



SERVICE MANUAL

MODEL : LN500/LN505/LN510/LN515

PORTABLE NAVIGATION SERVICE MANUAL

INFORMATION

If you have other questions about the Navigation Device, please contact your supplier or Technical Support:



MODEL : LN500/LN505/LN510/LN515



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SECTION 1. GENERAL

SAFETY PRECAUTIONS

Electrostatically Sensitive Devices (ESD)



Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).











CAUTION. GRAPHIC SYMBOLS

	THE LIGHTNING FLASH WITH APOWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SPECIFICATIONS

ITEM	SPECIFICATION	REMARK
OS	Win CE 5.0	
CPU	Centrality Atlas-II ARM9 276 Mhz	
MEMORY	LN500B : 256 MB	Built-in Memory
	LN500/505 : 512 MB	Built-in Memory
	LN510 : 1 GB	External SD Card
	LN515 : 2 GB	External SD Card
DISPLAY	3.5 inch TFT LCD	LG Philips LCD
	Resolution 320 X 240	
	Backlight	LED type
	Touch Screen	Analog resistive type
AUDIO	Mono, Internal Speaker	Typical 1.0W (1EA)
GPS	SiRF star III, Internal Antenna	
NAVI	Full Map	Voice Guidance
MAP	Navtaq	
POWER	DC 5.0 +/- 0.2V	Vehicle Power
		Cigar-jack Input (12V)
TEMPERATURE	Operating : -10~60 °C	
	Storing : -30~80 °C	
Built-in BATTERY	3.7 V (Li-Ion)	Typical 3-hours operation
INTERFACE	Mini-USB Port	USB 1.1
	External GPS Jack (Optional)	
Multimedia	Electronic Picture Frame	BMP, JPG, GIF Files Compatible

❑ ACCESSORIES

 <p>Main Set</p>	 <p>(801) Quick Start Guide</p>	 <p>(825) USB Cable</p>	 <p>(826) SD Memory Card (Optional)</p>	 <p>(827) Cigar Light Adapter</p>
 <p>(828) AC Adapter</p>	 <p>(829) Carring Case</p>	 <p>(830) Suction-Mount Cradle</p>	 <p>(835) Installation CD</p>	 <p>(836) GPS aerial (Optional)</p>

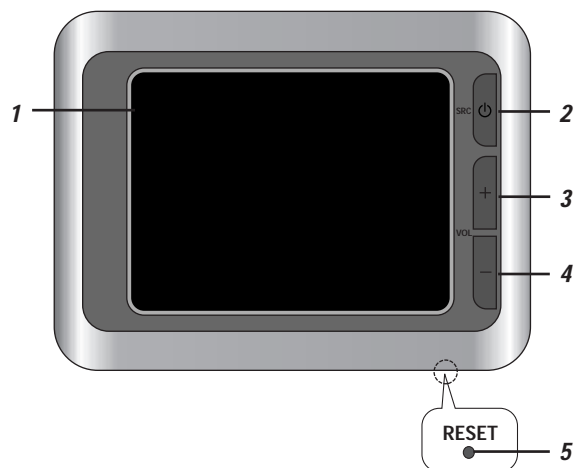
Contents may be changed without notices.

SD memory card (Optional)

The supplied SD Memory Card space may be insufficient after upgrade. In this case, another SD Memory Card that has bigger space has to be purchased..

□ NAME OF EACH PART

• Front panel



1. LCD

2. SRC (Source) button

Move to the main menu screen or the previous screen.

Power sleep

Entering power sleep mode.

On : Press and hold.

Off : Press and hold again.

3. Volume Up

Increases the volume level.

4. Volume Down

Decrease the volume level.

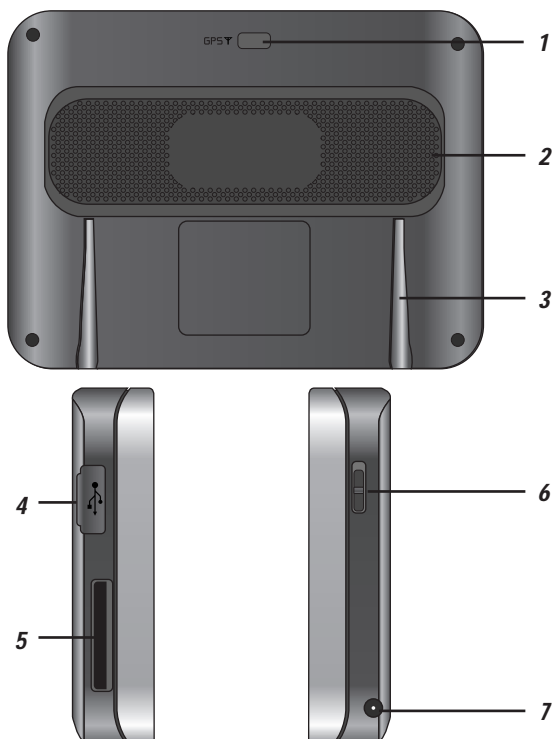
5. RESET hole

If the unit fails to operate properly, press the reset button using a ball point pen or a similar tool.



To activate the menu function through the LCD screen, touch the LCD screen with a finger.

• Rear / Side panel



1. External GPS Antenna Slot

2. Speaker

Gets a voice guidance service.

3. Docking connector

4. USB port

5. Memory Card Slot

Insert a SD Memory Card.

6. Power Hold On / Off button

On : Push button up.

Off : Push button down.

7. Power supply connector

Tiffical DC 5V



Deleting or altering the map data in the built-in memory or the SD memory card randomly, may cause problems in the navigation function.

SUPPORT-HOTLINE

If you have other questions about the Navigation Device, please contact your supplier or Technical Support:

www.lge.com/support/software.jsp

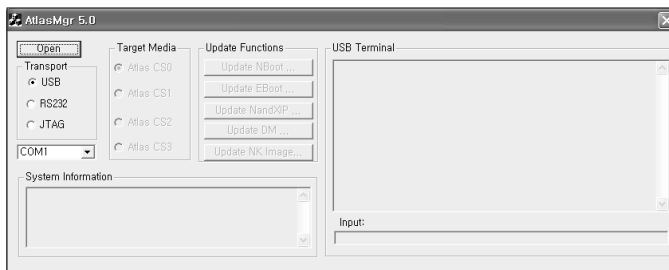
For questions on products please visit our site or contact the Support Team.

Monday-Fridays : 09 : 00 am - 6 : 00 pm

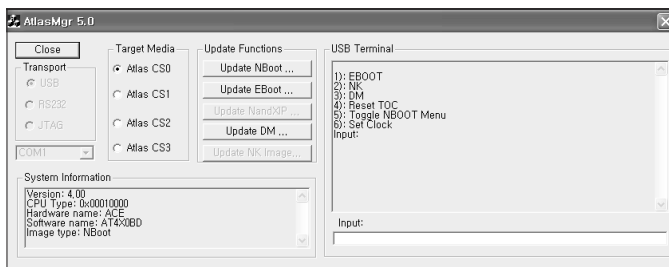
LG Subsidiary	Country	Service Number
LG Electronics ESPANA S.A.	SPAIN	902 500 234
LG Electronics U.K. Ltd	U.K. / IRELAND	0870 873 5454
LG Electronics France	FRANCE	0825-826-822 0825-825-592
LG Electronics Deutschland GmbH	GERMANY	01805 4737 84
LG Electronics Italia S.p.A	ITALY	39 199600099
LG Electronics Hellas S.A	GREECE	+30-210-4800-564/8 801 11 200 900
LG Electronics Benelux B.V	BELGIUM LUXEMBOURG Netherlands	070-233-557 32-70-233-557 0900-543-5454
LG ELECTRONICS MAGYAR KFT	HUNGARY Bulgaria	36-06-40-545454 +359-070-1-5454
LG Electronics Polska Sp. z.o.o	POLAND	801 54 54 54
LG Electronics Portugal, S,A	PORTUGAL	808-78-5454
LG Electronics Nordic AB	SWEDEN DENMARK FINLAND NORWAY	0771 41 4379 8088 5758 0800 116 587 800 18 740
Austria	AUSTRIA	420 810 555 810
RUMANIA	RUMANIA	40 31 228 3542
CZECH REPUBLIC	CZECH SLOVAKIA	420 810 555 810 421 850 111 154
LG Electronics Australia	AUSTRALIA	1 800 643 156

❑ SOFTWARE UPGRADE METHOD (OS IMAGE)

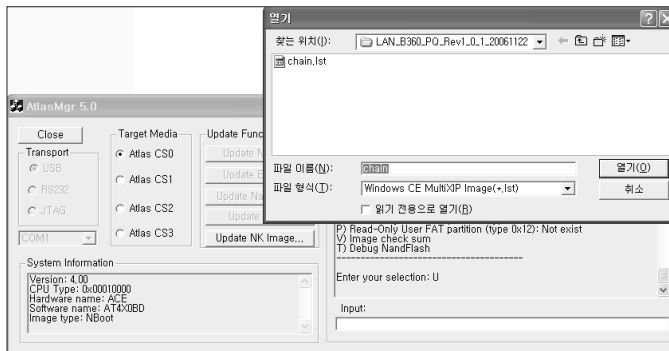
1. Execute Atlas Mgr 5.0



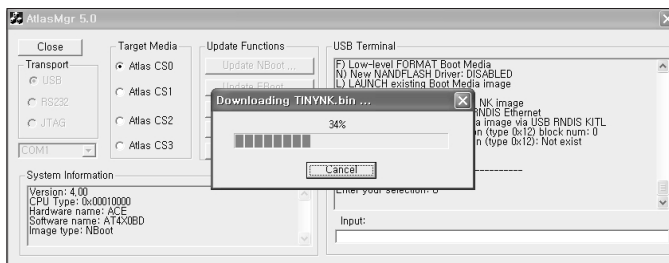
2. Press and hold the **VOL-** button, push up the slide switch and press **OPEN** button, then **INPUT** window is activated. Keep pressing **VOL-** button until **INPUT** window is activated.
3. Input **1** on **INPUT** window and then press **ENTER** on keyboard.
 - **EBOOT** is displayed on screen.



4. The log is created on **USB Terminal** and **enter your selection** is displayed, input u.
Then press **Update NK Image** icon and file selection windows is displayed, select **chain.lst** file from **OS IMAGE** file.



5. **Os image** is downloaded, then disconnect **USB** cable after product is turned on.

