

Compal Confidential

NIWE2

Schematics Document

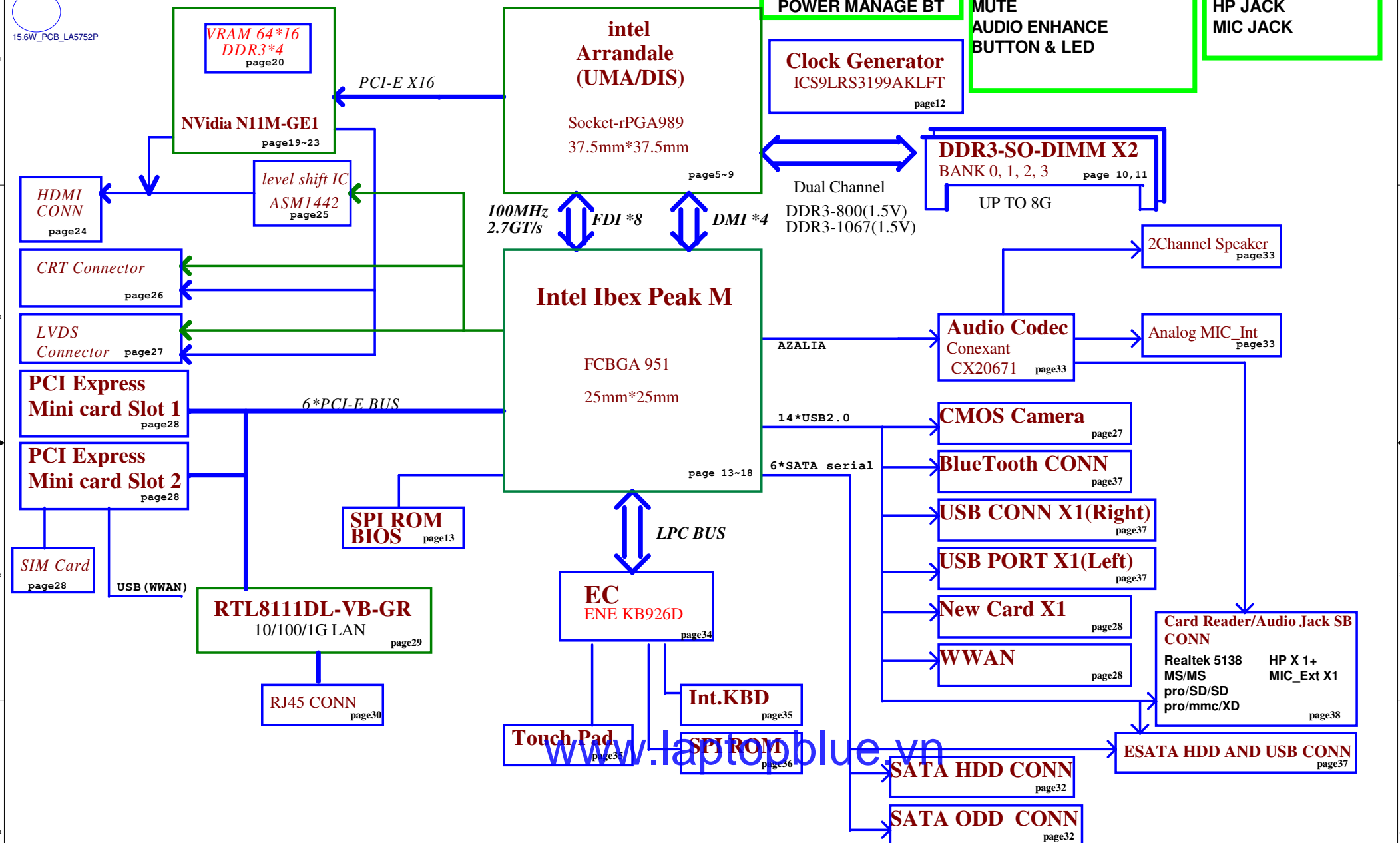
Arrandale

with Intel IBEX PEAK-M core logic

REV : 0 . 3

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			2008/04/	Cover Sheet	
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				Custom	LA-5752P
				Date: Thursday, October 29, 2009	Rev 0.3
				Sheet 1 of 51	



Security Classification		Compal Secret Data		Compal Electronics, Inc.		
Issued Date	2008/03/24	Deciphered Date	2008/04/	Title MB Block Diagram		
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				Custom	LA-5752P	
				Date:	Thursday, October 29, 2009	Sheet

DDR3 Voltage Rails

power plane	+B	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +VCCP +CPU_CORE +VGA_CORE +1.8VS +0.75VS +1.05VS
				State
S0	○	○	○	○
S3	○	○	○	X
S5 S4/AC	○	○	X	X
S5 S4/ Battery only	○	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

SMBUS Control Table

	SOURCE	RAM M2	BATT	KE926	SODIMM	CLK CHIP	WLAN WWAN	N10x Thermal Sensor	N10x	Cap sensor board	NEW CARD	PCH
SMB_EC_CK1	KB926	X	V	X	X	X	X	X	X	X	X	X
SMB_EC_DA1	+3VALW		+3VALW									
SMB_EC_CK2	KB926	X	X	X	X	X	X	X	X	X	X	V
SMB_EC_DA2	+3VALW											+3VALW
SMBCLK	PCH	V	X	X	V	V	X	X	X	X	V	X
SMBDATA	+3VALW	+3VALW			+3VS	+3VS					+3VS	
SML0CLK	PCH	X	X	X	X	X	X	X	X	X	X	X
SML0DATA	+3VALW											
SML1CLK	PCH	X	X	V	X	X	X	V	X	V	X	X
SML1DATA	+3VALW			+3VALW				+3VS		+3VS		

I2C / SMBUS ADDRESSING

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

@ FUNCTION

	EVT	NON-USE
45@	(45 BOM)	
100@	10/100 LAN	
GIGA@	GIGA LAN	
UMA HDMI@	FOR UMA HDMI components	
HDMI@	FOR HDMI components	
3G@	3G(WWAN) function	
X76@	(X76 BOM)	
ESATA@	ESATA function	
CMOS@	Camera function	
BT@	Blue Tooth	
10M@	FOR 10M CHIP	
11M@	FOR 11M CHIP	
UMA@	UMA only (Arranddale)	
DIS@	DIS only (Arranddale)	
VGA@	FOR NVIDIA PART	
HYBRID@	FOR SWITCHABLE	
HU@	SWITCHABLE or UMA only	
HD@	SWITCHABLE or DIS only	

PCIE PORT LIST

PORT	DEVICE
1	
2	WLAN
3	LAN
4	3G
5	NEW CARD
6	
7	
8	

USB PORT LIST

PORT	DEVICE
0	RIGHT SIDE
1	LEFT SIDE
2	CMOS
3	LEFT SIDE
4	RIGHT SIDE
5	CARD READER
6	
7	
8	WIRELESS
9	
10	NEW CARD
11	BT
12	
13	3G

SKU

Arrandale (dGPU) DIS only	DIS@ / 100@ for EVT
Arrandale (iGPU) UMA only	UMA@ / 100@ for EVT
Arrandale (iGPU+dGPU) SWITCHABLE	VGA@+HD@+HU@+HYBRID@

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				B	LA-5752P	0.3
				Date	Thursday, October 29, 2009	Sheet 3 of 51

VGA and DDR3 Voltage Rails (N10x GPIO)

GPIO	I/O	ACTIVE	Function Description
GPIO0	N/A	N/A	
GPIO1	IN	-	Hot plug detect for IFP link C
GPIO2	OUT	H	Panel Back-Light brightness(PWM capable)
GPIO3	OUT	H	Panel Power Enable
GPIO4	OUT	H	Panel Back-Light On/Off (PWM)
GPIO5	OUT	-	GPU VID0
GPIO6	OUT	-	GPU VID1
GPIO7	OUT	-	GPU VID2
GPIO8	I/O	L	Thermal Catastrophic Overtemp
GPIO9	OUT	L	Thermal Alert
GPIO10	OUT		Memory VREF switch
GPIO11	I/O	L	SLI raster sync
GPIO12	IN	-	AC power detect pin
GPIO13	OUT	-	MEM_VID orPower supply control
GPIO14	OUT	-	Power supply control
GPIO15	IN	-	Hot plug detect for IFP Link E
GPIO16	OUT	-	Programmable Fan Control
GPIO17	IN	-	
GPIO18	IN	-	
GPIO19	IN	-	Hot plug detect for IFP Link D
GPIO20	IN	-	
GPIO21	IN	-	Hot plug detect for IFP link F
GPIO22	IN	-	SLI swap ready signal
GPIO23	I/O		

GPIO6 GPIO5 N10M-GS N10P-GS

GPU_VID1	GPU_VID0	VGA_CORE	P-State
0	0	0.8V	12
0	1	0.85V	12
1	0	0.9V	0, 10
1	1	1.0V (N10M-GS) 0.925V (N10P-GS)	

Performance Mode P0 TDP at Tj = 102 C* (DDR3)

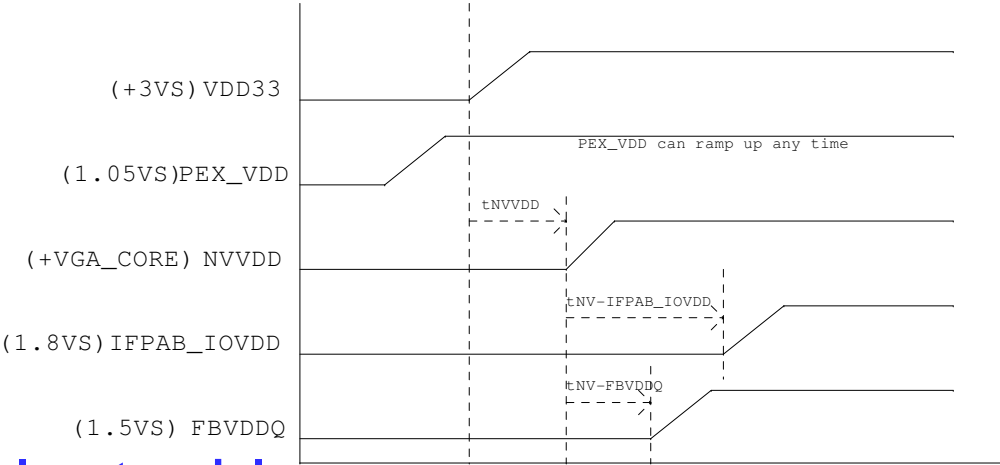
Products	GPU (4) (W)	Mem (1,5) (W)	NVCLK /MCLK (MHz)	NVVDD (V) (A) (W)			FBVDD (1.5V) (A) (W)		FBVDDQ (GPU+Mem) (1.5V) (A) (W)		PCI Express (1.05V) (6) (mA) (W)		I/O and PLLVDD (1.8V) (mA) (W)		I/O and PLLVDD (1.05V) (mA) (W)		Other (3.3V) (mA) (W)	
N10P-GS 128bit 1024MB DDR3	21.07	6.67	TBD	TBD	18.25	17.34	2.06	3.09	4.09	6.14	850	0.89	75	0.14	63	0.07	55	0.18
N10P-GE 128bit 1024MB DDR3	20.97	6.73	TBD	TBD	19.17	17.25	2.03	3.05	4.09	6.14	840	0.88	75	0.14	63	0.07	55	0.18
N10P-LP 128bit 1024MB DDR3	15.48	6.44	TBD	TBD	13.95	11.86	1.90	2.85	3.99	5.99	810	0.85	75	0.14	63	0.07	55	0.18

Performance Mode P0 TDP at Tj = 102 C* (DDR3)

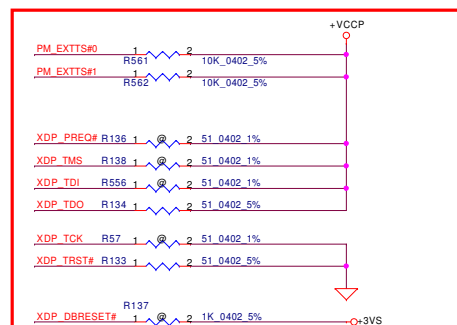
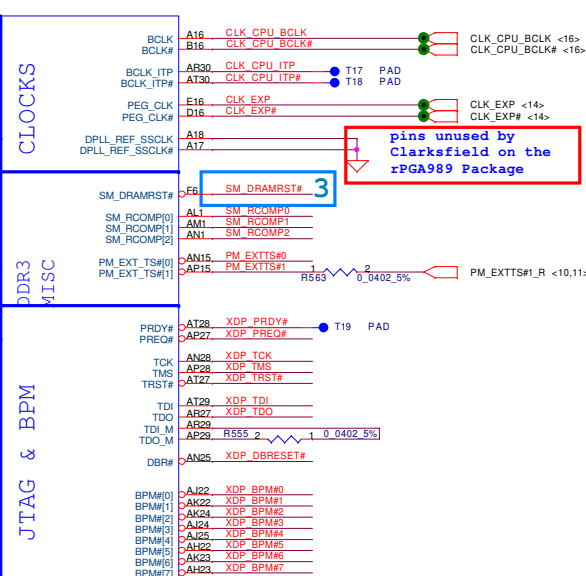
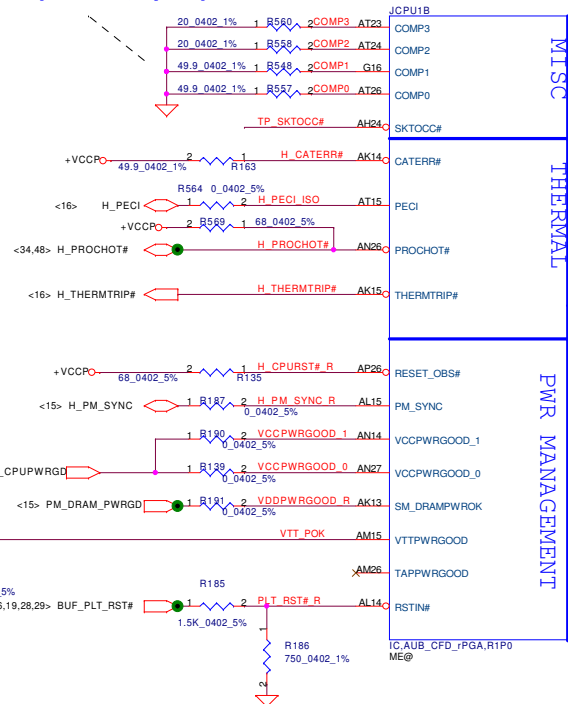
Products	GPU (4) (W)	Mem (1,5) (W)	NVCLK /MCLK (MHz)	NVVDD (V) (A) (W)			FBVDD (1.5V) (A) (W)		FBVDDQ (GPU+Mem) (1.5V) (A) (W)		PCI Express (1.05V) (6) (mA) (W)		I/O and PLLVDD (1.8V) (mA) (W)		I/O and PLLVDD (1.05V) (mA) (W)		Other (3.3V) (mA) (W)	
N10M-GE 64bit 512MB DDR3	13.36	2.93	TBD	TBD	11.89	10.70	0.66	0.99	2.16	3.24	792	0.83	75	0.14	63	0.07	100	0.33
N10M-GS 64bit 512MB DDR3	14.29	3.10	TBD	TBD	11.53	11.53	0.70	1.05	2.28	3.42	817	0.86	75	0.14	63	0.07	100	0.33
N10M-LP 64bit 512MB DDR3	8.28	2.91	TBD	TBD	6.60	5.61	0.62	0.93	2.20	3.3	782	0.82	75	0.14	63	0.07	100	0.33

