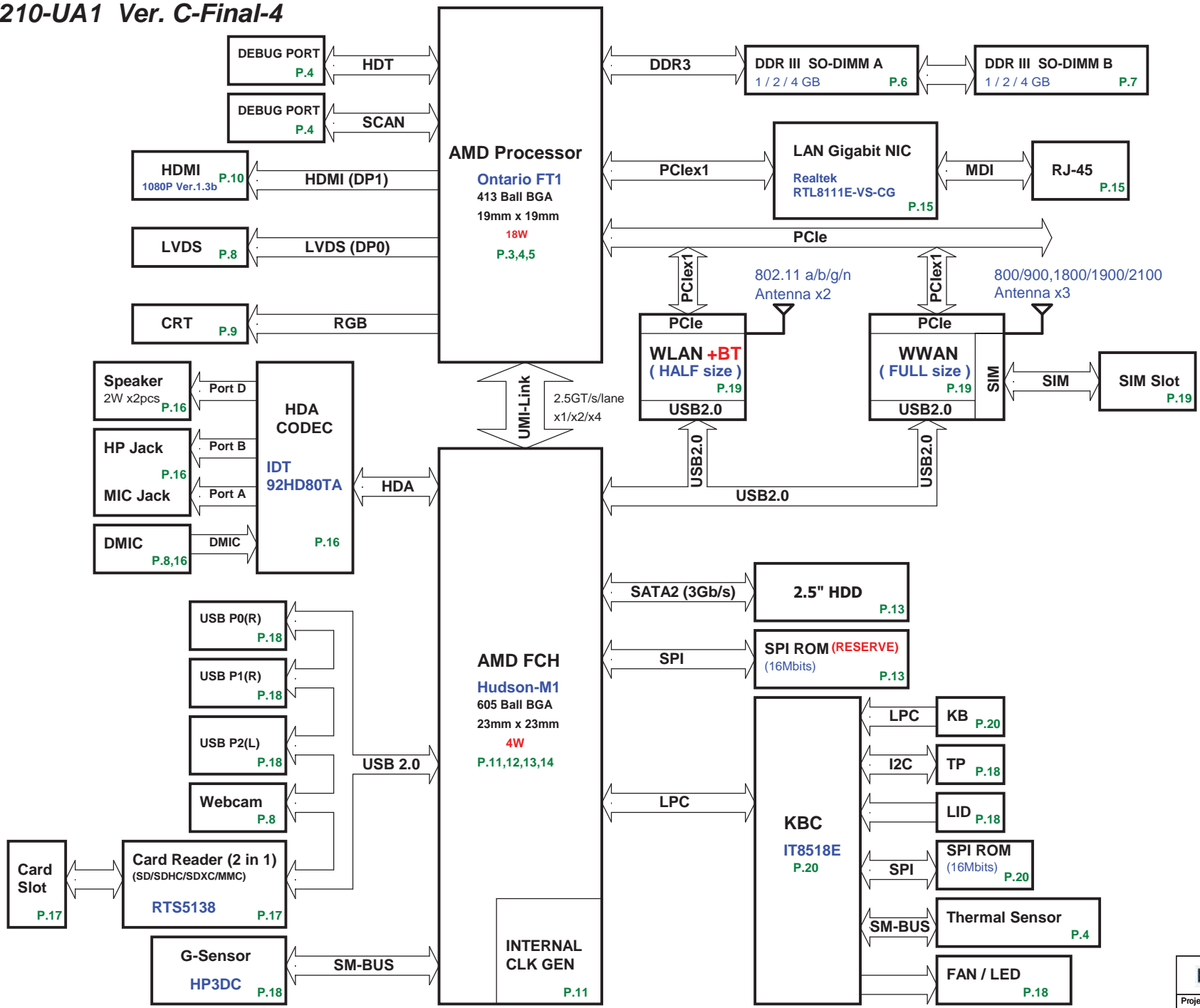


Garbo-Brazos Platform

H210-UA1 Ver. C-Final-4



Charger / B+ BQ24745	P.21
APU-CORE APU-VDDNB ISL6265C	P.22
1.1VS 1.0VS RT8015BGQW*2	P.24
1.5V 0.75VS-VTT RT8209AGQW G2997BF61U	P.23
5V 3.3VSTBY RT8205EGQW(2)	P.25
5VS / 3.3VS / 1.5VS 3.3V-LAN 3.3V-DUAL 1.1V-DUAL/1.1V-USB 3.3-USB 1.8VS	P.26

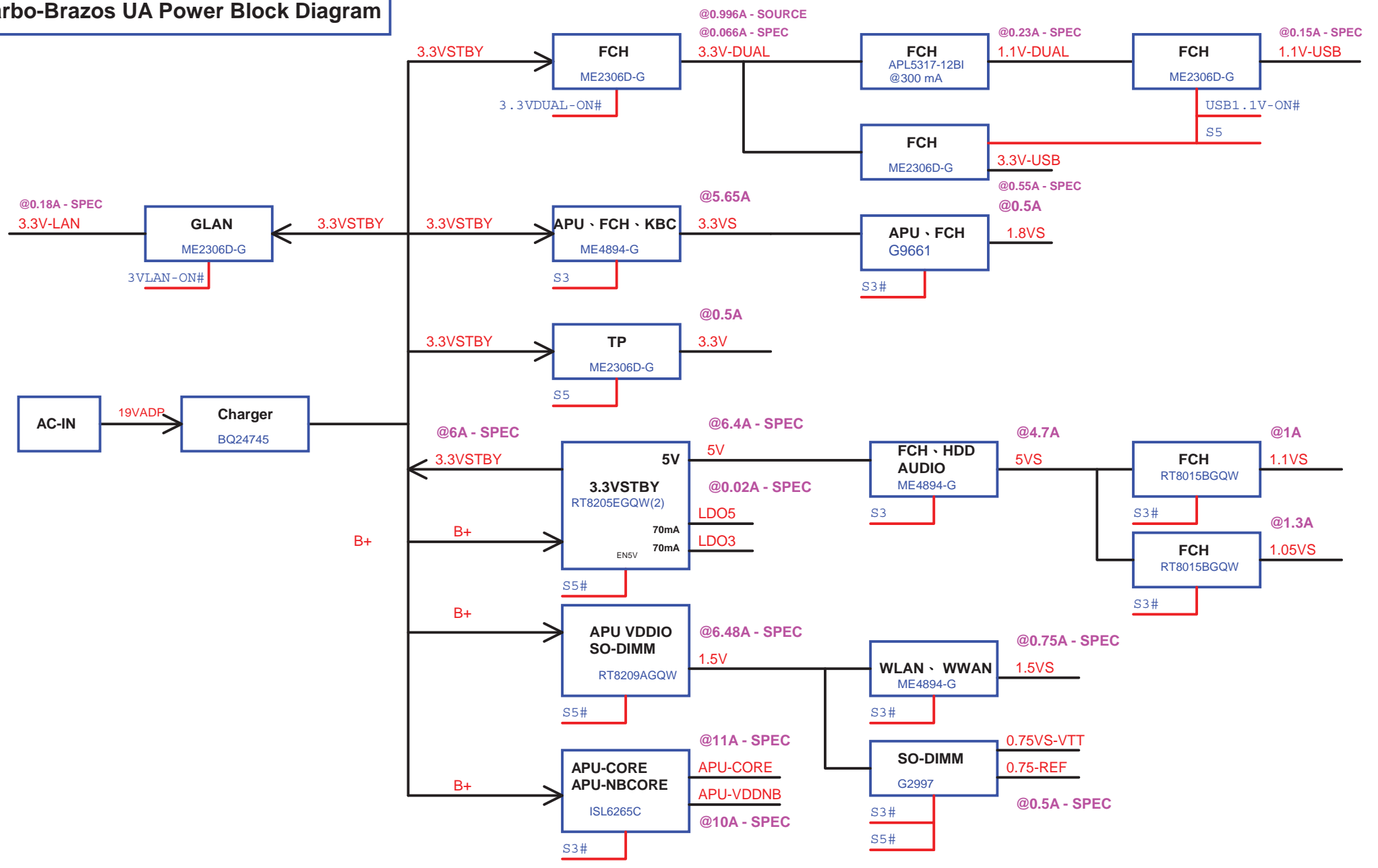
SMBus BLOCK

SMBCLK SMBDAT	SO-DIMM G-SENSOR	WLAN WWAN
KBC-BATCLK KBC-BATDAT	CHARGE	
KBC-TMCLK KBC-TMDAT	CPU ON-DIE THERMAL SENSOR CPU THERMAL SENSOR (G786)	

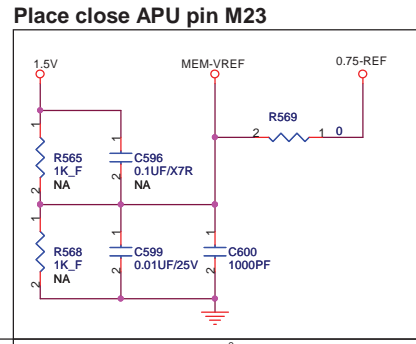
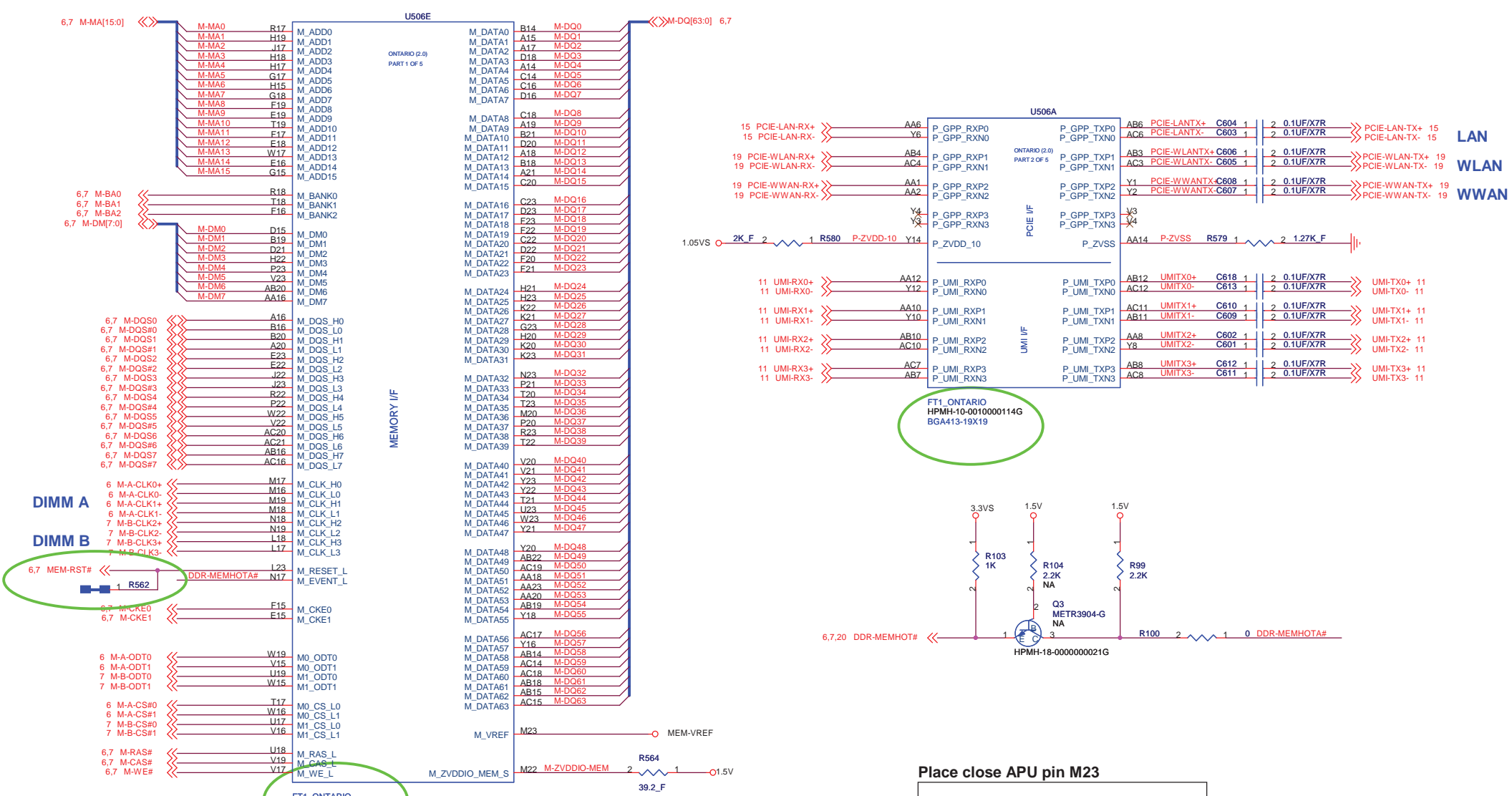
LED STATUS

(1) TP (Dual Color) :	Amber: Off
(1) RF (Dual Color) :	White: enable Amber: disable
(2) Power on :	White: Power on Blink white: Standby
(1) Battery Charging :	Amber
(2) AC plugged and not charging :	White
(3) HDD (Dual Color) :	White : Active Amber: Park
(1) Mute LED :	Amber
(2) Caps Lock :	White
(1) Webcam :	White : Active

Garbo-Brazos UA Power Block Diagram

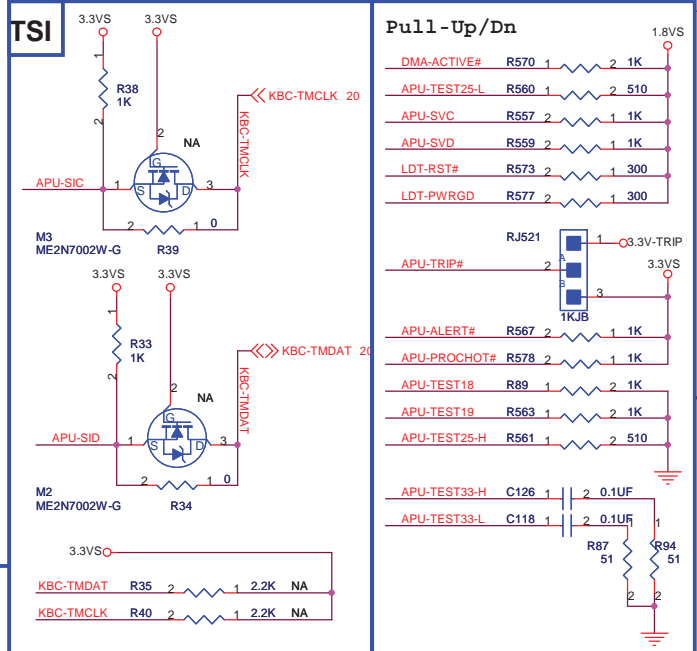
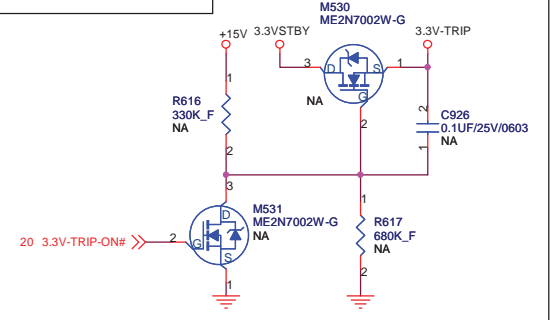
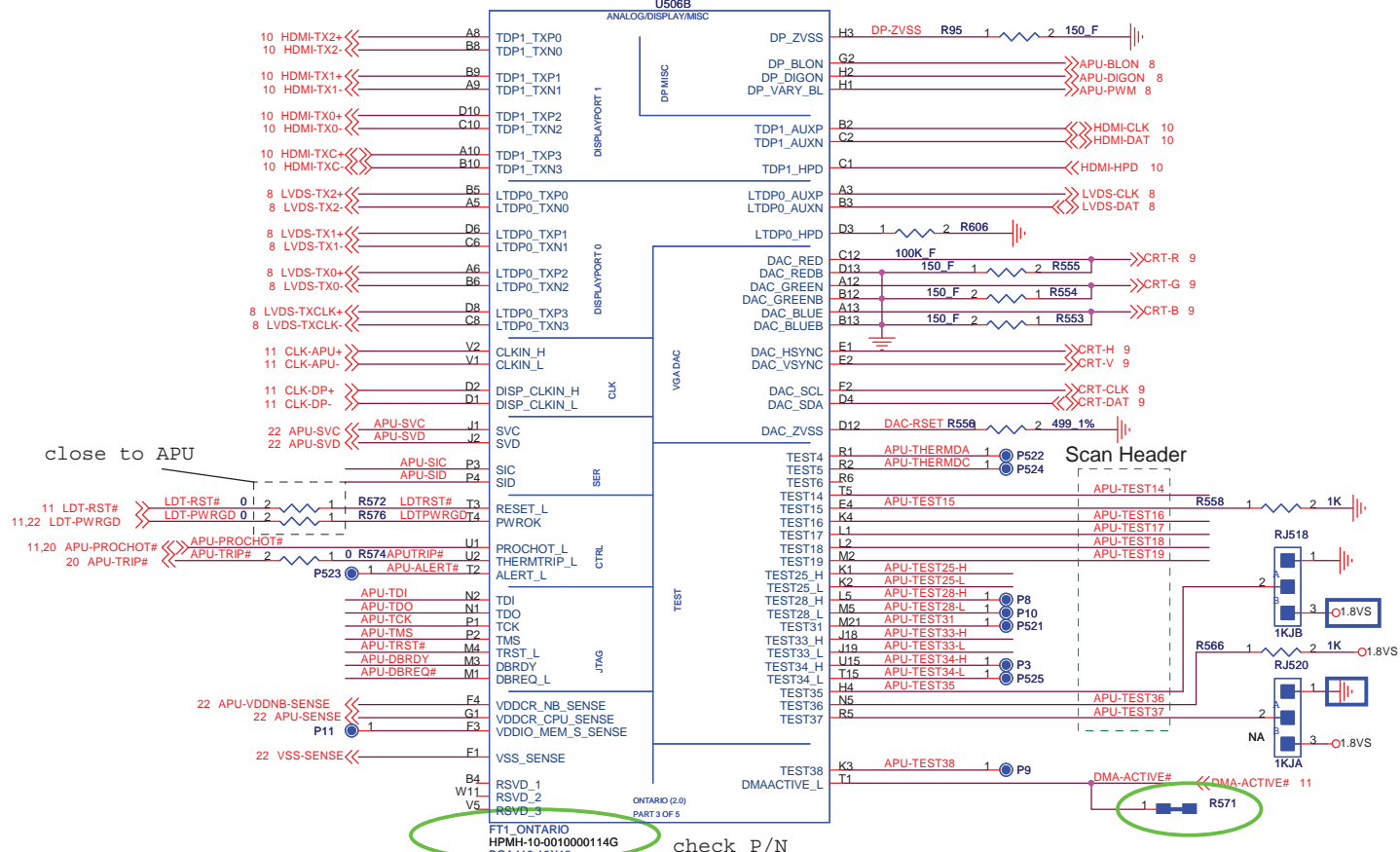


APU_MEMORY/PCIE/UMI

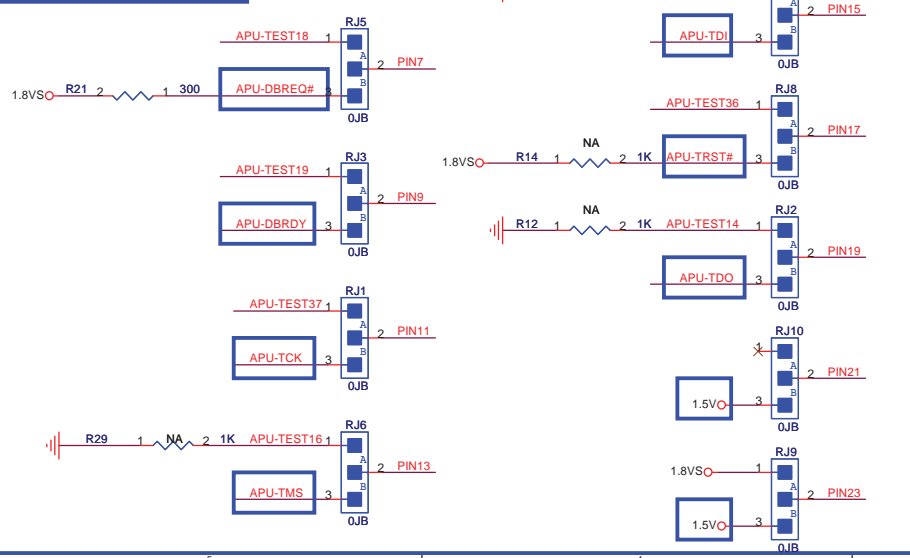


APU_DISPLAY/CLK/MISC

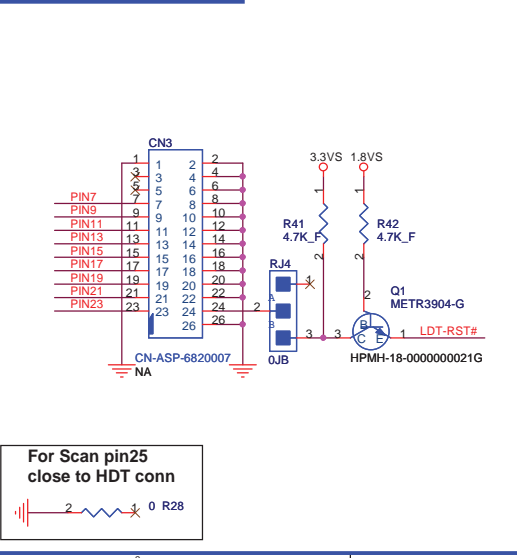
ME2N7002W-G VGS=1(min) ~ 2.5(max)
 +15= 11.8V ,VG=7.94V +15= 14.6V ,VG=9.82V
 VGS=7.94V-3.3V=4.64V VGS=9.82V-3.3V=6.52V



