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# IZ17C-AHT VER 5.0

## CPU:

Intel Skylake S 42 in LGA1151 Package 95W

## System Chipset:

SPT-H PCH

## Main Memory:

Dual Channel/DDR-III\*4(Max 16GB) 1066/1333/1600

## Onboard Device:

Super I/O:IT8625E

LAN:Realtek 8111G

HD Codec:ALC892

PCI BRIDGE ASM1083

## Power solution:

CPU Voltage Regulators:3phase by ISL95858

DDR Voltage Regulators:1Phase by UP1514

## Expansion Slots:

PCI EXPRESS 16X SLOT \*2

PCI EXPRESS 1X SLOT \*3

PCI EXPRESS 4X SLOT \*1

PCIE M2 SOLT \*1

## REAR IO:

PS/2 +2 layer USB3.0 Port

HDMI Port

DVI+VGA Port

USB3.0 PORT \*2

Gb RJ-45 +2 layer USB3.0 Ports

Audio Jackets (5 PORT+SPDIF)

## Front I/O:

SATA3 \*6 SATA EXPRESS \* 1

USB 2.0 Header \* 2

USB 3.0 Header \* 1

CPU FAN \*2


System FAN \*4

Serial header

CIR Header

Front Audio Header

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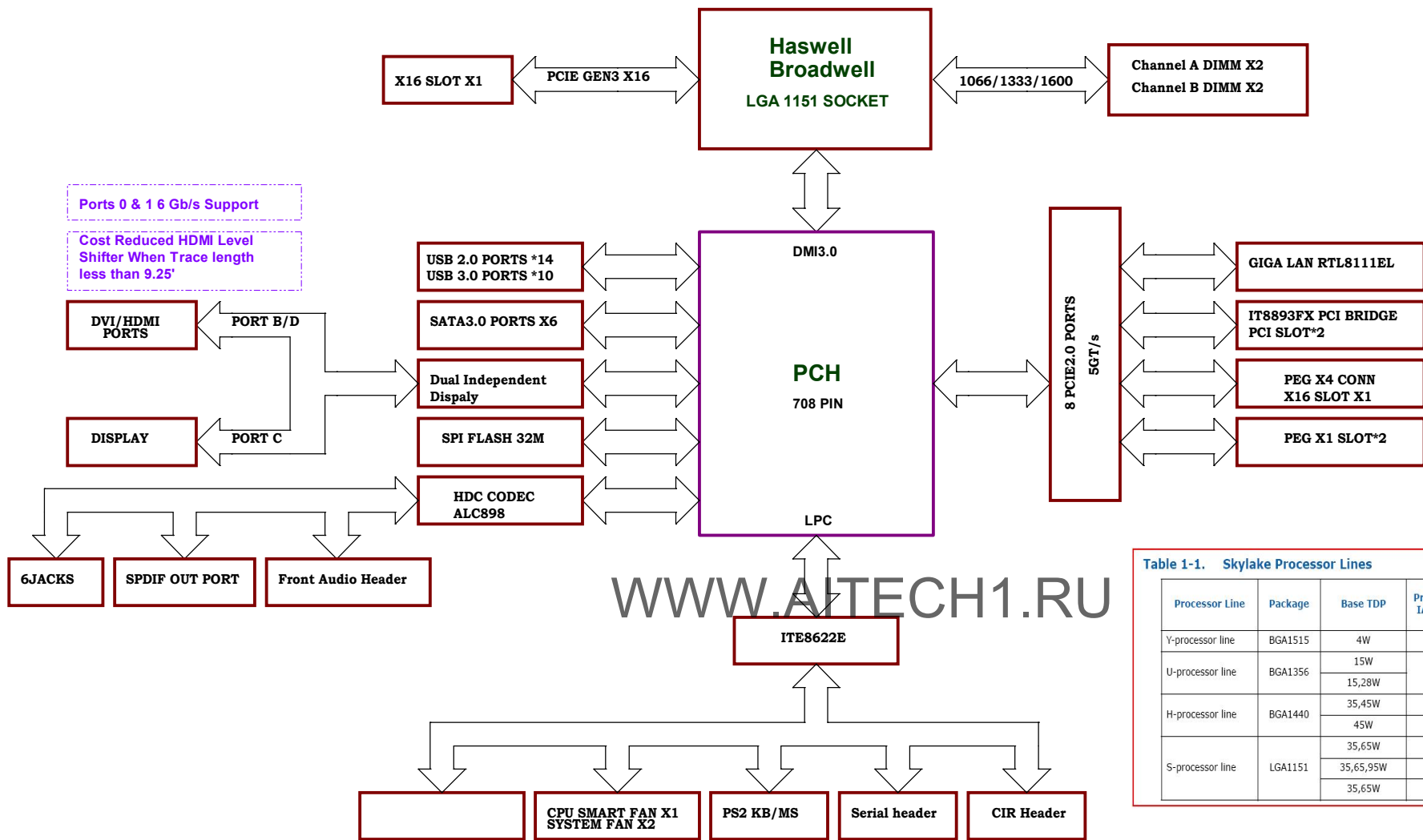


Table 1-1. Skylake Processor Lines						
Processor Line	Package	Base TDP	Processor IA Cores	Maximum Graphics Configuration	On Package Cache	Platform Type
Y-processor line	BGA1515	4W	2	GT2	N/A	1-Chip
U-processor line	BGA1356	15W	2	GT2	64 MB	1-Chip
		15,28W		GT3		
H-processor line	BGA1440	35,45W	4	GT2	N/A	2-Chip
		45W	4	GT4	128 MB	
S-processor line	LGA1151	35,65W	2	GT2	N/A	2-Chip
		35,65,95W	4	GT2		
		35,65W	4	GT4	64 MB	

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Title: **BLOCK DIAGRAM**

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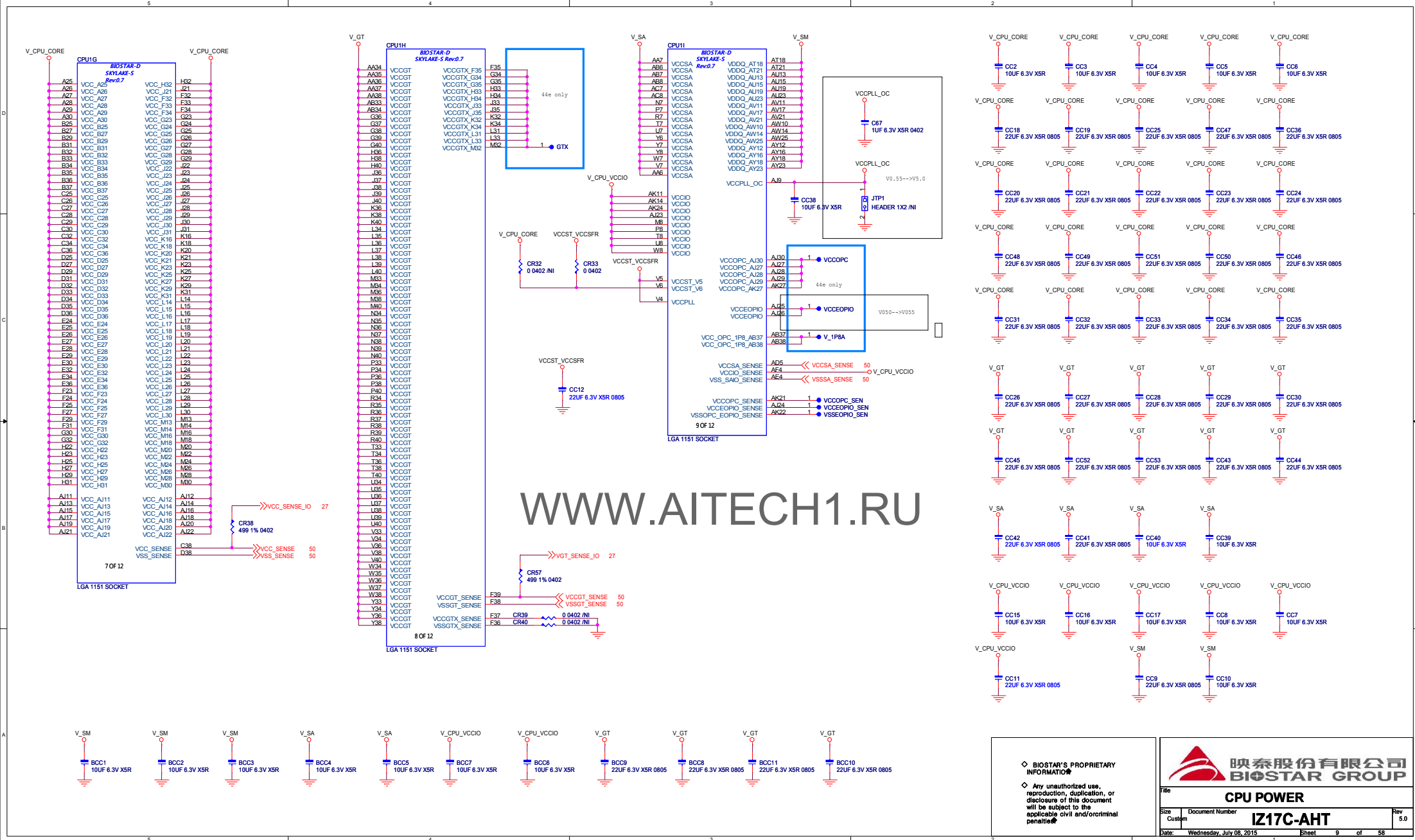




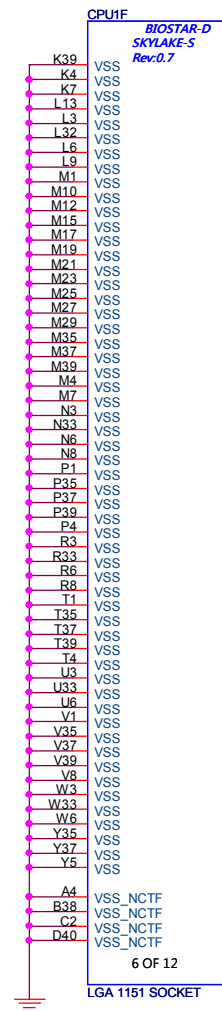
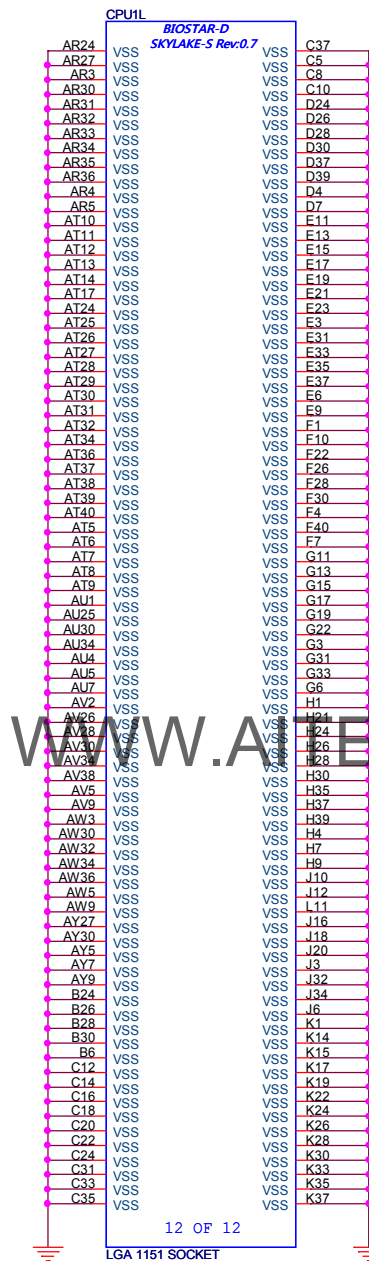
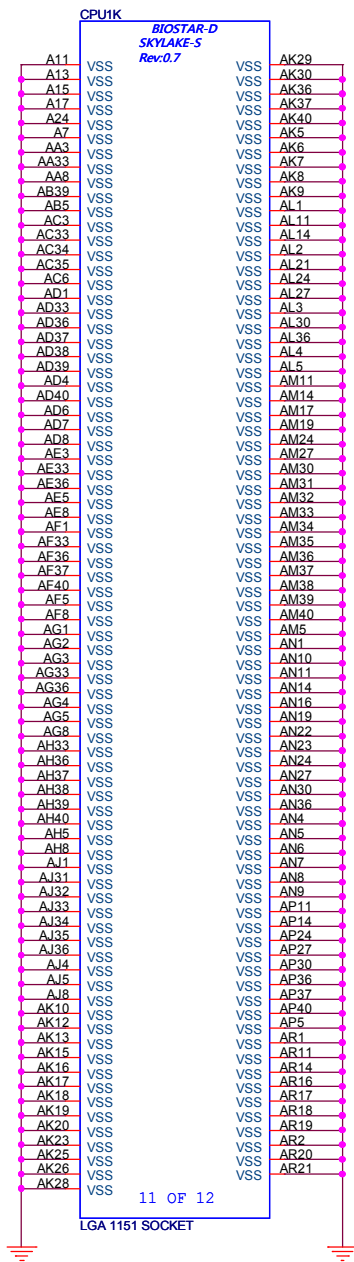












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CPU GND		
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**DIMM3(CHANNEL-B1)**  
**ADDRESS = 0:1:0 [SA2:SA1:SA0]**  
**DIMM1 CH0 ADDRESS HEX:0XA4**

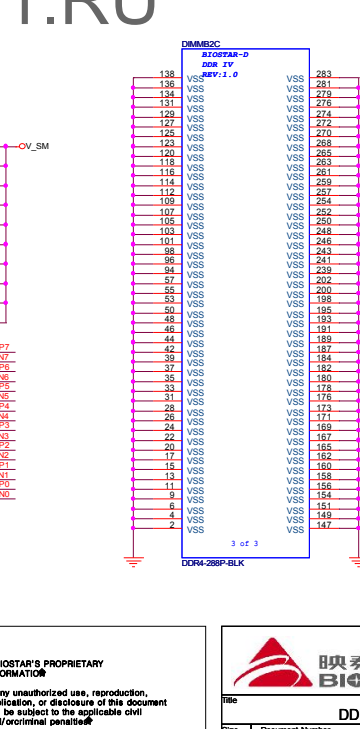
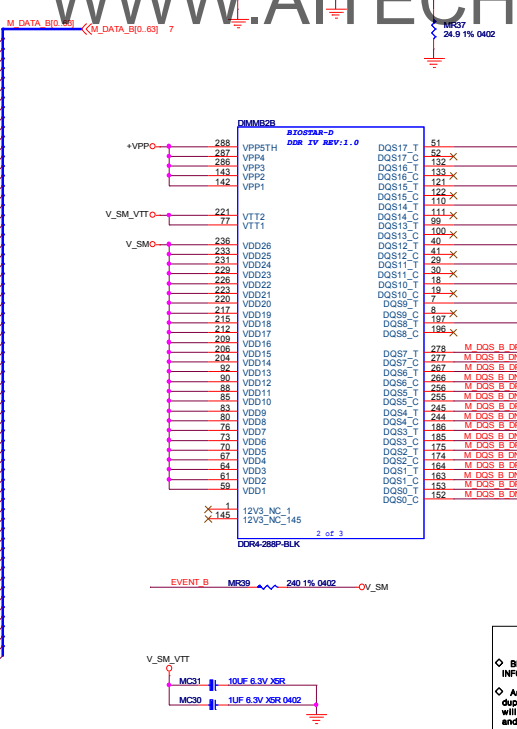
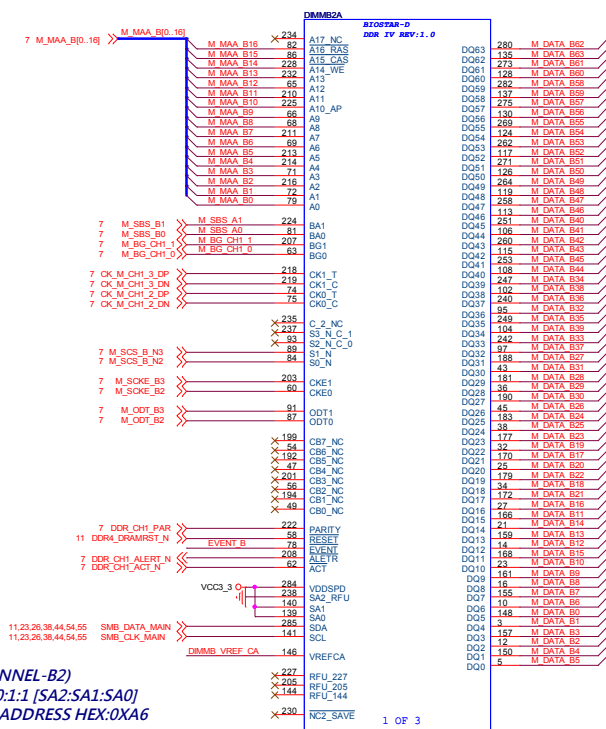
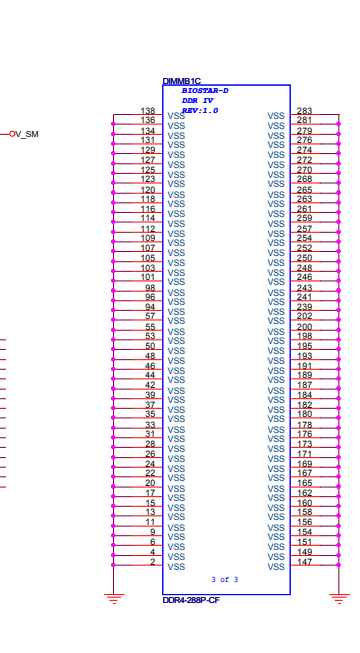
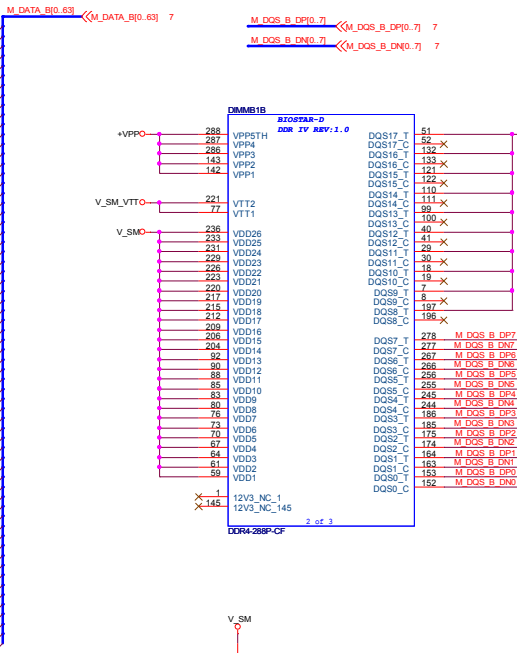
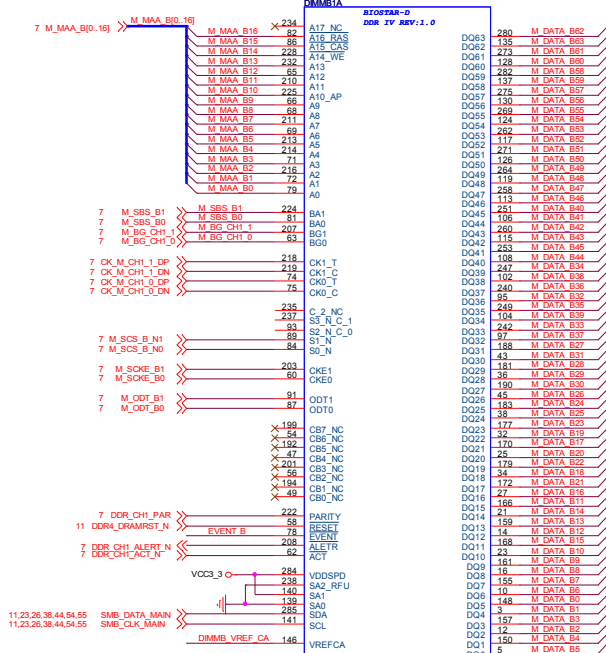
**DIMM3(CHANNEL-B2)**  
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**DIMM1 CH0 ADDRESS HEX:0XA6**

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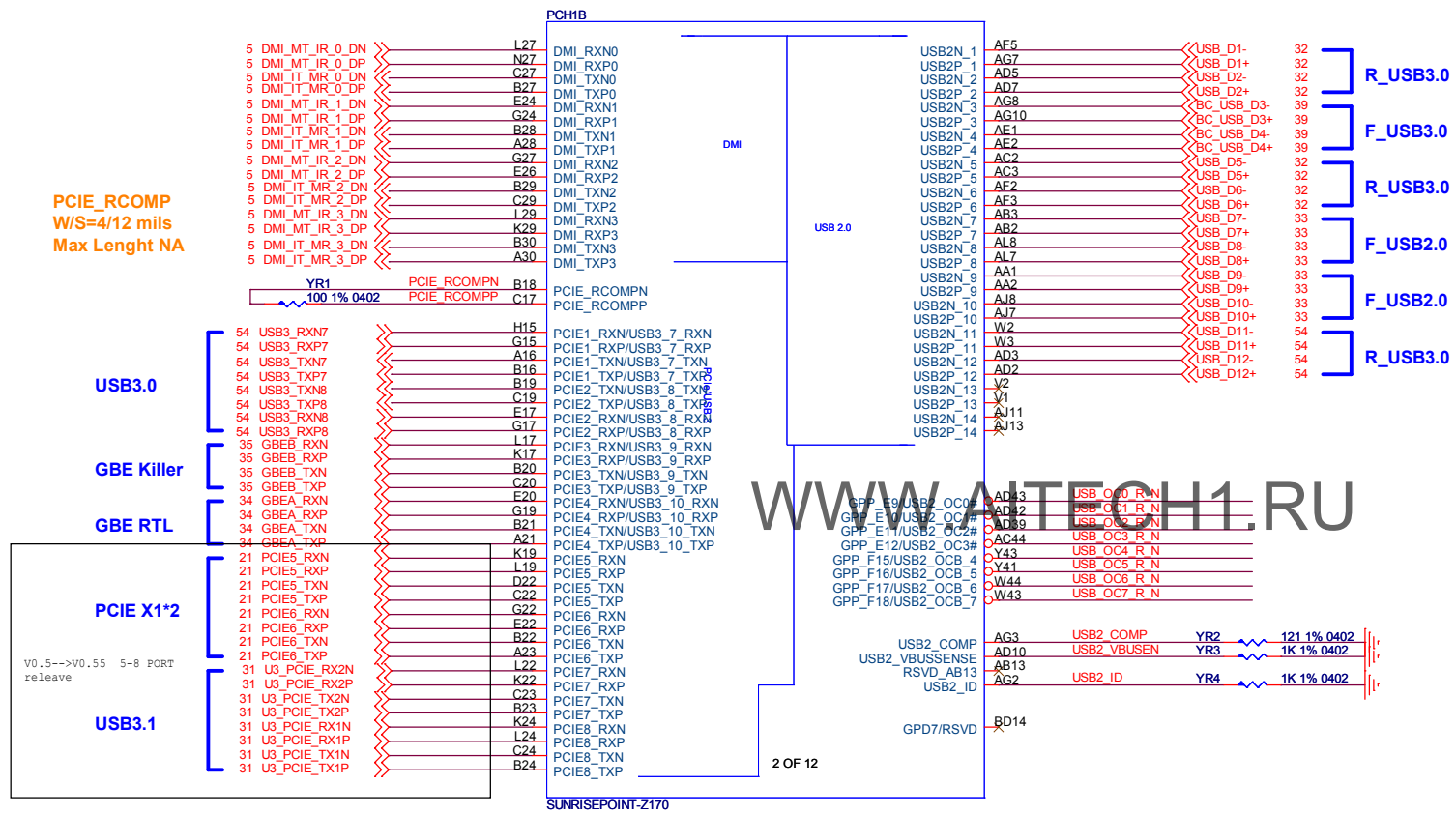
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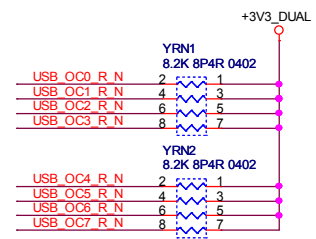




