TX-21/14S4TF / TC-21/14S4RF Service Manual

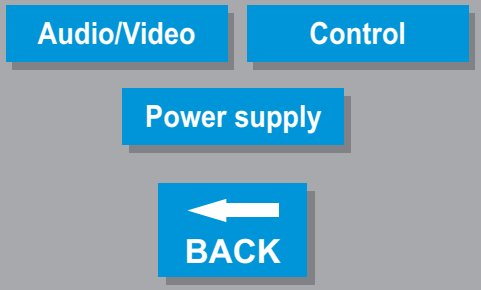
Service Support

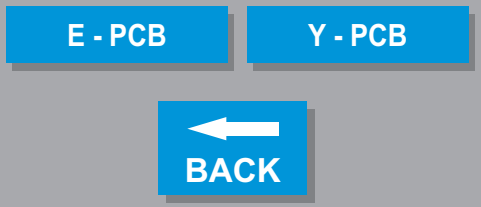
Service and repair of this product is supported by Panasonic's LUCI interface.

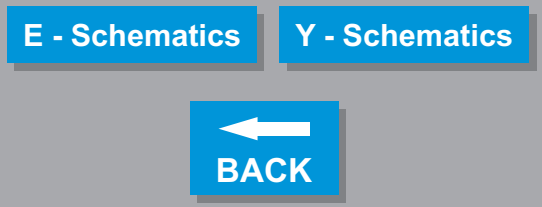
This interface provides a link between the TV and a standard PC to allow a number of diagnostic and control functions to be performed.

For more details contact your local Panasonic company.

BACK
EXIT


Audio/Video
Control
Power supply
BACK


E - PCB
Y - PCB
BACK


E - Schematics
Y - Schematics
BACK

ORDER NO. SM–98023

Service Manual

Colour Television

TX–21S4TF
TC–21S4RF
TX–14S4TF
TC–14S4RF

Z–7 Chassis

SPECIFICATIONS

(Information in brackets {} refer to TX–14S4TF/TC–14S4RF)

Power Source :	220–240V AC, 50Hz	
Power Consumption :	50W {47W}	
Standby Power Consumption :	1W	
Aerial Impedance :	75Ω unbalanced, Coaxial Type	
Receiving System :	PAL–BG, H, PAL 525/60 SECAM BG, L/L',	
Receiving Channels :		
VHF E2 – E12	VHF H1 – H2 (ITALY)	
VHF A – H (ITALY)	UHF E21 – E69	
CATV (S01 – S05)	CATV S1 – S10 (M1 – M10	
CATV S11 – S20 (U1 – U10)	CATV S21 – S41 (HYPERBAND)	
Intermediate Frequency :		
Video	38,9MHz, 34MHz	
Sound	33,4MHz, 33,16MHz 32,4MHz, 40,4MHz	
Colour	34,47MHz, 34,5MHz, 34,65MHz	
Video / Audio Terminals :		
AV1 IN	Video (21 pin) Audio (21 pin) RGB (21 pin)	1V p–p 75Ω 500mV rms 10kΩ
AV1 OUT	Video (21 pin) Audio (21 pin)	1V p–p 75Ω 500mV rms 1kΩ
RCA IN	Video	1V p–p 75Ω
RCA IN	Audio	500mV rms, 10kΩ
High Voltage : (zero beam current)	27kV + 0,7kV / – 1kV {23,5kV +0,7kV / – 1kV}	
Picture Tube :	A51EAL135X13 51cm {A34EAC01X13 34cm}	
Audio Output : **Speaker**	6W (Music Power) 8 Ω Impedance	
Headphones	8 Ω Impedance	
Accessories supplied :	Remote Control 2 x R6 (UM3) Batteries	
Dimensions :		
Height :	480mm	{365mm}
Width :	520mm	{388mm}
Depth :	485mm	{380mm}
Net Weight :	20kg	{10kg}

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

CARACTÉRISTIQUES

(Les informations entre parenthèses {} concernent le TX–14S4TF/TC–14S4RF)

Alimentation :	220–240V AC, 50Hz	
Consommation :	50W {47W}	
Standby Consommation :	1W	
Impédance d'antenne :	75Ω asymétrique sur prise coaxiale	
Systéme de réception :	PAL–BG, H, PAL 525/60 SECAM BG, L/L',	
Canaux de réception :		
VHF E2 – E12	VHF H1 – H2 (ITALY)	
VHF A – H (ITALY)	UHF E21 – E69	
CATV (S01 – S05)	CATV S1 – S10 (M1 – M10	
CATV S11 – S20 (U1 – U10)	CATV S21 – S41 (HYPERBAND)	
Fréquency Intermédiaire :		
Video	38,9MHz, 34MHz	
Audio	33,4MHz, 33,16MHz 32,4MHz, 40,4MHz	
Couleur	34,47MHz, 34,5MHz, 34,65MHz	
Les bornes vidéo/audio :		
Entrée AV1 (21 broches)	Video (21 pin) Audio (21 pin) RGB (21 pin)	1V p–p 75Ω 500mV rms 10kΩ
Sortie AV1 (21 broches)	Video (21 pin) Audio (21 pin)	1V p–p 75Ω 500mV rms 1kΩ
Entrée **RCA**	Video	1V p–p 75Ω
Entrée **RCA**	Audio	500mV rms, 10kΩ
Tension d'anode :	27kV + 0,7kV / – 1kV {23,5kV +0,7kV / – 1kV}	
Tube image :	A51EAL135X13 51cm {A34EAC01X13 34cm}	
Sortie Audio :	6W (Music Power) 8 Ω Impédance	
Casque d'écoute	8 Ω Impédance	
Accessories fournis	Télécomande R6 (UM3) Piles x 2	
Dimensions :		
Hauteur :	480mm	{365mm}
Largeur :	520mm	{388mm}
Profondeur :	485mm	{380mm}
Poids (NET) :	20kg	{10kg}

Les caractéristiques techniques sont susceptibles de modification sans Préavis.
Le poids et les dimensions indiqués sont approximatifs.

Panasonic

CONTENTS

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 27,7kV {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.

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.

CONTENTS

PRECAUTIONS DE SECURITE

CONSEILS GENERAUX

1. Avant d'effectuer toute révision d'un châssis sous tension il est recommandé d'installer un transformateur d'isolation.

2. Il est important, lors des réparations, de conserver laposition initial de tours les fils et faisceaux, surtout dans le circuit de la haute tension. Remplacer toutes les pièces affectées par la chaleur dégagée lors d'un cort–circuit.

3. Après les réparations, s'assurer que toutes les pièces protectrices telles que barrières ou papiers isolants,blindages et réseaux d'isolation R–C soient convenablement placées.

4. Il est préférable de débrancher le fil d'alimentation si la télé –couleur ne doit pas être utilisée pendant un certain temps.

5. Une tension élevée, de l'odre de 27,7kV {24,2kV} , est présente en plusieurs endroits lorsque l,appareil est en circuit. Il y a danger de chocs électriques lorsque le contact est établi en absence du panneau arrière. Toute personne qui tente de réparer cet appareil doit d'abord être consciente des précautions à observer avant de travailler sur un circuit à haute tension. Toujours décharger l'anode du tube cathodique au châssis avant de manipuler.

6. Après tout réparation, on doit effectuer les tests de courant de fuite dans le but d,éviter tout choc.

VERIFICATION DES COURANTS DE FUITE SANS ALIMENTATION

1. Débrancher le fil d'alimentation et installer un fil STRAP entre les deux broches de la fiche.

2. Placer l'interrupteur comme pour établir le contact sur l'appareil.

3. Mesurer la résistance entre les branches de la fiche d'alimentation et les pièces métalliques visibles telles que têtes de vis, antennes, arbre des commandes, support des poignées, etc. Certaines de ces pièces sont en contact avec le châssis et la rèsistance measurée devrait se siture entre 4MΩ, et 20MΩ. La résistance des pièces qui ne sont pas en contact avec le châssis doit être infinie.

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.
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.

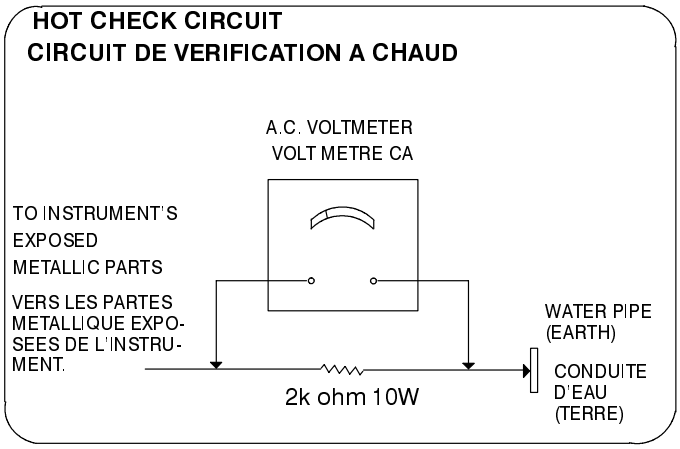


Fig.1

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 27,7kV {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 27kV + 0,7 / – 1kV {23,5kV + 0,7 / – 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.

VERIFICATION A CHAUD DU COURANT DE FUITE

1. Brancher le cordon secteur directement à une prise secteur. Ne pas utiliser de transformateur d'isolation pour cette vérification.
2. Raccorder une résistance de 2kΩ, 10W, en série avec une partie métallique exposée du récepteur et une terre comme une conduite d'eau.
3. Utiliser un voltmètre CA, de type à impédance élevée, pour mesurer le potentiel à travers la résistance.
4. Vérifier toutes les parties métalliques exposées et mesurer la tension à chaque point.
5. Retourner la fiche CA dans la prise secteur et répéter toutes les mesures ci–dessus.
6. Le potentiel à tous les points ne doit pas dépasser 1.4 volt RMS. AU cas où une mesure est supérieure à cette limite spécifiée, il y a un risque de décharge électrique et le récepteur doit être réparé et revérifié avant d'être rendu au cliente.

IRRADIATION AUX RAYONS X ATTENTION:

1. Les parties de la haute tension et du tube–cathodique d'une télé–couleur sont des sources possible d'emissions de rayons X.
2. Si un tube cathodique témoin est utilisé pour la réparation, s'assurer que son assemblage pourra supporter 27,7kV {24,2kV} sans émettre de radiations.

REMARQUE : Il est important que le multimètre à haute tension utilisé soit étalonné périodiquement.

1. Tourner entièrement vers la gauche la commande de lumière.
2. Mesurer la haute tension à l'aide du multimètre approprié. La valeur nominale est de 27kV + 0,7 / – 1kV {23,5kV + 0,7 / – 1kV}. Si la lecture est hors des tolérances, une réparation immédiate s'impose afin de prévenir toute panne prématurée.
3. Il est essentiel d'utiliser le tube cathodique d'origine pour prévenir toute émission de rayons X.

SERVICE HINTS

HOW TO REMOVE THE REAR COVER

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

SUGGESTIONS DE DEPANNAGE

COMMENT RETIRER LE PENNEAU ARRIÈRE

1. Retirer les 5 vis (A) comme sur la **Fig.2.** / **Fig.3.**

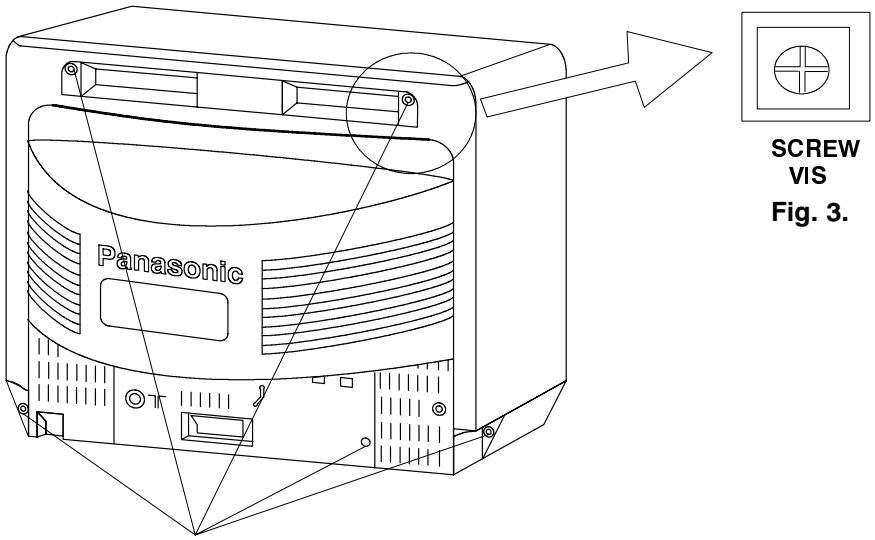


Fig. 3.

Fig. 2.

LOCATION OF CONTROLS

EMPLACEMENT DES COMMANDES

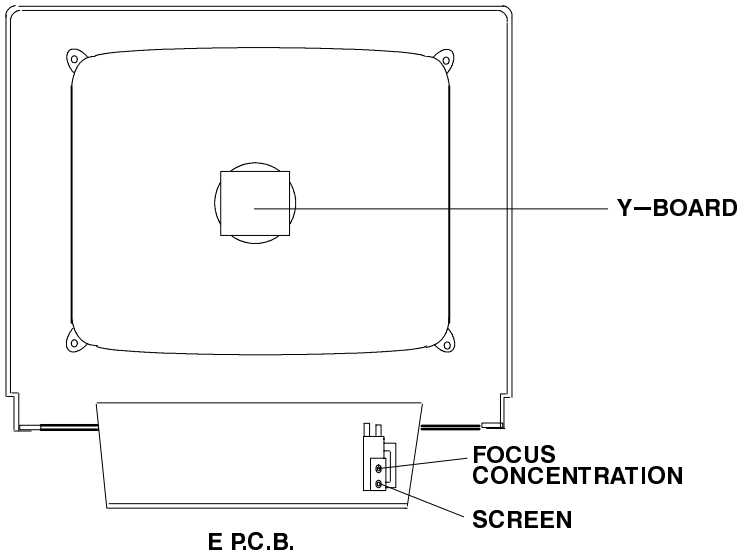


Fig. 4.

