

Service
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Service Manual

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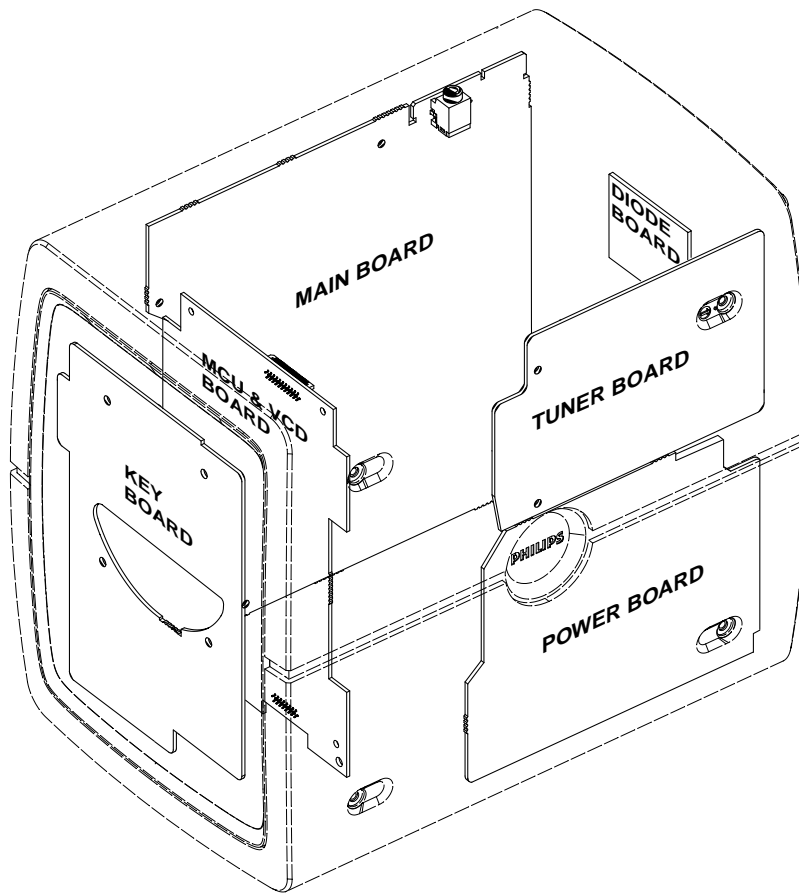
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Version 1.0



PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS

Type/Versions	MC-V320				
	/21M				
Features & Board in used					
RDS function					
ECO Standby					
Aux Input	x				
Digital Coaxial Out					
Line Out					
Subwoofer Out					
Headphone Out	x				
AC Voltage Selector	x				
Non-Cenelec Tuner	x				
Cenelec Tuner					

SPECIFICATIONS**GENERAL:**

Mains voltage	: 120V / 230V \pm 15% Switchable
Mains frequency	: 50/60Hz
Power consumption	: < 8W at Standby (DEMO mode off) : 45W at Active
Clock accuracy	: < 4 seconds per day
Dimension centre unit	: 155 x 220 x 270mm

TUNER:**FM**

Tuning range	: 87.5-108MHz
IF frequency	: 10.7MHz \pm 20kHz
Aerial input	: 75 Ω Coaxial
Sensitivity at 26dB S/N	: < 22dBf
Selectivity at S9/300kHz	: > 33dB
IF Rejection	: > 60dB
Image Rejection	: > 20dB
Distortion at RF=1mV, dev. 75kHz	: < 3%
-3dB Limiting Point	: < 23.5dB
Crosstalk at RF=1mV, dev. 40kHz	: > 26dB
Modulation Hum	: > 45dB
AM Suppression I/P: 48~82dBf	: > 25dB

AM (MW)

Tuning range	: 531-1602kHz or 530-1700kHz
Grid	: 9kHz / 10kHz
IF frequency	: 450kHz \pm 1kHz
Aerial input	: Frame aerial 18.1 μ H
Sensitivity at 26dB S/N	: < 3.25mV/M
Selectivity at S9/300kHz	: > 15dB
AGC Figure of Merit	: > 25dB
IF rejection	: > 24dB
Image rejection	: > 20dB
Distortion at RF=50mV, m=80%	: < 5%
Mudulation Hum with REC or	: > 40dB
Spurious Response Rejection	: > 28dB

AMPLIFIER:

Output power (6 Ω , 1kHz, 10% THD)	: 2X18W
Frequency response within -3dB	: 60Hz-14kHz
Digital Sound Control (DSC)	: Optimal,Classic,Jazz, Rock
DBB	: ON/OFF
Incredible Surround (IS)	: ON/OFF
Input sensitivity (\pm 3dB) for Rated Output Power at 1kHz	
Aux in	: 500mV; Rs=600 Ω
Tuner in	: FM67.5kHz, AM80%Modulation
CD in	: -6dB track
Tape in	: 250nWb/m
Microphone in	: 3.5mV; Rs=600 Ω
Output sensitivity	
Headphone output at 32 Ω	: 15mW \pm 1dB

CASSETTE RECORDER:

Number of track	: 2 Tracks (Stereo)
Tape speed	: 4.76 cm/sec \pm 2%
Wow and flutter	: < 0.4% DIN
Fast-wind/Rewind time C60	: 130 sec
Bias system	: 80Hz - 10kHz
Rec/Pb freq. response within 8dB	: 78kHz \pm 10kHz
Signal to Noise Ratio (A-weighted)	: > 48dBA
Distortion 250nWb/m	: < 5%
Channel Difference at overall	: < 4dB

COMPACT DISC:

Frequency response within \pm 3dB	: 63Hz - 14kHz
Output level (in Vrms)	: 500mV, Z _{out} = 100 Ω
Signal/Noise ratio (A-weighted)	: > 62dBA
Distortion at 1kHz	: < 0.02%
Channel unbalance at 1kHz	: \leq 2dB
Channel separation at 1kHz	: > 30dB
Emphasis	: 15/50 μ S (switched automatically by CD10)
THD Noise(1kHz)	: 1.00%
Outband Attenuation	: > 20dB for Frequency > 40kHz

VIDEO - CD :

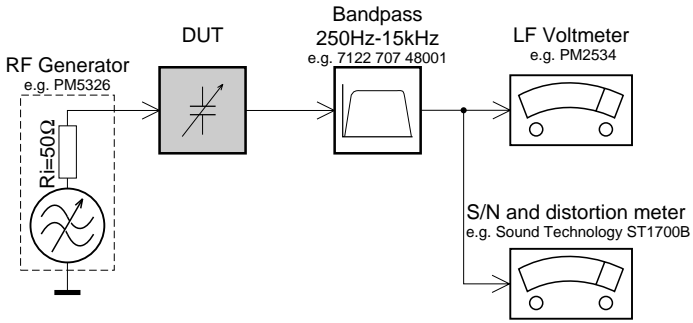
Video bandwidth	: 6MHz
Amplitude output	: 1.0Vpp(+10/-15%)
S/N luminance	: \geq 45dB
Chroma/Luminance delay	: \leq 80ns

MP3 - CD :

Bit rates	: 32K - 320Kps
Sampling rates	: 32KHz/44.1KHz/48KHz

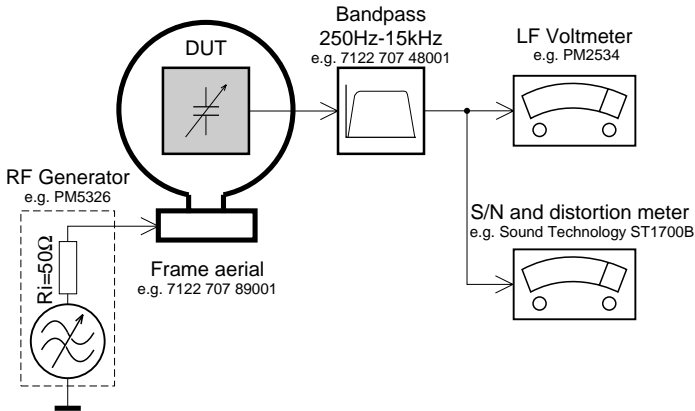
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

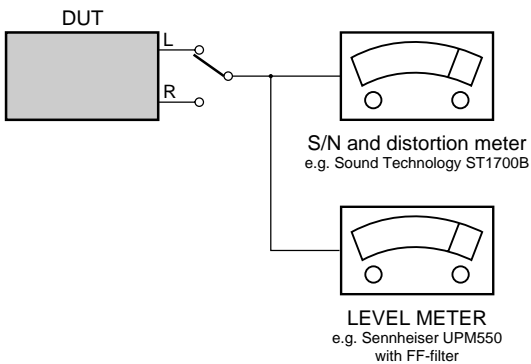
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

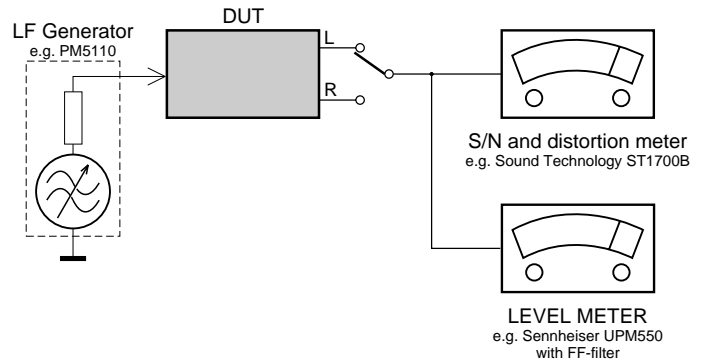
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

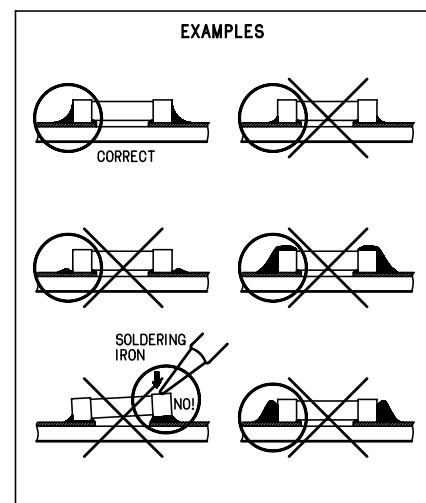
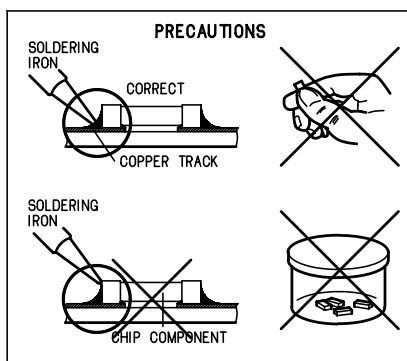
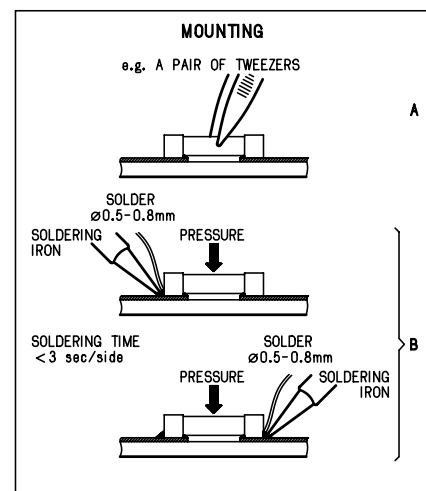
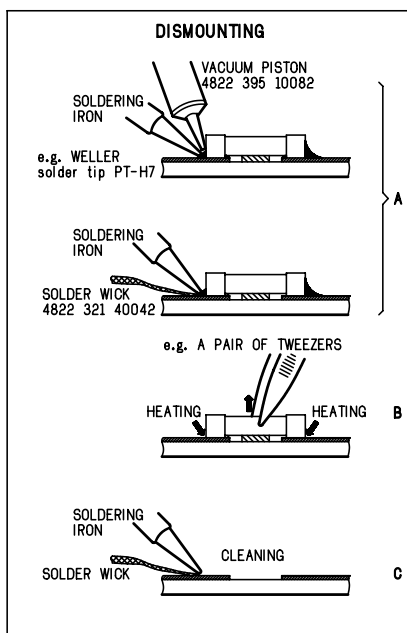
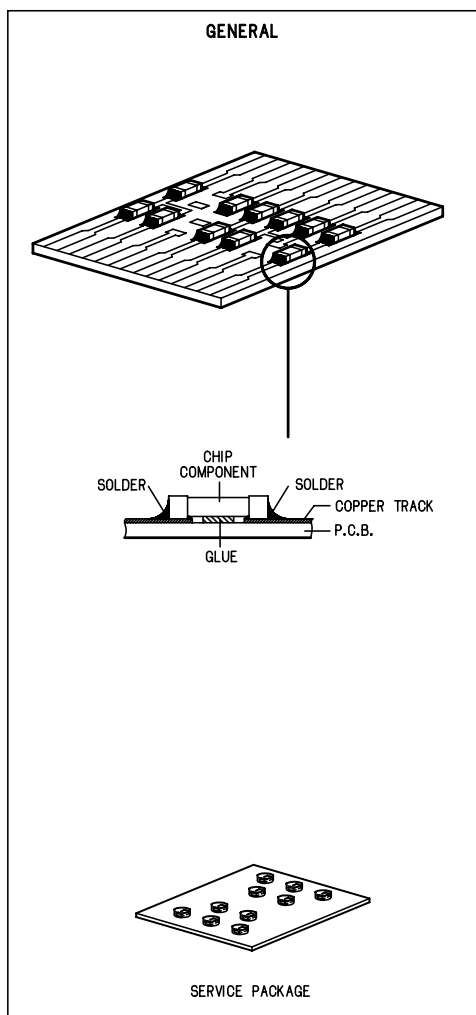
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ...	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1M Ω)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS



(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).

Unvorsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

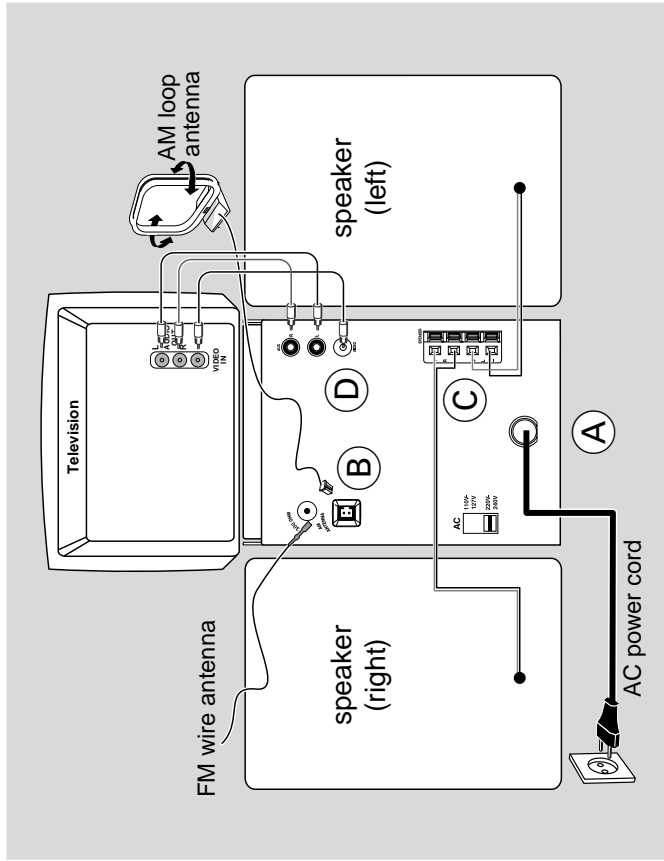
(DK) Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

PREPARATIONS AND CONTROLS

Preparations



- Position the antenna as far as possible from a TV, VCR or other radiation source.

FM Antenna

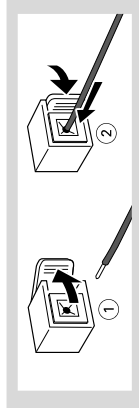


- For better FM stereo reception, connect an outdoor FM antenna to the FM AERIAL (FM ANTENNA) terminal.

Speakers Connection

Front Speakers

Connect the speaker wires to the SPEAKERS terminals, right speaker to "RIGHT" and left speaker to "LEFT", colored (marked) wire to "+" and black (unmarked) wire to "-".



Rear connections

The type plate is located at the rear of the system.

A Power

- Before connecting the AC power cord to the wall outlet, ensure that the following are done;
 - If your system is equipped with a Voltage Selector, set the VOLTAGE SELECTOR to the local power line voltage.
 - All other connections have been made.

WARNING!

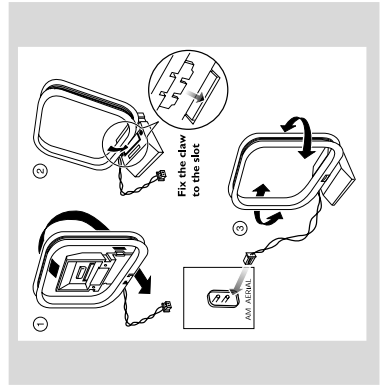
- For optimal performance, use only the original power cable.
- Never make or change any connections with the power switched on.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it (not available for all versions).

B Antennas Connection

Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

AM Antenna



Preparations

Optional connection

The optional equipment and connecting cords are not supplied. Refer to the operating instructions of the connected equipment for details.

Connecting other equipment to your system

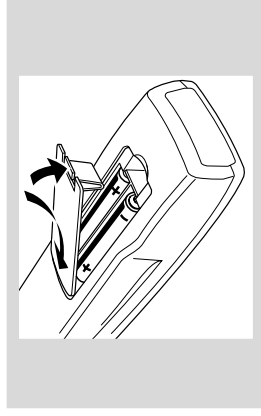
Connect the audio left and right OUT terminals of a TV/VCR, Laser Disc player, DVD player or CD Recorder to the **AUX** terminals.

Note:

- / output (a single audio out terminal), connect it to the **AUX** left terminal. Alternatively, you can use a "single to double" cinch cable (the output sound still remain mono).

Inserting batteries into the Remote Control

Insert two batteries (Type R06 or AA) into the remote control with the correct polarity as indicated by the + and - symbols inside the battery compartment.



CAUTION!

- Remove batteries if they are exhausted or not to be used for a long time.
- Do not use old and new or different types of batteries in combination.
- Batteries contain chemical substances, so they should be disposed off properly.

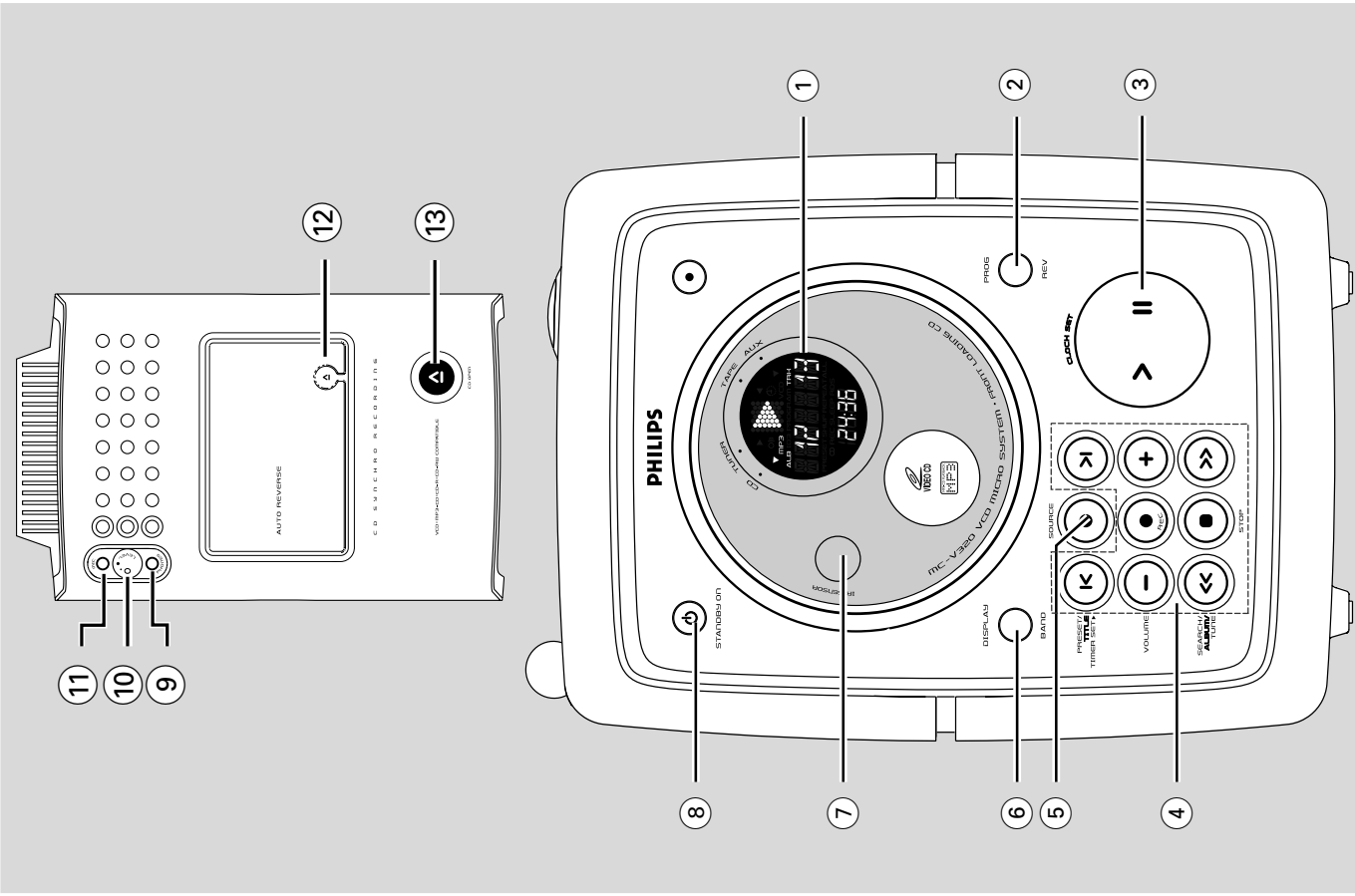
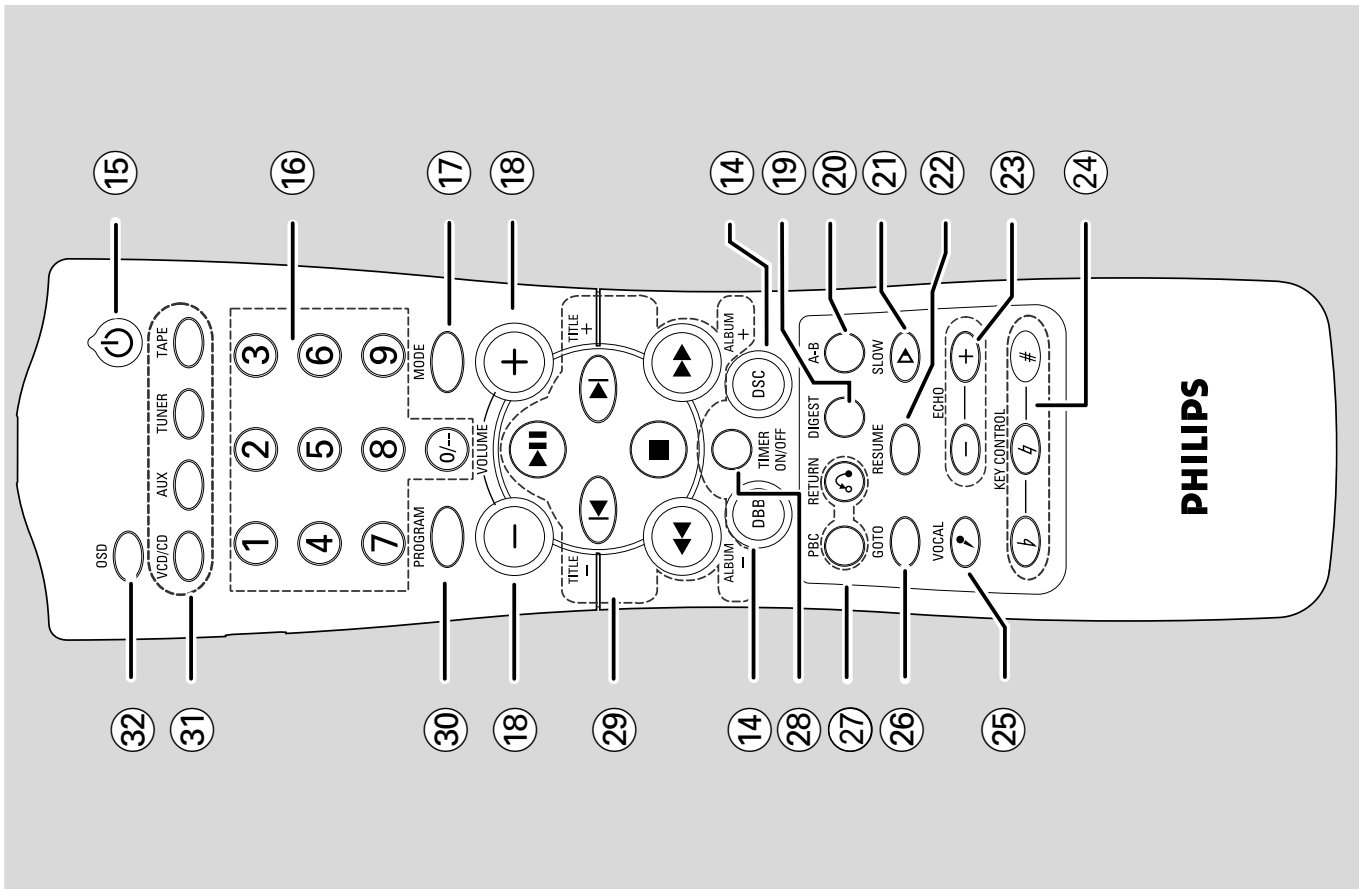
D Video Out Connection

Connect the **VIDEO OUT (CVBS)** terminal at the rear of the system to the TV or VCR VIDEO IN for viewing or recording.

Note:

- To avoid magnetic interference with the picture on your TV, do not position the front speakers too close to the TV.

PREPARATIONS AND CONTROLS



Controls

Controls on the system and remote control

- ① **Display**
— shows the status of the system.
- ② **PROG/REV**
for VCD/ CD/ MP3 programmes tracks and reviews the programme.
for TUNER programmes tuner stations manually or automatically.
for TAPE sets tape reverse mode
- ③ **CLOCK SET > II**
for CLOCK set the clock function.
for VCD/ CD/ MP3 starts or interrupts CD playback
for TAPE starts the tape playback
- ④ **Mode Selection VOLUME (-/+)**
— adjusts the volume level.
— on the system only - adjusts the hour and minutes for the clock/timer functions.
PRESET/ TIMER SET | < / > | (TITLE -/+)
for TUNER selects a preset radio station.
for VCD/ CD/ MP3 skips to the beginning of a current track/ previous/ subsequent track
..... select next or previous menu
for Timer (| < only) to set timer under standby
SEARCH/ TUNE << / >> (ALBUM -/+)
for TUNER Tune to a station
for VCD/ CD fast searches back and forward within a track
for MP3 ALBUM select.
for TAPE fast rewind/ wind tape
- STOP ■**
for VCD/ CD/ MP3 stops VCD/ CD/ MP3 playback or erase a VCD/ CD/ MP3 programme.
for TUNER stops programming
for TAPE stops tape playback/ recording.
REC ● starts recording.

