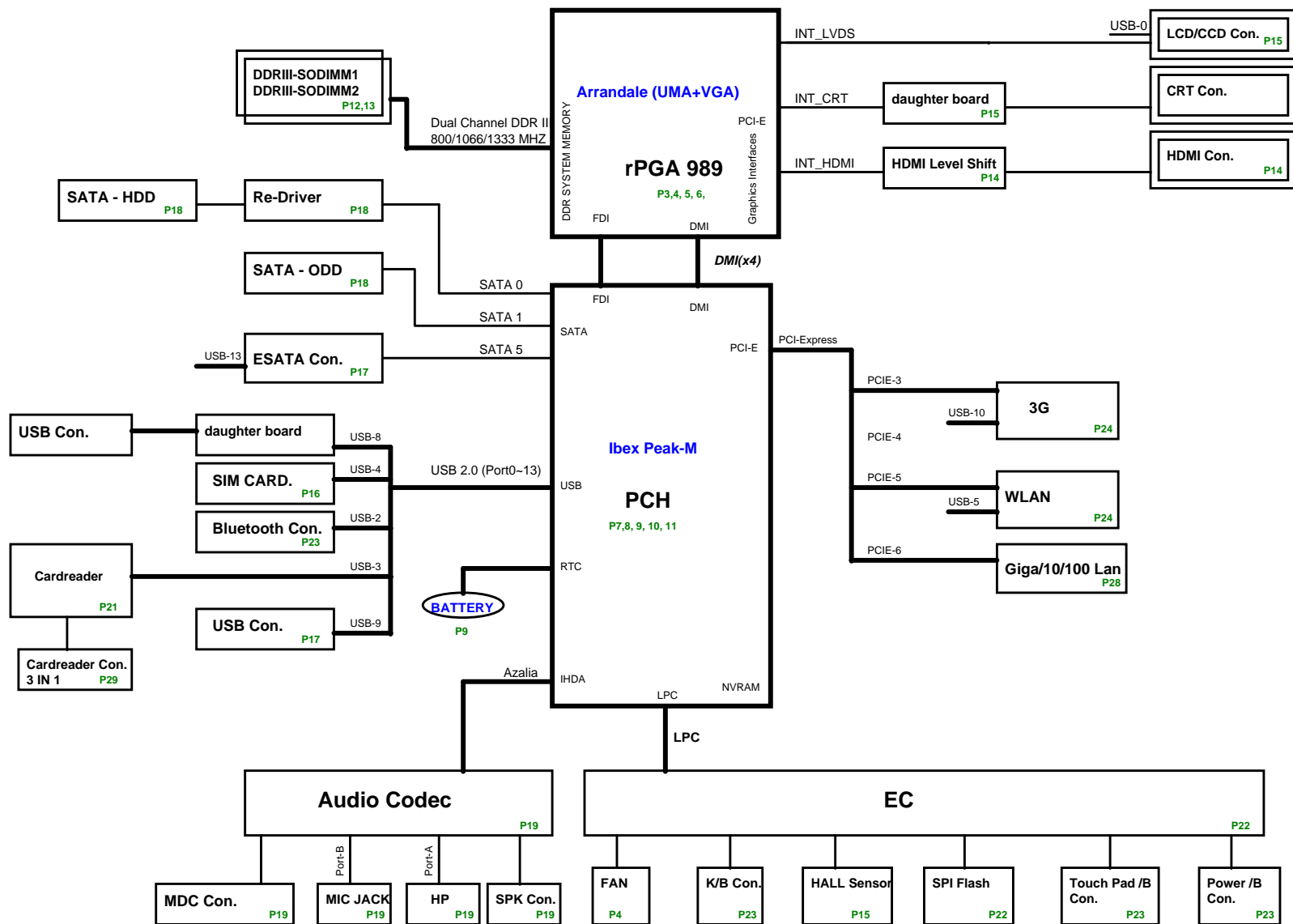


PCB STACK UP

LAYER 1 : TOP  
LAYER 2 : GND  
LAYER 3 : IN1  
LAYER 4 : IN2  
LAYER 5 : VCC  
LAYER 6 : BOT



CK505

P2

POWER SYSTEM

ISL88731A P25  
RT8210B P26  
UP6163 P27  
UP6111A P28  
RT015A P29  
ISL62882C P30  
RT8152C P32

+VCC\_CORE

+1.5V  
+1.5VSUS

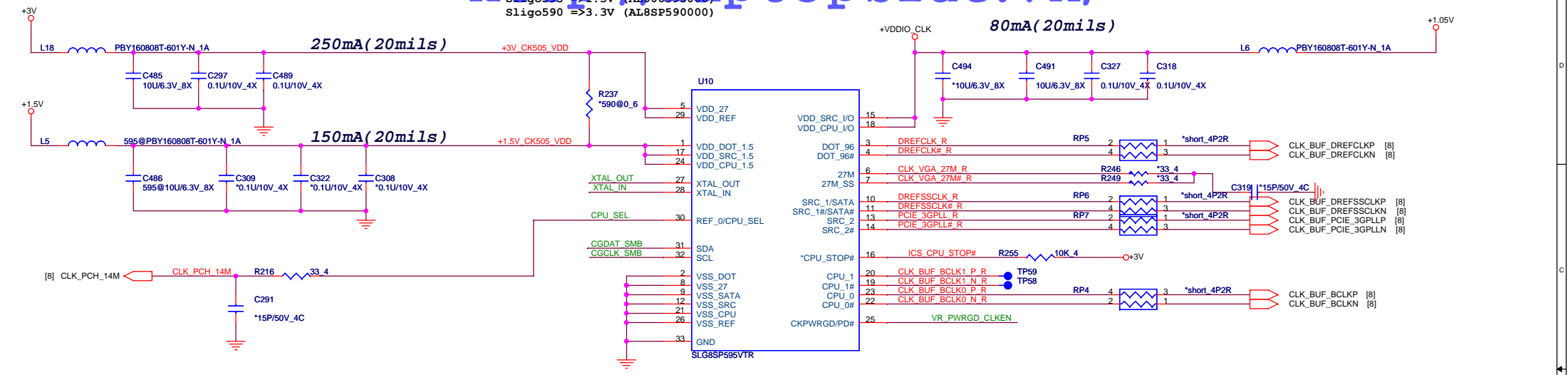
+VTT  
+1.05V

+1.8V

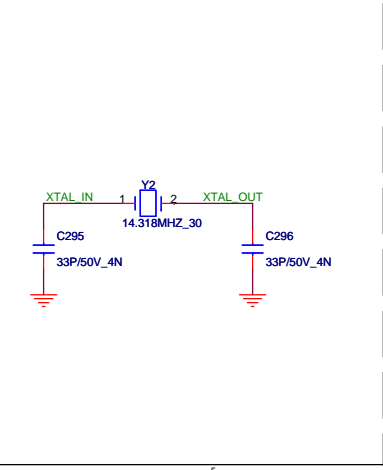
+1.5V\_S5  
+3VPCU  
+3V\_S5  
+3V  
+5VPCU  
+5V\_S5  
+5V  
+SMDDR\_VTERM  
+SMDDR\_VREF

CLOCK Gen [CLK]

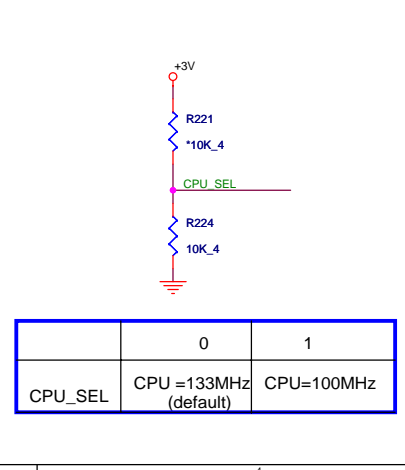
http://laptopblue.vn/



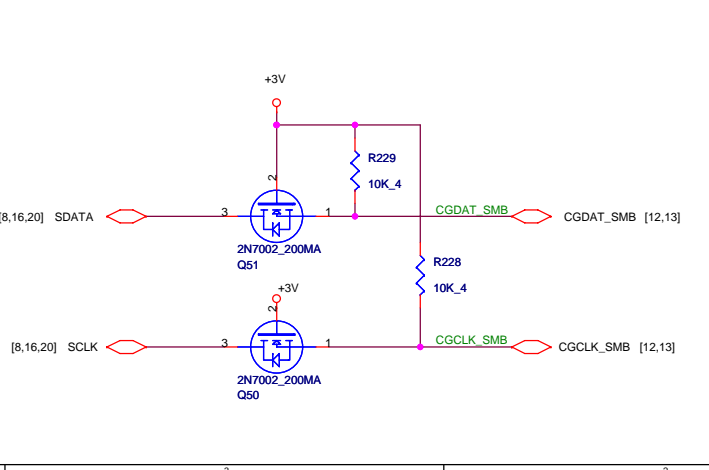
CLK CRYSTAL



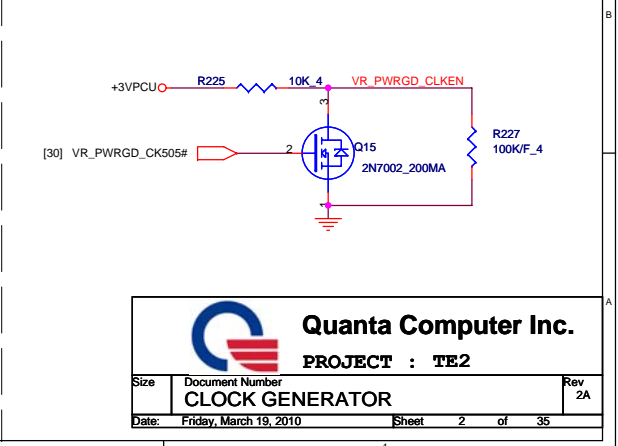
CLK CPU\_SEL

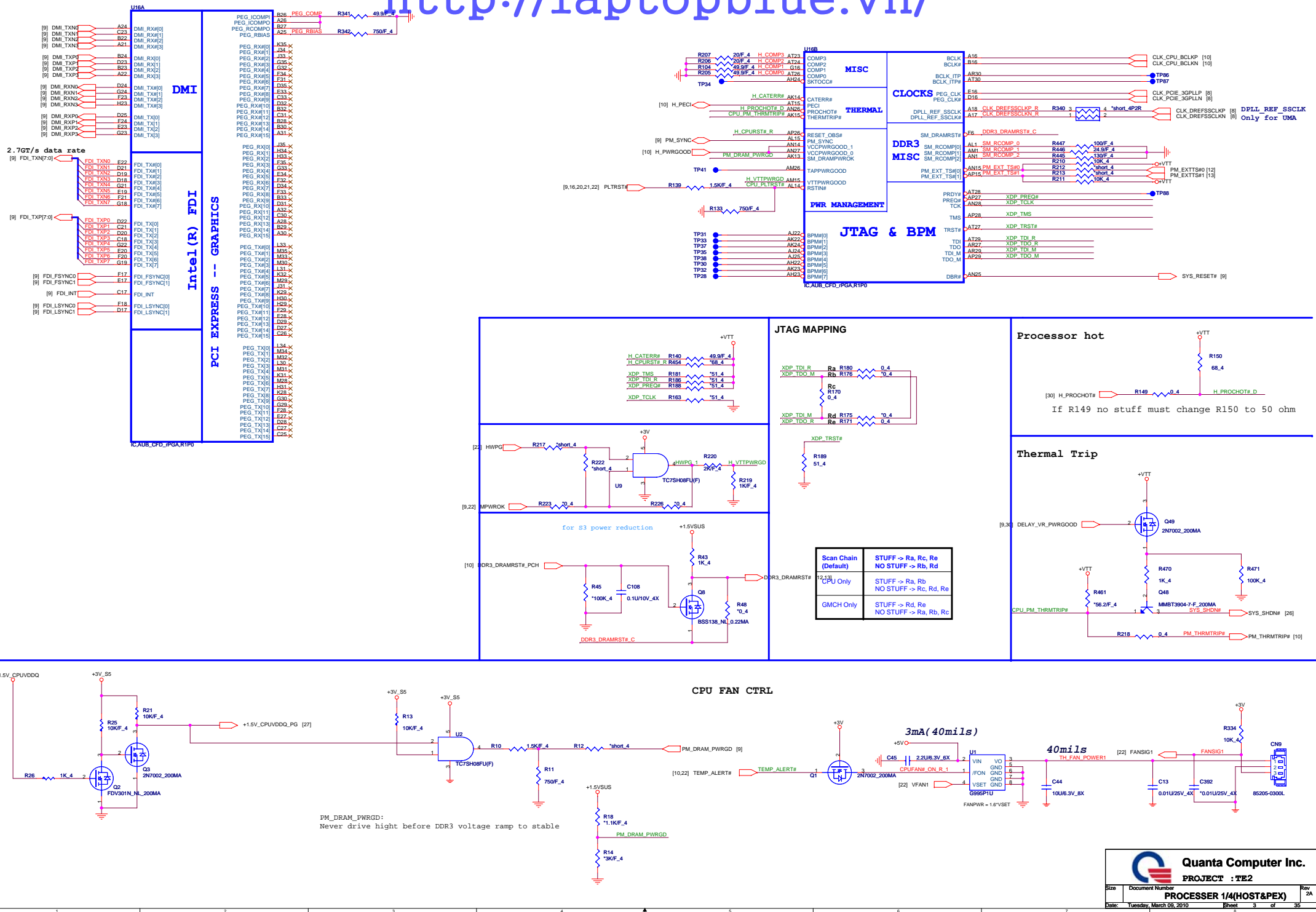


CLK I2C

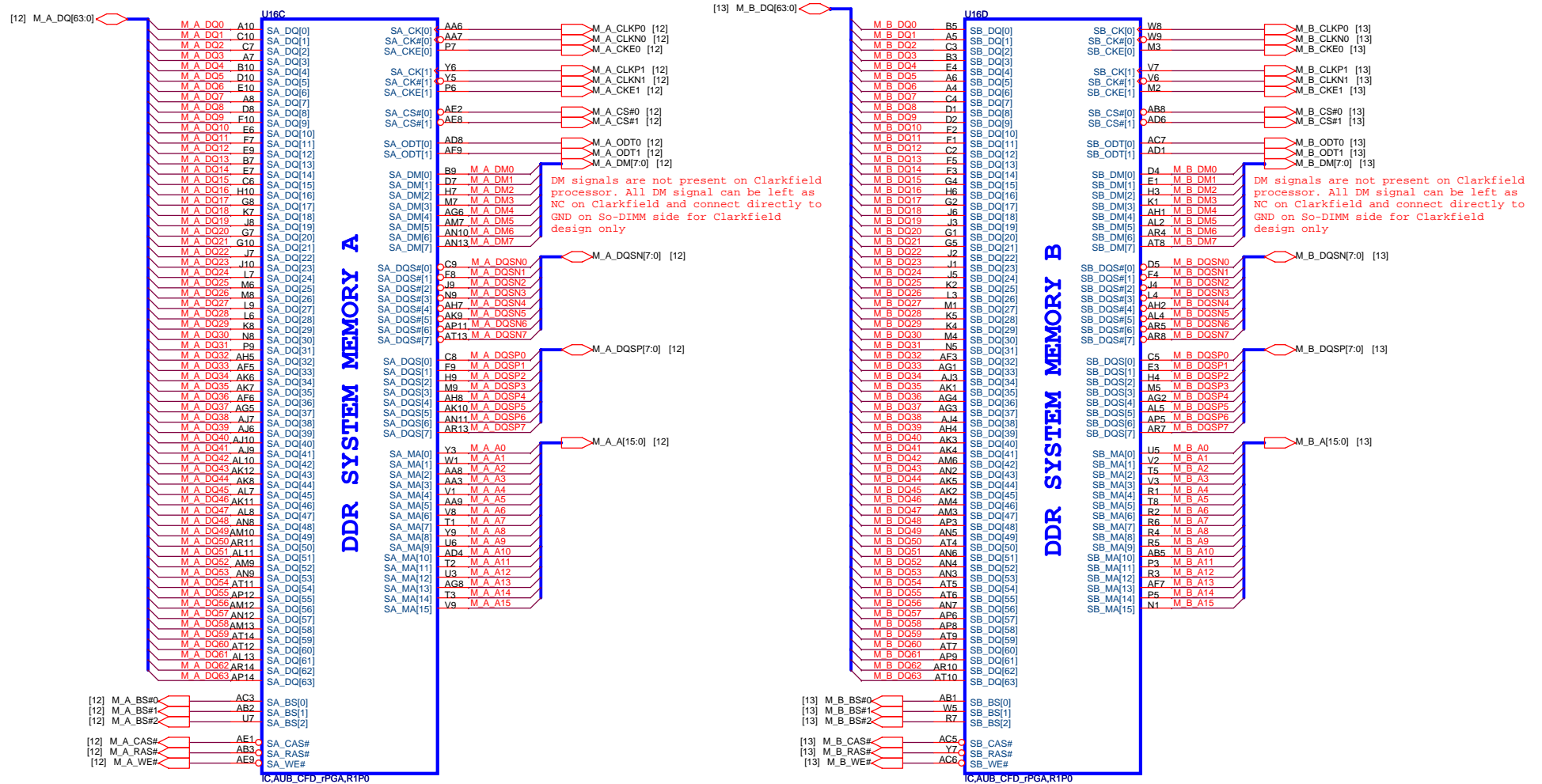


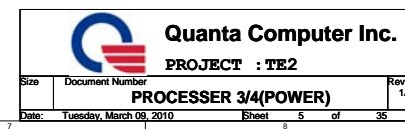
CLK POWERGOOD  
Change to +3VPCU  
(follow CRB)





