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- 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.

SCHEM, DINO, Q41A

12/17/03


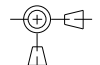
REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD	ENG APPD
				DATE	DATE
01		308080	ENGINEERING RELEASED	12/19/03?	

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
815-7053	1	ALS DUST COVER	DC1	?

PAGE CONTENTS

1	TITTLE PAGE AND CONTENTS
2	PCB NOTES
3	USB / SENSOR
4	POWER CONNECTOR
5	SIGNAL CONSTRAINTS
6	POWER CONSTRAINTS
7	COMPONENT LOCATIONS
8	SIGNAL LOCATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-6600	1	SCHEM, DINO, Q41A	SCH1	
820-1617	1	PCBF, DINO, Q41A	PCB1	

DIMENSIONS ARE IN MILLIMETERS		METRIC		 Apple Computer Inc.	
XX : _____	_____	DRAPFER	DESIGN CK	NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART	
X.XX : _____	_____	ENG APPD	MFG APPD		
X.XXX : _____	_____	QA APPD	DESIGNER		
ANGLES : _____	_____	RELEASE	SCALE		
DO NOT SCALE DRAWING		SCALE NONE		TITLE	
 THIRD ANGLE PROJECTION		MATERIAL/FINISH NOTED AS APPLICABLE		SIZE D	SCHEM, DINO, Q41A DRAWING NUMBER 051-6600 REV. 01
				SHT 1 OF 8	

PCB SPECS

THICKNESS : 1.2 MM / 0.047 IN
 1/2 OZ CU THICKNESS: 0.7 MILS
 1.0 OZ CU THICKNESS: 1.4 MILS

IMPEDANCE : 50 OHMS +/- 10%
 DIELECTRIC: FR-4
 LAYER COUNT: 12
 SIGNAL TRACE WIDTH: 4 MILS
 SIGNAL TRACE SPACING: 4 MILS
 PREPREG THICKNESS: 2-3 MILS

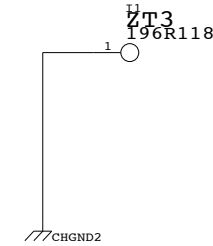
SEE PCB CAD FILES FOR MORE SPECIFIC INFO.

BOARD STACK-UP AND CONSTRUCTION

20R10 TH VIA OR VIA IN PAD

1	SIGNAL (1/3 OZ + COPPER PLATING)
2 PREPREG (3MIL)	GROUND (1/2 OZ)
3 LAMINATE (4MIL)	SIGNAL (1/2 OZ)
4 PREPREG (3MIL)	SIGNAL (1/2 OZ)
5 LAMINATE (4MIL)	GROUND (1/2 OZ)
6 PREPREG (2MIL)	CUT POWER PLANE(1 OZ)
7 LAMINATE (3MIL)	CUT POWER PLANE(1 OZ)
8 PREPREG (2MIL)	GROUND (1/2 OZ)
9 LAMINATE (4MIL)	SIGNAL (1/2 OZ)
10 PREPREG (3MIL)	SIGNAL (1/2 OZ)
11 LAMINATE (4MIL)	GROUND (1/2 OZ)
12 PREPREG (3MIL)	SIGNAL (1/3 OZ + COPPER PLATING)

