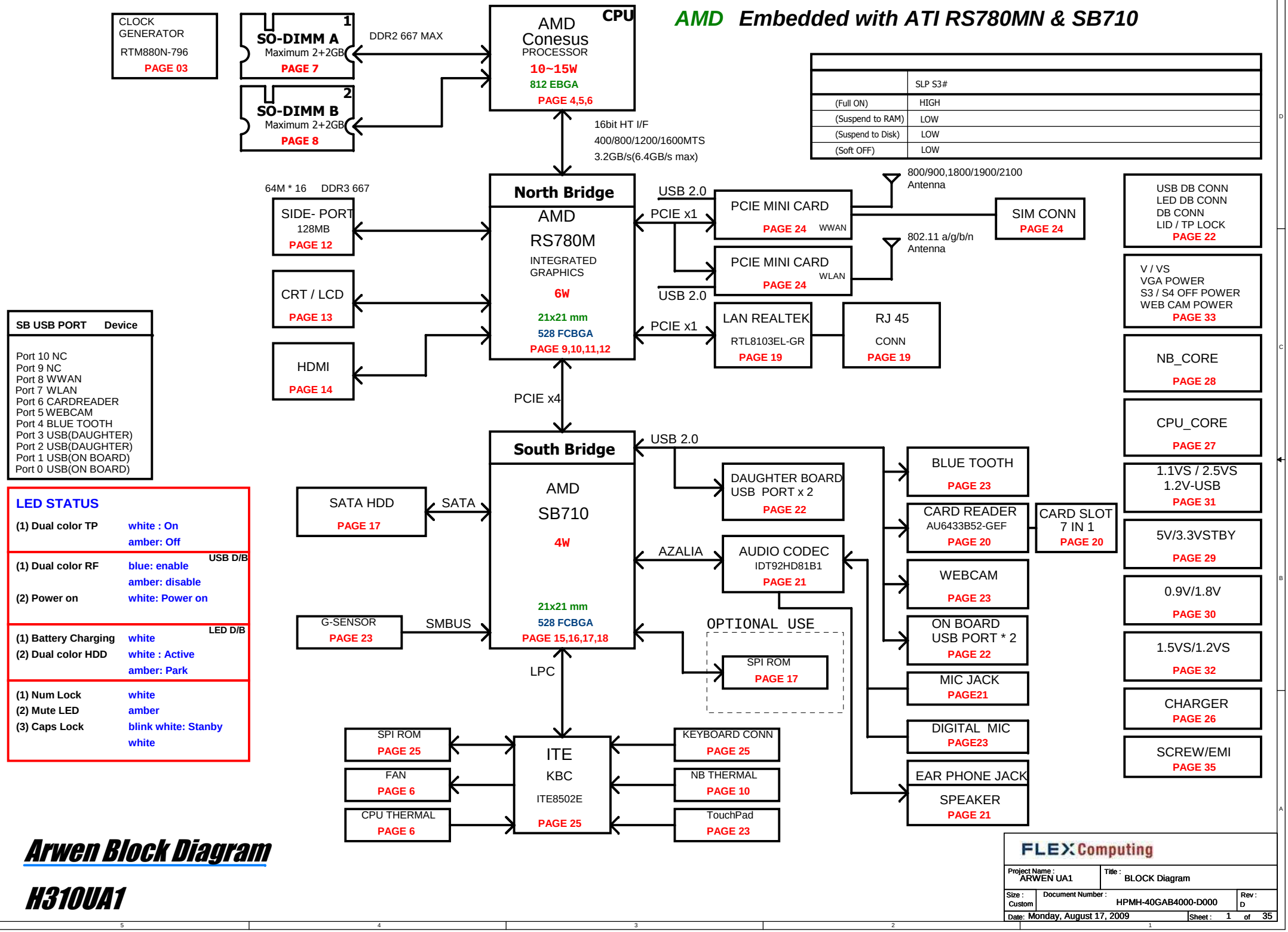
AMD Embedded with ATI RS780MN & SB710



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

Arwen Block Diagram

H310UA1

FLEX Computing

Project Name : ARWEN UA1	Title : BLOCK Diagram	
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Table of Contents

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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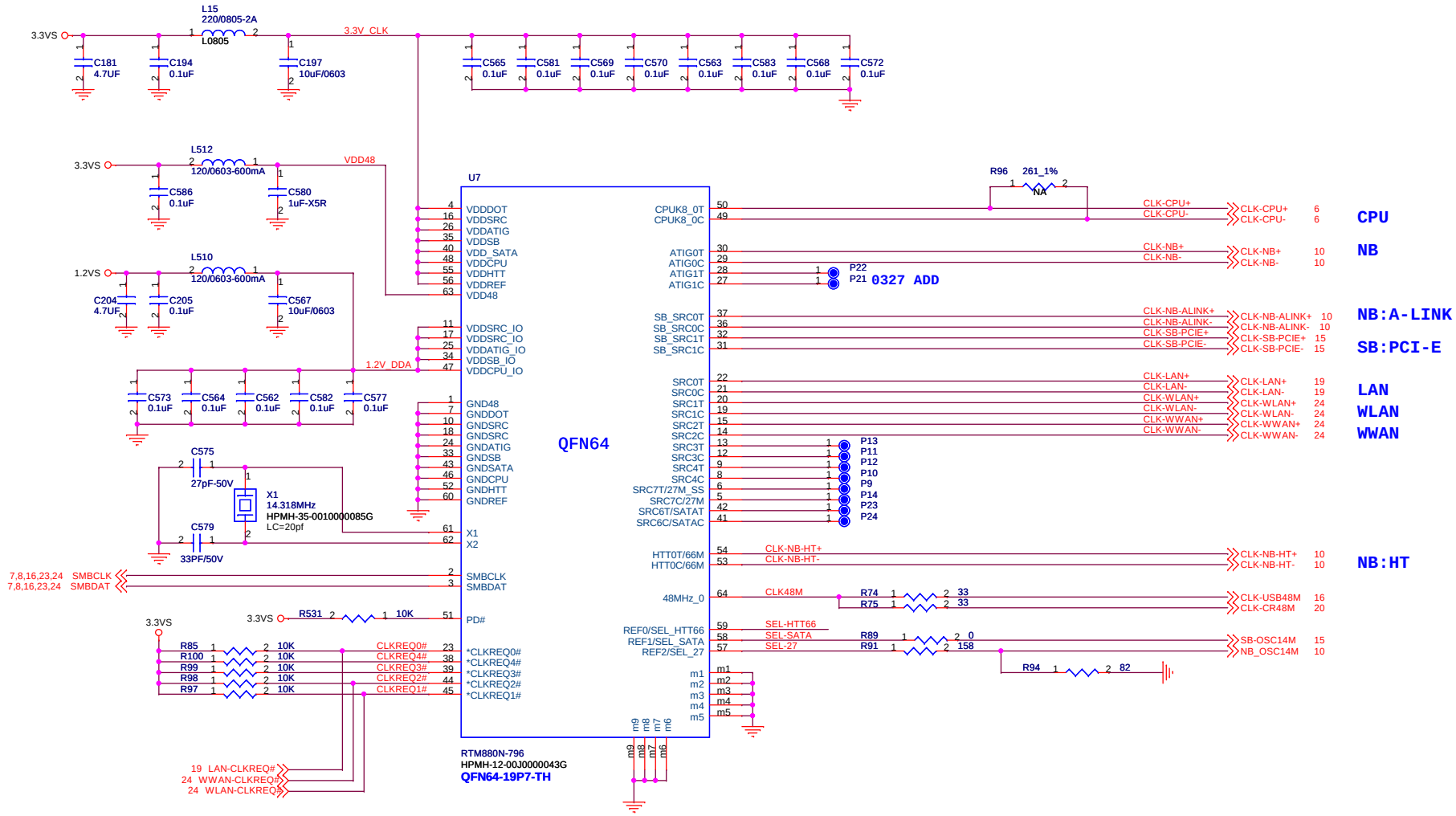
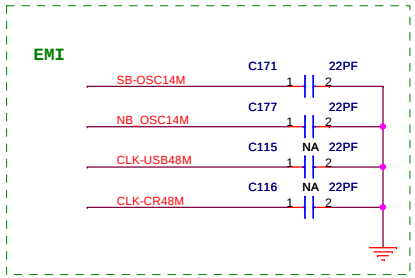
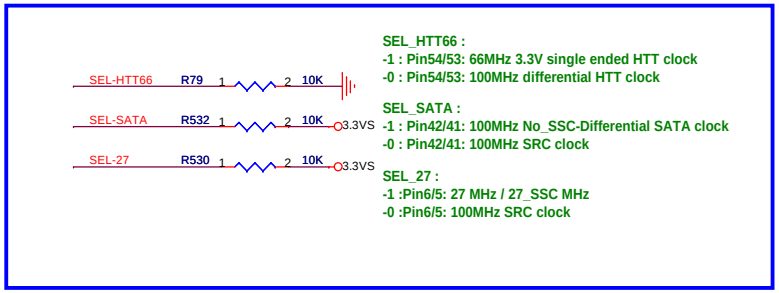
CLOCK GENERATOR







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Project Name : ARWEN UA1	Title : CLOCK GENERATOR	
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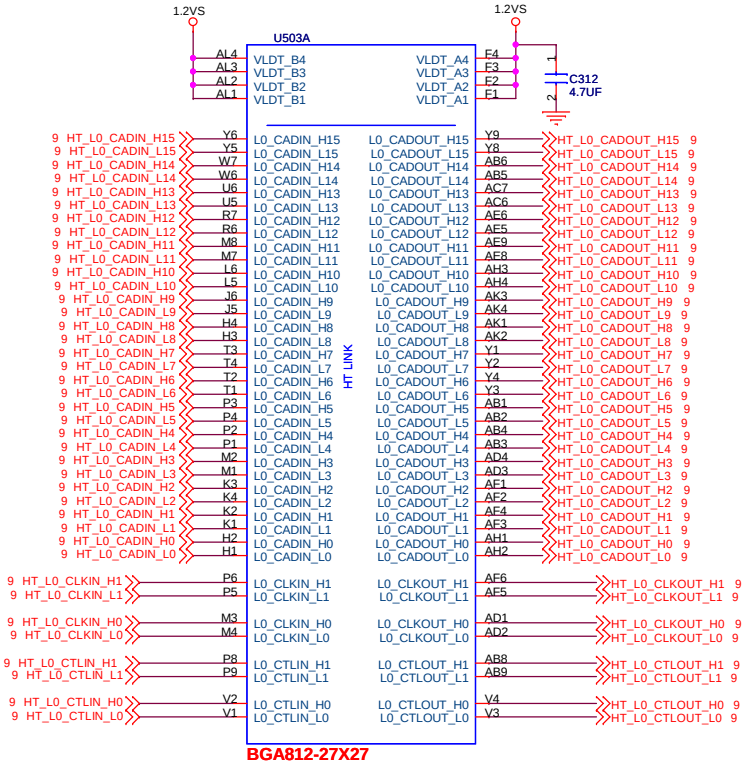
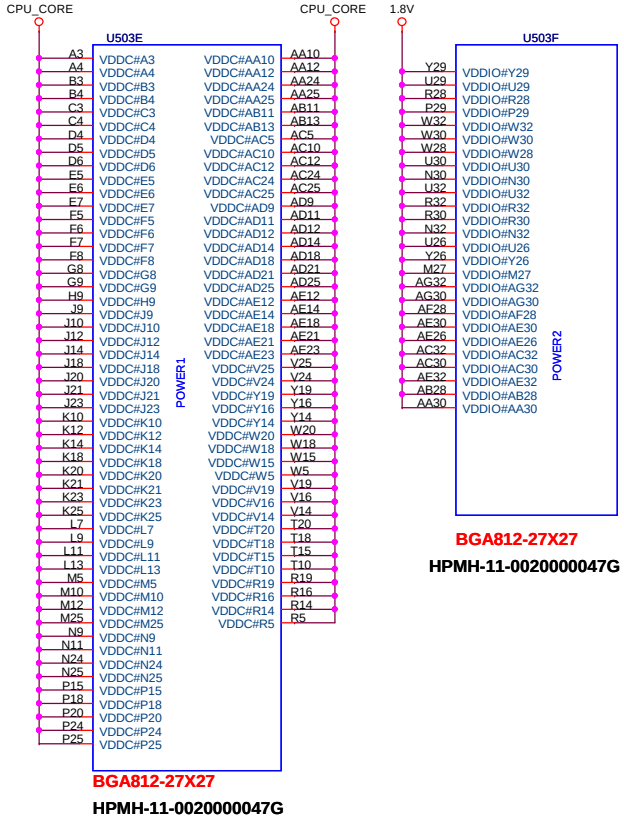
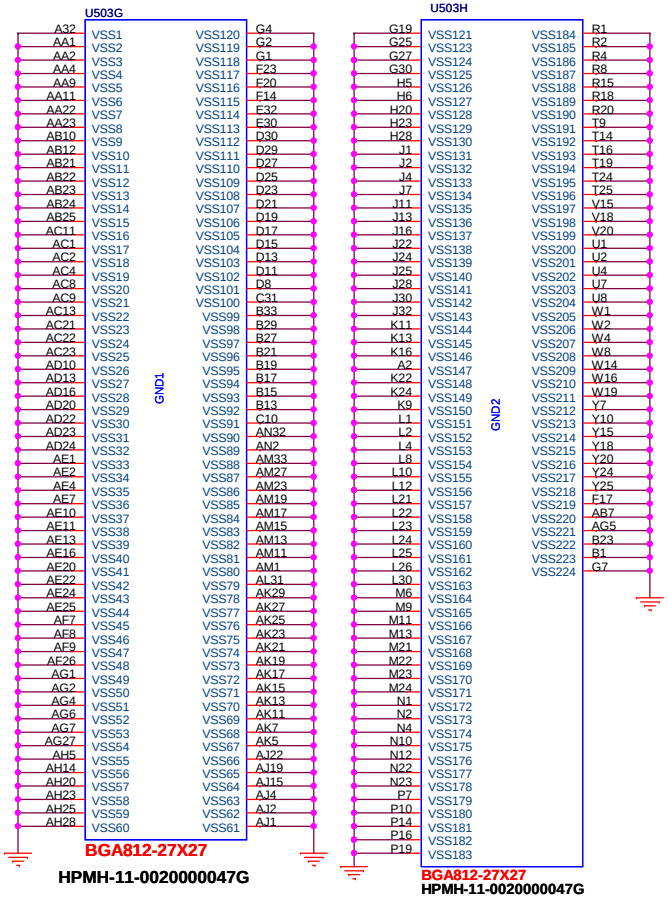
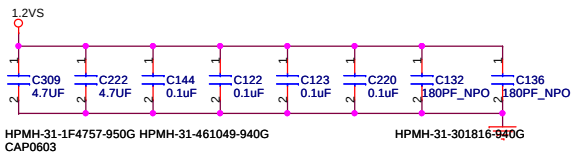
CPU HT/PWR/GND

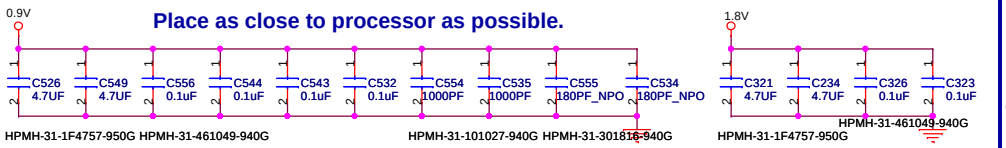
VLDT Trace at Itast 200 mils wide

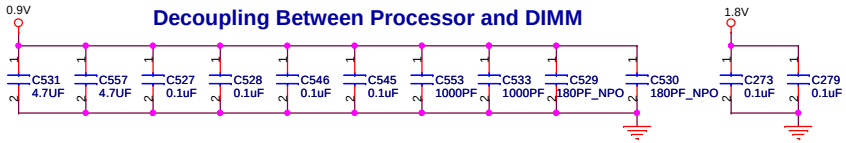


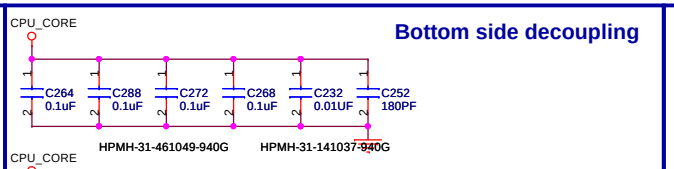


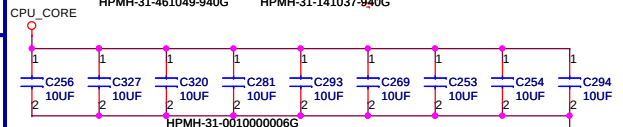


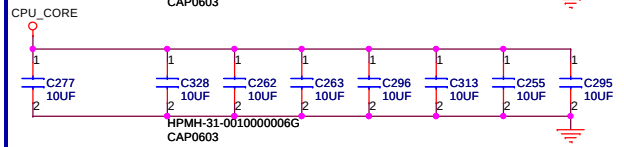


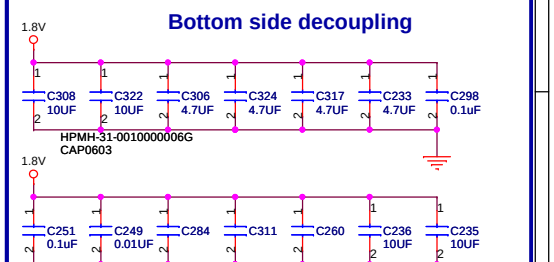












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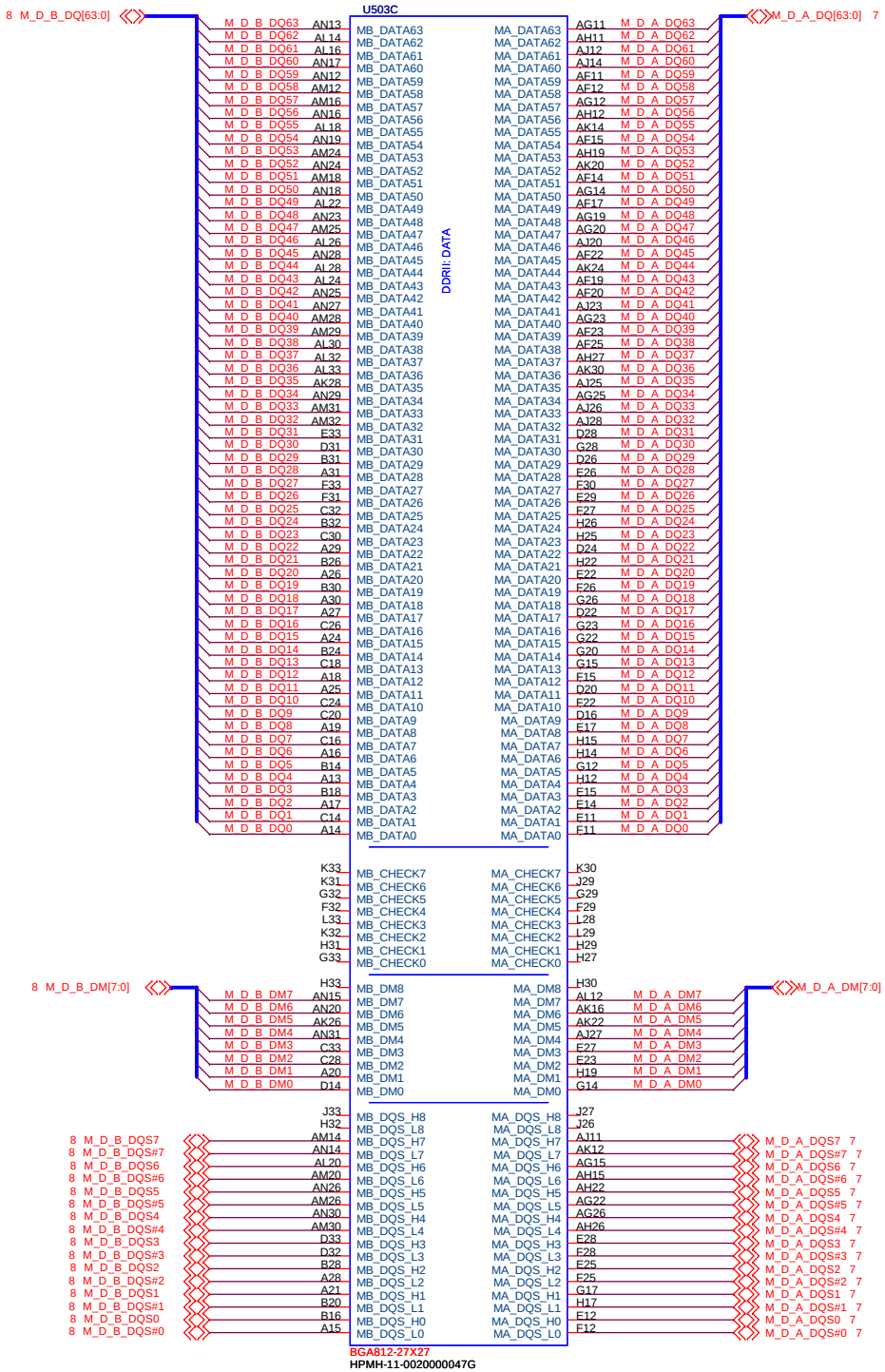
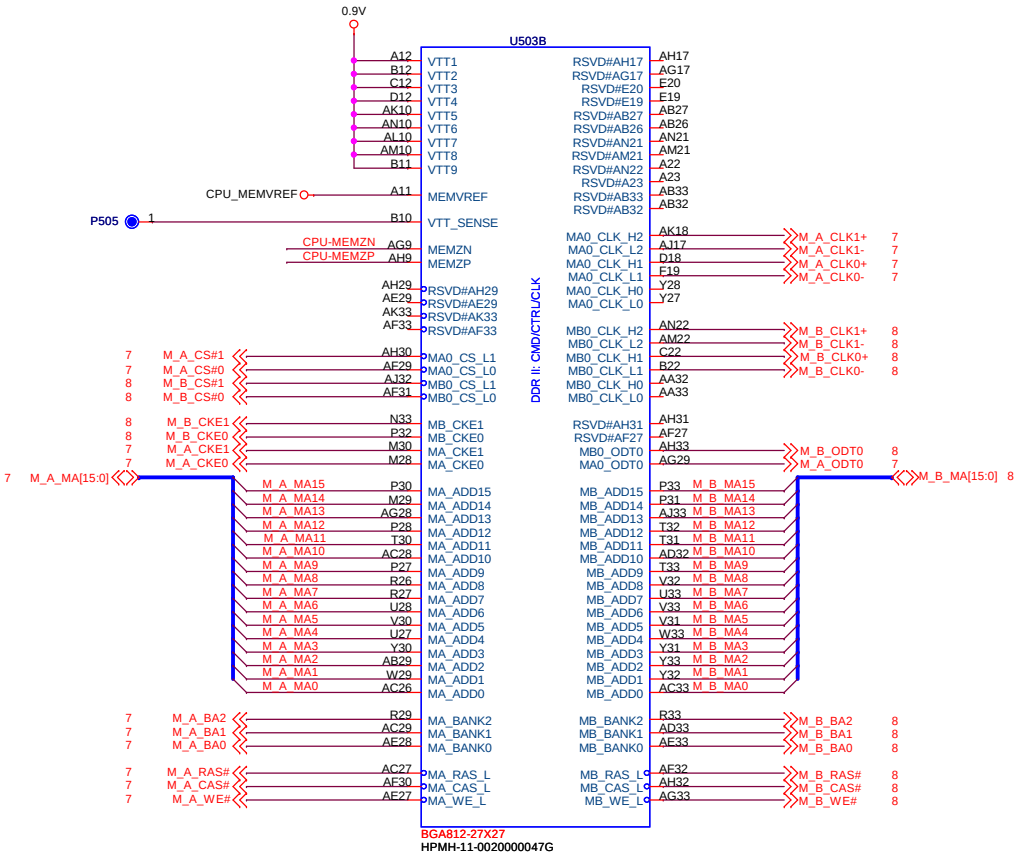
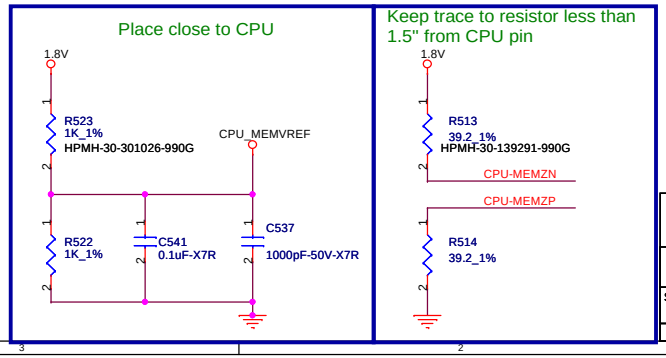
CPU MEMORY A/B



