AMD Embedded with ATI RS780MN & SB710

CLOCK GENERATOR
RTM880N-796
PAGE 03

1 SO-DIMM A
Maximum 2+2GB
PAGE 7

2 SO-DIMM B
Maximum 2+2GB
PAGE 8

DDR2 667 MAX

CPU
AMD Conesus
PROCESSOR
10~15W
812 EBGA
PAGE 4,5,6

16bit HT I/F
400/800/1200/1600MTS
3.2GB/s(6.4GB/s max)

	SLP S3#
(Full ON)	HIGH
(Suspend to RAM)	LOW
(Suspend to Disk)	LOW
(Soft OFF)	LOW

64M * 16 DDR3 667

SIDE- PORT
128MB
PAGE 12

CRT / LCD
PAGE 13

HDMI
PAGE 14

North Bridge
AMD
RS780M
INTEGRATED GRAPHICS
6W
21x21 mm
528 FCBGA
PAGE 9,10,11,12

USB 2.0
PCIE x1
PCIE MINI CARD
PAGE 24 WWAN

800/900,1800/1900/2100
Antenna

SIM CONN
PAGE 24

PCIE MINI CARD
PAGE 24 WLAN

802.11 a/g/b/n
Antenna

USB 2.0
PCIE x1
LAN REALTEK
RTL8103EL-GR
PAGE 19

RJ 45
CONN
PAGE 19

PCIE x4

South Bridge
AMD
SB710
4W
21x21 mm
528 FCBGA
PAGE 15,16,17,18

USB 2.0

SATA HDD
PAGE 17

SATA

DAUGHTER BOARD
USB PORT x 2
PAGE 22

BLUE TOOTH
PAGE 23

CARD READER
AU6433B52-GEF
PAGE 20

CARD SLOT
7 IN 1
PAGE 20

AZALIA

AUDIO CODEC
IDT92HD81B1
PAGE 21

WEBCAM
PAGE 23

ON BOARD
USB PORT * 2
PAGE 22

MIC JACK
PAGE21

DIGITAL MIC
PAGE23

EAR PHONE JACK

SPEAKER
PAGE 21

G-SENSOR
PAGE 23

SMBUS

OPTIONAL USE

SPI ROM
PAGE 17

LPC

ITE
KBC
ITE8502E
PAGE 25

SPI ROM
PAGE 25

FAN
PAGE 6

CPU THERMAL
PAGE 6

KEYBOARD CONN
PAGE 25

NB THERMAL
PAGE 10

TouchPad
PAGE 23

SB USB PORT	Device
Port 10	NC
Port 9	NC
Port 8	WWAN
Port 7	WLAN
Port 6	CARDREADER
Port 5	WEBCAM
Port 4	BLUE TOOTH
Port 3	USB(DAUGHTER)
Port 2	USB(DAUGHTER)
Port 1	USB(ON BOARD)
Port 0	USB(ON BOARD)

LED STATUS

(1) Dual color TP	white : On amber: Off
USB D/B	
(1) Dual color RF	blue: enable amber: disable
(2) Power on	white: Power on
LED D/B	
(1) Battery Charging	white
(2) Dual color HDD	white : Active amber: Park
(1) Num Lock	white
(2) Mute LED	amber
(3) Caps Lock	blink white: Stanby white

USB DB CONN
LED DB CONN
DB CONN
LID / TP LOCK
PAGE 22

V / VS
VGA POWER
S3 / S4 OFF POWER
WEB CAM POWER
PAGE 33

NB_CORE
PAGE 28

CPU_CORE
PAGE 27

1.1VS / 2.5VS
1.2V-USB
PAGE 31

5V/3.3VSTBY
PAGE 29

0.9V/1.8V
PAGE 30

1.5VS/1.2VS
PAGE 32

CHARGER
PAGE 26

SCREW/EMI
PAGE 35

Arwen Block Diagram

H310UA1

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FLEX Computing

Project Name : ARWEN UA1	Title : BLOCK Diagram
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1	Block Diagram
2	INDEX & POWER STATUS
3	CLOCK GEN
4-8	CPU
9-12	North bridge RS780
13	CONN - LVDS/CRT
14	CONN - HDMI
15-18	SOUTH BRIDGE RS780
19	LAN - RT8103EL
20	CARD READER - ALCOR AU6433B52-GEF
21	AUDIO - IDT 92HD81
22	USB CONN / SWITCH / LID
23	BT / WEBCAM / TOUCHPAD / G-SENSOR
24	WLAN / WWAN
25	KBC - ITE8502E
26	PWR - BATERY CHARGER
27	PWR - CPU CORE
28	PWR - NB CORE
29	PWR 5V / 3.3 VSTBY
30	PWR 1.8V / 0.9V
31	PWR - 1.1VS / 2.5VS / 1.2V-USB
32	PWR - 1.5VS / 1.2VS
33	PWR - V / VS / VGA POWER
34	POWER SEQUENCE
35	OTHER SCREW / EMI CAPS

Power States

POWER PLANE	VOLTAGE	PAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
ACIN	~+19V	26	ADAPTER IN POWER		S0~S5
B+	+10~+19V	13,23,24,26,27,28,29,30,31,32,33	MAIN POWER		S0~S5
VBAT	+3.0V~+3.3V	15	RTC BATTERY		S0~S5
LDO5	+5V	22,29	LDO POWER	B+	S0~S5
LDO3	+3.3V	29	LDO POWER	B+	S0~S5
3.3VSTBY	+3.3V	15,16,17,22,25,26,29,31,33	STANDBY POWER	B+	S0~S5
3.3V-DUAL	+3.3V	15,16,17,18,25,31,33	EC CTRLD POWER	3.3VDUAL-ON#	BY EC CONTROL
1.2V-DUAL	+1.2V	18,31	3.3V-DUAL CTRLD POWER	3.3V-DUAL	BY EC CONTROL
5V	+5V	22,23,29,30,32,33,	SUS-C# CTRLD POWER	SUSC#	S0.S3
3.3V	+3.3V	13,33	SUS-C# CTRLD POWER	SUSC	S0.S3
1.8V	+1.8V	04,05,06,07,08,30,33	SUS-C# CTRLD POWER	SUSC#	S0,S3
0.9V	+0.9V	04,05,07,08,30	SUS-C# CTRLD POWER	SUSC#,SUSB#	S0,S3
5VS	+5V	06,13,14,17,18,21,22,23,25,27,28,31,32,33	SUS-B# CTRLD POWER	SUSB	S0
3.8VS	+3.8V	23,33	SUS-B# CTRLD POWER	SUSB#	S0
3.3VS	+3.3V	03,06,07,08,10,11,12,13,14,16,17,18,20,21,22 23,24,25,27,28,29,31,32,33	SUS-B# CTRLD POWER	SUSB	S0
2.5VS	+2.5V	06,31	SUS-B# CTRLD POWER	SUSB#	S0
1.8VS	+1.8V	06,10,11,12,15,16,33	SUS-B# CTRLD POWER	SUSB	S0
1.5VS	+1.5V	11,12,16,24,28,31,32	SUS-B# CTRLD POWER	SUSB#	S0
1.2VS	+1.2V	04,06,11,15,17,18,32	SUS-B# CTRLD POWER	SUSB#	S0
1.1VS	+1.1V	09,10,11,12,31	SUS-B# CTRLD POWER	SUSB#	S0
CPU_CORE		04,27	CPU CORE POWER	SUSB#	S0
NB_CORE	+1.0V~+1.1V	11,18,32	NORTH BRIDGE CORE POWER	1.1VS-PG	S0
BATA+	+10V~+17V	26	MAIN BATTERY		S0~S5

GND PLANE	PAGE	DESCRIPTION
GND	ALL	
AGND	19	
LAN-GND	21	

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Project Name : ARWEN UA1	Title : Power Diagram
Size : Custom / Document Number : HPMH-40GAB4000-D000	Rev : D
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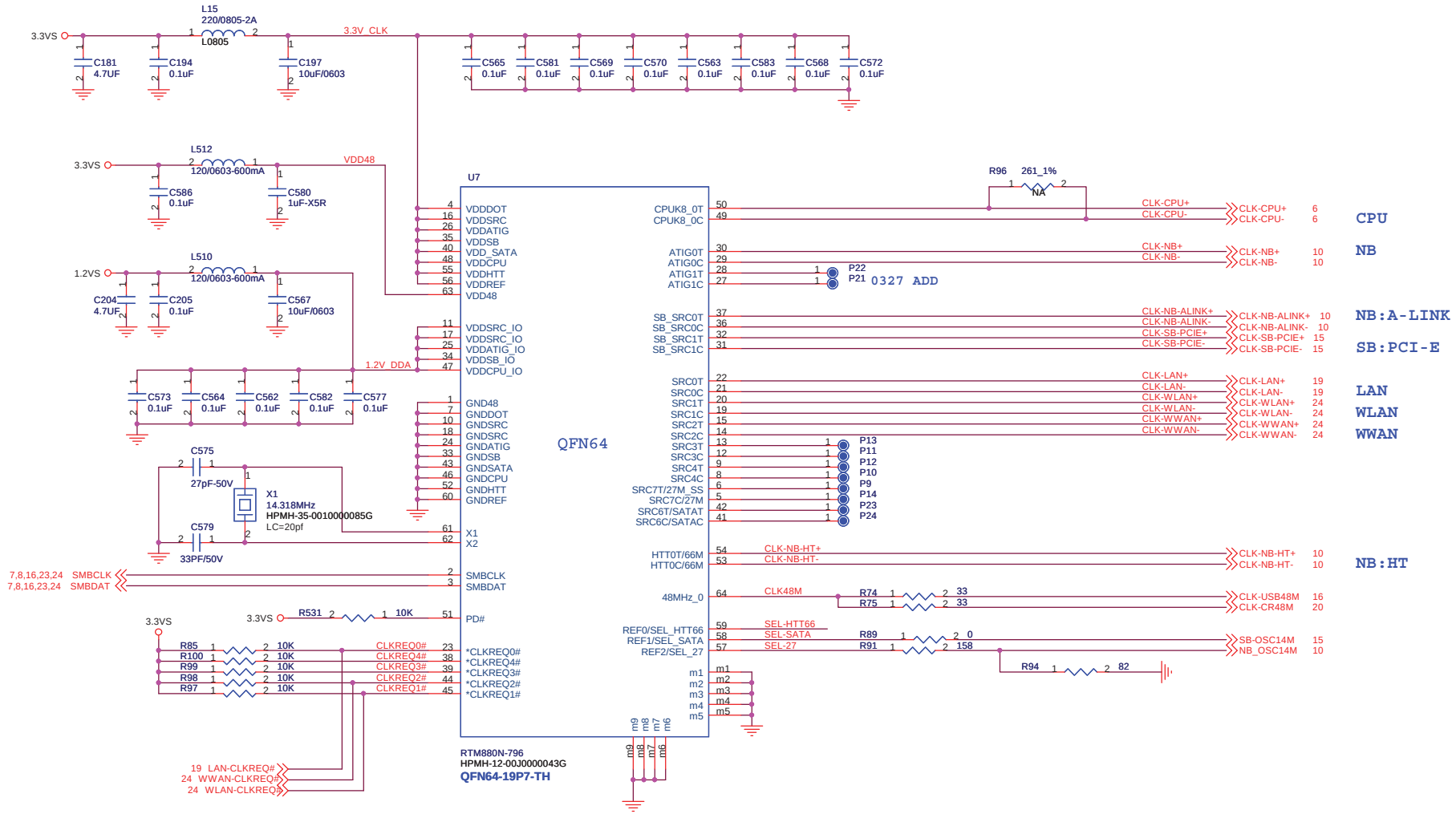
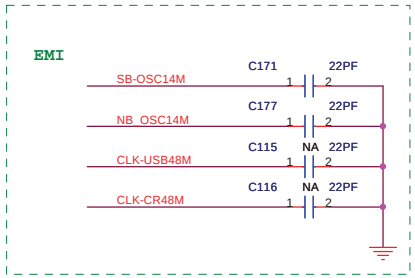
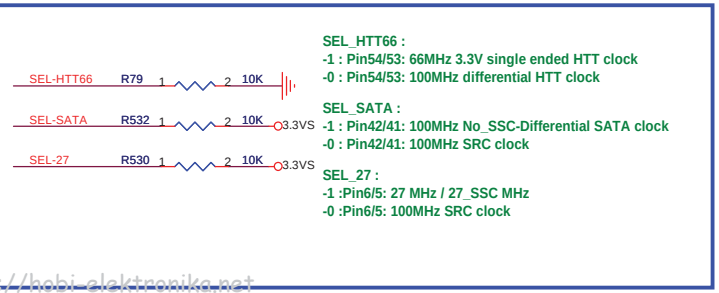
CLOCK GENERATOR







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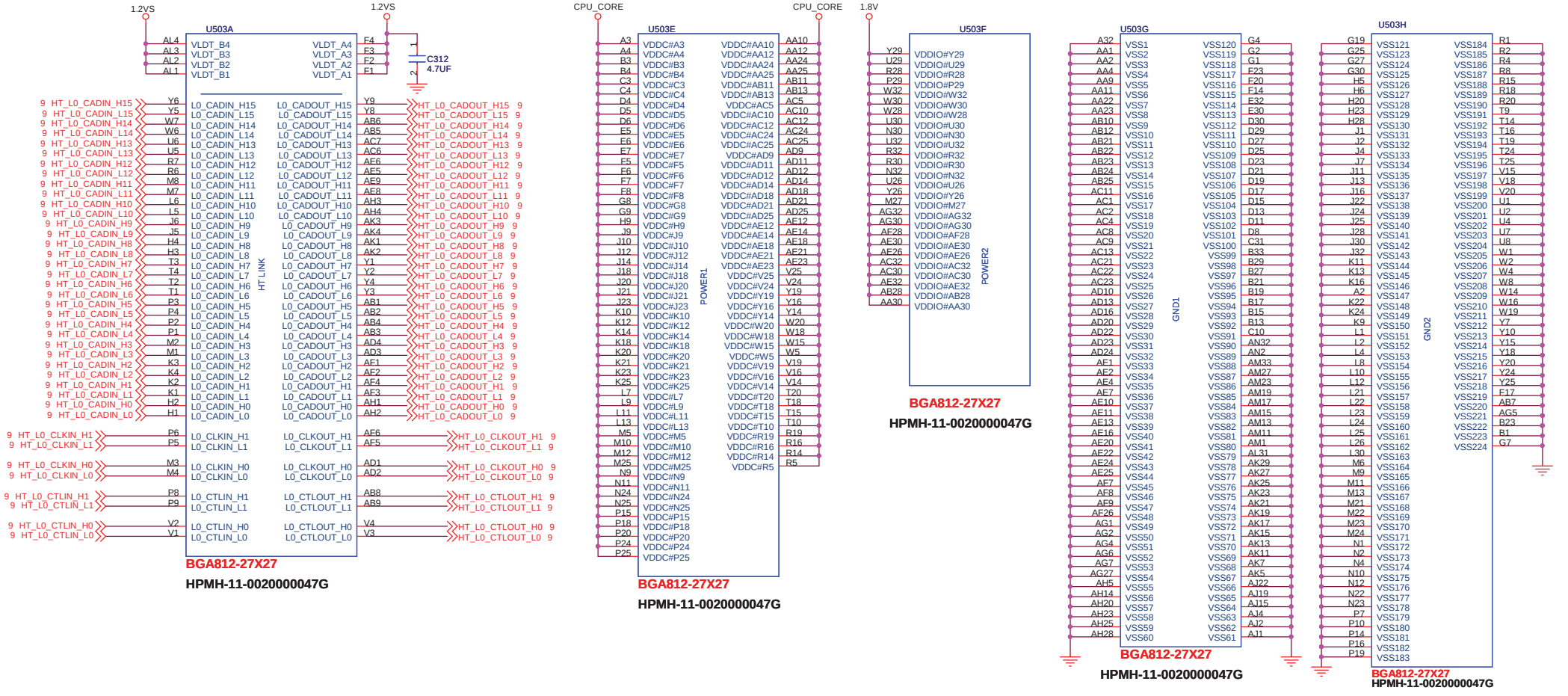
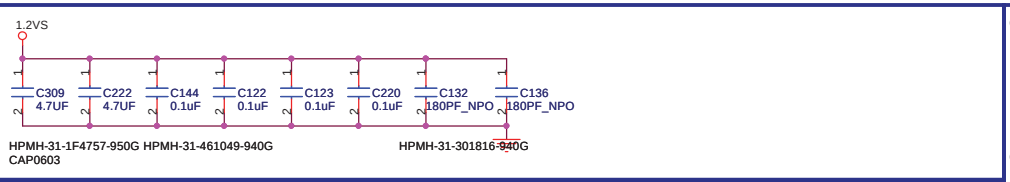
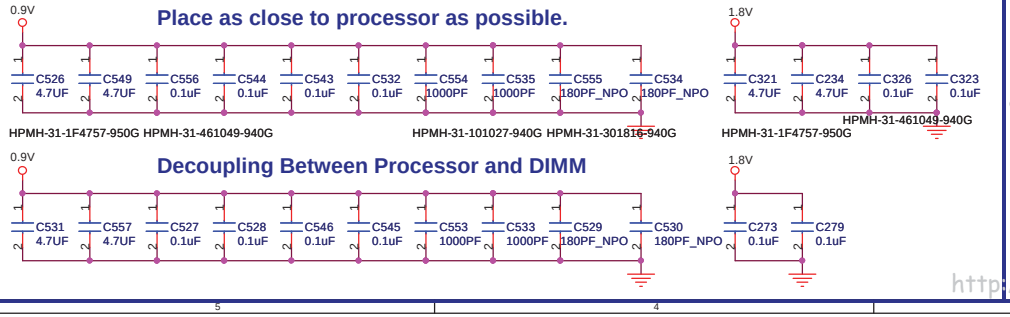
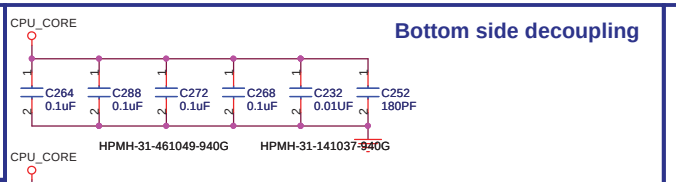
CPU HT/PWR/GND

