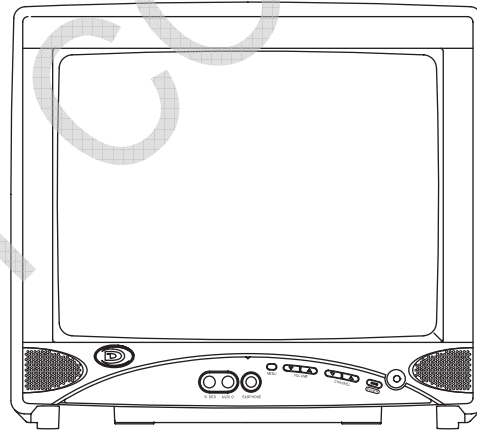




# SERVICE MANUAL

This service manual shows only the differences between the model DWT1304 and the original model ST413E. All other information is described in the service manual of the model ST413E.

## 13" COLOR TELEVISION DWT1304



### Different parts from original model (ST413E)

Ref. No.	Description	Part No.
A1	FRONT CABINET L2204UE	0EM000886
A2	CONTROL PLATE L2204UE	0EM302049
A4▲	RATING LABEL L2204UE	-----
A-5	BRAND BADGE L2204UE	0EM408903
B3	Not Used	
S1	CARTON L2204UE	0EM408906
S6	SERIAL NO. LABEL L2204UE	-----
S7	LABEL, EAS(H3761UD) MAKER NO.ZLLFNSLE1	0VM410203
X1▲	OWNER'S MANUAL(E)/(S) L2204UE:ENGLISH/SPANISH	0EMN02372
X2	REMOTE CONTROL NE142UD or REMOTE CONTROL NE154UD	NE142UD NE154UD
X4	Not Used	
X-4	SHEET RETURN STOP L2204UE	0EM408998

DO NOT COPY

**Symphonic**

**SYLVANIA**  
**DURABRAND**

# SERVICE MANUAL

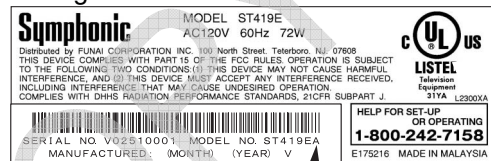
## Subject: Change of IF Signal Process IC

This service manual supplement is for the ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model, which are different from the previous ST413E/6413TE/DWT1304/ST419E/6419TE model. For the ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model, an "A" has been added to the end of the model number on rating label in the rear. Refer to the rating label illustration at right.

This service manual shows only the differences between the model ST413E/6413TE/DWT1304/ST419E/6419TE changed IC model and the previous ST413E/6413TE/DWT1304/ST419E/6419TE model. All other information is described in the service manual of the previous ST413E/6413TE/DWT1304/ST419E/6419TE model.

Example: ST419E

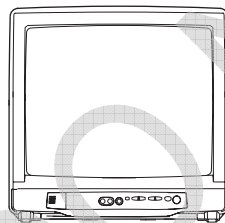
Rating label



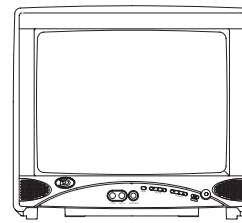
Suffix "A"

