

Service
Service
Service



Service Manual



x.v.Colour



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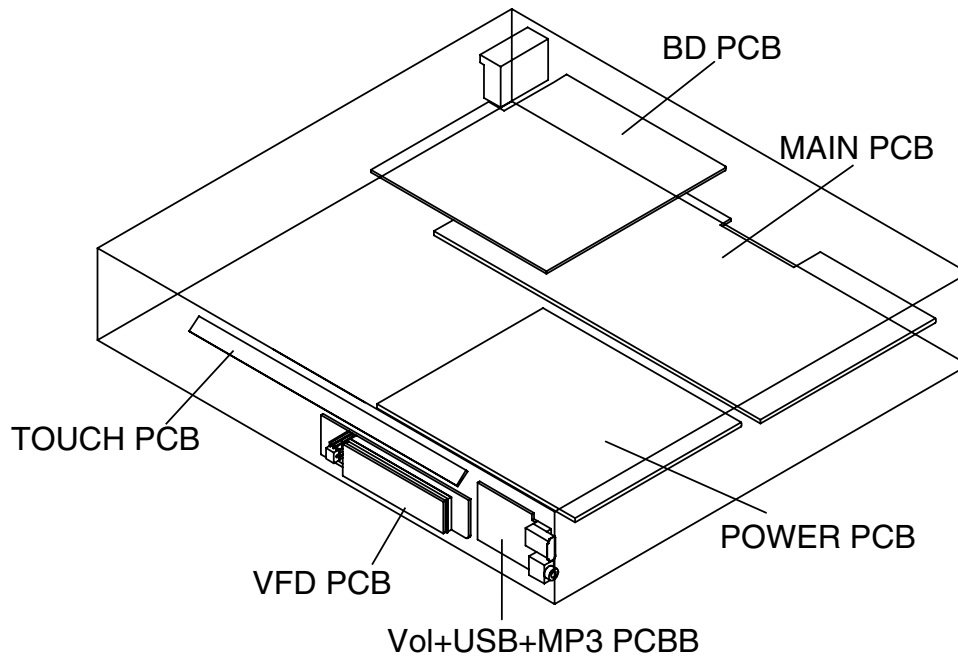
GB 3139 785 35570

Version 1.0



PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Versions Features	HTS3231
	/12
Output Power - 300W	X
Voltage (220~240V)	X
AUX/MP3	X

SERVICE SCENARIO MATRIX:

Type/Versions Board in used	HTS3231
	/12
Main Board	C
Power Board	C
VFD+VOL+USB+MP3 Board	C
BD Board	Bd
Touch Board	C

*C = Component Level Repair

*Bd = Board Level Replacement

SPECIFICATIONS

Playback media

BD-Video, DVD-Video, DVD+R/+RW, DVD-R/-RW, DVD+R/-R DL, CD-R/CDRW, Audio CD, Video CD/SVCD, PictureCD, MP3-CD, WMA-CD, DivX (Ultra)-CD, USB flash drive.

File Format

Audiomp3, .wma
Videoavi, .divx, .mkv, .wmv
Picturejpg, .gif, .png

Amplifier

Total output power..... 300 W RMS (30%THD)
Frequency response..... 20 Hz-20 kHz /±3dB
Signal-to-noise ratio..... > 65 dB (CCIR) /(A-weighted)
Input sensitivity:
AUX 1000 mV
MP3 LINK 500 mV

Video

Signal system PAL / NTSC
HDMI output 480i/576i, 480p/576p, 720p, 1080i, 1080p

Audio

Sampling frequency:
MP3 32 kHz, 44.1 kHz, 48 kHz
WMA..... 44.1 kHz, 48 kHz
Constant bit rate:
MP3 112 kbps - 320 kbps
WMA..... 48 kbps - 192 kbps

Radio

Tuning range FM 87.5-108 MHz (50 kHz)
Signal-to-noise ratio.....FM 55 dB
Frequency response..... FM 180 Hz-12.5 kHz/ ±3dB

USB

CompatibilityHi-Speed USB (2.0)
Class support..... UMS (USB Mass Storage Class)
File system FAT16, FAT32, NTFS
Maximum memory support..... < 160GB

Main Unit

Power supply 220-240V; ~50 Hz
Power consumption 55W
Standby power consumption ≤ 0.9 W
Dimensions (WxHxD) 360 x 58 x 351(mm)
Weight 3.1 kg

Speakers

Speaker impedance..... 8 ohm
Speaker drivers1 x 3"woofer+1"twitter
Frequency response.....150 Hz-20 kHz
Dimensions (WxHxD): 95 x161x 87 (mm)
Weight: 0.56 kg
Cable length: 3 m

Subwoofer

Impedance..... 4 ohm
Speaker drivers 165 mm (6.5") woofer
Frequency response..... 40 Hz-150 Hz
Dimensions (WxHxD) 123 x 309 x 369(mm)
Weight3.56 kg
Cable length 4 m

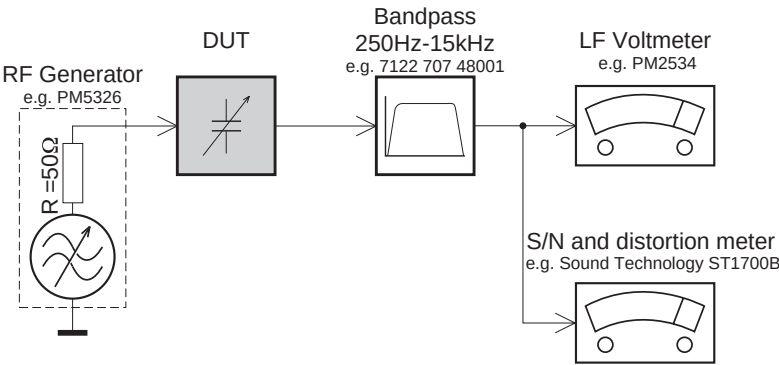
Laser specification

Laser Type (Diode)..... InGaN/AlGaIn (BD)
..... InGaAlP (DVD), A lGaAs (CD)
Wave length.....405 +5nm/-5nm (BD)
..... 650+13nm/-10nm (DVD)
.....790 +15nm/-15nm(CD)
Output power (Max. ratings) 20mW(BD), 7mW (DVD/CD)

Specifications subject to change without prior notice.

MEASUREMENT SETUP

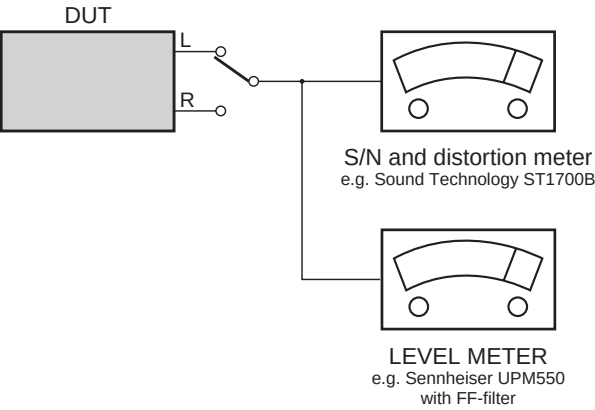
Tuner FM



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

CD

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



SERVICE AIDS

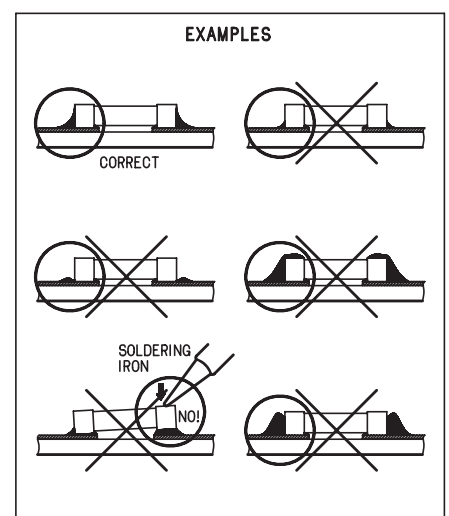
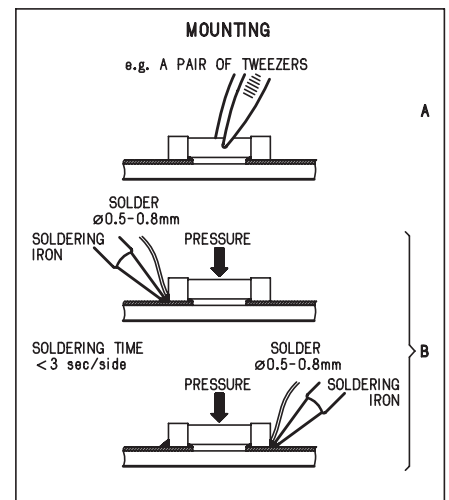
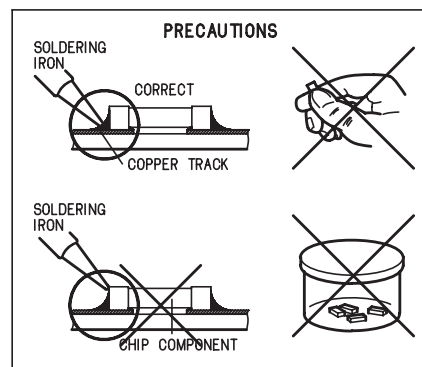
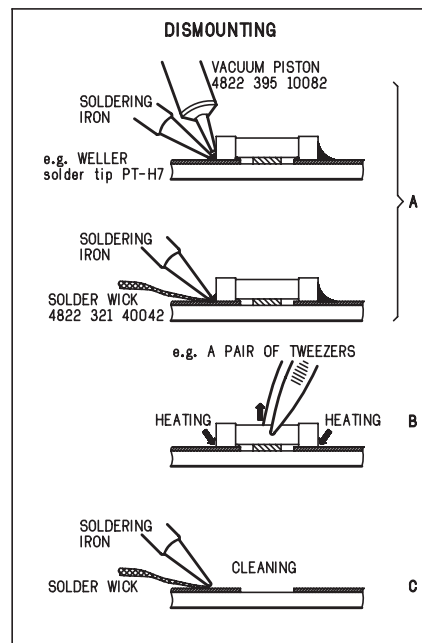
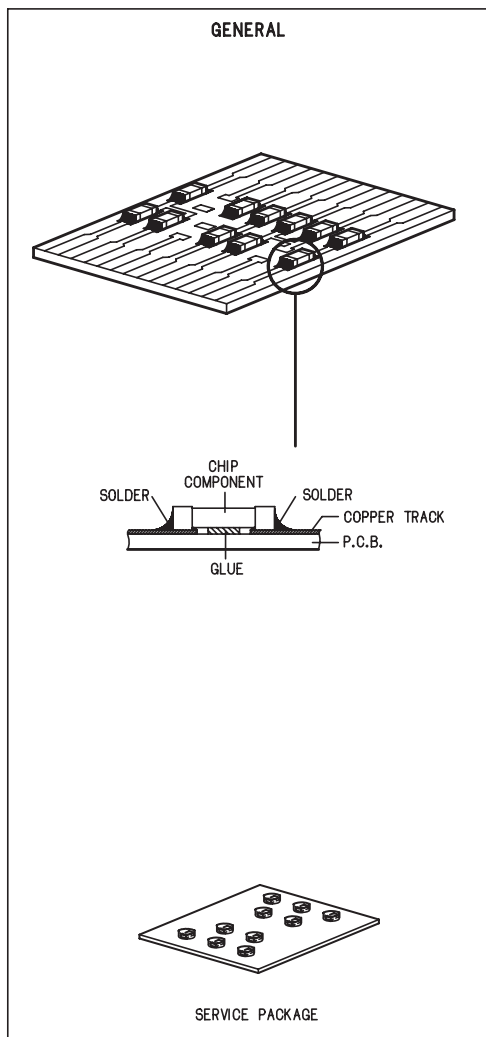
Service Tools:

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

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

HANDLING CHIP COMPONENTS



ESD**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.

**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 enfiler 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.

**WARNUNG**

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

**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 hetzelfde potentiaal.

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

**ESD PROTECTION EQUIPMENT**

Complete Kit ESD3 (small tablemat, wristband, connection box, estention cable and earth cable 4822 310 10671
Wristband tester 4822 344 13999



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 Δ .



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

De Veiligheidsonderdelen zijn aangeduid met het symbol Δ .



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.

Less composants de sécurité sont marqués Δ .



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

Sicherheitsbauteile sind durch das Symbol Δ markiert.



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.

Componenty di sicurezza sono marcati con Δ .



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.

**Warning !**

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

**Varning !**

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

**Varoitus !**

Avatussa laitteessa ja suojauslaitteiden ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**Advarse !**

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



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

Pb(Lead) Free Solder

When soldering, be sure to use the pb free solder.

IDENTIFICATION:

Regardless of special logo (not always indicated)



one must treat all sets from **1 Jan 2005** onwards, according next rules:

Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
 - To reach at least a solder-temperature of 400°C,
 - To stabilize the adjusted temperature at the solder-tip
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off unused equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
 - Always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
 - Lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening,

dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.

Do not re-use BGAs at all.

- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website www.atyourservice.ce.Philips.com you find more information to:
 - BGA-de-/soldering (+ baking instructions)
 - Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

Setting procedure & Repair instruction

1)Restore factory setting

- a) Press “” <Home> button on R/C.
- b) Select <SETUP>, then press “OK” button on R/C.
- c) Select <Advanced setup> ,then press < OK > button on R/C.
- d) Select <Restore default settings>,then press <OK> to confirm.

2)Password change

- a) Press “” <Home> button on R/C.
 - b) Select <SETUP>, then press “OK” button on R/C.
 - c) Select <preference setup>, then press <OK> button on R/C.
 - d) Select <Change Password> <Confirm>, then press <OK> button on R/C.
- “0000” is default password supplied.

3)Trade mode

- a) In open model,press “” <Home> button on R/C.
- b) Press “2” “5” “9” on R/C,VFD will display “TRA ON” or “TRA OFF”.

4)Check software version

- a) Press “” <Home> button on R/C
- b) Select <Setup>, then press <OK> button on R/C.
- c) Select <Advanced Setup> <Version Info.>,then press <OK> button on R/C.
- d) TV will show message as follow:

Model:HTS3231/12
Version:
System SW:29.00
Subsystem SW:28-00-00-00
Ethernet MAC:00-25-D1-02-25-D4
<http://www.philips.com/support>

Close

- e) Select <Close> on the version display screen and press <OK> button to exit .

5) Upgrading new software

- Method 1: Update software from a USB storage device or CD-R
- a) Create a folder named “UPG” in your CD-R or USB storage device, and Copy the latest upgrading software into the folder.
 - b) Insert the CD-R program disc or connect the USB storage device to the home theater.
 - c) Press “” <Home> button on R/C, and select <Setup>.
 - d) Select <Advance Setup> <Software Update> <USB>.
 - e) TV will show message as follow:

Now searching for upgrade software!
Please wait...!

Software updates for this player have been found. Do you want to upgrade?

Cancel

Start

- f) Select <Start>, press <OK> button on R/C.

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000029.0

Software BE80%

Software FECompleted

Software MCU1:

Software Dock:

Software MCU3:

- b) Press “” <Home> button on R/C, and select <Setup>.
- c) Select <Advance Setup> <Software Update> <Network>.
- d) TV will show message as follow:

Now searching for upgrade software!
Please wait...!

Software updates for this player have been found. Do you want to upgrade?

Cancel

Start

- e) Select <Start>, press <OK> button on R/C.

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000029.0

Software BE80%

Software FECompleted

Software MCU1:

Software Dock:

Software MCU3:

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000029.0

Software BECompleted

Software FECompleted

Software MCU1:Not started

Software Dock:2%

Software MCU3:Not started

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000029.0

Software BECompleted

Software FECompleted

Software MCU1:1%

Software Dock:Failed

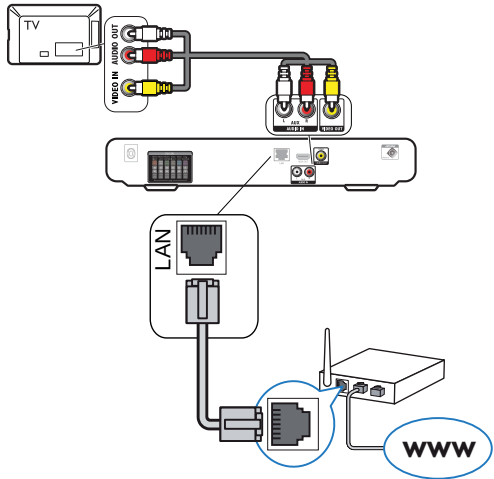
Software MCU3:

- g)The set will shut down automatically when the software upgrade is completed.

Method 2: Update software from the network

Note: To check for new updates, compare the current software version of your home theater with the latest software version (if available) on the Philips web site, and for BD-Live application and software update, make sure that the network router has access to the Internet and the firewall is disabled.

- a) The “LAN” jack at the back panel of the set must be connect to the network router via network cable and the set connect to TV, Prepare the connection as shown follow:



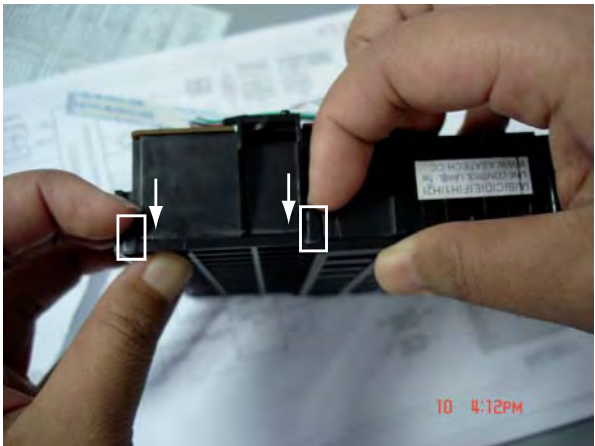
Software upgrade will take 5 minutes	
Do not switch off!	
Package version: 000029.0	
Software BE	Completed
Software FE	Completed
Software MCU1:	Not started
Software Dock:	2%
Software MCU3:	Not started

Software upgrade will take 5 minutes	
Do not switch off!	
Package version: 000029.0	
Software BE	Completed
Software FE	Completed
Software MCU1:	1%
Software Dock:	Failed
Software MCU3:	

f) The set will shut down automatically when the software upgrade is completed.

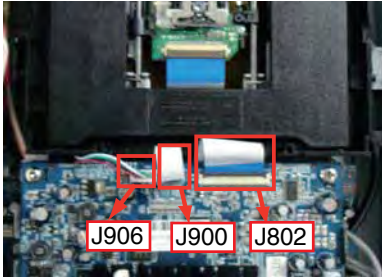
6)How to replace the defective Blu-ray Loader

- a) Remove the defective Blu-ray Loader.
- b) Remove the shield cover at the top of Blu-ray Loader as shown below.

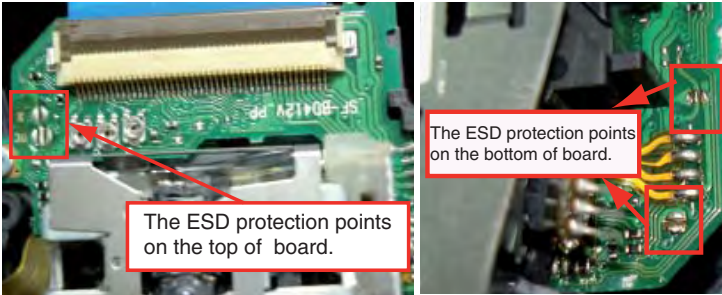


2 - 2

- c) Assembly Blu-ray Loader to “J802”, “J900”, “J906” on the top of BD Board as shown below.



- d) Remove soldered joint on the ESD protection points.



Top side view of OPU

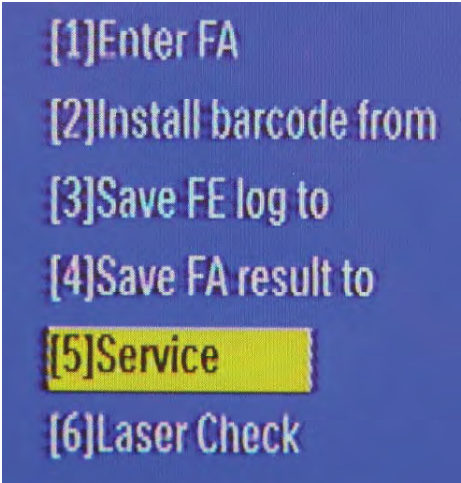
Bottom side view of OPU

- Note: The 2 ESD protection points on any one side must be soldered if
- o the Blu-ray Loader is OK and needs to be disconnected from connector J802, J900 and J906 of the BD Board.
 - o the defective Blu-ray Loader is needed to be send back to supplier for failure analysis and to support backcharging evidence.

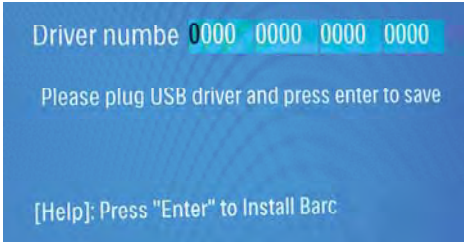
7)BD board and Blu-ray Loader OPU matching procedure

Note: This procedure must be performed whenever the defective Blu-ray Loader or BD Board has been replaced .

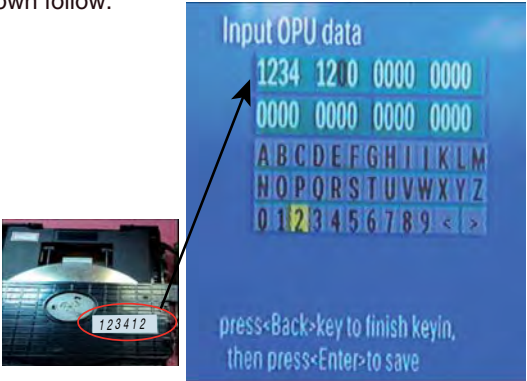
- a) Assembly Blu-ray Loader to BD Board.
- b) Remove soldered joint on the ESD protection points.
- c) Power on the set , press “” <Home> button and input “5” “1” “7” “7” on R/C.
- d) Go into OSD Select mode and select item [5] ,then press <OK> button on R/C as shown follow:



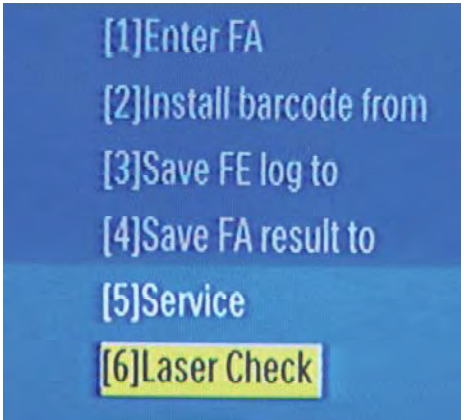
- e) Insert empty USB device of MSC type and press <OK> button with R/C as shown follow:



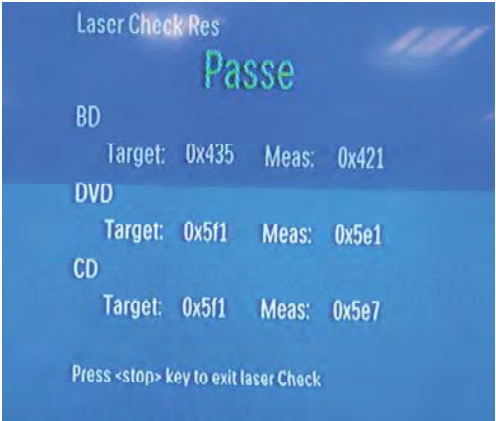
- f) Using “    ” buttons on R/C input the 6-digits OPU data given on the 1D barcode (see label on the Loader) with the on-screen selection and press <OK> button to save each digit entered as shown follow:



- g) Press <Back> followed by <OK> button to finish OPU matching and “”<Home> button to exit.
- h) Repeat step c) and select item [6] ,then press <OK> button on R/C as shown follow:



- i)Wait laser check to complete,press <stop> button to exit as shown follow:



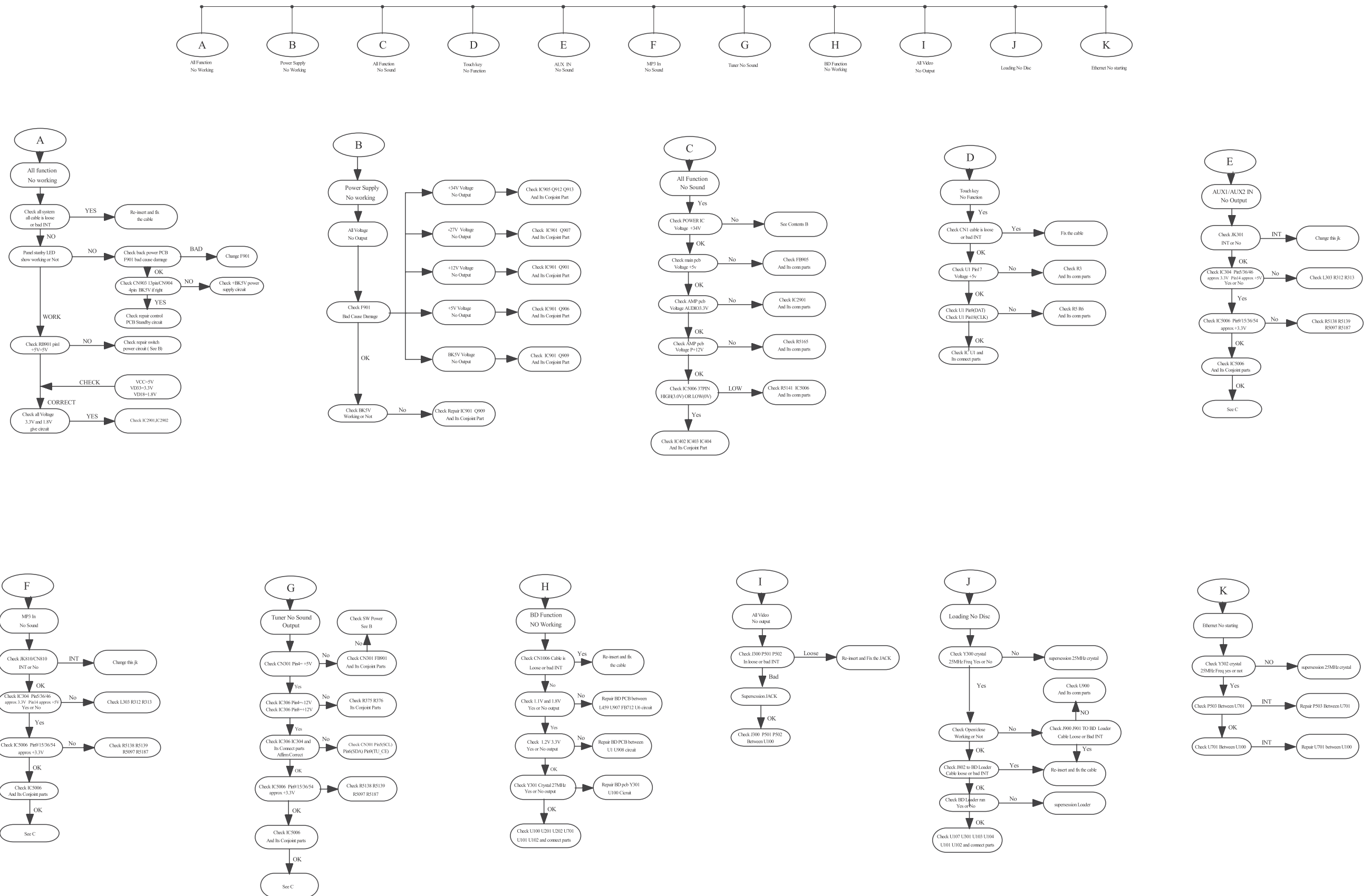
2 - 2

- j) If laser check fails press “” <Home> button and repeat OPU matching procedure.

CAUTION!

This information is confidential and may not be distributed.Only a qualified service person should reprogram the Region Code.

MAIN UNIT REPAIR CHART



DISASSEMBLY INSTRUCTIONS

3 - 1

Dismantling of the Top & Front Panel Assemble

- 1) Open the BD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.
Note: If this is not possible, the BD Tray has to be open manually.
Take a mini screw driver about 2mm diameter and make a marking 24mm from the tip as shown in figure 2 . Place the set on its side, insert the mini screw driver till the marking and slide it towards the left as shown in figure 1 until the Tray moves out of the Front Panel.
- 2) Return the set to its upright position and remove the Tray Cover as shown in Figure 3 and close the tray manually by pushing it back in.