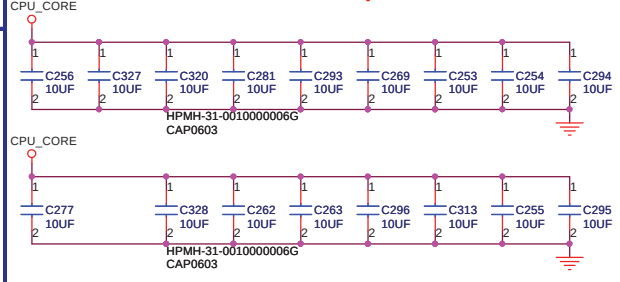
VLDT Trace at Itast 200 mils wide

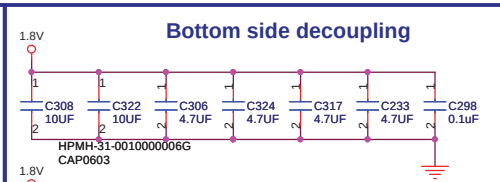












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Project Name : ARWEN UA1	Title : CPU HT/PWR/GND	
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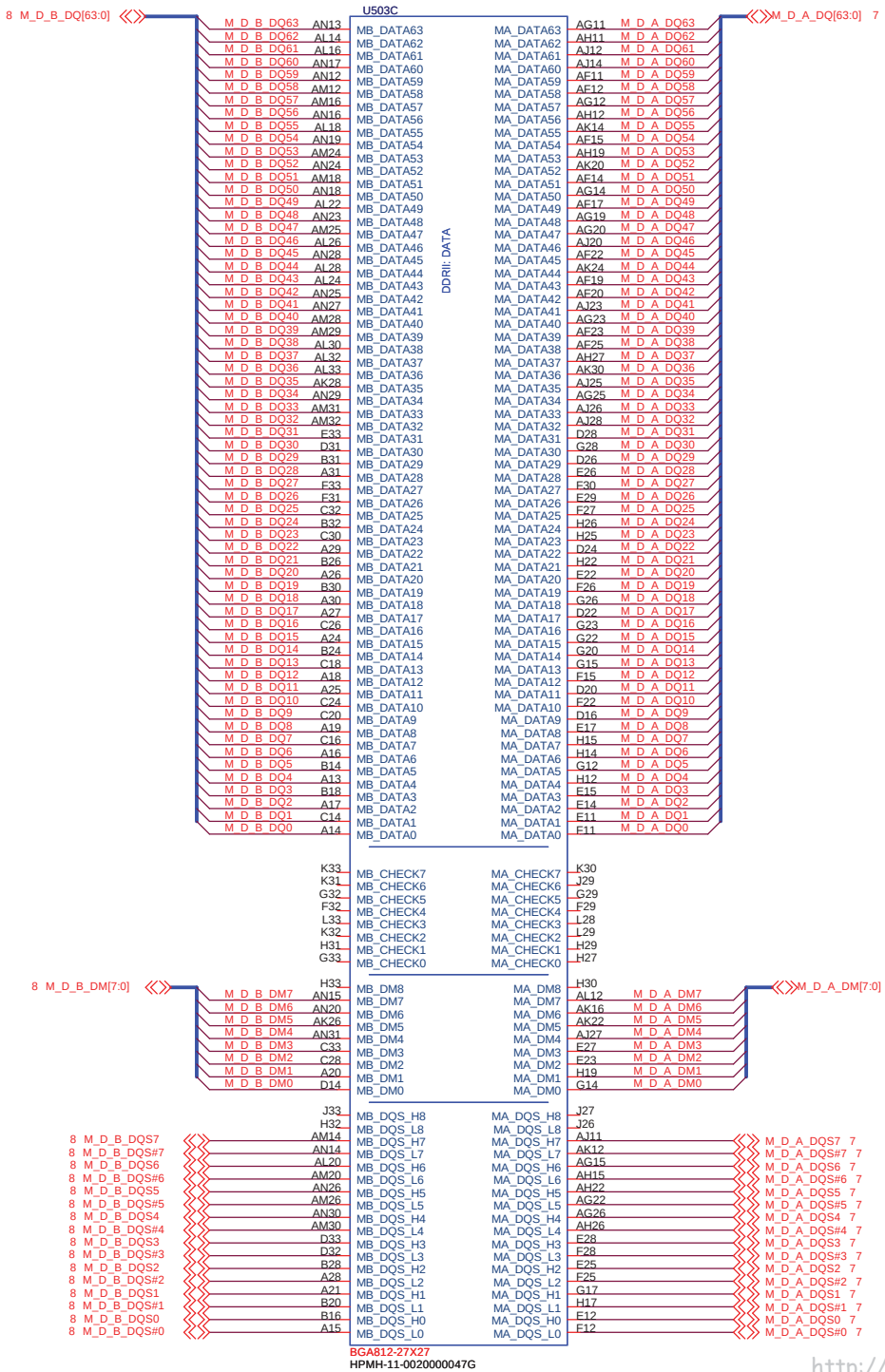
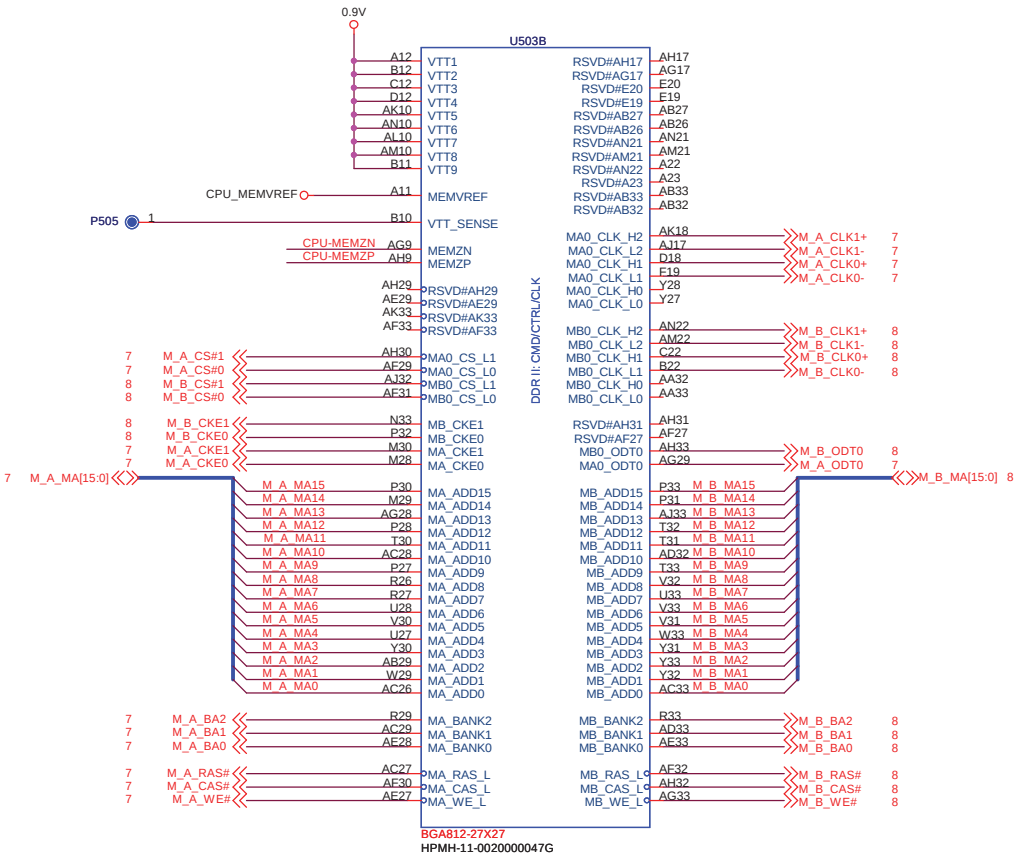
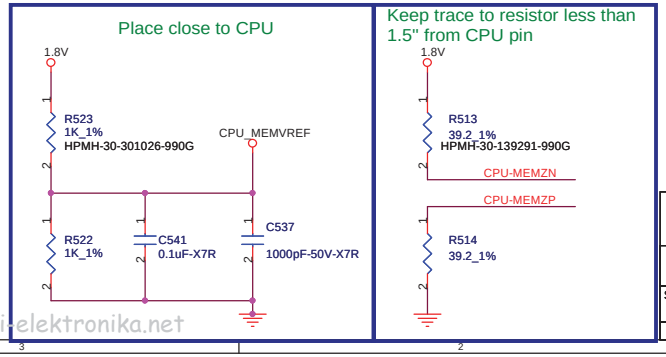
CPU MEMORY A/B



CPU Memory Interface





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Project Name : ARWEN UA1	Title : CPU Memory Interface	
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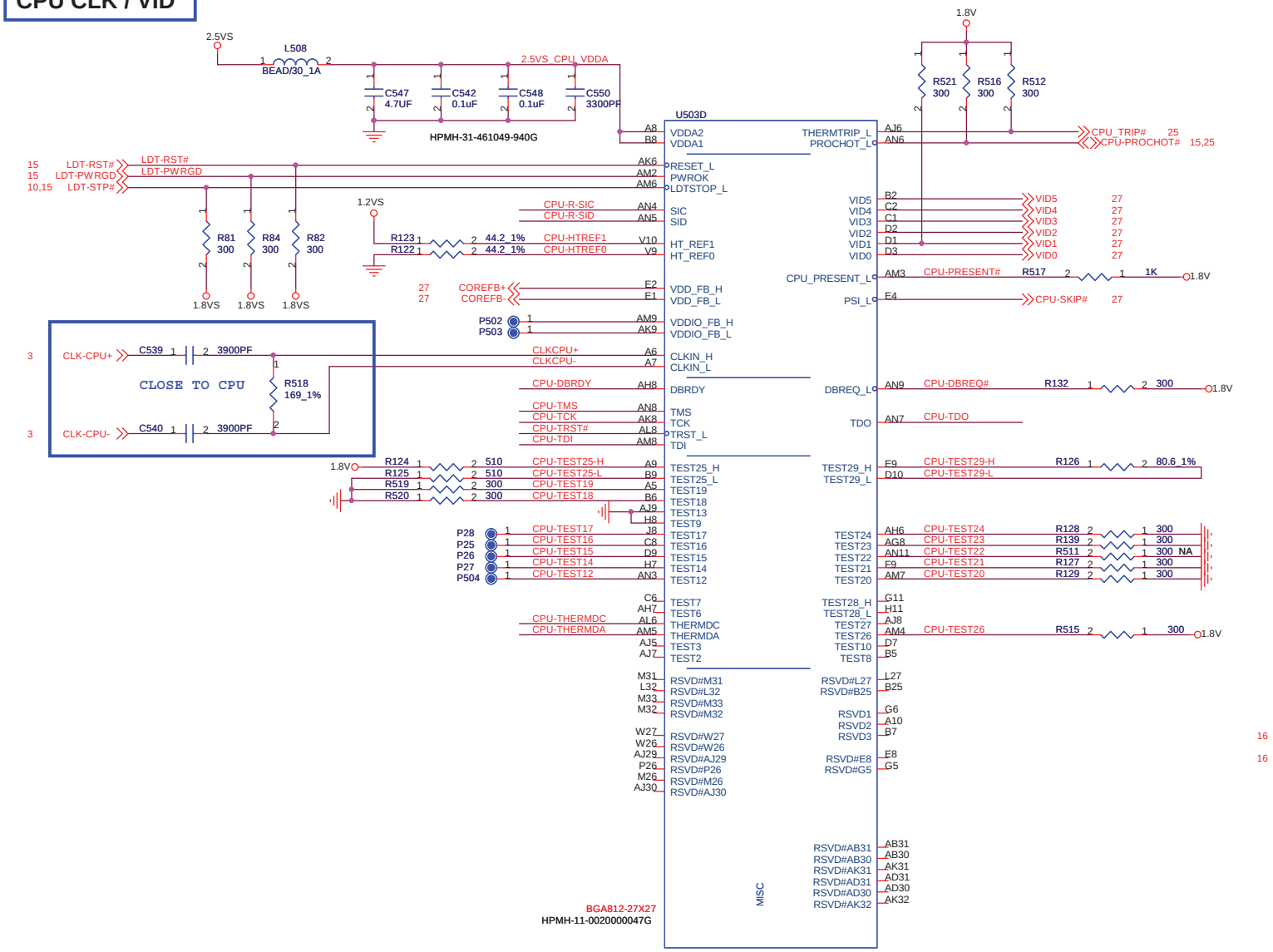
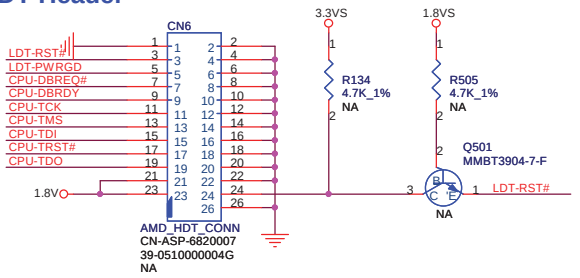
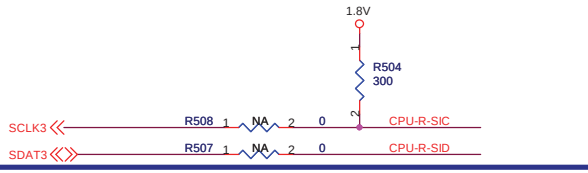
CPU CLK / VID



HDT Header



Reserve for internal thermal

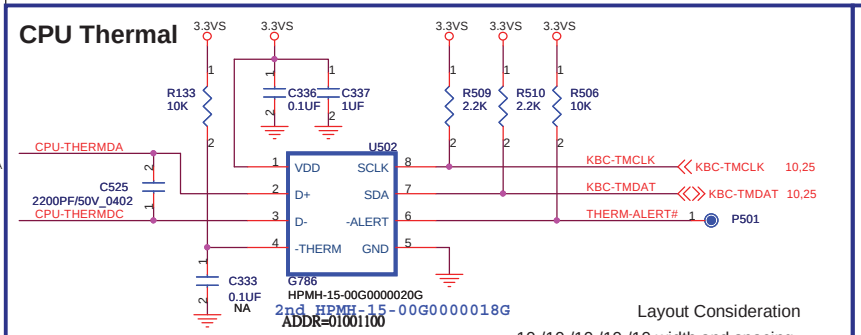


Delete LDT-STP# delay circuit for RS780 DA
ER_RS690B3

Layout (1) :Keep trace to resistor less than 600 mils from CPU pin and trace to AC caps less than 1250 mils

Layout (2) :Route VDDA trace approx. 50 mils wide (use 2x25 mil traces to exit ball field) and 500 mils long.

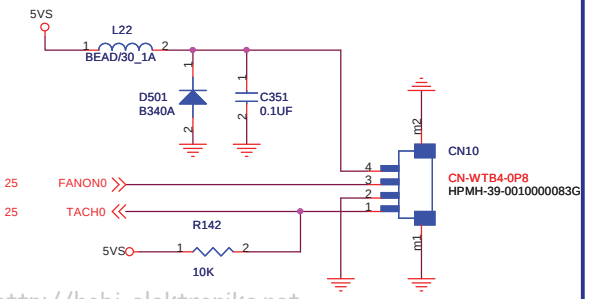
CPU Thermal



Layout Consideration

10 /10 /10 /10 /10 width and spacing

FAN



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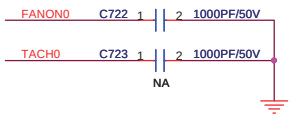
EMI



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Project Name : ARWEN UA1	Title : CPU Control & Debug
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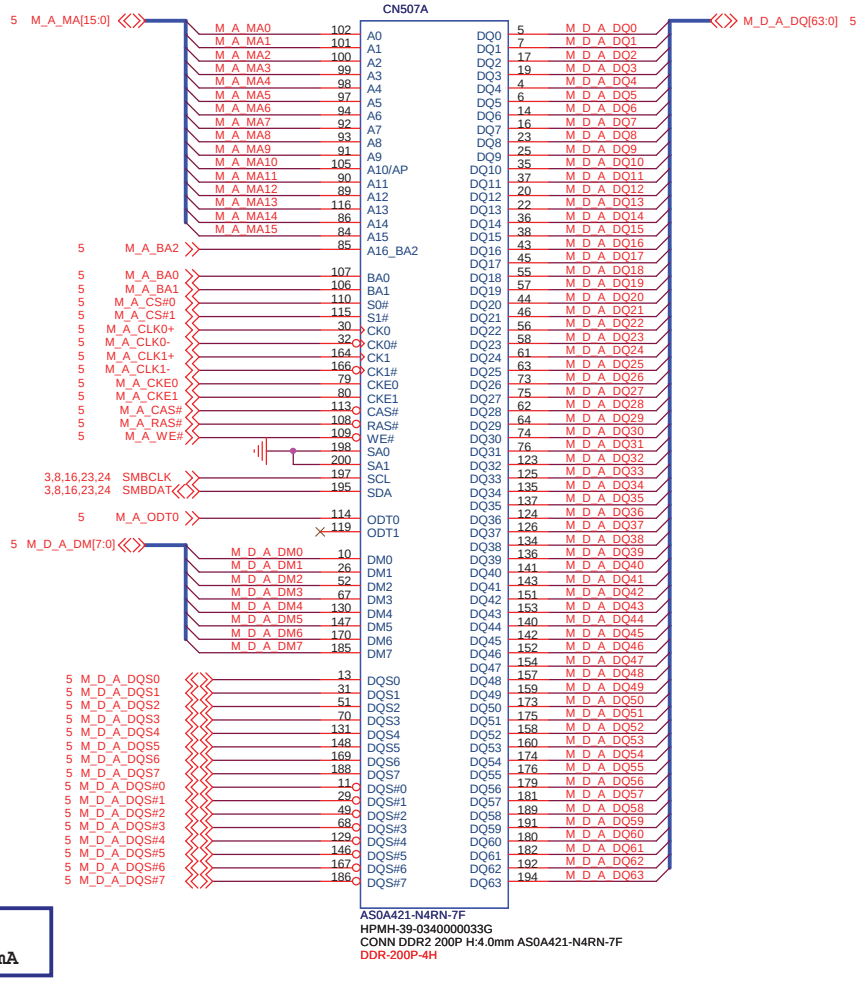
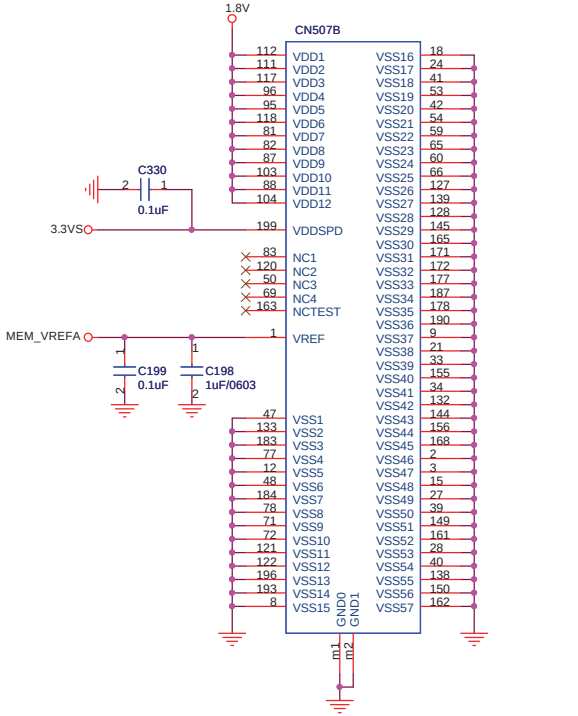
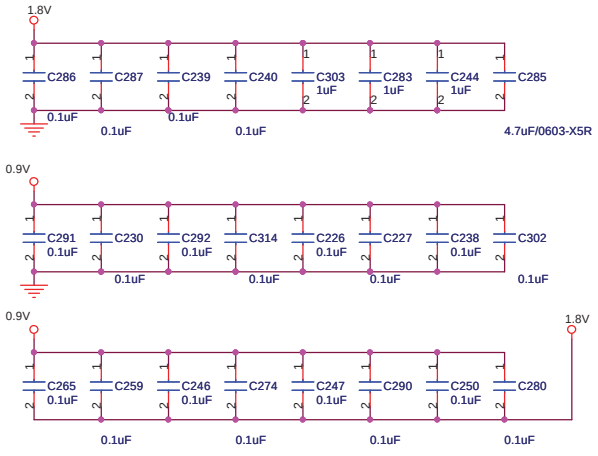
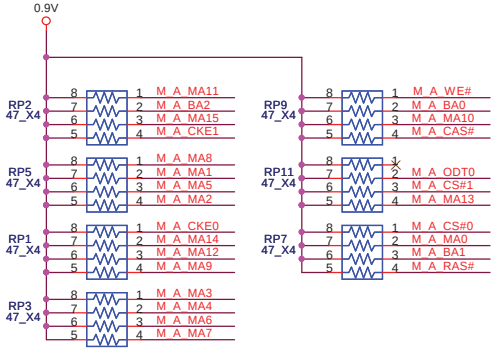
Memory Channel A

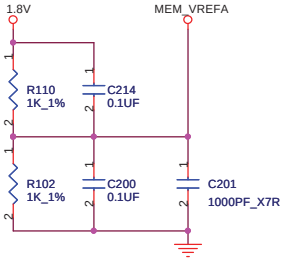




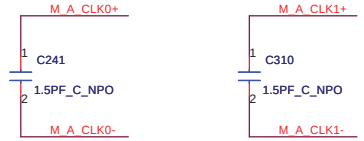
Layout :
Place these Caps near So-DimmA







Place near SO-DIMM socket



Place close to CPU within 1.5"

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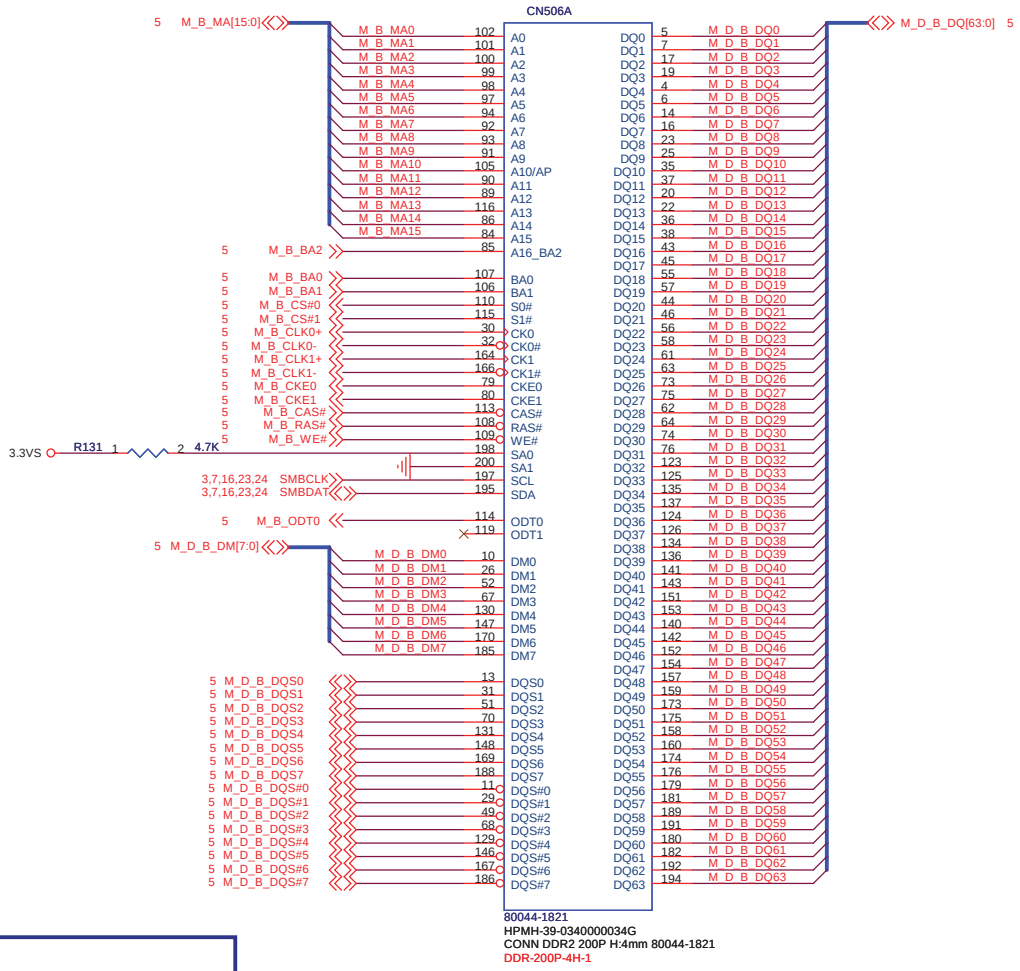
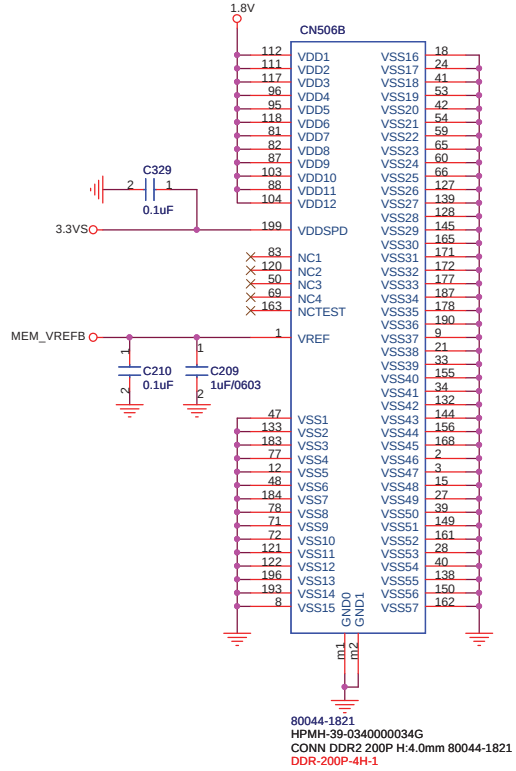
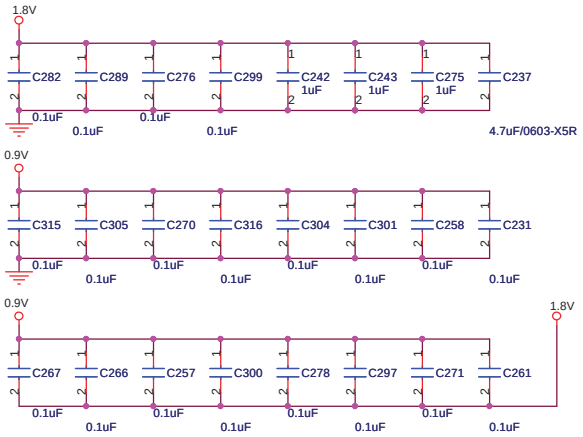
Memory Channel B