- ⑤ **SOURCE ●**
— selects the respective sound source for CD/ TUNER/ TAPE /AUX.
- ⑥ **DISPLAY-BAND**
for TUNER change the tuner radio band.(FM/ MW)
- for VCD/ CD/ MP3 change the CD display mode
- for TAPE select tape direction
- ⑦ **IR SENSOR**
— infrared sensor for remote control.
- ⑧ **STANDBY ON ⏻**
— switches the system to standby.
- ⑨ **PHONES** - connects to headphone.
- ⑩ **LEVEL (mic)**
— to adjust the mixing level for karaoke or microphone recording.
- ⑪ **MIC**
— to connect microphone jack.
- ⑫ **▲**
— open/ close the cassette door.
- ⑬ **CD OPEN ▲**
— open the CD door.
- ⑭ **INTERACTIVE SOUND controls:**
DBB (Dynamic Bass Boost) enhances the bass.
DSC (Digital Sound Control) selects sound characteristics: CLASSIC/ JAZZY/ ROCK/ OPTIMAL.
- ⑮ **⏻**
— to switch the system to Standby mode.
- ⑯ **DIGIT 0/-- -- 9**
(numbers consisting more than two or three figures must be Press & hold 0/--)
— to select a track number for CD/VCD/MP3-CD.
— to select tuner preset.
- ⑰ **MODE REPEAT SHUFFLE**
— REPEAT repeats a track/ CD programme/ entire CD.
— SHUFFLE plays CD tracks in random order.

PREPARATIONS AND CONTROLS

Controls

- ⑱ **VOLUME (-/+)**
— to increase or decrease the volume.
— adjusts the hour and minutes for the dock/ times junctions.
- ⑲ **DIGEST**
— to scan through a VCD or a specific track.
- ⑲ **A - B**
— to playback a certain scene or passage of a CD/ VCD repeatedly.
- ⑲ **SLOW ▽**
— to watch the VCD at a slower speed.
- ⑲ **RESUME**
— to continue playback again from where you have stopped (for VCD with PBC switched off).
- ⑲ **ECHO -/+**
— to adjust the VCD echo level for karaoke after inserted the microphone.
- ⑲ **KEY CONTROL (b h #)**
— to change the VCD key tone level to suit your vocal range.
b to decrease the key tone level.
h to restore the key tone level to original setting.
- ⑲ **#** to increase the key tone level.
- VOCAL ♪**
— to fade out the original vocal from a Karaoke VCD or to switch between mono or stereo mode during audio disc playback.
- ⑲ **GOTO**
— select time to begin playback within track.
- ⑲ **VCD Operation (for VCD version 2.0 only)**
PBC (PLAYBACK CONTROL)
— to switch on or off PBC mode.
- ⑲ **RETURN ↺**
— to return to the previous MENU level during playback (for VCD with PBC switched on).
- ⑲ **TIMER ON / OFF**
— activates/deactivates the timer function.
- ⑲ **VOLUME (-/+)**
for CD/VCD/MP3-CD to start or interrupt playback.
for TAPE to start playback.
◀ / ▶ (ALBUM - / +)
for MP3-CD only to select previous/next Album
for CD/VCD to search backward/ forward.
for TUNER to tune to a lower or higher radio frequency.
for TAPE to rewind or fast forward.
- STOP ■**
for CD/VCD/MP3-CD to stop playback or to clear a programme.
for TAPE to stop playback or recording.
..... to reset tape counter number.
- ◀ / ▶ (TITLE - / +)**
for MP3-CD only to select previous/next Title.
for VCD only to select next or previous MENU or VCD track during playback (for VCD with PBC switched on).
- for CD/VCD to skip to the previous or next track.
for TUNER to select a preset radio station.
- ⑳ **PROGRAM**
for CD/VCD/MP3-CD to programme disc tracks.
for TUNER to programme preset radio stations manually or automatically
- ㉑ **VCD/ CD**

PREPARATIONS AND CONTROLS

Controls

- to select disc (this system can playback normal CD/VCD/MP3-CD format disc).
- to select corresponding video output for NTSC or PAL system of your TV set (except Multi-system TV).
- TUNER**
- to select tuners mode.
- TAPE**
- to select tape deck mode.
- AUX / (CDR/DVD)**
- to select a connected external source : CDR/DVD or AUX (auxiliary) mode.
- OSD (ON SCREEN DISPLAY)**
- to switch on or off the on screen display on the TV.

Notes for remote control:

- First, select the source you wish to control by pressing one of the source select keys on the remote control (VCD/ CD or TUNER, for example).
- Then select the desired function (> II, I<, > I for example).

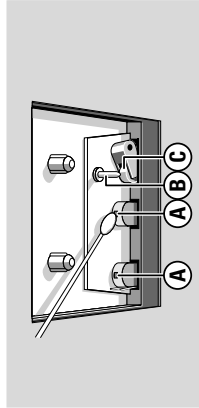
TROUBLESHOOTING

Troubleshooting

RADIO RECEPTION	<ul style="list-style-type: none"> - If the signal is too weak, adjust the antenna or connect an external antenna for better reception. - Increase the distance between the Micro HiFi System and your TV or VCR.
TAPE OPERATION / RECORDING	<ul style="list-style-type: none"> - Clean deck parts, see "Maintenance". - Use only normal (IEC I) tape for recording.
Recording or playback cannot be made.	<ul style="list-style-type: none"> - Apply a piece of adhesive tape over the missing "CHECK TAPE" is displayed.
"CHECK TAPE" is displayed.	<ul style="list-style-type: none"> - Remove and reconnect the AC power plug and switch on the system again.
The tape deck door cannot open.	<ul style="list-style-type: none"> - Remove and reconnect the AC power plug and switch on the system again.
GENERAL	
The system does not react when buttons are pressed.	<ul style="list-style-type: none"> - Remove and reconnect the AC power plug and switch on the system again.
Sound cannot be heard or is of poor quality.	<ul style="list-style-type: none"> - Adjust the volume. - Disconnect the headphones. - Check that the speakers are connected correctly. - Check if the stripped speaker wire is clamped.
The left and right sound outputs are reversed.	<ul style="list-style-type: none"> - Check the speaker connections and location.
The remote control does not function properly.	<ul style="list-style-type: none"> - Select the source (CD or TUNER, for example) before pressing the function button (▶ ◀ ▶). - Reduce the distance between the remote control and the system. - Insert the battery with its polarities (+/- signs) aligned as indicated. - Replace the battery. - Point the remote control directly toward IR sensor on the front of the system.
The timer is not working.	<ul style="list-style-type: none"> - Set the clock correctly. - Press TIMER ON / OFF to switch on the timer. - If a recording is in progress, stop the recording.
The Clock/Timer setting is erased.	<ul style="list-style-type: none"> - Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.

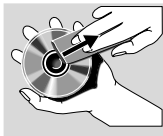
Maintenance

- Cleaning the Heads and the Tape Paths**
- To ensure good recording and playback quality, clean the heads (A), the capstan(s) (B), and pressure roller(s) (C) after every 50 hours of tape operation.
- Caution: Do not rotate the heads during cleaning.**
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
 - You can also clean the heads by playing a cleaning tape once.



- Demagnetising the heads**
- Use a demagnetising tape available at your dealer.

- Cleaning the Cabinet**
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.
- Cleaning Discs**
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out.
 - Do not use solvents such as benzene, thinner, commercially available cleaners, or antistatic spray intended for analogue records.



- Cleaning the disc lens**
- After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

Troubleshooting

WARNING
Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

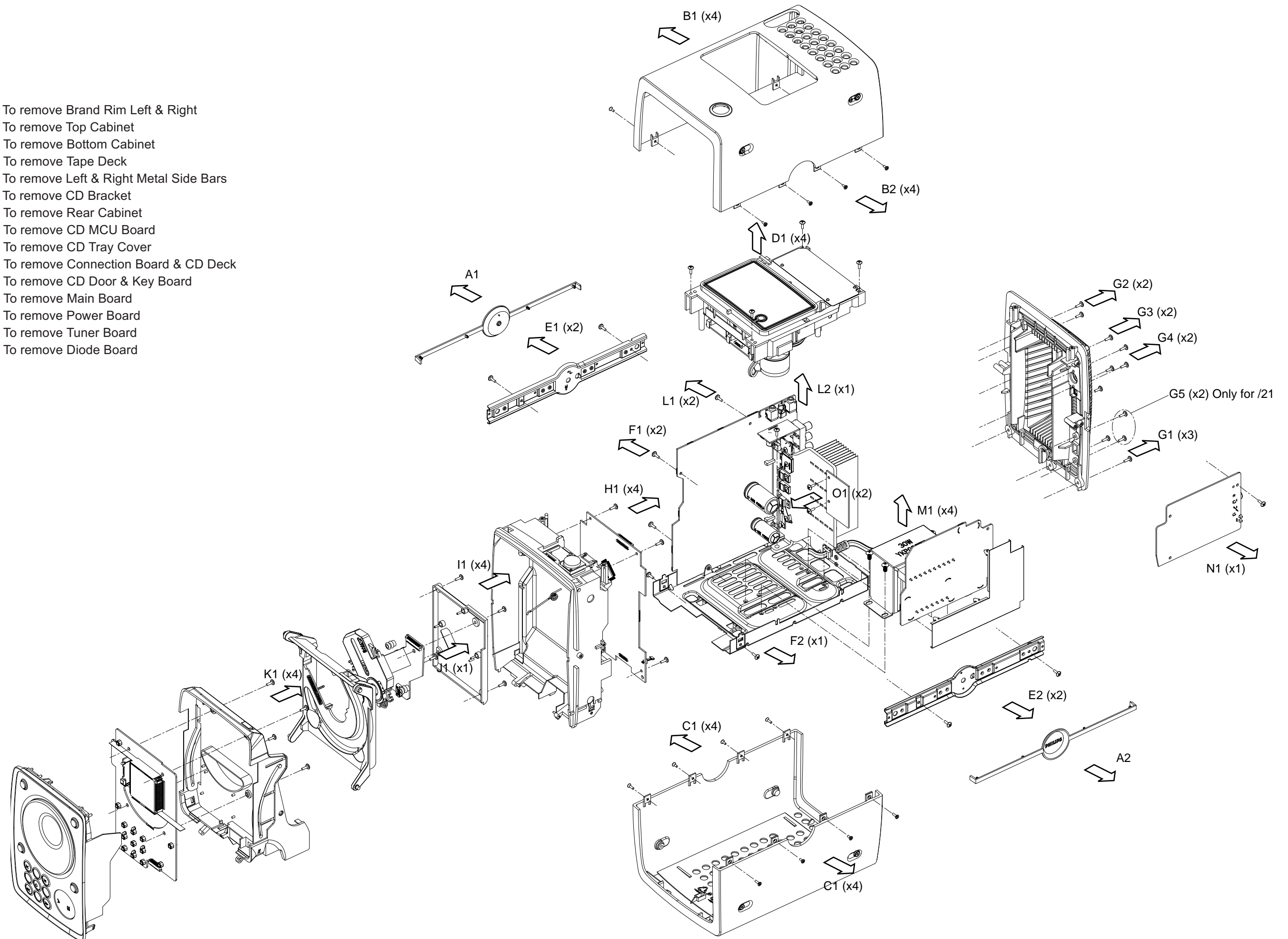
If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to remedy a problem by following these hints, consult your dealer or service center.

Problem	Solution
CD OPERATION	<ul style="list-style-type: none"> - Insert a disc. - Check if the disc is inserted upside down. - Wait until the moisture condensation at the lens has cleared. - Replace or clean the disc, see "Maintenance". - Use a finalised CD-RW or CD-R.
No picture on TV screen.	<ul style="list-style-type: none"> - Connect the cable between the system and TV.
No colour on TV.	<ul style="list-style-type: none"> - Change the system to the respective PAL or NTSC setting.
Cannot adjust the TV system to PAL or NTSC.	<ul style="list-style-type: none"> - Remove the MP-3 CD from disc tray

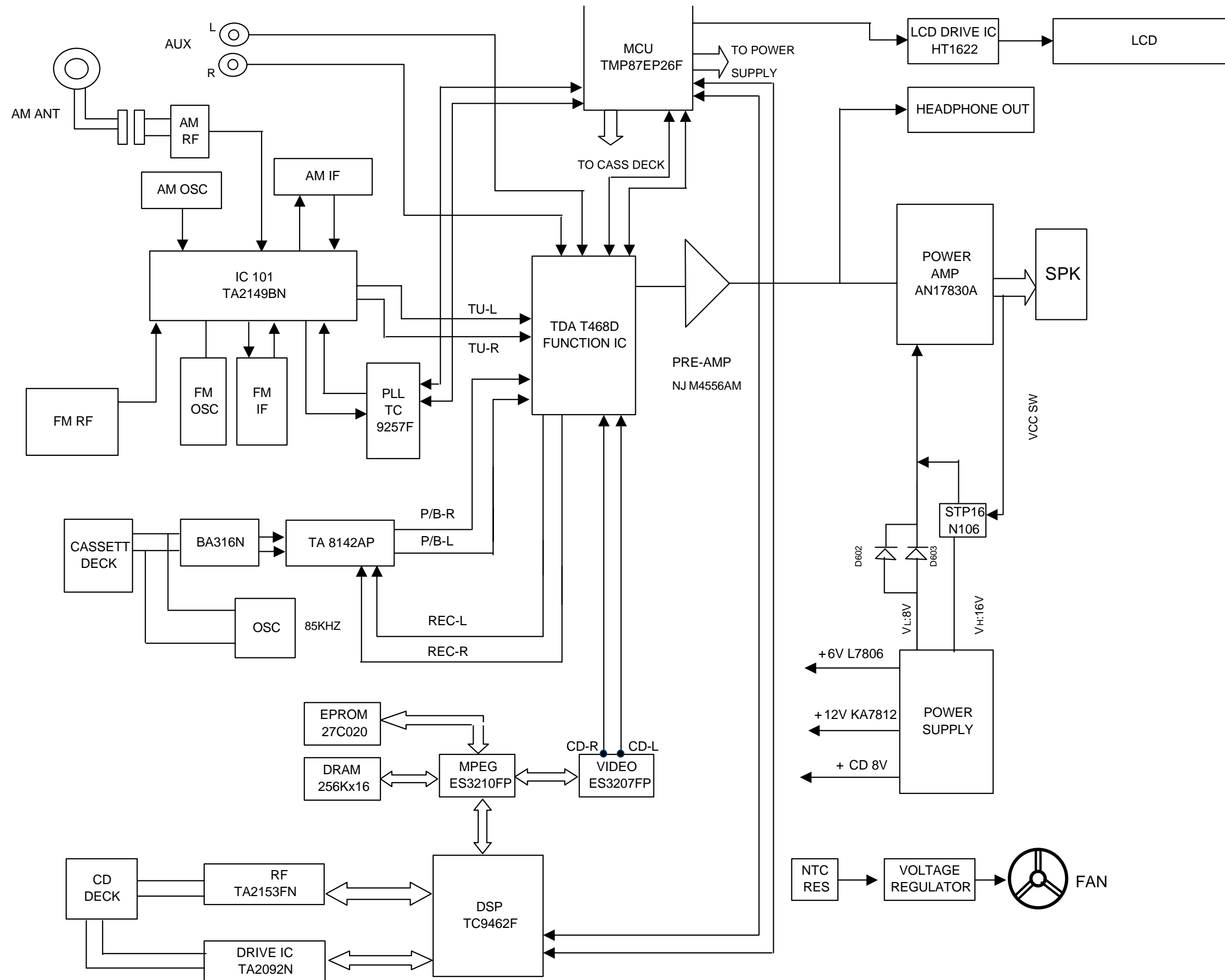
TROUBLESHOOTING

DISASSEMBLY INSTRUCTIONS

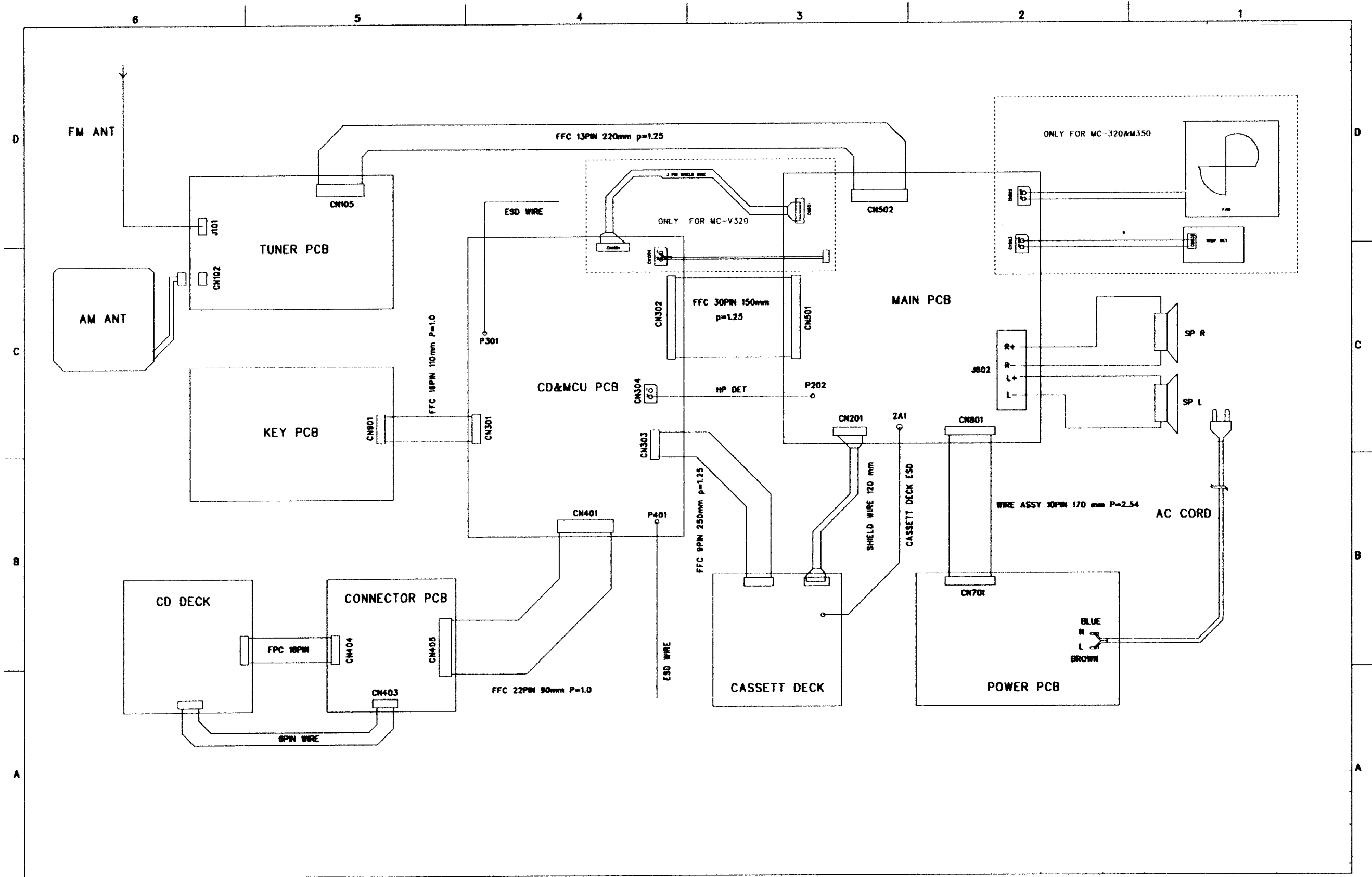
- A. To remove Brand Rim Left & Right
- B. To remove Top Cabinet
- C. To remove Bottom Cabinet
- D. To remove Tape Deck
- E. To remove Left & Right Metal Side Bars
- F. To remove CD Bracket
- G. To remove Rear Cabinet
- H. To remove CD MCU Board
- I. To remove CD Tray Cover
- J. To remove Connection Board & CD Deck
- K. To remove CD Door & Key Board
- L. To remove Main Board
- M. To remove Power Board
- N. To remove Tuner Board
- O. To remove Diode Board



SET BLOCK DIAGRAM



SET WIRING DIAGRAM



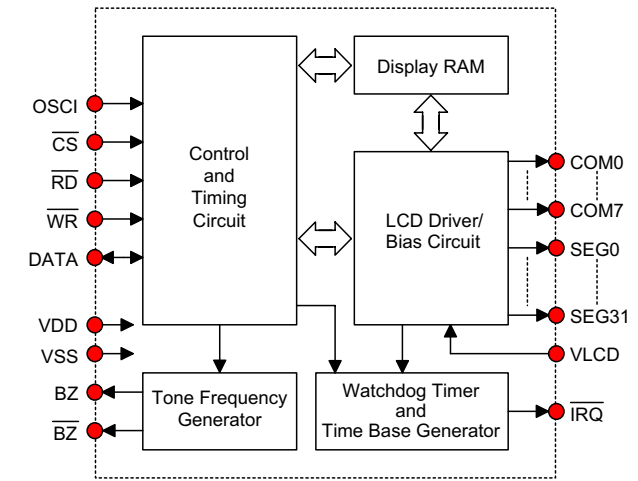
KEY BOARD

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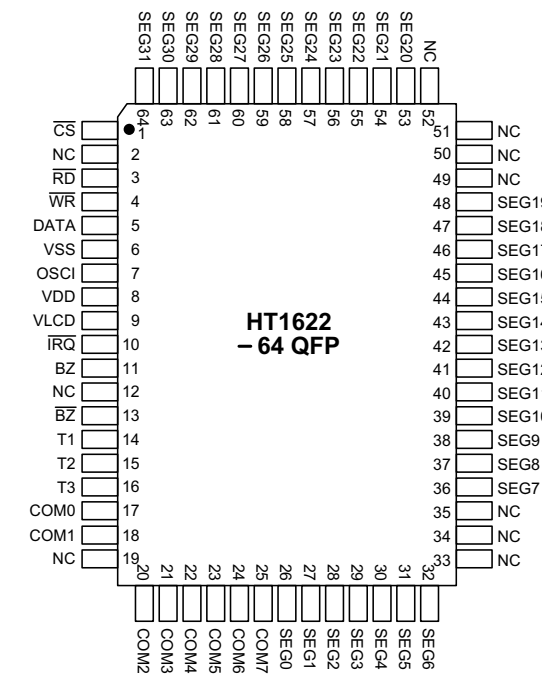
IC Block Diagram	8-1
Circuit Diagram	8-2
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Electrical parts list	8-4



