



Compal Confidential

IAKAA LA-3401P Schematics Document

Intel Yonah/Merom with 945PM/GM + DDRII + ICH7M
(+VGA/B NVidia NB7P-GS&NB7M-SE)

2006-10-03

REV: 0.3

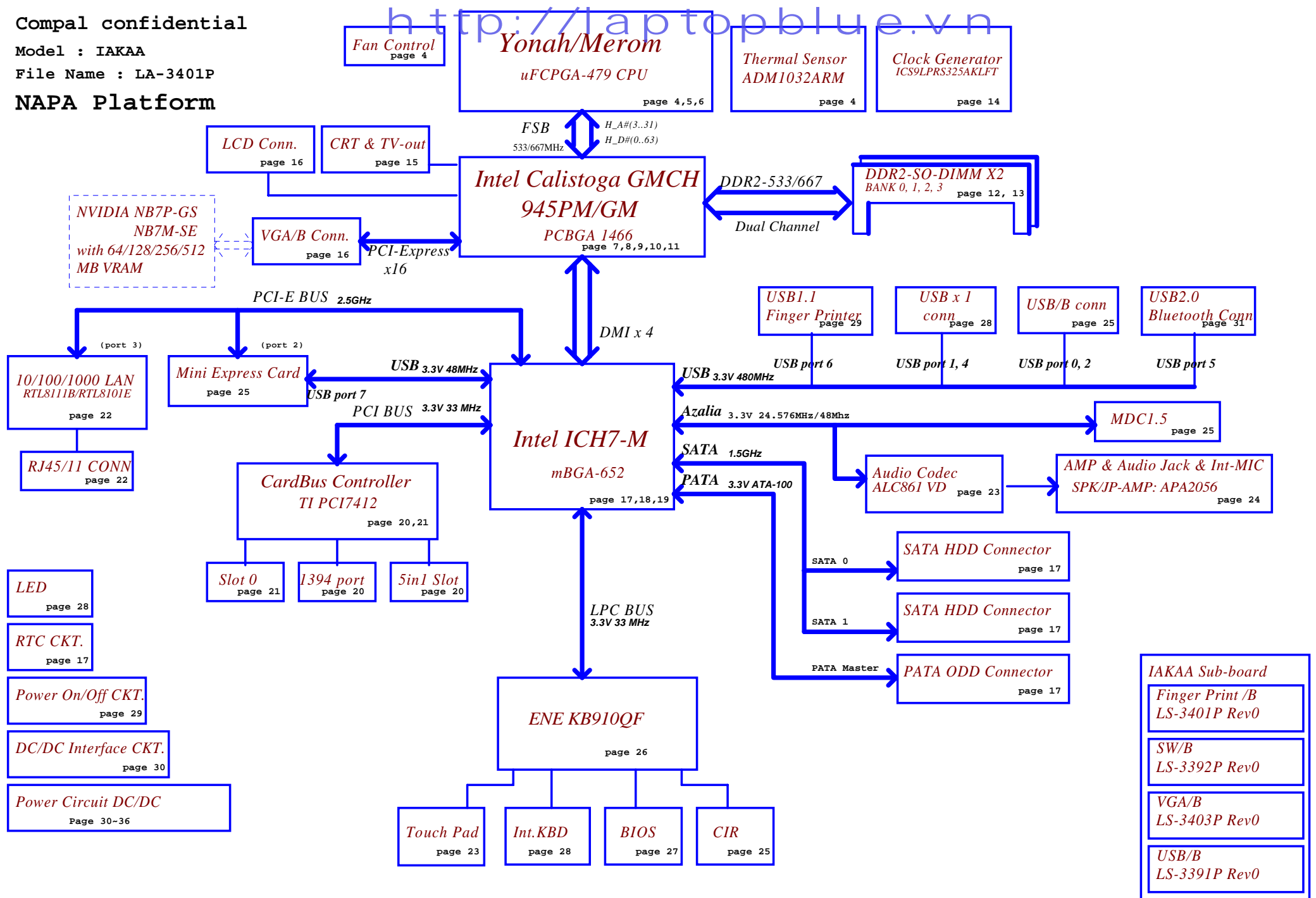
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Compal confidential

Model : IAKAA

File Name : LA-3401P

NAPA Platform



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Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	NA	NA	NA
B+	AC or battery power rail for power circuit.	NA	NA	NA
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+0.9VS	0.9V switched power rail for DDR terminator	ON	OFF	OFF
+VCCP	1.05V switched power rail	ON	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8V	1.8V power rail for DDR	ON	ON	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5VS	5V switched power rail	ON	OFF	OFF
+VSB	+VSB always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

External PCI Devices

DEVICE	PCI Device ID	IDSEL #	REQ/GNT #	PIRQ
1394	D0	AD20	2	A,B,C,D
CARD BUS	D4	AD20	2	A,B,C,D
SIN1	D4	AD20	2	A,B,C,D

KB910 I2C / SMBUS ADDRESSING

DEVICE	HEX	ADDRESS
SM1 24C16	A0H	1 0 1 0 0 0 0 X b
SM1 SMART BATTERY	16H	0 0 0 1 0 1 1 X b
SM2 ADM0132	98H	1 0 0 1 1 0 0 X b
CPU THERMAL MONITOR		

ICH7-M SM Bus address

DEVICE	HEX	ADDRESS
DDR SO-DIMM 0	A0	1 0 1 0 0 0 0 0
DDR SO-DIMM 1	A4	1 0 1 0 0 1 0 0
CLOCK GENERATOR (EXT.)	D2	1 1 0 1 0 0 1 0

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra	100K +/- 5%			
Board ID	Rb	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

BOARD ID Table

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	
4	
5	
6	
7	

SKU ID Table

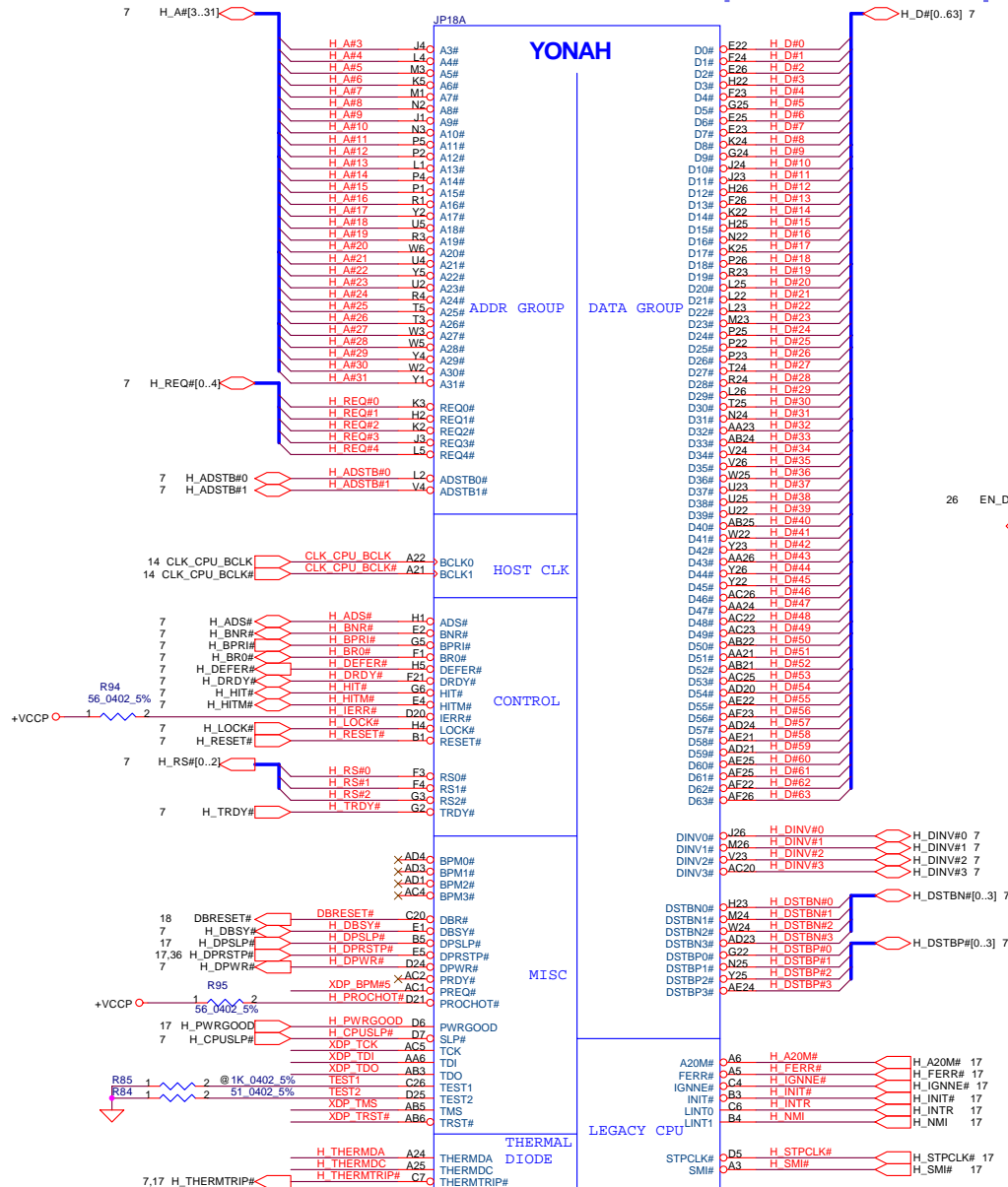
SKU ID	SKU
0	10 (10E)
1	10C
2	10G
3	10GC
4	10J (10EJ)
5	10CJ
6	10GJ
7	10GCJ

BTO Option Table

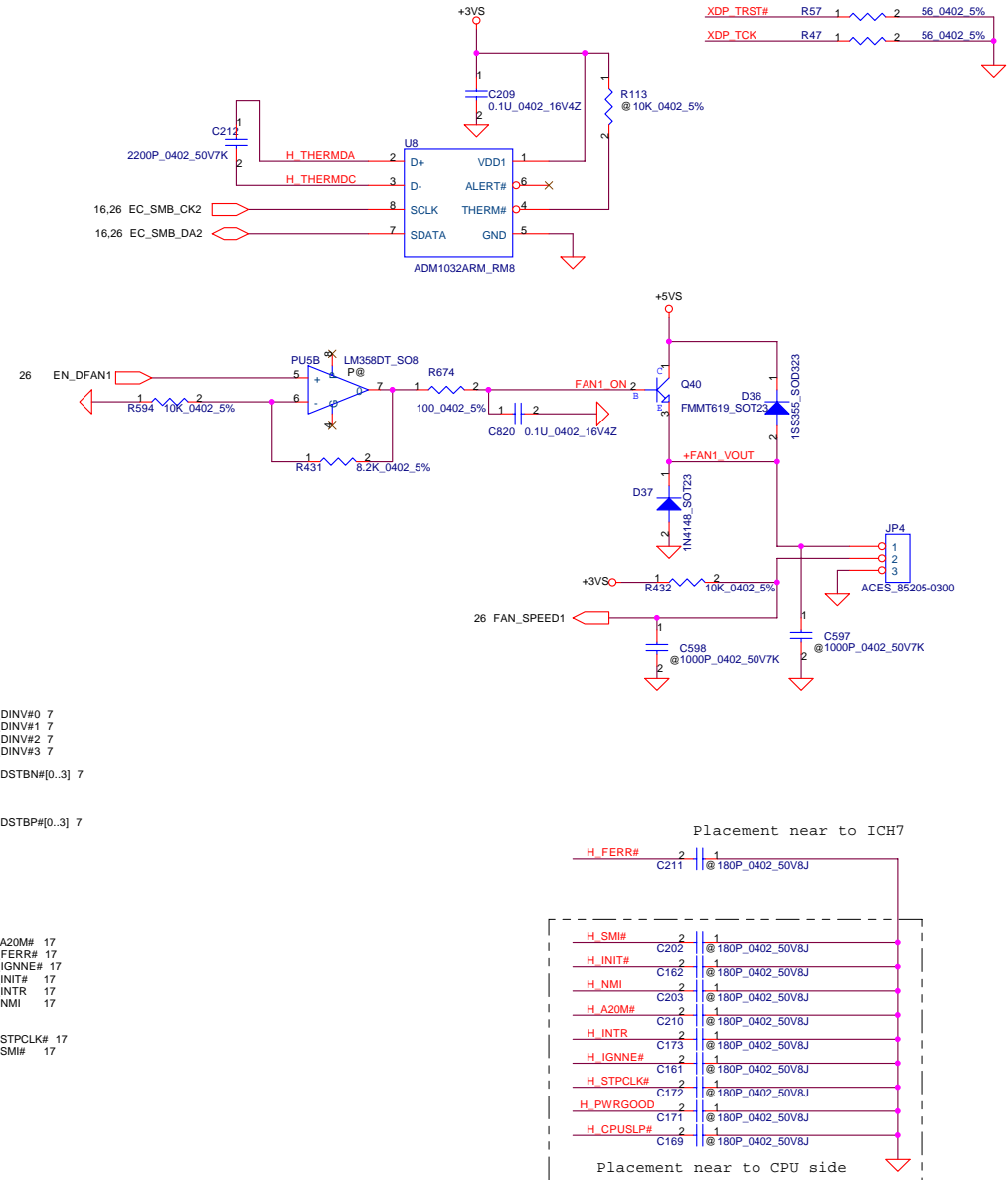
BTO Item	BOM Structure
2ND HDD	2HDD@
LAN	100M@ 1000M@
WLAN	KS@
NB	GM@ PM@
BT	BT@
MIC	MIC@
CIR	CIR@
FINGER PRINT	
SIN1	7412@

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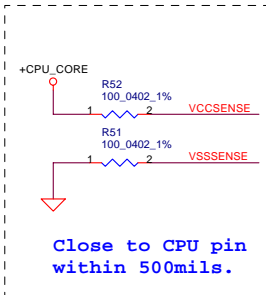
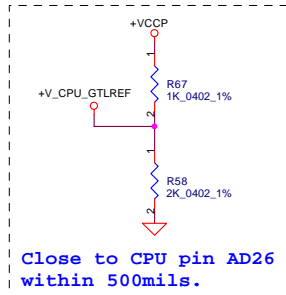
Place close to CPU within 500mil



