

Service Manual

Color Television

CHASSIS : CN-001GF

**Model : DTQ-2133SSN
DTQ-21U4SSN
DTQ-2133SSFN**



Caution

: In this Manual, some parts can be changed for improving their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List)in Service Information Center.

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PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO - VIDEO PRODUCTS

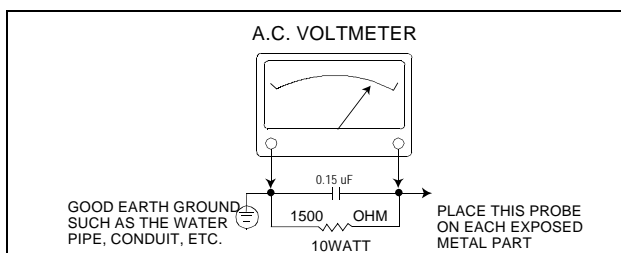
CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANT RESULTING PROPERTY DAMAGE OR USER INJURY. SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER. WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED, A CHECK SHOULD BE MADE OF THE FOLLOWING:

SUBJECT: FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE, THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OF SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS, FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD), AND REPLACE IF NECESSARY. FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTOR, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES. DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET. (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS, HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER : CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD. 150V A.C. TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER POPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART. VOLTAGE MEASURED MUST NOT EXCEED .75 VOLTS R.M.S THIS CORRESPONDS TO 0.5 MILLIAMPS A.C. MAY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION ON SERVICE LITERATURE.

SUBJECT : X-RADIATION

1. BE SURE PROCEDURES AND INSTRUCTIONS TO ALL SERVICE PERSONNEL COVER THE SUBJECT OF X-RADIATION. THE ONLY POTENTIAL SOURCE OF X-RAYS IN CURRENT T.V. RECEIVERS IS THE PICTURE TUBE. HOWEVER, THIS TUBE DOES NOT EMIT X-RAYS WHEN THE HIGH VOLTAGE IS AT THE FACTORY SPECIFIED LEVEL. THE PROPER VALUE IS GIVEN IN THE APPLICABLE SCHEMATIC. OPERATION AT HIGHER VOLTAGES MAY CAUSE A FAILURE OF THE PICTURE TUBE OR HIGH VOLTAGE SUPPLY AND UNDER CERTAIN CIRCUMSTANCES, ANY PRODUCE RADIATION IN EXCESS OF DESIRABLE LEVELS.
2. ONLY FACTORY SPECIFIED C.R.T ANODE CONNECTORS MUST BE USED. DEGAUSSING SHIELDS ALSO SERVE AS X-RAY SHIELD IN COLOR SETS. ALWAYS RE-INSTALL THEM.
3. IT IS ESSENTIAL THAT SERVICE PERSONNEL HAVE AVAILABLE AN ACCURATE AND RELIABLE HIGH VOLTAGE METER. THE CALIBRATION OF THE METER SHOULD BE CHECKED PERIODICALLY AGAINST A REFERENCE STANDARD. SUCH AS THE ONE AVAILABLE AT YOUR DISTRIBUTOR.
4. WHEN THE HIGH VOLTAGE CIRCUITRY IS OPERATING PROPERLY THERE IS NO POSSIBILITY OF AN X-RADIATION PROBLEM. EVERY TIME A COLOR CHASSIS IS SERVICED, THE BRIGHTNESS SHOULD BE RUN UP AND DOWN WHILE MONITORING THE HIGH VOLTAGE WITH A METER TO BE CERTAIN THAT THE HIGH VOLTAGE DOES NOT EXCEED THE SPECIFIED VALUE AND THAT IT IS REGULATING CORRECTLY. WE SUGGEST THAT YOU AND YOUR SERVICE ORGANIZATION REVIEW TEST PROCEDURES SO THAT VOLTAGE REGULATION IS ALWAYS CHECKED AS A STANDARD SERVICING PROCEDURE, AND THAT THE HIGH VOLTAGE READING BE RECORDED ON EACH CUSTOMER'S INVOICE.
5. WHEN TROUBLESHOOTING AND MAKING TEST MEASUREMENTS IN A PRODUCT WITH A PROBLEM OF EXCESSIVE HIGH VOLTAGE, AVOID BEING UNNECESSARILY CLOSE TO THE PICTURE TUBE AND THE HIGH VOLTAGE SUPPLY. DO NOT OPERATE THE PRODUCT LONGER THAN IS NECESSARY TO LOCATE THE CAUSE OF EXCESSIVE VOLTAGE.
6. REFER TO HV, B+ AND SHUTDOWN ADJUSTMENT PROCEDURES DESCRIBED IN THE APPROPRIATE SCHEMATIC AND DIAGRAMS (WHERE USED).

SUBJECT : IMPLSION

1. ALL DIRECT VIEWED PICTURE TUBES ARE EQUIPPED WITH AN INTEGRAL IMPLSION PROTECTION SYSTEM. BUT CARE SHOULD BE TAKEN TO AVOID DAMAGE DURING INSTALLATION. AVOID SCRATCHING THE TUBE. OF SCRATCHED REPLACE IT.
2. USE ONLY RECOMMENDED FACTORY REPLACEMENT TUBES.

SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE, OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT, MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS. A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

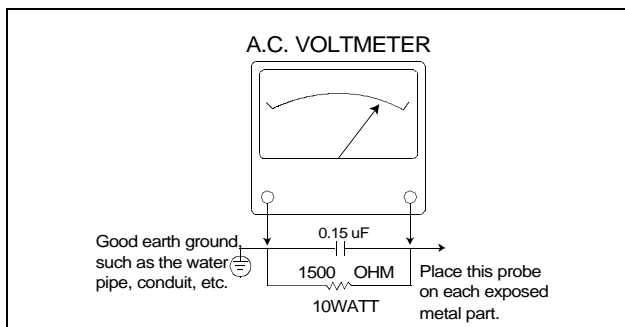
CAUTION : Do not attempt to modify this product in any way. Unauthorized modifications will not only void the warranty, but may lead to your being liable for any resulting property damage or user injury. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines. To do otherwise, increases the risk of potential hazards and injury to the user.

SAFETY CHECKS

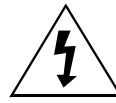
After the original service problem has been corrected, a check should be made of the following:

SUBJECT : FIRE & SHOCK HAZARD

1. Be sure that all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the repair shop.
2. Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.
3. Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including A.C. cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particulates.
4. Check for physical evidence of damage or deterioration to parts and components, and replace if necessary follow original layout, lead length and dress.
5. No leads or components should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. All critical components such as fuses, flameproof resistors, capacitors, etc. must be replaced with exact factory types. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. After re-assembly of the set always perform an A.C. leakage test on all exposed metallic parts of the cabinet, (the channel selector knob, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this test. Use an A.C. voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner : connect a 1500 ohm 10 watt resistor, paralleled by a 15 mfd. 150V A.C. type capacitor between a known good earth ground (9water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the A.C. voltage across the combination of 1500 ohm resistor and 0.15 MFD capacitor. Reverse the A.C. plug and repeat A.C. voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 volts R.M.S. This corresponds to 0.5 milliamp A.C. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



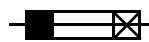
GRAPHIC SYMBOLS :



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the service personnel to the presence of uninsulated "dangerous voltage" that may be of sufficiently magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the service personnel to the presence of important safety information in service literature.



Fuse symbol is printed on pcb adjacent to the fuse, with "RISK OF FIRE REPLACE FUSE AS MARKED". The symbol is explained in the service manual with the following wording or equivalent.

"CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE (4A, 125V)" and **"ATTENTION:** AFIN D'ASSU UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET DE "4A, 125V".

SUBJECT : X-RADIATION

1. Be sure procedures and instructions to all service personnel cover the subject of X-rays in current T.V. receivers is the picture tube. However, this tube does not emit X-rays when the high voltage is at the factory specified level. The proper value is given in the applicable schematic. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.
2. Only factory specified C.R.T. anode connectors must be used. Degaussing shields also serve as X-ray shield in color sets. Always re-install them.
3. It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard. Such as the one available at your distributor.
4. When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure. And that the high voltage reading be recorded on each customer's invoice.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.
6. Refer to HV, B+ and Shutdown adjustment procedures described in the appropriate schematic and diagrams (where used).

SUBJECT : IMPLOSION

1. All direct viewed picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube. If scratched, replace it.
2. Use only recommended factory replacement tubes.

SUBJECT : TIPS ON PROPER INSTALLATION

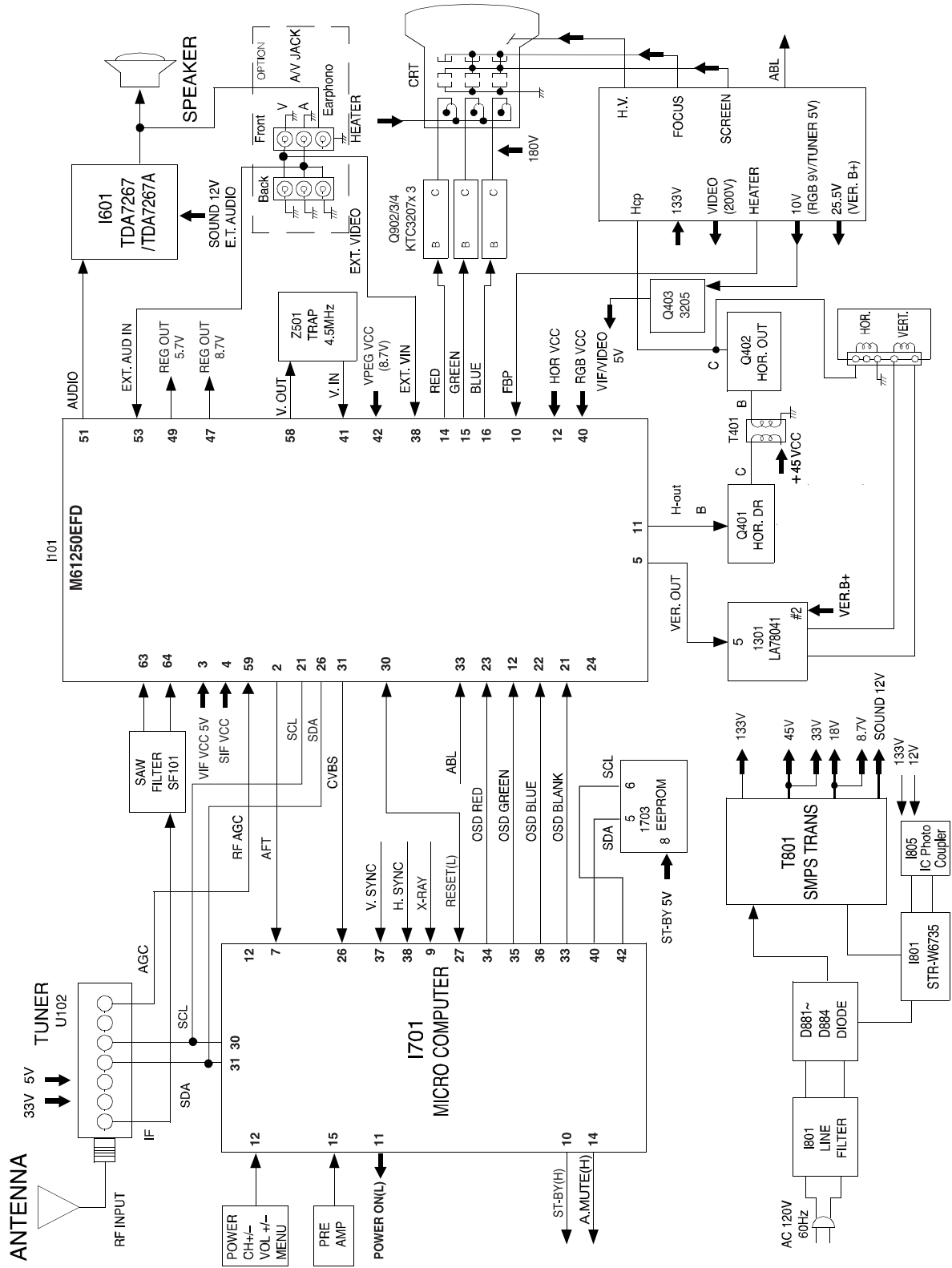
1. Never install any receiver in closed-in recess, cubbyhole or closely fitting shelf space over, or close to heat duct, or in the path of heated air flow.
2. Avoid conditions of high humidity such as : Outdoor patio installations where dew is a factor. Near steam radiators where steam leakage is a factor, etc.
3. Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.

4. Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions. A receiver mounted to a shelf or platform must retain its original feet(or the equivalent thickness in spacers) to provide adequate are flow across the bottom, bolts or screws used for fasteners must not touch and parts or wiring. Perform leakage test on customized installations.
5. Caution customers against the mounting of a receiver on sloping shelf or a tilted position, unless the receiver is properly secured.
6. A receiver on a roll-about cart should be stable on its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
7. Caution customers against the use of a cart or stand which has not been listed by underwriters laboratories, inc. For use with their specific model of television receiver or generically approved for use with T.V.'s of the same or larger screen size.

SPECIFICATIONS

ITEM	MODEL			REMARK
		DTQ-2133SSN DTQ-21U4SSN	DTQ-2133SSFN	
TV STANDARD	NTSC - M			
POWER INPUT	110V	FREE		
POWER CONSUMTION	65 WATTS			
TUNING SYSTEM	FREQUENCY SYNTHESIZER			
TUNING RANGES	VHF : 2 ~ 13 (12) UHF : 14 ~ 69 (56) CATV : 1 ~ 125 (125)			
SOUND OUTPUT	1.3W+1.3W			
SPEAKER	8ohm 3W			
ANTENA INPUT IMPEDANCE	75ohm Unbalanced			
AUXILIARY INPUT TERMINAL	Front : Video, Audio Rear : Video, Audio			
INTERMEDIATE FREQUENCIES	Picture IF Carrier Frequency : 45.75MHz Sound IF Carrier Frequency : 41.25MHz Color Sub- Carrier Frequency : 3.579545MHz			
REMOTE CONTROL	R-48C04			
SPECIAL FUNCTIONS	3-Language OSD With CAPTION Wakeup On/Off Time Sleep Timer Power Restore			

BLOCK DIAGRAM



ALIGNMENT INSTRUCTIONS

1. SERVICE MODE ADJUSTMENTS

Follow the steps below whenever service adjustment is required. See Table- A and Table- B to determine if service adjustments are required.

