

HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL

AZ1-FK CHASSIS

<u>MODEL NAME</u>	<u>REMOTE COMMANDER</u>	<u>DESTINATION</u>
<i>KDL-22BX300</i>	<i>RM-YD035</i>	<i>US</i>
<i>KDL-22BX300</i>	<i>RM-YD035</i>	<i>CND</i>
<i>KDL-22BX300</i>	<i>RM-YD035</i>	<i>MX</i>
<i>KDL-22BX300</i>	<i>RM-YD035</i>	<i>LATIN AMERICA</i>
<i>KDL-32BX300</i>	<i>RM-YD035</i>	<i>US</i>
<i>KDL-32BX300</i>	<i>RM-YD035</i>	<i>CND</i>
<i>KDL-32BX300</i>	<i>RM-YD035</i>	<i>MX</i>

LEVEL 3
CONFIDENTIAL

CONFIDENTIAL
ELECTRICAL SERVICE MANUAL
INTERNAL ONLY

ORIGINAL MANUAL ISSUE DATE: 2/2010

REVISION DATE

SUBJECT

2/2010

No revisions or updates are applicable at this time.

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SAFETY-RELATED COMPONENT WARNING

There are critical components used in LCD color TVs that are important for safety. These components are identified with shading and \triangle mark on the schematic diagrams and the electrical parts list. It is essential that these critical parts be replaced only with the part number specified in the electrical parts list to prevent electric shock, fire, or other hazard.

NOTE: Do not modify the original design without obtaining written permission from the manufacturer or you will void the original parts and labor guarantee.

USE CAUTION WHEN HANDLING THE LCD PANEL

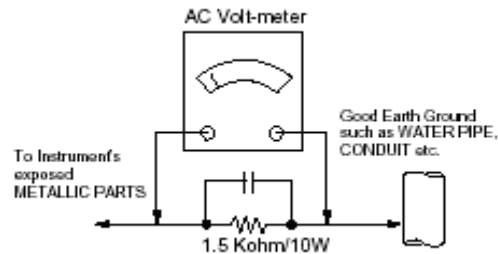
When repairing the LCD panel, be sure you are grounded by using a wrist band.

When installing the LCD panel on a wall, the LCD panel must be secured using the 4 mounting holes on the rear cover.

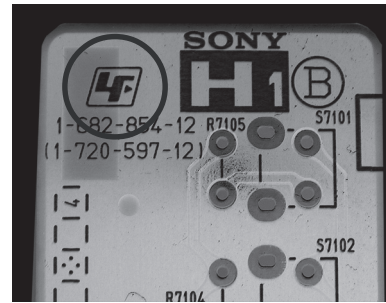
To avoid damaging the LCD panel:

- do not press on the panel or frame edge to avoid the risk of electric shock.
- do not scratch or press on the panel with any sharp objects.
- do not leave the module in high temperatures or in areas of high humidity for an extended period of time.
- do not expose the LCD panel to direct sunlight.
- avoid contact with water. It may cause a short circuit within the module.
- disconnect the AC adapter when replacing the backlight (CCFL) or inverter circuit.
(High voltage occurs at the inverter circuit at 650Vrms.)
- always clean the LCD panel with a soft cloth material.
- use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short.
- protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).

LEAKAGE CURRENT HOT CHECK CIRCUIT



The circuit boards used in these models have been processed using Lead Free Solder. The boards are identified by the LF logo located close to the board designation e.g. H1 etc [see example]. The servicing of these boards requires special precautions to be taken as outlined below.



example

It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints. Lead Free Solder is available under the following part numbers :

Part number	Diameter	Remarks
7-640-005-19	0.3mm	0.25Kg
7-640-005-20	0.4mm	0.50Kg
7-640-005-21	0.5mm	0.50Kg
7-640-005-22	0.6mm	0.25Kg
7-640-005-23	0.8mm	1.00Kg
7-640-005-24	1.0mm	1.00Kg
7-640-005-25	1.2mm	1.00Kg
7-640-005-26	1.6mm	1.00Kg

Due to the higher melting point of Lead Free Solder the soldering iron tip temperature needs to be set to 370 degrees centigrade. This requires soldering equipment capable of accurate temperature control coupled with a good heat recovery characteristics.

For more information on the use of Lead Free Solder, please refer to <http://www.sony-training.com>

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

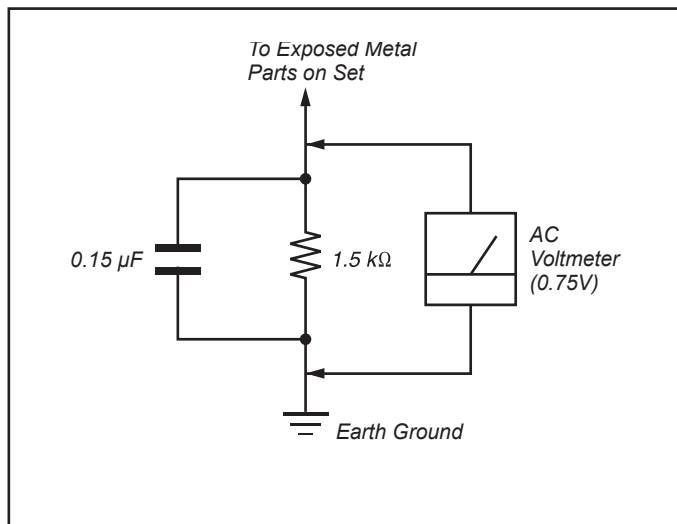


Figure A. Using an AC voltmeter to check AC leakage.

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble-light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

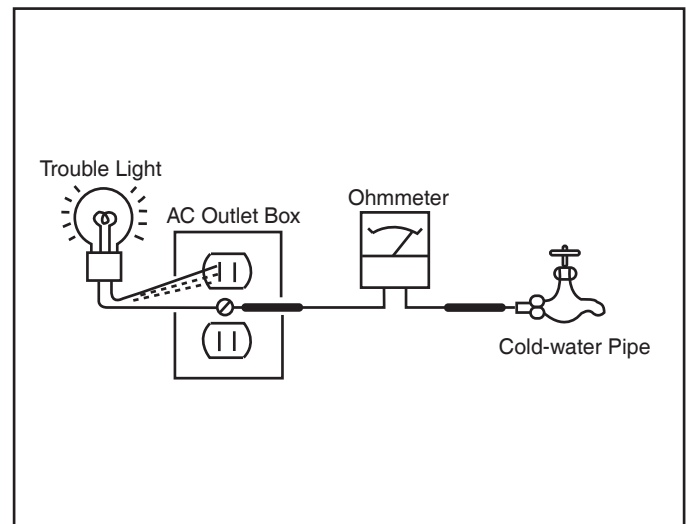
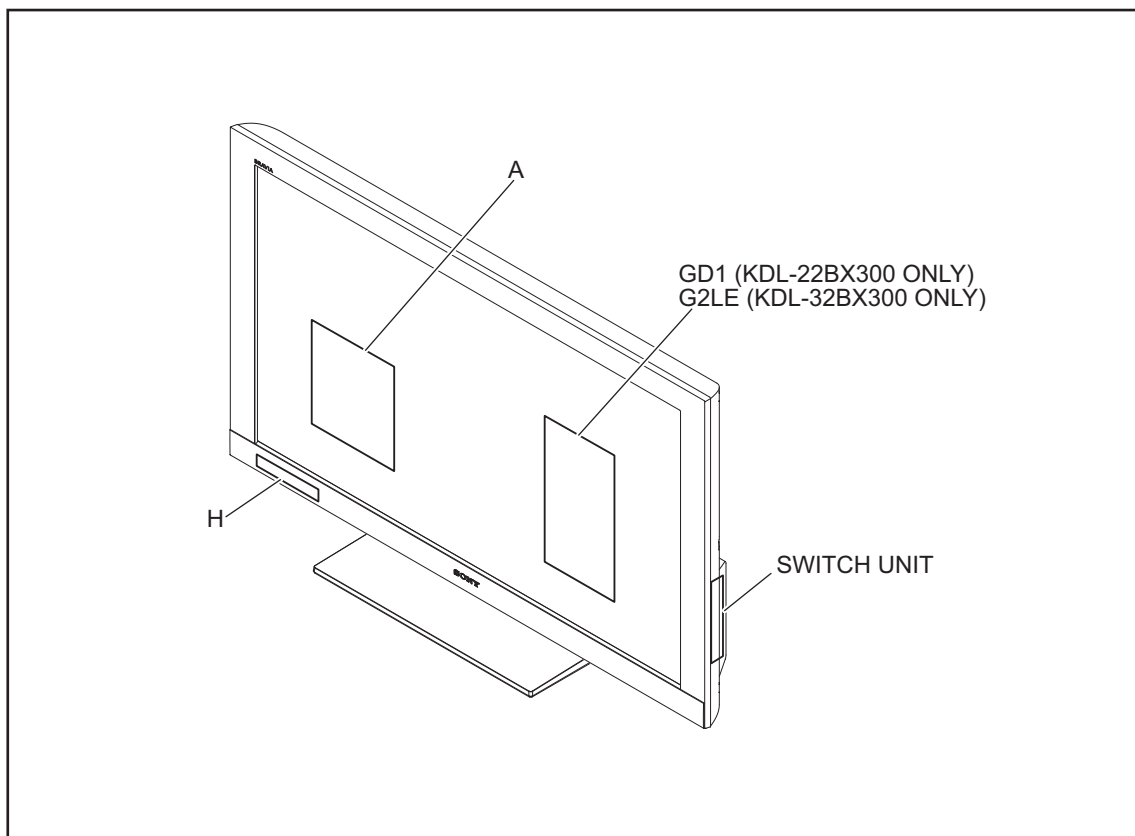


Figure B. Checking for earth ground.

SECTION 1: DIAGRAMS

1-1. CIRCUIT BOARDS LOCATION



1-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS INFORMATION

All capacitors are in μF unless otherwise noted. pF : μF 50VV or less are not indicated except for electrolytics and tantalums.

All electrolytics are in 50V unless otherwise specified.

All resistors are in ohms. $\text{k}\Omega=1000\Omega$, $\text{M}\Omega=1000\text{k}\Omega$

Indication of resistance, which does not have one for rating electrical power, is as follows: Pitch : 5mm

Rating electrical power : $\frac{1}{4}\text{W}$

$\frac{1}{4}\text{W}$ in resistance, $\frac{1}{10}\text{W}$ and $\frac{1}{16}\text{W}$ in chip resistance.

: nonflammable resistor

: fusible resistor

: internal component

: panel designation and adjustment for repair

: earth ground

: earth-chassis

All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

Readings are taken with a color-bar signal input.

Readings are taken with a $10\text{M}\Omega$ digital multimeter.

Voltages are DC with respect to ground unless otherwise noted.

Voltage variations may be noted due to normal production tolerances.

All voltages are in V.

S : Measurement impossibility.

: B+line.

: B-line. (Actual measured value may be different).

: signal path. (RF)

Circled numbers are waveform references.

The components identified by shading and are critical for safety. Replace only with part number specified.

The symbol indicates a fast operating fuse and is displayed on the component side of the board. Replace only with fuse of the same rating as marked.

Les composants identifiés par un trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Le symbole indique une fusible à action rapide. Doit être remplacé par une fusible de même valeur, comme marqué.

NOTE: The components identified by a red outline and a mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.

