

Compal confidential

ISKAA LA-3481P Schematics Document

Mobile Merom uFCPGA with Intel
Crestline_PM+ICH8-M core logic

2007-06-23

REV:2.0A

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Model : ISKAA

File Name : LA-3481P

Santa Rosa Platform

http://laptopblue.vn

ISKAA Sub-board

ATI VGA/B LS-3481P Rev 1.0

ATI VGA/B LS-3486P Rev 1.0

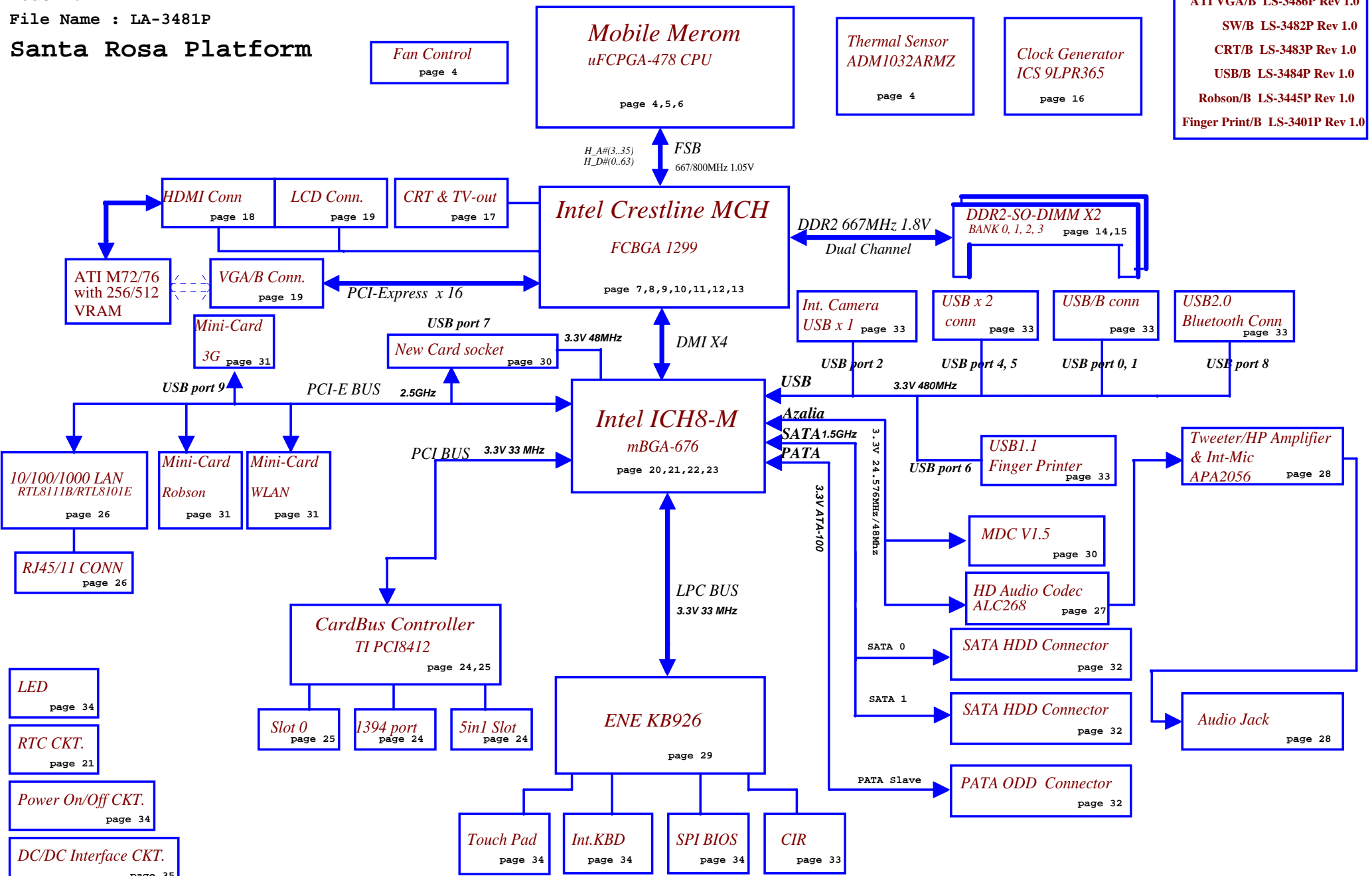
SW/B LS-3482P Rev 1.0

CRT/B LS-3483P Rev 1.0

USB/B LS-3484P Rev 1.0

Robson/B LS-3445P Rev 1.0

Finger Print/B LS-3401P Rev 1.0



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Voltage Rails

Power Plane	Description	S0-S1	S3	S5
VIN	Adapter power supply (18.5V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit	N/A	N/A	N/A
+VCC_CORE	Core voltage for CPU	ON	OFF	OFF
+0.9VS	0.9V switched power rail for DDRII Vtt	ON	OFF	OFF
+1.05VS	1.05V power rail for Processor I/O and MCH/ICH core power	ON	OFF	OFF
+1.25VS	1.25V power rail for MCH/ICH core power	ON	OFF	OFF
+1.5VS	1.5V switched power rail for PCI-E interface	ON	OFF	OFF
+1.8V	1.8V power rail for DDRII	ON	ON	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5VS	2.5V switched power rail for MCH video PLL	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
+RTC_VCC	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

KB926 I2C / SMBUS ADDRESSING

DEVICE	HEX	ADDRESS
SM1 24C16	A0H	1010000X b
SM1 SMART BATTERY	16H	0001011X b
SM2 ADM0132	98H	1001100X b
CPU THERMAL MONITOR		

ICH8-M SM Bus address

DEVICE	HEX	ADDRESS
DDR SO-DIMM 0	A0	10100000
DDR SO-DIMM 1	A4	10100100
CLOCK GENERATOR (EXT.)	D2	11010010

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra/Rc/Re	100K +/- 1%			
Board ID	Rb / Rd / Rf	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0.100 V
1	8.2K +/- 1%	0.216 V	0.250 V	0.289 V
2	18K +/- 1%	0.436 V	0.503 V	0.538 V
3	33K +/- 1%	0.712 V	0.819 V	0.875 V
4	56K +/- 1%	1.036 V	1.185 V	1.264 V
5	100K +/- 1%	1.453 V	1.650 V	1.759 V
6	200K +/- 1%	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	0.4
4	1.0
5	2.0
6	2A
7	

SKU ID Table

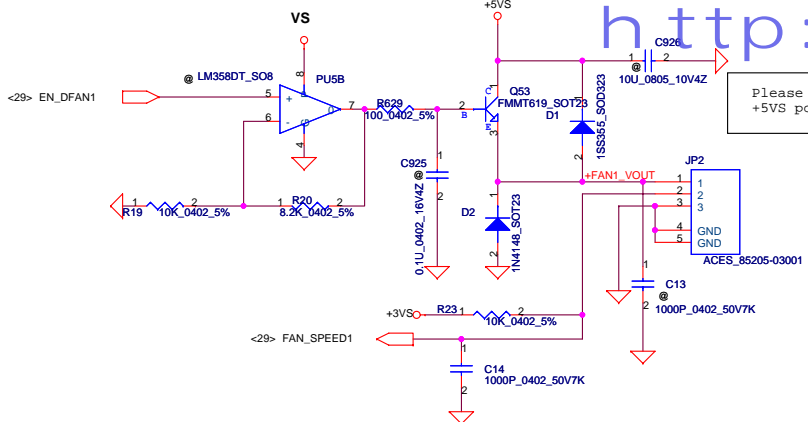
SKU ID	SKU
0	10
1	10G
2	
3	
4	
5	
6	
7	

BTO Option Table

BTO Item	BOM Structure
2nd HDD	2HDD@
LAN	100M@ 1000M@
WLAN	WLAN@
NB	GM@ PM@
BT	BT@
MIC	MIC@
CIR	CIR@
FINGER PRINT	FP@
HDMI	HDMI@
Camera	Camera@
Robson	Robson@
Express Card	NEWCARD@
HD-DVD	3G@

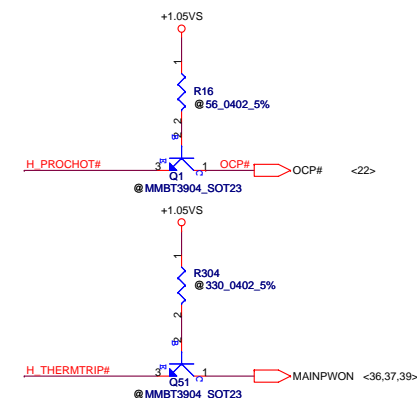
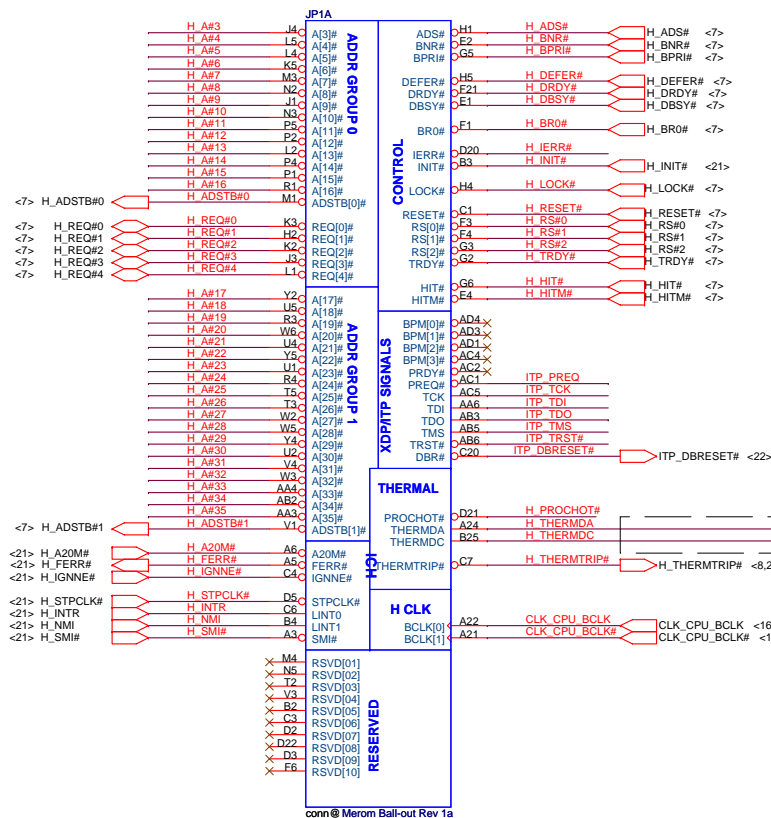
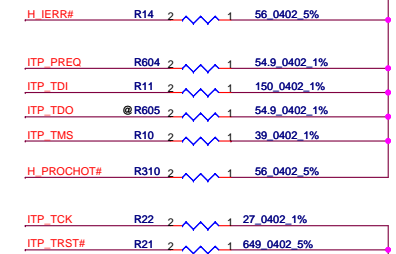
USB PORT LIST

PORT	DEVICE
0	RIGHT USB Port (Samll Board)
1	RIGHT USB Port (Samll Board)
2	3G Card
3	N.C.
4	LEFT USB Port
5	LEFT USB Port
6	Fingerprint or Felica
7	Blue Tooth
8	Internal Camera
9	New Card



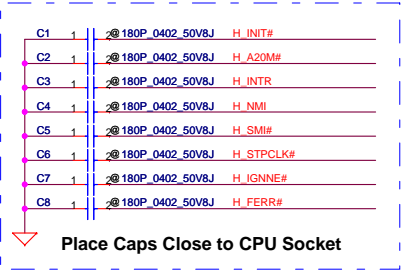
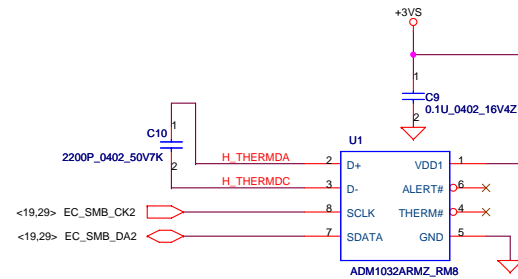
Please add the 10uF capacitor if the +5VS power source not stable.

Place close to CPU within 500mil



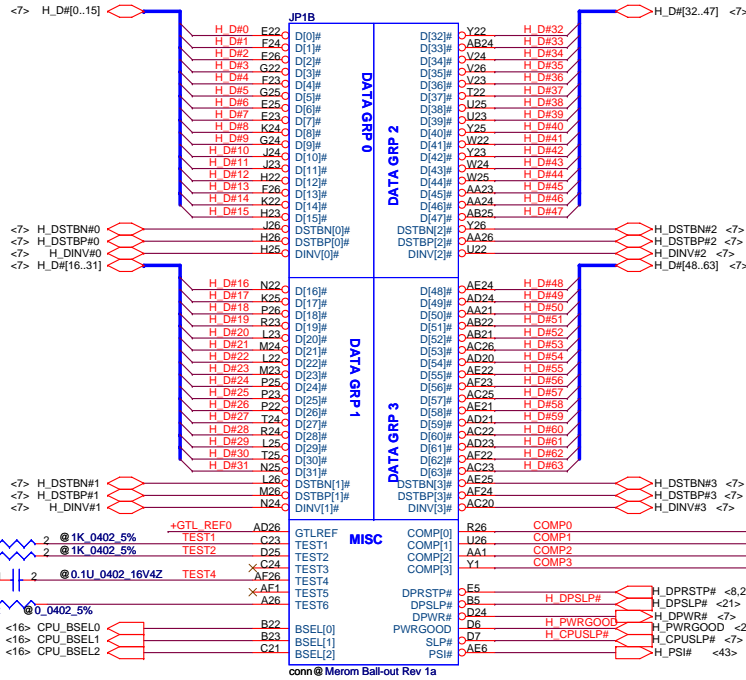
H_THERMDA, H_THERMDC routing together, Trace width / Spacing = 10 / 10 mil

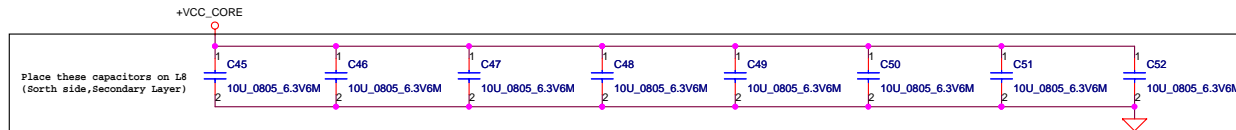
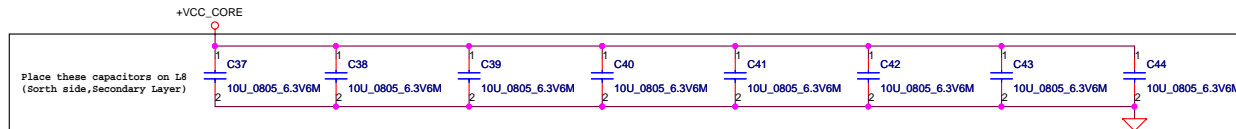
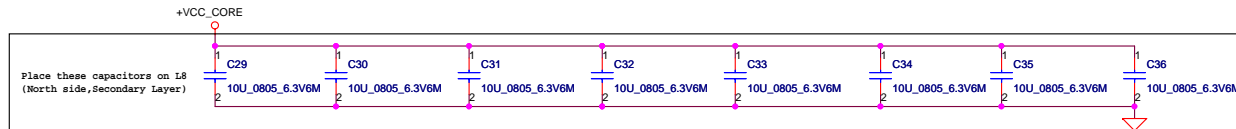
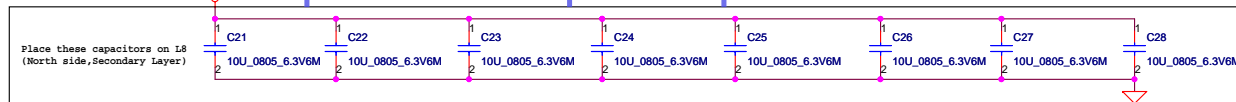
Thermal Sensor ADM1032ARM



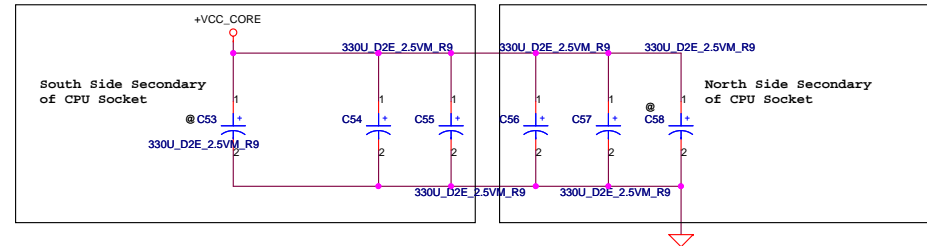
Place Caps Close to CPU Socket

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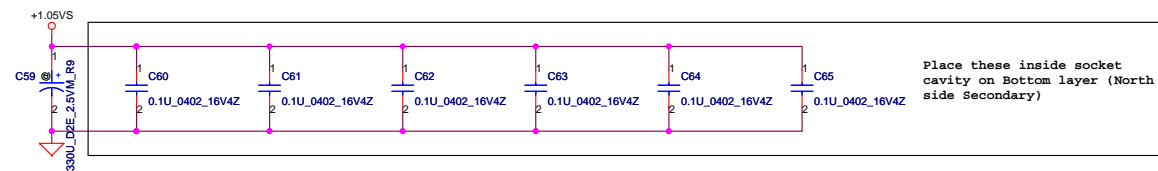


