

# TX-28/21MK1F/M Service Manual

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Specifications

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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

# Service Manual



## Colour Television

### TX-28MK1F/M

### TX-21MK1F/M

## EURO-4 Chassis

### SPECIFICATIONS

(Information in brackets { } refer to TX-21MK1F/M)

|                                   |  |
|-----------------------------------|--|
| <b>Power Source:</b>              | 220-240V a.c., 50Hz  |
| <b>Power Consumption:</b>         | 85W {71W}  |
| <b>Standby Power Consumption:</b> | 1,8W   |
| <b>Aerial Impedance:</b>          | 75Ω unbalanced, Coaxial Type   |
| <b>Receiving System:</b>          | PAL-I, B/G, H, D/K, PAL-525/60<br>SECAM L/L', B/G, D/K<br>M.NTSC<br>NTSC (AV only)   |
| <b>Receiving Channels:</b>        |  |
| VHF E2-E12                        | VHF H1-H2 (ITALY)  |
| VHF A-H (ITALY)                   | VHF R1-R2  |
| VHF R3-R5                         | VHF R6-R12   |
| UHF E21-E69                       | CATV (S01-S05)   |
| CATV S1-S10 (M1-M10)              | CATV S11-S20 (U1-U10)  |
| CATV S21-S41 (HYPERBAND)          |  |
| <b>Intermediate Frequency:</b>    |  |
| Video                             | 38,9MHz, 34MHz   |
| Sound                             | 32,9MHz, 33,16MHz, 33,4MHz<br>40,4MHz, 32,4MHz (A2 STEREO)<br>33,05MHz, 34,05MHz (NICAM)<br>32,66MHz, 32,4MHz (CZECH STEREO) |
| Colour                            | 34,47MHz (PAL)<br>34,5MHz, 34,65MHz (SECAM)  |

### Video/Audio Terminals:

|                              |                            |   |
|------------------------------|----------------------------|---|
| <b>AUDIO MONITOR OUT</b>     | Audio (RCAX2)              | 500mV rms 1kΩ                             |
| <b>AV1 IN</b>                | Video (21 pin)             | 1V p-p 75Ω                                |
|                              | Audio (21 pin)             | 500mV rms 10kΩ                            |
|                              | RGB (21 pin)               |   |
| <b>AV1 OUT</b>               | Video (21 pin)             | 1V p-p 75Ω                                |
|                              | Audio (21 pin)             | 500mV rms 1kΩ                             |
| <b>AV2 IN</b>                | Video (21 pin)             | 1V p-p 75Ω                                |
|                              | Audio (21 pin)             | 500mV rms 10kΩ                            |
|                              | S-Video IN                 | Y: 1V p-p 75Ω<br>(21 pin) C: 0,3V p-p 75Ω |
| <b>AV2 OUT</b>               | Video (21 pin)             | 1V p-p 75Ω                                |
|                              | Audio (21 pin)             | 500mV rms 1kΩ                             |
|                              | Selectable Output (21 pin) |   |
| <b>AV3 IN</b>                | Audio (RCAX2)              | 500mV rms 10kΩ                            |
|                              | Video (RCAX1)              | 1V p-p 75Ω                                |
| <b>High Voltage:</b>         | 28,2kV ± 1kV               | {28kV ± 1kV}                              |
| <b>Picture Tube:</b>         | A66ECF50X42                | 66cm<br>{A51EER35X70 51cm}                |
| <b>Audio Output:</b>         | 2 x 15W (Music Power)      |   |
|                              | 8Ω Impedance               |   |
| <b>Headphones:</b>           | 8Ω Impedance               |   |
| <b>Accessories supplied:</b> | Remote Control             |   |
|                              | 2 x R6 (UM3) Batteries     |   |

### Dimensions:

|                    |       |         |
|--------------------|-------|---------|
| Height:            | 580mm | {481mm} |
| Width:             | 666mm | {525mm} |
| Depth:             | 472mm | {477mm} |
| <b>Net Weight:</b> | 31kg  | {22kg}  |

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

NOTE: This Service Manual should be used in conjunction with the EURO-4 technical guide.

### CARACTÉRISTIQUES

(Les informations entre parenthèses { } concernent le TX-21MK1F/M)

|                                 |  |
|---------------------------------|--|
| <b>Alimentation:</b>            | 220-240V a.c., 50Hz  |
| <b>Consommation:</b>            | 85W {71W}  |
| <b>Standby Consommation:</b>    | 1,8W   |
| <b>Impédance d'antenne:</b>     | 75Ω asymétrique sur prise coaxiale   |
| <b>Système de réception:</b>    | PAL-I, B/G, H, D/K, PAL-525/60<br>SECAM L/L', B/G, D/K<br>M.NTSC<br>NTSC (Entrée AV seulement)                               |
| <b>Canaux de réception:</b>     |  |
| VHF E2-E12                      | VHF H1-H2 (ITALY)  |
| VHF A-H (ITALY)                 | VHF R1-R2  |
| VHF R3-R5                       | VHF R6-R12   |
| UHF E21-E69                     | CATV (S01-S05)   |
| CATV S1-S10 (M1-M10)            | CATV S11-S20 (U1-U10)  |
| CATV S21-S41 (HYPERBAND)        |  |
| <b>Fréquence Intermédiaire:</b> |  |
| Video                           | 38,9MHz, 34MHz   |
| Sound                           | 32,9MHz, 33,16MHz, 33,4MHz<br>40,4MHz, 32,4MHz (A2 STEREO)<br>33,05MHz, 34,05MHz (NICAM)<br>32,66MHz, 32,4MHz (CZECH STEREO) |
| Couleur                         | 34,47MHz (PAL)<br>34,5MHz, 34,65MHz (SECAM)  |

### Les bornes vidéo/audio:

|                                 |                       |   |
|---------------------------------|-----------------------|---|
| <b>SORTIE AUDIO MONITOR</b>     | Audio (RCAX2)         | 500mV rms 1kΩ                             |
| <b>Entrée AV1 (21 broches)</b>  | Video (21 pin)        | 1V p-p 75Ω                                |
|                                 | Audio (21 pin)        | 500mV rms 10kΩ                            |
|                                 | RGB (21 pin)          |   |
| <b>Sorties AV1 (21 broches)</b> | Video (21 pin)        | 1V p-p 75Ω                                |
|                                 | Audio (21 pin)        | 500mV rms 1kΩ                             |
| <b>Entrée AV2 (21 broches)</b>  | Video (21 pin)        | 1V p-p 75Ω                                |
|                                 | Audio (21 pin)        | 500mV rms 10kΩ                            |
|                                 | S-Video IN            | Y: 1V p-p 75Ω<br>(21 pin) C: 0,3V p-p 75Ω |
| <b>Sorties AV2 (21 broches)</b> | Video (21 pin)        | 1V p-p 75Ω                                |
|                                 | Audio (21 pin)        | 500mV rms 1kΩ                             |
|                                 | Être sélectionnée     |   |
| <b>Entrée AV3</b>               | Audio (RCAX2)         | 500mV rms 10kΩ                            |
|                                 | Video (RCAX1)         | 1V p-p 75Ω                                |
| <b>Tension d'anode:</b>         | 28,2kV ± 1kV          | {28kV ± 1kV}                              |
| <b>Tube image:</b>              | A66ECF50X42           | 66cm<br>{A51EER35X70 51cm}                |
| <b>Sortie Audio:</b>            | 2 x 15W (Music Power) |   |
|                                 | 8Ω Impédance          |   |
| <b>Casque d'écoute:</b>         | 8Ω Impédance          |   |
| <b>Accessories fournis:</b>     | Télécommande          |   |
|                                 | R6 (UM3) x 2 Piles    |   |

### Dimensions:

|                     |       |         |
|---------------------|-------|---------|
| Hauteur:            | 580mm | {481mm} |
| Largeur:            | 666mm | {525mm} |
| Profondeur:         | 472mm | {477mm} |
| <b>Poids (NET):</b> | 31kg  | {22kg}  |

Les caractéristiques techniques sont susceptibles de modification sans Préavis.

Le poids et les dimensions indiqués sont approximatifs.

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## SAFETY PRECAUTIONS

### GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the a.c. 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 a.c. outlet.
5. Potentials as high as 29,2kV {29kV} 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 tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

### LEAKAGE CURRENT COLD CHECK

1. Unplug the a.c. 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 a.c. 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.

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## PRECAUTIONS DE SECURITE

### CONSEILS GENERAUX

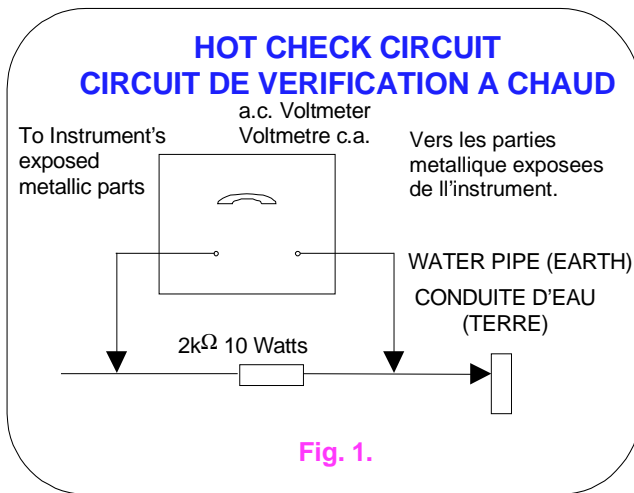
1. Avant d'effectuer toute révision d'un châssis sous tension il est recommandé d'installer un transformateur d'isolation.
2. Il est important, lors des réparations, de conserver la position initial de tours les fils et faisceaux, surtout dans le circuit de la haute tension. Remplacer toutes les pièces affectées par la chaleur dégagée lors d'un cort-circuit.
3. Après les réparations, s'assurer que toutes les pièces protectrices telle que barrières ou papiers isolant, 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'ordre de 29,2kV {29kV}, 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 résistance mesurée devrait se situer 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 a.c. cord directly into the a.c. outlet. Do not use an isolation transformer for this check.
2. Connect a 2k $\Omega$  10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an a.c. 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 a.c. plug at the outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 1,4 V rms. 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.



## 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 29,2kV {29kV} 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  
TX-28MK1F/M 28,2kV  $\pm$  1kV.  
TX-21MK1F/M 28kV  $\pm$  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 2k $\Omega$ , 10W, en série avec une partie métallique exposée du récepteur et une terre comme une conduite d'eau.
3. Utiliser un voltmètre c.a., 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 c.a. 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 client.

## 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'émissions de rayons X.
2. Si un tube cathodique témoin est utilisé pour la réparation, s'assurer que son assemblage pourra supporter 29,2kV {29kV} sans, émettre de radiations.

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

1. Tourner entièrement la gauche la commande de lumière.
2. Mesurer la haute tension à l'aide du multimètre approprié.  
TX-28MK1F/M 28,2kV  $\pm$  1kV.  
TX-21MK1F/M 28kV  $\pm$  1kV.  
La valeur nominale est de 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 9 screws (A) as shown in Fig.2.

## SUGGESTIONS DE DEPANNAGE COMMENT RETIRER LE PENNEAU ARRIÈRE

1. Retirer les 9 vis (A) comme sur la Fig.2.



Screws A  
Vis A  
Fig.2.

## LOCATION OF CONTROLS

## EMPLACEMENT DES COMMANDES

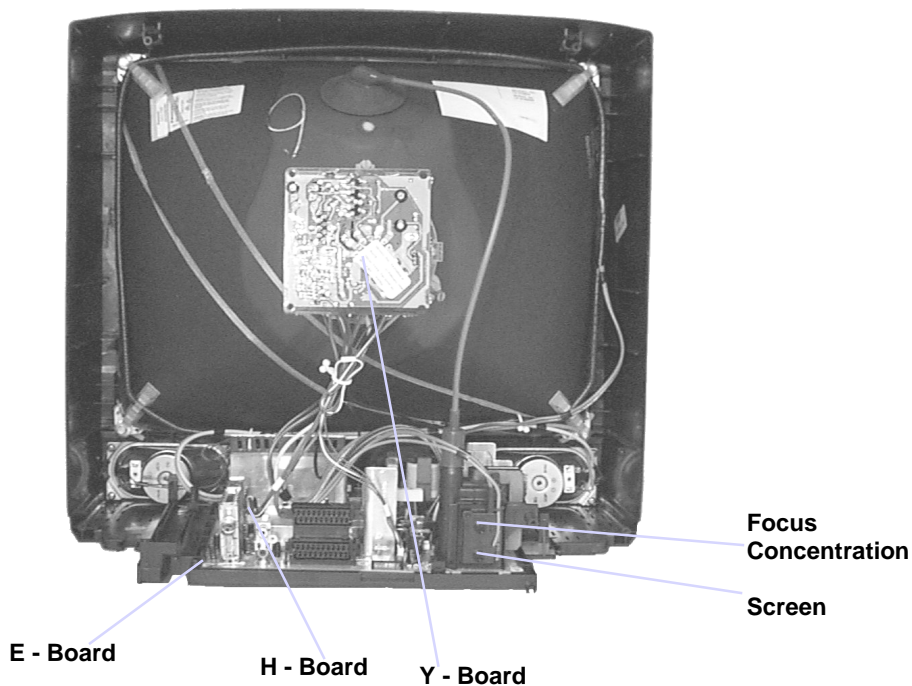



Fig.3.

## SELF CHECK

1. Self-check is used to automatically check the bus lines and hexadecimal code of the TV set.
2. To get into the Self-Check mode press the down **(-V)** button on the customer controls at the front of the set, at the same time pressing the **STATUS**  button on the remote control, and the screen will show :-

|         |         |     |  |
|---------|---------|-----|--|
| VDP     | O.K.    | PCB | O.K.   |
| TUN     | O.K.    | Cab | O.K.   |
| E2      | O.K.    | Sum | Factory use only<br>Usage d'usine<br>seulement |
| MSP     | O.K.    |     |  |
| DPL     | --      |     |  |
| OPTION1 | 3D {3D} |     |  |
| OPTION2 | 0C {0E} |     |  |
| OPTION3 | 1D {1D} |     |  |
| OPTION4 | 00 {00} |     |  |
| OPTION5 | EF {EF} |     |  |
| OPTION6 | 23 {23} |     |  |

If the CCU ports have been checked and found to be incorrect or not located then " - - " will appear in place of "O.K.". Si les ports du CCU ont été testés et qu'ils soient incorrectes ou non identifiés Lorsqu'il apparait " - - " au lieu de "O.K ".

### Service Aids

To aid in the service of our current chassis there are a number of Service Aids, which have been made available.

- **LUCI** interface kit (Linked Utility Computer Interface) Part number: Tzs6EZ002  
This contains interface and cables for connecting TV service connector and a PC as well as diagnostic software. As new models are introduced upgrade software will become available.
- **VICI** (Visual Interactive Computer Information)  
These C.D.'s contain multimedia documentation providing quick access to service information.  
Part No. Tzs7EZ006, Tzs7EZ005 & Tzs8EZ001  
1. Service Manuals  
2. Instruction Books  
3. Technical Information
- **TASMIN** (Technically Advanced System for Multimedia Interactive Notes)  
As well as providing a first step towards more interactive training this product also achieves quick access to Technical Information.

### Aides Techniques

Pour faciliter le dépannage des modèles courants il'y-a un certain nombres d'outils de service disponibles.

- Interface **LUCI** (Linked Utility Computer Interface)  
Ref: Tzs6EZ002  
Cette référence contient; L'interface et les cables de connexion aux TV et PC et également le logiciel de diagnostic. ( A l'introduction des nouveaux modèles un logiciel remis à jour sera disponible ).
- **VICI** (Visual Interactive Computer Information)  
Ces céderom contiennent des documents multimédias donnant acces rapide aux informations de Service.  
Ref. Tzs7EZ006, Tzs7EZ005 & Tzs8EZ001  
1. Les schémas techniques  
2. Les modes d'emplois  
3. Les informations techniques
- **TASMIN** (Technically Advanced System for Multimedia Interactive Notes)  
C'est le premier pas vers un "training" plus interactif, ce produit permet aussi bien un acces rapide aux informations techniques.