## 13" COLOR TELEVISION

**ST413E/6413TE**

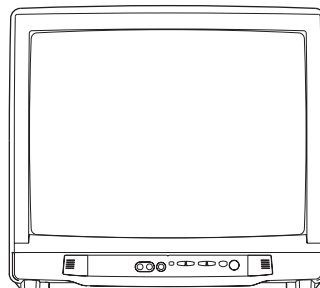


**DWT1304**



## 19" COLOR TELEVISION

**ST419E/6419TE**



# IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

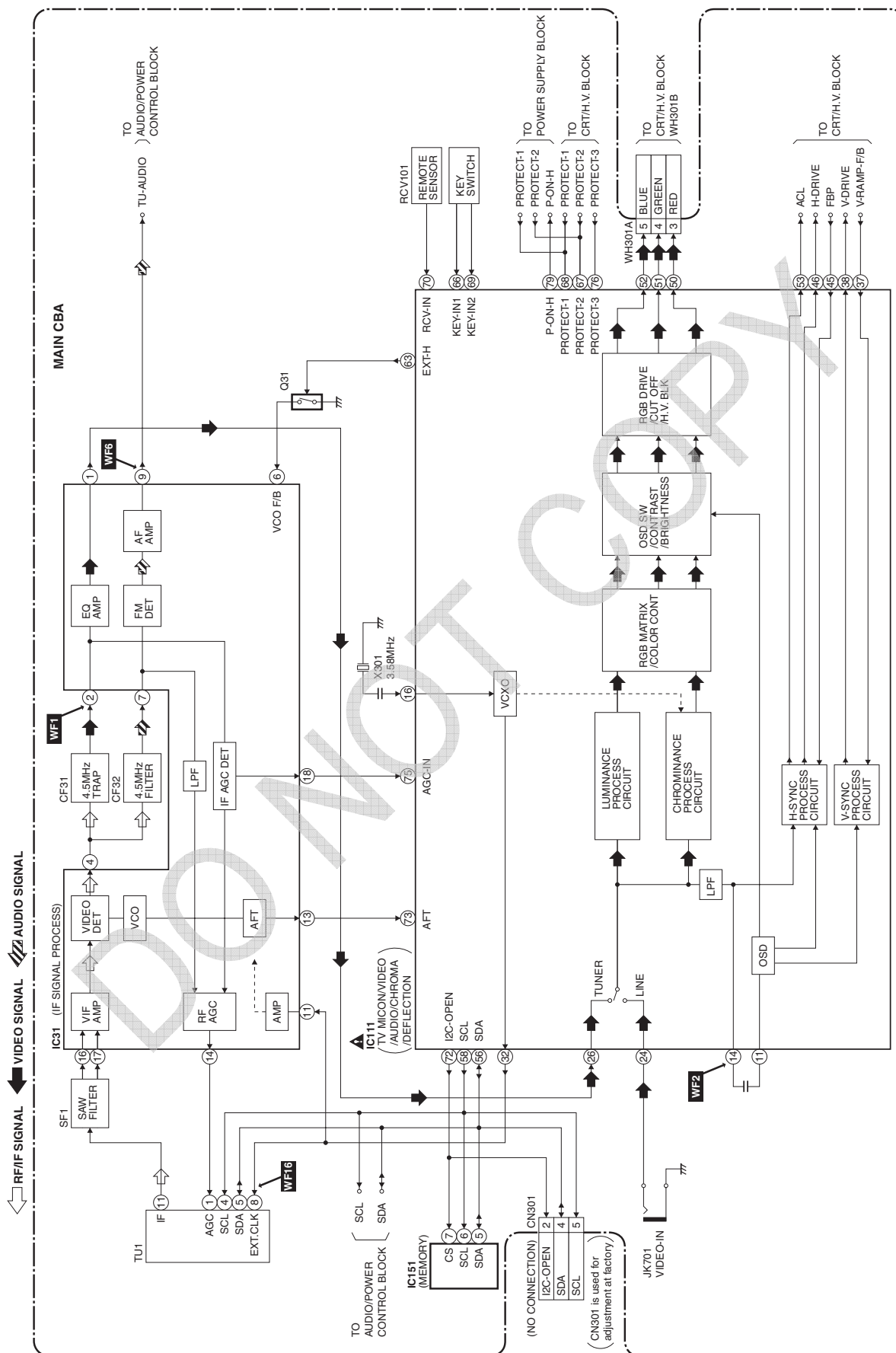
It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

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# BLOCK DIAGRAMS

## IF/Video/System Control Block Diagram



# SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

## Standard Notes

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "▲" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

### Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ( $K=10^3$ ,  $M=10^6$ ).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in  $\mu F$  ( $P=10^{-6}\mu F$ ).
5. All voltages are DC voltages unless otherwise specified.

### Note of Capacitors:

ML --- Mylar Cap. PP --- Metallized Film Cap. SC --- Semiconductor Cap. L --- Low Leakage type

### Temperature Characteristics of Capacitors are noted with the following:

B ---  $\pm 10\%$  CH ---  $0 \pm 60 \text{ ppm}/^\circ\text{C}$  CSL ---  $+350 \sim -1000 \text{ ppm}/^\circ\text{C}$

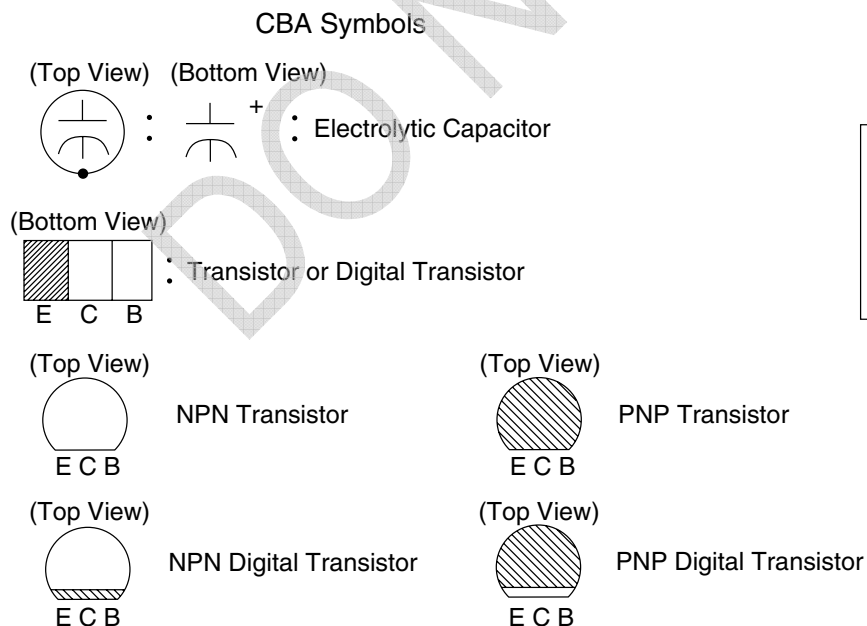
### Tolerance of Capacitors are noted with the following:

Z ---  $+80 \sim -20\%$

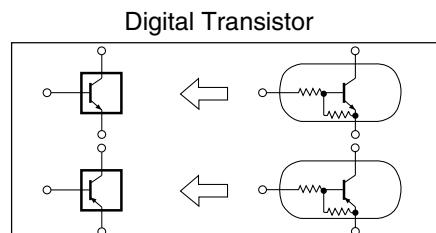
### Note of Resistors:

CEM --- Cement Res. MTL --- Metal Res. F --- Fuse Res.

Capacitors and transistors are represented by the following symbols.



### Schematic Diagram Symbols



## LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:** FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE\_A,\_V FUSE.

**ATTENTION:** UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE\_A,\_V.

### 2. CAUTION:

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.

If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

### 3. Note:

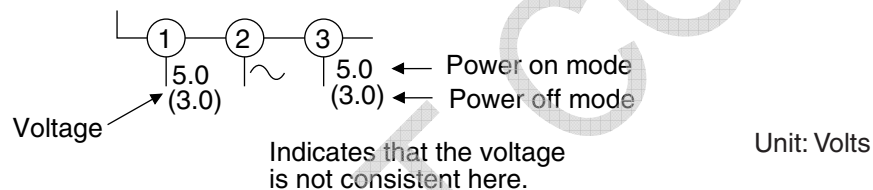
- (1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
- (2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

### 4. Wire Connectors

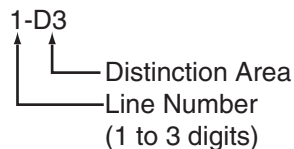
- (1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
- (2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

### 5. Voltage indications on the schematics are as shown below:

Plug the TV power cord into a standard AC outlet.:

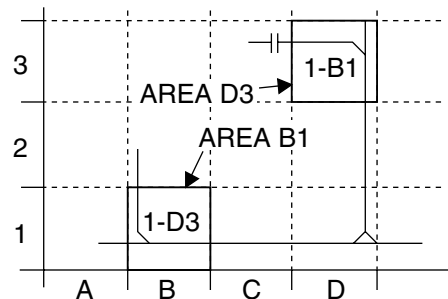


### 6. How to read converged lines



Examples:

1. "1-D3" means that line number "1" goes to the line number "1" of the area "D3".
2. "1-B1" means that line number "1" goes to the line number "1" of the area "B1".



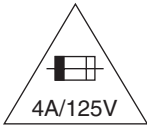
### 7. Test Point Information

- ⊙ : Indicates a test point with a jumper wire across a hole in the PCB.
- : Used to indicate a test point with a component lead on foil side.
- ⊗ : Used to indicate a test point with no test pin.
- : Used to indicate a test point with a test pin.

Main 2/3 Schematic Diagram

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.  
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.