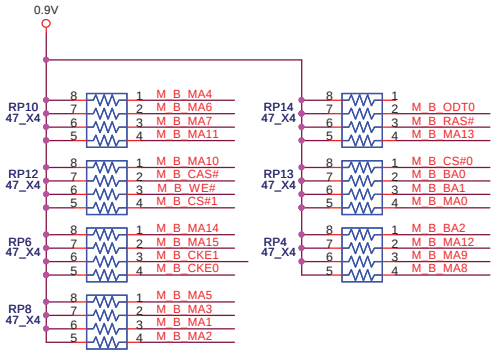
DDR2 Termination
DDR2 SO-DIMMB

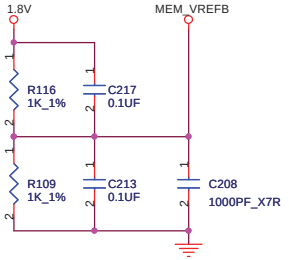


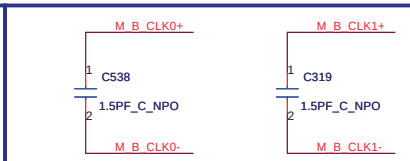


Layout :
Place these Caps near So-DimmA









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Project Name : ARWEN UA1	Title : DDR2 SO-DIMM B / Termination	
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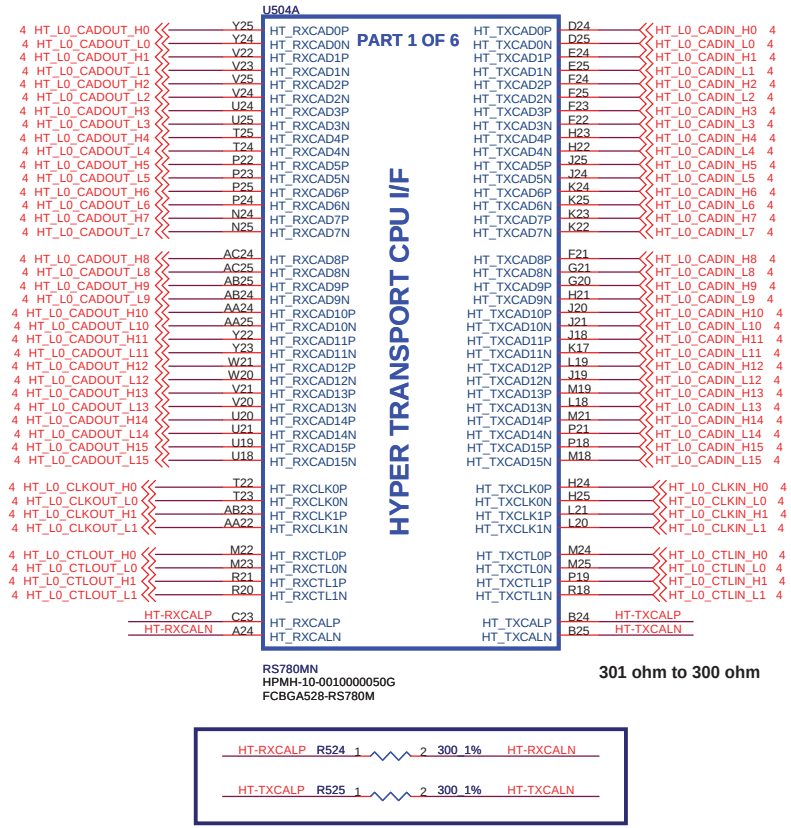
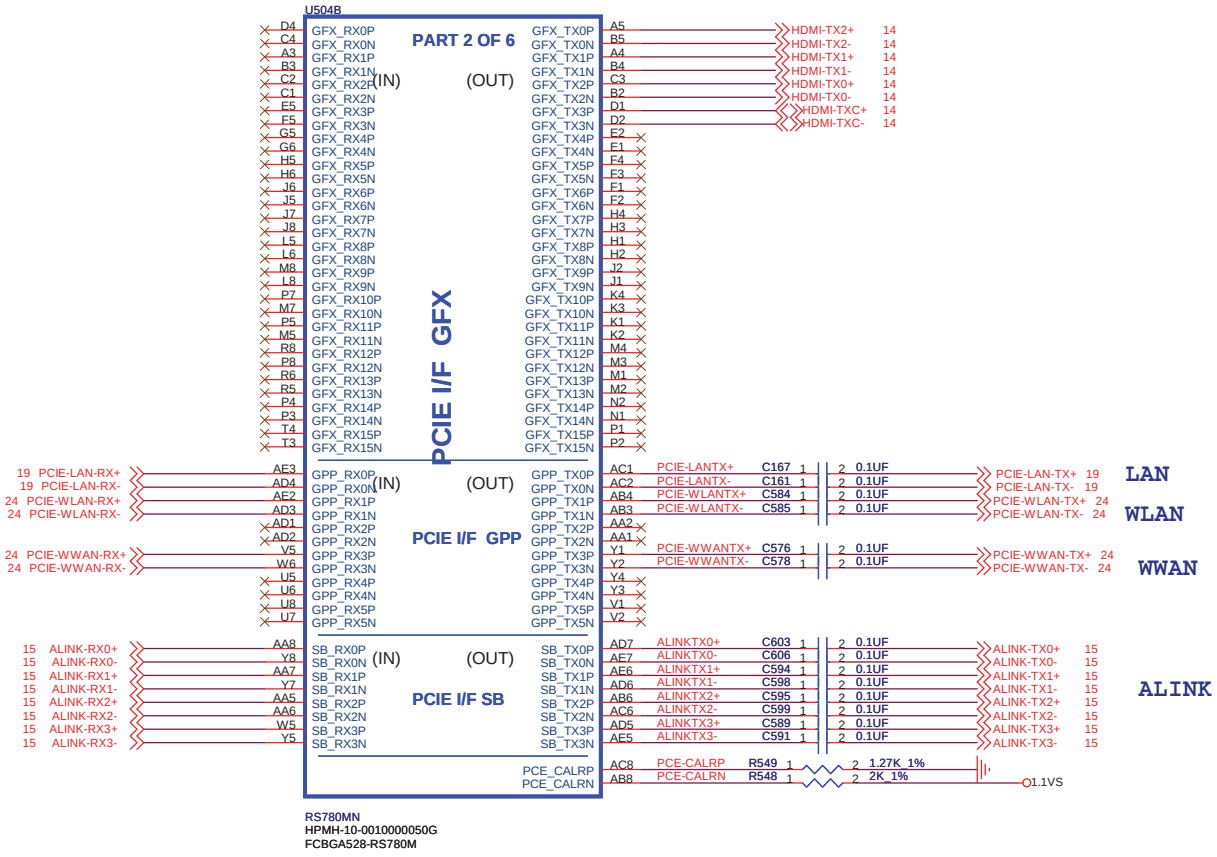
RS780M HT/PCIE/HDMI



UMA HDMI



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FLEXComputing			
Project Name : ARWEN UA1		Title : RS780M HT/PCIE/HDMI Interface	
Size : A3	Document Number : HPMH-40GAB4000-D000		Rev : D
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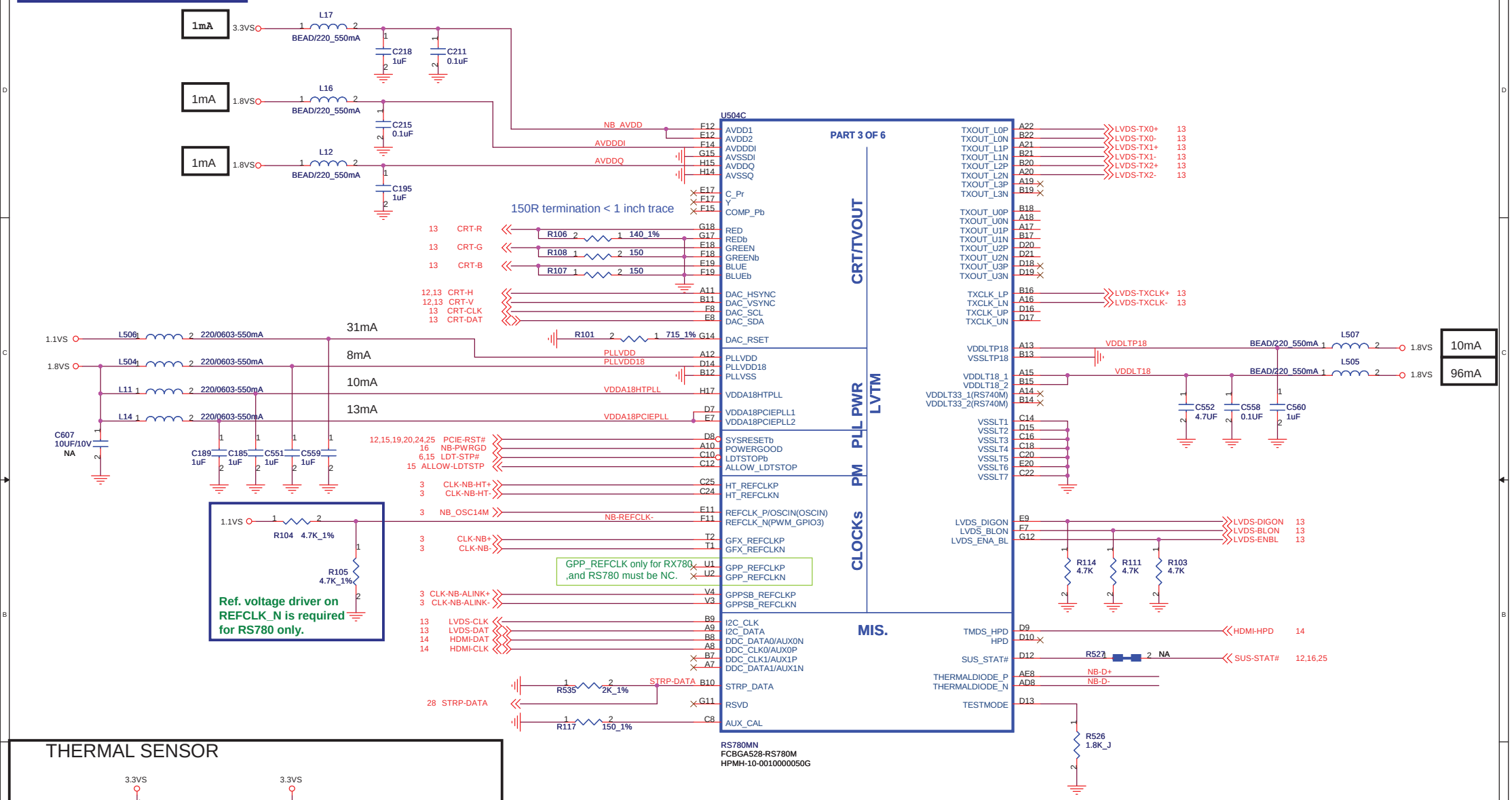
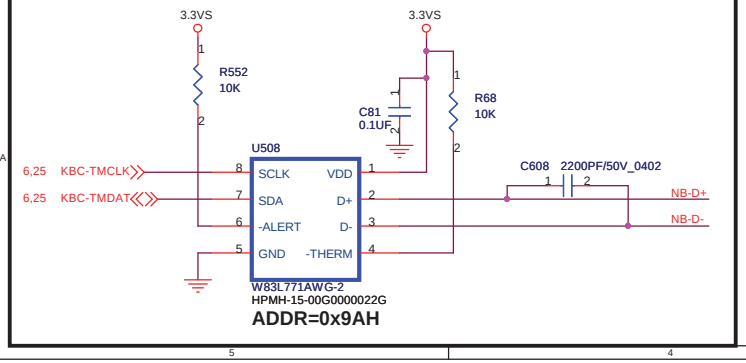
RS780M HT/PCIE/HDMI



THERMAL SENSOR



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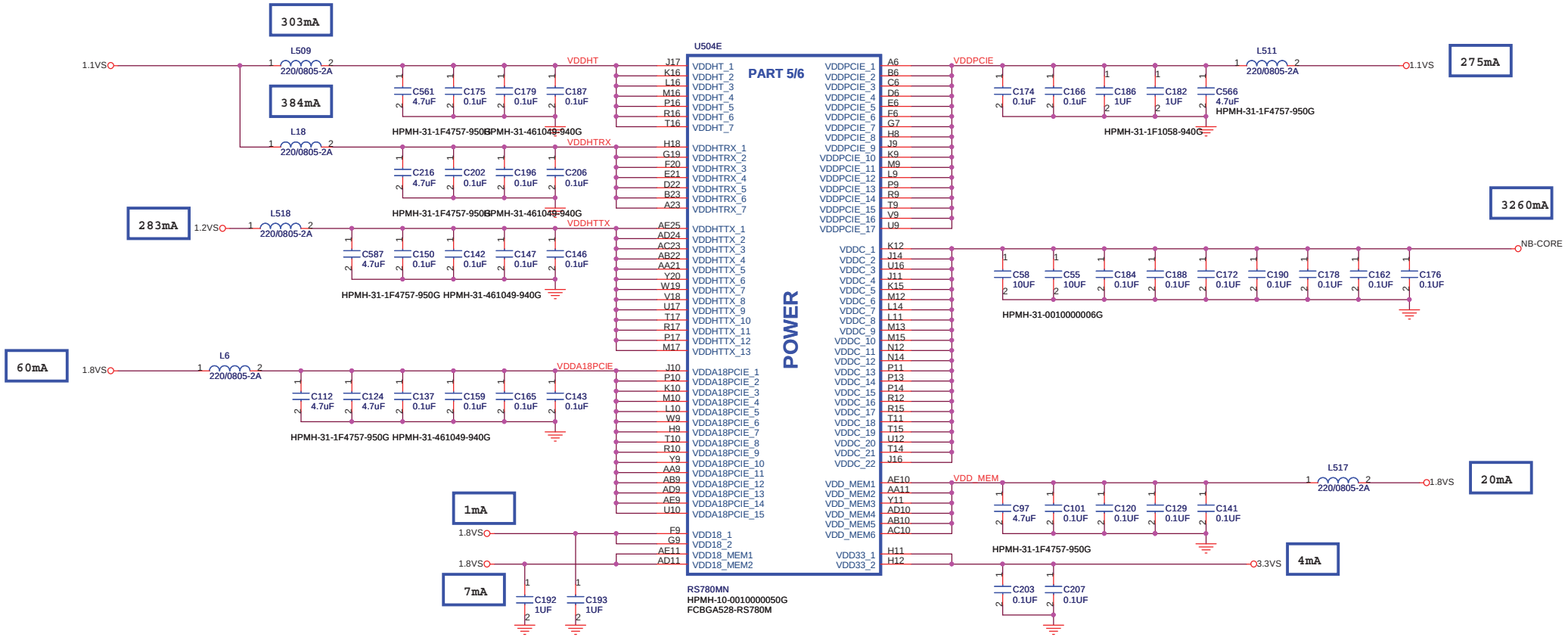
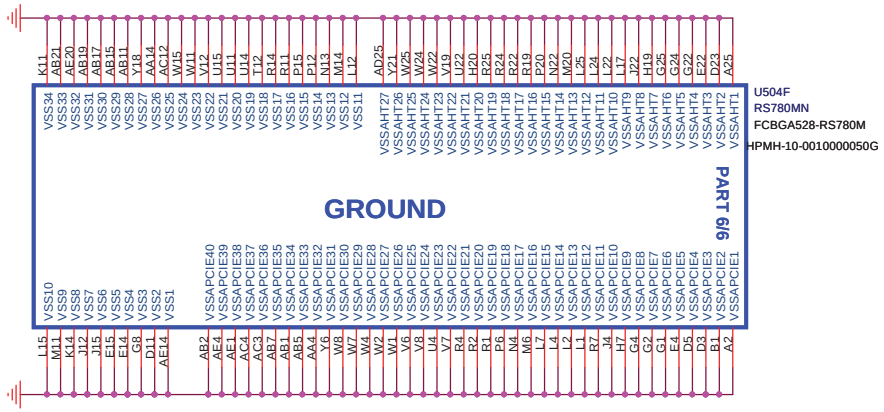
FLEX Computing

Project Name : ARWEN UA1	Title : RS780M Video Interface
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 10 of 35

RS780M Power/Ground





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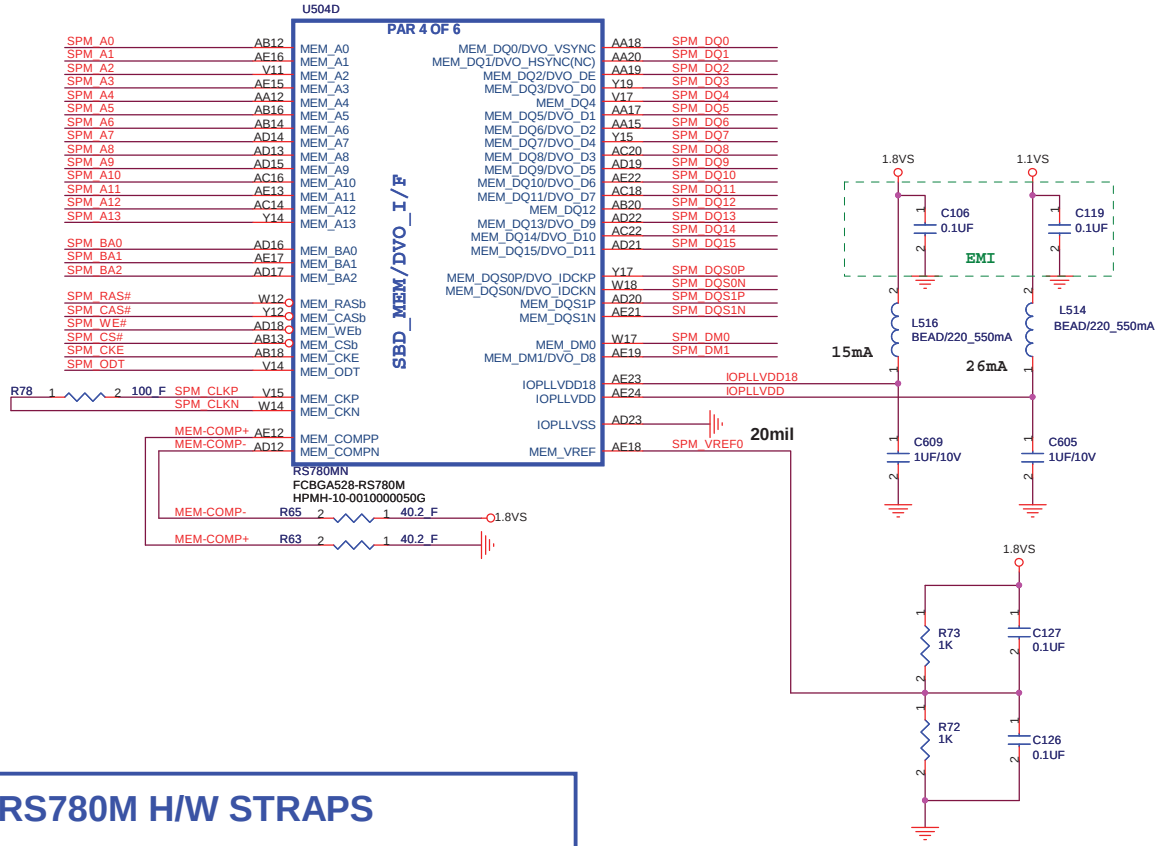
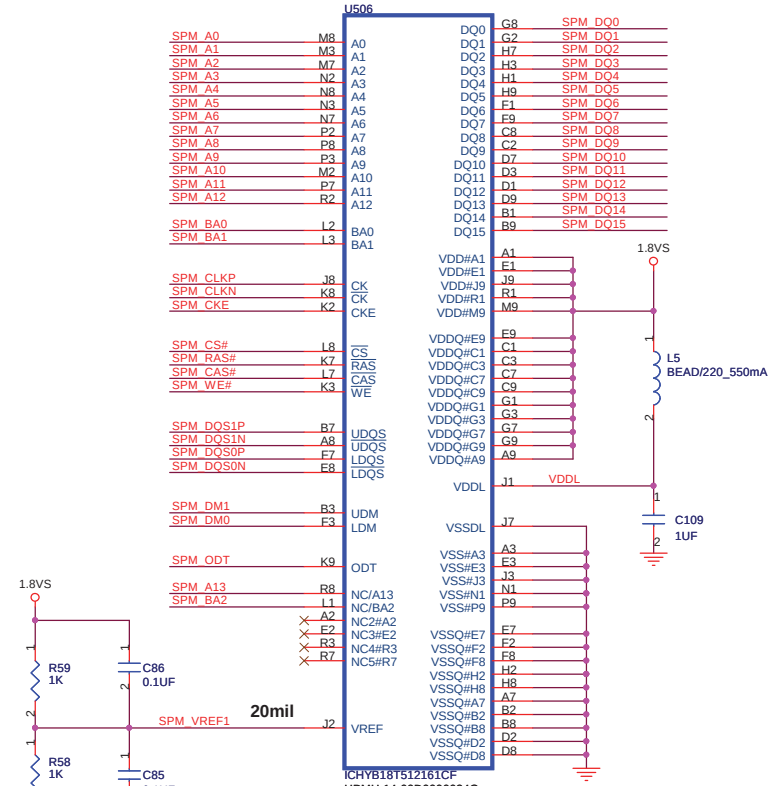
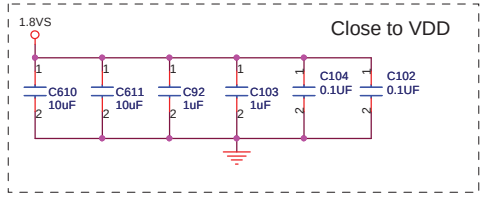
FLEX Computing

Project Name : ARWEN UA1	Title : RS780M Power & Ground
Size : Custom	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 11 of 35

NB_SIDE PORT / STRAPS







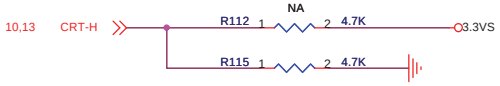
RS780M H/W STRAPS

STRAP_DEBUG_BUS_GPIO_ENABLE

Enables the Test Debug Bus using GPIO.
DAC_VSYNC (RS780.Pin B11)
1 : Disable (RS780) (default)
0 : Ensable (RS780)

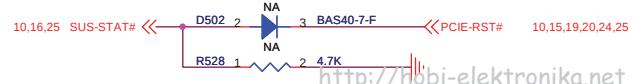
RS780: Enable Side Port Memory

Selects if Memory SIDE PORT is available or not
DAC_HSYNC (RS780.Pin A11)
1 : Disable (default)
0 : Enable
Register Readback of strap:
NB_CLKCFG:CLK_TOP_SPARE_D[1]



DFT_GPIO1: LOAD_EEPROM_STRAPS

Selects Loading of STRAPS from EPROM
SUS_STAT# (RS780.Pin D12)
-1*: Bypass the loading of EEPROM straps and
use Hardware Default Values
-0 : I2C Master can load strap values from EEPROM if connected
, or use default values if not connected