## ADJUSTMENT PROCEDURE

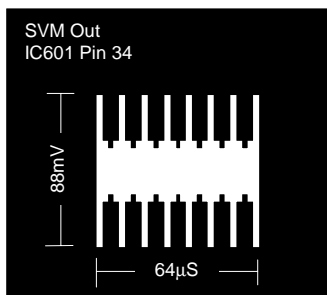
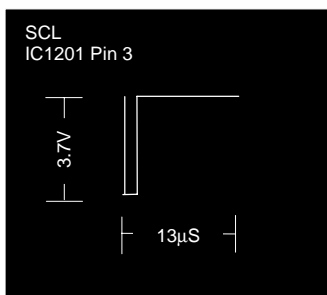
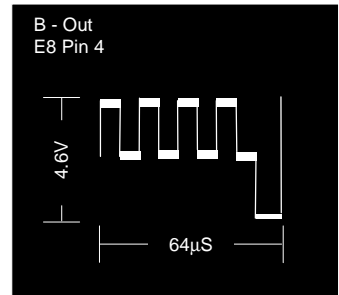
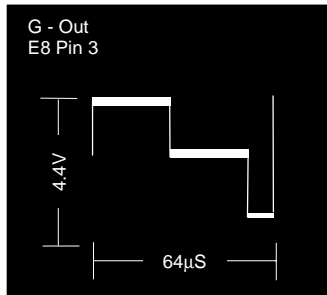
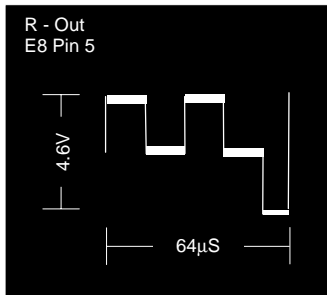
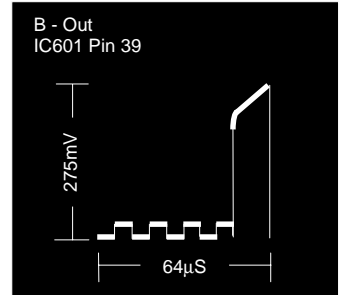
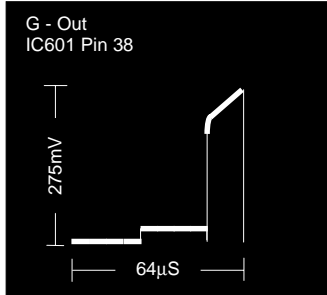
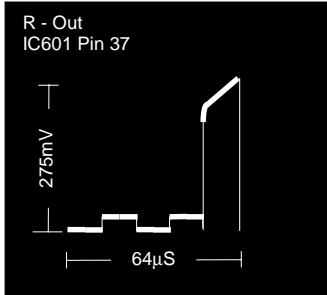
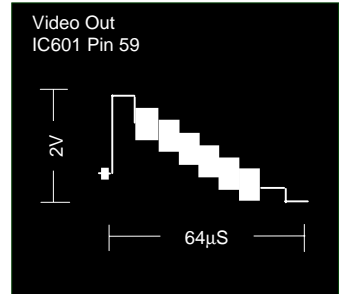
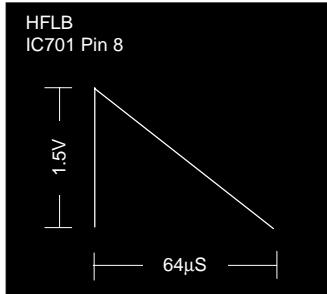
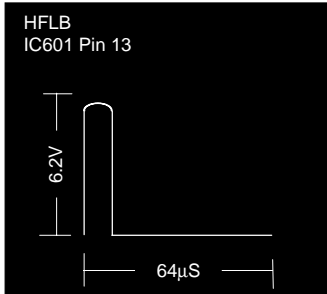
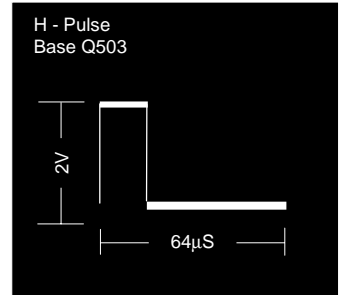
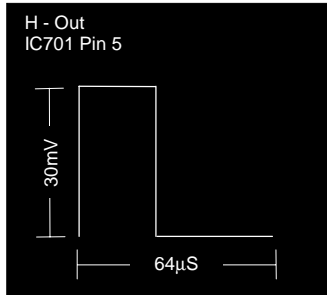
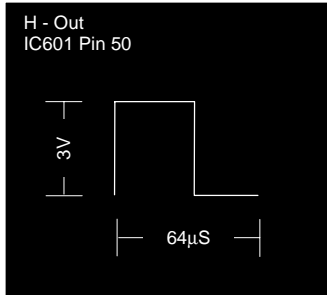
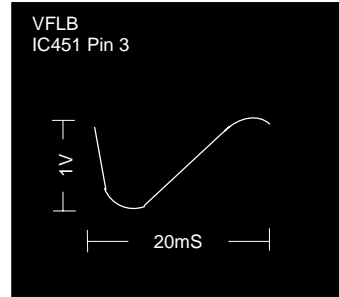
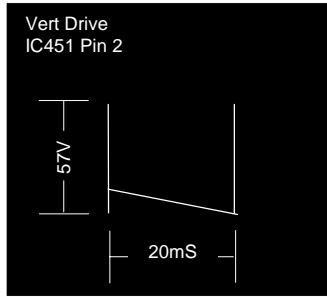
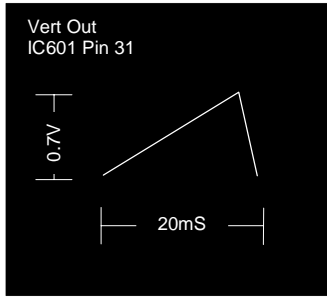
| Item/Preparation   | Adjustments   |         |          |            |        |         |   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
|--|---|---------|----------|------------|--------|---------|---|-----------|---|-------|-------|------------|---|-------|-------|-----------|----|-------|------|------------|----|-------|------|-----------|----|-------|----|-----------|---|-------|------|------------|----|-------|----|-----------|-----|-------|------|-----------|----|-------|----|------------|----|-------|----|-----------|-----|-------|-----|------------|----|-------|----|
| <p style="text-align: center;"><b>+B SET-UP</b></p> <ol style="list-style-type: none"> <li>Receive a Greyscale signal.</li> <li>Set the controls:-           <table style="margin-left: 20px;"> <tr> <td>Brightness</td> <td>Minimum</td> </tr> <tr> <td>Contrast</td> <td>Minimum</td> </tr> <tr> <td>Volume</td> <td>Minimum</td> </tr> </table> </li> </ol> | Brightness  | Minimum | Contrast | Minimum    | Volume | Minimum | <ol style="list-style-type: none"> <li>Set the +B voltage up as follows:-<br/>Adjust <b>R811</b> so that <b>B2</b> shows <math>148V \pm 1V</math> {<math>130V \pm 1V</math> TX-21MK1F/M}.</li> <li>Confirm the following voltages.           <table style="margin-left: 20px;"> <tr> <td><b>B9</b></td> <td>5</td> <td><math>\pm</math></td> <td>0,25V</td> <td><b>B10</b></td> <td>5</td> <td><math>\pm</math></td> <td>0,25V</td> </tr> <tr> <td><b>B5</b></td> <td>12</td> <td><math>\pm</math></td> <td>0,5V</td> <td><b>B11</b></td> <td>33</td> <td><math>\pm</math></td> <td>1,5V</td> </tr> <tr> <td><b>B4</b></td> <td>16</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B7</b></td> <td>8</td> <td><math>\pm</math></td> <td>0,5V</td> </tr> <tr> <td><b>B12</b></td> <td>26</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B8</b></td> <td>5,5</td> <td><math>\pm</math></td> <td>0,5V</td> </tr> <tr> <td><b>B3</b></td> <td>35</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B13</b></td> <td>15</td> <td><math>\pm</math></td> <td>1V</td> </tr> <tr> <td><b>B1</b></td> <td>200</td> <td><math>\pm</math></td> <td>10V</td> <td><b>B14</b></td> <td>15</td> <td><math>\pm</math></td> <td>1V</td> </tr> </table> </li> </ol> | <b>B9</b> | 5 | $\pm$ | 0,25V | <b>B10</b> | 5 | $\pm$ | 0,25V | <b>B5</b> | 12 | $\pm$ | 0,5V | <b>B11</b> | 33 | $\pm$ | 1,5V | <b>B4</b> | 16 | $\pm$ | 1V | <b>B7</b> | 8 | $\pm$ | 0,5V | <b>B12</b> | 26 | $\pm$ | 1V | <b>B8</b> | 5,5 | $\pm$ | 0,5V | <b>B3</b> | 35 | $\pm$ | 1V | <b>B13</b> | 15 | $\pm$ | 1V | <b>B1</b> | 200 | $\pm$ | 10V | <b>B14</b> | 15 | $\pm$ | 1V |
| Brightness   | Minimum   |         |          |            |        |         |   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| Contrast   | Minimum   |         |          |            |        |         |   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| Volume   | Minimum   |         |          |            |        |         |   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B9</b>  | 5   | $\pm$   | 0,25V    | <b>B10</b> | 5      | $\pm$   | 0,25V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B5</b>  | 12  | $\pm$   | 0,5V     | <b>B11</b> | 33     | $\pm$   | 1,5V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B4</b>  | 16  | $\pm$   | 1V       | <b>B7</b>  | 8      | $\pm$   | 0,5V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B12</b>   | 26  | $\pm$   | 1V       | <b>B8</b>  | 5,5    | $\pm$   | 0,5V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B3</b>  | 35  | $\pm$   | 1V       | <b>B13</b> | 15     | $\pm$   | 1V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B1</b>  | 200   | $\pm$   | 10V      | <b>B14</b> | 15     | $\pm$   | 1V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <p style="text-align: center;"><b>Cut-Off / Ug2 Test</b></p> <ol style="list-style-type: none"> <li>Receive a Greyscale signal.</li> <li>Degauss the tube externally.</li> <li>Set the TV into Service Mode 1.</li> <li>Select Cutoff mode.</li> </ol>   | <p>To adjust Cutoff, connect an oscilloscope to the blue cathode, adjust "cutoff" value using the "<b>YELLOW</b>" and "<b>BLUE</b>" buttons until the black level is <math>160V \pm 5V</math> press "<b>STR</b>" to store the value. Remove the oscilloscope. Select Ug2 adjustment and adjust the screen VR until the display shows "O.K."</p> |         |          |            |        |         |   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |

## REGLAGES

| Préparation  | Réglages   |         |           |            |        |         |  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
|--|--|---------|-----------|------------|--------|---------|--|-----------|---|-------|-------|------------|---|-------|-------|-----------|----|-------|------|------------|----|-------|------|-----------|----|-------|----|-----------|---|-------|------|------------|----|-------|----|-----------|-----|-------|------|-----------|----|-------|----|------------|----|-------|----|-----------|-----|-------|-----|------------|----|-------|----|
| <p style="text-align: center;"><b>+B Réglages</b></p> <ol style="list-style-type: none"> <li>Appliquer une mire à carreaux N/B.</li> <li>Régler les contrôles suivants           <table style="margin-left: 20px;"> <tr> <td>Lumière</td> <td>Minimum</td> </tr> <tr> <td>Contraste</td> <td>Minimum</td> </tr> <tr> <td>Volume</td> <td>Minimum</td> </tr> </table> </li> </ol> | Lumière  | Minimum | Contraste | Minimum    | Volume | Minimum | <ol style="list-style-type: none"> <li>Régler les tensions <b>+B</b> comme suit:<br/>Régler <b>R811</b> tel que la tension <b>B2</b> soit de <math>148V \pm 1V</math> {<math>130V \pm 1V</math> TX-21MK1F/M}. Confirmer le réglage:           <table style="margin-left: 20px;"> <tr> <td><b>B9</b></td> <td>5</td> <td><math>\pm</math></td> <td>0,25V</td> <td><b>B10</b></td> <td>5</td> <td><math>\pm</math></td> <td>0,25V</td> </tr> <tr> <td><b>B5</b></td> <td>12</td> <td><math>\pm</math></td> <td>0,5V</td> <td><b>B11</b></td> <td>33</td> <td><math>\pm</math></td> <td>1,5V</td> </tr> <tr> <td><b>B4</b></td> <td>16</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B7</b></td> <td>8</td> <td><math>\pm</math></td> <td>0,5V</td> </tr> <tr> <td><b>B12</b></td> <td>26</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B8</b></td> <td>5,5</td> <td><math>\pm</math></td> <td>0,5V</td> </tr> <tr> <td><b>B3</b></td> <td>35</td> <td><math>\pm</math></td> <td>1V</td> <td><b>B13</b></td> <td>15</td> <td><math>\pm</math></td> <td>1V</td> </tr> <tr> <td><b>B1</b></td> <td>200</td> <td><math>\pm</math></td> <td>10V</td> <td><b>B14</b></td> <td>15</td> <td><math>\pm</math></td> <td>1V</td> </tr> </table> </li> </ol> | <b>B9</b> | 5 | $\pm$ | 0,25V | <b>B10</b> | 5 | $\pm$ | 0,25V | <b>B5</b> | 12 | $\pm$ | 0,5V | <b>B11</b> | 33 | $\pm$ | 1,5V | <b>B4</b> | 16 | $\pm$ | 1V | <b>B7</b> | 8 | $\pm$ | 0,5V | <b>B12</b> | 26 | $\pm$ | 1V | <b>B8</b> | 5,5 | $\pm$ | 0,5V | <b>B3</b> | 35 | $\pm$ | 1V | <b>B13</b> | 15 | $\pm$ | 1V | <b>B1</b> | 200 | $\pm$ | 10V | <b>B14</b> | 15 | $\pm$ | 1V |
| Lumière  | Minimum  |         |           |            |        |         |  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| Contraste  | Minimum  |         |           |            |        |         |  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| Volume   | Minimum  |         |           |            |        |         |  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B9</b>  | 5  | $\pm$   | 0,25V     | <b>B10</b> | 5      | $\pm$   | 0,25V  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B5</b>  | 12   | $\pm$   | 0,5V      | <b>B11</b> | 33     | $\pm$   | 1,5V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B4</b>  | 16   | $\pm$   | 1V        | <b>B7</b>  | 8      | $\pm$   | 0,5V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B12</b>   | 26   | $\pm$   | 1V        | <b>B8</b>  | 5,5    | $\pm$   | 0,5V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B3</b>  | 35   | $\pm$   | 1V        | <b>B13</b> | 15     | $\pm$   | 1V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <b>B1</b>  | 200  | $\pm$   | 10V       | <b>B14</b> | 15     | $\pm$   | 1V   |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |
| <p style="text-align: center;"><b>Cut-Off / Ug2 Test</b></p> <ol style="list-style-type: none"> <li>Appliquer une mire à carreaux N/B.</li> <li>Démagnétiser le tube extérieurement.</li> <li>Mettre le TV en Mode Service 1.</li> <li>Sélectionner le Mode Cutoff.</li> </ol>   | <p>Pour régler le cutoff mettre un oscilloscope sur la cathode "Bleu" et régler avec les touches "<b>Jaune</b>" et "<b>Bleu</b>" jusqu'à ce que le niveau de noir soit à <math>160V \pm 5V</math>, mémoriser cette valeur en appuyant sur "<b>STR</b>". Enlever l'oscilloscope et sélectionner le réglage "Ug2" à l'écran et régler le potentiomètre "screen" du transfo THT pour que "OK" soit indiqué à l'écran.</p> |         |           |            |        |         |  |           |   |       |       |            |   |       |       |           |    |       |      |            |    |       |      |           |    |       |    |           |   |       |      |            |    |       |    |           |     |       |      |           |    |       |    |            |    |       |    |           |     |       |     |            |    |       |    |

**WAVEFORM PATTERN TABLE**

**TABLEAU DES OSCILLOGRAMMES**

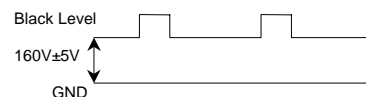




## ALIGNMENT SETTINGS:

(The figures below are nominal and used for representative purposes only.)

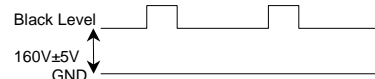
| Alignment Function    |   | Settings / Special features   |
|-----------------------|---|---|
| Horizontal Position   | H-Pos<br>061                              | Optimum setting.  |
| Vertical Position     | V-Pos<br>005                              | Optimum setting.  |
| Horizontal Amplitude  | H-Amp<br>055                              | Optimum setting.  |
| Vert. Amplitude       | V Amp<br>054                              | Optimum setting.  |
| EW-amplitude          | E/W-Amp1<br>-128                          | Optimum setting.  |
| EW-amplitude          | E/W-Amp2<br>006                           | Optimum setting.  |
| Trapezium-comp        | Trapez-1<br>047                           | Optimum setting.  |
| Trapezium-comp        | Trapez-2<br>-128                          | Optimum setting.  |
| Vertical Linearity    | V-Lin<br>006                              | Optimum setting.  |
| Vertical Symmetry     | V-Sym<br>002                              | Optimum setting.  |
| DVCO                  | DVCO<br>-005                              | Receive a PAL Colour Bar Pattern. For DVCO alignment press " <b>Blue</b> " button, wait until the colours are changing slowly and press " <b>STR</b> ".   |
| Cut-off DC            | Cut-off<br>0171                           | To adjust Cutoff connect an oscilloscope to the blue cathode, adjust "cutoff" value using the " <b>Yellow</b> " and " <b>Blue</b> " buttons until the black level is $160V \pm 5V$ press " <b>STR</b> " to store the value. Remove the oscilloscope.<br>Select Ug2 adjustment and adjust the screen VR until the display shows "O.K." |
| Ug2 Test              | Ug2<br>055<br>O.K.                        |   |
| Highlight<br>Lowlight | High 0902 0777 0864<br>Low 0117 0132 0112 | Optimum setting.  |
| Sub-Brightness        | Sub-Brightness<br>255                     | Optimum setting.  |



## REGLAGES

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

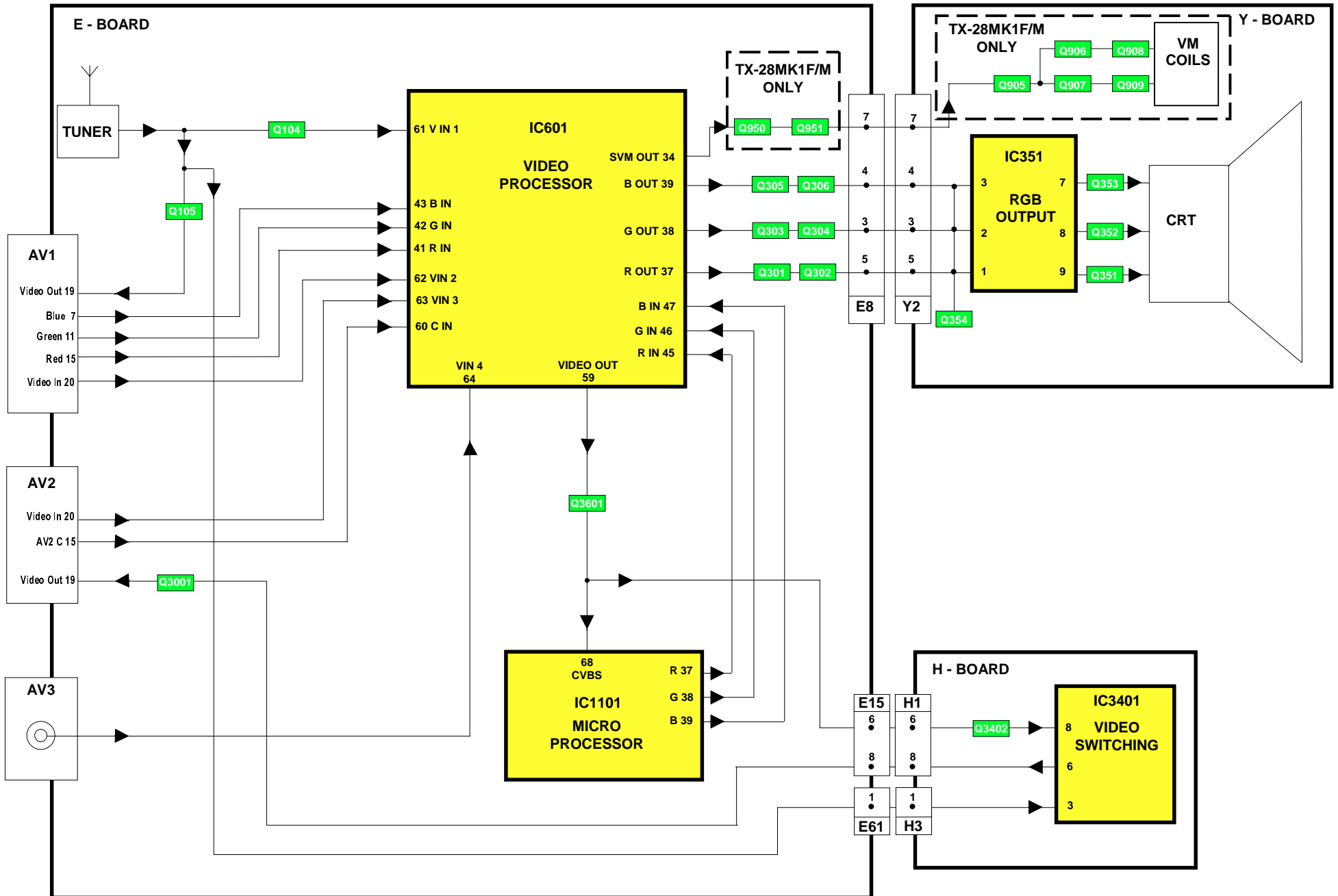
| Fonctions             |   | Réglages/Points particuliers   |
|-----------------------|---|--|
| Centrage Horizontal   | H-Pos<br>061                              | Optimiser les réglages.  |
| V-Pos.                | V-Pos<br>005                              | Optimiser les réglages.  |
| Amplitude Horizontale | H-Amp<br>055                              | Optimiser les réglages.  |
| Amplitude Verticale   | V. Amp<br>054                             | Optimiser les réglages.  |
| Amplitude E.O.        | E/W-Amp1<br>-128                          | Optimiser les réglages.  |
| Amplitude E.O.        | E/W-Amp2<br>006                           | Optimiser les réglages.  |
| Correction Trapèze    | Trapez-1<br>047                           | Optimiser les réglages.  |
| Correction Trapèze    | Trapez-2<br>-128                          | Optimiser les réglages.  |
| Linéarité Verticale   | V-Lin<br>006                              | Optimiser les réglages.  |
| Vertical Symmetry     | V-Sym<br>002                              | Optimiser les réglages.  |
| DVCO                  | DVCO<br>-005                              | Mettre une mire de barre couleur en PAL. Pour régler DVCO appuyer sur la touche "Bleu" et attendre que les couleurs défilent le plus lentement possible et appuyer sur "STR".  |
| Cut-off DC            | Cut-off<br>0171                           | Pour régler le cutoff mettre un oscilloscope sur la cathode "Bleu" et régler avec les touches "Jaune" et "Bleu" jusqu'à ce que le niveau de noir soit à $160V \pm 5V$ , mémoriser cette valeur en appuyant sur "STR". Enlever l'oscilloscope et sélectionner le réglage "Ug2" à l'écran et régler le potentiomètre "screen" du transfo THT pour que "OK" soit indiqué à l'écran. |
| Ug2 Test              | Ug2<br>055<br>O.K.                        |  |
| Highlight<br>Lowlight | High 0902 0777 0864<br>Low 0117 0132 0112 | Optimiser les réglages.  |
| Sub-Brightness        | Sub-Brightness<br>255                     | Optimiser les réglages.  |



