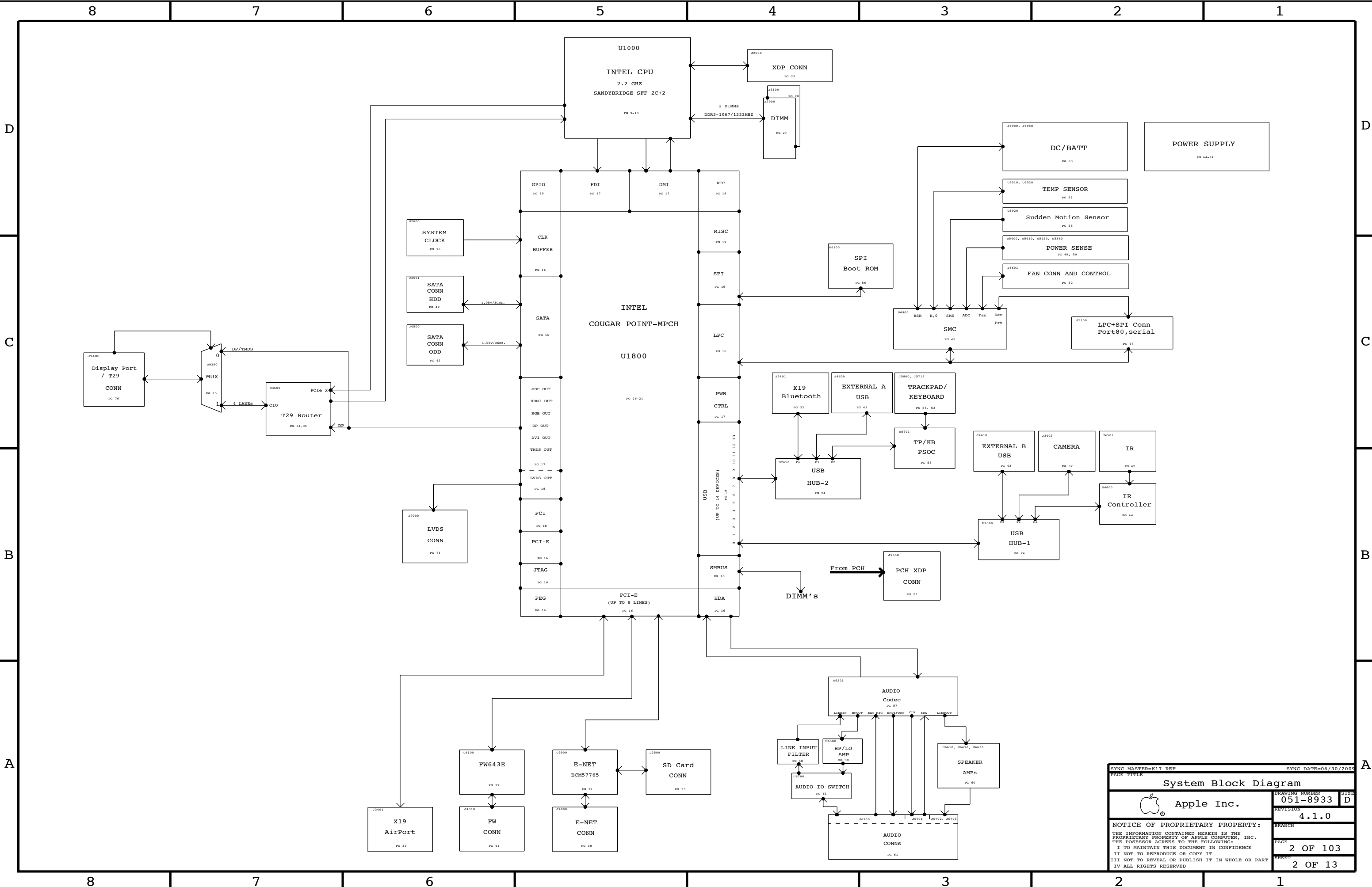
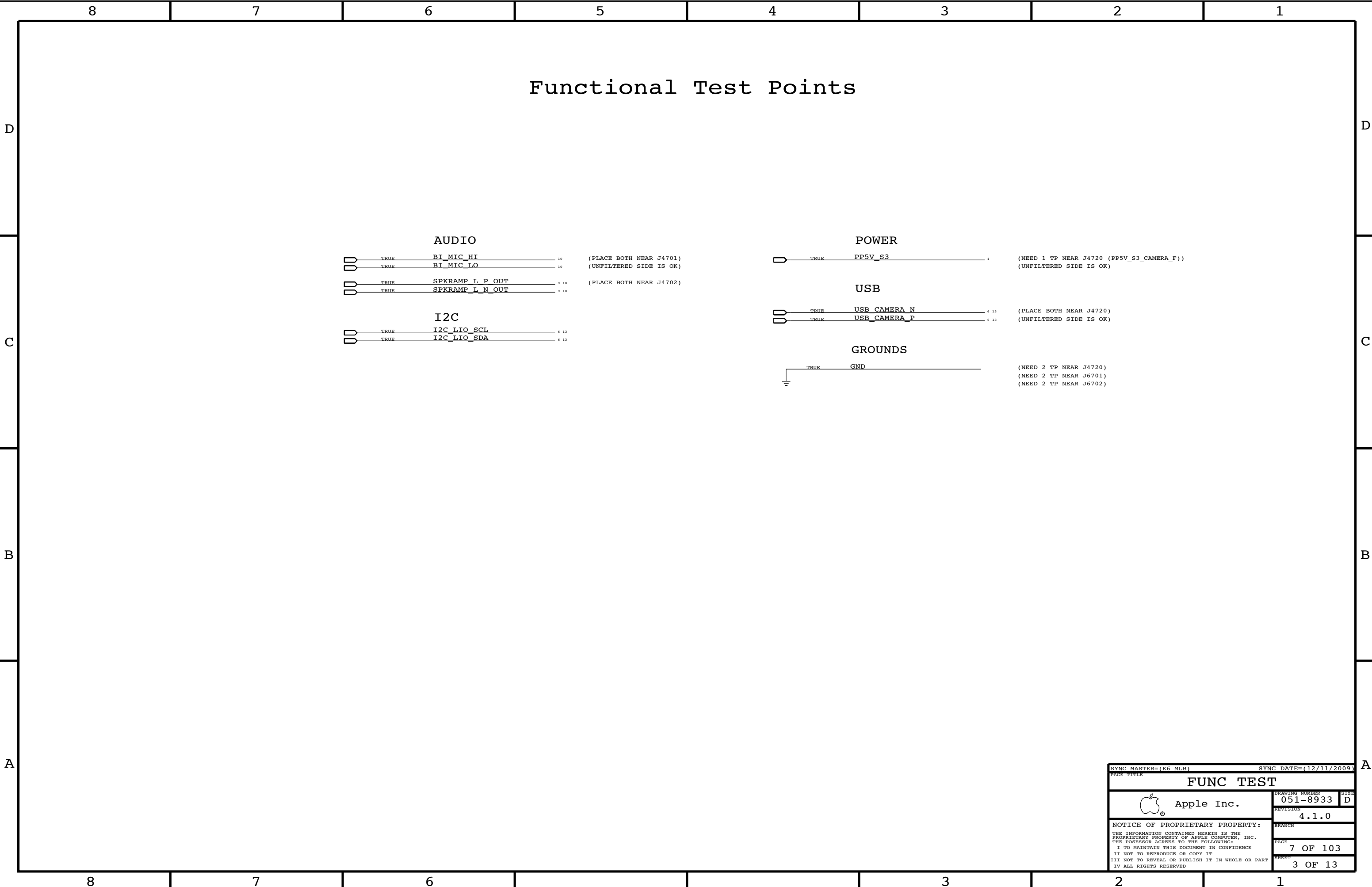
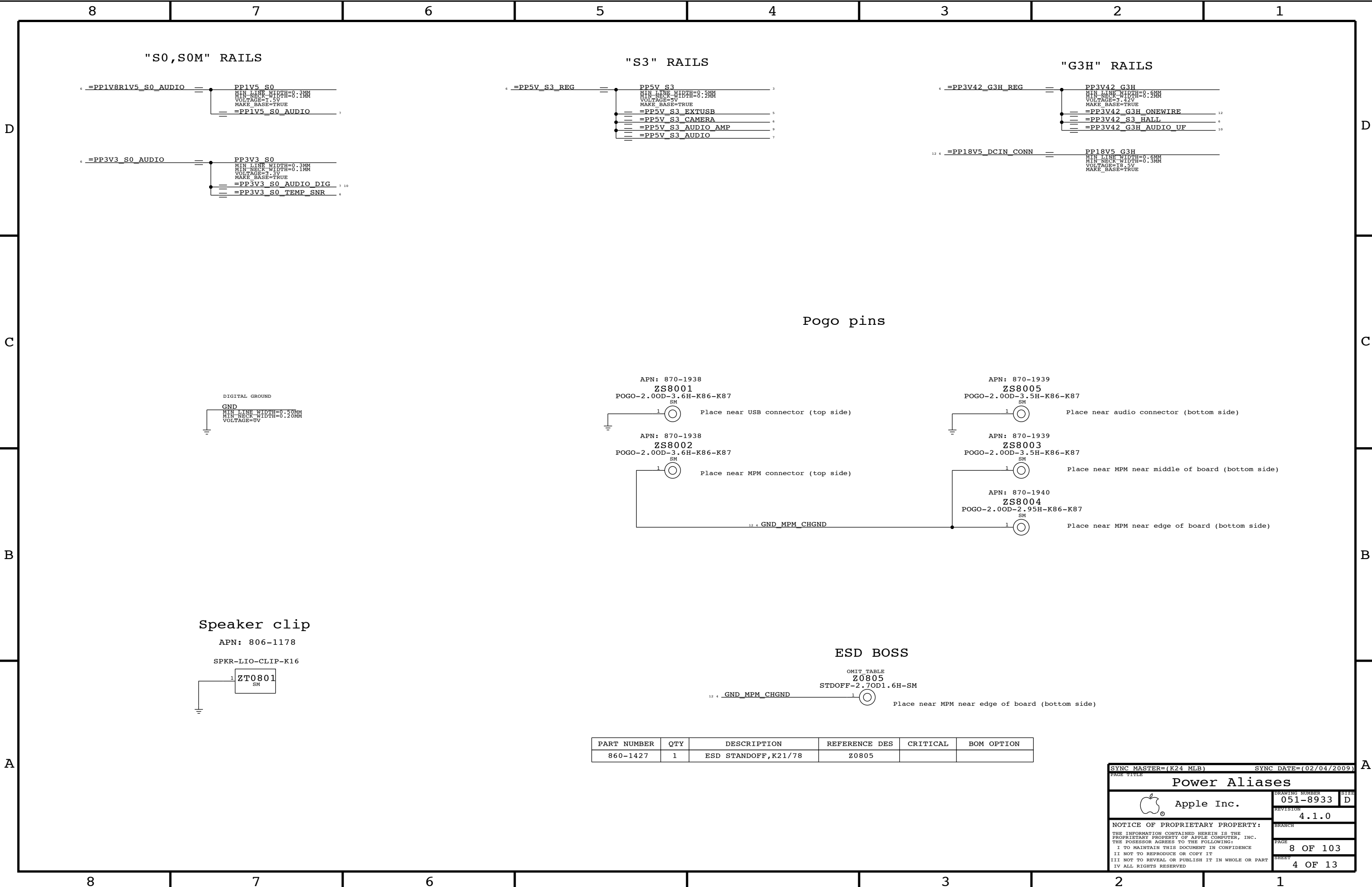


