

# IH67B-MHT REV 6.0

## CPU:

Intel Sandy Bridge processors in LGA1155 Package 95W

## System Chipset:

Sugar Point

## Main Memory:

Dual Channel/DDR-III\*4(Max 16GB) 1066/1333  
DDR3-1333 /1066 /800

## Onboard Device:

**Clock Generator:Realtek RTM875N-632**

Super I/O:IT8728

LAN:Realtek 8111E

HD Codec:ALC892 3 jacks

PCI BRIDGE:IT8893E

**USB3.0 CONTROLLER:NEC uPD720200**

## Power solution:

**CPU Voltage Regulators:3phase by uP6235 high 1 low 2 OV BY UP6262 MOSFET HEARSINK**

**AXG voltage Regulators:1phase by uP6235 high 1 low 2**

**VTT voltage Regulators:1Phase by UP6109 high 1 low 2 OV BY UP6262 MOSFET HEARSINK**

**DDR voltage Regulators:1Phase by UP6109 high 1 low 1 OV BY UP6262**

## Expansion Slots:

PCI EXPRESS 16X SLOT\*2

PCI EXPRESS 1X SLOT\*1

PCI SLOT\*1

## REAR IO:

PS/2 +2 layer USB2.0 Port

**HDMI Port**

DVI Port

VGA Port

2 layer USB3.0 + Gb RJ-45 Ports

Audio Jackets

## Front I/O:

4SATA2(Red)+ 2SATA3(white)

USB Header \* 3

CPU /System1/System2 FAN

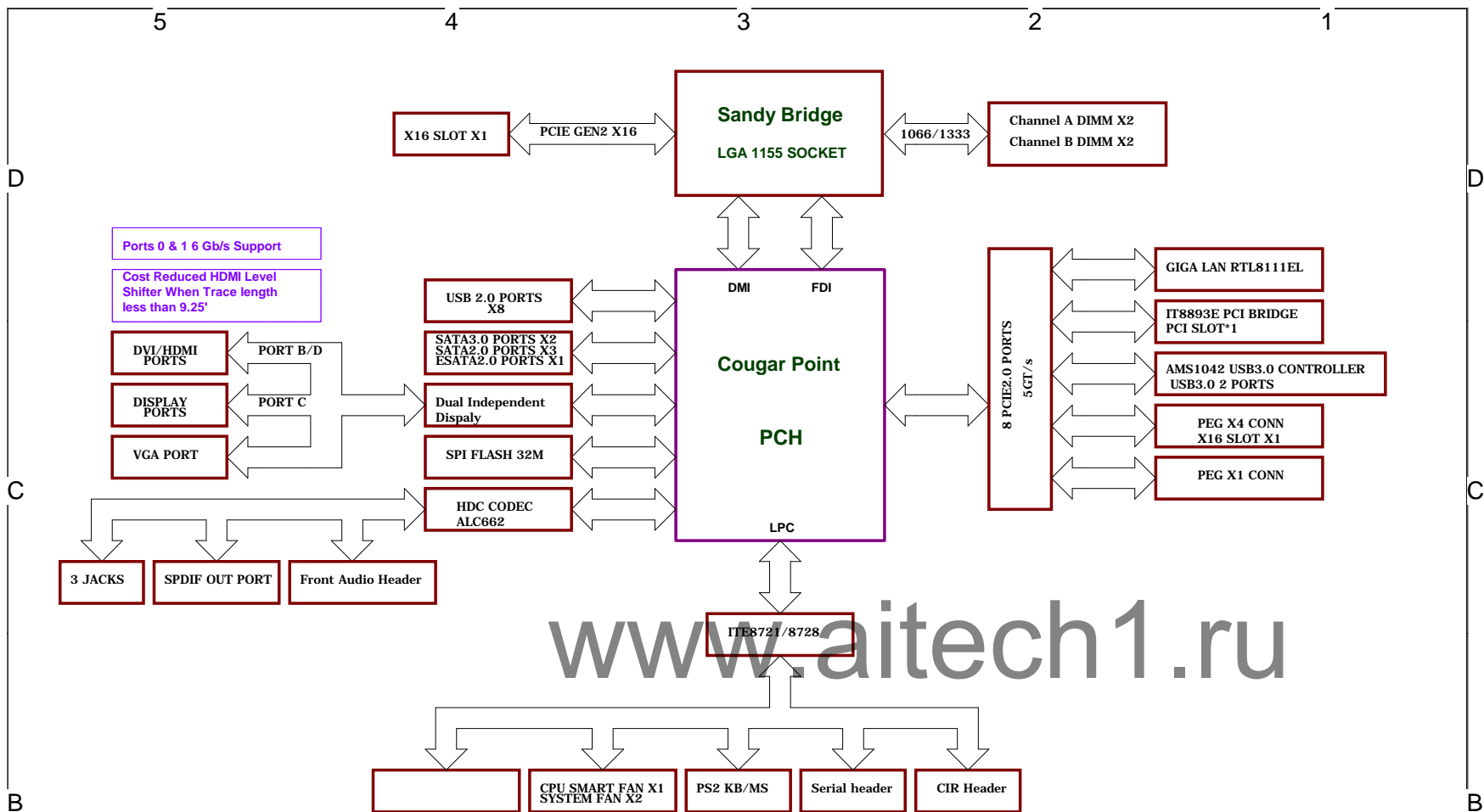
Serial header

CIR Header

Front Audio Header & SPDIF Out 1

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41	ACPI POWER CONTROL
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44	VTT DC-DC Conver
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48	RESERVED FOR AMT POWER
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50	BOM

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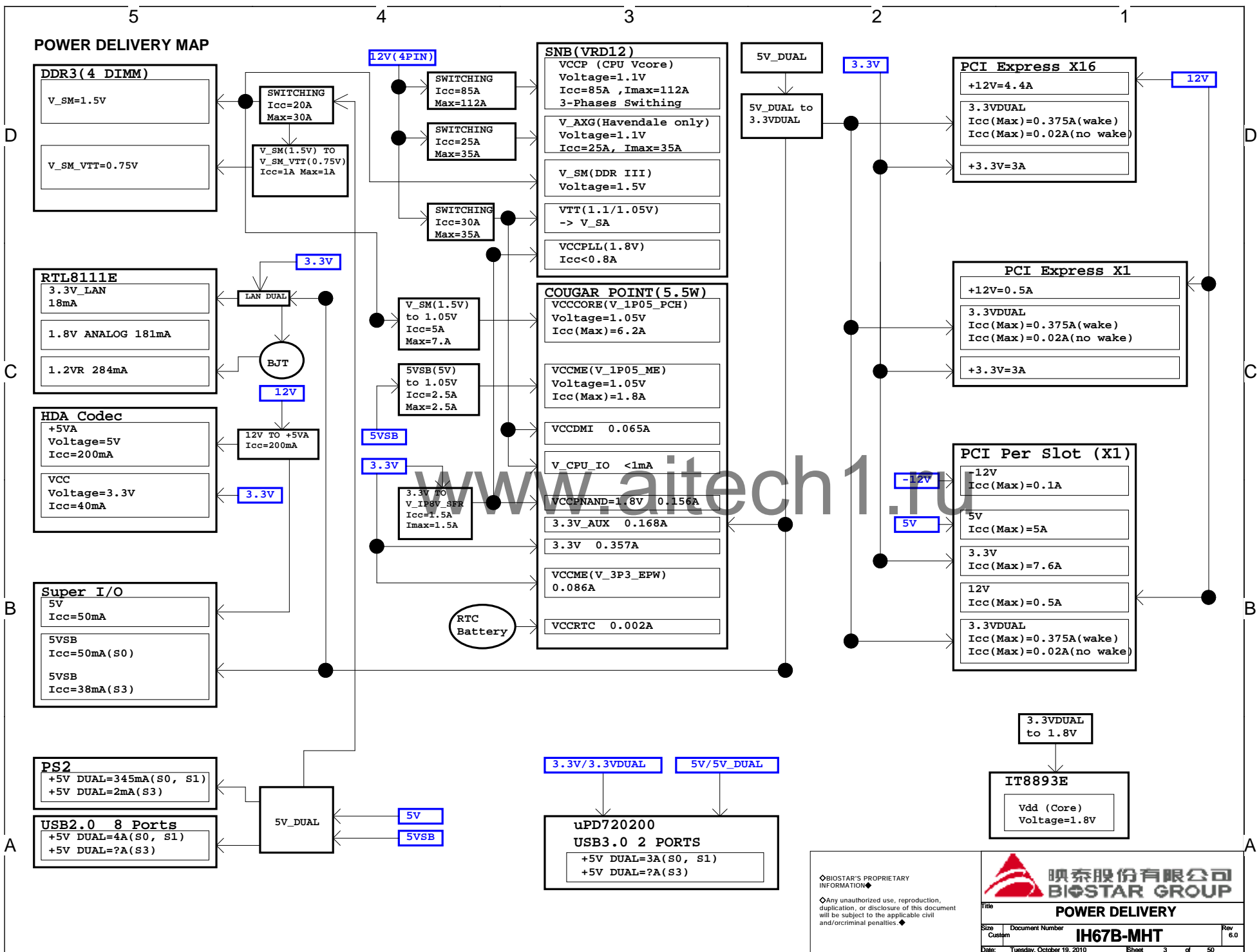
Feature Set	SKU Name(s)					
	Q67	Q65	B65	H67	P67	H61
PCI Express* 2.0 Ports	8	8	8	8	8	6 <sup>9</sup>
PCI Interface	Yes	Yes	Yes	No <sup>10</sup>	No <sup>10</sup>	No <sup>10</sup>
USB 2.0 Ports	14	14	12 <sup>6</sup>	14	14	10 <sup>7</sup>
Total number of SATA ports	6	6	6	6	6	4
• SATA Ports (6 Gb/s, 3 Gb/s, and 1.5 Gb/s)	2 <sup>4</sup>	1 <sup>5</sup>	1 <sup>5</sup>	2 <sup>4</sup>	2 <sup>4</sup>	0
• SATA Ports (3 Gb/s and 1.5 Gb/s only)	4	5	5	4	4	4 <sup>8</sup>
HDMI/DVI/VGA/DisplayPort*/eDP*	Yes	Yes	Yes	Yes	No	Yes
Integrated Graphics Support with PAVP	Yes	Yes	Yes	Yes	No	Yes
Intel® Rapid Storage Technology	AHCI	Yes	Yes	Yes	Yes	No
	RAID 0/1/5/10 Support	Yes	No	No	Yes	No
Intel® AT	Yes	Yes	No	No	No	No
Intel® AMT 7.0	Yes	No	No	No	No	No
Intel® Remote PC Assist Technology - Proactive	Yes	No	Yes	No	No	No
Intel® Remote PC Assist Technology - Reactive	No	No	Yes	Yes	No	No

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**BLOCK DIAGRAM**



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## IH67B-MHT REV 0.6 TO 0.61 CHANGELIST

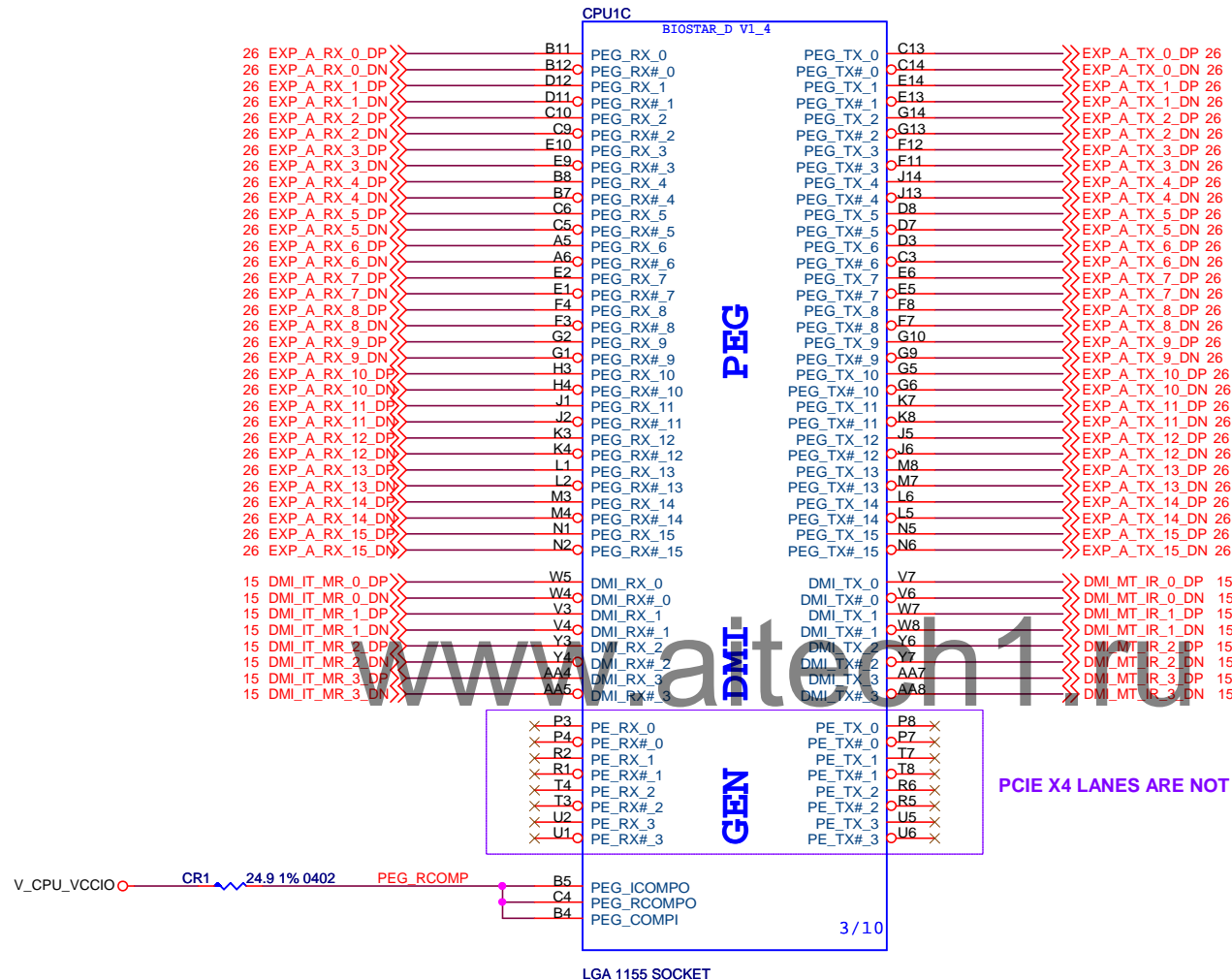
- 1.YR86,YR87 NI
- 2.YR84,YR85 NI
- 3.YR67,YR83 NI
4. ADD C30
- 5.ADD YR75; YR64&YR65 NI; Remove DP signal
- 6.YR73 NI
- 7.YR77&YR78 change from 100ohm to 10ohm; YC17 change from 0.1uf to 1uf
- 8.Add page 25 content
- 9.Page 26: all By16 signal AC couple cap change from 0.1uf to 0.22uf for PCIE3.0 compatible
- 10.ER7 reserved; EU1.5 connect to power; EU1.59 connect to power; Add ER18; ER8 NI,ER9 reserved; ER12 NI,ER13 reserved; ER16 NI; Add ERN9&ERN10
- 11.HDMI\_DP1 change to HDMI
- 12.Remove page 32 content(DP port)
- 13.Removed ARN3; add AR29, AR30, AR31, AR32; AR29& AR30 NI
- 14.Add SQ7,SQ8,SQ9,FAN\_TACH sch changed
- 15.Reserve Q18
- 16.NI R71,R74,R78,Q43,Q44
- 17.CT10 change from 820UF-S 2.5V 6.3X8 ELITE to 820UF-S 2.5V 6.3X8
- 18.TR24.1 connect to V\_SA
- 19.Page 47:change from UP6230 to UP6235; Add page48 content
- 20.Page50:V\_1P05\_ME power solution changed; ME power NI;
- 21.Page51:change from ASM1042 to uPD720200
- 22.Add VCCP\_SEL circuit
- 23.CR28 change from 0ohm to 120ohm
- 24.Remove YRN11,add YR76,YR89,YR90
- 25.Remove YR43,YR change from 1.1Kohm to 200ohm
- 26.Remove YC20,BYC21,YC28,BYC29,YC35,YC36
- 27.Remove EU2,ERN1
- 28.Add Q10
- 29.Add R24
- 30.Modify +3V3\_DUAL solution

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# CPU PART: C+Reference



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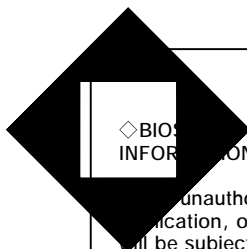
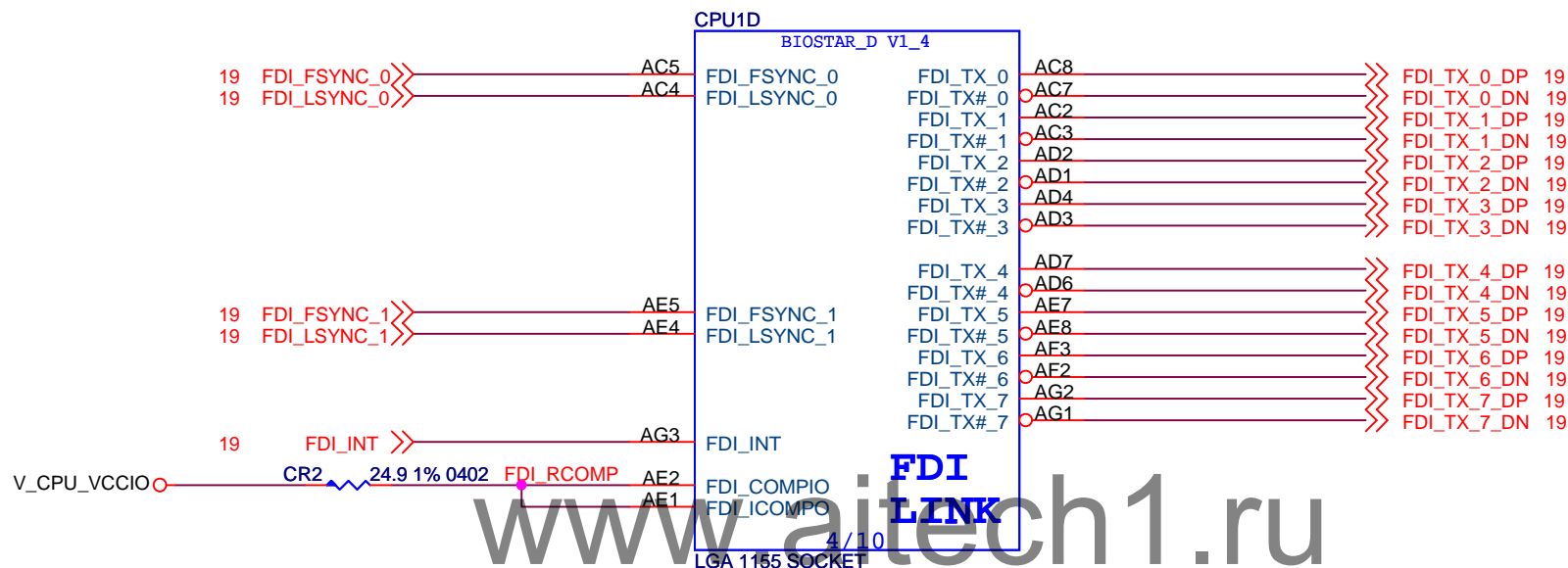
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Title: **CPU PCIEX16/DMI**