# VIDEO BLOCK DIAGRAM

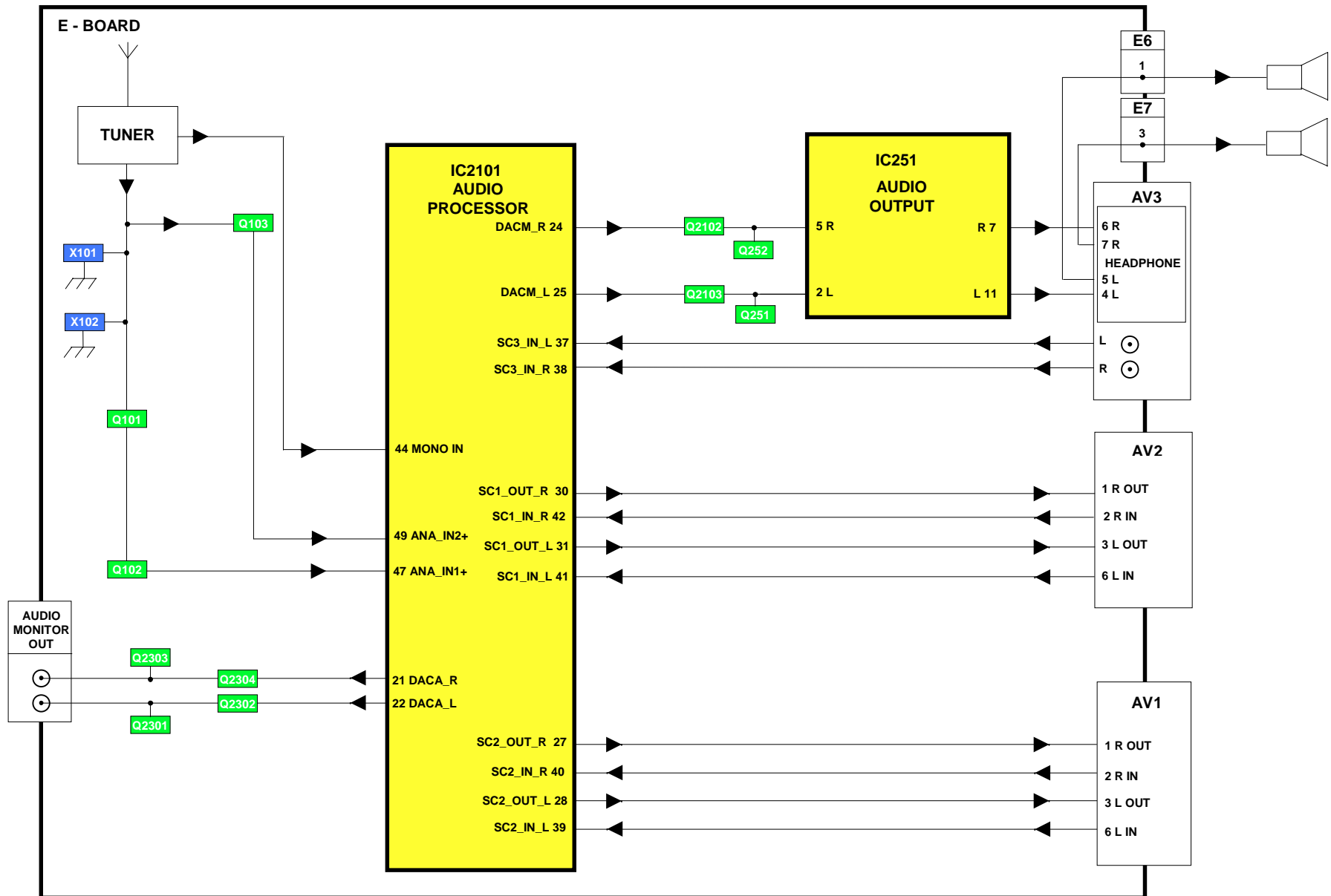
# SYNOPTIQUE VIDEO

10



# AUDIO BLOCK DIAGRAM

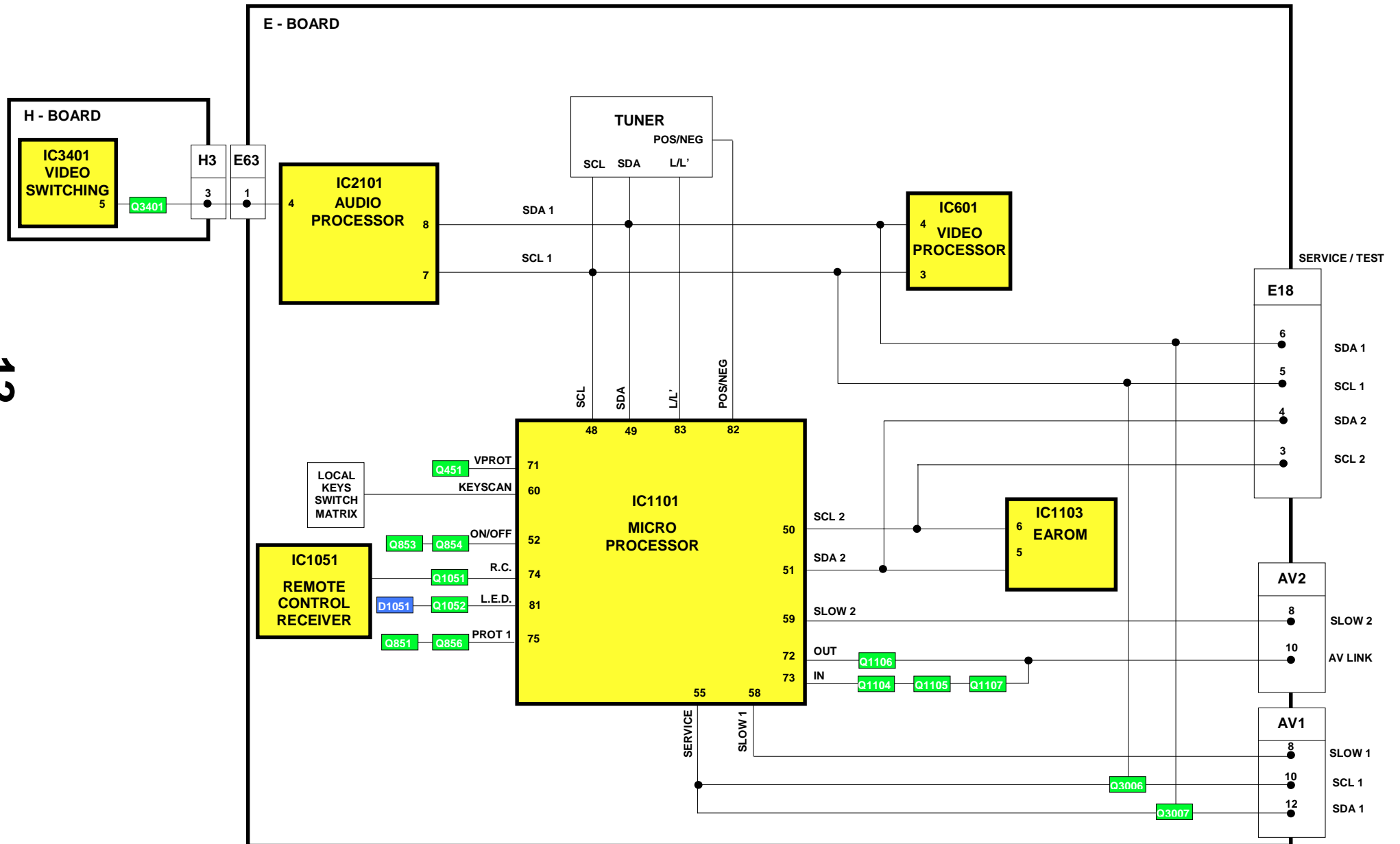
# SYNOPTIQUE AUDIO



# CONTROL BLOCK DIAGRAM

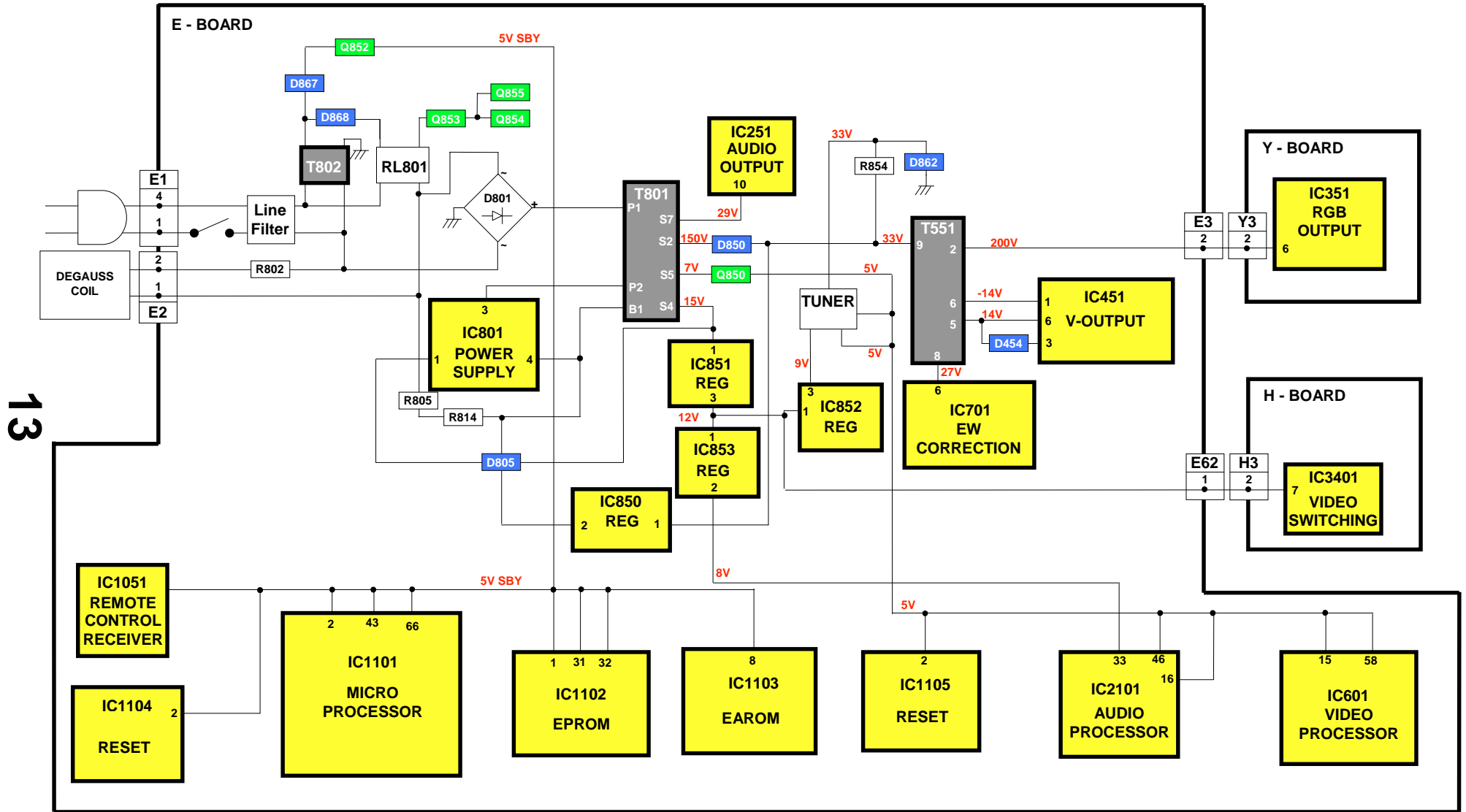
# SYNOPTIQUE DE COMMANDE

12



# POWER SUPPLY BLOCK DIAGRAM

# SYNOPTIQUE ALIMENTATION



13

## PARTS LOCATION

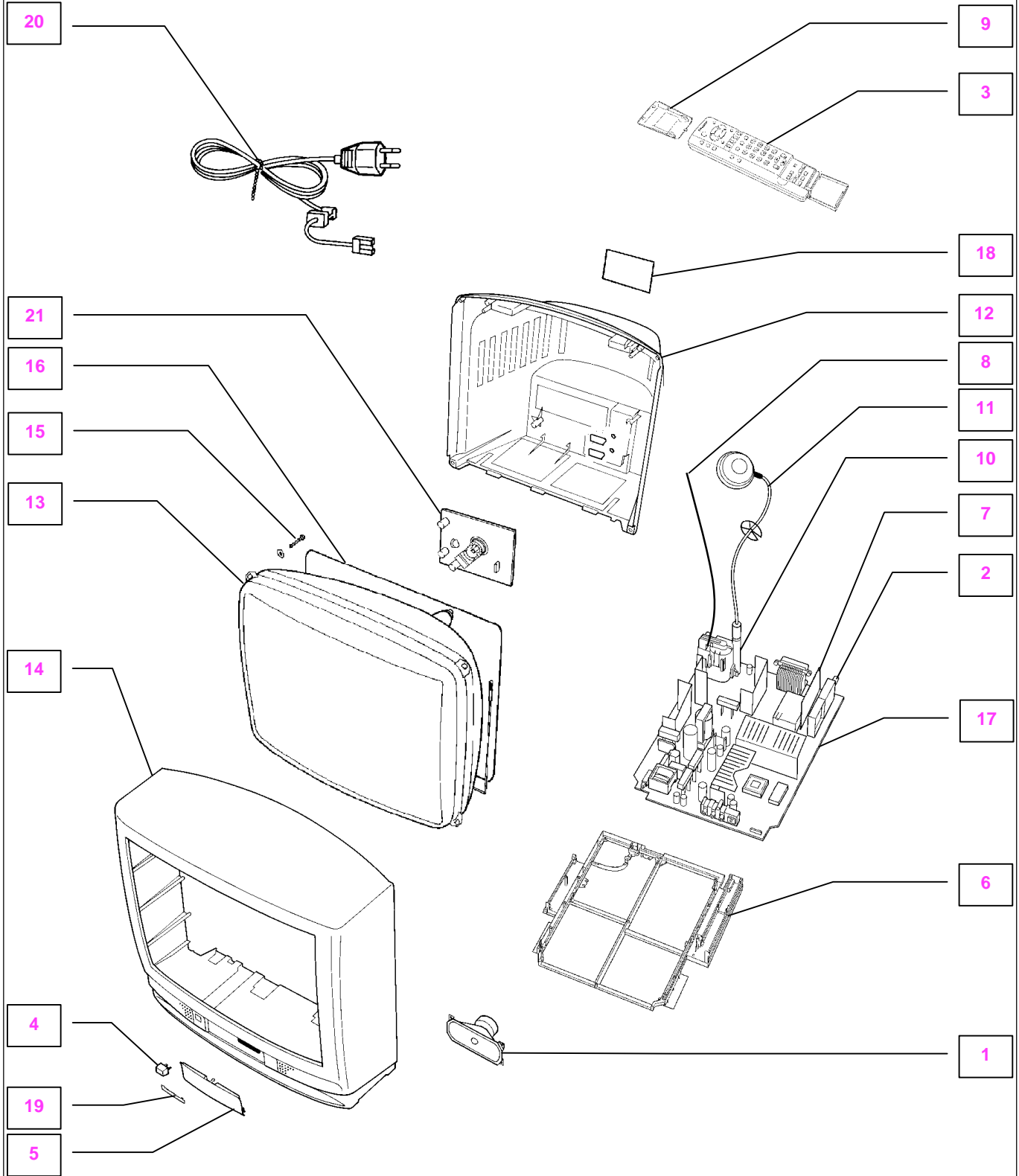
## EMPLACEMENT DES PIÈCES

**NOTE:**

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


**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

### 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   |
|---------------------------------|--------------|---|
| <b>COMMON PARTS</b>             |              |   |
| <b>MECHANICAL PARTS</b>         |              |   |
| 1                               | EASG12D531P2 | SPEAKER   |
| 2                               | ENG29504GR   | TUNER                |
| 3                               | EUR511200    | REMOTE CONTROL  |
| 4                               | TBX8E069     | POWER BUTTON  |
| 5                               | TKP8E1289    | LID DOOR  |
| 6                               | TMX8E023     | CHASSIS FRAME   |
| 7                               | TNP8EH002AA  | H P.C.B.             |
| 8                               | TXFJTF01BMTG | FOCUS LEAD ASSY   |
| 9                               | UR51EC904A   | BATTERY COVER (REMOTE)  |
| 10                              | ZTFL94002A   | F.B.T.               |
| <b>MISCELLANEOUS COMPONENTS</b> |              |   |
|                                 | F9-4-220     | RELAY   |
|                                 | PLCC-84-T    | 84 PIN IC SOCKET  |
|                                 | TBM8E1920-1  | PRE-SET LABEL   |
|                                 | TEK6935      | LID SWITCH  |
|                                 | TKP8E1179    | LED TUBE  |
|                                 | TKP8E1290    | LED VISOR   |
|                                 | TMW8E020-1   | LED HOLDER  |
|                                 | UM-3DJ-2P    | BATTERY PACK  |
| RL801                           | TSE1885-1    | RELAY   |
| R802                            | 232266296706 | THERMISTOR         |
| S351                            | 0330550049   | C.R.T. SOCKET   |
| <b>INSTRUCTION BOOKS</b>        |              |   |
|                                 | TQB8E2708AJ  | GERMAN/PORTUGUESE  |
|                                 | TQB8E2708BD  | DUTCH/FRENCH       |
|                                 | TQB8E2708CE  | ITALIAN/SPANISH    |
|                                 | TQB8E2708FG  | SWEDISH/NORG.      |
|                                 | TQB8E2708HK  | SUOMI/DANISH       |
| <b>I.C.s</b>                    |              |   |
| IC251                           | LA4282       | AUDIO OUTPUT  |
| IC351                           | TDA6103Q-N3  | R.G.B. OUTPUT   |
| IC451                           | LA7845N      | VERTICAL OUTPUT   |
| IC601                           | VDP3112BPPC2 | VIDEO PROCESSOR   |
| IC701                           | TEA2031A     | E/W CORRECTION  |
| IC801                           | STRF6654LF51 | POWER SUPPLY  |
| IC851                           | L78M12MRB    | 12V REGULATOR   |
| IC852                           | L78M05MRB    | 5V REGULATOR  |
| IC853                           | AN78L08TA    | 8V REGULATOR  |
| IC1051                          | RPM6937-V4   | LED RECEIVER  |
| IC1101                          | SDA5450C48   | MICRO PROCESSOR   |
| IC1102                          | 27C2001-F29  | EPROM *   |
| IC1104                          | MN1381-R(TA) | RESET   |
| IC1105                          | MN1381-T(TA) | RESET   |
| IC2101                          | MSP3410DPOB4 | AUDIO PROCESSOR   |