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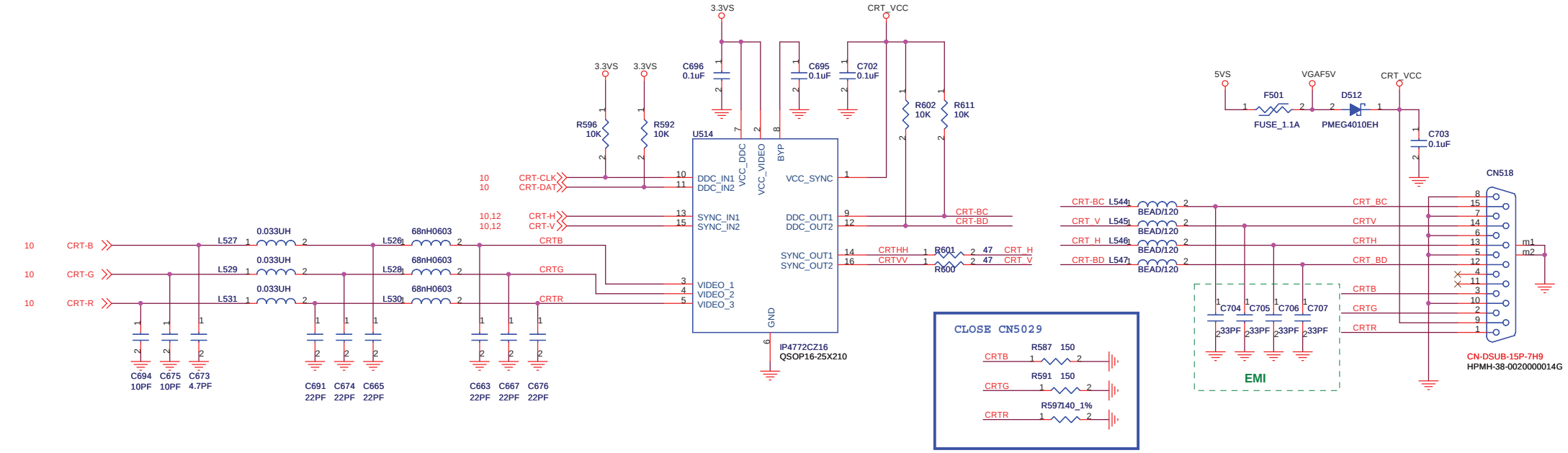
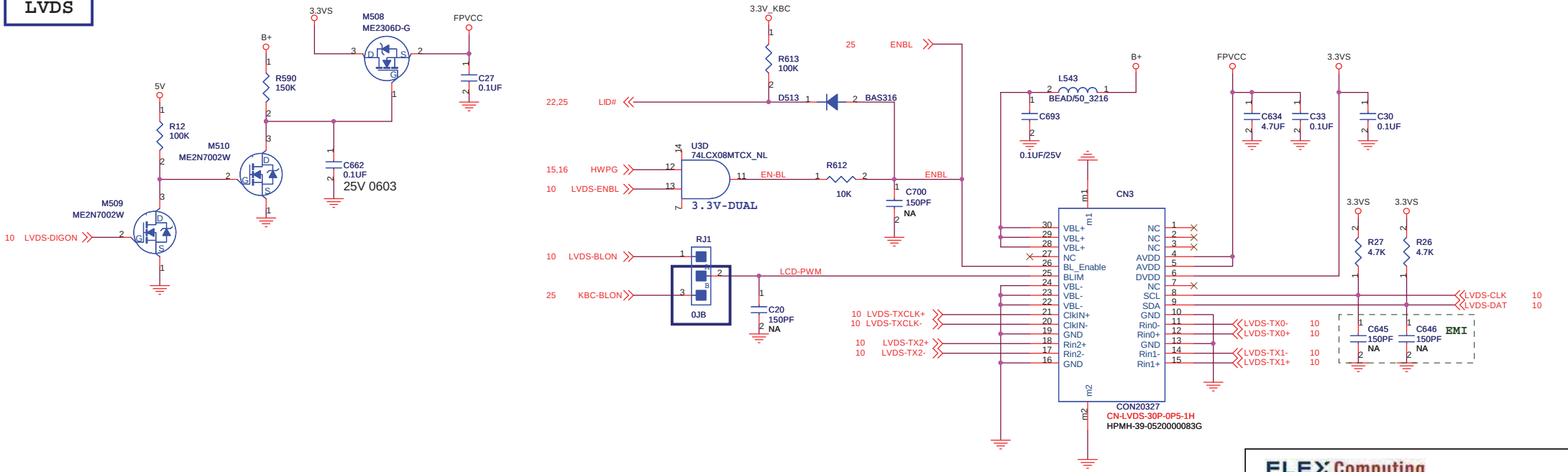
FLEXComputing

Project Name : ARWEN UA1	Title : RS780M SBD / STRAPS
Size : A3	Document Number : HPMH-40GAB4000-D000 — Rev : D
Date: Monday, August 17, 2009	Sheet : 12 of 35

CRT



LVDS



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FLEX Computing

Project Name : ARWEN UA1	Title : LVDS / CRT Connector
Size : A3	Document Number : HPMH-40GAB4000-D000
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Date: Monday, August 17, 2009	Sheet : 13 of 35

HDMI

CLOSE CN5031

HPMH-32-4000000104G

HPMH-31-181047-940G

M92 SPEC SET 499 ohm

EMI

HDMICLK
HDMIDAT
C13 180PF NA
C15 180PF NA

9 HDMI-TX2+ C688 0.1UF HDMITX2+ L540 TX2+ NA
9 HDMI-TX2- C687 0.1UF HDMITX2- TX2- R607 0
9 HDMI-TX1+ C686 0.1UF HDMITX1+ L539 TX1+ R606 0 NA
9 HDMI-TX1- C685 0.1UF HDMITX1- TX1- R605 0
9 HDMI-TX0+ C689 0.1UF HDMITX0+ L541 TX0+ R609 0 NA
9 HDMI-TX0- C690 0.1UF HDMITX0- TX0- R610 0
9 HDMI-TXC+ C684 0.1UF HDMITXC+ L538 TXC+ R604 0 NA
9 HDMI-TXC- C683 0.1UF HDMITXC- TXC- R603 0

HDMITX2+ R8 715_1%
HDMITX2- R7 715_1%
HDMITX1+ R6 715_1%
HDMITX1- R5 715_1%
HDMITX0+ R9 715_1%
HDMITX0- R10 715_1%
HDMITXC+ R4 715_1%
HDMITXC- R3 715_1%

5VS
M1 ME2N7002W

16,25,31,33 SUSB
R419 100_1206 NA
M517 ME2N7002W NA
VGAF5V
R11 0
D1 BAS316 NA
R14 6.8K
R15 6.8K

HDMI
CN515
TMDS-D2+
TMDS-D2-Shield
TMDS-D2
TMDS-D1+
TMDS-D1-Shield
TMDS-D1
TMDS-D0+
TMDS-D0-Shield
TMDS-D0
TMDS-CLK+
TMDS-CLK-Shield
TMDS-CLK-
CEC
NC
DDC-CLK
DDC-DAT
GND
+5V
HP-DET
CN-HDMI-19DIP-5H55
HPMH-38-00F0000008G

VGAF5V L542 BEAD/220_2A L0805
C697 4.7UF
C701 0.1UF

3.3VS
R585 6.8K
M514 ME2N7002W
10 HDMI-CLK
HDMICLK
R589 NA

R584 6.8K
M513 ME2N7002W
10 HDMI-DAT
HDMIDAT
R588 NA

25 EC-HDMI-HPD-IN
R61 0 NA
RJ13
0JA
10 HDMI-HPD
R586 100K
M511 ME2N7002W
25 EC-HDMI-HPD-OUT

5VS
R16 100K
M512 ME2N7002W
R626 100K
HDMIHPD
D6 UDZ5V6B-7-F_5.6V_0.2W
HPMH-20-000042-870G
R60 200K_F
HPMH-30-120031-990G
C17 180PF NA
CLOSE CN5031
EMI

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FLEX Computing

Project Name : ARWEN UA1	Title : HDMI Connector
Size : A3	Document Number : HPMH-40GAB4000-D000
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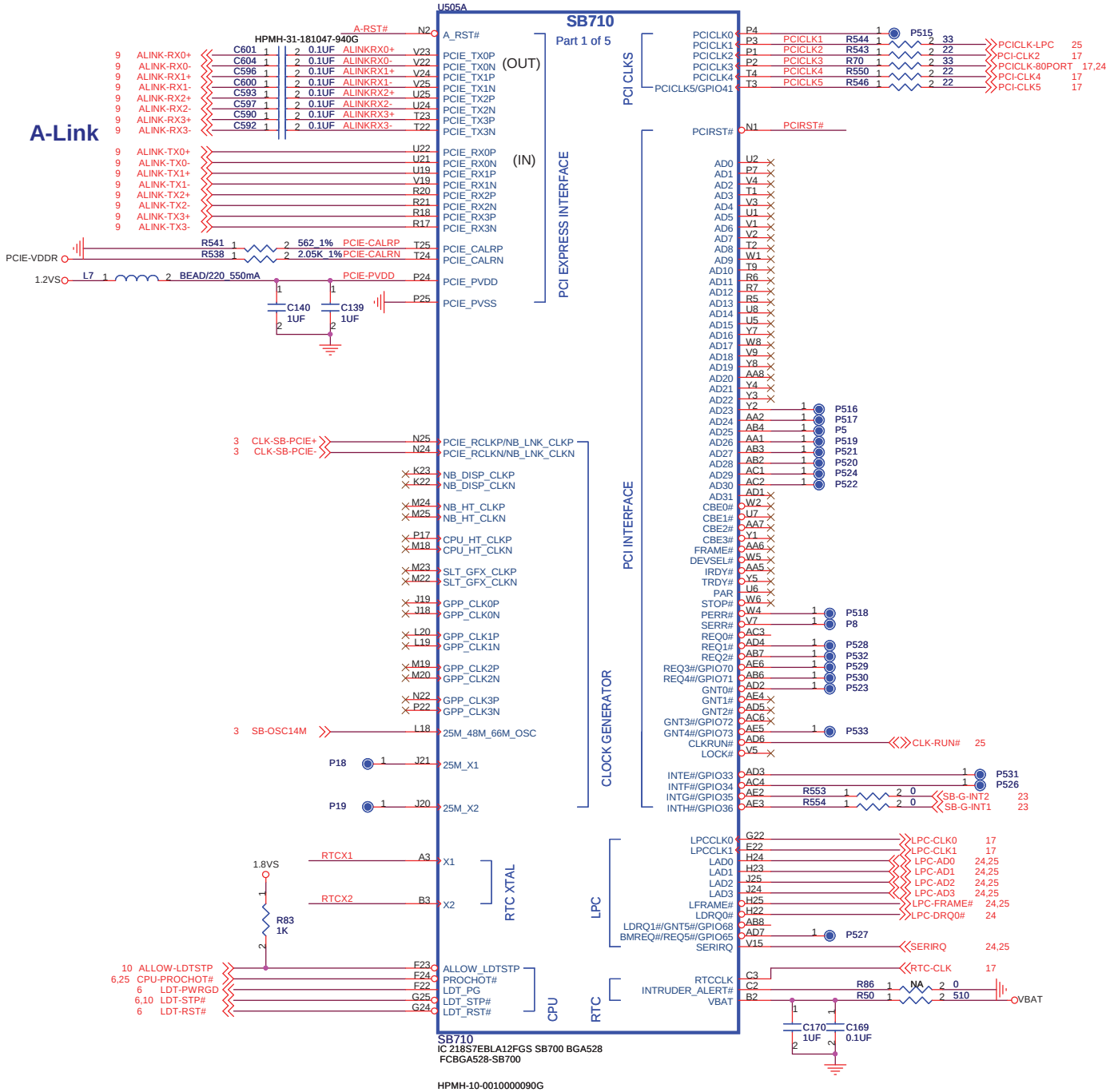
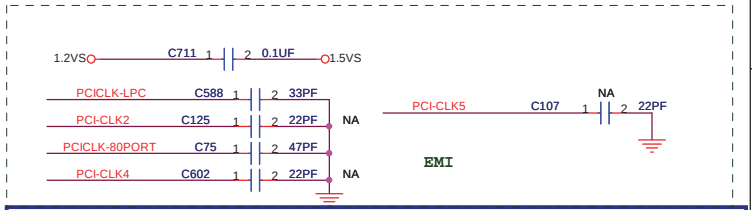
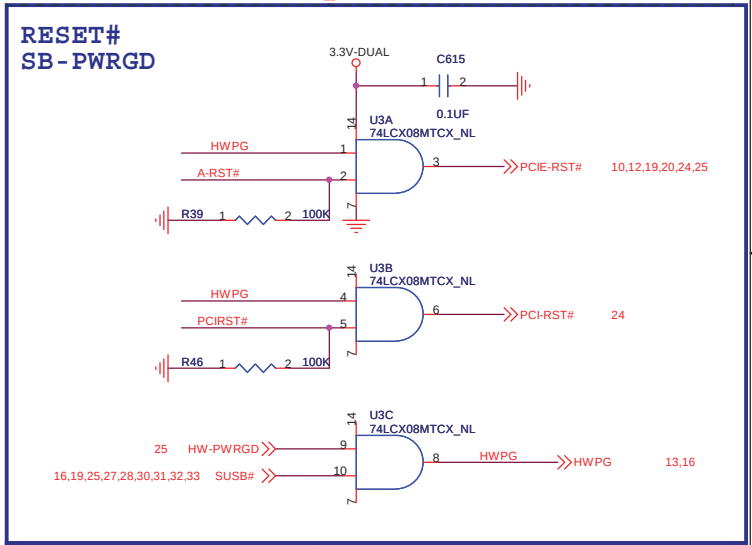
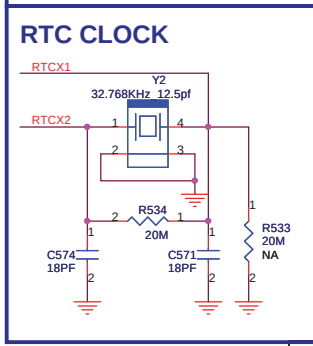
SB710 PCIE/PCI/CPU/LPC

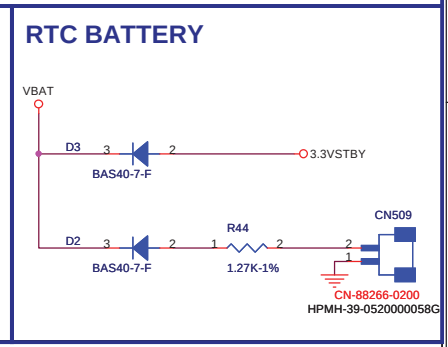
	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	RESERVED
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	











FLEX Computing

Project Name : ARWEN UA1	Title : SB700 PCIE/PCI/CPU/LPC
Size : A3	Document Number : HPMH-40GAB4000-D000
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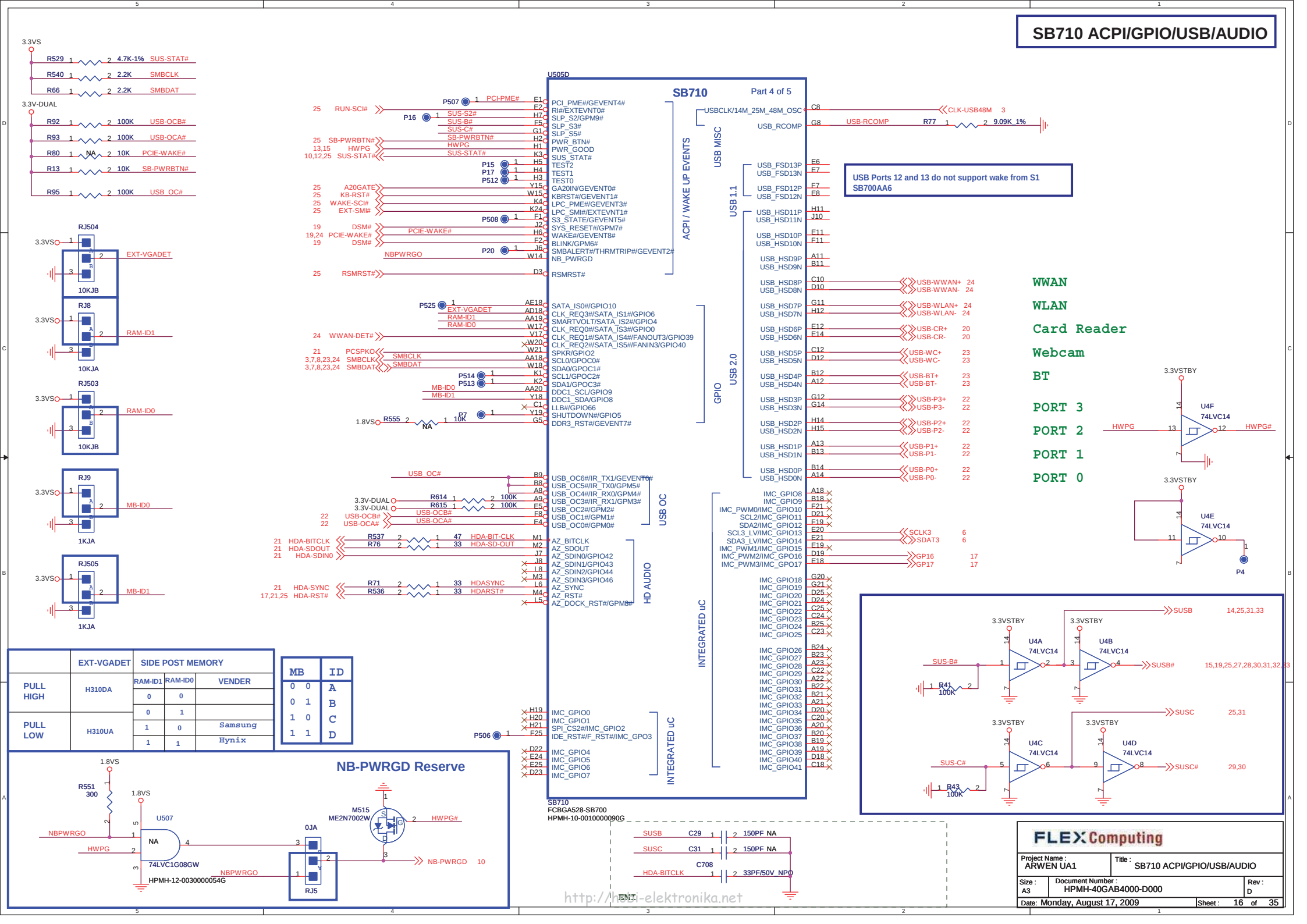
SB710 ACPI/GPIO/USB/AUDIO



	EXT-VGADET	SIDE POST MEMORY		
		RAM-ID1	RAM-ID0	VENDER
PULL HIGH	H310DA	0	0	
		0	1	
PULL LOW	H310UA	1	0	Samsung
		1	1	Hynix

MB		ID
0	0	A
0	1	B
1	0	C
1	1	D

NB-PWRGD Reserve

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Project Name :	ARWEN UA1
Title :	SB710 ACPI/GPIO/USB/AUDIO
Size :	A3
Document Number :	HPMH-40GAB4000-D000
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SB710 SATA / IDE / HWM / SPI / STRAPS

SATA HDD

CN505

SIGNAL SEGMENT: GND_0, TX, TX#, GND_1, RX#, RX, GND_2 (S1–S7)

POWER SEGMENT: 3.3V_0, 3.3V_1, 3.3V_Pre_Charge_2nd_mate, GND_3, GND_4, GND_5, 5V_Pre_Charge_2nd_mate, 5V_0, 5V_1, GND_6, Reserved, GND_7, 12V_Pre_Charge_2nd_mate, 12V_0, 12V_1, m2, m1 (P1–P15, m2, m1)

SATA-TX0+ C518 0.01UF SATATX0+ AD9
SATA-TX0- C519 0.01UF SATATX0- AE9
SATA-RX0- C520 0.01UF SATARX0- AB10
SATA-RX0+ C521 0.01UF SATARX0+ AC10

5VS

EMI: C523 0.1UF, C524 0.1UF, C522 0.1UF, CPOS501 100UF/POS6.3V

CN-SATA-22P-1P27-4H5
HPMH-39-0500000100G

PLACE SATA_CAL RES VERY CLOSE TO BALL OF SB

R69 2 1 1K-1% SATA-CAL V12

SATA-X1 Y12

SATA-X2 AA12

3.3VS R51 1 2 10K W11

25 SATA-ACT#

1.2VS L4 1 2 220/0603-550mA PLLVDD-SATA

93 mA

C99 1uF-X5R, C96 1uF-X5R

XTLVDD-ATA

3.3VS L3 1 2 220/0603-550mA

6 mA

C91 1uF-X5R

SATA 25MHz

C84 2 1 10pF-50V

SATA-X1

Y1 25MHz

R57 10M

C83 2 1 10pF-50V

SATA-X2

HPMH-35-0010000087G

U505B — SB710 Part 2 of 5

SATA_TX0P, SATA_TX0N
SATA_RX0N, SATA_RX0P
SATA_TX1P, SATA_TX1N
SATA_RX1N, SATA_RX1P
SATA_TX2P, SATA_TX2N
SATA_RX2N, SATA_RX2P
SATA_TX3P, SATA_TX3N
SATA_RX3N, SATA_RX3P
SATA_TX4P, SATA_TX4N
SATA_RX4N, SATA_RX4P
SATA_TX5P, SATA_TX5N
SATA_RX5N, SATA_RX5P

SERIAL ATA

SATA_CAL
SATA_X1
SATA_X2
SATA_ACT#/GPIO67

PLLVDD_SATA
XTLVDD_SATA

SATA PWR

IDE_IORDY, IDE_IRQ, IDE_A0, IDE_A1, IDE_A2, IDE_DACK#, IDE_DRQ, IDE_IOR#, IDE_IOW#, IDE_CS1#, IDE_CS3#
IDE_D0/GPIO15 … IDE_D15/GPIO30

ATA 66/100/133

SB710 Internal Pull Up/Down

SPI_DI/GPIO12 G6 SB-SPI-DI
SPI_DO/GPIO11 D2 SB-SPI-DO
SPI_CLK/GPIO47 D1 SB-SPI-CLK
SPI_HOLD#/GPIO31 F4 SB-SPI-HOLD#
SPI_CS#/GPIO32 F3 SB-SPI-CS#