REFERENCE INFORMATION

RESISTOR

: RN METAL FILM
 : RC SOLID
 : FPRD NONFLAMMABLE CARBON
 : FUSE NONFLAMMABLE FUSIBLE
 : RW NONFLAMMABLE WIREWOUND
 : RS NONFLAMMABLE METAL OXIDE
 : RB NONFLAMMABLE CEMENT
 : ※ ADJUSTMENT RESISTOR

CAPACITOR

: TA TANTALUM
 : PS STYROL
 : PP POLYPROPYLENE
 : PT MYLAR
 : MPS METALIZED POLYESTER
 : MPP METALIZED POLYPROPYLENE
 : ALB BIPOLAR
 : ALT HIGH TEMPERATURE
 : ALR HIGH RIPPLE

COIL

: LF-8L MICRO INDUCTOR

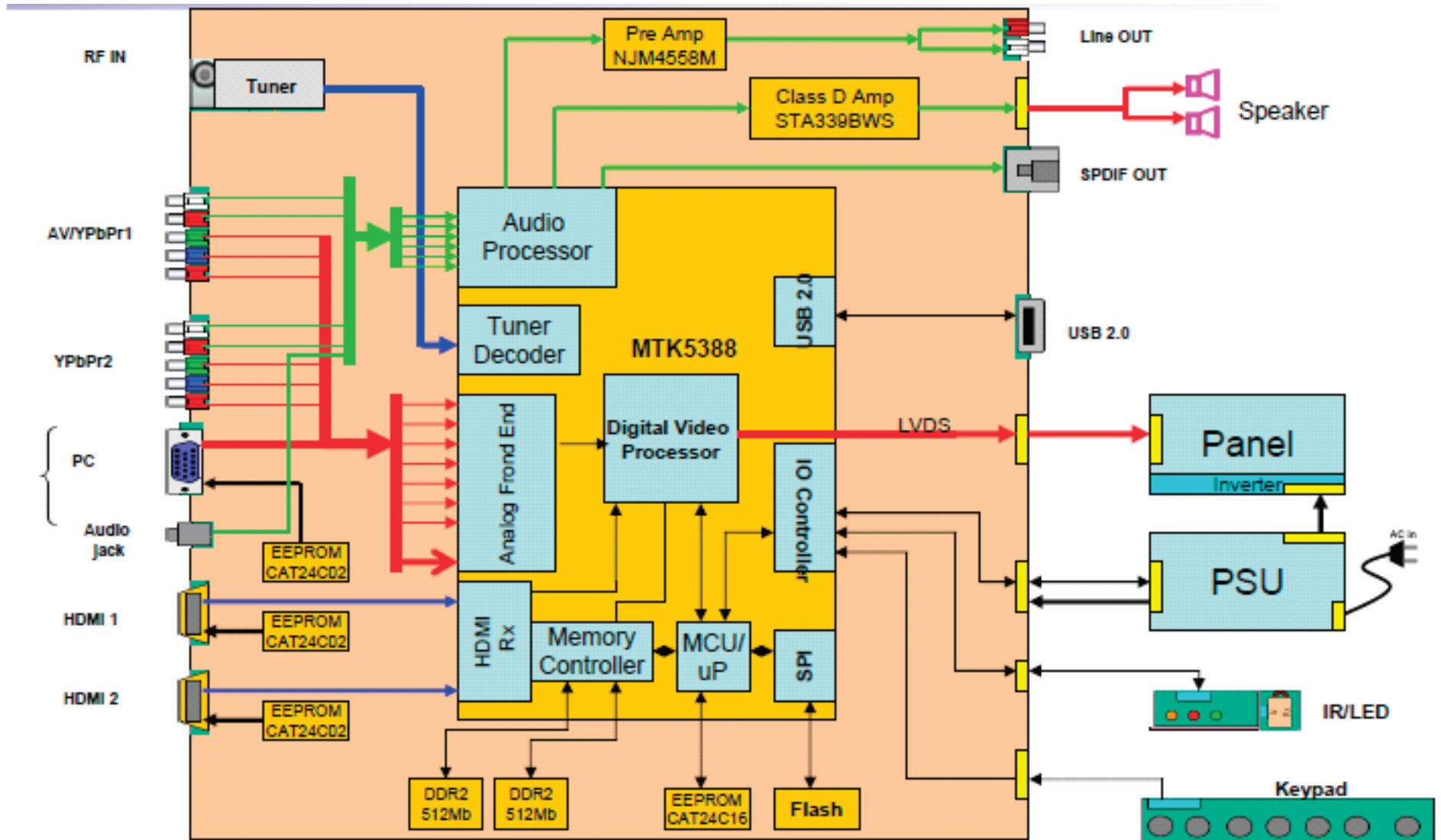
Terminal name of semiconductors in silk screen printed circuit (※)

	Device	Printed symbol	Terminal name	Circuit
1	Transistor		Collector Base Emitter	
2	Transistor		Collector Base Emitter	
3	Diode		Cathode Anode	
4	Diode		Cathode Anode (NC)	
5	Diode		Cathode Anode (NC)	
6	Diode		Common Anode Cathode	
7	Diode		Common Anode Cathode	
8	Diode		Common Anode Anode	
9	Diode		Common Anode Anode	
10	Diode		Common Cathode Cathode	
11	Diode		Common Cathode Cathode	
12	Diode		Anode Cathode Anode Cathode	
13	Transistor (FET)		Drain Source Gate	
14	Transistor (FET)		Drain Source Gate	
15	Transistor (FET)		Source Drain Gate	
16	Transistor		Emitter Collector Base	
17	Transistor		C2 B1 E1 E2 B2 C1	
18	Transistor		C1 B2 E2 E1 B1 C2	
19	Transistor		C1 B2 E2 E1 B1 C2	
20	Transistor		C1 B2 E2 E1 B1 C2	
21	Transistor		E2 B1 E1 C2 C1(B2)	
22	Transistor		(B2) B1 E1 E2 C1 C2	
23	Transistor		(B2) E2 E1 B1 C2 C1	
—	Discrete semiconductor			

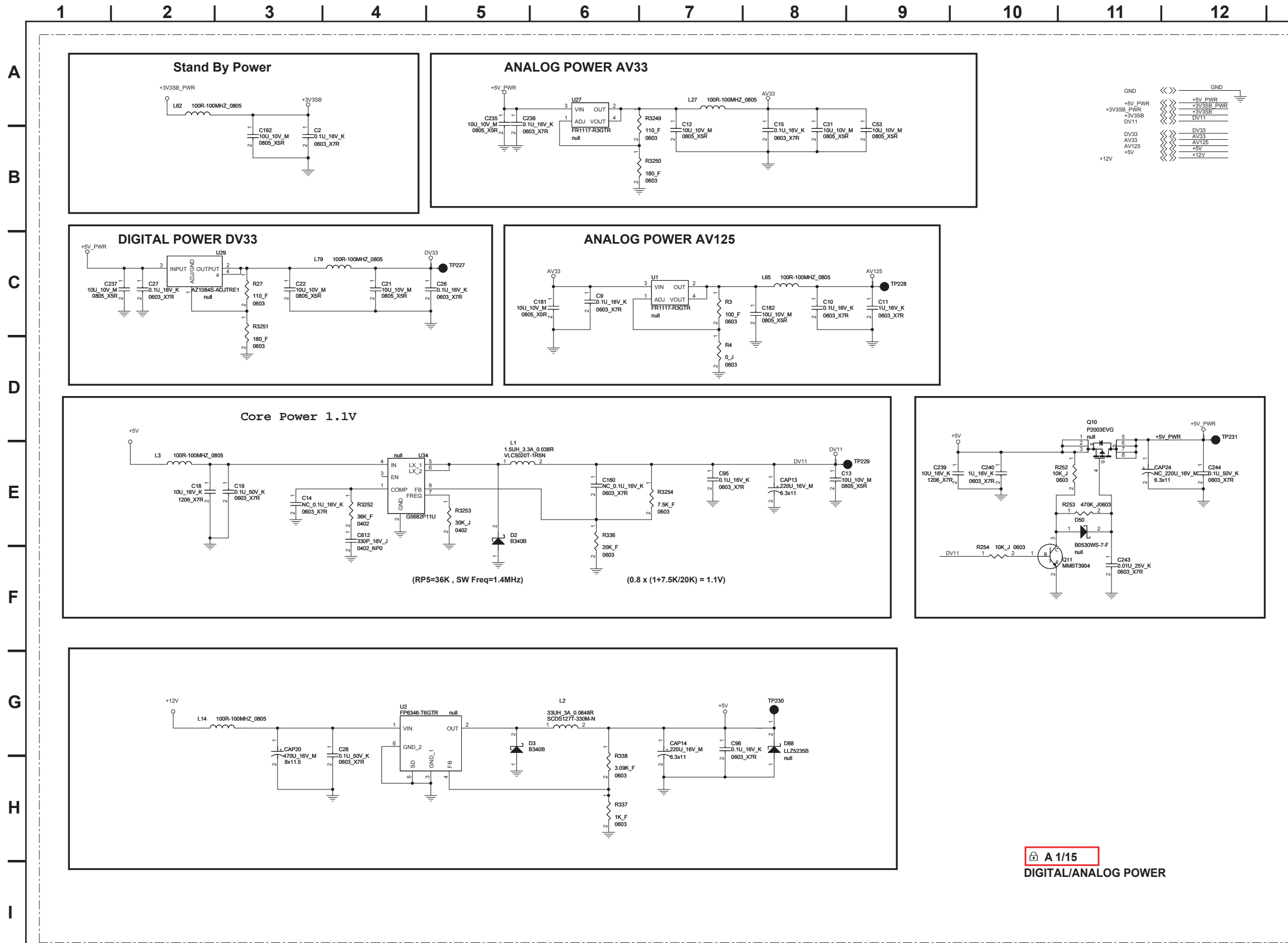
(Chip semiconductors that are not actually used are included.)

Ver.1.6

1-3. BLOCK DIAGRAM

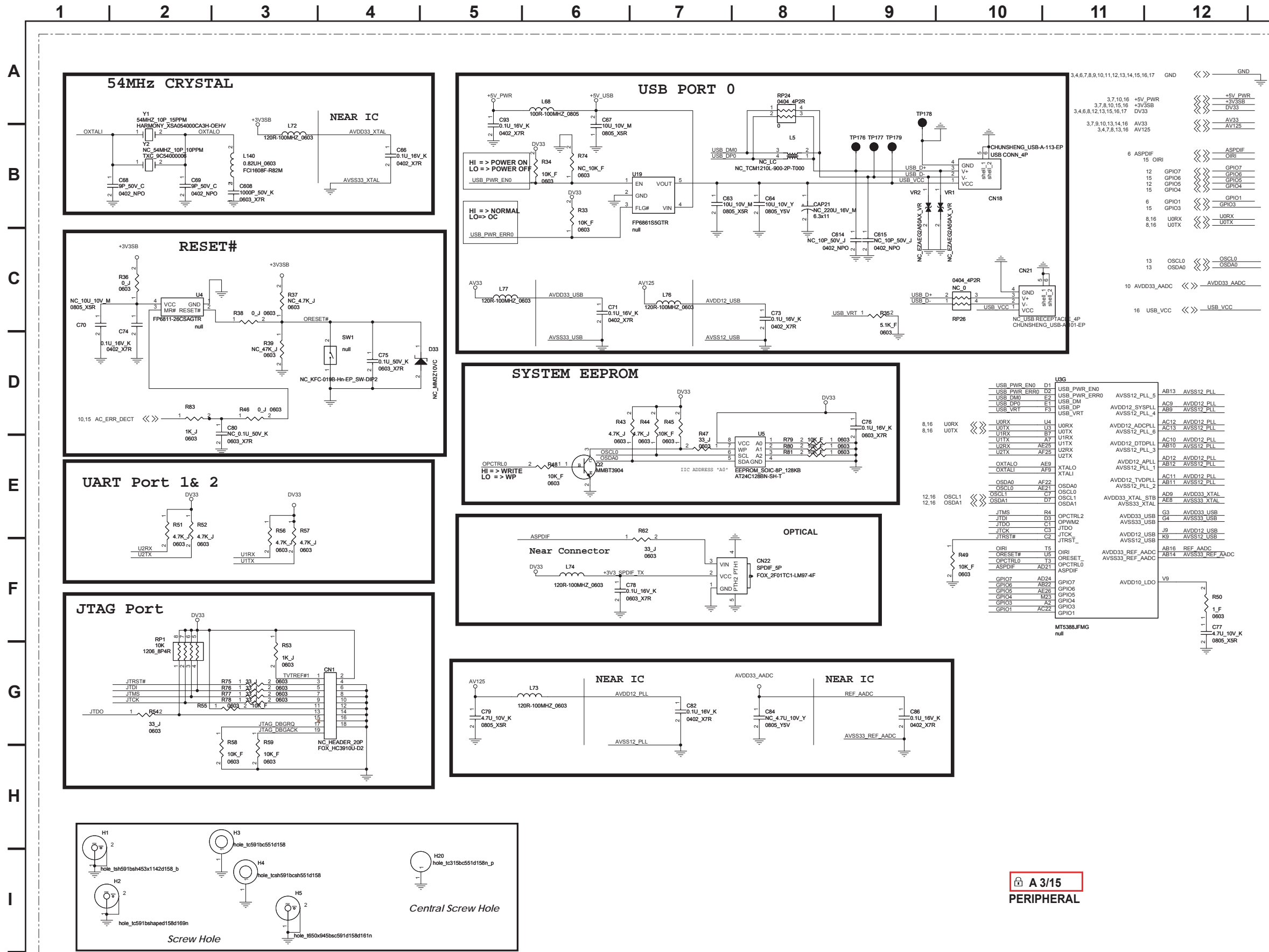


1-4. SCHEMATICS AND SUPPORTING INFORMATION
 A BOARD SCHEMATIC DIAGRAM (1 OF 15)