CPU Memory Interface





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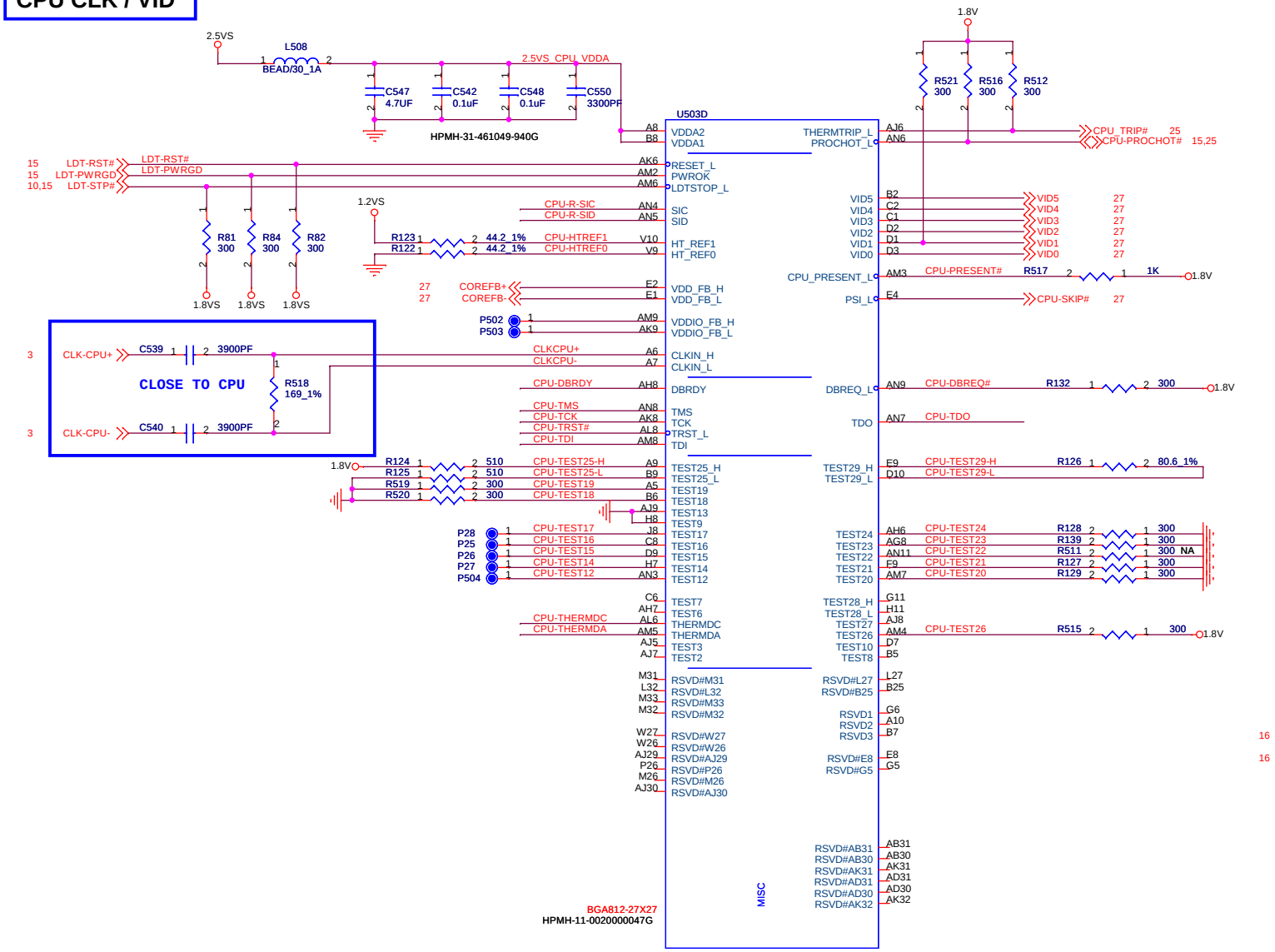
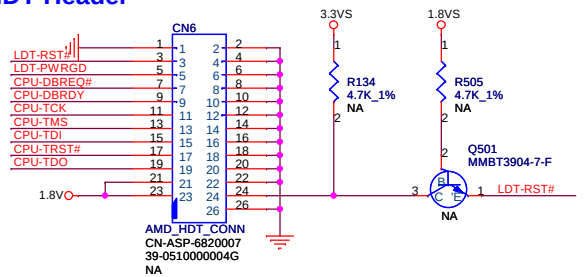
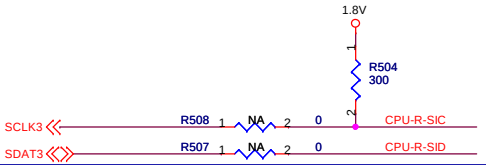
CPU CLK / VID



HDT Header



Reserve for internal thermal

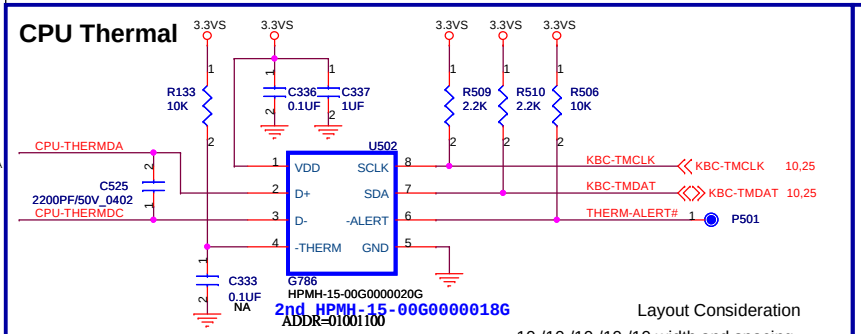


Delete LDT-STP# delay circuit for RS780 DA
ER_RS690B3

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

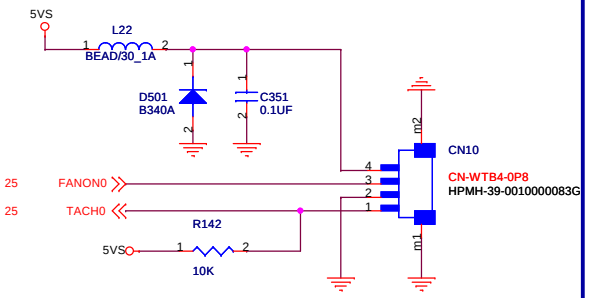
Layout (2) :Route VDDA trace approx. 50 mils wide (use 2x25 mil traces to exit ball field) and 500 mils long.

CPU Thermal

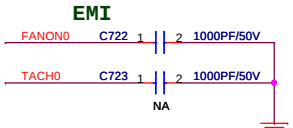


Layout Consideration
10 /10 /10 /10 /10 width and spacing

FAN



EMI



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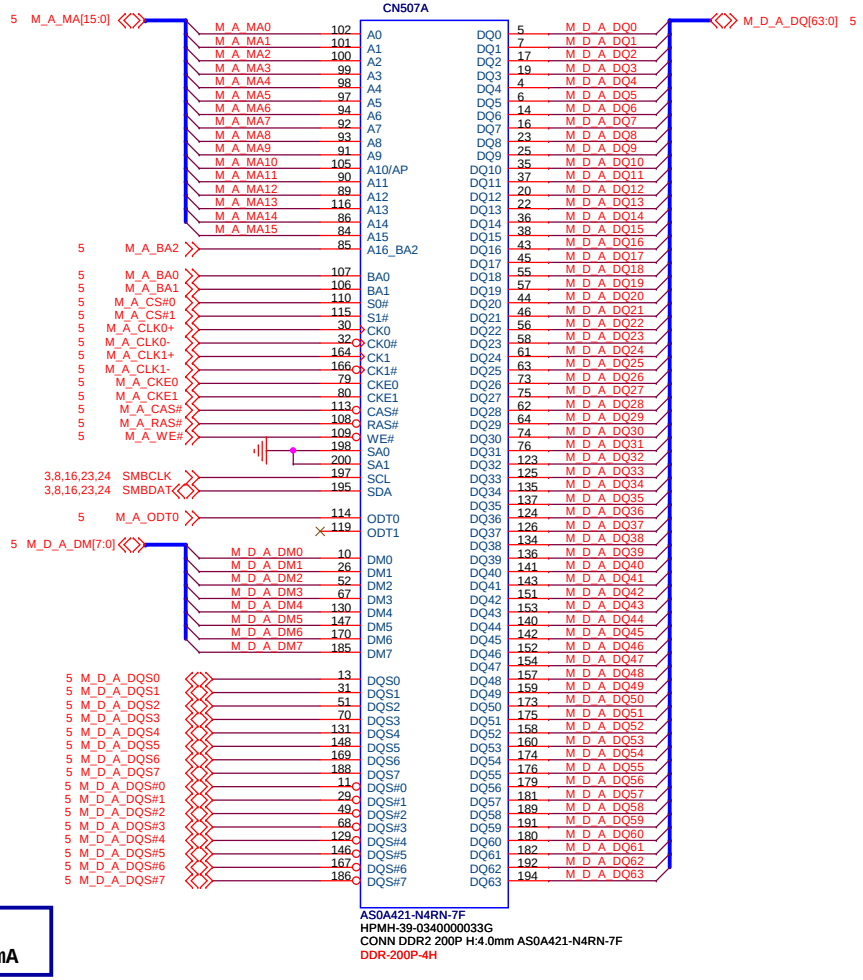
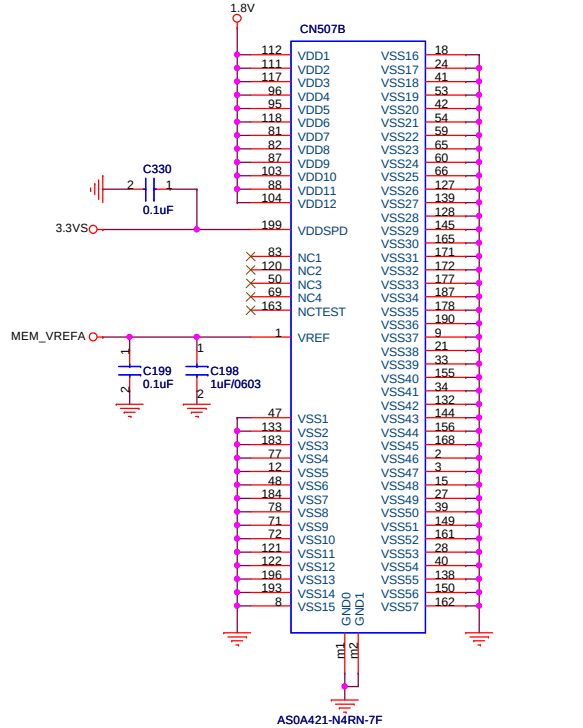
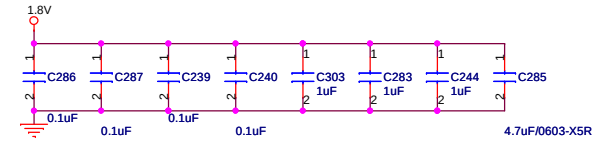
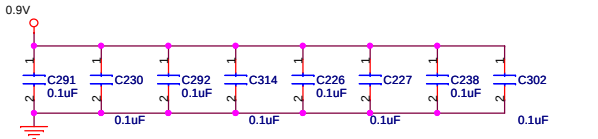
Memory Channel A

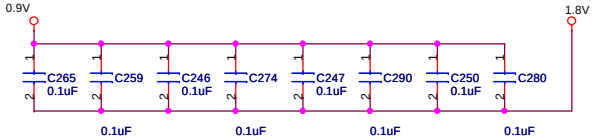


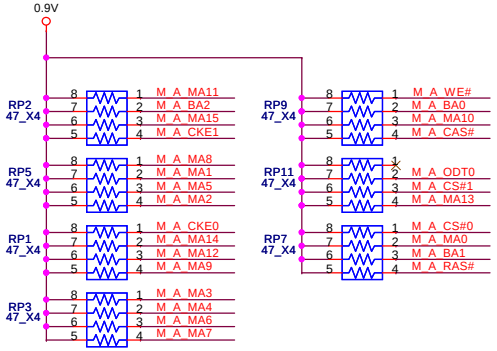


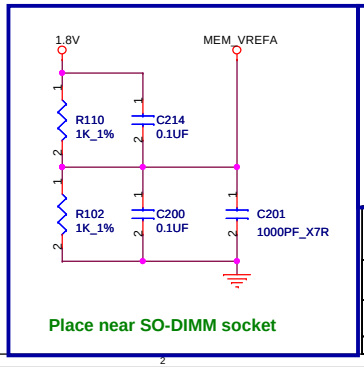
Layout :
Place these Caps near So-DimmA

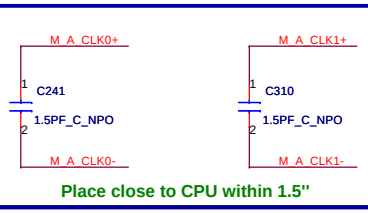












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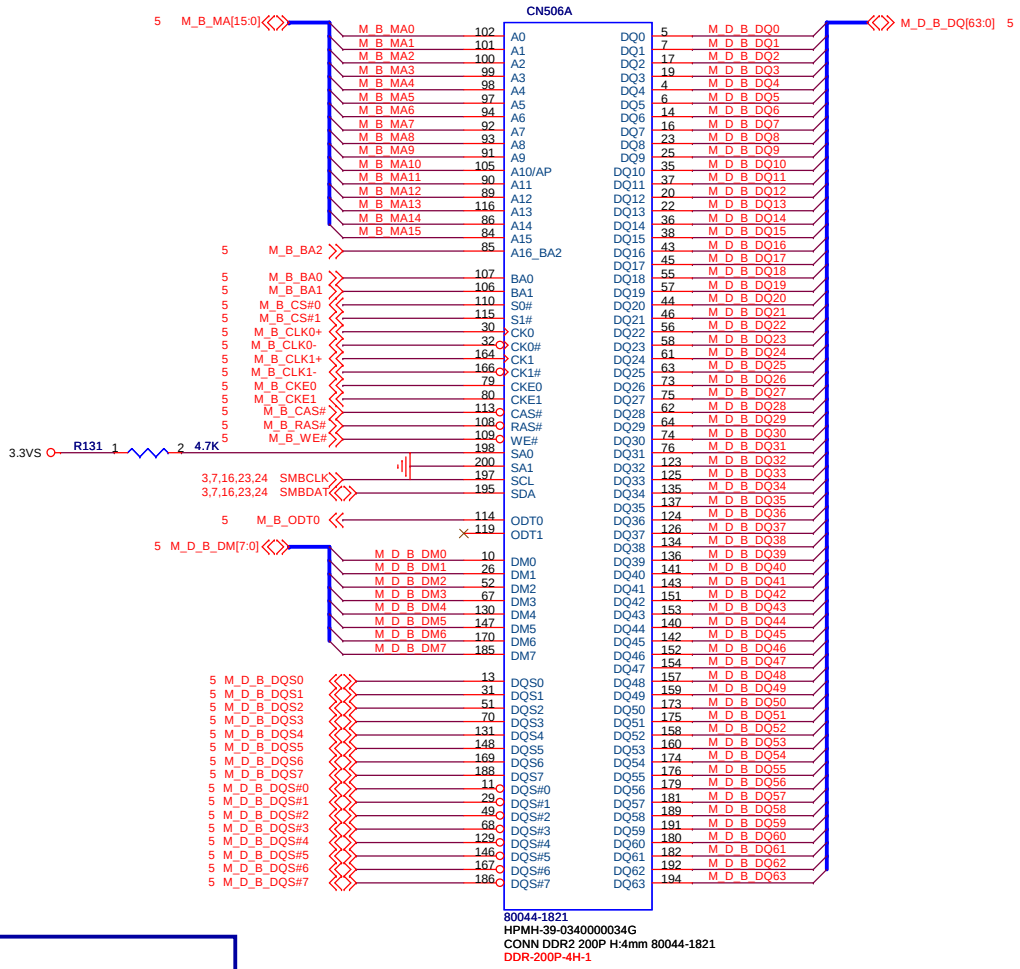
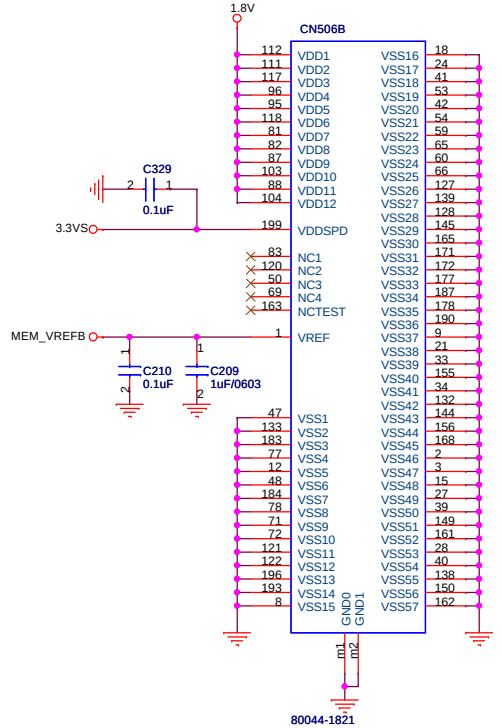
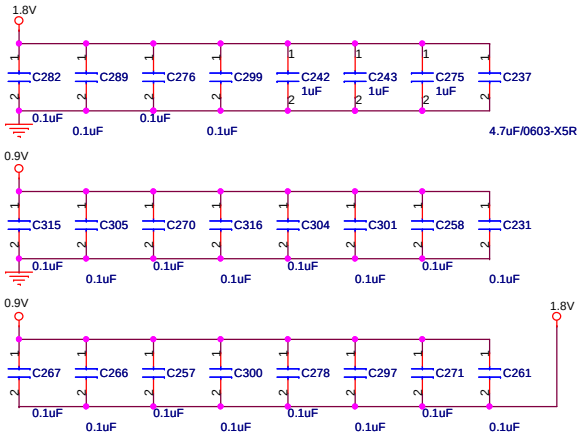
Memory Channel B