Power Sequence

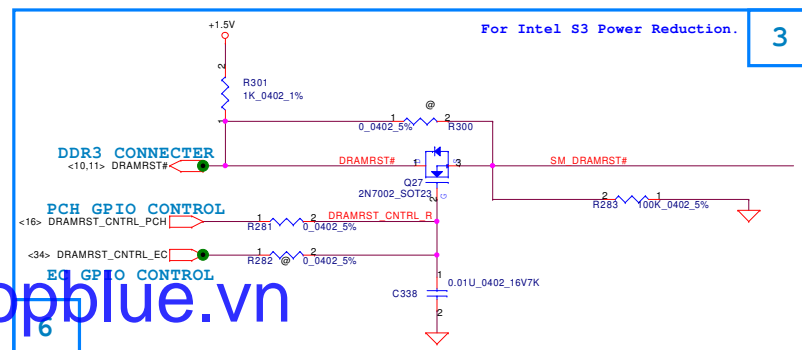
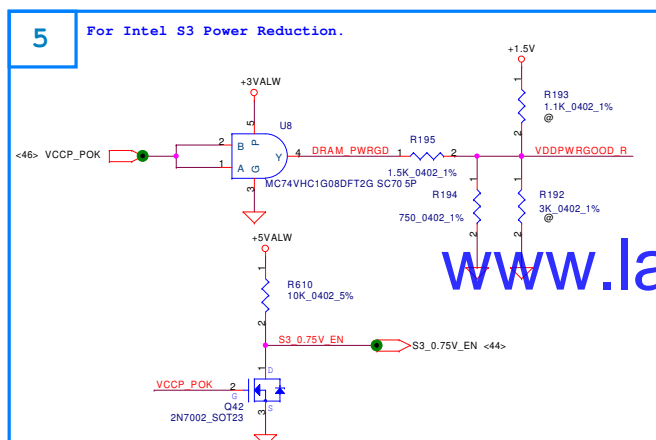
The ramp time for any rail must be more than 40us



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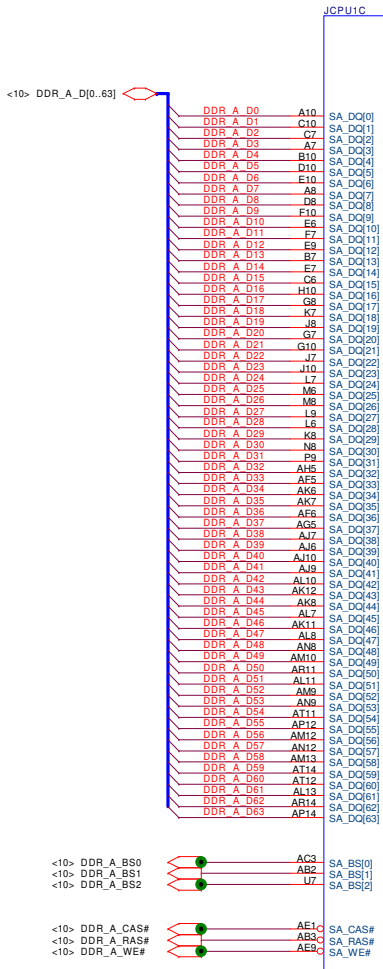
CHECK INTEL DOCUMENT #385422
Debug Port Design Guide Rev1.3



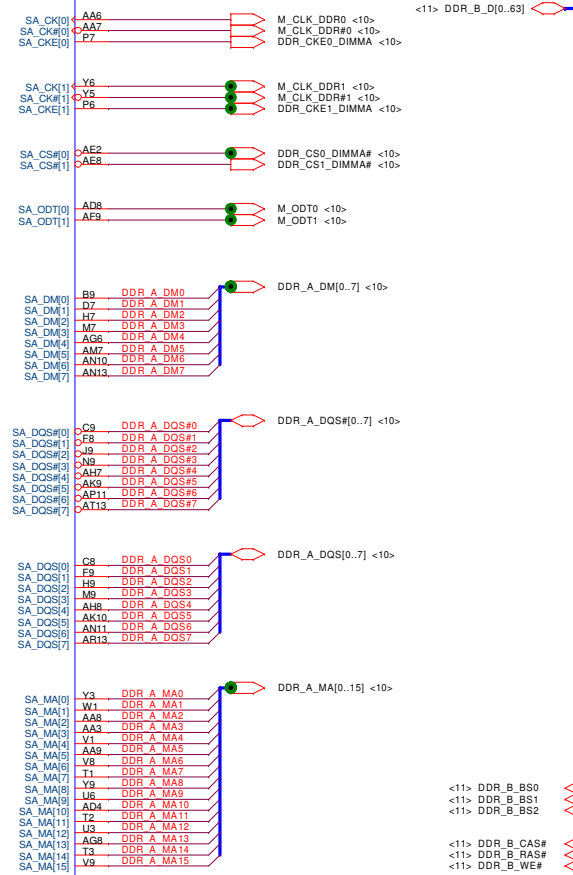
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				LA-5752P	
				Date:	
				Thursday, October 29, 2009	5 of 51



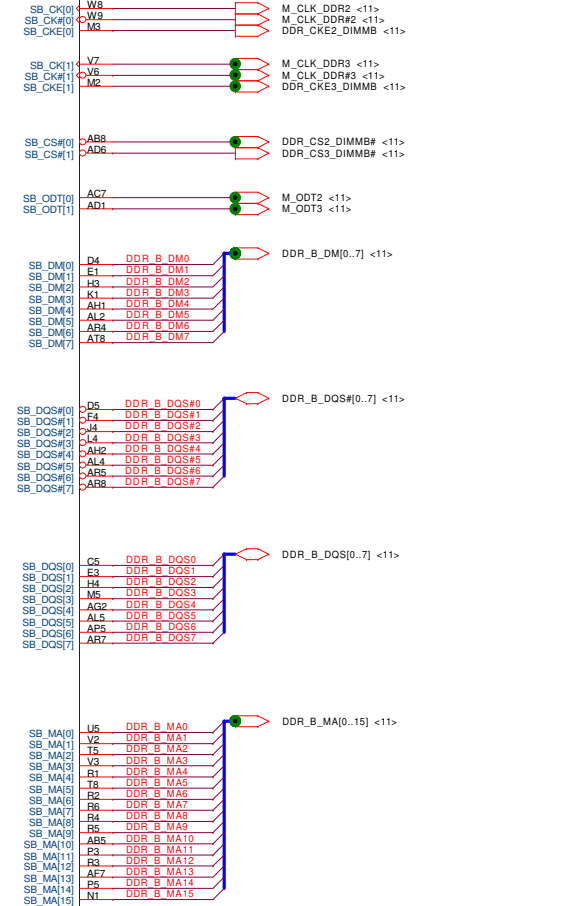
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Date:				Thursday, October 29, 2009	Sheet 6 of 51



DDR SYSTEM MEMORY A

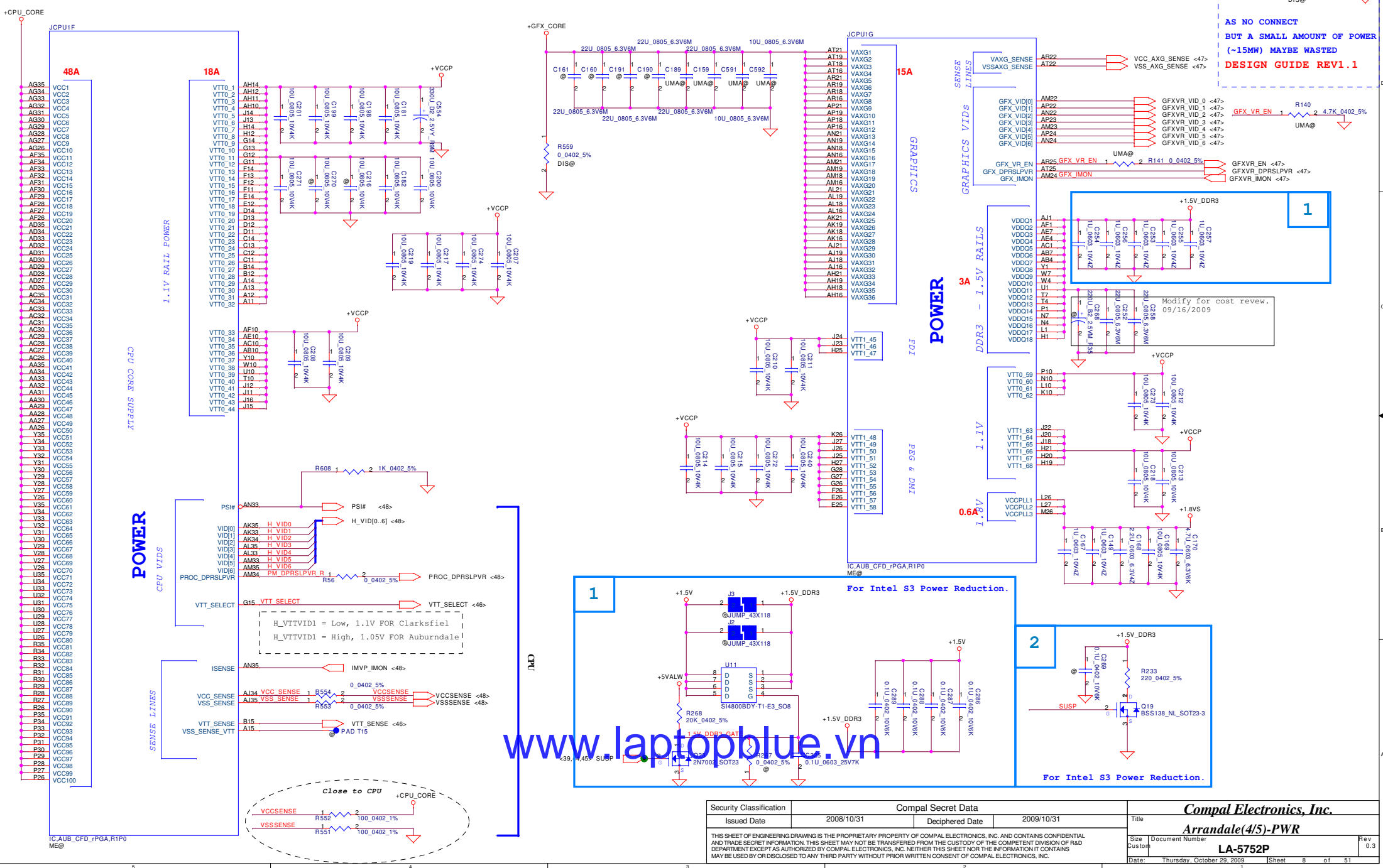


DDR SYSTEM MEMORY - B



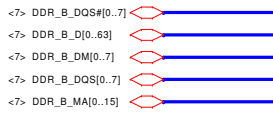
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				Custom	LA-5752P
				Date	Thursday, October 29, 2009
				Sheet	7 of 51
				Rev	0.3



AS NO CONNECT
BUT A SMALL AMOUNT OF POWER
(~15MW) MAYBE WASTED
DESIGN GUIDE REV1.1

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2008/10/31		2009/10/31		LA-5752P	
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		Sheet		8 of 51	



07/17/2009

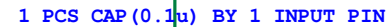
The diagram shows a 10-stage ladder network. The input is a 1.5V source connected to a 100 ohm resistor. This is followed by a series of 10 stages, each consisting of a 100 ohm resistor in series with a shunt capacitor. The shunt capacitors are labeled C305 through C314. The final output is taken across the last 100 ohm resistor. The capacitors are specified as 0.1uF 402 1096K.

VDDSPD (3.3V) =

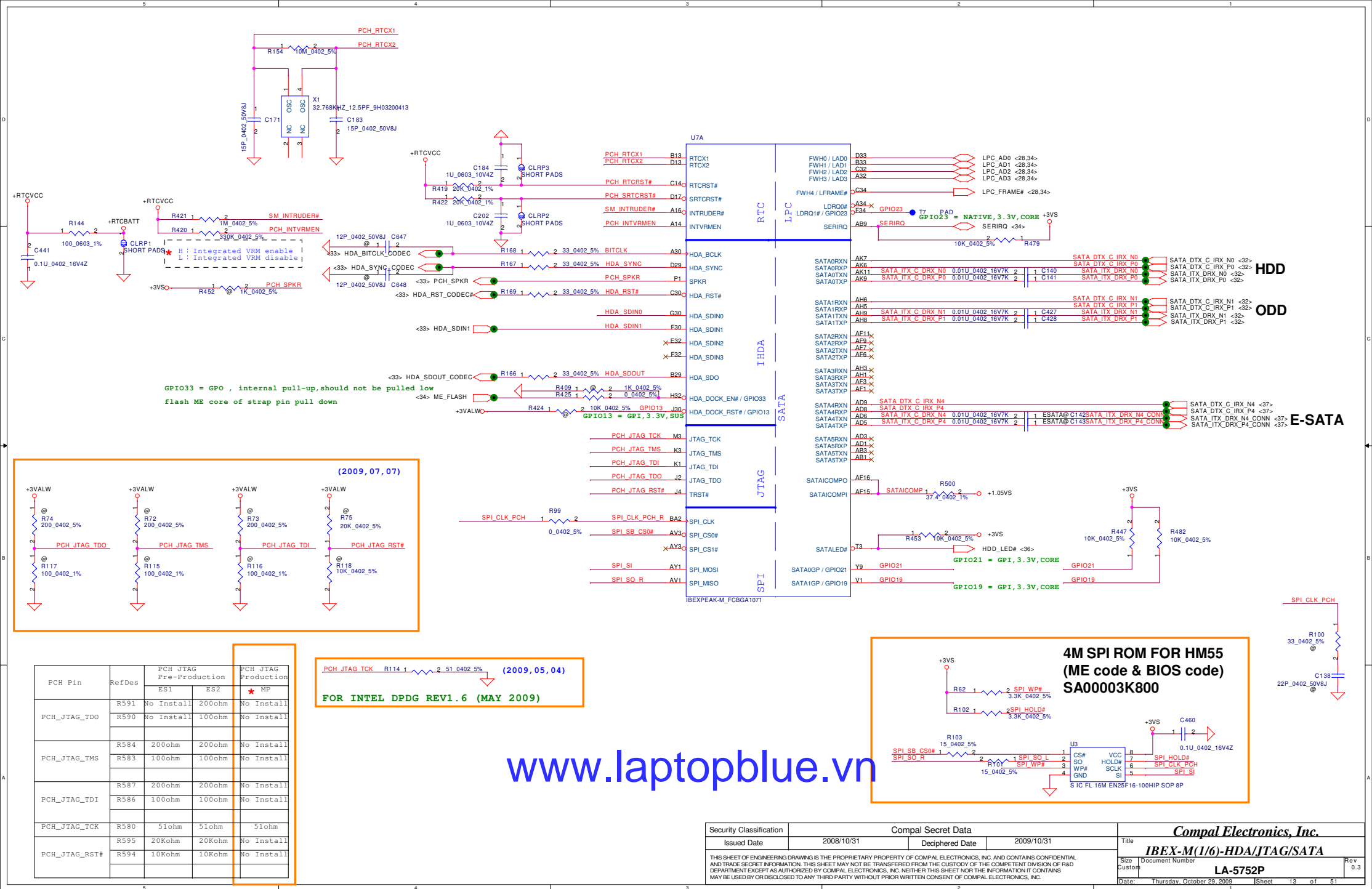
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						DDRIII-SODIMM SLOT2				
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						Date	Thursday, October 29, 2009	13h41	11 of 51	