Scan/HDT Option

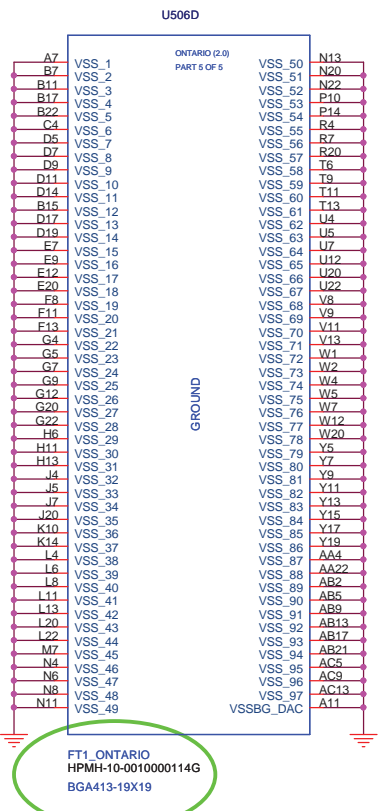
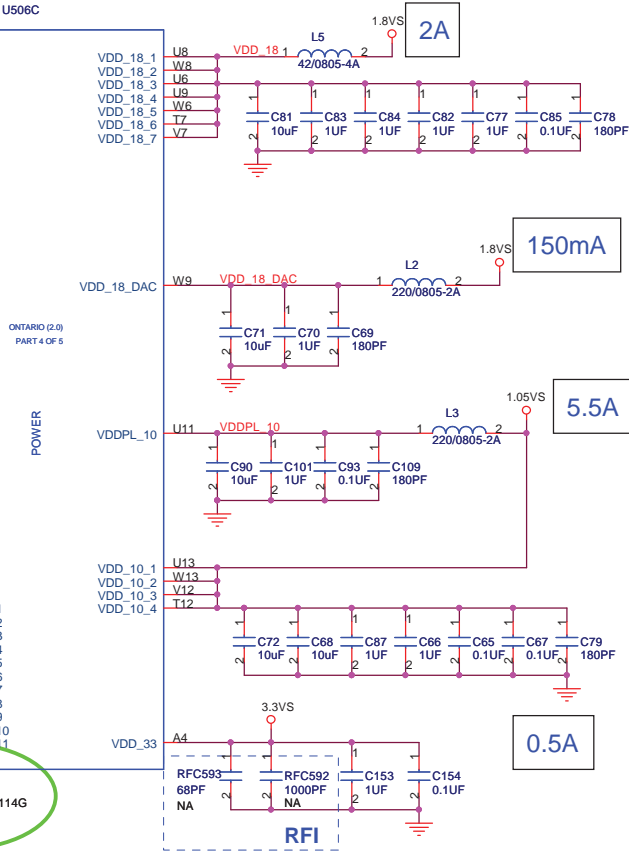
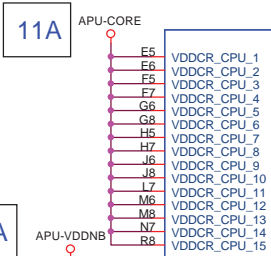


Scan/HDT Header

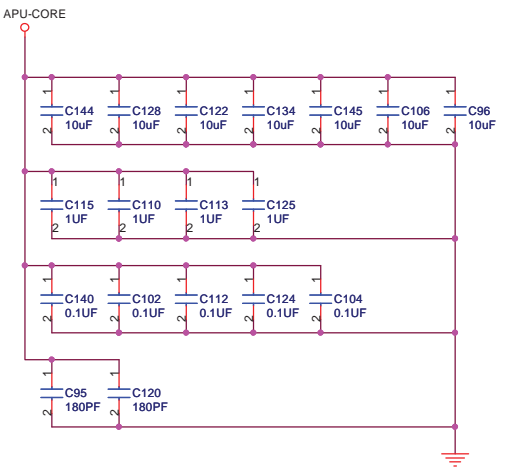


FLEX Computing

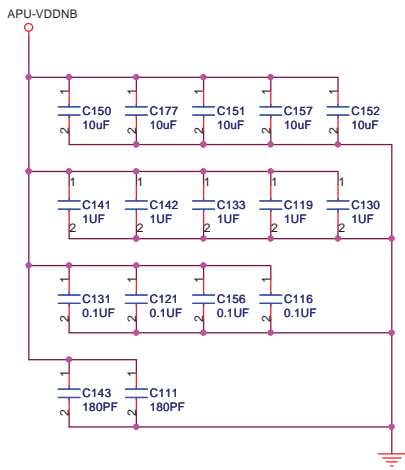
APU_POWER & GND



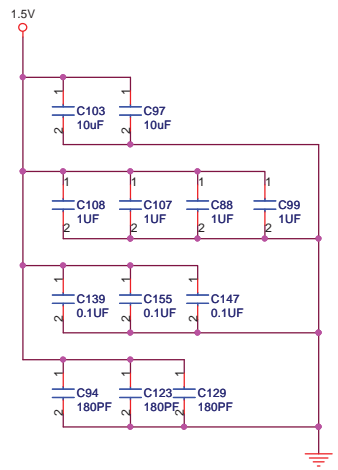
For APU-CORE



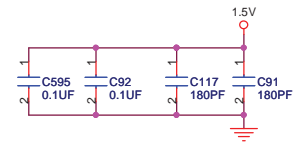
For APU-VDDNB



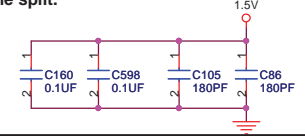
For 1.5V



If the VSS plane is cut to create a VDDIO_MEM_S plane, ceramic capacitors are connected across the VDDIO_MEM_S and VSS plane split.



If the VSS plane is longer than 63.5 mm an additional two capacitors are required across the VDDIO_MEM_S and VSS plane split.



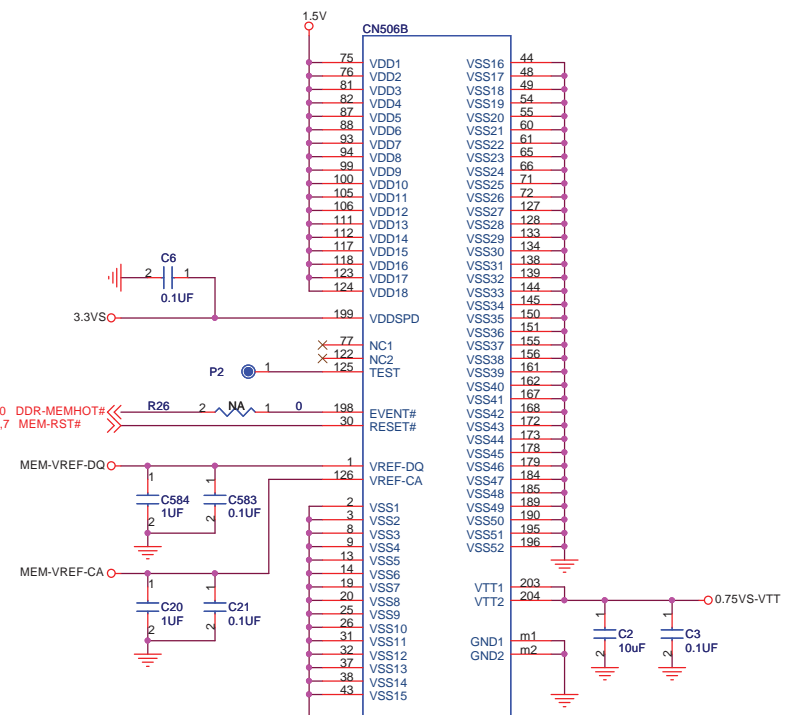
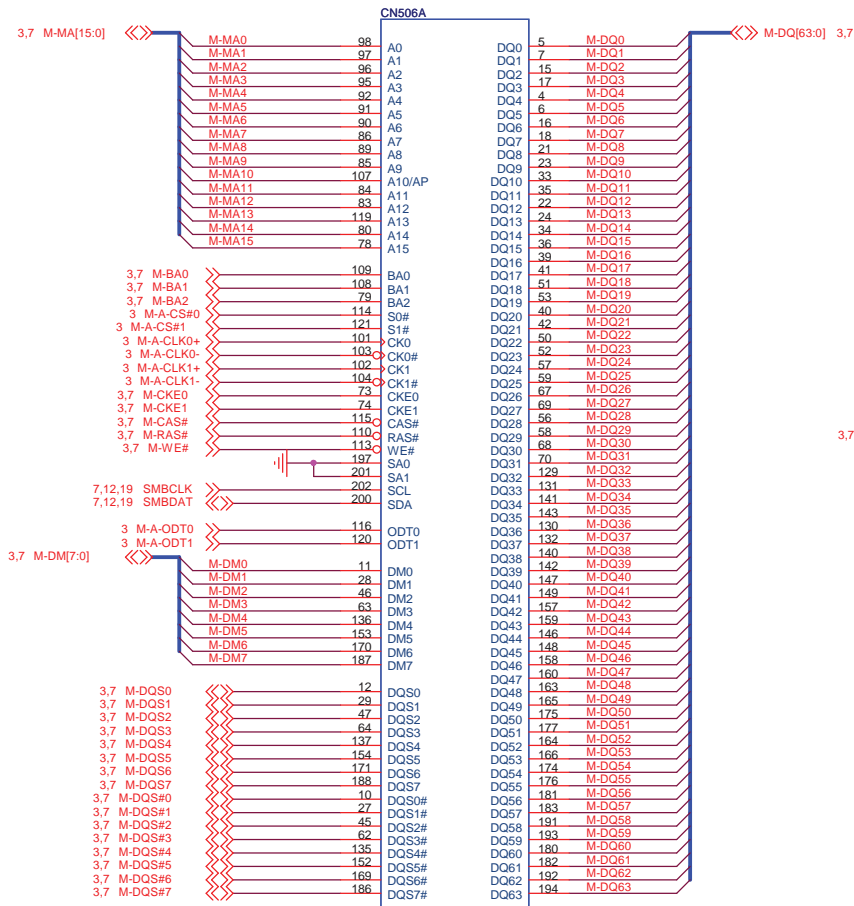
FLEX Computing

Project Name : H210UA1 | Title : APU_POWER / GND

Size : | Document Number : HPMH-40GAB6000-C000 | Rev : C

Date : Thursday, September 23, 2010 | Sheet : 5 of 28

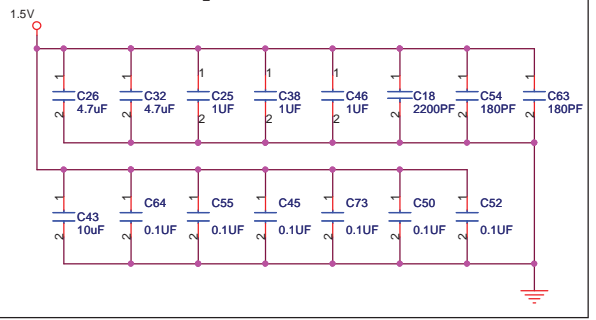
DDR3 DIMM A



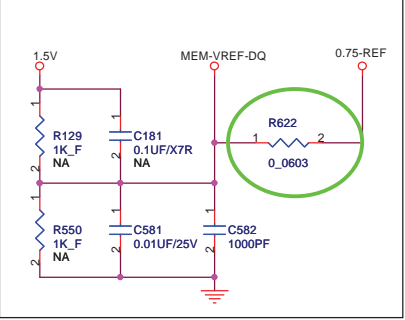
SA0	SA1	Address
0	0	A0
1	0	A2

DDRRK-20410-TP4B
 HPMH-39-0370000019G
 DDR3-204P-4H-RVS

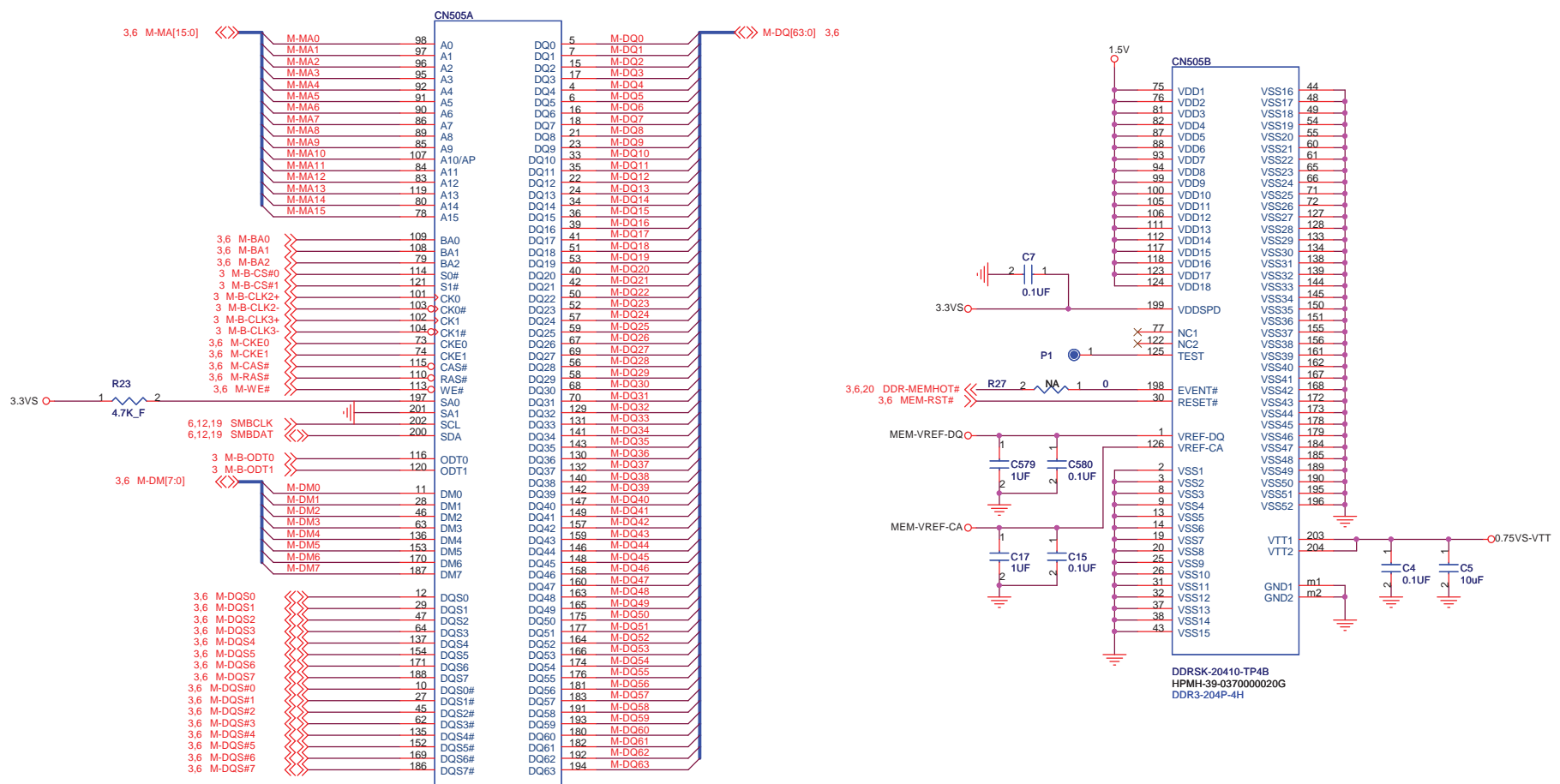
Layout :
 Place these Caps near So-DimmA



Layout :
 Place near So-DimmA

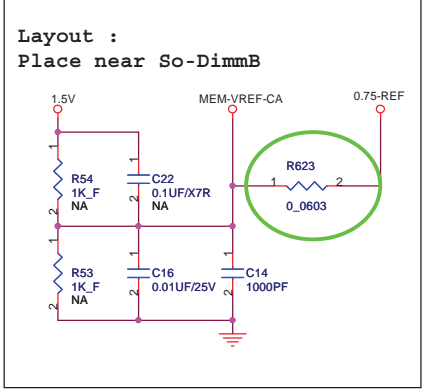
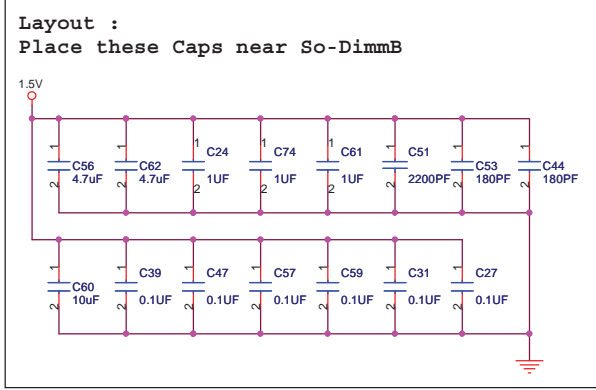


DDR3 DIMM B



DDRSK-20410-TP4B
HPMH-39-0370000020G
DDR3-204P-4H

SA0	SA1	Address
0	0	A0
1	0	A2



FLEX Computing

Project Name : H210UA1 Title : DDR3 SO-DIMM B

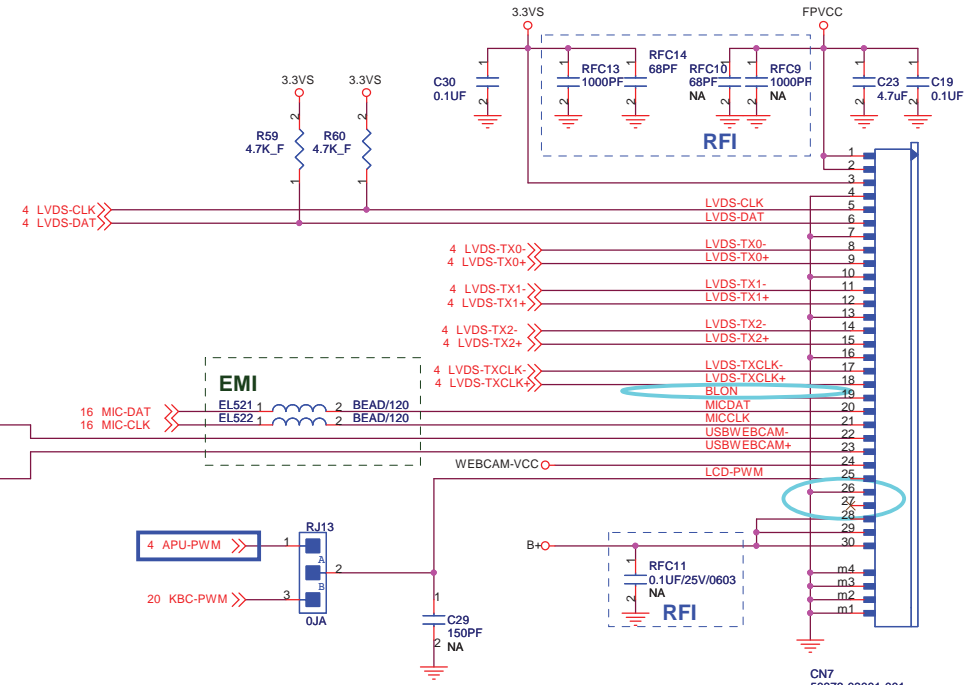
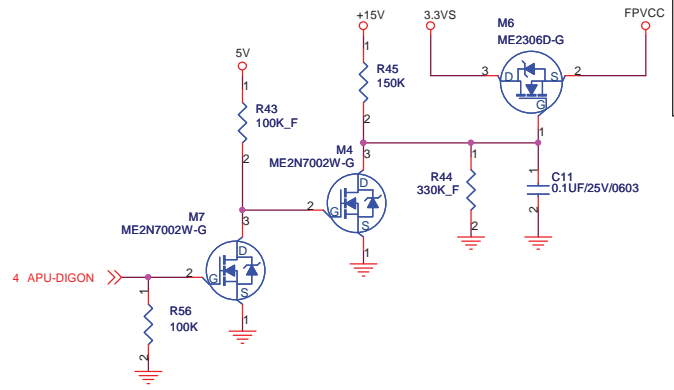
Size : Document Number : HPMH-40GAB6000-C000 Rev : C

Date : Monday, September 27, 2010 Sheet : 7 of 28

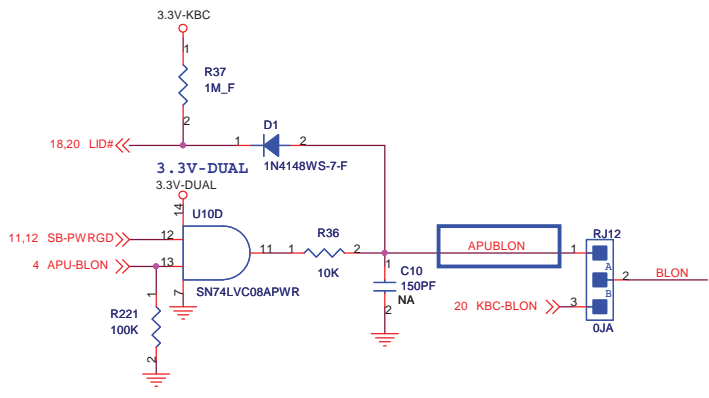
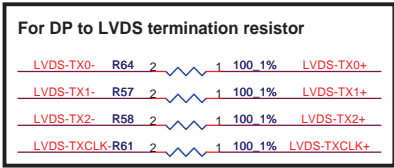
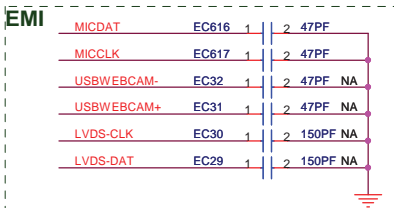
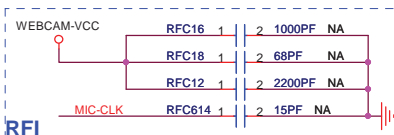
LVDS