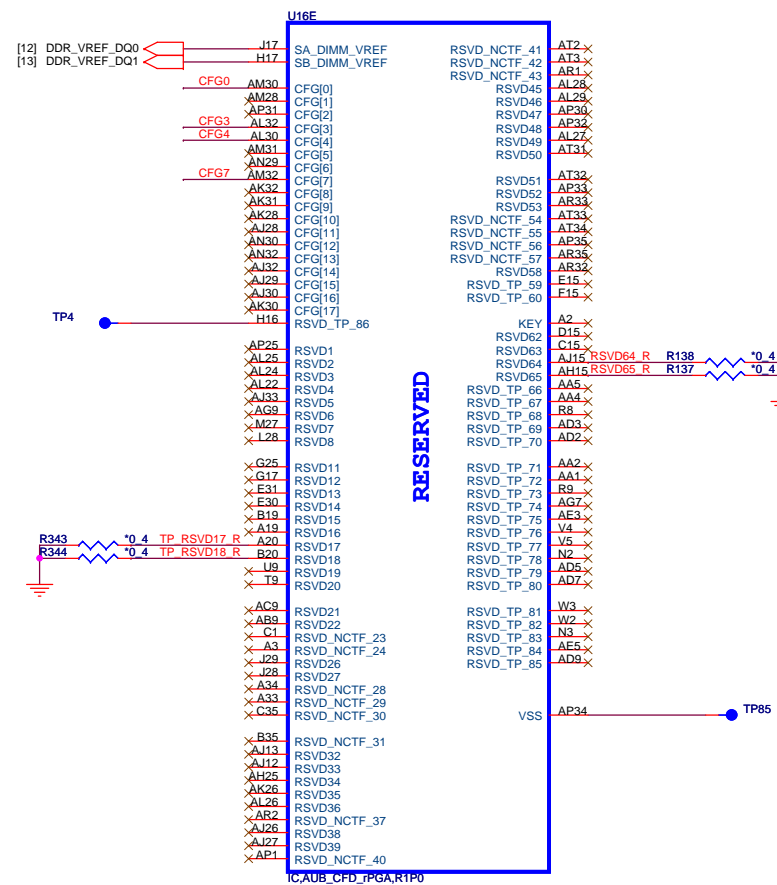
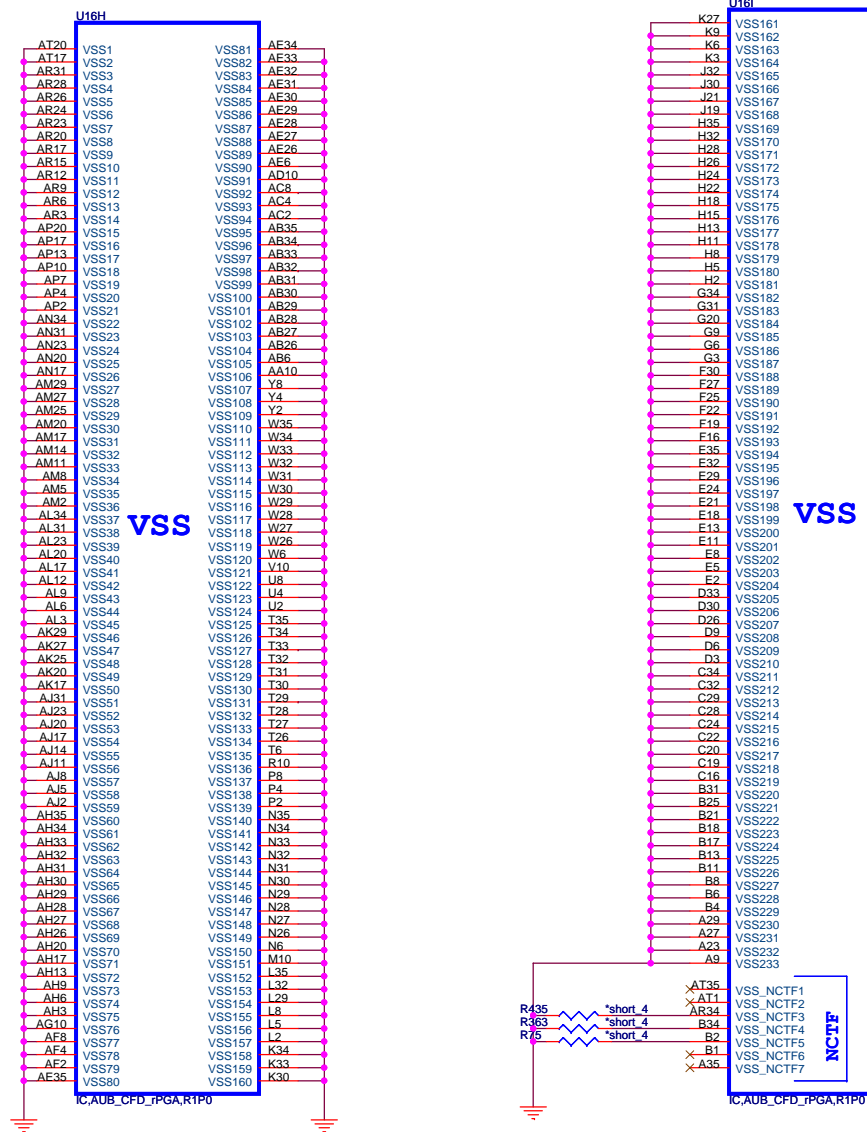
## AUBURNDALE/CLARKSFIELD PROCESSOR (DDR3)



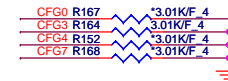


AUBURNDAL/CLARKSFIELD PROCESSOR (GND)

AUBURNDAL/CLARKSFIELD PROCESSOR( RESERVED, CFG)



For Discrete only

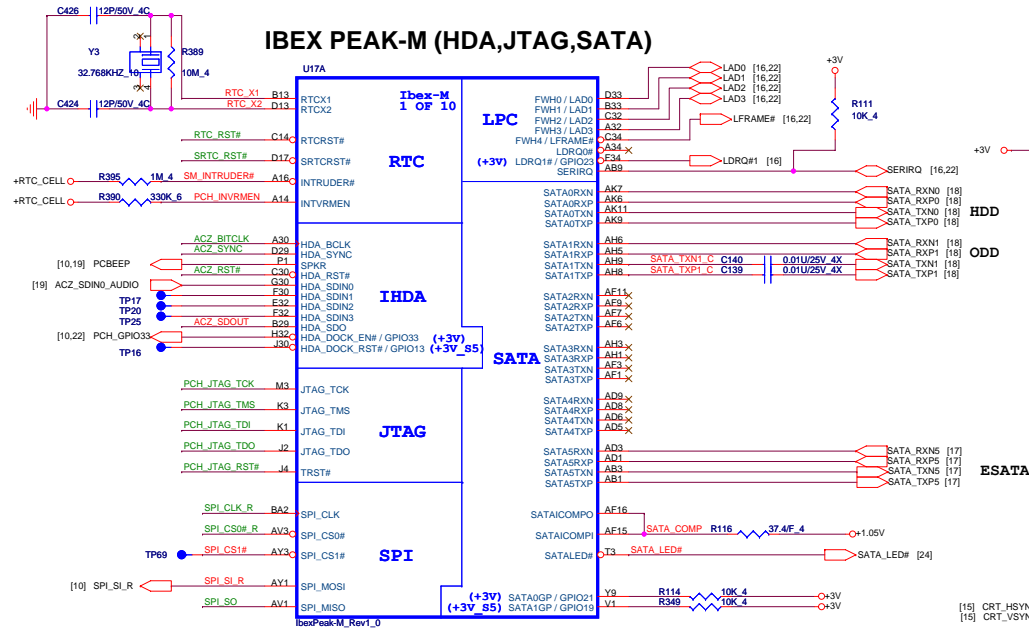


CFG[ 1:0 ] - PCI\_Epress Configuration Select  
\* 11= 1 x 16 PEG  
\* 10= 2 x 8 PEG

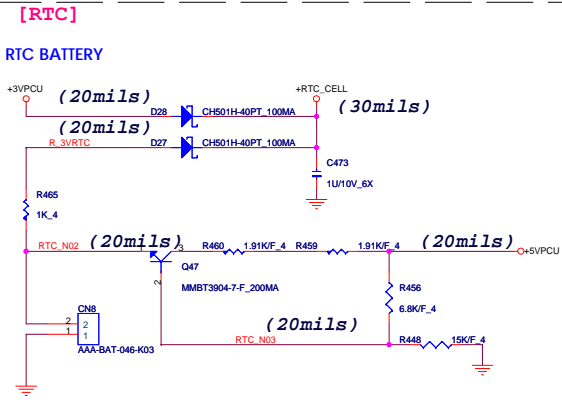
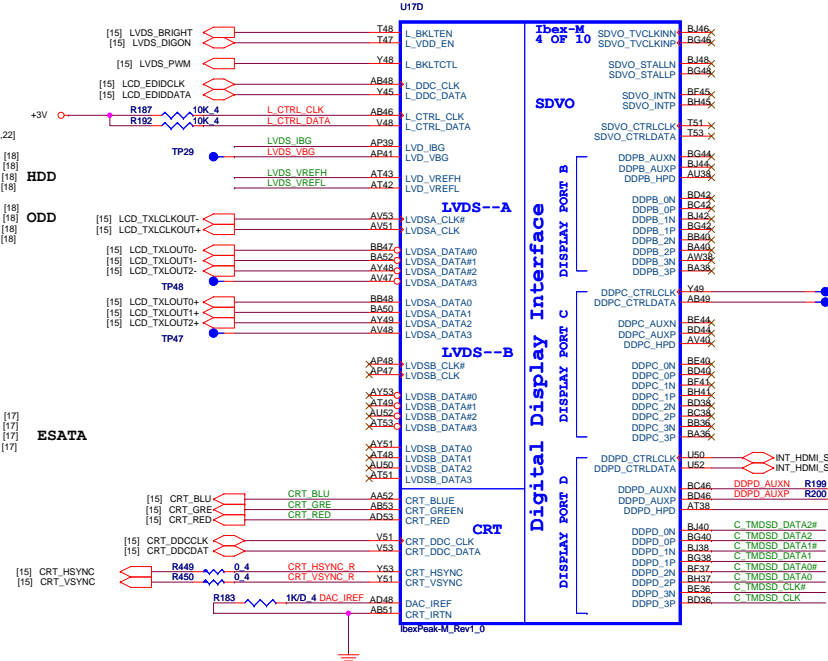
	1	0
CFG4 (Display Port Presence)	Disabled; No Physical Display Port attached to Embedded Display Port	Enabled; An external Display port device is connected to the Embedded Display port
CFG0 (PCI-Epress Configuration Select)	Single PEG	Bifurcation enabled
CFG3 (PCI-Epress Static Lane Reversal)	Normal Operation	Lane Numbers Reversed 15 -> 0 , 14 -> 1



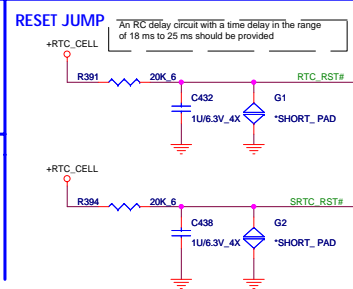
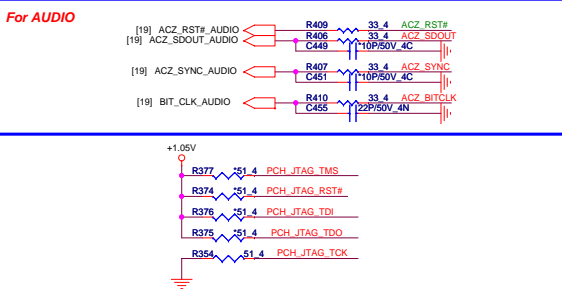
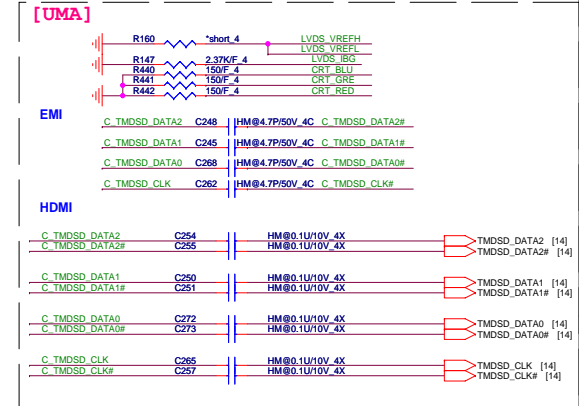
IBEX PEAK-M (HDA,JTAG,SATA)



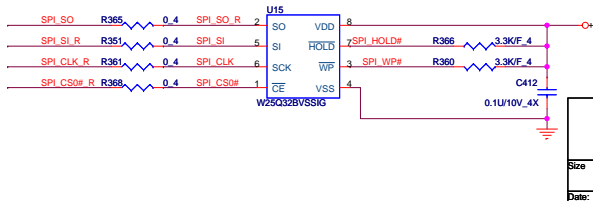
IBEX PEAK-M (LVDS,DDI)



