

IH61N-MHS TH61 REV 6.1

CPU:

Intel Sandy/Ivy Bridge processors in LGA1155 Package 95W

System Chipset:

Cugar Point H61

Main Memory:

Dual Channel/DDR-III*2(Max 16GB) 1066/1333

DDR3-1333 /1066 /800

Onboard Device:

Super I/O:IT8728

LAN:Realtek 8111EL

HD Codec:VT1708B 3 jacks

Power solution:

CPU Voltage Regulators:2phase by ISL6363

AXG voltage Regulators:1phase by ISL6363

VTT voltage Regulators:1Phase by uP6109

DDR voltage Regulators:1Phase by uP6109

Expansion Slots:

PCI EXPRESS 16X SLOT*1

PCI EXPRESS 1X SLOT*2

REAR IO:

PS/2 KB/MS

DVI Port

VGA

2 layer USB2.0 Ports

2 layer USB2.0 + Gb RJ-45 Ports

Audio Jacks

Front I/O:

SATA2 * 4

USB Header * 2

CPU /System1

Front Audio Header

COM1

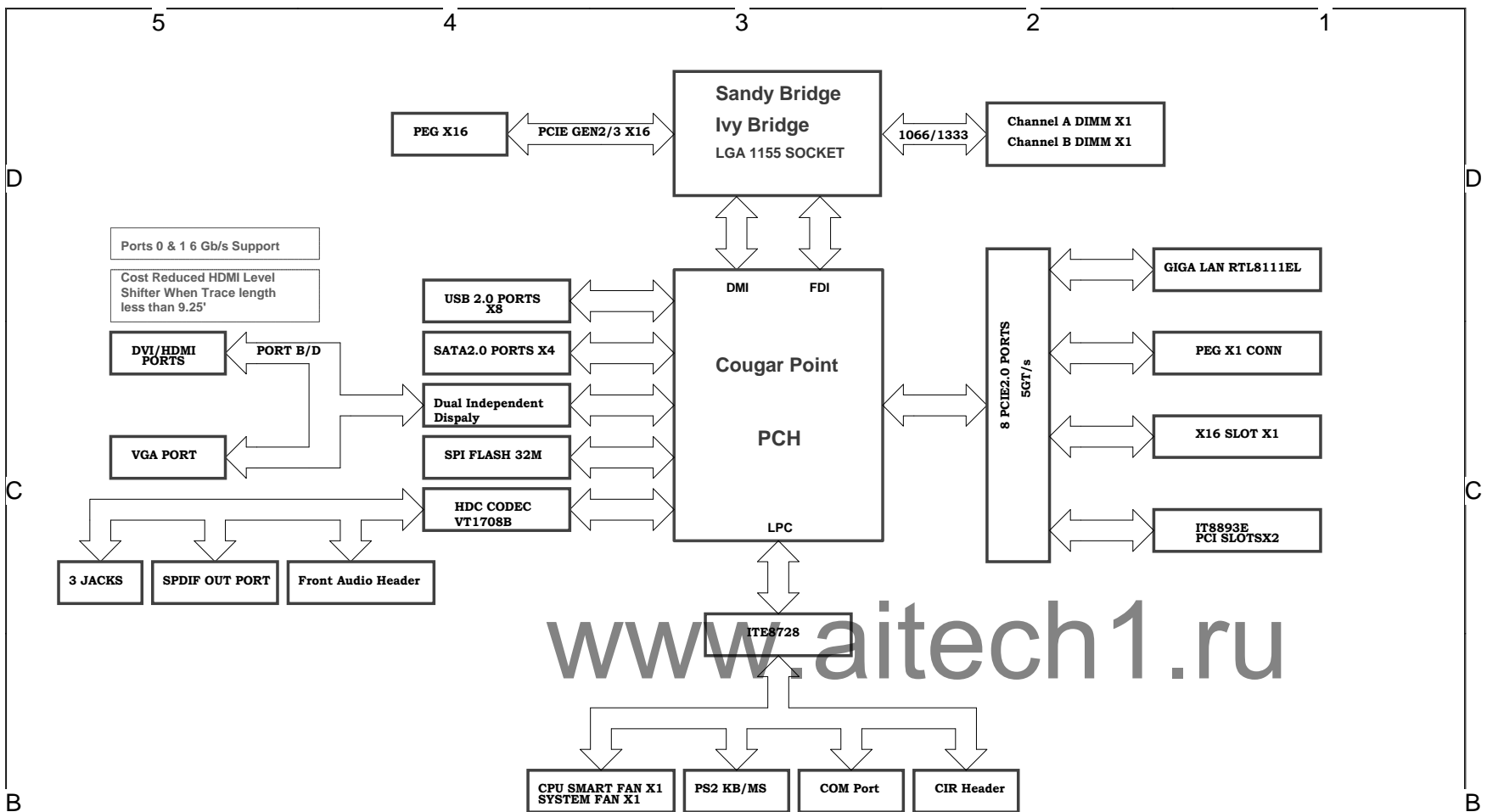
LPT1

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30	USB PORT
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33	ACPI POWER CONTROL
34	LINEAR POWER
35	MEMORY DC-DC Conver
36	VTT DC-DC Conver
37	VCORE VREG1
38	VCORE VREG2
39	OVER VOLTAGE
40	BOM

HW Engineer		Date	
HW Leader1		Date	
HW Leader2		Date	

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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 ⁹
PCI Interface	Yes	Yes	Yes	No ¹⁰	No ¹⁰	No ¹⁰
USB 2.0 Ports	14	14	12 ⁶	14	14	10 ⁷
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 ⁴	1 ⁵	1 ⁵	2 ⁴	2 ⁴	0
• SATA Ports (3 Gb/s and 1.5 Gb/s only)	4	5	5	4	4	4 ⁸
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

映泰股份有限公司
BIostar Group


Title: **BLOCK DIAGRAM**

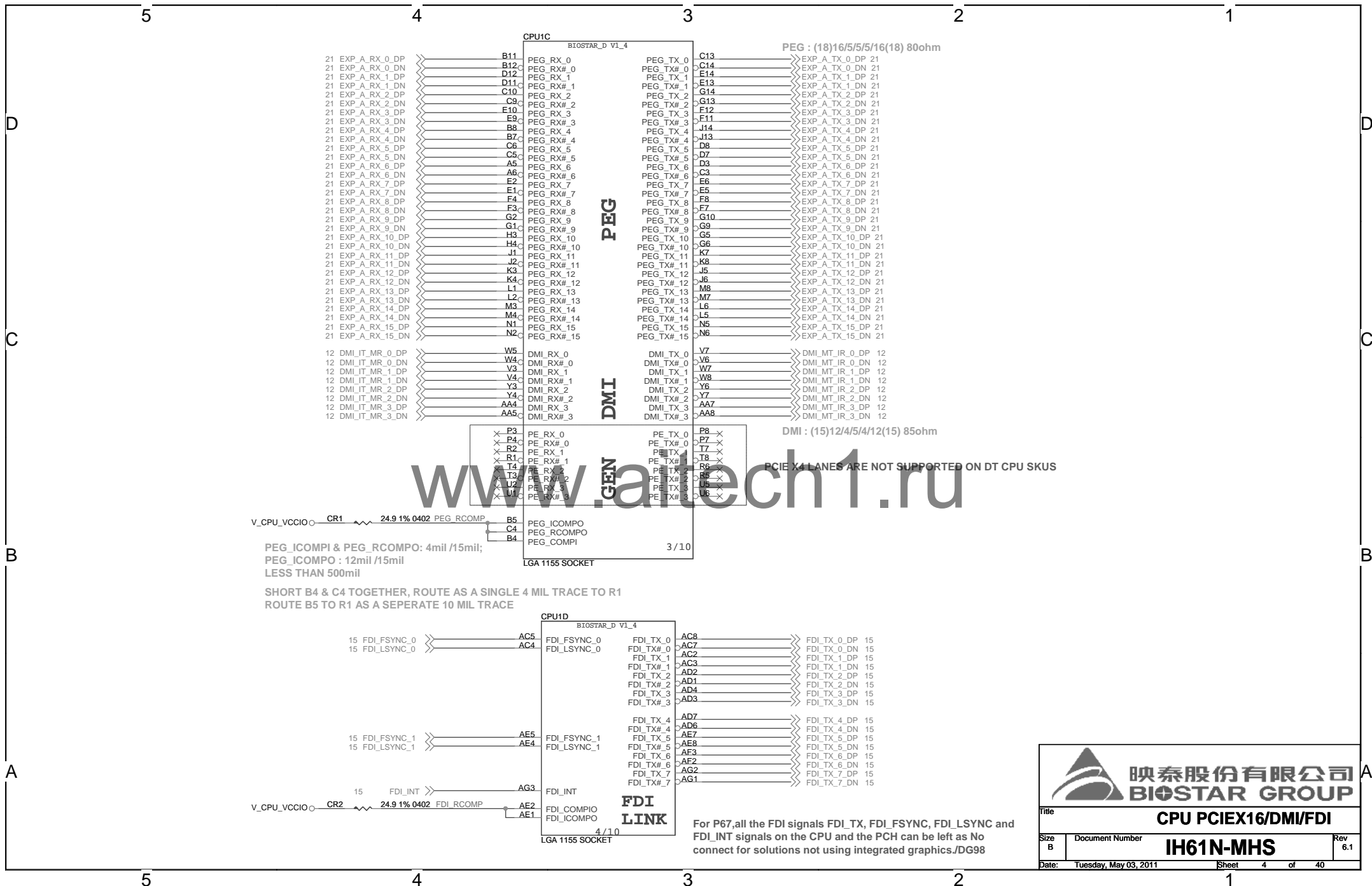
Size: Custom Document Number: **IH67A-MHS** Rev: 6.1

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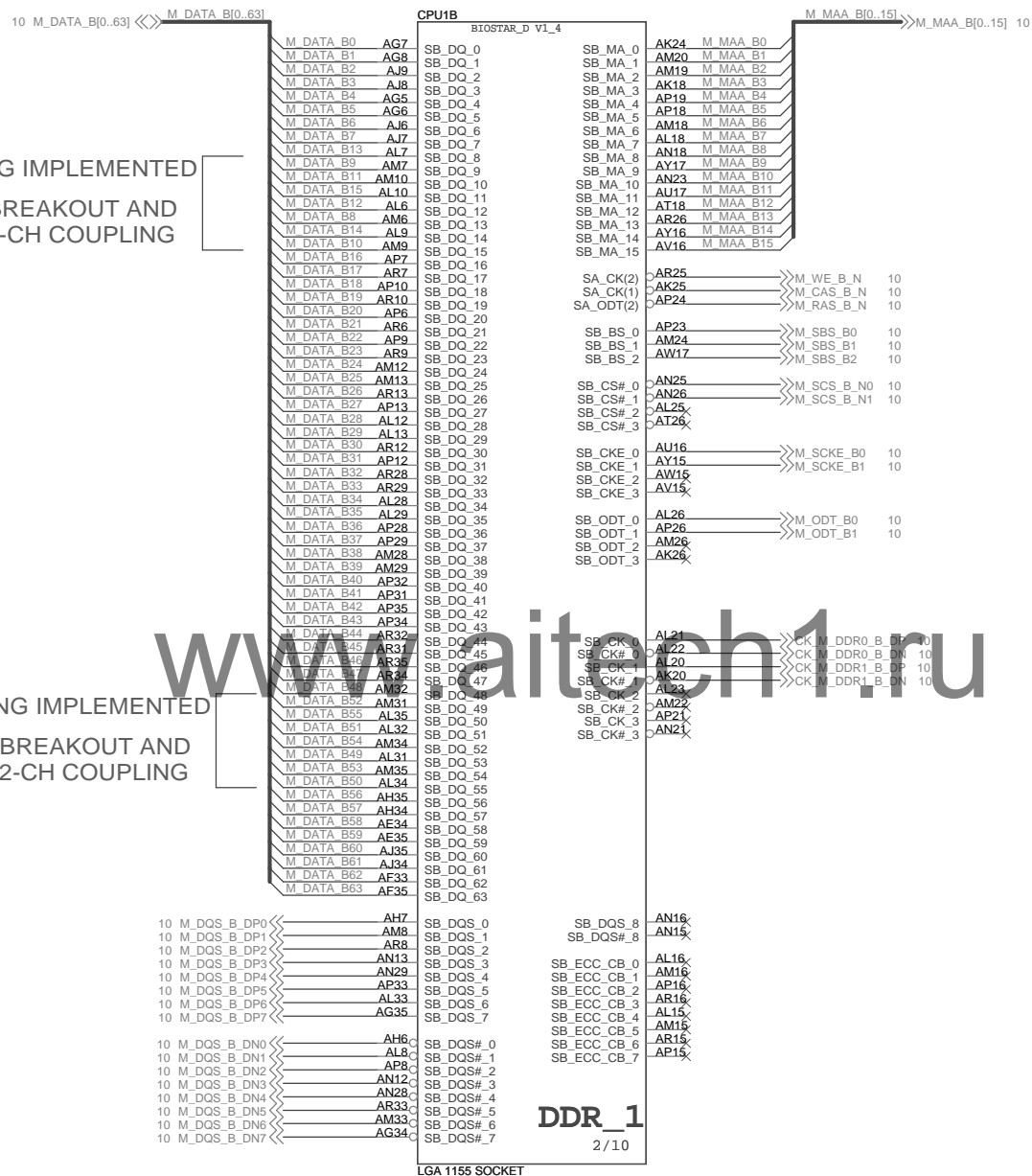
 映泰股份有限公司 BIOSTAR GROUP		
Title CHANGE LIST		
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DQ REMAPPING IMPLEMENTED
TO IMPROVE BREAKOUT AND
MINIMIZE CH-2-CH COUPLING

