SONY

ANALOG INPUT EXPANSION ADAPTOR

# BKM-48X

INSTALLATION AND MAINTENANCE MANUAL

Japanese/English

1st Edition

Serial No. 2000001 and Higher

## ⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injuly, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## ⚠ 警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.

3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.

4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair Point them out to the customer and recommend their replacement.

5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

# TABLE OF CONTENS

SONY

HD Analog Input Expansion Adaptor

# BKM-48X

INSTALLATION MANUAL English
1st Edition
Serial No. 2000001 and Higher



**English**

**For customers in the USA**
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

**For customers in Canada**
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

**Pour les utilisateurs au Canada**
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

**Für Kunden in Deutschland**
Dieses Produkt kann im kommerziellen und in begrenztem Maße auch im industriellen Bereich eingesetzt werden. Dies ist eine Einrichtung, welche die Funk-Entstörung nach Klasse B besitzt.

## SECTION 1
## OPERATING INSTRUCTIONS

This section is extracted from installation manual.

# Table of Contents







# Overview

The BKM-48X HD Analog Input Expansion Adaptor is a video signal input adaptor for BVM-Series and HDM-Series video monitors.
When installed in an input option slot on the rear panel of the video monitor, it provides video input and output connectors for the monitor.

### About the Software Version of the Monitor Installed

The following software versions are necessary to use the BKM-48X with your monitor.
- For BVM-E, -F series monitor : Version 1.30 or later
- For BVM-G series monitor : Version 1.00 or later
- For HDM series monitor : Version 1.10 or later

If the software version of your monitor is previous to those listed above, contact your nearest Sony dealer or Sony service facility for an upgrade.

# Using with BVM-Series Video Monitors

## Functions

### Expansion of Analog Composite Inputs

The BKM-48X is not equipped with decoders, but if decoder adaptors are installed in other input option slots, you can use them to decode analog composite signals input to the BKM-48X.
Expansion of analog component inputs is also possible.

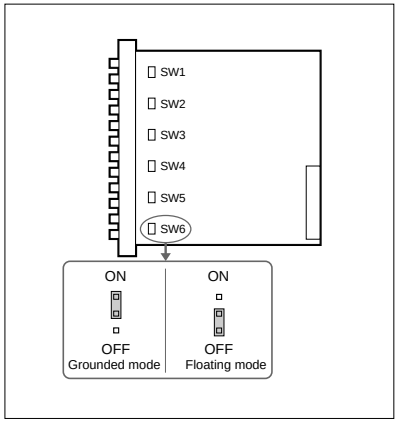
### Analog Input and Output Signal Connectors

The BKM-48X is equipped with six input and six output connectors. You can input two Y/R–Y/B–Y, RGB or YC signals, or six analog composite signals to the input connectors. The types of analog composite signals that may be input vary depending on the input adaptors installed in other input option slots *(see page 4(E))*.

### Floating System

Each input connector can be selected to either floating or grounded mode by the switches on the board (SW1 to SW6, shown in the figure on the right column).

To set the grounded mode, insert the jumper-pins into the ON slot and the center slot. To set the floating mode, insert the jumper-pins into the OFF slot and the center slot.
The factory preset is grounded mode.
Floating mode is useful for rejecting common mode noise.

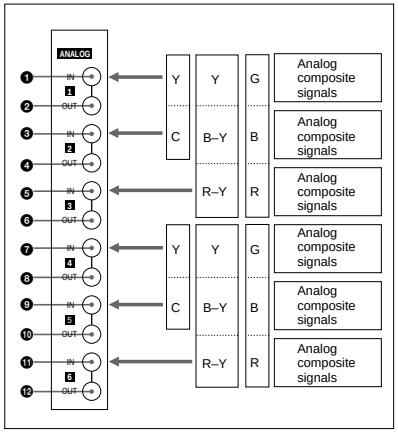


## Using the Input and Output Connectors

*For information about installing the BKM-48X in a video monitor input option slot, see "Installing into Video Monitors" (page 7 (E)).*

### Configuration of Input/Output Connectors and Signals that may be Input

The configuration of the input and output connectors and the signals that may be input are shown below.




**Input of analog composite signals**

You can input analog composite signals to connectors ❶, ❸, ❺, ❼, ❾, and ⓫. You can obtain loop-through output of those signals from connectors ❷, ❹, ❻, ❽, ❿, and ⓬, respectively. If you do not wish to use loop-through output, attach 75-ohm terminators to connectors ❷, ❹, ❻, ❽, ❿, and ⓬.

**Input of Y/R–Y/B–Y, RGB, or YC signals**

When inputting Y/R–Y/B–Y or RGB signals, you can input Y or G signals to connectors ❶ and ❼, B–Y or B signals to connectors ❸ and ❾, and R–Y or R signals to connectors ❺ and ⓫.
When inputting YC signals, you can input Y signals to connectors ❶ and ❼, and C signals to connectors ❸ and ❾. (Connectors ❺ and ⓫ are not used).
You can obtain loop-through output of the above signals from connectors ❷, ❹, ❻, ❽, ❿, and ⓬, respectively. If you do not wish to use loop-through output, attach 75-ohm terminators to connectors ❷, ❹, ❻, ❽, ❿, and ⓬.

### Assigning Input Signals to Connectors

Before inputting signals to the BKM-48X, you must specify the type and format of the signal that will be input to each connector. To assign input signals to each connector, use the on-screen INPUT CONFIGURATION menu of your video monitor.

*For information about using the INPUT CONFIGURATION menu, refer to the manual of your video monitor.*

## Combination of Multiple Adaptors

You can configure an input and output connector panel by installing any combination of adaptors in the input option slots on the rear panel of the video monitor. By combining adaptors of different types, you gain access to a wider range of input signals than would be possible with a single adaptor type. The input signals made available by different combinations of adaptor types are shown in the table on the next page.

The number of input option slots varies with video monitors, and to specify signal types for each input connector, use the on-screen INPUT CONFIGURATION menu of your video monitor.

*For information about the input option slots and using the INPUT CONFIGURATION menu, refer to the manual of your video monitor.*

### Internal Connections between Decoders

When you install a decoder adaptor (BKM-20D/21D/24N/25P/26M/27T), it is connected to the other adaptors installed in your video monitor's input option slots over an internal bus. Therefore, if you install a decoder adaptor for a given signal, you can decode that signal even when it is input to another adaptor.







Combinations of adaptors and input signals made available

| | | Adaptor name | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BKM-20D SDI 4:2:2 Decoder Adaptor | BKM-21D SDI Multi Decoder Adaptor | BKM-24N NTSC Decoder Adaptor | BKM-25P PAL Decoder Adaptor | BKM-26M PAL-M Decoder Adaptor | BKM-27T Tri-Standard Decoder Adaptor | BKM-22X SDI Input Expansion Adaptor | BKM-28X Analog Input Expansion Adaptor | BKM-48X HD Analog Input Expansion Adaptor |
| Serial digital input | Component 525/625 | ● | ● | | | | | ○ | | |
| | Composite NTSC | ○ | ● | | | | | ○ | | |
| | Composite PAL | ○ | ● | | | | | ○ | | |
| Analog input | Composite NTSC | ○ | ● | ● | ○ | ○ | ● | ○ | ○ | ○ |
| | Composite PAL | ○ | ● | ○ | ● | ○ | ● | ○ | ○ | ○ |
| | Composite PAL-M | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ |
| | Composite SECAM | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ |
| | Y/R–Y/B–Y 525/625 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | RGB 525/625 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | Y/C NTSC | | | ● | ○ | ○ | ● | | ○ | ○ |
| | Y/C PAL | | | ○ | ● | ○ | ● | | ○ | ○ |
| | Y/C PAL-M | | | ○ | ○ | ● | ○ | | ○ | ○ |
| Number of digital inputs | | 3 | 3 | – | – | – | – | 3 | – | |
| Number of analog input | | 3 | 3 | 6 | 6 | 6 | 6 | 3 | 6 | |

●: Independent input possible

○: Input possible when used with decoder adaptor

# Using with HDM-Series Video Monitors

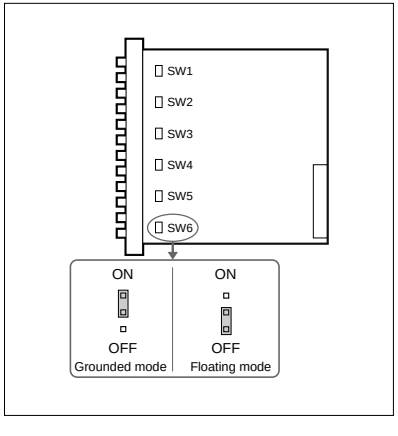
## Functions

### Analog Input and Output Signal Connectors

The BKM-48X is equipped with input and output connectors for two signal paths. You can input Y/$P_B$/$P_R$ or GBR signals to the input connectors.

### Floating System

Each input conector can be selected to either floating or grounded mode by the switches on the board (SW1 to SW6, shown in the figure below).
To set the grounded mode, insert the jumper-pins into the ON slot and the center slot. To set the floating mode, insert the jumper-pins into the OFF slot and the center slot.
The factory preset is grounded mode.
Floating mode is useful for rejecting common mode noise.

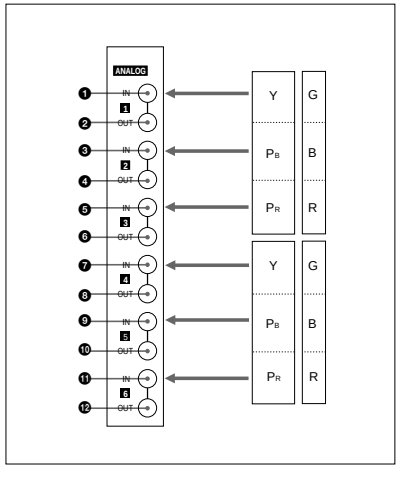



## Using the Input and Output Connectors

*For information about installing the BKM-48X in a video monitor input option slot, see "Installing into Video Monitors" (page 7 (E)).*

### Configuration of Input/Output Connectors and Signals that may be Input

The configuration of the input and output connectors and the signals that may be input are shown below.




#### Input of Y/$P_B$/$P_R$ or GBR signals

When inputting Y/$P_B$/$P_R$ or GBR signals, you can input Y or G signals to connectors ❶ and ❼, $P_B$ or B signals to connectors ❸ and ❾, and $P_R$ or R signals to connectors ❺ and ⓫.
You can obtain loop-through output of the above signals from connectors ❷, ❹, ❻, ❽, ❿, and ⓬, respectively. If you do not wish to use loop-through output, attach 75-ohm terminators to connectors ❷, ❹, ❻, ❽, ❿, and ⓬.

### Assigning Input Signals to Connectors

Before inputting signals to the BKM-48X, you must specify the type and format of the signal that will be input to each connector. To assign input signals to each connector, use the on-screen INPUT CONFIGURATION menu of your video monitor.

*For information about using the INPUT CONFIGURATION menu, refer to the manual of your video monitor.*



# Specifications

### General

Power requirements +5 V, ±6 V, ±15 V (supplied from the monitor)
Power consumption 6W
Recommended operating temperature
20°C to 30°C (68°F to 86°F)
Permissible operating temperature
0°C to 35°C (32°F to 95°F)
Operating humidity 0% to 90% (no condensation)
Maximum external dimensions (w/h/d)
$25 \times 256 \times 245$ mm
($31/32 \times 10 1/8 \times 9 3/4$ inches)
Mass 660g (1lb 7 oz)

### Input/Output Connectors

BNC × 6, high impedance, with loop-through output

### Signal Characteristics (Using with BVM-Series Video Monitors)

#### Analog composite signals

Signal level 1 Vp-p +3 dB/–6 dB
Return loss 43 dB min. (10 MHz, 75-ohm terminated)

#### YC signals

Signal level Y: 1 Vp-p ±6 dB
C: 0.286 Vp-p ±6 dB (NTSC burst signal level)
0.3 Vp-p ±6 dB (PAL burst signal level)

#### Analog component (Y/R–Y/B–Y, RGB) signals

Signal level
Y/R–Y/B–Y Y: 1 Vp-p ±6 dB
R–Y: 0.7 Vp-p ±6 dB
B–Y: 0.7 Vp-p ±6 dB
R/G/B 1 Vp-p ±6 dB (sync on G)
Frequency characteristics
Y 50 Hz to 10 MHz ±1dB
R–Y/B–Y 50 Hz to 6 MHz ±1dB
R/G/B 50 Hz to 30 MHz ±1dB
Chrominance signal/luminance signal
Delay time error
30 nsec max.
Gain error 5% max.
Aperture compensation (Y/R–Y/B–Y)
Off: 0 dB
On: 2 to 6 dB (5 MHz)
Return loss 43 dB min. (10 MHz, 75-ohm terminated)

### Signal Characteristics (Using with HDM-Series Video Monitors)

#### Analog component (Y/$P_B$/$P_R$, GBR) signals

Signal level
Y/$P_B$/$P_R$ Y: 1 Vp-p ±6 dB
$P_B$: 0.7 Vp-p ±6 dB
$P_R$: 0.7 Vp-p ±6 dB
G/B/R 1 Vp-p ±6 dB (sync on G)
Frequency characteristics
Y 50 Hz to 30 MHz ±1dB
$P_B$/$P_R$ 50 Hz to 30 MHz ±1dB
G/B/R 50 Hz to 30 MHz ±1dB
Chrominance signal/luminance signal
Delay time error
30 nsec max.
Gain error 5% max.
Return loss 43 dB min. (10 MHz, 75-ohm terminated)

### Accessory Supplied

Installation Manual (1)

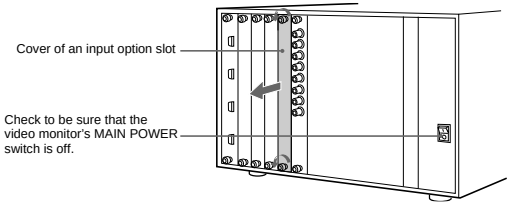
Design and specifications are subject to change without notice.