## LISTE DES PIÈCES DE RECHANGE

### Remarque importante por la sécurité

Les éléments portant la indication  possèdent 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, veuillez toujours ajouter le numero de modele complet a votre commande

| Cct Ref       | Parts Number | Description  |
|---------------|--------------|--|
| IC3401        | TEA2114      | VIDEO SWITCHING  |
| <b>FUSES</b>  |              |  |
| F802          | 19181-3.15   | FUSE  |
| F8021         | EYF52BC      | FUSE HOLDER  |
| F8022         | EYF52BC      | FUSE HOLDER  |
| <b>DIODES</b> |              |  |
| D101          | MA3020TX     | DIODE  |
| D102          | MA3020TX     | DIODE  |
| D251          | MA2180BLFS   | DIODE  |
| D253          | MA700TA5     | DIODE  |
| D254          | MA700TA5     | DIODE  |
| D354          | 1SR124-4AT82 | DIODE  |
| D355          | 1SR124-4AT82 | DIODE  |
| D356          | 1SR124-4AT82 | DIODE  |
| D357          | MA165TA5     | DIODE  |
| D358          | MA165TA5     | DIODE  |
| D359          | MA165TA5     | DIODE  |
| D360          | MTZJT-7715A  | DIODE  |
| D361          | MA165TA5     | DIODE  |
| D362          | MA165TA5     | DIODE  |
| D363          | MA165TA5     | DIODE  |
| D364          | MA165TA5     | DIODE  |
| D453          | MA165TA5     | DIODE  |
| D454          | ERA15-02V3   | DIODE  |
| D456          | MTZJT-775.6C | DIODE  |
| D457          | MA165TA5     | DIODE  |
| D501          | MA165TA5     | DIODE  |
| D502          | 1SR124-4AT82 | DIODE  |
| D511          | MA4047       | DIODE  |
| D551          | ERD07-15L7   | DIODE  |
| D552          | RU3LFA1      | DIODE  |
| D553          | 1SR124-4AT82 | DIODE  |
| D554          | 1SR124-4AT82 | DIODE  |
| D556          | MA165TA5     | DIODE  |
| D557          | EU02         | DIODE  |
| D558          | 1SR124-4AT82 | DIODE  |
| D601          | DAN217T146   | DIODE  |
| D603          | DAN217T146   | DIODE  |
| D605          | DAN212KT146  | DIODE  |
| D606          | MA165TA5     | DIODE  |
| D607          | MA4051       | DIODE  |
| D609          | 1SR124-4AT82 | DIODE  |
| D615          | STZ6.2NT146  | DIODE  |
| D616          | STZ6.2NT146  | DIODE  |
| D701          | MA165TA5     | DIODE  |
| D702          | MTZJT-775.1C | DIODE  |
| D704          | MA29TA5      | DIODE  |
| D705          | MTZJT-775.6C | DIODE  |
| D801          | RBV4-08      | DIODE  |
| D803          | 1SR124-4AT82 | DIODE  |
| D804          | 1SR124-4AT82 | DIODE  |
| D805          | TLP621GR-LF2 | PHOTO COUPLER  |



| Cct Ref            | Parts Number | Description |
|--------------------|--------------|-------------|
| D806               | 1SR124-4AT82 | DIODE       |
| D850               | RU4BLF-L1    | DIODE       |
| D851               | MTZJT776.2B  | DIODE       |
| D852               | MA165TA5     | DIODE       |
| D853               | MA2180BLFS   | DIODE       |
| D854               | TVSRU2AMLFA5 | DIODE       |
| D855               | FML22SLF610  | DIODE       |
| D856               | RU4AMLF-M1   | DIODE       |
| D857               | MTZJT-775.1C | DIODE       |
| D858               | MA165TA5     | DIODE       |
| D859               | MA165TA5     | DIODE       |
| D860               | MA165TA5     | DIODE       |
| D861               | MA165TA5     | DIODE       |
| D862               | MTZJT-7736A  | DIODE       |
| D863               | MA165TA5     | DIODE       |
| D864               | MA165TA5     | DIODE       |
| D865               | MA165TA5     | DIODE       |
| D866               | MA165TA5     | DIODE       |
| D867               | EK06-V0      | DIODE       |
| D868               | 1N4150T-77   | DIODE       |
| D869               | 1N4150T-77   | DIODE       |
| D870               | MA165TA5     | DIODE       |
| D871               | 1N4150T-77   | DIODE       |
| D873               | MTZJT-775.6C | DIODE       |
| D874               | 1SR124-4AT82 | DIODE       |
| D875               | BZX79A75A26A | DIODE       |
| D1051              | SLR56UR3FLF  | LED         |
| D1101              | MA165TA5     | DIODE       |
| D1102              | MA165TA5     | DIODE       |
| D2101              | MA723TA5     | DIODE       |
| D2102              | MA723TA5     | DIODE       |
| D2103              | MA723TA5     | DIODE       |
| D2104              | MA723TA5     | DIODE       |
| D2105              | MTZJT-778.2C | DIODE       |
| D2303              | MA723TA5     | DIODE       |
| D2304              | MA723TA5     | DIODE       |
| D3101              | MTZJT-778.2C | DIODE       |
| D3102              | MTZJT-778.2C | DIODE       |
| <b>TRANSISTORS</b> |              |             |
| Q101               | BC847B       | TRANSISTOR  |
| Q102               | BC847B       | TRANSISTOR  |
| Q103               | BC847B       | TRANSISTOR  |
| Q104               | BC847B       | TRANSISTOR  |
| Q105               | BC847B       | TRANSISTOR  |
| Q251               | 2SD1328STX   | TRANSISTOR  |
| Q252               | 2SD1328STX   | TRANSISTOR  |
| Q253               | BC847B       | TRANSISTOR  |
| Q254               | BC847B       | TRANSISTOR  |
| Q301               | BC847B       | TRANSISTOR  |
| Q302               | FMY4T148     | TRANSISTOR  |
| Q303               | BC847B       | TRANSISTOR  |
| Q304               | FMY4T148     | TRANSISTOR  |
| Q305               | BC847B       | TRANSISTOR  |
| Q306               | FMY4T148     | TRANSISTOR  |
| Q354               | BC857B       | TRANSISTOR  |
| Q451               | BC857B       | TRANSISTOR  |
| Q503               | 2SD2398-M2   | TRANSISTOR  |
| Q552               | 2SC1473-RN   | TRANSISTOR  |
| Q701               | BC857B       | TRANSISTOR  |
| Q850               | 2SD1273PLB   | TRANSISTOR  |
| Q851               | BC857B       | TRANSISTOR  |
| Q852               | 2SC1383-S    | TRANSISTOR  |
| Q853               | BC847B       | TRANSISTOR  |
| Q854               | BC847B       | TRANSISTOR  |
| Q855               | BC847B       | TRANSISTOR  |
| Q856               | BC847B       | TRANSISTOR  |

| Cct Ref             | Parts Number | Description |
|---------------------|--------------|-------------|
| Q857                | 2SA1018QTA   | TRANSISTOR  |
| Q950                | BC847B       | TRANSISTOR  |
| Q951                | FMY4T148     | TRANSISTOR  |
| Q1051               | BC847B       | TRANSISTOR  |
| Q1052               | BC847B       | TRANSISTOR  |
| Q1101               | BC847B       | TRANSISTOR  |
| Q1104               | BC847B       | TRANSISTOR  |
| Q1105               | BC847B       | TRANSISTOR  |
| Q1106               | BC847B       | TRANSISTOR  |
| Q1107               | BC847B       | TRANSISTOR  |
| Q1108               | BC847B       | TRANSISTOR  |
| Q2101               | BC857B       | TRANSISTOR  |
| Q2102               | BC857B       | TRANSISTOR  |
| Q2103               | BC857B       | TRANSISTOR  |
| Q2301               | BC847B       | TRANSISTOR  |
| Q2302               | BC857B       | TRANSISTOR  |
| Q2303               | BC847B       | TRANSISTOR  |
| Q2304               | BC857B       | TRANSISTOR  |
| Q3001               | BC847B       | TRANSISTOR  |
| Q3006               | BC847B       | TRANSISTOR  |
| Q3007               | BC847B       | TRANSISTOR  |
| Q3401               | BC847B       | TRANSISTOR  |
| Q3402               | BC847B       | TRANSISTOR  |
| Q3601               | BC847B       | TRANSISTOR  |
| <b>TRANSFORMERS</b> |              |             |
| T501                | ETH19Y173AY  | TRANSFORMER |
| T802                | ETP35KAN619U | TRANSFORMER |
| <b>COILS</b>        |              |             |
| J208                | EXCELSA35V   | COIL        |
| L101                | TLT100K991R  | COIL        |
| L102                | TLT068K991R  | COIL        |
| L103                | EXCELSA35B   | COIL        |
| L104                | TLTACT4R7K   | COIL        |
| L105                | TLTACTR47K   | COIL        |
| L106                | TLTACT100K   | COIL        |
| L107                | TLTACT6R8K   | COIL        |
| L114                | ELJFC2R2KF   | COIL        |
| L115                | ELJFC2R2KF   | COIL        |
| L301                | TLTACT4R7K   | COIL        |
| L302                | TLTACT4R7K   | COIL        |
| L451                | EXCELSA35T   | COIL        |
| L501                | EXCELSA35T   | COIL        |
| L553                | ELC08D682E   | COIL        |
| L601                | TLTACT4R7K   | COIL        |
| L602                | TLTACT4R7K   | COIL        |
| L603                | TLTACT4R7K   | COIL        |
| L604                | TLTACT4R7K   | COIL        |
| L606                | TLTACT4R7K   | COIL        |
| L607                | ELJFC2R2KF   | COIL        |
| L701                | ELC10D822E   | COIL        |
| L850                | EXCELSA35T   | COIL        |
| L851                | EXCELSA35T   | COIL        |
| L852                | ELEIE470KA   | COIL        |
| L853                | EXCELSA35T   | COIL        |
| L854                | EXCELSA35T   | COIL        |
| L855                | EXCELSA35T   | COIL        |
| L856                | EXCELSA39V   | COIL        |
| L1103               | TLTACT100K   | COIL        |
| L1104               | EXCELSA35T   | COIL        |
| L1105               | ELJFC2R2KF   | COIL        |
| L2101               | TLTACT100K   | COIL        |
| L2103               | EXCELSA35T   | COIL        |
| L2104               | TLTACT4R7K   | COIL        |
| L3001               | ELEMV1R5MA   | COIL        |
| L3002               | ELEMV1R5MA   | COIL        |
| L3003               | ELEMV1R5MA   | COIL        |

| Cct Ref          | Parts Number | Description           |
|------------------|--------------|-----------------------|
| L3004            | ELEMV1R5MA   | COIL                  |
| L3005            | ELEBR2R2KA   | COIL                  |
| L3006            | ELEBR2R2KA   | COIL                  |
| L3007            | TLTACT2R2K   | COIL                  |
| L3101            | ELEBT6R8KA   | COIL                  |
| L3102            | ELEBT6R8KA   | COIL                  |
| L3401            | ELESN2R2KA   | COIL                  |
| L3402            | ELESN2R2KA   | COIL                  |
| <b>FILTERS</b>   |              |                       |
| X101             | EFCT6504BF   | FILTER                |
| X102             | EFCT7004BF   | CERAMIC FILTER        |
| <b>CRYSTALS</b>  |              |                       |
| X601             | 4730007267   | CRYSTAL               |
| X1101            | TSSA121      | CRYSTAL               |
| X2101            | 4730007158   | CRYSTAL               |
| <b>RESISTORS</b> |              |                       |
| JA1              | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA2              | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA5              | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA8              | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA9              | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA10             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA11             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA12             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA13             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA14             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA15             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA16             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA17             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA18             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA21             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA22             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA23             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA25             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA26             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA27             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA28             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA29             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA30             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA31             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA32             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA33             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA34             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA35             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA36             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA37             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA38             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA39             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA40             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA43             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA44             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA45             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA46             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA47             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA48             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA49             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA50             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA51             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA52             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA53             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA54             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA55             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA56             | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω |
| JA57             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |
| JA58             | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω  |

| Cct Ref | Parts Number | Description            |
|---------|--------------|------------------------|
| JA59    | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JA60    | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JA61    | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JSE3    | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE4    | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE5    | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE10   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE12   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE17   | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JSE25   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE26   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE33   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE35   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE43   | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| JSE45   | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JSE46   | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JSE47   | ERJ8GEY0R00  | S.M.CARB .125W 5% 0 Ω  |
| JSH001  | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω   |
| R101    | ERJ6GEYJ331  | S.M.CARB 0.1W 5% 330 Ω |
| R102    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R103    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |
| R104    | ERJ6GEYJ331  | S.M.CARB 0.1W 5% 330 Ω |
| R105    | ERJ6GEYJ101  | S.M.CARB 0.1W 5% 100 Ω |
| R106    | ERJ6GEYJ680  | S.M.CARB 0.1W 5% 68 Ω  |
| R107    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |
| R108    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R109    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R110    | ERJ6GEYJ471  | S.M.CARB 0.1W 5% 470 Ω |
| R111    | ERJ6GEYJ393  | S.M.CARB 0.1W 5% 39K Ω |
| R112    | ERJ6GEYJ101  | S.M.CARB 0.1W 5% 100 Ω |
| R113    | ERJ6GEYJ223  | S.M.CARB 0.1W 5% 22K Ω |
| R116    | ERJ6GEYJ562  | S.M.CARB 0.1W 5% 5K6 Ω |
| R117    | ERJ6GEYJ222  | S.M.CARB 0.1W 5% 2K2 Ω |
| R118    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |
| R121    | ERJ6GEYJ471  | S.M.CARB 0.1W 5% 470 Ω |
| R251    | ERJ6GEYJ101  | S.M.CARB 0.1W 5% 100 Ω |
| R252    | ERJ6GEYJ242  | S.M.CARB 0.1W 5% 2K4 Ω |
| R253    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R254    | ERJ6GEYJ101  | S.M.CARB 0.1W 5% 100 Ω |
| R255    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R256    | ERJ6GEYJ471  | S.M.CARB 0.1W 5% 470 Ω |
| R257    | ERJ6GEYJ270  | S.M.CARB 0.1W 5% 27 Ω  |
| R258    | ERJ6GEYJ242  | S.M.CARB 0.1W 5% 2K4 Ω |
| R259    | ERJ6GEYJ270  | S.M.CARB 0.1W 5% 27 Ω  |
| R260    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R261    | ERJ6GEYJ471  | S.M.CARB 0.1W 5% 470 Ω |
| R262    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R263    | ERJ6GEYJ473  | S.M.CARB 0.1W 5% 47K Ω |
| R264    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R265    | ERD25TJ2R2   | CARBON 0.25W 5% 2R2 Ω  |
| R266    | ERD25TJ2R2   | CARBON 0.25W 5% 2R2 Ω  |
| R267    | ERF7ZK4R7    | WOUND 7W 10% 4R7 Ω △   |
| R268    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R269    | ERQ14AJ101   | METAL 0.25W 5% 100 Ω △ |
| R271    | ERJ6GEYJ103  | S.M.CARB 0.1W 5% 10K Ω |
| R272    | ERF7ZK4R7    | WOUND 7W 10% 4R7 Ω △   |
| R301    | ERJ6GEYJ391  | S.M.CARB 0.1W 5% 390 Ω |
| R302    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |
| R303    | ERJ6GEYJ750  | S.M.CARB 0.1W 5% 75 Ω  |
| R304    | ERJ6GEYJ331  | S.M.CARB 0.1W 5% 330 Ω |
| R305    | ERJ6GEYJ391  | S.M.CARB 0.1W 5% 390 Ω |
| R306    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |
| R307    | ERJ6GEYJ750  | S.M.CARB 0.1W 5% 75 Ω  |
| R308    | ERJ6GEYJ331  | S.M.CARB 0.1W 5% 330 Ω |
| R309    | ERJ6GEYJ391  | S.M.CARB 0.1W 5% 390 Ω |
| R310    | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω  |

| Cct Ref | Parts Number | Description |       |    |         |
|---------|--------------|-------------|-------|----|---------|
| R311    | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5% | 75 Ω    |
| R312    | ERJ6GEYJ331  | S.M.CARB    | 0.1W  | 5% | 330 Ω   |
| R351    | ERJ6GEYJ302  | S.M.CARB    | 0.1W  | 5% | 3K Ω    |
| R352    | ERJ6GEYJ302  | S.M.CARB    | 0.1W  | 5% | 3K Ω    |
| R353    | ERJ6GEYJ302  | S.M.CARB    | 0.1W  | 5% | 3K Ω    |
| R354    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5% | 1K Ω    |
| R355    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5% | 1K Ω    |
| R356    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5% | 1K Ω    |
| R366    | ERDS1TJ152   | CARBON      | 0.5W  | 5% | 1K5 Ω   |
| R367    | ERDS1TJ152   | CARBON      | 0.5W  | 5% | 1K5 Ω   |
| R368    | ERDS1TJ152   | CARBON      | 0.5W  | 5% | 1K5 Ω   |
| R372    | ERQ12AJ121   | FUSIBLE     | 0.5W  | 5% | 120 Ω △ |
| R373    | ERJ6GEYJ220  | S.M.CARB    | 0.1W  | 5% | 22 Ω    |
| R374    | ERD25TJ274   | CARBON      | 0.25W | 5% | 270K Ω  |
| R375    | ERJ6GEYJ684  | S.M.CARB    | 0.1W  | 5% | 680K Ω  |
| R376    | ERJ6GEYJ183  | S.M.CARB    | 0.1W  | 5% | 18K Ω   |
| R381    | ERJ6GEYJ473  | S.M.CARB    | 0.1W  | 5% | 47K Ω   |
| R451    | ERJ6GEYJ223  | S.M.CARB    | 0.1W  | 5% | 22K Ω   |
| R452    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5% | 0 Ω     |
| R453    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5% | 0 Ω     |
| R454    | ERJ6GEYJ752  | S.M.CARB    | 0.1W  | 5% | 7K5 Ω   |
| R455    | ERJ6GEYJ222  | S.M.CARB    | 0.1W  | 5% | 2K2 Ω   |
| R456    | ERJ6GEYJ104  | S.M.CARB    | 0.1W  | 5% | 100K Ω  |
| R457    | ERJ6GEYJ223  | S.M.CARB    | 0.1W  | 5% | 22K Ω   |
| R458    | ERD25TJ1R5   | CARBON      | 0.25W | 5% | 1R5 Ω   |
| R459    | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5% | 100 Ω   |
| R460    | ERDS1TJ331   | CARBON      | 0.5W  | 5% | 330 Ω   |
| R463    | ERD25TJ222   | CARBON      | 0.25W | 5% | 2K2 Ω   |
| R464    | ERJ6GEYJ182  | S.M.CARB    | 0.1W  | 5% | 1K8 Ω   |
| R465    | ERJ6GEYJ681  | S.M.CARB    | 0.1W  | 5% | 680 Ω   |
| R502    | ERJ6GEYJ511  | S.M.CARB    | 0.1W  | 5% | 510 Ω   |
| R506    | ERD25TJ560   | CARBON      | 0.25W | 5% | 56 Ω    |
| R509    | ERDS1TJ152   | CARBON      | 0.5W  | 5% | 1K5 Ω   |
| R510    | ERDS1FJ152   | CARBON      | 0.5W  | 5% | 1K5 Ω △ |
| R553    | ERG1SJ152    | METAL       | 1W    | 5% | 1K5 Ω   |
| R554    | ERG1SJ101    | METAL       | 1W    | 5% | 100 Ω   |
| R558    | ERDS1TJ124   | CARBON      | 0.5W  | 5% | 120K Ω  |
| R559    | ERQ12HHR33   | METAL       | 0.5W  | 5% | R33 Ω △ |
| R560    | ERJ6GEYJ274  | S.M.CARB    | 0.1W  | 5% | 270K Ω  |
| R561    | ERJ6GEYJ273  | S.M.CARB    | 0.1W  | 5% | 27K Ω   |
| R563    | ERJ6GEYJ474  | S.M.CARB    | 0.1W  | 5% | 470K Ω  |
| R564    | ERJ6GEYJ623  | S.M.CARB    | 0.1W  | 5% | 62K Ω   |
| R566    | ERJ6GEYJ563  | S.M.CARB    | 0.1W  | 5% | 56K Ω   |
| R601    | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5% | 100 Ω   |
| R602    | ERJ6GEYJ821  | S.M.CARB    | 0.1W  | 5% | 820 Ω   |
| R603    | ERJ8GEYJ103  | S.M.CARB    | .125W | 5% | 10K Ω   |
| R604    | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5% | 100 Ω   |
| R605    | ERD25TJ331   | CARBON      | 0.25W | 5% | 330 Ω   |
| R606    | ERD25TJ331   | CARBON      | 0.25W | 5% | 330 Ω   |
| R607    | ERJ6GEYJ821  | S.M.CARB    | 0.1W  | 5% | 820 Ω   |
| R608    | ERJ6GEYJ271  | S.M.CARB    | 0.1W  | 5% | 270 Ω   |
| R609    | ERJ6GEYJ122  | S.M.CARB    | 0.1W  | 5% | 1K2 Ω   |
| R610    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5% | 0 Ω     |
| R611    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5% | 10K Ω   |
| R612    | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5% | 100 Ω   |
| R613    | ERJ6GEYJ152  | S.M.CARB    | 0.1W  | 5% | 1K5 Ω   |
| R622    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5% | 0 Ω     |
| R636    | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5% | 75 Ω    |
| R645    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5% | 10K Ω   |
| R647    | ERJ6GEYJ472  | S.M.CARB    | 0.1W  | 5% | 4K7 Ω   |
| R648    | ERJ6GEYJ152  | S.M.CARB    | 0.1W  | 5% | 1K5 Ω   |
| R650    | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5% | 75 Ω    |
| R651    | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5% | 75 Ω    |
| R652    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5% | 1K Ω    |
| R654    | ERJ6GEYJ622  | S.M.CARB    | 0.1W  | 5% | 6K2 Ω   |
| R655    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5% | 10K Ω   |