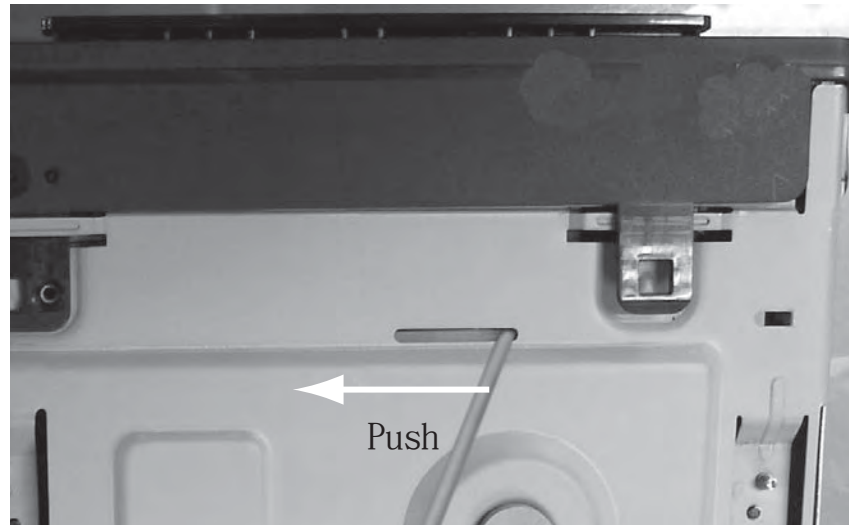


Figure 1

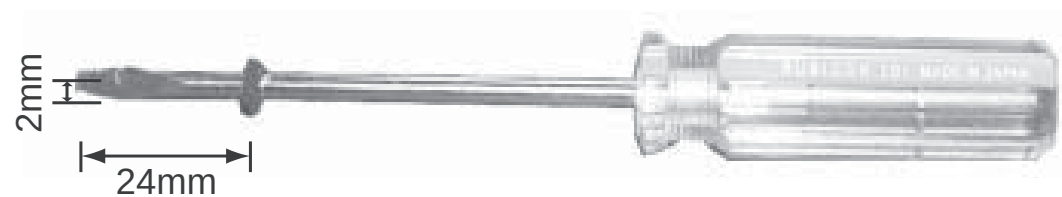


Figure 2

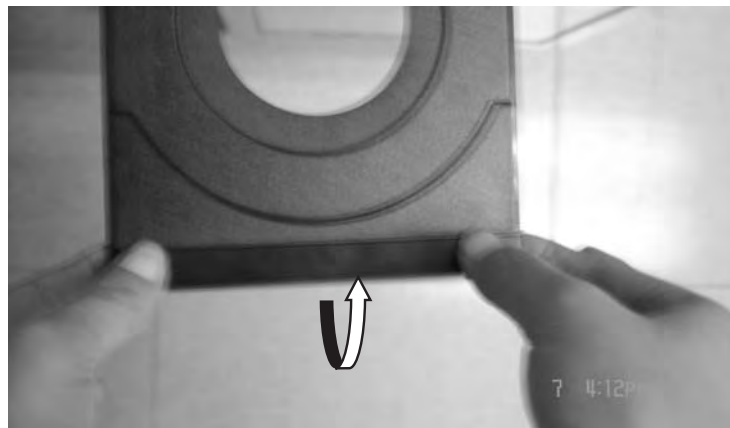


Figure 3

3 - 1

- 3) Loosen 6 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
 - 4 screws "A" at the back panel as shown in figure 4.
 - 1 screw "B" each on the left & right side as shown in figure 5.
- 4) Remove Volume KNOB as shown in figure 6 and using sleeve to loosen screw as shown in figure 7 & 8 to remove the front panel.

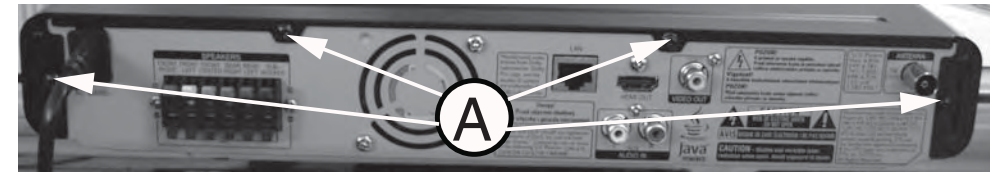


Figure 4

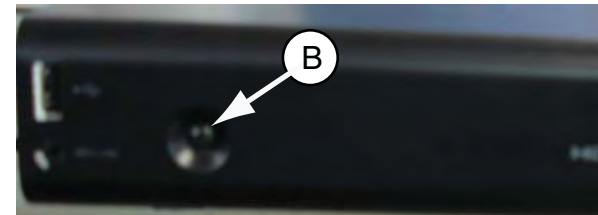


Figure 5

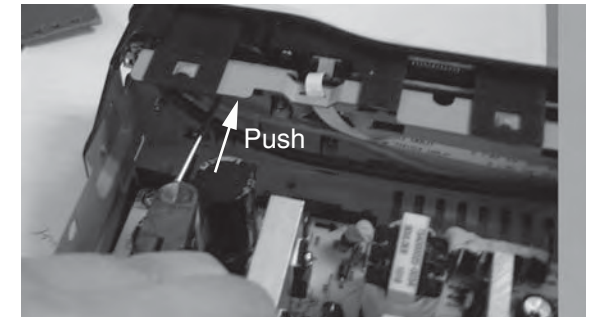


Figure 6



Figure 7



Figure 8

Dismantling of the BD Module

- 1) Loosen 4 screws "C" at the BD Module as shown in figure 9.

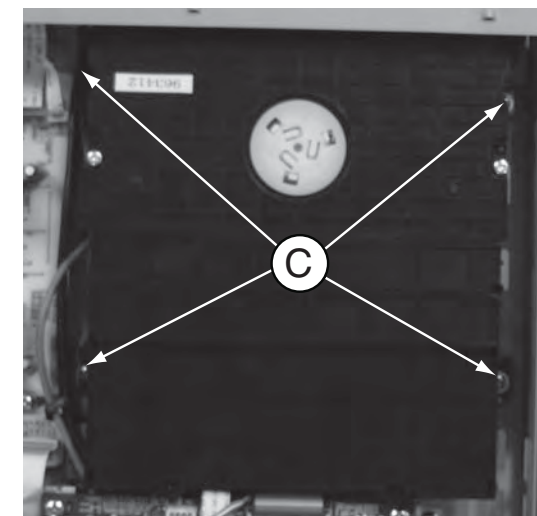


Figure 9

Dismantling of the VFD+VOL+USB+MP3 Board

3 - 2

- 1) Loosen 6 screws “D” on the top of VFD+VOL+USB+MP3 Board as shown in figure 10.

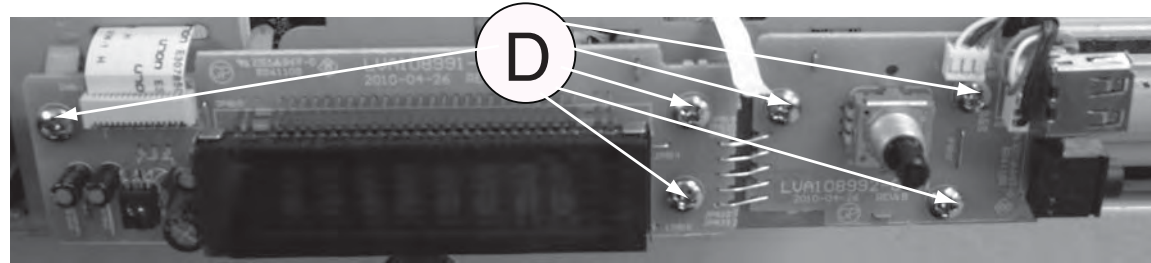


Figure 10

Dismantling of the TOUCH Board

- 1) Loosen 4 screws “E” on the top of touch Board bracket as shown in figure 11.



Figure 11

Dismantling of the BD Board

- 1) Loosen 4 screws “F” on the top of BD Board as shown in figure 12
- 2) At the back panel, loosen 2 screws “G” as shown in figure 13

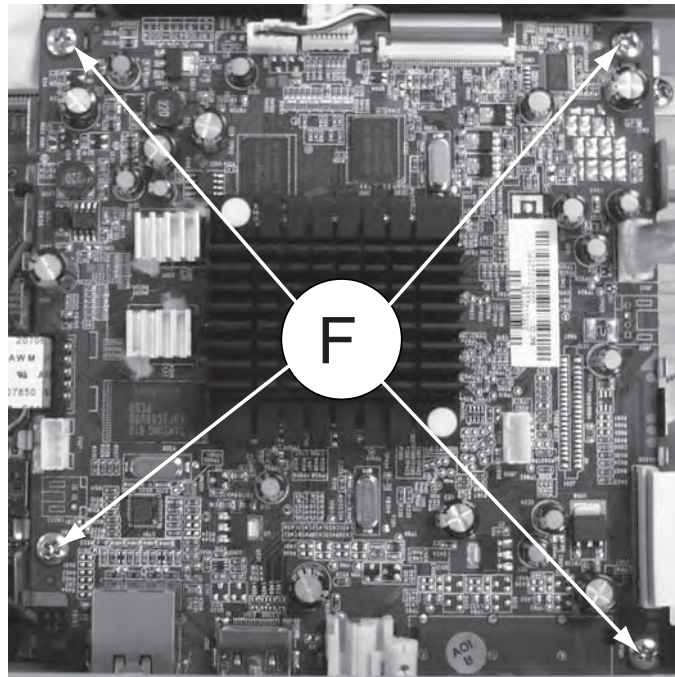


Figure 12

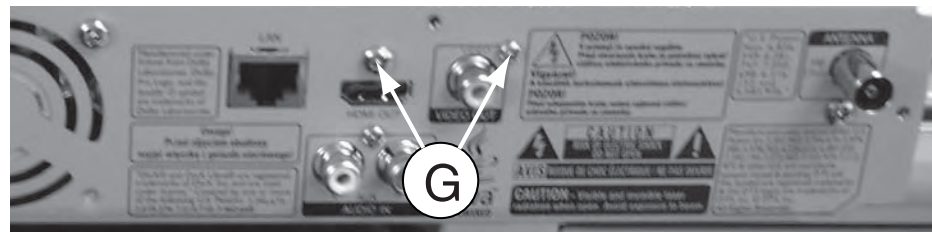


Figure 13

Dismantling of the MAIN Board

3 - 2

- 1) Loosen 3 screws “H” on the top of MAIN Board as shown in figure 14.
- 2) Loosen 3 screws “I” at the back panel as shown in figure 15.

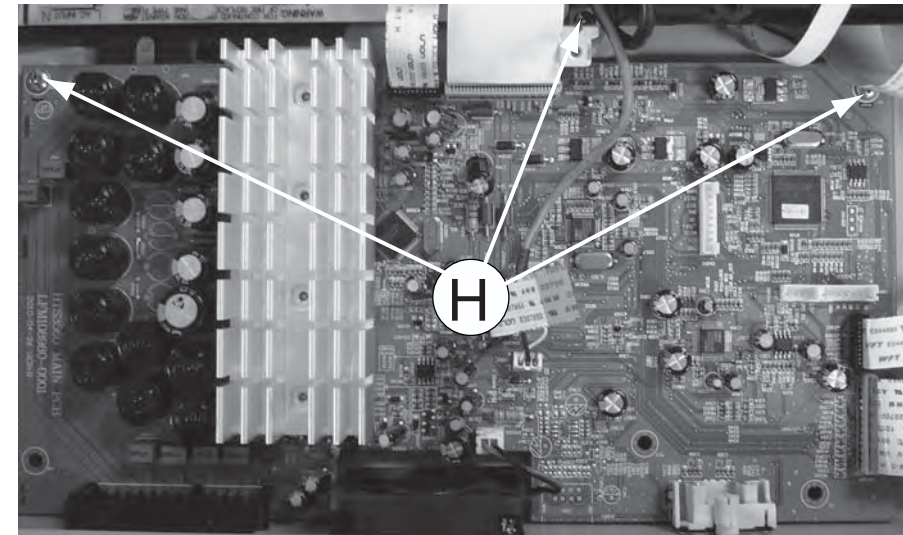


Figure 14

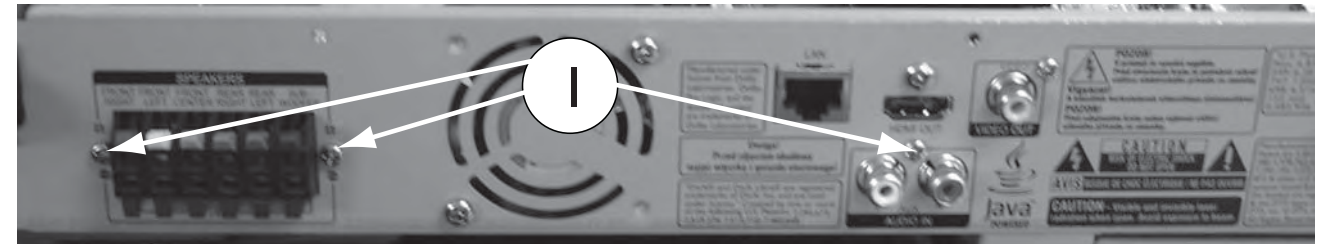


Figure 15

Dismantling of the POWER Board

- 1) Loosen 5 screws “J” on the top of Power Board as shown in figure 16.

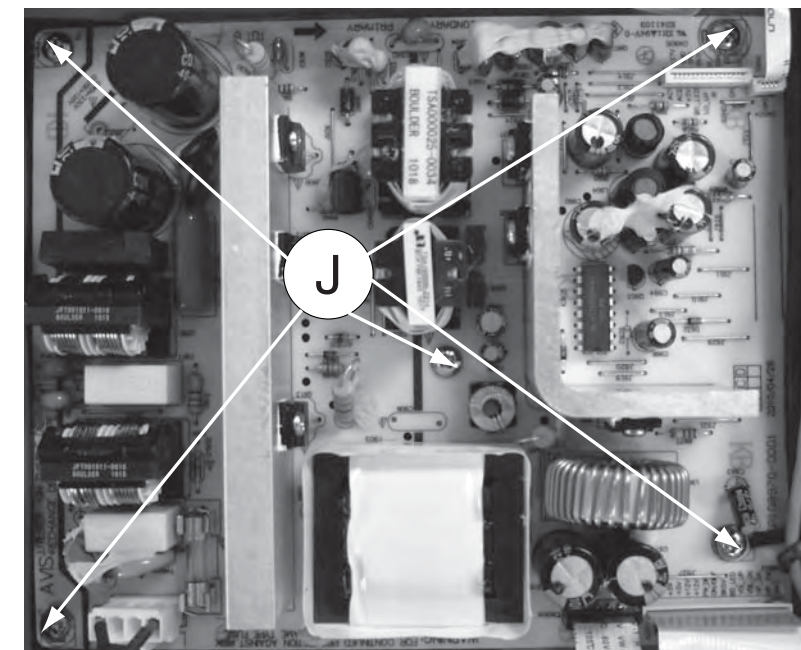
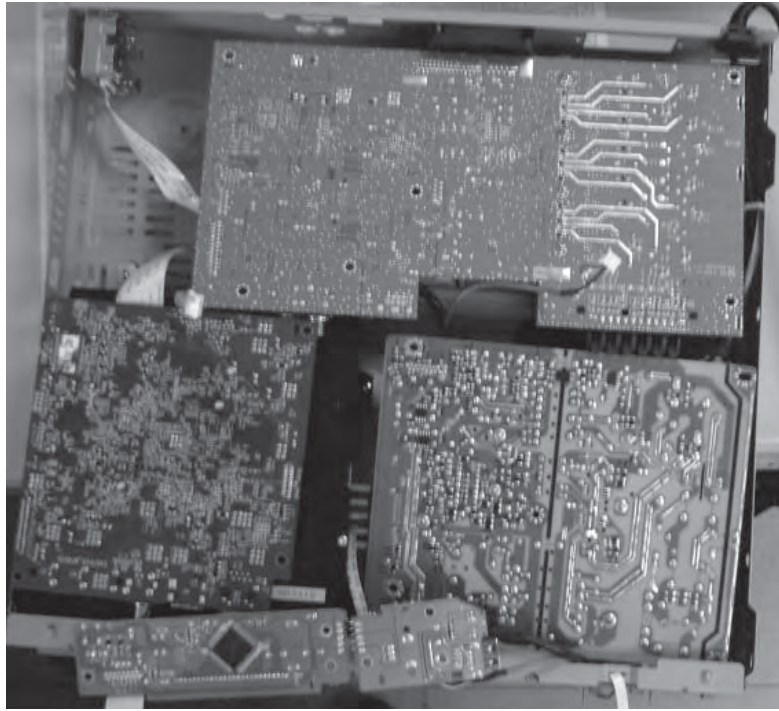


Figure 16

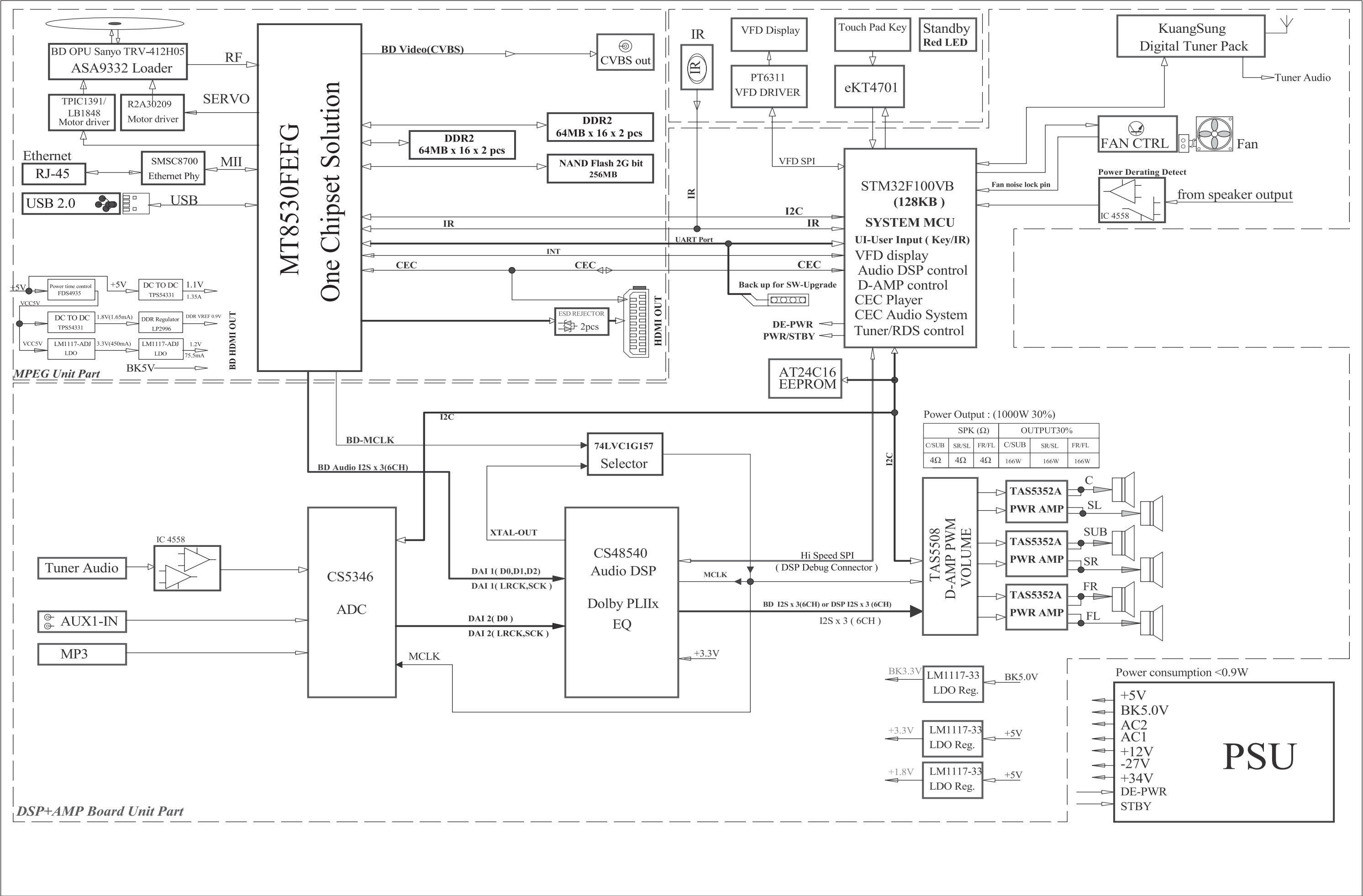
SERVICE POSITIONS

3 - 3

3 - 3



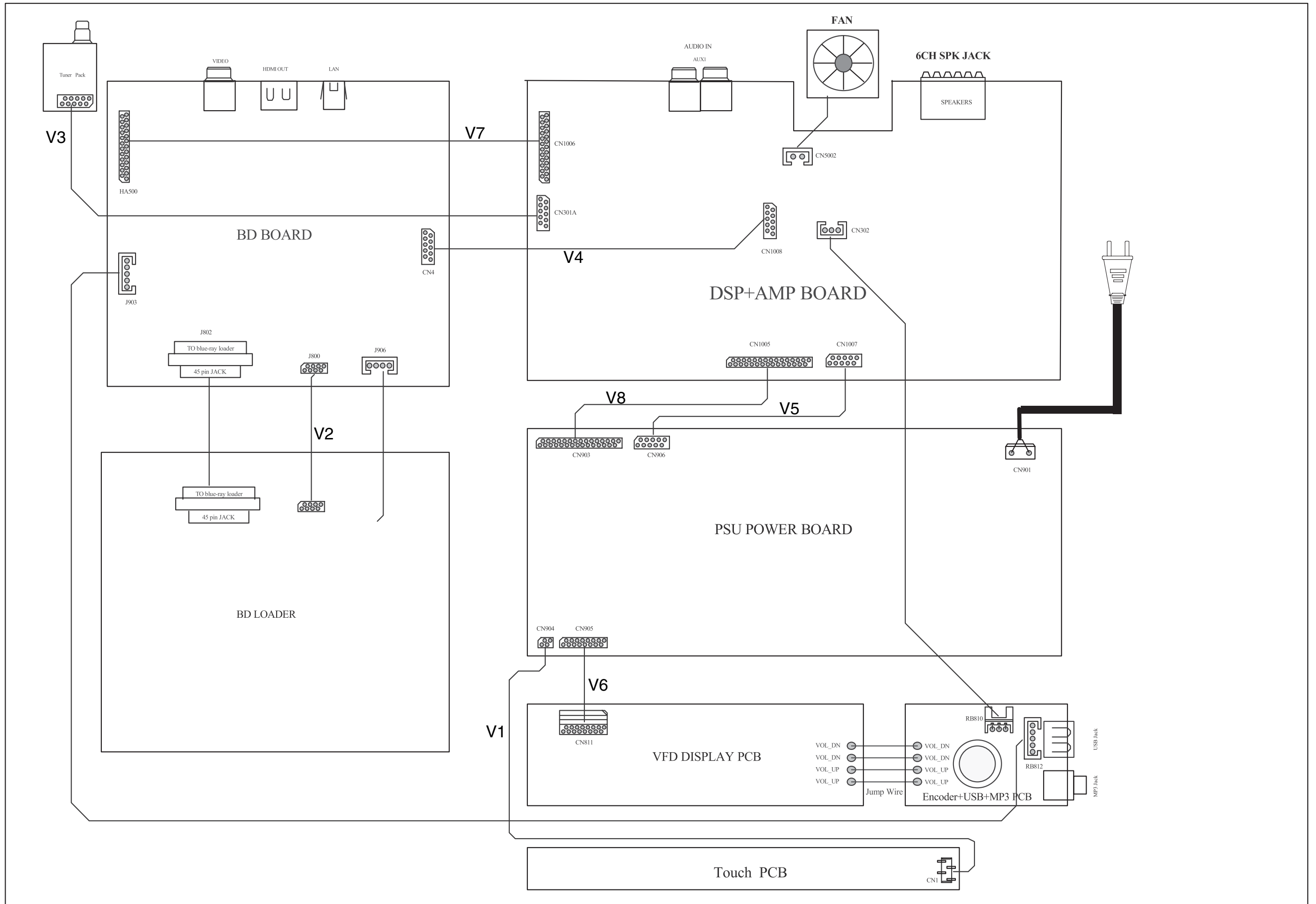
Note: In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

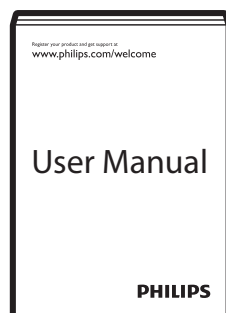
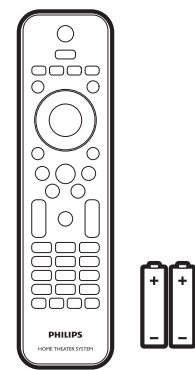


WIRING DIAGRAM

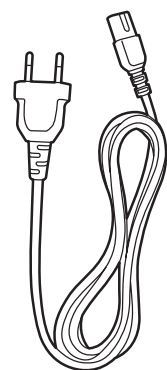
4 - 2

4 - 2

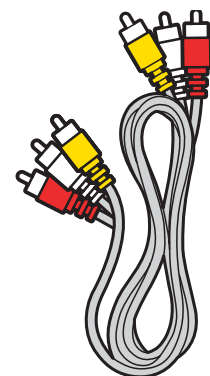
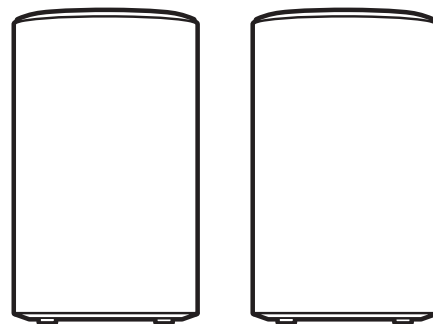
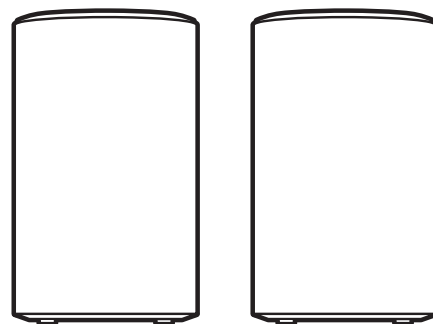
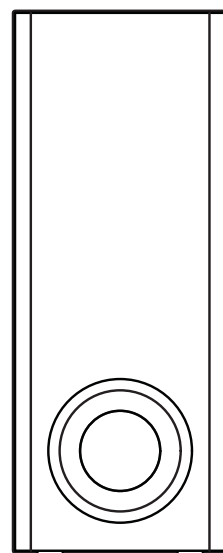
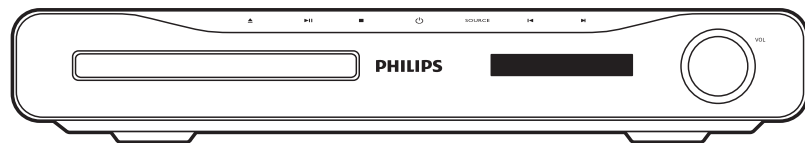




