GB	ELECT	50V	100µF	
C1244	ECA1CM100GB	ELECT	16V	10µF	
C1249	ECJ2VF1H104Z	ELECT	350V	100nF	
C1255	ECA1HM101GB	ELECT	50V	100µF	
C1256	ECJ2YB1H104K	ELECT	350V	100nF	
C1257	ECUV1H561JCX	S.M. CAP	50V	560pF	
C1258	ECA1CM100GB	ELECT	16V	10µF	
C1259	ECUV1H150JCX	S.M. CAP	50V	15pF	
C1260	ECUV1H560JCX	S.M. CAP	50V	56pF	
C1261	ECA1HM101GB	ELECT	50V	100µF	
C1262	ECUV1H390JCX	S.M. CAP	50V	39pF	
C1263	ECUV1H390JCX	S.M. CAP	50V	39pF	
C1264	ECUV1H390JCX	S.M. CAP	50V	39pF	
C1265	ECUV1H560JCX	S.M. CAP	50V	56pF	
C1266	ECA1CM100GB	ELECT	16V	10µF	
C3101	ECUV1H101JCX	S.M. CAP	50V	100pF	
C3102	ECUV1H561KBX	S.M. CAP	50V	560pF	
C3104	ECUV1H102KBX	S.M. CAP	50V	1nF	
C3105	ECUV1H101JCX	S.M. CAP	50V	100pF	
C3109	ECUV1H561JCX	S.M. CAP	50V	560pF	
C3110	ECA1HM3R3GB	ELECT	50V	3.3µF	
C3113	ECUV1H103KBX	S.M. CAP	50V	10nF	
C3115	ECEA1CN100	ELECT	16V	10µF	
C3117	ECJ2VF1H104Z	ELECT	350V	100nF	
C3118	ECEA1CN100	ELECT	16V	10µF	
C3119	ECEA1CN100	ELECT	16V	10µF	
C3120	ECA1CM471GB	ELECT	16V	470µF	
TERMINALS AND LINKS					
JK3102	TJB16663	A.V. TERMINAL			
SWITCHES					
S801	ESB91232A	SWITCH			△
S1201	EVQ23405R	SWITCH			
S1202	EVQ23405R	SWITCH			
S1203	EVQ23405R	SWITCH			
S1204	EVQ23405R	SWITCH			
S1205	EVQ23405R	SWITCH			
DIFFERENCES FOR MODEL TC-14S3R					
MECHANICAL PARTS					
8	TKU8E00340	BACK COVER			△
9	UR51EC780	BATTERY COVER (REMOTE)			
10	TKY8E220	CABINET			△
11	TNP8EE007CP	E P.C.B.			△
12	TBM8E1868	MODEL LABEL			
13	TBX8E051	POWER BUTTON			
14	TNQ8E0460	REMOTE CONTROL			
MISCELLANEOUS COMPONENTS					
	TPC8E4693	OUTER CARTON			
	TSA8E001	LOOP ANTENNA			
PKN1	TBX8E052	KEY PAD			
INSTRUCTION BOOKS					
	TQB8E2543	ENGLISH			△
I.C.s					
IC1201	SDA5222V23	MICRO PROCESSOR			