SPI ROM

LAN_RST#/GPIO13 U15 P6
ROM_RST#/GPIO14 J1 P510

FANOUT0/GPIO3, FANOUT1/GPIO48, FANOUT2/GPIO49
FANIN0/GPIO50, FANIN1/GPIO51, FANIN2/GPIO52
TEMP_COMM, TEMPIN0/GPIO61, TEMPIN1/GPIO62, TEMPIN2/GPIO63, TEMPIN3/TALERT#/GPIO64
VIN0/GPIO53, VIN1/GPIO54, VIN2/GPIO55, VIN3/GPIO56, VIN4/GPIO57, VIN5/GPIO58, VIN6/GPIO59, VIN7/GPIO60

HW MONITOR

AVDD F6 3.3V-DUAL — 5 mA
AVSS G7

C183 4.7UF NA, C191 0.1UF NA

SB710
FCBGA528-SB700
HPMH-10-0010000090G

Reserve 8M-bit SPI ROM

3.3V-DUAL

R56 10K NA

U6: CE#, SO, WP#, GND, VDD, HOLD#, SCK, SI

SPI-CS#, SPI-DI, SPI-HOLD#, SPI-CLK, SPI-DO

R54 10K NA, C77 0.1UF NA

AT26DF081A-SU
HPMH-14-0080000004G
NA

R64 33 SPI-DI
R47 33 SPI-DO
R48 33 SPI-CLK
R49 33 SPI-HOLD#
R67 33 SPI-CS#

SB710 H/W STRAPS

15 LPC-CLK0 R87 10K
15 LPC-CLK1 R88 10K
15 RTC-CLK R90 10K 3.3VSTBY
16,21,25 HDA-RST# R23 10K

15 PCI-CLK2 R542 10K
15,24 PCICLK-80PORT R539 10K
15 PCI-CLK4 R547 NA x10K 16
15 PCI-CLK5 R545 NA x10K

RJ10: GP16, 3.3V-DUAL, NA, 10KJA
HPMH-30-301036-990G

RJ11: GP17, 3.3V-DUAL, 1KJB
HPMH-30-310011-990G

NOTE: SB700 HAS INTERNAL 15K PULL UP RESISTOR FOR RTC_CLK

	PCI-CLK2	PCI-CLK3	PCI-CLK4	PCI-CLK5	LPC-CLK0	LPC-CLK1	RTC-CLK	AZ-RST#	GP17 GP16
PULL HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	USE DEBUG STRAPS	RESERVED	RESERVED	ENABLE PCI MEM BOOT (A11) IMC ENABLED (A12)	CLKGEN ENABLED	INTERNAL RTC DEFAULT	IMC ENABLED (A11) ENABLE PCI MEM BOOT (A12)	H,H = Reserved H,L = SPI ROM (Default) L,H = LPC ROM L,L = FWH ROM
PULL LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT			DISABLE PCI MEM BOOT (A11) IMC DISABLED (A12) DEFAULT	CLKGEN DISABLED DEFAULT	EXT. RTC (PD on X1, apply 32KHz to RTC_CLK)	IMC DISABLED (A11) DISABLE PCI MEM BOOT (A12) DEFAULT	

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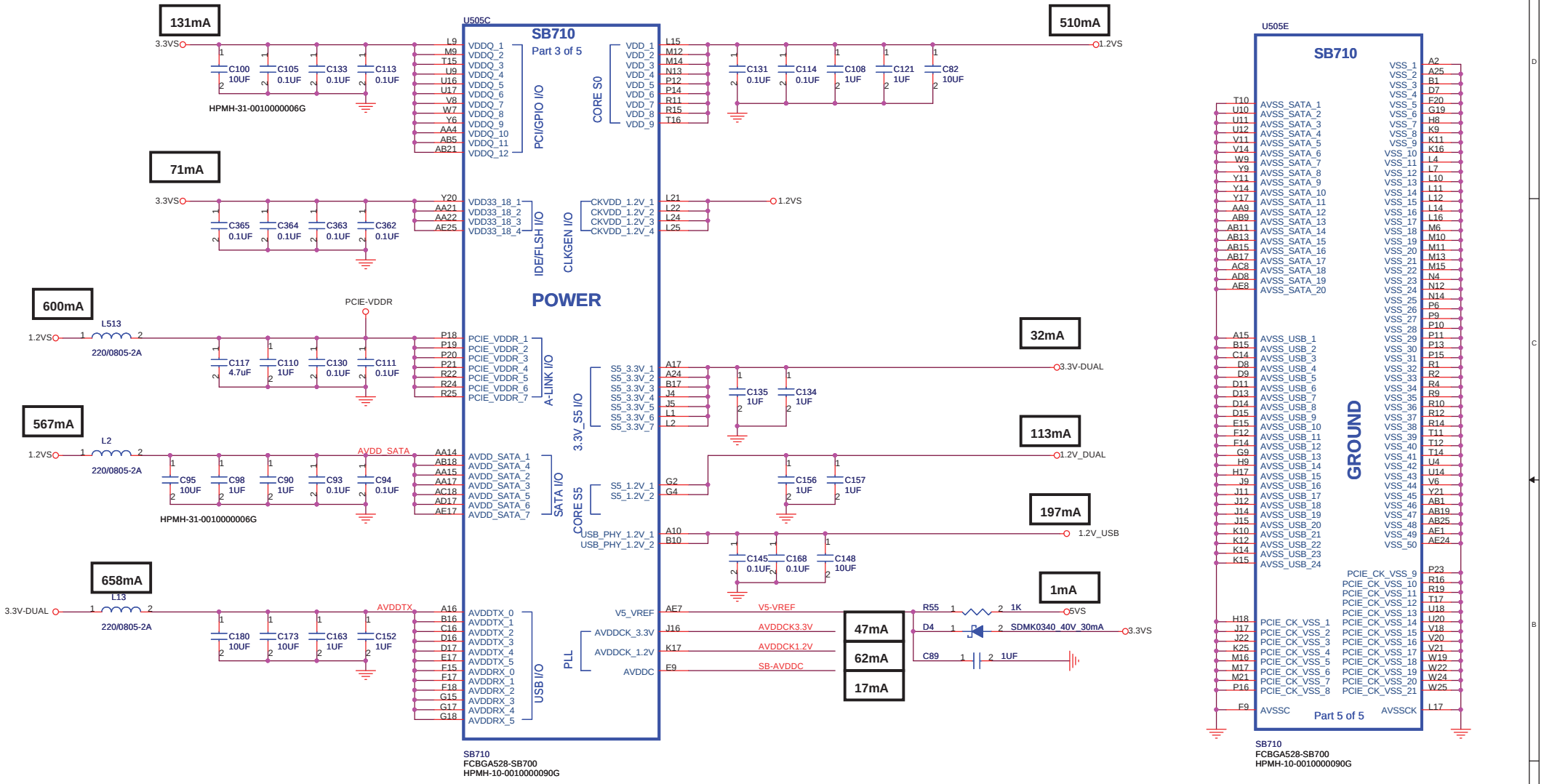
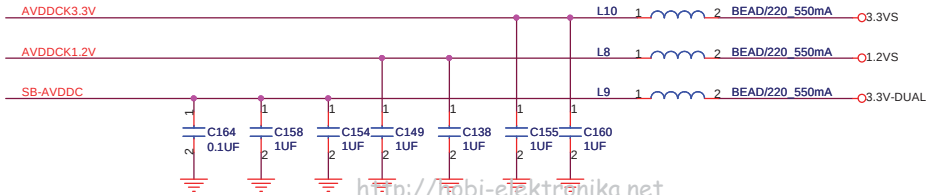
FLEX Computing

Project Name : ARWEN UA1	Title : SB710 SATA / IDE / SPI / HDD CONN
Size : A3	Document Number : HPMH-40GAB4000-D000 — Rev : D
Date: Monday, August 17, 2009	Sheet : 17 of 35

SB710 PWR / GND





Project Name : ARWEN UA1	Title : SB710 PWR/GND
Size : Custom	Document Number : HPMH-40GAB4000-D000
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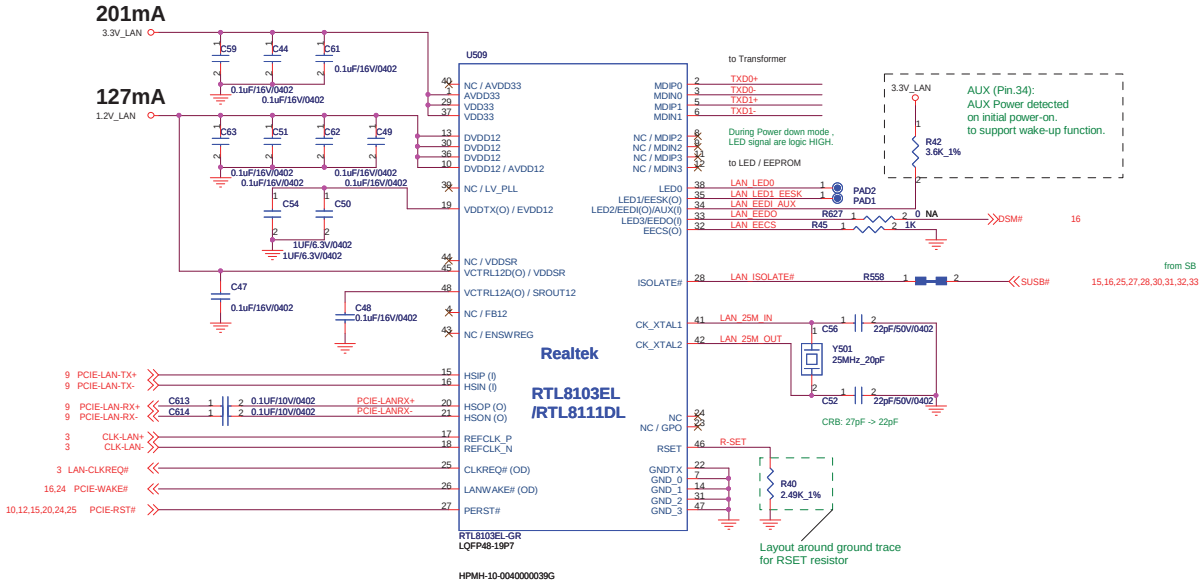
10/100 LAN



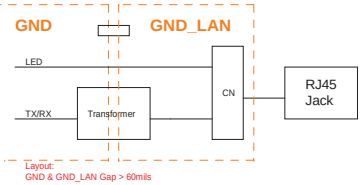
RTL8103E LED Configuation:

LED1-0	*00	01	10	11
LED0	Tx/Rx	**Tx/Rx**	Tx	Tx
LED1	LINK100	**LINK**	LINK	LINK100
LED2	LINK10	FULL	Rx	LINK10
LED3	NA	NA	NA	NA

LEDS1-0's initial value comes from the 93C46
If there is no 93C46, the default value is 00

H310 mini-spec_v1.4
LAN LED:
- Amber : Activity (RX/TX)
- Green : Connectivity (Link)

Layout notes:

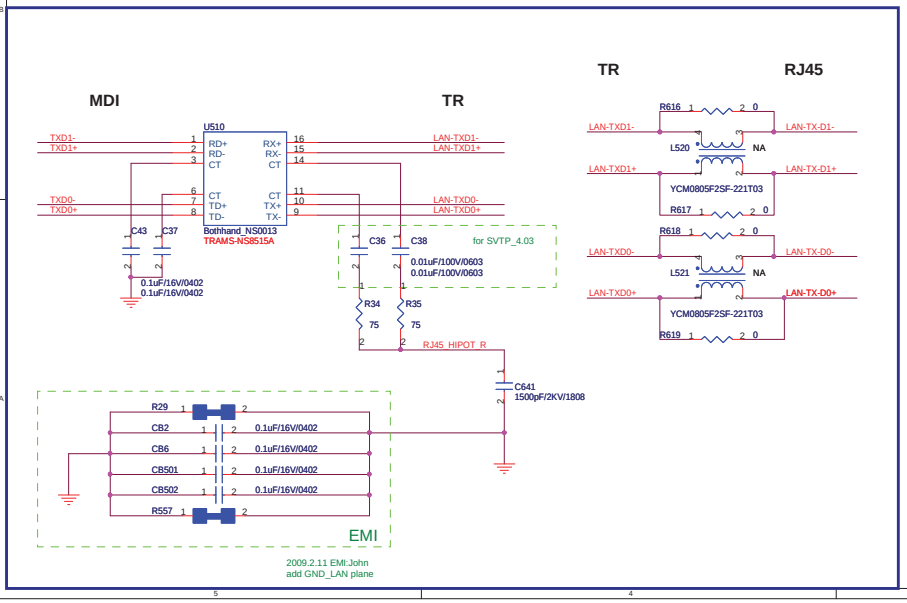


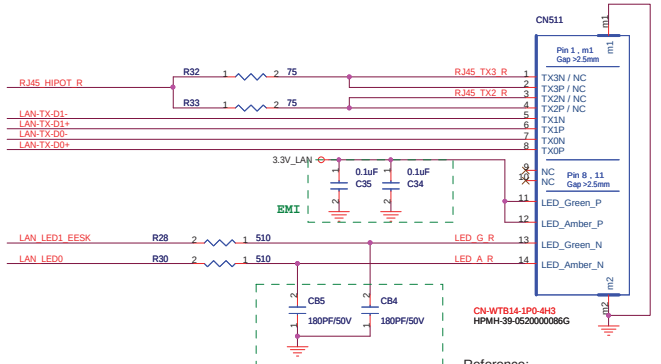
SVTP_v4.03
2.6 - Ethernet Checklist - Rev C.xls

- Ch.3.1.4.4
Some older cheap RJ-45s only populate pins 1,2,3,6. 10/100 requires the other 4 pins for grounding. Gigabit Ethernet requires all 8 pins for data signals.

- Ch.3.1.4.13
Resistance from RJ-45 shell to any other chassis ground point (ohms) less than 1 ohm

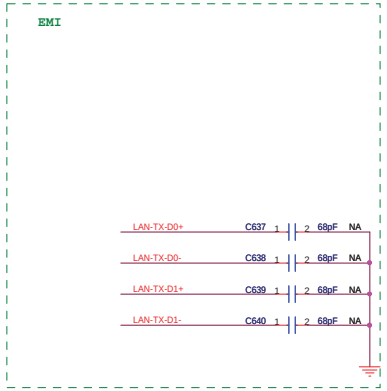
- Ch.3.1.4.14 & Ch.3.1.4.15
Protection against non-standard power-over-Ethernet (PoE) : Resistance between pins 1,3 (TXD0P,TXD1P) and pins 4,7 (TXD2P,TXD3P) of the RJ-45 greater than 58K ohms.





Reference:

RJ45 Phone Jack
Pin define:
1 TXD+0
2 TXD-0
3 TXD+1
4 TXD+2
5 TXD-2
6 TXD-1
7 TXD+3
8 TXD-3



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FLEX Computing

Project Name : ARWEN UA1	Title : RTL8103EL (LQFP48)
Size : C	Document Number : HPMH-40GAB4000-D000 — Rev : D
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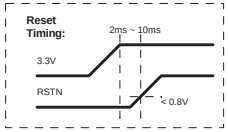
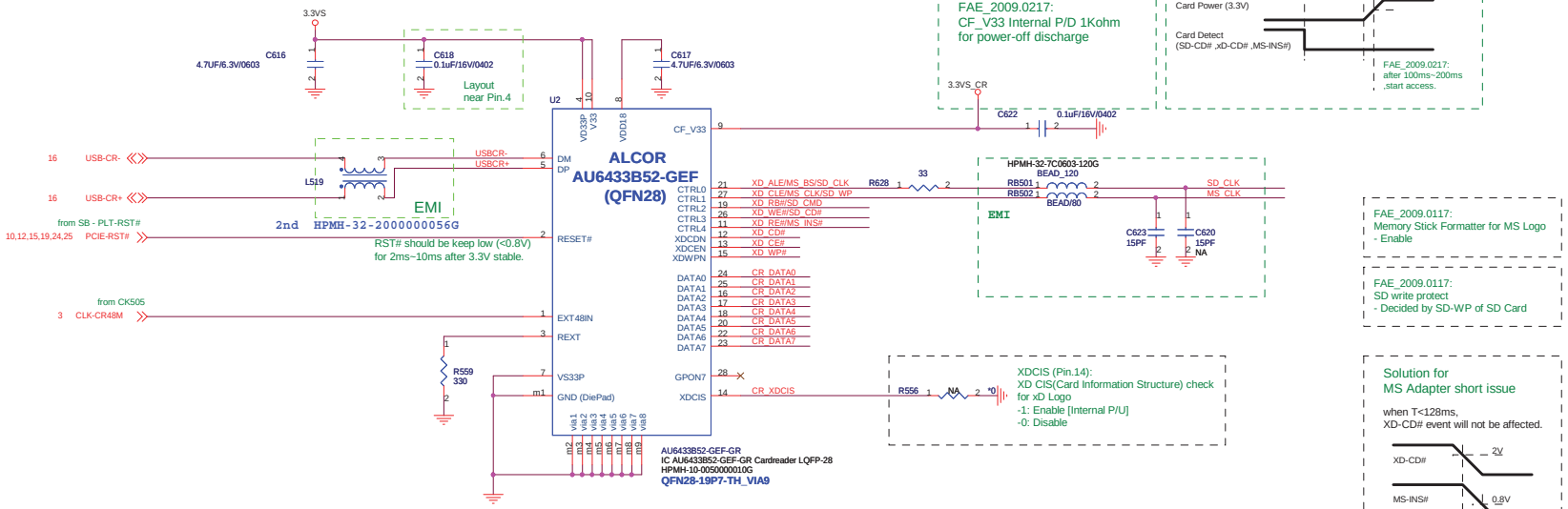
Card Reader

AIcor AU6433-GEF Card supported:

SD v2.0 (SDHC)
MMC v4.2
MS v1.43
MS-PRO v1.03
MS PRO-HG v1.01
xD v1.2

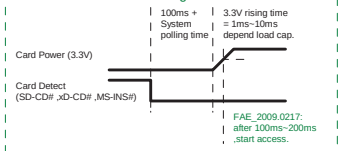




Card Power V33 = 3.3V ~ 2.8V
Card Power OCP = 420mA

FAE_2009.0217:
CF_V33 Internal P/D 1Kohm
for power-off discharge

Card detect Power-In Timing

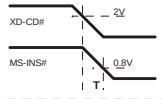


FAE_2009.0117:
Memory Stick Formatter for MS Logo
- Enable

FAE_2009.0117:
SD write protect
- Decided by SD-WP of SD Card

Solution for
MS Adapter short issue

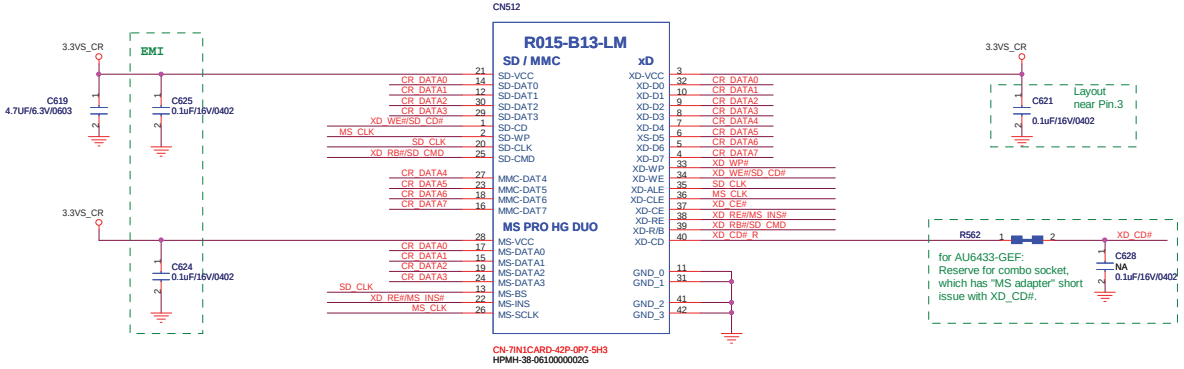
when T<128ms,
XD-CD# event will not be affected.