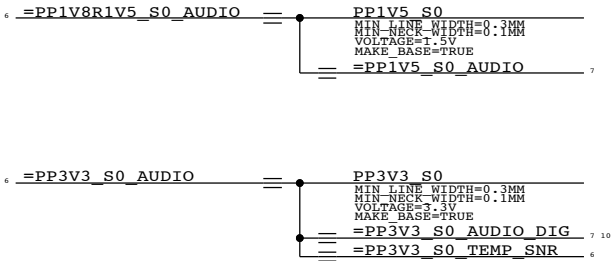
8		7		6		5		4		3		2		1																																																																							
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%. 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS. 3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.												REV	ECN	DESCRIPTION OF REVISION	CK APPD DATE																																																																						
															2011-04-18																																																																						
SCHEM,PCB,LIO,K21 EVT, 2011-4-14																																																																																					
<table><tr><th>Page</th><th></th><th>Contents</th><th>Sync</th><th>Date</th></tr><tr><td>1</td><td>1</td><td>Table of Contents</td><td></td><td></td></tr><tr><td>2</td><td>2</td><td>System Block Diagram</td><td>K17_REF</td><td>06/30/2009</td></tr><tr><td>3</td><td>7</td><td>FUNC TEST</td><td>(K6_MLB)</td><td>(12/11/2009)</td></tr><tr><td>4</td><td>8</td><td>Power Aliases</td><td>(K24_MLB)</td><td>(02/04/2009)</td></tr><tr><td>5</td><td>46</td><td>External USB Connectors</td><td>(K84_MLB)</td><td>(11/09/2009)</td></tr><tr><td>6</td><td>47</td><td>LIO CONNECTORS</td><td>MASTER</td><td>MASTER</td></tr><tr><td>7</td><td>62</td><td>AUDIO: CODEC/REGULATOR</td><td>AUDIO</td><td>04/06/2011</td></tr><tr><td>8</td><td>65</td><td>AUDIO: HEADPHONE FILTER</td><td>AUDIO</td><td>04/06/2011</td></tr><tr><td>9</td><td>66</td><td>AUDIO: SPEAKER AMP</td><td>AUDIO</td><td>04/06/2011</td></tr><tr><td>10</td><td>67</td><td>AUDIO: JACK</td><td>AUDIO</td><td>04/06/2011</td></tr><tr><td>11</td><td>68</td><td>AUDIO: JACK TRANSLATORS</td><td>AUDIO</td><td>04/06/2011</td></tr><tr><td>12</td><td>69</td><td>MPM CONNECTOR</td><td>MASTER</td><td>MASTER</td></tr><tr><td>13</td><td>103</td><td>COUGAR POINT CONSTRAINTS 2</td><td>(K24_MLB)</td><td>(04/06/2009)</td></tr></table>																Page		Contents	Sync	Date	1	1	Table of Contents			2	2	System Block Diagram	K17_REF	06/30/2009	3	7	FUNC TEST	(K6_MLB)	(12/11/2009)	4	8	Power Aliases	(K24_MLB)	(02/04/2009)	5	46	External USB Connectors	(K84_MLB)	(11/09/2009)	6	47	LIO CONNECTORS	MASTER	MASTER	7	62	AUDIO: CODEC/REGULATOR	AUDIO	04/06/2011	8	65	AUDIO: HEADPHONE FILTER	AUDIO	04/06/2011	9	66	AUDIO: SPEAKER AMP	AUDIO	04/06/2011	10	67	AUDIO: JACK	AUDIO	04/06/2011	11	68	AUDIO: JACK TRANSLATORS	AUDIO	04/06/2011	12	69	MPM CONNECTOR	MASTER	MASTER	13	103	COUGAR POINT CONSTRAINTS 2	(K24_MLB)	(04/06/2009)
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13	103	COUGAR POINT CONSTRAINTS 2	(K24_MLB)	(04/06/2009)																																																																																	
ALTERNATIVE PARTS																																																																																					
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																	
155S0660	155S0513		ALL	TDK ALT TO MURATA																																																																																	
155S0661	155S0511		ALL	TDK ALT TO MURATA																																																																																	
155S0694	155S0387		ALL	TDK ALT TO MURATA																																																																																	
Schematic / PCB #'s																																																																																					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION																																																																																
051-8933	1	SCHEM,PCB,LIO,K21	SCH	CRITICAL																																																																																	
820-3057	1	PCBF,LIO,K21	PCB	CRITICAL																																																																																	
825-7563	1	LABEL,LIO,K21/K78	[EEEE_DK6V]	CRITICAL																																																																																	
946-3092	1	LIO LOCTITE UV EB 0.07, K21	UV_GLUE	CRITICAL																																																																																	
BOM: 639-1796 PCBA,LIO,K21 MCO: 056-4170 MCO,LIO,K21																																																																																					
PRODUCT SAFETY REQUIREMENTS: PCB, UL RECOGNIZED, MIN. 130-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, 130-C TEMP. RATING AND V-0 FLAME RATING.																																																																																					
DRAWING TITLE SCHEM,PCB,LIO,K21																																																																																					
Apple Inc.												DRAWING NUMBER 051-8933	SIZE D																																																																								
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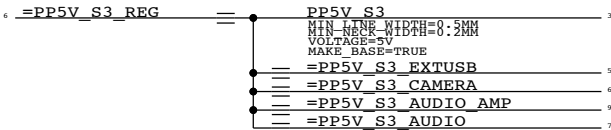




