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Model Name : A78XB-A3T
Marketing name : TA770XE3
VER:6.2

CPU :
- AM3,Including AthlonII / Phenom II

System Chipset :
- AMD RX780
- AMD SB710

On Board Chip :
- Clock Gen. -- RealTek RTM880N-793
- Azalia Codec -- RealTek ALC662-GR
- GigaBit Lan -- RealTek RTL8111DL/8102EL
- PWM Controller -- ST 6740L + L6743D
- Super I/O -- 8718FHX
- SPI Flash 8Mb

Main Memory :
- 4 Channel DDR 3 * 4 (Max 8GB)

Expansion Slot :
- PCI Express x16 Slot * 1
- PCI Express x1 Slot * 2
- PCI Slot * 3

Heatsink :
- NB: NBHS-N78VE
- SB: SB SMALL-AMD
- MOS: HEATSINK-74X14H18MM /NI

I/O Pannel :
- 47-RIOBRACKET-64A

PCB SIZE :
- 219.96*305.00mm
- 4-layers-2116

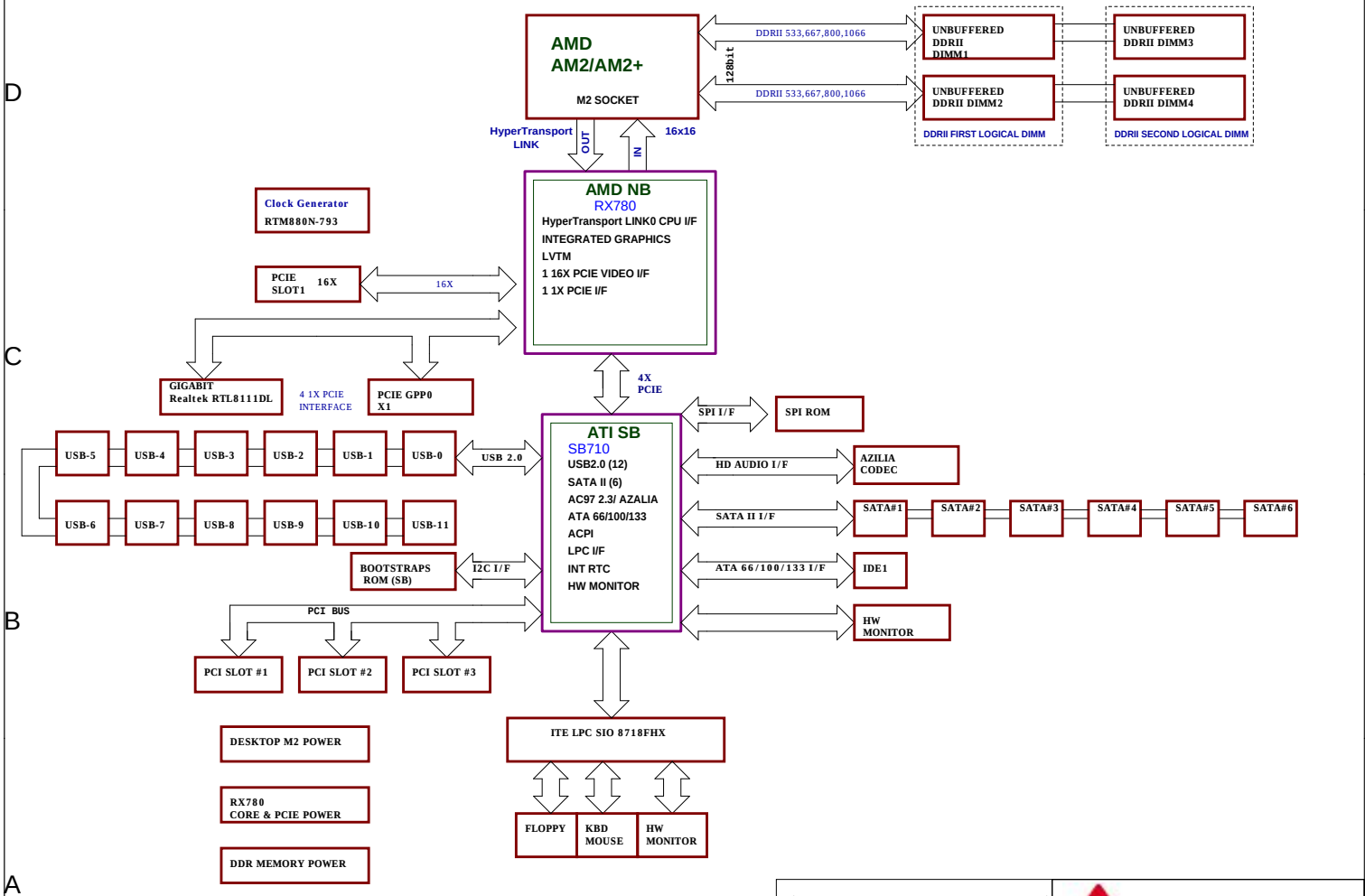
HW Engineer:		Date:	
HW Leader:		Date:	