Mid Frequency Decoupling



ESR <= 1.5m ohm
Capacitor > 1980uF

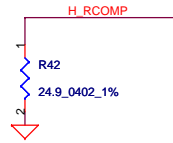
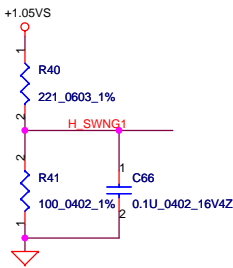
330uF ESR 7m ohm X 6 PCS



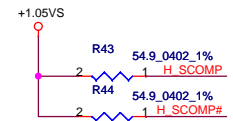
conn@ Merom Ball-out Rev 1a

A4	VSS[001]	P6
A8	VSS[002]	P21
A11	VSS[003]	P24
A14	VSS[004]	R2
A16	VSS[005]	R5
A19	VSS[006]	R22
A23	VSS[007]	R25
AF2	VSS[008]	T1
B6	VSS[009]	T4
B8	VSS[010]	T23
B11	VSS[011]	T26
B13	VSS[012]	U3
B16	VSS[013]	U6
B19	VSS[014]	U21
B21	VSS[015]	U24
B24	VSS[016]	V2
C5	VSS[017]	V5
C6	VSS[018]	V22
C11	VSS[019]	V25
C14	VSS[020]	W1
C16	VSS[021]	W4
C19	VSS[022]	W23
C2	VSS[023]	W26
C22	VSS[024]	Y3
D1	VSS[025]	Y21
D4	VSS[026]	Y24
D8	VSS[027]	Y26
D9	VSS[028]	AA2
D11	VSS[029]	AA5
D13	VSS[030]	AA8
D16	VSS[031]	AA11
D19	VSS[032]	AA14
D23	VSS[033]	AA16
D26	VSS[034]	AA19
E3	VSS[035]	AA22
E6	VSS[036]	AA25
E8	VSS[037]	AB1
E11	VSS[038]	AB4
E14	VSS[039]	AB8
E16	VSS[040]	AB11
E19	VSS[041]	AB13
E21	VSS[042]	AB16
E24	VSS[043]	AB19
F5	VSS[044]	AB23
F8	VSS[045]	AB26
F11	VSS[046]	AC3
F13	VSS[047]	AC6
F16	VSS[048]	AC8
F19	VSS[049]	AC11
F22	VSS[050]	AC16
F25	VSS[051]	AC19
G4	VSS[052]	AC21
G1	VSS[053]	AC24
G23	VSS[054]	AD2
G26	VSS[055]	AD5
H3	VSS[056]	AD8
H6	VSS[057]	AD11
H21	VSS[058]	AD13
H24	VSS[059]	AD16
J2	VSS[060]	AD19
J5	VSS[061]	AD22
J22	VSS[062]	AD25
J25	VSS[063]	AE1
K1	VSS[064]	AE4
K23	VSS[065]	AE8
K26	VSS[066]	AE11
L3	VSS[067]	AE14
L6	VSS[068]	AE16
L21	VSS[069]	AE19
L24	VSS[070]	AE23
M2	VSS[071]	AE26
M5	VSS[072]	A2
M22	VSS[073]	AF6
M25	VSS[074]	AF8
N1	VSS[075]	AF11
N4	VSS[076]	AF13
N23	VSS[077]	AF16
N26	VSS[078]	AF19
P3	VSS[079]	AF21
	VSS[080]	A25
	VSS[081]	AF25

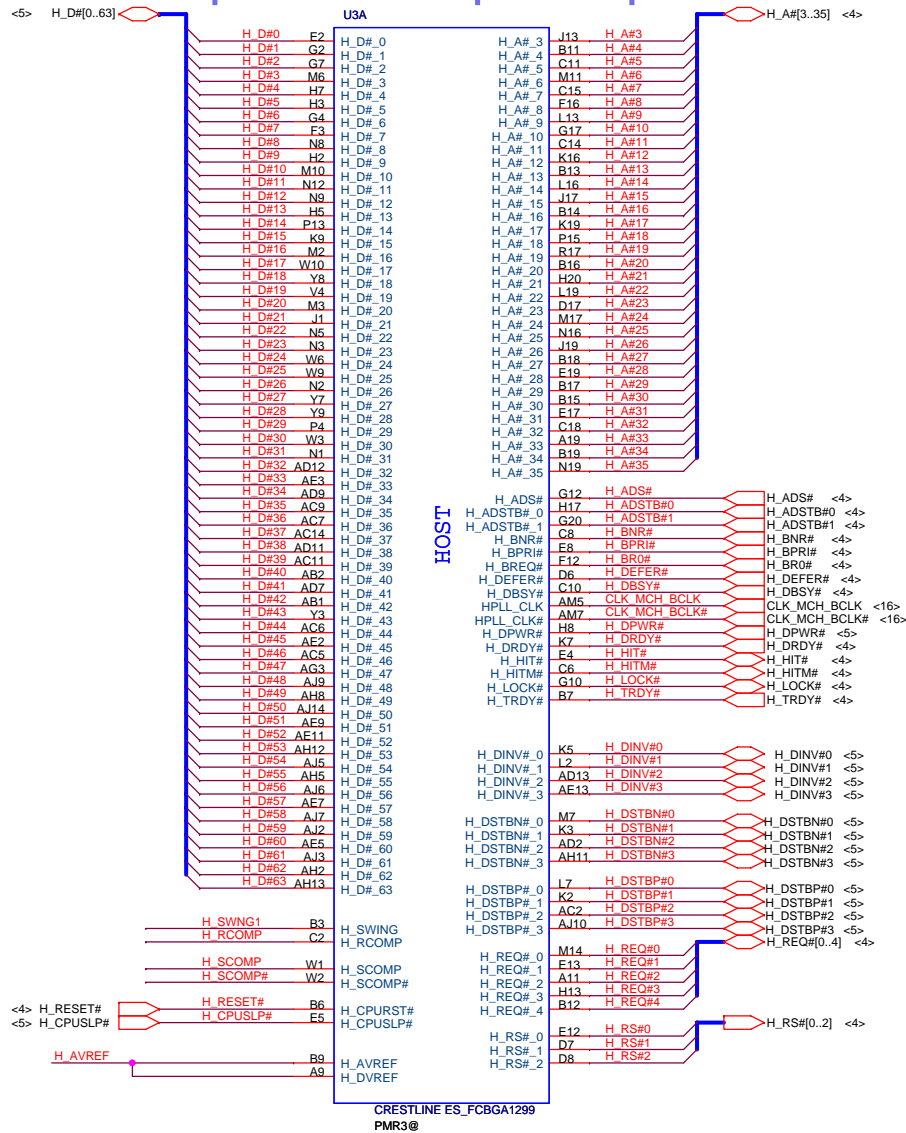
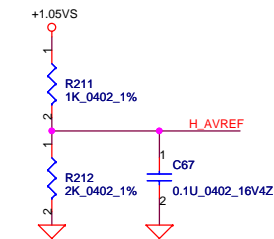
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10-mil wide with 20-mil spacing

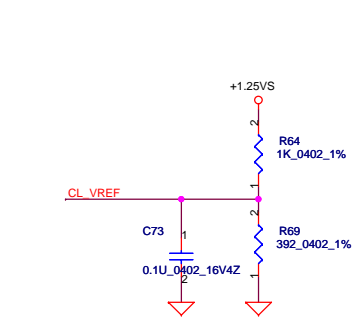
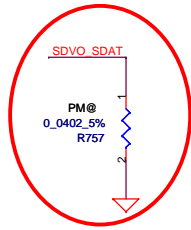
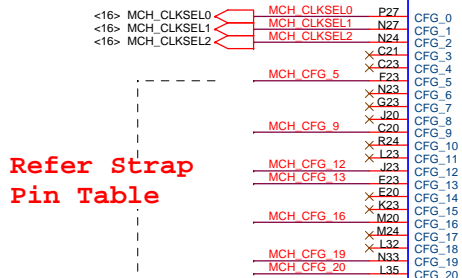
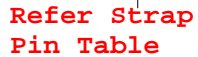
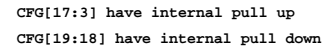


impedance is 55 ohm
Width is 10mil



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CFG[2:0]	011 = 667MT/s FSB 010 = 800MT/s FSB
CFG5	0 = DMI x 2 1 = DMI x 4 * (Default)
CFG9	0 = Lane Reversal Enable 1 = Normal Operation * (Default)
CFG[13:12]	00 = Reserved 01 = XOR Mode Enabled 10 = All Z Mode Enabled 11 = Normal Operation * (Default)
CFG16	0 = Dynamic ODT Disabled 1 = Dynamic ODT Enabled * (Default)
CFG19	0 = Normal Operation 1 = DMI Lane Reversal Enable * (Default)
CFG20 (PCIE/SDVO select)	0 = Only PCIE or SDVO is operational. * (Default) 1 = PCIE/SDVO are operating simu.
SDVO_CTRLDATA	0 = No SDVO Device Present * (Default) 1 = SDVO Device Present

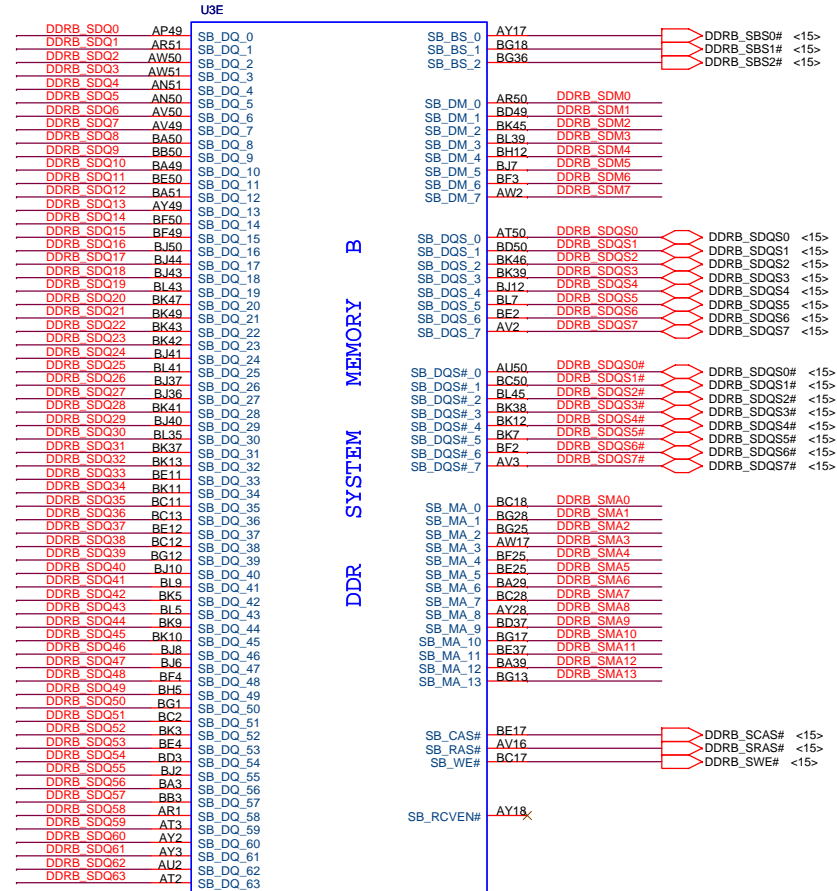


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<15> DDRB_SDQ[0..63] <15> DDRB_SDM[0..7] <15> DDRB_SMA[0..13]



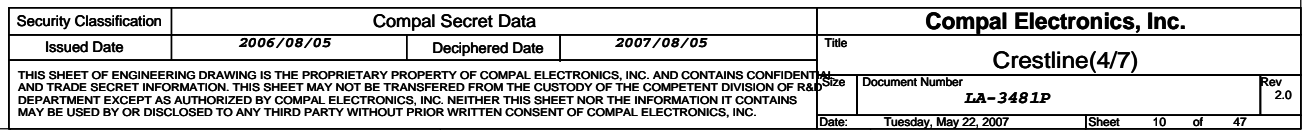
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PMR3@



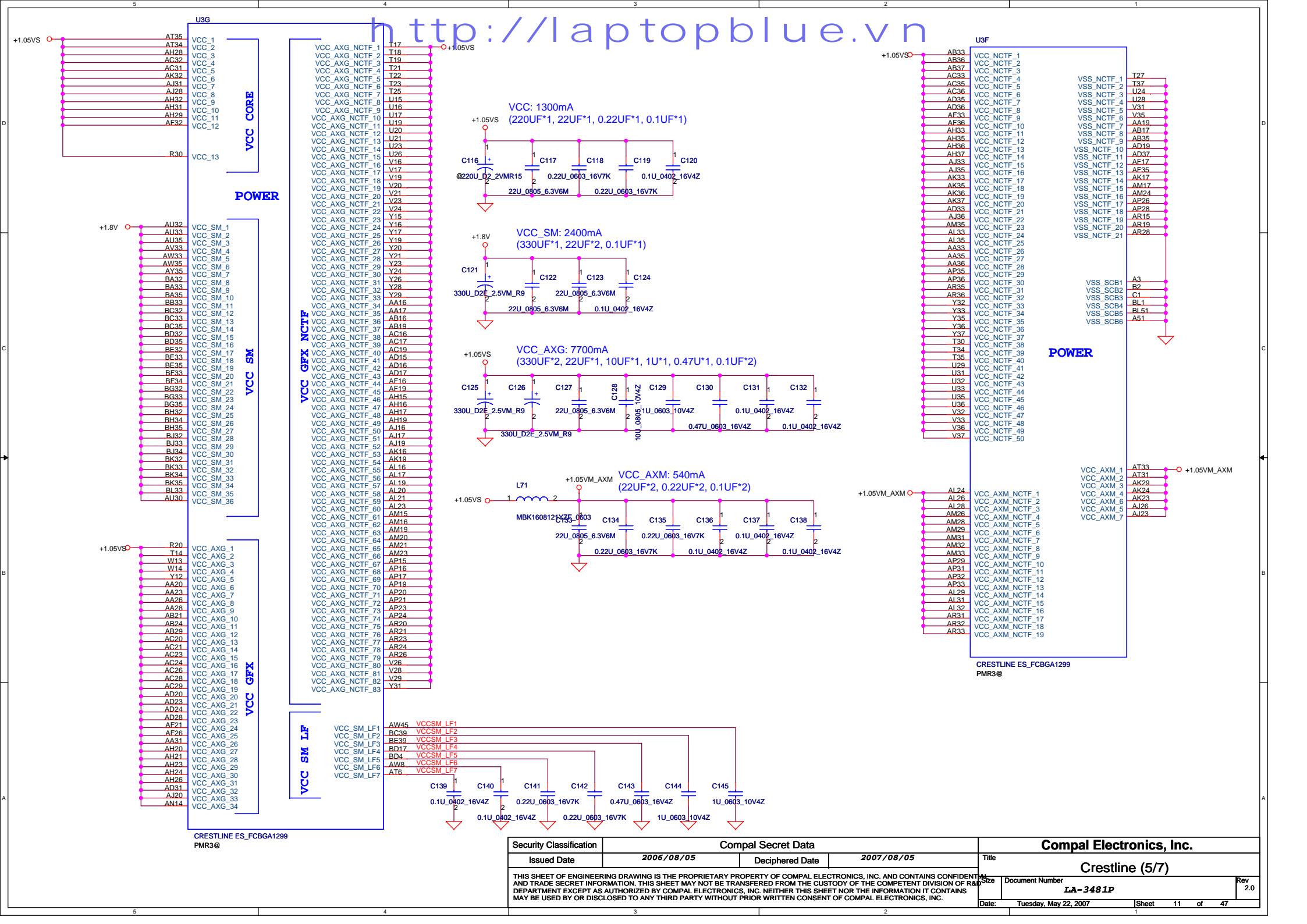
CRESTLINE ES_FCBGA1299
PMR3@

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PCIE_MTX_C_GRX_N[0..15]	PCIE_MTX_C_GRX_P[0..15]	<19>
PCIE_MTX_C_GRX_N[0..15]	PCIE_MTX_C_GRX_P[0..15]	<19>
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h t t p : / / l a p t o p b l u e . v n