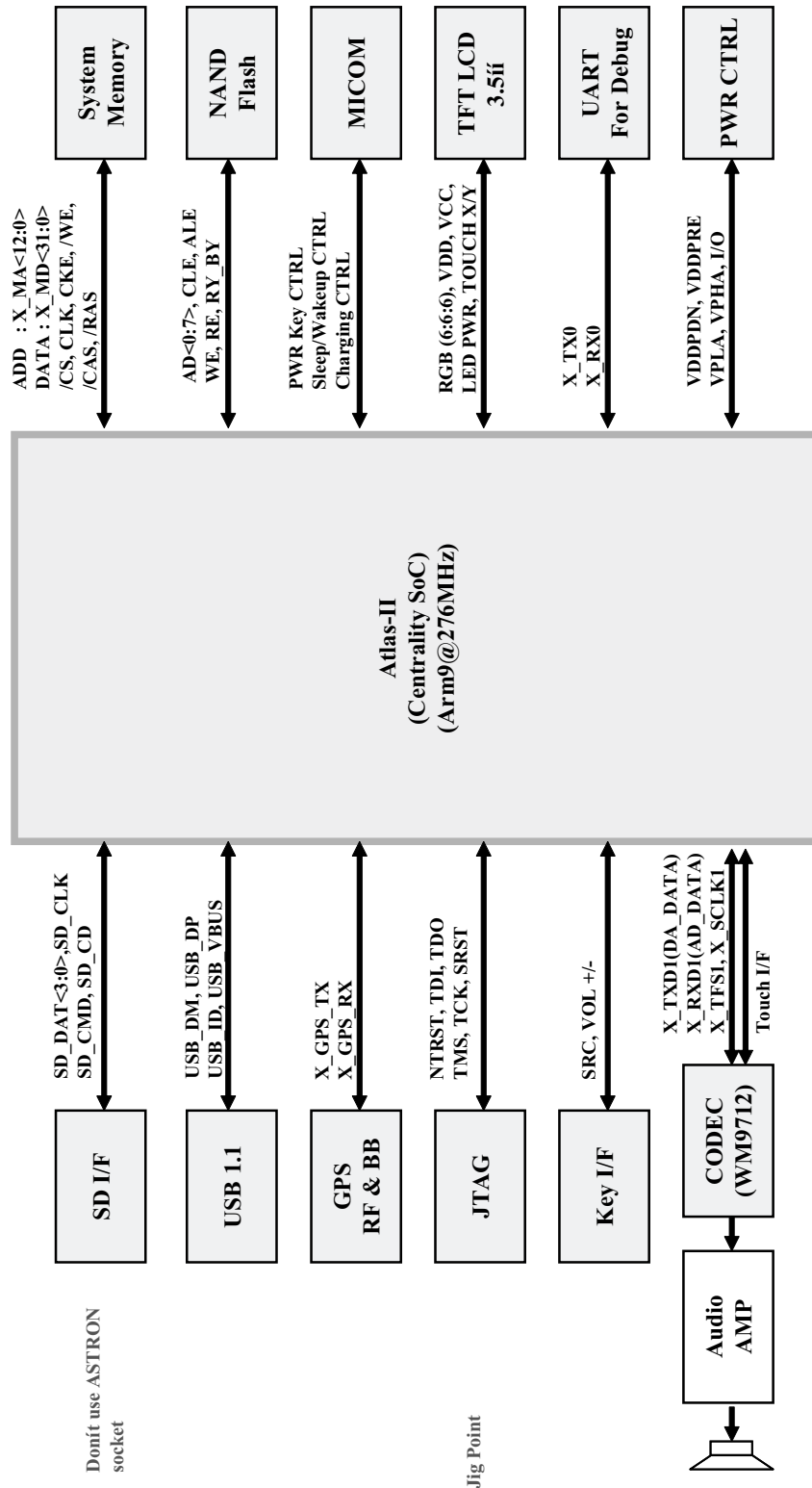


The ways software upgrade for **LAN-B360** two, **OS IMAGE** and **MAP DATA**.
MAP is executed by **DESTINATOR CONSOLE**. (Refer to **USER_GUIDE**)