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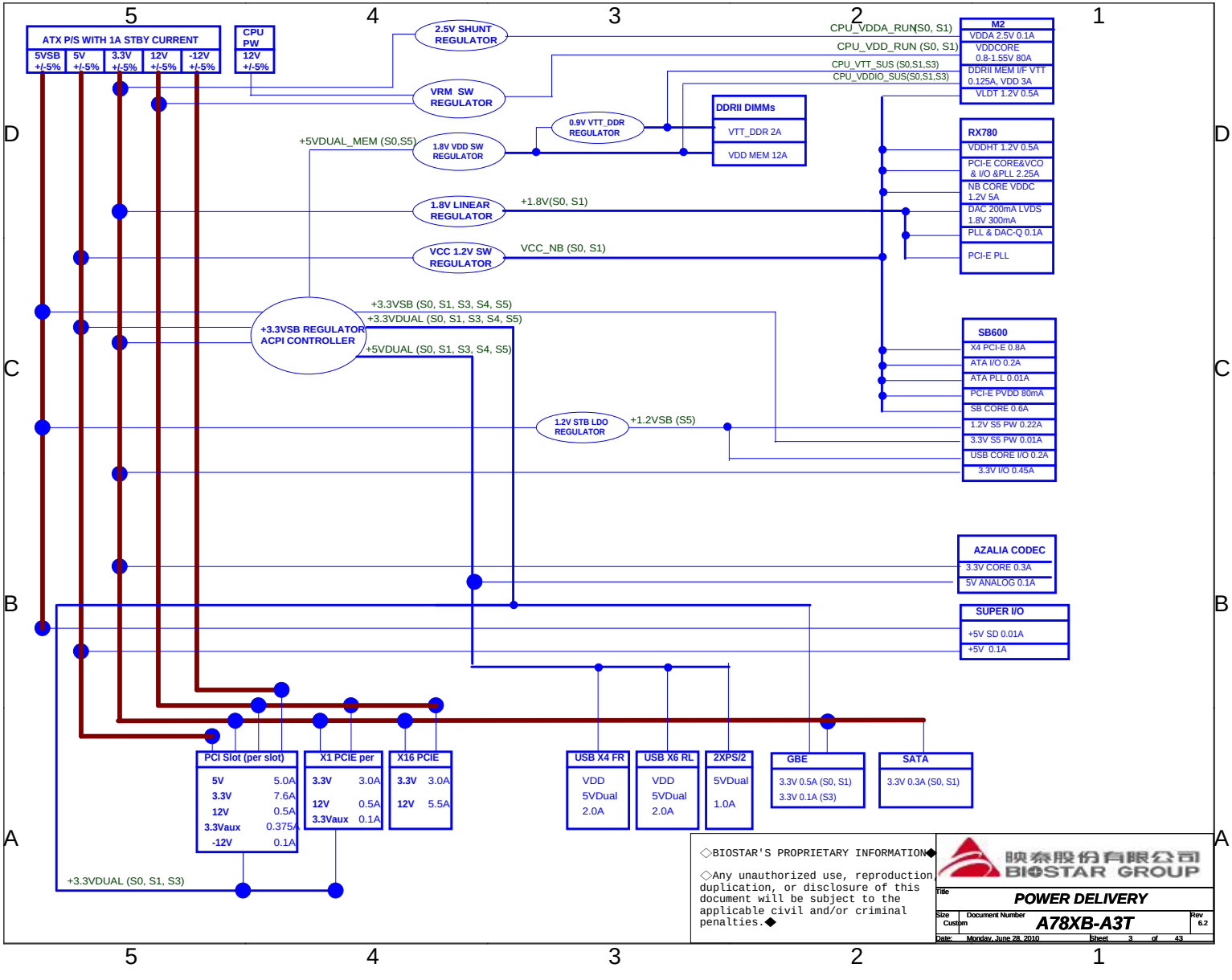
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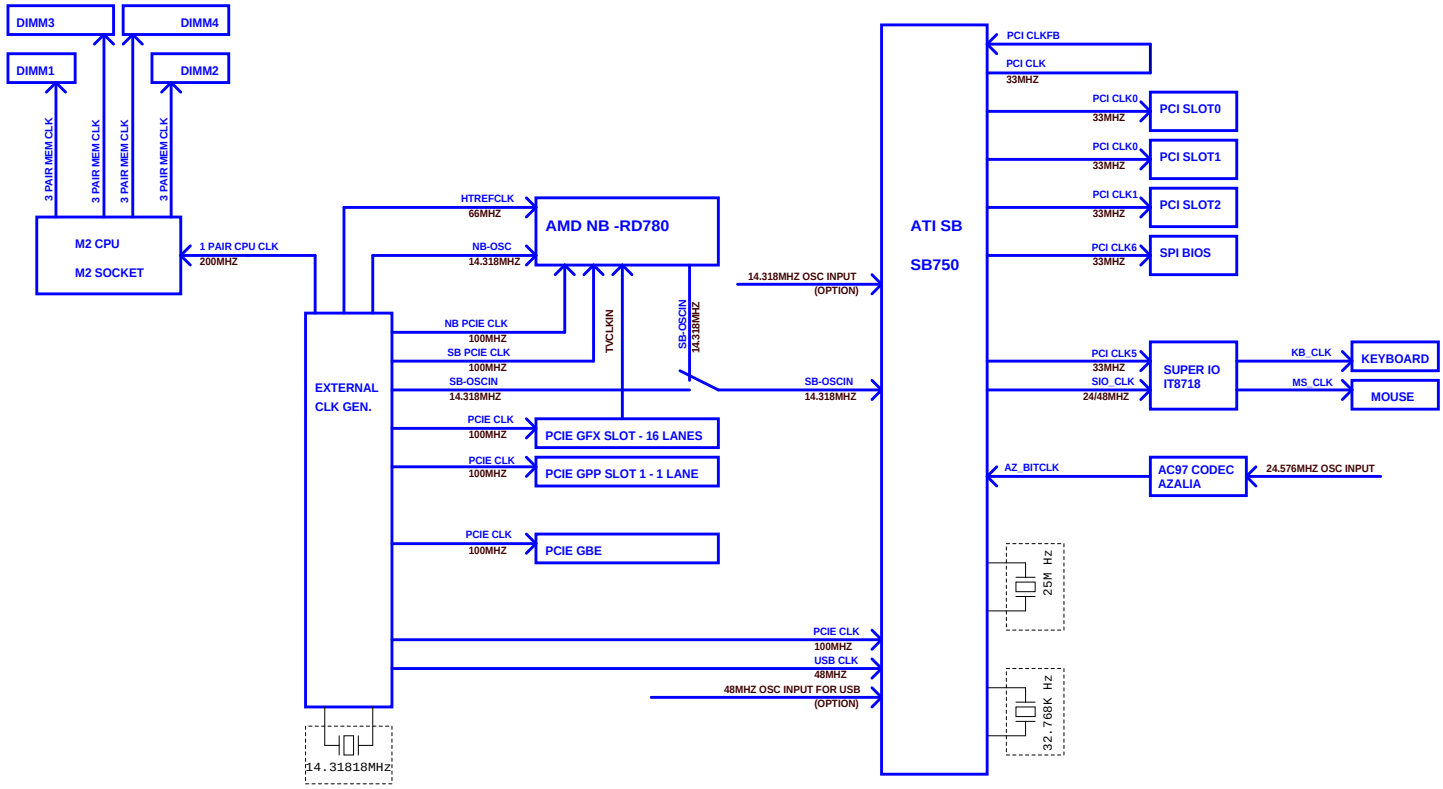
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ATX P/S WITH 1A STBY CURRENT
5VSB +/-5%
5V +/-5%
3.3V +/-5%
12V +/-5%
-12V +/-5%
CPU PW
12V +/-5%
2.5V SHUNT REGULATOR
VRM SW REGULATOR
0.9V VTT_DDR REGULATOR
1.8V VDD SW REGULATOR
1.8V LINEAR REGULATOR
VCC 1.2V SW REGULATOR
+3.3VSB REGULATOR ACPI CONTROLLER
12V STB LDO REGULATOR
CPU_VDDA_RUN(S0, S1)
CPU_VDD_RUN (S0, S1)
CPU_VTT_SUS (S0,S1,S3)
CPU_VDDIO_SUS(S0,S1,S3)
+5VDUAL_MEM (S0,S5)
+1.8V(S0, S1)
VCC_NB (S0, S1)
+3.3VSB (S0, S1, S3, S4, S5)
+3.3VDUAL (S0, S1, S3, S4, S5)
+5VDUAL (S0, S1, S3, S4, S5)
+1.2VSB (S5)
+3.3VDUAL (S0, S1, S3)
M2
VDDA 2.5V 0.1A