ADJUSTMENTS

ITEM/PREPARATION	ADJUSTMENT PROCEDURE
B VOLTAGE 1. Operate the TV set. 2. Set controls : Bright minimum. Contrast minimum. Volume minimum. Beam Current Zero.	1. Confirm the indicated test points for the specified voltage. TPE 1: 10V ± 1V TPE 2: 5V ± 0,3V TPE 3: 12,5V ± 1V TPE 4: 22V ± 1,5V TPE 5: 5V ± 0,3V TPE 6: 9V ± 0,3V {1V} TPE 9: 30V ± 2,5V TPE 10: 185V{135V} ± 10V TPE 11: −13V ± 1V TPE 12: 12V ± 1,5V TPE 13: 125V{104V} ± 1,5V TPE 14: 8V ± 1V TPE 18: 8V ± 1V TPE 19: 31V ± 1,5V

RÉGLAGES

Préparation	Réglages
+B 1. Appliquer une mire à carreaux N/B. 2. Régler les contrôles suivants : Lumière Minimum. Contraste Minimum. Volume Minimum. Beam Current Zero.	1. TPE 1: 10V ± 1V TPE 2: 5V ± 0,3V TPE 3: 12,5V ± 1V TPE 4: 22V ± 1,5V TPE 5: 5V ± 0,3V TPE 6: 9V ± 0,3V {1V} TPE 9: 30V ± 2,5V TPE 10: 185V{135V} ± 10V TPE 11: −13V ± 1V TPE 12: 12V ± 1,5V TPE 13: 125V{104V} ± 1,5V TPE 14: 8V ± 1V TPE 18: 8V ± 1V TPE 19: 31V ± 1,5V

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 Se rvice Mode.
3. Press the Λ / V 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.

RÉGLAGES

1. Sélectionner le programme 60 et régler la netteté au minimum.

2. Appuyer la touche minuterie (Off Timer) de la télécommande et simultanément presser la touche V (–) sur le clavier de commande à l'avant du téléviseur en mode Service.

3. Appuyer sur la touche Λ (+) ou V (–) pour sélectionner la fonction désirée.

4. Appuyer sur la touche + ou – pour modifier les valeurs des réglages.

5. Mettre en mémoire après chaque réglage, en appuyant sur la touche STORE.

6. Pour sortir de la position SERVICE MODE arrêter le TV.

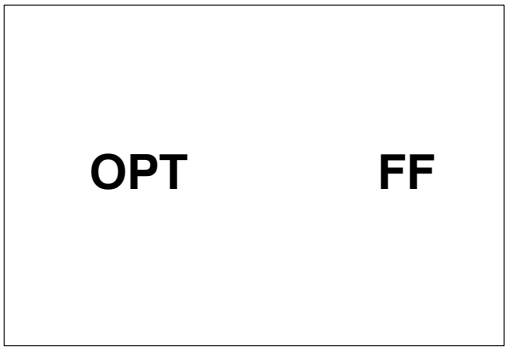
(Les figures ci–dessous sont fictives et utilisées uniquement à des fins représentatives)

Fonctions		**Réglages/Points particuliers**
1. Amplitude verticale	V–Amp 27	Optimiser les réglages.
2. Vertical position	V–Pos 03	Optimiser les réglages.
3. Centrage horizontal	H–Ctr 07	Optimiser les réglages.
4. Red cutoff	R–Cut 186	Optimiser les réglages.
5. Green cutoff	G–Cut 220	Optimiser les réglages.
6. Blue cutoff	B–Cut 213	Optimiser les réglages.
7. Red drive	R–Drv 46	Optimiser les réglages.
8. Blue drive	B–Drv 36	Optimiser les réglages.
9. AGC	AGC 33	Optimiser les réglages.
10. Sub contrast	S–Con 33	Optimiser les réglages.
11. Sub colour	S–Col 39	Optimiser les réglages.
12. Sub bright	S–Bri 40	Optimiser les réglages.

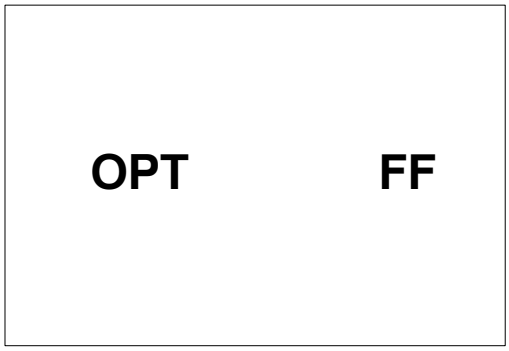
SELF CHECK

Self check is used to automatically check the Bus Lines Hexadecimal code of the TV set.
To acces the Self Check mode press the Status button on the Remote Control, foll“owed by the V button on the customer controls at the front of the TV, and the screen will show:—
When exiting Self Check the customer settings will return to factory settings.

TX–21S4TF



TC–21S4RF



TX–14S4TF

TC–14S4RF

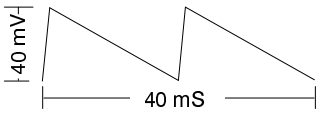
AUTO TEST

L’auto test est utilisé pour véifier le BUS et les codes Hexadécimaux du TV.
Pour passer en mode test ,il faut appuyé simultanément sur : VOLUME MOINS sur le tiroir en face avant et: OFF TIMER sur la télécommande Infra–rouge.
Après un Auto Test (Self Check) le téléviseur retourne en position réglages usine.