SLG8LV597VTR

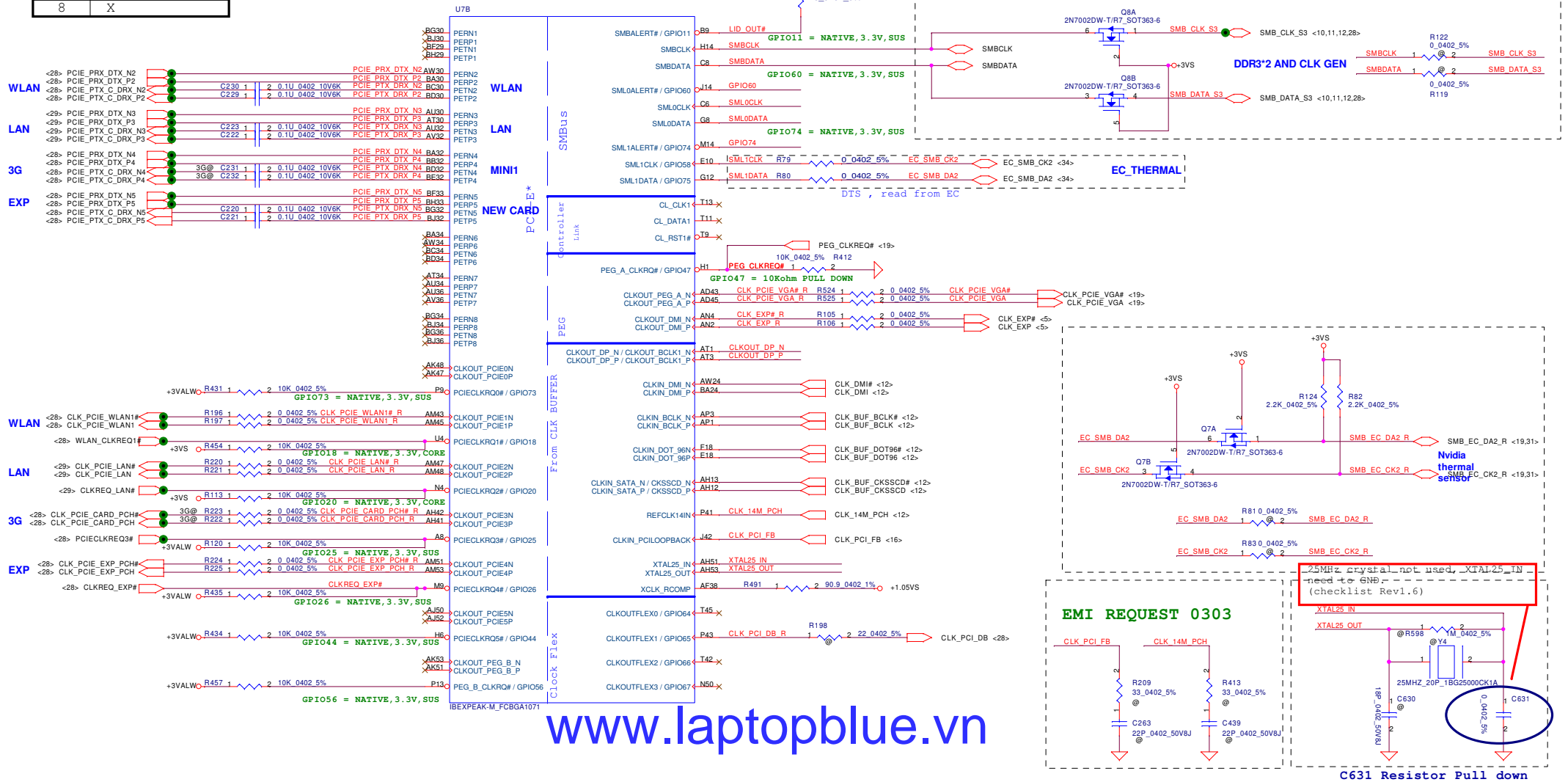


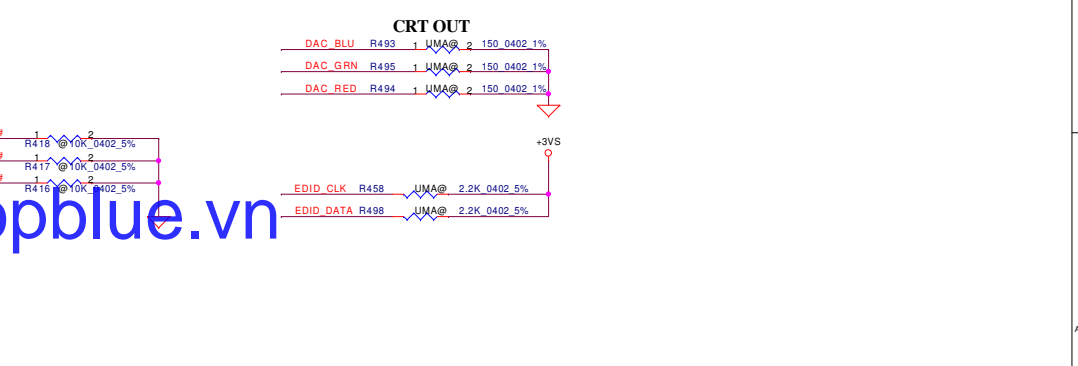
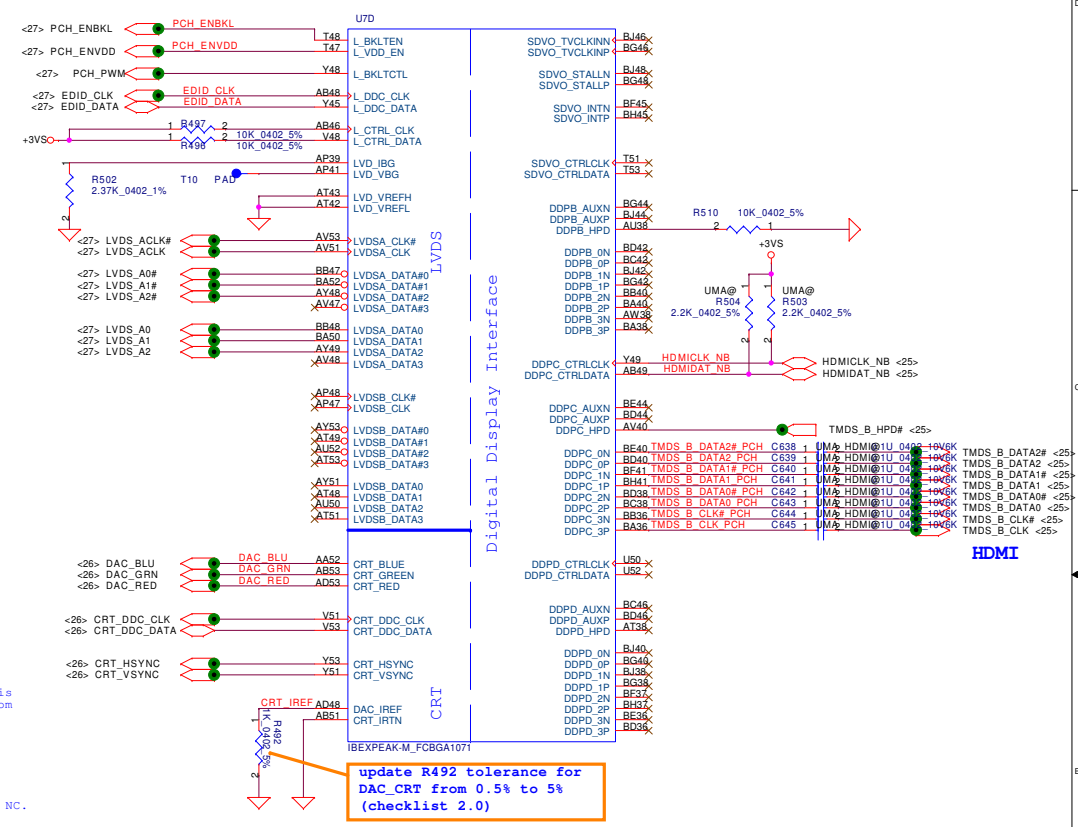
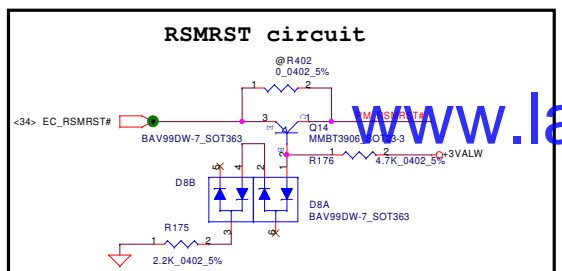
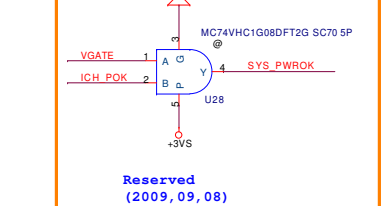
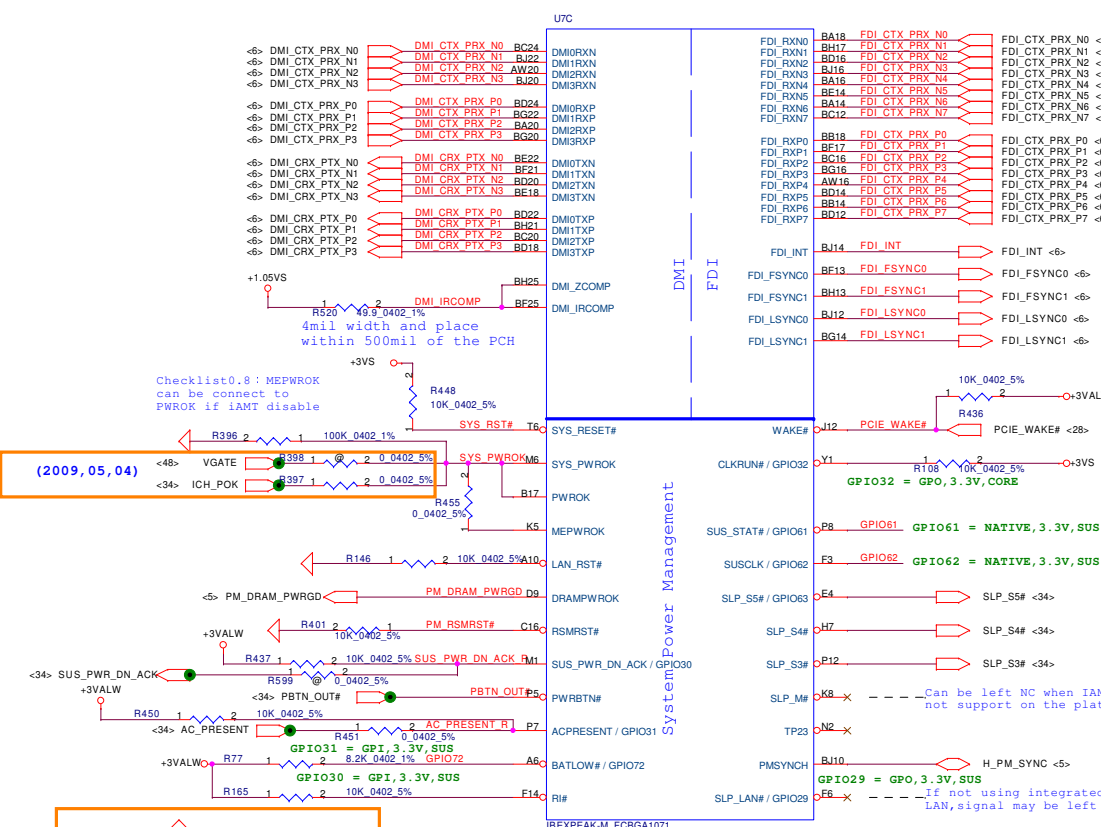
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					LA-5752P	0.3
Date:	Thursday, October 29, 2009	Sheet	12	of	51	



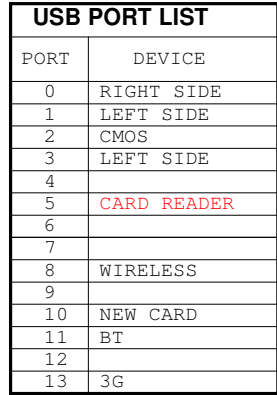
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Site	Customer	Document Number	LA-5752P	Date: Thursday, October 29, 2009
Sheet	13	of	51	

PCIE PORT LIST	
PORT	DEVICE
1	X
2	WLAN
3	LAN
4	3G
5	NEW CARD
6	X
7	X
8	X

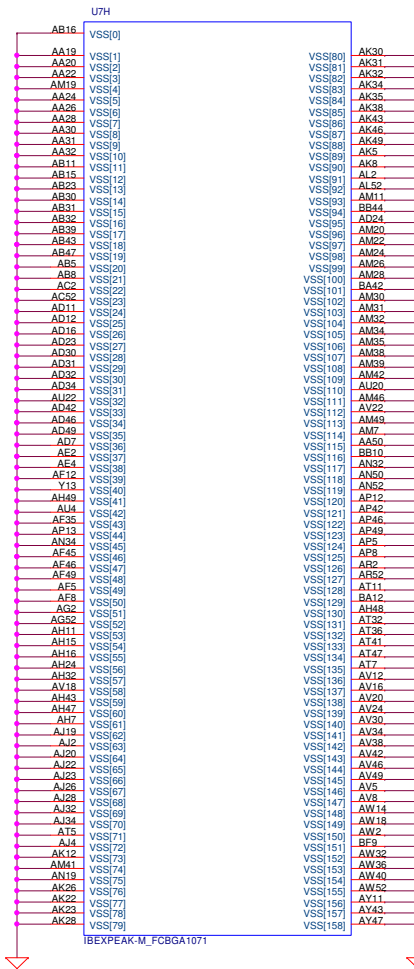
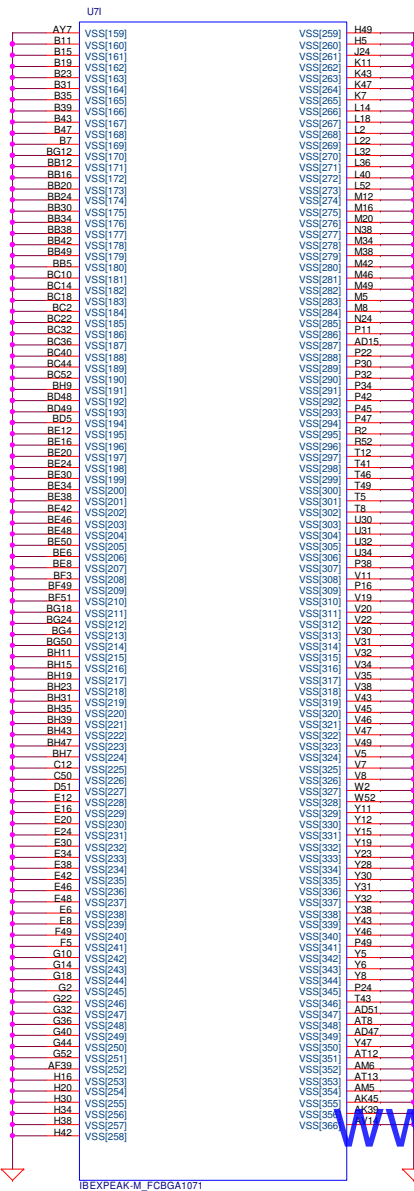




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				Date	Thursday, October 29, 2009
				Sheet	15 of 51