VDDCORE 0.8-1.55V 80A
DDRII MEM I/F VTT 0.125A, VDD 3A
VLDT 1.2V 0.5A
DDRII DIMMs
VTT_DDR 2A
VDD MEM 12A
RX780
VDDHT 1.2V 0.5A
PCI-E CORE&VCO & I/O &PLL 2.25A
NB CORE VDDC 1.2V 5A
DAC 200mA LVDS 1.8V 300mA
PLL & DAC-Q 0.1A
PCI-E PLL
SB600
X4 PCI-E 0.8A
ATA I/O 0.2A
ATA PLL 0.01A
PCI-E PVDD 80mA
SB CORE 0.6A
1.2V S5 PW 0.22A
3.3V S5 PW 0.01A
USB CORE I/O 0.2A
3.3V I/O 0.45A
AZALIA CODEC
3.3V CORE 0.3A
5V ANALOG 0.1A
SUPER I/O
+5V SD 0.01A
+5V 0.1A
PCI Slot (per slot)
5V 5.0A
3.3V 7.6A
12V 0.5A
3.3Vaux 0.375A
-12V 0.1A
X1 PCIE per
3.3V 3.0A
12V 0.5A
3.3Vaux 0.1A
X16 PCIE
3.3V 3.0A
12V 5.5A
USB X4 FR
VDD
5VDual
2.0A
USB X6 RL
VDD
5VDual
2.0A
2XPS/2
5VDual
1.0A
GBE
3.3V 0.5A (S0, S1)
3.3V 0.1A (S3)
SATA
3.3V 0.3A (S0, S1)
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A78XB-A3T 6.1

