

Service
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PRODUCT FAMILY CDP EXPANIUM 2004

Service Manual



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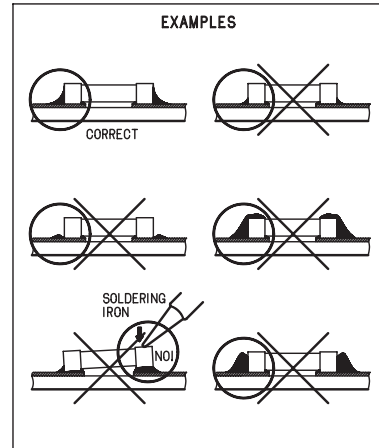
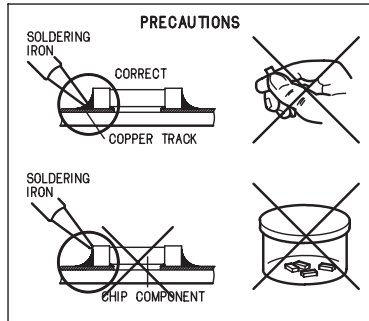
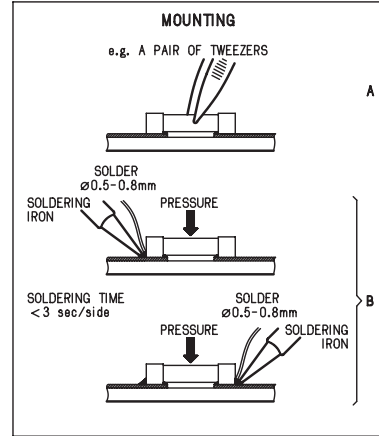
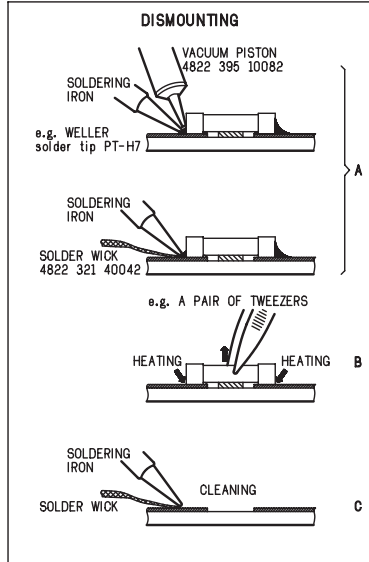
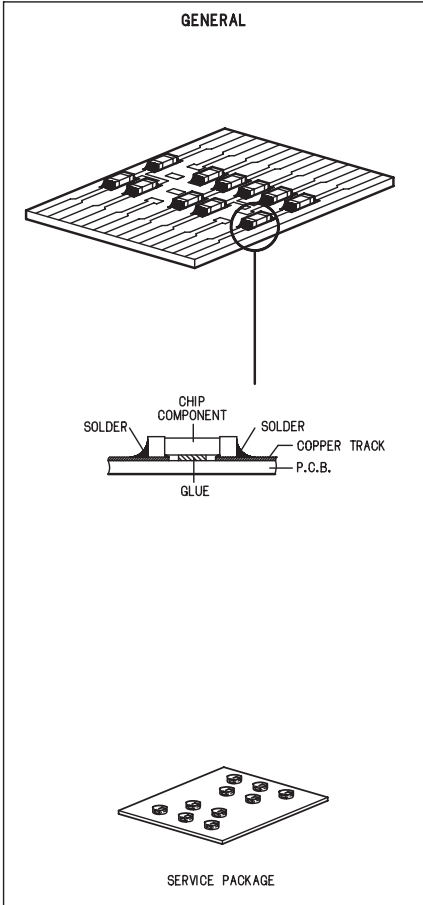
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HANDLING CHIP COMPONENTS



(GB) WARNING

All ICs and many other semiconductors 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 wristband with resistance. Keep components and tools 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 dit zelfde 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 sert 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). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridatta 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 bracciale 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. Safety components are marked by the symbol

(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. Les composants de sécurité sont marqués

SAFETY



(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden. Sicherheitsbauteile sind durch das Symbol markiert.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool

(I)

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

(GB)

DANGER: Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

(S) Varning!

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

(DK) Advarsel!

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



(FIN) Varoitus!

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkyvättömälle laserisäteilylle. Älä katso säteeseen!

(GB)

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

(F)

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

TECHNICAL SPECIFICATION

General

Dimensions (WxHxD)	: 128x34x139.5 mm
Weight without batteries	: 205 g

Power supply modes

DC-in socket	: 2.5 - 6.0V
Primary batteries (2xLR6)	: 1.8 - 3.6V

Battery lifetime

BATTERY TYPE	ESA off	ESA on
Normal Alkalite batteries 2 x LR6	≥ 10h (11.5 h typ.)	≥ 8.5 h (9.5h typ.)

Battery level detection

Battery empty	: 2.0V nom. +200/-200 mV
---------------	--------------------------

Current consumption CDDA-playback

OPERATION MODE	DC-IN SUPPLY (4.5V)	BATT. SUPPLY (2.25V)
Play-mode	220mA typ.	240mA typ.
Jump-mode	260mA typ.	250mA typ.
Stand-by	n.a.	n.a.

Shock resistance

+X/-X direction	: ≥5 g
+Y/-Y direction	: ≥5 g
+Z/-Z direction	: ≥up to 10 g

Headphone out (measured with 16Ω load, DBB/ESP off)

Output power (THD=10%)	: 2x4.5mW (+1/-3dB)
Frequency response (1mW)	: 100Hz-20kHz within-6dB
S/N ratio (unwght)	: ≥73dB (76dB typ.)
S/N ratio (A-wght)	: ≥82dB (84dB typ.)
THD+N (1kHz, 1mW)	: ≤1.0% (0.2% typ.)
Channel crosstalk (1kHz, no load)	: ≤-30dB (-45dBtyp.)
Channel unbalance (-40dB)	: ≤2dB
Volume attenuation (1kHz)	: >60dB

Dynamic Bass Boost DBB

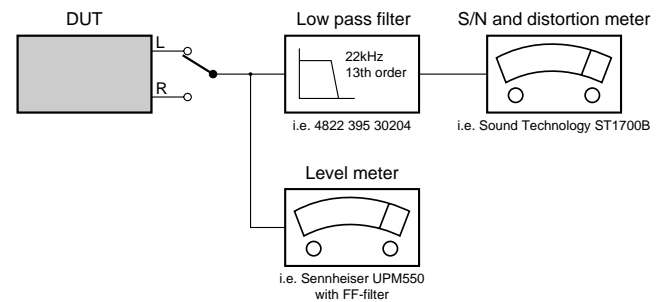
DBB STAGE	Frequency response		
	65 Hz	1kHz	250Hz
DBB 1	+5dB	0dB	+5dB+2/-1dB
DBB 2	+9dB	0dB	+9dB+2/-1dB

Laser

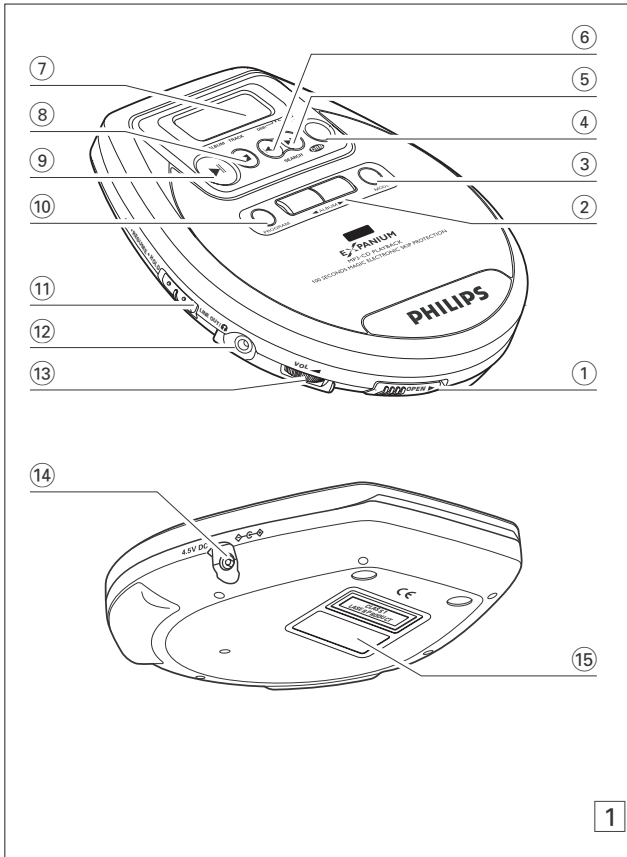
Output power	: <5mW (3mW typ.)
Wavelength	: 780nm