Memory Card Socket

R015-B13-LM
HPMH-38-0610000002G

Card type Supported:
- SD
- SD IO
- MMC
- MMC4.0
- MS
- MS Pro
- xD



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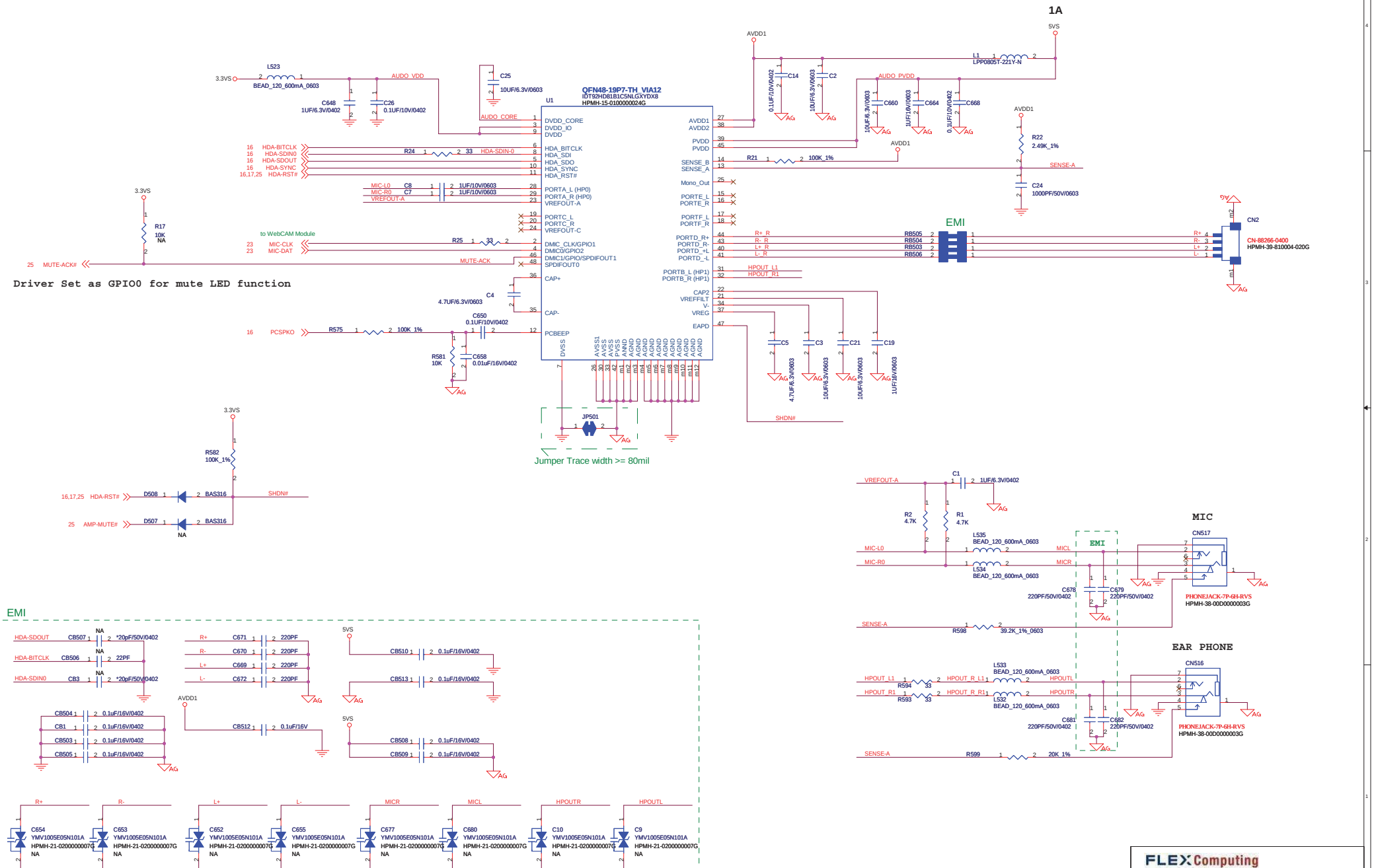
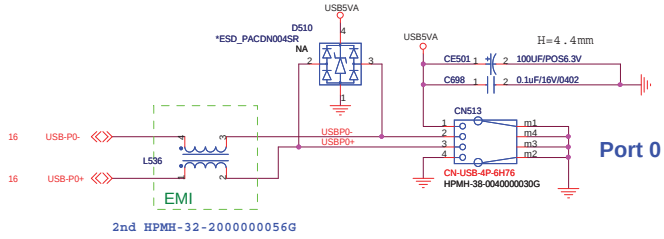
FLEX Computing

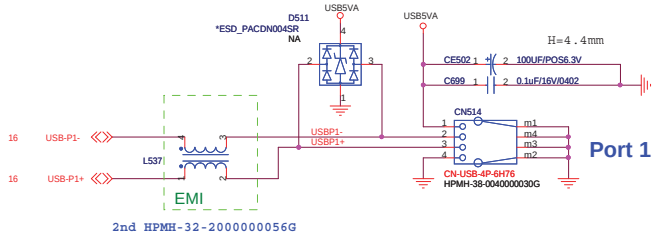
Project Name : ARWEN UA1	Title : AU6433-GEF CardReader	
Size : C	Document Number : HPMH-40GAB4000-D000	Rev : D
Date: Monday, August 17, 2009	Sheet : 20 of 35	

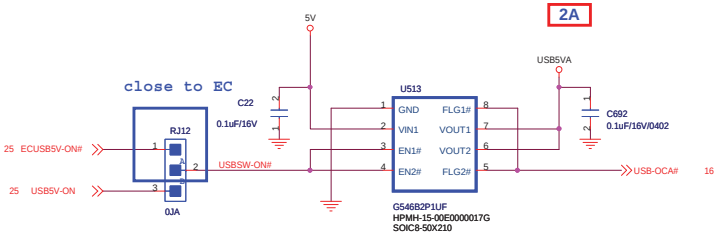
Audio CODEC

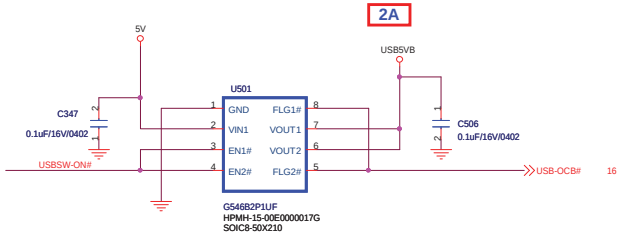

1A
QFN48-19P7-TH_VIA12
IDT92HD81B1C5NLGXYDX8
HPMH-15-0100000024G
U1
Driver Set as GPIO0 for mute LED function
EMI
Jumper Trace width >= 80mil
MIC
EAR PHONE
PHONEJACK-7P-6H-RVS
HPMH-38-00D0000003G
CN-88266-0400
HPMH-39-810004-020G
FLEX Computing
Project Name : ARWEN UA1
Title : HDA CODEC(92HD81)
Size : C
Document Number : HPMH-40GAB4000-D000
Rev : D
Date: Monday, August 17, 2009
Sheet : 21 of 35
http://hobi-elektronika.net

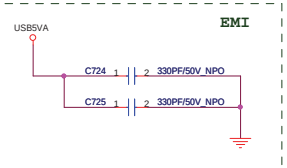
USB Port 0 / 1



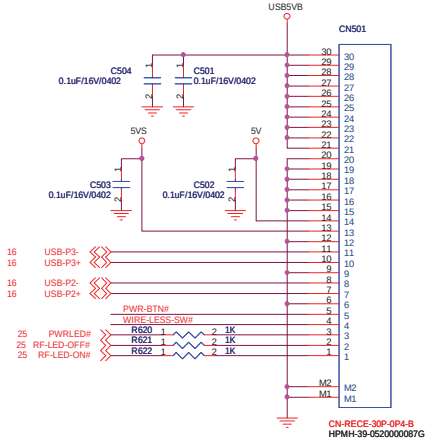






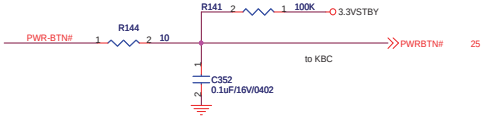


USB DB CONN

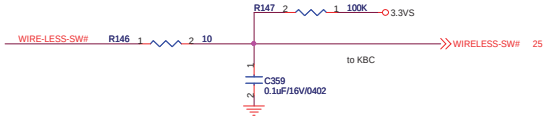


USB Power Connector needs >2A

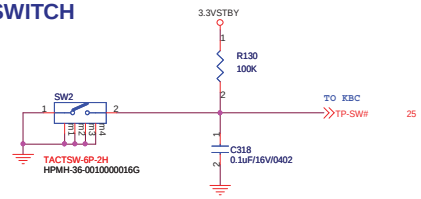
Power ON/OFF Button



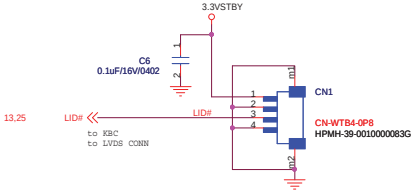
Wireless ON/OFF Button



TP LOCK SWITCH

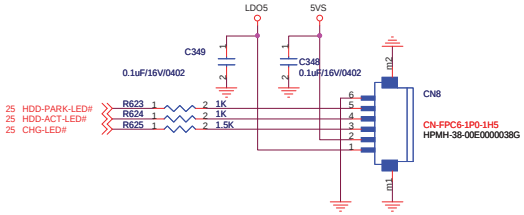


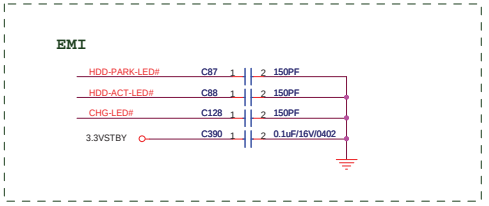
LID Switch



http://hobi-elektronika.net

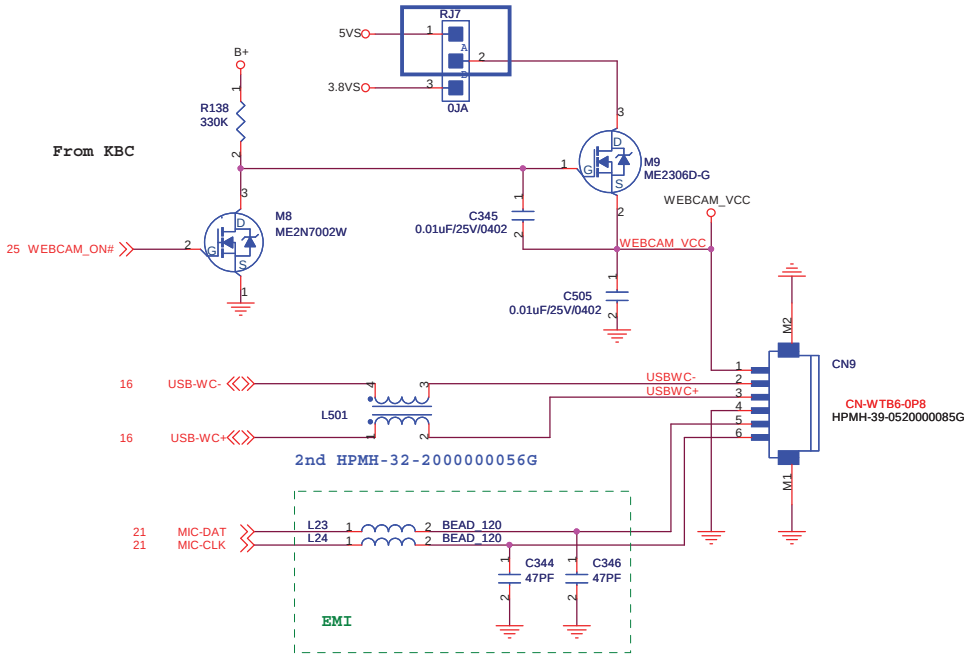
LED DB CONN



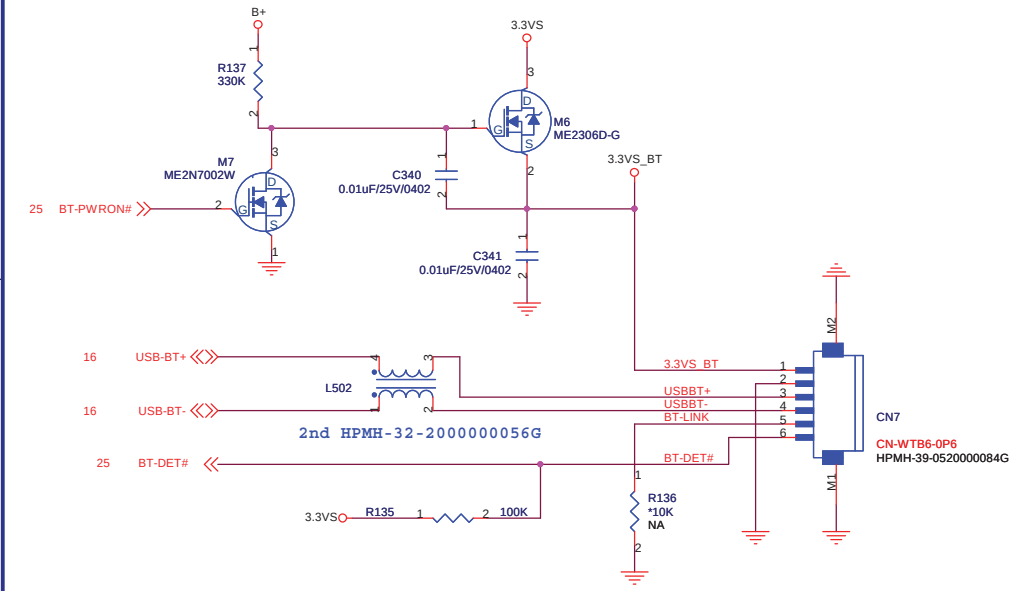


FLEXComputing			
Project Name : ARWEN UA1		Title : USB / USB CON	
Size : C	Document Number : HPMH-40GAB4000-D000		Rev : D
Date: Monday, August 17, 2009		Sheet : 22 of 35	

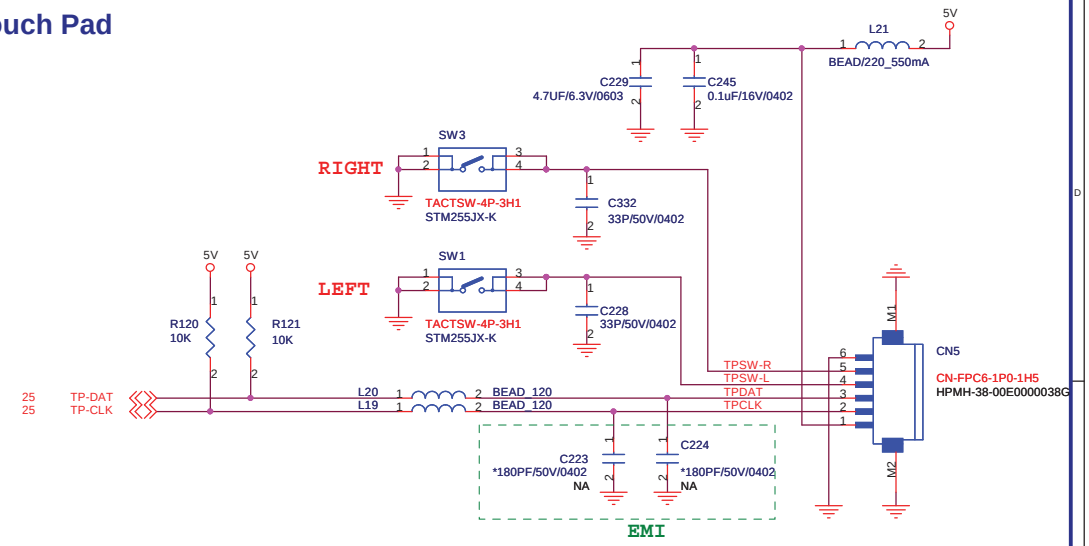
Web CAM



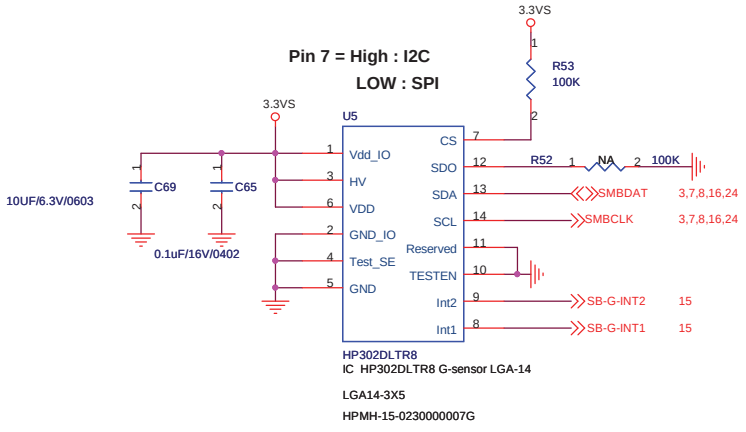
Blue Tooth

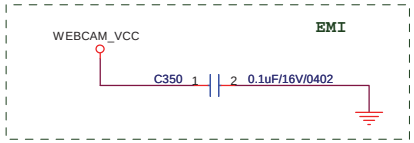


Touch Pad



G-Sensor





FLEX Computing

Project Name : ARWEN UA1	Title : BT/WEBCAM/TP/G-SENSOR
Size : Custom	Document Number : HPMH-40GAB4000-D000
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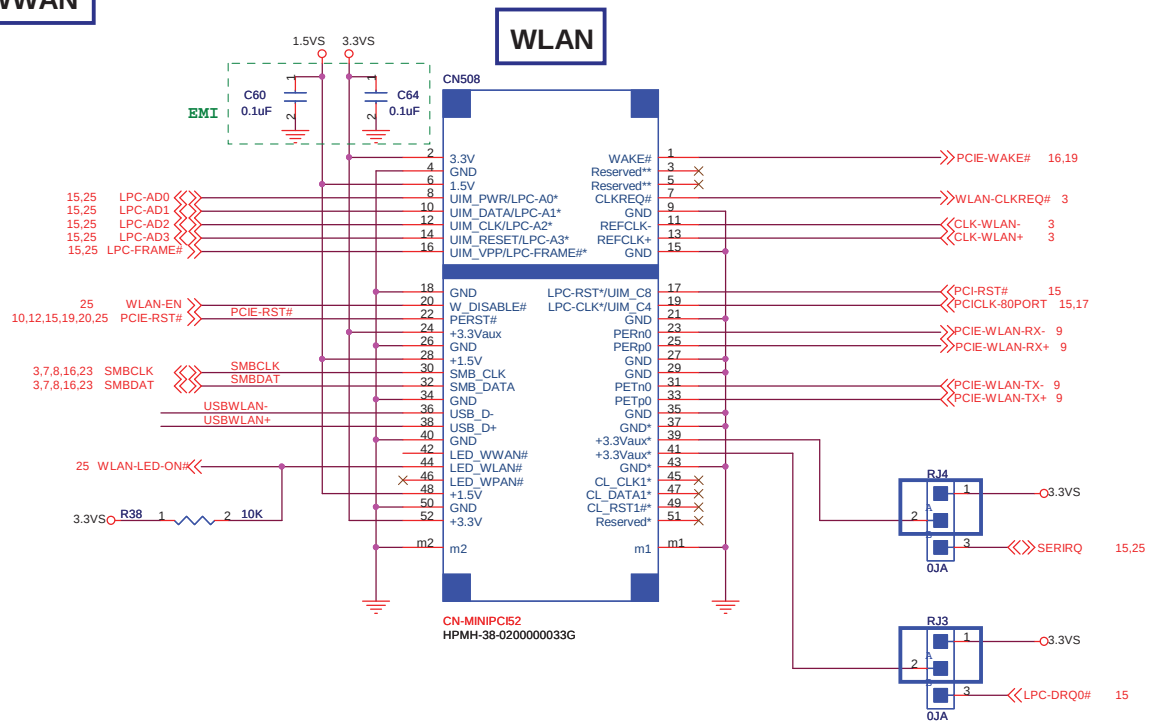
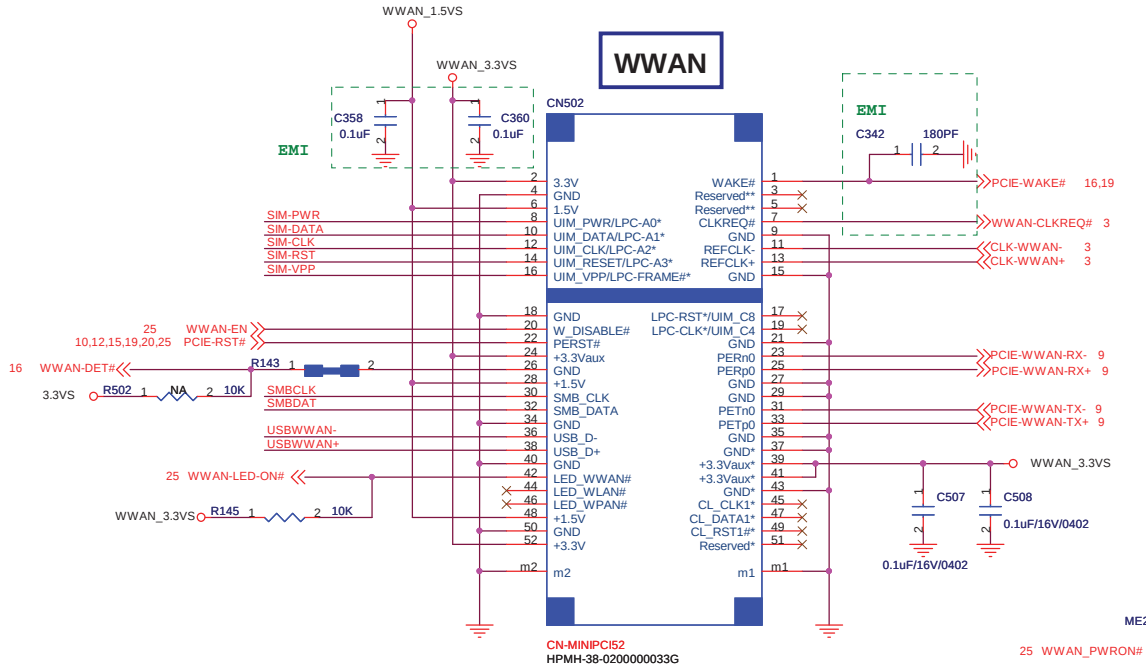
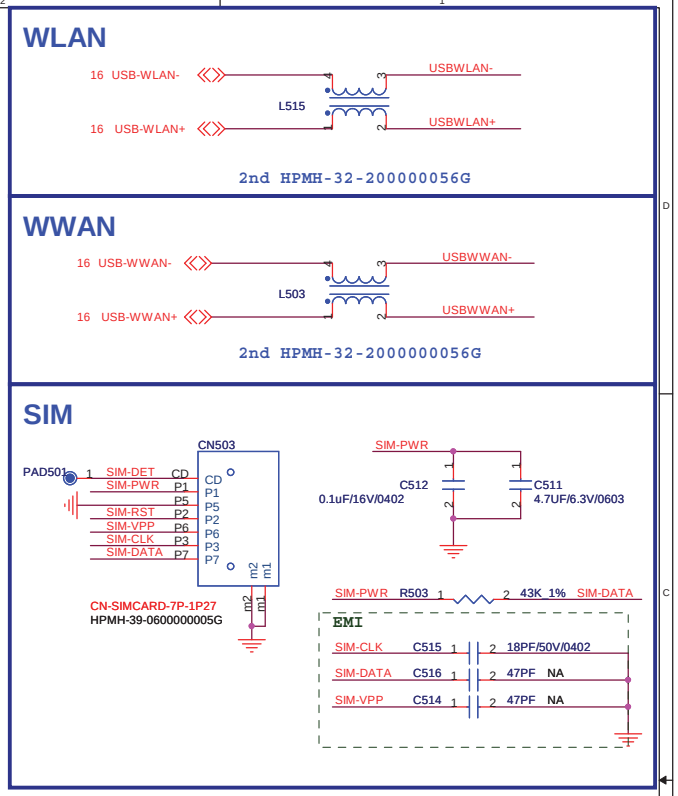
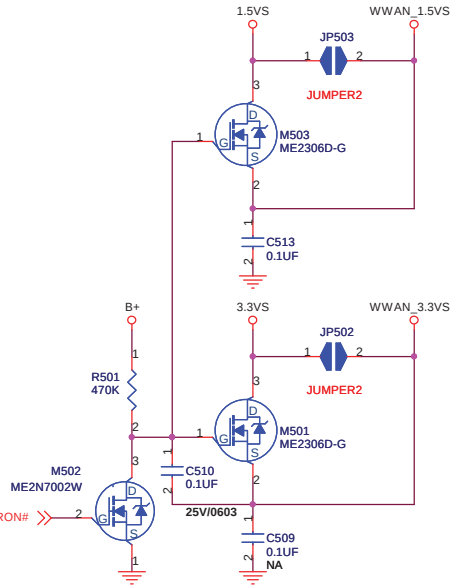
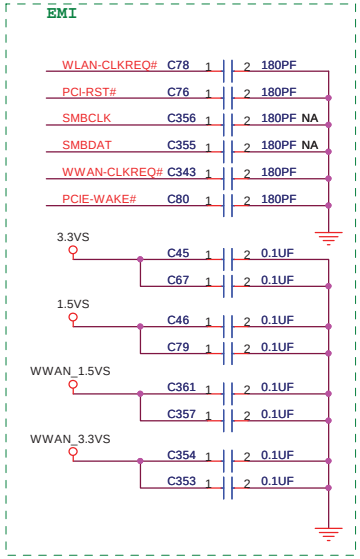
WLAN / WWAN