U3G

VCC CORE

POWER

VCC SM

VCC GFX NCTF

VCC SM LF

U3F

POWER

VCC AXG

CRESTLINE ES_FCBGA1299
PMR3@

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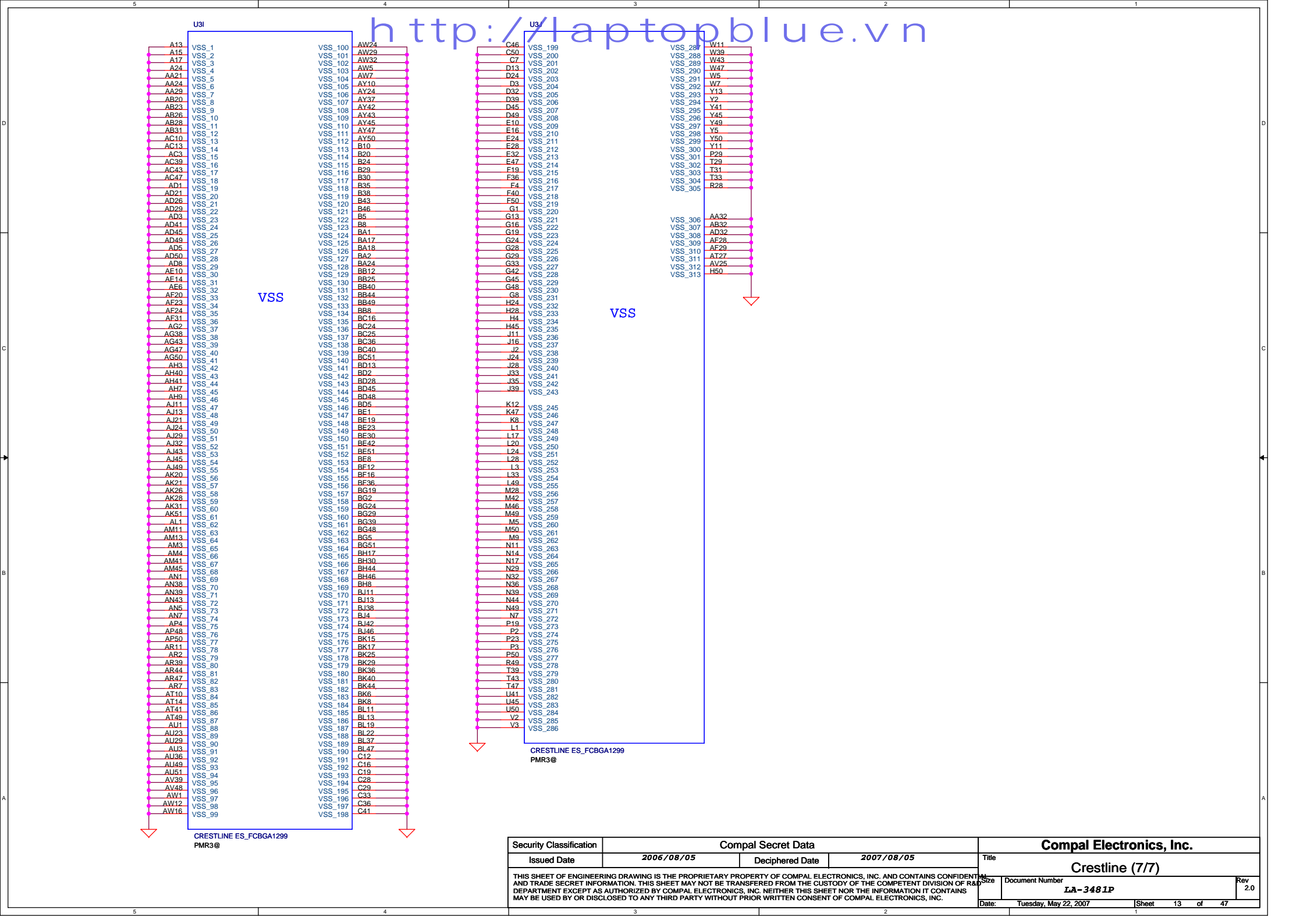
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Date:

Saturday, June

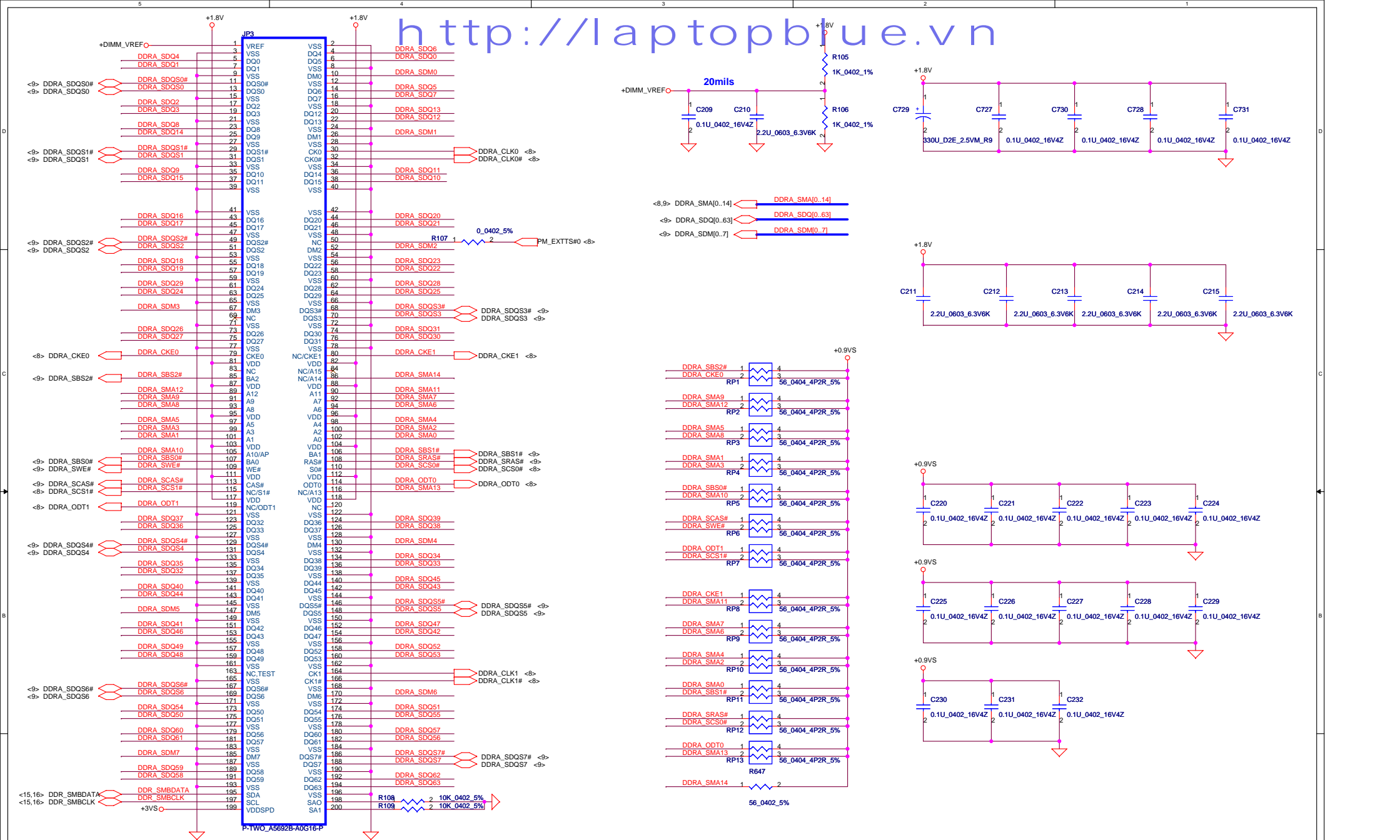
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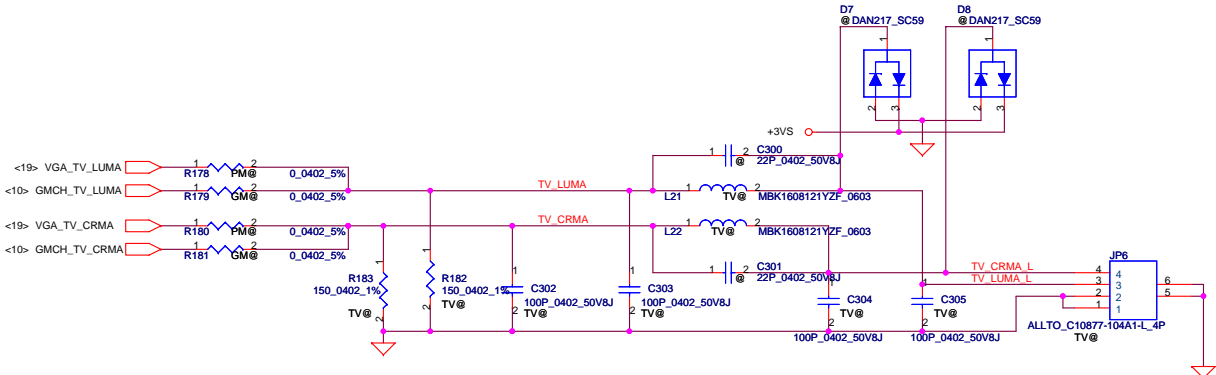
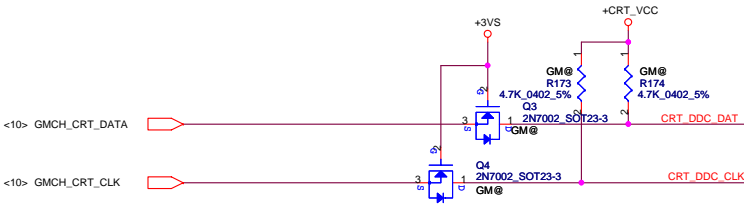
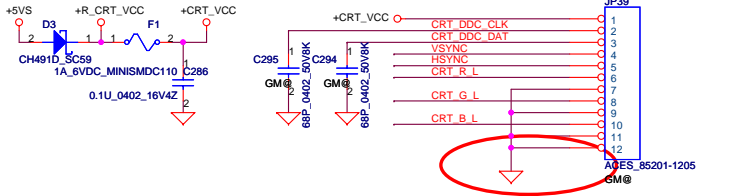
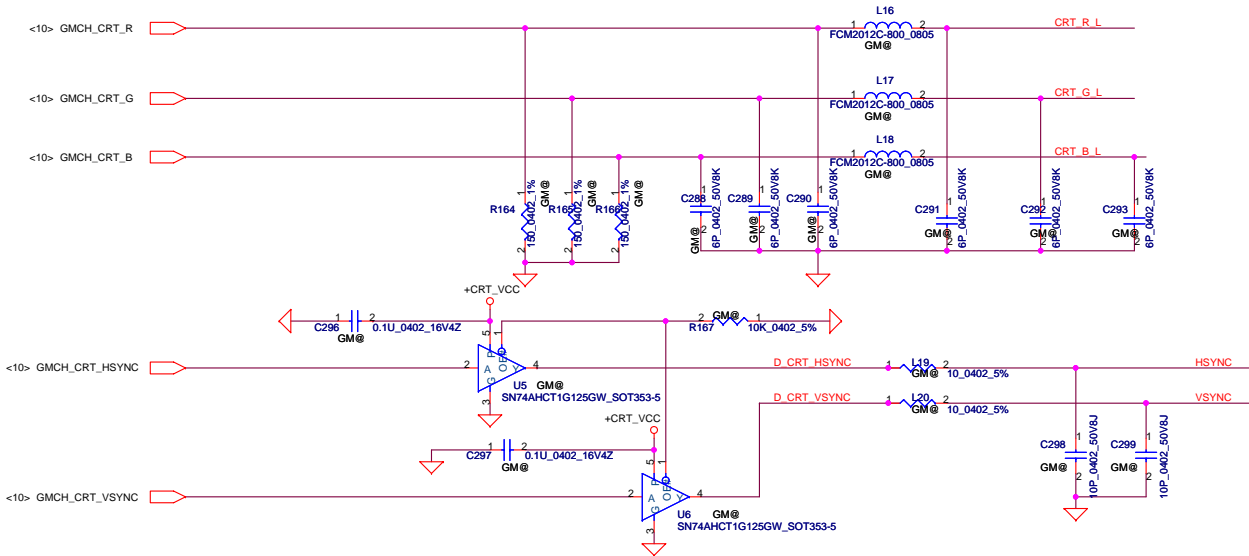


DIMM0 STD H:9.2mm (BOT)

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CRT CONNECTOR

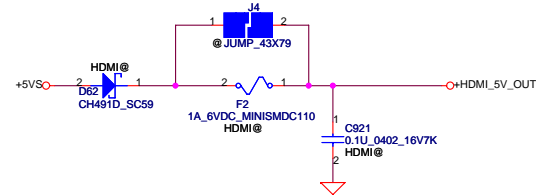
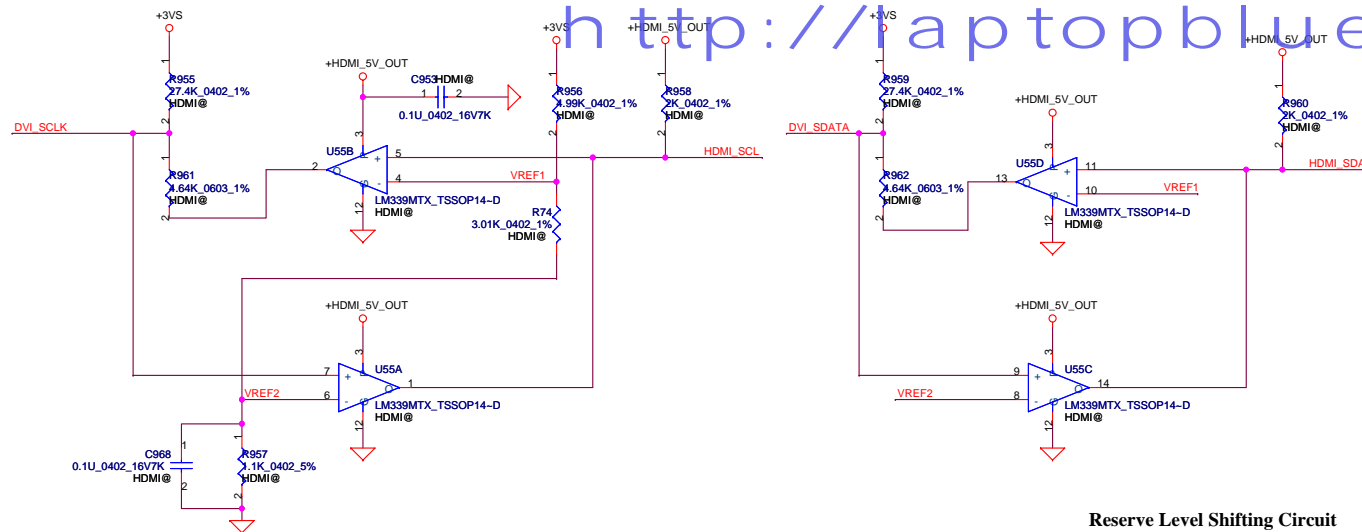
http://laptopblue.vn



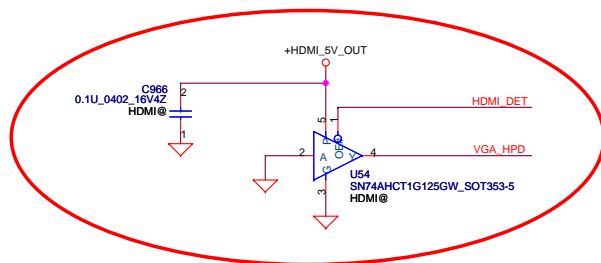
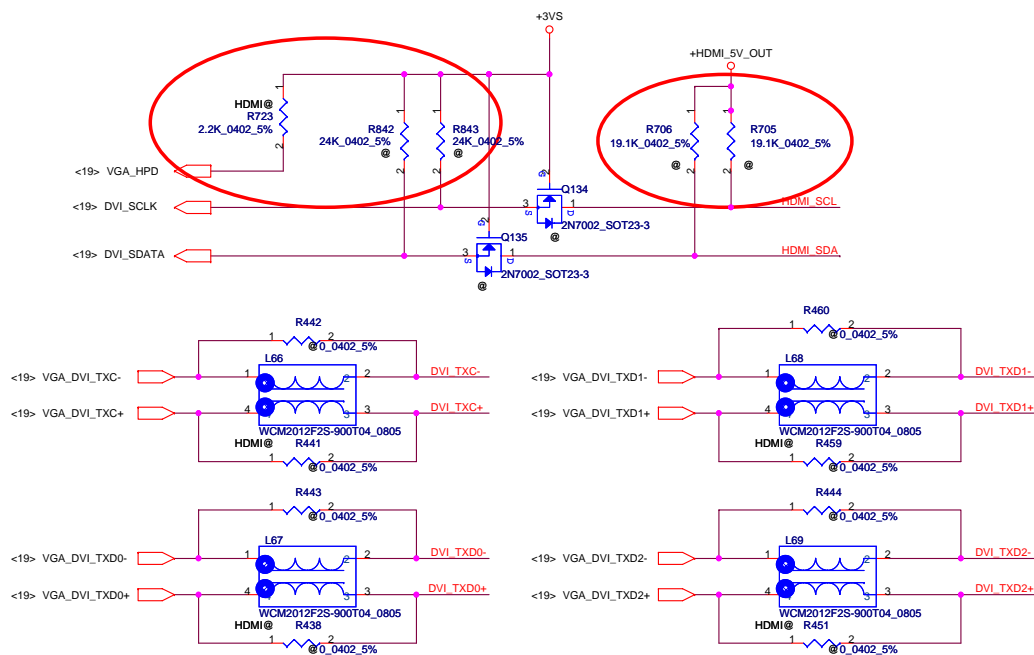
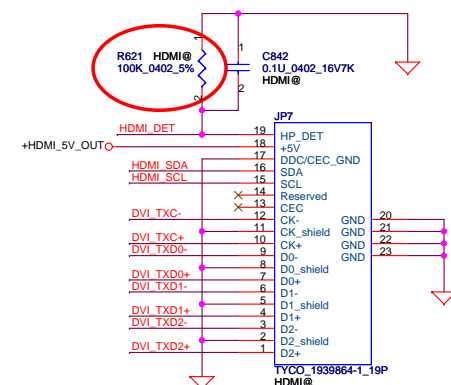
TV-OUT Conn.