| Cct Ref | Parts Number | Description |       |     |         |
|---------|--------------|-------------|-------|-----|---------|
| R658    | ERJ6GEYJ153  | S.M.CARB    | 0.1W  | 5%  | 15K Ω   |
| R659    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5%  | 0 Ω     |
| R660    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5%  | 0 Ω     |
| R701    | ERQ12AJ101   | FUSIBLE     | 0.5W  | 5%  | 100 Ω △ |
| R703    | ERG2FJ821    | METAL       | 2W    | 5%  | 820 Ω △ |
| R704    | ERJ6GEYJ563  | S.M.CARB    | 0.1W  | 5%  | 56K Ω   |
| R705    | ERJ6GEYJ104  | S.M.CARB    | 0.1W  | 5%  | 100K Ω  |
| R706    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5%  | 10K Ω   |
| R707    | ERJ6GEYJ391  | S.M.CARB    | 0.1W  | 5%  | 390 Ω   |
| R708    | ERJ6GEYJ393  | S.M.CARB    | 0.1W  | 5%  | 39K Ω   |
| R709    | ERJ6GEYJ393  | S.M.CARB    | 0.1W  | 5%  | 39K Ω   |
| R710    | ERJ6GEYJ273  | S.M.CARB    | 0.1W  | 5%  | 27K Ω   |
| R711    | ERG1SJ101    | METAL       | 1W    | 5%  | 100 Ω   |
| R712    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5%  | 1K Ω    |
| R803    | ERC12ZGK335D | SOLID       | 0.5W  | 10% | 3M3 Ω   |
| R805    | ERD25TJ473   | CARBON      | 0.25W | 5%  | 47K Ω   |
| R806    | ERD25TJ100   | CARBON      | 0.25W | 5%  | 10 Ω    |
| R807    | ERD25TJ332   | CARBON      | 0.25W | 5%  | 3K3 Ω   |
| R809    | ERD25TJ681   | CARBON      | 0.25W | 5%  | 680 Ω   |
| R811    | ERW2PKR33    | WOUND       | 2W    | 20% | R33 Ω △ |
| R812    | ERD75TAJ825  | CARBON      | 0.75W | 5%  | 8M2 Ω △ |
| R813    | ERF7ZK2R7    | WOUND       | 7W    | 20% | 2R7 Ω △ |
| R814    | ERD25TJ473   | CARBON      | 0.25W | 5%  | 47K Ω   |
| R815    | ERD25TJ222   | CARBON      | 0.25W | 5%  | 2K2 Ω   |
| R850    | ERD25TJ122   | CARBON      | 0.25W | 5%  | 1K2 Ω   |
| R852    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5%  | 0 Ω     |
| R853    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5%  | 1K Ω    |
| R854    | ERG2FJ223    | METAL       | 2W    | 5%  | 22K Ω △ |
| R855    | ERJ6GEYJ752  | S.M.CARB    | 0.1W  | 5%  | 7K5 Ω   |
| R856    | ERJ6GEYJ752  | S.M.CARB    | 0.1W  | 5%  | 7K5 Ω   |
| R857    | ERJ6GEYJ752  | S.M.CARB    | 0.1W  | 5%  | 7K5 Ω   |
| R858    | ERJ6GEYJ752  | S.M.CARB    | 0.1W  | 5%  | 7K5 Ω   |
| R859    | ERJ6GEYJ753  | S.M.CARB    | 0.1W  | 5%  | 75K Ω   |
| R860    | ERQ1CJP2R2   | FUSIBLE     | 1W    | 10% | 2R2 Ω △ |
| R861    | ERD25TJ221   | CARBON      | 0.25W | 5%  | 220 Ω   |
| R862    | ERD25TJ272   | CARBON      | 0.25W | 5%  | 2K7 Ω   |
| R863    | ERDS1TJ560   | CARBON      | 0.5W  | 5%  | 56 Ω    |
| R864    | ERDS1TJ680   | CARBON      | 0.5W  | 5%  | 68 Ω    |
| R865    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5%  | 0 Ω     |
| R867    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5%  | 10K Ω   |
| R868    | ERJ6GEYJ223  | S.M.CARB    | 0.1W  | 5%  | 22K Ω   |
| R869    | ERJ6GEY0R00  | S.M.CARB    | 0.1W  | 5%  | 0 Ω     |
| R870    | ERJ6GEYJ272  | S.M.CARB    | 0.1W  | 5%  | 2K7 Ω   |
| R871    | ERJ6GEYJ153  | S.M.CARB    | 0.1W  | 5%  | 15K Ω   |
| R872    | ERG1SJ183    | METAL       | 1W    | 5%  | 18K Ω   |
| R873    | ERG1SJ223    | METAL       | 1W    | 5%  | 22K Ω   |
| R874    | ERD25TJ104   | CARBON      | 0.25W | 5%  | 100K Ω  |
| R876    | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5%  | 10K Ω   |
| R877    | ERW2PKR56    | WOUND       | 2W    | 10% | R56 Ω △ |
| R878    | ERJ6GEYJ473  | S.M.CARB    | 0.1W  | 5%  | 47K Ω   |
| R882    | ERG2FJ330H   | METAL       | 2W    | 5%  | 33 Ω △  |
| R951    | ERJ6GEYJ391  | S.M.CARB    | 0.1W  | 5%  | 390 Ω   |
| R952    | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5%  | 1K Ω    |
| R953    | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5%  | 75 Ω    |
| R954    | ERJ6GEYJ391  | S.M.CARB    | 0.1W  | 5%  | 390 Ω   |
| R1051   | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5%  | 1K Ω    |
| R1052   | ERJ6GEYJ271  | S.M.CARB    | 0.1W  | 5%  | 270 Ω   |
| R1053   | ERJ6GEYJ103  | S.M.CARB    | 0.1W  | 5%  | 10K Ω   |
| R1054   | ERJ6GEYJ750  | S.M.CARB    | 0.1W  | 5%  | 75 Ω    |
| R1101   | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5%  | 100 Ω   |
| R1102   | ERJ6GEYJ102  | S.M.CARB    | 0.1W  | 5%  | 1K Ω    |
| R1103   | ERJ6GEYJ331  | S.M.CARB    | 0.1W  | 5%  | 330 Ω   |
| R1104   | ERJ6GEYJ331  | S.M.CARB    | 0.1W  | 5%  | 330 Ω   |
| R1105   | ERJ6GEYJ101  | S.M.CARB    | 0.1W  | 5%  | 100 Ω   |
| R1106   | ERJ6GEYJ104  | S.M.CARB    | 0.1W  | 5%  | 100K Ω  |
| R1107   | ERJ6GEYJ104  | S.M.CARB    | 0.1W  | 5%  | 100K Ω  |

| Cct Ref | Parts Number | Description |      |    |        |
|---------|--------------|-------------|------|----|--------|
| R1108   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω   |
| R1109   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1110   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1111   | ERJ6GEYJ473  | S.M.CARB    | 0.1W | 5% | 47K Ω  |
| R1112   | ERJ6GEYJ473  | S.M.CARB    | 0.1W | 5% | 47K Ω  |
| R1113   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1115   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω  |
| R1116   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1117   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1118   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1119   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1120   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1121   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1123   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1125   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1126   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1127   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1128   | ERJ6GEYJ682  | S.M.CARB    | 0.1W | 5% | 6K8 Ω  |
| R1129   | ERJ6GEYJ682  | S.M.CARB    | 0.1W | 5% | 6K8 Ω  |
| R1130   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω  |
| R1131   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω  |
| R1132   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1133   | ERJ6GEYJ273  | S.M.CARB    | 0.1W | 5% | 27K Ω  |
| R1136   | ERJ6GEYJ823  | S.M.CARB    | 0.1W | 5% | 82K Ω  |
| R1137   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω    |
| R1138   | ERJ6GEYJ474  | S.M.CARB    | 0.1W | 5% | 470K Ω |
| R1139   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω  |
| R1140   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω  |
| R1141   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω  |
| R1142   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1145   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1146   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1147   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1148   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1149   | ERJ6GEYJ223  | S.M.CARB    | 0.1W | 5% | 22K Ω  |
| R1151   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1152   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1154   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1155   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1156   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1157   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω  |
| R1158   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω    |
| R1159   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω    |
| R1160   | ERJ6GEYJ223  | S.M.CARB    | 0.1W | 5% | 22K Ω  |
| R1161   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω  |
| R1162   | ERJ6GEYJ222  | S.M.CARB    | 0.1W | 5% | 2K2 Ω  |
| R1163   | ERJ6GEYJ222  | S.M.CARB    | 0.1W | 5% | 2K2 Ω  |
| R1164   | ERJ6GEYJ332  | S.M.CARB    | 0.1W | 5% | 3K3 Ω  |
| R1165   | ERJ6GEYJ512  | S.M.CARB    | 0.1W | 5% | 5K1 Ω  |
| R1166   | ERJ6GEYJ912  | S.M.CARB    | 0.1W | 5% | 9K1 Ω  |
| R1167   | ERJ6GEYJ100  | S.M.CARB    | 0.1W | 5% | 10 Ω   |
| R1168   | ERJ6GEYJ473  | S.M.CARB    | 0.1W | 5% | 47K Ω  |
| R1169   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R1170   | ERJ6GEYJ273  | S.M.CARB    | 0.1W | 5% | 27K Ω  |
| R1171   | ERJ6GEYJ224  | S.M.CARB    | 0.1W | 5% | 220K Ω |
| R1172   | ERJ6GEYJ223  | S.M.CARB    | 0.1W | 5% | 22K Ω  |
| R1173   | ERJ6GEYJ104  | S.M.CARB    | 0.1W | 5% | 100K Ω |
| R1174   | ERJ6GEYJ221  | S.M.CARB    | 0.1W | 5% | 220 Ω  |
| R1175   | ERJ6GEYJ225  | S.M.CARB    | 0.1W | 5% | 2M2 Ω  |
| R1177   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R1178   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω    |
| R2101   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω  |
| R2102   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R2103   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R2104   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R2105   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |

| Cct Ref | Parts Number | Description |      |    |                    |
|---------|--------------|-------------|------|----|--------------------|
| R2106   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2107   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2108   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2109   | ERJ6GEYJ183  | S.M.CARB    | 0.1W | 5% | 18K Ω              |
| R2110   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω                |
| R2111   | ERJ6GEYJ221  | S.M.CARB    | 0.1W | 5% | 220 Ω              |
| R2112   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω               |
| R2113   | ERJ6GEYJ562  | S.M.CARB    | 0.1W | 5% | 5K6 Ω              |
| R2114   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2115   | ERJ6GEYJ222  | S.M.CARB    | 0.1W | 5% | 2K2 Ω              |
| R2116   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2117   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2118   | ERJ6GEYJ222  | S.M.CARB    | 0.1W | 5% | 2K2 Ω              |
| R2119   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2120   | ERJ6GEYJ222  | S.M.CARB    | 0.1W | 5% | 2K2 Ω              |
| R2302   | ERJ6GEYJ104  | S.M.CARB    | 0.1W | 5% | 100K Ω             |
| R2303   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2304   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R2305   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω               |
| R2306   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω              |
| R2308   | ERJ6GEYJ104  | S.M.CARB    | 0.1W | 5% | 100K Ω             |
| R2309   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R2310   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R2311   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω               |
| R2312   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω              |
| R3001   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3002   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R3003   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3004   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |
| R3005   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3006   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R3007   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3008   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |
| R3009   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3010   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3011   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3012   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3013   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3014   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R3015   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3016   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |
| R3017   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3018   | ERJ6GEYJ471  | S.M.CARB    | 0.1W | 5% | 470 Ω              |
| R3019   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3020   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |
| R3021   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3022   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω               |
| R3023   | ERJ6GEYJ123  | S.M.CARB    | 0.1W | 5% | 12K Ω              |
| R3024   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω              |
| R3025   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3026   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3044   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3046   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3047   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3048   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω              |
| R3049   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3050   | ERJ6GEYJ103  | S.M.CARB    | 0.1W | 5% | 10K Ω              |
| R3057   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω               |
| R3101   | ERDS1TJ151   | CARBON      | 0.5W | 5% | 150 Ω              |
| R3102   | ERDS1TJ151   | CARBON      | 0.5W | 5% | 150 Ω              |
| R3103   | ERG2FJ221    | METAL       | 2W   | 5% | 220 Ω <sup>△</sup> |
| R3104   | ERG2FJ221    | METAL       | 2W   | 5% | 220 Ω <sup>△</sup> |
| R3105   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3106   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω              |
| R3107   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |
| R3108   | ERJ6GEYJ153  | S.M.CARB    | 0.1W | 5% | 15K Ω              |

| Cct Ref | Parts Number | Description |      |    |        |
|---------|--------------|-------------|------|----|--------|
| R3402   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω   |
| R3403   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3404   | ERJ6GEYJ242  | S.M.CARB    | 0.1W | 5% | 2K4 Ω  |
| R3405   | ERJ6GEYJ104  | S.M.CARB    | 0.1W | 5% | 100K Ω |
| R3406   | ERJ6GEYJ301  | S.M.CARB    | 0.1W | 5% | 300 Ω  |
| R3407   | ERJ6GEYJ123  | S.M.CARB    | 0.1W | 5% | 12K Ω  |
| R3408   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R3409   | ERJ6GEYJ750  | S.M.CARB    | 0.1W | 5% | 75 Ω   |
| R3601   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3602   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3603   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3604   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3605   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3606   | ERJ6GEYJ101  | S.M.CARB    | 0.1W | 5% | 100 Ω  |
| R3607   | ERJ6GEYJ472  | S.M.CARB    | 0.1W | 5% | 4K7 Ω  |
| R3608   | ERJ6GEYJ752  | S.M.CARB    | 0.1W | 5% | 7K5 Ω  |
| R3609   | ERJ6GEY0R00  | S.M.CARB    | 0.1W | 5% | 0 Ω    |
| R3610   | ERJ6GEYJ102  | S.M.CARB    | 0.1W | 5% | 1K Ω   |

**CAPACITORS**

|      |              |          |      |       |  |
|------|--------------|----------|------|-------|--|
| C101 | ECJ2VB1C104K | ELECT    | 350V | 100nF |  |
| C102 | ECJ2VB1C104K | ELECT    | 350V | 100nF |  |
| C103 | ECJ2VF1H104Z | ELECT    | 350V | 100nF |  |
| C105 | ECUV1H560JCX | S.M. CAP | 50V  | 56pF  |  |
| C106 | ECUV1H560JCX | S.M. CAP | 50V  | 56pF  |  |
| C107 | ECJ2VF1H104Z | ELECT    | 350V | 100nF |  |
| C108 | ECA1CM470GB  | ELECT    | 16V  | 47μF  |  |
| C109 | ECUV1H102JCX | S.M. CAP | 50V  | 1nF   |  |
| C110 | ECUV1H103ZFX | S.M. CAP | 50V  | 10nF  |  |
| C111 | ECA1HMR33GB  | ELECT    | 50V  | 10nF  |  |
| C114 | ECJ2VF1H104Z | ELECT    | 350V | 100nF |  |
| C115 | ECUV1H103ZFX | S.M. CAP | 50V  | 10nF  |  |
| C116 | ECA1CM221GB  | ELECT    | 16V  | 220μF |  |
| C120 | ECA1CM221GB  | ELECT    | 16V  | 220μF |  |
| C121 | ECUV1H103KBX | S.M. CAP | 50V  | 10nF  |  |
| C124 | ECUV1H220JCX | S.M. CAP | 50V  | 22pF  |  |
| C125 | ECUV1H100DCX | S.M. CAP | 50V  | 10pF  |  |
| C133 | ECUV1H104KBX | S.M. CAP | 50V  | 100nF |  |
| C134 | ECUV1H104KBX | S.M. CAP | 50V  | 100nF |  |
| C135 | ECUV1H104KBW | S.M. CAP | 50V  | 100nF |  |
| C136 | ECUV1H104KBX | S.M. CAP | 50V  | 100nF |  |
| C138 | ECUV1H104KBX | S.M. CAP | 50V  | 100nF |  |
| C251 | ECA1EM100GB  | ELECT    | 25V  | 0.1μF |  |
| C252 | ECUV1H223KBX | S.M. CAP | 50V  | 22nF  |  |
| C253 | ECA1HM4R7GB  | ELECT    | 50V  | 4.7μF |  |
| C254 | ECQM1H184J   | FILM     | 50V  | 4.7μF |  |
| C255 | ECA1EM101GB  | ELECT    | 25V  | 100μF |  |
| C256 | ECUV1H223KBX | S.M. CAP | 50V  | 22nF  |  |
| C257 | ECA1HM4R7GB  | ELECT    | 50V  | 4.7μF |  |
| C258 | ECA1EM100GB  | ELECT    | 25V  | 0.1μF |  |
| C259 | ECQM1H184J   | FILM     | 50V  | 0.1μF |  |
| C260 | ECA1VM102GB  | ELECT    | 35V  | 1nF   |  |
| C261 | ECA1VM102GB  | ELECT    | 35V  | 1nF   |  |
| C262 | ECQM1H474J   | FILM     | 50V  | 470nF |  |
| C263 | ECA1HM010GB  | ELECT    | 50V  | 1μF   |  |
| C264 | ECA1HHG222E  | ELECT    | 50V  | 1μF   |  |
| C265 | ECQM1H474J   | FILM     | 50V  | 470nF |  |
| C266 | ECA1HM010GB  | ELECT    | 50V  | 1μF   |  |
| C267 | ECJ2VB1H104K | ELECT    | 350V | 100nF |  |
| C268 | ECJ2VB1H104K | ELECT    | 350V | 100nF |  |
| C270 | ECJ2VB1H104K | ELECT    | 350V | 100nF |  |
| C301 | ECJ2VB1C104K | ELECT    | 350V | 100nF |  |
| C302 | ECJ2VB1C104K | ELECT    | 350V | 100nF |  |
| C303 | ECJ2VB1C104K | ELECT    | 350V | 100nF |  |
| C304 | ECA1CM100GB  | ELECT    | 16V  | 10μF  |  |
| C354 | ECQM2104KZ   | FILM     | 250V | 100nF |  |
| C355 | ECUV1H471JCX | S.M. CAP | 50V  | 470pF |  |