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

www.hiteach1.ru

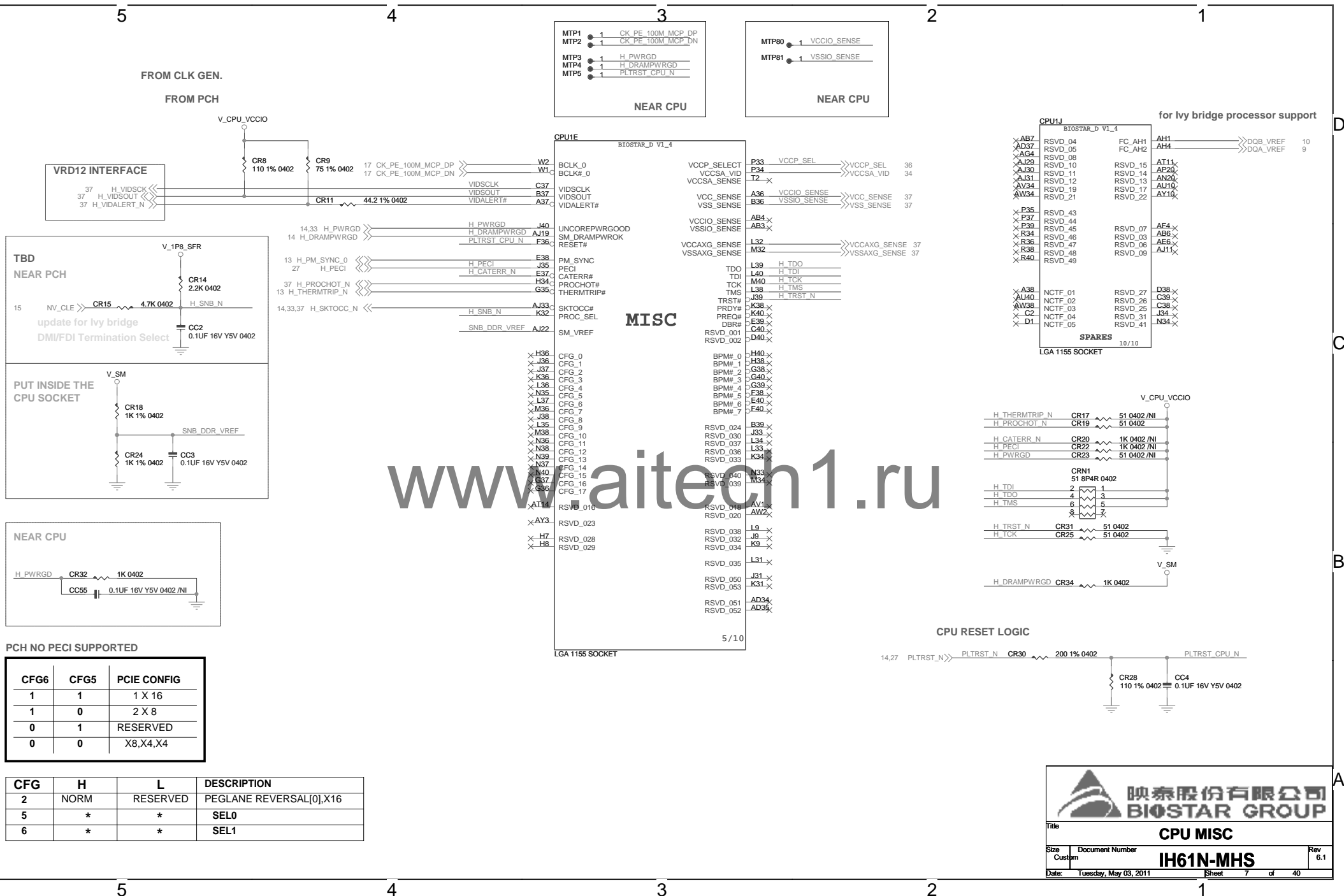


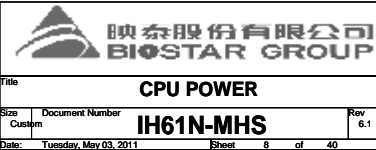
 映泰股份有限公司
BIOS STAR GROUP

Title CPU DDR CHANNEL A

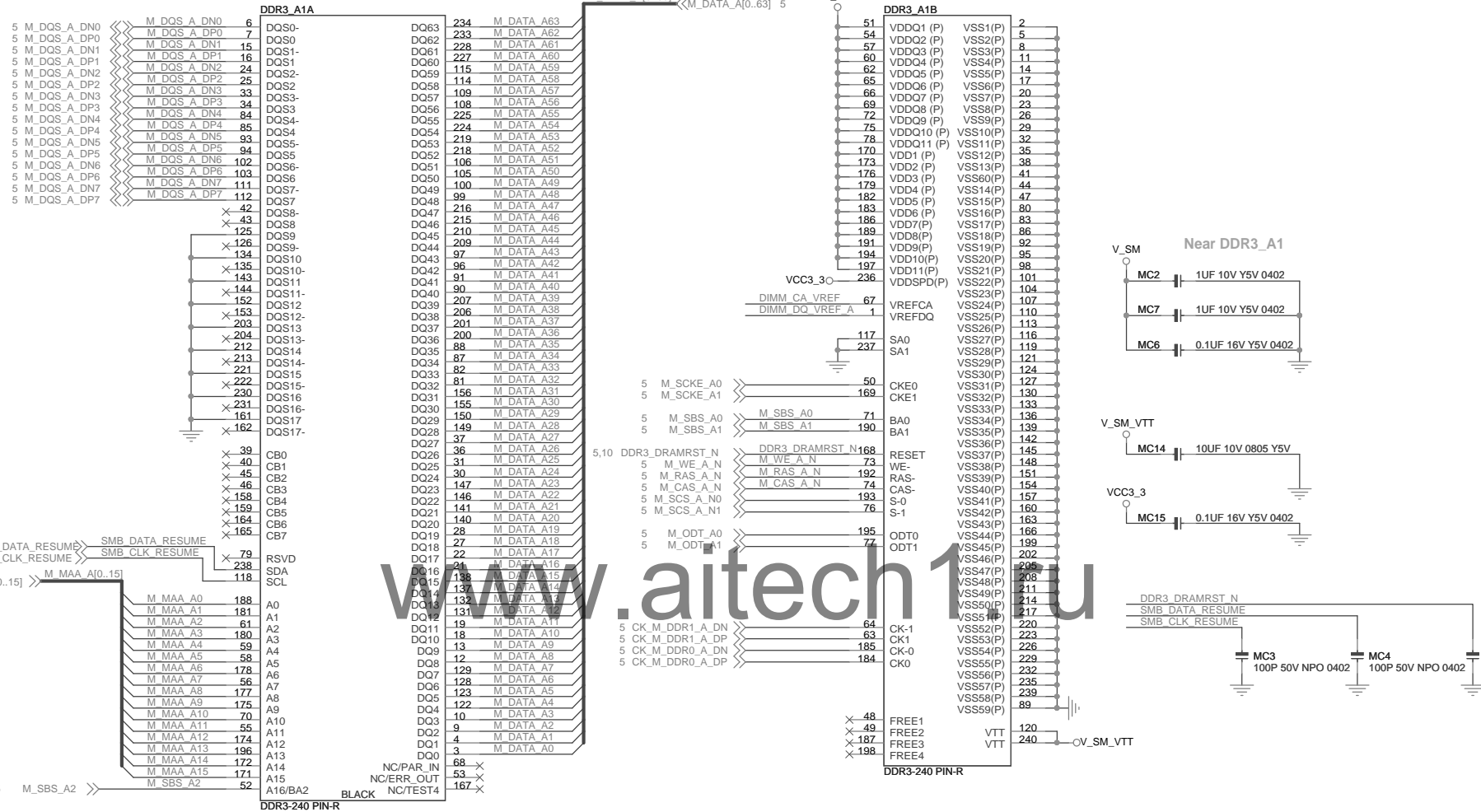
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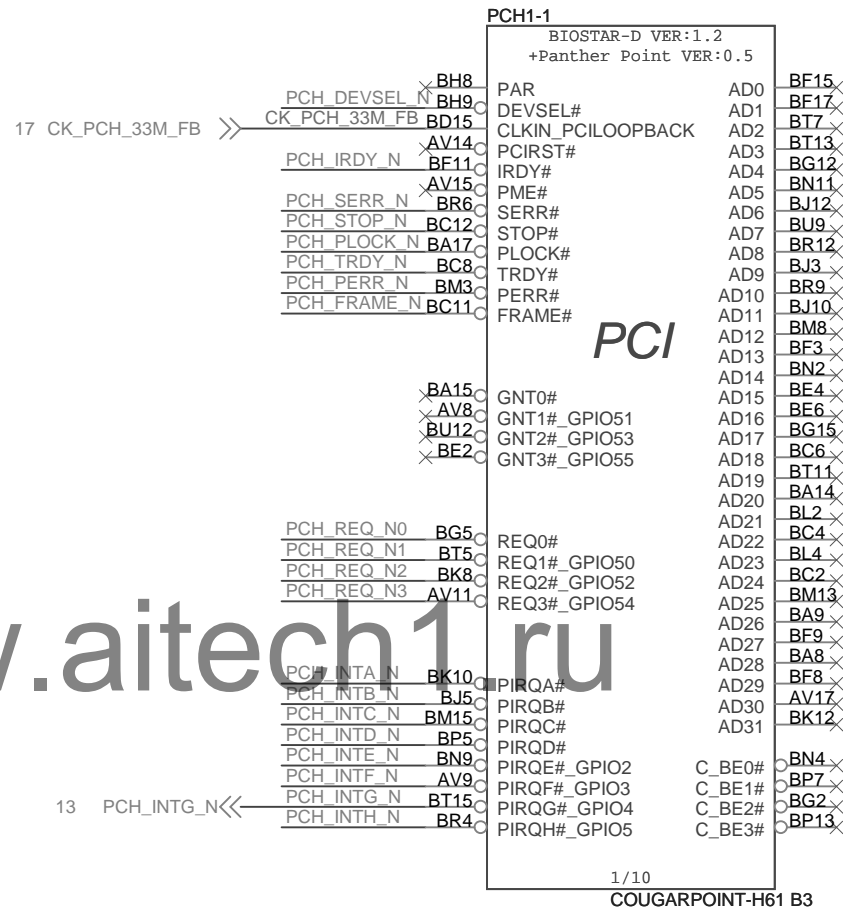
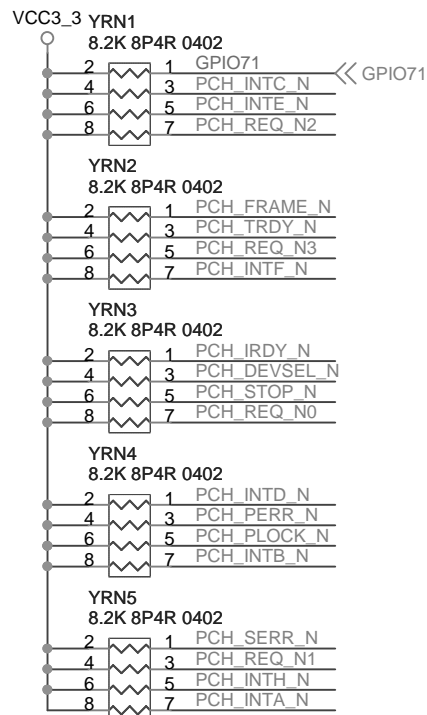
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5 4 3 2 1





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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Title PCH PCI		
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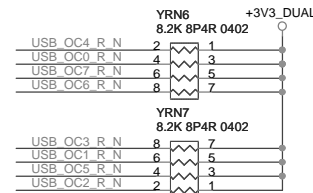
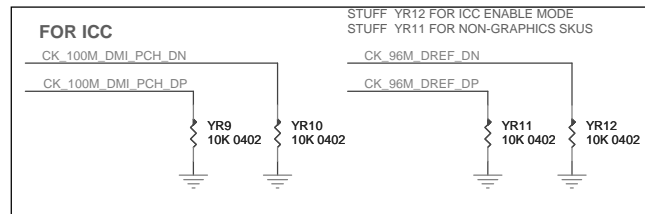
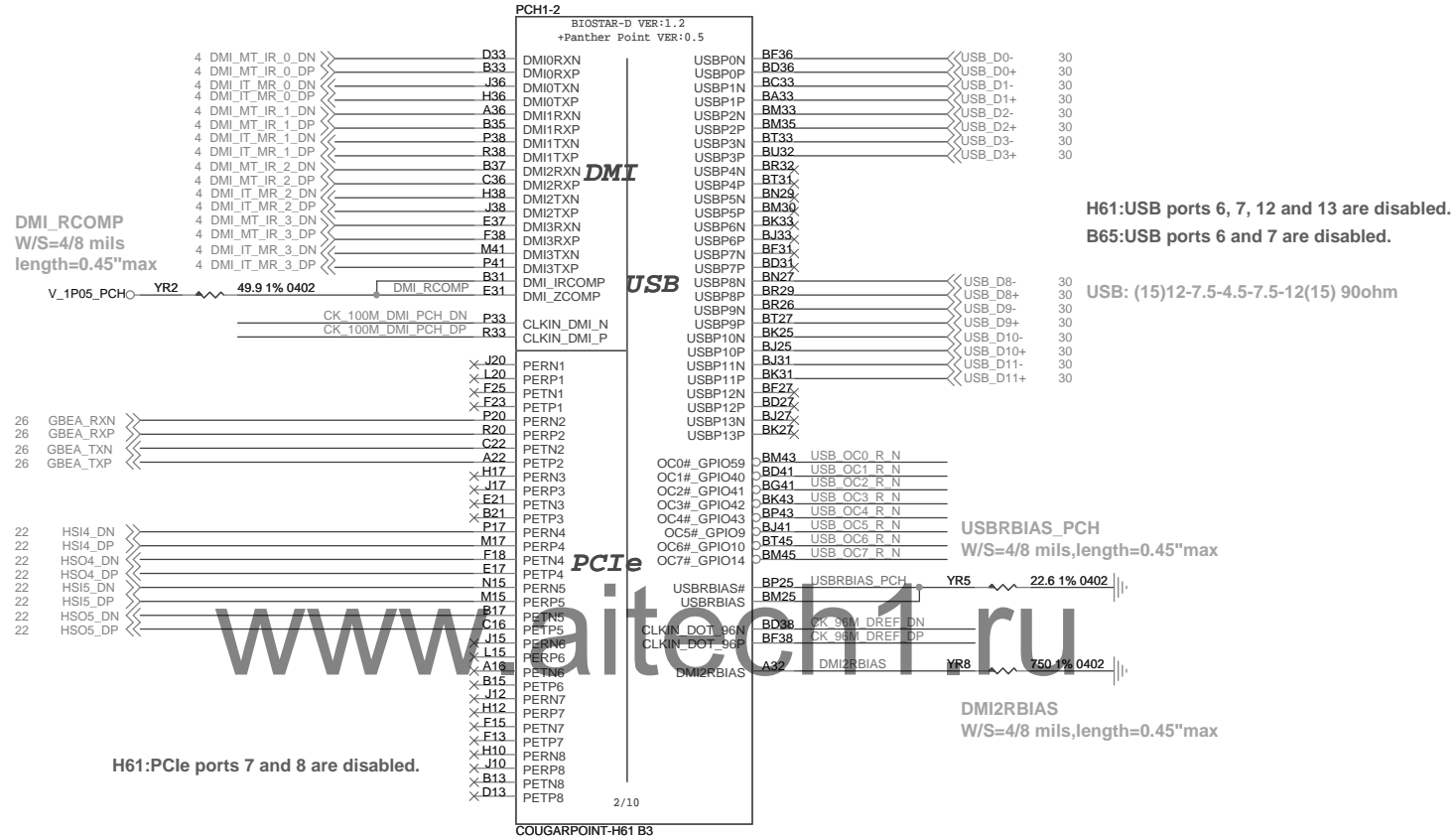
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Title PCH DMI/PCIE/USB		
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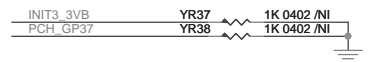
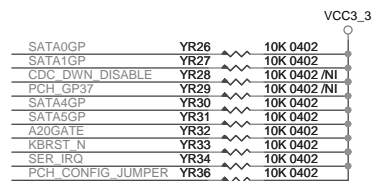
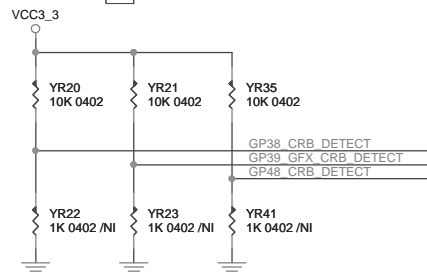
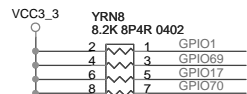
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1

14,27,33 PWRGD_3V >>

11 GPIO71 >>

27 SST_CTRL >>



PCH1-3
BIOSTAR-D VER:1.2
+Panther Point VER:0.5

CLINK
CK_CLK1
CL_DATA1
CL_RST1#

BC46 APWROK

BN21 PWM0
BT21 PWM1
BM20 PWM2
BN19 PWM3

FAN
BT17 TACH0_GPIO17
BR19 TACH1_GPIO1
BA22 TACH2_GPIO6
BR16 TACH3_GPIO7
BU16 TACH4_GPIO68
BM18 TACH5_GPIO69
BN17 TACH6_GPIO70
BP15 TACH7_GPIO71

BC43 SST

BA53 PCH_CONFIG_JUMPER
BE54 GP38_CRB_DETECT
BE55 GP39_GFX_CRB_DETECT
AW53 GP48_CRB_DETECT

GPIO
NC_5

AY20

NC_5

NC_5

NC_5

NC_5

NC_5

NC_5

NC_5

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NC_5

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NC_5

SATA3
SATA0RXN
SATA0RXP
SATA0TXN
SATA0TXP
SATA1RXN
SATA1RXP
SATA1TXN
SATA1TXP

SATA2
SATA2RXN
SATA2RXP
SATA2TXN
SATA2TXP
SATA3RXN
SATA3RXP
SATA3TXN
SATA3TXP
SATA4RXN
SATA4RXP
SATA4TXN
SATA4TXP
SATA5RXN
SATA5RXP
SATA5TXN
SATA5TXP