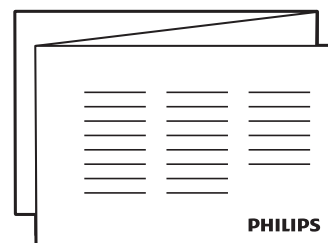
FM Antenna



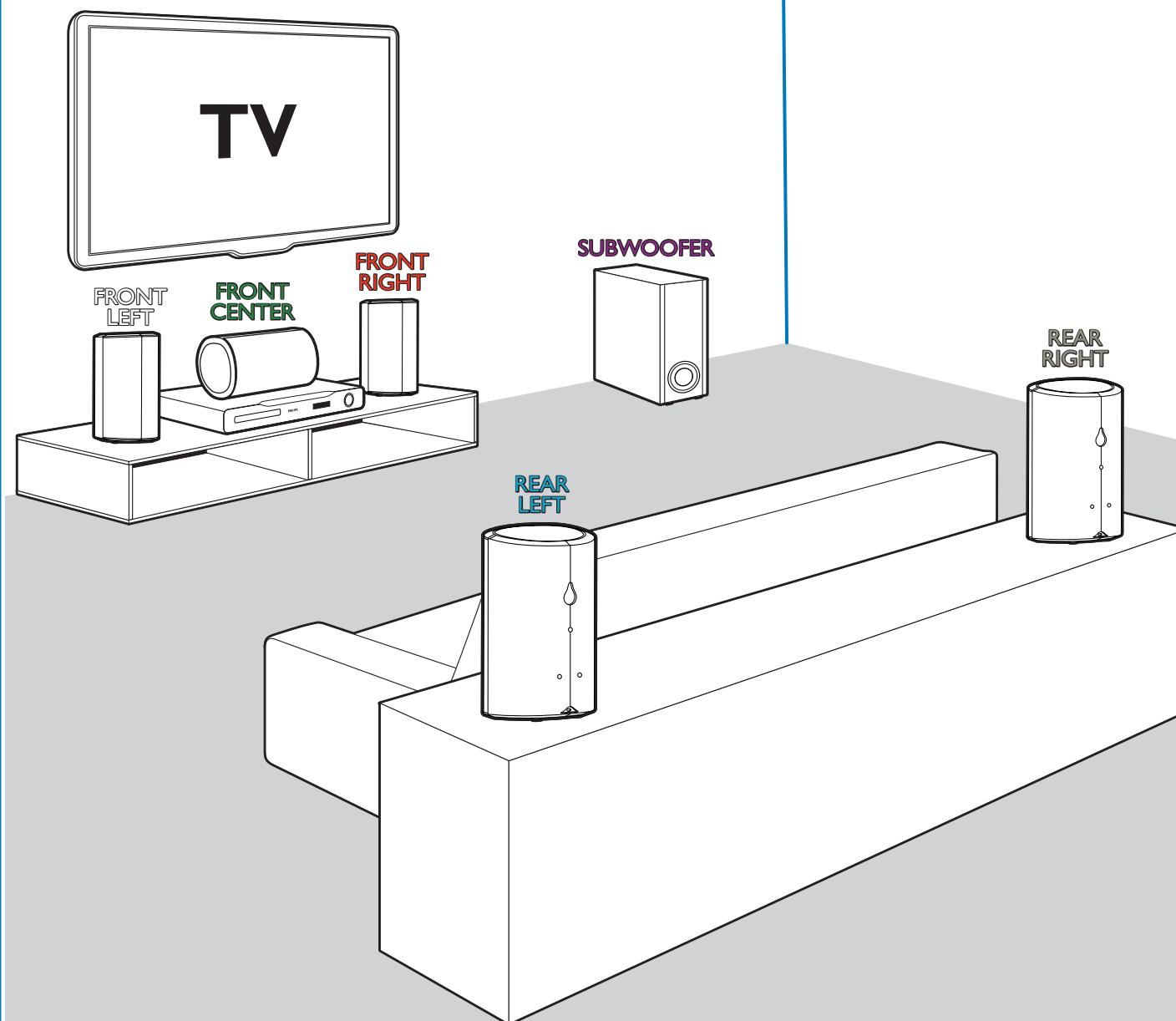
Power cord



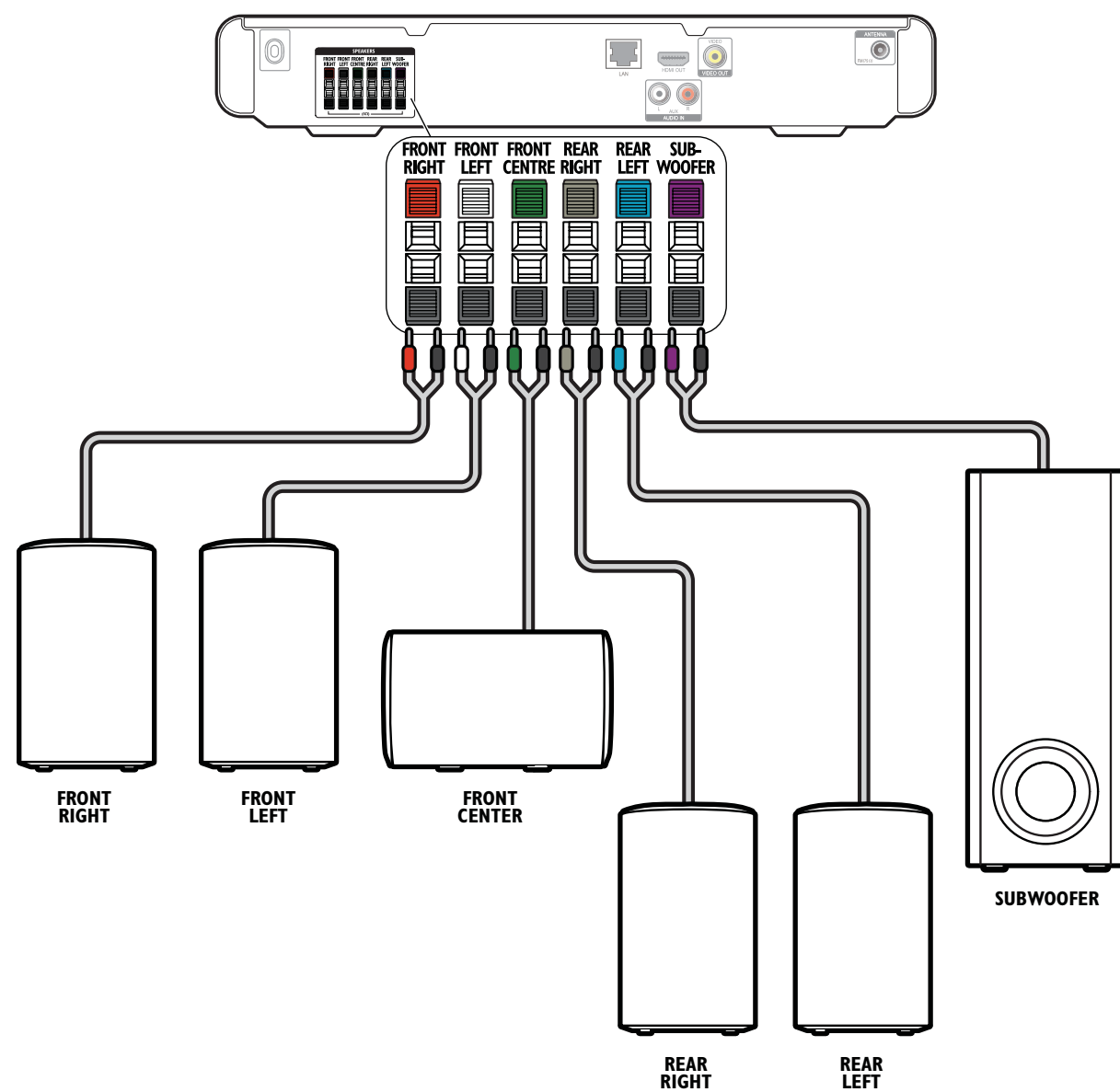
Audio/Video



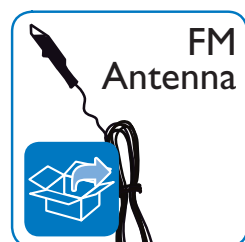
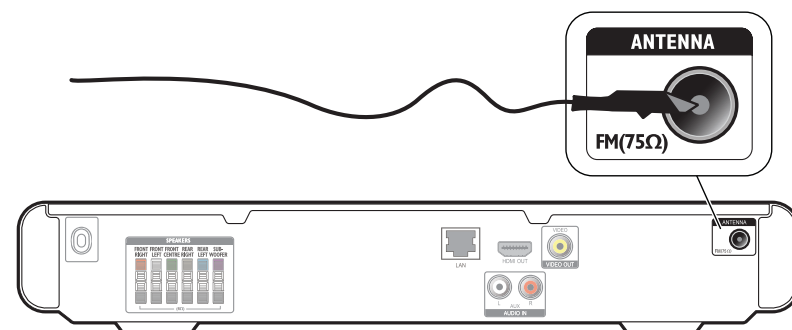
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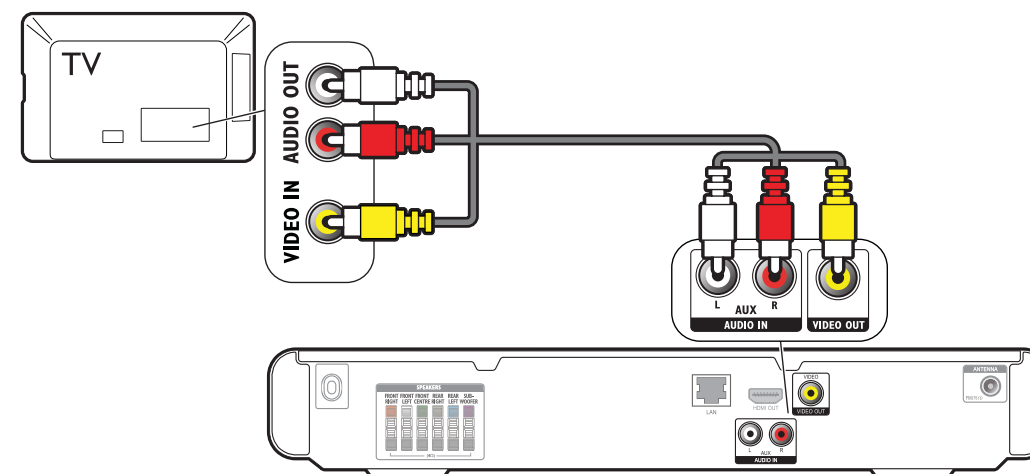
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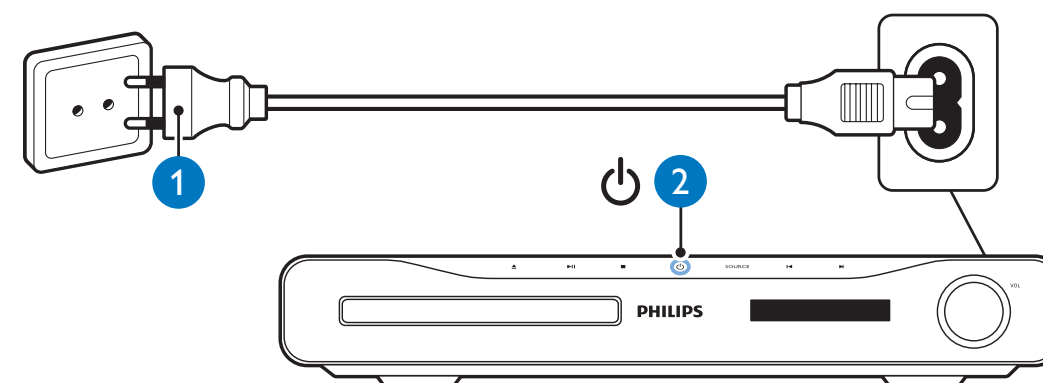
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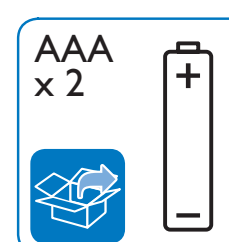
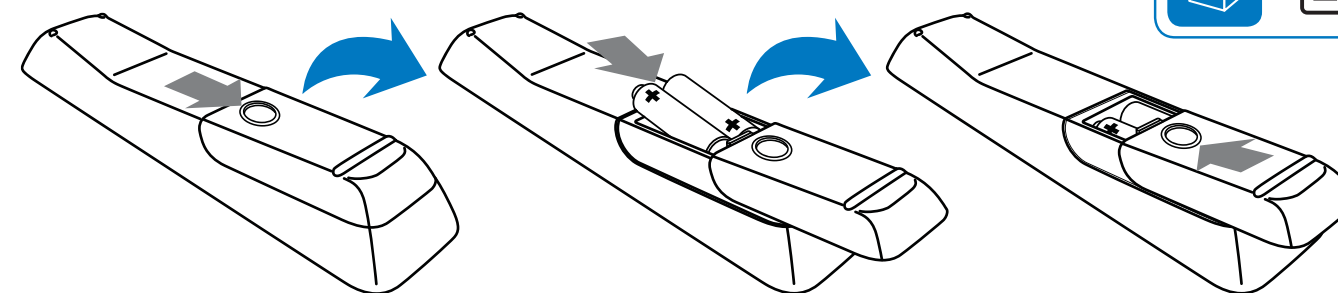
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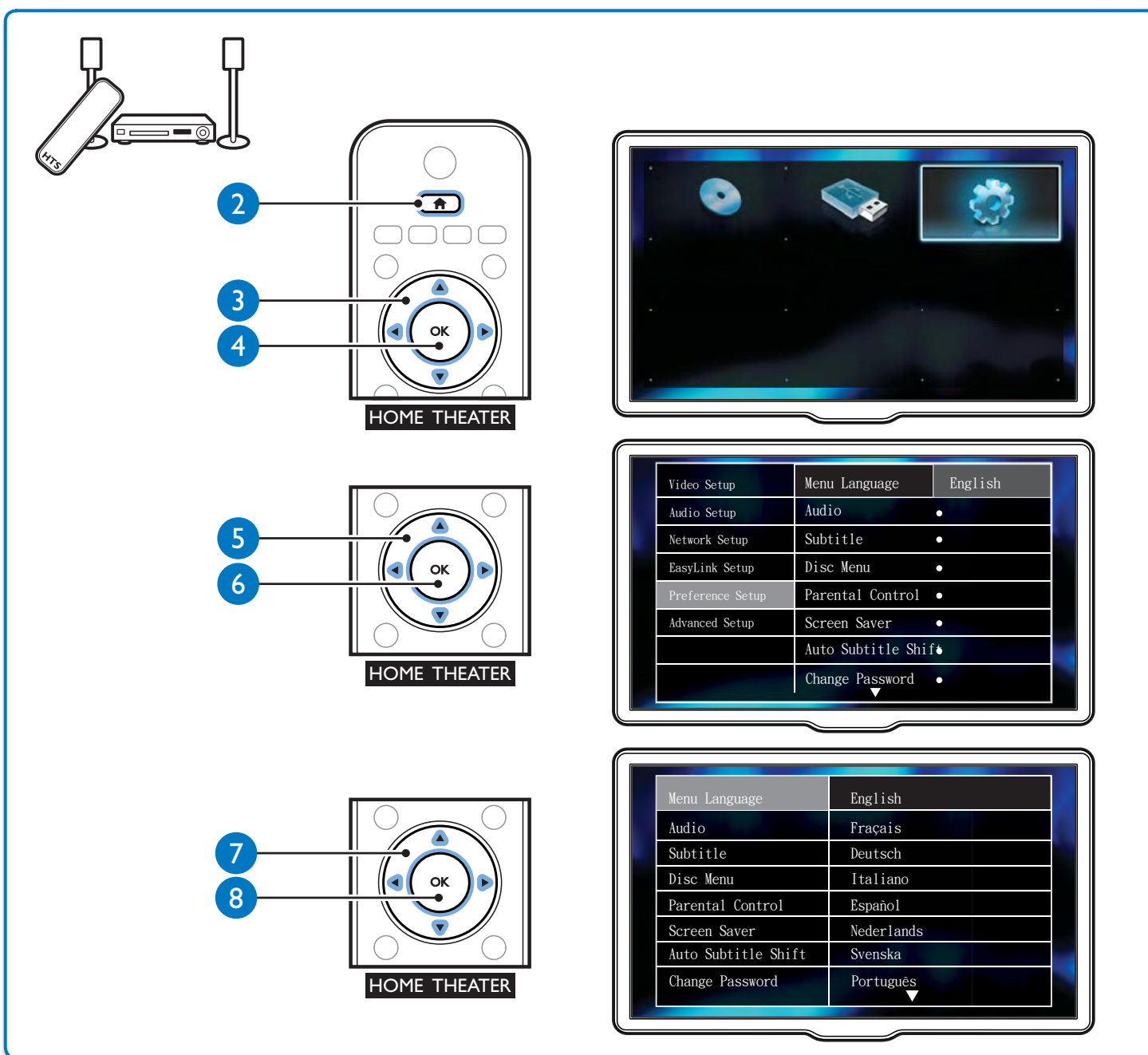
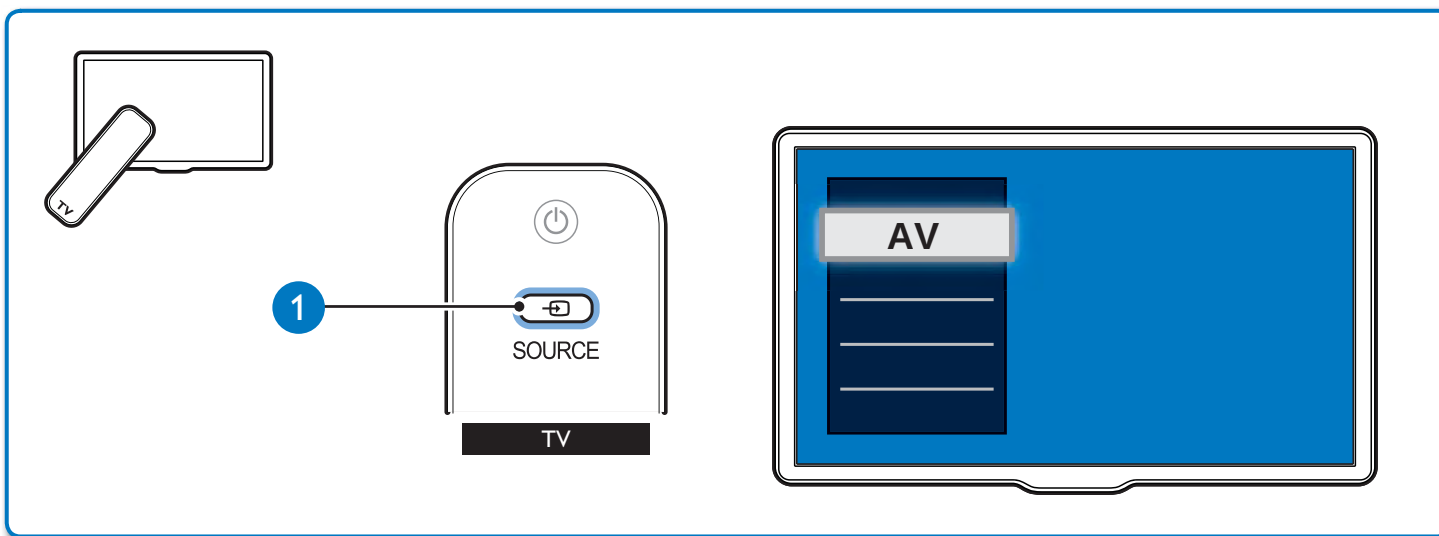


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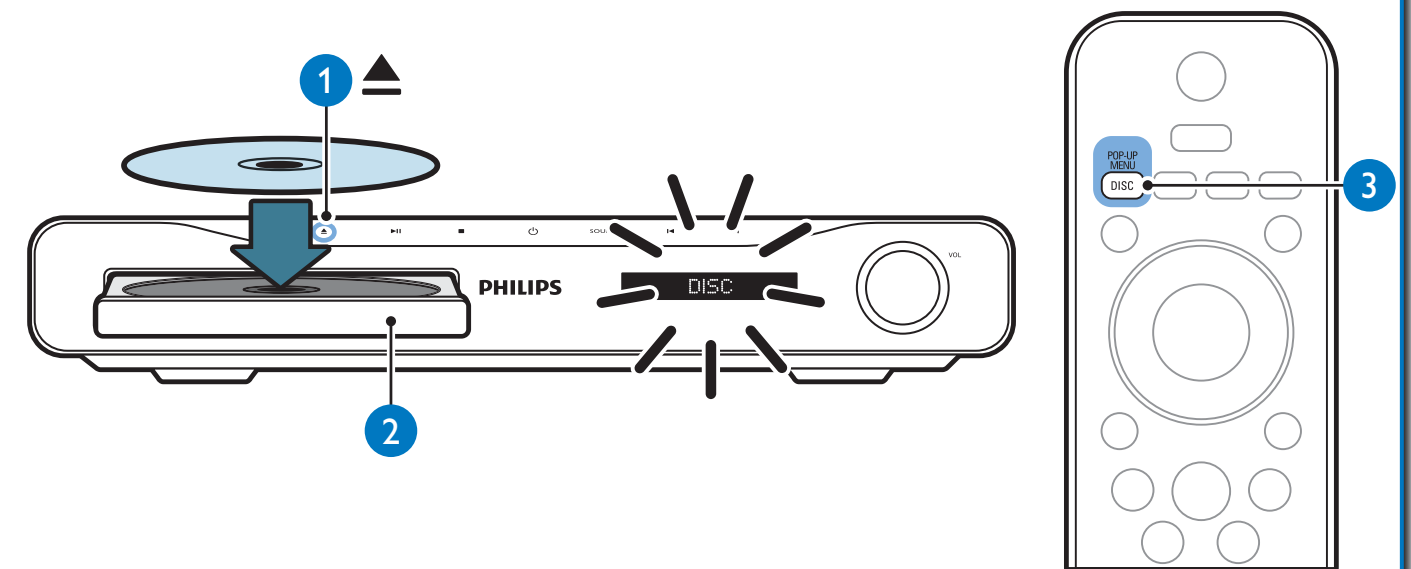


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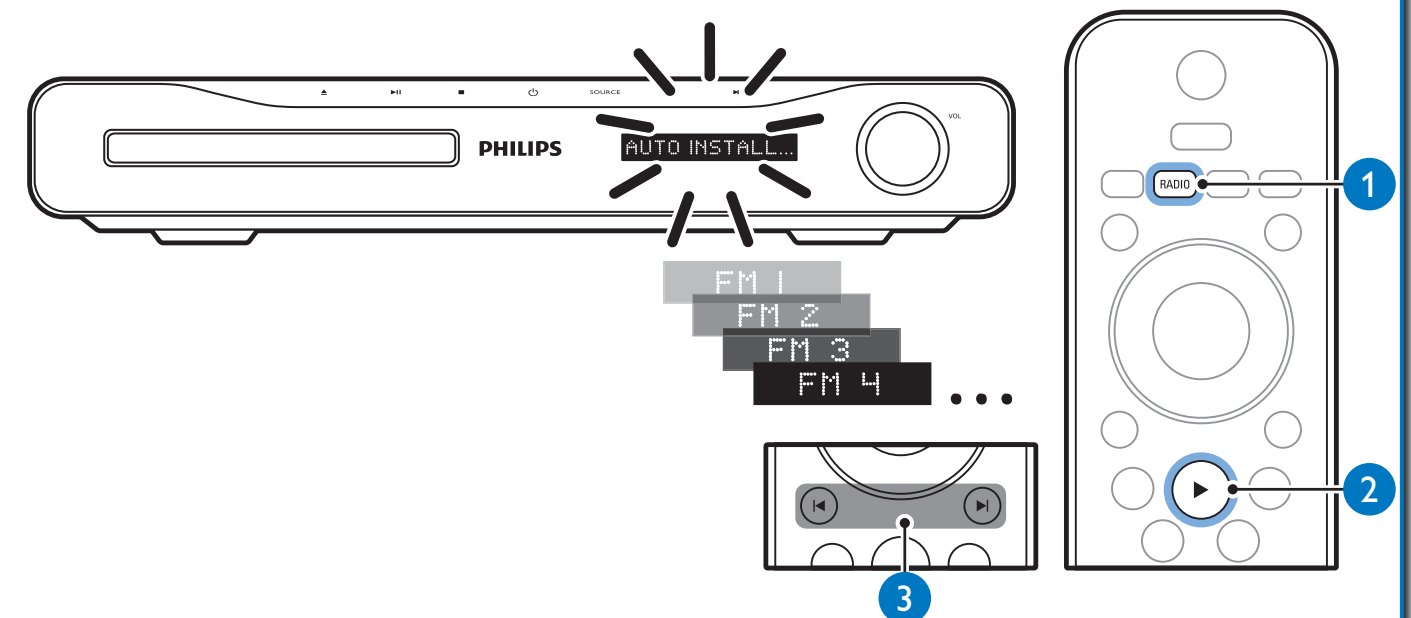


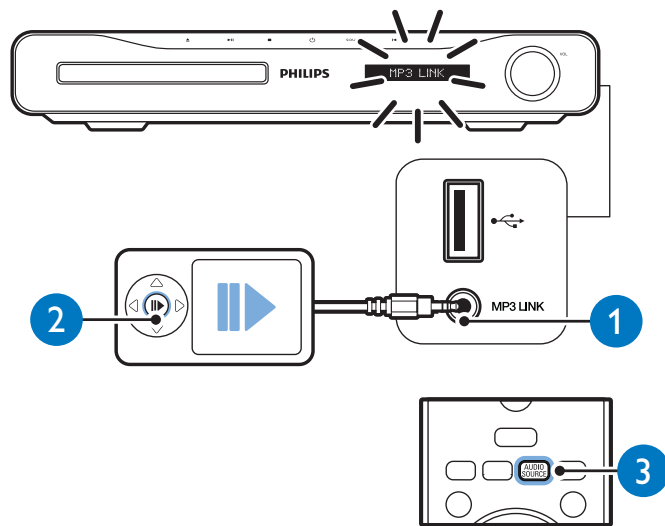
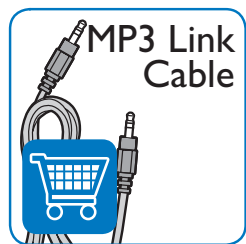
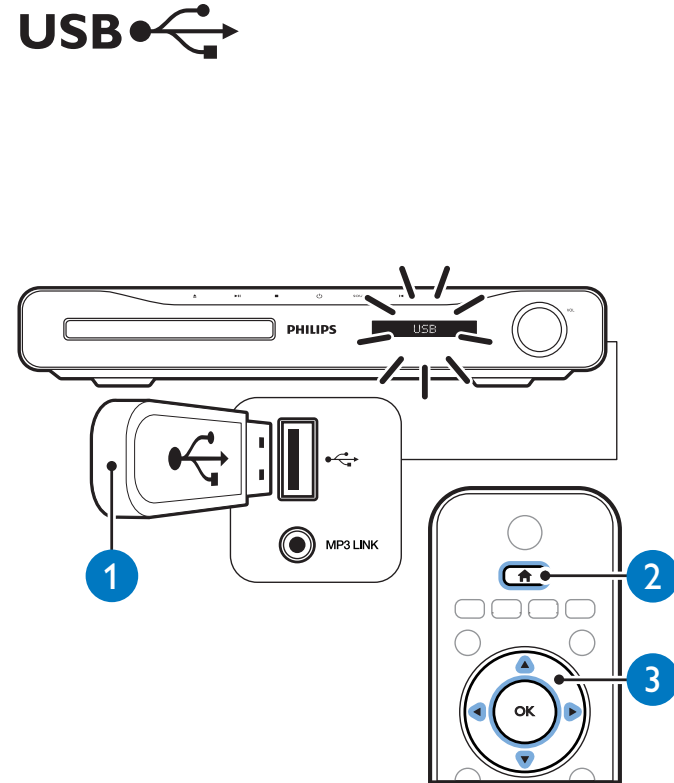
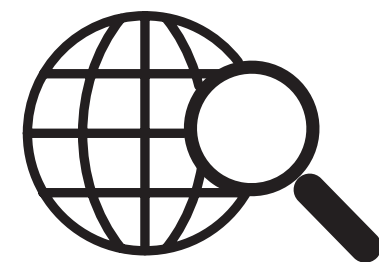
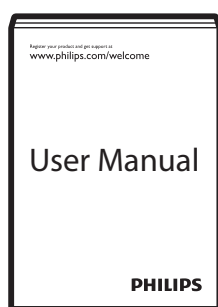


DISC



FM



MP3**USB****i**

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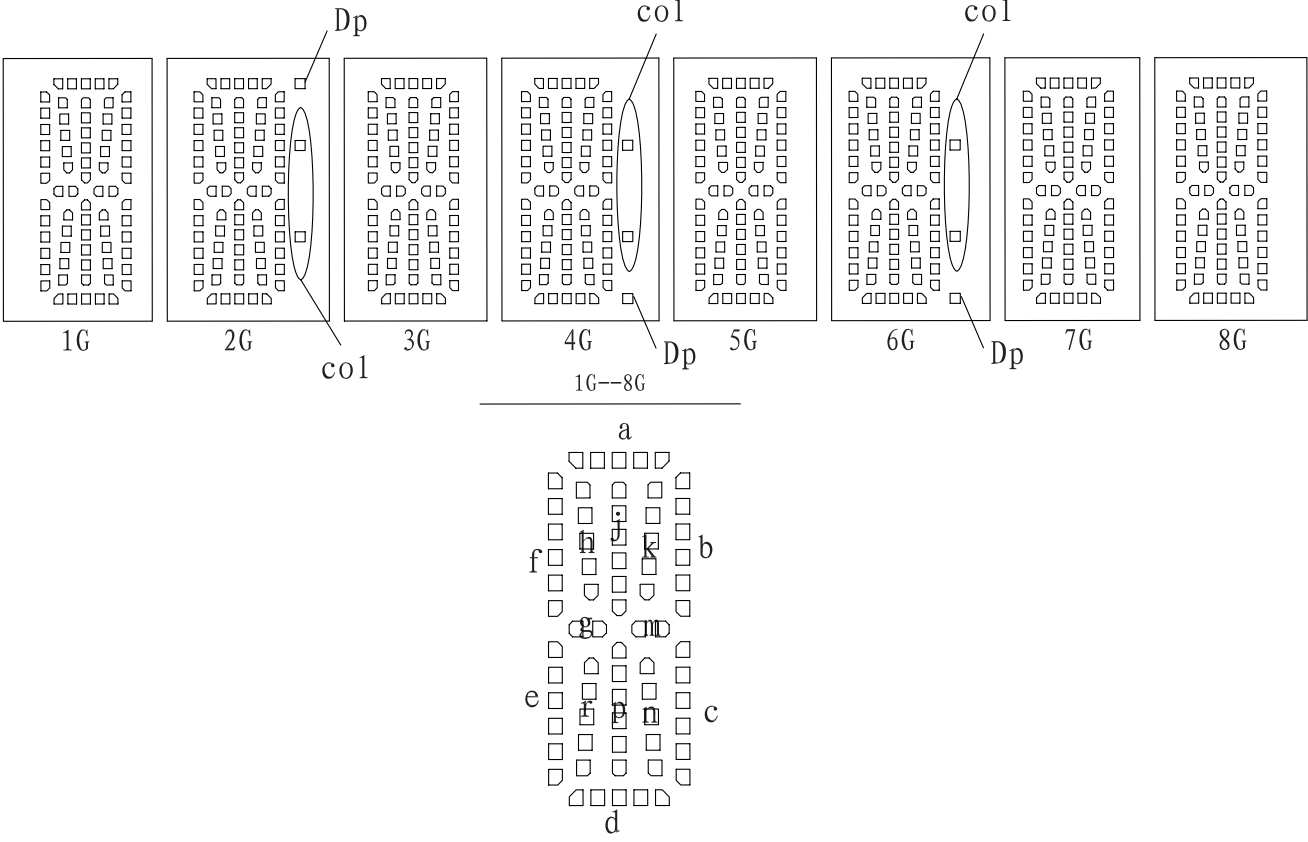


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FTD DISPLAY PIN ASSIGNMENT



VFD+VOL+USB+MP3 BOARD

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	1G	2G	3G	4G	5G	6G	7G	8G
P1	a	a	a	a	a	a	a	a
P2	j, p	j, p	j, p	j, p	j, p	j, p	j, p	j, p
P3	h	h	h	h	h	h	h	h
P4	k	k	k	k	k	k	k	k
P5	b	b	b	b	b	b	b	b
P6	f	f	f	f	f	f	f	f
P7	m	m	m	m	m	m	m	m
P8	g	g	g	g	g	g	g	g
P9	c	c	c	c	c	c	c	c
P10	e	e	e	e	e	e	e	e
P11	r	r	r	r	r	r	r	r
P12	n	n	n	n	n	n	n	n
P13	d	d	d	d	d	d	d	d
P14		col		col		col		
P15		Dp		Dp		Dp		