| Cct Ref | Parts Number | Description |       |       |   |
|---------|--------------|-------------|-------|-------|---|
| C356    | ECUV1H471JCX | S.M. CAP    | 50V   | 470pF |   |
| C357    | ECUV1H471JCX | S.M. CAP    | 50V   | 470pF |   |
| C358    | ECQM1H224J   | FILM        | 50V   | 220nF |   |
| C360    | ECKC3D152J   | CERAMIC     | 2KV   | 1.5nF | ▲ |
| C361    | ECA1HMR47GB  | ELECT       | 50V   | 1.5nF |   |
| C363    | ECA1VM471GB  | ELECT       | 35V   | 470μF |   |
| C451    | ECUV1H102JX  | S.M. CAP    | 50V   | 1nF   |   |
| C453    | ECUV1H152KBX | S.M. CAP    | 50V   | 1.5pF |   |
| C454    | ECUV1H223KBM | S.M. CAP    | 50V   | 22nF  |   |
| C455    | ECA1HM100GB  | ELECT       | 50V   | 10μF  |   |
| C456    | ECA1HHG221B  | ELECT       | 50V   | 220μF |   |
| C458    | ECQB1222JF3  | FILM        | 100V  | 2.2nF |   |
| C459    | 222236516154 | FILM        | 160V  | 150nF |   |
| C461    | ECCR2H270J   | CERAMIC     | 500V  | 27pF  |   |
| C508    | ECQV1H105JZ  | FILM        | 50V   | 1μF   |   |
| C509    | ECA1VM470B   | ELECT       | 35V   | 47μF  |   |
| C510    | ECUV1H104KBX | S.M. CAP    | 50V   | 100nF |   |
| C511    | ECQM2683JZ   | FILM        | 250V  | 68nF  |   |
| C552    | ECWH15H102JN | FILM        | 1500V | 1nF   |   |
| C557    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | ▲ |
| C558    | ECA1HHG471E  | ELECT       | 50V   | 470μF |   |
| C560    | ECA2GHG2R2B  | ELECT       | 400V  | 470μF |   |
| C561    | ECA1EHG102B  | ELECT       | 25V   | 470μF |   |
| C562    | ECKC2H101J   | CERAMIC     | 500V  | 100pF | ▲ |
| C563    | ECA2EHG220B  | ELECT       | 250V  | 20μF  |   |
| C564    | ECEA2AU2R2   | ELECT       | 100V  | 2.2μF |   |
| C565    | ECQP1H273J   | FILM        | 100V  | 2.2μF |   |
| C566    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | ▲ |
| C567    | ECA1EHG102B  | ELECT       | 25V   | 470pF |   |
| C568    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | ▲ |
| C569    | ECKC2H102J   | CERAMIC     | 500V  | 1nF   | ▲ |
| C601    | ECUV1H104KBX | S.M. CAP    | 50V   | 100nF |   |
| C602    | ECA1HM101GB  | ELECT       | 50V   | 100μF |   |
| C603    | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |   |
| C604    | ECJ2VF1H223Z | ELECT       | 350V  | 22nF  |   |
| C605    | ECA1HM101GB  | ELECT       | 50V   | 100μF |   |
| C606    | ECA1HM3R3GB  | ELECT       | 50V   | 3.3μF |   |
| C607    | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C608    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C609    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C610    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C611    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C612    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C613    | ECUV1H153KBX | S.M. CAP    | 50V   | 15nF  |   |
| C614    | ECUV1H050CCX | S.M. CAP    | 50V   | 50pF  |   |
| C615    | ECUV1H050CCX | S.M. CAP    | 50V   | 50pF  |   |
| C616    | ECA1HM101GB  | ELECT       | 50V   | 100μF |   |
| C617    | ECUV1H223KBX | S.M. CAP    | 50V   | 22nF  |   |
| C618    | ECA1CM221GB  | ELECT       | 16V   | 220μF |   |
| C619    | ECJ2VB1H473K | ELECT       | 350V  | 47nF  |   |
| C620    | ECA1HM101GB  | ELECT       | 50V   | 100μF |   |
| C621    | ECJ2VB1C104K | ELECT       | 350V  | 100nF |   |
| C622    | ECUV1H683KBX | S.M. CAP    | 50V   | 68nF  |   |
| C623    | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |   |
| C624    | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |   |
| C625    | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |   |
| C626    | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |   |
| C627    | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |   |
| C628    | ECA1CM100GB  | ELECT       | 16V   | 10μF  |   |
| C629    | ECUV1H104KBX | S.M. CAP    | 50V   | 100nF |   |
| C630    | ECUV1H100DCX | S.M. CAP    | 50V   | 10pF  |   |
| C631    | ECUV1H683ZFX | S.M. CAP    | 50V   | 68nF  |   |
| C632    | ECUV1H270JCX | S.M. CAP    | 50V   | 27pF  |   |
| C633    | ECUV1H271JCX | S.M. CAP    | 50V   | 270pF |   |
| C634    | ECUV1H271JCX | S.M. CAP    | 50V   | 270pF |   |
| C635    | ECUV1H180JCX | S.M. CAP    | 50V   | 18pF  |   |

| Cct Ref | Parts Number | Description |       |       |   |
|---------|--------------|-------------|-------|-------|---|
| C636    | ECUV1H271JCX | S.M. CAP    | 50V   | 270pF |   |
| C637    | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |   |
| C638    | ECUV1H471JCX | S.M. CAP    | 50V   | 470pF |   |
| C639    | ECUV1H332KBM | S.M. CAP    | 50V   | 3.3nF |   |
| C701    | ECA1HHG101B  | ELECT       | 50V   | 100µF |   |
| C702    | ECUV1H103KBX | S.M. CAP    | 50V   | 10nF  |   |
| C703    | ECEA1HGE100  | ELECT       | 50V   | 10µF  |   |
| C704    | ECQB1H223K   | FILM        | 50V   | 22nF  |   |
| C705    | ECQB1H222J   | FILM        | 50V   | 2.2nF |   |
| C804    | 222233510224 | FILM        | 50V   | 220nF |   |
| C806    | ECKWNA101MBC | CERAMIC     | 400V  | 100µF |   |
| C807    | ECKC2H472J   | CERAMIC     | 500V  | 4.7nF | △ |
| C808    | ECKC2H472J   | CERAMIC     | 500V  | 4.7nF | △ |
| C809    | ECKC2H472J   | CERAMIC     | 500V  | 4.7nF | △ |
| C810    | ECKC2H472J   | CERAMIC     | 500V  | 4.7nF | △ |
| C811    | 43504A9187M0 | ELECT       | 400V  | 180µF |   |
| C814    | ECKC3D102J   | CERAMIC     | 2KV   | 1nF   | △ |
| C815    | ECKC1H471J   | CERAMIC     | 50V   | 470pF |   |
| C816    | ECA1EM101GB  | ELECT       | 25V   | 100µF |   |
| C817    | ECQE6104K    | FILM        | 600V  | 100nF | △ |
| C818    | ECKWNA332MEC | CERAMIC     | 250V  | 3.3nF |   |
| C819    | ECQB1H152K   | FILM        | 50V   | 1.5nF |   |
| C850    | ECKC3D471JB  | CERAMIC     | 2KV   | 470pF | △ |
| C851    | ECA2CM221E   | ELECT       | 160V  | 220µF |   |
| C852    | ECA2CHG101E  | ELECT       | 160V  | 100µF |   |
| C853    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | △ |
| C854    | ECA1EM102GB  | ELECT       | 25V   | 100µF |   |
| C855    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | △ |
| C856    | ECA1AHG222B  | ELECT       | 10V   | 470pF |   |
| C857    | ECKC2H471J   | CERAMIC     | 500V  | 470pF | △ |
| C858    | ECEA1HGE102  | ELECT       | 50V   | 470pF |   |
| C859    | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C860    | ECA1HM101GB  | ELECT       | 50V   | 100µF |   |
| C862    | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C863    | ECA1HM101GB  | ELECT       | 50V   | 100µF |   |
| C864    | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C865    | ECA1CM100GB  | ELECT       | 16V   | 10µF  |   |
| C866    | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C867    | ECA1CM100GB  | ELECT       | 16V   | 10µF  |   |
| C868    | ECA1CM100GB  | ELECT       | 16V   | 10µF  |   |
| C869    | ECA1EM101GB  | ELECT       | 25V   | 100µF |   |
| C870    | ECA1EM471GB  | ELECT       | 25V   | 470µF |   |
| C871    | ECA1CM102B   | ELECT       | 16V   | 470µF |   |
| C872    | ECA1CM471GB  | ELECT       | 16V   | 470µF |   |
| C873    | ECA1CM100GB  | ELECT       | 16V   | 10µF  |   |
| C875    | ECA2CM4R7B   | ELECT       | 160V  | 10µF  |   |
| C876    | ECA1AHG471E  | ELECT       | 10V   | 470pF |   |
| C950    | ECJ2VB1C104K | ELECT       | 350V  | 100nF |   |
| C1051   | ECUV1H103KBX | S.M. CAP    | 50V   | 10nF  |   |
| C1052   | ECA1HM101GB  | ELECT       | 50V   | 100µF |   |
| C1053   | ECUV1H331JCX | S.M. CAP    | 50V   | 330pF |   |
| C1101   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C1102   | ECA0JM101G   | ELECT       | 6.3V  | 100µF |   |
| C1103   | ECUV1H220JCX | S.M. CAP    | 50V   | 22pF  |   |
| C1104   | ECUV1H220JCX | S.M. CAP    | 50V   | 22pF  |   |
| C1105   | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |   |
| C1108   | ECJ2VB1H333K | ELECT       | 350V  | 33nF  |   |
| C1111   | ECA1CM100GB  | ELECT       | 16V   | 10µF  |   |
| C1112   | ECUV1H103KBX | S.M. CAP    | 50V   | 10nF  |   |
| C1115   | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |   |
| C1116   | ECUV1H472KBX | S.M. CAP    | 50V   | 4.7nF |   |
| C1117   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C1118   | ECUV1H103KBX | S.M. CAP    | 50V   | 10nF  |   |
| C1119   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |   |
| C1120   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |   |
| C1121   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |   |

| Cct Ref | Parts Number | Description |       |       |  |
|---------|--------------|-------------|-------|-------|--|
| C1123   | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |  |
| C1124   | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |  |
| C1125   | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |  |
| C1126   | ECUV1H101JCX | S.M. CAP    | 50V   | 100pF |  |
| C1127   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C1128   | ECUV1H223KBX | S.M. CAP    | 50V   | 22nF  |  |
| C1129   | ECUV1H270JCX | S.M. CAP    | 50V   | 27pF  |  |
| C2101   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2102   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2103   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2104   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2105   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2106   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2107   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2108   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2109   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2110   | ECUV1H102JCX | S.M. CAP    | 50V   | 1nF   |  |
| C2111   | ECA1CM100GB  | ELECT       | 16V   | 10µF  |  |
| C2112   | ECA1CM100GB  | ELECT       | 16V   | 10µF  |  |
| C2113   | ECA1HM3R3GB  | ELECT       | 50V   | 3.3µF |  |
| C2114   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |  |
| C2115   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2116   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2117   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2118   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2119   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2120   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2121   | ECA1CM100GB  | ELECT       | 16V   | 10µF  |  |
| C2122   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |  |
| C2123   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2124   | ECUV1H070DTX | S.M. CAP    | 50V   | 70pF  |  |
| C2125   | ECUV1H470JCX | S.M. CAP    | 50V   | 47pF  |  |
| C2126   | ECUV1H560JCX | S.M. CAP    | 50V   | 56pF  |  |
| C2127   | ECUV1H010CCX | S.M. CAP    | 50V   | 1pF   |  |
| C2128   | ECUV1H010CCX | S.M. CAP    | 50V   | 1pF   |  |
| C2129   | ECA1CM102B   | ELECT       | 16V   | 1pF   |  |
| C2130   | ECA1CM331B   | ELECT       | 16V   | 330µF |  |
| C2131   | ECUV1H103ZFX | S.M. CAP    | 50V   | 10nF  |  |
| C2132   | ECUV1H103ZFX | S.M. CAP    | 50V   | 10nF  |  |
| C2134   | ECUV1H103ZFX | S.M. CAP    | 50V   | 10nF  |  |
| C2135   | ECA1HM101GB  | ELECT       | 50V   | 100µF |  |
| C2136   | ECJ2VF1H104Z | ELECT       | 350V  | 100nF |  |
| C2137   | ECA1CM100GB  | ELECT       | 16V   | 10µF  |  |
| C2138   | ECUV1H471KBX | S.M. CAP    | 50V   | 470pF |  |
| C2139   | ECUV1H221JCX | S.M. CAP    | 50V   | 220pF |  |
| C2140   | ECA1HM101GB  | ELECT       | 50V   | 100µF |  |
| C2141   | ECUV1H152JCX | S.M. CAP    | 50V   | 1.5pF |  |
| C2301   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C2302   | ECA1CM470GB  | ELECT       | 16V   | 47µF  |  |
| C2303   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C2304   | ECA1CM470GB  | ELECT       | 16V   | 47µF  |  |
| C3001   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3002   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3003   | ECA1CM470GB  | ELECT       | 16V   | 47µF  |  |
| C3005   | ECUV1H561JCX | S.M. CAP    | 50V   | 560pF |  |
| C3006   | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |  |
| C3007   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3008   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3009   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3010   | ECA1CM470GB  | ELECT       | 16V   | 47µF  |  |
| C3012   | ECUV1H561JCX | S.M. CAP    | 50V   | 560pF |  |
| C3013   | ECJ3VB1C474K | ELECT       | 3.5KV | 470nF |  |
| C3014   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3015   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3016   | ECUV1H222JCX | S.M. CAP    | 50V   | 2.2nF |  |
| C3017   | ECA1CM470GB  | ELECT       | 16V   | 47µF  |  |

| Cct Ref                                  | Parts Number | Description          |       |       |
|--|--------------|----------------------|-------|-------|
| C3019                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3020                                    | ECJ3VB1C474K | ELECT                | 3.5KV | 470nF |
| C3021                                    | ECUV1H222JCX | S.M. CAP             | 50V   | 2.2nF |
| C3022                                    | ECUV1H222JCX | S.M. CAP             | 50V   | 2.2nF |
| C3023                                    | ECUV1H222JCX | S.M. CAP             | 50V   | 2.2nF |
| C3024                                    | ECA1CM470GB  | ELECT                | 16V   | 47µF  |
| C3026                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3027                                    | ECJ3VB1C474K | ELECT                | 3.5KV | 470nF |
| C3028                                    | ECUV1H222JCX | S.M. CAP             | 50V   | 2.2nF |
| C3029                                    | ECA1HM101GB  | ELECT                | 50V   | 100µF |
| C3032                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3033                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3034                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3035                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3101                                    | ECUV1H104KBX | S.M. CAP             | 50V   | 100nF |
| C3102                                    | ECUV1E104KBX | S.M. CAP             | 25V   | 100nF |
| C3103                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3104                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3105                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3106                                    | ECUV1H561JCX | S.M. CAP             | 50V   | 560pF |
| C3107                                    | ECA1HM470GB  | ELECT                | 50V   | 47µF  |
| C3108                                    | ECA1HM470GB  | ELECT                | 50V   | 47µF  |
| C3111                                    | ECUV1H222KBX | S.M. CAP             | 50V   | 2.2nF |
| C3112                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3401                                    | ECQM1H224J   | FILM                 | 50V   | 220nF |
| C3402                                    | ECUV1H101JCX | S.M. CAP             | 50V   | 100pF |
| C3403                                    | ECA1HM101GB  | ELECT                | 50V   | 100µF |
| C3404                                    | ECQM1H224J   | FILM                 | 50V   | 220nF |
| C3405                                    | ECUV1H180JCX | S.M. CAP             | 50V   | 18pF  |
| C3406                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3407                                    | ECUV1H271JCX | S.M. CAP             | 50V   | 270pF |
| C3408                                    | ECA1HM101GB  | ELECT                | 50V   | 100µF |
| C3601                                    | ECA1HM101GB  | ELECT                | 50V   | 100µF |
| JSE28                                    | ECUV1H104KBX | S.M. CAP             | 50V   | 100nF |
| <b>TERMINALS AND LINKS</b>               |              |                      |       |       |
| JK2301                                   | JPJ841101320 | RCA / HEADPHONE JACK |       |       |
| JK3001                                   | 0350808500   | SCART SOCKET         |       |       |
| JK3101                                   | TJB16673     | A.V. TERMINAL        |       |       |
| <b>SWITCHES</b>                          |              |                      |       |       |
| S801                                     | ESB92S11B    | SWITCH               |       | △     |
| S1201                                    | EVQ21405R    | SWITCH               |       |       |
| S1202                                    | EVQ21405R    | SWITCH               |       |       |
| S1203                                    | EVQ21405R    | SWITCH               |       |       |
| S1204                                    | EVQ21405R    | SWITCH               |       |       |
| S1205                                    | EVQ21405R    | SWITCH               |       |       |
| <b>DIFFERENCES FOR MODEL TX-21MK1F/M</b> |              |                      |       |       |
| <b>MECHANICAL PARTS</b>                  |              |                      |       |       |
| 11                                       | ZTUZAE450A   | ANODE LEAD           |       | △     |
| 12                                       | TKU8E00370   | BACK COVER           |       | △     |
| 13                                       | A51EER35X70  | C.R.T.               |       | △     |
| 14                                       | TKY8E400-1   | CABINET              |       | △     |
| 15                                       | VP15005-35   | CRT FIXING SCREW     |       | △     |
| 16                                       | TLK8E05143   | DEGAUSS COIL         |       | △     |
| 17                                       | TNP8EE009CJ  | E P.C.B.             |       | △     |
| 18                                       | TQF8E2785    | MODEL LABEL          |       | △     |
| 19                                       | TBM8E1928    | PANASONIC BADGE      |       | △     |
| 20                                       | TSX8E0028    | POWER CORD           |       | △     |
| 21                                       | TNP8EY013AD  | Y P.C.B.             |       | △     |
| <b>MISCELLANEOUS COMPONENTS</b>          |              |                      |       |       |
|  | TPC8E4674    | OUTER CARTON         |       |       |
|  | TPD8E606-1   | TOP CUSHION          |       |       |
|  | TPD8E607-1   | BOTTOM CUSHION       |       |       |