# Installing into Video Monitors

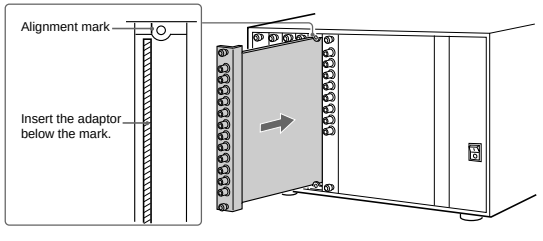
The BKM-48X can be installed in any input option slot.

Always turn your video monitor's MAIN POWER switch off before installing or removing adaptor.

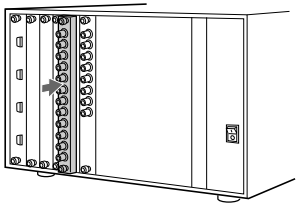
**1** Remove the cover of an input option slot on the rear panel of your video monitor.



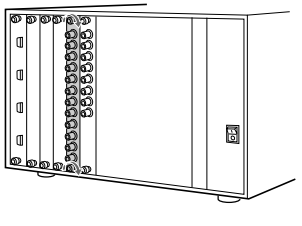

**2** Insert the adaptor below the alignment mark on the left of the upper screw hole of the slot.




**3** Push the adaptor in until it is firmly seated in the connector inside your video monitor.

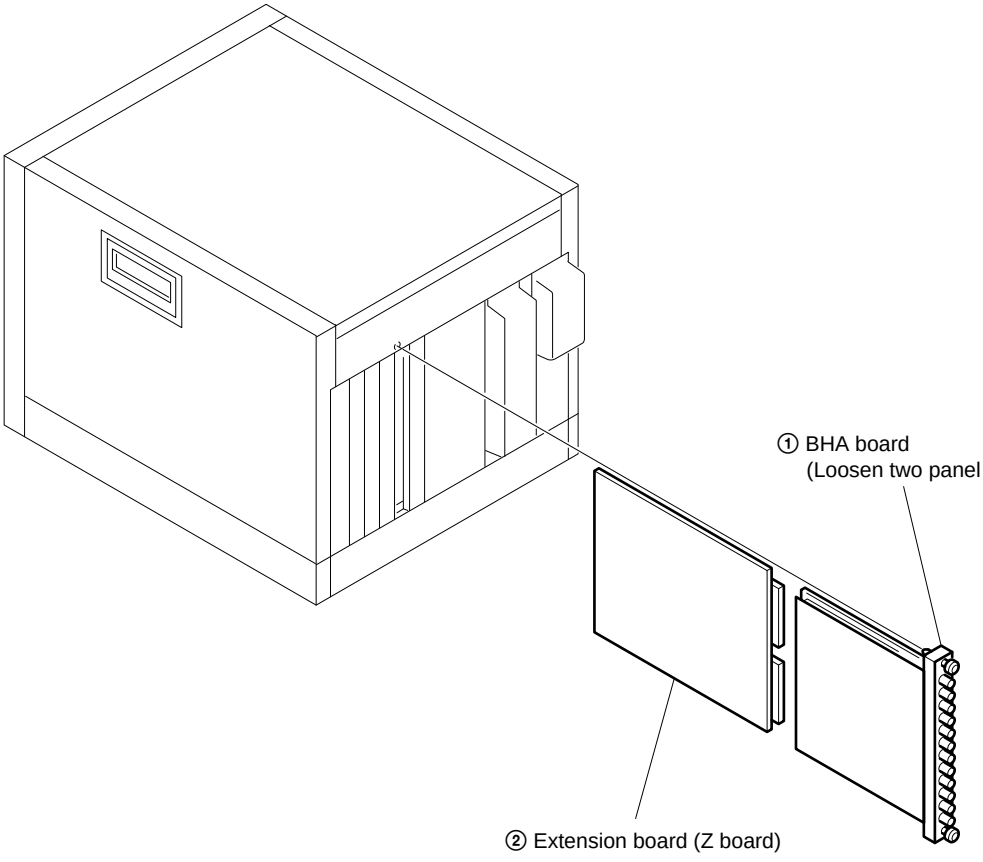


**4** Tighten the both screws to retain the adaptor.



# SECTION 2
# SERVICE INFORMATIONS

## 2-1. BHA BOARD REMOVAL AND CHECK




* Insert the Z board into the slot.
And insert the BHA board into the connector on the Z board.

# SECTION 3
# CIRCUIT ADJUSTMENTS

The BKM-48X is an optional board for the HDM series, BVM series, and therefore will not operate on its own. To adjust and measure it, BKM-48X must be mounted with the HDM series monitor, BVM series monitor. The HDM series monitor, BVM series monitor used in these adjustments should satisfy the respective specifications.

## 3-1. PREPARATIONS FOR BHA BOARD ADJUSTMENTS

### 3-1-1. When mounting to BVM

Set as follows in the INPUT CONFIGURATION menu of the SETUP menu.

- 01 CH
  FORMAT ..... RGB
  SLOT NO. ..... n (Set to the slot number with the BHA inserted)
  INPUT NO. ..... 123
  SYNC MODE ..... INT

- 02 CH
  FORMAT ..... YUV
  Same as 01 CH for others

- 03 CH
  FORMAT ..... NTSC 0
  SLOT NO. ..... n (Set to the slot number with the BHA inserted)
  INPUT NO. ..... 1
  YC SEP ..... COMP
  SYNC MODE ..... INT
  APERTURE ..... OFF
  FILTER ..... OFF
  CONTROL ..... PRESET
  H PHASE ..... 000

- 04 CH
  FORMAT ..... YC NTSC 0
  Same as 03 CH for others

- 05 CH
  FORMAT ..... RGB
  INPUT NO ..... 456
  Same as 01 CH for others

* Mount together with the BKM-24N or BKM-27T.

### 3-1-2. When mounting to HDM

Set as follows in the INPUT CONFIGURATION menu of the SETUP menu.

- 01 CH
  FORMAT ..... GBR
  SLOT NO. ..... n (Set to the slot number with the BHA inserted)
  INPUT NO. ..... 123
  SYNC MODE ..... INT

- 02 CH
  FORMAT ..... $YP_BP_R$
  Same as 01 CH for others

- 03 CH
  FORMAT ..... GBR
  INPUT NO ..... 456
  Same as 01 CH for others

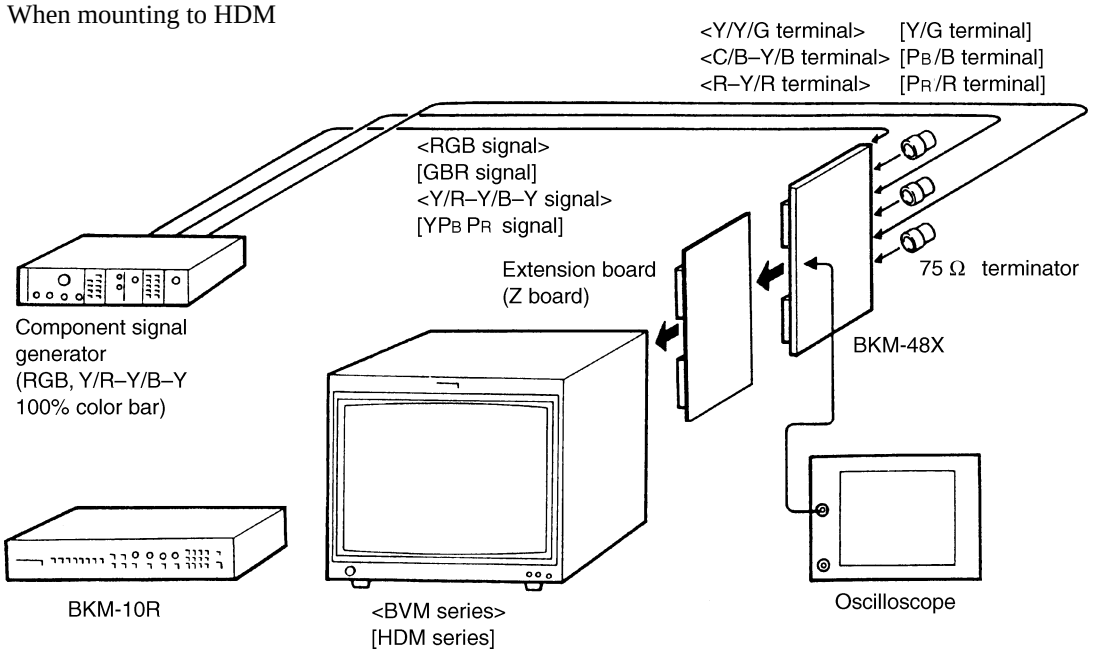
**[Connection Diagram]**

- **RGB signal, Y/B–Y/R–Y signals: <When mounting to BVM>**
- **GBR signal, $YP_BP_R$ signals: [When mounting to HDM]**

**Note:**

< > : When mounting to BVM

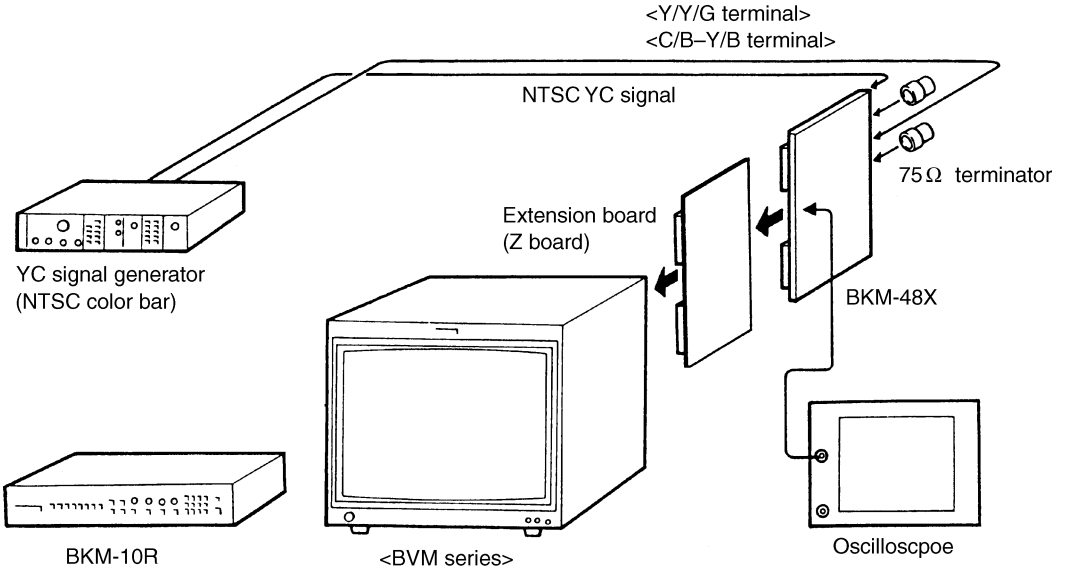
[ ] : When mounting to HDM



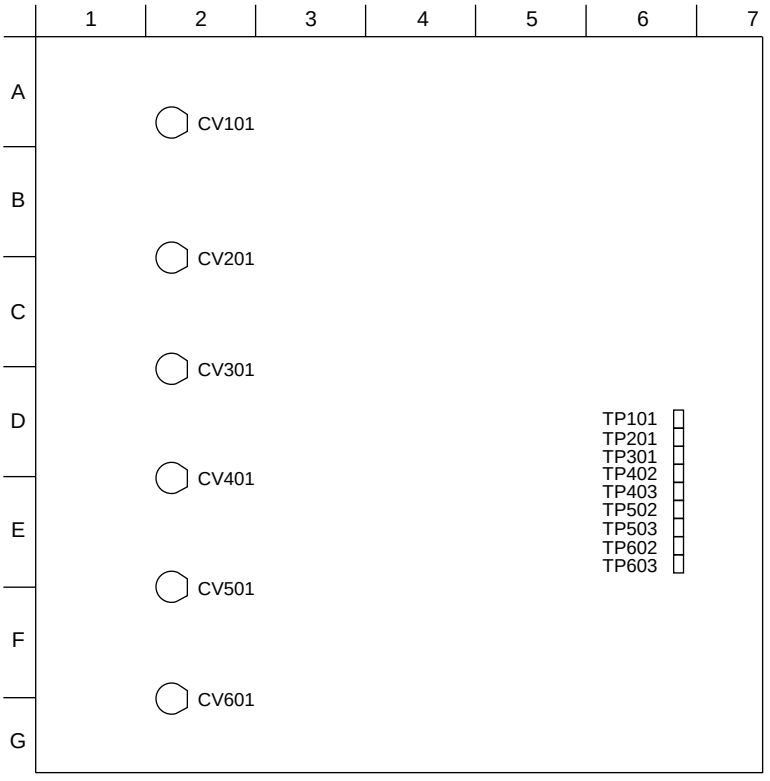

- **NTSC YC signals:**

**Note:**

< > : When mounting to BVM



**[Layout of adjustment-related parts]**




BHA board –Side A–

## 3-2. GBR MODE

### 3-2-1. GBR Level Adjustment

**Note1:** The following adjustment menus are below the BKM-48X BOARD menu of the MAINTENANCE menu.

Y LEVEL
$P_B$ LEVEL
$P_R$ LEVEL

**Note2:** < > : When mounting to BVM
[ ] : When mounting to HDM

1. Input the RGB 100% color bar signal into INPUT 123.
2. Select 01 CH.
3. Connect the oscilloscope to <TP402>, [TP403] of the BHA board.
4. Adjust the Y LEVEL data so that the G signal level becomes 660 mV.