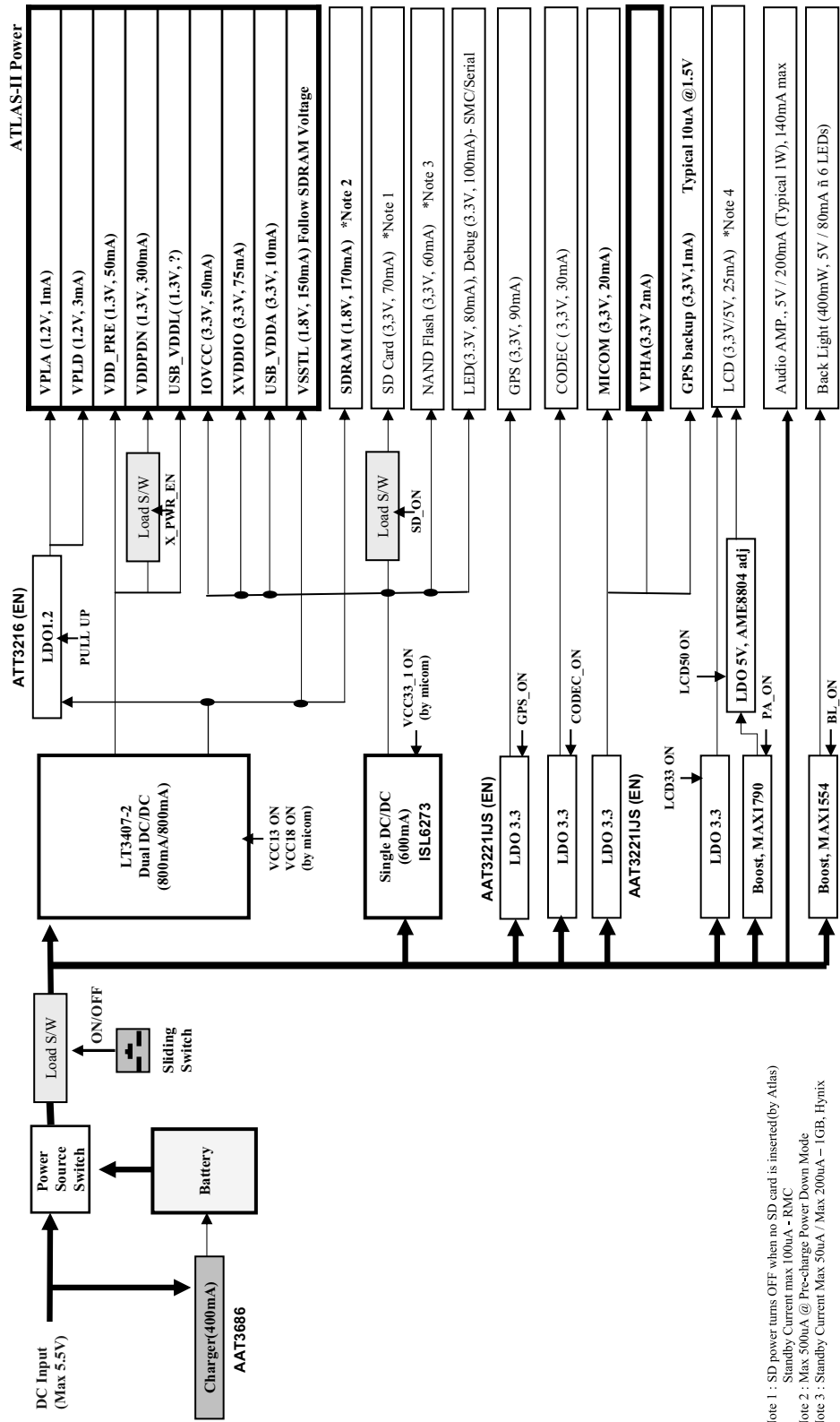
SECTION 2. ELECTRICAL SECTION

□ BLOCK DIAGRAM

• SYSTEM BLOCK DIAGRAM

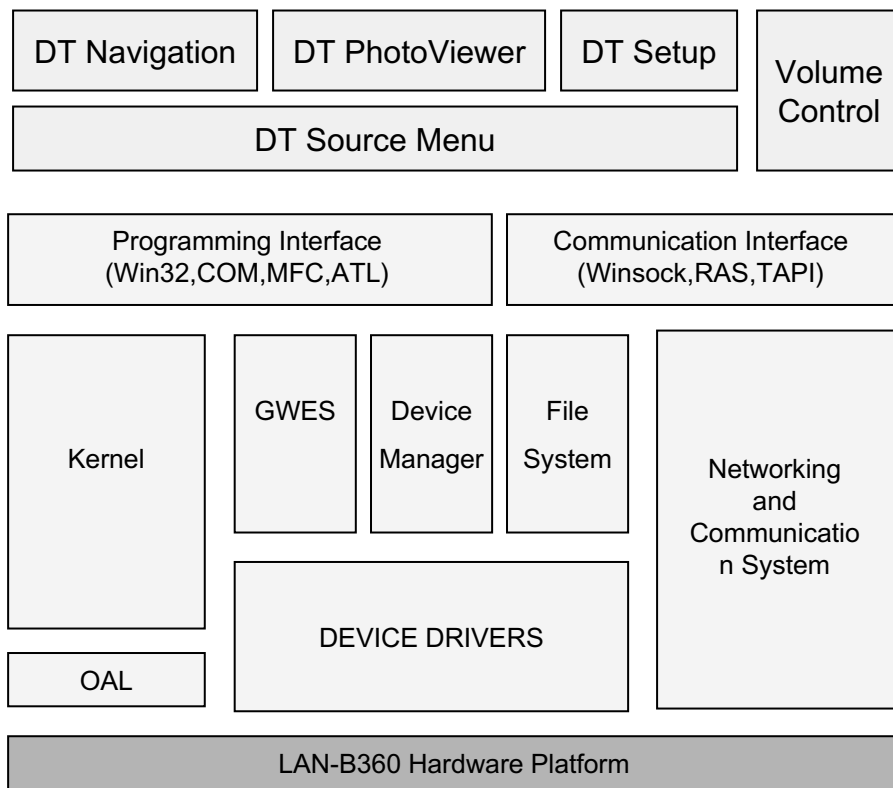


• POWER BLOCK DIAGRAM



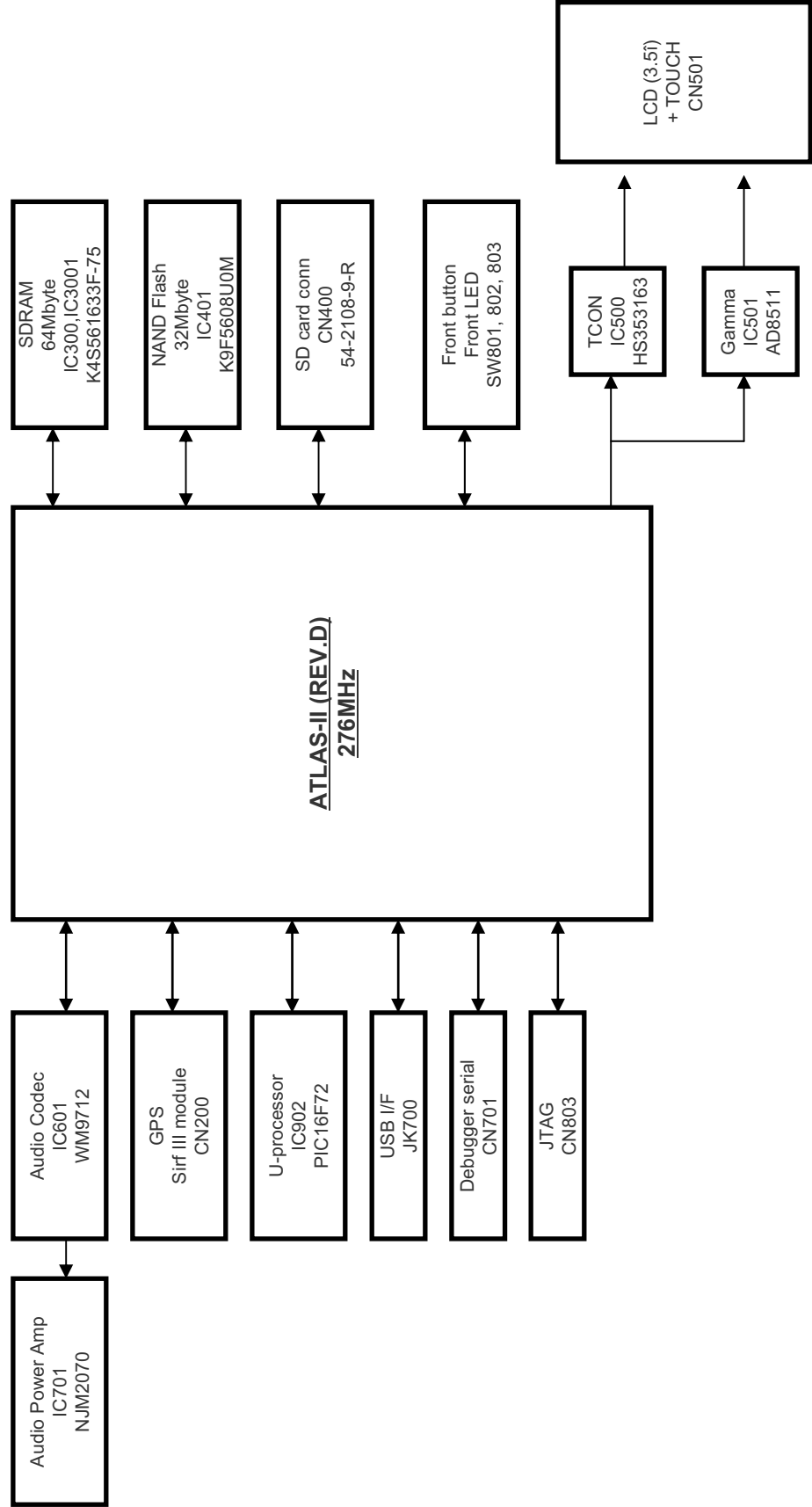
Note 1 : SD power turns OFF when no SD card is inserted (by Atlas)
Standby Current max 100uA - RMC
Note 2 : Max 500uA @ Pre-charge Power Down Mode
Note 3 : Standby Current Max 50uA / Max 200uA - 1GB, Hynix

• SW BLOCK DIAGRAM

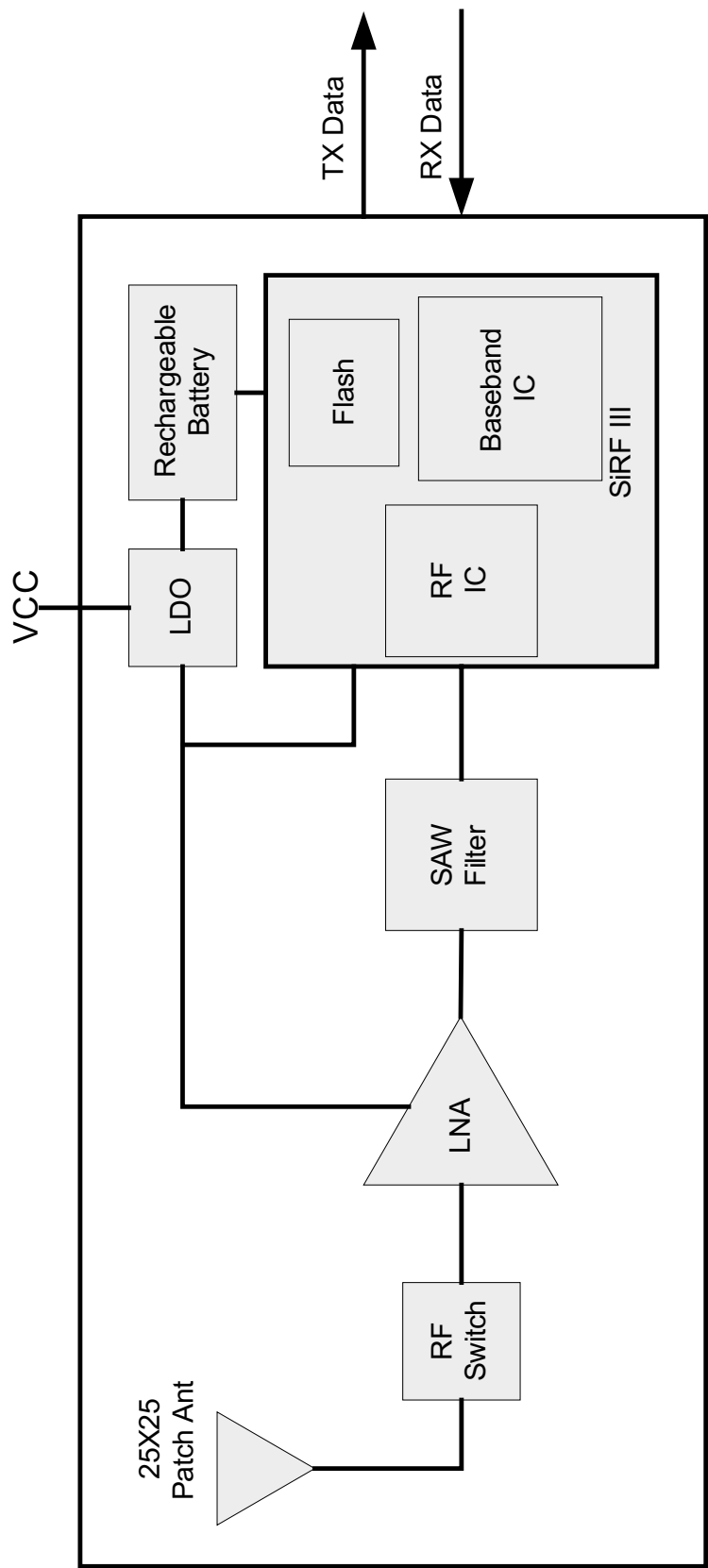


OAL : OEM Adaptation Layer
 GWES : Graphics, Windowing and
 Event Subsystem
 COM : Component Object Model
 MFC : Microsoft Foundation Class
 ATL : Active Template Library
 RAS : Remote Access Sever
 TAPI : Telephony Application Program Interface

• CPU CONNECTION DIAGRAM



• GPS BLOCK DIAGRAM



□ VOLTAGE SHEET

• MAIN PCB

1. TEST VOLTAGE : DC 10.5~16V
2. CHECK METHOD : VR MIN(10.5V)/MAX(16V)

PART NAME	SPEC	10.5V	16V
C518	10uF/50V	18.81	18.82
C519	10uF/16V	3.31	3.31
C616	10uF/16V	5.35	5.36
C627	22uF/16V	5.06	5
C639	10uF/16V	3.35	3.35
C633	10uF/16V	5.03	5.01
C642	10uF/16V	5.03	5
C904	47uF/10V	5.17	5.17
C909	22uF/6.3V	5.16	5.17
C902	10uF/10V	5.4	5.41
C905	47uF/10V	4.18	4.18
C1004	10uF/16V	4.72	4.7
C1000	10uF/16V	1.81	1.8
C1011	10uF/16V	1.34	1.35
C1019	10uF/16V	3.27	3.28
C1008	10uF/16V	1.19	1.19
C1020	10uF/17V	3.23	3.23
C1024	10uF/18V	3.31	3.31
C1018	10uF/19V	3.31	3.31
C1009	22uF/6.3V	1.34	1.33