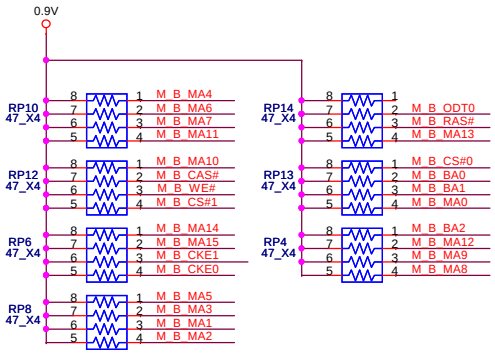
DDR2 Termination
DDR2 SO-DIMMB

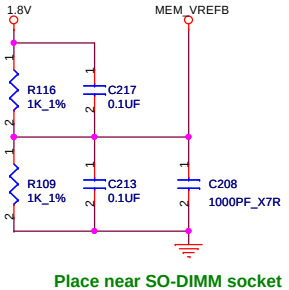


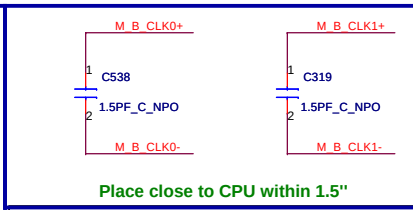


Layout :
Place these Caps near So-DimmA









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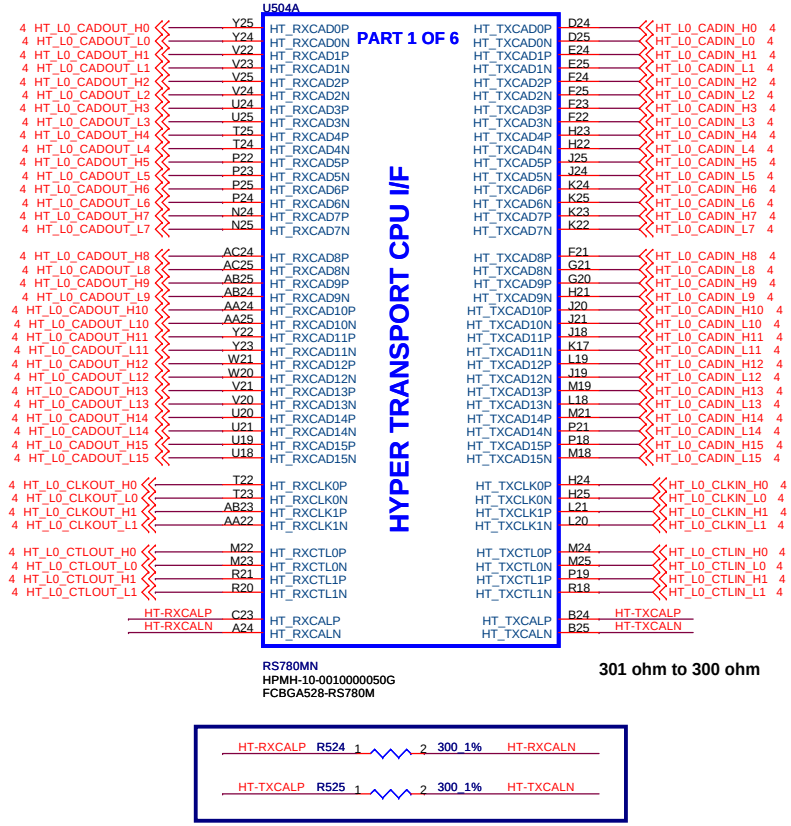
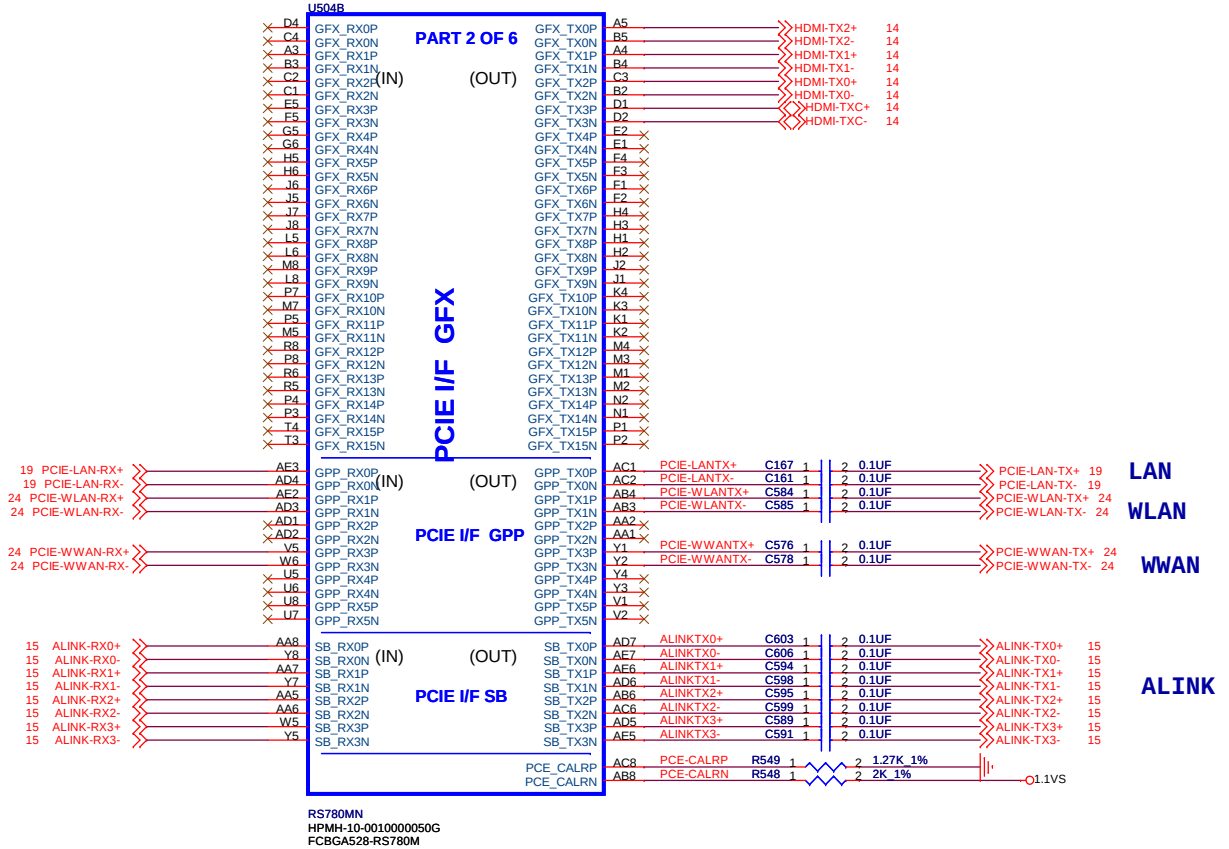
RS780M HT/PCIE/HDMI





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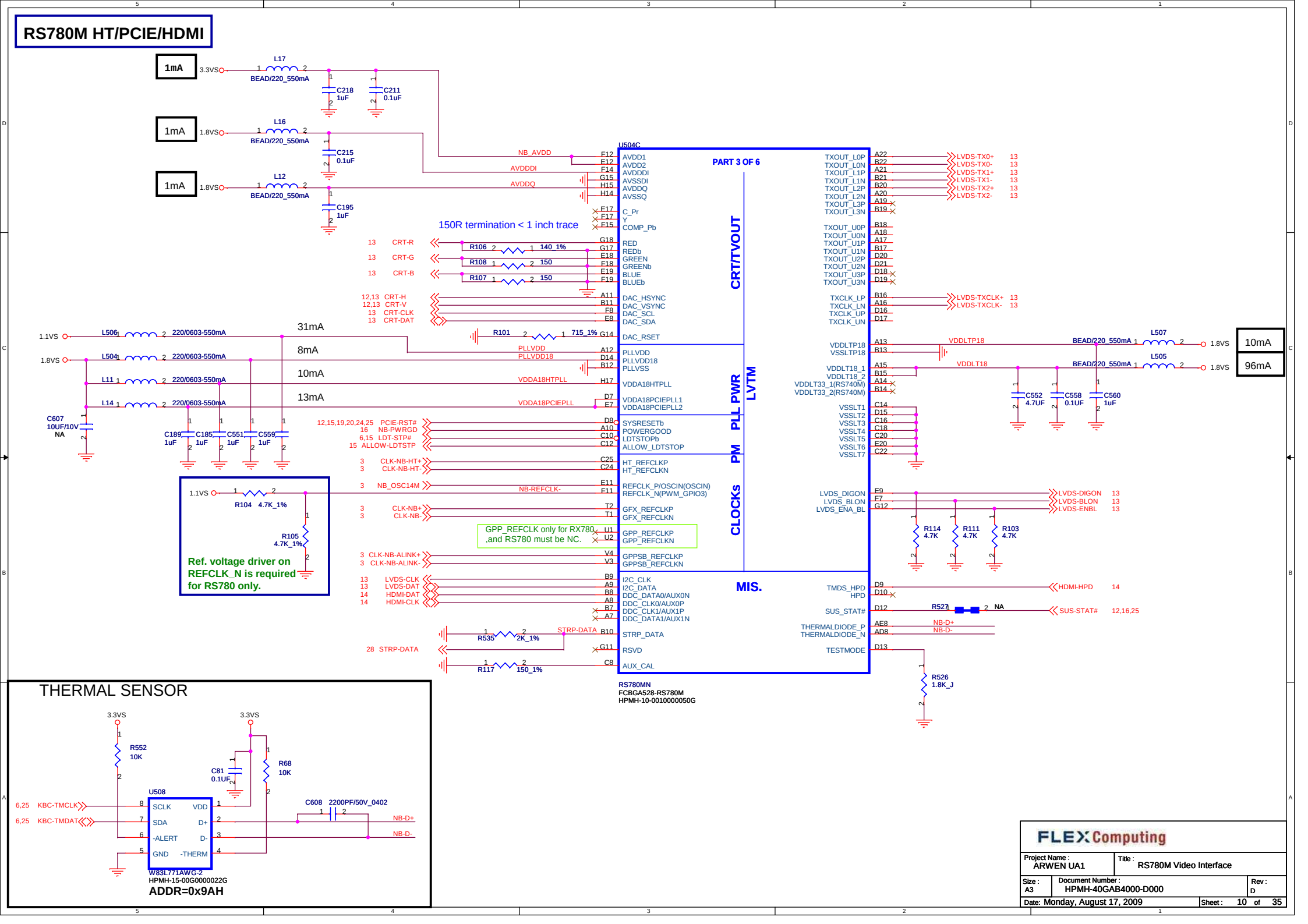
RS780M HT/PCIE/HDMI



THERMAL SENSOR

FLEXComputing

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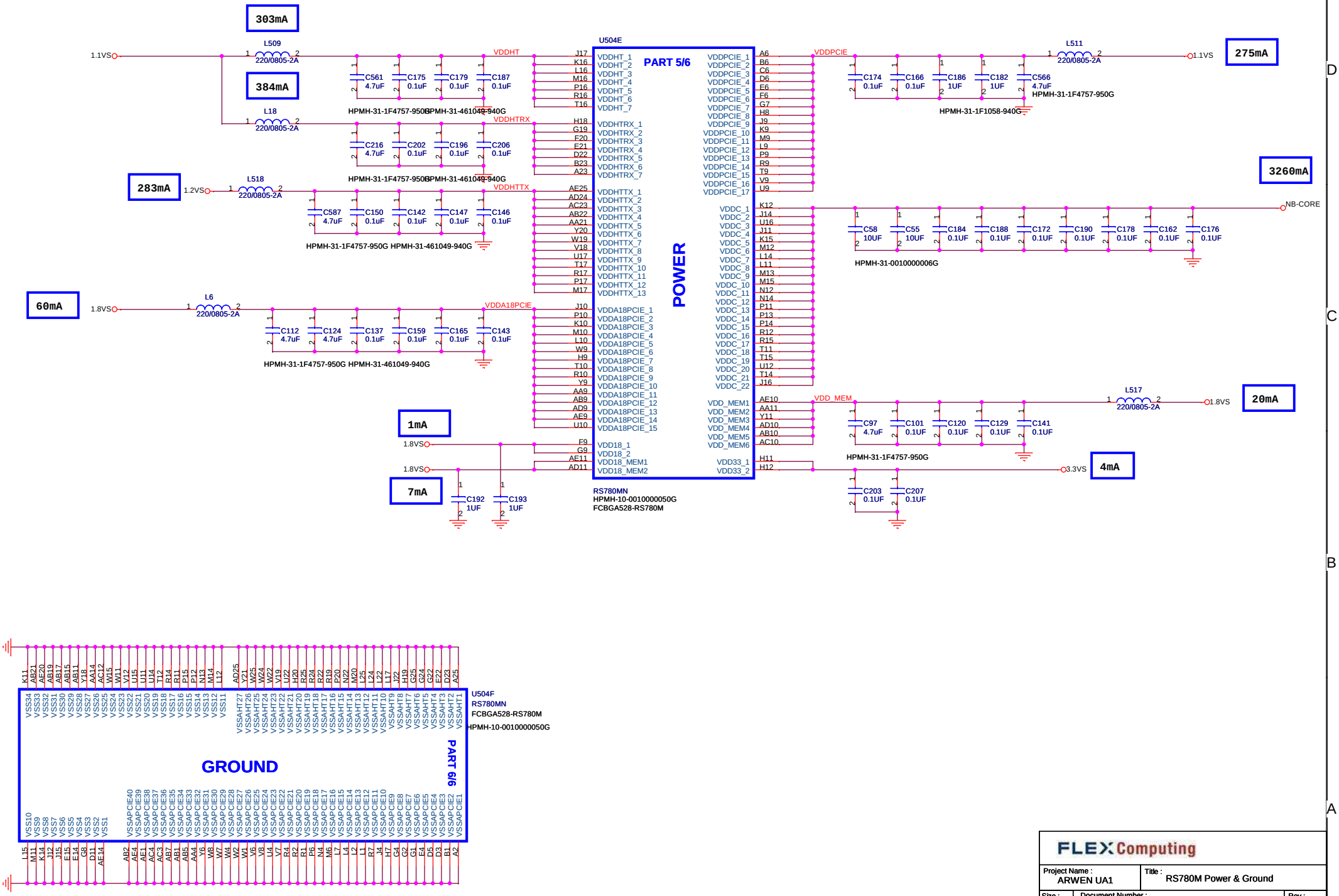
RS780M Power/Ground



FLEX Computing

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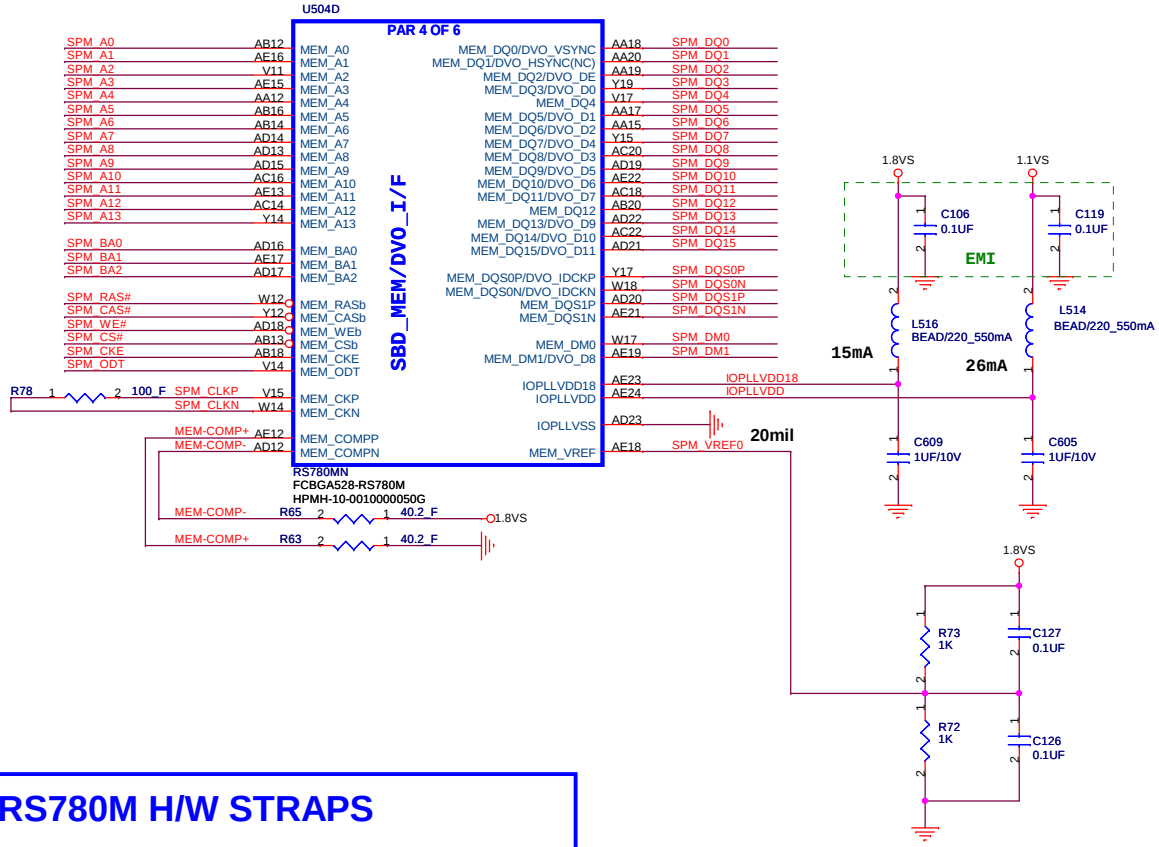
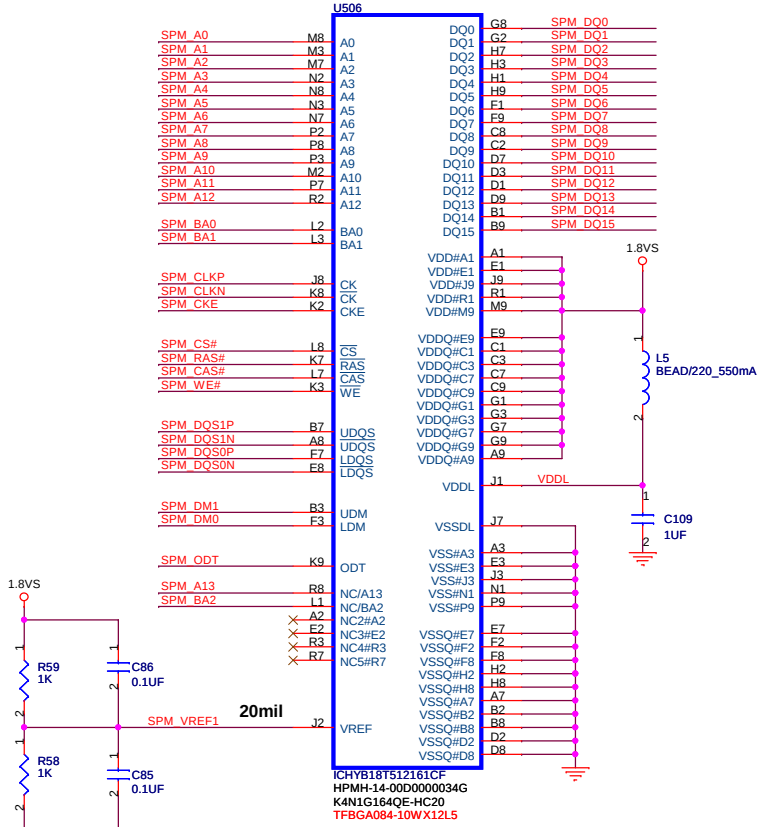
NB_SIDE PORT / STRAPS

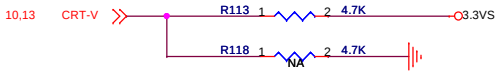




RS780M H/W STRAPS

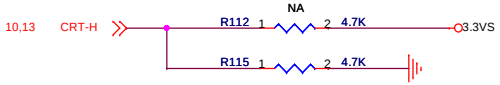
STRAP_DEBUG_BUS_GPIO_ENABLE

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



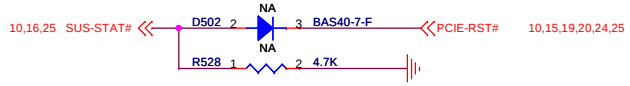
RS780: Enable Side Port Memory

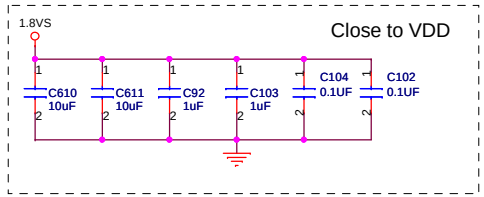
Selects if Memory SIDE PORT is available or not
DAC_HSYNC (RS780.Pin A11)
1 : Disable (default)
0 : Enable
Register Readback of strap:
NB_CLKCFG:CLK_TOP_SPARE_D[1]