BOARD HOLES



PCB BOARD STANDOFFS

BOARD INFORMATION

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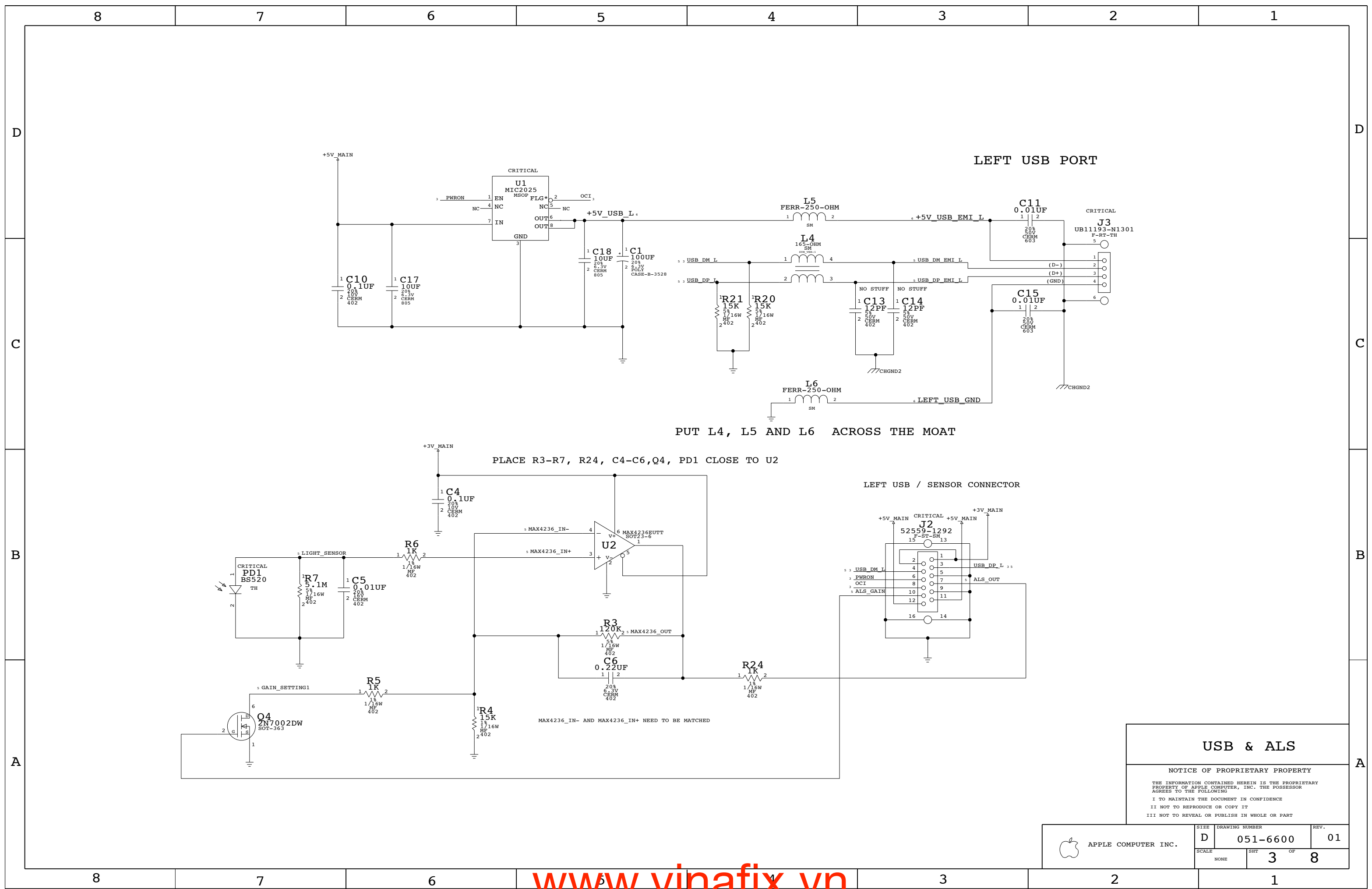
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LEFT USB PORT

PUT L4, L5 AND L6 ACROSS THE MOAT

PLACE R3-R7, R24, C4-C6, Q4, PD1 CLOSE TO U2

LEFT USB / SENSOR CONNECTOR

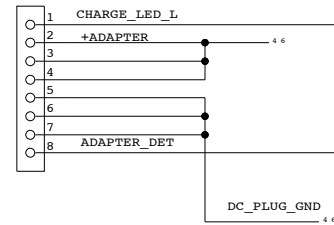
USB & ALS

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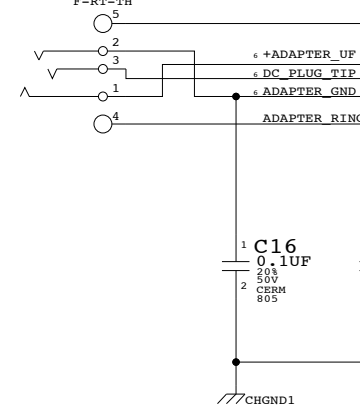
POWER CONNECTOR