PCH PART: Y+Reference



PCIe #20					
PCIe #19					
PCIe #18	SATA #5		X4	X2	Internal PCIe Storage Device #3
PCIe #17	SATA #4		X4	X2	Internal PCIe Storage Device #2
PCIe #16	SATA #3		X4	X2	Internal PCIe Storage Device #1
PCIe #15	SATA #2		X4	X2	
PCIe #14	SATA #1		X4	X2	
PCIe #13	SATA #0	GbE	X4	X2	
PCIe #12		GbE	X4	X2	
PCIe #11			X4	X2	
PCIe #10	SATA #1		X4	X2	
PCIe #9	SATA #0	GbE	X4	X2	
PCIe #8			X4	X2	
PCIe #7			X4	X2	
PCIe #6			X4	X2	
PCIe #5		GbE	X4	X2	
USB3 #10	PCIe #4	GbE	X4	X2	No Remapping
USB3 #9	PCIe #3		X4	X2	
USB3 #8	PCIe #2		X4	X2	
USB3 #7	PCIe #1		X4	X2	
USB3 #6			X4	X2	
USB3 #5			X4	X2	
USB3 #4			X4	X2	
USB3 #3		SSIC #2	X4	X2	
USB3 #2		SSIC #1	X4	X2	
USB3 #1 (Capable of OTG)			X4	X2	



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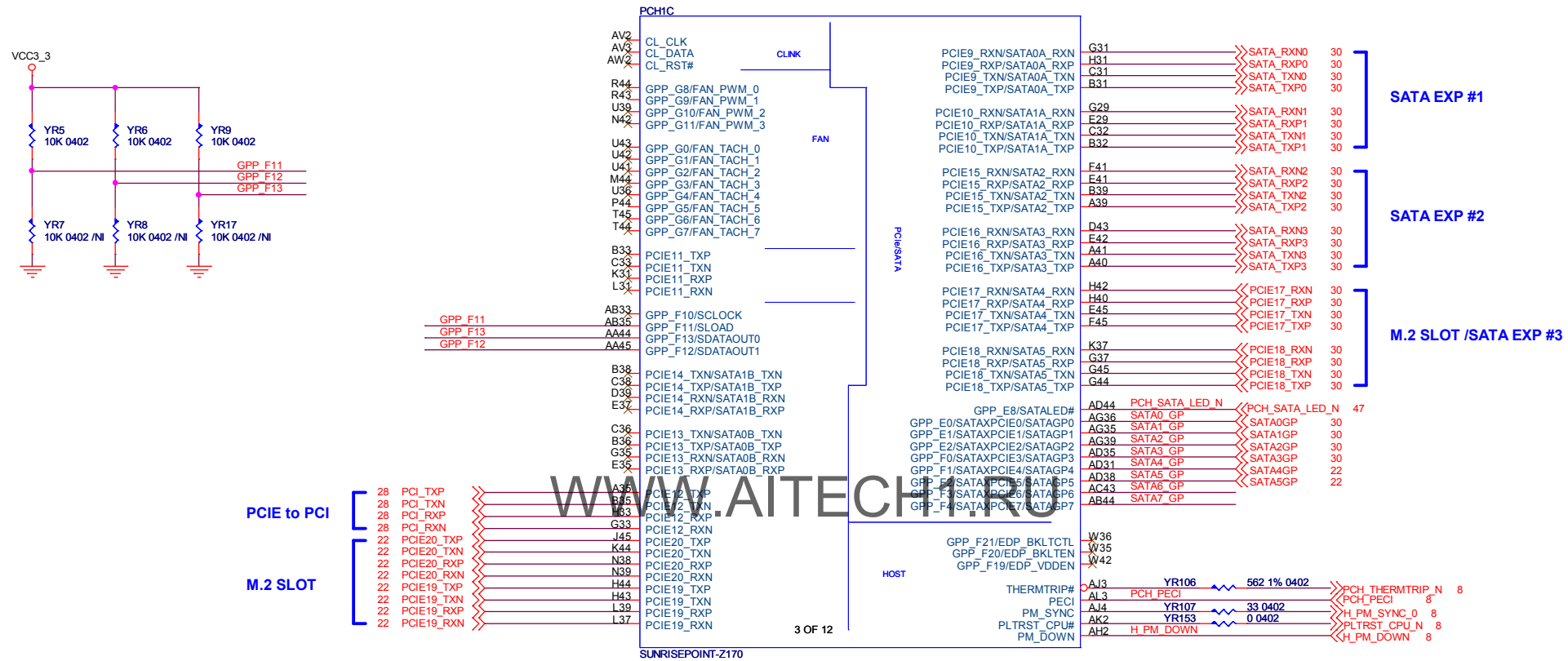
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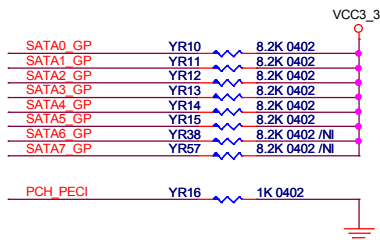
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## PCH PART: Y+Reference



GbE can be mapped into one of the PCIe Ports 4-5, Port 9, and Ports 12-13.



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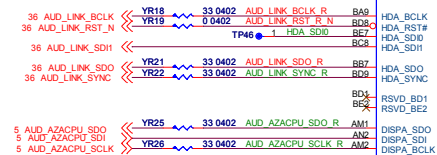


Title	<b>PCH CLINK/SATA/CPU HOST</b>
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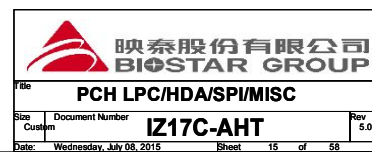
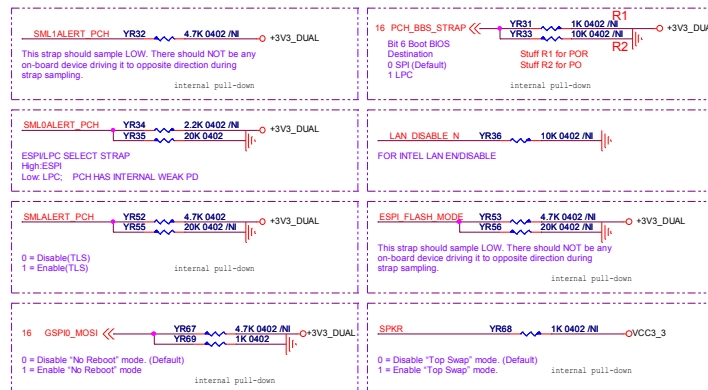
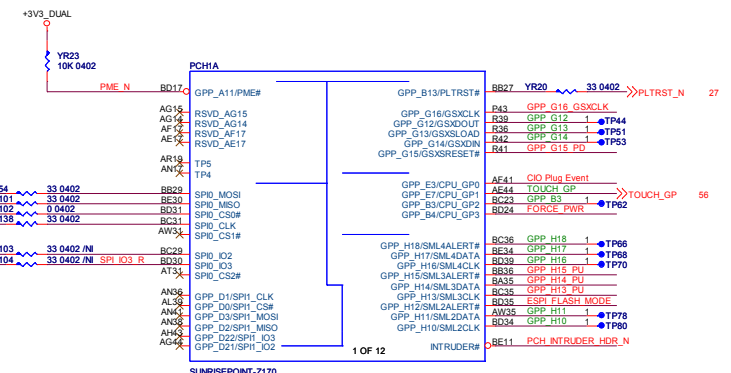
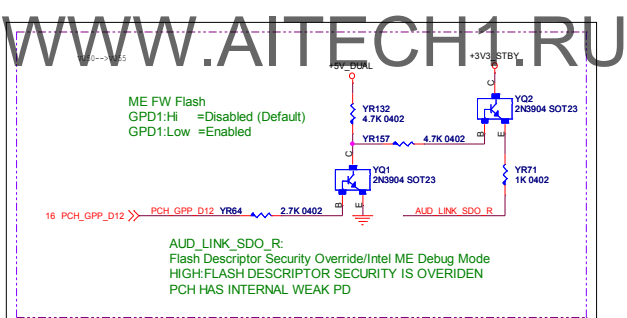
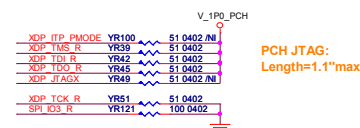
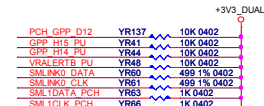
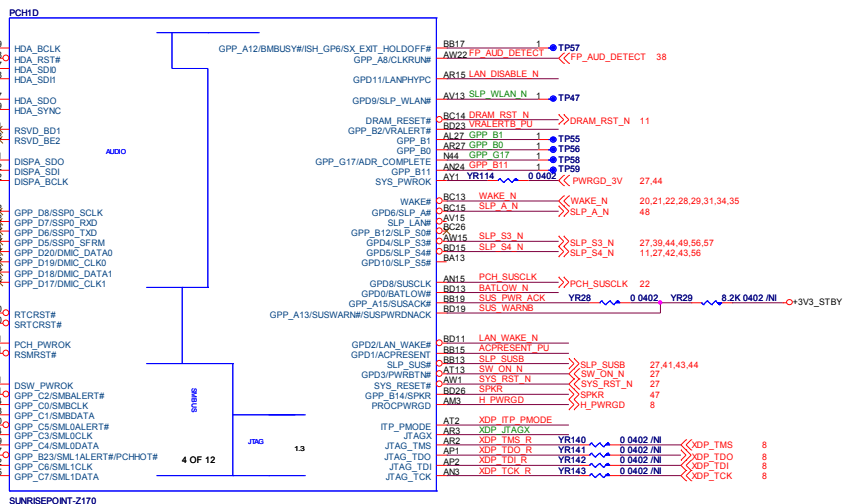




47,48 PCH\_RTCRST\_PULLUP >> PCH\_SRTCSTB\_PULLUP

44,57 PCH\_SYSPWROK >> YR115 0 0402

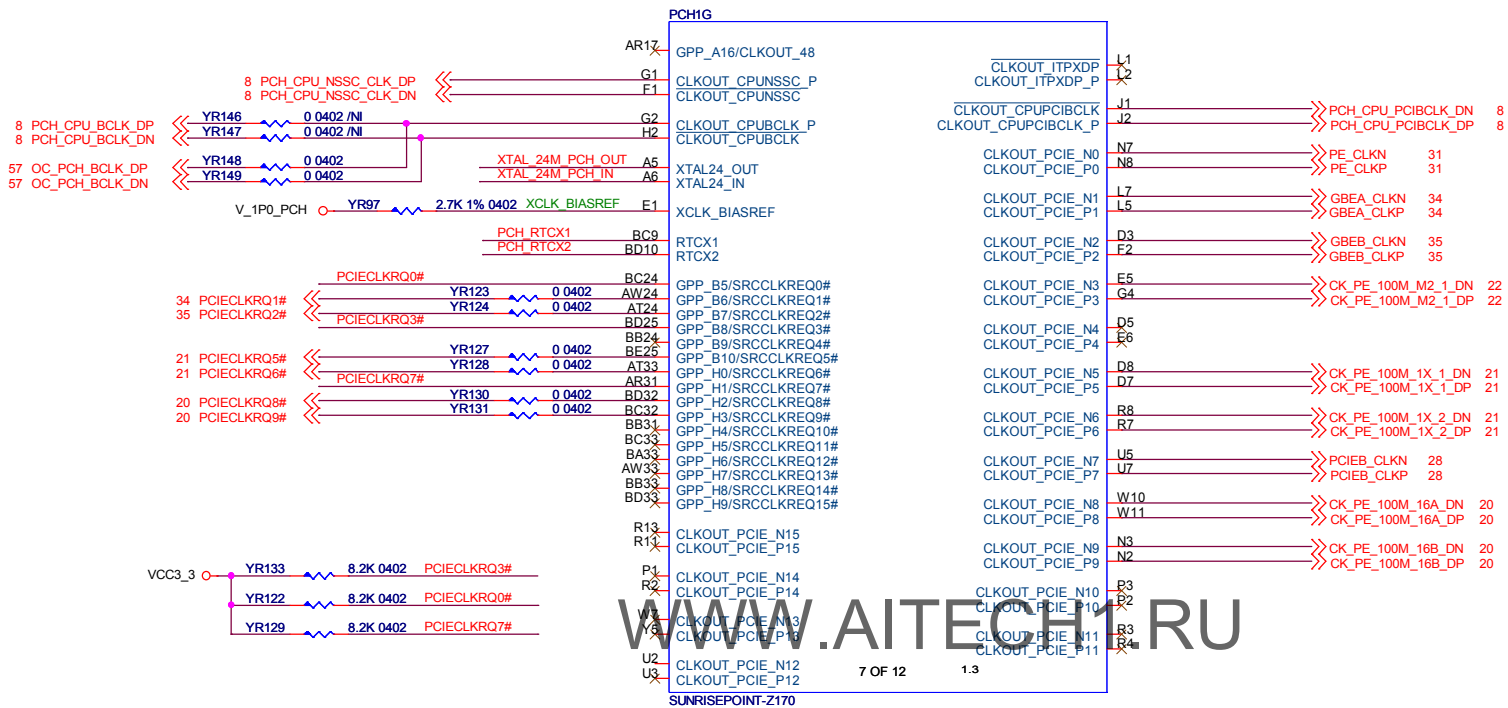
27,44 PCH\_RSMRST N



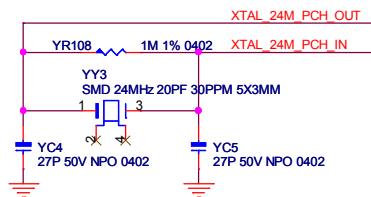




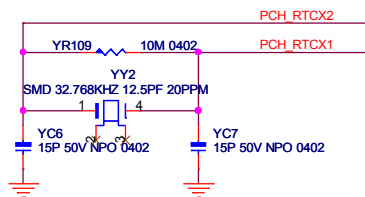





24MHZ CRYSTAL

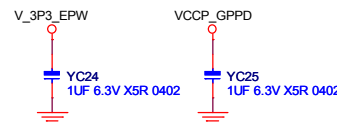
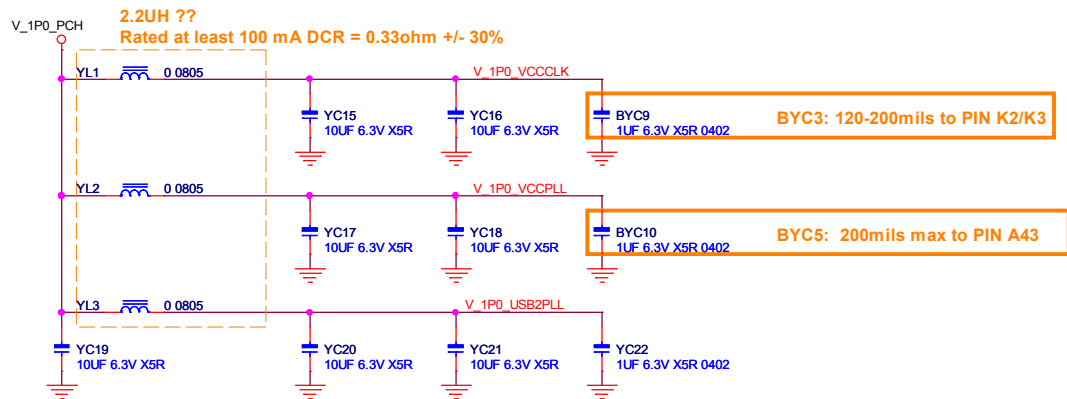
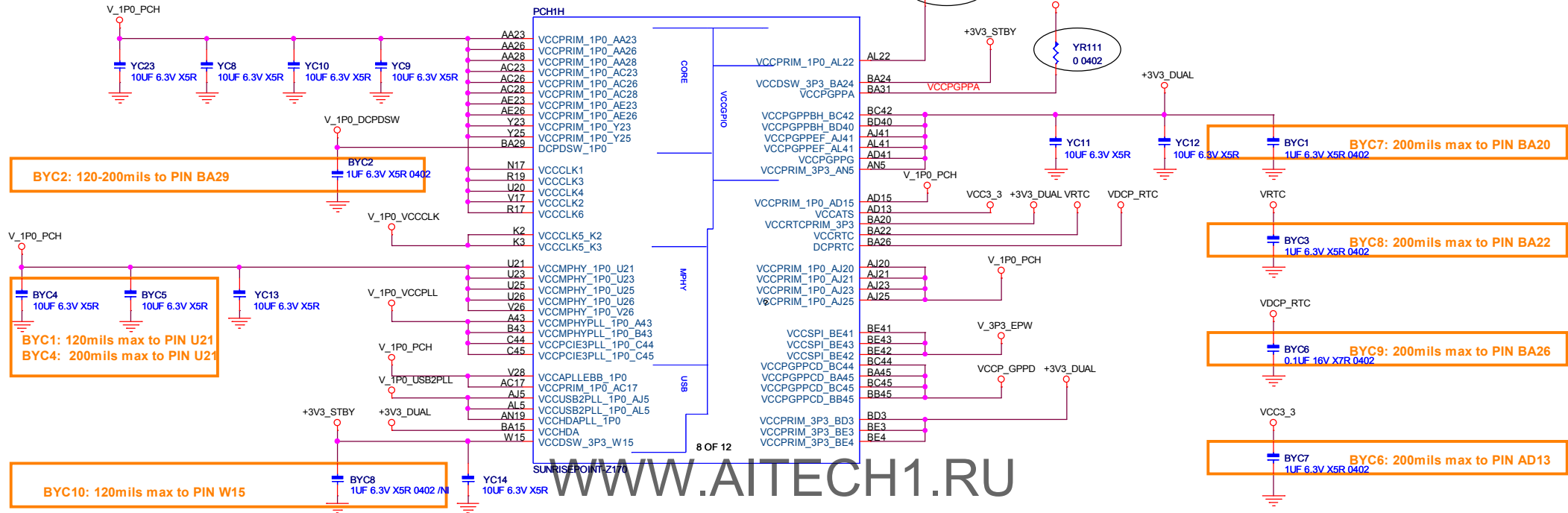


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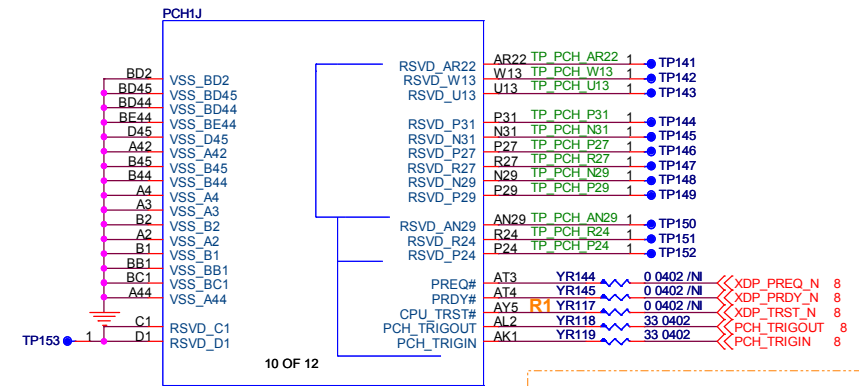
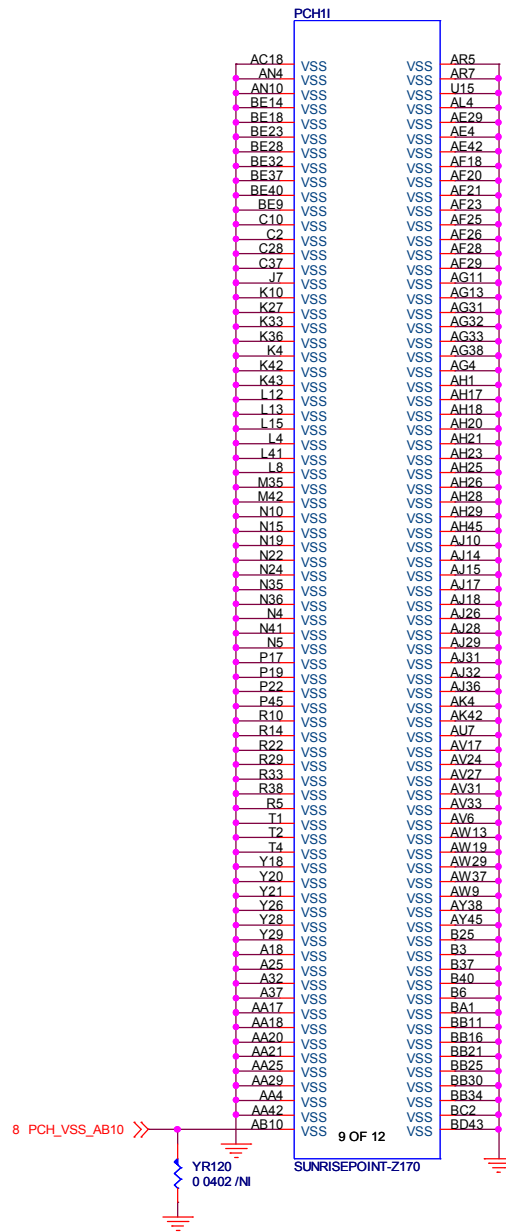