**<TP402(G)>, [TP403(G)]**

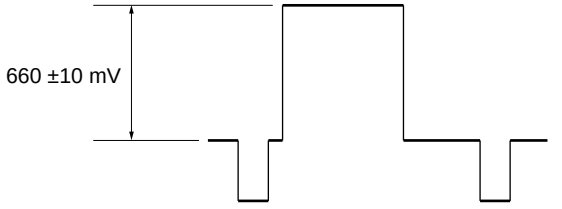



**Fig. 3-1.**

5. Connect the oscilloscope to <TP502>, [TP503] of the BHA board.
6. Adjust the $P_B$ LEVEL data so that the B signal level becomes 660 mV.

**<TP502(G)>, [TP503(G)]**

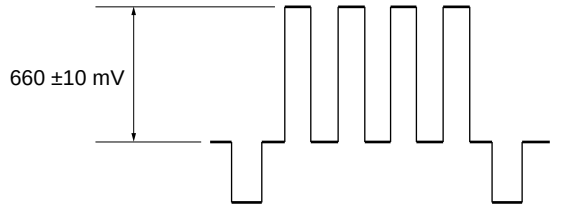



**Fig. 3-2.**

7. Connect the oscilloscope to <TP602>, [TP603] of the BHA board.
8. Adjust the $P_R$ LEVEL data so that the R signal level becomes 660 mV.

**<TP602(R)>, [TP603(R)]**

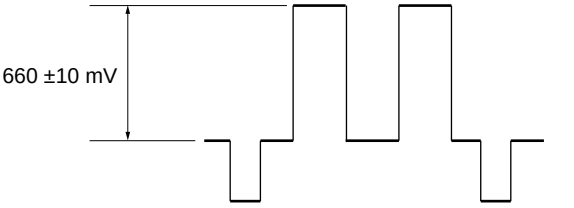



**Fig. 3-3.**

## 3-3. YPBPR MODE

### 3-3-1. YPBPR Level Adjustment

**Note1:** The following adjustment menus are below the BKM-48X menu of the MAINTENANCE menu.
Y LEVEL
PB LEVEL
PR LEVEL

**Note2:** < > : When mounting to BVM
[ ] : When mounting to HDM

1. Input the Y/R–Y/B–Y 100% color bar signal to INPUT 123.
2. Select 02 CH.
3. Connect the oscilloscope to <TP402>, [TP403] of the BHA board.
4. Adjust the Y LEVEL data so that the Y signal level becomes 660 mV.

**<TP402(Y)>, [TP403(Y)]**

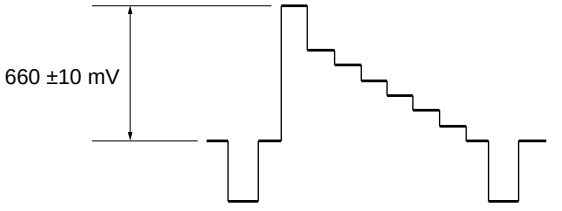



**Fig. 3-4.**

5. Connect the oscilloscope to <TP502>, [TP503] of the BHA board.
6. Adjust the PB LEVEL data so that the PB signal level becomes 660 mV.

**<TP502(PB)>, [TP503(PB)]**

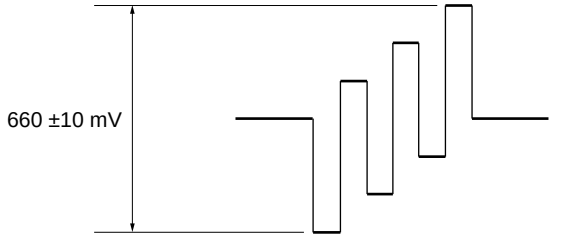



**Fig. 3-5.**

7. Connect the oscilloscope to <TP602>, [TP603] of the BHA board.
8. Adjust the PR LEVEL data so that the PR signal level becomes 660 mV.

**<TP602(PR)>, [TP603(PR)]**

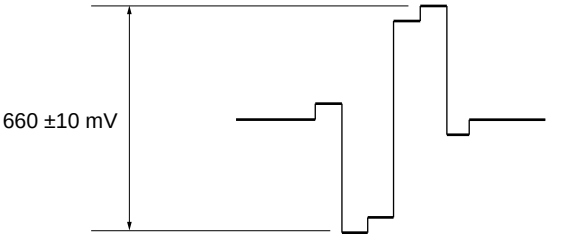



**Fig. 3-6.**

## 3-4. EXT VIDEO OUT MODE
**(When mounting to BVM Only)**

### 3-4-1. VIDEO OUT Level Adjustment

**Note:** The following adjustment menus are below the BKM-48X menu of the MAINTENANCE menu.
V LEVEL

1. Input the YC NTSC color bar signal into INPUT 1. (100% White Ref. 75% Saturation)
2. Set 03 CH.
3. Turn ON the INT V OUT SW.
4. Connect the oscilloscope to TP101 of the BHA board.
5. Adjust the V LEVEL data so that the signal level becomes 700 mV.
6. Exit the EXT VIDEO OUT mode.
INT V OUT SW ..... OFF

**TP101 (V)**

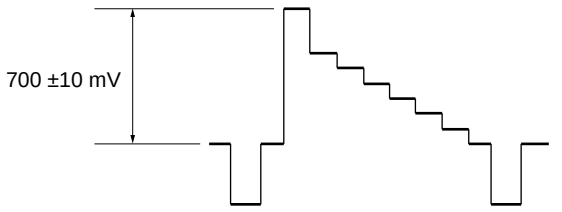



**Fig. 3-7.**

## 3-5. EXT YC OUT MODE
**(When mounting to BVM Only)**

### 3-5-1. PY, PC OUT Level Adjustment

**Note:** The following adjustment menus are below the BKM-48X menu of the MAINTENANCE menu.
PY LEVEL
PC LEVEL

1. Input the YC NTSC color bar signal. (100% White Ref. 75% Saturation)
2. Set 04 CH.
3. Turn ON the INT YC OUT SW.
4. Connect the oscilloscope to TP201 of the BHA board.
5. Adjust the PY LEVEL data so that the signal level becomes 660 mV.
6. Connect the oscilloscope to TP301 of the BHA board.
7. Adjust the PC LEVEL data so that the PC burst signal level becomes 280 mV.
8. Exit the EXT VIDEO OUT mode.
INT YC OUT SW ... OFF

**TP201 (Y)**

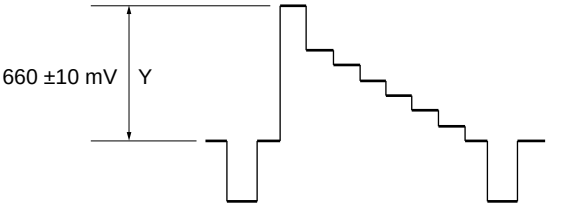



**Fig. 3-8.**

**TP301 (PC burst)**

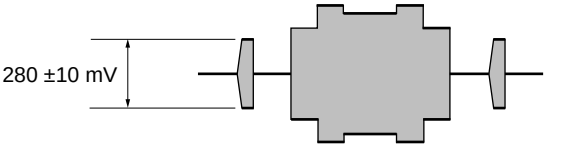



**Fig. 3-9.**

## 3-6. FREQUENCY CHARACTERISTICS ADJUSTMENT

**Note1:** Use an oscilloscope above 200 MHz, and a probe that has been calibrated.

**Note2:** < > : When mounting to BVM
[ ] : When mounting to HDM

1. Select 01CH, and input the GBR SWEEP signal (30 MHz) to INPUT 123.
2. Adjust CV101, CV201, and CV301 so that the waveforms of <TP402>, <TP502>, <TP602>, [TP403], [TP503], [TP603] become flat (30 MHz ±1 dB).
3. Select <05> [03] CH, and input the GBR SWEEP signal (30 MHz) to INPUT 456.
4. Adjust CV401, CV501, and CV601 so that the waveforms of <TP402>, <TP502>, <TP602>, [TP403], [TP503], [TP603] become flat (30 MHz ±1 dB).

# SECTION 4
# CIRCUIT OPERATIONS

## 1. Floating Type Input Buffer

The input buffer is composed of the Q101 and Q102 input stages, Q103 and Q104 cascade-connected high gain amplifiers, and Q106 emitter-follower. The frequency is expanded by imposing a negative feed back on the output. The signals input to the Q101 base can be switched to the ground of the unit or ground of the signal source (floating) by setting SW1. When set to floating, because the voltage between the Q101 base and emitter becomes stable, even if common mode noise is present in the signal and ground line, the common mode noise can be absorbed.
(This is the same for IN2, 3, 4, 5, and 6.)

## 2. Composite Signal Input Switching Circuit

When INPUT 1 is selected, only the V–A signal becomes "L" (V–B, V–C are "H"), the IC101 SW turns ON (other channel SWs are OFF), and the composite signal input to INPUT 1 is output to TP100.
(This is the same for other channels.)

## 3. Component (33K)/GBR Signal Input Switching Circuit

When INPUT 123 is selected, only the COMP A signal becomes "L" (COMP B is "H"), the IC101, IC201, and IC301 SWs turn ON (other channel SWs are OFF), and the component signals input to INPUT 123 are output to TP400, TP500, and TP600.
(This is the same for INPUT 456.)

## 4. Component (15K) Signal Input Switching Circuit

When INPUT 123 is selected, only the COMP A signal becomes "L" (COMP B is "H"), and the IC101, IC201, and IC301 SWs turn ON (other channel SWs are OFF). When 15K, since the 33K signal becomes "H", the IC102, IC202, and IC302 SW becomes ON, and the component signal input is output to the aperture circuit in the next stage.
(This is the same for INPUT 456.)

## 5. YC Signal Input Switching Circuit

When INPUT 123 is selected, only the COMP A signal becomes "L" (COMP B is "H"), and the IC101, IC201, and IC301 SWs turn ON (other channel SWs are OFF). When the YC signal is input, as the 33K signal becomes "H" and the INT–YC signal becomes "L", the IC102 and IC202 SWs turn ON, and the YC signal input is output to the circuit in the next stage.
(This is the same for INPUT 456.)

## 6. Aperture Compensation Circuit

The aperture compensation signal is generated by two delay lines (DL730, DL731). This compensation signal is level-adjusted by IC700 and mixed with the Y signal. The aperture compensation amount is controlled by the APT LEVEL voltage. The aperture circuit operates only on the 15K component signal. To correspond to the delay time of the Y signal passing through the aperture circuit, The B–Y and R–Y signals are also delayed in DL750 and DL770.

## 7. Level Adjustment Circuit, Output Circuit

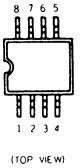
The composite and YC signals are level-adjusted in the respective gain control ICs (IC170, IC270, and IC370), passed through the SW circuit (Q170 to Q174, Q270 to Q274, Q370 to Q374) using the transistor, and output to the signal line on the mother board.
The component and GBR signals are level-adjusted in the respective gain control ICs (IC451, IC551, and IC651), passed through the SW circuit (Q470 to Q474, Q570 to Q574, Q670 to Q674, Q480 to Q484, Q580 to Q584, Q680 to Q684) using the transistor, and output to the Y, $P_B$, and $P_R$ lines on the mother board when 15K and to the 2Y, $2P_B$, and $2P_R$ lines when 33K.

## 8. Control Circuit

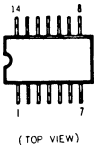
The CPU (IC1) carries out serial communication with the system controller of the unit using the three signals MISO, MOSI, and SCLK, and outputs control signals for selecting switches, etc. according to the instructions from the system controller. It also outputs adjustment data from the EEPROM (IC2) and adjustment voltage from the D/A converter (IC3).