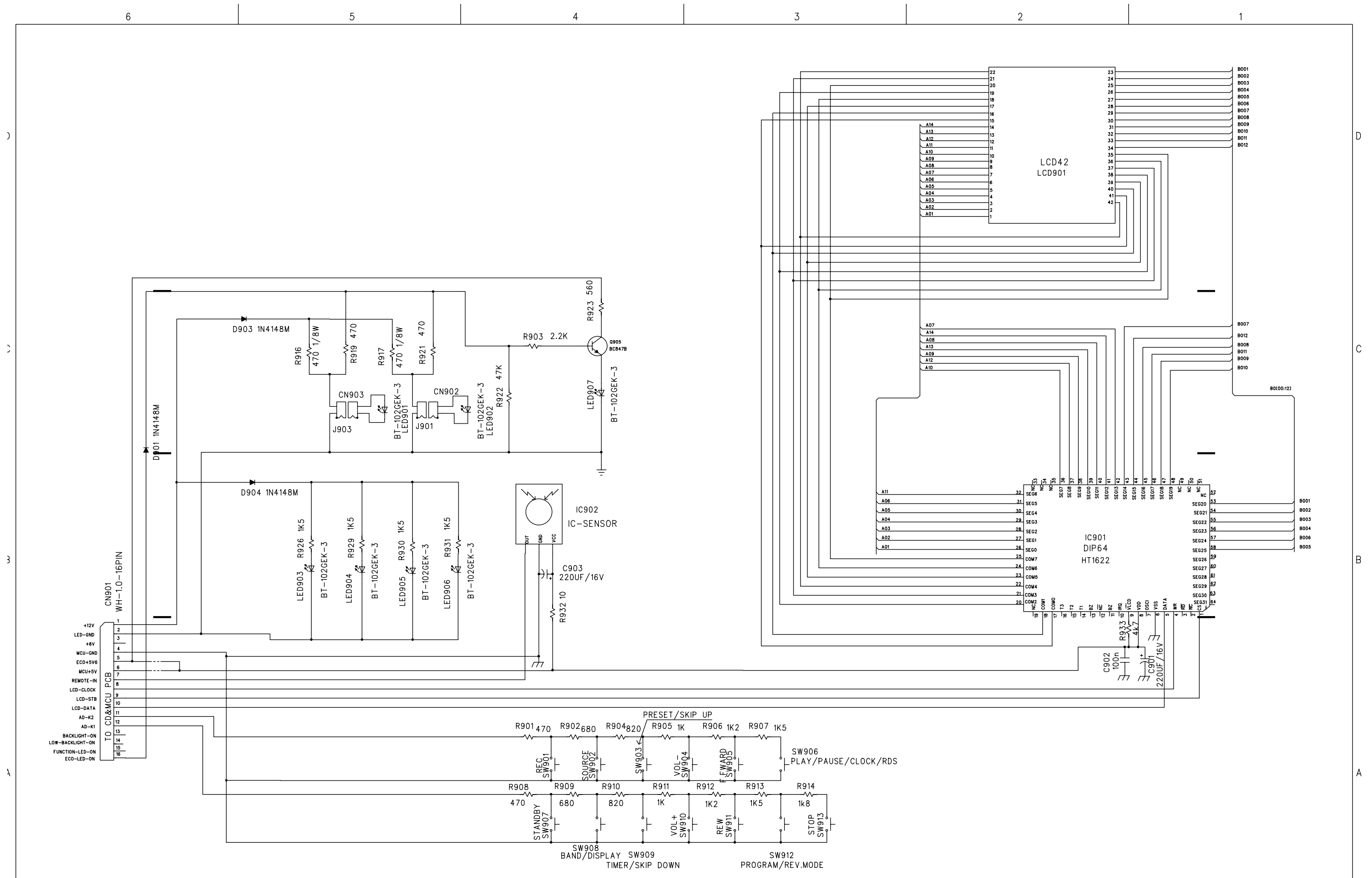
Block Diagram



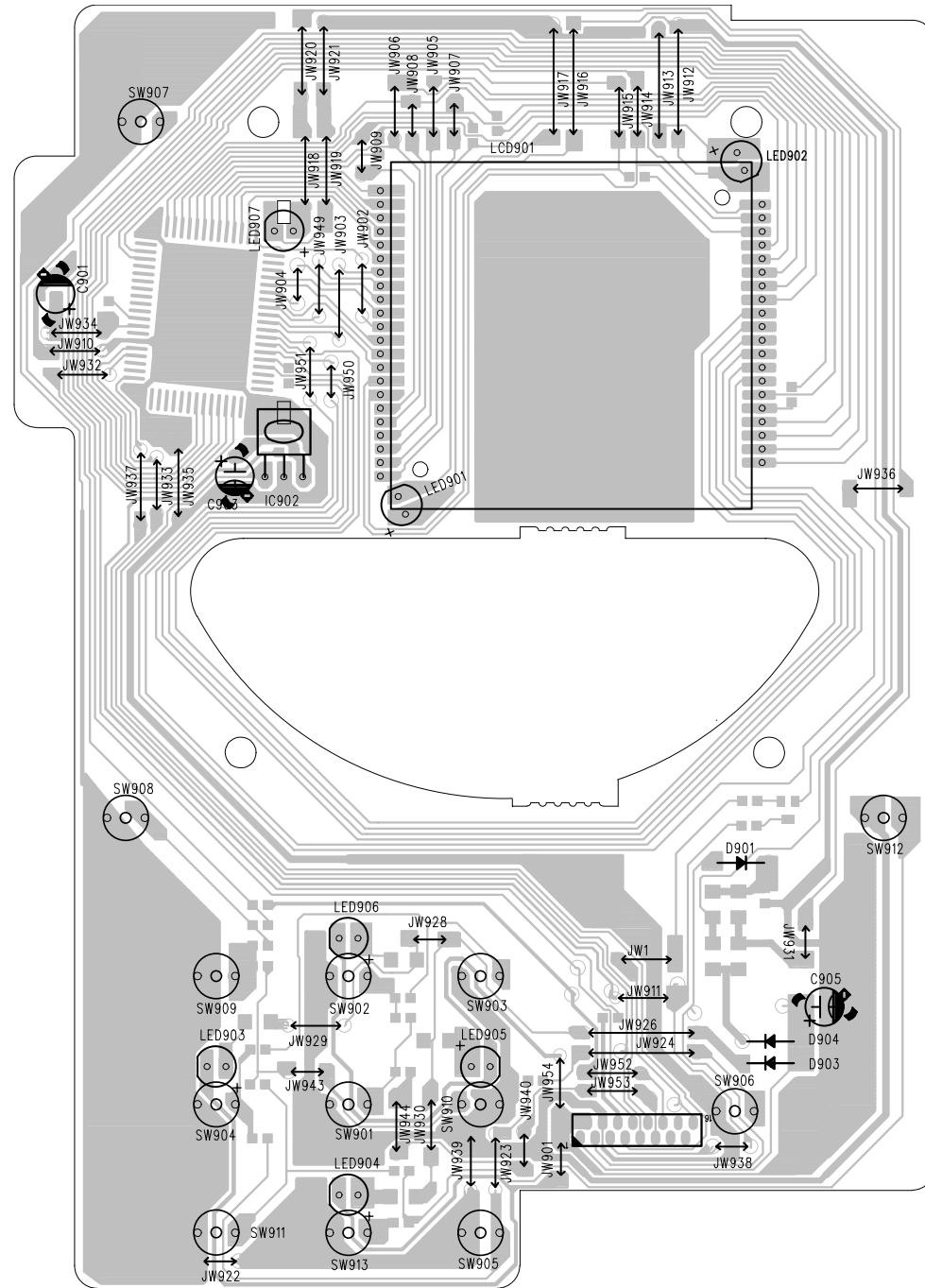
Pin Assignment



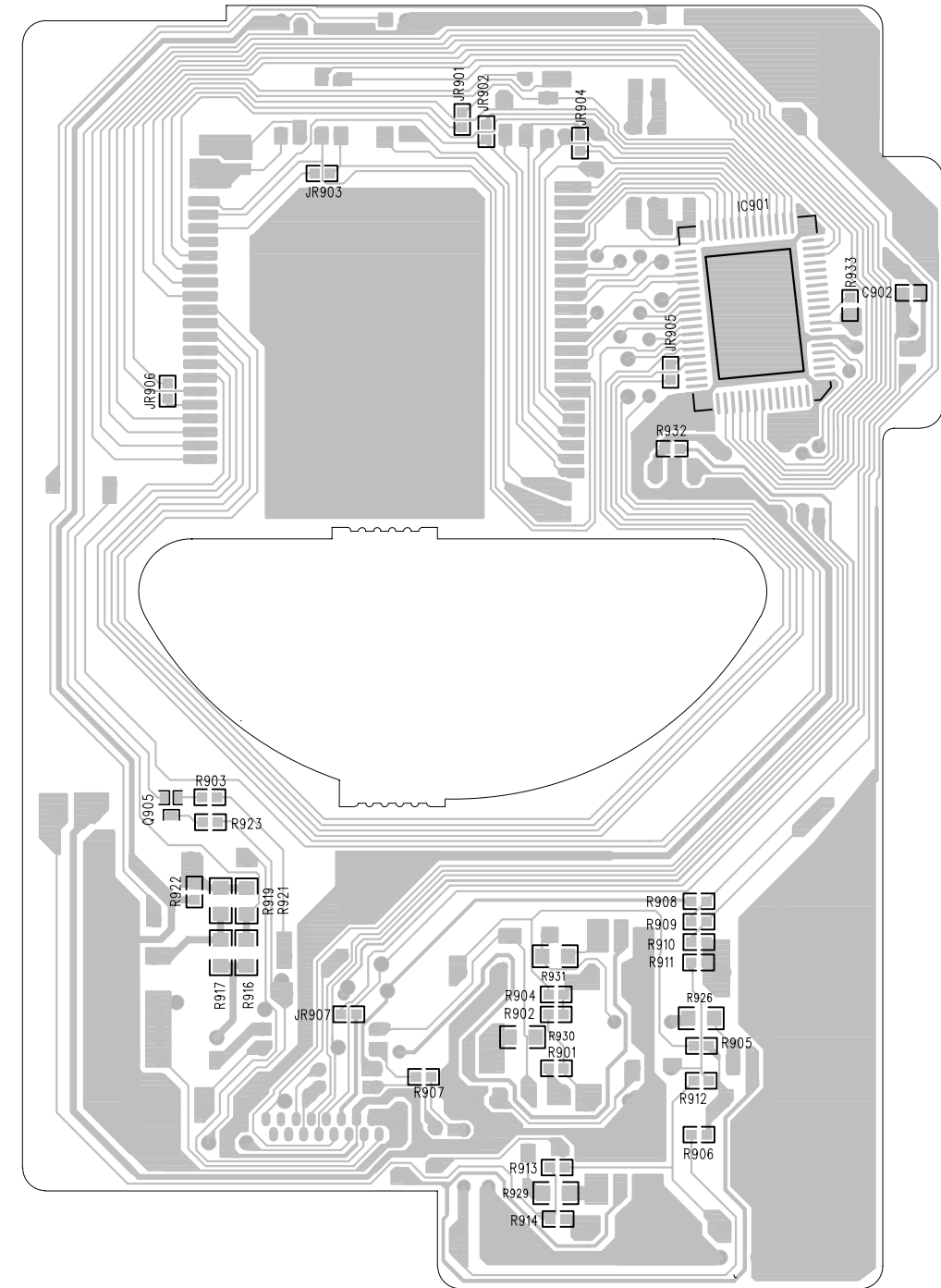
CIRCUIT DIAGRAM - FRONT BOARD



LAYOUT DIAGRAM - FRONT BOARD COMPONENT SIDE



LAYOUT DIAGRAM - FRONT BOARD SMD SIDE



ELECTRICAL PARTSLIST - KEY BOARD**- MISCELLANEOUS -**

CN901	9965 000 18230	CONN 16P H P=1.0
LCD901	9965 000 18252	LCD MC320
LED901	9965 000 19727	LED RED
LED902	9965 000 19727	LED RED
LED903	9965 000 18304	LED BT-H203D-31 RED
LED904	9965 000 18304	LED BT-H203D-31 RED
LED905	9965 000 18304	LED BT-H203D-31 RED
LED906	9965 000 18304	LED BT-H203D-31 RED
SW901	4822 276 13775	SWITCH
SW902	4822 276 13775	SWITCH
SW903	4822 276 13775	SWITCH
SW904	4822 276 13775	SWITCH
SW905	4822 276 13775	SWITCH
SW906	4822 276 13775	SWITCH
SW907	4822 276 13775	SWITCH
SW908	4822 276 13775	SWITCH
SW909	4822 276 13775	SWITCH
SW910	4822 276 13775	SWITCH
SW911	4822 276 13775	SWITCH
SW912	4822 276 13775	SWITCH
SW913	4822 276 13775	SWITCH

- DIODES -

D901	4822 130 30621	1N4148
D903	4822 130 30621	1N4148
D904	4822 130 30621	1N4148

- IC & TRANSISTORS -

IC901	9965 000 18251	IC HT1622-64-QFP
IC902	9965 000 14545	SENSOR RECEIVER

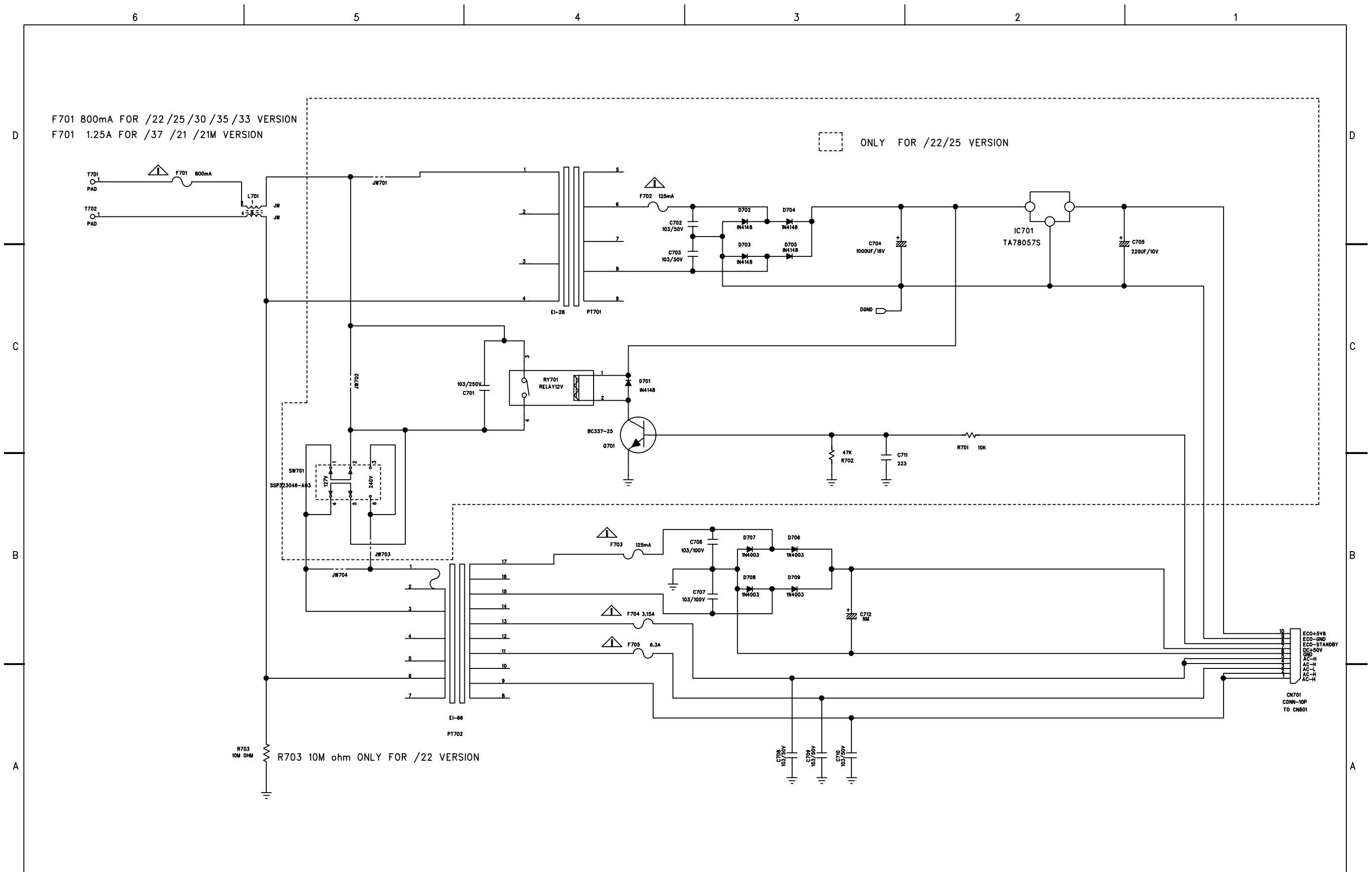
Note: Only these parts mentioned in the list are normal service parts.

POWER BOARD

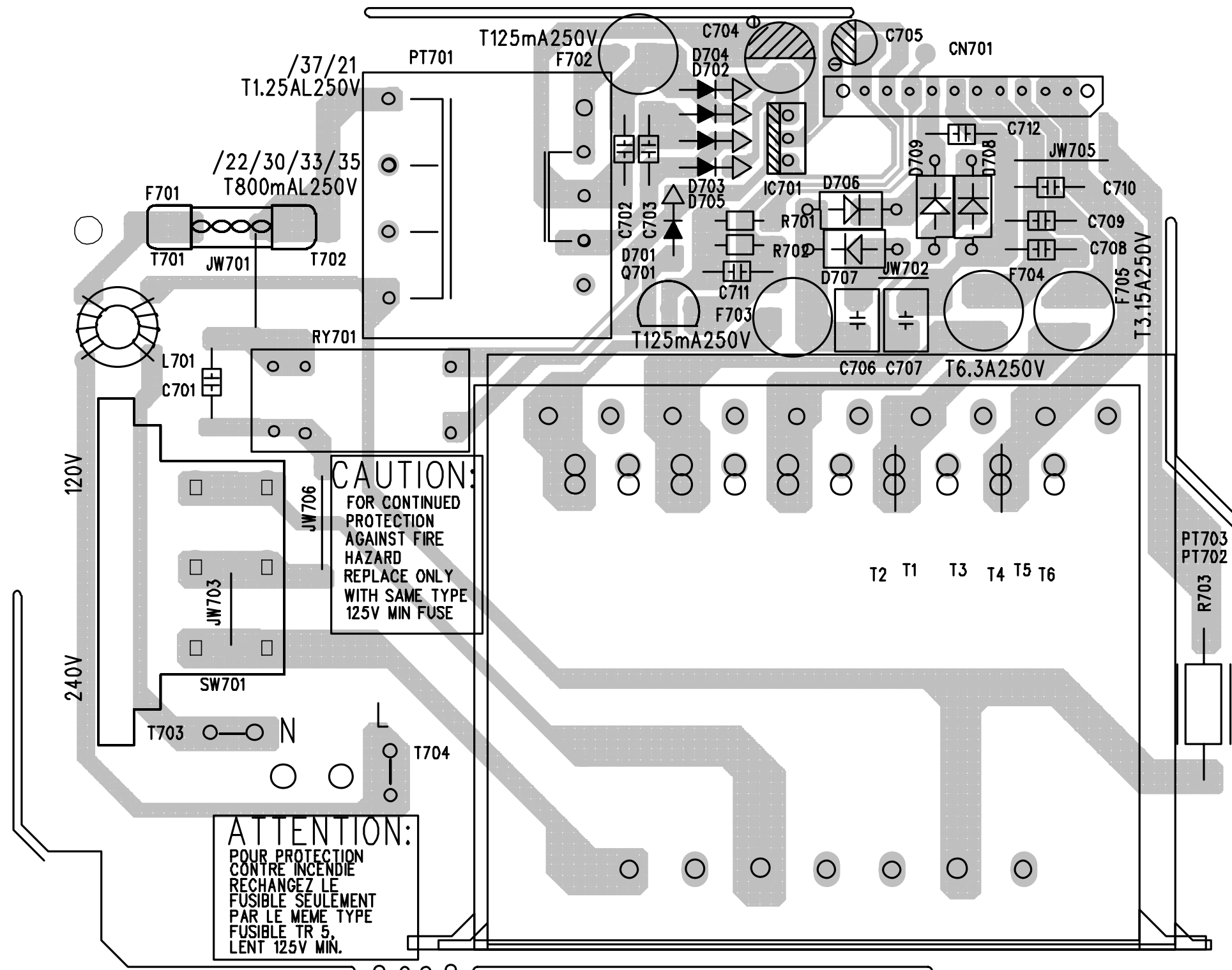
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PCB Layout	6-3
Electrical Parts List.....	6-4

CIRCUIT DIAGRAM



POWER PCB LAYOUT



ELECTRICAL PARTSLIST - POWER BOARD**- MISCELLANEOUS -**

CN701	9965 000 19724	CON BM V 10P M 2.5 EHB
F701	△ 9965 000 19725	FUSE 1.6A TSD1.6A 250V /21
F703	△ 9965 000 18246	FUSE 125MA TAPPING
F704	△ 9965 000 18247	FUSE 6.3A TAPPING
F705	△ 9965 000 18248	FUSE 3.15A TAPPING
PT702	△ 9965 000 18219	POWER TRANS. EI-66 H /21
SW701	△ 9965 000 11348	VOLTAGE SELECTOR 2P 5A
T703	9965 000 18250	CONNECTOR
T704	9965 000 18250	CONNECTOR

- COILS & FILTERS -

L701	9965 000 11379	FILTER MAINS 400μH
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- DIODES -

D706	4822 130 31878	1N4003G
D707	4822 130 31878	1N4003G
D708	4822 130 31878	1N4003G
D709	4822 130 31878	1N4003G

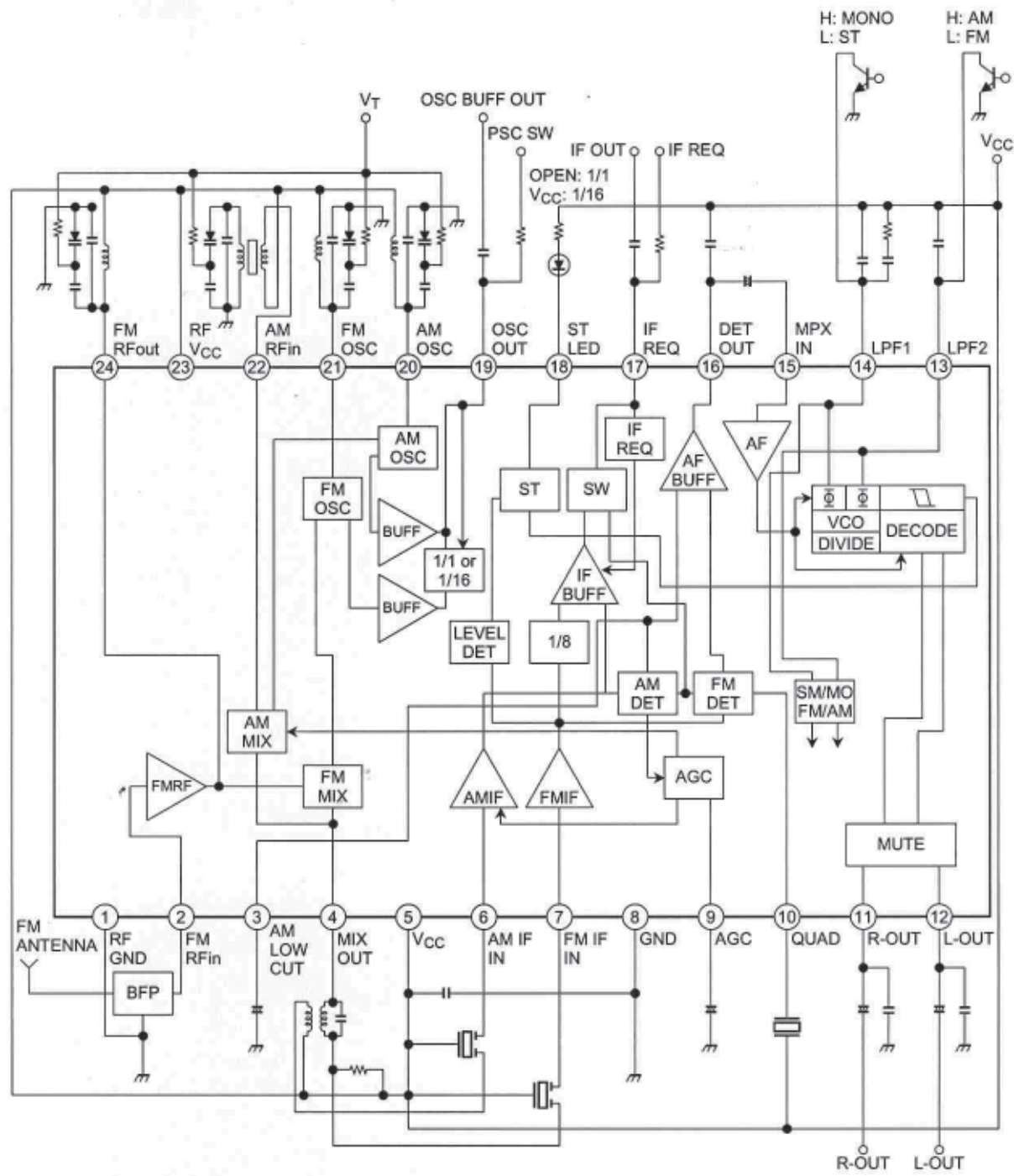
Note: Only these parts mentioned in the list are normal service parts.

TUNER BOARD

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Layout Diagram-SMD_Non Cenelec.....	7-9
Electrical parts list	7-10

**AM / FM TUNER IC
TA2149BN
BLOCK DIAGRAM**



**AM / FM TUNER IC
TA2149BN
Pins Description**

PIN No.	Characteristic	Internal Circuit	Terminal Voltage (Typ.) (V)	
			AM	FM
1	RF GND (GND for FM RF stage)	—	0	0
2	FM-RFin		0	0.8
3	AM LOW CUT		1.0	—
4	MIX OUT		3.0	3.0
5	Vcc (Vcc for AM, FM IF, MPX)	—	3.0	3.0
6	AM IF IN		2.3	2.5

AM / FM TUNER IC
TA2149BN
Pins Description

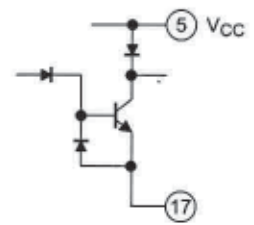
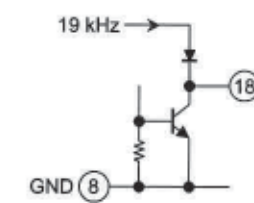
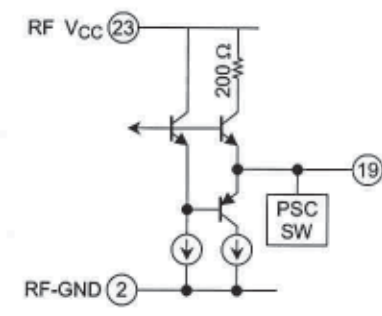
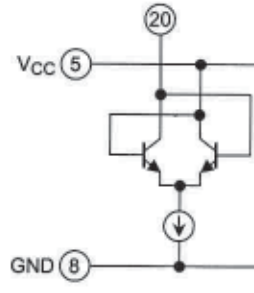
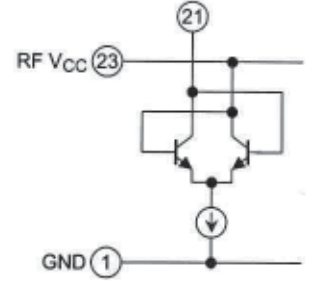
PIN No.	Characteristic	Internal Circuit	Terminal Voltage (Typ.) (V)	
			AM	FM
7	FM IF IN		3.0	3.0
8	GND (GND for AM, FM IF, MPX)	—	0	0
9	AGC		0	0
10	QUAD		2.5	2.2
11 12	R-OUT L-OUT		1.2	1.2

AM / FM TUNER IC
TA2149BN
Pins Description

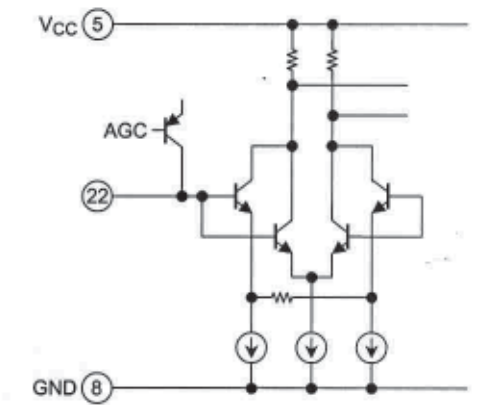
PIN No.	Characteristic	Internal Circuit	Terminal Voltage (Typ.) (V)	
			AM	FM
13	LPF2 • LPF terminal for phase detector • Bias terminal AM/FM SW circuit V ₁₃ = GND → AM V ₁₃ = OPEN → FM		0	2.2
14	LPF1 • LPF terminal for synchronous detector • VCO stop terminal V ₁₄ = GND → VCO STOP		0.7	2.4
15	MPX IN		0.7	0.7
16	DET OUT		1.0	0.9

(a) LOW → FM, HIGH → AM
(b) LOW → AM, HIGH → FM

AM / FM TUNER IC
TA2149BN
Pins Description

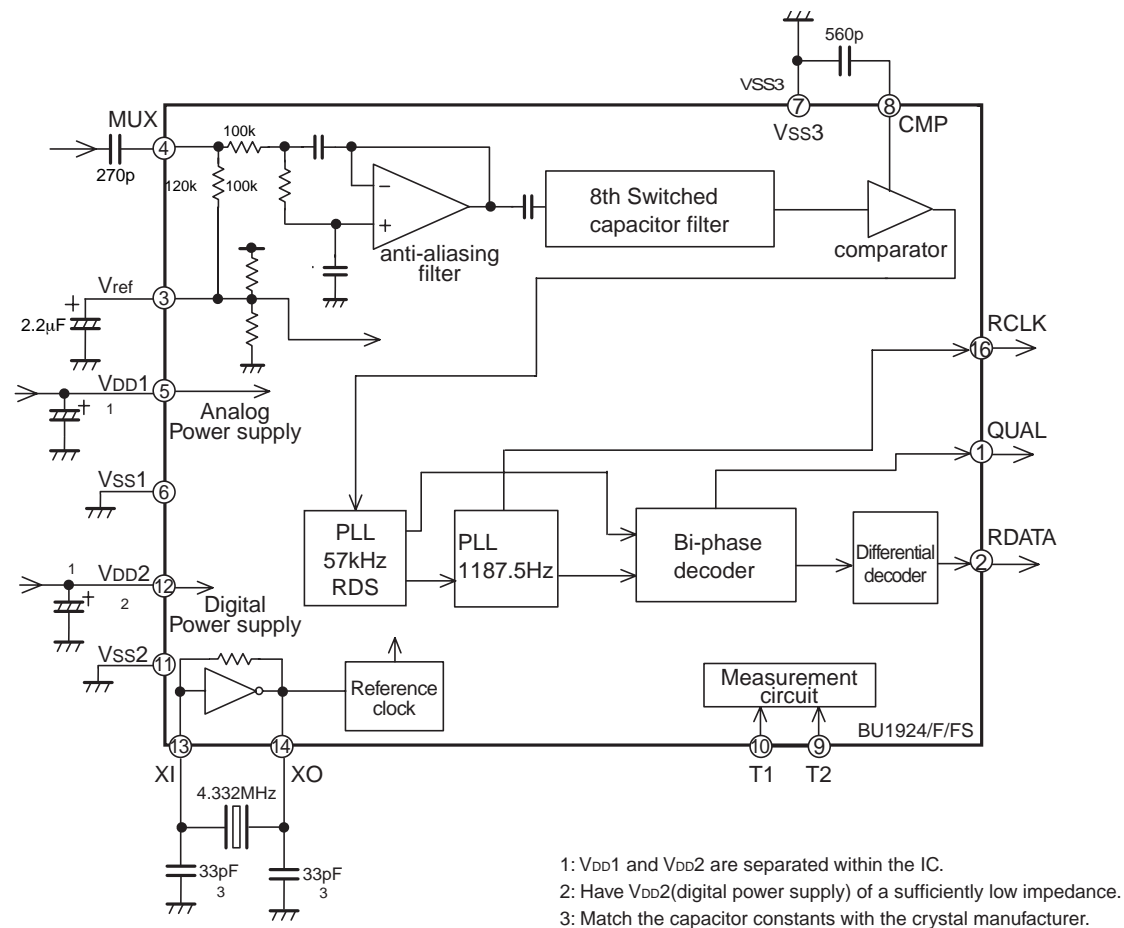
PIN No.	Characteristic	Internal Circuit	Terminal Voltage (Typ.) (V)	
			AM	FM
17	IF REQ		—	—
18	ST LED		—	—
19	OSC OUT		2.8	2.7
20	AM OSC		3.0	3.0
21	FM OSC		3.0	3.0