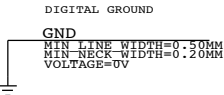
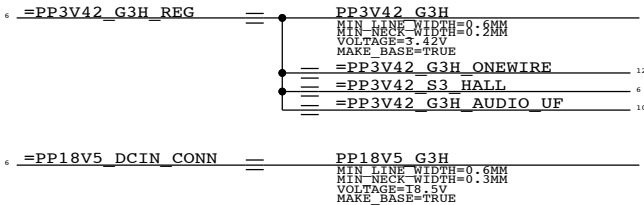
"S0,S0M" RAILS



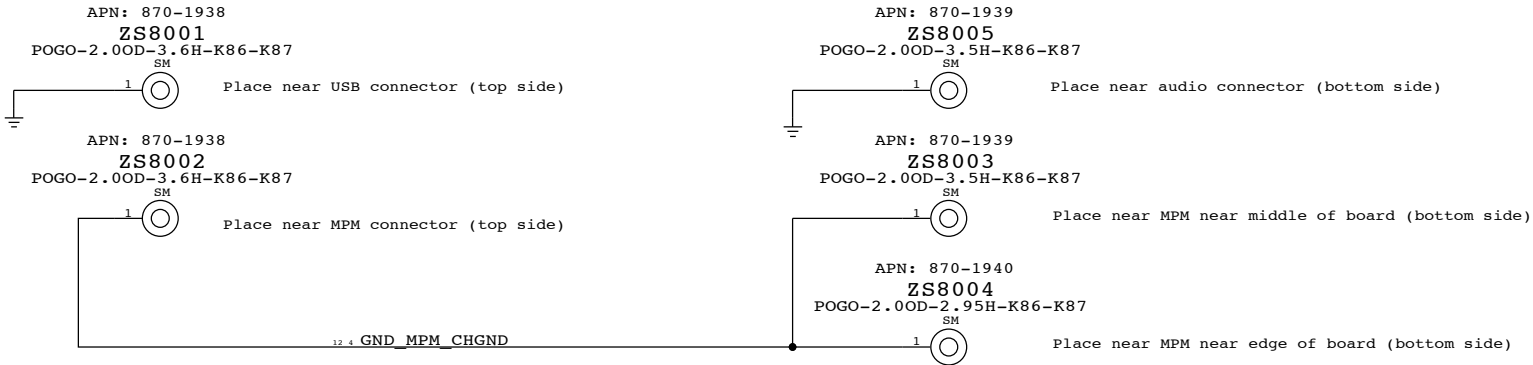
"S3" RAILS



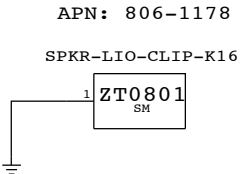
"G3H" RAILS



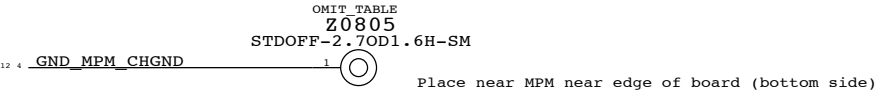
Pogo pins



Speaker clip



ESD BOSS




PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
860-1427	1	ESD STANDOFF,K21/78	Z0805		