Cct Ref	Parts Number	Description			
IC1205	XL24D02P-AA1	EAROM *			
DIODES					
D551	TVSRH2FV1	DIODE			
D1228	1SS355TE-17	DIODE			
RESISTORS					
C1230	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
C1245	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1215	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1216	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1230	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R1242	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1251	ERJ6GEYJ513	S.M.CARB	0.1W	5%	51K Ω
R1253	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K Ω
R1275	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1291	ERJ6GEYJ432	S.M.CARB	0.1W	5%	4K3 Ω
DIFFERENCES FOR MODEL TC-14S3R/W					
MECHANICAL PARTS					
8	TKU8E00341	BACK COVER			△
9	UR51EC780	BATTERY COVER (REMOTE)			
10	TKY8E221	CABINET			△
11	TNP8EE007CQ	E P.C.B.			△
12	TBM8E1876	MODEL LABEL			
13	TBX8E058	POWER BUTTON			
14	TNQ8E0460	REMOTE CONTROL			
MISCELLANEOUS COMPONENTS					
	TPC8E4693	OUTER CARTON			
	TSA8E002	LOOP ANTENNA			
PKN1	TBX8E059	KEY PAD			
INSTRUCTION BOOKS					
	TQB8E2543	ENGLISH			△
I.C.s					
IC1201	SDA5222V23	MICRO PROCESSOR			
IC1205	XL24D02P-AA1	EAROM *			
DIODES					
D551	TVSRH2FV1	DIODE			
D1228	1SS355TE-17	DIODE			
RESISTORS					
C1230	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
C1245	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1215	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1216	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1230	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω
R1242	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1251	ERJ6GEYJ513	S.M.CARB	0.1W	5%	51K Ω
R1253	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K Ω
R1275	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0 Ω
R1291	ERJ6GEYJ432	S.M.CARB	0.1W	5%	4K3 Ω
DIFFERENCES FOR MODEL TX-14S3T					
MECHANICAL PARTS					
8	TKU8E00340	BACK COVER			△
9	UR51EC904A	BATTERY COVER (REMOTE)			
10	TKY8E220	CABINET			△
11	TNP8EE007CR	E P.C.B.			△
12	TBM8E1869	MODEL LABEL			
13	TBX8E058	POWER BUTTON			
14	EUR511300	REMOTE CONTROL			
MISCELLANEOUS COMPONENTS					
	TPC8E4692	OUTER CARTON			

Cct Ref	Parts Number	Description
	TSA8E001	LOOP ANTENNA
PKN1	TBX8E059	KEY PAD
INSTRUCTION BOOKS		
	TQB8E2545	ENGLISH △
I.C.s		
IC1201	SDA5254V12	MICRO PROCESSOR
IC1205	XL24C02P-AA1	EAROM *
DIODES		
D551	TVSRH2F-LFB3	DIODE
D1225	MA165TA5	DIODE
TRANSISTORS		
Q1214	BC857B	TRANSISTOR
Q1215	BC857B	TRANSISTOR
Q1216	BC847B	TRANSISTOR
COILS		
L1206	EXCELSA35T	COIL
RESISTORS		
JC24	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
R1213	ERJ6GEYJ392	S.M.CARB 0.1W 5% 3K9 Ω
R1215	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1216	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1230	ERJ6GEYJ823	S.M.CARB 0.1W 5% 82K Ω
R1241	ERJ6GEYJ822	S.M.CARB 0.1W 5% 8K2 Ω
R1242	ERJ6GEYJ434	S.M.CARB 0.1W 5% 43K Ω
R1251	ERJ6GEYJ513	S.M.CARB 0.1W 5% 51K Ω
R1253	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7 Ω
R1256	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2 Ω
R1275	ERJ6GEYJ225	S.M.CARB 0.1W 5% 2M2 Ω
R1277	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1278	ERJ6GEYJ182	S.M.CARB 0.1W 5% 1K8 Ω
R1290	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1291	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1292	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1306	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
R1307	ERJ6GEYJ182	S.M.CARB 0.1W 5% 1K8 Ω
CAPACITORS		
C1230	ECJ2VB1H333K	ELECT 350V 33nF
C1231	222236516154	FILM 160V 150nF
C1242	ECUV1H120JCX	S.M. CAP 50V 12pF
C1245	ECJ2VB1H333K	ELECT 350V 33nF
C1250	ECUV1H151JCX	S.M. CAP 50V 150pF
C1251	ECQM1H104J	FILM 50V 100nF
C1269	ECUV1H181JCX	S.M. CAP 50V 180pF
DIFFERENCES FOR MODEL TX-14S3T/W		
MECHANICAL PARTS		
8	TKU8E00341	BACK COVER △
9	UR51EC904A	BATTERY COVER (REMOTE)
10	TKY8E221	CABINET △
11	TNP8EE007CS	E P.C.B. △
12	TBM8E1877	MODEL LABEL
13	TBX8E058	POWER BUTTON
14	EUR511300	REMOTE CONTROL
MISCELLANEOUS COMPONENTS		
	TPC8E4693	OUTER CARTON
	TSA8E002	LOOP ANTENNA
PKN1	TBX8E059	KEY PAD
INSTRUCTION BOOKS		
	TQB8E2545	ENGLISH △
I.C.s		
IC1201	SDA5254V12	MICRO PROCESSOR