AF55 CK SATA_PCH_DN
AG56 CK SATA_PCH_DP

BF57 PCH_SATA_LED_N <<PCH_SATA_LED_N_31

AJ55 SATARBIAS_PCH YR17 37.4 1% 0402 -OV_1P05_PCH

BC54 SATA0GP

AY52 SATA1GP

BG53 PCH_GP37

AU56 SATA4GP

AE54 SATA3COMP_PCH YR18 49.9 1% 0402 -OV_1P05_PCH

AE52

AC52 RBIAS_SATA3 YR19 750 1% 0402

SATA3RBIAS

A20GATE

INIT3_3V

KBRST_N

SER_IRQ

H_THERMTRIP_N

H_THERMTRIP_N_7

H_THERMTRIP_N

H_THERMTRIP_N

H_THERMTRIP_N

H_THERMTRIP_N

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H_THERMTRIP_N

H_THERMTRIP_N

AC56 SATA_RXN0
AB55 SATA_RXP0
AE46 SATA_TXN0
AE44 SATA_TXP0
AA53 SATA_RXN1
AA56 SATA_RXP1
AG49 SATA_TXN1
AG47 SATA_TXP1

AL50
AL49
AL56
AL53
AN46
AN44
AN56
AM55
AN49
AN50
AT50
AT49
AT46
AT44
AV50
AV49

AF55 CK SATA_PCH_DN
AG56 CK SATA_PCH_DP

BF57 PCH_SATA_LED_N <<PCH_SATA_LED_N_31

AJ55 SATARBIAS_PCH YR17 37.4 1% 0402 -OV_1P05_PCH

BC54 SATA0GP

AY52 SATA1GP

BG53 PCH_GP37

AU56 SATA4GP

AE54 SATA3COMP_PCH YR18 49.9 1% 0402 -OV_1P05_PCH

AE52

AC52 RBIAS_SATA3 YR19 750 1% 0402

SATA3RBIAS

A20GATE

INIT3_3V

KBRST_N

SER_IRQ

H_THERMTRIP_N

H_THERMTRIP_N_7

H_THERMTRIP_N

H_THERMTRIP_N

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H_THERMTRIP_N

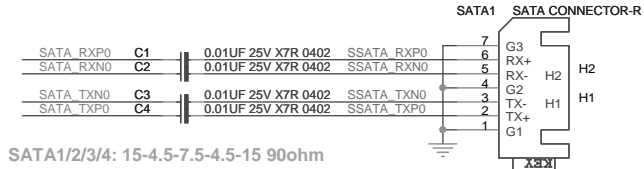
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H_THERMTRIP_N

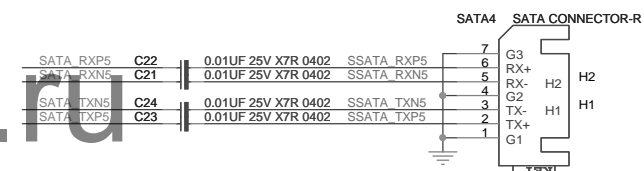
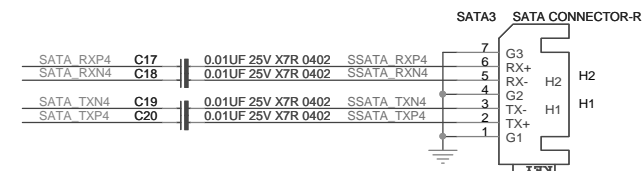
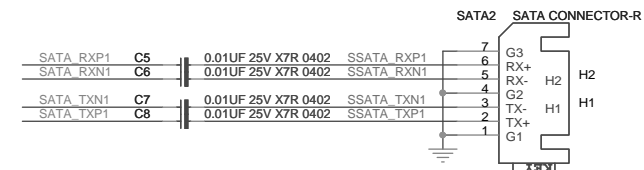
H_THERMTRIP_N

H_THERMTRIP_N

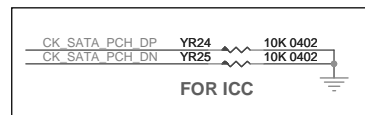
H61 SKU NOT SUPPORT SATA3.0,AHCI,RAID
H61: SATA2 & SATA3 are disable



SATA1/2/3/4: 15-4.5-7.5-4.5-15 90ohm



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



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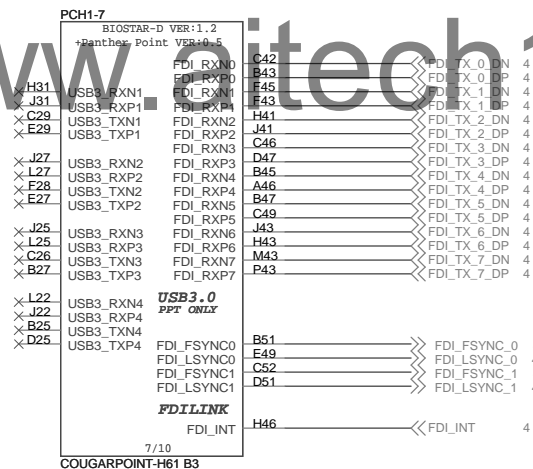
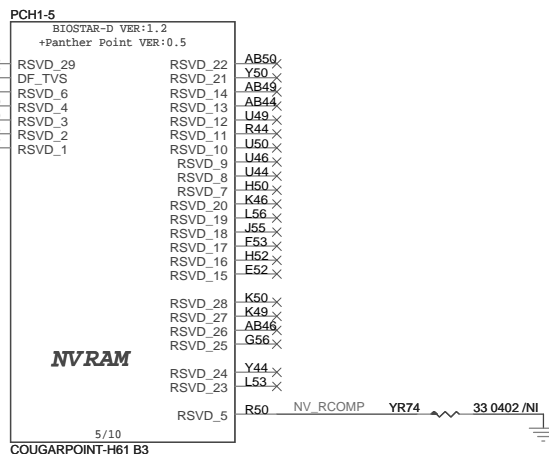
Title PCH CLINK/SATA/CPU HOST		
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DMI/FDI Termination Select

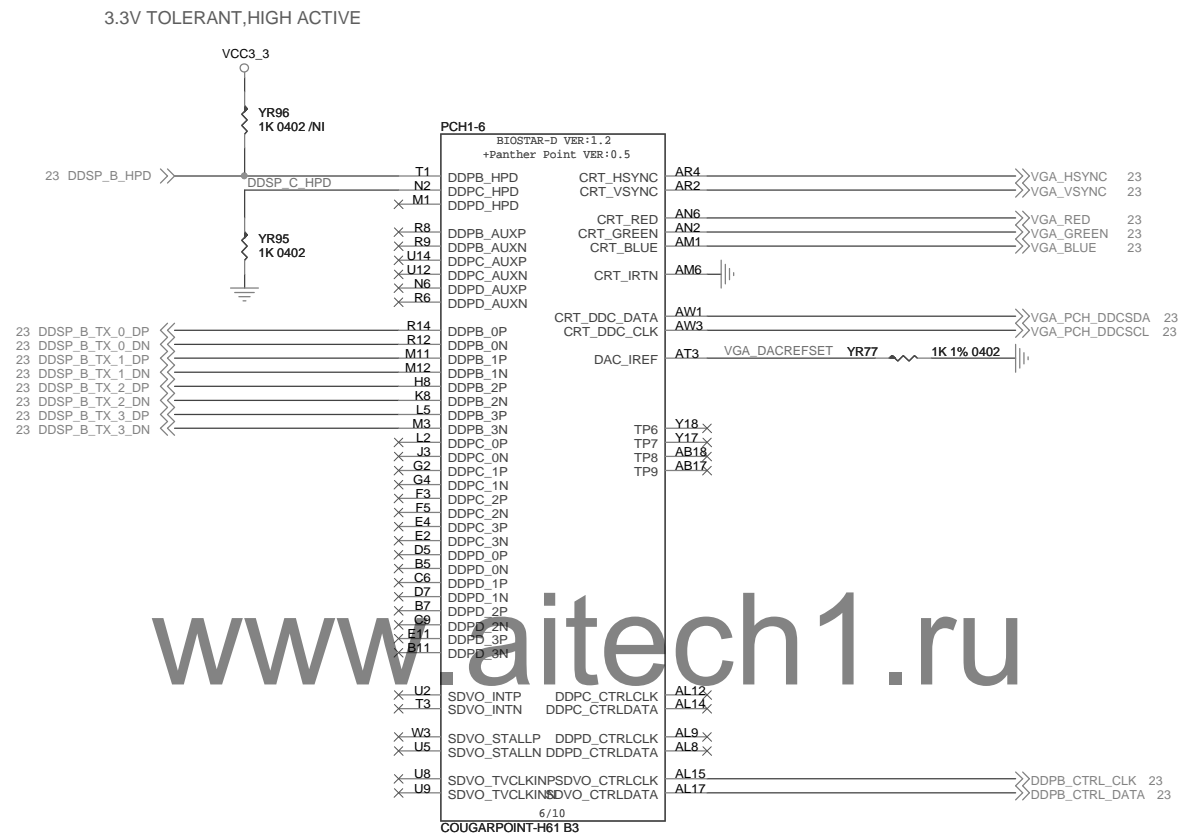
H:For Sandy Bridge

L:For Ivy Bridge



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Title PCH NVRAM & FDI LINK		
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	FUNCTION
PORTB	DVI OR SDVO
PORTC	DISPLAY PORT
PORTD	HDMI/DVI/eDP

REMOVE LEVEL SHIFTER WHEN TRACE
LENGHT LESS THAN 9.25 INCHES

If DisplayPort interface is not implemented,
the Main Link, aux channel differential
signals and HPD signals can be left as No
Connects./DG108

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Title PCH VGA/DISPLAY PORT		
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D

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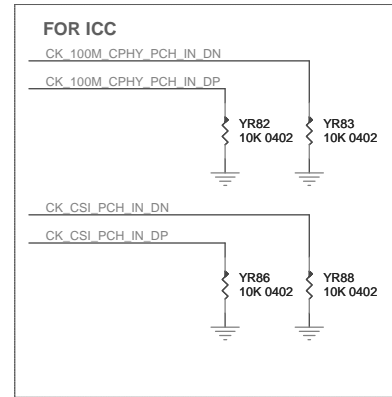
C

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W/I/S: 4/6/18

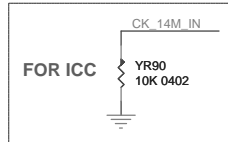
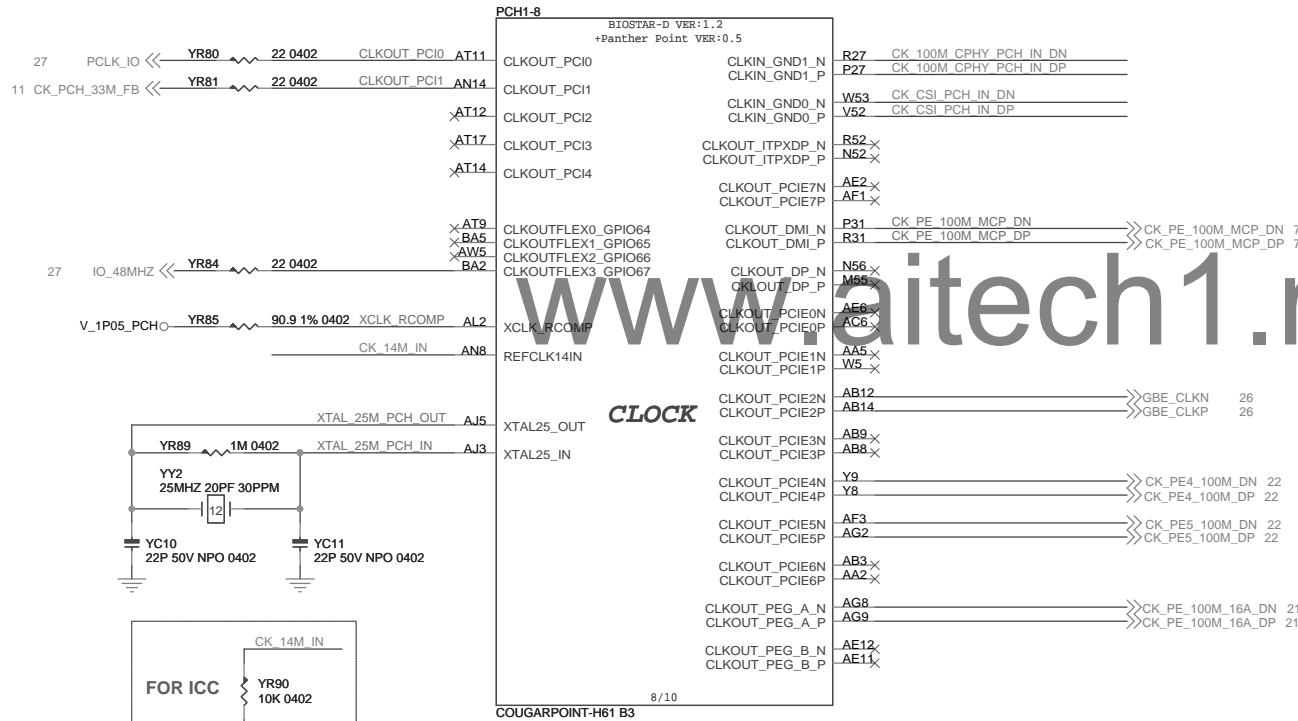
FOR CPU ITP PORT(0)

FOR PCH PCIE DEVICE(1)

FOR CPU BCLK(0)

FOR PCH PCIE DEVICE(1)

FOR CPU PCIE X 16 DEVICE(0)