# SECTION 5
# SEMICONDUCTORS

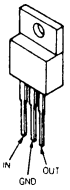
**CXA1521M**
**TC4W53F**
**TL431CPS**
**X25040S-C7000**



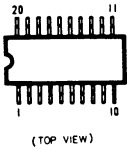

**EL4451CS**
**MC74HC00AFEL**
**MC74HC08AFEL**
**MC74HC125AF**



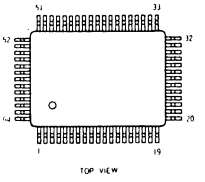

**LM2940CT-5.0**
**LM2990T-5.0**
**NJM7812FA**



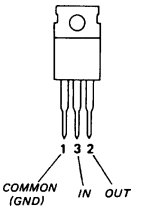

**MB88346BPFV**



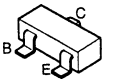

**MB89613R-236**



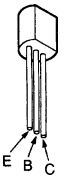

**NJM7912FA**



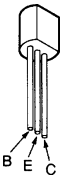

**DTA144EKA**
**DTC144EKA**
**2SA1037K**
**2SA1462**
**2SC2412K**
**2SC3545**



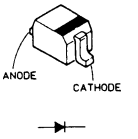

**2SA206**




**2SC3779D**




**RD5.6SB-T1**



# SECTION 6
# EXPLODED VIEWS

【使用上の注意】

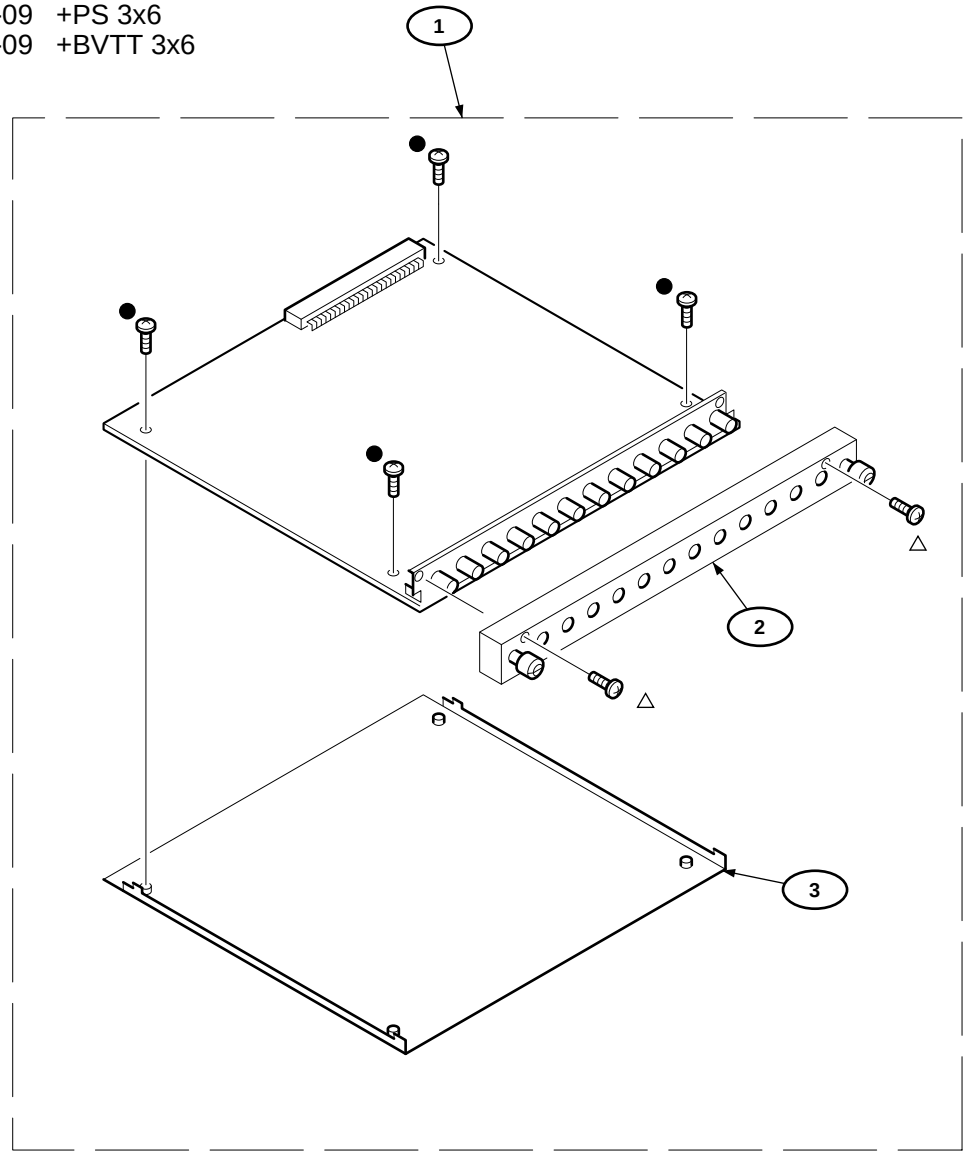
- 組立部品の構成部品は備考欄に図面番号で示します。
- *印の部品は常備在庫しておりません。
  受注して供給できるまで日数を要します。
- 分解図中の機構部品で、図面番号のない部品は供給しません。
- -XX，-Xは標準部品のため，セットに付いている部品と異なる場合があります。

**NOTE :**

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

## 6-1. BKM-48X

●: 7-682-647-09 +PS 3x6
△: 7-685-872-09 +BVTT 3x6




| REF NO. | | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|---|
| 1 | * | A-1135-932-A | COMPLETE PCB, BHA | 2-3 |
| 2 | * | X-4033-142-5 | PANEL ASSY, CONNECTOR | |
| 3 | * | X-4033-340-1 | SHIELD ASSY, PCB | |

# SECTION 7
# ELECTRICAL PARTS LIST

**NOTE:**

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

  RESISTORS
- All resistors are in ohms
- F : nonflammable

  CAPACITORS
- PF : μμF

  COILS
- MMH : mH
- uH : μH

【使用上の注意】

図面番号で部品を指定するときは基板名又はブロックを併せて指定して下さい。

- コンデンサの単位で，PFはμμFを示します。
- 抵抗の単位Ωは省略してあります。

  金属被膜：金属被膜抵抗。

  酸金被膜：酸化金属被膜抵抗。

  備考欄のFは不燃性抵抗を示します。
- *印の部品は常備在庫しておりません。

  受注してから供給できるまで，日数を要します。
- ここに記載されている部品は，補修用部品であるため，回路図及びセットについている部品と異なる場合があります。

# BHA

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| | * A-1135-932-A | BHA COMPL | | | |
| | | ********** | | | |
| | * X-4033-142-5 | PANEL ASSY, CONNECTOR | | | |
| | * X-4033-340-1 | SHIELD ASSY, PWB | | | |
| | * 1-565-514-11 | SOCKET, CONNECTOR 2P | | | |
| | * 3-648-057-00 | NUT (ISO-4), U | | | |
| | 3-899-248-01 | SCREW (M3X6) | | | |
| | * 4-050-804-01 | SCREW, PANEL STOPPER | | | |
| | * 4-050-814-01 | SHIELD, PWB | | | |
| | * 4-057-770-01 | INSULATOR | | | |
| | 4-623-699-01 | SCREW (3X5) | | | |
| | 7-682-647-09 | SCREW +PS 3X6 | | | |
| | 7-685-872-09 | SCREW +BVTT 3X8 (S) | | | |
| | | <CAPACITOR> | | | |
| C10 | 1-128-527-11 | ELECT | 330MF | 20% 25V | |
| C11 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C12 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C13 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C14 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C16 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C20 | 1-128-527-11 | ELECT | 330MF | 20% 25V | |
| C21 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C22 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C23 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C24 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C26 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C30 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C31 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C32 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C33 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C34 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C35 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C36 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C38 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C40 | 1-128-528-11 | ELECT | 470MF | 20% 16V | |
| C41 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C42 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C43 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C44 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C46 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C50 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C51 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C52 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C53 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C54 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C55 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C56 | 1-104-652-11 | ELECT | 470MF | 20% 10V | |
| C57 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C58 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C59 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C101 | 1-107-368-11 | FILM | 0.047MF | 10% 200V | |
| C102 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C103 | 1-107-701-11 | ELECT | 47MF | 20% 16V | |
| C104 | 1-107-888-11 | ELECT | 47MF | 20% 25V | |
| C105 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | 16V | |
| C106 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF 50V | |
| C107 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF 50V | |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| C108 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C109 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C110 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C111 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C112 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C113 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C170 | 1-107-715-11 | ELECT | 22MF | 20% 16V | |
| C171 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C172 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C173 | 1-163-038-91 | CERAMIC CHIP | 0.1MF | 25V | |
| C174 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% 50V | |
| C180 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C201 | 1-107-368-11 | FILM | 0.047MF | 10% 200V | |
| C202 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C203 | 1-107-701-11 | ELECT | 47MF | 20% 16V | |
| C204 | 1-107-888-11 | ELECT | 47MF | 20% 25V | |
| C205 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | 16V | |
| C206 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF 50V | |
| C207 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF 50V | |
| C208 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C209 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C210 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C211 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C212 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C213 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C270 | 1-107-715-11 | ELECT | 22MF | 20% 16V | |
| C271 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C272 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C273 | 1-163-038-91 | CERAMIC CHIP | 0.1MF | 25V | |
| C274 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% 50V | |
| C280 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C301 | 1-107-368-11 | FILM | 0.047MF | 10% 200V | |
| C302 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C303 | 1-107-701-11 | ELECT | 47MF | 20% 16V | |
| C304 | 1-107-888-11 | ELECT | 47MF | 20% 25V | |
| C305 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | 16V | |
| C306 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF 50V | |
| C307 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF 50V | |
| C308 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C309 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C310 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C311 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C312 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C313 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C370 | 1-107-715-11 | ELECT | 22MF | 20% 16V | |
| C371 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C372 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C373 | 1-163-038-91 | CERAMIC CHIP | 0.1MF | 25V | |
| C374 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% 50V | |
| C380 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C401 | 1-107-368-11 | FILM | 0.047MF | 10% 200V | |
| C402 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |
| C403 | 1-107-701-11 | ELECT | 47MF | 20% 16V | |
| C404 | 1-107-888-11 | ELECT | 47MF | 20% 25V | |
| C405 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | 16V | |
| C406 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF 50V | |
| C407 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF 50V | |
| C410 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | 50V | |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| C411 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C412 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C413 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C414 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C415 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C450 | 1-107-715-11 | ELECT | 22MF | 20% | 16V |
| C451 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C452 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C453 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C454 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C455 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C456 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C470 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C480 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C501 | 1-107-368-11 | FILM | 0.047MF | 10% | 200V |
| C502 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C503 | 1-107-701-11 | ELECT | 47MF | 20% | 16V |
| C504 | 1-107-888-11 | ELECT | 47MF | 20% | 25V |
| C505 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C506 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C507 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF | 50V |
| C510 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C511 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C512 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C513 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C514 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C515 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C550 | 1-107-715-11 | ELECT | 22MF | 20% | 16V |
| C551 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C552 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C553 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C554 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C555 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C556 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C570 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C580 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C601 | 1-107-368-11 | FILM | 0.047MF | 10% | 200V |
| C602 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C603 | 1-107-701-11 | ELECT | 47MF | 20% | 16V |
| C604 | 1-107-888-11 | ELECT | 47MF | 20% | 25V |
| C605 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C606 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C607 | 1-163-085-00 | CERAMIC CHIP | 2PF | 0.25PF | 50V |
| C610 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C611 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C612 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C613 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C614 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C615 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C650 | 1-107-715-11 | ELECT | 22MF | 20% | 16V |
| C651 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C652 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C653 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C654 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C655 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C656 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C670 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C680 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C700 | 1-163-089-00 | CERAMIC CHIP | 6PF | 0.5PF | 50V |
| C701 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C702 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C703 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C704 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C730 | 1-163-038-91 | CERAMIC CHIP | 0.1MF | | 25V |
| C731 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C732 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C733 | 1-164-346-11 | CERAMIC CHIP | 1MF | | 16V |
| C734 | 1-164-505-11 | CERAMIC CHIP | 2.2MF | | 16V |
| C750 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C751 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C752 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C753 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C754 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C770 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C771 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C772 | 1-163-031-11 | CERAMIC CHIP | 0.01MF | | 50V |
| C773 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| C774 | 1-104-652-11 | ELECT | 470MF | 20% | 10V |
| | | <CONNECTOR> | | | |
| CN1 | 1-774-523-11 | PIN, CONNECTOR (PC BOARD) 64P | | | |
| | | <TRIMMER> | | | |
| CV101 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| CV201 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| CV301 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| CV401 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| CV501 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| CV601 | 1-141-441-91 | CAP, CERAMIC TRIMMER 7PF | | | |
| | | <DIODE> | | | |
| D10 | 8-719-158-15 | DIODE RD5.6SB | | | |
| | | <DELAY LINE> | | | |
| DL700 | 1-411-451-11 | DELAY LINE | | | |
| DL730 | 1-411-450-11 | DELAY LINE | | | |
| DL731 | 1-411-450-11 | DELAY LINE | | | |
| DL750 | 1-411-452-11 | DELAY LINE | | | |
| DL770 | 1-411-452-11 | DELAY LINE | | | |
| | | <FILTER> | | | |
| FL1 | 1-236-071-11 | ENCAPSULATED COMPONENT | | | |
| FL2 | 1-236-071-11 | ENCAPSULATED COMPONENT | | | |
| FL3 | 1-239-183-11 | FILTER, EMI | | | |
| | | <IC> | | | |
| IC1 | 8-759-346-47 | IC MB89613R-236 | | | |
| IC2 | 8-759-156-54 | IC X25040SI | | | |
| IC3 | 8-759-064-36 | IC MB88346BPFV | | | |
| IC4 | 8-759-032-26 | IC MC74HC125AF | | | |
| IC5 | 8-759-424-13 | IC MC74HC00AFEL | | | |
| IC10 | 8-759-231-58 | IC TA7812S | | | |
| IC15 | 8-759-032-14 | IC MC74HC08AF | | | |
| IC16 | 8-759-032-14 | IC MC74HC08AF | | | |
| IC20 | 8-759-701-88 | IC NJM7912FA | | | |
| IC30 | 8-759-144-82 | IC µPC2405HF | | | |
| IC40 | 8-759-247-67 | IC LM2990T-5.0 | | | |