6.0	**04-30**	A78XB-A3T 6.0 update A78XB-A3T 6.1 1. Change chock
6.1	**06-11**	1. Remove R355
6.2	**06-23**	1. Change BOARD ID:1 1 1 2. Change CPU POWER:HIGH1+LOW2 3. Change SEQUENCE page39 4. Change USB OC page28

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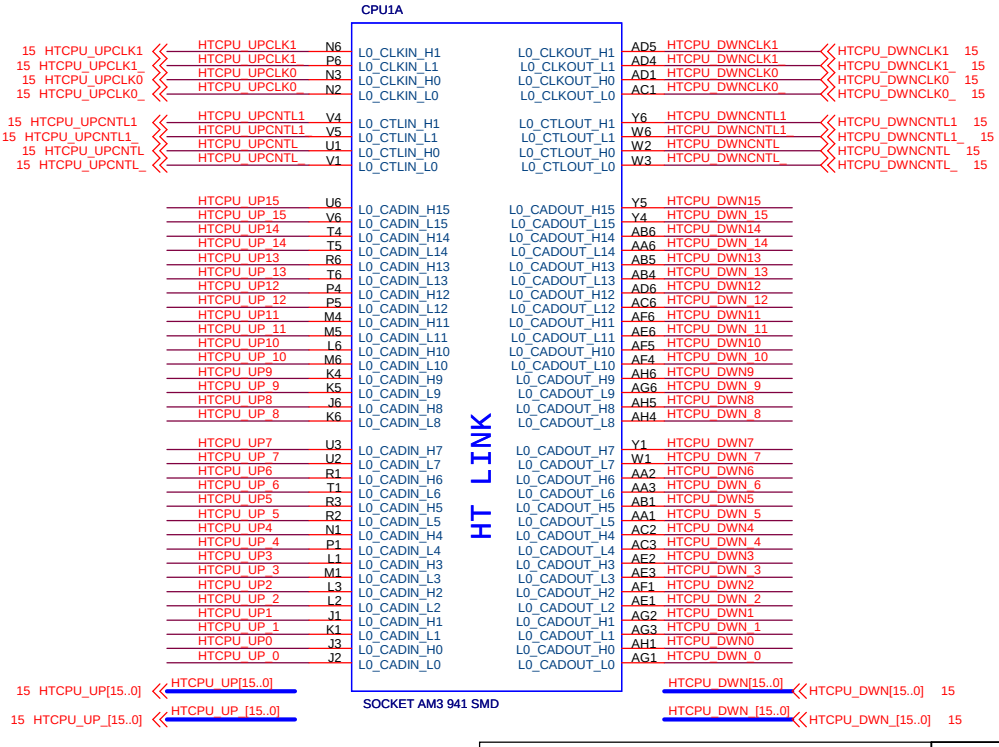
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Title: **REVISION HISTORY**