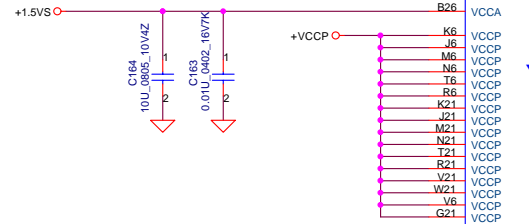
Thermal Sensor ADM1032ARM



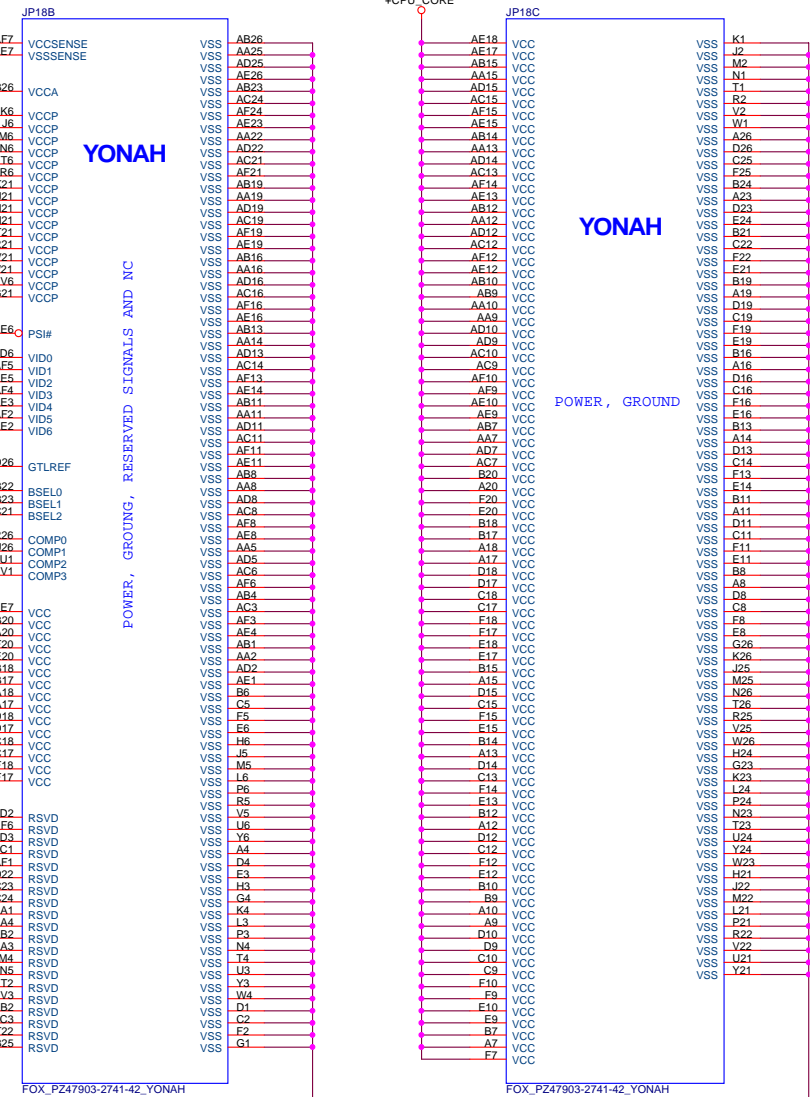
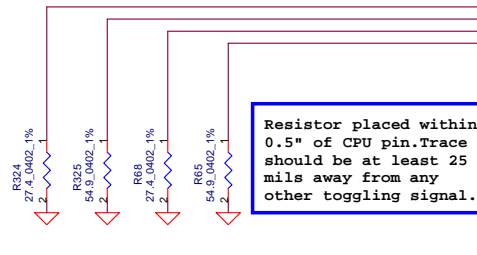
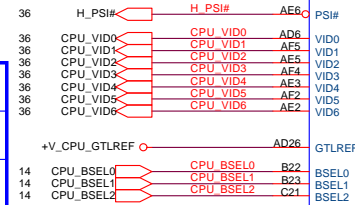
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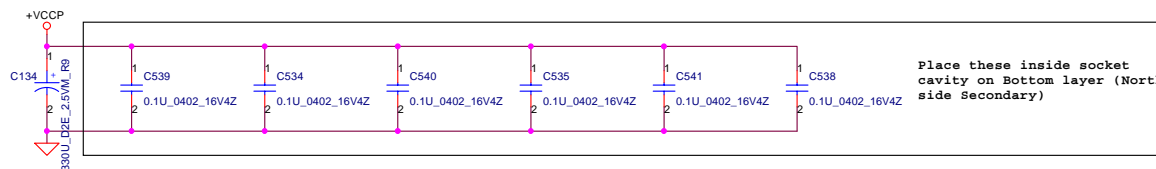
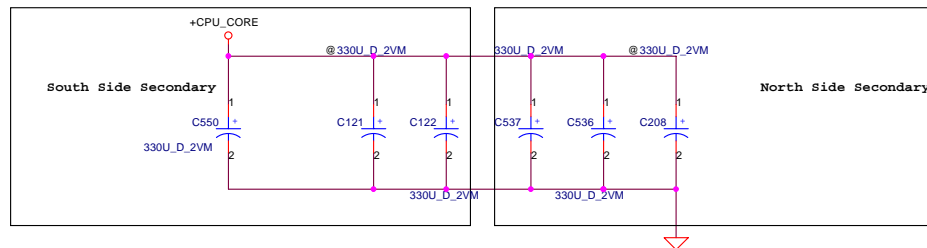
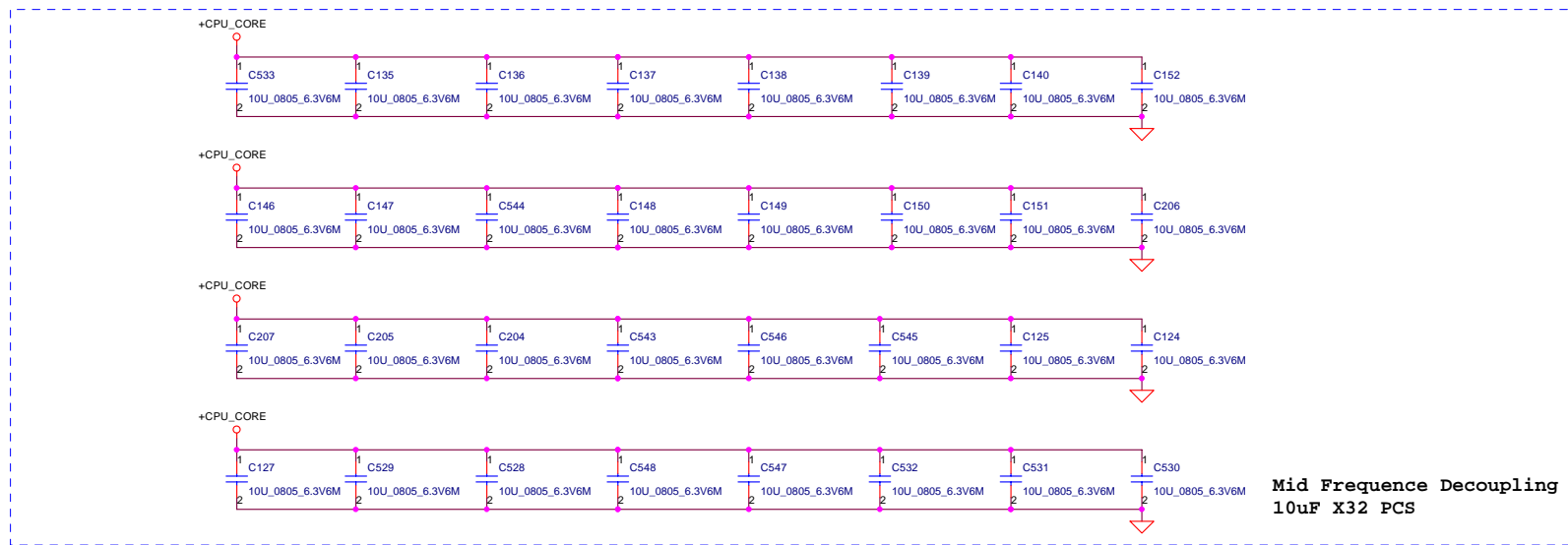


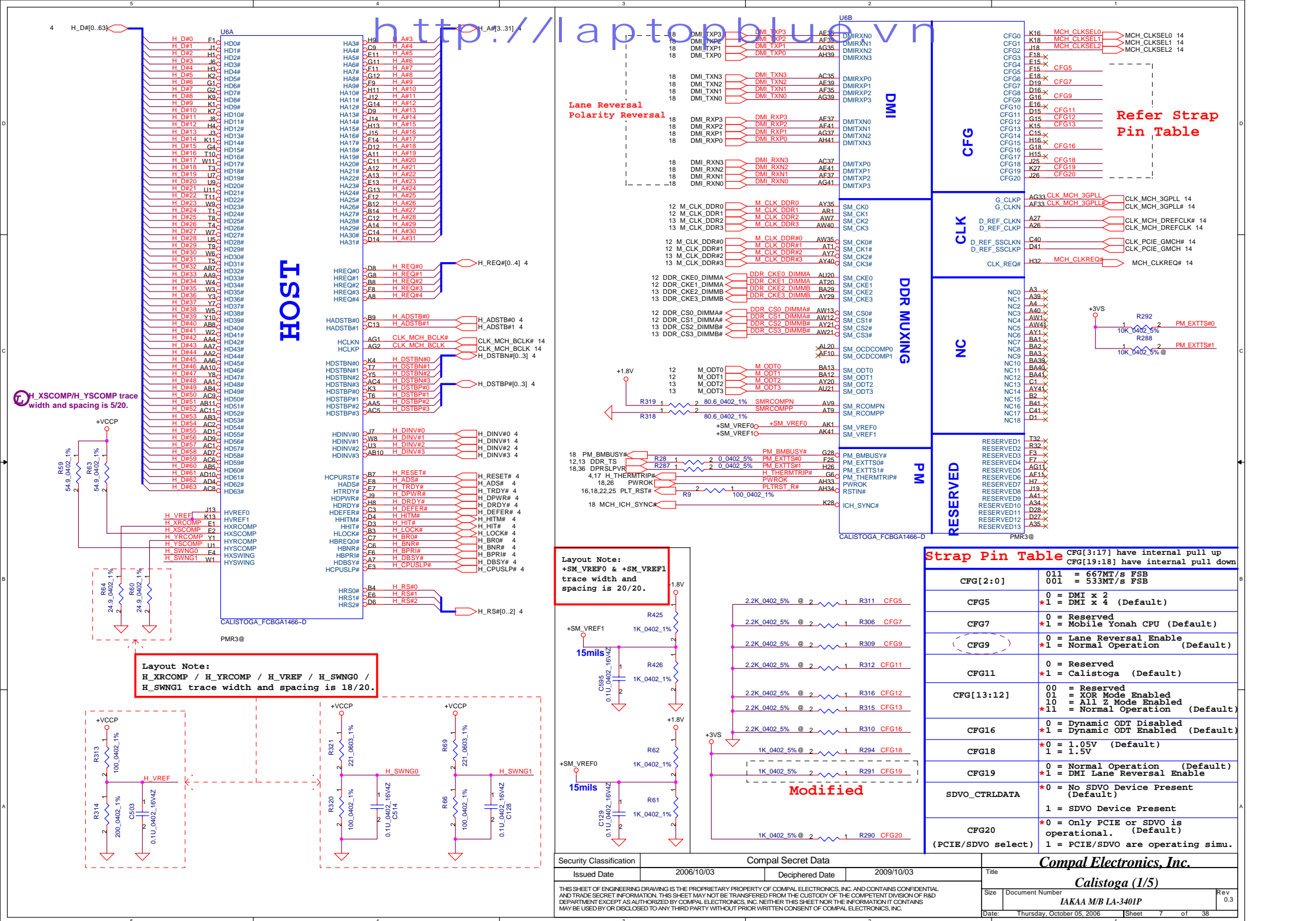
Length match within 25 mils
The trace width 18 mils space
7 mils

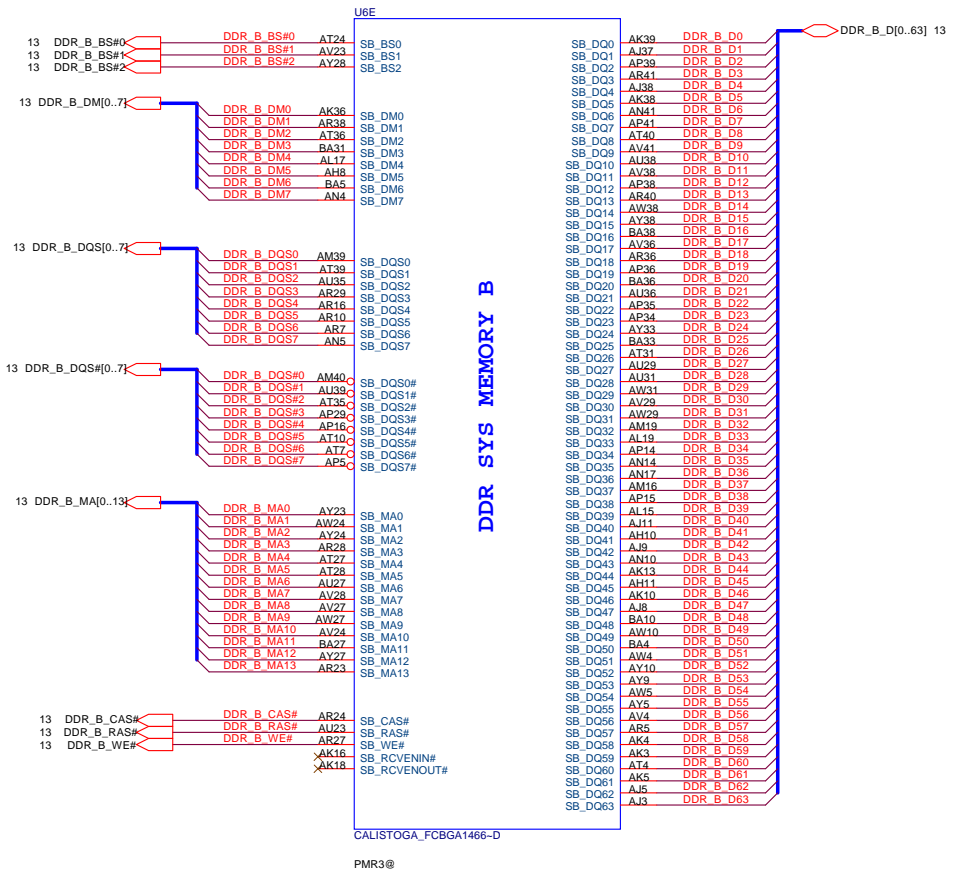
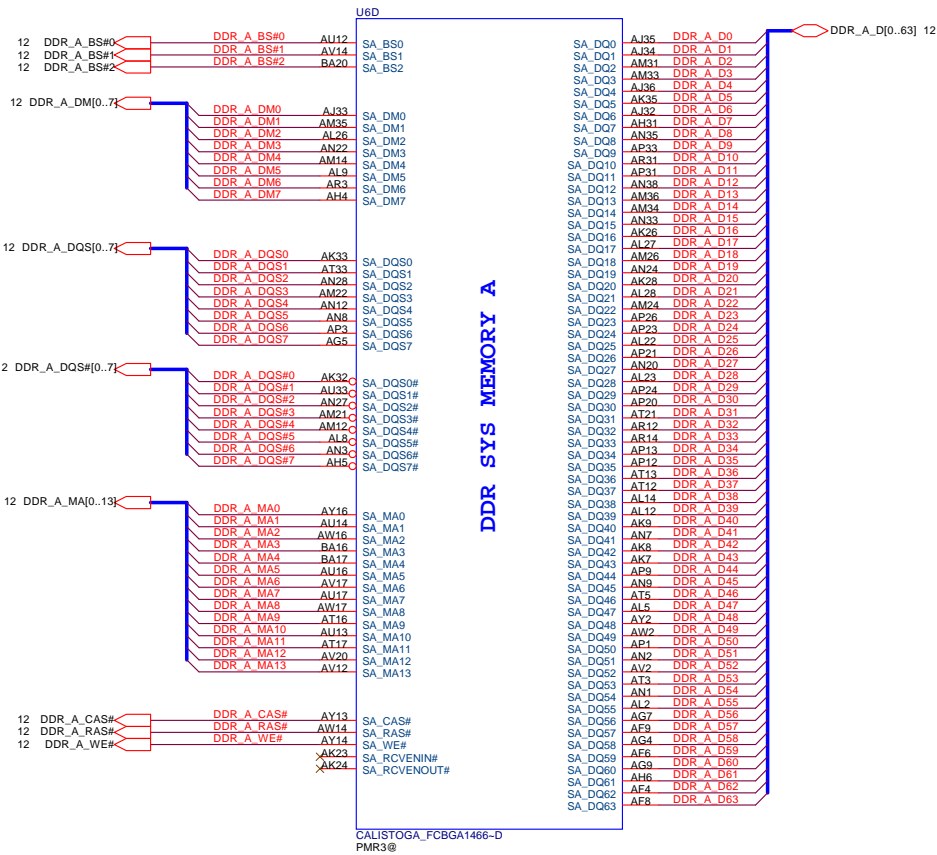