# BHA

| REF NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| IC101 | 8-759-242-64 | IC TC4W53F | |
| IC102 | 8-759-242-64 | IC TC4W53F | |
| IC170 | 8-752-054-80 | IC CXA1521M | |
| IC201 | 8-759-242-64 | IC TC4W53F | |
| IC202 | 8-759-242-64 | IC TC4W53F | |
| IC270 | 8-752-054-80 | IC CXA1521M | |
| IC301 | 8-759-242-64 | IC TC4W53F | |
| IC302 | 8-759-242-64 | IC TC4W53F | |
| IC370 | 8-752-054-80 | IC CXA1521M | |
| IC401 | 8-759-242-64 | IC TC4W53F | |
| IC450 | 8-759-242-64 | IC TC4W53F | |
| IC451 | 8-759-477-17 | IC EL4451CS-TE2 | |
| IC501 | 8-759-242-64 | IC TC4W53F | |
| IC550 | 8-759-242-64 | IC TC4W53F | |
| IC551 | 8-759-477-17 | IC EL4451CS-TE2 | |
| IC601 | 8-759-242-64 | IC TC4W53F | |
| IC650 | 8-759-242-64 | IC TC4W53F | |
| IC651 | 8-759-477-17 | IC EL4451CS-TE2 | |
| IC700 | 8-752-054-80 | IC CXA1521M | |
| | | <COIL> | |
| L1 | 1-412-529-81 | INDUCTOR 22µH | |
| | | <TRANSISTOR> | |
| Q1 | 1-801-806-11 | TRANSISTOR DTC144EKA-T146 | |
| Q2 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q3 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q101 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q102 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q103 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q104 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q106 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q107 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q111 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q112 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q170 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q171 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q172 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q173 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q174 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q201 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q202 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q203 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q204 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q206 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q211 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q212 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q270 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q271 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q272 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q273 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q274 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q301 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q302 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q303 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q304 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q306 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q311 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q312 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q370 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q371 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q372 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q373 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q374 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q401 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q402 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q403 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q404 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q406 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q407 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q450 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q470 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q471 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q472 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q473 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q474 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q480 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q481 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q482 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q483 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q484 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q501 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q502 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q503 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q504 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q506 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q507 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q550 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q570 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q571 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q572 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q573 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q574 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q580 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q581 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q582 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q583 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q584 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q601 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q602 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q603 | 8-729-822-90 | TRANSISTOR 2SC3779C | |
| Q604 | 8-729-103-19 | TRANSISTOR 2SA1206-K1 | |
| Q606 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q607 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q650 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q670 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| Q671 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q672 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q673 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q674 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q680 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q681 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q682 | 8-729-027-38 | TRANSISTOR DTA144EKA-T146 | |
| Q683 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q684 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |
| Q700 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q701 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | |
| Q702 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| Q703 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q730 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q731 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q732 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q750 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q751 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | | | |
| Q752 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | | | |
| Q753 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q770 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| Q771 | 8-729-112-65 | TRANSISTOR 2SA1462-Y33 | | | |
| Q772 | 8-729-107-31 | TRANSISTOR 2SC3545-T43 | | | |
| Q773 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | |
| | | <RESISTOR> | | | |
| R10 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R11 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R12 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R13 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R14 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R15 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R16 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R17 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R18 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R19 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R20 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R21 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R22 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R23 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R24 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R25 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R26 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W |
| R27 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W |
| R28 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R29 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R31 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R32 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R33 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R34 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R35 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R36 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R37 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R38 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R39 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R40 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R41 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R45 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R46 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R101 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R102 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R103 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R104 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R105 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R106 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R107 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R108 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R109 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R110 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R111 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R112 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R113 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R114 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R120 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R121 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R122 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R123 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R125 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R126 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R127 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R128 | 1-218-762-11 | METAL CHIP | 270K | 0.50% | 1/10W |
| R130 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R131 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R133 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R134 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R135 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R170 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R172 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R173 | 1-218-753-11 | METAL CHIP | 110K | 0.50% | 1/10W |
| R174 | 1-216-677-11 | METAL CHIP | 12K | 0.50% | 1/10W |
| R175 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R176 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R177 | 1-216-681-11 | METAL CHIP | 18K | 0.50% | 1/10W |
| R178 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W |
| R179 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R180 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R181 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R182 | 1-216-623-11 | METAL CHIP | 68 | 0.50% | 1/10W |
| R201 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R202 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R203 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R204 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R205 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R206 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R207 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R208 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R209 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R210 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R211 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R212 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R213 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R214 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R220 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R221 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R225 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R227 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R230 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R231 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R233 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R234 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R235 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R270 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R272 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R273 | 1-218-753-11 | METAL CHIP | 110K | 0.50% | 1/10W |
| R274 | 1-216-677-11 | METAL CHIP | 12K | 0.50% | 1/10W |
| R275 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R276 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R277 | 1-216-681-11 | METAL CHIP | 18K | 0.50% | 1/10W |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| R278 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W |
| R279 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R280 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R281 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R282 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R301 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R302 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R303 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R304 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R305 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R306 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R307 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R308 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R309 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R310 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R311 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R312 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R313 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R314 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R320 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R321 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R325 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R327 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R330 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R331 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R333 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R334 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R335 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R370 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R372 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W |
| R373 | 1-218-753-11 | METAL CHIP | 110K | 0.50% | 1/10W |
| R374 | 1-216-677-11 | METAL CHIP | 12K | 0.50% | 1/10W |
| R375 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R376 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R377 | 1-216-681-11 | METAL CHIP | 18K | 0.50% | 1/10W |
| R378 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W |
| R379 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R380 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R381 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R382 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R401 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R402 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R403 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R404 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R405 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R406 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R407 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R408 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R409 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R410 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R411 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R412 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R413 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R414 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R420 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R421 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R422 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R423 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| R424 | 1-216-295-91 | SHORT | 0 | | |
| R450 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R451 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R452 | 1-216-089-91 | RES,CHIP | 47K | 5% | 1/10W |
| R453 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R454 | 1-216-053-00 | RES,CHIP | 1.5K | 5% | 1/10W |
| R455 | 1-216-061-00 | RES,CHIP | 3.3K | 5% | 1/10W |
| R456 | 1-216-109-00 | RES,CHIP | 330K | 5% | 1/10W |
| R457 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R458 | 1-216-655-11 | METAL CHIP | 1.5K | 0.50% | 1/10W |
| R470 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R471 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R472 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R473 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R474 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R475 | 1-216-623-11 | METAL CHIP | 68 | 0.50% | 1/10W |
| R480 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R481 | 1-216-051-00 | RES,CHIP | 1.2K | 5% | 1/10W |
| R482 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R483 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R484 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R485 | 1-216-617-11 | METAL CHIP | 39 | 0.50% | 1/10W |
| R501 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R502 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R503 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R504 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R505 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R506 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R507 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R508 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R509 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R510 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R511 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R512 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R513 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R514 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R520 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R521 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R522 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R523 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R524 | 1-216-295-91 | SHORT | 0 | | |
| R550 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R551 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R552 | 1-216-089-91 | RES,CHIP | 47K | 5% | 1/10W |
| R553 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R554 | 1-216-053-00 | RES,CHIP | 1.5K | 5% | 1/10W |
| R555 | 1-216-061-00 | RES,CHIP | 3.3K | 5% | 1/10W |
| R556 | 1-216-109-00 | RES,CHIP | 330K | 5% | 1/10W |
| R557 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R558 | 1-216-655-11 | METAL CHIP | 1.5K | 0.50% | 1/10W |
| R570 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R571 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R572 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R573 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R574 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R575 | 1-216-623-11 | METAL CHIP | 68 | 0.50% | 1/10W |
| R580 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R581 | 1-216-051-00 | RES,CHIP | 1.2K | 5% | 1/10W |
| R582 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |

| REF NO. | PART NO. | DESCRIPTION | | | REMARK |
|---|---|---|---|---|---|
| R583 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R584 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R585 | 1-216-617-11 | METAL CHIP | 39 | 0.50% | 1/10W |
| R601 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R602 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| R603 | 1-216-678-11 | METAL CHIP | 13K | 0.50% | 1/10W |
| R604 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R605 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R606 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R607 | 1-216-683-11 | METAL CHIP | 22K | 0.50% | 1/10W |
| R608 | 1-216-001-00 | RES,CHIP | 10 | 5% | 1/10W |
| R609 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R610 | 1-216-663-11 | METAL CHIP | 3.3K | 0.50% | 1/10W |
| R611 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R612 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R613 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R614 | 1-216-627-11 | METAL CHIP | 100 | 0.50% | 1/10W |
| R620 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R621 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R622 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R623 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W |
| R624 | 1-216-295-91 | SHORT | 0 | | |
| R650 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R651 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R652 | 1-216-089-91 | RES,CHIP | 47K | 5% | 1/10W |
| R653 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R654 | 1-216-053-00 | RES,CHIP | 1.5K | 5% | 1/10W |
| R655 | 1-216-061-00 | RES,CHIP | 3.3K | 5% | 1/10W |
| R656 | 1-216-109-00 | RES,CHIP | 330K | 5% | 1/10W |
| R657 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R658 | 1-216-655-11 | METAL CHIP | 1.5K | 0.50% | 1/10W |
| R670 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R671 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R672 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R673 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R674 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R675 | 1-216-623-11 | METAL CHIP | 68 | 0.50% | 1/10W |
| R680 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R681 | 1-216-051-00 | RES,CHIP | 1.2K | 5% | 1/10W |
| R682 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R683 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R684 | 1-216-097-91 | RES,CHIP | 100K | 5% | 1/10W |
| R685 | 1-216-617-11 | METAL CHIP | 39 | 0.50% | 1/10W |
| R700 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R701 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R702 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R704 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R705 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R706 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R707 | 1-216-671-11 | METAL CHIP | 6.8K | 0.50% | 1/10W |
| R708 | 1-216-654-11 | METAL CHIP | 1.3K | 0.50% | 1/10W |
| R709 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R710 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R711 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R712 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R713 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R730 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R731 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R732 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R733 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R734 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R735 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R736 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R737 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R738 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R739 | 1-216-059-00 | RES,CHIP | 2.7K | 5% | 1/10W |
| R740 | 1-216-089-91 | RES,CHIP | 47K | 5% | 1/10W |
| R741 | 1-216-697-91 | METAL CHIP | 82K | 0.50% | 1/10W |
| R742 | 1-216-685-11 | METAL CHIP | 27K | 0.50% | 1/10W |
| R743 | 1-216-677-11 | METAL CHIP | 12K | 0.50% | 1/10W |
| R745 | 1-216-687-11 | METAL CHIP | 33K | 0.50% | 1/10W |
| R746 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W |
| R750 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R751 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R752 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R753 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R754 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R755 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R756 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R757 | 1-216-654-11 | METAL CHIP | 1.3K | 0.50% | 1/10W |
| R758 | 1-216-657-11 | METAL CHIP | 1.8K | 0.50% | 1/10W |
| R759 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R760 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R761 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R762 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R770 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R771 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R772 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R773 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W |
| R774 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W |
| R775 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R776 | 1-216-667-11 | METAL CHIP | 4.7K | 0.50% | 1/10W |
| R777 | 1-216-654-11 | METAL CHIP | 1.3K | 0.50% | 1/10W |
| R778 | 1-216-657-11 | METAL CHIP | 1.8K | 0.50% | 1/10W |
| R779 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W |
| R780 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |
| R781 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W |
| R782 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W |

<SWITCH>

| | | |
|---|---|---|
| SW1 | * 1-568-378-21 | PIN, CONNECTOR 3P |
| SW2 | * 1-568-378-21 | PIN, CONNECTOR 3P |
| SW3 | * 1-568-378-21 | PIN, CONNECTOR 3P |
| SW4 | * 1-568-378-21 | PIN, CONNECTOR 3P |
| SW5 | * 1-568-378-21 | PIN, CONNECTOR 3P |
| SW6 | * 1-568-378-21 | PIN, CONNECTOR 3P |

<CRYSTAL>

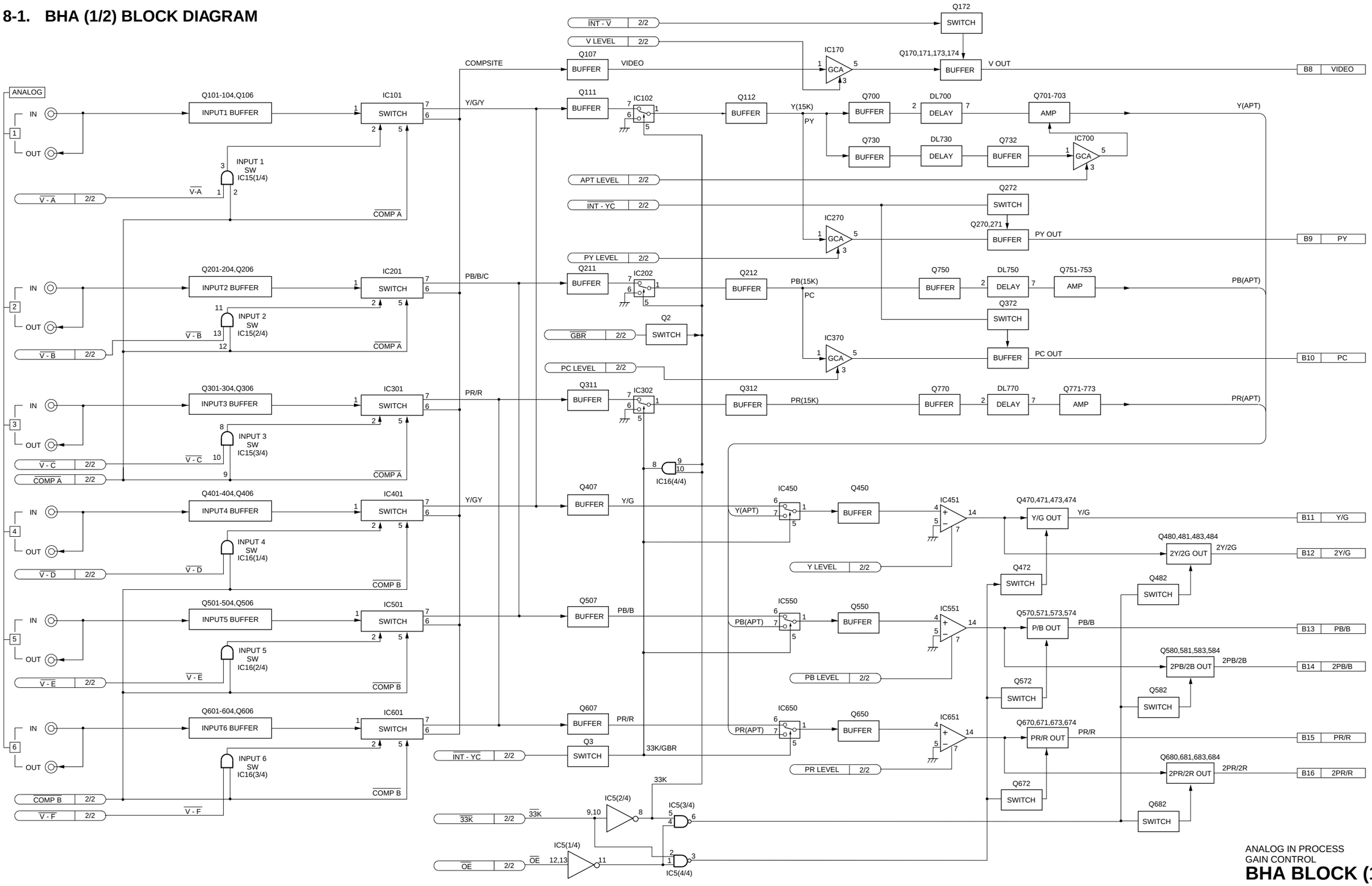
| | | |
|---|---|---|
| X1 | 1-578-689-21 | VIBRATOR |