Title PCH CLOCK BUFFER		
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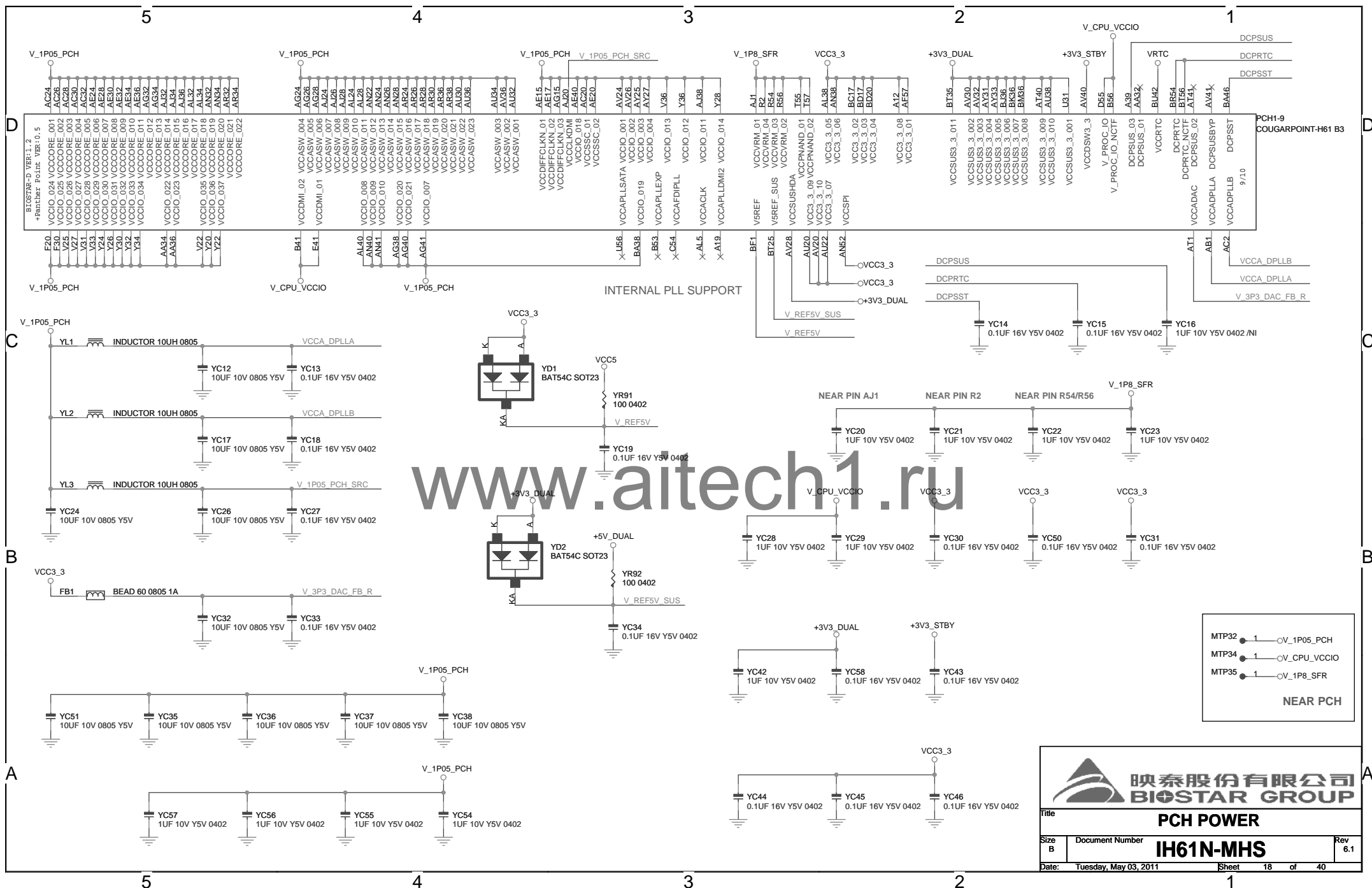
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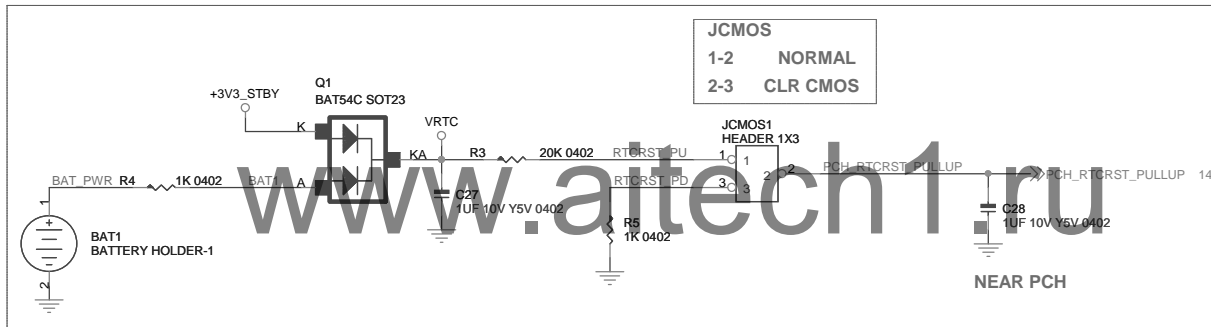
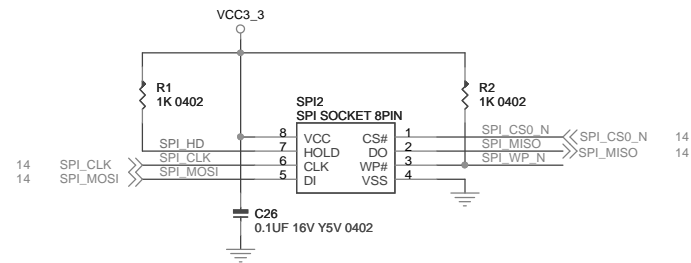
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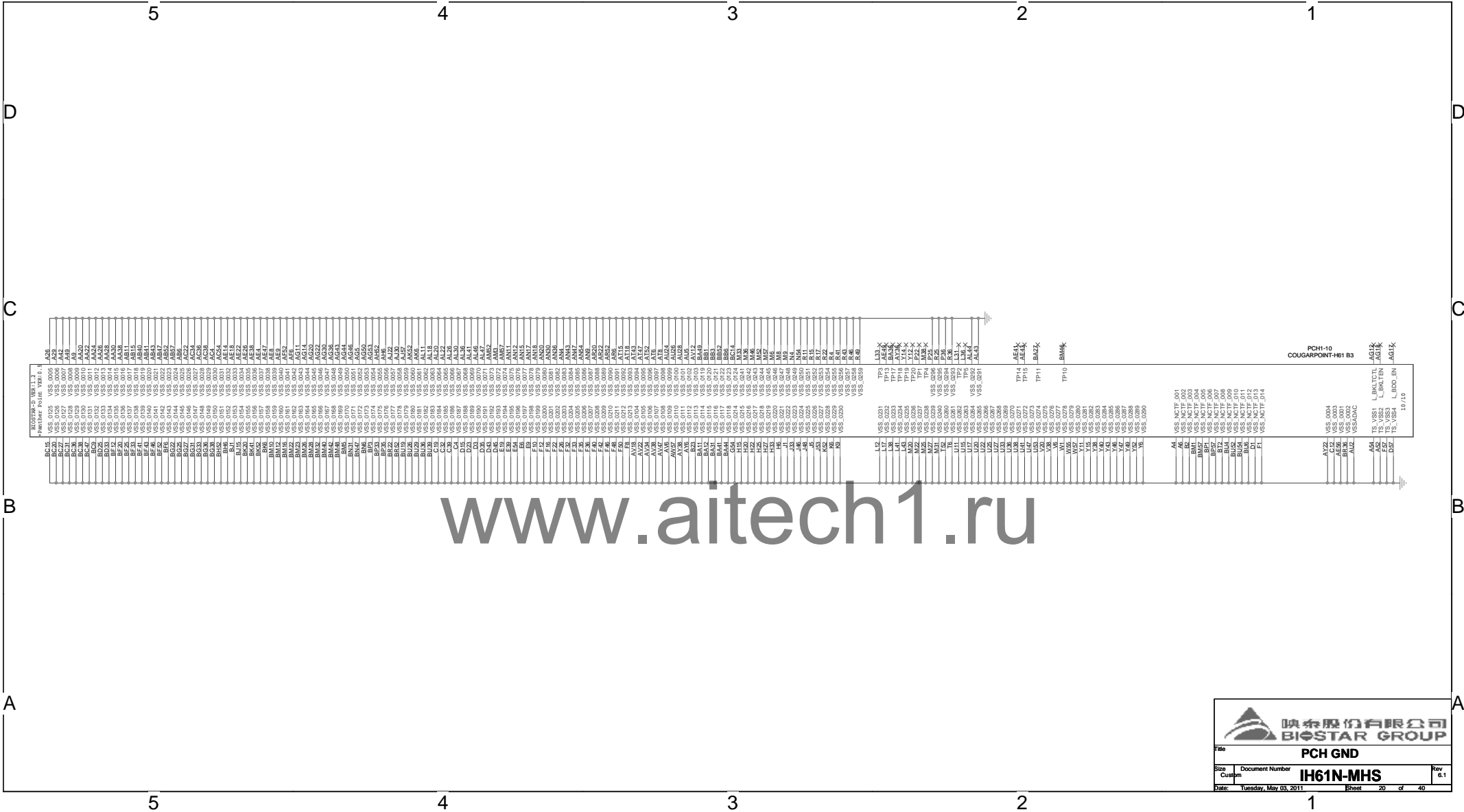
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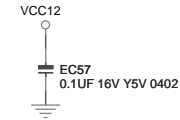
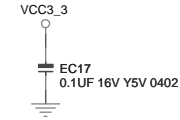
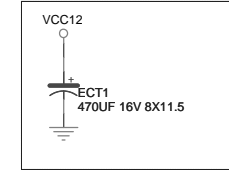
PCH-10
COUGARPOINT-H61 B3
AGLX
L_BKLTCT
L_BKLTEN
L_BOD_EN
AGUX
10/10

Value:180 nF - 265 nF
450 mils max to connector pin

4 EXP_A_TX_0_DP	EC1	0.22UF 10V X5R 0402	EEXP_A_TXP_0
4 EXP_A_TX_0_DN	EC2	0.22UF 10V X5R 0402	EEXP_A_TXN_0
4 EXP_A_TX_1_DP	EC3	0.22UF 10V X5R 0402	EEXP_A_TXP_1
4 EXP_A_TX_1_DN	EC4	0.22UF 10V X5R 0402	EEXP_A_TXN_1
4 EXP_A_TX_2_DP	EC5	0.22UF 10V X5R 0402	EEXP_A_TXP_2
4 EXP_A_TX_2_DN	EC6	0.22UF 10V X5R 0402	EEXP_A_TXN_2
4 EXP_A_TX_3_DP	EC7	0.22UF 10V X5R 0402	EEXP_A_TXP_3
4 EXP_A_TX_3_DN	EC8	0.22UF 10V X5R 0402	EEXP_A_TXN_3
4 EXP_A_TX_4_DP	EC9	0.22UF 10V X5R 0402	EEXP_A_TXP_4
4 EXP_A_TX_4_DN	EC10	0.22UF 10V X5R 0402	EEXP_A_TXN_4
4 EXP_A_TX_5_DP	EC11	0.22UF 10V X5R 0402	EEXP_A_TXP_5
4 EXP_A_TX_5_DN	EC12	0.22UF 10V X5R 0402	EEXP_A_TXN_5
4 EXP_A_TX_6_DP	EC13	0.22UF 10V X5R 0402	EEXP_A_TXP_6
4 EXP_A_TX_6_DN	EC14	0.22UF 10V X5R 0402	EEXP_A_TXN_6
4 EXP_A_TX_7_DP	EC15	0.22UF 10V X5R 0402	EEXP_A_TXP_7
4 EXP_A_TX_7_DN	EC16	0.22UF 10V X5R 0402	EEXP_A_TXN_7
4 EXP_A_TX_8_DP	EC18	0.22UF 10V X5R 0402	EEXP_A_TXP_8
4 EXP_A_TX_8_DN	EC19	0.22UF 10V X5R 0402	EEXP_A_TXN_8
4 EXP_A_TX_9_DP	EC20	0.22UF 10V X5R 0402	EEXP_A_TXP_9
4 EXP_A_TX_9_DN	EC21	0.22UF 10V X5R 0402	EEXP_A_TXN_9
4 EXP_A_TX_10_DP	EC22	0.22UF 10V X5R 0402	EEXP_A_TXP_10
4 EXP_A_TX_10_DN	EC23	0.22UF 10V X5R 0402	EEXP_A_TXN_10
4 EXP_A_TX_11_DP	EC24	0.22UF 10V X5R 0402	EEXP_A_TXP_11
4 EXP_A_TX_11_DN	EC25	0.22UF 10V X5R 0402	EEXP_A_TXN_11
4 EXP_A_TX_12_DP	EC26	0.22UF 10V X5R 0402	EEXP_A_TXP_12
4 EXP_A_TX_12_DN	EC27	0.22UF 10V X5R 0402	EEXP_A_TXN_12
4 EXP_A_TX_13_DP	EC28	0.22UF 10V X5R 0402	EEXP_A_TXP_13
4 EXP_A_TX_13_DN	EC29	0.22UF 10V X5R 0402	EEXP_A_TXN_13
4 EXP_A_TX_14_DP	EC30	0.22UF 10V X5R 0402	EEXP_A_TXP_14
4 EXP_A_TX_14_DN	EC31	0.22UF 10V X5R 0402	EEXP_A_TXN_14
4 EXP_A_TX_15_DP	EC32	0.22UF 10V X5R 0402	EEXP_A_TXP_15
4 EXP_A_TX_15_DN	EC33	0.22UF 10V X5R 0402	EEXP_A_TXN_15



For T-Series-----270UF-S 16V 8X11 ELITE
For NO T-Series-----470UF 16V 8X11.5



Title			PCIEX16 SLOT1
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4

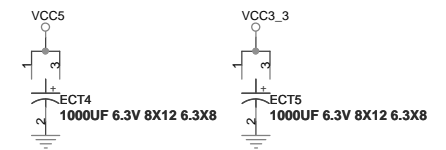
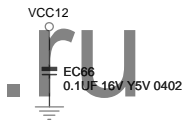
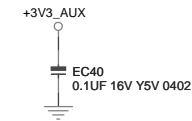
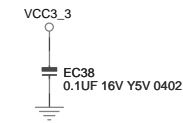
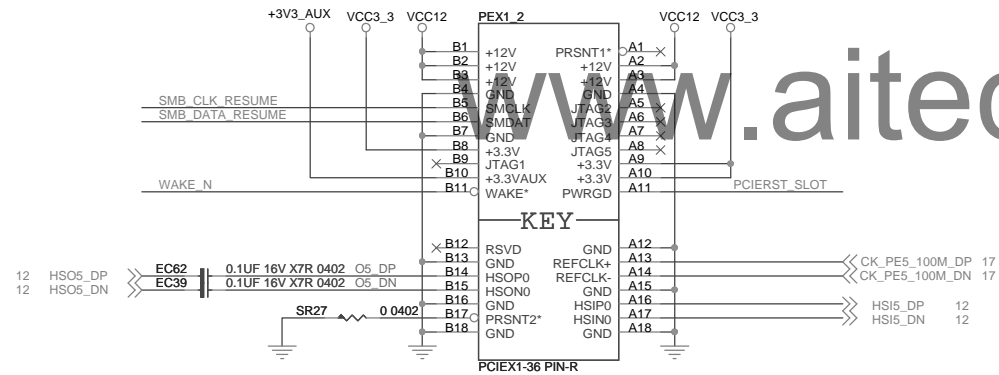
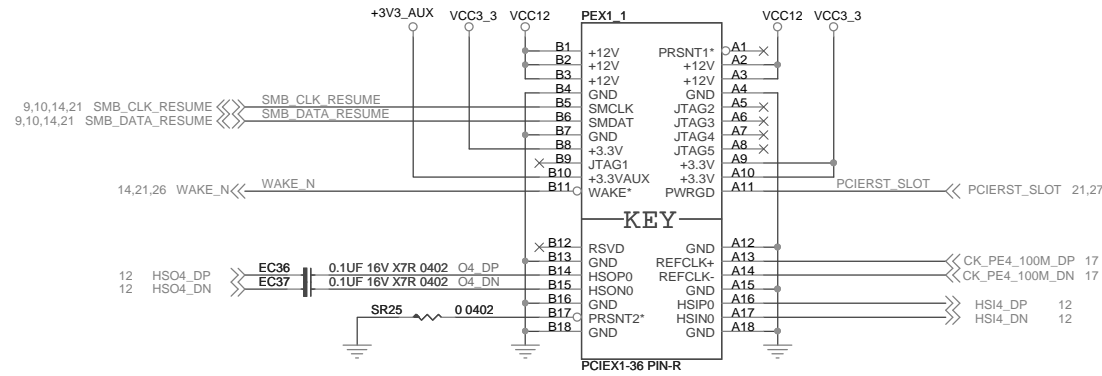
3

2

1

D

D



For T-Series-----560UF-S 6.3V 6.3X8 8X12(ELITE)
For NO T-Series-----1000UF 6.3V 8X12

5

4

3

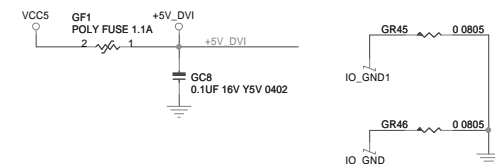
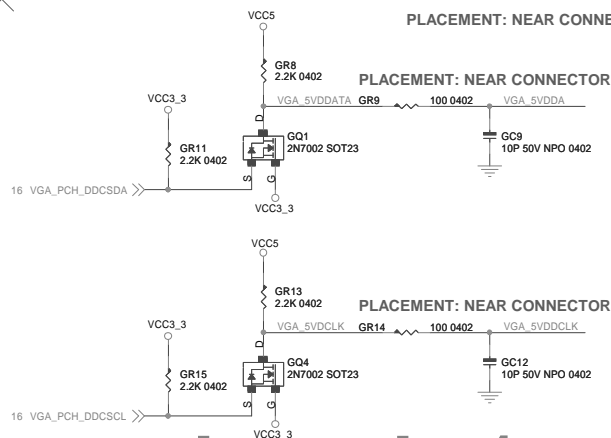
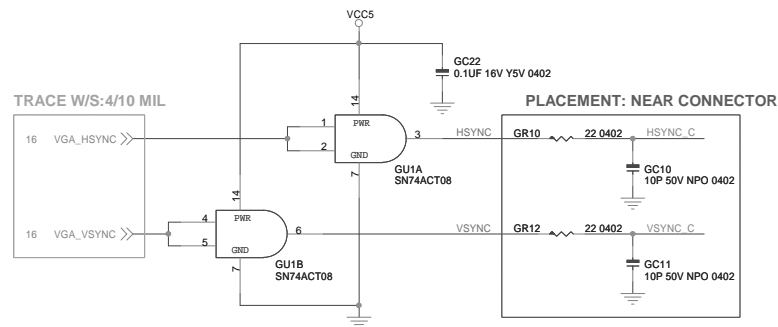
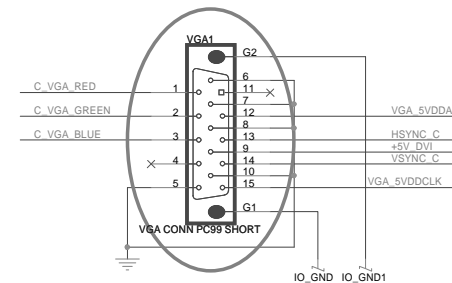
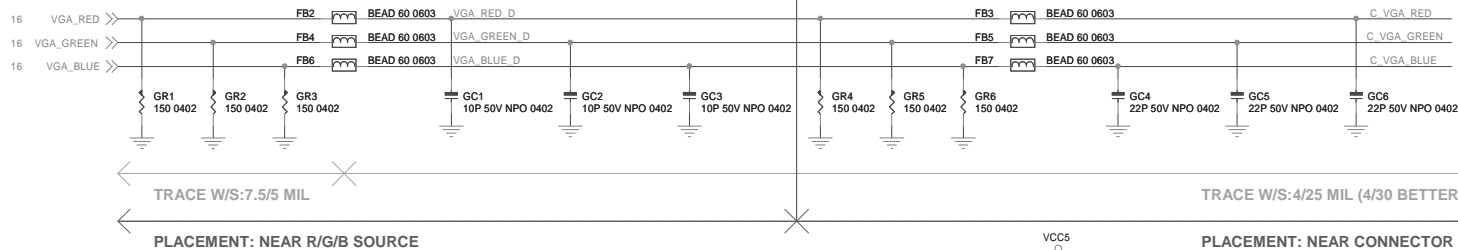
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1

