

TABLETOP STEREO SYSTEM

TSX-10/15/20

SERVICE MANUAL

The TSX-10 is composed of the CRX-TS10 (cherry color) and the NX-TS10 (cherry color).
 The TSX-15 is composed of the CRX-TS20 (black color) and the NX-TS10 (black color).
 The TSX-20 is composed of the CRX-TS20 (black color) and the NX-TS20 (black color).

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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 This Service Manual uses recycled paper.



■ TO SERVICE PERSONNEL

1. Critical Components Information

Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only)

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.



“CAUTION”

“F1: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 1.25A, 125V FUSE.”

“F2: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 1.25A, 125V FUSE.”

CAUTION

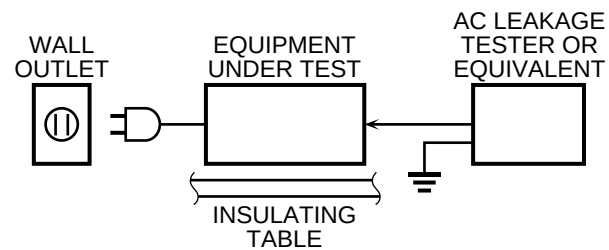
F1: REPLACE WITH SAME TYPE 1.25A, 125V FUSE.

F2: REPLACE WITH SAME TYPE 1.25A, 125V FUSE.

ATTENTION

F1: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 1.25A, 125V.

F2: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 1.25A, 125V.



- Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

WARNING: Laser Safety

This product contains a laser beam component. This component may emit invisible, as well as visible radiation, which may cause eye damage. To protect your eyes and skin from laser radiation, the following precautions must be used during servicing of the unit.

- 1) When testing and/or repairing any component within the product, keep your eyes and skin more than 30 cm away from the laser pick-up unit at all times. Do not stare at the laser beam at any time.
- 2) Do not attempt to readjust, disassemble or repair the laser pick-up, unless noted elsewhere in this manual.
- 3) CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Emitting conditions:

- 1) When the the STANDBY/ON key is turned to the "ON" position, and the cover is open, the laser component will emit a beam for several seconds to detect if a disc is present. During this time (5-10 sec.) the laser may radiate through the lens of the laser pick-up unit. Do not attempt any servicing during this period!
If no disc is detected, the laser will stop emitting the beam. When a disc is loaded, you will not be exposed to any laser emissions.
- 2) The laser power level can be adjusted with the VR on the pick-up PWB. However, this level has been set by the factory prior to shipping from the factory. Do not adjust this laser level control unless instruction is provided elsewhere in this manual. Adjustment of this control can increase the laser emission level from the device.

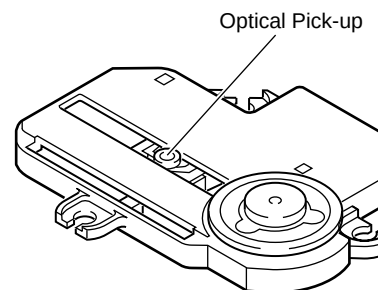
PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing.

1. Laser Diode Properties

- Material : GaAlAs
- Wavelength : 780 nm
- Emission Duration : Continuous
- Laser Output : max. 44.6 μ W*

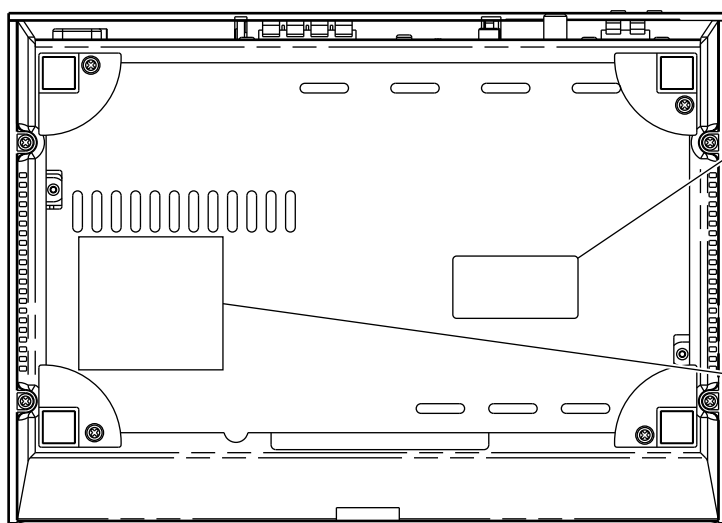
* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.



- When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

VARO!: AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

WARNING!: OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

CAUTION - VISIBLE AND / OR INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VARNING - SYNLIIG OCH / ELLER OSYNLIIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE, STRÅLEN ÄR FARLIG.
VARO ! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING - SYNLIIG OCH / ELLER OSYNLIIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLAD. BETRakta EJ STRÅLEN.
VORSICHT ! SICHTBARE UND / ODER UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT DEM STRAHL AUSSETZEN.
ATTENTION - RADIATION LASER VISIBLE ET / OU INVISIBLE LORSQUE L'APPAREIL EST OUVERT ET QUE LE VERROUILLAGE EST DESACTIVE, EVITEZ TOUTE EXPOSITION AU FAISCEAU.

WARNING: Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board by soldering, solder using the connection terminals provided on the battery cells. Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

ADVARSEL!

Lithiumbatteri—Eksplodingsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

Grounding for electrostatic breakdown prevention

1. Human body grounding

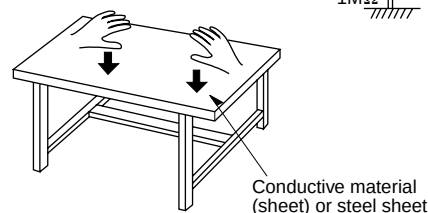
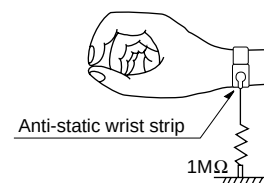
Use the antistatic wrist strap to discharge the static electricity from your body.

2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed and ground the sheet.

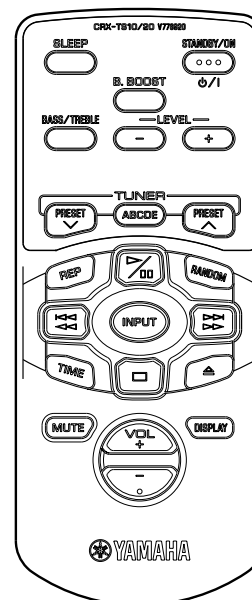
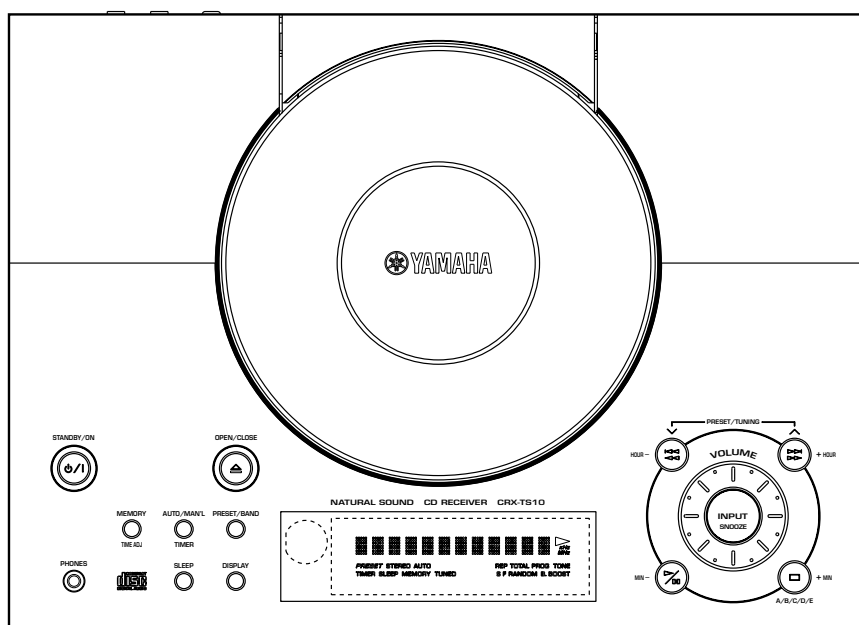
Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So take care not to let your clothes touch the optical pickup.

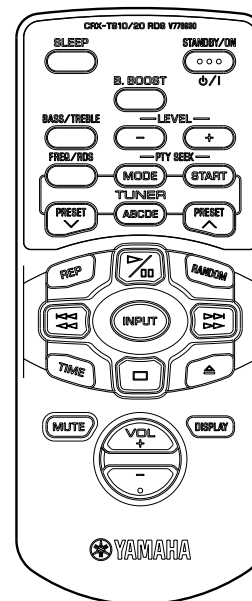
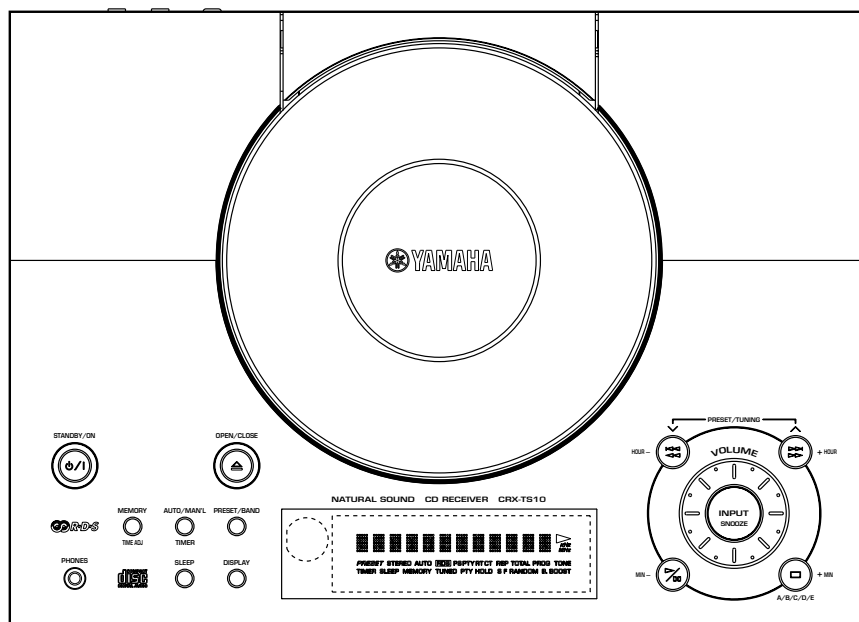


TOP PANELS

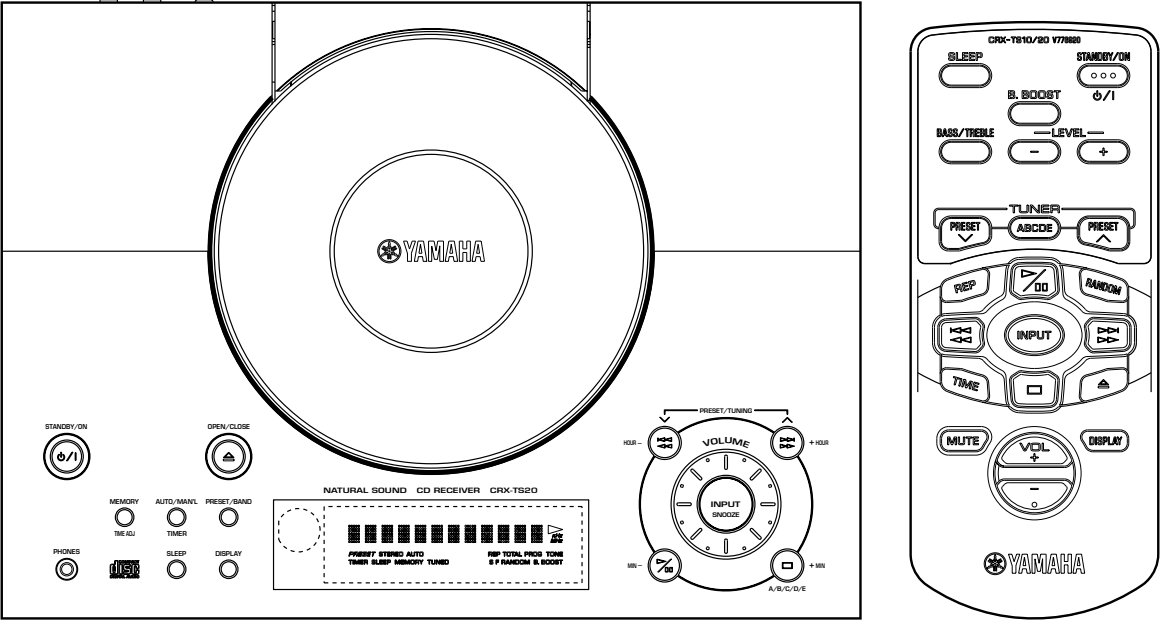
CRX-TS10: U, C, A, T models



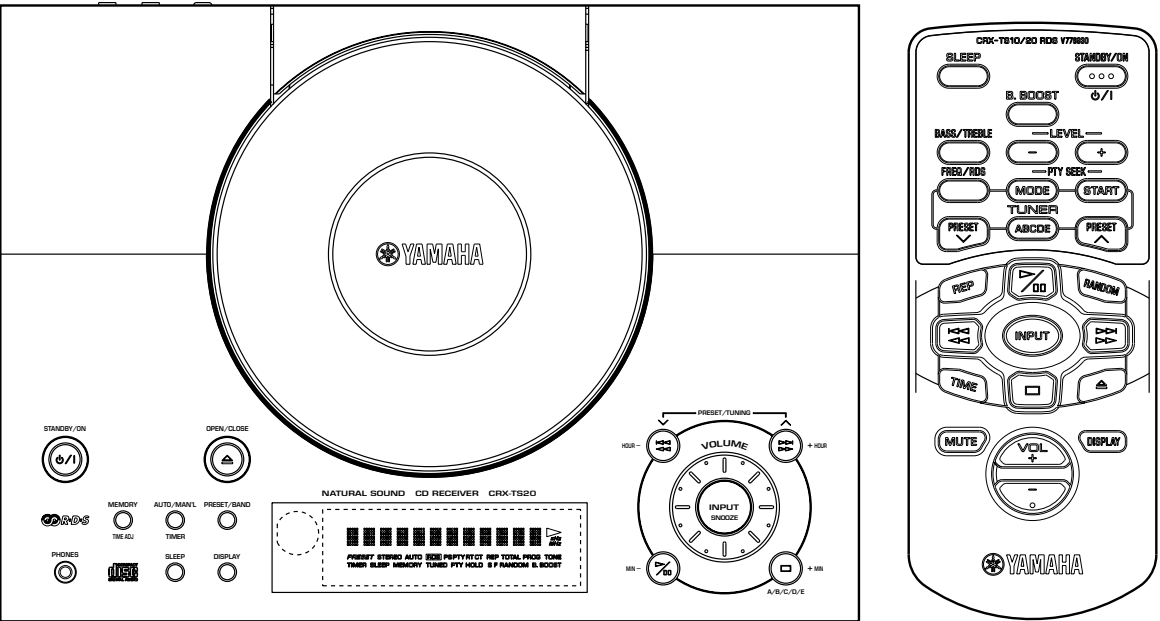
CRX-TS10: B, G models



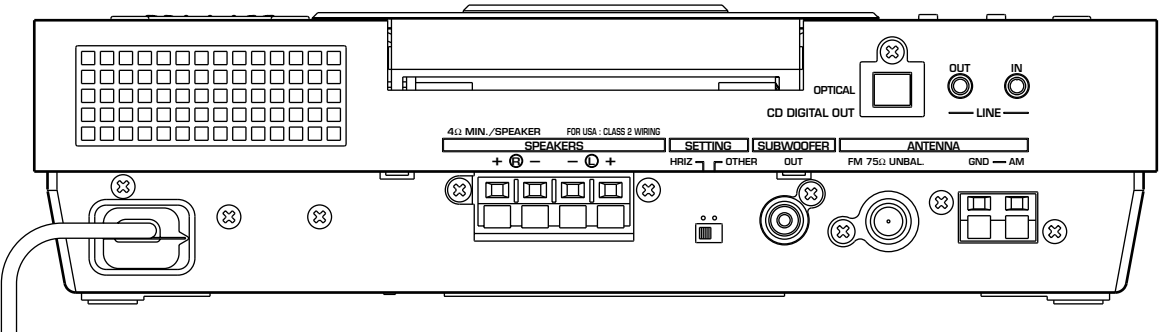
CRX-TS20: U, C, A, T models



CRX-TS20: B, G models



REAR PANEL



■ SPECIFICATIONS

■ Audio Section

Output Power Per Channel

(1 kHz, 10% THD, 4 ohms)

SP OUT L/R 18W + 18W
(B, G models: DIN standard output power per channel)

Input Sensitivity / Impedance

AUX 250 mV / 47 k

Amplifier

..... Tripath Digital BTL type

Volume

..... Rotary Encoder type

Tone Control (Remote control only)

..... BASS, TREBLE, BASS BOOST

Input

..... AUX (Mini jack) x 1

Output

..... AUX (Mini jack) x 1, CD Digital (Optical) x 1
..... Subwoofer x 1, Headphone x 1, Speaker x 1

Setting Angle

..... Flat, 45°, 70°, Wall mountable

■ Tuner Section

FM Tuning Range

U, C models 87.5 to 107.9 MHz
A, B, G, T models 87.50 to 108.00MHz

FM Usable Sensitivity

(1 kHz, 100% MOD, 30 dB S/N Quieting)

U, C, T models 1.5 µV (14.8 dBf)
A, B, G models (DIN 26 dB S/N) 1.8 µV

AM Tuning Range

U, C models 530 to 1710 kHz
A, B, G, T models 531 to 1611 kHz

Preset

..... 40 station (FM/AM)

RDS (B, G models only)

..... PS/PTY/RT/CT

■ CD Section

DAC

..... 1 Bit DAC

Digital Filter

..... 8 times Over Sampling Digital Filter

Wow & Flutter

..... Below measurable limits

CD Mechanical Unit

..... Ball Chucking Type Floating

Open/Close Mechanism

..... Big Acrylic CD Window by Motor Drive

Playback Disc

..... CD/CD-R/CD-RW

Signal Readout

..... Non-contact, 3-beam semi-conductor laser pick-up

■ General

Power Supply

U, C models AC 120 V, 60 Hz
A model AC 240 V, 50 Hz
B, G models AC 230 V, 50 Hz
T models AC 220 V, 50 Hz

Power Consumption

..... 35 W

Standby Power Consumption

..... 3.0 W

Dimensions (W x H x D)

CRX-TS10/20 297 x 79 x 213 mm
(11-11/16" x 3-1/8" x 8-3/8")
NX-TS10 140 x 213 x 77.5 mm
(5-1/2" x 8-3/8" x 3")
NX-TS20 126 x 230 x 146 mm
(5" x 9" x 5-3/4")

Weight

CRX-TS10/20 4.0 kg (8 lbs. 13 oz.)
NX-TS10 1.0 kg (2 lbs. 3 oz.)
NX-TS20 1.9 kg (4 lbs. 3 oz.)

Finish

CRX-TS10 Cherry
CRX-TS20 Black
NX-TS10 Cherry, Black
NX-TS20 Black

Accessories

Remote Control Transmitter x 1, Lithium battery x 1,
Indoor FM antenna x 1, AM loop antenna x 1,
Speaker Cable x 2, Stand x 3, Mounting bracket x 1,
Cushion x 1, Screws x 9

■ SPEAKER Section (NX-TS10, NX-TS20)

Type

..... 2 Way Bass-reflex Magnetic Shielding Type

Driver

Woofer 10 cm (3-15/16") Cone Type
Tweeter 2.5 cm (1") Dome Type

Maximum Input

NX-TS10 20 W
NX-TS20 20 W

Frequency Response

NX-TS10 100 Hz to 27 kHz
NX-TS20 63 Hz to 27 kHz

Sound Pressure Level

NX-TS10 91 dB / 2.83 v/m
NX-TS20 88 dB / 2.83 v/m

Setting Angle

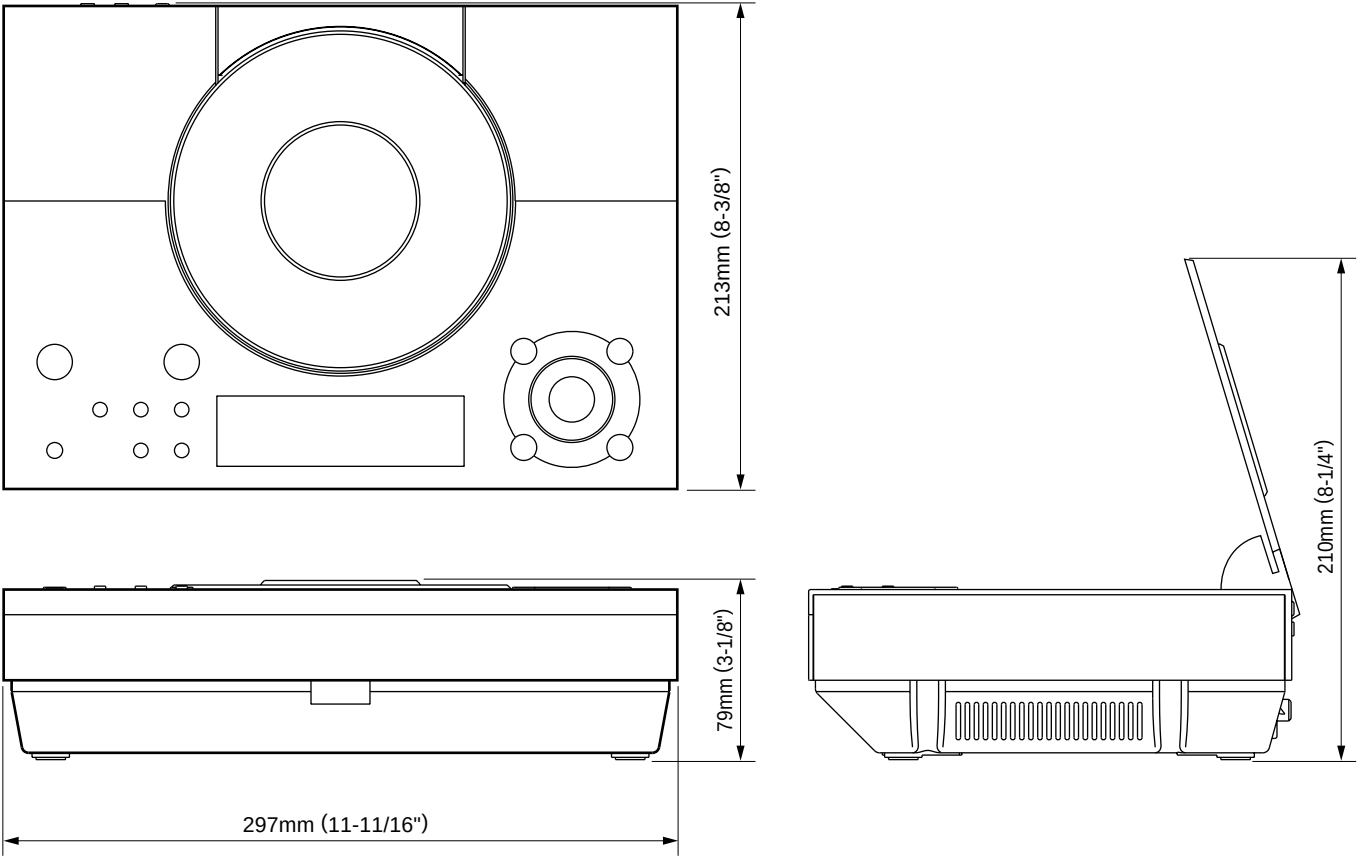
NX-TS10 45°, 70°, Wall mountable

* Specifications are subject to change without notice due to product improvements.