**********

| REF NO. | PART NO. | DESCRIPTION | REMARK |
|---|---|---|---|
| | | ACCESSORIES & PACKING METERIALS<br>********** | |
| | * 3-703-263-13 | BAG, CONDUCTIVE | |
| | 3-862-718-01 | MANUAL, OPERATION (Japanese/English) | |

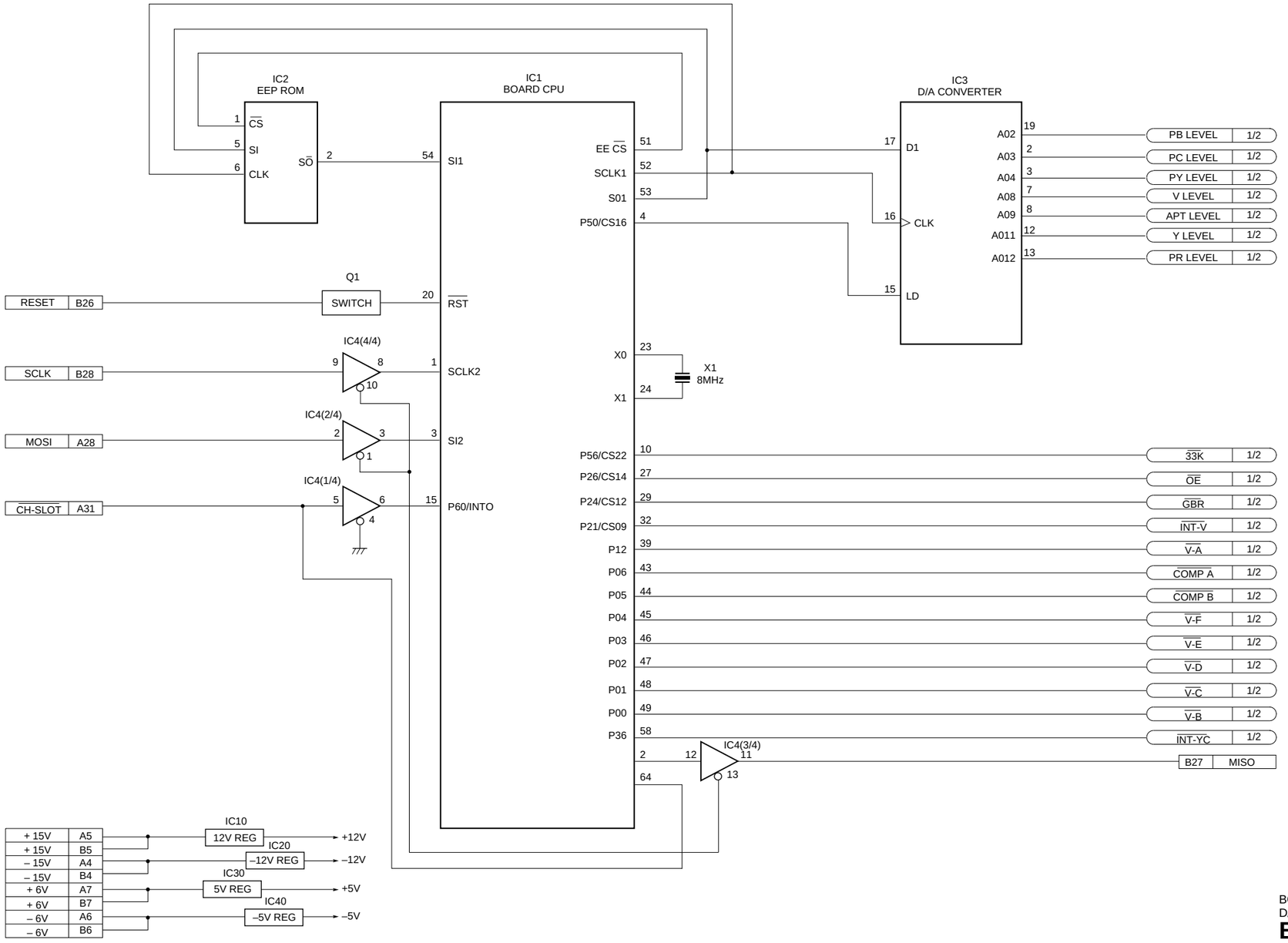
# SECTION 8
# BLOCK DIAGRAMS

## 8-1. BHA (1/2) BLOCK DIAGRAM




ANALOG IN PROCESS
GAIN CONTROL
**BHA BLOCK (1/2)**

## 8-2. BHA (2/2) BLOCK DIAGRAM




BOARD CPU
D/A CONVERTER
**BHA BLOCK (2/2)**

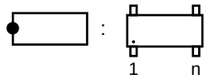
# SECTION 9
# DIAGRAMS

## 9-1. PRINTED WIRING BOARDS

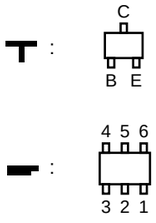
### ● For Printed Wiring Boards

• : Pattern from the side which enables seeing.