1) How to enter the service mode using the user remote control.

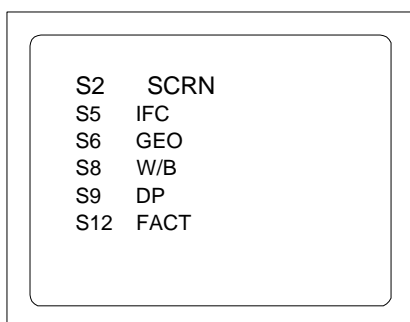
Turn the set on.

Direct the remote control to the reception window of TV.

Push buttons of remote control in sequence as follows.

1 **®** **MUTE** **®** **DISPLAY** **®** **MUTE**

Then, the screen will appear as follows.



Using the channel up or channel down button, select the item you wish to adjust.

(The color of selected item turns into the red.)

Press the volume up or down button to enter in the service mode you wish to adjust.

2) How to memorize the adjusted values in the service mode.

Must press **DISPLAY** button the state which the screen is displaying each of service menus after all adjustments are completed each of all service menu.

Table-A : Adjust the values of service mode when a part is replaced.

PART REPLACED	ADJUSTMENT		NOTES								
	NECESSARY	UNNECESSARY									
I701 (U-COM)		○	Data is stored in I703.								
I101 (MAIN)		○									
I703 (EEPROM)	○		Initial setting values are written from I701. Adjusting Items <table border="1"> <tr><td>S5</td><td>R FAGCD</td></tr> <tr><td>S6</td><td>H.SHIFT/V.SHIFT/V.SIZE</td></tr> <tr><td>S8</td><td>RD/BD/RB/GB/BB</td></tr> <tr><td>S9</td><td>Brightness</td></tr> </table>	S5	R FAGCD	S6	H.SHIFT/V.SHIFT/V.SIZE	S8	RD/BD/RB/GB/BB	S9	Brightness
S5	R FAGCD										
S6	H.SHIFT/V.SHIFT/V.SIZE										
S8	RD/BD/RB/GB/BB										
S9	Brightness										
CRT	○		Adjust items related to picture tube only.(White Balance adjustment)								

ALIGNMENT INSTRUCTIONS

Table-B

MODE	ADJUSTMENT ITEMS		DATA				REMARKS
			INITIAL		RANGE		
S2	Screen Adjustment		-		-		
S5	Auto Vco		OK		OK, NG		
	VIF VCO Adj		36		0~63		
	Auto Hvco		OK		OK, NG		
	H Vco adj		04		0~7		
	Auto RFAGC		OK		OK, NG		
	RF-DELAY		90		0~125		Align RF AGC threshold
	AGC Point		3.75		3.25/3.5/3.75/4.0		Select AGC reference voltage
S6	VCO CH NO AGC CH NO		22	10	-		
	H.Shift(Horizontal Shift)		09		0~15		
	V.Shift(Vertical Shift)		02		0~7		
	V.Size(Vertical Size)		32		0~63		
	VBLK Shift		03		0~7		
	VBLK Shift On		NO		NO,YES		
S7(1)	NO SD POWER OFF		NO		NO,YES		Automatically turn off in 15min for no received signal
	Vif F	HTONE SW	0	0	0,1	0,1	
	C Clip Level	White Back	1	0	0,1	0,1	
	TRAP Off	V Free	0	0	0,1	0,1	
	EXT	Gamma Control	0	0	0,1	0~3	
	Y DL Fine	Trap Fine ad	1	0	0~3	0~3	
	Y DL Time	H Free	3	0	0~3	0,1	
	VOUT STOP	WINDOW	0	0	0,1	0,1	
	Fsc Free	Y SW LPF	0	1	0,1	0,1	
	V Mute	FM Level	ON	15	ON,OFF	0~30	
S7(2)	Service SW		0		0,1		
	AFC1 Gain		1		0,1		
	AFC2 Gain		0		0,1		
	Analog OSD		0		0,1		
	US/JA SW		4		0~7		
	SYNC DET		0		0,1		
	Auto Slice Down		0		0,1		
	FBL Vth L		1		0,1		
	BGpFbp OFF		0		0,1		
	VIF VIDEO OUT GAIN		4		0~7		
S8(1)	RD(Red Drive)		64		0~127		Align RED OUT AC level
	BD(Blue Drive)		64		0~127		Align BLUE OUT AC level
	RB(Red Bias)		128		0~255		Align RED OUT DC level
	GB(Green Bias)		128		0~255		Align Green OUT DC level
	BB(Blue Bias)		128		0~255		Align BLUE OUT DC level
S8(2)	SCR R-BIAS		00		0~255		
	SCR G-BIAS		127		0~255		
	SCR B-BIAS		00		0~255		
	SCR R-DRIVE		63		0~127		
	SCR B-DRIVE		63		0~127		
	SCR BRIGHT		140		0~255		
S9	Brightness		75		0~155		Align common RGB DC level
	Contrast		10		0~27		
	Tint		36		0~77		
	Color		15		0~27		
	Sharpness		38		0~43		
S11	Video Tsharp	SsliceDown2	1	0	0,1	0,1	
	ABCL	SsliceDown1	0	1	0,1	0,1	
	Blackstre.off	OSD level	0	1	0,1	0,1	
	Take off	Killer level	0	1	0,1	0,1	
	ABCL Gain		0		0,1		
	AFT defeat		0		0,1		
	HVBLK off		0		0,1		
	Black stretch discharge		2		0~3		
Black stretch charge		0		0~3			
S12	Forwarding Mode						Factory Initialization

2. ASSEMBLY ADJUSTMENTS

1) SCREEN ADJUSTMENT (S2)

- Enter the service mode and select service adjustment S2.
- You can see the one horizontal line on the screen.
- Adjust the Screen Control Volume (located on FBT) so that the horizontal line onscreen may be disappeared.
- Press the volume up or down button to exit in the screen adjustment mode.

NOTE

IN THE SCREEN ADJUSTMENT MODE, DON'T PRESS OTHER BUTTONS EXCEPT VOLUME UP OR DOWN BUTTON.

2) FOCUS ADJUSTMENT

- Turn in a local station and adjust the Focus Control knob (located on FBT) for best picture details at high light condition.

3) RF AGC DELAY ADJUSTMENT (S5)

- Receive a good local channel.
- Enter the service mode and select service adjustment S5.
- You can see the OSD as shown in below.

IF CONTROL	
AUTO VCO ▯	OK
VIF VCO ADJ	36
AUTO HVCO	OK
HVCO ADJ	04
AUTO RFAGC	START
RF-DELAY	90
AGC POINT	3.75
VCO CH NO 22 ▯	AGC CH NO 10

- Select RFAGCD item, press the volume up or down button until noise or beat in picture disappears.
- Press the DISPLAY button to memorize the data.

ALIGNMENT INSTRUCTIONS

4) GEOMETRIC ADJUSTMENTS (S6)

- Enter the service mode and select service adjustment S6.

- You can see the OSD as shown in below.

GEOMETRY	
H. SHIFT	09
V. SHIFT	02
V. SIZE	32
VBLK SHIFT	03
VBLK SHIFT ON	NO
NO SD POWER OFF	NO
◆ MOVE ◀▶ ADJUST RECALL:SET	

4-1. Horizontal SHIFT Adjustment

- Select H.SHIFT item, adjust H.SHIFT data value to obtain proper horizontal centering of the internal cross pattern at the left and right of the screen.

4-2. Vertical SHIFT Adjustment

- Select V.SHIFT item, adjust V.SHIFT data value to center the raster properly on the screen.

4-3. Vertical Size Adjustment

- Select "V.SIZE" item, adjust "V.SIZE" data value to proper vertical size as follows.

5) WHITE BALANCE ADJUSTMENT(S8)

- Receive a good local channel.
- Enter the service mode and select service adjustment S8.
- You can see the OSD as shown in below.

RD	64
BD	64
RB	128
GB	128
BB	128
⬆ MOVE ⬅ ADJUST RECALL : SET	

- Using volume up or volume down, adjust service adjustment data of RD/GD/BD and RB/GB/BB until a good gray scale with normal whites is obtained.
- Press the DISPLAY button to memorize the data.

6) DIGITAL PRESET(D.P) ADJUSTMENTS(S9)**SUBBRIGHTNESS ADJUSTMENT**

- Receive a good local channel.
- Enter the service mode and select service adjustment S9.
- You can see the OSD as shown in below.

D.P.	
BRIGHTNESS	75
CONTRAST	10
TINT	36
COLOR	15
SHARPNESS	38
⬆ MOVE ⬅ ADJUST RECALL : SET	

- Select Subbrightness item, adjust Subbrightness data value to obtain normal brightness level.
- Press the DISPLAY button to memorize the data.

CONTRAST

- Fixed value = 10

TINT

- Fixed value = 36

COLOR

- Fixed value = 15

SHARPNESS

- Fixed value = 38

7) FACTORY OUTGOING MODE (S12 : FACT)

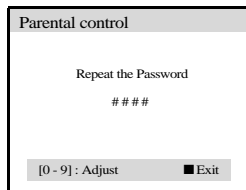
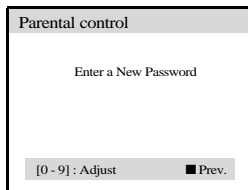
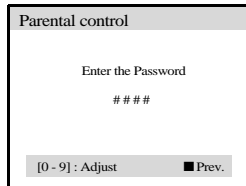
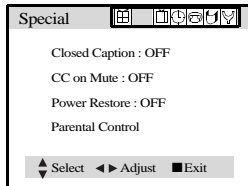
- If you select the S12, then the set becomes factory outgoing status.
- You can see the OSD "outgoing OK"

3. PARENTAL CONTROL PASSWORD SETTINGS

If user forget Parental Control Password as follows.

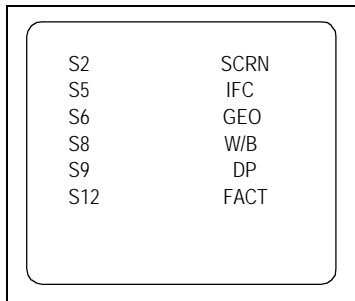
1) CHANGE THE PASSWORD.

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR
- Using the MENU buttons, select the Special menu.
- Using the the channel up (▲) or down (▼) duttons, select prental control.
- Using the volume up (►), set the password Menu.
- Push buttons of remote control in sequence as follows.
2 → 2 → 1 → 1
- Parental control password is reset.
- Using the 0-9 buttons, enter the password.
- Using the 0-9 buttons, repeat the password.



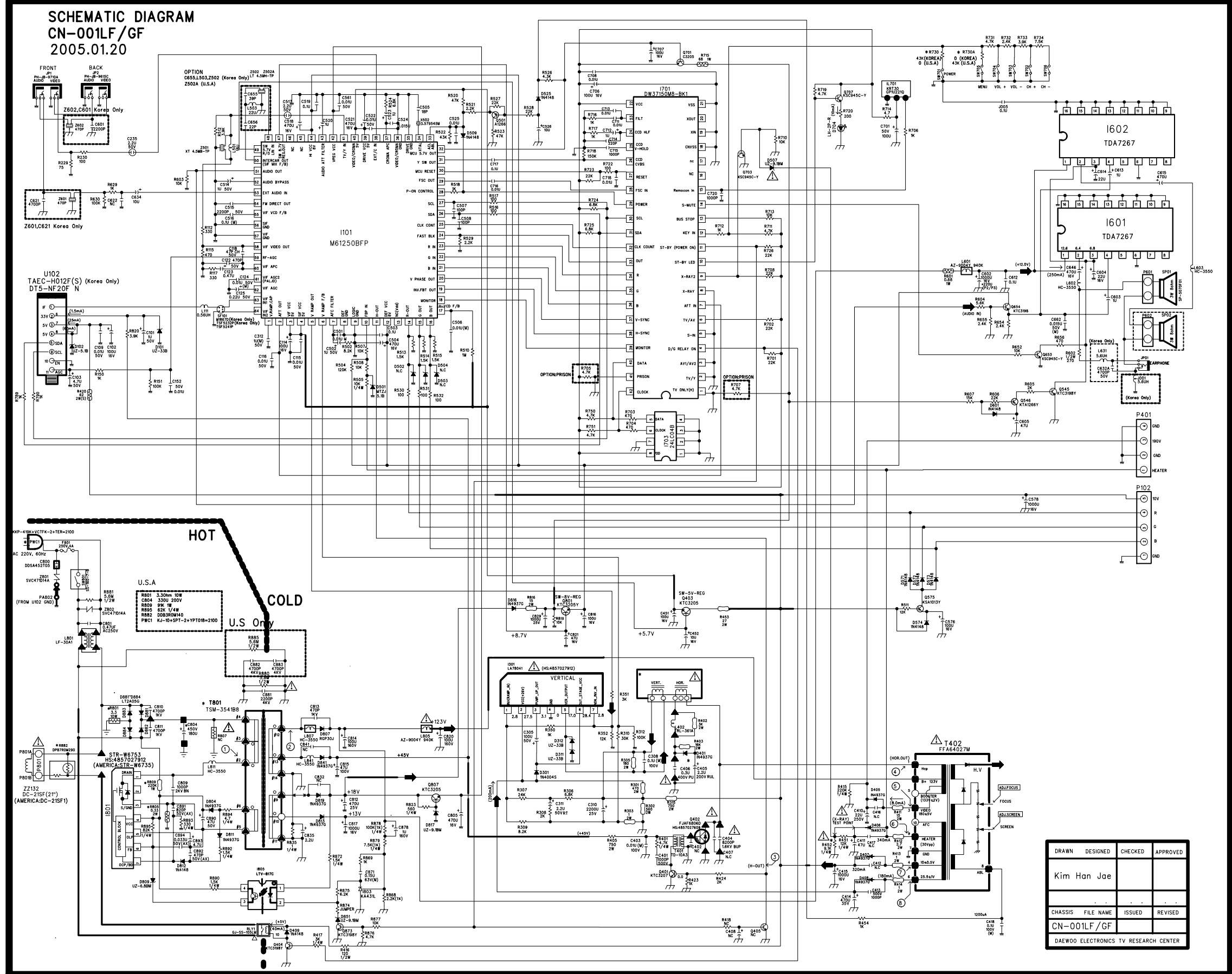
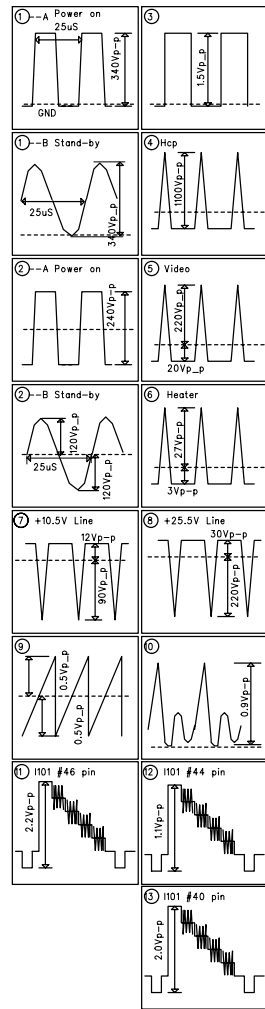
2) RESET THE PASSWORD

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR.
- Push buttons of remote control in sequence as follows.
1 → MUTE → DISPLAY → MUTE
- Then, the screen will appear as follows.