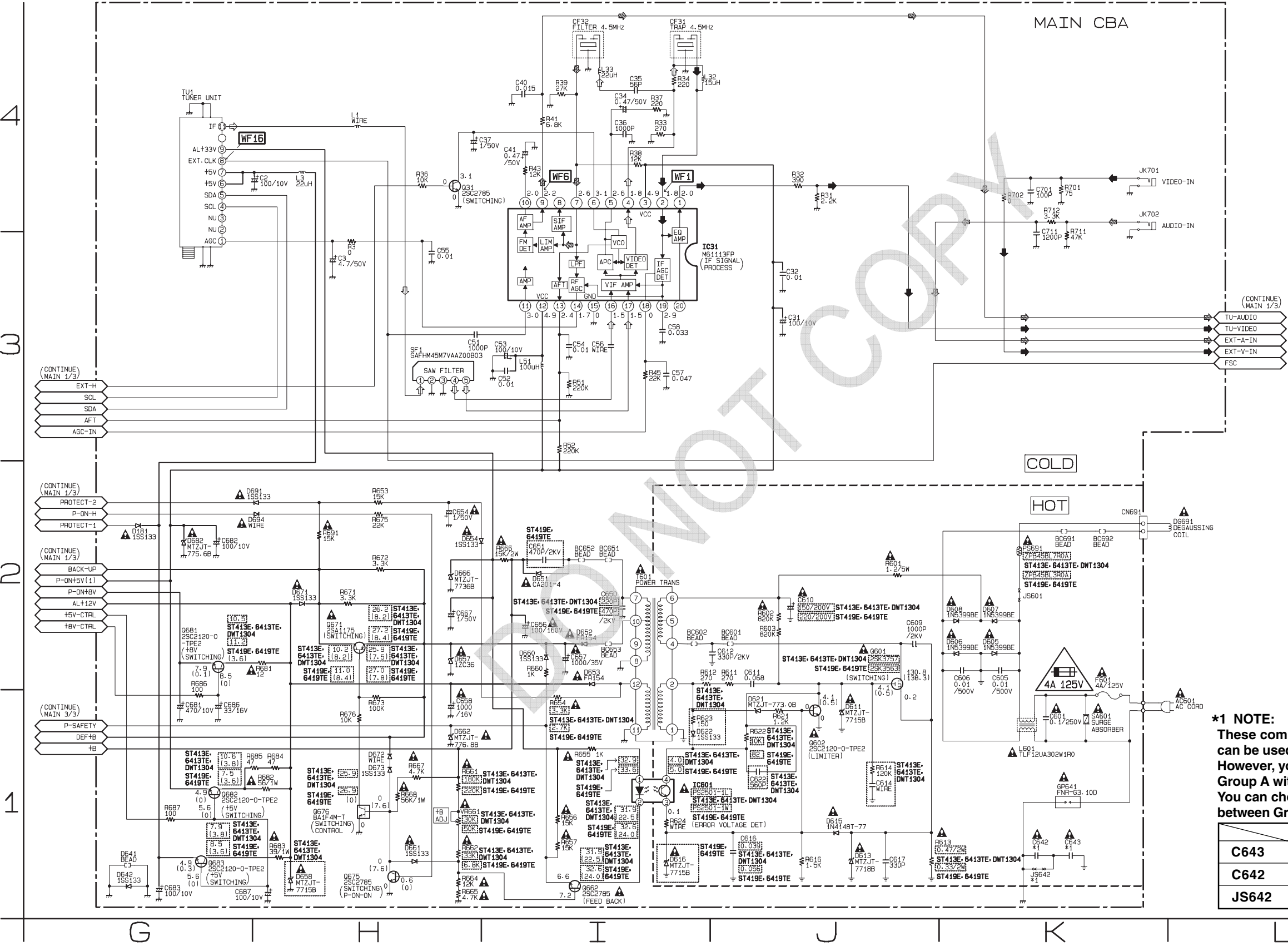
CAUTION ! : For continued protection against risk of fire,  
replace only with same type 4 A, 125V fuse.

ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

NOTE:

The voltage for parts in hot circuit is measured using  
hot GND as a common terminal.

IF SIGNAL VIDEO SIGNAL AUDIO SIGNAL



MAIN 2/3	
Ref No.	Position
ICS	
IC31	I-3
IC601	I-1
TRANSISTORS	
Q31	H-4
Q601	J-2
Q602	J-1
Q662	I-1
Q671	H-2
Q675	H-1
Q676	H-1
Q681	G-2
Q682	G-1
Q683	G-1
CONNECTOR	
CN691	K-2
VARIABLE RESISTOR	
VR661	H-1

\*1 NOTE:  
These components (C643, C642, JS642)  
can be used in any models.  
However, you cannot mix components under  
Group A with the ones under Group B.  
You can choose either Group. The difference  
between Group A and Group B is shown below.

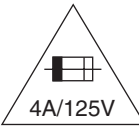
	Group A	Group B
C643	0.01/250V	4700P/250V
C642	0.01/250V	Not Used
JS642	Not Used	WIRE



Main CBA Top View

CAUTION !