ME2306D-G VGS= 1(min) - 3(max)

+15= 11.8V ,VG=8.11V
 VGS=8.11V-3.3V=4.81V
 +15= 14.6V ,VG=10.03V
 VGS=10.03V-3.3V=6.73V



CN7
 50373-03001-001
 HPMH-39-0520001010G
 CN-LVDS-30P-1H95



Mounted for AUO panel

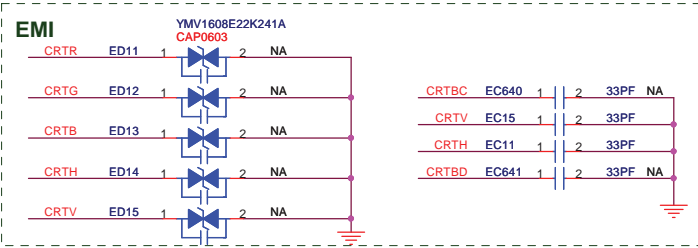
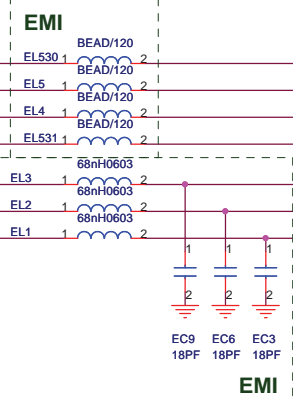
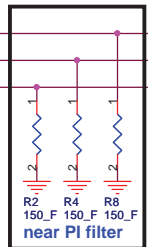
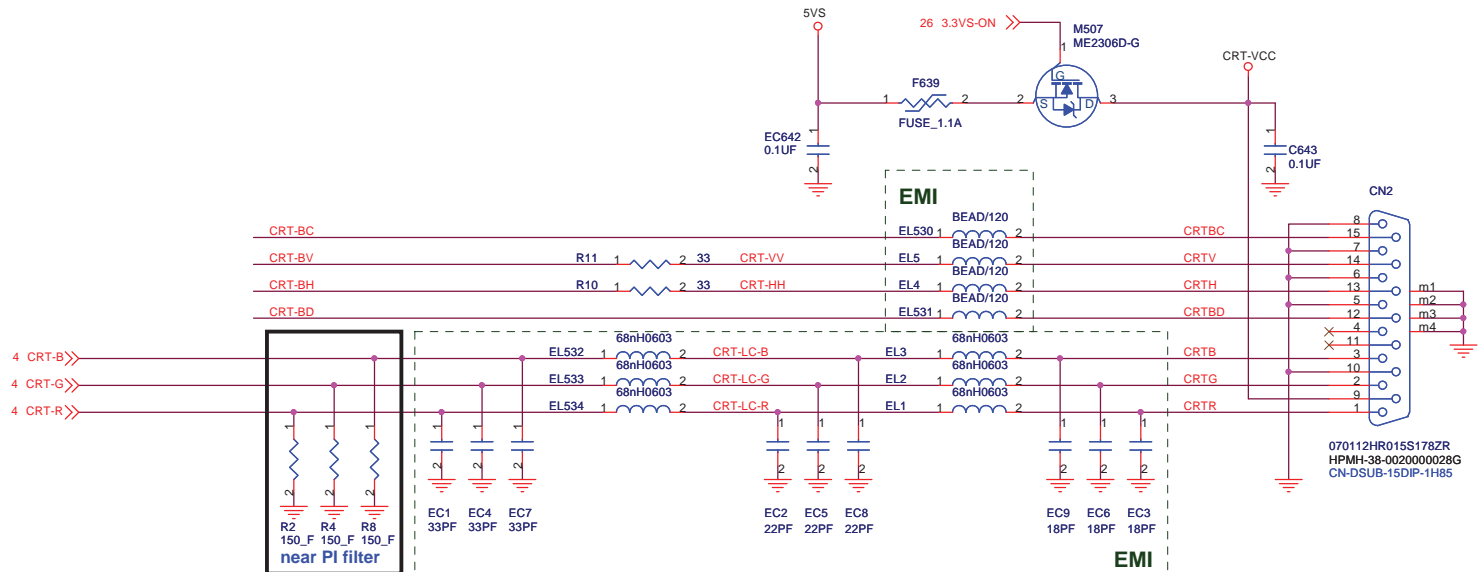
FLEX Computing

Project Name : H210UA1 | Title : LVDS / eDP Connector

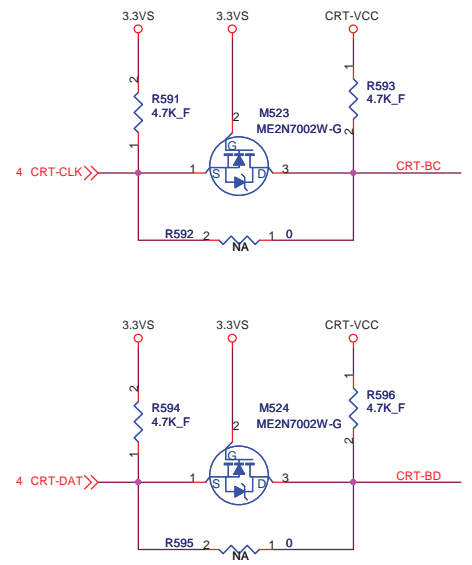
Size : Custom | Document Number : HPMH-40GAB6000-C000 | Rev : C

Date : Thursday, September 30, 2010 | Sheet : 8 of 28

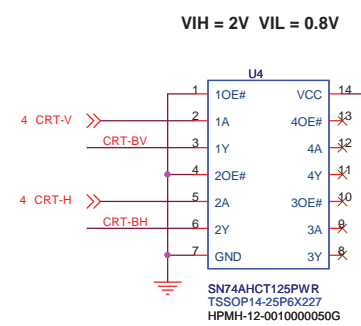
CRT



CRT LEVEL SHIFT



H / V SYNC BUFFER

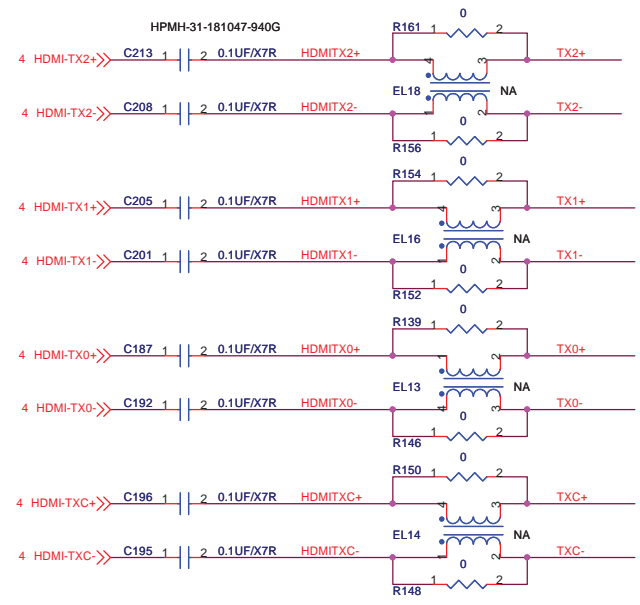


INPUT		OUTPUT
nOE	nA	nY
L	L	L
L	H	H
H	X	Z

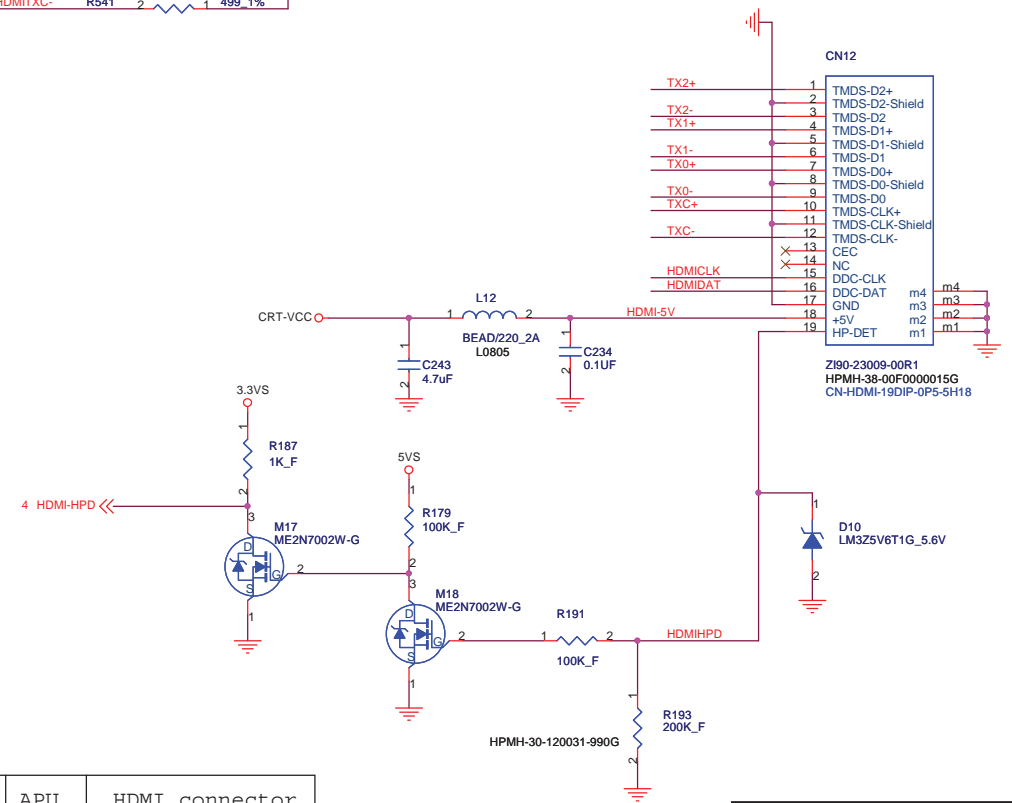
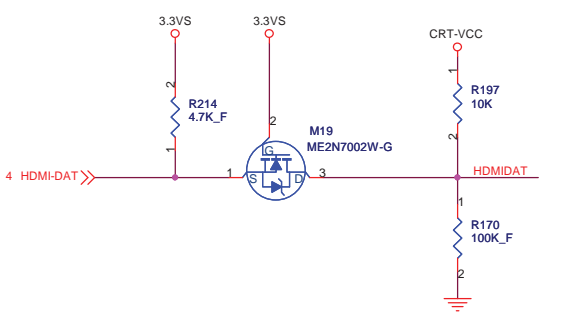
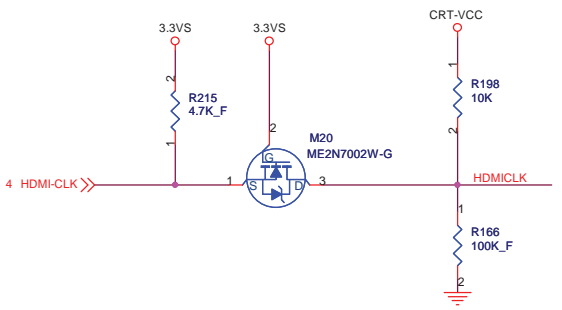
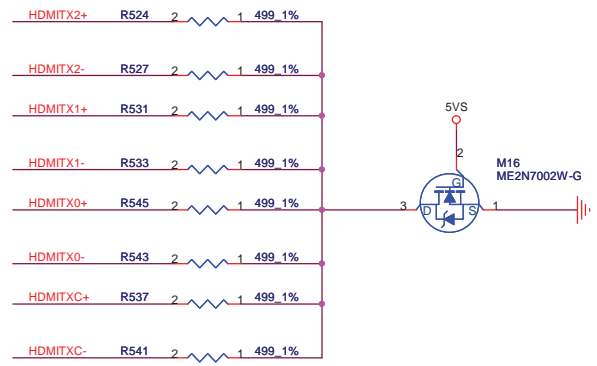


Project Name : H210UA1		Title : CRT Connector	
Size : Custom	Document Number : HPMH-40GAB6000-C000	Rev : C	
Date : Monday, September 27, 2010		Sheet : 9	of 28

CLOSE CN514



Connected a 499-Ω 5% resistor on each signal connected with a FET to GND (one FET per pair) located on the TMDS connector side of the series capacitors.



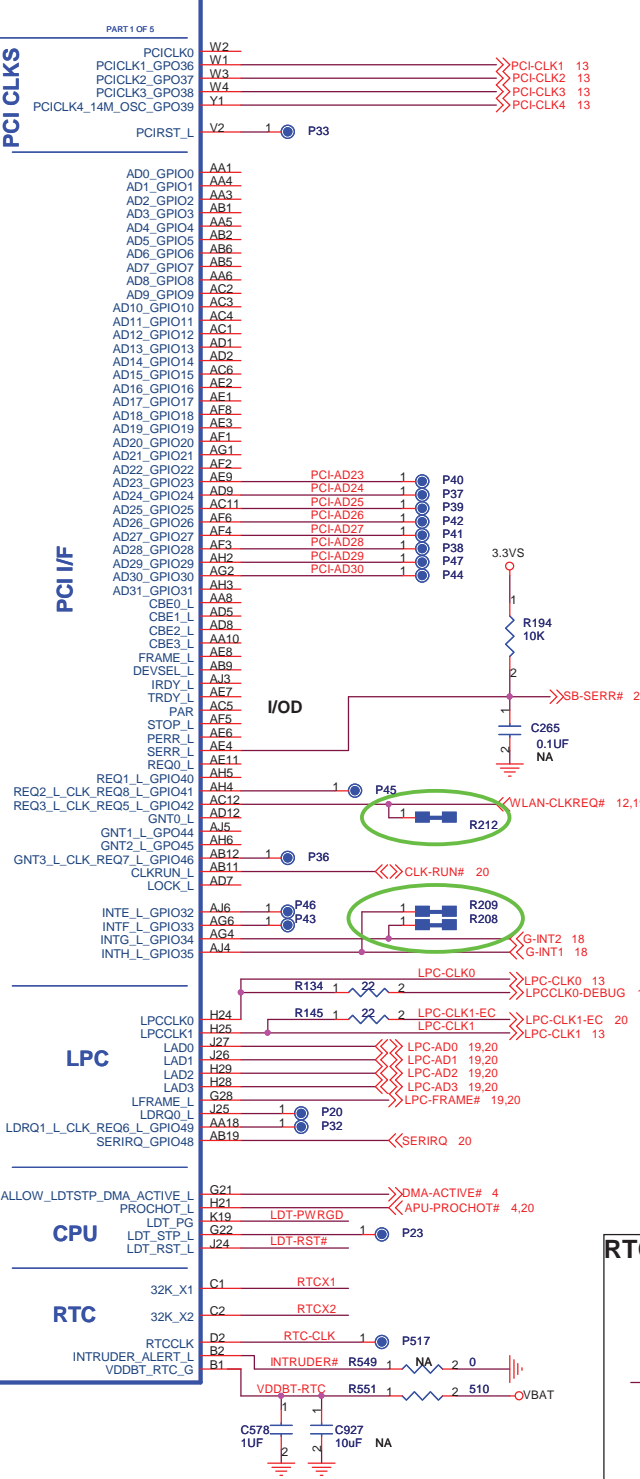
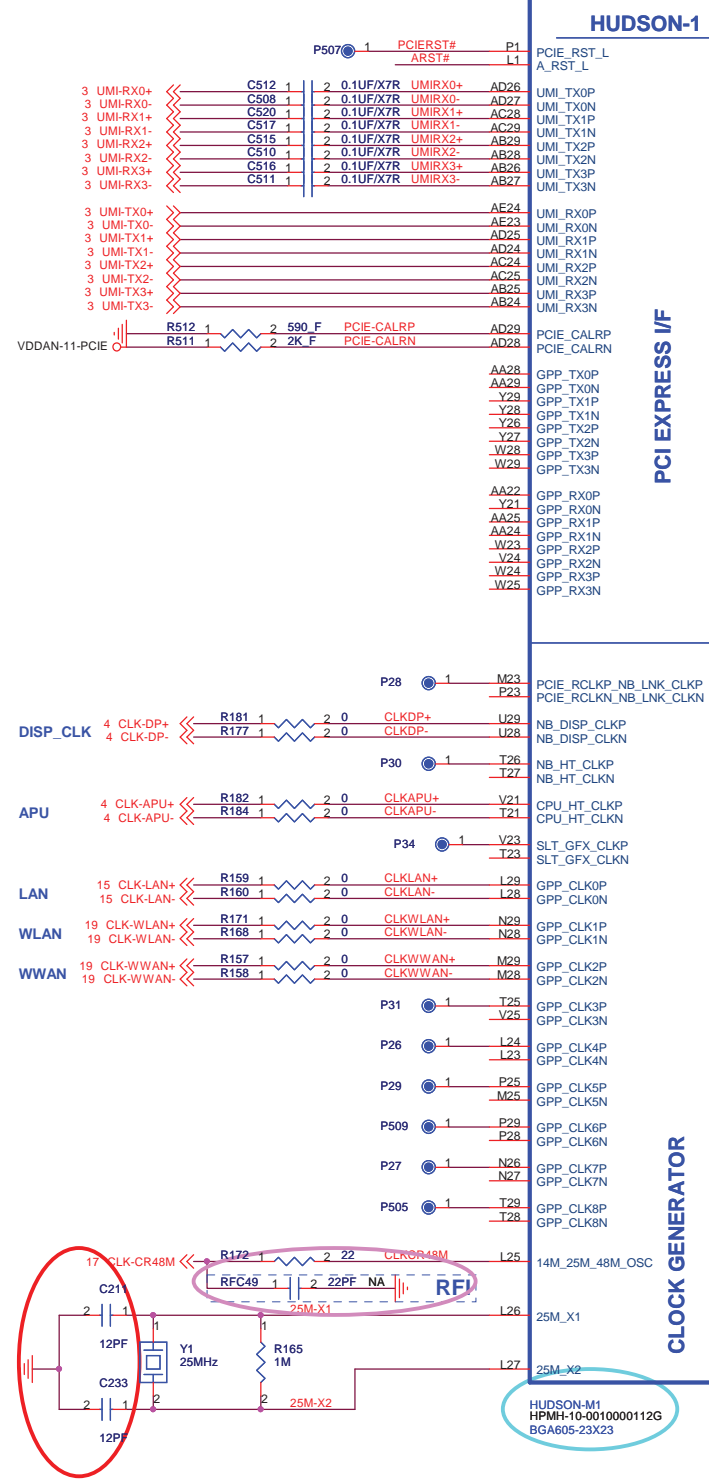
PLUG IN/OUT	APU	HDMI connector
IN	H	H
OUT	L	L

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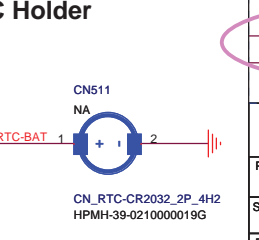
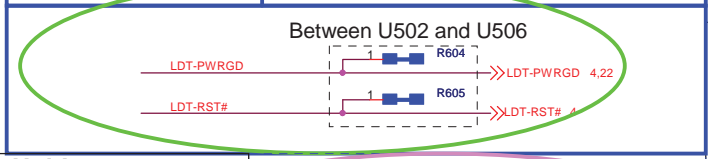
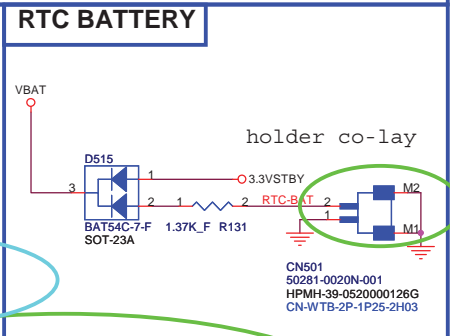
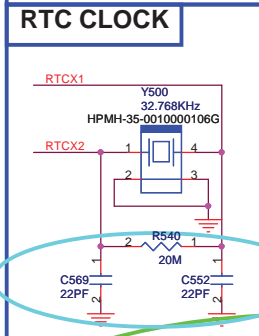
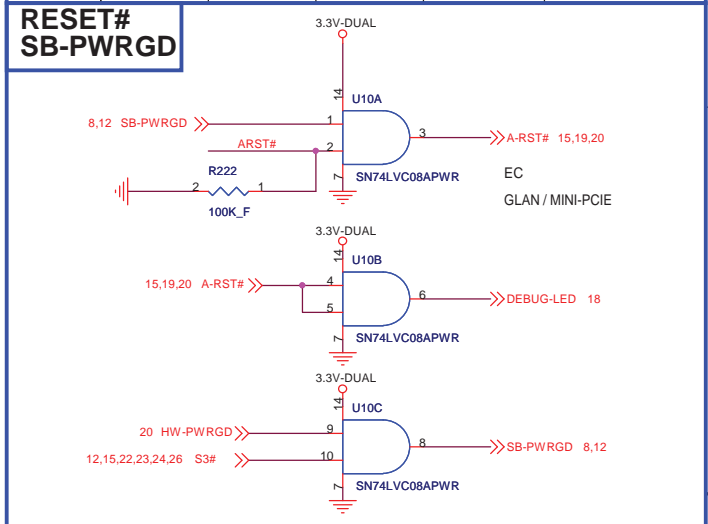
Project Name : H210UA1 | Title : HDMI Connector

Size : Custom | Document Number : HPMH-40GAB6000-C000 | Rev : C

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	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL	DISABLE ILA AUTORUN	USE FC PLL	USE DEFAULT PCIE STRAPS	DISABLE PCI MEM BOOT
	DEFAULT	DEFAULT	DEFAULT	DEFAULT	DEFAULT
PULL LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT



RFI

- LPCCLK0-DEBUG RFC639 1
- LPC-CLK1-EC RFC640 1

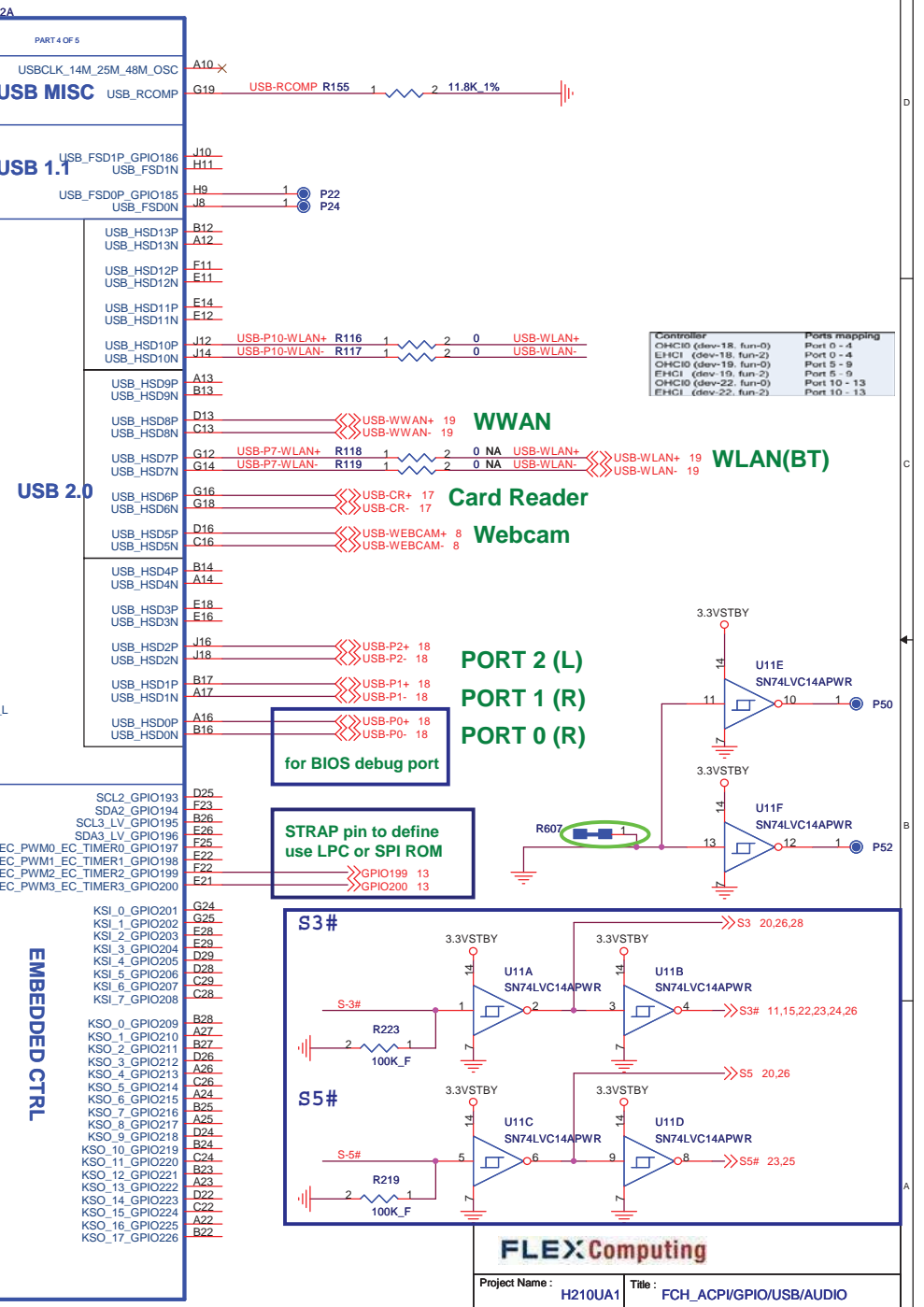
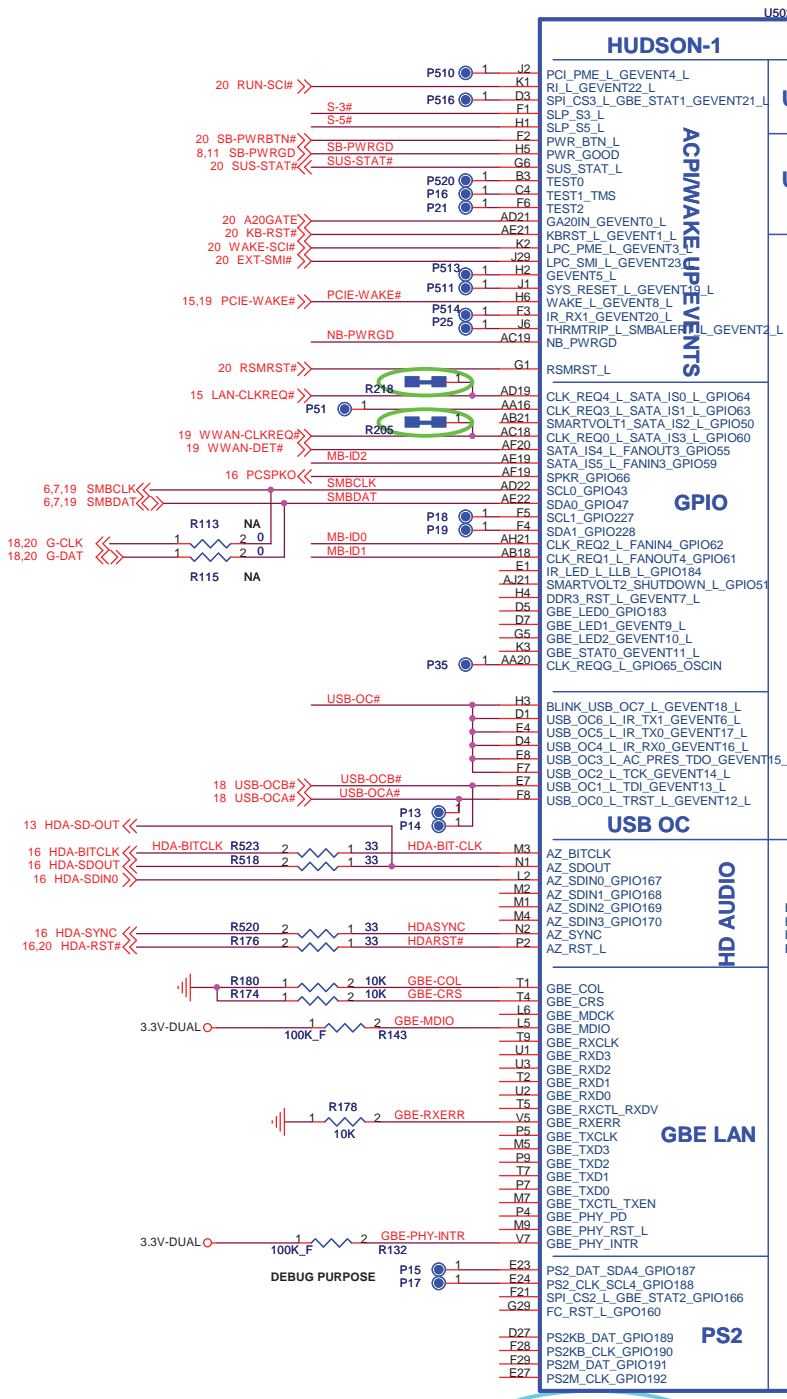
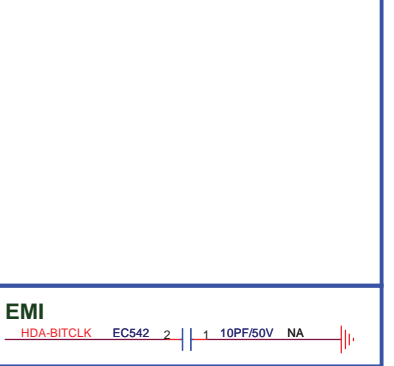
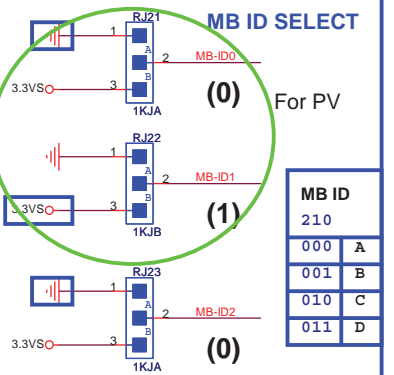
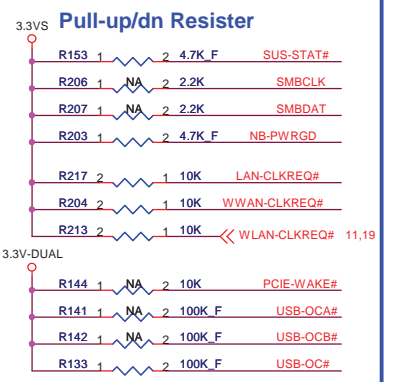
FLEX Computing

Project Name: H210UA1 | Title: FCH_UMI/PCIE/CLK/LPC/RTC

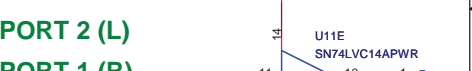
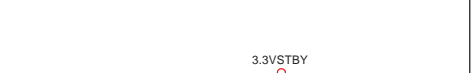
Size: | Document Number: HPMH-40GAB6000-C000 | Rev: C

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FCH_ACPI/GPIO/USB/AUDIO

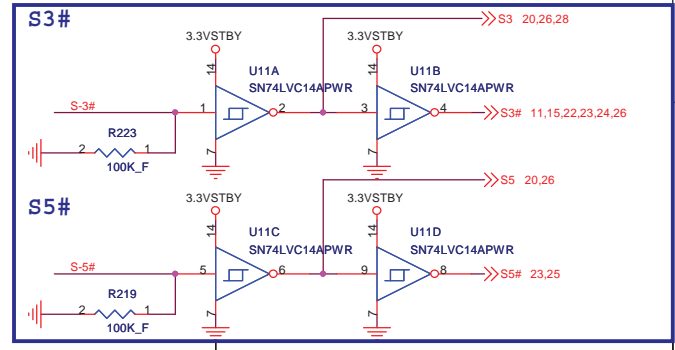


Controller	Ports mapping
OHCI0 (dev-18, fun-0)	Port 0 - 4
EHCI1 (dev-18, fun-2)	Port 0 - 4
OHCI0 (dev-19, fun-0)	Port 5 - 9
EHCI1 (dev-19, fun-2)	Port 5 - 9
OHCI0 (dev-22, fun-0)	Port 10 - 13
EHCI1 (dev-22, fun-2)	Port 10 - 13



for BIOS debug port

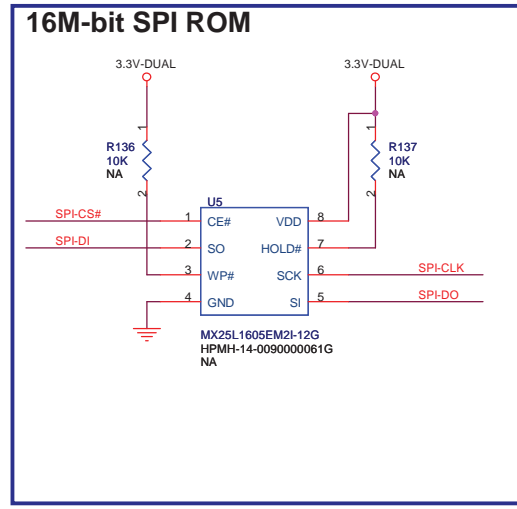
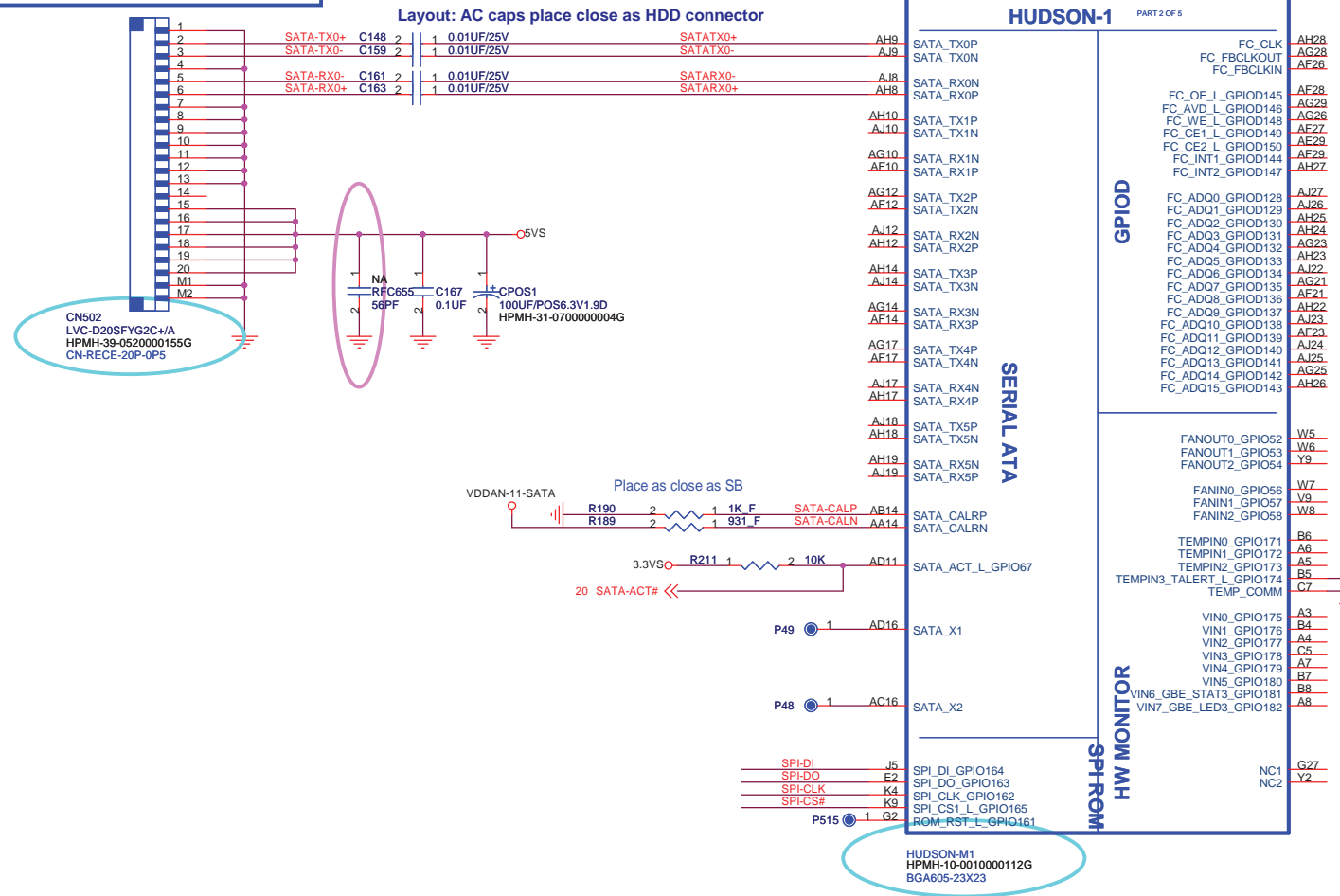
STRAP pin to define use LPC or SPI ROM



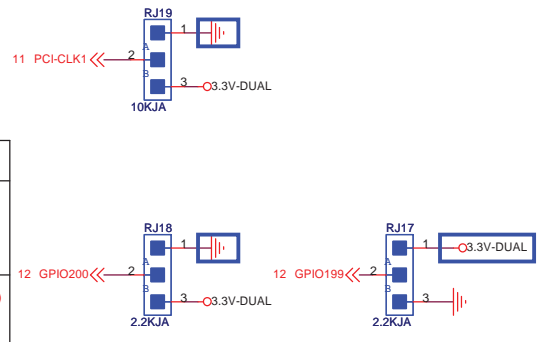
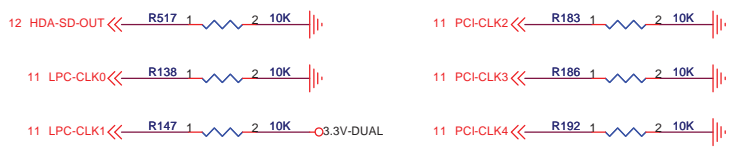
HUDSON-M1
HPMH-10-0010000112G
BGA605-23X23

FCH_SATA/IDE/SPI/STRAPS

SATA / IDE / SPI / STRAPS



HUDSON-M1 HW STRAPS



	AZ_SDOUT	PCI_CLK1	PCI_CLK2	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	GPIO200	GPIO199
PULL HIGH	LOW POWER MODE	ALLOW PCIE Gen2	Watchdog Timer Enabled	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLED	CLKGEN ENABLED DEFAULT	H,H = Reserved H,L = SPI ROM	
PULL LOW	PERFORMANCE MODE DEFAULT	FORCE PCIE Gen1 DEFAULT	Watchdog Timer Disabled DEFAULT	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLED DEFAULT	L,H = LPC ROM (Default) L,L = FWH ROM	

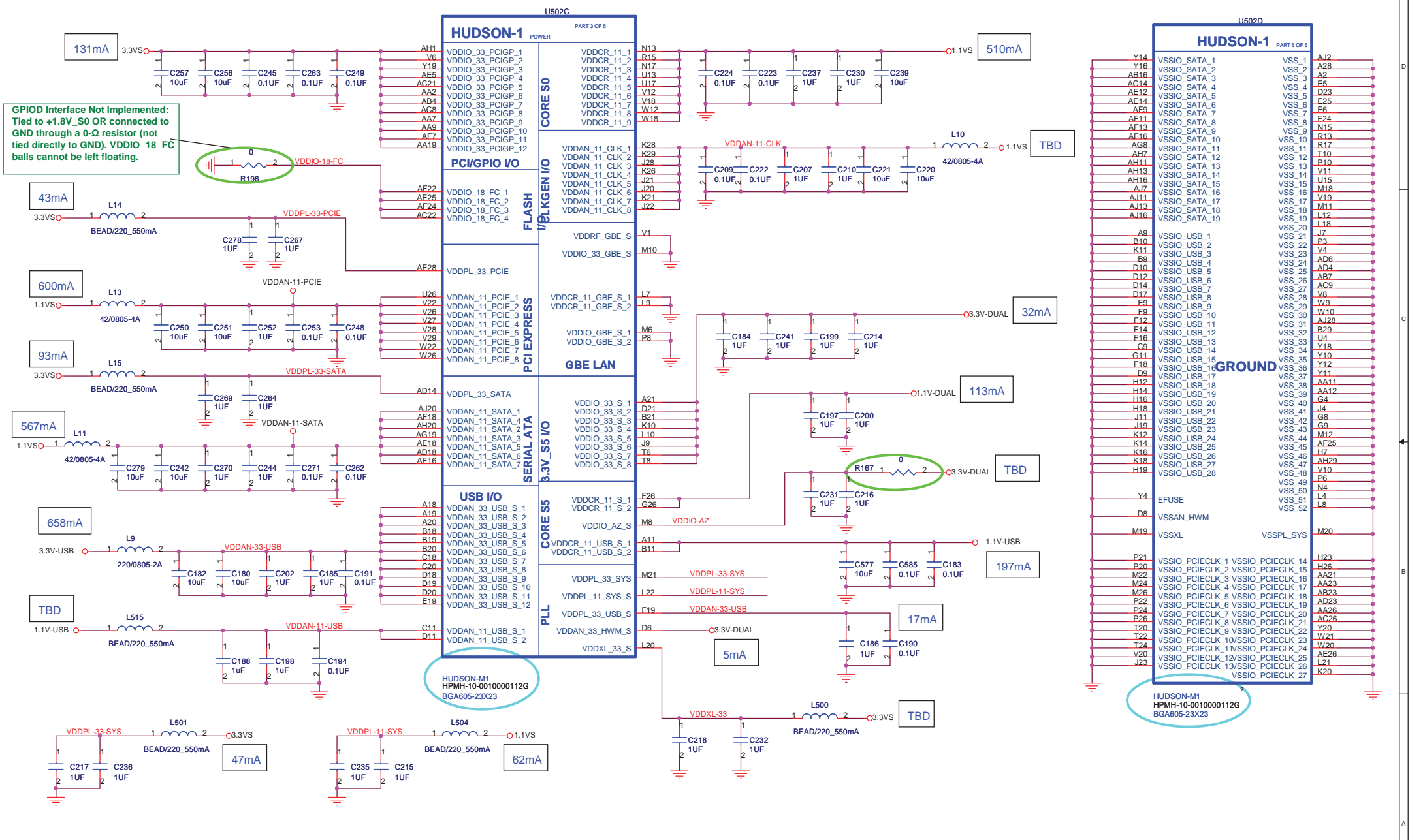
FLEX Computing

Project Name : H210UA1 Title : FCH_SATA/IDE/SPI/STRAPS

Size : Document Number : HPMH-40GAB6000-C000 Rev : C

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FCH_PWR/GND



GPIO Interface Not Implemented:
Tied to +1.8V_S0 OR connected to GND through a 0-Ω resistor (not tied directly to GND). VDDIO_18_FC balls cannot be left floating.