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

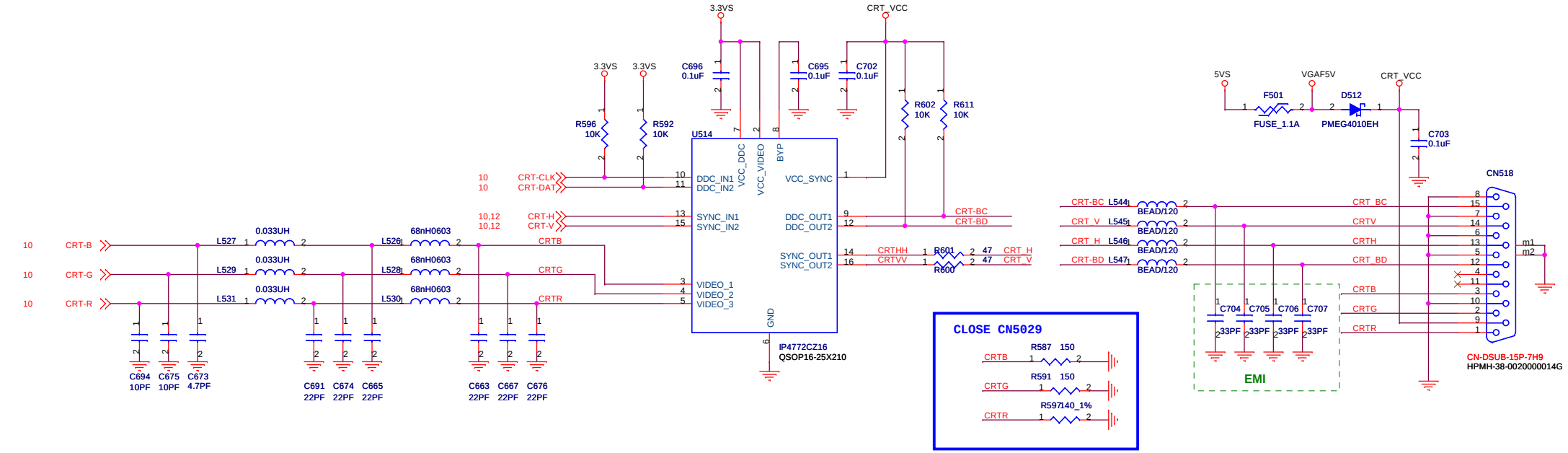




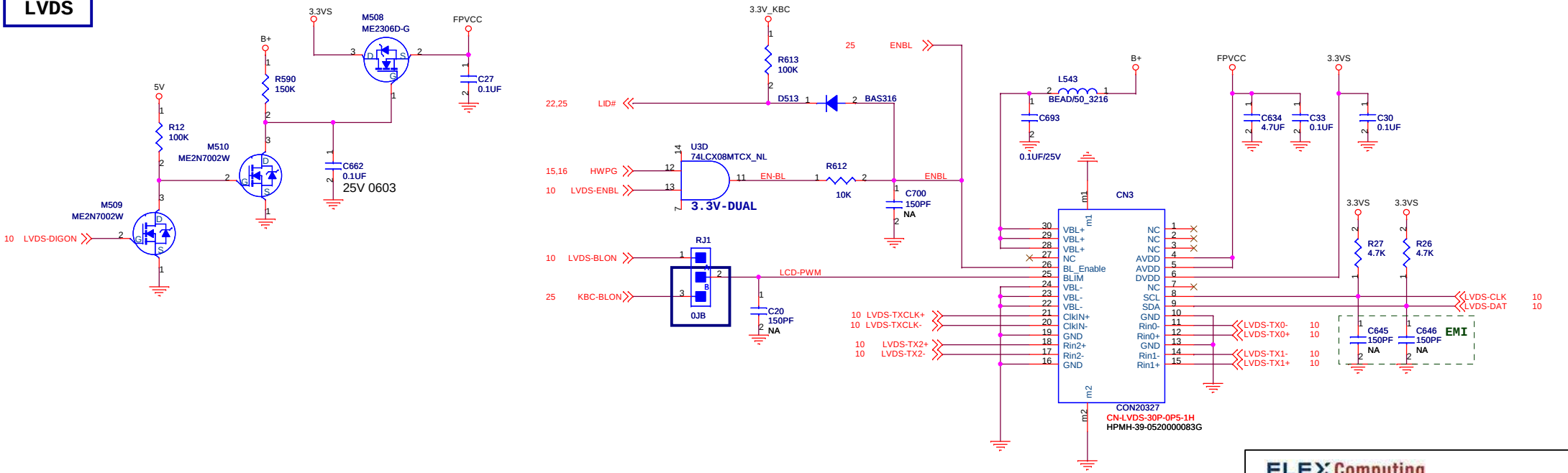
FLEXComputing

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



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

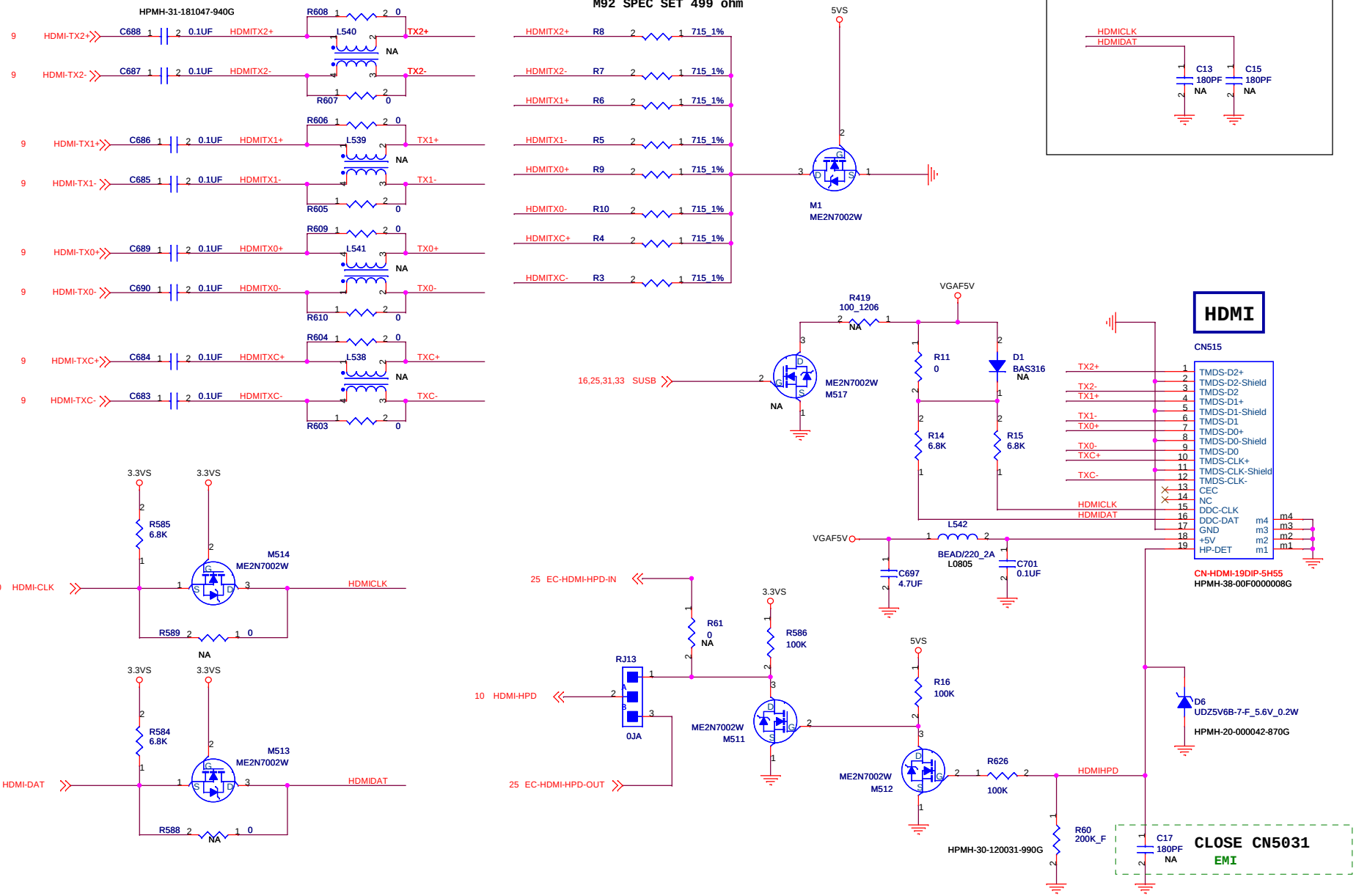
HDMI

CLOSE CN5031

HPMH-32-40000000104G

HPMH-31-181047-940G

M92 SPEC SET 499 ohm



EMI

HDMI

CN515

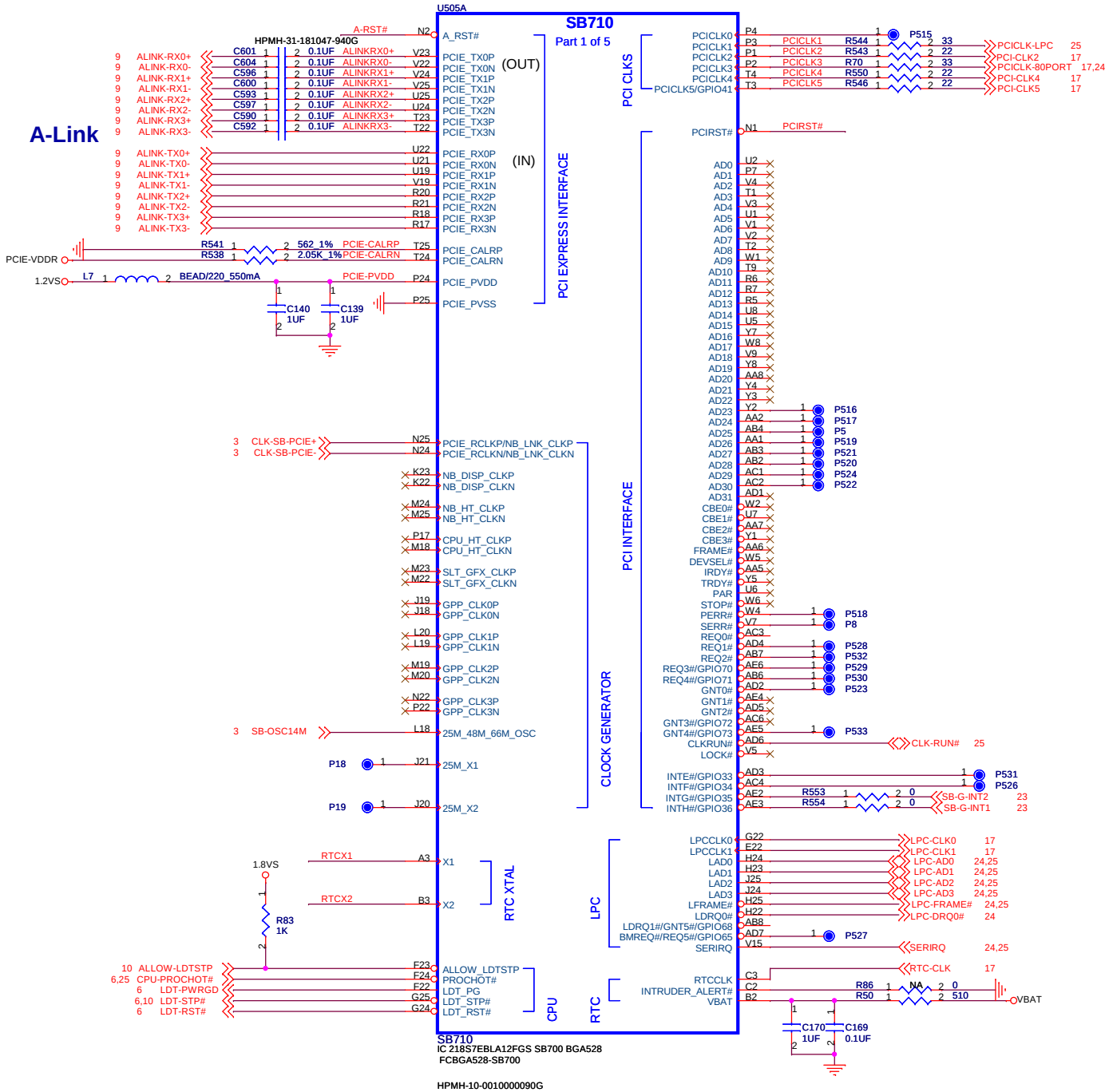
CN-HDMI-19DIP-5H55

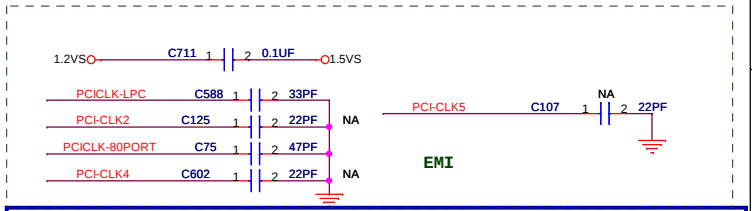
HPMH-38-00F0000008G

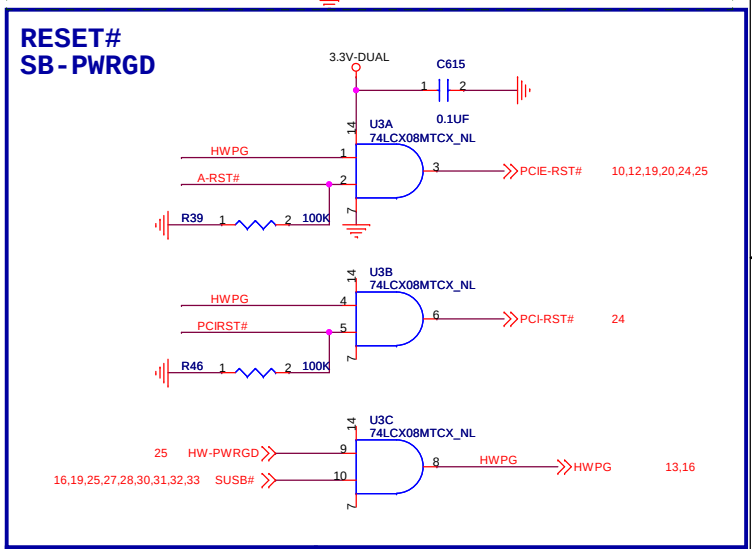
FLEX Computing	
Project Name : ARWEN UA1	Title : HDMI Connector
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 14 of 35

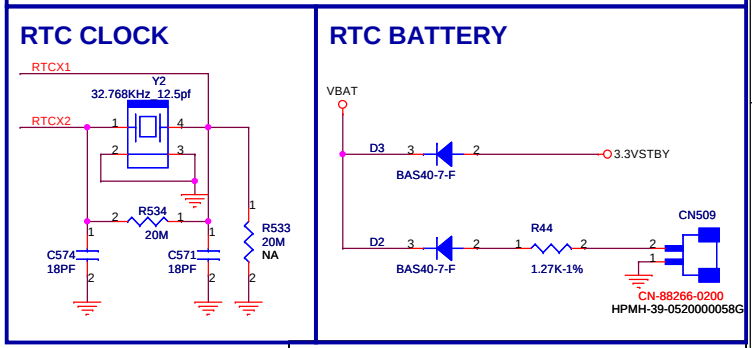
SB710 PCIE/PCI/CPU/LPC

	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	





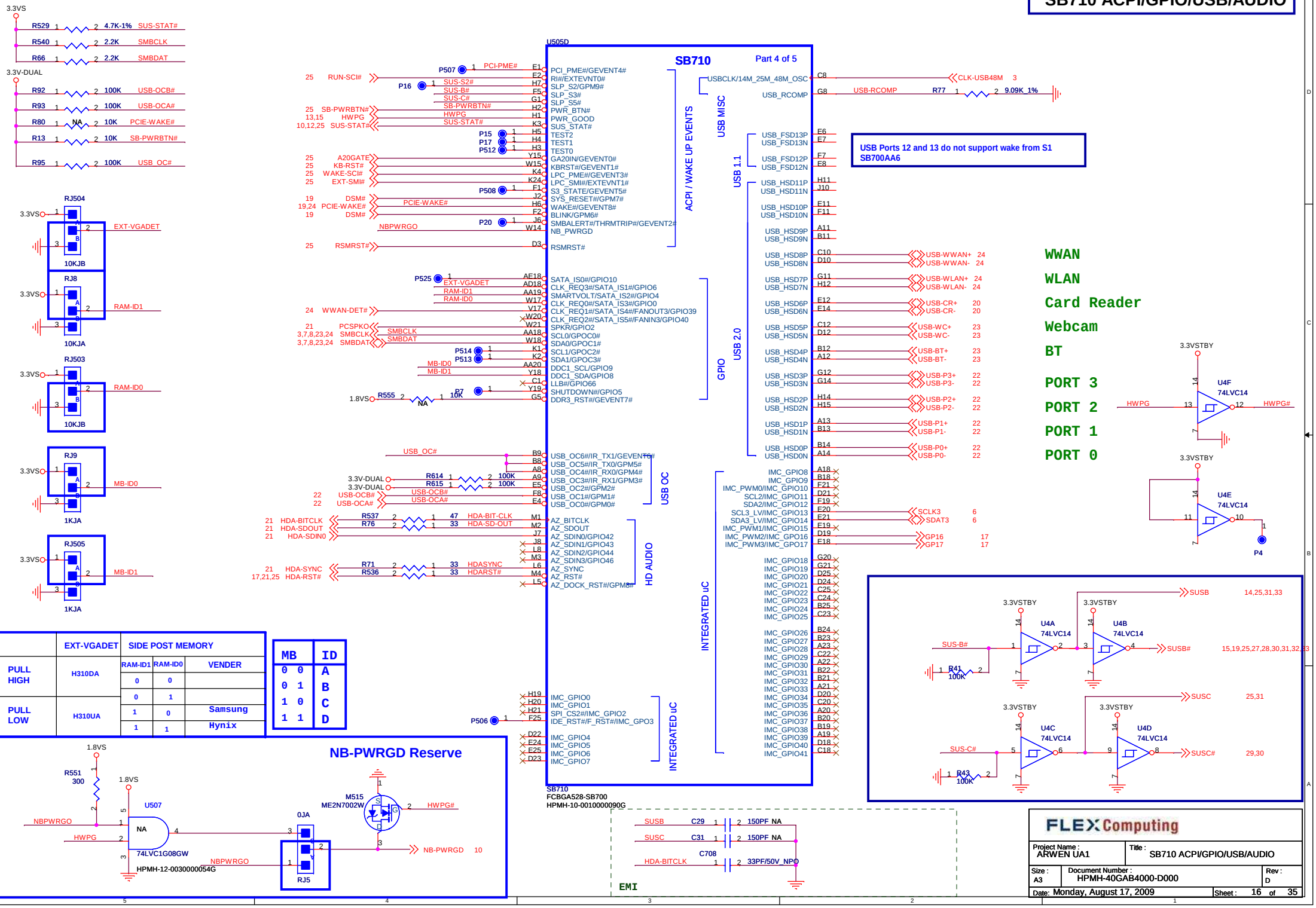




FLEX Computing

Project Name : ARWEN UA1	Title : SB700 PCIE/PCI/CPU/LPC
Size : A3	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 15 of 35

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

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)

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

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

PLACE SATA_CAL RES
VERY CLOSE TO BALL OF SB

R69 1K-1% → SATA-CAL V12
SATA-X1 Y12
SATA-X2 AA12
3.3VS R51 10K → SATA-ACT# W11
25 SATA-ACT#

1.2VS L4 220/0603-550mA → PLLVDD-SATA AA11
C99 1uF-X5R, C96 1uF-X5R
93 mA

3.3VS L3 220/0603-550mA → XTLVDD-ATA W12
C91 1uF-X5R
6 mA

SB710

U505B

SB710 Part 2 of 5

SERIAL ATA:
SATA_TX0P AD9, SATA_TX0N AE9
SATA_RX0N AB10, SATA_RX0P AC10
SATA_TX1P AE10, SATA_TX1N AD10
SATA_RX1N AD11, SATA_RX1P AE11
SATA_TX2P AB12, SATA_TX2N AC12
SATA_RX2N AE12, SATA_RX2P AD12
SATA_TX3P AD13, SATA_TX3N AE13
SATA_RX3N AB14, SATA_RX3P AC14
SATA_TX4P AE14, SATA_TX4N AD14
SATA_RX4N AD15, SATA_RX4P AE15
SATA_TX5P AB16, SATA_TX5N AC16
SATA_RX5N AE16, SATA_RX5P AD16