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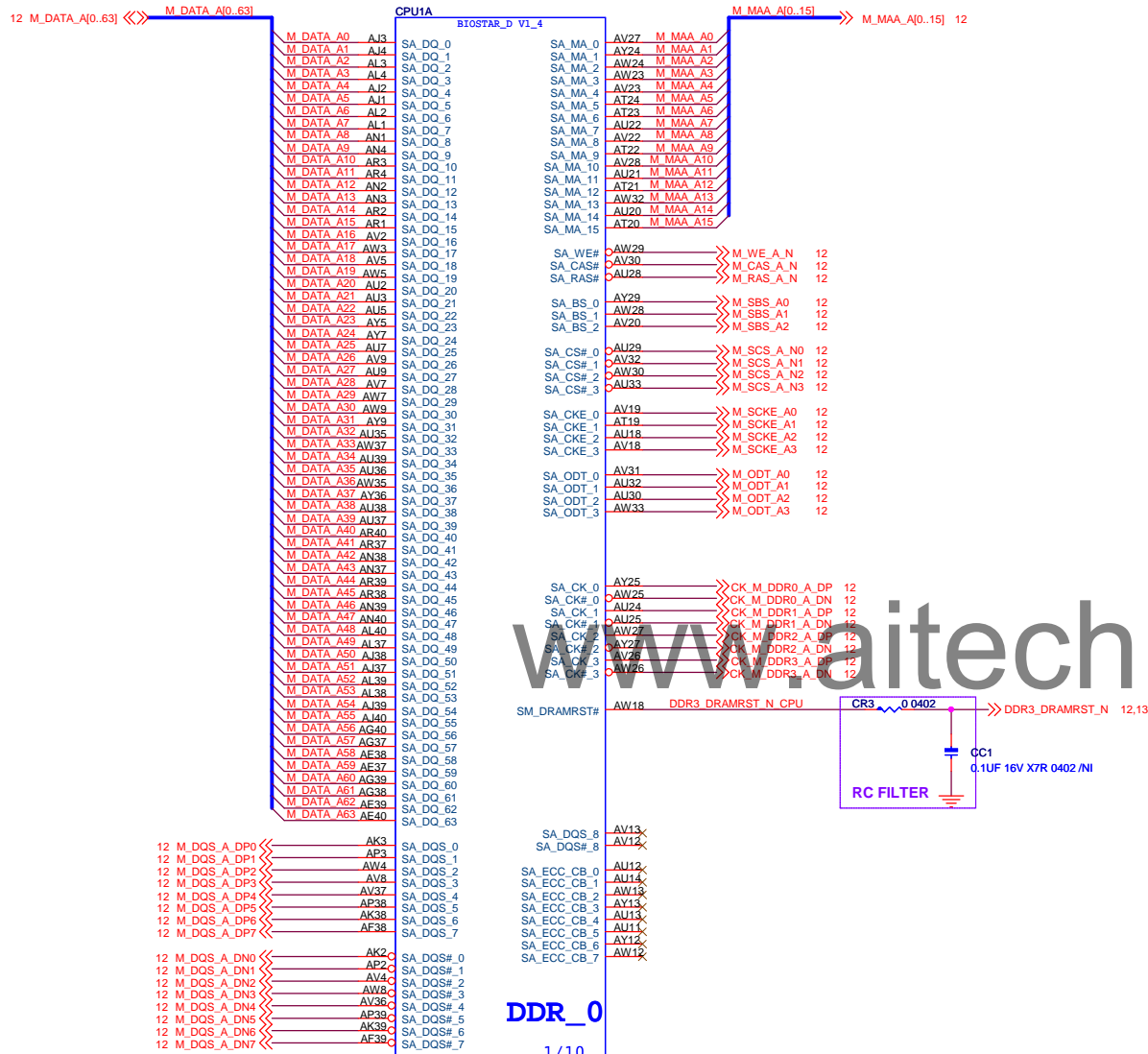
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**File** CPU DDR CHANNEL A

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**CPU PART: C+Reference**

DQ REMAPPING IMPLEMENTED TO IMPROVE BREAKOUT AND MINIMIZE CH-2-CH COUPLING

DQ REMAPPING IMPLEMENTED TO IMPROVE BREAKOUT AND MINIMIZE CH-2-CH COUPLING

DDR\_1  
2/10

LGA 1165 SOCKET

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Title CPU DDR CHANNEL A

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DQ REMAPPING IMPLEMENTED  
TO IMPROVE BREAKOUT AND  
MINIMIZE CH-2-CH COUPLING

Q 40  
Q 41  
Q 42  
Q 43  
Q 44  
Q 45  
Q 46  
Q 47  
Q 48

SB CK#0  
SB CK#0  
SB CK#1  
SB CK#1  
SB CK#1  
SB CK#2

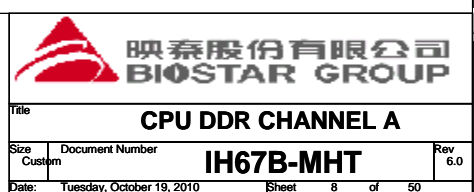
AL21  
AL22  
AL20  
AL20  
AL20  
AL23

CK DDR0 B DP 13  
CK DDR0 B DN 13  
CK DDR1 B DP 13  
CK DDR1 B DN 13  
CK DDR1 B DN 13  
CK DDR2 B DP 13

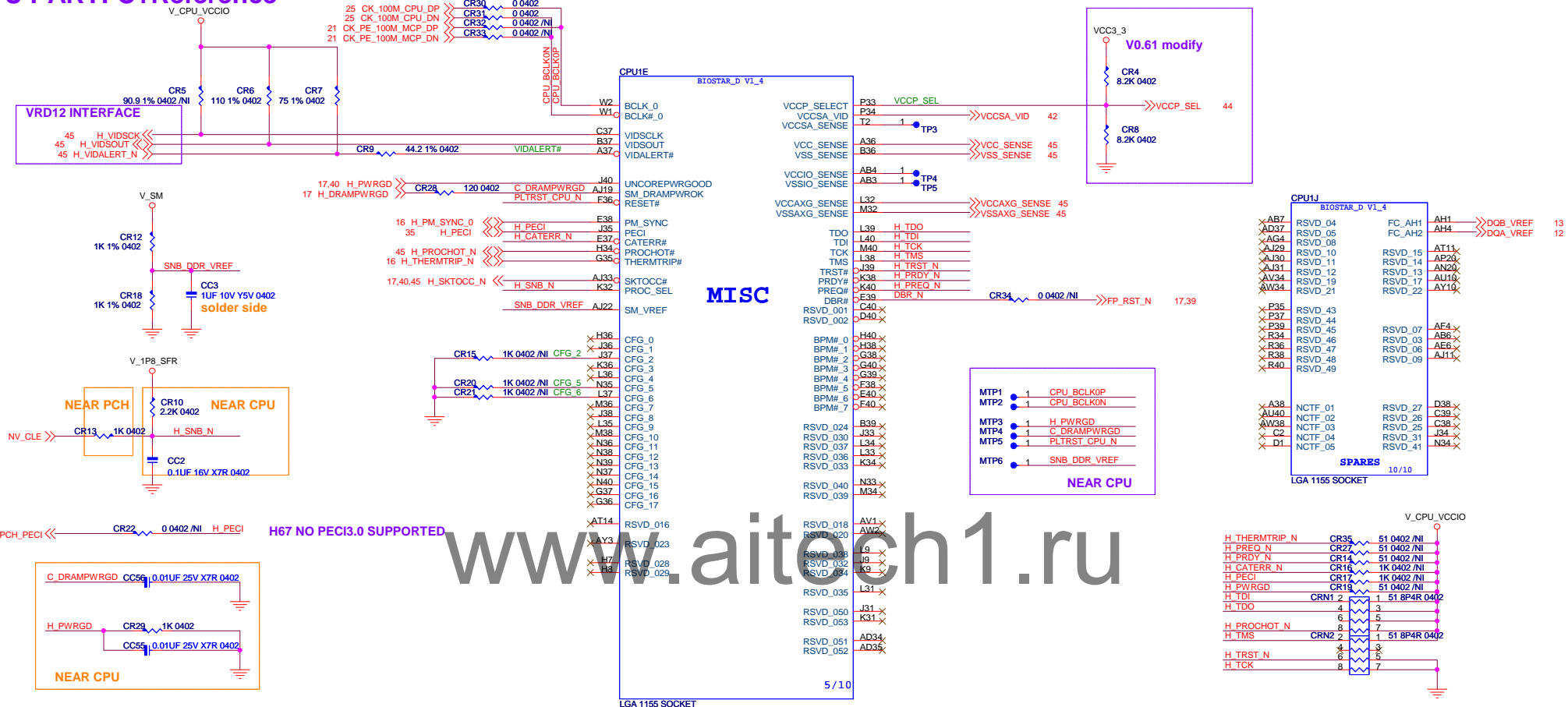
DDR\_1

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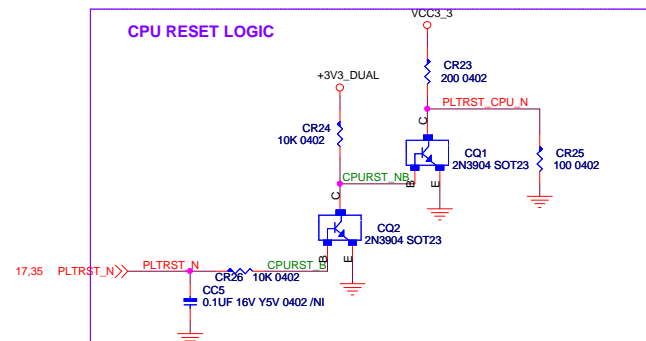


## CPU PART: C+Reference



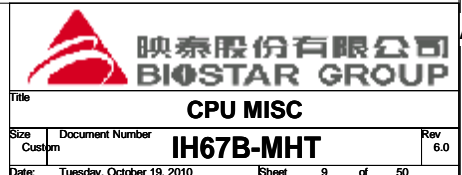
CFG6	CFG5	PCIE CONFIG
1	1	1 X 16
1	0	2 X 8
0	1	RESERVED
0	0	X8,X4,X4

CFG	H	L	DESCRIPTION
2	NORM	RESERVED	PEGLANE REVERSAL[0],X16
5	*	*	SEL0
6	*	*	SEL1



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# CPU PART: C+Reference

D

C

B

A

4

3

2

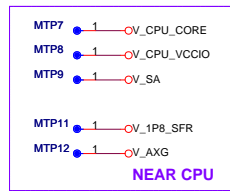
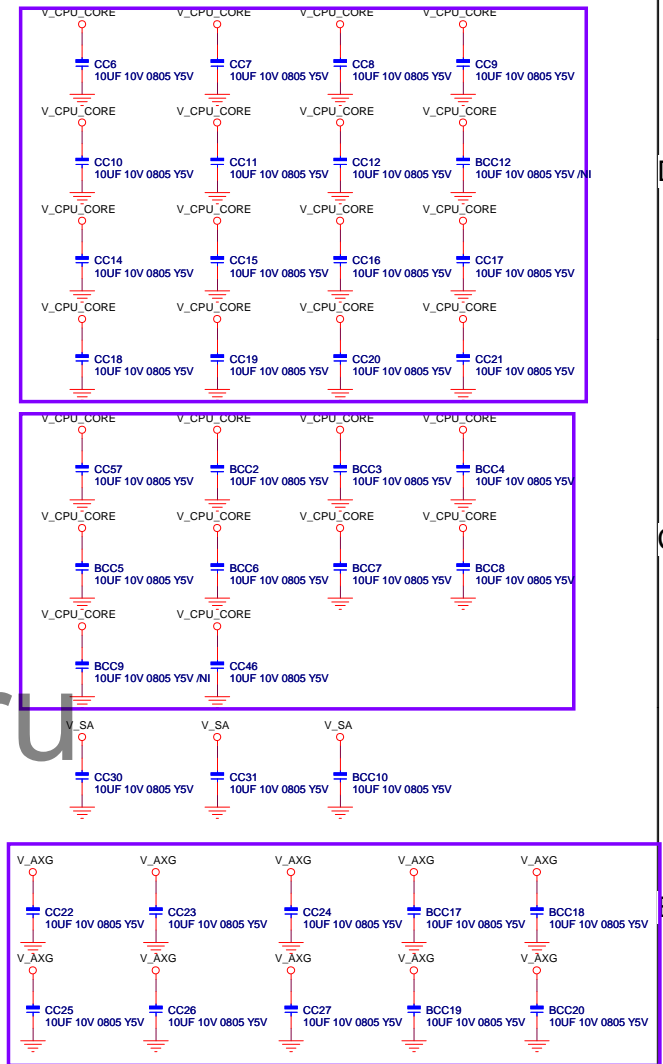
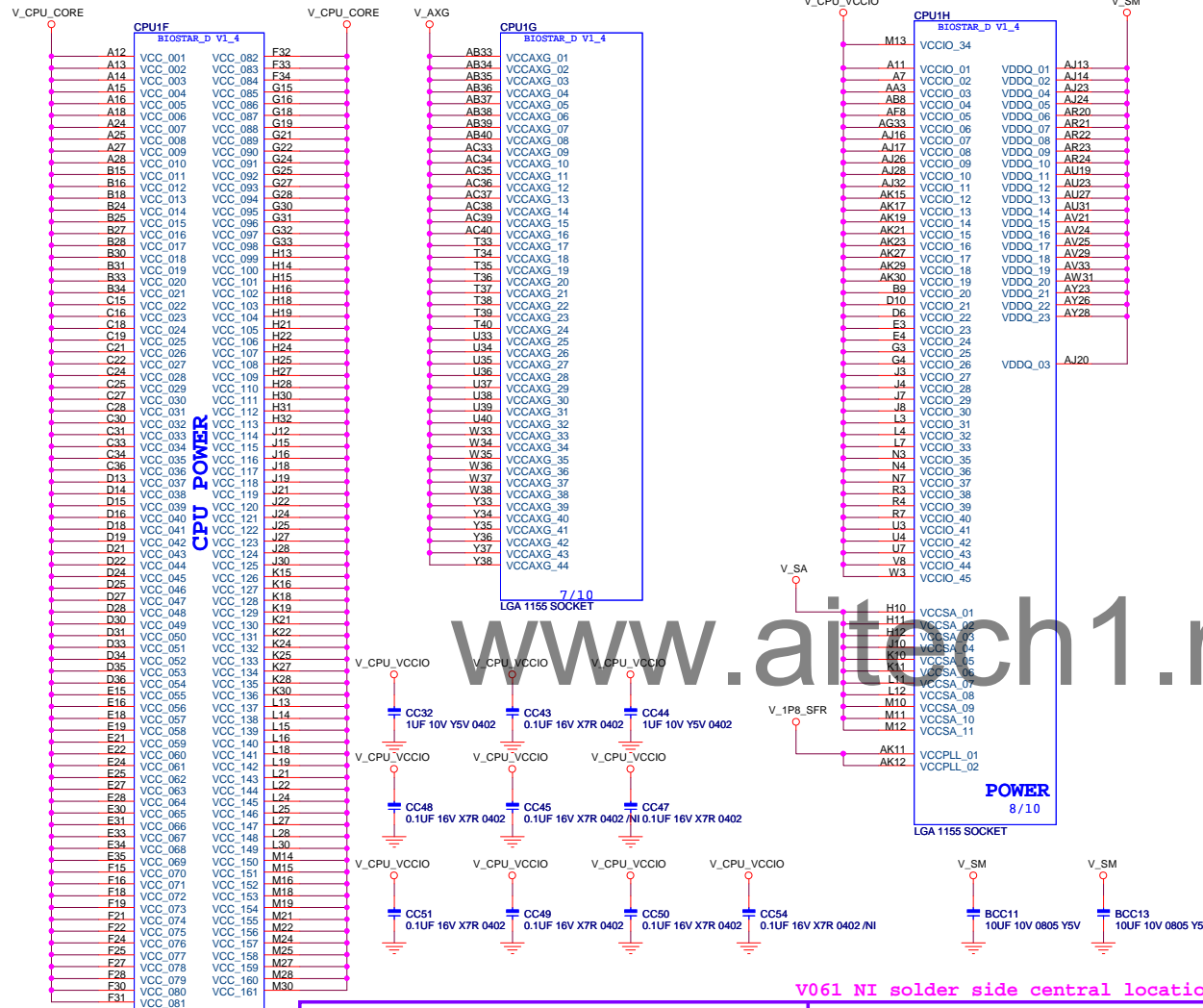
1

D

C

B

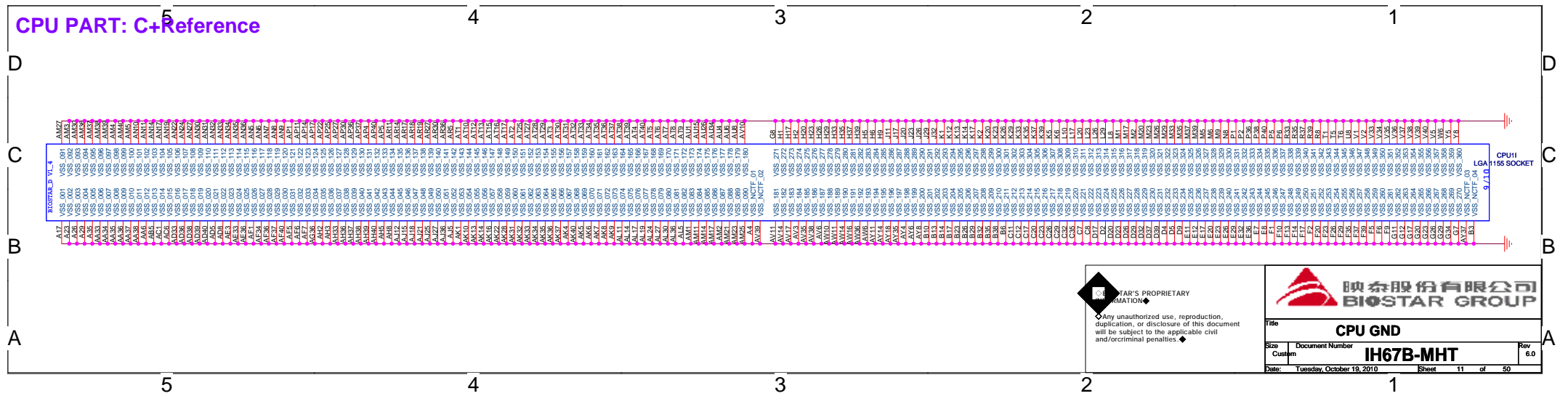
A



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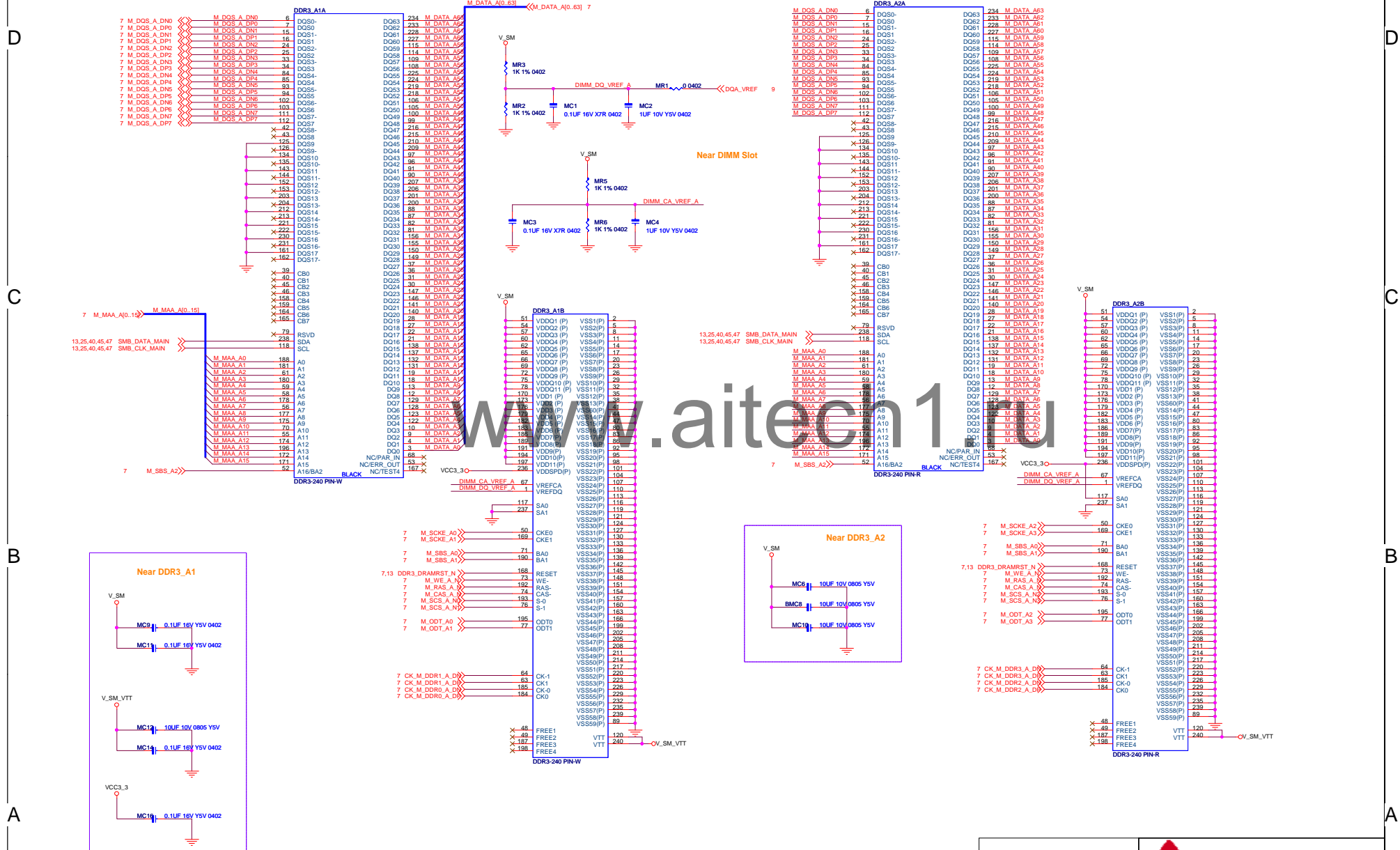


