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41	BOM

IB25C-AHS TB250 BTC VER:60

CPU:
Intel Skylake S 42 in LGA1151 Package 95W

System Chipset:
SPT-H PCH

Main Memory:
Dual Channel/DDR-4*2(Max 32GB) 1866/2133

Onboard Device:
Super I/O:IT8613E
LAN:Realtek 8111H
HD Codec:ALC887

Power solution:
CPU Voltage Regulators:3phase by ISL95824
DDR Voltage Regulators:1Phase by UP1514

Expansion Slots:
PCI EXPRESS 16X SLOT *1
PCI EXPRESS 1X SLOT *3

REAR IO:

PS/2 Port

DVI Port

SINGLE USB2.0 PORT

2 layer USB3.0 PORT

Gb RJ-45 +2 layer USB2.0 Ports

Audio Jackets

Front I/O:
SATA3 *6 SATA EXPRESS * 1
USB 2.0 Header * 2 Serial header
USB 3.0 Header * 1 Front Audio Header
CPU FAN *1
System FAN *1

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Title: INDEX		
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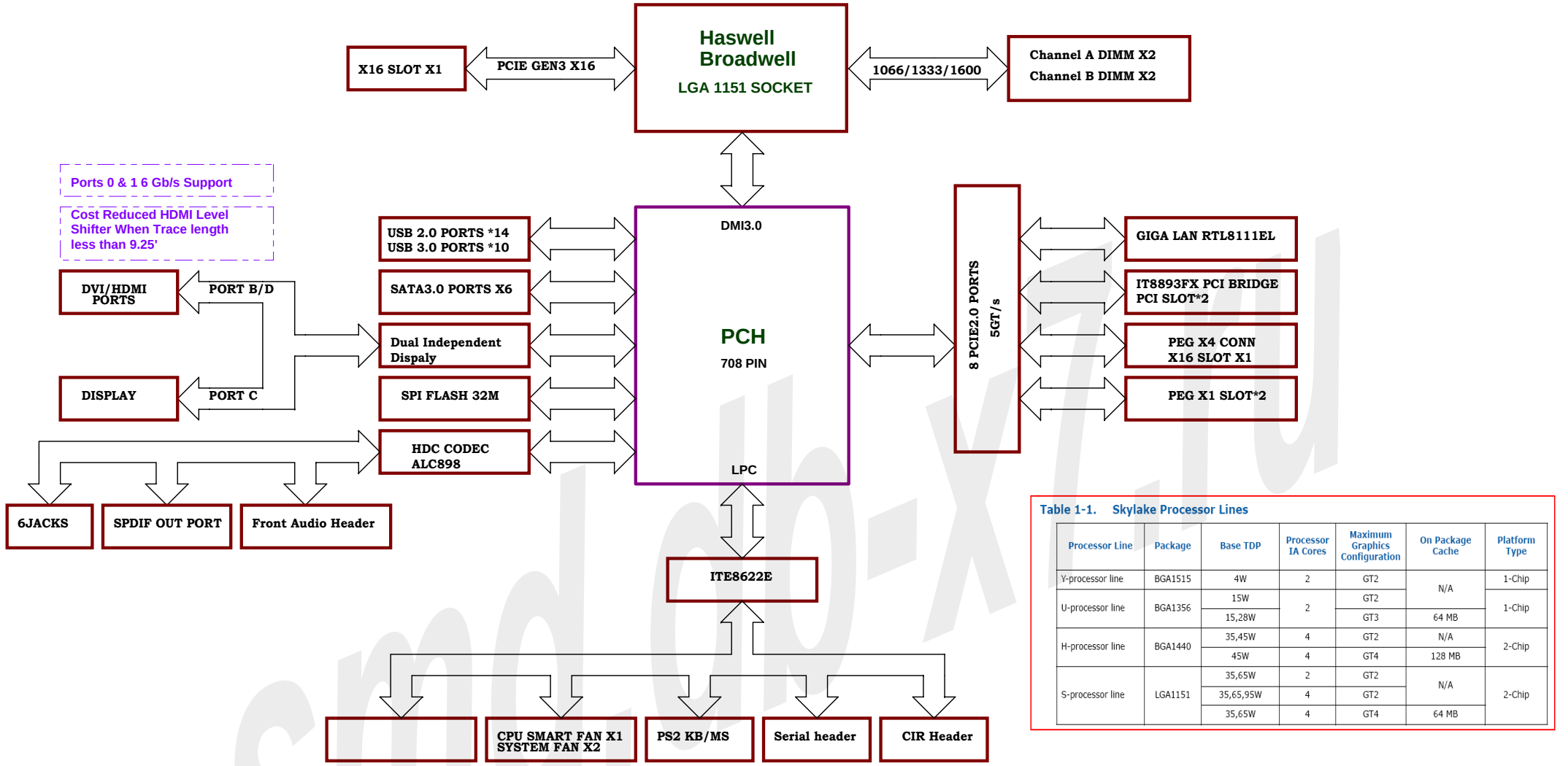

Table 1-1. Skylake Processor Lines

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	N/A	1-Chip
		15,28W		GT3	64 MB	
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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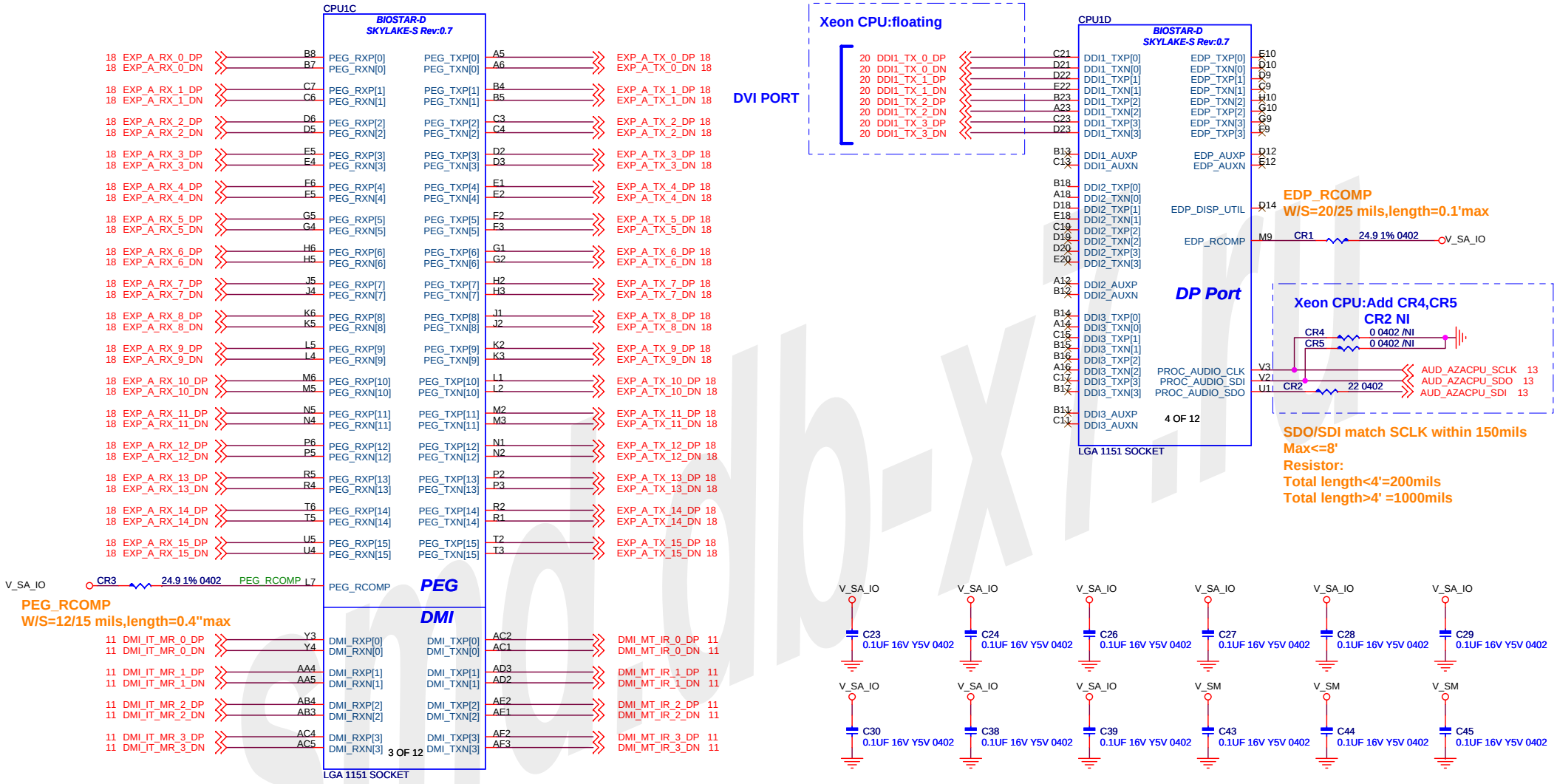

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Title: CPU PCIEX16/DMI/FDI

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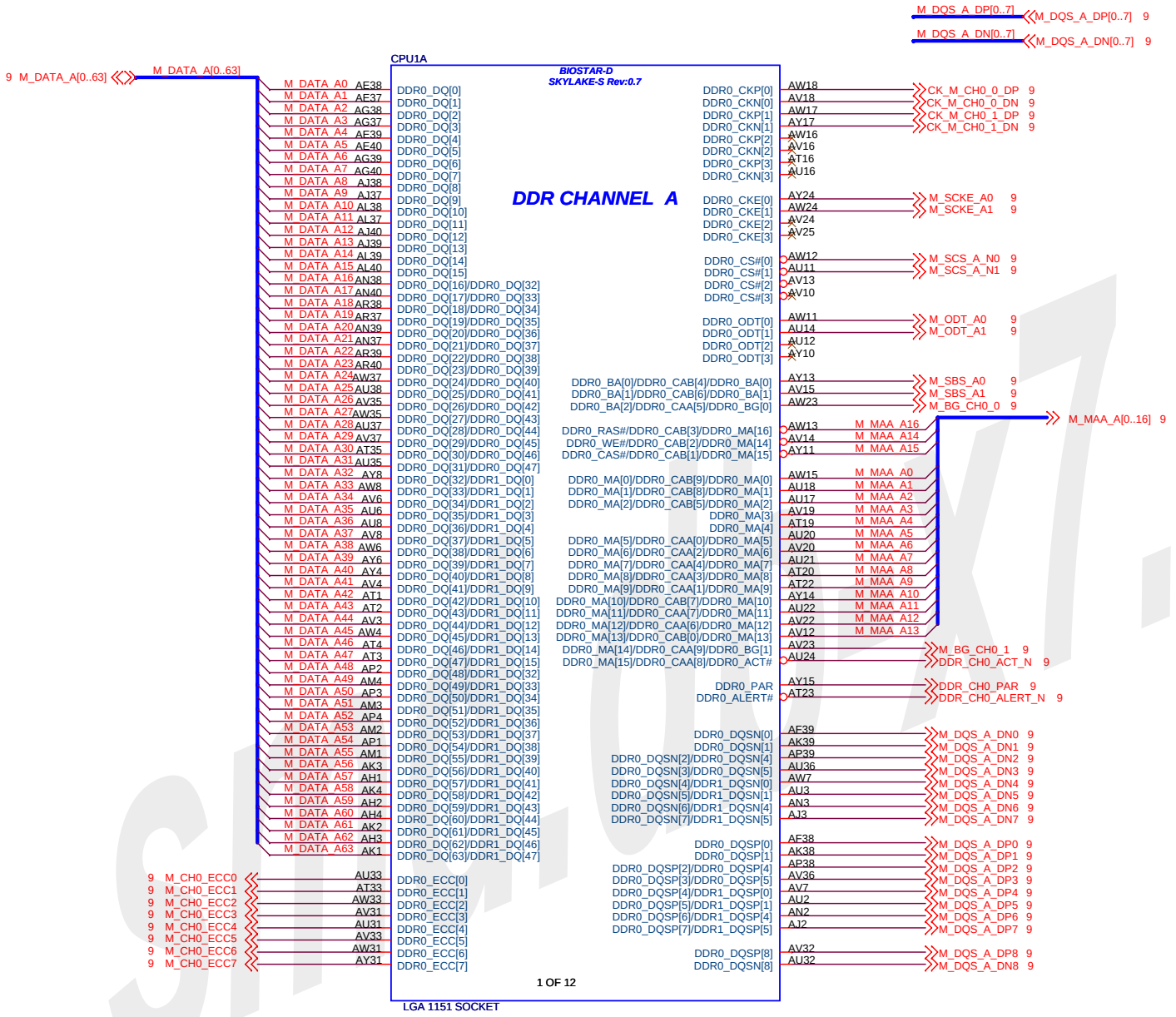

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Title	CPU DDR4 CHANNEL A		
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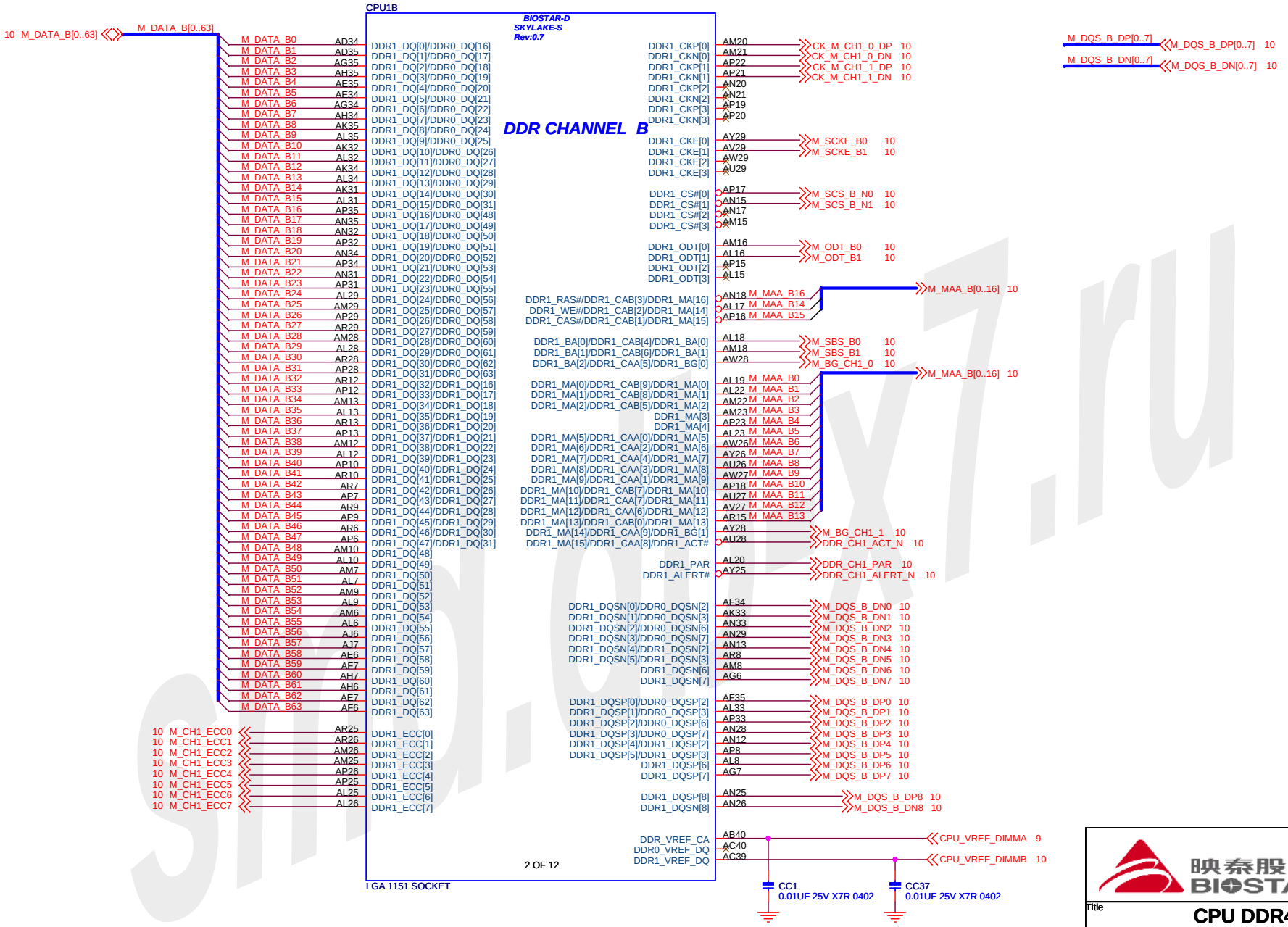

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Title	CPU DDR4 CHANNEL B	
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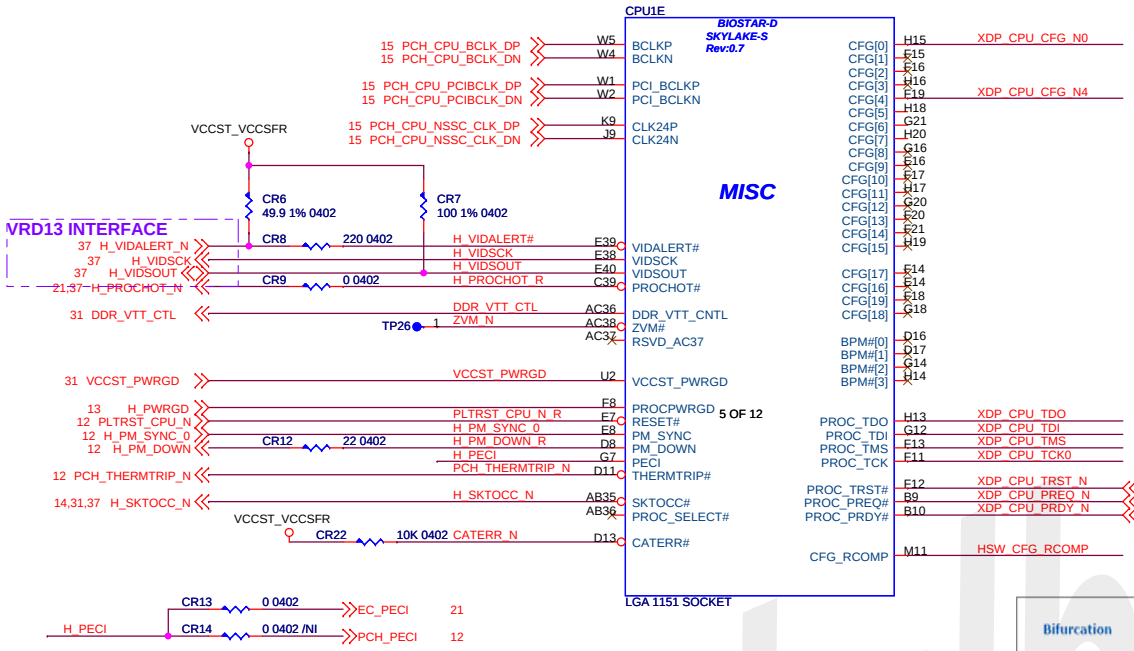

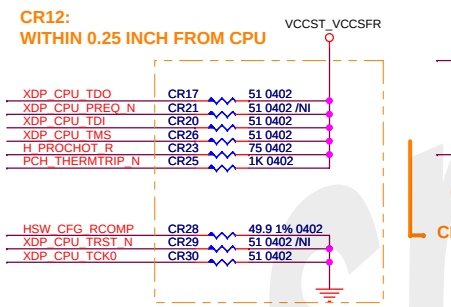

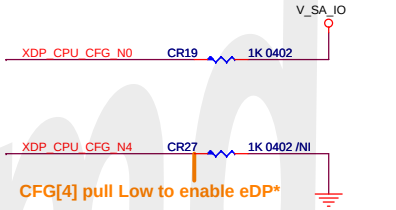

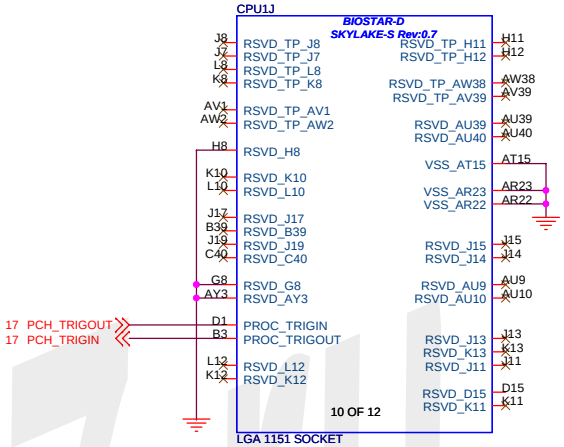

Bifurcation	Link Width			Config. Signals		
	0:1:0	0:1:1	0:1:2	CFG [6]	CFG [5]	CFG [2]
1x16	x16	N/A	N/A	1	1	1
1x16 Reversed	x16	N/A	N/A	1	1	0
2x8	x8	x8	N/A	1	0	1
2x8 Reversed	x8	x8	N/A	1	0	0
1x8+2x4	x8	x4	x4	0	0	1
1x8+2x4 Reversed	x8	x4	x4	0	0	0