SYNC MASTER=(K24 MLB)

SYNC DATE=(02/04/2009)

Power Aliases

 Apple Inc.

DRAWING NUMBER
051-8933

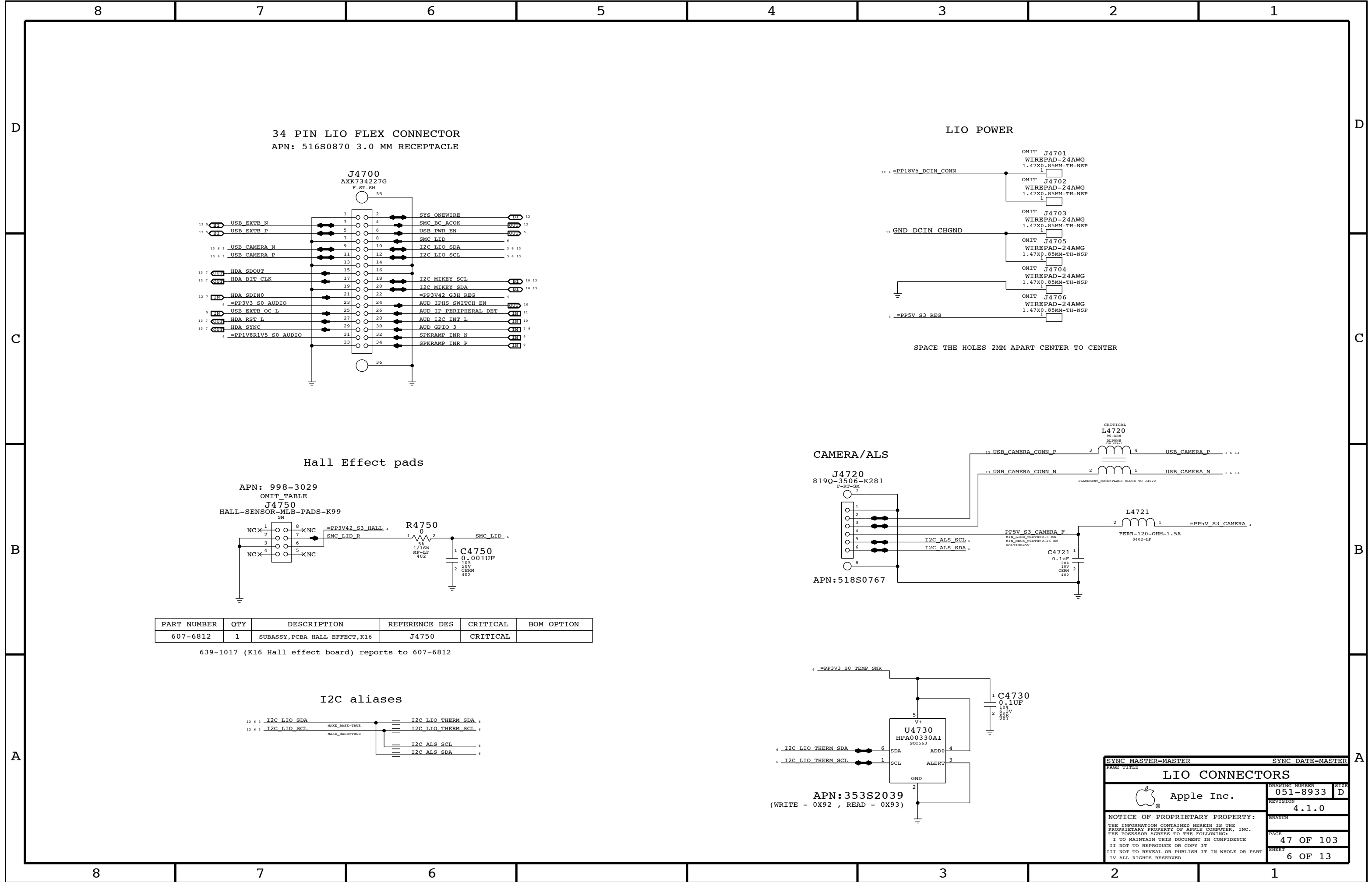
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