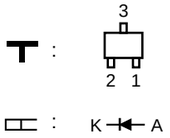
• Chip IC




• Chip transistor




• Chip diode

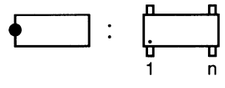




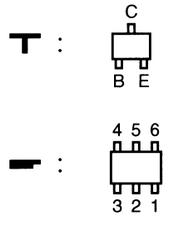

### ●プリント図ノート

• ：見た面側のパターン

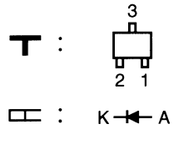
• チップ IC




• チップトランジスタ



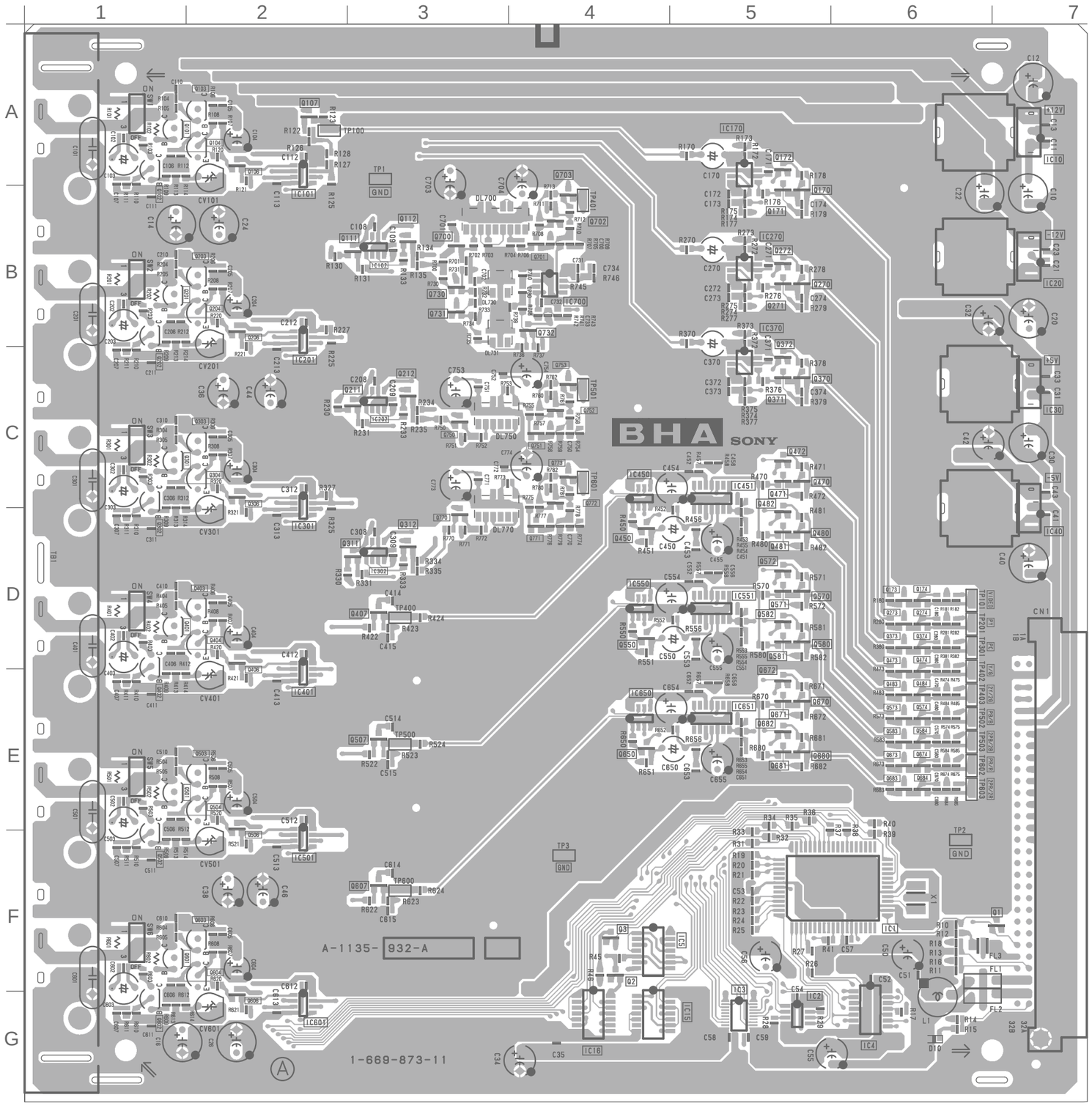

• チップダイオード



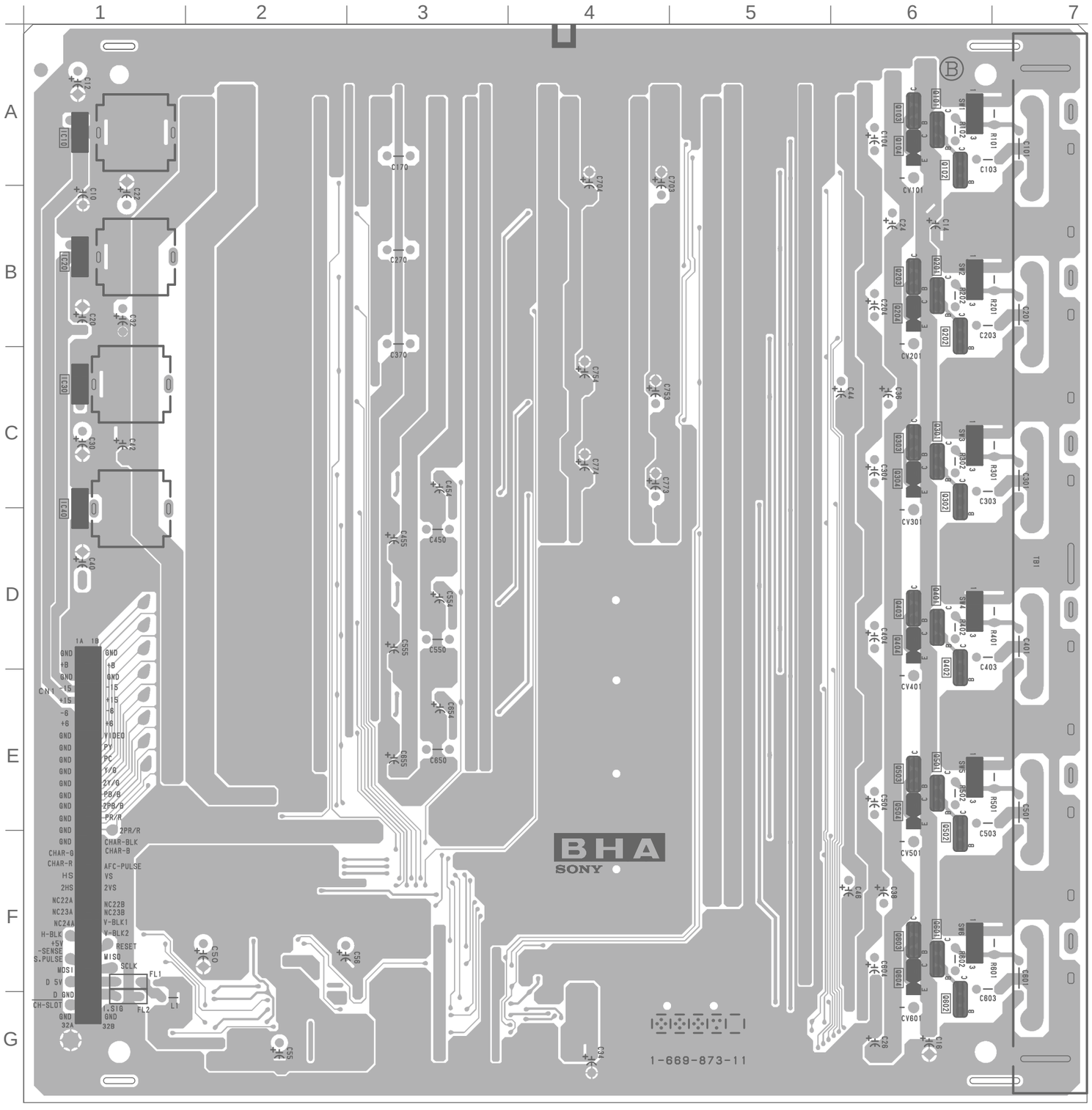

9-1

---
BHA
---
1-669-873-11

| | | | |
|---|---|---|---|
| CV101 | A-2 | Q473 | D-6 |
| CV201 | B-2 | Q474 | D-6 |
| CV301 | D-2 | Q480 | D-5 |
| CV401 | E-2 | Q481 | D-5 |
| CV501 | F-2 | Q482 | C-5 |
| CV601 | G-2 | Q483 | E-6 |
| | | Q484 | E-6 |
| D10 | G-6 | Q501 | E-1 |
| | | Q502 | F-1 |
| IC1 | F-6 | Q503 | E-1 |
| IC2 | G-5 | Q504 | E-2 |
| IC3 | G-5 | Q506 | E-2 |
| IC4 | G-6 | Q507 | E-3 |
| IC5 | F-4 | Q550 | D-4 |
| IC10 | A-7 | Q570 | D-5 |
| IC15 | G-4 | Q571 | D-5 |
| IC16 | G-4 | Q572 | D-5 |
| IC20 | B-7 | Q573 | E-6 |
| IC30 | C-7 | Q574 | E-6 |
| IC40 | C-7 | Q580 | D-5 |
| IC101 | A-2 | Q581 | D-5 |
| IC102 | B-3 | Q582 | D-5 |
| IC170 | A-5 | Q583 | E-6 |
| IC201 | B-2 | Q584 | E-6 |
| IC202 | C-3 | Q601 | F-1 |
| IC270 | B-5 | Q602 | G-1 |
| IC301 | C-2 | Q603 | F-2 |
| IC302 | D-3 | Q604 | F-2 |
| IC370 | B-5 | Q606 | G-2 |
| IC401 | D-2 | Q607 | F-3 |
| IC450 | C-4 | Q650 | E-4 |
| IC451 | C-5 | Q670 | E-5 |
| IC501 | F-2 | Q671 | E-5 |
| IC550 | D-4 | Q672 | E-5 |
| IC551 | D-5 | Q673 | E-6 |
| IC601 | G-2 | Q674 | E-6 |
| IC650 | E-4 | Q680 | E-5 |
| IC651 | E-5 | Q681 | E-5 |
| IC700 | B-4 | Q682 | E-5 |
| | | Q683 | E-6 |
| Q1 | F-7 | Q684 | E-6 |
| Q2 | F-4 | Q700 | B-3 |
| Q3 | F-4 | Q701 | B-4 |
| Q101 | A-1 | Q702 | B-4 |
| Q102 | A-1 | Q703 | B-4 |
| Q103 | A-2 | Q730 | B-3 |
| Q104 | A-2 | Q731 | B-3 |
| Q106 | A-2 | Q732 | B-4 |
| Q107 | A-2 | Q750 | C-3 |
| Q111 | B-3 | Q751 | C-4 |
| Q112 | B-3 | Q752 | C-4 |
| Q170 | B-5 | Q753 | C-4 |
| Q171 | B-5 | Q770 | D-3 |
| Q172 | A-5 | Q771 | D-4 |
| Q173 | D-6 | Q772 | C-4 |
| Q174 | D-6 | Q773 | C-4 |
| Q201 | B-1 | | |
| Q202 | C-1 | TP1 | A-3 |
| Q203 | B-2 | TP2 | F-6 |
| Q204 | B-2 | TP3 | F-4 |
| Q206 | B-2 | TP101 | D-6 |
| Q211 | C-3 | TP201 | D-6 |
| Q212 | C-3 | TP301 | D-6 |
| Q270 | B-5 | TP400 | D-3 |
| Q271 | B-5 | TP401 | B-4 |
| Q272 | B-5 | TP402 | D-6 |
| Q273 | D-6 | TP403 | E-6 |
| Q274 | D-6 | TP500 | E-3 |
| Q301 | C-1 | TP501 | C-4 |
| Q302 | C-1 | TP502 | E-6 |
| Q303 | C-2 | TP503 | E-6 |
| Q304 | C-2 | TP600 | F-3 |
| Q306 | C-2 | TP601 | C-4 |
| Q311 | D-3 | TP602 | E-6 |
| Q312 | D-3 | TP603 | E-6 |
| Q370 | C-5 | | |
| Q371 | C-5 | | |
| Q372 | B-5 | | |
| Q373 | D-6 | | |
| Q374 | D-6 | | |
| Q401 | D-1 | | |
| Q402 | D-6 | | |
| Q403 | D-2 | | |
| Q404 | D-2 | | |
| Q406 | D-2 | | |
| Q407 | D-3 | | |
| Q450 | D-4 | | |
| Q470 | C-5 | | |
| Q471 | C-5 | | |
| Q472 | C-5 | | |




**BHA** –A SIDE–
1-669-873-11




**BHA** –B SIDE–
1-669-873-11

## 9-2. SCHEMATIC DIAGRAMS

**Note:**

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W

- All resistors are in ohms. (1MΩ: 1000kΩ, 1kΩ: 1000Ω)
- Chip resister are 1/10W unless otherwise noted.
- ▭: panel designation and adjustment repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- METAL FILM (:RN, :RN-CP) resister in 1%, 0.5%, 1/4W unless otherwise specified.
- All voltages are in V.
- Reading are taken with Hivision color-bar signal (R.G.B) input.
- Voltage are dc with respect to ground unless otherwise noted.
- Reading are taken with attach the BVM series monitor.
- Voltage variation may be noted due to normal production tolerancd.
- ▭V: B+, B– line
- ⇨: signal path
- Circled numbers are waveforms reference.

**Reference information**

| | | |
|---|---|---|
| RESISTOR | : RN | METAL FILM |
| | : RC | SOLID |
| | : FPRD | NONFLAMMABLE CARBON |
| | : FUSE | NONFLAMMABLE FUSIBLE |
| | : RW | NONFLAMMABLE WIREWOUND |
| | : RS | NONFLAMMABLE METAL OXIDE |
| | : RB | NONFLAMMABLE CEMENT |
| COIL | : FL-8L | MICRO INDUCTOR |
| CAPACITOR | : TA | TANTALUM |
| | : PS | STYROL |
| | : PP | POLYPROPYLENE |
| | : PT | MYLAR |
| | : MPS | METALIZED POLYESTER |
| | : MPP | METALIZED POLYPROPYLENE |
| | : ALB | BIPOLAR |
| | : ALT | HIGH TEMPERATURE |
| | : ALR | HIGH RIPPLE |

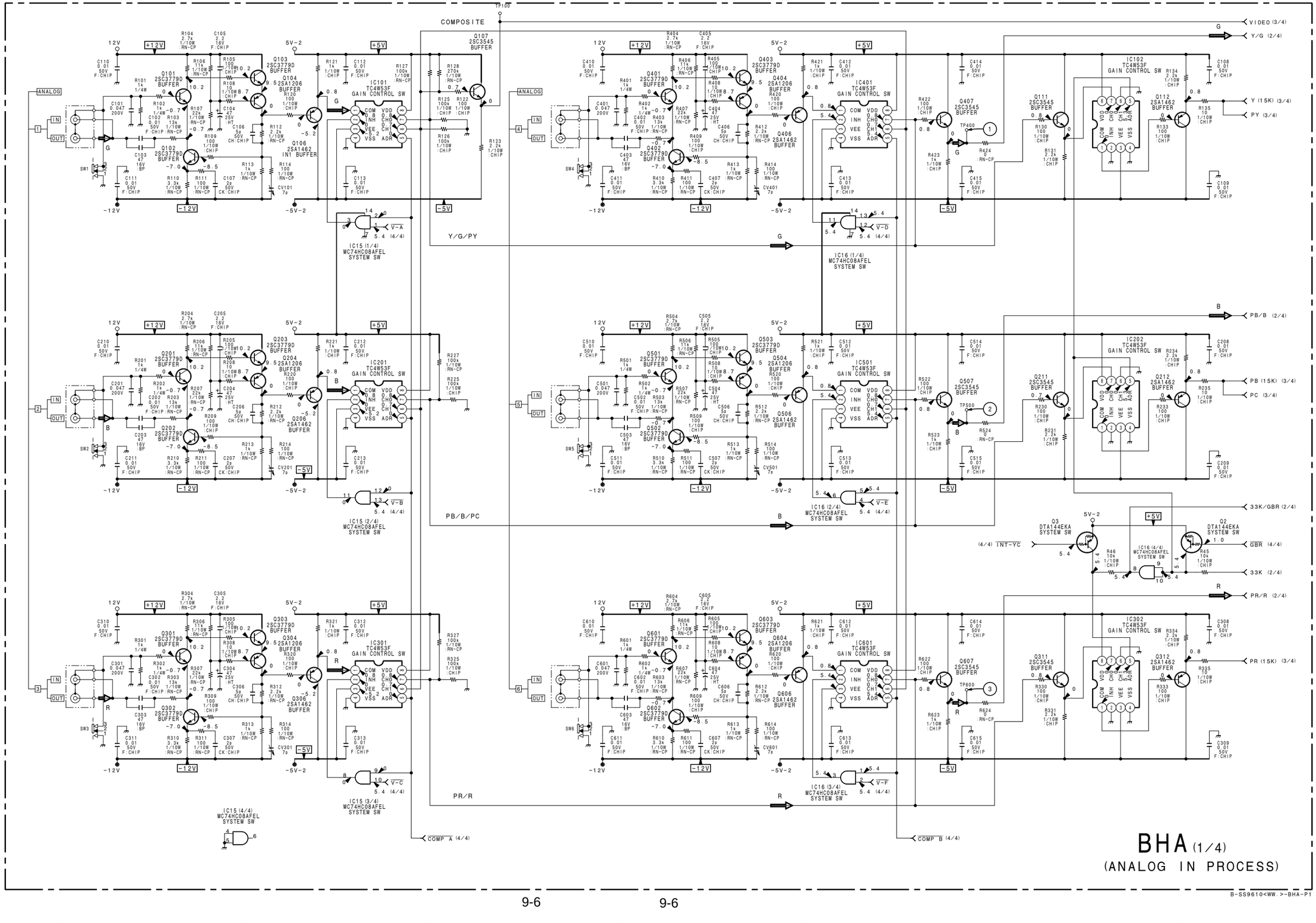
**●回路図ノート**

- 耐圧表示のないコンデンサの電圧は50V。PF:µµF
- 定格電力表示のない抵抗は5mmピッチ, 1/4Wを示す。
  単位はΩ（1MΩ=1000kΩ, kΩ=1000Ω)
- チップ抵抗の定格電力は1/10W。
- ▭は, パネル表示名称及び調整名称。
- 半固定抵抗および可変抵抗器の特性カーブ（B）は省略。
- 金属皮膜抵抗（：RN, ：RN-CP）の1%, 0.50%規格は省略。
- 測定は, BVMシリーズに装着して測定。
- 電圧値は, カラーバーゼネレータよりHD SDI信号を受信したときの対アース間の参考値。
- 電圧値の単位はV（ボルト)。
- ▭V：B＋, B－ライン
- ⇨：主要信号経路を示す。
- ○数字は波形表の番号。