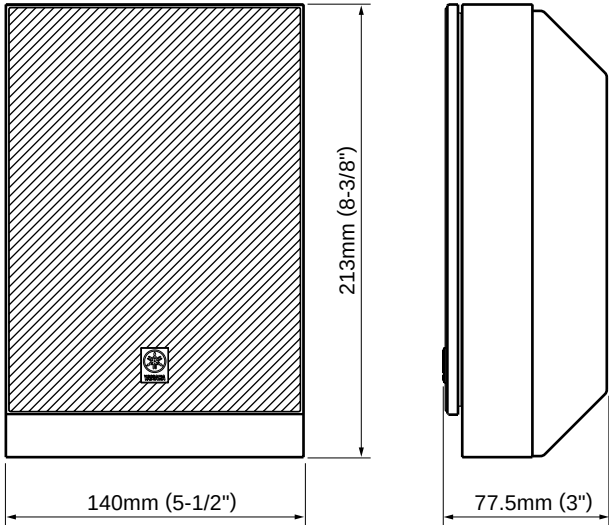
U	U.S.A. model	C	Canadian model
A	Australian model	B	British model
G	European model	T	Chinese model

• DIMENSIONS

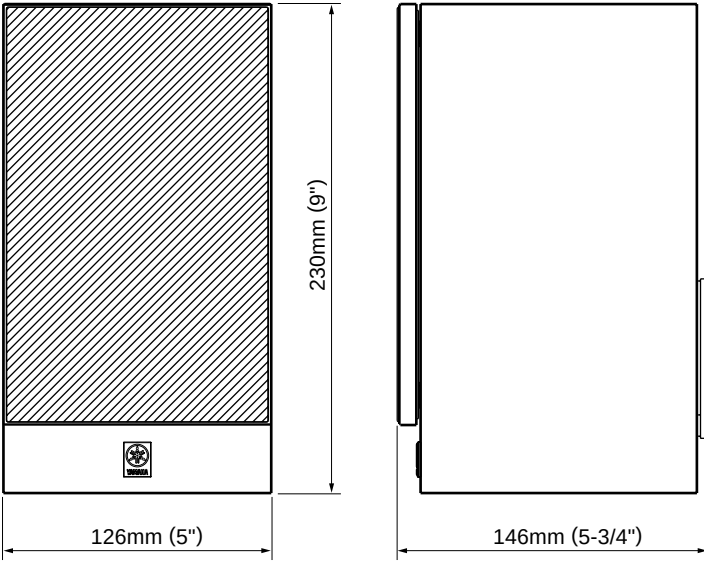
CRX-TS10/20



NX-TS10

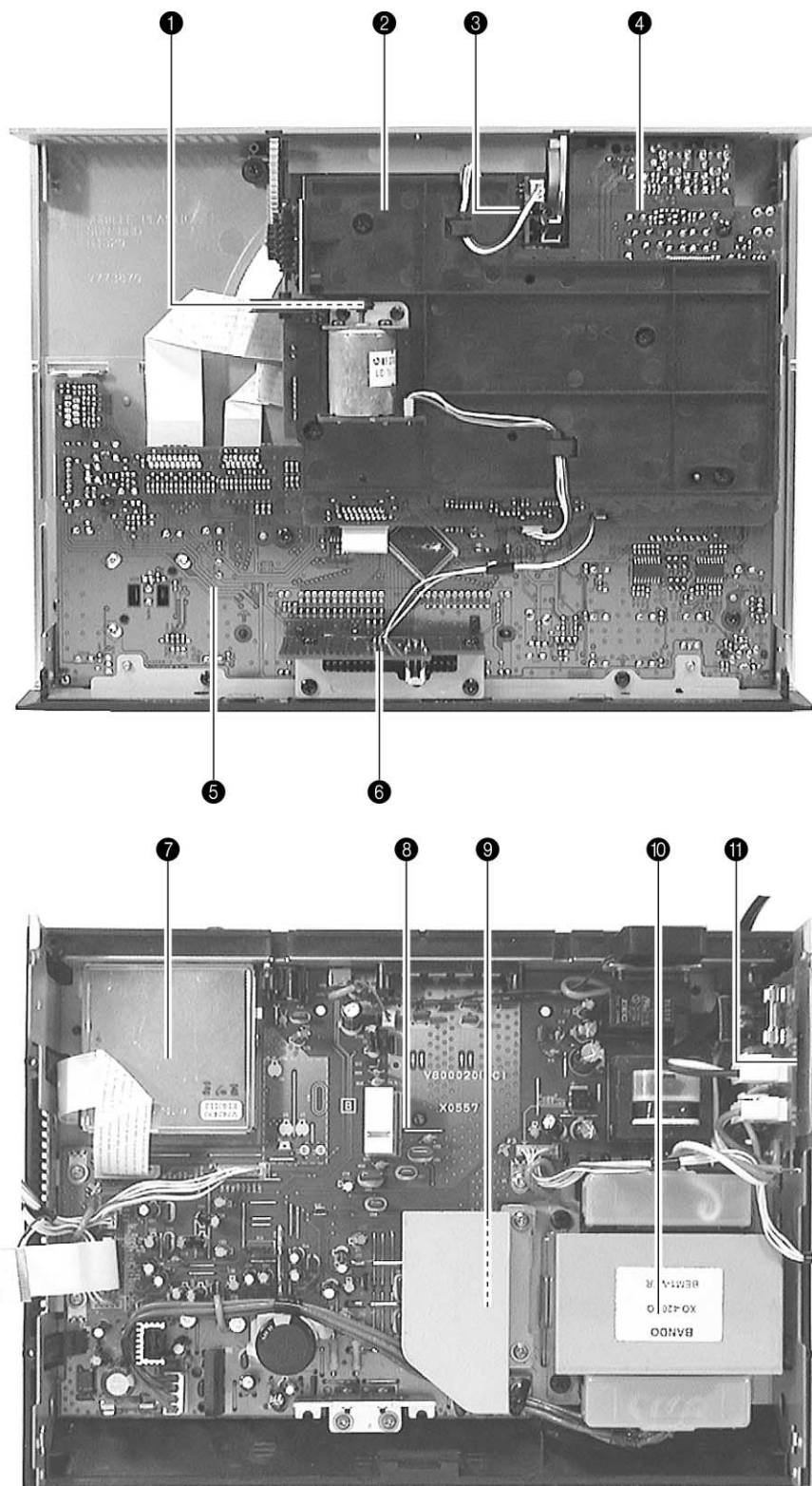


NX-TS20



TSX-10/15/20

INTERNAL VIEW



- ① Pick-up Unit
- ② CD Lid Opening Motor Mount
- ③ DIGITAL (5) P.C.B.
- ④ DIGITAL (1) P.C.B.
- ⑤ DIGITAL (2) P.C.B.
- ⑥ DIGITAL (3) P.C.B.

- ⑦ Tuner Pack Unit
- ⑧ MAIN (1) P.C.B.
- ⑨ Power Amplifier IC (IC5)
- ⑩ Power Transformer
- ⑪ MAIN (2) P.C.B.

■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)
Disconnect the power plug from the AC outlet.

1. Separation of Top section and Bottom section

- Remove 4 screws (①) to remove the side panels. (Fig. 1)
- Remove 7 screws (②).
- Remove the connector (CB206).
- Remove the top section by lifting its right side and place it on the left of the bottom section.

2. Removal of MAIN P.C.B.

- Remove the connectors (CB3, CB11) from the MAIN P.C.B.
- Remove 1 screw (③), shift the MAIN P.C.B (2) upward and then remove the connector (CB4). (Fig. 2)
- Remove the connectors (CB13, CB207, CB408, CB409) and flat cables (CB2, CB210) connected to the MAIN P.C.B.(1).
- Remove 3 screws (④).
- Remove 9 screws (⑤). The MAIN P.C.B. (1) and MAIN P.C.B. (2) can then be removed. (Fig. 2)

3. Removal of CD Drive Unit

- Remove the connectors (CB402, CB403).
- Remove 4 screws (⑥) and then remove the Motor Unit. (Fig. 3)
- Disconnect the flat cables (CB404, CB406, CB407).
- Remove 3 screws (⑦) and then remove the DIGITAL P.C.B. (1). (Fig. 3)
- Remove 1 screw (⑧). The CD Drive Unit can then be removed together with the DIGITAL P.C.B. (4). (Fig. 3)

Check that the disc table height is as specified below.

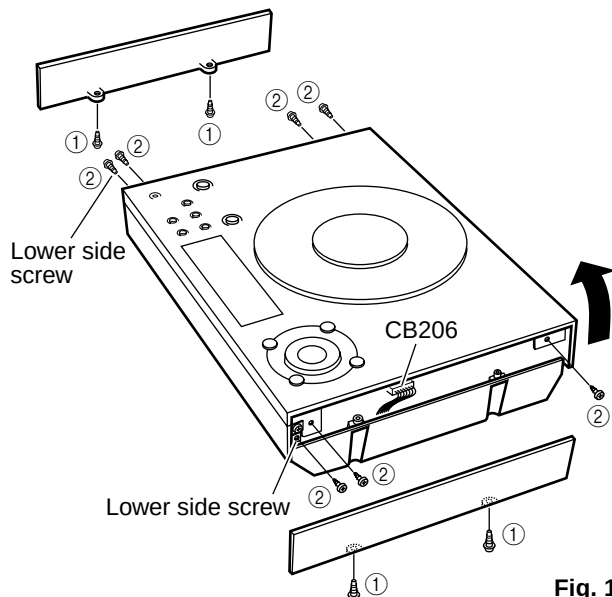
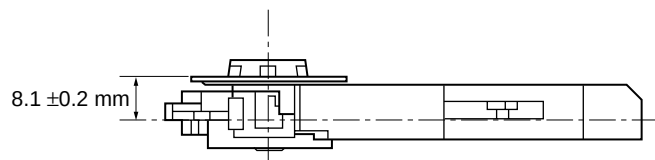


Fig. 1

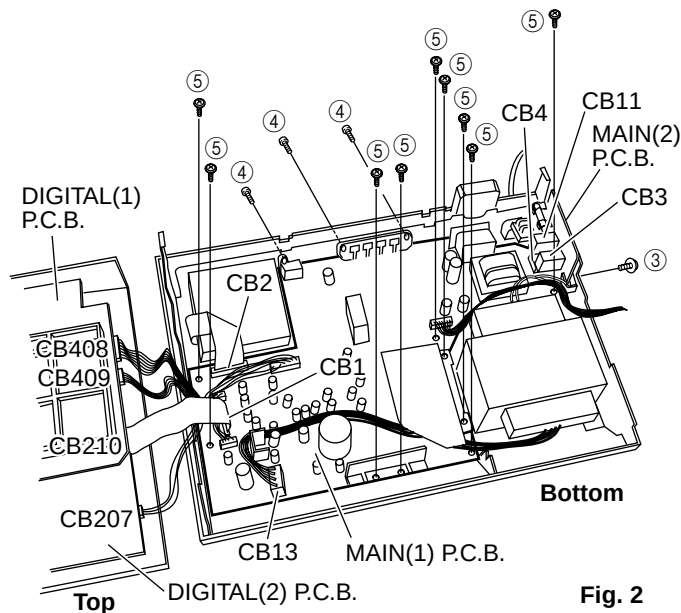


Fig. 2

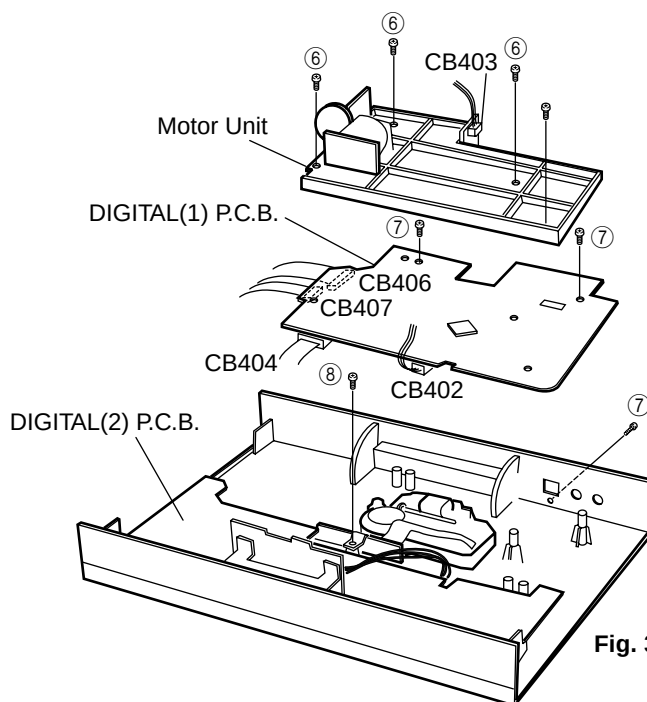


Fig. 3

SERVICING POSITION

When performing inspections, use the positions as shown in the figure.
Be sure to pay attention to the following items when performing inspections.

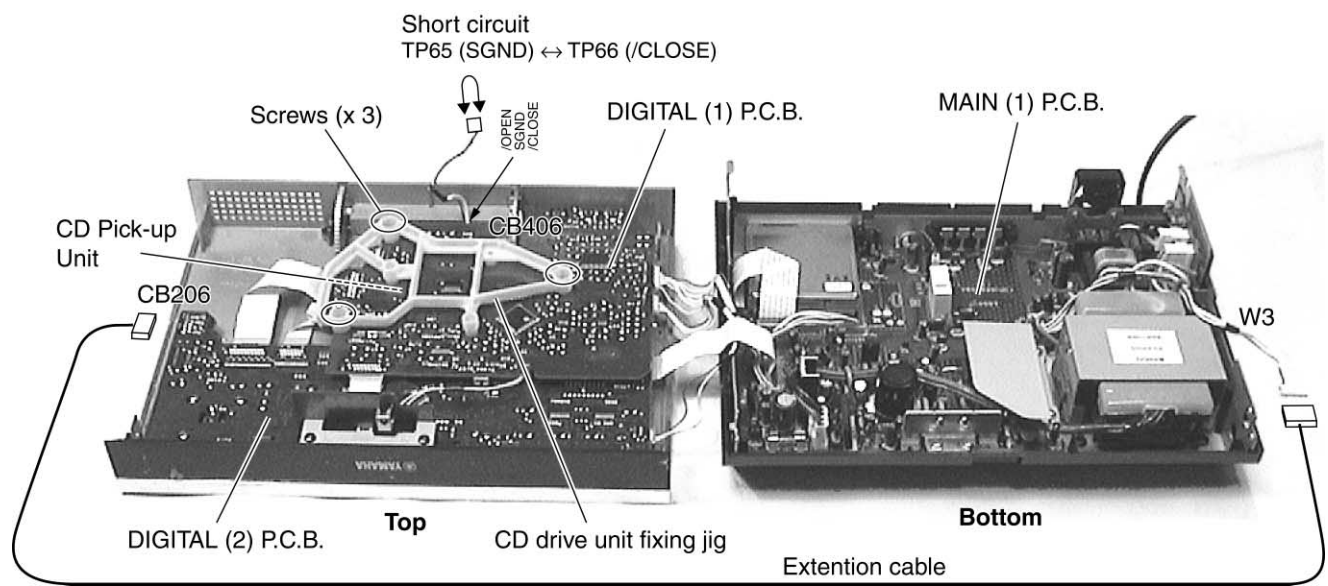
- 1. Static electricity
 - 2. Polarity of connectors
 - 3. Laser light from the pickup
- Be sure to load a CD before turning on the power and take it out after turning off the power. Never turn on the power without a CD loaded .

Procedure:

- 1. Remove the Motor Unit by performing Steps 1 and 3, a and b of the DISASSEMBLY PROCEDURES.
- 2. Where the Motor Unit has been removed, position the CD drive unit fixing jig as shown in the photo and fix it with 3 screws.
- 3. Reconnect the connectors that have been disconnected in the original state. However, use an extension cable for connection between W3 of the MAIN (1) P.C.B. and CB206 of the DIGITAL (2) P.C.B.

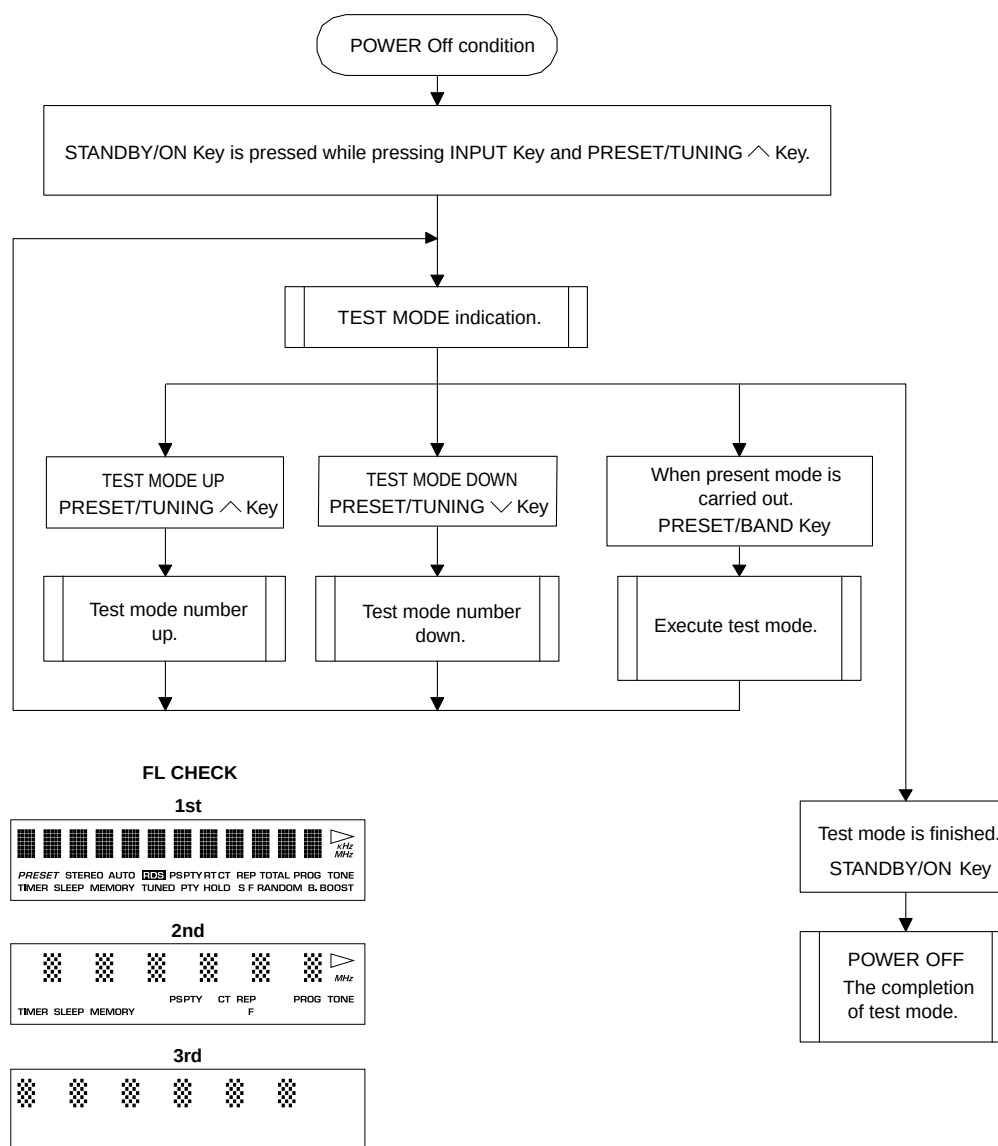
• Extention Cable

Part No.	Pin	Connection
MF407300	7P	MAIN (1) P.C.B. (W3) ↔ DIGITAL (2) P.C.B. (CB206)



TSX-10/15/20

■ TEST MODE



DISPLAY	FUNCTION	PRESET/BAND Key
01 Fact.Test	The factory inspection mode. Do not use this mode.	The choice of the factory inspection mode.
02 DEST-R9k	Indication for destination. (*1)	
03 FL+CLEAR	All FL segments and BACKUP RAM CLEAR. (Note that memories set by the user will be erased.)	1st: all segments light 2nd: RAM CLEAR Also, the preset contents of the tuner are restored to the factory preset ones.
04 FL CHECK	All FL segments and circuit board short circuit inspection.	1st: all segments light 2nd: Even-numbered segments and even numbered digits are turned on. 3rd: Odd-numbered segments and odd- numbered digits are turned on.
05 FAN[Stop] 05 FAN[Low] 05 FAN[High]	The test of the fan.	Switching of Stop → Low → High.

DISPLAY	FUNCTION	PRESET/BAND Key
06 Ver-A1.06	Version information of the microcomputer software. (*2)	It is changed to the date indication.
06 '01.07.11	The date of the microcomputer software.	It is changed to version indication.
07 SUM[f370]	The calculation of SUM is done and indicated after that. (*2)	Re-calculation.
08 ROM Check 08 ROM→Flash	Do not use this mode.	
09 PrCan-OFF 09 PrCan-ON	The cancel of ALL protection.	ON/OFF
10 Pr!C_P_T_	The confirmation of protection. _ (Mark): normal x (Mark): Protection history exists. [C: Amp. voltage, P: Power voltage, T: Thermal]	Clear protection history.
11 SubC1kOut 11 SubC1k-1P	The frequency confirmation of clock (32.768 kHz) for the time display.	Switching of Out → -1P. (It is outputted when INPUT Key is pushed at the time of -1P.) While this button is pressed, a clock signal is output at TP201.
12 RemoCorrR	ROM collection data (remote controller) reception / data writing.	Start the writing. (After the data reception.)
13 COR-Clear (*2)	ROM collection data is cleared. Do not use this mode.	Confirm the data clear. Start the data clear.
14 Cor- St. (*2)	SUM of ROM collection is calculated.	Start calculation.

(*1)

DESTINATION	R(AM9k/FM:50k), T	R(AM10k/FM100k)	A	B,G	U,C	J
Display	R9k	R10k	A	B, G	U, C	J

(*2) When the ROM collection area of EEPROM has some data, these functions are displayed.

CAUTION : When executing Test mode No. 2 RAM CLEAR, be sure to write down the preset memory contents of the tuner, using a table like the one shown below. Execution of RAM CLEAR will set the memory contents of the tuner back to the factory preset state which means that all the memories preset by the user will be erased.

Preset group	P1	P2	P3	P4	P5	P6	P7	P8
A								
B								
C								
D								
E								

● FACTORY PRESET

BAND	MARKETS	PRESET No.							
		1	2	3	4	5	6	7	8
FM (MHz)	U, C	98.1	95.1	87.5	101.5	107.9	88.1	106.1	107.9
	A, B, G, T	98.10	95.10	87.50	101.50	108.00	88.10	106.10	107.90
AM (kHz)	U, C	630	1080	1400	530	1710	900	1350	1440
	A, B, G, T	630	1080	1404	531	1611	900	1350	1440

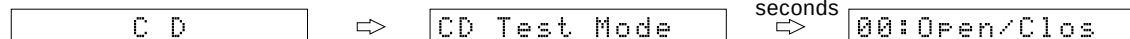
NOTE 1) PRESET PAGE A : FM B : AM C : FM D : AM E : FM

■ CD TEST MODE

Press the "STANDBY/ON" key while pressing the "STOP" key and the "INPUT" key simultaneously, and the TEST MODE will be activated.

On the FL display, an opening message appears for a few seconds.

After a few seconds



● Test Mode Function List of Panel keys

PANEL KEY	FUNCTION
(SKIP/SEARCH)	Increase the test command number.
(SKIP/SEARCH)	Decrease the test command number.
OPEN/CLOSE	Execute the test command selected with the SKIP/SEARCH keys
PLAY/PAUSE	Plays if focus servo is effective.
STOP	All stop. (Focus, spindle, feed, laser, tray, etc.) Initializes FL display

Sample of display of test command



The functions corresponded to the test command numbers are as follows.

No.	Display	Function
00	Open/Clos	Open/close the CD lid.
01	AutoAdj-1	Auto adjustment mode1 (TR offset, FO offset, adjustment)
02	AutoAdj-2	Auto adjustment mode2 (FO rough gain, TR balance, FO rough gain adjustment).
03	AutoAdj-3	Auto adjustment mode3 (FO fine gain adjustment, TR fine gain adjustment, FO balance).
04	Feed Rev	Move traverse reverse until the inner SW turns on.
05	Feed Fwd	Move traverse forward.
06	Feed Stop	Stop traverse.
07	SP Acc	Accelerate spindle.
08	SP Brake	Decelerate spindle.
09	SP Srv On	Spindle servo on.
10	SP SrvOFF	Spindle free (servo off).
11	SP Stop	Stop spindle.
12	Fcs Srch	FO on, TR off. (Enter focus search if focus servo is off.)
13	TrFe OFF	FO on, TR off, TV off.
14	1Kick R	Reverse 1 track kick continuously.
15	1Kick F	Forward 1 track kick continuously.
16	10Kick R	Reverse 10 track kick continuously.
17	10Kick F	Forward 10 track kick continuously.
18	30Kick R	Reverse 30 track kick continuously.
19	30Kick F	Forward 30 track kick continuously.
20	150Kick R	Reverse 150 track kick continuously.
21	150Kick F	Forward 150 track kick continuously.
22	FcsG High	Focus gain at High.
23	FcsG Norm	Focus gain at Low.
24	Test Coef	Servo coefficient rewrite test.
25	Mute Chg	Analog mute control.
26	Motor Drv	Tray motor drive test (for P.C.B. test).
27	SW check	Tray switch test (for P.C.B. test).
28	Error Msg	Display of latest error message.
29	ToProduct	To product mode.
30	Test Rep	To repetitive test mode.
31	Tray Test	To tray repetitive test mode.
32	CD Ver.	Display of version of CD section.

Display and test servo coefficient

The coefficients subject to display and test are from FG to SET3.

The functions of the control buttons are as follows.

PANEL KEY	FUNCTION
(SKIP/SEARCH)	Increase of coefficient item / upper digits of coefficient / lower digits of coefficient.
(SKIP/SEARCH)	Decrease of coefficient item / upper digits of coefficient / lower digits of coefficient.
OPEN/CLOSE	Switching up/down contents (coefficient item / upper digits of coefficient / lower digits of coefficient).
PLAY/PAUSE	Define servo coefficient, write data to LSI.
STOP	Return to the test command selection.

■ CD ERROR MESSAGE

- (1) If a CD error occurs, an error message can be displayed by selecting "CD TEST MODE 28 Error Msg" and pressing the "OPEN/CLOSE" key.
- (2) Shown below is an example of display. ("E-73" as an example)



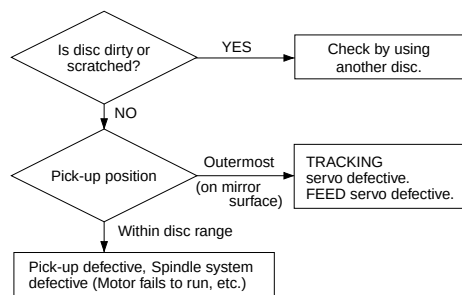
- (3) Listed in the table below are error messages.

● Error Messages List

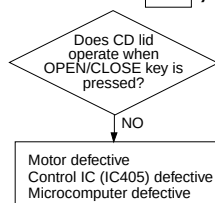
Error No.	Status	Contents
E-10	PLAY	CD fails in the disc data reading after the state shift.
E-20	SCAN	
E-30	PAUSE	
E-70	SEARCH	
E-11	PLAY	CD fails in the disc data reading.
E-21	SCAN	
E-31	PAUSE	
E-73	LOAD	CD fails in the TOC data reading
E-04	LOAD, SEARCH	Tracking servo is not effective at the DISC MOTOR SERVO PLL.
E-14	LOAD, SEARCH	Disc motor servo PLL is not effective.
E-35		CD fails in FOCUS SEARCH.
E-06	SEARCH, PLAY, PAUSE	CD fails in escaping from the LEAD-IN area.
E-47	SEARCH	The inner limit switch does not operate at the FEED INNER CONTROL.
E-57	STOP	
E-77	LOAD, EJECT	
E-18	PLAY	CD fails in recovery from the FOCUS OUT.
E-28	SCAN	
E-38	PAUSE	
E-48	SEARCH	
E-68	LOAD	
E-AC		Close switch does not operate at the CD Lid CLOSE CONTROL.
E-AD		Open switch does not operate at the CD Lid OPEN CONTROL.
MN ERR		MN35511 does not give response of SENSE with resetting.