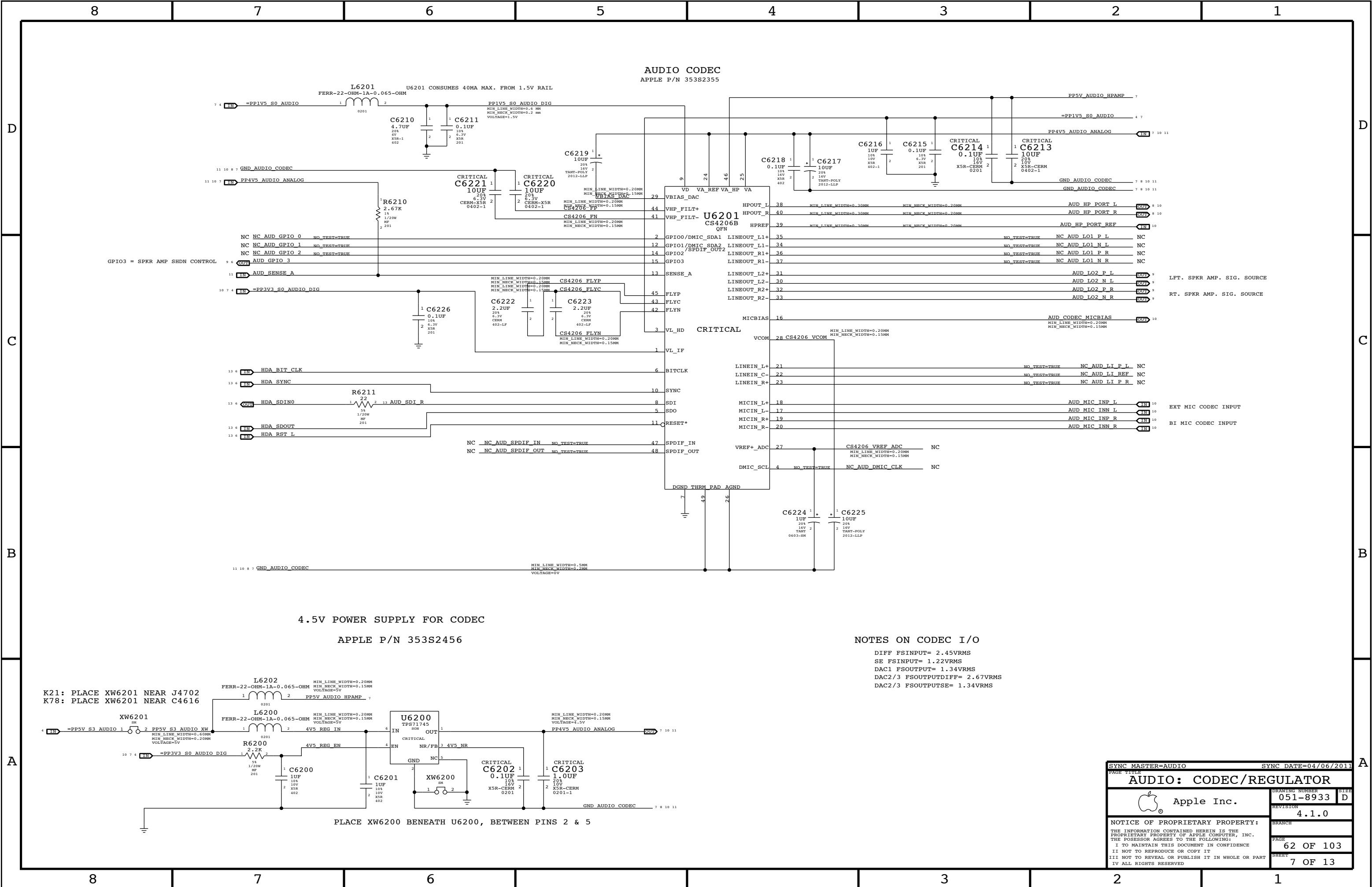
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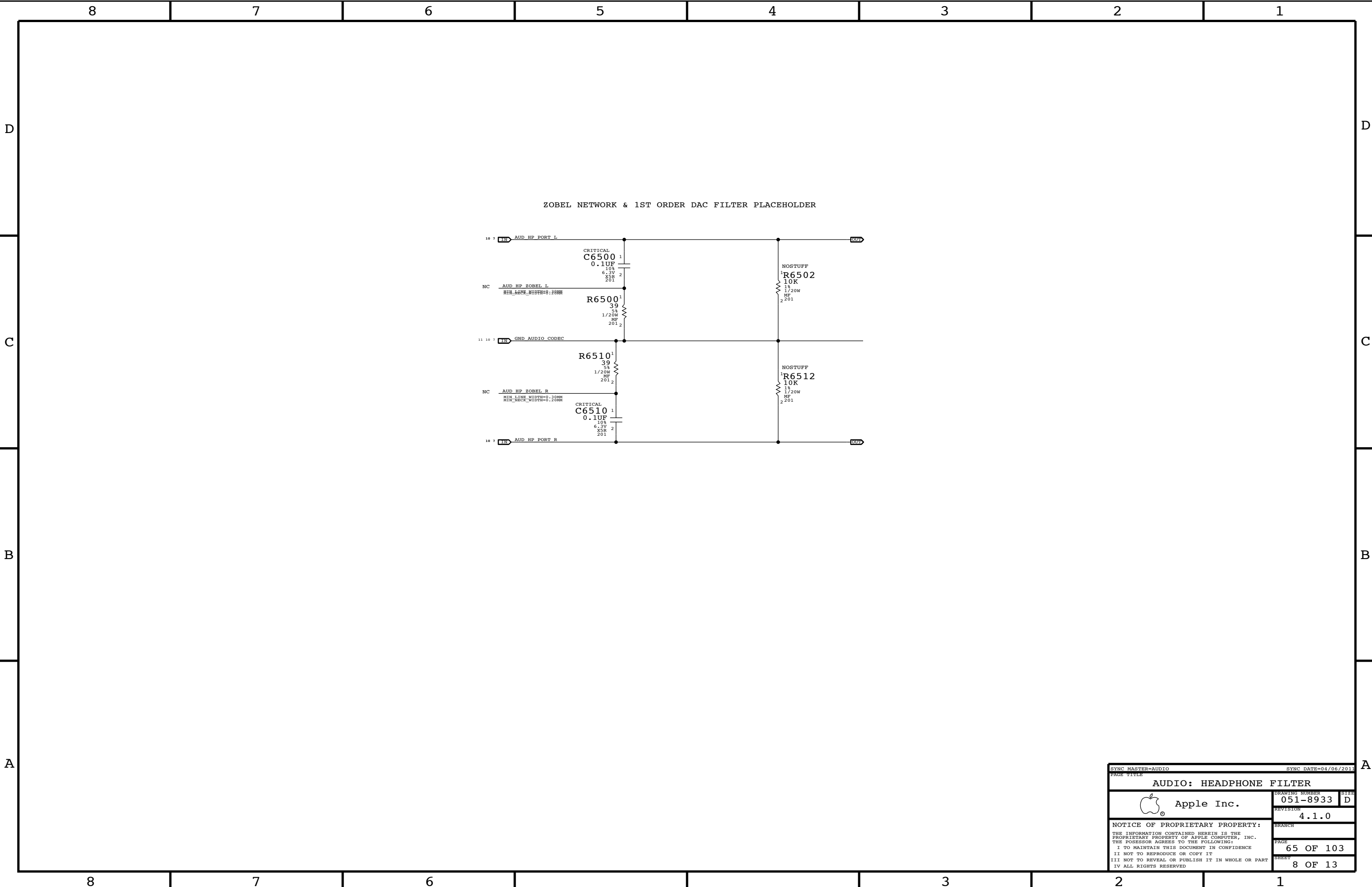
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