AM / FM TUNER IC
TA2149BN
Pins Description

PIN No.	Characteristic	Internal Circuit	Terminal Voltage (Typ.) (V)	
			AM	FM
22	AM RFin		3.0	3.0
23	RF Vcc (Vcc for FM RF stage)	—	3.0	3.0
24	FM RFout	cf. pin 1	3.0	3.0

RDS/RBDS DECODER
BU1924F

BLOCK DIAGRAM

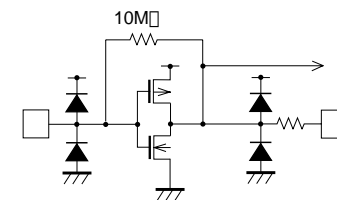


RDS/RBDS DECODER
BU1924F

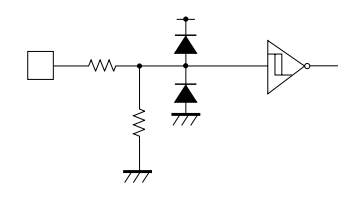
Pins Description

Pin No.	Symbol	Pin name	Functions	Input/Output type
1	QUAL	Demodulator quality	Good data: High, bad data : Low	Type C
2	RDATA	Demodulator data	Refer to output data timing	□
3	Vref	Reference voltage	1/2 V _{DD1} (refer to input/output circuits)	Type E
4	MUX	Input	Composite signal input (refer to input/output circuits)	Type D
5	V _{DD1}	Analog power supply	4.5V to 5.5V	□
6	V _{SS1}			□
7	V _{SS3}	GND	□	□
8	CMP	Comparator input	C-junction (refer to input/output circuits)	Type D
9	T2	Test input	Open or connected to ground	Type B
10	T1			
11	V _{DD2}	Digital power supply	4.5V to 5.5V	□
12	V _{SS2}			□
13	XI	Crystal oscillator	Connects to 4.332MHz oscillator (refer to input/output circuits)	Type A
14	XO			
15	(N.C.)	□	□	□
16	RCLK	Demodulator clock	1187.5Hz clock (refer to the timing diagram)	Type C

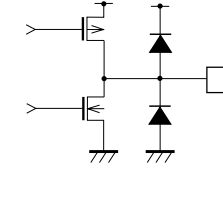
Type A



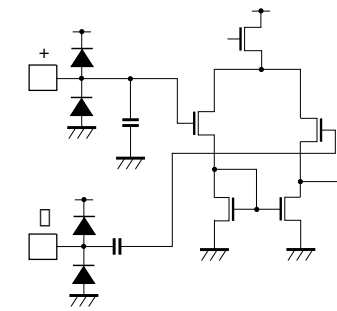
Type B



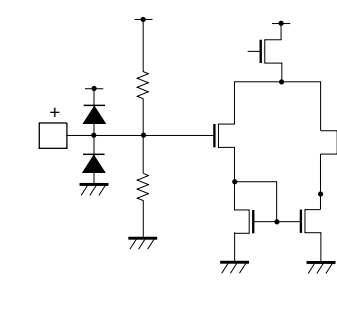
Type C



Type D

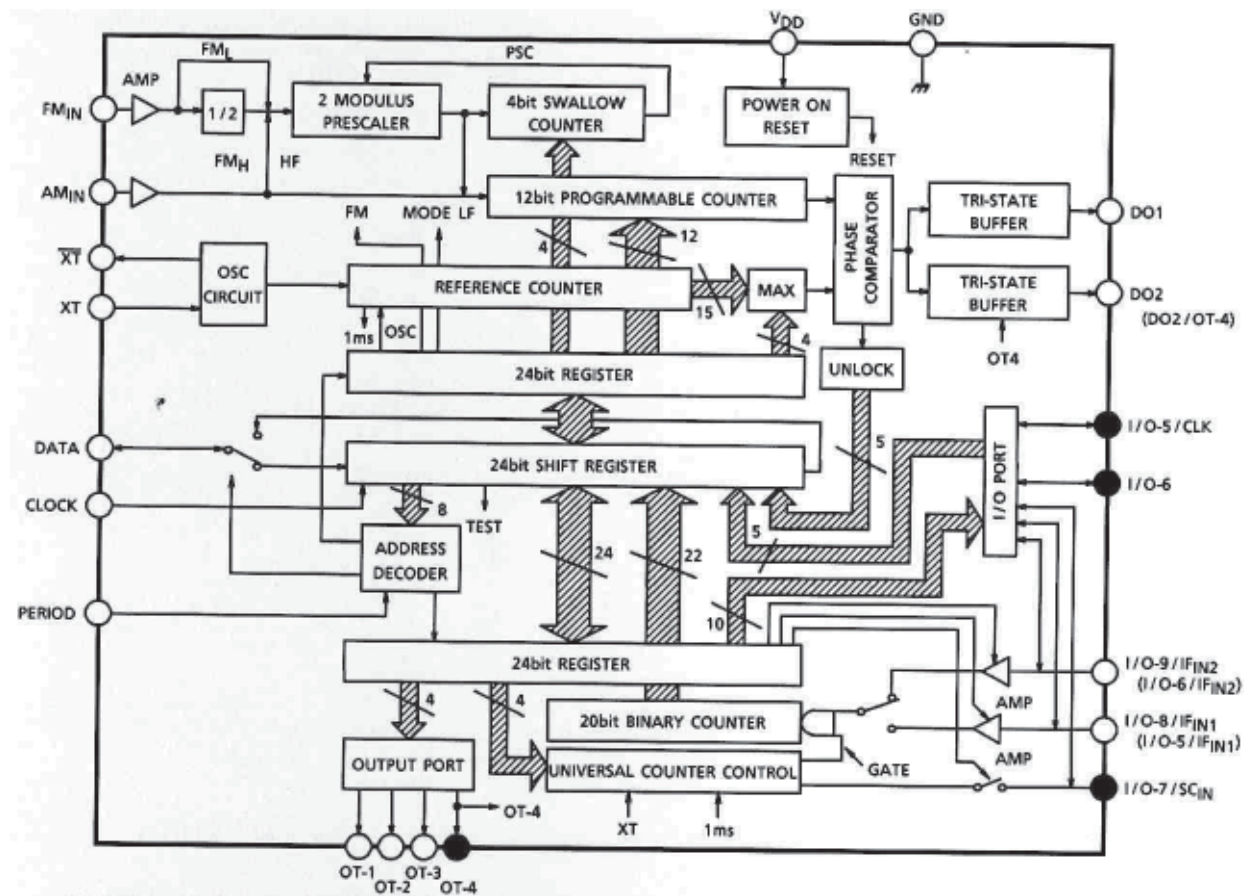


Type E



DIGITAL TUNING IC
TC9257F

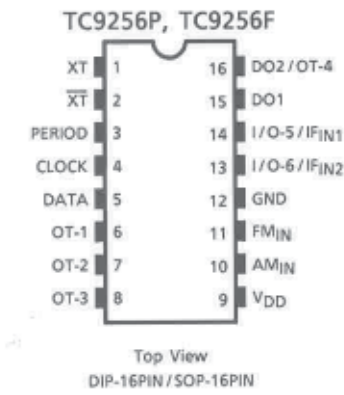
IC BLOCK DIAGRAM



(Note) ● Mark terminals are not existence in TC9256P, TC9256F.
Terminal name of TC9256P, TC9256F is shown in parentheses.
Others are common terminals.

DIGITAL TUNING IC
TC9257F

PIN CONNECTION

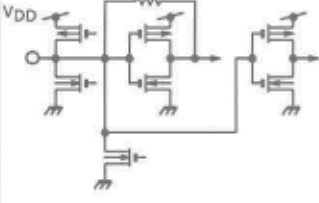
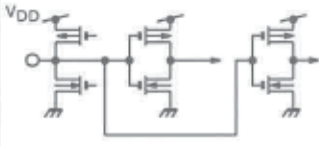
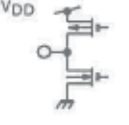


PIN FUNCTION

PIN No.	SYMBOL	PIN NAME	FUNCTION	CIRCUIT DIAGRAM
1	XT	Crystal oscillator pins	Connects 3.6MHz, 4.5MHz, 7.2MHz or 10.8MHz crystal oscillator to supply reference frequency and internal clock.	
2	\overline{XT}			
3	PERIOD	Period signal input	Serial I/O ports. These pins transfer data to and from the controller to set divisors and dividing modes, and to control the general-purpose counter and general-purpose I/O ports.	
4	CLOCK	Clock signal input		
5	DATA	Serial data input/output		
6	OT-1	General-purpose output ports	N channel open drain port pins, for such uses as control signal output. These pins are set to the OFF state when power is turned on. (On TC9256P and TC9256F, OT-4 can be used as a CMOS output pin by switching it with DO2.)	
7	OT-2			
8	OT-3			
9 (-)	OT-4			
10 (-)	I/O-5 / CLK	General-purpose I/O ports	CMOS structure allows free use of these ports for input or output. Ports are set for input when the power is turned on. On TC9257P and TC9257F, I/O-5 can be switched for use as a system clock output pin.	
11 (-)	I/O-6			
13 (10)	AM_IN	Programmable counter input	These pins input FM and AM band local oscillator signals by capacitor coupling. FM_IN and AM_IN operate at low amplitude.	
14 (11)	FM_IN			

DIGITAL TUNING IC TC9257F

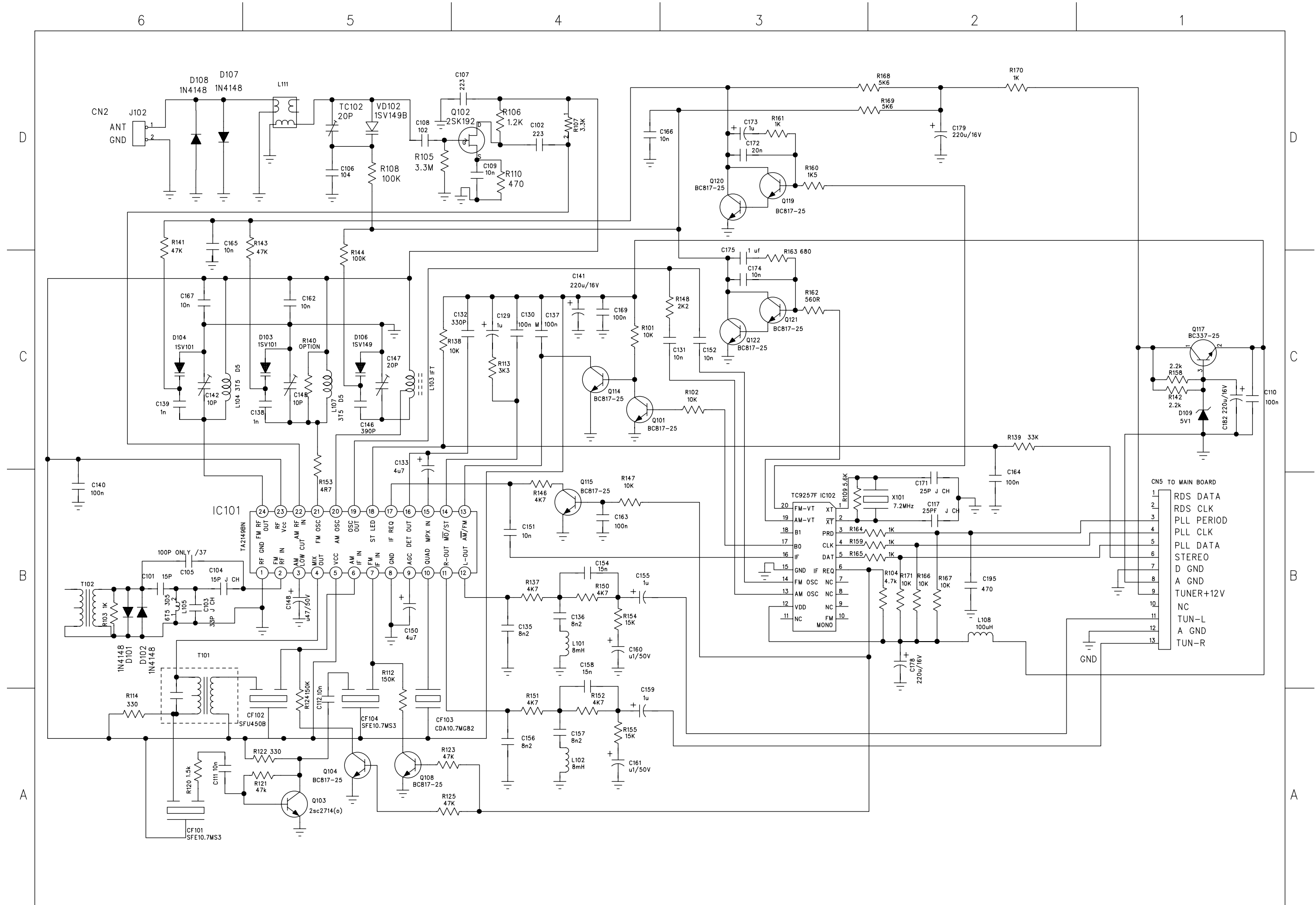
Pins Description

PIN No.	SYMBOL	PIN NAME	FUNCTION	CIRCUIT DIAGRAM
16 (13)	I/O-9 (-6) /IFIN2	General-purpose I/O ports / General-purpose counter frequency measurement input	General-purpose I/O port input/output pins. Can be switched for use as input pins to measure general-purpose counter frequencies. The frequency measurement function has such uses as measuring intermediate frequencies (IF). These pins feature built-in amps. Data are input by capacitor coupling. FM _{IN} and AM _{IN} operate at low amplitude. (Note) Pins are set for input when power is turned on.	
17 (14)	I/O-8 (-5) /IFIN1			
18 (-)	I/O-7 /SCIN	General-purpose I/O ports / General-purpose counter cycle measurement input	General-purpose I/O port input/output pin. Can be switched for use as signal input pin to measure low-frequency signal cycles. (Not available on TC9256P and TC9256F.) (Note) This pin is set for input when power is turned on.	
19 (15)	DO1*	Phase comparator output (General-purpose output ports)	These pins are for phase comparator tristate output. DO1 and DO2 are output in parallel. (On TC9256P and TC9256F, DO2 can be switched for use as a general-purpose output port.)	
20 (16)	DO2 (DO2 /OT-4)			
15 (12)	GND	Power supply pins	Applies 5.0V ± 10%.	—
12 (9)	V _{DD}			

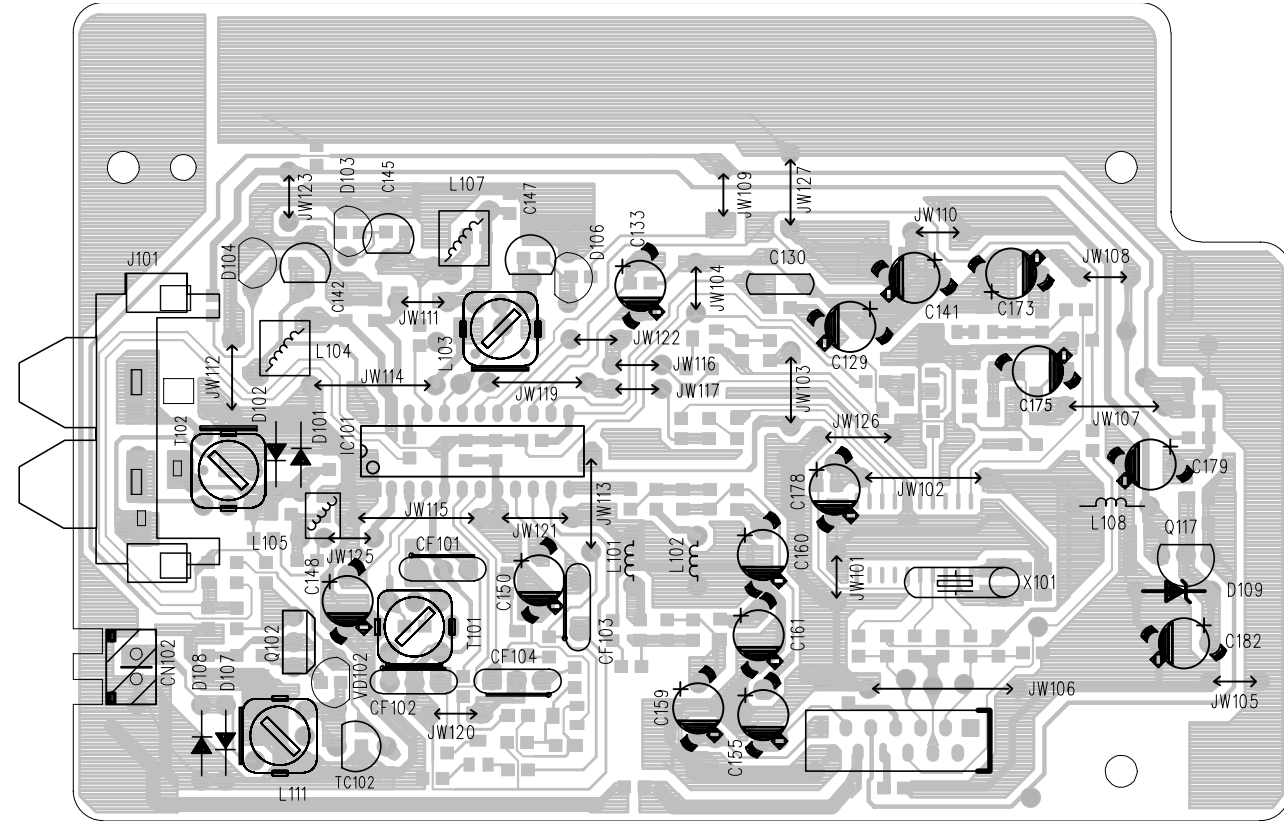
(*) Pin numbers 1~8 are common to TC9256P, TC9256F, TC9257P and TC9257F.

(*) Pin names and numbers in parentheses apply to TC9256P and TC9256F.

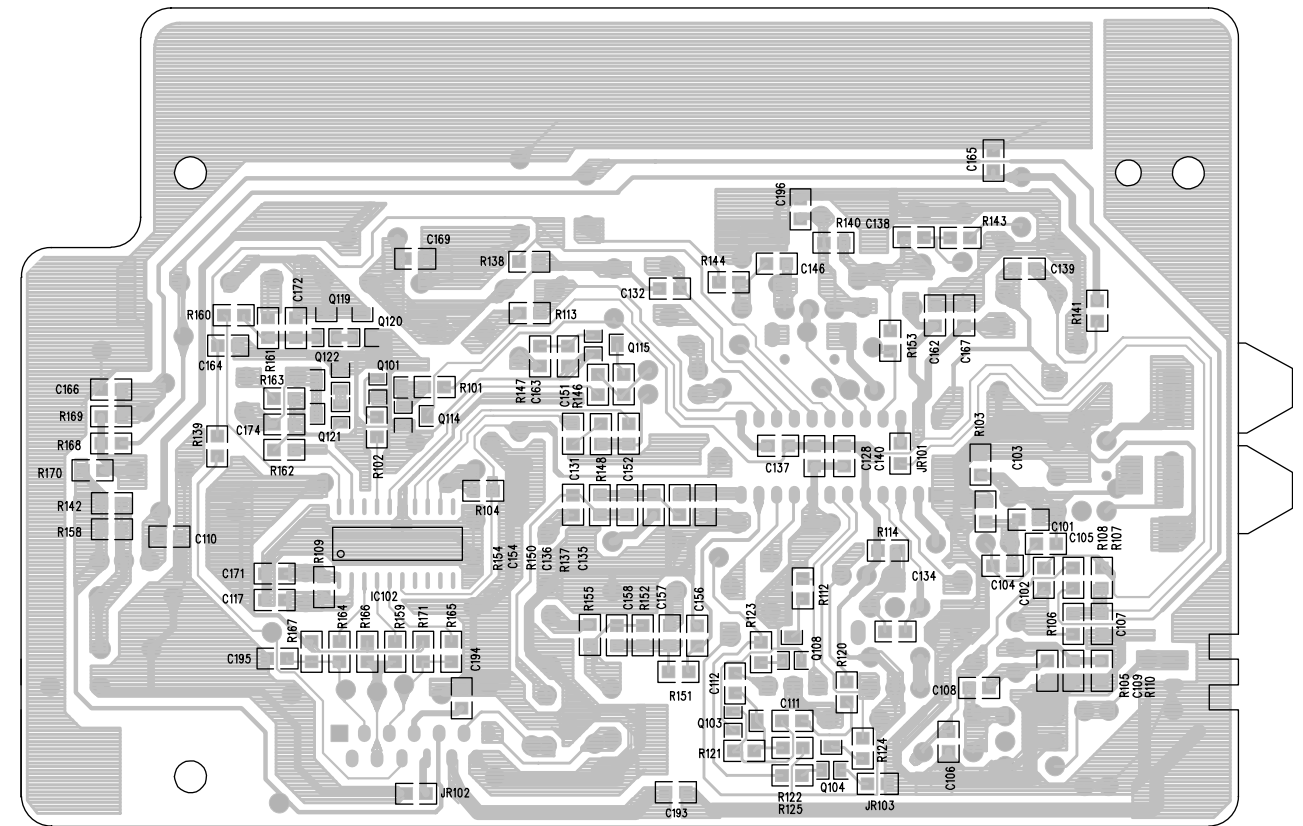
CIRCUIT DIAGRAM - TUNER BOARD (NON CENELEC)



LAYOUT DIAGRAM - TUNER BOARD (NON CENELEC)
COMPONENT SIDE



LAYOUT DIAGRAM - TUNER BOARD (NON CENELEC)
COPPER SIDE



ELECTRICAL PARTSLIST - TUNER BOARD (NON CENENLEC)**- MISCELLANEOUS -**

CN102	9965 000 18259	AM ANT TERMINAL 2P
CN105	9965 000 18233	CONN 13P P=1.25 V
J101	9965 000 11365	FM ANTENNA SOCKET

- IC & TRANSISTORS -

Q120	4822 130 42804	BC817-25
Q121	4822 130 42804	BC817-25
Q122	4822 130 42804	BC817-25

- CAPACITORS -

C142	4822 125 60101	3P0-11P N450 100V
C145	4822 125 60101	3P0-11P N450 100V
C147	9965 000 16264	CER TRIMMER 20P 6.15X5.9
TC102	9965 000 16264	CER TRIMMER 20P 6.15X5.9

- COILS & FILTERS -

CF101	9965 000 18257	FILTER SFE10.7MHZ
CF102	4822 242 80989	SFU450B
CF103	9965 000 18258	FILTER JT10.7MHZ
CF104	9965 000 18257	FILTER SFE10.7MHZ
L101	9965 000 19758	COIL CB
L102	9965 000 19758	COIL CB
L103	9965 000 18263	IFT 2B
L104	9965 000 18264	SPRING COIL 3.5XDIA5
L105	9965 000 18265	FM BPF DIA2.2X6.5T
L107	9965 000 18266	SPRING COIL 3T5
L108	9965 000 18267	FIXED IND 100 μ H
L111	9965 000 18268	AM RF IFT 2B/3B
T101	9965 000 18270	AM IFT 2B
X101	9965 000 19728	XTAL 7.2MHZ
	9965 000 19729	FERRITE BEAD 1K Ω 100MHZ

Note: Only these parts mentioned in the list are normal service parts.

- DIODES -

D101	4822 130 30621	1N4148
D102	4822 130 30621	1N4148
D103	4822 130 70056	1SV101
D104	4822 130 70056	1SV101
D106	4822 130 81673	1SV149
D107	4822 130 30621	1N4148
D108	4822 130 30621	1N4148
D109	4822 130 80317	MTZJ5.1B
VD102	4822 130 81673	1SV149

- IC & TRANSISTORS -

IC101	9965 000 18260	TUNER IC TA2149BN
IC102	9965 000 18261	IC TC9257F
Q101	4822 130 42804	BC817-25
Q102	4822 130 63173	2SK192AY
Q103	9965 000 18269	2SC2714O
Q104	4822 130 42804	BC817-25
Q108	4822 130 42804	BC817-25
Q114	4822 130 42804	BC817-25
Q115	4822 130 42804	BC817-25
Q117	4822 130 40981	BC337-25
Q119	4822 130 42804	BC817-25

MCU & VCD BOARD

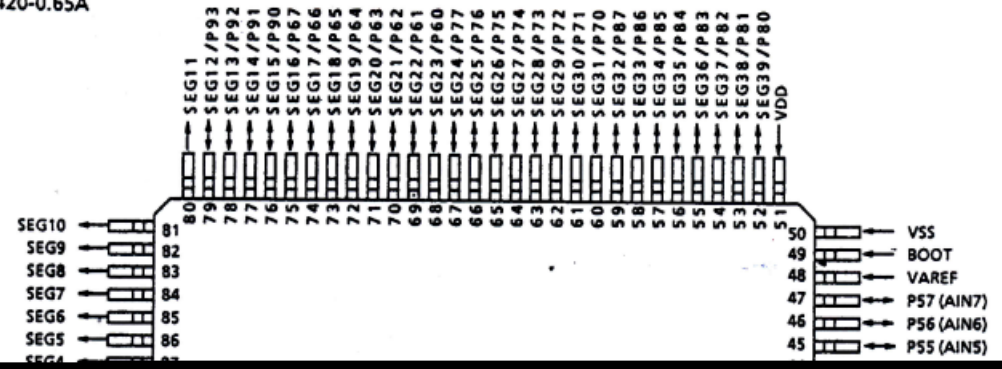
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MICROPROCESSOR
TMP87EP26F

BLOCK DIAGRAM

P-QFP100-1420-0.65A



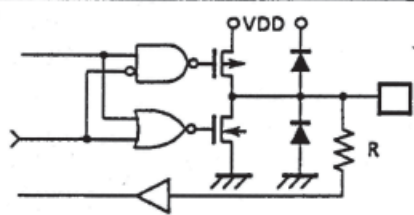
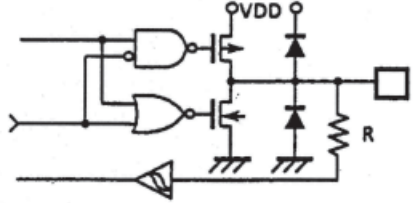
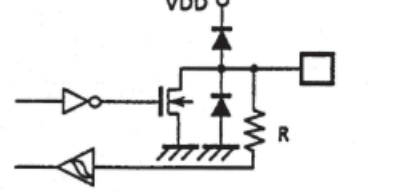
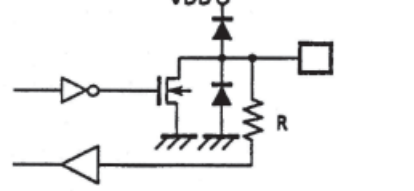
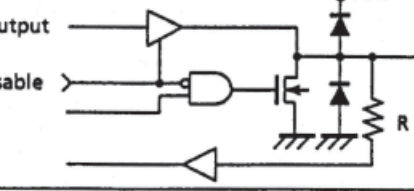
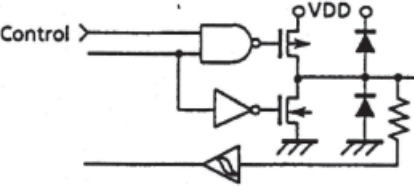
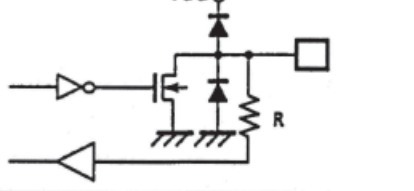
MICROPROCESSOR
TMP87EP26F

PINS DESCRIPTION

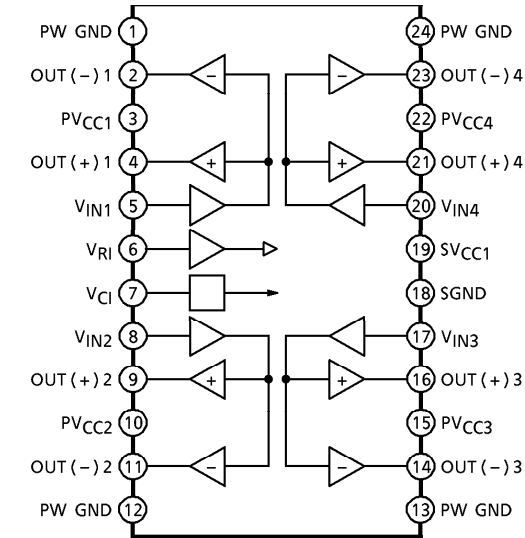
Control Pin	I/O	Input/Output Circuitry and Code	Remarks
XIN XOUT	Input Output		Resonator connecting pins (high-frequency) $R_f = 1.2 \text{ M}\Omega$ (typ.) $R_o = 1.5 \text{ k}\Omega$ (typ.) $R = 1 \text{ k}\Omega$ (typ.)
XTIN XTOUT	Input Output	Refer to port P2 	Resonator connecting pins (low-frequency) $R_f = 6 \text{ M}\Omega$ (typ.) $R_o = 220 \text{ k}\Omega$ (typ.) $R = 1 \text{ k}\Omega$ (typ.)
RESET	I/O		Sink open drain output Hysteresis input Pull-up resistor $R_{IN} = 220 \text{ k}\Omega$ (typ.) $R = 1 \text{ k}\Omega$ (typ.)
STOP/INT5	Input		Hysteresis input $R = 1 \text{ k}\Omega$ (typ.)
TEST BOOT	Input		Pull-down resistor $R_{IN} = 70 \text{ k}\Omega$ (typ.) $R = 1 \text{ k}\Omega$ (typ.)