FLEX Computing

Project Name : ARWEN UA1	Title : MINI PCIE (WLAN / WWAN)
Size : A3	Document Number : HPMH-40GAB4000-D000 / Rev : D
Date: Monday, August 17, 2009	Sheet : 24 of 35

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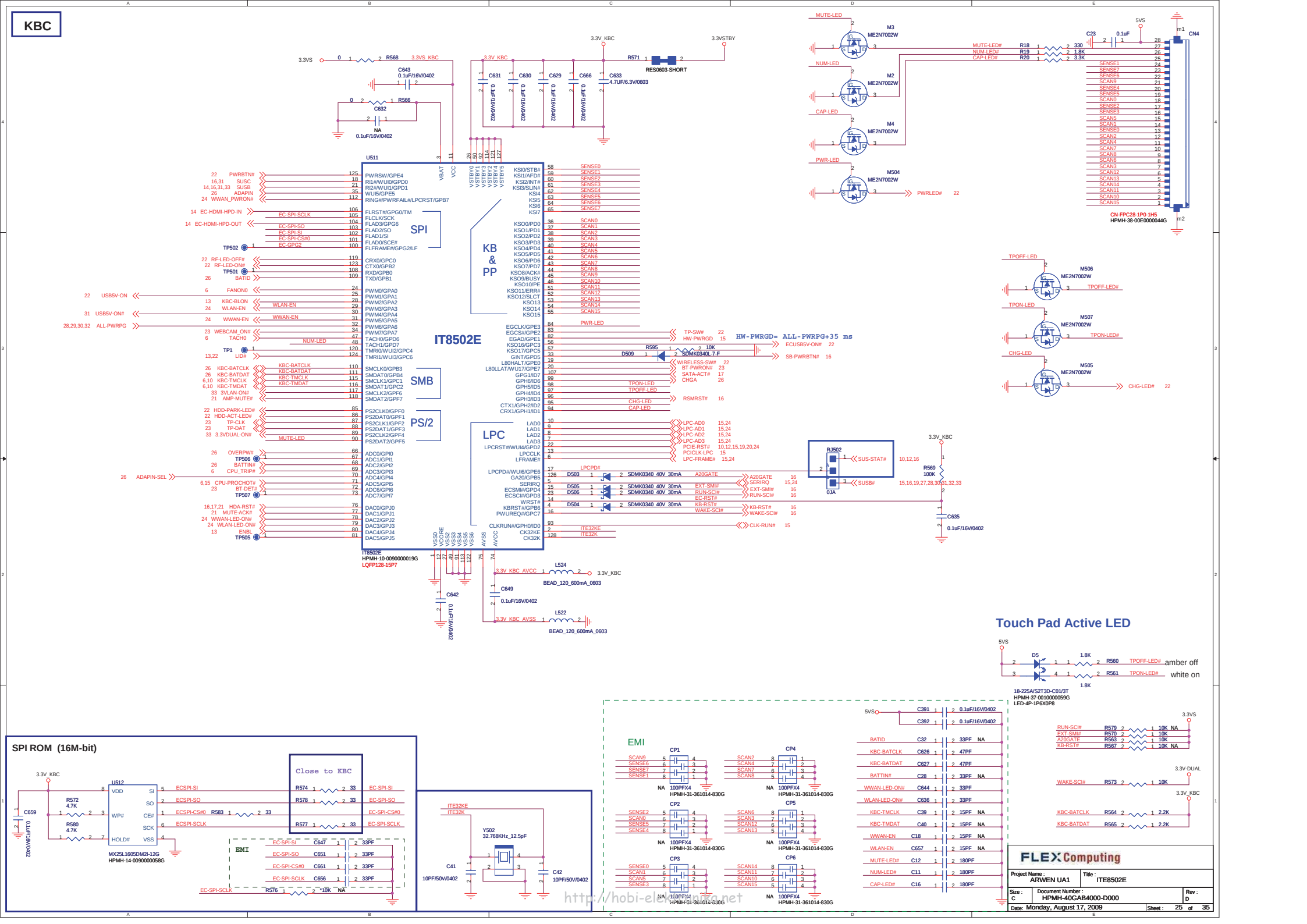
KBC


U511
IT8502E
HPMH-10-0090000019G
LQFP128-15P7
SPI
KB & PP
SMB
PS/2
LPC
EMI
Touch Pad Active LED
SPI ROM (16M-bit)
U512
MX25L1605DM2I-12G
HPMH-14-0090000058G
Close to KBC
Y502
32.768KHz_12.5pF
BEAD_120_600mA_0603
RES0603-SHORT
M2 ME2N7002W
M3 ME2N7002W
M4 ME2N7002W
M504 ME2N7002W
M505 ME2N7002W
M506 ME2N7002W
M507 ME2N7002W
CN-FPC28-1P0-1H5
HPMH-38-00E0000044G
18-225A/S2T3D-C01/3T
HPMH-37-0010000059G
LED-4P-1P6X0P8
HW-PWRGD= ALL-PWRPG+35 ms
amber off
white on
FLEXComputing
Project Name : ARWEN UA1
Title : IT8502E
Size : C
Document Number : HPMH-40GAB4000-D000
Rev : D
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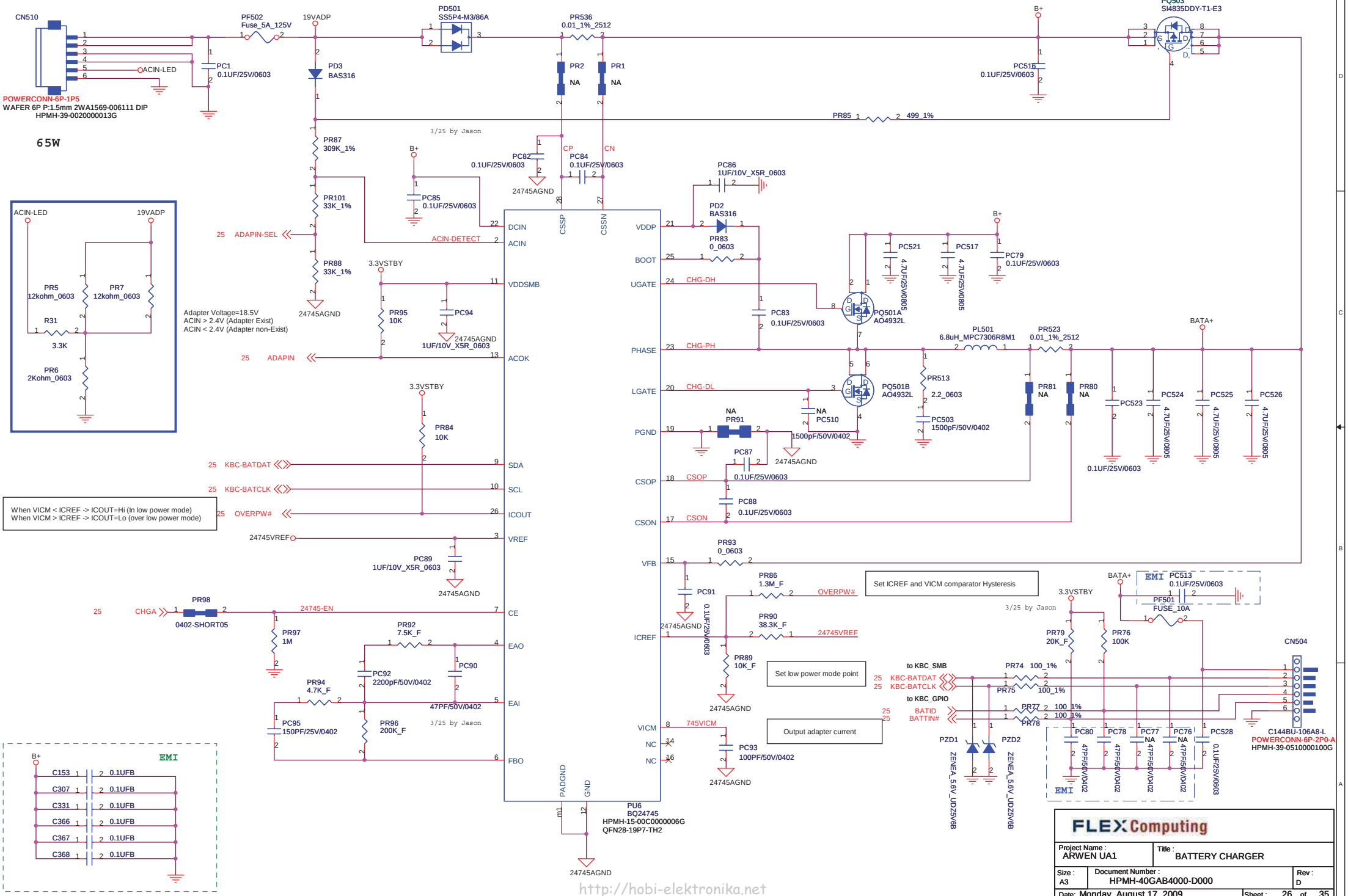
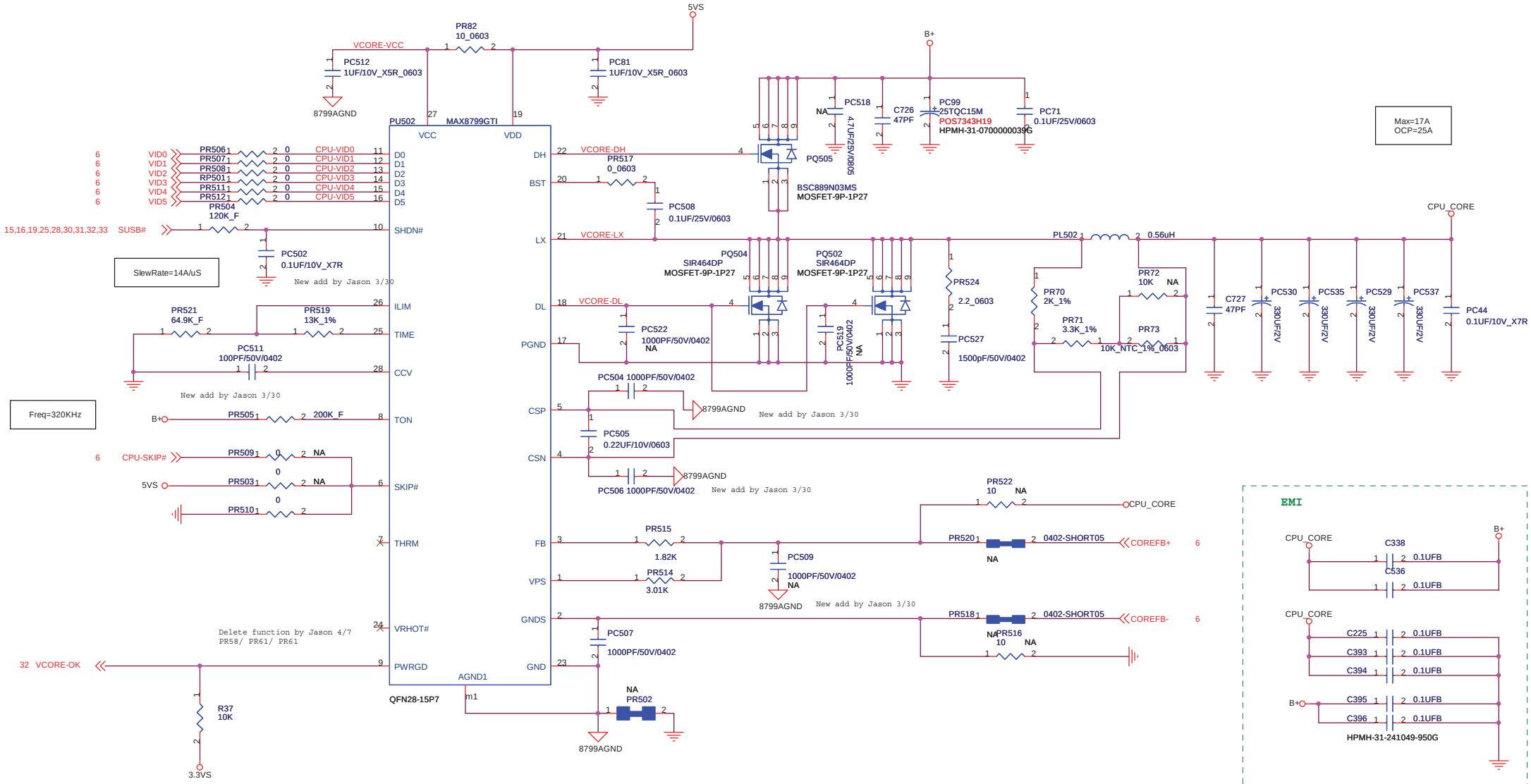
Charger



http://hobi-elektronika.net

CPU_CORE



CPU Voltage	VID 0	VID 1	VID 2	VID 3	VID 4	VID 5
1.00V	0	1	1	0	1	0
1.05V	0	0	1	0	1	0
1.10V	0	1	0	0	1	0

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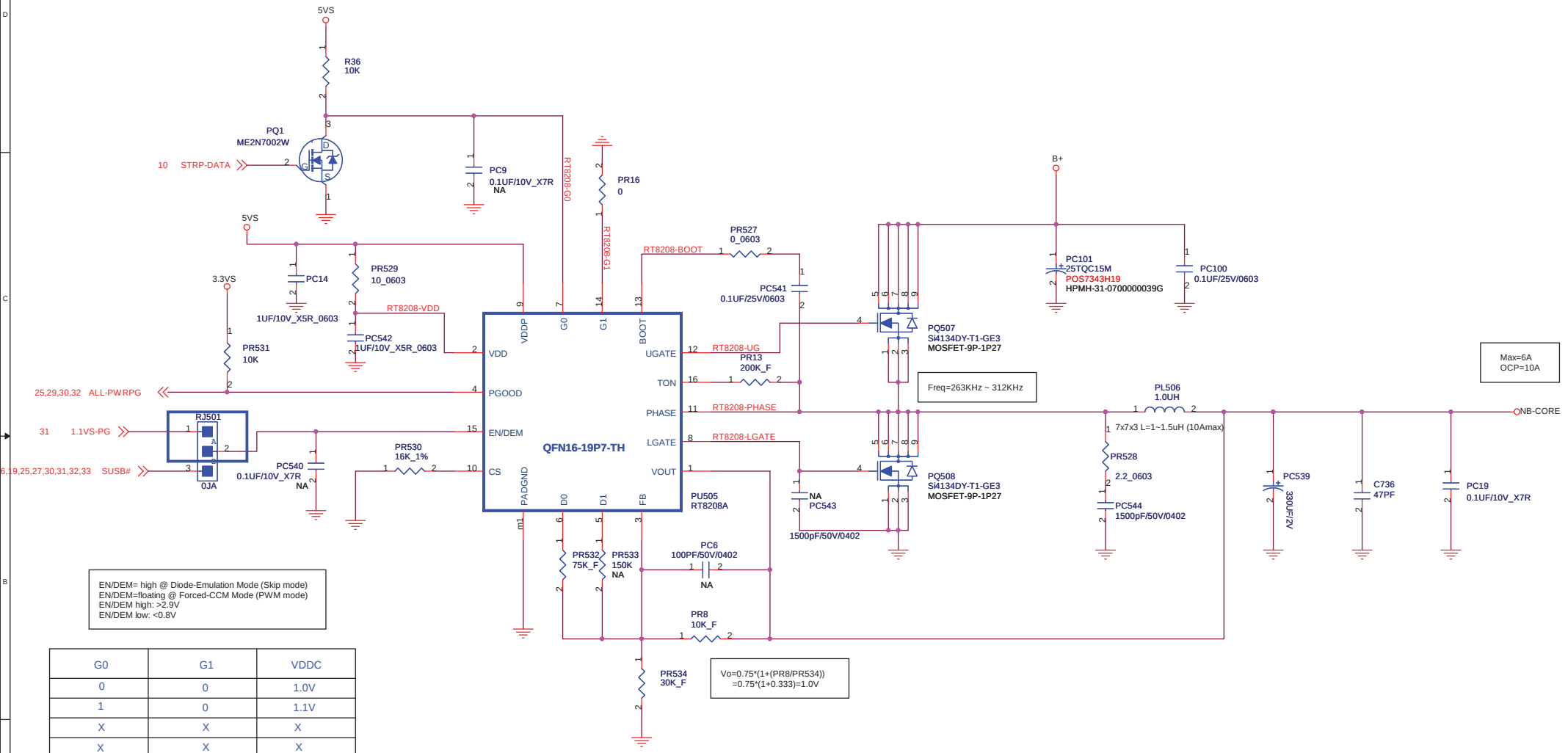
FLEX Computing

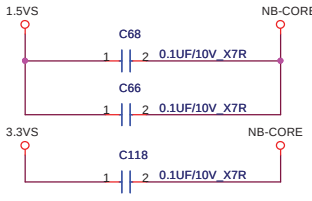
Project Name : ARWEN UA1	Title : CPU_CORE
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 27 of 35

NB_CORE



G0	G1	VDDC
0	0	1.0V
1	0	1.1V
X	X	X
X	X	X

EMI



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FLEX Computing

Project Name : ARWEN UA1	Title : NB_CORE
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 28 of 35

5V / 3.3VSTBY

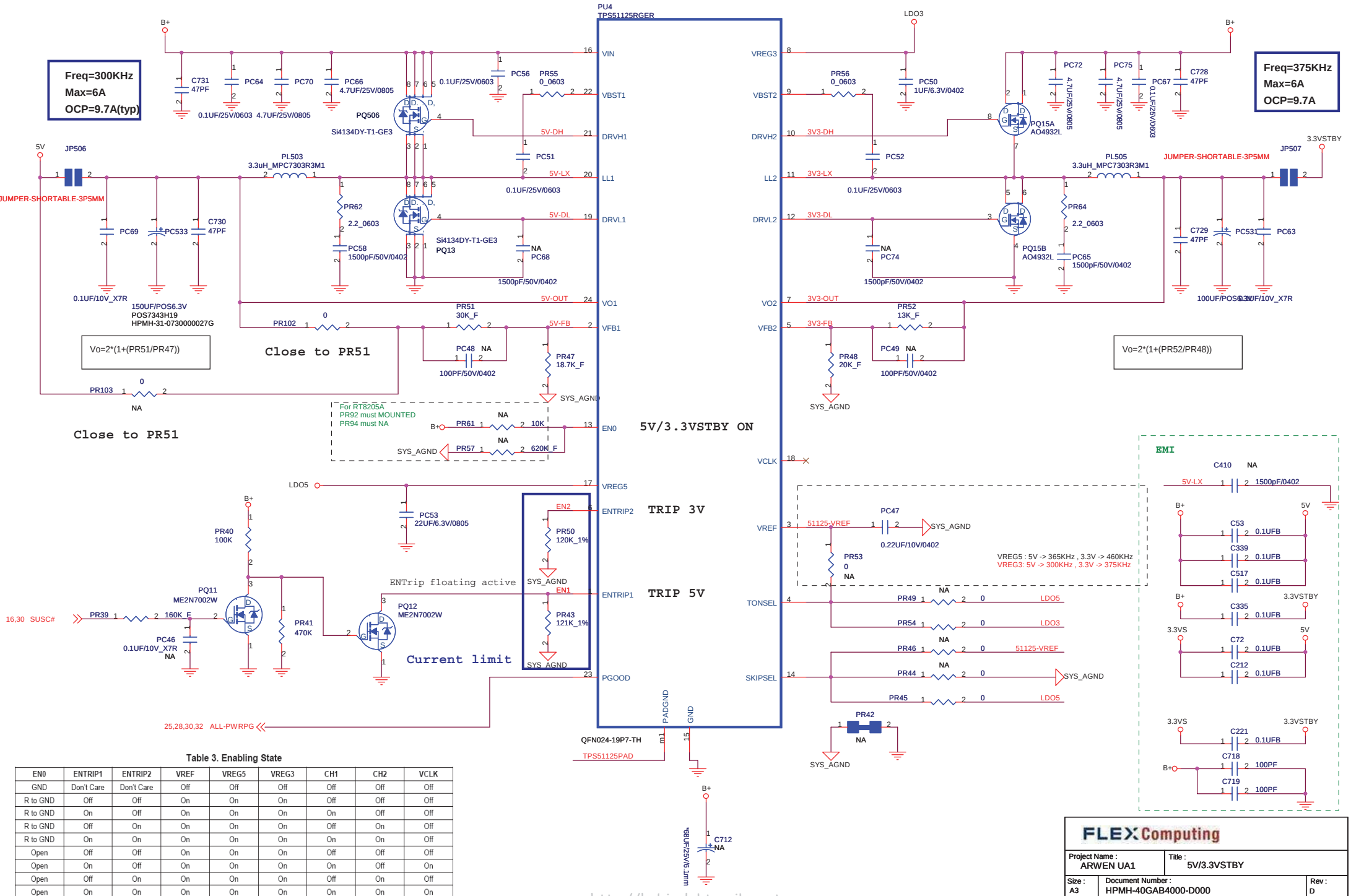


Table 3. Enabling State

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

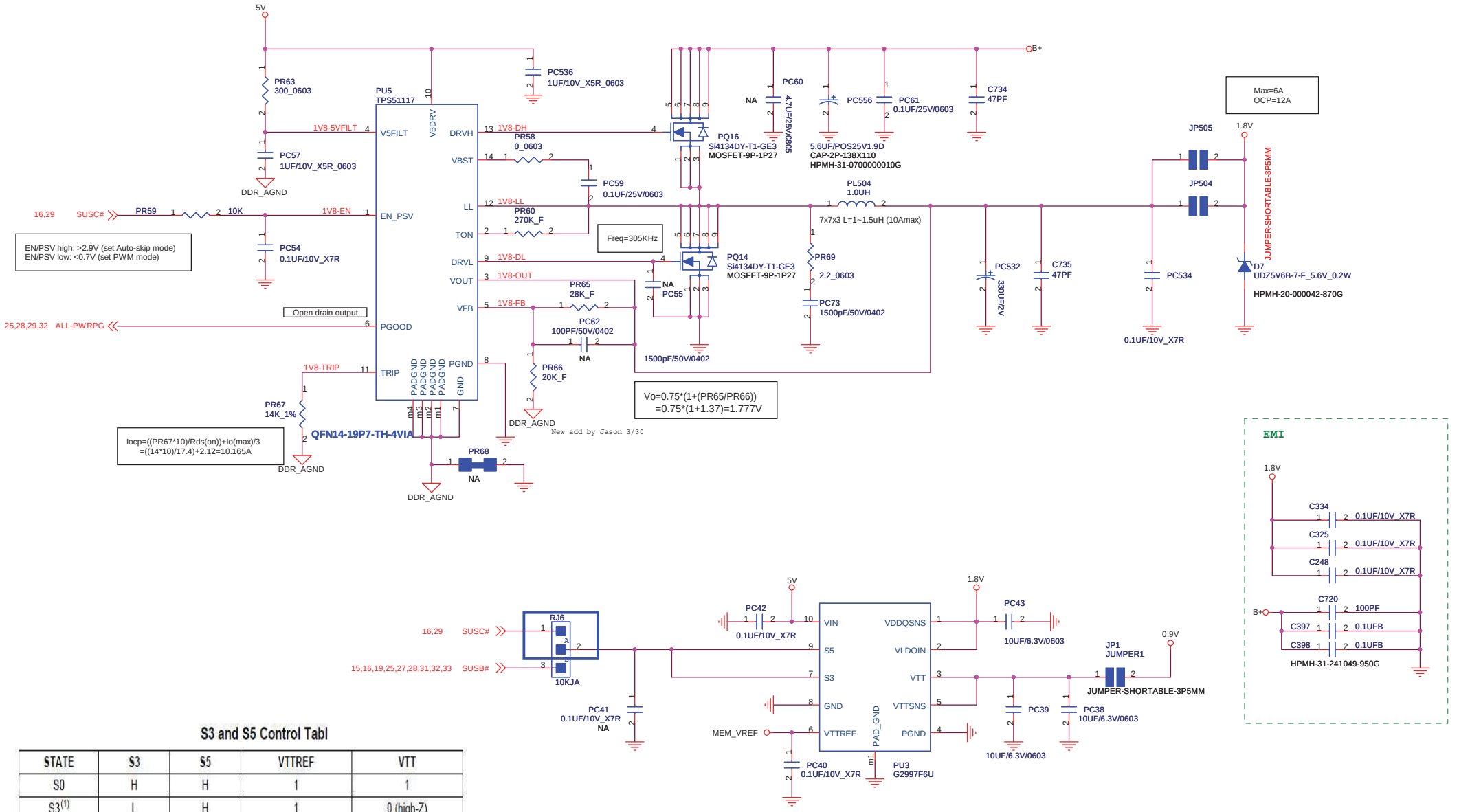
For PCB Acustic Noise

http://laptopschematics.com

FLEX Computing

Project Name : ARWEN UA1	Title : 5V/3.3VSTBY
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 29 of 35

