

87654321

1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.

2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.

3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

REV

ECN

DESCRIPTION OF REVISION

CK
APPD

DATE

2013-03-27

ALIASES RESOLVED

J43 LIO SCHEMATIC 6.4.0

DVT, 3/27/2013

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14	Power: DC-In	MASTER	MASTER
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16	Power Control	MASTER	MASTER
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18	LIO Power Cable	MASTER	MASTER
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20	Functional Test / No Test	MASTER	MASTER
21	Constraints: LIO	MASTER	MASTER
22	Constraints: LIO Audio	MASTER	MASTER

Schematic / PCB #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-9829	1	SCHEM,LIO,J43	SCH	CRITICAL	
820-3455	1	PCBF,LIO,J43	PCB	CRITICAL	

SAFETY NOTES:

PCB, UL RECOGNIZED, MIN. 130 DEG. C TEMP. RATING AND V-0 FLAME RATING PER UL 796 & UL 94. PCB TO BE SILK-SCREENED WITH UL/CUL RECOGNITION MARK, MANUFACTURER'S UL FILE NUMBER, UL PCB MATERIAL DESIGNATION, TEMPERATURE RATING FLAME RATING.

DRAWING TITLE

<PART_DESCRIPTION>

Apple Inc.

DRAWING NUMBER

SIZE

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Connector Variants

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
514-0741	1	CONN,RCPT,AUDIO,K99	J6500	CRITICAL	CONN:MG
514-0807	1	CONN,RCPT,AUDIO,K21_K78	J6500	CRITICAL	CONN:SE
514-0849	1	CONN,RCPT,AUDIO,J11	J6500	CRITICAL	CONN:MG3

UV Glue & Solder Paste


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
946-3891	1	J11/J13 L10 DYNAM ADHESIVE 29993-SC 0.2G	UV_GLUE	CRITICAL	GLUE
900-0090	1		SOLDERPASTE	CRITICAL	

USB Shield Can

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
806-3084	1	SHLD,USB.LIO,J11/13	USB_CAN	CRITICAL	

Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	REFERENCE DESIGNATOR(S)	DESCRIPTION	BOM OPTION
155S0660	155S0513	ALL	TDK ALT TO MURATA	
155S0694	155S0387	ALL	TDK ALT TO MURATA	
127S0162	127S0164	ALL	NEC 1UF TO VISHAY	
377S0157	377S0114	ALL	1-WIRE ESD DIODE	
377S0155	377S0104	ALL	ALT USB ESD DIODE	

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BOM Configuration			
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BOM Variants

BOM NUMBER	BOM NAME	BOM OPTIONS
639-4157	PCBA,L10,J43	COMMON,CONN:MG3,ALTERNATE,GLUE

Bar Code Labels / EEEE #'s

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-7770	1	LABEL,L10,J11	LABEL	CRITICAL	