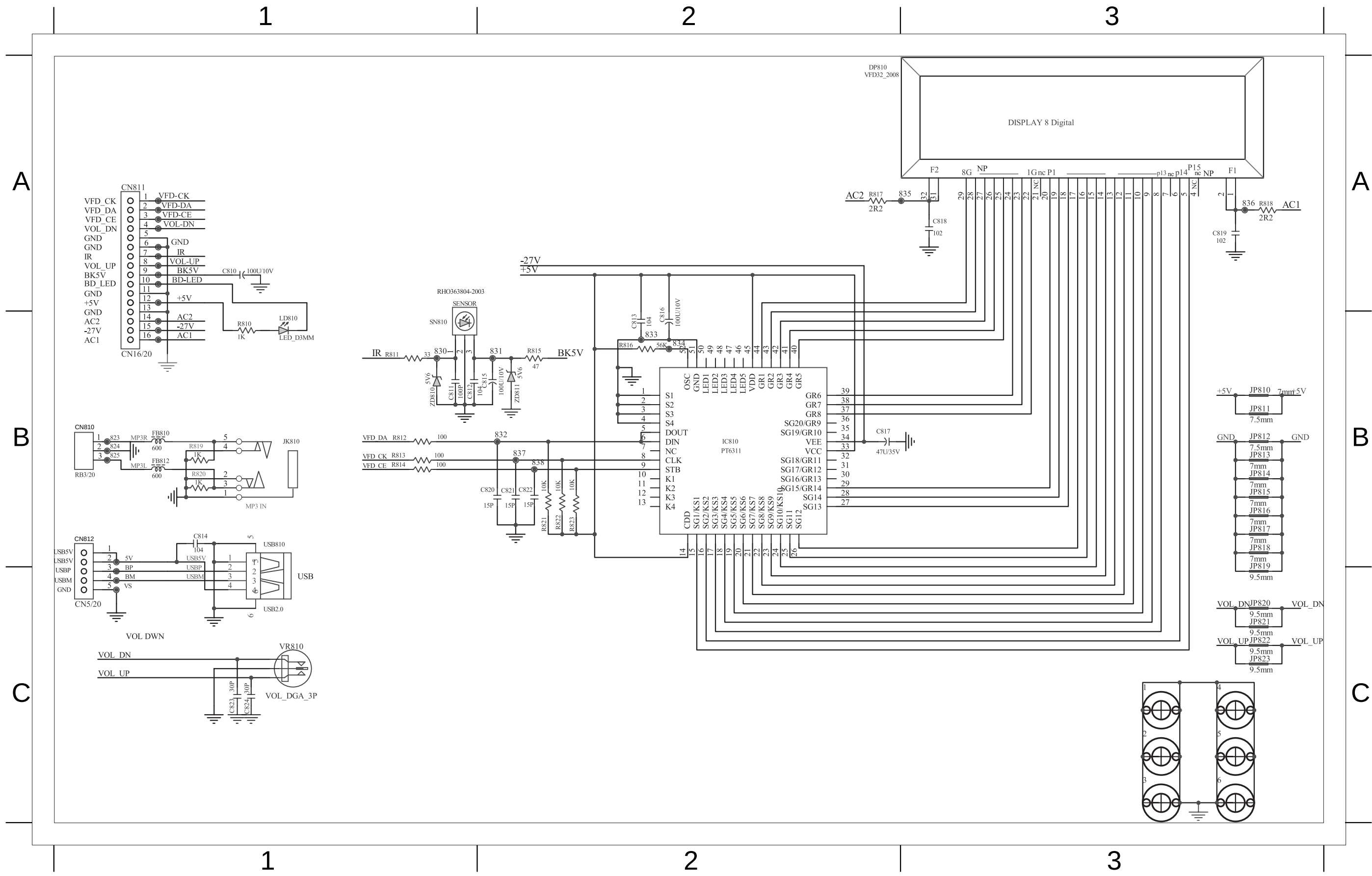
PIN CONNECTION

(Pin NO.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
(Connection)	F1	F1	NP	NC	P15	P14	NC	P13	P12	P11	P10	P9	P8	P7	P6	P5
(Pin NO.)	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
(Connection)	P4	P3	P2	P1	NC	1G	2G	3G	4G	5G	6G	7G	8G	NP	F2	F2

(Notes) : Fn : (Filament Pin) nG : (Grid Pin)
 Pn : (Anode Pin) NP : (No Pin)
 NC : (No connection Pin)

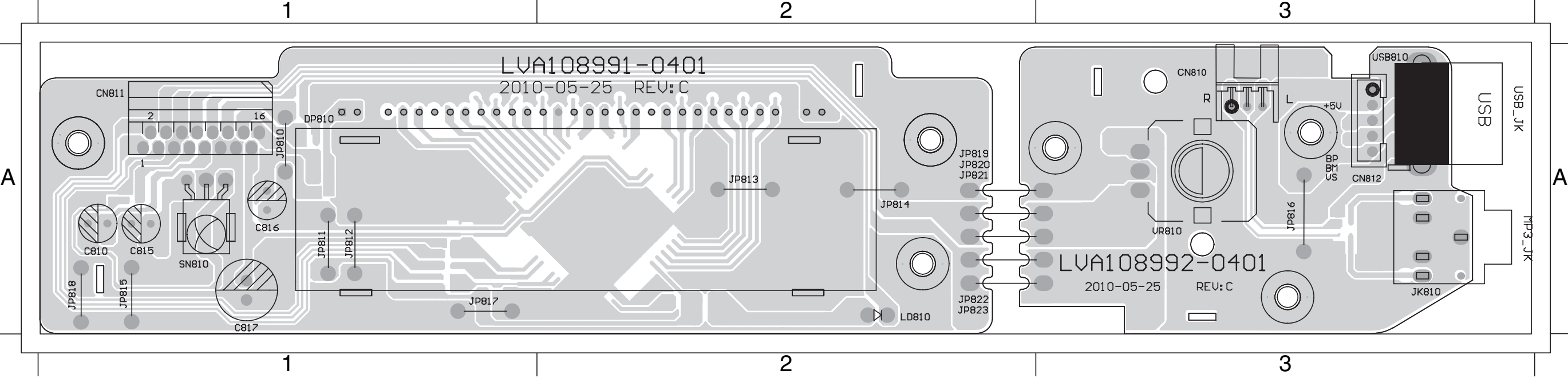
CIRCUIT DIAGRAM

C810	A1	C813	B2	C816	B2	C819	A3	C822	B2	CN810	B1	DP810	A2	IC810	B2	R811	B1	R814	B1	R817	A2	R820	B1	R823	B2	VR810	C1	ZD811	B2
C811	B1	C814	B1	C817	B2	C820	B2	C823	C1	CN811	A1	FB810	B1	IC810	B2	R812	B1	R815	B2	R818	A3	R821	B2	SN810	B1	VR810	C1		
C812	B1	C815	B2	C818	A3	C821	B2	C824	C1	CN812	B1	FB812	B1	JK810	B1	R813	B1	R816	B2	R819	B1	R822	B2	USB810B1		ZD810	B1		



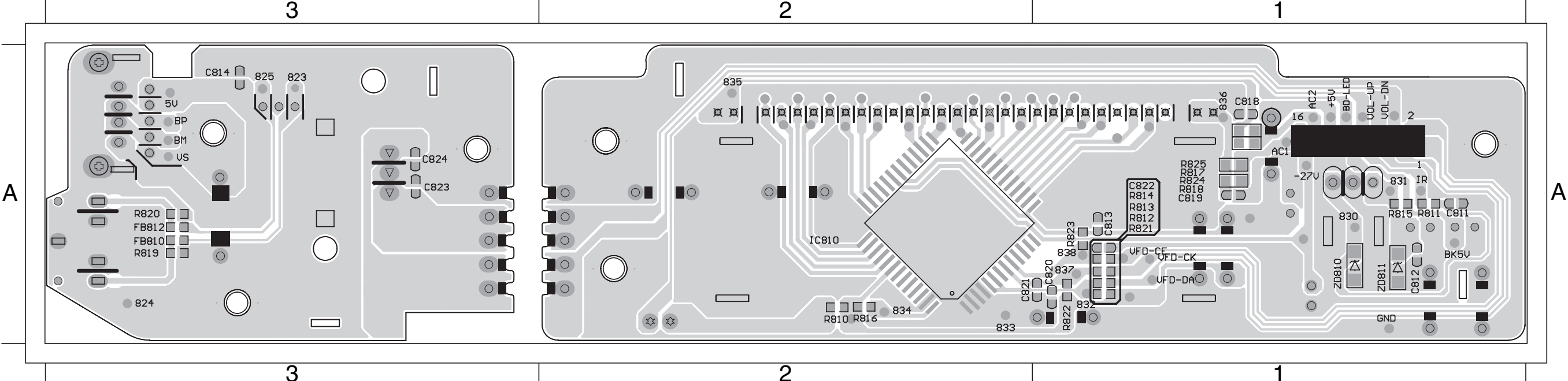
PCB LAYOUT - TOP VIEW

C810	A1	C817	A1	CN812	A3	JP810	A1	JP813	A2	JP816	A3	JP819	A2	JP822	A2	USB810	A3
C815	A1	CN810	A3	DP810	A1	JP811	A1	JP814	A2	JP817	A1	JP820	A2	JP823	A2	VR810	A3
C816	A1	CN811	A1	JK810	A3	JP812	A1	JP815	A1	JP818	A1	JP821	A2	SN810	A1		



PCB LAYOUT - BOTTOM VIEW

C811	A1	C814	A3	C820	A1	C823	A3	FB812	A3	R812	A1	R815	A1	R818	A1	R821	A1	R824	A1	ZD811	A1
C812	A1	C818	A1	C821	A2	C824	A3	IC810	A2	R813	A1	R816	A2	R819	A3	R822	A1	R825	A1		
C813	A1	C819	A1	C822	A1	FB810	A3	R811	A1	R814	A1	R817	A1	R820	A3	R823	A1	ZD810	A1		



MAIN BOARD

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Internal IC Diagram

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Circuit Diagram.....

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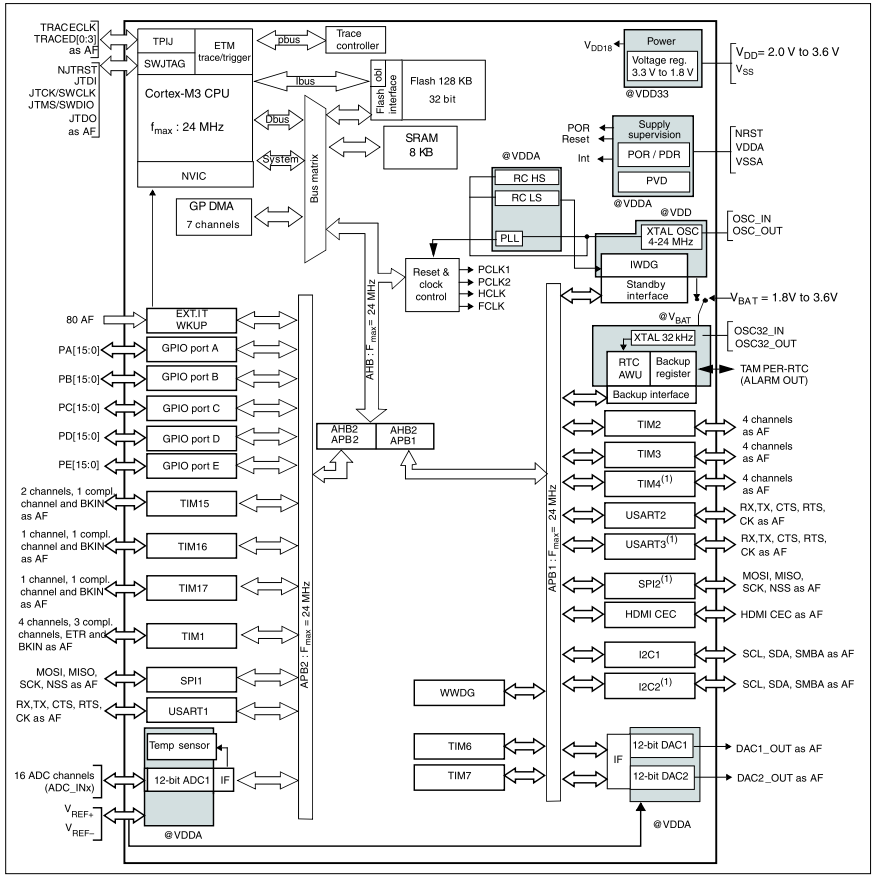
PCB Layout Top View

7-3

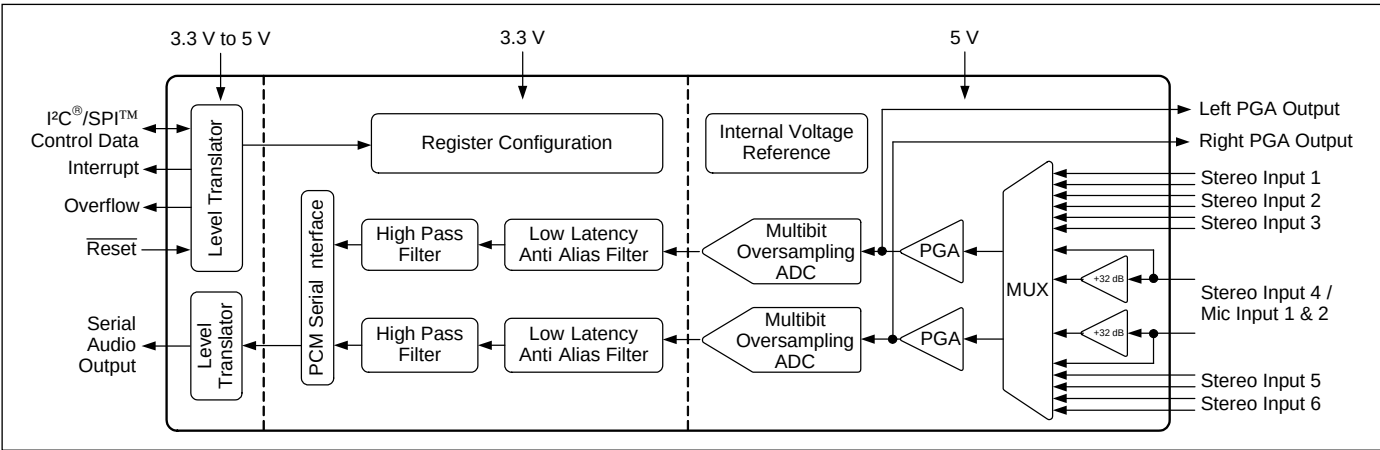
PCB Layout Bottom View

7-4

INTERNAL IC DIAGRAM - STM32F100VBT6ATR



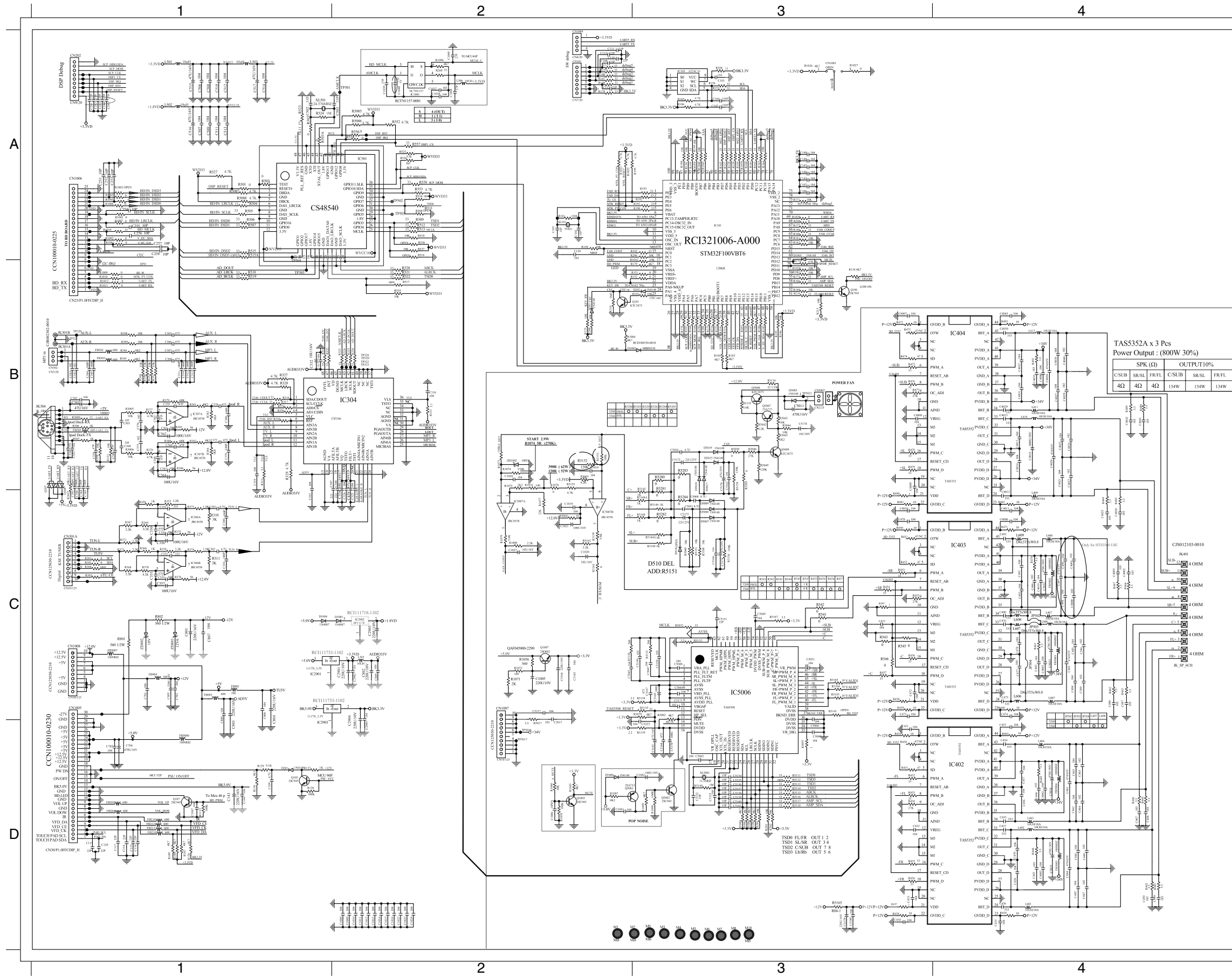
INTERNAL IC DIAGRAM - CS5346-CQZR



CIRCUIT DIAGRAM

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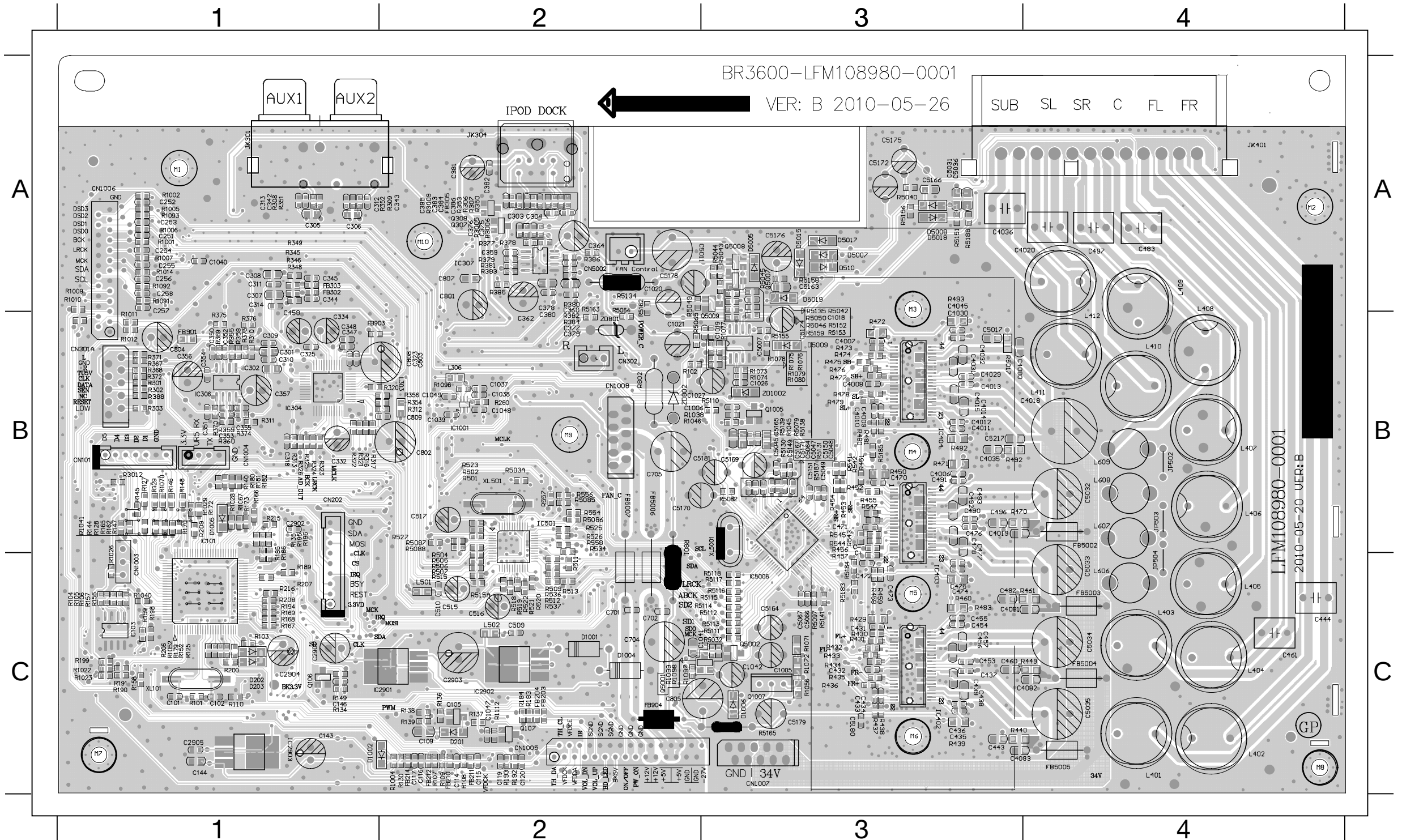
7 - 2



A	C1005	C2	C351	C1	C499	C4	D5007	C3	R106	A3	R302	C1
	C1008	D2	C352	C1	C5011	B3	D5008	C3	R1065	D3	R303	C1
	C1009	D2	C353	C1	C5017	C2	D5015	B3	R1066	D3	R308	B1
	C101	A2	C354	C1	C502	A1	D5017	B3	R1067	B3	R309	B1
	C1010	D2	C355	C1	C503	A2	D5018	B3	R107	D1	R310	C1
	C1011	D2	C356	C1	C5031	C3	D5019	B3	R1070	A3	R311	C1
	C1012	D2	C357	C1	C5032	C4	FB203	D1	R1071	C2	R312	B1
	C1013	D2	C4000	C4	C5033	C4	FB204	D1	R1072	C2	R313	B2
	C1014	D2	C4001	C4	C5034	D4	FB210	D1	R1073	B2	R316	B1
	C1015	D2	C4002	C4	C5035	D4	FB211	D1	R1074	B2	R317	B1
B	C1016	D2	C4003	C4	C5036	B3	FB212	D1	R1075	B2	R318	B3
	C1018	B2	C4006	C4	C5045	C2	FB214	D1	R1076	B2	R319	B3
	C1019	C2	C4007	B3	C5047	C3	FB302	B1	R1077	A2	R320	B1
	C102	A2	C4008	B3	C5048	C3	FB303	B1	R1078	B2	R321	B1
	C1020	C2	C4009	B3	C5049	C3	FB5002	C4	R1079	C2	R322	B1
	C1021	C2	C4010	C3	C5051	C3	FB5003	C4	R108	D1	R323	B2
	C1022	D2	C4011	C4	C506	A1	FB5004	D4	R1080	C2	R324	B2
	C1023	D2	C4012	C4	C5064	C3	FB5005	D4	R109	D1	R325	B2
	C1024	D2	C4013	B4	C5065	D3	FB5006	D1	R1091	A1	R326	B2
	C1026	B2	C4014	B4	C5066	D3	FB5007	C1	R1092	A1	R327	B1
C	C1027	C2	C4015	B4	C5067	D3	FB901	C1	R1093	A1	R328	B1
	C103	A3	C4018	B4	C507	A1	FB903	C1	R1096	A2	R329	B1
	C1037	A2	C4019	C4	C508	A1	FB904	C1	R1097	D2	R345	B1
	C1038	A2	C4020	B4	C509	A1	IC1001	A2	R1098	D3	R346	B1
	C1039	A2	C4021	B4	C510	A1	IC101	A3	R1099	D3	R348	B1
	C104	A3	C4022	B4	C511	A1	IC103	A3	R110	B2	R349	B1
	C1040	A2	C4023	B4	C512	A1	IC404	B4	R1112	D1	R351	B1
	C1041	D2	C4024	B4	C513	A1	IC2901	C1	R125	B2	R352	B1
	C1042	D3	C4025	C4	C514	A1	IC2902	C2	R127	A3	R354	B1
	C1047	D1	C4026	C4	C5149	C3	IC2903	C1	R128	A3	R355	C1
D	C1048	A2	C4029	B4	C515	A1	IC304	B2	R129	A3	R356	B1
	C1049	A2	C4030	B4	C5150	C3	IC306	C1	R130	D1	R358	C1
	C105	A3	C4031	B4	C5151	C3	IC402	D4	R134	B3	R359	C1
	C106	A3	C4032	B4	C5152	D3	IC403	C4	R135	B3	R360	C1
	C107	A3	C4035	B4	C5153	D3	IC404	B4	R136	D1	R367	C1
	C108	A2	C4036	B4	C5154	D3	IC5006	C3	R137	D1	R368	C1
	C109	D1	C4037	B4	C5155	D3	IC5007	C2	R138	D1	R369	C1
	C110	A2	C4038	B4	C5156	D3	IC501	A2	R139	D1	R370	C1
	C111	A2	C4039	B4	C5157	D3	JK301	B1	R140	A3	R371	C1
	C112	A2	C4040	B4	C5158	D3	JK401	C4	R144	A2	R372	C1
E	C113	A2	C4041	B4	C5159	D3	L303	C2	R145	A2	R373	C1
	C114	D1	C4042	B4	C516	A1	L306	A2	R146	A2	R374	C1
	C115	D1	C4045	B4	C5160	D3	L401	D4	R147	A2	R375	C1
	C116	D1	C4080	B4	C5161	D3	L402	D4	R148	A2	R376	C1
	C117	D1	C4081	C4	C5163	B3	L403	D4	R149	B3	R429	D3
	C119	D1	C4082	D4	C5164	C2	L404	D4	R150	A2	R431	D3
	C120	D1	C4083	D4	C5165	C2	L405	C4	R151	B3	R432	D3
	C143	D1	C431	D3	C5166	C3	L406	C4	R152	B3	R433	D3
	C144	D1	C432	D3	C5167	C3	L407	C4	R153	B3	R434	D3
	C145	A3	C433	D3	C5168	D3	L408	C4	R154	A3	R435	D3
F	C146	A3	C434	D3	C5169	C3	L409	C4	R156	A3	R436	D3
	C147	A3	C435	D4	C517	A1	L410	B4	R157	A3	R437	D3
	C148	A3	C436	D4	C5170	D3	L411	B4	R158	A3	R438	D3
	C149	A3	C437	D4	C5171	C3	L412	B4	R159	A3	R439	D4
	C150	A2	C438	D4	C5172	B3	L501	A1	R160	A3	R440	D4
	C241	A1	C439	D4	C5174	C3	L502	A1	R161	A3	R441	D4
	C242	A1	C443	D4	C5175	C3	L503	A1	R162	A3	R442	D4
	C243	A1	C444	D4	C5176	B3	L606	C4	R163	A3	R445	D4
	C244	A1	C445	D4	C5178	B3	L607	C4	R164	A3	R446	D4
	C245	A1	C446	D4	C5179	D3	Q1005	D2	R165	A3	R449	D4
G	C251	A1	C447	D4	C5180	D3	Q1005	D2	R166	B3	R450	C3
	C252	A1	C448	D4	C5181	D3	Q1007	C2	R167	B3	R452	C3
	C253	A1	C449	D4	C5217	C2	Q101	B2	R168	B3	R453	C3
	C254	A1	C450	D4	C5223	D3	Q105	D1	R169	B3	R454	C3
	C255	A1	C453	D4	C589	C4	Q106	B3	R170	A2	R455	C3
	C256	A1	C454	D4	C590	C4	Q107	B1	R171	A3	R456	C3
	C257	A1	C455	D4	C701	C1	Q5001	D2	R172	A3	R457	C3
	C258	A1	C456	D4	C702	D1	Q5002	D3	R173	B3	R458	C3
	C2901	C2	C457	D4	C703	C1	Q5007	B3	R174	A3	R459	C3
	C2902	C2	C458	C2	C704	D1	Q5008	B3	R175	B3	R460	C4
H	C2903	C2	C460	D4	C801	C1	Q5009	B3	R178	B3	R461	C4
	C2904	C2	C461	D4	C802	C2	R1001	A1	R179	B3	R462	C4
	C2905	C2	C462	D4	C803	C1	R1002	A1	R180	A3	R463	C4
	C301	C1	C463	D4	C804	C1	R1004	B2	R181	A3	R466	C4
	C302	C1	C464	D4	C805	C1	R1005	A1	R182	A3	R467	C4
	C305	B1	C465	D4	C806	C1	R1006	A1	R183	B3	R470	C4
	C306	B1	C466	D4	C807	C1	R1007	A1	R184	B3	R471	C4
	C307	B1	C467	D4	C808	C1	R1009	B1	R185	B3	R472	B3
	C308	B1	C470	C3	C809	C2	R101	A2	R186	B3	R474	B3
	C309	C1	C471	C3	CN101	A2	R1010	B1	R189	B3	R475	B3
I	C310	C1	C472	C3	CN202	A1	R1011	B1	R190	A3	R476	B3
	C311	B1	C473	C3	CN1004	A2	R1012	B1	R191	A3	R477	B3
	C312	B1	C474	C4	CN1005	C1	R1014	A1	R192	A3	R478	B3
	C313	B1	C475	C4	CN1006	A1	R102	A3	R193	A3	R479	B3
	C314	B1	C476	C4	CN1007	C2	R1022	A2	R194	B3	R480	C3
	C317	B1	C477	C4	CN1008	C1	R1023	A2	R195	B3	R481	C3
	C318	B2	C478	C4	CN101	A2	R1026	A3	R196	B3	R482	C4
	C319	B1	C482	C4	CN202	A1	R1027	A3	R198	A3	R483	D4
	C323	C1	C483	C4	CN301AC1	R1028	B3	R199	A2	R484	C4	
	C324	C2	C484	C4	CN302	B1	R1029	A3	R200	B2	R485	C4
J	C325	C2	C485	C4	CN5002	B3	R103	B3	R206	A3	R488	B4
	C332	B1	C486	C4	D1001	C2	R1038	D2	R207	B3	R489	B4
	C334	C2	C487	C4	D1002	B2	R104	A3	R208	B3	R492	B4
	C342	B1	C490	C4	D1004	C1	R1040	A3	R209	A3	R493	B4
	C343	B1	C491	C4	D1005	A3	R1041	A3	R215	B3	R501	A1
	C344	B1	C492	C4	D1006	D2	R1045	D2	R260	A2	R5017	C2
	C345	B1	C493	C4	D201	D1	R1046	D2	R282	D3	R502	A1
	C347	B2	C496	C4	D202	B3	R105	A3	R283	D3	R503	A1
	C348	B2	C497	C4	D203	B2	R1052	A3	R284	D3	R5032	C3
	C350	C1	C498	C4	D5005	B3	R1056	C2	R301	C1	R503A	A1