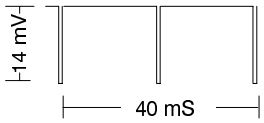
WAVEFORM PATTERN TABLE

TABLEAU DE MIRES DE FORMA D'ONDES

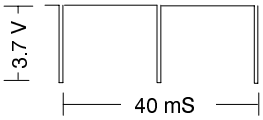
Vert Out IC IN
IC451 pin 4
5 mS 20 mV



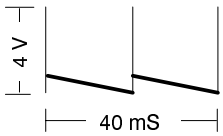
SDA
IC601 pin 14
5 mS 5 mV



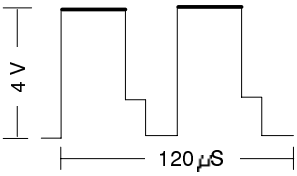
SCL
IC1201 pin 3
5 mS 1 V



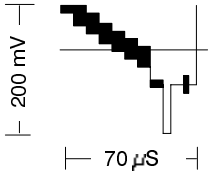
Vert Drive
IC451 pin 2
5 mS 1 V



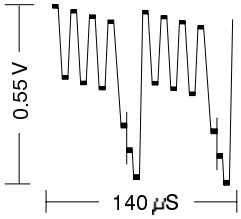
H. Out
IC601 pin 13
20 µS 1 V



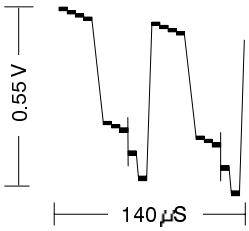
IF VO
IC601 pin 52
20 µS 50 mV



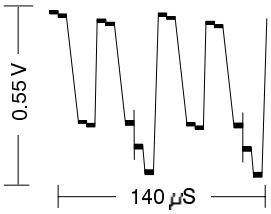
B Out
TPE15
20 µS 0.1 V



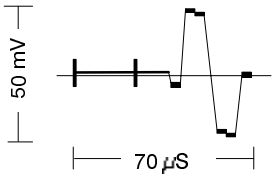
G Out
TPE16
20 µS 0.1 V



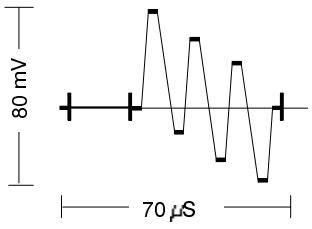
R Out
TPE17
20 µS 0.1 V



'RY' Out
IC601 pin 43
20 µS 20 mV

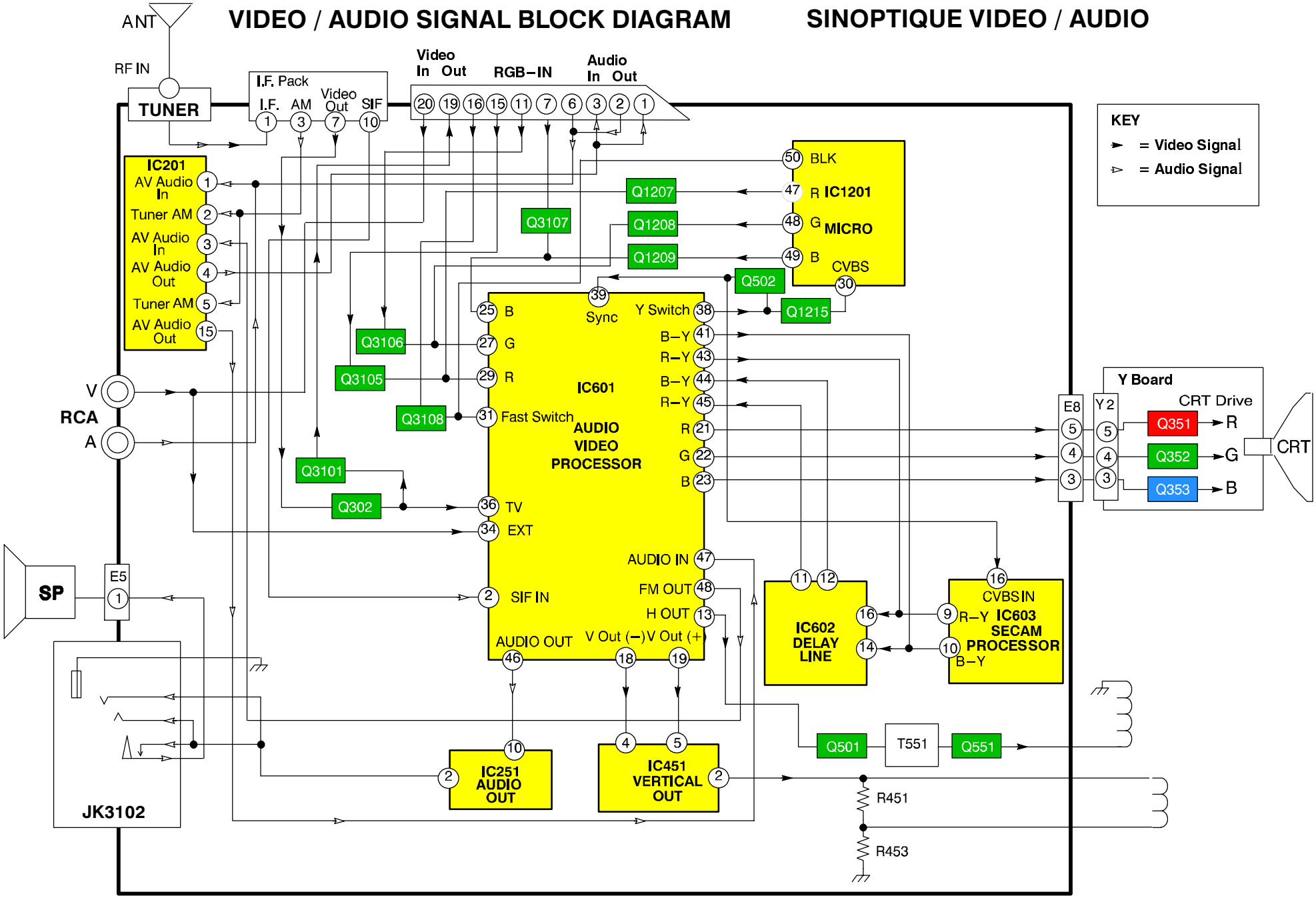


'BY' Out
IC601 pin 41
20 µS 20 mV

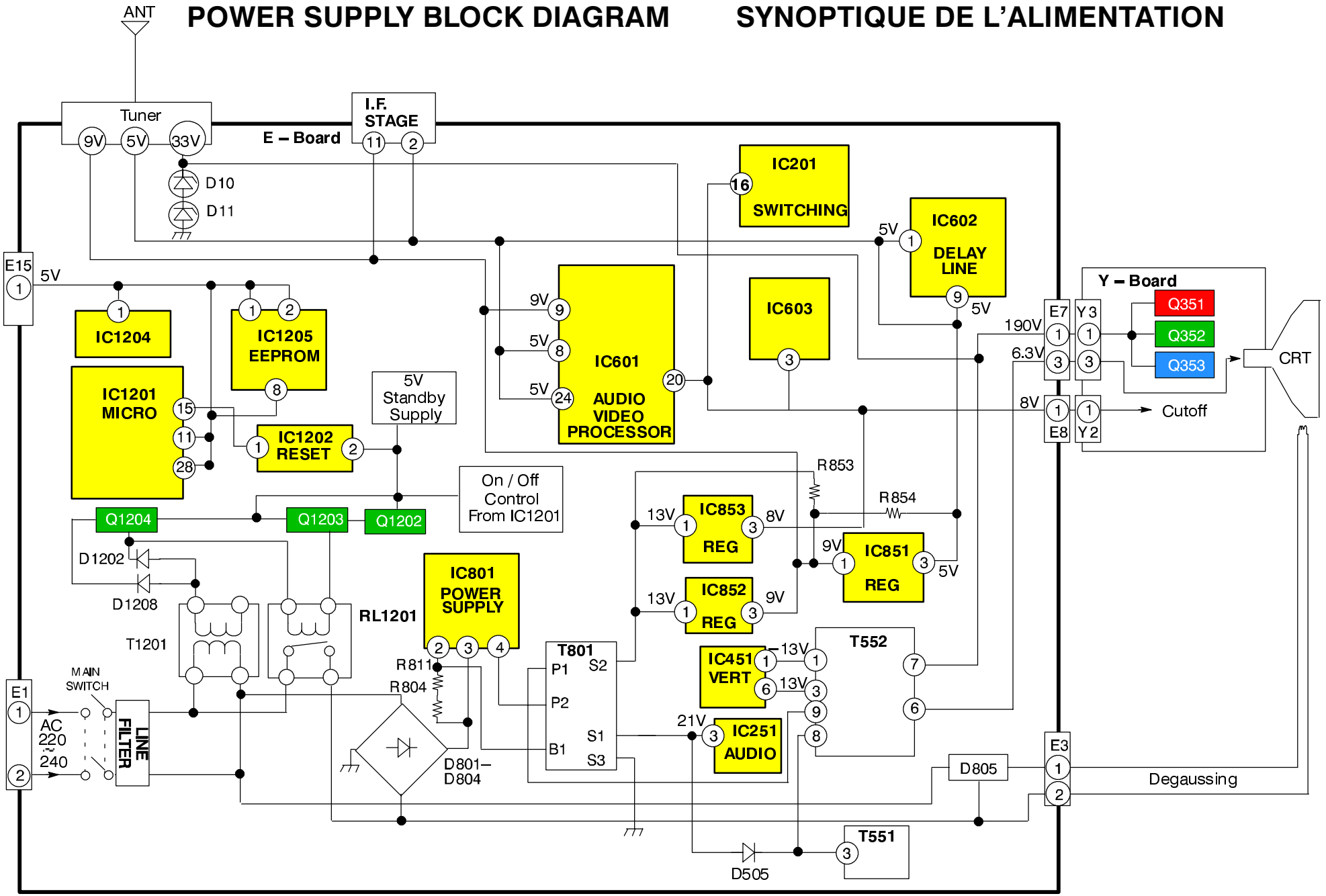


VIDEO / AUDIO SIGNAL BLOCK DIAGRAM

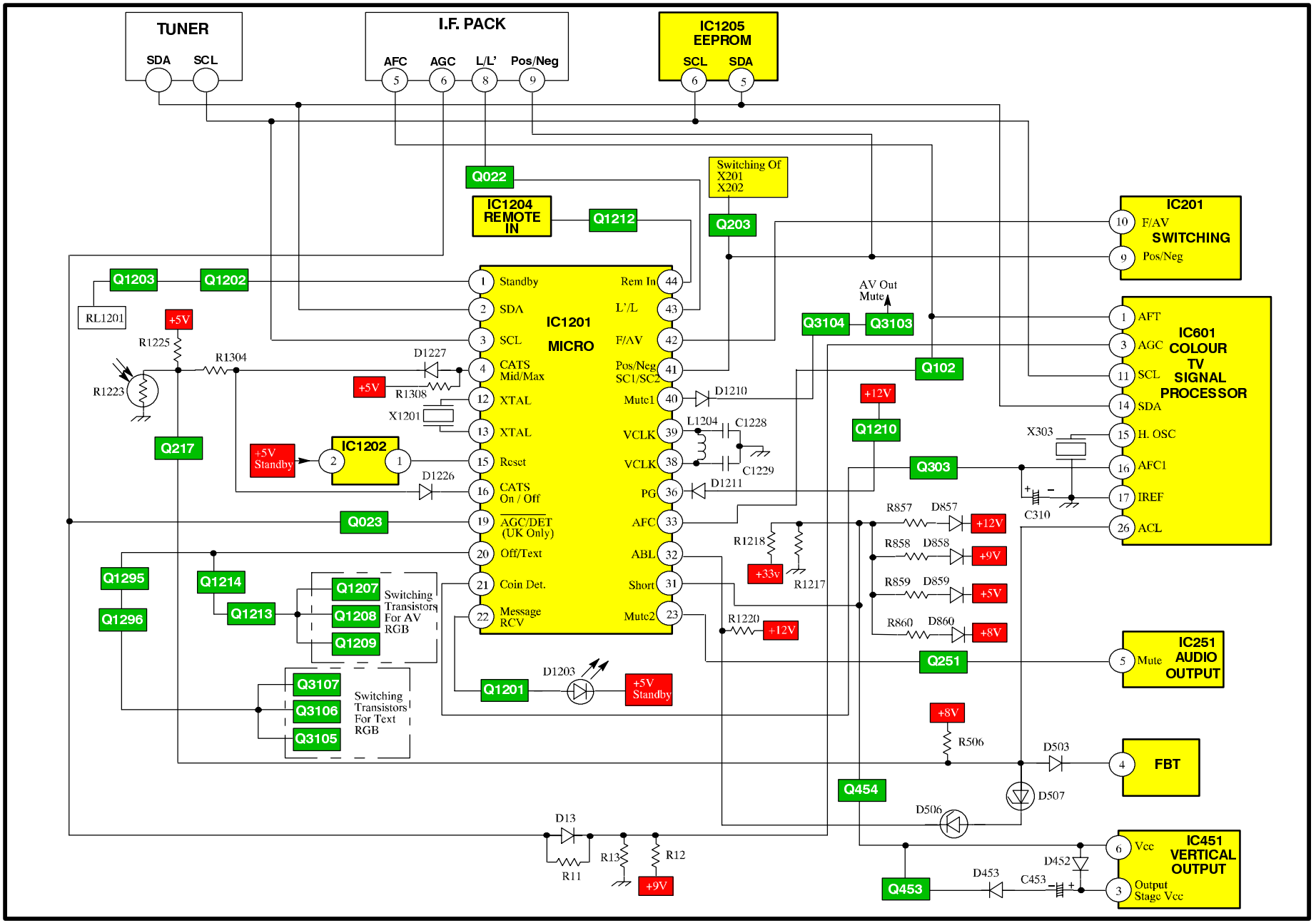
SINOPTIQUE VIDEO / AUDIO



POWER SUPPLY BLOCK DIAGRAM SYNOPTIQUE DE L'ALIMENTATION



CONTROL BLOCK DIAGRAM SYNOPTIQUE DU SIGNAL DE CONTROLE



PARTS LOCATION

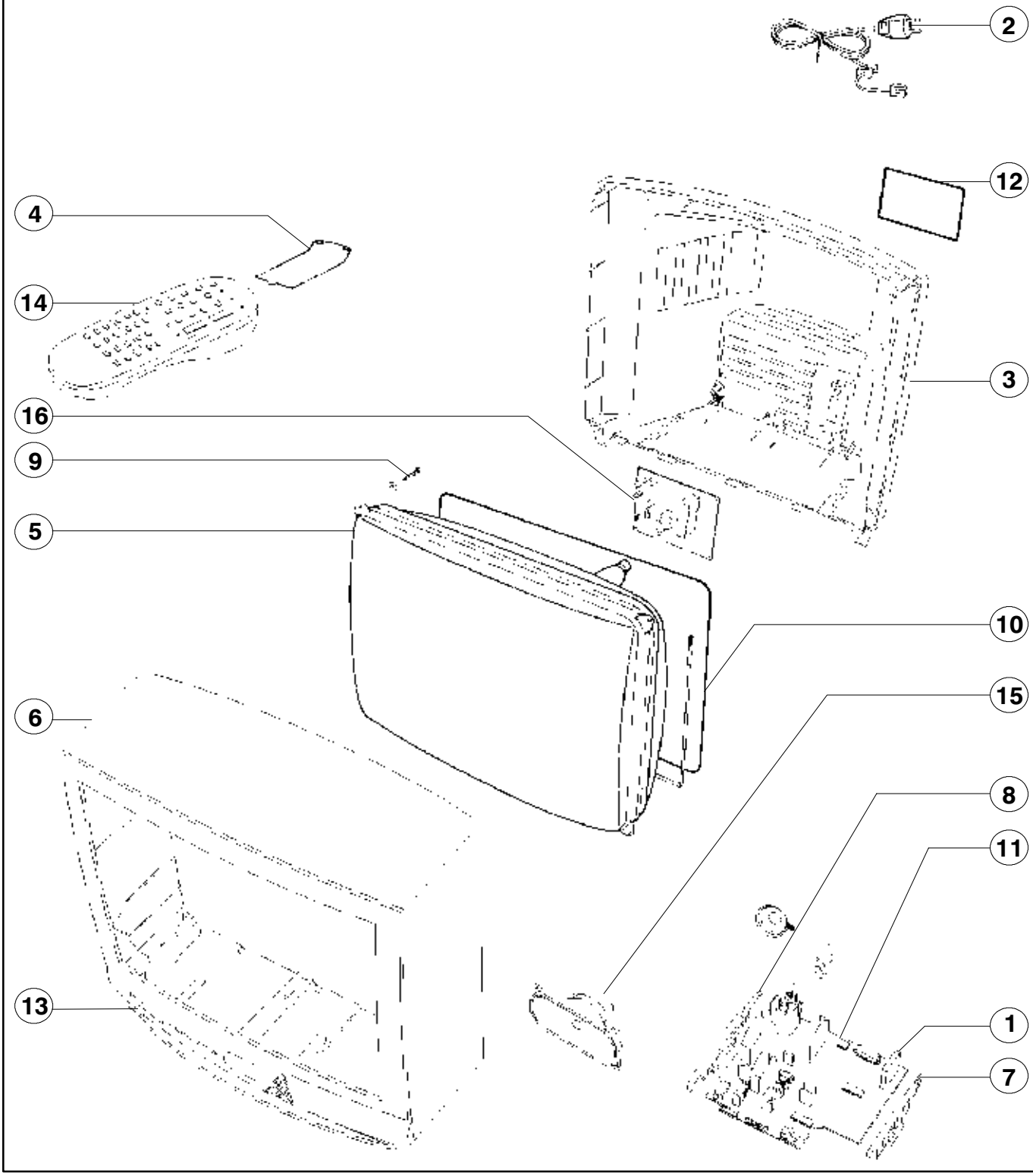
NOTE :

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

EMPLACEMENT DÈS PIECES

REMARQUE :

Les numéros des pièces sur la vue éclatée ci–dessous renvoient à la section mécanique de la liste des pièces de rechange.



REPLACEMENT PARTS LIST

LISTE DES PIÈCES DE RECHANGE

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.

Remarque importante por la sécurité

Les éléments portant la indication ⚠ possèent des caractéristiques de sécurité spécials. Lors du remplacement de l'une quelconque des ces pièces, n'utiliser que celles spécifiées par la fabricant.
* En cas de commande de ces pieces, veuiilez toujours ajouter le numero de modele complet a votre commande

Cct Ref	Parts Number	Description	
COMMON PARTS			
MECHANICAL PARTS			
1	ENG29501G	TUNER	
2	TSX8E0023	POWER CORD	⚠
MISCELLANEOUS COMPONENTS			
	F9-4-220	RELAY	
	UM-3DJ-2P	BATTERY PACK	
MOE8	31221212478	FIX CLIP	
MOE4	31221212478	FIX CLIP	
MOE2	31221212478	FIX CLIP	
POE3	TMW8E015-2	LED HOLDER	
RL1201	TSE1885-1	RELAY	
I.C.s			
IC201	HEF4053B	SWITCHING I.C.	
IC251	LA4265	AUDIO OUTPUT	
IC451	LA7840	VERTICAL OUTPUT	
IC601	M52778SP-A	AUDIO VIDEO PROCESSOR	
IC602	U3666M-MDP	DELAY LINE	
IC603	TDA8395PN2	SECAM DECODER	
IC801	STR58041A	POWER SUPPLY	
IC851	L78M05MRB	5V REGULATOR	
IC852	AN7809LB	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	
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	

Cct Ref	Parts Number	Description
D505	1SR124-4AT82	DIODE
D506	MTZJ33B	DIODE
D541	MA165TA5	DIODE
D542	MA165TA5	DIODE
D551	TVSRH2FV1	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
D1222	MA165TA5	DIODE
D1224	MA165TA5	DIODE
D1301	MTZJT-775.1A	DIODE
D1311	MA165TA5	DIODE
D1312	MA700TA5	DIODE
D3101	MA165TA5	DIODE

Cct Ref	Parts Number	Description
TRANSISTORS		
Q102	BC847B	TRANSISTOR
Q201	BC847B	TRANSISTOR
Q202	BC847B	TRANSISTOR
Q251	BC847B	TRANSISTOR
Q302	BC847B	TRANSISTOR
Q303	BC847B	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
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
T1201	ETP35KAN617U	TRANSFORMER
COILS		
J208	EXCELSA39V	COIL
J305	EXCELSA39V	COIL
L010	EXCELSA35T	COIL
L012	EXCELSA35T	COIL
L451	EXCELSA35T	COIL
L803	EXCELSA35T	COIL
L804	EXCELDR35V	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
R016	ELJFC6R8KF	COIL
R017	ELJFC6R8KF	COIL
FILTERS		
L801	ELF15N005A	LINE FILTER
X201	EFCS5R5MS5	FILTER
X303	TAFCSB503F6	FILTER