Measurement setup

Use Audio Signal disc SBC429 4822 397 30184



CONNECTIONS AND CONTROLS

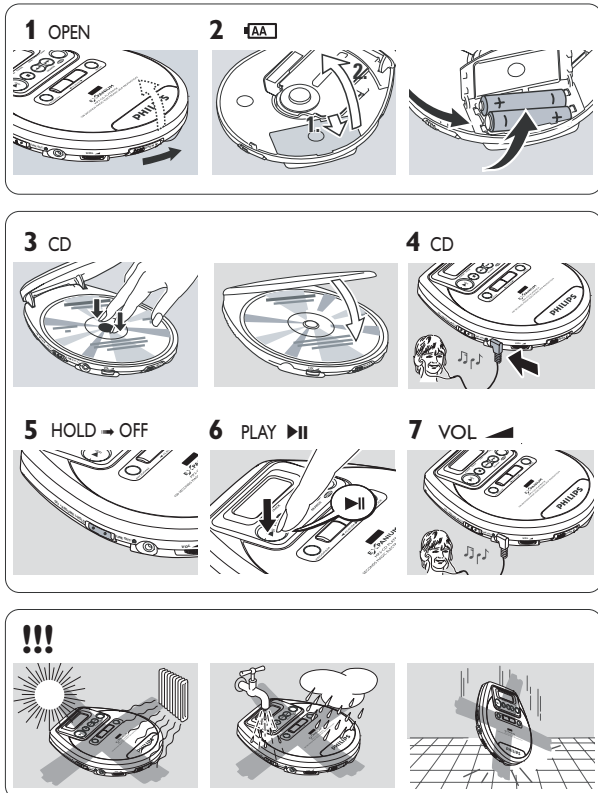


English CONTROLS / GENERAL INFORMATION

Controls (see figure 1)

- ① OPEN ►opens the CD lid.
- ② ALBUMselects next / previous album.
- ③ MODEselects the different playing possibilities: **REPEAT** and **SHUFFLE FUNCTION**; turn on / off ESP (Electronic Skip Protection)
- ④ DBB (Dynamic Bass Boost)
.....Selects the bass.
- ⑤ ►►skips and searches forwards.
- ⑥ ◀◀skips and searches backwards.
- ⑦display.
- ⑧ ■stops playback, clears a program or switches the player off.
- ⑨ ►||switches the player on, starts or pauses playback.
- ⑩ PROGRAMprograms tracks, reviews the program
- ⑪ RESUMEstores the last position of a track played
HOLDlocks all buttons
OFFswitches RESUME and HOLD off
- ⑫ LINE OUT/🎧3.5 mm LINE OUT/ headphone jack to connect the head-
phone or another audio input of an additional appliance.
- ⑬ VOL ◀adjusts the volume
- ⑭ 4.5V DC 🔌jack for connecting external power supply
- ⑮type plate

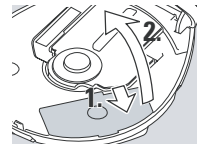
QUICK START



Batteries (not supplied)

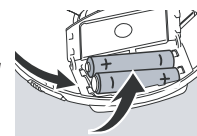
Inserting batteries

- Open the battery compartment and insert either 2 normal or alkaline batteries type **AA (LR6, UM3)**.
Old and new or different types of batteries should not be combined.



Indication of empty batteries

- Replace the battery or connect the mains adapter as soon as blinks.
Remove batteries if they are empty or if the unit will not be used for a long time.



Batteries contain chemical substances, so they should be disposed of properly.



CAUTION

Use of controls or adjustments or performance of procedures other than herein may result in hazardous radiation exposure.

Both the model number and production number are located on the bottom of the set.

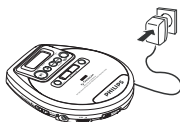
INSTRUCTION FOR USE

POWER SUPPLY / GENERAL INFORMATION

Mains adapter (supplied or optionally available)

Only use the AY3162 mains adapter (4.5 V/450 mA direct current, positive pole to the center pin). Any other product may damage the set.

- 1 Make sure the local voltage corresponds to the adapter's voltage. If your mains adapter is equipped with a voltage selector, set this selector to the local mains voltage if necessary.
- 2 Connect the mains adapter to 4.5V DC on the set and to the wall outlet.



Note: Always disconnect the adapter if you are not using it.

Headphones (HE035)

- Connect the supplied headphones to LINE OUT/Ⓜ.

Note: LINE OUT/Ⓜ can also be used for connecting this set to your HiFi system. Adjust the volume and sound on both the MP3/CD player and your HiFi system.

**IMPORTANT!**

- **Hearing safety :**
Do not play your headphones at a high volume. Hearing experts advise that continuous use at high volume can permanently damage your hearing.
- **Traffic safety :**
Do not use headphones while driving a vehicle. It may create a hazard and it is illegal in many countries. Even if your headphones are an open-air type designed to let you hear outside sounds, do not turn up the volume so high that you cannot hear what is going on around you.

Environmental information

- All redundant packing material has been omitted. We have done our utmost to make the packaging easily separable into three mono materials: EXP220 / 00Z use clamshell package, EXP221/00C use D box.
- Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, exhausted battery and old equipment.

MP3 music files

The music compression technology MP3 (MPEG Audio Layer 3) reduce the size of digital data of an audio CD significantly while maintaining CD-like sound quality. With MP3 you can record up to 10 hours of CD-like music on a single CD-ROM.

How to get music files

Either download legal music files from the Internet to your computer hard disk or create them from your own audio CDs. For this, insert an audio CD into your computer's CD-ROM drive and convert the music using an appropriate encoder software select to achieve a good sound quality, a bit rate of 128 kbps and sampling frequency of 44.1kHz are recommended for MP3 music files.

Supported formats

- This set supports:
- Disc format: ISO 9660, Joliet, Multisession, UDF, Enhanced Music CD, Mixed Mode CD
 - MP3 bit rate: 32–320 kbps and variable bit rate (128 kbps preferable)
 - MP3 sampling frequency: 8 - 48 kHz (44.1 kHz preferable)
 - Total number of music files around 600
 - Maximum album number : around 99

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GENERAL INFORMATION

MP3 music files

Note:

The following formats are not supported:

- *.WMA* , *.AAC* , *.DLF* , *.PLS* , MP3 PRO
- Non-session closed discs

How to organize music files

In order to easily handle the large number of music files on a CD-ROM, you can organize them in folders ("albums").

The tracks of an album will be played in alphabetical order. If you want to arrange them in a certain order, let the file names start with numbers.

For example:

001-ONEWORLD.MP3
002-FIRESTARTER.MP3
003-DEEP.MP3

The albums will be arranged in alphabetical order. If albums are located in an album, they will be played after this album. Albums without MP3 files will be skipped.

If there are MP3 files which you did not put into an album, you will find them in the album number 1.

How to make a CD-ROM with MP3

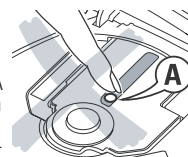
Use your computer's CD burner to record ("burn") the music files from your hard disk on a CD-ROM. Use either ISO 9660 disc format or UDF. Some CD burner softwares like e. g. "Draw - to - Disc" or "InCD" support the UDF format.

Make sure that the file names of the MP3 files end with .mp3.

This set complies with the radio interference requirements of the European Community.

CD player and CD handling

- Do not touch the lens (A) of the CD player.
- Do not expose the unit, batteries or CDs to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight).
- You can clean the CD player with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.
- To clean the CD, wipe it in a straight line from the center toward the edge using a soft, lint-free cloth. A cleaning agent may damage the disc! Never write on a CD or attach a sticker to it.
- The lens may cloud over when the unit is moved suddenly from cold to warm surroundings. Playing a CD is not possible then. Leave the CD player in a warm environment until the moisture has evaporated.
- Active mobile phones in the vicinity of the CD player may cause malfunctions.
- Avoid dropping the unit as this may cause damage.

**Volume and bass****Volume adjustment**

- Adjust the volume by using VOL ◀▶

**SOUND ADJUSTMENT**

- 1 Press DBB once or more for a moderate bass enhancement (DBB1) or a strong bass enhancement (DBB2).



→▶ A ♪ is shown in the display

- 2 Press DBB again to switch the bass enhancement off.

→▶ A ♪ disappears

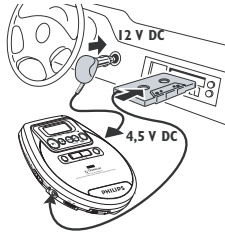
INSTRUCTION FOR USE

GENERAL INFORMATION/CD PLAY

In-car use (supplied or optionally available)

Only use a **4.5 V DC** car voltage converter (positive pole to the center pin) and cassette car adapter. Any other converter may damage the set.

- Put the set on a horizontal, vibration-free and stable surface. Make sure it is in a safe place, where the set is neither a danger nor an obstacle to the driver and the passengers.
 - Plug the voltage converter into the cigarette lighter jack (**only for 12 V car battery, negative grounding**), then connect the wired end with 4.5V DC input jack on the set.
 - If necessary, clean the cigarette lighter jack to obtain a good electrical contact.
 - Turn down the volume and connect the cassette adapter plug to LINE OUT/🔊 on the set.
 - Carefully insert the cassette adapter into the car radio's cassette compartment.
 - Make sure the cord does not hinder your driving.
 - Decrease the volume on the set if necessary. Start playback on the set and adjust the sound with the car radio controls.
- Always remove the voltage converter from the cigarette lighter jack when the set is not in use.**

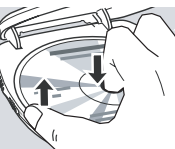


Note: If your car radio has a LINE IN jack, it is better to use it for the car radio connection instead of the cassette adapter. Connect the signal lead to this LINE IN jack and to LINE OUT/🔊 on the set.