Cct Ref	Parts Number	Description
IC1205	XL24C02P-AA1	EAROM *
DIODES		
D551	TVSRH2FV1	DIODE
D1225	MA165TA5	DIODE
TRANSISTORS		
Q1214	BC857B	TRANSISTOR
Q1215	BC857B	TRANSISTOR
Q1216	BC847B	TRANSISTOR
COILS		
L1206	EXCELSA35T	COIL
RESISTORS		
JC24	ERJ8GEY0R00	S.M.CARB .125W 5% 0 Ω
R1213	ERJ6GEYJ392	S.M.CARB 0.1W 5% 3K9 Ω
R1215	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1216	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1230	ERJ6GEYJ823	S.M.CARB 0.1W 5% 82K Ω
R1241	ERJ6GEYJ822	S.M.CARB 0.1W 5% 8K2 Ω
R1242	ERJ6GEYJ434	S.M.CARB 0.1W 5% 43K Ω
R1251	ERJ6GEYJ513	S.M.CARB 0.1W 5% 51K Ω
R1253	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7 Ω
R1256	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2 Ω
R1275	ERJ6GEYJ225	S.M.CARB 0.1W 5% 2M2 Ω
R1277	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1278	ERJ6GEYJ182	S.M.CARB 0.1W 5% 1K8 Ω
R1290	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1291	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8 Ω
R1292	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω
R1306	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0 Ω
R1307	ERJ6GEYJ182	S.M.CARB 0.1W 5% 1K8 Ω
CAPACITORS		
C1230	ECJ2VB1H333K	ELECT 350V 33nF
C1231	222236516154	FILM 160V 150nF
C1242	ECUV1H120JCX	S.M. CAP 50V 12pF
C1245	ECJ2VB1H333K	ELECT 350V 33nF
C1250	ECUV1H151JCX	S.M. CAP 50V 150pF
C1251	ECQM1H104J	FILM 50V 100nF
C1269	ECUV1H181JCX	S.M. CAP 50V 180pF

SCHEMATIC DIAGRAMS FOR MODELS

TX-14S3T / TC-14S3R

TX-14S3T/W / TC-14S3R/W

(Z-7 CHASSIS)

IMPORTANT SAFETY NOTICE

Components identified by mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

1. RESISTOR

All resistors are carbon 1/4W resistor, unless marked. Unit of resistance is OHM (Ω) (k=1,000, M=1,000,000).

- | | |
|----------------|---------------|
| : Nonflammable | : Metal Oxide |
| : Metal Film | : Fuse |
| : Wire Wound | : Solid |

2. CAPACITOR

All capacitors are ceramic 50V capacitors, unless marked as follows: Unit of capacitance is μ F, unless otherwise stated.

- | | |
|----------------------------|-------------------|
| : Temperature Compensation | : Polyester |
| : Polypropylene | : Dipped Tantalum |
| : Electrolytic | : Bipolar |
| : Metallised Polyester | : Z-Type |

3. COIL

Unit of inductance is μ H, unless otherwise stated.

4. TEST POINT

- Test Point position

5. EARTH SYMBOL

- | | |
|----------------------|------------------|
| Chassis Earth (COLD) | Line Earth (HOT) |
|----------------------|------------------|

6. VOLTAGE MEASUREMENT

Voltage is measured by a DC voltmeter. Measurement conditions are as follows:

- Power source AC 220 / 240V, 50Hz
 Receiving Signal Colour Bar signal (RF)
 All customer controls Maximum position