PCB LAYOUT - TOP VIEW

C1005	C3	C117	C2	C305	A1	C351	B1	C4031	B3	C455	C3	C49	A4	C516	C2	C705	B2	D1002	C1	FB5002	B4	IC5007	B3	L607	B4	R1009	A1	R106	C1	R1099	C2	R156	C1	R190	C1	R311	B1	R359	B1	R440	C3	R480	B3	R5064	A2	R5131	B3	R521	C2
C101	C1	C119	C2	C306	A1	C352	B1	C4032	B3	C456	C3	C5011	A2	C5163	A3	C801	A2	D1004	C2	FB5003	C4	IC501	B2	Q1005	B3	R101	C1	R1067	B1	R110	C1	R157	C1	R191	C1	R312	B2	R360	B1	R449	C4	R481	B3	R5065	B2	R5134	A2	R522	C2
C1018	B3	C120	C2	C307	A1	C353	B1	C4035	B3	C457	C3	C5017	B3	C5164	C3	C802	B2	D1005	B1	FB5004	C4	JK301	A1	Q1005	B3	R1010	A1	R107	C2	R1112	C2	R158	C1	R192	C2	R313	B1	R367	B1	R450	B3	R482	B3	R507	C2	R5138	B3	R523	B2
C1019	B3	C143	C1	C308	A1	C354	B1	C4036	A3	C458	B1	C5031	A3	C5165	B3	C803	B2	D1006	C3	FB5005	C4	JK401	A4	Q1007	C3	R1011	B1	R1070	B1	R125	C1	R159	C1	R193	C2	R316	B1	R368	B1	R452	B3	R483	C3	R5079	B3	R5139	B3	R525	B2
C102	C1	C144	C1	C309	B1	C355	B1	C4045	A3	C460	C3	C5032	B4	C5166	A3	C804	B1	D201	C2	FB5006	B2	JP503	B4	Q105	C2	R1012	B1	R1071	C3	R127	B1	R162	B1	R194	C1	R317	B1	R369	B1	R453	B3	R492	B3	R5082	B3	R515	C2	R526	B2
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C1021	B2	C150	B1	C311	A1	C357	B1	C4081	C3	C470	B3	C5034	C4	C5169	B3	C807	A2	D203	C1	FB901	B1	L306	B2	Q106	C1	R102	B2	R1073	B3	R129	B1	R166	B1	R196	B1	R321	B1	R371	B1	R455	B3	R501	B2	R5086	B2	R5152	B3	R537	C2
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C1039	B2	C255	A1	C323	B2	C4010	B3	C433	C3	C475	C3	C5048	B3	C5174	B3	CN1004B1	D5017	A3	IC103	C1	L405	C4	Q5002	C3	R1029	B1	R1078	B3	R137	C2	R172	B1	R207	C1	R326	B1	R376	B1	R460	C3	R504	B2	R5110	B3	R5159	B3	R557	B2	
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C109	C2	C2904	C1	C345	A1	C4019	B3	C443	C3	C491	B3	C5149	B3	C5217	B3	CN301AB1	FB212	C2	IC402	C3	L412	A4	R1004	C2	R1046	B2	R1093	A1	R147	B1	R184	C2	R303	B1	R354	B2	R436	C3	R476	B3	R5049	A2	R5118	C3	R5185	B3	ZD801	B3	
C114	C2	C2905	C1	C347	B1	C4020	A4	C444	A4	C492	B3	C515	C2	C701	C2	CN302	B2	FB214	C2	IC403	C3	L501	C2	R1005	A1	R105	C1	R1096	B2	R148	B1	R185	B1	R308	A1	R355	B1	R437	C3	R477	B3	R505	C2	R512	C2	R5187	B3	ZD802	B2
C115	C2	C301	B1	C348	B1	C4029	B3	C453	C3	C493	B3	C5150	B3	C702	C2	CN5002A2	FB302	A1	IC404	B3	L502	C2	R1006	A1	R1052	C1	R1097	C2	R149	C1	R186	B1	R309	A2	R356	B2	R438	C3	R478	B3	R5050	B3	R513	C2	R519	C2			
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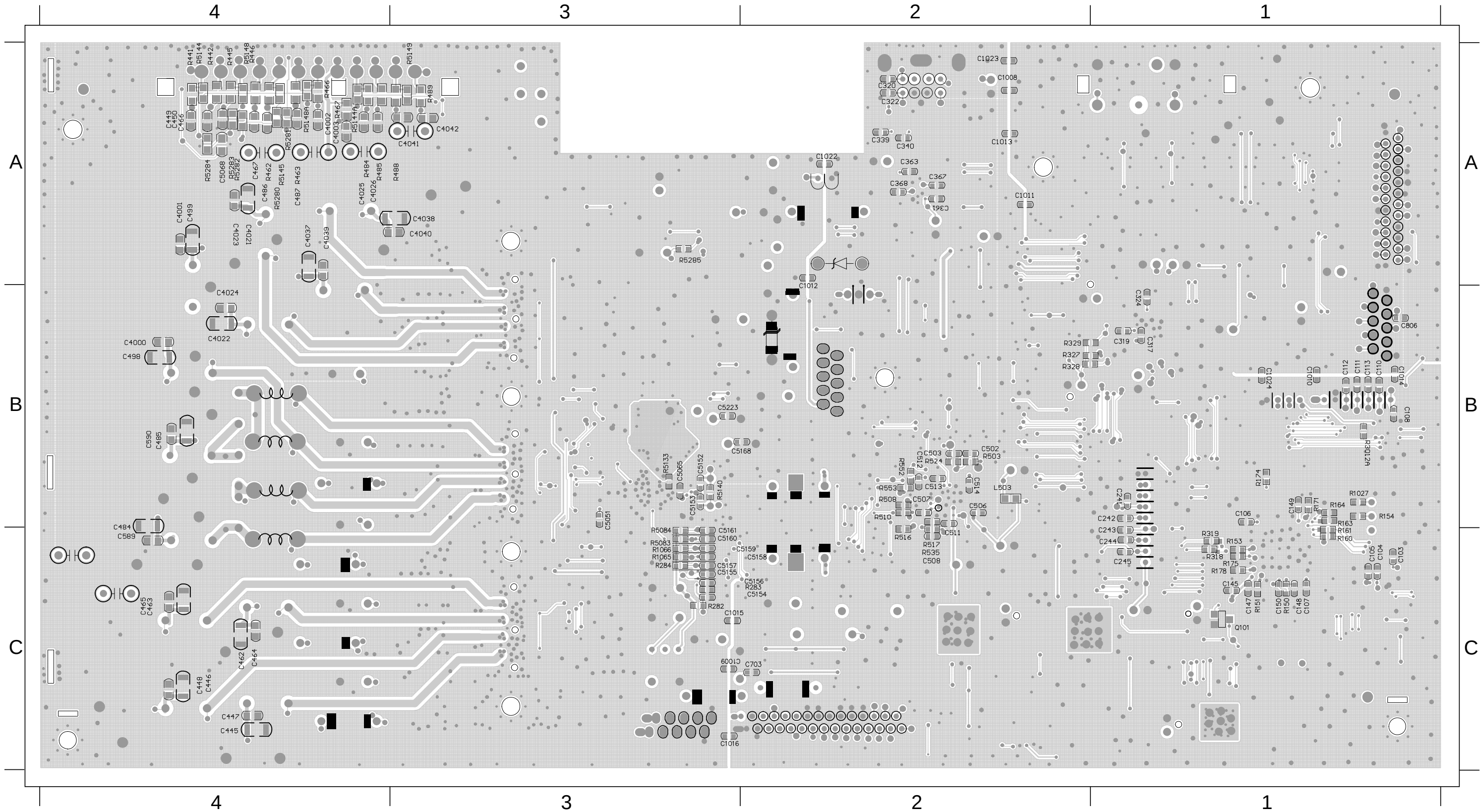
PCB LAYOUT - BOTTOM VIEW

PCB LAYOUT - BOTTOM VIEW

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C1010 B1	C1022 A2	C107 C1	C147 C1	C245 C1	C4003 A4	C4037 A4	C446 C4	C464 C4	C487 A4	C5065 B3	C5152 B3	C5159 C2	C703 C2	R150 C1	R164 B1	R284 C3	R442 A4	R484 A4	R5084 C3	R5148 A4	R535 C2
C1011 A2	C1023 A2	C108 B1	C148 C1	C317 B1	C4021 A4	C4038 A3	C447 C4	C465 C4	C498 B4	C507 B2	C5153 B3	C5160 C3	C806 B1	R151 C1	R171 B1	R318 C1	R445 A4	R485 A4	R510 B2	R5148AA4	R552 B2
C1012 A2	C1024 B1	C110 B1	C149 B1	C319 B1	C4022 B4	C4039 A4	C448 C4	C466 A4	C499 A4	C508 C2	C5154 C2	C5161 C3	L503 B2	R153 C1	R174 B1	R319 C1	R446 A4	R488 A3	R5133 B3	R5149 A3	R553 B2
C1013 A2	C103 C1	C111 B1	C241 B1	C324 B1	C4023 A4	C4040 A3	C449 A4	C467 A4	C502 B2	C511 C2	C5155 C3	C5168 B3	Q101 C1	R154 B1	R175 C1	R327 B2	R462 A4	R489 A3	R5140 B3	R524 B2	
C1014 B1	C104 C1	C112 B1	C242 B1	C4000 B4	C4024 B4	C4041 A3	C450 A4	C484 C4	C503 B2	C512 B2	C5156 C2	C5223 B3	R1027 B1	R160 C1	R178 C1	R328 B2	R463 A4	R503 B2	R5144 A4	R5281 A4	

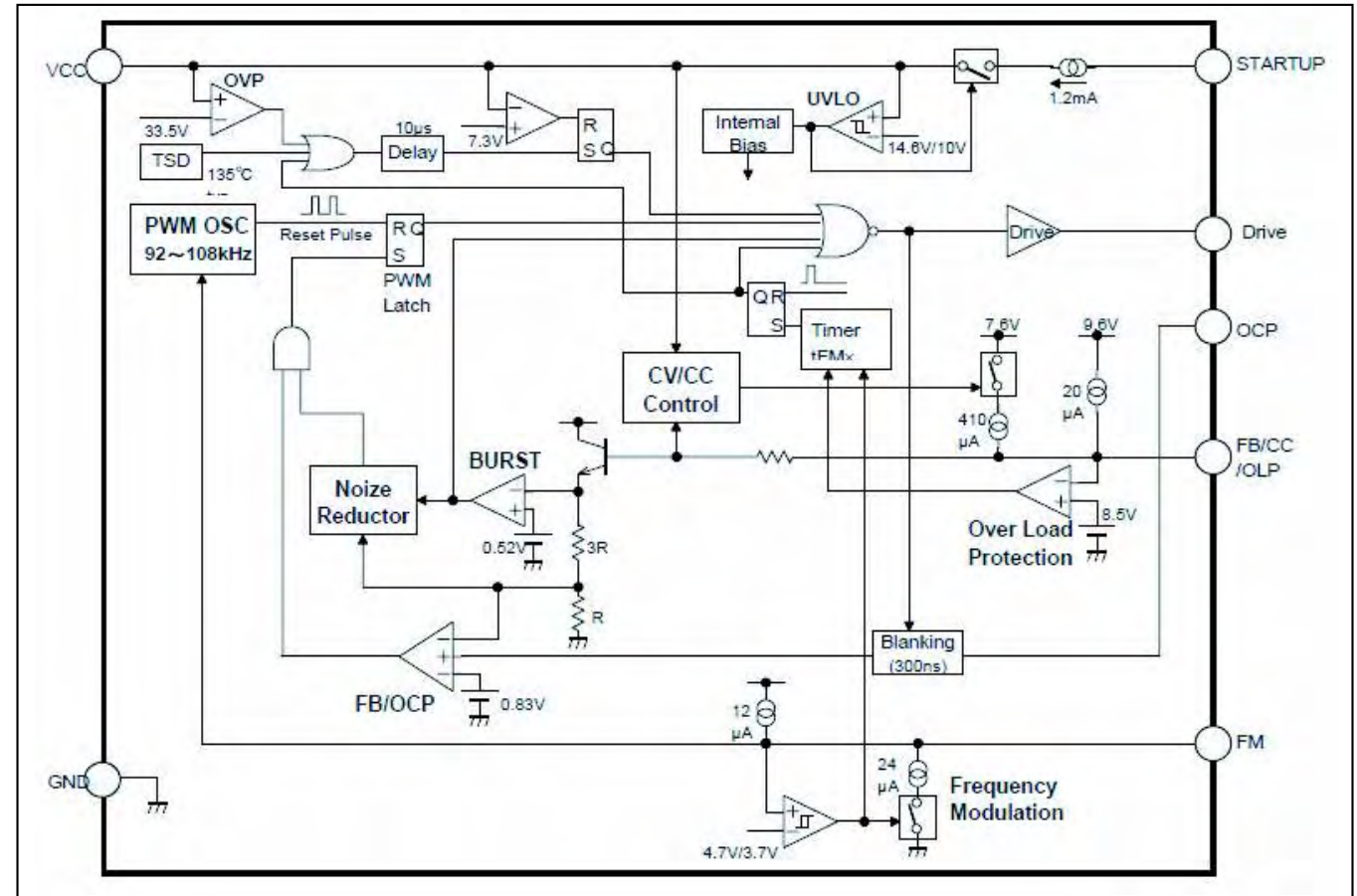


POWER BOARD

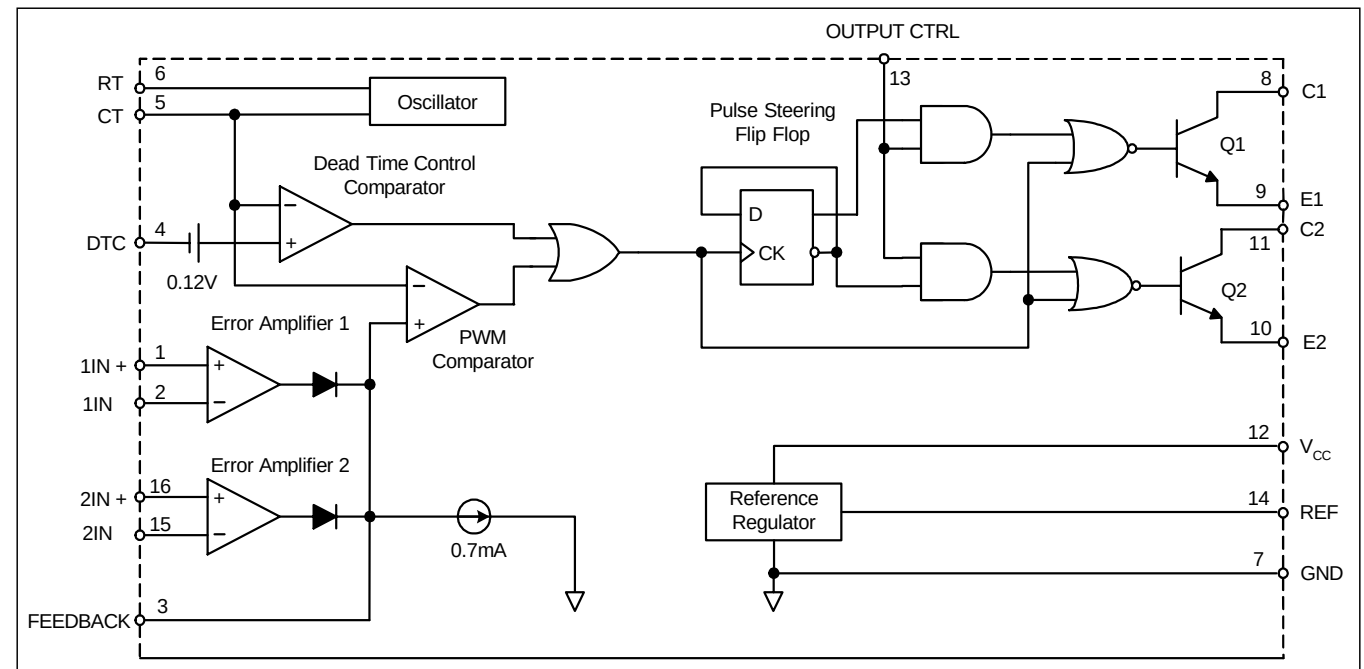
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INTERNAL IC DIAGRAM - SSC620S SOP



INTERNAL IC DIAGRAM - AZ7500BP

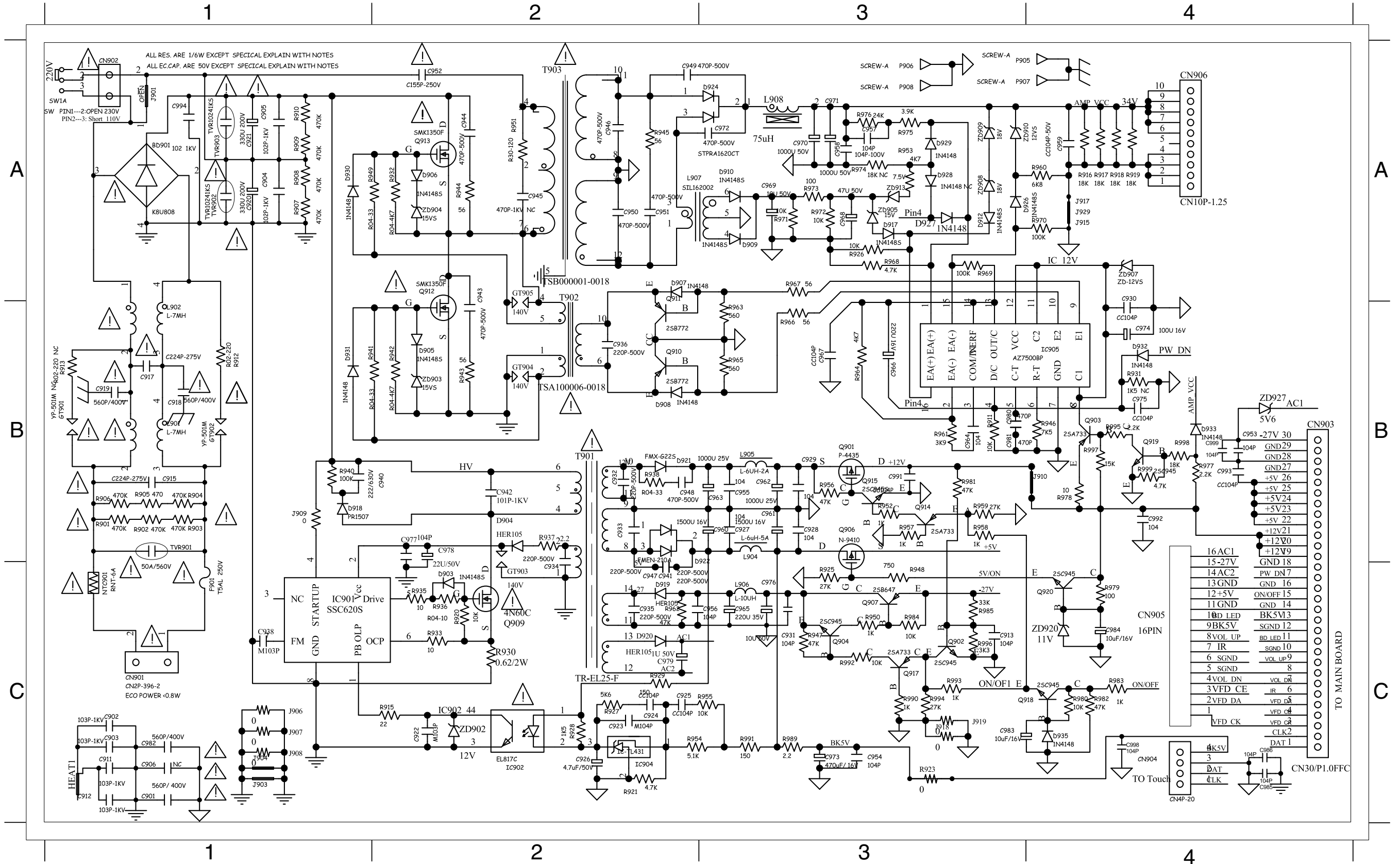


CIRCUIT DIAGRAM

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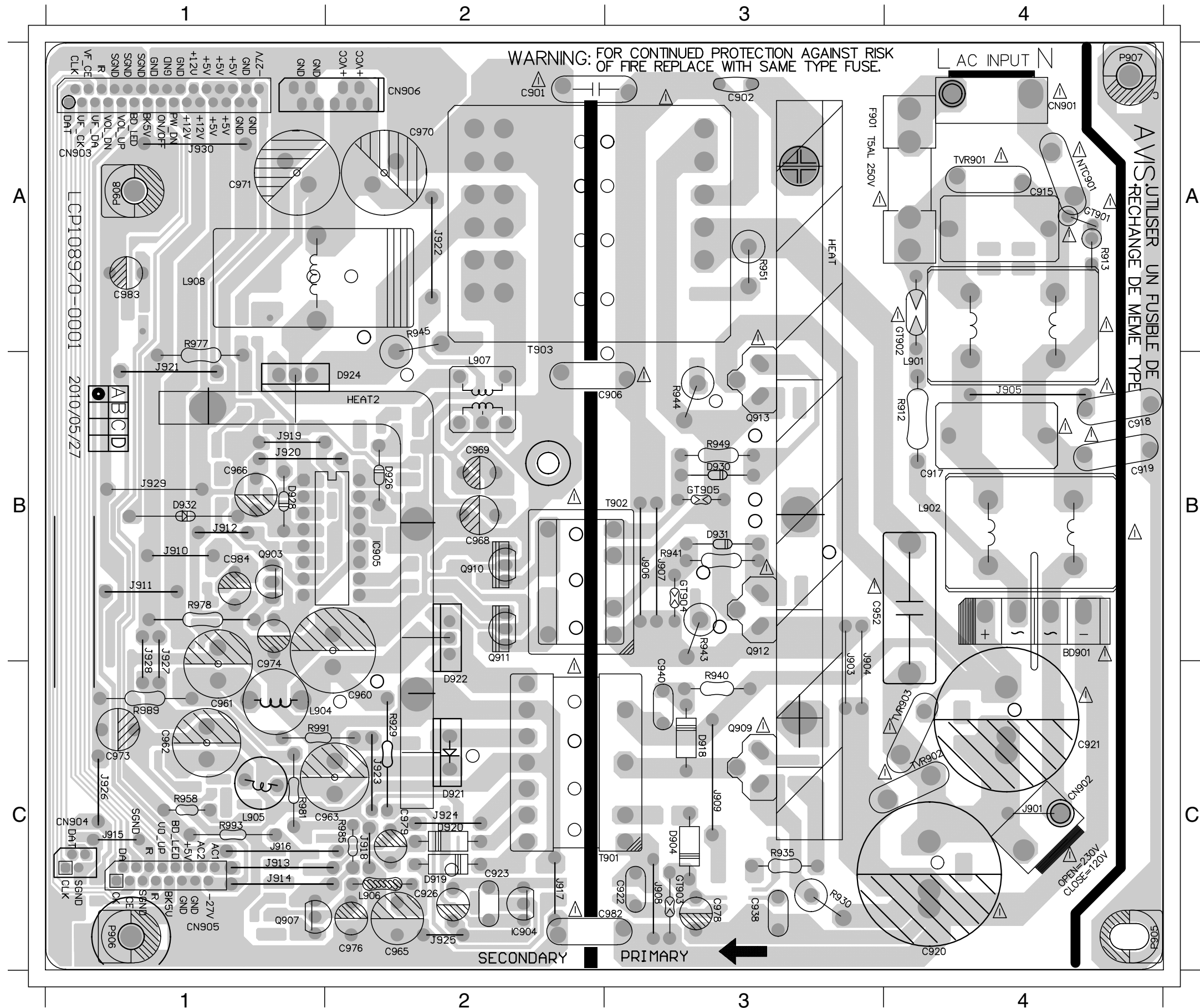
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C901	C1	C921	A1	C935	C2	C950	A2	C961	B3	C972	A3	C983	C3	CN906	A4	D918	B1	D932	B4	IC905	B3	Q903	B4	Q917	C3	R907	A1	R920	C2	R935	C2	R947	C3	R959	B3	R970	A4	R982	C4	R996	C3	ZD903	B2
C902	C1	C922	C2	C936	B2	C951	A2	C962	B3	C973	C3	C984	C4	D903	C2	D919	C2	D933	B4	L901	B1	Q904	C3	Q918	C3	R908	A1	R921	C2	R936	C2	R948	C3	R960	A4	R971	A3	R983	C4	R997	B4	ZD904	A2
C904	A1	C923	C2	C938	C1	C952	A2	C963	B3	C974	B4	C991	B3	D904	B2	D920	C2	D935	C4	L902	B1	Q906	B3	Q919	B4	R909	A1	R923	C3	R937	B2	R949	A1	R961	B3	R972	A3	R984	C3	R998	B4	ZD905	A3
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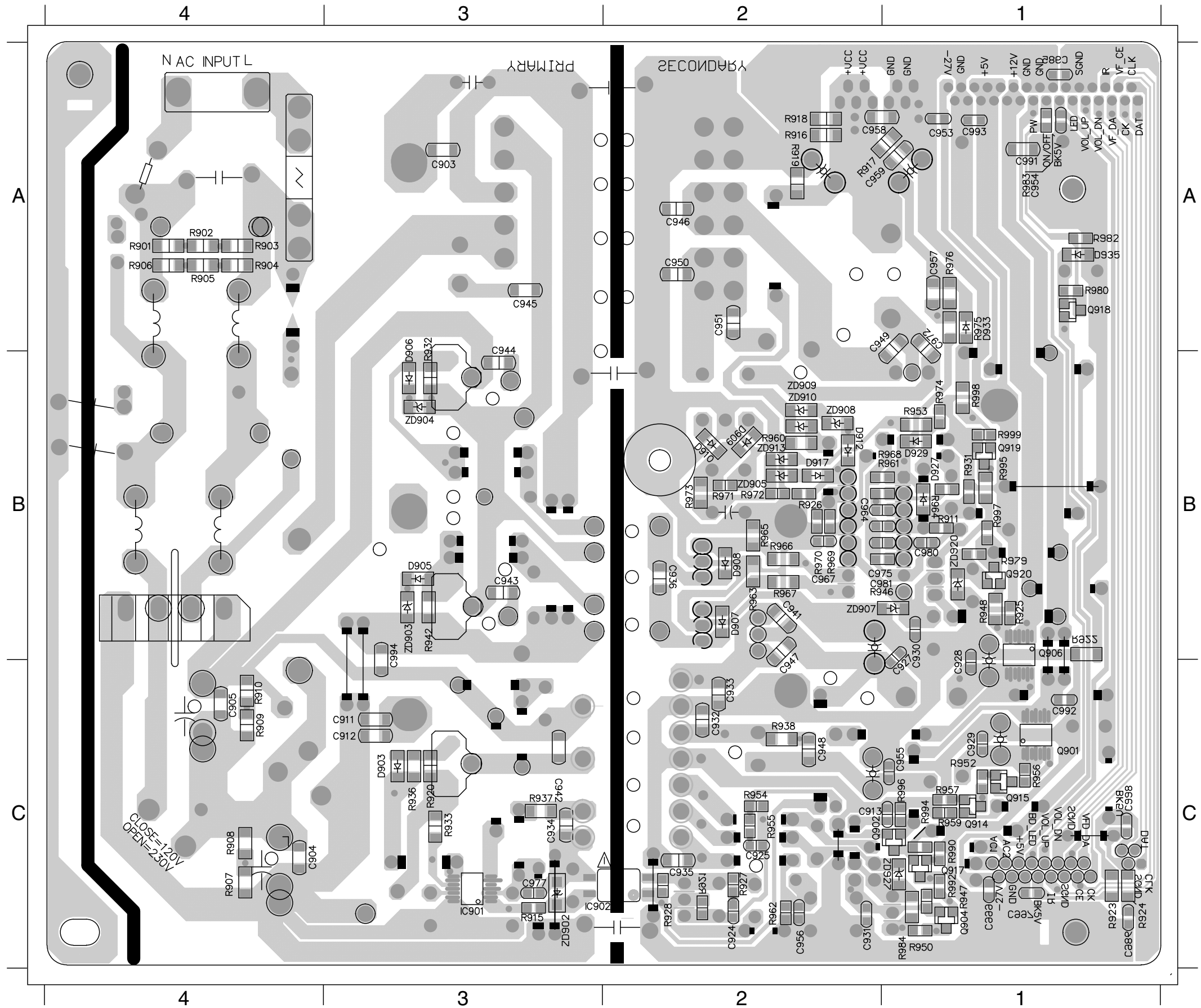
PCB LAYOUT - TOP VIEW