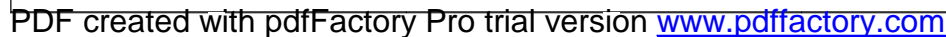
CPU POWER			
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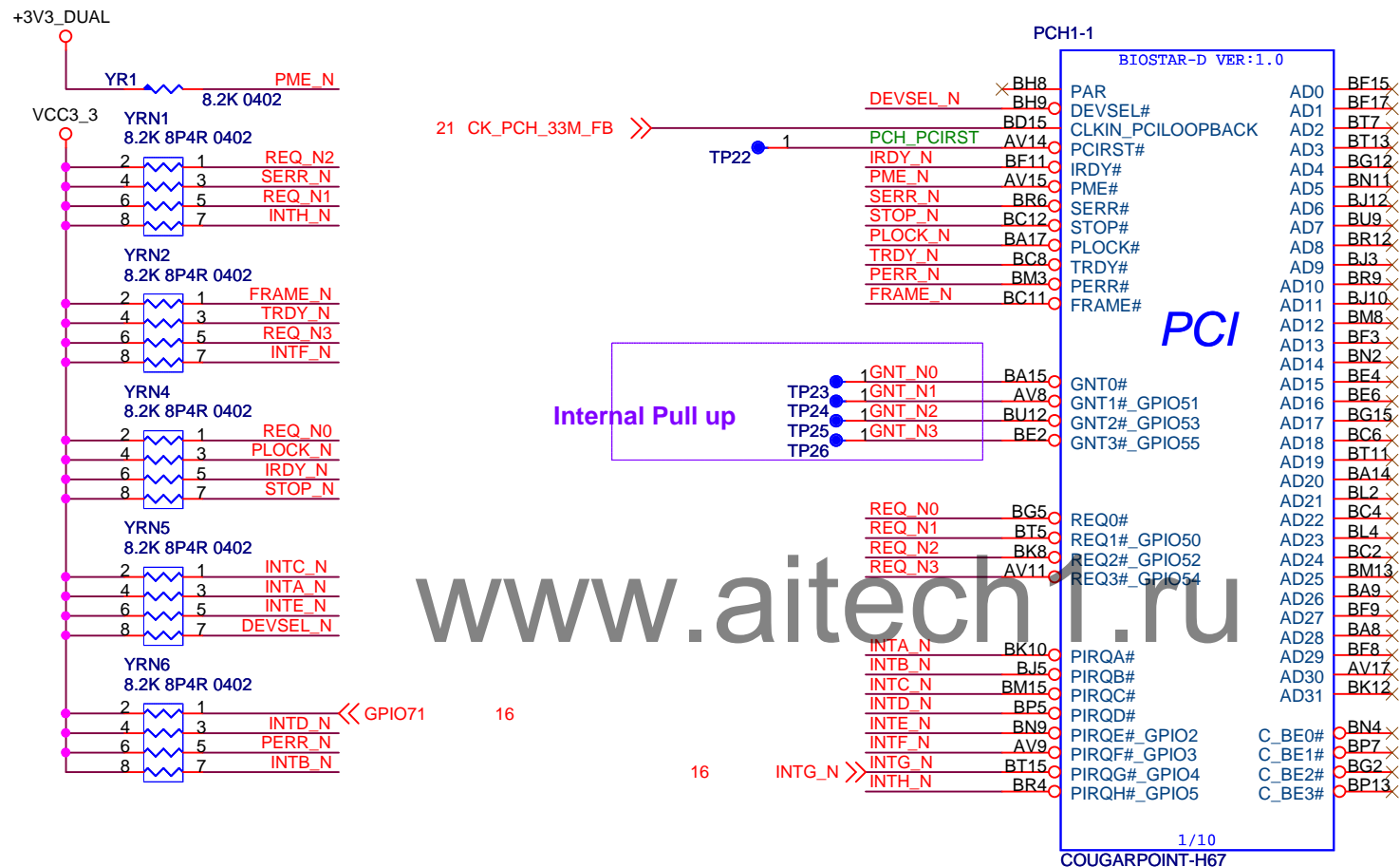


## 5 MEMORY PART. M+Reference





# PCH PART: Y+Reference



WEAK INTERNAL PULLUPS ON GNT\*.DEFAULT SPI BOOT DEVICE

GNT1	GNT0/SATA1GP	BOOT DEVICE
0	0	LPC
0	1	NANO
1	0	PCI
1	1	SPI

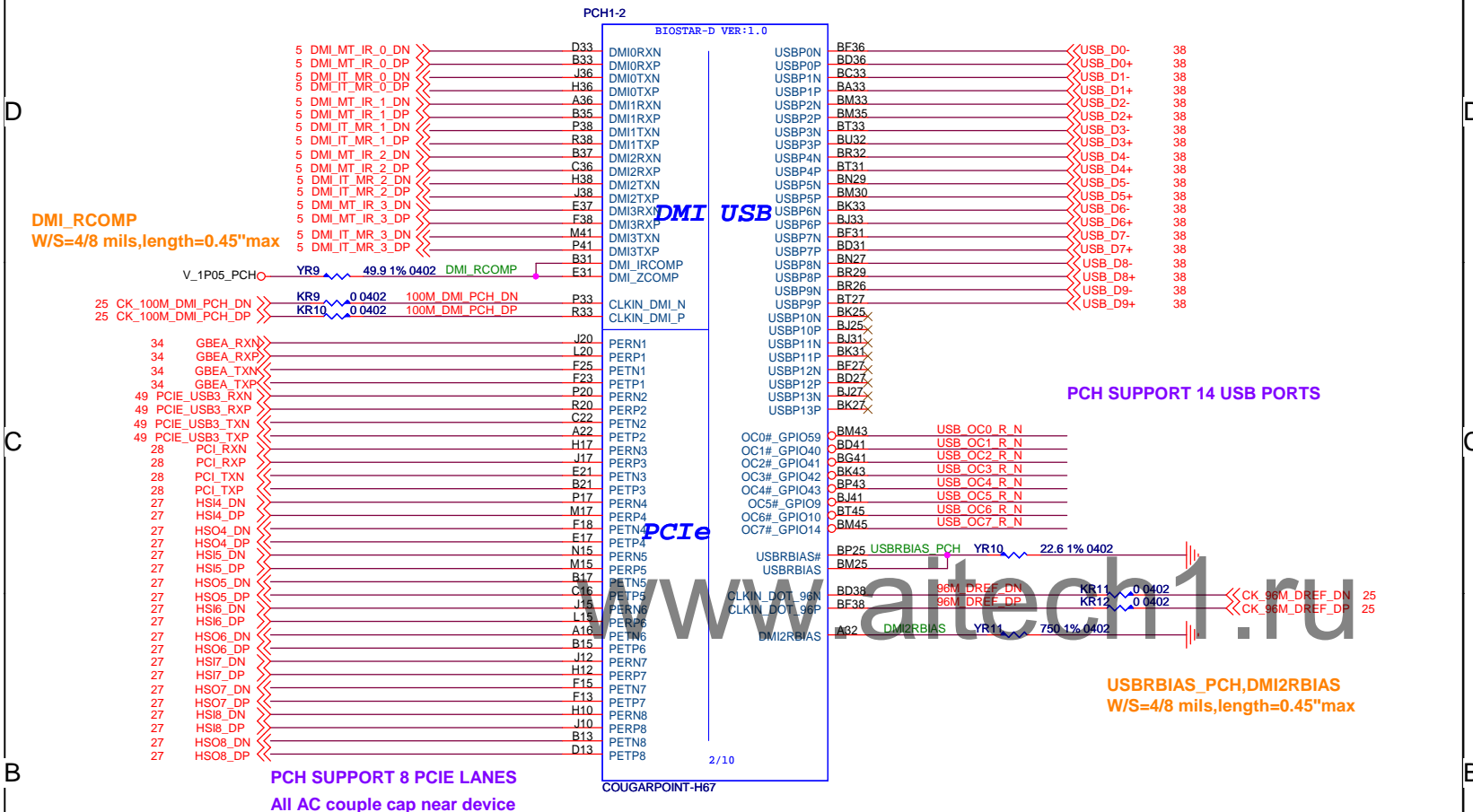
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# PCH PART: Y+Reference

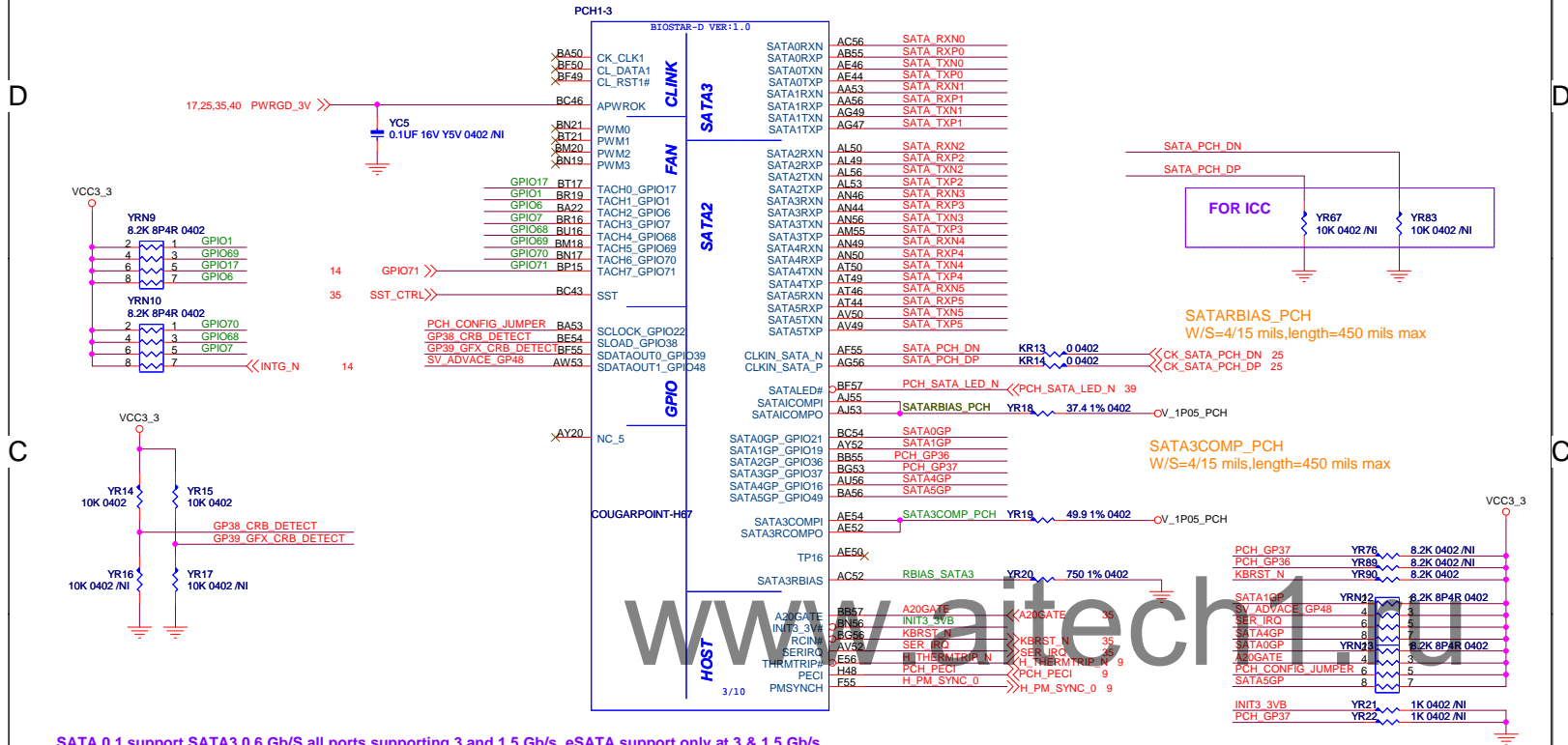


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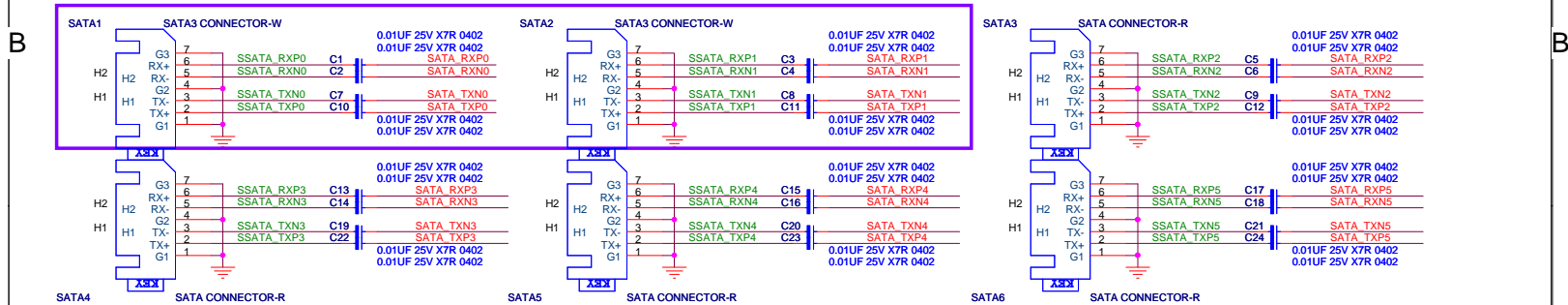


Title			PCH DMI/PCIE/USB
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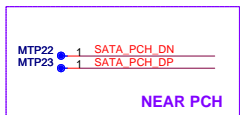
## PCH PART: Y+Reference



**SATA 0,1 support SATA3.0,6 Gb/S,all ports supporting 3 and 1.5 Gb/s. eSATA support only at 3 & 1.5 Gb/s**



Interleaved TX and RX pairs so that no RX pair is adjacent to two TX pairs



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Title	PCH CLINK/SATA/CPU HOST
-------	-------------------------

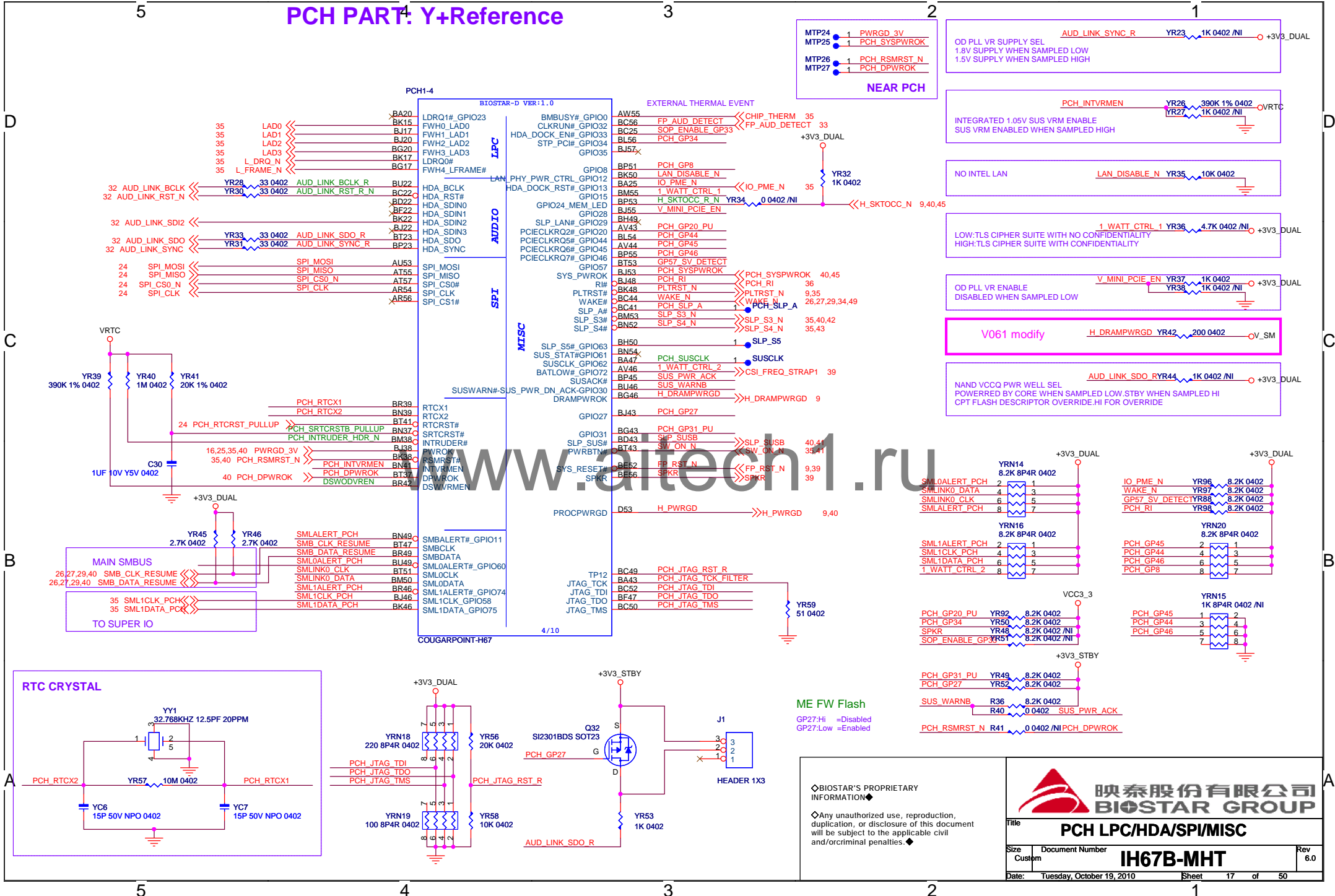
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# PCH PART: Y+Reference



ME FW Flash

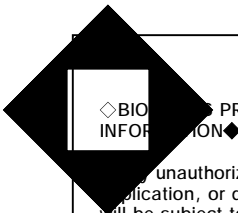
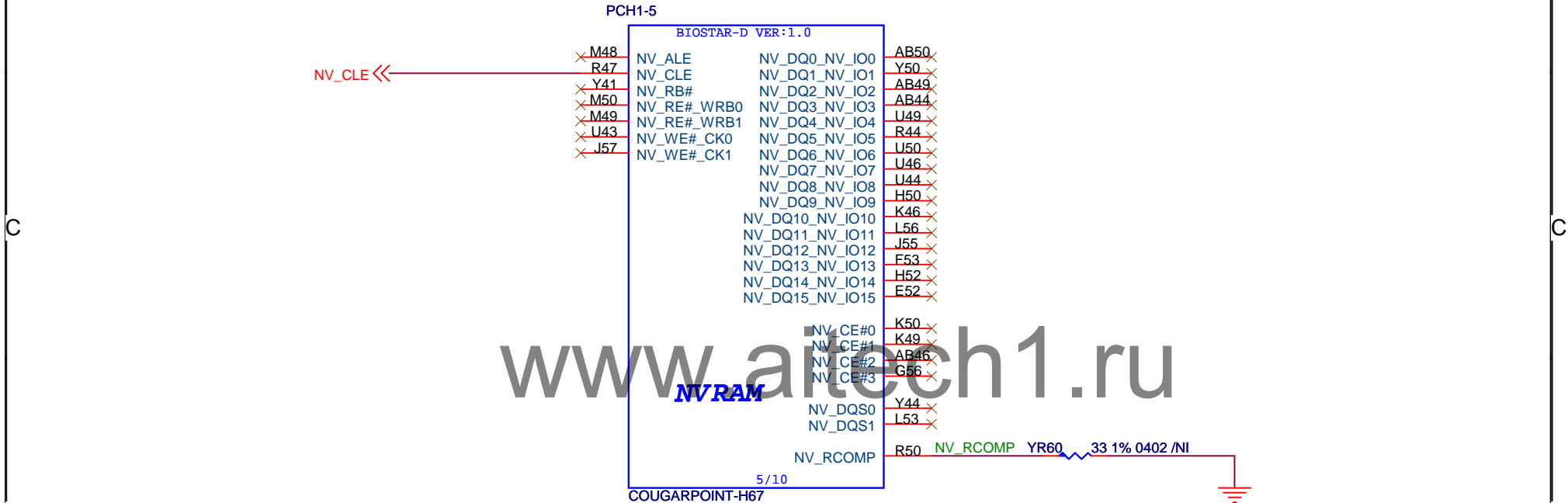
GP27:Hi =Disabled  
GP27:Low =Enabled

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Title		<b>PCH LPC/HDA/SP/MISC</b>	
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# PCH PART: Y+Reference