**MICROPROCESSOR
TMP87EP26F**

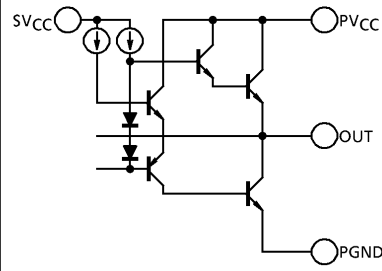
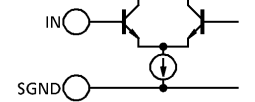
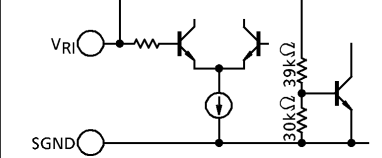
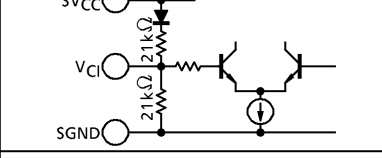
PINS DESCRIPTION

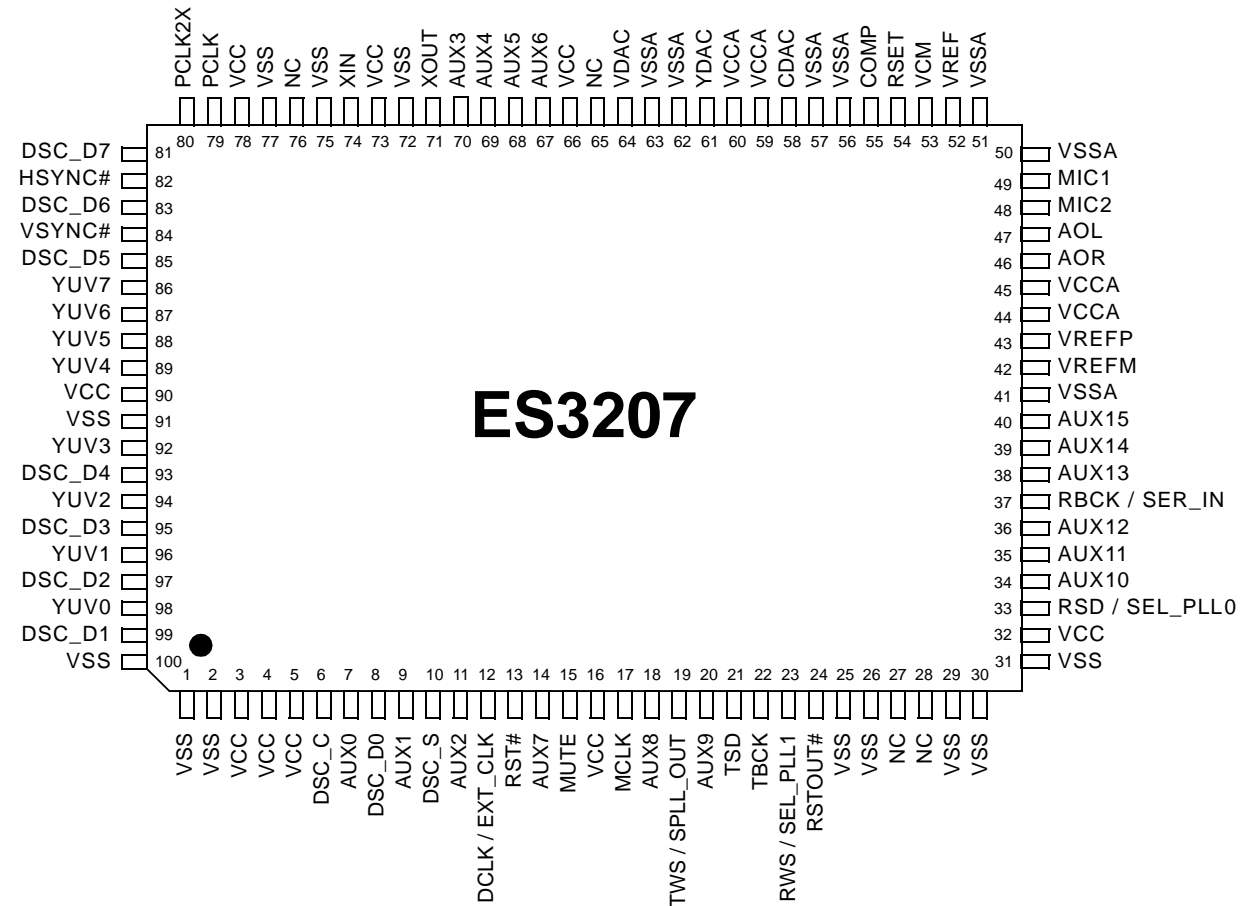
Port	I/O	Input / Output Circuitry and Code	Remarks
P0 P5	I/O	initial "Hi-Z" 	Tri-state I/O R = 1 kΩ (typ.)
P1	I/O	initial "Hi-Z" 	Tri-state I/O Hysteresis input R = 1 kΩ (typ.)
P3	I/O	initial "Hi-Z" 	Sink open drain output Hysteresis input R = 1 kΩ (typ.)
P2	I/O	initial "Hi-Z" 	Sink open drain output R = 1 kΩ (typ.)
P6 P7 P8 P9	I/O	Segment output 	Sink open drain or Segment output R = 1 kΩ (typ.)
P4	I/O	initial "Hi-Z" 	Sink open drain or push-pull output P41 High current output Hysteresis input
PD	I/O	initial "Hi-Z" 	Sink open drain output R = 1 kΩ (typ.)

**POWER DRIVER IC
TA2092N**



TERMINAL EXPLANATION

TERMINAL No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT
1	PW GND	Power GND ● Connected to substrate. ● ①, ⑫, ⑬, ⑭ pin are connected inside.	
2	OUT (-) 1	Inverted output for CH1	
3	PVCC1	Supply terminal of output stage for CH1 ● Supply terminal of output stage are not connected to other channel terminal.	
4	OUT (+) 1	Non-inverted output for CH1	
5	VIN1	Input for CH1 ● Not biased inside	
6	VRI	Input reference voltage ● Under condition of $V_{RI} \leq 1.8V$, internal bias circuit is shut off. ● No signal input condition : $V_{RI} = V_{IN}$	
7	VCI	Output reference voltage ● $V_{OUT} = V_{CI} = (V_{CC} - V_F) / 2$	
8	VIN2	Input for CH2	Same as channel 1
9	OUT (+) 2	Non-inverted output for CH2	
10	PVCC2	Supply terminal of output stage for CH2	
11	OUT (-) 2	Inverted output for CH2	
12	PW GND	Power GND	Same as channel 1
13	PW GND	Power GND	
14	OUT (-) 3	Inverted output for CH3	
15	PVCC3	Supply terminal of output stage for CH3	
16	OUT (+) 3	Non-inverted output for CH3	Same as channel 1
17	VIN3	Input for CH3	
18	S GND	Supply terminal of small signal GND	
19	S VCC	Small signal GND	
20	VIN4	Input for CH4	Same as channel 1
21	OUT (+) 4	Non-inverted output for CH4	
22	PVCC4	Supply terminal of output stage for CH4	
23	OUT (-) 4	Inverted output for CH4	
24	PW GND	Power GND	

**VIDEO CD/DVD COMPANION PROCESSOR
ES3207**
PINOUT

PIN DESCRIPTION

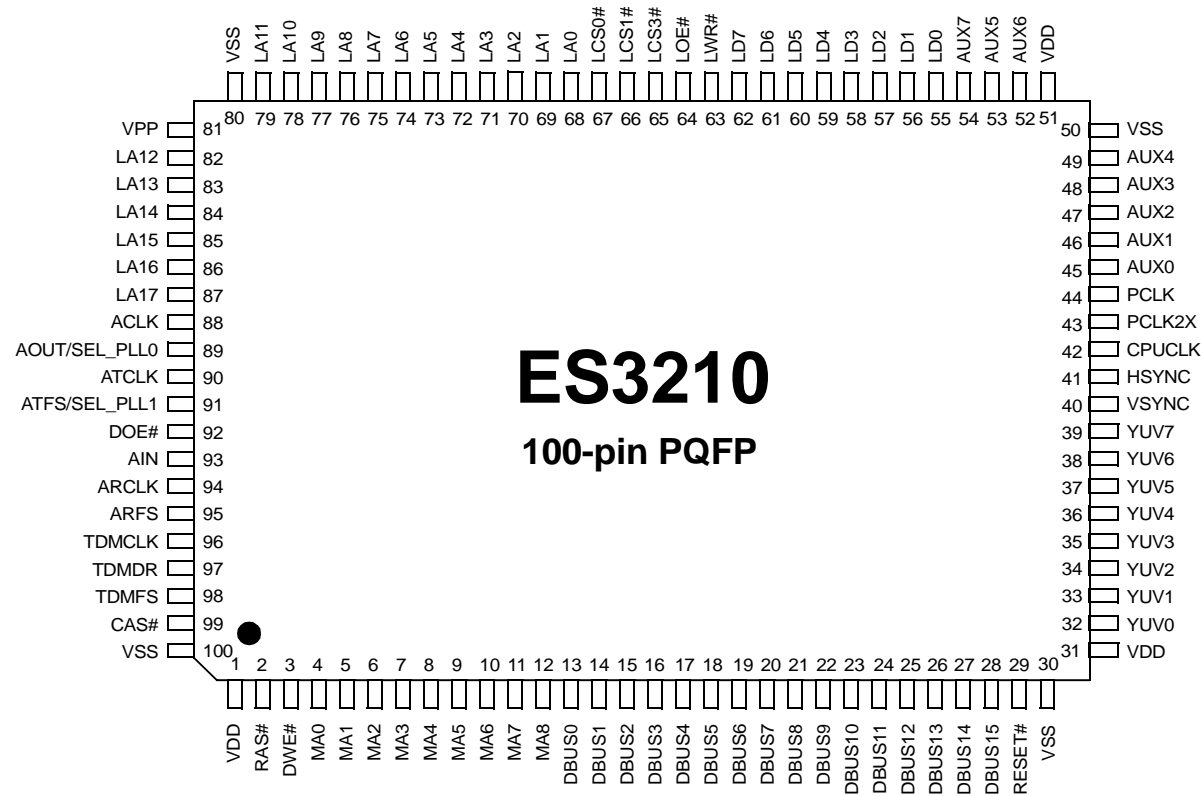
Name	Number	I/O	Definition
VSS	1:2,25:26,29:31,72,75,77,91,100	I	Ground.
VCC	3:5,16,32,66,73,78,90	I	Voltage supply, 5 V.
DSC_C	6	I	Clock for programming to access internal registers.
AUX[15:0]	40:38,36:34,20,18,14,67:70,11,9,7	I/O	Auxiliary control pins.
DSC_D[7:0]	81,83,85,93,95,97,99,8	I/O	Data for programming to access internal registers.
DSC_S	10	I	Strobe for programming to access internal registers.
DCLK	12	O	Dual-purpose pin. DCLK is the MPEG decoder clock.
EXT_CLK		I	EXT_CLK is the external clock. EXT_CLK is an input during bypass PLL mode.
RST#	13	I	Video reset (active-low).
MUTE	15	O	Audio mute.
MCLK	17	I	Audio master clock.
TWS	19	I	Dual-purpose pin. TWS is the transmit audio frame sync.
SPLL_OUT		O	SPLL_OUT is the select PLL output.

**VIDEO CD/DVD COMPANION PROCESSOR
ES3207**
PIN DESCRIPTION

Name	Number	I/O	Definition														
TSD	21	I	Transmit audio data input.														
TBCK	22	I	Transmit audio bit clock.														
RWS	23	O	Dual-purpose pin. RWS is the receive audio frame sync.														
SEL_PLL1		I	Pins SEL_PLL[1:0] select the PLL clock frequency for the DCLK output. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SEL_PLL1</th> <th>SEL_PLL0</th> <th>DCLK</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Bypass PLL (input mode)</td> </tr> <tr> <td>0</td> <td>1</td> <td>27 MHz (output mode)</td> </tr> <tr> <td>1</td> <td>0</td> <td>32.4 MHz (output mode)</td> </tr> <tr> <td>1</td> <td>1</td> <td>40.5 MHz (output mode)</td> </tr> </tbody> </table>	SEL_PLL1	SEL_PLL0	DCLK	0	0	Bypass PLL (input mode)	0	1	27 MHz (output mode)	1	0	32.4 MHz (output mode)	1	1
SEL_PLL1	SEL_PLL0	DCLK															
0	0	Bypass PLL (input mode)															
0	1	27 MHz (output mode)															
1	0	32.4 MHz (output mode)															
1	1	40.5 MHz (output mode)															
RSTOUT#	24	O	Reset output (active-low).														
NC	27:28,65:76		No connect. Do not connect to these pins.														
RSD	33	O	Dual-purpose pin. RSD is the receive audio data input.														
SEL_PLL0		I	SEL_PLL0 along with SEL_PLL1 select the PLL clock frequency for the DCLK output. See the table for pin number 23.														
RBCK	37	O	Dual-purpose pin. RBCK is the receive audio bit clock.														
SER_IN		I	SER_IN is the serial input DSC mode. 0 = Parallel DSC mode. 1 = Serial DSC mode.														
VSSA	41,50:51,56:57,62:63	I	Analog ground.														
VREFM	42	I	DAC and ADC minimum reference. Bypass to VCMR with 10 nF in parallel with 0.1 nF.														
VREFP	43	I	DAC and ADC maximum reference. Bypass to VCMR with 10 nF in parallel with 0.1 nF.														
VCCA	44:45,59:60	I	Analog VCC, 5 V.														
AOR	46	O	Right channel output.														
AOL	47	O	Left channel output.														
MIC2	48	I	Microphone input 2.														
MIC1	49	I	Microphone input 1.														
VREF	52	I	Internal resistor divider generates Common Mode Reference (CMR) voltage. Bypass to analog ground with 0.1 nF.														
VCM	53	I	ADC Common Mode Reference (CMR) buffer output. CMR is approximately 2.25 V. Bypass to analog ground with 47 nF electrolytic in parallel with 0.1 nF.														
RSET	54	I	Full scale DAC current adjustment.														
COMP	55	I	Compensation pin.														
CDAC	58	O	Modulated chrominance output.														
YDAC	61	O	Y luminance data bus for screen video port.														
VDAC	64	O	Composite video output.														
XOUT	71	O	Crystal output.														
XIN	74	I	27 MHz crystal input.														
PCLK	79	I/O	13.5 MHz pixel clock.														
PCLK2X	80	I/O	27 MHz (2 times pixel clock).														
HSYNC#	82	O	Horizontal sync (active-low).														
VSYNC#	84	O	Vertical sync (active-low).														
YUV[7:0]	86:89,92,94,96,98	I	YUV data bus for screen video port.														

**VIDEO CD PROCESSOR
ES3210**

ES3210 PINOUT



ES3210 PIN DESCRIPTION

Name	Number	I/O	Definition
VDD	1, 31, 51	I	Voltage supply for 3.3V.
RAS#	2	O	DRAM row address strobe (active low).
DWE#	3	O	DRAM write enable (active low).
MA[8:0]	12:4	O	DRAM multiplexed row and column address bus.
DBUS[15:0]	28:13	I/O	DRAM data bus I/O [15:0].
RESET#	29	I	System reset (active low).
VSS	30, 50, 80, 100	I	Ground.
YUV[7:0]	39:32	O	YUV[7:0] pixel output data.
VSYNC	40	I/O	Vertical sync for screen video interface, programmable for rising or falling edge.
HSYNC	41	I/O	Horizontal sync for screen video interface, programmable for rising or falling edge.
CPUCLK	42	I	RISC and system clock input. CPUCLK is used only if SEL_PLL[1:0] = 00.
PCLK2X	43	I/O	Pixel clock; two times the actual pixel clock for screen video interface.

**VIDEO CD PROCESSOR
ES3210**

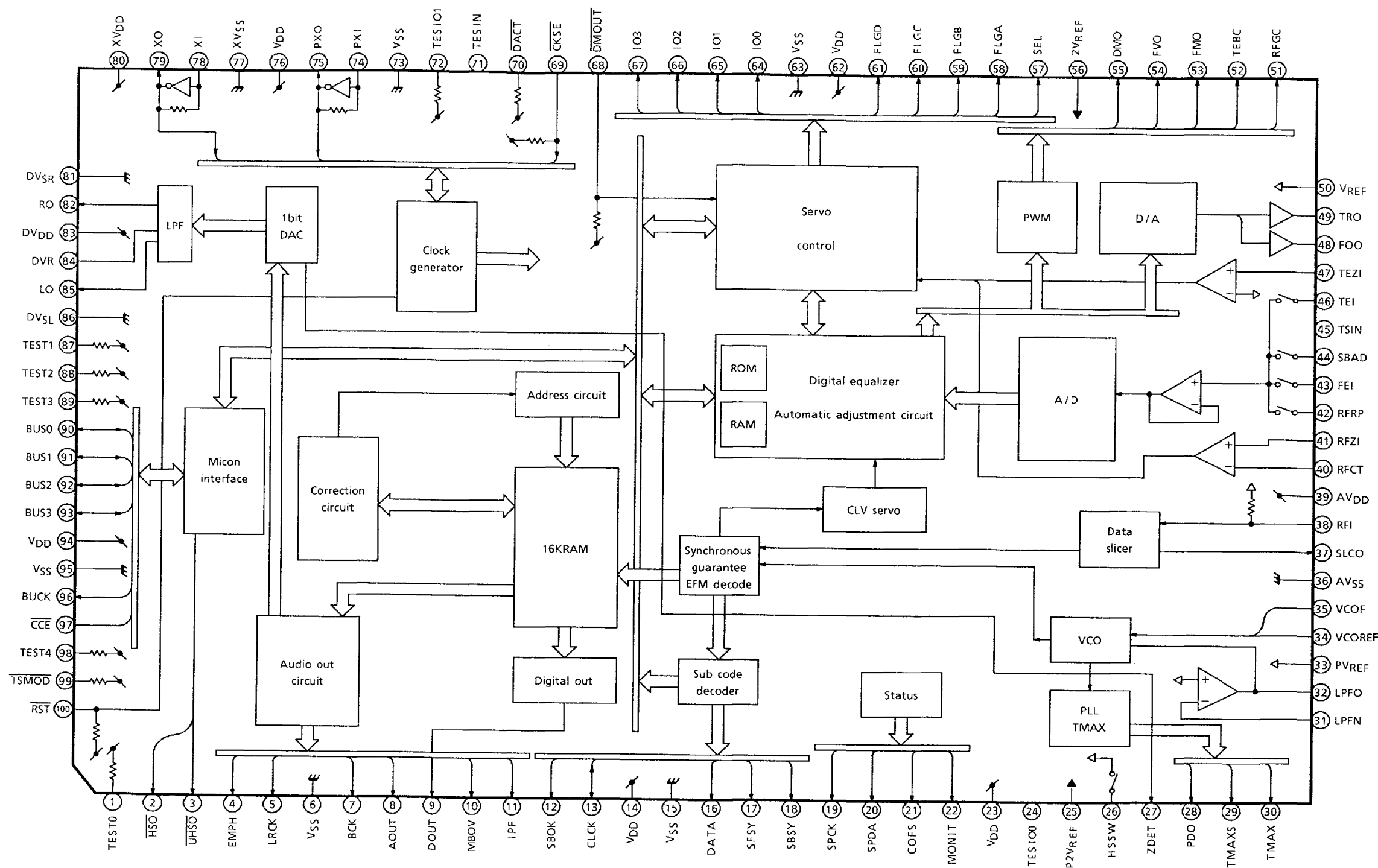
PIN DESCRIPTION (Continued)

Name	Number	I/O	Definition															
PCLK	44	I/O	Pixel clock qualifier in for screen video interface.															
AUX[7:0]	54:52, 49:45	I/O	Auxiliary control pins (AUX0 and AUX1 are open collectors).															
LD[7:0]	62:55	I/O	RISC interface data bus.															
LWR#	63	O	RISC interface write enable (active low).															
LOE#	64	O	RISC interface output enable (active low).															
LCS[3,1,0]#	65:67	O	RISC interface chip select (active low).															
LA[17:0]	87:82, 79:68	O	RISC interface address bus.															
VPP	81	I	Digital supply voltage for 5V.															
ACLK	88	I/O	Master clock for external audio DAC (8.192 MHz, 11.2896 MHz, 12.288 MHz, 16.9344 MHz, and 18.432 MHz).															
AOUT/ SEL_PLL0	89	O I	Dual-purpose pin. AOUT is the audio interface serial data output Select PLL[0] input. The matrix below lists the available clock frequencies and their respective PLL bit settings.															
<table border="1"> <thead> <tr> <th>SEL_PLL1</th> <th>SEL_PLL0</th> <th>Clock Output</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Bypass PLL</td> </tr> <tr> <td>0</td> <td>1</td> <td>54.0 MHz</td> </tr> <tr> <td>1</td> <td>0</td> <td>67.5 MHz</td> </tr> <tr> <td>1</td> <td>1</td> <td>81.0 MHz</td> </tr> </tbody> </table>				SEL_PLL1	SEL_PLL0	Clock Output	0	0	Bypass PLL	0	1	54.0 MHz	1	0	67.5 MHz	1	1	81.0 MHz
SEL_PLL1	SEL_PLL0	Clock Output																
0	0	Bypass PLL																
0	1	54.0 MHz																
1	0	67.5 MHz																
1	1	81.0 MHz																
ATCLK	90	I/O	Audio transmit bit clock.															
ATFS	91	O	Audio transmit frame sync.															
SEL_PLL1		I	Refer to the description and matrix for SEL_PLL0 pin 89.															
DOE#	92	O	DRAM output enable (active low).															
AIN	93	I	Audio serial data input.															
ARCLK	94	I	Audio receive bit clock.															
ARFS	95	I	Audio receive frame sync.															
TDMCLK	96	I	TDM interface serial clock.															
TDMDR	97	I	TDM interface serial data receive.															
TDMFS	98	I	TDM interface frame sync.															
CAS#	99	O	DRAM column address strobe bank 0 (active low).															