Cct Ref	Parts Number	Description			
CRYSTALS					
X601	LN-P-01S	CRYSTAL			
X1201	CSA18.00MXZ	CRYSTAL			
RESISTORS					
C605	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC26	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC22	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC11	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC12	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC2	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC21	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC23	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC1	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC7	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC9	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC3	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JEZK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JEADK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JEFK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC31	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JEJK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JENK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC20	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JEXK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC28	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
JC8	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
JC35	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
JC14	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
JC30	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
JC25	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
R010	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K
R011	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R014	ERG2SJS273	METAL	2W	5%	27K
R107	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R112	ERJ8GEYJ122	S.M.CARB	.125W	5%	1K2
R114	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K
R116	ERJ8GEYJ152	S.M.CARB	.125W	5%	1K5
R117	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K
R203	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2
R205	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R206	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8
R214	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R215	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R221	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220
R222	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R223	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R230	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R231	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K
R232	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K
R233	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K
R234	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390
R235	ERJ6GEYJ563	S.M.CARB	0.1W	5%	56K
R251	ERJ6GEYJ3R3	S.M.CARB	0.1W	5%	3R3
R256	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K
R257	ERQ1CJP120	FUSIBLE	1W	5%	12
R259	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330
R260	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3
R261	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8
R301	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R302	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R303	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7
R304	ERJ6ENF2201	S.M.CARB	0.1W	1%	2K2
R305	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270
R306	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270
R307	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270
R313	ERQ14AJ470	METAL	0.25W	5%	47

Cct Ref	Parts Number	Description			
R314	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470
R315	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470
R317	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R318	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R319	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R320	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R321	ERJ6GEYJ243	S.M.CARB	0.1W	5%	24K
R322	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K
R372	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R373	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390
R374	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R401	ERJ6ENF9100	S.M.CARB	0.1W	1%	910
R402	ERJ6ENF8201	S.M.CARB	0.1W	1%	8K2
R403	ERJ6ENF6801	S.M.CARB	0.1W	1%	6K8
R451	ERDS1TJ331	CARBON	0.5W	5%	330
R452	ERJ6GEYJ1R0	S.M.CARB	0.1W	5%	1
R454	ERJ6GEYF153V	S.M.CARB	0.1W	5%	15K
R456	ERO25CKF5601	METAL	0.25W	1%	6K1
R457	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R458	ERD25TJ683	CARBON	0.25W	5%	68K
R459	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3
R460	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K
R461	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K
R462	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K
R501	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390
R502	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680
R503	ERG3SJS101	METAL	3W	5%	10
R504	ERG2ANJ471	METAL	2W	5%	470
R505	ERJ6GEYJ433	S.M.CARB	0.1W	5%	43K
R510	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560
R511	ERJ6GEYJ334	S.M.CARB	0.1W	5%	330K
R512	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5
R513	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470
R514	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5
R515	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R516	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R518	ERJ6ENF1302	S.M.CARB	0.1W	1%	13K
R520	ERJ6GEYJ334	S.M.CARB	0.1W	5%	330K
R521	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R541	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3
R601	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3
R602	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R603	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R604	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7
R605	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R606	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R611	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R612	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R613	ERJ6GEYJ395	S.M.CARB	0.1W	5%	3M9
R614	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R801	ERF5ZK2R7	WOUND	5W	20%	2R7
R804	ERDS1TJ224	CARBON	0.5W	5%	220K
R805	ERW2PKR33	WOUND	2W	20%	R33
R806	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R807	ERG2ANJ101	METAL	0.5W	5%	100
R808	ERG12SJ561P	METAL	0.5W	5%	650
R809	ERG2ANJP560H	METAL	2W	5%	56
R810	ERQ12HJ100	FUSIBLE	0.5W	5%	10
R811	ERDS1TJ224	CARBON	0.5W	5%	220K
R813	ERJ6GEYJ202	S.M.CARB	0.1W	5%	2K
R814	ERD75TAJ825	CARBON	0.75W	5%	8M2
R819	ERDS1TJ104	CARBON	0.5W	5%	100K
R853	ERG2ANJ270	METAL	2W	5%	27
R854	ERG2ANJ330	METAL	2W	5%	33
R857	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R858	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K

Cct Ref	Parts Number	Description			
R859	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R860	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R861	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R1201	ERQ1CJP2R2	FUSIBLE	1W	10%	2R2
R1202	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1203	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1204	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1205	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1206	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1208	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1209	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1210	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1211	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1212	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1214	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R1219	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1220	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7
R1221	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270
R1222	ERJ6GEYJ330	S.M.CARB	0.1W	5%	33
R1226	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1227	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1228	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1229	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1231	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1232	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1233	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1234	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1235	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5
R1236	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R1237	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R1238	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1239	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1240	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1243	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1244	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1246	ERD25TJ272	CARBON	0.25W	5%	2K7
R1247	ERD25TJ221	CARBON	0.25W	5%	220
R1248	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R1249	ERDS1TJ121	CARBON	0.5W	5%	120
R1250	ERDS1TJ560	CARBON	0.5W	5%	56
R1255	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1257	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1258	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R1259	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1261	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2
R1263	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2
R1265	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2
R1266	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1267	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1268	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1269	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1270	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1271	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1272	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R1273	ERJ6GEYJ333	S.M.CARB	0.1W	5%	33K
R1274	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K
R1276	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1282	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1283	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1284	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1285	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R1286	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R1287	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R1288	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R1289	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1293	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K

Cct Ref	Parts Number	Description			
R1294	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R1295	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R1296	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R1298	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R1303	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R1309	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R1311	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R3101	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R3102	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R3103	ERJ6GEYJ564	S.M.CARB	0.1W	5%	560K
R3104	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K
R3105	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75
R3106	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75
R3107	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75
R3108	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75
R3109	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220
R3110	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2
R3111	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R3114	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R3115	ERDS1TJ750	CARBON	0.5W	5%	75
R3120	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75
R3121	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6
R3122	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8
R3123	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220
R3124	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220
R3125	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
R3126	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K
R3127	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100
R3128	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K
R3130	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R3132	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R3133	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R3134	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R3136	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R3137	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R3138	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R3140	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R3141	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K
R3142	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K
R3143	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180

CAPACITORS

C010	ECUV1H103KBX	S.M. CAP	50V	10nF
C011	ECA1CM470GB	ELECT	16V	47µF
C012	ECUV1H103KBX	S.M. CAP	50V	10nF
C014	ECUV1H080DCX	S.M. CAP	50V	80pF
C015	ECA1HM330B	ELECT	50V	33µF
C019	ECUV1H103KBX	S.M. CAP	50V	10nF
C020	ECA1HM010GB	ELECT	50V	1µF
C022	ECUV1H150JCX	S.M. CAP	50V	15pF
C023	ECUV1H150JCX	S.M. CAP	50V	15pF
C027	ECUV1H222JCX	S.M. CAP	50V	2.2nF
C029	ECUV1H101JCX	S.M. CAP	50V	100pF
C030	ECUV1H221JCX	S.M. CAP	50V	220pF
C112	ECA1HMR47GB	ELECT	50V	220pF
C113	ECUV1H103KBX	S.M. CAP	50V	10nF
C114	ECA1HM010GB	ELECT	50V	1µF
C205	ECEA1HN2R2UB	ELECT	50V	2.2µF
C206	ECEA1HN2R2UB	ELECT	50V	2.2µF
C207	ECEA1CN100	ELECT	16V	10µF
C208	ECA1CM100GB	ELECT	16V	10µF
C210	ECEA1HN2R2UB	ELECT	50V	2.2µF
C213	ECA1HM010GB	ELECT	50V	1µF
C214	ECEA1HN2R2UB	ELECT	50V	2.2µF
C215	ECJ2VF1H104Z	ELECT	350V	100nF
C216	ECUV1H272KBX	S.M. CAP	50V	100nF
C251	ECA1EM471GB	ELECT	25V	470µF

Cct Ref	Parts Number	Description			
C252	ECA1HM010GB	ELECT	50V	1µF	
C253	ECA1EHG470B	ELECT	50V	1µF	
C254	ECUV1H272JCX	S.M. CAP	50V	2.7nF	
C256	ECQM1H224J	FILM	50V	220nF	
C257	ECQM1H474J	FILM	50V	470nF	
C258	ECA1EHG101B	ELECT	50V	470nF	
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	
C317	ECA1HM101GB	ELECT	50V	100µF	
C318	ECEA1HNR47UB	ELECT	50V	100µF	
C319	ECJ2VF1H104Z	ELECT	350V	100nF	
C320	ECA1HM010GB	ELECT	50V	1µF	
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	
C457	ECQM1H394J	FILM	50V	390nF	
C461	ECUV1H100CCX	S.M. CAP	50V	10pF	
C501	ECA1HM010GB	ELECT	50V	1µF	
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	
C550	ECA1VM471GB	ELECT	35V	470µF	
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	⚠
C601	ECJ2YB1H473K	ELECT	350V	47nF	
C602	ECUV1H153KBX	S.M. CAP	50V	15nF	
C603	ECA1HM010GB	ELECT	50V	1µF	
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	

Cct Ref	Parts Number	Description			
C613	ECUV1H103KBX	S.M. CAP	50V	10nF	
C614	ECJ2VF1H104Z	ELECT	350V	100nF	
C615	ECQM1H224J	FILM	50V	220nF	
C616	222236576104	FILM	760V	100nF	
C617	ECJ2VF1H104Z	ELECT	350V	100nF	
C618	ECA1HM101GB	ELECT	50V	100µF	
C619	ECUV1H103KBX	S.M. CAP	50V	10nF	
C620	ECUV1H103KBX	S.M. CAP	50V	10nF	
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	
C630	ECUY1H103JCW	S.M. CAP	50V	10nF	
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	
C809	ECKC3D471JB	CERAMIC	2KV	470pF	⚠
C810	ECA1VM101GB	ELECT	35V	100µF	
C812	ECA2CHG221E	ELECT	160V	220µF	
C817	ECA1VM101GB	ELECT	35V	100µF	
C818	ECKWNA471MBC	CERAMIC	250V	470pF	
C820	ECKWNA332MEC	CERAMIC	250V	3.3nF	
C821	ECKC3A101J	CERAMIC	1KV	100pF	⚠
C853	ECA1EHG102B	ELECT	25V	100pF	
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	
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	
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	

Cct Ref	Parts Number	Description			
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	
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	222236516684	FILM	160V	100nF	
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	
C3121	ECA1HM4R7GB	ELECT	50V	4.7µF	
L202	ECCR1H560J	CERAMIC	50V	4.7µF	
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-14S4RF

MECHANICAL PARTS			
3	TKU8E00340	BACK COVER	⚠
4	UR51EC780	BATTERY COVER (REMOTE)	
5	A34EAC01X13	C.R.T.	⚠
6	TKY8E220	CABINET	⚠
9	THE492-4	CRT FIXING SCREW	
10	TLK8E05134	DEGAUSS COIL	⚠
11	TNP8EE007CH	E P.C.B.	⚠
12	TBM8E1845	MODEL LABEL	
13	TBX8E051	POWER BUTTON	
14	TNQ8E0460	REMOTE CONTROL	
15	EASG9D541B2	SPEAKER	
16	TNP8EY011AJ	Y P.C.B.	⚠
MISCELLANEOUS COMPONENTS			
	TBM8E1727	PANASONIC BADGE	
	TKP8E1226	SMOKED PANEL	
	TPC8E4693	OUTER CARTON	
	TPD8E665	BOTTOM CUSHION	
	TPD8E666	TOP CUSHION	
	TSA120026	MONOPOLE ANTENNA	
D805	232266296319	THERMISTOR	⚠
PKN1	TBX8E052	KEY PAD	
S351	0330660069	CRT SOCKET	
INSTRUCTION BOOKS			
	TQB8E2514	GERMAN/DUTCH/ITALIAN	⚠
	TQB8E2661	FRENCH/SPANISH	⚠
I.C.s			
IC1201	SDA5222V23	MICRO PROCESSOR	
IC1205	XL24D02P-1GF	EAROM *	
DIODES			
D1228	1SS355TE-17	DIODE	
TRANSISTORS			
	2SC1473-RN	TRANSISTOR	

Cct Ref	Parts Number	Description				
Q351	TYMQ0003	TRANSISTOR				
Q352	TYMQ0003	TRANSISTOR				
Q353	TYMQ0003	TRANSISTOR				
TRANSFORMERS						
T552	ZTFK33004A	F.B.T.				⚠
T801	ETS29AK237AC	TRANSFORMER				⚠
RESISTORS						
C1230	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
C1245	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
JYAK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R252	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R254	ERJ6GEYJ560	S.M.CARB	0.1W	5%	56	
R255	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270	
R351	ERG1SJ123E	METAL	1W	5%	12K	
R352	ERG1SJ123E	METAL	1W	5%	12K	
R353	ERG1SJ123E	METAL	1W	5%	12K	
R366	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560	
R367	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680	
R368	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680	
R369	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R370	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R371	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R375	ERDS1TJ182	CARBON	0.5W	10%	1K8	
R386	ERDS1TJ182	CARBON	0.5W	10%	1K8	
R387	ERDS1TJ182	CARBON	0.5W	10%	1K8	
R453	ERDS1TJ1R5	CARBON	0.5W	5%	1R5	
R506	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K	
R508	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K	
R519	ERJ6GEYJ754	S.M.CARB	0.1W	5%	750K	
R522	ERJ6GEYJ394	S.M.CARB	0.1W	5%	390K	
R542	ERJ6GEYJ242	S.M.CARB	0.1W	5%	2K4	
R543	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R551	ERDS1TJ1R5	CARBON	0.5W	5%	1R5	
R552	ERDS1TJ1R5	CARBON	0.5W	5%	1R5	
R555	ERQ1CJP1R0	FUSIBLE	1W	5%	1	⚠
R557	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R560	ERDS1TJ304	CARBON	0.5W	5%	300K	
R1215	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1216	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1217	ERJ6ENF1202	S.M.CARB	0.1W	1%	1K2	
R1218	ERO50PKF6203	METAL	0.5W	1%	620K	⚠
R1230	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1242	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1252	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R1253	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K	
R1275	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1291	ERJ6GEYJ432	S.M.CARB	0.1W	5%	4K3	
CAPACITORS						
C255	B32529-C224	FILM	50V		220nF	
C351	ECUV1H151JCX	S.M. CAP	50V		150pF	
C352	ECUV1H151JCX	S.M. CAP	50V		150pF	
C353	ECUV1H181JCX	S.M. CAP	50V		180pF	
C453	ECEA1HU101	ELECT	50V		100µF	
C454	ECA1HM2R2GB	ELECT	50V		2.2µF	
C551	ECWH12H822J	FILM	1250V		8.2nF	
C552	ECQE6104K	FILM	600V		100nF	⚠
C554	ECKC3D331J	CERAMIC	2KV		330pF	⚠
C557	ECWF2H474J	FILM	500V		470nF	⚠
C558	ECEA2CG010	ELECT	160V		1µF	
C567	ECA1VM471GB	ELECT	35V		470µF	
C811	ECA1JM100GB	ELECT	63V		10µF	
C1228	ECUV1H560GCG	S.M. CAP	50V		56pF	
C1268	ECA1HM101GB	ELECT	50V		100µF	