Playing a disc

With this set you can play
 –all pre-recorded audio CDs
 –all finalized audio CDRs and CDRWs
 –MP3-CDs (CD-ROMs with MP3 files)

- Push the OPEN ► slider to open the CD lid.
- Insert a disc, printed side up, by pressing gently on the disc's centre so that it fits onto the hub. Close the lid by pressing it down.
- Press ►► to start playback.
 →► **READ DISC** are displayed briefly when reading the contents of the disc. Press ►► again to start playback. Playback starts. For audio CD track, the current track number and the elapsed playing time are displayed. For a MP3 track, the album number, track number and the elapsed time and MP3 icon is displayed.
- Press ■ to stop playback.
 →► The total number of tracks and the total playing time of an audio disc are displayed.
 →► The total number of albums and tracks of MP3-CD are displayed.
- To remove the disc, hold it by its edge and press the hub gently while lifting the disc.
- Press ■ again to switch off the player.



Notes:
 - After pressing ►► it may take some time to read the disc until the first MP3 track is played.
 - The set switches off automatically after 70 seconds.

CD PLAY / FEATURES

Playing Enhanced Music CDs and Mixed Mode CDs

On enhanced music CDs and mixed mode CDs, there are audio CD tracks as well as MP3 files.

- All audio CD tracks normally placed in album 1 or the last album number. When audio CD tracks are played, the display shows the album number, track number, elapsed time, but no **MP3** is displayed.
- When MP3 files are played, the display shows the album number, track number, elapsed time and MP3 icon.

Note:

Enhanced music CD & mixed mode CD containing computer data (text file, pictures) are not recommended in order to allow the set to play audio CD and MP3 file correctly.

Pause

- Press ►► to interrupt playback.
 →► The time where playback was interrupted will blink.
- To resume playback, press ►► to again.

Notes:

The set will return to the stop mode automatically after 90 seconds in pause mode.

Selecting and searching CD only**Selecting a track during playback**

- Briefly press ◀◀ or ▶▶ once or several times to skip to the beginning of the current, previous or subsequent track.
 →► Playback continues with the selected track .

**Selecting album and tracks on MP3-CDs****Selecting an album during playback**

- Briefly press ◀ or ▶ once or several times to skip to the first track of the previous or subsequent album.
 →► The first track of the selected album is played.

Selecting a track during playback

- Keep ◀◀ or ▶▶ pressed to skip quickly to previous or subsequent MP3 tracks.
 →► Skipping starts and speeds up .
- Release the button at the desired track.
 →► Playback continues with the selected track.

Searching for a passage during playback

- Briefly press ◀◀ or ▶▶ to skip to previous or subsequent MP3 track.
 →► Searching is started at a high speed sound.
- Release the button at the desired passage.
 →► Normal playback continues.

Note: To skip from track to track at low speed, use ◀◀ or ▶▶.

INSTRUCTION FOR USE

FEATURES

Programming track numbers

You can store up to 50 tracks to play in a program. A single track may be stored more than once in the program.

- 1 While playback is stopped, select a track with ◀◀ or ▶▶.

- 2 Press PROGRAM to store the track.

→ **PROG** lights up; the track number programmed and *P* with the total number of stored tracks are displayed.

- 3 Select and store all desired tracks in this way.

- 4 Press ▶▶ to start playback of your programmed tracks.

→ **PROG** is shown and playback starts.

- To add additional tracks to your program, press ■ to stop playing the program and continue with step 1 and 2.

- In stop mode, you can review the program by pressing PROGRAM for more than 2 seconds.

→ The display shows all the stored tracks in sequence.

Notes: – If you press PROGRAM and there is no track selected, *SELE* or “no Pr” is displayed.

– If you try to store more than 50 tracks, *Pr 09* or *FULL* is displayed.

Clearing the program

- While playback is stopped, press ■ to clear program.
- *Pr 09* is displayed once, **PROG** goes off, and the program is cleared.

Playing tracks repeatedly or in random order-MODE

Note: The program will also be cleared if the power supply is interrupted, or if the CD-player lid is opened, or if the set switches off automatically.

- 1 Press MODE repeatedly during playback to select either:

– **shuffle**: All tracks of the disc are played in random order once.

– **shuffle repeat all**: All tracks of the disc are played repeatedly in random order.

– **repeat one**: current track is played repeatedly.

– **repeat all**: The entire disc is played repeatedly.

– **shuffle album** (with MP3-CDs only):

All the albums are played in random order once.

– **shuffle repeat album** (with MP3-CDs only):

All the albums are played repeatedly in random order.

– **repeat album** (with MP3-CDs only):

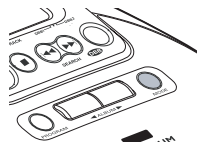
All tracks of the current album are played repeatedly.

– **shuffle program**: All tracks of the program are played in random order until all of them have been played once

– **repeat all program**: All tracks of the program are played repeatedly.

– **shuffle repeat program**: All tracks of the program are played repeatedly in random order.

– **repeat one program**: The current track of the program is played repeatedly.



FEATURES

Playing tracks repeatedly or in random order-MODE

- 2 Playback starts in the selected mode after 2 seconds.

- 3 To return to normal playback, press MODE repeatedly until **repeat** and **shuffle** disappear.

ESP (Electronic Skip Protection)

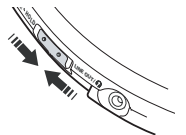
With a conventional portable MP3 -CD player you might have experienced that the music stopped e.g. when you were jogging. The **Electronic Skip Protection** prevents loss of sound caused by light vibrations and shocks. Continuous playback is ensured. It also does not protect the unit against any damage caused by dropping!

In this set ESP is default ON. It is possible to set ESP off in audio CD playback (ESP is always on in MP3 playback).

- Press MODE for more than 2 seconds.
- **ESP** disappears.
- Press MODE again for more than 2 seconds.
- **ESP** is displayed.

RESUME and HOLD

You can interrupt playback and continue (even after an extended period of time) from the position where playback stopped (RESUME) and you can lock all buttons of the set so that no action will be executed (HOLD). Use the OFF-RESUME-HOLD slider for these functions.



RESUME – continuing from where you have stopped

- 1 Switch the slider to RESUME during playback to activate RESUME.

→ **RESUME** is shown.

- 2 Press ■ whenever you want to stop playback.

- 3 Press ▶▶ whenever you want to resume playback.

→ **RESUME** is shown and playback continues from where you have stopped.

- To deactivate RESUME, switch the slider to OFF.

→ **RESUME** goes off.

HOLD – locking all buttons

You can lock the buttons of the set. When a key is pressed, no action will be executed. With HOLD activated, you can avoid accidental activation of other functions.

- 1 Switch the slider to HOLD to activate HOLD.

→ All buttons are locked. *Hold* is shown when you press any button. If the set is switched off, **HOLD ON** will be shown shortly when ▶▶ is pressed.

- 2 To deactivate HOLD, switch the slider to OFF.

Note: -- you deactivate HOLD by switching the slider to RESUME, you will be activating the RESUME function.



INSTRUCTION FOR USE

TROUBLESHOOTING

Troubleshooting

WARNING: Under no circumstances should you try to repair the set yourself as this will invalidate the guarantee. If a fault occurs, first check the points listed, before taking the unit for repair. If you are unable to solve a problem by following these hints, consult your dealer or service centre.

Problem	Solution
No power, playback does not start	<ul style="list-style-type: none"> – Insert the batteries correctly. – Replace the batteries. – Connect the mains adapter securely.
Hold indication and/or no reaction to controls	<ul style="list-style-type: none"> – Deactivate HOLD. – Disconnect the set from the power supply or take out the batteries for a few seconds.
No sound or bad sound quality	<ul style="list-style-type: none"> – Press ► to resume playback. – Adjust the volume. – Check and clean the connections. – Keep this set away from active mobile phones or strong magnetic fields.
No disc	<ul style="list-style-type: none"> – Insert a disc, label upwards. – Clean or replace the disc. – Wait until the steamed up lens has cleared. – Make sure you have inserted an audio disc or an MP3-CD disc.

Problem	Solution
No Disc	<ul style="list-style-type: none"> – Make sure the inserted CDR or CDRW is recorded correctly .
Music file is not played	<ul style="list-style-type: none"> – Make sure that the file names of the MP3 files end with .mp3
Missing directories on MP3-CD	<ul style="list-style-type: none"> – Make sure the total number of files and albums on your MP3-CD does not exceed 600 and 99 respectively. – Only albums with MP3 files are shown. Other computer data file is skipped.
The disc skips tracks	<ul style="list-style-type: none"> – Clean or replace the disc. – Make sure repeat, repeat album, shuffle or prog are not selected.
Music skips or popping sound when playing an MP3 file	<ul style="list-style-type: none"> – Play the music file on your computer. If the problem persists, encode the audio track again and make a new CD-ROM.
In-car use: No power, playback does not start	<ul style="list-style-type: none"> – Clean the cigarette lighter jack – Switch on the ignition of your car.
In-car use: No sound or bad sound quality	<ul style="list-style-type: none"> – Insert the cassette adapter correctly. – Change the autoreverse direction of your car cassette player. – Let the set adjust to the temperature in the car.