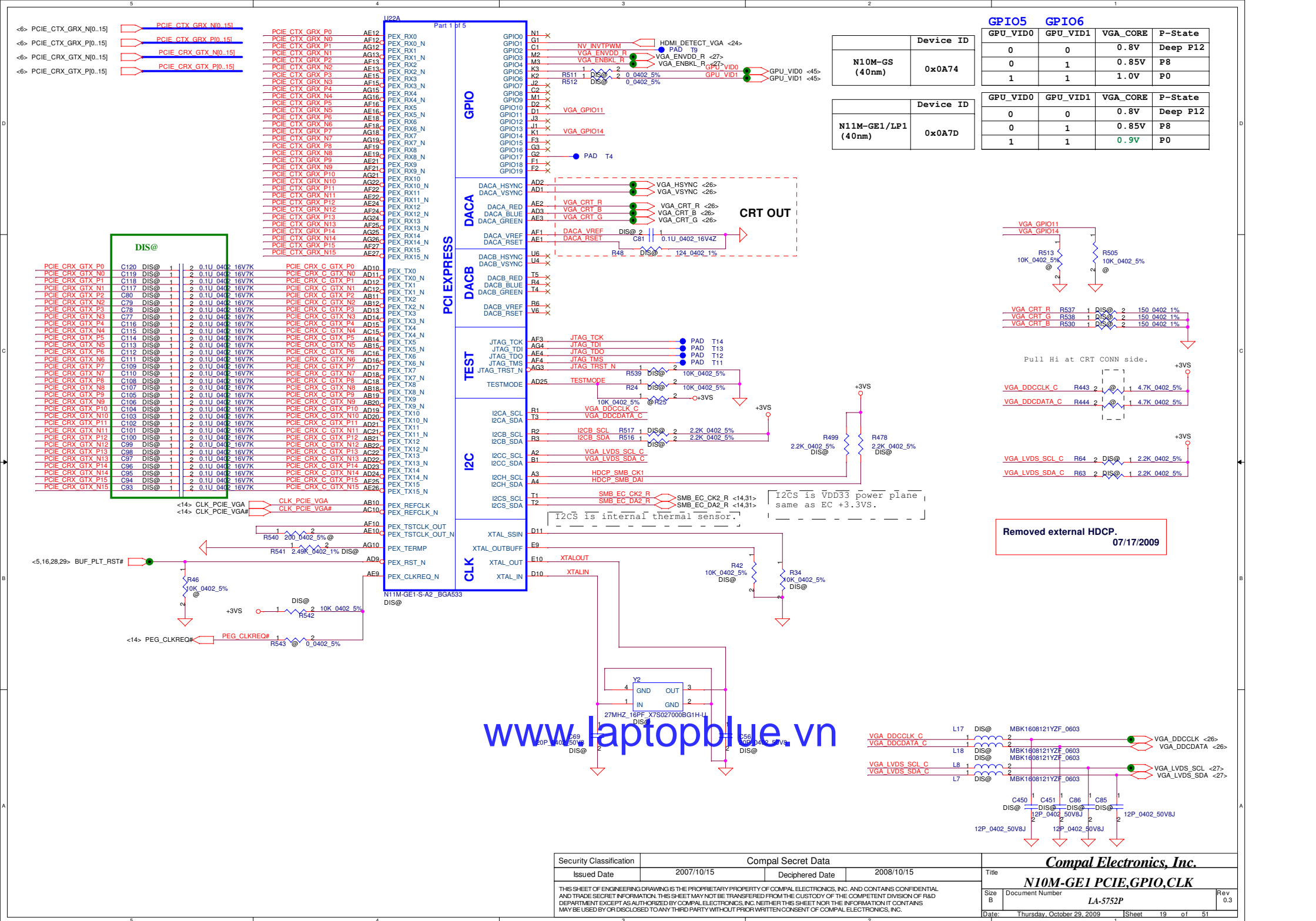


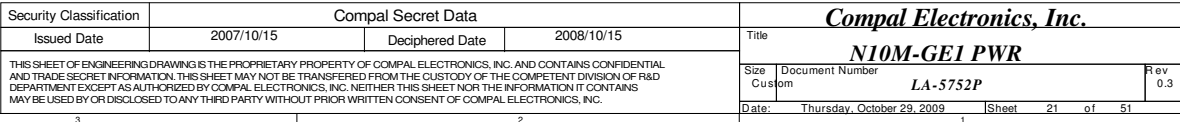
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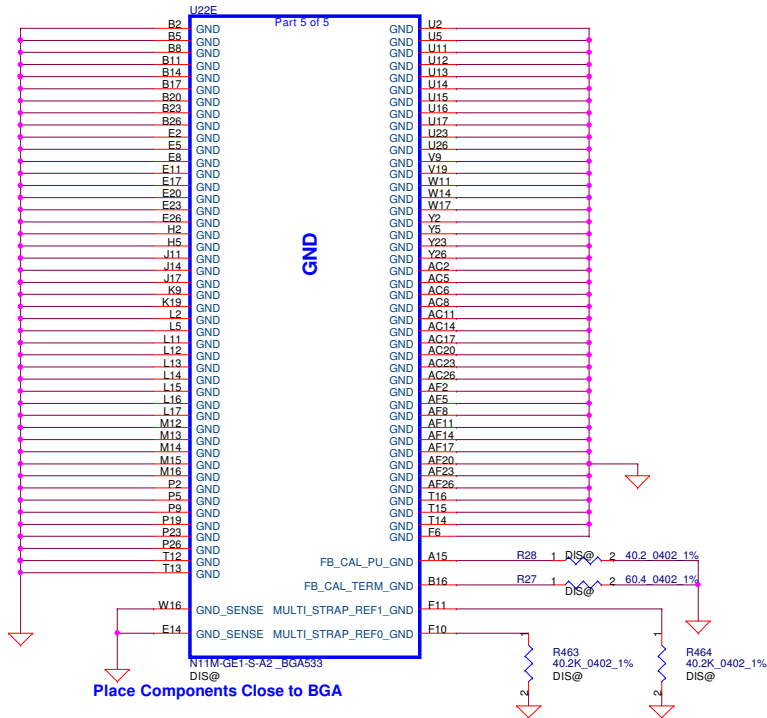


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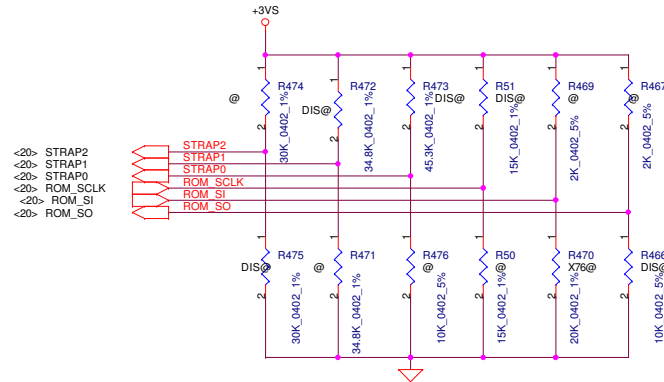
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				Customer	LA-5752P
				Date	Thursday, October 29, 2009
				Sheet	18 of 51
				Rev	0.3







A total of 8 signals are required for GB1 strapping this includes
 2 reference signals
 6 physical strapping pins
 4 logical strapping bits
 A total of 24 logical strapping bits are available



STRAP1 use for 3GIO_PADCFG to set 35K pull up.
 (PUN-04335-001_V10 HW9 update)

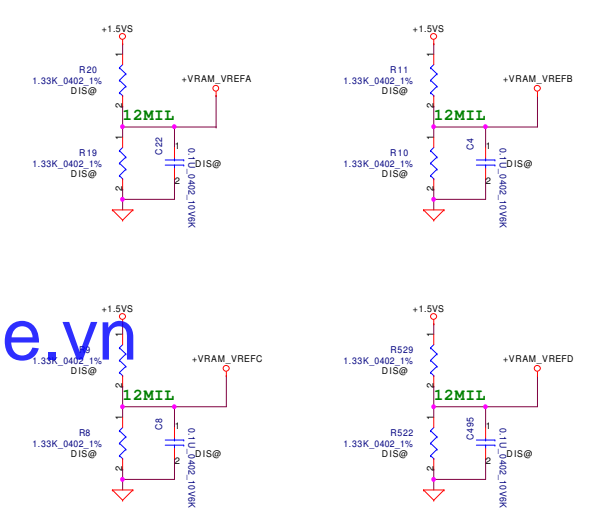
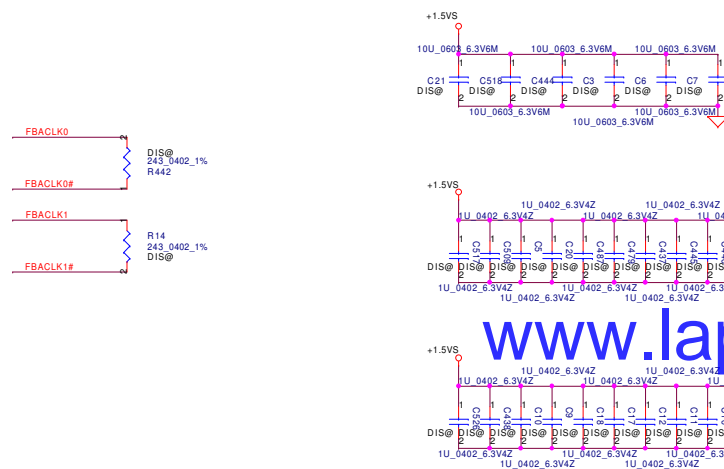
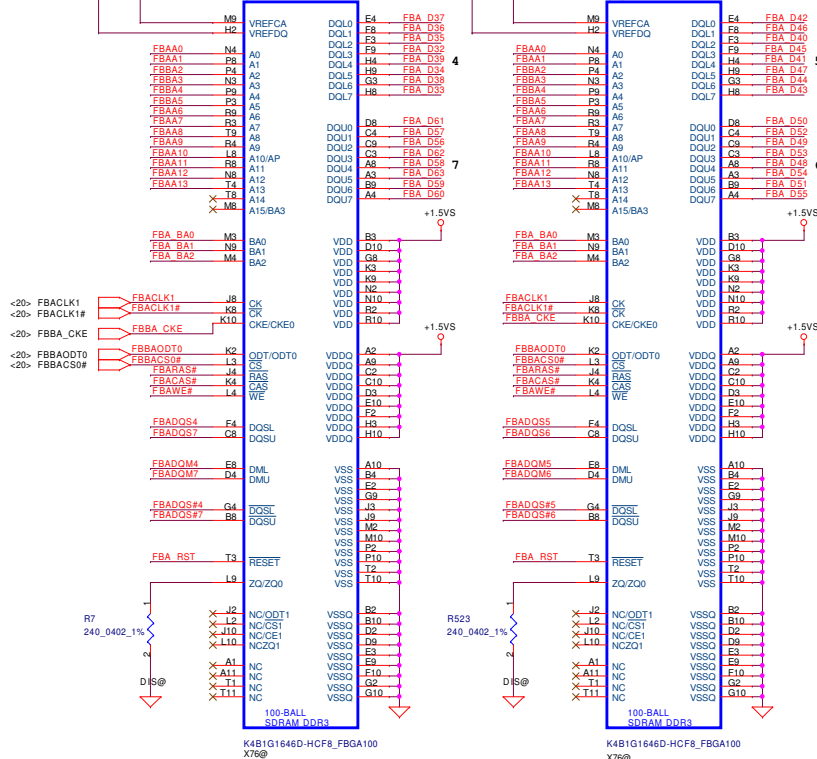
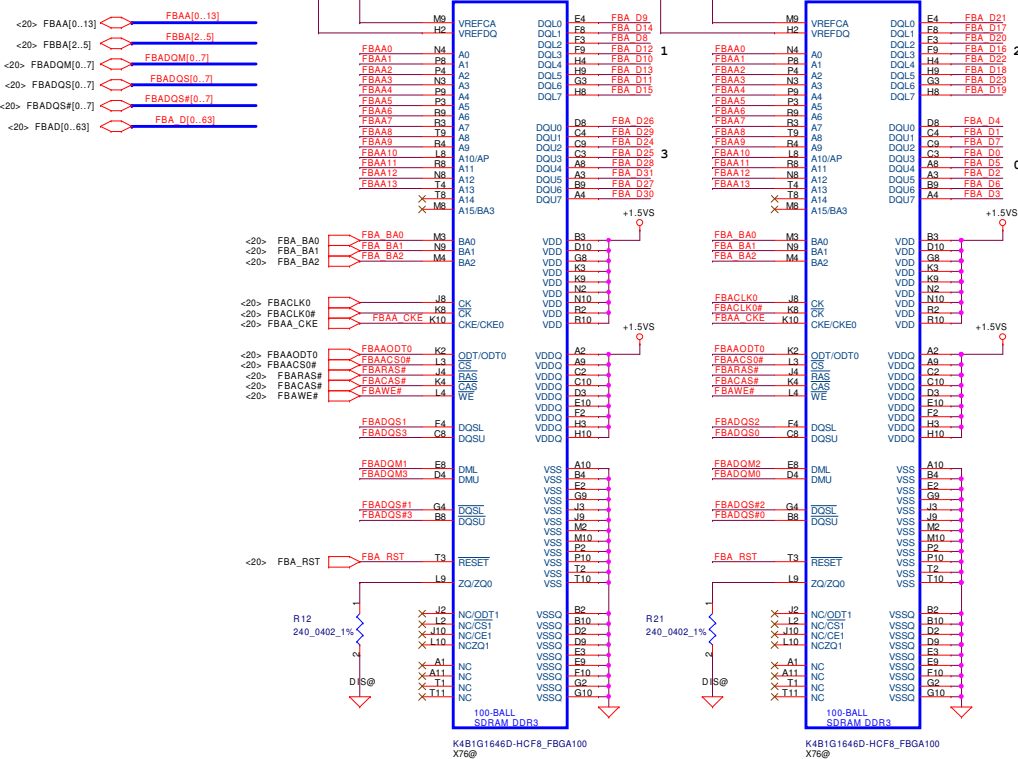
GPU	FB Memory (DDR3)		ROM_SO	ROM_SCLK	ROM_SI	STRAP2	STRAP1	STRAP0
N11M-GE1 LP1 (0x0A7D) 40nm	Samsung 800MHz (default)	K4W1G1646E-HC12						
		64Mx16	PD 10K	PD 15K	PD 20K	PU 30K	PU 35K	PU 45K
	Hynix 800MHz	H5TQ1G63BFR-12C						
		64Mx16	PD 10K	PD 15K	PD 15K	PU 30K	PU 35K	PU 45K
					X76			

N11M-GE1 LP1	Memory/PKG	FBVDDQ	FB_CAL_PU_GND	FBCAL_PD_VDDQ	FBCAL_TERM_GND
	DDR3	+1.5VS	40.2 ohm	40.2 ohm	40.2/60.4 ohm

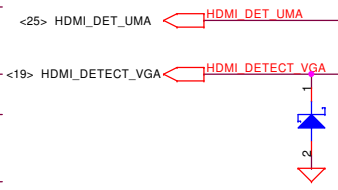
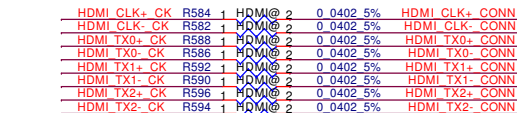
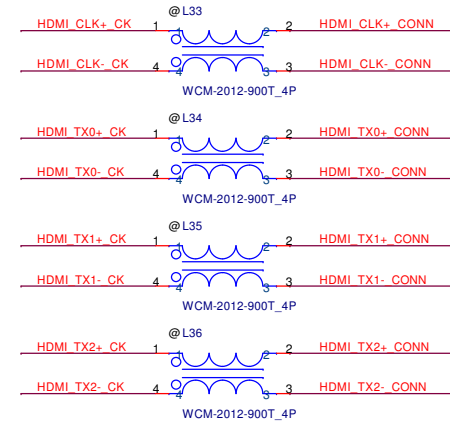
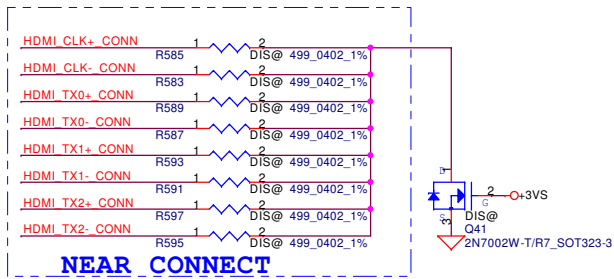
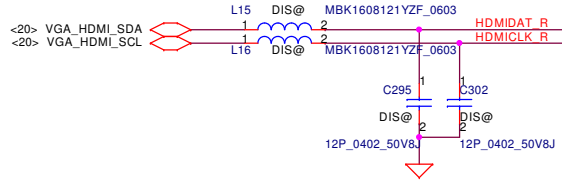
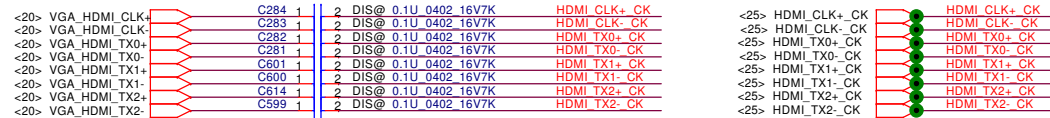
Must be used 1% resistor for driver calibration DG-04642-001-V01(May 22, 2009)