• GPS

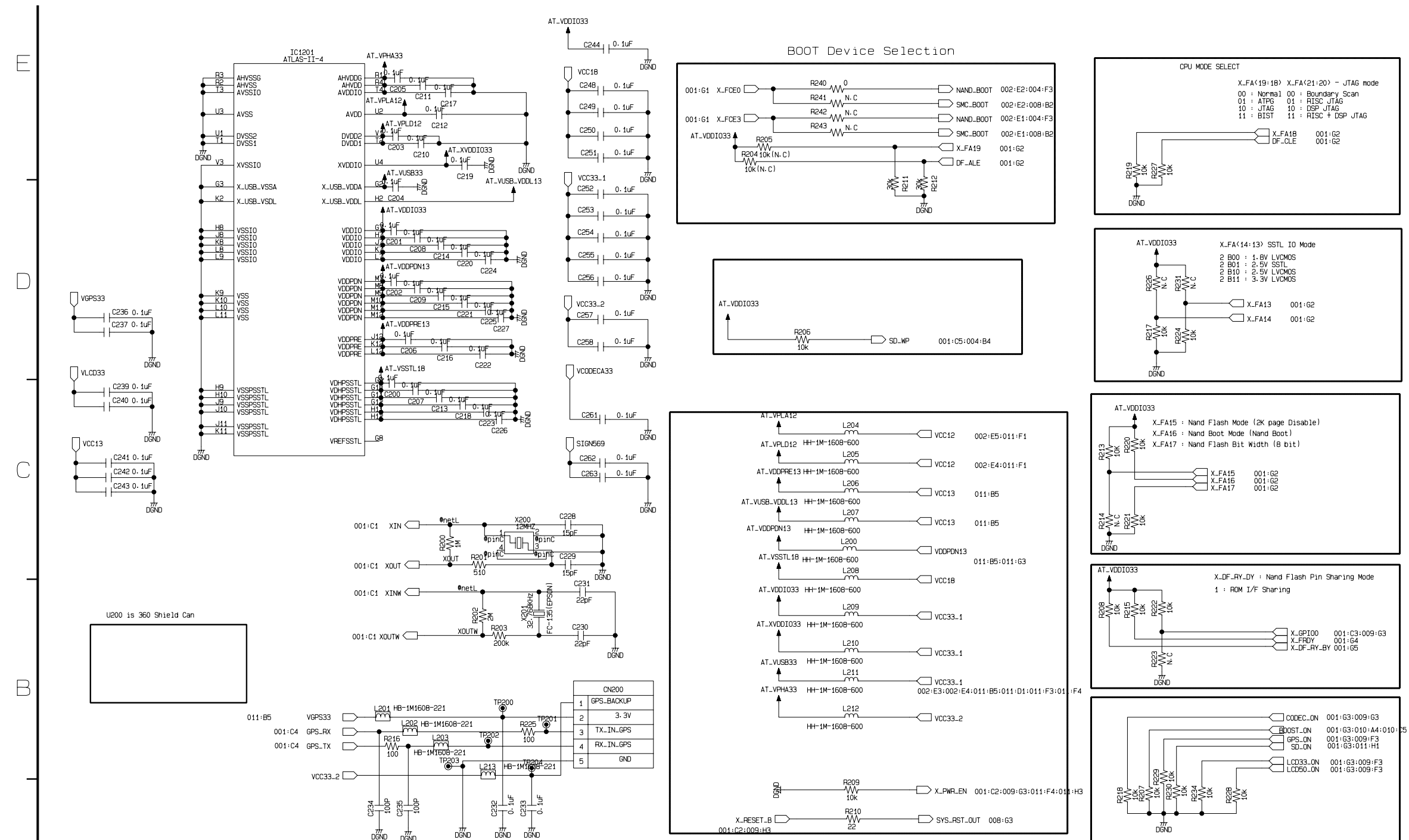
1. TEST VOLTAGE : DC 10.5~16V
2. CHECK METHOD : VR MIN(10.5V)/MAX(16V)

PART NAME	SPEC	10.5V	16V
C121	10uF/16V	3.29	3.3
C128	10uF/16V	1.18	1.18

- **CPU I/O SCHEMATIC DIAGRAM**



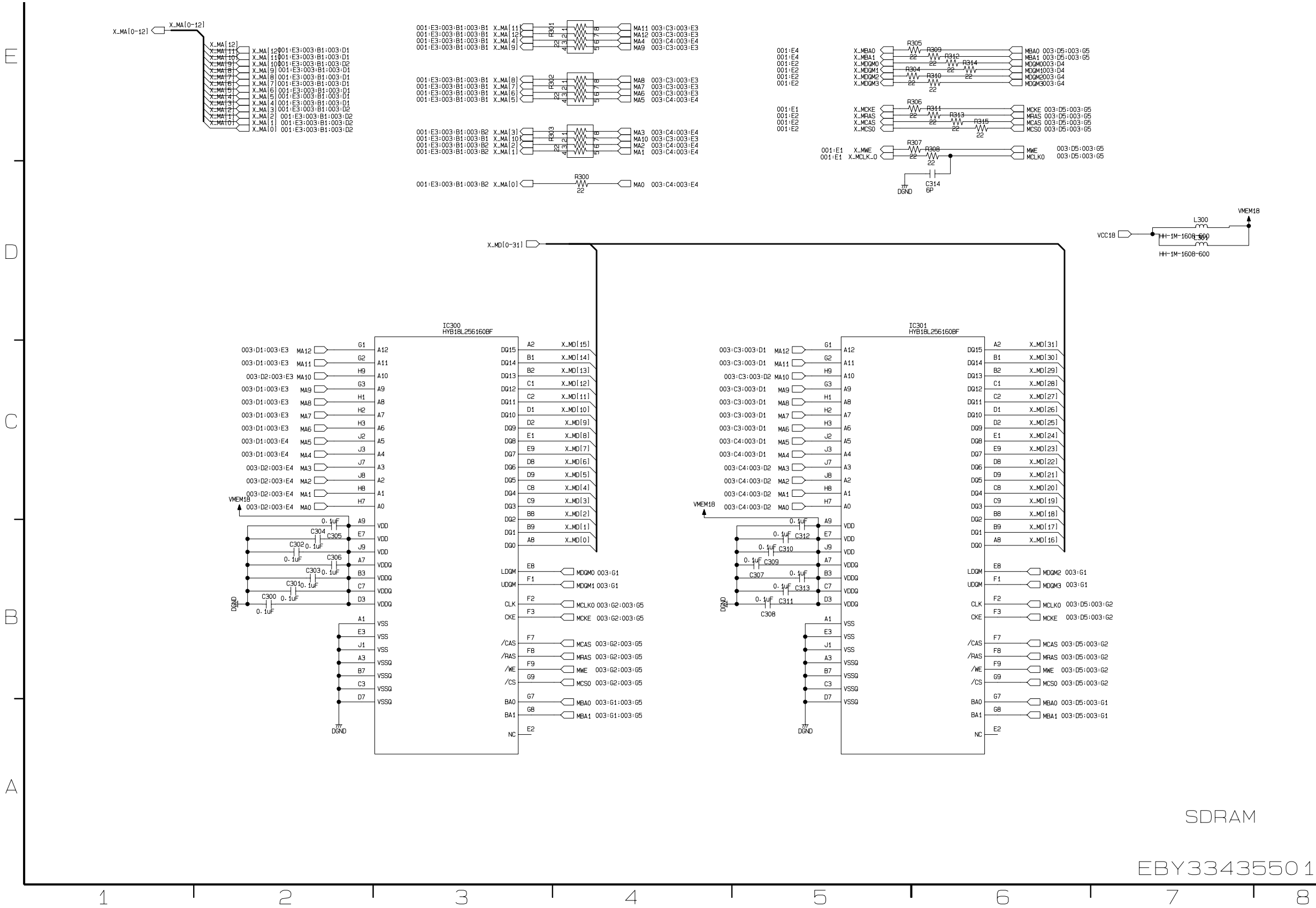
- **CPU POWER & CONFIGURATION SCHEMATIC DIAGRAM**