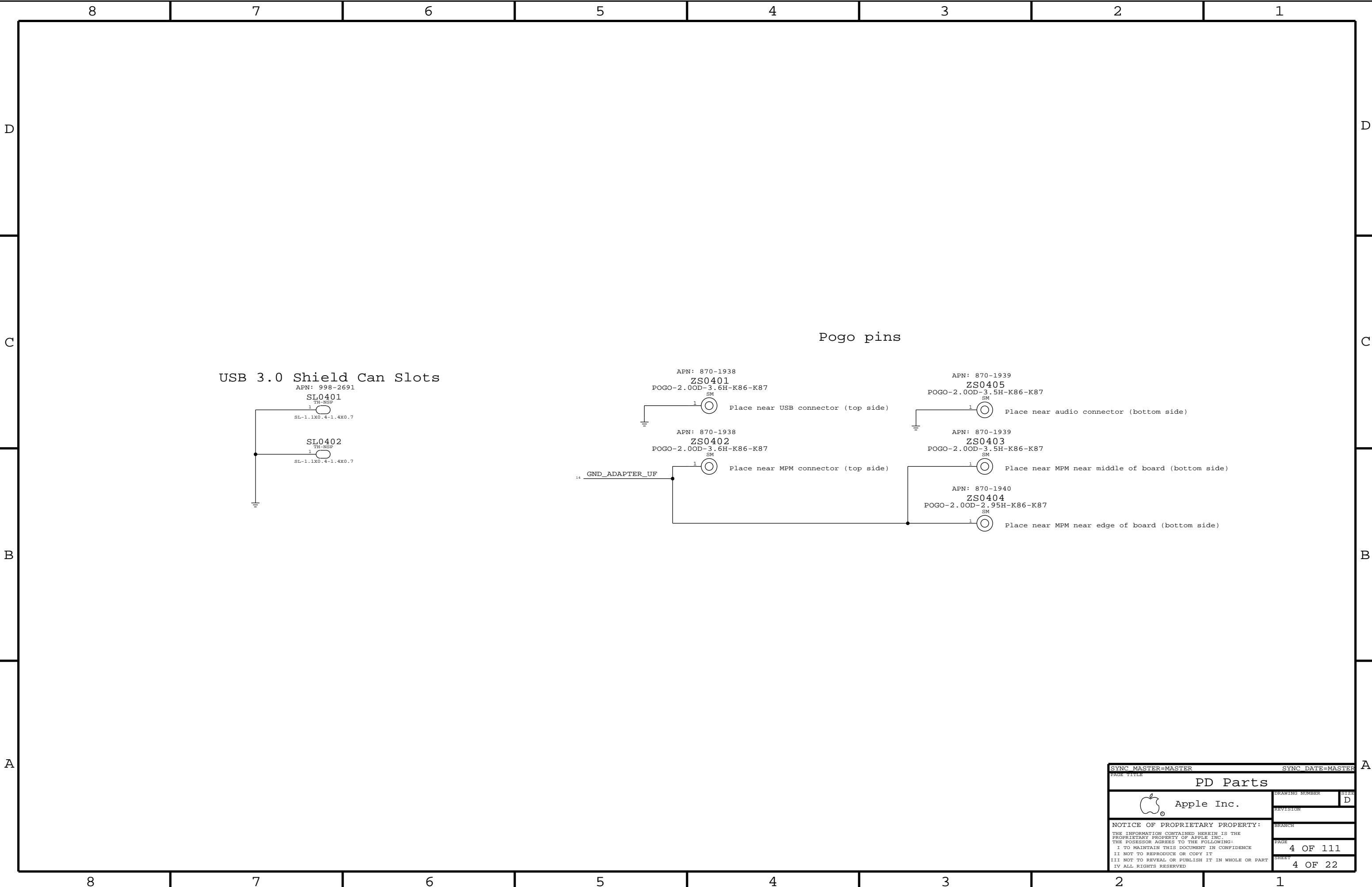
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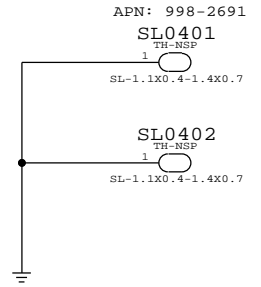
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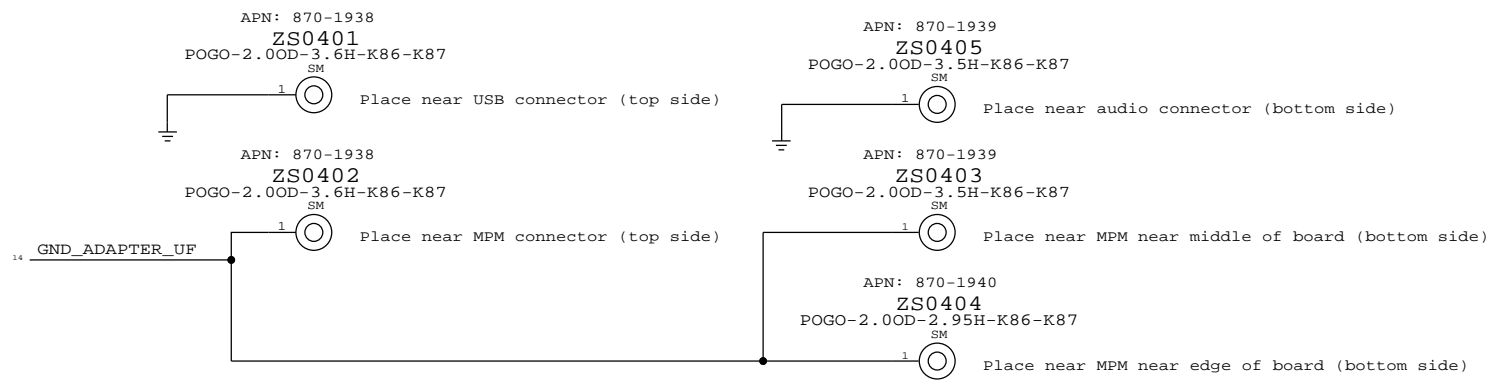
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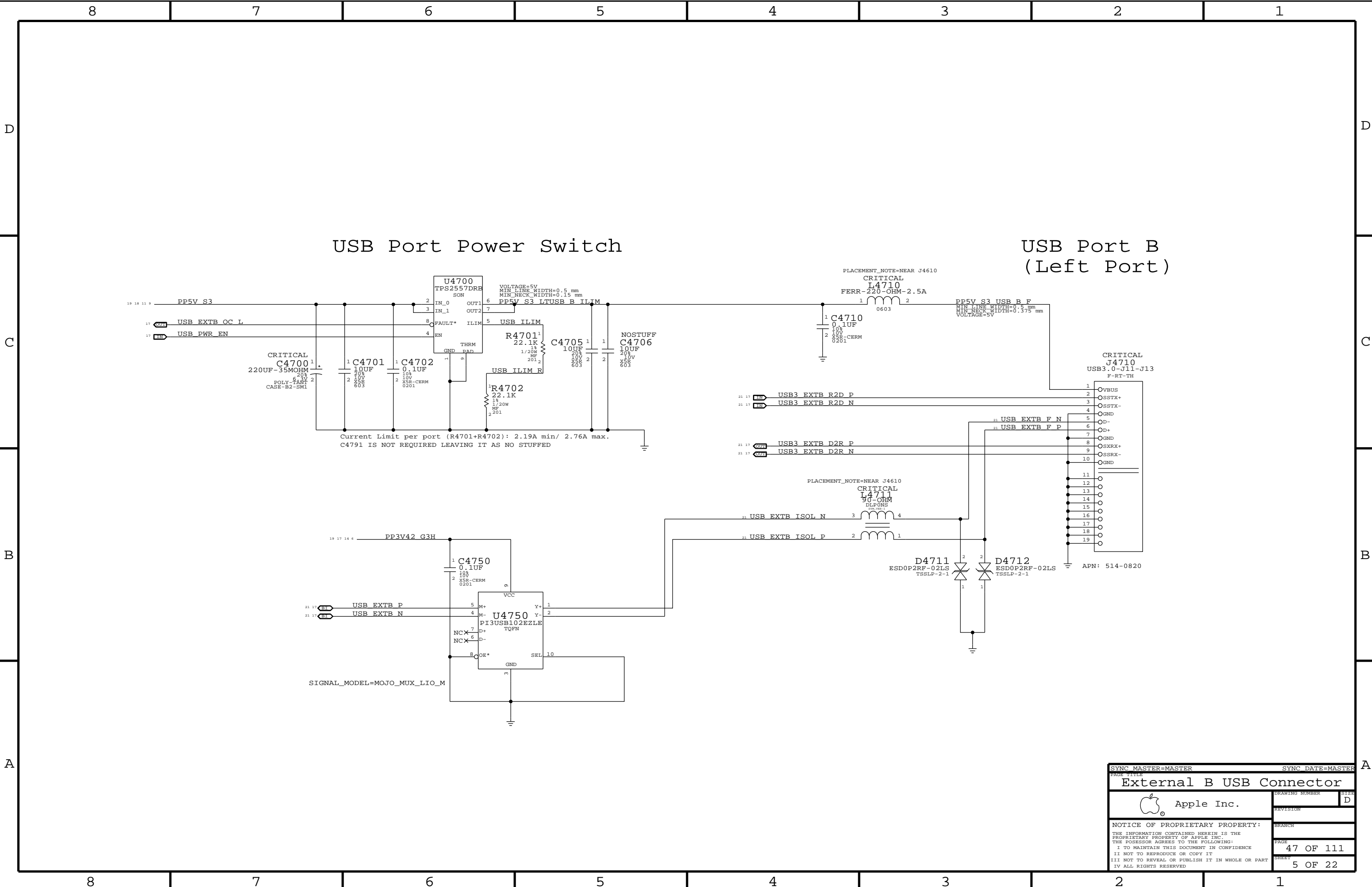
USB 3.0 Shield Can Slots