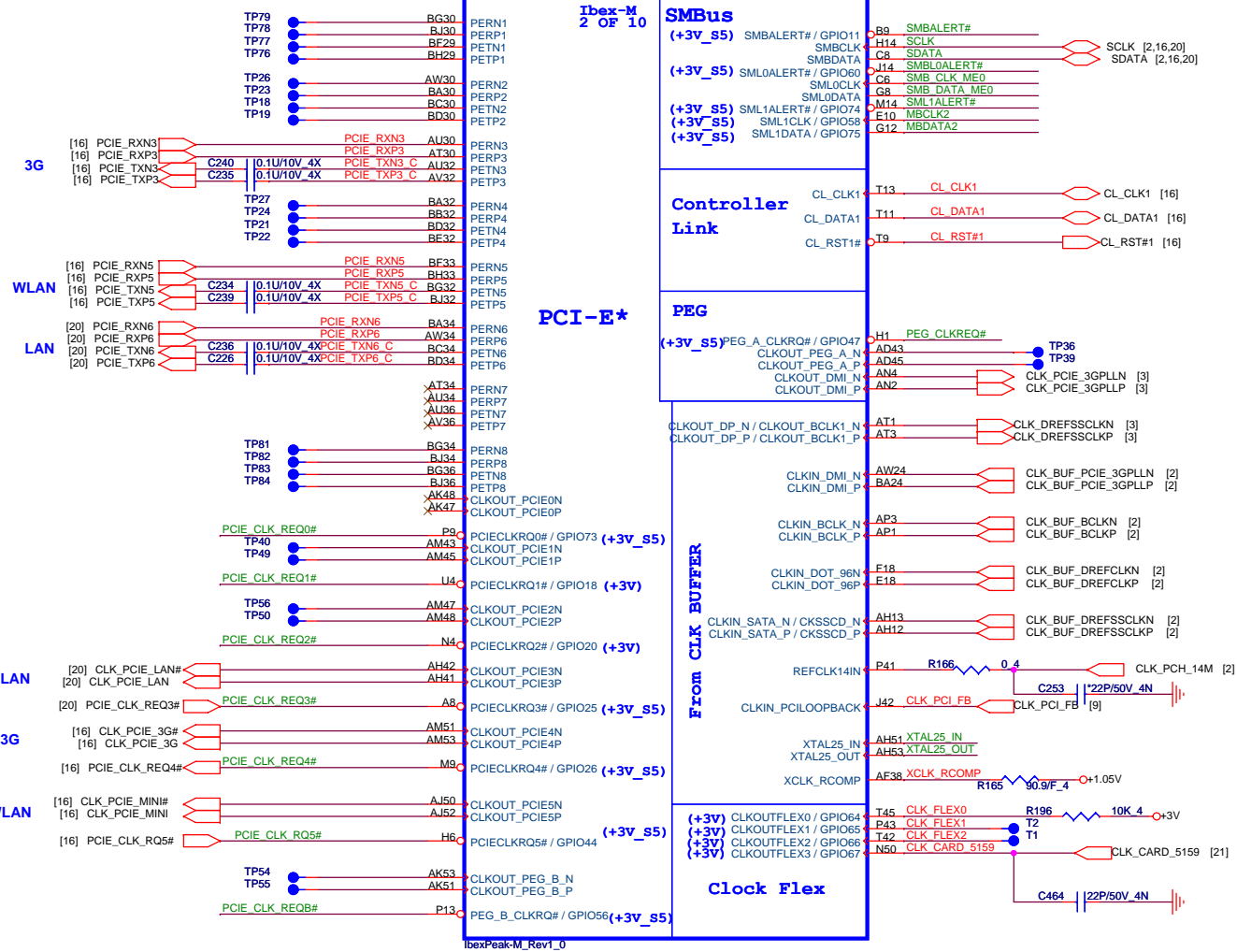
Port	Strap	How to enable Port?	How to disable Port?
LVDS	L_DDC_DATA	PU to 3.3V with 2.2k+/- 5%	NC
Port B	SDVO_CTRLDATA	PU to 3.3V with 2.2k+/- 5%	NC
Port C	DDPC_CTRLDATA	PU to 3.3V with 2.2k+/- 5%	NC
Port D	DDPD_CTRLDATA	PU to 3.3V with 2.2k+/- 5%	NC
eDP	CFG[4]	PD to GND directly	NC



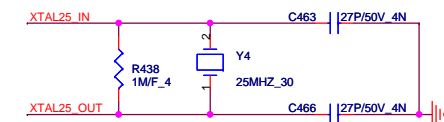
4M byte SPI ROM



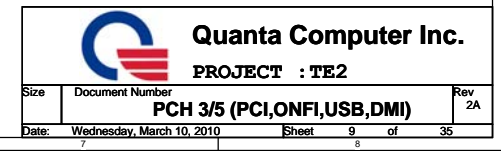
PCH	2MB	4MB	8MB
PM55	●		
HM55		●	
HM57/PM57		●	●
QM57/QS57			●



Placement close

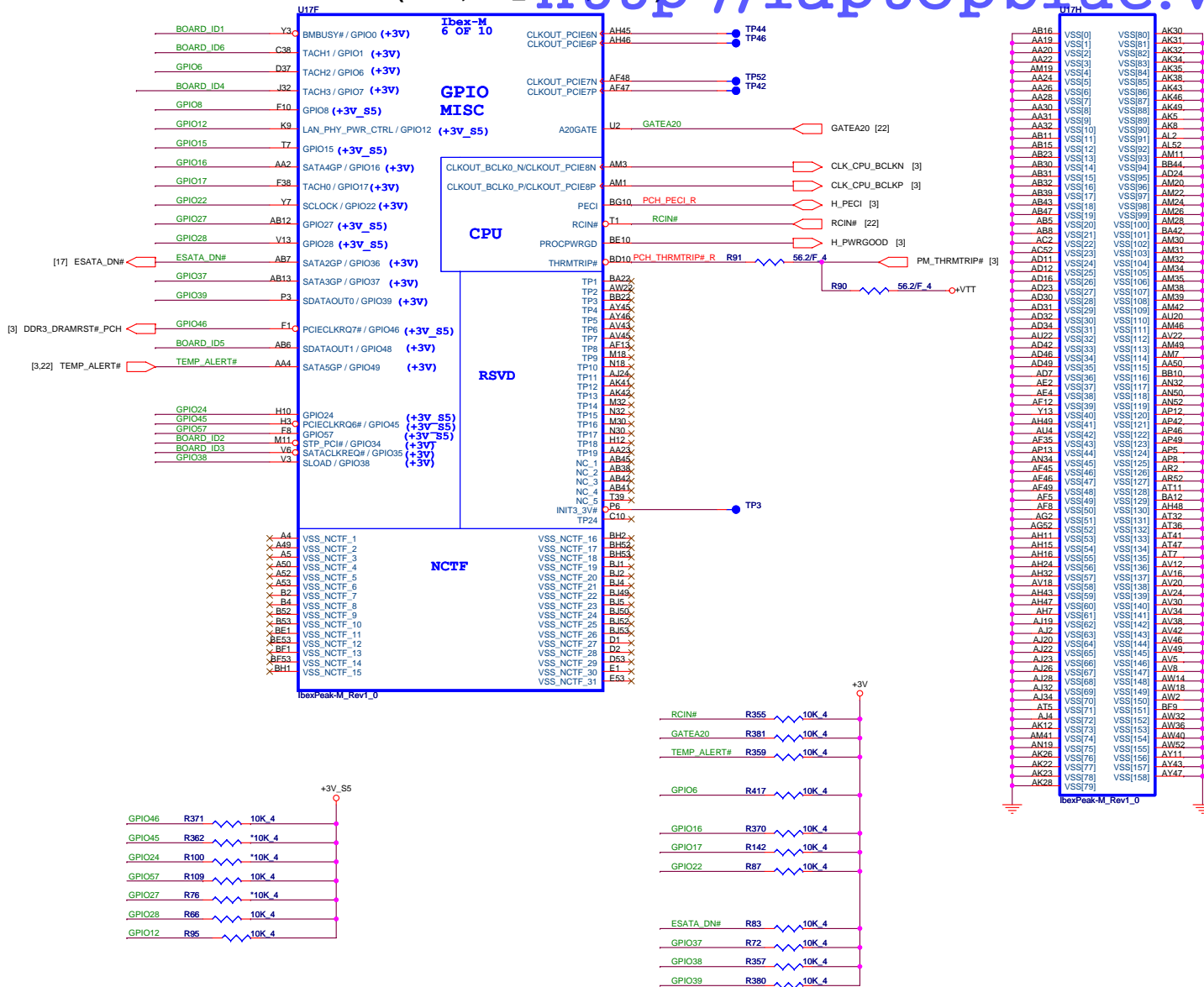






## IBEX PEAK-M (GPIO,VSS\_NCTFRSVD)

## IBEX PEAK-M (GND)



## PCH Strap Pin Configuration Table

## SPKR

[7,19] PCBEEP \*1K/F 4 R364 +3V

0 = Default Mode (Internal weak Pull-down)  
1 = No Reboot Mode with TCO Disabled

GNT3#/  
GPIO55

[9] GNT3# R452 \*10K/F 4

0 = Default Mode (Internal weak Pull-down)  
1 = No Reboot Mode with TCO Disabled

HDA\_DOCK\_EN  
#GPIO33

[7,22] PCH\_GPIO33 R136 10K 4 JP1 1

0 = Top Block Swap Mode  
1 = Default Mode (Internal pull-up)

GNT0#,  
GNT1#

[9] GNT0# R184 \*1K/F 4   
[9] GNT1# R185 \*1K/F 4

Boot BIOS Strap			
PCI_GNT0#	GNT#1	Boot BIOS Location	
0	0	LPC	
0	1	Reserved (NAND)	
1	0	PCI	
1	1	SPI	

## SPI\_MOSI

[7] SPI\_SL\_R R348 \*1K 4 +3V

## NV\_ALE

[9] NV\_ALE R98 \*10K 4 +1.8V

1 = Enabled  
0 = Disabled (Default)

## GPIO8

R81 \*10K 4 +3V\_S5

This signal has a weak internal pull up.  
NOTE: This signal should not be pulled low

## GPIO15

R58 1K 4 +3V\_S5

0 = Intel ME Crypto Transport Layer Security (TLS) cipher suite with no confidentiality  
1 = Intel ME Crypto Transport Layer Security (TLS) cipher suite with confidentiality

## GPIO27

R79 \*10K 4

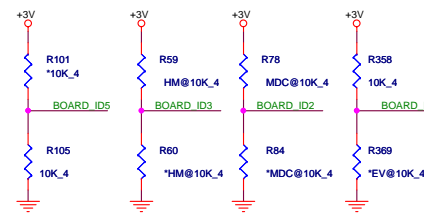
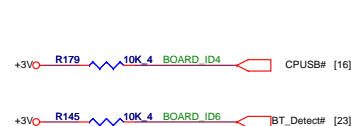
0 = Disables the VccVRM. Need to use on-board filter circuits for analog rails.  
1 = Enables the internal VccVRM to have a clean supply for analog rails.  
No need to use on-board filter circuit.  
This signal has a weak internal pull-up.

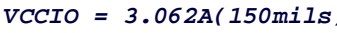
**Quanta Computer Inc.**  
PROJECT : TE2

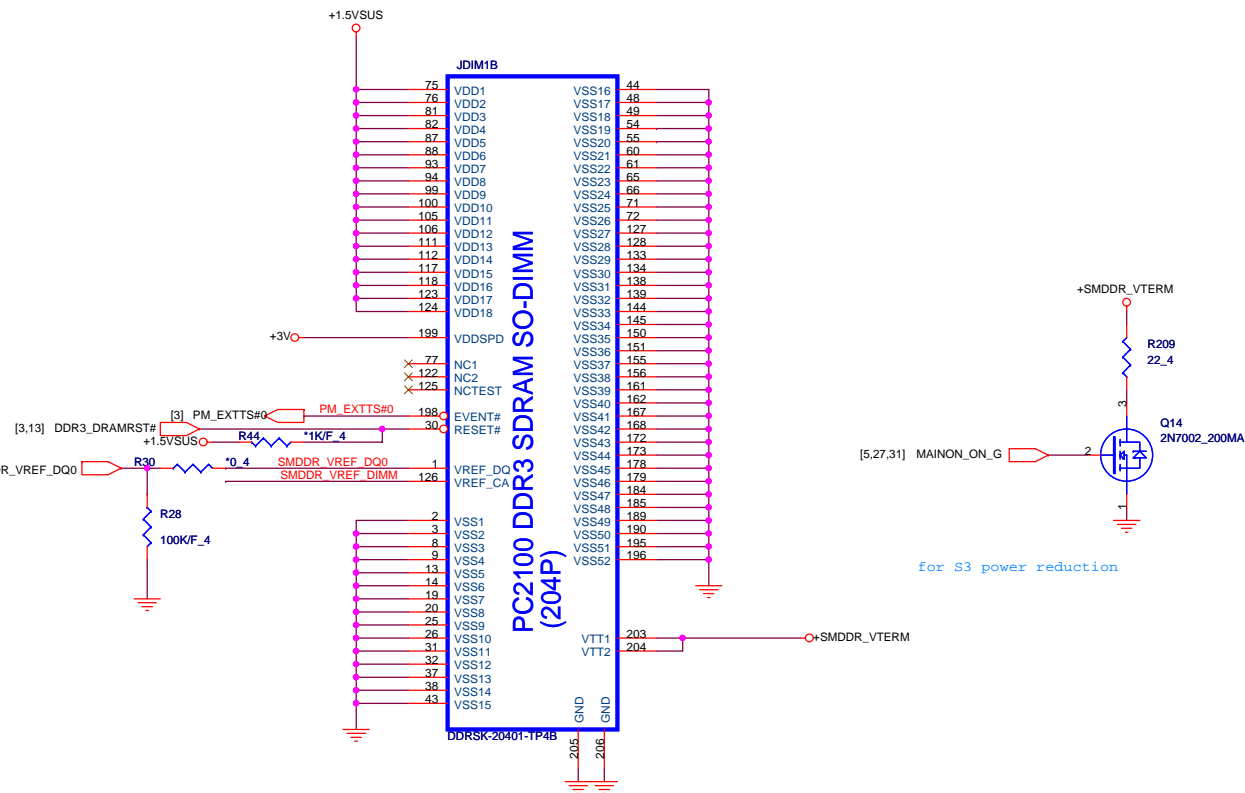
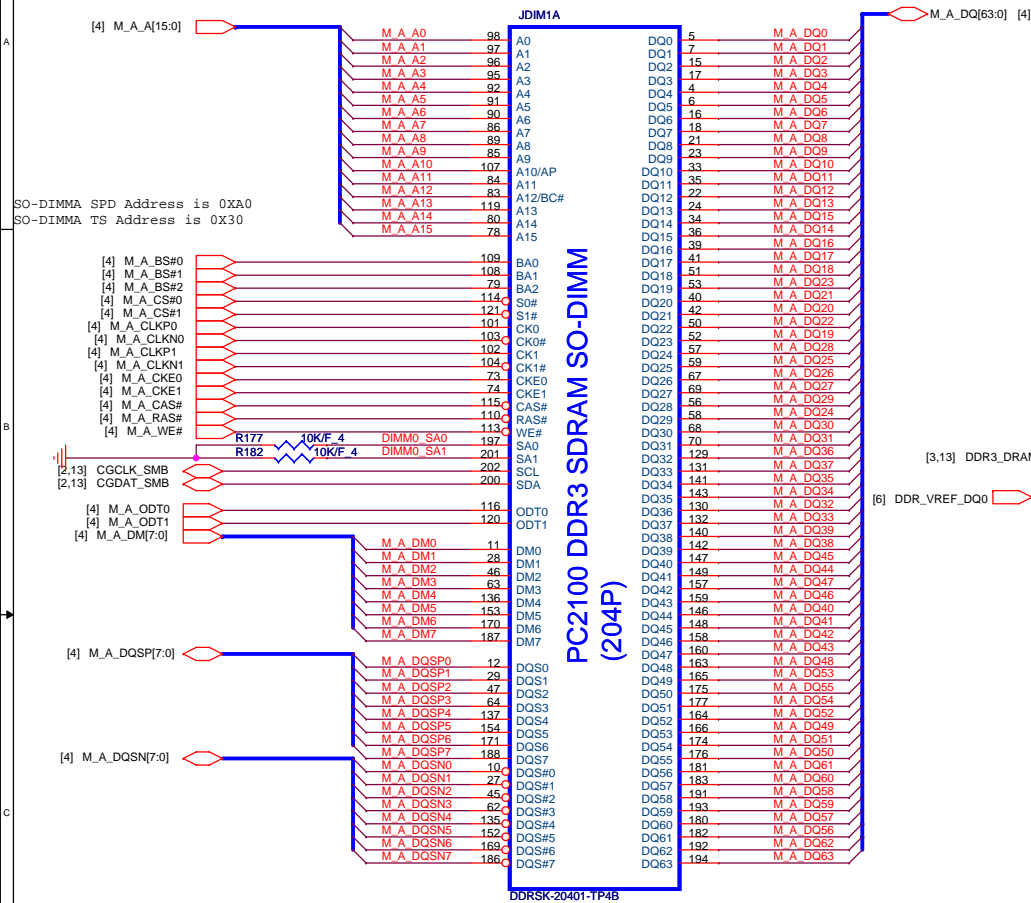
Size	Document Number	Rev
	<b>PCH 4/5 (GPIO &amp; Strap)</b>	2A
Date:	Wednesday, March 10, 2010	Sheet 10 of 35

## BOARD ID SETTING

Board ID	ID1	ID2	ID3	ID4	ID5	ID6
UMA SKU	H					
VGA SKU	L					
W/ MDC		H				
W/O MDC		L				
W/ HDMI			H			
W/O HDMI			L			
W/O 3G				H		
W/ 3G				L		
15"					H	
14"					L	
W/O BT						H
W/ BT						L