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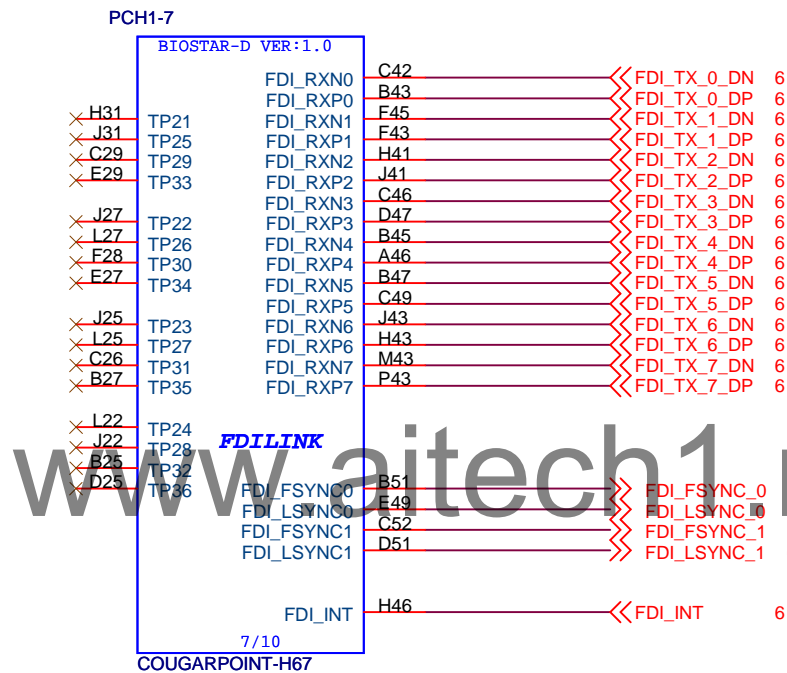


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Title  
**PCH FDI LINK**

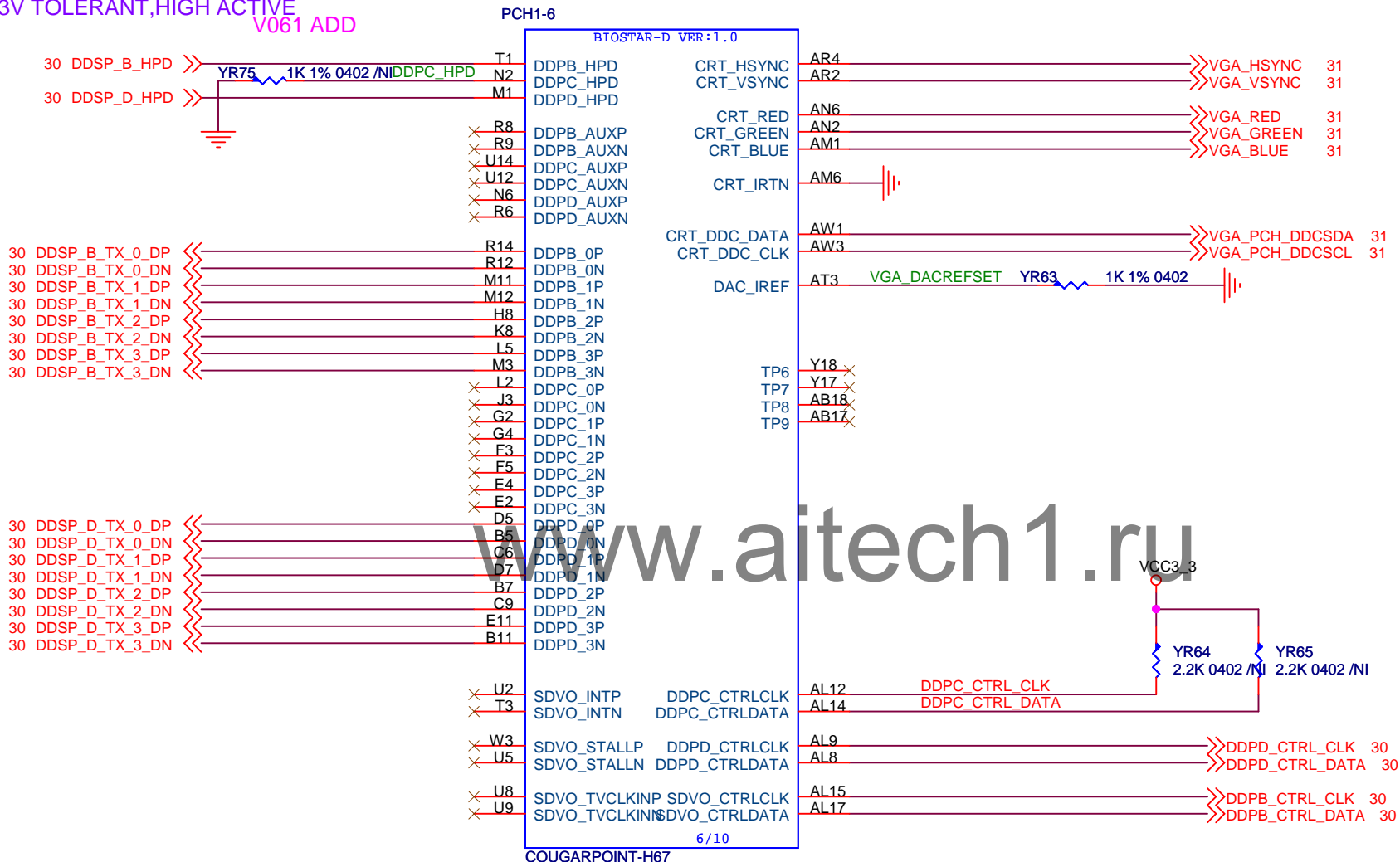
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# PCH PART: Y+Reference

3.3V TOLERANT, HIGH ACTIVE  
V061 ADD



REMOVE LEVEL SHIFTER WHEN TRACE LENGTH LESS THAN 9.25 INCHES

	FUNCTION
PORTB	DVI OR SDVO
PORTC	DISPLAY PORT
PORTD	HDMI/DVI/eDP

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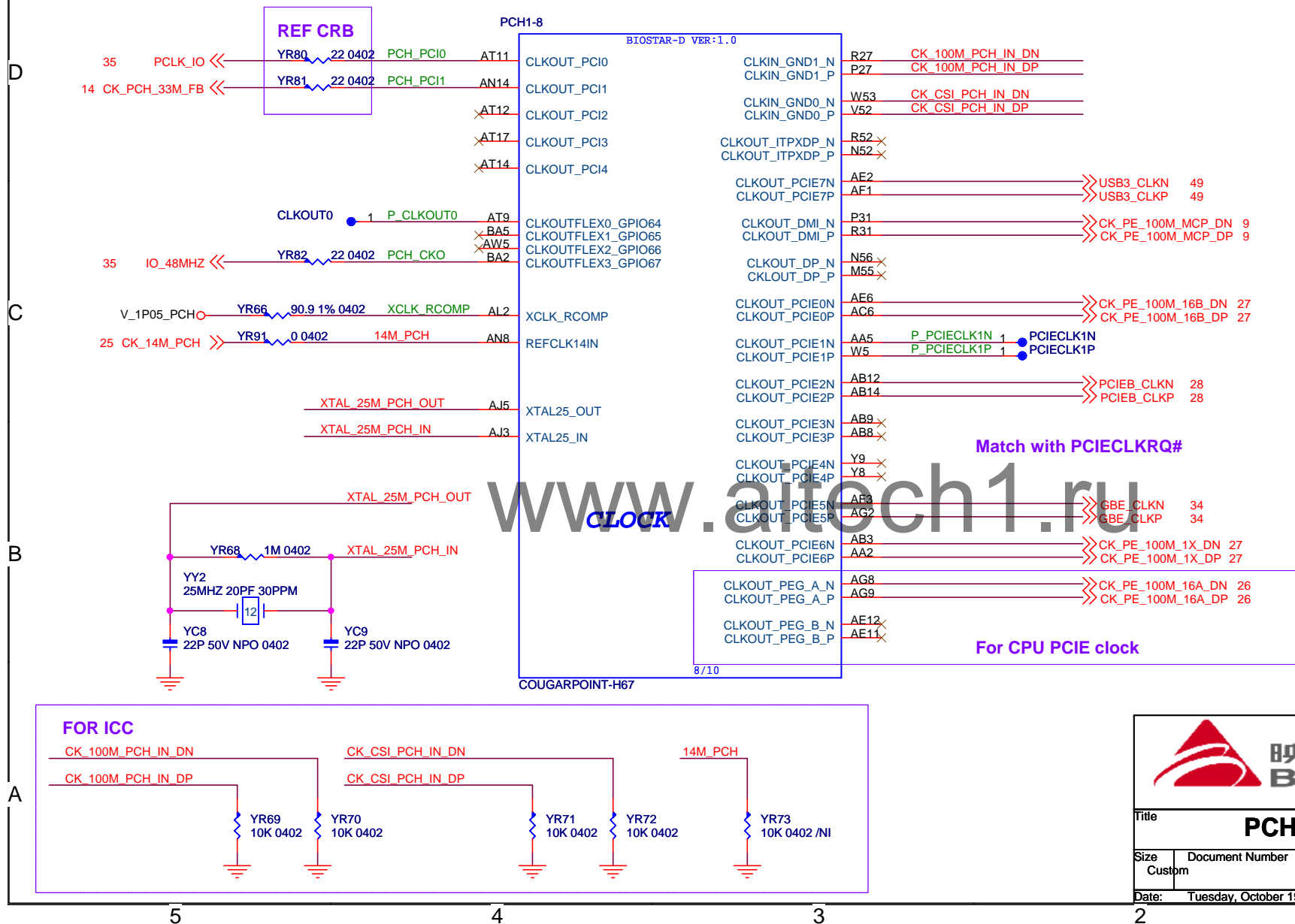
Title **PCH VGA/DISPLAY PORT**

Size A Document Number **IH67B-MHT**

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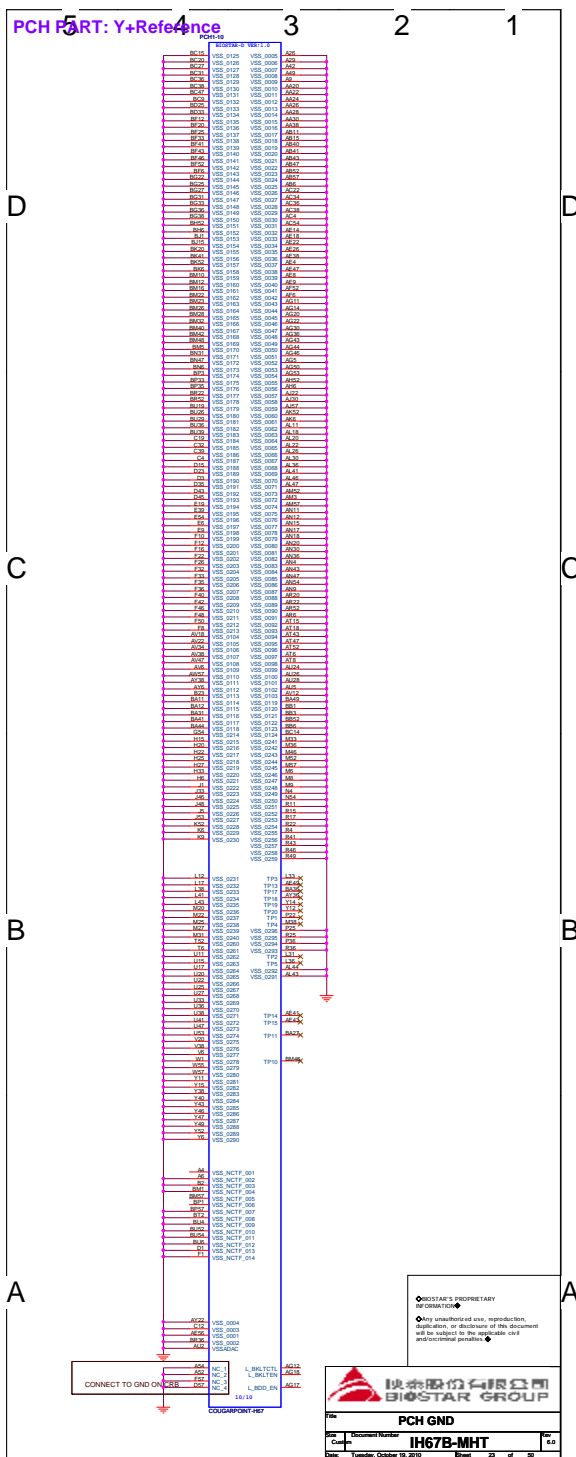
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# PCH PART: Y+Reference

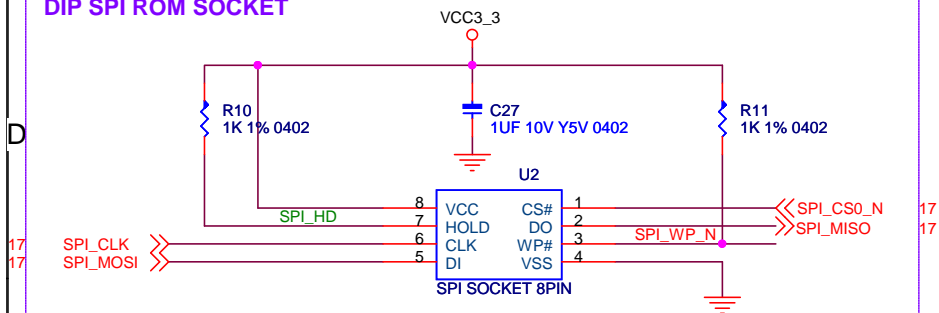


Title					<b>PCH CLOCK BUFFER</b>				
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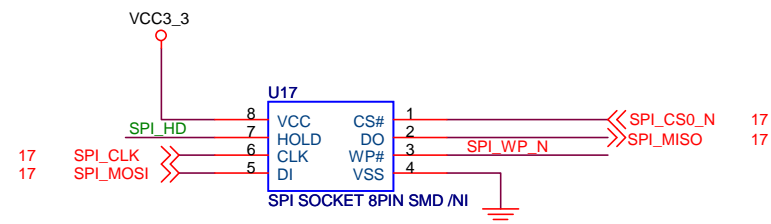
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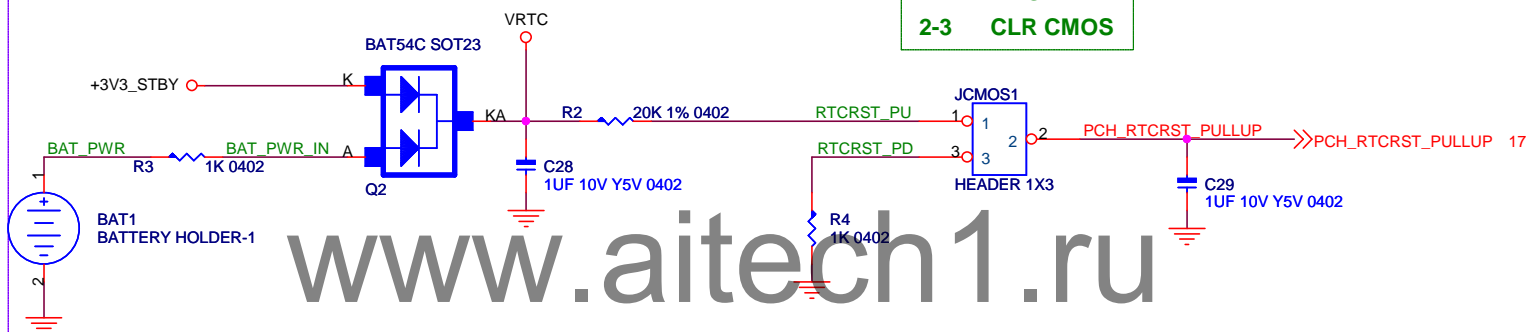
## DIP SPI ROM SOCKET



## SMD ROM SOCKET

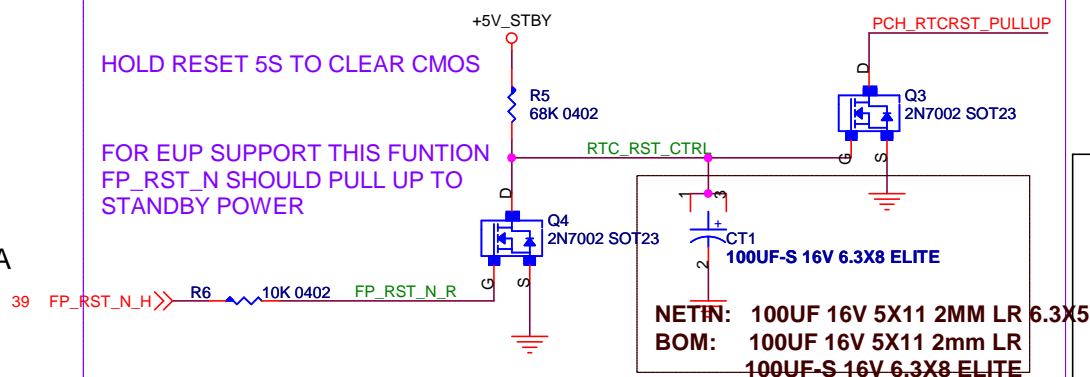


JCMOS  
1-2 NORMAL  
2-3 CLR CMOS



HOLD RESET 5S TO CLEAR CMOS

FOR EUP SUPPORT THIS FUNTION  
FP\_RST\_N SHOULD PULL UP TO  
STANDBY POWER



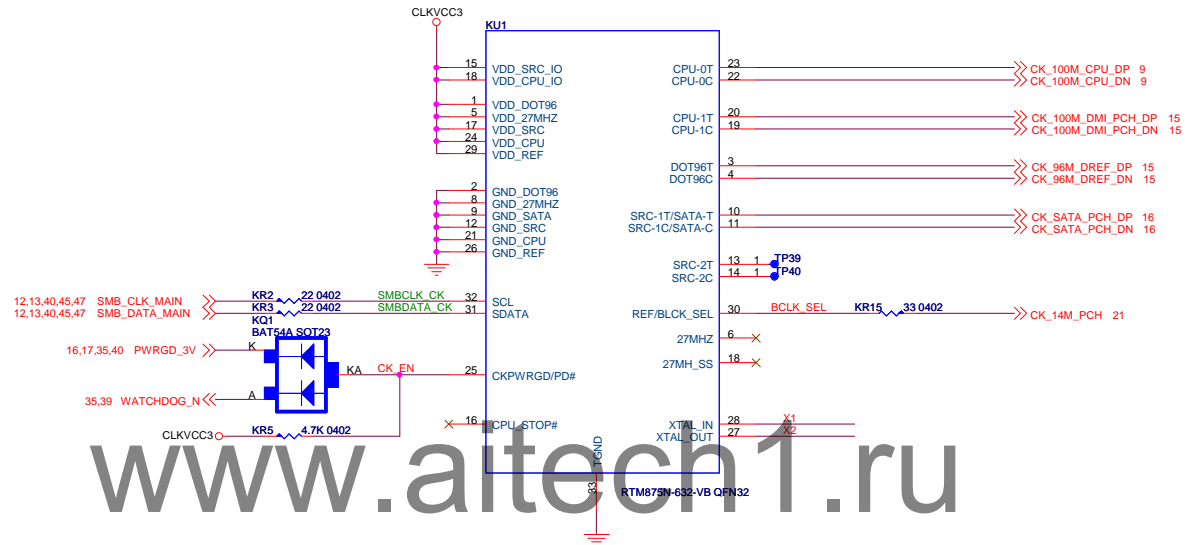
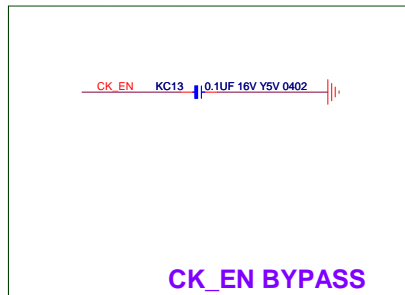
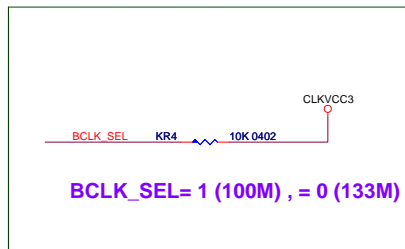
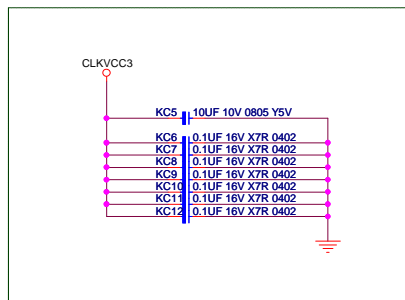
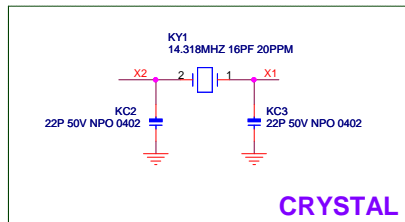
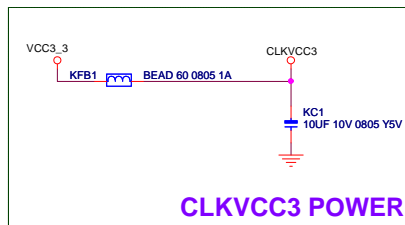
NETIN: 100UF 16V 5X11 2MM LR 6.3X5  
BOM: 100UF 16V 5X11 2mm LR  
100UF-S 16V 6.3X8 ELITE

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SPI ROM/RTC CRYSTAL/BAT			
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# CLOCK GEN PART: K+Reference