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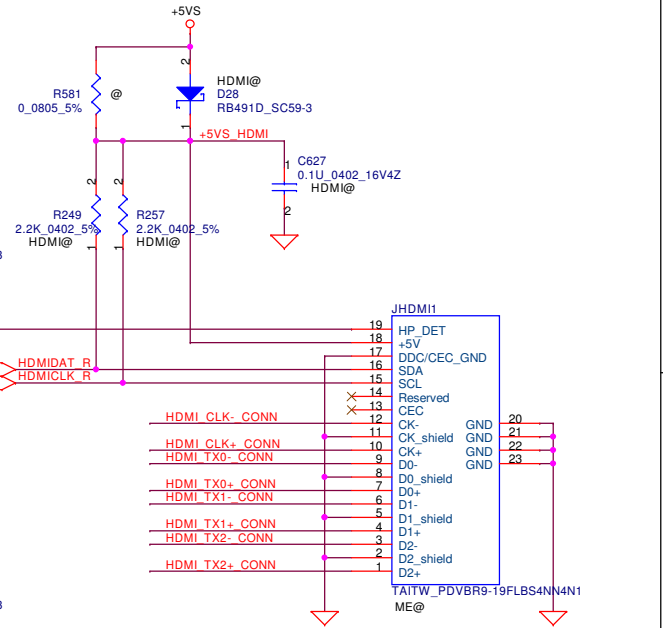
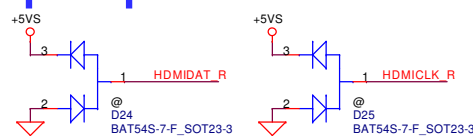
N10x 40nm DDR3 MAPPING
NVIDIA DOCUMENT FOR DA-3978-001



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				LA-5752P		
Date:				Thursday, October 29, 2009	Sheet 23	of 51



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Size		Document Number		Rev	
Custom		LA-5752P		0.3	
Date: Thursday, October 29, 2009		Sheet		24 of 51	

P/N:SA00003GT00 (ASM1442)

FOR asmedia R428 STUFF

RESERVE THE R668 PULL UP TO 3VS

RESERVE THE R670 PULL DOWN TO GND

CHANGE R483 FROM 499 TO 3.4K OHM

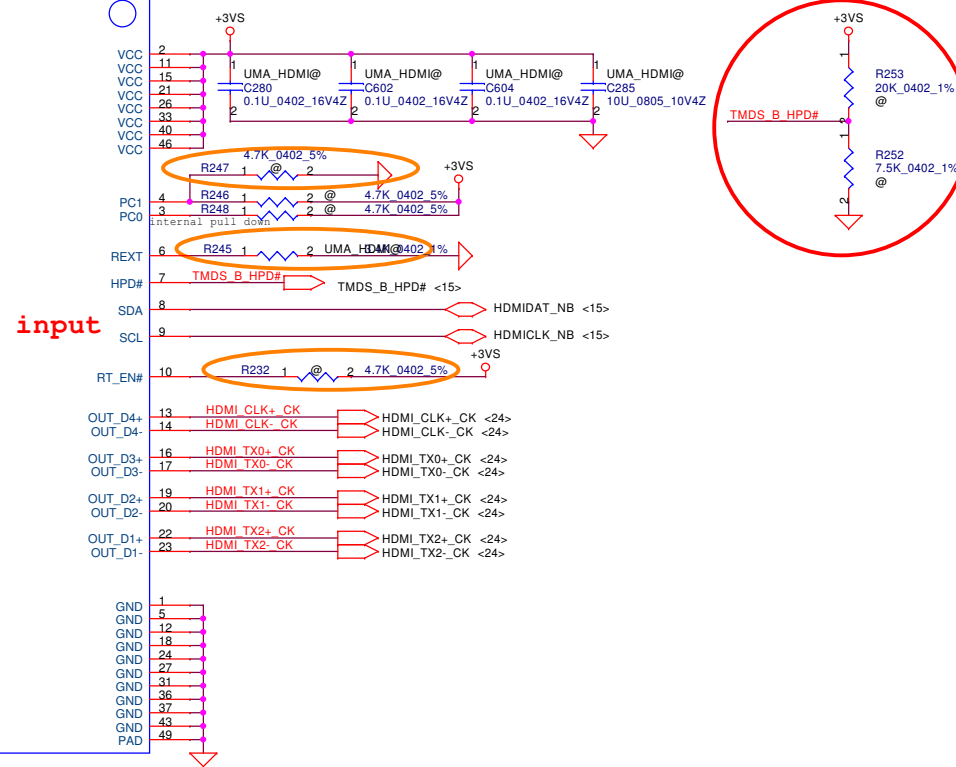
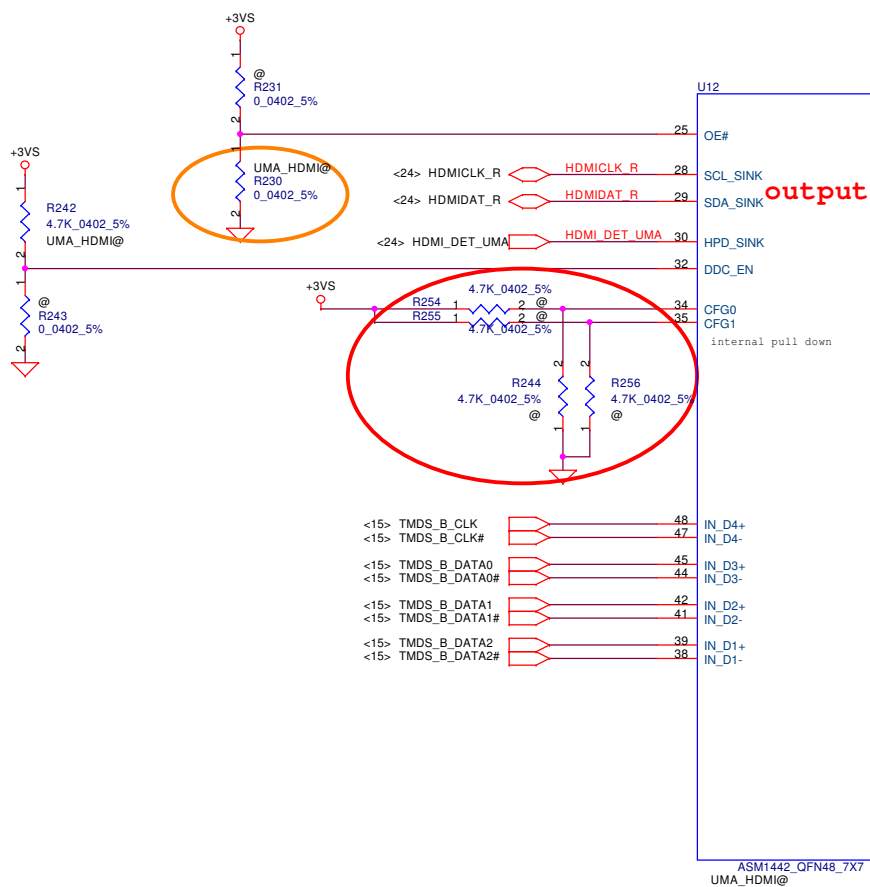
P/N:SA00002D700 (8101T)
P/N:SA00001U900 (CH7318A)

FOR 7318C

PIN6 PULL DOWN 1.2Kohm

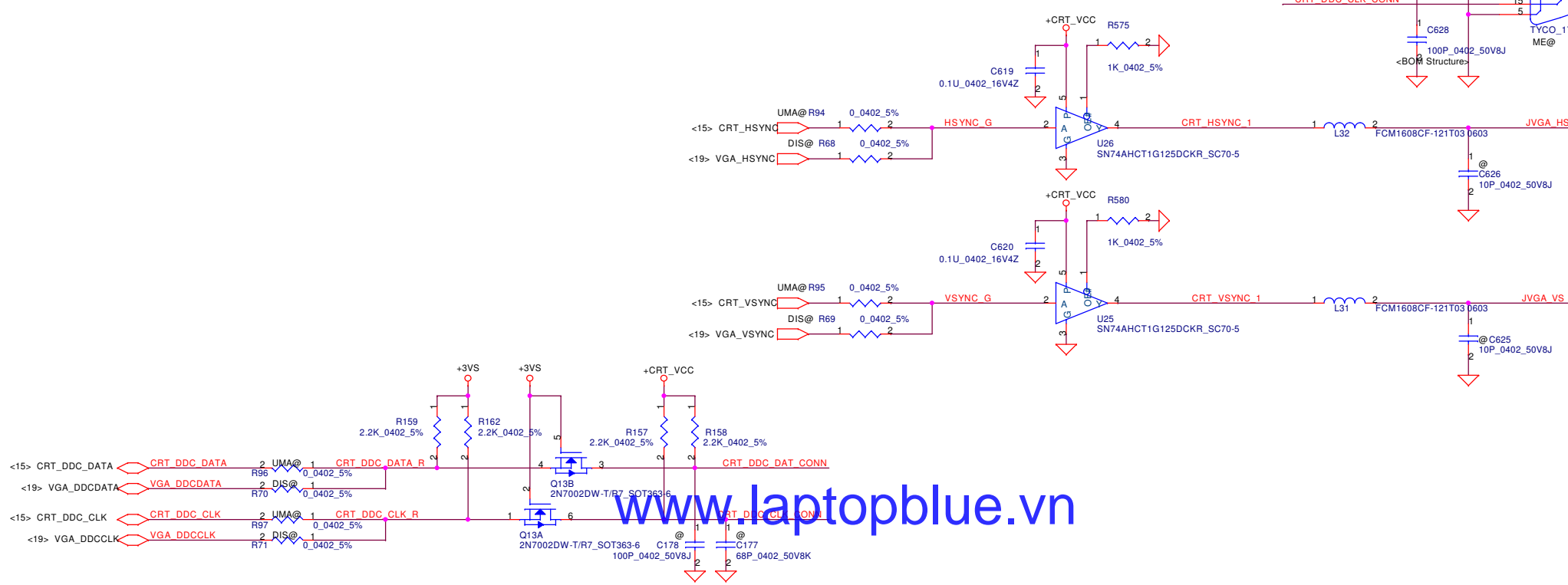
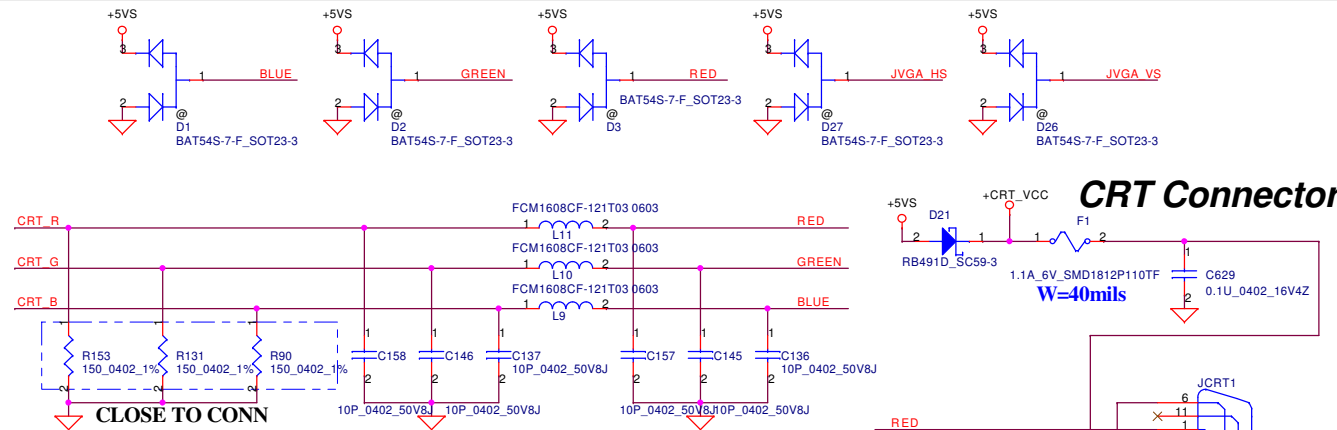
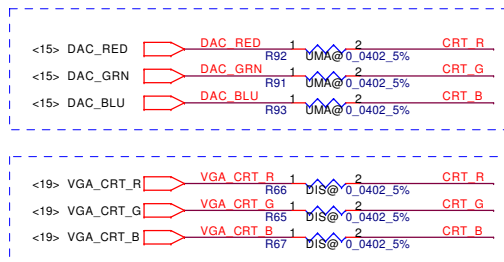
PIN7 PULL DOWN 7.5Kohm

PIN7 PULL UP 20Kohm



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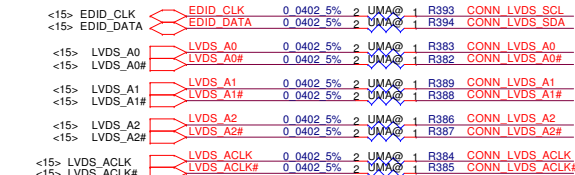
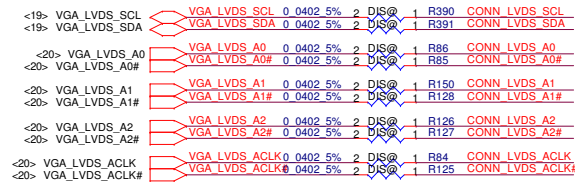
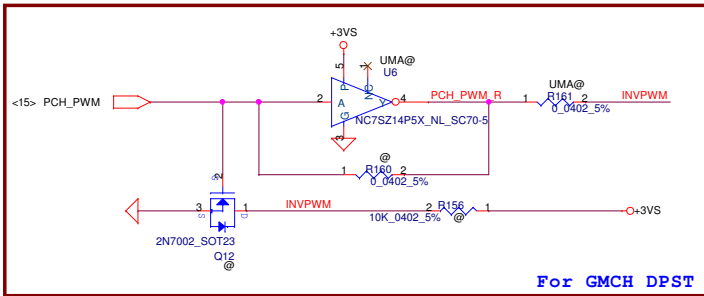
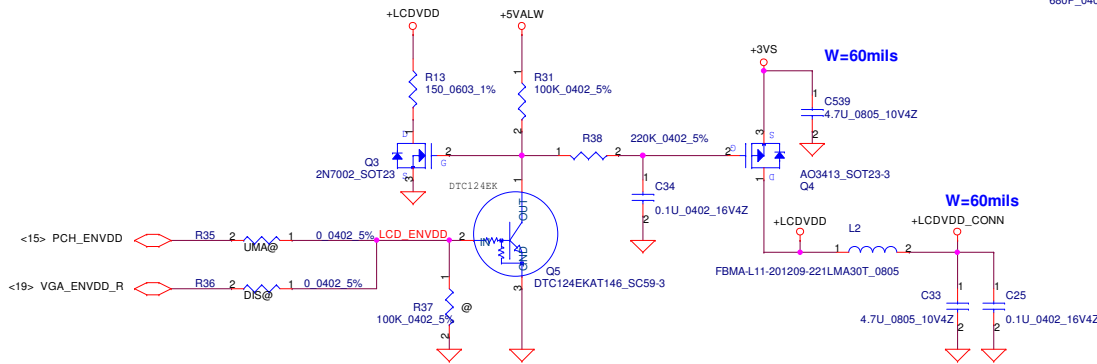
Security Classification		Compal Secret Data		Compal Electronics, Ltd.					
Issued Date	2008/03/25	Deciphered Date	2008/04/	Title	Level Shifter = ASM1442				
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				Custom	LA-5752P	0.3			
				Date: Thursday, October 29, 2009			Sheet	25	of 51