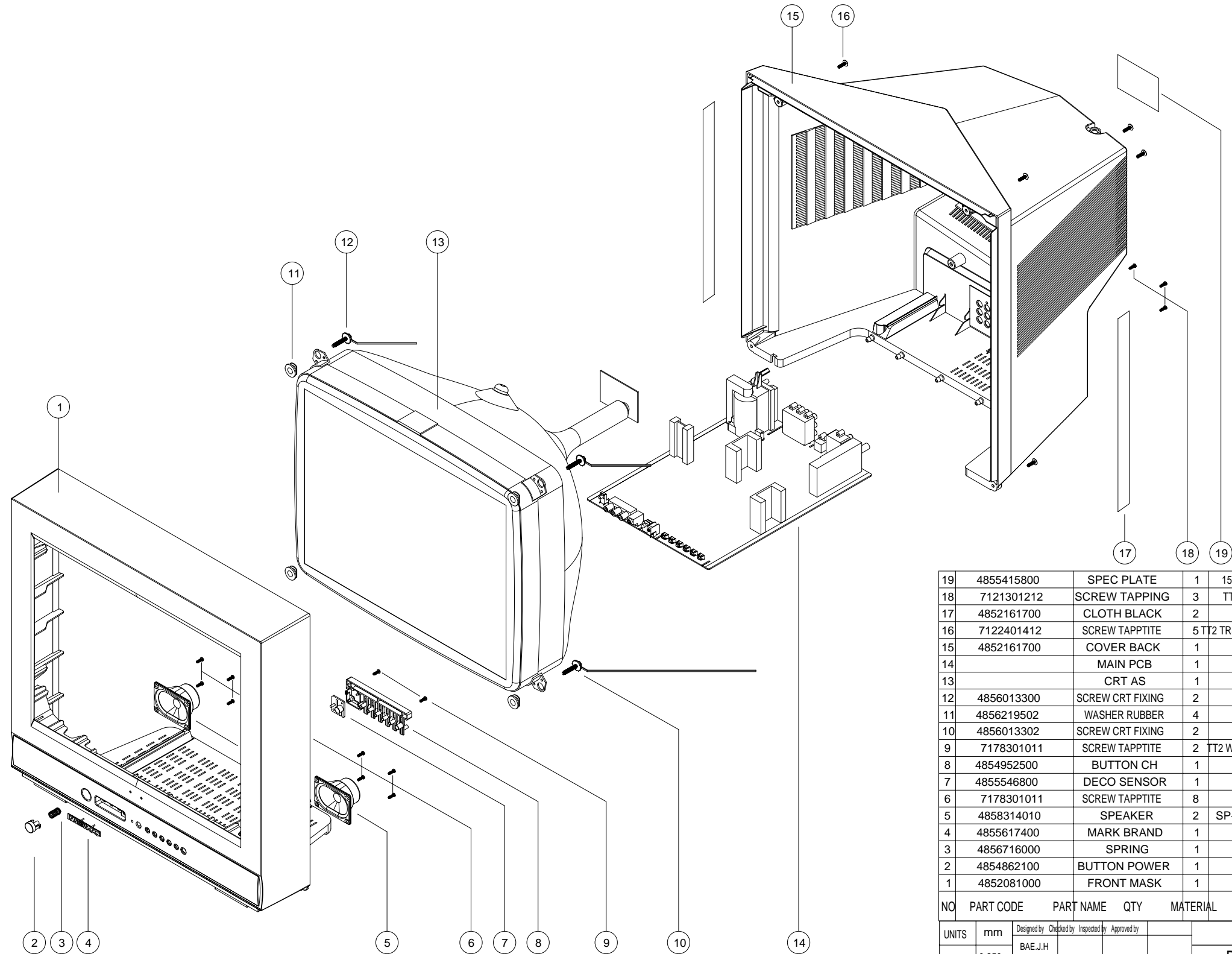
- Using the channel up (▲) or down (▼) buttons, select S12 FACT.
Press the volume up (►) button, the set becomes factory outgoing status.
- Parental control password is reset.
- Using the MENU buttons, select the parental control menu, set the new password.

SCHEMATIC DIAGRAM



DRAWN	DESIGNED	CHECKED	APPROVED
Kim Han Jae			
CHASSIS	FILE NAME	ISSUED	REVISED
CN-001LF/GF			
DAEWOO ELECTRONICS TV RESEARCH CENTER			

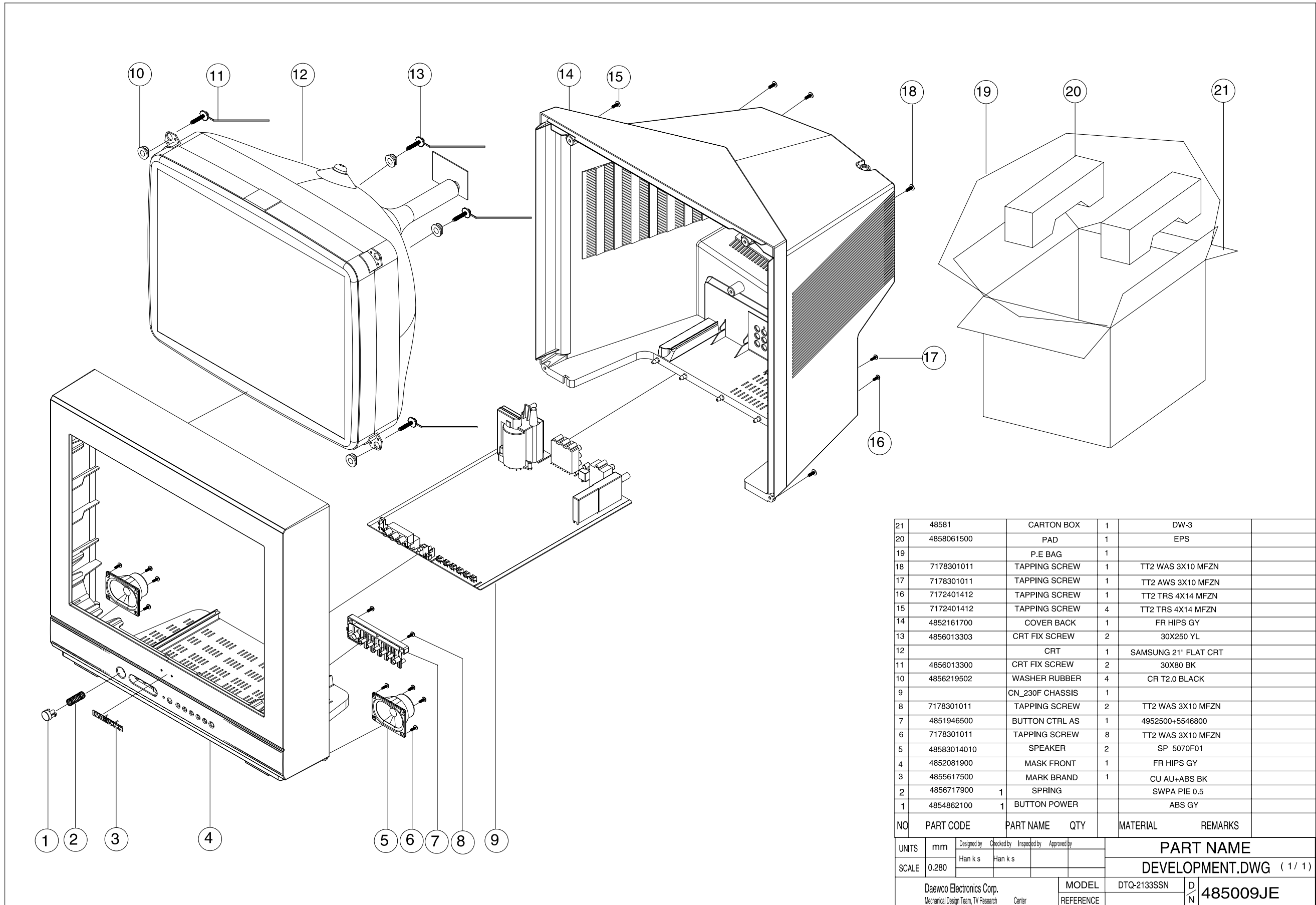
EXPLODED VIEW



19	4855415800	SPEC PLATE	1	15ART P/E FILM (C/TV)	
18	7121301212	SCREW TAPPING	3	TT2 TRS 3X12 MFZN BK	
17	4852161700	CLOTH BLACK	2	FELT 400X20X0.7	
16	7122401412	SCREW TAPTITE	5	TT2 TRS 4X14 MFZN BK	
15	4852161700	COVER BACK	1	FR HIPS GY	
14		MAIN PCB	1	CN-230F	
13		CRT AS	1		
12	4856013300	SCREW CRT FIXING	2	30X80 BK	
11	4856219502	WASHER RUBBER	4	CR T2.0 BLACK	
10	4856013302	SCREW CRT FIXING	2	30X190 BK	
9	7178301011	SCREW TAPTITE	2	TT2 WAS 3X10 MFZN	
8	4854952500	BUTTON CH	1	FR ABS GY	
7	4855546800	DECO SENSOR	1	GPPS	
6	7178301011	SCREW TAPTITE	8	TT2 WAS 3X10 MFZN	
5	4858314010	SPEAKER	2	SP-5070F01 3W 8OHM	
4	4855617400	MARK BRAND	1	CU AU+ABS BK	
3	4856716000	SPRING	1	SWPA PIE0.5	
2	4854862100	BUTTON POWER	1	FR ABS GY	
1	4852081000	FRONT MASK	1	FR HIPS GY	

NO	PART CODE	PART NAME	QTY	MATERIAL	REMARKS
UNITS	mm	Designed by	Checked by	Inspected by	Approved by
SCALE	0.250	BAE.J.H			
					ASSY NAME
					DEVELOPMENT DWG (1/1)
Daewoo Electronics Corp. Mechanical Design Team, TV Research Center			MODEL	DTQ-21U4SSN	D N 485009M6
			REFERENCE	CN-001GF	

EXPLODED VIEW



21	48581	CARTON BOX	1	DW-3	
	4858061500	PAD	1	EPS	
19		P.E BAG	1		
18	7178301011	TAPPING SCREW	1	TT2 WAS 3X10 MFZN	
17	7178301011	TAPPING SCREW	1	TT2 AWS 3X10 MFZN	
16	7172401412	TAPPING SCREW	1	TT2 TRS 4X14 MFZN	
15	7172401412	TAPPING SCREW	4	TT2 TRS 4X14 MFZN	
14	4852161700	COVER BACK	1	FR HIPS GY	
13	4856013303	CRT FIX SCREW	2	30X250 YL	
12		CRT	1	SAMSUNG 21" FLAT CRT	
11	4856013300	CRT FIX SCREW	2	30X80 BK	
10	4856219502	WASHER RUBBER	4	CR T2.0 BLACK	
9		CN_230F CHASSIS	1		
8	7178301011	TAPPING SCREW	2	TT2 WAS 3X10 MFZN	
7	4851946500	BUTTON CTRL AS	1	4952500+5546800	
6	7178301011	TAPPING SCREW	8	TT2 WAS 3X10 MFZN	
5	48583014010	SPEAKER	2	SP_5070F01	
4	4852081900	MASK FRONT	1	FR HIPS GY	
3	4855617500	MARK BRAND	1	CU AU+ABS BK	
2	4856717900	1	1	SPRING	SWPA PIE 0.5
1	4854862100	1	1	BUTTON POWER	ABS GY

NO	PART CODE	PART NAME	QTY	MATERIAL	REMARKS
UNITS	mm	Designed by	Checked by	Inspected by	Approved by
SCALE	0.280	Han k s	Han k s		
		MODEL		DTQ-2133SSN	PART NAME DEVELOPMENT.DWG (1 / 1)
		REFERENCE			
Daewoo Electronics Corp. Mechanical Design Team, TV Research Center					D N 485009JE

ELECTRICAL PARTS LIST

CAUTION

“△” is a safety part, so it must be used the same part.

“®” is a recommendable part for essential stock.