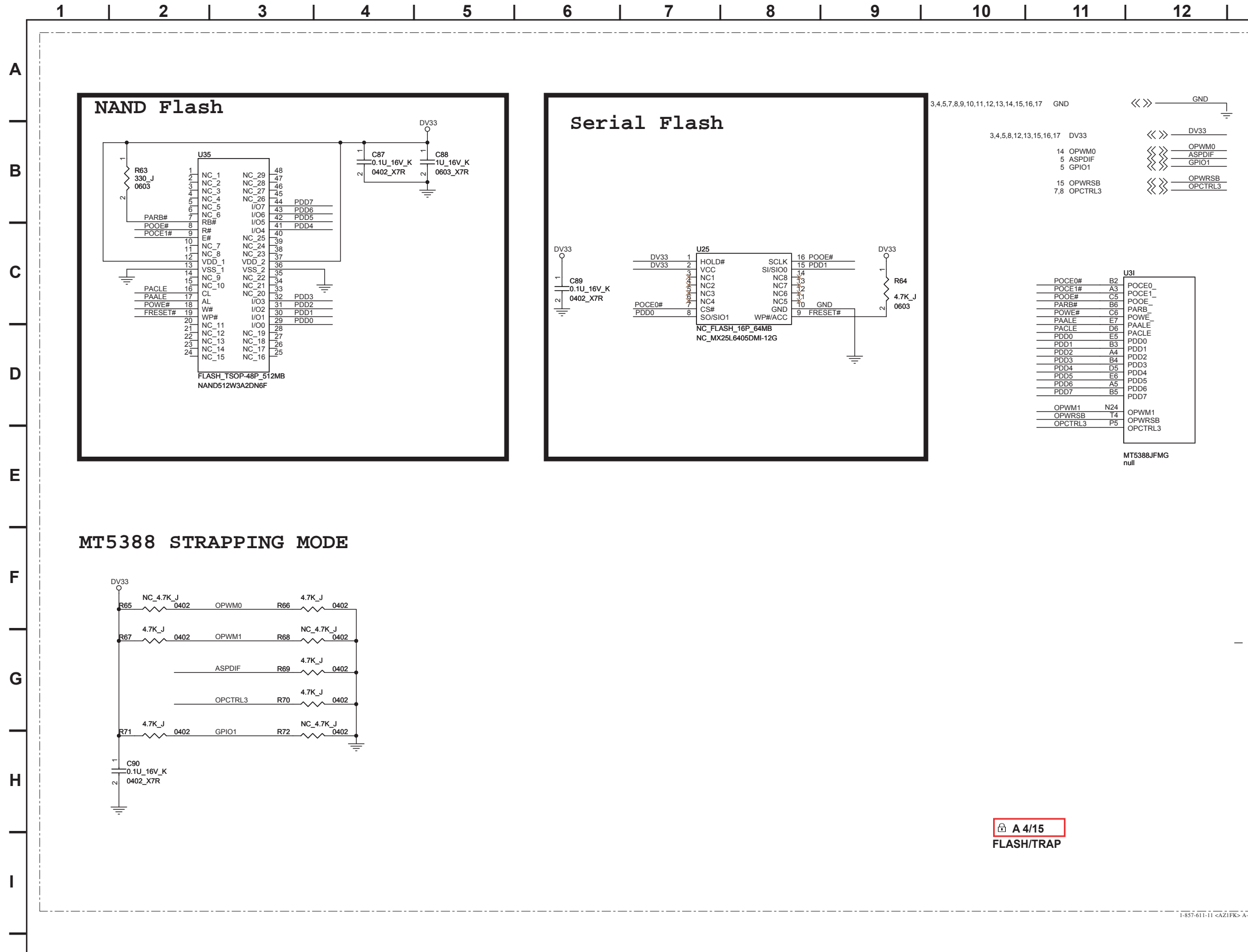
A 1/15
 DIGITAL/ANALOG POWER

A BOARD SCHEMATIC DIAGRAM (3 OF 15)



A 3/15 PERIPHERAL

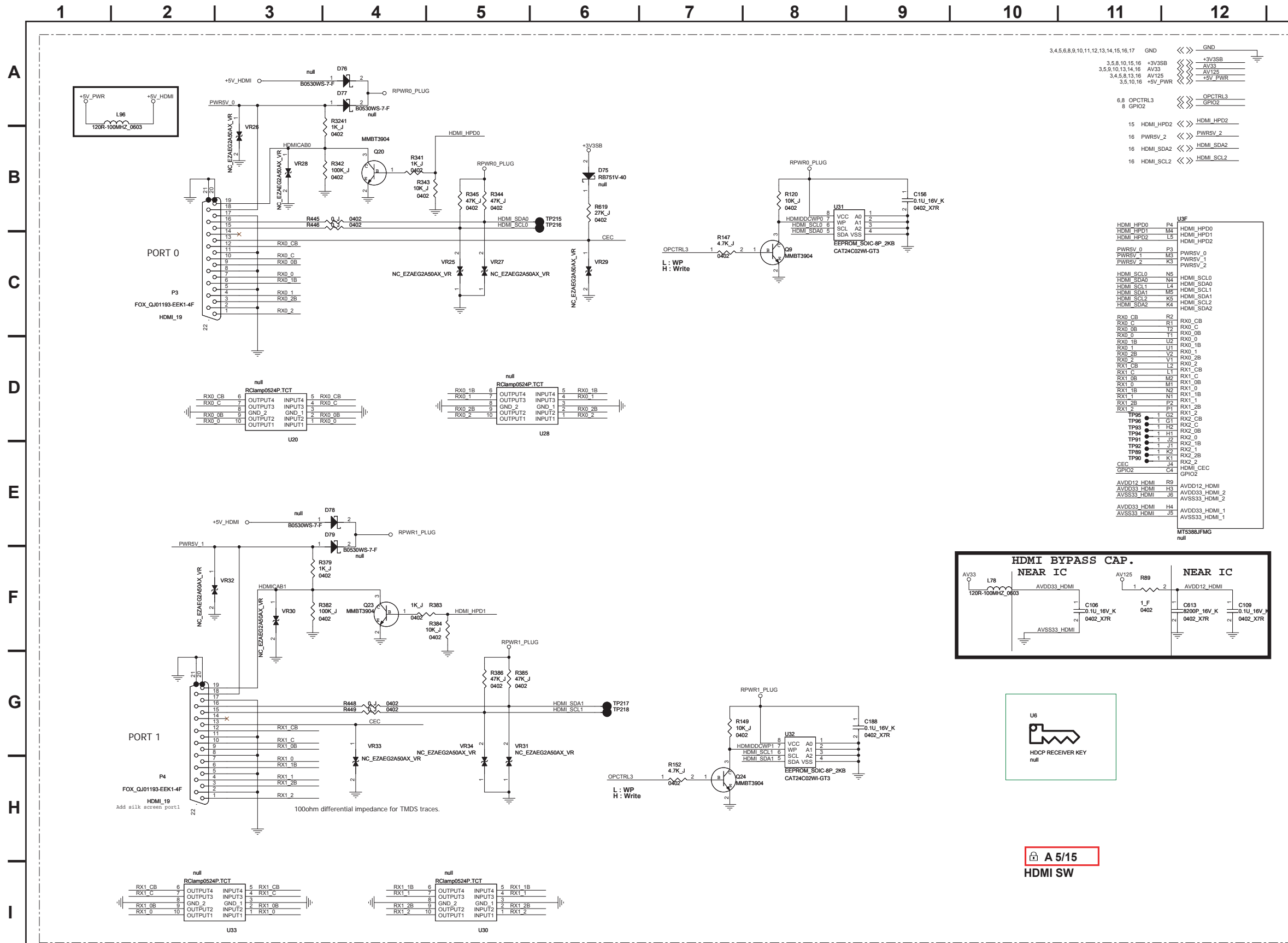
A BOARD SCHEMATIC DIAGRAM (4 OF 15)



A 4/15
FLASH/TRAP

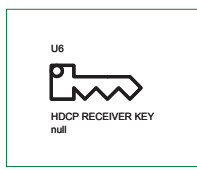
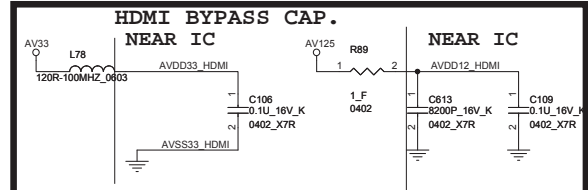
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A BOARD SCHEMATIC DIAGRAM (5 OF 15)



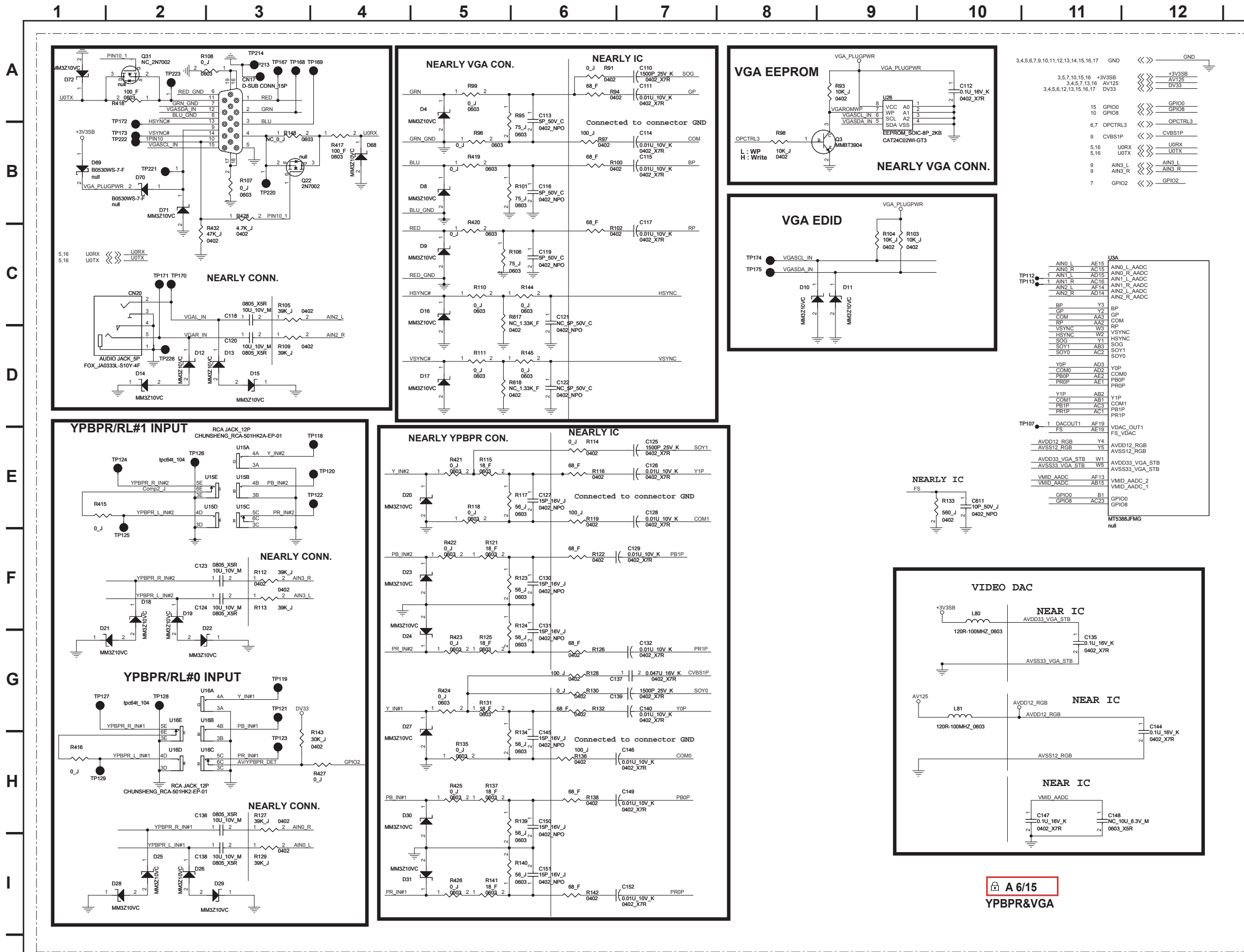
Pin	Signal	Pin	Signal
3,4,5,6,8,9,10,11,12,13,14,15,16,17	GND	<<>	GND
3,5,8,10,15,16	+3V3SB	<<>	+3V3SB
3,5,9,10,13,14,16	AV33	<<>	AV33
3,4,5,8,13,16	AV125	<<>	AV125
3,5,10,16	+5V_PWR	<<>	+5V_PWR
6,8	OPCTRL3	<<>	OPCTRL3
8	GPIQ2	<<>	GPIQ2
15	HDMI_HPD2	<<>	HDMI_HPD2
16	PWR5V_2	<<>	PWR5V_2
16	HDMI_SDA2	<<>	HDMI_SDA2
16	HDMI_SCL2	<<>	HDMI_SCL2