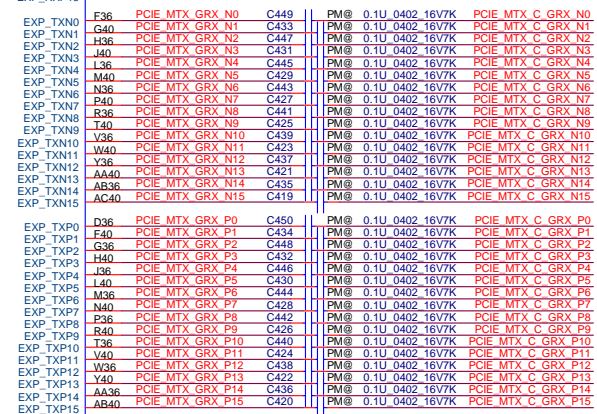
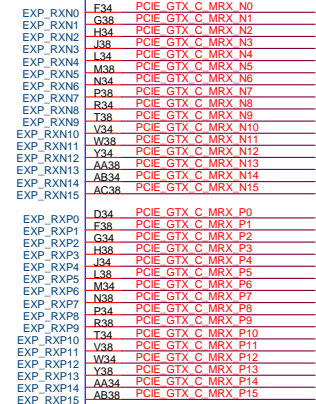
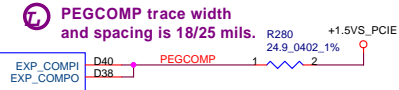
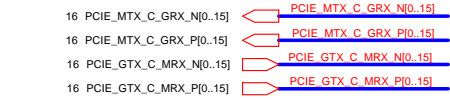
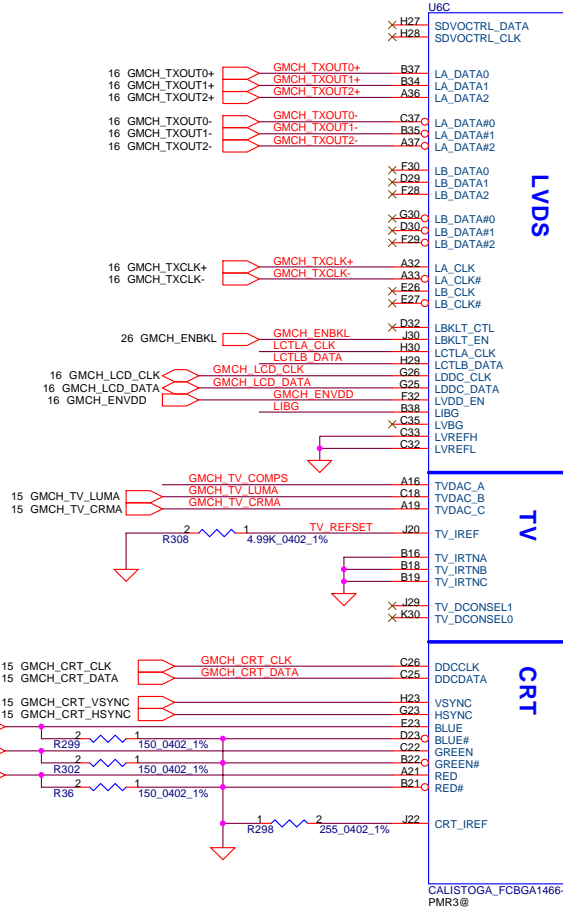
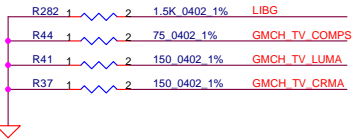
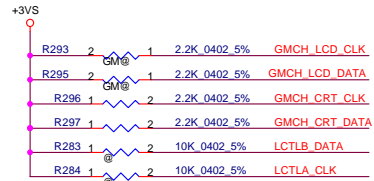
CPU_BSEL	CPU_BSEL2	CPU_BSEL1	CPU_BSEL0
133	0	0	1
166	0	1	1









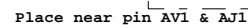


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GND

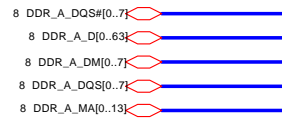


Compal Electronics, Inc.

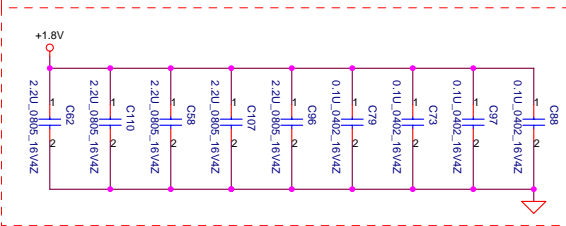
Calistoga (5/5)

IAKAA M/B LA-3401P

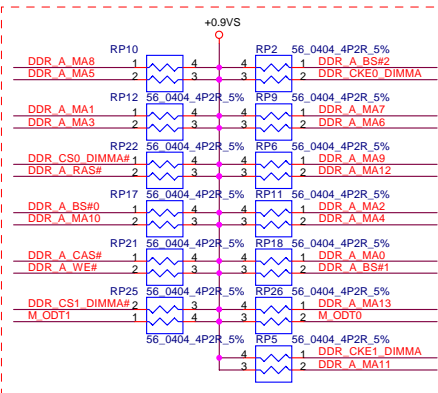
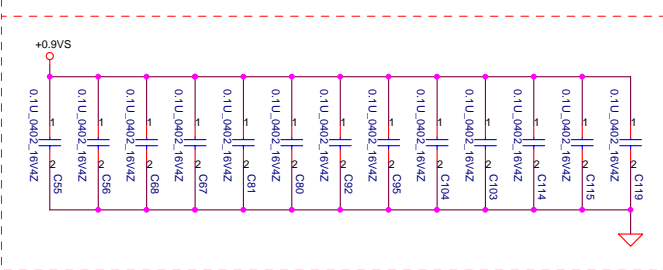
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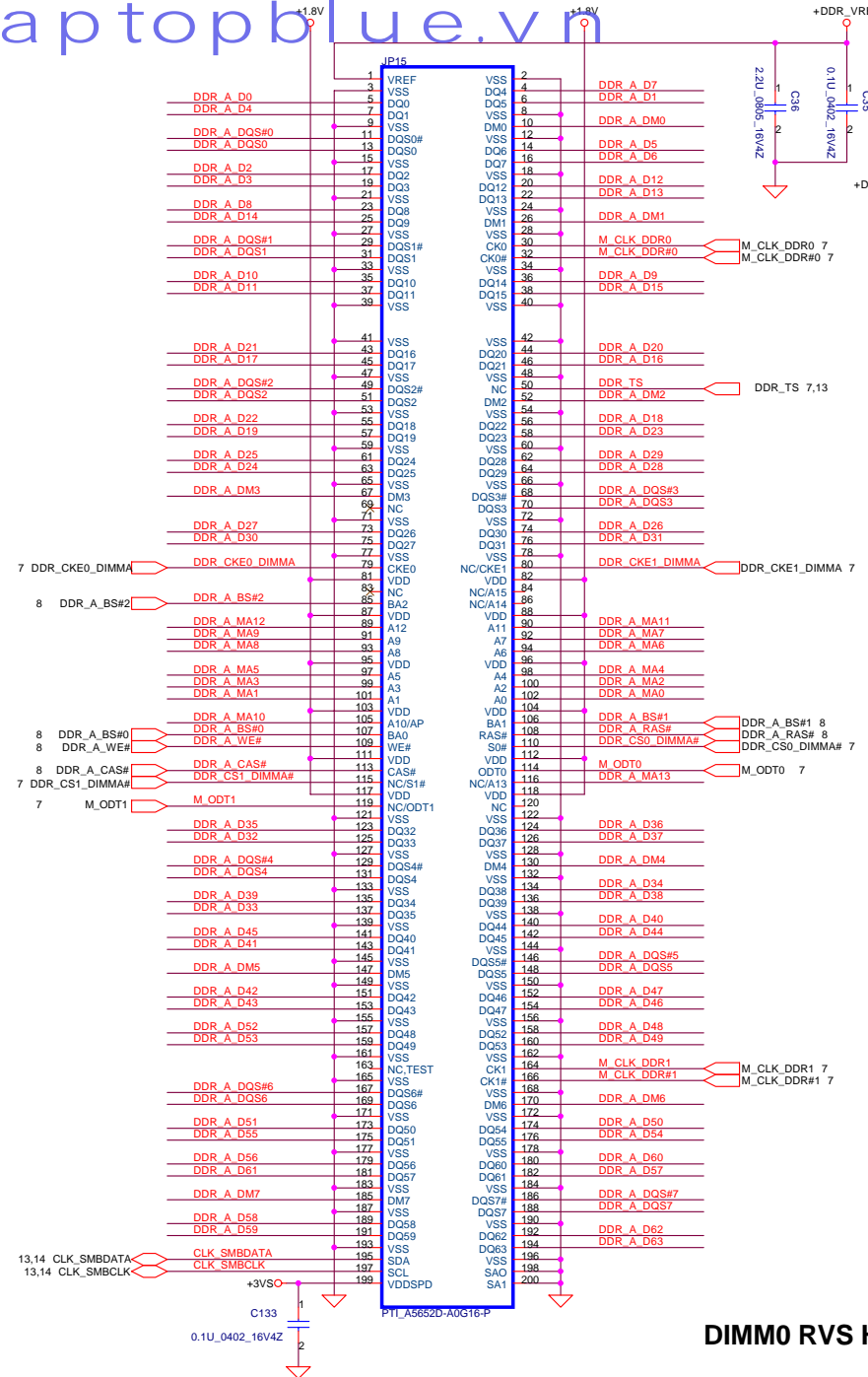
Layout Note:
Place near JP27



Layout Note:
Place one cap close to every 2 pullup resistors terminated to +0.9VS



Layout Note:
Place these resistor closely JP27, all trace length Max=1.5"

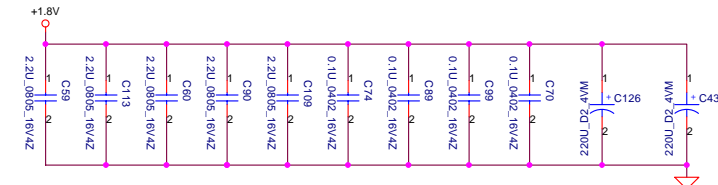


DIMM0 RVS H:5.2mm (BOT)

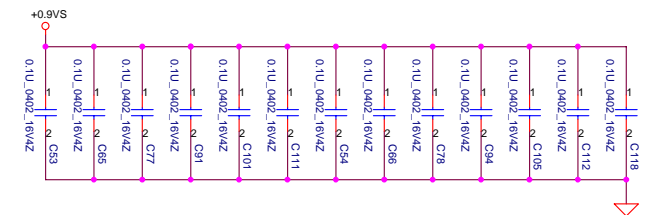
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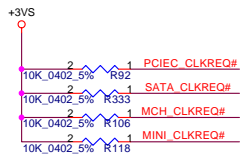
8 DDR_B_DQS#[0..7]
8 DDR_B_D[0..63]
8 DDR_B_DM[0..7]
8 DDR_B_DQS[0..7]
8 DDR_B_MA[0..13]

Layout Note:
Place near JP26



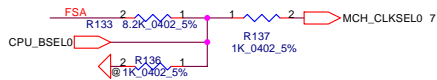
Layout Note:
Place one cap close to every 2 pullup resistors terminated to +0.9VS