ACCESSORIES

ACCESSORIES FOR CD-PORTABLE		EXP220			EXP221
		/00C /00Z/01			/00C
AY3162/00 AC/DC ADAPTOR	9965 000 21016				X
HE035/77 HEADPHONE	9965 000 11492	X	X	X	X

SERVICE TOOLS

Audio signal disc SBC 429.....	4822 397 30184
Playability test disc SBC 444.....	4822 397 30245
Test disc 5 (disc without errors) +	
Test disc 5A (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A.....	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155
Universal test cassette Fe SBC 420.....	4822 397 30071

ESD PROTECTION EQUIPMENT

anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
anti-static wristband	4822 395 10223
connection box (3 press stud connections, 1M Ω)	4822 320 11307
extendible cable (2m, 2M Ω , to connect wristband to connection box)	4822 320 11305
connecting cable (3m, 2M Ω , to connect table mat to connection box)	4822 320 11306
earth cable (1M Ω , to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)	4822 310 10671
wristband tester	4822 344 13999

IC BLOCK DIAGRAM

U5: SAA7824HL

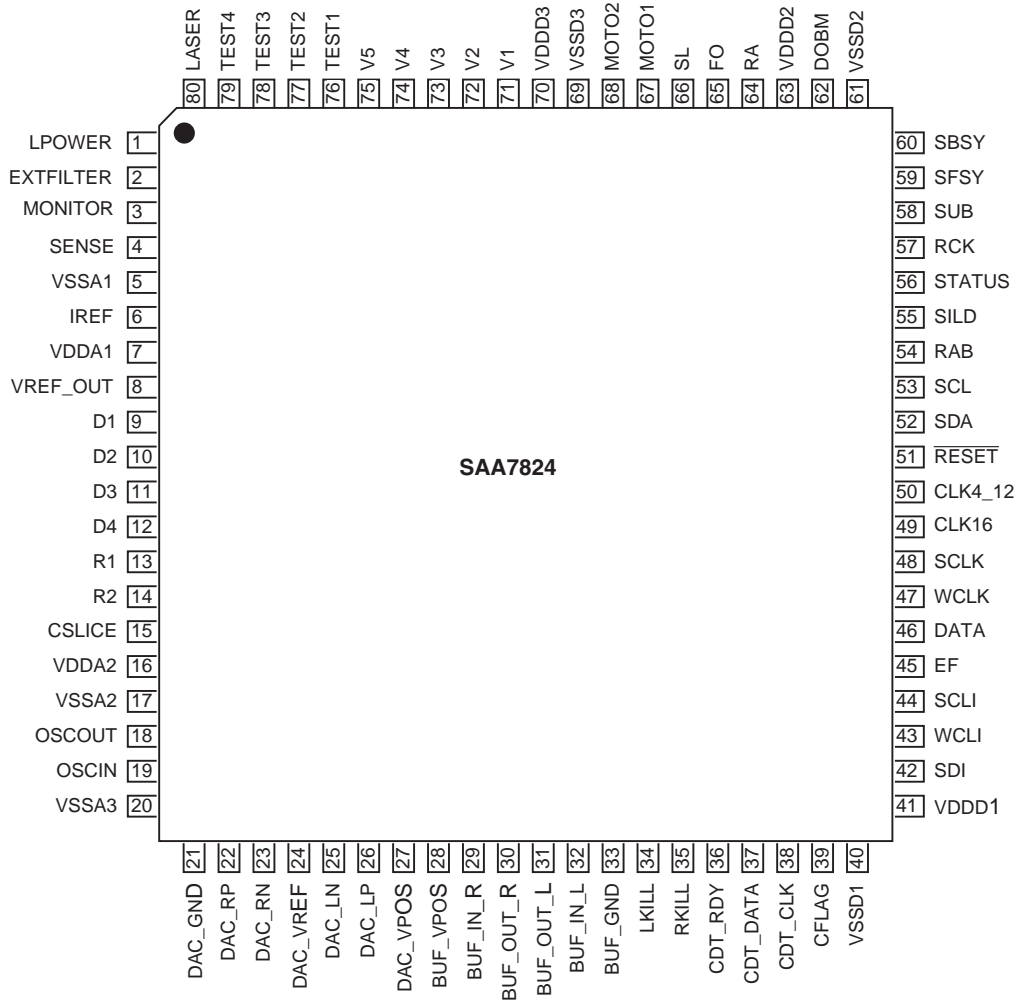
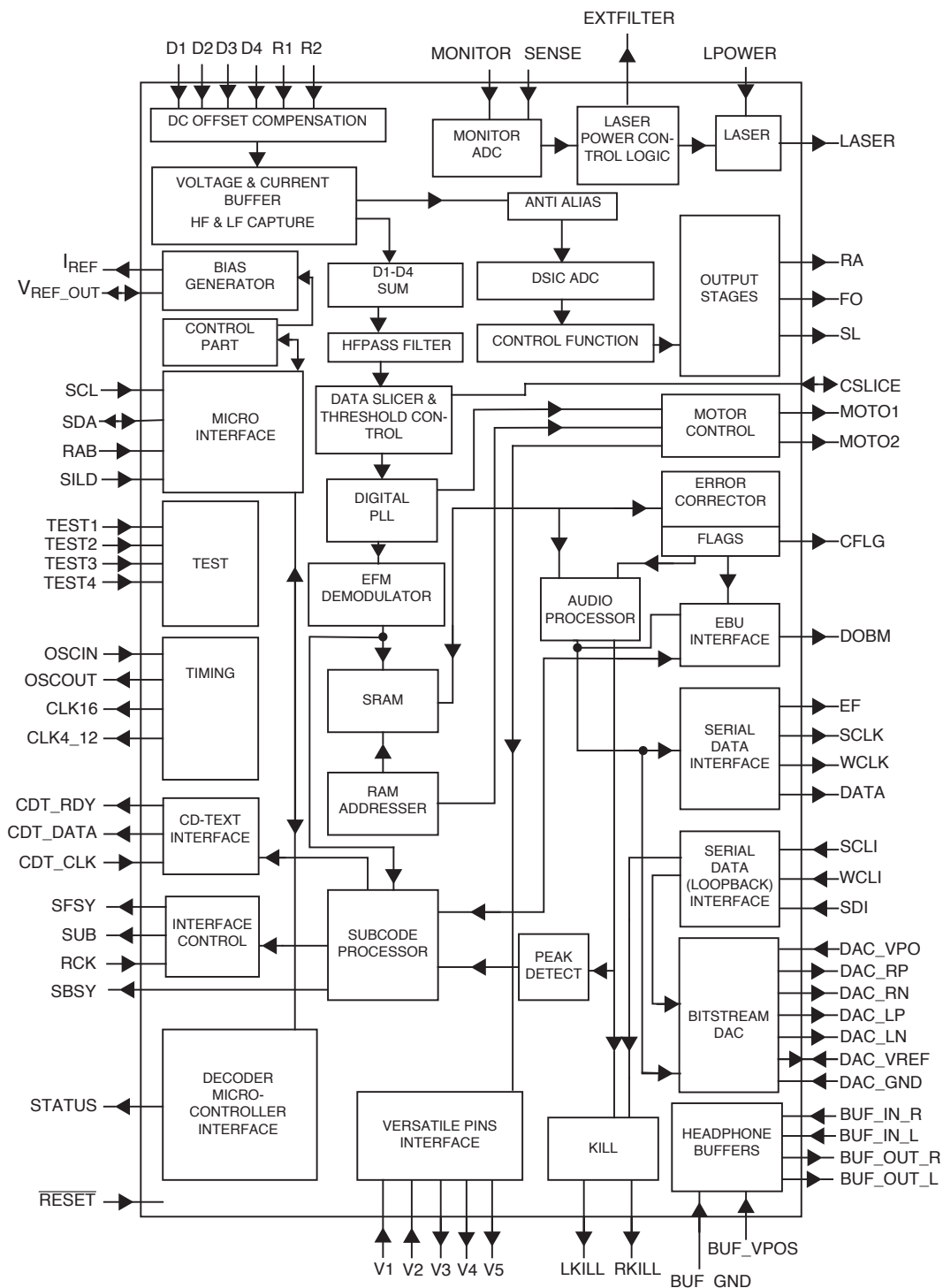


Fig.2 Pin configuration.