A

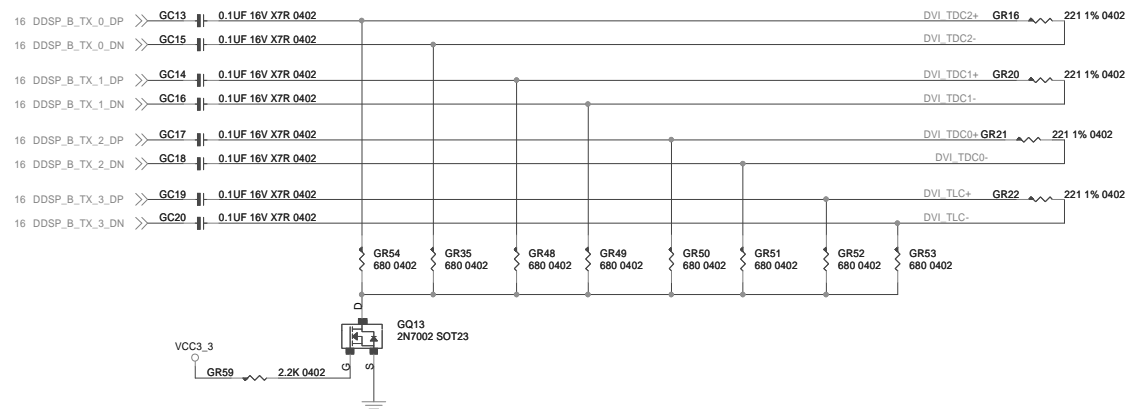
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Title			
PCIE X1 SLOT			
Size B	Document Number		Rev
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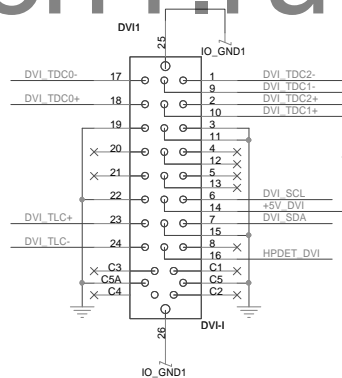


D_SUB

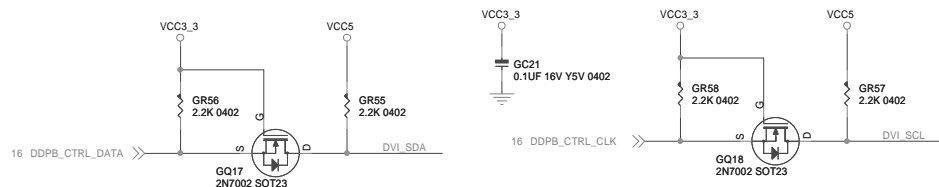
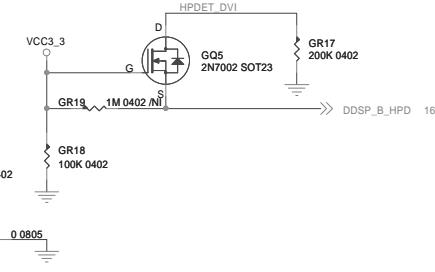
DVI



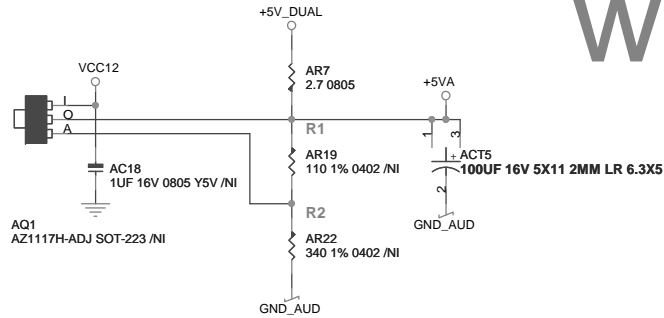
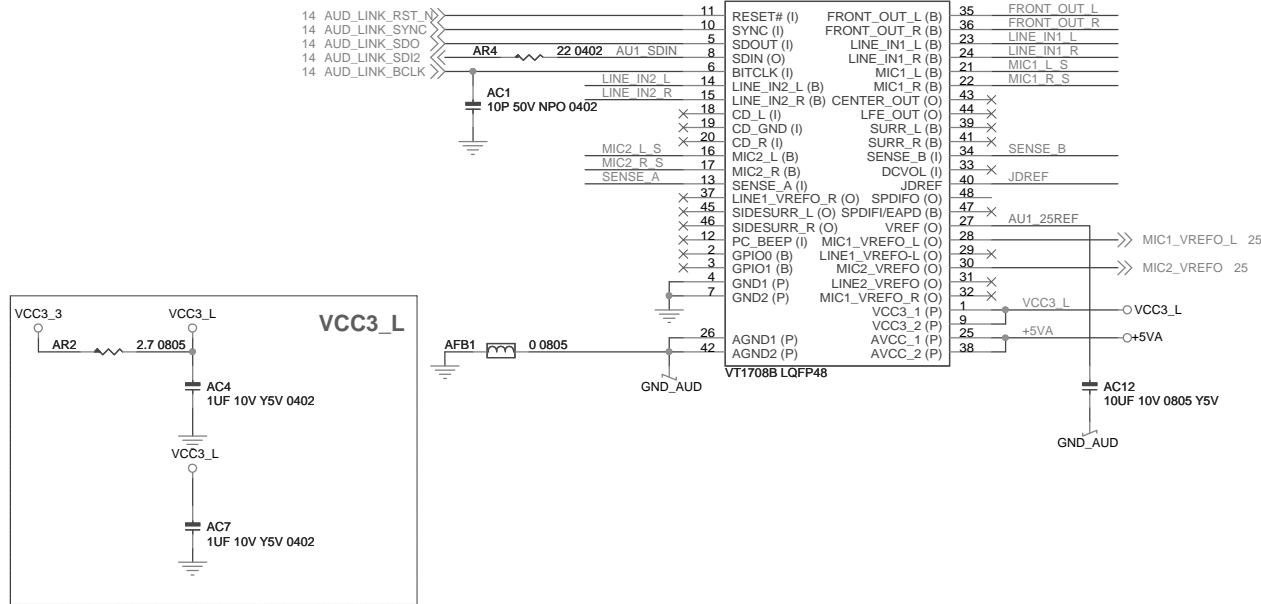
DVI CONNECTOR



LEVEL SHIFTER
HPD +5V SWITCH TO +3.3V

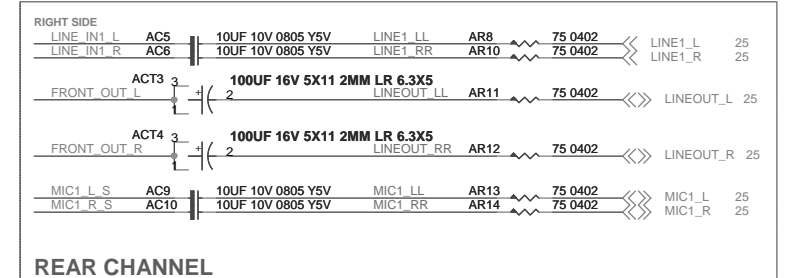
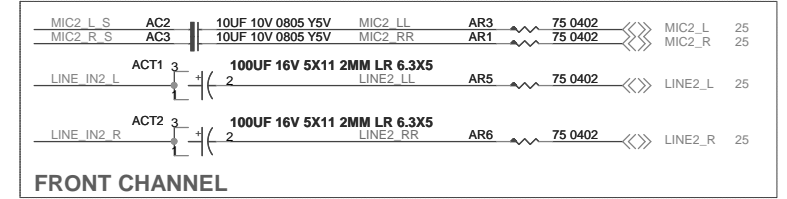
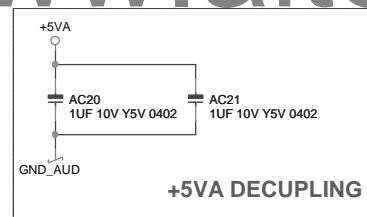


AUDIO PART: A+Reference

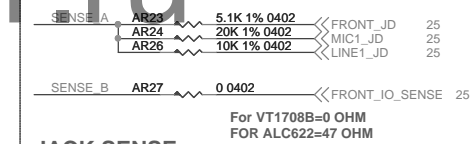


$$V_{out} = V_{ref} (1.25V) \times (1 + R2/R1) = 5.11V$$

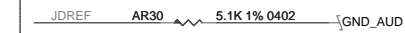
NETIN: 100UF 16V 5X11 2MM LR 6.3X5
BOM: 100UF 16V 5X11 2mm LR
100UF-S 16V 6.3X8 ELITE



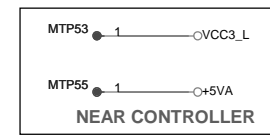
CD IN CONNECTOR



JACK SENSE



FOR VT1708B LQFP48: AR30=5.1K
FOR ALC662 LQFP48: AR30=20K



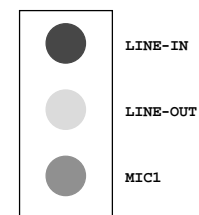
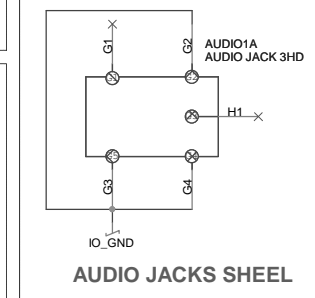
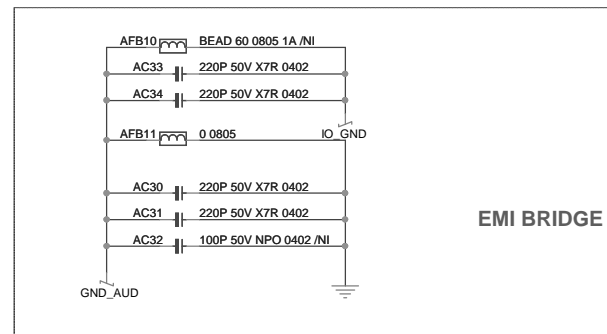
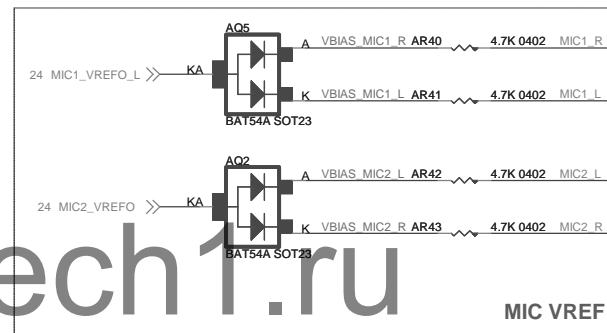
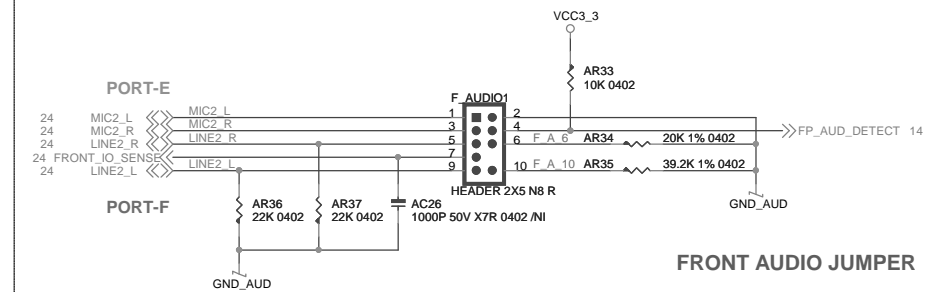
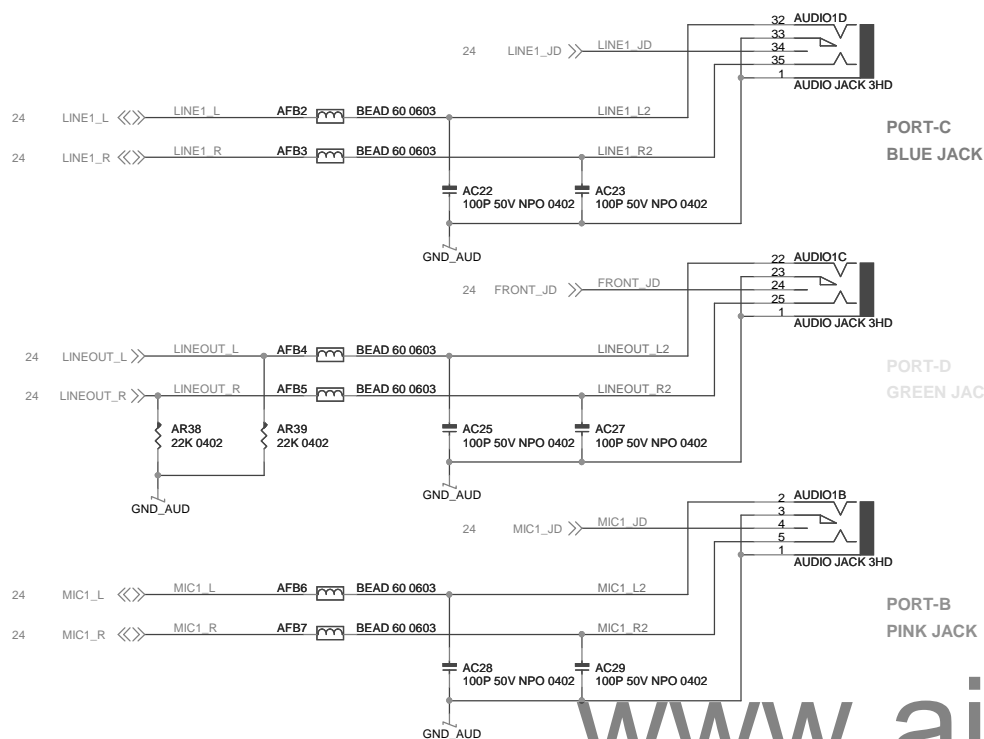
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Title: **CODEC VT1708B**

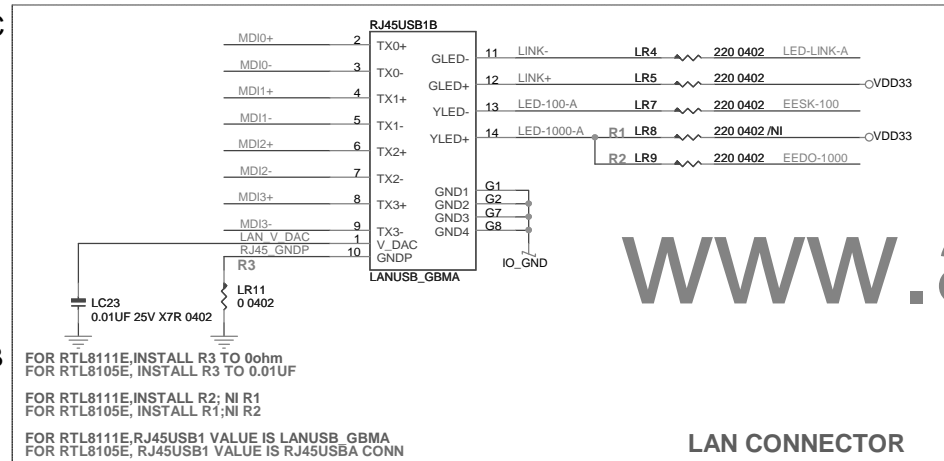
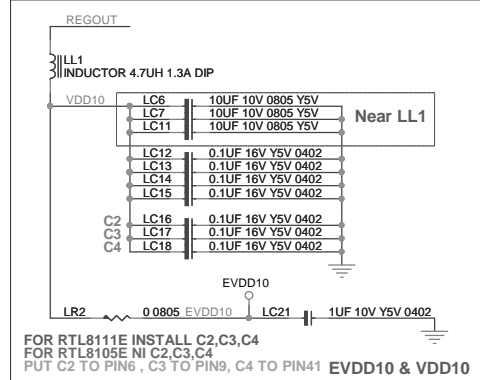
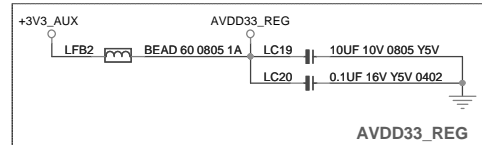
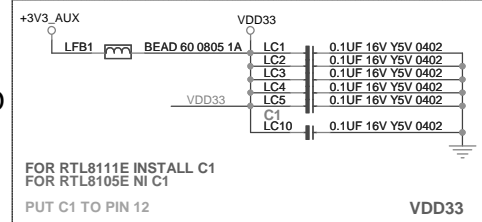
Size B: **IH61N-MHS**