CPU PWR & CONFIG

EBY33435501

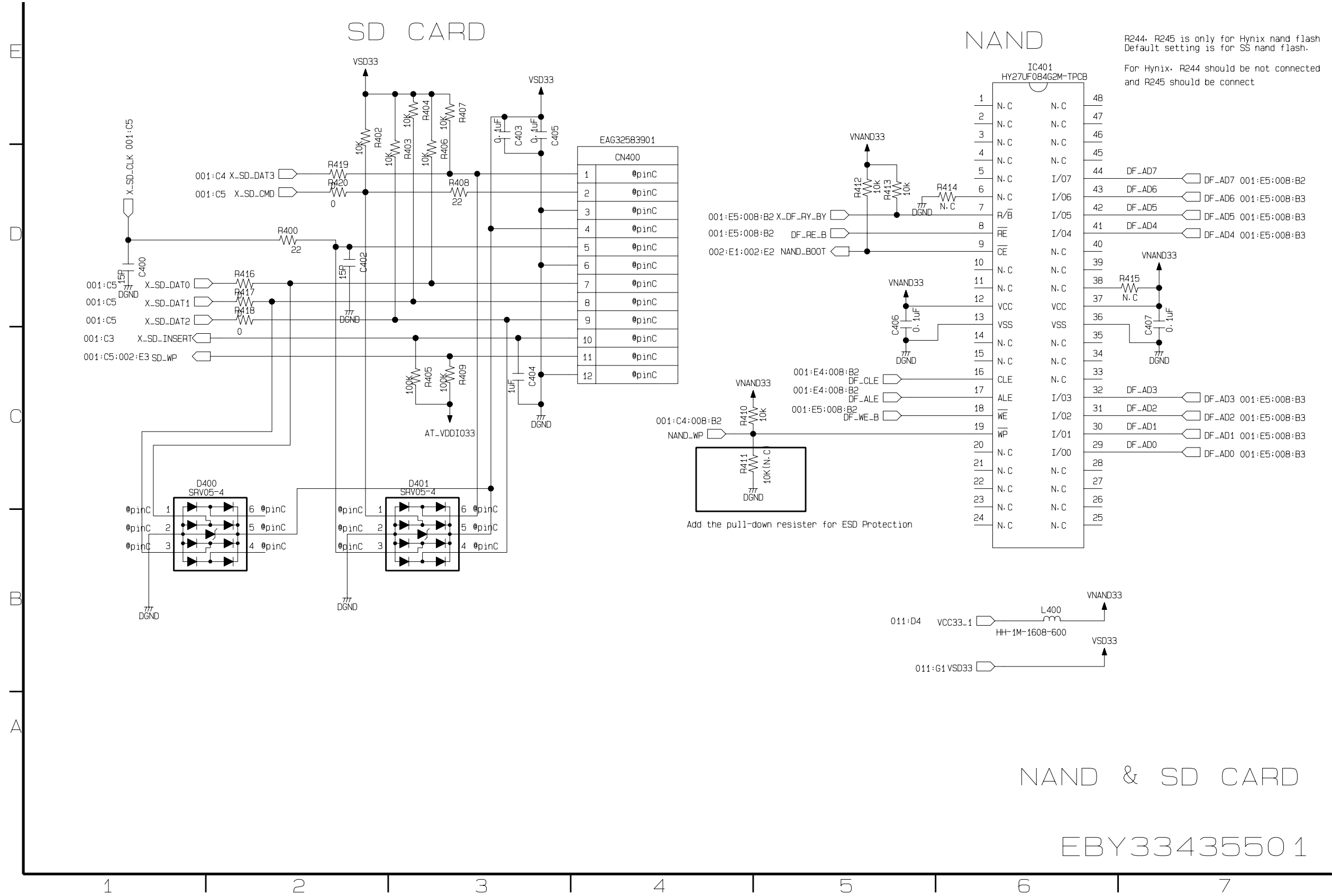
• SDRAM SCHEMATIC DIAGRAM



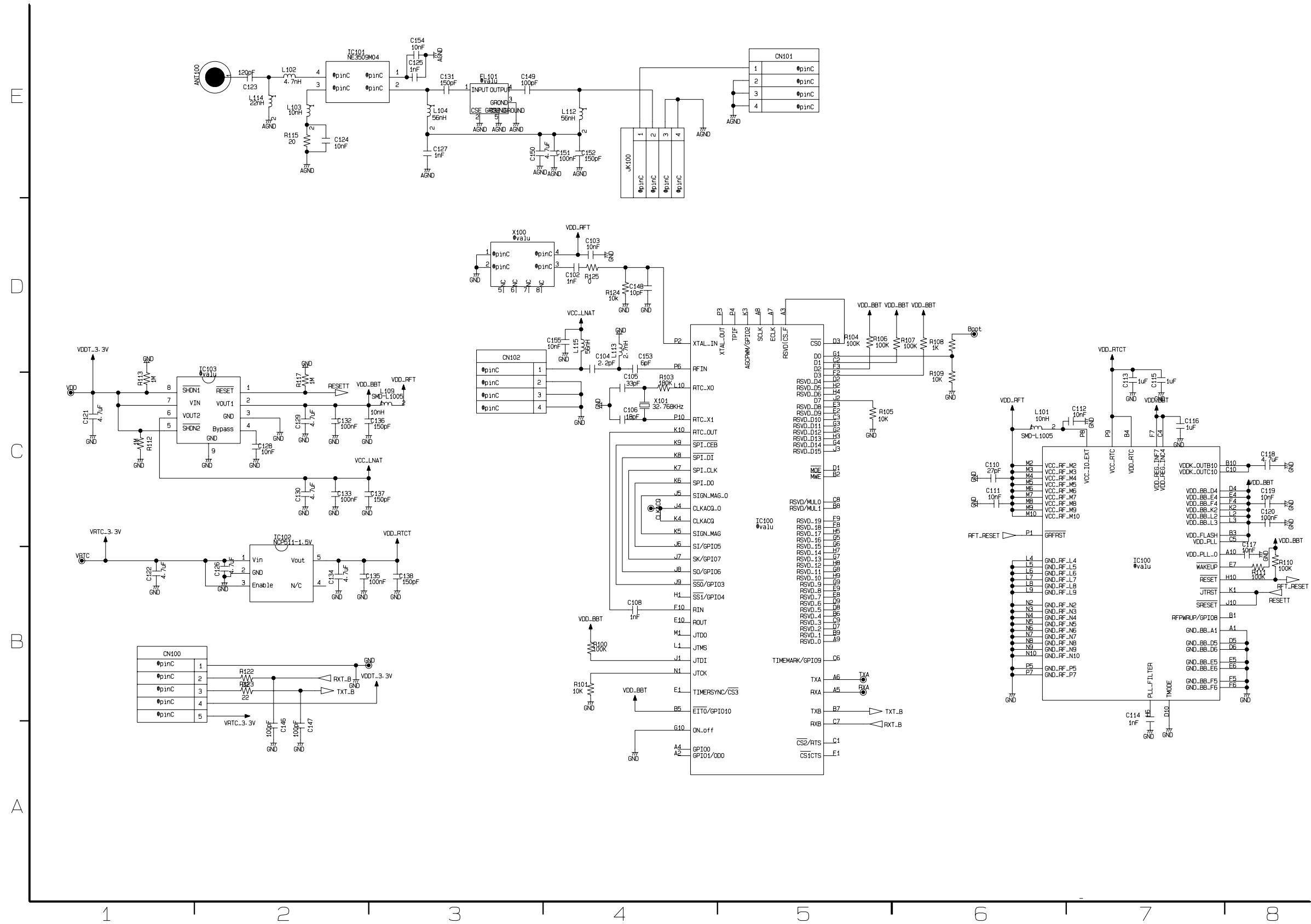
SDRAM

EBY3343550 1

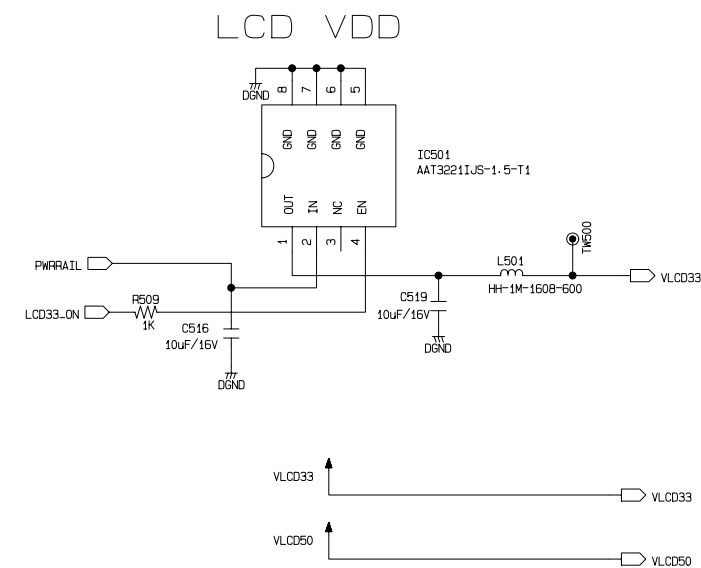
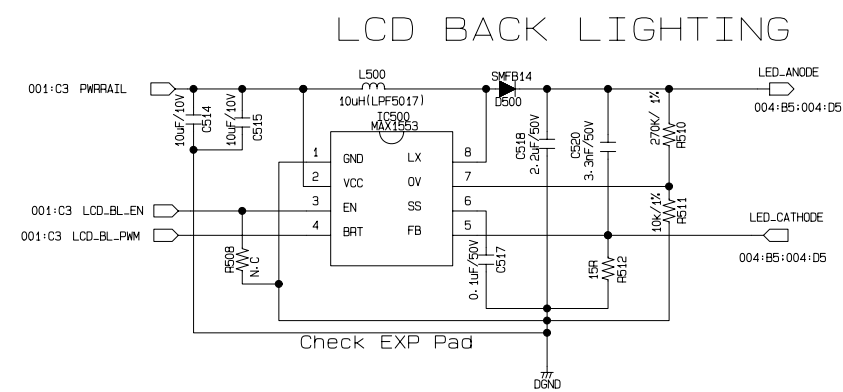
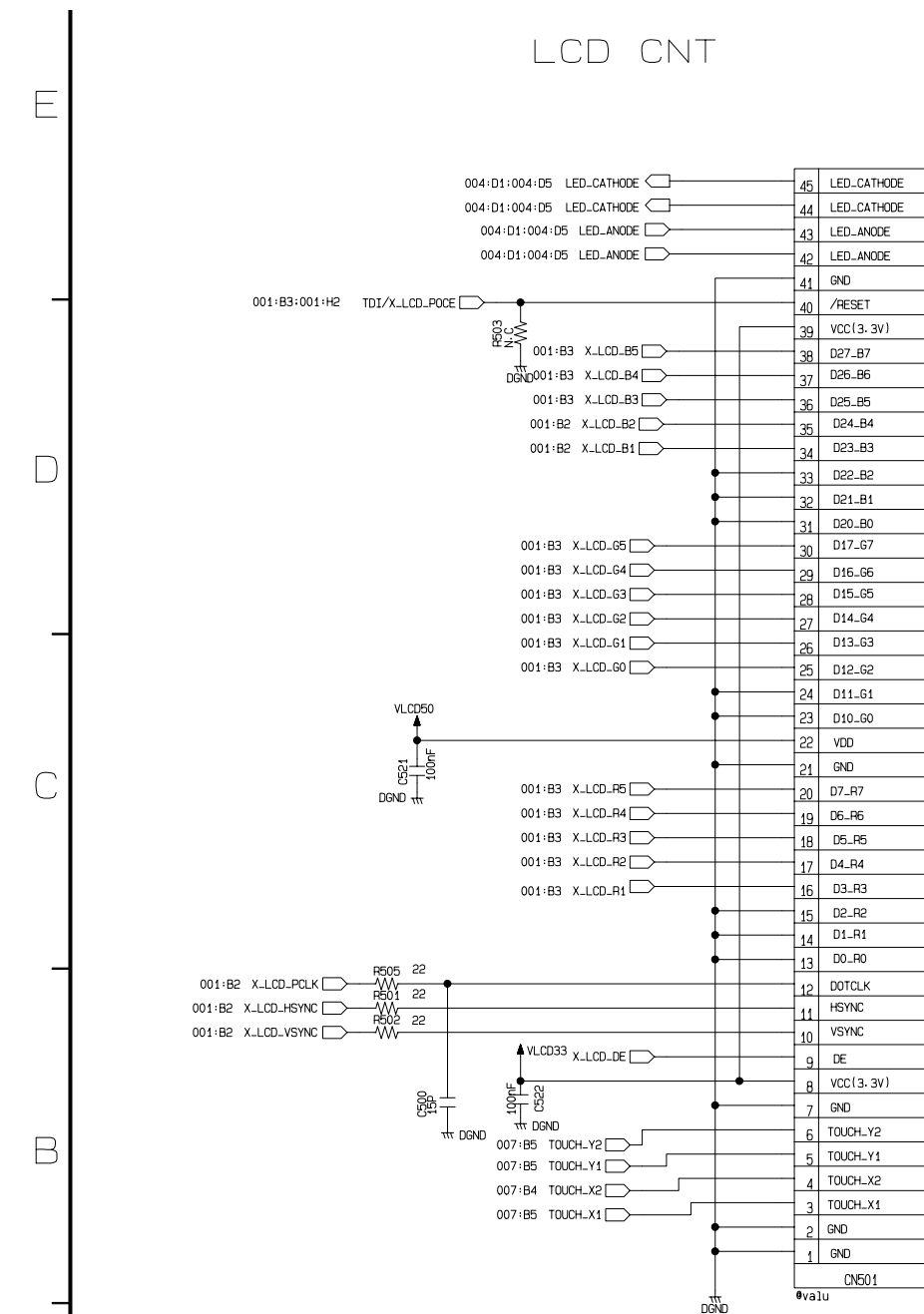
• NAND FLASH & SD CARD SCHEMATIC DIAGRAM