DIGITAL SERVO PROCESSOR TC9462F

BLOCK DIAGRAM

BLOCK DIAGRAM (Top view)



**DIGITAL SERVO PROCESSOR
TC9462F**
PINS DESCRIPTION

PIN No.	SYMBOL	I/O	FUNCTIONAL DESCRIPTION	REMARKS															
1	TEST0	I	Test mode terminal. Normally, keep at open.	With pull-up resistor.															
2	$\overline{\text{HSO}}$	O	Playback speed mode flag output terminal.	—															
3	$\overline{\text{UHSO}}$	O	<table border="1"> <thead> <tr> <th>$\overline{\text{UHSO}}$</th> <th>$\overline{\text{HSO}}$</th> <th>PLAYBACK SPEED</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>H</td> <td>Normal</td> </tr> <tr> <td>H</td> <td>L</td> <td>2 times</td> </tr> <tr> <td>L</td> <td>H</td> <td>4 times</td> </tr> <tr> <td>L</td> <td>L</td> <td>—</td> </tr> </tbody> </table>		$\overline{\text{UHSO}}$	$\overline{\text{HSO}}$	PLAYBACK SPEED	H	H	Normal	H	L	2 times	L	H	4 times	L	L	—
			$\overline{\text{UHSO}}$		$\overline{\text{HSO}}$	PLAYBACK SPEED													
			H		H	Normal													
			H		L	2 times													
L	H	4 times																	
L	L	—																	
4	EMPH	O	Subcode Q data emphasis flag output terminal. Emphasis ON at "H" level and OFF at "L" level. The output polarity can invert by command.																
5	LRCK	O	Channel clock output terminal. (44.1 kHz) L-ch at "L" level and R-ch at "H" level. The output polarity can invert by command.																
6	V _{SS}	—	Digital GND terminal.	—															
7	BCK	O	Bit clock output terminal. (1.4112 MHz)	—															
8	AOUT	O	Audio data output terminal.	—															
9	DOUT	O	Digital data output terminal.	—															
10	MBOV	O	Buffer memory over signal output terminal. Over at "H" level.	—															
11	IPF	O	Correction flag output terminal. At "H" level, AOUT output is made to correction impossibility by C ₂ correction processing.	—															
12	SBOK	O	Subcode Q data CRCC check adjusting result output terminal. The adjusting result is OK at "H" level.	—															
13	CLCK	I/O	Subcode P~W data readout clock input/output terminal. This terminal can select by command bit.	—															
14	V _{DD}	—	Digital power supply voltage terminal.	—															
15	V _{SS}	—	Digital GND terminal.	—															
16	DATA	O	Subcode P~W data output terminal.	—															
17	SFSY	O	Play-back frame sync signal output terminal.	—															
18	SBSY	O	Subcode block sync signal output terminal.	—															
19	SPCK	O	Processor status signal readout clock output terminal.	—															
20	SPDA	O	Processor status signal output terminal.	—															
21	COFS	O	Correction frame clock output terminal. (7.35 kHz)	—															
22	MONIT	O	Internal signal (DSP internal flag and PLL clock) output terminal. Selected by command. This terminal output the text data with serial by command.	—															

**DIGITAL SERVO PROCESSOR
TC9462F**
PINS DESCRIPTION

PIN No.	SYMBOL	I/O	FUNCTIONAL DESCRIPTION	REMARKS								
23	V _{DD}	—	Digital power supply voltage terminal.	—								
24	TESIO0	I	Test input/output terminal. Normally, keep at "L" level. The terminal that inputted the clock for read of text data by command.	—								
25	P2VREF	—	PLL double reference voltage supply terminal.	—								
26	HSSW	O	2/4 times speed at "VREF" voltage.	2-state output. (P2VREF, HiZ)								
27	ZDET	O	1 bit DA converter zero detect flag output terminal.	—								
28	PDO	O	Phase difference signal output terminal of EFM signal and PLCK signal.	3-state output. (P2VREF, PVREF, V _{SS})								
29	TMAXS	O	TMAX detection result output terminal. Selected by command bit (TMPS).	3-state output. (P2VREF, PVREF, V _{SS})								
30	TMAX	O	TMAX detection result output terminal. Selected by command bit (TMPS).	3-state output. (P2VREF, HiZ, V _{SS})								
			<table border="1"> <thead> <tr> <th>DIFFERENCE RESULT</th> <th>TMAX OUTPUT</th> </tr> </thead> <tbody> <tr> <td>Longer than fixed freq.</td> <td>"P2VREF"</td> </tr> <tr> <td>Shorter than fixed freq.</td> <td>"V_{SS}"</td> </tr> <tr> <td>Within the fixed freq.</td> <td>"HiZ"</td> </tr> </tbody> </table>	DIFFERENCE RESULT	TMAX OUTPUT	Longer than fixed freq.	"P2VREF"	Shorter than fixed freq.	"V _{SS} "	Within the fixed freq.	"HiZ"	
DIFFERENCE RESULT	TMAX OUTPUT											
Longer than fixed freq.	"P2VREF"											
Shorter than fixed freq.	"V _{SS} "											
Within the fixed freq.	"HiZ"											
31	LPFN	I	LPF amplifier inverting input terminal for PLL.	Analog input.								
32	LPFO	O	LPF amplifier output terminal for PLL.	Analog output.								
33	PVREF	—	PLL reference voltage supply terminal.	—								
34	VCOREF	I	VCO center frequency reference level terminal. Normally, keep at "PVREF" level.	—								
35	VCOF	O	VCO filter terminal.	Analog output.								
36	AV _{SS}	—	Analog GND terminal.	—								
37	SLCO	O	Data slice level output terminal.	Analog output.								
38	RFI	I	RF signal input terminal.	Analog input. (Z _{in} : selected by command)								
39	AV _{DD}	—	Analog power supply voltage terminal.	—								
40	RFCT	I	RFRP signal center level input terminal.	Analog input. (Z _{in} : 50 kΩ)								
41	RFZI	I	RFRP zero cross input terminal.	Analog input.								
42	RFRP	I	RF ripple signal input terminal.	Analog input.								
43	FEI	I	Focus error signal input terminal.	Analog input.								
44	SBAD	I	Sub-beam adder signal input terminal.	Analog input.								
45	TSIN	I	Test input terminal. Normally, keep at "VREF" level.	Analog input.								
46	TEI	I	Tracking error signal input terminal. Take in at tracking servo on.	Analog input.								
47	TEZI	I	Tracking error zero cross input terminal.	Analog input. (Z _{in} : 10 kΩ)								

**DIGITAL SERVO PROCESSOR
TC9462F**
PINS DESCRIPTION

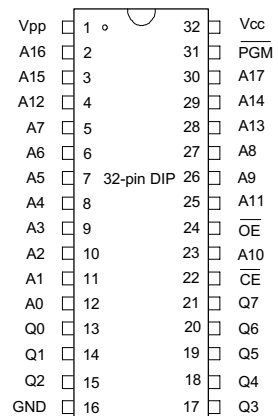
PIN No.	SYMBOL	I/O	FUNCTIONAL DESCRIPTION	REMARKS
48	FOO	O	Focus servo equalizer output terminal.	Analog output. (2VREF~AVSS)
49	TRO	O	Tracking servo equalizer output terminal.	
50	VREF	—	Analog reference voltage supply terminal.	—
51	RFGC	O	RF amplitude adjustment control signal output terminal.	3-state PWM signal output. (2VREF, VREF, VSS) (PWM carrier = 88.2 kHz)
52	TEBC	O	Tracking balance control signal output terminal.	
53	TEBC	O	Feed equalizer output terminal.	
54	TEBC	O	Speed error signal or feed search equalizer output terminal.	
55	DMO	O	Disk equalizer output terminal. (PWM carrier = 88.2 kHz for DSP, Synchronize to PXO)	3-state output. (2VREF, VREF, VSS)
56	2VREF	—	Analog double reference voltage supply terminal.	—
57	SEL	O	APC circuit ON/OFF indication signal output terminal. At the laser on time, UHF = L at "HiZ" level and UHF = H at "H" level.	—
58	FLGA	O	External flag output terminal for internal signal. Can select signal from TEZC, FOON, FOK and RFZC by command.	—
59	FLGB	O	External flag output terminal for internal signal. Can select signal from DFCT, FOON, FMON and RFZC by command.	—
60	FLGC	O	External flag output terminal for internal signal. Can select signal from TRON, TRSR, FOK and SRCH by command.	—
61	FLGD	O	External flag output terminal for internal signal. Can select signal from TRON, DMON, HYS and SHC by command.	—
62	VDD	—	Digital power supply voltage terminal.	—
63	VSS	—	Digital GND terminal.	—
64	IO0	I/O	General I/O terminal. Can change over input port or output port by command. At the input mode time can readout a state of terminal (H/L) by read command. At the output mode time can control a state of terminal (H/L/HiZ) by command.	—
65	IO1			
66	IO2			
67	IO3			
68	DMOUT	I	This terminal controls IO0~IO3 terminal. At "L" level time, IO0, 1 out feed equalizer signal of 2-state PWM, IO2, 3 out disk equalizer signal of 2-state PWM.	With pull-up resistor.
69	CKSE	I	Normally, keep at open.	With pull-up resistor.
70	DACT	I	DAC test mode terminal. Normally, keep at open.	With pull-up resistor.
71	TESIN	I	Test input terminal. Normally, keep at "L" level.	Analog input.

**DIGITAL SERVO PROCESSOR
TC9462F**
PINS DESCRIPTION

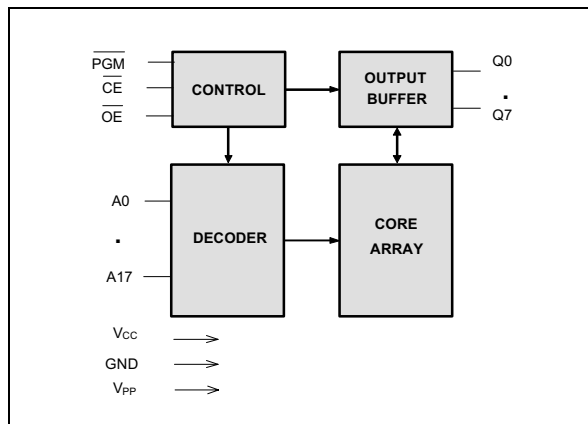
PIN No.	SYMBOL	I/O	FUNCTIONAL DESCRIPTION	REMARKS
72	TESIO1	I	Test input/output terminal. Normally, keep at "L" level.	Analog input.
73	VSS	—	Digital GND terminal.	—
74	PXI	I	Crystal oscillator connecting input terminal for DSP. Normally, keep at "L" level.	—
75	PXO	O	Crystal oscillator connecting output terminal for DSP.	
76	VDD	—	Digital power supply voltage terminal.	—
77	XVSS	—	Oscillator GND terminal for system clock.	—
78	XI	I	Crystal oscillator connecting input terminal for system clock.	—
79	XO	O	Crystal oscillator connecting output terminal for system clock.	—
80	XVDD	—	Oscillator power supply voltage terminal for system clock.	—
81	DVSR	—	Analog GND terminal for DA converter. (R-ch)	—
82	RO	O	R channel data forward output terminal.	—
83	DVDD	—	Analog supply voltage terminal for DA converter.	—
84	DVR	—	Reference voltage terminal for DA converter.	—
85	LO	O	L channel data forward output terminal.	—
86	DVSL	—	Analog GND terminal for DA converter. (L-ch)	—
87	TEST1	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
88	TEST2	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
89	TEST3	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
90	BUS0	I/O	Micon interface data input/output terminal.	Schmit input. With pull-up resistor.
91	BUS1	I/O		
92	BUS2	I/O		
93	BUS3	I/O		
94	VDD	—	Digital power supply voltage terminal.	—
95	VSS	—	Digital GND terminal.	—
96	BUCK	I	Micon interface clock input terminal.	Schmit input.
97	CCE	I	Command and data sending/receiving chip enable signal input terminal. The bus line becomes active at "L" level.	Schmit input.
98	TEST4	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
99	TSMOD	I	Local test mode selection terminal.	With pull-up resistor.
100	RST	I	Reset signal input terminal. Reset at "L" level.	With pull-up resistor.

**E2PROM
W27C020**

PIN CONFIGURATIONS



BLOCK DIAGRAM

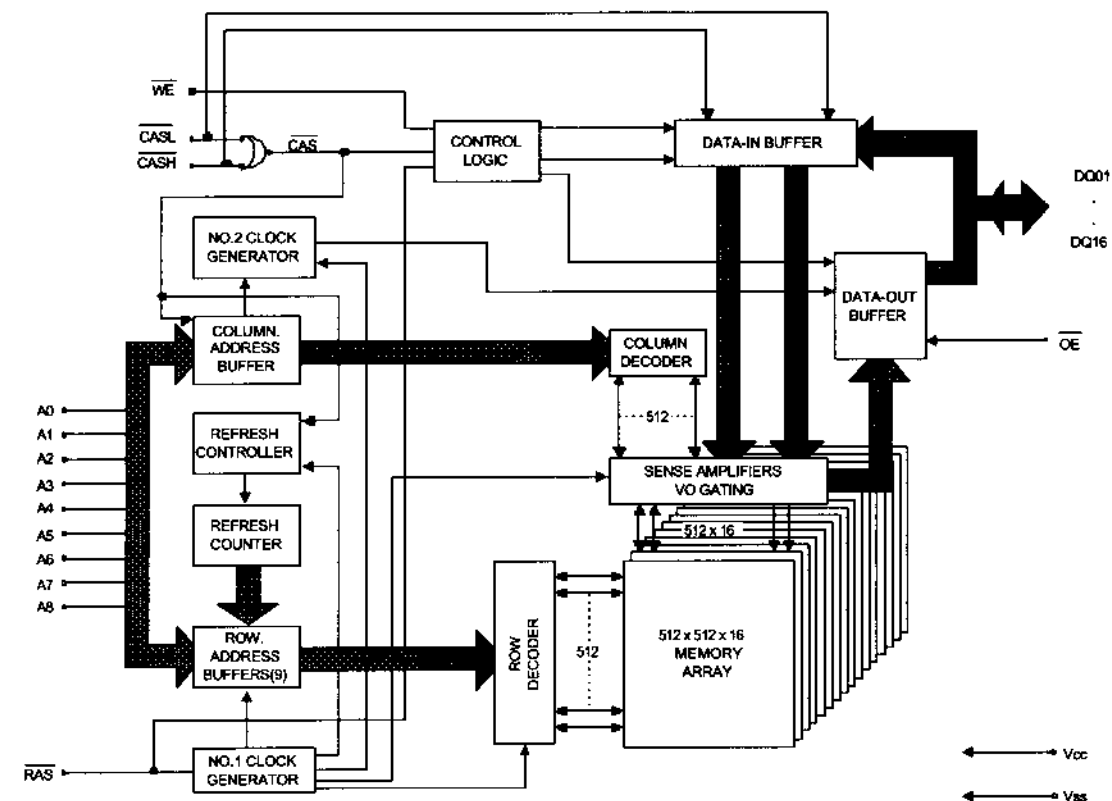


PIN DESCRIPTION

SYMBOL	DESCRIPTION
A0-A17	Address Inputs
Q0-Q7	Data Inputs/Outputs
\overline{CE}	Chip Enable
\overline{OE}	Output Enable
PGM	Program Enable
VPP	Program/Erase Supply Voltage
VCC	Power Supply
GND	Ground

**DRAM
T224162B28S**

FUNCTIONAL BLOCK DIAGRAM

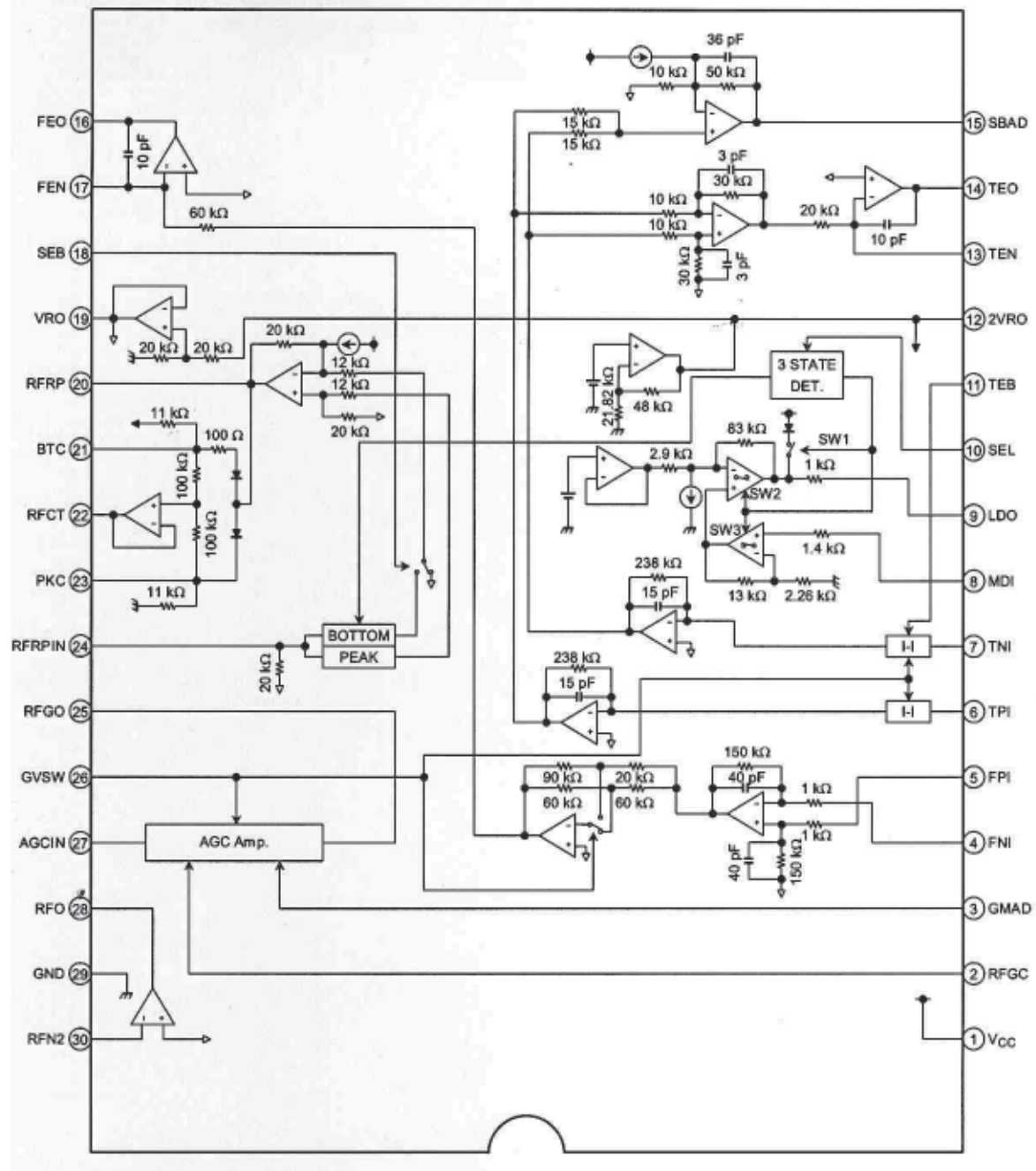


PIN DESCRIPTIONS

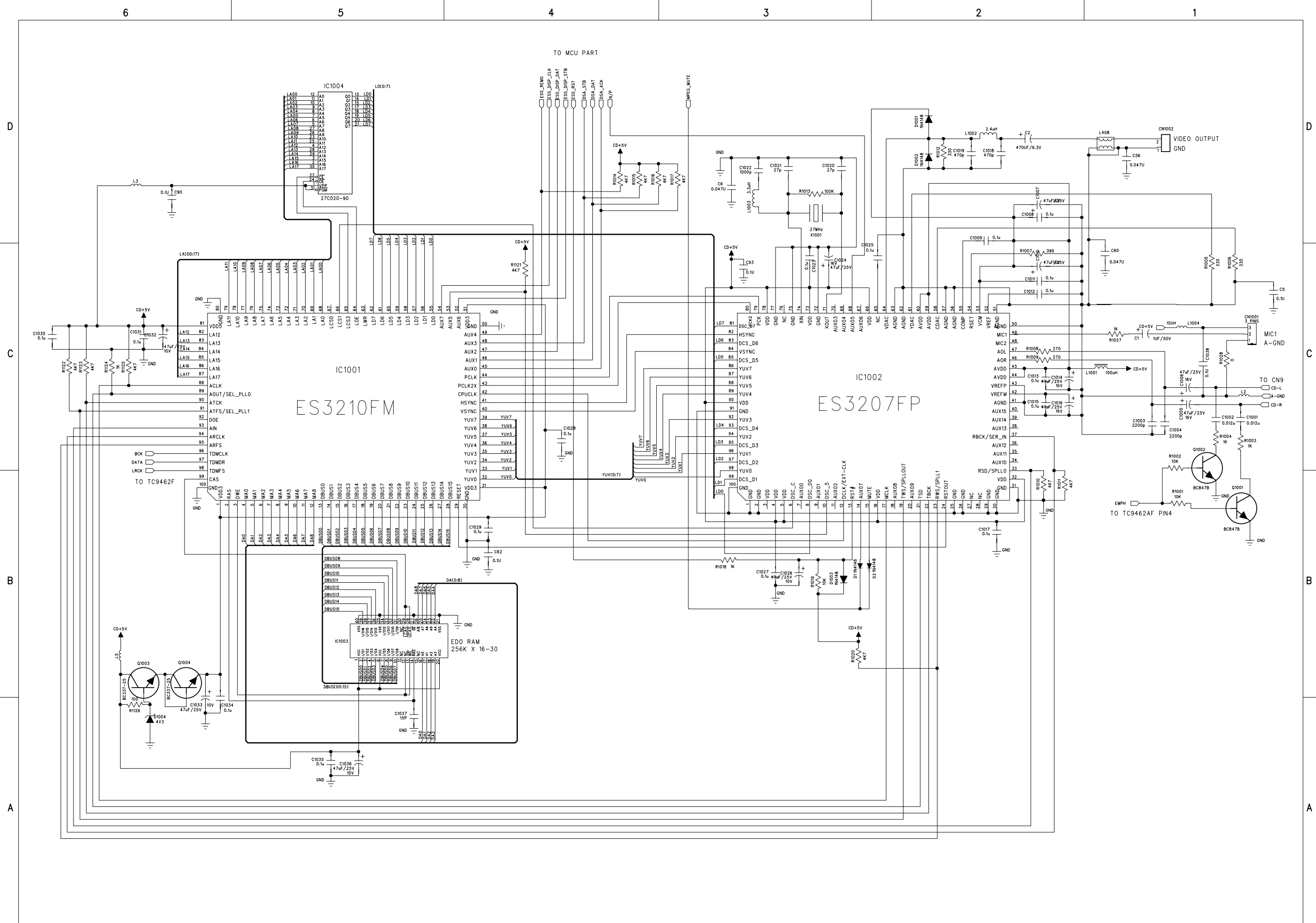
PIN NO.	SYM.	TYPE	DESCRIPTION
16~19,22~26	A0-A8	Input	Address Input
14	\overline{RAS}	Input	Row Address Strobe
28	\overline{CASH}	Input	Column Address Strobe /Upper Byte Control
29	\overline{CASL}	Input	Column Address Strobe /Lower Byte Control
13	\overline{WE}	Input	Write Enable
27	\overline{OE}	Input	Output Enable
2~5,6~10,31~34,36~39	I/O1 - I/O16	Input/ Output	Data Input/ Output
1,6,20	Vcc	Supply	Power, 5V
21,35,40	Vss	Ground	Ground
11,12,15,30	NC	-	No Connect

MICROPROCESSOR TA2153FN

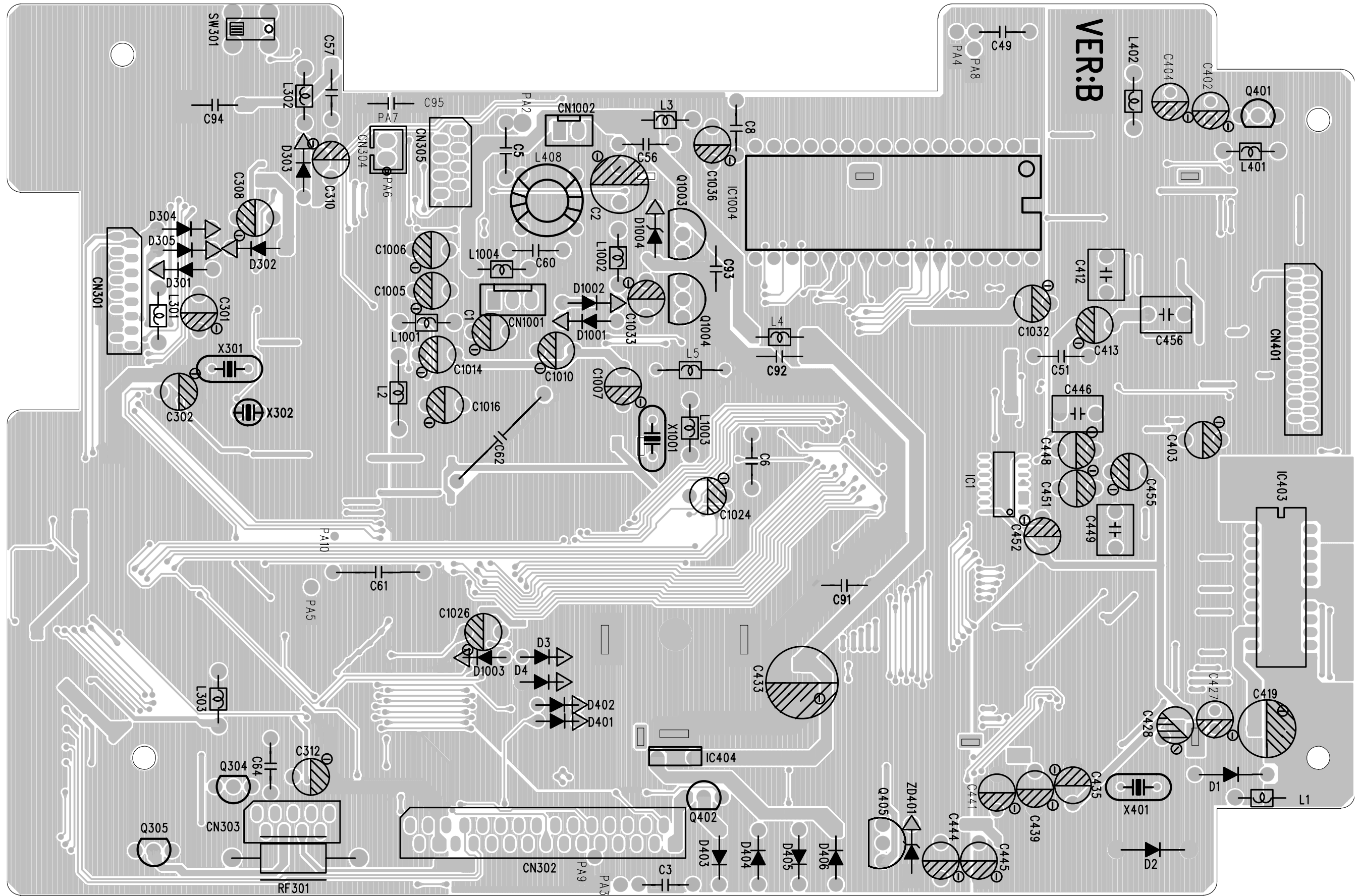
BLOCK DIAGRAM



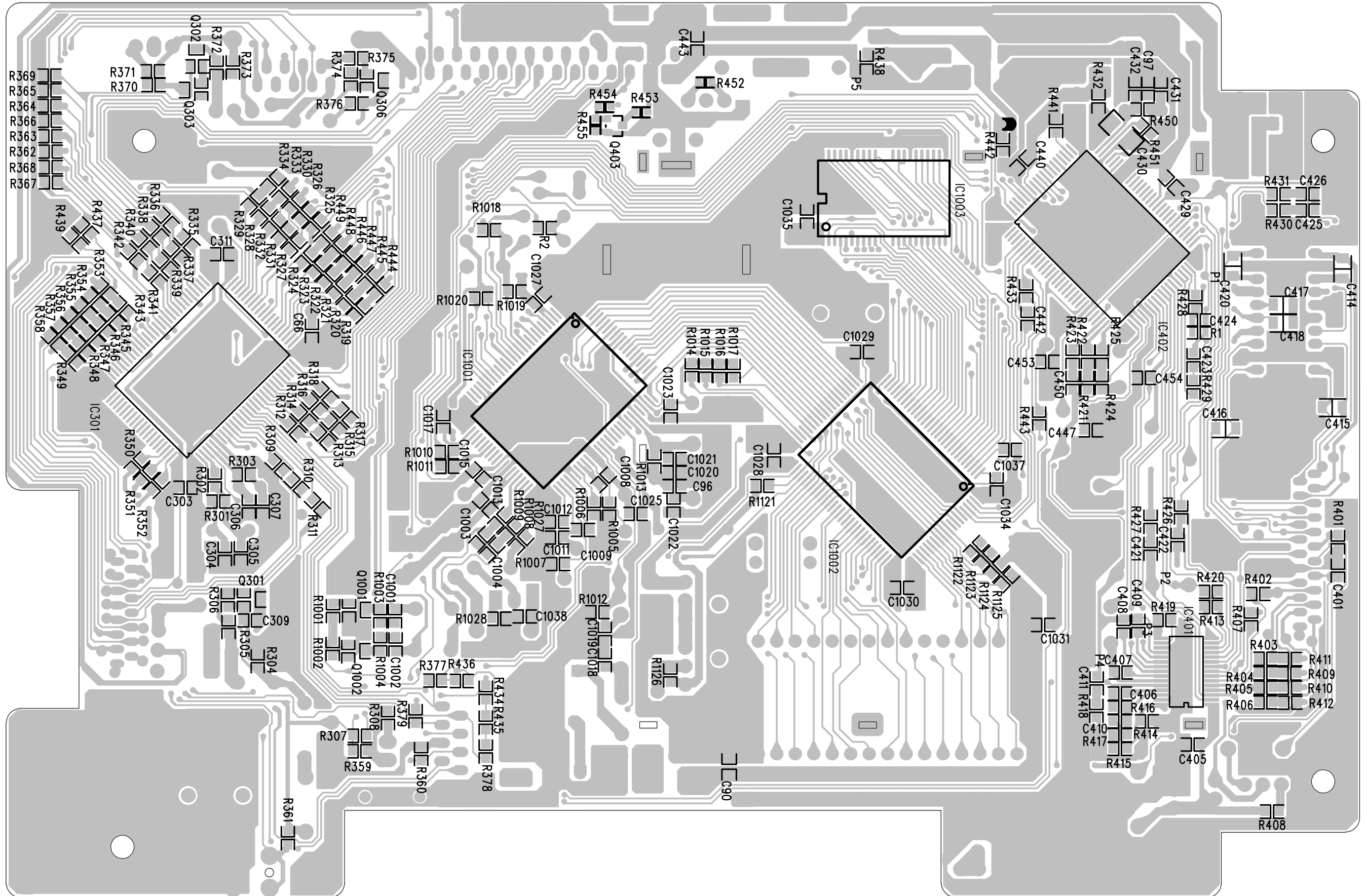
CIRCUIT DIAGRAM - MCU & VCD BOARD



LAYOUT DIAGRAM - MCU & VCD BOARD
COMPONENT SIDE



LAYOUT DIAGRAM - MCU & VCD BOARD SMD SIDE



ELECTRICAL PARTSLIST - VCD MCU BOARD**- MISCELLANEOUS -**

CN1001 9965 000 20205 CONN BASE 3P
 CN1002 9965 000 20206 CONNECTOR BASE 2P
 CN301 9965 000 18230 CONN 16P H P=1.0
 CN302 9965 000 18232 CONN 30P P=1.25 V
 CN303 9965 000 18273 CONN 9P