7. Indicates the Video signal path
 Indicates the Audio signal path

8. These schematic diagrams are the latest at the time of printing and are subject to change without notice.

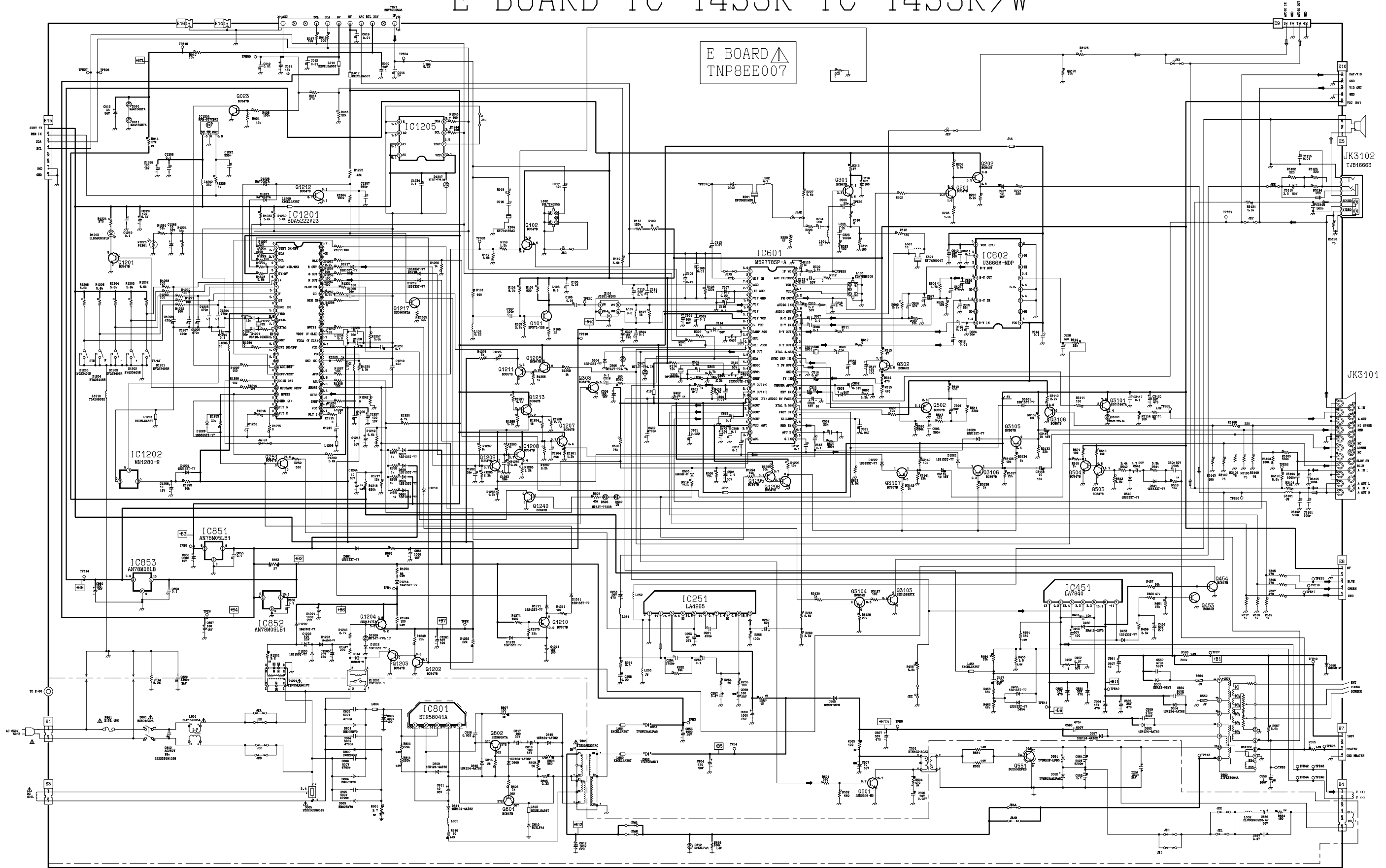
Remarks:

1. Care must be taken when servicing this receiver, as it uses a HOT chassis. The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions. All circuits except the Audio, Video input circuits are HOT.