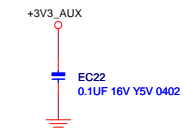


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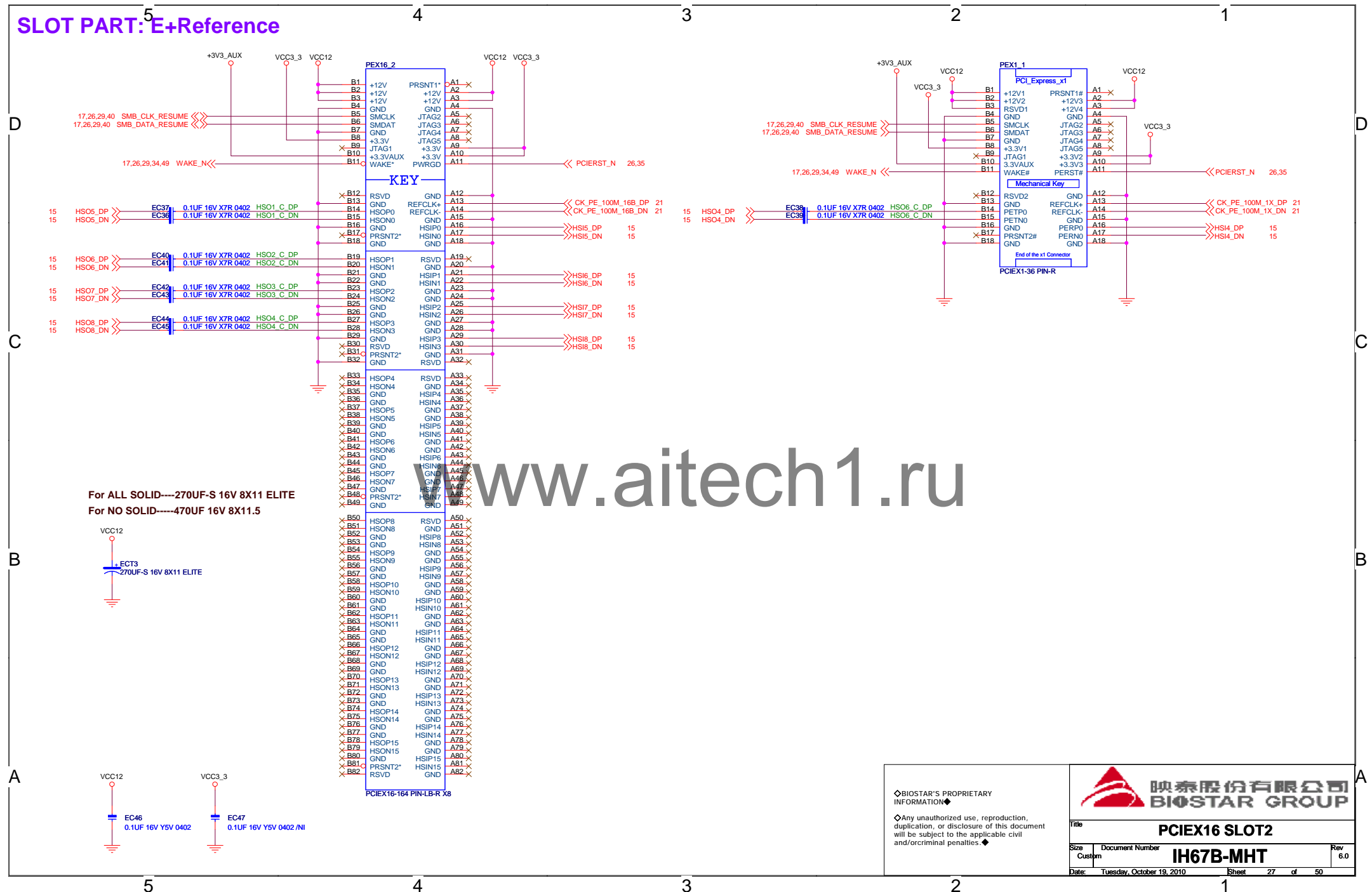
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Size Custom	Document Number <b>IH67B-MHT</b>
Date: Tuesday, October 19, 2010	Sheet 25 of 50
	Rev 6.0



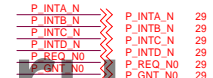
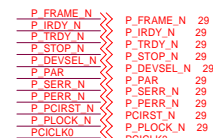
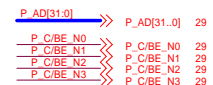
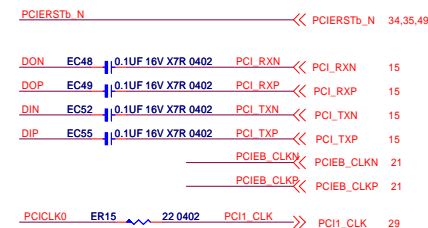
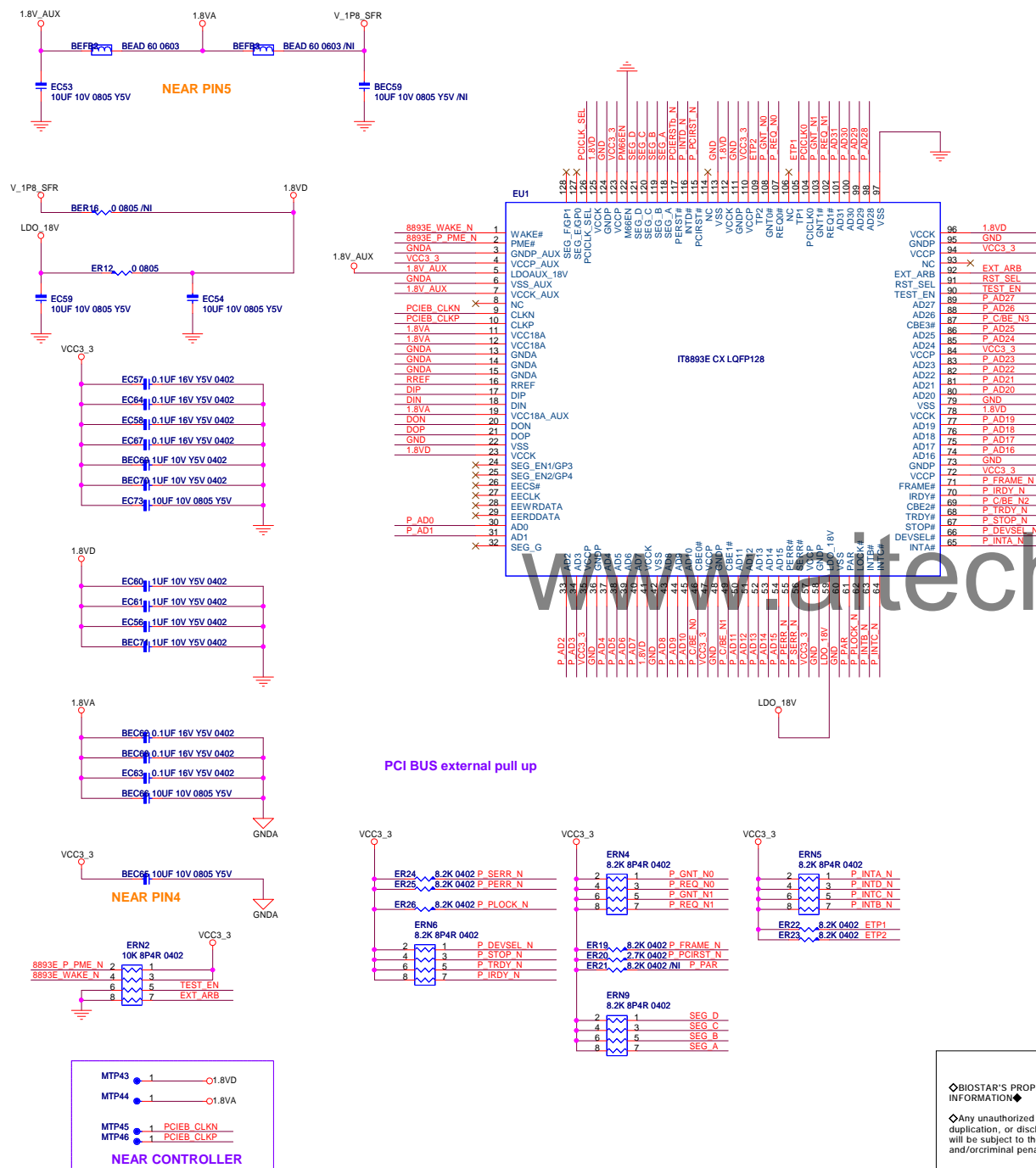
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# SLOT PART: E+Reference



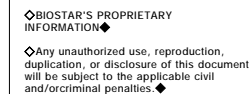
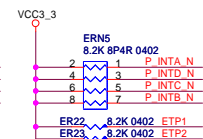
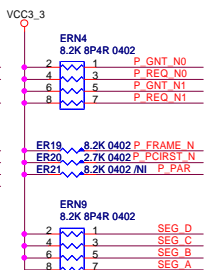
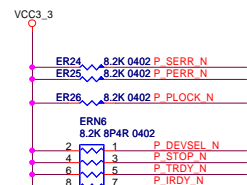
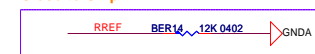
## SLOT PART: E+Reference



M66EN = LOW : DISABLED



## Close to Chip



Title	PCI BRIDGE IT8893
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Size	Document Number	Rev
Custom	IH67B MHT	s

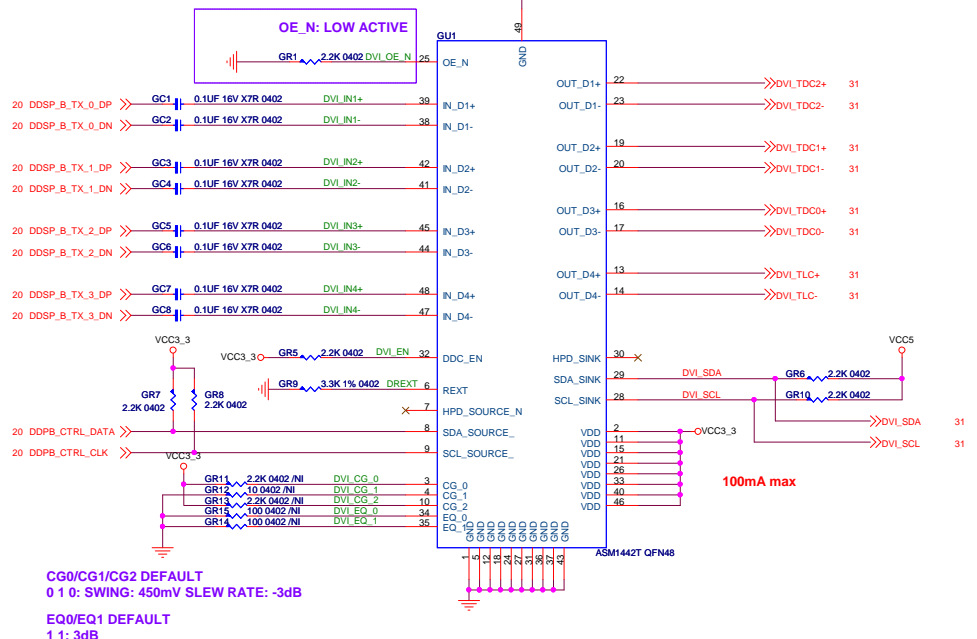
Date: Tuesday, October 19, 2010 Sheet 28 of 50

## 2

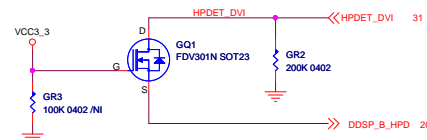


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Size Custom		Document Number <b>IH67B-MHT</b>					Rev 6.
Date: Tuesday, October 19, 2010		Sheet		29		of 50	

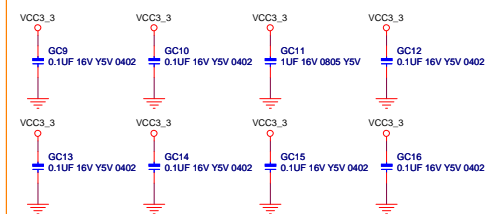
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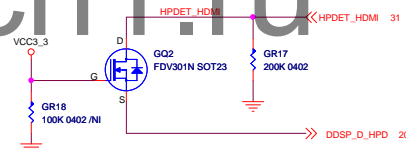


CLOSE TO GU1 VDD PIN

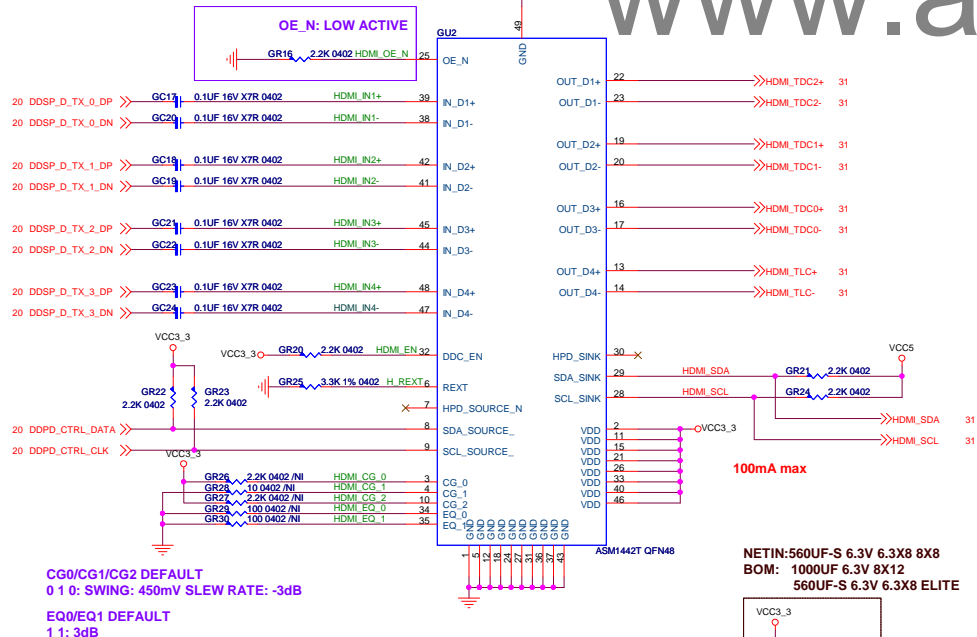
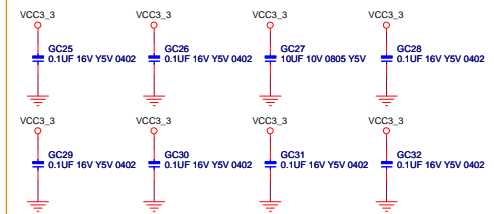


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For 1442T, RESERVE THIS CIRCUIT



CLOSE TO GU2 VDD PIN



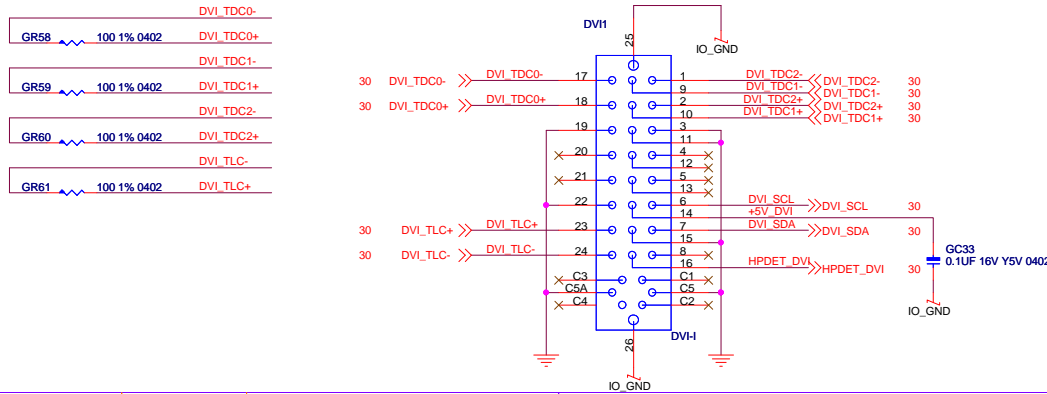
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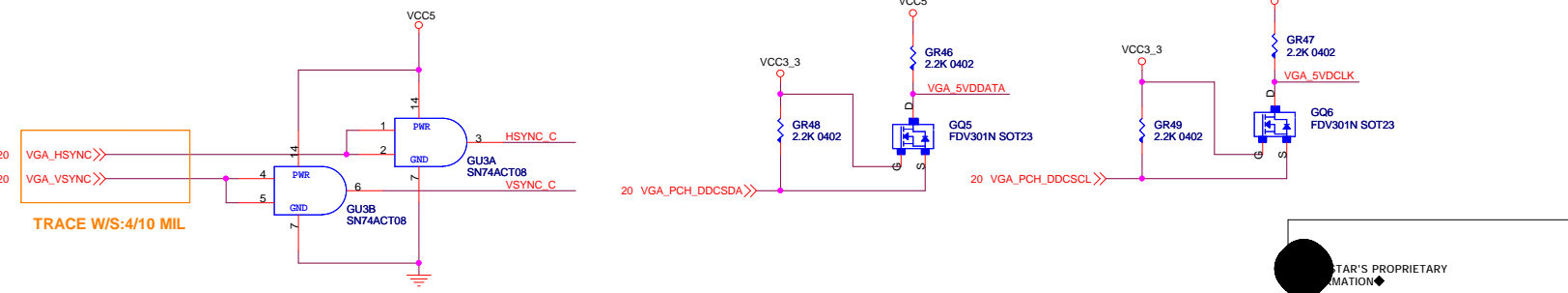
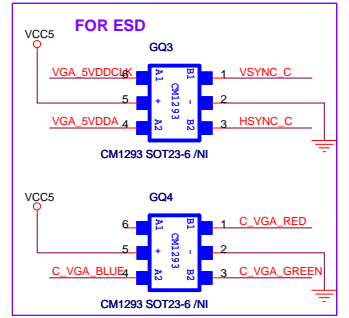
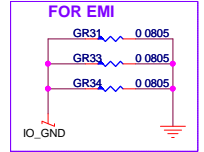
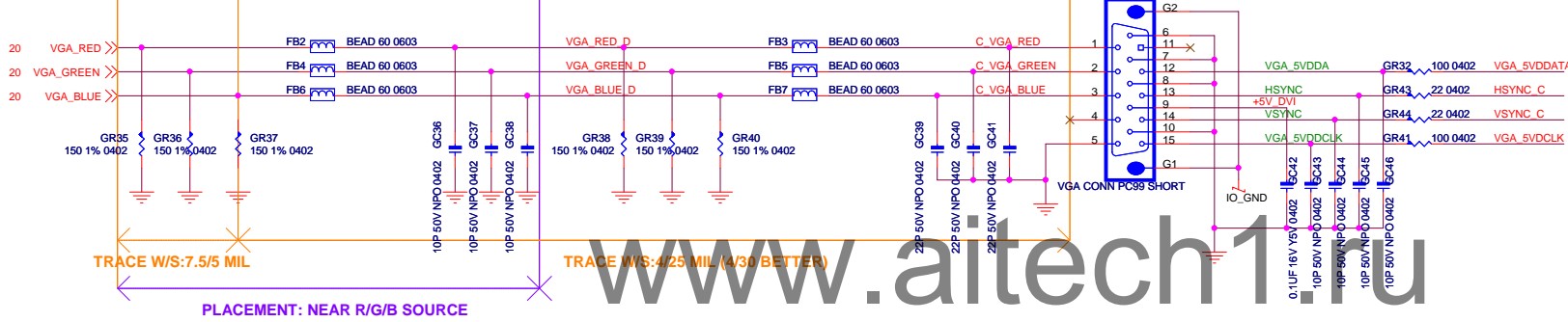
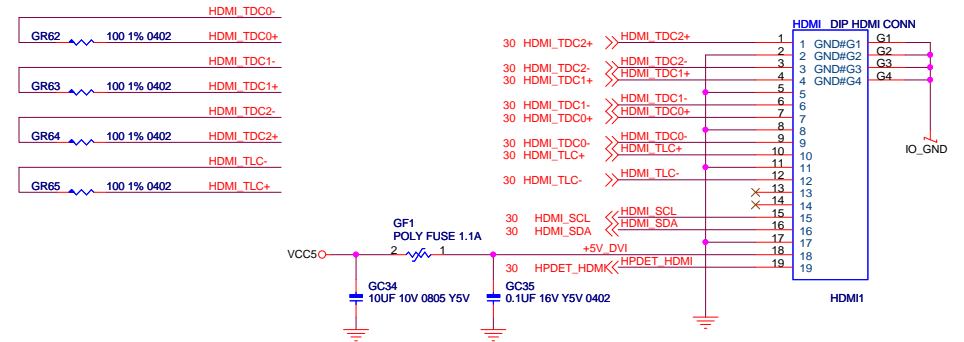
 <b>映泰股份有限公司</b> <b>BIOSTAR GROUP</b>	
<b>File</b> <b>ASM1442T LEVEL SHIFTER</b>	
<b>Size</b> Custom	<b>Document Number</b> <b>IH67B-MHT</b>
<b>Date</b> Tuesday, October 16, 2010	<b>Rev</b> 6.0
<b>Sheet</b> 30	<b>of</b> 50