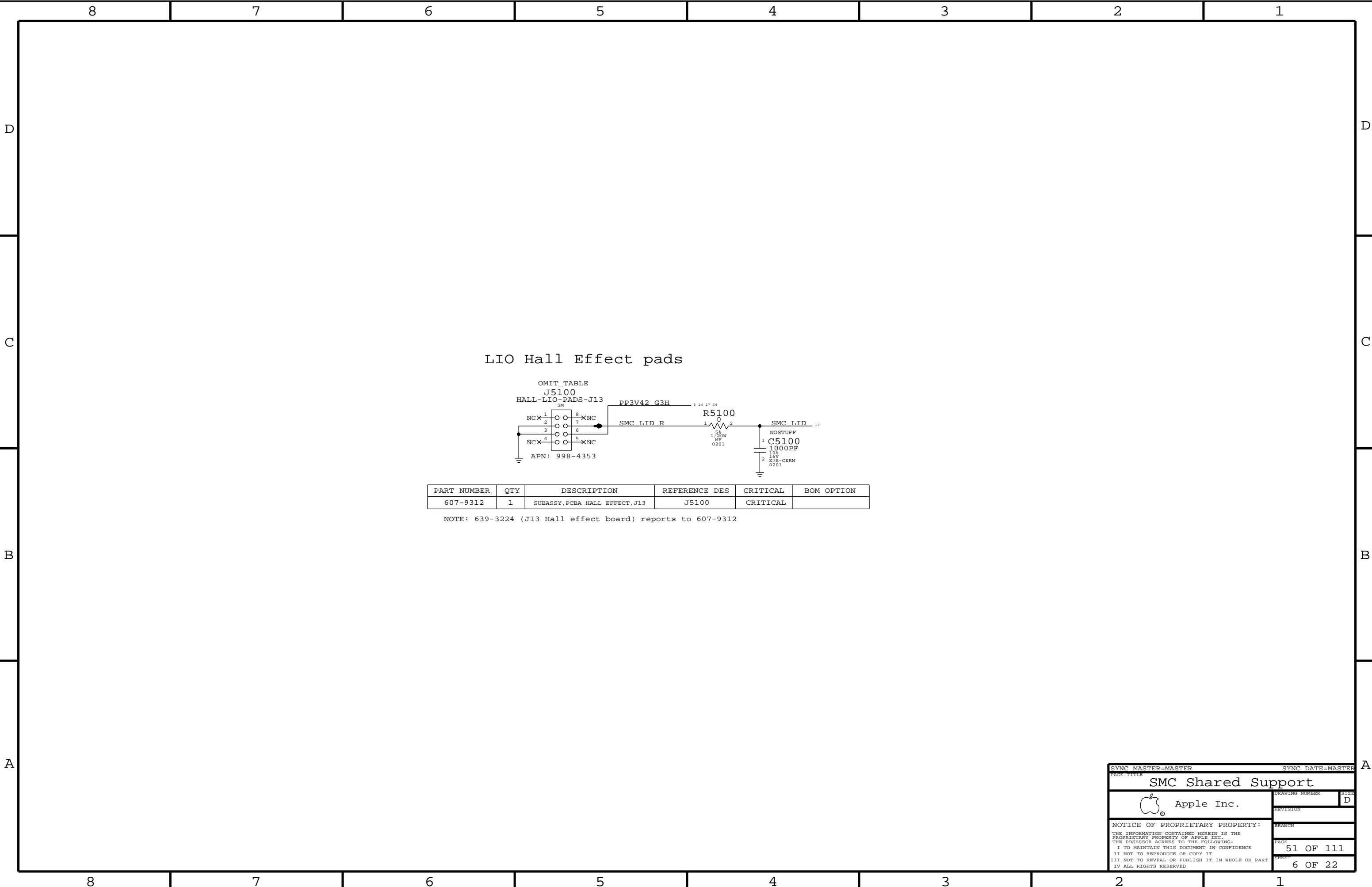


Pogo pins

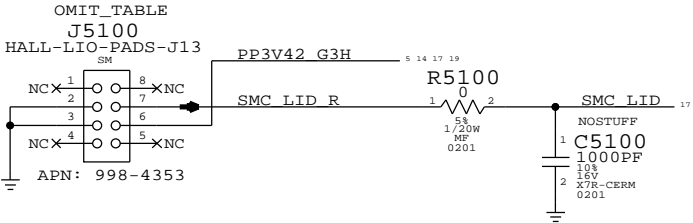


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PD Parts			
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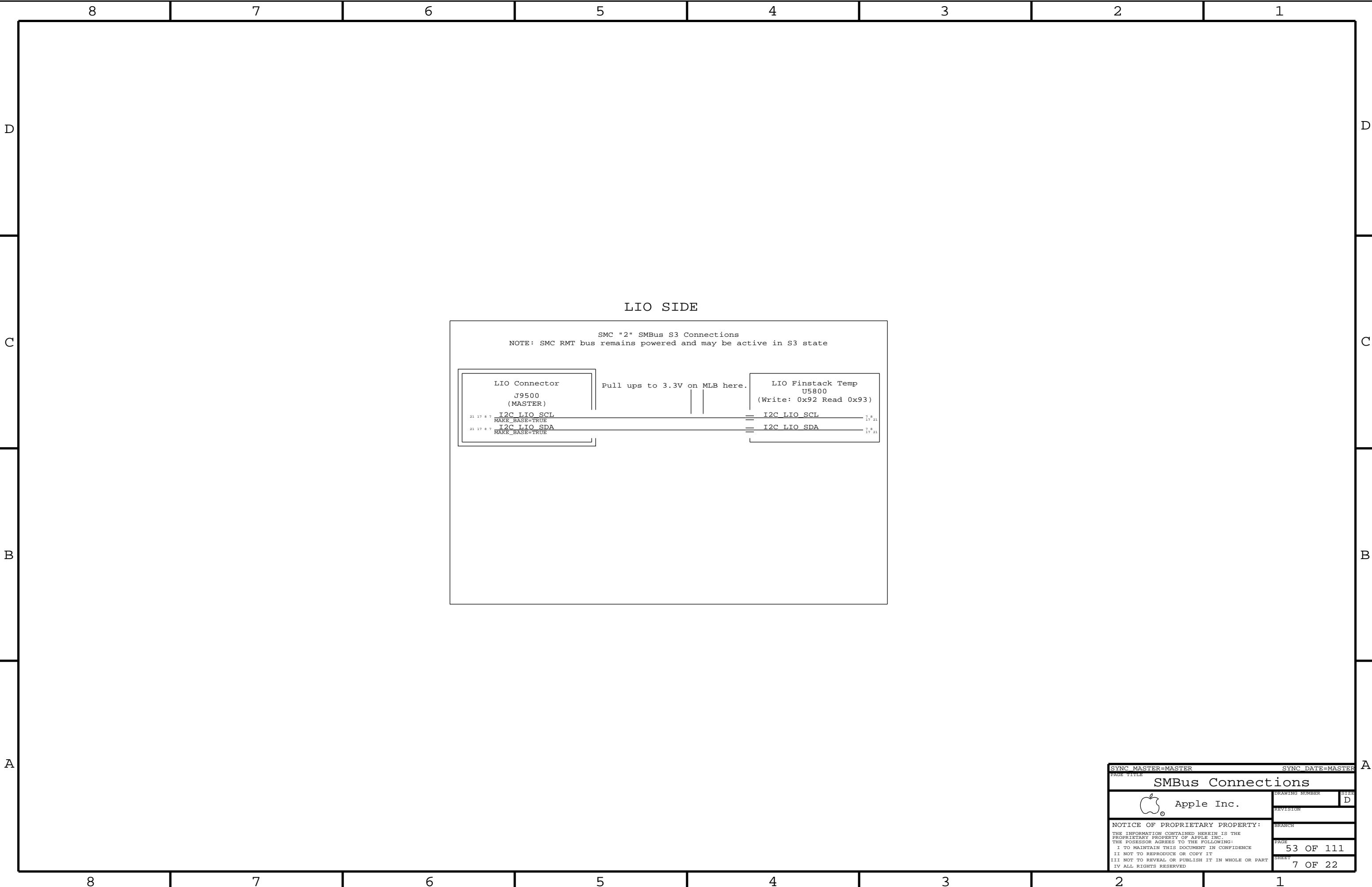