2. **Precautions**

- a. Do not touch the HOT part, or the HOT and COLD parts of the chassis, at the same time, as you are liable to a shock hazard.
- b. Do not short-circuit the HOT and COLD circuits as electrical components may be damaged.
- c. Do not connect an instrument, such as an oscilloscope, to the HOT and COLD circuits simultaneously, as this may cause fuse failure. Connect the earth of the instruments to the earth connection of the circuit being measured.
- d. Make sure to disconnect the power plug before removing the chassis.

E-BOARD TC-14S3R TC-14S3R/W



E BOARD
TNP8EE007

JK3102
TJB16663

JK3101

B8

B7

B6

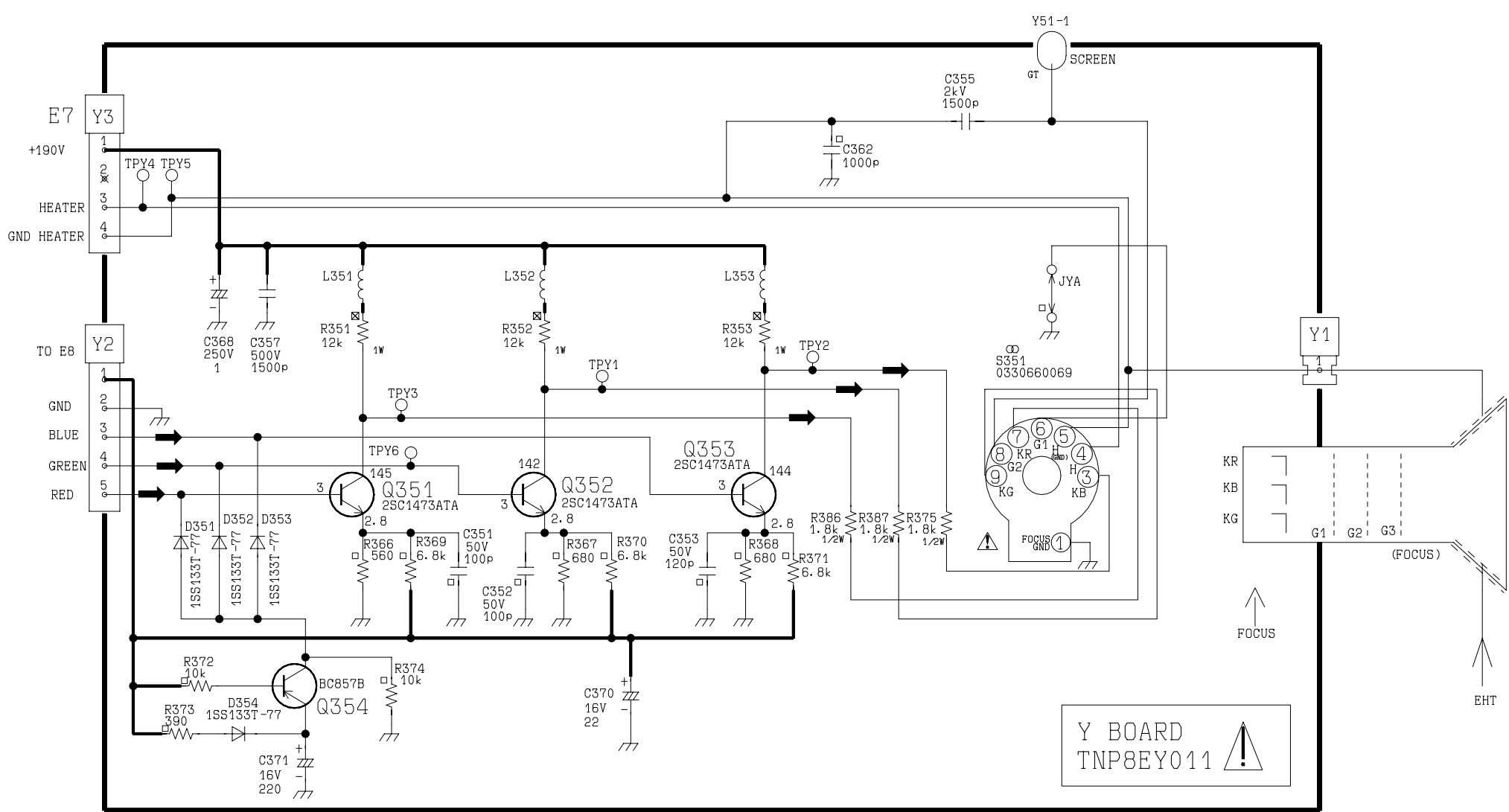