# GRAPHIC PART: G+Reference

## DVI CONNECTOR DVI CONNECTOR TYPE ACCORD WITH SPEC



## HDMI CONNECTOR



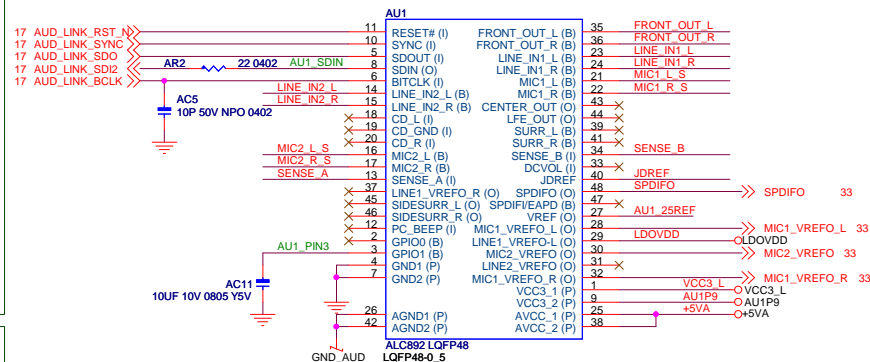
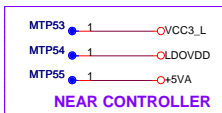
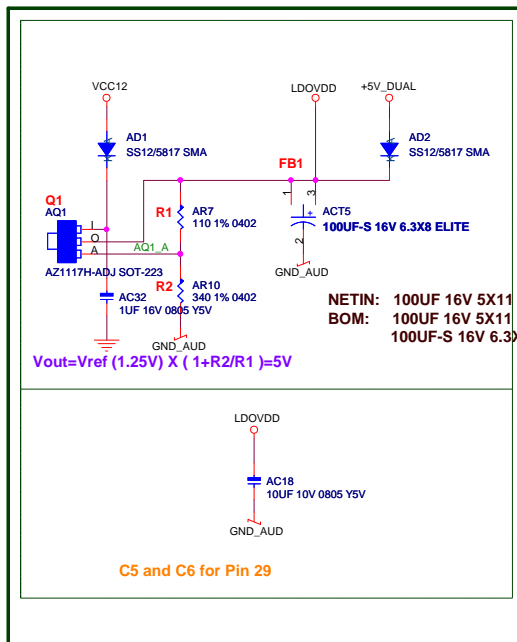
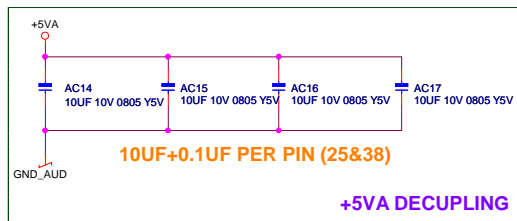
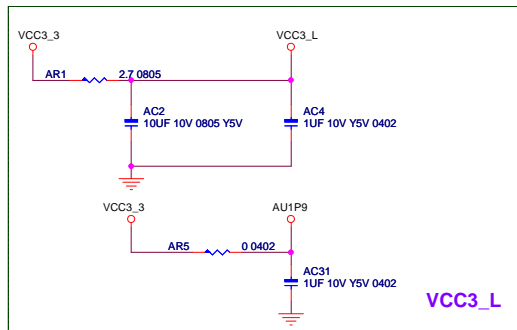
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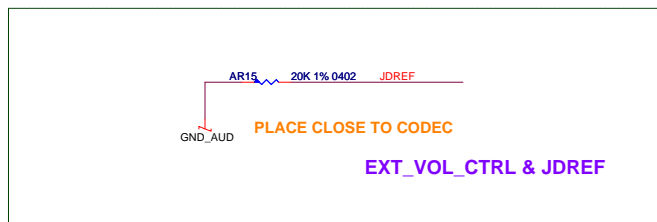
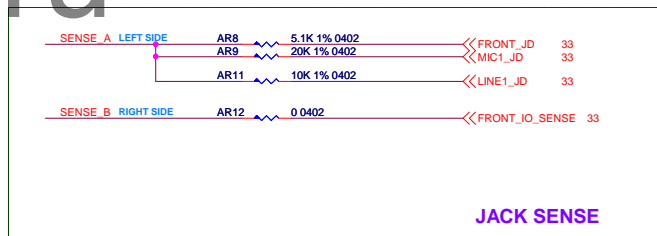
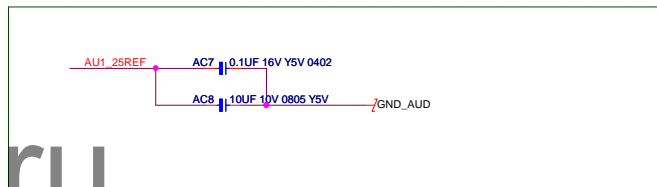
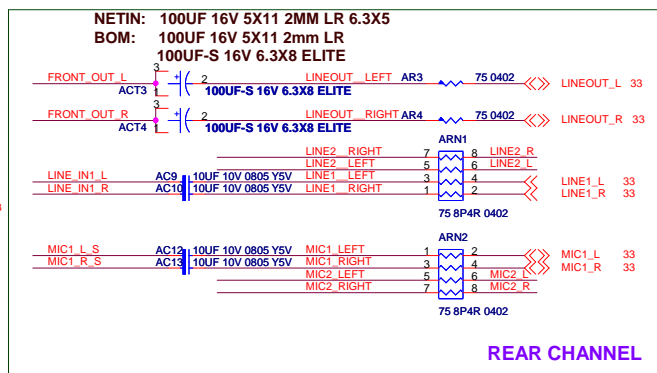
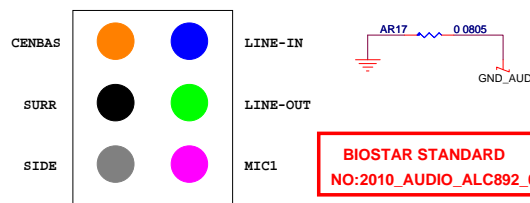
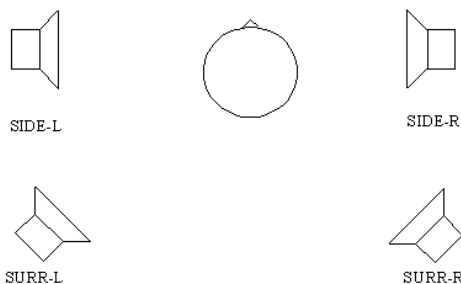
**VGA/DVI/HDMI CONNECTOR**  
**IH67B-MHT**

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## AUDIO PART: A+Reference



## 7.1 SPEAKER CONFIGURATION



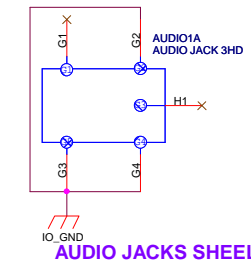
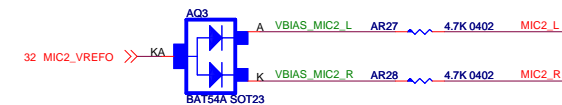
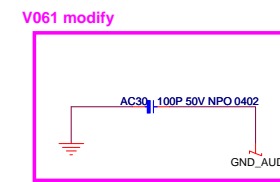
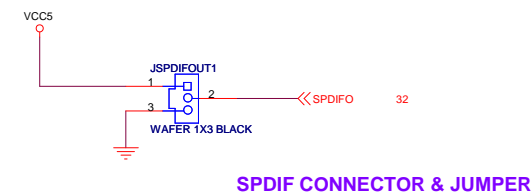
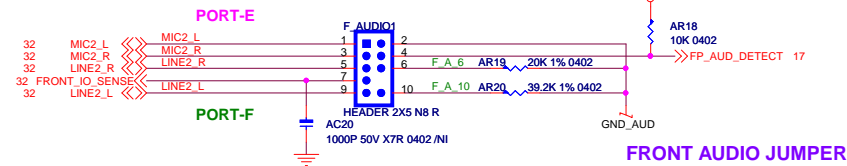
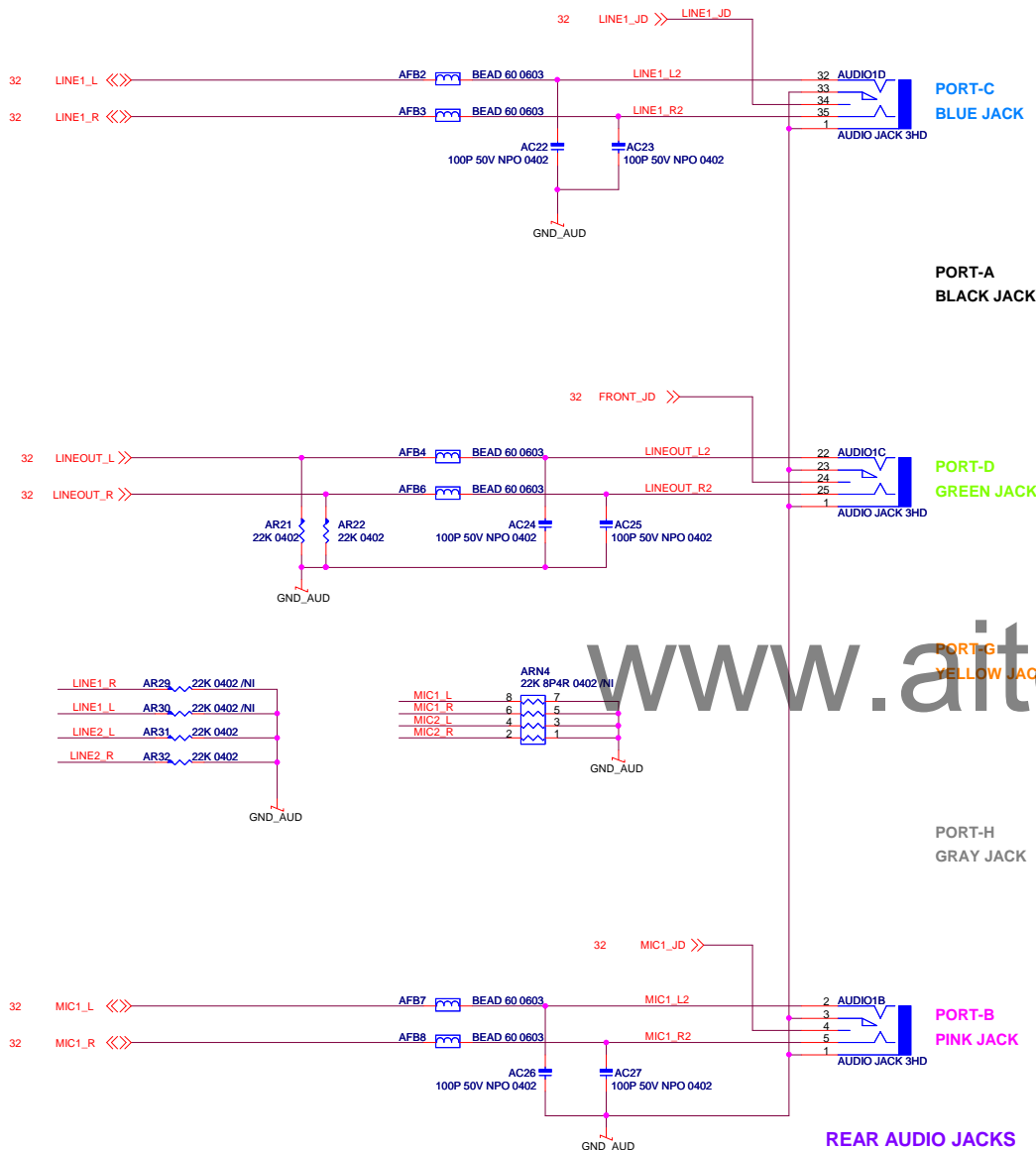
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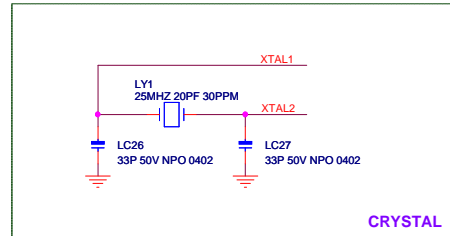
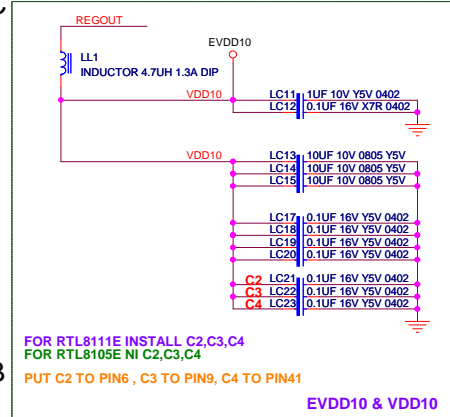
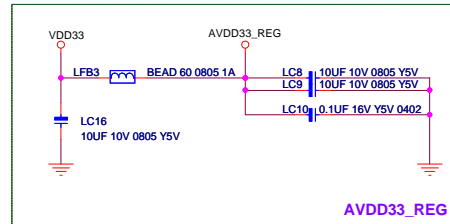
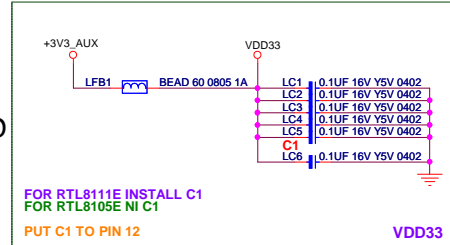
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**BIOSTAR GROUP**

**AUDIO CONNECTOR**

**Size Custom** **Document Number** **IH67B-MHT** **Rev 6.0**

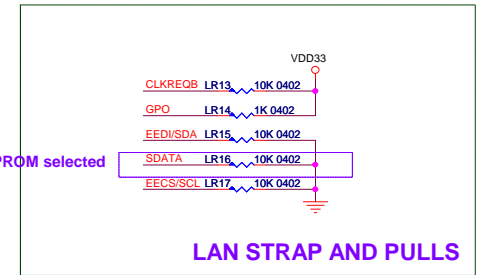
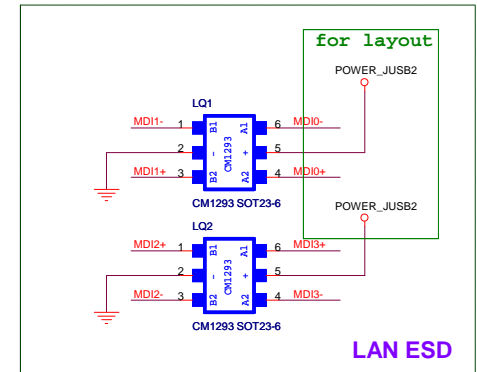
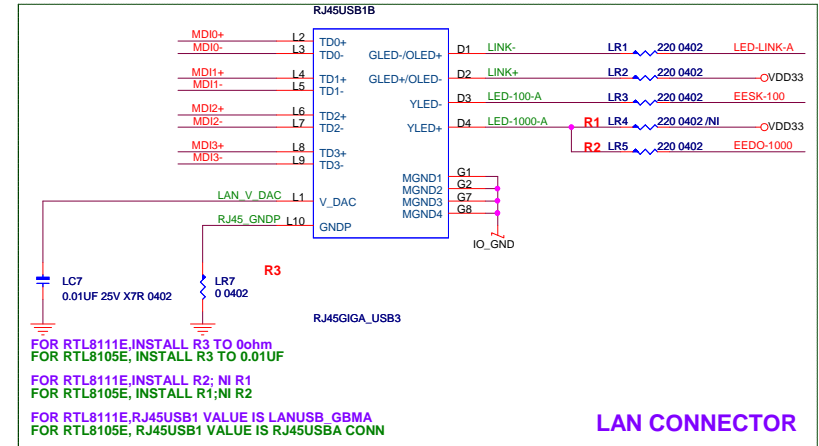
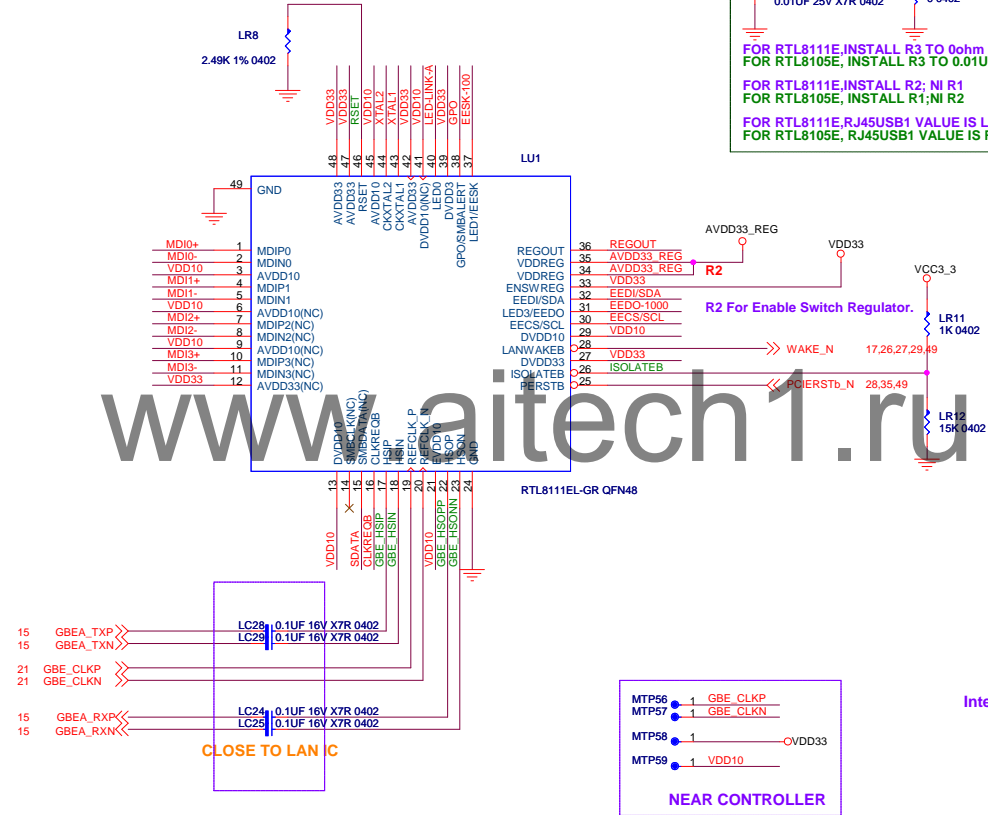
**Date:** Wednesday, October 20, 2010 **Sheet** 33 **of** 50