3.3V-USB / 1.1V-USB	S3	S4	S5
AC mode	ON	OFF	OFF
DC mode	OFF	OFF	OFF

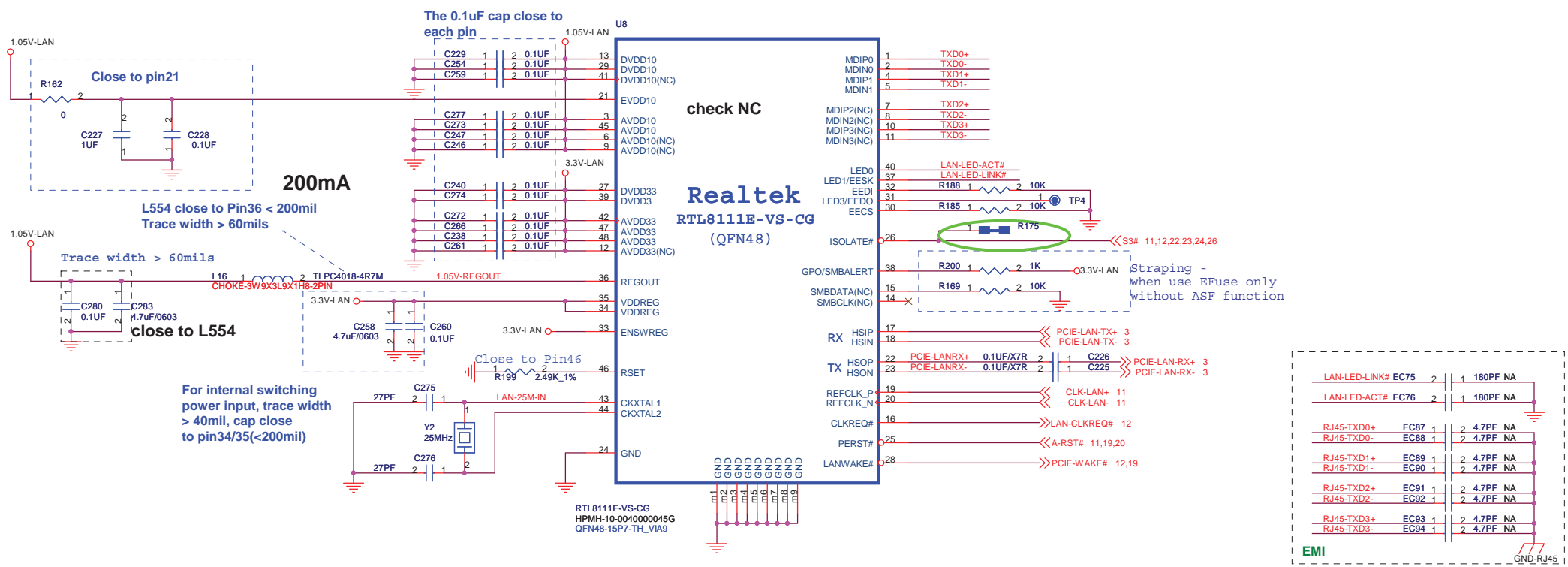
FLEX Computing

Project Name: H210UA1 | Title: FCH_PWR/GND

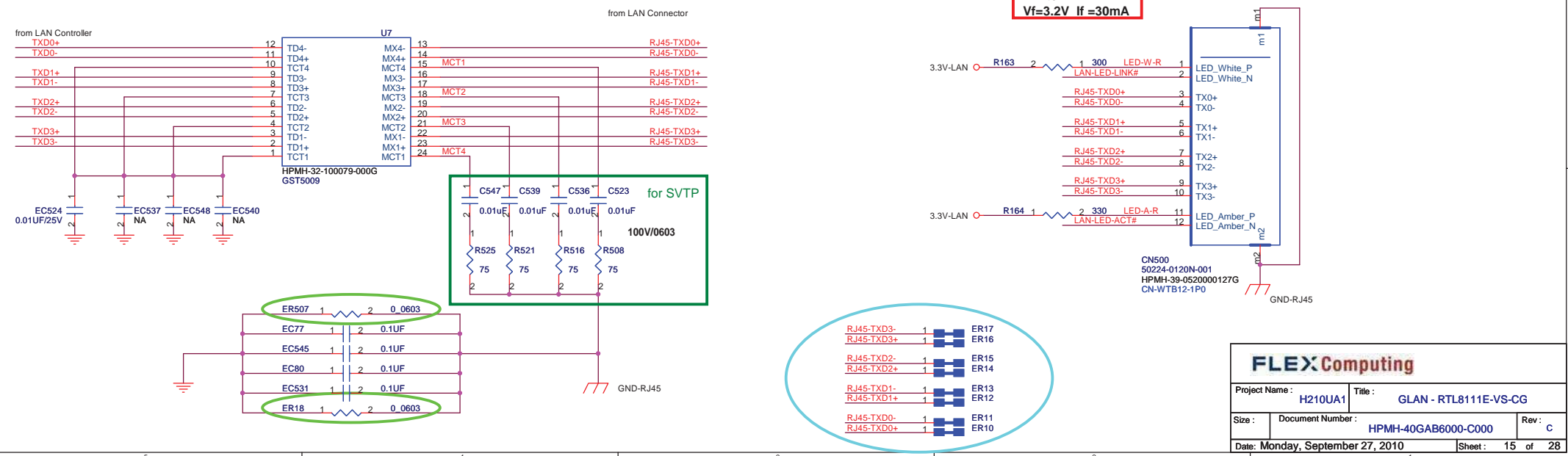
Size: | Document Number: HPMH-40GAB6000-C000 | Rev: c

Date: Thursday, September 23, 2010 | Sheet: 14 of 28

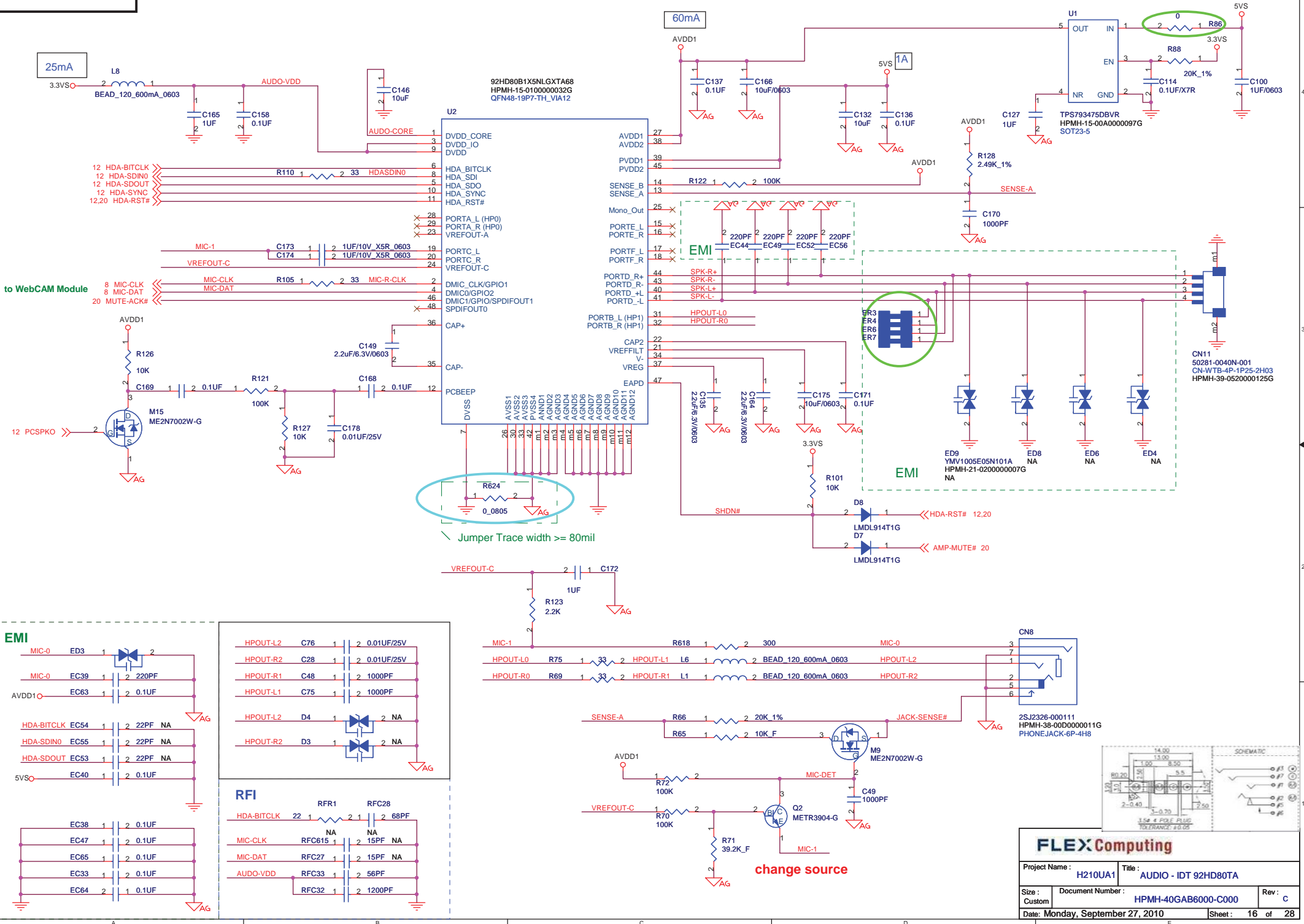
GLAN Controller



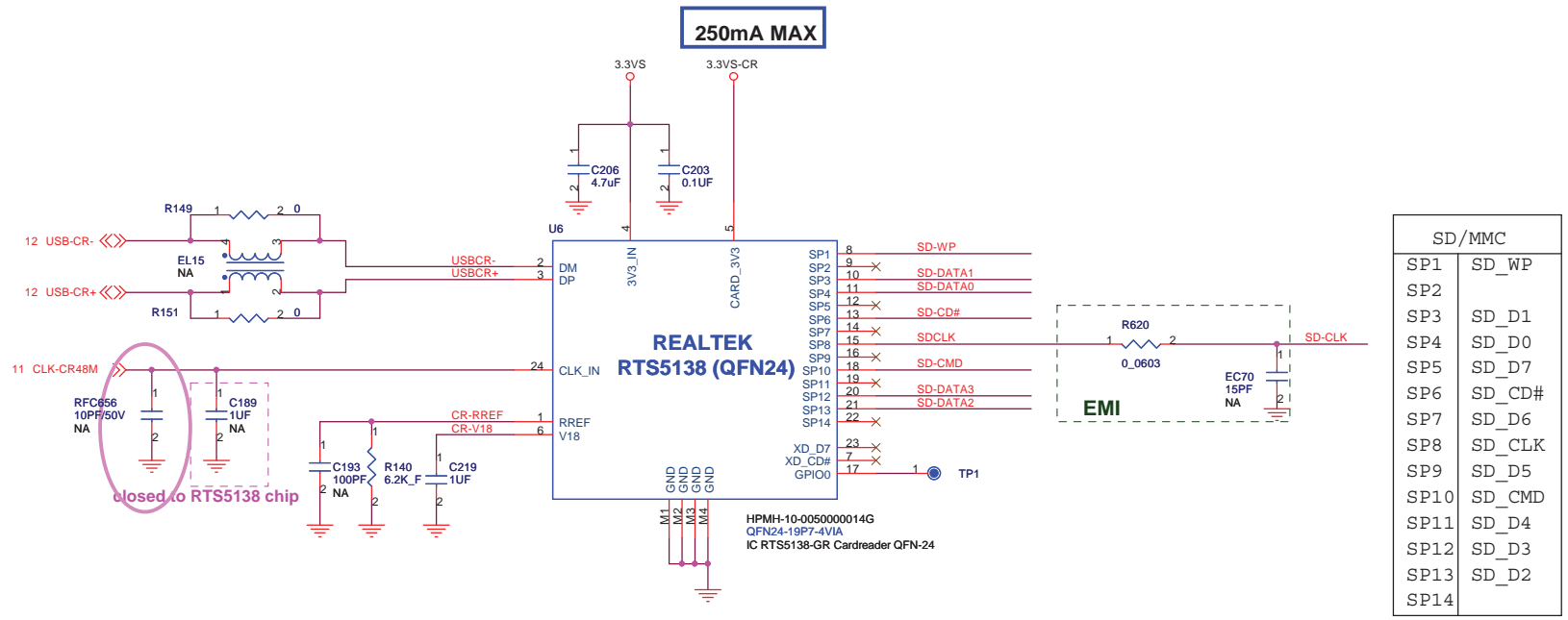
RJ45 connector



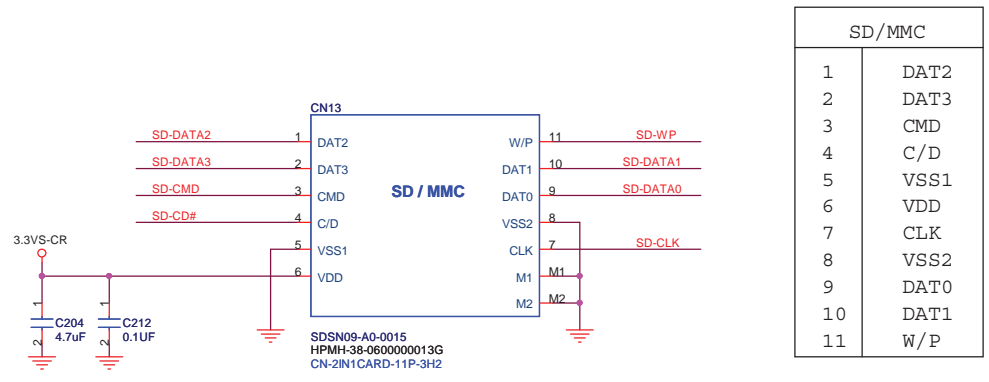
Audio CODEC



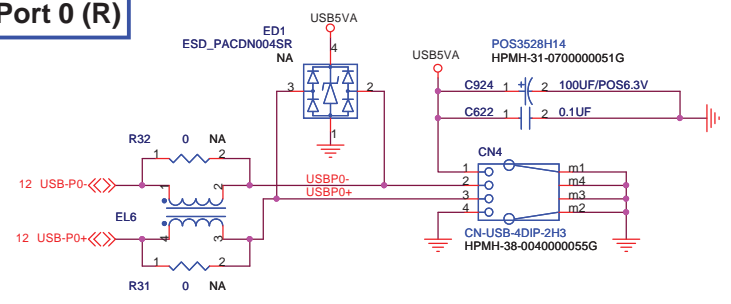
Card Reader



Memory Card Socket



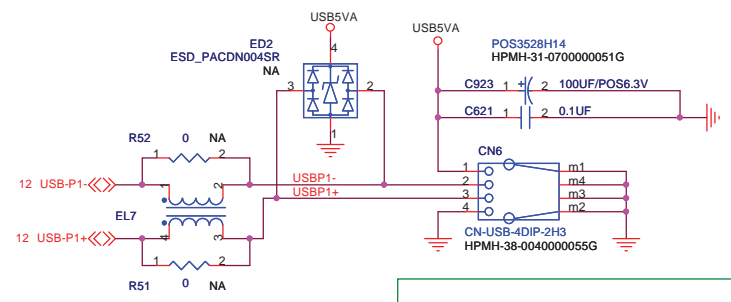
USB Port 0 (R)



Note 1
 For USB ports that have trace length of <=10", the rise and fall time parameters may not meet the specification of > 450 ps.

USBP0- C9 1 2 15PF NA
 USBP0+ C8 1 2 15PF NA

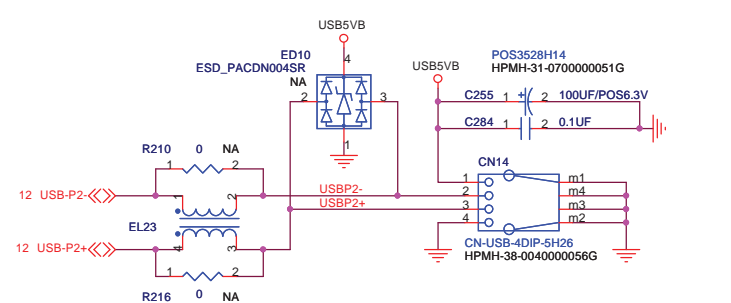
USB Port 1 (R)



Note 1
 For USB ports that have trace length of <=10", the rise and fall time parameters may not meet the specification of > 450 ps.

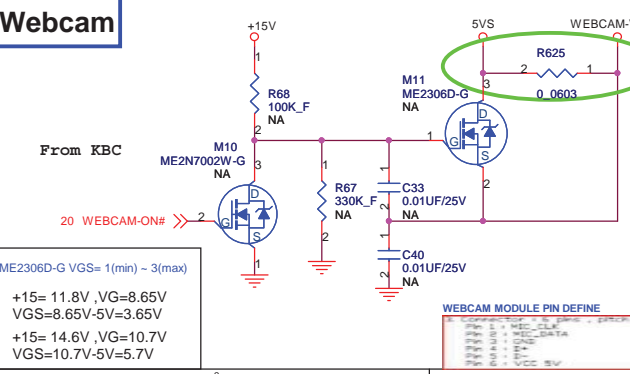
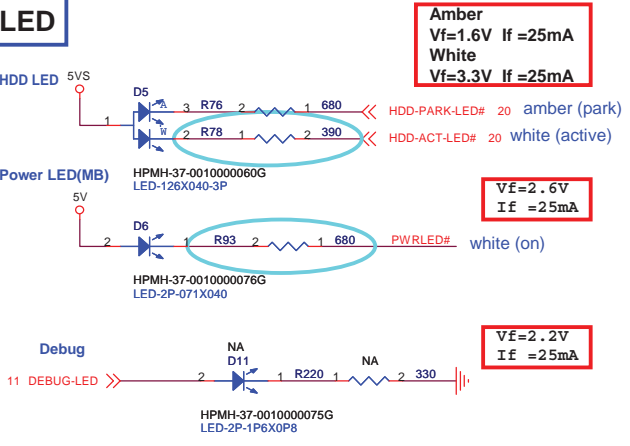
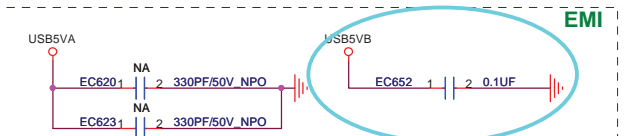
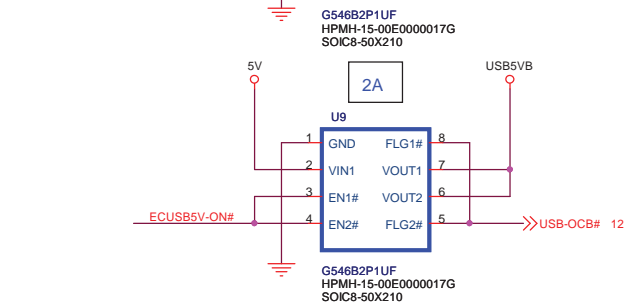
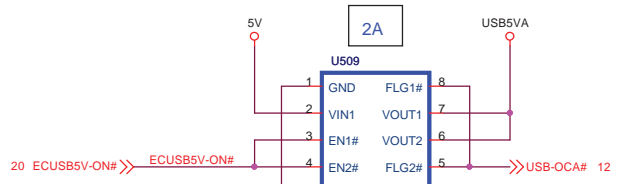
USBP1- C13 1 2 15PF NA
 USBP1+ C12 1 2 15PF NA

USB Port 2 (L)

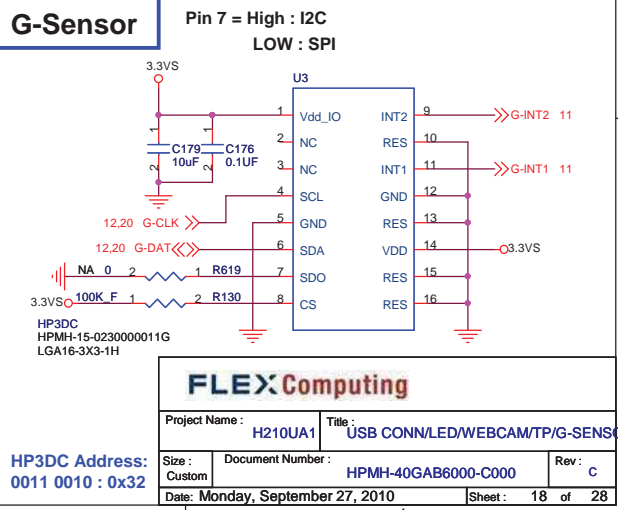
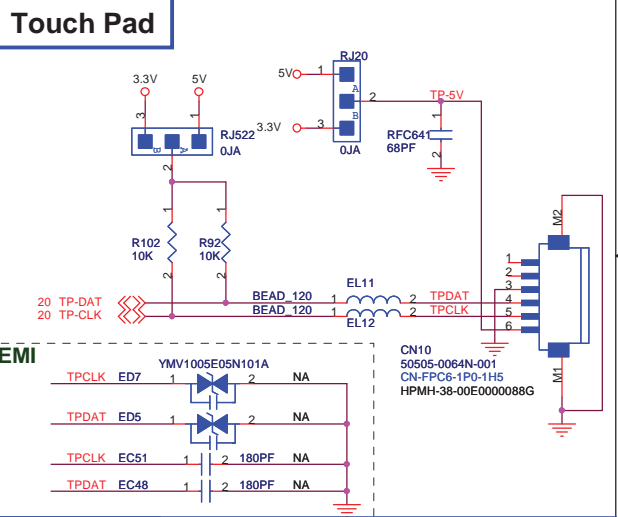
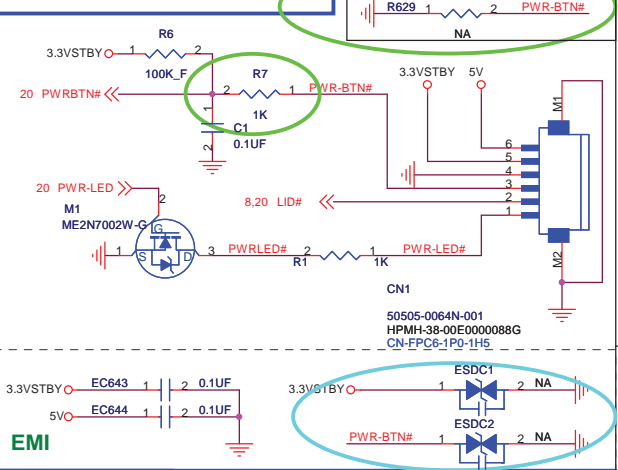


Note 1
 For USB ports that have trace length of <=10", the rise and fall time parameters may not meet the specification of > 450 ps.