• GPS SCHEMATIC DIAGRAM



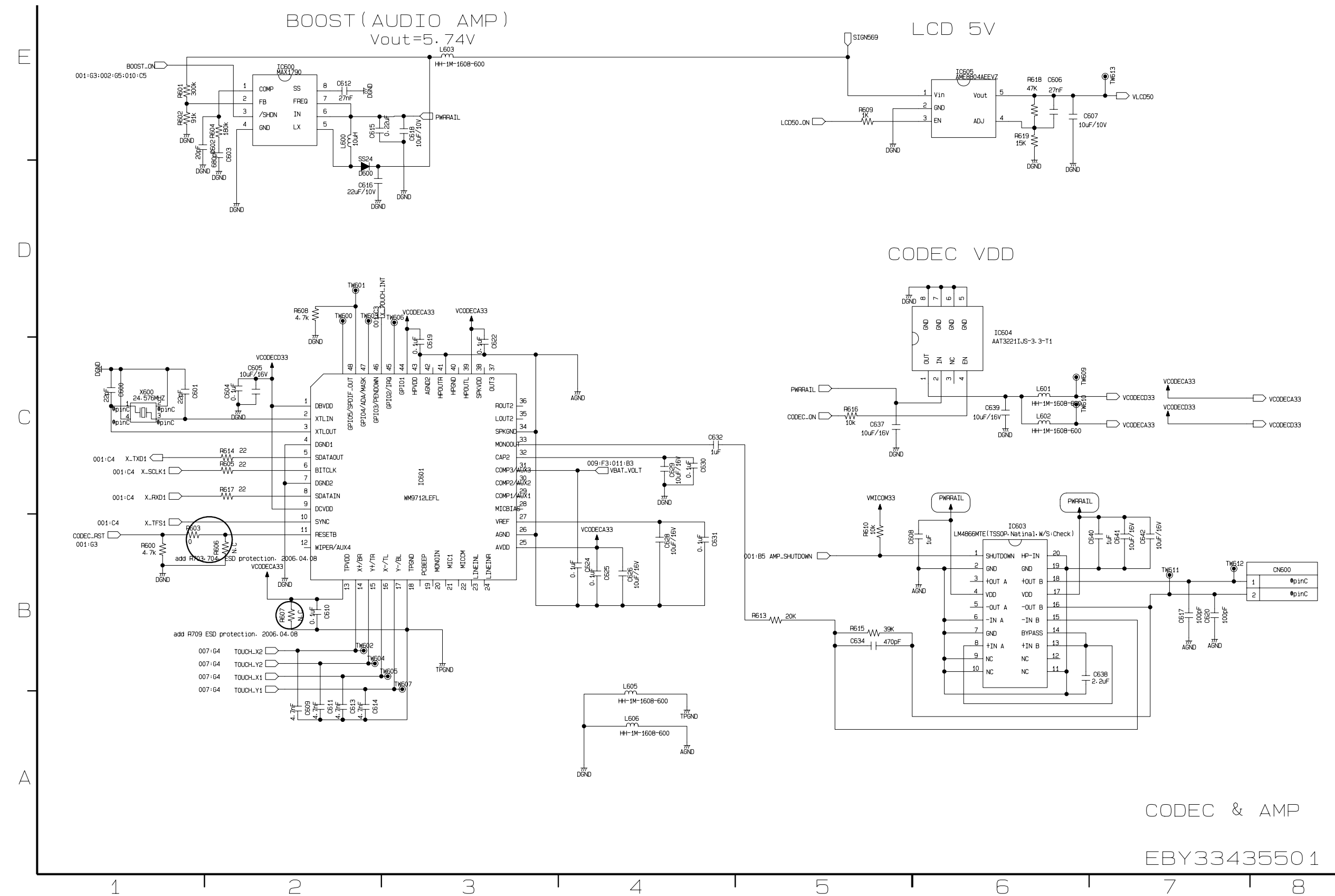
• LCD POWER & CONNECTOR SCHEMATIC DIAGRAM