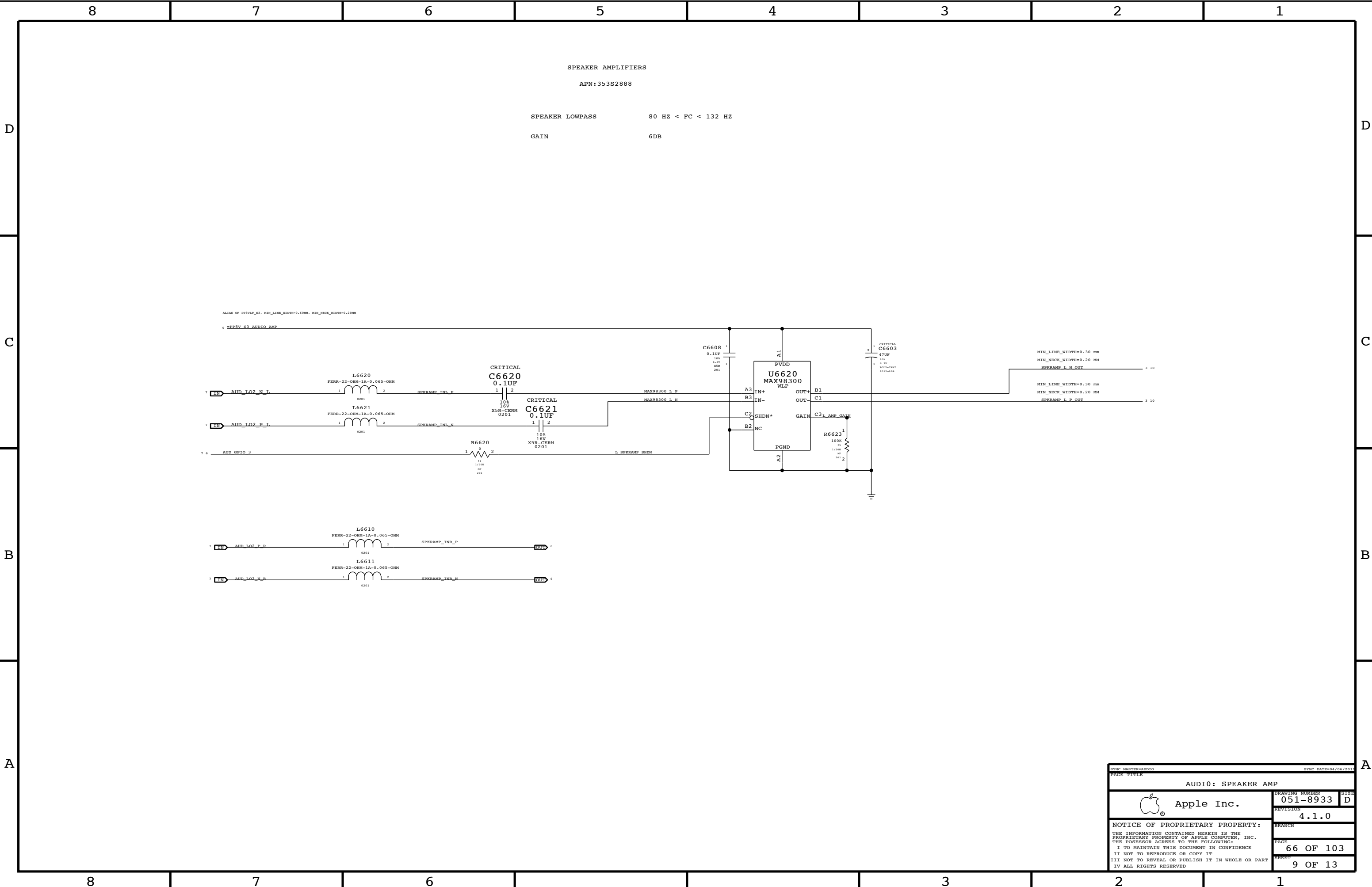
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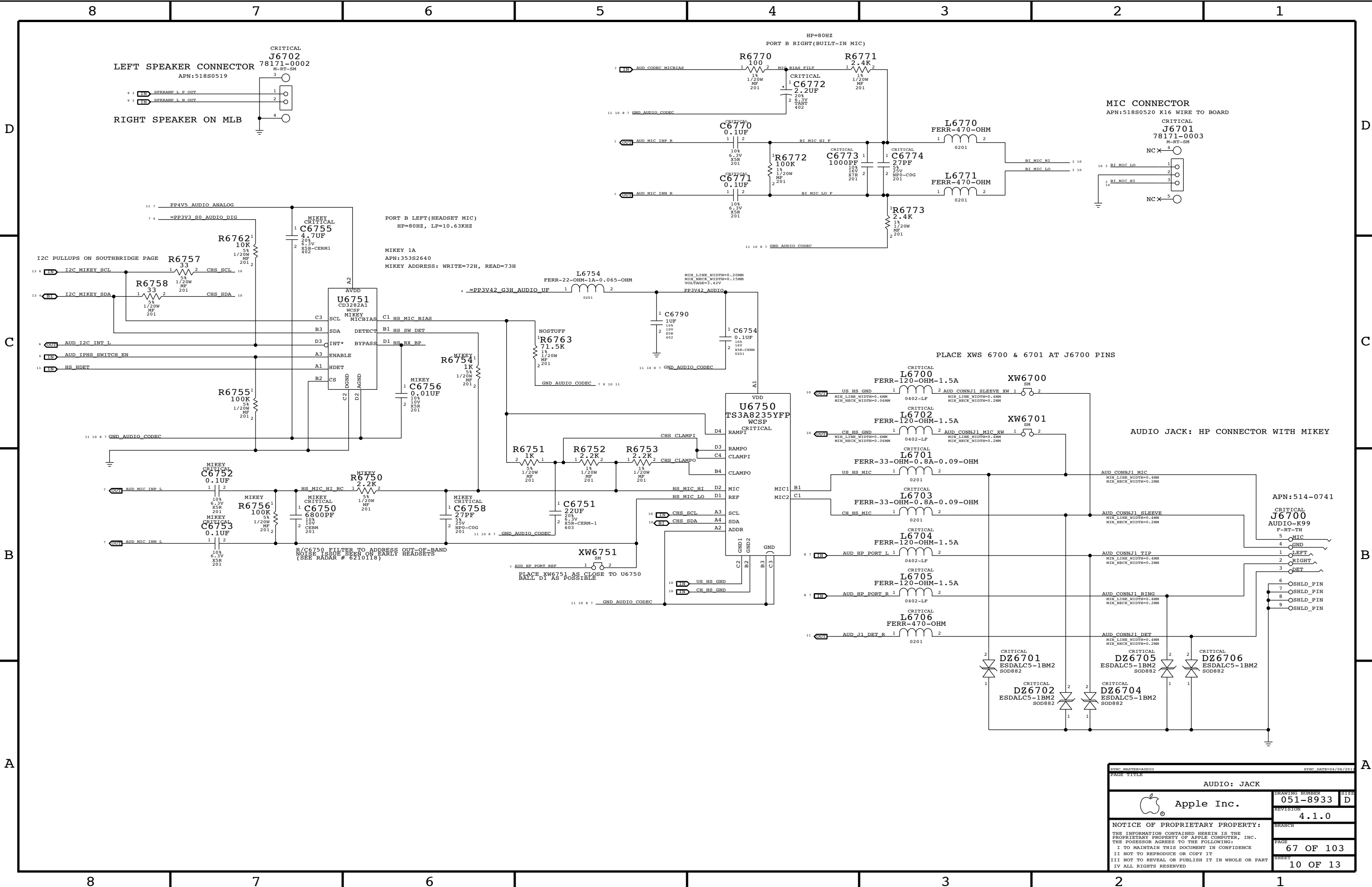
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8