CN401 9965 000 18274 CONN 22P
 SW301 9965 000 18285 SWITCH SIDE SPVF130100
 PA4 9965 000 20208 WIRE 2P
 PA5 9965 000 20209 WIRE 2P
 PA7 9965 000 14709 TERMINAL PIN

- RESISTORS -

RF301 Δ 9965 000 14537 1/2W 1 Ω

- COILS & FILTERS -

L1001 9965 000 19740 FIXED IND 100 μ H TP=52MM
 L1002 9965 000 19760 FIXED IND 2.4 μ H (K)
 L1003 9965 000 19761 FIXED IND 3.3 μ H CECS
 L1004 9965 000 19762 FIXED IND 10 μ H
 L2 9965 000 14721 FILTER EMI BL01 RN1

L301 9965 000 19740 FIXED IND 100 μ H TP=52MM
 L302 9965 000 19740 FIXED IND 100 μ H TP=52MM
 L303 9965 000 19740 FIXED IND 100 μ H TP=52MM
 L401 9965 000 19762 FIXED IND 10 μ H
 L402 9965 000 19763 FIXED IND 47 μ H (K) T26

L408 9965 000 20207 FIL EMI
 X1001 9965 000 19764 XTAL 27MHZ
 X301 9965 000 18282 CRYSTAL 7.3728 MHZ
 X302 9965 000 18283 CRYSTAL 32.768KHZ
 X401 9965 000 19766 XTAL 16.93MHZ

- DIODES -

D1 4822 130 31878 1N4003G
 D1001 4822 130 30621 1N4148
 D1002 4822 130 30621 1N4148
 D1003 4822 130 30621 1N4148
 D1004 4822 130 31554 BZX79-B4V3

D2 4822 130 31878 1N4003G
 D3 4822 130 30621 1N4148
 D301 4822 130 30621 1N4148
 D302 4822 130 30621 1N4148
 D303 4822 130 30621 1N4148

D305 4822 130 30621 1N4148
 D4 4822 130 30621 1N4148
 D401 4822 130 30621 1N4148
 D402 4822 130 30621 1N4148
 D403 4822 130 83883 FR202

D404 4822 130 83883 FR202

- DIODES -

D405 4822 130 83883 FR202
 D406 4822 130 83883 FR202
 ZD401 4822 130 83206 BZX79-B5V6

- IC & TRANSISTORS -

IC1001 9965 000 19731 IC ES3207FP
 IC1002 9965 000 19732 IC ES3210FM
 IC1003 9965 000 19734 IC T224162B-28S
 IC1004 9965 000 14729 E2PROM W27C020
 IC301 9965 000 18275 IC MCU TMP87EP26F4K76

IC401 9322 171 88668 IC SM TA2153FN (TOSJ) R
 IC402 9965 000 18276 IC TC9462F
 IC403 9965 000 18277 IC TA2092N
 IC404 4822 209 80817 L7805CV
 Q1001 5322 130 60159 BC846B

Q1002 5322 130 60159 BC846B
 Q1003 4822 130 40981 BC337-25
 Q1004 4822 130 40981 BC337-25
 Q301 5322 130 60159 BC846B
 Q302 5322 130 60159 BC846B

Q303 5322 130 60159 BC846B
 Q304 5322 130 44593 BC369
 Q305 5322 130 44593 BC369
 Q306 4822 130 60373 BC856B
 Q401 4822 130 44568 BC557B

Q402 5322 130 44593 BC369
 Q403 5322 130 60159 BC846B
 Q405 4822 130 40981 BC337-25

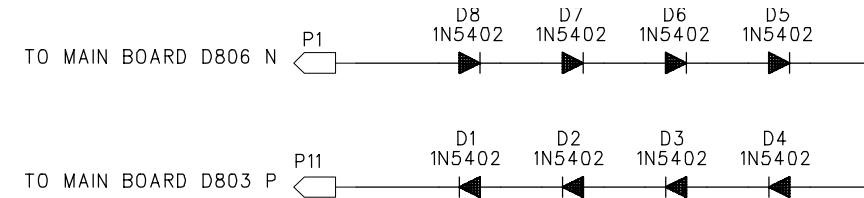
Note: Only these parts mentioned in the list are normal service parts.

DIODE & CONNECTION BOARDS

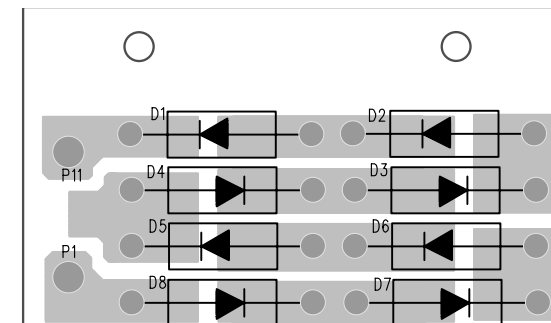
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 Diode Board - Layout Diagram..... 9-1
 Conn. Board - Circuit Diagram 9-2
 Conn. Board - Layout Diagram..... 9-3
 Electrical Parts List..... 9-4

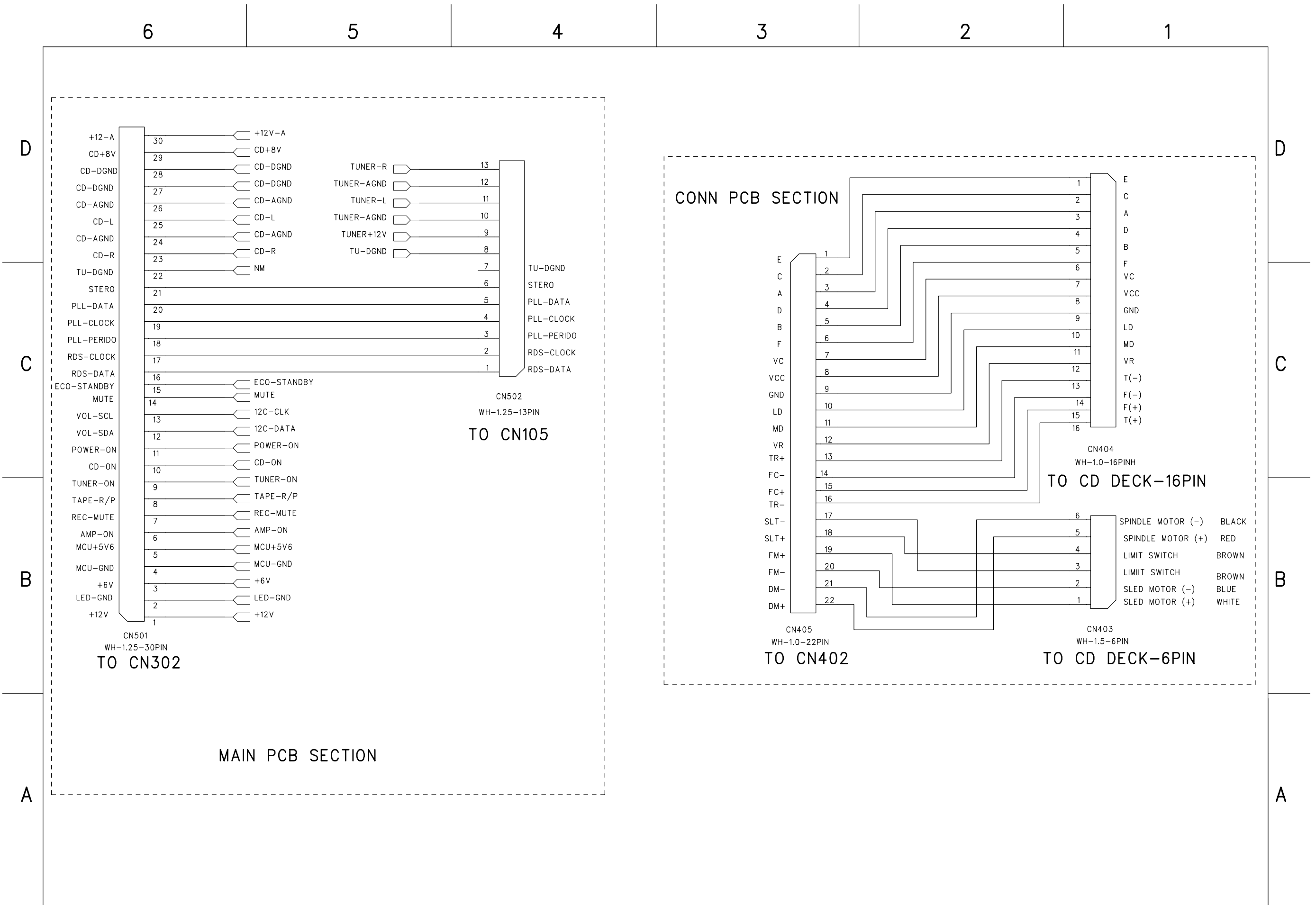
DIODE PCB CIRCUIT DIAGRAM



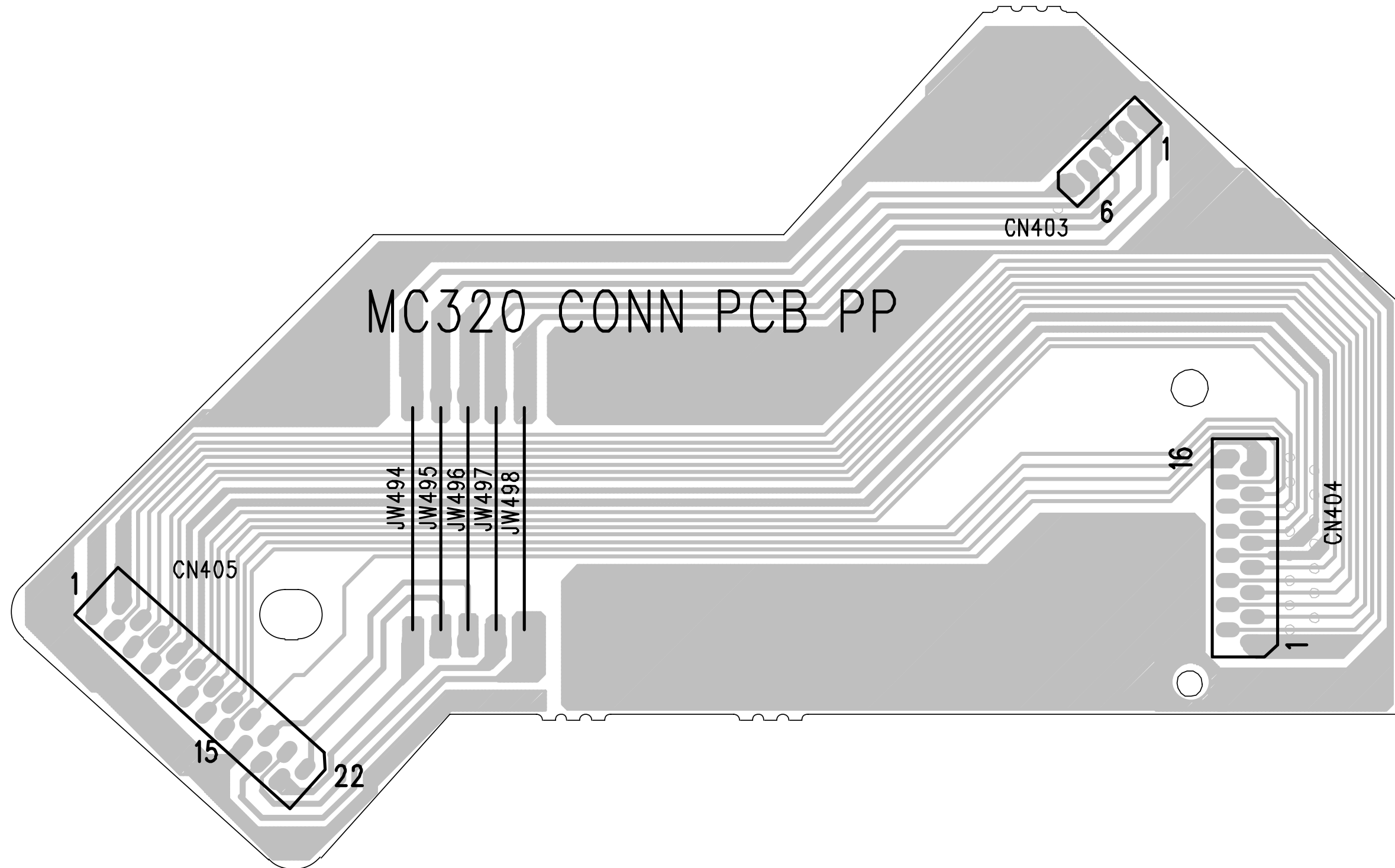
DIODE PCB LAYOUT DIAGRAM



CONNECTION PCB CIRCUIT DIAGRAM



CONNECTION PCB LAYOUT DIAGRAM



ELECTRICAL PARTSLIST - DIODE BOARD**- DIODES -**

D2	9965 000 19770	DIODE 1N5402GW F20
D3	9965 000 19770	DIODE 1N5402GW F20
D6	9965 000 19770	DIODE 1N5402GW F20
D7	9965 000 19770	DIODE 1N5402GW F20

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - CONNECTION BOARD**- MISCELLANEOUS -**

CN403	9965 000 18229	CONN P=1.5 H 6PIN
CN404	9965 000 18230	CONN 16P H P=1.0
CN405	9965 000 18231	CONN 22P P=1.0 H

Note: Only these parts mentioned in the list are normal service parts.

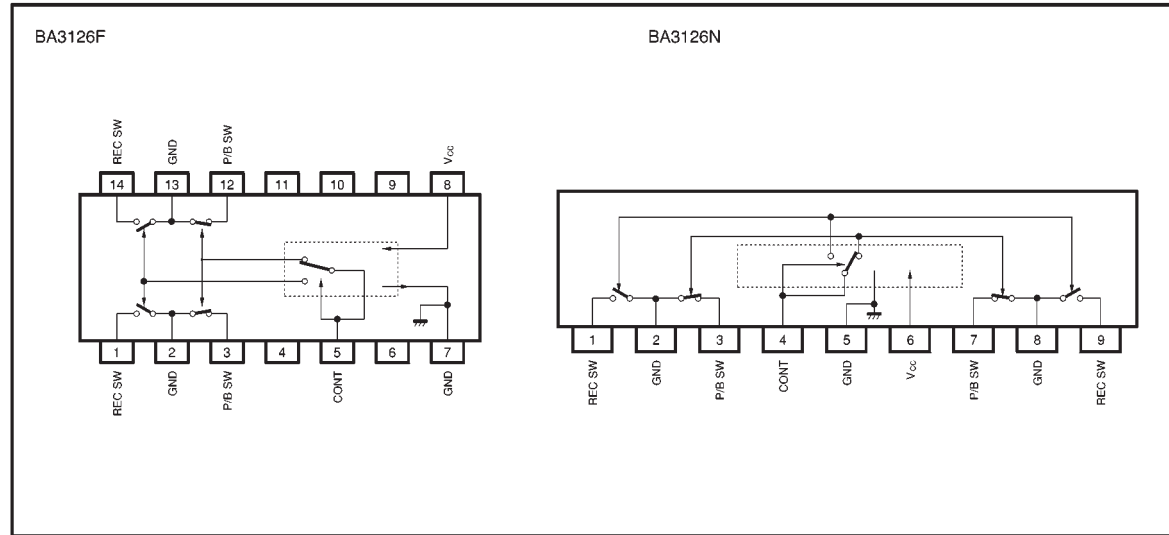
MAIN BOARD

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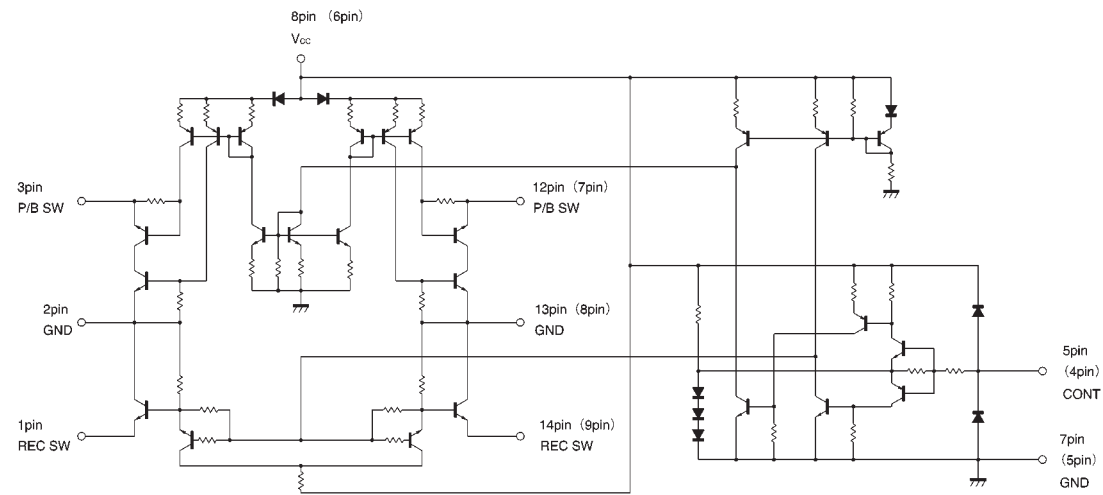
IC Block Diagram.....	10-2 to 10-3
Circuit Diagram - Main Part.....	10-4
Circuit Diagram - Tape Part.....	10-5
Component Layout - Main PCB.....	10-6
SMD Layout - Main PCB.....	10-7
Electrical Parts List.....	10-8

**TAPE HEAD SWITCHING IC
BA3126N**

Block diagram



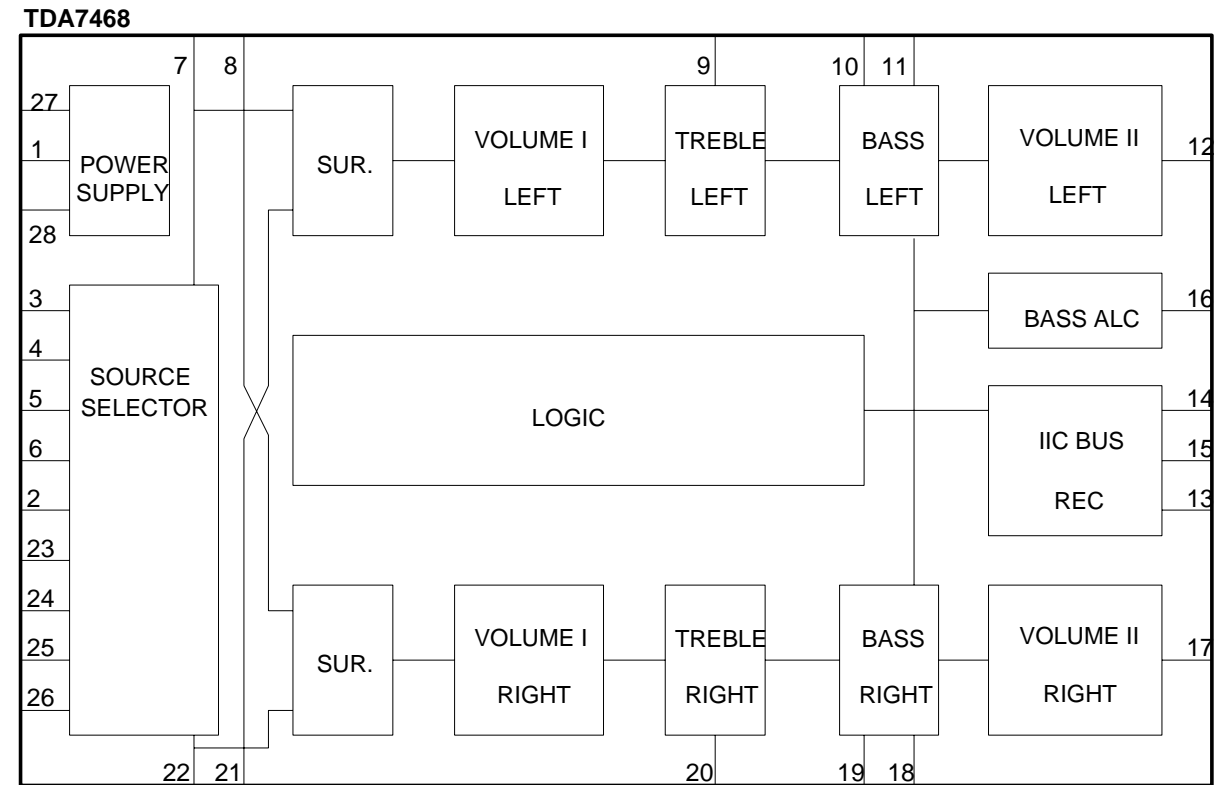
Internal circuit diagram



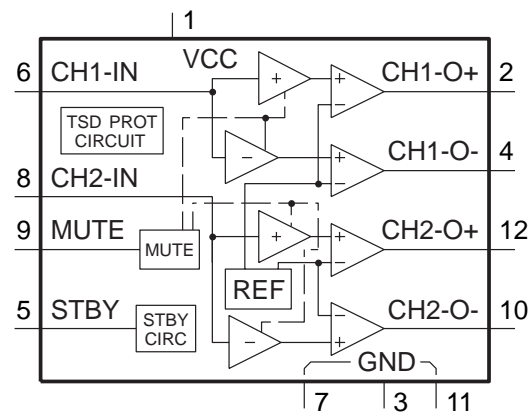
Pin numbers for the BA3126F (BA3126N pin numbers are in brackets).