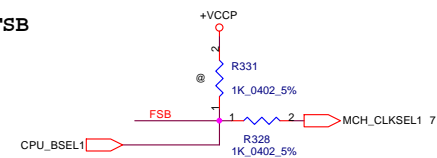


FSLC CLKSEL2	FSLB CLKSEL1	FSLA CLKSEL0	CPU MHz	SRC MHz	PCI MHz
0	0	1	133	100	33.3
0	1	1	166	100	33.3

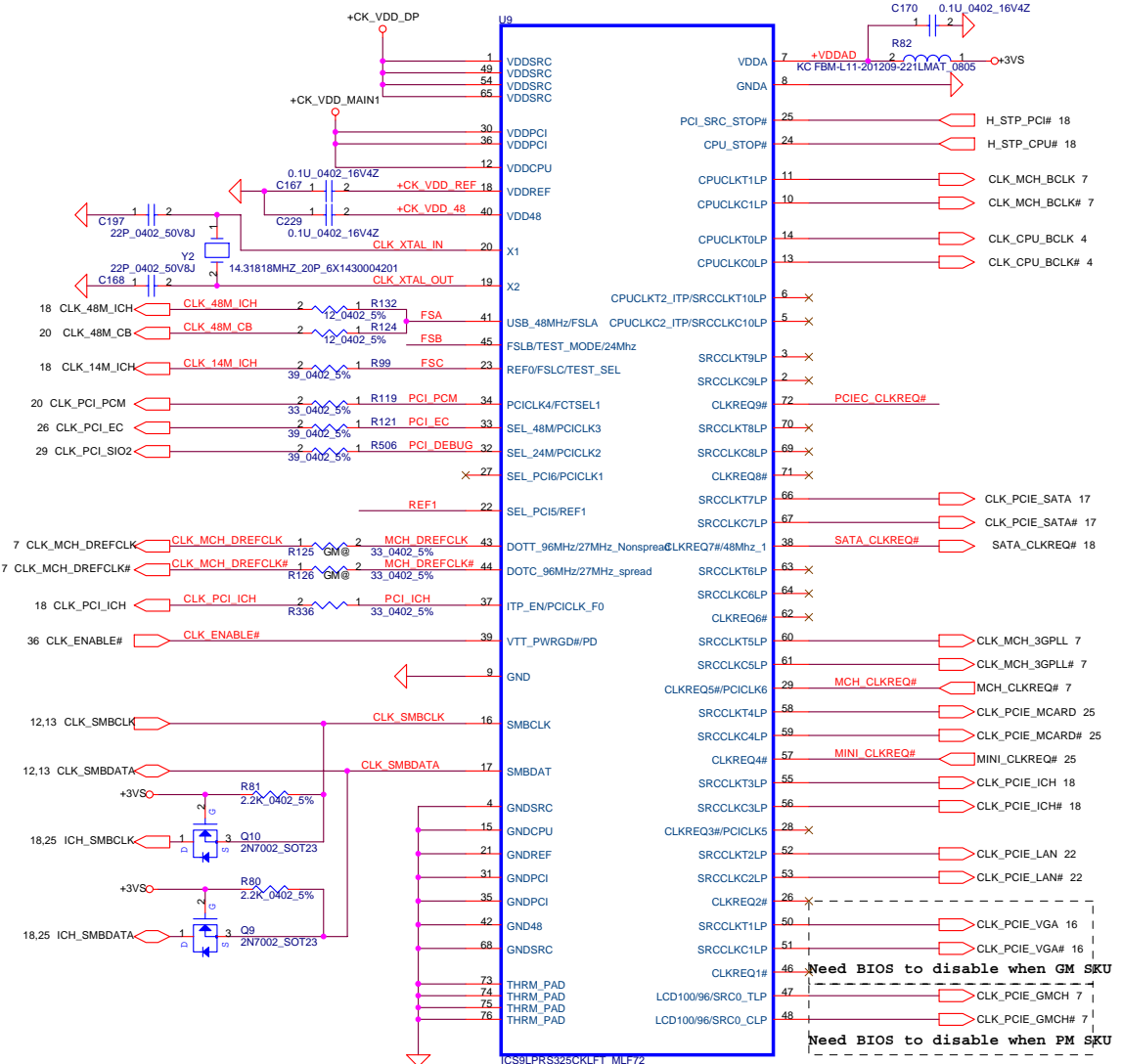
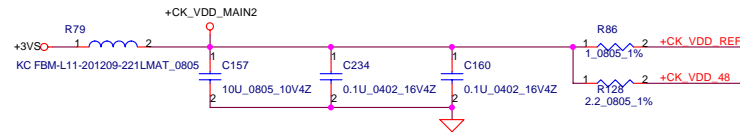
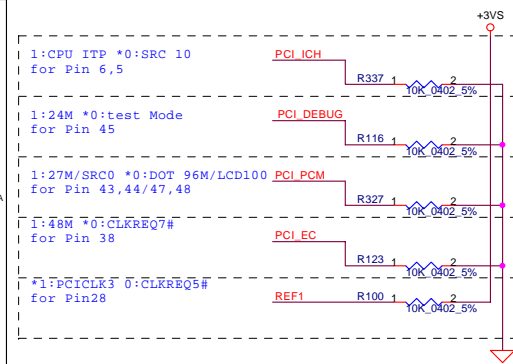
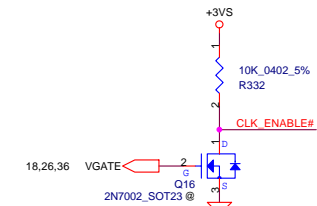
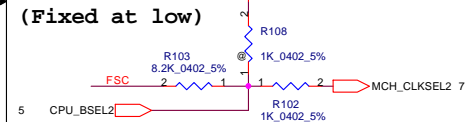
FSA



FSB



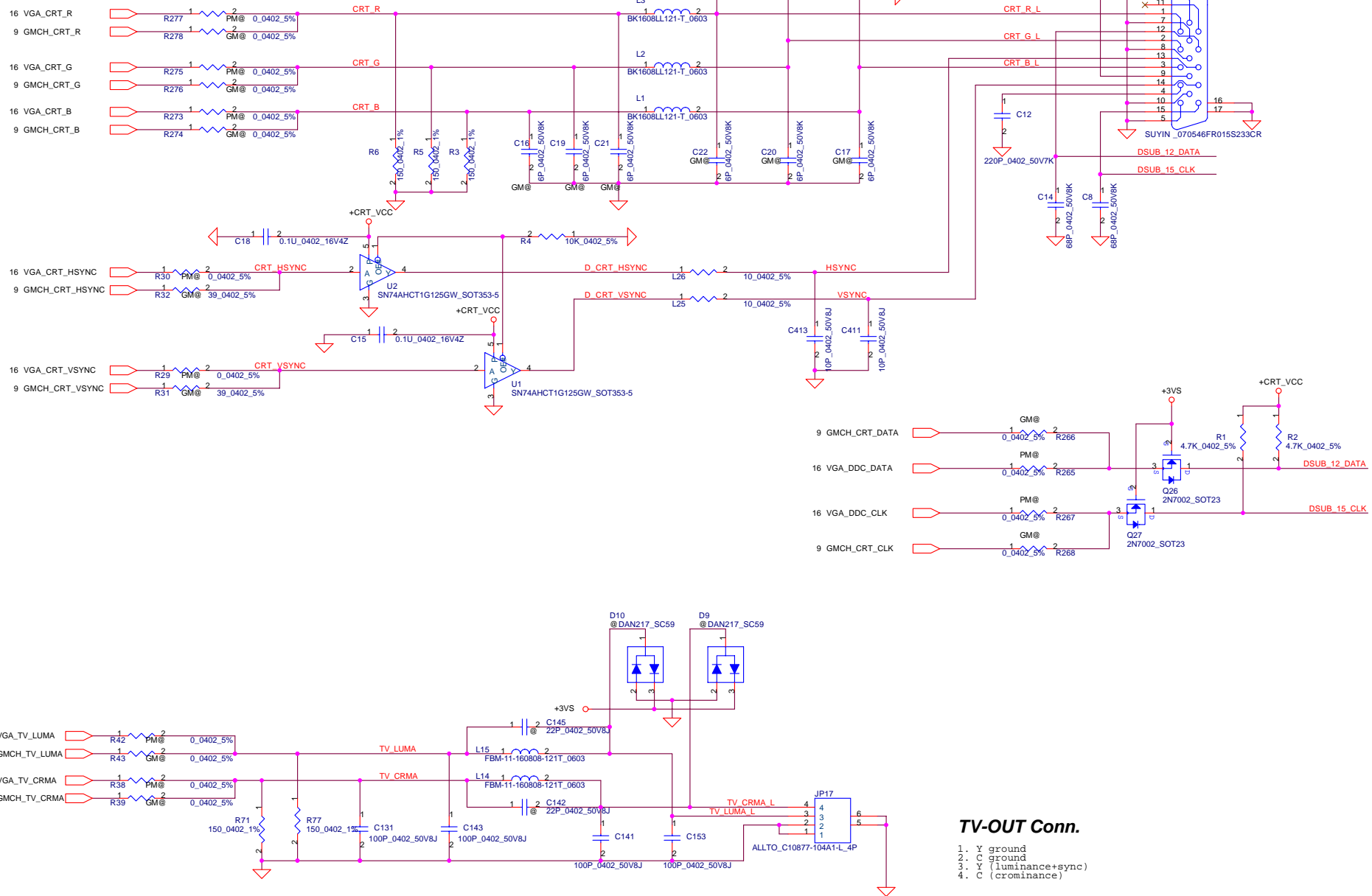
FSC



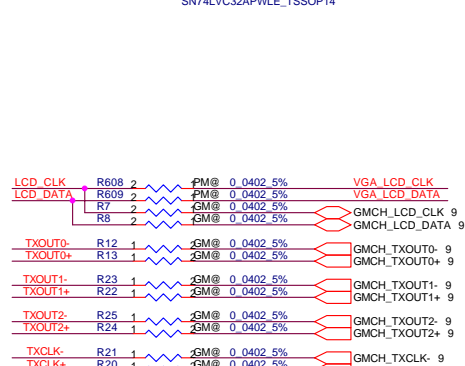
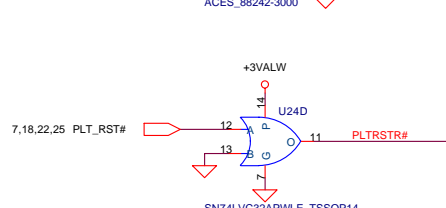
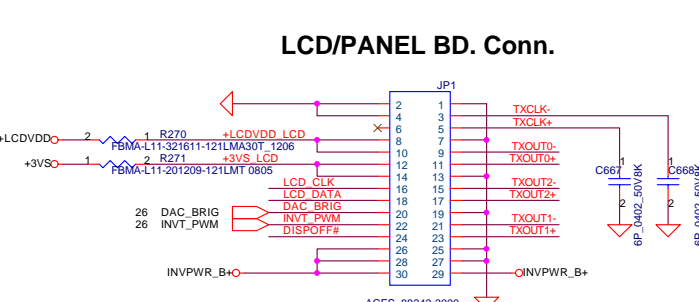
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CRT CONNECTOR

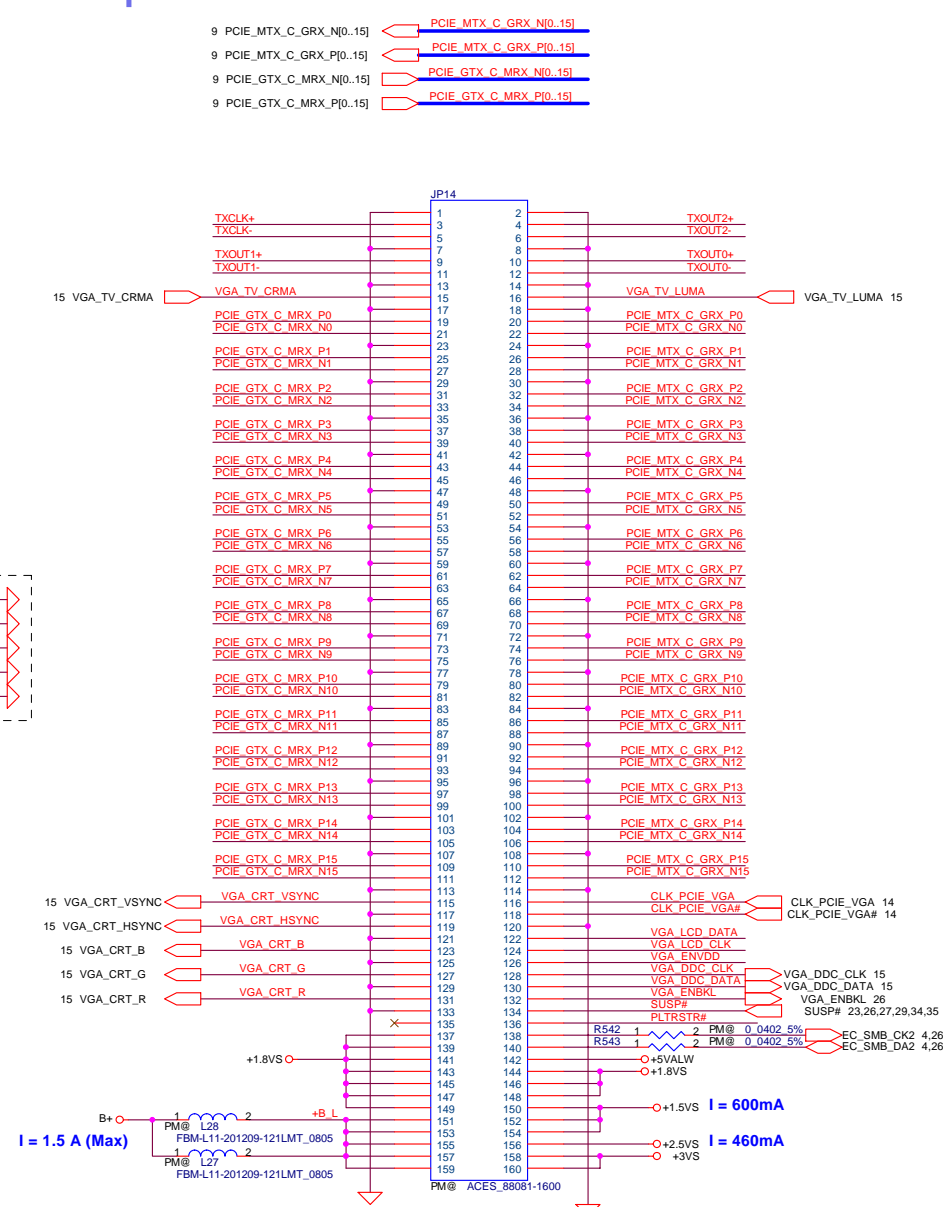
http://laptopblue.vn



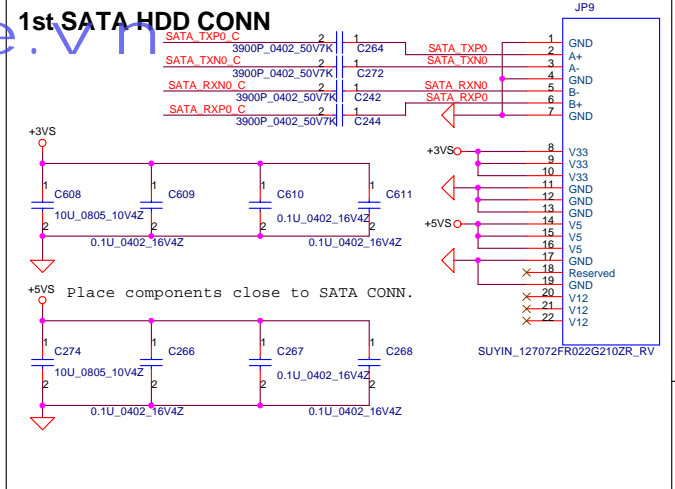
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http://laptopblue.vn **VGA BOARD Conn.**



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				VGA / LCD CONN.				
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SATA TXP1 C 2 1
3900P_0402_50V7K C712 2HDD@

SATA TXN1 C 2 1
3900P_0402_50V7K C713 2HDD@

SATA RXN1 C 2 1
3900P_0402_50V7K C714 2HDD@

SATA RXP1 C 2 1
3900P_0402_50V7K C715 2HDD@

IP31 2HDD+

1 GND
2 A+
3 A-
4 GND
5 B-
6 B+
7 GND

Internal Components:

C716 2HDD@ 100_0805_10V4Z C717 2HDD@ 0.1U_0402_16V4Z C718 2HDD@ 0.1U_0402_16V4Z C719 2HDD@ 0.1U_0402_16V4Z

Place components close to SATA CONN.

C720 2HDD@ 100_0805_10V4Z C721 2HDD@ 0.1U_0402_16V4Z C722 2HDD@ 0.1U_0402_16V4Z C723 2HDD@ 0.1U_0402_16V4Z

Power Connections:

+3VS
+5VS

Pinout Table:

Pin	Signal
8	VCC3.3
9	VCC3.3
10	VCC3.3
11	GND
12	GND
13	GND
14	VCC5
15	VCC5
16	VCC5
17	GND
18	RESERVED
19	GND
20	VCC12
21	VCC12
22	VCC12

SUYIN_127043FB02ZG028Z_22P_RV

The diagram illustrates the PCB layout for the Octek CDR-50JD1, showing the placement of various components and their connections to the chip's pins.

Component Placement:

- Capacitors:** C549, C159, C155, and C158 are placed near the ODD CONN. pins. C156 is placed near the OCTEK_CDR-50JD1 pins.
- Resistors:** R78, R83, R110, and R79 are placed near the ODD CONN. pins. R87 is placed near the OCTEK_CDR-50JD1 pins.
- Other Components:** A 100K_0402_5% resistor is placed near the OCTEK_CDR-50JD1 pins.