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HyperTransport 3.0

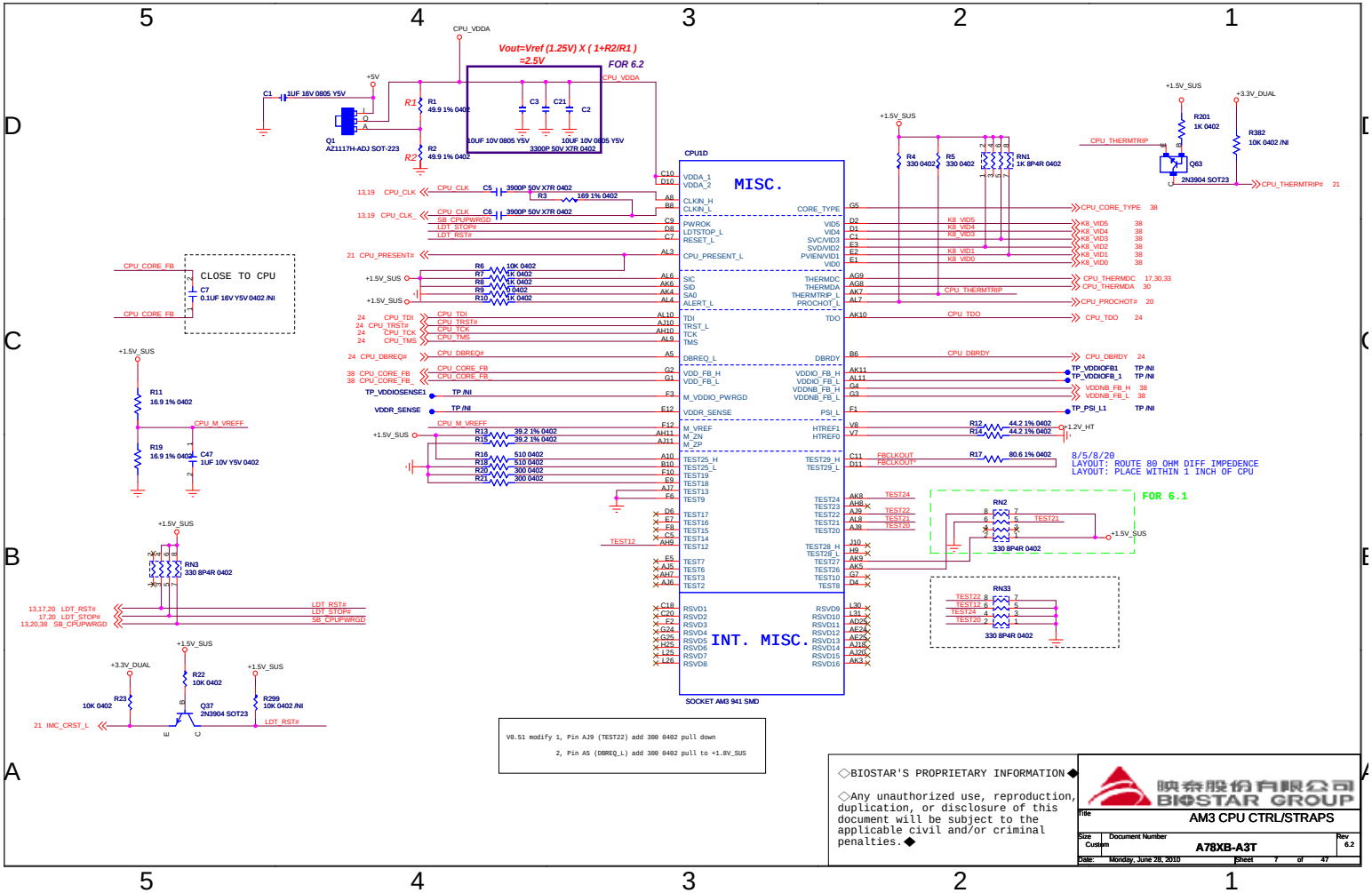


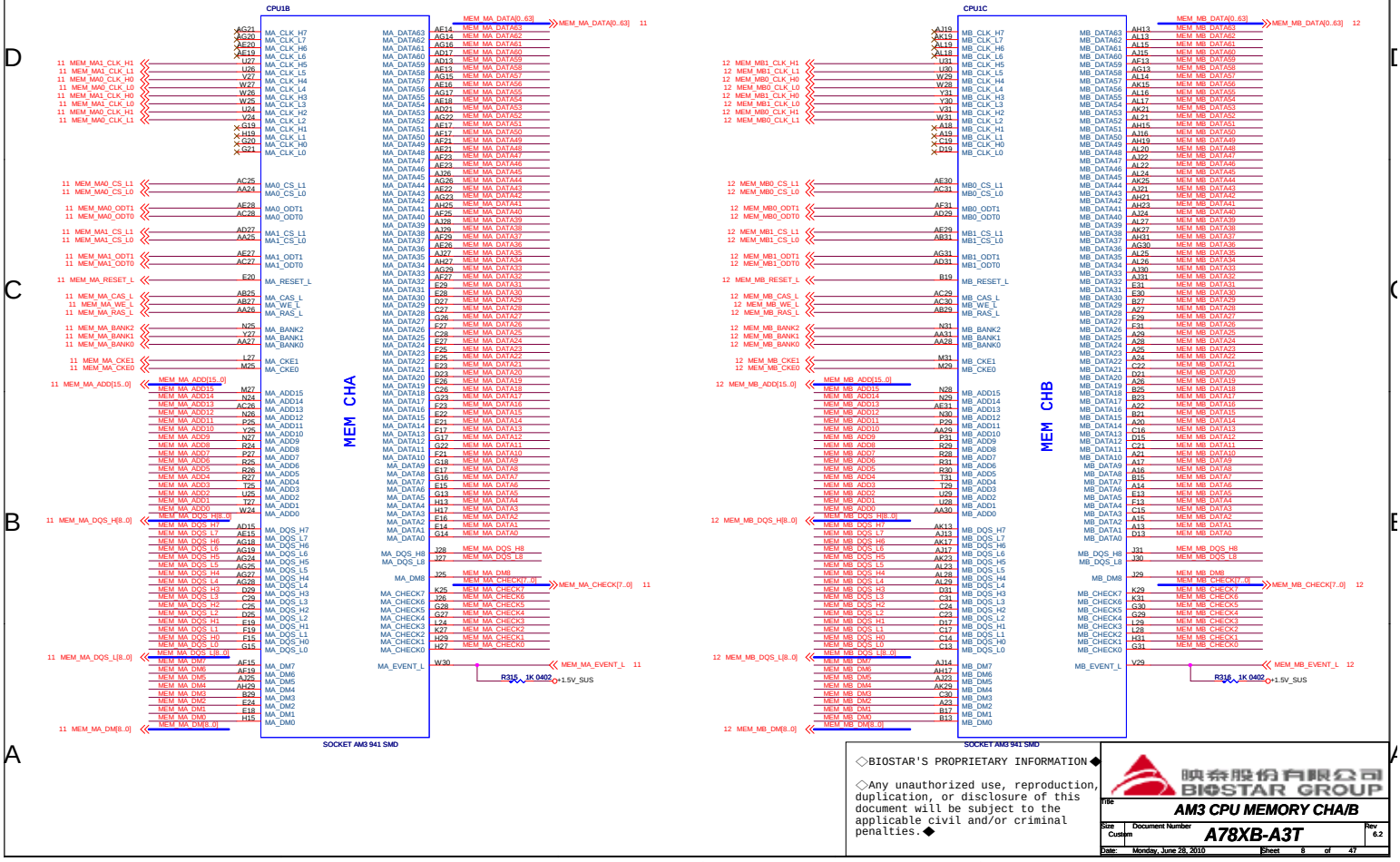
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Title	AM3 CPU HT	