**IC BLOCK DIAGRAM
TDA7468**

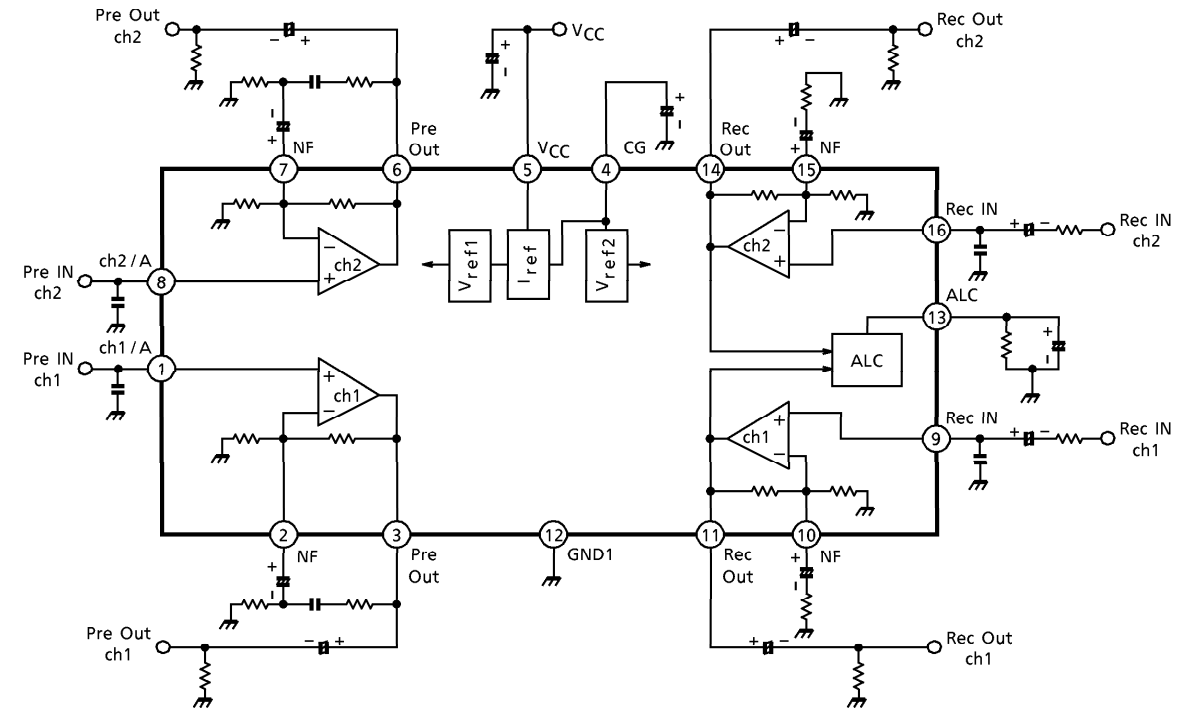
TDA7468 INTERNAL BLOCK DIAGRAM



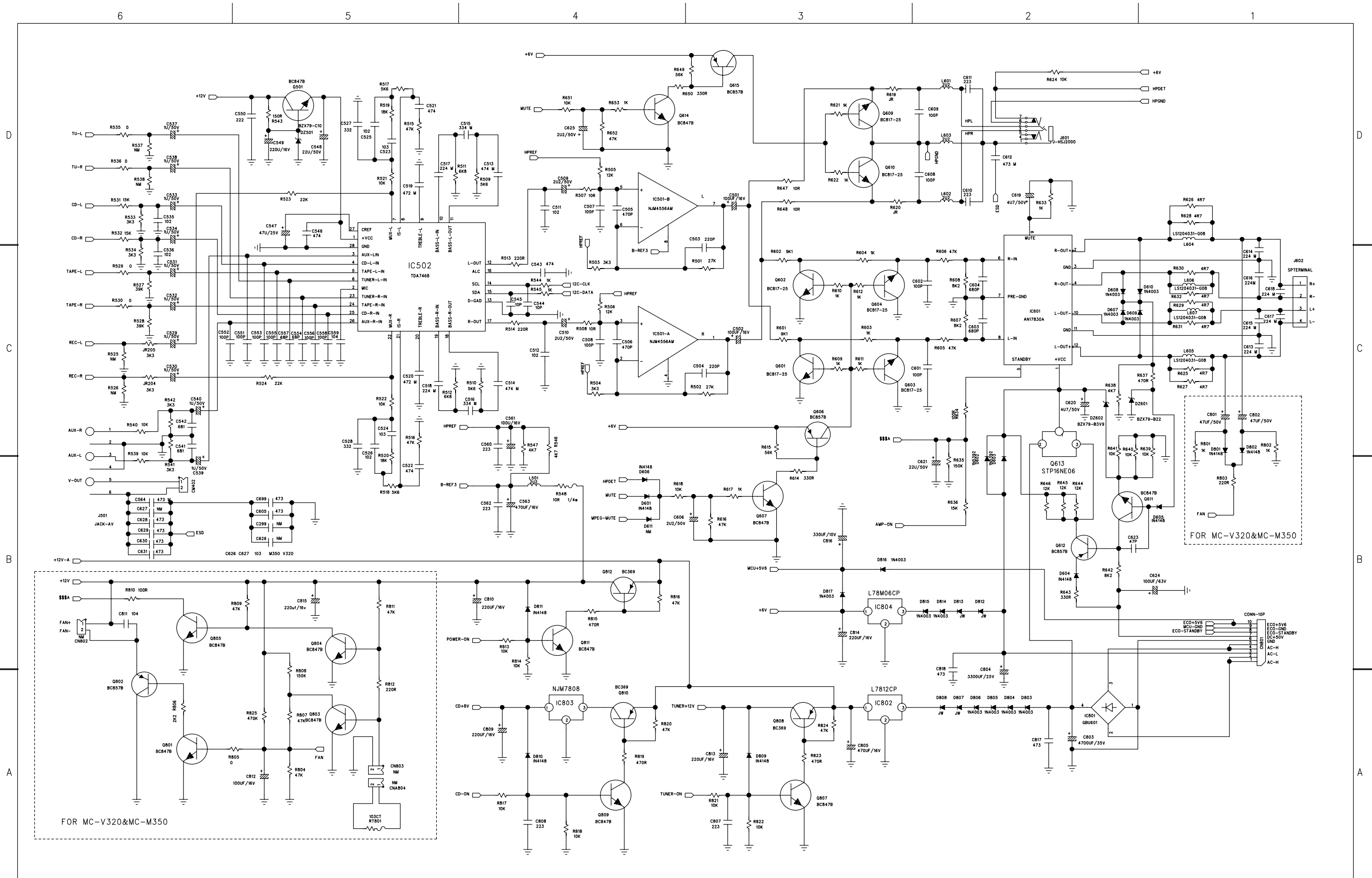
IC BLOCK DIAGRAM
AN17830A



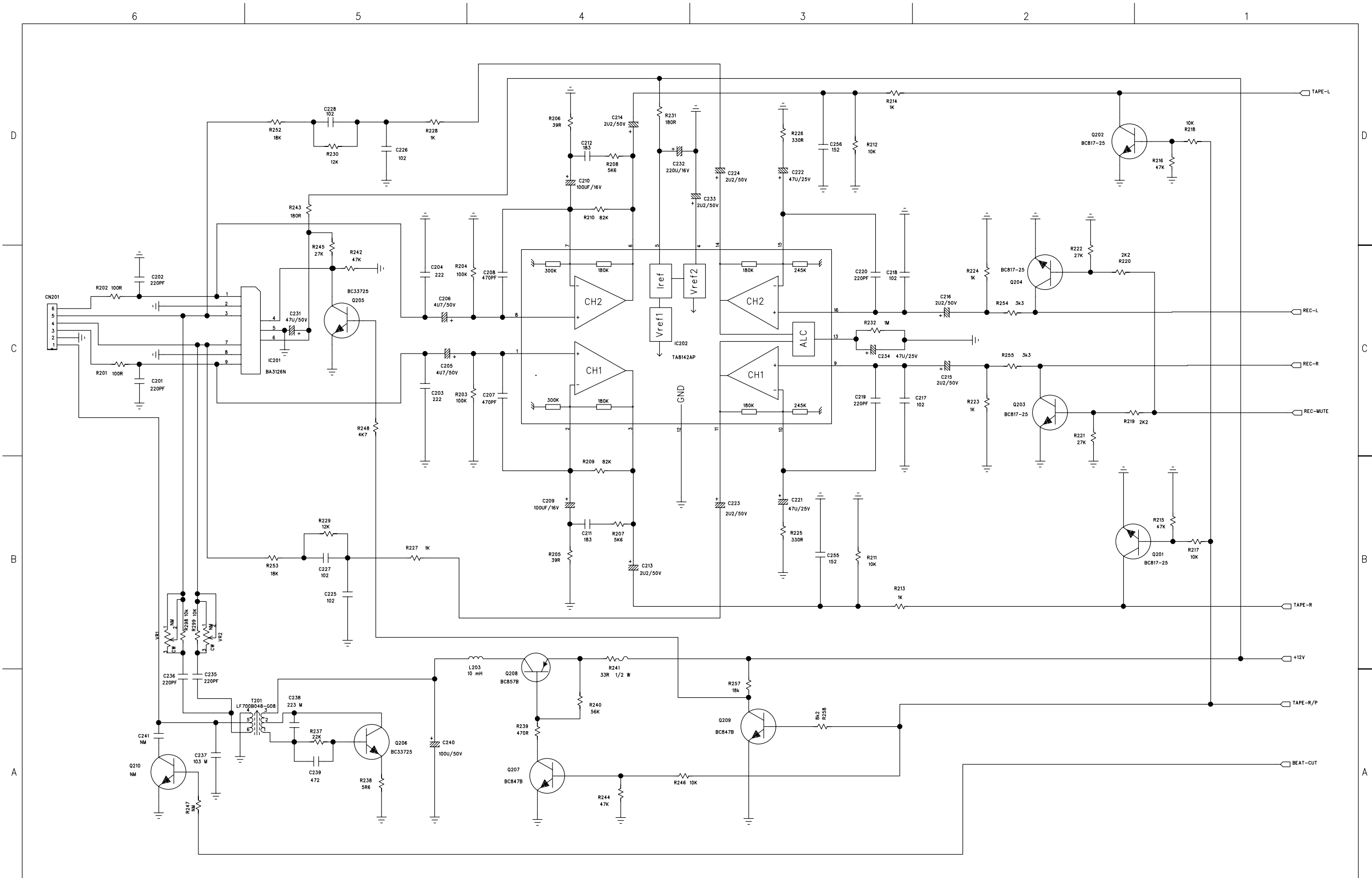
IC BLOCK DIAGRAM
TA8142AP



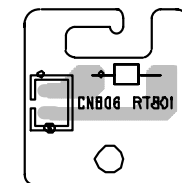
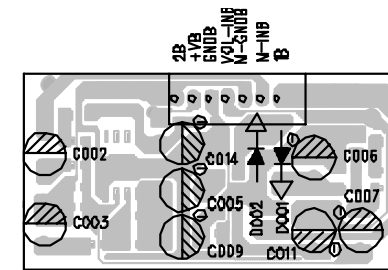
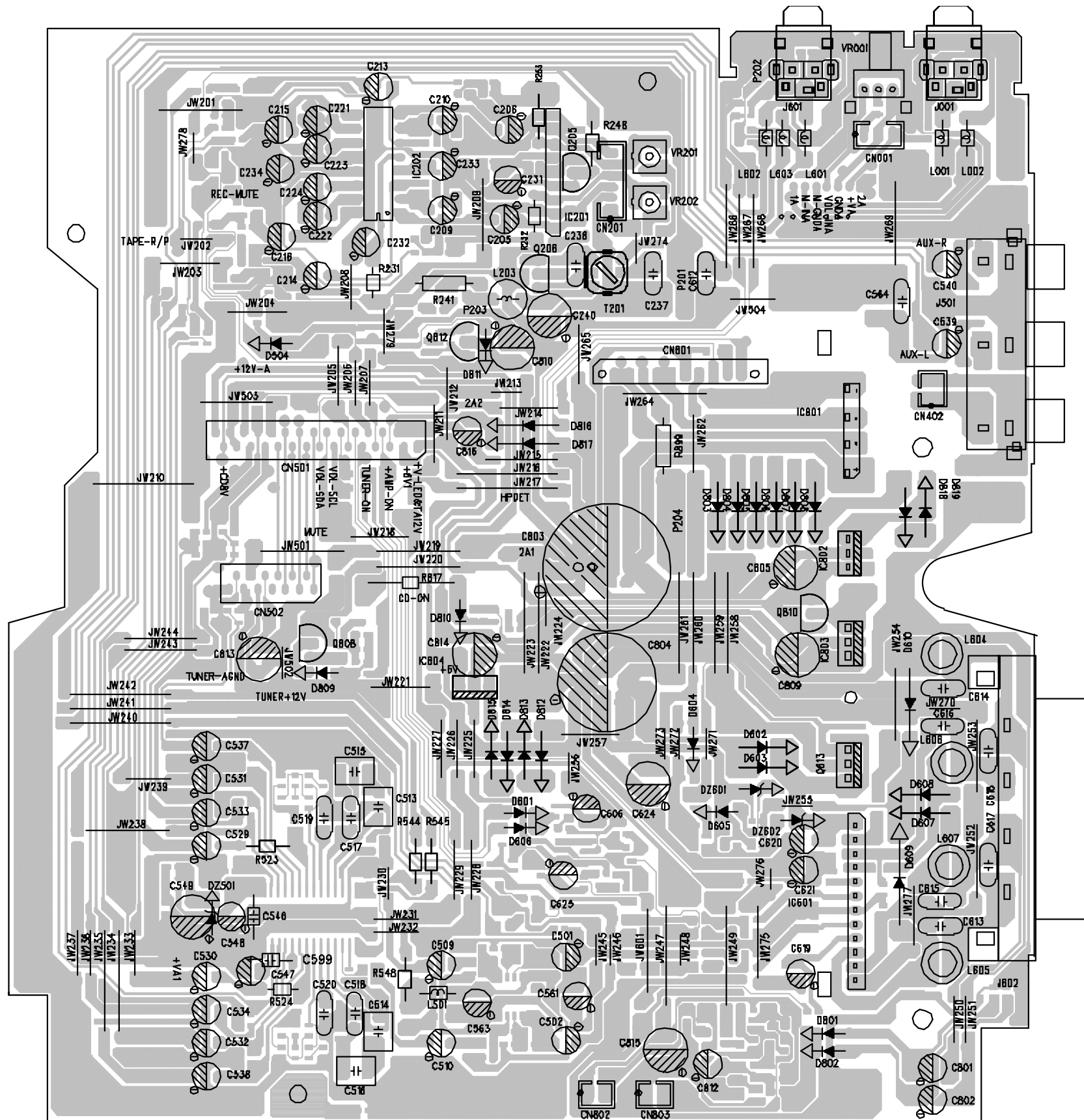
MAIN BOARD - CIRCUIT DIAGRAM



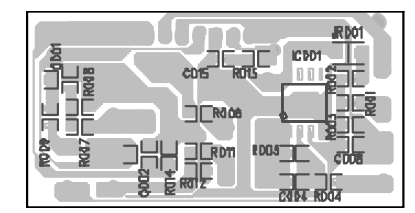
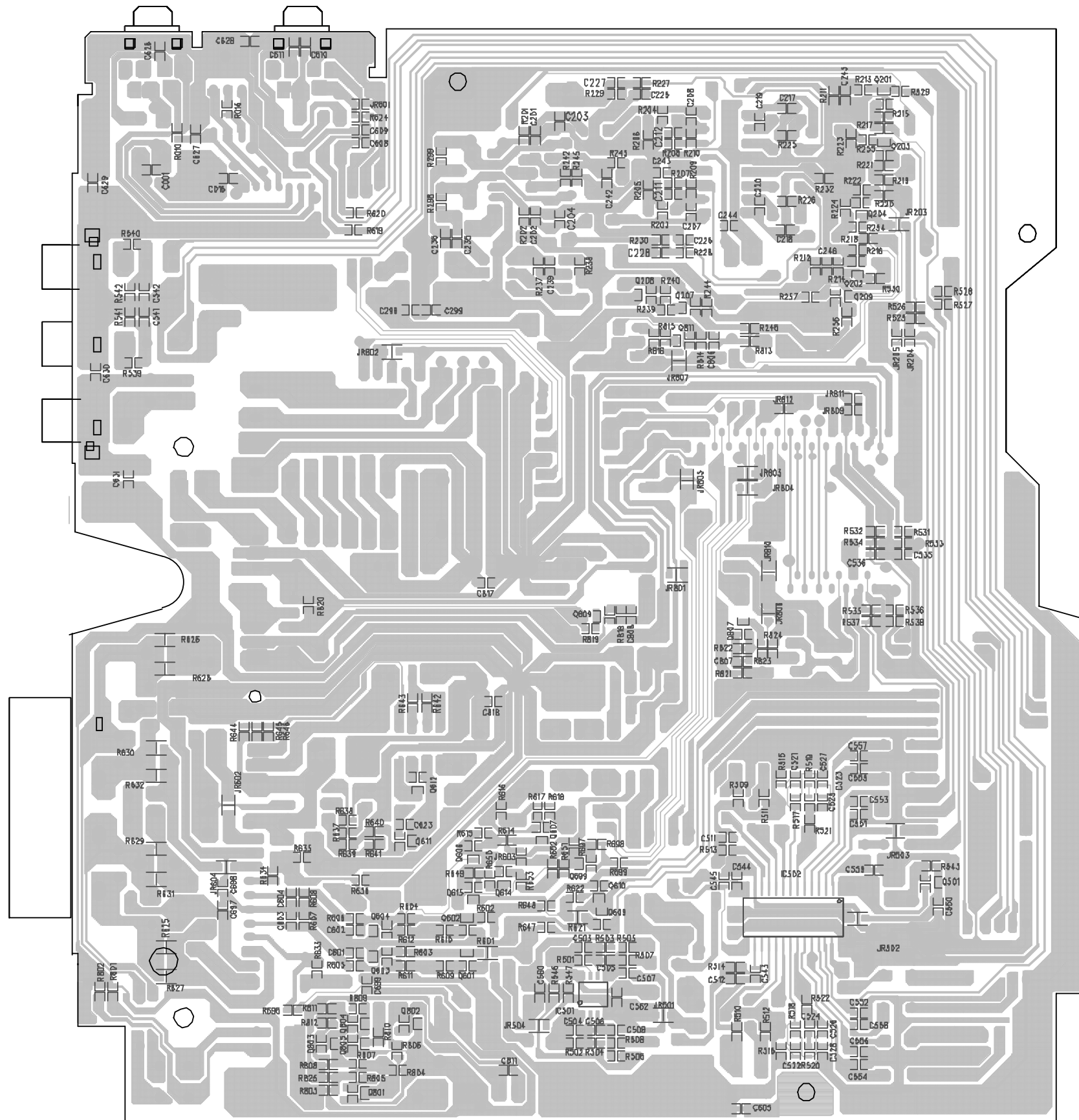
TAPE PART - CIRCUIT DIAGRAM



MAIN PCB - COMPONENT LAYOUT



MAIN PCB - SMD LAYOUT



ELECTRICAL PARTSLIST - MAIN BOARD**- MISCELLANEOUS -**

CN001	9965 000 20199	WIRE ASS' Y 3PIN
CN201	9965 000 14509	CON BASE 6P
CN402	9965 000 20200	WIRE ASS' Y 2PIN
CN403	9965 000 18229	CONN P=1.5 H 6PIN
CN404	9965 000 18230	CONN 16P H P=1.0
CN405	9965 000 18231	CONN 22P P=1.0 H
CN501	9965 000 18232	CONN 30P P=1.25 V
CN502	9965 000 18233	CONN 13P P=1.25 V
CN801	9965 000 18234	WIRE ASS' Y 10P L170MM
CN802	9965 000 19716	CONNECTOR BASE 2P
CN803	9965 000 19717	WIRE ASS' Y 2PIN L=250MM
CN806	9965 000 19718	CONNECTOR 2P PH-2A
J 001	9965 000 20201	HEAD PHONE J ACK D3.5MM
J 501	9965 000 20202	J ACK-AC 3 MC-350
J 601	9965 000 20201	HEAD PHONE J ACK D3.5MM
J 602	9965 000 18239	SPK TERMINAL 4P 94V0
VR001	9965 000 20204	VOL 50KA
ZA1	9965 000 14709	TERMINAL PIN

- RESISTORS -

R241	△ 9965 000 18241	FUSE RES 33Ω 1/2W
R548	△ 9965 000 18242	FUSE RES NFR 25 A 10Ω
RT801	9965 000 20203	NTC RES 10KΩ

- COILS & FILTERS -

L001	9965 000 19762	FIXED IND 10μH
L002	9965 000 19762	FIXED IND 10μH
L203	9965 000 18240	FIXED IND 10MH
L501	4822 157 11477	LAL02TB2R2J
L601	4822 157 11477	LAL02TB2R2J
L602	4822 157 11477	LAL02TB2R2J
L603	4822 157 11477	LAL02TB2R2J
L604	9965 000 19721	SPRING COIL 1.0μH K 4.0±1.0
L605	9965 000 19721	SPRING COIL 1.0μH K 4.0±1.0
L606	9965 000 19721	SPRING COIL 1.0μH K 4.0±1.0
L607	9965 000 19721	SPRING COIL 1.0μH K 4.0±1.0
T201	9965 000 18243	OSC 85KHZ COIL

- DIODES -

D601	4822 130 30621	1N4148
D602	4822 130 31878	1N4003G
D603	4822 130 31878	1N4003G
D604	4822 130 30621	1N4148
D605	4822 130 30621	1N4148
D606	4822 130 30621	1N4148
D607	4822 130 31878	1N4003G
D608	4822 130 31878	1N4003G
D609	4822 130 31878	1N4003G

- DIODES -

D610	4822 130 31878	1N4003G
D801	4822 130 30621	1N4148
D802	4822 130 30621	1N4148
D809	4822 130 30621	1N4148
D810	4822 130 30621	1N4148
D811	4822 130 30621	1N4148
D814	4822 130 31878	1N4003G
D815	4822 130 31878	1N4003G
D816	4822 130 31878	1N4003G
D817	4822 130 31878	1N4003G
DZ501	4822 130 61219	BZX79-B10
DZ601	4822 130 34441	BZX79-B22
DZ602	4822 130 31981	BZX79-B3V9

- IC & TRANSISTORS -

IC001	5322 209 15853	NJ M4556AM
IC201	4822 209 30188	BA3126N
IC202	4822 209 32082	TA8142AP
IC501	5322 209 15853	NJ M4556AM
IC502	9322 150 74668	IC SM TDA7468D (ST00) R

IC601	9322 174 32682	IC AN17830A (MATJ) B
IC801	9965 000 18236	IC GBU601
IC802	4822 209 81726	MC7812CT
IC803	4822 209 33083	L7808CV
IC804	4822 209 61533	NJ M7806A

Q002	5322 130 60159	BC846B
Q201	4822 130 42804	BC817-25
Q202	4822 130 42804	BC817-25
Q203	4822 130 42804	BC817-25
Q204	4822 130 42804	BC817-25

Q205	4822 130 40981	BC337-25
Q206	4822 130 40981	BC337-25
Q207	5322 130 60159	BC846B
Q208	4822 130 60373	BC856B
Q209	5322 130 60159	BC846B

Q501	5322 130 60159	BC846B
Q601	4822 130 42804	BC817-25
Q602	4822 130 42804	BC817-25
Q603	4822 130 42804	BC817-25
Q604	4822 130 42804	BC817-25

Q606	4822 130 60373	BC856B
Q607	5322 130 60159	BC846B
Q609	4822 130 42804	BC817-25
Q610	4822 130 42804	BC817-25
Q611	5322 130 60159	BC846B

Q612	4822 130 60373	BC856B
Q613	4822 130 11336	STP16NE06FP
Q614	5322 130 60159	BC846B
Q615	4822 130 60373	BC856B
Q699	5322 130 60159	BC846B

ELECTRICAL PARTSLIST - MAIN BOARD**- IC & TRANSISTORS -**

Q801	5322 130 60159	BC846B
Q802	4822 130 60373	BC856B
Q803	5322 130 60159	BC846B
Q804	5322 130 60159	BC846B
Q805	5322 130 60159	BC846B

Q807	5322 130 60159	BC846B
Q808	5322 130 44593	BC369
Q809	5322 130 60159	BC846B
Q810	5322 130 44593	BC369
Q811	5322 130 60159	BC846B

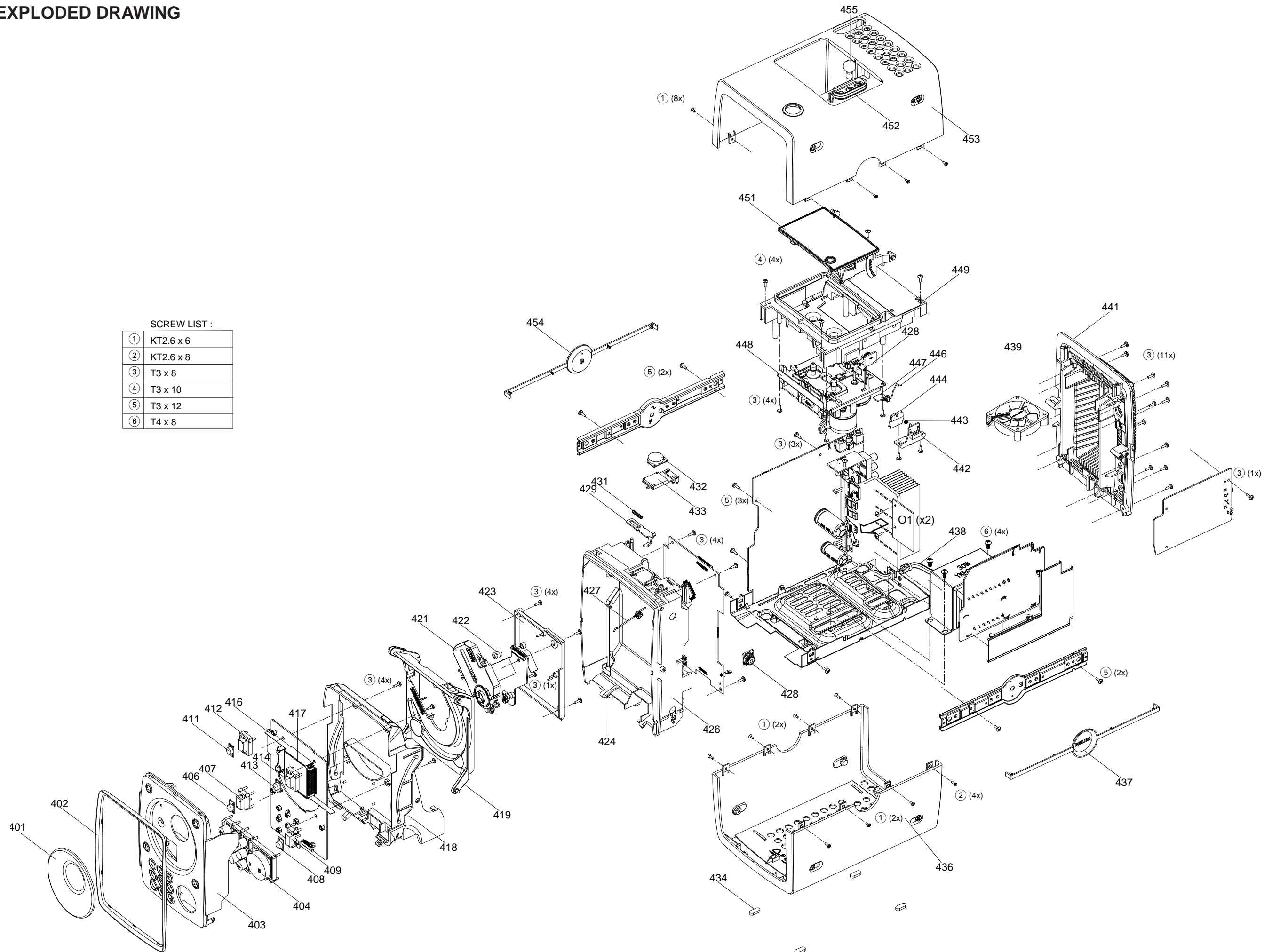
Q812	5322 130 44593	BC369
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Note: Only these parts mentioned in the list are normal service parts.

EXPLODED DRAWING

SCREW LIST :

①	KT2.6 x 6
②	KT2.6 x 8
③	T3 x 8
④	T3 x 10
⑤	T3 x 12
⑥	T4 x 8



MECHANICAL & ACCESSORIES PARTSLIST

401	9965 000 20194	CD DOOR LENS	9965 000 20195	IFU MCV320
402	9965 000 18185	CD CHROME RING	9965 000 11157	FM ANTENNA WIRE
402	9965 000 20183	CD DOOR PANEL	4822 303 50082	AM LOOP ANTENNA
404	9965 000 20182	KEY SET FUNCTION	9965 000 20196	SPK BOX MC-V320 20W
406	9965 000 20187	KEY DISPLAY CAP	9965 000 20197	REMOTE CONTROL
407	9965 000 18203	KEY DISPLAY BKT	9965 000 18224	FFC 9P L=250MM P=1.25
408	9965 000 20189	KEY REC CAP	9965 000 18225	FFC 13P L=200MM P=1.25
409	9965 000 18205	KEY REC BKT	9965 000 18226	FFC P=1.0 L=115MM
411	9965 000 20186	KEY POWER CAP	9965 000 18227	FFC 22P L=90MM P=1.0
412	9965 000 18202	KEY POWER BKT	9965 000 18228	FFC 30P L=150MM P=1.25
413	9965 000 20188	KEY IR CAP	9965 000 20198	CORD PIN 1PY 1.5M
414	9965 000 18204	KEY IR BKT		
416	9965 000 18255	REFLECT LIGHT GUIDE		
417	9965 000 18256	LCD LIGHT GUIDE		
418	9965 000 20180	CD DOOR		
419	9965 000 20184	CD TRAY		
421	9965 000 18220	CD DECK DA23Z		
422	9965 000 18212	DMPR MECHA (SP)		
423	9965 000 20185	CD TRAY COVER		
424	9965 000 18213	CD DOOR SHAFT		
426	9965 000 20179	CD BKT		
427	9965 000 18216	CD TRAY SPRING		
428	4822 529 10322	DAMPER ASSY		
429	9965 000 18198	CD DOOR LEVER		
431	9965 000 18214	CD DOOR LEVER SPRING		
432	9965 000 20190	CD DOOR KNOB CAP		
433	9965 000 18206	CD DOOR KNOB BKT		
434	9965 000 18208	FOOT RUBBER		
436	9965 000 20176	CAB BOTTOM		
437	9965 000 20192	BRAND RIM RIGHT		
438	9965 000 18223	AC CORD E 1750MM		
439	9965 000 19713	DC FAN		
441	9965 000 20177	CAB REAR		
442	9965 000 18181	BRACKET-LEFT		
443	9965 000 18211	SPRING-C LOCK		
444	9965 000 18192	PUSH CATCH LEFT		
446	9965 000 18215	CASS DOOR SPRING		
447	9965 000 18207	CASS SPRING BKT		
448	9965 000 18221	CASSETT DECK CRM4304		
449	9965 000 19701	CASS BKT		
451	9965 000 19700	CASS DOOR		
452	9965 000 20193	DECORATION TOP		
453	9965 000 20178	CAB TOP		
454	9965 000 20191	BRAND RIM LEFT		
455	9965 000 20181	KEY VOL MIC		

Note: Only these parts mentioned in the list are normal normal service parts.