IC BLOCK DIAGRAM

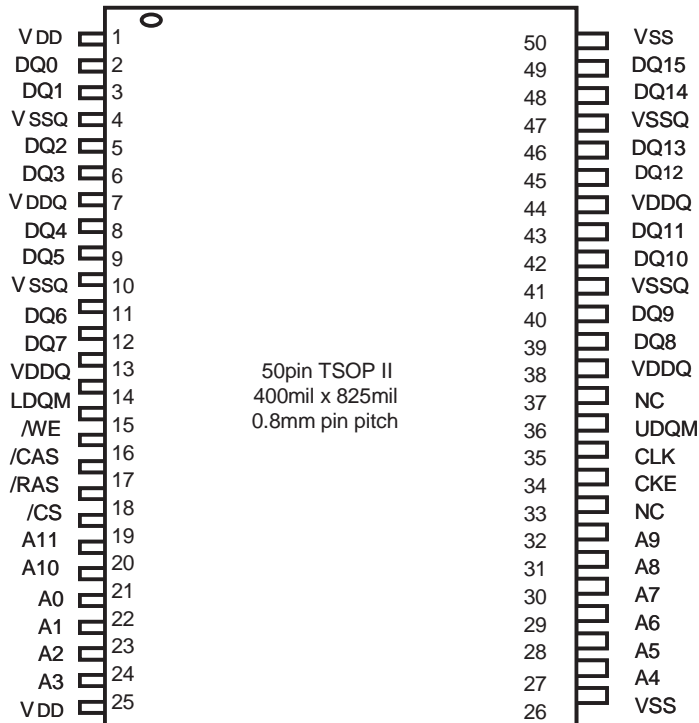
U5: SAA7824HL



IC PIN DESCRIPTIONS

HY57V161610D

PIN CONFIGURATION



PIN DESCRIPTION

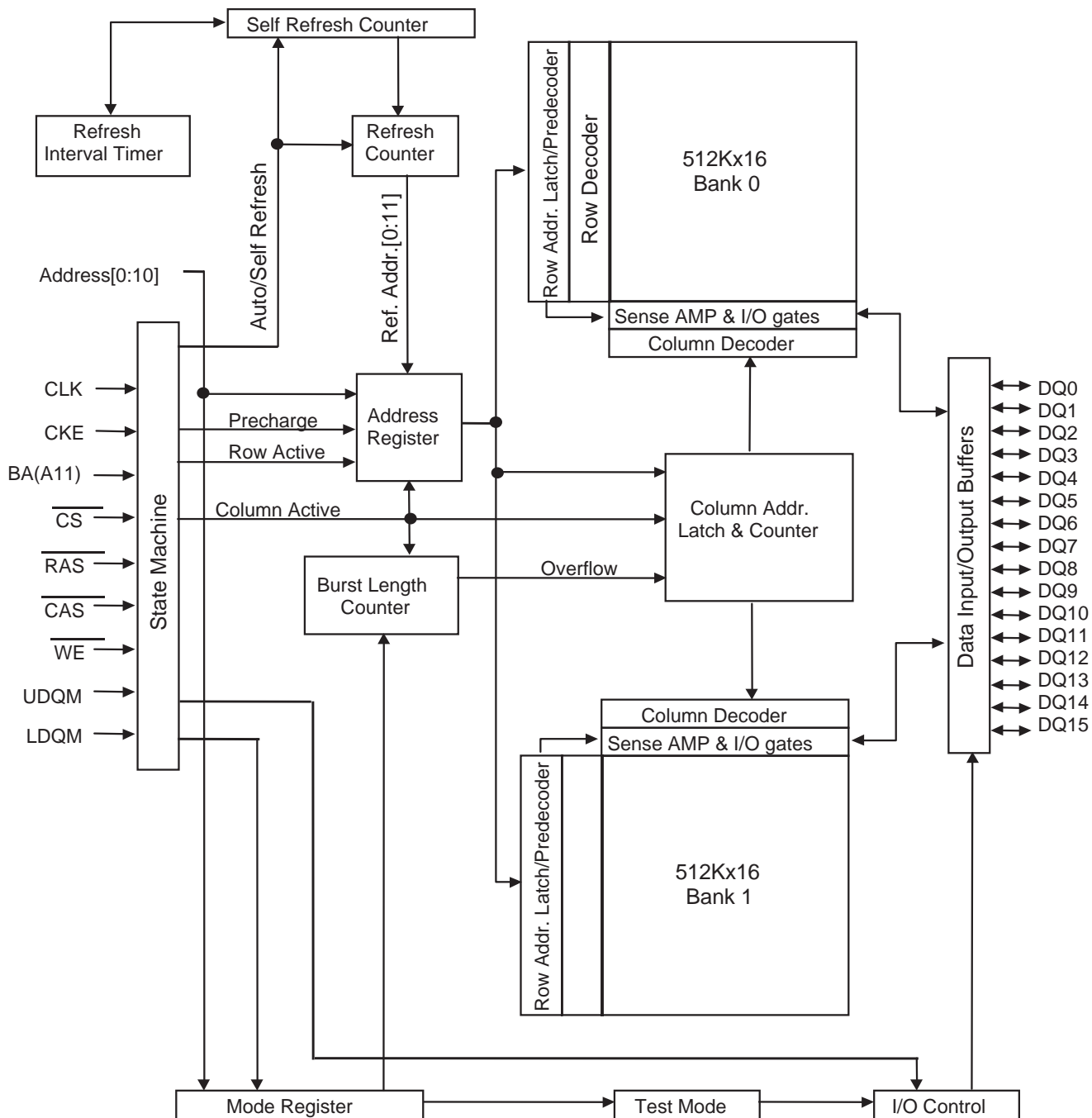
PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are referenced to the SDRAM on the rising edge of CLK.
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power down, suspend or self refresh.
$\overline{\text{CS}}$	Chip Select	Command input enable or mask except CLK, CKE and DQM
BA	Bank Address	Select either one of banks during both $\overline{\text{RAS}}$ and $\overline{\text{CAS}}$ activity.
A0 ~ A10	Address	Row Address : RA0 ~ RA10, Column Address : CA0 ~ CA7 Auto-precharge flag : A10
$\overline{\text{RAS}}$, $\overline{\text{CAS}}$, $\overline{\text{WE}}$	Row Address Strobe, Column Address Strobe, Write Enable	$\overline{\text{RAS}}$, $\overline{\text{CAS}}$ and $\overline{\text{WE}}$ define the operation. Refer function truth table for details
LDQM, UDQM	Data Input/Output Mask	DQM control output buffer in read mode and mask input data in write mode
DQ0 ~ DQ15	Data Input/Output	Multiplexed data input / output pin
VDD/VSS	Power Supply/Ground	Power supply for internal circuit and input buffer
VDDQ/VSSQ	Data Output Power/Ground	Power supply for DQ
NC	No Connection	No connection