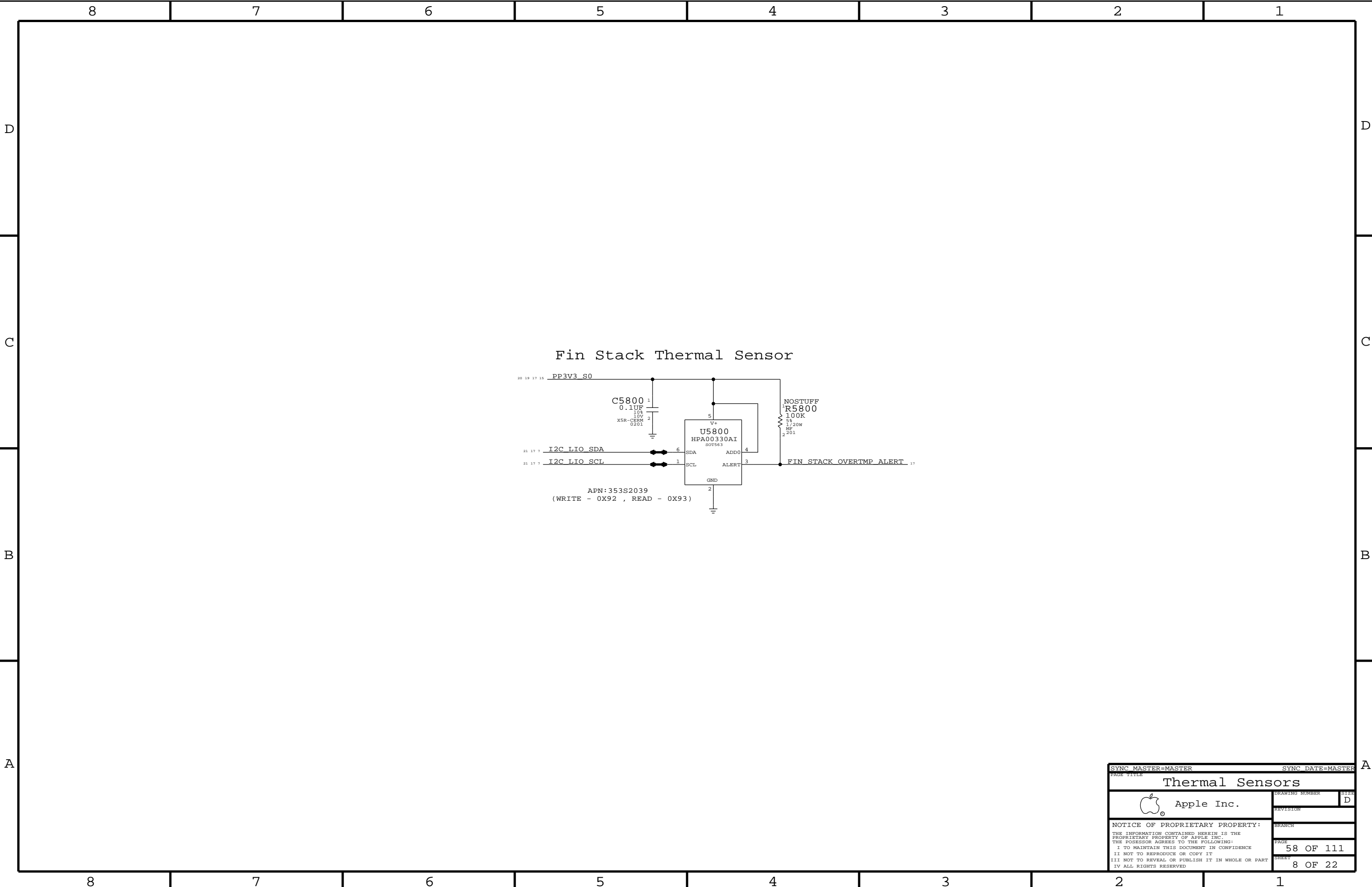
LIO Hall Effect pads



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
607-9312	1	SUBASSY,PCBA HALL EFFECT,J13	J5100	CRITICAL	

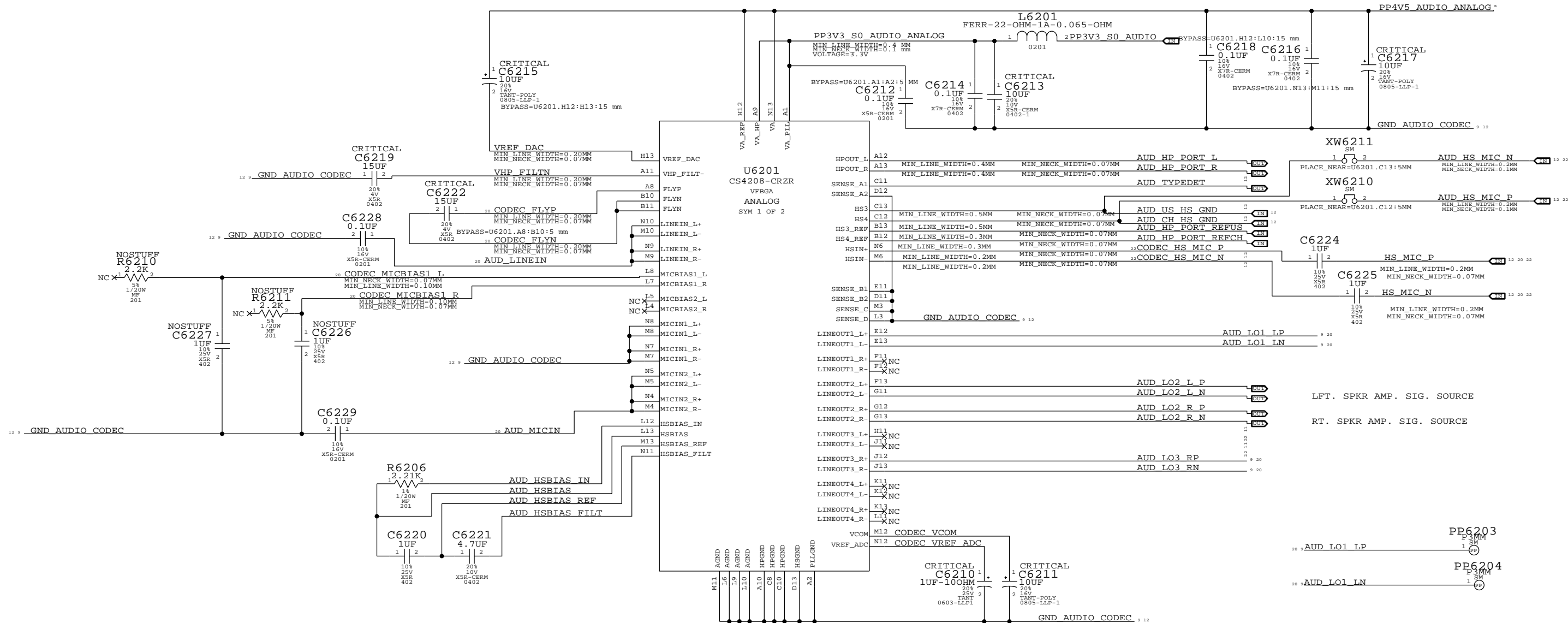
NOTE: 639-3224 (J13 Hall effect board) reports to 607-9312