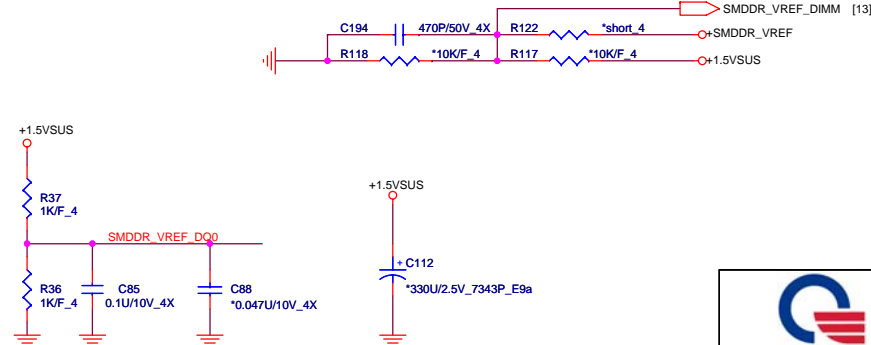
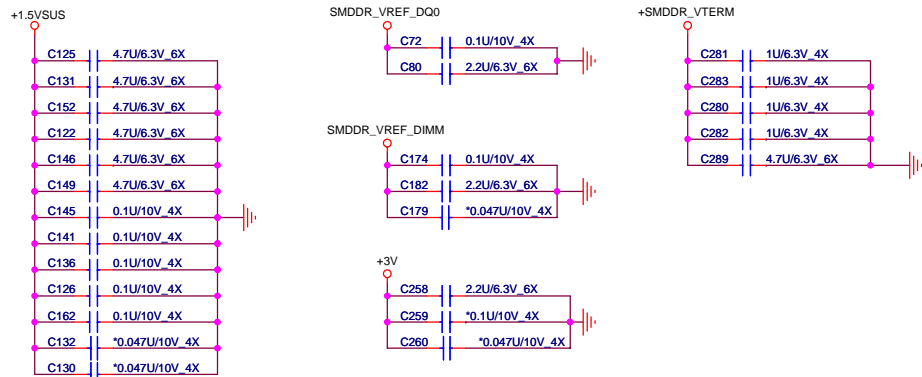


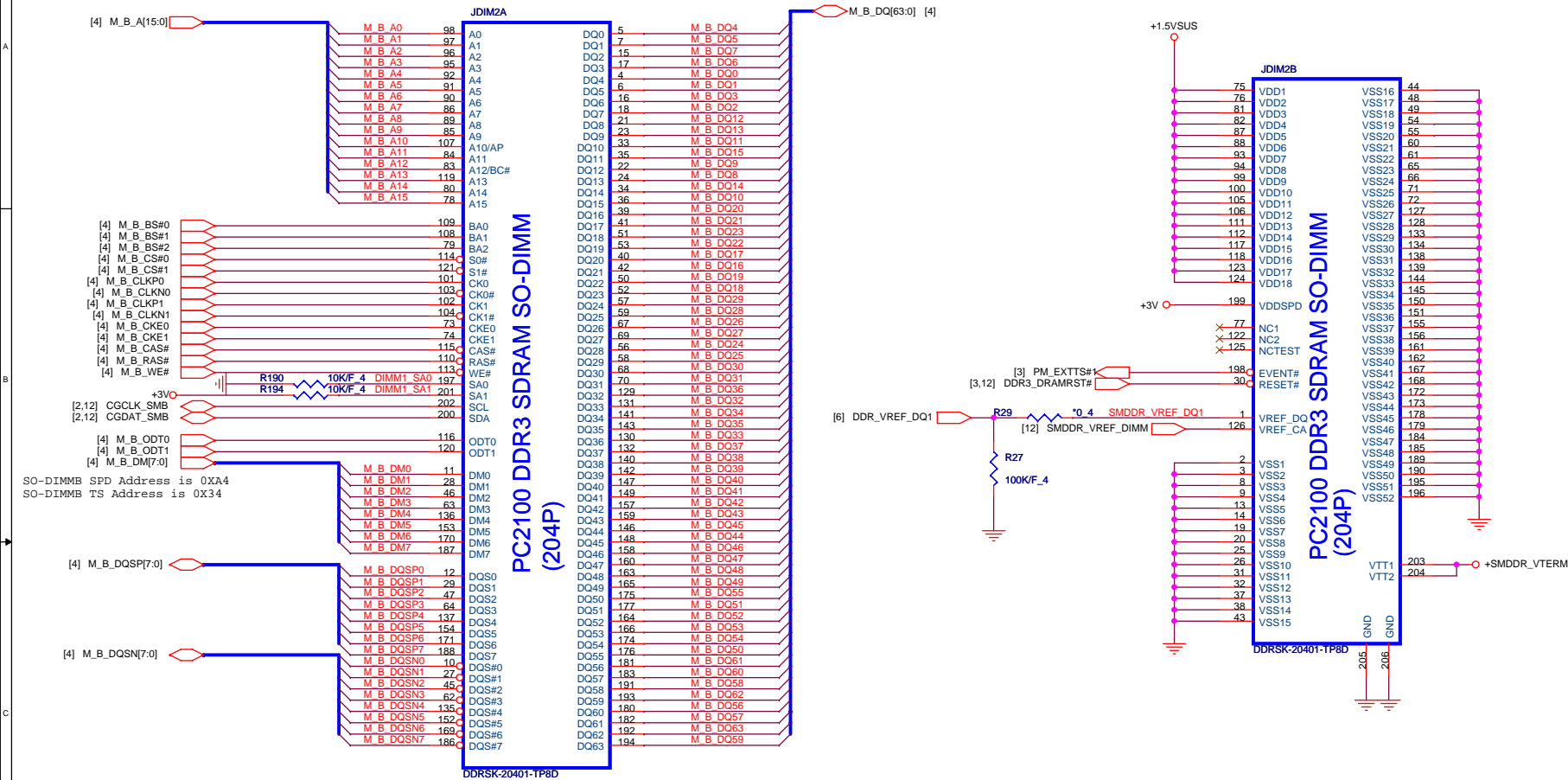




***Place these Caps near So-Dimm0.***

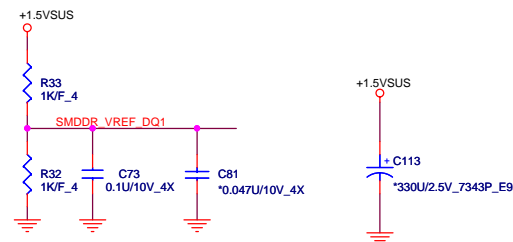
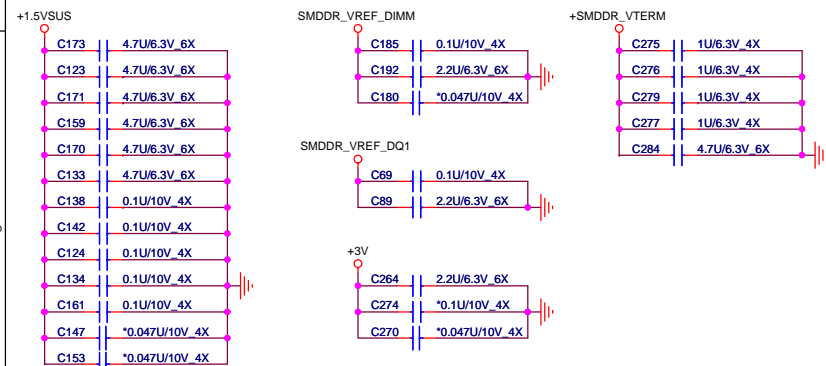
Some Projects replace 10UF 0805 by 4.7UF 0603  
It can cost down 30%





### Place these Caps near So-Dimm1.

Some Projects replace 10UF 0805 by 4.7UF 0603  
It can cost down 30%



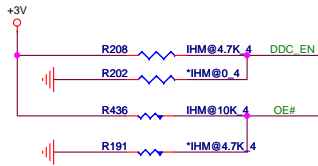
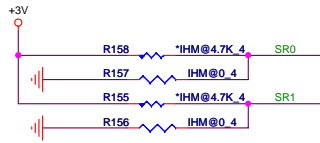
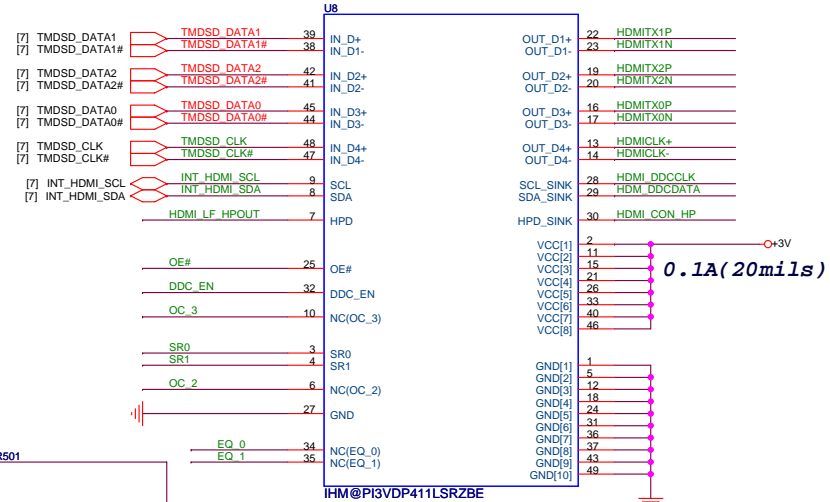
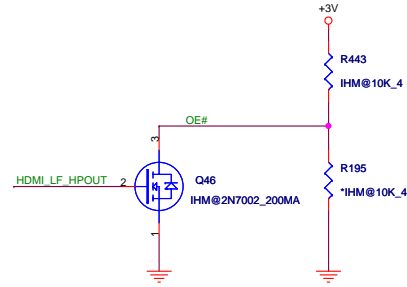
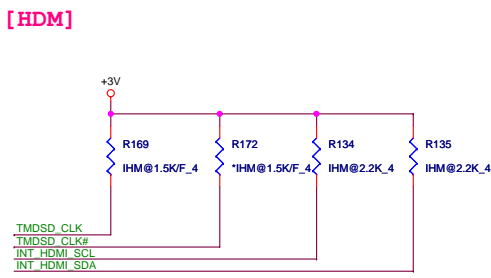


# HDMI Conn

## HDMI Level Shift UMA only

[HDM]

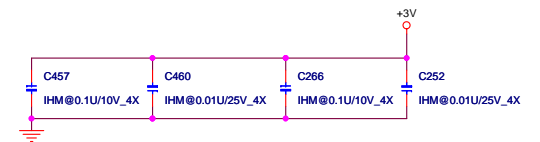
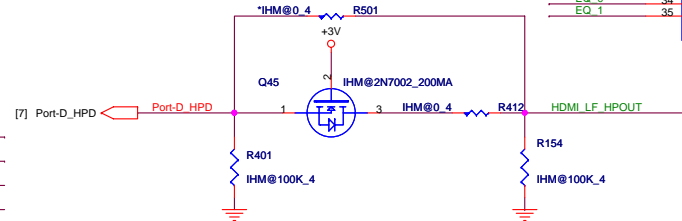
<http://laptopblue.vn/>



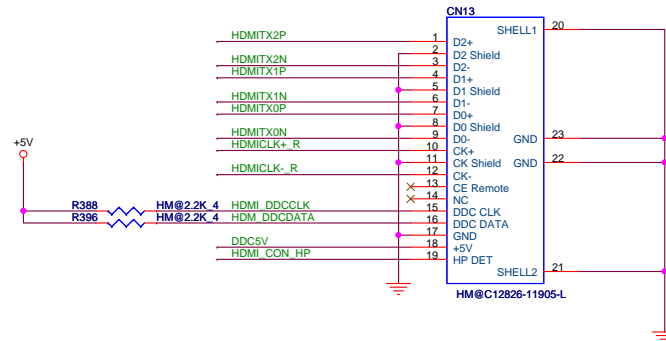
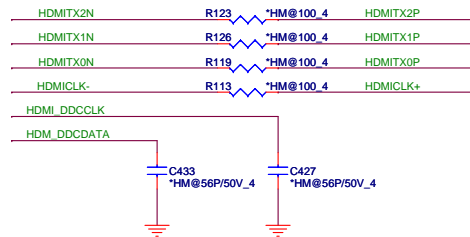
### Slew Rate Control Function

SR1	SR0	Rise/Fall Time
1	1	140ps
1	0	130ps
0	1	120ps
0	0	110ps

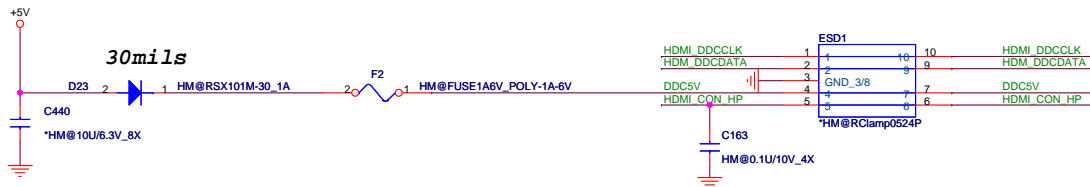
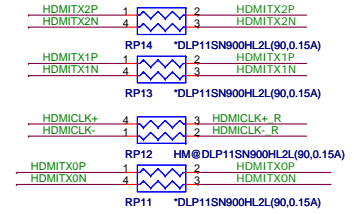
### Reserve