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
ZZ100	48B5748C04	TRANSMITTER REMOCON	R-48C04 (AAA)	
ZZ110	PTACPWK123	ACCESSORY AS	DTQ-21U4SSN	
00010	4850A02510	ANT ROD	S3BW216B (L=600 MM)	
00030	4850Q00910	BATTERY	R03/NN	
00040	4850A00650	TRANS ANT MATCHING	YSC-T-07 BR	
10000	48586001E2	MANUAL INSTRUCTION	DTQ-20V1FS	
M821	4858213803	BAG INSTRUCTION	L.D.P.E TO.05X250X400(+20)	
ZZ120	PTBCSHK123	COVER BACK AS	DTQ-21U4SSN	
M211	4852161701	COVER BACK	HIPS GY 21U4	
M781	4857817630	CLOTH BLACK	FELT 400X20X0.7	
ZZ130	PTPKCPK116	PACKING AS	DTQ-21U4M	
10	6520010100	STAPLE PIN	AUTO W65	
M801	4858061500	BOX CARTON	DW-3 21U4	
M811	4858100B00	PAD	EPS 21U4	
M821	4858219101	BAG P.E	P.E FOAM T0.5X1300X1150	
ZZ131	48519A7610	CRT GROUND NET	2103S-1015-1P	
ZZ132	58G0000178	COIL DEGAUSSING	DC-21F1 AL	
ZZ140	PTCACAK128	CABINET AS	DTQ-2133SSN	
40	2TF01612CL	TAPE FILAMENT	0.15X12mmX55mm	
M201A	4856017303	SCREW CRT FIX	5X30 L80 BK	
M201B	4856017310	SCREW CRT FIX	5X30 L190 BK	
M201C	4856219502	WASHER RUBBER	CR T2.0 BLACK	
M211A	7172401412	SCREW TAPPTITE	TT2 TRS 4X14 MFZN BK	
M541	4855415800	SPEC PLATE	150ART P/E FILM (C/TV)	
M591	4855930900	DECO TERM	PVC CL T0.2	
M681	4856812001	TIE CABLE	NYLON66 DA100	
SP01A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
SP01B	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
V901	4859641460	CRT	A51QDJ470X03 P38	△, ®
ZZ200	PTFMSJK128	MASK FRONT AS	DTQ-2133SSN	
M191	4851948101	BUTTON CTRL	4952501+5546801	
M191A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
M201	4852081901	MASK FRONT	HIPS GY	
M481	4854862101	BUTTON POWER	ABS GY 21U4	
M481A	4856716000	SPRING	SWPA PIE0.5	
M561	4855617500	MARK BRAND	CU AU+ABS BK	
ZZ210	PTSPPWK103	SPEAKER AS	DTN-21U4FJN	
PA601	4850703S51	CONNECTOR	YH025-03+35098+ULW=300	
PA602	4850703S55	CONNECTOR	YH025-03+35098+ULW=700	
SP01	4858314010	SPEAKER	SP-5070F01 3W 8 OHM	®
SP02	4858314010	SPEAKER	SP-5070F01 3W 8 OHM	®
ZZ290	PTMPMSK123	PCB MAIN MANUAL AS	DTQ-21U4SSN	
10	2193102005	SOLDER BAR	SN:PB=63:37 S63S-1320	
30	2291050616	FLUX SOLDER	JS-64T3	
40	2291050301	FLUX SOLVENT	IM-1000	
C404	CMYH3C822J	C MYLAR	1.6KV BUP 8200PF J	△
C406	CMYF2G304J	C MYLAR	400V MPP 0.30MF J	△
C801	CL1UC3474M	C LINE ACROSS	0.47MF 1J(U/CVSNDF/SV)+Q/O	
C804	CEYD2D331D	C ELECTRO	200V FHS 330MF (22X30)	
C881	CH1BFE222M	C CERA AC	U/C/V AC400V 2200PF	
D704	DLH2PR—	LED BLOCK	LH-2P-R	
D807	DRGP30J—	DIODE	RGP30J DO-201AD 600V 3A	
I301	PTA2SW7912	HEAT SINK ASS'Y	1LA78041— + 7174300811	®
00001	1LA78041—	IC VERTICAL	LA78041	
0000A	4857027912	HEAT SINK	AL EX	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I601	1TDA7267—	IC AUDIO AMP	TDA7267	®
I602	1TDA7267—	IC AUDIO AMP	TDA7267	®
I703	124LC04B—	IC MEMORY	24LC04B	
I801	PTE2SW7912	HEAT SINK ASS'Y	1STRW6735- + 7174300811	
00001	1STRW6735-	IC POWER	STR-W6735	△, ®
0000A	4857027912	HEAT SINK	AL EX	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
IL701	1KRT30—	IC PREAMP	KRT30	
JP01	4859109950	JACK PIN BOARD	PH-JB-9710A	
JP02	4859110150	JACK PIN BOARD	YS01-9615D	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
L401	58H0000055	COIL H-LINEARITY	TRL-361A	
L801	5PLF30A1—	FILTER LINE	LF-30A1	△
M681	4856812001	TIE CABLE	NYLON66 DA100	
PWC1	4859902710	CORD POWER AS	KJ-10+SPT-2+YPT018=2100	△, ®
Q402	PTL2SW7609	HEAT SINK ASS'Y	TKTD2499— + 7174301011	®
00001	TKTD2499—	TR HORI	KTD2499	
0000A	4857027609	HEAT SINK	AL EX	
0000B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
R801	RX10B109JQ	R CEMENT	10W 1 OHM J BEN 25MM 4P	
R882	DOB3ROM140	POSISTOR	ECPBD3ROM140	
RLY1	5SC0101335	SW RELAY	DY2-5	△
SF101	5PTSFS241P	FILTER SAW	TSF5241P	
SW801	5540101146	SW POWER PUSH	SS-160-7-B	
T401	50D10A3—	TRANS DRIVE	TD-10A3	
T402	50H0000261	FBT	BSC29-0141D	△, ®
T801	50M3541B8-	TRANS SMPS	TSM-3541B8	△
U102	4859726730	TUNER VARACTOR	TAEC-H012F(A)	△, ®
Z802	D5VC471D14	VARISTOR	SVC471D14A (BULK)	△
ZZ200	PTMPJ2K123	PCB MAIN CHIP MOUNT B AS	DTQ-21U4SSN	
I101	1M61250FFP-	IC CHIP CHROMA	M61250BFP	
I701	1DW150MAA2	IC CHIP MICOM	DW37150M8-AA2(088FP)	
I805	1LTV817C-Q	IC CHIP PHOTO COUPLER	LTV-817C TRAY	△
ZZ200	PTMPJOK123	PCB MAIN (RHU) AS	DTQ-21U4SSN	
C310	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
C405	CEXA2D229E	C ELECTRO	200V RUL 2.2MF (10X16) TP	
C410	CEXF2E220V	C ELECTRO	250V RSS 22MF (13X20) TP	
C414	CEXF1V471V	C ELECTRO	35V RSS 470MF (10X20) TP	
C415	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C504	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C518	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C521	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C578	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C602	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C615	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C646	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C805	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C809	CBXB3D102K	C CERA SEMI	2KV BL(N) 1000PF K (T)	
C810	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)	
C811	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)	
C812	CEXF1E471V	C ELECTRO	25V 470MF 10X12.5	
C813	CBXB3D471K	C CERA SEMI	2KV BL(N) 470PF K (T)	
C814	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C815	CEXF2A470V	C ELECTRO	100V RSS 47MF (10X16) TP	
C817	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C820	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C829	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP	
C832	CBXB3D471K	C CERA SEMI	2KV BL(N) 470PF K (T)	
ZZ200	PTMPJBK123	PCB MAIN M-10 AS	DTQ-21U4SSN	
10	2TM18006BE	TAPE MASKING	6.2X500	
E001	4856310300	EYE LET	BSR T0.2 (R1.6)	
E002	4856310300	EYE LET	BSR T0.2 (R1.6)	
E003	4856310300	EYE LET	BSR T0.2 (R1.6)	
E006	4856310300	EYE LET	BSR T0.2 (R1.6)	
E009	4856310600	EYE LET	BSR T0.2 (R2.3)	
E010	4856310600	EYE LET	BSR T0.2 (R2.3)	
E011	4856310300	EYE LET	BSR T0.2 (R1.6)	
E012	4856310300	EYE LET	BSR T0.2 (R1.6)	
E013	4856310300	EYE LET	BSR T0.2 (R1.6)	
E014	4856310600	EYE LET	BSR T0.2 (R2.3)	
E015	4856310300	EYE LET	BSR T0.2 (R1.6)	
E018	4856310300	EYE LET	BSR T0.2 (R1.6)	
E019	4856310300	EYE LET	BSR T0.2 (R1.6)	
E021	4856310600	EYE LET	BSR T0.2 (R2.3)	
E022	4856310300	EYE LET	BSR T0.2 (R1.6)	
E023	4856310600	EYE LET	BSR T0.2 (R2.3)	
E024	4856310300	EYE LET	BSR T0.2 (R1.6)	

ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
E025	4856310300	EYE LET	BSR T0.2 (R1.6)	
E026	4856310600	EYE LET	BSR T0.2 (R2.3)	
E027	4856310600	EYE LET	BSR T0.2 (R2.3)	
E028	4856310600	EYE LET	BSR T0.2 (R2.3)	
E029	4856310600	EYE LET	BSR T0.2 (R2.3)	
E030	4856310300	EYE LET	BSR T0.2 (R1.6)	
E032	4856310300	EYE LET	BSR T0.2 (R1.6)	
E033	4856310300	EYE LET	BSR T0.2 (R1.6)	
E034	4856310300	EYE LET	BSR T0.2 (R1.6)	
E035	4856310600	EYE LET	BSR T0.2 (R2.3)	
E036	4856310300	EYE LET	BSR T0.2 (R1.6)	
E037	4856310300	EYE LET	BSR T0.2 (R1.6)	
E038	4856310300	EYE LET	BSR T0.2 (R1.6)	
E039	4856310300	EYE LET	BSR T0.2 (R1.6)	
E042	4856310600	EYE LET	BSR T0.2 (R2.3)	
E043	4856310600	EYE LET	BSR T0.2 (R2.3)	
E044	4856310600	EYE LET	BSR T0.2 (R2.3)	
E045	4856310600	EYE LET	BSR T0.2 (R2.3)	
E046	4856310600	EYE LET	BSR T0.2 (R2.3)	
E047	4856310600	EYE LET	BSR T0.2 (R2.3)	
E048	4856310300	EYE LET	BSR T0.2 (R1.6)	
E049	4856310600	EYE LET	BSR T0.2 (R2.3)	
E050	4856310600	EYE LET	BSR T0.2 (R2.3)	
E051	4856310600	EYE LET	BSR T0.2 (R2.3)	
E052	4856310600	EYE LET	BSR T0.2 (R2.3)	
E057	4856310300	EYE LET	BSR T0.2 (R1.6)	
E058	4856310300	EYE LET	BSR T0.2 (R1.6)	
N401	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
N402	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
N403	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
N404	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P102	485923182S	CONN WAFER	YW025-05 (STICK)	
P401	485923172S	CONN WAFER	YW025-04 (STICK)	
P601	485923162S	CONN WAFER	YW025-03 (STICK)	
P602	485923162S	CONN WAFER	YW025-03 (STICK)	
P801A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P801B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
R301	RS02Z471JS	R M-OXIDE FILM	2W 470 OHM J SMALL	
R302	RS02Z561JS	R M-OXIDE FILM	2W 560 OHM J SMALL	
R303	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL	
R305	RS02Z181JS	R M-OXIDE FILM	2W 180 OHM J SMALL	
R315	RS02Z751JS	R M-OXIDE FILM	2W 750 OHM J SMALL	
R402	RS02Z302JS	R M-OXIDE FILM	2W 3K OHM J SMALL	
R403	RS02Z163JS	R M-OXIDE FILM	2W 16K OHM J SMALL	
R405	RS02Z241JS	R M-OXIDE FILM	2W 240 OHM J SMALL	
R411	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL	
R412	RS02Z279JS	R M-OXIDE FILM	2W 2.7 OHM J SMALL	
R413	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL	
R414	RS02Z109JS	R M-OXIDE FILM	2W 1 OHM J SMALL	
R420	RS02Z620JS	R M-OXIDE FILM	2W 62 OHM J SMALL	
R453	RS02Z270JS	R M-OXIDE FILM	2W 27 OHM J SMALL	
R601	RF01Z688K-	R FUSIBLE	1W 0.68 OHM K (TAPPING)	
R715	RS02Z680JS	R M-OXIDE FILM	2W 68 OHM J SMALL	
R805	RS02Z228JS	R M-OXIDE FILM	2W 0.22 OHM J SMALL	
R816	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL	
Z2200	PTMPJRK123	PCB MAIN RADIAL AS	DTQ-21U4SSN	
C101	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C102	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C103	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C114	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C123	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C124	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C125	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C235	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP	
C305	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP	
C308	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C311	CEXD1H229Q	C ELECTRO	50V RT 2.2MF (6.3X11) TP	
C312	CMXL1J105J	C MYLAR	63V MEU 1MF J	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
C401	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C403	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C411	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C413	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C416	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C418	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C451	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C452	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C501	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C502	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C506	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C514	CMXL1J105J	C MYLAR	63V MEU 1MF J	
C516	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C517	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP	
C520	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C523	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C524	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
C526	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C576	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C603	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
C604	CEXF1C220V	C ELECTRO	RSS 16V 22MF 5*11	
C605	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C613	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP	
C614	CEXF1C220V	C ELECTRO	RSS 16V 22MF 5*11	
C634	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C662	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
C701	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C706	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C707	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C712	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C816	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C821	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP	
C835	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
C871	CMXL1J104J	C MYLAR	63V MEU 0.1MF J	
C878	CEXF2C109V	C ELECTRO	160V RSS 1MF (6.3X11) TP	
C890	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C893	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
F801	5FWPS4022L	FUSE	WIDE TL 250V 4A CASE	
I803	1K1A431B-	IC REGULATOR(SHUNT)	KIA431B 2.495V 0.5% TO-92	
L601	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
L805	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
Q401	TKSC2330Y-	TR	KSC2330Y (TP)	
Q403	TKTC3205Y-	TR	KTC3205Y (TP)	
Q404	TKTC3198Y-	TR	KTC3198Y	
Q501	TKTA1266Y-	TR	KTA1266Y (TP)	
Q545	TKTC3198Y-	TR	KTC3198Y	
Q546	TKTA1266Y-	TR	KTA1266Y (TP)	
Q575	TKSA1013Y-	TR	KSA1013Y (TP)	
Q653	TKTC3198Y-	TR	KTC3198Y	
Q654	TKTC3198Y-	TR	KTC3198Y	
Q701	TKTC3205Y-	TR	KTC3205Y (TP)	
Q703	TKTC3198Y-	TR	KTC3198Y	
Q707	TKTC3198Y-	TR	KTC3198Y	
Q801	TKTC3205Y-	TR	KTC3205Y (TP)	
Q807	TKTC3205Y-	TR	KTC3205Y (TP)	
Q873	TKTC3198Y-	TR	KTC3198Y	
R809	RN01B913JS	R METAL FILM	1W 91K OHM J SMALL	
SW701	5S50101090	SW TACT	THVH472GCA	
SW702	5S50101090	SW TACT	THVH472GCA	
SW703	5S50101090	SW TACT	THVH472GCA	
SW704	5S50101090	SW TACT	THVH472GCA	
SW705	5S50101090	SW TACT	THVH472GCA	
SW706	5S50101090	SW TACT	THVH472GCA	
X502	5XEX3R579C	CRYSTAL QUARTZ	HC-49UJ 3.579545M (TP)	
Z501	5PXXT4R5MB	FILTER CERA	XT 4.5MB-TP	
Z502A	5PXLT4R5MT	FILTER CERA	LT 4.5MH-TP	
Z2200	PTMPJAK123	PCB MAIN AXIAL AS	DTQ-21U4SSN	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	

ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	
A001	4859816692	PCB MAIN	330X246 S1B	
C109	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C115	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C116	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C118	CZSL1H470J	C CERA	50V SL 47PF J (AXIAL)	
C122	CCZB1H471K	C CERA	50V B 470PF K (AXIAL)	
C152	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C503	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C505	CZCH1H180J	C CERA	50V CH 18PF J (AXIAL)	
C507	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)	
C508	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)	
C515	CCZB1H222K	C CERA	50V B 2200PF K AXIAL	
C519	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C522	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C525	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C561	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C612	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C708	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C711	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C713	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C714	CCZB1H221K	C CERA	50V B 220PF K (AXIAL)	
C715	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C716	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C717	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C718	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C720	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C891	CCZB1H821K	C CERA	50V B 820PF K AXIAL	
C892	CCZB1H471K	C CERA	50V B 470PF K (AXIAL)	
C894	CCZB1H333K	C CERA	50V B 0.033MF K AXL	
D101	DUZ33B—	DIODE ZENER	UZ-33B	
D102	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
D301	D1N4004S—	DIODE	1N4004S	
D311	DBZX55C62-	DIODE ZENER	BZX55C-62	
D312	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
D401	D1N4937G—	DIODE	1N4937G (TAPPING)	
D405	D1N4937G—	DIODE	1N4937G (TAPPING)	
D406	D1N4937G—	DIODE	1N4937G (TAPPING)	
D407	D1N4937G—	DIODE	1N4937G (TAPPING)	
D408	D1N4937G—	DIODE	1N4937G (TAPPING)	
D409	D1N4148—	DIODE	1N4148 (TAPPING)	
D451	D1N4937G—	DIODE	1N4937G (TAPPING)	
D501	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
D506	DMTZJ5R6B-	DIODE ZENER	MTZJ 5.6B	
D507	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM	
D509	D1N4148—	DIODE	1N4148 (TAPPING)	
D525	D1N4148—	DIODE	1N4148 (TAPPING)	
D571	D1N4148—	DIODE	1N4148 (TAPPING)	
D572	D1N4148—	DIODE	1N4148 (TAPPING)	
D573	D1N4148—	DIODE	1N4148 (TAPPING)	
D574	D1N4148—	DIODE	1N4148 (TAPPING)	
D801	D1N4148—	DIODE	1N4148 (TAPPING)	
D804	D1N4937G—	DIODE	1N4937G (TAPPING)	
D809	DMTZJ6R8C-	DIODE ZENER	MTZJ 6.8C	
D811	D1N4937G—	DIODE	1N4937G (TAPPING)	
D812	D1N4148—	DIODE	1N4148 (TAPPING)	
D813	D1N4937G—	DIODE	1N4937G (TAPPING)	
D816	D1N4937G—	DIODE	1N4937G (TAPPING)	
D817	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM	
D819	D1N4937G—	DIODE	1N4937G (TAPPING)	
D851	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM	
D881	DLT2A05G—	DIODE	LT2A05G (TP)	
D882	DLT2A05G—	DIODE	LT2A05G (TP)	
D883	DLT2A05G—	DIODE	LT2A05G (TP)	
D884	DLT2A05G—	DIODE	LT2A05G (TP)	
J001	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J002	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J003	85801060GY	WIRE COPPER	1/0.6 TIN COATING	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
J004	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J006	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J007	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J008	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J009	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J010	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J011	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J012	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J013	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J014	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J015	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J016	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J017	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J018	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J019	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J020	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J021	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J022	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J023	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J024	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J025	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J026	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J027	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J028	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J029	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J030	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J031	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J032	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J033	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J034	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J035	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J036	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J037	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J038	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J039	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J040	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J041	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J042	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J043	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J045	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J046	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J048	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J049	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J050	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J051	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J052	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J053	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J054	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J055	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J056	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J057	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J058	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J059	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J060	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J061	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J062	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J063	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J064	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J065	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J066	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J067	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J068	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J069	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J070	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J071	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J072	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J073	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J074	85801060GY	WIRE COPPER	1/0.6 TIN COATING	

ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
J075	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J076	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J077	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J078	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J080	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J083	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J084	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J085	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J086	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J087	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J088	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J089	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J090	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J091	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J092	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J093	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J094	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J095	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J096	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J097	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J098	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J099	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J100	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J101	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J102	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J103	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J104	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J105	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J106	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J107	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J108	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J109	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J110	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J111	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J112	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J113	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J114	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J115	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J116	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J117	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J118	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J119	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J120	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J121	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J122	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J123	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J124	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J125	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J126	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J127	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J128	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J129	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J130	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J131	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J132	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J133	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J135	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J230	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
L111	5CPZ568M02	COIL PEAKING	0.56UH M (AXIAL 3.5MM)	
L501	5CPZ180K02	COIL PEAKING	18UH K (AXIAL 3.5MM)	
L602	5MC0000100	COIL BEAD	HC-3550	
L603	5MC0000100	COIL BEAD	HC-3550	
L631	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
L807	5MC0000100	COIL BEAD	HC-3550	
L811	5MC0000100	COIL BEAD	HC-3550	
L841	5MC0000100	COIL BEAD	HC-3550	
R112	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
R115	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R117	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J	
R150	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R151	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R229	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
R230	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R306	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R307	RD-AZ243J-	R CARBON FILM	1/6 24K OHM J	
R308	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
R309	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R310	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R312	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R350	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R351	RD-AZ302J-	R CARBON FILM	1/6 3K OHM J	
R352	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
R401	RD-AZ472J-	R CARBON FILM	1/4 4.7K OHM J	
R415	RD-AZ224J-	R CARBON FILM	1/4 220K OHM J	
R416	RD-ZZ121J-	R CARBON FILM	1/2 120 OHM J	
R417	RD-AZ302J-	R CARBON FILM	1/4 3K OHM J	
R423	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R424	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
R451	RD-AZ123J-	R CARBON FILM	1/4 12K OHM J	
R452	RD-AZ912J-	R CARBON FILM	1/4 9.1K OHM J	
R454	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R502	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R504	RD-AZ124J-	R CARBON FILM	1/6 120K OHM J	
R505	RD-AZ103J-	R CARBON FILM	1/4 10K OHM J	
R507	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R508	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R510	RD-AZ105J-	R CARBON FILM	1/6 1M OHM J	
R511	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
R512	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R513	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R514	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R515	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R516	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R517	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R518	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R520	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
R521	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
R522	RD-AZ433J-	R CARBON FILM	1/6 43K OHM J	
R523	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
R524	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R526	RD-AZ432J-	R CARBON FILM	1/6 4.3K OHM J	
R527	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R528	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R529	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
R530	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R531	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R532	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R602	RD-ZZ271J-	R CARBON FILM	1/2 270 OHM J	
R603	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R604	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R605	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
R606	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R607	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
R629	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R630	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R652	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R654	RD-AZ242J-	R CARBON FILM	1/6 2.4K OHM J	
R655	RD-AZ242J-	R CARBON FILM	1/6 2.4K OHM J	
R656	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R701	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
R702	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R703	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R704	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R706	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R708	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R710	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	

ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R711	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R712	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R713	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R714	RD-AZ479J-	R CARBON FILM	1/6 4.7 OHM J	
R716	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R717	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R718	RD-AZ154J-	R CARBON FILM	1/6 150K OHM J	
R719	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R720	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J	
R722	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R723	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R724	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R725	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R726	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R730	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R730A	RD-AZ433J-	R CARBON FILM	1/6 43K OHM J	
R731	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R732	RD-AZ242J-	R CARBON FILM	1/6 2.4K OHM J	
R733	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R734	RD-AZ752J-	R CARBON FILM	1/6 7.5K OHM J	
R750	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R751	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R789	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R790	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R814	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R815	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R819	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R820	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R823	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R835	RD-4Z109J-	R CARBON FILM	1/4 1 OHM J	
R868	RN-4Z2201F	R METAL FILM	1/4 2.20K OHM F	
R869	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R872	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	
R874	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R875	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
R876	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R877	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R878	RN-4Z1003F	R METAL FILM	1/4 100K OHM F	
R879	RN-4Z7501F	R METAL FILM	1/4 7.5K OHM F	
R881	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R885	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R890	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	
R892	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	
R893	RD-4Z331J-	R CARBON FILM	1/4 330 OHM J	
R894	RD-4Z479J-	R CARBON FILM	1/4 4.7 OHM J	
ZZ300	PTCPMSK123	PCB CRT MANUAL AS	DTQ-21U4SSN	
C906	CH1BEE222M	C CERA AC	U/C/V 2.5KV 2200PF TP	
C914	CEYF2E100V	C ELECTRO	250V RSS 10MF (10X20)	
P102A	4850705S04	CONNECTOR	YH025-05+YBNH250+ULW=400	
P401A	4850704S04	CONNECTOR	YH025-04+YST025+ULW=400	
Q901	TKTC3229—	TR	KTC3229	
Q902	TKTC3229—	TR	KTC3229	
Q903	TKTC3229—	TR	KTC3229	
SCT1	4859904130	SOCKET CRT	ISHG93S	
ZZ200	PTCPJBK123	PCB CRT M-10 AS	DTQ-21U4SSN	
E001	4856310300	EYE LET	BSR T0.2 (R1.6)	
E002	4856310300	EYE LET	BSR T0.2 (R1.6)	
E003	4856310300	EYE LET	BSR T0.2 (R1.6)	
E004	4856310300	EYE LET	BSR T0.2 (R1.6)	
ZZ200	PTCPJRK123	PCB CRT RADIAL AS	DTQ-21U4SSN	
L901	5CPX181J—	COIL PEAKING	180UH J (RADIAL)	
Q904	TKTC3198Y-	TR	KTC3198Y	
Q905	TKTC3198Y-	TR	KTC3198Y	
Q906	TKTC3198Y-	TR	KTC3198Y	
Q907	TKTA1266Y-	TR	KTA1266Y (TP)	
R921	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R922	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R923	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R924	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R925	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
R926	RN02B243JS	R METAL FILM	2W 24K OHM J SMALL	
ZZ200	PTCPJAK123	PCB CRT AXIAL AS	DTQ-21U4SSN	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	
A001	4859807660	PCB UNION	108X93(246X246/4) DIB	
C901	CCZB1H271K	C CERA	50V B 270PF K	
C902	CCZB1H271K	C CERA	50V B 270PF K	
C903	CCZB1H271K	C CERA	50V B 270PF K	
C907	CCZB1H152K	C CERA	50V B 1500PF K (AXIAL)	
D901	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J901	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J902	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J903	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
J904	85801060GY	WIRE COPPER	1/0.6 TIN COATING	
R901	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R902	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R903	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R904	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R905	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R906	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R907	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	
R908	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	
R909	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	
R913	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R914	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R918	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R919	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R920	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J	
R927	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R928	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R929	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R930	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
R935	85801060GY	WIRE COPPER	1/0.6 TIN COATING	

ELECTRICAL PARTS LIST

110V / FREE VOLT DIFFERENTIAL PARTS LIST

LOC	PARTS_NAME	DTQ-2133/21U4SSN		DTQ-2133SSFN	
		S/N	PARTS_DESC.	S/N	PARTS_DESC.
00020	ADAPTER	4859000240	2P15A 300V(D=4.0)		
C804	C ELECTRO	CEYD2D331D	200V FHS 330MF(22X30)	CEYD2G181D	400V FHS 180MF(25X35)
C810	C CERA	CCXB2H222K	500V B 2200PF K (TAPPING)	CCXB3A472K	1KV B 4700PF K (TAPPING)
C811	C CERA	CCXB2H222K	500V B 2200PF K (TAPPING)	CCXB3A472K	1KV B 4700PF K (TAPPING)
I801	HEAT SINK ASS'Y	PTE2SW7912	1STRW6735- + 7174300811	PTD2SW7912	1STRW6735- + 7174300811
PWC1	CORD POWER AS	4859902710	KJ-10+SPT-2+YPT018=2100	4859900910	KKP-419C+YPT-018=2100
R805	R M-OXIDE FILM	RS02Z228JS	2W 0.22 OHM J SMALL	RS02Z338JS	2W 0.33 OHM J SMALL
R882	POSISTOR	DDB3R0M140	ECPBD3R0M140	DDB7R0M290	ECPBD7R0M290

CRT DIFFERENTIAL PART LIST(LG PHILIPS, DOMEX)

NO	L/C	PART NAME	LG PHILIPS SLIM	DOMEX	REMARKS
1	V901	CRT	4859641460 (A51QDJ470X03)	485964060 (A51QDK090X030)	CRT DIFFERENTIAL
2	R412	R M-OXIDE FILE	RS02Z279JS (2W, 2.7 \varnothing)	RS02Z309JS (2W, 3 \varnothing)	HEATER VOLTAGE
3	R302	R M-OXIDE FILM	RS02Z561JS (2W, 560 \varnothing)	RS02Z681JS (2W, 680 \varnothing)	VERTICAL CENTER

IC DESCRIPTION

I. MICOM Outline.

1. Abstract.

This specification is 1-Tuner Mono Model for North America, CCD 1-Chip MICOM M37150.
It is developing software specification for tuning only NTSC system TV F/S.