IC BLOCK DIAGRAM

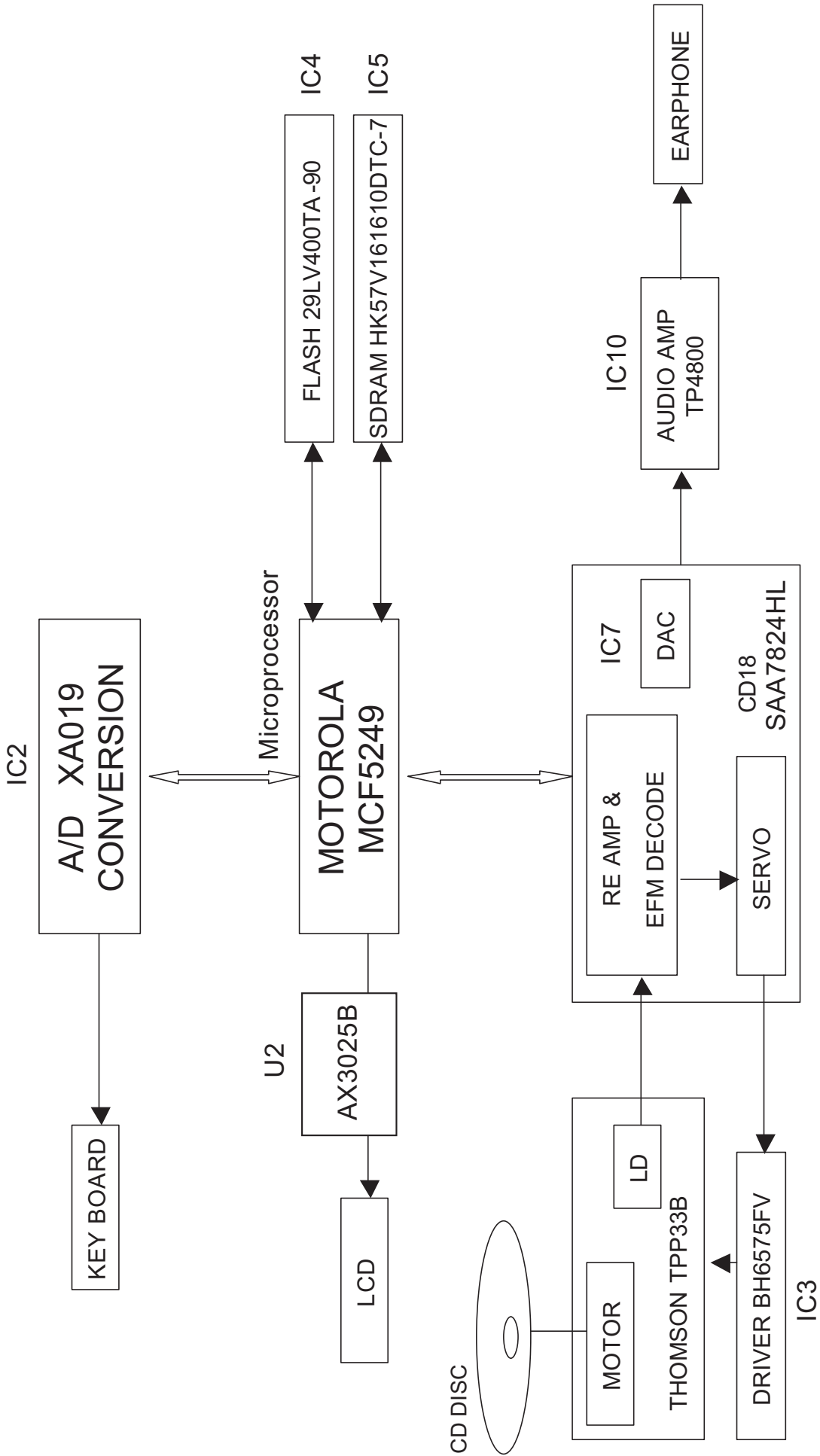
HY57V161610D

FUNCTIONAL BLOCK DIAGRAM

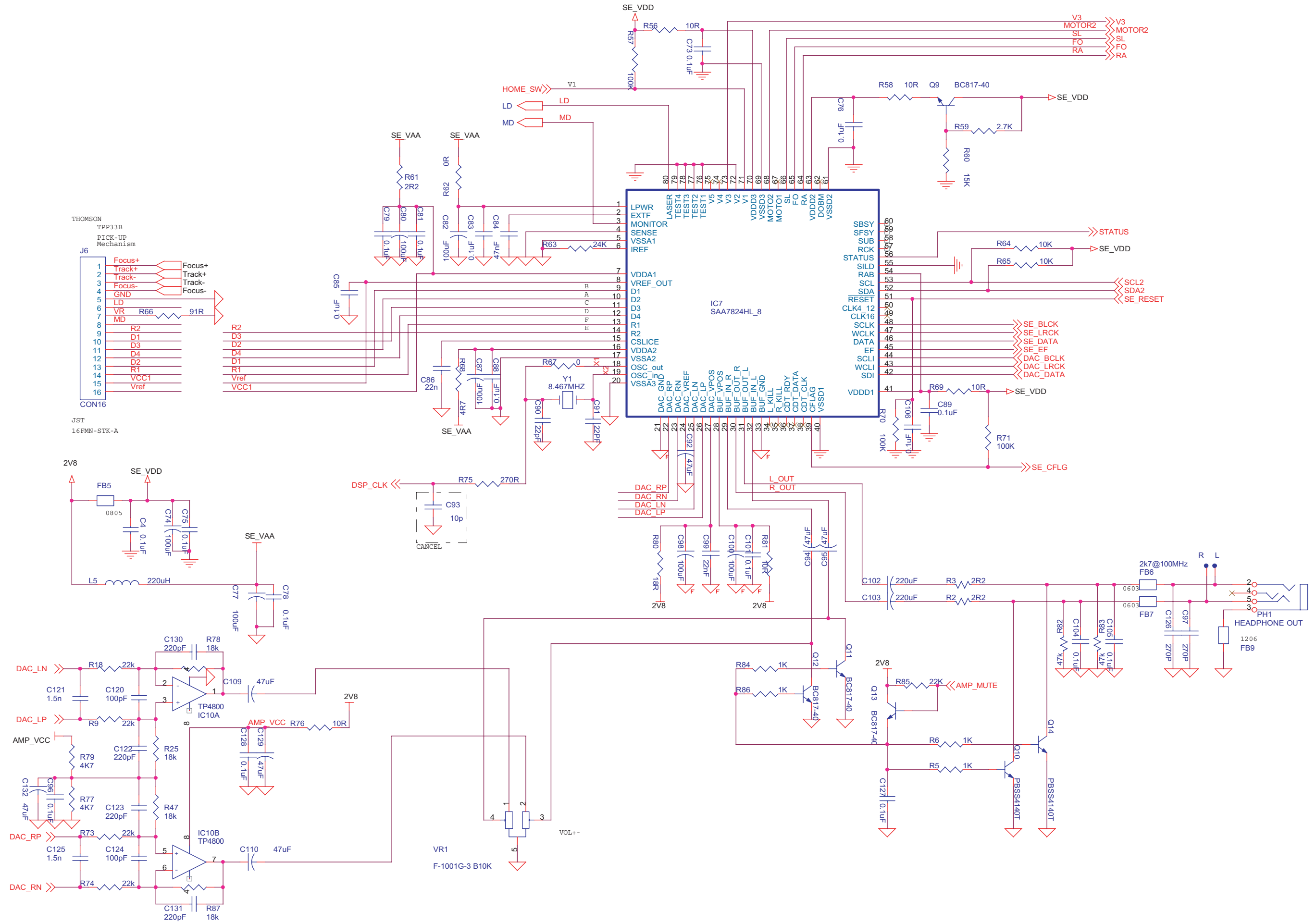
1Mx16 Synchronous DRAM



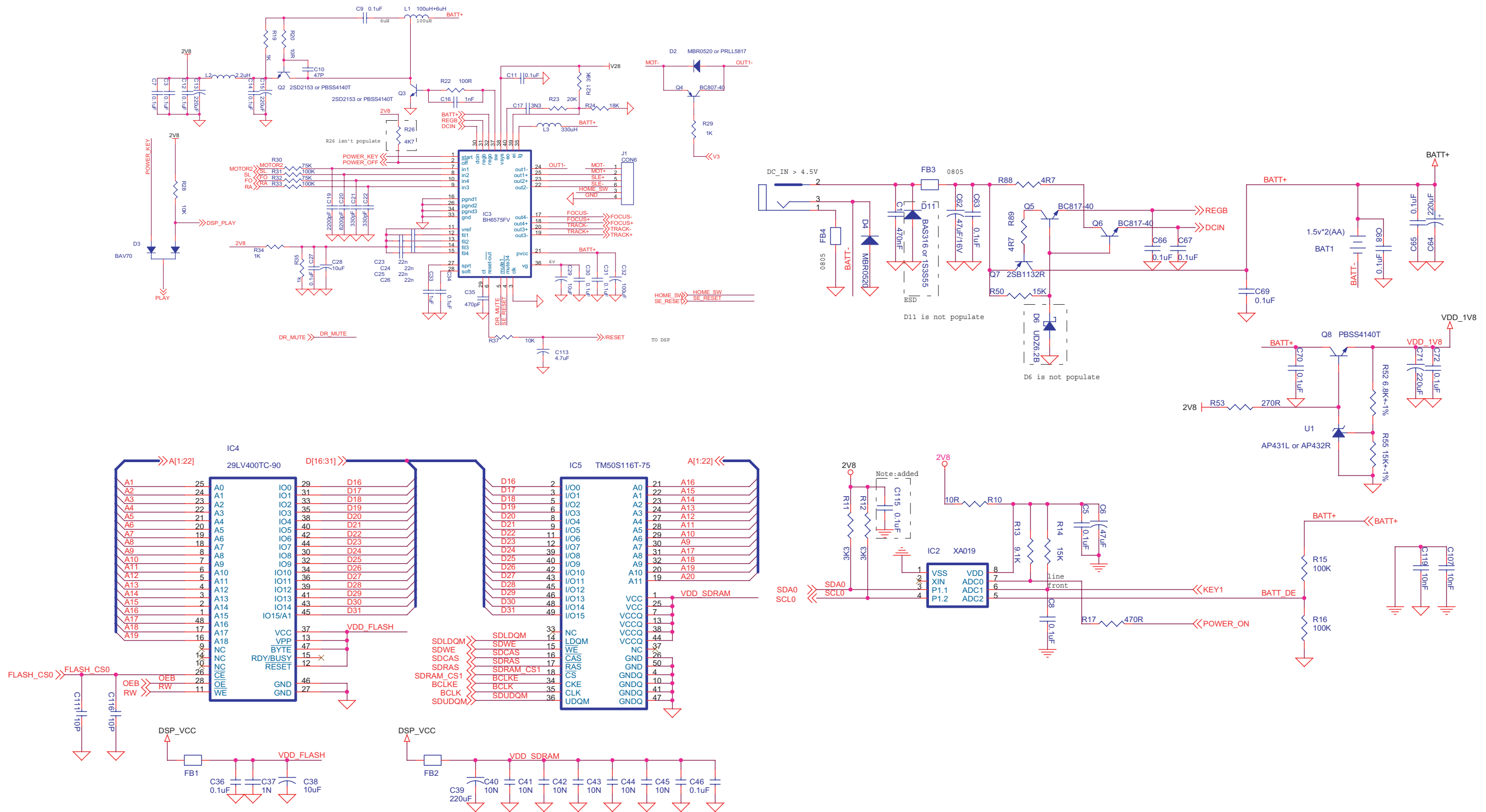
BLOCK DIAGRAM



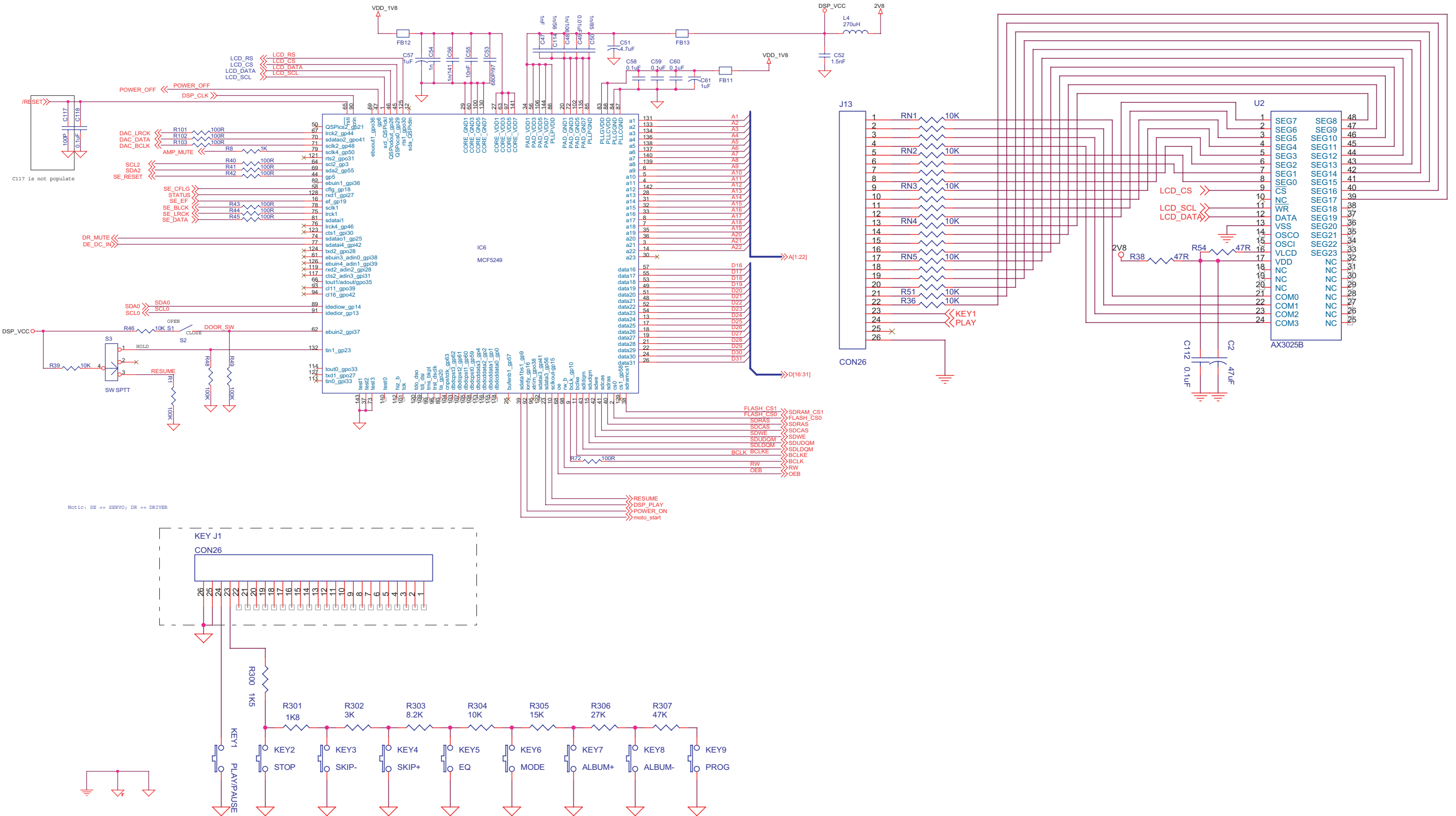
CIRCUIT DIAGRAM - PART 1

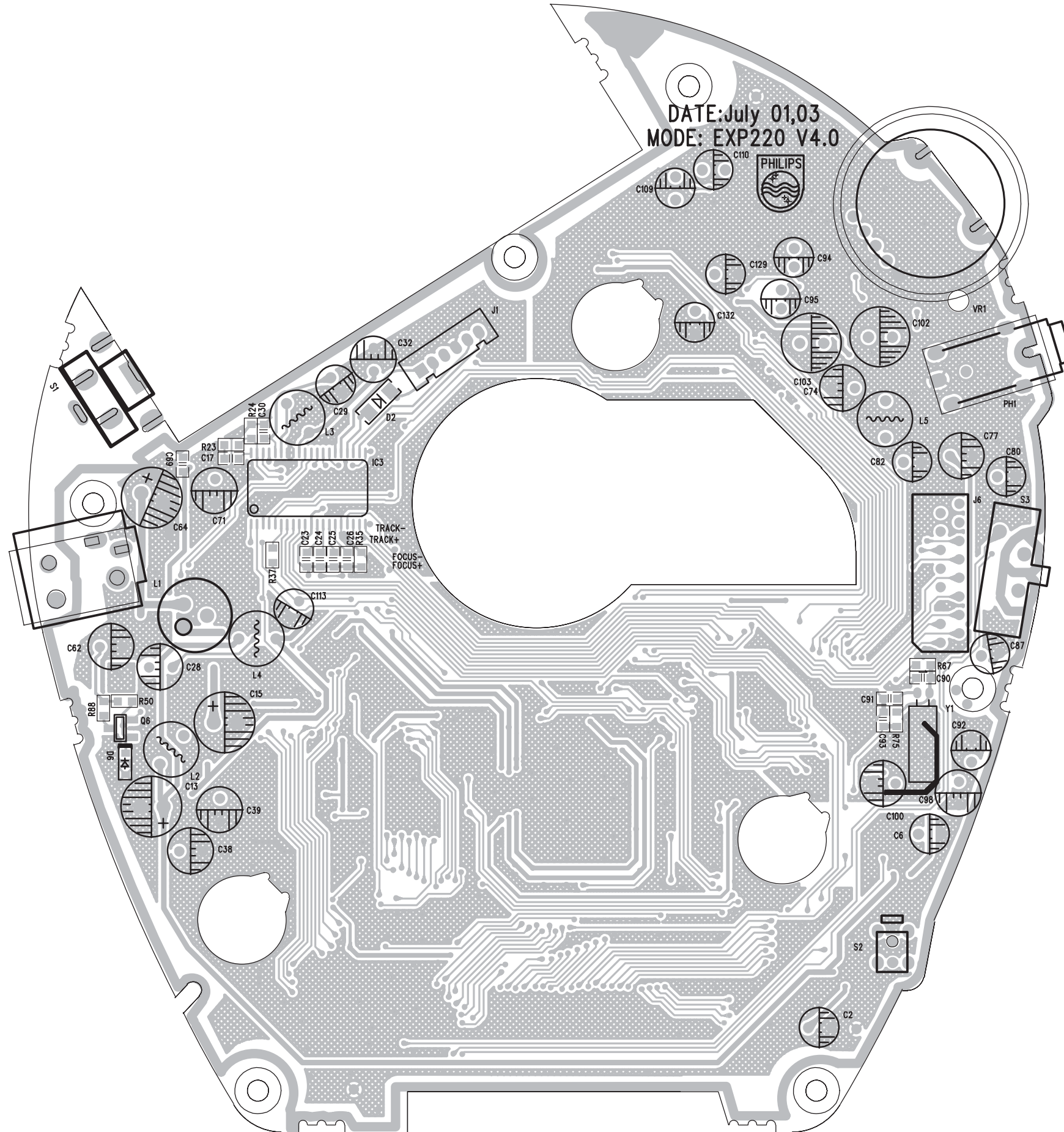


CIRCUIT DIAGRAM - PART 2

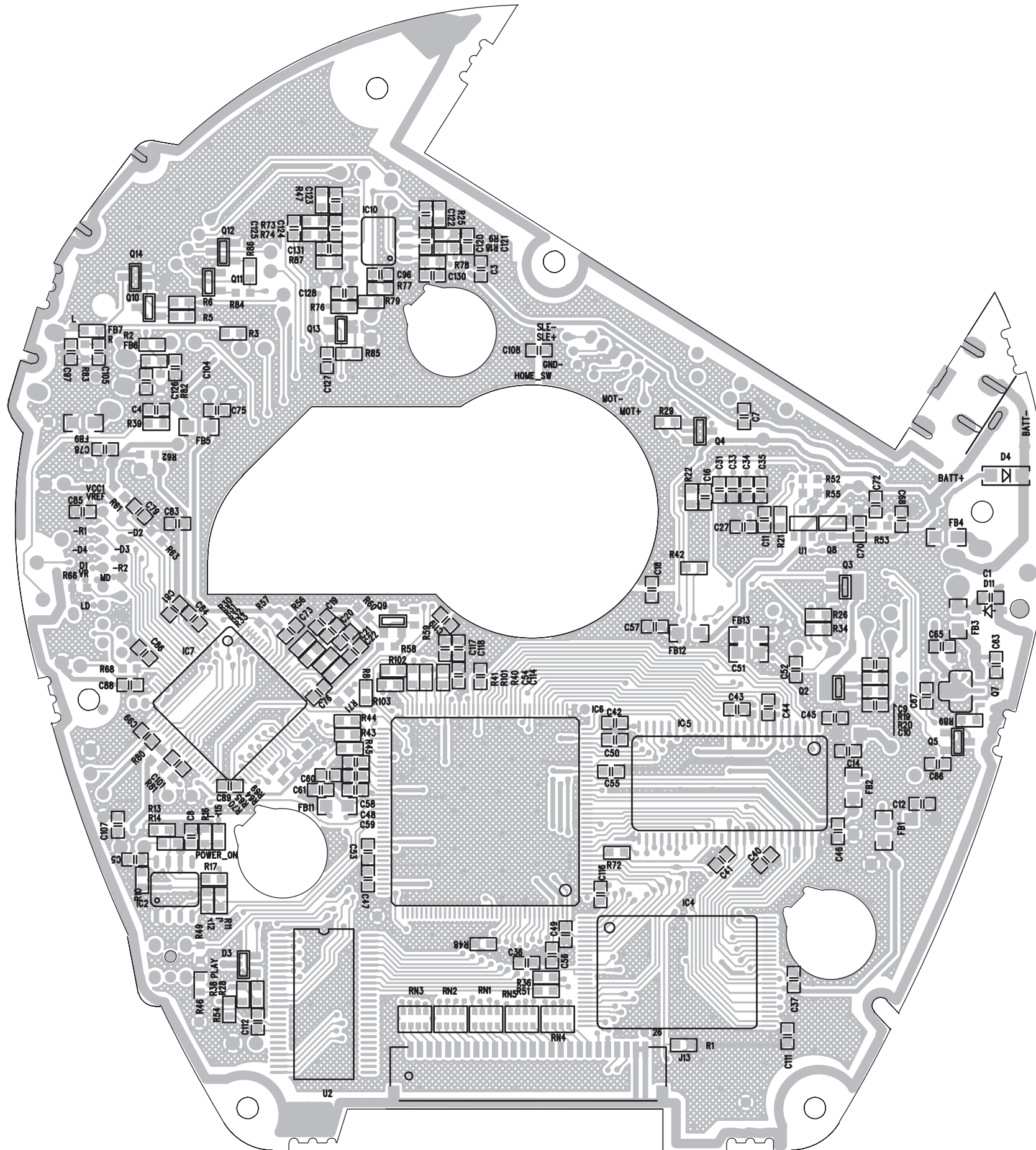


CIRCUIT DIAGRAM - PART 3

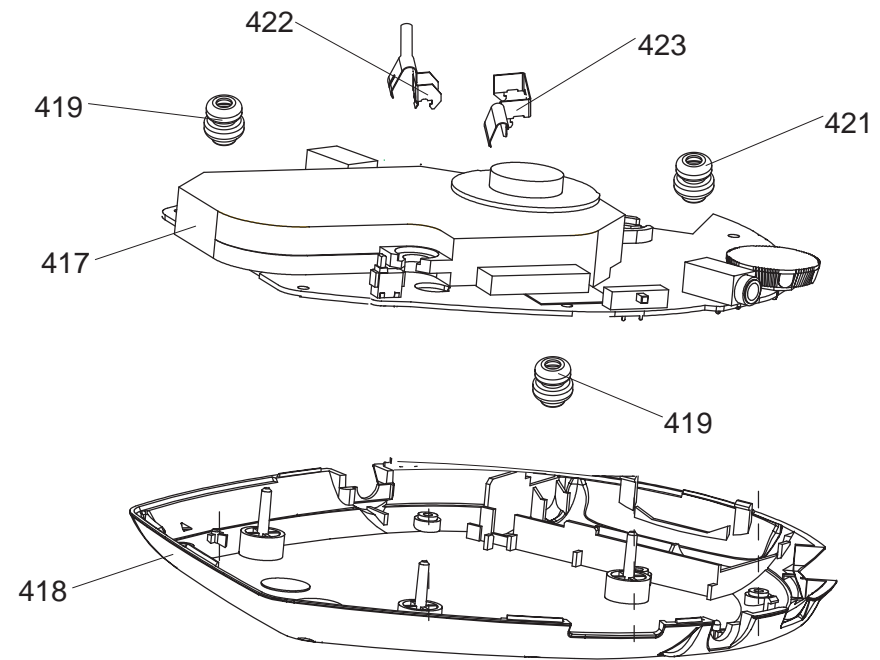
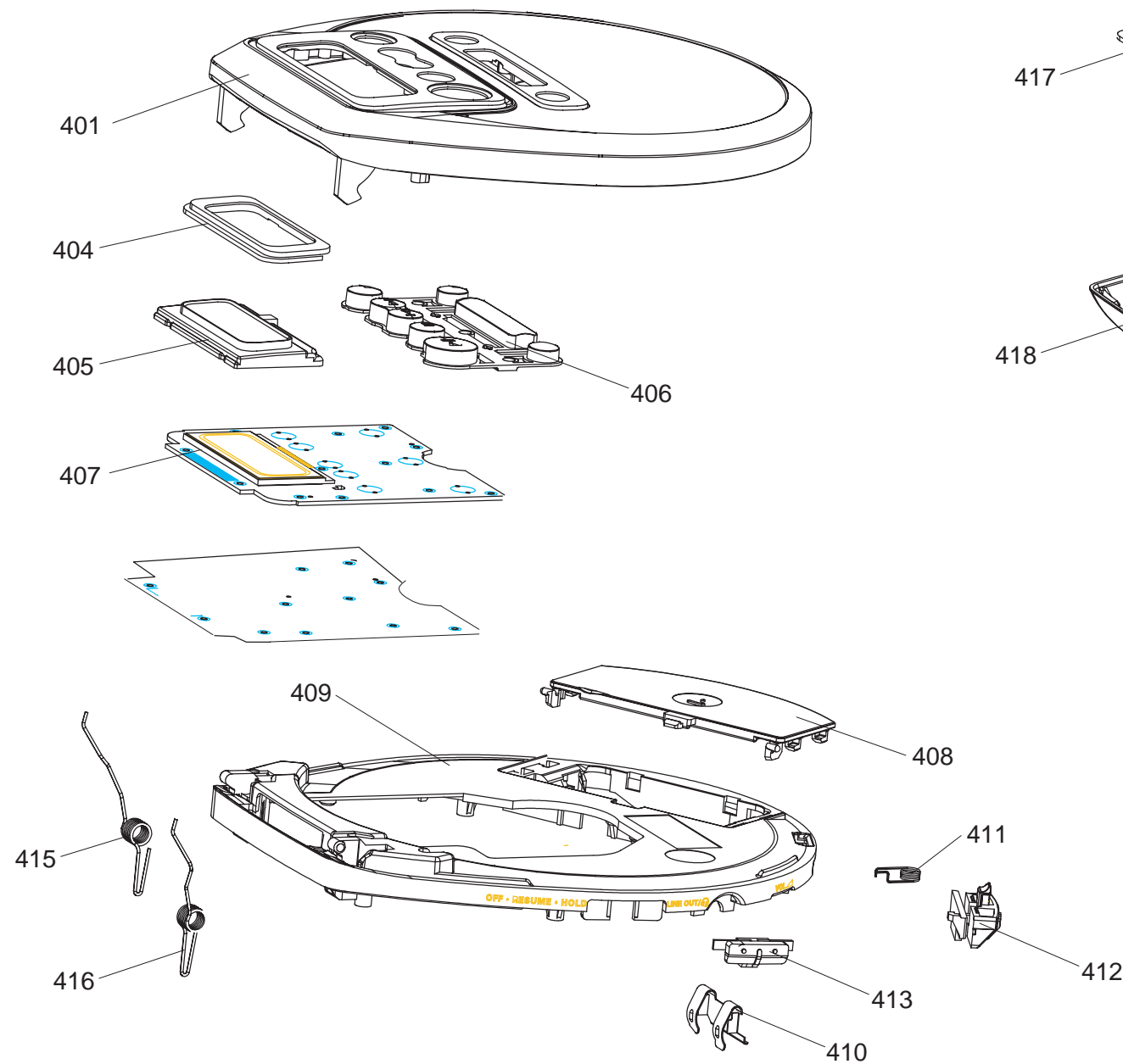




LAYOUT DIAGRAM - Copper Side



EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST

401	TO BE REVISED	CD DOOR ASSEMBLY
404	9965 000 16213	BRACKET
405	9965 000 20995	DISPLAY LENS
406	9965 000 16212	BUTTON SET
408	9965 000 20994	BATTERY DOOR
409	9965 000 20992	MIDDLE CABINET
410	3103 301 45180	SPRING-BATTERY-SHORT-2