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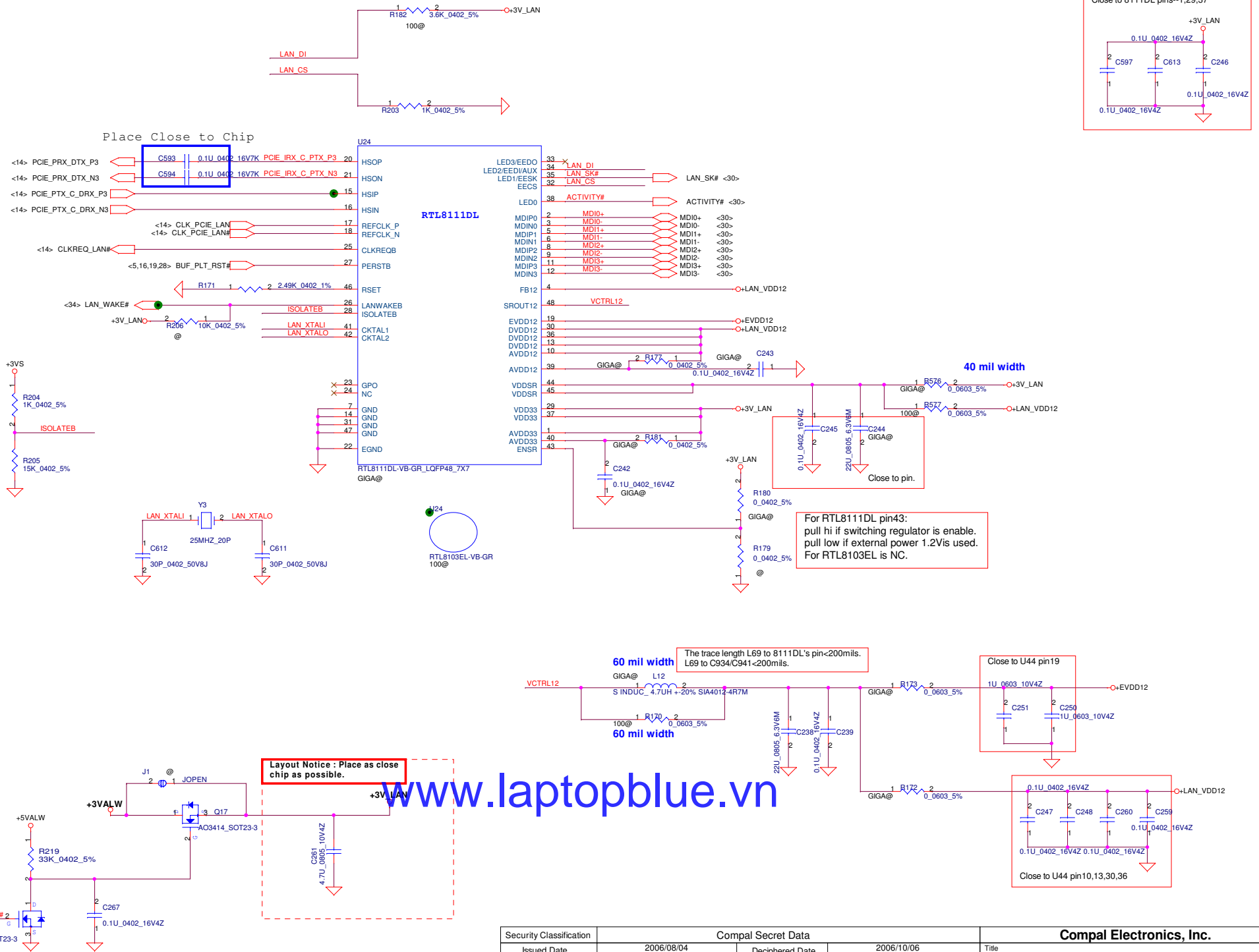
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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Custom		LA-5752P		0.3	
Date:		Thursday, October 29, 2009		Sheet 26 of 51	

LCD POWER CIRCUIT



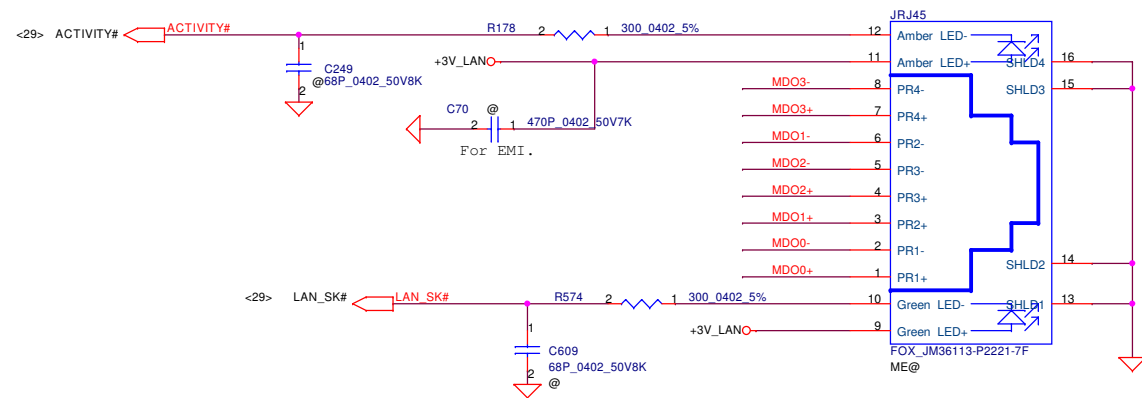
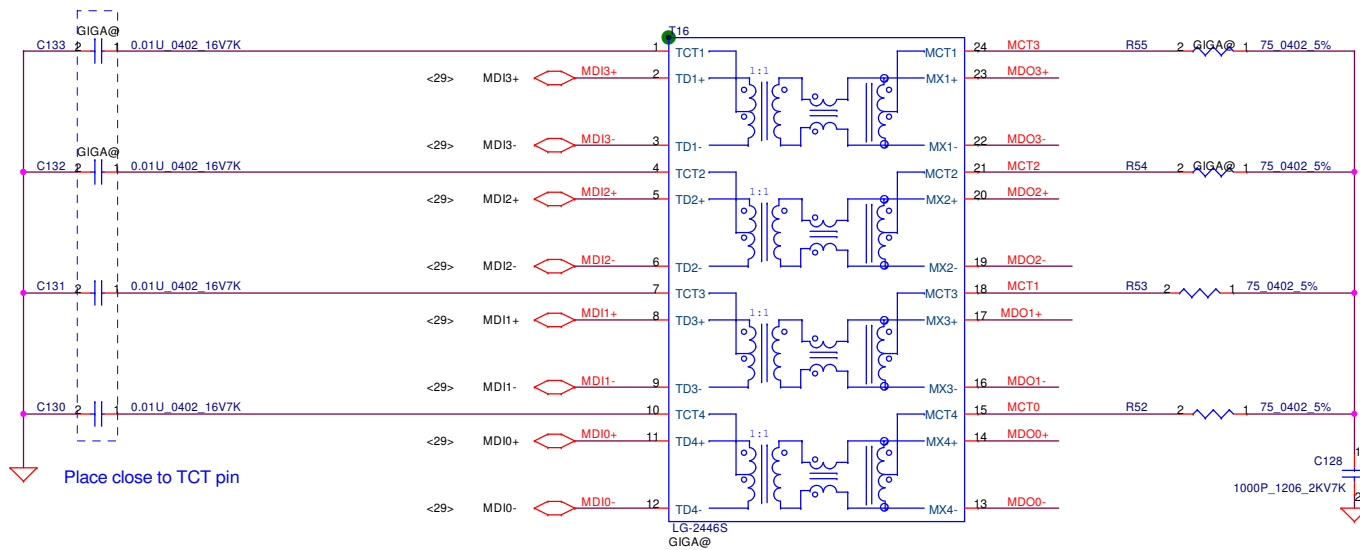
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Deciphered Date				2008/10/15				LVDS/CAMERA			
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				LA-5752P				Rev 0.3			
Date				Thursday, October 29, 2009				1 Sheet 27 of 51			



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				Date: Thursday, October 23, 2009	Sheet 29 of 51	

Close to T14



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Size	Custom	Document Number	LA-5752P		Rev 0.3
Date:	Thursday, October 29, 2009	Sheet	30	of	51

R430 1403@
0_0402_5%

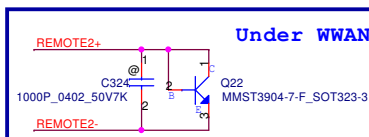
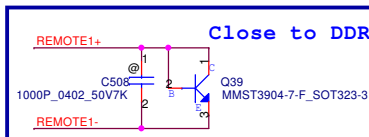
1403:
@C508/@C324=100p

SMSC thermal sensor
placed near by VRAM

FAN_PWM & TACH
for PWM FAN

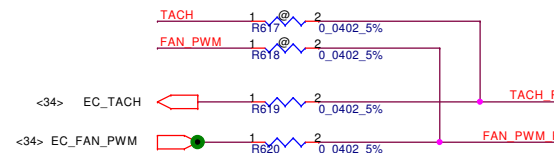
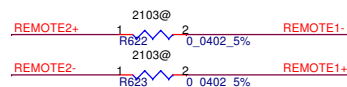
Address 0101_110xb

internal pull up 1.2K to 1.5V
R for initial thermal
shutdown temp

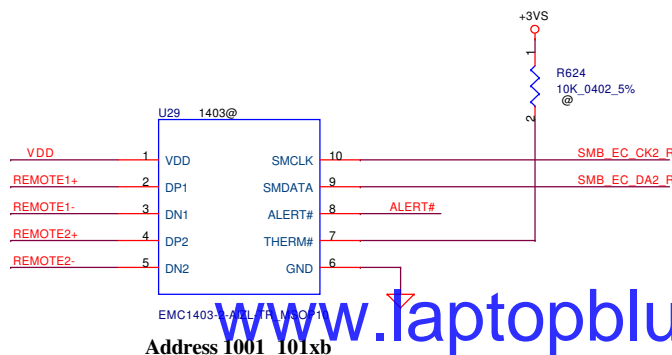


REMOTE1,2+/-:
Trace width/space:10/10 mil
Trace length:<8"

Close U20

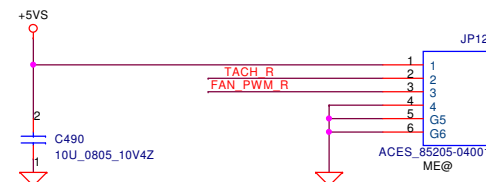


Shutdown Temp	TRIP_SET R439 (1%)
93	953ohm
94	1020ohm
95	1100ohm
96	1150ohm
97	1240ohm
98	1330ohm
99	1400ohm
100	1500ohm
101	1580ohm
102	1690ohm
103	1820ohm
104	1960ohm
105	2050ohm



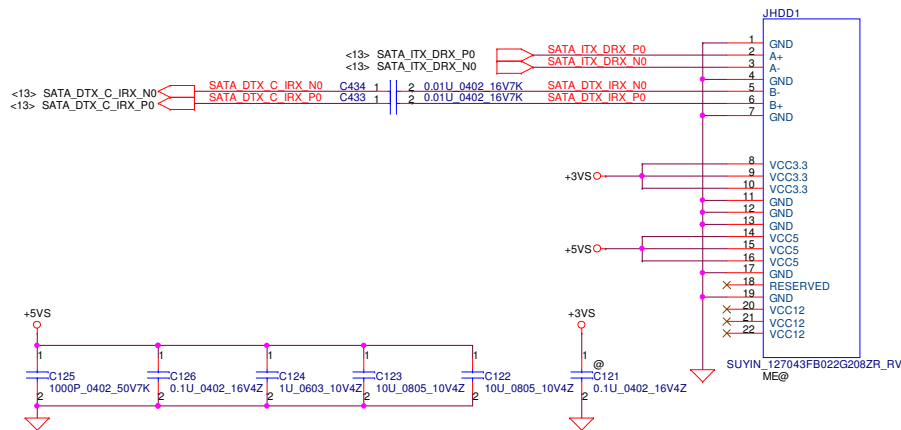
Address 1001_101xb

FAN1 Conn

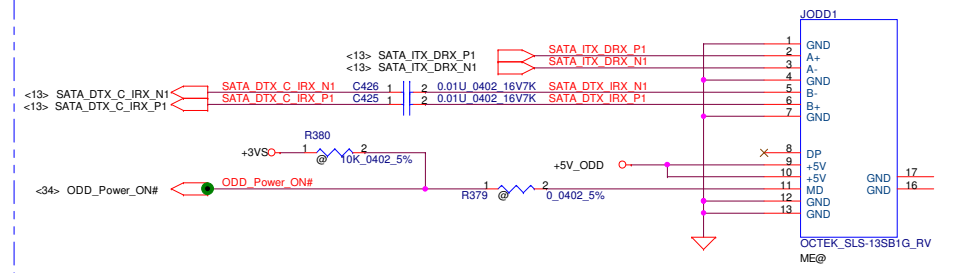


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		EMC2103/1403_Thermal sensor/FAN
Size	Document Number	Rev
Custom	LA-5752P	0.3
Date: Thursday, October 29, 2009	Sheet	31 of 51

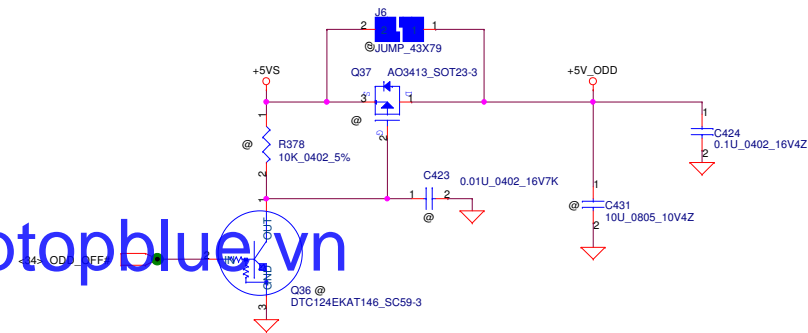
SATA HDD Conn.



SATA ODD Conn.