SATA_CAL V12
SATA_X1 Y12
SATA_X2 AA12
SATA_ACT#/GPIO67 W11

SATA PWR: PLLVDD_SATA AA11, XTLVDD_SATA W12

ATA 66/100/133:
IDE_IORDY AA24, IDE_IRQ AA25, IDE_A0 Y22, IDE_A1 AB23, IDE_A2 Y23, IDE_DACK# AB24, IDE_DRQ AD25, IDE_IOR# AC25, IDE_IOW# AC24, IDE_CS1# Y25, IDE_CS3# Y24
IDE_D0/GPIO15 AD24, IDE_D1/GPIO16 AD23, IDE_D2/GPIO17 AE22, IDE_D3/GPIO18 AC22, IDE_D4/GPIO19 AD21, IDE_D5/GPIO20 AE20, IDE_D6/GPIO21 AB20, IDE_D7/GPIO22 AD19, IDE_D8/GPIO23 AE19, IDE_D9/GPIO24 AC20, IDE_D10/GPIO25 AD20, IDE_D11/GPIO26 AE21, IDE_D12/GPIO27 AB22, IDE_D13/GPIO28 AD22, IDE_D14/GPIO29 AE23, IDE_D15/GPIO30 AC23

SB710 Internal Pull Up/Down

SPI ROM:
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#
LAN_RST#/GPIO13 U15 → P6
ROM_RST#/GPIO14 J1 → P510

HW MONITOR:
FANOUT0/GPIO3 M8, FANOUT1/GPIO48 M5, FANOUT2/GPIO49 M7
FANIN0/GPIO50 P5, FANIN1/GPIO51 P8, FANIN2/GPIO52 R8
TEMP_COMM C6, TEMPIN0/GPIO61 B6, TEMPIN1/GPIO62 A6, TEMPIN2/GPIO63 A5, TEMPIN3/TALERT#/GPIO64 B5
VIN0/GPIO53 A4, VIN1/GPIO54 B4, VIN2/GPIO55 C4, VIN3/GPIO56 D4, VIN4/GPIO57 D5, VIN5/GPIO58 D6, VIN6/GPIO59 A7, VIN7/GPIO60 B7

AVDD F6 → 3.3V-DUAL, C183 4.7UF NA, C191 0.1UF NA
AVSS G7
5 mA

SB710
FCBGA528-SB700
HPMH-10-0010000090G

Reserve 8M-bit SPI ROM

3.3V-DUAL
R56 10K NA
U6: CE# (SPI-CS#), SO (SPI-DI), WP#, GND, VDD, HOLD# (SPI-HOLD#), SCK (SPI-CLK), SI (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#

SATA 25MHz

C84 10pF-50V, Y1 25MHz, R57 10M, C83 10pF-50V
SATA-X1, SATA-X2
HPMH-35-0010000087G

SB710 H/W STRAPS

15	LPC-CLK0	R87	10K	15	PCI-CLK2	R542	10K	RJ10	3.3V-DUAL
15	LPC-CLK1	R88	10K	15,24	PCICLK-80PORT	R539	10K	GP16	NA
15	RTC-CLK	R90	10K	3.3VSTBY	15	PCI-CLK4	R547	NA x10K	16
16,21,25	HDA-RST#	R23	10K		15	PCI-CLK5	R545	NA x10K	10KJA

HPMH-30-301036-990G

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

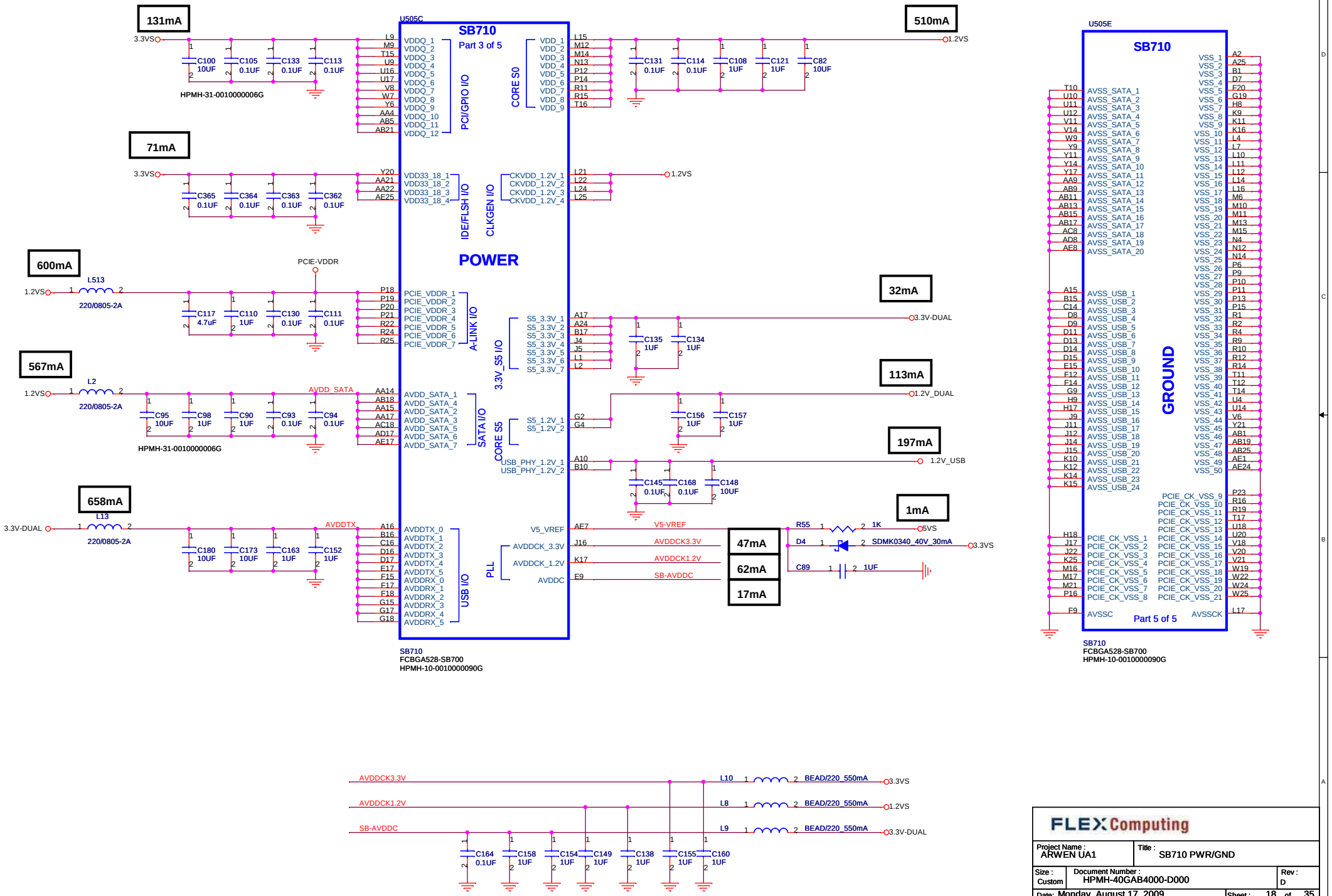
NOTE: SB700 HAS INTERNAL 15K PULL UP RESISTOR FOR RTC_CLK

	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)
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	L,H = LPC ROM L,L = FWH ROM

FLEXComputing

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

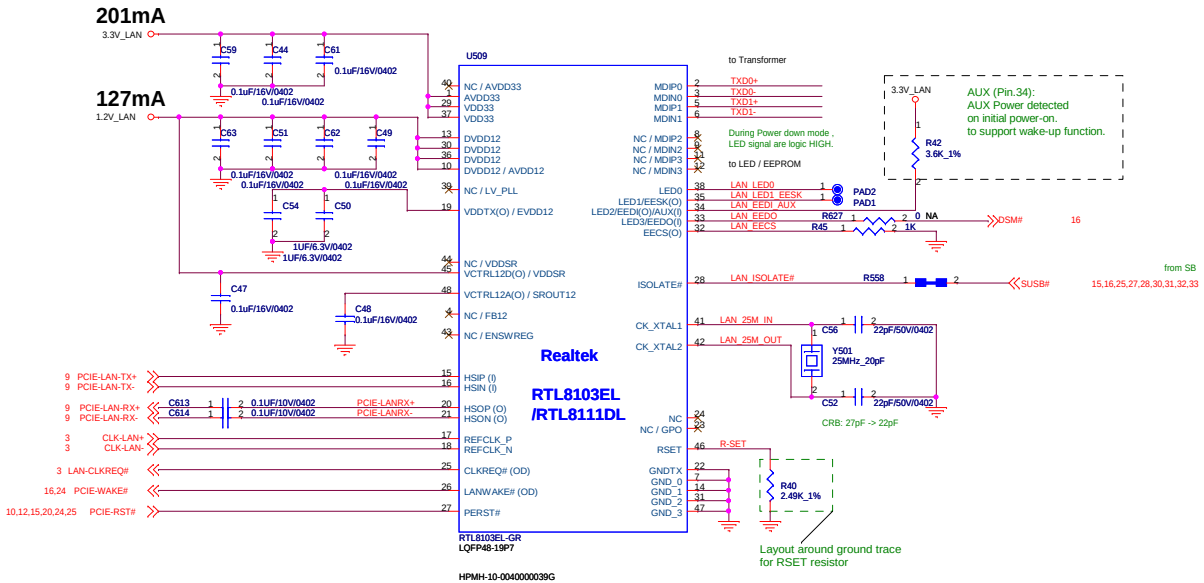
SB710 PWR / GND



FLEXComputing

Project Name : ARWEN UA1	Title : SB710 PWR/GND
Size : Custom	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 18 of 35

10/100 LAN



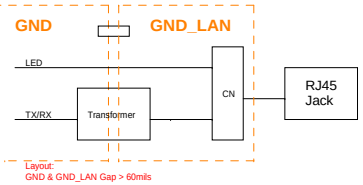
RTL8103E LED Configuation:

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:

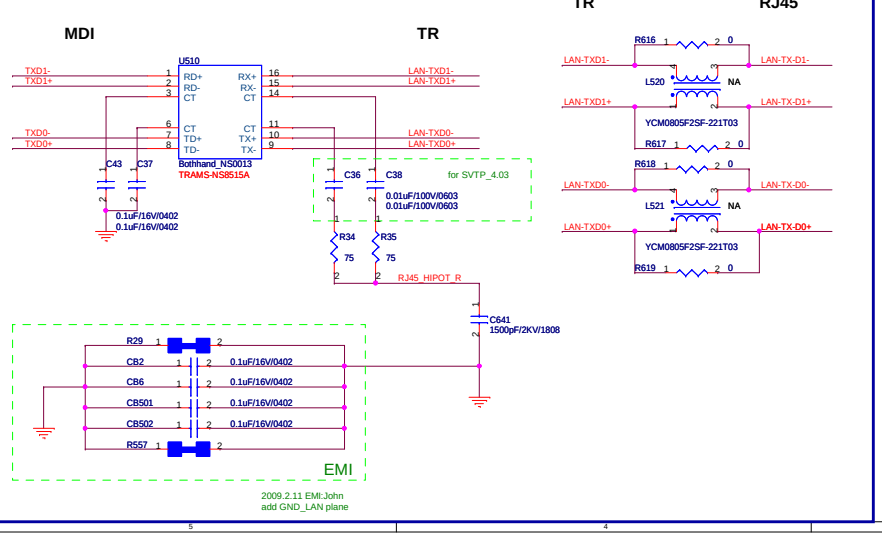


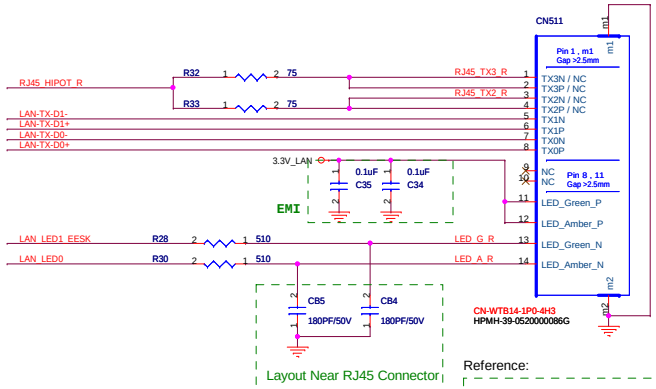
SVTP_v4.03
2.6 - Ethernet Checklist - Rev C.xls

- 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

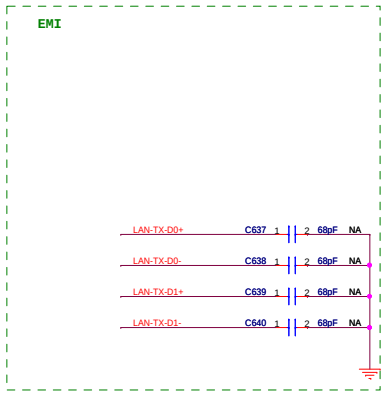
- Ch.3.1.4.14 & Ch.3.1.4.15
Protection against non-standard power-over-Ethernet (PoE) : Resistance between pins 1,3 (TXD0P,TXD1P) and pins 4,7 (TXD2P,TXD3P) of the RJ-45 greater than 58K ohms.





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



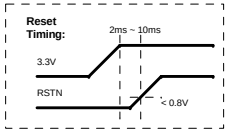
FLEX Computing

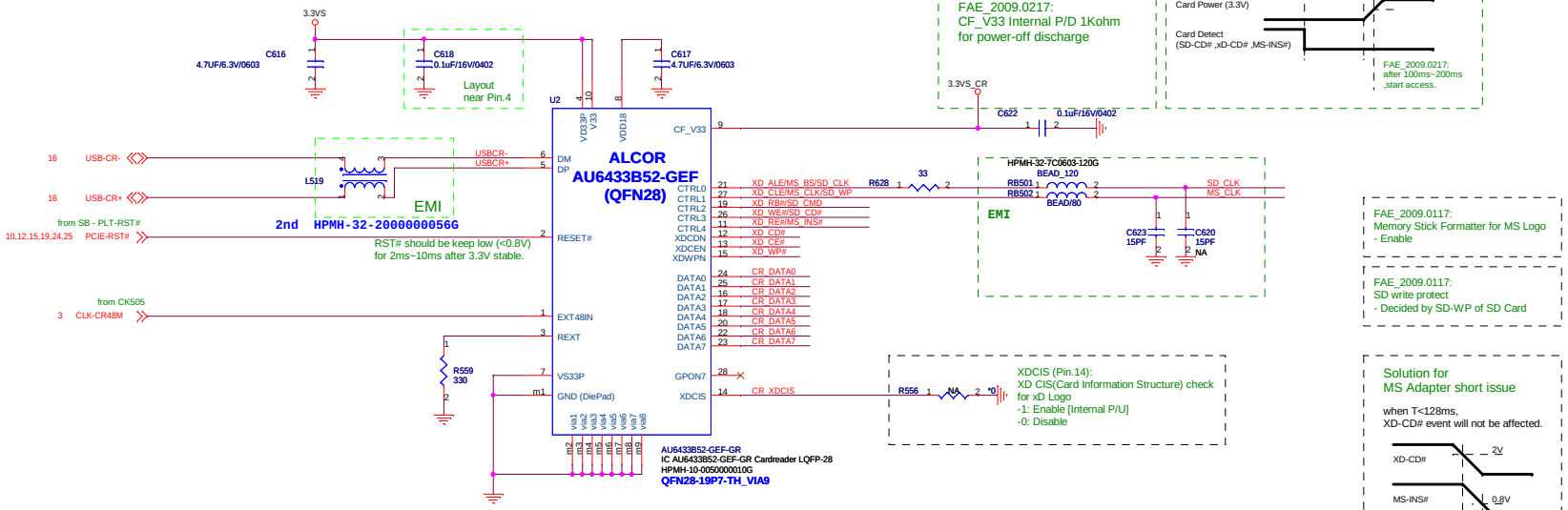
Project Name : ARWEN UA1	Title : RTL8103EL (LQFP48)
Size : C	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 19 of 35

Card Reader

Alcor 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

XDCIS (Pin.14):
XD CIS(Card Information Structure) check for xD Logo
-1: Enable [Internal P/U]
-0: Disable

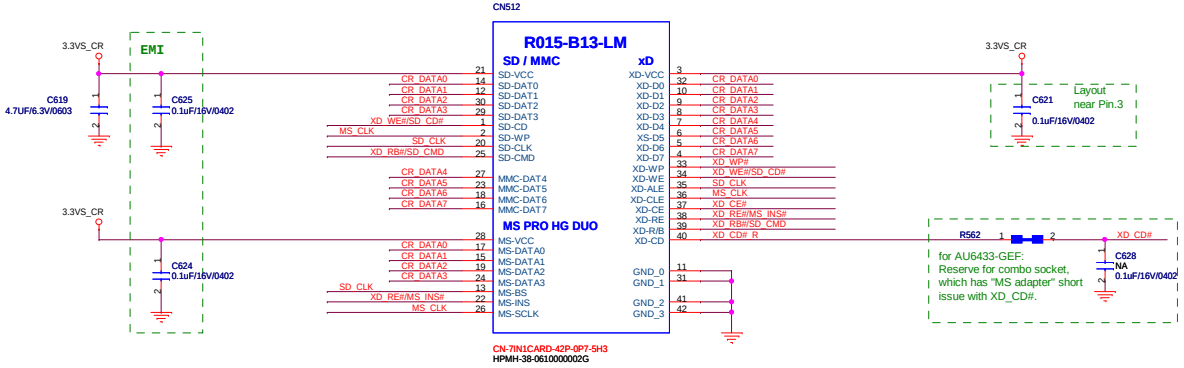
Solution for
MS Adapter short issue

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

Memory Card Socket

R015-B13-LM
HPMH-38-0610000002G

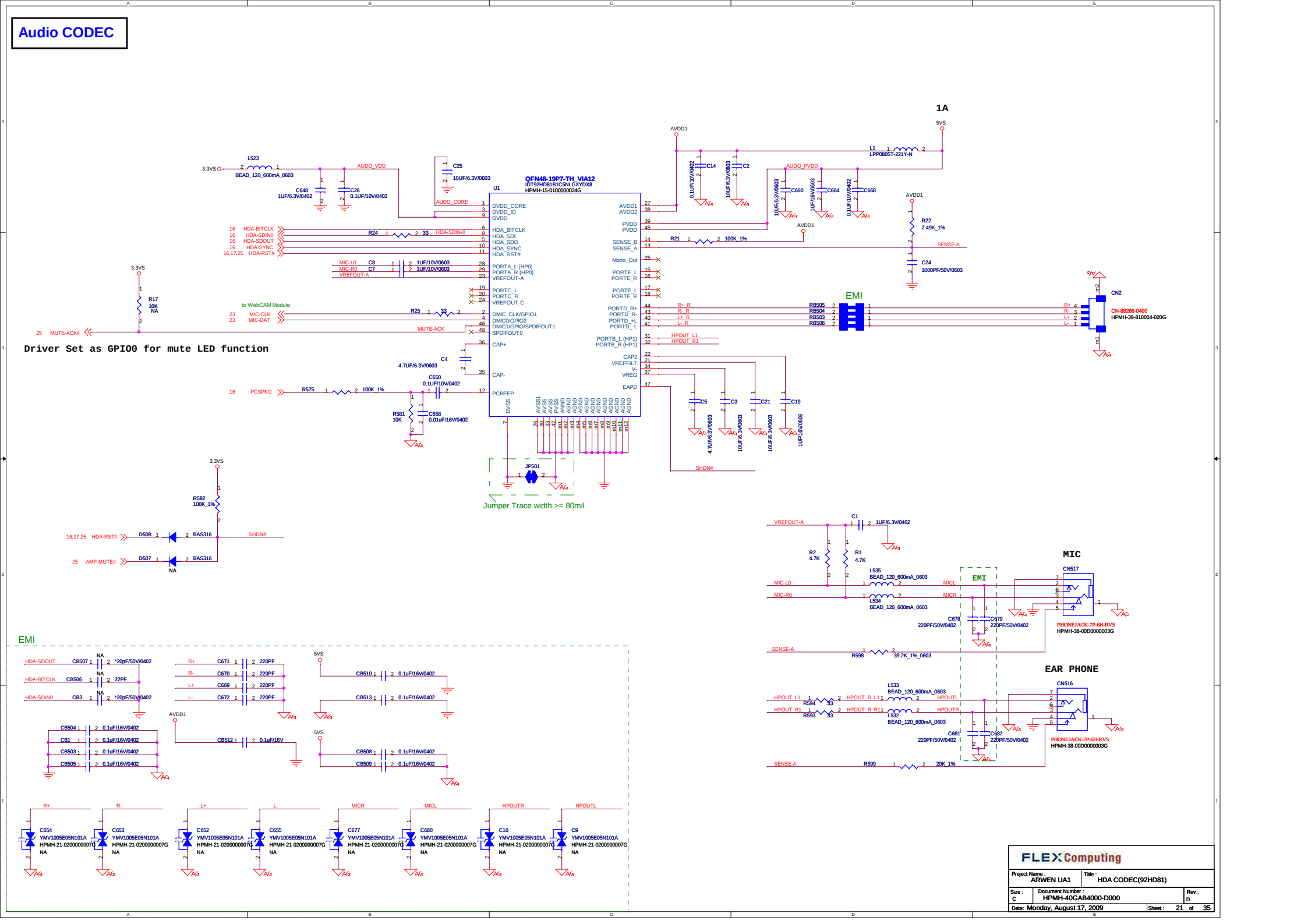
Card type Supported:
- SD
- SD IO
- MMC
- MMC4.0
- MS
- MS Pro
- xD