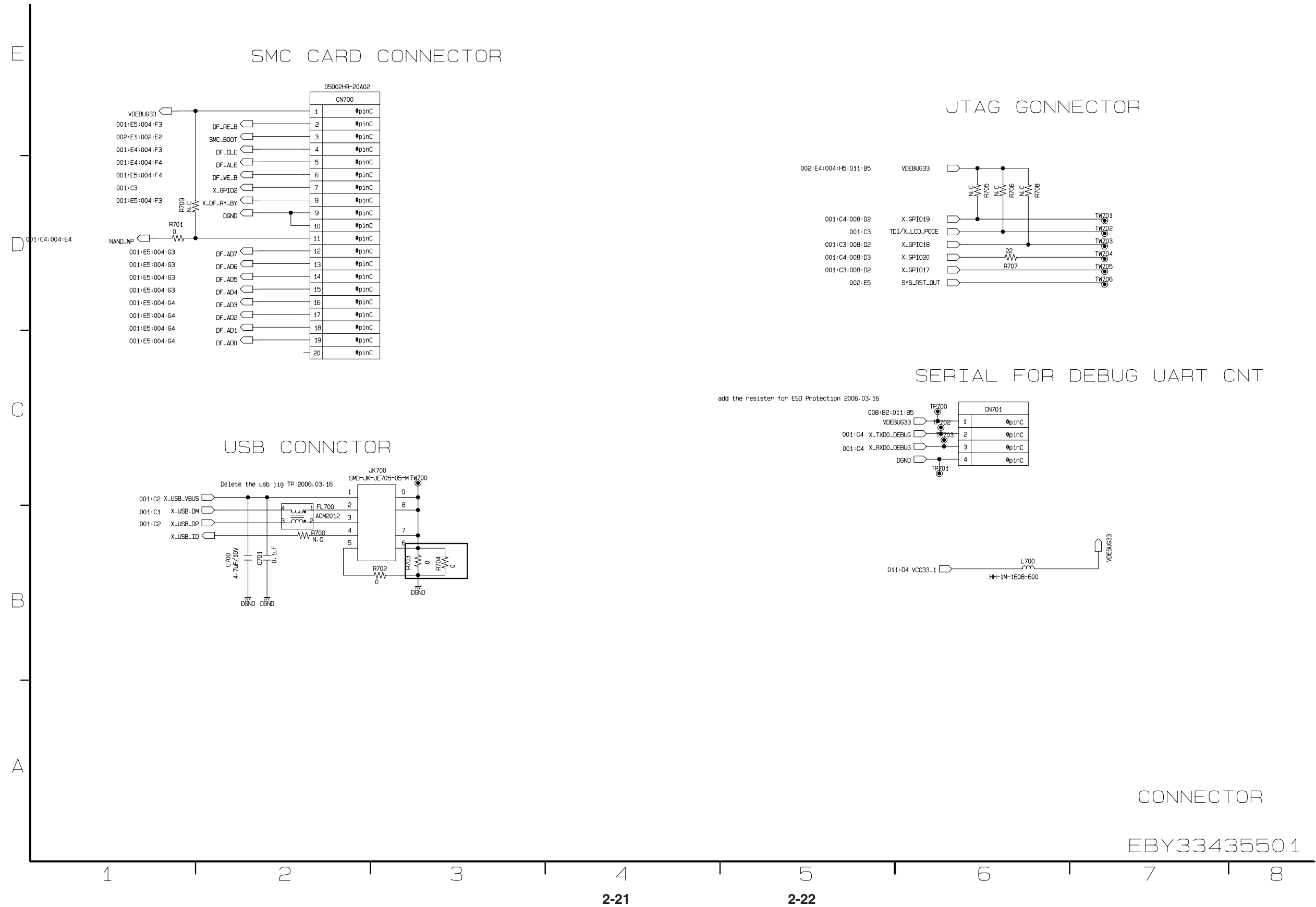
LCD DON & LED PWR

EBY33435501

- **CODEC & AMP SCHEMATIC DIAGRAM**



• CONNECTOR SCHEMATIC DIAGRAM



JTAG GONNECTOR

002:E4:004:H5:011:B5

VDEBUG33

N.C

R705

N.C

R706

N.C

R708

X_GPI019

001:C3

TDI/X_LCD_POCE

X_GPI018

X_GPI020

X_GPI017

SYS_RST_OUT

TW701

TW702

TW703

TW704

TW705

TW706

SERIAL FOR DEBUG UART CNT

add the resister for ESD Protection 2006-03-16

008:B2:011:B5

VDEBUG33

001:C4 X_TXD0_DEBUG

001:C4 X_RXD0_DEBUG

DGND

TP700

TP702

TP703

TP701

CN701

1

2

3

4

0pinC

0pinC

0pinC

0pinC

011:D4 VCC33..1

L700

H+1M-160B-600

VDEBUG33

USB CONNCTOR

JK700

SMD~JK~JE705-05-M TW700

1

2

3

4

5

6

7

8

9

FL700

ACM2012

B700

N.C

R702

R703

R704

DGND

C700

4.7uF/10V

C701

0.1uF

DGND

DGND

X_USB_VBUS

001:C2