| Cct Ref                                  | Parts Number | Description      |          |         |
|--|--------------|------------------|----------|---------|
| <b>I.C.s</b>                             |              |                  |          |         |
| IC850                                    | SE130N       | ERROR AMPLIFIER  |          |         |
| IC1103                                   | XDG2-01AF    | EAROM *          |          |         |
| <b>TRANSISTORS</b>                       |              |                  |          |         |
| Q351                                     | 2SA1767      | TRANSISTOR       |          |         |
| Q352                                     | 2SA1767      | TRANSISTOR       |          |         |
| Q353                                     | 2SA1767      | TRANSISTOR       |          |         |
| Q551                                     | BU4508AXLB   | TRANSISTOR       |          |         |
| <b>TRANSFORMERS</b>                      |              |                  |          |         |
| T801                                     | ETS39AG1K7AD | TRANSFORMER      |          | △       |
| <b>COILS</b>                             |              |                  |          |         |
| L552                                     | ELH5L4104    | COIL             |          |         |
| <b>FILTERS</b>                           |              |                  |          |         |
| L804                                     | ELF19N008A   | LINE FILTER      |          |         |
| <b>RESISTORS</b>                         |              |                  |          |         |
|  | ERQ2ABJP2R7S | FUSIBLE          | 2W 5%    | 2R7 Ω   |
| R357                                     | ERDS1TJ104   | CARBON           | 0.5W 5%  | 100K Ω  |
| R358                                     | ERDS1TJ104   | CARBON           | 0.5W 5%  | 100K Ω  |
| R359                                     | ERDS1TJ104   | CARBON           | 0.5W 5%  | 100K Ω  |
| R363                                     | ERDS1TJ103   | CARBON           | 0.5W 5%  | 10K Ω   |
| R364                                     | ERDS1TJ103   | CARBON           | 0.5W 5%  | 10K Ω   |
| R365                                     | ERDS1TJ103   | CARBON           | 0.5W 5%  | 10K Ω   |
| R369                                     | ERD25TJ123   | CARBON           | 0.25W 5% | 12K Ω   |
| R370                                     | ERD25TJ272   | CARBON           | 0.25W 5% | 2K7 Ω   |
| R378                                     | ERJ6GEY0R00  | S.M.CARB         | 0.1W 5%  | 0 Ω     |
| R379                                     | ERJ6GEY0R00  | S.M.CARB         | 0.1W 5%  | 0 Ω     |
| R380                                     | ERJ6GEY0R00  | S.M.CARB         | 0.1W 5%  | 0 Ω     |
| R461                                     | ERW2PK1R8    | WOUND            | 2W 5%    | 1R8 Ω △ |
| R507                                     | ERG1SJ331    | METAL            | 1W 5%    | 330 Ω   |
| R702                                     | ERQ12HJ220   | METAL            | 0.5W 5%  | 22 Ω △  |
| R810                                     | ERW2PKR33    | WOUND            | 2W 20%   | R33 Ω △ |
| <b>CAPACITORS</b>                        |              |                  |          |         |
| C364                                     | ECUV1H103ZFX | S.M. CAP         | 50V      | 10nF    |
| C365                                     | ECA1CM100GB  | ELECT            | 16V      | 10µF    |
| C551                                     | ECKC3D271JB  | CERAMIC          | 2KV      | 10µF △  |
| C555                                     | ECWH15H822JN | FILM             | 1500V    | 8.2nF   |
| C556                                     | ECQF4123JZH  | FILM             | 400V     | 12nF △  |
| C559                                     | ECWF2474JBB  | FILM             | 500V     | 470nF △ |
| <b>DIFFERENCES FOR MODEL TX-28MK1F/M</b> |              |                  |          |         |
| <b>MECHANICAL PARTS</b>                  |              |                  |          |         |
| 11                                       | ZTUZAE550A   | ANODE LEAD       |          | △       |
| 12                                       | TKU8E00350   | BACK COVER       |          | △       |
| 13                                       | A66ECF50X42  | C.R.T.           |          | △       |
| 14                                       | TKY8E194-1   | CABINET          |          | △       |
| 15                                       | VP17005-32   | CRT FIXING SCREW |          | △       |
| 16                                       | TLK8E05140   | DEGAUSS COIL     |          | △       |
| 17                                       | TNP8EE009CU  | E P.C.B.         |          | △       |
| 18                                       | TQF8E2863    | MODEL LABEL      |          | △       |
| 19                                       | TBM8E1929    | PANASONIC BADGE  |          | △       |
| 20                                       | TSX8E0027    | POWER CORD       |          | △       |
| 21                                       | TNP8EY012AF  | Y P.C.B.         |          | △       |
| <b>MISCELLANEOUS COMPONENTS</b>          |              |                  |          |         |
|  | TPC8E4685    | OUTER CARTON     |          |         |
|  | TPD8E639     | TOP CUSHION      |          |         |
|  | TPD8E640     | BOTTOM CUSHION   |          |         |
| <b>I.C.s</b>                             |              |                  |          |         |
| IC850                                    | SE140N       | ERROR AMPLIFIER  |          |         |
| IC1103                                   | XDG2-01CF    | EAROM *          |          |         |
| <b>DIODES</b>                            |              |                  |          |         |
| D901                                     | MA165TA5     | DIODE            |          |         |

| Cct Ref             | Parts Number | Description                                    |
|---------------------|--------------|--|
| D902                | MA165TA5     | DIODE  |
| D904                | MA165TA5     | DIODE  |
| D905                | MA165TA5     | DIODE  |
| D906                | RLS72TE-11   | DIODE  |
| <b>TRANSISTORS</b>  |              |  |
|                     | 2SA1767      | TRANSISTOR                                     |
| Q351                | TYMQ0002     | TRANSISTOR                                     |
| Q352                | TYMQ0002     | TRANSISTOR                                     |
| Q353                | TYMQ0002     | TRANSISTOR                                     |
| Q551                | 2SD1577LB    | TRANSISTOR                                     |
| Q905                | BC847B       | TRANSISTOR                                     |
| Q906                | BC847B       | TRANSISTOR                                     |
| Q907                | BC857B       | TRANSISTOR                                     |
| Q908                | 2SA1535ARLB  | TRANSISTOR                                     |
| Q909                | 2SC3944ARLB  | TRANSISTOR                                     |
| <b>TRANSFORMERS</b> |              |  |
| T801                | TLP8E1006    | TRANSFORMER <span style="float:right">▲</span> |
| <b>COILS</b>        |              |  |
| L552                | ELH5L4105    | COIL   |
| L554                | ELC18B102L   | COIL   |
| L901                | EXCELSA24T   | COIL   |
| L902                | EXCELSA24T   | COIL   |
| <b>FILTERS</b>      |              |  |
| L804                | ELF18N010A   | LINE FILTER                                    |
| <b>RESISTORS</b>    |              |  |
| JA1                 | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω                           |
| JA2                 | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω                           |
| JA3                 | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω                           |
| R357                | ERDS1TJ114   | CARBON 0.5W 5% 110K Ω                          |
| R358                | ERDS1TJ114   | CARBON 0.5W 5% 110K Ω                          |
| R359                | ERDS1TJ114   | CARBON 0.5W 5% 110K Ω                          |
| R363                | ERD25TJ103   | CARBON 0.25W 5% 10K Ω                          |
| R364                | ERD25TJ103   | CARBON 0.25W 5% 10K Ω                          |
| R365                | ERD25TJ103   | CARBON 0.25W 5% 10K Ω                          |
| R369                | ERD25TJ472   | CARBON 0.25W 5% 4K7 Ω                          |
| R370                | ERJ6GEYJ102  | S.M.CARB 0.1W 5% 1K Ω                          |
| R377                | ERQ1ABJP5R1  | METAL 0.5W 5% 5R1 Ω ▲                          |
| R461                | ERW2PK1R2    | WOUND 2W 10% 1R2 Ω ▲                           |
| R507                | ERG1FJ101P   | METAL 1W 5% 100 Ω ▲                            |
| R702                | ERQ12HJ8R2   | FUSIBLE 0.5W 5% 8R2 Ω ▲                        |
| R810                | ERW2PKR27    | WOUND 2W 10% R27 Ω ▲                           |
| R913                | ERJ6GEYJ473  | S.M.CARB 0.1W 5% 47K Ω                         |
| R914                | ERJ6GEYJ822  | S.M.CARB 0.1W 5% 8K2 Ω                         |
| R915                | ERJ6GEYJ152  | S.M.CARB 0.1W 5% 1K5 Ω                         |
| R916                | ERJ6GEYJ391  | S.M.CARB 0.1W 5% 390 Ω                         |
| R919                | ERQ14AJW390  | FUSIBLE 0.25W 5% 39 Ω ▲                        |
| R920                | ERQ14AJW390  | FUSIBLE 0.25W 5% 39 Ω ▲                        |
| R921                | ERD25TJ471   | CARBON 0.25W 5% 470 Ω                          |
| R922                | ERD25TJ393   | CARBON 0.25W 5% 39K Ω                          |
| R923                | ERD25TJ393   | CARBON 0.25W 5% 39K Ω                          |
| R924                | ERDS1FJ390   | CARBON 0.5W 5% 39 Ω ▲                          |
| R925                | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω                           |
| R926                | ERJ6GEY0R00  | S.M.CARB 0.1W 5% 0 Ω                           |
| R927                | ERD25TJ471   | CARBON 0.25W 5% 470 Ω                          |
| R928                | ERD25TJ5R6   | CARBON 0.25W 5% 5R6 Ω                          |
| R929                | ERDS1FJ471   | CARBON 0.5W 5% 470 Ω ▲                         |
| R930                | ERD25TJ5R6   | CARBON 0.25W 5% 5R6 Ω                          |
| R931                | ERDS1FJ390   | CARBON 0.5W 5% 39 Ω ▲                          |
| R935                | ERQ14AJW3R9  | FUSIBLE 0.25W 5% 3R9 Ω ▲                       |
| R936                | ERQ1CJP331   | FUSIBLE 1W 5% 330 Ω ▲                          |
| <b>CAPACITORS</b>   |              |  |
| C364                | ECJ2VF1H103Z | ELECT 350V 10nF                                |
| C366                | ECA1CM100GB  | ELECT 16V 10μF                                 |
| C551                | ECKC3D152J   | CERAMIC 2KV 1.5nF ▲                            |

| Cct Ref | Parts Number | Description          |
|---------|--------------|----------------------|
| C554    | ECWF2H514J   | FILM 500V 510nF ▲    |
| C555    | ECWH15H103JN | FILM 1500V 10nF      |
| C556    | ECQM4333JC   | FILM 400V 33nF       |
| C559    | ECWF2H684J   | FILM 500V 680nF ▲    |
| C902    | ECA1VM101GB  | ELECT 35V 100μF      |
| C903    | ECUV1H472KBX | S.M. CAP 50V 4.7nF   |
| C904    | ECUV1H472KBX | S.M. CAP 50V 4.7nF   |
| C906    | ECUV1H471KBX | S.M. CAP 50V 470pF   |
| C908    | ECUV1H151JCX | S.M. CAP 50V 150pF   |
| C909    | ECKC2H472J   | CERAMIC 500V 4.7nF ▲ |
| C910    | ECKC2H472J   | CERAMIC 500V 4.7nF ▲ |
| C911    | ECUV1H151JCX | S.M. CAP 50V 150pF   |
| C912    | ECEA2CU100   | ELECT 160V 10μF      |
| C913    | ECA1HM101GB  | ELECT 50V 100μF      |
| C914    | ECA1HM101GB  | ELECT 50V 100μF      |
| C916    | ECEA2CGE100  | ELECT 160V 10μF      |




## SCHEMATIC DIAGRAMS FOR MODELS




TX-28MK1F/M / TX-21MK1F/M



(EURO-4 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

- RESISTOR**  
All resistors are carbon 1/4W resistor, unless marked otherwise.  
Unit of resistance is OHM ( $\Omega$ ) (k=1,000, M=1,000,000)
- CAPACITORS**  
All capacitors are ceramic 50V unless marked otherwise.  
Unit of capacitance is  $\mu$ F unless otherwise stated.
- COIL**  
Unit of inductance is  $\mu$ H, unless otherwise stated.
- Components marked "L" on the schematic diagram shows leadless parts.
- TEST POINT**  
 Test Point Position
- EARTH SYMBOL**  
 Chassis Earth (Cold)  Line Earth (Hot)
- VOLTAGE MEASUREMENT**  
Voltage is measured by a d.c. voltmeter.  
Measurement conditions are as follows:  
Power source                    a.c. 220V-240V, 50Hz  
Receiving Signal                Colour Bar signal (RF)  
All customer controls        Maximum position.

-  Indicates the Video signal path  
 Indicates the Audio signal path

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

### REMARKS


- The Power Supply 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 :-
  - Do not touch the hot part, or the hot and cold parts at the same time, as you are liable to a shock hazard.
  - Do not short circuit the hot and cold circuits as electrical components may be damaged.
  - 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.
  - Always disconnect the power plug before removing the chassis.

## SCHEMA TECHNIQUE POUR MODELE




TX-28MK1F/M / TX-21MK1F/M



(EURO-4 CHASSIS)

### REMARQUE IMPORTANTE POUR LA SÉCURITÉ

Les éléments portant la marque  possèdent des caractéristiques de sécurité spécialisées. Lors du remplacement de l'une quelconque de ces pièces n'utiliser que celles spécifiées par la fabricant.

### NOTA

- RESISTANCE**  
Toutes les résistances sont des résistance au carbone 1/4W, sauf indication contraire par les indications suivantes.  
L'unité de résistance est l'OHM ( $\Omega$ ) (k=1,000, M=1,000,000)
- CONDENSATEUR**  
Toutes les condensateurs sont des condensateurs céramique 50V, sauf indication contraire par les indications suivantes: L'unité de capacité est le  $\mu$ F, sauf indication contraire.
- BOBINE**  
L'unité d'inductance est le  $\mu$ H, sauf indication contraire.
- Les composants entourés de pointillés, sur le schéma, représentent des éléments non câblés.
- POINT D'ESSAI**  
 Position du point d'essai
- SYMBOL DE TERRE**  
 Terre du châssis (froid)  Terre de ligne (chaud)
- MESURE DE TENSION**  
La tension est mesurée avec un voltmètre c.c.  
Les conditions de mesure sont les suivantes:  
Source d'alimentation        c.a. 220V-240V, 50Hz  
Signal de réception            Signal barre couleur (RF)  
Toutes les commandes utilisateur Position maximum.

-  Vidéo  
 Audio

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

### REMARQUE

- Le circuit d'alimentation contient une zone de qui utilise une alimentaion 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.
  - Ne pas toucher la partie chaude ou en même temps les parties chaud et froide. Cela présente un risque de décharge électrique.
  - Ne pas court-circuiter les circuits chaud et froid car un fusible peut sauter et des pièces se casser.
  - 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.
  - Toujours débrancher la fiche d'alimentation avant de déposer le châssis.