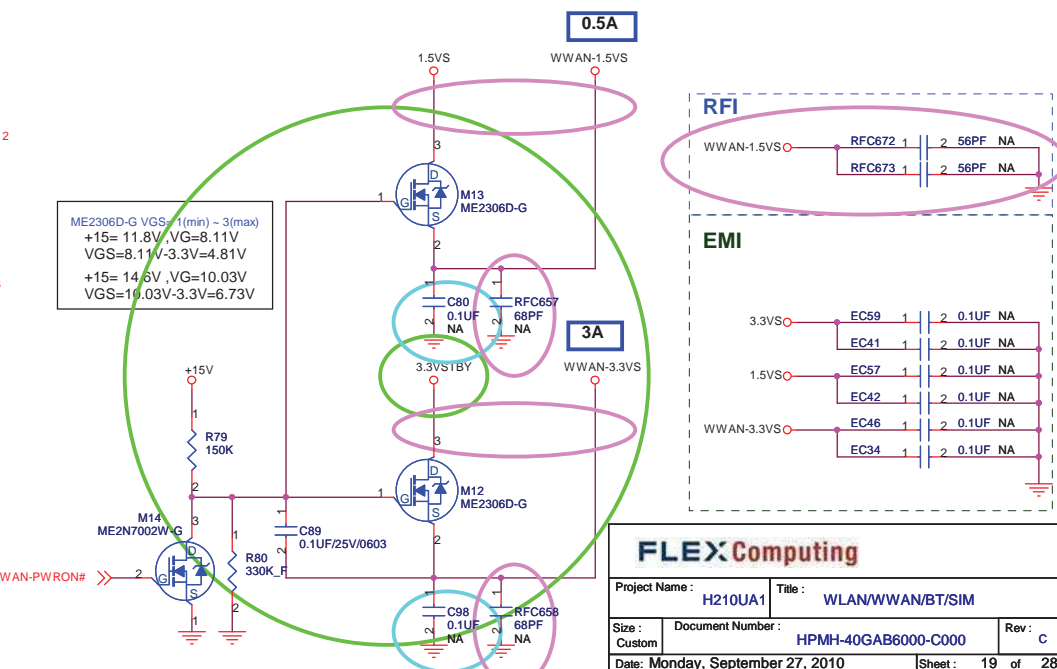
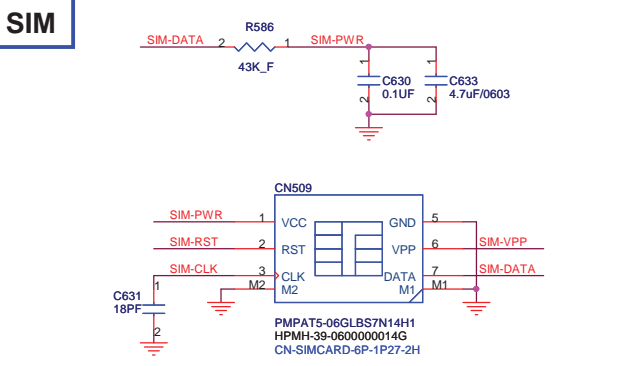
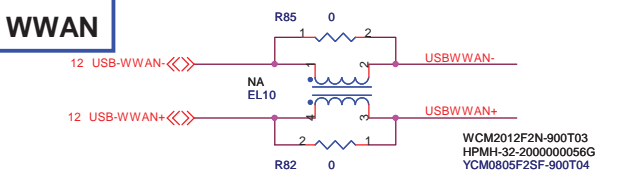
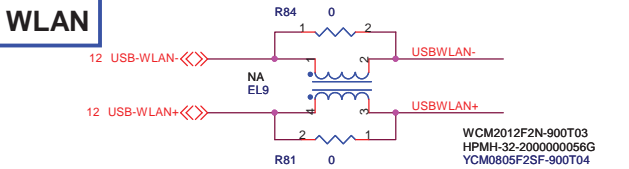
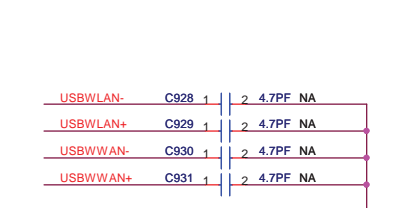
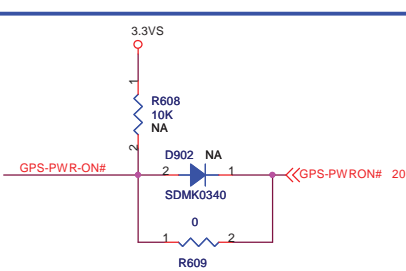
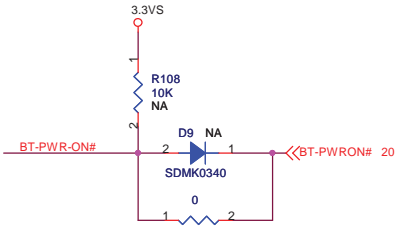
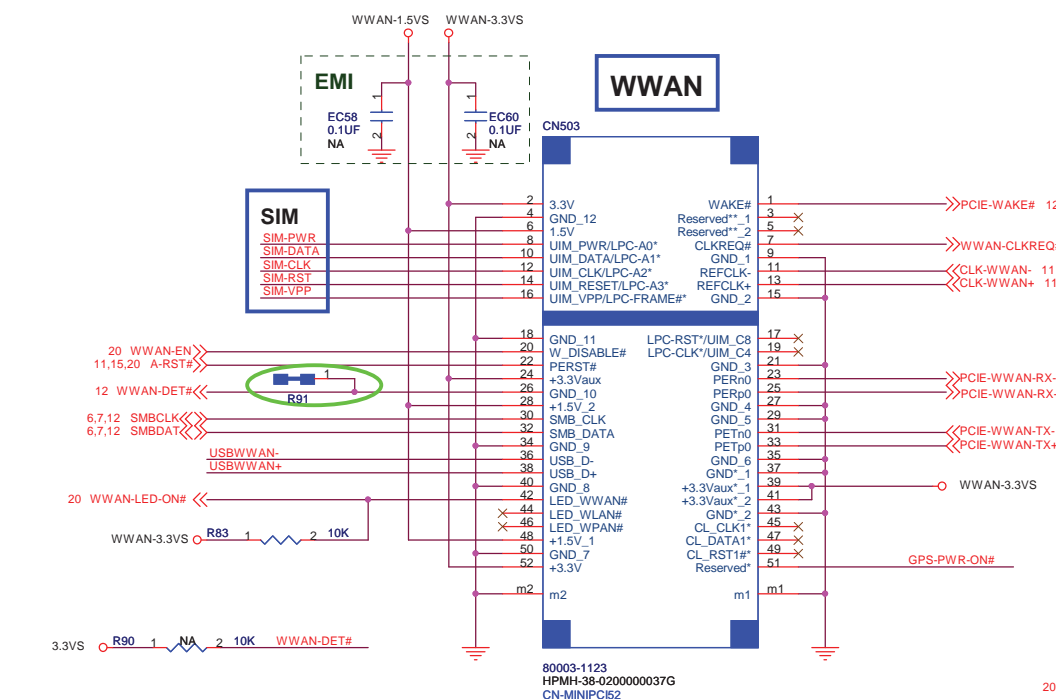
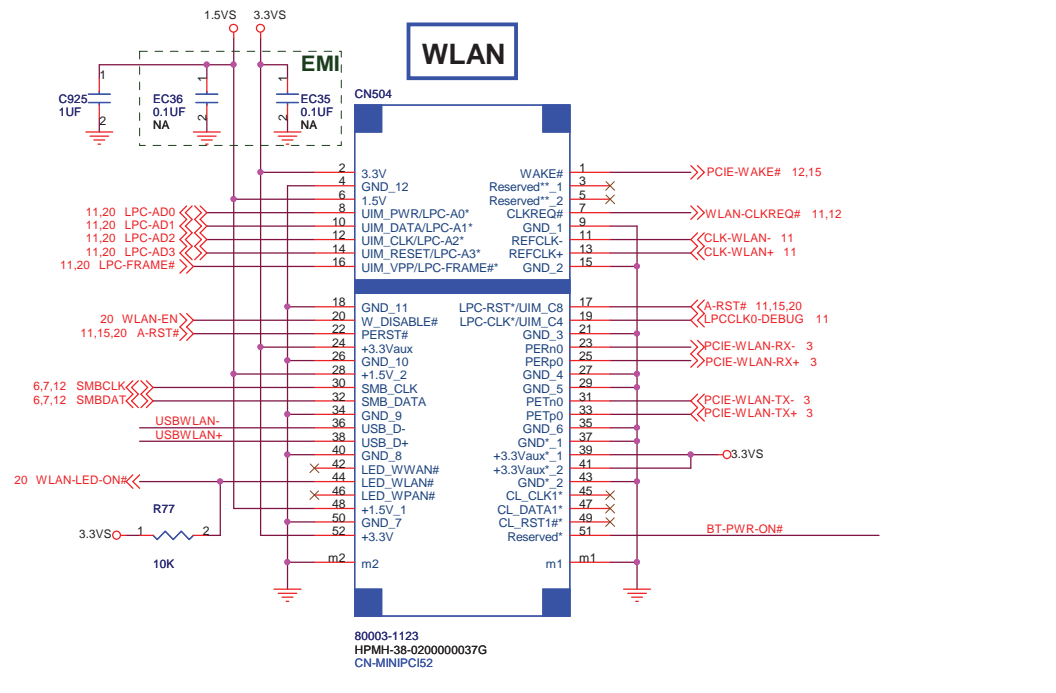
USBP2- C281 1 2 15PF NA
 USBP2+ C282 1 2 15PF NA

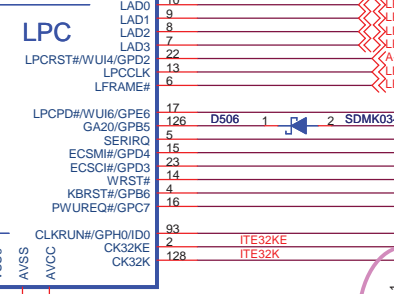
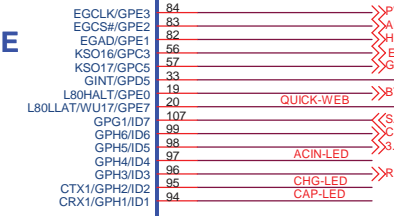
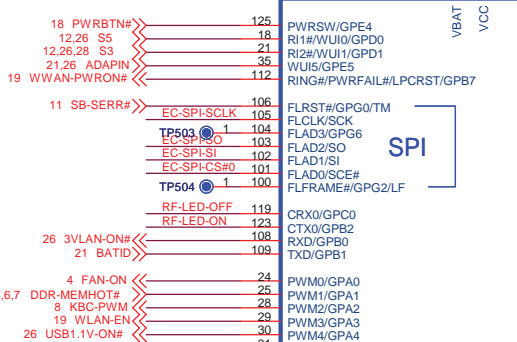
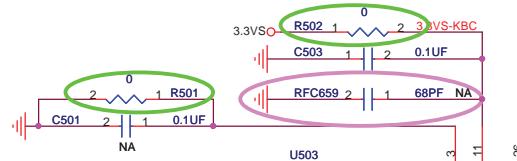


Power Button DB CONN

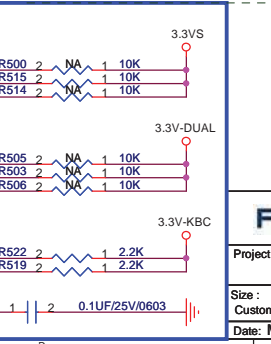
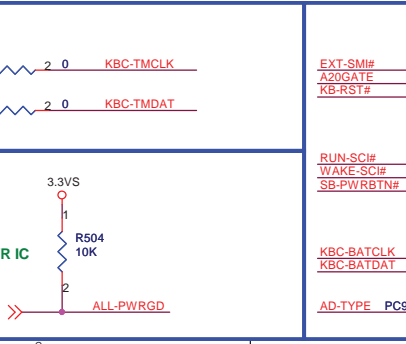
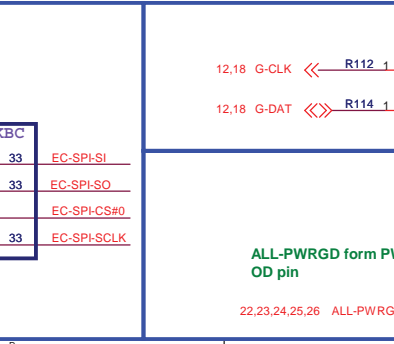
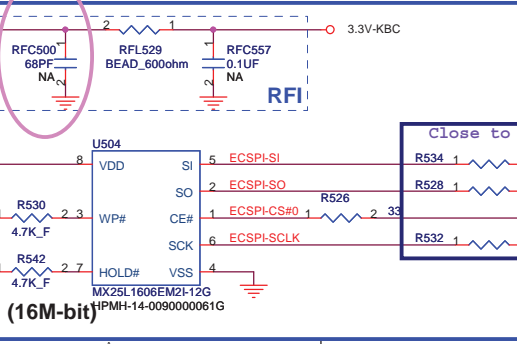
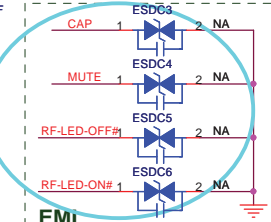
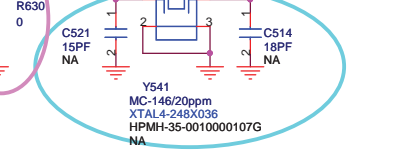
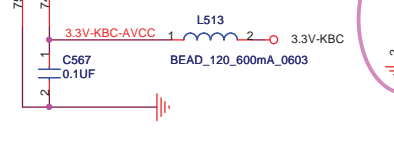
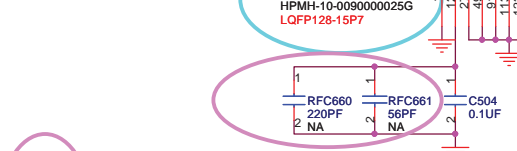
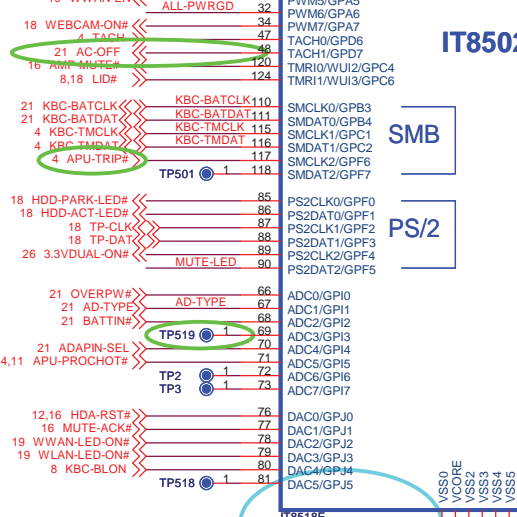
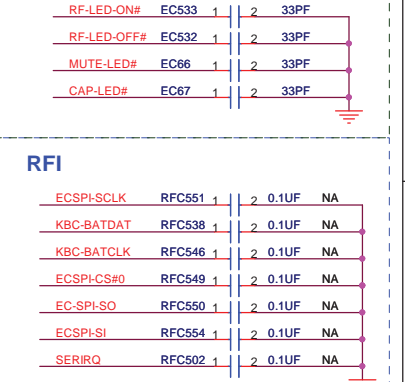
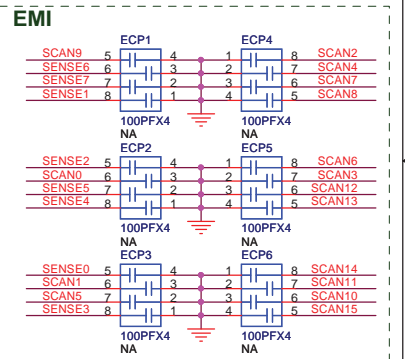
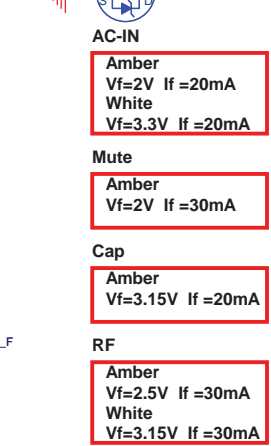
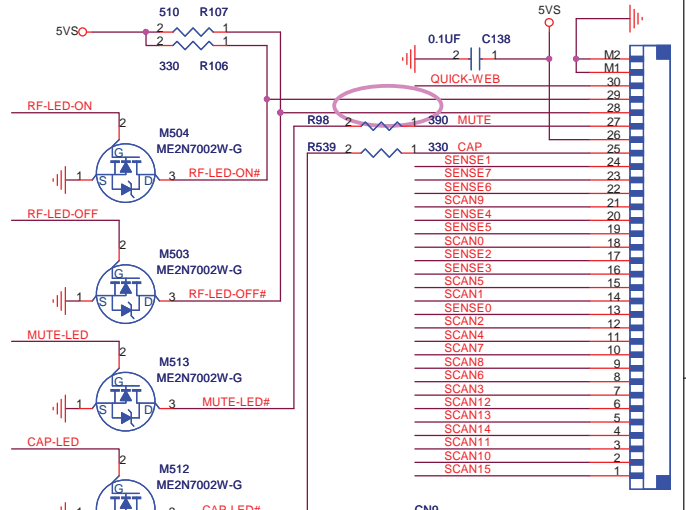
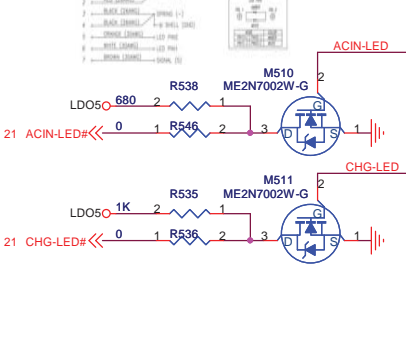


WLAN / WWAN

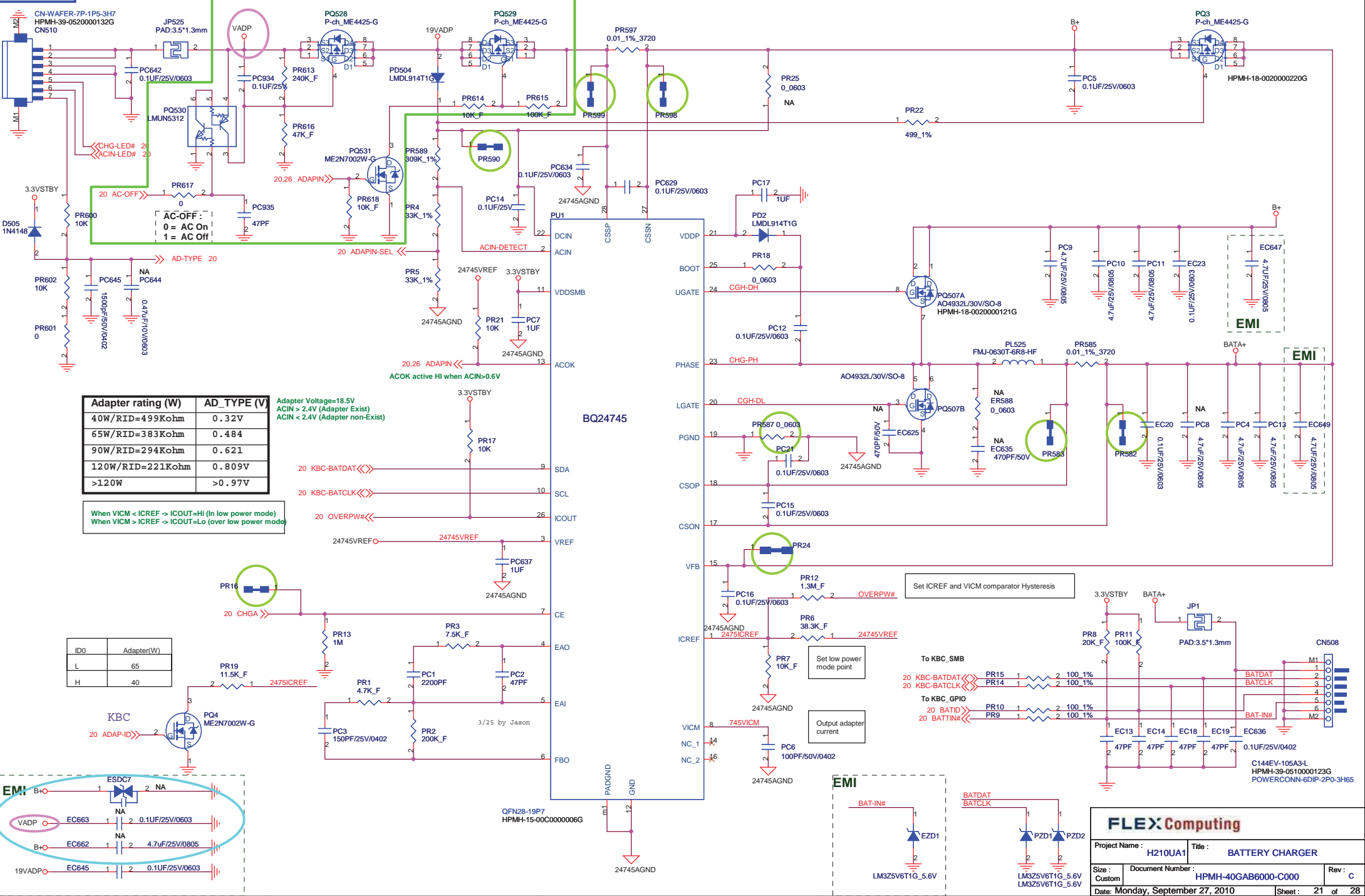




pin 28	pin 29	KB LED status
H	L	White (RF-ON)
L	H	Amber (RF-OFF)