Pin	Signal	Pin	Signal
HDMI_HPD0	P4	HDMI_HPD0	HDMI_HPD0
HDMI_HPD1	M4	HDMI_HPD1	HDMI_HPD1
HDMI_HPD2	L5	HDMI_HPD2	HDMI_HPD2
PWR5V_0	P3	PWR5V_0	PWR5V_0
PWR5V_1	M3	PWR5V_1	PWR5V_1
PWR5V_2	K3	PWR5V_2	PWR5V_2
HDMI_SCL0	N5	HDMI_SCL0	HDMI_SCL0
HDMI_SDA0	N4	HDMI_SDA0	HDMI_SDA0
HDMI_SCL1	L4	HDMI_SCL1	HDMI_SCL1
HDMI_SDA1	M5	HDMI_SDA1	HDMI_SDA1
HDMI_SCL2	K5	HDMI_SCL2	HDMI_SCL2
HDMI_SDA2	K4	HDMI_SDA2	HDMI_SDA2
RX0_CB	R2	RX0_CB	RX0_CB
RX0_C	R1	RX0_C	RX0_C
RX0_0B	T2	RX0_0B	RX0_0B
RX0_0	T1	RX0_0	RX0_0
RX0_1B	U2	RX0_1B	RX0_1B
RX0_1	U1	RX0_1	RX0_1
RX0_2B	V2	RX0_2B	RX0_2B
RX0_2	V1	RX0_2	RX0_2
RX1_CB	L2	RX1_CB	RX1_CB
RX1_C	L1	RX1_C	RX1_C
RX1_0B	M2	RX1_0B	RX1_0B
RX1_0	M1	RX1_0	RX1_0
RX1_1B	N2	RX1_1B	RX1_1B
RX1_1	N1	RX1_1	RX1_1
RX1_2B	P2	RX1_2B	RX1_2B
RX1_2	P1	RX1_2	RX1_2
TP95	G2	RX2_CB	RX2_CB
TP96	G1	RX2_C	RX2_C
TP97	H2	RX2_0B	RX2_0B
TP98	H1	RX2_0	RX2_0
TP99	J2	RX2_1B	RX2_1B
TP99	J1	RX2_1	RX2_1
TP99	K2	RX2_2B	RX2_2B
TP90	K1	RX2_2	RX2_2
CEC	J4	HDMI_CEC	HDMI_CEC
GPIQ2	C4	GPIQ2	GPIQ2
AVDD12_HDMI	R9	AVDD12_HDMI	AVDD12_HDMI
AVDD33_HDMI	H3	AVDD33_HDMI_2	AVDD33_HDMI_2
AVSS33_HDMI	J6	AVSS33_HDMI_2	AVSS33_HDMI_2
AVDD33_HDMI	H4	AVDD33_HDMI_1	AVDD33_HDMI_1
AVSS33_HDMI	J5	AVSS33_HDMI_1	AVSS33_HDMI_1



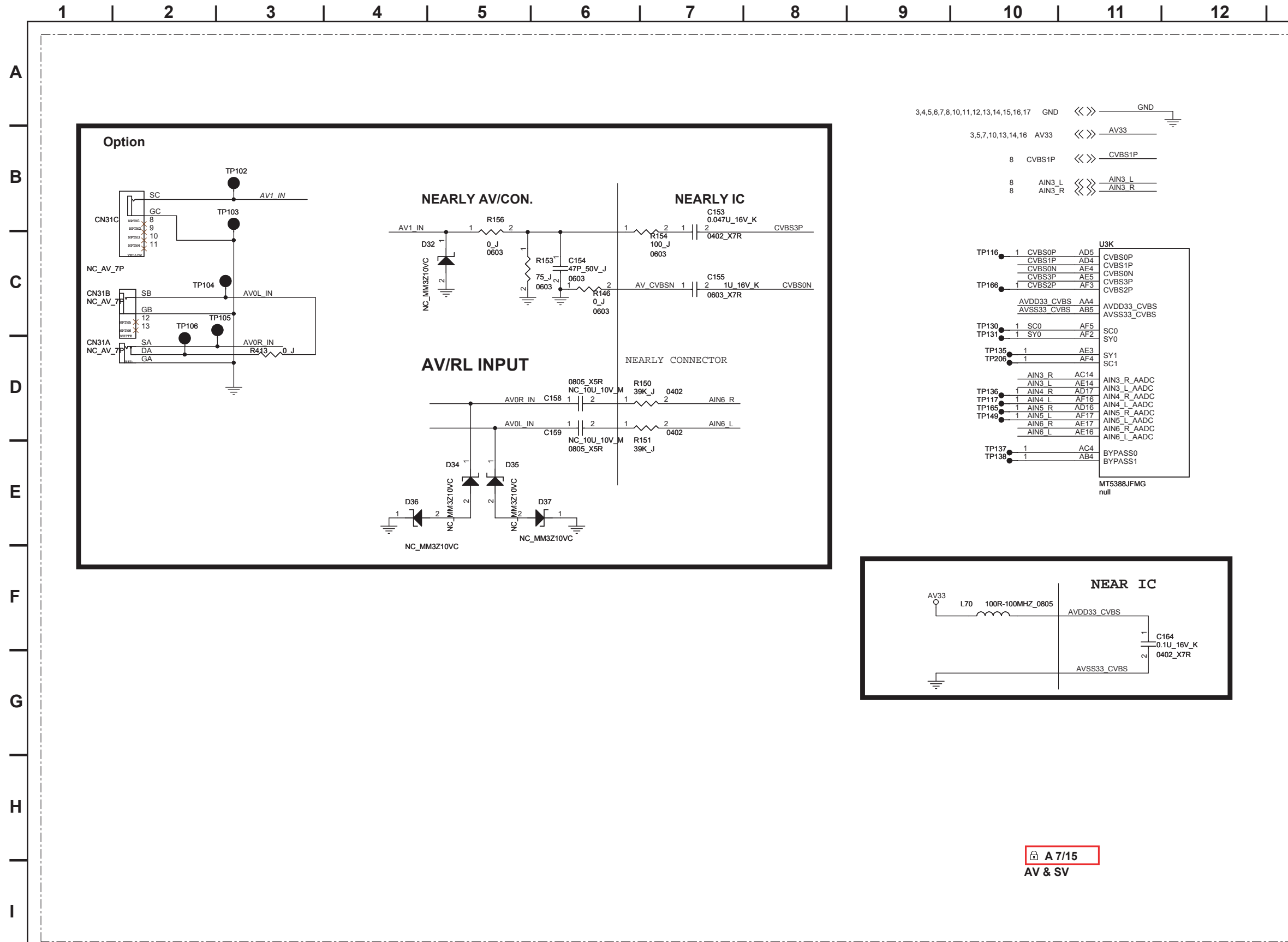
A 5/15
HDMI SW

A BOARD SCHEMATIC DIAGRAM (6 OF 15)



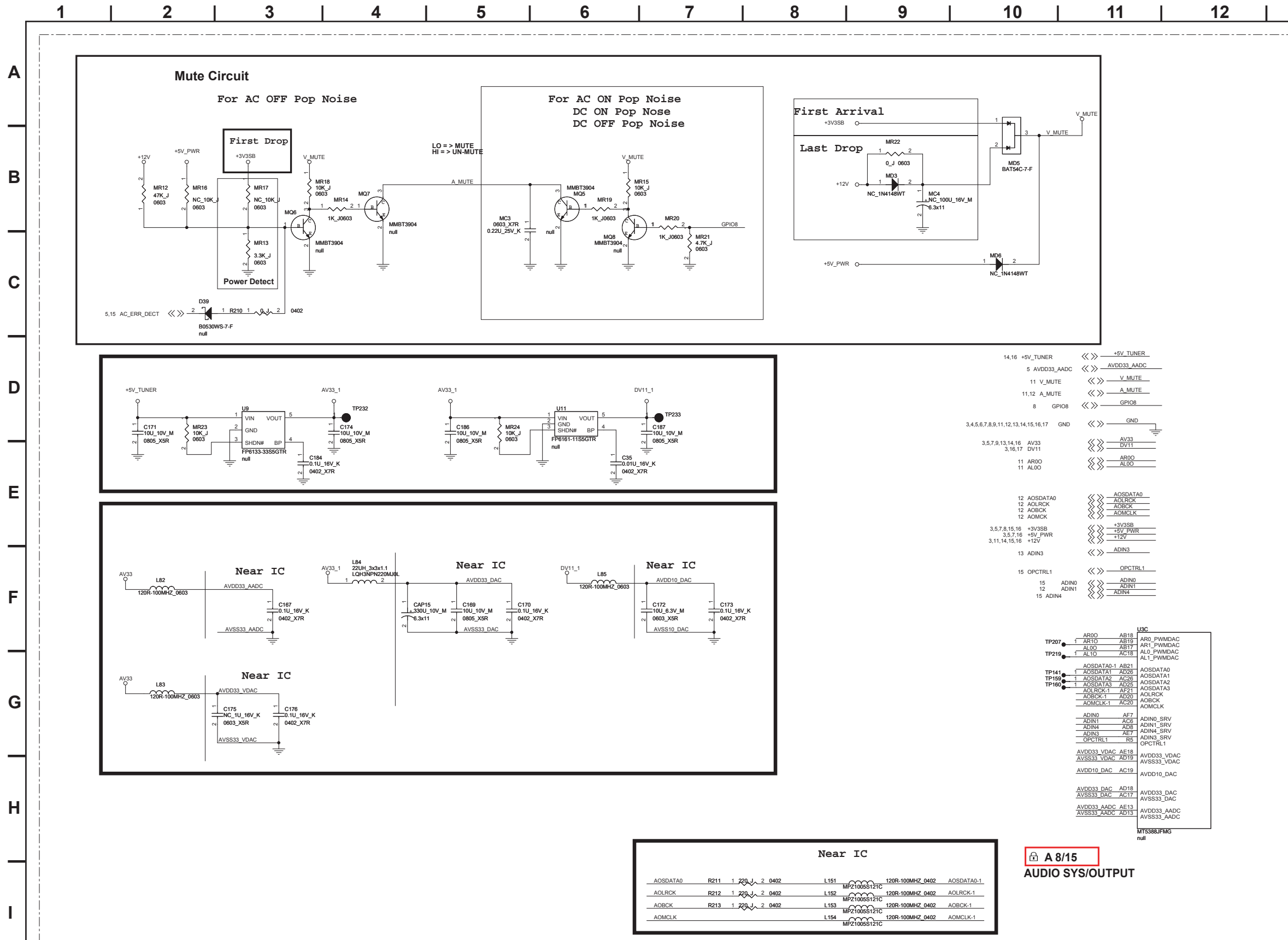
A 6/15 YPBPR&VGA

A BOARD SCHEMATIC DIAGRAM (7 OF 15)



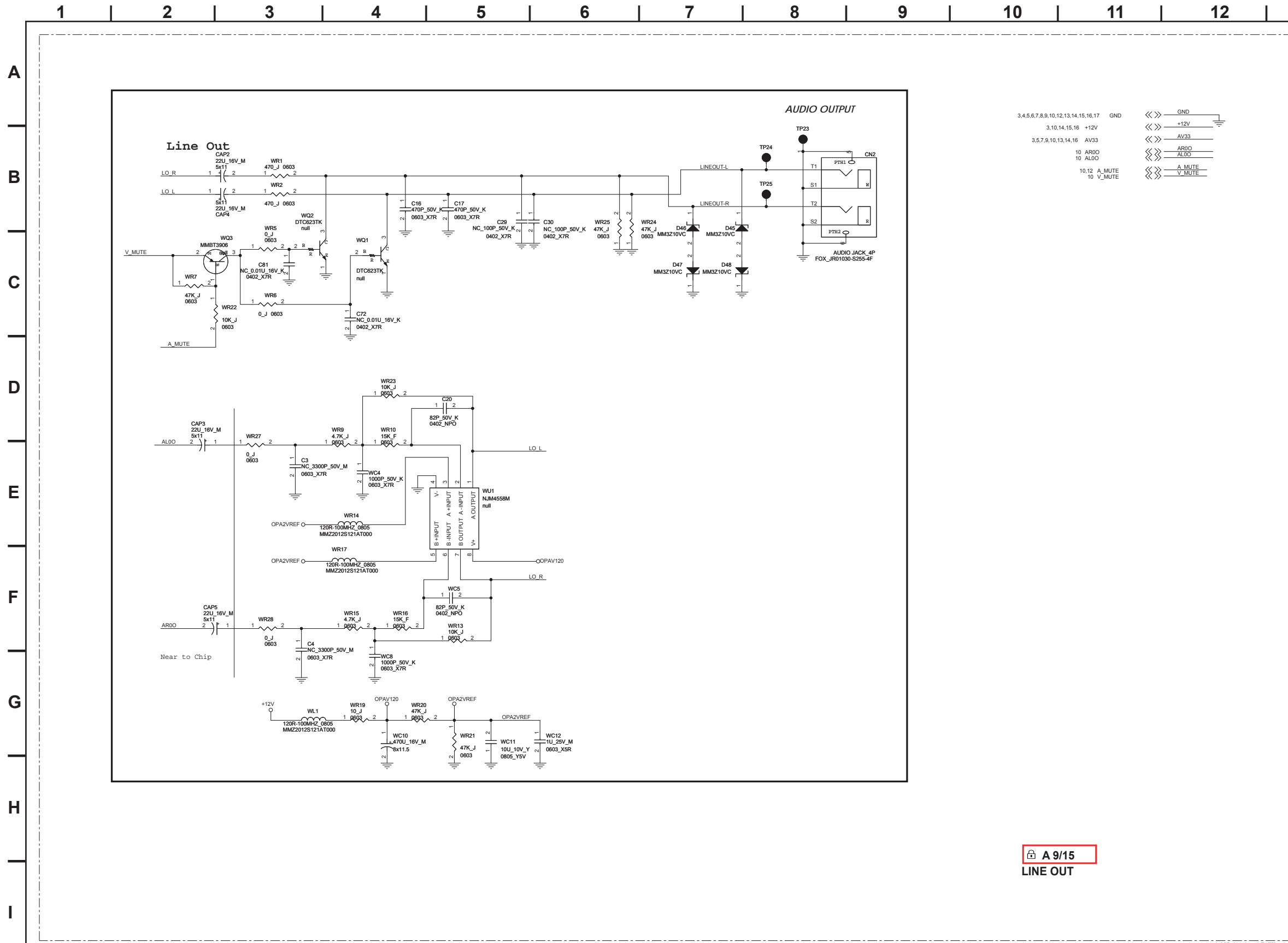
A 7/15
AV & SV

A BOARD SCHEMATIC DIAGRAM (8 OF 15)