2. H/W Outline.

- 1) ROM : 32K x 8bits.tsc
- 2) RAM : 1152 x 8bits.
- 3) OSD Function.
 - . Screen Display.
 - 32 characters x 2 lines.
 - Characters.
 - 254 patterns programmable.
 - Character display area
 - CC mode : 16 x 26 dots
 - Chatacter color : 8 colors
 - Attribute
 - CC mode : smooth italic, underline, flash, automatic solid space"
 - OSD mode : border
 - Display position
 - Horizontal : 128 levels
 - Vertical : 512 levels

3. System Feature.

- The system for TV tuning is Frequency Synthesis type.
- Closed Caption's function is built in IC.
- On Screen Display's function is built in IC.
- Package. : 42 PIN SSOP.
- Tuner (Pre-scaler.) : I2C Bus. --- DT5-NF20F N
- Remote. : R-43A Series
- E2PROM. : 24C04(I2C Bus) ? Apply one byte Read/Write mode.

- 6-Local Key. : A/D Input Control.(Power, Ch Up/Down, Vol Up/Down, Menu)

- Option S/W : Port Input Option Check.
- IFV/C/D IC :M61250(America, The only NTSC)"

4. Function.

- 1) C. C. D. function.
 - A section of C. C. D. operates FCC based specification.

- 2) C. C. D. controlled function.

- Closed Caption Mode. (Off<-->C1<-->C2<-->T1<-->T2<-->Off)
- CC On Mute.(Off / On)
- When CC On Mute is On, Output is selected a item of Closed Caption Modes.

3) Tuning Function.

- I2C Bus.
- PLL IC Interface.
- FS 181 Channel (AIR 2-69CH, CABLE 1-125CH)"
- AFT Operation(Fine Tuning) -2.5 ~ Fn ~ +2.5MHz
- AIR/CABLE (STD, HRC, IRC). Only Cable 5,6CH is that AFT range is cover over broad-band. -2.5MHz ~ Fn ~ +3.5MHz.
- Auto Program.(If a channel is broadcasting, the channel is memorized.)"
- Direct Tuning(0 ~ 9KEY)
- Channel Up/Down.(Memorized Channels) -> The Ch Up/Down buttons on the Remote and on the front panel are same function.
- Search Channel Up/Down.(If No-Memory or only 1CH is Memory)
- Channel Memory.(ADD/DELETE)
- Channel Review Function.
- Last Channel Memory Function.

4) OSD Function.

- In Video Mode, Things(Items) that is concerned with Air and Cable disappear in the Menu."
- Channel, AV display.
- Small & Graphic ICON Menu.
- Volume, Picture Control --> I2C Bus Control

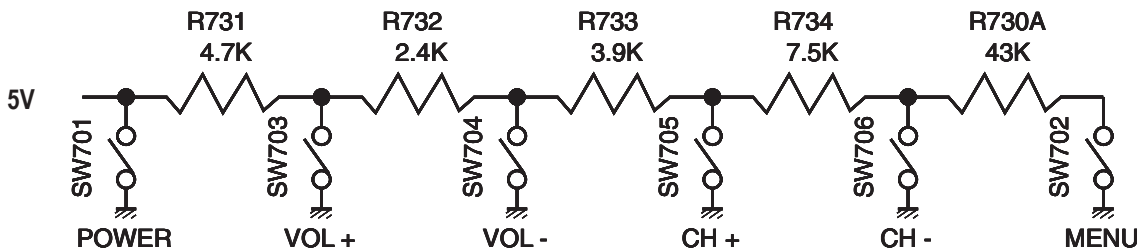
5) The Others Function.

- Video/Audio Mute Function.
 - If a Channel is no signal, it is Auto-Power Off Function after 15 minutes."
 - Heat Run Function. --- OSD White Background.
 - Sleep Timer, Wake-Up Time, Off Time Function. "
 - Audio Mode :Mono
 - TV/Line Controlled function- ----- (Option)
 - Prison Controlled function- ----- (Option)
 - 3-Language.(North America : ENG/SPA/FRA).
 - E2PROM Interface (I2C Bus Control)
 - CH 6 TRAP Function.(IS-31 對應)
 - PLL IC Band Data.(Control Byte 2-->P3~P0)
- VHF L : 1 / VHF H : 2 / CH6 TRAP : 5 (IS-31) AIR(Cable) CH 6 Only UHF : 8

5. The Table of Option and Schedule

PIN	OPTION	REFERENCE	REMARKS
#1	TV ONLY (H)	LOW (DC 0V): VIDEO	(L) : Video Model ("V" Series)
		HIGH (DC 5V) : TV	(H) : No Video Model ("P" Series)
#41	PRISON	LOW (DC 0V): NORMAL	(L) : Normal Video
		HIGH (DC 5V) : PRISON	(H) : Clock Menu (TIME) delete

6. KEY Matrix



KEY	FUNCTION	VALUE(V)
SW701	POWER	0 ~ 0.55
SW703	VOL +	2.25 ~ 2.75
SW704	VOL -	2.76 ~ 3.25
SW705	CH +	3.26 ~ 3.75
SW706	CH -	3.76 ~ 4.25
SW702	MENU	4.26 ~ 4.75

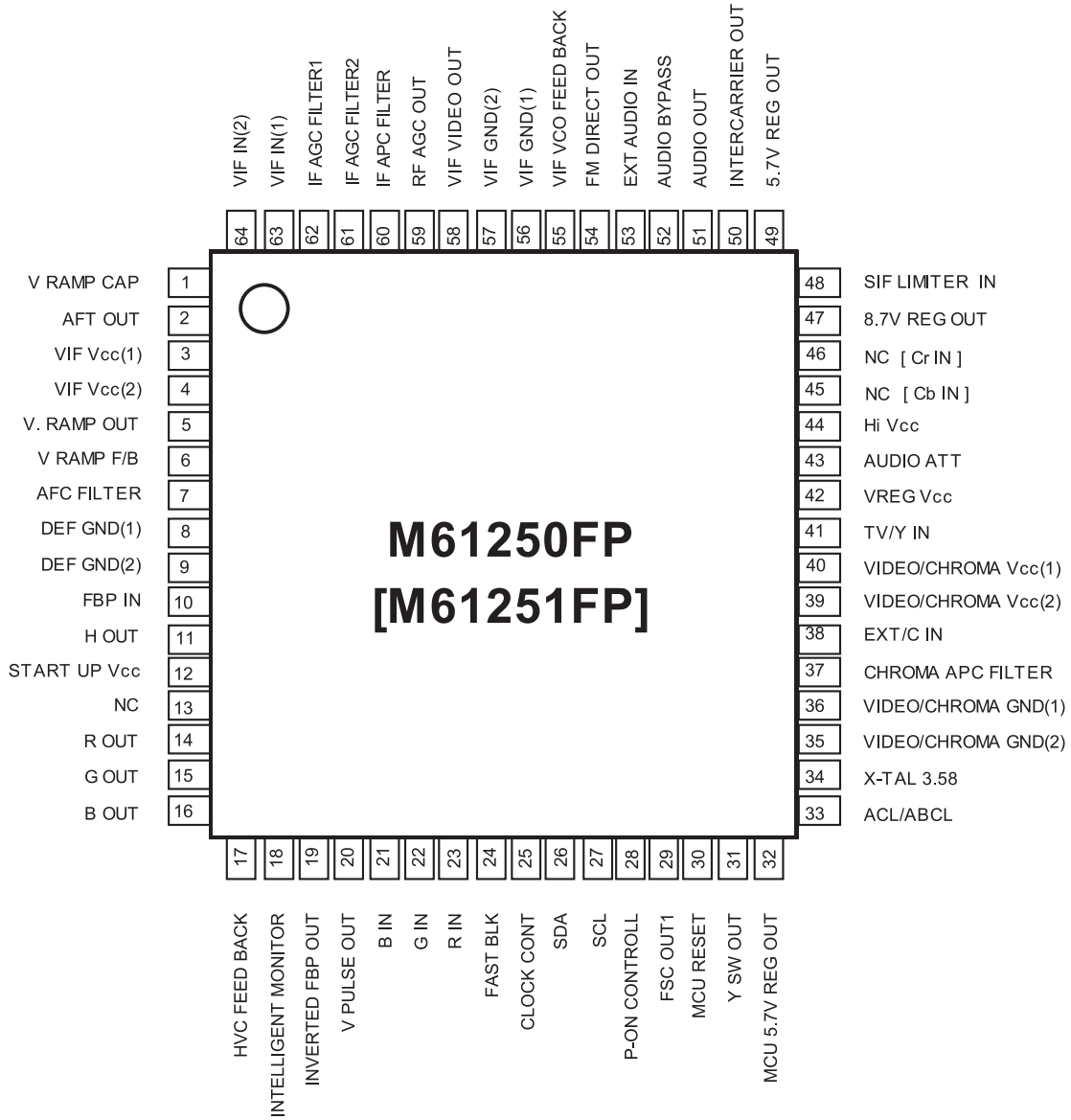
II. PIN ASSIGN

TV ONLY	1	P11/SCL1	P12/SCL2	42	CLOCK(EEPROM)
TV / Y	2	P00/PWMO	P13/SDA1	41	PRISON
AV1/AV2	3	P01/PWM1	P14/SDA2	40	DATA(EEPROM)
DG ON RELAY	4	P02/PWM2	P16/AD8/TIM2	39	MONITOR
S-IN	5	P03/PWM3/AD1	P50/H SYNC	38	H SYNC
TV/AV	6	P04/PWM4/AD2	P51/V SYNC	37	V SYNC
AFT IN	7	P16	P52/B	36	B
X-RAY	8	P06/INT2/AD4	P53/G	35	G
X-RAY2	9	P07/INT2	P54/R	34	R
ST-BY LED	10	P20/SCLK/AD5	P55/OUT	33	OUT
NC	11	P21/SOUT/AD6	CLKCOUNT/P10	32	CLK COUNT
KEY1	12	P22/SIN/AD7	P30/SDA3	31	SDA
BUS STOP	13	P23/TM3	P31/SCL3	30	SCL
S-MUTE	14	P24/TM2	P15	29	POWER
REMOCON IN	15	P25/INT3	FSCIN	28	FSC IN
NC	16	P26/XIN	RESET	27	RESET
NC	17	P27/XOUT	CVIN	26	CCD CVBS
CNVSS	18	CNVSS	VHOLD	25	CCD V-HOLD
GND	19	X-IN	HLF	24	CCD HLF
NC	20	X-OUT	FILT	23	FILT
VSS	21	VCC	VCC	22	VCC