1) Error Code Troubleshooting

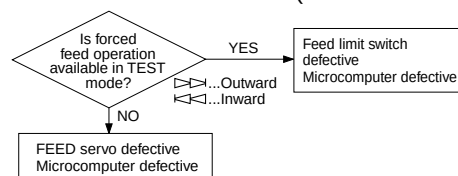
Error code **X0** , **X1** , **73** Data cannot be read.



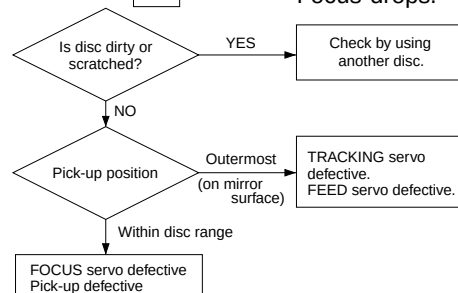
Error codes **AC** , **AD** Poor CD lid operation.



Error code **X7** FEED operation defective. (Limit switch fails)

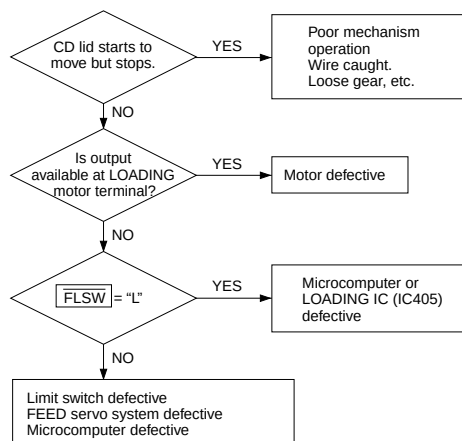


Error code **X8** Focus drops.



2) Troubleshooting from System Malfunctions

a) CD lid fails to open/close.

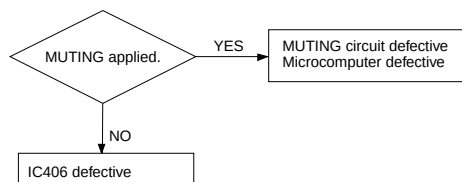


When CD lid fails to close completely (when it stops midway)

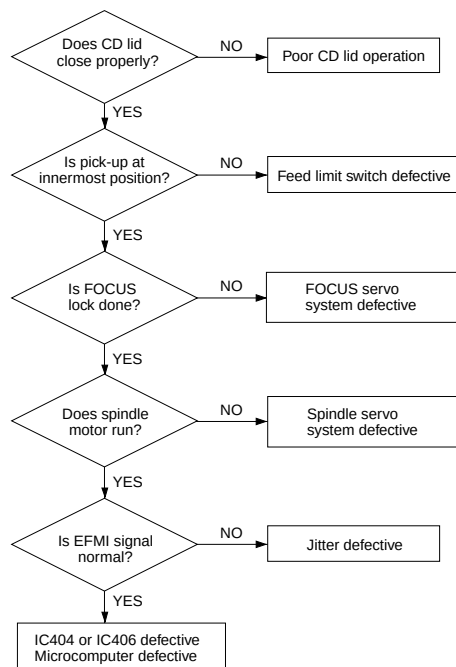
[Corrective measure]

- 1) Turn ON the power and open the CD lid.
- 2) Turn OFF the power and force the CD lid to close.
- 3) With the power turned ON, open and close the CD lid to check if the CD lid closes completely.

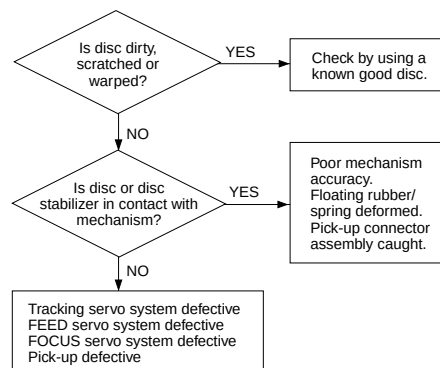
b) No sound generated, Sound cut during play. (but time display advances properly)



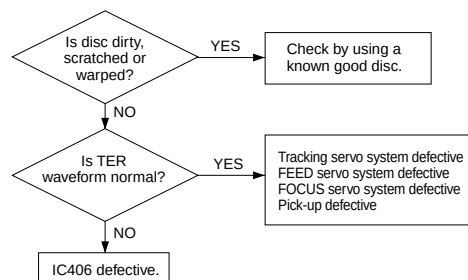
c) Operates as if no disc loaded. (although loaded)



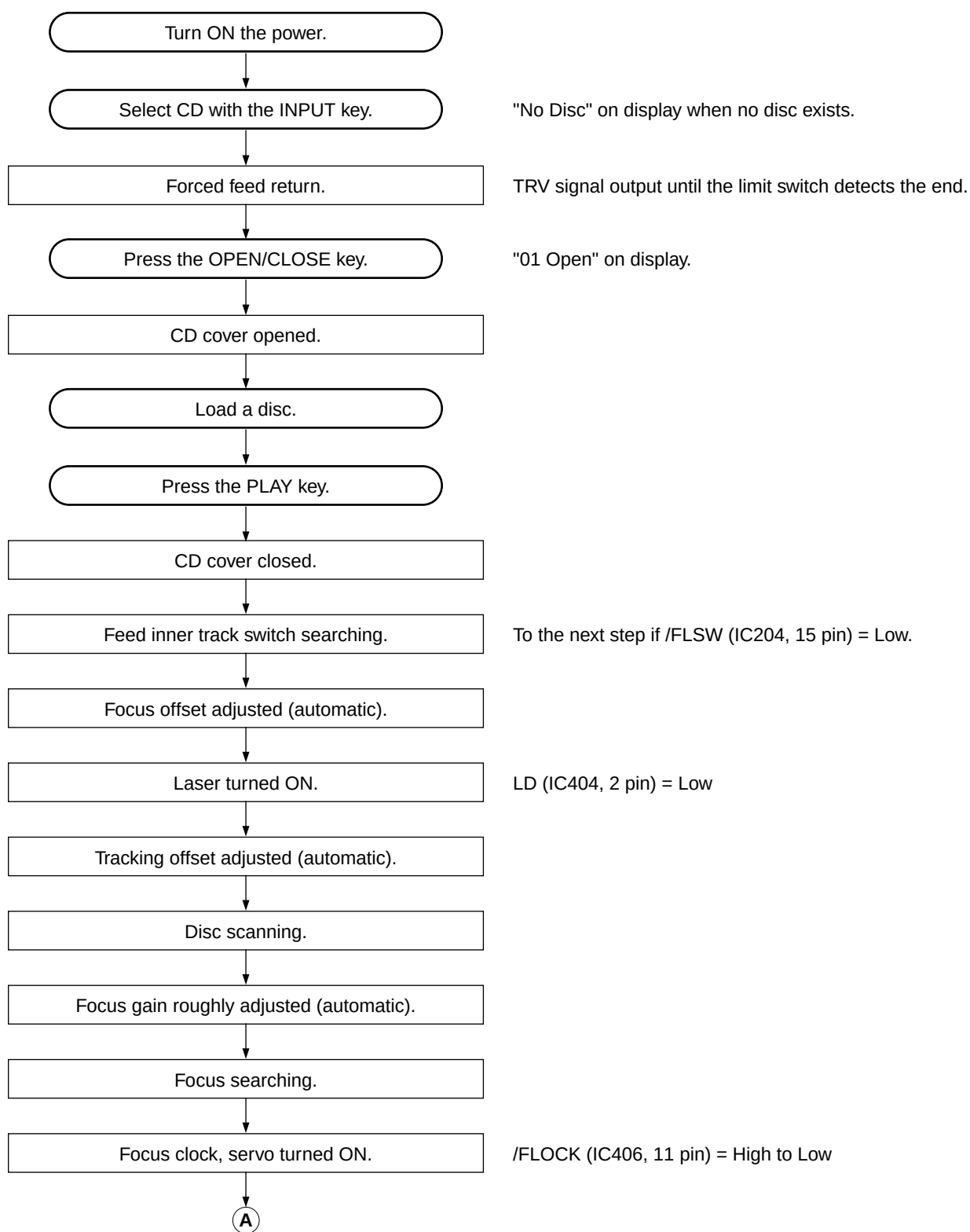
d) Sound skips. (Time display fails to advance properly)

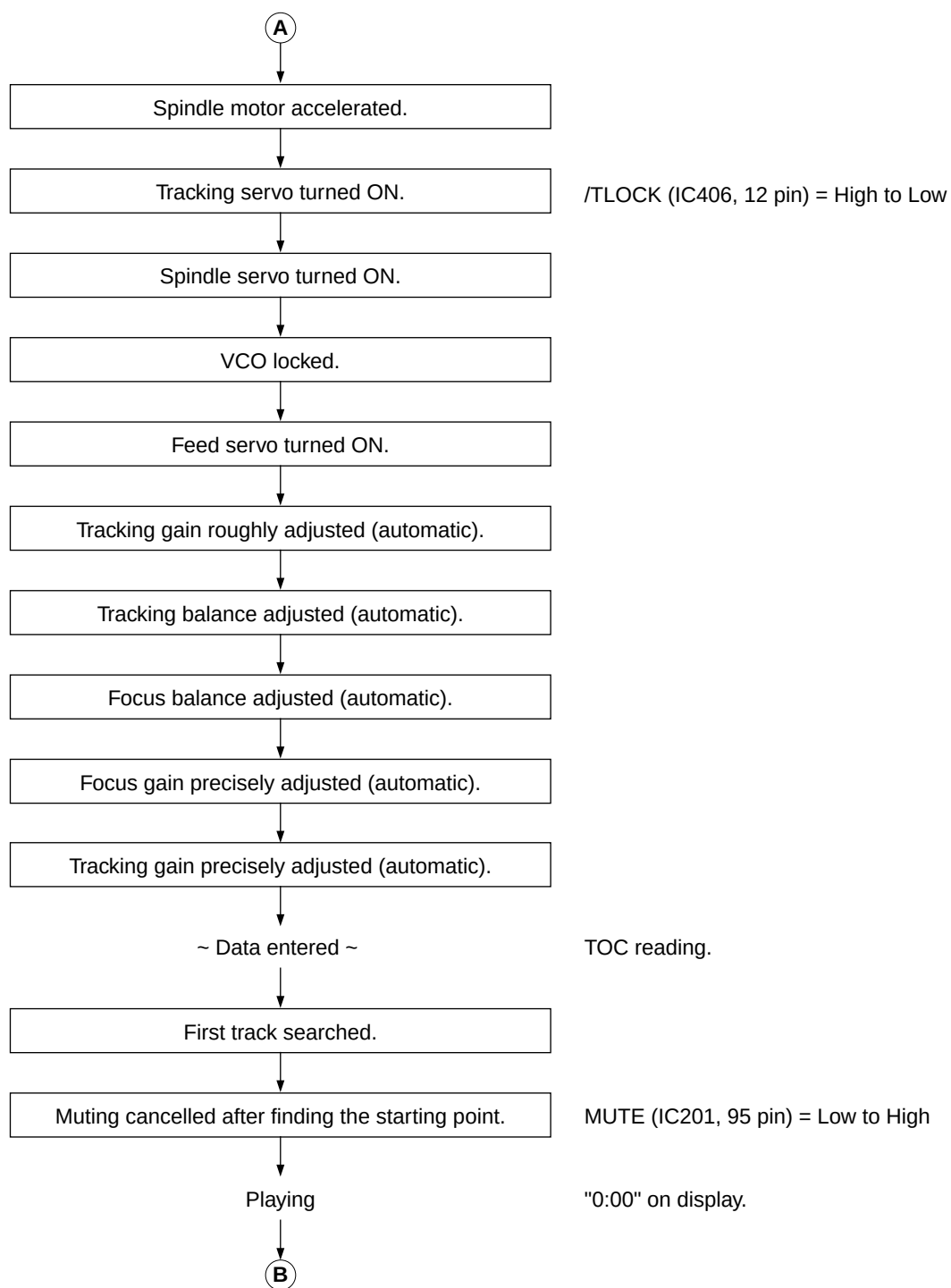


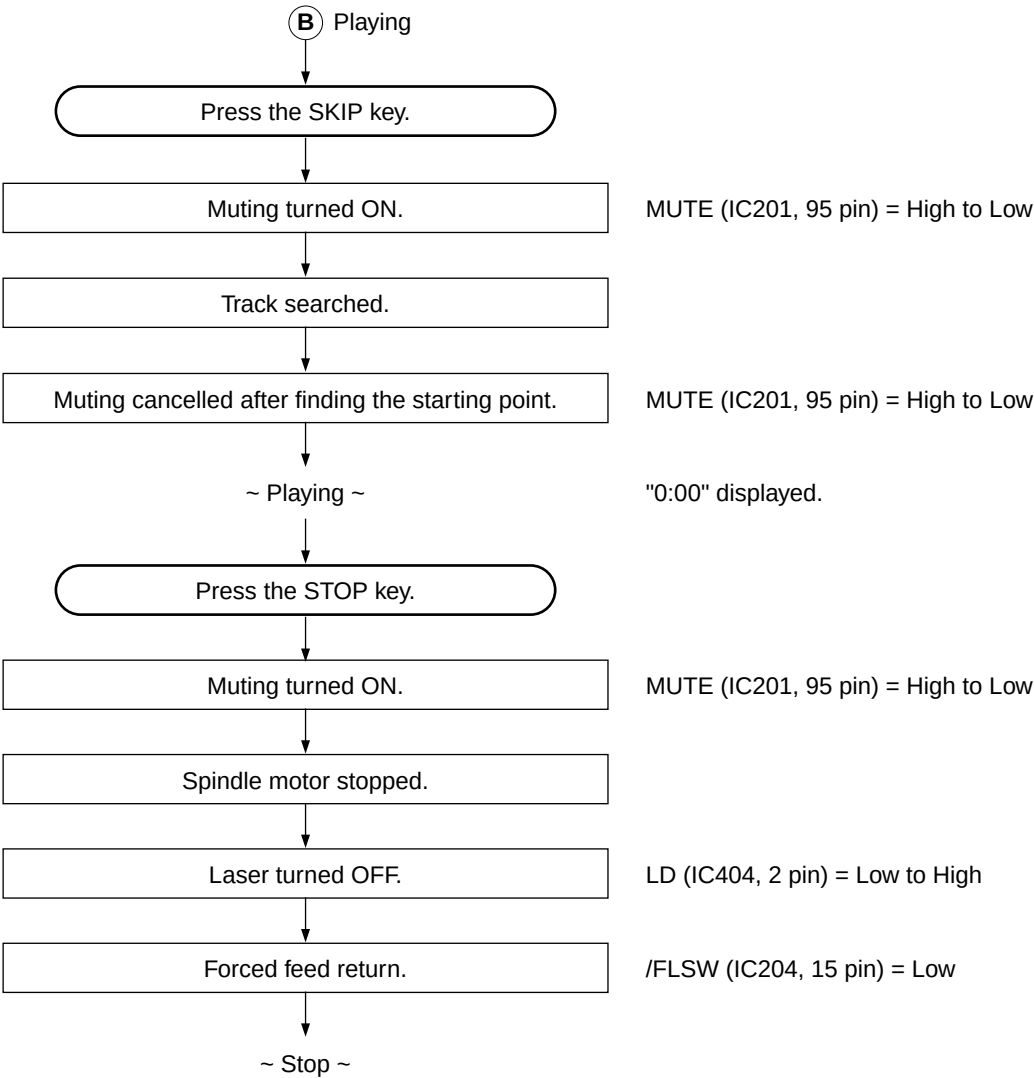
e) No search provided. (Sound skipped after search)



■ CD STANDARD OPERATION CHART





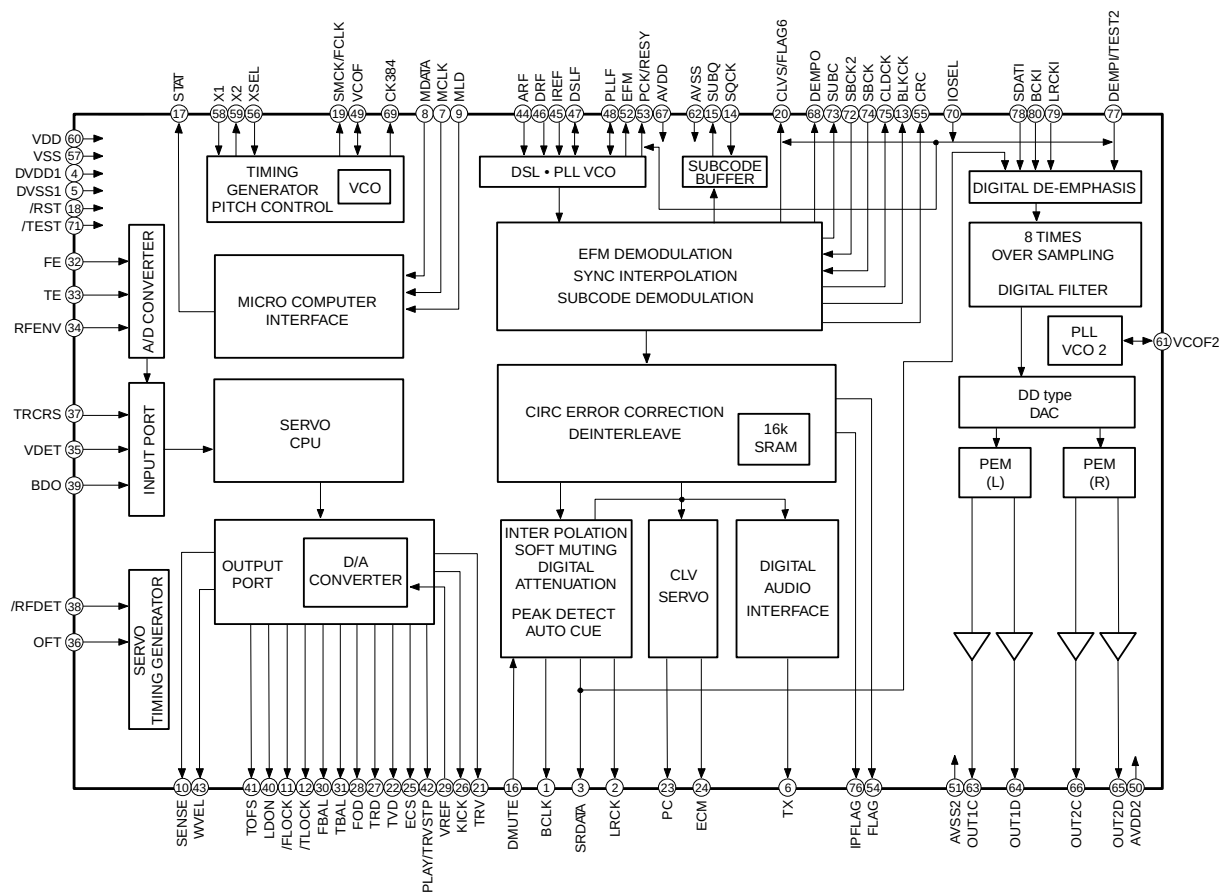


TSX-10/15/20

IC DATA

IC406 : MN35511AL

Signal Processor & Controller



IC406 : MN35511AL

Pin Description

Pin No.	Name	I/O	Function
1	BCLK	O	Bit clock output for SR DATA (NC)
2	LRCK	O	L/R identification signal output (NC)
3	SRDATA	O	Serial data output (NC)
4	DVDD1	I	Power supply for digital circuit (+5)
5	DVSS1	I	GND for digital circuit (GND)
6	TX	O	Digital audio interface output signal
7	MCLK	I	Microprocessor command clock signal input (data latched at leading edge)
8	MDATA	I	Microprocessor command data input
9	MLD	I	Microprocessor command load signal input (L : LOAD)
10	SENSE	O	Sense signal output (OFT, FESL, NACEND, NAJEND, SFG, NWTEND)
11	FLOCK	O	Focus servo drawing signal (L : when drawn)
12	TLOCK	O	Tracking servo drawing signal (L : when drawn)
13	BLKCK	O	Sub code block clock signal (BLKCK=75Hz)
14	SQCK	I	Clock input for sub-code Q register
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input (H : MUTE)
17	STAT	O	Status signal (CRC, STCNT, CLVS, TTSTOP, SQOK, RESY, FCLV, FLAG6, SENSE, /FLOCK, /RFDET, /TLOCK)
18	RST	I	Reset input (L : RESET)
19	SMCK/ FCLK	O	4.2336MHz clock signal output SMCK when command is defaulted. (Note 1) (NC) SMCK (8.4672MHz), FCLK (7.35kHz) or "L" fixed is selected when command is switched.
20	CLVS/ FLAG6	O	With command defaulted : CLVS when IOSEL=H, FLAG6 when IOSEL=L (NC) These settings can be reversed by command (FLAG6 when IOSEL=H).
21	TRV	O	Traverse (Feed) forced feed output 3-State
22	TVD	O	Traverse (Feed) drive output
23	PC	O	Spindle motor ON signal L : ON (default) (NC)
24	ECM	O	Spindle motor drive signal (forced mode output) 3-State
25	ECS	O	Spindle motor drive signal (servo error signal output)
26	KICK	O	Kick pulse output 3-State
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output block (TVD, ECS, TRD, FOD, FBAL, TBAL)
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input (analog input)
35	VDET	I	Oscillation detect signal input (H : DETECT) (GND)
36	OFT	I	Off track signal input (H : OFF TRACK)
37	TRCRS	I	Track cross signal input (analog input)
38	RFDET	I	RF detect signal input (L : DETECT)
39	BDO	I	Drop out signal input (H : DROP OUT)
40	LDON	O	Laser ON signal output (H : ON) (NC)
41	TOFS	O	Tracking offset adjustment output (NC)
42	PLAY/TRVSTOP	O	Switched by command. PLAY (Play signal output) when command is defaulted. (NC)
43	WVEL	O	Double speed status signal output (H : double speed) (NC)
44	ARF	I	RF signal input
45	IREF	I	Reference current input terminal
46	DRF	I	Bias terminal for DSL

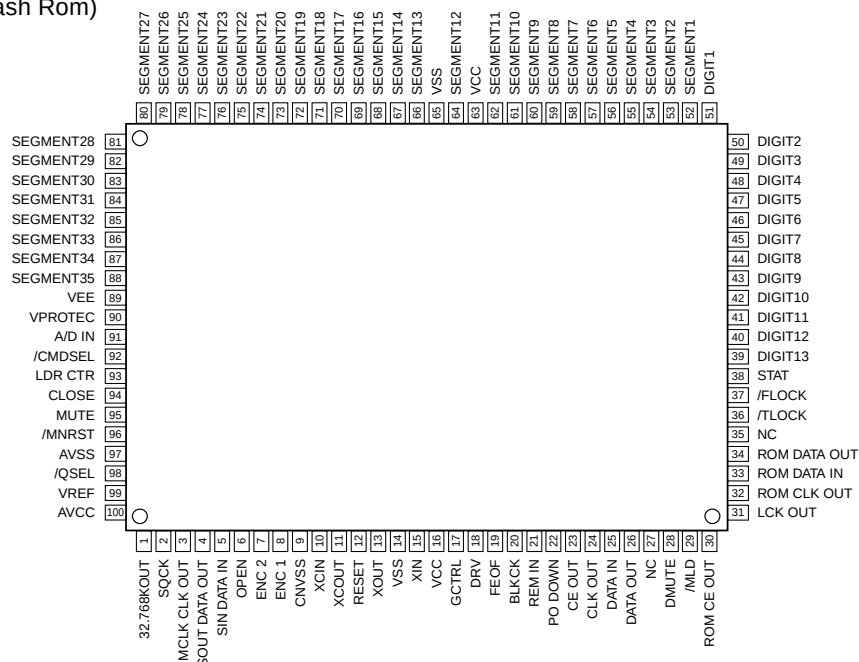
(Note 1) At the SMCK/FCLK pin, output does not stop while /RST=L.