Date: Tuesday, May 03, 2011

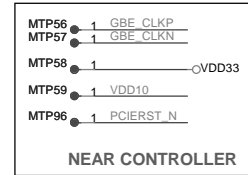
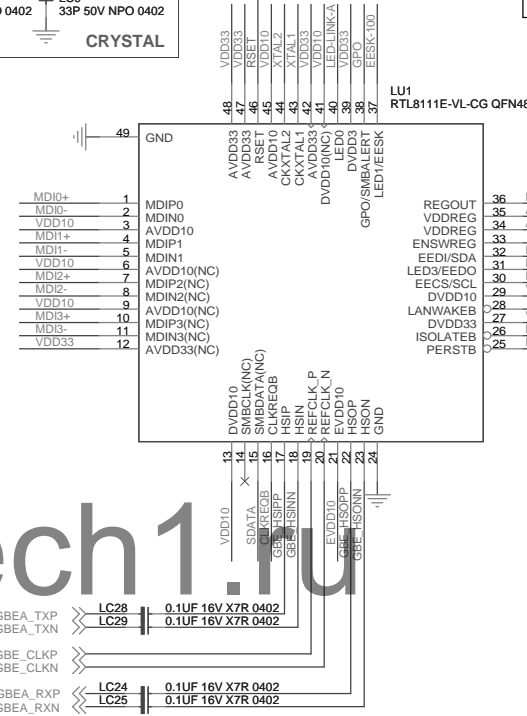
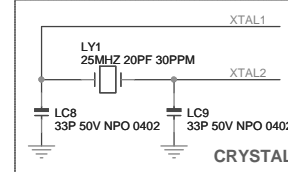
Rev: 6.1



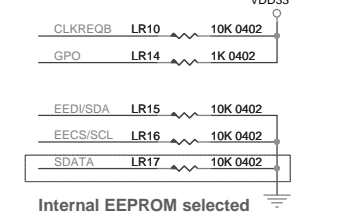
LAN PART: L+Reference



LAN CONNECTOR



LAN STRAP AND PULLS



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

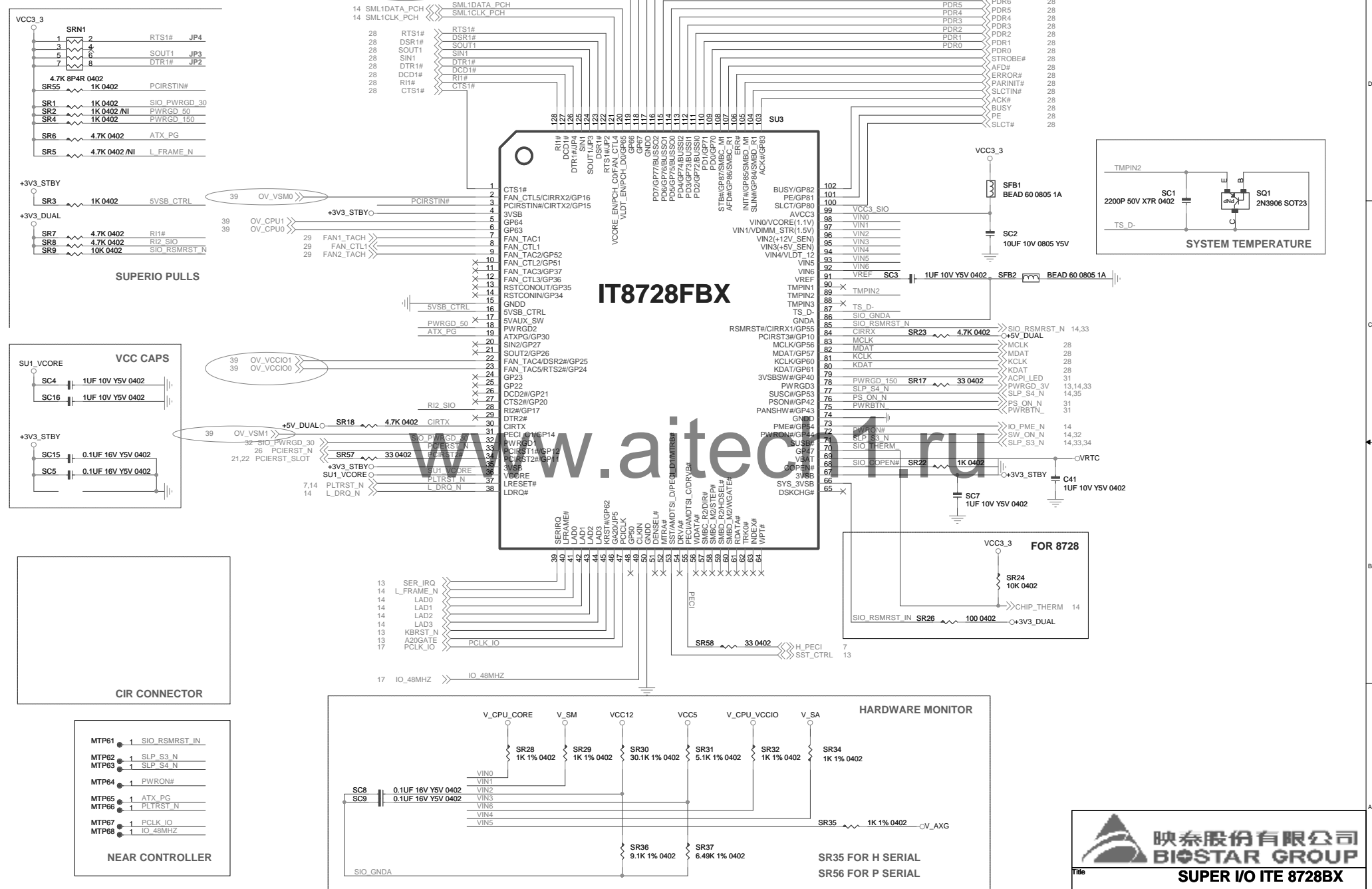
映泰股份有限公司
BIOSTAR GROUP

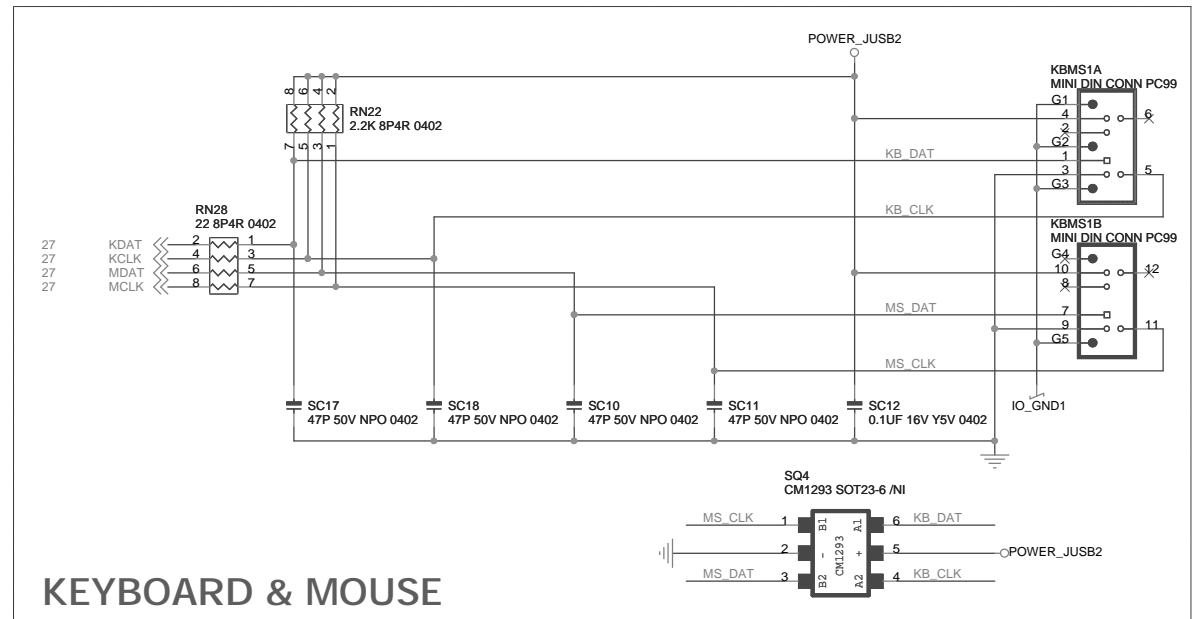
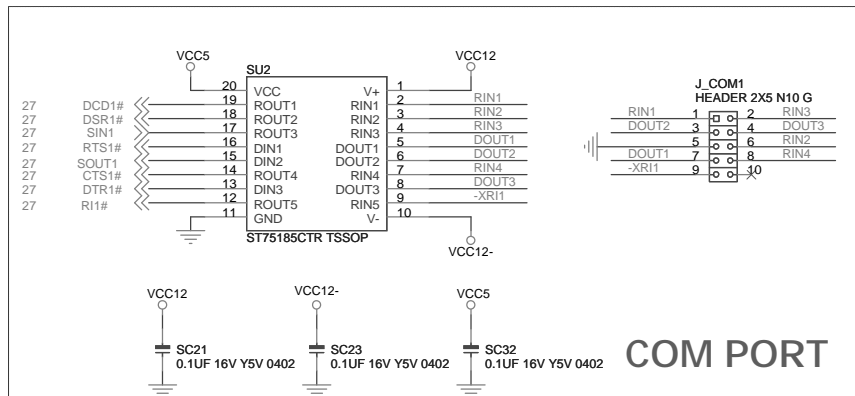
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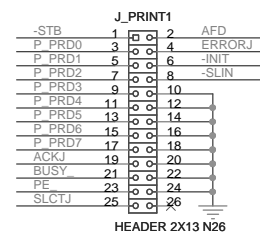
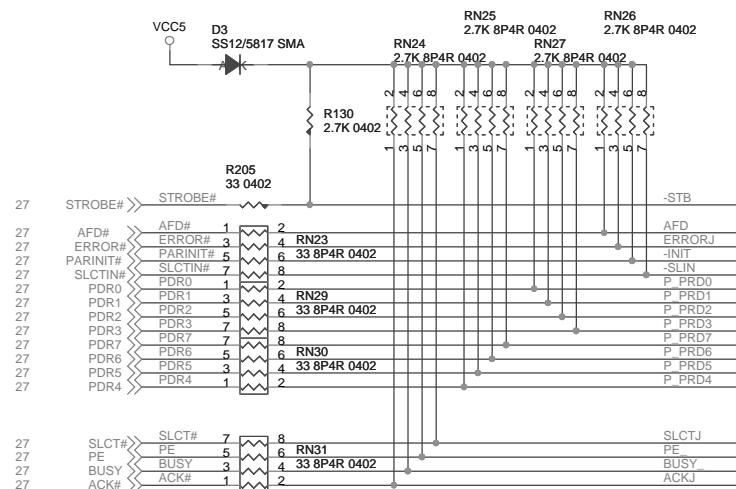
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SUPERIO PART: S+Reference





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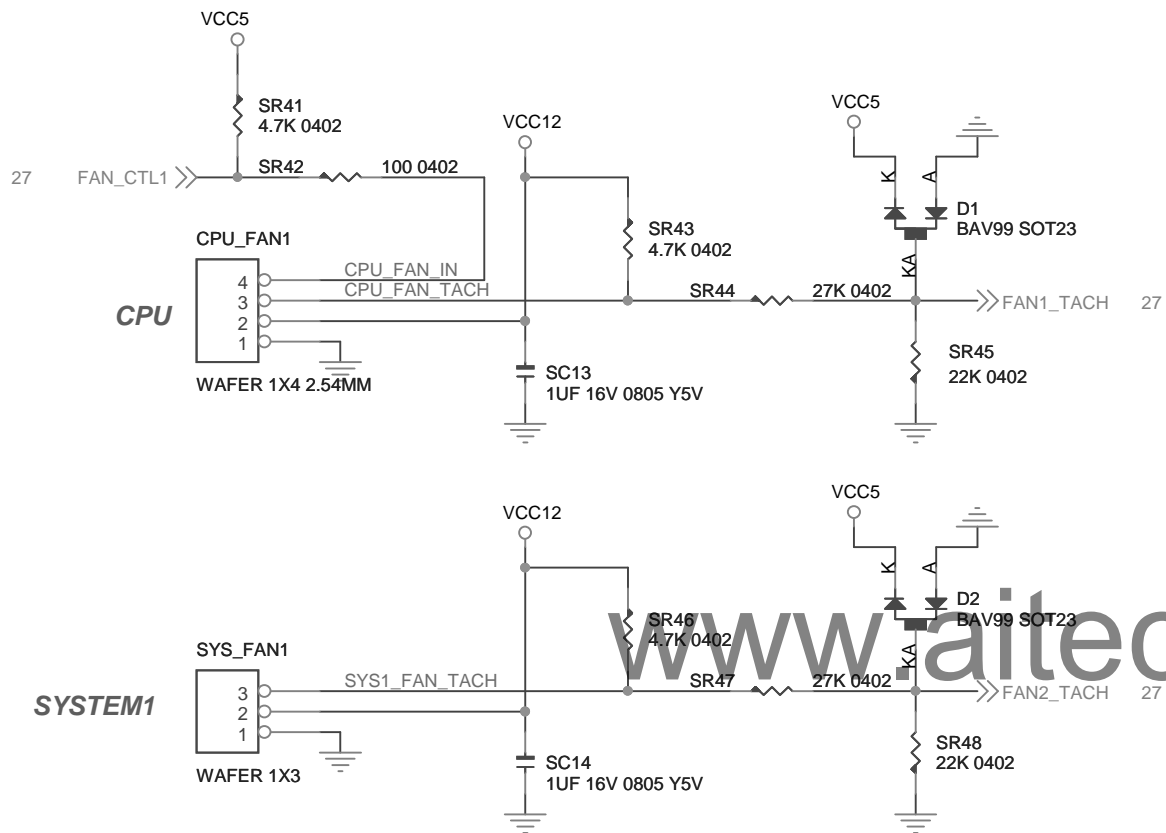
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BIOSTAR GROUP

Title **COM / LPT / PS2 CONN**

Size B Document Number **IH61N-MHS** Rev 6.1

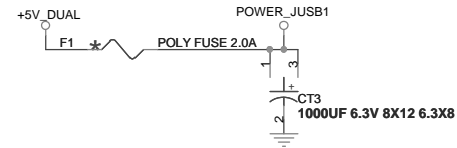
Date: Tuesday, May 03, 2011 Sheet 28 of 40