A 8/15
AUDIO SYS/OUTPUT

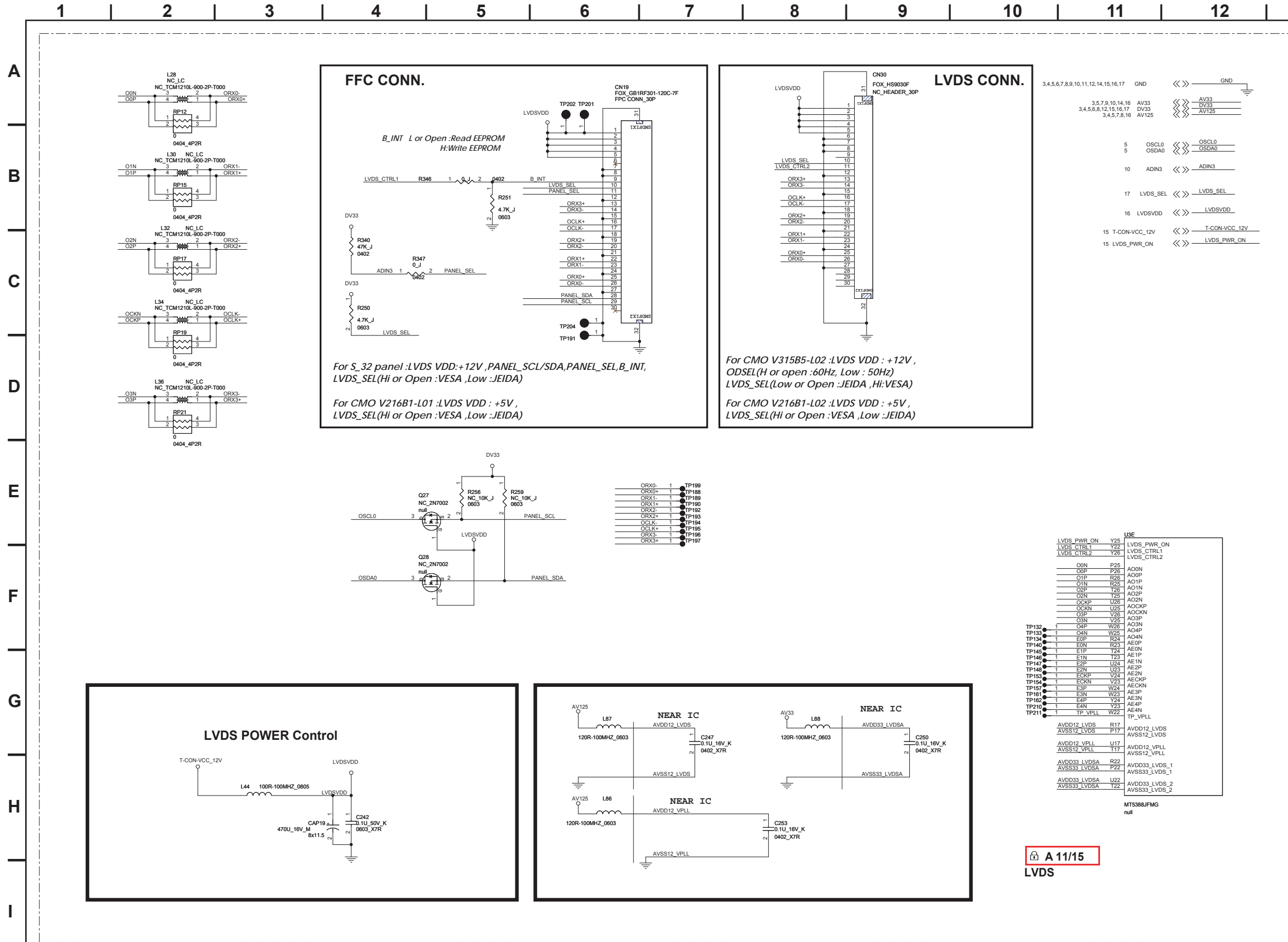
A BOARD SCHEMATIC DIAGRAM (9 OF 15)



A 9/15
LINE OUT

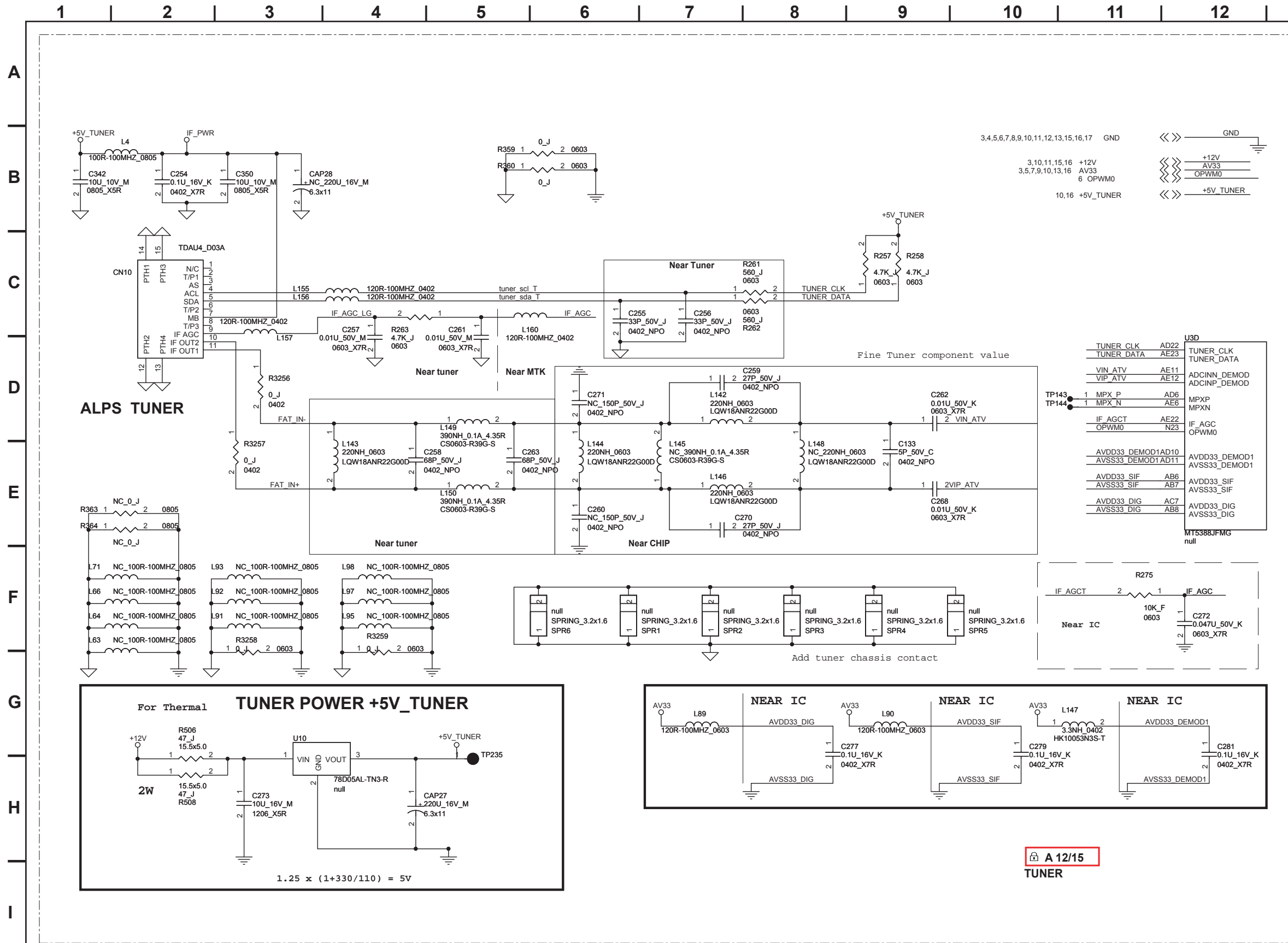
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A BOARD SCHEMATIC DIAGRAM (11 OF 15)



A 11/15
LVDS

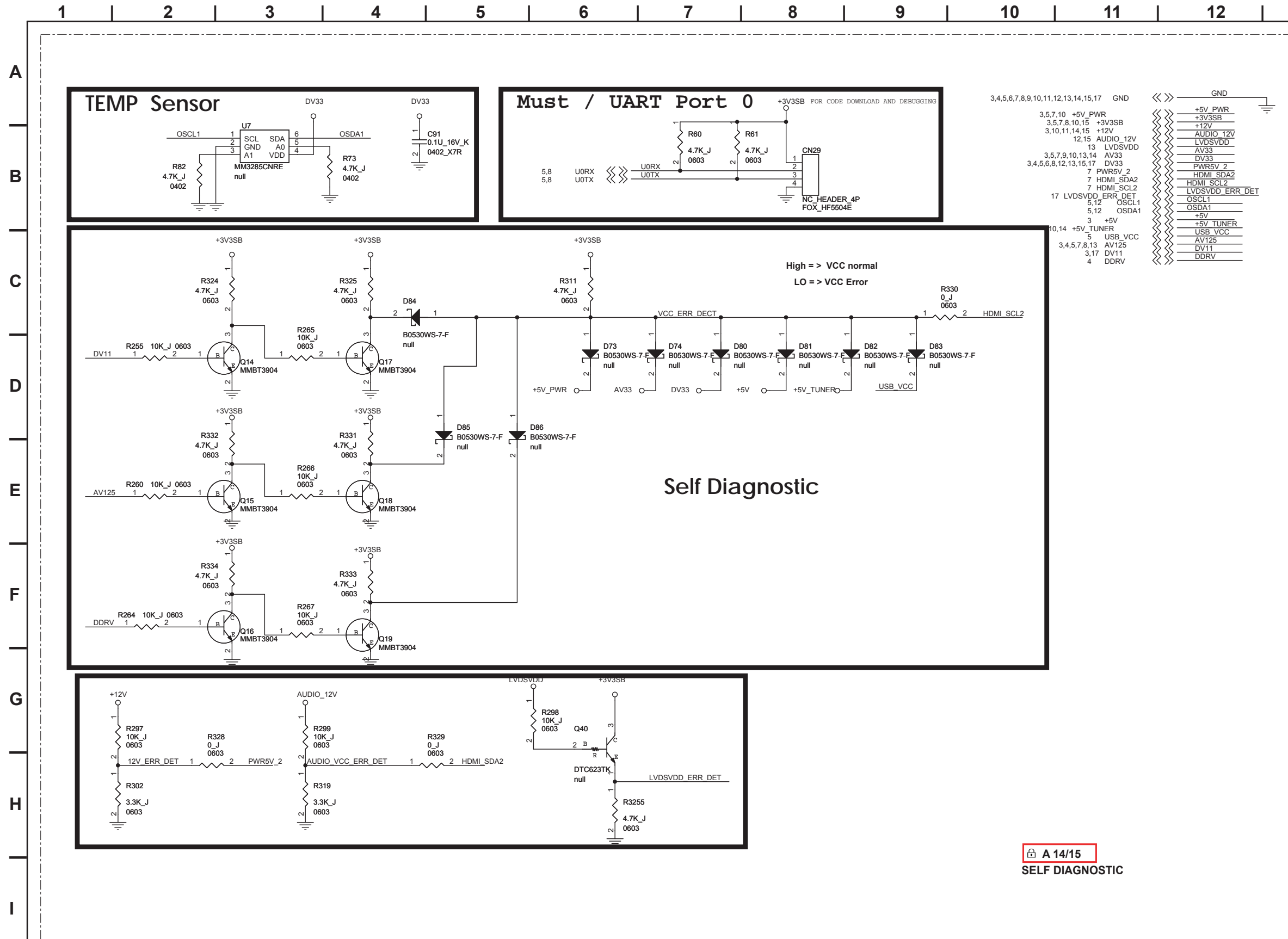
A BOARD SCHEMATIC DIAGRAM (12 OF 15)



A 12/15
TUNER

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A BOARD SCHEMATIC DIAGRAM (14 OF 15)