- 1. Y ground
- 2. C ground
- 3. Y (luminance+sync)
- 4. C (chrominance)

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								CRT & TVout Connector	
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						LA-3481P		2.0	
						Date:		Wednesday, May 23, 2007	



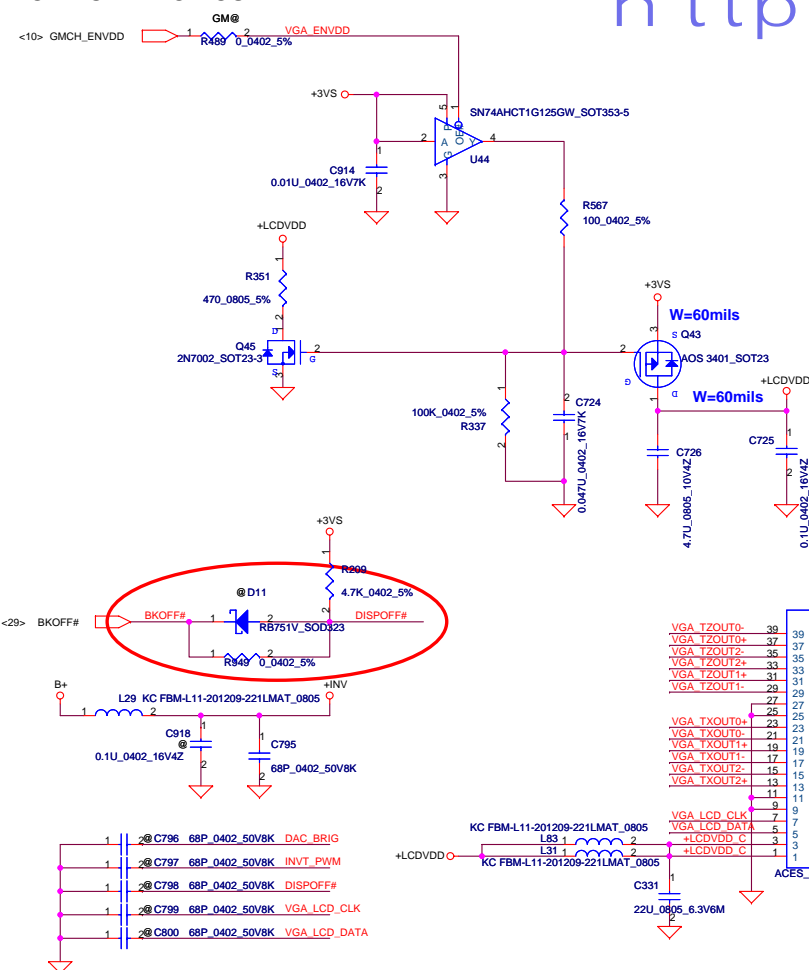
HDMI Connector



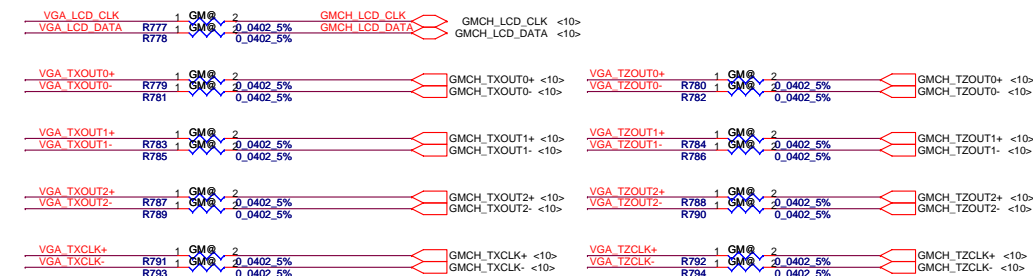
For HDMI Hot Plug Issue

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				LA-3481P	2.0
				Date: Saturday, June 23, 2007	Sheet 18 of 47

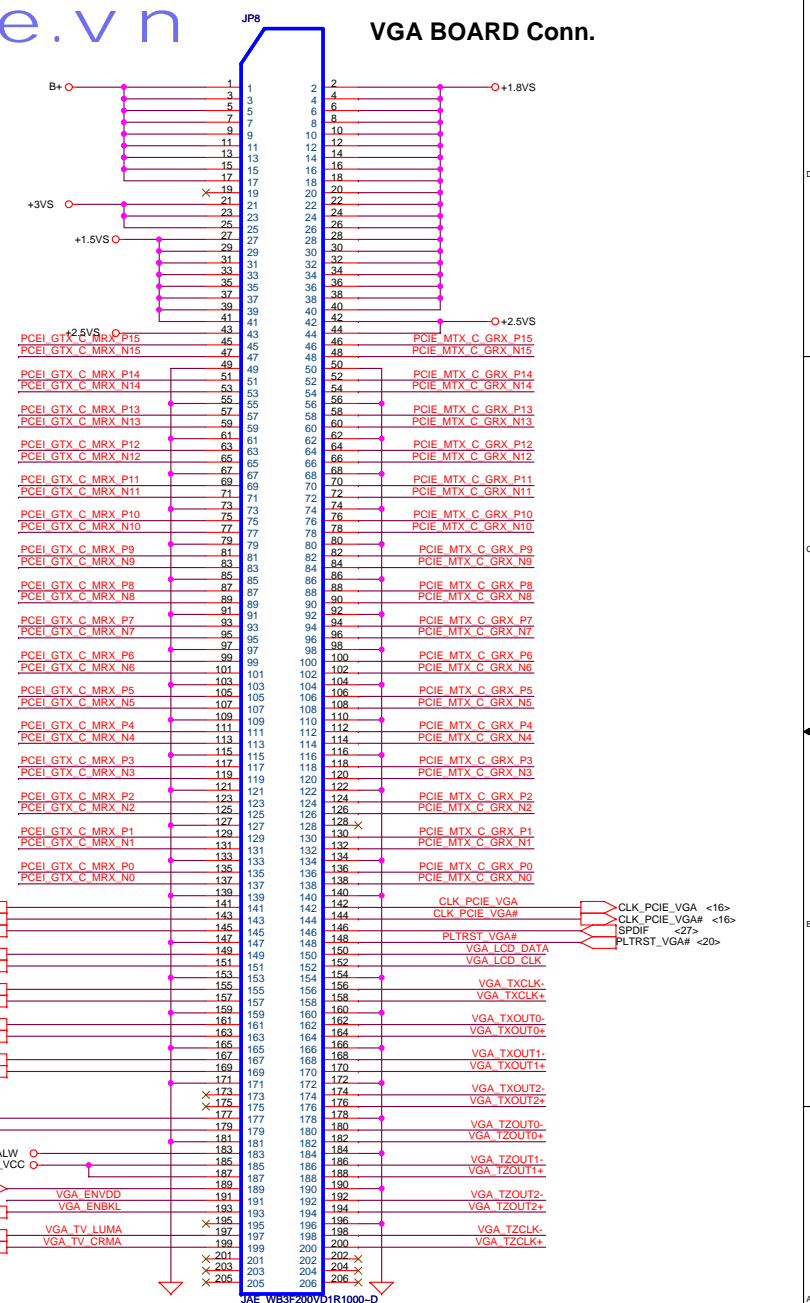
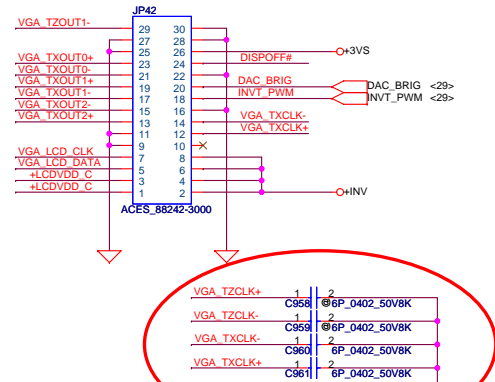
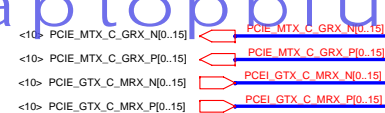
LCD POWER CIRCUIT



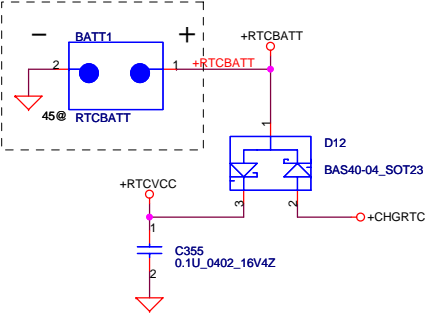
ALL R CLOSE TO VGA CONNECTOR



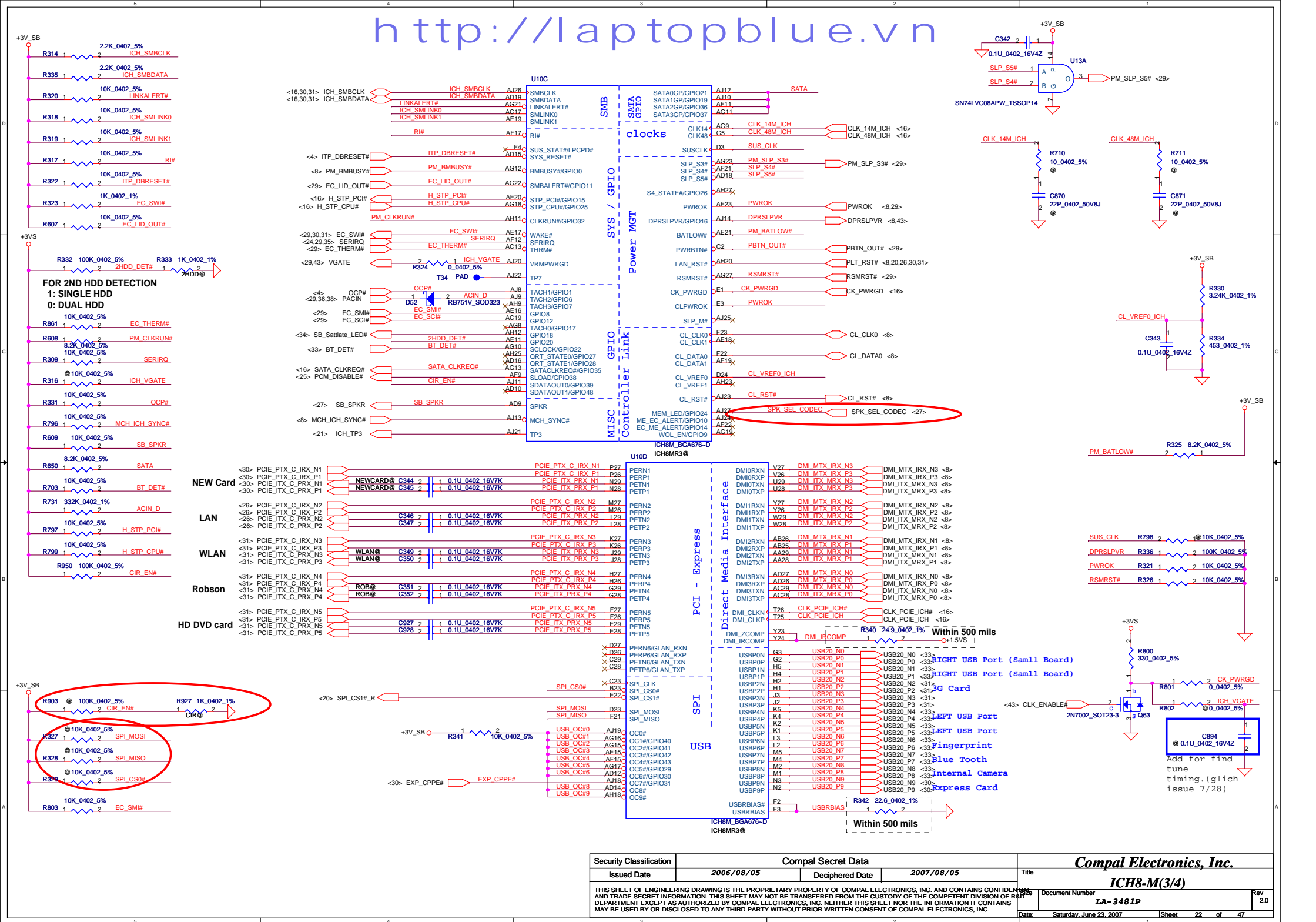
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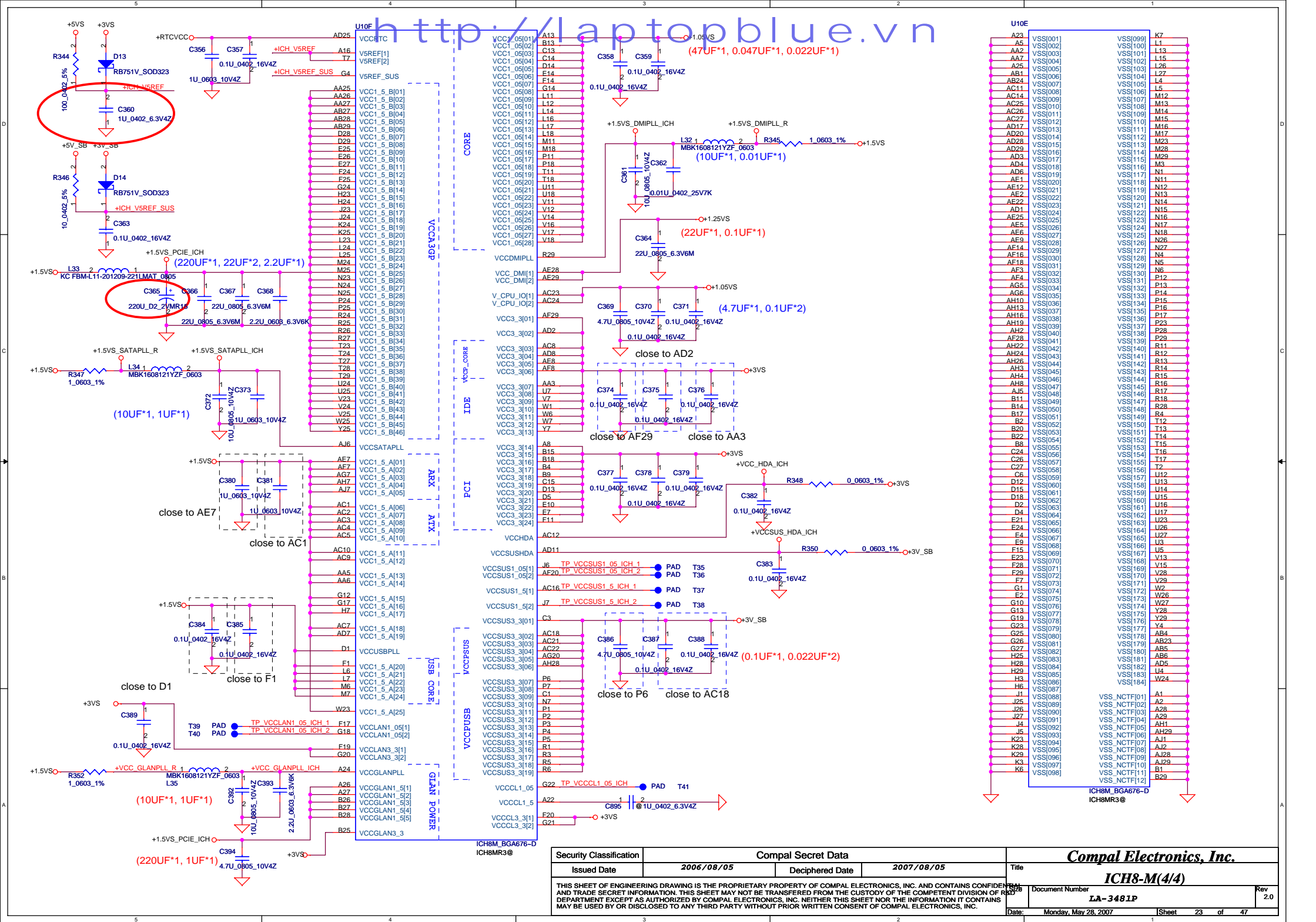