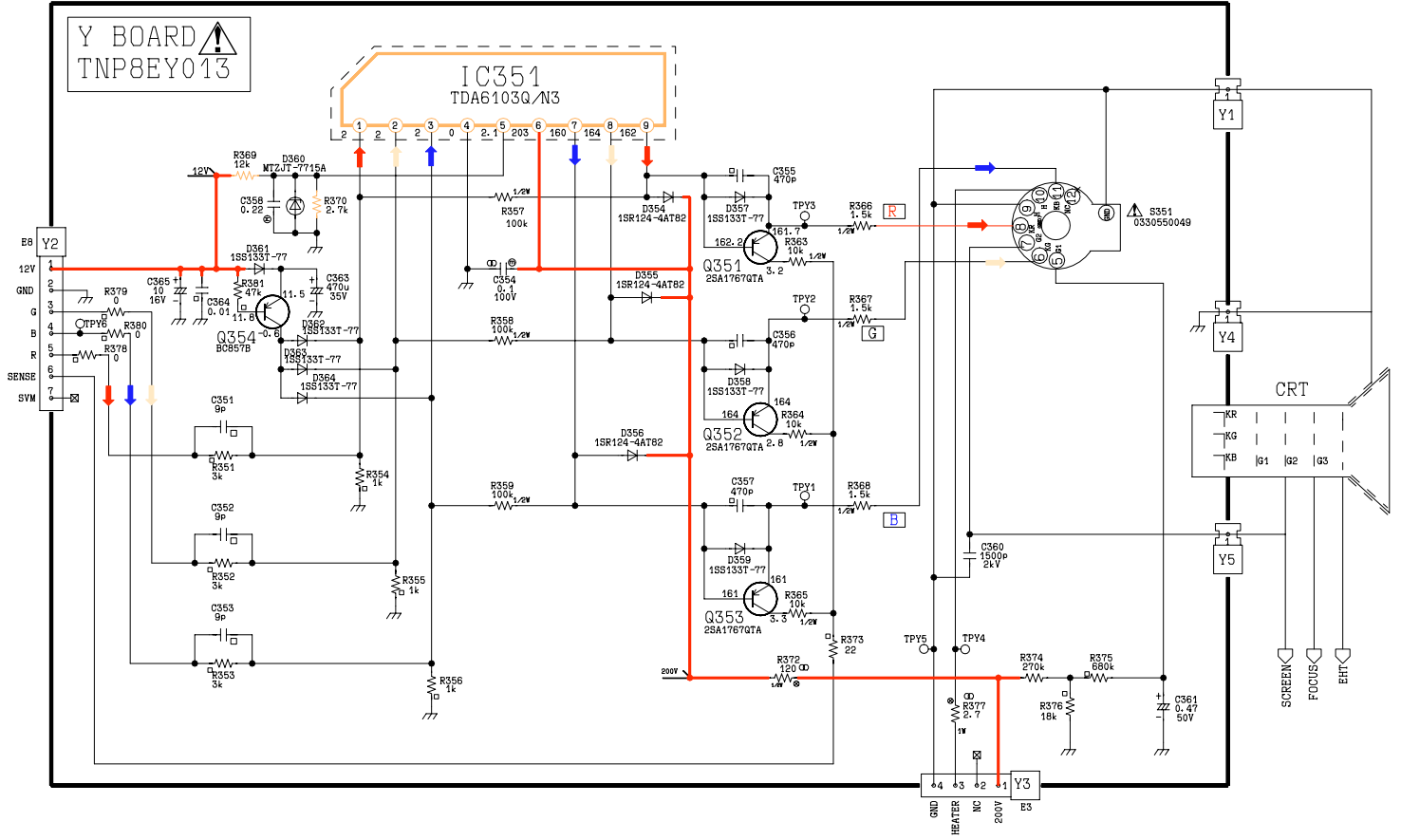




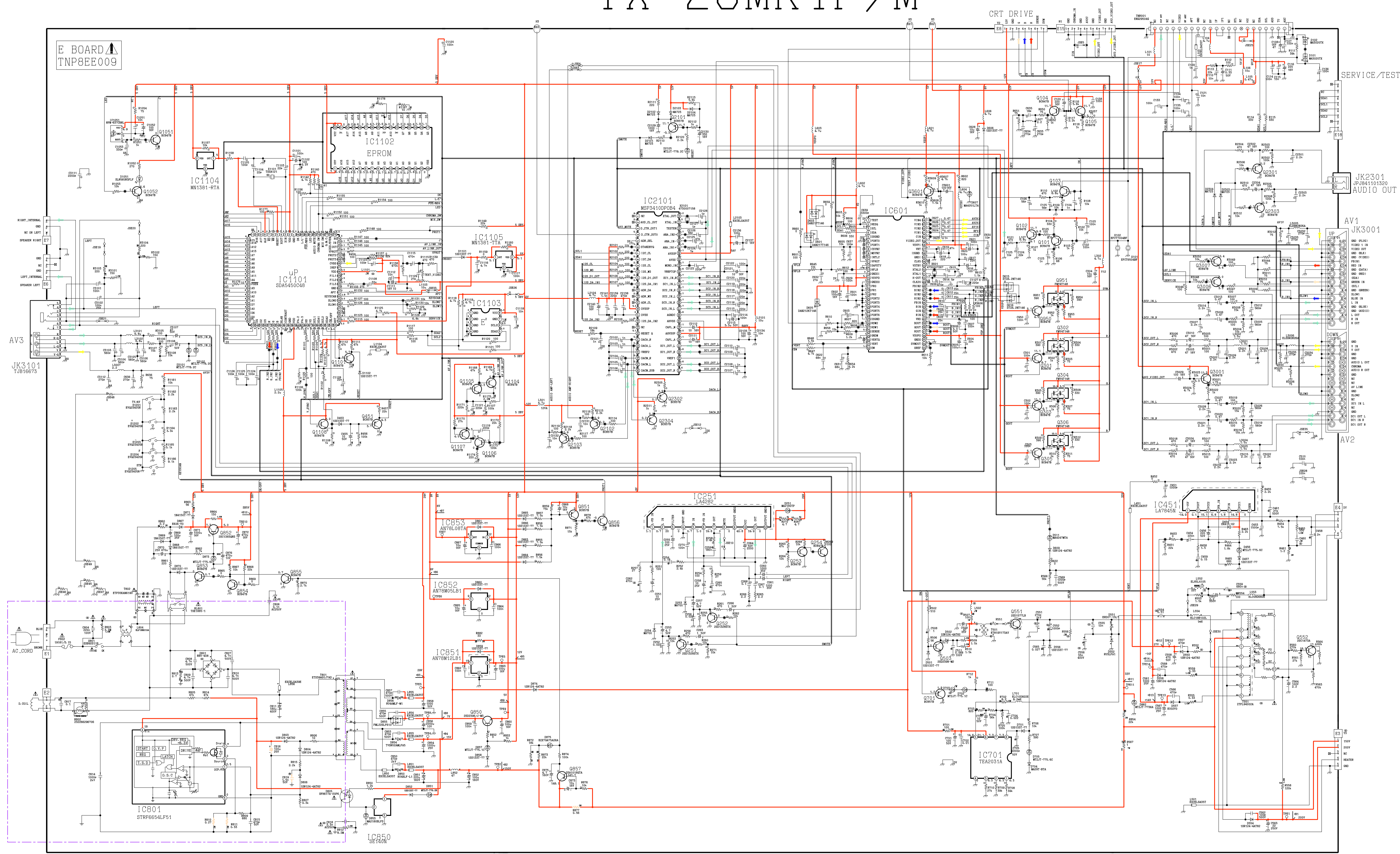
# TX-21MK1F/M

Y BOARD  
TNP8EY013

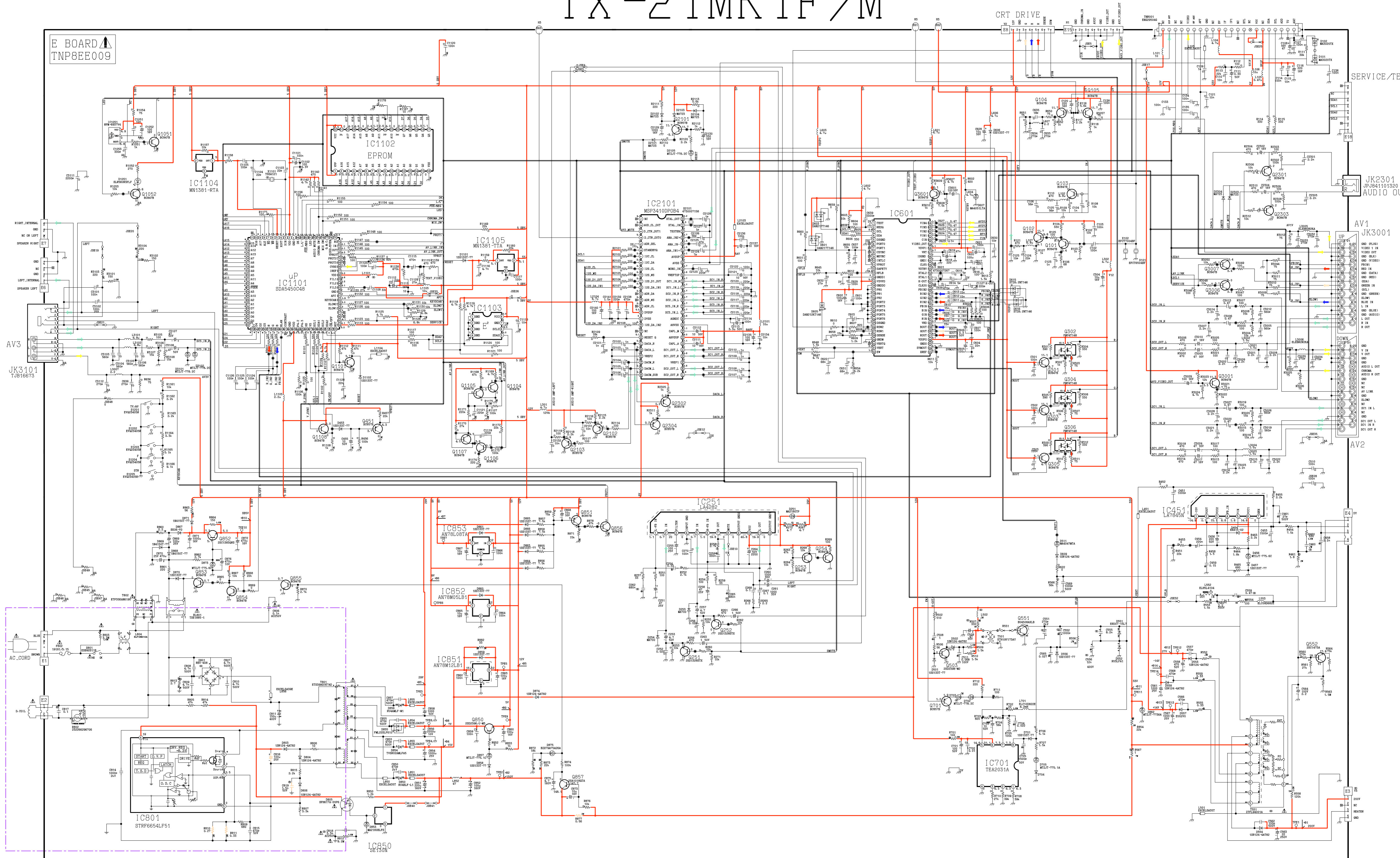
IC351  
TDA6103Q/N3



# TX-28MK1F/M



# TX-21MK1F/M



E BOARD  
TNP8EE009

SERVICE/TEST

JK2301  
UPJ841101320  
AUDIO OUT

AV1  
JK3001

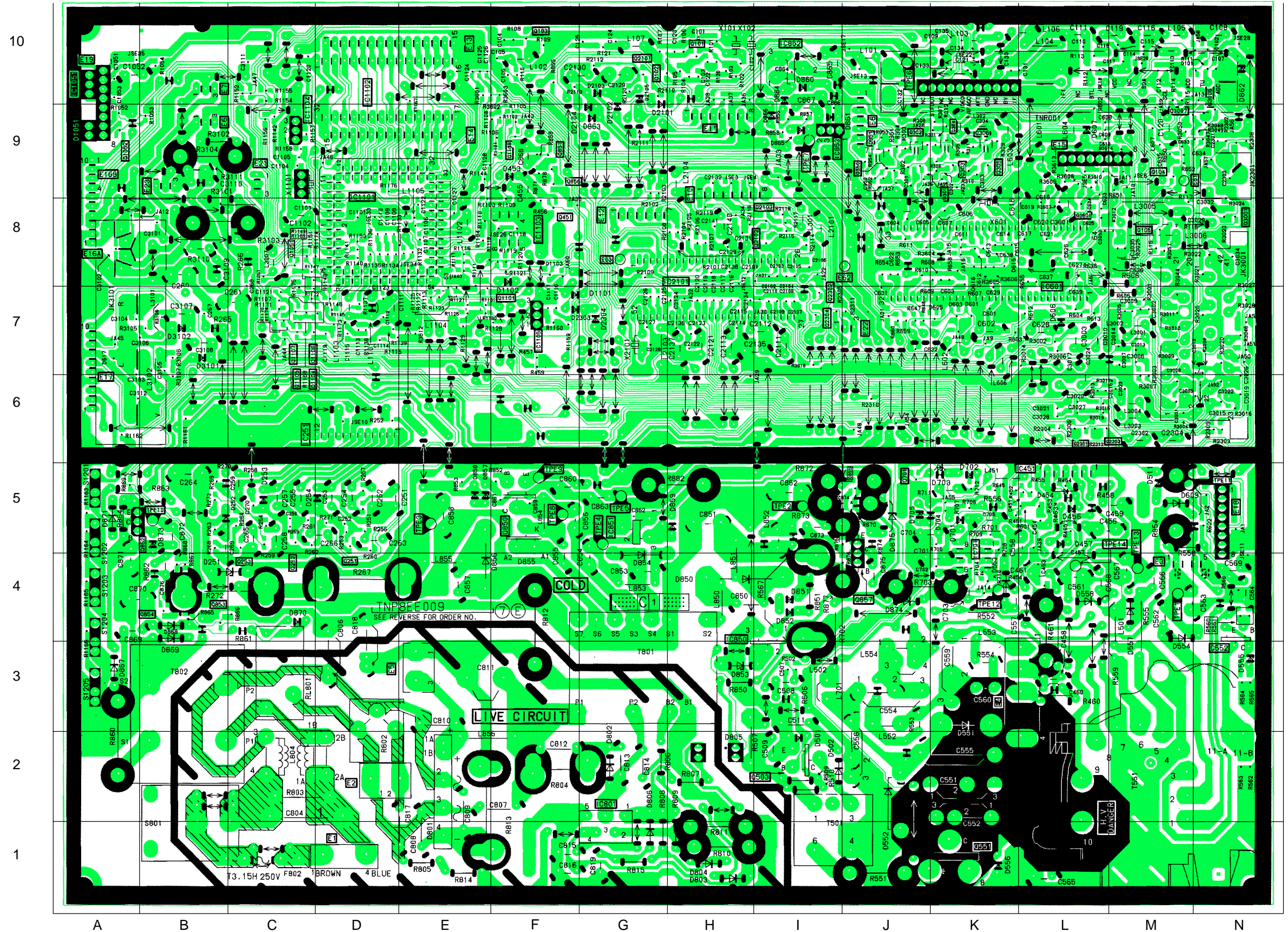
AV2

E4

E3  
E2  
E1

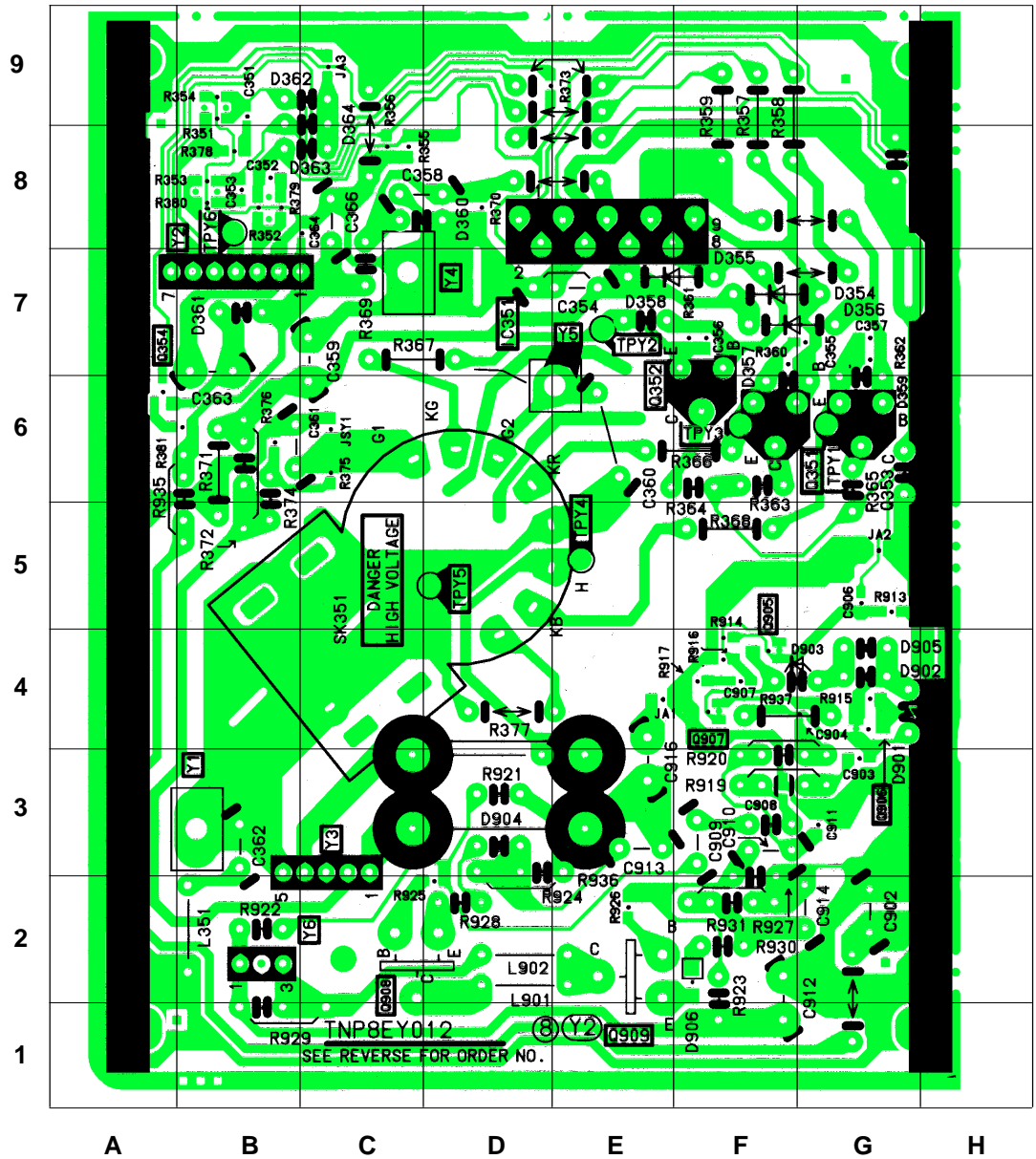
E - BOARD TNP8EE009

| TRAN'S    | DIODES    | D558 L4     |
|-----------|-----------|-------------|
| Q3601 L8  | D3103 B7  | D557 M4     |
| Q3007 M9  | D3101 B7  | D556 K1     |
| Q3001 N8  | D3102 B7  | D555 N3     |
| Q3006 N10 | D2161 G9  | D554 M4     |
| Q2304 I7  | D2105 G10 | D553 K4     |
| Q2303 M6  | D2104 F9  | D552 J2     |
| Q2301 I7  | D2103 G10 | D551 K3     |
| Q2103 I8  | D2102 G9  | D511 M5     |
| Q2102 H8  | D1103 F8  | D502 I2     |
| Q2101 G10 | D1102 F7  | D501 I2     |
| Q1108 F9  | D1101 G7  | D457 L5     |
| Q1107 C7  | D1051 A9  | D456 L5     |
| Q1106 C7  | D875 J5   | D454 L5     |
| Q1105 C7  | D874 J4   | D453 F9     |
| Q1104 C7  | D873 B5   | D254 C5     |
| Q1101 F7  | D871 A5   | D253 C5     |
| Q1052 A9  | D870 871  | D252 B5     |
| Q1051 C8  | D869 B4   | D251 B4     |
| Q951 J9   | D868 B4   | <b>IC'S</b> |
| Q950 J9   | D867 A3   | IC2101 H8   |
| Q857 J4   | D866 I9   | IC1105 F7   |
| Q856 F9   | D865 I9   | IC1104 C9   |
| Q855 J5   | D864 I10  | IC1103 F8   |
| Q854 B4   | D863 G9   | IC1102 D10  |
| Q853 B4   | D862 N10  | IC1101 D8   |
| Q852 B5   | D861 J9   | IC1051 A10  |
| Q850 F5   | D860 I10  | IC852 I10   |
| Q701 J5   | D859 H5   | IC851 G5    |
| Q552 N3   | D858 E5   | IC850 H4    |
| Q551 K1   | D857 E5   | IC801 G2    |
| Q503 I2   | D855 F4   | IC701 K5    |
| Q451 F8   | D854 G4   | IC601 L7    |
| Q394 K9   | D853 H3   | IC451 L5    |
| Q305 K9   | D852 I4   | IC251 D6    |
| Q303 K9   | D851 I4   | <b>TP'S</b> |
| Q302 J9   | D850 H4   | TPE14 M5    |
| Q301 K9   | D806 G2   | TPE13 M4    |
| Q253 C4   | D805 H2   | TPE12 K4    |
| Q252 C4   | D804 H1   | TPE11 N5    |
| Q252 C4   | D803 H1   | TPE10 B5    |
| Q251 D4   | D802 G2   | TPE9 E5     |
| Q105 M8   | D801 E1   | TPE8 F5     |
| Q104 M9   | D705 J5   | TPE7 I9     |
| Q103 F10  | D704 K5   | TPE6 J10    |
| Q102 G10  | D703 K5   | TPE5 G5     |
| Q101 H10  | D702 K5   | TPE4 G5     |
|           | D701 K5   | TPE3 E5     |
|           | D609 M5   | TPE2 I5     |
|           | D607 L9   | TPE1 M4     |



## Y - BOARD TNP8EY012

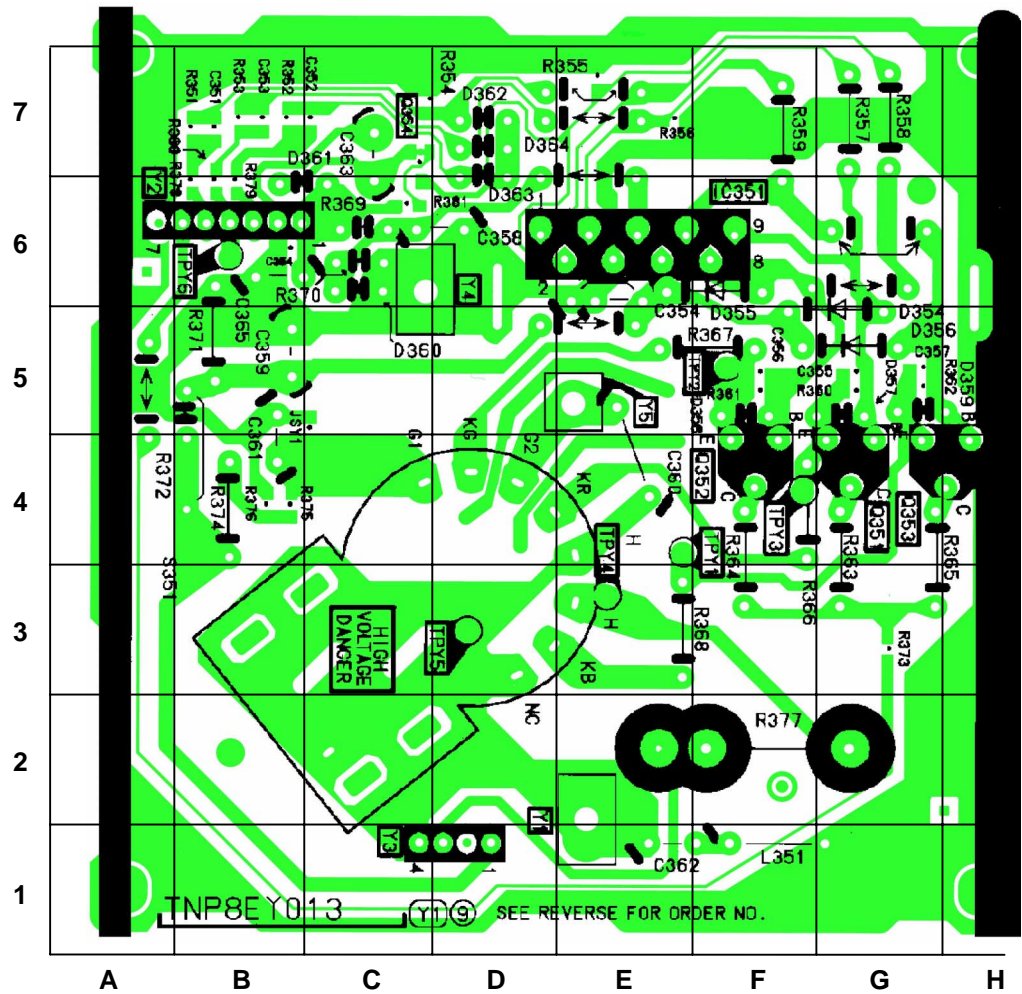
| TRANSISTORS |    |
|-------------|----|
| Q909        | E1 |
| Q908        | C2 |
| Q907        | F4 |
| Q906        | G3 |
| Q905        | F5 |
| Q354        | A7 |
| Q353        | G6 |
| Q352        | F6 |
| Q351        | F6 |
| DIODES      |    |
| D906        | F1 |
| D905        | G4 |
| D904        | D3 |
| D902        | G4 |
| D901        | G3 |
| D364        | C9 |
| D363        | C8 |
| D362        | B9 |
| D361        | B7 |
| D360        | D8 |
| D359        | G6 |
| D358        | E7 |
| D357        | F7 |
| D356        | G7 |
| D355        | F7 |
| D354        | G7 |
| TEST POINTS |    |
| TPY6        | B8 |
| TPY5        | D5 |
| TPY4        | E5 |
| TPY3        | F6 |
| TPY2        | E7 |
| TPY1        | G6 |
| IC'S        |    |
| IC351       | E8 |





## Y - BOARD TNP8EY013

| DIODES      |    |
|-------------|----|
| D354        | G5 |
| D355        | F6 |
| D356        | G5 |
| D357        | G5 |
| D358        | F5 |
| D359        | G5 |
| D360        | C6 |
| D361        | B6 |
| D362        | D7 |
| D363        | D7 |
| D364        | D7 |
| TEST POINTS |    |
| TPY1        | E4 |
| TPY2        | F5 |
| TPY3        | F4 |
| TPY4        | E3 |
| TPY5        | D3 |
| TPY6        | B6 |
| TRANSISTORS |    |
| Q351        | G4 |
| Q352        | F4 |
| Q353        | G4 |
| Q354        | C7 |
| I.C.'S      |    |
| IC351       | E6 |



## H - BOARD TNP8EH002

| TRANSISTORS |    |
|-------------|----|
| Q3401       | C3 |
| Q3402       | A2 |
| I.C.'S      |    |
| IC3401      | C2 |