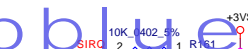
Pin Connections:

- ODD CONN.:** Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
- OCTEK_CDR-50JD1:** Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

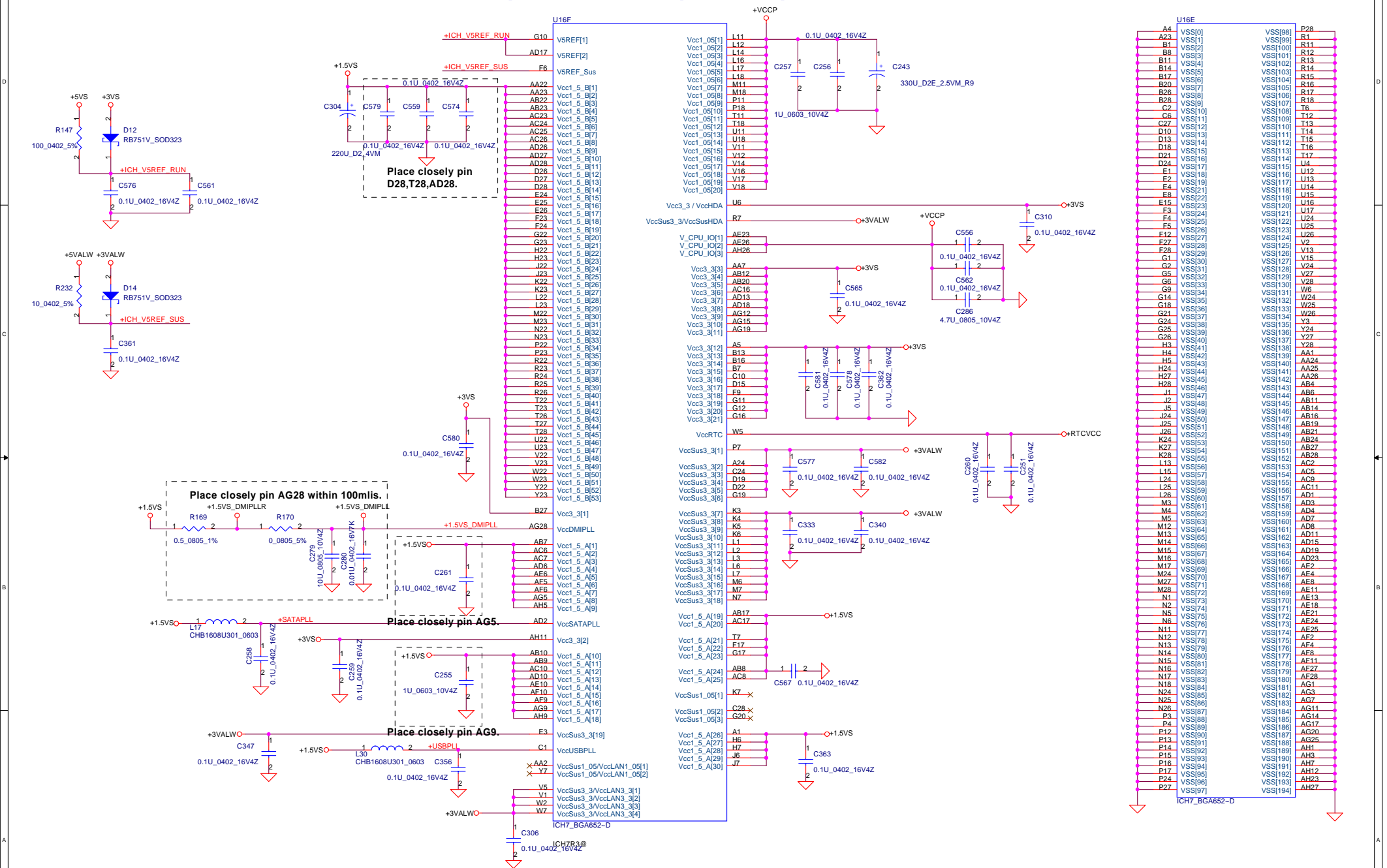
Notes:

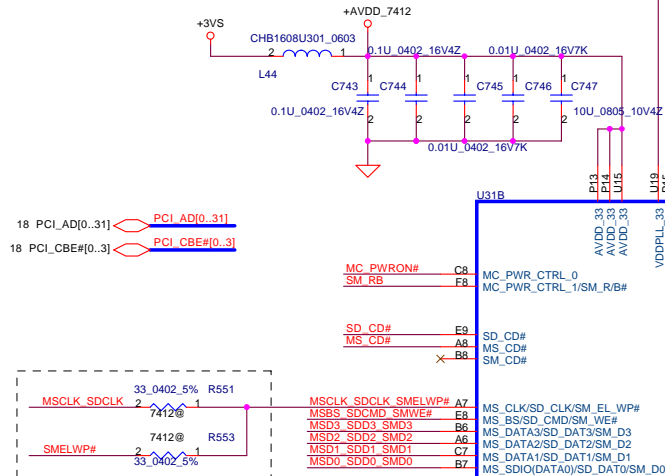
- Place components close to ODD CONN.
- W=80mils

Compal Electronics, Inc.			
Title ICH7-M(1/3)			
Size	Document Number IAKAA M/B LA-3401P		Rev 0.3
Date:	Thursday, October 05, 2006	Sheet 17 of 38	

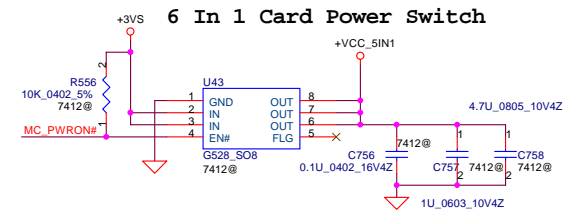
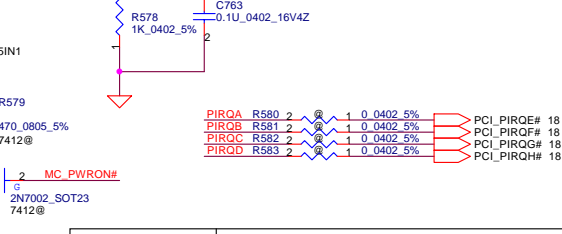
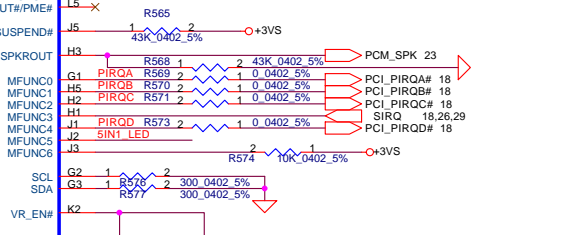
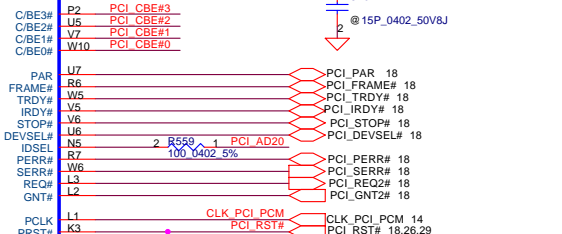
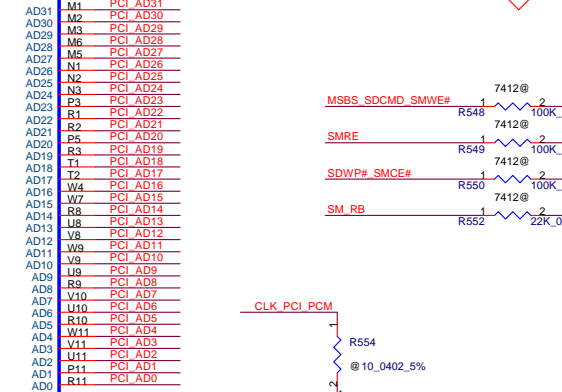


10K_0402_5%
SIRC 2 1 R161 +3V

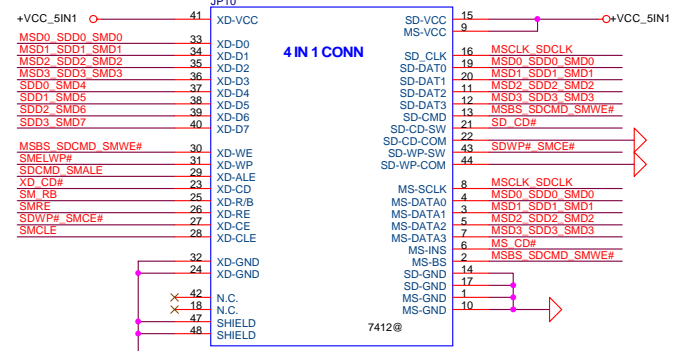




PCI7412

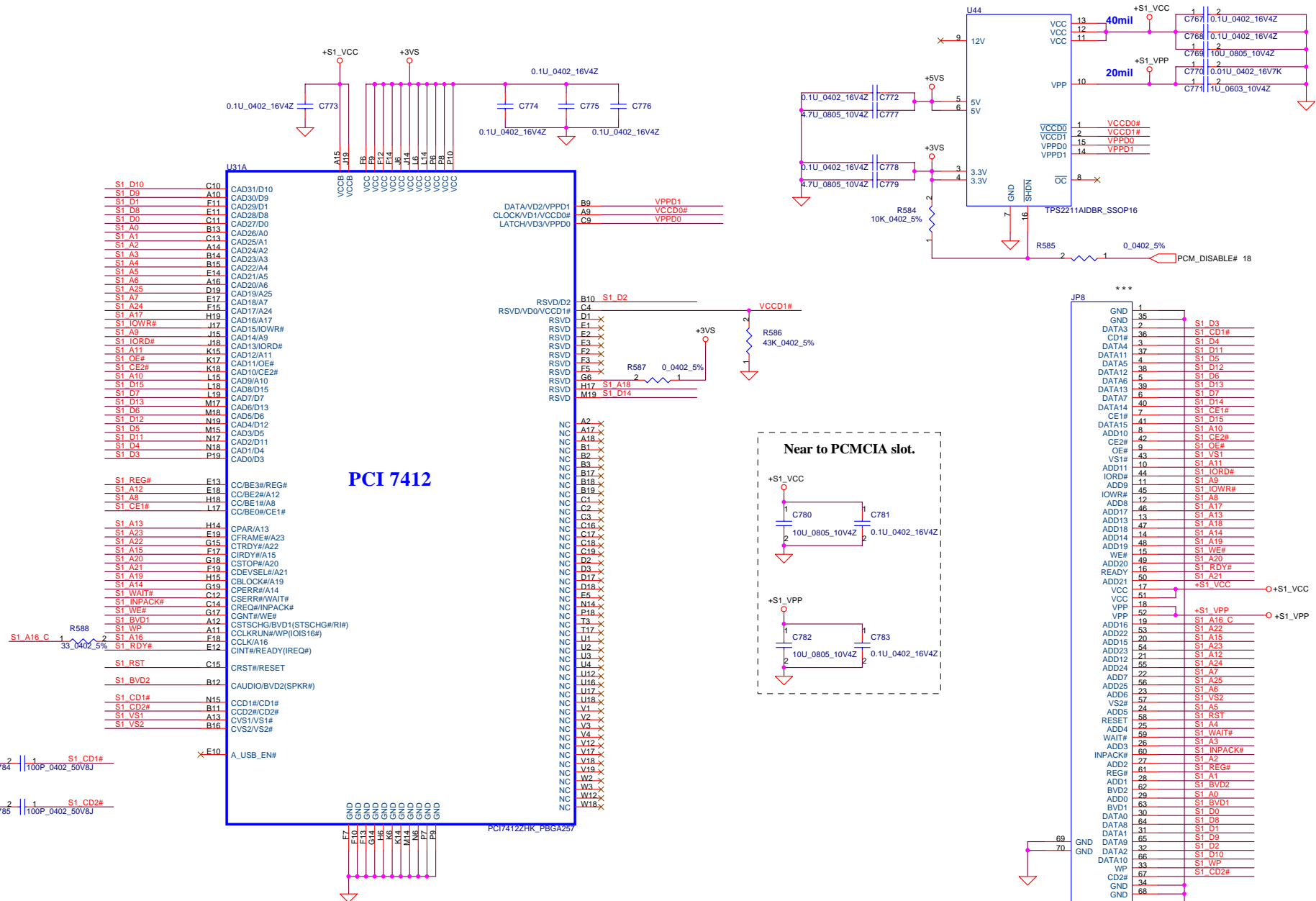


6 in 1 CardReader Conn.



Bottom Side, Normal Insertion

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AGND Change R246 from 5.1Kto 20K_0402_1%



PCI Beep

CardBus Beep

Regulator for CODEC

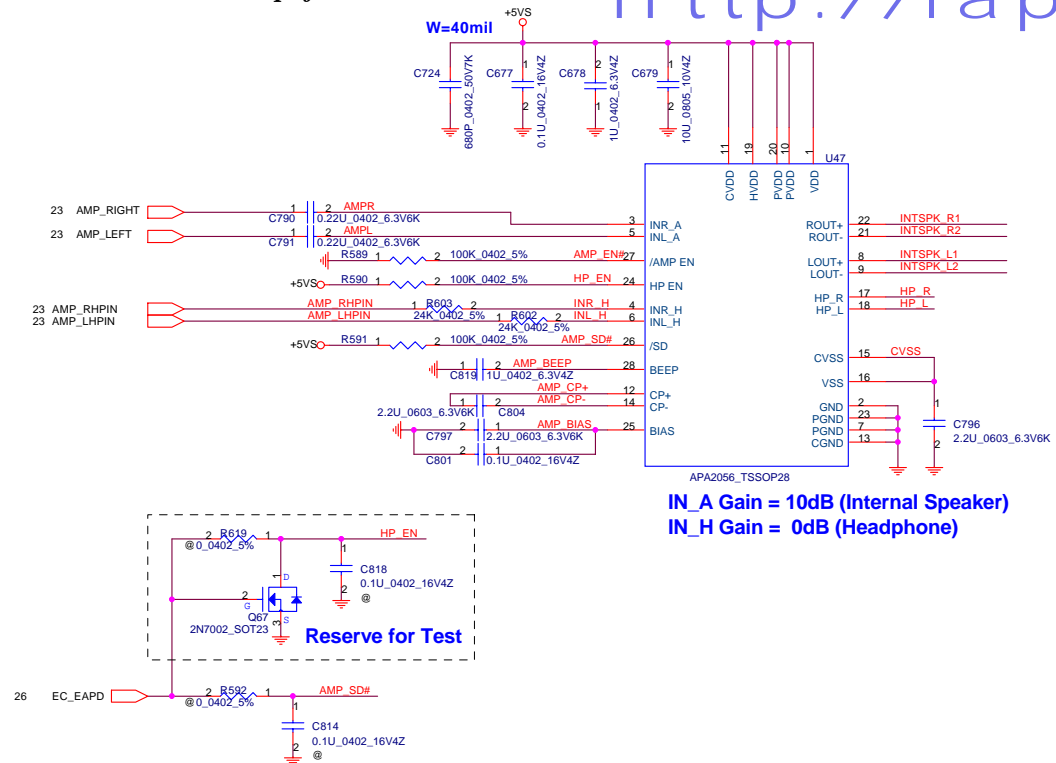


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)