B5

B4

B3

B2

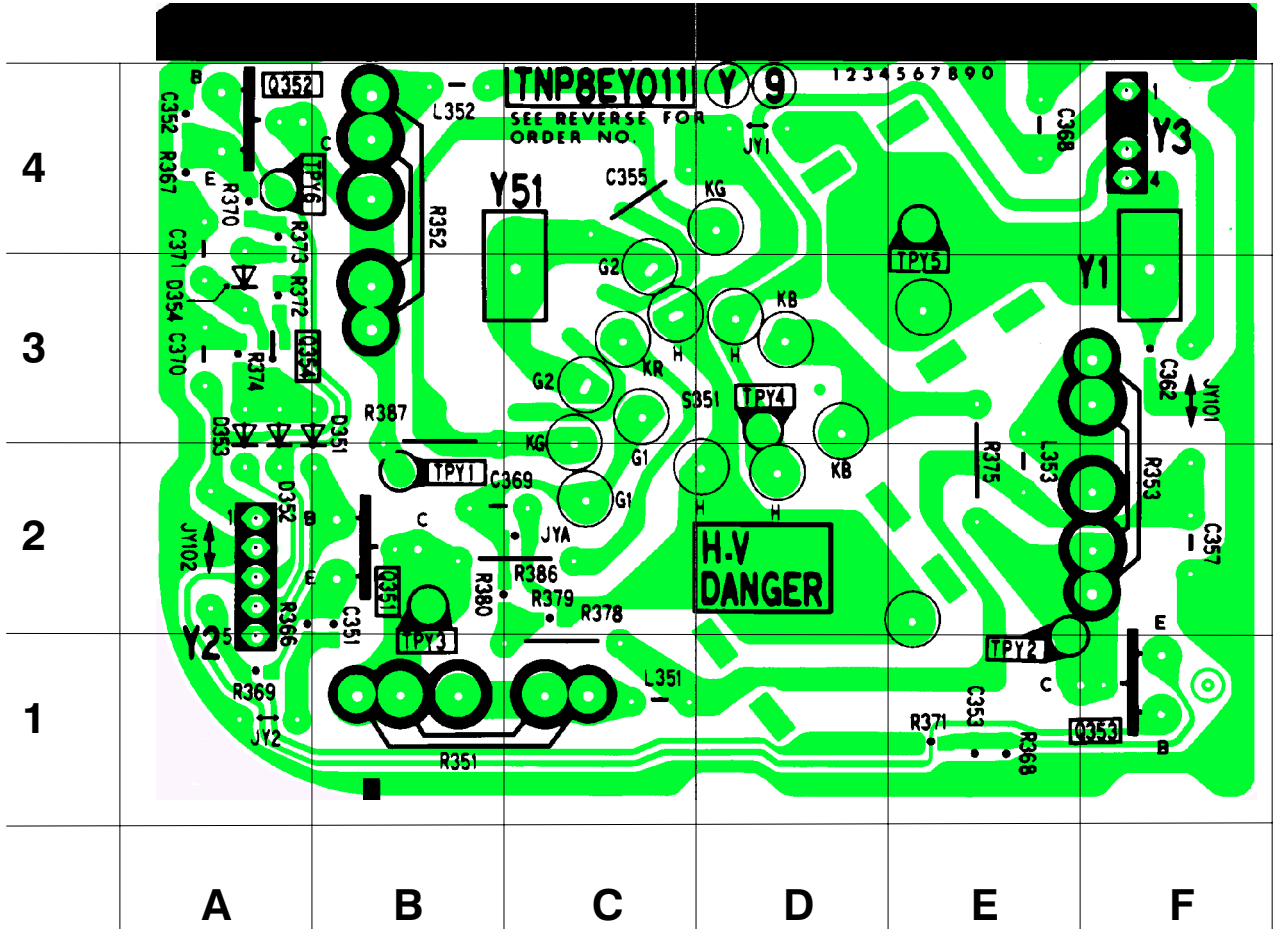
B1



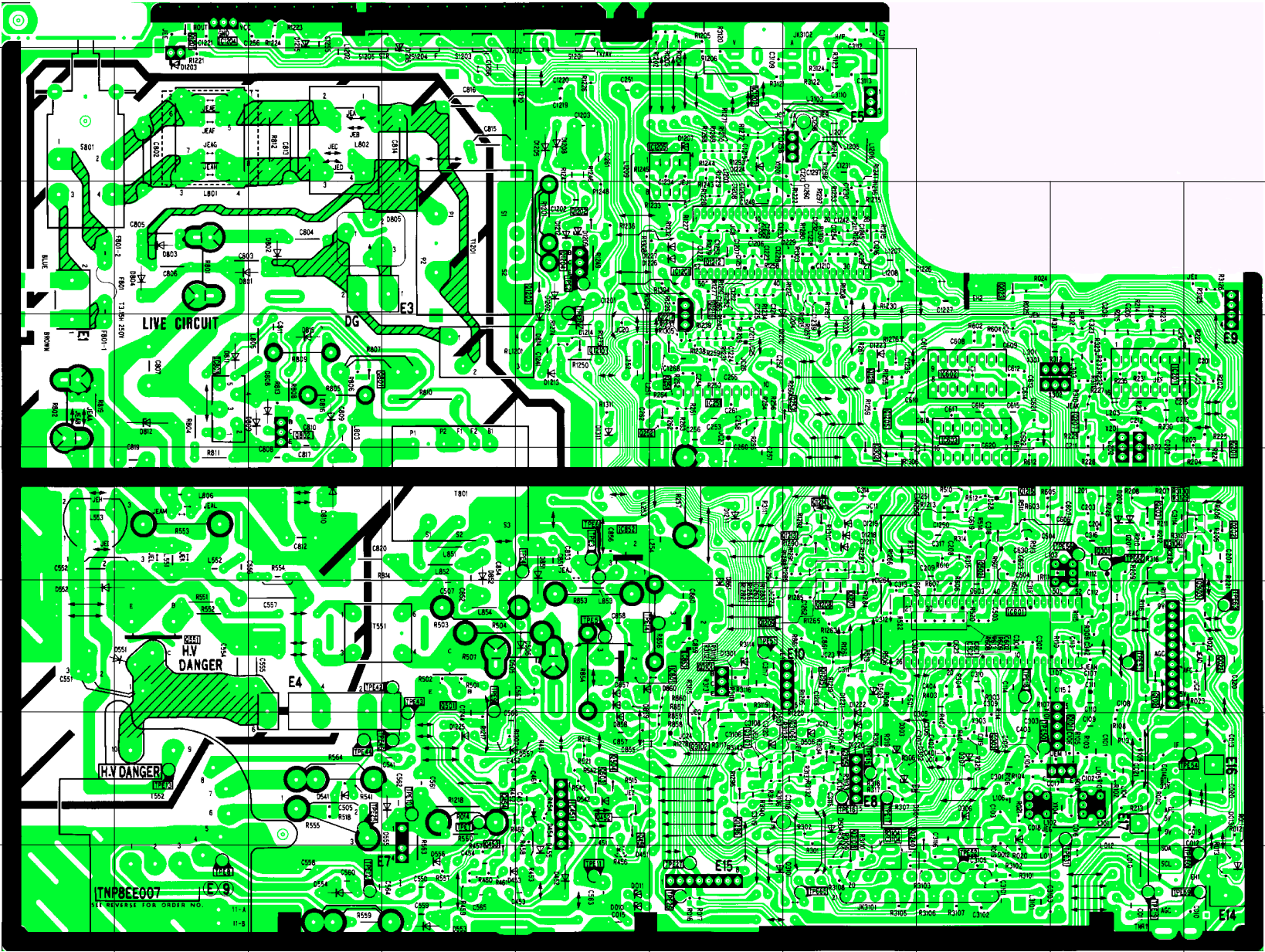
CONDUCTOR VIEWS

Y - BOARD TNP8EY011

TEST POINT	DIODE	TRANS
TPY1	B2	D351 B3 Q351 B2
TPY2	E1	D352 A3 Q352 A4
TPY3	B2	D353 A3 Q353 F1
TPY4	D3	D354 A3
TPY5	E4	
TPY6	A4	



E - BOARD TNP8EE007



8
7
6
5
4
3
2
1

A B C D E F G H I J

E - BOARD TNP8EE007

DIODES				TRANS				TEST POINT	
D010	E1	D814	E5	Q022	J3	Q1216	F6	TPE1	E6
D011	E1	D815	C5	Q023	H6	Q1217	F5	TPE2	E6
D012	H2	D816	C5	Q101	I2	Q1240	G2	TPE3	E4
D013	J1	D851	E4	Q102	I3	Q1295	G3	TPE4	E4
D201	J4	D852	D4	Q201	J4	Q1296	F2	TPE5	E3
D202	J4	D857	E3	Q202	J4	Q3101	F3	TPE6	E4