CRITICAL
J4
87437-0833
M-ST-SM

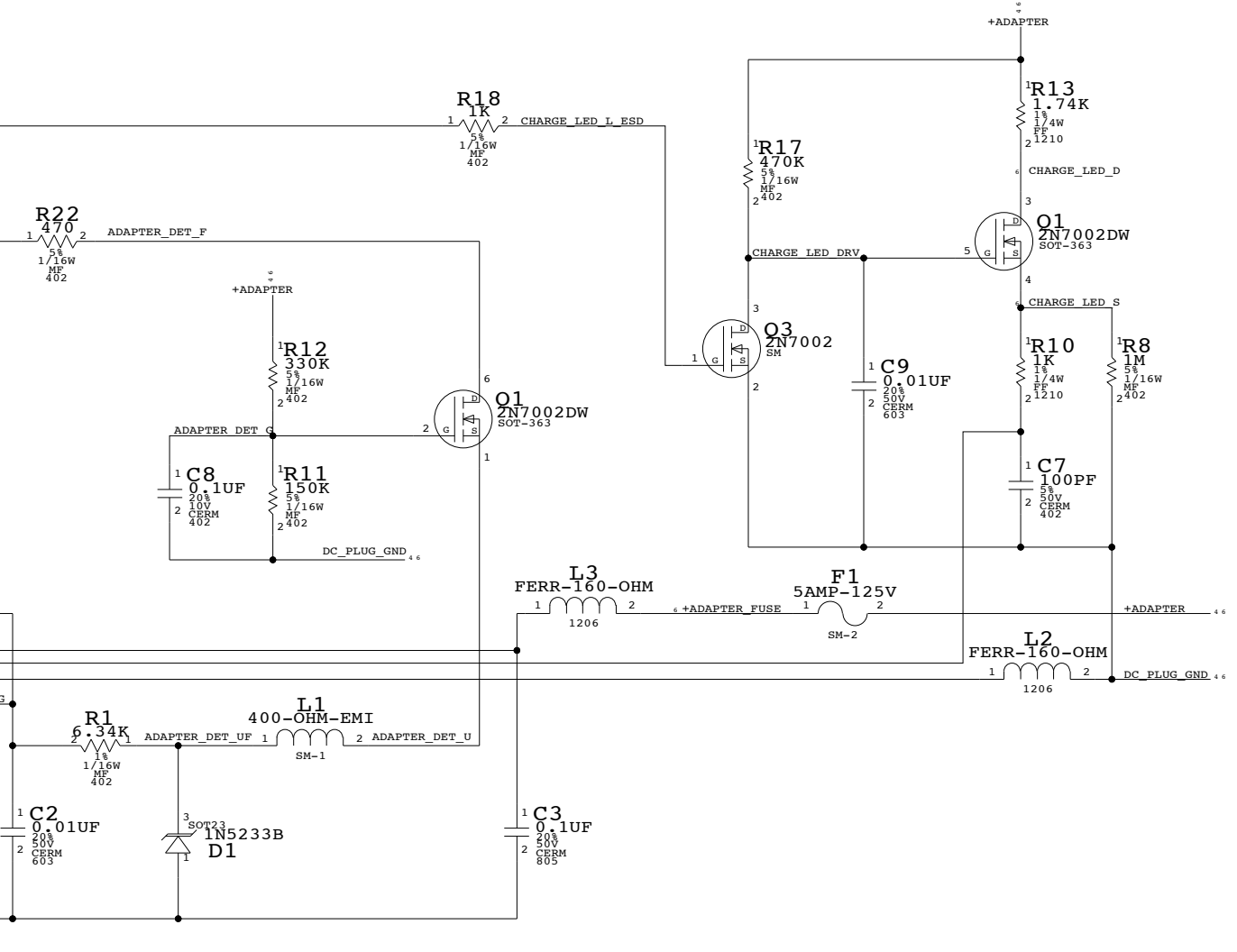


DC POWER JACK

CRITICAL
J1
JPD1133-W01
F-RT-TH



CHARGE LED SUPPORT



PLACE C2, C3 AND C16 CLOSE TO J1
PLACE L1, L2 AND L3 CLOSE TO J1

DC POWER INTERFACE

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Differential Signals

GROUP	SIG_NAME	DIFFERENTIAL_PAIR	MATCHED_DELAY	MIN_LINE_WIDTH	NET_SPACING_TYPE	MAX_VIAS
USB						
	USB_DM_L	USB_D1	USB_DM:J2.4:L4.1:20	MIN_LINE_WIDTH=5	10 MIL SPACING	3
	USB_DP_L	USB_D1	USB_DP:J2.3:L4.2:20	MIN_LINE_WIDTH=5	10 MIL SPACING	3
	USB_DM_EMI_L	USB_D1_EMI	USB_D1_EMI:L4.4:J3.2:20	MIN_LINE_WIDTH=5	10 MIL SPACING	3
	USB_DP_EMI_L	USB_D1_EMI	USB_D1_EMI:L4.3:J3.3:20	MIN_LINE_WIDTH=5	10 MIL SPACING	3