## LAN PART: L+Reference



### COMPONENT CONTRAST LIST

LAN PARTS	C1	C2	C3	C4	R1	R2	R3	RJ45 CONN
RTL8111E	O	O	O	O	X	O	0ohm	LANUSB_GBMA
RTL8105E	X	X	X	X	O	X	0.01uF	RJ45USBA CONN



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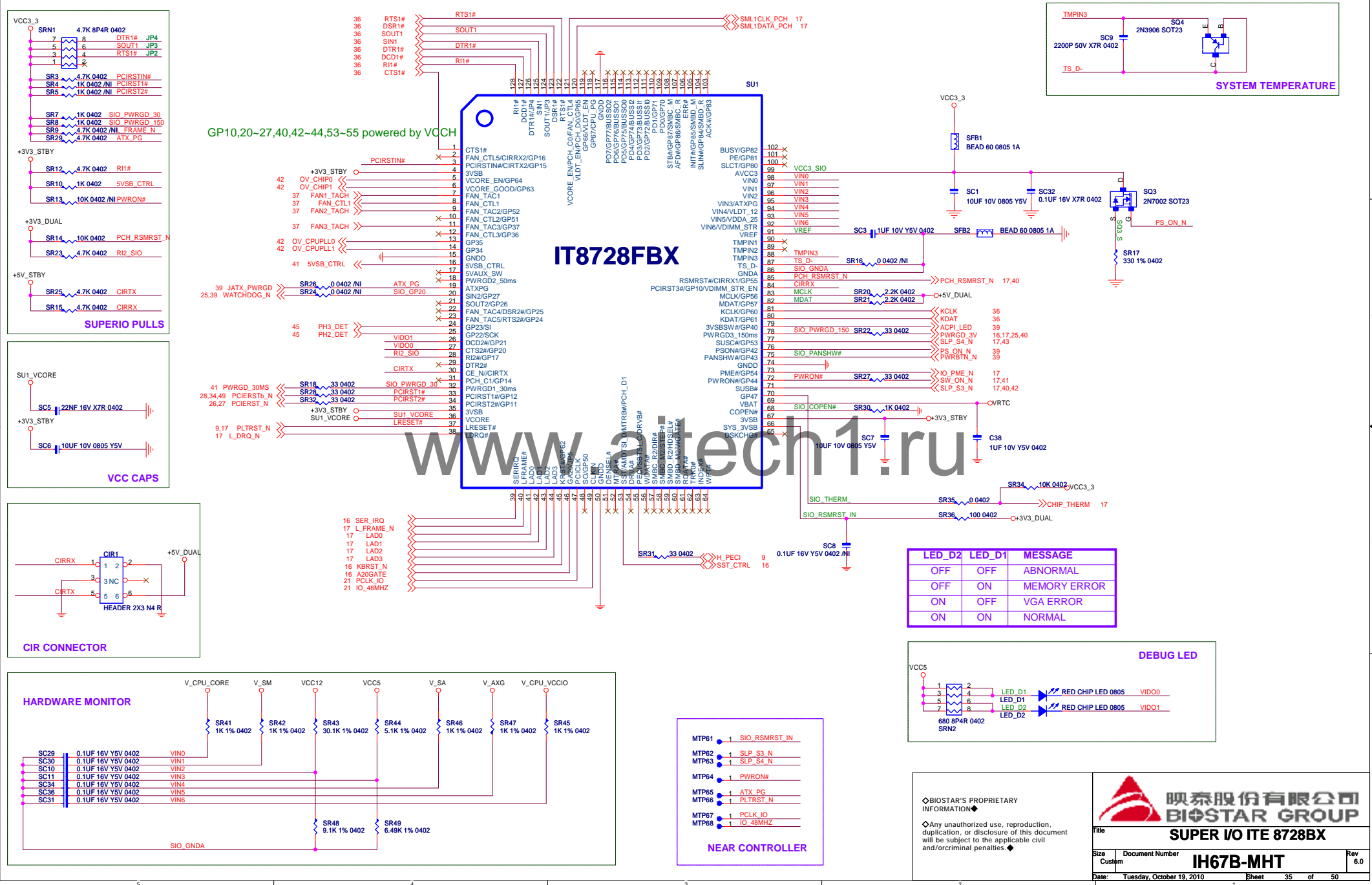
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**BIOSTAR GROUP**

Title: **ALC 8111E/8105E**

Size: Custom Document Number: **IH67B-MHT** Rev: 6.0

Date: Tuesday, October 19, 2010 Sheet: 34 of 50

# SUPERIO PART: S+Reference



## 2



## A



PDF created with pdfFactory Pro trial version [www.pdffactory.com](http://www.pdffactory.com)

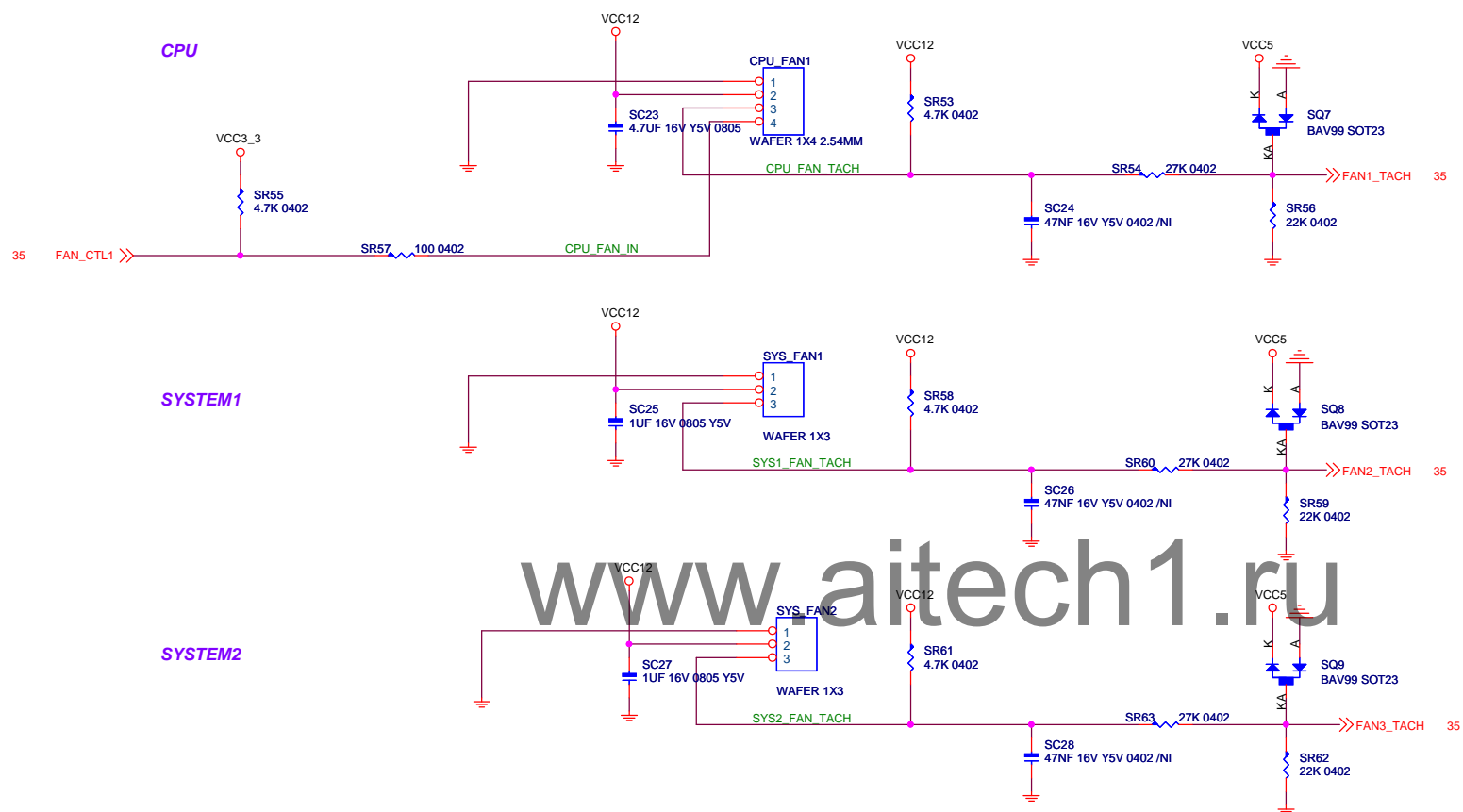


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Title		<b>FDD / PS2 CONN</b>	
Size	Document Number		Rev
Custom	<b>IH67B-MHT</b>		6.0
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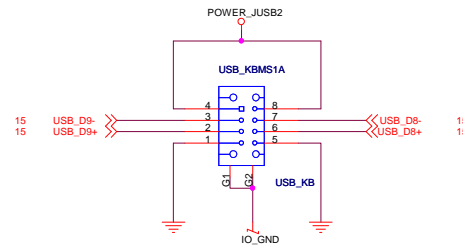
## AUDIO PART: A+Reference

### CPU FAN/SYSTEM FAN1/SYSTEM FAN2

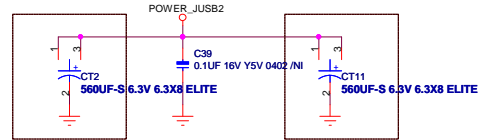
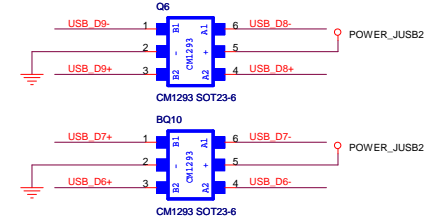
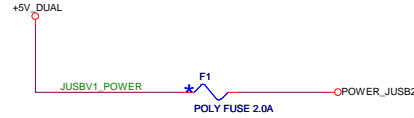


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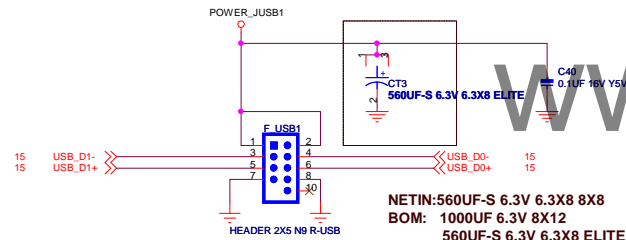
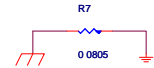
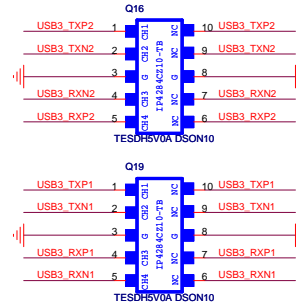
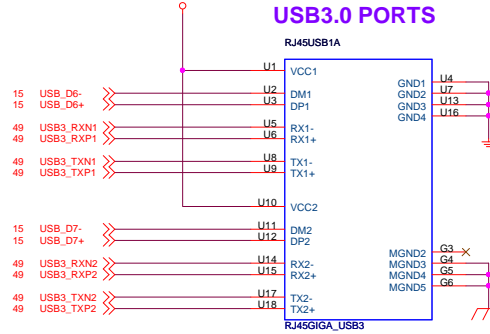
		
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Title <b>HW MONITOR/FAN CONTROL</b>		
Size Custom	Document Number <b>IH67B-MHT</b>	Rev 6.0
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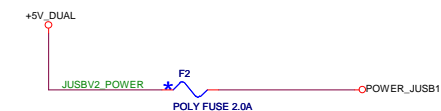
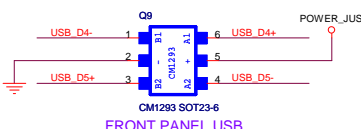
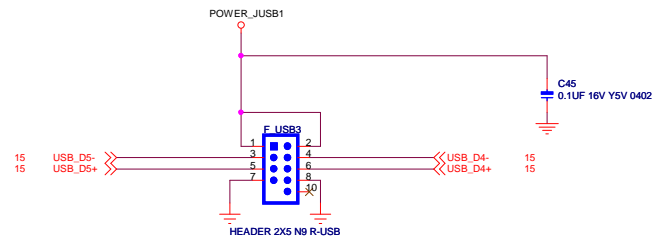
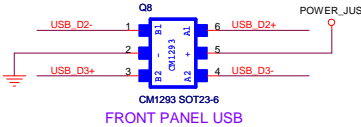
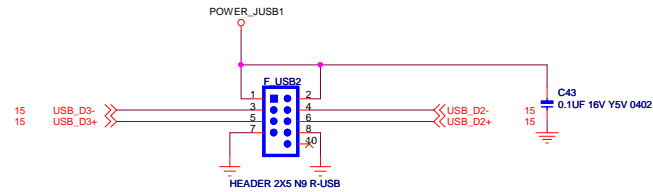
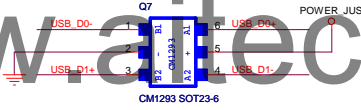
DEFAULT : 1-2 CLOSE



NETIN:560UF-S 6.3V 6.3X8 8X  
BOM: 1000UF 6.3V 8X12  
560UF-S 6.3V 6.3X8 ELITE



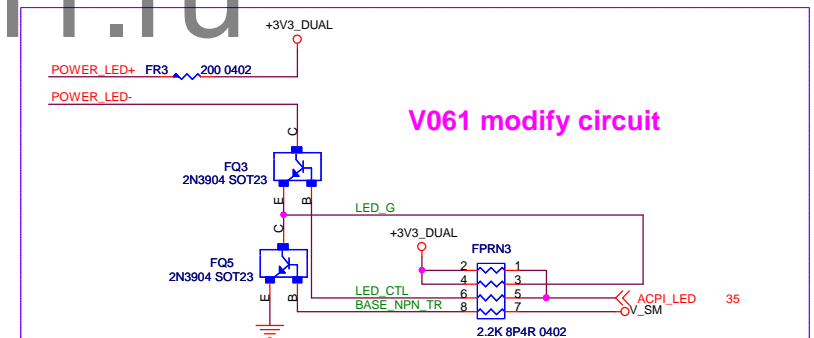
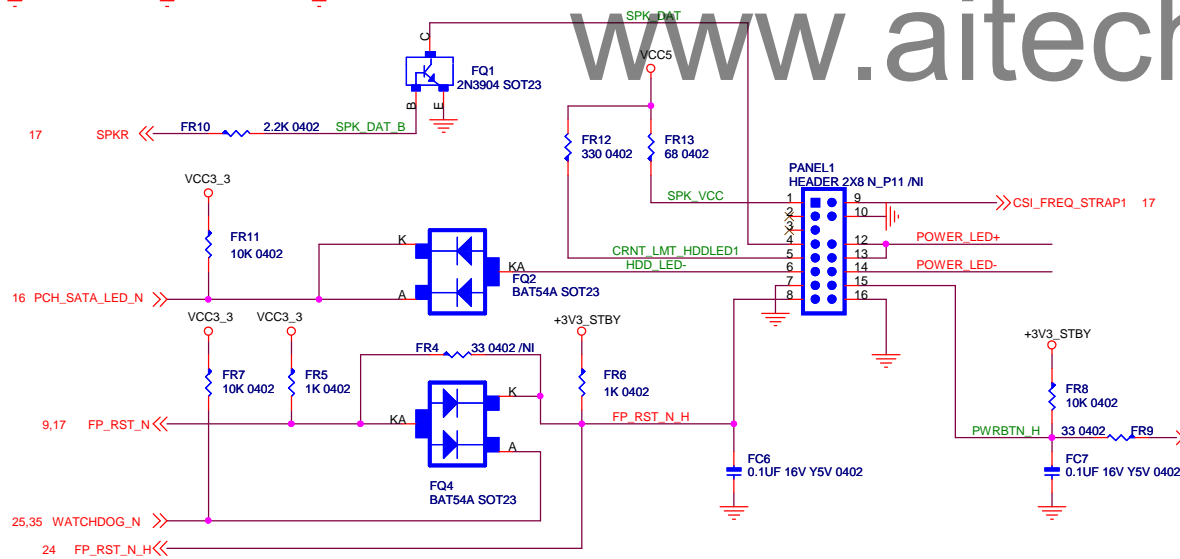
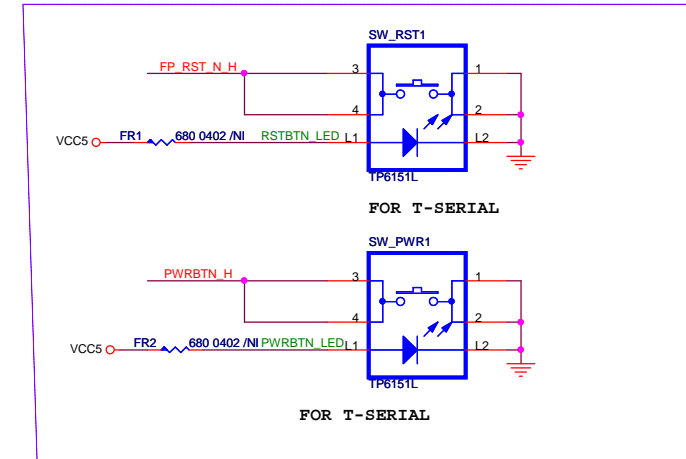
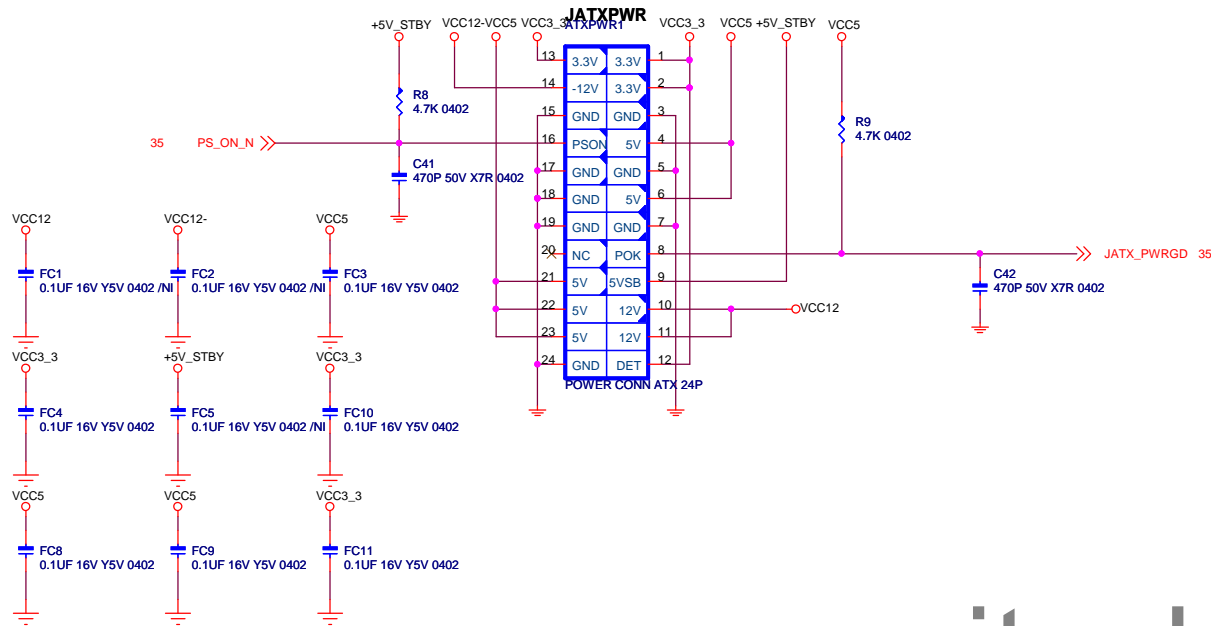
NETIN:560UF-S 6.3V 6.3X8 8X  
BOM: 1000UF 6.3V 8X12  
560UF-S 6.3V 6.3X8 ELITE



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# FP PART: F+Reference



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24PIN POWER CONN&FP

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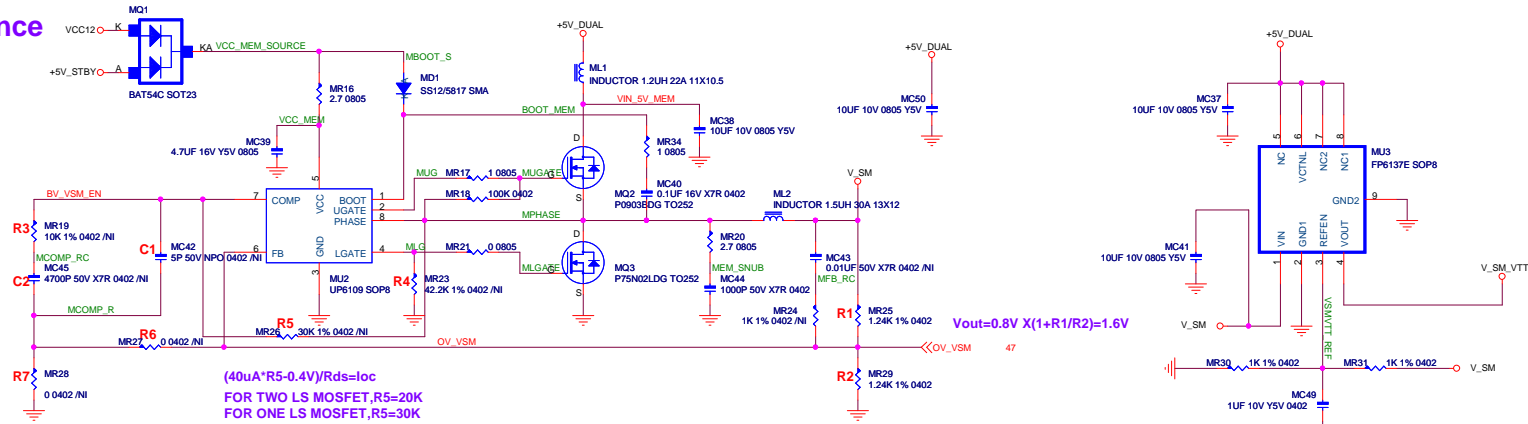




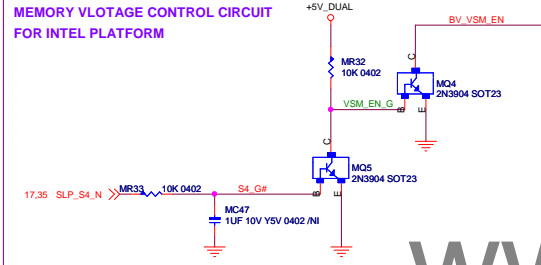


# MEMORY PART:M+Reference

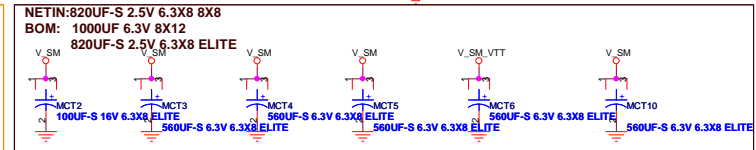
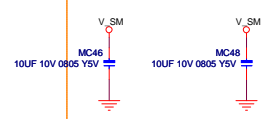
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R3	NI	13.7K 1% 0402	
R4	NI	26.1K 1% 0402	
R5	20K 0402	NI	
R6	NI	0 0402	
R7	NI	NI	
C1	NI	5P 50V NPO 0402	
C2	NI	4700P 50V X7R 0402	