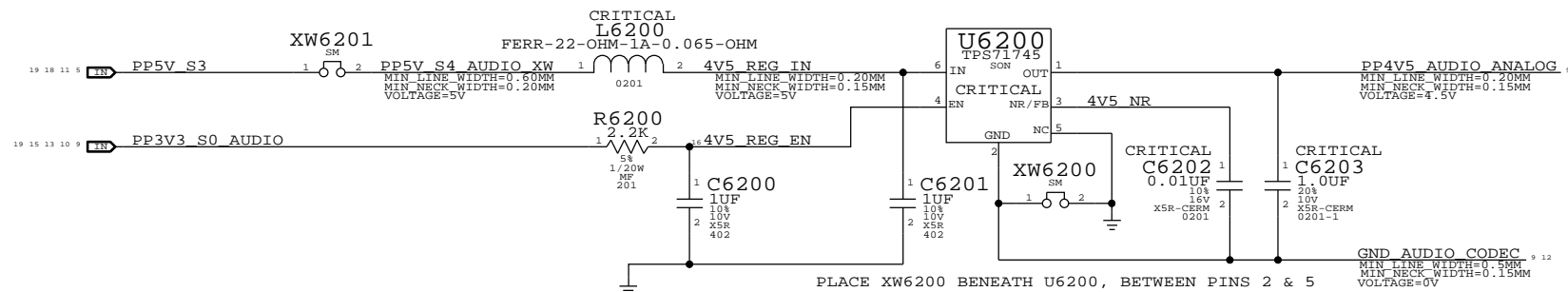
AUDIO CODEC, ANALOG BLOCKS

APPLE P/N 353S3821



4.5V POWER SUPPLY FOR CODEC

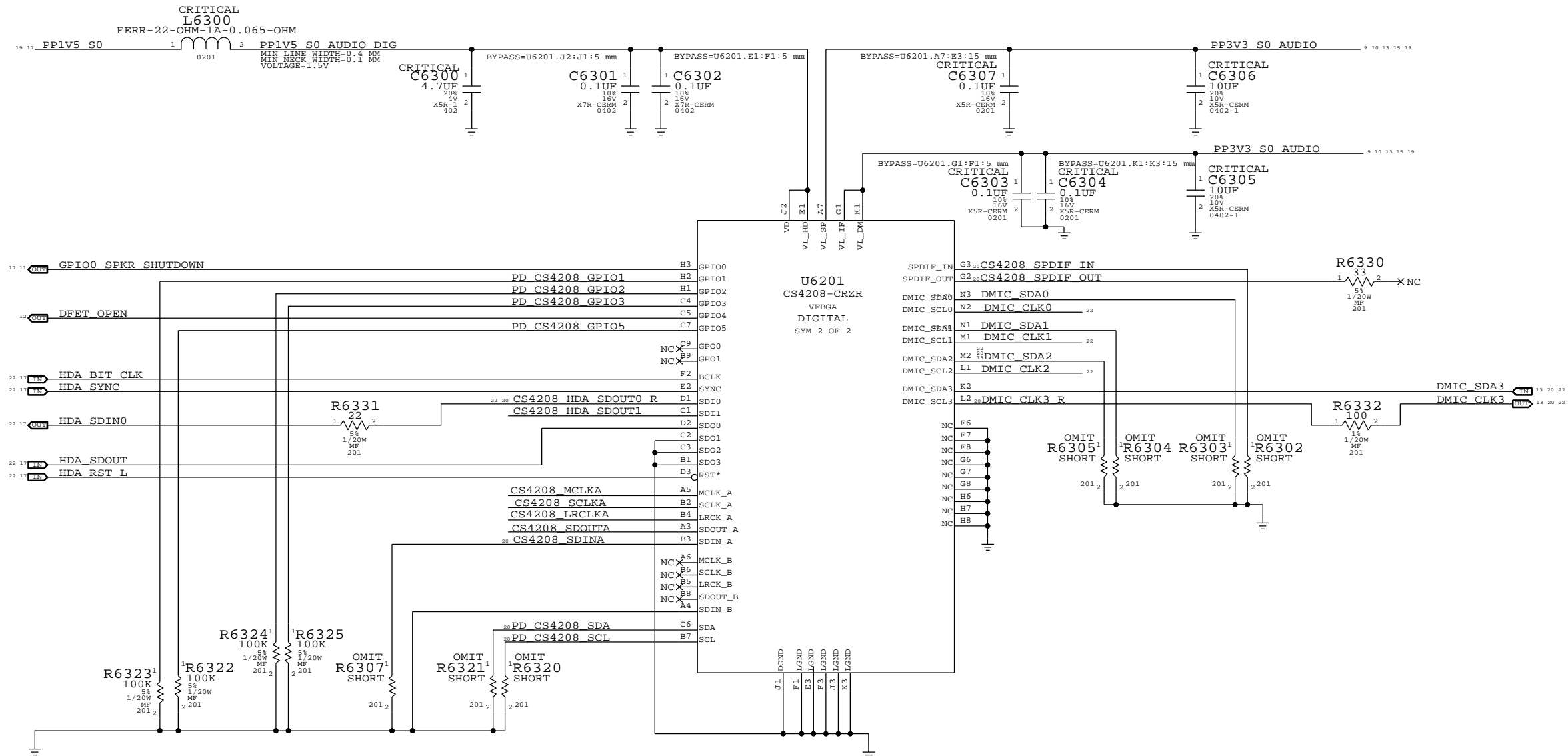
APPLE P/N 353S2281




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AUDIO:CODEC, ANALOG		DRAWING NUMBER	SIZE
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AUDIO CODEC, DIGITAL BLOCKS

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PAGE TITLE			
AUDIO:CODEC, DIGITAL			
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APN:353S2888