ALS SIGNALS

GROUP	SIG_NAME	DELAY_RULE	MATCHED_DELAY	STUB_LENGTH	MIN_LINE_WIDTH	NET_SPACING_TYPE
ALS						
	LIGHT_SENSOR				MIN_LINE_WIDTH=20	
	GAIN_SETTING1				MIN_LINE_WIDTH=20	
	MAX4236_IN+				MIN_LINE_WIDTH=20	
	MAX4236_IN-				MIN_LINE_WIDTH=20	
	MAX4236_OUT				MIN_LINE_WIDTH=20	
	ALS_GAIN				MIN_LINE_WIDTH=5	
	ALS_OUT				MIN_LINE_WIDTH=10	

FOR USB DIFFERENTIAL TRACES (ZSINGLE=45 OHM +- 10%,ZDIFF=90 OHM +- 15%)

	MICROSTRIP (OUTER LAYERS)	STRIPLINE (INTERNAL LAYERS)
TRACE WIDTH	4 MIL	5 MIL
SEPARATION OF TRACES	8 MIL	10 MIL

SIGNAL CONSTRAINTS - PAGE 3

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SCALE	SHT		OF
NONE	5		8

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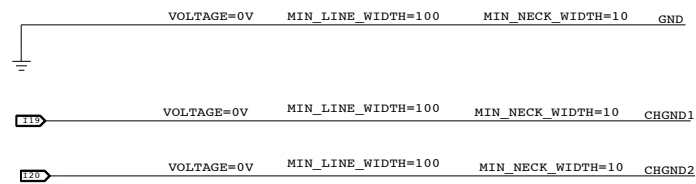
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POWER NET CONSTRAINTS

GROUP	SIG_NAME	VOLTAGE	MIN_LINE_WIDTH	MIN_NECK_WIDTH
ADAPTER	+5V_MAIN	VOLTAGE=5V	MIN_LINE_WIDTH=25	MIN_NECK_WIDTH=10
	+3V_MAIN	VOLTAGE=3.3V	MIN_LINE_WIDTH=25	MIN_NECK_WIDTH=10
	+ADAPTER_UF	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10
	+ADAPTER_FUSE	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10
	+ADAPTER	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10
	ADAPTER_GND	VOLTAGE=0V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10
	CHARGE_LED_D	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10
	CHARGE_LED_S	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10
	DC_PLUG_TIP	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10
	DC_PLUG_GND	VOLTAGE=0V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10
USB	+5V_USB_L	VOLTAGE=5V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10
	+5V_USB_EMI_L	VOLTAGE=5V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10
	LEFT_USB_GND	VOLTAGE=0V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10