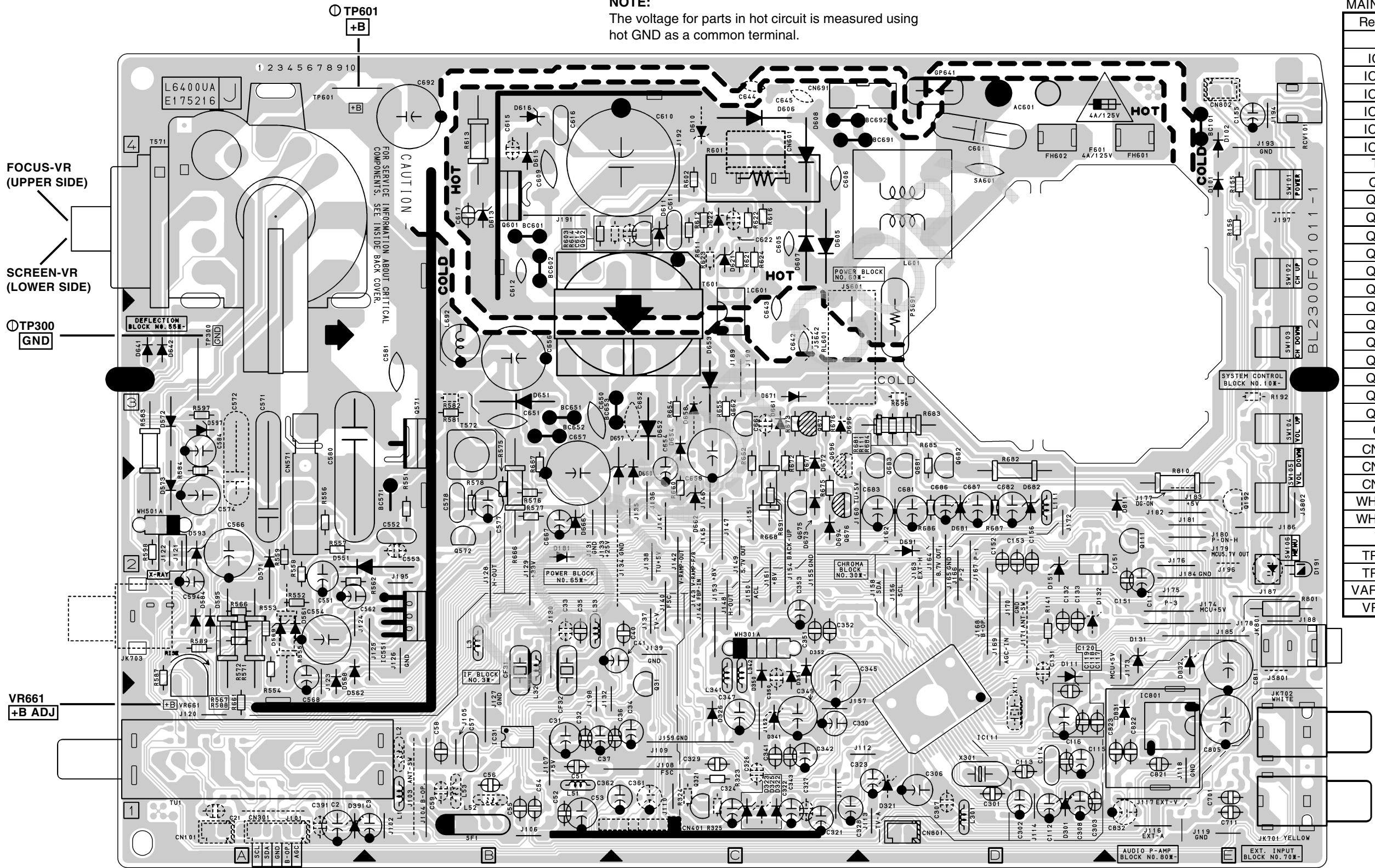
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.  
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.



**CAUTION ! :** For continued protection against risk of fire,  
replace only with same type 4 A, 125V fuse.  
**ATTENTION :** Utiliser un fusible de rechange de même type de 4A, 125V.

Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used.  
Also, in order to have the ability to increase the input slowly,when troubleshooting this type power supply circuit, a variable isolation transformer is required.

**NOTE:**  
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

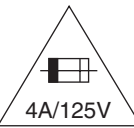


MAIN CBA	
Ref No.	Position
ICS	
IC31	B-1
IC111	D-1
IC151	E-2
IC551	B-2
IC601	C-4
IC801	E-1
TRANSISTORS	
Q31	C-1
Q111	E-2
Q321	C-1
Q571	B-3
Q572	B-2
Q601	B-4
Q602	B-4
Q662	C-3
Q671	C-3
Q675	C-2
Q676	C-2
Q681	D-3
Q682	D-3
Q683	D-3
CONNECTORS	
CN571	A-3
CN691	C-4
CN801	D-1
WH301A	C-2
WH501A	A-2
TEST POINTS	
TP300	A-3
TP601	A-4
VARIABLE RESISTOR	
VR661	A-1