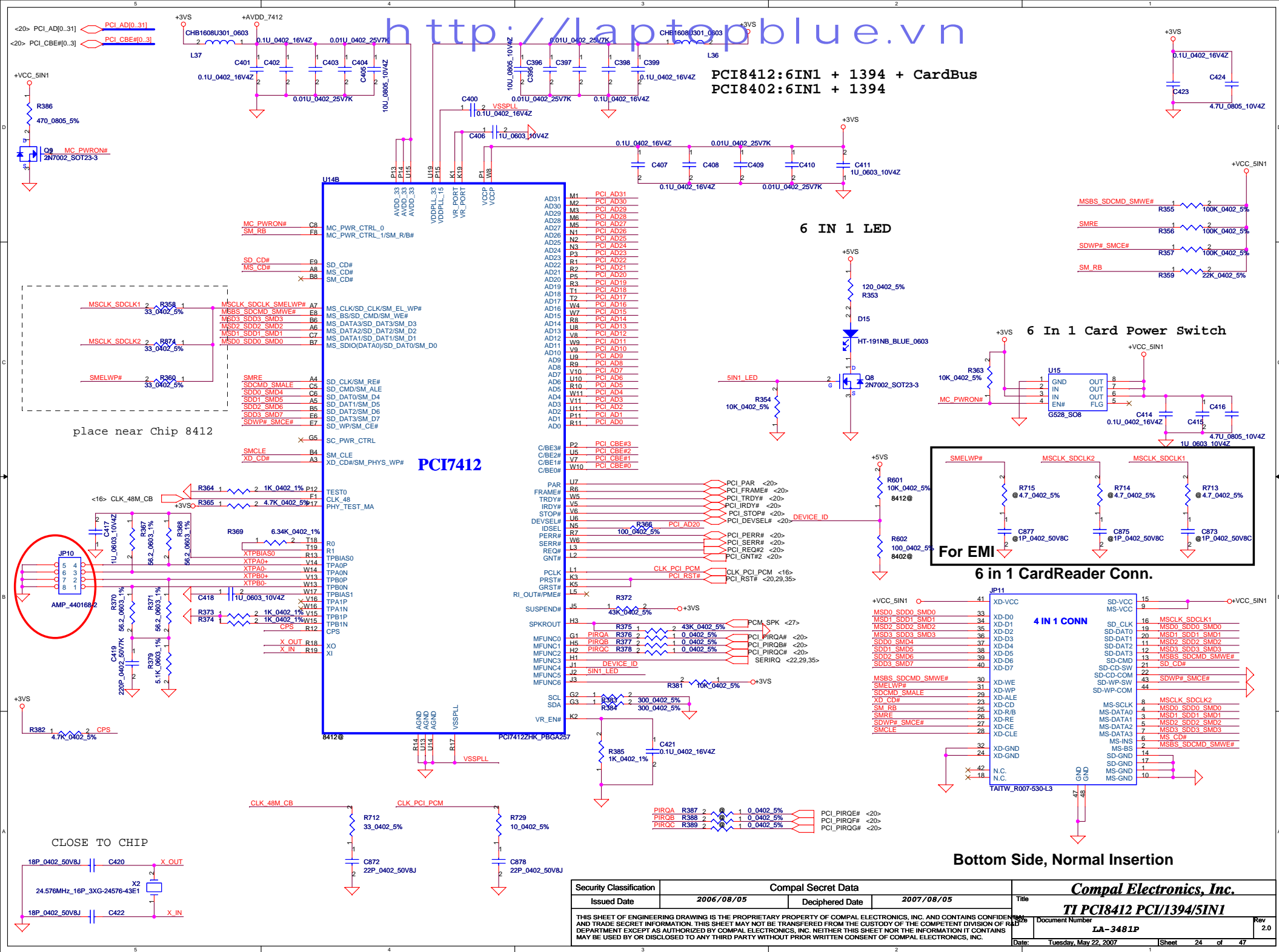
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Issued Date	2006/08/05	Deciphered Date	2007/08/05	Title VGA CONN		
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				Document Number	2.0
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Date: Tuesday, May 22, 2007		Sheet 21 of 47			







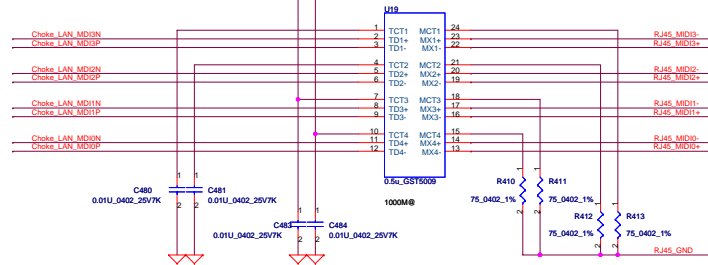
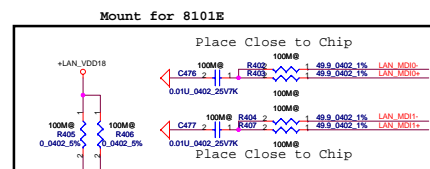
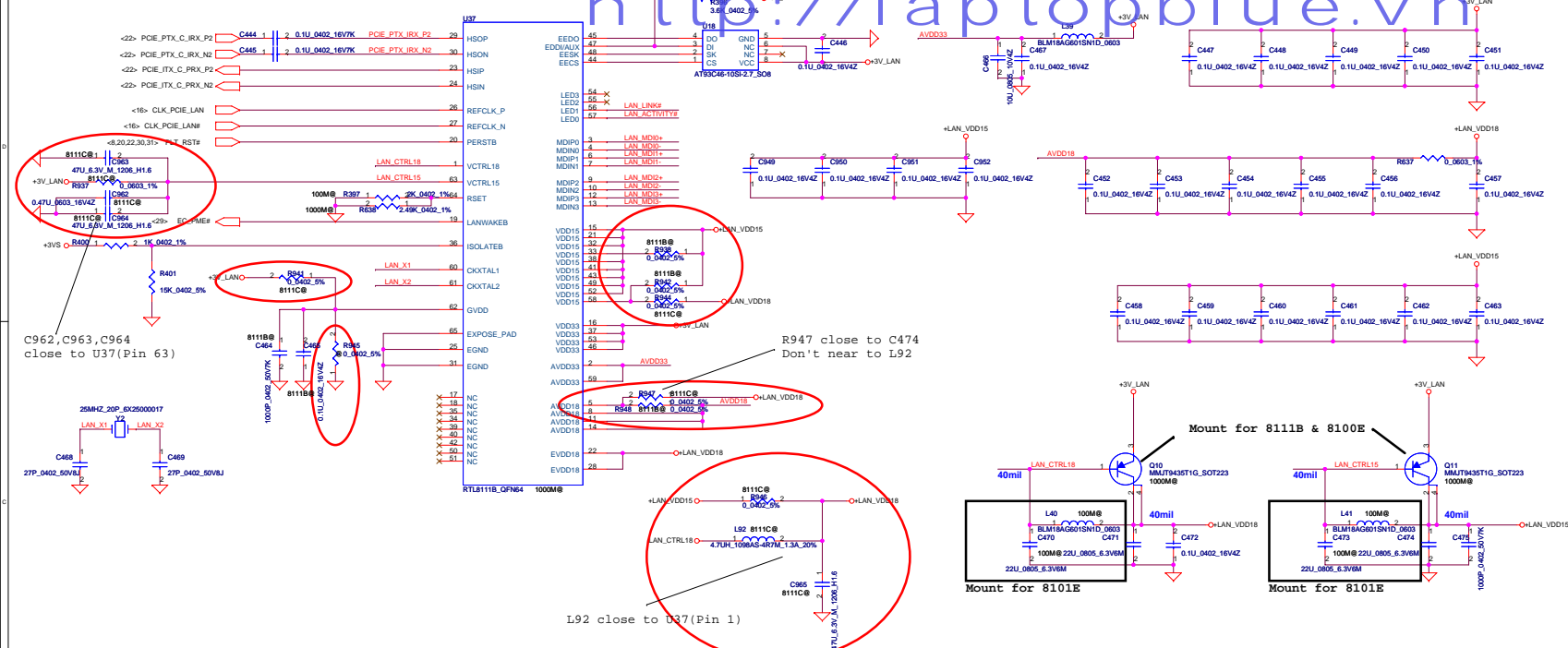


Compal Electronics, Inc.

TI PCI8412/CB socket

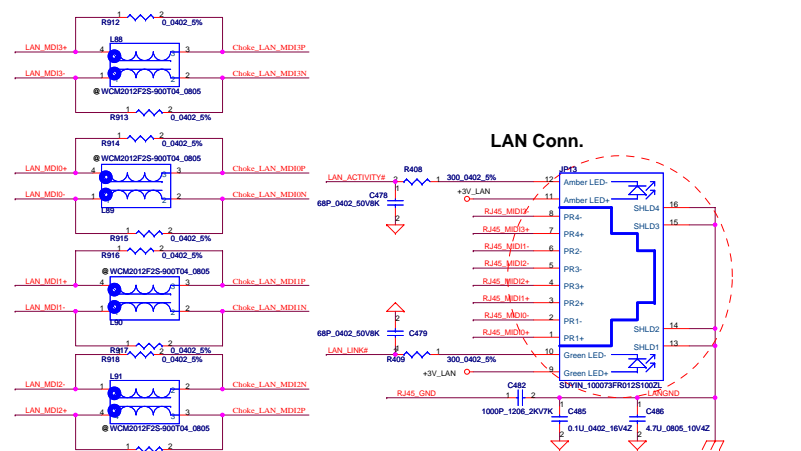
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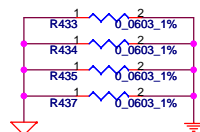


Place these components
colsed to LAN chip

GST5009 for GIGA LAN
TST1284 for 10/100 LAN



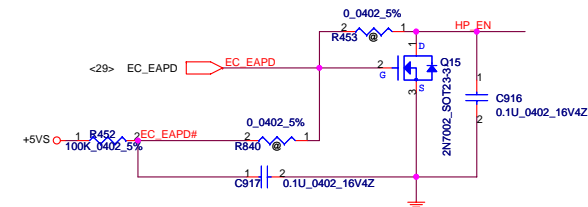
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					LA-3481P	2.0
Date:	Tuesday, May 22 2007	Sheet	77 of 47			