IC406 : MN35511AL

Pin Description

Pin No.	Name	I/O	Function
47	DSLIF	I/O	Loop filter terminal for DSL
48	PLLIF	I/O	Loop filter terminal for PLL
49	VCOF	I/O	Loop filter terminal for VCO (+5)
50	AVDD2	I	Power supply for analog circuit (for AD of DSL, PLL, DA output blocks) (+5)
51	AVSS2	I	GND for analog circuit (for AD of DSL, PLL, DA output blocks) (GND)
52	EFM	O	EFM signal output (NC)
53	PCK/ RESY	O	With command defaulted : PLL extract clock output PCK when IOSEL=H, frame re-synchronous signal RESY when IOSEL=L These settings can be reversed by command (RESY when IOSEL=H). (NC)
54	FLAG	O	Flag signal output (NC)
55	CRC	O	Sub-code CRC check result output (H : OK, L : NG) (NC)
56	XSEL	I	L : Normal mode (GND) H : • For internal master clock, VCO2 output clock for jitter adsorbing PLL is used instead of Xtal oscillation output (X2). • VCO2 is always fixed to oscillation mode regardless of VCO2 oscillation stop command or resetting (/RST=L) and Xtal oscillation is stopped.
57	VSS	I	GND for oscillation circuit
58	X1	I	Crystal oscillation circuit input terminal
59	X2	O	Crystal oscillation circuit output terminal
60	VDD	I	Power supply for oscillation circuit (+5)
61	VCOF2	O	PLL loop filter terminal for jitter adsorption (GND)
62	AVSS1	I	GND for audio DAC
63	OUT1C	O	PEM output terminal 1C
64	OUT1D	O	PEM output terminal 1D
65	OUT2D	O	PEM output terminal 2D
66	OUT2C	O	PEM output terminal 2C
67	AVDD1	I	Power supply terminal for audio DAC
68	DEMPO	O	Deemphasis detect signal output (NC)
69	CK384	O	384fs clock output (At the CK384 pin, output does not stop while /RST=L.) (NC) Xtal system when command is defaulted. Signal processing system when command is switched
70	IOSEL	I	Mode selecting terminal (+5)
71	TEST	I	Test mode setting terminal (Normal : H) (+5)
72	SBCK2	I	Sub-code data read clock input
73	SUBC	O	Sub-code serial output (SBCK effective) when command is defaulted. PACK data usable (SBCK2 effective) when command is switched
74	SBCK	I	Clock input for sub-code serial output (with pull-up resistor) (NC)
75	CLDCK	O	Sub-code frame clock signal output when command is defaulted (fCLDCK=7.35kHz) PACK synchronous signal when command is switched
76	IPFLAG	O	Interpolation flag signal output (H : INTERPOLATION) (NC)
77	DEMPI /TEST2	I	When IOSEL=H, L : NORMAL H : TEST2 (GND) Emphasis control in accordance with DEMPO When IOSEL=L, external DEMP1 input terminal For emphasis control, DEMP0, OR of DEMP1, DEMP1, forced OFF or forced ON is selected by command. When command is defaulted, DEMP0 and OR of DEMP1
78	SDATI	I	SRDATA input (effective only when IOSEL=L) (NC)
79	LRCKI	I	LRCK input (effective only when IOSEL=L) H : Lch data, L : Rch data (NC)
80	BCKI	I	BCK input (effective only when IOSEL=L) (NC)

IC201 : M30217MA-A209FP (Mask Rom) 16 bit μ -COM
M30218FCFP (Flash Rom)



No.	Name	Port	IN/OUT	Function
1	P97	DA0	OUT	Air cooling fan control OUT (D-A) (OUT for checking clock at 32.768 kHz/test mode)
2	P96	SCLK22	S-CLK2	[CD] SQCK (Serial I/O - 2)
3	P95	SCLK21	S-CLK1	[CD] MCLK CLK OUT (Serial I/O - 2)
4	P94	SOUT2	S-OUT	[CD] SOUT DATA OUT (Serial I/O - 2)
5	P93	SIN2	S-IN	[CD] SIN DATA IN (Serial I/O - 2)
6	P92	(SSTB)	OUT	[CD] CD tray OPEN output
7	P91	(SBUSY)	IN	Rotary encoder B IN [Pull-up resistor required]
8	P90	(SRDY2)	IN	Rotary encoder A IN [Pull-up resistor required]
9	CNVSS	–	–	Connected to Vss (GND) via a resistor (5.1k)
10	P87	XCIN	–	32.768 kHz IN (Built-in feedback resistor)
11	P86	XCOU	–	32.768 kHz OUT (Built-in feedback resistor)
12	RESET	–	–	RESET [0: RESET]
13	XOUT	–	–	10 MHz OUT (Built-in feedback resistor)
14	VSS	–	–	GND
15	XIN	–	–	10 MHz IN (Built-in feedback resistor)
16	VCC	–	–	Power supply +5V [Backup chemical capacitor for clock required]
17	P85	(INT5)	OUT	[CD] GCTRL
18	P84	(INT4)	OUT	[CD] DRV
19	P83	(INT3)	OUT	[CD] FEOF
20	P82	INT2	IN	[CD] BLKCK
21	P81	INT1	INT-IN	Remote control IN
22	P80	INT0	INT-IN	Power down DC detect IN [0: POWER DOWN]
23	P77	CMOS	OUT	C ² B (LC72131/LC72720/LC75342M) CE OUT [1: DATA transfer]
24	P76	CLK1	S-CLK	LC72131/LC72720/LC75342M CLK OUT (Serial I/O-1)
25	P75	RxD1	S-IN	LC72131/LC72720 DATA IN (Serial I/O-1)
26	P74	TxD1	S-OUT	LC72131/LC72720/LC75342M DATA OUT (Serial I/O-1)
27	P73	(TA3in)	OUT	NC
28	P72	(TB2in)	OUT	[CD] DMUTE
29	P71	(TB1in)	OUT	[CD] /MLD
30	P70	(TB0in)	OUT	CE OUT to E ² PROM [1: DATA transfer (E2PROM)]
31	P47	(CTS0)	OUT	Busy OUT from built-in flash ROM / Extension port (BU2092) LCK (latch) OUT
32	P46	CLK0	S-CLK	CLK IN to built-in flash ROM / E ² PROM / CLK OUT to BU2092 (Serial I/O-0)
33	P45	RxD0	S-IN	DATA IN to built-in flash ROM / DATA IN from E ² PROM (Serial I/O-0)
34	P44	TxD0	S-OUT	DATA OUT from built-in flash ROM / E ² PROM / DATA OUT to BU2092 (Serial I/O-0)
35	P43	(FLD51)	OUT	NC
36	P42	(FLD50)	IN	[CD] /TLOCK
37	P41	(FLD49)	IN	[CD] /FLOCK
38	P40	(FLD48)	IN	[CD] STAT

IC201 : M30217MA-A209FP (Mask Rom) 16 bit μ -COM
M30218FCFP (Flash Rom)

39	P37	FLD47	OUT	DIGIT 13 (13G)	[VEE external pull-down required]
40	P36	FLD46	OUT	DIGIT 12 (12G)	[VEE external pull-down required]
41	P35	FLD45	OUT	DIGIT 11 (11G)	[VEE external pull-down required]
42	P34	FLD44	OUT	DIGIT 10 (10G)	[VEE external pull-down required]
43	P33	FLD43	OUT	DIGIT 9 (9G)	[VEE external pull-down required]
44	P32	FLD42	OUT	DIGIT 8 (8G)	[VEE external pull-down required]
45	P31	FLD41	OUT	DIGIT 7 (7G)	[VEE external pull-down required]
46	P30	FLD40	OUT	DIGIT 6 (6G)	[VEE external pull-down required]
47	P27	FLD39	OUT	DIGIT 5 (5G)	[VEE external pull-down required]
48	P26	FLD38	OUT	DIGIT 4 (4G)	[VEE external pull-down required]
49	P25	FLD37	OUT	DIGIT 3 (3G)	[VEE external pull-down required]
50	P24	FLD36	OUT	DIGIT 2 (2G)	[VEE external pull-down required]
51	P23	FLD35	OUT	DIGIT 1 (1G)	[VEE external pull-down required]
52	P22	FLD34	OUT	SEGMENT 1 (P1)	[VEE external pull-down required]
53	P21	FLD33	OUT	SEGMENT 2 (P2)	[VEE external pull-down required]
54	P20	FLD32	OUT	SEGMENT 3 (P3)	[VEE external pull-down required]
55	P17	FLD31	OUT	SEGMENT 4 (P4)	(VEE internal pull-down)
56	P16	FLD30	OUT	SEGMENT 5 (P5)	(VEE internal pull-down)
57	P15	FLD29	OUT	SEGMENT 6 (P6)	(VEE internal pull-down)
58	P14	FLD28	OUT	SEGMENT 7 (P7)	(VEE internal pull-down)
59	P13	FLD27	OUT	SEGMENT 8 (P8)	(VEE internal pull-down)
60	P12	FLD26	OUT	SEGMENT 9 (P9)	(VEE internal pull-down)
61	P11	FLD25	OUT	SEGMENT 10 (P10)	(VEE internal pull-down)
62	P10	FLD24	OUT	SEGMENT 11 (P11)	(VEE internal pull-down)
63	VCC	–	–	Power supply +5V	[Clock backup chemical capacitor required]
64	P07	FLD23	OUT	SEGMENT 12 (P12)	(VEE internal pull-down)
65	VSS	–	–	GND	
66	P06	FLD22	OUT	SEGMENT 13 (P13)	(VEE internal pull-down)
67	P05	FLD21	OUT	SEGMENT 14 (P14)	(VEE internal pull-down)
68	P04	FLD20	OUT	SEGMENT 15 (P15)	(VEE internal pull-down)
69	P03	FLD19	OUT	SEGMENT 16 (P16)	(VEE internal pull-down)
70	P02	FLD18	OUT	SEGMENT 17 (P17)	(VEE internal pull-down)
71	P01	FLD17	OUT	SEGMENT 18 (P18)	(VEE internal pull-down)
72	P00	FLD16	OUT	SEGMENT 19 (P19)	(VEE internal pull-down)
73	P57	FLD15	OUT	SEGMENT 20 (P20)	(VEE internal pull-down)
74	P56	FLD14	OUT	SEGMENT 21 (P21)	(VEE internal pull-down)
75	P55	FLD13	OUT	SEGMENT 22 (P22)	(VEE internal pull-down)
76	P54	FLD12	OUT	SEGMENT 23 (P23)	(VEE internal pull-down)
77	P53	FLD11	OUT	SEGMENT 24 (P24)	(VEE internal pull-down)
78	P52	FLD10	OUT	SEGMENT 25 (P25)	(VEE internal pull-down)
79	P51	FLD9	OUT	SEGMENT 26 (P26)	(VEE internal pull-down)
80	P50	FLD8	OUT	SEGMENT 27 (P27)	(VEE internal pull-down)
81	P67	FLD7	OUT	SEGMENT 28 (P28)	(VEE internal pull-down)
82	P66	FLD6	OUT	SEGMENT 29 (P29)	(VEE internal pull-down)
83	P65	FLD5	OUT	SEGMENT 30 (P30)	(VEE internal pull-down)
84	P64	FLD4	OUT	SEGMENT 31 (P31)	(VEE internal pull-down)
85	P63	FLD3	OUT	SEGMENT 32 (P32)	(VEE internal pull-down)
86	P62	FLD2	OUT	SEGMENT 33 (P33)	(VEE internal pull-down)
87	P61	FLD1	OUT	SEGMENT 34 (P34)	(VEE internal pull-down)
88	P60	FLD0	OUT	SEGMENT 35 (P35)	(VEE internal pull-down)
89	VEE	–	–	P0, P1, P5, P6 pull-down resistor voltage input	[~(VCC-43)V]
90	P107	AN7	A-D IN	Power voltage detect IN (Protection)	[0~VREF]
91	P106	AN6	A-D/IN	Extention IN port 1, 2 (TC74HC4051A) A-D/IN input	
92	P105	(AN5)	OUT	[CD] /CMDSEL	
93	P104	(AN4)	OUT	[CD] LDR CTR	
94	P103	(AN3)	OUT	[CD] CD tray CLOSE output	
95	P102	(AN2)	OUT	[CD] MUTE	
96	P101	(AN1)	OUT	[CD] /MNRST	
97	AVSS	–	–	Connected to Vss (GND)	
98	P100	(AN0)	OUT	[CD] /QSEL	
99	VREF	–	–	A-D, D-A reference voltage input	[~VCC]
100	AVCC	–	–	Connected to Vcc terminal (+5V)	

IC201 : M30217MA-A209FP (Mask Rom) 16 bit μ -COM
M30218FCFP (Flash Rom)

• **Extention OUT port (IC202: BU2092 / F)**

Pin No.	Name	Function
5(5)	Q0	Tuner MUTE OUT (TUNER) [1: MUTE ON]
6(6)	Q1	AMP MUTE OUT [0: MUTE ON]
7(7)	Q2	AUX REC OUT MUTE control OUT [0: MUTE ON]
8(8)	Q3	Blue LED control OUT [0: ON]
9(9)	Q4	Speaker relay OUT [0: ON 1: OFF]
10(10)	Q5	Power supply relay (Power ON) OUT [0: ON 1: OFF]
11(11)	Q6	
12(14)	Q7	
13(15)	Q8	TC74HC4051A 1/2 select OUT [0: IN-2 1: IN-1]
14(16)	Q9	TC74HC4051A control A OUT [Pull-up required]
15(17)	Q10	TC74HC4051A control B OUT [Pull-up required]
16(18)	Q11	TC74HC4051A control C OUT [Pull-up required]

* Figures in () represent pin terminal numbers of BU2092/FV.

• **Extension IN port 1 (IC203: TC74HC4051A) A-D input**

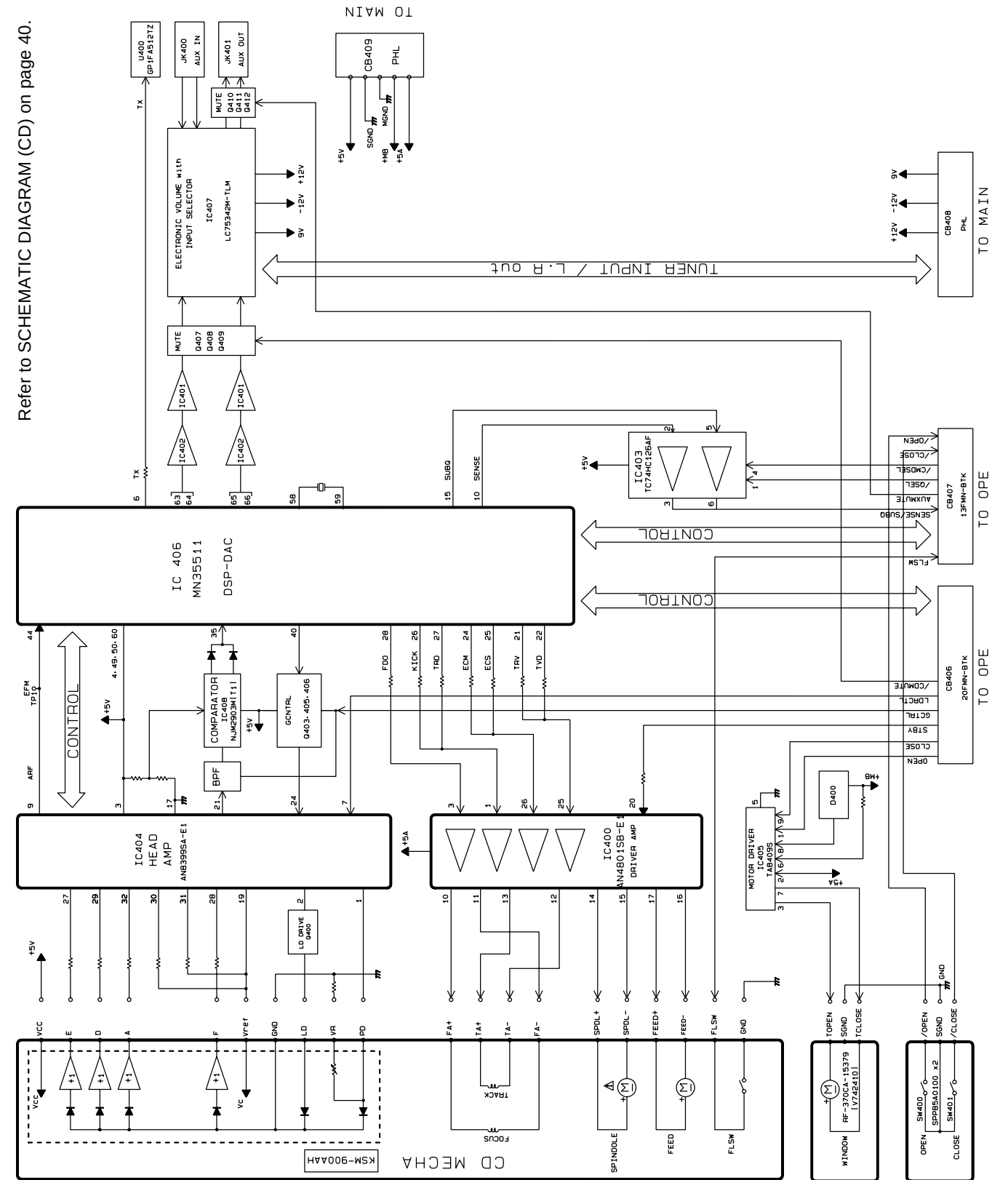
Pin No.	Name	Function
1	4	Destination select input (TUNER) [Pull-up -> VREF at 10k]
2	6	
4	7	
5	5	Temperature sensor input [0~VREF]
12	3	KEY 2 input [Pull-up -> VREF at 10k]
13	0	Extension IN port 2 (TC74HC4051A) OUT enter IN [Connected to 3 pin of IC204]
14	1	KEY 0 input [Pull-up -> VREF at 10k]
15	2	KEY 1 input [Pull-up -> VREF at 10k]

• **Extension IN port 2 (IC204: TC74HC4051A) input**

Pin No.	Name	Function
1	4	Power amplifier excess current DC voltage detect IN [1: abnormality exists]
2	6	Headphone detect IN [0: SP 1: HP]
4	7	
5	5	STATION IN (TUNER) [0: station exists]
12	3	STEREO/MONO IN (TUNER) [0: STEREO]
13	0	/OPSW CD tray OPEN detect SW IN
14	1	/CLSW CD tray CLOSE detect SW IN
15	2	/FLSW CD feed end detect SW IN

■ BLOCK DIAGRAM

Refer to SCHEMATIC DIAGRAM (CD) on page 40.

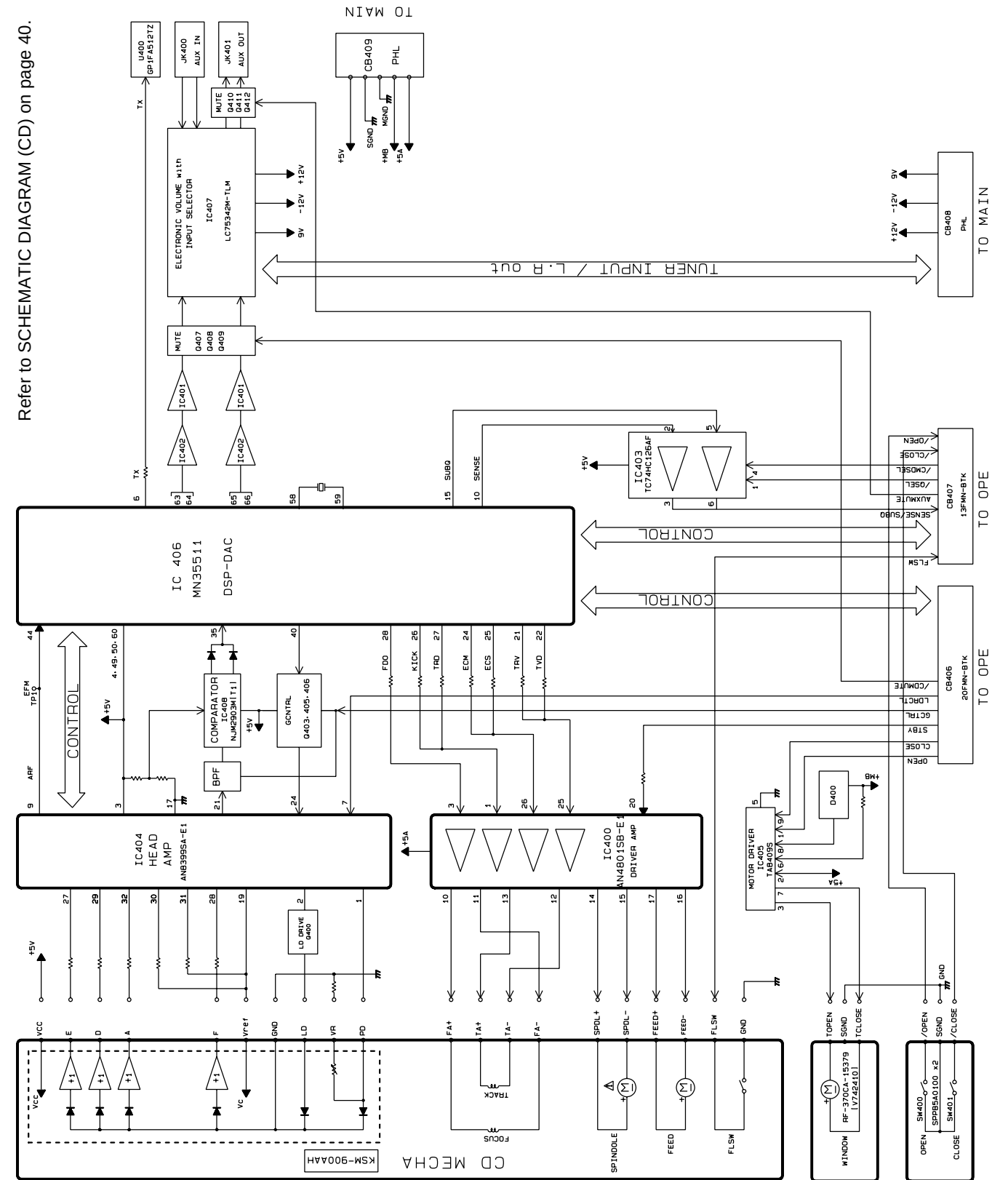


Refer to SCHEMATIC DIAGRAM (CD) on page 40.

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Refer to SCHEMATIC DIAGRAM (CD) on page 40.

Refer to SCHEMATIC DIAGRAM (CD) on page 40.

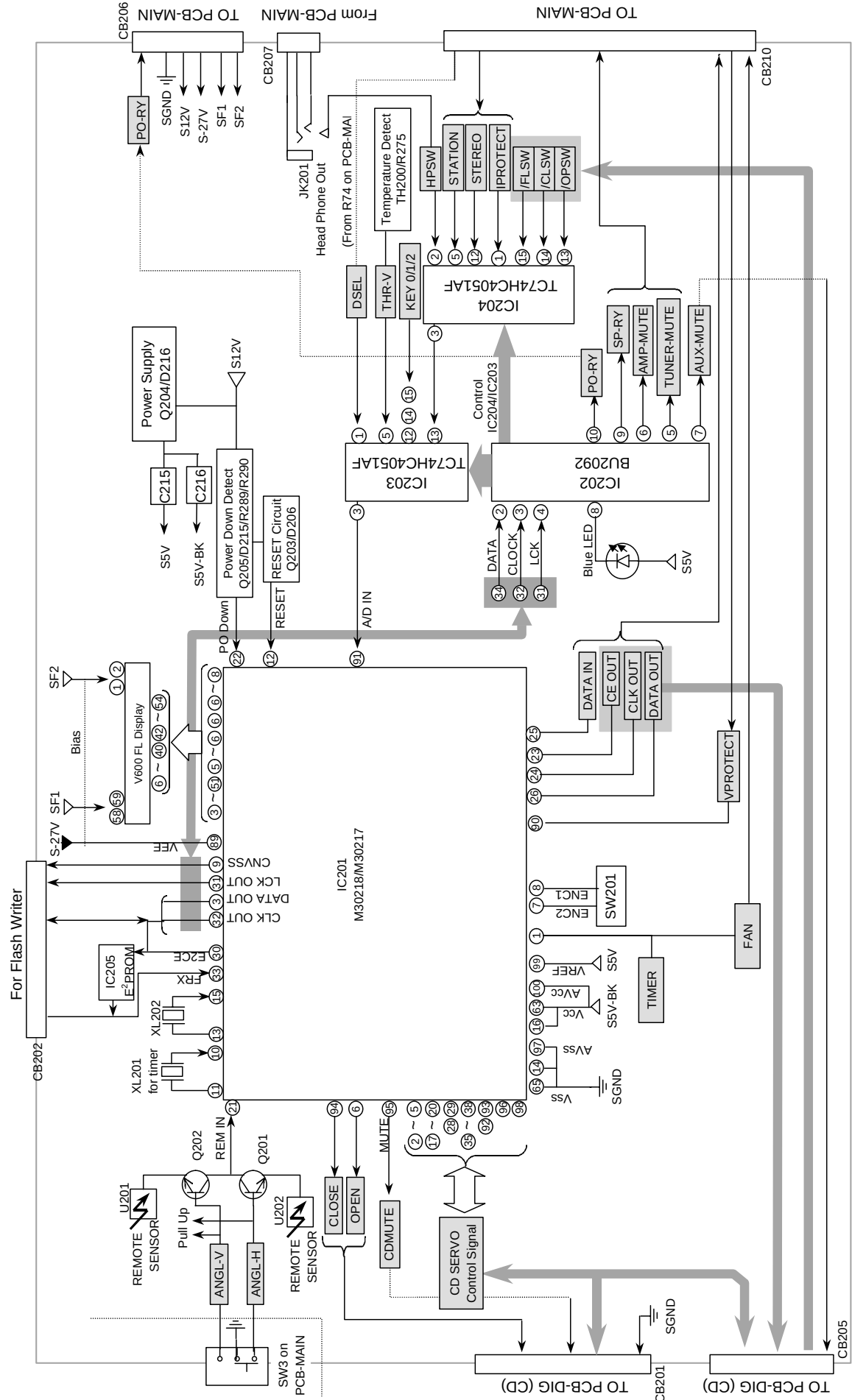


Refer to SCHEMATIC DIAGRAM (CD) on page 40.