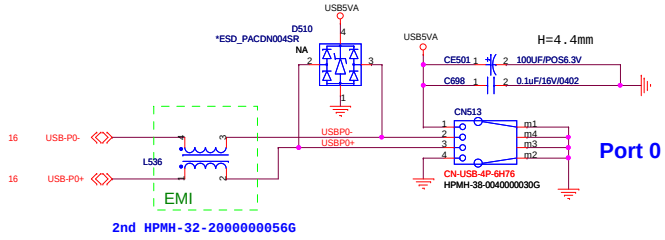
FLEX Computing

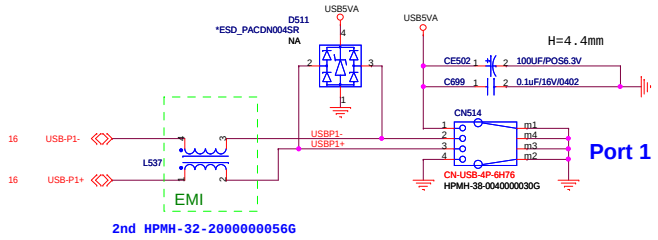
Project Name : ARWEN UA1	Title : AU6433-GEF CardReader
Size : C	Document Number : HPMH-40GAB4000-D000
Rev : D	
Date: Monday, August 17, 2009	Sheet : 20 of 35

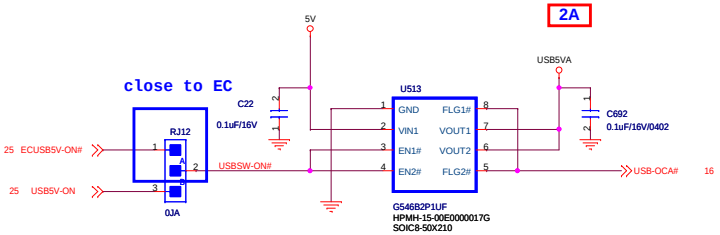
Audio CODEC

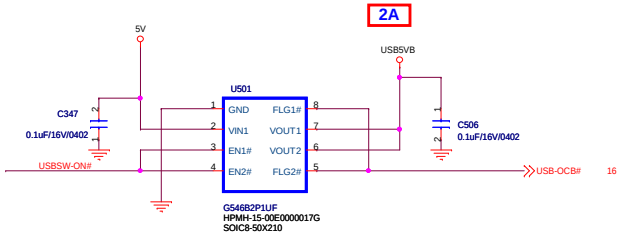

1A
QFN48-19P7-TH_VIA12
IDT92HD81B1C5NLGXYDX8
HPMH-15-0100000024G
U1
Driver Set as GPIO0 for mute LED function
Jumper Trace width >= 80mil
EMI
MIC
EAR PHONE
FLEX Computing
Project Name : ARWEN UA1
Title : HDA CODEC(92HD81)
Size : C
Document Number : HPMH-40GAB4000-D000
Rev : D
Date: Monday, August 17, 2009
Sheet : 21 of 35

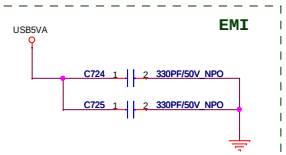
USB Port 0 / 1



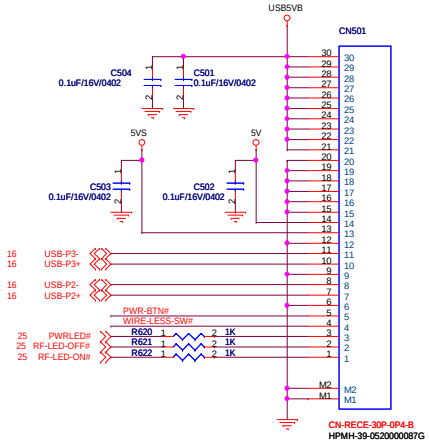






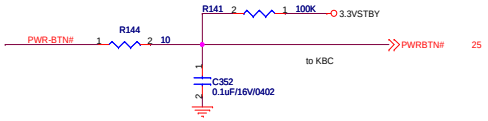


USB DB CONN

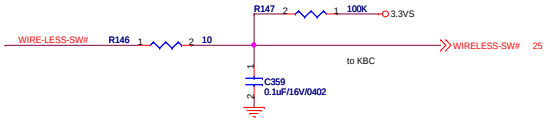


USB Power Connector needs >2A

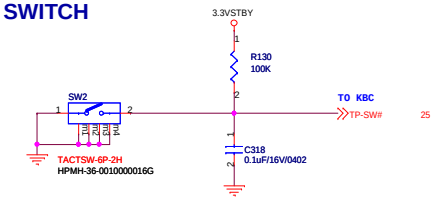
Power ON/OFF Button



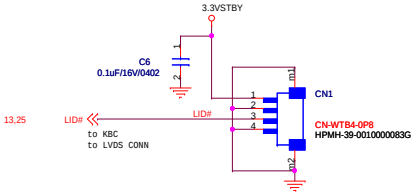
Wireless ON/OFF Button



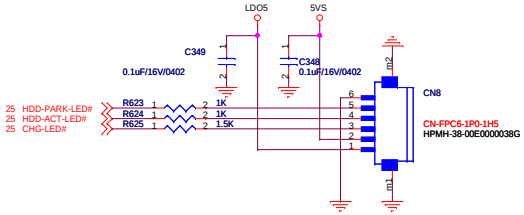
TP LOCK SWITCH

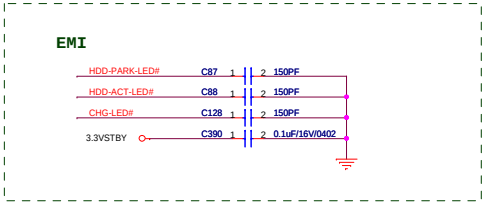


LID Switch



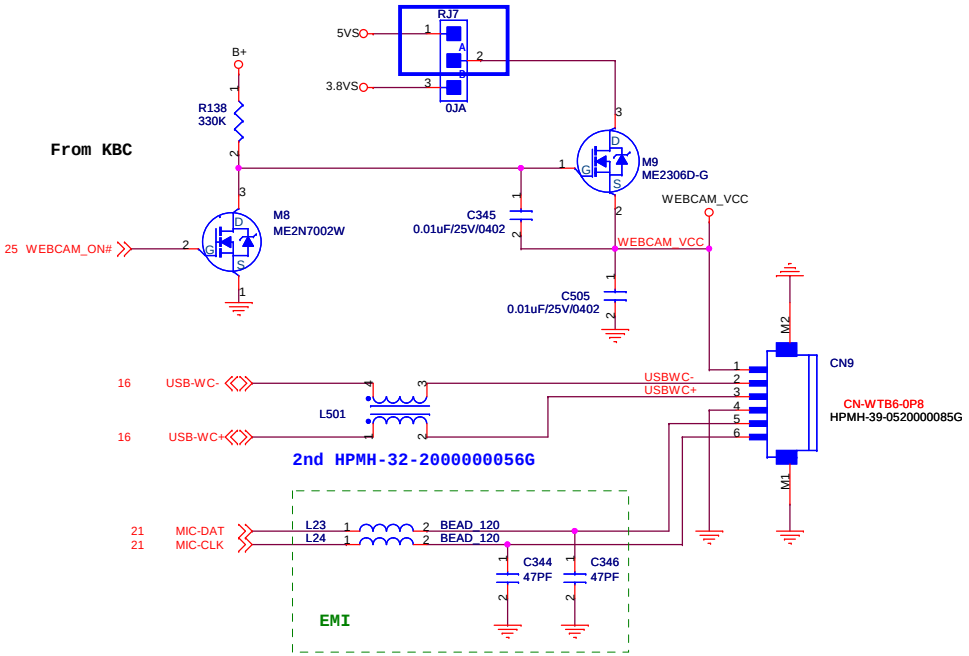
LED DB CONN



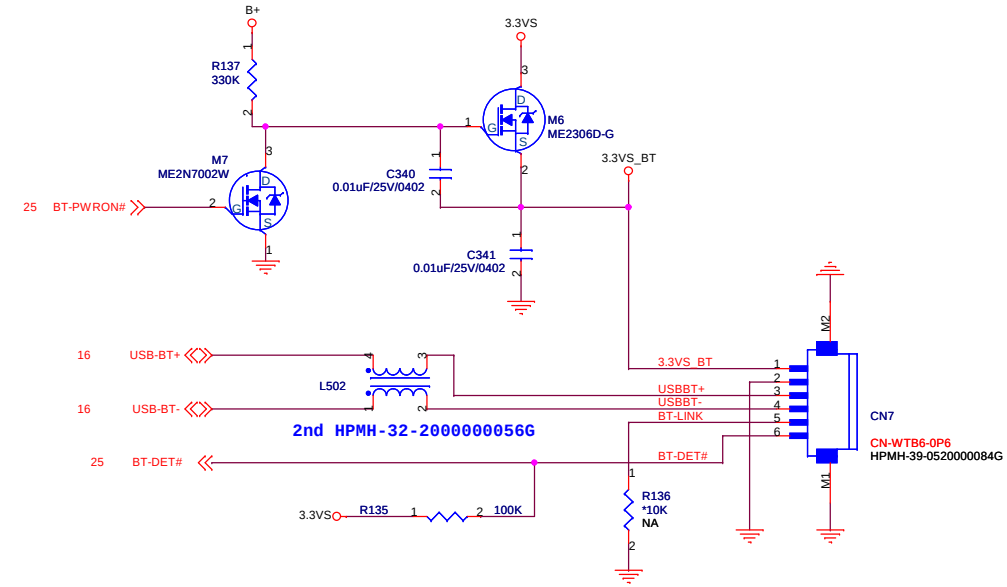


FLEX Computing			
Project Name : ARWEN UA1		Title : USB / USB CON	
Size : C	Document Number : HPMH-40GAB4000-D000		Rev : D
Date: Monday, August 17, 2009		Sheet : 22 of 35	

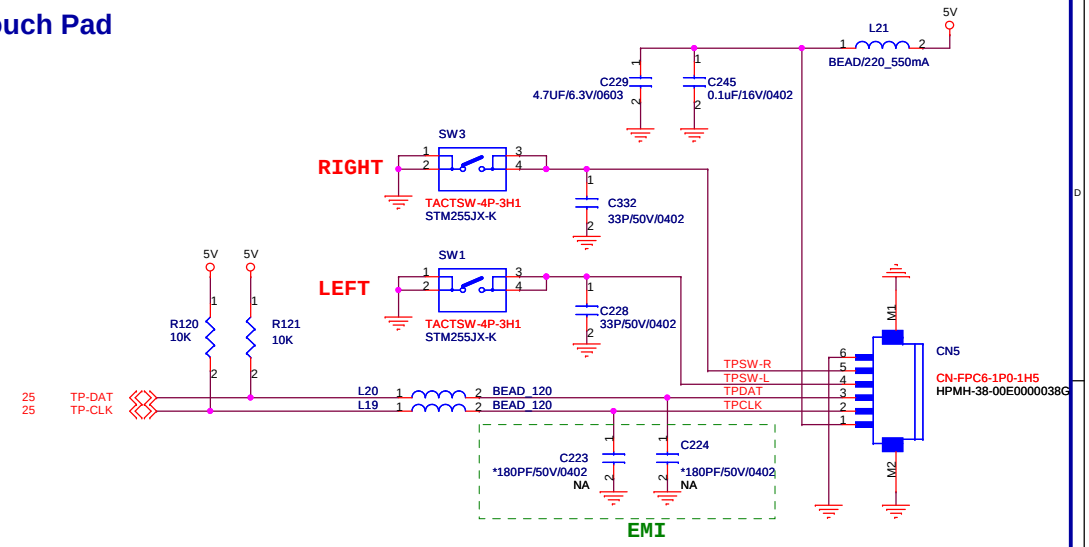
Web CAM



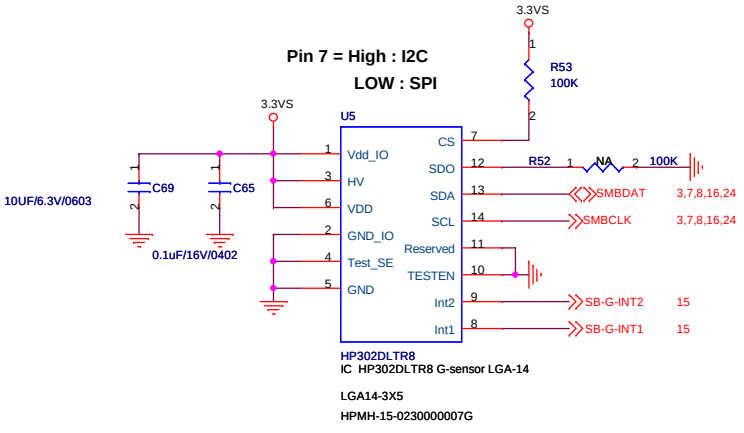
Blue Tooth

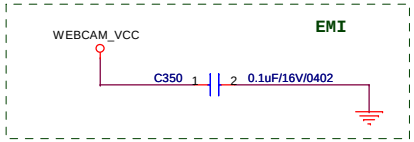


Touch Pad



G-Sensor





FLEXComputing

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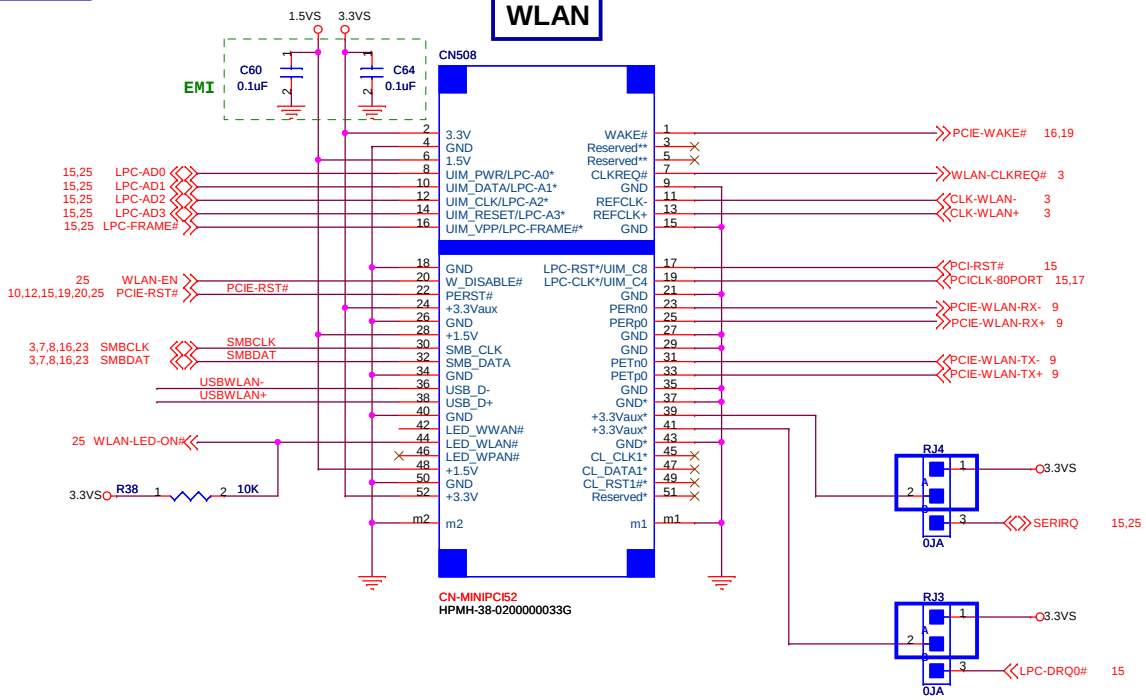
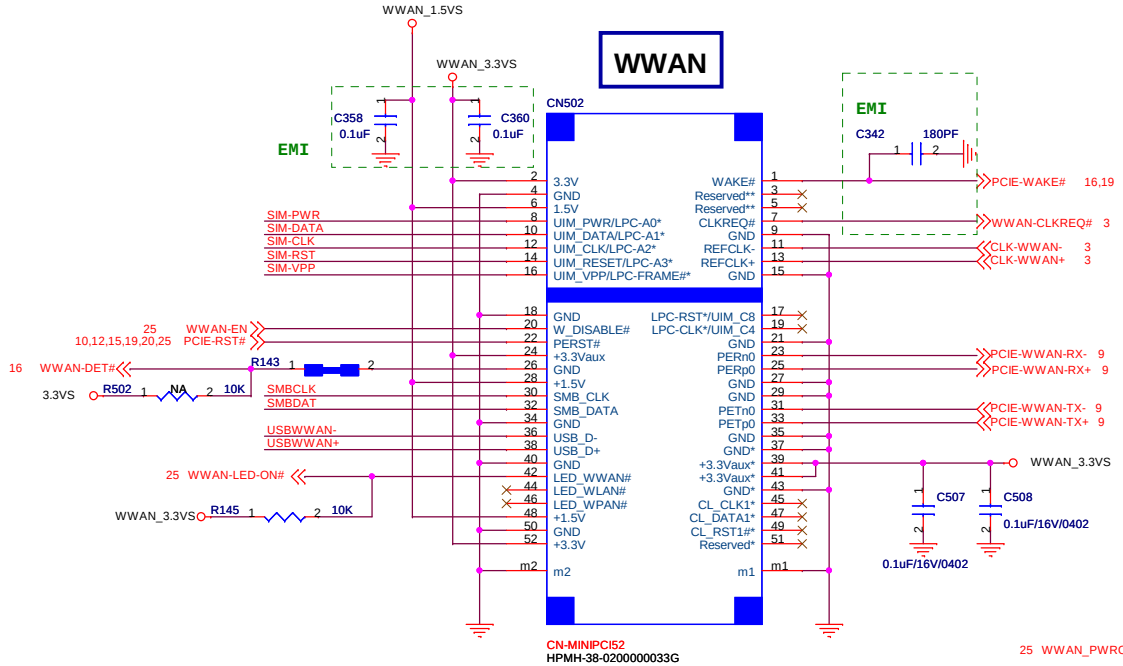
WLAN / WWAN