CFG	HIGH	LOW	STRAP DESCRIPTION
0	NORMAL	STALL	EAR
1	NORMAL	PCHLESS	PCHLESS MODE
2	NORMAL	REVERSE	PEG_LANE_REVERSAL
3	ENABLE	DISABLE	PHYSICAL_DEBUG_ENABLE
4	DISABLE	ENABLE	DP PRESENCE
5	DISABLE	ENABLE	PEG0CFGSEL[0]
6	DISABLE	ENABLE	PEG0CFGSEL[1]
7	RESET_N	BIOS REQ	PEG_DEFER_TRAINING
8	DISABLE	ENABLE	CFG UNLOCK
9	PRESENT	NOT PRESENT	SVID NOT PRESENT
10	ACTIVATE	DEACTIVATE	SAFE MODE BOOT
11	DC COUPLED	AC COUPLED	DMI_AC_COUPLED
12	PMSYNC 2.0	LEGACY	PMSYNC LEGACY
13	SYNC	ASYNC	PMSYNC ASYNC MODE
14	RESERVED		
15	RESERVED		
ALL PINS HAVE INTERNAL PULL-UPS			

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Title	CPU MISC	
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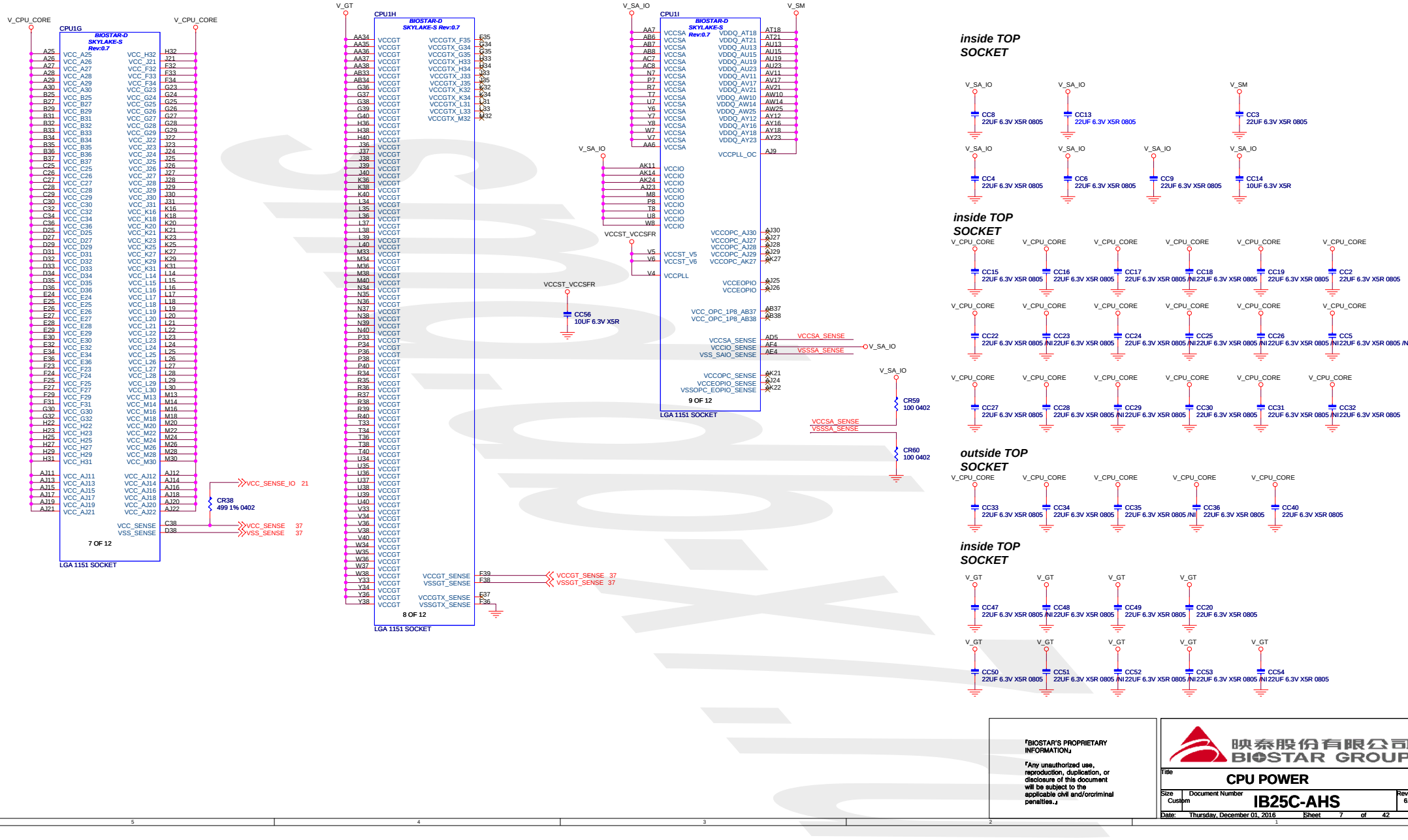

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Title: CPU POWER

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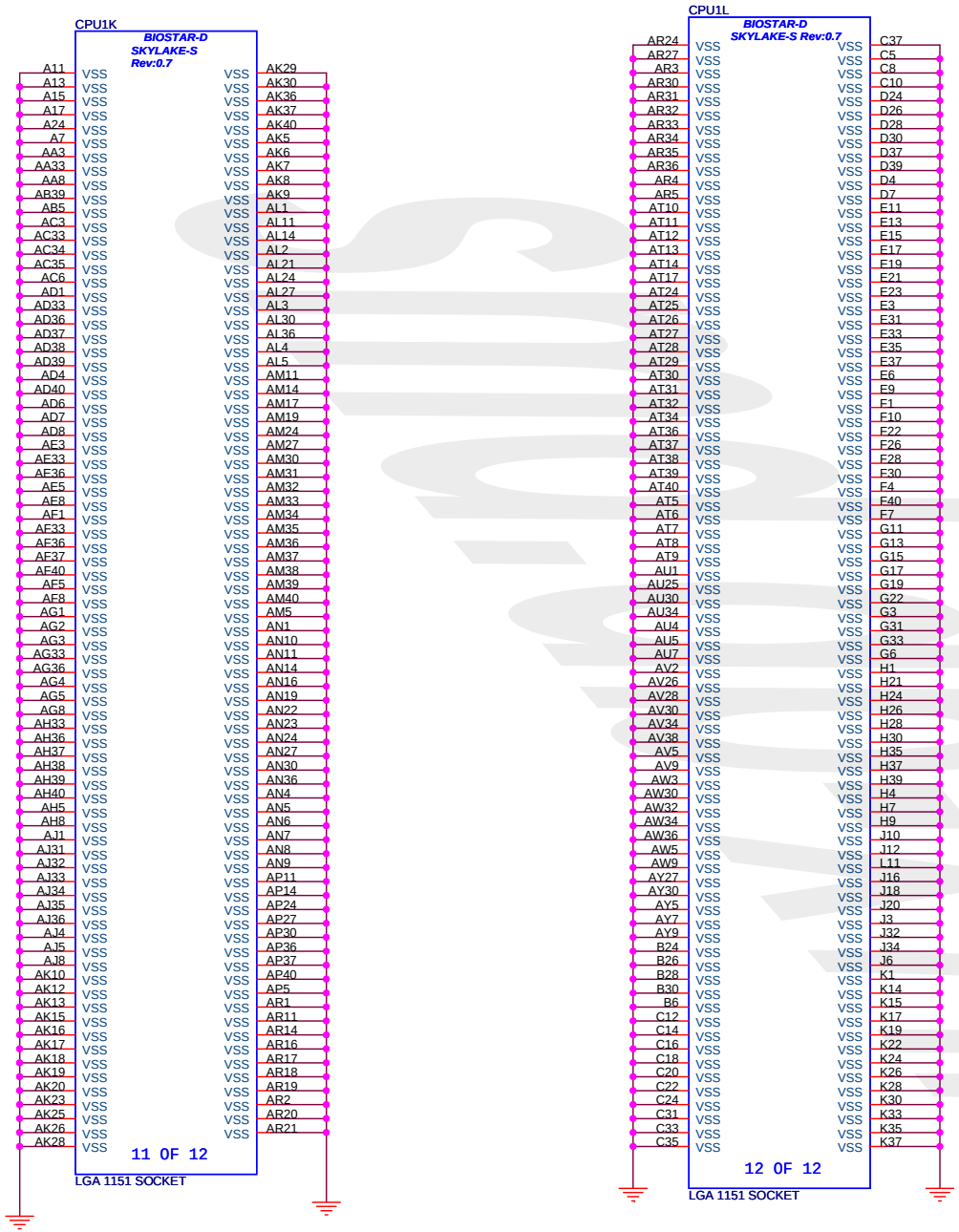

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Title	CPU GND	
Size B	Document Number IB25C-AHS	Rev 6.0
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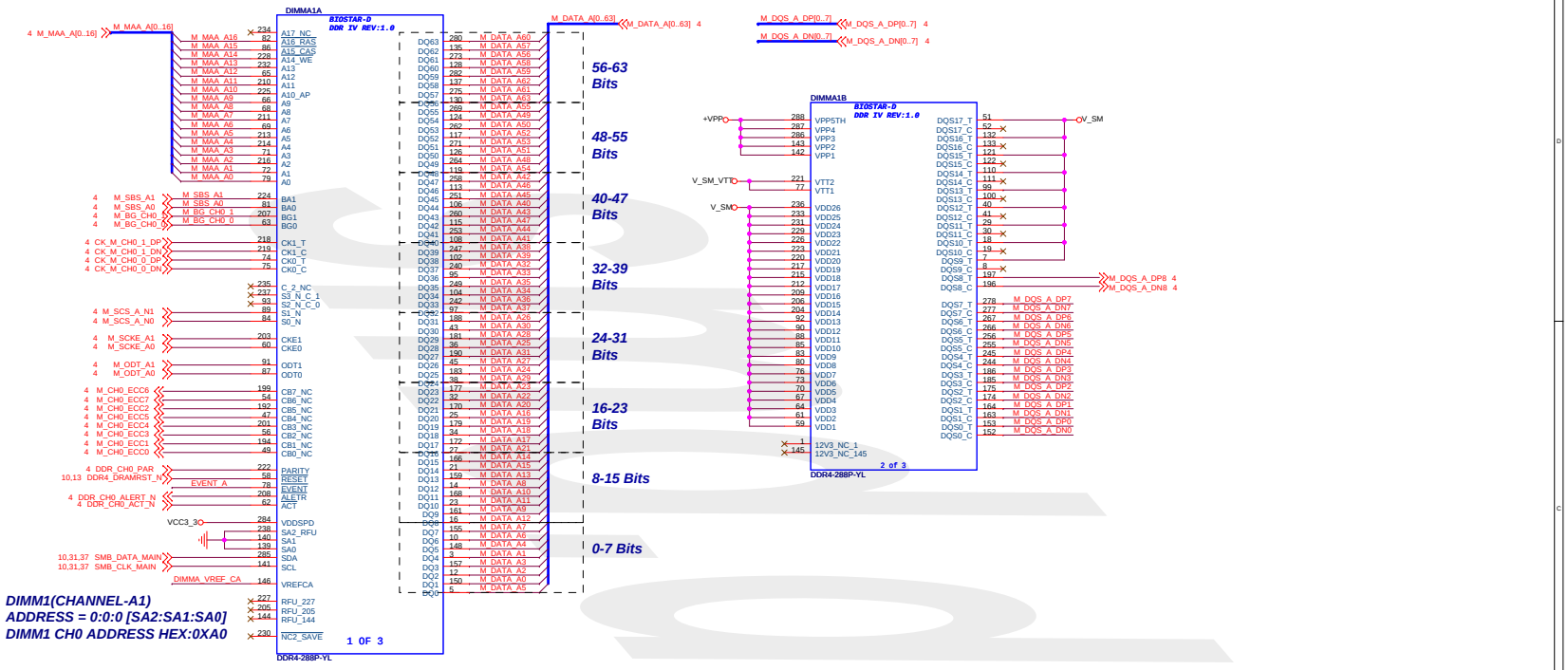

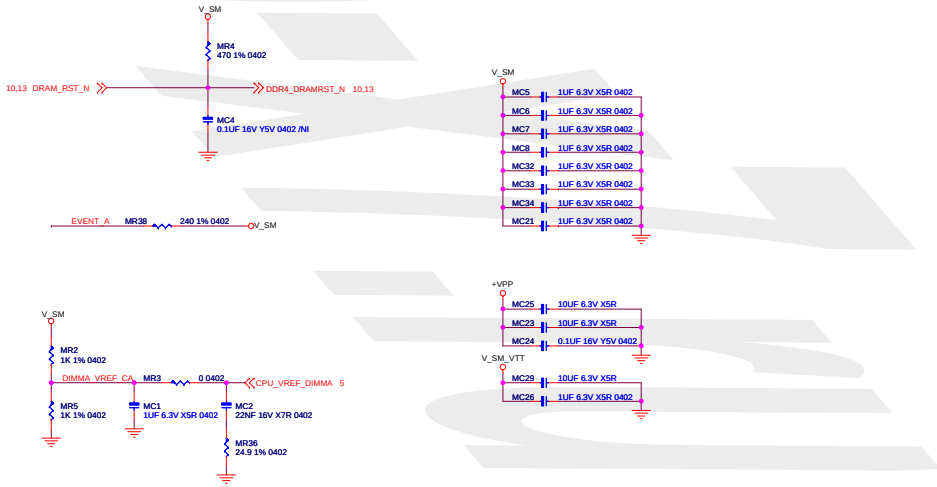

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Title: DDR4 DIMMA1

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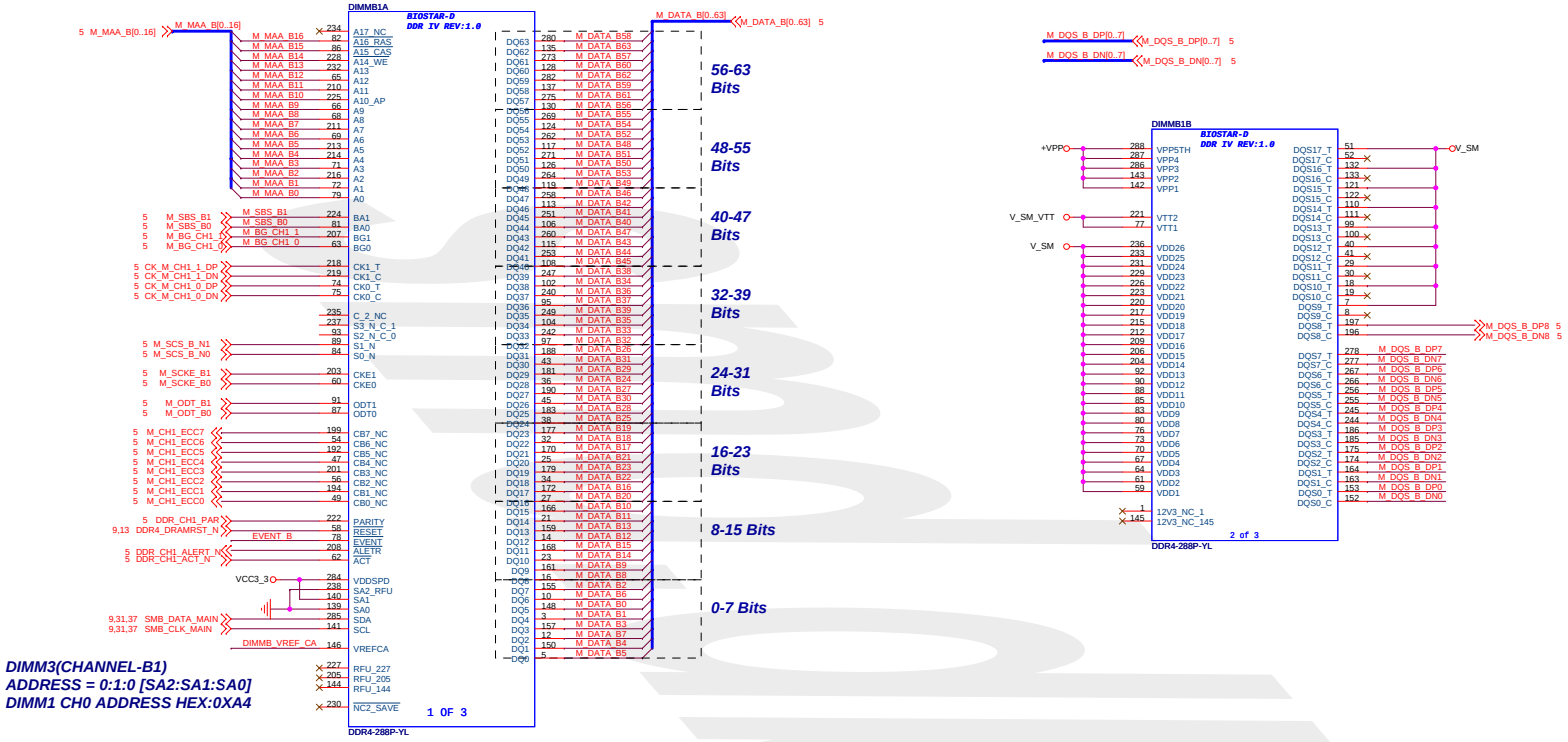