D301	G2	D858	E2	Q203	I4	Q3102	F2	TPE7	D2
D302	G2	D859	E3	Q207	I5	Q3103	J3	TPE8	B1
D303	G2	D860	E3	Q251	F5	Q3105	G2	TPE9	D3
D306	H2	D861	F3	Q252	F5	Q3106	G2	TPE10	D2
D307	H2	D1201	E6	Q252	G5	Q3107	F2	TPE11	E1
D452	E1	D1203	B7	Q301	I4	Q3108	G2	TPE12	C1
D453	D1	D1205	E7	Q302	G4			TPE13	B2
D454	E2	D1207	F7	Q303	H2	I.C.		TPE14	F3
D455	E1	D1208	E7	Q451	E2	IC201	I5	TPE16	G2
D503	G3	D1209	E6	Q452	E2	IC251	F5	TPE17	G2
D504	G2	D1210	G6	Q453	D1	IC451	E2	TPE18	H3
D505	E3	D1211	F4	Q454	D2	IC601	H3	TPE19	I1
D506	G2	D1212	E6	Q501	D3	IC602	H5	TPE25	C2
D507	F2	D1213	E5	Q502	H4	IC603	H5	TPE26	F1
D541	C2	D1214	E5	Q503	E2	IC801	B5	TPE27	F1
D542	F2	D1215	C8	Q504	E2	IC851	E3	TPE31	I2
D551	B3	D1216	D7	Q551	B3	IC852	E4	TPE42	D3
D552	A3	D1217	G4	Q801	C5	IC853	F3	TPE43	D3
D553	D1	D1218	G4	Q802	C5	IC1201	F6	TPE44	C2
D554	C1	D1219	G4	Q1201	B8	IC1202	G7	TPE46	D2
D555	D2	D1220	G2	Q1202	F6	IC1204	B8	TPE50	H2
D556	D1	D1221	G2	Q1203	F6	IC1205	F7	TPE51	F3
D557	F2	D1223	G5	Q1204	F6			TPE52	H1
D801	B6	D1224	F7	Q1205	G5			TPE54	J2
D802	C6	D1225	D2	Q1207	G3			TPE56	I4
D803	B6	D1226	F6	Q1208	G3			TPE57	I3
D804	B6	D1227	F6	Q1209	G3			TPE59	J1
D805	D6	D1301	F3	Q1210	E5			TPE60	J1
D808	C5	D1311	E5	Q1211	G5			TPE62	I4
D809	C5	D3101	F1	Q1212	F6			TPE63	J3
D810	C4			Q1213	G4			TPE65	G1
D811	B5			Q1214	G4				
D812	B5			Q1215	H4				