Cct Ref	Parts Number	Description

DIFFERENCES FOR MODEL TC-21S4RF

MECHANICAL PARTS						
3	TKU8E00213	BACK COVER				⚠
4	UR51EC780	BATTERY COVER (REMOTE)				
5	A51EAL135X13	C.R.T.				⚠
6	TKY8E310	CABINET				⚠
7	TMZ8E002	CHASSIS RAIL LEFT				
8	TMZ8E001	CHASSIS RAIL RIGHT				
9	THT1009R	CRT FIXING SCREW				
10	TLK8E05133	DEGAUSS COIL				⚠
11	TNP8EE007DE	E P.C.B.				⚠
12	TBM8E1909	MODEL LABEL				
13	TBX8E038	POWER BUTTON				
14	TNQ8E0460	REMOTE CONTROL				
15	EASG12D546A2	SPEAKER				
16	TNP8EY011AH	Y P.C.B.				⚠
MISCELLANEOUS COMPONENTS						
	TBM8E1626	PANASONIC BADGE				⚠
	TKP8E1164-1	DOOR LID				
	TPC8E4722	OUTER CARTON				
	TPD8E627	TOP CUSHION				
	TPD8E628	BOTTOM CUSHION				
D805	232266296706	THERMISTOR				⚠
PKN1	TBX8E039	KEY PAD				
R1223	P1201	SENSOR				
S351	TJSC00300	CRT SOCKET				
INSTRUCTION BOOKS						
	TQB8E2514	GERMAN/DUTCH/ITALIAN				⚠
	TQB8E2661	FRENCH/SPANISH				⚠
I.C.s						
IC1201	SDA5222V23	MICRO PROCESSOR				
IC1205	XL24C02P-1HF	EAROM *				
DIODES						
D1226	MA700TA5	DIODE				
D1227	MA700TA5	DIODE				
D1228	1SS355TE-17	DIODE				
TRANSISTORS						
Q351	2SC4714RL2	TRANSISTOR				
Q352	2SC4714RL2	TRANSISTOR				
Q353	2SC4714RL2	TRANSISTOR				
Q507	BC847B	TRANSISTOR				
Q1217	2SD965-R	TRANSISTOR				
TRANSFORMERS						
T552	FSU-21A002	F.B.T.				⚠
T801	ETS29AK227AC	TRANSFORMER				⚠
COILS						
L551	ELH5L4104	COIL				
L553	ELH16F713	COIL				
RESISTORS						
C1230	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
C1245	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
JC13	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R252	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R254	ERJ6GEYJ121	S.M.CARB	0.1W	5%	120	
R255	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180	
R351	ERG2ANJ103	METAL	2W	5%	10K	⚠
R352	ERG2ANJ103	METAL	2W	5%	10K	⚠
R353	ERG2ANJ103	METAL	2W	5%	10K	⚠
R366	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390	
R367	ERJ6GEYJ431	S.M.CARB	0.1W	5%	430	
R368	ERJ6GEYJ431	S.M.CARB	0.1W	5%	430	

Cct Ref	Parts Number	Description				
R369	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R370	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R371	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R375	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R378	ERD25TJ274	CARBON	0.25W	5%	270K	
R379	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K	
R380	ERJ6GEYJ684	S.M.CARB	0.1W	5%	680K	
R386	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R387	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R453	ERDS1TJ1R0	CARBON	0.5W	5%	1	
R506	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K	
R508	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K	
R519	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K	
R522	ERJ6GEYJ684	S.M.CARB	0.1W	5%	680K	
R523	ERJ6GEYJ154	S.M.CARB	0.1W	5%	150K	
R524	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R525	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R542	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3	
R543	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2	
R553	ERQ1CJP102	FUSIBLE	1W	5%	1K	⚠
R555	ERQ1CJP4R7	FUSIBLE	1W	5%	4R7	⚠
R557	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R560	ERDS1TJ204	CARBON	0.5W	5%	200K	
R1215	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1216	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1217	ERJ6ENF7501	S.M.CARB	0.1W	1%	7K5	
R1218	ERO50PKF5603	METAL	0.5W	1%	560K	⚠
R1224	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K	
R1225	ERJ6GEYJ433	S.M.CARB	0.1W	5%	43K	
R1230	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1242	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1251	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1252	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100	
R1253	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K	
R1275	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1279	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1280	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1291	ERJ6GEYJ432	S.M.CARB	0.1W	5%	4K3	
R1304	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R1305	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R1308	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
CAPACITORS						
C255	ECQM1H104J	FILM	50V		100nF	
C351	ECUV1H221JCX	S.M. CAP	50V		220pF	
C352	ECUV1H271JCX	S.M. CAP	50V		270pF	
C353	ECUV1H221JCX	S.M. CAP	50V		220pF	
C369	ECA1HMR47GB	ELECT	50V		220pF	
C453	ECA1HHG101B	ELECT	50V		100µF	
C454	ECA1HHG2R2B	ELECT	50V		100µF	
C508	ECUV1H102JCX	S.M. CAP	50V		1nF	
C551	ECWH12H103J	FILM	1250V		10nF	
C552	ECQF4273JZH	FILM	400V		27nF	⚠
C555	ECKC3D152J	CERAMIC	2KV		1.5nF	⚠
C557	ECWF2H394JZ	FILM	500V		390nF	⚠
C558	ECEA2CU4R7	ELECT	160V		4.7µF	
C567	ECA1VHG471B	ELECT	35V		47µF	
C811	ECA1JHG100B	ELECT	6.3V		100µF	
C1228	ECUV1H470GCG	S.M. CAP	50V		47pF	
C1266	ECA1CM100GB	ELECT	16V		10µF	
C1268	ECA1HM101GB	ELECT	50V		100µF	

DIFFERENCES FOR MODEL TX-14S4TF

MECHANICAL PARTS

3	TKU8E00340	BACK COVER	⚠

Cct Ref	Parts Number	Description	
4	UR51EC904A	BATTERY COVER (REMOTE)	
5	A34EAC01X13	C.R.T.	⚠
6	TKY8E220	CABINET	⚠
9	THE492-4	CRT FIXING SCREW	
10	TLK8E05134	DEGAUSS COIL	⚠
11	TNP8EE007CD	E P.C.B.	⚠
12	TBM8E1846	MODEL LABEL	
13	TBX8E051	POWER BUTTON	
14	EUR511300	REMOTE CONTROL	
15	EASG9D541B2	SPEAKER	
16	TNP8EY011AJ	Y P.C.B.	⚠
MISCELLANEOUS COMPONENTS			
	TBM8E1727	PANASONIC BADGE	
	TKP8E1226	SMOKED PANEL	
	TPC8E4693	OUTER CARTON	
	TPD8E665	BOTTOM CUSHION	
	TPD8E666	TOP CUSHION	
	TSA120026	MONOPOLE ANTENNA	
D805	232266296319	THERMISTOR	⚠
PKN1	TBX8E052	KEY PAD	
S351	0330660069	CRT SOCKET	
INSTRUCTION BOOKS			
	TQB8E2518	GERMAN/DUTCH/ITALIAN	⚠
	TQB8E2660	FRENCH/SPANISH	⚠
I.C.s			
IC1201	SDA5254V31	MICRO PROCESSOR	
IC1205	XL24C02P-1GF	EAROM *	
DIODES			
D1225	MA165TA5	DIODE	
TRANSISTORS			
	2SC1473-RN	TRANSISTOR	
Q351	TYMQ0003	TRANSISTOR	
Q352	TYMQ0003	TRANSISTOR	
Q353	TYMQ0003	TRANSISTOR	
Q1214	BC857B	TRANSISTOR	
Q1215	BC857B	TRANSISTOR	
Q1216	BC847B	TRANSISTOR	
TRANSFORMERS			
T552	ZTFK33004A	F.B.T.	⚠
T801	ETS29AK237AC	TRANSFORMER	⚠
COILS			
L1206	EXCELSA35T	COIL	
RESISTORS			

JYAK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0
JC24	ERJ8GEY0R00	S.M.CARB	.125W	5%	0
R252	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K
R254	ERJ6GEYJ560	S.M.CARB	0.1W	5%	56
R255	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270
R351	ERG1SJ123E	METAL	1W	5%	12K
R352	ERG1SJ123E	METAL	1W	5%	12K
R353	ERG1SJ123E	METAL	1W	5%	12K
R366	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560
R367	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680
R368	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680
R369	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8
R370	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8
R371	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8
R375	ERDS1TJ182	CARBON	0.5W	10%	1K8
R386	ERDS1TJ182	CARBON	0.5W	10%	1K8
R387	ERDS1TJ182	CARBON	0.5W	10%	1K8
R453	ERDS1TJ1R5	CARBON	0.5W	5%	1R5
R506	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K
R508	ERJ6GEYJ753	S.M.CARB	0.1W	5%	75K

Cct Ref	Parts Number	Description				
R519	ERJ6GEYJ754	S.M.CARB	0.1W	5%	750K	
R522	ERJ6GEYJ394	S.M.CARB	0.1W	5%	390K	
R542	ERJ6GEYJ242	S.M.CARB	0.1W	5%	2K4	
R543	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R551	ERDS1TJ1R5	CARBON	0.5W	5%	1R5	
R552	ERDS1TJ1R5	CARBON	0.5W	5%	1R5	
R555	ERQ1CJP1R0	FUSIBLE	1W	5%	1	⚠
R557	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R560	ERDS1TJ304	CARBON	0.5W	5%	300K	
R1213	ERJ6GEYJ392	S.M.CARB	0.1W	5%	3K9	
R1215	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R1216	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R1217	ERJ6ENF1202	S.M.CARB	0.1W	1%	1K2	
R1218	ERO50PKF6203	METAL	0.5W	1%	620K	⚠
R1230	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K	
R1241	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2	
R1242	ERJ6GEYJ434	S.M.CARB	0.1W	5%	43K	
R1252	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R1253	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R1256	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2	
R1275	ERJ6GEYJ225	S.M.CARB	0.1W	5%	2M2	
R1277	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1278	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8	
R1290	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1291	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R1292	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1306	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1307	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8	
CAPACITORS						
C255	B32529-C224	FILM	50V		220nF	
C351	ECUV1H151JCX	S.M. CAP	50V		150pF	
C352	ECUV1H151JCX	S.M. CAP	50V		150pF	
C353	ECUV1H181JCX	S.M. CAP	50V		180pF	
C453	ECEA1HU101	ELECT	50V		100µF	
C454	ECA1HM2R2GB	ELECT	50V		2.2µF	
C551	ECWH12H822J	FILM	1250V		8.2nF	
C552	ECQE6104K	FILM	600V		100nF	⚠
C554	ECKC3D331J	CERAMIC	2KV		330pF	⚠
C557	ECWF2H474J	FILM	500V		470nF	⚠
C558	ECEA2CG010	ELECT	160V		1µF	
C567	ECA1VM471GB	ELECT	35V		470µF	
C811	ECA1JM100GB	ELECT	63V		10µF	
C1228	ECUV1H560GCG	S.M. CAP	50V		56pF	
C1230	ECJ2VB1H333K	ELECT	350V		33nF	
C1231	222236516154	FILM	160V		33nF	
C1242	ECUV1H120JCX	S.M. CAP	50V		12pF	
C1245	ECJ2VB1H333K	ELECT	350V		33nF	
C1250	ECUV1H151JCX	S.M. CAP	50V		150pF	
C1251	ECQM1H104J	FILM	50V		100nF	
C1268	ECA1CM220GB	ELECT	16V		22µF	
C1269	ECUV1H181JCX	S.M. CAP	50V		180pF	

DIFFERENCES FOR MODEL TX-21S4TF

MECHANICAL PARTS

3	TKU8E00213	BACK COVER	⚠
4	UR51EC904A	BATTERY COVER (REMOTE)	
5	A51EAL135X13	C.R.T.	⚠
6	TKY8E310	CABINET	⚠
7	TMZ8E002	CHASSIS RAIL LEFT	
8	TMZ8E001	CHASSIS RAIL RIGHT	
9	THT1009R	CRT FIXING SCREW	
10	TLK8E05133	DEGAUSS COIL	⚠
11	TNP8EE007DF	E P.C.B.	⚠
12	TBM8E1908	MODEL LABEL	
13	TBX8E038	POWER BUTTON	
14	EUR511300	REMOTE CONTROL	
15	EASG12D546A2	SPEAKER	
16	TNP8EY011AH	Y P.C.B.	⚠