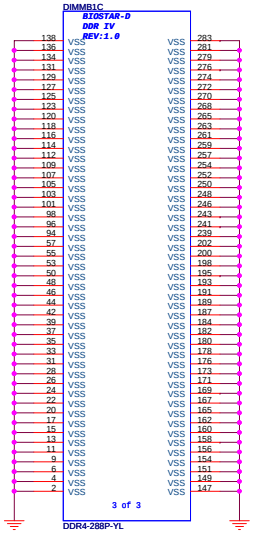

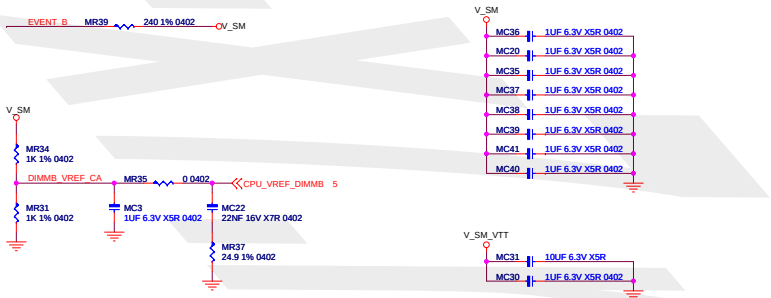

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Title: DDR4 DIMMB1

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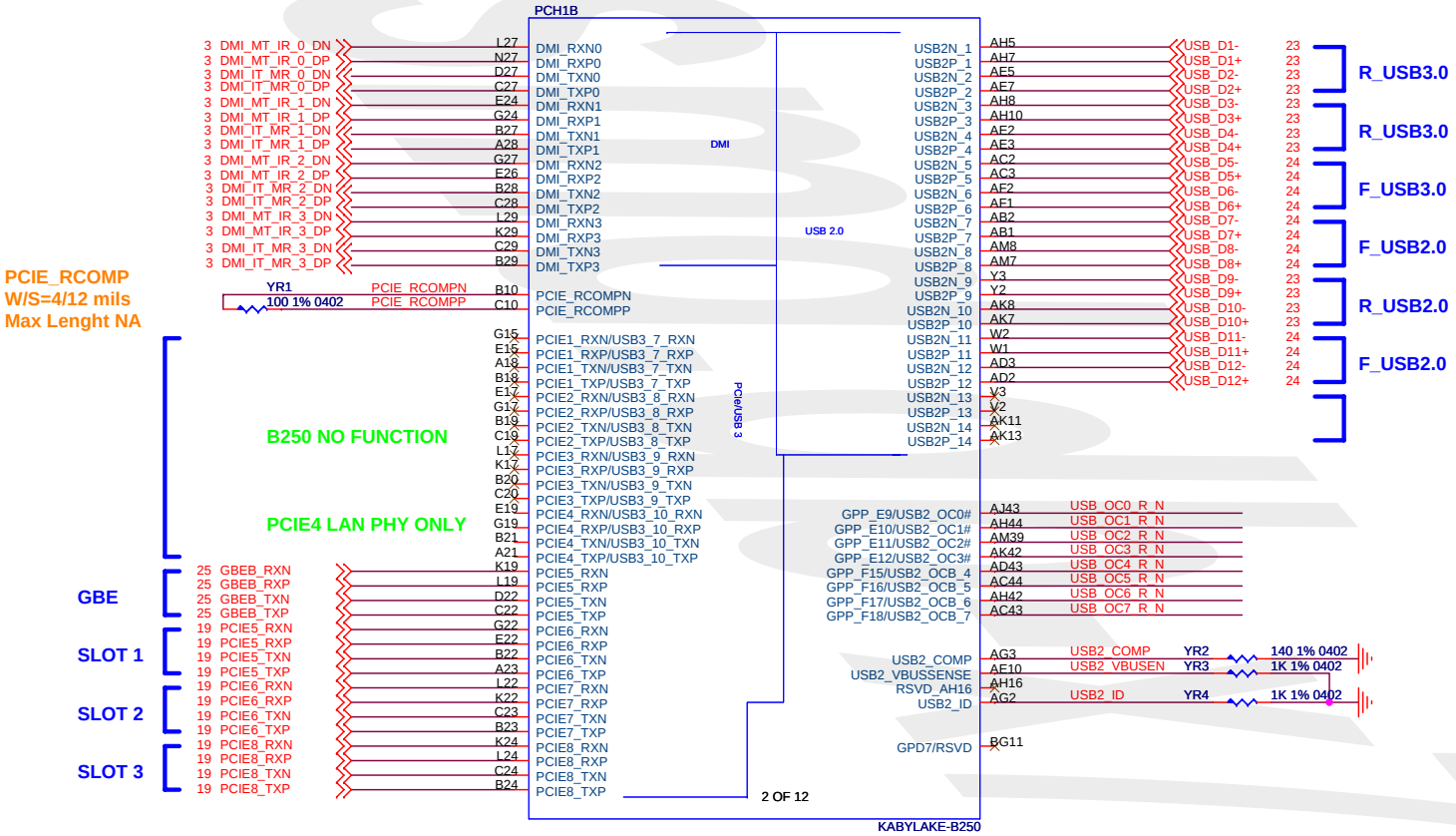
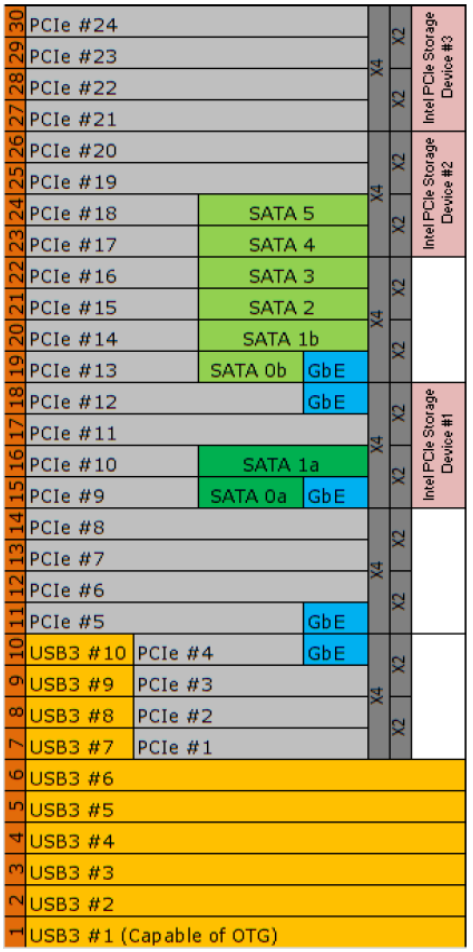
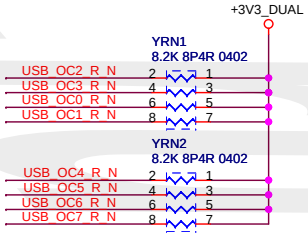
PCH PART: Y+Reference







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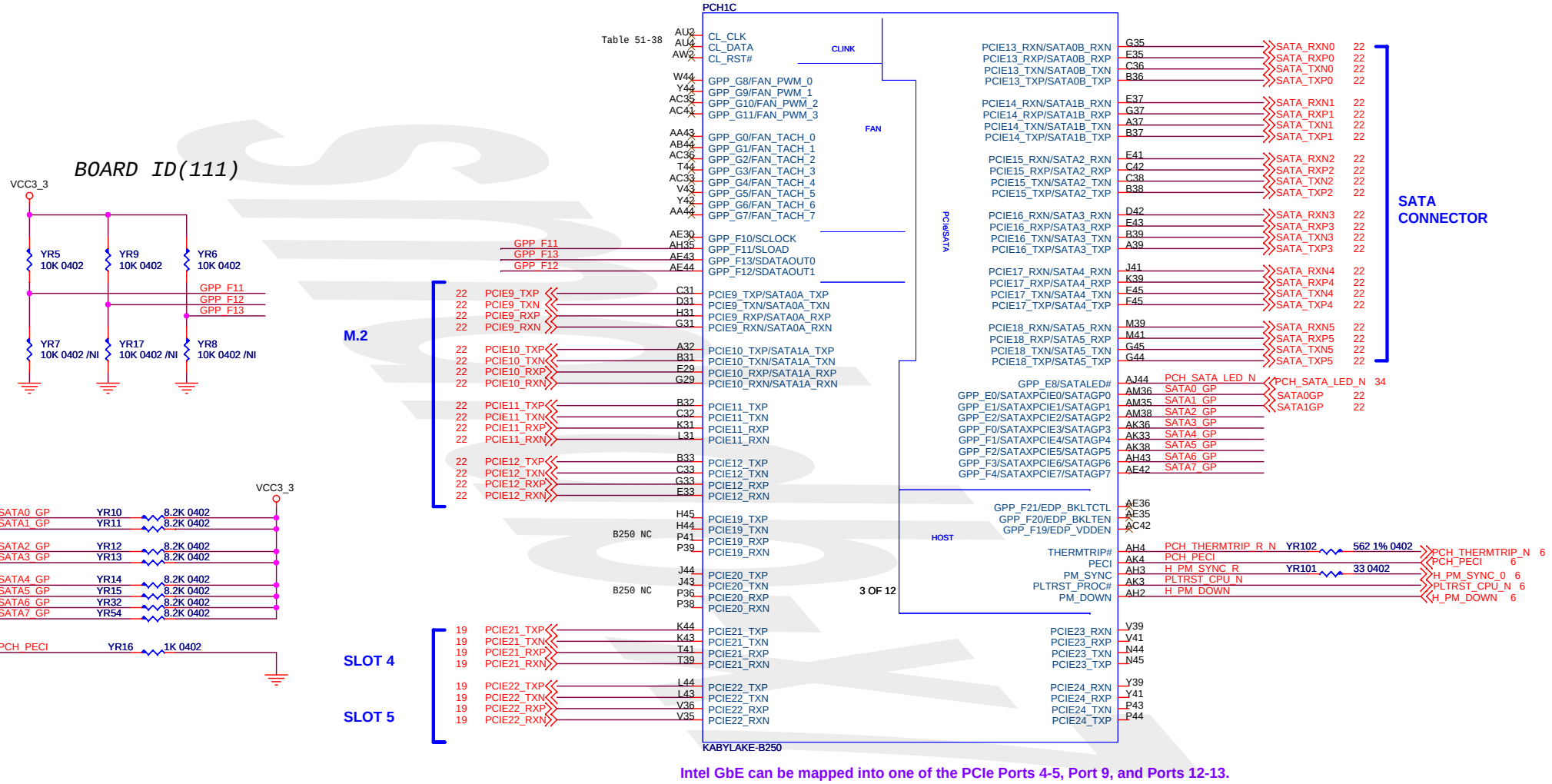
PCH PART: Y+Reference



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

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Title	PCH CLINK/SATA/CPU HOST	
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HDA_SDO and HDA_BCLK matched within 500mils

PCH1D

KABYLAKE-B250

SDO/SDI matched SCLK within 150mils
Max<=8'
Resistor:
Total length<4'=200mils
Total length>4' =1000mils

TO SUPER IO

PCH JTAG:
Length=1.1"max

ME FW Flash
GPD1:Hi =Disabled (Default)
GPD1:Low =Enabled

AUD_LINK_SDO_R:
Flash Descriptor Security Override/Intel ME Debug Mode
HIGH:FLASH DESCRIPTOR SECURITY IS OVERRIDEN
PCH HAS INTERNAL WEAK PD

PCH1A

KABYLAKE-B250

This strap should sample LOW. There should NOT be any on-board device driving it to opposite direction during strap sampling.

Bit 6 Boot BIOS Destination
0 SPI (Default)
1 LPC

ESPI/LPC SELECT STRAP
High:ESPI
Low: LPC; PCH HAS INTERNAL WEAK PD

FOR INTEL LAN EN/DISABLE

0 = Disable(TLS)
1 = Enable(TLS)

This strap should sample LOW. There should NOT be any on-board device driving it to opposite direction during strap sampling.

0 = Disable "No Reboot" mode. (Default)
1 = Enable "No Reboot" mode

0 = Disable "Top Swap" mode. (Default)
1 = Enable "Top Swap" mode

Title	PCH LPC/HDA/SPI/MISC		
Size	Document Number		Rev
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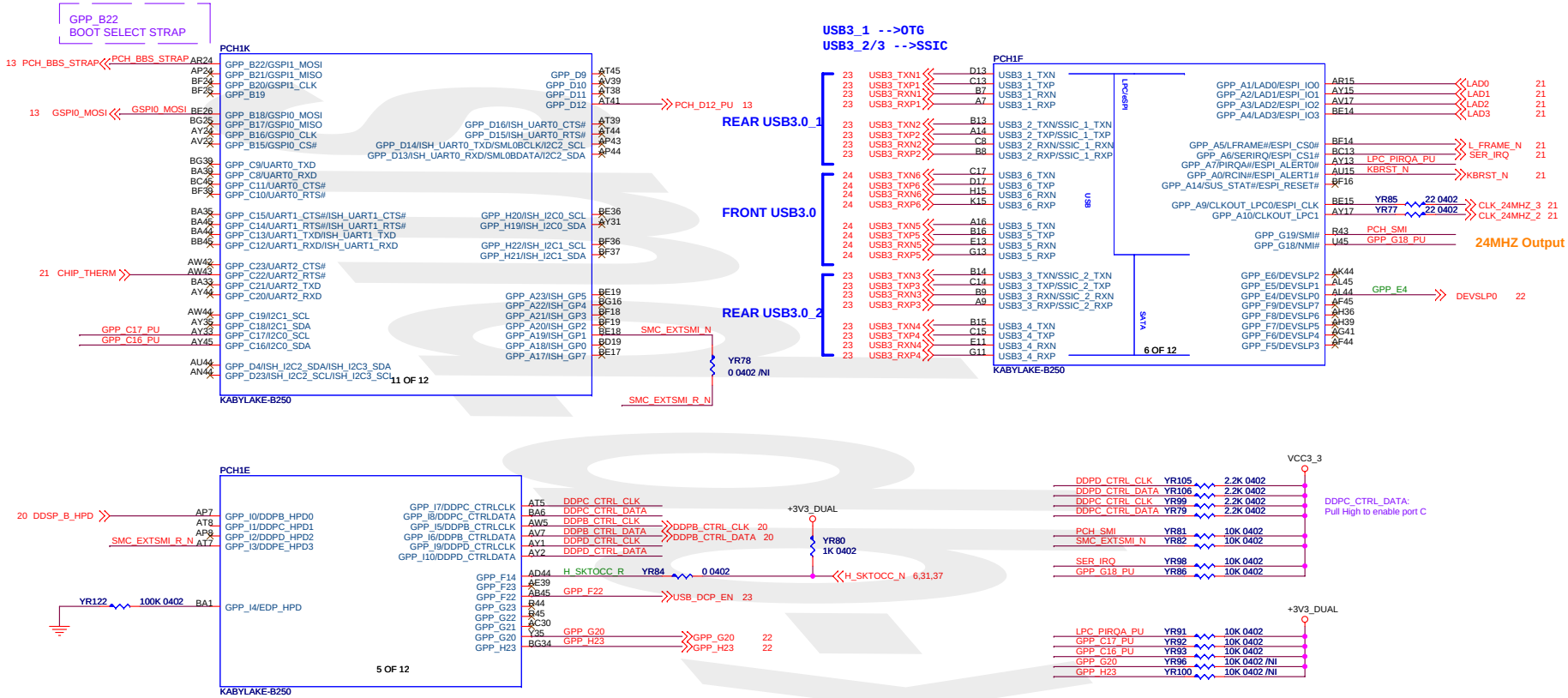
PCH PART: Y+Reference



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Title	PCH LPC/DP/USB3/UART	
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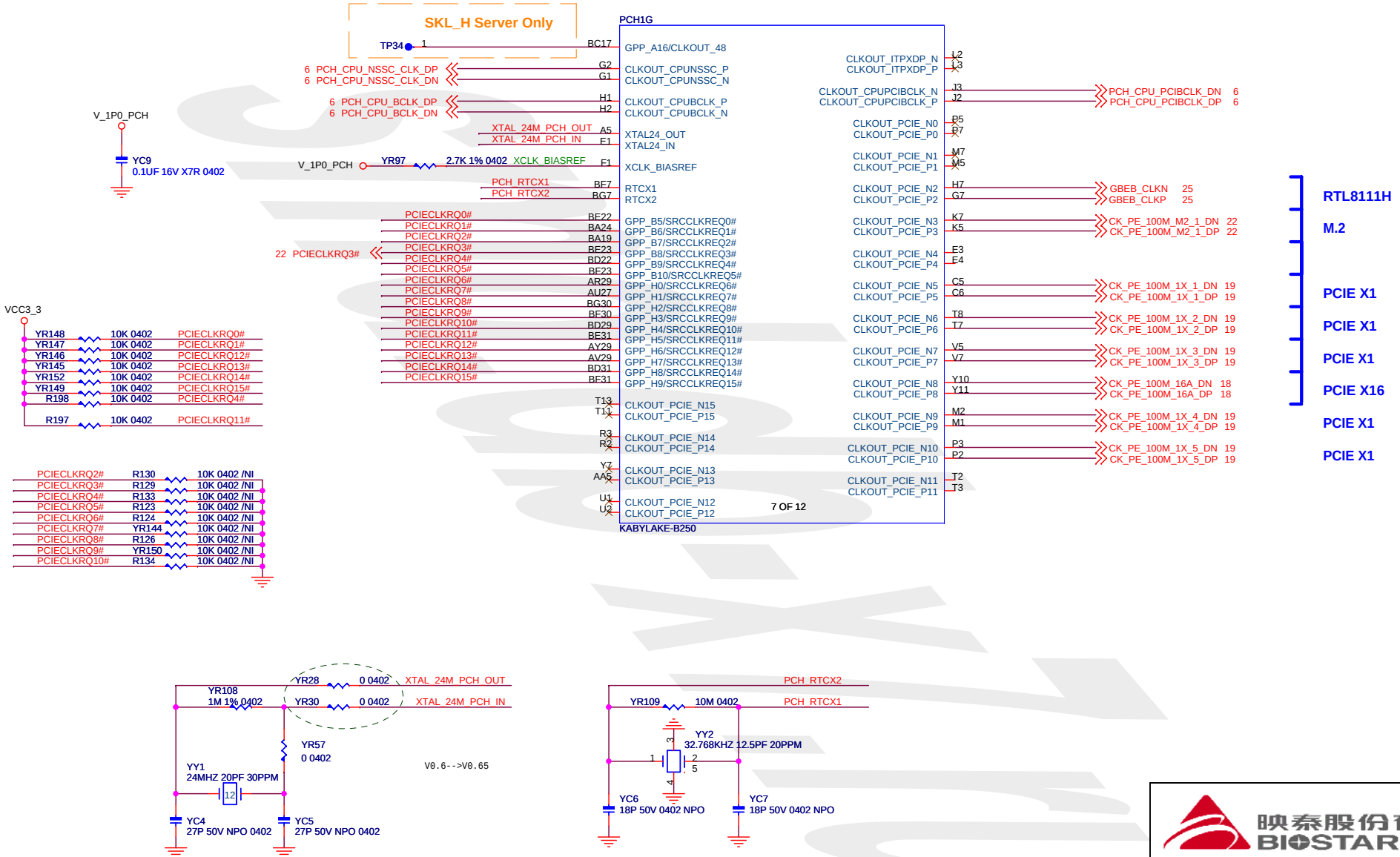

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Title	PCH CLOCK BUFFER		
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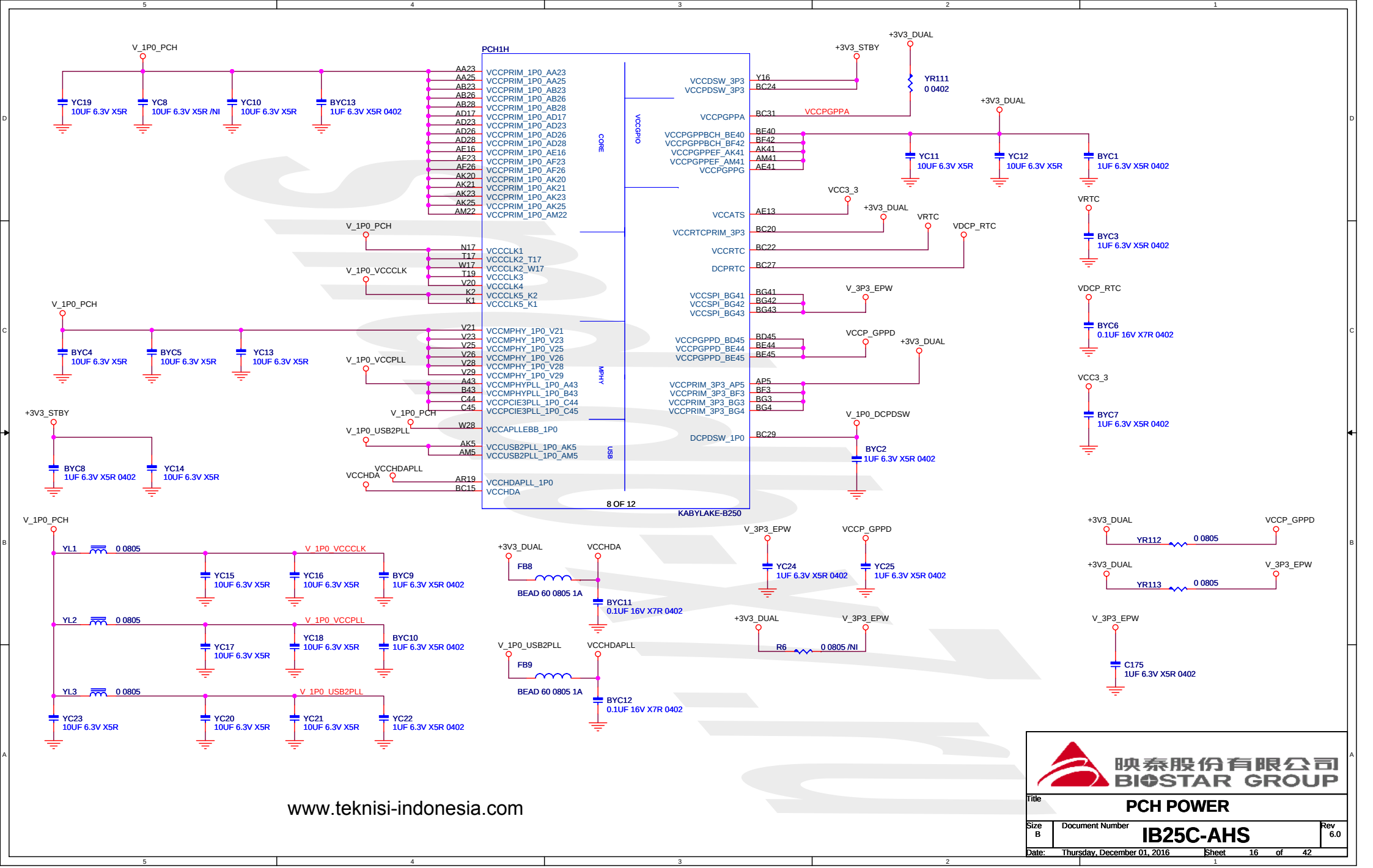