X_USB_DM

001:C1

X_USB_DP

001:C2

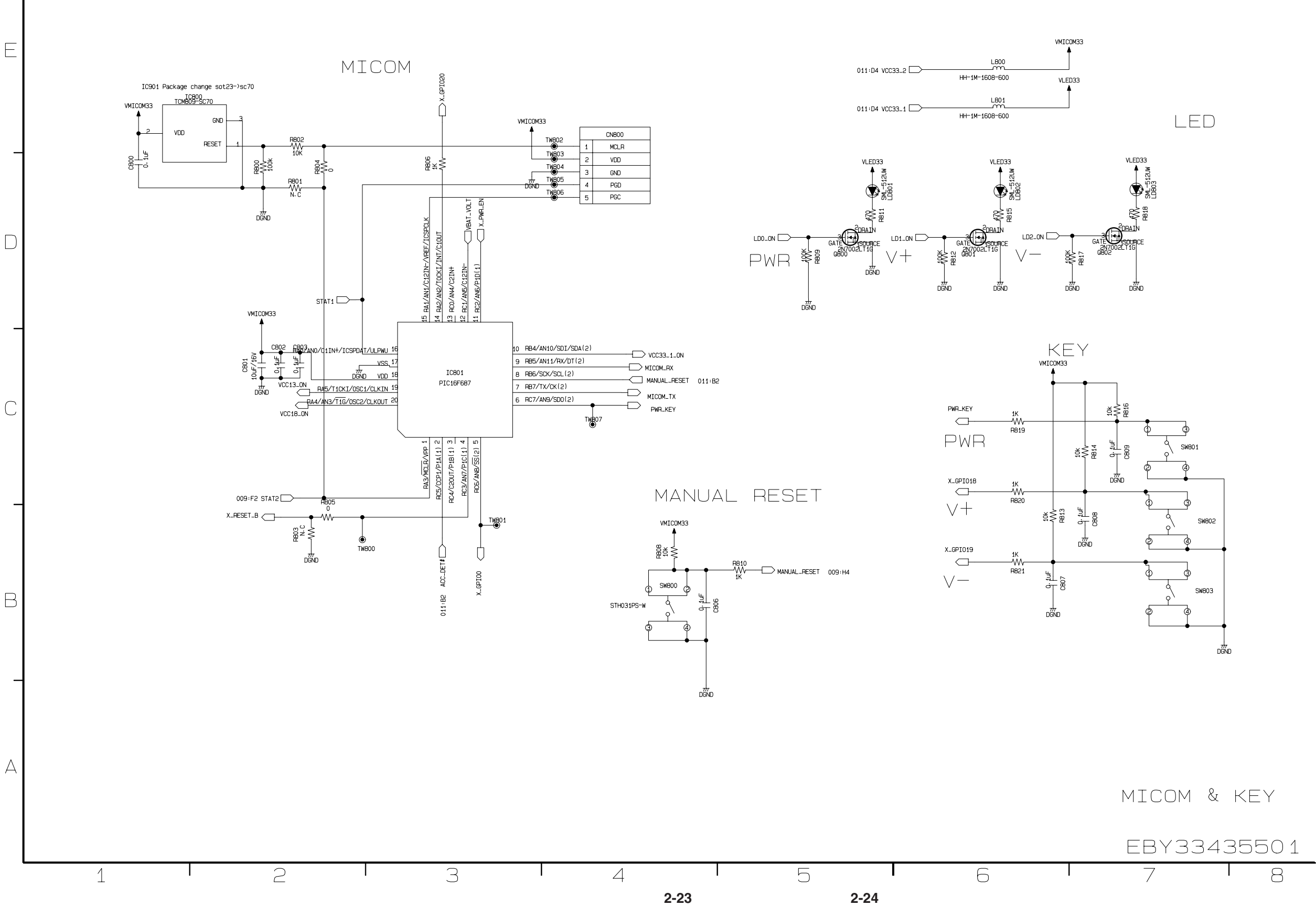
X_USB_ID

Delete the usb jig TP 2006-03-16

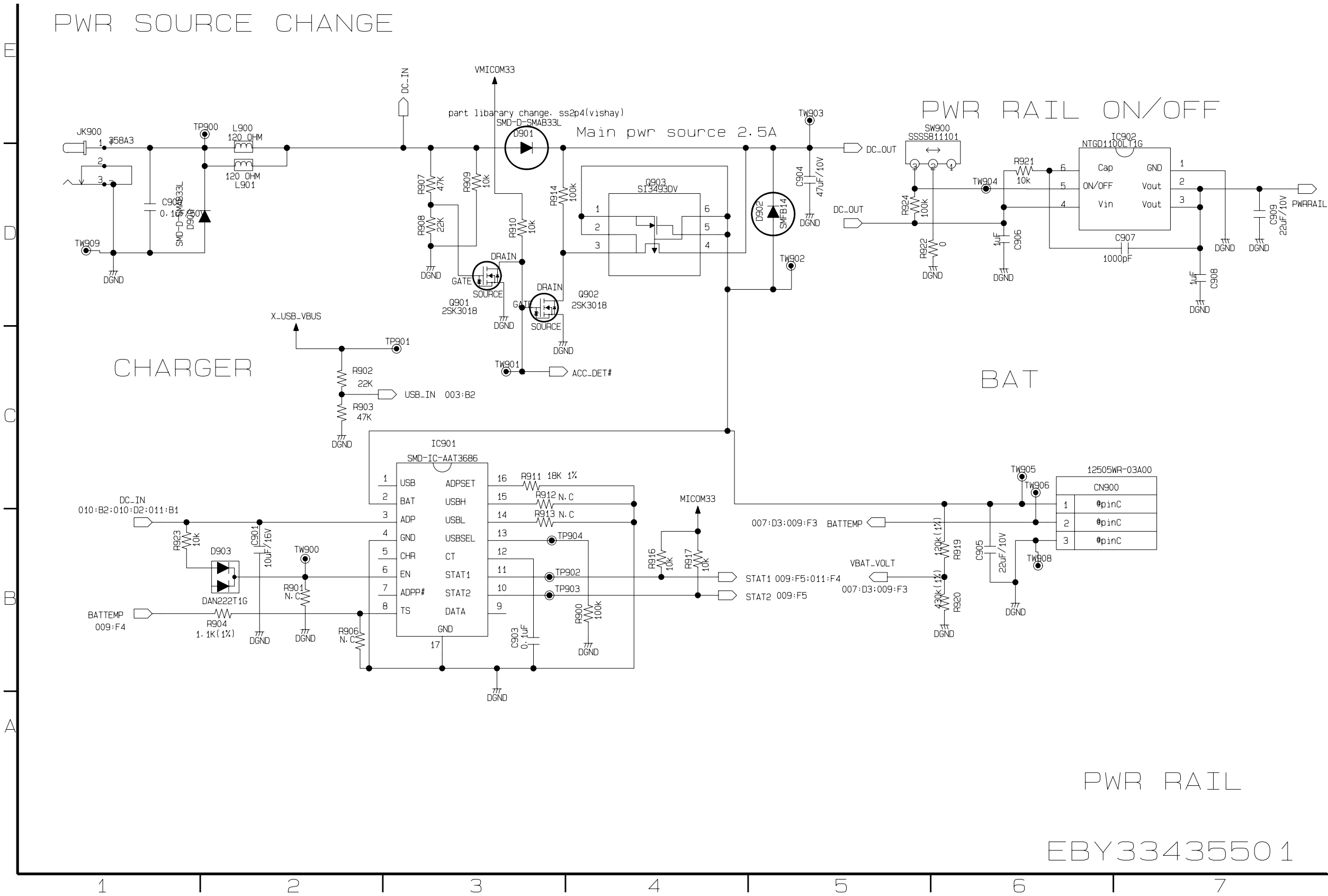
CONNECTOR

EBY3343550 1

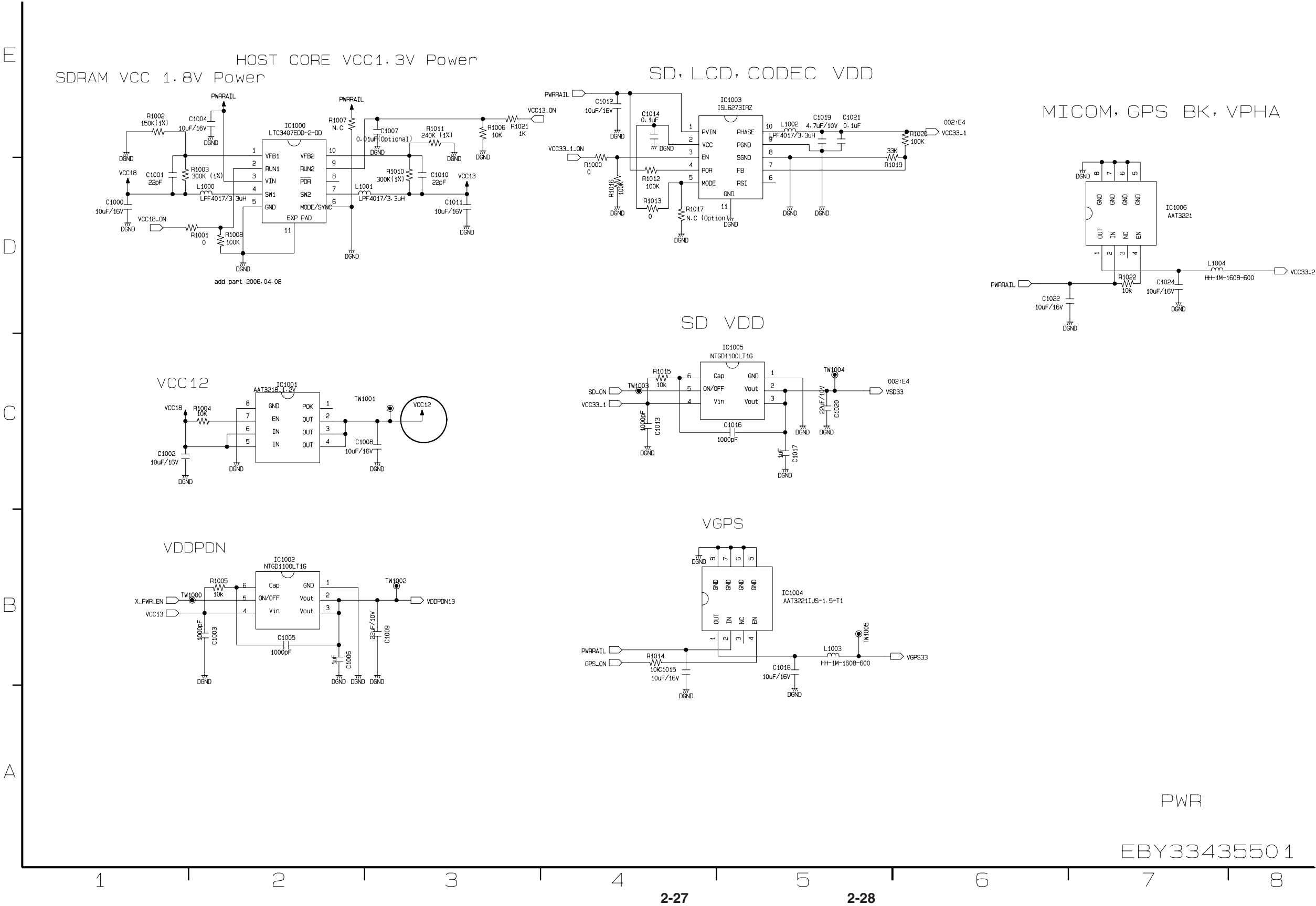
• MICOM, KEY & LED SCHEMATIC DIAGRAM



• POWER RAIL SCHEMATIC DIAGRAM



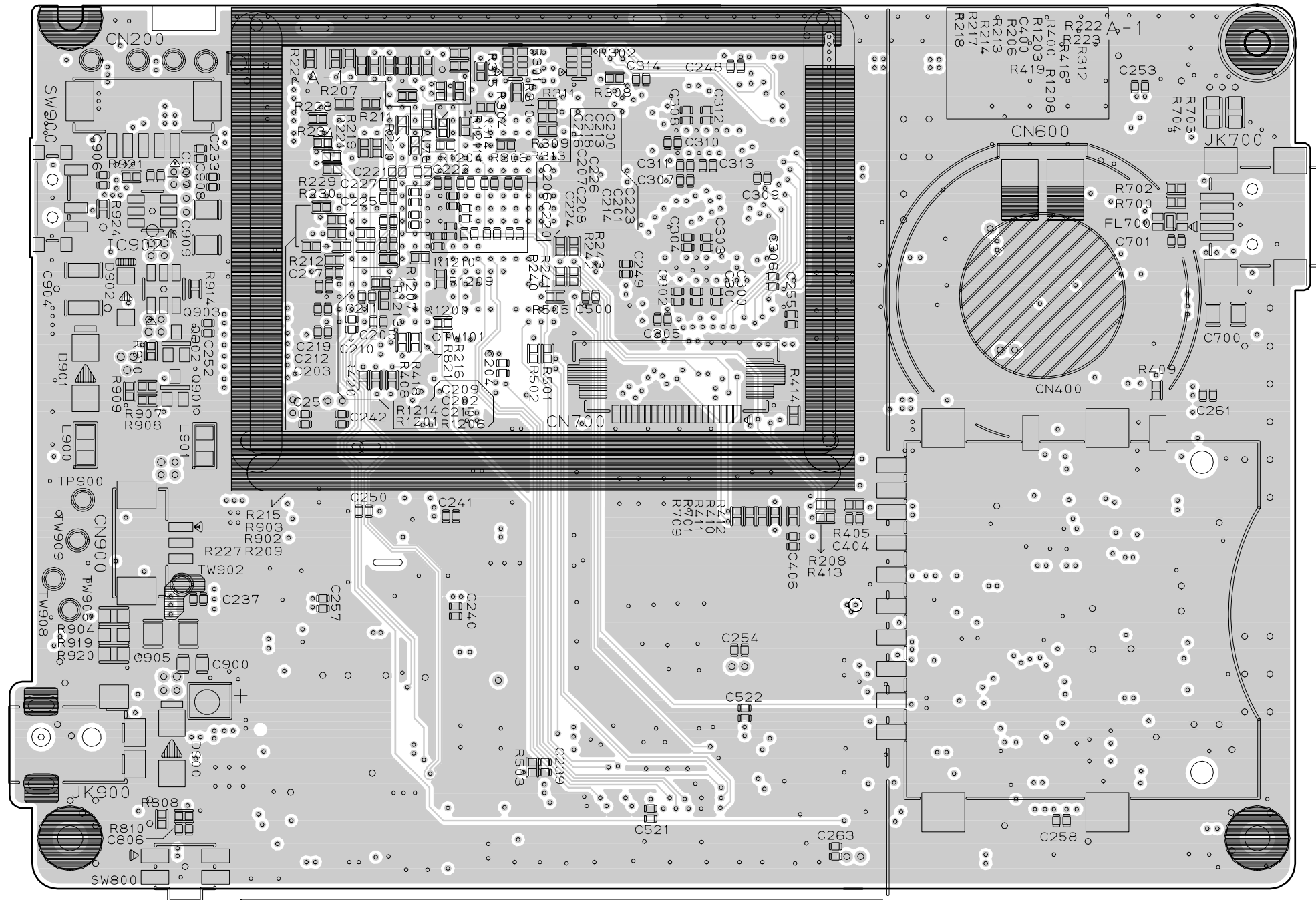
• POWER SCHEMATIC DIAGRAM



- **MAIN P.C BOARD DIAGRAM (TOP SIDE)**



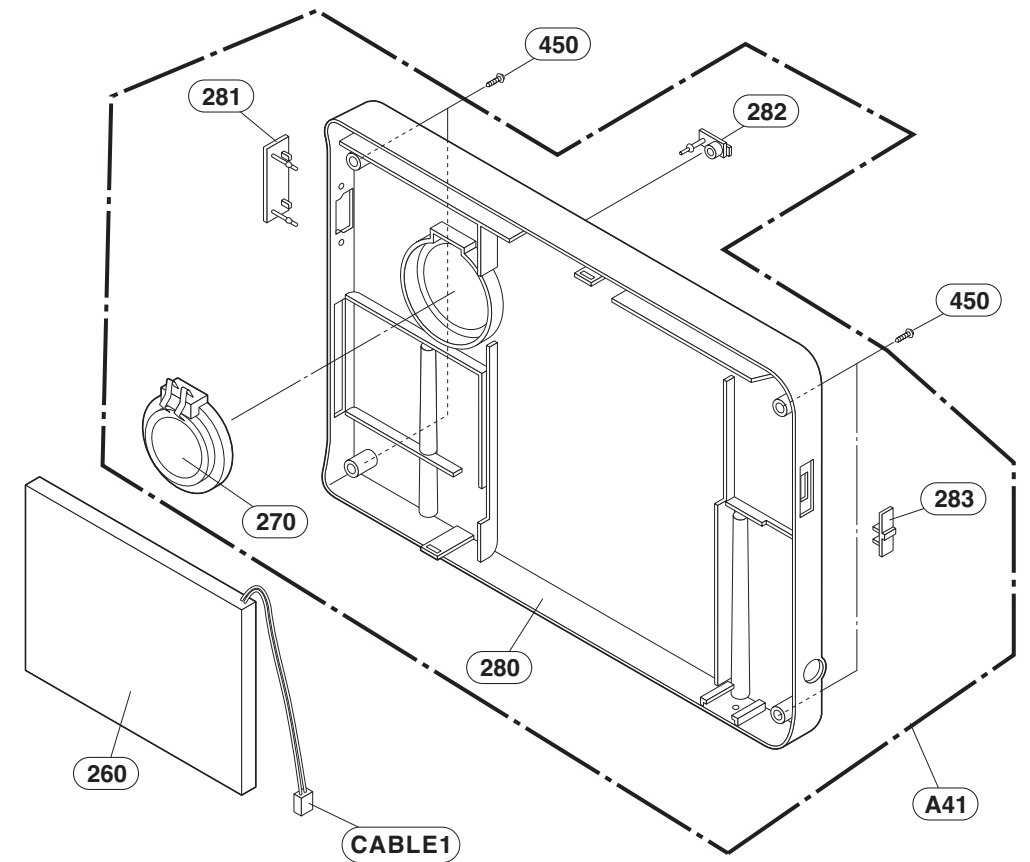
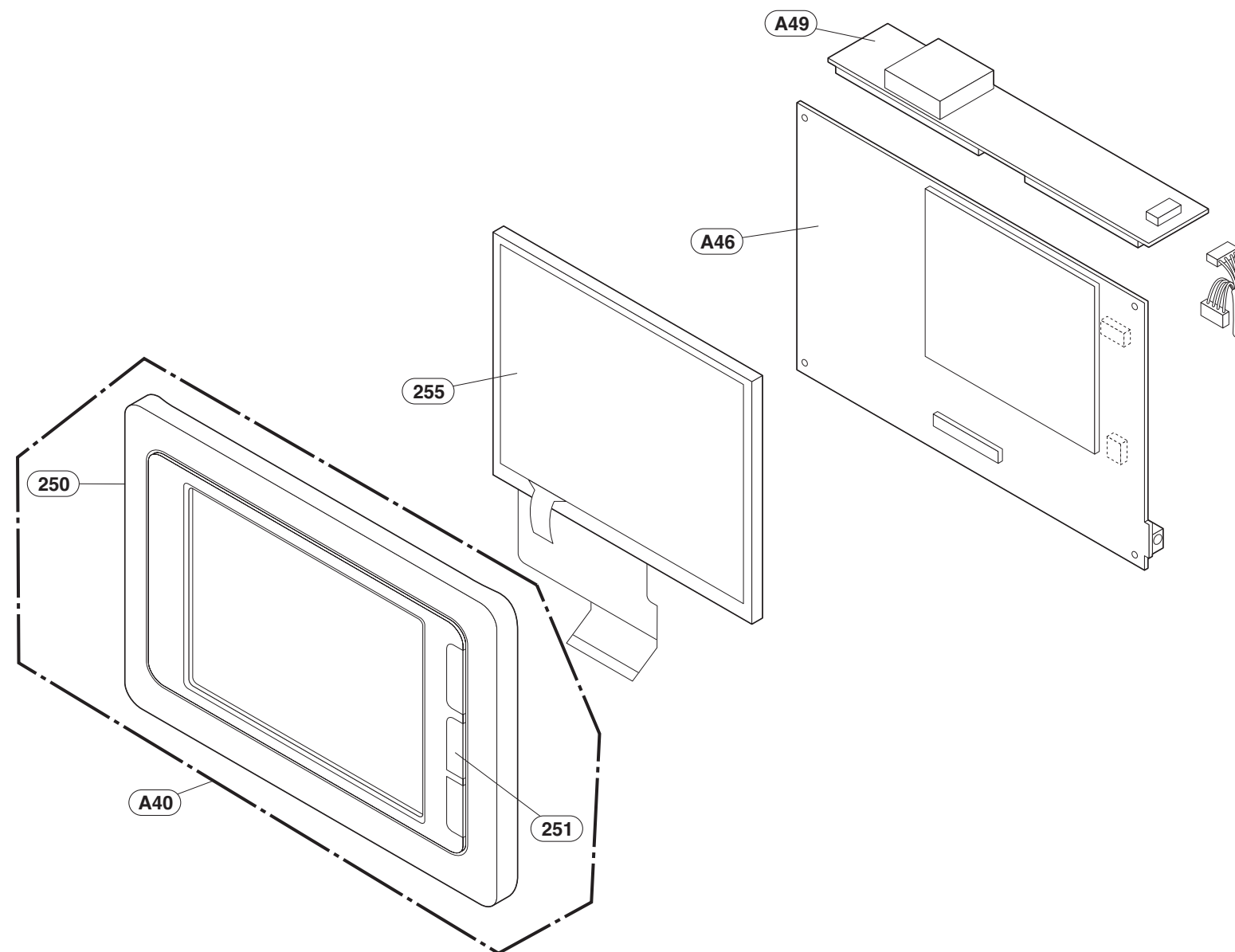
- **MAIN P.C BOARD DIAGRAM (BOTTOM SIDE)**



SECTION 3. EXPLODED VIEW

□ CABINET & MAIN FRAME SECTION

NOTE) Refer to SECTION 4 REPLACEMENT PARTS LIST in order to look for the part number of each part.



MEMO

Lined area for writing on the left page.

MEMO

Lined area for writing on the right page.