# Main CBA Bottom View

## CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.  
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.

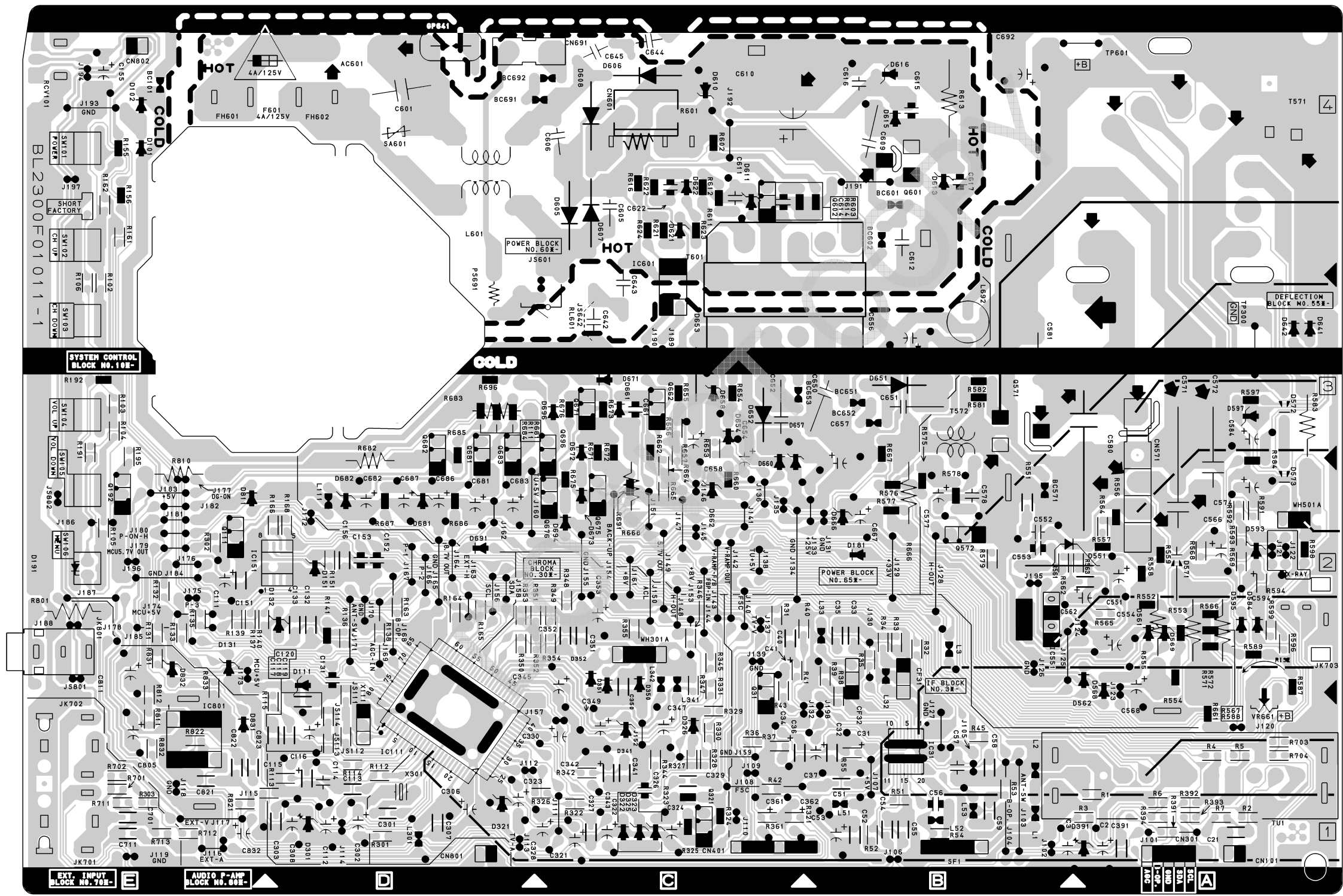


**CAUTION ! :** For continued protection against risk of fire,  
replace only with same type 4 A, 125V fuse.  
**ATTENTION :** Utiliser un fusible de rechange de même type de 4A, 125V.