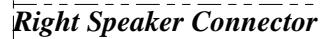
APA2056 SPK/HP Amplifier

```
+5VS for SA00001G200
+3VS for SA00001G210
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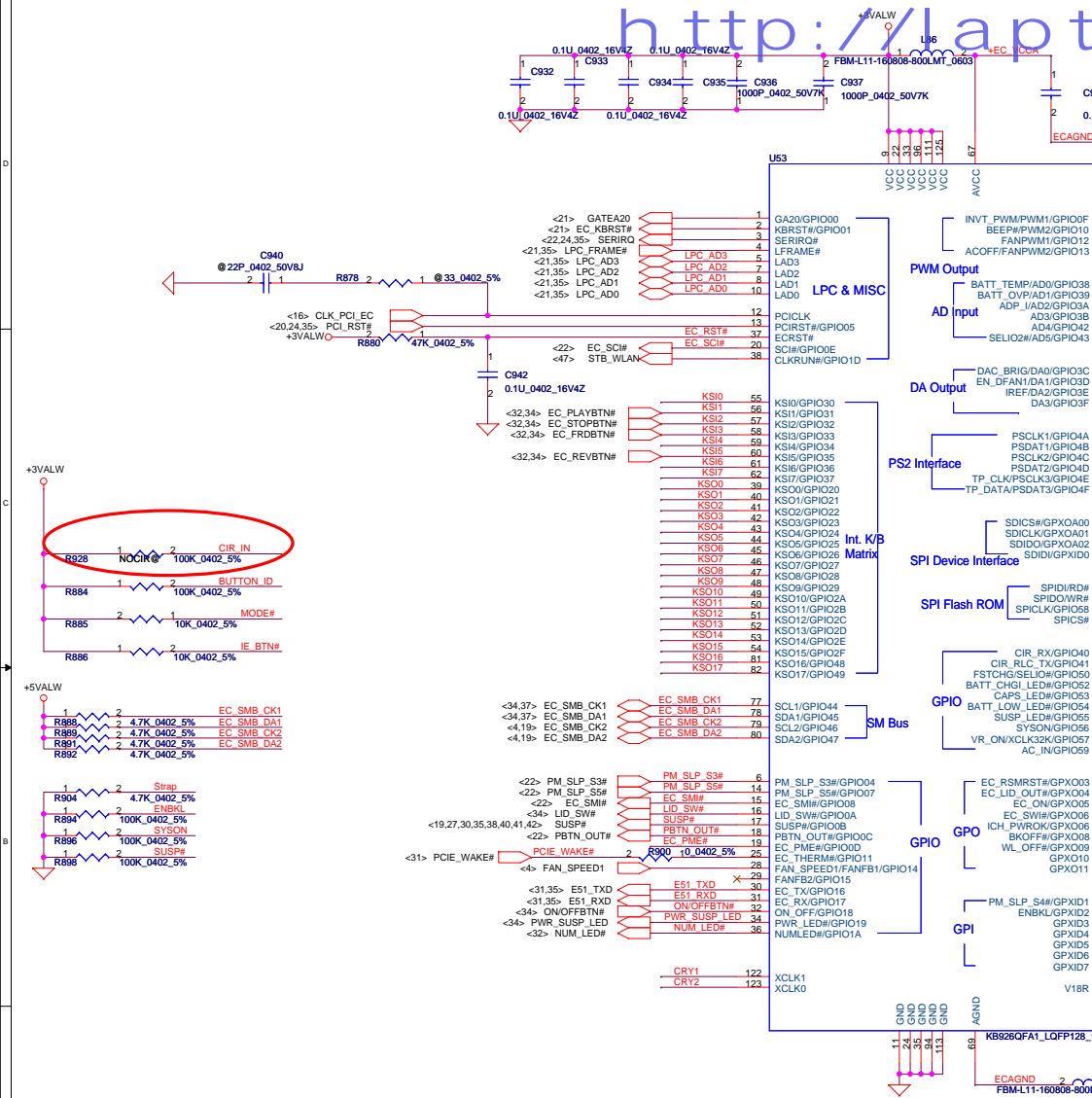
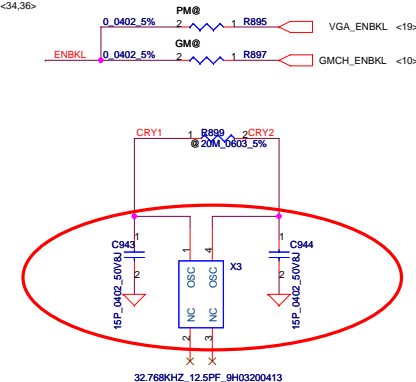
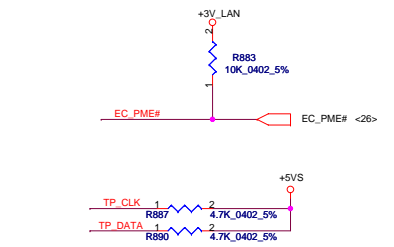
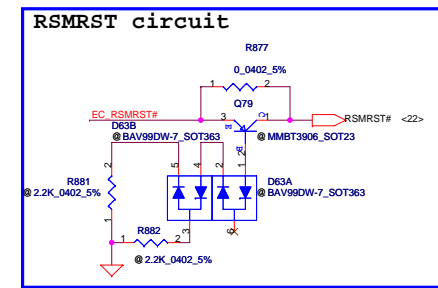
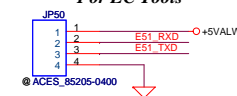


IN_A Gain = 10dB (Internal Speaker)
IN_H Gain = 0dB (Headphone)

The schematic diagram illustrates the internal circuit of a 74LCX74MTC TSSOP14 encoder. It begins with a switch SW1 (SW_XRE094_3P) that provides input signals to a network of resistors (R455, R456, R457, R458) and capacitors (C548, C549, C550, C551, C552). These components are connected to two 74VHC1G14 inverters (U23 and U24). The output of the circuit is an encoder signal, which is shown as a square wave. The output is labeled ENCODER_DIR <29> and ENCODER_PULSE <29>.



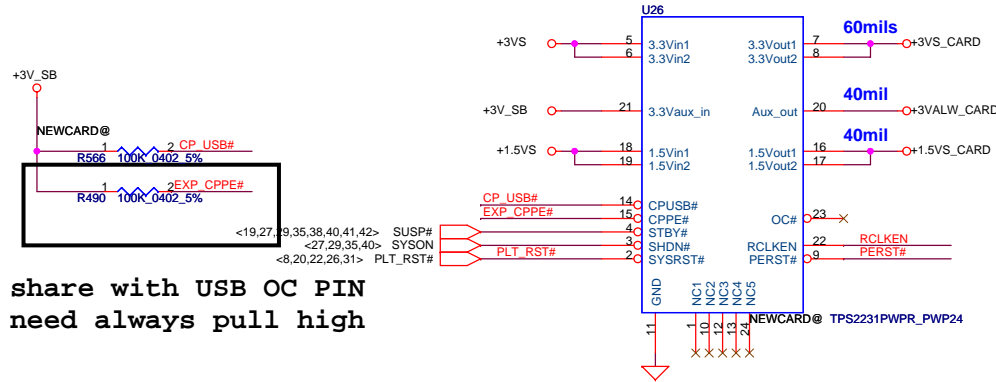
Security Classification	Compal Secret Data			Compal Electronics, Inc.		
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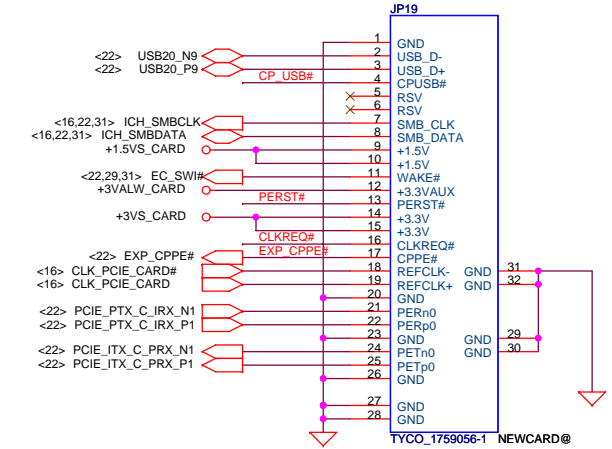
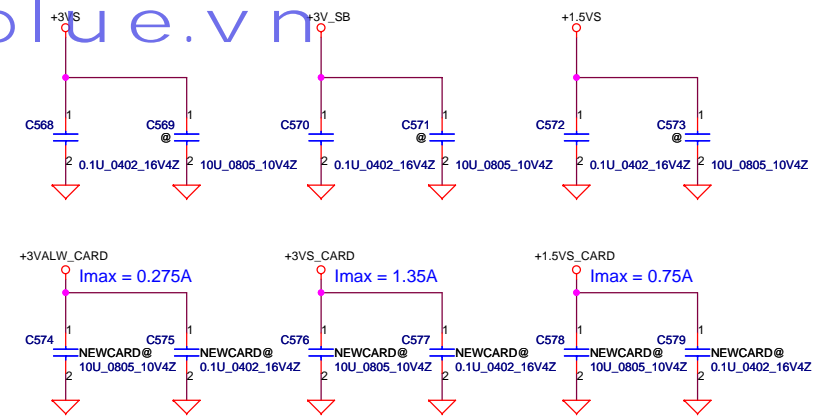
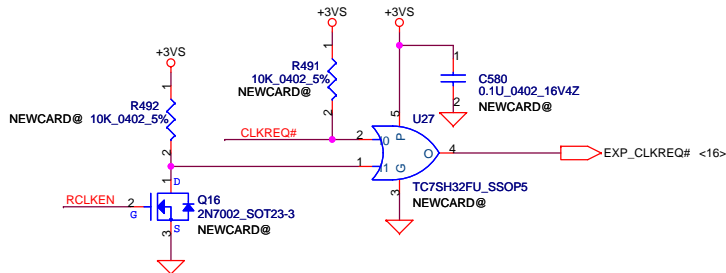
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New Card

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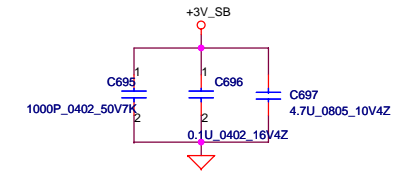
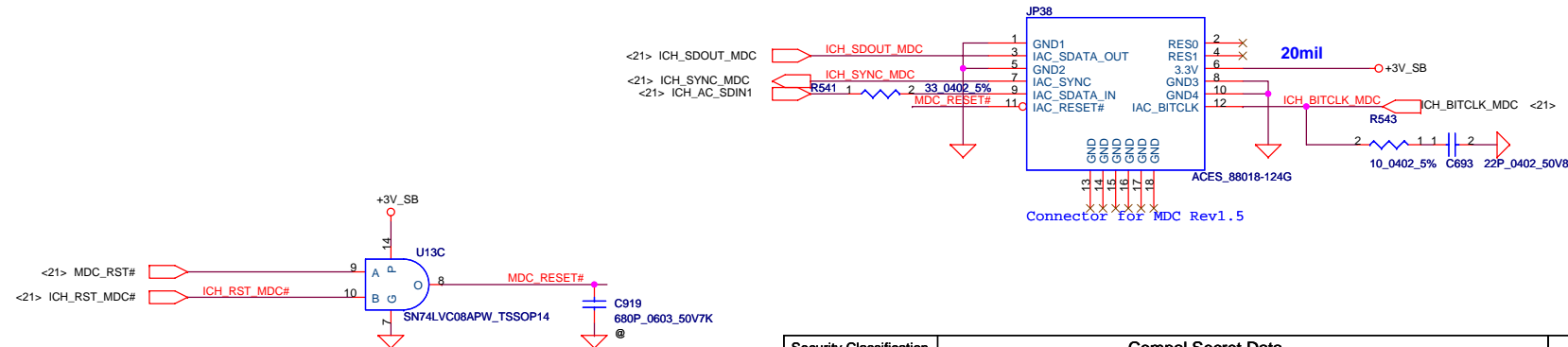


share with USB OC PIN
need always pull high



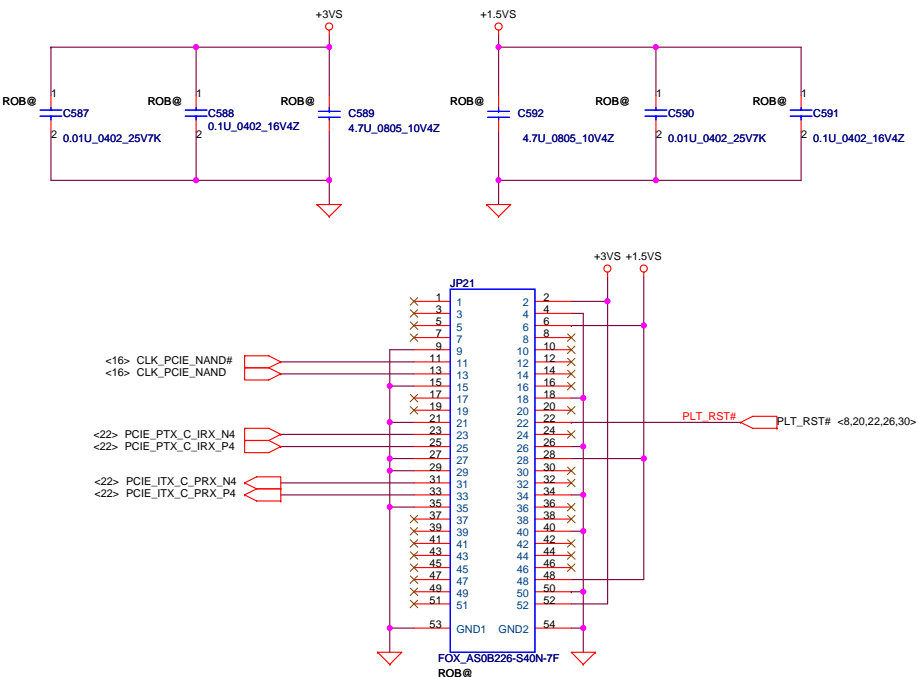
MDC

MDC Conn.

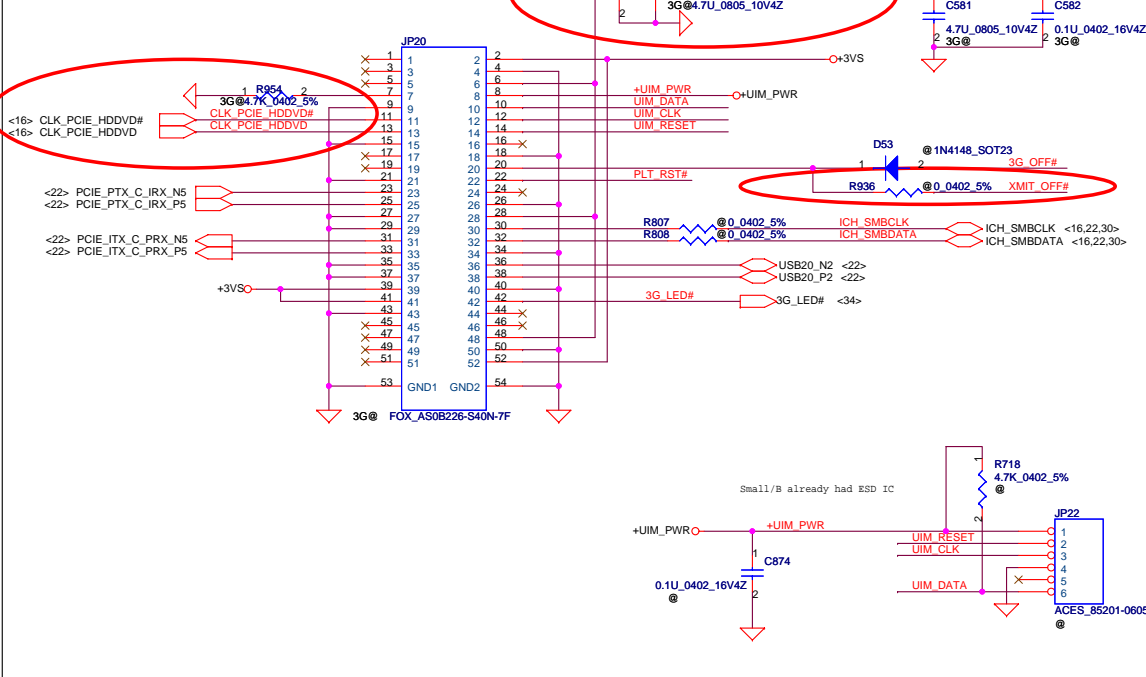


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2007/08/05				Title				New Card & MDC			
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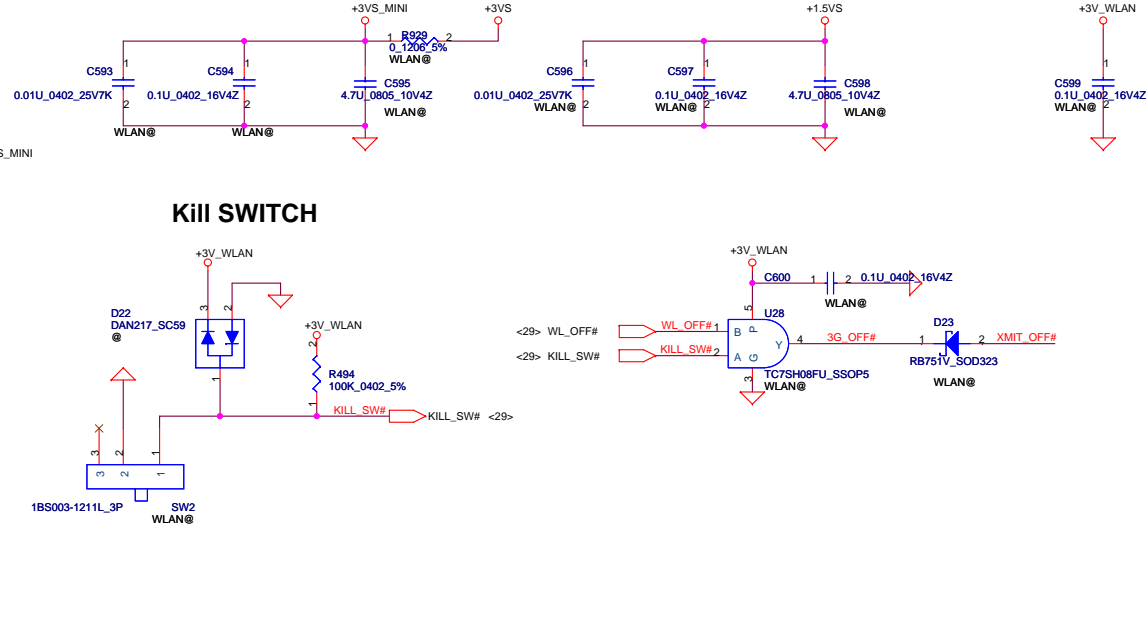
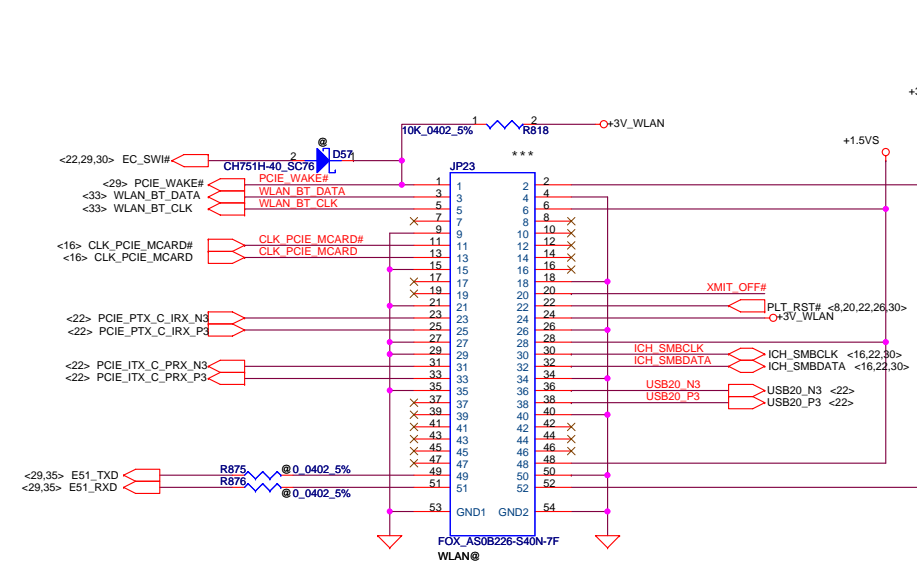
NAND mini Card(Robson support)



Mini-Express Card for 3G



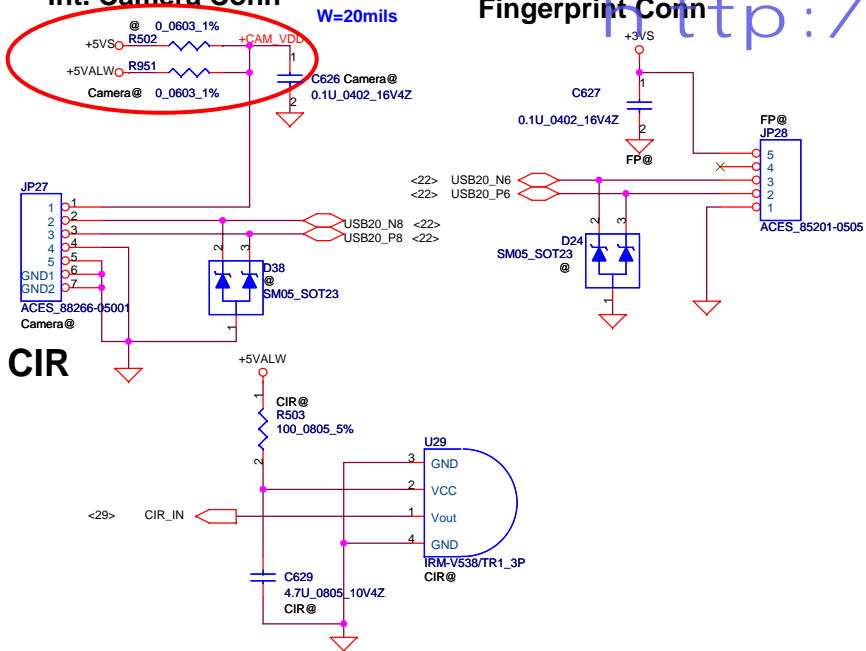
Mini-Express Card for WLAN



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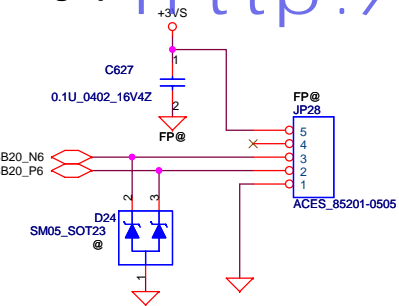
Int. Camera Conn

W=20mils

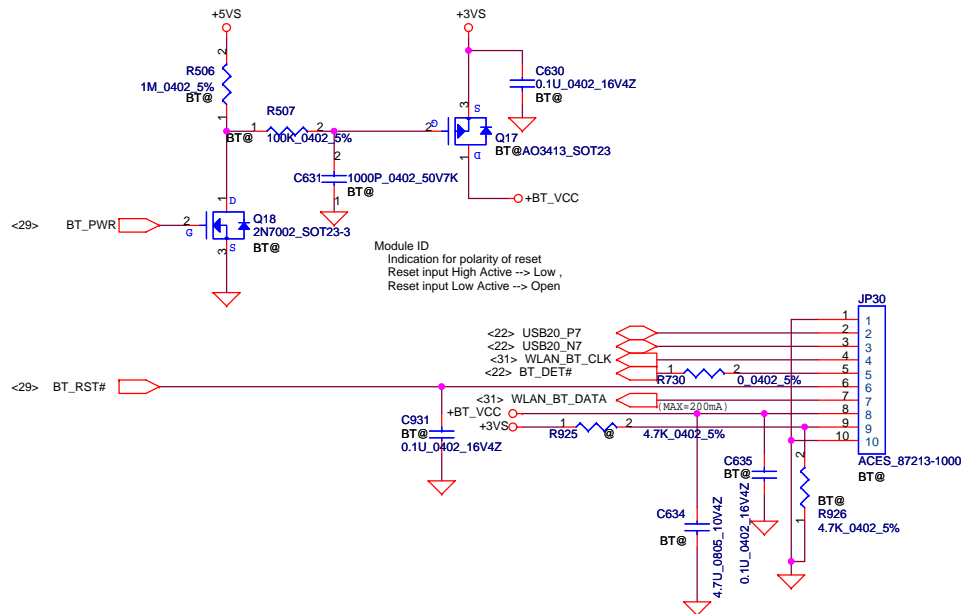


CIR

Fingerprint Conn



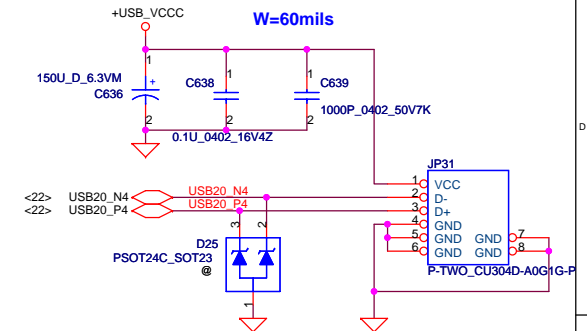
BlueTooth Interface



http://laptopblue.vn

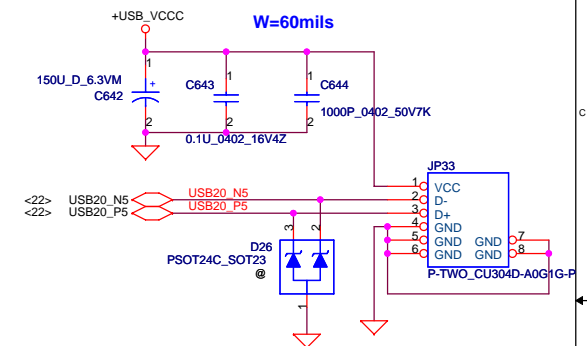
USB CONN. 1

W=60mils

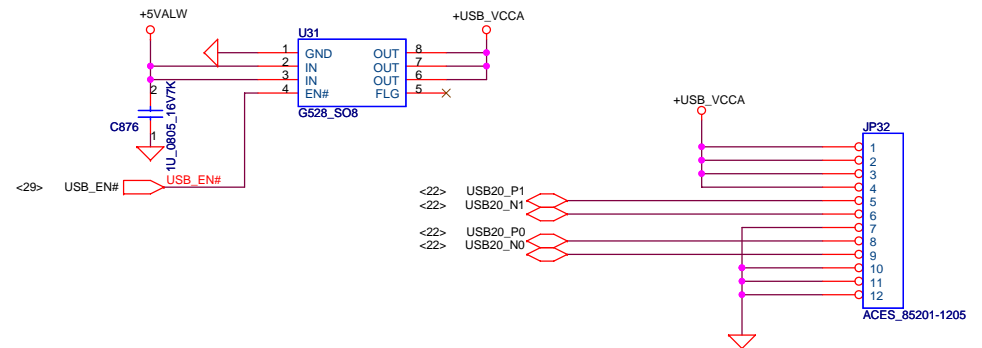


USB CONN.2

W=60mils

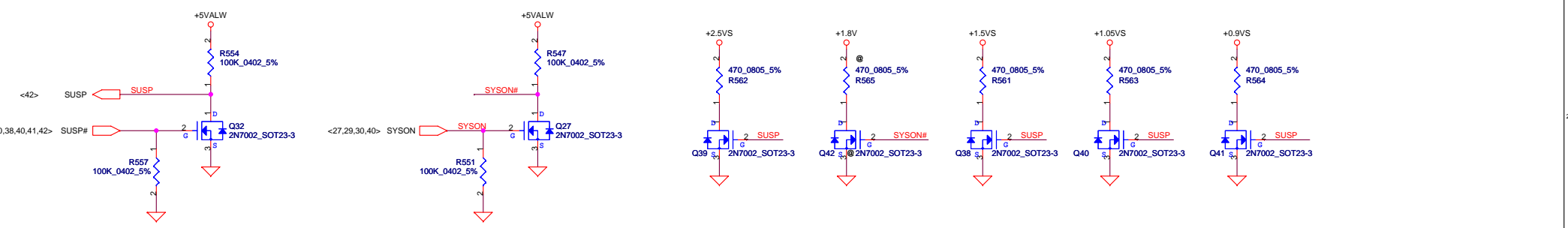
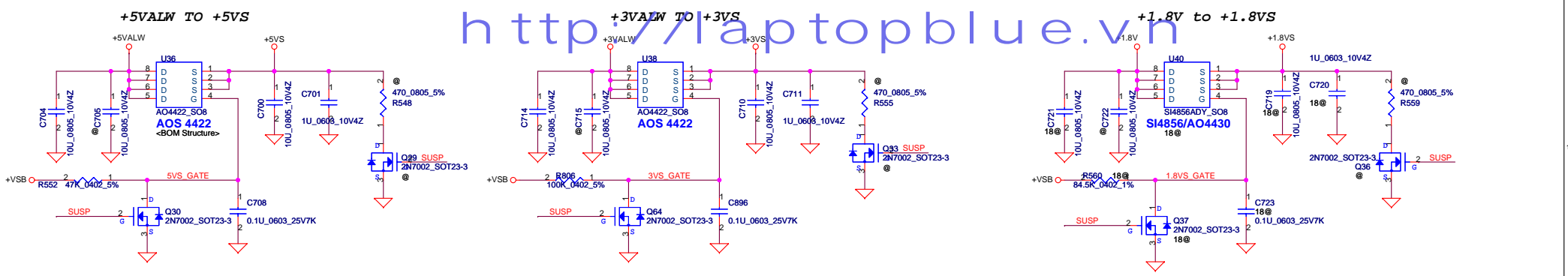


USB Small Board

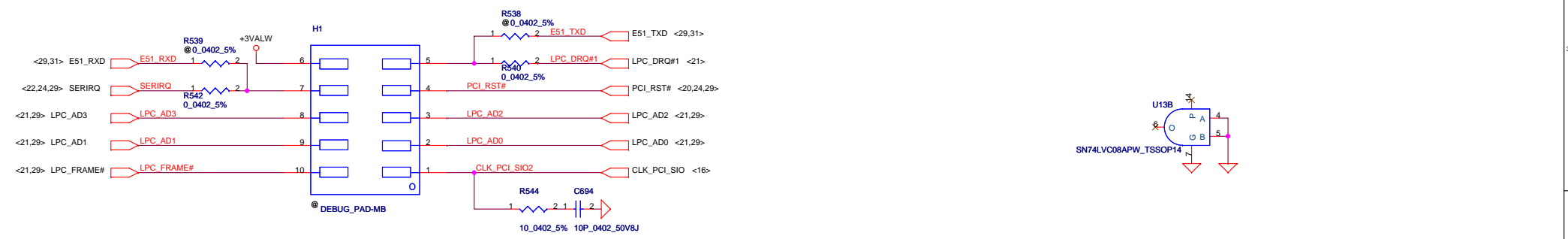


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										LA-3481P	
										Rev 2.0	
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										Sheet 33 of 47	

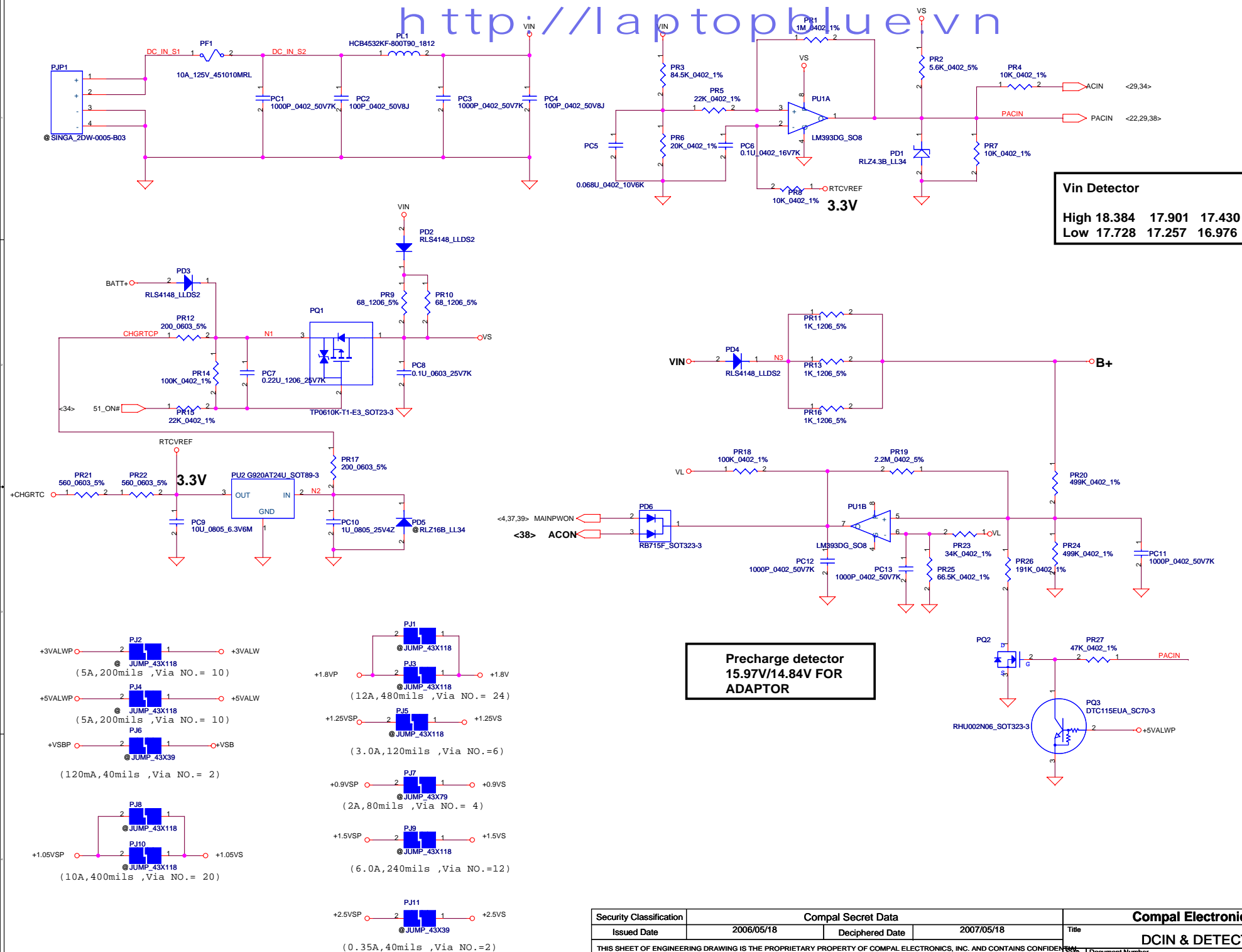
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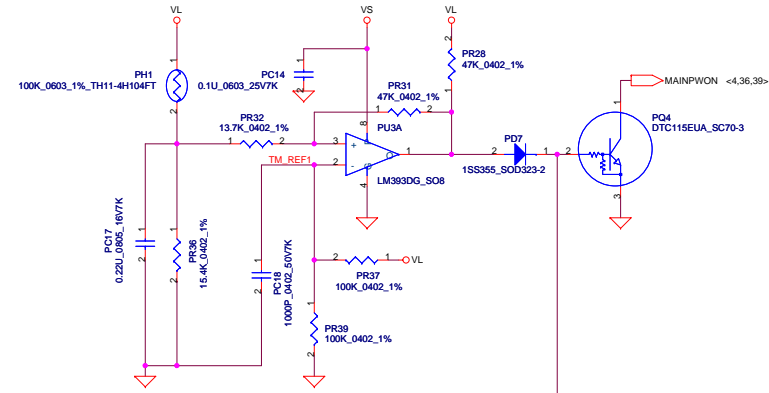