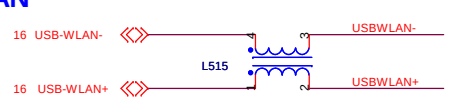
WLAN



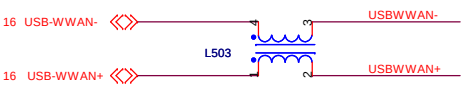
WWAN



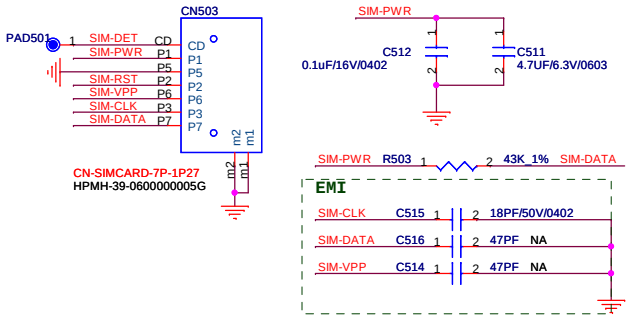
WLAN

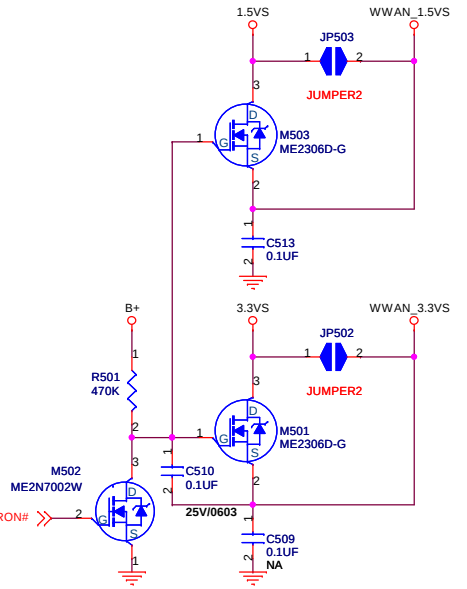


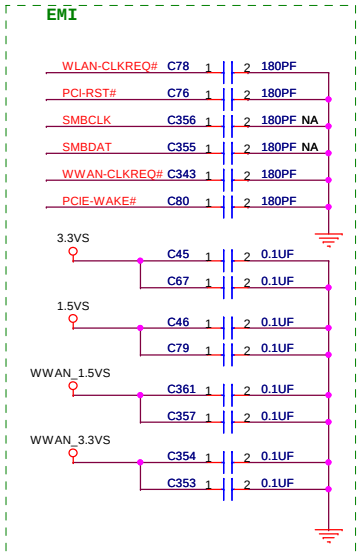
WWAN



SIM







FLEXComputing

Project Name : ARWEN UA1	Title : MINI PCIE (WLAN / WWAN)	
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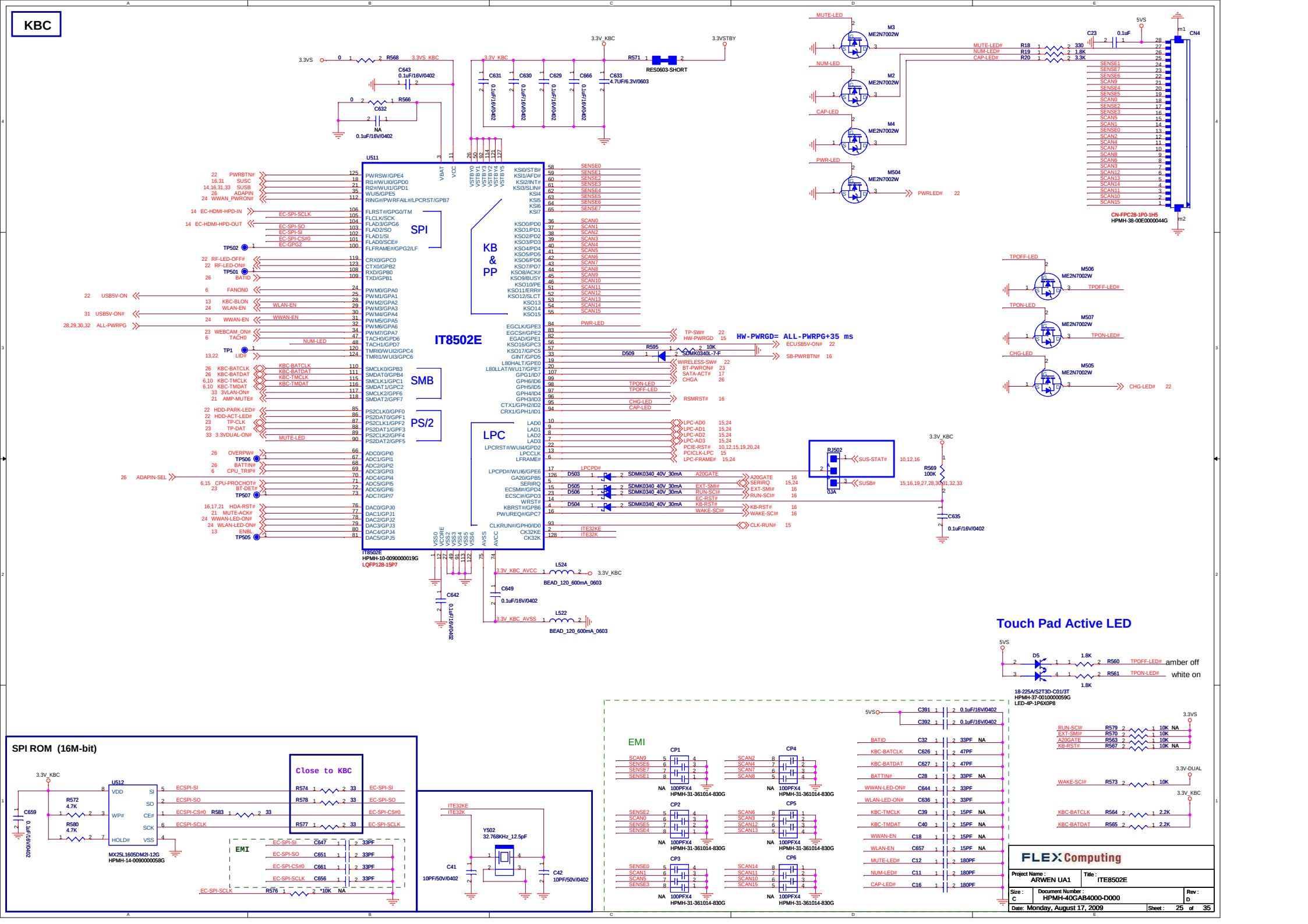
KBC


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
FLEX Computing
Project Name : ARWEN UA1
Title : IT8502E
Size : C
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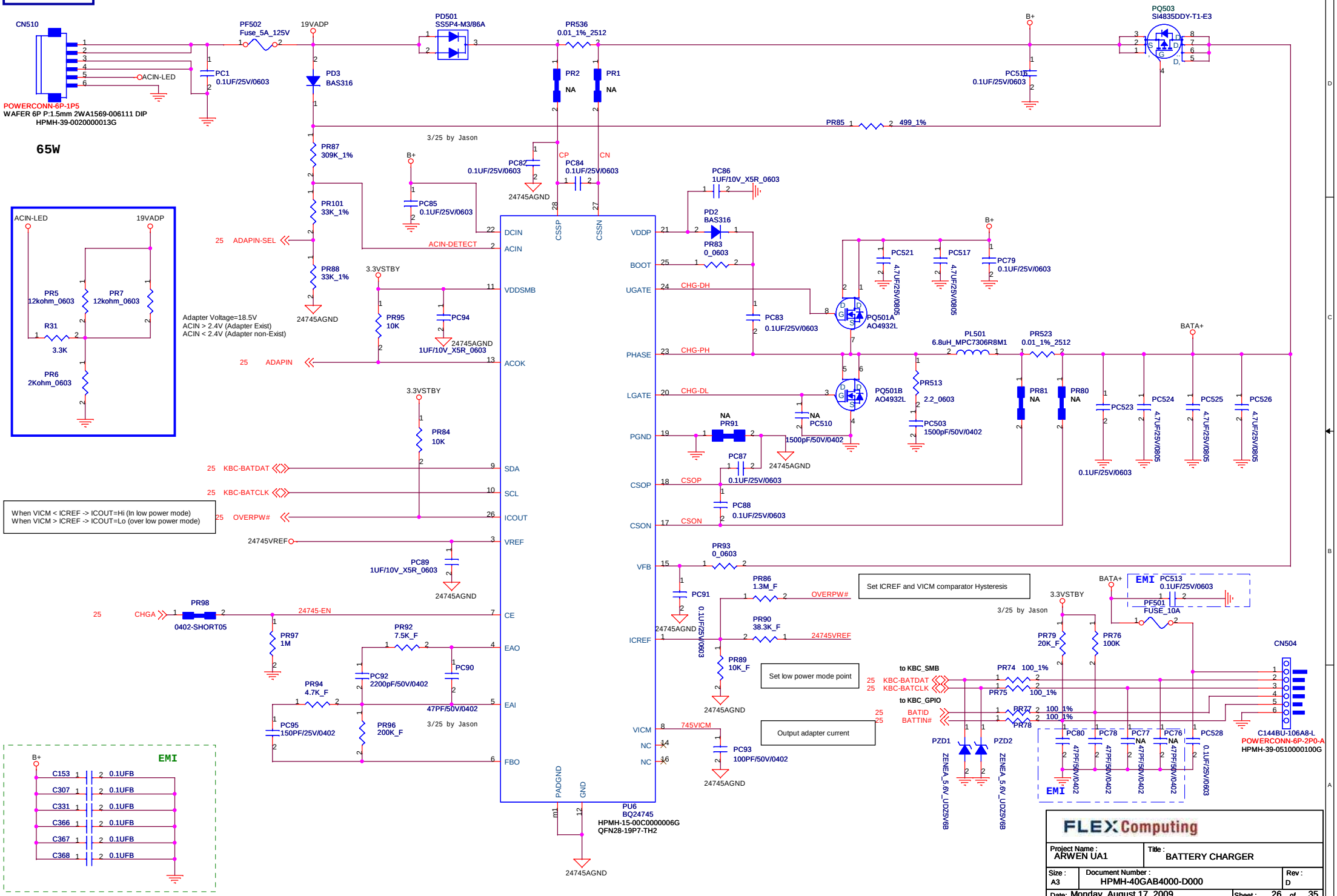
Charger



FLEX Computing

Project Name : ARWEN UA1	Title : BATTERY CHARGER	
Size : A3	Document Number : HPMH-40GAB4000-D000	Rev : D
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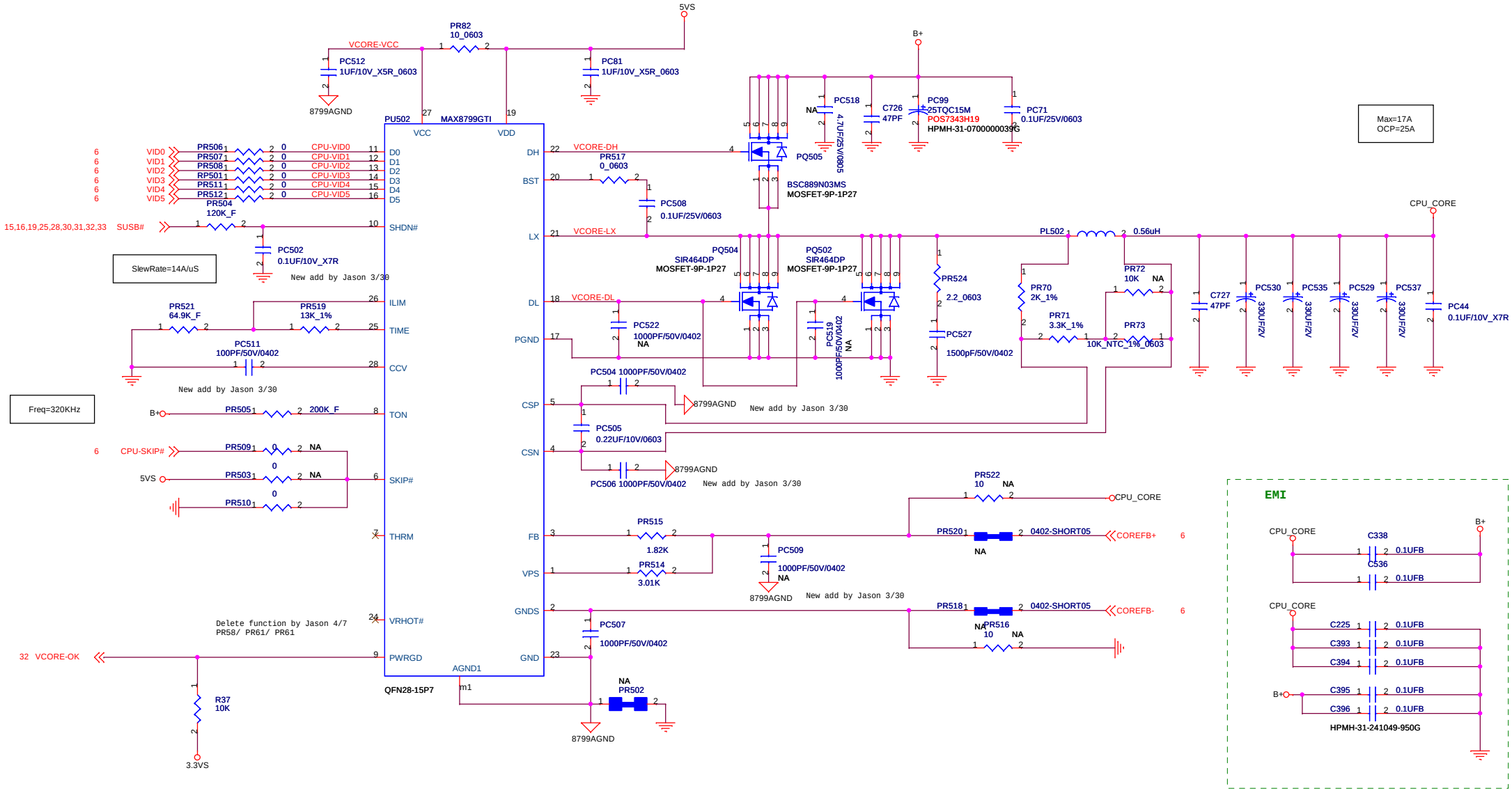
CPU_CORE



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

FLEX Computing

Project Name : ARWEN UA1	Title : CPU_CORE
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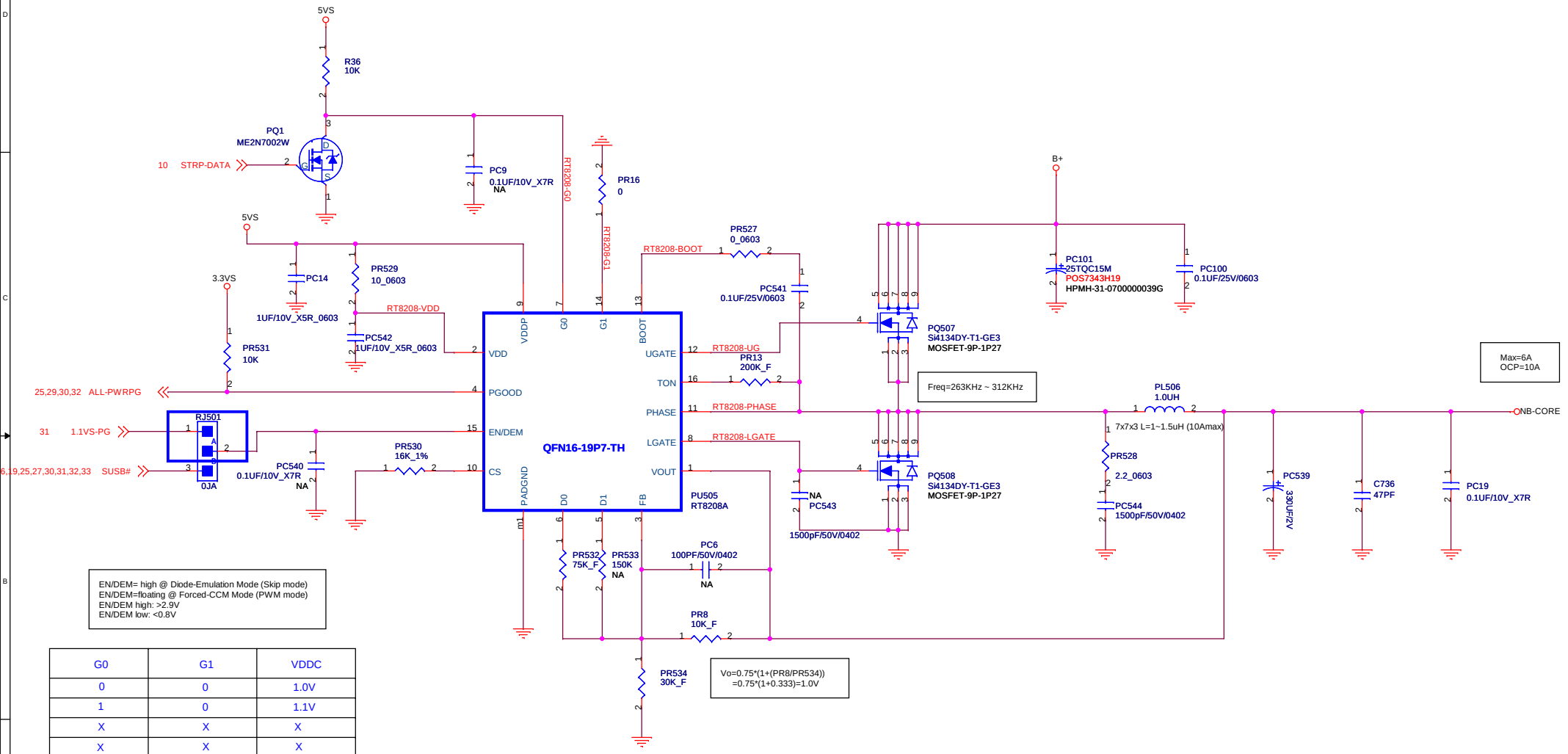
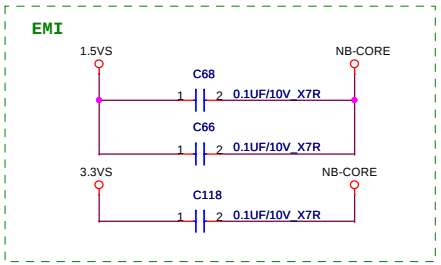
NB_CORE



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



FLEX Computing

Project Name : ARWEN UA1	Title : NB_CORE
Size : A3	Document Number : HPMH-40GAB4000-D000
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5V / 3.3VSTBY

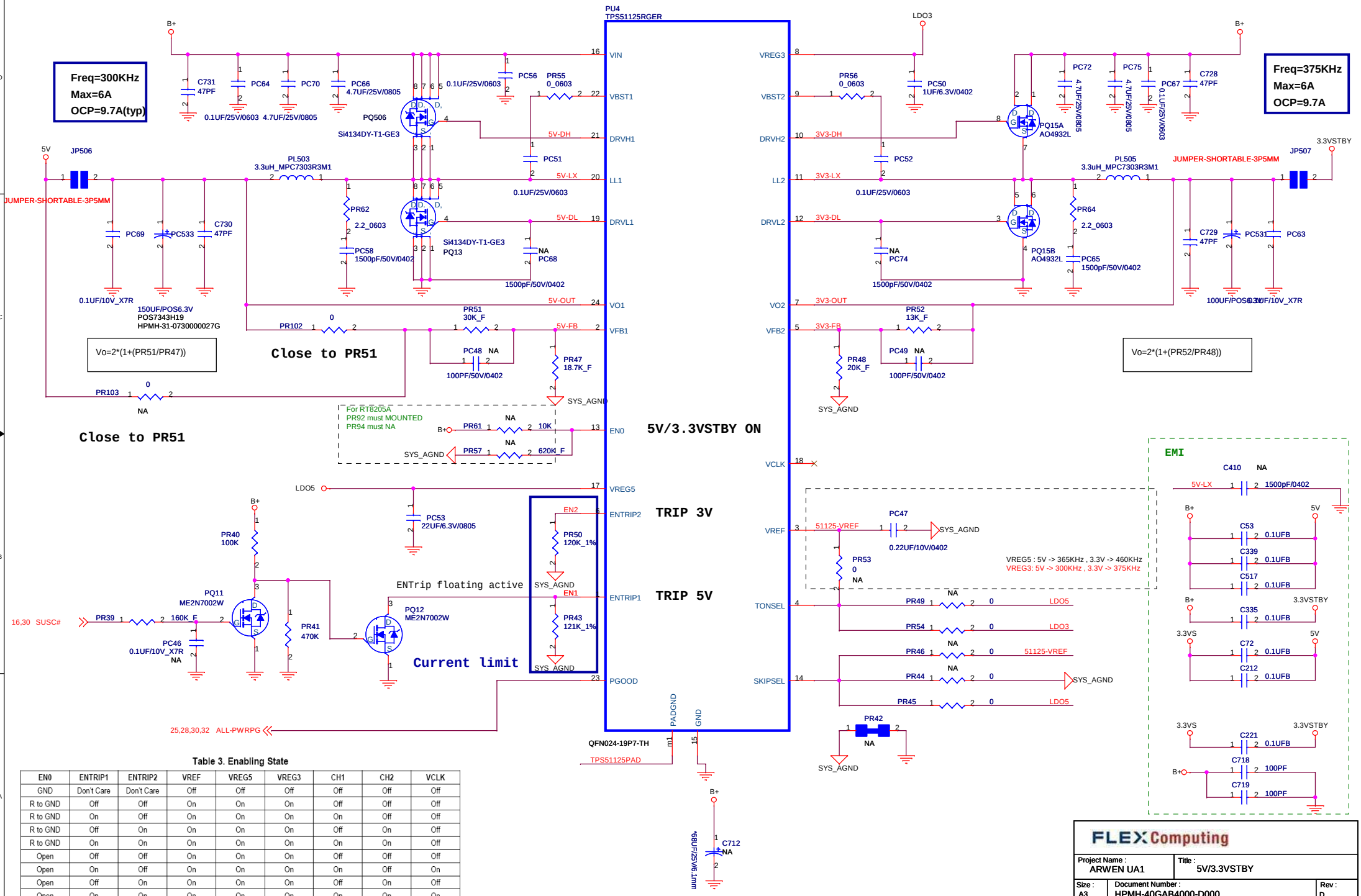

Table 3. Enabling State

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

FLEX Computing

Project Name : ARWEN UA1	Title : 5V/3.3VSTBY
Size : A3	Document Number : HPMH-40GAB4000-D000
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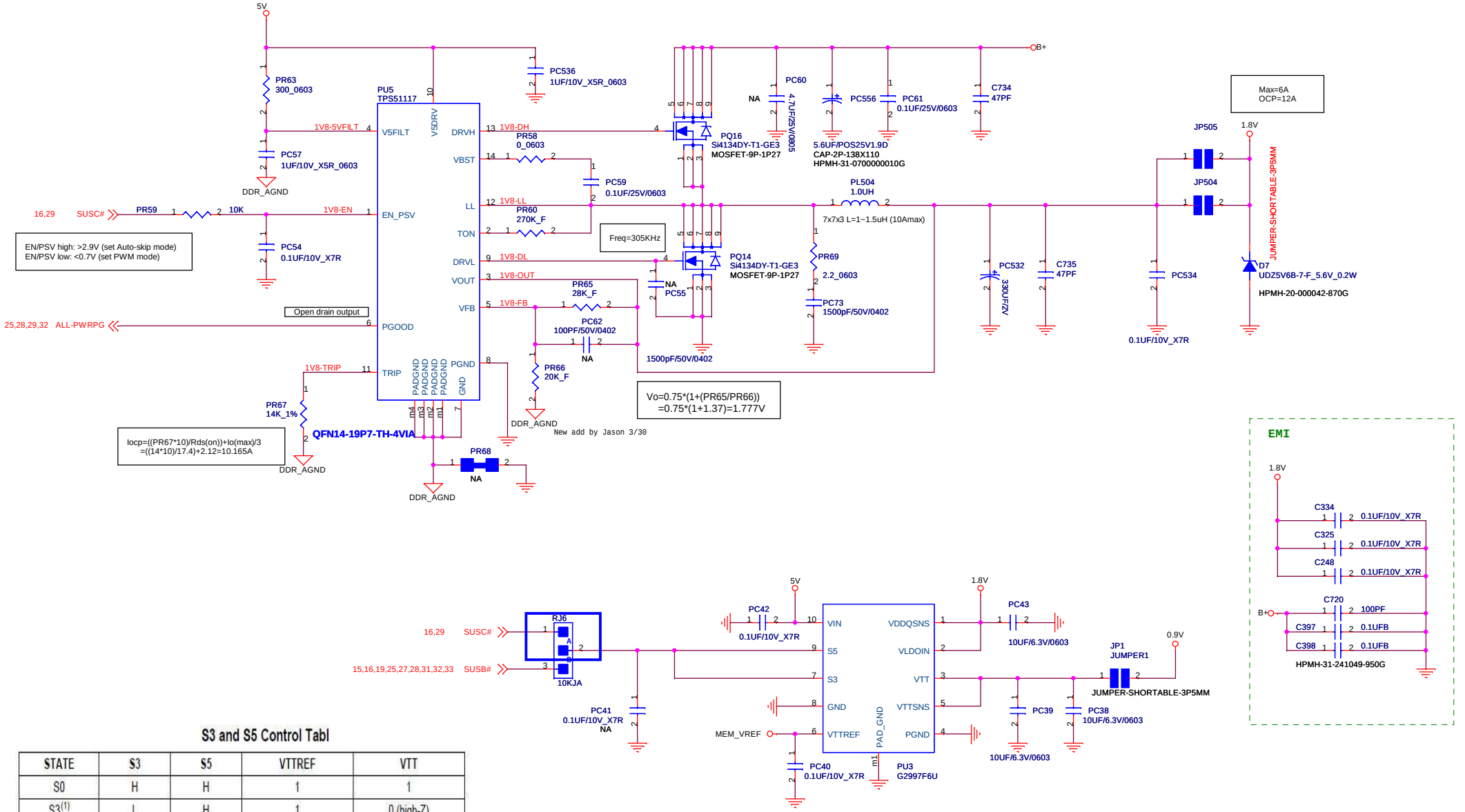
1.8V / 0.9V



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.