## MEMORY VLOTAGE CONTROL CIRCUIT FOR INTEL PLATFORM



## Between CPU and DIMM



NETIN: 820UF-S 2.5V 6.3X8 8X8  
BOM: 1000UF 6.3V 8X12  
820UF-S 2.5V 6.3X8 ELITE

NETIN: 100UF 16V 5X11 2MM LR 6.3X5  
BOM: 100UF 16V 5X11 2mm LR  
100UF-S 16V 6.3X8 ELITE

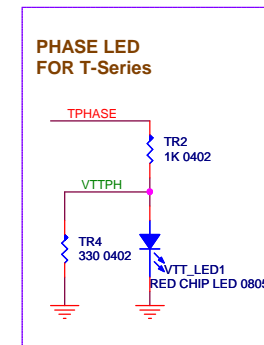
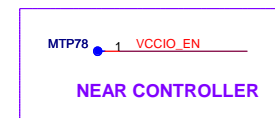
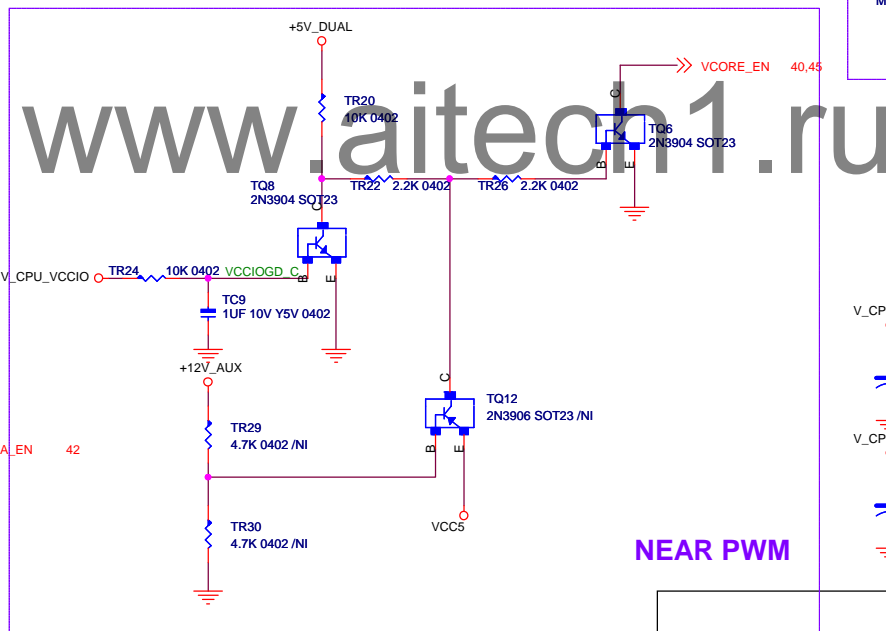
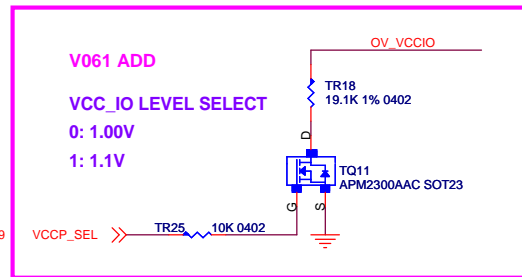
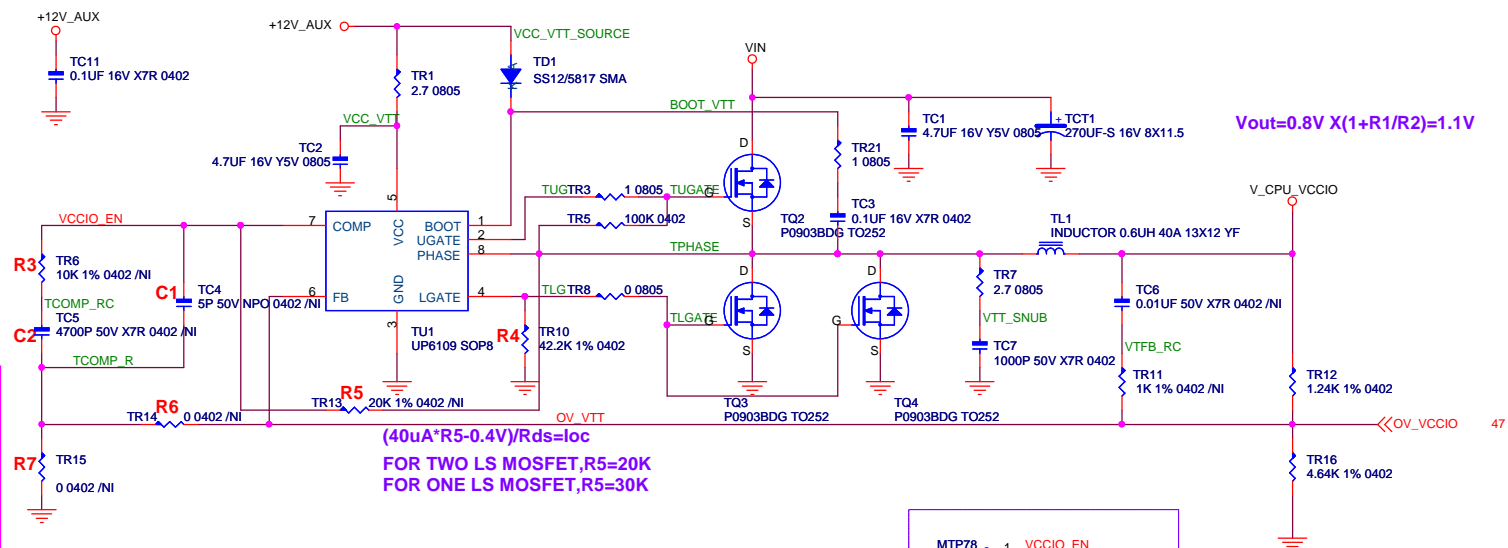
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<b>VSM DC-DC Converter</b> <b>IH67B-MHT</b>	
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# VTT POWER PART:T+Reference

	FP6321A	UP6101B	FP6327
R3	NI	13.7K 1% 0402	
R4	NI	26.1K 1% 0402	
R5	20K 0402	NI	
R6	NI	0 0402	
R7	NI	NI	
C1	NI	5P 50V NPO 0402	
C2	NI	4700P 50V X7R 0402	



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# CPU POWER PART:P+Reference

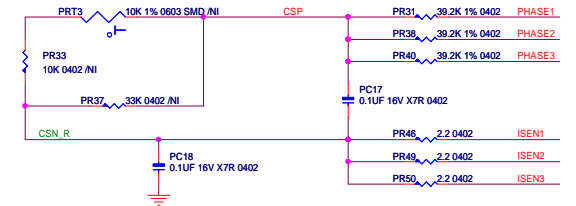
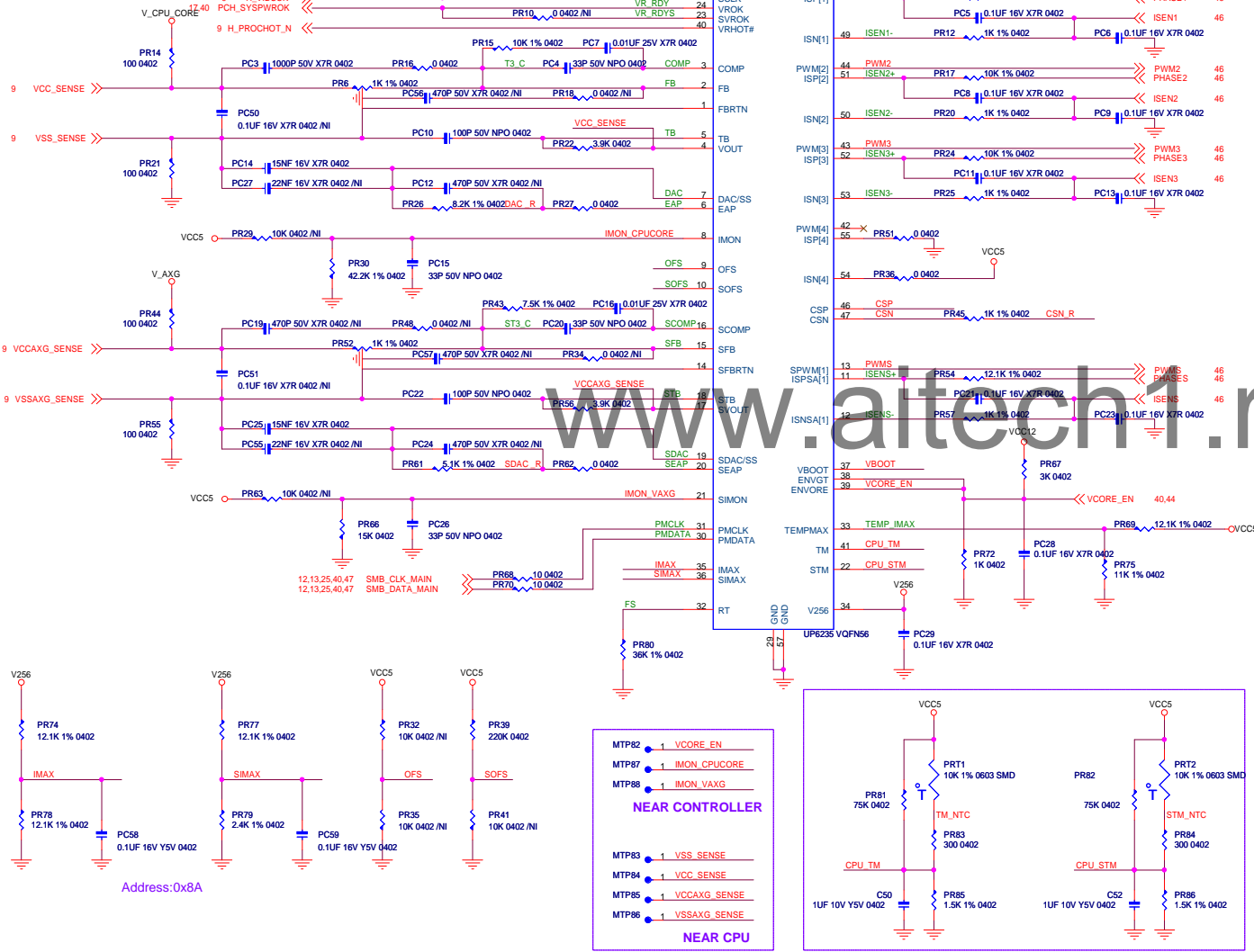
# VRD12: 3+1 HIGH1+LOW2

D/源供 CHOKE 0.6uH/40A/  
DCR0.8m/ELDA-1312-R60M-P/器器

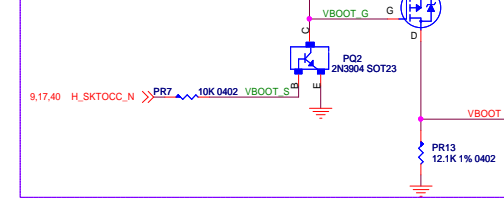
L/DCR=Rcsp\*Ccs  
N\*L/DCR=Rsw\*Csum

Rll=DCR\*Rdroop/Rcsp/N  
=0.8mohm\*6.8Kohm/1Kohm/3  
=1.7mohm

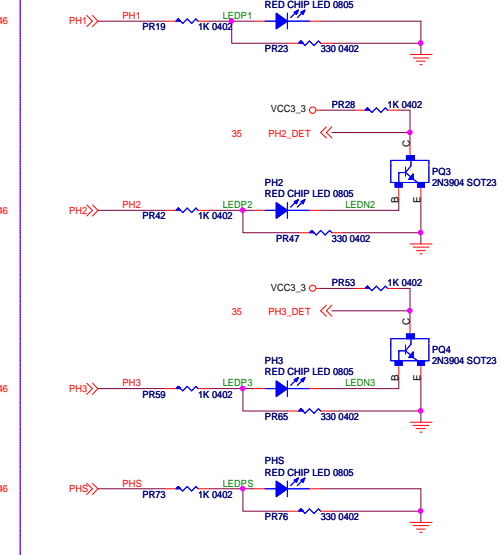
Isum=lout\*DCR/(N\*Rsum)



FOR POWER TEST  
VBOOT:2.56V Vout=1.1V  
0V Vout=0V



## PHASE LED



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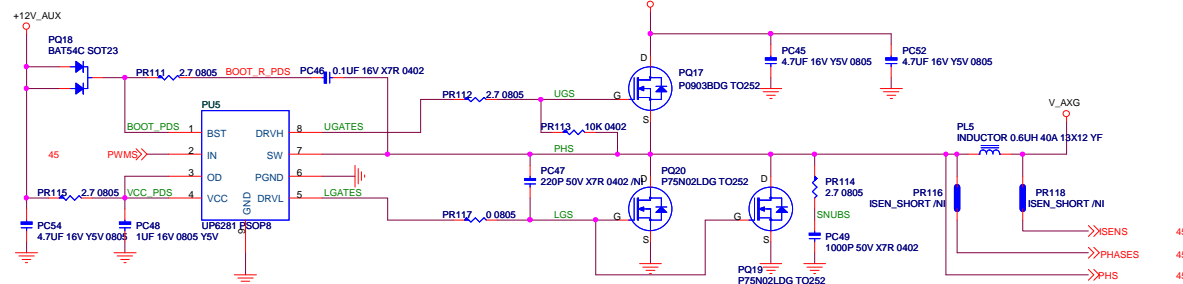
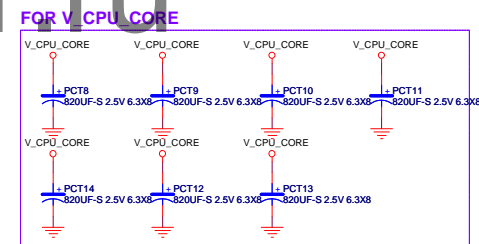
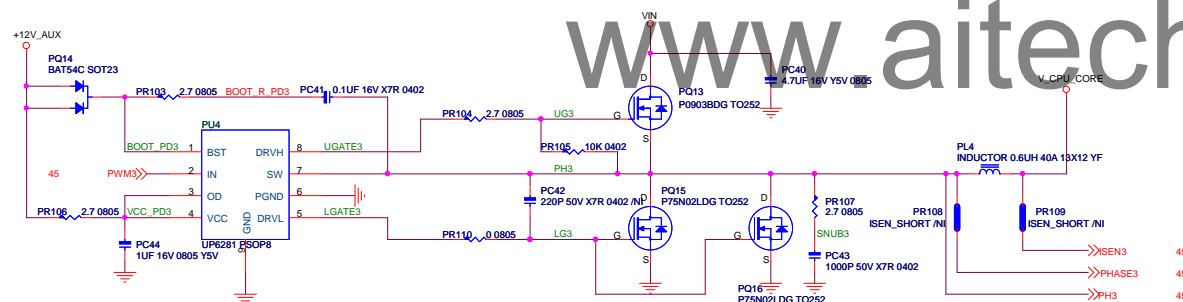
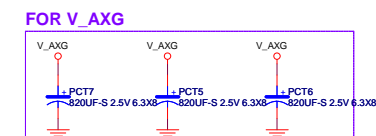
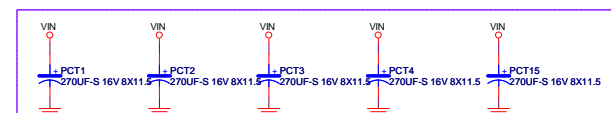
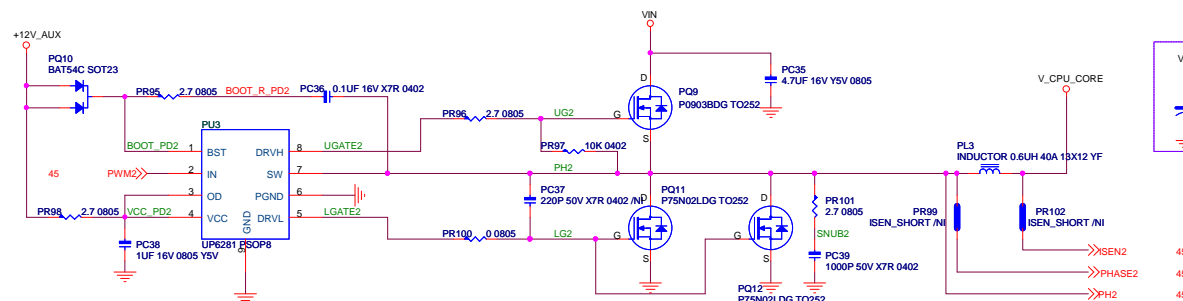
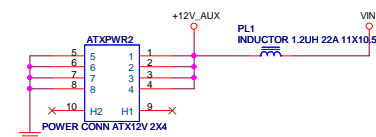
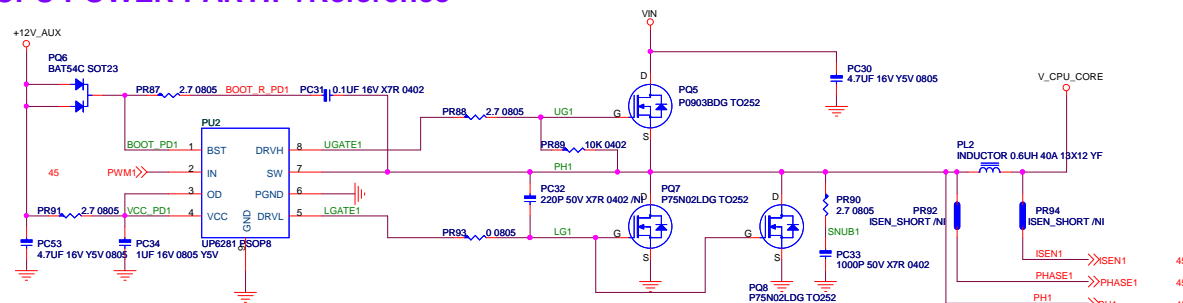
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**VCORE VREG1**

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## CPU POWER PART:P+Reference



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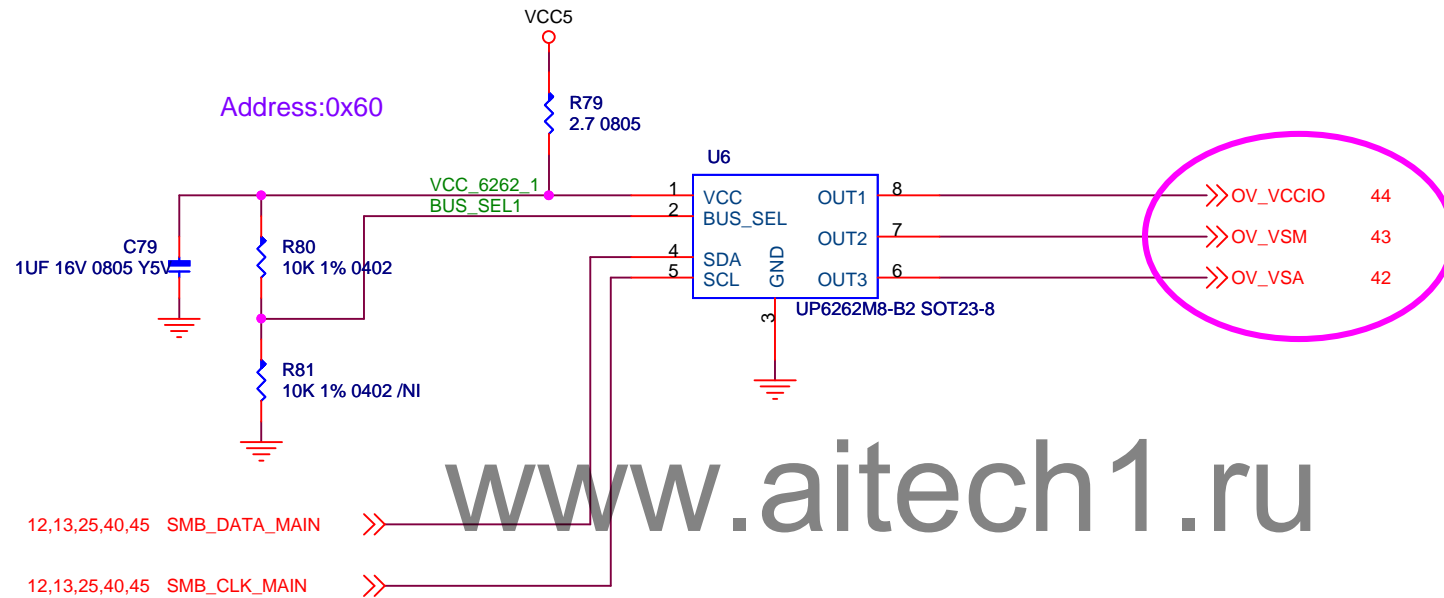


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