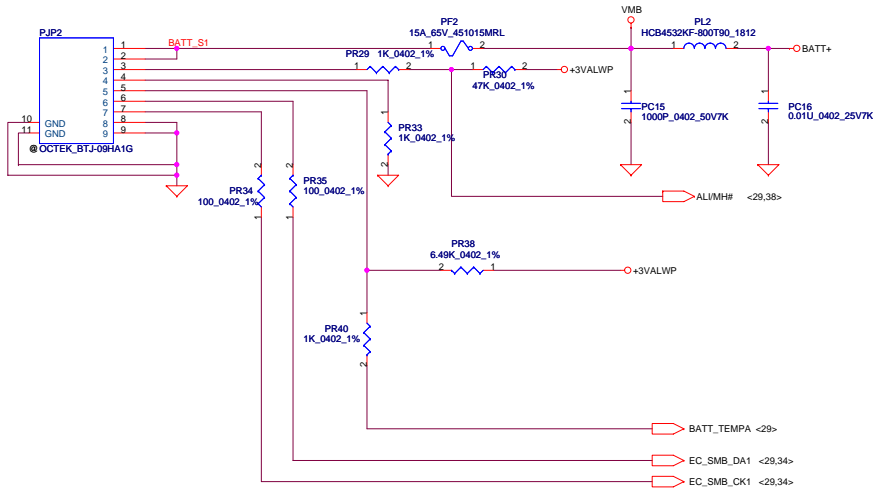
Debug Port
New LPC Debug Pad ---- MB side For EE



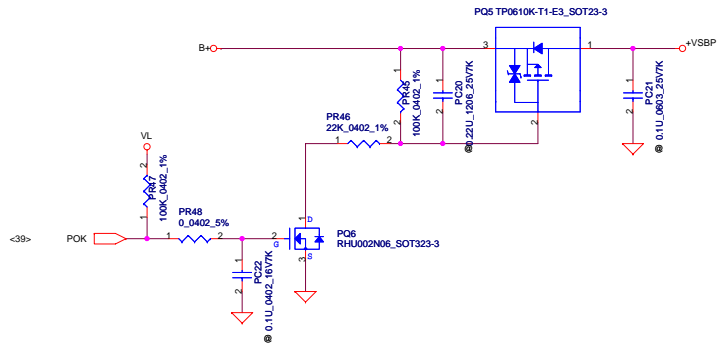
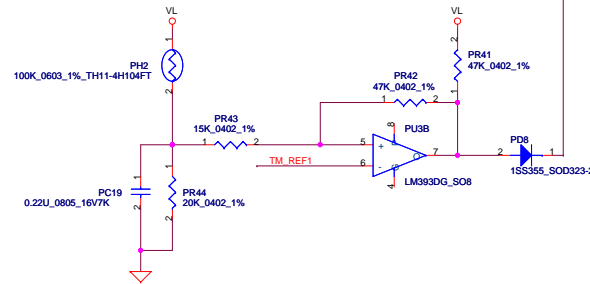
Under DDR ME Assignment Area
Keep Resistor near Debug Pad and in the same side
Reverse Side DIMM ---- Pin 1 keep away DIMM



PH1 under CPU bottom side :
CPU thermal protection at 92 degree C
Recovery at 56 degree C

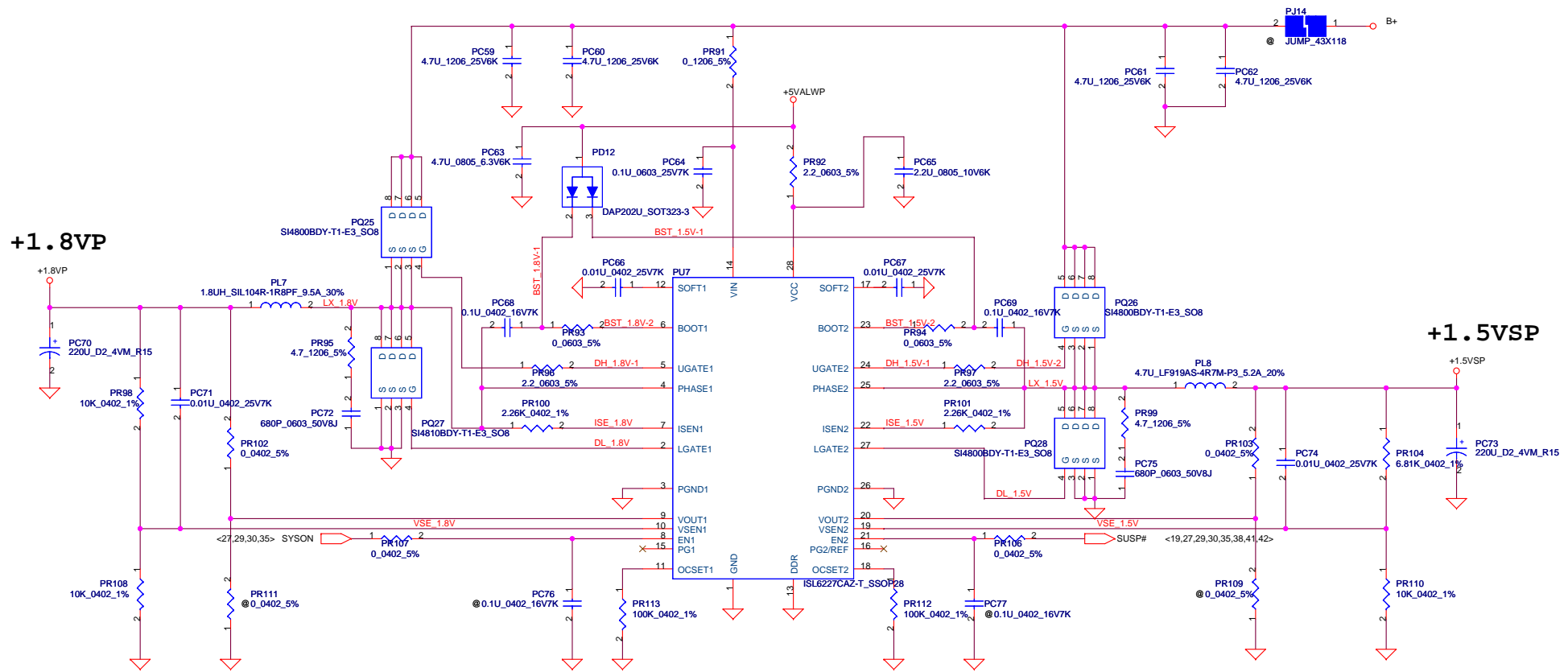


PH2 near main Battery CONN :
BAT. thermal protection at 92 degree C
Recovery at 47 degree C

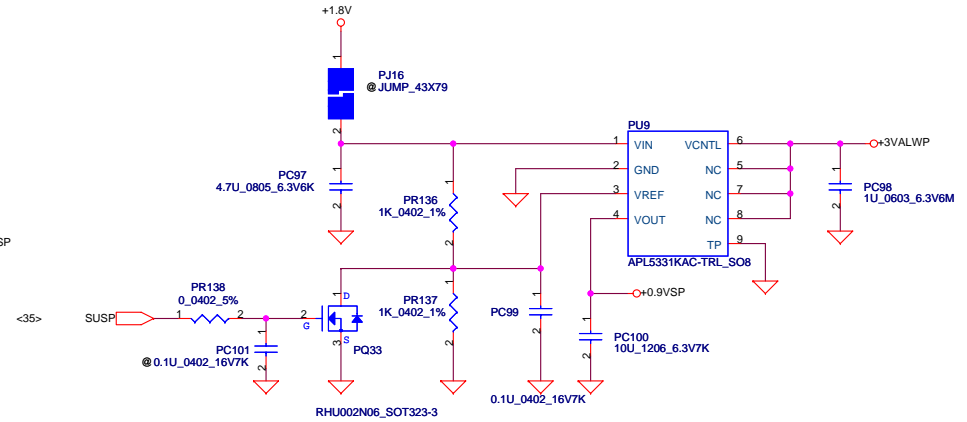
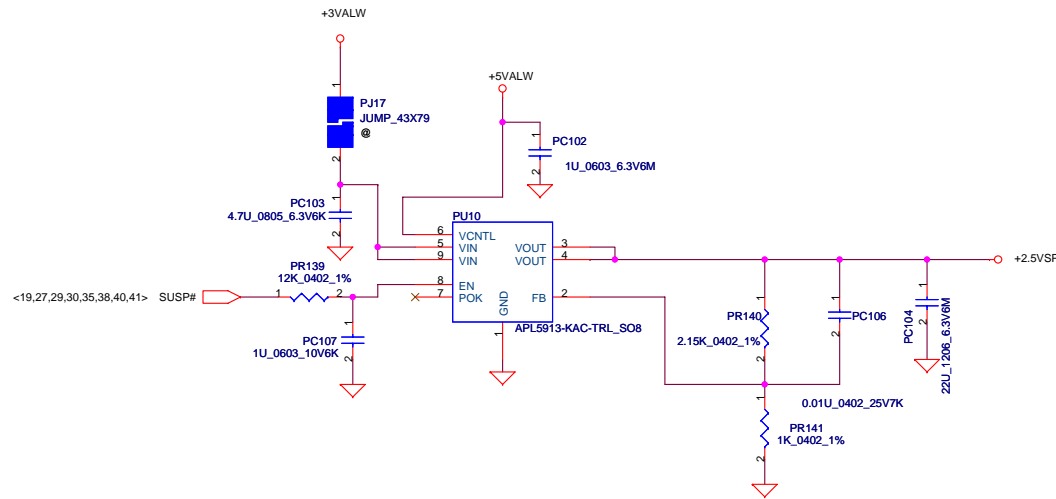


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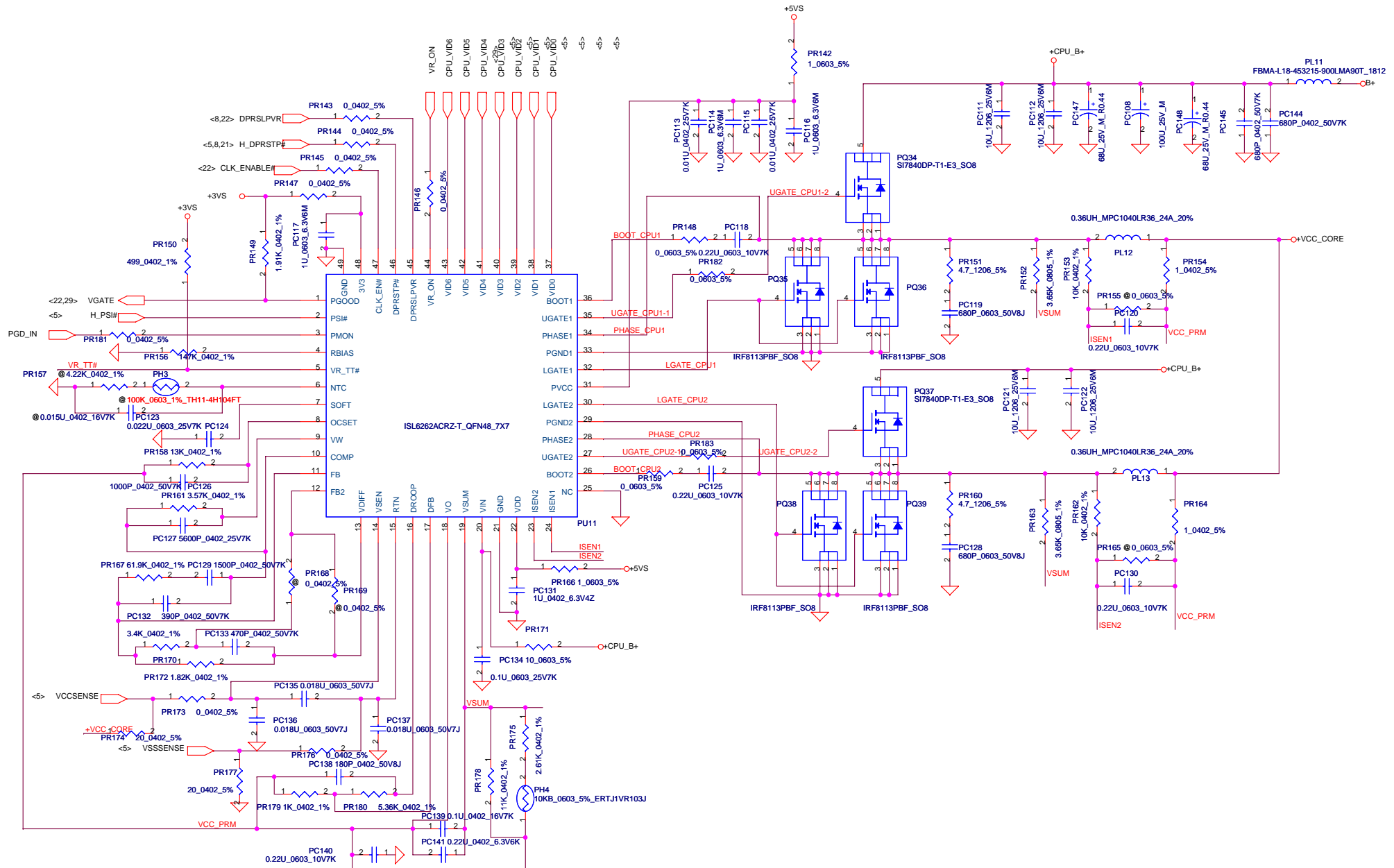
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HW4 Product Improvement Record (P.I.R.)

ISKAA LA-3481P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.1 TO 2A

Rev 0.1 to 0.2

NO	PAGE	MODIFICATION LIST	PURPOSE
1	17	Add JP39	Add CRT Board
2	22	Change R322 from 150 ohm to 10K ohm	From Intel recommend
3	12	Delete L13, L14, C199, C140	1.25VS_DMI share with 1.25VS_PEG
4	31	Modify PCI-E for WLAN and Robson	Design issue
5	15	Delete C234	Share with C729

Rev 0.2 to 0.3

NO	PAGE	MODIFICATION LIST	PURPOSE
1	11	Remove C116	From Intel recommend
2	16	Change EXP_CLKREQ# from U4.44 to U4.3	Common design with ISRAA
3	16	Change CLK_MCH_3GPLL from U4.27 to U4.47	Common design with ISRAA
4	16	Change CLK_PCIE_CARD from U4.47 to U4.27	Common design with ISRAA
5	19	Add R949 and Remove D11	Design change
6	19	Add JP42	Co-layout 30 pin LVDS connector
7	24	Add R874	Reserve the resistor for EMI
8	29	Change EC from KB910 to KB926	Design change
9	34	Change SPI BIOS U52	Design change
10	34	Add Q54, Q55	HDD LED controlled by SB
11	47	Add Energy Star circuit	Design change
12	10	Change C84-C115 from Y5V to X7R	For VGA thermal issue

Rev 0.3 to 0.4

NO	PAGE	MODIFICATION LIST	PURPOSE
1	12	Modify L58 to 4.7 ohm	For TV-out wave line issue
2	12	Change R686 to 2.2uf	For TV-out wave line issue
3	12	Modify L15 to 100 ohm	from Intel recommend for new chip set
4	12	Change R694 to 1uf	from Intel recommend for new chip set
5	26	Reserve L92,R941,R944,R946,R947, C965,C963,R937,C962,C964	Reserve for LAN controller 8111C
6	33	Modify Camera power from +5Vs to +5VALW	Change for Camera can't detect from S3 resume
7	29	Add R928	For CIR issue
7	22	Add R903 and R927	For CIR issue

Rev 0.4 to 1.0

NO	PAGE	MODIFICATION LIST	PURPOSE
1	27	Change PCB 0.4 to 1.0	Modify Revision for MP
2	28	Add R935	Design for speaker select
2	28	Change L49, L50, L51, L52 to 0 ohm	For speaker issue
3	27	Change C517 and C519 from 1uf to 4.7uf	From Realtek recommend for THD+N issue
4	31	Add R954	For HD-DVD function

Rev 1.0 to 2.0