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C917	B4	C926	C2	C962	C1	C970	A2	C979	C2	CN904	C1	D920	C2	D931	B3	GT905	B3	J905	B4	J911	B1	J917	C2	J924	C2	J930	A1	L907	B2	Q910	B2	R930	C3	R945	A2	R985	C2	T903	A2	
C918	B4	C938	C3	C963	C1	C971	A1	C982	C2	CN905	C1	D921	C2	D932	B1	IC904	C2	J906	B3	J912	B1	J918	C2	J925	C2	L901	B4	L908	A1	Q911	B2	R935	C3	R949	B3	R989	C1	TVR901A4		



PCB LAYOUT - BOTTOM VIEW

C904	C4	C928	B1	C943	B3	C951	A2	C959	A2	C981	B1	C998	C1	D910	B2	IC901	C3	Q914	C1	R902	A4	R909	C4	R919	A2	R926	B2	R938	C2	R953	B1	R961	B1	R968	B1	R976	A1	R992	C1	ZD902	C3	ZD910	B2		
C905	C4	C929	C1	C944	B3	C953	A2	C964	B2	C982	A1	D903	C3	D912	B2	IC902	C3	Q915	C1	R903	A4	R910	C4	R920	C3	R927	C2	R942	B3	R954	C2	R962	C2	R969	B2	R979	B1	R994	C1	ZD903	B3	ZD913	B2		
C912	C3	C930	B1	C946	A2	C954	A1	C967	B2	C991	A1	D905	B3	D917	B2	J922	C2	Q917	C1	R904	A4	R911	B1	R921	C2	R928	C2	R946	B1	R955	C2	R963	B2	R970	B2	R980	A1	R995	B1	ZD904	B3	ZD920	B1		
C913	C2	C931	C2	C947	B2	C955	C1	C972	A1	C992	C1	D906	B3	D927	B4	Q901	C1	Q918	A1	R905	A4	R915	C3	R922	B1	R932	B3	R947	C1	R956	C1	R964	B1	R971	B2	R982	A1	R996	C1	ZD905	B2	ZD927	C1		
C924	C2	C935	C2	C948	C2	C956	C2	C975	B1	C993	A1	D907	B2	D929	B1	Q902	C2	Q919	B1	R906	A4	R916	A2	R923	C1	R933	C3	R948	B1	R957	C1	R965	B2	R972	B2	R983	A1	R997	B1	ZD907	B2				
C925	C2	C936	B2	C949	A1	C957	A1	C977	C3	C994	B3	D908	B2	D933	A1	Q904	C1	Q920	B1	R907	C4	R917	A2	R924	C1	R936	C3	R950	C1	R959	C1	R966	B2	R973	B2	R984	C1	R998	B1	ZD908	B2				
C927	B1	C941	B2	C950	A2	C958	A1	C980	B1	C997	C1	D909	B2	D935	A1	Q906	B1	R901	A4	R908	C4	R918	A2	R925	B1	R937	C3	R952	C1	R960	B2	R967	B2	R975	A1	R990	C1	R999	B1	ZD909	B2				

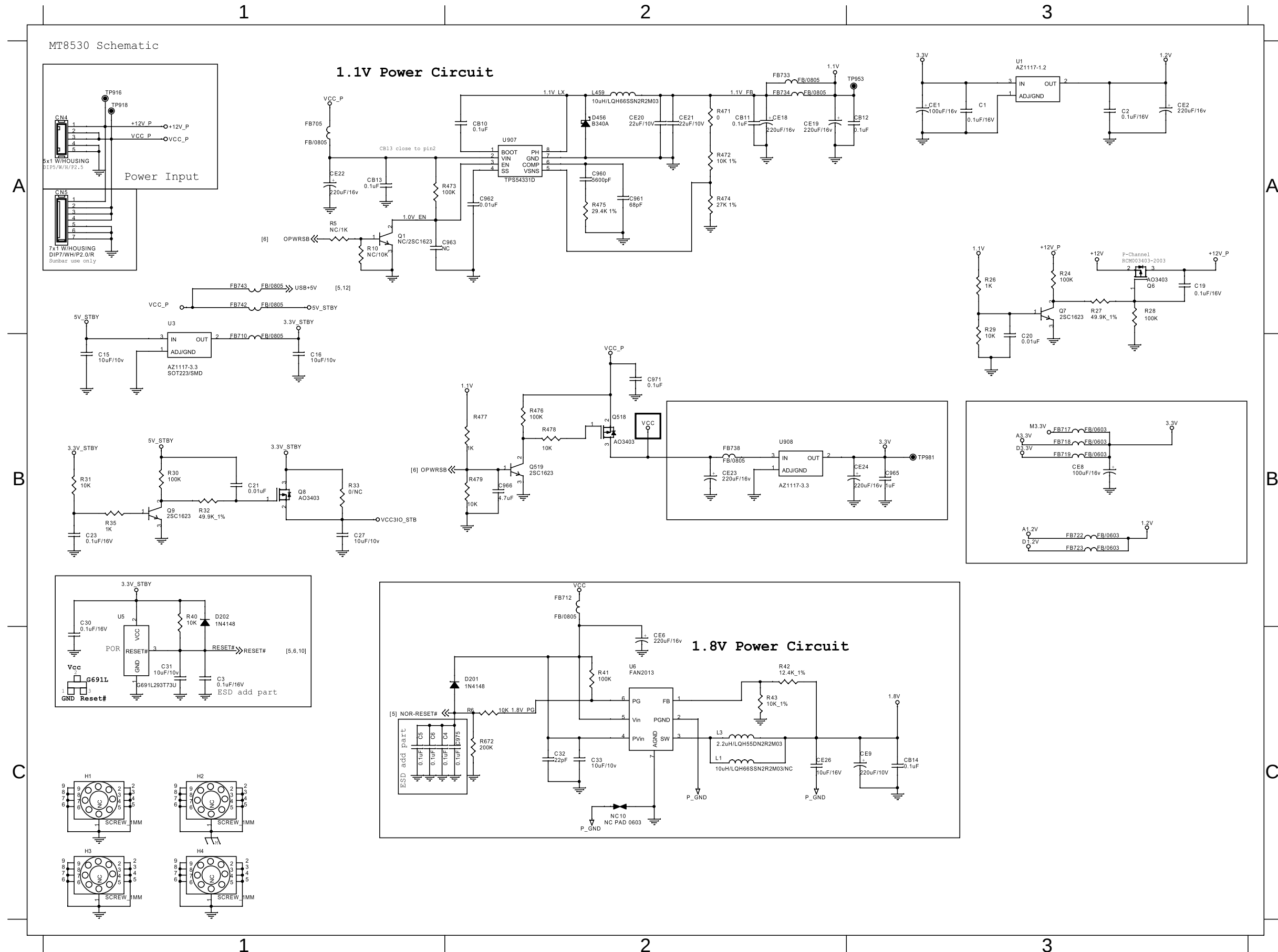


BD BOARD

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C1	A3	C20	B3	C31	C1	C6	C1	C966	B2	CB12	A3	CE19	A2	CE23	B2	CE9	C3	FB705	A1	FB719	B3	FB738	B2	Q518	B2	Q9	B1	R29	A3	R40	B1	R472	A2	R477	B2	U1	A3	U908	B2
C15	B1	C23	B1	C32	C2	C960	A2	C971	B2	CB13	A1	CE2	A3	CE24	B3	CN4	A1	FB710	B1	FB722	B3	FB742	A1	Q519	B2	R24	A3	R30	B1	R41	C2	R473	A2	R478	B2	U3	A1		
C16	B1	C27	B1	C33	C2	C961	A2	C975	C2	CB14	C3	CE20	A2	CE26	C2	D201	C2	FB712	B2	FB723	B3	FB743	A1	Q6	A3	R26	A3	R31	B1	R42	C2	R474	A2	R479	B2	U5	B1		
C19	A3	C3	C1	C4	C2	C962	A2	CB10	A2	CE1	A3	CE21	A2	CE6	C2	D202	B1	FB717	B3	FB733	A2	L3	C2	Q7	A3	R27	A3	R32	B1	R43	C2	R475	A2	R6	C2	U6	C2		
C2	A3	C30	B1	C5	C1	C965	B3	CB11	A2	CE18	A2	CE22	A1	CE8	B3	D456	A2	FB718	B3	FB734	A2	L459	A2	Q8	B1	R28	A3	R35	B1	R471	A2	R476	B2	R672	C2	U907	A2		

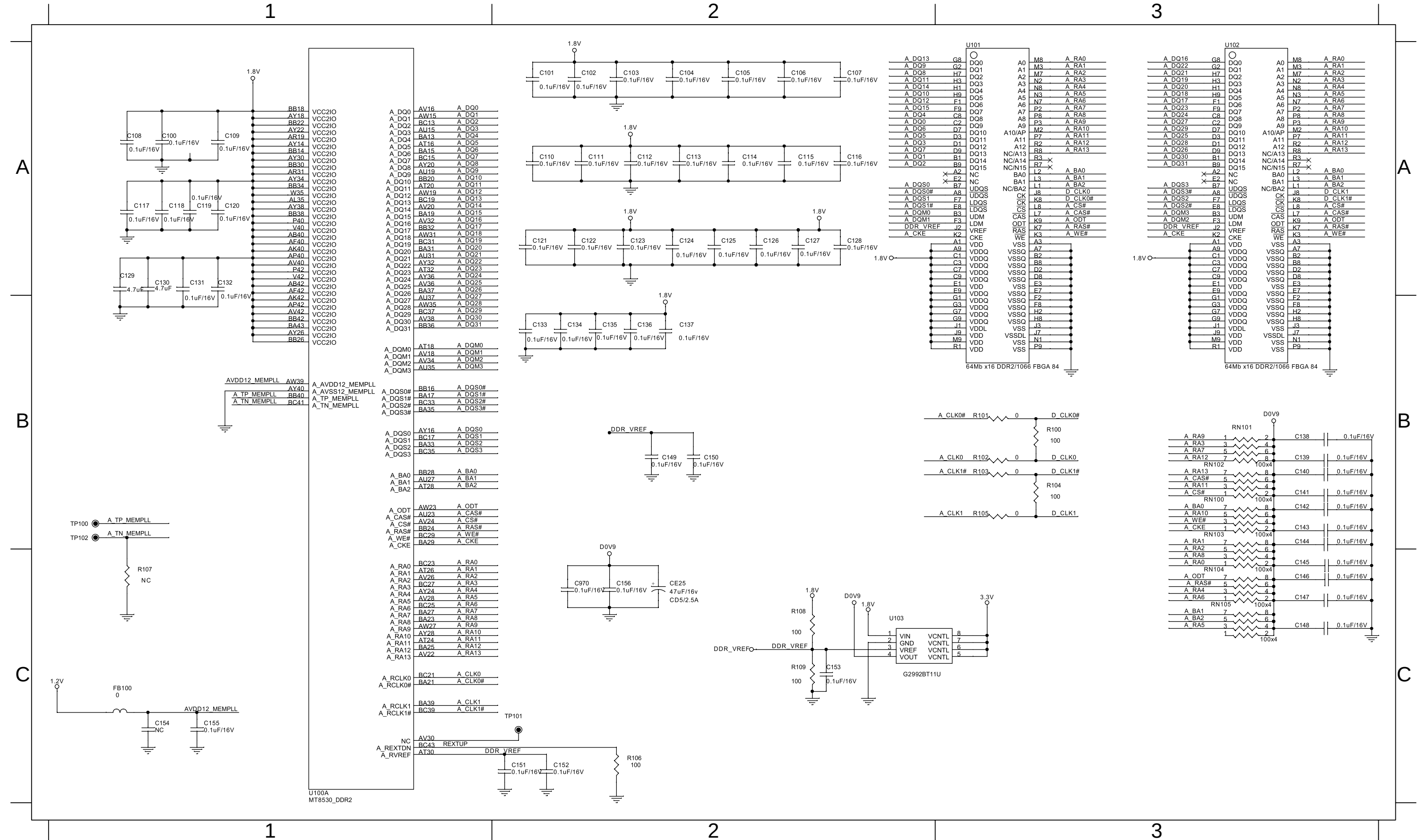


CIRCUIT DIAGRAM (two)

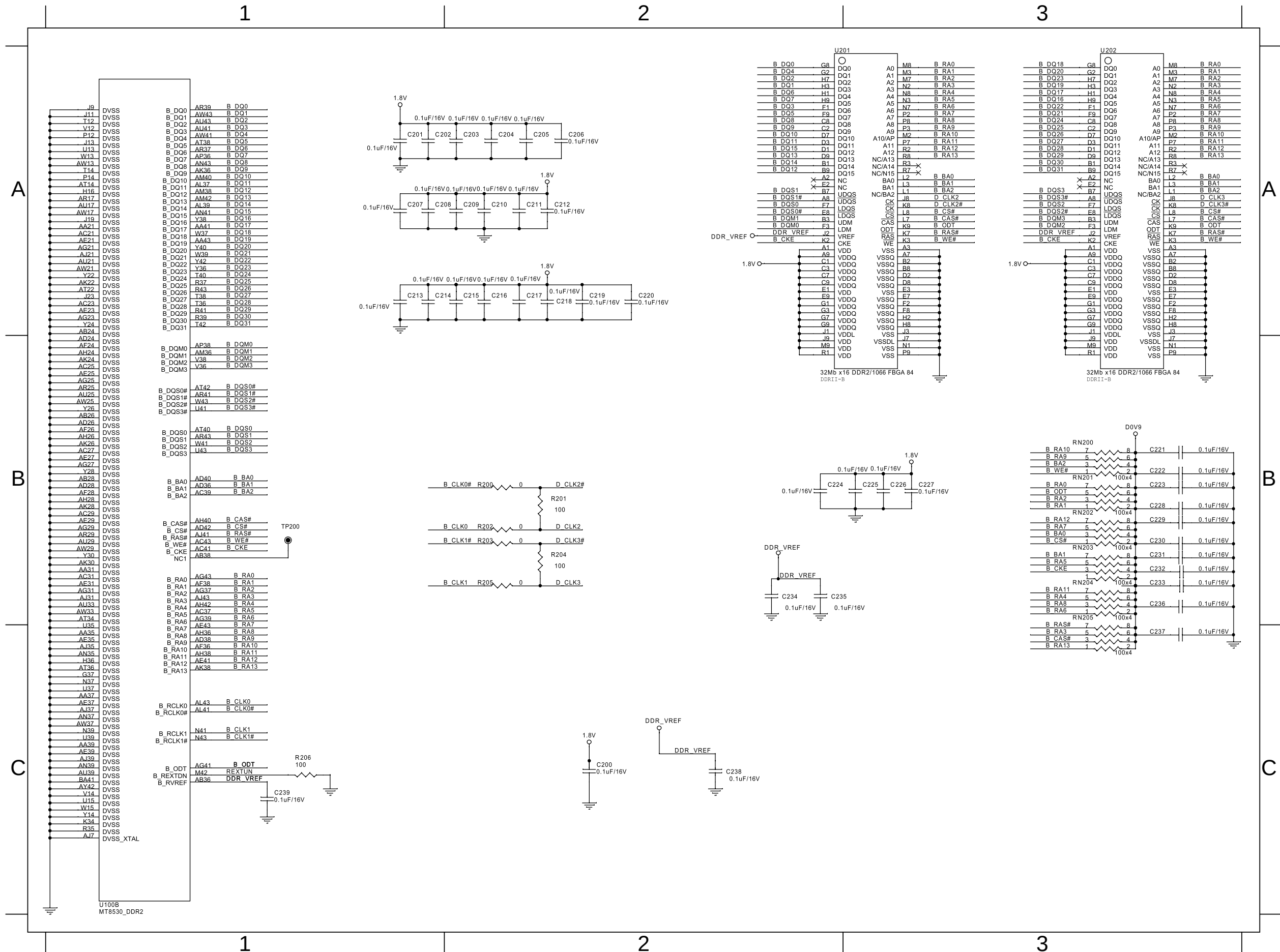
9 - 3

9 - 3

C100 A1 C104 A2 C108 A1 C112 A2 C116 A2 C120 A1 C124 A2 C128 A2 C132 A1 C136 B2 C140 B3 C144 B3 C148 C3 C152 C2 C970 C2 R101 B3 R105 B3 RN100 B3 RN104 C3 U102 A3
C101 A2 C105 A2 C109 A1 C113 A2 C117 A1 C121 A2 C125 A2 C129 A1 C133 B2 C137 B2 C141 B3 C145 C3 C149 B2 C153 C2 CE25 C2 R102 B3 R106 C2 RN101 B3 RN105 C3 U103 C2
C102 A2 C106 A2 C110 A2 C114 A2 C118 A1 C122 A2 C126 A2 C130 A1 C134 B2 C138 B3 C142 B3 C146 C3 C150 B2 C155 C1 FB100 C1 R103 B3 R108 C2 RN102 B3 U100 C1
C103 A2 C107 A2 C111 A2 C115 A2 C119 A1 C123 A2 C127 A2 C131 A1 C135 B2 C139 B3 C143 B3 C147 C3 C151 C2 C156 C2 R100 B3 R104 B3 R109 C2 RN103 B3 U101 A3



C200	C2	C203	A2	C206	A2	C209	A2	C212	A2	C215	A2	C218	A2	C221	B3	C224	B2	C227	B3	C230	B3	C233	B3	C236	B3	C239	C1	R202	B2	R205	B2	RN201	B3	RN204	B3	U202	A3
C201	A1	C204	A2	C207	A1	C210	A2	C213	A1	C216	A2	C219	A2	C222	B3	C225	B3	C228	B3	C231	B3	C234	B2	C237	C3	R200	B2	R203	B2	R206	C1	RN202	B3	RN205	B3		
C202	A1	C205	A2	C208	A1	C211	A2	C214	A1	C217	A2	C220	A2	C223	B3	C226	B3	C229	B3	C232	B3	C235	B2	C238	C2	R201	B2	R204	B2	RN200	B3	RN203	B3	U201	A2		

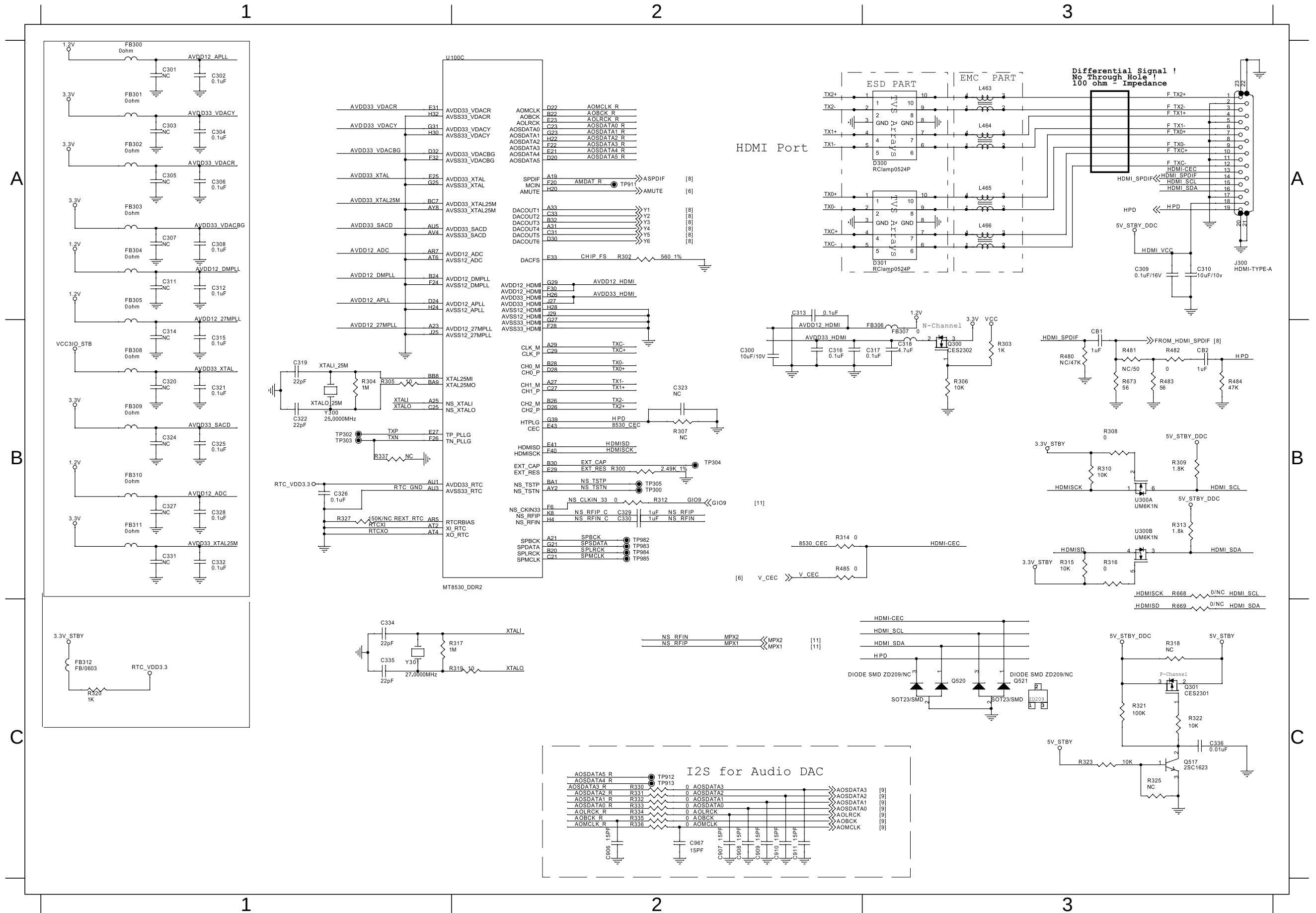


CIRCUIT DIAGRAM (four)

9 - 5

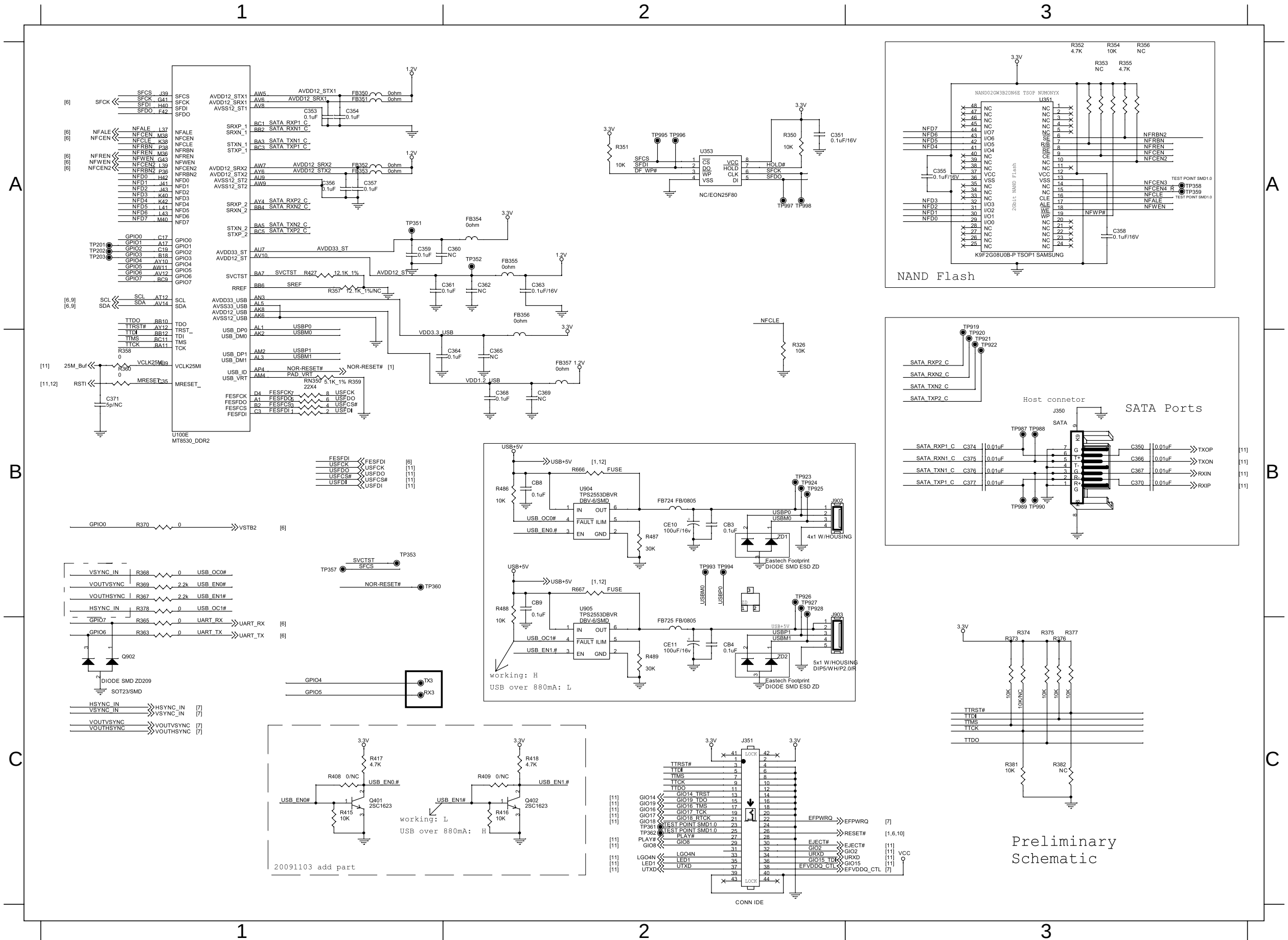
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C300 B2 C308 A1 C313 A2 C318 B3 C325 B1 C330 B2 C336 C3 C909 C2 CB1 B3 FB302 A1 FB306 B3 FB310 B1 Q300 B3 R302 A2 R306 B3 R312 B2 R316 B3 R321 C3 R331 C2 R335 C2 R484 B3 Y300 B1
C302 A1 C309 A3 C315 B1 C319 B1 C326 B1 C332 B1 C906 C2 C910 C2 CB2 B3 FB303 A1 FB307 B3 FB311 B1 Q301 C3 R303 B3 R308 B3 R313 B3 R317 C2 R322 C3 R332 C2 R336 C2 R485 B2 Y301 C1
C304 A1 C310 A3 C316 B2 C321 B1 C328 B1 C334 C1 C907 C2 C911 C2 FB300 A1 FB304 A1 FB308 B1 FB312 C1 Q517 C3 R304 B1 R309 B3 R314 B2 R319 C2 R323 C3 R333 C2 R482 B3 R673 B3
C306 A1 C312 A1 C317 B3 C322 B1 C329 B2 C335 C1 C908 C2 C967 C2 FB301 A1 FB305 A1 FB309 B1 J300 A3 R300 B2 R305 B1 R310 B3 R315 B3 R320 C1 R330 C2 R334 C2 R483 B3 U300 B3



CIRCUIT DIAGRAM (five)