CODEC OUTPUT SIGNAL PATHS

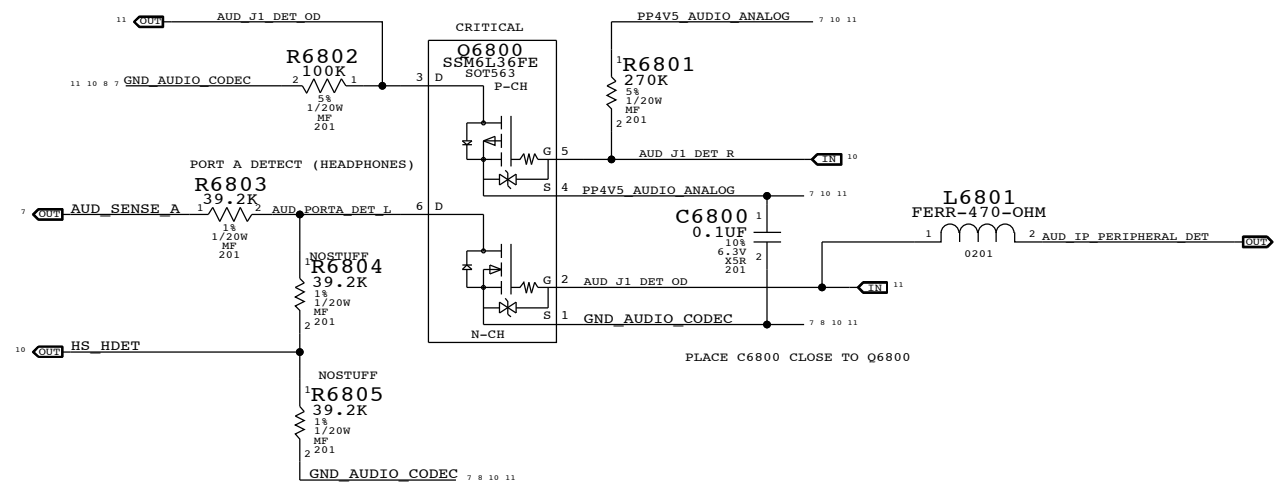
FUNCTION	VOLUME	CONVERTER	PIN COMPLEX	MUTE CONTROL	DET ASSIGNMENT
HP/LINE OUT	0X02 (2)	0X02 (2)	0X09 (9,A)	GPIO_0 AND GPIO_1	0X09 (A)
SPEAKERS	0X04 (4)	0X04 (4)	0X0B (11)	GPIO_3	N/A


CODEC INPUT SIGNAL PATHS

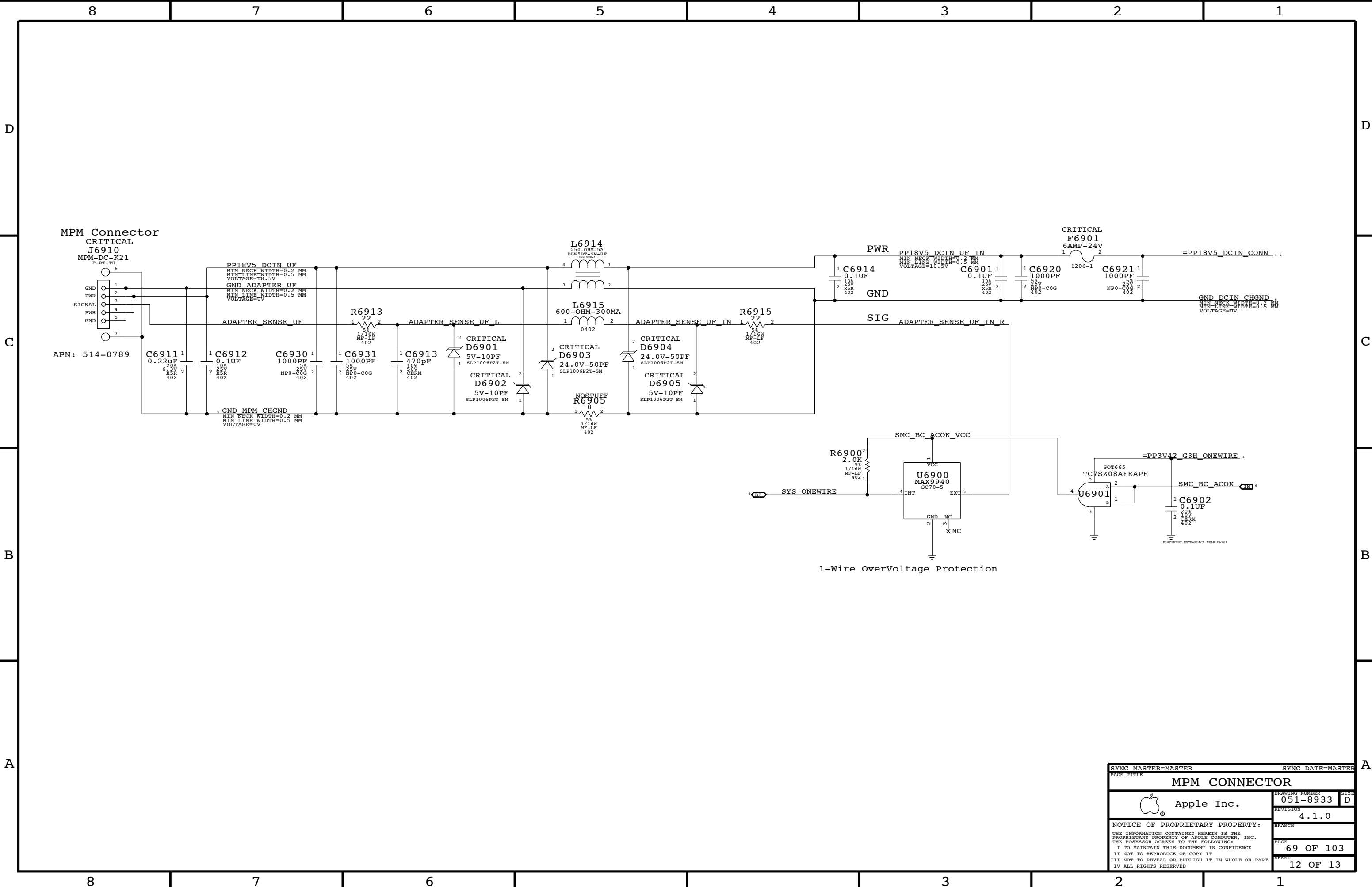
FUNCTION	CONVERTER	PIN COMPLEX	VREF	DET ASSIGNMENT
BUILT-IN MIC	0X06 (6)	0X0D (13,B,RIGHT)	MIC_BIAS (80%)	N/A
HEADSET MIC	0X06 (6)	0X0D (13,V22,B,LEFT)	MIKEY	MIKEY