PP5V_S3
ALIAS OF PP5VLT_S3, MIN_LINE_WIDTH=0.60MM, MIN_NECK_WIDTH=0.20MM

CRITICAL
L6420
FERR-22-OHM-1A-0.065-OHM
AUD LO2 L P 1 2
0201

CRITICAL
C6420
0.1UF
10%
X5R-CERM
0201

CRITICAL
L6421
FERR-22-OHM-1A-0.065-OHM
AUD LO2 L N 1 2
0201

CRITICAL
C6421
0.1UF
10%
X5R-CERM
0201

R6420
0
1/20W
5%
0201

GPIO0 SPKR SHUTDOWN 1 2

CRITICAL
L6410
FERR-22-OHM-1A-0.065-OHM
AUD LO2 R P 1 2
0201

CRITICAL
L6411
FERR-22-OHM-1A-0.065-OHM
AUD LO2 R N 1 2
0201

SPKRAMP LIN P 22

SPKRAMP LIN N 22

SPKR SHUTDOWN

SPKRCONN L OUT P 13 20 22

SPKRCONN L OUT N 13 20 22


MAX98300
PVDD
WLP
A3 IN+
B3 IN-
C2 SHDN*
B2 NC
C3 SPKR LGAIN
PGND
C1 OUT-
B1 OUT+

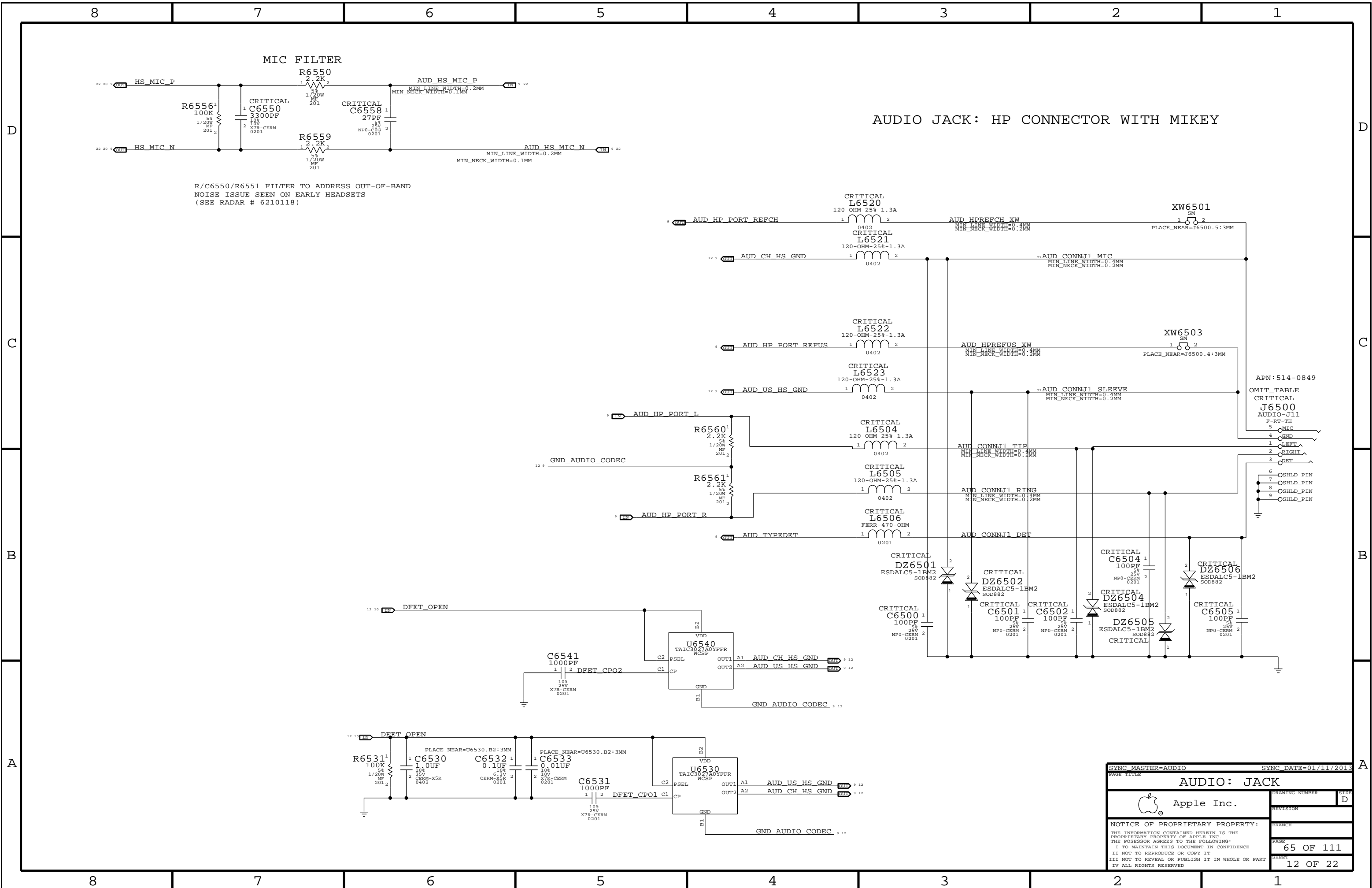
R6423
1
100K
5%
1/20W
0201


C6408
0.1UF
10%
X5R-CERM
0201

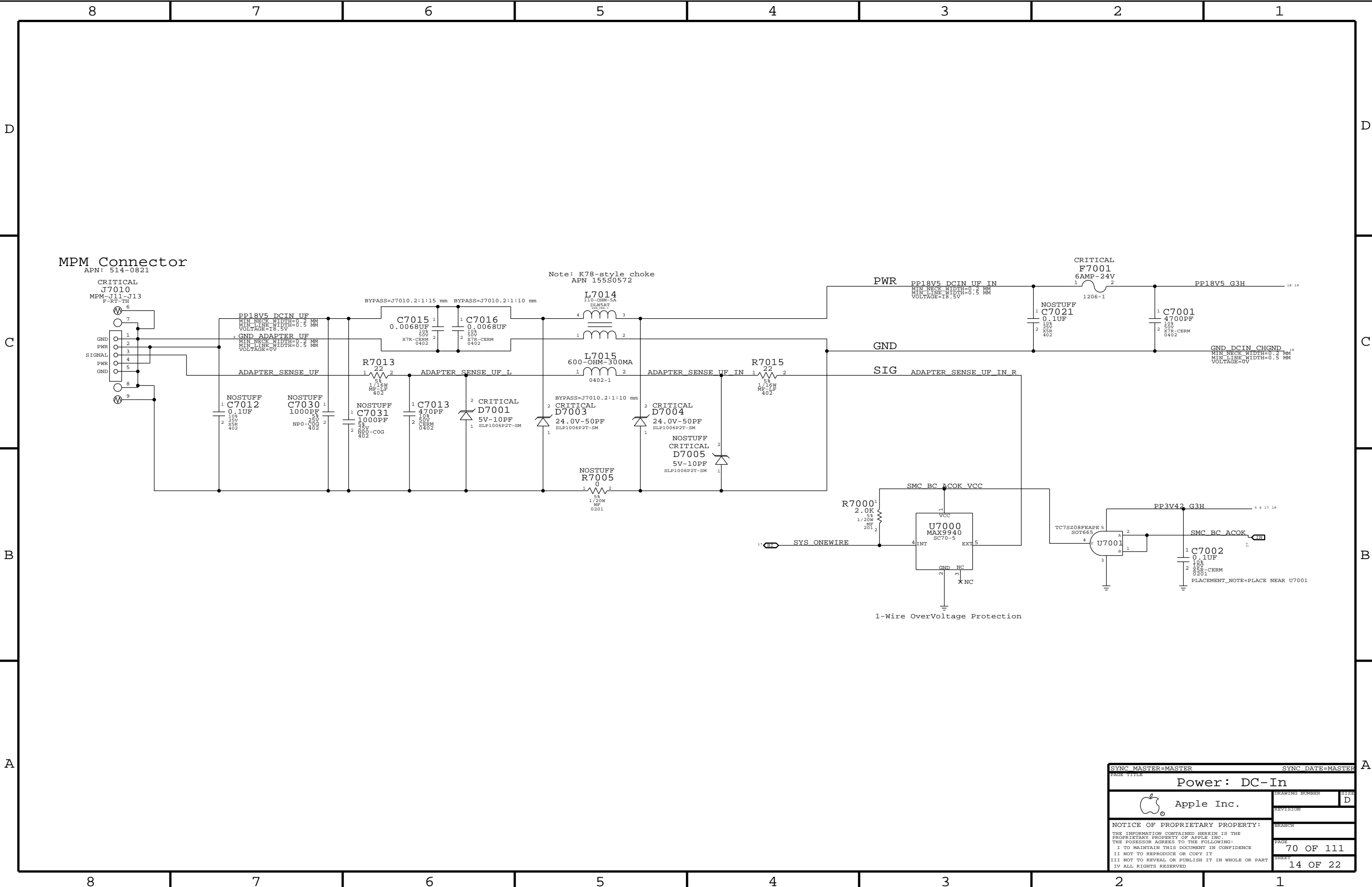
C6403