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				Size	Document Number	Rev
				Custom	IAKAA M/B LA-3401P	0.3
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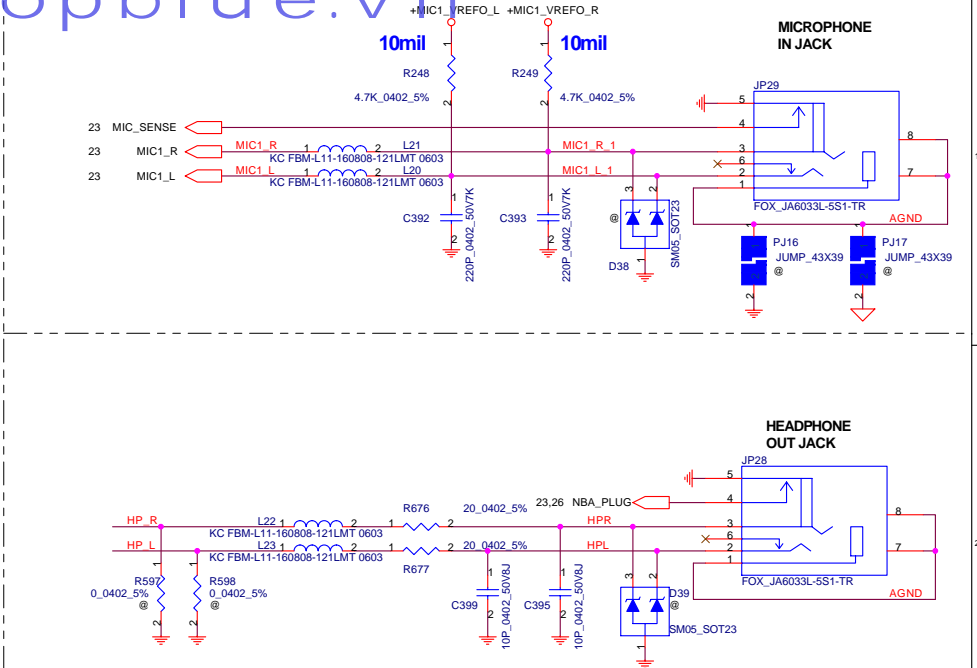
APA2056 SPK/HP Amplifier

http://laptopblue.vn

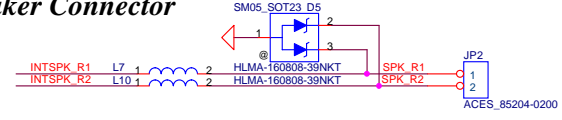


IN_A Gain = 10dB (Internal Speaker)
IN_H Gain = 0dB (Headphone)

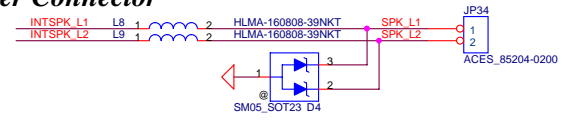
Reserve for Test



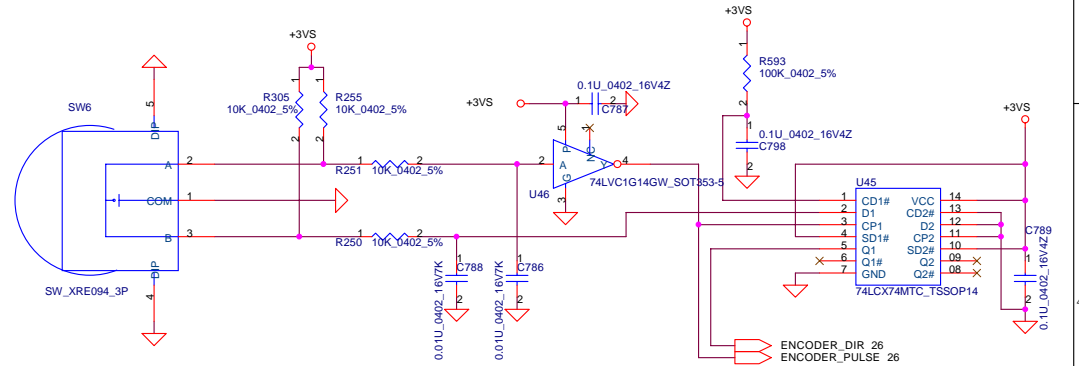
Right Speaker Connector



Left Speaker Connector

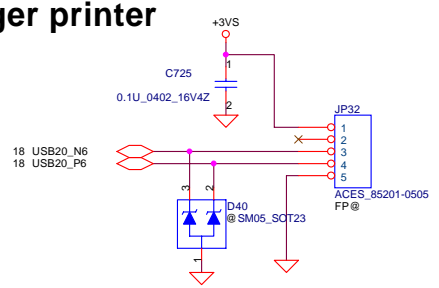


Volume Control



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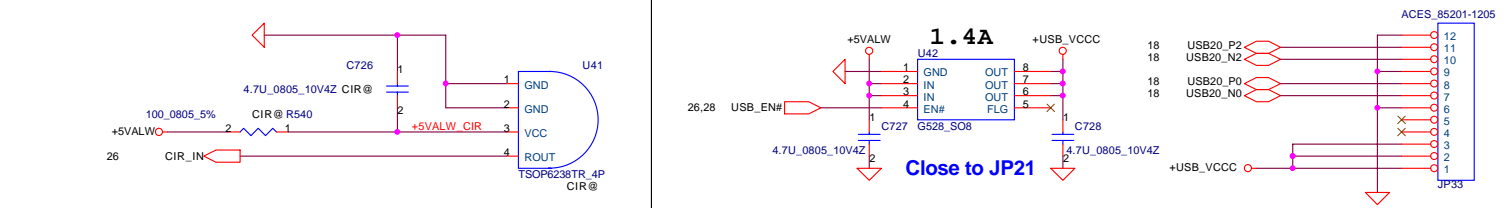
Finger printer



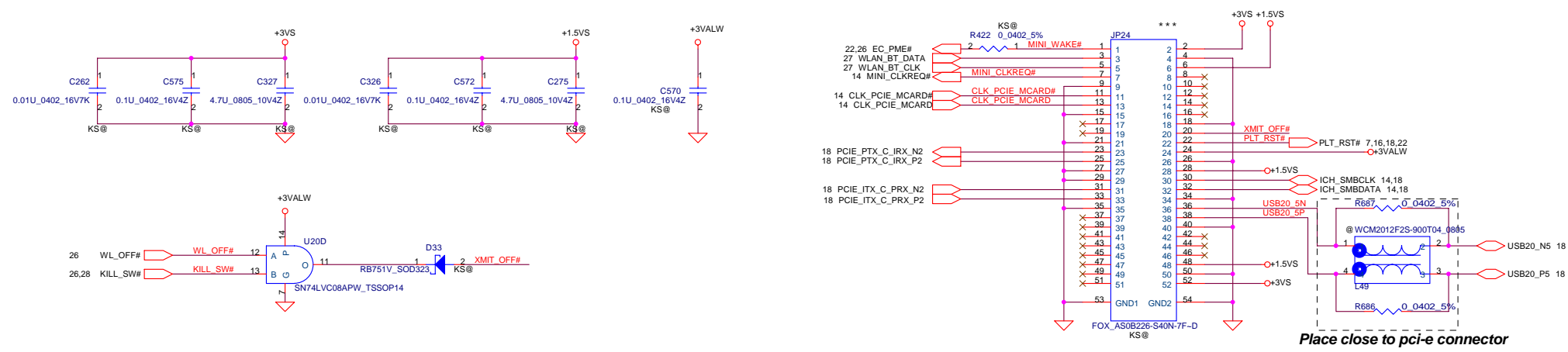
CIR

http://laptopblue.vn

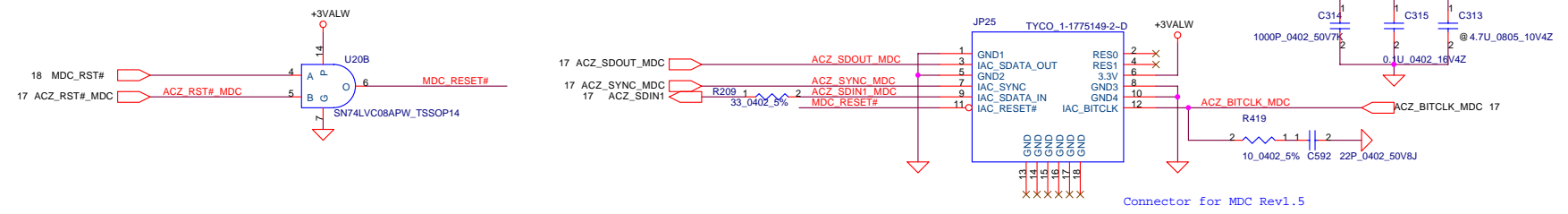
USB Board



Mini-Express Card



MDC 1.5 Conn.

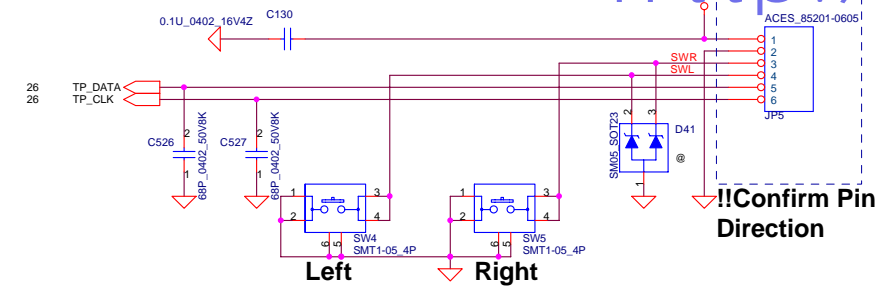


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Size	Document Number		IAKAA M/B LA-3401P		Rev	
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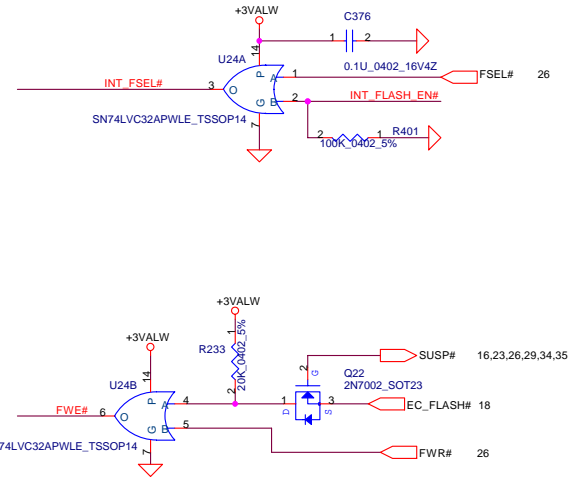
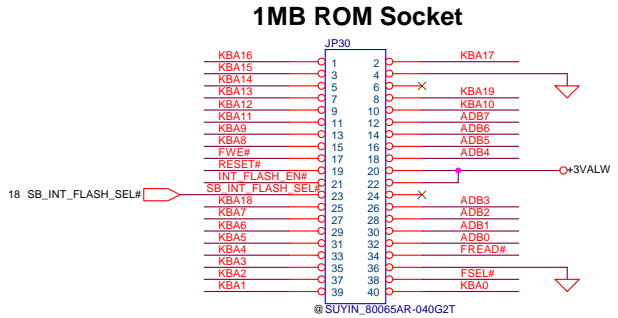
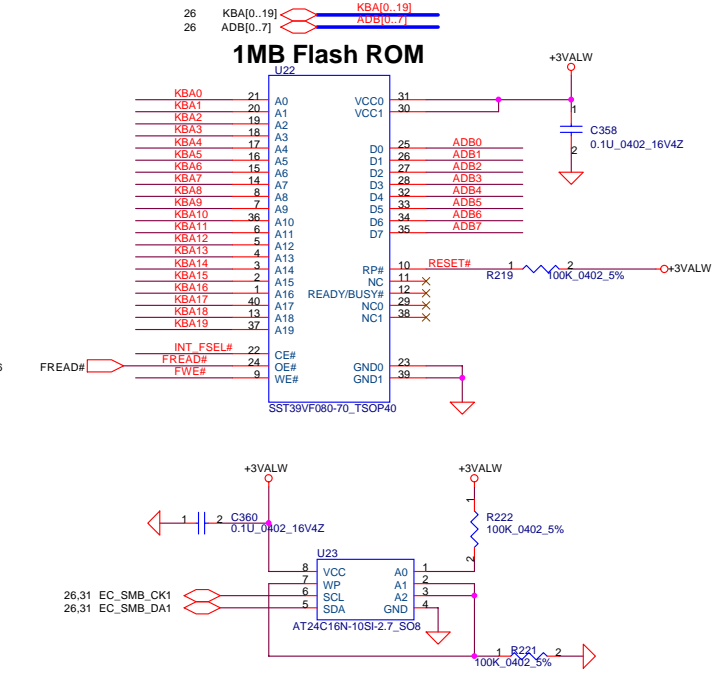
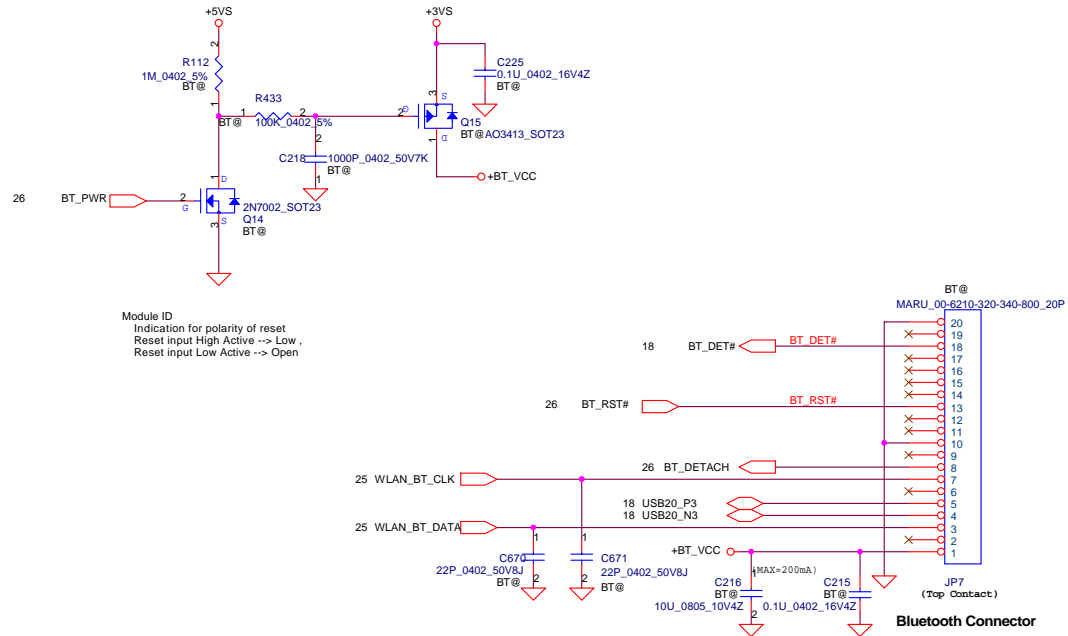


23/11/2019

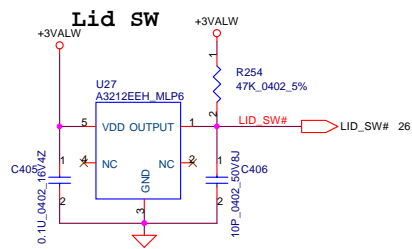
TP CONN.