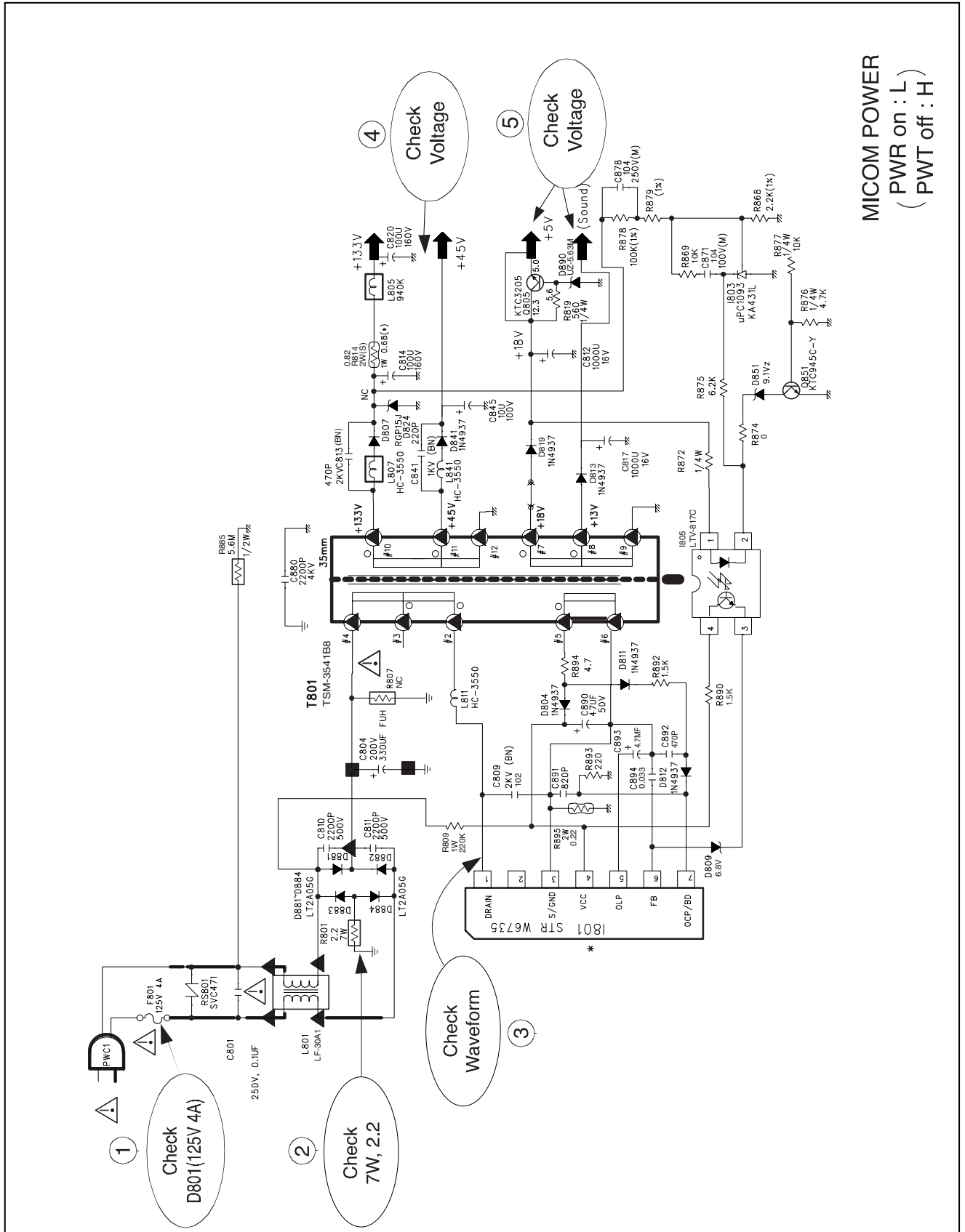
III. PIN DESCRIPTION

Pin	Symbol	NAME	I/O	Description	REMARKS
1	P11/SCL1	TV ONLY	O	TV ONLY(H), VIDEO(L)	OPTION
2	P00/PWM0	TV/Y	I	CVIN IN	
3	P01/PWM1	AV1/AV2	I	AV1/AV2 SW	
4	P02/PWM2	D/G ON	O	D/G RELAY ON(H)	
5	P03/PWM3/ADI	S-IN	I	S-VHS Jack Signal Input	
6	P04/PWM4/AD2	TV/AV	I	TV/VIDEO SW,TV(H),VIDEO(L)	
7	P05/AD3	AFT IN	I	Default Voltage:3.75V	
8	P06/INT2/AD4	X-RAY	I	B+ PROTECT(L)	
9	P07/INT1	X-RAY2	I	고압 PROTECT, OCP	
10	P20/SCLK/AD5	ST-BY LED	O	POWER OFF --> ST-BY(H)	
11	P21/SOUT/AD6	NC		NC	
12	P22/SIN/AD7	KEY1	I	MENU, VOL+,VOL-, CH+,CH-, POWER	
13	P23/TIM3	BUS STOP	I	FACTORY MODE	
14	P24/TIM2	S-MUTE	O	AUDIO MUTE(H)	
15	P25/INT3	REMOCON	I	Remocon Signal Input	
16	P26/XCIN	NC		NC	
17	P27/XCOUT	NC		NC	
18	CNVSS	CNVSS		GND	
19	X-IN	GND		GND	
20	X-OUT	NC		NC	
21	VSS	VSS		GND(Negative Power Supply)	
22	VCC	VCC	I	+5V(Positive Power Supply)	
23	FILT	FILT	I	Clock Oscillation Filter	
24	HLF	CCD HLF	I/O	I/O for Data Slicer	
25	VHOLD	CCD V-HOLD	I/O	I/O for Data Slicer	
26	CVIN	CCD CVBS	I	Composite Video Signal Input	
27	RESET	RESET	I	MCU RESET:Active(H)	
28	FSC IN	FSCIN	I	Clock Input	
29	P15	POWER	I	Chroma On/Off	
30	P31/SCL3	SCL	I/O	I2C Data IN/OUT	
31	P30/SDA3	SDA	I/O	I2C Data IN/OUT	
32	CLKCONT/P10	CLK CONT	I	CLK CONTROL	
33	P55/OUT	OUT	O	Fast Blanking Control Signal	
34	P54R	R	O	OSD Red Output	
35	P53G	G	O	OSD Green Output	
36	P52B	B	O	OSD Blue Output	
37	P51/V Sync	V Sync	I	Vertical Syn Signal Input	
38	P50/H Sync	H Sync	I	Horixental Syn Signal Input	
39	P16/AD8/TM2	MONTOR	I	Intelligent Monitor	
40	P14/SDA2	SDA2	I	EEPROM Data (<--> Micom Data	
41	P13/SDA1	PRISON	I	Prison(H), Normal(L)	OPTION
42	P12/SCL2	SCL2	I	EEPROM Clock (<--> Micom Clock	

IV. M61250(CROMA) Pin Configuration

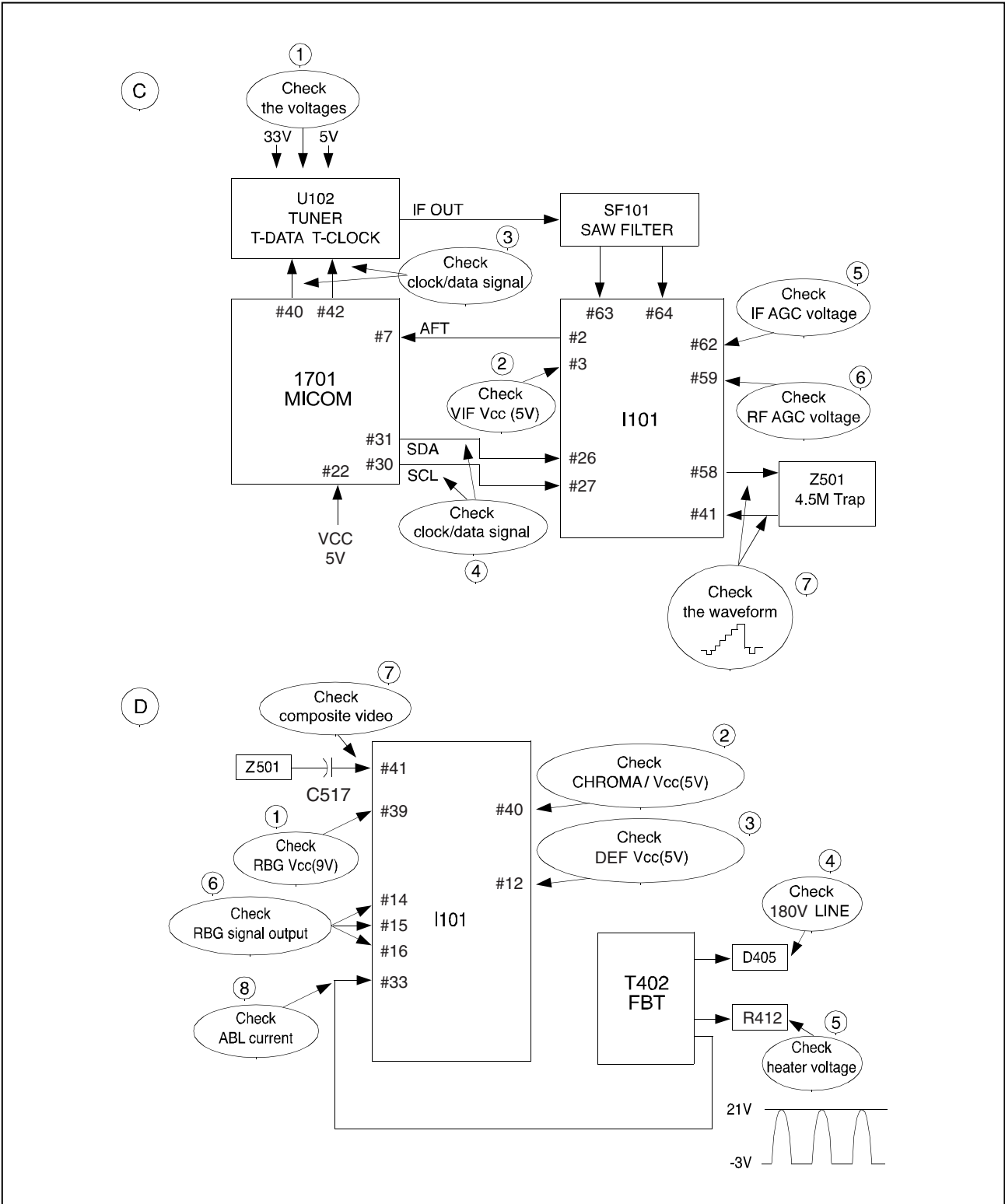


1. NO POWER



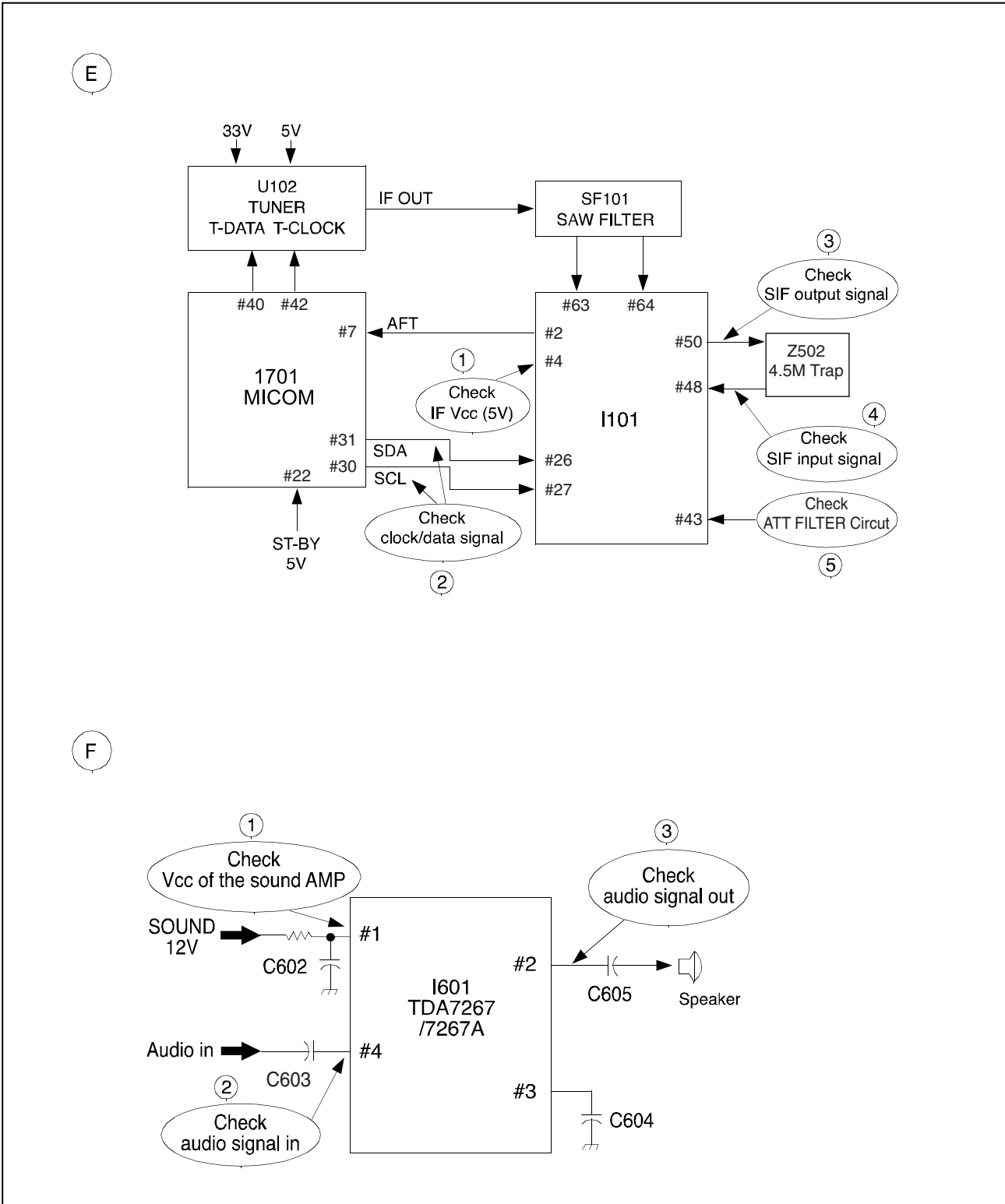
2. NO PICTURE

Check the waveform of I101 #58	NG : GO to the figure ㉓
	OK : Go to the figure ㉔



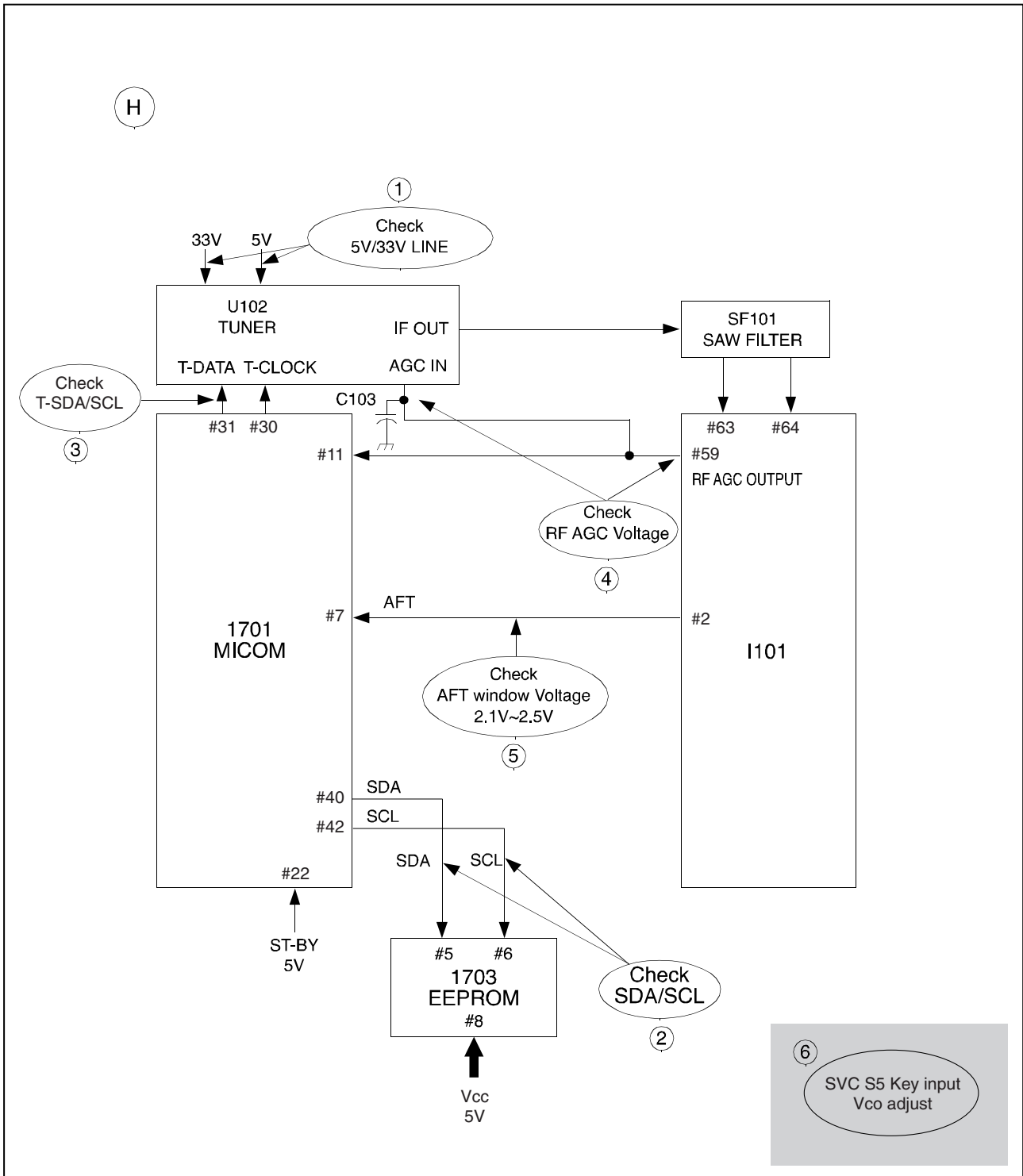
3. NO SOUND

Check audio output signal of I101 #51	NG : Go to the figure ㉔
	OK : Go to the figure ㉕