CPU FAN/SYSTEM FAN1

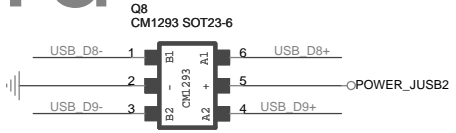
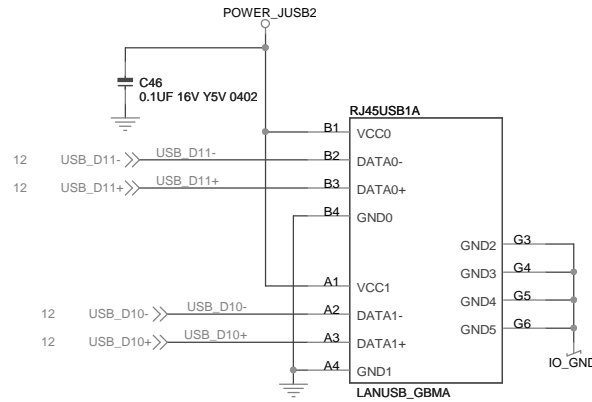
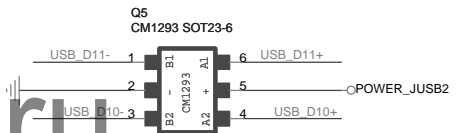
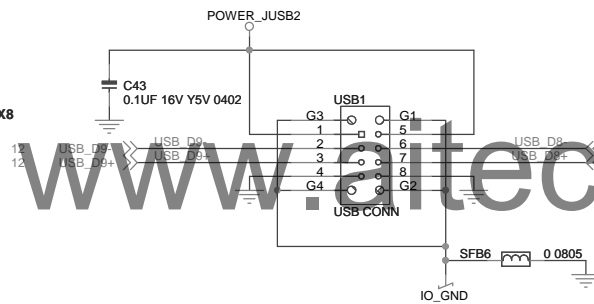
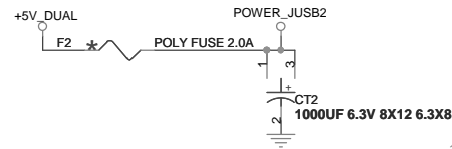
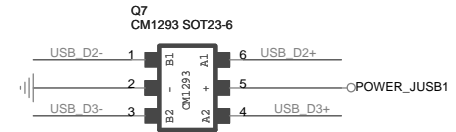
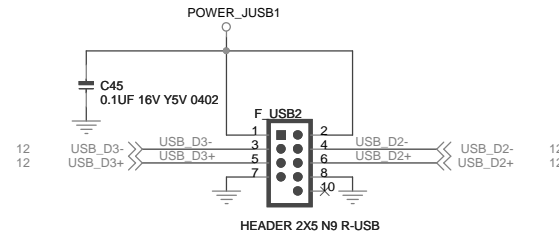
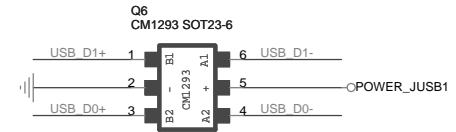
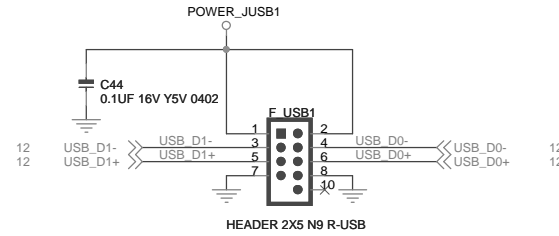


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BIOSSTAR GROUP

Title			HW MONITOR/FAN CONTROL		
Size	Document Number				Rev
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For T-Series----560UF-S 6.3V 6.3X8 8X12(ELITE)
For NO T-Series-----1000UF 6.3V 8X12



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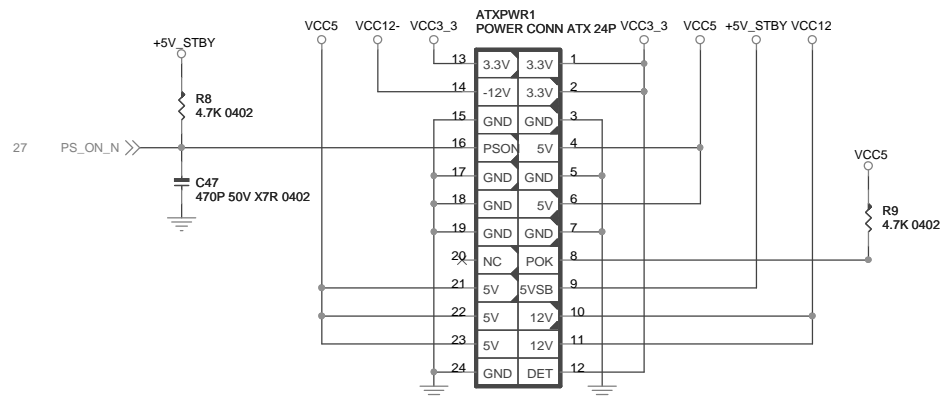
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Size B Document Number: **IH61N-MHS** Rev 6.1

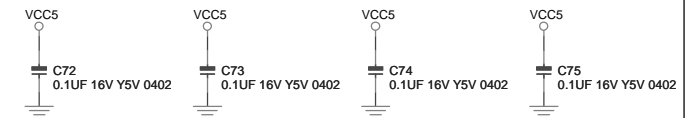
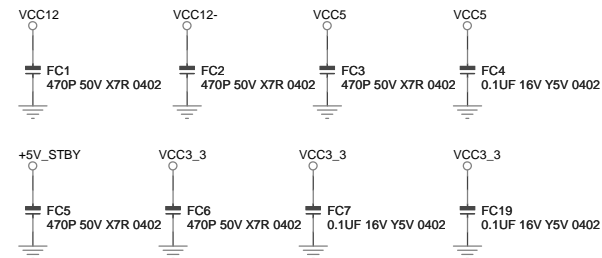
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24 PIN POWER CONNECTOR

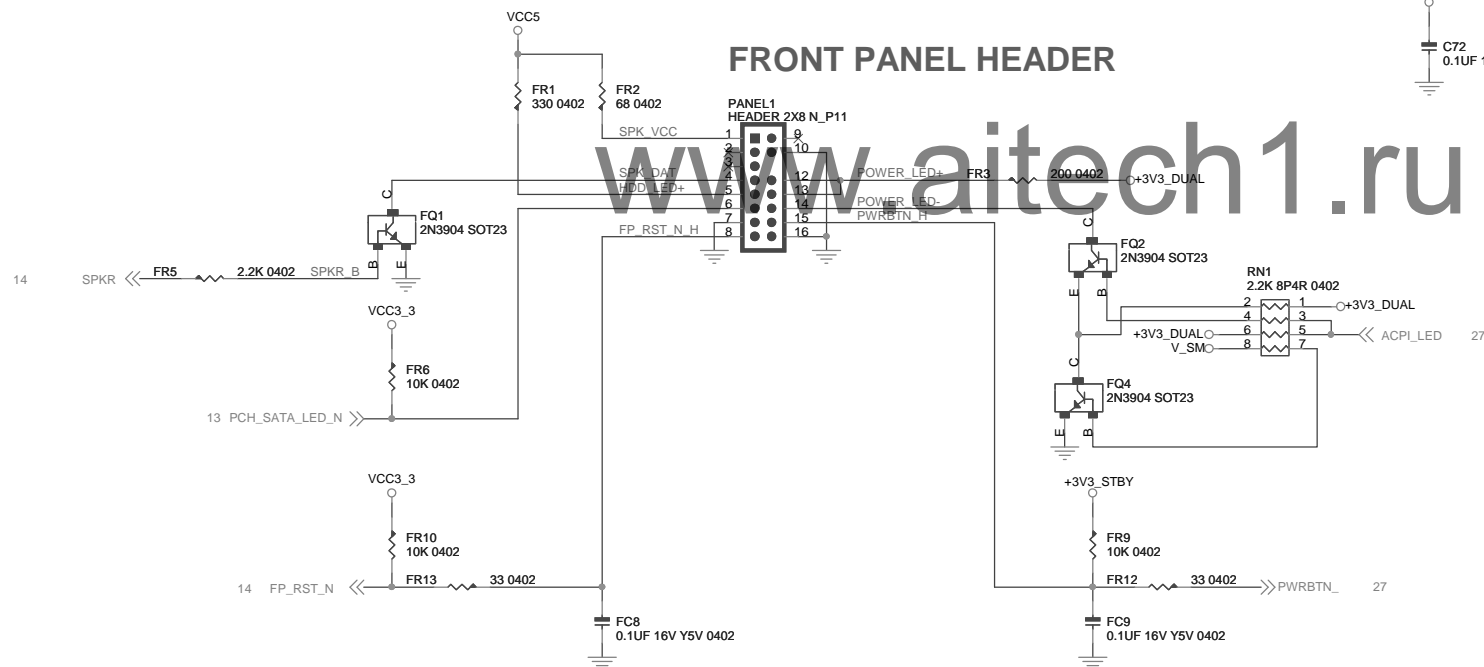
JATXPWR




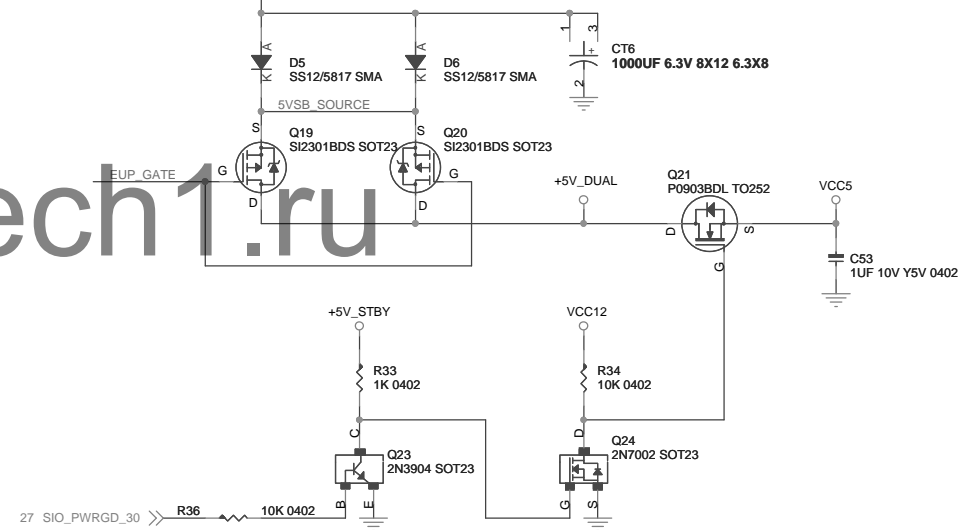
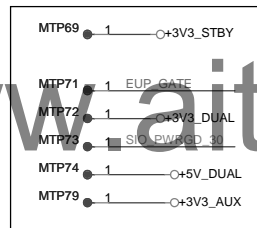
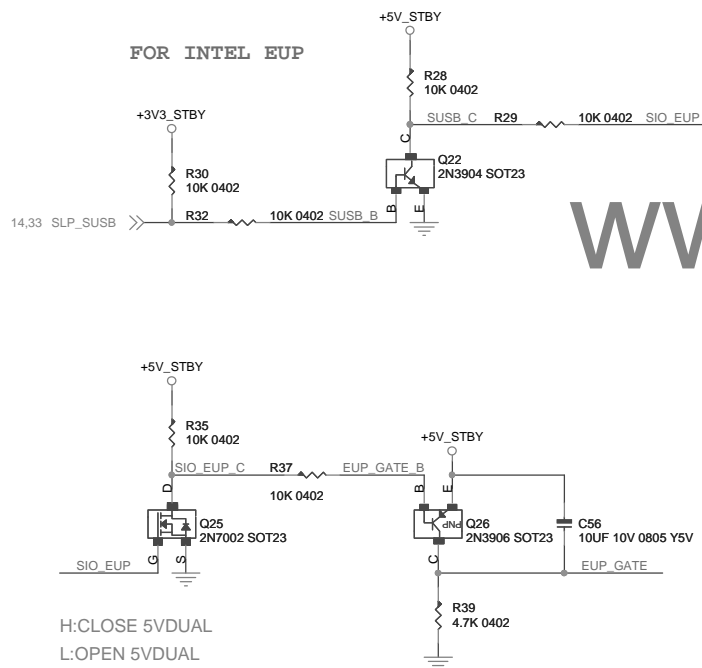
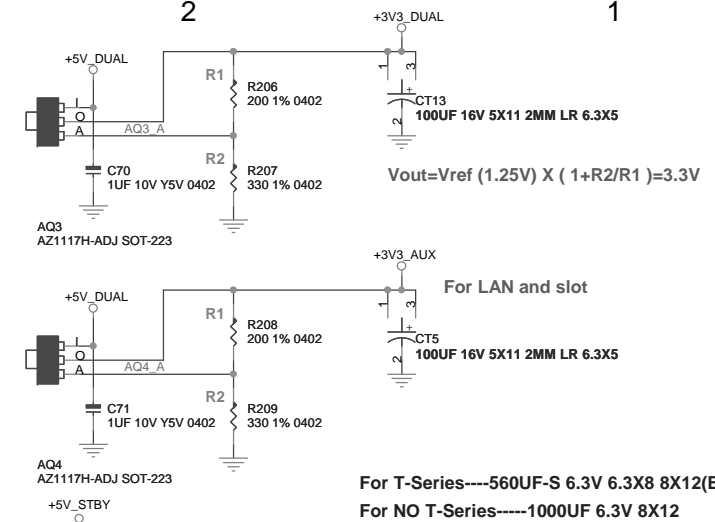
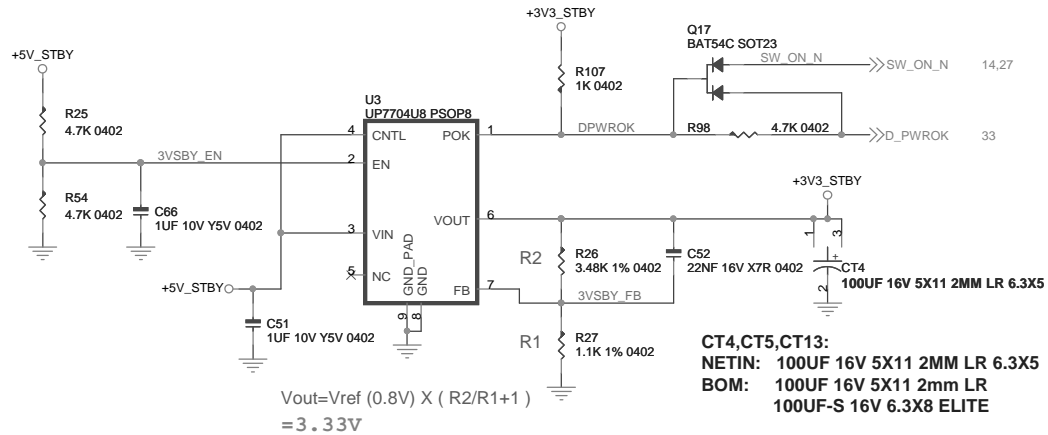
FOR EMI

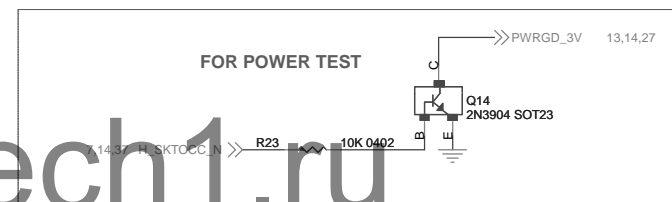
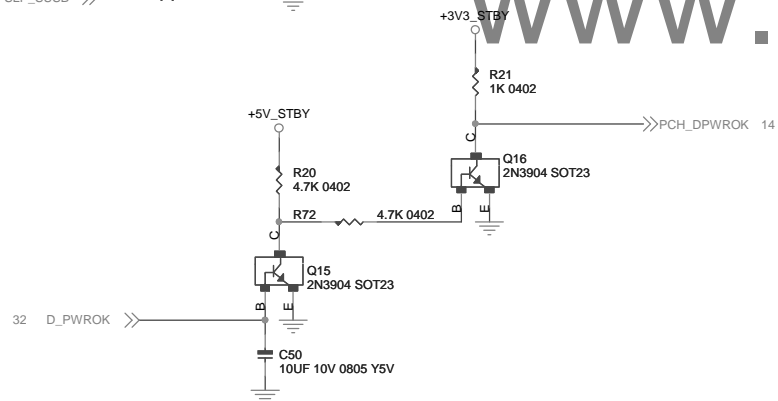
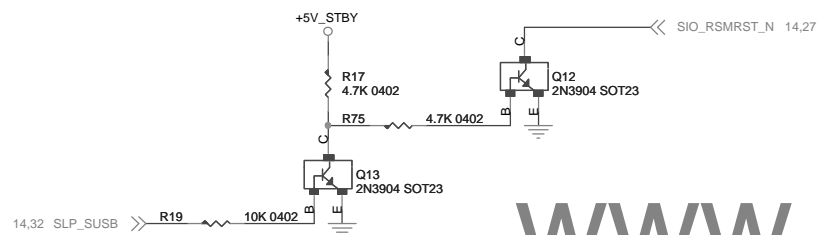
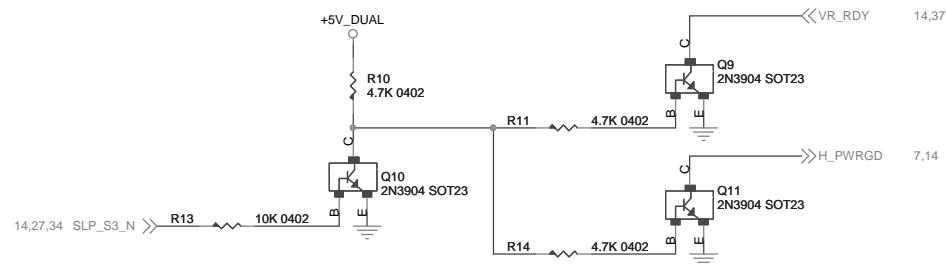