Charger



Adapter rating (W)	AD_TYPE (V)
40W/RID=499Kohm	0.32V
65W/RID=383Kohm	0.484
90W/RID=294Kohm	0.621
120W/RID=221Kohm	0.809V
>120W	>0.97V

When VICM < ICREf -> ICOUT=Hi (In low power mode)
 When VICM > ICREf -> ICOUT=Lo (over low power mode)

ID0	Adapter (W)
L	65
H	40

Adapter Voltage=18.5V
 ACIN > 2.4V (Adapter Exist)
 ACIN < 2.4V (Adapter non-Exist)

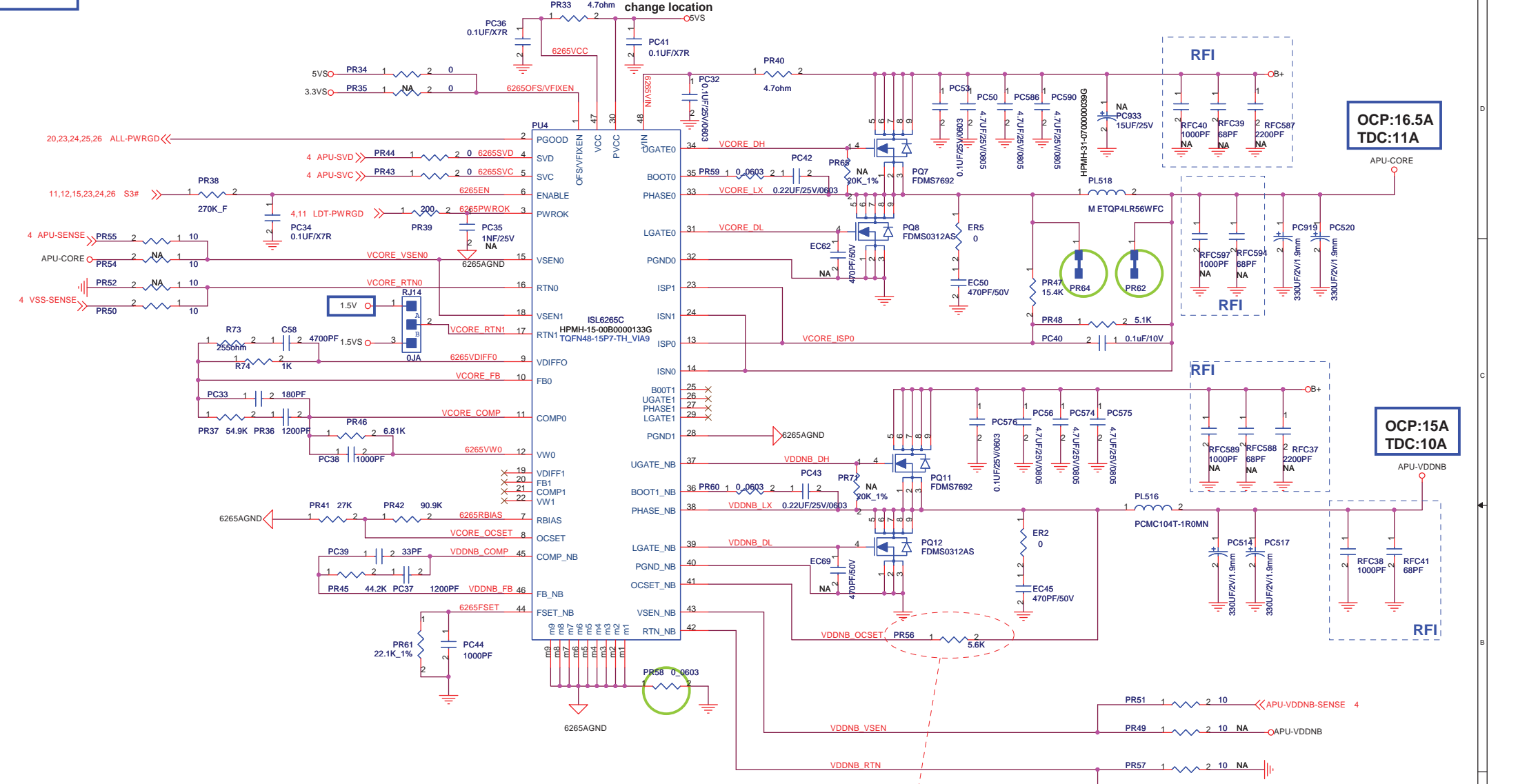
FLEX Computing

Project Name: H210UA1 Title: BATTERY CHARGER

Size: Custom Document Number: HPMH-40GAB6000-C000 Rev: c

Date: Monday, September 27, 2010 Sheet: 21 of 28

VCORE



Metal VID Codes

SVC	SVD	Output
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8

VFIXEN VID Codes

SVC	SVD	Output
0	0	1.4
0	1	1.2
1	0	1.0
1	1	0.8

OFS/VFIXEN	Offset & Droop	SVI	VFIX
GND	0	0	X
+3.3V	X	X	0
+5V	X	0	X

$$RocsetNB = Ioc * Rdson / 10\mu A$$

FLEX Computing

Project Name: H210UA1 | Title: APU-CORE/APU-VDDNB

Size: | Document Number: HPMH-40GAB6000-C000 | Rev: C

Date: Monday, September 27, 2010 | Sheet: 22 of 28

1.5VDDR

EN_PSV	Voltage
Low	0.8V (Max)
High	2.9V (Min)
float	2V (Typ)

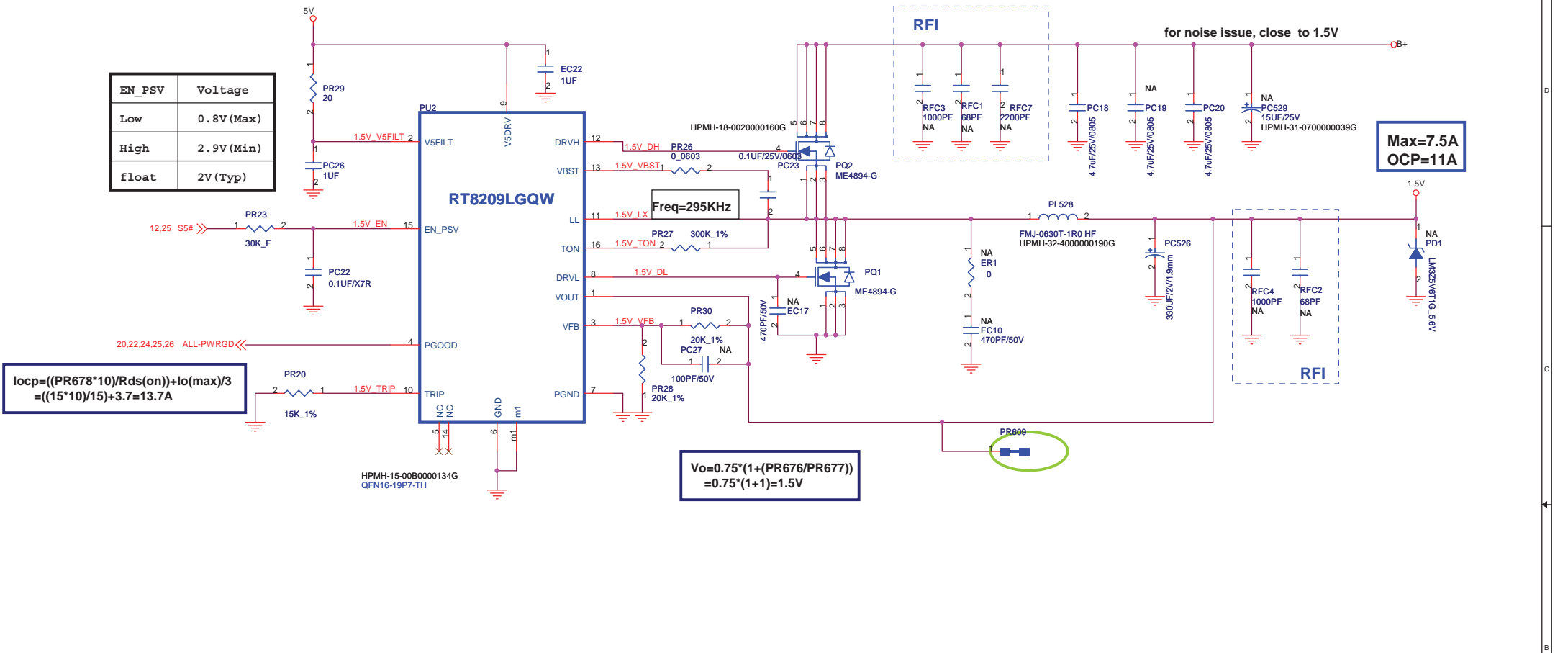
$$I_{ocp} = ((PR678 * 10) / R_{ds(on)}) + I_o(max) / 3$$

$$= ((15 * 10) / 15) + 3.7 = 13.7A$$

$$V_o = 0.75 * (1 + (PR676 / PR677))$$

$$= 0.75 * (1 + 1) = 1.5V$$

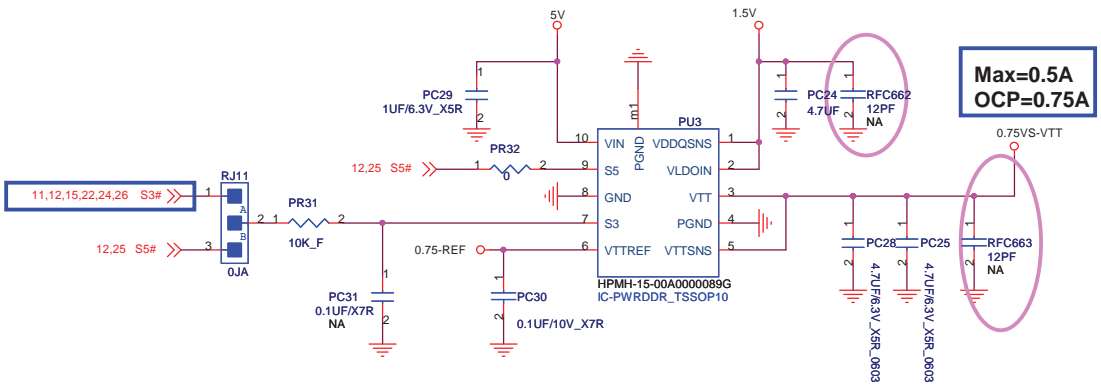
Max=7.5A
OCP=11A



0.75VS

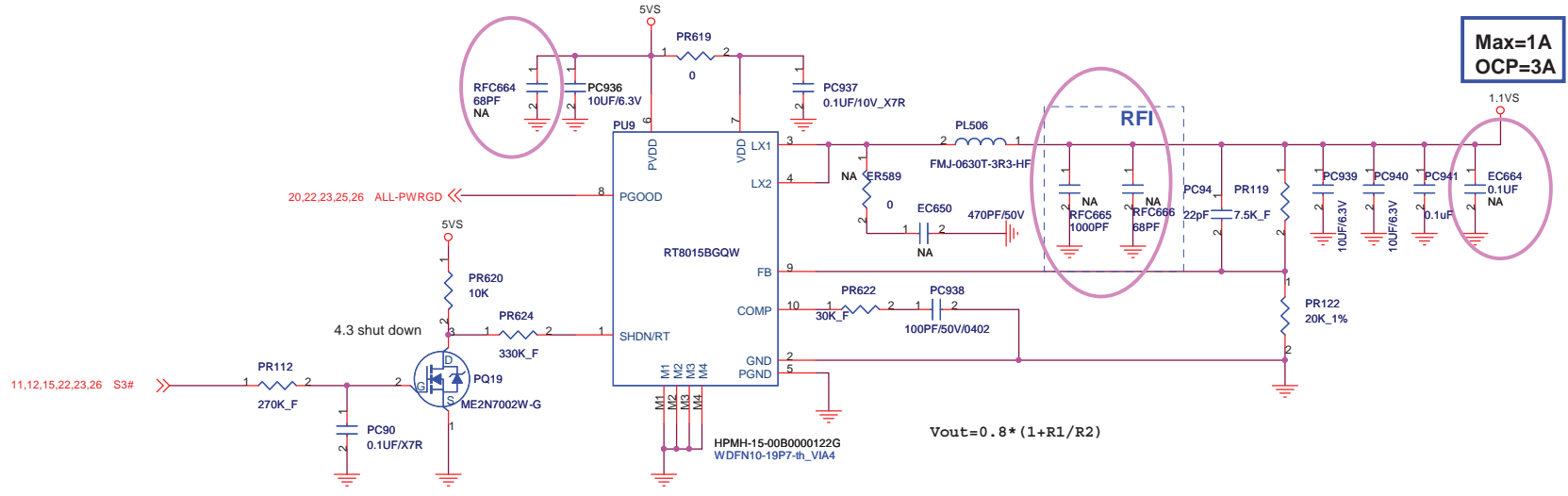
Table 1. S3 and S5 Control Table

STATE	S3	S5	VTT	VREF
Normal	Hi	Hi	1.25V/0.9V	1.25V/0.9V
Standby	Lo	Hi	12mV/6mV (High-Z)	1.25V/0.9V
Shutdown	Lo	Lo	0V (Discharge)	0V (Discharge)
Shutdown	Hi	Lo	0V (Discharge)	0V (Discharge)

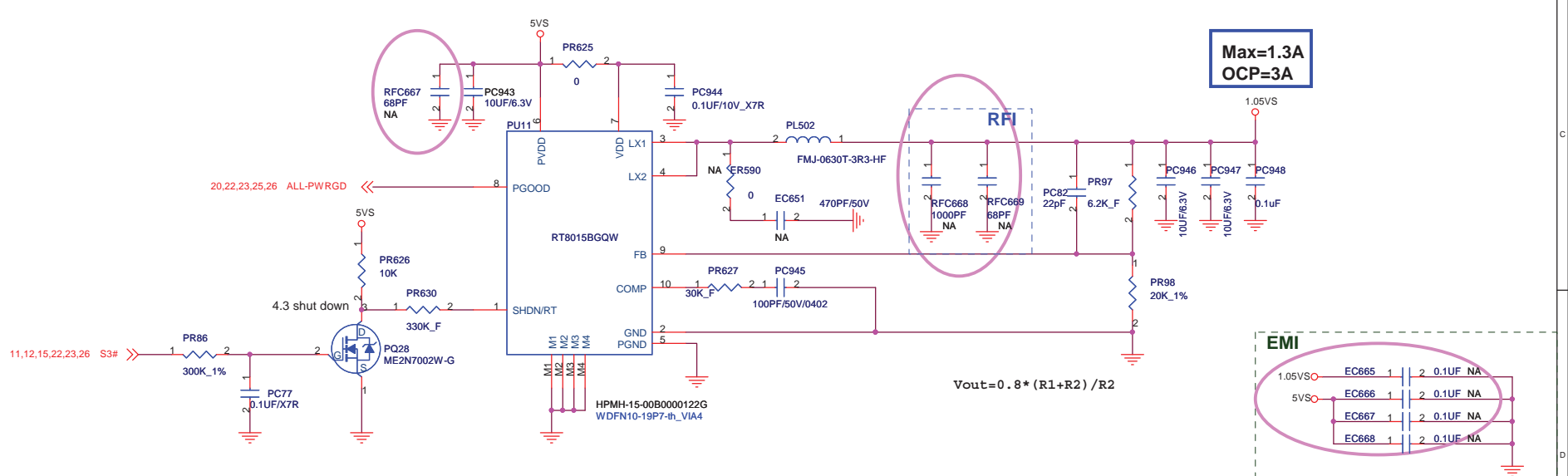


Max=0.5A
OCP=0.75A

1.1VS



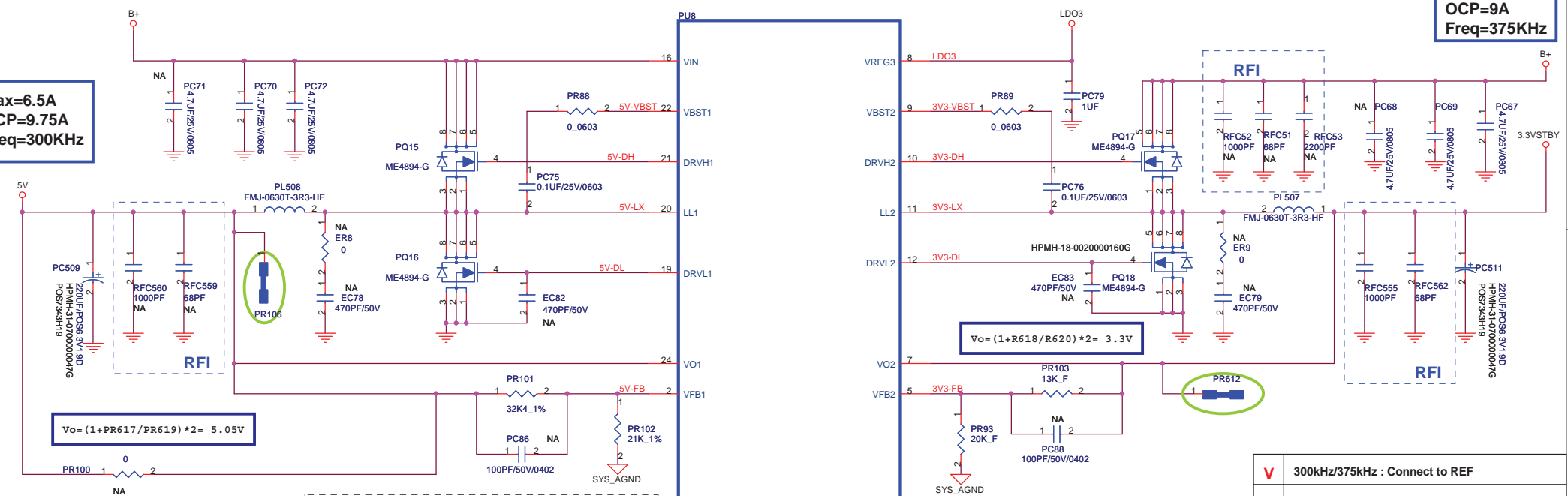
1.05VS



5V / 3.3VSTBY

**Max=6A
OCP=9A
Freq=375KHz**

**Max=6.5A
OCP=9.75A
Freq=300KHz**



5V/3.3VSTBY ON

- V** 300kHz/375kHz : Connect to REF
 - 400kHz/500kHz : Connect to VREG5 or VREG3
 - 200kHz/250kHz : Connect to GND
-
- V** Ultrasonic Mode : Connect to VREG5 or VREG3
 - Diode Emulation Mode : Connect to REF
 - PWM Mode : Connect to GND

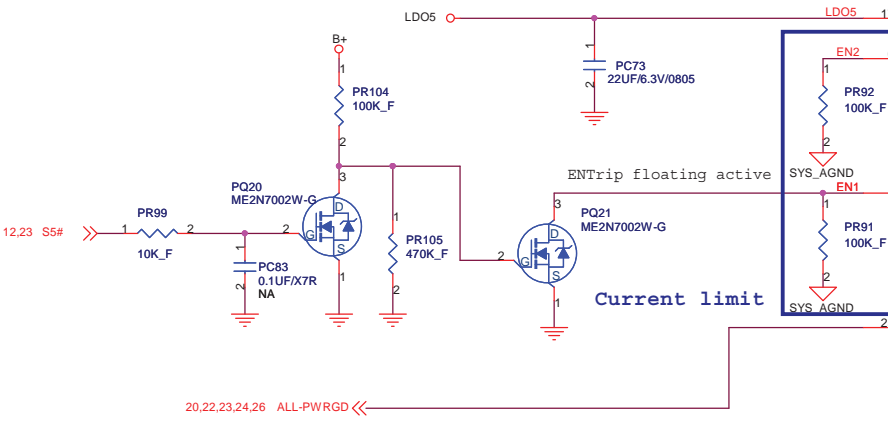
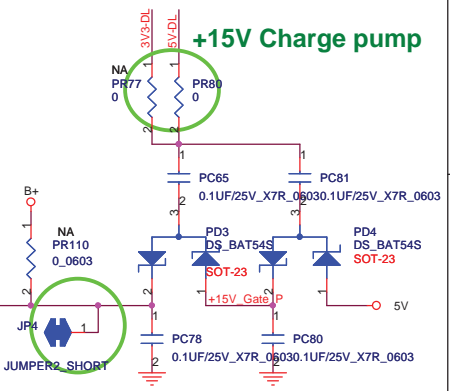
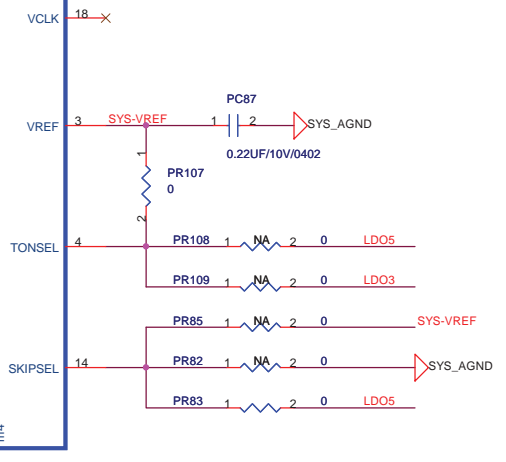