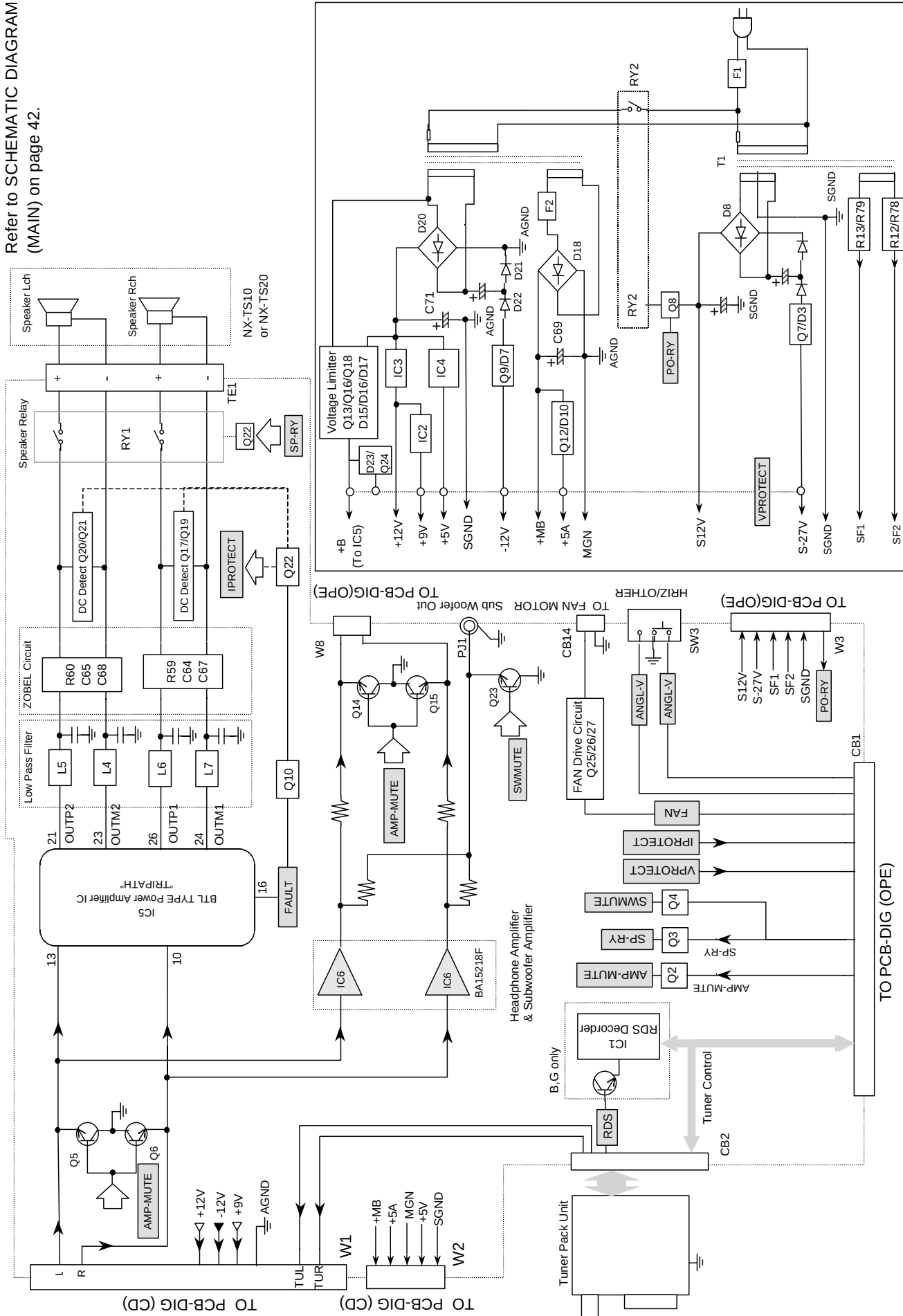
Refer to SCHEMATIC DIAGRAM (CD) on page 40.

Refer to SCHEMATIC DIAGRAM (CD) on page 40.

Refer to SCHEMATIC DIAGRAM (DIGITAL) on page 41.



Refer to SCHEMATIC DIAGRAM (MAIN) on page 42.

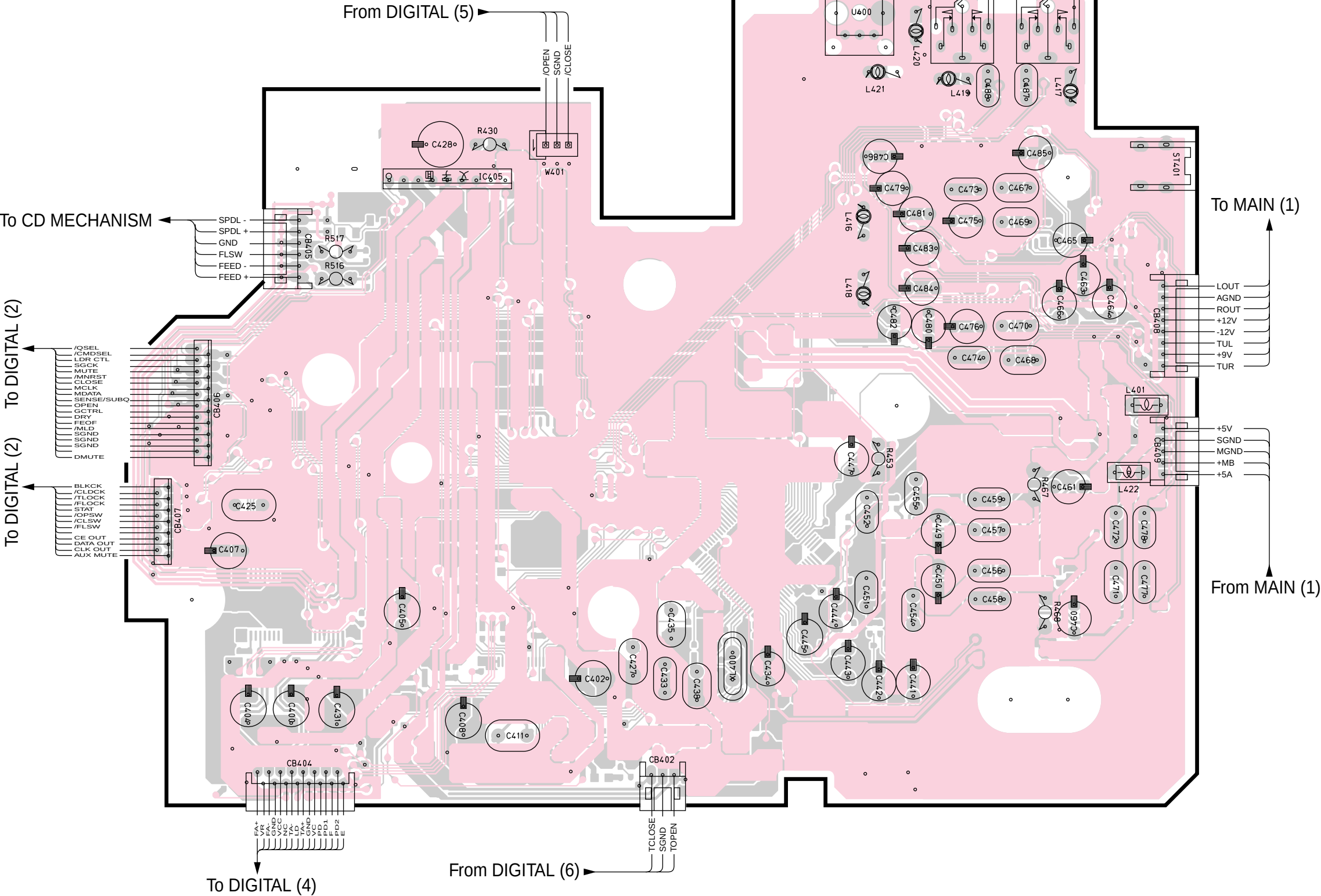


PRINTED CIRCUIT BOARD (Foil side)

DIGITAL (1) P. C. B. (Lead Type Device)

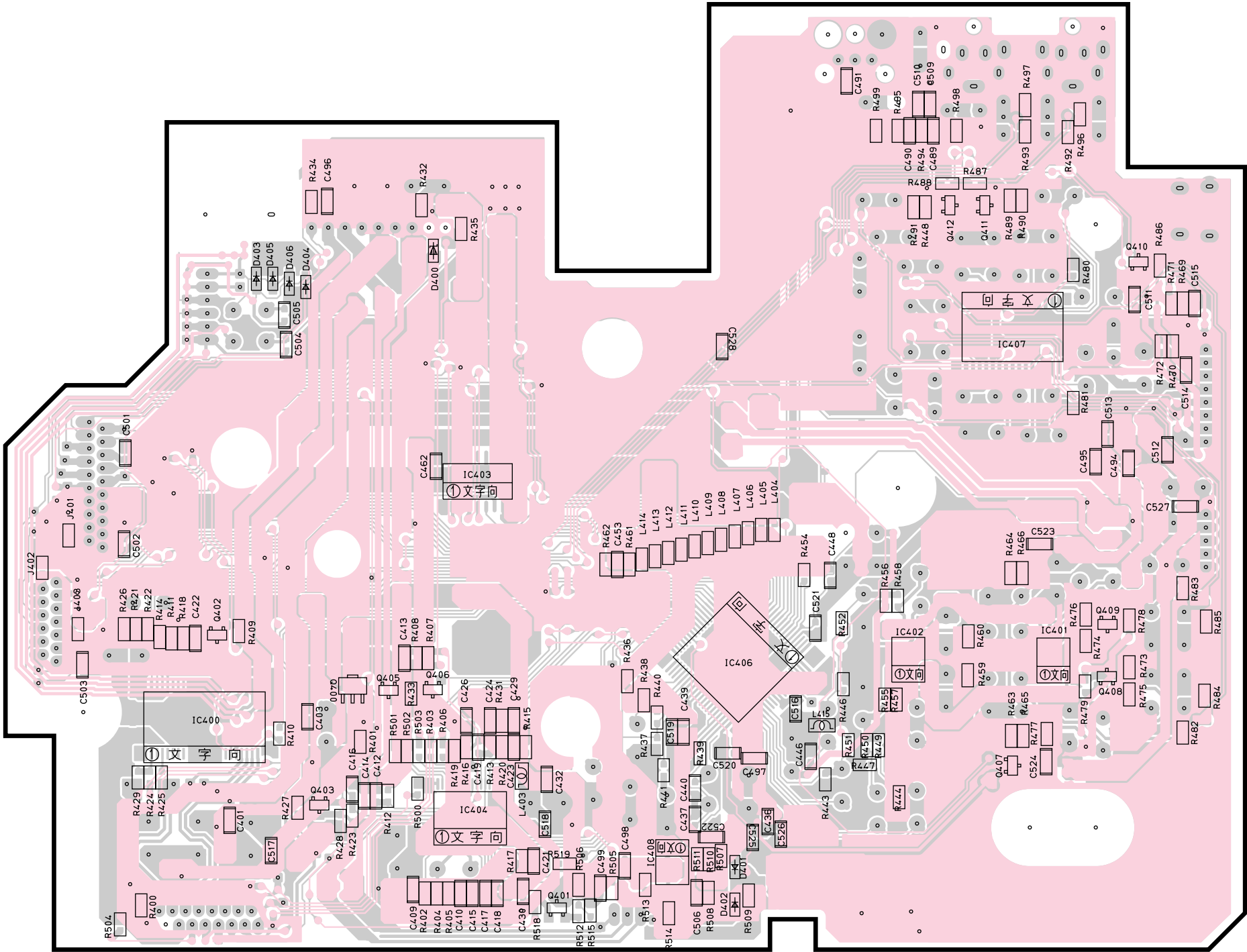
Semiconductor Location

Ref. No.	Location
IC405	C3



PRINTED CIRCUIT BOARD (Foil side)

DIGITAL (1) P. C. B. (Surface Mount Device)

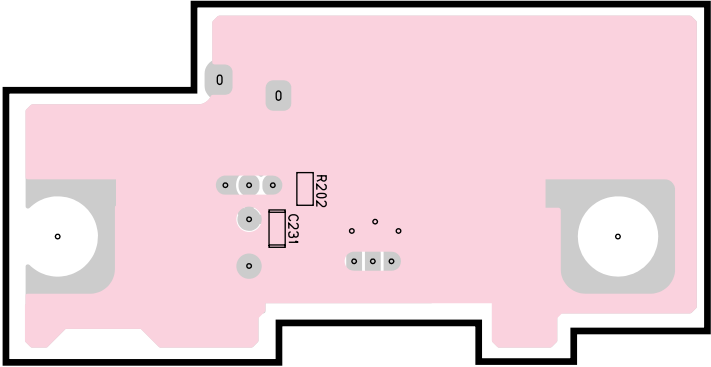


Semiconductor Location

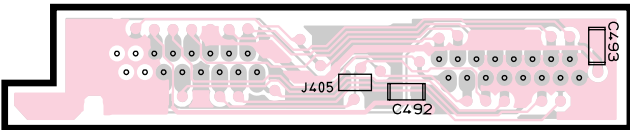
Ref. No.	Location
D400	D3
D401	E6
D402	E6
D403	C3
D404	C3
D405	C3
D406	C3
IC400	B5
IC401	G5
IC402	F5
IC403	D4
IC404	D6
IC406	E5
IC407	F3
IC408	E6
Q400	C5
Q401	D6
Q402	B5
Q403	C6
Q405	C5
Q406	D5
Q407	F6
Q408	G5
Q409	G5
Q410	G3
Q411	F3
Q412	F3

PRINTED CIRCUIT BOARD (Foil side)

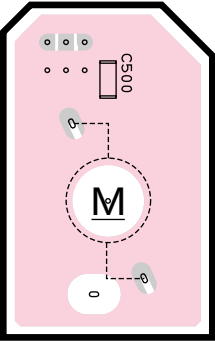
DIGITAL (3) P. C. B. (Surface Mount Device)



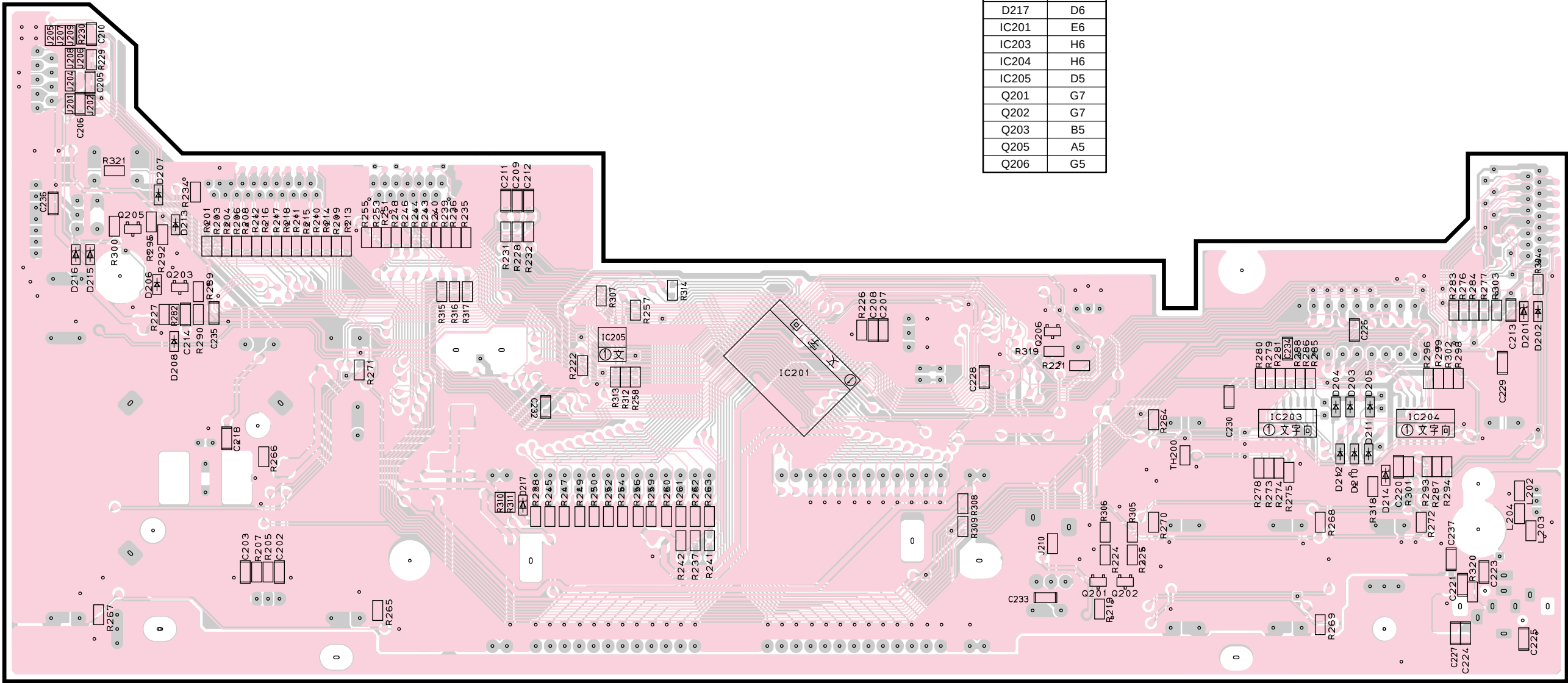
DIGITAL (4) P. C. B. (Surface Mount Device)



DIGITAL (6) P. C. B. (Surface Mount Device)



DIGITAL (2) P. C. B. (Surface Mount Device)



Semiconductor Location

Ref. No.	Location
D201	I5
D202	I5
D203	H6
D204	H6
D205	H6
D206	B5
D207	B5
D208	B5
D210	H6
D211	H6
D212	H6
D213	B5
D214	H6
D215	A5
D216	A5
D217	D6
IC201	E6
IC203	H6
IC204	H6
IC205	D5
Q201	G7
Q202	G7
Q203	B5
Q205	A5
Q206	G5

PRINTED CIRCUIT BOARD (Foil side)

MAIN (1) P. C. B. (Lead Type Device)

MAIN (2) P. C. B.

SPEAKERS

SETTING SUBWOOFER

TUNER PACK UNIT

• Semiconductor Location

Ref. No.	Location
D8	C3
D18	I7
D20	G7
IC2	F5
IC3	G5
IC4	H6
IC5	D5
Q1	G4
Q7	D2
Q9	G5
Q10	F5
Q11	F5
Q12	I6
Q13	F7
Q16	F7
Q18	F7
Q22	F3
Q25	E3

1. When replacing these parts, cut each lead from the bottom of the P.C.B. to the length of 2 mm (1/16 inch) or less.
2. Cut each lead from the bottom of the entire MAN (1) P.C.B. to the length of 4 mm (1/8 inch) or less.

PRINTED CIRCUIT BOARD (Foil side)

MAIN (1) P. C. B. (Surface Mount Device)

Semiconductor Location

Ref. No.	Location
D1	H5
D3	D2
D4	C2
D5	C3
D6	C3
D7	G5
D9	F6
D10	I6
D11	E5
D12	D5
D13	E5
D14	D5
D15	G6
D16	G7
D17	G7
D19	F3
D21	G6
D22	G6
D23	F6
D24	E4
D25	F4
IC1	G3
IC6	H5
Q2	H5
Q3	H5
Q4	H5
Q5	G5
Q6	G5
Q8	D3
Q14	H4
Q15	H4
Q17	E4
Q19	E4
Q20	F4
Q21	F4
Q23	F3
Q24	F6
Q26	F2
Q27	F2
Q28	G5
Q29	H5

Point (A) Pin 59 of IC406

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
k1	IC403	TC74HC126AF
k2		HD74HC126FP
k3		
k4		

2SD1938F
DTC144EKA
2SA1037K
2SC2412K
2SB1132
DTA114EKA
DTC143XKA
DTC114EKA

2SC4488

MA8051-M
RB501V-40
1SS355
MA8068-M
MA8062-M

M30218FCFP

BU2092

TC74HC4051AF

S-29390AFJA
NJM2068MD
NJM2903M

AN4801SB-E1

TC74HC126AF

AN8399SA-E1

TA8409SE

MM35511AL

LC75342M

IC404: AN8399SA-E1
CD Head Amp.

IC474: LC75342M-TLM
Input Selector & Electric Controlled Volume

IC400: AN4801SB-E1
CD Driver Amp.

IC405: TA8409SE

IC401: 402: NJM2068MD
IC408: NJM2903M
Dual OP-Amp

IC403: TC74HC125AF
Quad Bus Buffer

IC406: NJM2903M
Dual OP-Amp

IC407: TC74HC126AF
Quad Bus Buffer

IC409: NJM2068MD
Dual OP-Amp

IC410: NJM2068MD
Dual OP-Amp

IC411: NJM2068MD
Dual OP-Amp

IC412: NJM2068MD
Dual OP-Amp

IC413: NJM2068MD
Dual OP-Amp

IC414: NJM2068MD
Dual OP-Amp

IC415: NJM2068MD
Dual OP-Amp

IC416: NJM2068MD
Dual OP-Amp

IC417: NJM2068MD
Dual OP-Amp

IC418: NJM2068MD
Dual OP-Amp

IC419: NJM2068MD
Dual OP-Amp

IC420: NJM2068MD
Dual OP-Amp

IC421: NJM2068MD
Dual OP-Amp

IC422: NJM2068MD
Dual OP-Amp

IC423: NJM2068MD
Dual OP-Amp

IC424: NJM2068MD
Dual OP-Amp

IC425: NJM2068MD
Dual OP-Amp

IC426: NJM2068MD
Dual OP-Amp

IC427: NJM2068MD
Dual OP-Amp

IC428: NJM2068MD
Dual OP-Amp

IC429: NJM2068MD
Dual OP-Amp

IC430: NJM2068MD
Dual OP-Amp

IC431: NJM2068MD
Dual OP-Amp

IC432: NJM2068MD
Dual OP-Amp

IC433: NJM2068MD
Dual OP-Amp

IC434: NJM2068MD
Dual OP-Amp

IC435: NJM2068MD
Dual OP-Amp

IC436: NJM2068MD
Dual OP-Amp

IC437: NJM2068MD
Dual OP-Amp

IC438: NJM2068MD
Dual OP-Amp

IC439: NJM2068MD
Dual OP-Amp

IC440: NJM2068MD
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IC441: NJM2068MD
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IC443: NJM2068MD
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IC447: NJM2068MD
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IC468: NJM2068MD
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IC469: NJM2068MD
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IC470: NJM2068MD
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IC471: NJM2068MD
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IC472: NJM2068MD
Dual OP-Amp

IC473: NJM2068MD
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IC498: NJM2068MD
Dual OP-Amp

IC499: NJM2068MD
Dual OP-Amp

IC500: NJM2068MD
Dual OP-Amp

IC501: NJM2068MD
Dual OP-Amp

IC502: NJM2068MD
Dual OP-Amp

IC503: NJM2068MD
Dual OP-Amp

IC504: NJM2068MD
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IC506: NJM2068MD
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IC507: NJM2068MD
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IC511: NJM2068MD
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IC512: NJM2068MD
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IC513: NJM2068MD
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IC514: NJM2068MD
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IC515: NJM2068MD
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IC521: NJM2068MD
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IC522: NJM2068MD
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IC523: NJM2068MD
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IC524: NJM2068MD
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IC525: NJM2068MD
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IC526: NJM2068MD
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IC527: NJM2068MD
Dual OP-Amp

IC528: NJM2068MD
Dual OP-Amp

IC529: NJM2068MD
Dual OP-Amp

IC530: NJM2068MD
Dual OP-Amp

IC531: NJM2068MD
Dual OP-Amp

IC532: NJM2068MD
Dual OP-Amp

IC533: NJM2068MD
Dual OP-Amp

IC534: NJM2068MD
Dual OP-Amp

IC535: NJM2068MD
Dual OP-Amp

IC536: NJM2068MD
Dual OP-Amp

IC537: NJM2068MD
Dual OP-Amp

IC538: NJM2068MD
Dual OP-Amp

IC539: NJM2068MD
Dual OP-Amp

IC540: NJM2068MD
Dual OP-Amp

IC541: NJM2068MD
Dual OP-Amp

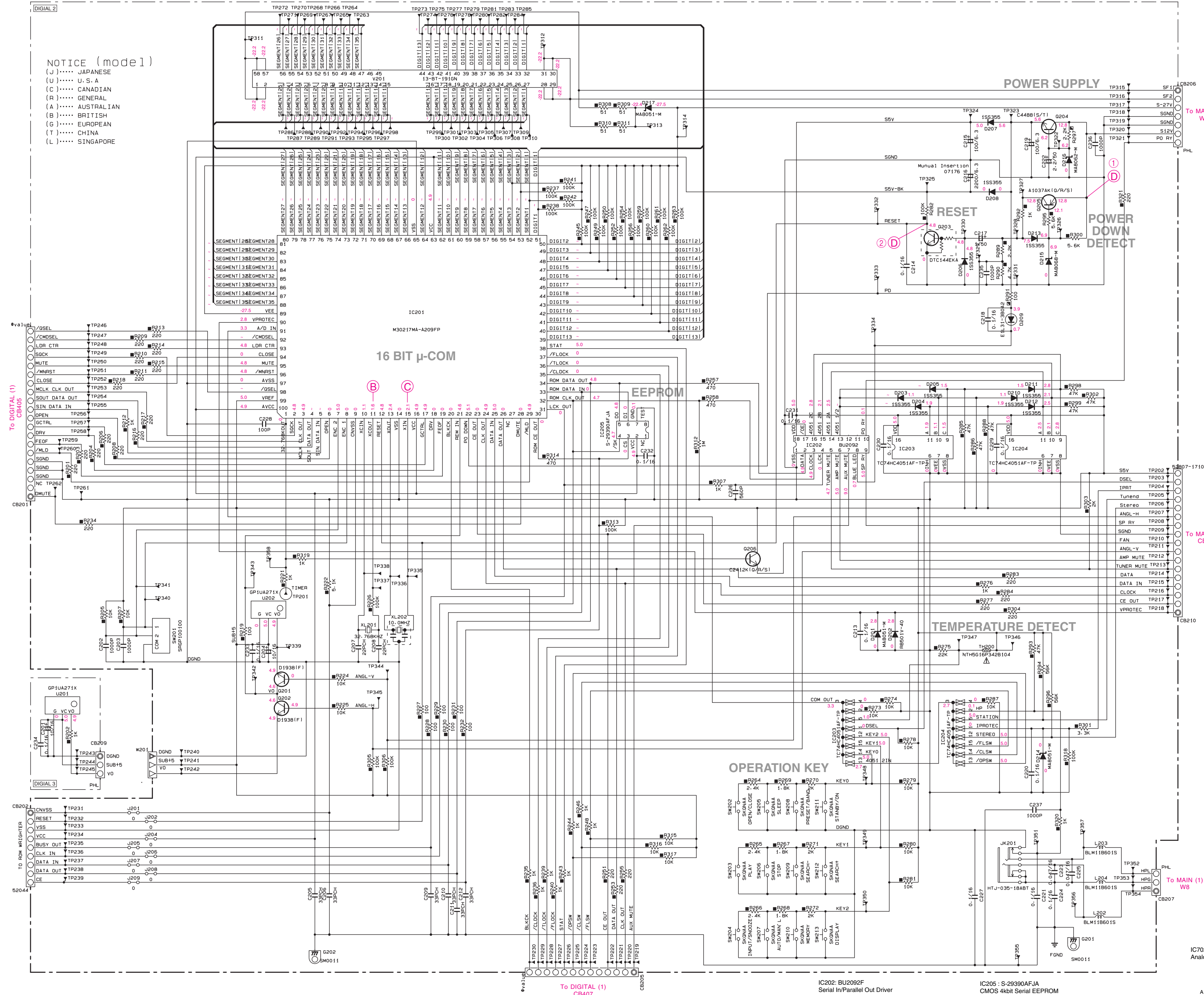
IC542: NJM2068MD
Dual OP-Amp

IC543: NJM2068MD
Dual OP-Amp

IC544: NJ

TSX-10/15/20
SCHEMATIC DIAGRAM (DIGITAL)