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Vout=Vref (1.25V) X (1+R2/R1)
=2.5V
FOR 6.2
CPU_VDDA
CPU1D
MISC.
INT. MISC.
SOCKET AM3 941 SMD
CLOSE TO CPU
FOR 6.1
8/5/8/20
LAYOUT: ROUTE 80 OHM DIFF IMPEDENCE
LAYOUT: PLACE WITHIN 1 INCH OF CPU
V0.51 modify 1, Pin AJ9 (TEST22) add 300 0402 pull down
2, Pin A5 (DBREQ_L) add 300 0402 pull to +1.8V_SUS
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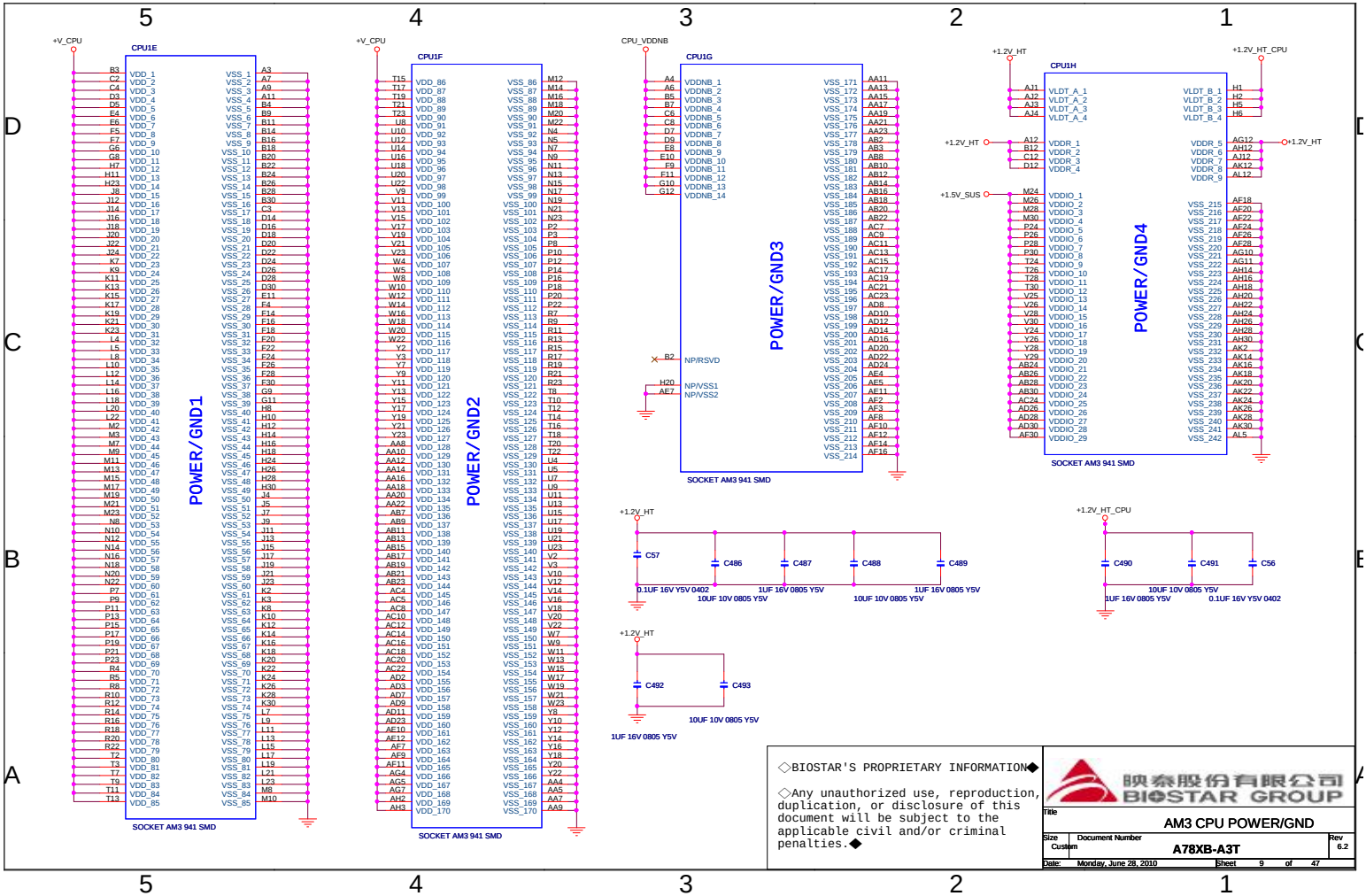