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Title	PCH POWER	
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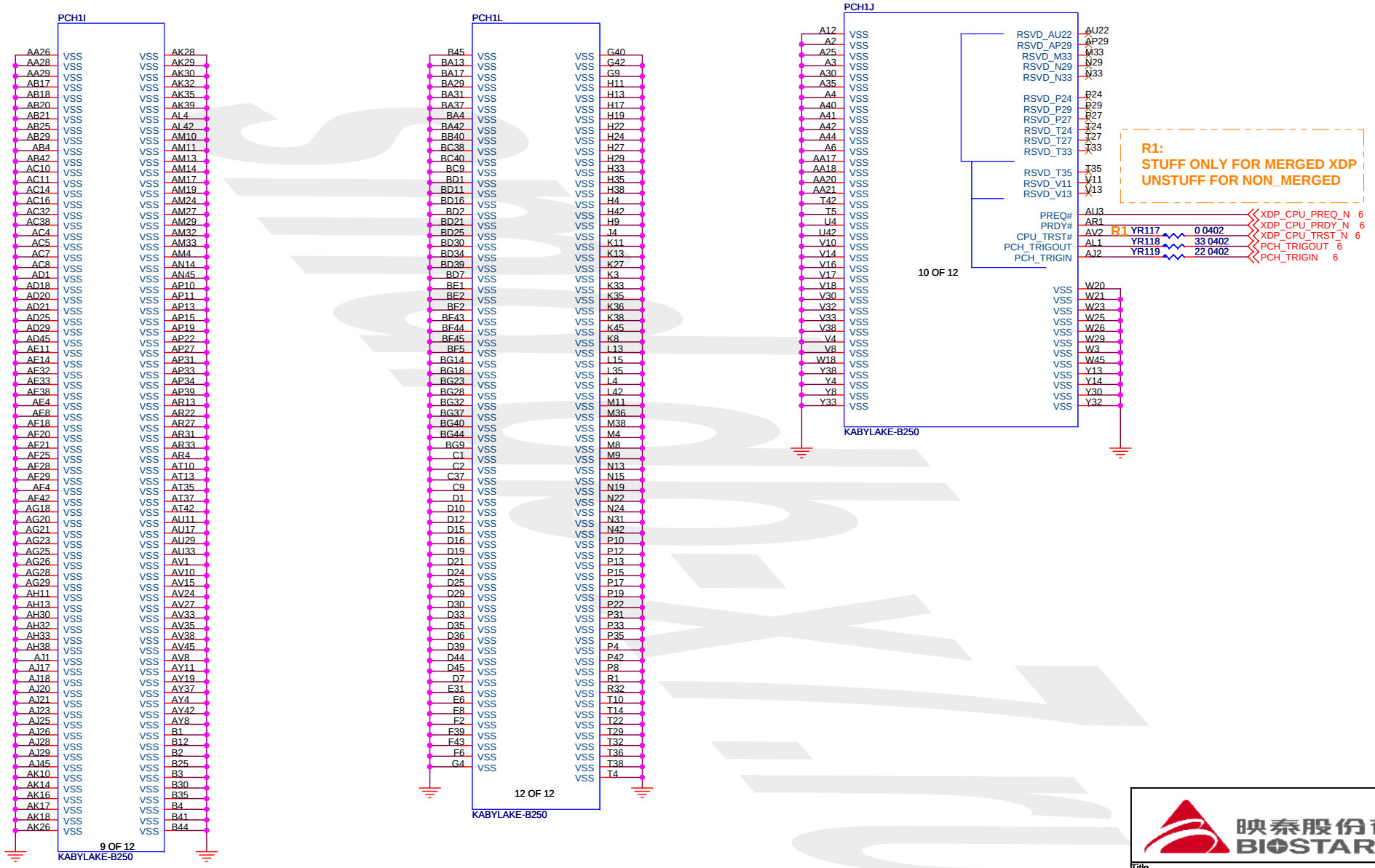

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Title	PCH GND	
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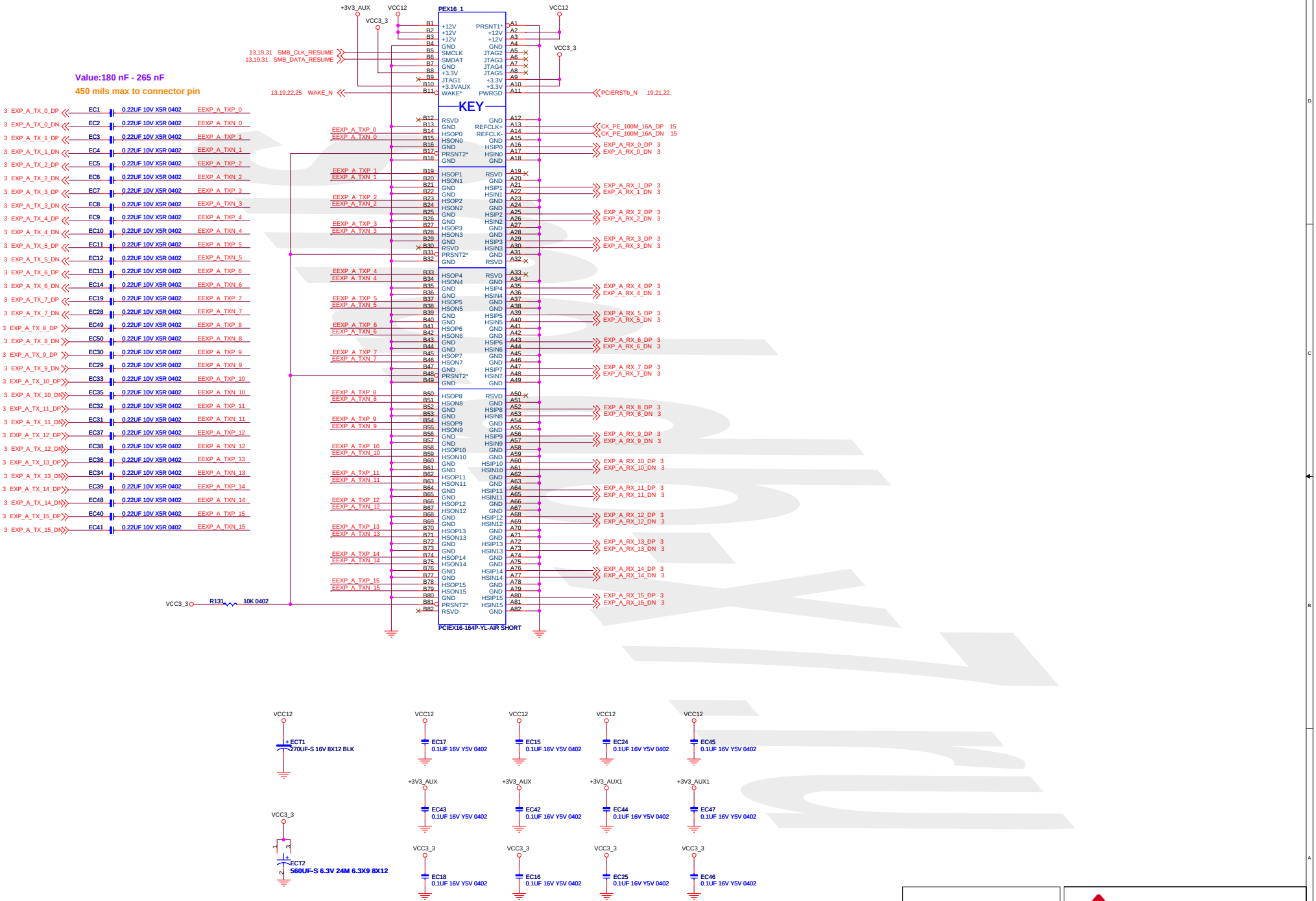
SLOT PART: E+Reference



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Title	PCIEX16 SLOT 1 & 2	
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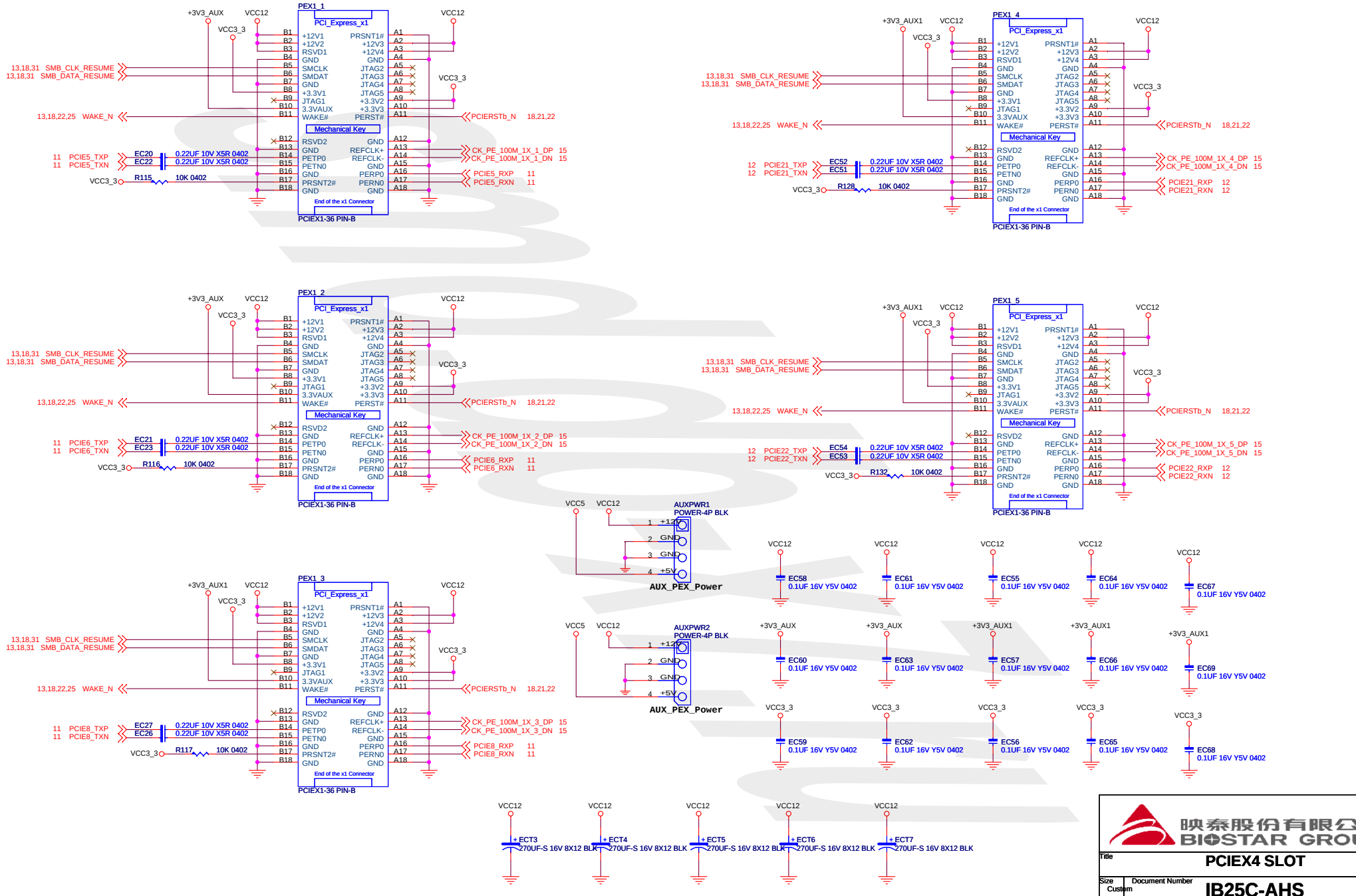

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Title	PCIEX4 SLOT	
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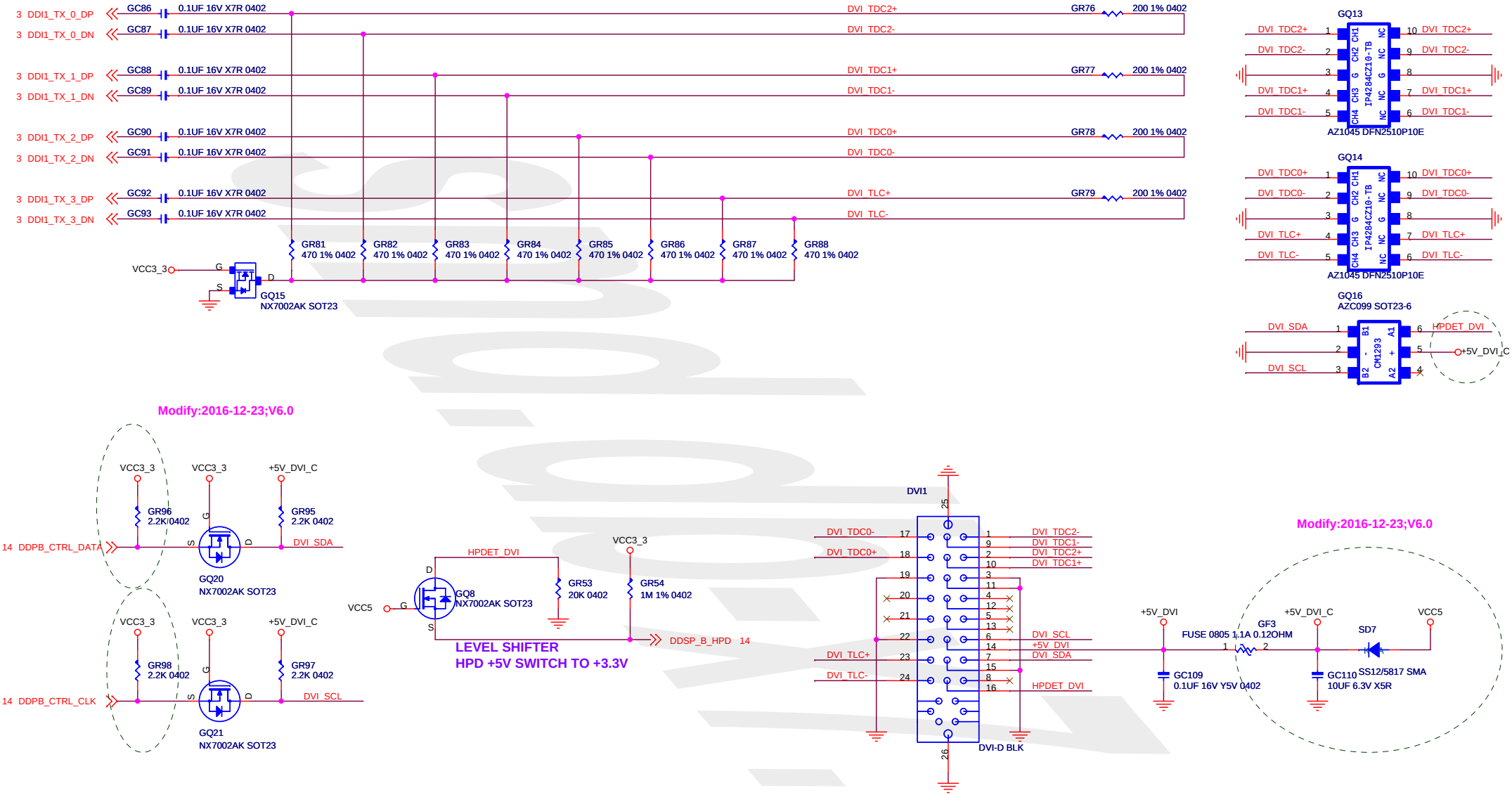

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Title	DVI-I CONNECTOR	
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IT8613E LQFP64

64-LQFP

SUPERIO PULLS

VCC CAPS

MOS TEMPERATURE

SYSTEM TEMPERATURE

HARDWARE MONITOR

V0.66

Power-On Strapping

	Symbol	Value	Description
JP1	DSW_EUP_SEL	1	EUP
Pin-24		0	DSW
JP2	WDT_EN	1	Disable WDT to reset PWROK
Pin-56		0	Enable WDT to reset PWROK
JP3	FAN_CTL_SEL	1	EC Index 63h/73h/7B/A3 is 80h
Pin-58		0	EC Index 63h/73h/7B/A3 is 00h
JP4	K8PWR_EN	1	Disable K8 Power Sequence
Pin-60		0	Enable K8 Power Sequence

FAN_CTRL2 not supported by JP3 FAN_CTL_SEL(EC index 6Bh default value always 80h)