		
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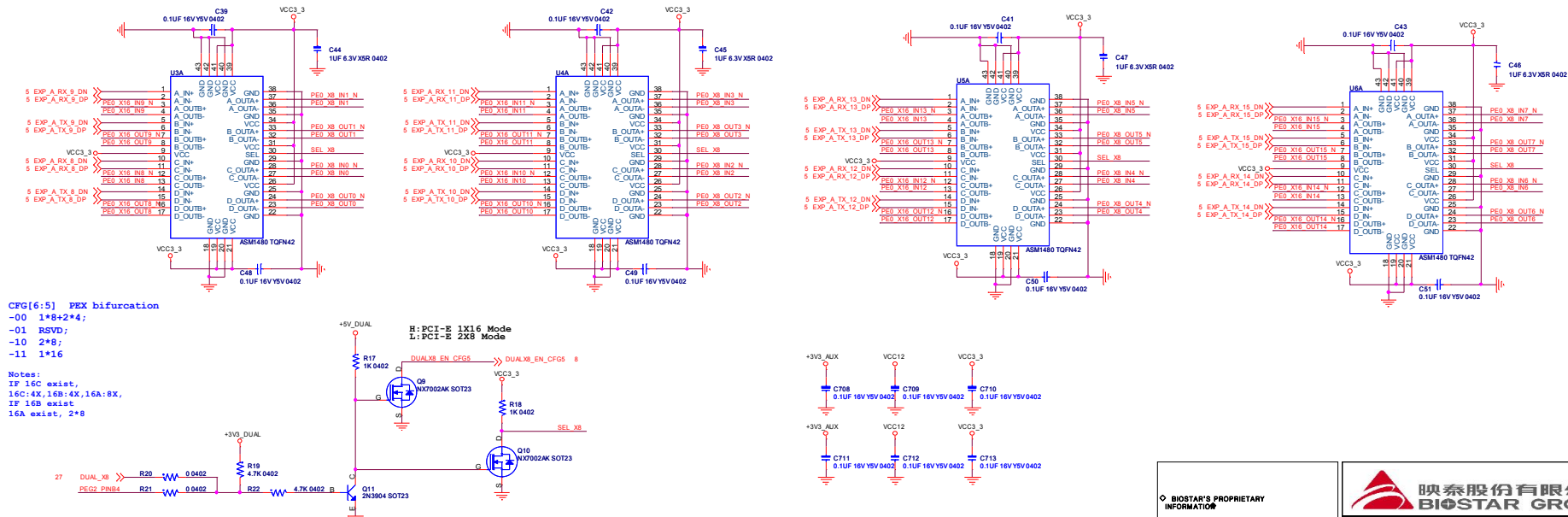
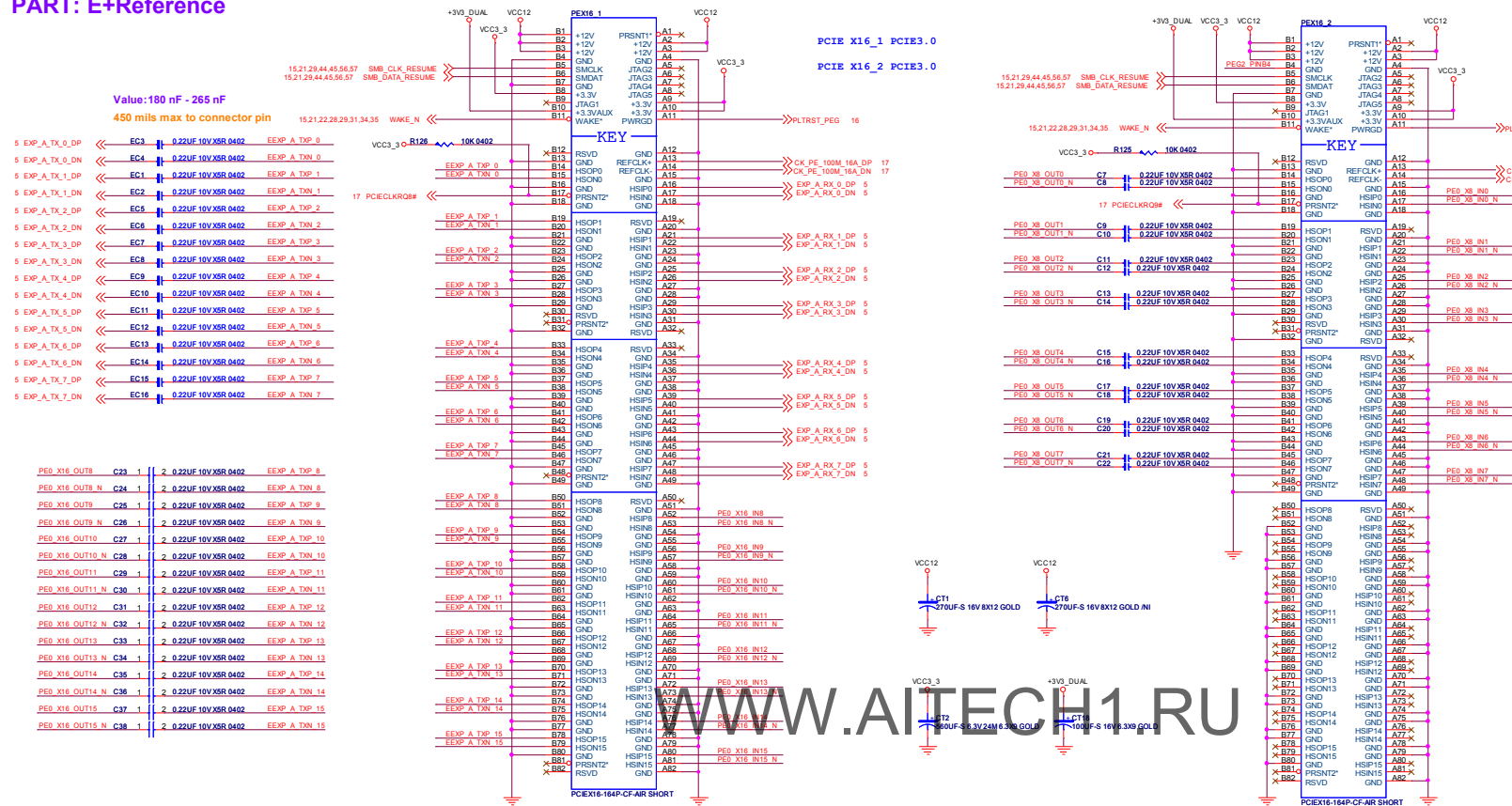
**R1:**  
STUFF ONLY FOR MERGED XDP  
UNSTUFF FOR NON\_MERGED

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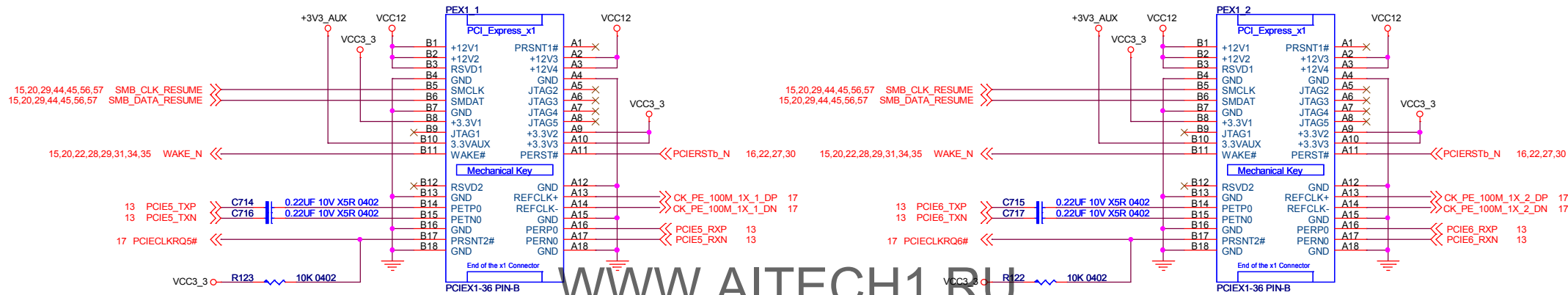
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Title <b>PCH GND</b>		
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## SLOT PART: E+Reference







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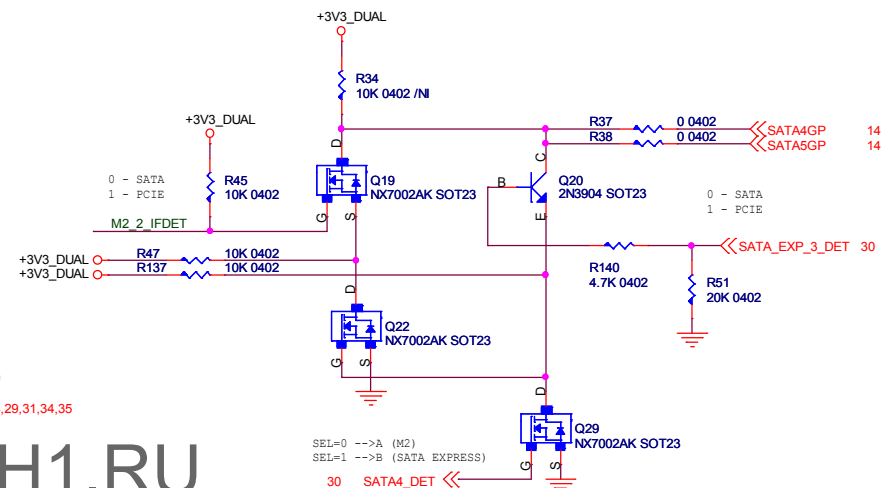
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PCIEX1 SOLT1 & 2		
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Title	PCIE M2
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Size  
B

Document Number
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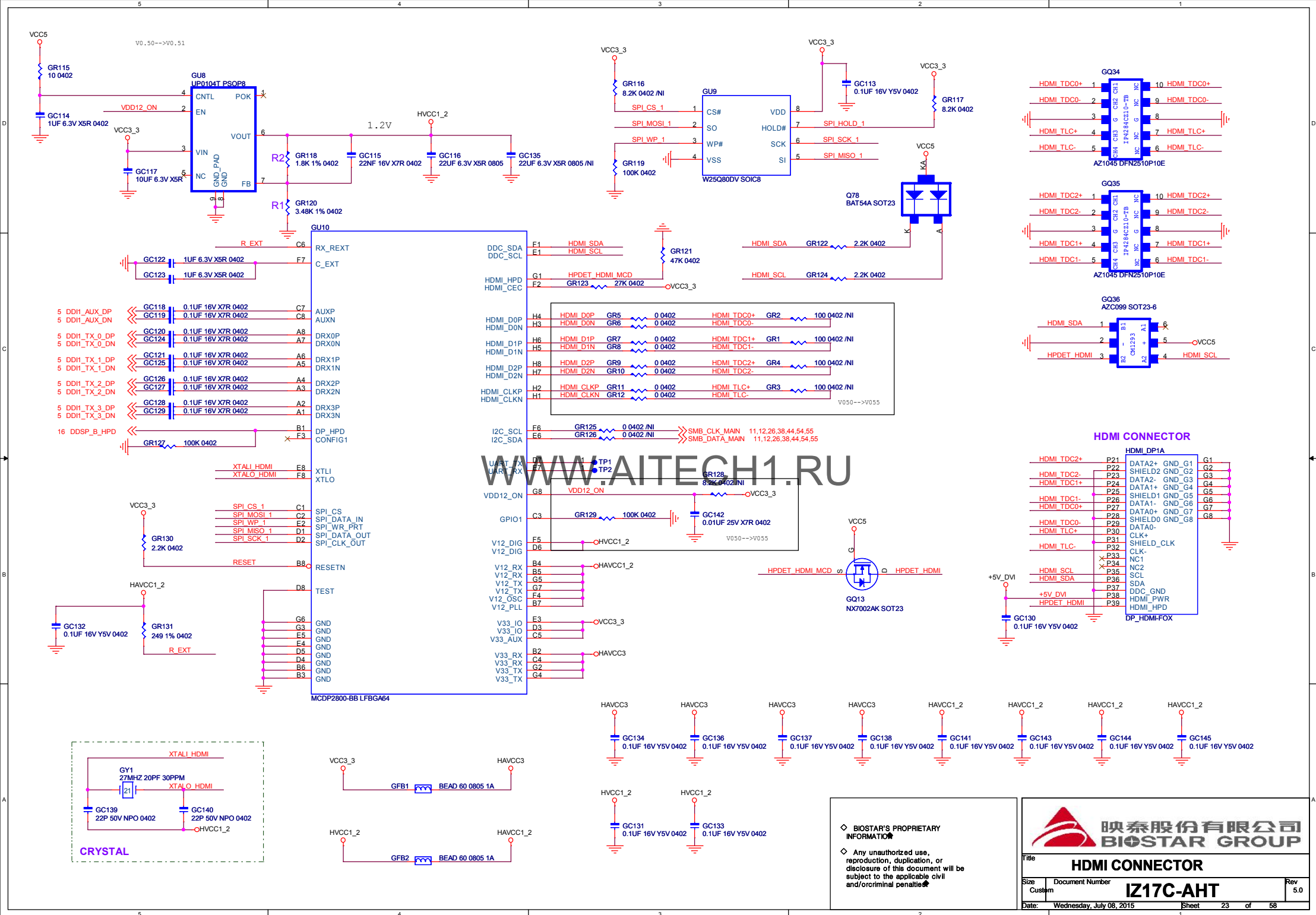
**IZ17C-AHT**

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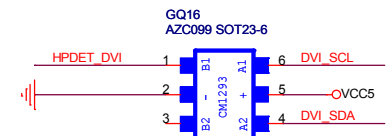
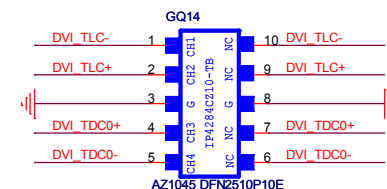
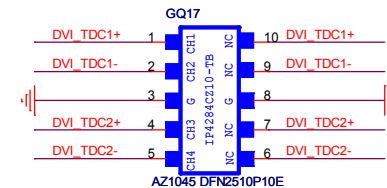
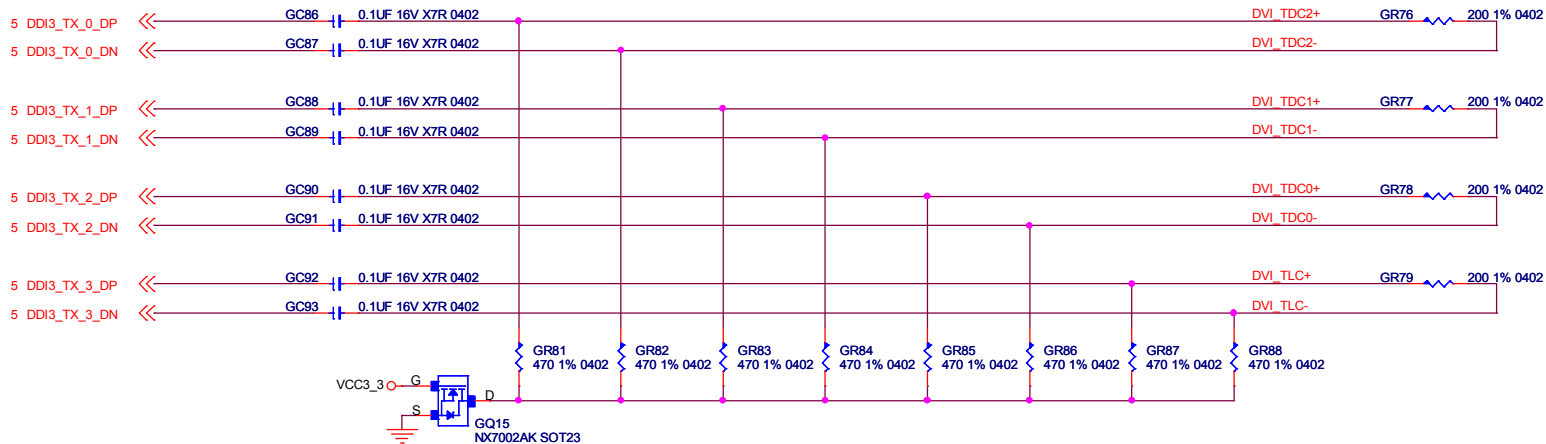
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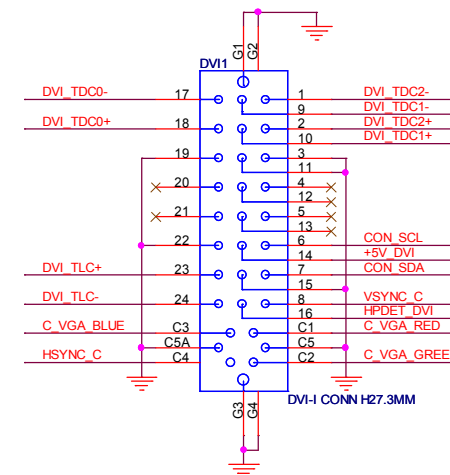




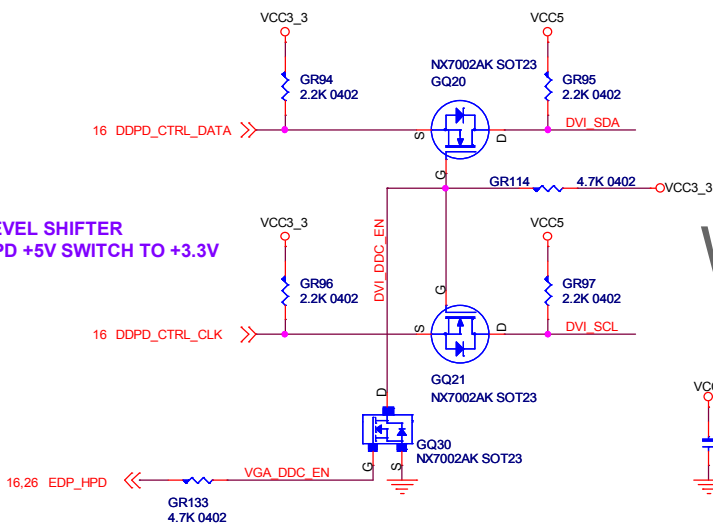




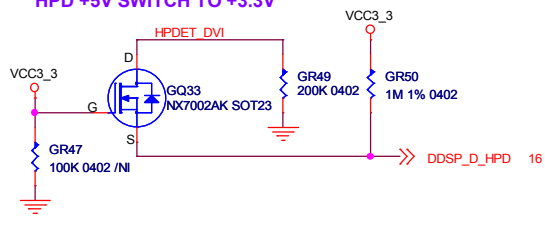
# DVI CONNECTOR



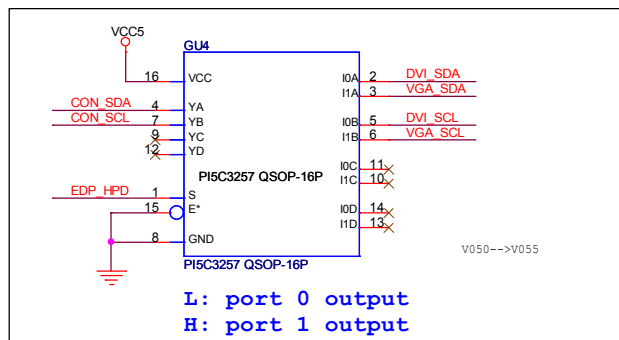
## LEVEL SHIFTER HPD +5V SWITCH TO +3.3V



## LEVEL SHIFTER HPD +5V SWITCH TO +3.3V



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L: port 0 output  
H: port 1 output

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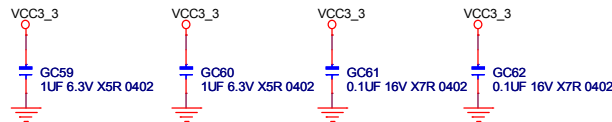
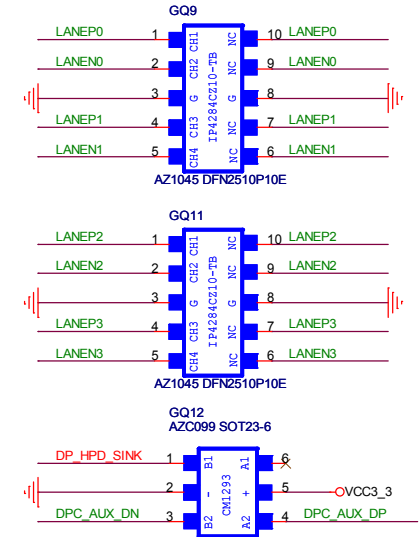
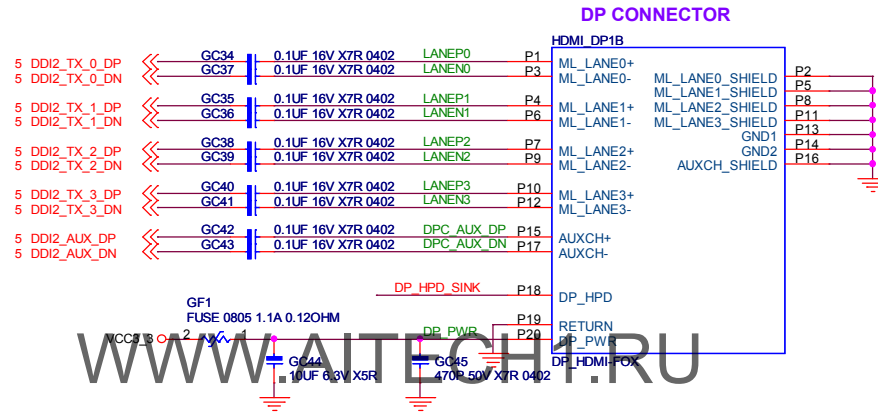
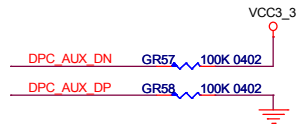
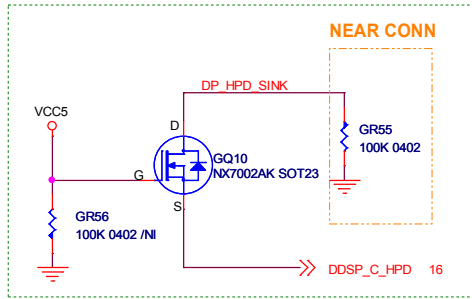
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**DVI CONNECTOR**