MISCELLANEOUS COMPONENTS

	TBM8E1626	PANASONIC BADGE	⚠
	TKP8E1164-1	DOOR LID	
	TPC8E4722	OUTER CARTON	
	TPD8E627	TOP CUSHION	
	TPD8E628	BOTTOM CUSHION	
D805	232266296706	THERMISTOR	⚠
PKN1	TBX8E039	KEY PAD	
R1223	P1201	SENSOR	
S351	TJSC00300	CRT SOCKET	

INSTRUCTION BOOKS

	TQB8E2518	GERMAN/DUTCH/ITALIAN	⚠
	TQB8E2660	FRENCH/SPANISH	⚠

I.C.s

IC1201	SDA5254V31	MICRO PROCESSOR
IC1205	XL24D02P-1HF	EAROM *

DIODES

D1225	MA165TA5	DIODE
D1226	MA700TA5	DIODE
D1227	MA700TA5	DIODE

TRANSISTORS

Q351	2SC4714RL2	TRANSISTOR
Q352	2SC4714RL2	TRANSISTOR
Q353	2SC4714RL2	TRANSISTOR
Q507	BC847B	TRANSISTOR
Q1214	BC857B	TRANSISTOR
Q1215	BC857B	TRANSISTOR
Q1216	BC847B	TRANSISTOR
Q1217	2SD965-R	TRANSISTOR

TRANSFORMERS

T552	FSU-21A002	F.B.T.	⚠
T801	ETS29AK227AC	TRANSFORMER	⚠

COILS

L551	ELH5L4104	COIL
L553	ELH16F713	COIL
L1206	EXCELSA35T	COIL

RESISTORS

JC13	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
JC24	ERJ8GEY0R00	S.M.CARB	.125W	5%	0	
R252	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
R254	ERJ6GEYJ121	S.M.CARB	0.1W	5%	120	
R255	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180	
R351	ERG2ANJ103	METAL	2W	5%	10K	⚠
R352	ERG2ANJ103	METAL	2W	5%	10K	⚠
R353	ERG2ANJ103	METAL	2W	5%	10K	⚠
R366	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390	
R367	ERJ6GEYJ431	S.M.CARB	0.1W	5%	430	
R368	ERJ6GEYJ431	S.M.CARB	0.1W	5%	430	
R369	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R370	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R371	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R375	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R378	ERD25TJ274	CARBON	0.25W	5%	270K	
R379	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K	
R380	ERJ6GEYJ684	S.M.CARB	0.1W	5%	680K	
R386	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R387	ERDS1TJ272	CARBON	0.5W	5%	2K7	
R453	ERDS1TJ1R0	CARBON	0.5W	5%	1	
R506	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K	

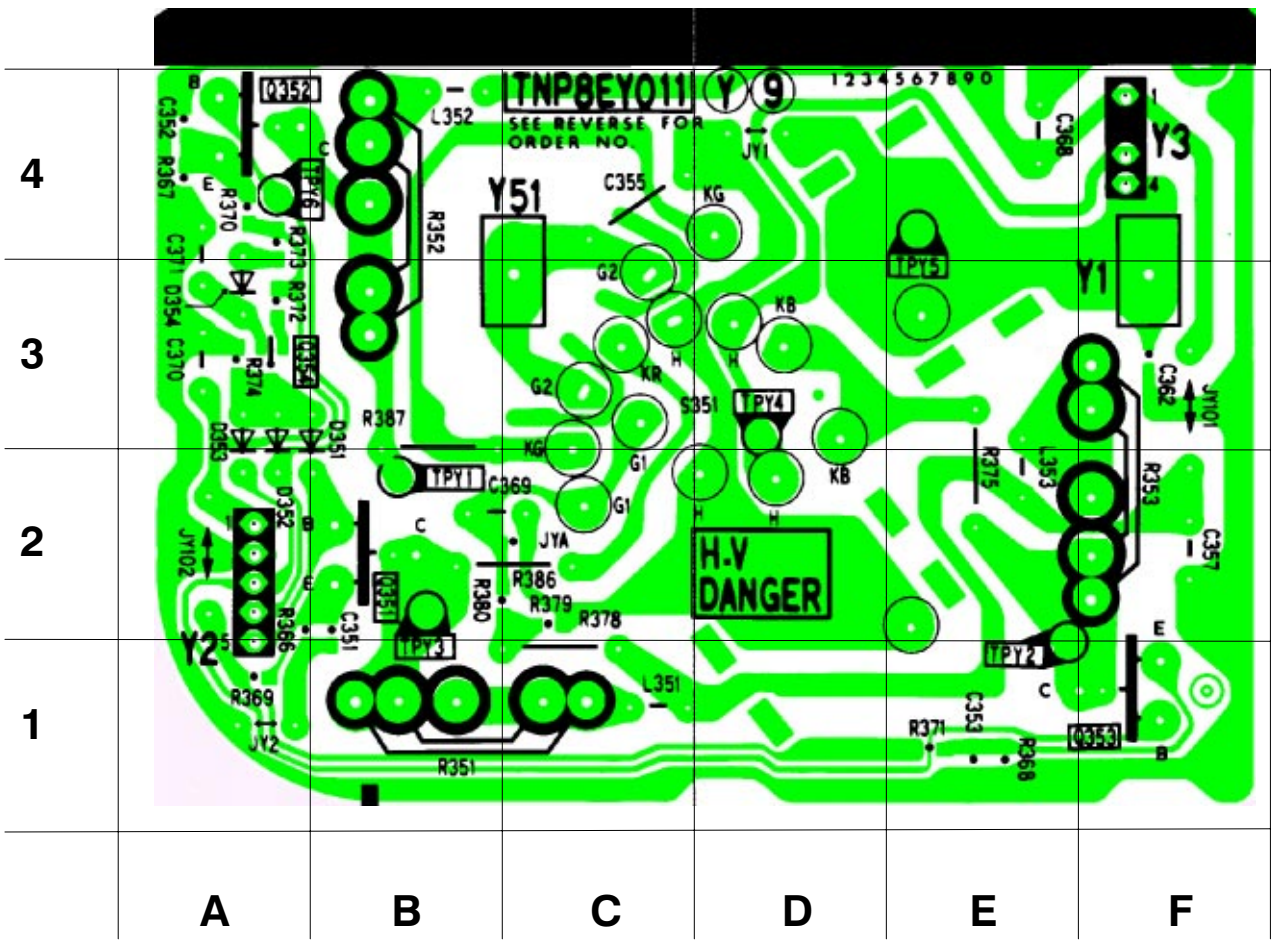
Cct Ref	Parts Number	Description				
R508	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K	
R519	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K	
R522	ERJ6GEYJ684	S.M.CARB	0.1W	5%	680K	
R523	ERJ6GEYJ154	S.M.CARB	0.1W	5%	150K	
R524	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R525	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R542	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3	
R543	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2	
R553	ERQ1CJP102	FUSIBLE	1W	5%	1K	⚠
R555	ERQ1CJP4R7	FUSIBLE	1W	5%	4R7	⚠
R557	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R560	ERDS1TJ204	CARBON	0.5W	5%	200K	
R1213	ERJ6GEYJ392	S.M.CARB	0.1W	5%	3K9	
R1215	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R1216	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8	
R1217	ERJ6ENF7501	S.M.CARB	0.1W	1%	7K5	
R1218	ERO50PKF5603	METAL	0.5W	1%	560K	⚠
R1224	ERJ6GEYJ683	S.M.CARB	0.1W	5%	68K	
R1225	ERJ6GEYJ433	S.M.CARB	0.1W	5%	43K	
R1230	ERJ6GEYJ823	S.M.CARB	0.1W	5%	82K	
R1241	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2	
R1242	ERJ6GEYJ434	S.M.CARB	0.1W	5%	43K	
R1251	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1252	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100	
R1253	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R1256	ERJ6GEYJ122	S.M.CARB	0.1W	5%	1K2	
R1275	ERJ6GEYJ225	S.M.CARB	0.1W	5%	2M2	
R1277	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1278	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8	
R1279	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1280	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1290	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1291	ERJ6GEYJ752	S.M.CARB	0.1W	5%	7K5	
R1292	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K	
R1304	ERJ6GEYJ184	S.M.CARB	0.1W	5%	180K	
R1305	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7	
R1306	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0	
R1307	ERJ6GEYJ182	S.M.CARB	0.1W	5%	1K8	
R1308	ERJ6GEYJ562	S.M.CARB	0.1W	5%	5K6	
CAPACITORS						
C255	ECQM1H104J	FILM	50V		100nF	
C351	ECUV1H221JCX	S.M. CAP	50V		220pF	
C352	ECUV1H271JCX	S.M. CAP	50V		270pF	
C353	ECUV1H221JCX	S.M. CAP	50V		220pF	
C369	ECA1HMR47GB	ELECT	50V		220pF	
C453	ECA1HHG101B	ELECT	50V		100µF	
C454	ECA1HHG2R2B	ELECT	50V		100µF	
C508	ECUV1H102JCX	S.M. CAP	50V		1nF	
C551	ECWH12H103J	FILM	1250V		10nF	
C552	ECQF4273JZH	FILM	400V		27nF	⚠
C555	ECKC3D152J	CERAMIC	2KV		1.5nF	⚠
C557	ECWF2H394JZ	FILM	500V		390nF	⚠
C558	ECEA2CU4R7	ELECT	160V		4.7µF	
C567	ECA1VHG471B	ELECT	35V		47µF	
C811	ECA1JHG100B	ELECT	6.3V		100µF	
C1228	ECUV1H470GCG	S.M. CAP	50V		47pF	
C1230	ECJ2VB1H333K	ELECT	350V		33nF	
C1231	222236516154	FILM	160V		33nF	
C1242	ECUV1H120JCX	S.M. CAP	50V		12pF	
C1245	ECJ2VB1H333K	ELECT	350V		33nF	
C1250	ECUV1H151JCX	S.M. CAP	50V		150pF	
C1251	ECQM1H104J	FILM	50V		100nF	
C1266	ECA1CM100GB	ELECT	16V		10µF	
C1268	ECA1CM220GB	ELECT	16V		22µF	
C1269	ECUV1H181JCX	S.M. CAP	50V		180pF	

Cct Ref	Parts Number	Description

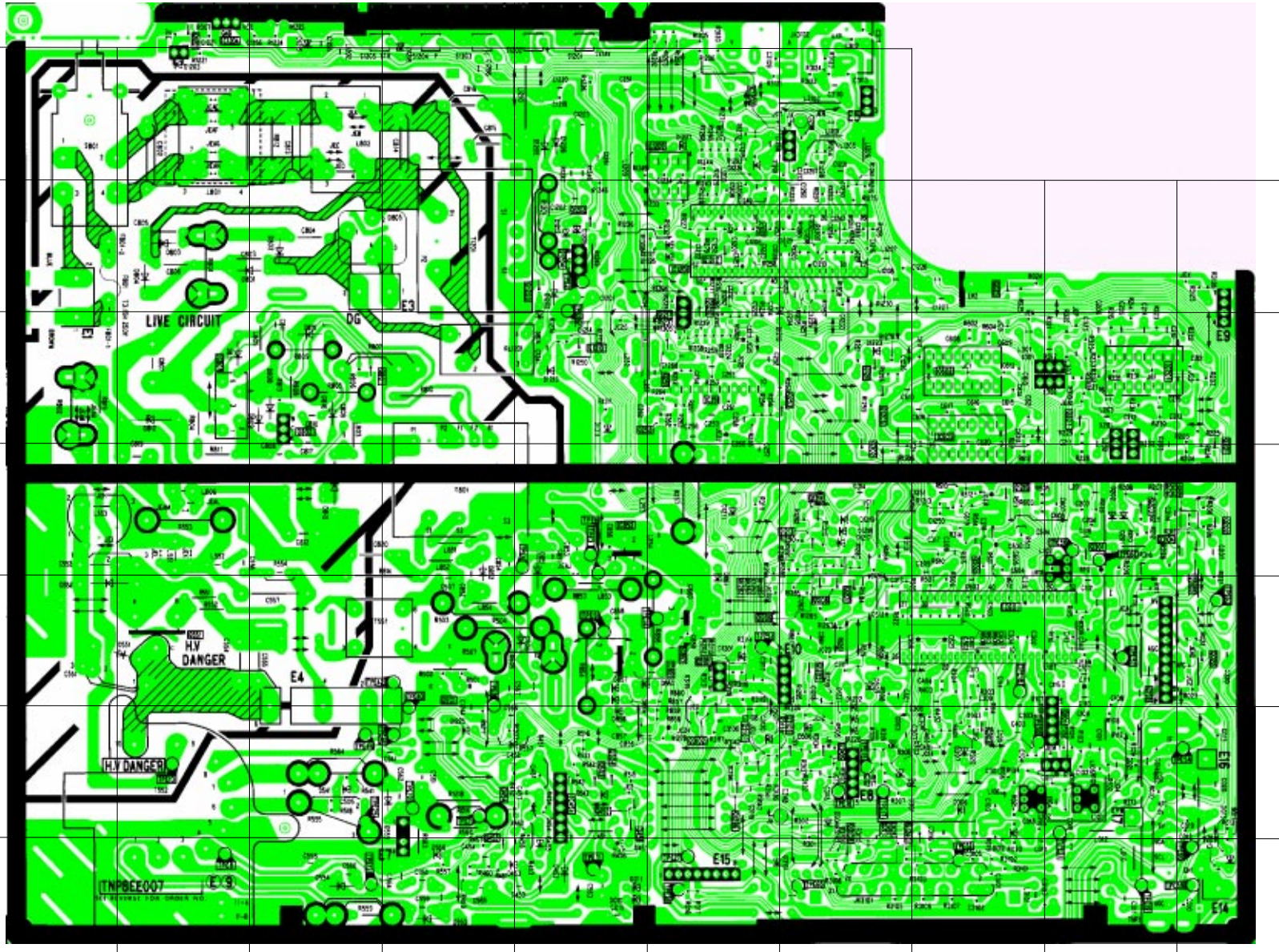
CONDUCTOR VIEWS VUE DU CIRCUIT IMPRIMÉ

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				

SCHEMATIC DIAGRAMS FOR MODELS

TX−21S4TF/TC−21S4RF
TX−14S4TF/TC−14S4RF
(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.