47UF
20%
6.3V
POLY-TANT
0805-LLP

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0363	128S0296		C6403	

SYNCH MASTER=AUDIO		SYNCH DATE=01/11/2013	
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AUDIO: SPEAKER AMPLIFIERS			
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SYNC MASTER=AUDIO		SYNC DATE=01/11/2013	
PAGE TITLE		AUDIO: JACK	
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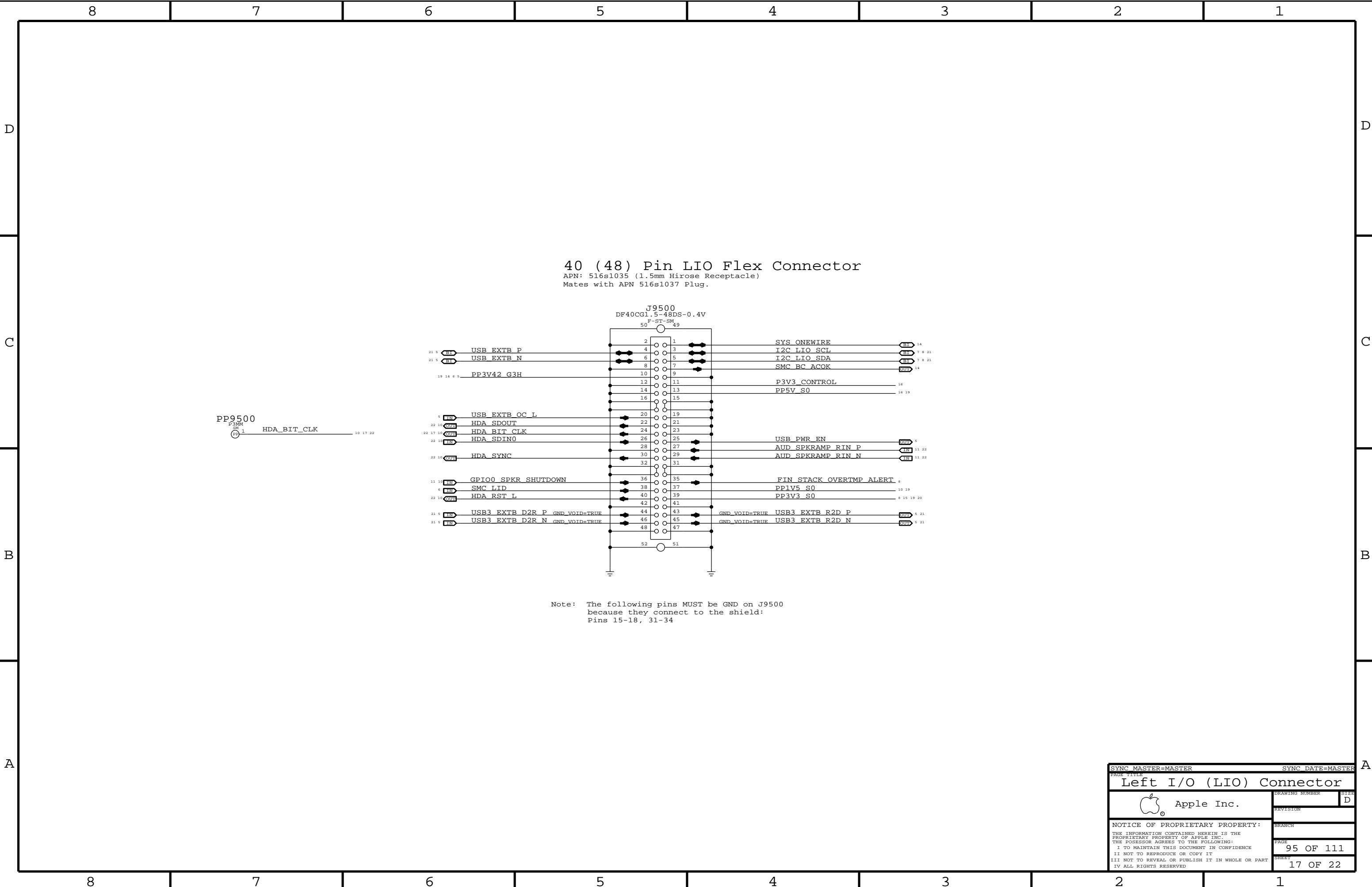
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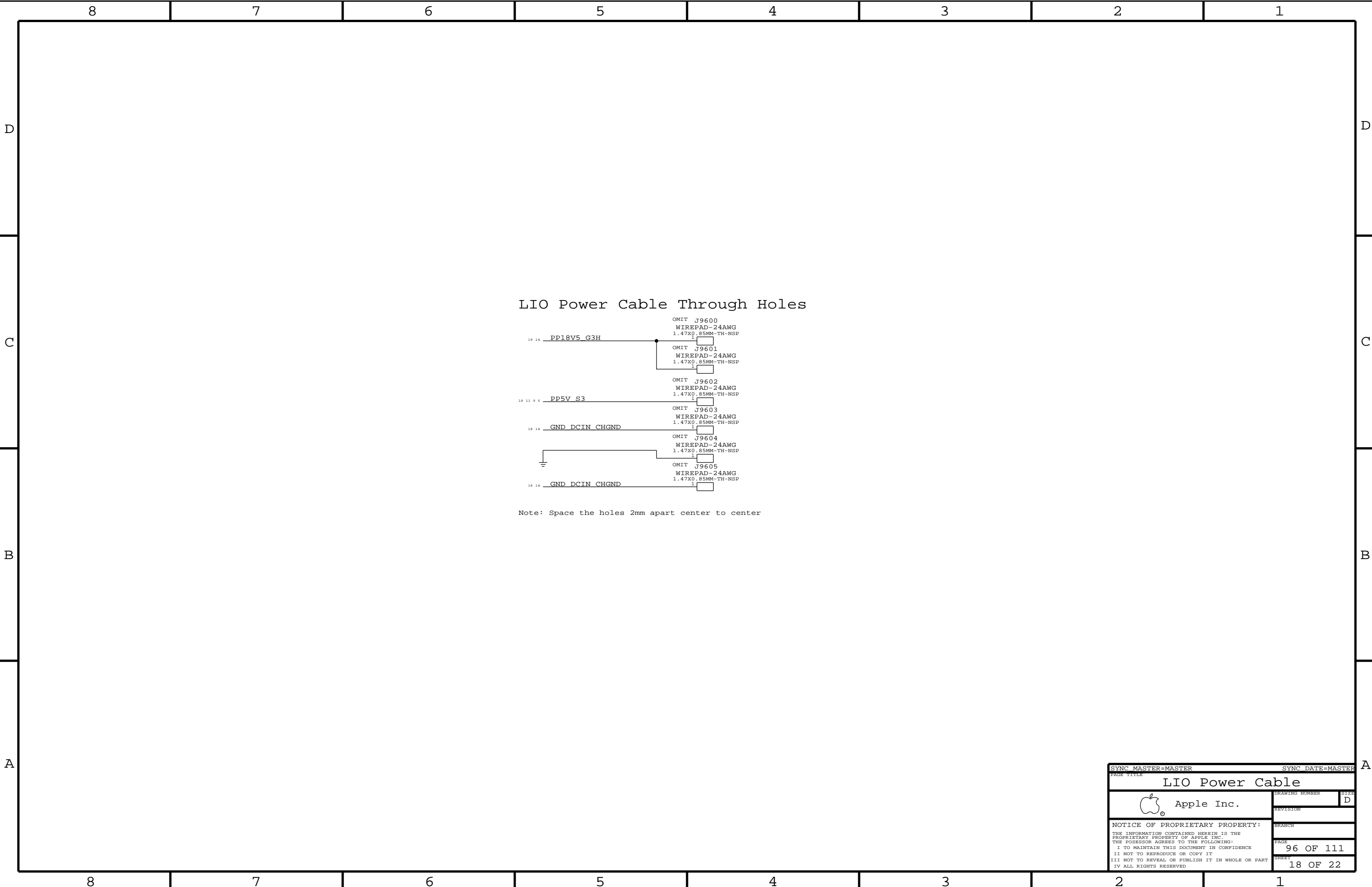
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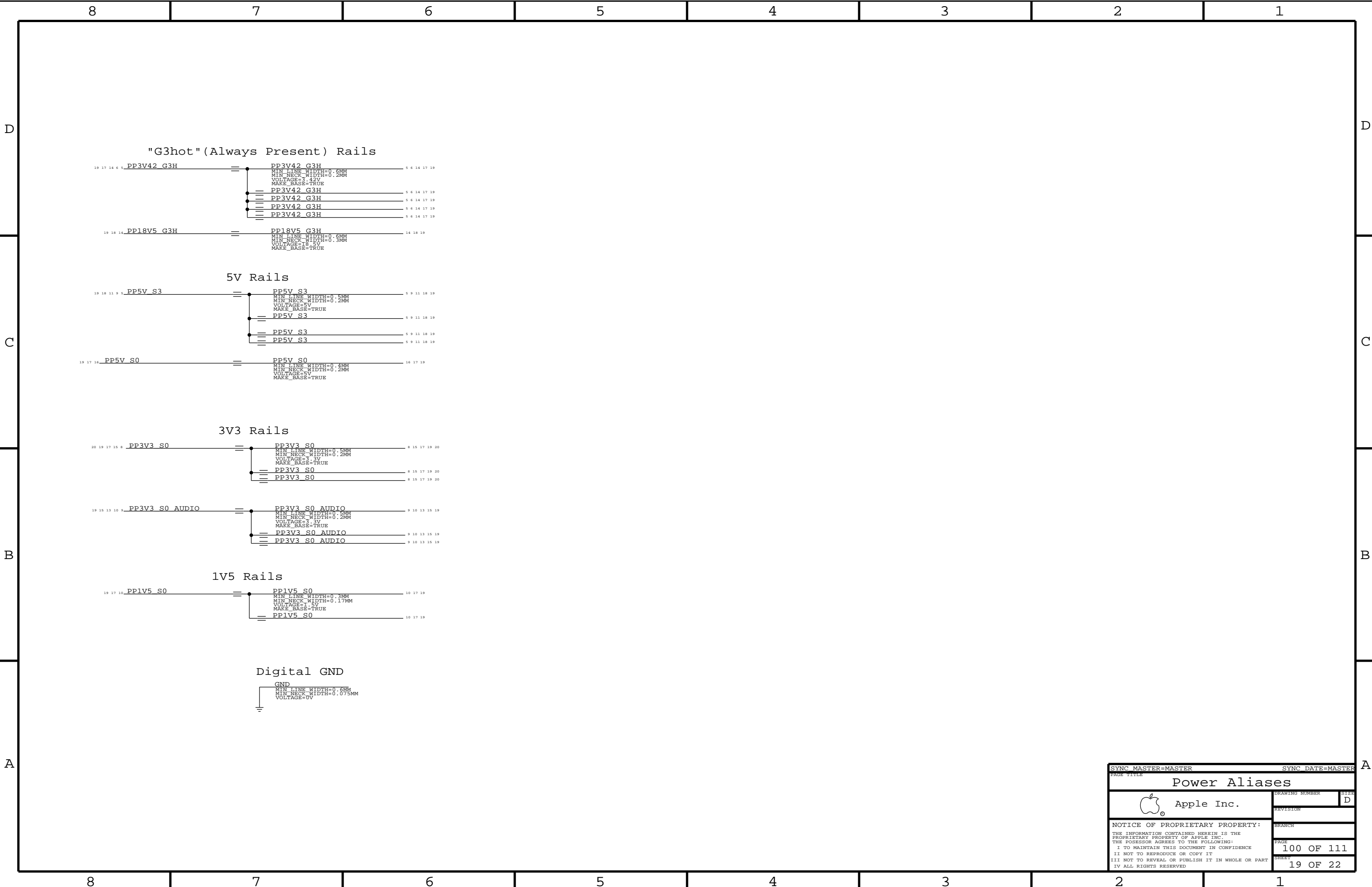
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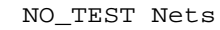
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D