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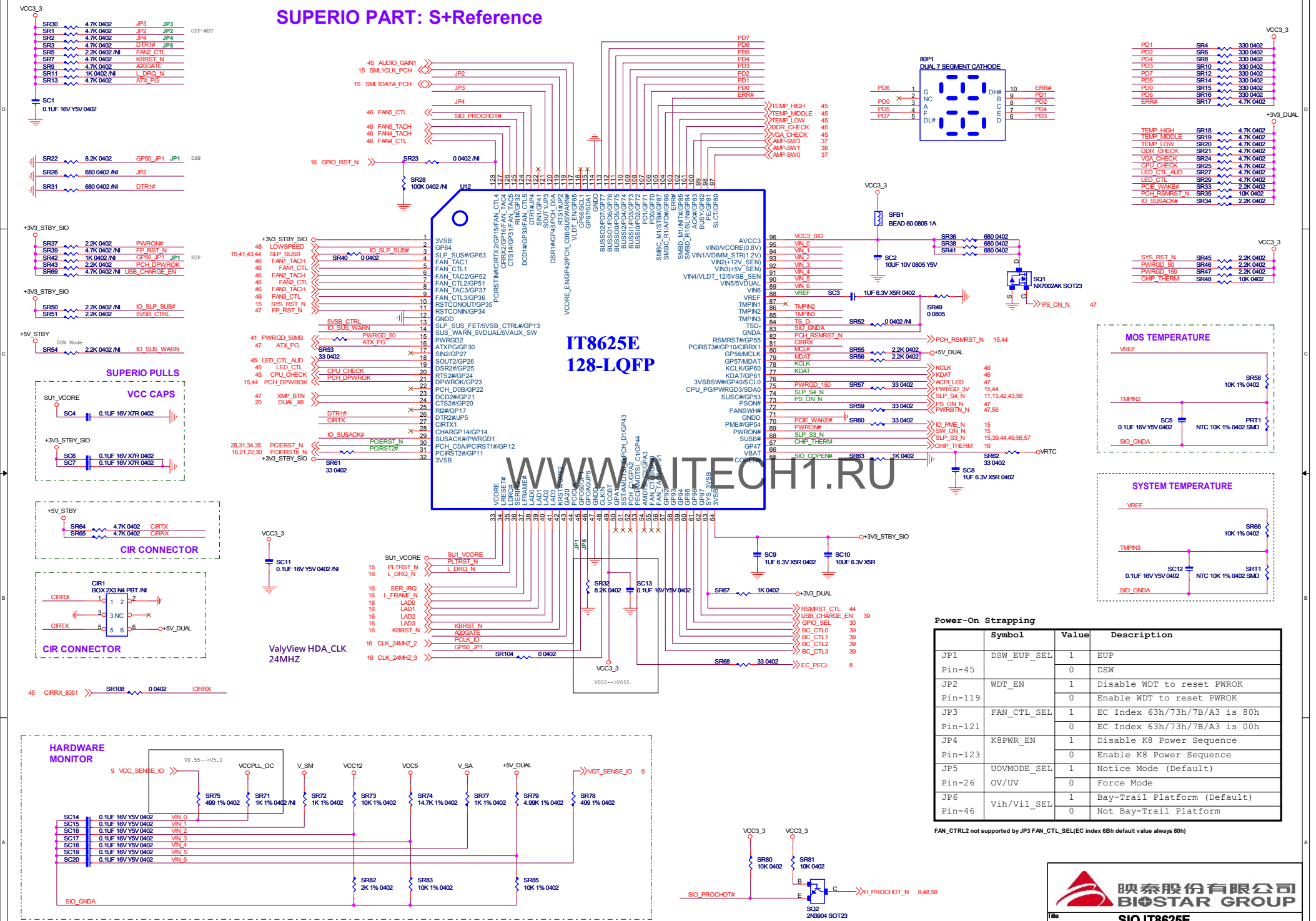
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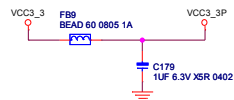
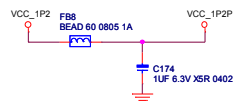
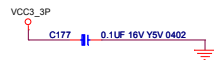
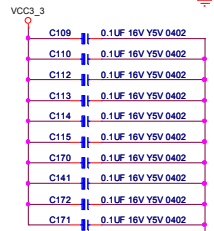
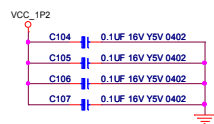




## SUPERIO PART: S+Reference







### CLK100SEL Strapping Set

CLK100SEL	H	L
PCIE CLK	100M +/-N%	100M +/-N%
PCICLK_IN	X	33M
PCICLK0	33M +/-N%	33M

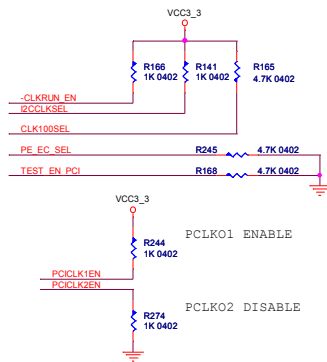
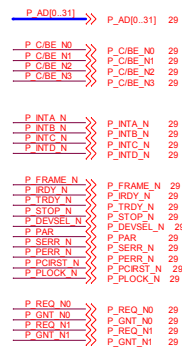
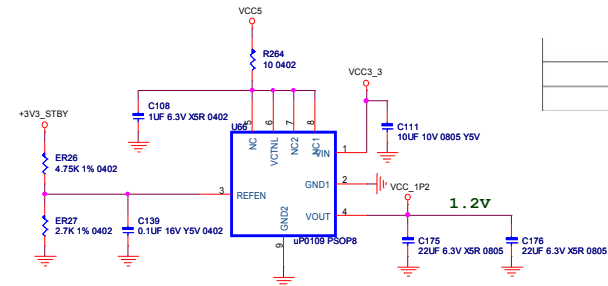
```
PE_EC_SEL-
"H" for Express Card mode
"L" for PCIe Riser Card mode
```

CLK100SEL-  
 "H" for PECLK input only  
 "L" for PECLK & PCICLK input

TEST EN-  
 "H" for Test Mode Enable  
 "L" for Test Mode Disable

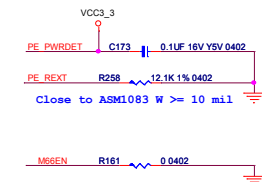
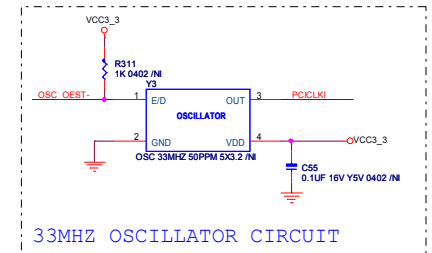
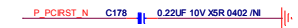
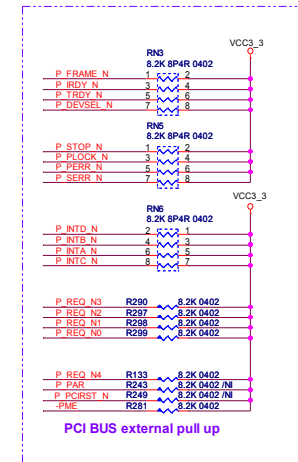
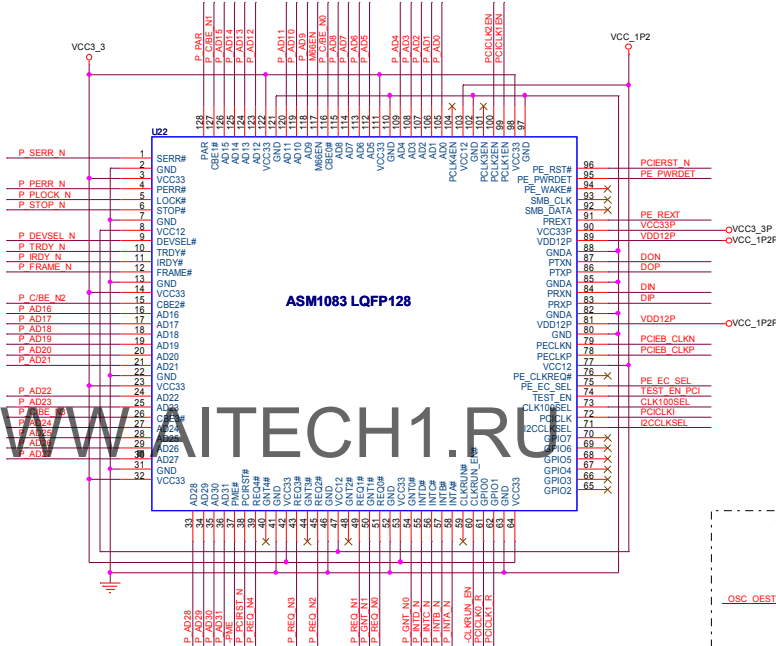
```
-CLKRUN_EN-
"H" for CLKRUN Mode Disable
"L" for CLKRUN Mode Enable
```

I2CCLKSEL-  
 "H" is 135KHz I2CCLK  
 "L" is 67.5KHz I2CCLK



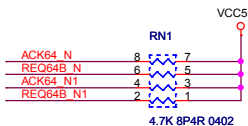
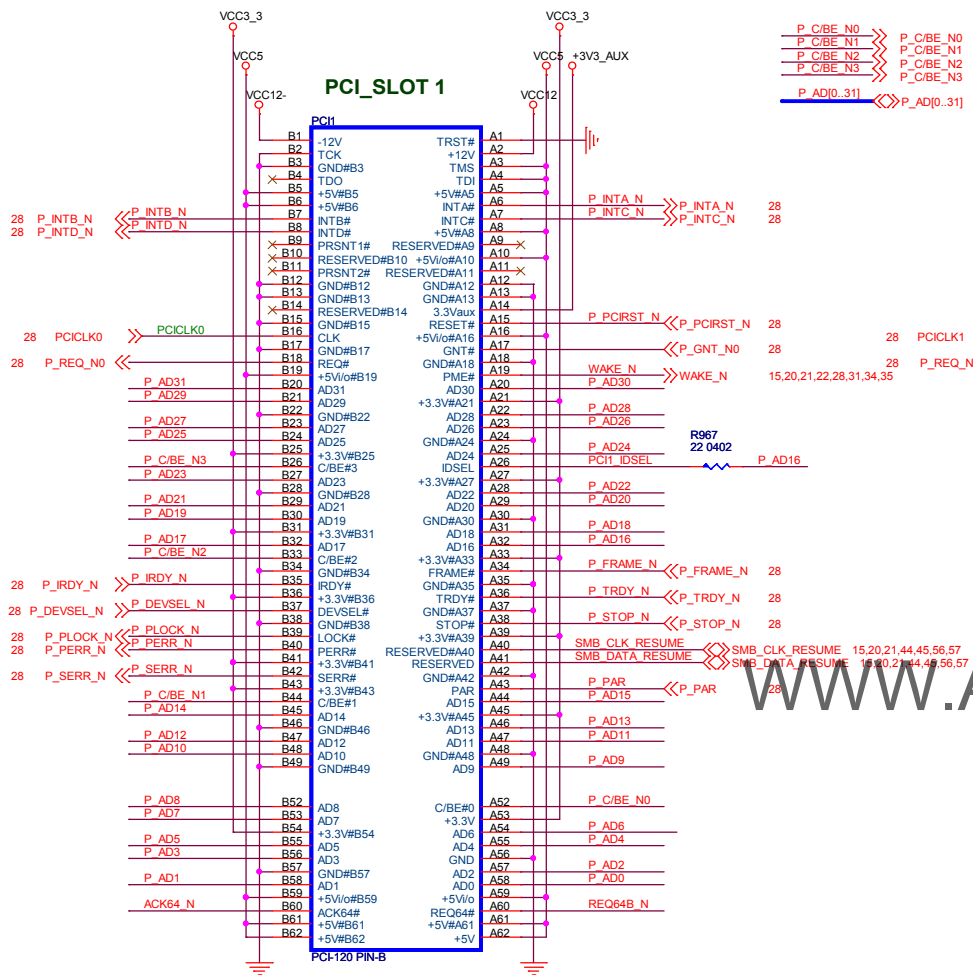
	3.3V	1.2V
Min. Power	70mA	100mA
Max. Power	90mA	115mA

For ASM1083 Pin 101  
and Pin 104 is NC Pin

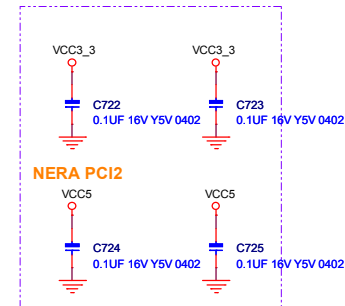
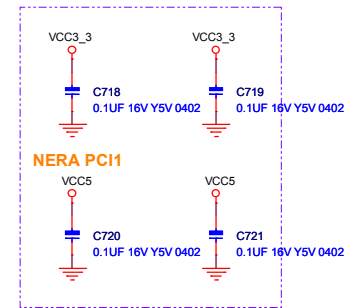
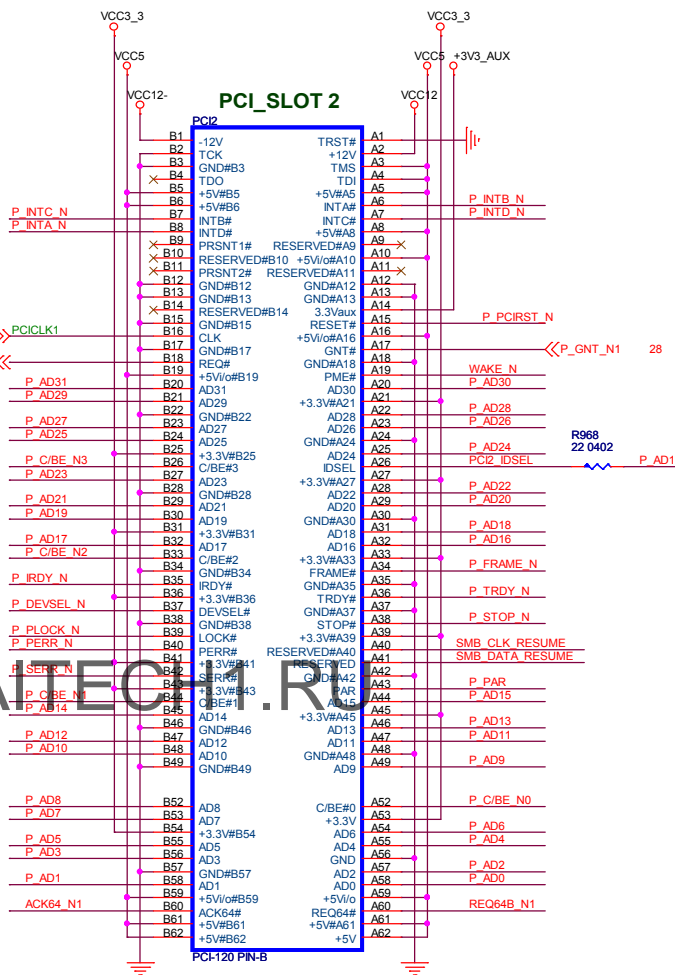




# IDSEL:AD16, INT:ABCD, REQ0 & GNT0, PCICLK0



# IDSEL:AD17, INT:BCDA, REQ1 & GNT1, PCICLK0



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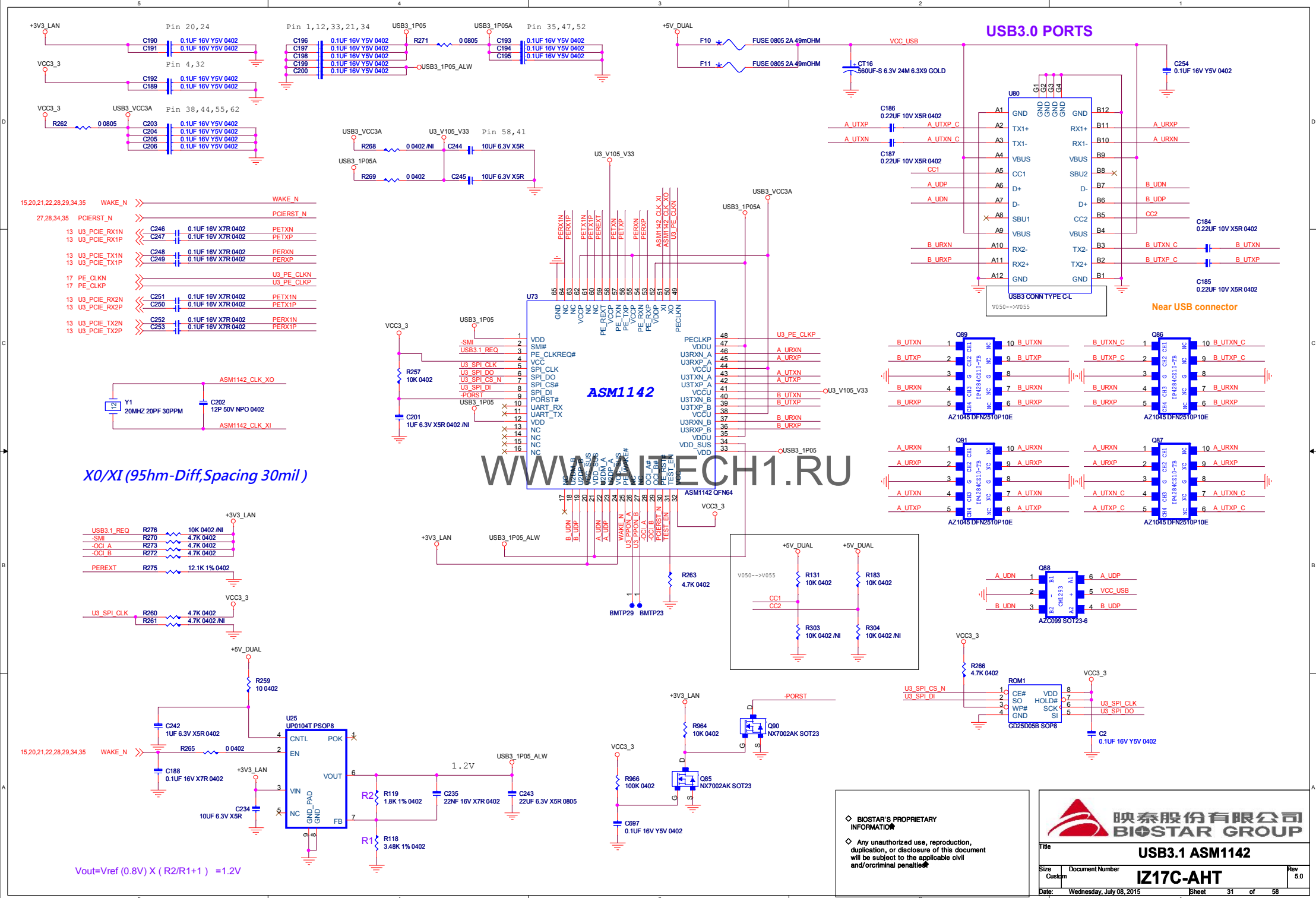


Title		PCI SOLT1&2	
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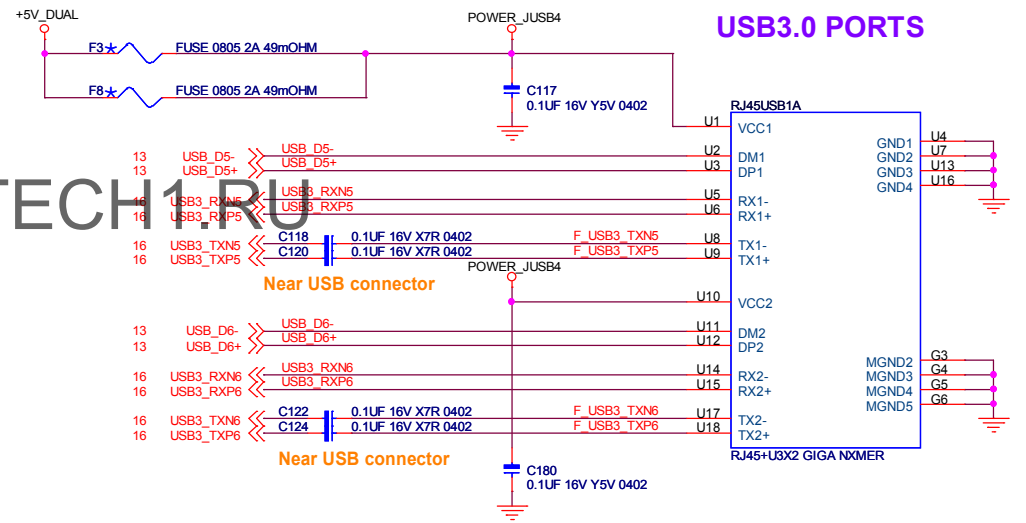
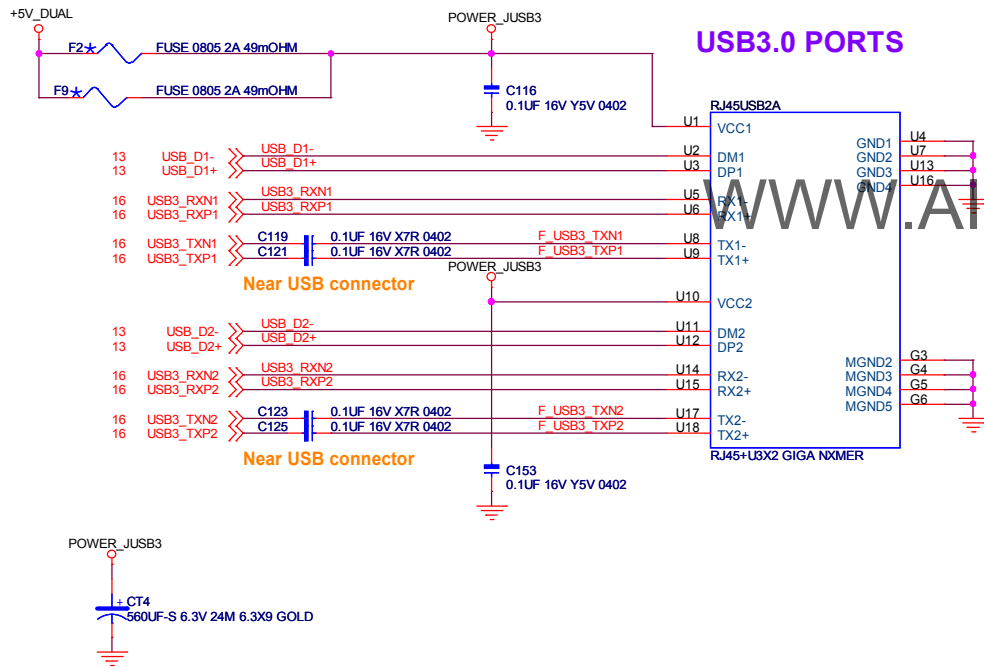
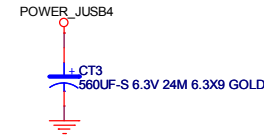
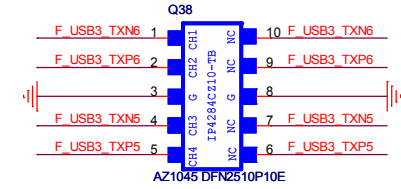
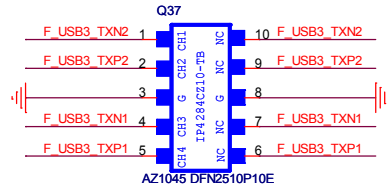
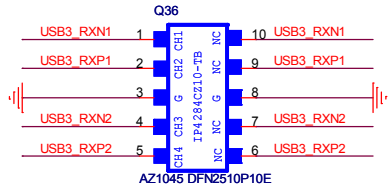
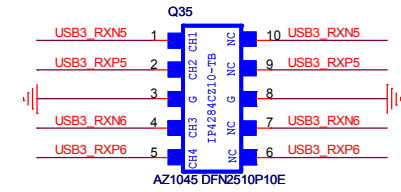
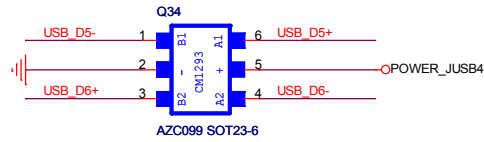
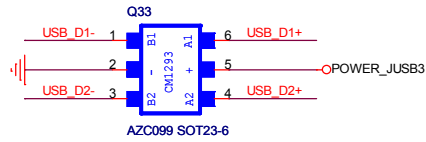