Notes

1. RESISTOR
   All resistors are carbon ¼W resistor, unless marked as follows:
   Unit of resistance is OHM (Ω) (k=1,000, M=1,000,000).

2. CAPACITORS
   All capacitors are ceramic 50V, unless marked as follows:
   Unit of capacitance is μF, unless otherwise stated.

3. COIL
   Unit of inductance is μH, unless otherwise stated.

4. Components marked 'L' on the schematic diagram shows leadless parts.

5. TEST POINT
   : Test Point position

6. EARTH SYMBOL
   Chassis Earth (Cold) Line Earth (Hot)

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

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

8. Indicates the Video signal path
   Indicates the Audio signal path
   Indicates the Vertical/Horizontal signal path

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

Remarks

1. The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection. The circuit is defined by HOT and COLD indications in the schematic diagram. All circuits, except the Power Circuit, are COLD. Take the following precautions:

Precautions

a. Do not touch the hot part, or the hot and cold parts 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.

SCHEMA TECHNIQUE POUR MODELE

TX−21S4TF/TC−21S4RF
TX−14S4TF/TC−14S4RF
(Z−7 Chassis)

REMARQUE IMPORTANTE POUR LA SÉCURITÉ

Les élément portant la marque ⚠ possèdent des caractéristiques de sécurite spécialses. Lors du remplacement de l'une quelconque de ces pièces n' utiliser que celles spécifiées par la fabricant.

Nota :

1. RESISTOR
   Toutes les résistance sont des résistance au carbone 1/4W, sauf indication contraire par les indications suivantes
   L'unité de résistance est l' OHM (Ω) (k=1,000, M=1,000,000).

2. CONDENSATEUR
   Toutes les condensateurs sont des condensateurs céramique 50V, sauf indication contraire par les indications suivantes :
   L'unité de capacitié est le μF, sauf indication contraire.

3. BOBINE
   L'unité d'inductance est le μH, sauf indication contraire

4. Les composants entourés de pointillés, sur le schéma, représentent des éléments non câblés.

5. POINT D'ESSAI
   Position du point d'essai

6. SYMBOL DE TERRE
   Terre du châssis (froid) Terre de ligne (chaud)

7. MESURE DE TENSION
   La tension est mesurée avec un voltmètre c.c.
   Les conditions de mesure sont les suivantes:

Source d'alignmentation	CA 220V−240V, 50Hz
Signal de réception	Signal barre couleur (RF)
Toutes les commandes utilisateur	Position maximum

8. Vidéo
   Audio
   Vertical / Horizontal

9. Ce schéma est à jour moment de l'impression et modifiable sans préavis.

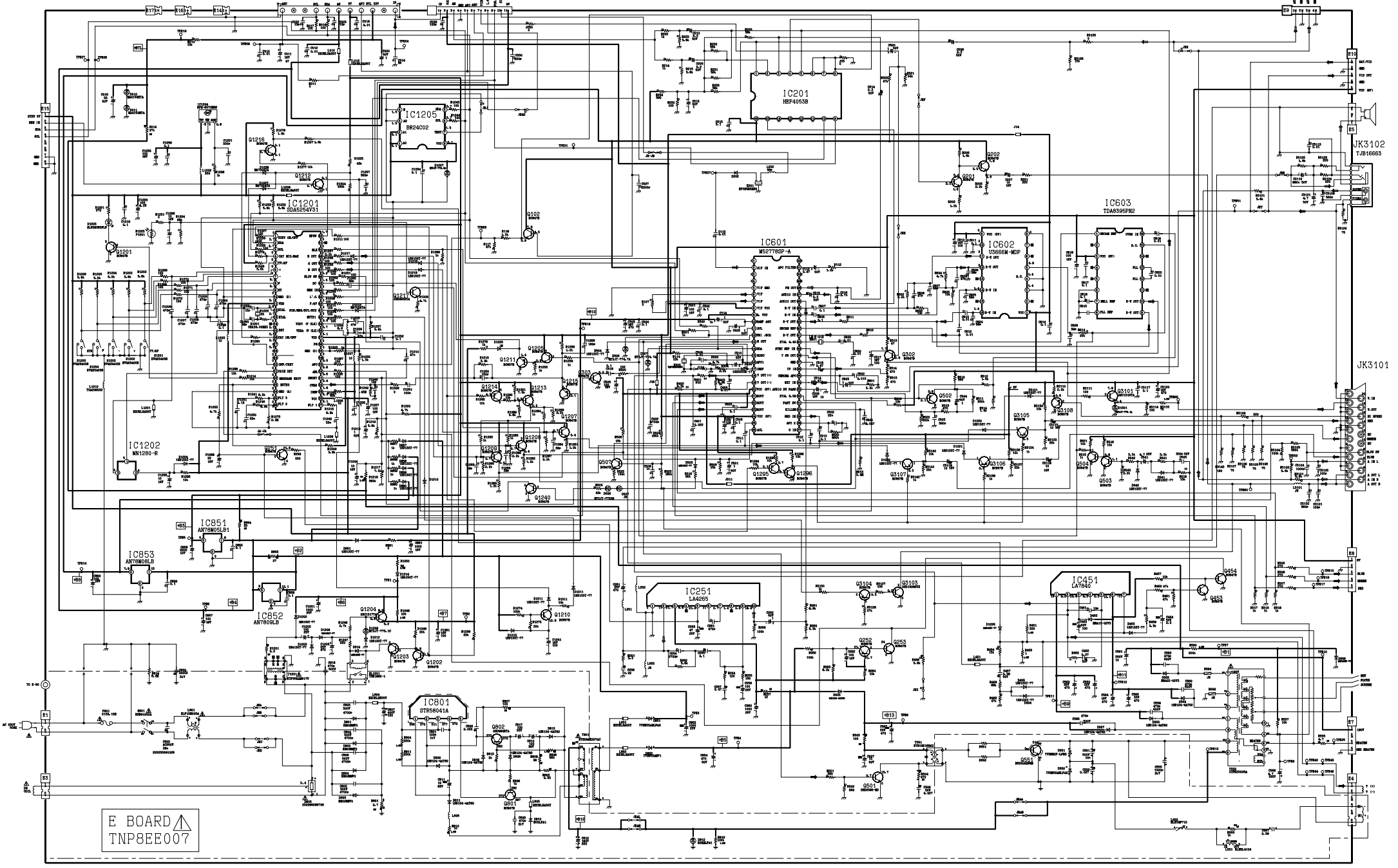
Remarque

1. Le circuit d'alimentation contient une zone de qui utilise une alimentation séparée pour isoler la connexion à la terre. Le circuit est défini par les indications chaud (HOT) et froid (COLD) dans le diagramme schématique. Prendre les précautions suivantes. Tous les circuits, sauf le circuit d'alimentation, sont froids.

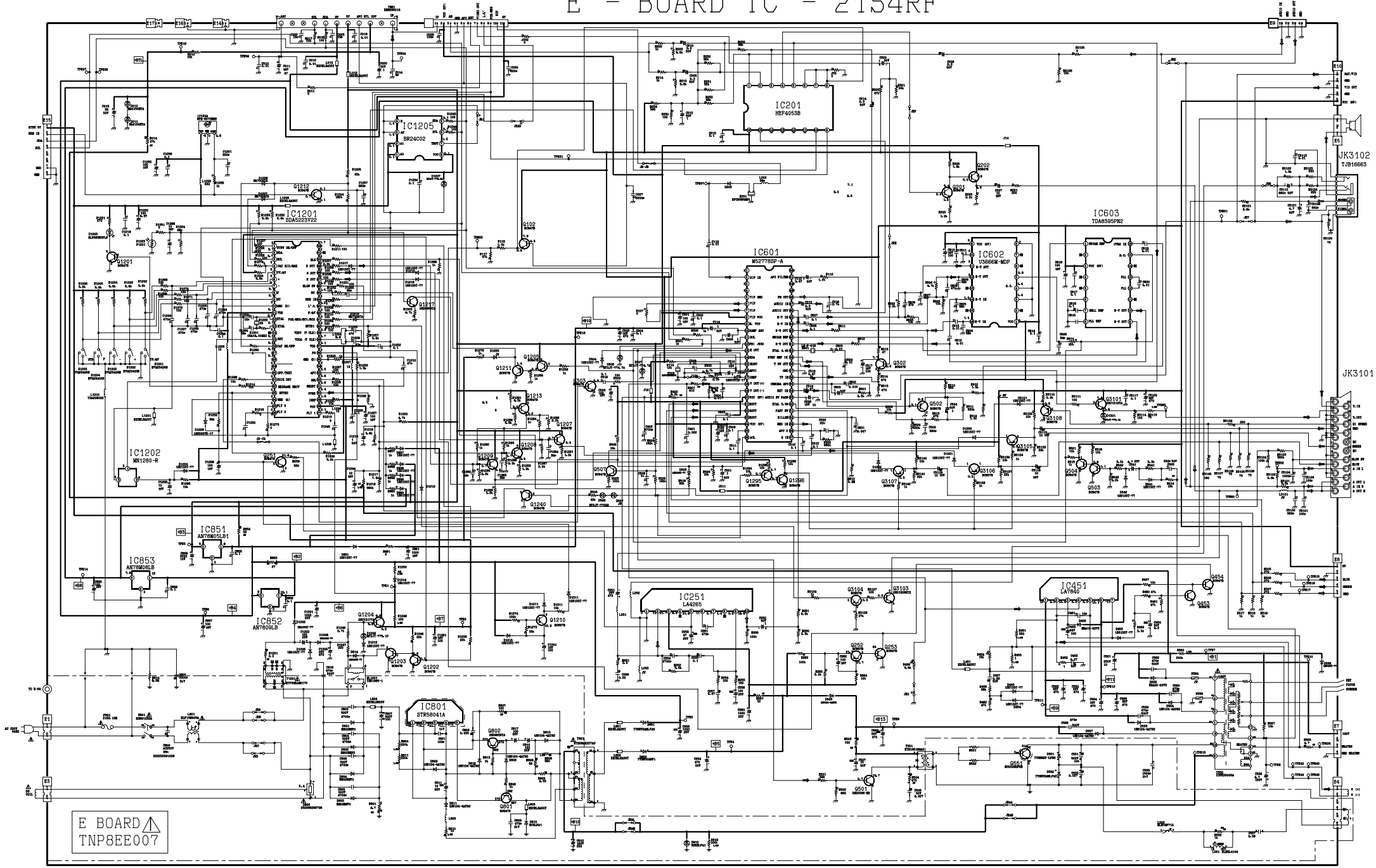
Précautions

a. Ne pas toucher la partie chaude ou en même temps les parties chaud et froide. Cela présente un risque de décharge électrique.
b. Ne pas court−circuit les circuits chaud et froid car un fusible peut sauter et des pièces se casser.
c. Ne pas raccorder un instrument, comme un oscilloscope, simultanément aux circuits chaud et froid car un fusible peut sauter. Raccorder la terre des instruments à la connexion de terre du circuit mesuré.
d. Toujours débrancher la fiche d'alimentation avant de déposer le châssis.