SOUTHBRIDGE RESOURCE/PIN ALLOCATIONS

FUNCTION	NET NAME	SB GPIO/INT
PERIPHERAL/EXTRACTION DETECT	AUD_IP_PERIPHERAL_DET	GPIO 38
MIKEY INTERRUPT	AUD_I2C_INT_L	GPIO 55
MIKEY ENABLE	AUD_IPHS_SWITCH_EN	GPIO 7
MIKEY I2C BUS	I2C_MIKEY_SDA/SCL	MCP89 SMBUS 0



SYNC MASTER=AUDIO		SYNC DATE=04/06/2011	
PAGE TITLE			
AUDIO: JACK TRANSLATORS			
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SYNC MASTER=MASTER		SYNC DATE=MASTER	
PAGE TITLE			
MPM CONNECTOR			
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K21 LIO BOARD-SPECIFIC SPACING & PHYSICAL CONSTRAINTS

BOARD LAYERS	BOARD AREAS	BOARD UNITS (MIL or MM)	ALLEGRO VERSION
TOP, ISL2, ISL3, ISL4, ISL5, BOTTOM	NO_TYPE, BGA_P100H	MM	15.5.1

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	0.1000MM	30 MM	0 MM	0 MM
STANDARD	*	Y	=DEFAULT	=DEFAULT	12.7 MM	=DEFAULT	=DEFAULT

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
55_OHM_SE	TOP,BOTTOM	Y	0.12 MM	0.12 MM			
55_OHM_SE	*	Y	0.110 MM	0.110 MM	=STANDARD	=STANDARD	=STANDARD

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
90_OHM_DIFF	*	N	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
90_OHM_DIFF	18L3, 18L4	Y	0.115 MM	0.115 MM		0.130 MM	0.130 MM
90_OHM_DIFF	TOP, BOTTOM	Y	0.125 MM	0.125 MM		0.11 MM	0.11 MM

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
50_OHM_SE	TOP,BOTTOM	Y	0.090 MM	0.090 MM			
50_OHM_SE	*	Y	0.076 MM	0.076 MM	=STANDARD	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
2X_RULESET101C	TOP_BOTTOM	0.180 MM	2
4X_RULESET101C	TOP_BOTTOM	0.360 MM	2
2X_RULESET101C	-	0.254 MM	2
4X_RULESET101C	-	0.508 MM	2

USB 2.0 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
USER_30D	*	=0_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT	SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
USB	*	=2x_DIELECTRIC	?	USB	TOP,BOTTOM	=4x_DIELECTRIC	?

SOURCE: MCP79 Interface DG (DG-03328-001_v0D), Section 2.10.1.

SMBus 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
SMB_558	*	=55_OBM_SE	=55_OBM_SE	=55_OBM_SE	=55_OBM_SE	=STANDARD	=STANDARD

SPACING RULE SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SMB	*	=2x_DIELECTRIC	?



















SOURCE: MCP79 Interface DG (DG-03328-001_v0D), Section 2.11.1.


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_558	*	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

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

SOURCE: MCP79 Interface DG (DG-03328-001_v0D), Section 2.12.1.

ELECTRICAL_CONSTRAINT_SET		NET_TYPE		
		PHYSICAL	SPACING	
	USB_EXT_A	USB_90D	USB	CONN_USB_EXTB_N 5
	USB_EXT_A	USB_90D	USB	CONN_USB_EXTB_P 5
	USB_EXT_A	USB_90D	USB	USB_EXTB_N 5
	USB_EXT_A	USB_90D	USB	USB_EXTB_P 5 6
	USB_CAMERA	USB_90D	USB	USB_CAMERA_P 3 6
	USB_CAMERA	USB_90D	USB	USB_CAMERA_N 3 6
	USB_CAMERA	USB_90D	USB	USB_CAMERA_CONN_P 6
	USB_CAMERA	USB_90D	USB	USB_CAMERA_CONN_N 6
		SMB_55S	SMB	I2C_LIO_SDA 3 6
		SMB_55S	SMB	I2C_LIO_SCL 3 6
		SMB_55S	SMB	I2C_MIKEY_SCL 6 10
		SMB_55S	SMB	I2C_MIKEY_SDA 6 10
	HDA_BIT_CLK	HDA_55S	HDA	HDA_BIT_CLK 6 7
	HDA_SYNC	HDA_55S	HDA	HDA_SYNC 6 7
		HDA_55S	HDA	HDA_RST_L 6 7
	HDA_SDINO	HDA_55S	HDA	HDA_SDINO 6 7
		HDA_55S	HDA	AUD_SDI_R 7
	HDA_SDOUT	HDA_55S	HDA	HDA_SDOUT 6 7

SYNC MASTER=(K24 MLB)		SYNC DATE=(04/06/2009)	
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COUGAR POINT CONSTRAINTS 2			
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