### For EMI close to connector



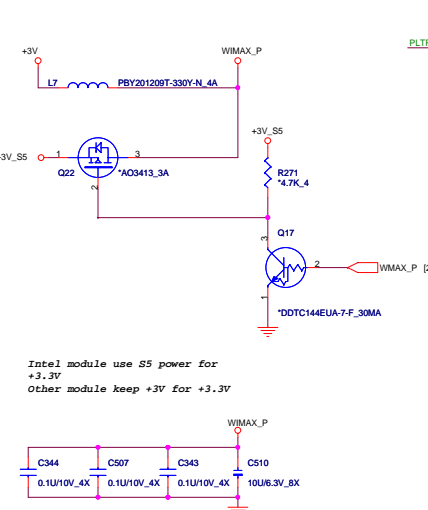
### Close to HDMI CONN



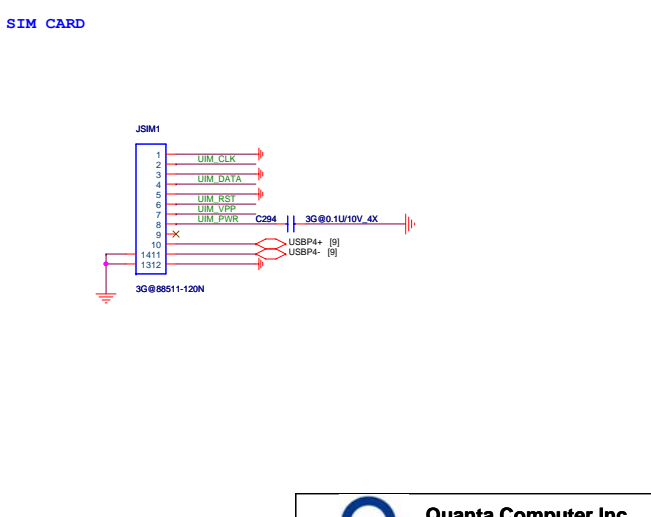
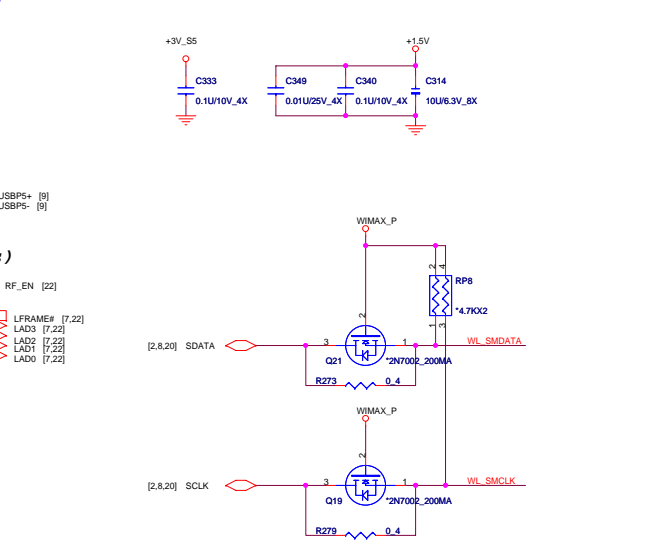
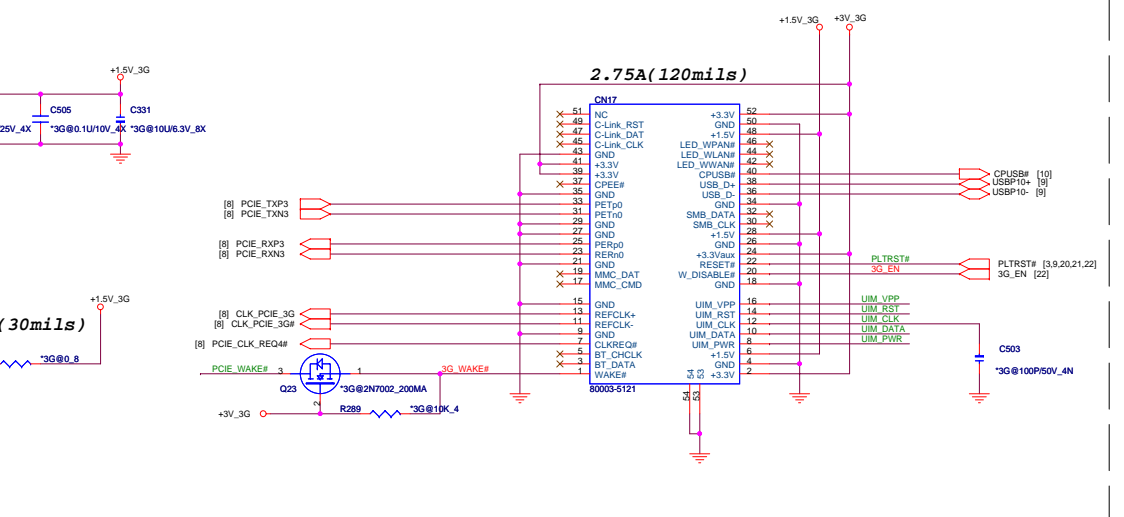
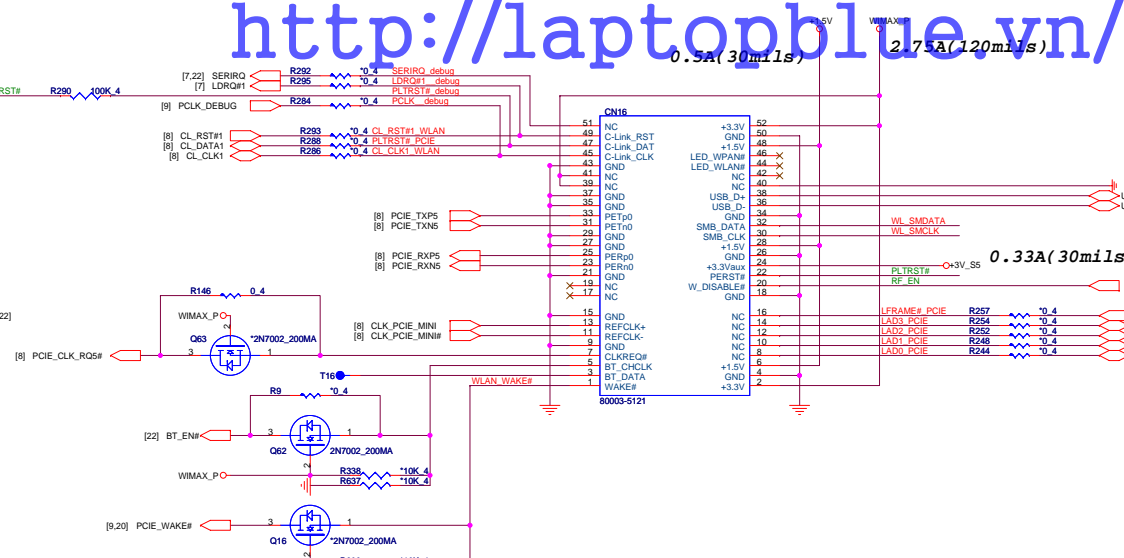
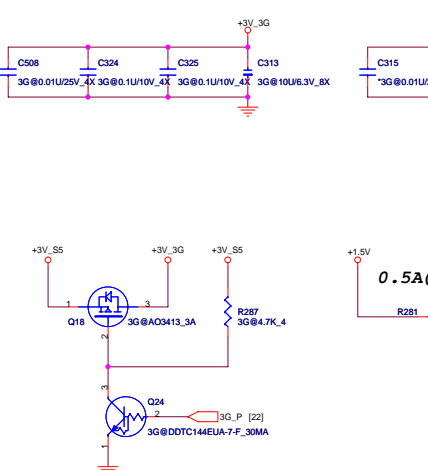




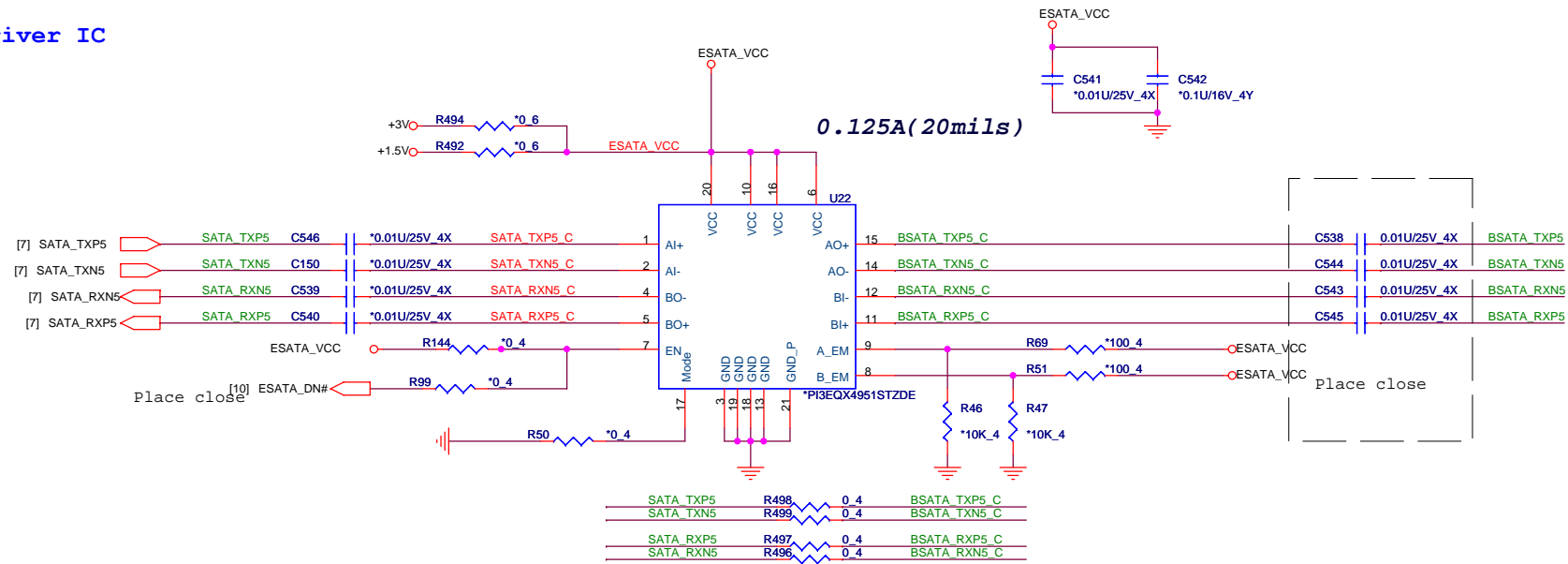
MINI Card Slot#1  
(WiFi) [WLN]



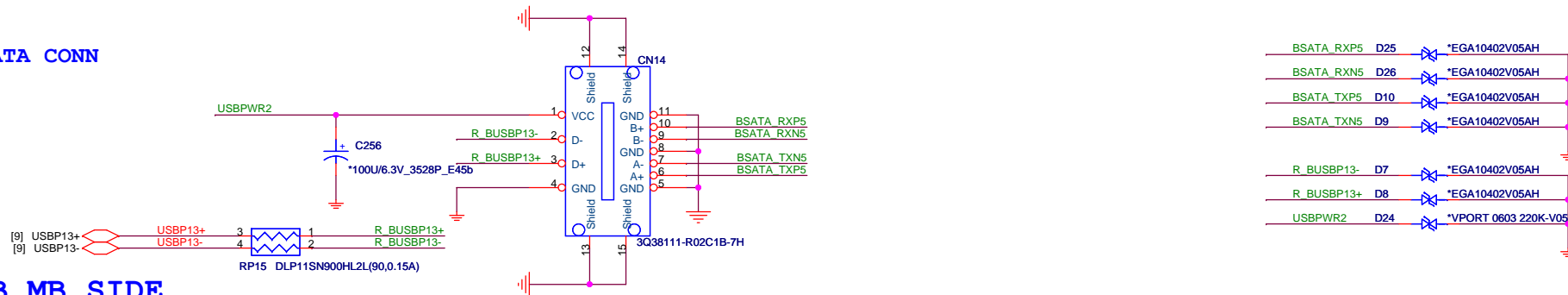
MINI Card Slot#2  
3G [M3G]



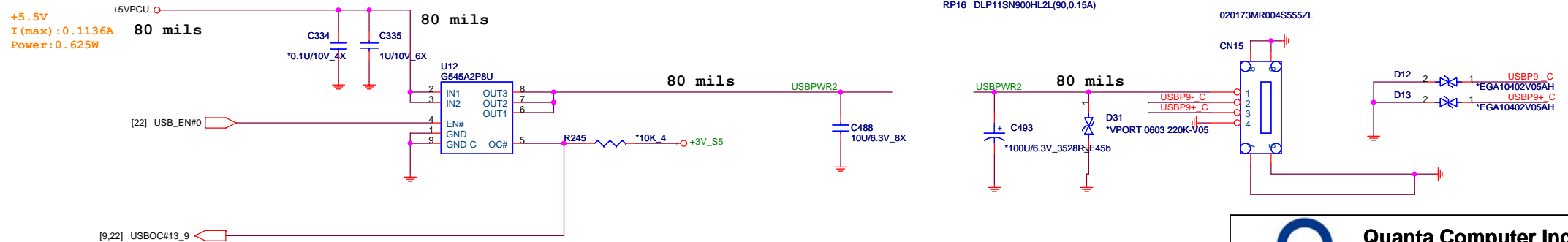
## SATA HDD Re-driver IC

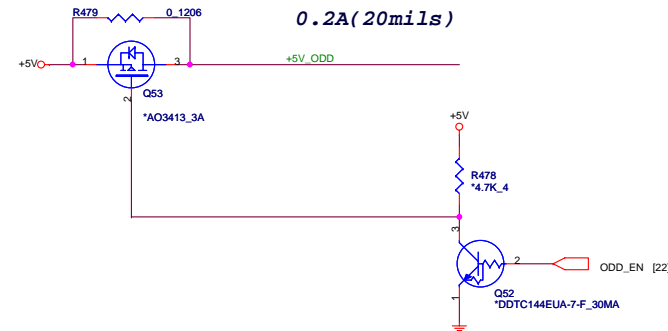


## ESATA CONN



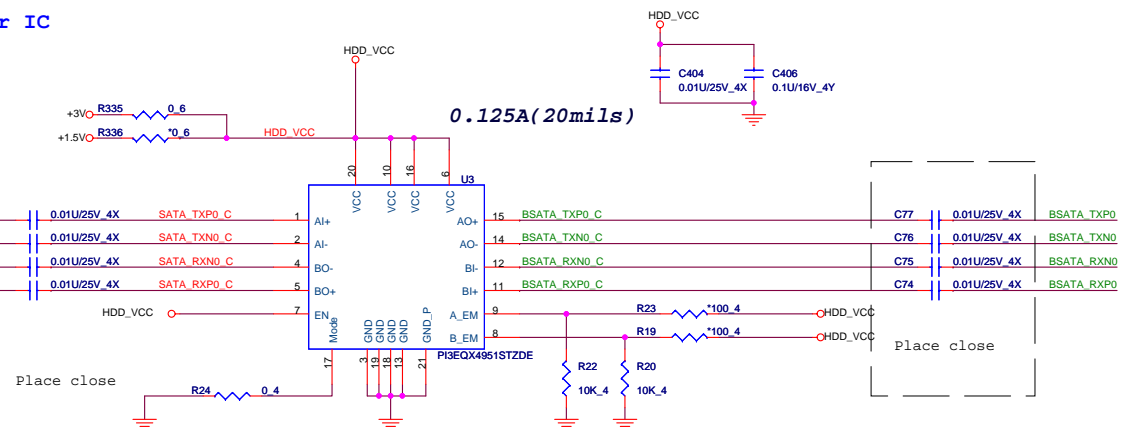
## USB MB SIDE

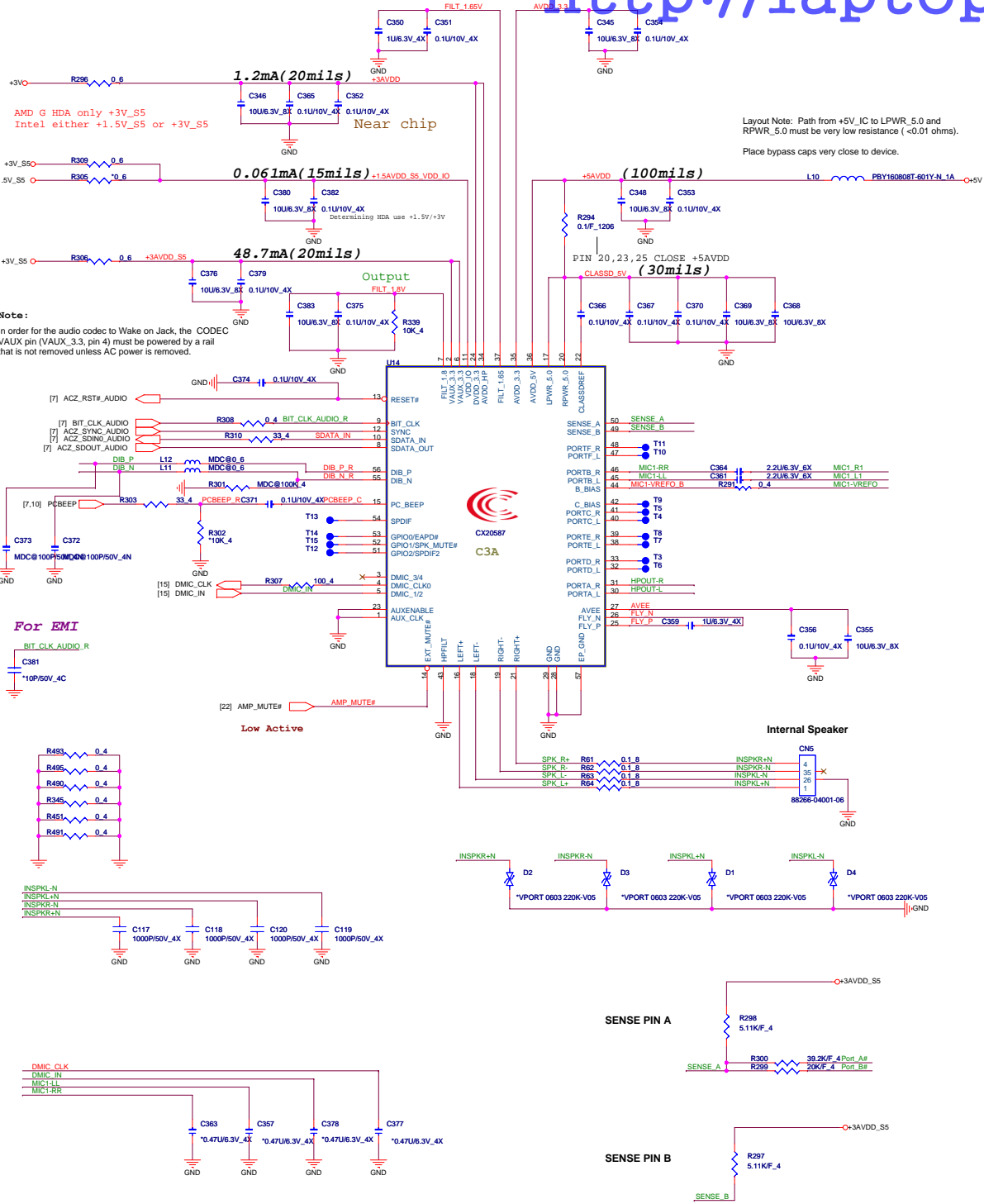




[HDD]