BlueTooth Interface

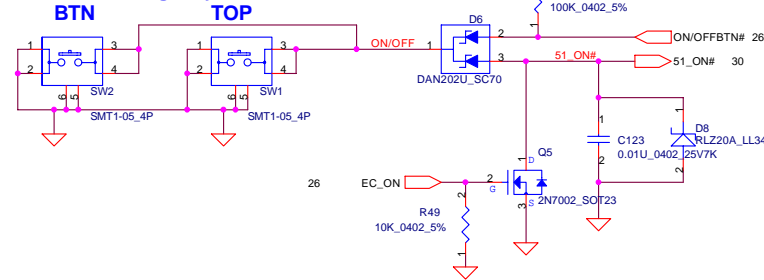


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				Size	Document Number
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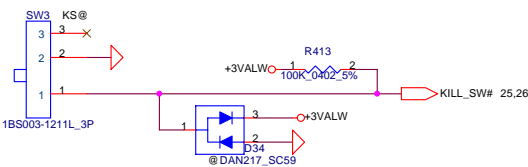


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ON/OFF BUTTON for debug only



Kill SWITCH



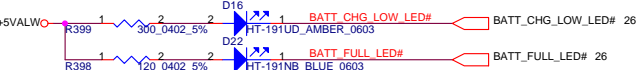
WL&BT LED



POWER/SUSPEND LED



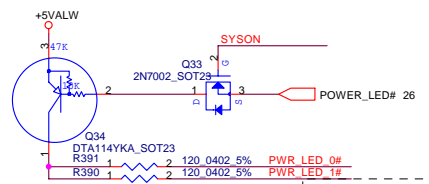
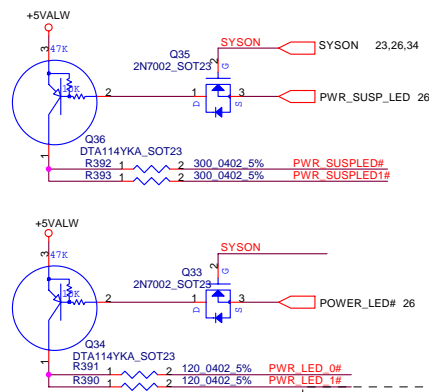
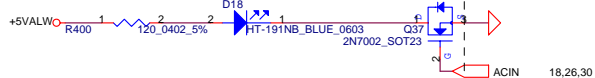
BATT CHARGE/FULL LED



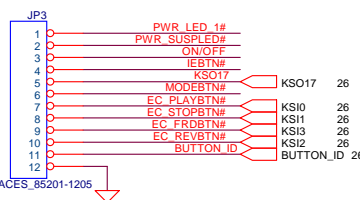
HDD LED



AC IN LED



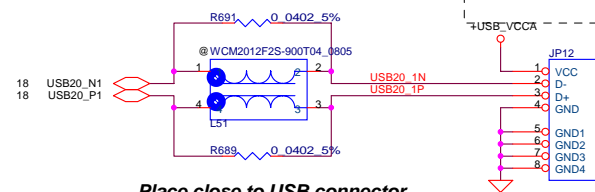
SW/LED Connector



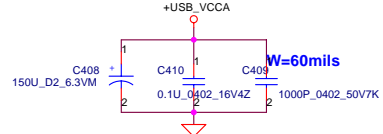
KSO17	C508	2	220P_0402_50V7K
ON/OFF	C506	1	220P_0402_50V7K
PWR_LED_1#	C510	1	220P_0402_50V7K
PWR_SUSP_LED#	C509	1	220P_0402_50V7K
IE_BTN#	C504	1	220P_0402_50V7K
MODEBTN#	C502	1	220P_0402_50V7K
EC_REVBTN#	C489	1	220P_0402_50V7K
EC_FRDBTN#	C490	1	220P_0402_50V7K
EC_PLAYBTN#	C500	1	220P_0402_50V7K
EC_STOPBTN#	C499	1	220P_0402_50V7K
BUTTON_ID	C810	1	220P_0402_50V7K

For EMI Request

USB CONN. 1 (In Back Side)

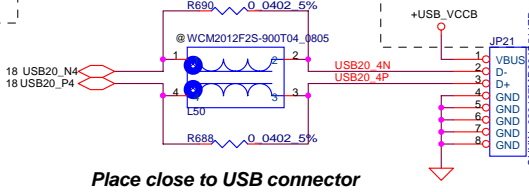


Place close to USB connector

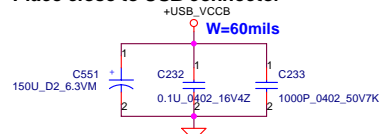


1.4A
Close to JP12

USB CONN. 2 (In Left Side)

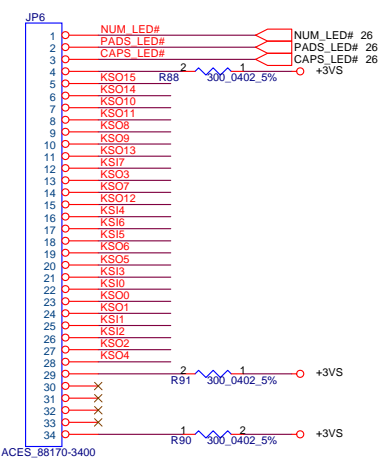


Place close to USB connector



1.4A
Close to JP21

KEYBOARD CONN.



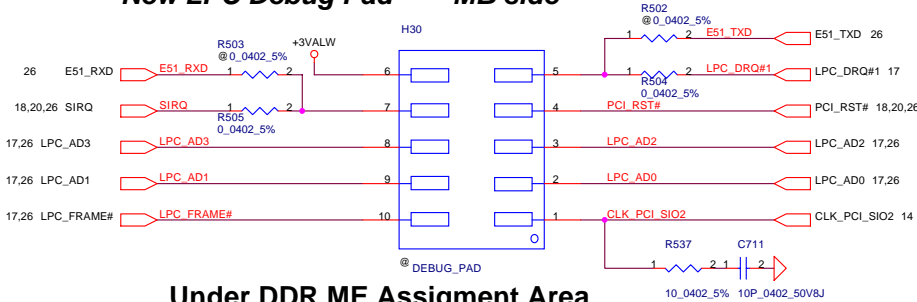
KSI0[.7] KSI[0..7] 26
KSO[0..15] KSO[0..15] 26

100P_0402_50V8J	C193	1	100P_0402_50V8J
100P_0402_50V8J	C191	1	100P_0402_50V8J
100P_0402_50V8J	C189	1	100P_0402_50V8J
100P_0402_50V8J	C187	1	100P_0402_50V8J
100P_0402_50V8J	C185	1	100P_0402_50V8J
100P_0402_50V8J	C183	1	100P_0402_50V8J
100P_0402_50V8J	C181	1	100P_0402_50V8J
100P_0402_50V8J	C179	1	100P_0402_50V8J
100P_0402_50V8J	C177	1	100P_0402_50V8J
100P_0402_50V8J	C175	1	100P_0402_50V8J

For EMI Request

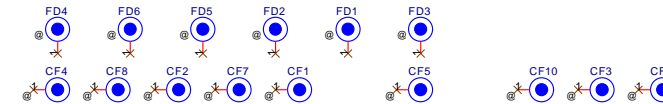
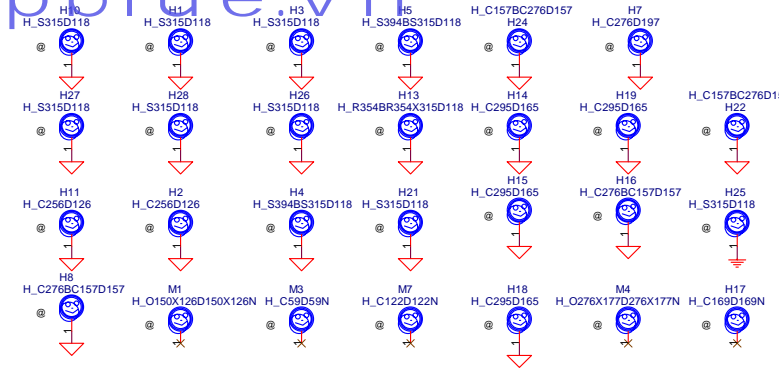
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Compal Electronics, Inc.	
USB/LID/KS/KB/LED/SW-B Conn	
IAKAA/MB LA-3401P	
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New LPC Debug Pad ---- MB side

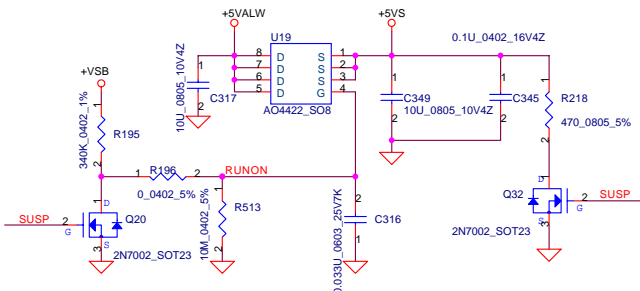


Under DDR ME Assignment Area

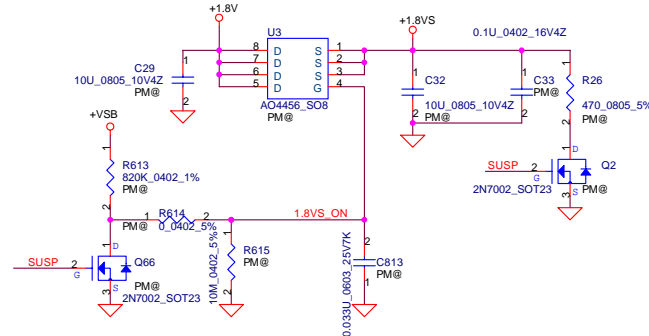
Keep Resistor near Debug Pad and in the same side
Reverse side DIMM ---- Pin 1 keep away DIMM



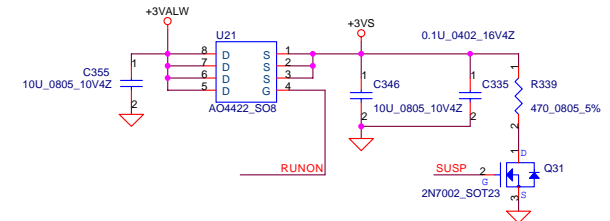
+5VALW to +5VS Transfer



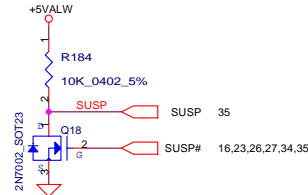
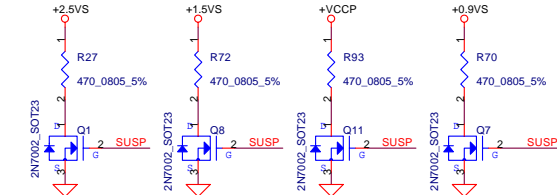
+1.8V to +1.8VS Transfer (Place close to VGA-Connector)



+3VALW to +3VS Transfer

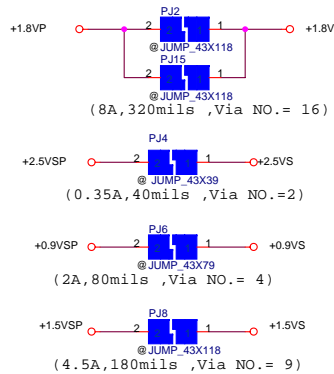
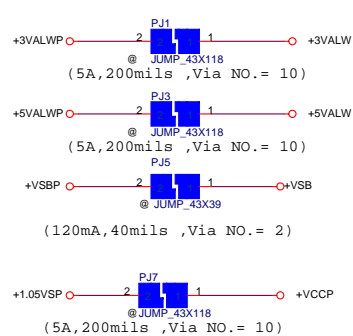
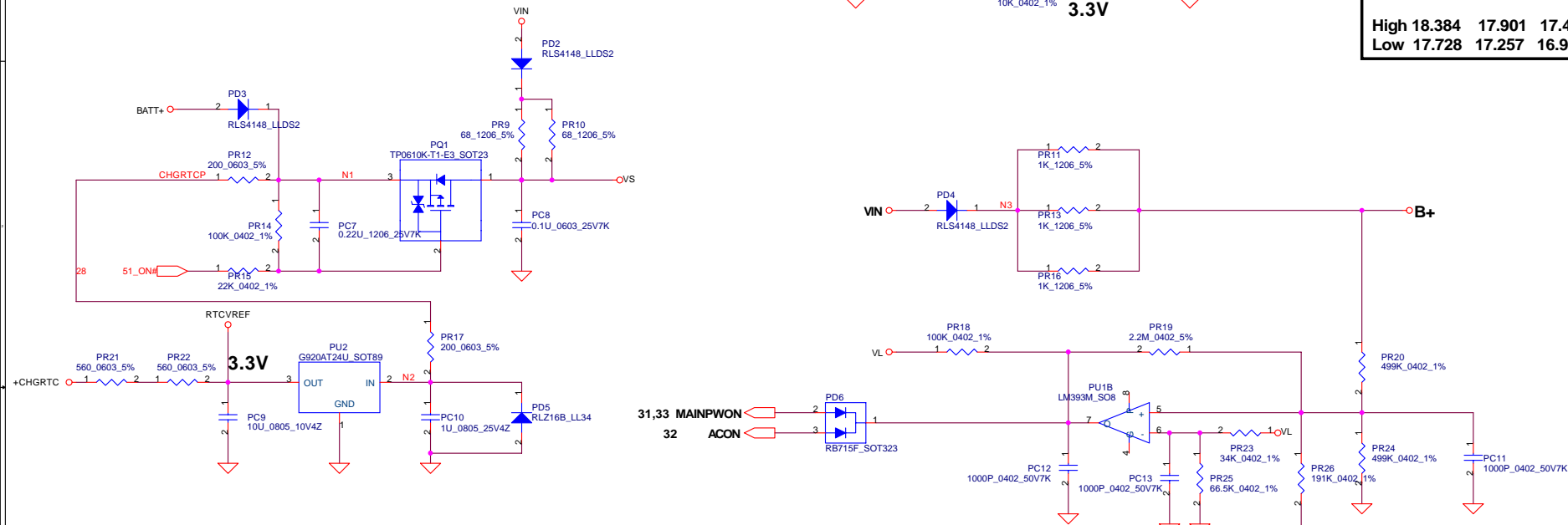
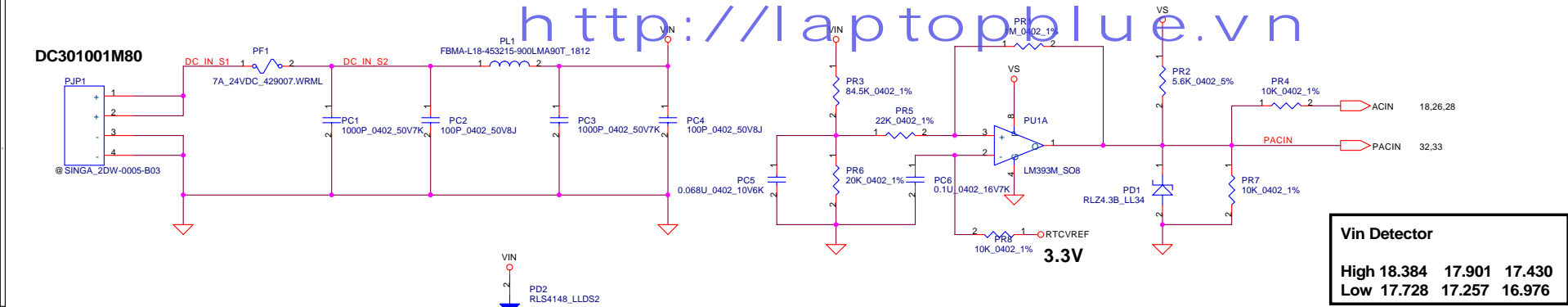