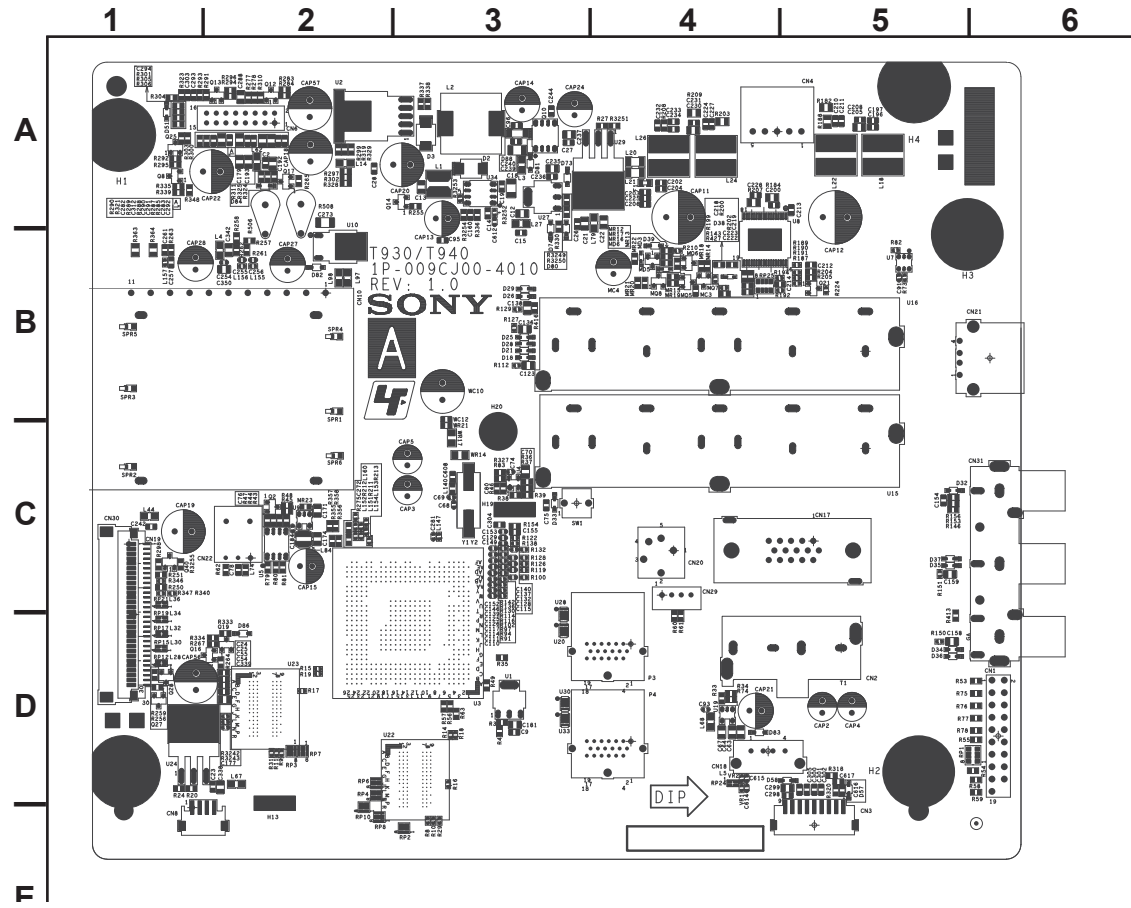


A 14/15
 SELF DIAGNOSTIC

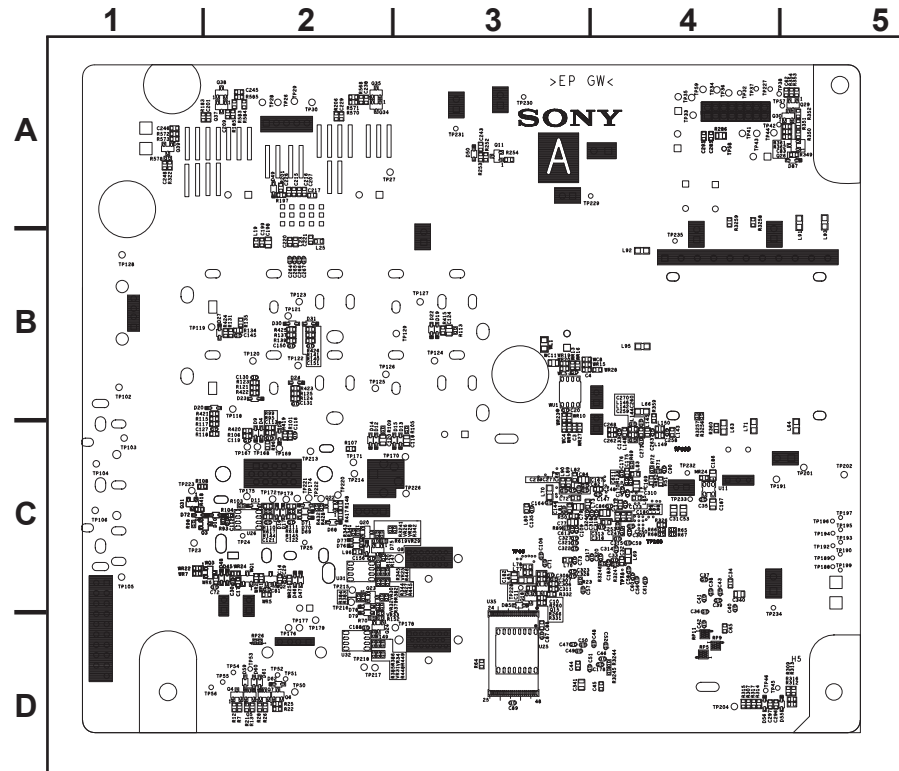
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A

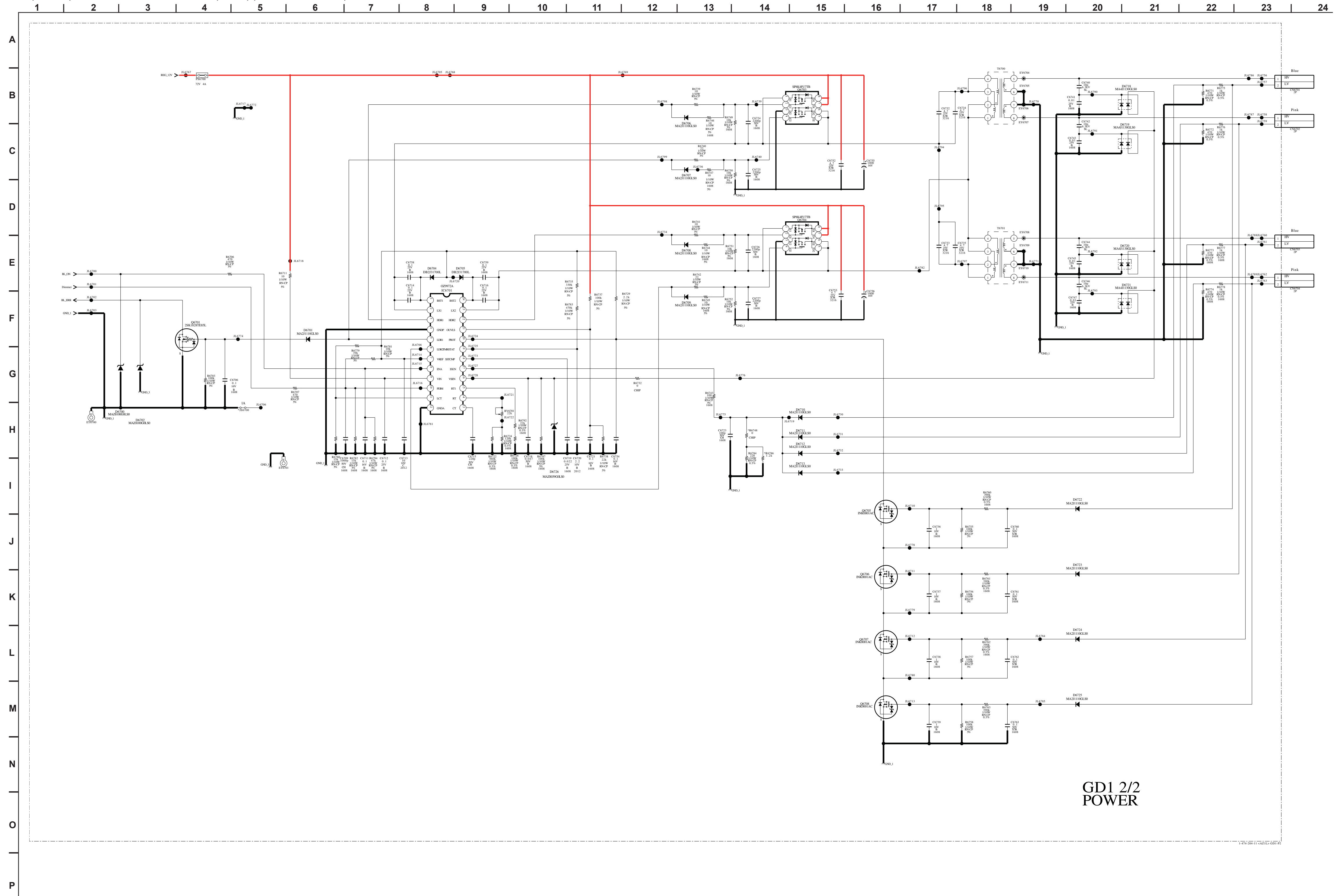
[DIGITAL/ANALOG POWER/DRAM/PERIPHERAL/FLASH/TRAP/HDMI SW/YPBPR & VGA/AV & SV/AUDIO SYS/OUTPUT/LINE OUT/CLASS D AMP SPEAKER/LVDS/TUNER/INV/MAIN PWR/IR_LED/KEYPAD/SELF DIAGNOSTIC//O & CORE POWER]
COMPONENT SIDE



A [DIGITAL/ANALOG POWER/DRAM/PERIPHERAL/FLASH/TRAP/HDMI SW/YBPBR & VGA/AV & SV/AUDIO SYS/OUTPUT/LINE OUT/CLASS D AMP SPEAKER/LVDS/TUNER/INV/MAIN PWR/IR_LED/KEYPAD/SELF DIAGNOSTIC//I/O & CORE POWER]
CONDUCTOR SIDE

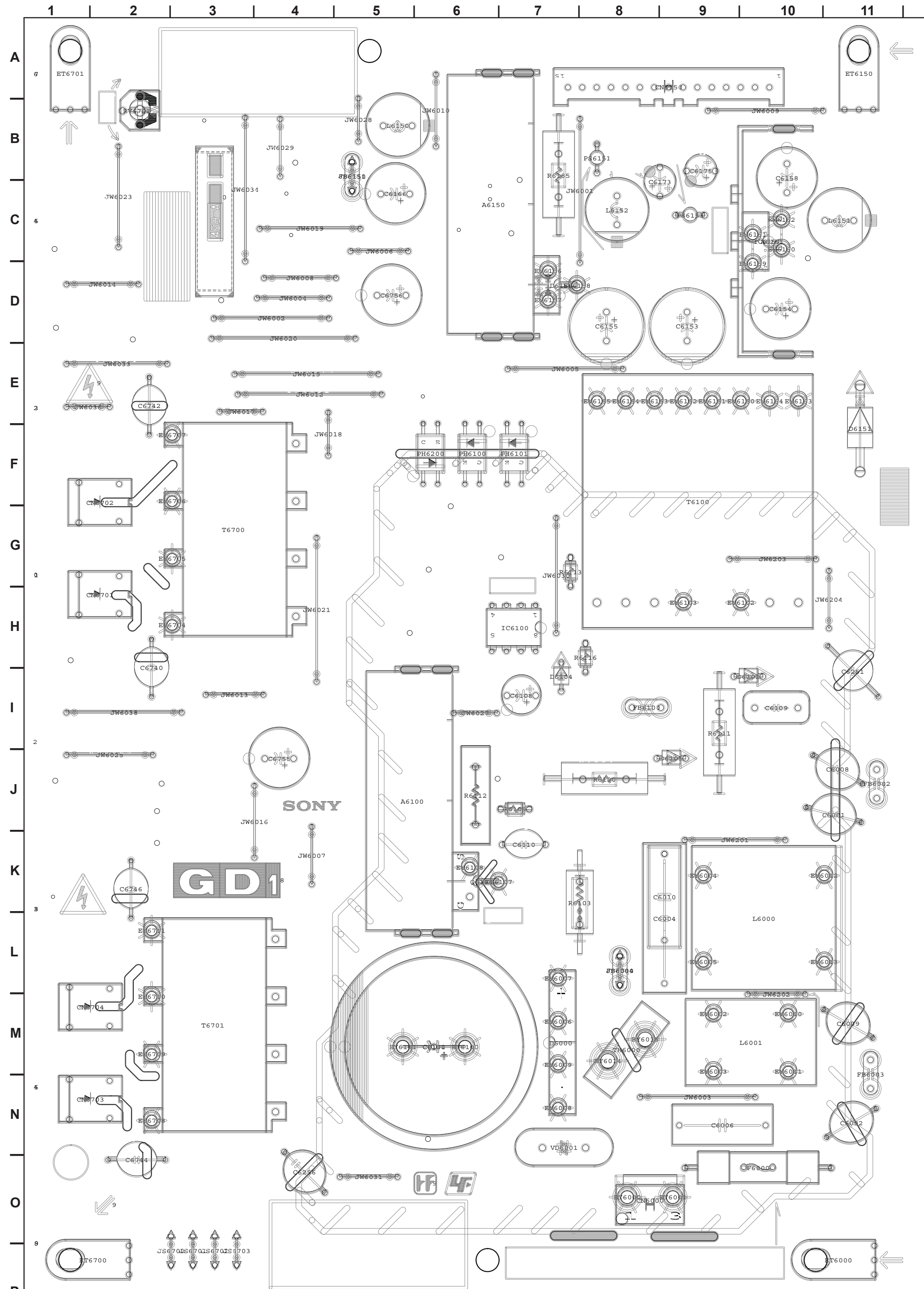


GD1 (POWER) BOARD SCHEMATIC DIAGRAM (2 OF 2) (KDL-22BX300 ONLY)