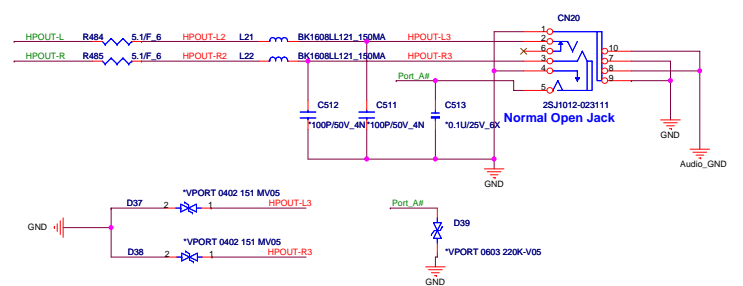
## ESATA Re-driver Bypass



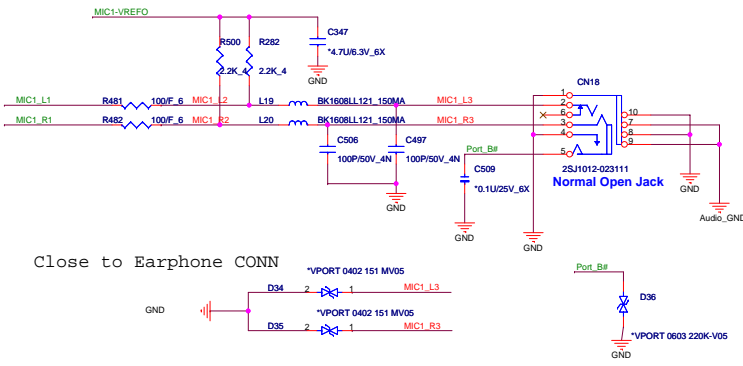


<http://laptopblue.vn/>

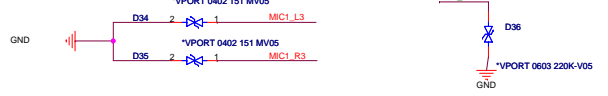
Earphone



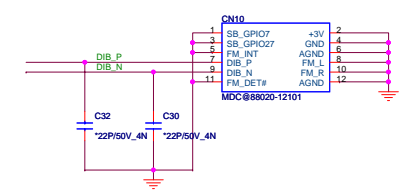
External MIC



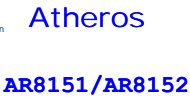
Close to Earphone CONN




MDC

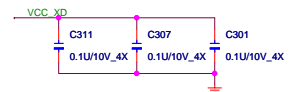
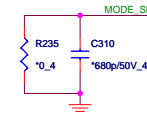
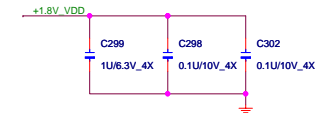
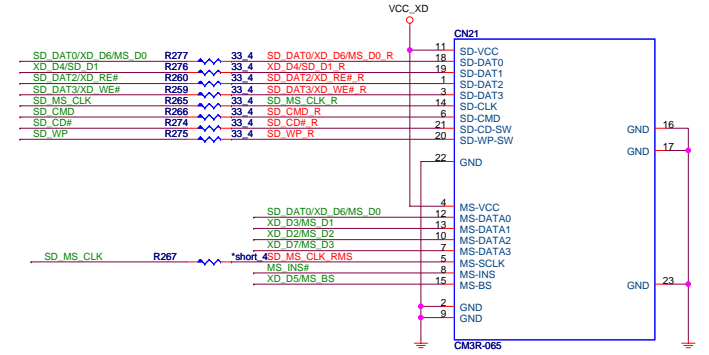


http://laptopblue.vn/



 <b>Quanta Computer Inc.</b> <b>PROJECT : TE2</b>	
Size	Document Number <b>Atheros Lan</b>
Date: Wednesday, March 10, 2010	Sheet 20 of 35 Rev 2

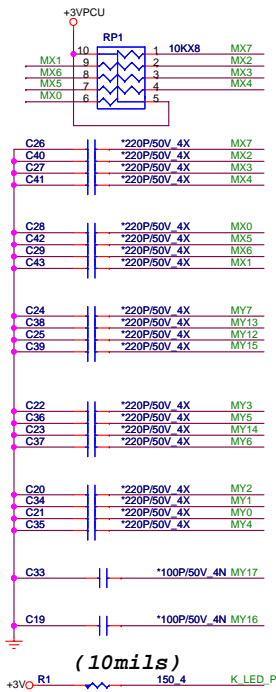




	R49	C73	Power mode
RTS 5159	0-ohm	NC	USB Auto De-link mode:

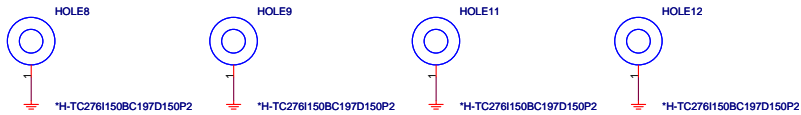


# INT Keyboard [KBC]

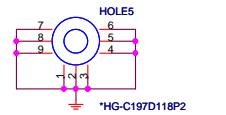


## HOLE

### CPU



### MDC

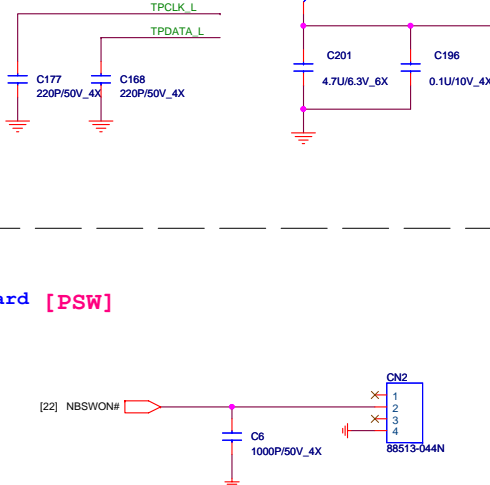


### MINI CARD

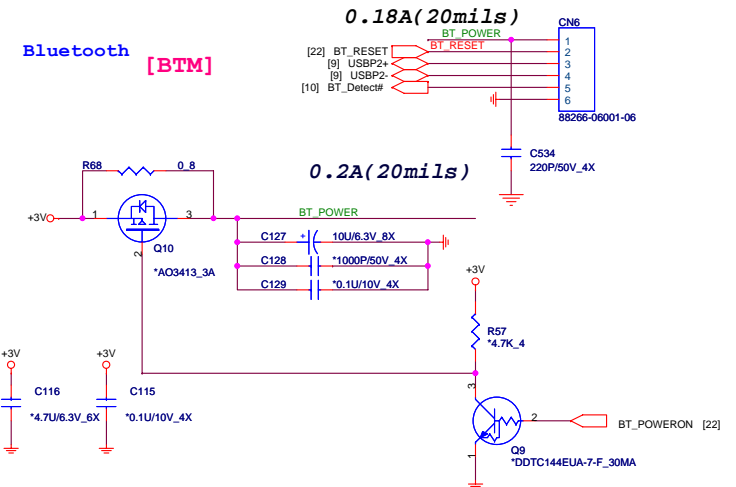


<http://laptopblue.vn/>

## Power board [PSW]



## Bluetooth [BTM]



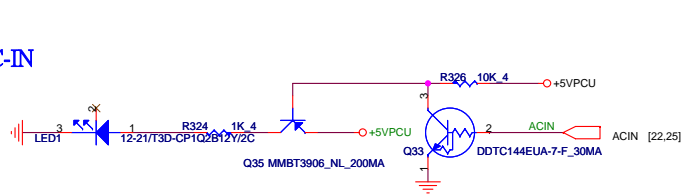
## HDD&ODD



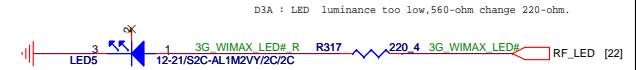
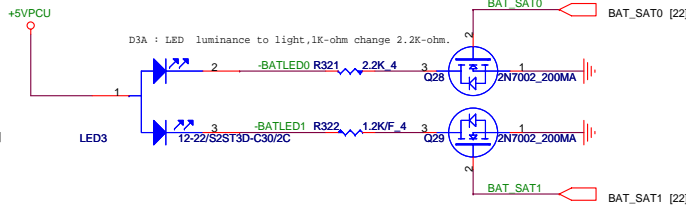
Quanta Computer Inc.

PROJECT : TE2

## AC-IN

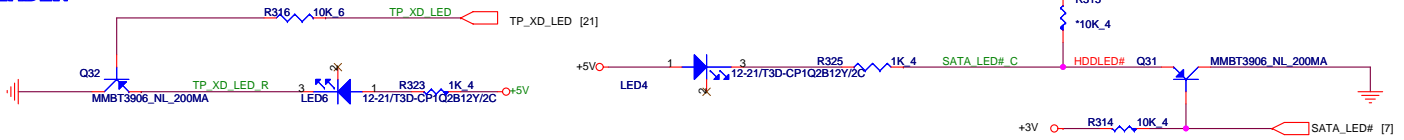
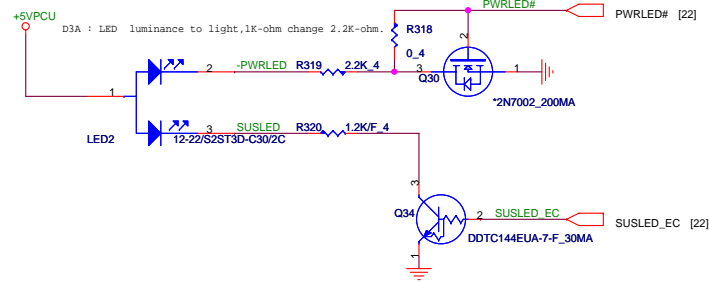


http://laptopblue.vn/



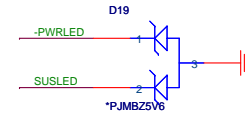
## HDD/ODD

## CARDREADER

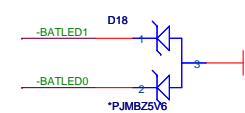


ESD Protect

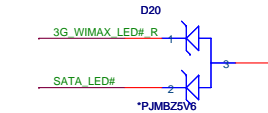
FOR POWER LED



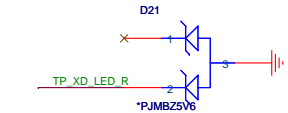
FOR BATTERY LED



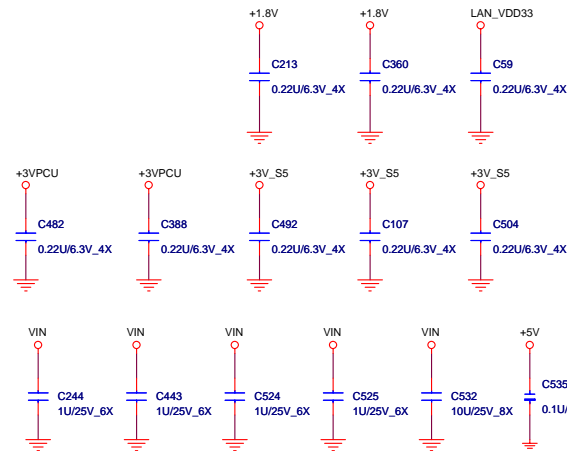
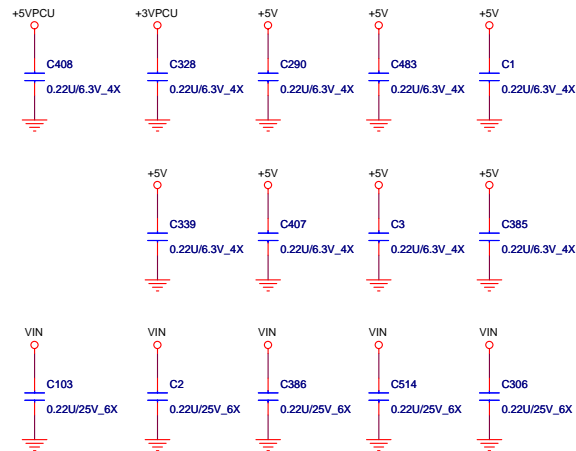
FOR HDD/W-LAN LED



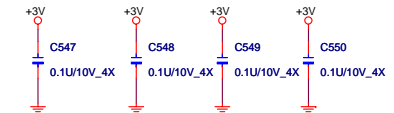
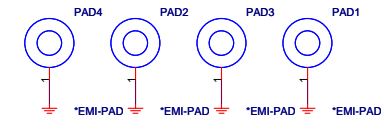
FOR 3G/CARDREADER LED



## EMI



## EMI PAD



D3A : Add C547,C548,C549,C550 0.1u Cap for EMI issue.