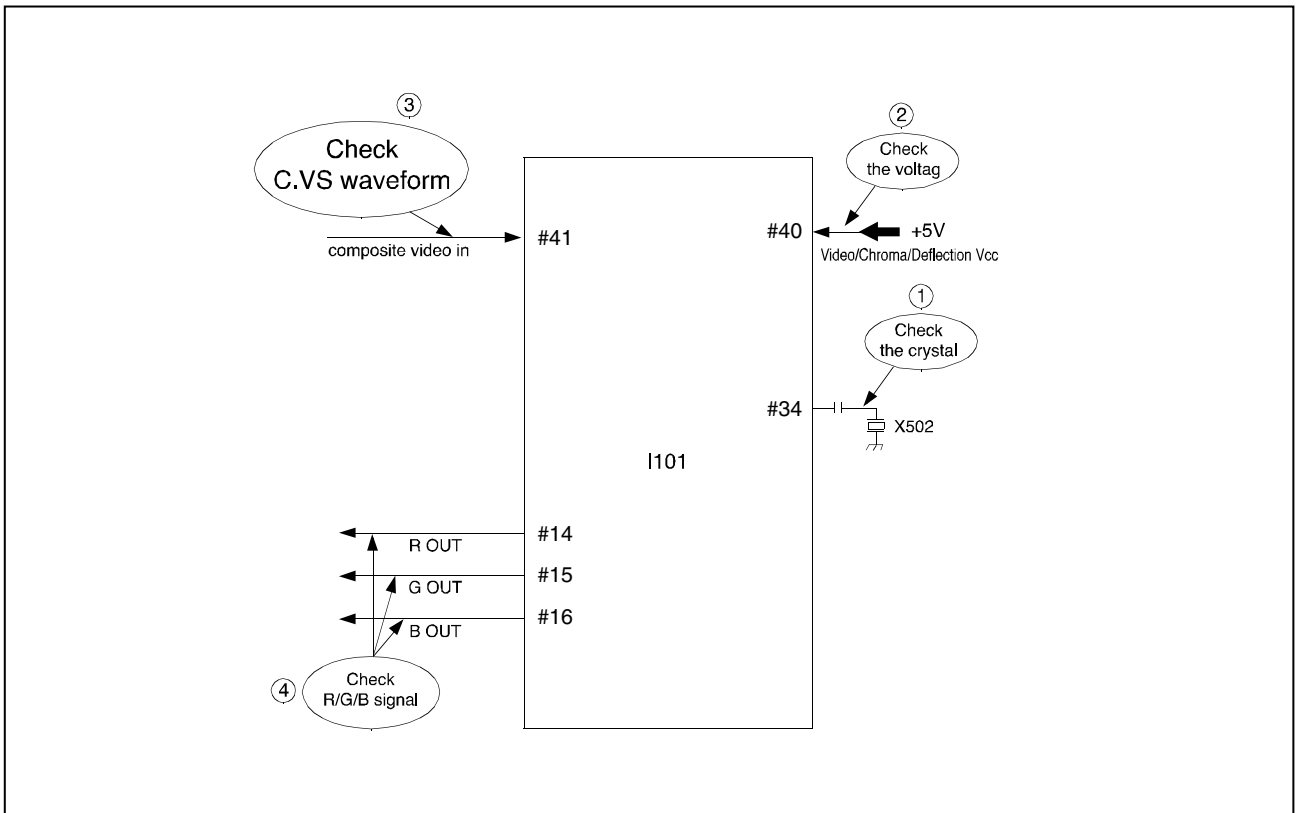


4. CH DON'T STOP

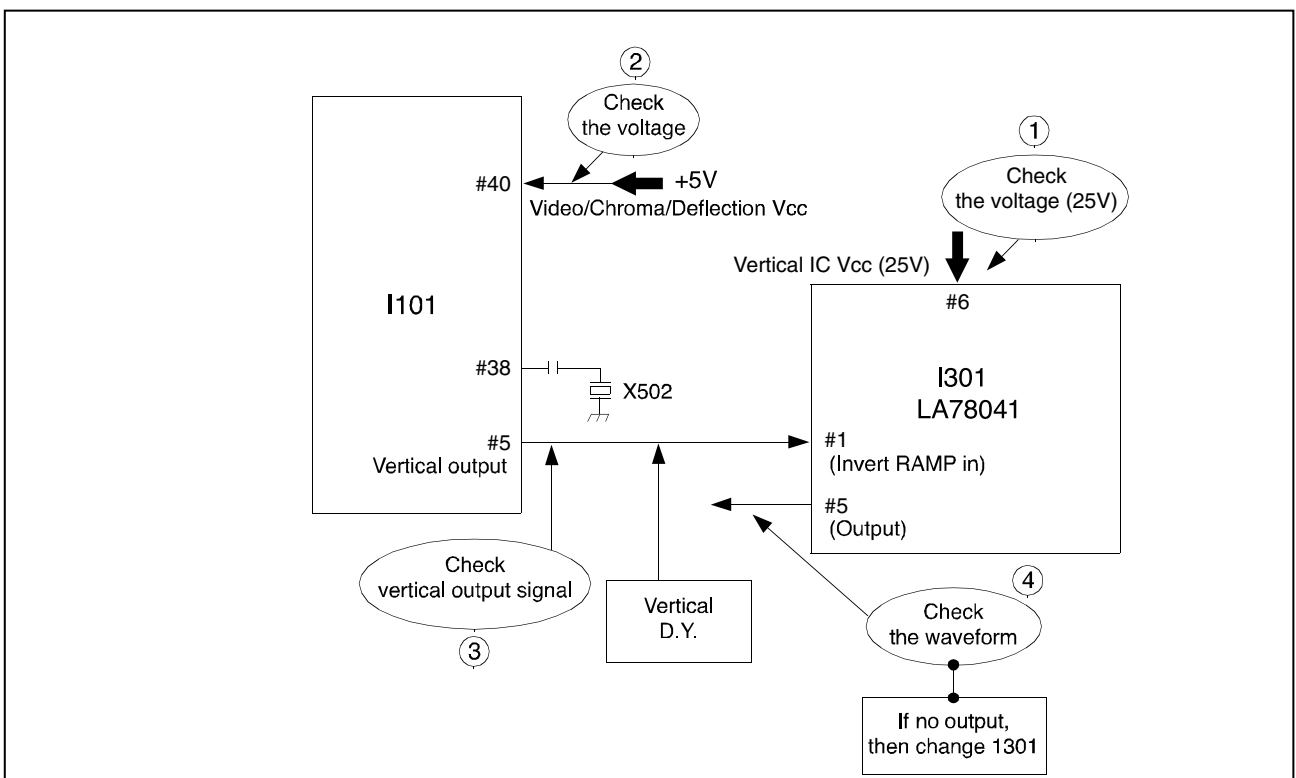
Check the input signal conditions	NG : Loss of signal or weak signal
	OK : Go to the figure (h)



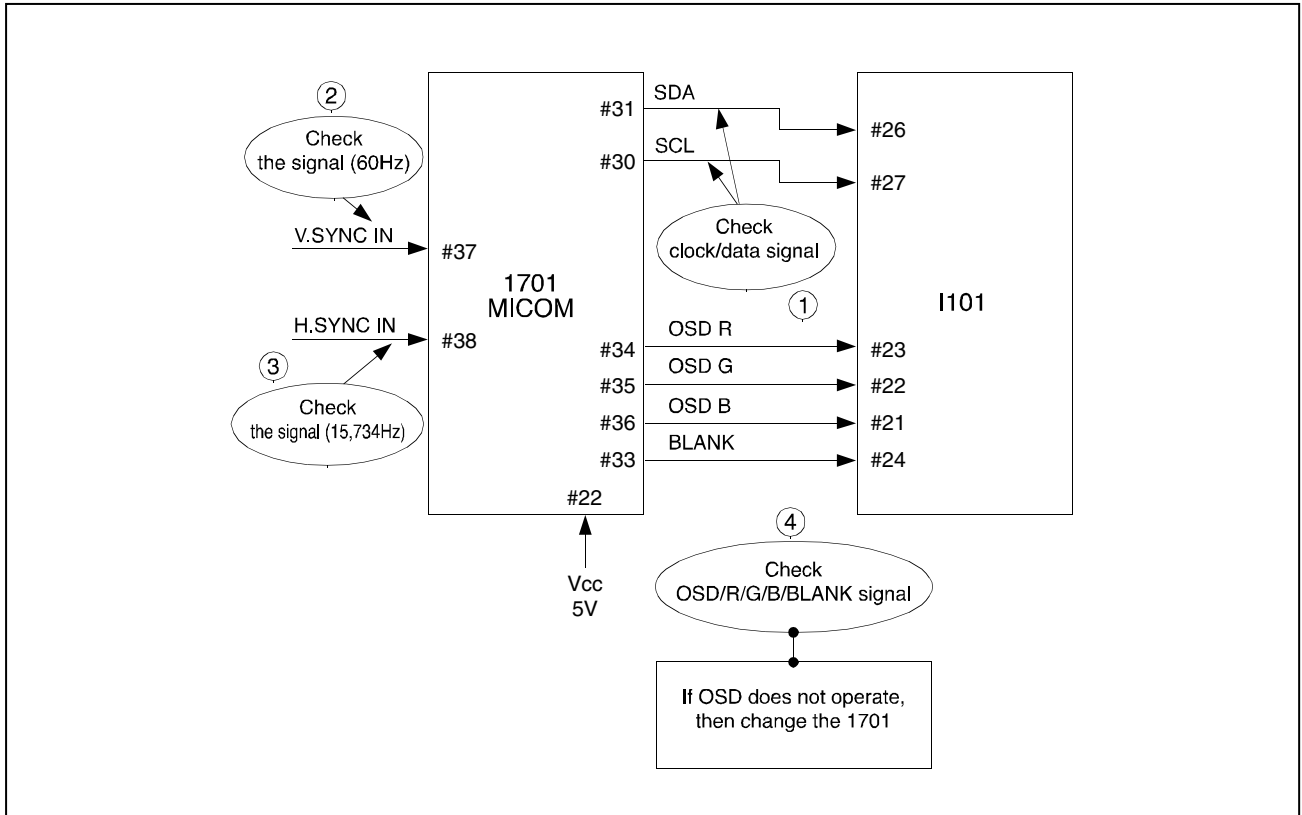
5. NO COLOR



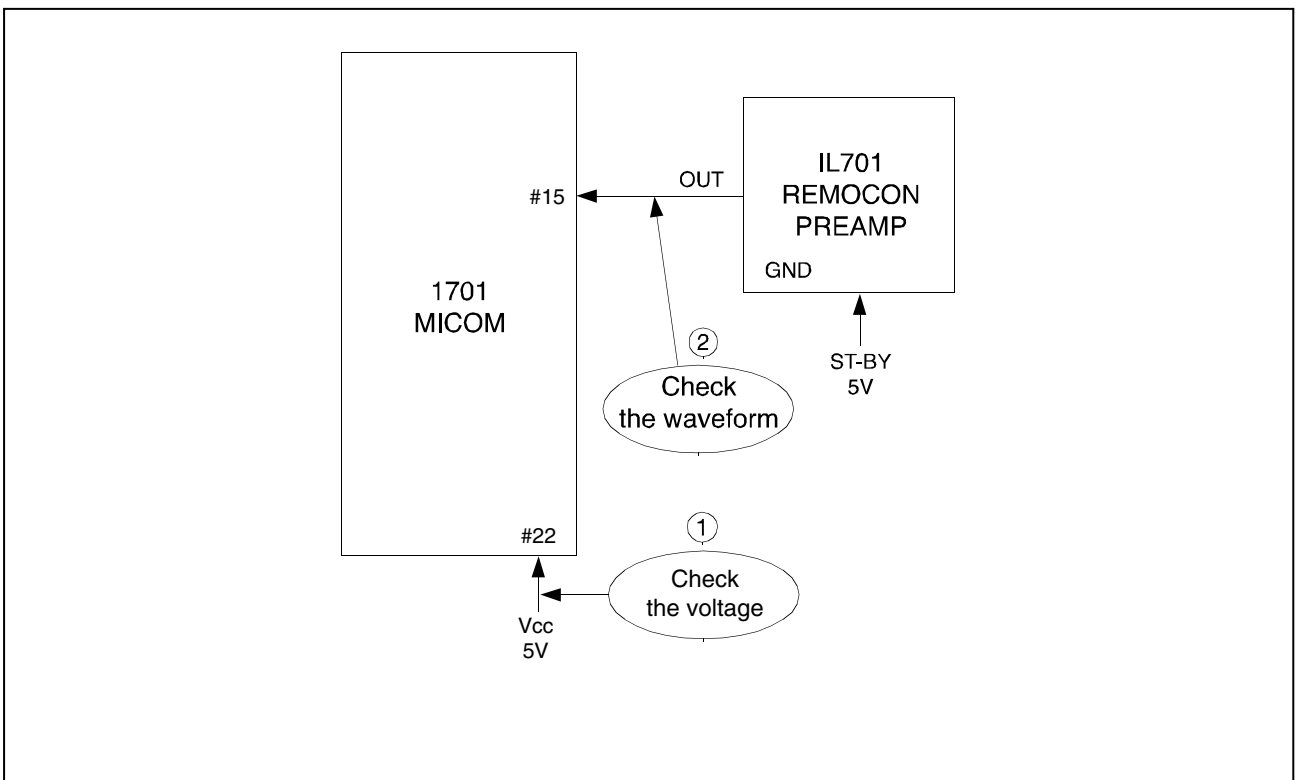
6. NO VERTICAL DEFLECTION



7. NO ON-SCREEN DISPLAY



8. REMOTE CONTROL DOES NOT OPERATE





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