FL DISPLAY



NOTICE (model)

- (J)..... JAPANESE
- (U)..... U. S. A
- (C)..... CANADIAN
- (R)..... GENERAL
- (A)..... AUSTRALIAN
- (B)..... BRITISH
- (G)..... EUROPEAN
- (T)..... CHINA
- (L)..... SINGAPORE

16 BIT μ-COM

EEPROM

POWER SUPPLY

RESET

POWER DOWN DETECT

TEMPERATURE DETECT

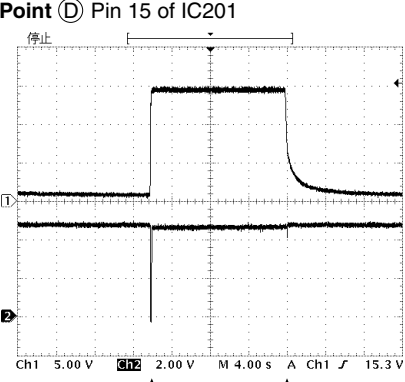
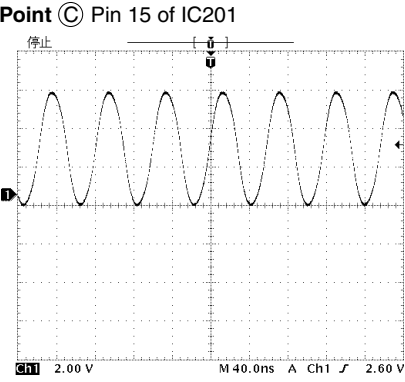
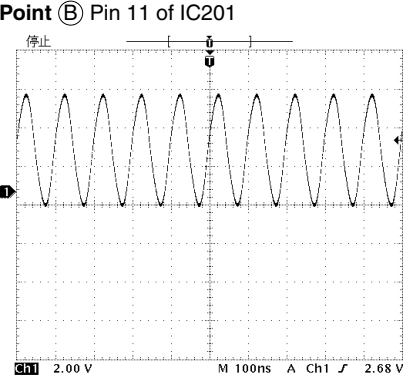
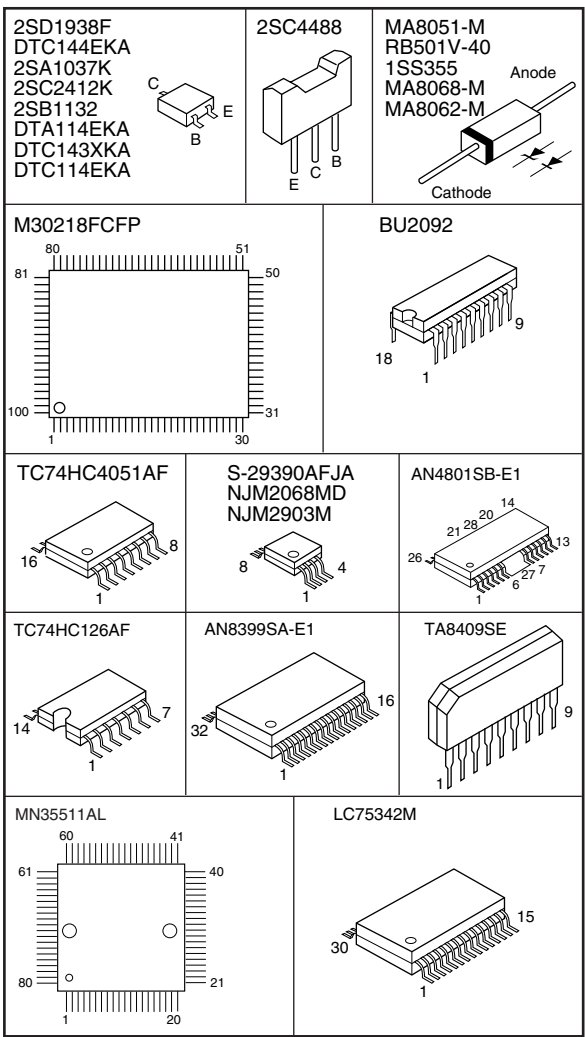
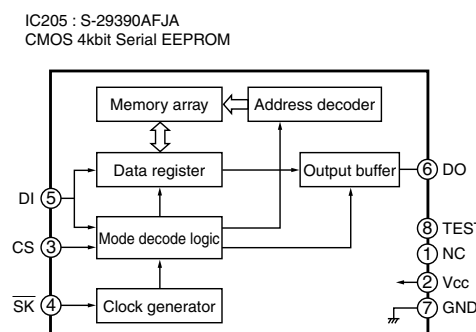
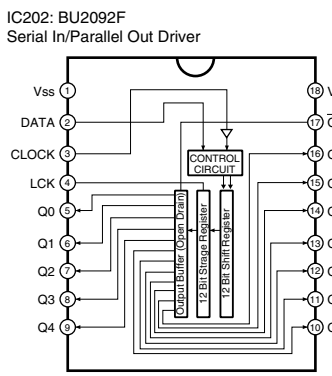
OPERATION KEY

All voltage are measured with a 10M Ω DC electric volt meter.
Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
Schematic diagram is subject to change without notice.

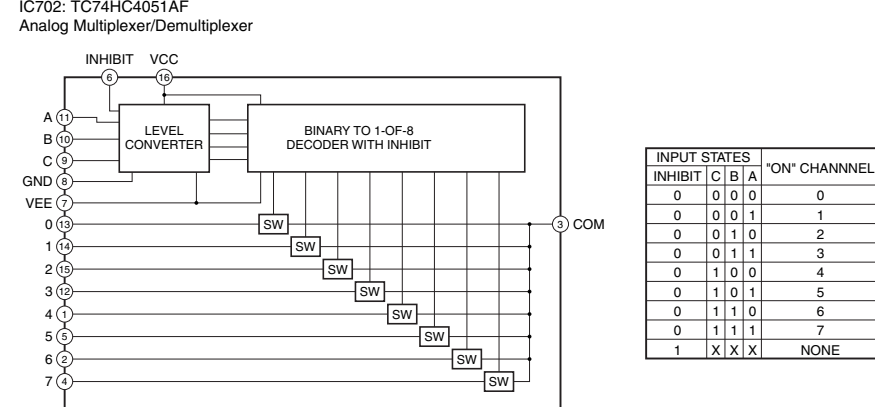
- 電圧は、内部抵抗10MΩの電圧計で測定したものです。
- 印のある部品は、安全性確保部品を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
- 本回路図は標準回路図です。改良のため予告なく変更することがございます。

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
	CERAMIC TUBULAR CAPACITOR
	POLYESTER FILM CAPACITOR
	POLYSTYRENE FILM CAPACITOR
	MICA CAPACITOR
	POLYPROPYLENE FILM CAPACITOR
	SEMICONDUCTIVE CERAMIC CAPACITOR
	POLYPHENYLENE SULFIDE FILM CAPACITOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
	CARBON FILM RESISTOR (P=10)
	METAL OXIDE FILM RESISTOR
	METAL FILM RESISTOR
	METAL PLATE RESISTOR
	FIRE PROOF CARBON FILM RESISTOR
	CEMENT MOLDED RESISTOR
	SEMI VARIABLE RESISTOR
	CHIP RESISTOR

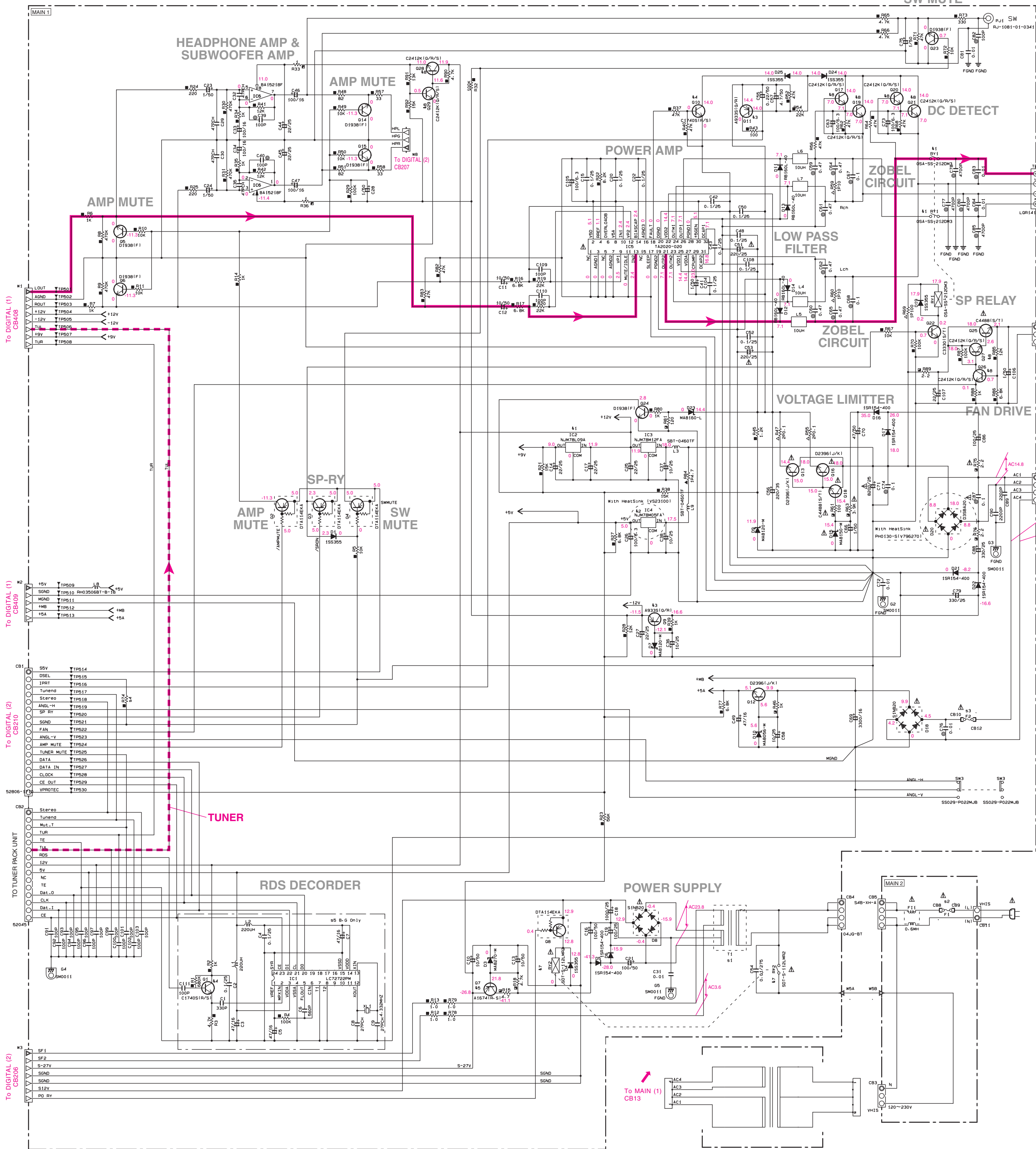


POWER ON (Connect the power cord)
POWER OFF (Disconnect the power cord)

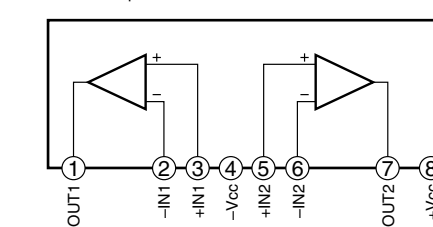


INPUT STATES	INHIBIT	C	B	A	'ON' CHANNEL
0	0	0	0	0	0
0	0	0	1	1	1
0	0	1	0	2	2
0	0	1	1	3	3
0	1	0	0	4	4
0	1	0	1	5	5
0	1	1	0	6	6
0	1	1	1	7	7
1	X	X	X	NONE	NONE

SCHEMATIC DIAGRAM (MAIN)



IC5: BA15218F
Dual OP-Amp.



		U-C	T	A	B	G
s1	T1	X0424	X0425	X0426	X0426	X0426
s2	F1	1-25A/125V Y82230	T500AL250V K80071	T500AL250V K80071	T500AL250V K80071	T500AL250V K80071
s3	F2	1-25A/125V Y82230	T14L250V K800177	T14L250V K800177	T14L250V K800177	T14L250V K800177
s4	R7A	RD35710 10K	RD35000 CHIP JUMPER	RD35639 3.9K	RD35662 6.2K	RD35662 6.2K
s5	C1~C9, IC1 L1~3-AL, C111 R1~R4, G1	X	X	X	O	O

Interchangeable Parts at Manufacture Stage

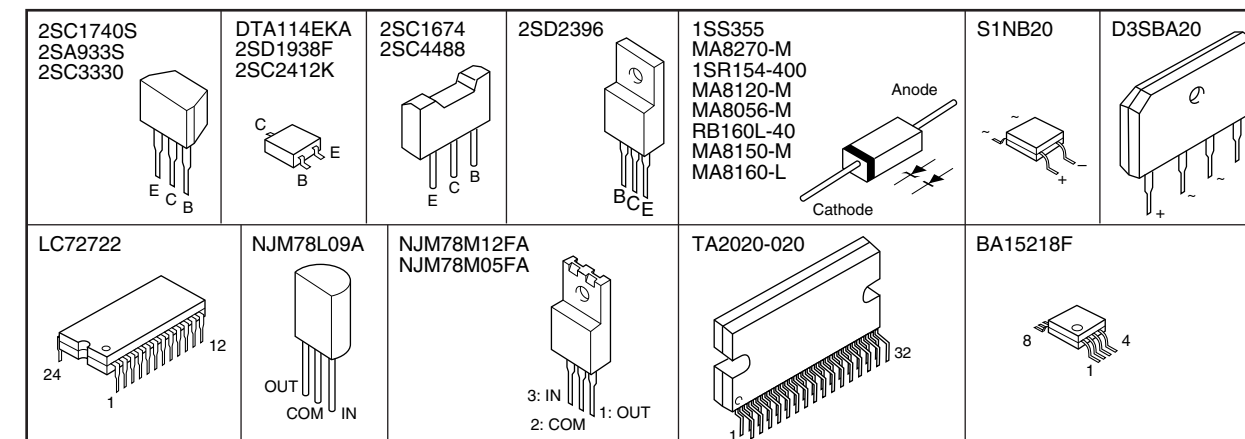
Mark	Reference	Parts Number	Parts Name
k1	IC2	NJM78L09A AN78L09	Voltage Regulator
k2	IC4	NJM78M05FA AN78M05F	Voltage Regulator
k3	09-11	2SA933S (Q/R) 2SA1110 (E/F) 2SA1308A (Q/R/S)	Transistor
k4	01-10	2SC1740S (R/S) 2SC1674 (R/S) 2SC3311A (Q/R/S)	Transistor
k5	07	2SA1674 (R/S) 2SB1237 (Q/R)	Transistor
k6	Ry1	0SA-SS-2120K3 S151201-01W1	Relay
k7	Ry2	SOT-5-115LWR2 DL51201-01W1	Relay
k8	Q17-19-21-26-29	2SC2412K (Q/R/S) 2SD601A1 (TX)	Transistor

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
○	METAL FILM RESISTOR
◇	METAL PLATE RESISTOR
■	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
◇	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
○	TANTALUM CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
○	MICA CAPACITOR
●	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

NOTICE (model)

(J)..... JAPANESE
(U)..... U.S.A
(C)..... CANADIAN
(R)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(T)..... CHINA
(L)..... SINGAPORE



All voltage are measured with a 10MΩ /V DC electric volt meter.
Components having special characteristics are marked with a triangle (▲) and must be replaced with parts having specifications equal to those originally installed.
Schematic diagram is subject to change without notice.

- 電圧は、内部抵抗10MΩの電圧計で測定したものです。
- ▲印のある部品は、安全性確保部品を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
- 本回路図は標準回路図です。改良のため予告なく変更することがございます。

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

C.A.EL.CHP	: CHIP ALUMI.ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED,INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR,RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN,TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR.	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR,BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR,CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR,DIN	SCR.TR	: SCREW,TRANSISTOR
CN.FLAT	: CONNECTOR,FLAT CABLE	SUPRT.PCB	: SUPPORT,P.C.B.
CN.POST	: CONNECTOR,BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL,AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL,FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL,FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL,FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.SHOT	: SCHOTTKY BARRIER DIODE	SW.SLIDE	: SLIDE SWITCH
DIODE.VAR	: VARACTOR DIODE	TERM.SP	: SPEAKER TERMINAL
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DIODE.ZENR	: ZENER DIODE	THRMST.CHP	: CHIP THERMISTOR
DSCR.CE	: CERAMIC DISCRIMINATOR	TR.CHP	: CHIP TRANSISTOR
FER.BEAD	: FERRITE BEADS	TR.DGT	: DIGITAL TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TRANS	: TRANSFORMER
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS.PULS	: PULSE TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PWR	: POWER TRANSFORMER ASS'Y
FLTR.COMB	: COMB FILTER MODULE	TUNER.AM	: TUNER PACK,AM
FLTR.LC.RF	: LC FILTER,EMI	TUNER.FM	: TUNER PACK,FM
GND.MTL	: GROUND PLATE	TUNER.PK	: FRONT-END TUNER PACK
GND.TERM	: GROUND TERMINAL	VR	: ROTARY POTENTIOMETER
HOLDER.FUS	: FUSE HOLDER	VR.MTR	: POTENTIOMETER WITH MOTOR
IC.PRTCT	: IC PROTECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.CN	: JUMPER CONNECTOR	VR.SLIDE	: SLIDE POTENTIOMETER
JUMPER.TST	: JUMPER,TEST POINT	VR.TRIM	: TRIMMER POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE		

Note) Those parts marked with “#” are not included in the P.C.B. ass'y.

P.C.B. DIGITAL

Schm Ref.	PART NO.	Description	Markets
	V8000100	P. C. B.	UCTABG
	DIGITAL		
* CB201	V7833200	CN. BS. PIN	20P SE
* CB202	VQ044400	CN. BS. PIN	9P
* CB205	V7833100	CN. BS. PIN	13P SE
CB206	VB858600	CN. BS. PIN	7P
CB207	VB858200	CN. BS. PIN	3P
CB209	VB858200	CN. BS. PIN	3P
* CB210	V7684200	CN. BS. PIN	17P SE
CB400	V2731000	CN. FMN	16P
CB402	VB858200	CN. BS. PIN	3P
CB403	VB858200	CN. BS. PIN	3P
* CB404	V5492000	CN. BS. PIN	16P SE
CB405	VB858500	CN. BS. PIN	6P
* CB406	V7667200	CN. BS. PIN	20P TE
* CB407	V6646700	CN. BS. PIN	13P TE
CB408	VB858700	CN. BS. PIN	8P
CB409	VB858400	CN. BS. PIN	5P
* CB410	V7414700	CN	16P TE
C201	UM397100	C. EL	10uF 16V
C202	US063100	C. CE. M. CHP	1000pF 50V
C203	US063100	C. CE. M. CHP	1000pF 50V
C204	UM397100	C. EL	10uF 16V
C205	US061330	C. CE. M. CHP	33pF 50V
C206	US061330	C. CE. M. CHP	33pF 50V
C207	US061220	C. CE. M. CHP	22pF 50V
C208	US061220	C. CE. M. CHP	22pF 50V
C209	US061330	C. CE. M. CHP	33pF 50V
C210	US061330	C. CE. M. CHP	33pF 50V
C211	US061330	C. CE. M. CHP	33pF 50V
C212	US061330	C. CE. M. CHP	33pF 50V
C213	US035100	C. CE. M. CHP	0. 1uF 16V
C214	US035100	C. CE. M. CHP	0. 1uF 16V
C215	UM388100	C. EL	100uF 10V
* C216	UR619220	C. EL	2200uF 6. 3V
C217	UM416100	C. EL	1uF 50V
C218	US035100	C. CE. M. CHP	0. 1uF 16V
C219	UM388100	C. EL	100uF 10V
C220	US035100	C. CE. M. CHP	0. 1uF 16V
C221	US035100	C. CE. M. CHP	0. 1uF 16V
C222	UM416220	C. EL	2. 2uF 50V
C223	US034470	C. CE. M. CHP	0. 047uF 16V
C224	US035100	C. CE. M. CHP	0. 1uF 16V
C225	US034470	C. CE. M. CHP	0. 047uF 16V
C226	US062560	C. CE. CHP	560pF 50V
C227	US035100	C. CE. M. CHP	0. 1uF 16V
C228	US062100	C. CE. M. CHP	100pF 50V
C229	US035100	C. CE. M. CHP	0. 1uF 16V
C230	US035100	C. CE. M. CHP	0. 1uF 16V
C231	US035100	C. CE. M. CHP	0. 1uF 16V
C232	US035100	C. CE. M. CHP	0. 1uF 16V
C233	US035100	C. CE. M. CHP	0. 1uF 16V
C234	US035100	C. CE. M. CHP	0. 1uF 16V
C235	US063100	C. CE. M. CHP	1000pF 50V
C236	US063100	C. CE. M. CHP	1000pF 50V
C237	US063100	C. CE. M. CHP	1000pF 50V
C400	UM388100	C. EL	100uF 10V
C401	US035100	C. CE. M. CHP	0. 1uF 16V
C402	UM388100	C. EL	100uF 10V
C403	US063100	C. CE. M. CHP	1000pF 50V
C404	UM388100	C. EL	100uF 10V
C405	UM397470	C. EL	47uF 16V
C407	UM388100	C. EL	100uF 10V
C408	UM388100	C. EL	100uF 10V

* New Parts

Schm Ref.	PART NO.	Description	Markets
C409	US035100	C. CE. M. CHP	0. 1uF 16V
C410	US061560	C. CE. CHP	56pF 50V
C411	UA655470	C. MYLAR	0. 47uF 50V
C412	US035100	C. CE. M. CHP	0. 1uF 16V
C413	US035100	C. CE. M. CHP	0. 1uF 16V
C414	US035100	C. CE. M. CHP	0. 1uF 16V
C415	US035100	C. CE. M. CHP	0. 1uF 16V
C416	US035100	C. CE. M. CHP	0. 1uF 16V
C417	US034390	C. CE. M. CHP	0. 039uF 16V
C418	US063560	C. CE. CHP	5600pF 50V
C419	US062180	C. CE. CHP	180P 50V
C421	US034470	C. CE. M. CHP	0. 047uF 16V
C422	US034470	C. CE. M. CHP	0. 047uF 16V
C423	US062270	C. CE. M. CHP	270pF 50V
C424	US063100	C. CE. M. CHP	1000pF 50V
C425	UA655100	C. MYLAR	0. 1uF 50V
C426	US063100	C. CE. M. CHP	1000pF 50V
C427	UA655100	C. MYLAR	0. 1uF 50V
C428	UM398100	C. EL	100uF 16V
C429	US035100	C. CE. M. CHP	0. 1uF 16V
C430	US062390	C. CE. CHP	390P 50V
C431	UM388100	C. EL	100uF 10V
C432	US035100	C. CE. M. CHP	0. 1uF 16V
C433	UA654120	C. MYLAR	0. 012uF 50V
C434	UR818100	C. EL	100uF 6. 3V
C435	UA655100	C. MYLAR	0. 1uF 50V
C436	US035100	C. CE. M. CHP	0. 1uF 16V
C437	US061470	C. CE. M. CHP	47pF 50V
C438	UA655100	C. MYLAR	0. 1uF 50V
C439	US035100	C. CE. M. CHP	0. 1uF 16V
C440	US061470	C. CE. M. CHP	47pF 50V
C441	UR866100	C. EL	1uF 50V
C442	UR866100	C. EL	1uF 50V
C443	UR866100	C. EL	1uF 50V
C444	UR866100	C. EL	1uF 50V
C445	UR818470	C. EL	470uF 6. 3V
C446	US035100	C. CE. M. CHP	0. 1uF 16V
C447	UM388100	C. EL	100uF 10V
C448	US035100	C. CE. M. CHP	0. 1uF 16V
C449	UR847220	C. EL	22uF 25V
C450	UR847220	C. EL	22uF 25V
C451	UA652560	C. MYLAR	560pF 50V
C452	UA652560	C. MYLAR	560pF 50V
C453	US035100	C. CE. M. CHP	0. 1uF 16V
C454	UA652100	C. MYLAR	100pF 50V
C455	UA652100	C. MYLAR	100pF 50V
C456	UA654180	C. MYLAR	0. 018uF 50V
C457	UA654180	C. MYLAR	0. 018uF 50V
C458	UA653330	C. MYLAR	3300pF 50V
C459	UA653330	C. MYLAR	3300pF 50V
C460	UR847220	C. EL	22uF 25V
C461	UR847220	C. EL	22uF 25V
C462	US064100	C. CE. M. CHP	0. 01uF 50V
C463	UR847220	C. EL	22uF 25V
C464	UR847220	C. EL	22uF 25V
C465	UR866220	C. EL	2. 2uF 50V
C466	UR866220	C. EL	2. 2uF 50V
C467	UA655100	C. MYLAR	0. 1uF 50V
C468	UA655100	C. MYLAR	0. 1uF 50V
C469	UA655100	C. MYLAR	0. 1uF 50V
C470	UA655100	C. MYLAR	0. 1uF 50V
C471	UA653220	C. MYLAR	2200pF 50V
C472	UA653220	C. MYLAR	2200pF 50V