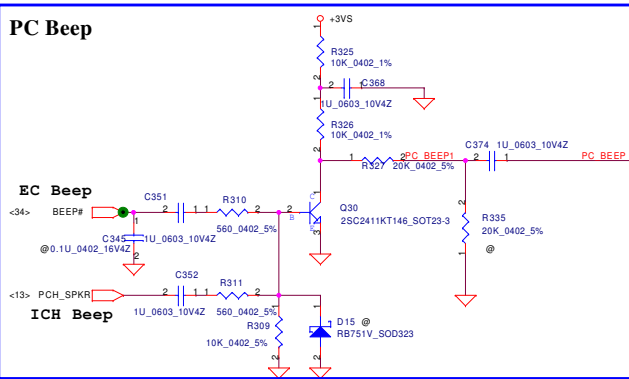
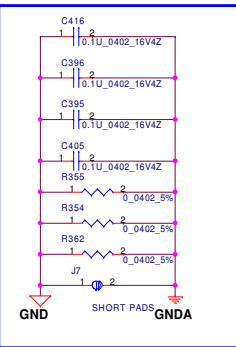
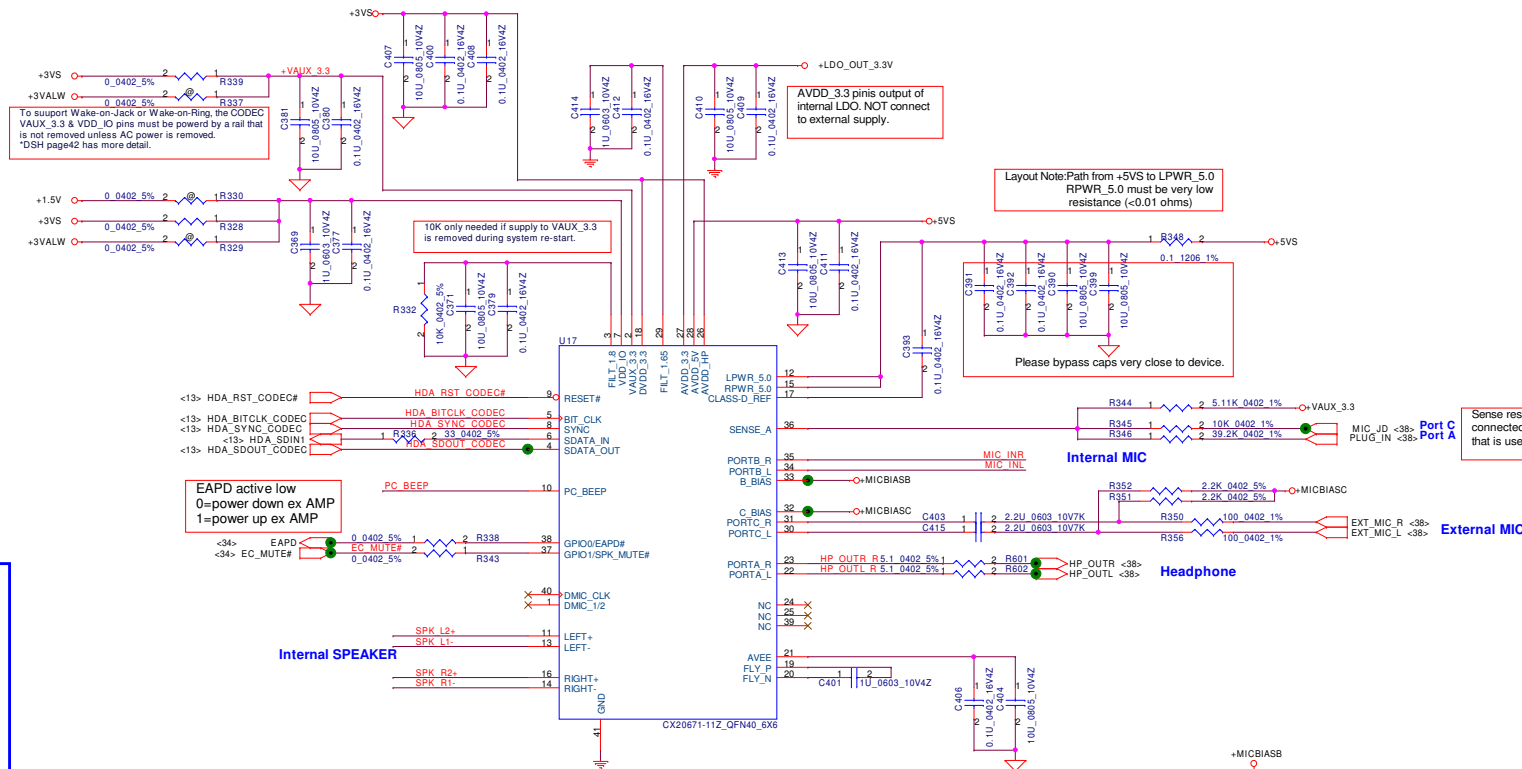
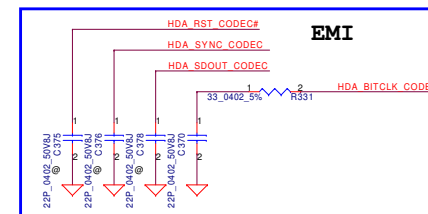
ODD Power Control



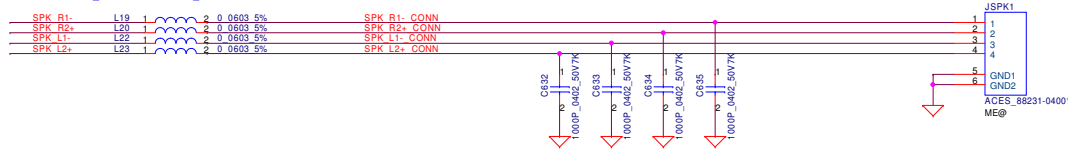
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				LA-5752P	
				Date	Thursday, October 29, 2009
				Sheet	32 of 51

CX20671
High Definition Audio Codec SoC
With Integrated Class-D Stereo
Amplifier.
An integrated 5 V to 3.3 V Low-dropout
voltage regulator (LDO).
An integrated 3.3 V to 1.8V Low-dropout
voltage regulator (LDO).



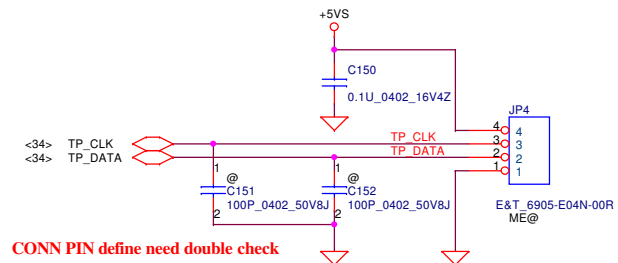
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wide 20MIL



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Date: Thursday, October 29, 2009	Sheet	33 of 51

[illegible]

To TP/B Conn.



EC DEBUG PORT

The diagram illustrates the wiring for the EC Debug Port. A 4-pin header, labeled JP11, is connected to the EC. The connections are as follows:

- Pin 1: +3VALW
- Pin 2: EC_TX_P80_DATA
- Pin 3: EC_RX_P80_CLK
- Pin 4: ACES_85205-0400 ME@

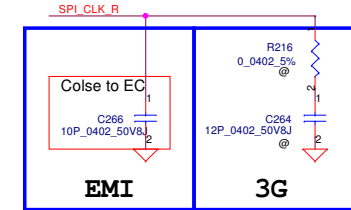
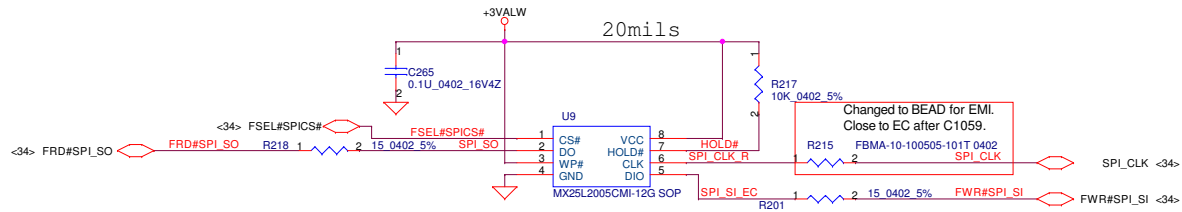
The EC is represented by a blue box with pins 1, 2, 3, and 4 labeled. The ACES_85205-0400 ME@ is connected to the EC via a red arrow pointing to the EC box.

Kill	
STATUS	
1, 2 (LOW)	OFF
2, 3 (HI)	ON

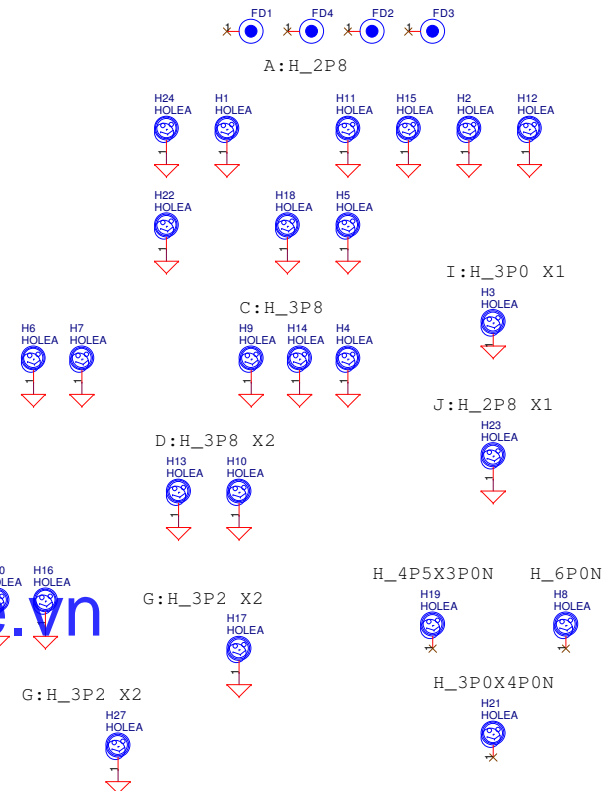
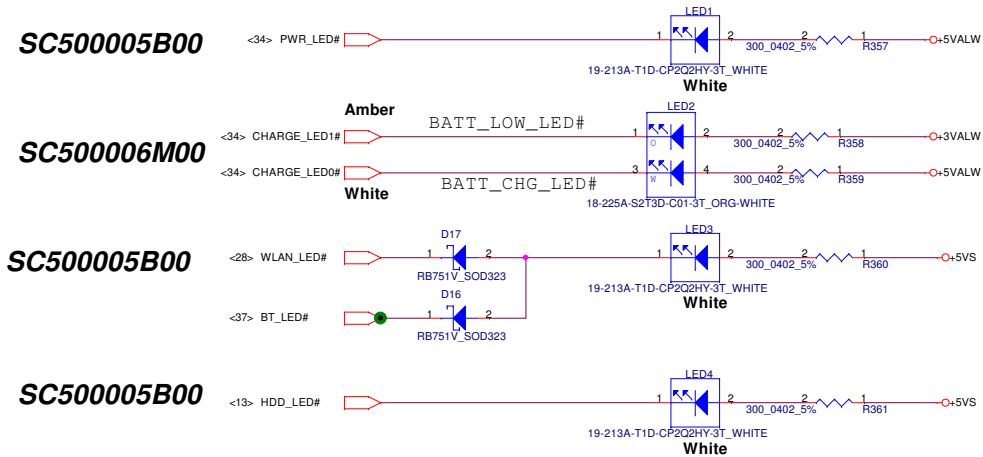
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				A	LA-5752P	0.3
Date: Thursday, October 29, 2009				Sheet	35	of 51

**FOR EC 256KB SPI ROM
(150mil PACKAGE)
P/N : SA00003GK00**



LED



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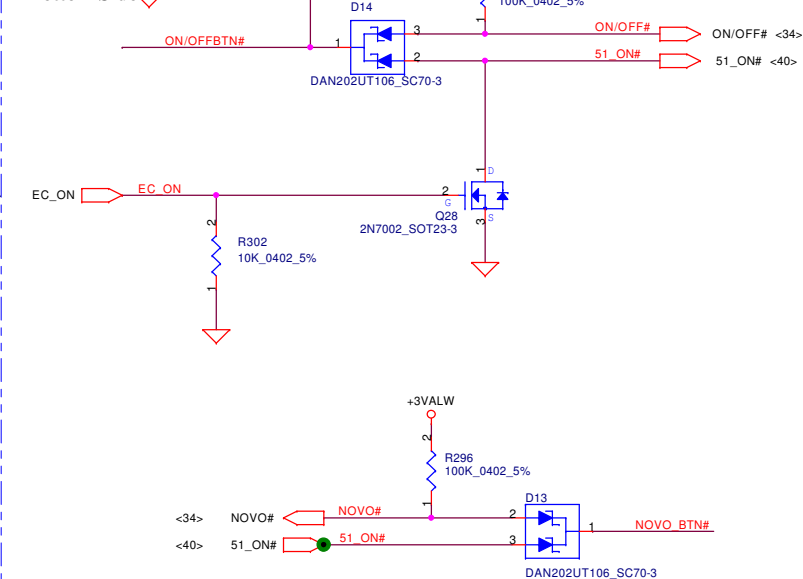
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				Size B Document Number LA-5752P	
				Rev 0.3	
				Date: Thursday, October 29, 2009 Sheet 36 of 51	

ON/OFF switch

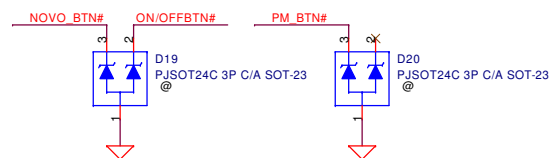
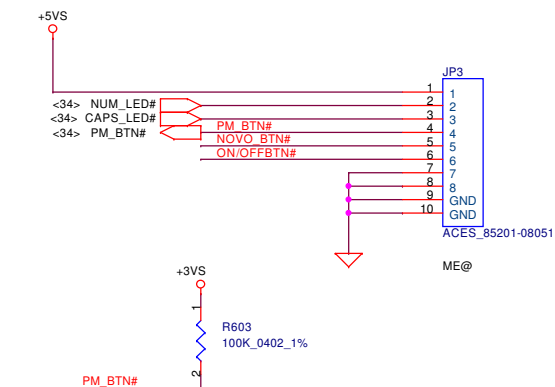
Power Button

TOP Side

Bottom Side



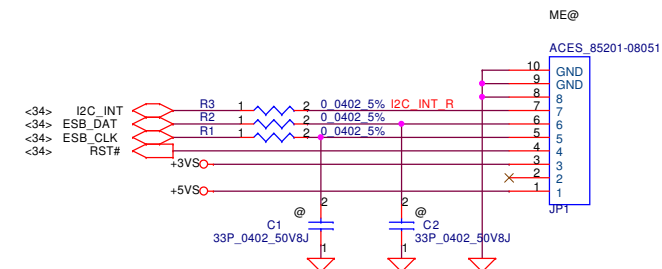
Power Bottom Board Conn. 8pin



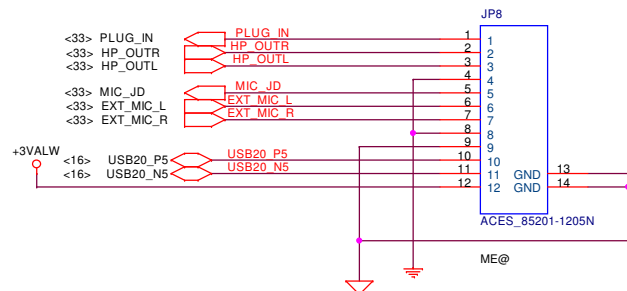
EMI REQUEST 1ST = SCA00000E00
2ST = SCA00000R00

Cap Sensor Board Conn. 6pin

ENE SB3534



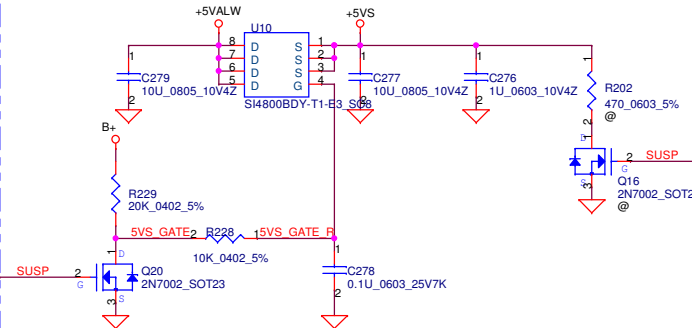
Card Reader/Audio Jack SB CONN



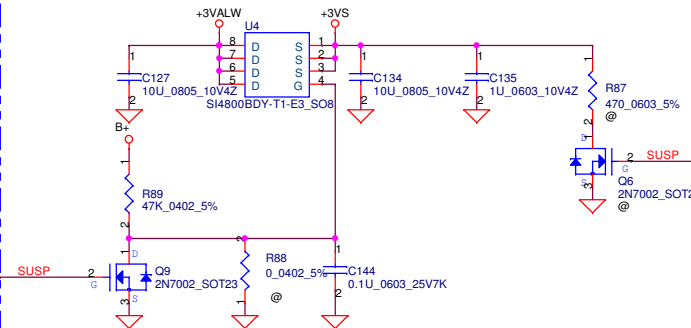
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Size	Document Number	LA-5752P		Rev
Custom				0.3
Date:	Thursday, October 29, 2009	Sheet	38 of 51	