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Title	SIO IT8613E	
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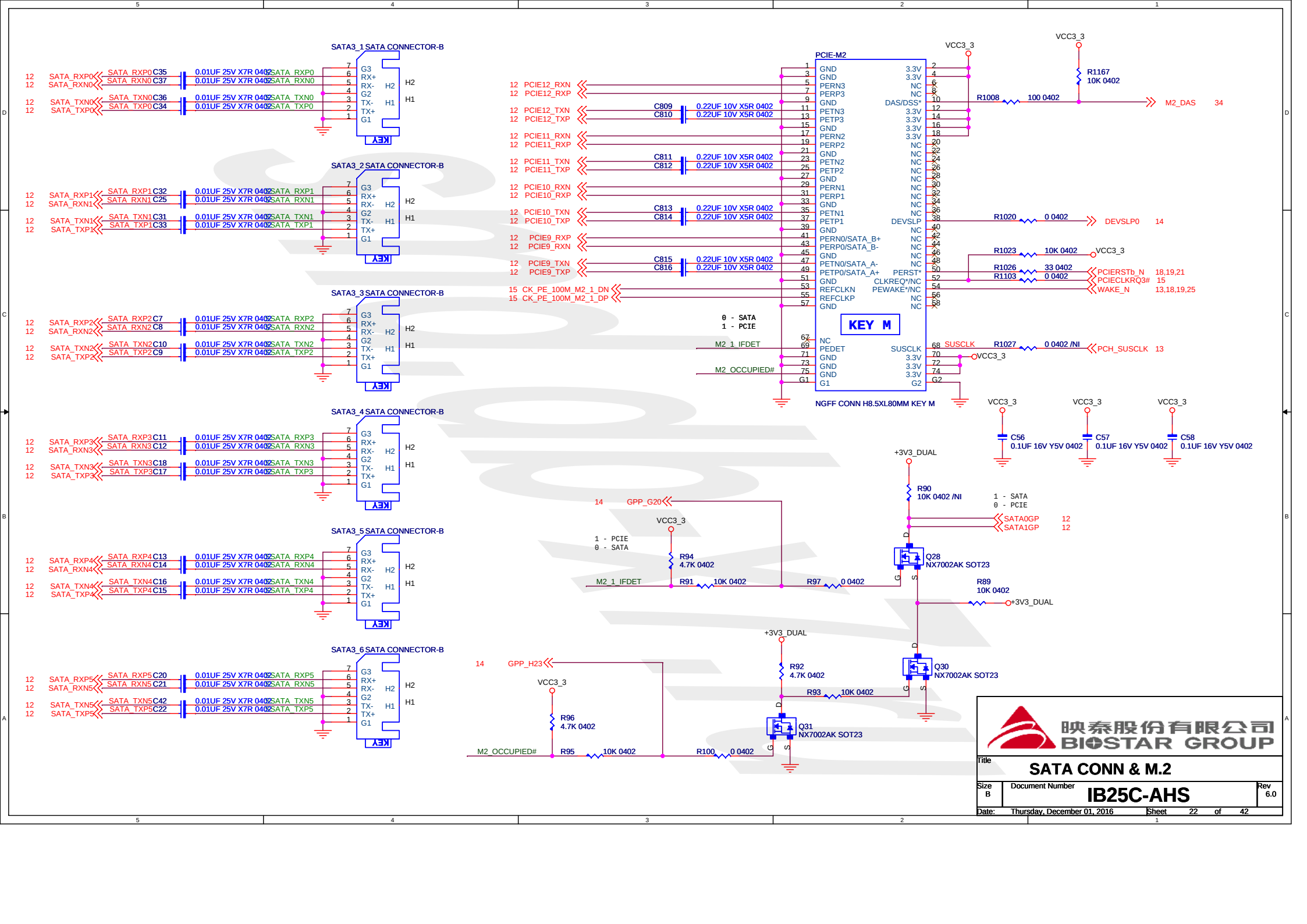
SATA3_1 SATA CONNECTOR-B
SATA3_2 SATA CONNECTOR-B
SATA3_3 SATA CONNECTOR-B
SATA3_4 SATA CONNECTOR-B
SATA3_5 SATA CONNECTOR-B
SATA3_6 SATA CONNECTOR-B
SATA_RXP0 C35
SATA_RXN0 C37
SATA_TXN0 C36
SATA_TXP0 C34
SATA_RXP1 C32
SATA_RXN1 C25
SATA_TXN1 C31
SATA_TXP1 C33
SATA_RXP2 C7
SATA_RXN2 C8
SATA_TXN2 C10
SATA_TXP2 C9
SATA_RXP3 C11
SATA_RXN3 C12
SATA_TXN3 C18
SATA_TXP3 C17
SATA_RXP4 C13
SATA_RXN4 C14
SATA_TXN4 C16
SATA_TXP4 C15
SATA_RXP5 C20
SATA_RXN5 C21
SATA_TXN5 C42
SATA_TXP5 C22
0.01UF 25V X7R 0402
PCIE-M2
NGFF CONN H8.5XL80MM KEY M
KEY M
0 - SATA
1 - PCIE
M2_1_IFDET
M2_OCCUPIED#
C809 C810 0.22UF 10V X5R 0402
C811 C812 0.22UF 10V X5R 0402
C813 C814 0.22UF 10V X5R 0402
C815 C816 0.22UF 10V X5R 0402
R1167 10K 0402
R1008 100 0402
R1020 0 0402
R1023 10K 0402
R1026 33 0402
R1103 0 0402
R1027 0 0402 /NI
C56 0.1UF 16V Y5V 0402
C57 0.1UF 16V Y5V 0402
C58 0.1UF 16V Y5V 0402
R90 10K 0402 /NI
R94 4.7K 0402
R91 10K 0402
R97 0 0402
R89 10K 0402
R92 4.7K 0402
R93 10K 0402
R96 4.7K 0402
R95 10K 0402
R100 0 0402
Q28 NX7002AK SOT23
Q30 NX7002AK SOT23
Q31 NX7002AK SOT23
GPP_G20
GPP_H23
SUSCLK
M2_DAS
DEVSLP0
PCIERSTb_N
PCIECLKRQ3#
WAKE_N
PCH_SUSCLK
SATA0GP
SATA1GP
VCC3_3
+3V3_DUAL
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BIOSTAR GROUP
SATA CONN & M.2
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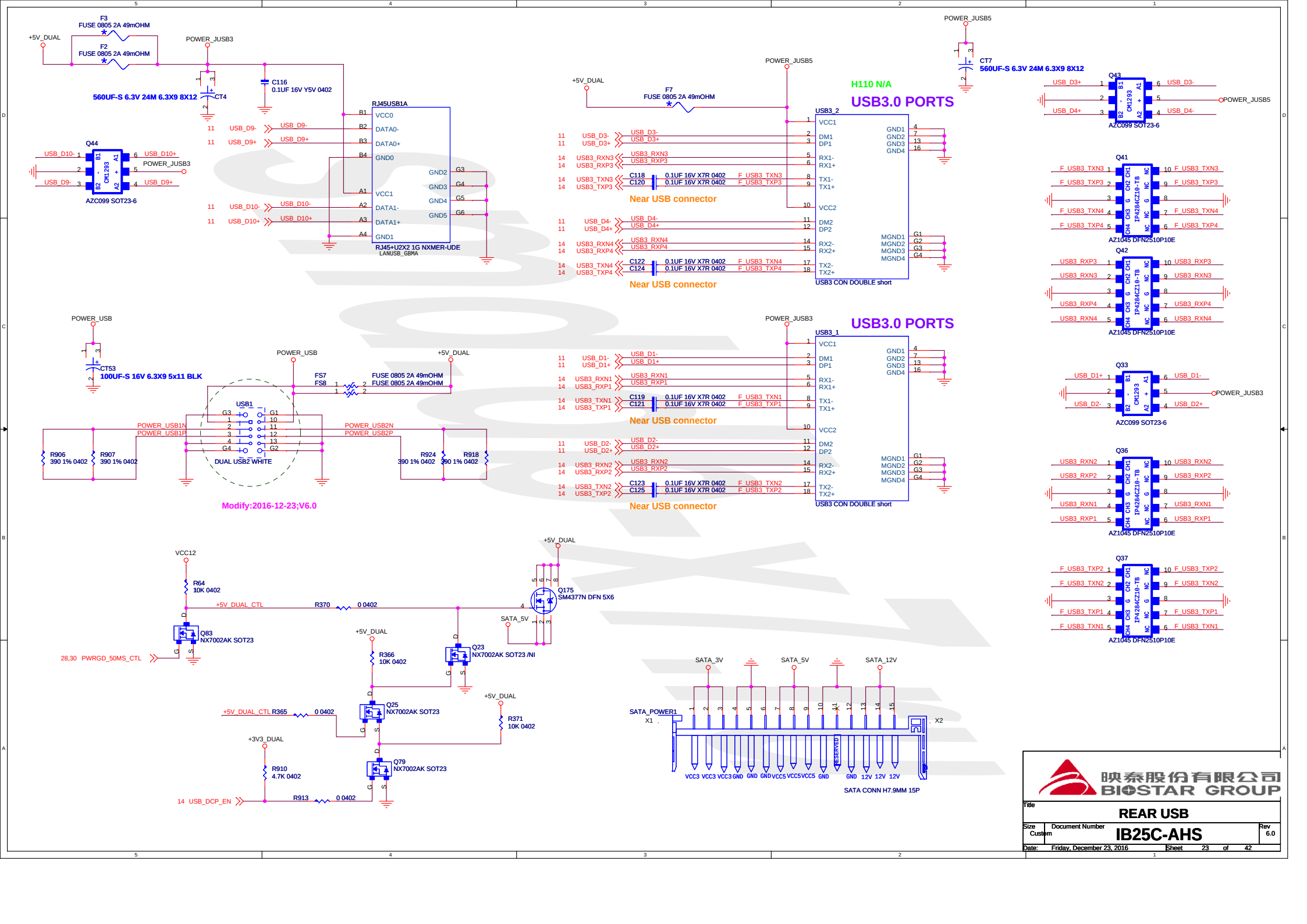
F3
FUSE 0805 2A 49mOHM
F2
FUSE 0805 2A 49mOHM
+5V_DUAL
POWER_JUSB3
CT4
560UF-S 6.3V 24M 6.3X9 8X12
C116
0.1UF 16V Y5V 0402
RJ45USB1A
VCC0
DATA0-
DATA0+
GND0
VCC1
DATA1-
DATA1+
GND1
GND2
GND3
GND4
GND5
RJ45+U2X2 1G NXMER-UDE
LANUSB_GBMA
Q44
AZC099 SOT23-6
USB_D9-
USB_D9+
USB_D10-
USB_D10+
POWER_JUSB5
CT7
560UF-S 6.3V 24M 6.3X9 8X12
H110 N/A
USB3.0 PORTS
F7
FUSE 0805 2A 49mOHM
USB3_2
USB3 CON DOUBLE short
Near USB connector
Q43
Q41
Q42
AZ1045 DFN2510P10E
POWER_USB
CT53
100UF-S 16V 6.3X9 5x11 BLK
FS7
FS8
FUSE 0805 2A 49mOHM
USB1
DUAL USB2 WHITE
POWER_USB1N
POWER_USB1P
POWER_USB2N
POWER_USB2P
R906
390 1% 0402
R907
390 1% 0402
R924
390 1% 0402
R918
390 1% 0402
Modify:2016-12-23;V6.0
USB3_1
Q33
Q36
Q37
VCC12
R64
10K 0402
+5V_DUAL_CTL
R370
0 0402
Q83
NX7002AK SOT23
28,30 PWRGD_50MS_CTL
Q175
SM4377N DFN 5X6
SATA_5V
Q23
NX7002AK SOT23 /NI
R366
10K 0402
Q25
NX7002AK SOT23
R365
R371
10K 0402
+3V3_DUAL
R910
4.7K 0402
Q79
NX7002AK SOT23
R913
0 0402
14 USB_DCP_EN
SATA_3V
SATA_5V
SATA_12V
SATA_POWER1
SATA CONN H7.9MM 15P
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BIOSTAR GROUP
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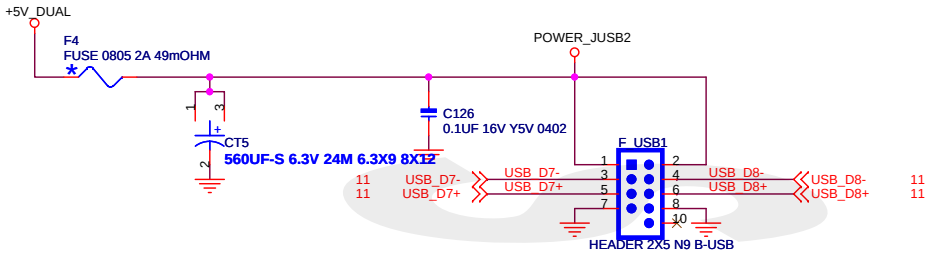

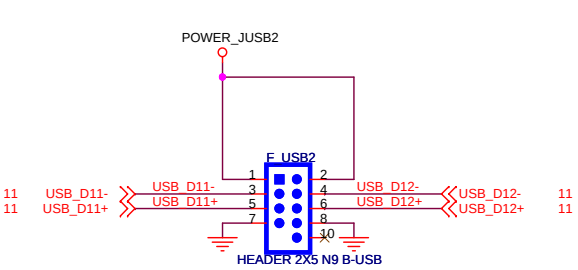

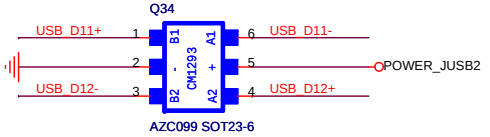

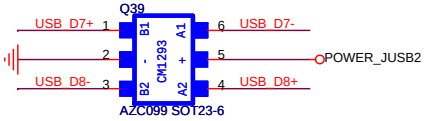

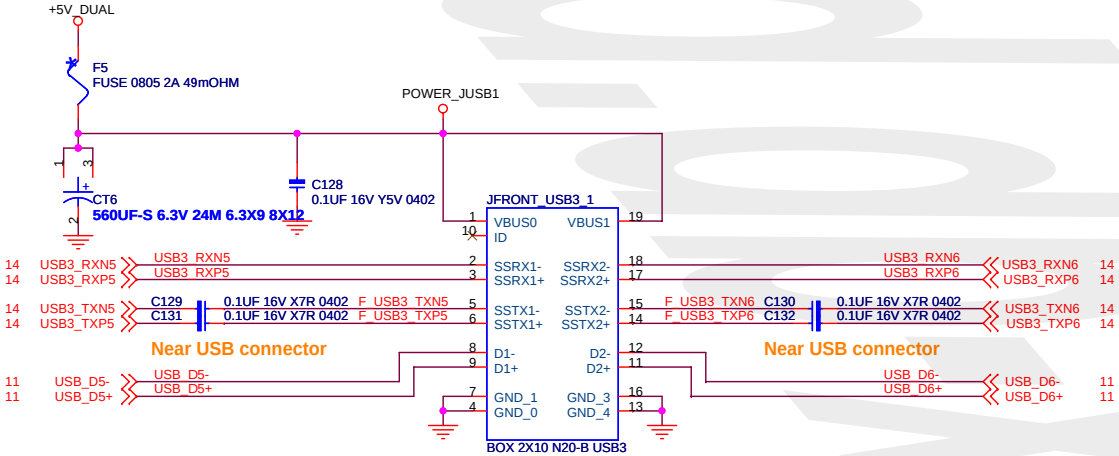

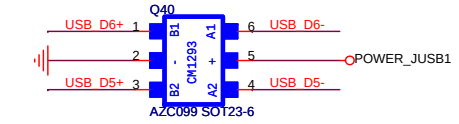

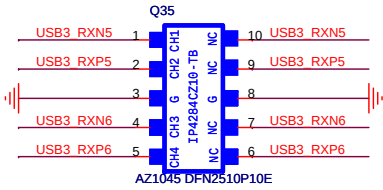

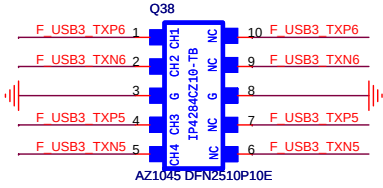

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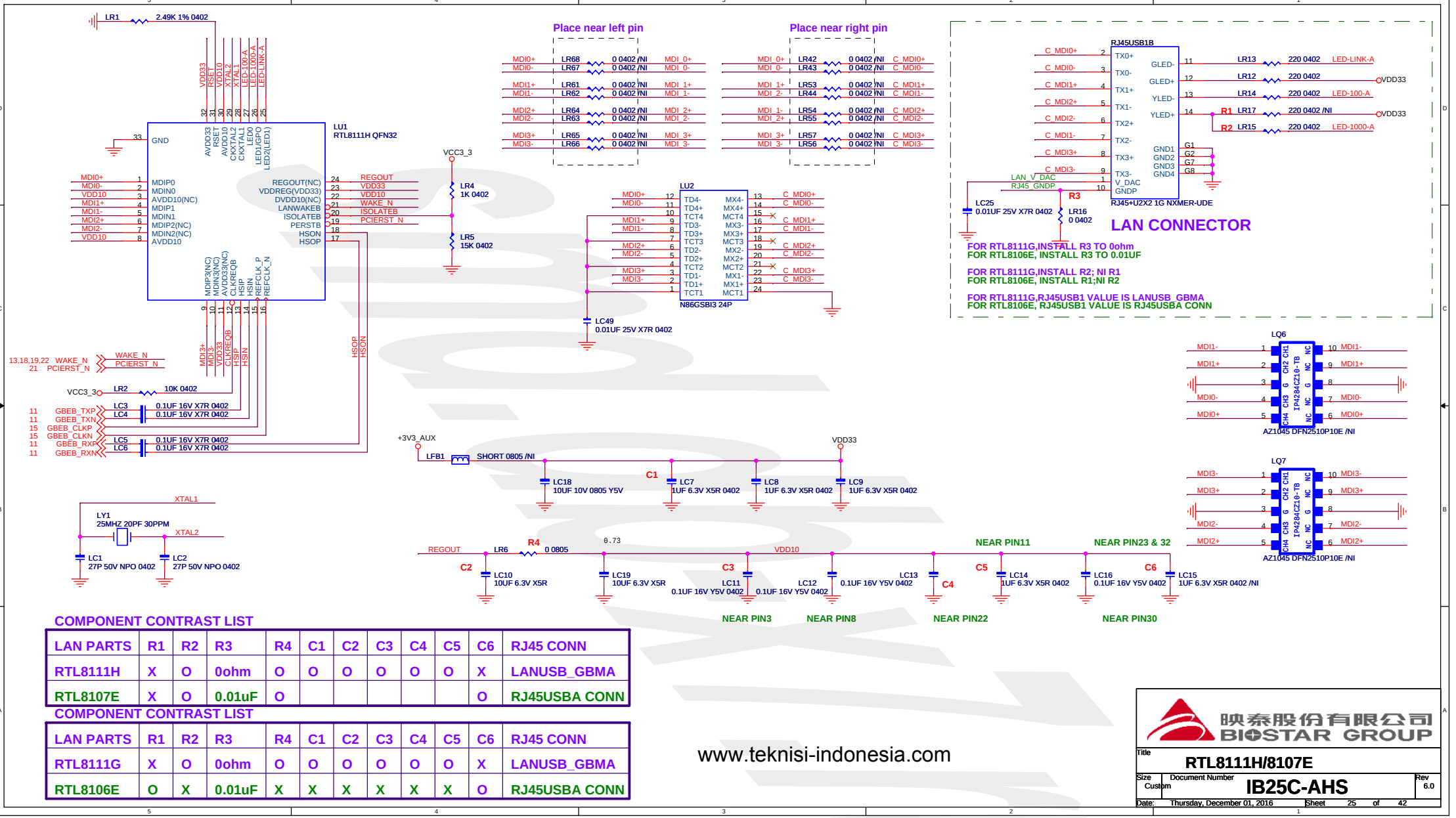

COMPONENT CONTRAST LIST

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

COMPONENT CONTRAST LIST

LAN PARTS	R1	R2	R3	R4	C1	C2	C3	C4	C5	C6	RJ45 CONN
RTL8111G	X	O	0ohm	O	O	O	O	O	O	X	LANUSB_GBMA
RTL8106E	O	X	0.01uF	X	X	X	X	X	X	O	RJ45USBA CONN

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Title: RTL8111H/8107E

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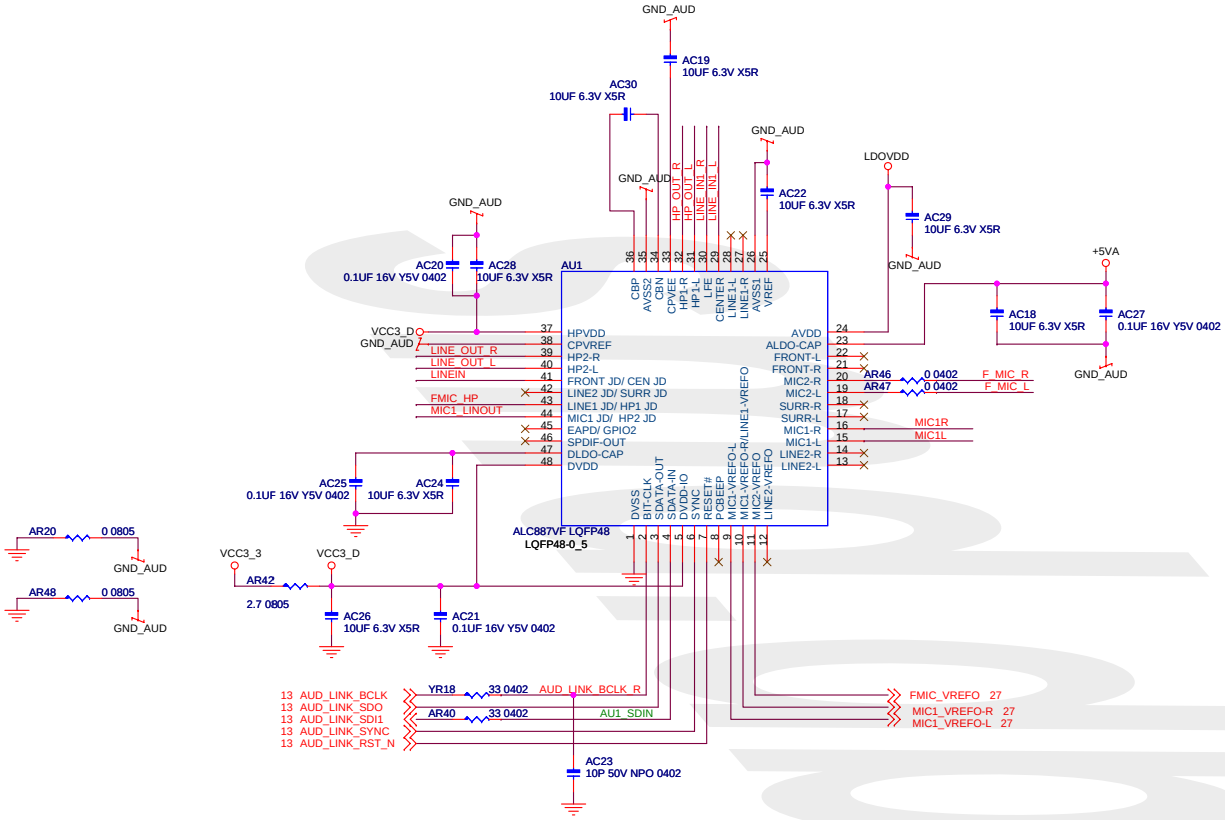
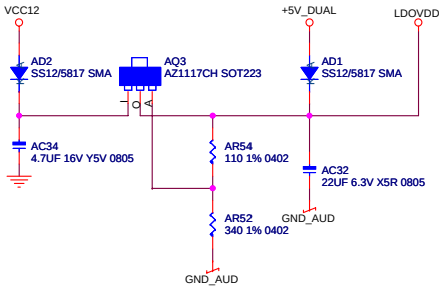
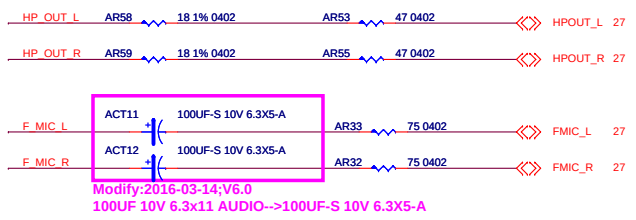