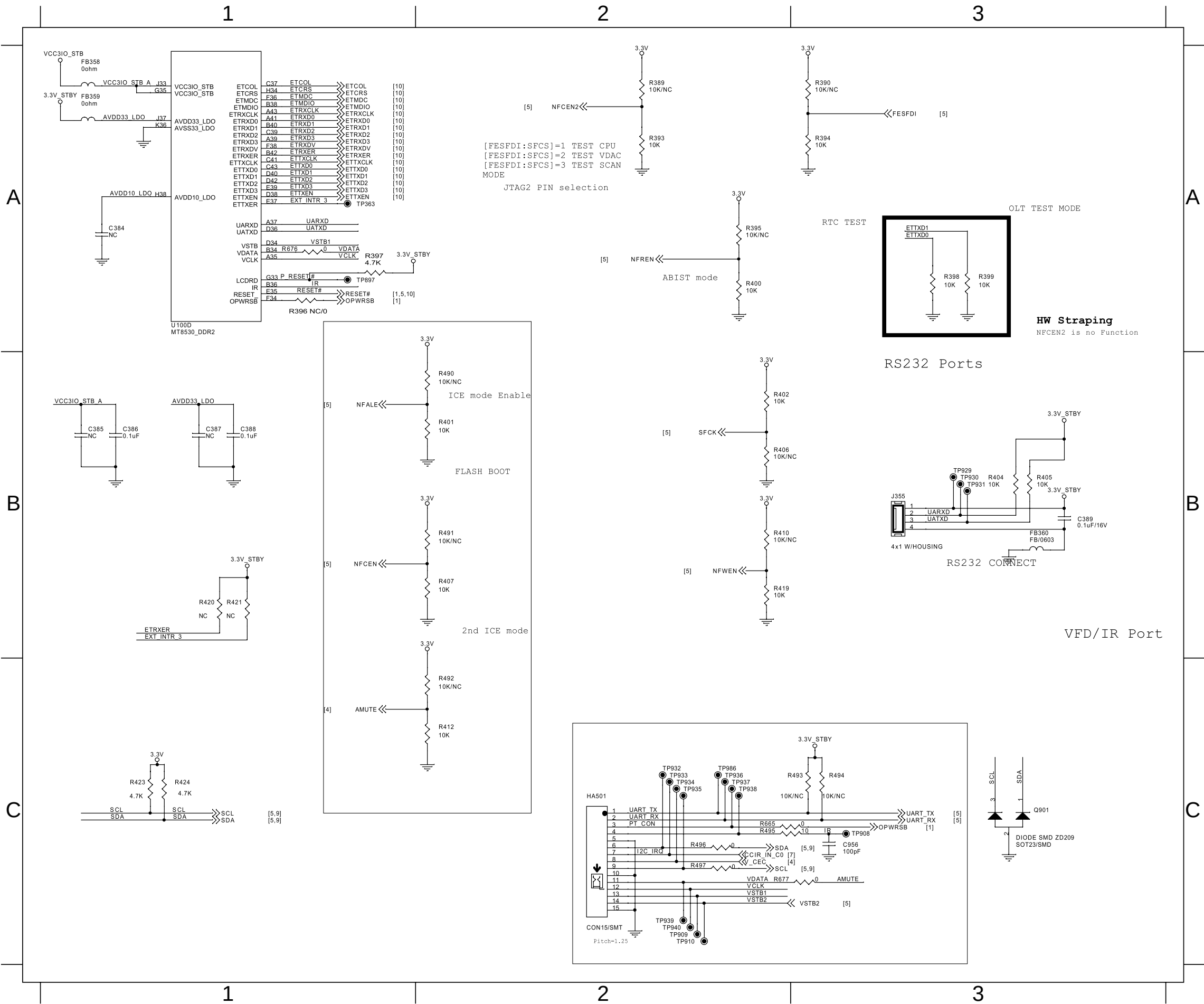
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C351 A2 C356 A1 C361 A2 C367 B3 C375 B3 CB4 C2 CE11 C2 FB353 A1 FB357 B2 J903 C2 R350 A2 R355 A3 R363 C1 R369 B1 R376 C3 R415 C1 R427 A1 R489 C2 ZD2 C2
C353 A1 C357 A1 C363 A2 C368 B2 C376 B3 CB8 B2 FB350 A1 FB354 A2 FB724 B2 Q401 C1 R351 A2 R358 B1 R365 C1 R370 B1 R377 C3 R416 C2 R486 B2 RN350 B1
C354 A1 C358 A3 C364 B2 C370 B3 C377 B3 CB9 B2 FB351 A1 FB355 A2 FB725 C2 Q402 C2 R352 A3 R359 B1 R367 B1 R373 C3 R378 B1 R417 C1 R487 B2 U351 A3



CIRCUIT DIAGRAM (six)

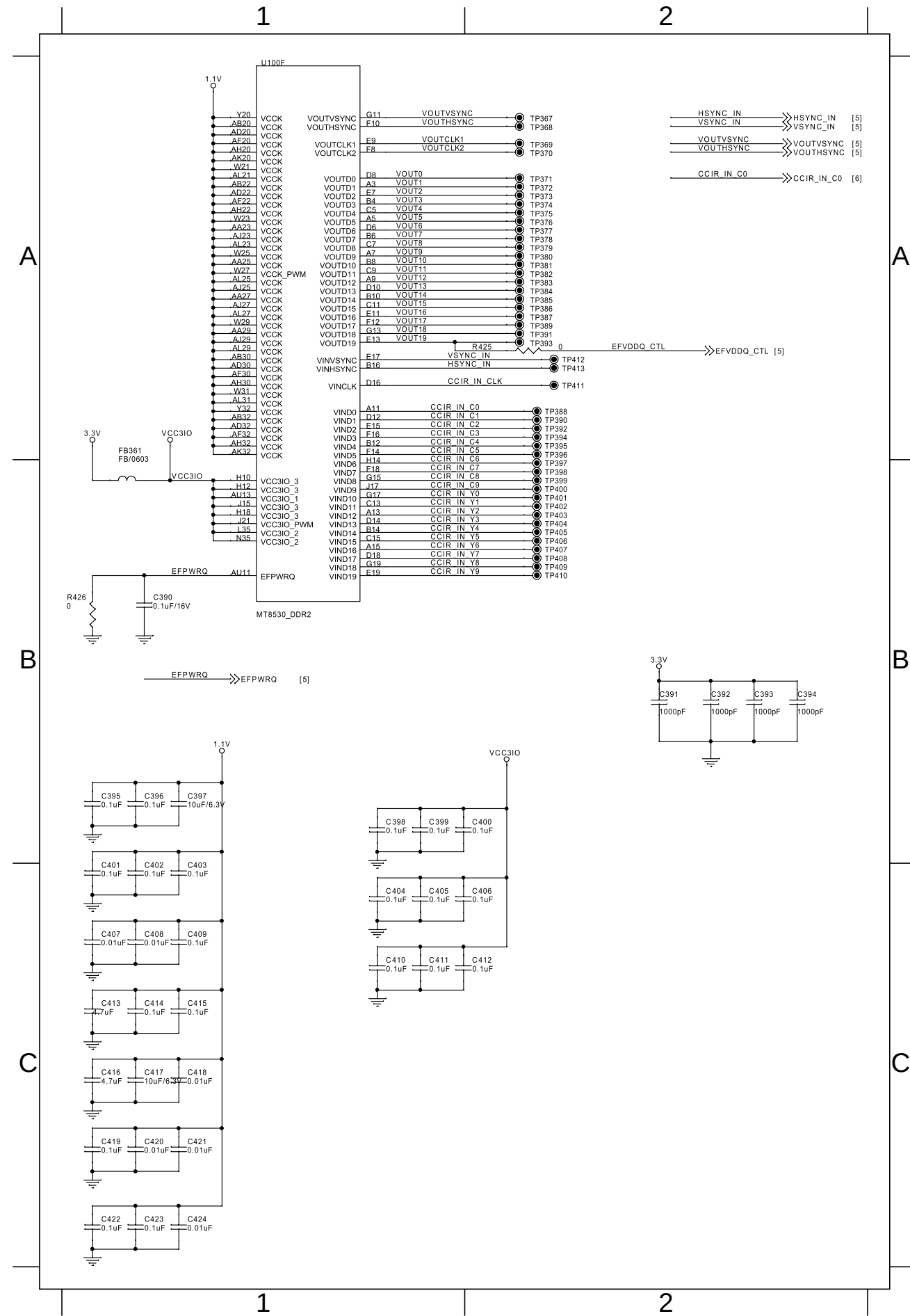
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C388 B1 C956 C3 FB359 A1 HA501 C2 Q901 C4 R394 A3 R398 A3 R400 A2 R402 B2 R405 B3 R412 C2 R423 C1 R495 C2 R497 C2



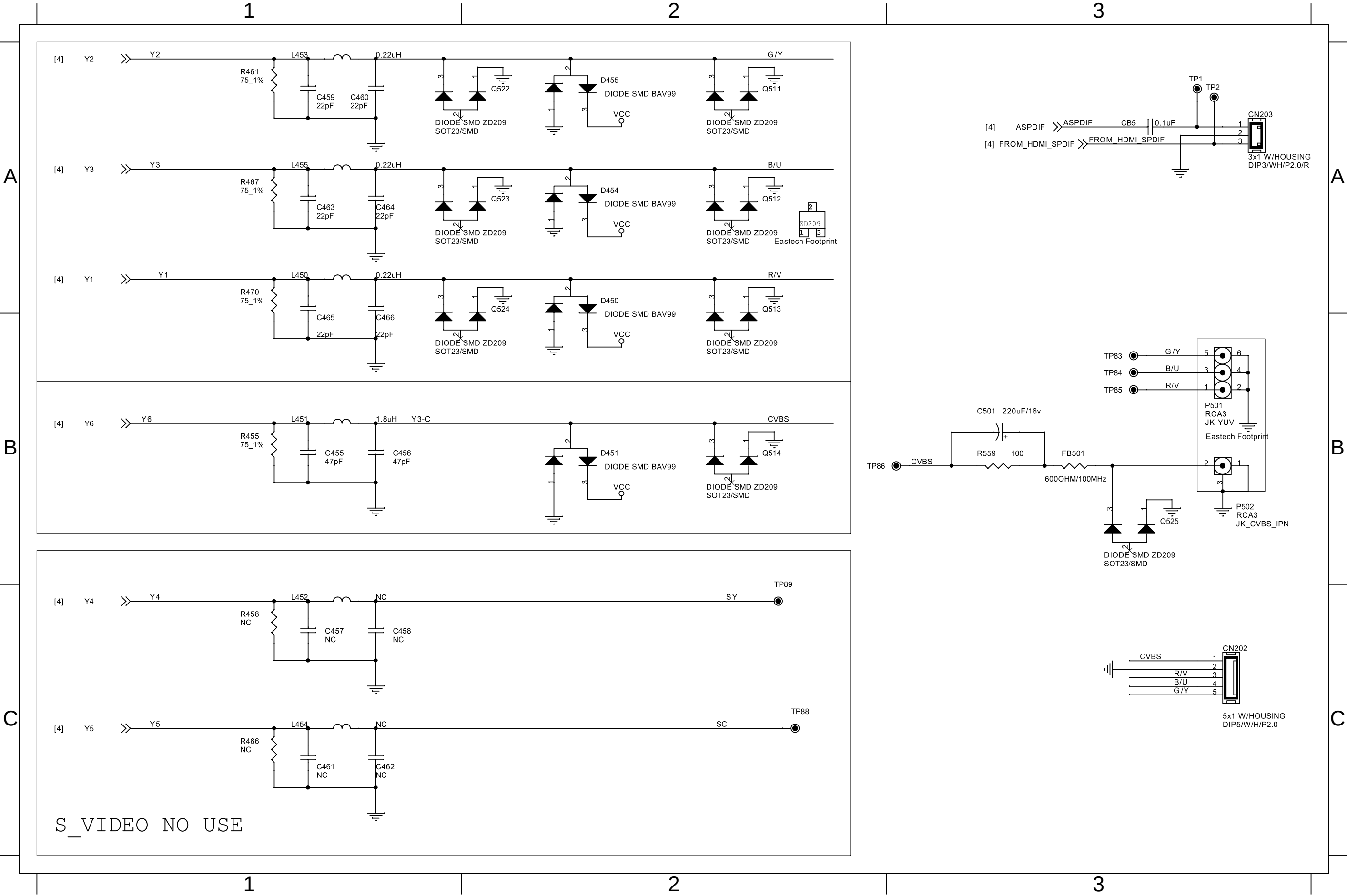
CIRCUIT DIAGRAM (seven)

C390 B1 C392 B2 C394 B2 C396 B1 C398 B1 C400 B2 C402 C1 C404 C1 C406 C2 C408 C1 C410 C1 C412 C2 C414 C1 C416 C1 C418 C1 C420 C1 C422 C1 C424 C1 R425 A2
C391 B2 C393 B2 C395 B1 C397 B1 C399 B1 C401 C1 C403 C1 C405 C1 C407 C1 C409 C1 C411 C1 C413 C1 C415 C1 C417 C1 C419 C1 C421 C1 C423 C1 FB361 A1 R426 B1



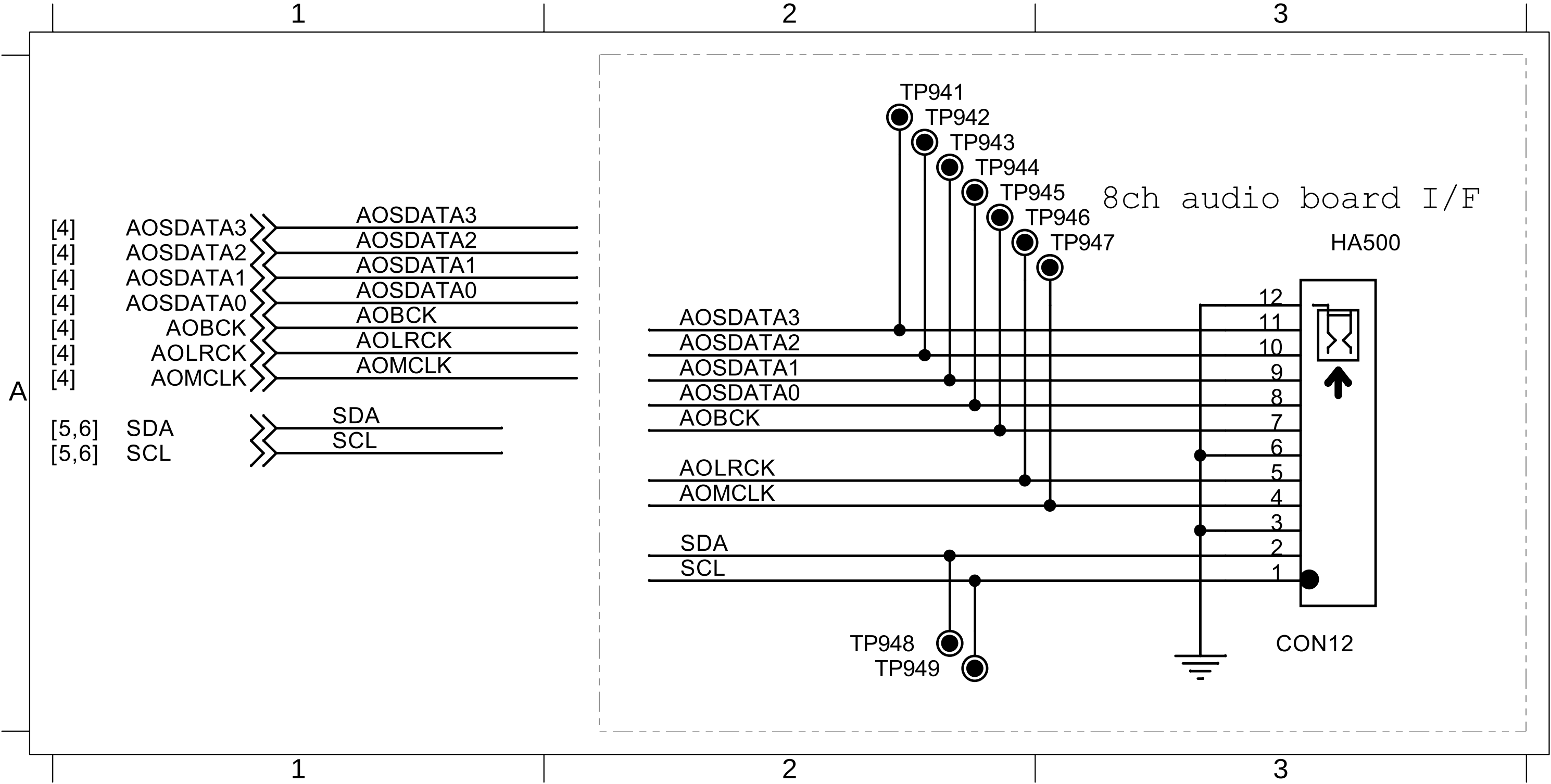
CIRCUIT DIAGRAM (eight)

C455 B1 C459 A1 C463 A1 C465 B1 C501 B3 CN203 A3 D451 B2 D455 A2 L450 A1 L453 A1 P501 B3 Q511 A2 Q513 A2 R455 B1 R467 A1 R559 B3
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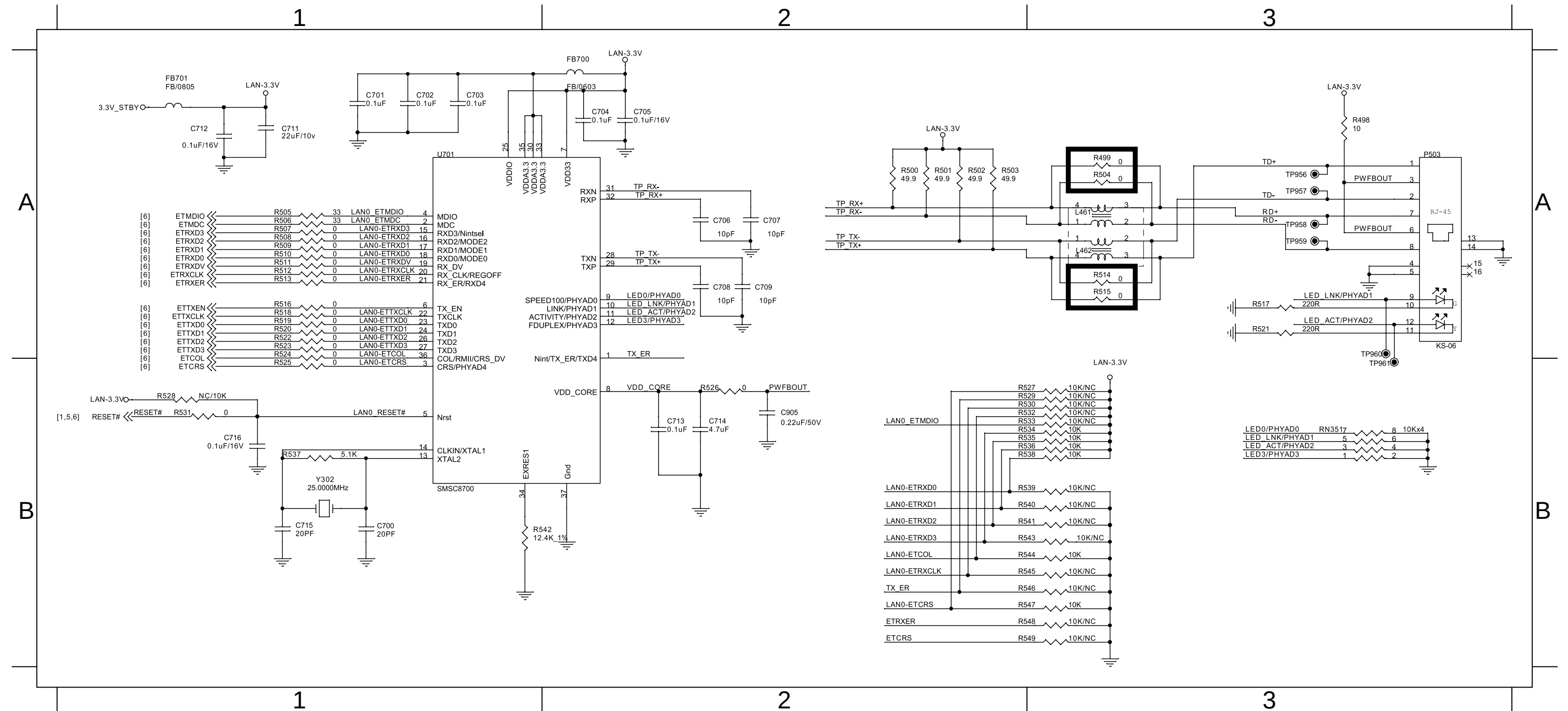


CIRCUIT DIAGRAM (nine)

HA500 A3



C700	B1	C704	A2	C708	A2	C713	B2	C905	B2	R498	A3	R502	A2	R506	A1	R510	A1	R514	A3	R518	A1	R522	A1	R526	B2	R536	B3	R544	B3	Y302	B1
C701	A1	C705	A2	C709	A2	C714	B2	FB700	A2	R499	A3	R503	A2	R507	A1	R511	A1	R515	A3	R519	A1	R523	A2	R531	B1	R537	B1	R547	B3		
C702	A1	C706	A2	C711	A1	C715	B1	FB701	A1	R500	A2	R504	A3	R508	A1	R512	A1	R516	A1	R520	A1	R524	A1	R534	B3	R538	B3	RN351	B3		
C703	A1	C707	A2	C712	A1	C716	B1	P503	A3	R501	A2	R505	A1	R509	A1	R513	A1	R517	A3	R521	A3	R525	B1	R535	B3	R542	B2	U701	A1		

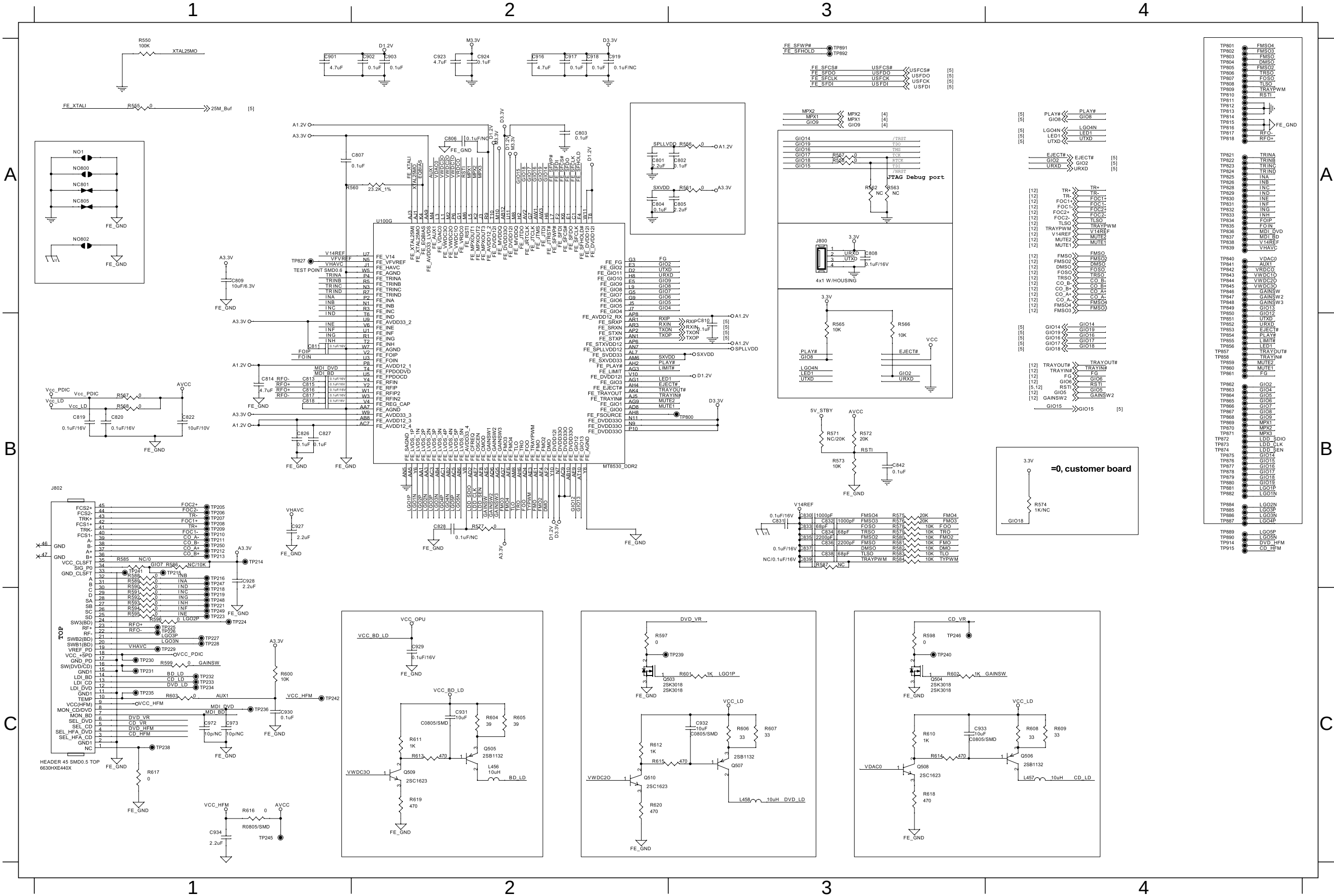


CIRCUIT DIAGRAM (eleven)

9 - 12

9 - 12

C801 A2	C808 A3	C815 B1	C822 B1	C833 B3	C842 B3	C918 A2	C930 C1	J802 B1	Q505 C2	R550 A1	R561 A3	R573 B3	R580 B3	R589 B1	R595 C1	R601 C3	R607 C3	R613 C2	R619 C2
C802 A3	C809 A1	C816 B1	C826 B1	C834 B3	C901 A1	C923 A2	C931 C2	L456 C2	Q506 C4	R555 A1	R565 B3	R575 B3	R581 B3	R590 B1	R596 C1	R602 C3	R608 C4	R614 C3	R620 C2
C803 A2	C810 B3	C817 B1	C827 B1	C835 B3	C902 A2	C924 A2	C932 C3	L457 C4	Q507 C3	R556 A3	R566 B3	R576 B3	R582 B3	R591 C1	R597 C2	R603 C1	R609 C4	R615 C2	
C804 A2	C811 B1	C818 B1	C830 B3	C836 B3	C903 A2	C927 B1	C933 C3	L458 C3	Q508 C3	R557 A3	R567 B1	R577 B2	R583 B3	R592 C1	R598 C3	R604 C2	R610 C3	R616 C1	
C805 A3	C813 B1	C819 B1	C831 B3	C837 B3	C916 A2	C928 B1	C934 C1	Q503 C2	Q509 C2	R558 A3	R568 B1	R578 B3	R584 B3	R593 C1	R599 C1	R605 C2	R611 C2	R617 C1	
C807 A2	C814 B1	C820 B1	C832 B3	C838 B3	C917 A2	C929 C2	J800 A3	Q504 C3	Q510 C2	R560 A1	R572 B3	R579 B3	R588 B1	R594 C1	R600 C1	R606 C3	R612 C2	R618 C3	

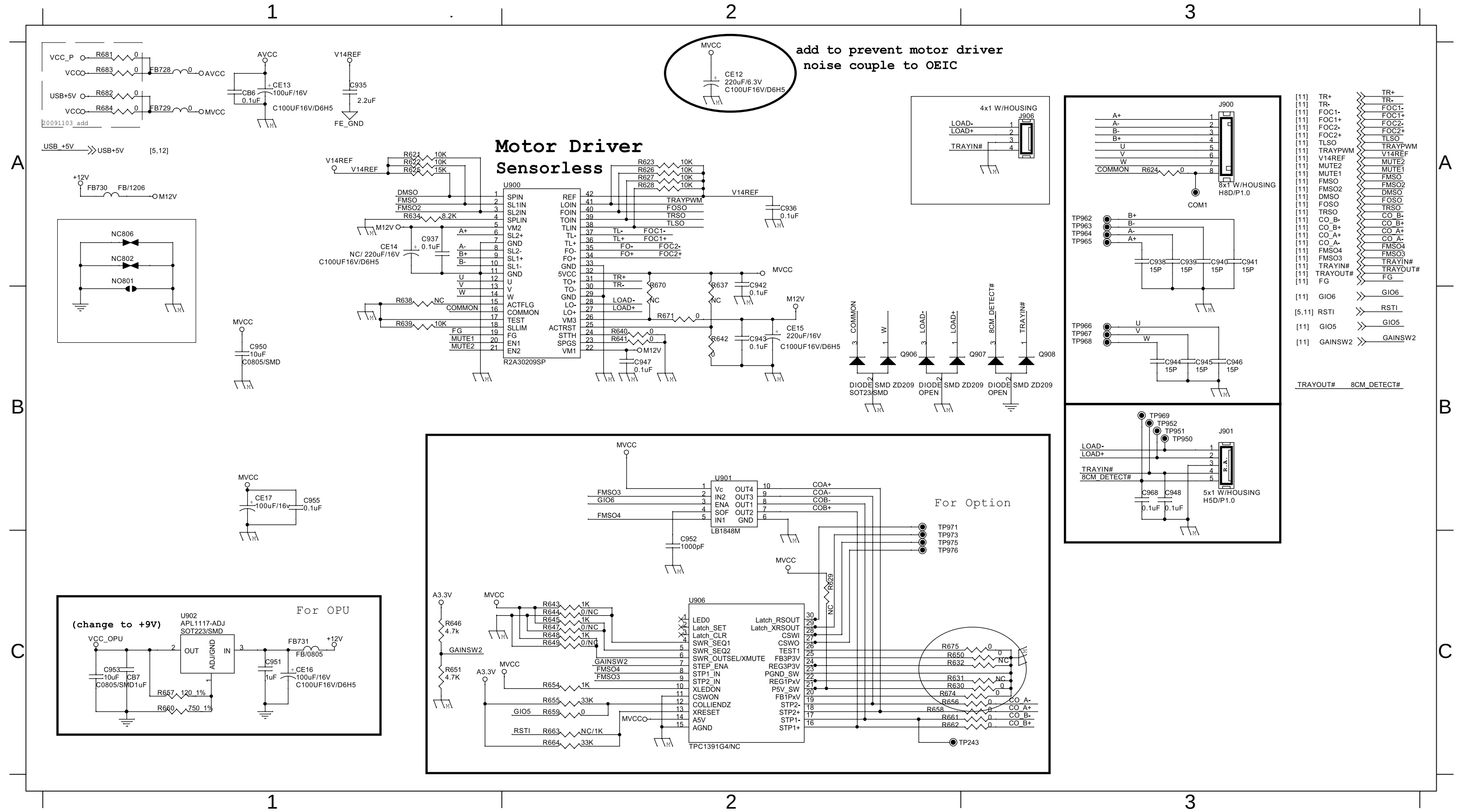


CIRCUIT DIAGRAM (twelve)