FRONT PANEL HEADER



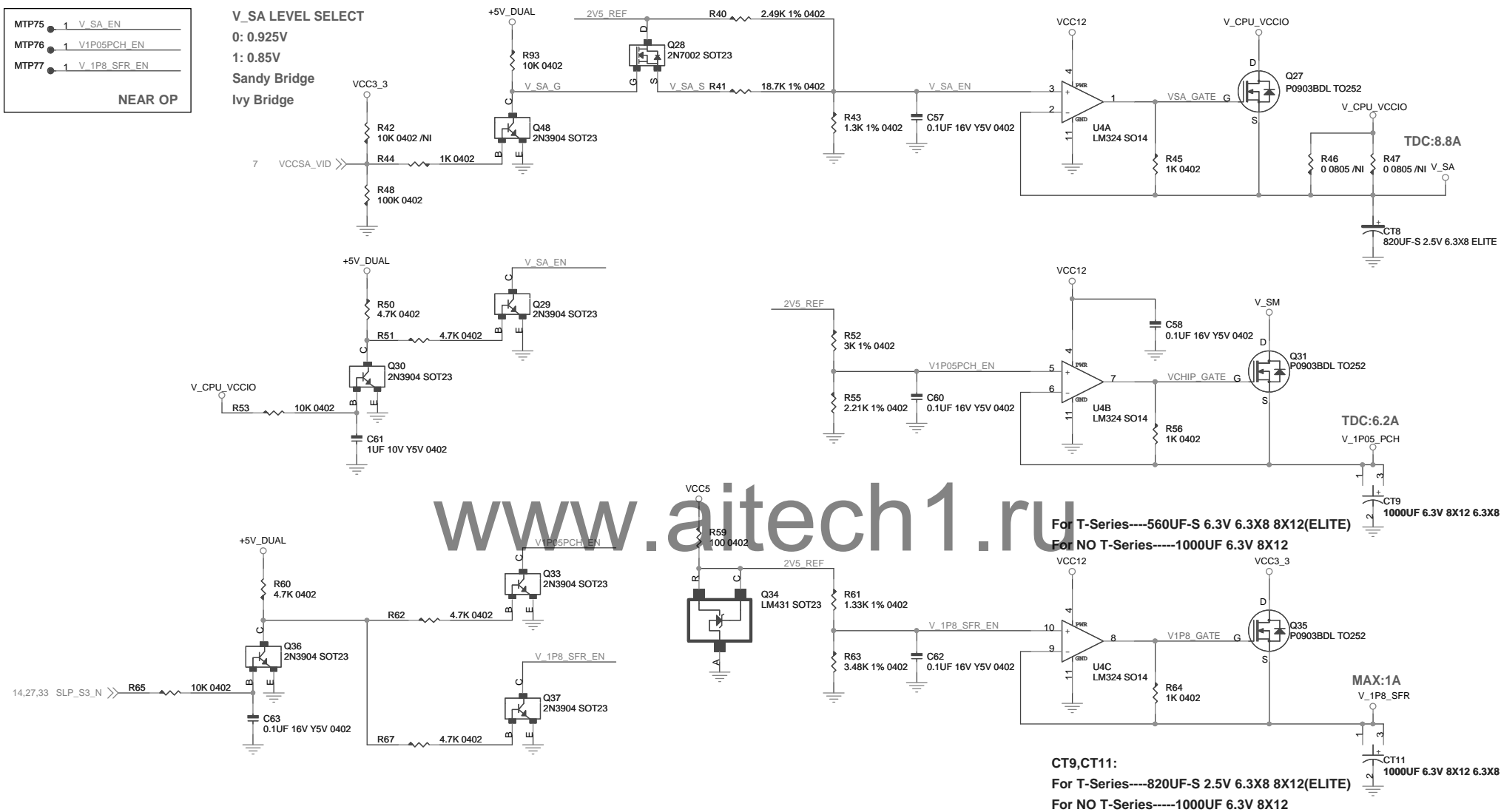
 映泰股份有限公司 BIOSAR GROUP		
Title 24PIN POWER CONN&FP		
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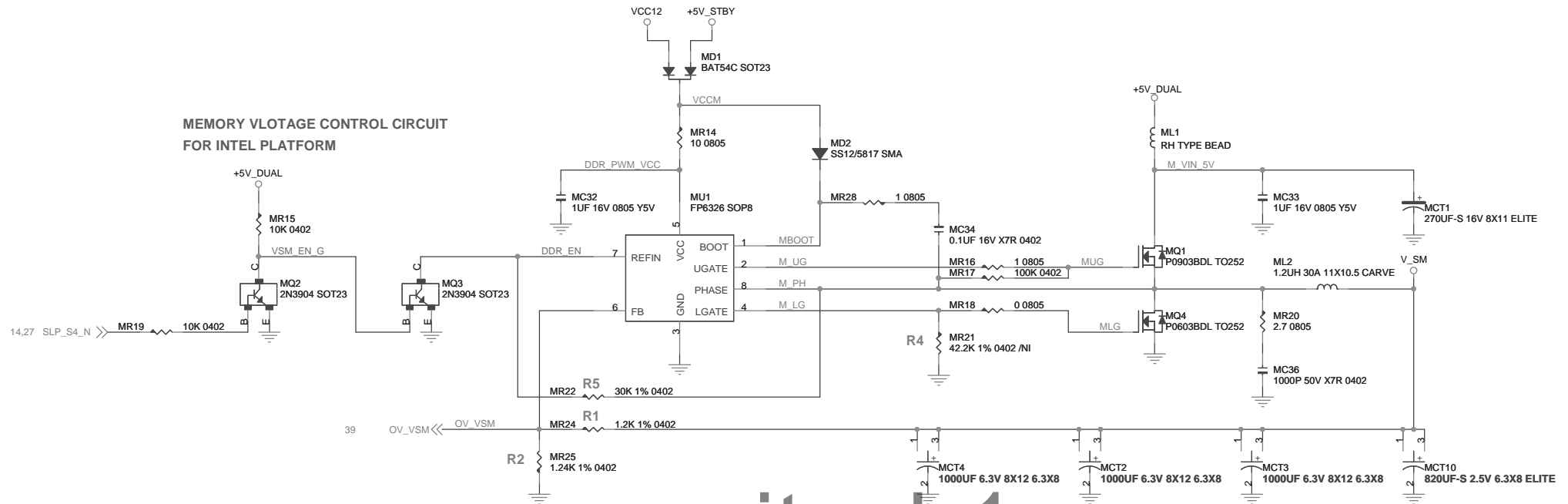


MTP75	1	V_SA_EN
MTP76	1	V1P05PCH_EN
MTP77	1	V_1P8_SFR_EN
NEAR OP		

V_SA LEVEL SELECT
0: 0.925V
1: 0.85V
Sandy Bridge
Ivy Bridge



MEMORY VLOTAGE CONTROL CIRCUIT FOR INTEL PLATFORM



$$V_{SM} = 0.8(1 + R1/R2) = 1.6V$$

R5 Only For FP6326

(40uA * R5 - 0.4V) / Rds = loc

FOR ONE LS MOSFET, R5 = 30K 1%

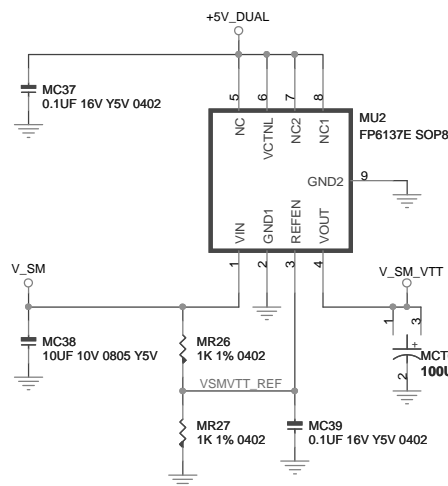
R4 Only For UP6109

OCP Set : 50A

FOR ONE LS MOSFET, P0603BDL : R4 = 42.2K 1%

For T-Series ---- 820UF-S 2.5V 6.3X8 8X12(ELITE)

For NO T-Series ---- 1000UF 6.3V 8X12

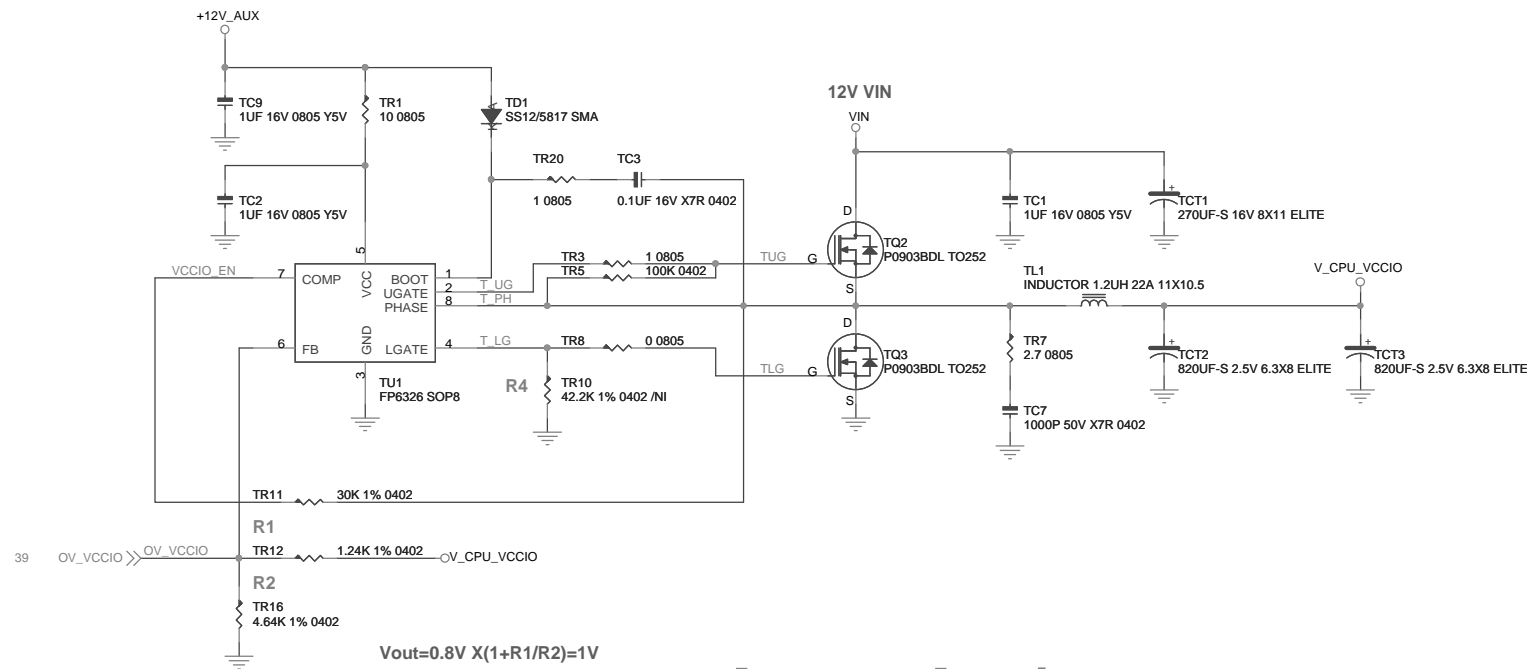


NETIN: 100UF 16V 5X11 2MM LR 6.3X5

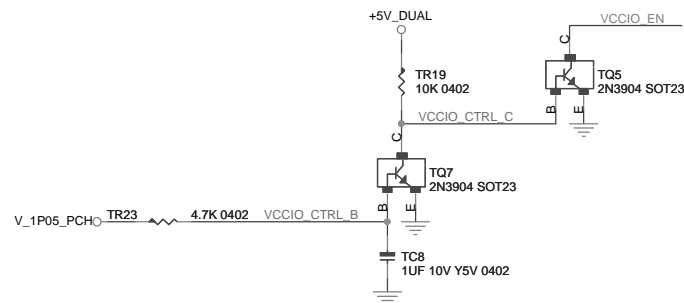
BOM: 100UF 16V 5X11 2mm LR

100UF-S 16V 6.3X8 ELITE

Title		
VSM DC-DC Converter		
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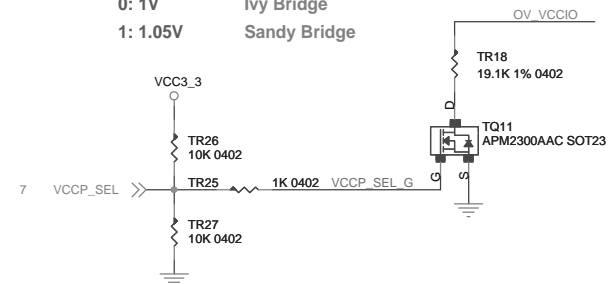


$V_{out} = 0.8V \times (1 + R1/R2) = 1V$
 R4 Only For UP6109
 OCP Set: 50A
 FOR TWO LS MOSFET, P0903BDG: R4=26.1K 1%



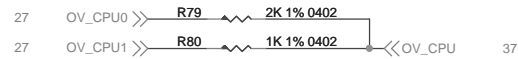
VCC_IO LEVEL SELECT

- 0: 1V Ivy Bridge
- 1: 1.05V Sandy Bridge

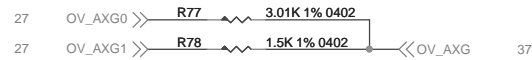


ch 1 .ru

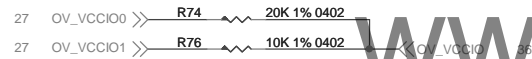




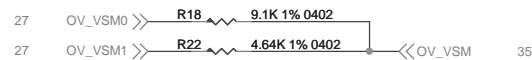
V_CPU_CORE	OV_CPU0	OV_CPU1
DEFAULT	1	1
+5%	0	1
+10%	1	0
+15%	0	0



V_AXG	OV_AXG0	OV_AXG1
DEFAULT	1	1
+5%	0	1
+10%	1	0
+15%	0	0



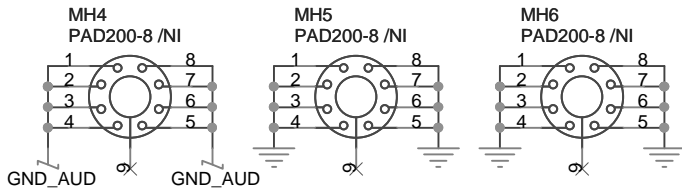
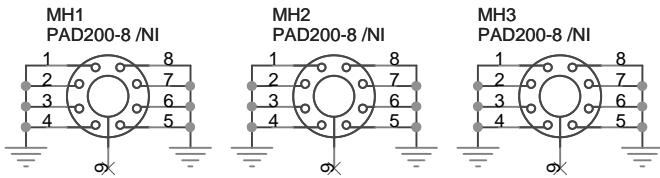
V_CPU_VCCIO	OV_VCCIO0	OV_VCCIO1
1.05V(DEFAULT)	1	1
1.1V	0	1
1.15V	1	0
1.2V	0	0



V_SM	OV_VSM0	OV_VSM1
1.5V(DEFAULT)	1	1
1.6V	0	1
1.7V	1	0
1.8V	0	0

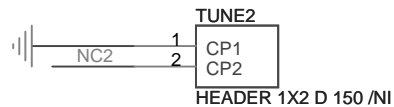
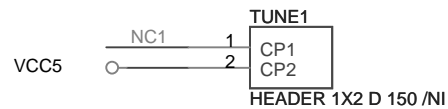
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Title OVER VOLTAGE		
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