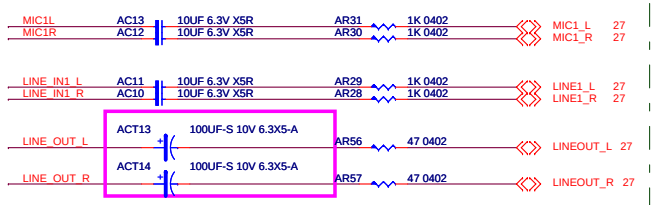


FRONT CHANNEL



Modify:2016-03-14;V6.0
100UF 10V 6.3x11 AUDIO-->100UF-S 10V 6.3X5-A

REAR CHANNEL



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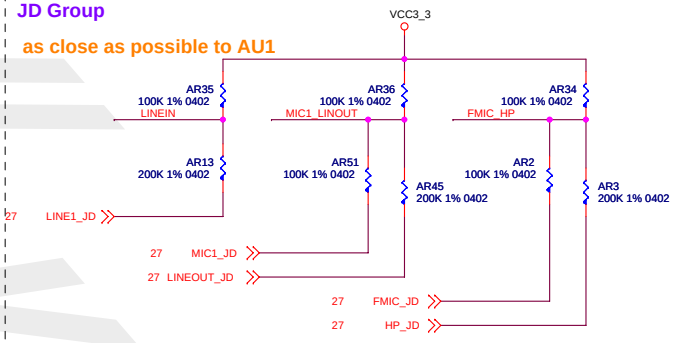
100UF 10V 6.3x11 AUDIO-->100UF-S 10V 6.3X5-A

JD Group

as close as possible to AU1



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Title: AUDIO CODEC ALC887

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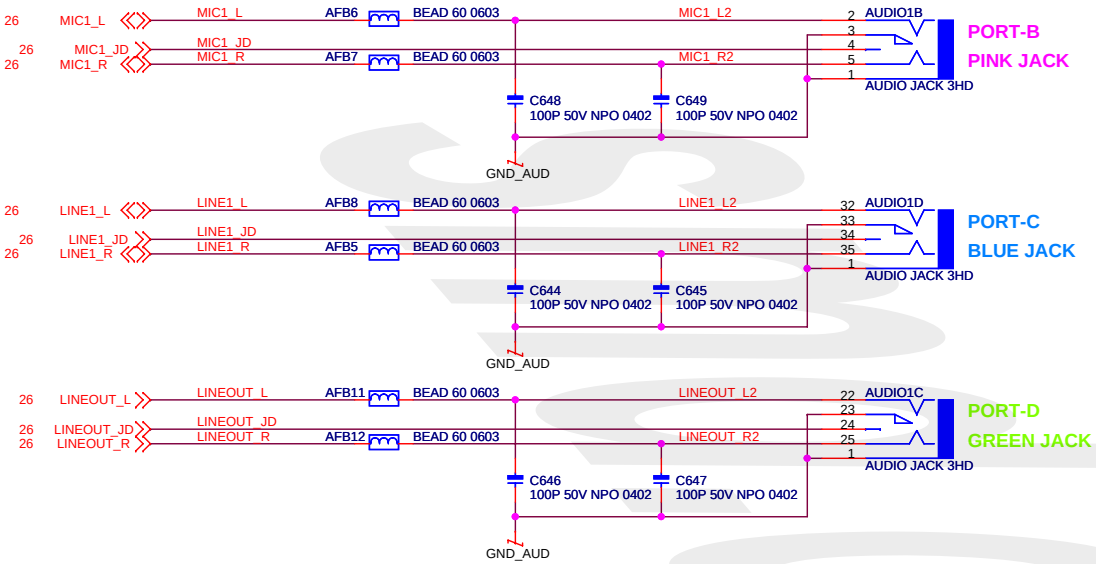
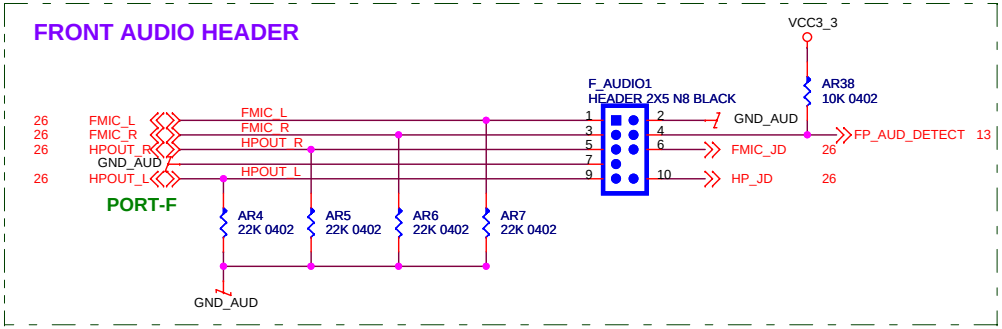


FRONT AUDIO HEADER



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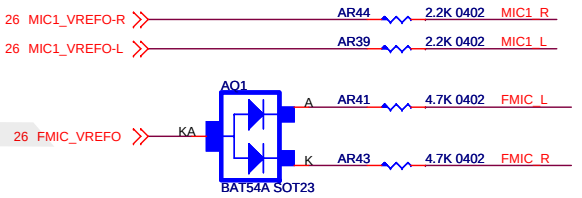
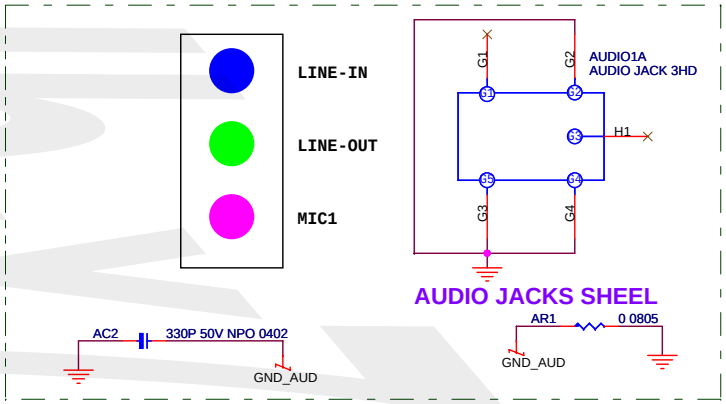


SPDIF CONNECTOR

V0.66



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Title: AUDIO CONNECTOR

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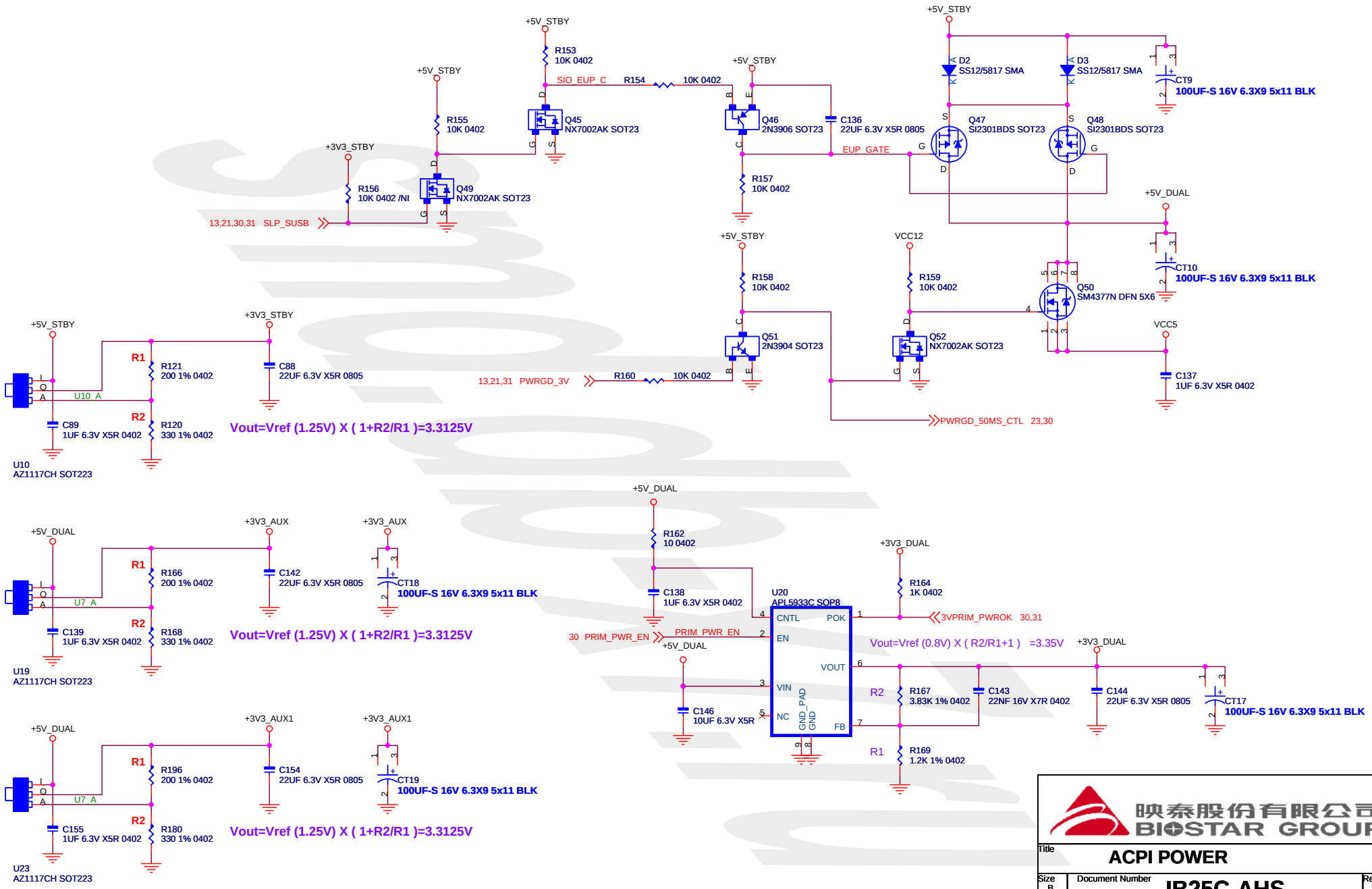

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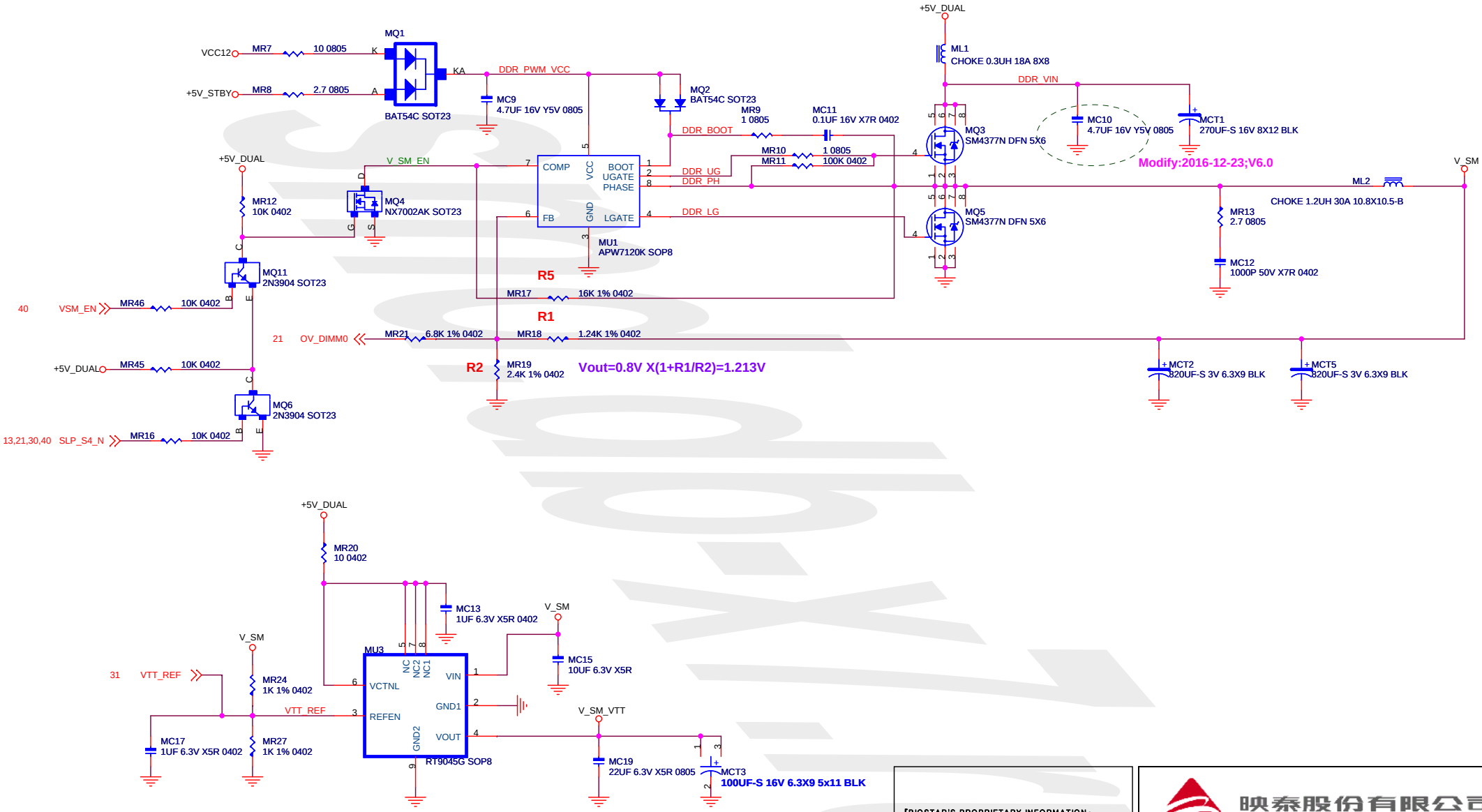
MEMORY PART:M+Reference