* New Parts

P.C.B. DIGITAL

Schm Ref.	PART NO.	Description	Markets
C473	UA653270	C. MYLAR 2700pF 50V	
C474	UA653270	C. MYLAR 2700pF 50V	
C475	UR866100	C. EL 1uF 50V	
C476	UR866100	C. EL 1uF 50V	
C477	UA652220	C. MYLAR 220pF 50V	
C478	UA652220	C. MYLAR 220pF 50V	
C479	UR866100	C. EL 1uF 50V	
C480	UR866100	C. EL 1uF 50V	
C481	UR866100	C. EL 1uF 50V	
C482	UR866100	C. EL 1uF 50V	
C483	UR866100	C. EL 1uF 50V	
C484	UR866100	C. EL 1uF 50V	
C485	UR866220	C. EL 2.2uF 50V	
C486	UR866220	C. EL 2.2uF 50V	
C487	UA652100	C. MYLAR 100pF 50V	
C488	UA652100	C. MYLAR 100pF 50V	
C489	US061470	C. CE. M. CHP 47pF 50V	
C490	US061470	C. CE. M. CHP 47pF 50V	
C491	US035100	C. CE. M. CHP 0.1uF 16V	
C492	US035100	C. CE. M. CHP 0.1uF 16V	
C493	US035100	C. CE. M. CHP 0.1uF 16V	
C494	US062560	C. CE. CHP 560pF 50V	
C495	US062560	C. CE. CHP 560pF 50V	
C496	US135330	C. CE. CHP 0.33uF 16V	
C497	US064100	C. CE. M. CHP 0.01uF 50V	
C498	US063270	C. CE. M. CHP 2700pF 50V	
C499	US034470	C. CE. M. CHP 0.047uF 16V	
C500	US135330	C. CE. CHP 0.33uF 16V	
C501	US061470	C. CE. M. CHP 47pF 50V	
C502	US061470	C. CE. M. CHP 47pF 50V	
C503	US061470	C. CE. M. CHP 47pF 50V	
C504	US135220	C. CE. CHP 0.22uF 16V	
C505	US135220	C. CE. CHP 0.22uF 16V	
C506	US064100	C. CE. M. CHP 0.01uF 50V	
C509	US062560	C. CE. CHP 560pF 50V	
C510	US062560	C. CE. CHP 560pF 50V	
C511	US062560	C. CE. CHP 560pF 50V	
C512	US062560	C. CE. CHP 560pF 50V	
C513	US062560	C. CE. CHP 560pF 50V	
C514	US062560	C. CE. CHP 560pF 50V	
C515	US062560	C. CE. CHP 560pF 50V	
C516	US062560	C. CE. CHP 560pF 50V	
C517	US062560	C. CE. CHP 560pF 50V	
C518	US062560	C. CE. CHP 560pF 50V	
C519	US062560	C. CE. CHP 560pF 50V	
C520	US062560	C. CE. CHP 560pF 50V	
C521	US062560	C. CE. CHP 560pF 50V	
C522	US062560	C. CE. CHP 560pF 50V	
C523	US062560	C. CE. CHP 560pF 50V	
C524	US062560	C. CE. CHP 560pF 50V	
C525	US062560	C. CE. CHP 560pF 50V	
C526	US062560	C. CE. CHP 560pF 50V	
C527	US062560	C. CE. CHP 560pF 50V	
C528	US062560	C. CE. CHP 560pF 50V	
C800	UR866100	C. EL 1uF 50V	
C801	UR866100	C. EL 1uF 50V	
C802	UR866100	C. EL 1uF 50V	
D201	VU992600	DIODE. ZENR MA8051-M 5.1V	
D202	VV220700	DIODE. SHOT RB501V-40	
D203	VT332900	DIODE 1SS355	
D204	VT332900	DIODE 1SS355	
D205	VT332900	DIODE 1SS355	
D206	VT332900	DIODE 1SS355	

* New Parts

Schm Ref.	PART NO.	Description	Markets
D207	VT332900	DIODE 1SS355	
D208	VT332900	DIODE 1SS355	
D209	V7446300	LED E1L31-3BOA2	
D210	VT332900	DIODE 1SS355	
D211	VT332900	DIODE 1SS355	
D212	VT332900	DIODE 1SS355	
D213	VT332900	DIODE 1SS355	
D214	VU992600	DIODE. ZENR MA8051-M 5.1V	
D215	VU993800	DIODE. ZENR MA8068-M 6.8V	
D216	VU993400	DIODE. ZENR MA8062-M 6.2V	
D217	VU992600	DIODE. ZENR MA8051-M 5.1V	
D400	VU992600	DIODE. ZENR MA8051-M 5.1V	
D401	VT332900	DIODE 1SS355	
D402	VT332900	DIODE 1SS355	
D403	VT332900	DIODE 1SS355	
D404	VT332900	DIODE 1SS355	
D405	VT332900	DIODE 1SS355	
D406	VT332900	DIODE 1SS355	
G201	V8880000	TERM. GND M3.5 RJP9899	
G202	V8880000	TERM. GND M3.5 RJP9899	
IC201	X0384A00	IC M30217MA-A209FP	
IC202	XW416A00	IC BU2092 SER/PAR	
IC203	XR056A00	IC TC74HC4051AF-TP	
IC204	XR056A00	IC TC74HC4051AF-TP	
IC205	XY887A00	IC S-29390AFJA EEPROM	
IC400	X0070A00	IC AN4801SB-E1	
IC401	XJ553A00	IC NJM2068MD	
IC402	XJ553A00	IC NJM2068MD	
IC403	XS776A00	IC TC74HC126AF BUS BU	
IC404	X0071A00	IC AN8399SA-E1	
IC405	XR274A00	IC TA8409SE	
IC406	XW915A00	IC MN35511AL	
IC407	XY935A00	IC LC75342M-TLM	
IC408	XD672A00	IC NJM2903M(T1) SOP	
JK201	V7709900	JACK. MNI HTJ-035-18ABT	
JK400	V4971300	JACK. MNI 2P	
JK401	V4971300	JACK. MNI 2P	
L202	V3063400	COIL. CHP BLM11B601S 1608	
L203	V3063400	COIL. CHP BLM11B601S 1608	
L204	V3063400	COIL. CHP BLM11B601S 1608	
L401	VD473700	COIL 60uH	
L403	VZ250100	COIL. CHP BK2125HS470-T	
L404	V3063400	COIL. CHP BLM11B601S 1608	
L405	V3063400	COIL. CHP BLM11B601S 1608	
L406	V3063400	COIL. CHP BLM11B601S 1608	
L407	V3063400	COIL. CHP BLM11B601S 1608	
L408	V3063400	COIL. CHP BLM11B601S 1608	
L409	V3063400	COIL. CHP BLM11B601S 1608	
L410	V3063400	COIL. CHP BLM11B601S 1608	
L411	V3063400	COIL. CHP BLM11B601S 1608	
L412	V3063400	COIL. CHP BLM11B601S 1608	
L413	V3063400	COIL. CHP BLM11B601S 1608	
L414	V3063400	COIL. CHP BLM11B601S 1608	
L415	VZ250100	COIL. CHP BK2125HS470-T	
L416	V4769500	FER. BEAD RH03506BT-B-1B	
L417	V4769500	FER. BEAD RH03506BT-B-1B	
L418	V4769500	FER. BEAD RH03506BT-B-1B	
L419	V4769500	FER. BEAD RH03506BT-B-1B	
L420	V4769500	FER. BEAD RH03506BT-B-1B	
L421	V4769500	FER. BEAD RH03506BT-B-1B	
L422	VD473700	COIL 60uH	
Q201	VZ725900	TR 2SD1938F S, T	
Q202	VZ725900	TR 2SD1938F S, T	

* New Parts

P.C.B. DIGITAL & P.C.B. MAIN

Schm Ref.	PART NO.	Description	Markets
Q203	VV655700	TR. DGT	DTC144EKA
Q204	VP872700	TR	2SC4488 S, T
Q205	VV556500	TR	2SA1037K Q, R, S
Q206	VV556400	TR	2SC2412K Q, R, S
Q400	VR810000	TR	2SB1132 Q, R
Q401	VV556500	TR	2SA1037K Q, R, S
Q402	VZ725900	TR	2SD1938F S, T
Q403	VV655000	TR. DGT	DTA114EKA
Q405	V3033500	TR. DGT	DTC143XKA
Q406	VV655400	TR. DGT	DTC114EKA
Q407	VV655000	TR. DGT	DTA114EKA
Q408	VZ725900	TR	2SD1938F S, T
Q409	VZ725900	TR	2SD1938F S, T
Q410	VV655000	TR. DGT	DTA114EKA
Q411	VZ725900	TR	2SD1938F S, T
Q412	VZ725900	TR	2SD1938F S, T
R291	HV755100	R. CAR. FP	100Ω 1/4W
R297	HV756220	R. CAR. FP	2.2KΩ 1/4W
R430	HV753220	R. CAR. FP	2.2Ω 1/4W
R453	HV754470	R. CAR. FP	47Ω 1/4W
R467	HV753100	R. CAR. FP	1Ω 1/4W
R468	HV753100	R. CAR. FP	1Ω 1/4W
R516	HV754100	R. CAR. FP	10Ω 1/4W
R517	HV754100	R. CAR. FP	10Ω 1/4W
ST401	V4040500	SCR. TERM	M3
SW201	V7409200	SW. RT. ENC	SRGP100100
SW202	VV020300	SW. TACT	SKQNAA
SW203	VV020300	SW. TACT	SKQNAA
SW204	VV020300	SW. TACT	SKQNAA
SW205	VV020300	SW. TACT	SKQNAA
SW206	VV020300	SW. TACT	SKQNAA
SW207	VV020300	SW. TACT	SKQNAA
SW208	VV020300	SW. TACT	SKQNAA
SW209	VV020300	SW. TACT	SKQNAA
SW210	VV020300	SW. TACT	SKQNAA
SW211	VV020300	SW. TACT	SKQNAA
SW212	VV020300	SW. TACT	SKQNAA
SW213	VV020300	SW. TACT	SKQNAA
SW400	V7644000	SW. MICRO	SPPB5A0100
SW401	V7644000	SW. MICRO	SPPB5A0100
TH200	V7962300	THRMST. CHP	NCP18WF104J03RB
U201	V8085300	L. DTCT	GP1UA271X
U202	V8085300	L. DTCT	GP1UA271X
U400	V7680800	CN. PHOT. SN	1P GP1FA512TZ
V201	V7357700	FL. DSPLY	13-BT-191GN
XL201	VQ328900	RSNR. CRY	32.768KHz
XL202	V7718300	RSNR. CE	CSTLS10M0G53-B0
XL400	VJ719800	RSNR. CRY	16.9344MHz
	V3688400	SHEET. FL	SI
	V3747400	SPACER. FL	T4x6x18
	V3747500	SUPRT	
	V8297500	SPACER	6RB V744630
	V8000200	P. C. B.	MAIN
	V8000300	P. C. B.	MAIN
	V8000400	P. C. B.	MAIN
	V8000500	P. C. B.	MAIN
CB1	V7687000	CN. BS. PIN	17P TE
CB2	VM859600	CN. BS. PIN	15P
CB3	VT637800	CN. BS. PIN	3P
CB5	V7434900	CN. BS. PIN	4P SE

* New Parts

Schm Ref.	PART NO.	Description	Markets
CB8	VP206500	HOLDER. FUS	EYF-52BCT
CB9	VP206500	HOLDER. FUS	EYF-52BCT
CB10	VP206500	HOLDER. FUS	EYF-52BCT
CB11	VG879900	CN. BS. PIN	2P
CB12	VP206500	HOLDER. FUS	EYF-52BCT
CB13	LB932040	CN. BS. PIN	4P
CB14	VB389900	CN. BS. PIN	3P
C1	US062330	C. CE. M. CHP	330pF 50V
C2	V8085400	C. CE. CHP	0.1uF 25V
C3	UR837470	C. EL	47uF 16V
C4	V8085400	C. CE. CHP	0.1uF 25V
C5	UR837470	C. EL	47uF 16V
C6	US062560	C. CE. CHP	560pF 50V
C7	UR837470	C. EL	47uF 16V
C8	US061270	C. CE. M. CHP	27pF 50V
C9	US061270	C. CE. M. CHP	27pF 50V
C10	UR867100	C. EL	10uF 50V
C11	UU167100	C. EL	10uF 50V
C12	UU167100	C. EL	10uF 50V
C13	UR867100	C. EL	10uF 50V
C14	UR847220	C. EL	22uF 25V
C15	V8085400	C. CE. CHP	0.1uF 25V
C16	UR868100	C. EL	100uF 50V
C17	UR847220	C. EL	22uF 25V
C18	UR749100	C. EL	1000uF 25V
C19	UR848100	C. EL	100uF 25V
C20	V8085400	C. CE. CHP	0.1uF 25V
C21	UR868100	C. EL	100uF 50V
C22	V8085400	C. CE. CHP	0.1uF 25V
C23	UR866100	C. EL	1uF 50V
C24	UR866100	C. EL	1uF 50V
C25	UR847220	C. EL	22uF 25V
C26	UR818100	C. EL	100uF 6.3V
C27	UR847220	C. EL	22uF 25V
C28	UR866100	C. EL	1uF 50V
C29	US061470	C. CE. M. CHP	47pF 50V
C30	US061470	C. CE. M. CHP	47pF 50V
C31	US064100	C. CE. M. CHP	0.01uF 50V
C32	US061470	C. CE. M. CHP	47pF 50V
C33	UR838100	C. EL	100uF 16V
C34	UR838100	C. EL	100uF 16V
C35	US061470	C. CE. M. CHP	47pF 50V
C36	UR847100	C. EL	10uF 25V
C37	UR847100	C. EL	10uF 25V
C38	UR847100	C. EL	10uF 25V
C39	UA652100	C. MYLAR	100pF 50V
C40	UA652100	C. MYLAR	100pF 50V
C41	UR866100	C. EL	1uF 50V
C42	V8085400	C. CE. CHP	0.1uF 25V
C43	V8085400	C. CE. CHP	0.1uF 25V
C44	UR847220	C. EL	22uF 25V
C45	UR847220	C. EL	22uF 25V
C46	UR838100	C. EL	100uF 16V
C47	UR838100	C. EL	100uF 16V
C48	V8085400	C. CE. CHP	0.1uF 25V
C49	UR837470	C. EL	47uF 16V
C50	V8085400	C. CE. CHP	0.1uF 25V
C51	V3324600	C. EL	220uF 25V
C52	V8085400	C. CE. CHP	0.1uF 25V
C53	V3324600	C. EL	220uF 25V
C54	V6185300	C. CE. SAFTY	0.01uF 275V
C55	UR865220	C. EL	0.22uF 50V
C56	UR858220	C. EL	220uF 35V

* New Parts

P.C.B. MAIN

Schm Ref.	PART NO.	Description	Markets
C57	UR866470	C. EL 4.7uF 50V	
C58	UR847100	C. EL 10uF 25V	
C59	UA655470	C. MYLAR 0.47uF 50V	
C60	UA655470	C. MYLAR 0.47uF 50V	
C61	UA655470	C. MYLAR 0.47uF 50V	
C62	UA655470	C. MYLAR 0.47uF 50V	
C63	UR818100	C. EL 100uF 6.3V	
C64	UA655470	C. MYLAR 0.47uF 50V	
C65	UA655470	C. MYLAR 0.47uF 50V	
C66	UR866100	C. EL 1uF 50V	
C67	UA655100	C. MYLAR 0.1uF 50V	
C68	UA655100	C. MYLAR 0.1uF 50V	
C69	UR739330	C. EL 3300uF 16V	
C70	UR867470	C. EL 47uF 50V	
* ⚠ C71	V7408700	C. EL 8200uF 25V	
C72	US064100	C. CE. M. CHP 0.01uF 50V	
C73	UR818100	C. EL 100uF 6.3V	
C74	UA655100	C. MYLAR 0.1uF 50V	
C75	UR866100	C. EL 1uF 50V	
C76	UA654100	C. MYLAR 0.01uF 50V	
C77	UA653470	C. MYLAR 4700pF 50V	
C78	UA653470	C. MYLAR 4700pF 50V	
C79	UR848330	C. EL 330uF 25V	
C80	UA653470	C. MYLAR 4700pF 50V	
C81	US064100	C. CE. M. CHP 0.01uF 50V	
C82	UA652100	C. MYLAR 100pF 50V	
C83	UA654100	C. MYLAR 0.01uF 50V	
C84	UA654100	C. MYLAR 0.01uF 50V	
C85	UA653470	C. MYLAR 4700pF 50V	
⚠ C86	UR848100	C. EL 100uF 25V	
⚠ C87	UA655100	C. MYLAR 0.1uF 50V	
C88	UR848330	C. EL 330uF 25V	
C89	US063220	C. CE. M. CHP 2200pF 50V	
C90	US063220	C. CE. M. CHP 2200pF 50V	
C91	US062100	C. CE. M. CHP 100pF 50V	
C92	US062100	C. CE. M. CHP 100pF 50V	
C93	US062100	C. CE. M. CHP 100pF 50V	
C94	US062100	C. CE. M. CHP 100pF 50V	
C95	US062100	C. CE. M. CHP 100pF 50V	
C96	US062100	C. CE. M. CHP 100pF 50V	
C97	US062100	C. CE. M. CHP 100pF 50V	
C99	US062100	C. CE. M. CHP 100pF 50V	
C100	US062100	C. CE. M. CHP 100pF 50V	
C101	US062100	C. CE. M. CHP 100pF 50V	
C102	US062100	C. CE. M. CHP 100pF 50V	
C103	US062100	C. CE. M. CHP 100pF 50V	
* C104	V8085400	C. CE. CHP 0.1uF 25V	
* C105	VE392300	C. EL 100uF 6.3V	
C106	UR866100	C. EL 1uF 50V	
C107	UR847220	C. EL 22uF 25V	
* C108	V8085400	C. CE. CHP 0.1uF 25V	
C109	US062100	C. CE. M. CHP 100pF 50V	
C110	US062100	C. CE. M. CHP 100pF 50V	
C111	US062100	C. CE. CHP 100pF 50V	
D1	VT332900	DIODE 1SS355	
D3	VU999500	DIODE. ZENR MA8270-M 27V	
D4	VT332900	DIODE 1SS355	
D5	VT532500	DIODE 1SR154-400	
D6	VT532500	DIODE 1SR154-400	
* D7	VU996200	DIODE. ZENR MA8120-M 12.0V	
⚠ D8	VR253700	DIODE. BRG S1NB20 1A 200V	
* D9	VU996200	DIODE. ZENR MA8120-M 12.0V	
D10	VU993000	DIODE. ZENR MA8056-M 5.6V	BG

* New Parts

Schm Ref.	PART NO.	Description	Markets
* D11	VS597600	DIODE. CHP RB160L-40 TE25	
* D12	VS597600	DIODE. CHP RB160L-40 TE25	
* D13	VS597600	DIODE. CHP RB160L-40 TE25	
* D14	VS597600	DIODE. CHP RB160L-40 TE25	
* ⚠ D15	VU997100	DIODE. ZENR MA8150-M 15.0V	
D16	VT532500	DIODE 1SR154-400	
D17	VT532500	DIODE 1SR154-400	
⚠ D18	VR253700	DIODE. BRG S1NB20 1A 200V	
D19	VT332900	DIODE 1SS355	
D20	VN011300	DIODE. BRG D3SBA20 4A 200V	
D21	VT532500	DIODE 1SR154-400	
D22	VT532500	DIODE 1SR154-400	
* D23	VU997400	DIODE. ZENR MA8160-L 15.7V	
D24	VT332900	DIODE 1SS355	
D25	VT332900	DIODE 1SS355	
⚠ F1	VS822300	FUSE 1.25A 125V	UC
⚠ F1	KB000710	FUSE 500mA 250V	TABG
⚠ F2	VS822300	FUSE 1.25A 125V	UC
⚠ F2	KB001770	FUSE T1.0A 250V	TABG
⚠ Fi1	VU984000	FLTR IE-UU10.5-009	
* G2	V8880000	TERM. GND M3.5 RJP9899	
* G3	V8880000	TERM. GND M3.5 RJP9899	
* G4	V8880000	TERM. GND M3.5 RJP9899	
* G5	V8880000	TERM. GND M3.5 RJP9899	
HS1	VS231000	HEAT. SINK OSH-1035	
* IC1	X0082A00	IC LC72722PM	BG
* IC2	X0651A00	IC NJM78L09A-T3	
IC3	XJ602A00	IC NJM78M12FA	
IC4	XJ604A00	IC NJM78M05FA	
* ⚠ IC5	XY908A00	IC TA2020-020	
IC6	XS377A00	IC BA15218F	
L1	VU889500	COIL 220uH	BG
L2	VU889500	COIL 220uH	BG
L3	VD473700	COIL 60uH	
* L4	V7046200	COIL 7310-100uH	
* L5	V7046200	COIL 7310-100uH	
* L6	V7046200	COIL 7310-100uH	
* L7	V7046200	COIL 7310-100uH	
L8	V4769500	FER. BEAD RH03506BT-B-1B	
L9	VD473700	COIL 60uH	
PJ1	VV306800	JACK. PIN 1P	
PN3	V3750200	PIN L=70	
PN4	V3750200	PIN L=70	
PN6	V3750200	PIN L=70	
Q1	iC174020	TR 2SC1740S R, S	BG
Q2	VV655000	TR. DGT DTA114EKA	
Q3	VV655000	TR. DGT DTA114EKA	
Q4	VV655000	TR. DGT DTA114EKA	
Q5	VZ725900	TR 2SD1938F S, T	
Q6	VZ725900	TR 2SD1938F S, T	
Q7	VG805300	TR 2SA1674 R, S	
Q8	VV655000	TR. DGT DTA114EKA	
Q9	iA093320	TR 2SA933S Q, R	
Q10	iC174020	TR 2SC1740S R, S	
Q11	iA093320	TR 2SA933S Q, R	
Q12	VR510800	TR 2SD2396 J, K	
⚠ Q13	VR510800	TR 2SD2396 J, K	
Q14	VZ725900	TR 2SD1938F S, T	
Q15	VZ725900	TR 2SD1938F S, T	
⚠ Q16	VR510800	TR 2SD2396 J, K	
Q17	VV556400	TR 2SC2412K Q, R, S	
⚠ Q18	VP872700	TR 2SC4488 S, T	
Q19	VV556400	TR 2SC2412K Q, R, S	

* New Parts

P.C.B. MAIN & Chip Resistors

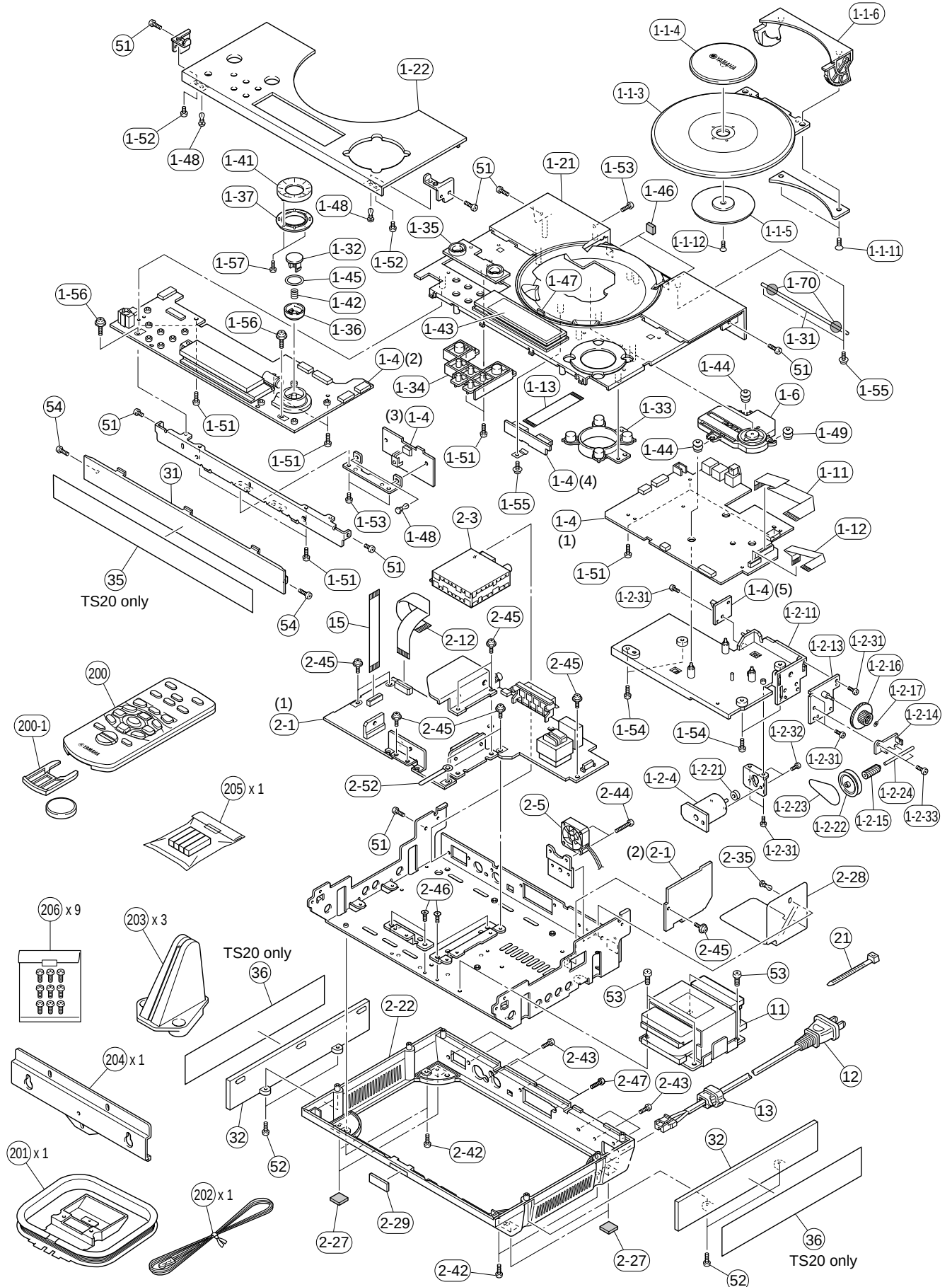
Schm Ref.	PART NO.	Description	Markets
Q20	VV556400	TR 2SC2412K Q, R, S	
Q21	VV556400	TR 2SC2412K Q, R, S	
Q22	VC218900	TR 2SC3330 R, S, T	
Q23	VZ725900	TR 2SD1938F S, T	
Q24	VZ725900	TR 2SD1938F S, T	
Q25	VP872700	TR 2SC4488 S, T	
Q26	VV556400	TR 2SC2412K Q, R, S	
Q27	VV556400	TR 2SC2412K Q, R, S	
Q28	VV556400	TR 2SC2412K Q, R, S	
Q29	VV556400	TR 2SC2412K Q, R, S	
R15	HV753470	R. CAR. FP 4.7Ω 1/4W	
R18	HV756470	R. CAR. FP 4.7KΩ 1/4W	
R33	HV753100	R. CAR. FP 1Ω 1/4W	
R36	HV753100	R. CAR. FP 1Ω 1/4W	
R46	HV756100	R. CAR. FP 1KΩ 1/4W	
R47	VE869300	R. MTL. OXD 0.1Ω 2W	
R55	VE869300	R. MTL. OXD 0.1Ω 2W	
R59	VP939800	R. MTL. OXD 10Ω 1W	
R60	VP939800	R. MTL. OXD 10Ω 1W	
R61	HV755100	R. CAR. FP 100Ω 1/4W	
R63	HV756390	R. CAR. FP 3.9KΩ 1/4W	
R69	VP940400	R. MTL. OXD 100Ω 1W	
R75	HV753220	R. CAR. FP 2.2Ω 1/4W	
R76	HV753220	R. CAR. FP 2.2Ω 1/4W	
R81	HV755120	R. CAR. FP 120Ω 1/4W	
R84	VP939700	R. MTL. FLM 4.7Ω 1W	
R89	HV753220	R. CAR. FP 2.2Ω 1/4W	
RY1	V7845000	RELAY DC OSA-SS-212DM3	
RY2	V6017400	RELAY DC SDT-S-112LMR2	
SW3	V3624300	SW. SLIDE SS029-P022MJB-PA6	
T1	X0424A00	TRANS	UC
T1	X0425A00	TRANS	T
T1	X0426A00	TRANS	ABG
TE1	V7408800	TERM. SP LQR1410-0004M	
XL1	V3930900	RSNR. CRY 4.332MHz	BG
	VQ368600	PUSH. RIVET P3555-B	
	V7741700	SHEET	
	EP600530	SCR. BND. HD 3x8 MFZN2BL	
	VK173200	SCR. TR 3x15 SP MFC2	
	EP600830	SCR. BND. HD 3x8 MFC2BL	