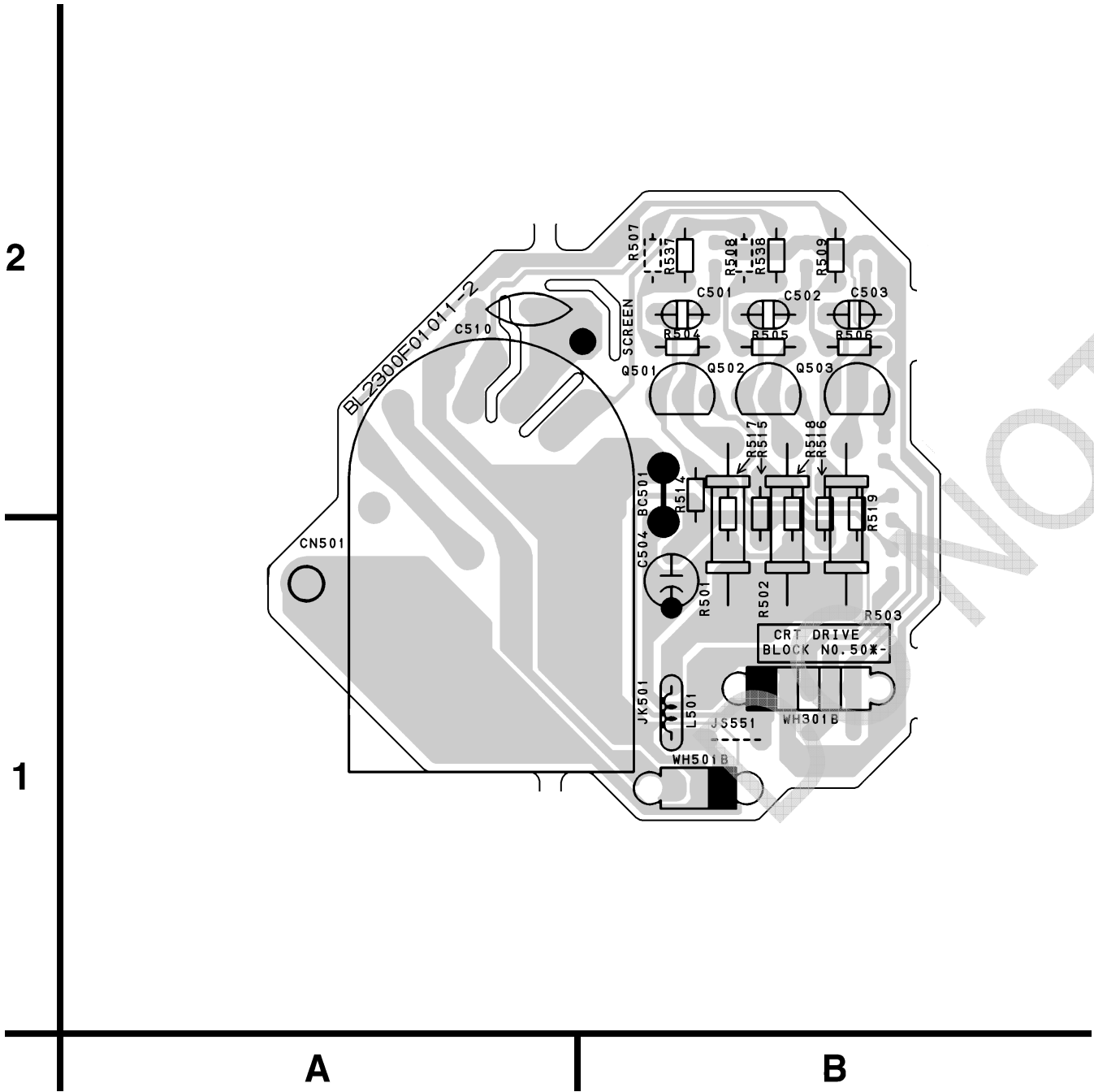
## NOTE:

The voltage for parts in hot circuit is measured using  
hot GND as a common terminal.