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Title	MEMORY DC-DC	
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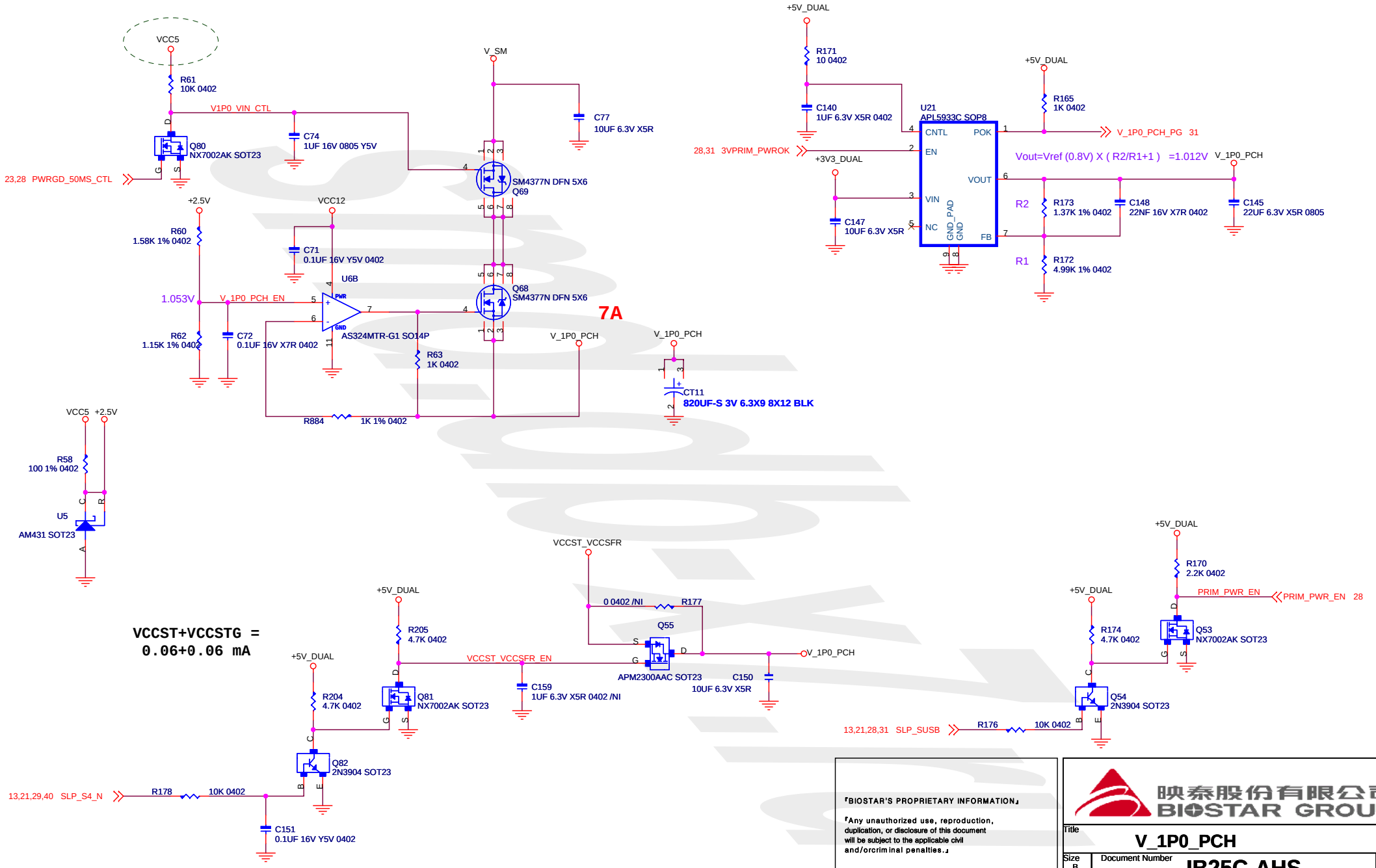
VCC5
R61
10K 0402
V1P0_VIN_CTL
Q80
NX7002AK SOT23
23,28 PWRGD_50MS_CTL
C74
1UF 16V 0805 Y5V
V_SM
C77
10UF 6.3V X5R
SM4377N DFN 5X6
Q69
+2.5V
VCC12
R60
1.58K 1% 0402
C71
0.1UF 16V Y5V 0402
U6B
1.053V
V_1P0_PCH_EN
AS324MTR-G1 SO14P
Q68
SM4377N DFN 5X6
7A
R62
1.15K 1% 0402
C72
0.1UF 16V X7R 0402
R63
1K 0402
V_1P0_PCH
R884
1K 1% 0402
CT11
820UF-S 3V 6.3X9 8X12 BLK
+5V_DUAL
R171
10 0402
C140
1UF 6.3V X5R 0402
U21
APL5933C SOP8
CNTL
POK
EN
VOUT
VIN
NC
GND_PAD
GND
FB
28,31 3VPRIM_PWROK
+3V3_DUAL
C147
10UF 6.3V X5R
R165
1K 0402
V_1P0_PCH_PG 31
Vout=Vref (0.8V) X (R2/R1+1) =1.012V
R2
R173
1.37K 1% 0402
C148
22NF 16V X7R 0402
C145
22UF 6.3V X5R 0805
R1
R172
4.99K 1% 0402
VCC5 +2.5V
R58
100 1% 0402
U5
AM431 SOT23
VCCST+VCCSTG =
0.06+0.06 mA
VCCST_VCCSFR
+5V_DUAL
R205
4.7K 0402
0 0402 /NI
R177
Q55
APM2300AAC SOT23
C150
10UF 6.3V X5R
V_1P0_PCH
VCCST_VCCSFR_EN
R204
4.7K 0402
Q81
NX7002AK SOT23
C159
1UF 6.3V X5R 0402 /NI
Q82
2N3904 SOT23
13,21,29,40 SLP_S4_N
R178
10K 0402
C151
0.1UF 16V Y5V 0402
R170
2.2K 0402
PRIM_PWR_EN
PRIM_PWR_EN 28
Q53
NX7002AK SOT23
R174
4.7K 0402
Q54
2N3904 SOT23
13,21,28,31 SLP_SUSB
R176
10K 0402
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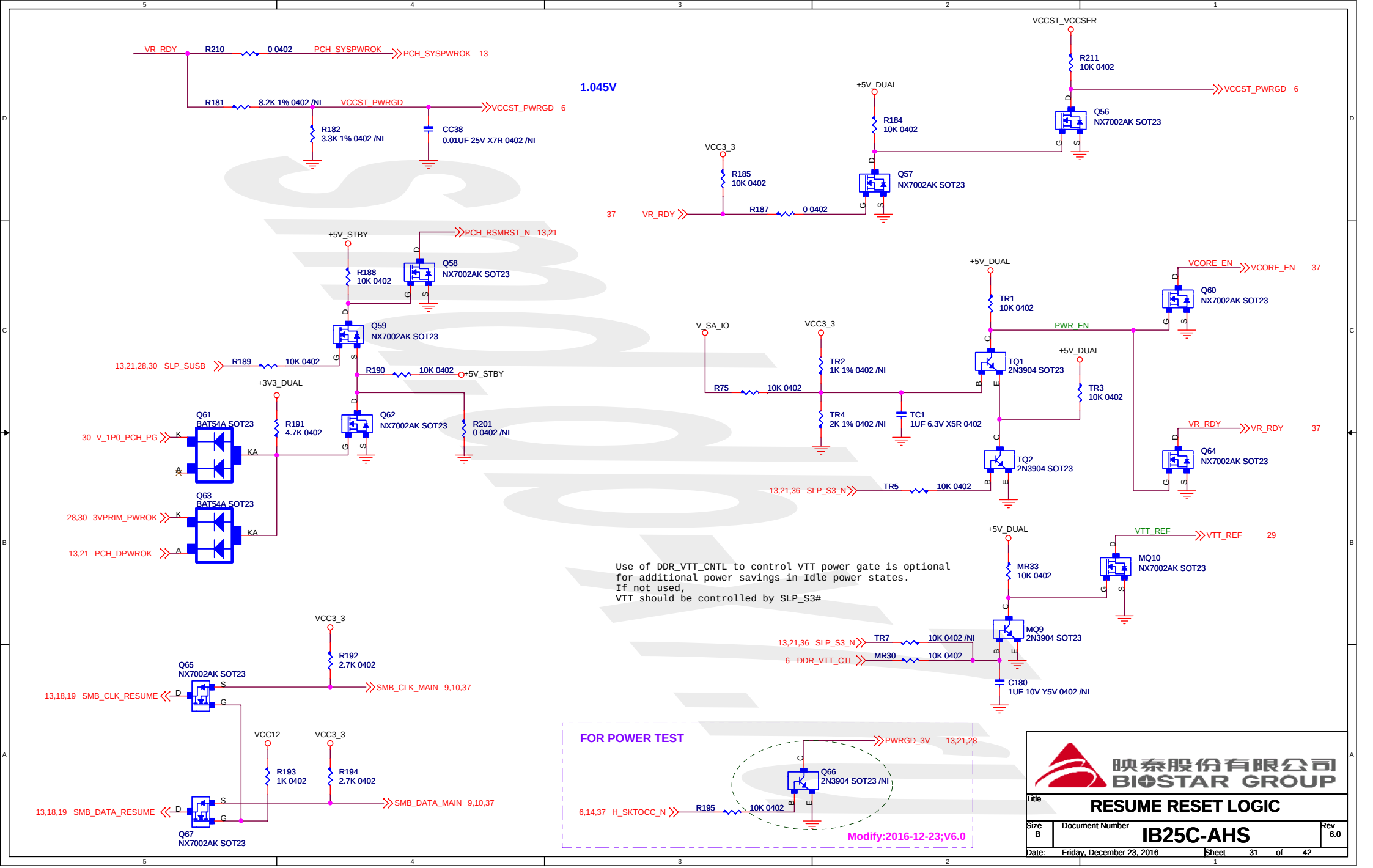
VR_RDY
R210
0 0402
PCH_SYSPWROK
PCH_SYSPWROK 13
R181
8.2K 1% 0402 /NI
VCCST_PWRGD
VCCST_PWRGD 6
R182
3.3K 1% 0402 /NI
CC38
0.01UF 25V X7R 0402 /NI
1.045V
VCCST_VCCSFR
R211
10K 0402
VCCST_PWRGD 6
+5V_DUAL
R184
10K 0402
Q56
NX7002AK SOT23
VCC3_3
R185
10K 0402
Q57
NX7002AK SOT23
37 VR_RDY
R187
0 0402
+5V_STBY
PCH_RSMRST_N 13,21
R188
10K 0402
Q58
NX7002AK SOT23
Q59
NX7002AK SOT23
13,21,28,30 SLP_SUSB
R189
10K 0402
R190
10K 0402
+5V_STBY
+3V3_DUAL
Q61
BAT54A SOT23
30 V_1P0_PCH_PG
R191
4.7K 0402
Q62
NX7002AK SOT23
R201
0 0402 /NI
Q63
BAT54A SOT23
28,30 3VPRIM_PWROK
13,21 PCH_DPWROK
+5V_DUAL
TR1
10K 0402
VCORE_EN
VCORE_EN 37
Q60
NX7002AK SOT23
PWR_EN
V_SA_IO
VCC3_3
TR2
1K 1% 0402 /NI
R75
10K 0402
TR4
2K 1% 0402 /NI
TC1
1UF 6.3V X5R 0402
TQ1
2N3904 SOT23
+5V_DUAL
TR3
10K 0402
TQ2
2N3904 SOT23
13,21,36 SLP_S3_N
TR5
10K 0402
VR_RDY
VR_RDY 37
Q64
NX7002AK SOT23
Use of DDR_VTT_CNTL to control VTT power gate is optional
for additional power savings in Idle power states.
If not used,
VTT should be controlled by SLP_S3#
+5V_DUAL
MR33
10K 0402
VTT_REF
VTT_REF 29
MQ10
NX7002AK SOT23
MQ9
2N3904 SOT23
13,21,36 SLP_S3_N
TR7
10K 0402 /NI
6 DDR_VTT_CTL
MR30
10K 0402
C180
1UF 10V Y5V 0402 /NI
VCC3_3
R192
2.7K 0402
Q65
NX7002AK SOT23
13,18,19 SMB_CLK_RESUME
SMB_CLK_MAIN 9,10,37
VCC12
VCC3_3
R193
1K 0402
R194
2.7K 0402
13,18,19 SMB_DATA_RESUME
SMB_DATA_MAIN 9,10,37
Q67
NX7002AK SOT23
FOR POWER TEST
PWRGD_3V 13,21,28
Q66
2N3904 SOT23 /NI
6,14,37 H_SKTOCC_N
R195
10K 0402
Modify:2016-12-23;V6.0
映泰股份有限公司
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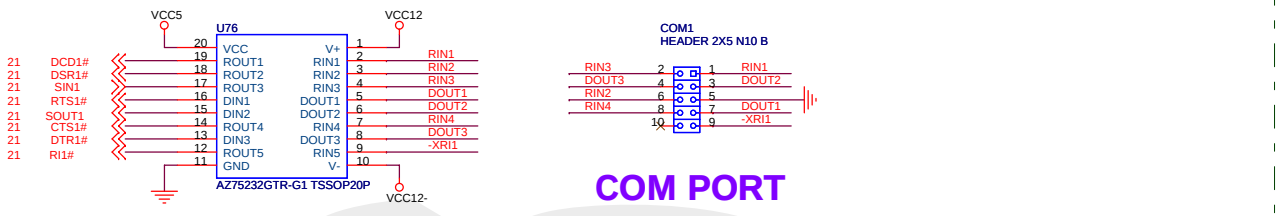
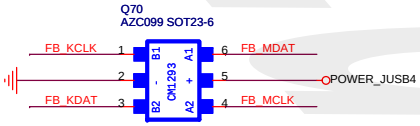
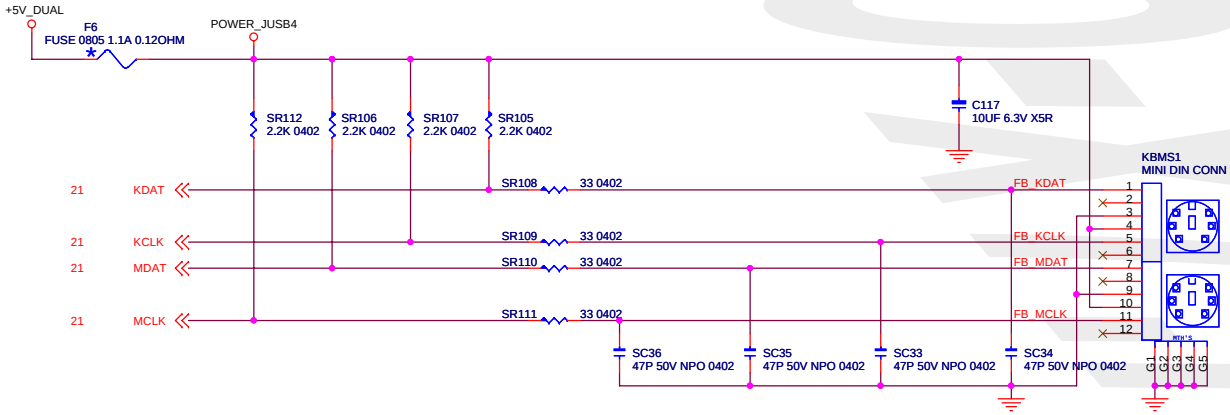


COM PORT

WAKE ON RING

KEYBOARD & MOUSE





PARALLEL CONNECTOR

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Title: COM1 / PS2 CONN

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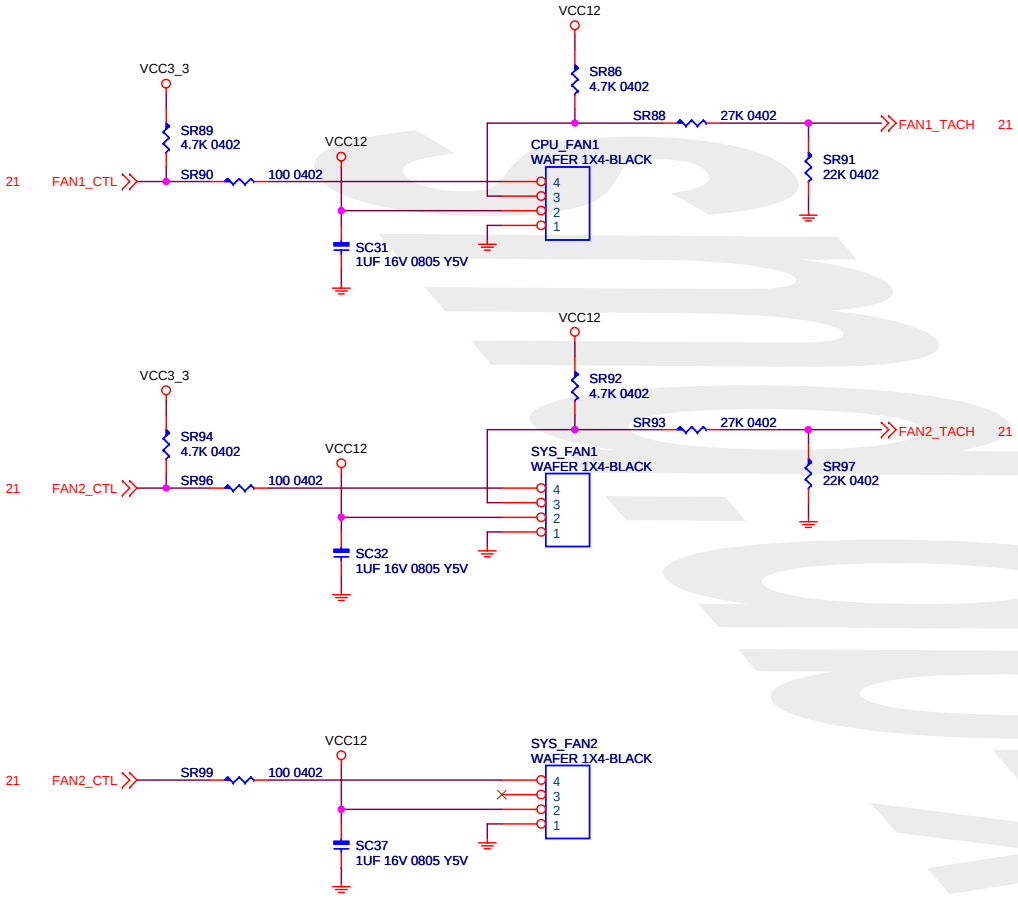

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Title	FAN & PS2	
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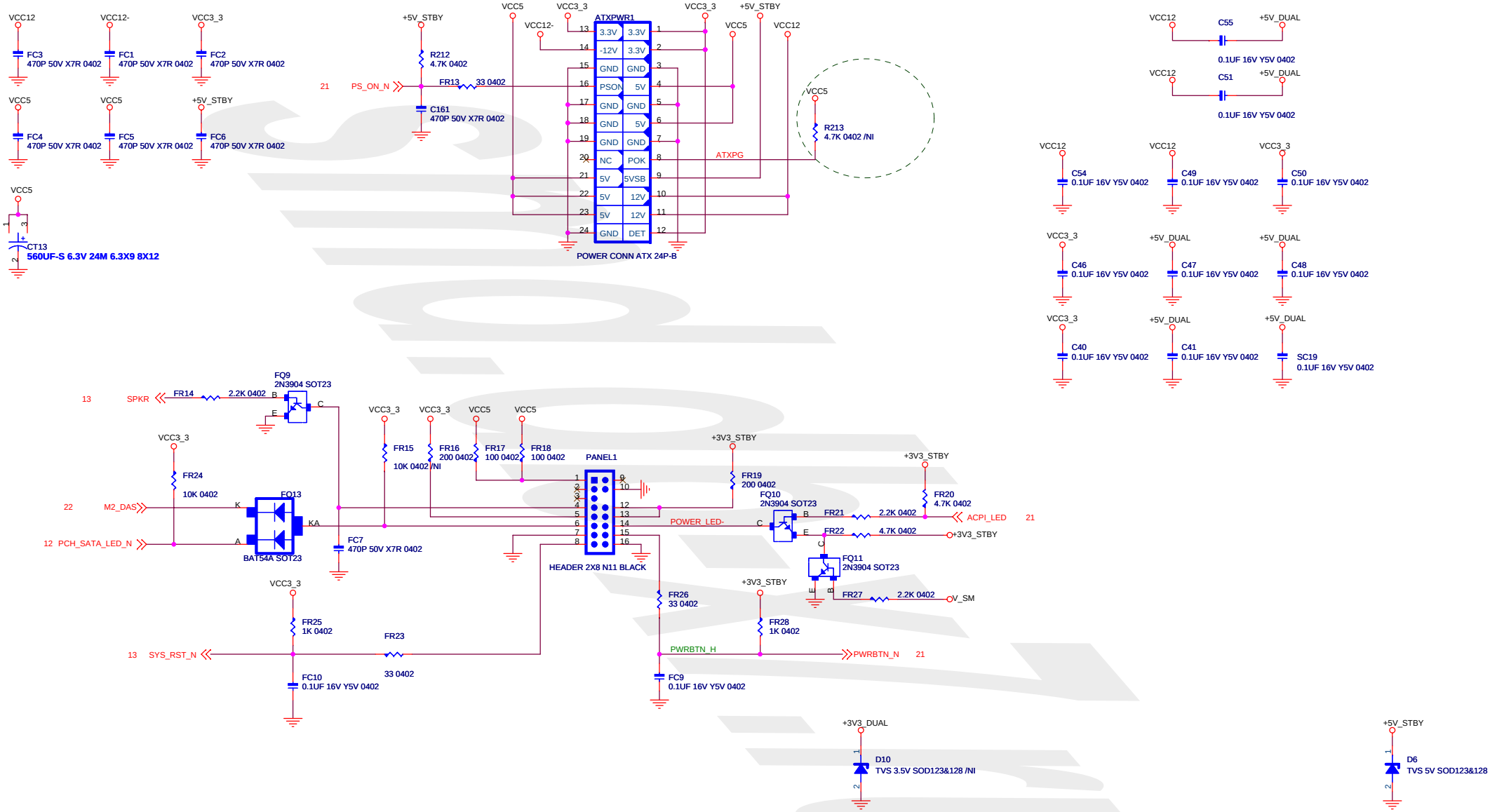
FP PART: F+Reference



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Title	24PIN CONN & FP	
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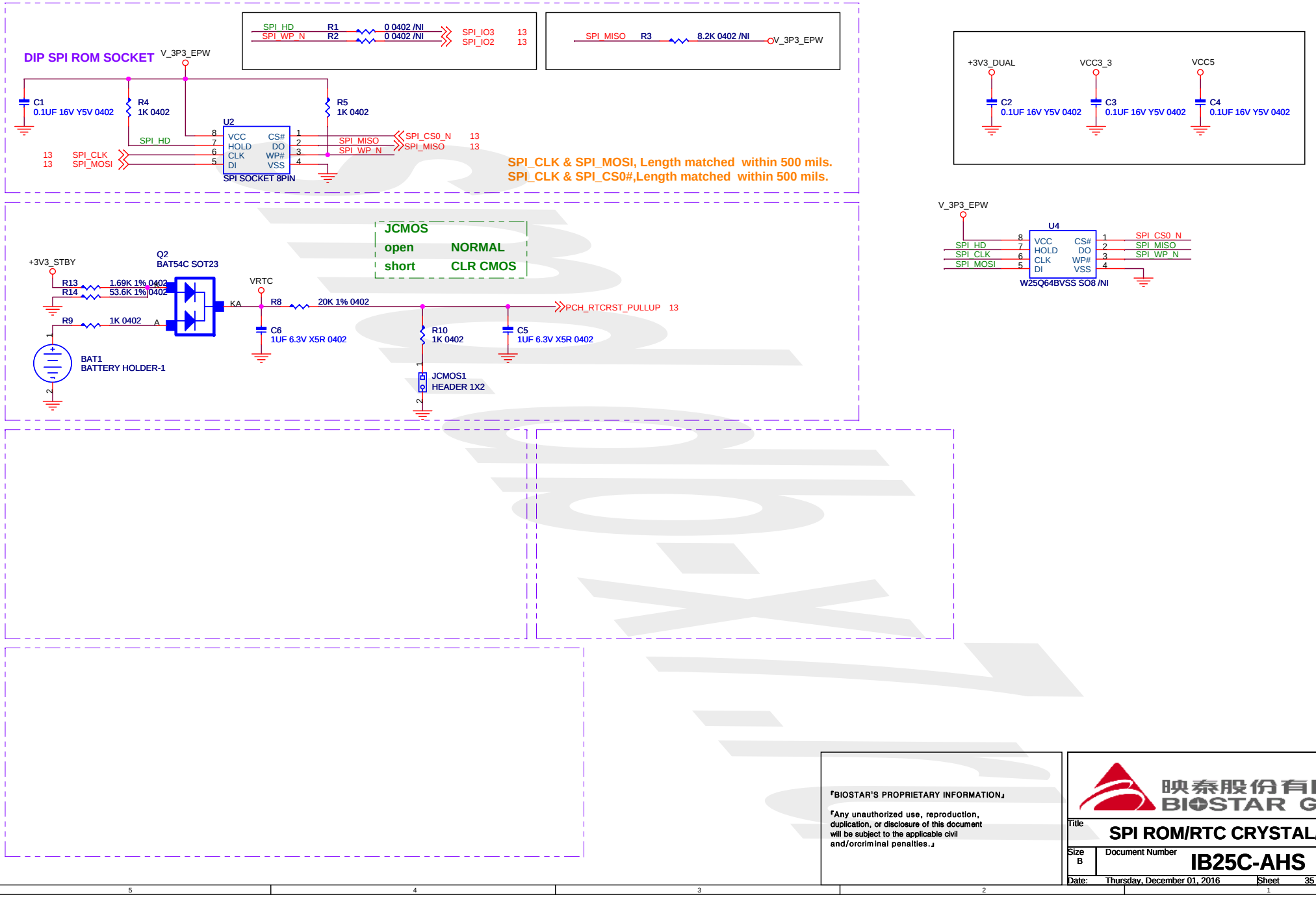