CHANGE HISTORY

- 1.IMPORTED 051-6474
- 2.CHANGED LM3526 TO MIC2025
3. ADDED ASL DUST COVER (815-7053) FOR THE BOM

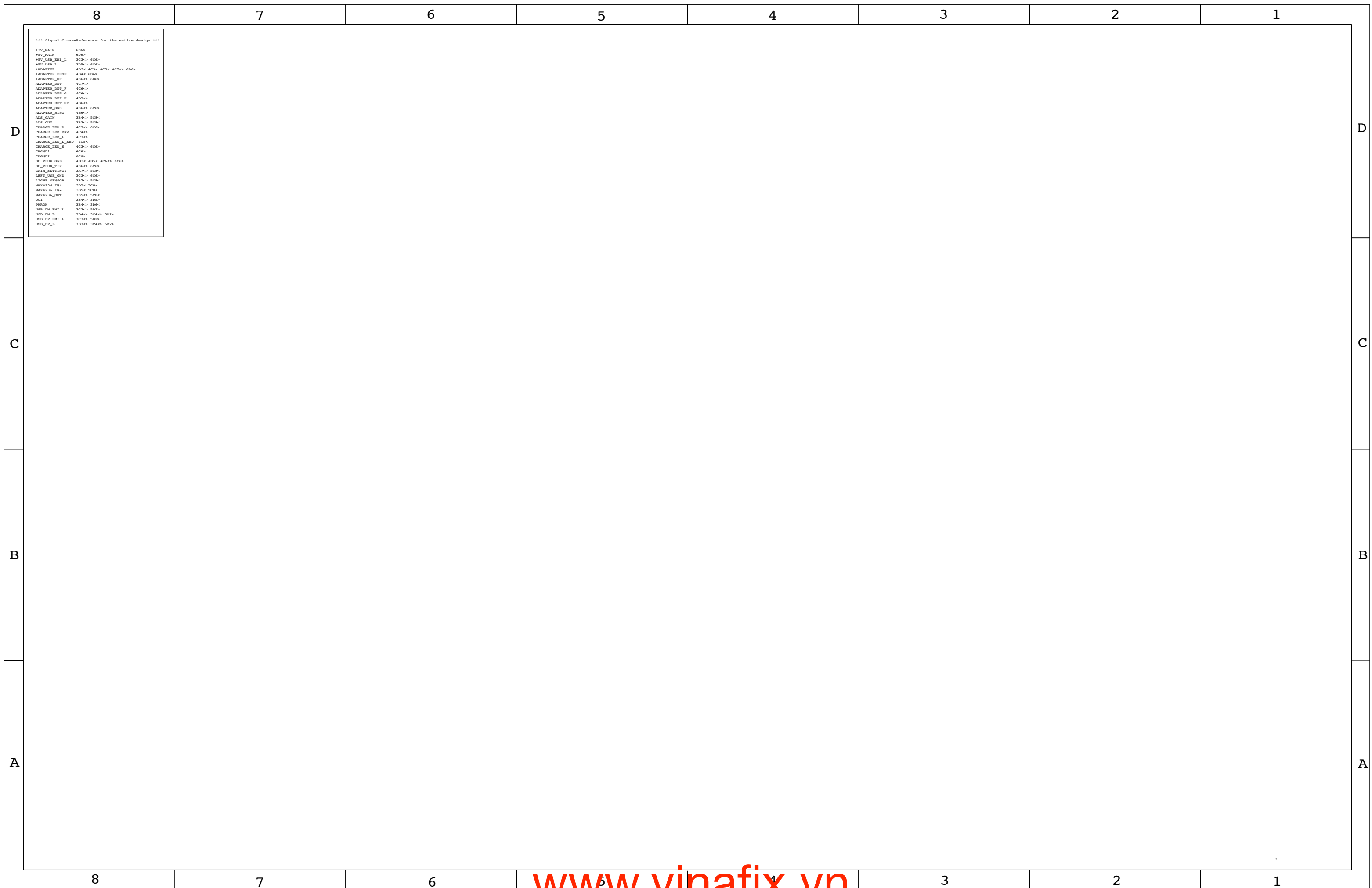


SIGNAL CONSTRAINTS - PAGE 4

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SCALE		SHT	OF
NONE		6	8



*** Signal Cross-Reference for the entire design ***

+3V_MAIN	6D6>
+3V_MAIN	4B6>
+5V_USB_EMI_L	3C3<> 6C6>
+5V_USB_L	3D5<> 6C6>
+ADAPTER	4B3< 4C3< 4C5< 4C7<> 6D6>
+ADAPTER_FUSE	4B4< 6D6>
+ADAPTER_UP	4B6<> 6D6>
ADAPTER_DET	4C7<>
ADAPTER_DET_F	4C6<>
ADAPTER_DET_G	4C6<>
ADAPTER_DET_I	4B5<>
ADAPTER_DET_UF	4B6<>
ADAPTER_GND	4B6<> 6C6>
ADAPTER_RING	4B5<>
ALS_GAIN	3B4<> 5C8<
ALS_OFF	3B3<> 5C8<
CHANGE_LED_D	4C3<> 6C6>
CHANGE_LED_DRV	4C4<>
CHANGE_LED_L	4C7<>
CHANGE_LED_L_RED	4C5<
CHANGE_LED_S	4C3<> 6C6>
CHRGD1	6C6>
CHRGD2	6C6>
DC_PLD0_GND	4B3< 4B5< 4C6<> 6C6>
DC_PLD0_V10	4B6<> 6C6>
GAIN_BITTING1	3A7<> 5C8<
LEFT_USB_GND	3C3<> 6C6>
LIGHT_SENSOR	3B7<> 5C8<
MAX4224_IN+	3B5< 5C8<
MAX4224_IN-	3B5<> 5C8<
MAX4224_OUT	3B5<> 5C8<
OC1	3B4<> 3D5>
PWRON	3B4<> 3D6<
USB_DM_EMI_L	3C3<> 5D2>
USB_DM_L	3B4<> 3C4<> 5D2>
USB_DP_EMI_L	3C3<> 5D2>
USB_DP_L	3B3<> 3C4<> 5D2>