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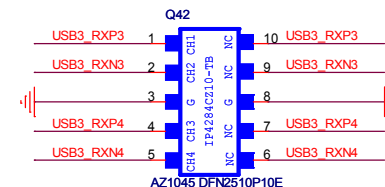
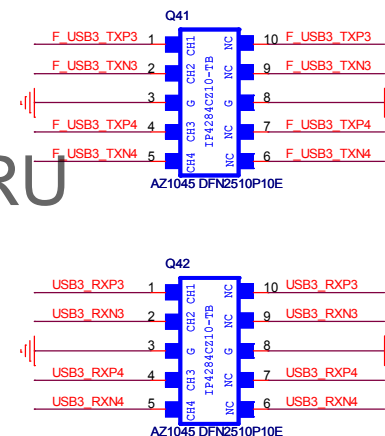
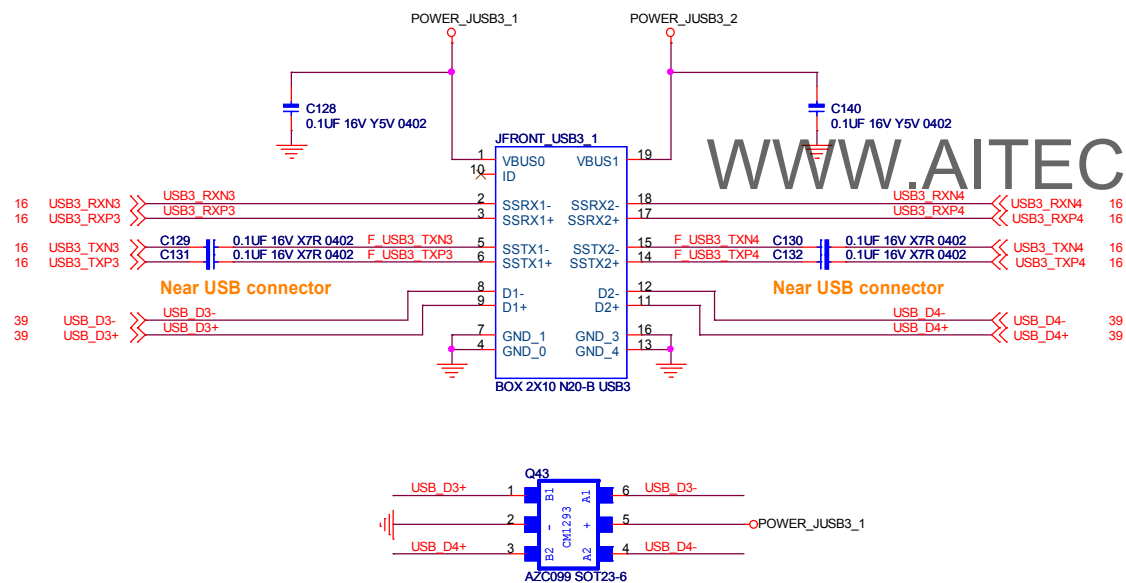
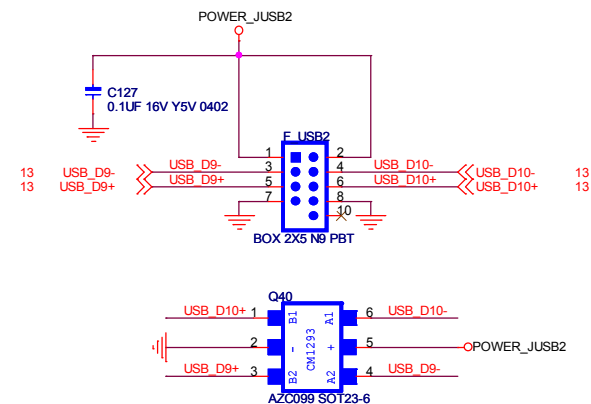
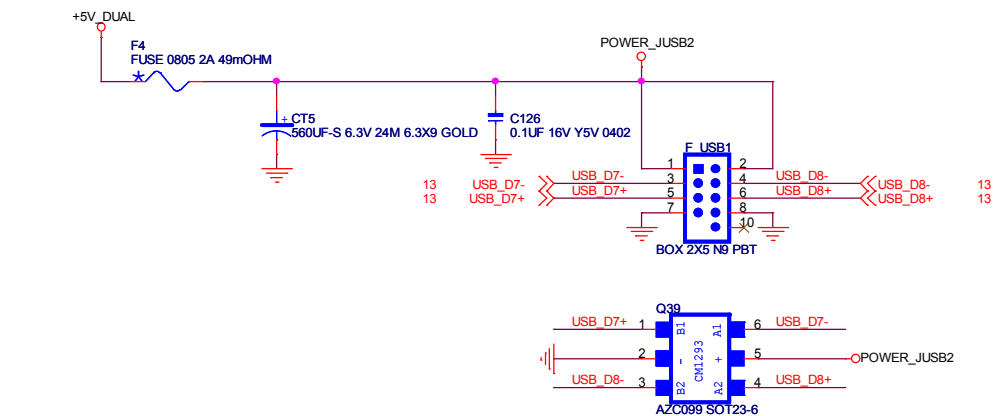
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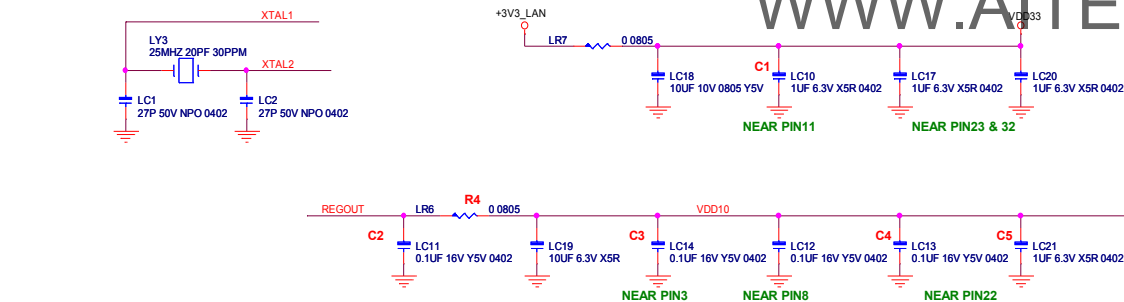
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The diagram illustrates the pin connections for the R45US28 module. The module's pins are connected to a network switch (RJ45+U3X2 GIGA NXMER) and a power source (X5R 0402). The module's pins are labeled as follows:

- Pin 1: LAN\_V\_DAC C
- Pin 2: C MDI0+
- Pin 3: C MDI0-
- Pin 4: C MDI1+
- Pin 5: C MDI2+
- Pin 6: C MDI2-
- Pin 7: C MDI1-
- Pin 8: C MDI3+
- Pin 9: C MDI3-
- Pin 10: GNDIP

The module is connected to a network switch (RJ45+U3X2 GIGA NXMER) via four twisted-pair cables. The cables are labeled as follows:

- D1 LR8 330 0402 LED-LINK-A
- D2 LR9 0 0402 +3V3\_LAN
- D3 LR10 330 0402 LED-100-A
- D4 LR11 0 0402 LED-1000-A

The module is also connected to a power source (X5R 0402) via a resistor (LR16 0 0402). The module's internal components include YLED-, YLED+, QLED+/GLED-, and QLED-/GLED+.

LAN PARTS	R1	R2	R3	R4	C1	C2	C3	C4	C5	C6	RJ45 CONN
RTL8111H	X	O	0ohm	O	O	O	O	O	O	X	LANUSB_GBMA
RTL8107E	X	O	0.01uF	O						O	RJ45USBA CONN

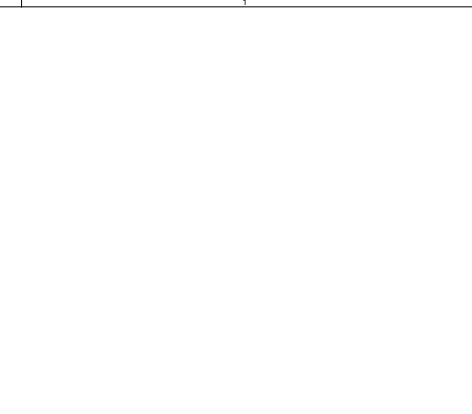
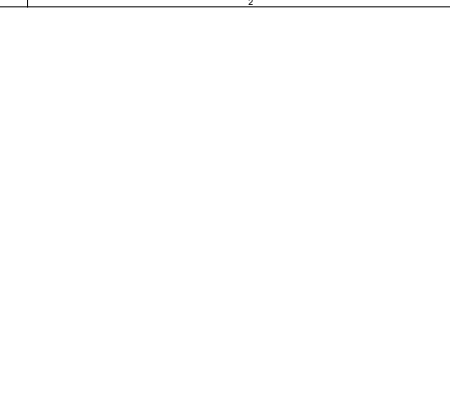
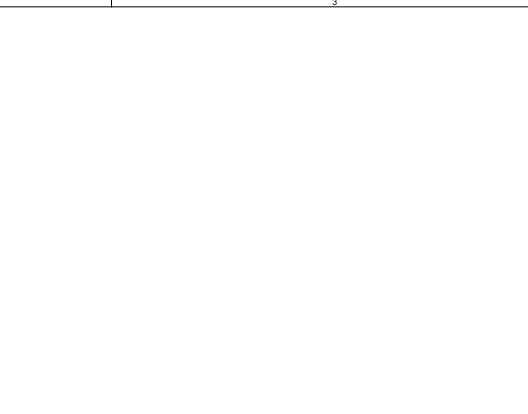
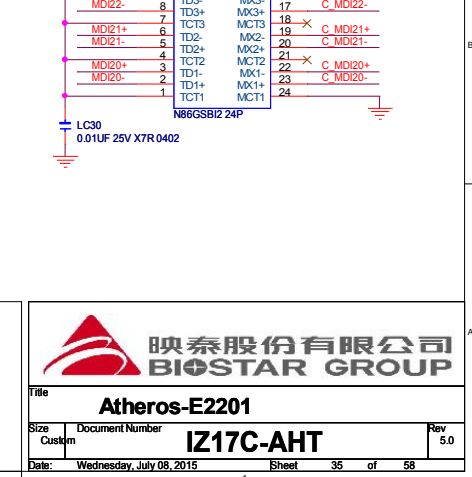
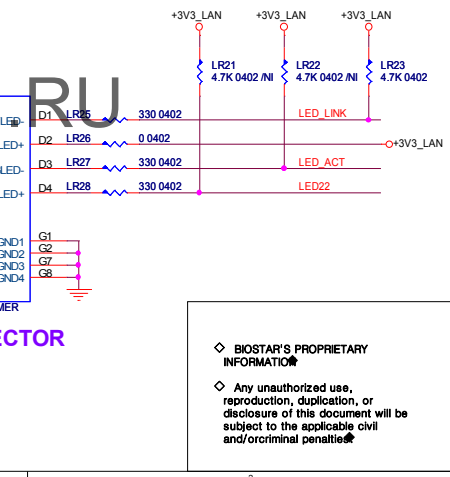
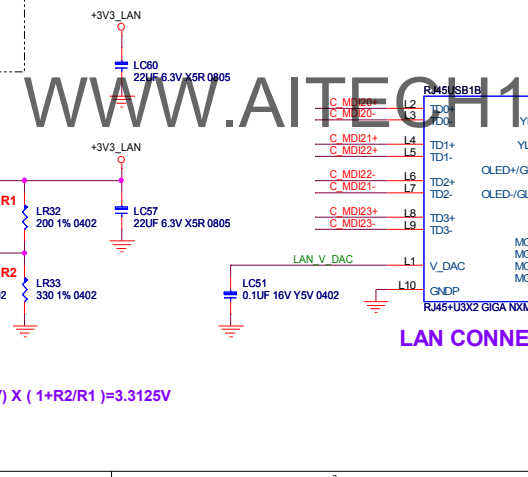
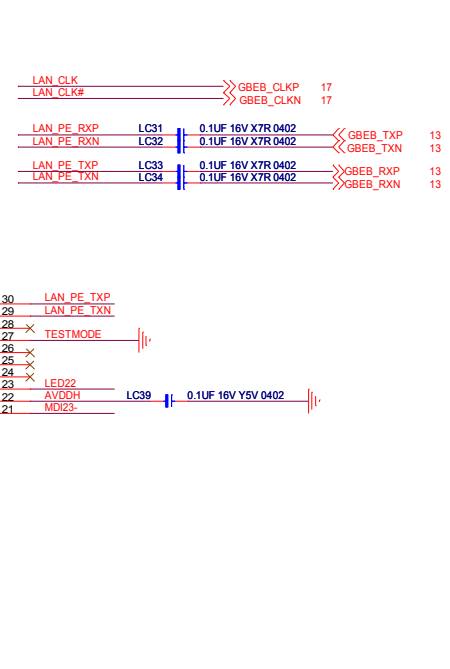
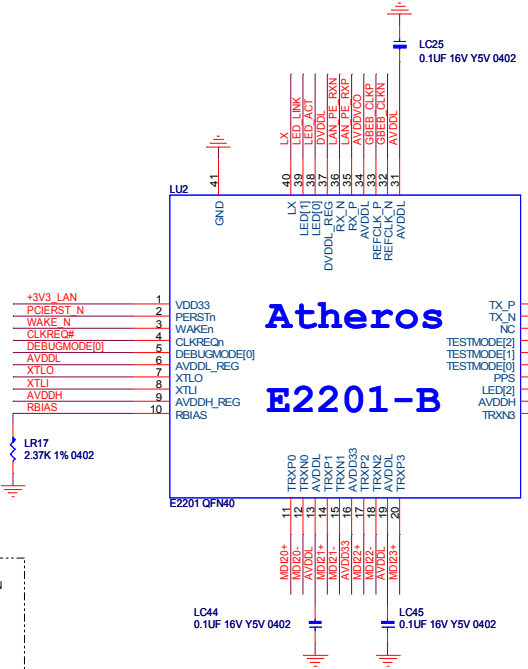
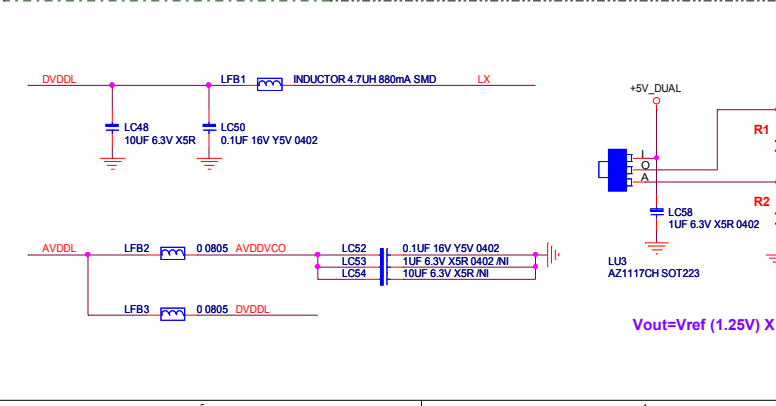
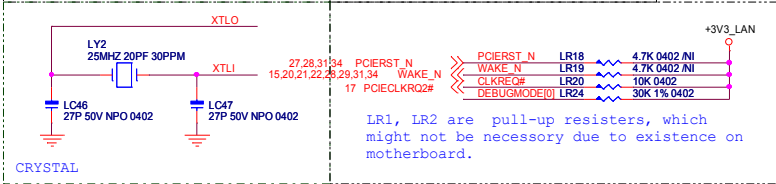
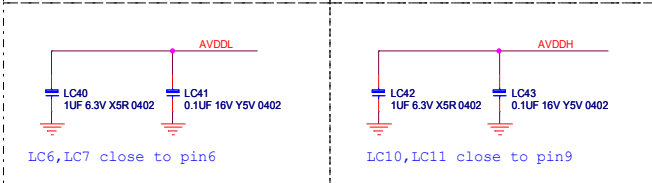
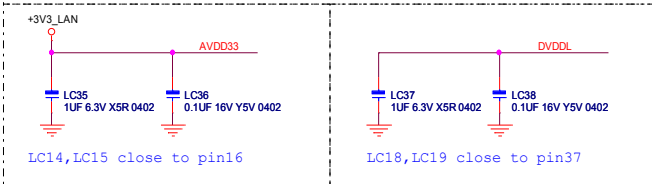
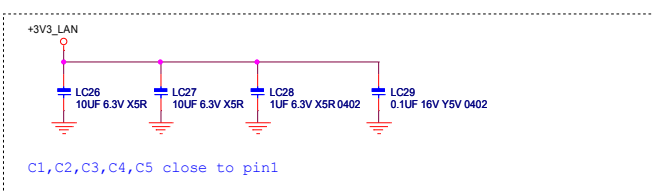
[illegible]

MDI 0+	LR42	0.0402	NI	C MDI0+
MDI 0-	LR43	0.0402	NI	C MDI0-
MDI 1+	LR53	0.0402	NI	C MDI1+
MDI 2-	LR44	0.0402	NI	C MDI1-
MDI 1-	LR54	0.0402	NI	C MDI2+
MDI 2+	LR55	0.0402	NI	C MDI2-
MDI 3+	LR57	0.0402	NI	C MDI3+
MDI 3-	LR56	0.0402	NI	C MDI3-


MDI0+	LR68	0 0402 NI	MDI 0+
MDI0-	LR67	0 0402 NI	MDI 0-
MDI1+	LR61	0 0402 NI	MDI 1+
MDI1-	LR62	0 0402 NI	MDI 1-
MDI2+	LR64	0 0402 NI	MDI 2+
MDI2-	LR63	0 0402 NI	MDI 2-
MDI3+	LR65	0 0402 NI	MDI 3+
MDI3-	LR66	0 0402 NI	MDI 3-







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Atheros-E2201

Size

Custom

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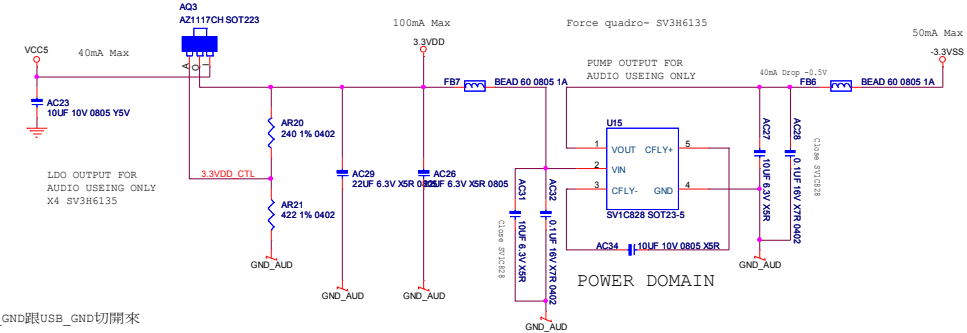
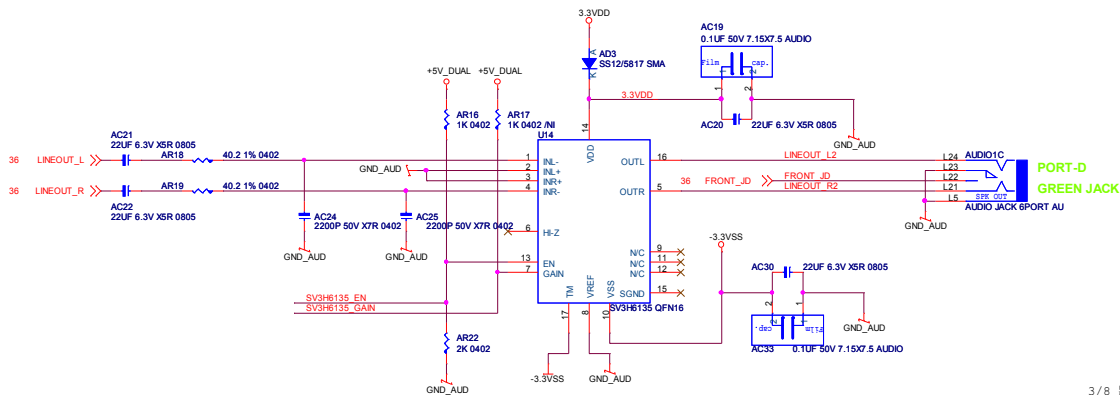
5.0

$V_{out} = V_{ref} (1.25V) \times (1 + R2/R1) = 3.3125V$

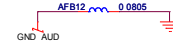




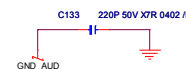




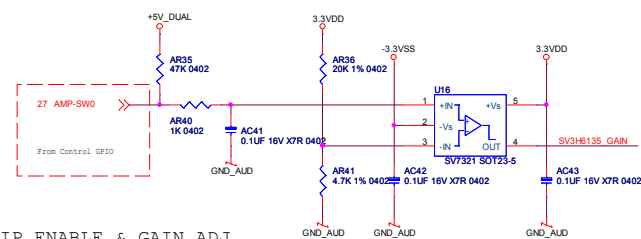
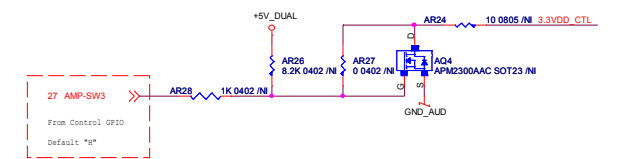
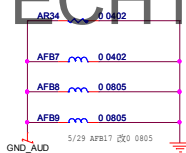
3/8 將AUD\_GND跟USB\_GND切開來



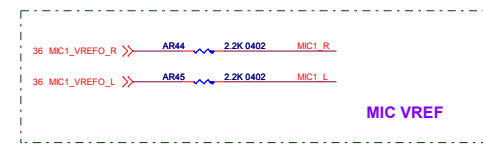
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EMI