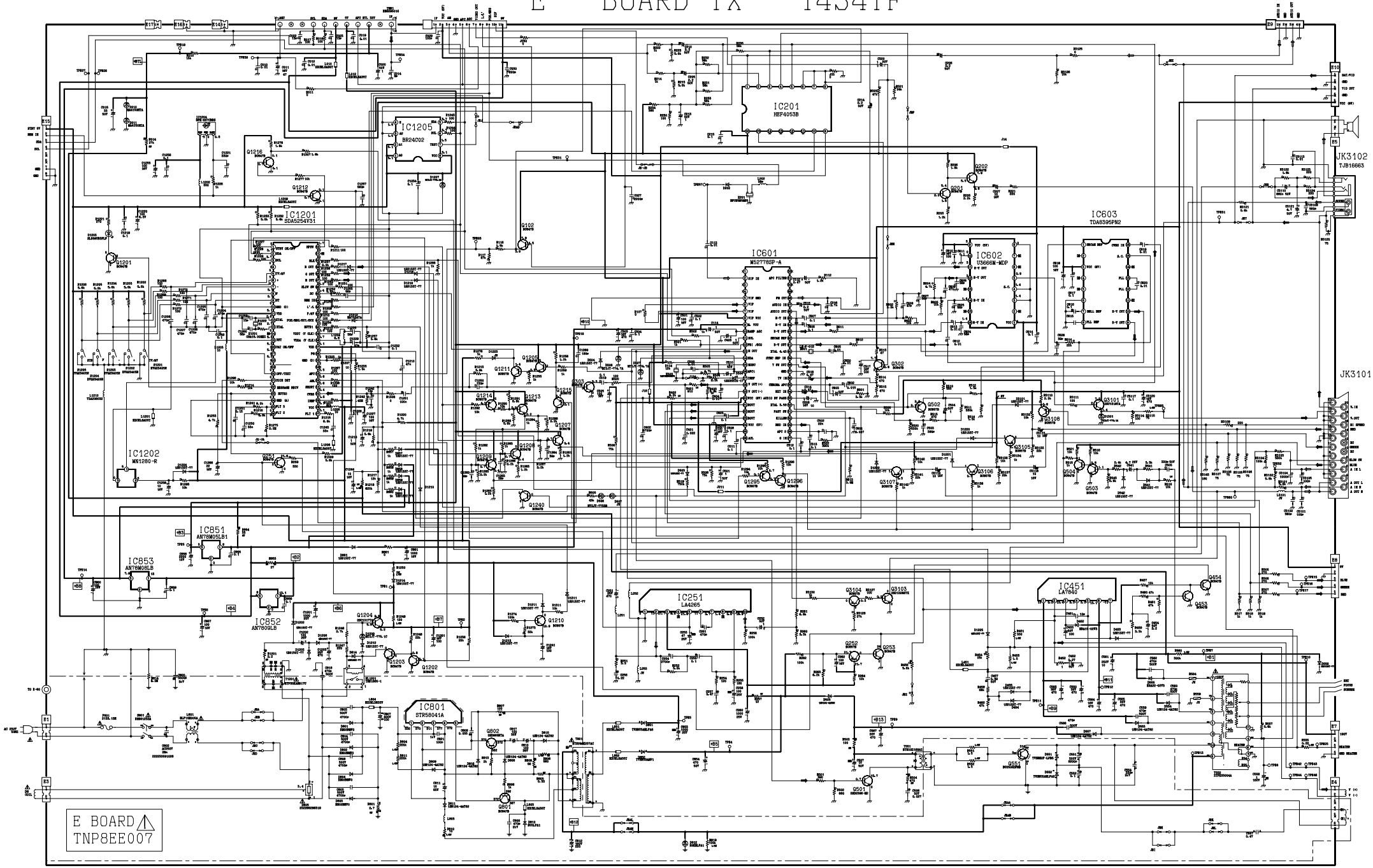
E - BOARD TX - 21S4TF



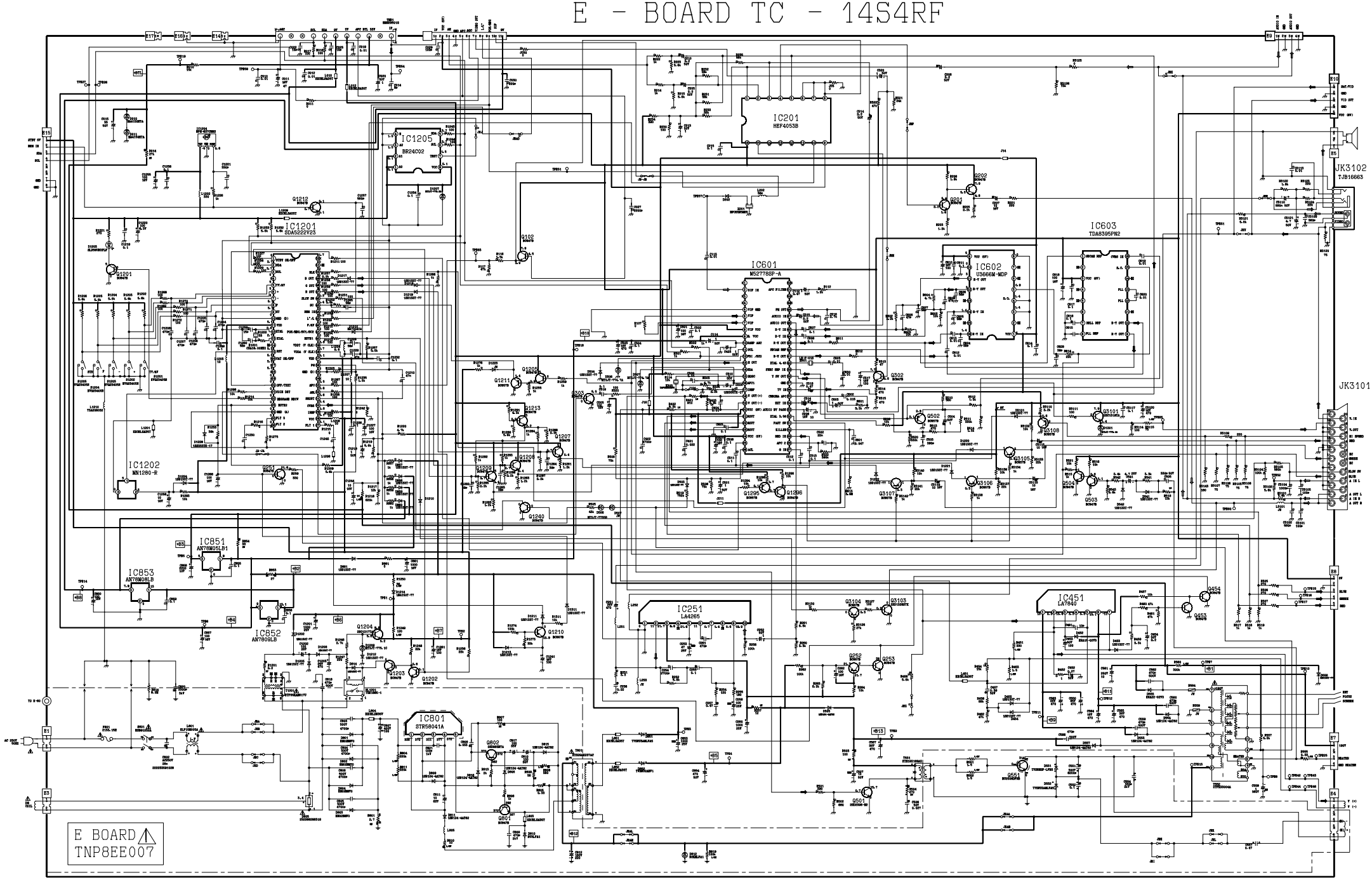
E - BOARD TC - 21S4RF



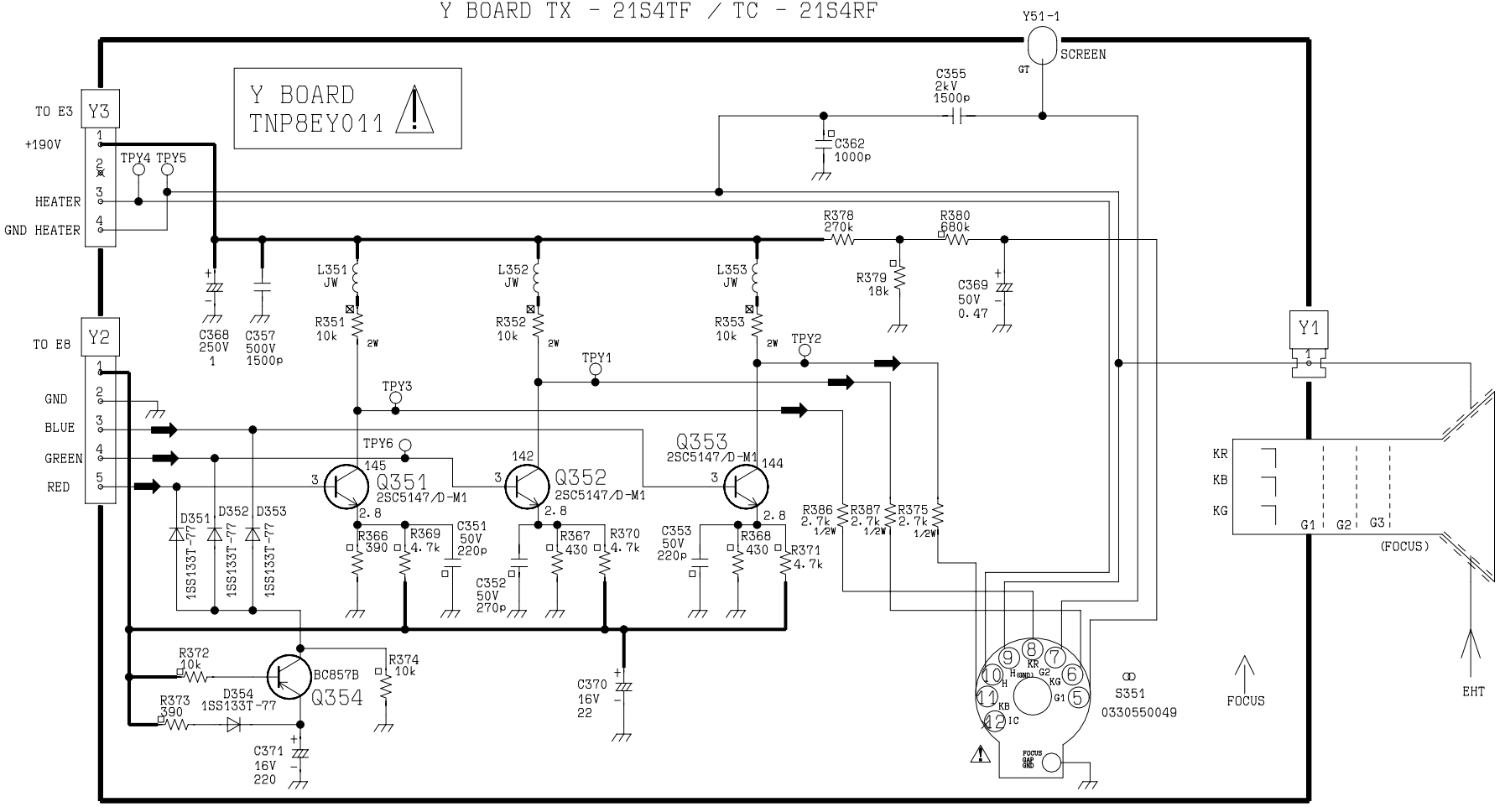
E - BOARD TX - 14S4TF



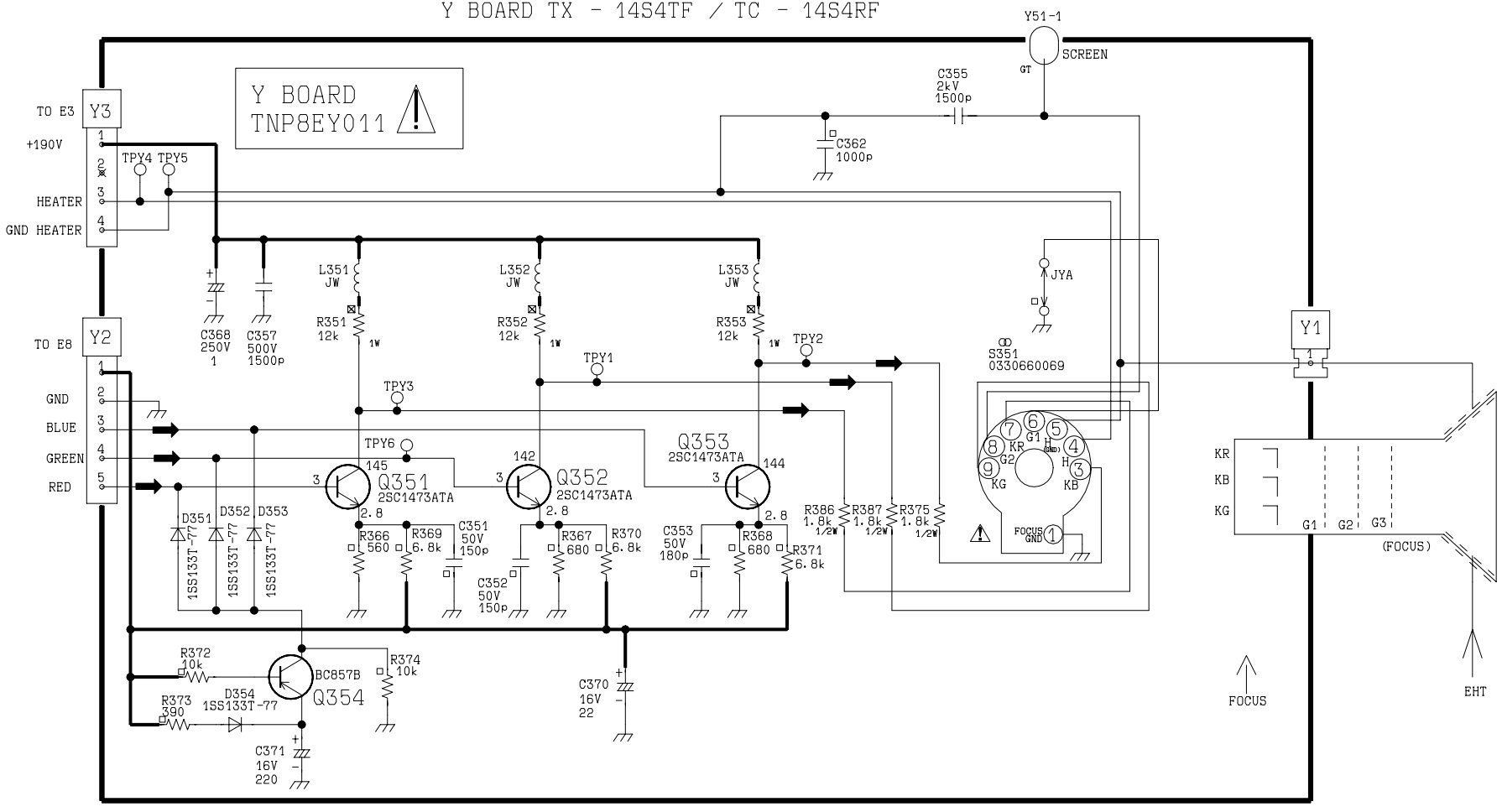
E - BOARD TC - 14S4RF



Y BOARD TX - 21S4TF / TC - 21S4RF



Y BOARD TX - 14S4TF / TC - 14S4RF



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