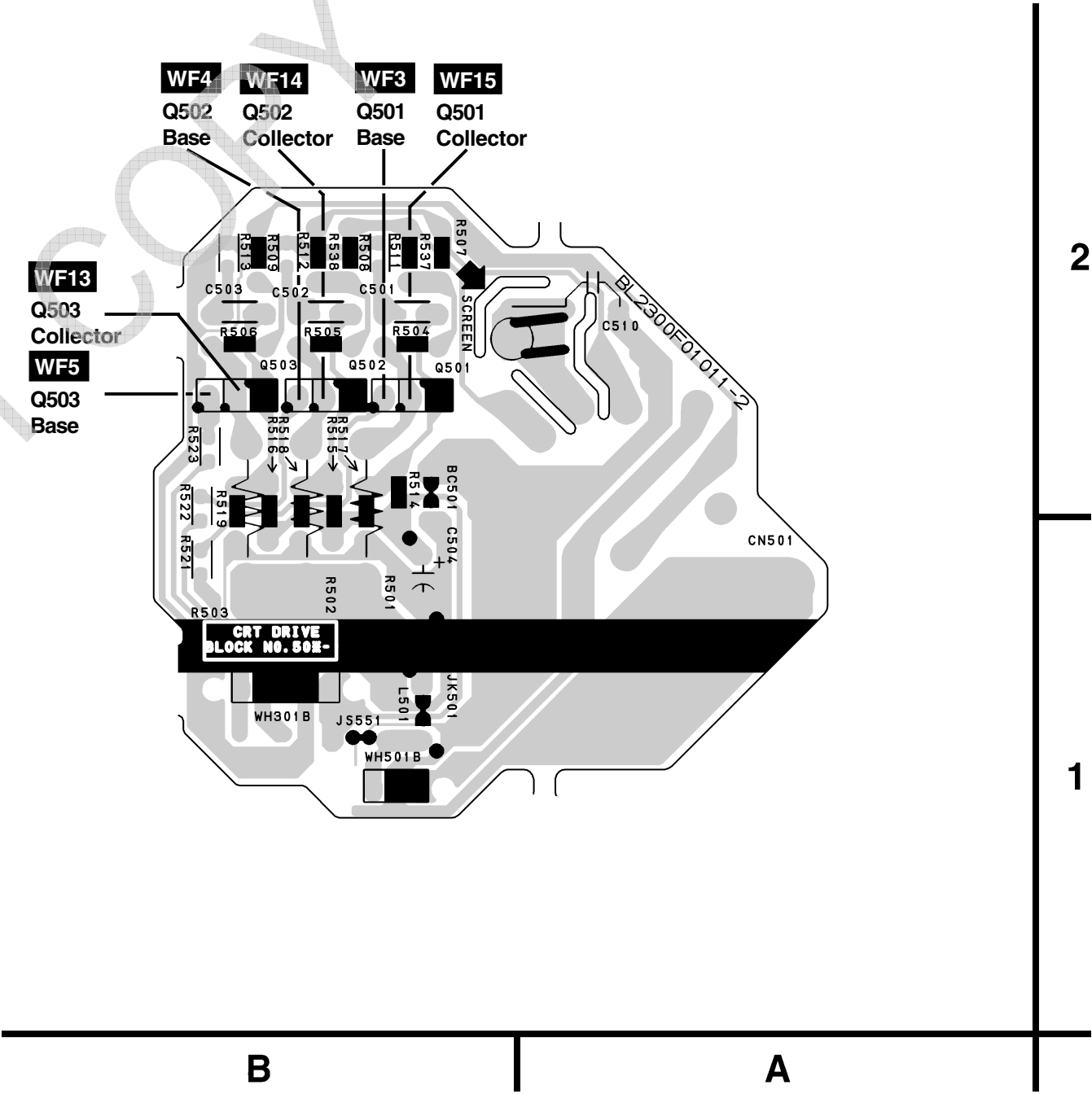
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used.  
Also, in order to have the ability to increase the input slowly,when troubleshooting this type power supply circuit, a variable isolation transformer is required.



CRT CBA Top View



CRT CBA Bottom View



CRT CBA

Ref No.	Position
TRANSISTORS	
Q501	B-2
Q502	B-2
Q503	B-2
CONNECTORS	
CN501	A-1
WH301B	B-1
WH501B	B-1

## ST413E changed IC model

### Different parts from the previous version model (ST413E)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A4▲	RATING LABEL L2200XA	-----
S6	SERIAL NO. LABEL L2200XA	-----
ELECTRICAL PARTS		
	MMA CBA	0ESA05976
	MAIN CBA	-----
C38	Not Used	
C609	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
IC31	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
R38▲	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJB5Z0123
R132	Not Used	

## 6413TE changed IC model

### Different parts from the previous version model (6413TE)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A4▲	RATING LABEL L2201XB	-----
S6	SERIAL NO. LABEL L2201XB	-----
ELECTRICAL PARTS		
	MMA CBA	0ESA05976
	MAIN CBA	-----
C38	Not Used	
C609	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
IC31	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
R38▲	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJB5Z0123
R132	Not Used	

## DWT1304 changed IC model

### Different parts from the previous version model (DWT1304)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A4▲	RATING LABEL L2204XE	-----
S6	SERIAL NO. LABEL L2204XE	-----
ELECTRICAL PARTS		
	MMA CBA	0ESA05976
	MAIN CBA	-----
C38	Not Used	
C609	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
IC31	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
R38▲	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJB5Z0123
R132	Not Used	



## ST419E changed IC model

### Different parts from the previous version model (ST419E)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A4▲	RATING LABEL L2300XA	-----
S6	SERIAL NO. LABEL L2300XA	-----
ELECTRICAL PARTS		
	MMA CBA	0ESA05979
	MAIN CBA	-----
C38	Not Used	
C609	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
IC31	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
R38▲	CHIP RES.(1608) 1/10W J 12k $\Omega$	RRXAJB5Z0123
R132	Not Used	

## 6419TE changed IC model

### Different parts from the previous version model (6419TE)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A4▲	RATING LABEL L2301XB	-----
S6	SERIAL NO. LABEL L2301XB	-----
ELECTRICAL PARTS		
	MMA CBA	0ESA05979
	MAIN CBA	-----
C38	Not Used	
C609	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
IC31	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
R38▲	CHIP RES.(1608) 1/10W J 12k $\Omega$	RRXAJB5Z0123
R132	Not Used	

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