Discharge Circuit

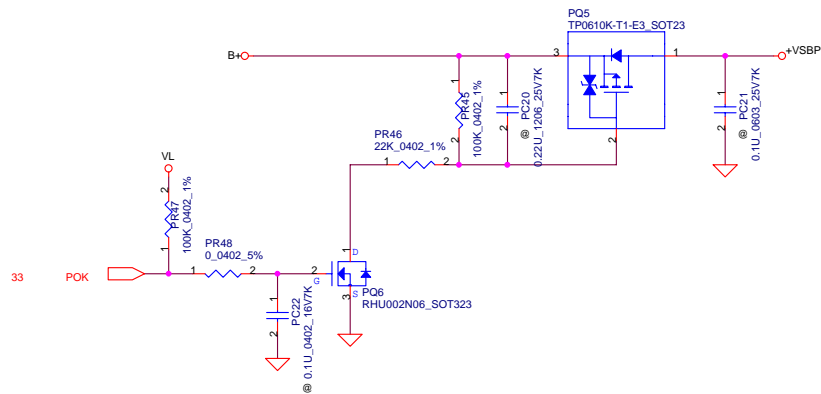
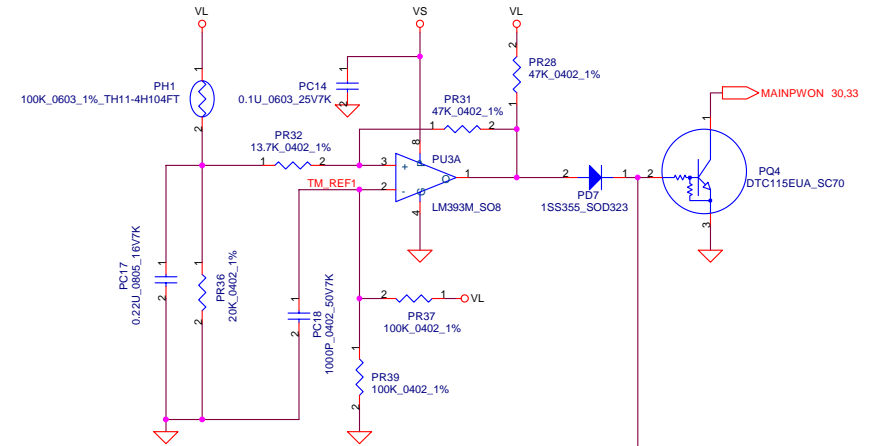
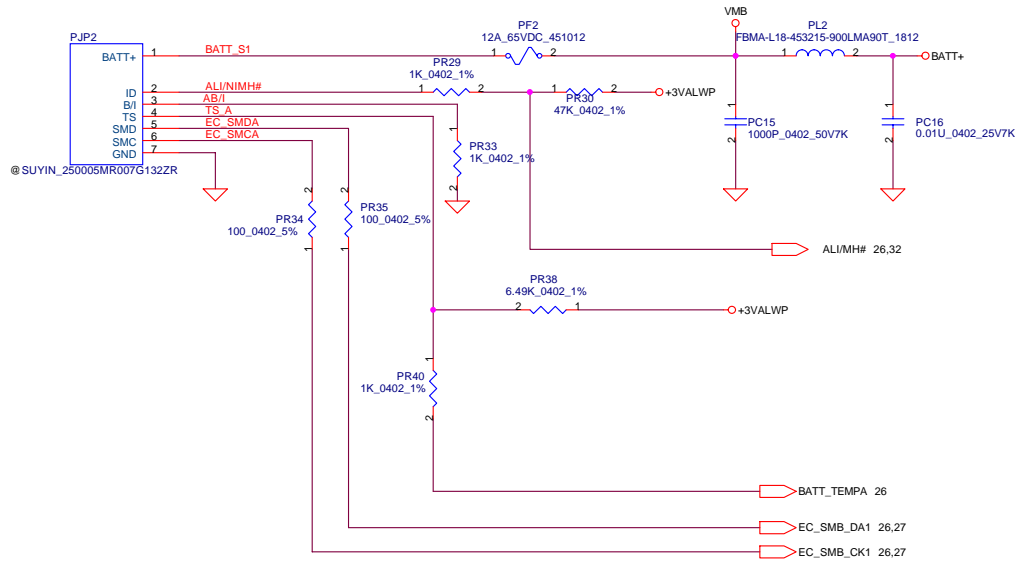


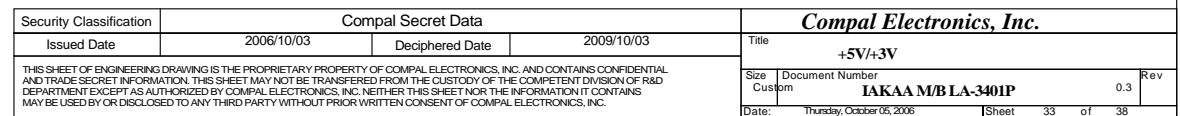
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				Size	Document Number
				IAKAA M/B LA-340IP	
				Date	Rev
				Thursday, October 05, 2006	0.3
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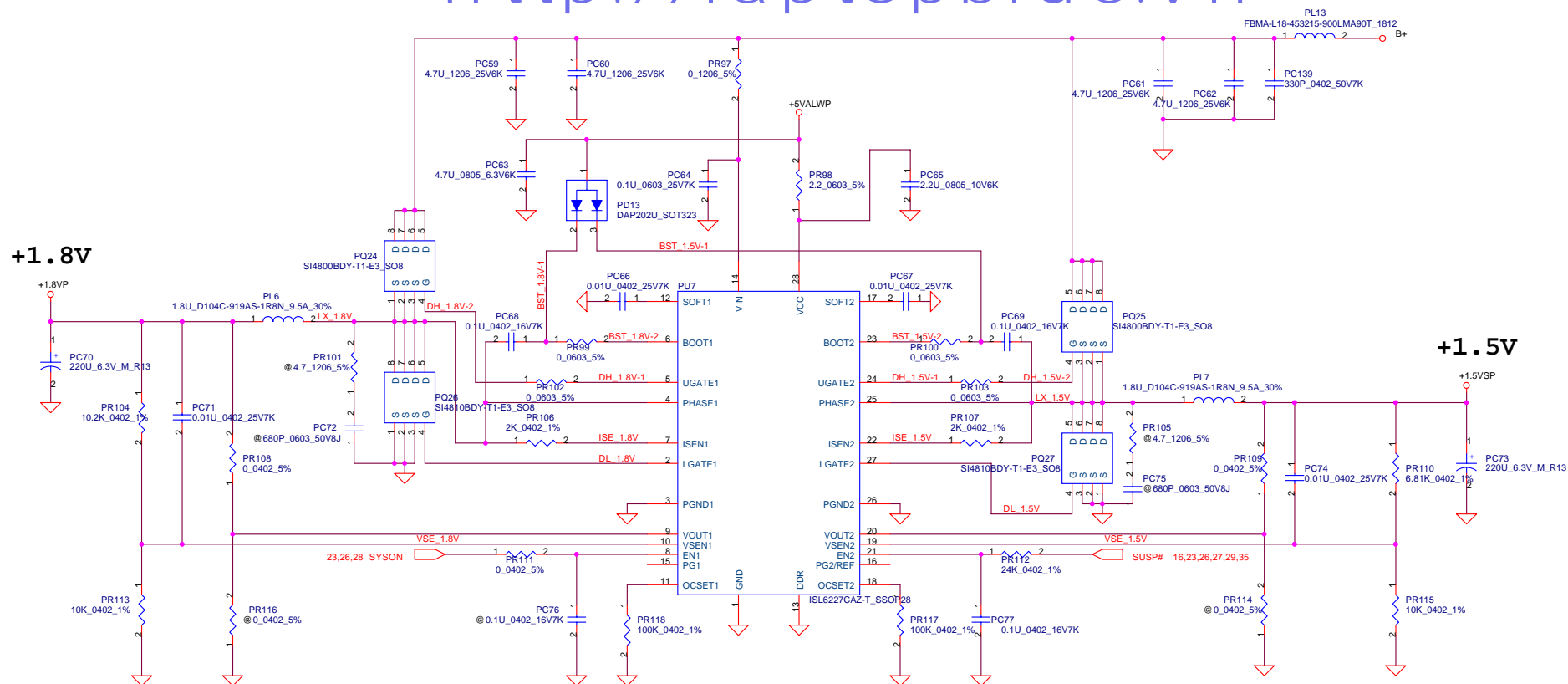
DC301001M80



PH1 under CPU botten side :
CPU thermal protection at 87(86) degree C
Recovery at 48(47) degree C







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Size	Document Number	Rev	0.3	
Date:	Thursday, October 05, 2006	Sheet	34	of 38

PIR (Product Improve Record)

IAKAA LA-3401P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.1 TO 0.2

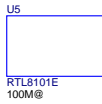
NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	0803	23	CHANGE Q25,Q44,R252,R499 TO RESERVED CHANGE R611,R612 TO POP	TO COMPATIBLE WITH NORMAL OPEN AUDIO JACK
2	0810	23	CHANGE C792,C793 TO RESERVE AND MOVE TO PAGE 23 ADD C811 BETWEEN AMP_LHPIN AND 861_HP_L ADD C812 BETWEEN AMP_RHPIN AND 861_HP_R	TO RESERVE HP PATH FOR ALC268 TO CHANGE HP PATH FOR ALC861
3	0814	23 24	ADD R618_1K_0402 BETWEEN Q23.2 AND R240.2 ADD CONNECTION BEEP_MIX FROM Q23.2 TO Q67.2 ADD CONNECTION EAPD TO Q67.3 CONNECT Q67.1,R616.1,C815.1 TOGETHER PULL HIGH R616_20K_0402 TO +VDDA CONNECT C815.2, R599.2 TOGETHER REMOVE Q65 RESERVE C814 BETWEEN AMP_SD# & GND	TO BYPASS BEEP SOUND BEFORE CODEC INITIAL
4	0816	14	CHANGE R121,R506,R99 TO 39_0402	FOR EMI REQUEST
5	0816	15	CHANGE L1,L2,L3 TO 120OHM BEAD	FOR EMI REQUEST
6	0816	28	CHANGE U12,U28 FROM G528 TO G548 25 CHANGE U42 FROM G528 TO G548	FOR INCREASE USB PORT CURRENT RATING

IAKAA LA-3401P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.2 TO 0.3

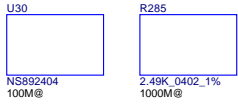
NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	0919	16	CONNECT INVPWR_B+ TO JP1.26	INCREASE 1 MORE B+ PIN FOR SUPPORT 2 LAMP LCD
2	0919	23	CONNECT R673_20K_0402 PULL DOWN ON SENSE_B	TO SENSE INTERNAL MIC EXIST OR NOT
3	0919	04	CHANGE U48 TO PU5	TO COST DOWN 1 OP AMP
4	0919	26	RESERVE Q46,D47,R671 FOR RSMRST# SIGNAL	TO MEET INTEL REQUIREMENT
5	0919	23	CHANGE R253 TO RESERVE CONNECT R620 BETWEEN Q25.1,SENSE_B	TO CHANGE HEADPHONE SENSE PIN FROM SENSE_A TO SENSE_B
6	0919	23	ADD R676,R677 TO 200HM	FIX MONO HEADPHONE NOISE ISSUE
7	0926	23	CHANGE C811,C812,C792,C793 TO 2.2uF	IMPROVE HP FREQUENCE RESPONSE
8	0926	24	DEL R520,R521,C681,C683 CHANGE C790,C791 TO 0.22uF	CHNAGE SPEAKER HIGHPASS -3dB POINT TO 100HZ
9	0926	24	CHANGE C804 TO 2.2uF	IMPROVE CHARGE PUMP QUALITY
10	0926	24	DEL R616,R617,R599,C815 ADD C819	NOT TO USE AMP BEEP FUNCTION
11	0926	24	ADD Q67	IMPROVE BOOT BO SOUND
12	0926	24	CHANGE C596 TO 22uF	IMPROVE FAN NOISE
13	0926	24	ADD D48	IMPROVE ESD
14	1003	22	ADD R678,R679,RESERVE L45 ADD R680,R681,RESERVE L46 ADD R682,R683,RESERVE L47 ADD R684,R685,RESERVE L48 ADD NET RJ45_MID10+_L,RJ45_MID10-_L BETWEEN L45,JP11 RJ45_MID11+_L,RJ45_MID11-_L BETWEEN L46,JP11 RJ45_MID12+_L,RJ45_MID12-_L BETWEEN L47,JP11 RJ45_MID13+_L,RJ45_MID13-_L BETWEEN L48,JP11	FOR EMI REQUIREMENT
25			ADD R686,R687,RESERVE L49 ADD NET USB20_5P,USB20_5N BETWEEN L49,JP24	
28			ADD R688,R690,RESERVE L50 ADD R689,R691,RESERVE L51 ADD NET USB20_1N,USB20_1P BETWEEN L51,JP12 USB20_4N,USB20_4P BETWEEN L50,JP21	RESERVE FOR USB EMI SOLUTION

FOR ISPD

LAN



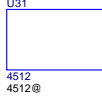
TRANSFORMER



PCB



Card BUS



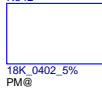
SB



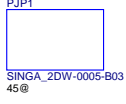
NB



SKU ID



DC-JACK



CRT EMI SOLUTION



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Date: Thursday, October 05, 2006				Sheet 37 of 38		

POWER PIR LIST

http://laptopblue.vn

	page	Reason for change	Modify list
DVT	35	Change +1.05V IC	Change PU8 to ISL6269A(SA000000GU80), add PR122 (0ohm, SD013000080)
	36	For EMI team request to add snubber and gate resistor	Add snuber PR155,PR165(6.8ohm_SD011680B80), PC109,PC118(680p_SE024681J80) and gate resistor PR154,PR162(1ohm_SD013100B80)
		Modify the CUP CORE load line and compensation	Change PC103 to 0.022u(SE076223K80), PC104 to 2.2u(SE107225K80), PR185 to 4.42K(SD000004J80), PC129 to 0.1u(SE076104K80, add PC126 (0.0180U_SE025183J80), delete PC105 and PC106
	31	Modify the CPU OTP point from 84 degC to 87 degC for thermal team request	Change PR36 from 22K to 20K(SD034200280)
PVT	32,34,35,36	For EMI team request to add bead to reduce board band	Add PL12,PL13,PL14(SM010020720);PC137,PC138,PC139(330p_SE074331K80);PC140(680p_SE074681K80);PC141(3300p_SE074332K80)
	33	Reduce the power consumption on S3/S4	Add PR188(0_0402_5%) and unpop PR89
	36	Solve the high frequency noise.	Change PC99 from 100U to 220U(SF22004M210)