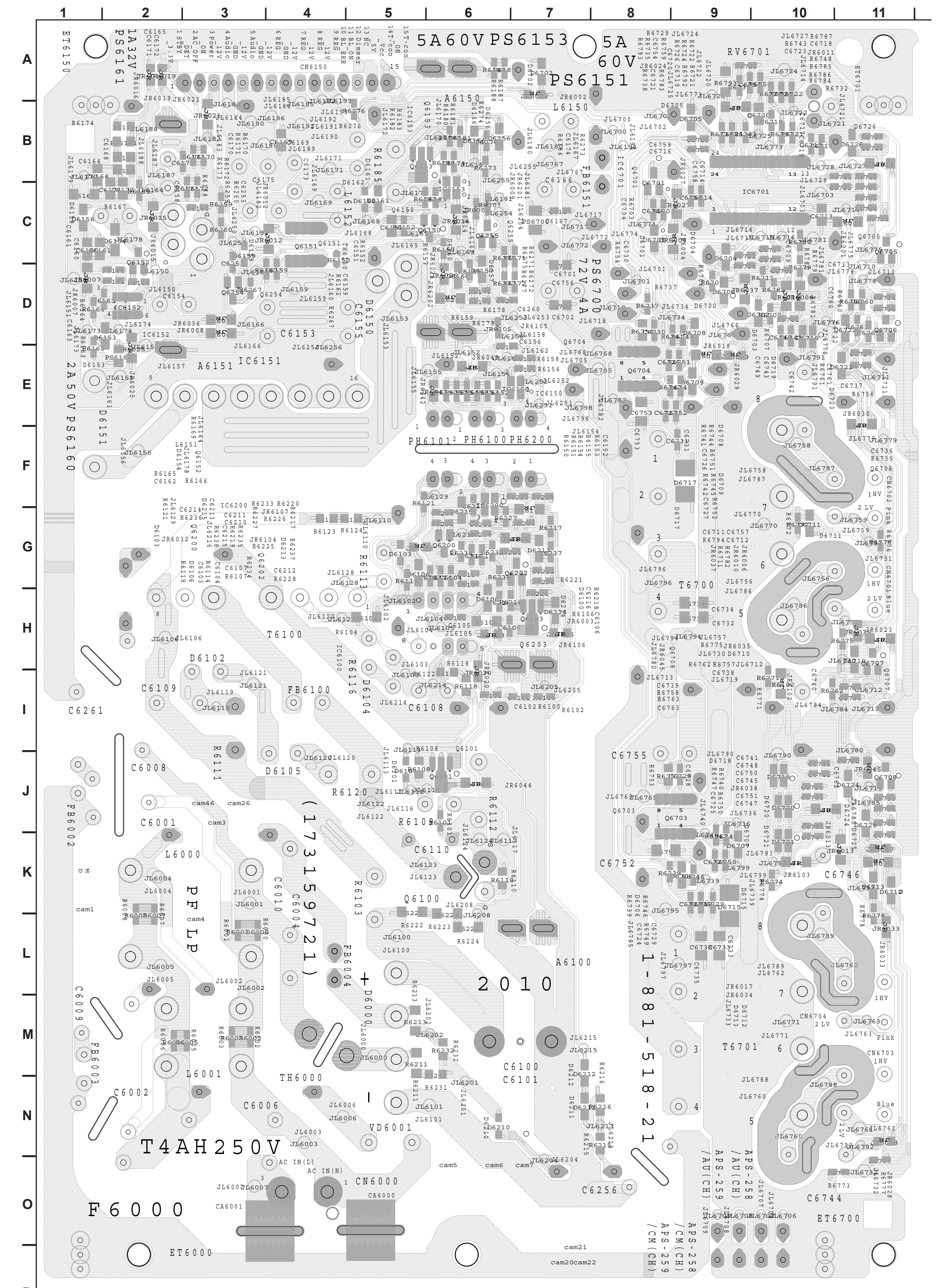


GD1 2/2
POWER

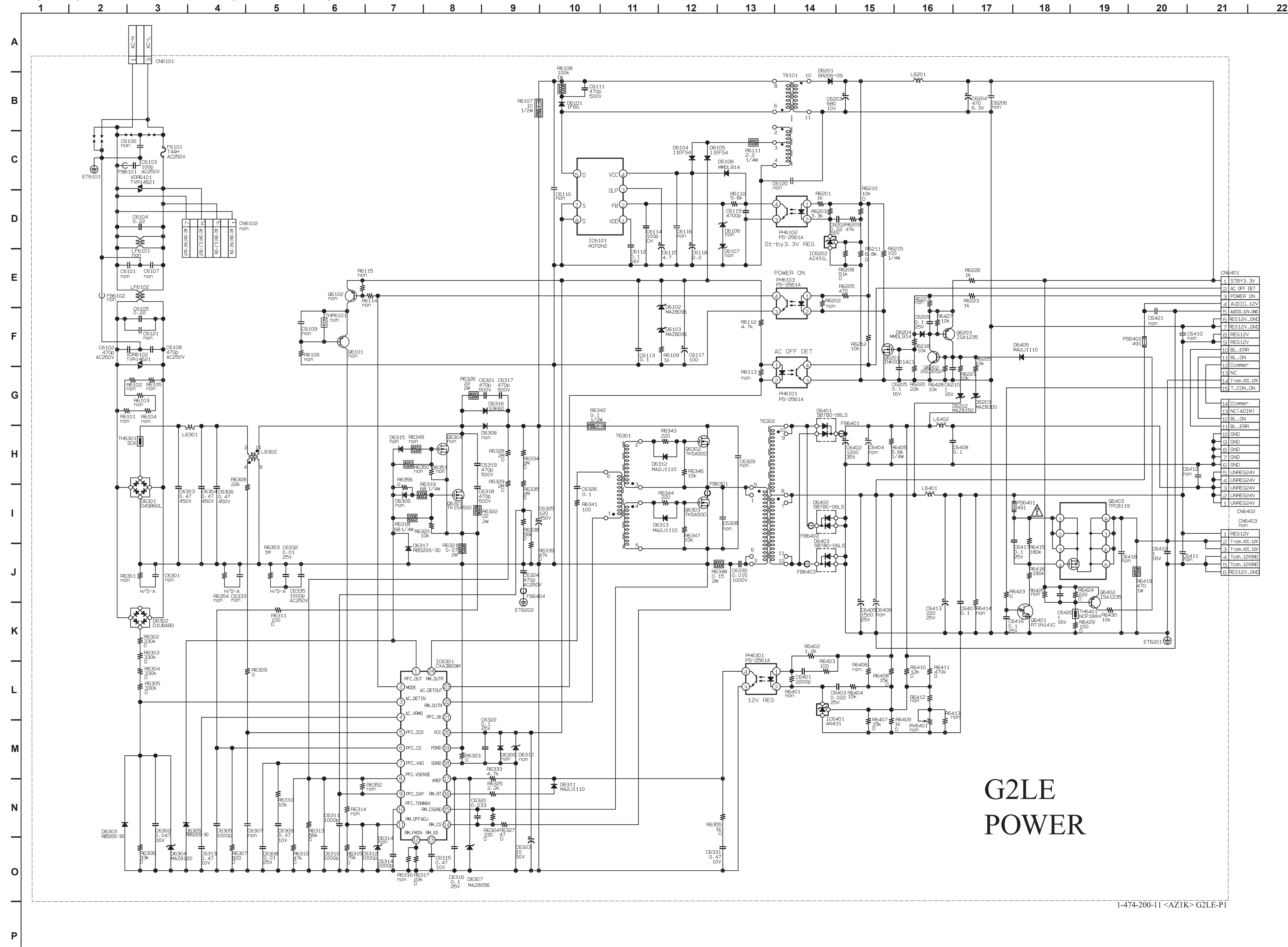
GD1 [POWER] COMPONENT SIDE (KDL-22BX300 ONLY)



GD1 [POWER] CONDUCTOR SIDE (KDL-22BX300 ONLY)

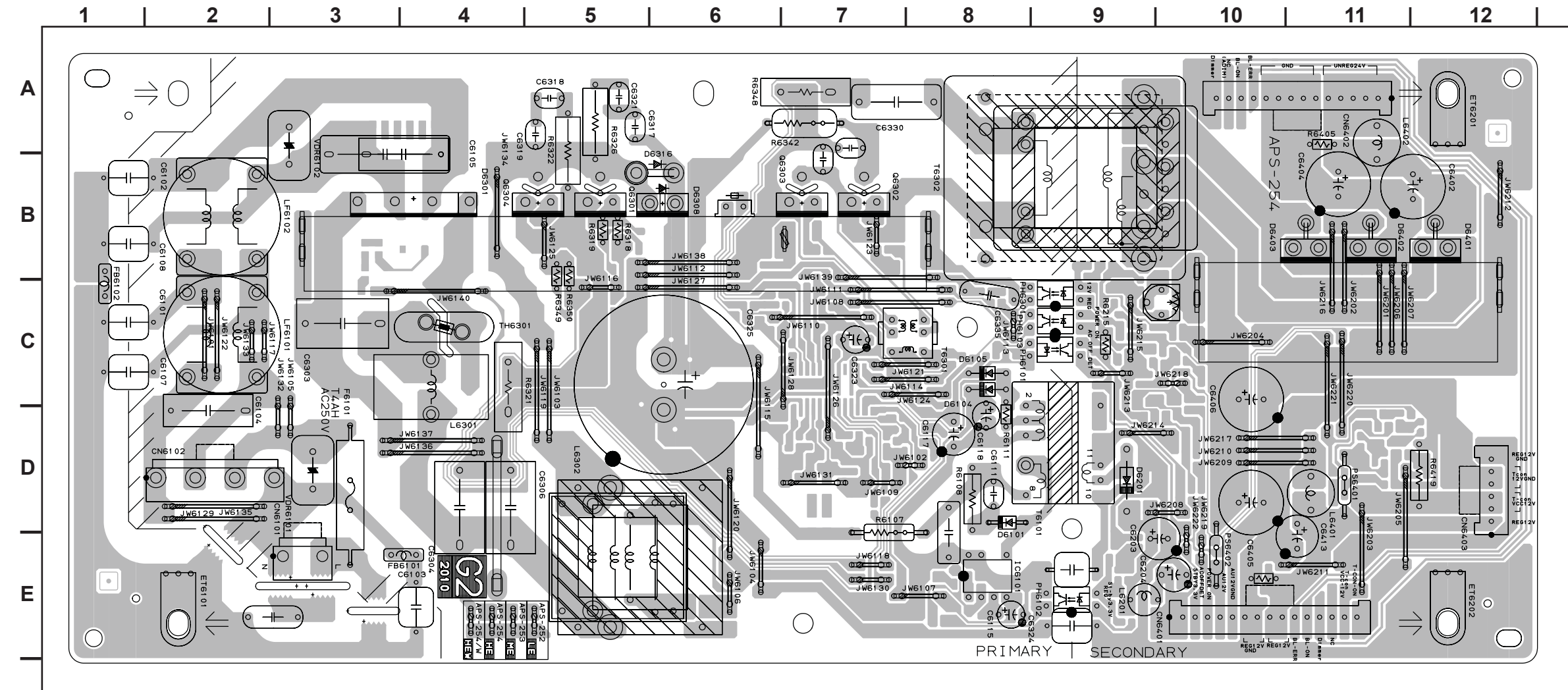


G2LE (POWER) BOARD SCHEMATIC DIAGRAM (KDL-32BX300 ONLY)