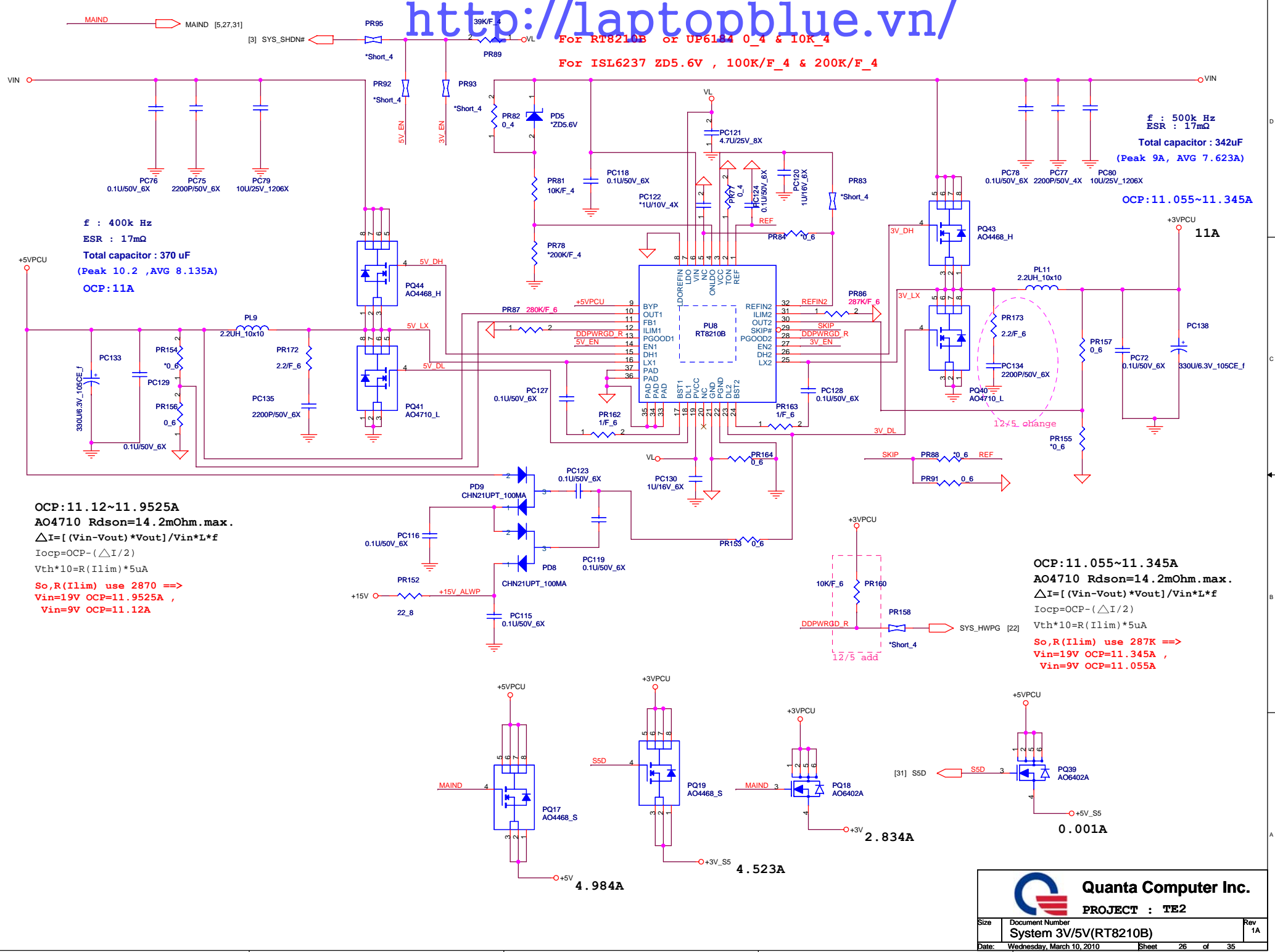
**Quanta Computer Inc.**

**PROJECT : TE2**

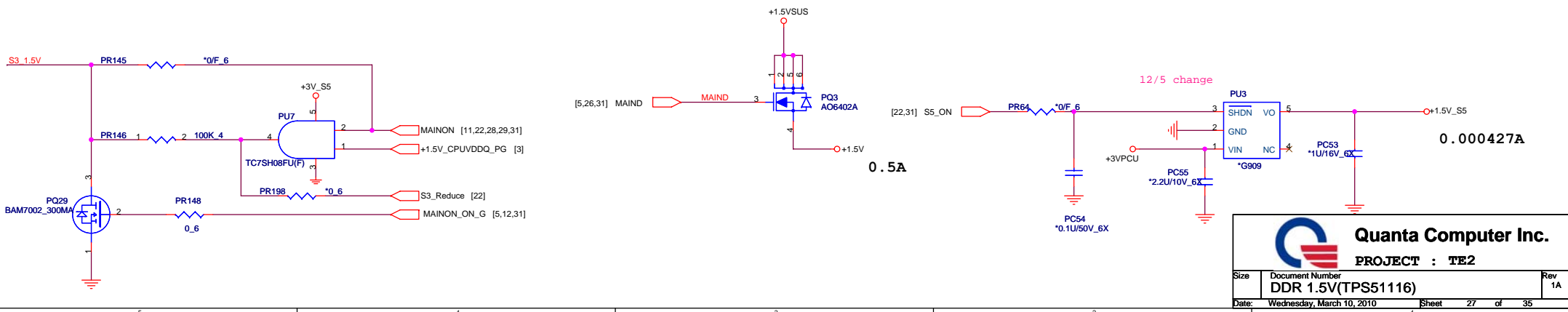
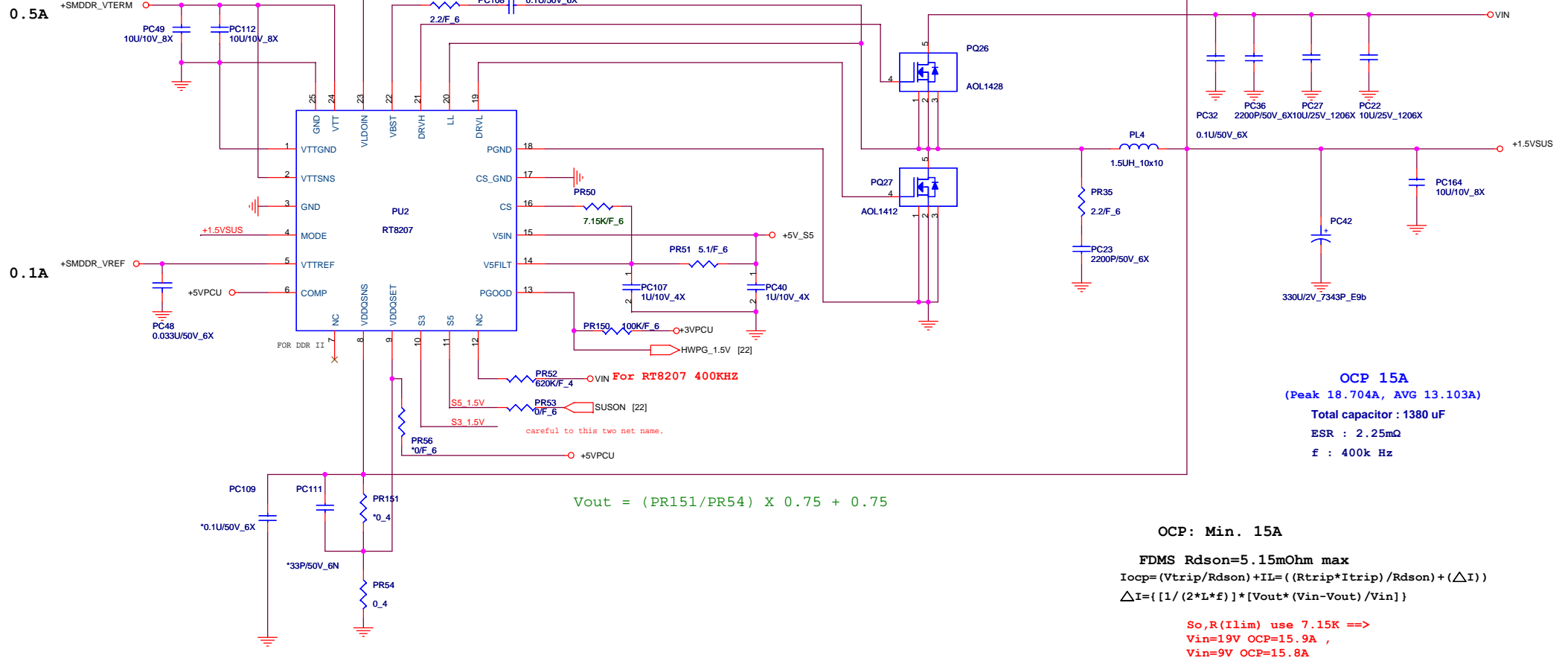
Size	Document Number <b>LED/HOLE</b>	Rev 2A
Date:	Wednesday, March 10, 2010	Sheet 24 of 35

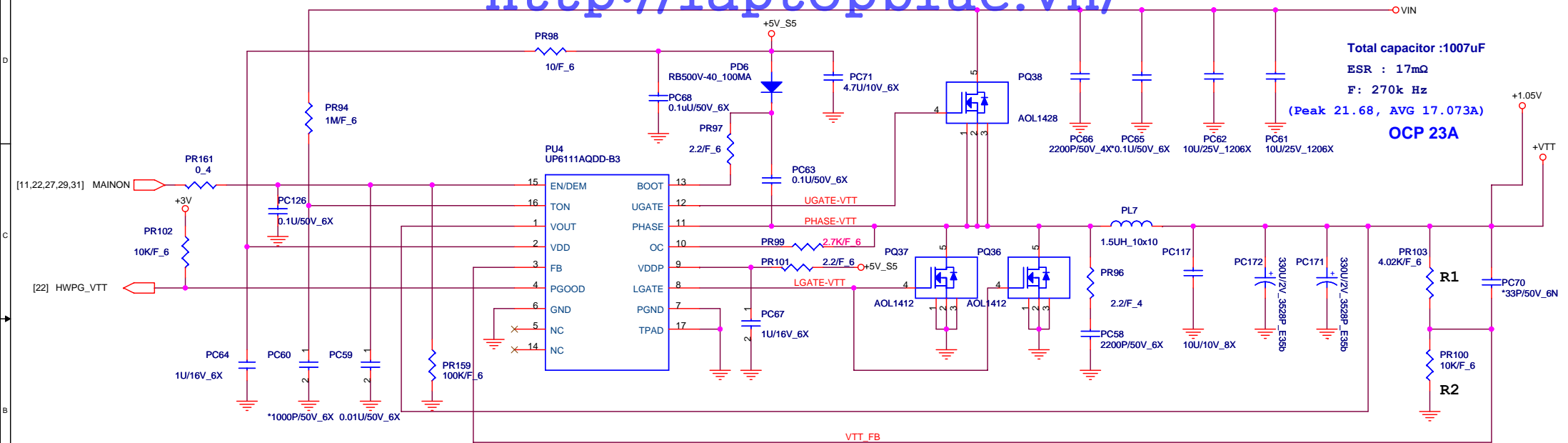


Size	Document Number <b>Charger (ISL88731)</b>	Rev <b>1A</b>
Date:	Wednesday, March 10, 2010	Sheet 25 of 35









Total capacitor :1007uF  
ESR : 17mΩ  
F: 270k Hz  
(Peak 21.68, AVG 17.073A)  
**OCP 23A**

$$V_{OUT} = (1 + R1/R2) * 0.75$$

OCP:23.18~23.27A

FDMS0310  $R_{dson} = 5.15m\Omega$  max

$$I_{ocp} = (V_{trip}/R_{dson}) + I_L = (R_{trip} * I_{trip})/R_{dson} + (\Delta I)$$

$$\Delta I = \left[ \frac{1}{2 * L * f} \right] * [V_{out} * (V_{in} - V_{out}) / V_{in}]$$

$$R_{dson} * OCP = R_{Ilim} * 20uA$$

So,  $R(I_{lim})$  use 2.7K ==>

$V_{in} = 19V$  OCP=23.18A ,

$V_{in} = 9V$  OCP=23.27A

$$TON = 3.85p * R_{TON} * V_{out} / (V_{in} - 0.5)$$

$$Frequency = V_{out} / (V_{in} * TON)$$

$$TON = 3.85p * 1M * 1 / (V_{in} - 0.5)$$

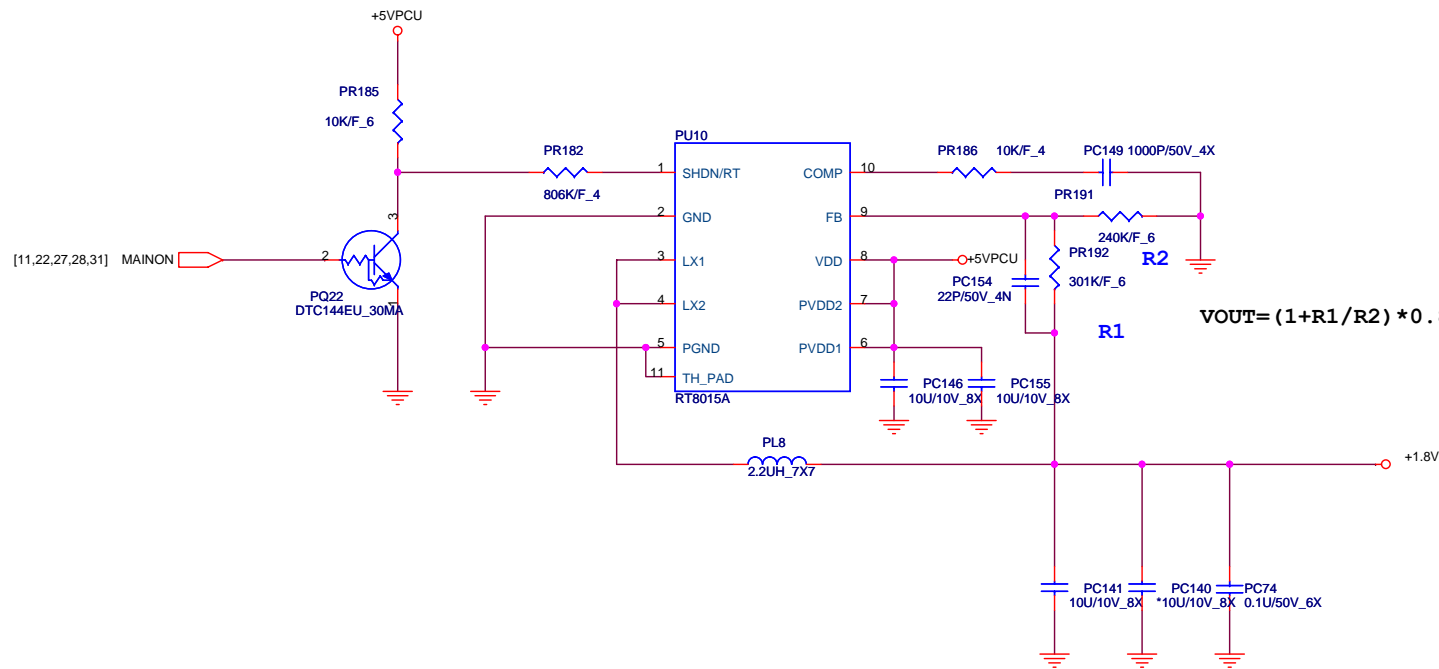
$$Frequency = 1 / (0.0036767) = 272K$$



**Quanta Computer Inc.**

**PROJECT : TE2**

Size	Document Number	Rev
	<b>+VTT (UP6111A)</b>	1A
Date:	Wednesday, March 10, 2010	Sheet 28 of 35