* New Parts

Schm Ref.	PART NO.	Description	Markets
	RD350000	R. CAR. CHP 0Ω 1/10W	
	RD353100	R. CAR. CHP 1Ω 1/10W	
	RD354100	R. CAR. CHP 10Ω 1/10W	
	RD354330	R. CAR. CHP 33Ω 1/10W	
	RD354510	R. CAR. CHP 51Ω 1/10W	
	RD354820	R. CAR. CHP 82Ω 1/10W	
	RD354910	R. CAR. CHP 91Ω 1/10W	
	RD355100	R. CAR. CHP 100Ω 1/10W	
	RD355220	R. CAR. CHP 220Ω 1/10W	
	RD355270	R. CAR. CHP 270Ω 1/10W	
	RD355330	R. CAR. CHP 330Ω 1/10W	
	RD355390	R. CAR. CHP 390Ω 1/10W	
	RD355470	R. CAR. CHP 470Ω 1/10W	
	RD355560	R. CAR. CHP 560Ω 1/10W	
	RD355680	R. CAR. CHP 680Ω 1/10W	
	RD356100	R. CAR. CHP 1KΩ 1/10W	
	RD356120	R. CAR. CHP 1.2KΩ 1/10W	
	RD356180	R. CAR. CHP 1.8KΩ 1/10W	
	RD356200	R. CAR. CHP 2KΩ 1/10W	
	RD356220	R. CAR. CHP 2.2KΩ 1/10W	
	RD356240	R. CAR. CHP 2.4KΩ 1/10W	
	RD356330	R. CAR. CHP 3.3KΩ 1/10W	
	RD356360	R. CAR. CHP 3.6KΩ 1/10W	
	RD356390	R. CAR. CHP 3.9KΩ 1/10W	
	RD356470	R. CAR. CHP 4.7KΩ 1/10W	
	RD356510	R. CAR. CHP 5.1KΩ 1/10W	
	RD356560	R. CAR. CHP 5.6KΩ 1/10W	
	RD356620	R. CAR. CHP 6.2KΩ 1/10W	
	RD356680	R. CAR. CHP 6.8KΩ 1/10W	
	RD356820	R. CAR. CHP 8.2KΩ 1/10W	
	RD357100	R. CAR. CHP 10KΩ 1/10W	
	RD357120	R. CAR. CHP 12KΩ 1/10W	
	RD357130	R. CAR. CHP 13KΩ 1/10W	
	RD357150	R. CAR. CHP 15KΩ 1/10W	
	RD357180	R. CAR. CHP 18KΩ 1/10W	
	RD357220	R. CAR. CHP 22KΩ 1/10W	
	RD357270	R. CAR. CHP 27KΩ 1/10W	
	RD357330	R. CAR. CHP 33KΩ 1/10W	
	RD357390	R. CAR. CHP 39KΩ 1/10W	
	RD357470	R. CAR. CHP 47KΩ 1/10W	
	RD357560	R. CAR. CHP 56KΩ 1/10W	
	RD358100	R. CAR. CHP 100KΩ 1/10W	
	RD358120	R. CAR. CHP 120KΩ 1/10W	
	RD358150	R. CAR. CHP 150KΩ 1/10W	
	RD358220	R. CAR. CHP 220KΩ 1/10W	
	RD358270	R. CAR. CHP 270KΩ 1/16W	
	RD358330	R. CAR. CHP 330KΩ 1/10W	
	RD358470	R. CAR. CHP 470KΩ 1/10W	
	RD359100	R. CAR. CHP 1MΩ 1/10W	
	RD359150	R. CAR. CHP 1.5MΩ 1/10W	

* New Parts

EXPLODED VIEW (CRX-TS10/CRX-TS20)



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
*	1-1-3	V7739000 WINDOW/CD	GLASS	CRXTS10
*	1-1-3	V7739100 WINDOW/CD	GRAY	CRXTS20
*	1-1-4	V7739200 COVER/PU		
*	1-1-5	V7739300 COVER/PU-B		
*	1-1-6	V7722600 HINGE/WINDOW		
*	1-1-11	V7958800 FLAT HEAD P-TITE SCREW	3x6 MFZN2BL	
*	1-1-12	V8128400 FLAT HEAD P-TITE SCREW	2.3x5 MFNI33	
*	1-2-4	V7424100 MOTOR	DC RF-370CA-15370	
*	1-2-11	V7738900 SUPPORT/CD		
*	1-2-13	V7722500 SHAFT ASS'Y/L16		
*	1-2-14	V7722300 HOLDER/WO		
*	1-2-15	V7722200 GEAR		
*	1-2-16	V7722100 GEAR, WW		
*	1-2-17	V7722400 WASHER	2.6x5.2	
	1-2-21	VS036200 PULLEY		
*	1-2-22	V7722000 PULLEY/22		
	1-2-23	VW014200 BELT	CL	
	1-2-24	VS036600 SHAFT, 2		
*	1-2-31	EP620160 BIND HEAD P-TITE SCREW	2.6x6 MFZN2BL	
	1-2-32	V2500400 BIND HEAD SCREW	3x3 MFZN2BL	
	1-2-33	EG320160 BIND HEAD SCREW	2.6x4 MFZN2BL	
*	1-4	V8000100 P.C.B. ASS'Y	DIGITAL	
*	1-6	V7773300 CD DRIVE NNIT	KSM-900AAH	
*	1-11	V8068700 FLEXIBLE FLAT CABLE	20P 120mm P=1.00	
*	1-12	V7839600 FLEXIBLE FLAT CABLE	13P 70mm P=1.00	
*	1-13	V7839700 FLEXIBLE FLAT CABLE	16P 70mm P=1.00	
*	1-21	V7738700 SUB PANEL		
*	1-22	V7736900 PANEL, TOP		CRXTS10
*	1-22	V7737000 PANEL, TOP		CRXTS10
*	1-22	V7737100 PANEL, TOP		CRXTS20
*	1-22	V7737200 PANEL, TOP		CRXTS20
*	1-31	V7738100 SHAFT/L127.5		
*	1-32	V7739600 BUTTON/INPUT		
*	1-33	V7739700 BUTTON, 4P		
*	1-34	V7739800 BUTTON		
*	1-35	V7740000 ESCUTCHEON/2P		
*	1-36	V7740100 LENS/INSIDE		
*	1-37	V7740200 LENS/OUTSIDE		
*	1-41	V7739900 KNOB/VOL		
*	1-42	V7738000 SPRING		
*	1-43	V7741100 WINDOW/TOP		
*	1-44	V7741500 CUSHION/PU	BLACK	
*	1-45	V8105600 SHEET/LED		
	1-46	VS010000 CUSHION, LEG		
	1-47	VY940400 CUSHION, LID	T=0.8	
	1-48	VQ368500 PUSH RIVET	P3545-B	
*	1-49	V8529200 CUSHION/PU-HS30	BLUE	
	1-51	EP630220 BIND HEAD P-TITE SCREW	3x8 MFZN2BL	
	1-52	VN413300 BIND HEAD BONDING B-T. SCREW	3x8 MFZN2BL	
	1-53	EP600830 BIND HEAD B-TITE SCREW	3x8 MFC2BL	
	1-54	EP600910 BIND HEAD P-TITE SCREW	3x10 MFC2BL	
	1-55	VA775100 PW HEAD P-TITE SCREW	3x8-10 MFCR3BL	
	1-56	VH365800 PW HEAD B-TITE SCREW	3x6-8 MFC2	

* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-57	VG893800	BIND HEAD P-TITE SCREW	2x6 MFZN2BL	KANTO CHEMICAL
* 1-70	VQ472900	GREASE	FLOIL G-31KB	
* 2-1	V8000200	P.C.B. ASS'Y	MAIN	
* 2-1	V8000300	P.C.B. ASS'Y	MAIN	
* 2-1	V8000400	P.C.B. ASS'Y	MAIN	
* 2-1	V8000500	P.C.B. ASS'Y	MAIN	
* 2-3	V7424300	AM/FM TUNER	FAE350-A10F	
* 2-3	V7424400	AM/FM TUNER	FAE404-E10F	
* 2-5	V7832900	DC FAN MOTOR	DC DF310R-12LC	
* 2-12	MF115100	FLEXIBLE FLAT CABLE C&C	15P 100mm	
* 2-22	V7738500	COVER/BOTTOM		
* 2-27	V7741200	LEG		
* 2-28	V7741400	SHEET		
* 2-29	V7741000	WINDOW/FRONT		
2-35	VQ368500	PUSH RIVET	P3545-B	
2-42	EP600820	BIND HEAD B-TITE SCREW	3x6 MFC2BL	
2-43	EP600830	BIND HEAD B-TITE SCREW	3x8 MFC2BL	
2-44	EP600840	BIND HEAD B-TITE SCREW	3x16 MFC2BL	
2-45	VH365800	PW HEAD B-TITE SCREW	3x6-8 MFC2	
2-46	EP630400	FLAT HEAD B-TITE SCREW	3x6 MFC2BL	
2-47	EP600910	BIND HEAD P-TITE SCREW	3x10 MFC2BL	
2-52	CB836200	BINDING TIE	S-70B	
* 11	X0420A00	POWER TRANSFORMER		UC A BG T UC A G B T
* 11	X0422A00	POWER TRANSFORMER		
* 11	X0423A00	POWER TRANSFORMER		
* 11	X0421A00	POWER TRANSFORMER		
12	V2363800	POWER CORD ASS'Y		
12	V2296800	POWER CORD ASS'Y		
12	VN363700	POWER CORD ASS'Y		
12	VV437300	POWER CORD ASS'Y		
12	VZ542500	POWER CORD ASS'Y		
13	V2438700	CORD STOPPER	10P1	
15	MFA17100	FLEXIBLE FLAT CABLE	17P 100mm P=1.0	CRX-TS10 CRX-TS20 CRX-TS10 CRX-TS20 CRX-TS20 CRX-TS20 CRX-TS20
21	VU590000	BINDING TIE	CBTD001B	
* 31	V7740400	COVER/FRONT-10		
* 31	V7740600	COVER/FRONT-20		
* 32	V7740500	COVER/SIDE-10		
* 32	V7740700	COVER/SIDE-20		
* 35	V7740800	SHEET/FRONT-20		
* 36	V7740900	SHEET/SIDE-20		
51	EP600830	BIND HEAD B-TITE SCREW	3x8 MFC2BL	
52	EP630220	BIND HEAD P-TITE SCREW	3x8 MFZN2BL	
53	V2728500	BIND HEAD S-TITE SCREW	4x7 MFZN2BL	103RRS 129 50L C-0918-YAM-017 3125-011-0Y01
54	VH365800	PW HEAD B-TITE SCREW	3x6-8 MFC2	
		ACCESSORIES		
* 200	V7769200	REMOTE CONTROL TRANSMITTER	RRS3000-5001LSYS38	
* 200	V7769300	REMOTE CONTROL TRANSMITTER	RRS3000-5002LSYS39	
* 200-1	AAX30940	BATTERY HOLDER	103RRS-129-50L	
* 201	V7848300	AM LOOP ANTENNA	1.2m	
* 202	V7998500	FM ANTENNA	1.4m	
* 202	V7998400	FM ANTENNA	1.4m	
* 203	V7740300	STAND/SLANT	1pc	

* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
* 204	V7738300	MOUNTING BRACKET	1pc	
* 205	V7741600	NON SKID PAD	4pcs/set	
206	V2728500	BIND HEAD S-TITE SCREW	4x7 MFZN2BL	
		LITHIUM BATTERY 3V	CR2025/1FE	

* New Parts

● NX-TS10

Ref. No.	PART NO.	Description	Remarks	Markets
* 1	AAX30620	SATELLITE SPEAKER UNIT	NX-TS10BL	NX TS10A B
* 1	AAX30630	SATELLITE SPEAKER UNIT	NX-TS10CH	NX TS10A C
* 1-1	AAX30850	FRONT GRILLE ASS'Y	NX-TS10BL	903 TS10B
* 1-1	AAX30860	FRONT GRILLE ASS'Y	NX-TS10CH	903 TS10C
		ACCESSORIES		
* 101	AAX30650	SPEAKER CORD	4m 2pcs/set	617 22GRAY04
* 102	V7741600	NON SKID PAD	4pcs/set	

* New Parts

● NX-TS20

Ref. No.	PART NO.	Description	Remarks	Markets
* 10	AAX30820	CABINET ASS'Y		505 TS20A B
10-1	V2722900	EMBLEM		
* 11	AAX30840	FRONT GRILLE ASS'Y		903 1TS20B
* 12	X0432A00	DRIVER, TWEETER	2.5cm 4Ω	350216
* 13	X0434A00	DRIVER, WOOFER	10cm 4Ω	350217
* 14-1	AAX30830	SPEAKER TERMINAL		213 S28D
14-2	V6367500	ELECTROLYTIC CAP	3.3uF 63V BP	
* 14-3	UM080010	ELECTROLYTIC CAP	5.6uF 63V BP	
* 14-4	AAX30810	REF PACKING	72x72x1	429 0720721
* 15	AAX30870	GRILLE HOLDER	URETHANE FOAM	437 030050
16	V6018100	HEXAGON SOCKET TAPPING SCREW	4x16 MFCR33	
17	03706420	OVAL HEAD WOOD SCREW	3.1x13 MFZN2BL	
		ACCESSORIES		
* 103	AAX30650	SPEAKER CORD	4m 2pcs/set	617 22GRAY04

* New Parts

1

EXPLODED VIEW (NX-TS10/NX-TS20)

NX-TS10

2

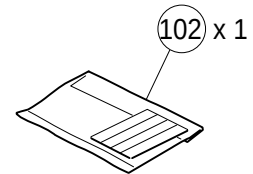
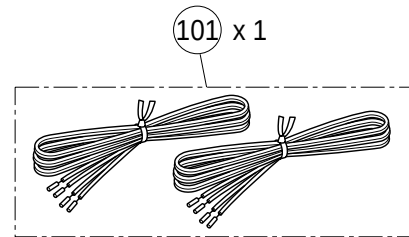
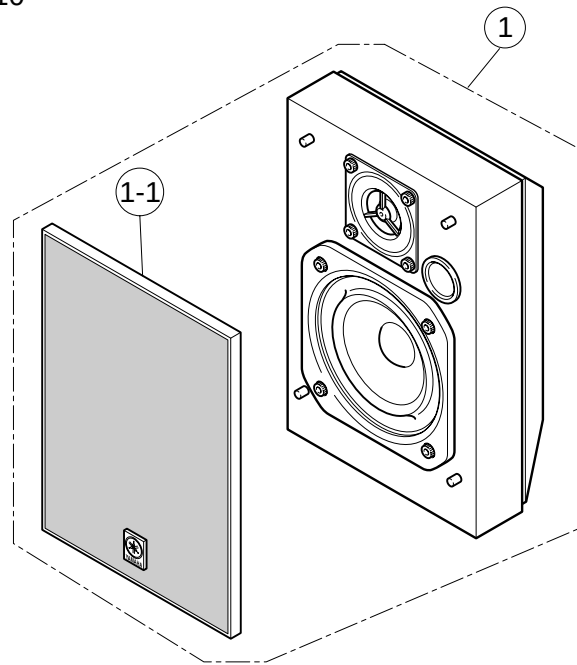
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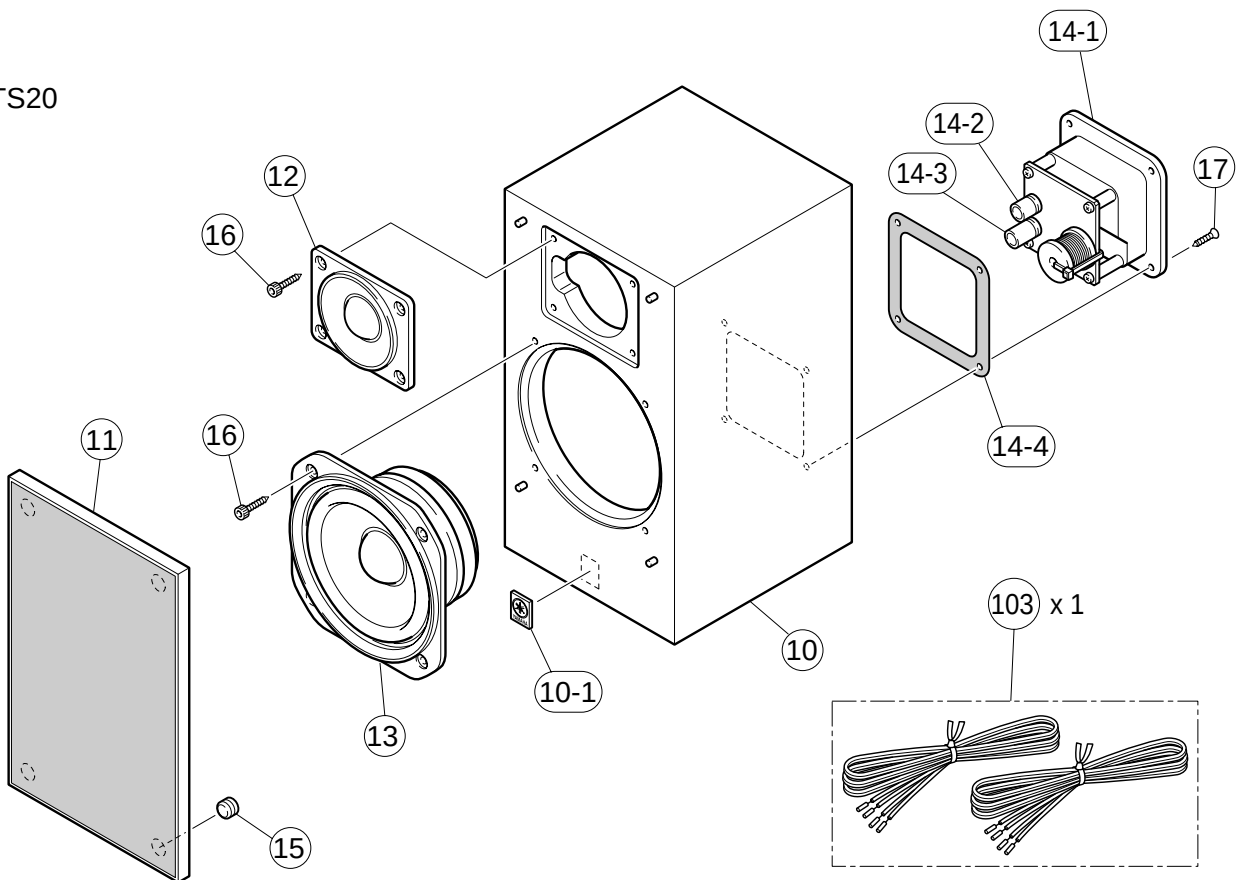
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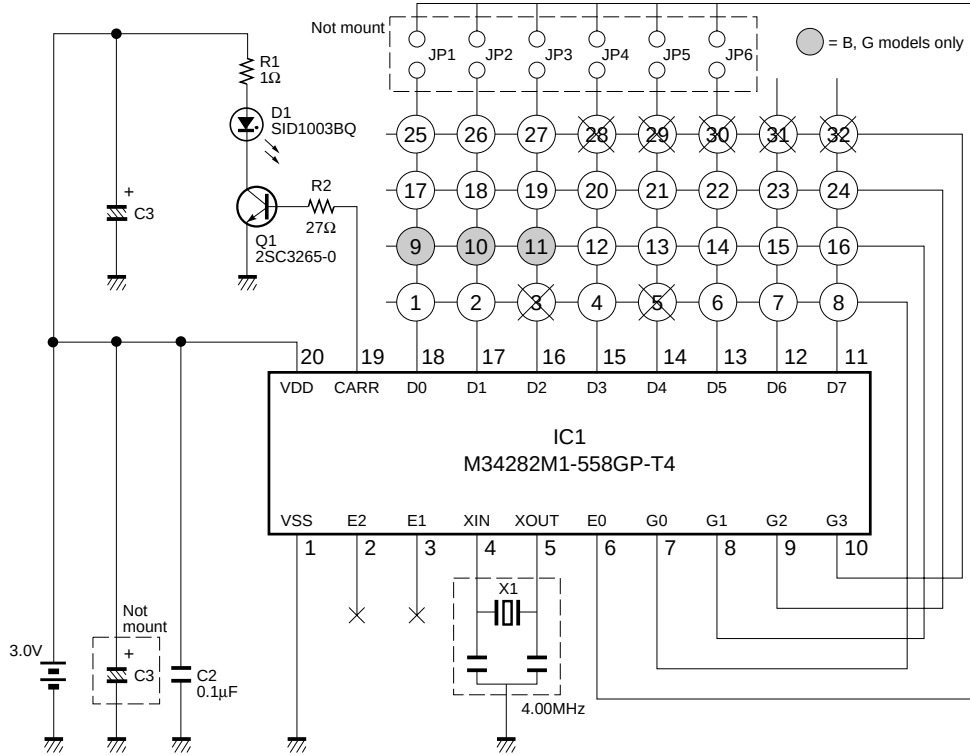


NX-TS20

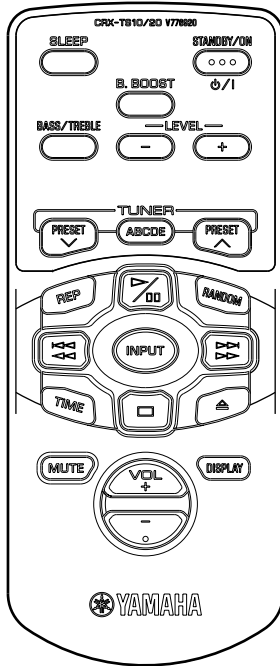


TSX-10/15/20

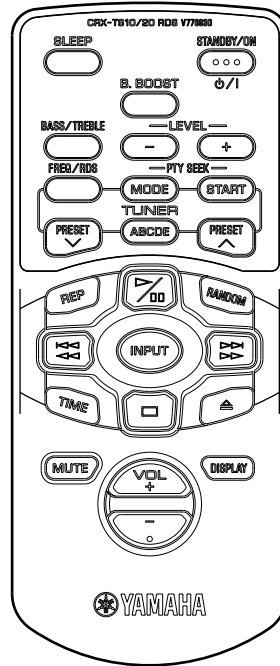
REMOTE CONTROL TRANSMITTER



U, C, A, T models



B, G models



KEY No.	KEY FUNCTION	CUSTOM	DATA
1	SLEEP	78	4F
2	STANDBY/ON	78	0F
4	B.BOOST ON/OFF	78	8B
6	BASS/TREBLE	78	84
7	BASS/TREBLE LEVEL-	78	56
8	BASS/TREBLE LEVEL+	78	55
9	RDS FREQ	78	81
10	RDS PTY SEEK MODE	78	82
11	RDS PTY SEEK START	78	83
12	TUNER PRESET-	78	1C
13	TUNER A/B/C/D/E	78	1D
14	TUNER PRESET+	78	1B
15	CD REPEAT	78	0C
16	CD PLAY/PAUSE	78	02
17	CD RANDOM	78	07
18	CD SKIP -	78	04
19	INPUT	78	5E
20	CD SKIP +	78	03
21	CD TIME	78	0A
22	CD STOP	78	01
23	CD OPEN	78	00
24	MUTE	78	9C
25	DISPLAY	78	4E
26	VOLUME +	78	1E
27	VOLUME -	78	1F

9 ~ 11 = B, G models only