Table 3. Enabling State

EN0	ENTRIP1	ENTRIP2	VREF	VREG5	VREG3	CH1	CH2	VCLK
GND	Don't Care	Don't Care	Off	Off	Off	Off	Off	Off
R to GND	Off	Off	On	On	On	Off	Off	Off
R to GND	On	Off	On	On	On	On	Off	Off
R to GND	Off	On	On	On	On	Off	On	Off
R to GND	On	On	On	On	On	On	On	Off
Open	Off	Off	On	On	On	Off	Off	Off
Open	On	Off	On	On	On	On	Off	On
Open	Off	On	On	On	On	Off	On	Off
Open	On	On	On	On	On	On	On	On



S4/S3 OFF

5VS

Control HDMI CONN 5V

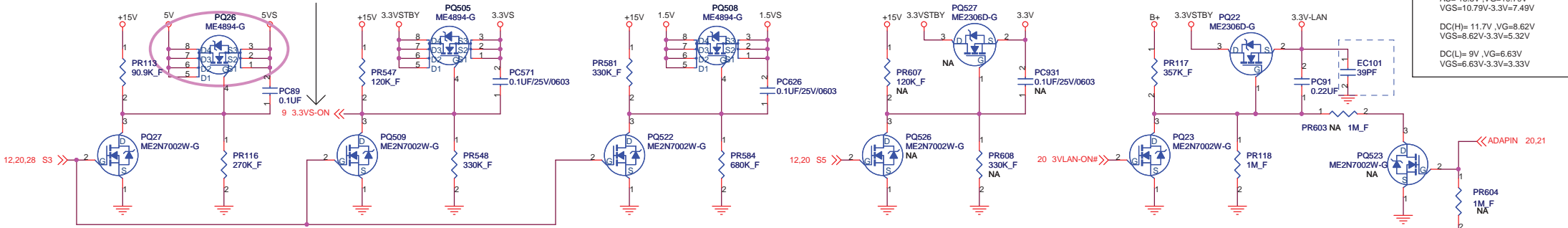
3.3VS

1.5VS

3.3V

3.3V-LAN

rise time 1 ~100ms
 AC= 18.5V ,VG=10.79V
 VGS=10.79V-3.3V=7.49V
 DC(H)= 11.7V ,VG=8.62V
 VGS=8.62V-3.3V=5.32V
 DC(L)= 9V ,VG=6.63V
 VGS=6.63V-3.3V=3.33V



ME2306D-G VGS= 1(min) ~ 3(max)
 +15= 11.8V ,VG=8.82V +15= 14.6V ,VG=10.92V
 VGS=8.82V-5V=3.82V VGS=10.92V-5V=5.92V

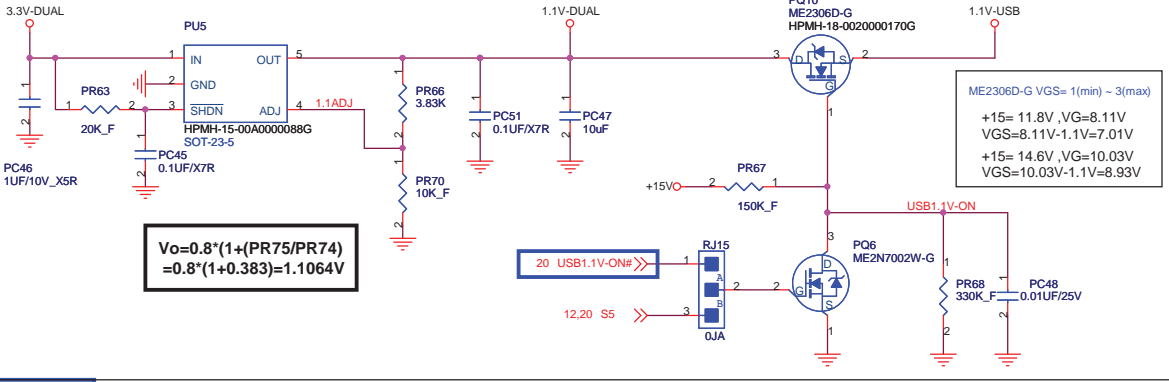
ME4894-G VGS=1(min) ~ 3(max)
 +15= 11.8V ,VG=8.65V +15= 14.6V ,VG=10.7V
 VGS=8.65V-3.3V=5.35V VGS=10.7V-3.3V=7.4V

ME4894-G VGS=1(min) ~ 3(max)
 +15= 11.8V ,VG=7.94V +15= 14.6V ,VG=9.82V
 VGS=7.94V-1.5V=6.44V VGS=9.82V-1.5V=8.32V

1.1VSTBY / 1.1V_USB

200mA

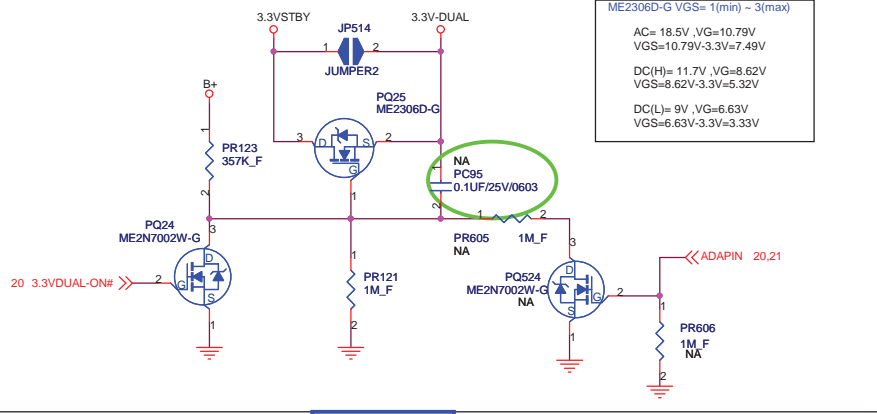
150mA



$V_o = 0.8 * (1 + (PR75 / PR74)) = 0.8 * (1 + 0.383) = 1.1064V$

ME2306D-G VGS= 1(min) ~ 3(max)
 +15= 11.8V ,VG=8.11V
 VGS=8.11V-1.1V=7.01V
 +15= 14.6V ,VG=10.03V
 VGS=10.03V-1.1V=8.93V

3.3V-DUAL



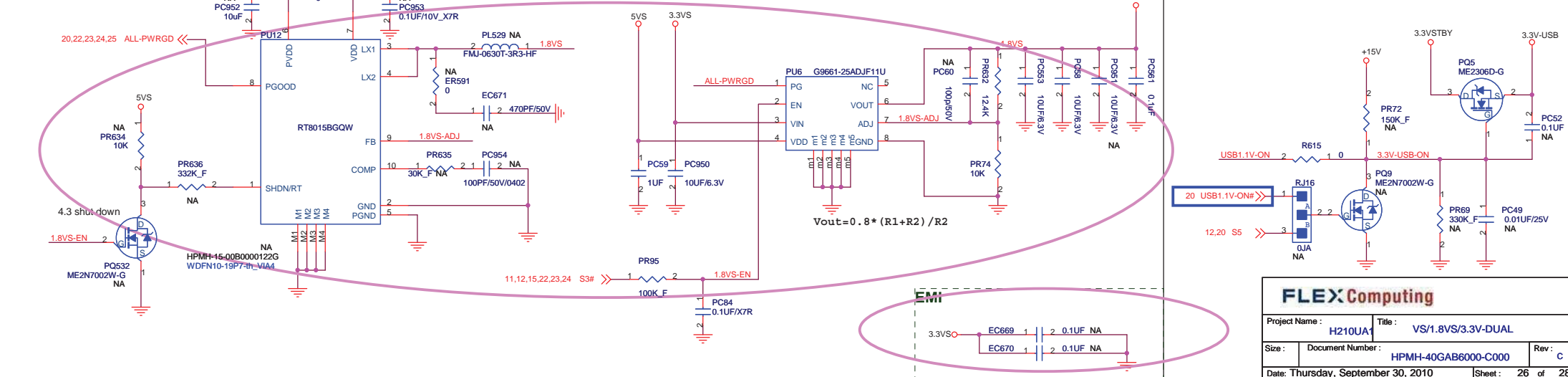
ME2306D-G VGS= 1(min) ~ 3(max)
 AC= 18.5V ,VG=10.79V
 VGS=10.79V-3.3V=7.49V
 DC(H)= 11.7V ,VG=8.62V
 VGS=8.62V-3.3V=5.32V
 DC(L)= 9V ,VG=6.63V
 VGS=6.63V-3.3V=3.33V

1.8VS

**Max=0.5A
OCP=3A**

3.3V-USB

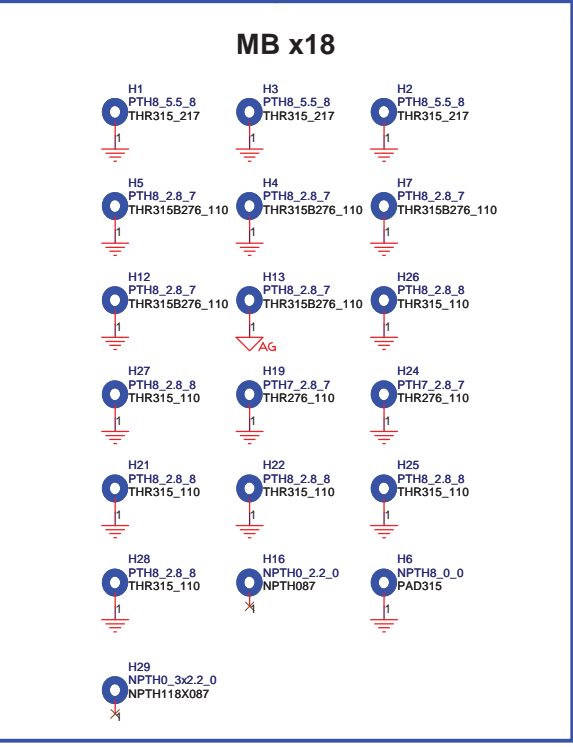
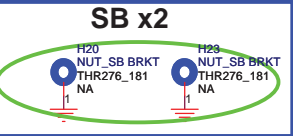
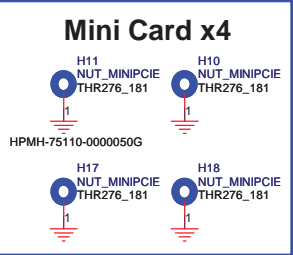
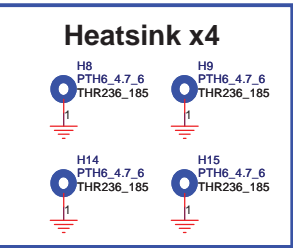
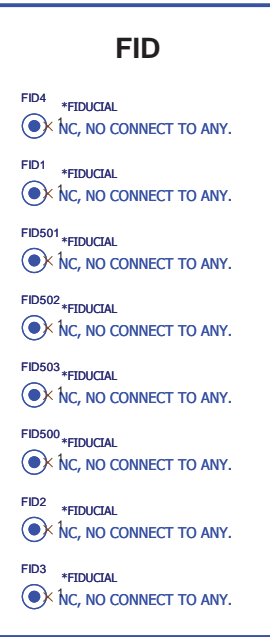
ME2306D-G VGS= 1(min) ~ 3(max)
 +15= 11.8V ,VG=8.11V
 VGS=8.11V-3.3V=4.81V
 +15= 14.6V ,VG=10.03V
 VGS=10.03V-3.3V=6.73V



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

FLEX Computing

Project Name :	H210UA	Title :	VS/1.8VS/3.3V-DUAL
Size :	Document Number :	HPMH-40GAB6000-C000	Rev : C
Date : Thursday, September 30, 2010	Sheet :	26 of 28	



030 list

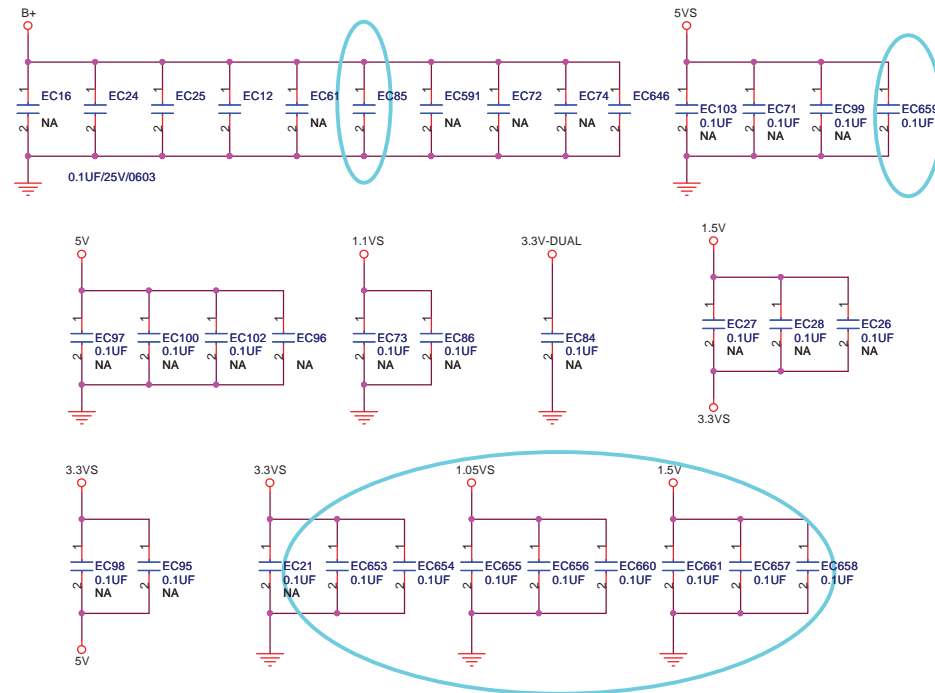
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CPU Support	1	HPMH-B2985120G00001	BRKT CPU SUPPORT G AB600
SCREW	2	HPMH-7030730000069G	SCREW PH M1.6*0.35 L3 D3.6 T0.8 G AB600
RTC BATTERY CABLE	1	HPMH-B2985050G00001	CABLE ASSY RTC BATTERY G AB600
MYLAR	1	HPMH-B298511G00001	MYLAR CPU MB TOP G AB600
MYLAR	1	HPMH-B298511G00003	MYLAR FAN MB BOT G AB600
MYLAR	1	HPMH-B298511G00004	MYLAR IO L MB BOT G AB600
MYLAR	1	HPMH-B298511G00005	MYLAR IO R MB TOP G AB600
MYLAR	1	HPMH-B298511G00006	MYLAR KB MB TOP G AB600
MYLAR	1	HPMH-B298511G00008	MYLAR SB MB BOT G AB600
MYLAR	1	HPMH-B298511G00010	MYLAR WWAN MB BOT G AB600
KAPTON	1	HPMH-B298511G00035	KAPTON CPU AMD G AB600
KAPTON	1	HPMH-B298511G00044	KAPTON FOR SB G AB600
SPONGE	2	HPMH-B298511G00037	SPONGE L5.5W4H3 G AB600
SPONGE	4	HPMH-B298511G00045	SPONGE L4.8*W4*H2.55 G AB600
GASKET	4	HPMH-B298511G00048	GASKET W8*H1*L30 G AB600
GASKET	1	HPMH-B298511G00049	GASKET W5*H0.7*L25 G AB600
GASKET	1	HPMH-B298511G00050	GASKET W3*H1*L25 G AB600
CONDUCTIVE TAPE	1	HPMH-B298511G00039	CONDUCTIVE TAPE FOR HDMI G AB600
CONDUCTIVE TAPE	1	HPMH-B298511G00040	CONDUCTIVE TAPE W7*L12 G AB600
CONDUCTIVE FABRIC	2	HPMH-B298511G00041	CONDUCTIVE FABRIC W7*T0.25*L10 G AB600
CONDUCTIVE TAPE	1	HPMH-B298511G00042	CONDUCTIVE TAPE W6*L26 G AB600
RUBBER	2	HPMH-B298511G00055	RUBBER FOR MB TOP G AB600

Normal short list

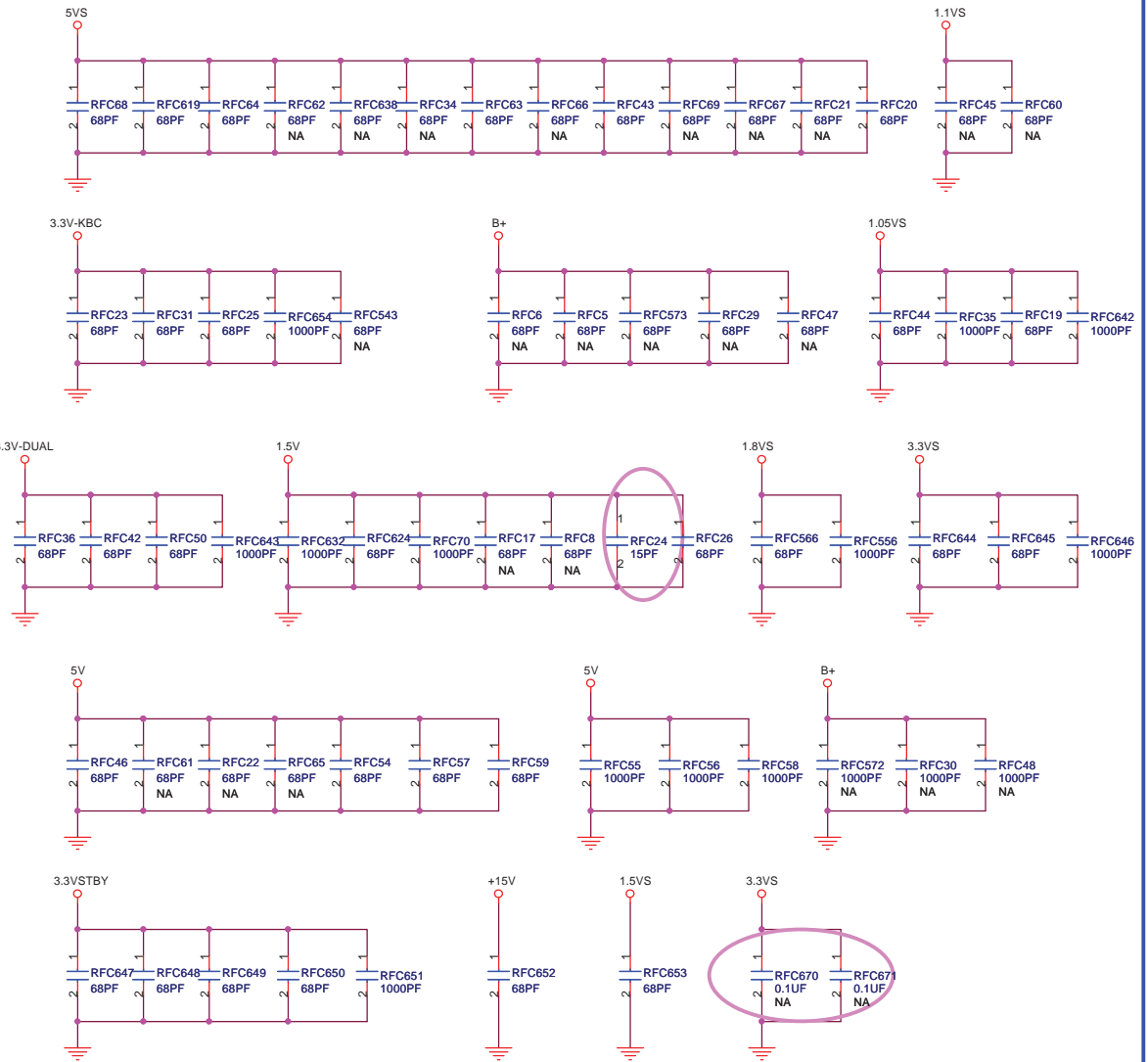
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ER11	
ER12	
ER13	
ER14	
ER15	
ER16	
ER17	
PR16	
PR62	
PR64	
PR582	
PR583	
PR590	
PR598	
PR599	
PR609	PAD0402-SHORT5
R91	
R175	
R205	
R208	
R209	
R212	
R218	
R562	
R571	
R604	
R605	
R607	
R612	
R613	
R614	

Location	Footprint
PR24	
PR106	PAD0402-SHORT
PR612	
ER3	
ER4	
ER6	PAD0603-SHORT
ER7	
JP4	PAD-JUMPER-SHORT

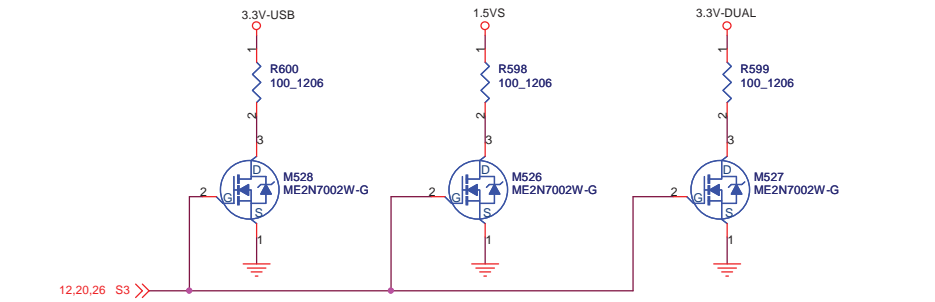
EMI Caps



RFI Caps



Discharge



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