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Title	SPI ROM/RTC CRYSTAL/BAT	
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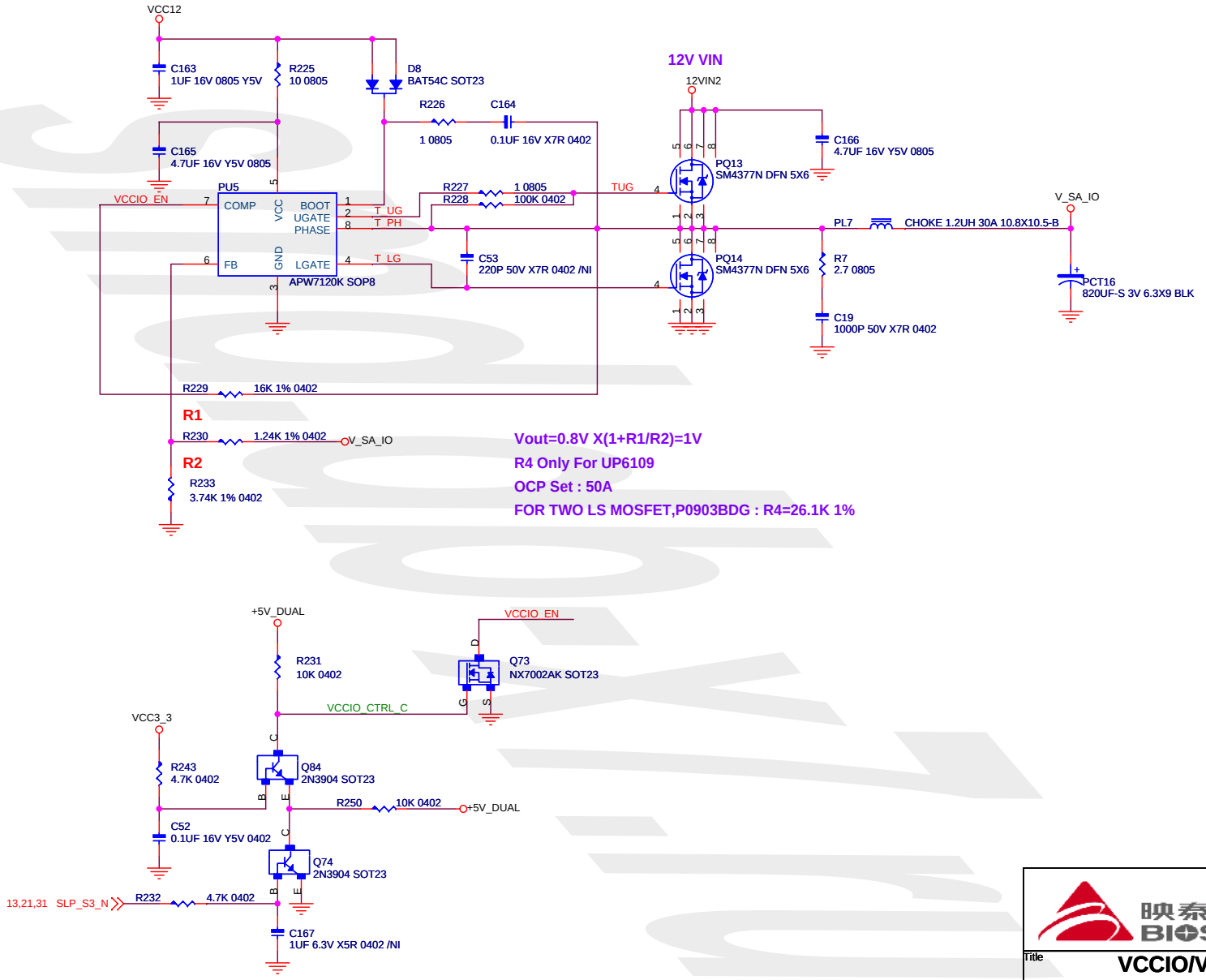

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Kabylake S-line 42e 95W ISL95866 +ISL95808

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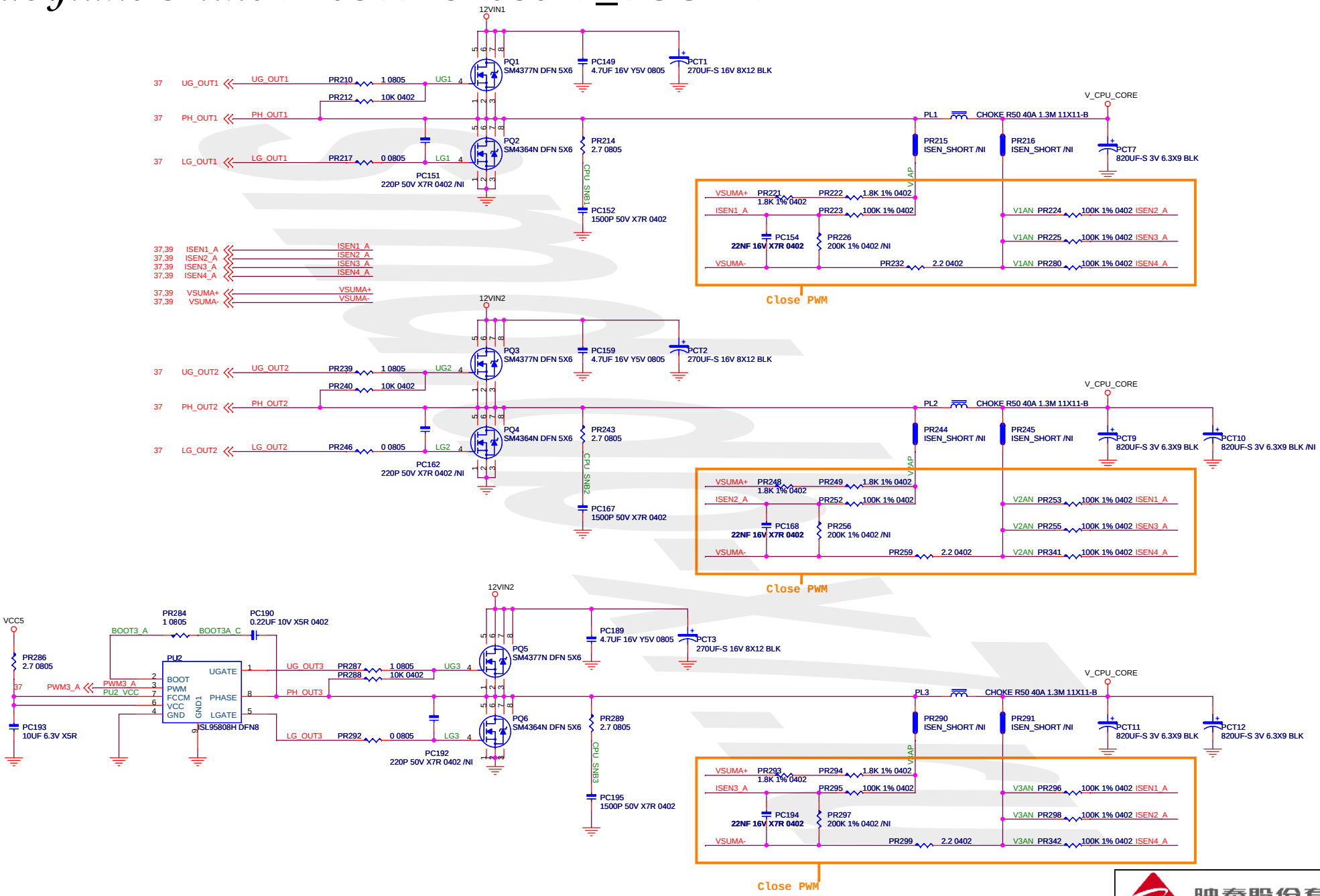
Kabylake S-line 42 95W ISL95824_VCORE



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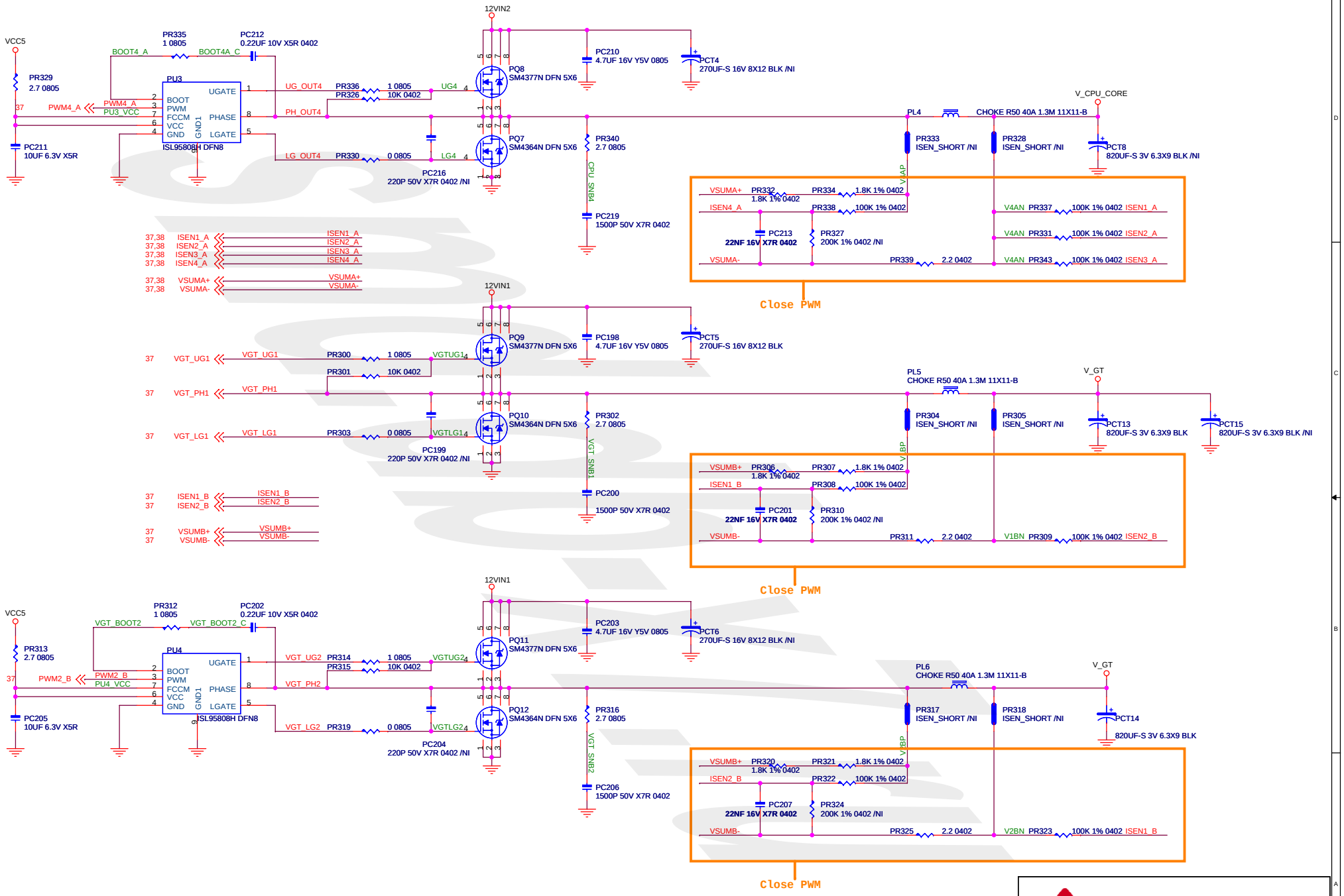

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Size: Custom	Document Number: IB25C-AHS	Rev: 6.0
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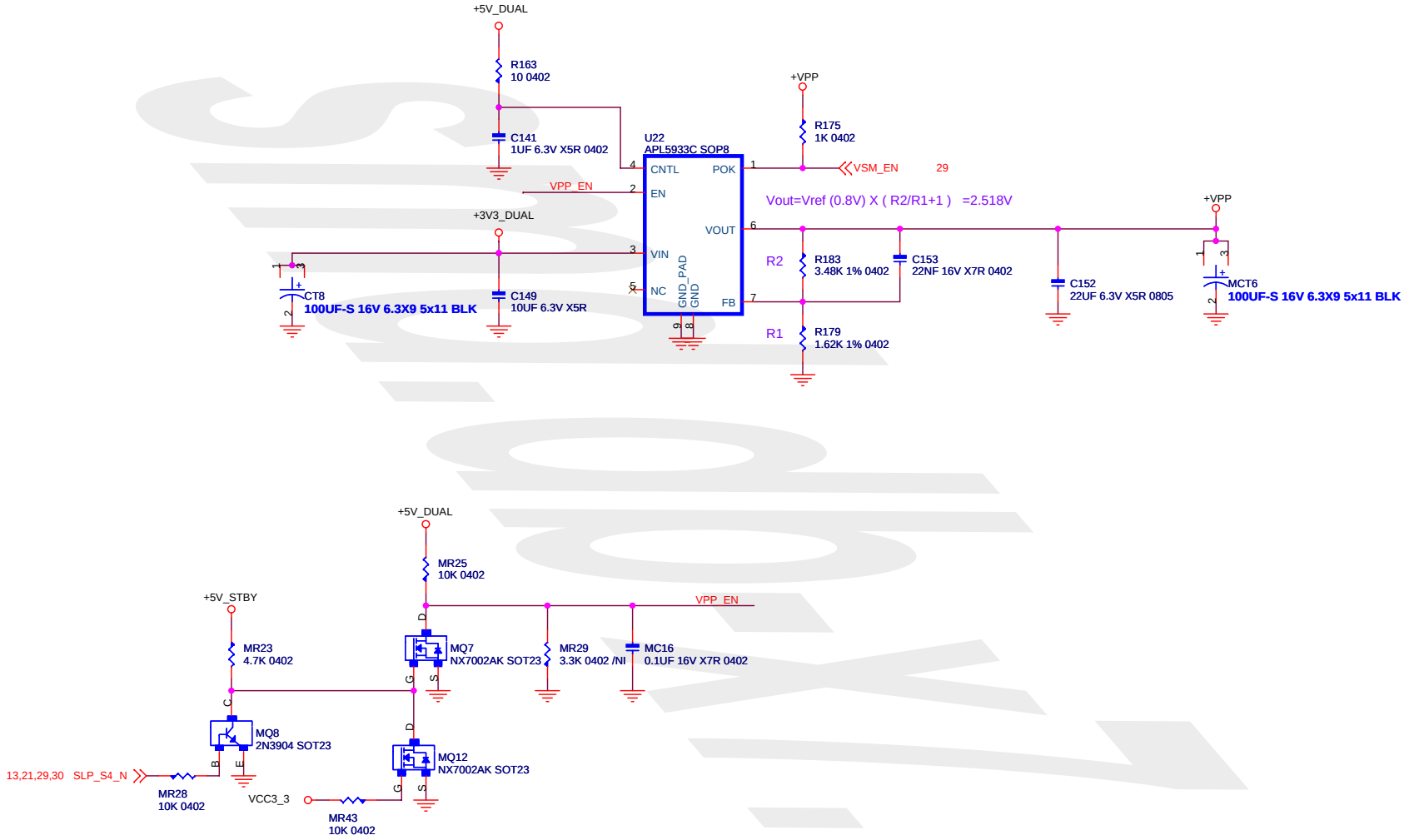

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Title	MEMORY +VPP	
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IB15C-AHS-V6.0 Change List 160307

Based on IB15C-AHS-V0.6

2016/03/07

1.For thermal balance

PR343,PR342,PR341,PR253,PR296,PR331
100K 1% 0402--->82K 1% 0402

2.ACT11,ACT12,ACT13,ACT14 100UF-S 16V 6.3X9 GOLD--->100UF 10V 6.3x11 AUDIO

3.Adjust USB1 charger layout for higher current

IB25C-AHS-V6.0 Change List 161226

Based on IB25C-AHS-V0.6

1.PAGE20: Add SD7,GR96,GR98

2.PAGE23: USB1 VALUE CHANGE TO DUAL USB2 WHITE

3.PAGE31: MC10 change to 4.7UF 16V Y5V 0805

4.PAGE31: Q66 NI

5.PAGE42: MOS SINK change

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Title: CHANGELIST		
Size: B	Document Number: IB25C-AHS	Rev: 6.0
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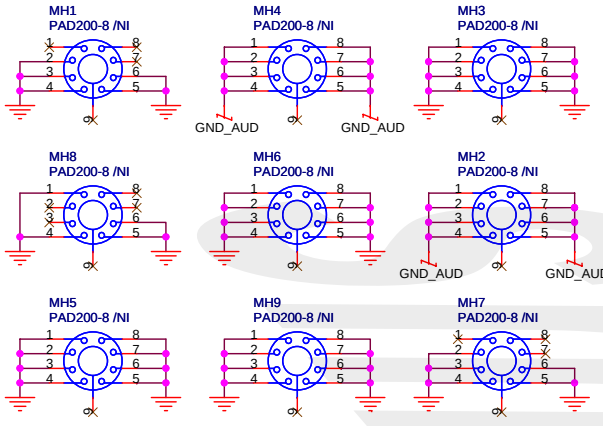

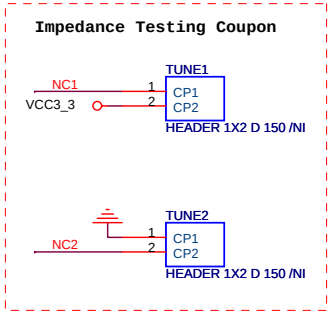

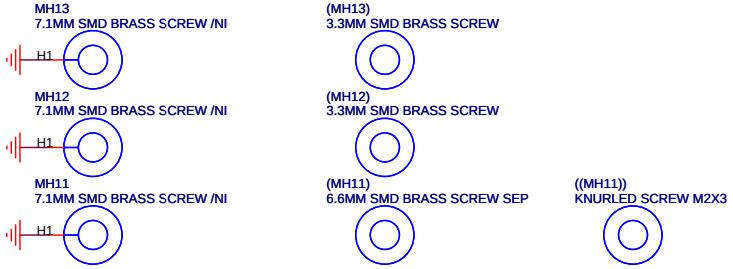

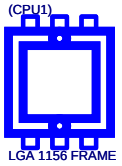

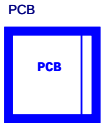

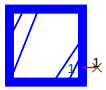

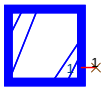

IB25C-AHS V0.6

20-120-544002H11

20-120-228202H1

Modify:2016-12-23;V6.0

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96-IB25CAHS-R01P-60  DIP MODULE IB25CAHS...6.0  MB.
98-IB25CAHS-R01P  IB25CAHS Rev:6.0 DocNo:  MB.PCB  VER:0.6/import
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15-Z71-106060RS IB25C-AHSVER:0.6 /OSP/BLACK/(210.00*295.00*1.5)mm/4L /ISUHN
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