FLEX Computing			
Project Name : ARWEN UA1	Title : 1.8V/0.9V		
Size : A3	Document Number : HPMH-40GAB4000-D000		Rev : D
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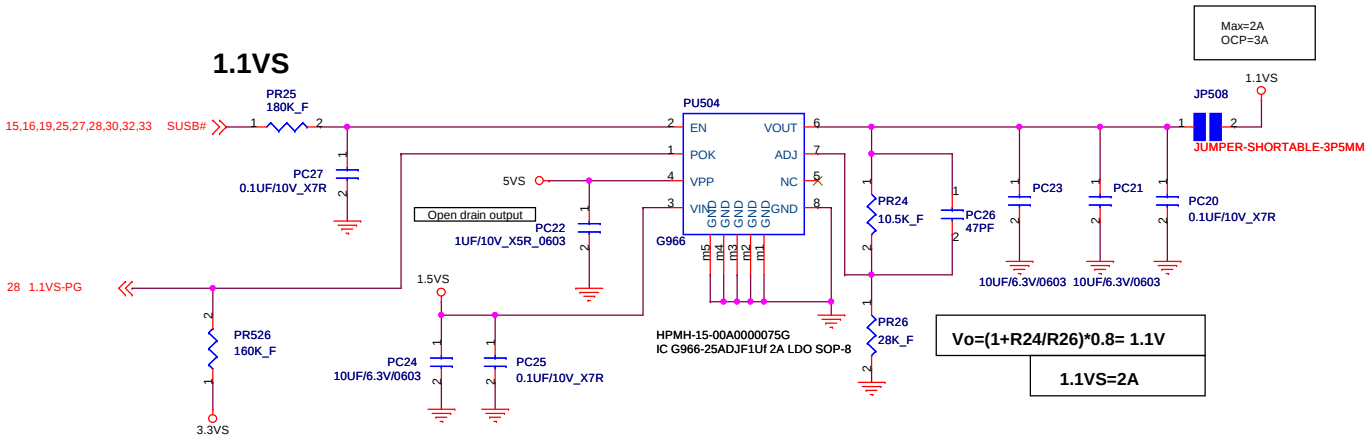
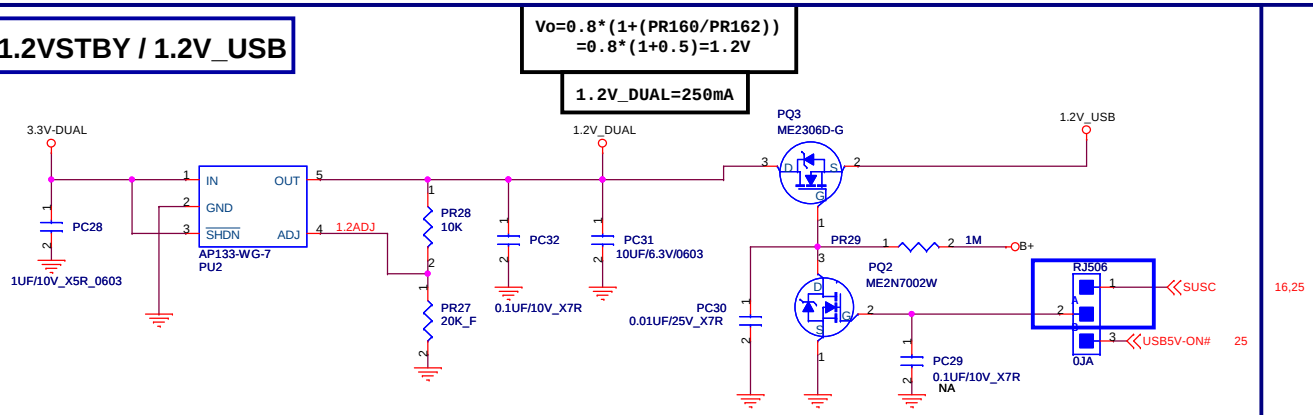
1.1VS

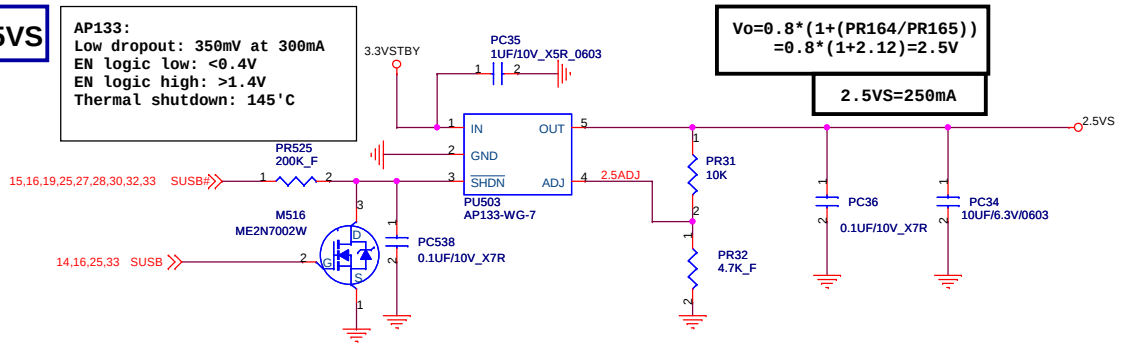


1.2VSTBY / 1.2V_USB



2.5VS

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



FLEX Computing

Project Name : ARWEN UA1	Title : 1.1VS/2.5VS/1.2V_USB
Size : A3	Document Number : HPMH-40GAB4000-D000
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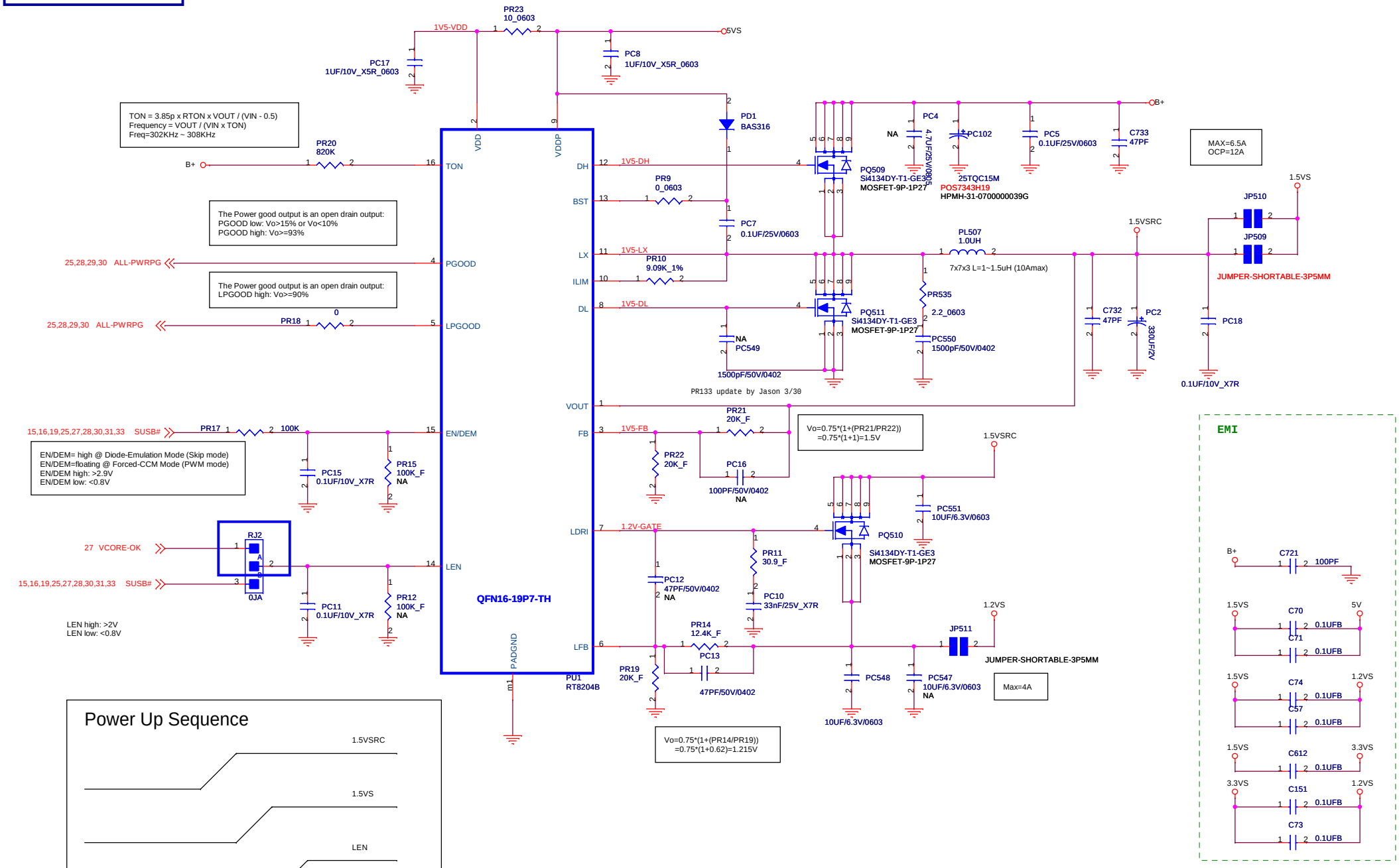
1.5VS / 1.2VS



Power Up Sequence

FLEX Computing		
Project Name : ARWEN UA1	Title : 1.5VS/1.2VS	
Size : Custom	Document Number : HPMH-40GAB4000-D000	Rev : D
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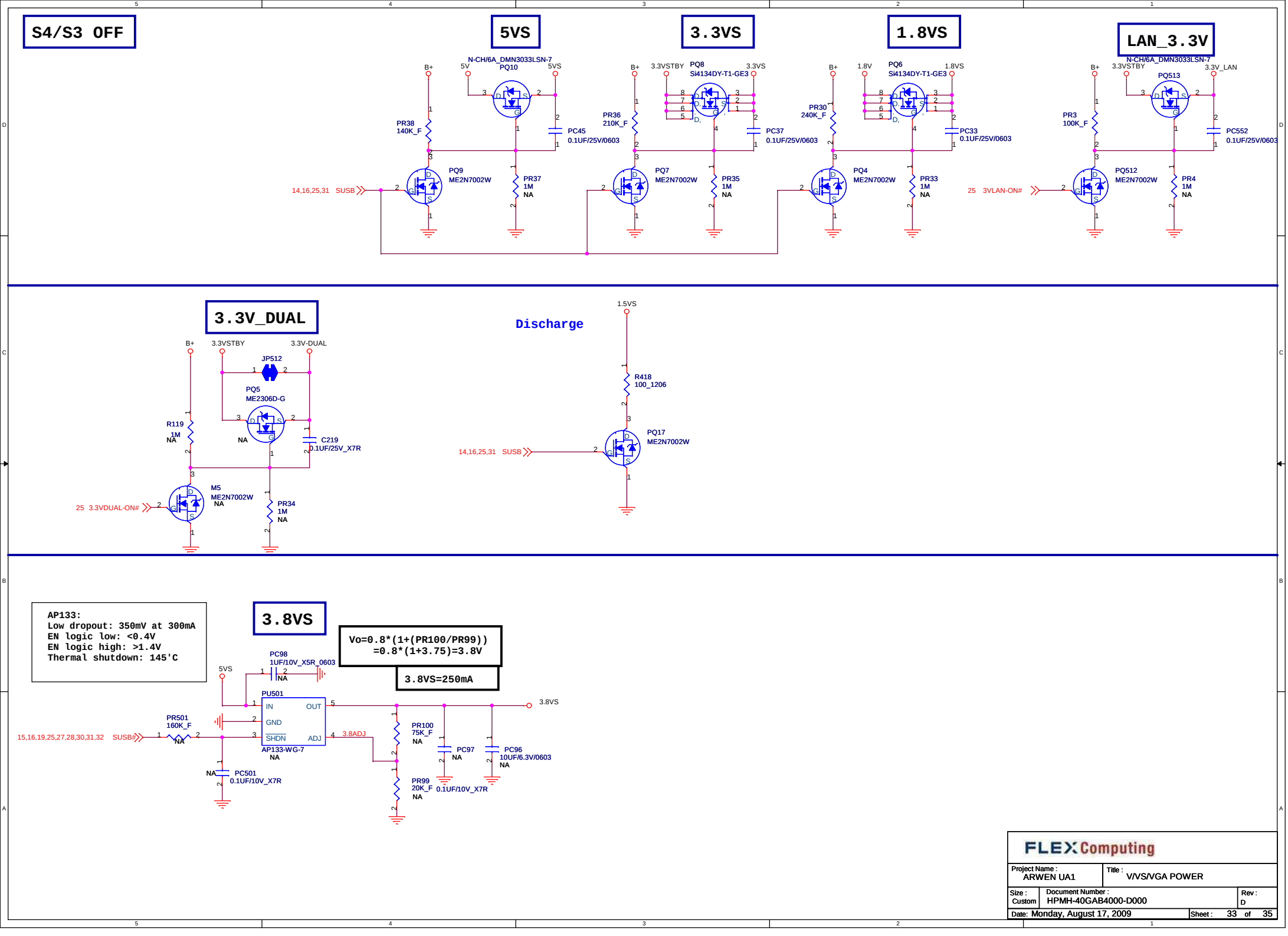
S4/S3 OFF
5VS
3.3VS
1.8VS
LAN_3.3V
N-CH/6A_DMN3033LSN-7
PQ10
PQ8
Si4134DY-T1-GE3
PQ6
Si4134DY-T1-GE3
PQ513
PR38 140K_F
PR36 210K_F
PR30 240K_F
PR3 100K_F
PC45 0.1UF/25V/0603
PC37 0.1UF/25V/0603
PC33 0.1UF/25V/0603
PC552 0.1UF/25V/0603
PQ9 ME2N7002W
PQ7 ME2N7002W
PQ4 ME2N7002W
PQ512 ME2N7002W
PR37 1M NA
PR35 1M NA
PR33 1M NA
PR4 1M NA
14,16,25,31 SUSB
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
1.5VS
R418 100_1206
PQ17 ME2N7002W
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
PU501
IN
OUT
GND
SHDN
ADJ
AP133-WG-7
PR501 160K_F
PC501 0.1UF/10V_X7R
PR100 75K_F
PC97
PC96 10UF/6.3V/0603
PR99 20K_F
0.1UF/10V_X7R
15,16,19,25,27,28,30,31,32 SUSB#
3.8ADJ
FLEXComputing
Project Name : ARWEN UA1
Title : V/VS/VGA POWER
Size : Custom
Document Number : HPMH-40GAB4000-D000
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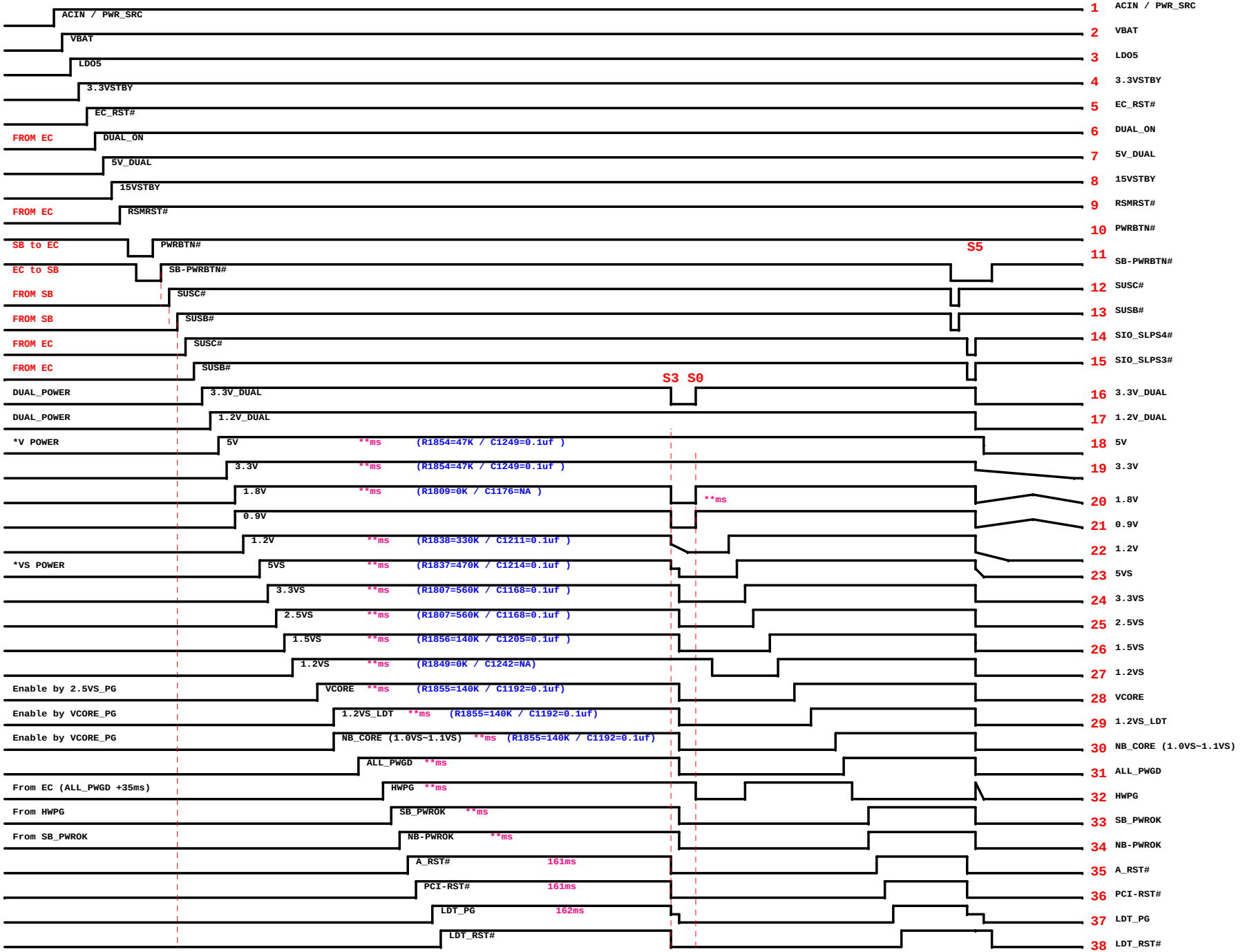

FLEX Computing

Project Name : ARWEN UA1	Title : GPU OFF PWR	
Size : Custom	Document Number : HPMH-40GAB4000-D000	Rev : D
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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 0.1UFB
C370 0.1UFB
C371 0.1UFB
C372 0.1UFB
C373 0.1UFB
C374 0.1UFB
C375 0.1UFB
C376 0.1UFB
C377 0.1UFB
C378 0.1UFB
C384 0.1UFB
C385 0.1UFB
C386 0.1UFB
C387 0.1UFB
C388 0.1UFB
C389 0.1UFB
C399 0.1UFB
C401 0.1UFB

5V
C379 0.1UFB
C380 0.1UFB

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

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

3.3VS
C409 0.1UFB

5VS
C400 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

FLEXComputing

Project Name: ARWEN UA1	Title: PAD/ SCREW/ Moat Cap
Size:	Document Number: Rev: D
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