リファレンス情報

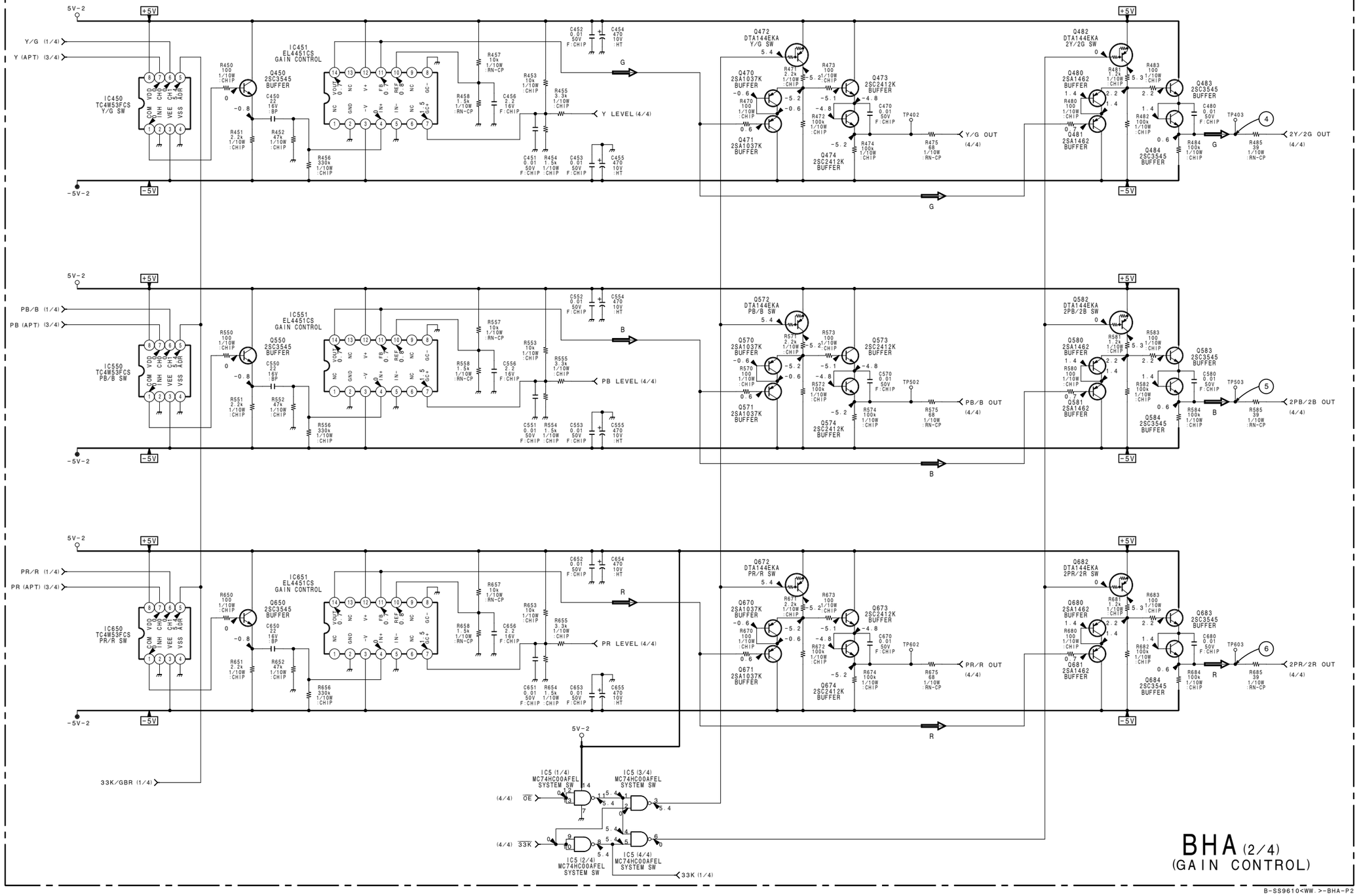
| | | |
|---|---|---|
| 抵抗 | : RN | 金属皮膜 |
| | : RC | ソリッド |
| | : FPRD | 不燃性カーボン |
| | : FUSE | 不燃性ヒューズ |
| | : RS | 不燃性酸金 |
| | : RB | 不燃性セメント |
| | : RW | 不燃性巻線 |
| コイル | : LF-8L | マイクロインダクタ |
| コンデンサ | : TA | タンタル |
| | : PS | スチロール |
| | : PP | ポリプロピレン |
| | : PT | マイラ |
| | : MPS | メタライズドポリエステル |
| | : MPP | メタライズドポリプロピレン |
| | : ALB | バイポーラ |
| | : ALT | 高温用 |
| | : ALR | ハイリップル |


9-5



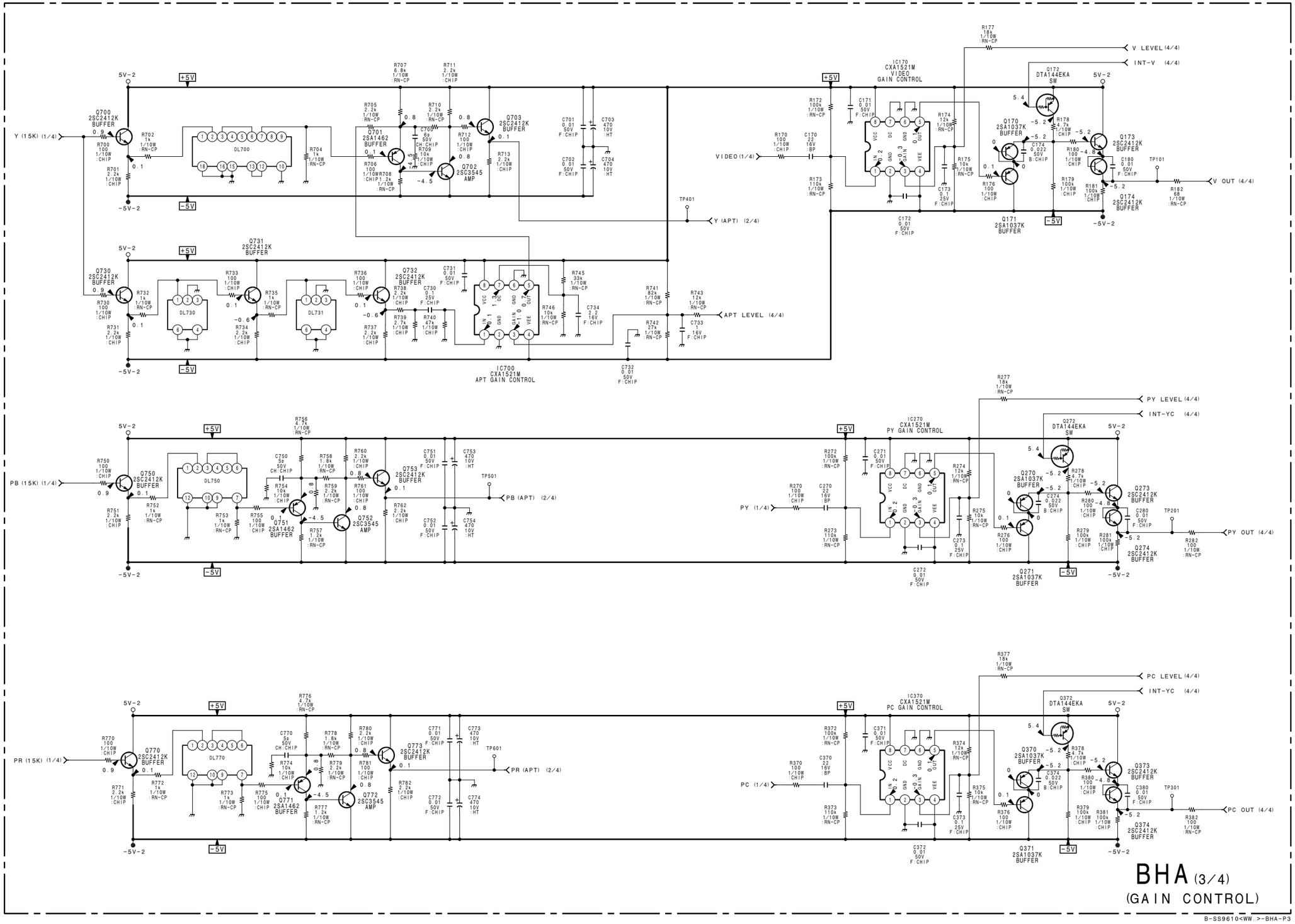

# BHA (1/4)
(ANALOG IN PROCESS)

B-SS9610<WW.>-BHA-P1



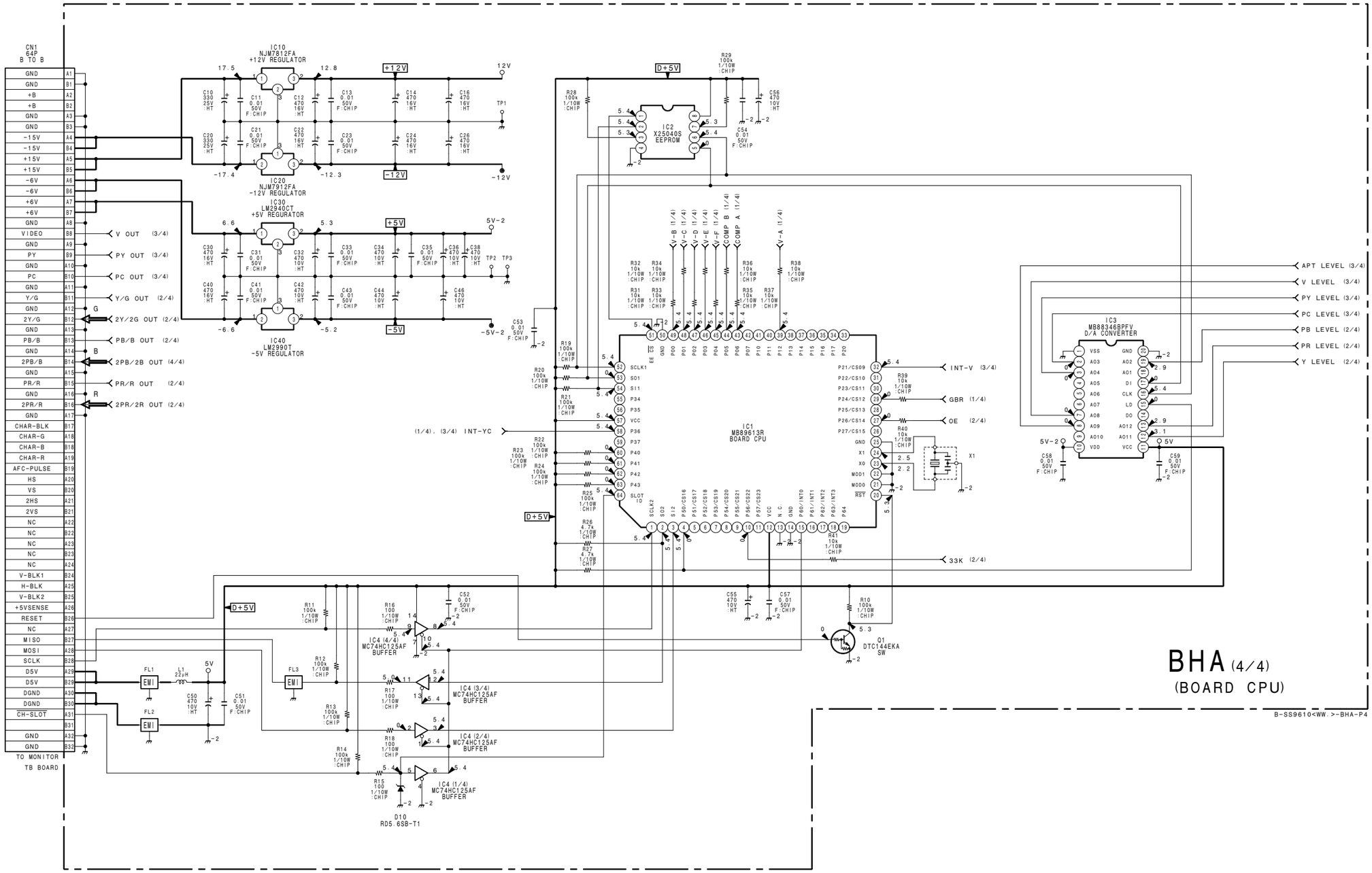

# BHA (2/4) (GAIN CONTROL)

B-SS9610<WW.>-BHA-P2




# BHA (3/4)
## (GAIN CONTROL)

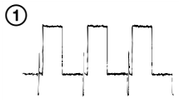
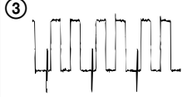
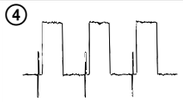
B-SS9610<WW.>-BHA-P3




**BHA** (4/4)
(BOARD CPU)

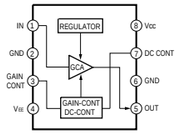
B-SS9610<WW.>-BHA-P4

## BHA Board Waveforms

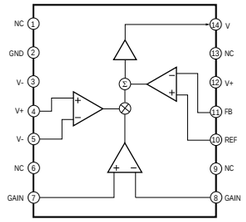
| | | |
|---|---|---|
| ①  1.6Vp-p (H) | ②  0.8Vp-p (H) | ③  0.8Vp-p (H) |
| ④  2Vp-p (H) | ⑤  1Vp-p (H) | ⑥  1Vp-p (H) |

## BHA Board IC Block Diagrams

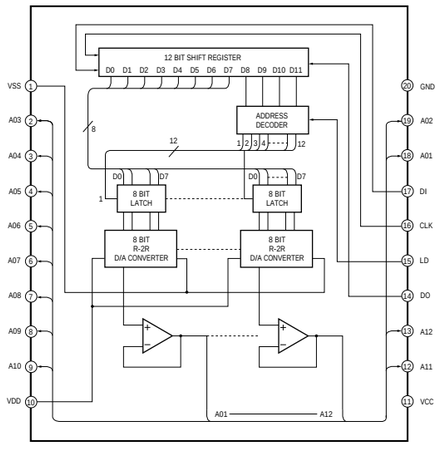
### CXA1521M (IC170, 270, 370, 700)



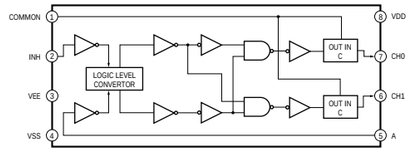

### EL4451CS (IC451, 551, 651)




### MB88346BPFV (IC3)




### TC4W53F (IC101, 102, 201, 202, 301, 302, 401, 501, 601, 450, 550, 650)



Japanese/English
98CT0912-1
Printed in Japan

Sony Corporation
**Broadcasting & Professional Systems Company**

9-922-699-01