9 - 13

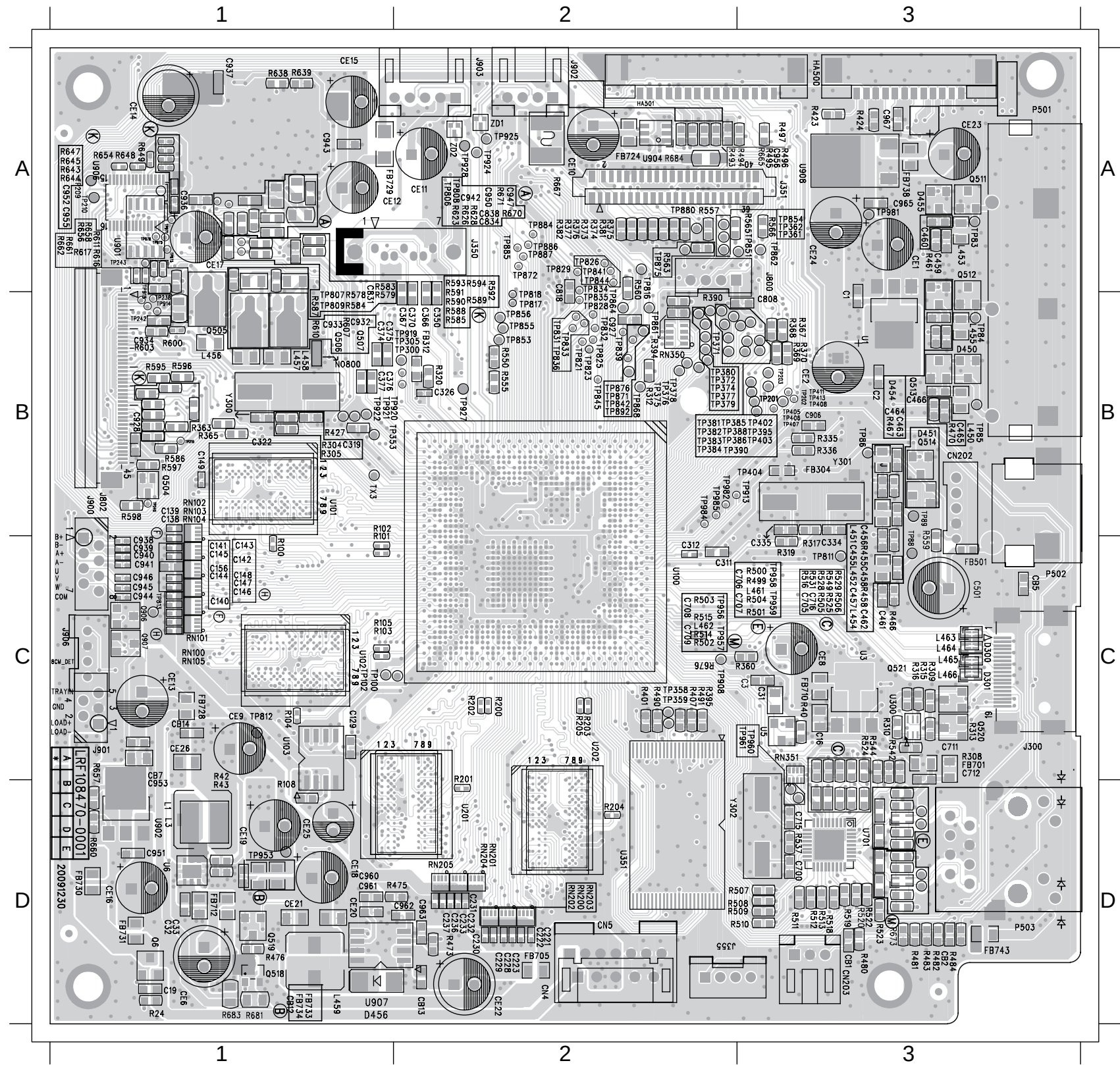
9 - 13

C935 A1 C939 A3 C943 B2 C947 B2 C952 C2 CB7 C1 CE15 B2 FB729A1 J906 A3 R624 A3 R628 A2 R640 B2 R645 C2 R651 C1 R657 C1 R661 C2 R674 C2 U900 A2
C936 A2 C940 A3 C944 B3 C948 B3 C953 C1 CE12 A2 CE16 C1 FB730A1 R621 A1 R625 A1 R630 C2 R641 B2 R646 C1 R654 C2 R658 C2 R662 C2 R675 C2 U902 C1
C937 A1 C941 A3 C945 B3 C950 B1 C955 B1 CE13 A1 CE17 B1 FB731C1 R622 A1 R626 A2 R634 A1 R642 B2 R648 C2 R655 C2 R659 C2 R664 C2 R683 A1 U906 C2
C938 A3 C942 A2 C946 B3 C951 C1 CB6 A1 CE14 A1 FB728A1 J900 A3 R623 A2 R627 A2 R639 B1 R643 C2 R650 C2 R656 C2 R660 C1 R671 B2 R684 A1



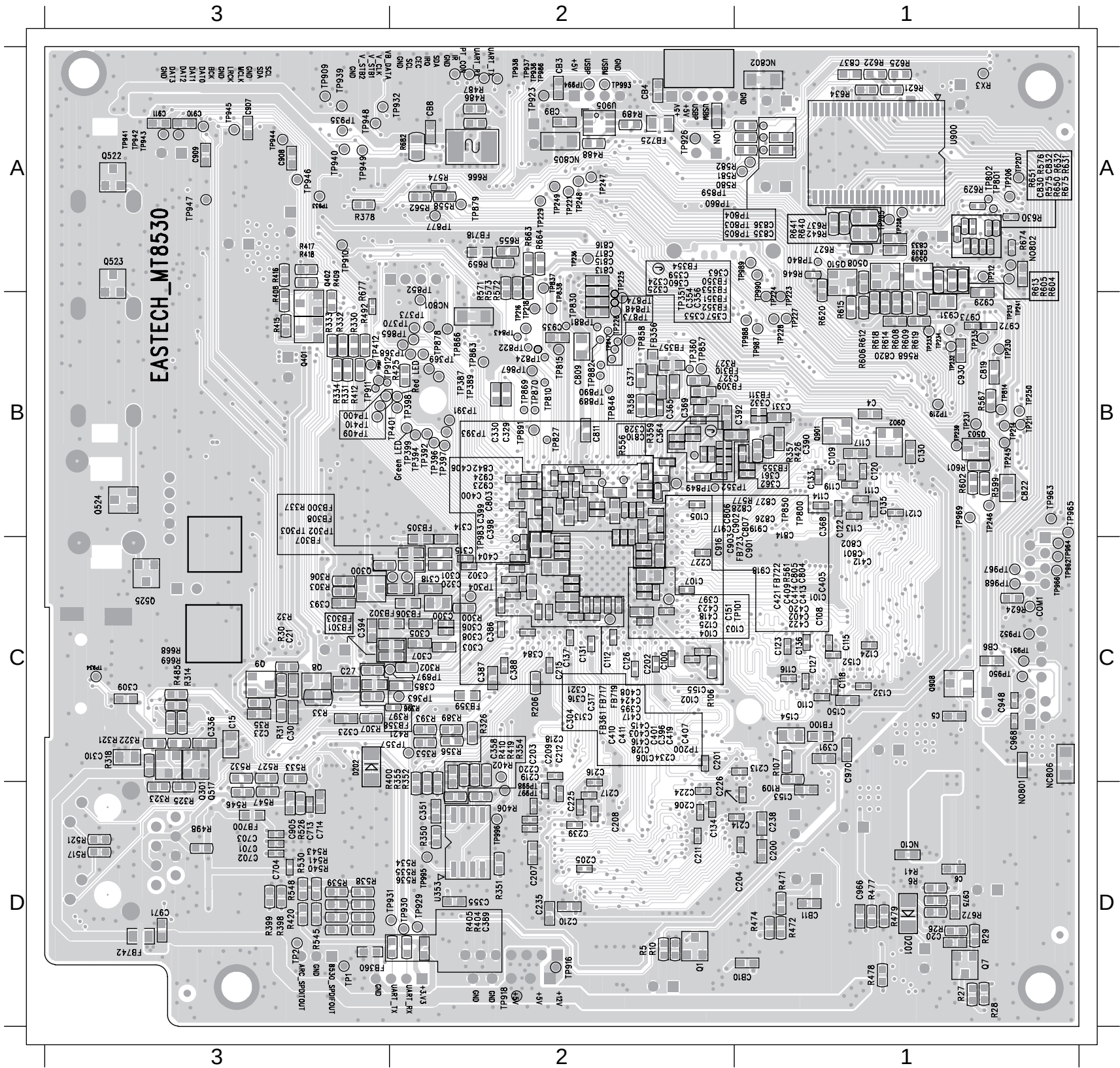
PCB LAYOUT - TOP VIEW

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C1	A3	C149	B1	C233	D2	C350	B2	C464	B3	C716	C3	C938	C1	C953	D1	CB5	C3	CE2	B3	D450	B3	FB728	C1	J800	A3	L459	D1	Q519	D1	R204	D2	R319	C3	R376	A2	R461	A3	R500	C3	R513	D4	R542	C3	R588	B2	R607	B1	R656	A1	RN103B1	U101	B1	U907	D1
C129	C1	C156	C1	C236	D2	C366	B2	C465	B3	C808	B3	C939	C1	C955	A1	CB7	C1	CE20	D1	D451	B3	FB729	A1	J802	B1	P501	A3	Q6	D1	R205	C2	R320	B2	R377	A2	R467	B3	R501	C3	R514	C2	R544	C3	R589	B2	R610	B1	R657	C1	RN104B1	U102	C1	U908	A3
C138	B1	C16	C3	C237	D2	C367	B2	C466	B3	C818	B2	C940	C1	C956	A3	CE1	A3	CE21	D1	D454	B3	FB730	D1	J900	B1	P502	C3	R100	C1	R24	D1	R335	B3	R381	A2	R470	B3	R502	C2	R515	C2	R550	B2	R590	B2	R611	A1	R658	A1	RN105C1	U103	C1	Y300	B1
C139	B1	C19	D1	C3	C3	C370	B2	C501	C3	C834	A2	C941	C1	C960	D1	CE10	A2	CE22	D2	D455	A3	FB731	D1	J903	A2	P503	D3	R101	B1	R304	B1	R336	B3	R394	B2	R473	D2	R503	C2	R516	C3	R555	B2	R591	B2	R616	A1	R660	D1	RN200D2	U201	D2	Y301	B3
C140	C1	C2	B3	C31	C3	C374	B1	C700	D4	C838	A2	C942	A2	C961	D1	CE11	A2	CE23	A3	D456	D1	FB733	D1	J906	C1	Q504	B1	R102	B1	R305	B1	R360	C3	R40	C3	R475	D1	R504	C3	R518	D4	R557	A2	R592	B2	R617	A1	R661	A1	RN201D2	U202	C2	Y302	D2
C141	C1	C221	D2	C312	C2	C375	B1	C705	C3	C906	B3	C943	A1	C962	D2	CE12	A1	CE24	A3	FB304	B3	FB734	D1	L3	D1	Q505	B1	R103	C1	R308	C3	R363	B1	R401	C2	R476	D1	R505	C3	R519	D4	R559	B3	R593	A2	R623	A2	R662	A1	RN202D2	U3	C3	ZD2	A2
C142	C1	C222	D2	C319	B1	C376	B1	C706	C3	C927	B2	C944	C1	C965	A3	CE13	C1	CE25	D1	FB312	B2	FB738	A3	L450	B3	Q506	B1	R104	C1	R309	C3	R365	B1	R407	C2	R482	D4	R506	C3	R520	D4	R560	B2	R594	A2	R626	A2	R671	A2	RN203D2	U300	C3		
C143	C1	C223	D2	C32	D1	C377	B1	C707	C3	C928	B1	C945	C1	C967	A3	CE14	A1	CE26	C1	FB501	C3	FB743	D4	L451	B3	Q507	B1	R105	C1	R310	C3	R367	B3	R42	C1	R483	D4	R507	D2	R522	D4	R565	A3	R595	B1	R628	A2	R673	D4	RN204D2	U351	D2		
C144	C1	C228	D2	C322	B1	C455	C3	C708	C2	C932	B1	C946	C1	CB1	D4	CE15	A1	CE6	D1	FB701	C2	HA500	A3	L453	A3	Q511	A3	R108	D1	R312	B2	R368	B3	R423	A3	R484	D4	R508	D2	R523	D4	R566	A3	R596	B1	R639	A1	R683	D1	RN205D2	U5	C3		
C145	C1	C229	D2	C326	B2	C456	B3	C709	C2	C933	B1	C947	A2	CB12	D1	CE16	D1	CE8	C3	FB705	D2	HA501	A2	L455	B3	Q512	A3	R200	D2	R313	C3	R369	B3	R424	A3	R495	A3	R509	D2	R524	C3	R578	A1	R597	B1	R643	A1	R684	A2	RN350B2	U6	D1		
C146	C1	C230	D2	C33	D1	C459	A3	C711	C3	C934	B1	C950	A2	CB13	D2	CE17	A1	CE9	C1	FB710	C3	J300	C3	L456	B1	Q513	B3	R201	D2	R315	C3	R370	B3	R427	B1	R496	A3	R510	D2	R525	C3	R579	A1	R598	B1	R645	A1	RN100C1	RN351C3	U701	D4			
C147	C1	C231	D2	C334	C3	C460	A3	C712	C3	C936	A1	C951	D1	CB14	C1	CE18	D1	CN203D4	FB712	D1	J351	A3	L457	B1	Q514	B3	R202	D2	R316	C3	R373	A2	R43	D1	R497	A3	R511	D4	R531	C3	R583	A1	R600	B1	R648	A1	RN101C1	U1	B3	U902	D1			



PCB LAYOUT - BOTTOM VIEW

C100	C2	C113	B1	C126	C2	C151	C2	C208	D2	C224	D2	C304	C2	C329	B2	C363	A2	C397	C2	C409	C1	C422	C1	C803	B2	C820	B1	C903	C2	C930	B1	CB8	A2	FB309B1	FB360D3	Q402	A3	R26	D1	R322	C3	R355	C2	R412	B3	R479	D1	R538	D3	R581	A2	R614	B1	R641	A1	U905	A2
C101	C1	C114	B1	C127	C1	C152	C1	C209	C2	C225	D2	C306	C2	C330	B2	C364	B2	C398	B2	C410	C2	C423	C2	C804	C1	C822	B1	C905	D3	C931	B1	CB9	A2	FB310B1	FB361C2	Q503	B1	R27	D1	R323	D3	R358	B2	R415	B3	R485	C3	R547	D3	R582	A2	R615	B1	R642	A1		
C102	C2	C115	C1	C128	C2	C153	D1	C210	D2	C226	C2	C308	C2	C332	B1	C368	B1	C399	B2	C411	C2	C424	C2	C805	C1	C826	B1	C907	A3	C935	B2	D201	D1	FB311B1	FB700D3	Q508	A1	R28	D1	R326	C2	R359	B2	R416	A3	R486	A2	R556	B2	R599	B1	R618	B1	R646	A1		
C103	C1	C116	C1	C130	B1	C155	C2	C211	D2	C227	C2	C309	C3	C336	C3	C386	C2	C4	B1	C412	C1	C5	C1	C807	B1	C827	B1	C908	A3	C948	C1	D202	C3	FB350A2	FB717C2	Q509	A1	R29	D1	R330	B3	R378	A3	R417	A3	R487	A2	R558	A2	R6	D1	R619	B1	R650	A1		
C104	C2	C117	B1	C131	C2	C20	D1	C212	C2	C23	C3	C310	C3	C351	D2	C388	C2	C400	B2	C413	C1	C6	D1	C809	B2	C830	A1	C909	A3	C966	D1	FB100C1	FB351B2	FB718A2	Q510	A1	R30	C3	R331	B3	R393	C2	R418	A3	R488	A2	R561	C1	R601	B1	R620	B1	R651	A1			
C105	B2	C118	C1	C132	C1	C200	D1	C213	C1	C234	C2	C313	C2	C353	B2	C389	D2	C401	C2	C414	C1	C701	D3	C810	B2	C832	A1	C910	A3	C970	C1	FB300B1	FB352B2	FB719C2	Q517	D3	R300	C2	R332	B3	R397	C2	R419	C2	R489	A2	R567	B1	R602	B1	R621	A1	R655	A2			
C106	C2	C119	B1	C133	B1	C201	C2	C214	D1	C235	D2	C315	C2	C354	B2	C390	B1	C402	C1	C415	C2	C702	D3	C811	B2	C833	A1	C911	A3	C971	D3	FB301C3	FB353A2	FB722C1	Q7	D1	R302	C2	R333	B3	R398	D3	R425	B2	R498	D3	R568	B1	R604	B1	R622	A1	R659	A2			
C107	C2	C120	B1	C134	D2	C202	C2	C215	C2	C238	D1	C316	C2	C355	D2	C391	C1	C403	C2	C416	C2	C703	D3	C813	A2	C835	A1	C916	C2	C975	D1	FB302C2	FB354A2	FB723C1	Q8	C3	R303	C3	R334	B3	R399	D3	R426	B1	R517	D3	R572	A2	R605	B1	R624	C1	R664	A2			
C108	C1	C121	B1	C135	B1	C203	C2	C216	C2	C239	D2	C317	C2	C356	B2	C392	B1	C404	C2	C417	C2	C704	D3	C814	C1	C836	A1	C917	B2	CB10	D1	FB303C3	FB355B1	FB725A2	Q9	C3	R306	C3	R35	C3	R400	C2	R471	D1	R521	D3	R573	A2	R606	B1	R625	A1	R672	D1			
C109	B1	C122	B1	C136	C1	C204	D1	C217	D2	C27	C3	C318	C2	C357	B2	C393	C3	C405	C1	C418	C2	C713	D3	C815	A2	C837	A1	C918	C1	CB11	D1	FB305B2	FB356B2	FB742D3	Q901	B1	R31	C3	R350	D2	R402	C2	R472	D1	R526	D3	R575	A1	R608	B1	R627	A1	R674	A1			
C110	C1	C123	C1	C137	C2	C205	D2	C218	C2	C30	C3	C321	C2	C358	C2	C394	C3	C406	B2	C419	C2	C714	D3	C816	A2	C842	B2	C923	B2	CB3	A2	FB306C2	FB357B2	Q300	C3	R106	C2	R314	C3	R351	D2	R404	D2	R474	D1	R534	D2	R576	A1	R609	B1	R630	A1	R675	A1		
C111	B1	C124	C1	C15	C3	C206	D2	C219	C2	C300	C2	C325	A2	C359	A2	C395	C2	C407	C2	C420	C1	C801	C1	C817	A2	C901	C1	C924	B2	CB4	A2	FB307C3	FB358C2	Q301	D3	R109	D1	R32	C3	R352	C2	R405	D2	R477	D1	R535	D2	R577	B1	R612	B1	R634	A1	R677	B3		
C112	C2	C125	C2	C150	C1	C207	D2	C220	C2	C302	C2	C328	B2	C361	B1	C396	C2	C408	C2	C421	C1	C802	C1	C819	B1	C902	B1	C929	B1	CB6	C1	FB308B1	FB359C2	Q401	B3	R206	C2	R321	C3	R354	C2	R41	D1	R478	D1	R536	D2	R580	A2	R613	B1	R640	A1	U900	A1		



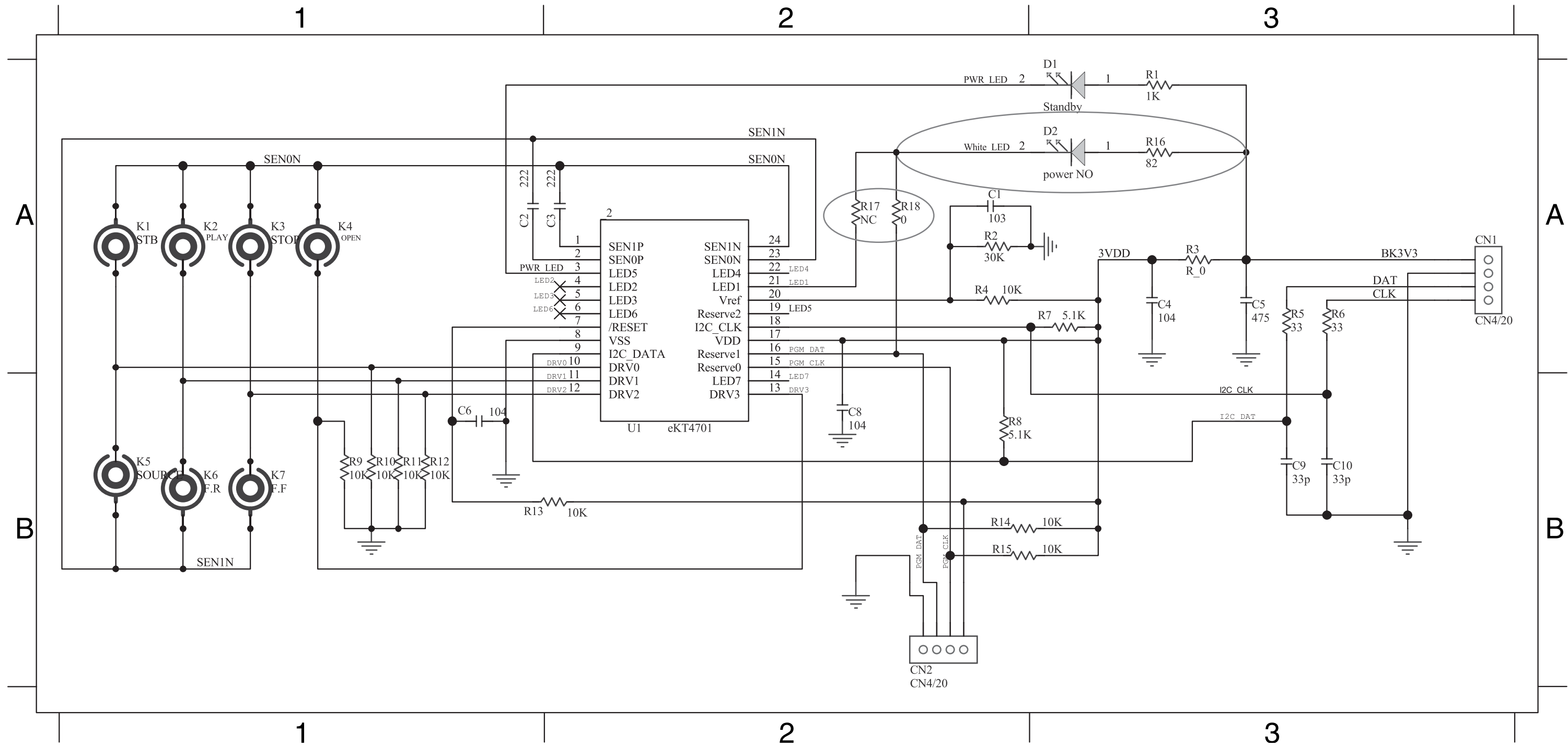
TOUCH BOARD

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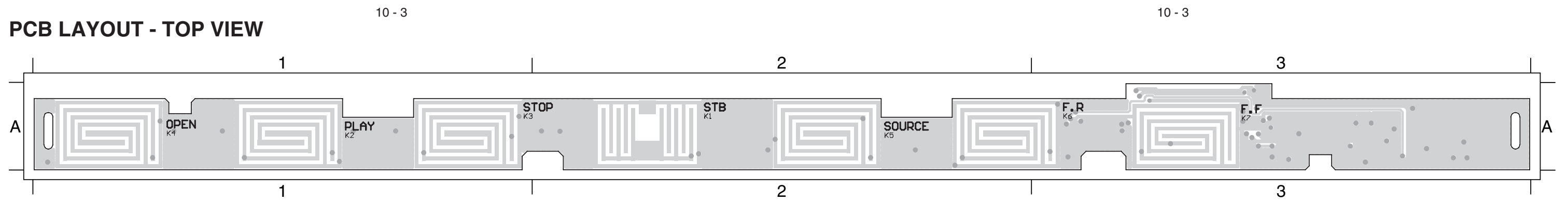
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PCB Layout Top View & Bottom View.....	10-3

CIRCUIT DIAGRAM

C1	A2	C2	A1	C4	A3	C6	B1	C9	B3	D1	A3	R10	B1	R12	B1	R14	B2	R2	A2	R4	A2	R6	A3	R8	B2	U1	A2
C10	B3	C3	A2	C5	A3	C8	B2	CN1	A3	R1	A3	R11	B1	R13	B1	R15	B2	R3	A3	R5	A3	R7	A3	R9	B1		

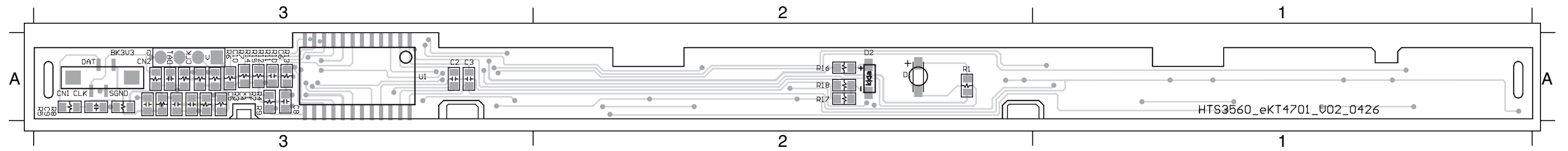


PCB LAYOUT - TOP VIEW



PCB LAYOUT - BOTTOM VIEW

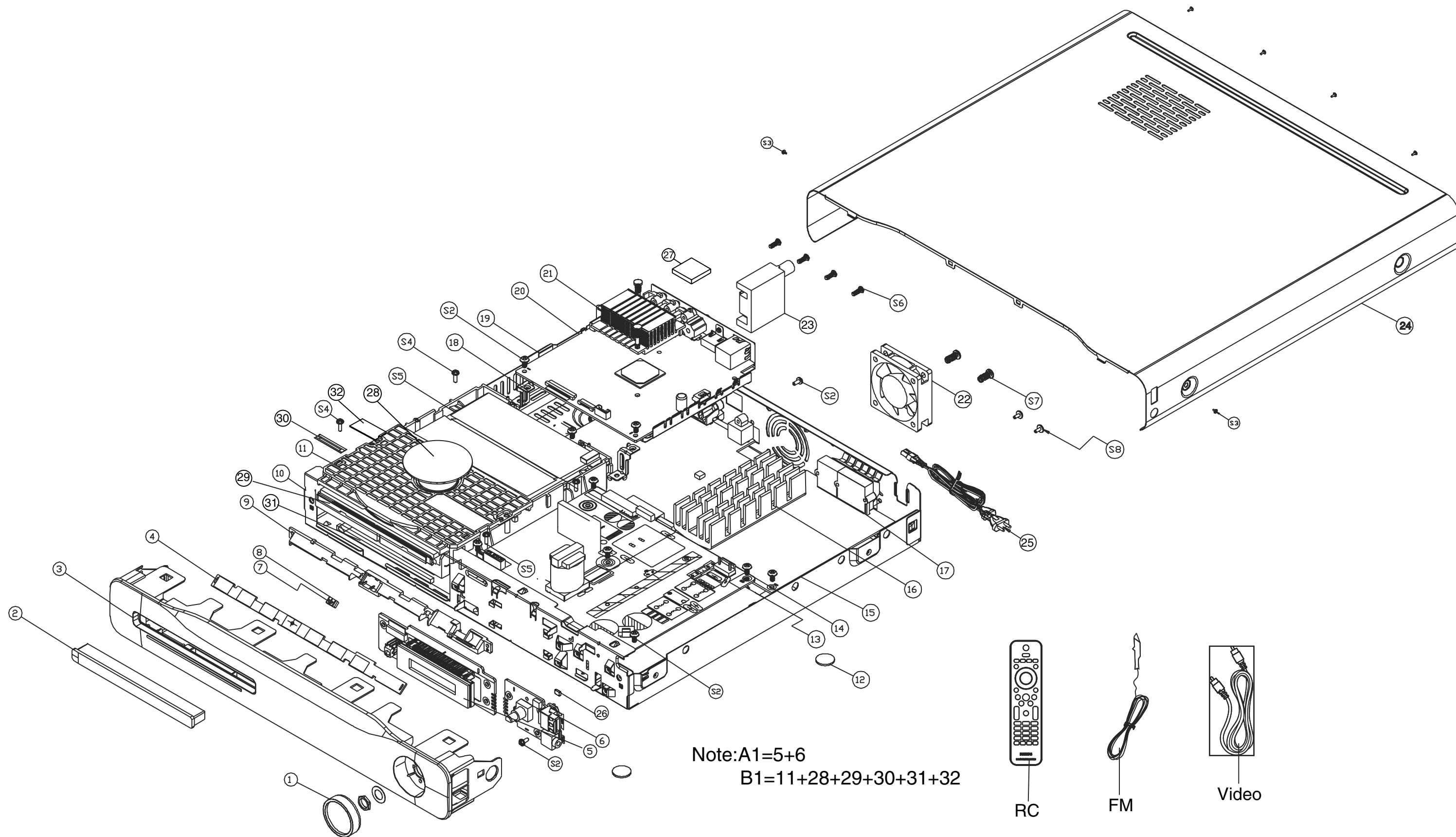
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C10	A3	C3	A3	C5	A3	C8	A3	CN1	A3	R1	A2	R11	A3	R13	A3	R15	A3	R3	A3	R5	A3	R7	A3	R9	A3		



Mechanical Exploded View

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REVISION LIST

Version 1.0

*Initial release