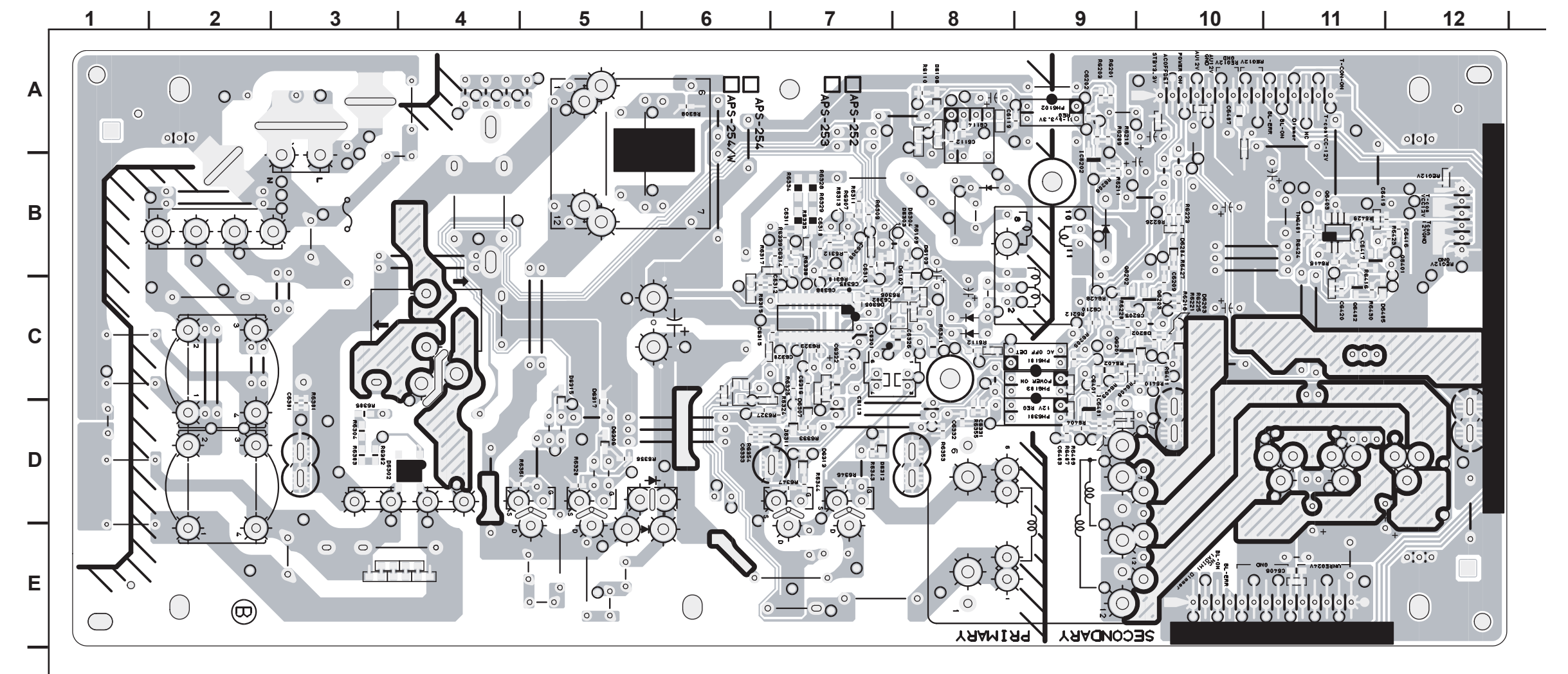


1-474-200-11 <AZ1K> G2LE-P1

G2LE [POWER]
COMPONENT SIDE (KDL-32BX300 ONLY)



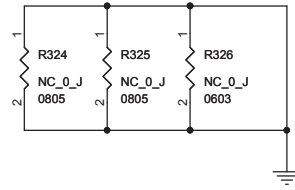
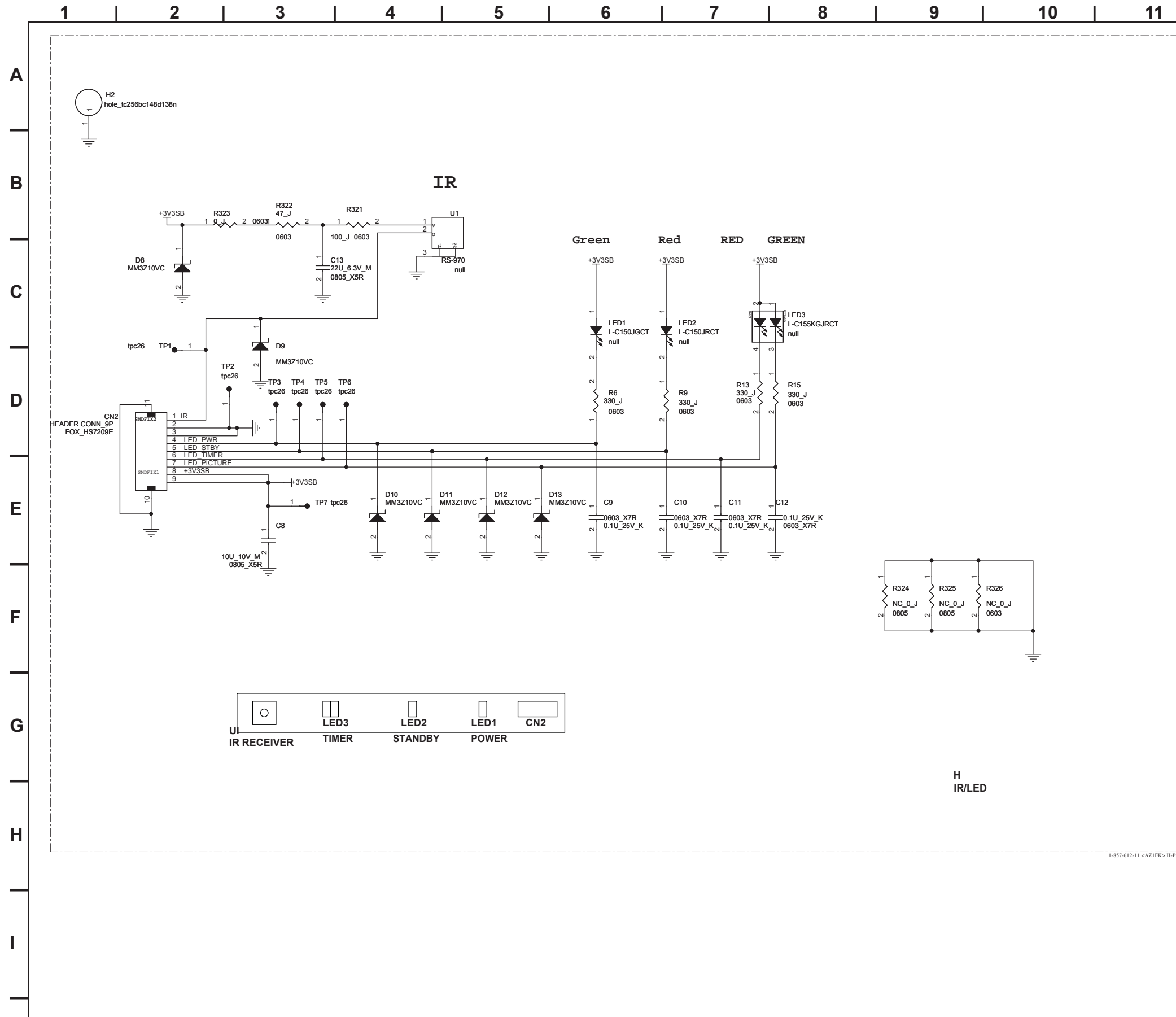
G2LE [POWER]
CONDUCTOR SIDE (KDL-32BX300 ONLY)



H BOARD SCHEMATIC DIAGRAM



THE PWB DIAGRAMS FOR THIS BOARD ARE NOT AVAILABLE.



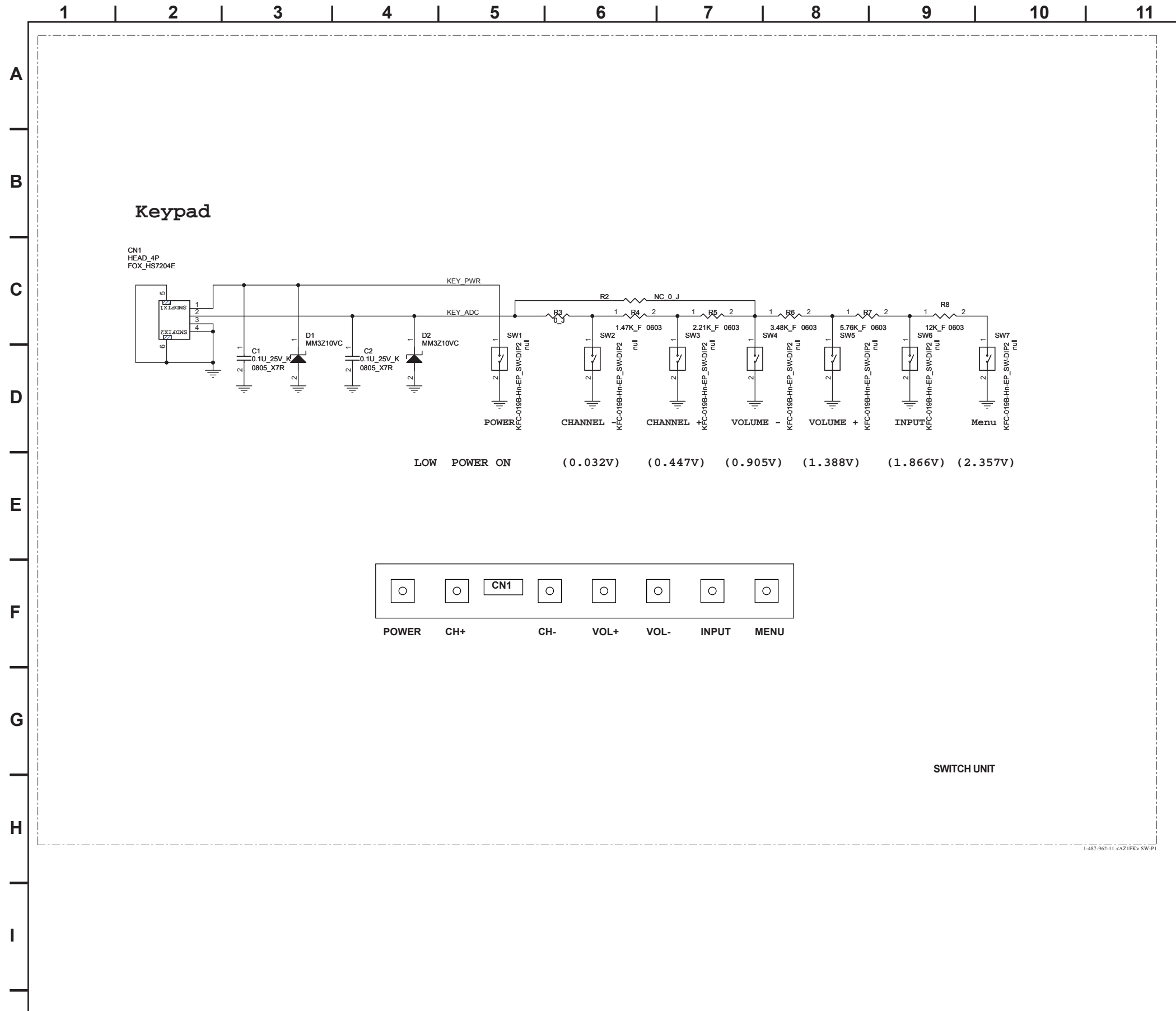
H IR/LED

SWITCH UNIT SCHEMATIC DIAGRAM



[SWITCH UNIT]




THE PWB DIAGRAMS FOR THIS BOARD ARE NOT AVAILABLE.



APPENDIX A: ENCRYPTION KEY COMPONENTS

Encryption key components developed by Sony Corporation contain confidential information, and shall be handled under the non-disclosure obligations provided in the applicable agreement with Sony Corporation (and/or its subsidiary).

As part of this agreement specific instructions must be adhered to whenever a Circuit Board containing encryption key components is repaired and/or replaced pursuant to the following:

- 1) In the service manual the Circuit Board(s) containing encryption key components shall be identified with a red outline and a .
- 2) Only repair boards or components listed in the service manual shall be utilized for replacement and/or repair.
- 3) Disassembly, decryption, or reverse-engineering component(s) is strictly prohibited.
- 4) Any board in which the Servicer replaces an encryption key component must be placed back into the set it originally came from and the replaced defective component **MUST BE DESTROYED**. Boards cannot be swapped.
- 5) If a Circuit Board identified with a red outline and a  in the service manual is deemed to be defective:
 - a) and if a core charge is imposed and is covered under the product warranty, the defective un-repaired or modified board **MUST BE RETURNED** to Sony.
 - b) and if the core charge is **NOT** covered under the product warranty, the defective un-repaired or modified board **MUST BE DESTROYED**.
- 5) If a unit is destroyed (such as field scrap), the Circuit Board identified with a red outline and a  in the service manual **MUST BE DESTROYED**.

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Sony Corporation
 Sony Technology Center
 Technical Services
 Service Publication Department

English
 2010BJ74WEB-1
 Printed in USA
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