C

B

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K21 LIO BOARD AUDIO SPECIFIC SPACING & PHYSICAL CONSTRAINTS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
DEFAULT	*	Y?	=50_OHM_SE	=50_OHM_SE	10 MM	0 MM	0 MM
STANDARD	*	=DEFAULT	=DEFAULT	P07MM	=DEFAULT	=DEFAULT	=DEFAULT
1T01_DIFFPAIR	*	=STANDARD	=STANDARD	P07MM	=STANDARD	0.100 MM	0.100 MM
AUDDIFF_0200MM	*	=STANDARD	0.200 MM	0.100 MM	=STANDARD	0.100 MM	0.100 MM

HD Audio Interface Constraints









































PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
HDA_50S	*	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
HDA	*	=2x_DIELECTRIC	?

Other Audio Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MIC_50S	*	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD
SPK_CONN_DIFF	*	TOP,BOTTOM	0.300 MM	0.200 MM	=1T01_DIFFPAIR	=1T01_DIFFPAIR	=1T01_DIFFPAIR

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SPEAKER	*	=2:1_SPACING	?
MIC	*	=2.5:1_SPACING	?

ELECTRICAL_CONSTRAINT_SET		NET_TYPE		
		PHYSICAL	SPACING	
	HDA_BIT_CLK	HDA_50S	HDA	HDA_BIT_CLK 10 17
	HDA_SYNC	HDA_50S	HDA	HDA_SYNC 10 17
	HDA_RST	HDA_50S	HDA	HDA_RST_L 10 17
	HDA_SDINO	HDA_50S	HDA	HDA_SDINO 10 17
	HDA_SDOUT0	HDA_50S	HDA	CS4208_HDA_SDOUT0_R 10 20
	HDA_SDOUT	HDA_50S	HDA	HDA_SDOUT 10 17
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_LO2_R_P 9 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_LO2_R_N 9 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_SPKRAMP_RIN_P 11 17
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_SPKRAMP_RIN_N 11 17
	HDA_50S	HDA		SPKR_RT_ID 11 17
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_LO2_L_P 9 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_LO2_L_N 9 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_SPKRAMP_LIN_P 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	AUD_SPKRAMP_LIN_N 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	SPKRAMP_LIN_P 11
	DIEFFPAIR	1T01_DIEFFPAIR	SPEAKER	SPKRAMP_LIN_N 11
	DIEFFPAIR	SPK_CONN_DIFF	SPEAKER	SPKRCONN_L_OUT_P 11 13
	DIEFFPAIR	SPK_CONN_DIFF	SPEAKER	SPKRCONN_L_OUT_N 11 13
	HDA_50S	HDA		SPKR_LT_ID 11 13
	DIEFFPAIR	1T01_DIEFFPAIR	MIC	AUD_MIC_IN1_LP 9
	DIEFFPAIR	1T01_DIEFFPAIR	MIC	AUD_MIC_IN1_LN 9
	DIEFFPAIR	1T01_DIEFFPAIR	MIC	AUD_MIC_IN1_RP 9 12
	DIEFFPAIR	1T01_DIEFFPAIR	MIC	AUD_MIC_IN1_RN 9 12
	AUDDIFF_0200MM	MIC		CODEC_HS_MIC_P 9
	AUDDIFF_0200MM	MIC		CODEC_HS_MIC_N 9
	AUDDIFF_0200MM	MIC		HS_MIC_P 9 12
	AUDDIFF_0200MM	MIC		HS_MIC_N 9 12
	AUDDIFF_0200MM	MIC		AUD_HS_MIC_P 9 12
	AUDDIFF_0200MM	MIC		AUD_HS_MIC_N 9 12
	AUDDIFF_0200MM	MIC		AUD_CONNJ1_MIC 12
	AUDDIFF_0200MM	MIC		AUD_CONNJ1_SLEEVE 12
	SMB_SDA_DMIC_3	SMB_50S	SMB	DMIC_SDA3 10 13
	SMB_SCL_DMIC_3	SMB_50S	SMB	DMIC_CLK3 10 13
	SMB_50S	SMB		DMIC_SDA2 10 13
	SMB_50S	SMB		DMIC_CLK2 10
	SMB_50S	SMB		DMIC_SDA1 10 20
	SMB_50S	SMB		DMIC_CLK1 10
	SMB_50S	SMB		DMIC_SDA0 10 20
	SMB_50S	SMB		DMIC_CLK0 10

To LIO Connector (RT Spkr J9500)

To Left Speaker(J6700)

To MIC1 Channel (Unused)

To External Mic Jack(J6500)

To Internal Digital Mic (J6701)

To Other Digital Mic Buses (Unused)