1.8V / 0.9V



S3 and S5 Control Tabl

STATE	S3	S5	VTTREF	VTT
S0	H	H	1	1
S3(1)	L	H	1	0 (high-Z)
S4/S5(1)	L	L	0 (discharge)	0 (discharge)

(1) In case S3 is forced to H and S5 to L, VTTREF is discharged and VTT is at High-Z state. This condition is NOT recommended.

http://hobi-elektronika.net

FLEX Computing	
Project Name : ARWEN UA1	Title : 1.8V/0.9V
Size : A3	Document Number : HPMH-40GAB4000-D000
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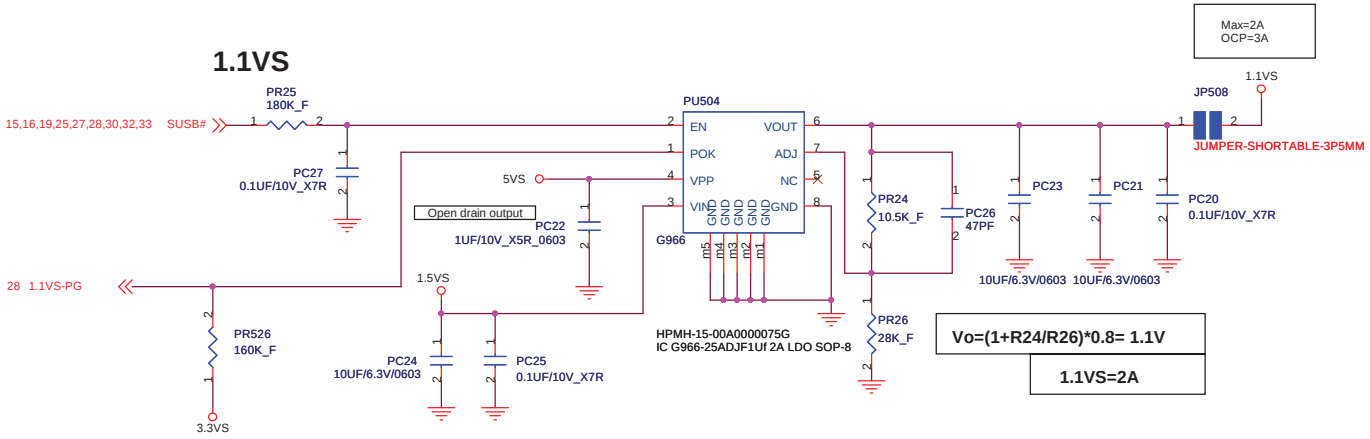
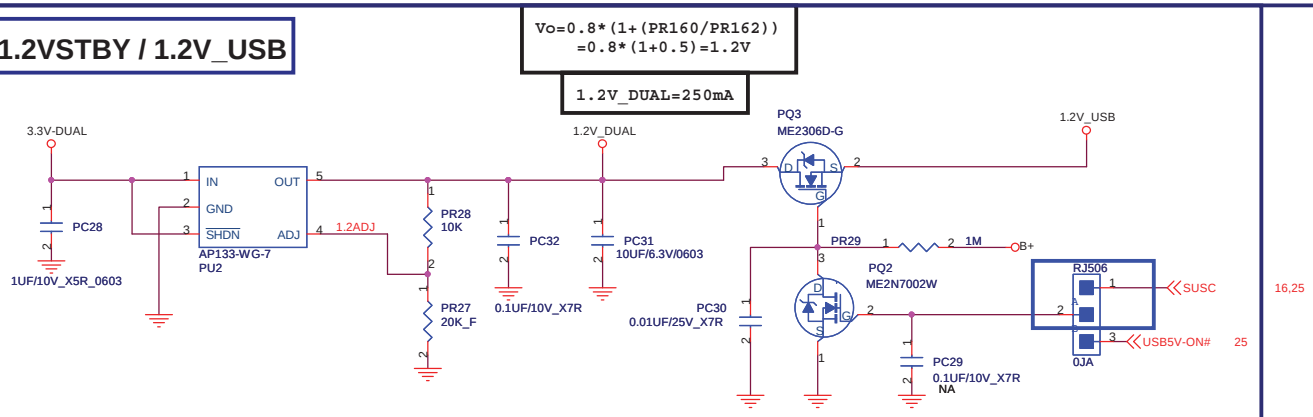
Date: Monday, August 17, 2009	Sheet : 30 of 35

1.1VS

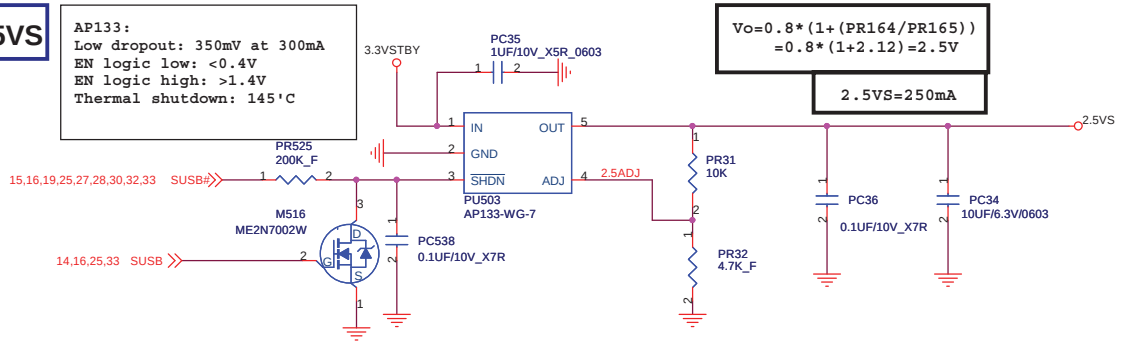


1.2VSTBY / 1.2V_USB



2.5VS

AP133:
Low dropout: 350mV at 300mA
EN logic low: <0.4V
EN logic high: >1.4V
Thermal shutdown: 145'C



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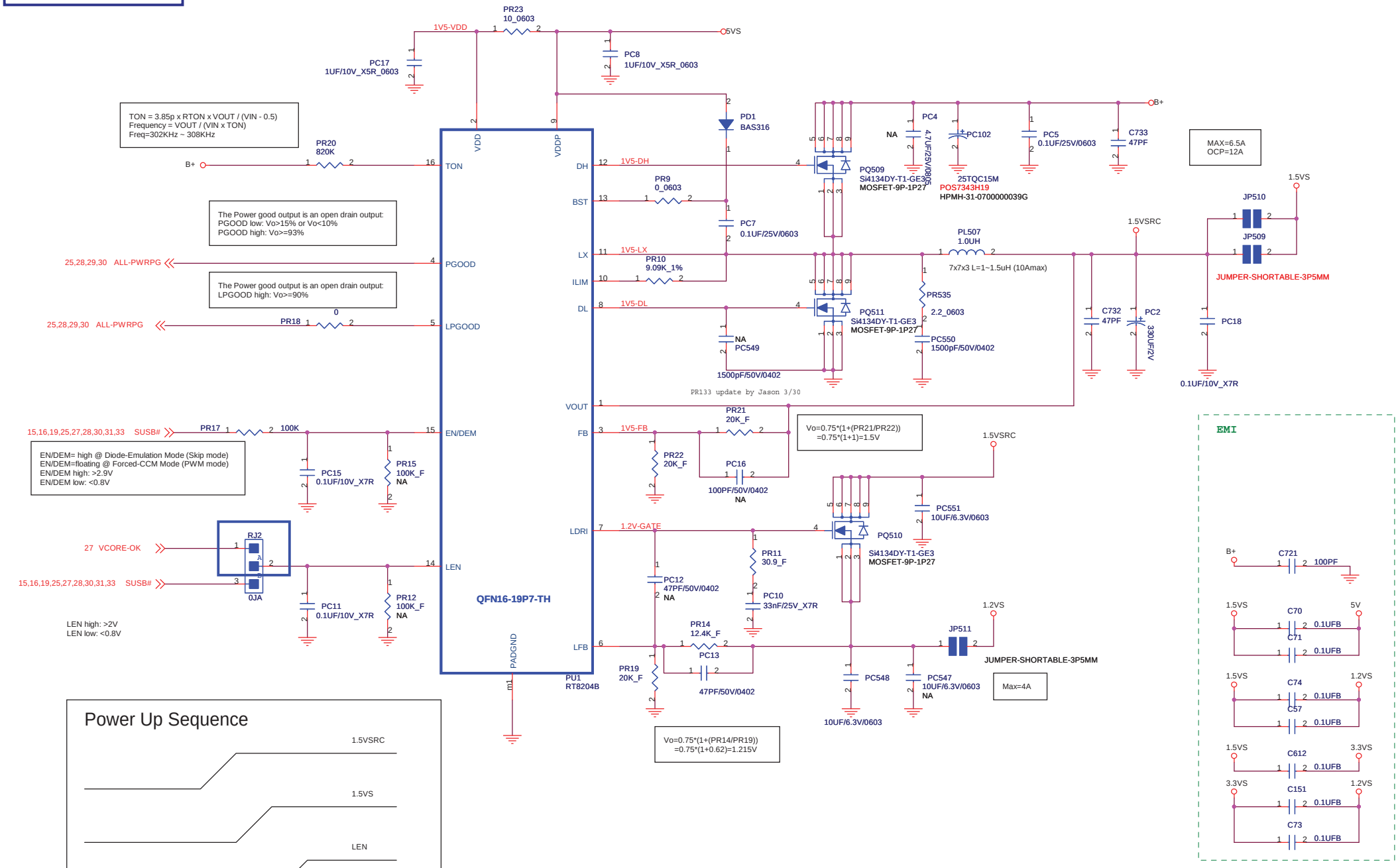
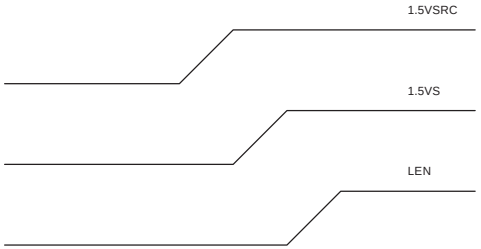
FLEX Computing

Project Name : ARWEN UA1	Title : 1.1VS/2.5VS/1.2V_USB
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 31 of 35

1.5VS / 1.2VS



Power Up Sequence



FLEX Computing		
Project Name : ARWEN UA1	Title : 1.5VS/1.2VS	
Size : Custom	Document Number : HPMH-40GAB4000-D000	Rev : D
Date: Monday, August 17, 2009	Sheet : 32 of 35	

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S4/S3 OFF

5VS

N-CH/6A_DMN3033LSN-7
PQ10
PR38 140K_F
PC45 0.1UF/25V/0603
PQ9 ME2N7002W
PR37 1M NA
14,16,25,31 SUSB

3.3VS

PQ8 Si4134DY-T1-GE3
PR36 210K_F
PC37 0.1UF/25V/0603
PQ7 ME2N7002W
PR35 1M NA

1.8VS

PQ6 Si4134DY-T1-GE3
PR30 240K_F
PC33 0.1UF/25V/0603
PQ4 ME2N7002W
PR33 1M NA

LAN_3.3V

N-CH/6A_DMN3033LSN-7
PQ513
PR3 100K_F
PC552 0.1UF/25V/0603
PQ512 ME2N7002W
PR4 1M NA
25 3VLAN-ON#

3.3V_DUAL

JP512
PQ5 ME2306D-G
R119 1M NA
C219 0.1UF/25V_X7R
M5 ME2N7002W NA
PR34 1M NA
25 3.3VDUAL-ON#

Discharge

R418 100_1206
PQ17 ME2N7002W
14,16,25,31 SUSB

AP133:
Low dropout: 350mV at 300mA
EN logic low: <0.4V
EN logic high: >1.4V
Thermal shutdown: 145'C

3.8VS

Vo=0.8*(1+(PR100/PR99))
=0.8*(1+3.75)=3.8V

3.8VS=250mA

PC98 1UF/10V_X5R_0603 NA
PU501 AP133-WG-7
PR501 160K_F NA
PC501 0.1UF/10V_X7R NA
PR100 75K_F NA
PC97 NA
PC96 10UF/6.3V/0603 NA
PR99 20K_F NA
0.1UF/10V_X7R
15,16,19,25,27,28,30,31,32 SUSB#

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Project Name : ARWEN UA1	Title : V/VS/VGA POWER
Size : Custom	Document Number : HPMH-40GAB4000-D000
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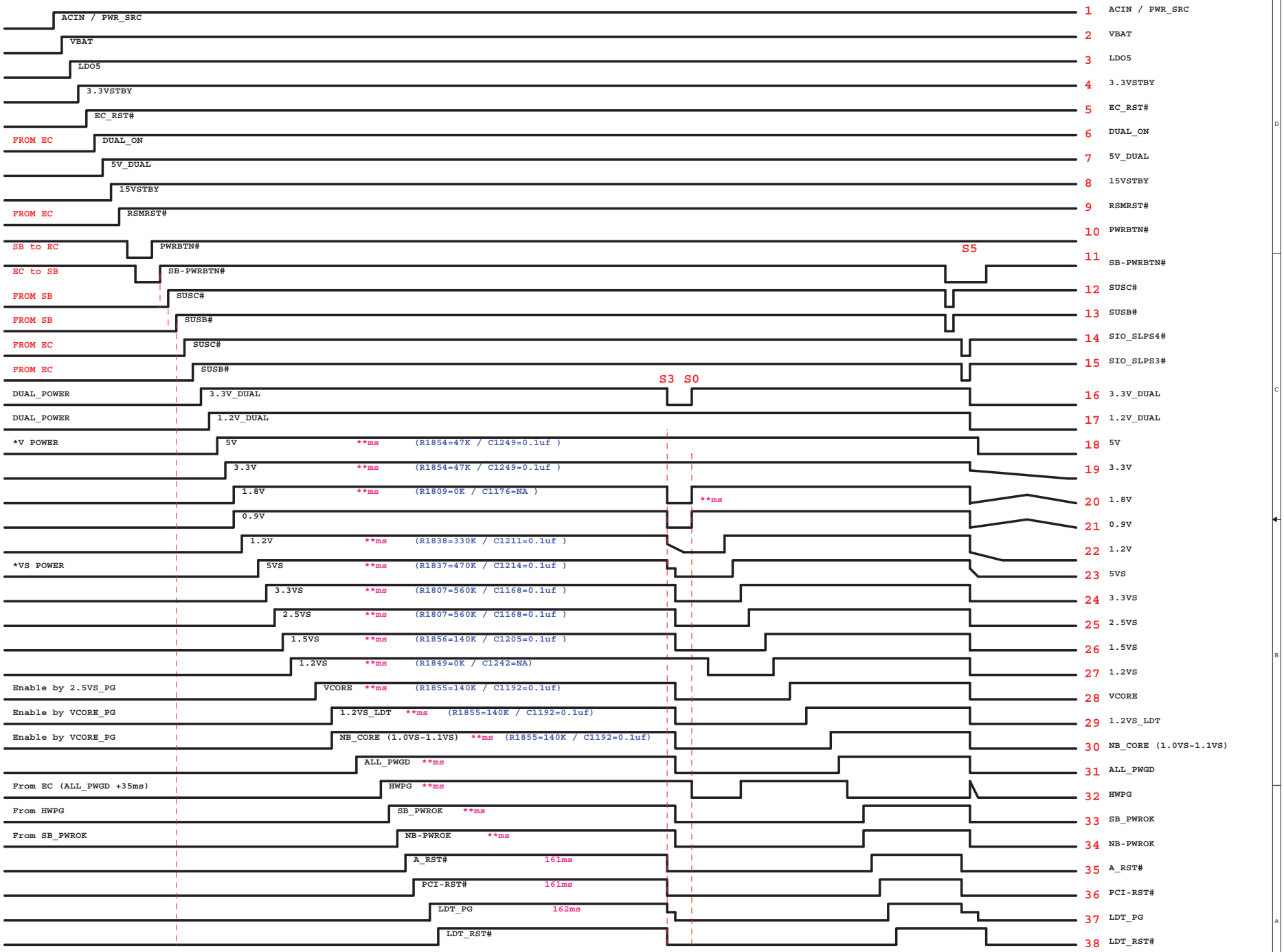

FLEX Computing

Project Name : ARWEN UA1	Title : GPU OFF PWR	
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Screw Hole

MB x 16

H26 *PTH6.4_3.3_6.4 THR252_130
H6 *PTH6.4_3.3_6.4 THR252_130
H5 *PTH8_3.3_8 THR315_130
H4 *PTH6.4_3.3_6.4 THR252_130
H7 *PTH6.4_3.3_6.4 THR252_130
H13 *PTH8_3.3_8 THR315_130
H18 *PTH8_3.3_8 THR315_130
H21 *PTH8_3.3_8 THR315_130
H9 *PTH8_3.3_8 THR315_130
H24 *PTH8_3.3_8 THR315_130
H22 *PTH6.4_3.3_6.4 THR252_130
H17 *PTH6.4_3.3_6.4 THR252_130
H25 *PTH6_3.3_6 THR236_130

CPU/VGA x 8

H19 *PTH6.4_4.4_6.4 THR252_173
H20 *PTH6.4_4.4_6.4 THR252_173
H15 *PTH6.4_4.4_6.4 THR252_173
H16 *PTH6.4_4.4_6.4 THR252_173
H10 *PTH6.4_4.4_6.4 THR252_173
H11 *PTH6.4_4.4_6.4 THR252_173

MINI CARD x 2

H8 NUT_MINIPCIE_H1.6 THR0B252_110
H12 NUT_MINIPCIE_H1.6 THR0B252_110

EMI x 2

H1 NUT_EMI_SUPPORTER THR177B0_044
H2 NUT_EMI_SUPPORTER THR0B177_044

FID

FID1 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID3 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID4 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID5 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID6 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID7 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID8 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.
FID2 *FIDUCIAL CAD-016 NC, NO CONNECT TO ANY.

H3 *NPTH0_1.7_0 NPTH068
H23 *NPTH0_1.7_0 NPTH068
H14 *NPTH5 NPTH197
H501 *PAD4.5MM PAD177

ME1 SU-15BS
ME2 SU-15BS
ME6 SU-15BS
ME3 SU-20AS
ME4 SU-20AS
ME5 SU-20AS

B+
C369 1 2 0.1UFB
C370 1 2 0.1UFB
C371 1 2 0.1UFB
C372 1 2 0.1UFB
C373 1 2 0.1UFB
C374 1 2 0.1UFB
C375 1 2 0.1UFB
C376 1 2 0.1UFB
C377 1 2 0.1UFB
C378 1 2 0.1UFB
C384 1 2 0.1UFB
C385 1 2 0.1UFB
C386 1 2 0.1UFB
C387 1 2 0.1UFB
C388 1 2 0.1UFB
C389 1 2 0.1UFB
C399 1 2 0.1UFB
C401 1 2 0.1UFB

5V
C379 1 2 0.1UFB
C380 1 2 0.1UFB

1.5VS
C381 1 2 0.1UFB
C403 1 2 0.1UFB
C404 1 2 0.1UFB
C405 1 2 0.1UFB

1.2VS
C382 1 2 0.1UFB
C383 1 2 0.1UFB
C406 1 2 0.1UFB
C407 1 2 0.1UFB
C408 1 2 0.1UFB

3.3VS
C409 1 2 0.1UFB

5VS
C400 1 2 0.1UFB

EMI1 SPRING_HEIGHT_40
HPMH-B2685111G00004
EMI-3LX2WX4H
2nd source HPMH-B2685111G00001

EMI5 SPRING_HEIGHT_12
HPMH-B2685111G00005
EMI-3L5X2WX1H2
2nd source HPMH-B2685111G00003

EMI2 SPRING_HEIGHT_25
HPMH-B2685111G00006
EMI-2L6X1W5X2H5
2nd source HPMH-B2685111G00002

EMI3 SPRING_HEIGHT_25
NA
HPMH-B2685111G00002
EMI-2L6X1W5X2H5

EMI4 SPRING_HEIGHT_25
HPMH-B2685111G00002
EMI-2L6X1W5X2H5

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Project Name : ARWEN UA1	Title : PAD/ SCREW/ Moat Cap
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