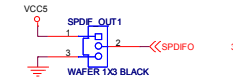


CHIP ENABLE & GAIN ADJ  
LEVEL SHIFT

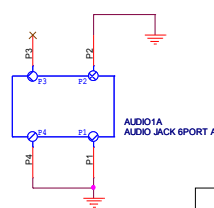


REAR AUDIO JACKS

SPDIF OUT



SPDIF CONNECTOR & JUMPER



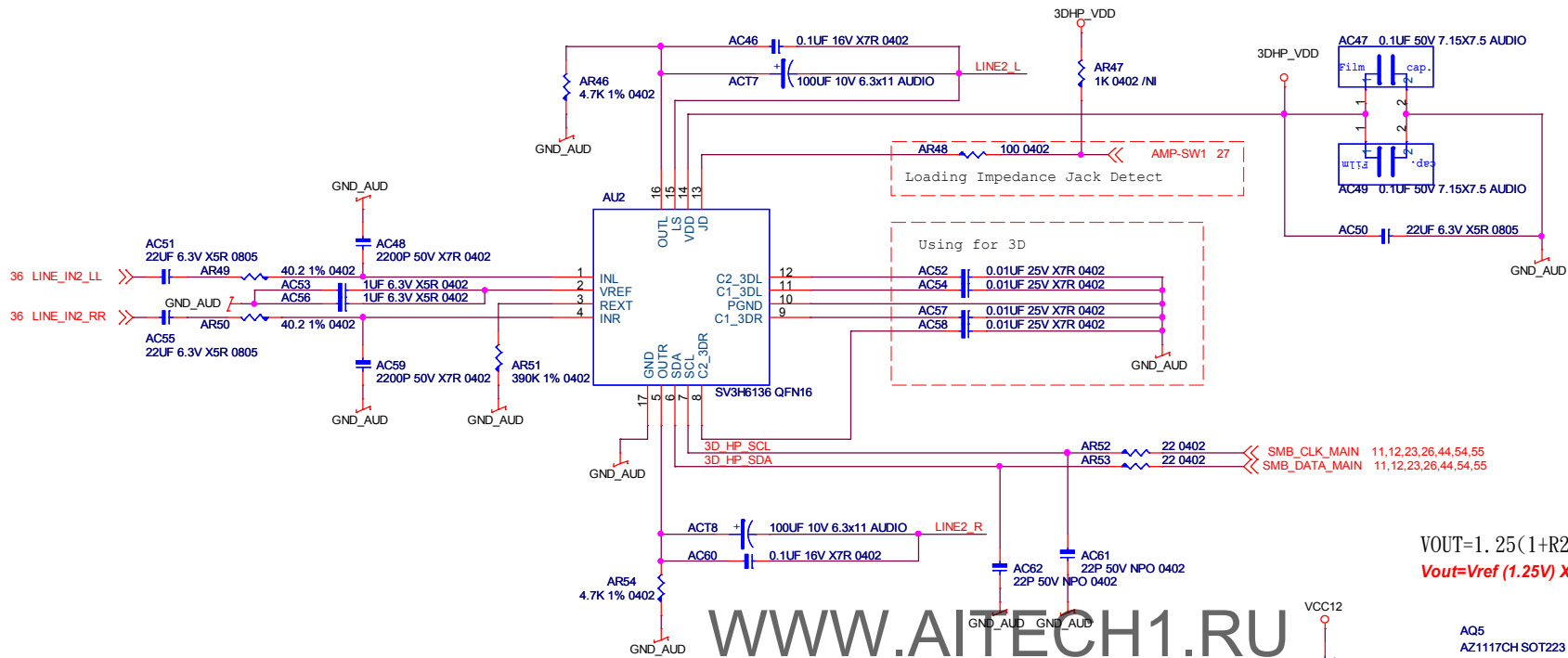
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AUDIO CONNECTOR  
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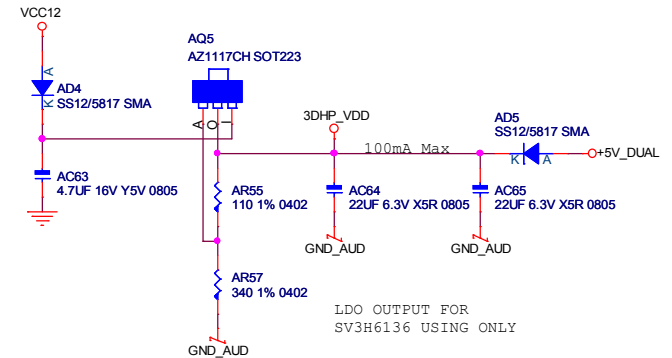
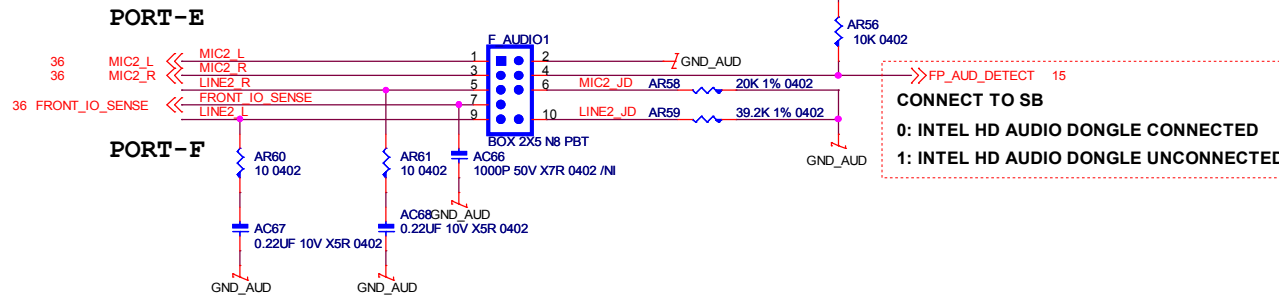




$$V_{OUT} = 1.25 \left( 1 + \frac{R_2}{R_1} \right)$$

$$V_{out} = V_{ref} (1.25V) \times \left( 1 + \frac{R_2}{R_1} \right) = 5.11V$$

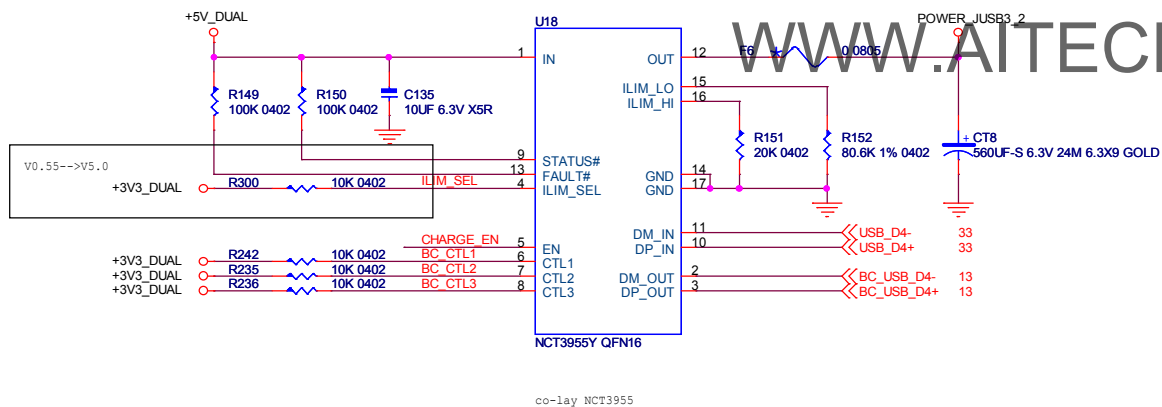
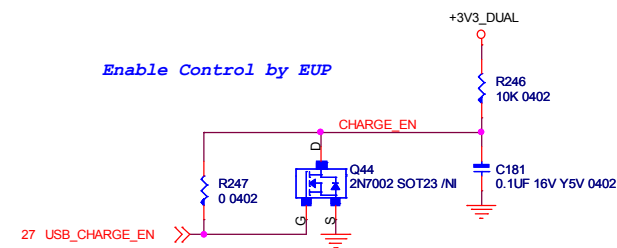
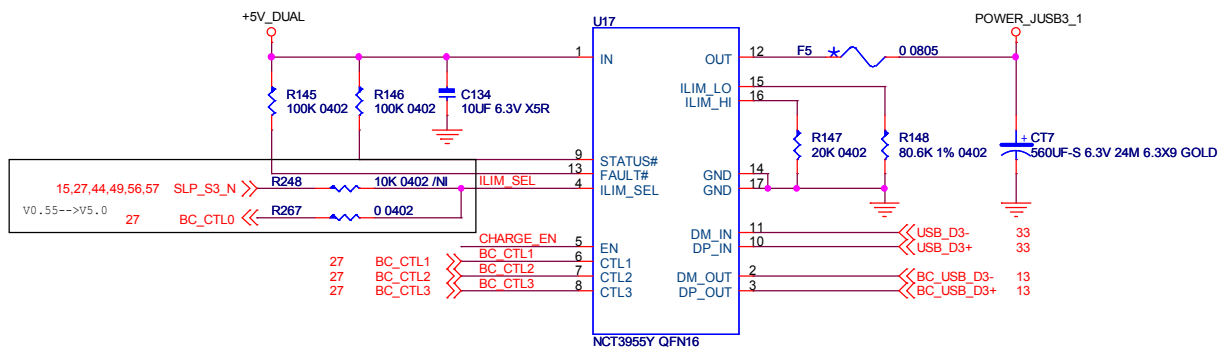
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LDO OUTPUT FOR  
SV3H6136 USING ONLY

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AUDIO HEADER		
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CTL1	CTL2	CTL3	ILIM_SEL	Mode	Current Limit Setting	STATUS# Output (Active Low)	Comment
1	1	1	0 (S3/S5)	SDP	ILM_LO	OFF	
1	1	1	1 (S0)	CDP	ILM_HI	CDP load present	Data Lines Connected and Port Power Mgt. Function Active

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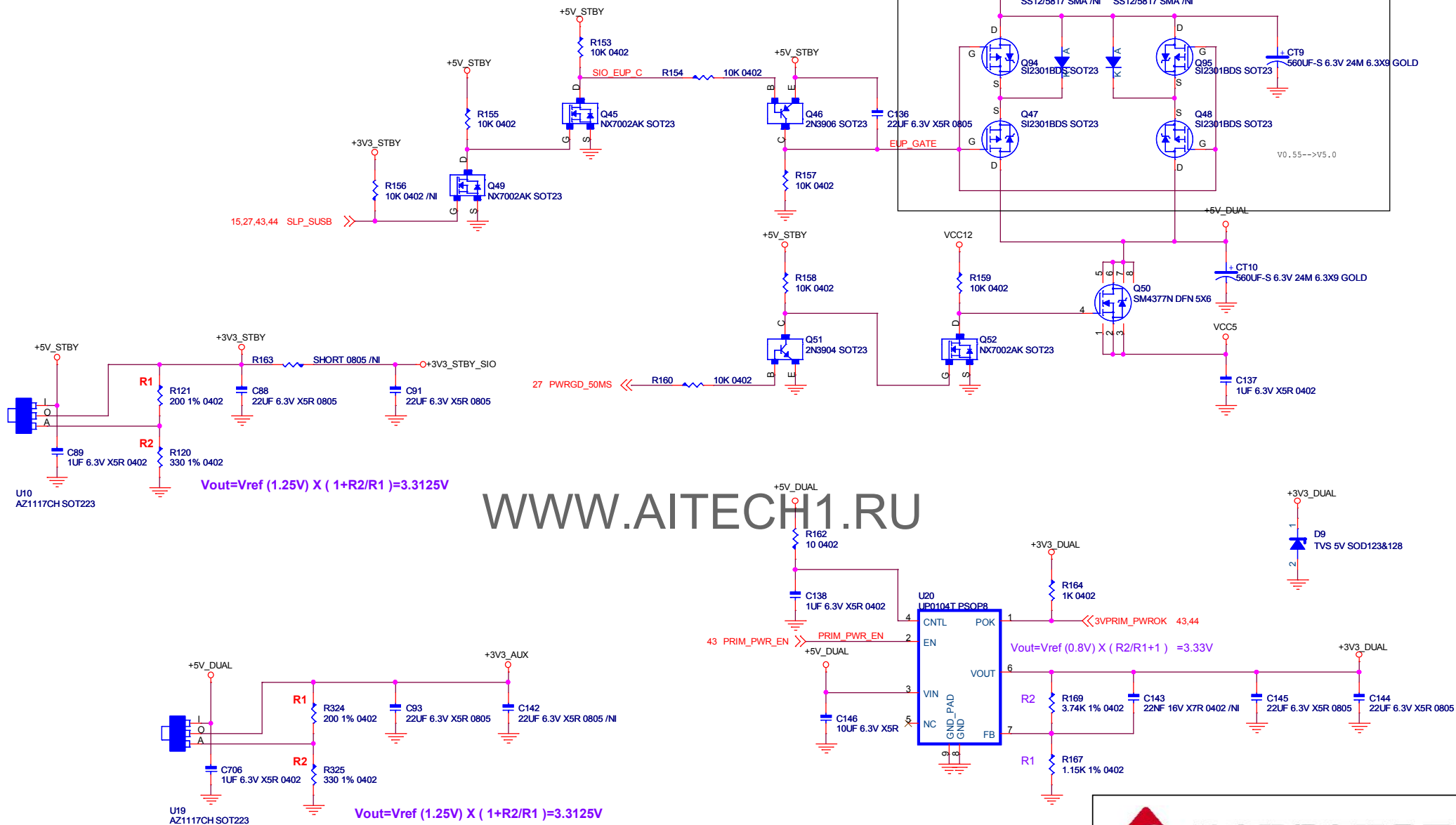


Title		
Charging NCT3955Y		
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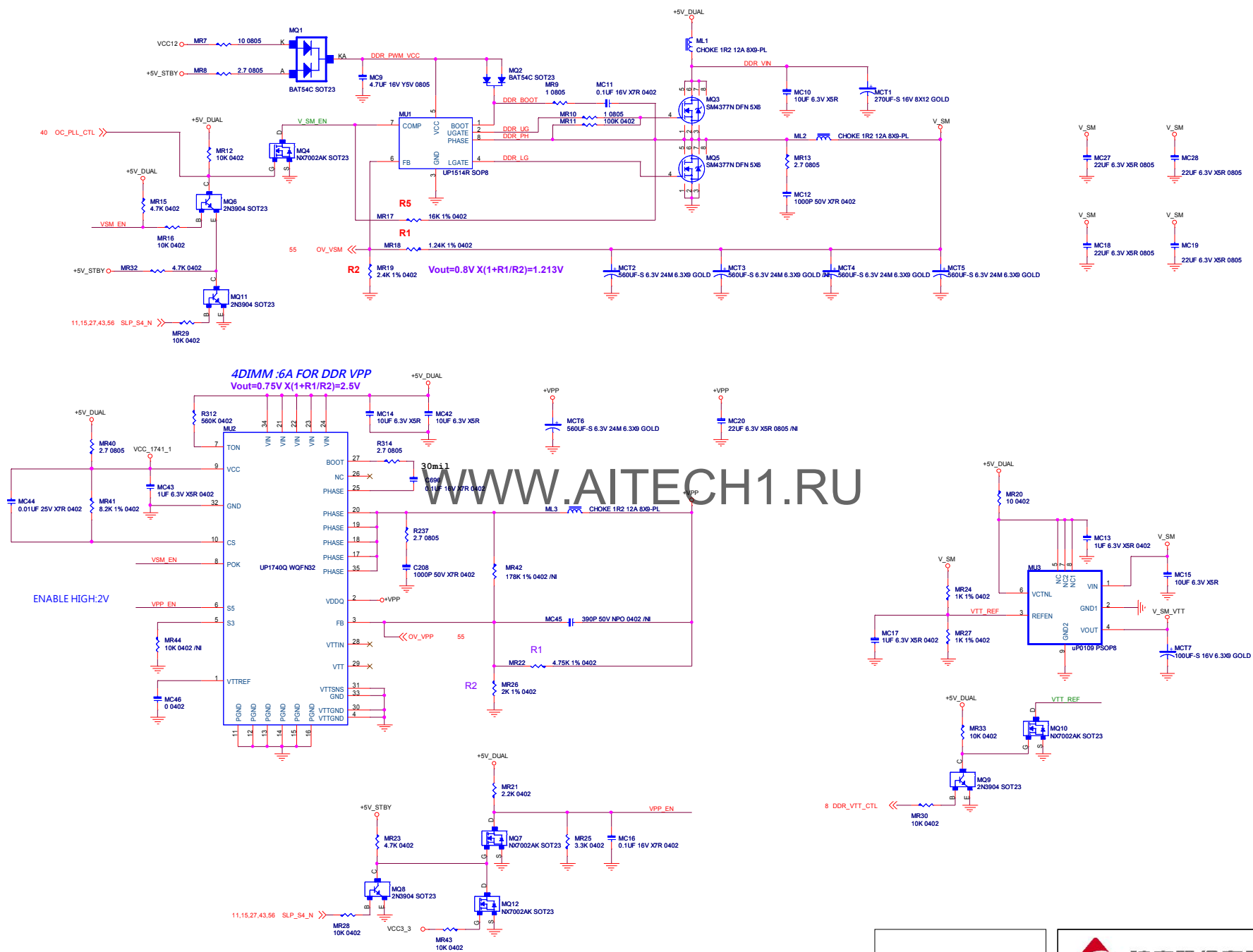




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MEMORY PART:M+Reference



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File  
**MEMORY DC-DC**  
**IZ17C-AHT**

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D

D

C

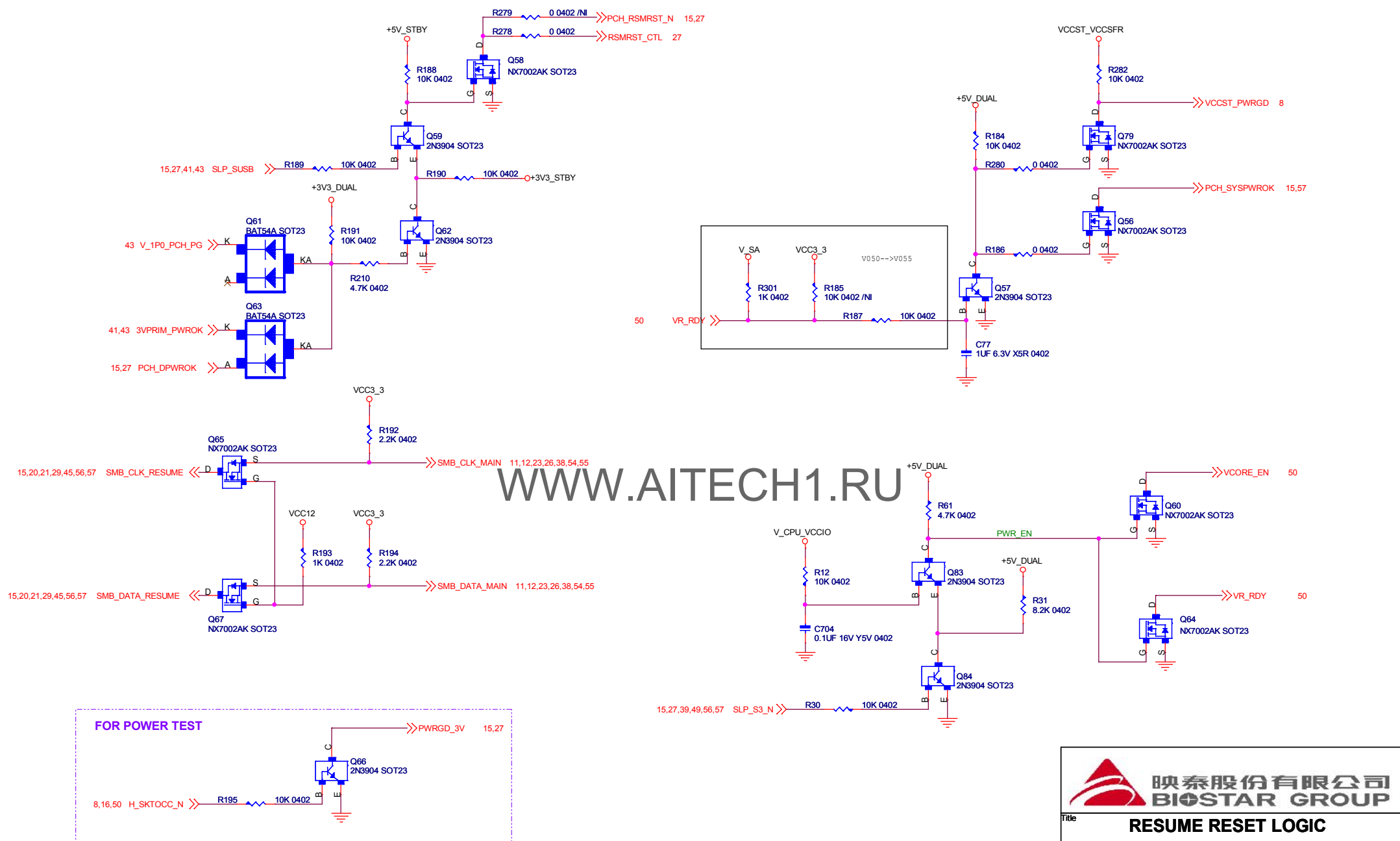
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B

B

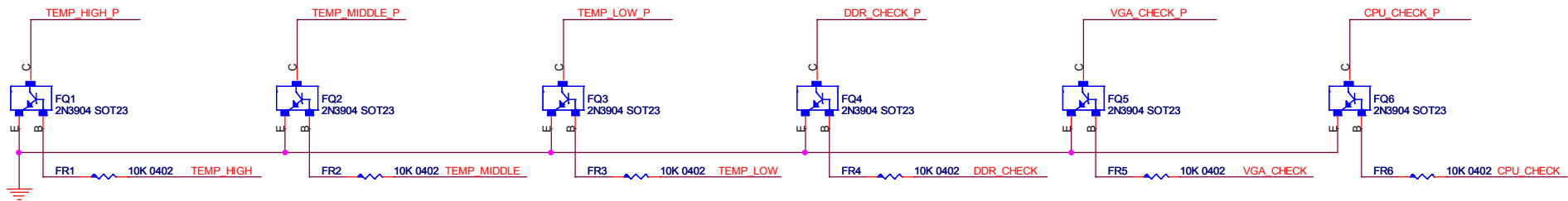
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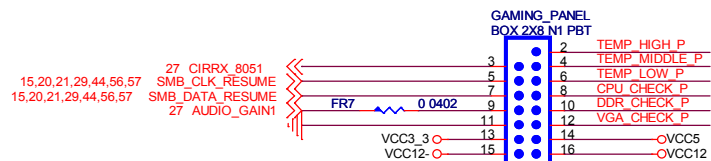
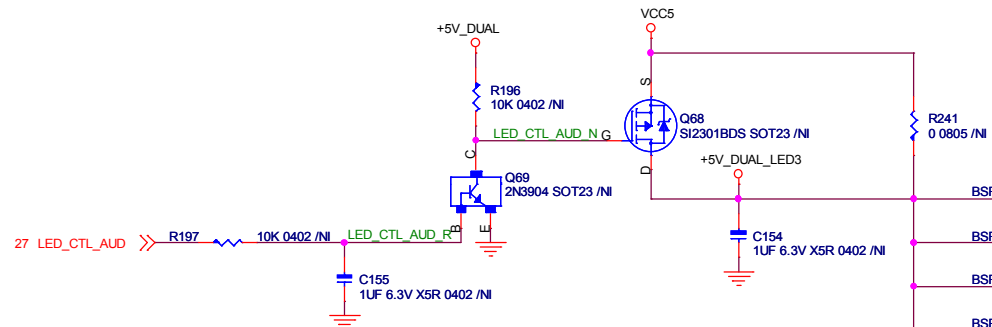