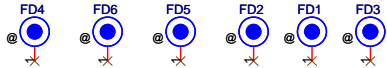
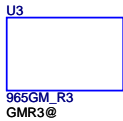
NO	PAGE	MODIFICATION LIST	PURPOSE
1	18	Add U54 and C966	For HDMI hot plug issue
2	18	Remove 1932 circuit	M72 and M76 has internal HDMI
3	18	Remove CMD circuit	For EMI issue
4	18	Add L66, L67, L68, L69	For EMI issue
5	18	Add Q134,Q135 level-shifting circuit	For HDMI level-shifting
6	18	Change R705 and R706 to 19.1K ohm	From ATI recommend
7	24	Reserve R713, R714, R715, C873, C875, C877	For EMI issue
8	32	Reserve C650-C676	For EMI issue
9	34	Reserve C682-C687	For EMI issue
10	18	Change R621 to 100K ohm and R723 to 2.2K ohm	For HDMI level-shifting

Rev 2.0 to 2A

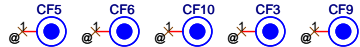
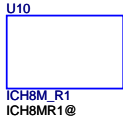
NO	PAGE	MODIFICATION LIST	PURPOSE
1	18	Add U55 level-shifting circuit	For HDMI level-shifting
2	29	Change C943 and C944 from 10pf to 15pf	From ENE recommend for crystal issue
3	23	Change C360 from 0.1uf to 1uf	From Intel recommend for boot-up issue
4	22	Remove R327, R328, R329	For leakage issue

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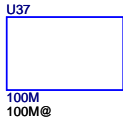
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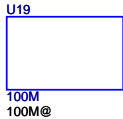
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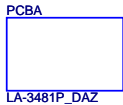
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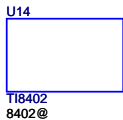
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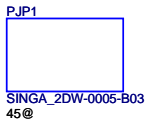
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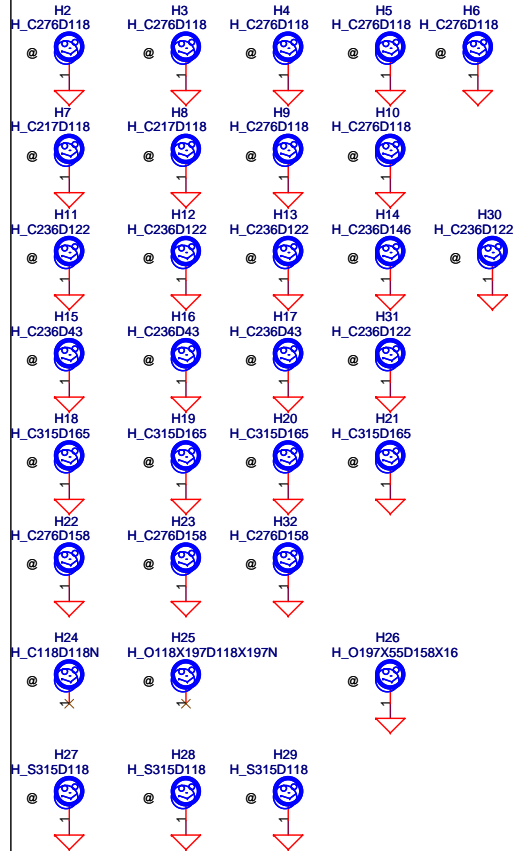
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DC-JACK



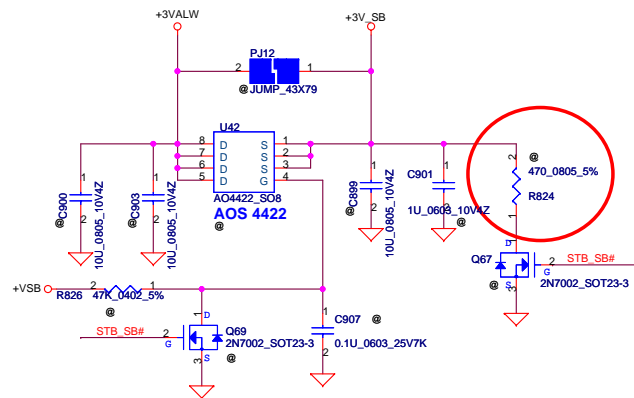
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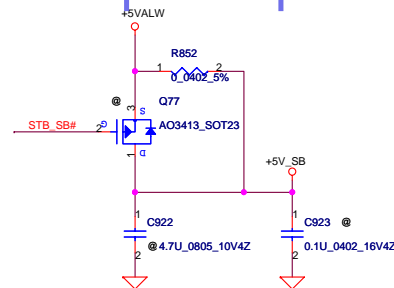
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NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
9/14		P.39	Change PACIN to GND	Change to AUTO-SKIP mode
9/14		P.39	Add PR105 0_0402_5%	Reserve control sequence pin
9/14		P.37	Change PF2 to 15A	Increase design margine
10/24		P.36,37,43	Change PL1,PL2,PL11 to Tai-Tech	Buyer request
10/24		P.39,43	Add PC143,PC144,PC145	EMI request
10/24		P.41,43	Add snubber PR124,PC90,PR151,PC119,PR160,PC128	EMI request
10/24		P.41	Change PR119 to 5.49K	Modify 1.05V OCP point
10/24		P.40	Change PC70 to 330U_D2_9m ohm	Reduce the 1.8V ripple

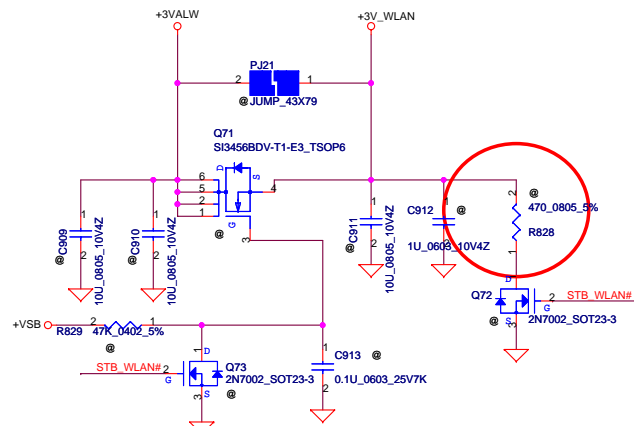
+3VALW TO +3V_SB



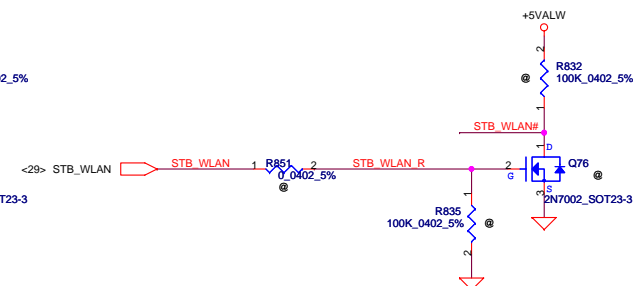
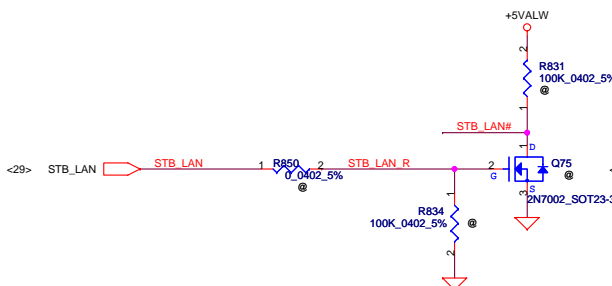
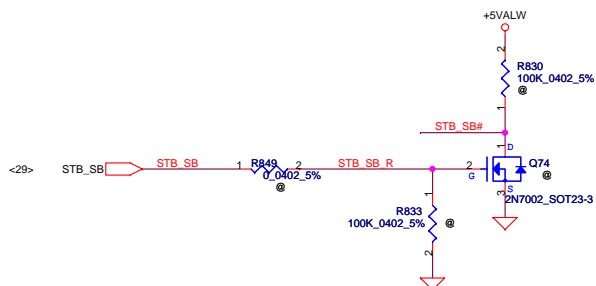
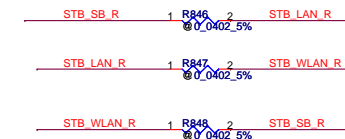
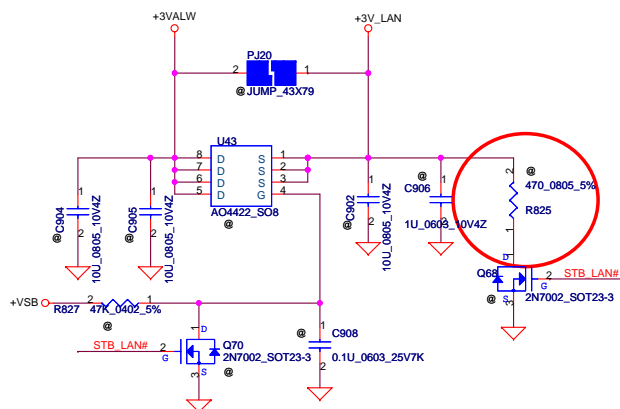
+5VALW TO +5V_SB



+3VALW TO +3V_WLAN



+3VALW TO +3V_LAN



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