OCP Fellow IC spec~3.7A

$$V_{OUT} = (1 + R1/R2) * 0.8$$

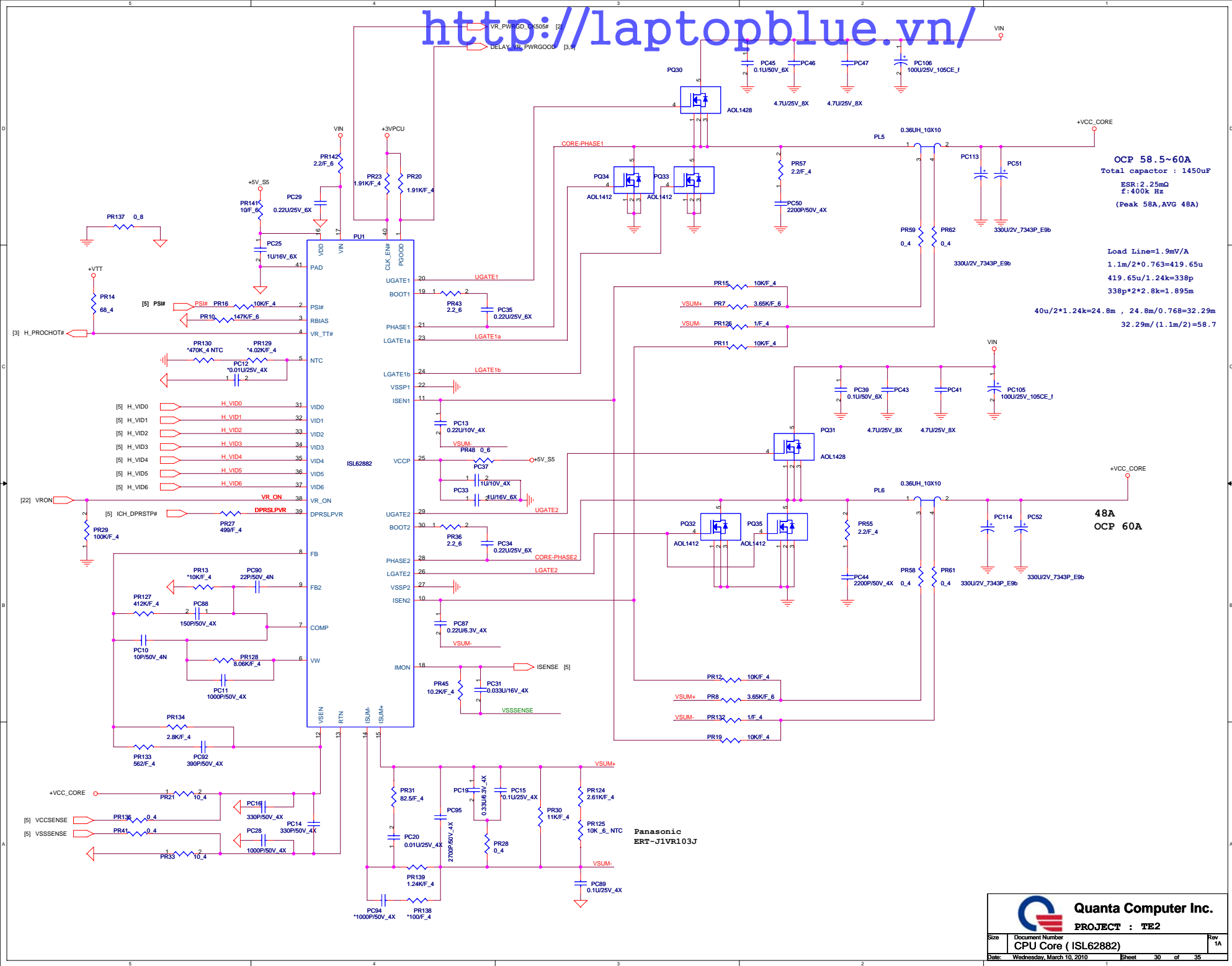
FOR UMA 0.194A  
For VGA 1.345A

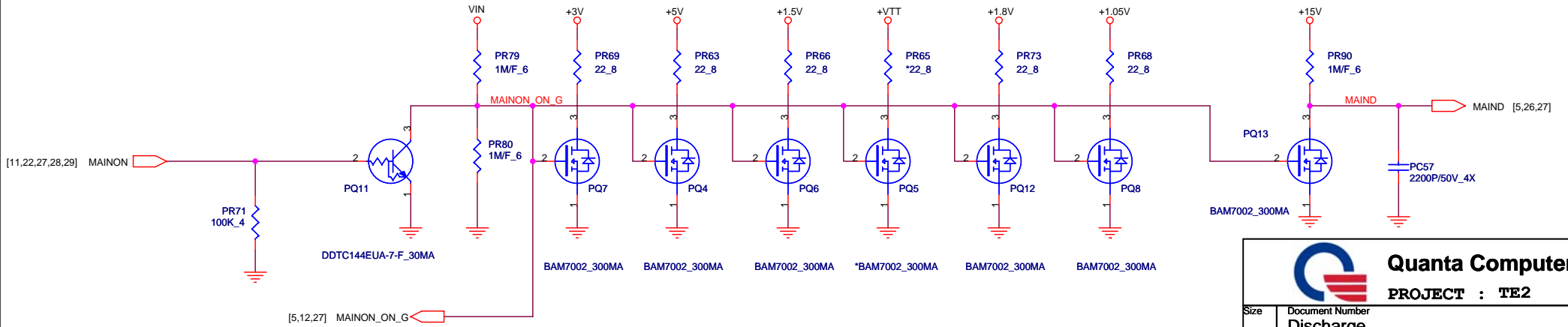
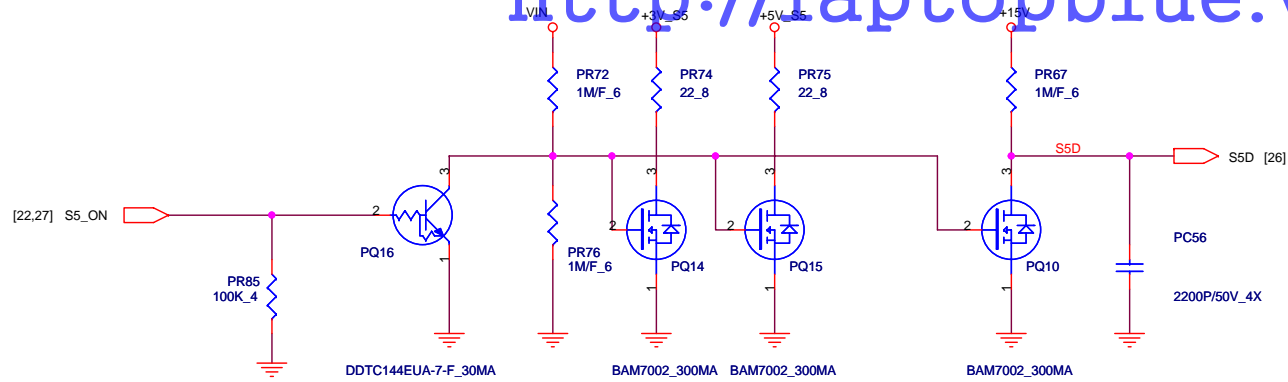



**Quanta Computer Inc.**

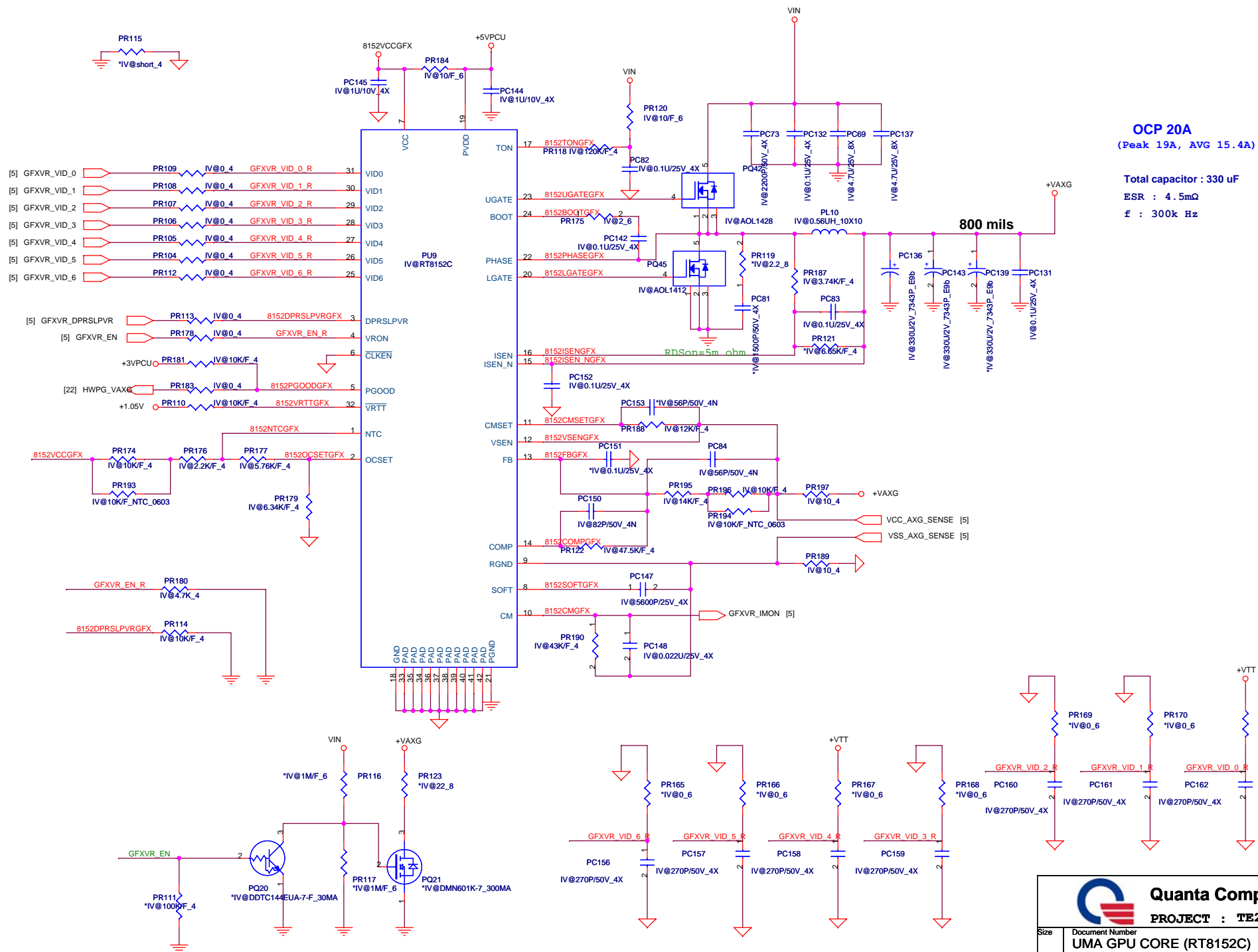
**PROJECT : TE2**

Size	Document Number	Rev
	<b>+1.8V (RT8015A)</b>	1A
Date:	Tuesday, March 09, 2010	Sheet 29 of 35





			<b>Quanta Computer Inc.</b>		
			<b>PROJECT : TE2</b>		
Size	Document Number				Rev
	<b>Discharge</b>				<b>1A</b>
Date:	Wednesday, March 10, 2010			Sheet	31 of 35



**OCP 20A**  
(Peak 19A, AVG 15.4A)

Total capacitor : 330 uF  
ESR : 4.5mΩ  
f : 300k Hz



Table of Contents

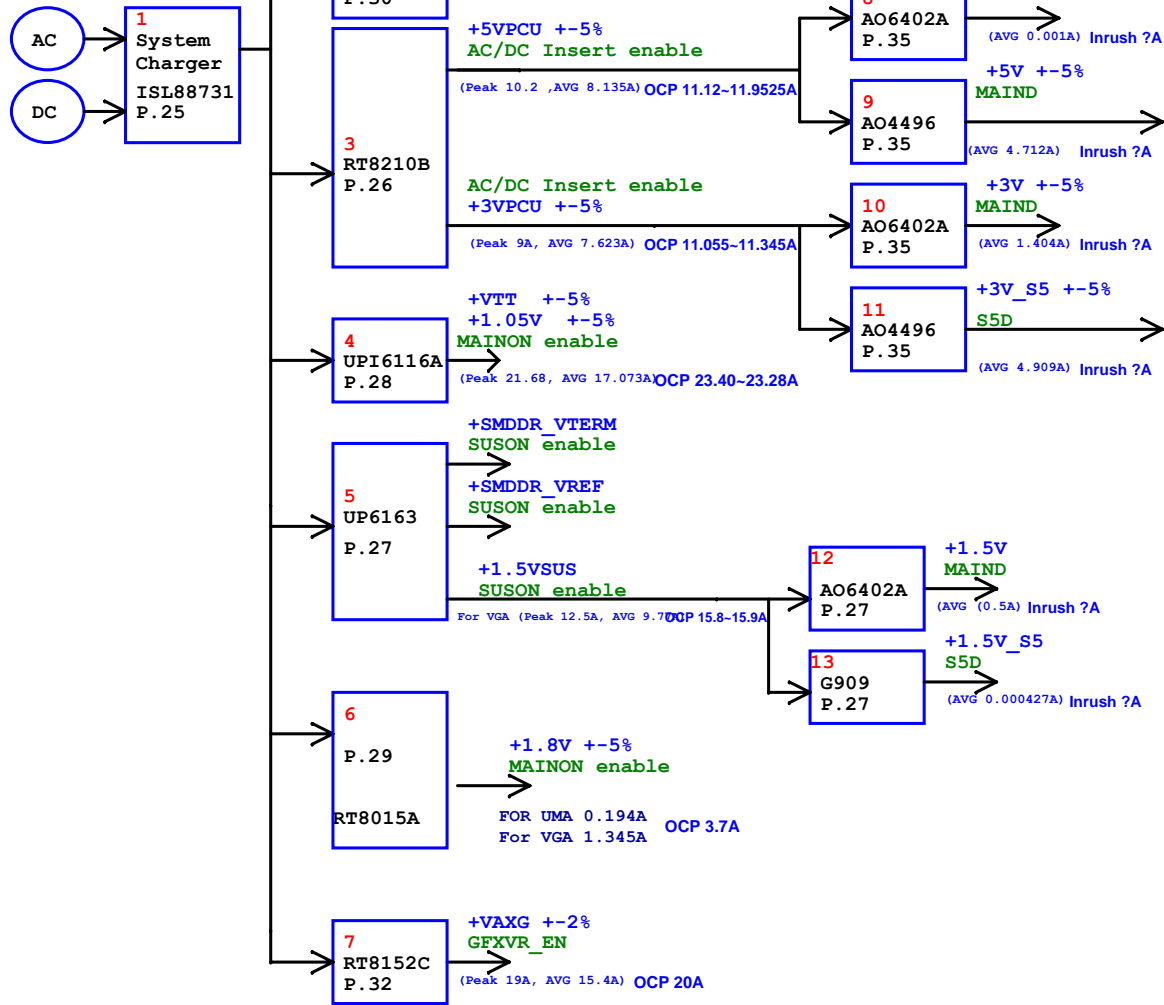
PAGE	DESCRIPTION	BOI-FUNCTIONS
1	Schematic Block Diagram	
2	Front Page	
3	Clock Generator	CLK
4-7	Processor	CPU
8-14	PCH	CLG
9	RTC	RTC
15-16	DDRIII SO-DIMM	DDR
17	VGA Connector	VGA
18	LCD Panel	LDS
	CRT & CRT BUS SWITCH	CRT
	CCD	CCD
	HALL SENSOR&BACK LIGHT SWITCH	HSR
19	Display Port	DPP
20	HDMI comm part	HDM
	HDMI for GM	HMG
21	SATA ODD	ODD
	Main SATA HDD & 2nd SATA HDD	HDD
	G-Sensor	H3D
22	5 IN 1 Card reader	MMC
	IEEE1394	FIW
23	MINI Card (Wi-Fi & WIMAX)	WLN
	MINI Card 2nd	MNC
	MINI Card 3rd	MNC
	TMA Connector	TMA
24	INT KeyBoard & K/B LED Power	KBC
	LED Board	LED
	TP&FP board	TPD,FPD
	Bluetooth Connector	BTM
	Felica Connector	FEC
	MMB Connector	MMB
	Power SW	PSW
	B-CAS Connector	BCS
25	New Card (Express Card)	EXC
	E-SATA comb USB	ESA
	USB Connector	USB
	Audio & USB Board	USB,ADO
	Light Sensor	LSN
	Satellite LED	LED
	RF LED / WIMAX LED / Kill SW	KSW
26	EC WP8763LDG/WPC8769L(O)	KBC
	CIR	CIR
27	Codec (CX20583)	ADO
28	FM Tunner	FMM
	Modem Connector	MDM
	HOLE	
29	Atheros LAN	LAN
30	NVRAM Connecytor	NVR
31	Charger (ISL6251A)	PWM
32	System 5V/3V (ISL6237)	PWM
33	CPU CORE (ISL62882)	PWM

Power States		Power States	
POWER PLANE	VOLTAGE	CONTROL SIGNAL	ACTIVE IN
VIN	10V~+19V		S0~S5
+VCCRTC	+3.0V~+3.3V		S0~S5
+3V	+3.3V	MAIN_ON	S0
+3V_S5	+3.3V	S5_ON	S0~S5
+3V_HDP	+3.3V	MAIN_ON	S0
+3VPCU	+3.3V	AC/DC Insert enable	S0
+5V	+5V	MAIN_ON	S0
+5V_S5	+5V	S5_ON	S0~S5
+5VPCU	+5V	AC/DC Insert enable	S0~S5
+5V_TMA	+5V	MAIN_ON	S0
WIMAX_P	+3.3V	WMAX_P for EC	
+1.8V	+1.8V	MAIN_ON	S0
+1.5V	+1.5V	MAIN_ON	S0
+1.5V_S5	+1.5V	S5_ON	S0~S5
+1.5V_SUS	+1.5V	SUSON	S0~S3
+VCC_CORE		VRON	S0
+VTT	+1.05V~+1.1V	MAIN_ON	S0
+1.05V	+1.05V	MAIN_ON	S0
+VAXG		GFXVR_EN	S0

GND PLANE	PAGE
⏏ GND_SIGNAL	32
⏏ CARD_GND	21
⏏ AGND_DC/DC	31
⏏ GND	ALL

PAGE	DESCRIPTION	BOI-FUNCTIONS
34	VAXG (ISL62881)	PWM
35	+VTT (UP6111A)	PWM
36	+1.05V (UP6111AQDD)	PWM
37	DDR 1.5V (TPS51116)	PWM
38	Discharge (1.5V_S5/1.8V)	PWM
39	Power Tree Table	
40	PCH Power Plane	
41	Power Management	
42	Change List	

Power Tree Table



Power Distribution List

Power	Distribution

Model		REV	CHANGE LIST			MODEL			TE2	
						PAGE	FROM	To		
TE2 MB	B2A	PAGE(16) : Add BT_EN# for combo RF control for BT				1	1A			
		PAGE(27) : Change DDR S3 1.5V ON circuit.				2	1A			
	C3A					3	1A			
						4	1A			
	D3A	PAGE(07) : Add ESATA re-driver IC				5	1A			
						6	1A			
	PAGE(24) : LED luminance to light,R321、R319 1K-ohm change 2.2K-ohm.				7	1A				
	PAGE(24) : LED luminance too low,R317 560-ohm change 220-ohm.				8	1A				
	PAGE(19) : Add R61,R62,R63,R64 0.1-ohm to avoid speaker burn.				9	1A				
	PAGE(16) : Add Q62 to avoid leakage current.				10	1A				
					11	1A				
					12	1A				
					13	1A				
					14	1A				
					15	1A				
					16	1A				
					17	1A				
					18	1A				
					19	1A				
					20	1A				
					21	1A				
					22	1A				
					23	1A				
					24	1A				
					25	1A				
					26	1A				
					27	1A				
					28	1A				
					29	1A				
					30	1A				