Title			RESUME RESET LOGIC		
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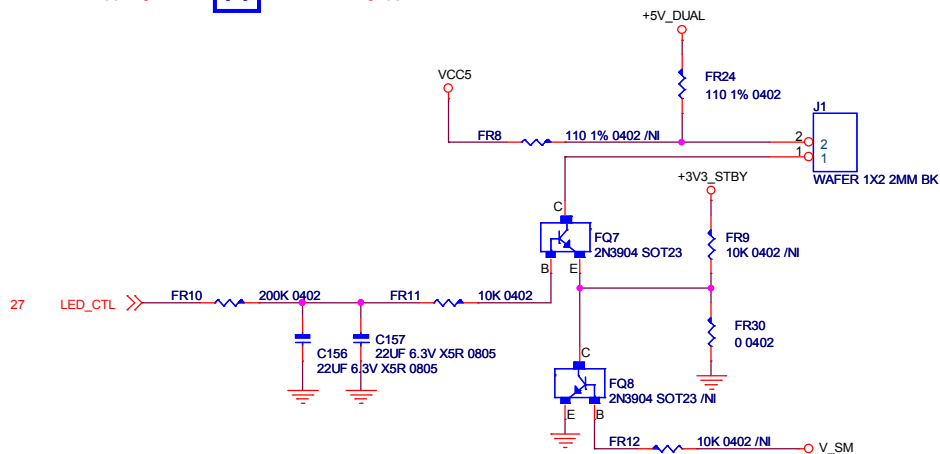




27 CPU\_CHECK << CPU CHECK  
 27 TEMP\_HIGH << TEMP HIGH  
 27 TEMP\_MIDDLE << TEMP MIDDLE  
 27 TEMP\_LOW << TEMP LOW  
 27 DDR\_CHECK << DDR CHECK  
 27 VGA\_CHECK << VGA CHECK



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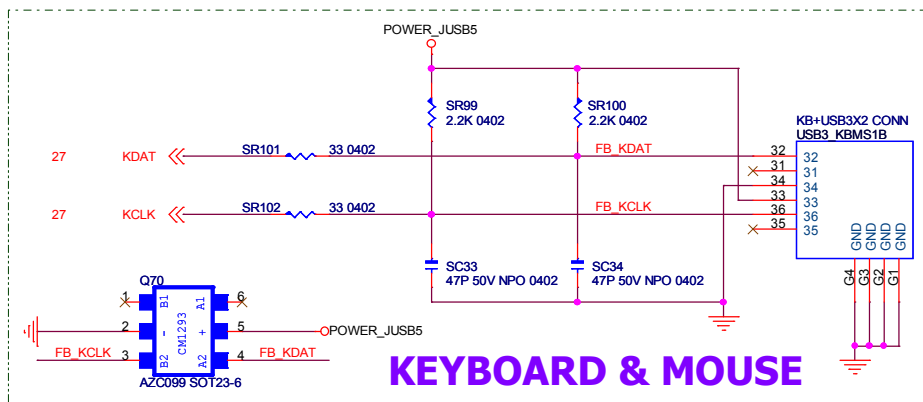
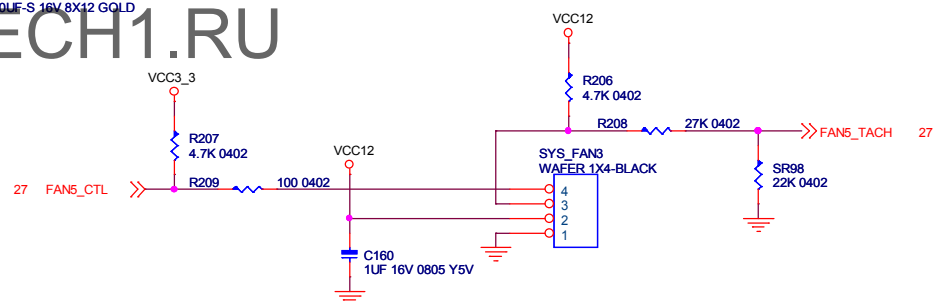
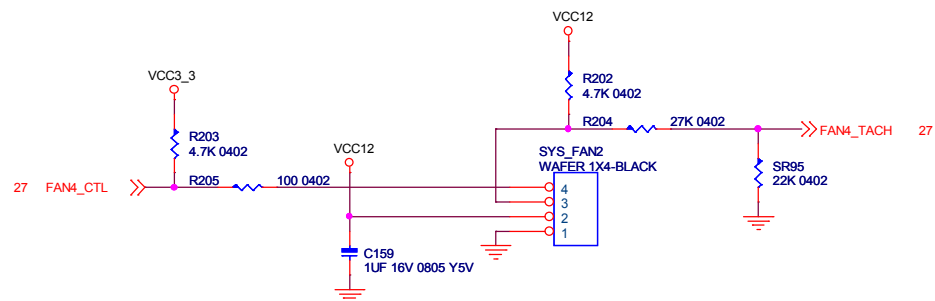
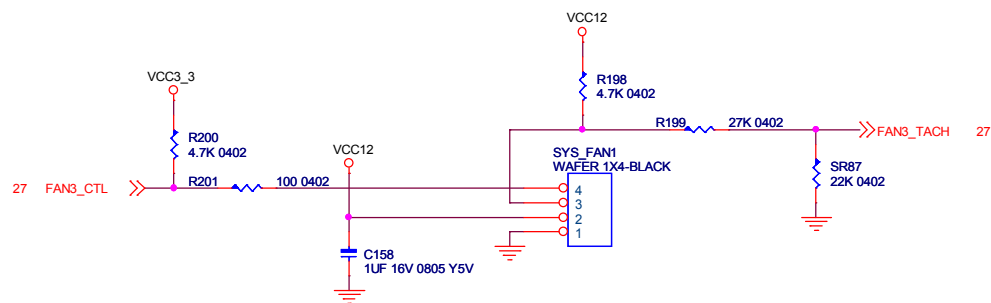
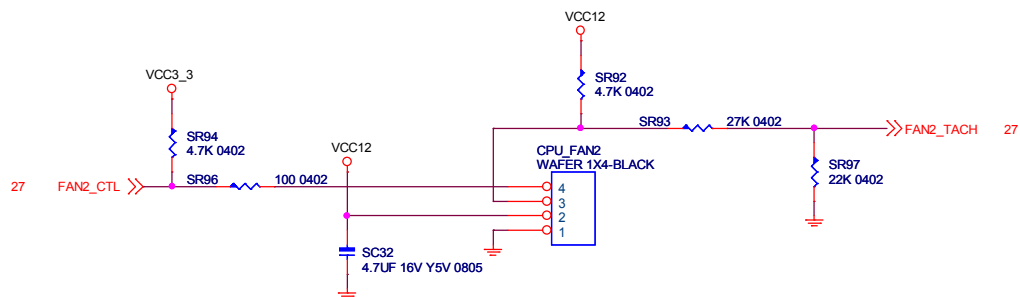
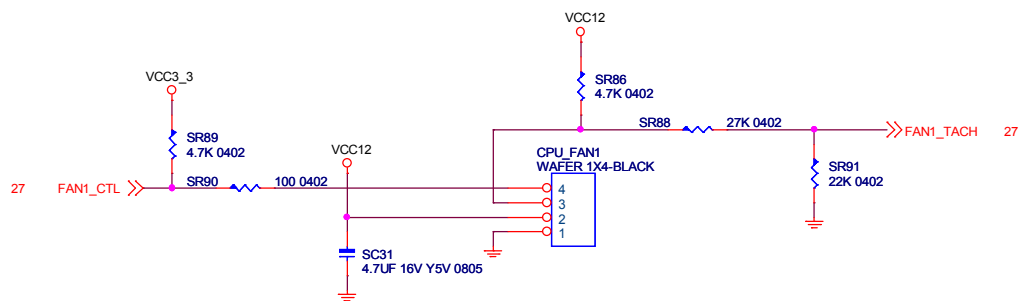
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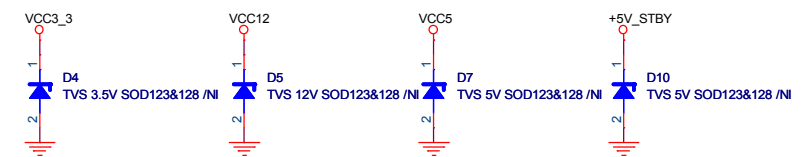
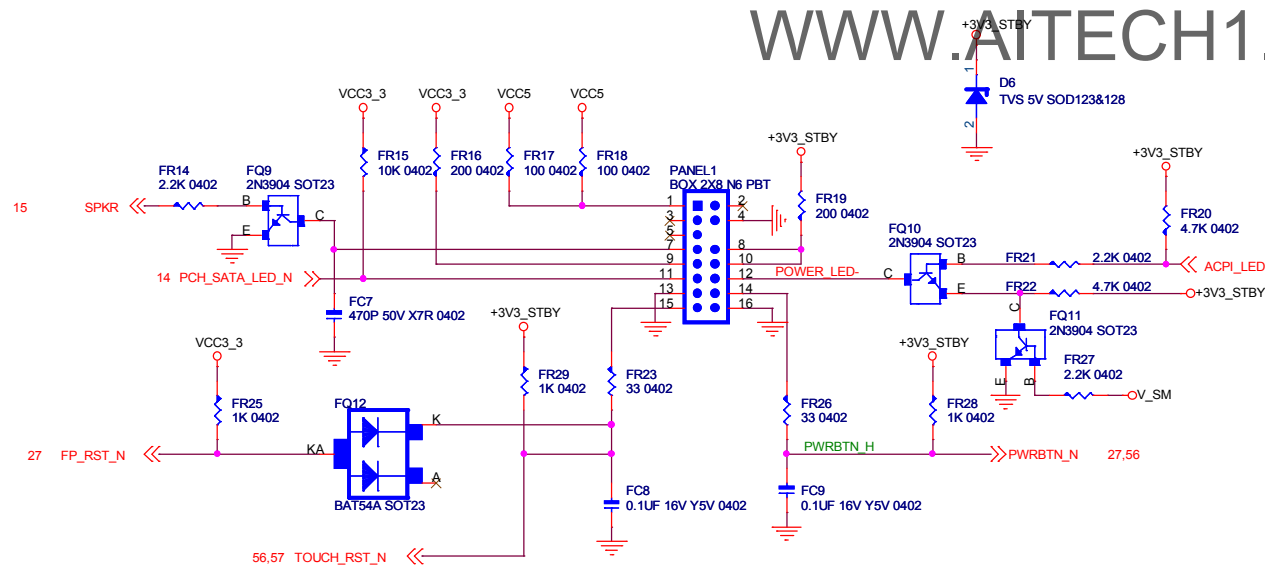
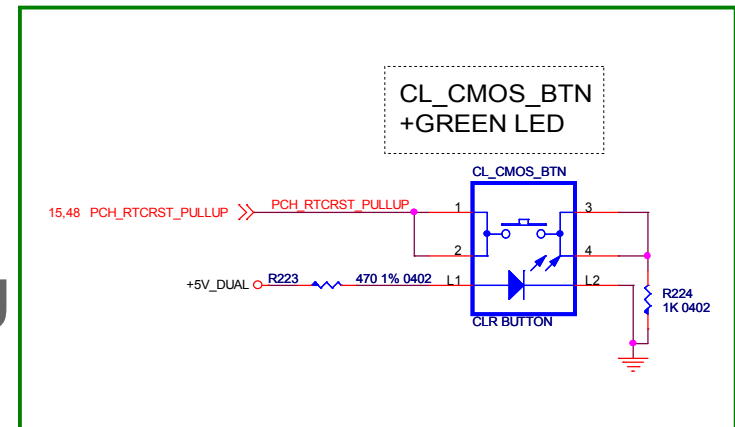
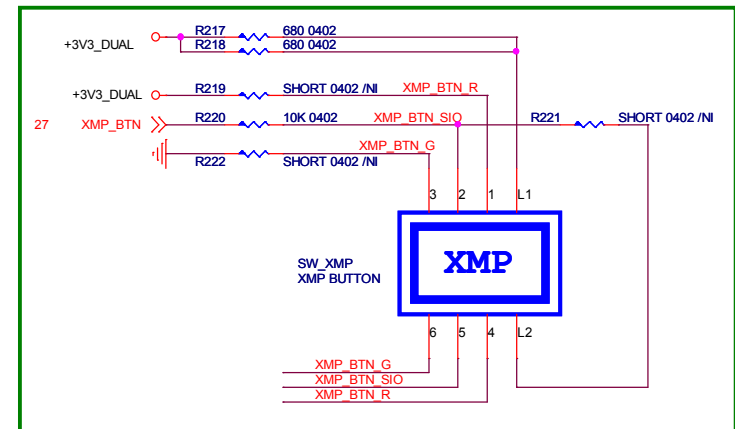
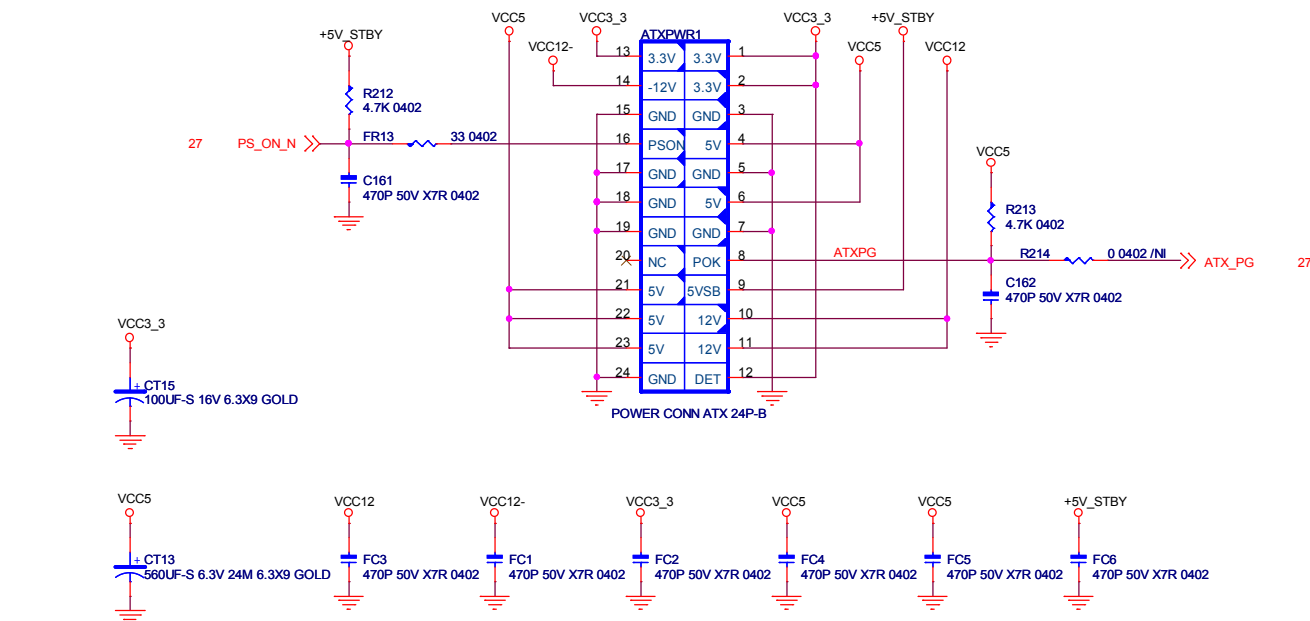


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## FP PART: F+Reference



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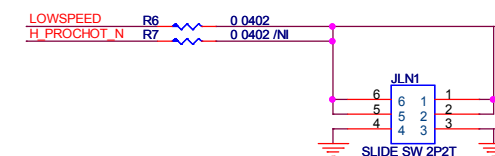
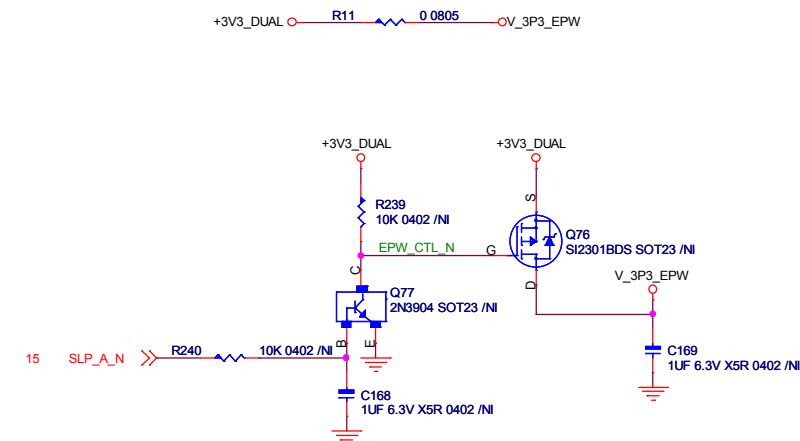
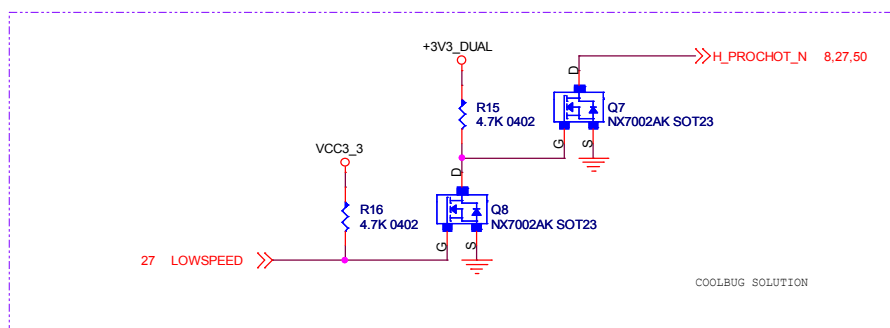
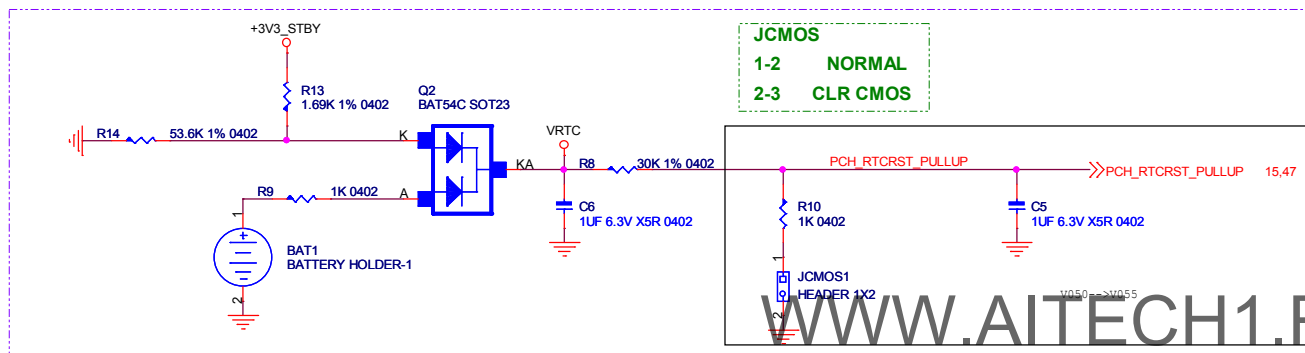
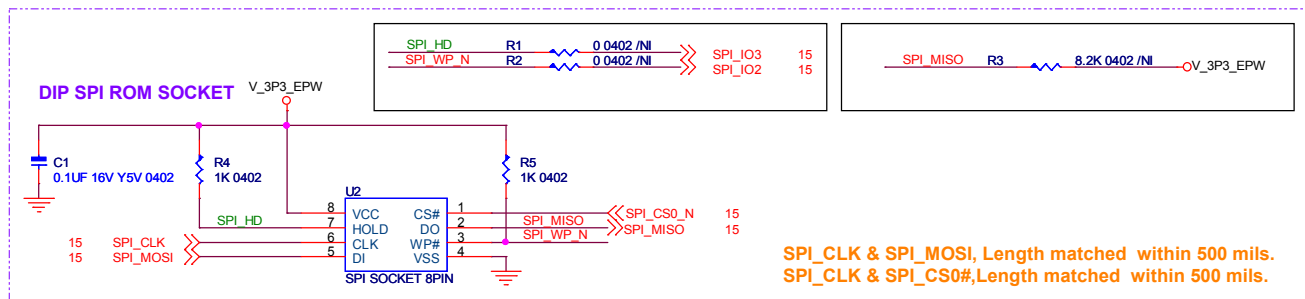


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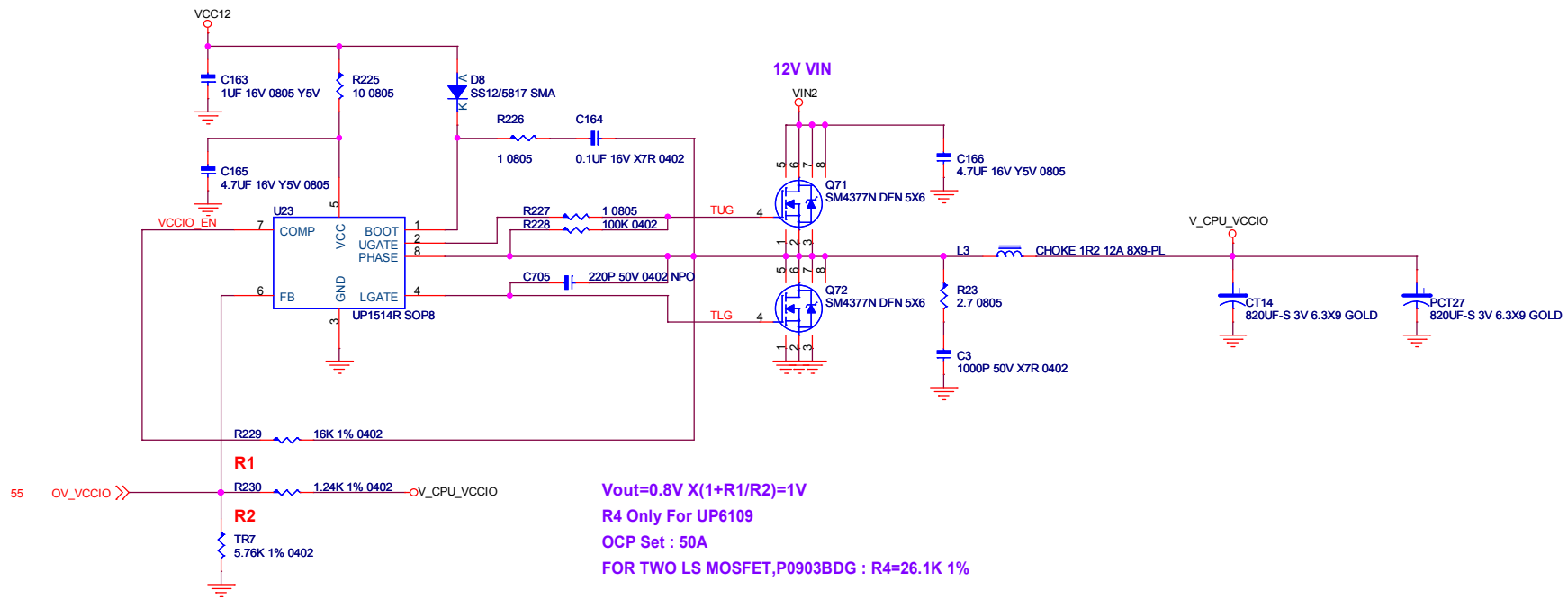
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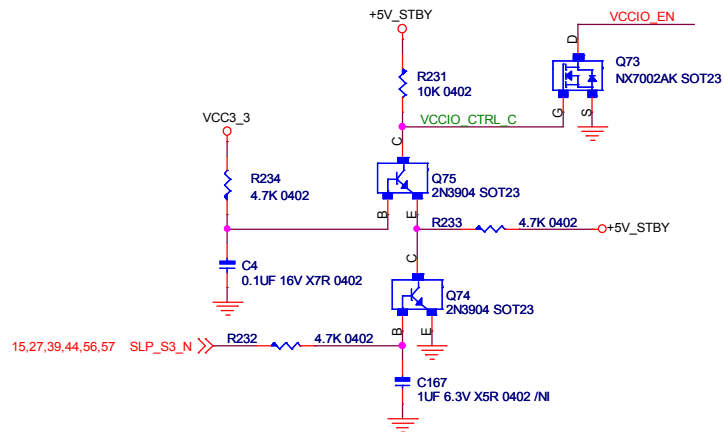