411	9965 000 16220	OPEN KNOB SPRING
412	9965 000 20998	SLIDE KNOB-DOOR OPEN
413	9965 000 20997	SLIDE KNOB-HOLD
415	9965 000 21000	CD DOOR SPRING RIGHT
416	9965 000 20999	CD DOOR SPRING LEFT
417	9965 000 16221	CD MECHANISM TPP33BCP
418	9965 000 20993	BOTTOM CABINET
419	9965 000 16216	CD DAMPER 2131PD YELLOW
421	9965 000 16217	CD DAMPER 2131PE WHITE
422	3103 301 45410	SPRING-BATTERY-MINUS
423	3103 301 45420	SPRING-BATTERY-PLUS

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

ELECTRICAL PARTSLIST

- MISCELLANEOUS -

	9965 000 21001	SOCKET FFC 26P
DC-J-1	9965 000 11404	DC JACK
PH1	9965 000 16224	STEREO JACK
LCD	9965 000 21002	LCD DISPLAY
S2	9965 000 16226	CD DOOR SWITCH
S3	9965 000 16227	SLIDE SWITCH 1P
	9965 000 21003	CONTACT DISC PLATE
VR1	9965 000 21004	VOLUME B10K
L1	9965 000 16231	DC-DC OSC COIL

- DIODES -

D2	9965 000 21005	MBR0520LT1
D3	9965 000 21006	BAV70
D4	9965 000 21005	MBR0520LT1

- IC & TRANSISTORS -

Q10	9965 000 21007	PBSS4140T
Q11	4822 130 42615	BC817-40
Q12	4822 130 42615	BC817-40
Q13	4822 130 42615	BC817-40
Q14	9965 000 21007	PBSS4140T
Q2	9965 000 21007	PBSS4140T
Q3	9965 000 21007	PBSS4140T
Q4	5322 130 60123	BC807-40
Q5	4822 130 42615	BC817-40
Q6	4822 130 42615	BC817-40
Q7	9965 000 21008	2SB1132R
Q8	9965 000 21007	PBSS4140T
Q9	4822 130 42615	BC817-40
IC10	9965 000 21009	IC PT4800
IC2	9965 000 21010	IC XA019
IC3	9965 000 21011	IC BH6575FV-E2
IC4	9965 000 21012	IC MBM29LV400TC-90PFTN
IC5	9965 000 21013	IC HY57V161610DTC-7
IC6	9965 000 21014	IC MCF5249
IC7	9965 000 17297	IC SAA7824HL/M0D
U1	9965 000 21015	IC APL431LBAS
U2	9965 000 20062	IC AX3025B-PH

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