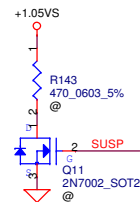
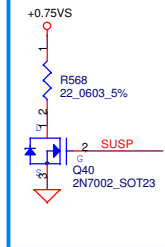
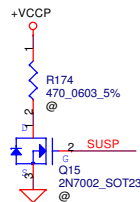
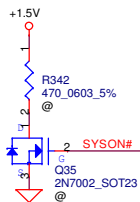
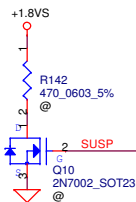
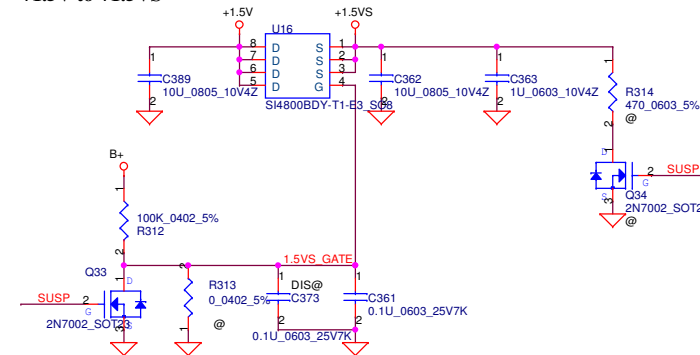
+5VALW TO +5VS



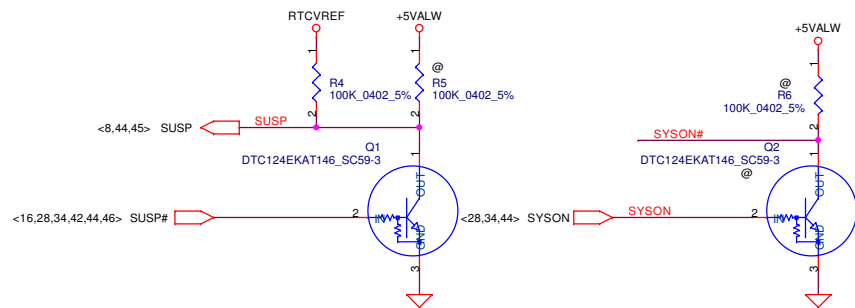
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+1.5V to +1.5VS

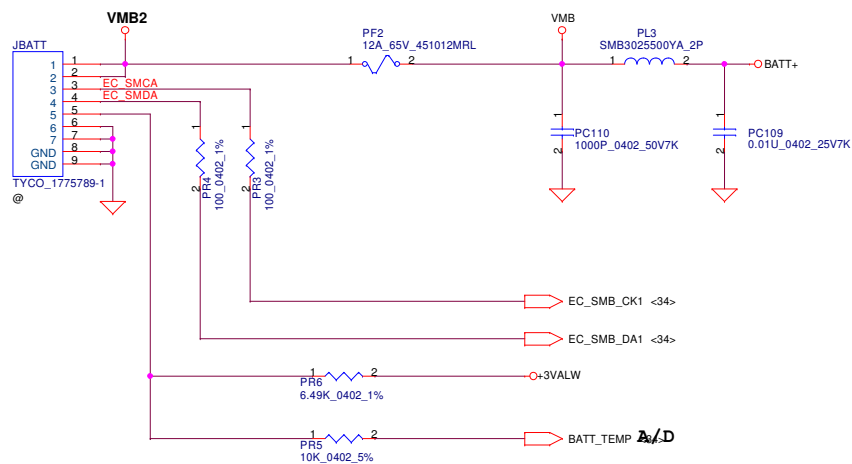


For Intel S3 Power Reduction.

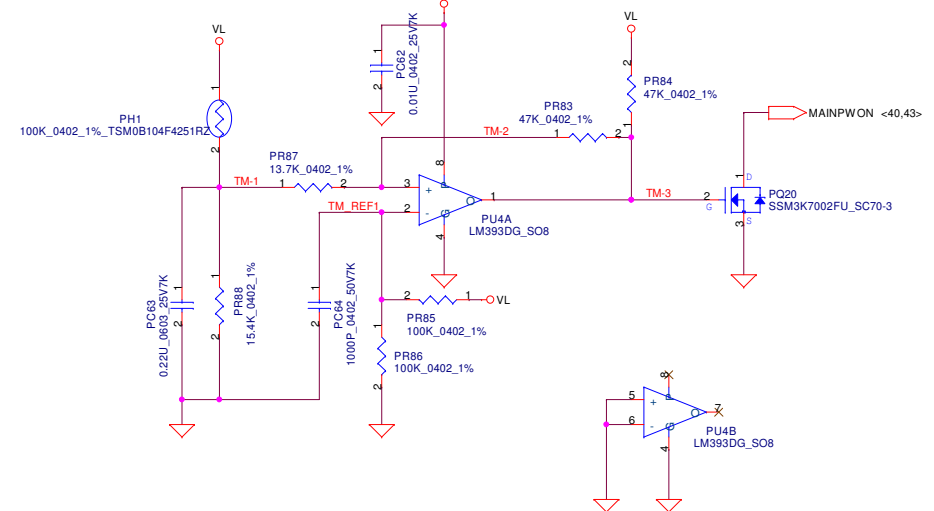


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				Size	Rev
				Document Number	0.3
				LA-5752P	
				Date: Thursday, October 29, 2009	Sheet 39 of 51

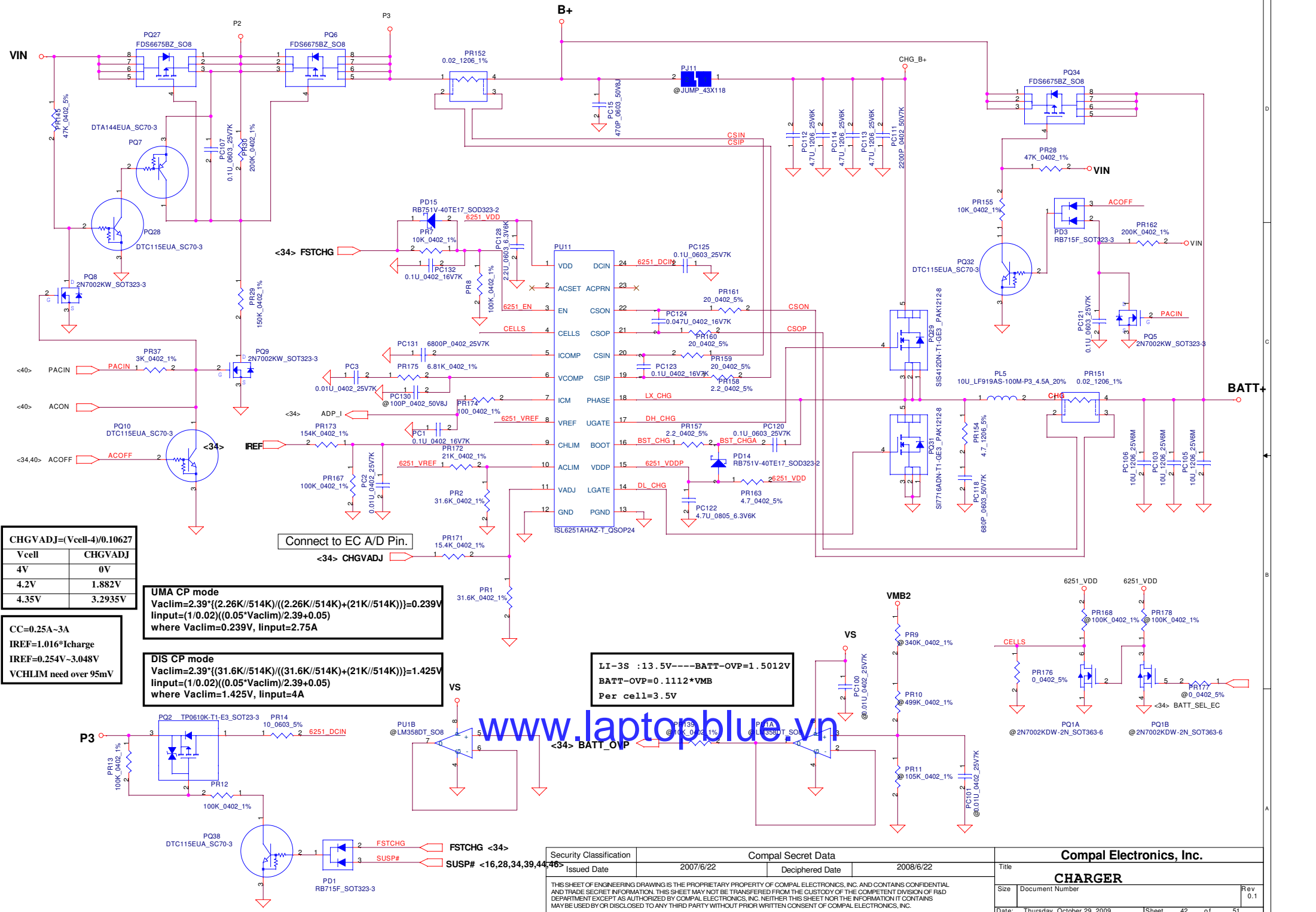


PH1 under CPU bottom side :
 CPU thermal protection at 92 degree C
 Recovery at 56 degree C



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Size	Document Number			Rev	
				0.1	
Date:	Thursday, October 29, 2009	Sheet	41 of 51		



CHGVADJ=(Vcell-4)/0.10627	
Vcell	CHGVADJ
4V	0V
4.2V	1.882V
4.35V	3.2935V

CC=0.25A-3A
IREF=1.016*Icharge
IREF=0.254V-3.048V
VCHLIM need over 95mV

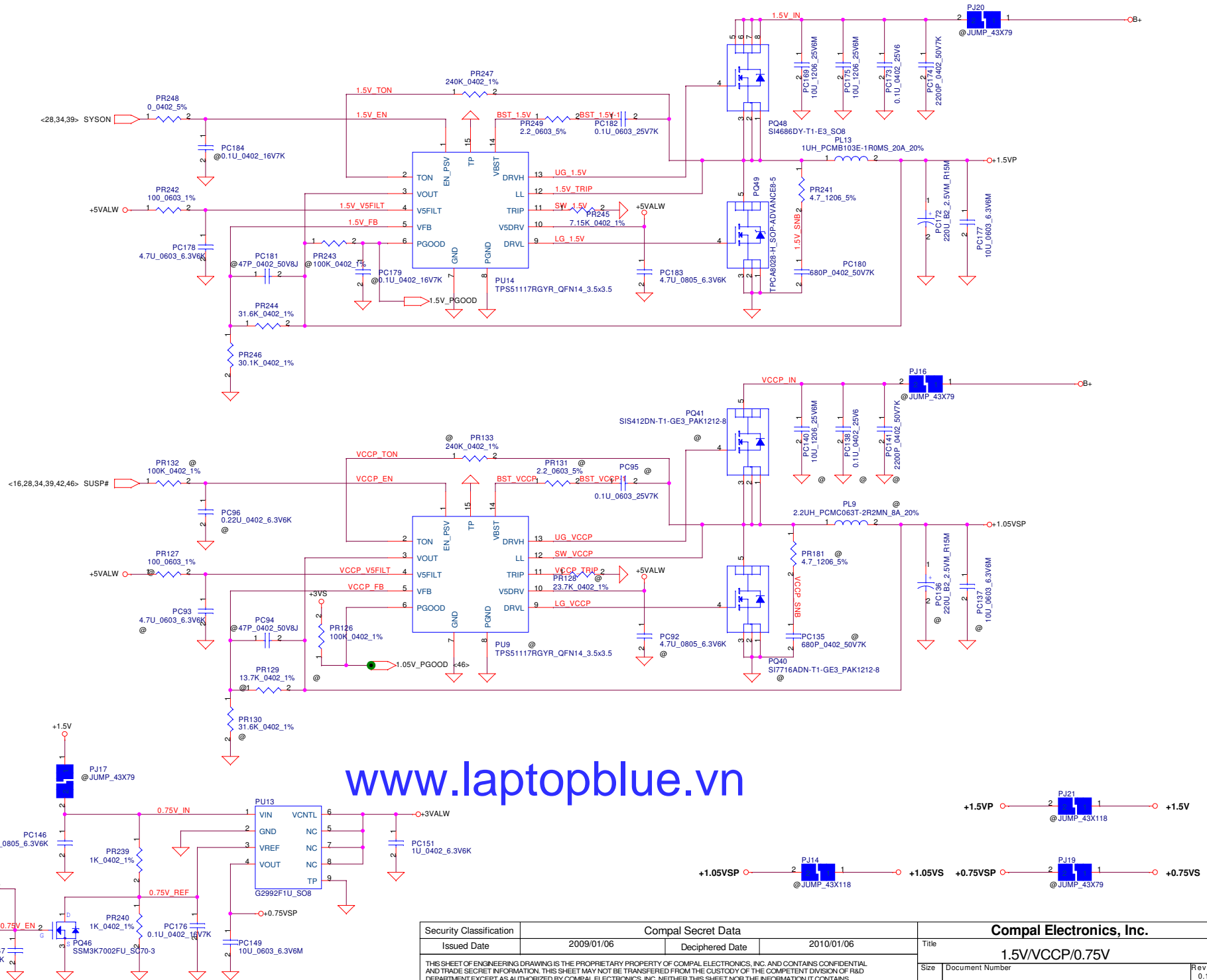
UMA CP mode
 $V_{acim}=2.39*((2.26K/514K)/((2.26K/514K)+(21K/514K)))=0.239V$
 $I_{inut}=(1/0.02)/((0.05*V_{acim})/2.39+0.05)$
where $V_{acim}=0.239V$, $I_{inut}=2.75A$

DIS CP mode
 $V_{acim}=2.39*((31.6K/514K)/((31.6K/514K)+(21K/514K)))=1.425V$
 $I_{inut}=(1/0.02)/((0.05*V_{acim})/2.39+0.05)$
where $V_{acim}=1.425V$, $I_{inut}=4A$

LI-3S :13.5V---BATT-OVP=1.5012V
BATT-OVP=0.1112*VMB
Per cell=3.5V

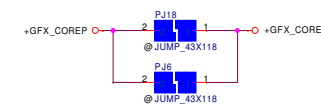
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					Size	Document Number
					Date: Thursday, October 29, 2009	Sheet 42 of 51
						0.1



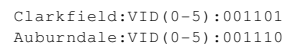
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									0.1
Date:		Thursday, October 29, 2009		Sheet		44 of		51	



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				Date:	Thursday, October 29, 2009	Sheet 47 of 51



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				Date: Thursday, October 29, 2009		
				Sheet	48	of 51

Item	Reason for change	PG#	Modify List	Date	Phase
1					
2					
3					
4					
5					
6					
7					
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9					
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Title			
HW PIR			
Size	Document Number		Rev
B	LA-5752P		0.3
Date:	Thursday, October 29, 2009	Sheet	50 of 51

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Title			
HW PIR			
Size	Document Number		Rev
B	LA-5751		0.3
Date:	Thursday, October 29, 2009	Sheet	51 of 51