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TABLE 8. PROG5 PIN

TYPICAL PROG5 RESISTOR (±1%, kΩ)	VR C IMAX (A)		VR C SWITCHING FREQUENCY (kHz)
	SA	GTUS	
1.87	7	17	300
5.62	9	20	300
9.31	12	25	300
13.3	15	27	300
16.9	7	17	350
20.5	9	20	350
24.3	12	25	350
28.0	15	27	350
34.0	7	17	450
41.2	9	20	450
48.7	12	25	450
56.2	15	27	450
63.4	7	17	583
71.5	9	20	583
78.7	12	25	583
88.7	15	27	583
100	7	17	750
110	9	20	750
121	12	25	750
137	15	27	750
150	7	17	1000
165	9	20	1000
182	12	25	1000
215	15	27	1000

TABLE 7. PROG4 PROGRAMMING TABLE

TYPICAL PROG4 RESISTOR (±1%, kΩ)	DROOP VR A	DROOP VR C	VR A AND VR B SWITCHING FREQUENCY (kHz)
1.87	Disabled	Disabled	300
5.62	Disabled	Disabled	350
9.31	Disabled	Disabled	450
13.3	Disabled	Disabled	583
16.9	Disabled	Disabled	750
20.5	Disabled	Disabled	1000
24.3	Disabled	Active	300
28.0	Disabled	Active	350
34.0	Disabled	Active	450
41.2	Disabled	Active	583
48.7	Disabled	Active	750
56.2	Disabled	Active	1000
63.4	Active	Disabled	300
71.5	Active	Disabled	350
78.7	Active	Disabled	450
88.7	Active	Disabled	583
100	Active	Disabled	750
110	Active	Disabled	1000
121	Active	Active	300
137	Active	Active	350
150	Active	Active	450
165	Active	Active	583
182	Active	Active	750
215	Active	Active	1000

TABLE 6. PROG3 PROGRAMMING TABLE

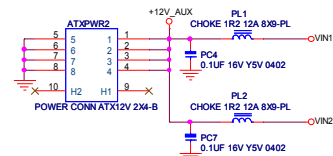
TYPICAL PROG3 RESISTOR (±1%, kΩ)	IMAX VR B		DROOP VR B
	2-PH (A)	1-PH (A)	
1.87	35	7	Active
5.62	40	10	Active
9.31	45	15	Active
13.3	50	18	Active
16.9	55	20	Active
20.5	60	25	Active
24.3	65	27	Active
28.0	67	30	Active
34.0	70	33	Active
41.2	75	35	Active
48.7	80	40	Active
56.2	85	45	Active
63.4	35	7	Disabled
71.5	40	10	Disabled
78.7	45	15	Disabled
88.7	50	18	Disabled
100	55	20	Disabled
110	60	25	Disabled
121	65	27	Disabled
137	67	30	Disabled
150	70	33	Disabled
165	75	35	Disabled
182	80	40	Disabled
215	85	45	Disabled

TABLE 5. PROG2 PROGRAMMING TABLE

TYPICAL PROG2 RESISTOR (±1%, kΩ)	IMAX VR A			VR A PS11 PHASE REDUCTION
	3-PH (A)	2-PH (A)	1-PH (A)	
1.87	67	35	7	2-Phase
5.62	70	40	10	2-Phase
9.31	75	45	15	2-Phase
13.3	80	50	18	2-Phase
16.9	85	55	20	2-Phase
20.5	91	60	25	2-Phase
24.3	95	65	27	2-Phase
28.0	100	67	30	2-Phase
34.0	105	70	33	2-Phase
41.2	110	75	35	2-Phase
48.7	115	80	40	2-Phase
56.2	120	85	45	2-Phase
63.4	67	35	7	1-Phase
71.5	70	40	10	1-Phase
78.7	75	45	15	1-Phase
88.7	80	50	18	1-Phase
100	85	55	20	1-Phase
110	91	60	25	1-Phase
121	95	65	27	1-Phase
137	100	67	30	1-Phase
150	105	70	33	1-Phase
165	110	75	35	1-Phase
182	115	80	40	1-Phase
215	120	85	45	1-Phase

TABLE 4. PROG1 PROGRAMMING TABLE

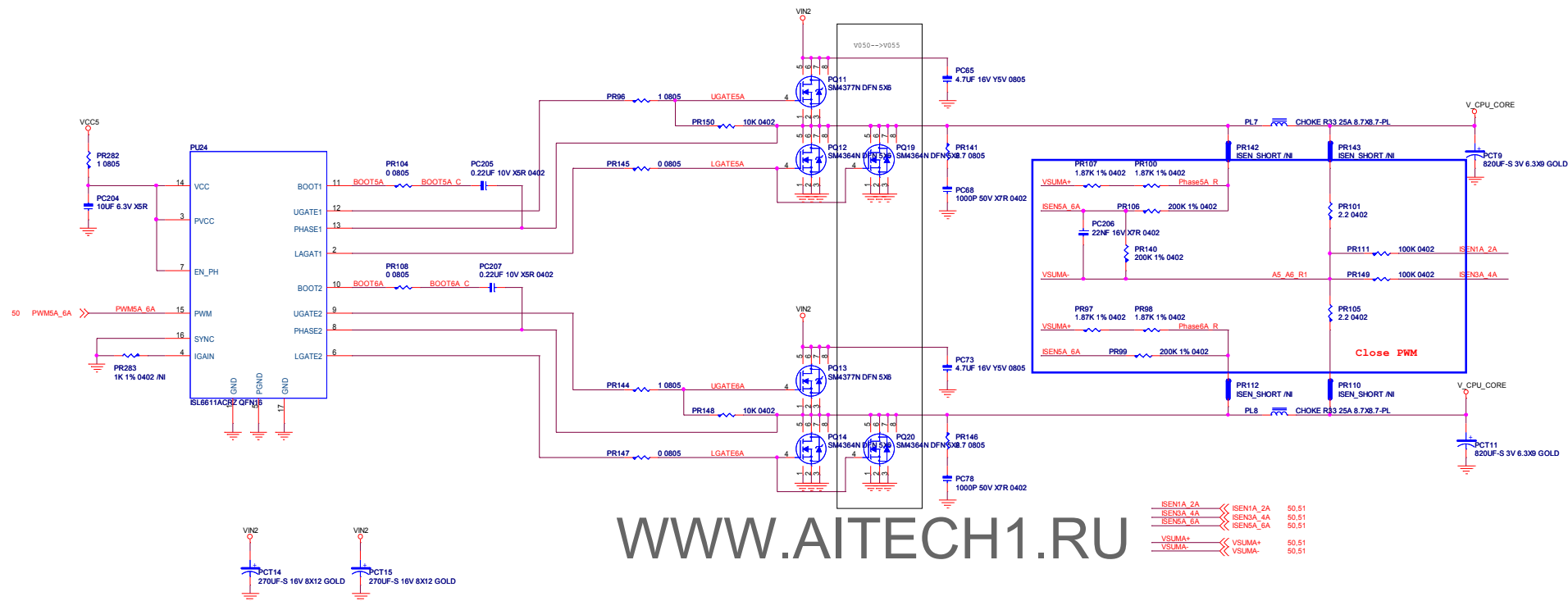
TYPICAL PROG1 RESISTOR (±1%, kΩ)	VR A + VR B + VR C (GTUS) Vboot (V)	SLEW RATE ALL VRs (mV/μs)	ADDRESS SELECTION		
			VR A	VR B	VR C
1.87	1.05	30	GT[01h]	GTUS[03h]	SA[02h]
5.62	1.05	30	GT[01h]	IA[00h]	GTUS[03h]
9.31	1.05	30	GT[01h]	IA[00h]	SA[02h]
13.3	1.05	30	IA[00h]	GTUS[03h]	SA[02h]
16.9	1.05	30	IA[00h]	GT[01h]	GTUS[03h]
20.5	1.05	30	IA[00h]	GT[01h]	SA[02h]
24.3	1.05	10	GT[01h]	GTUS[03h]	SA[02h]
28.0	1.05	10	GT[01h]	IA[00h]	GTUS[03h]
34.0	1.05	10	GT[01h]	IA[00h]	SA[02h]
41.2	1.05	10	IA[00h]	GTUS[03h]	SA[02h]
48.7	1.05	10	IA[00h]	GT[01h]	GTUS[03h]
56.2	1.05	10	IA[00h]	GT[01h]	SA[02h]
63.4	0	30	GT[01h]	GTUS[03h]	SA[02h]
71.5	0	30	GT[01h]	IA[00h]	GTUS[03h]
78.7	0	30	GT[01h]	IA[00h]	SA[02h]
88.7	0	30	IA[00h]	GTUS[03h]	SA[02h]
100	0	30	IA[00h]	GT[01h]	GTUS[03h]
110	0	30	IA[00h]	GT[01h]	SA[02h]
121	0	10	GT[01h]	GTUS[03h]	SA[02h]
137	0	10	GT[01h]	IA[00h]	GTUS[03h]
150	0	10	GT[01h]	IA[00h]	SA[02h]
165	0	10	IA[00h]	GTUS[03h]	SA[02h]
182	0	10	IA[00h]	GT[01h]	GTUS[03h]
215	0	10	IA[00h]	GT[01h]	SA[02h]





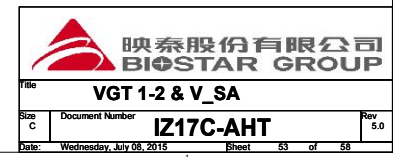




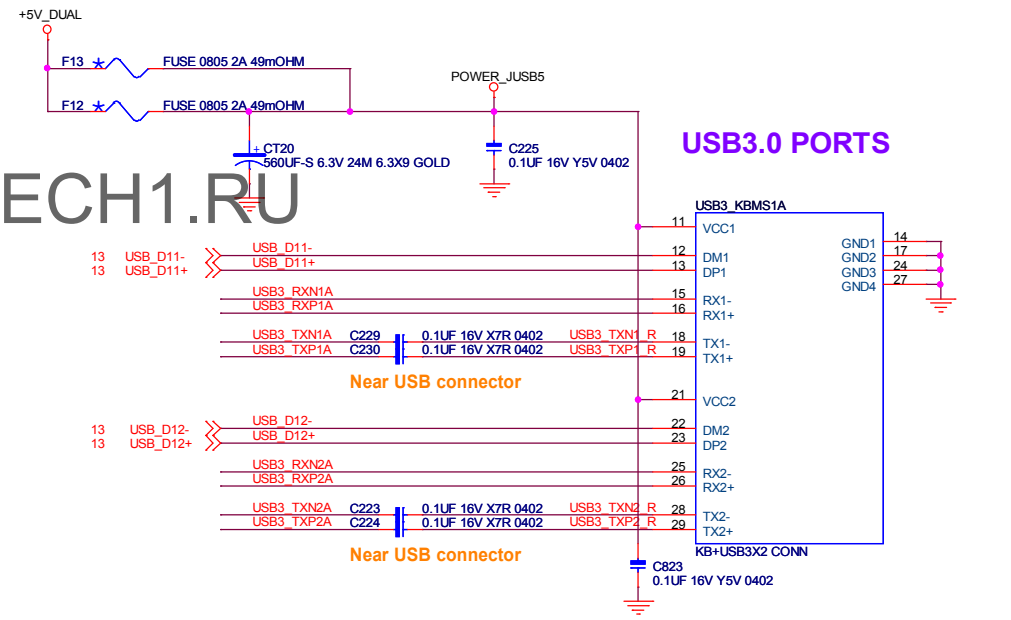
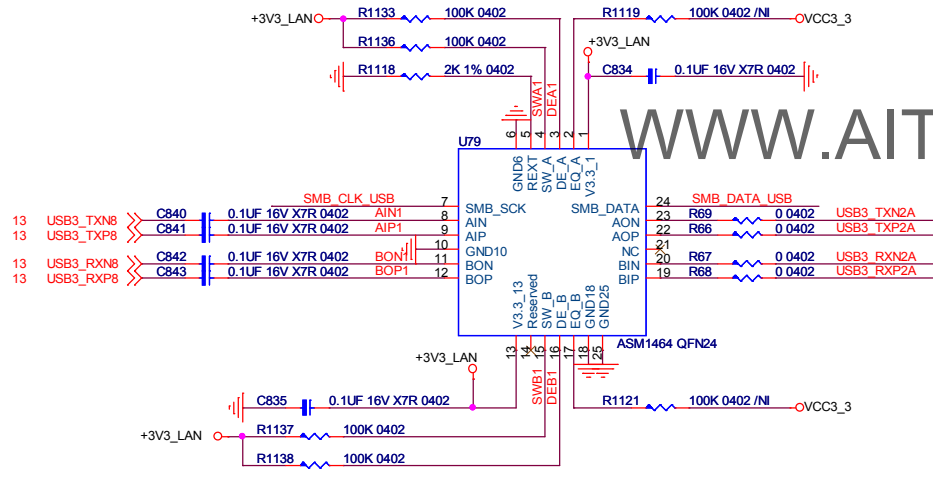
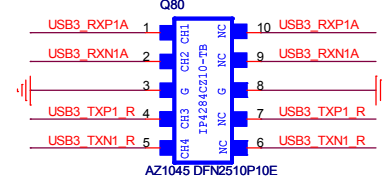
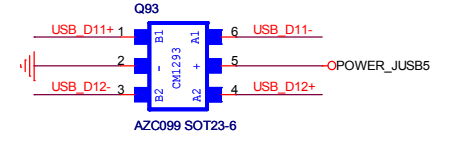
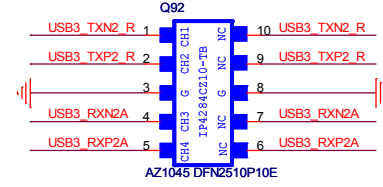
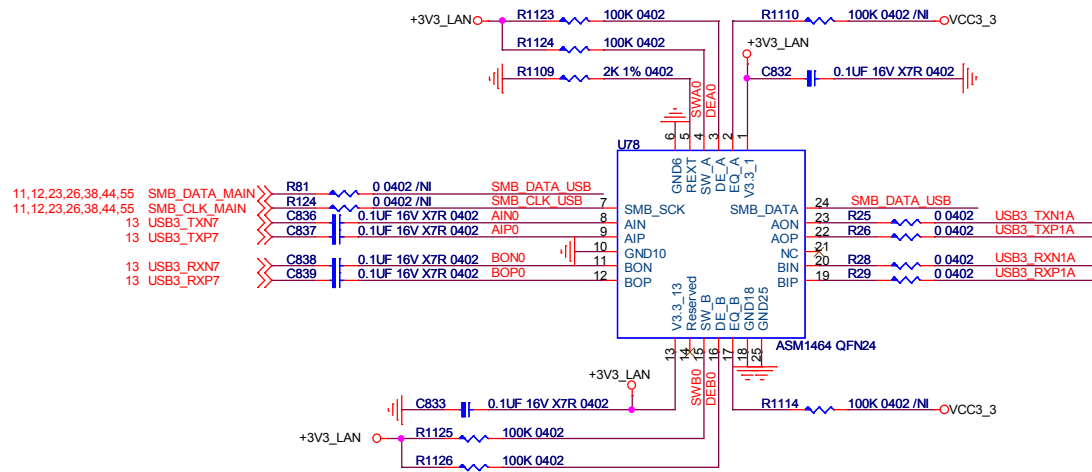


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**Co-Lay**

13	USB3_TXN7	C59	0.1UF 16V X7R 0402 /NI	R65	0.0402 /NI	USB3_TXN1A
13	USB3_TXP7	C60	0.1UF 16V X7R 0402 /NI	R62	0.0402 /NI	USB3_TXP1A
13	USB3_RXN7	C61	0.1UF 16V X7R 0402 /NI	R63	0.0402 /NI	USB3_RXN1A
13	USB3_RXP7	C62	0.1UF 16V X7R 0402 /NI	R64	0.0402 /NI	USB3_RXP1A
13	USB3_TXN8	C63	0.1UF 16V X7R 0402 /NI	R73	0.0402 /NI	USB3_TXN2A
13	USB3_TXP8	C64	0.1UF 16V X7R 0402 /NI	R71	0.0402 /NI	USB3_TXP2A
13	USB3_RXN8	C65	0.1UF 16V X7R 0402 /NI	R70	0.0402 /NI	USB3_RXN2A
13	USB3_RXP8	C66	0.1UF 16V X7R 0402 /NI	R72	0.0402 /NI	USB3_RXP2A

SW_X	DE_X	Descriptions
0	0	-1.5dB
0	1	0dB
1	0	+1.5dB
1	1	+1.5dB



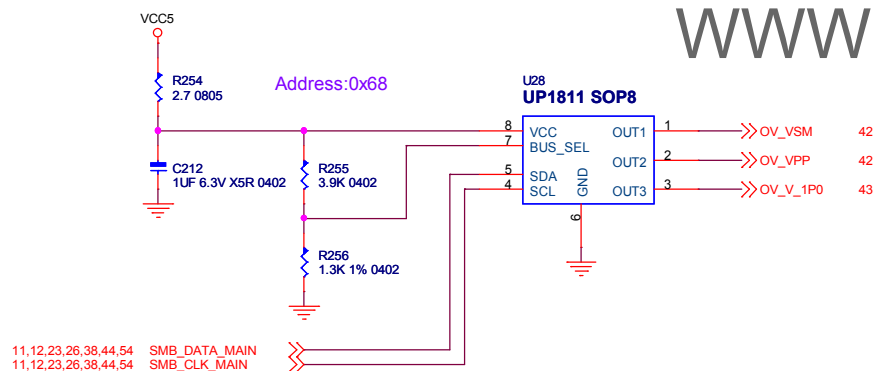
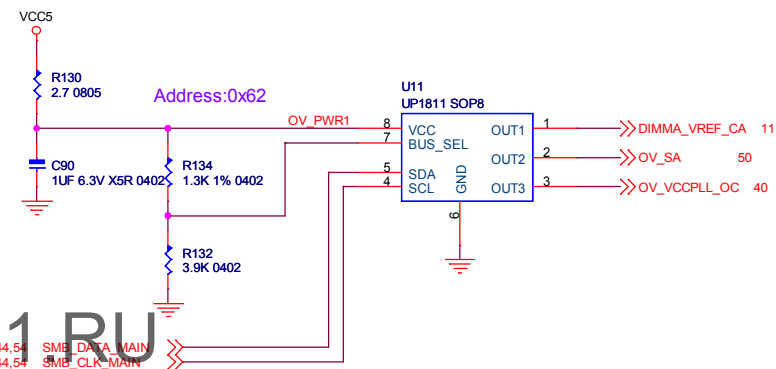
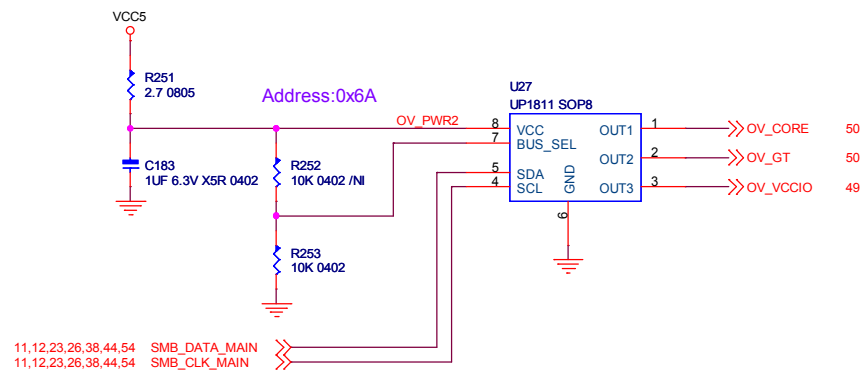
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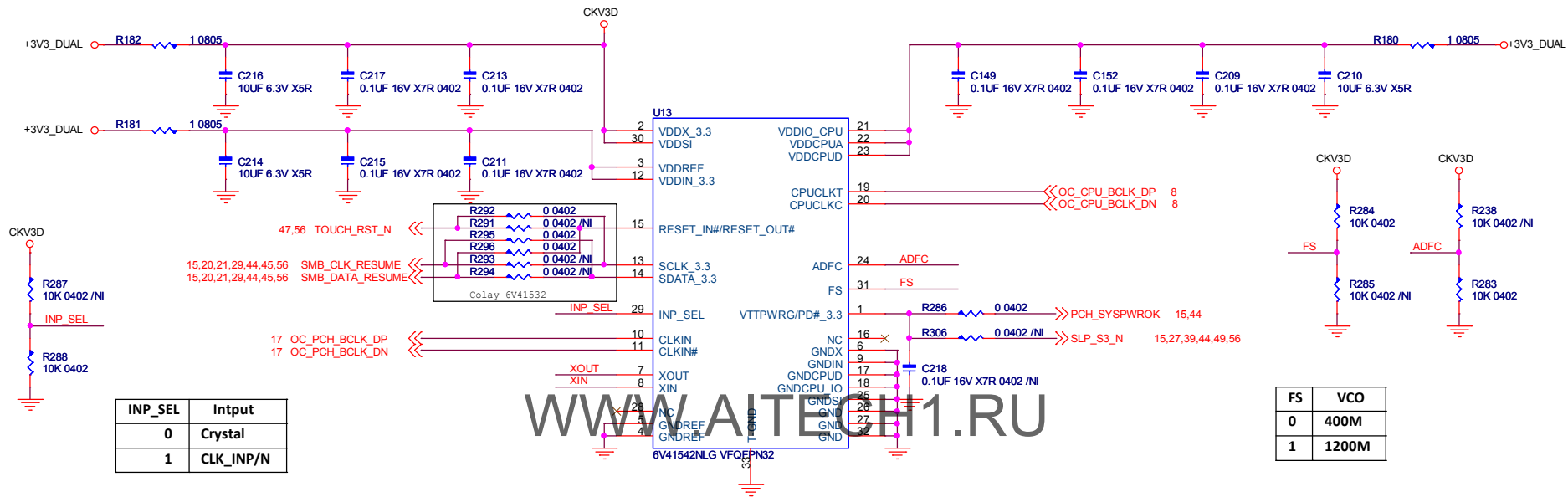
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