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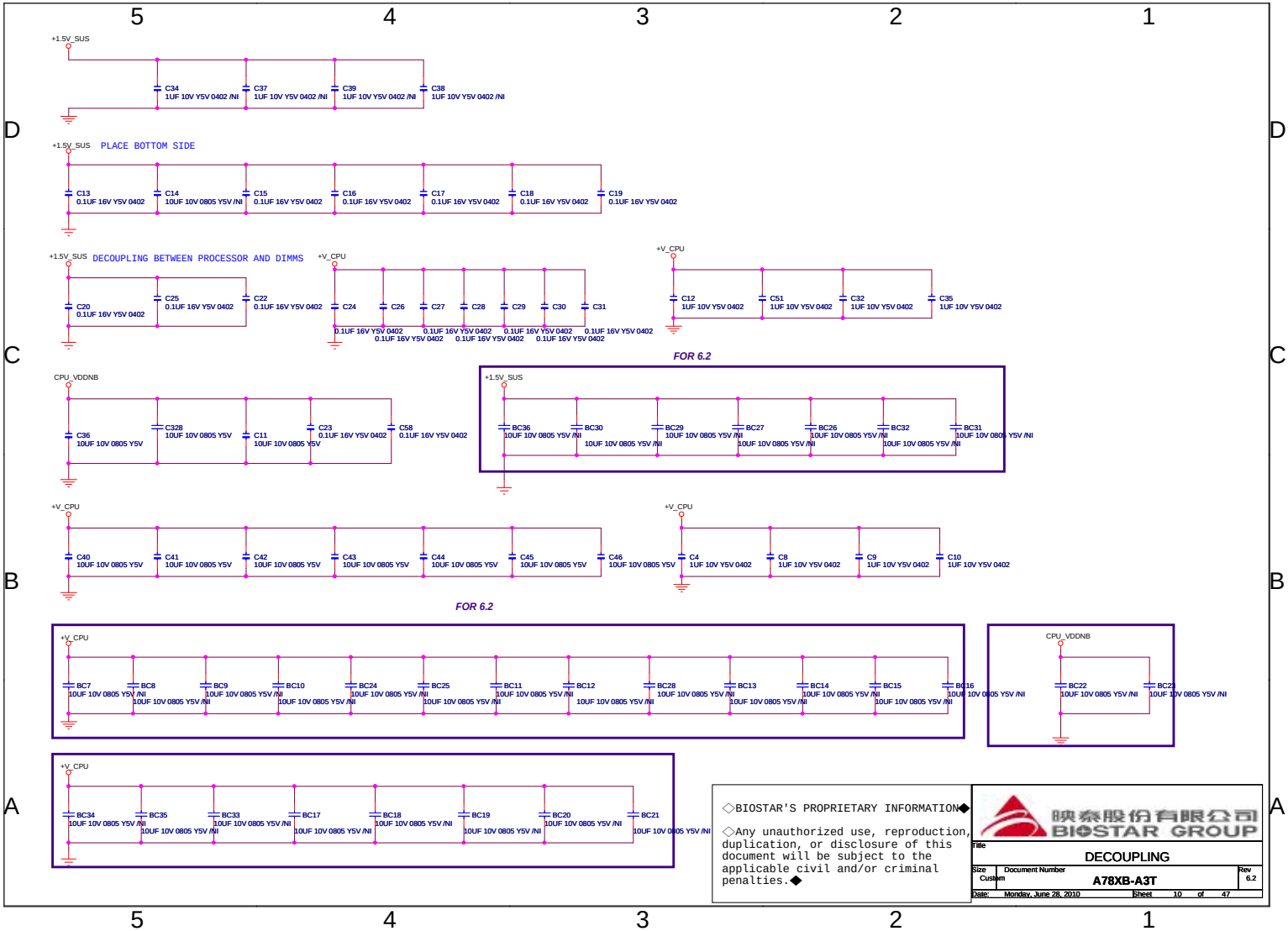
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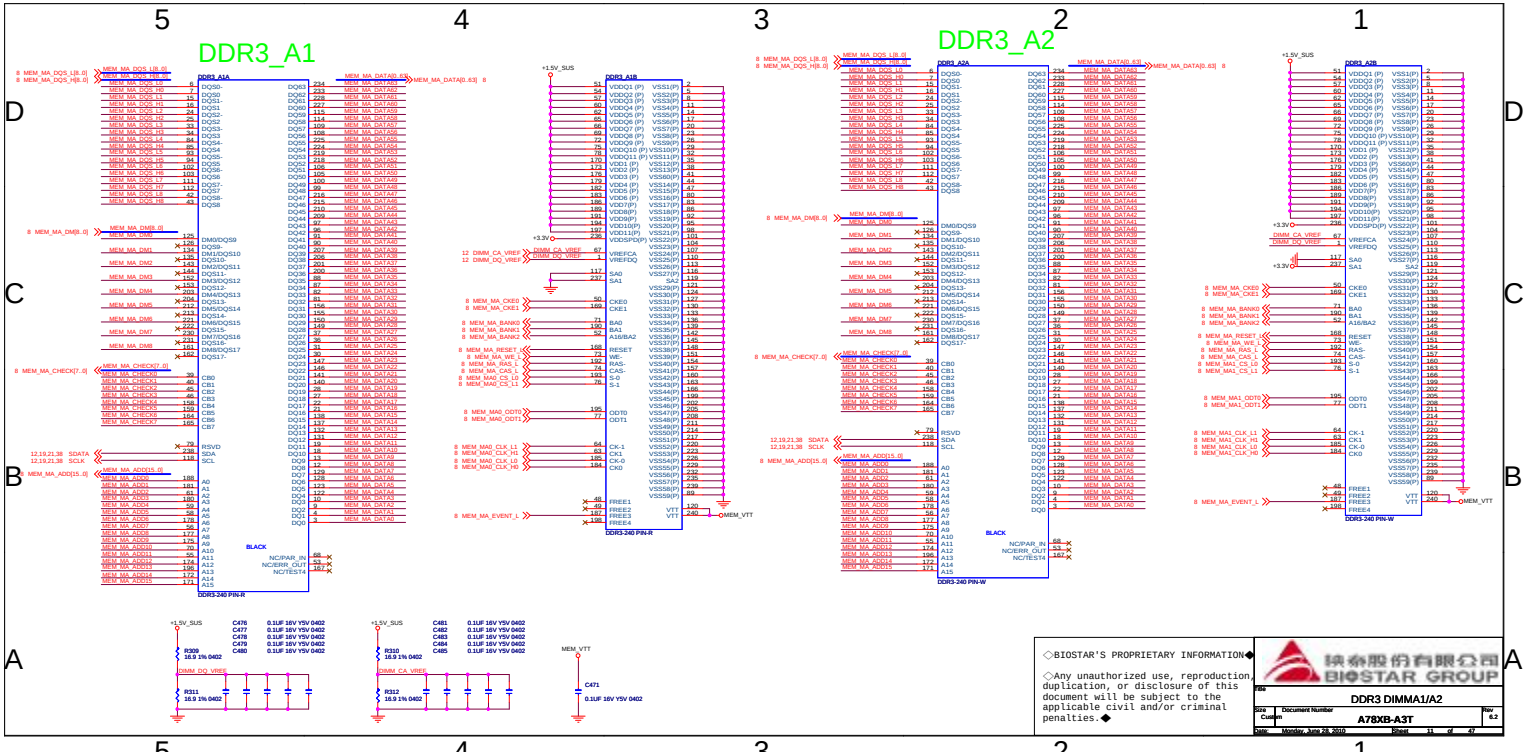
Title: AM3 CPU MEMORY CHA/B

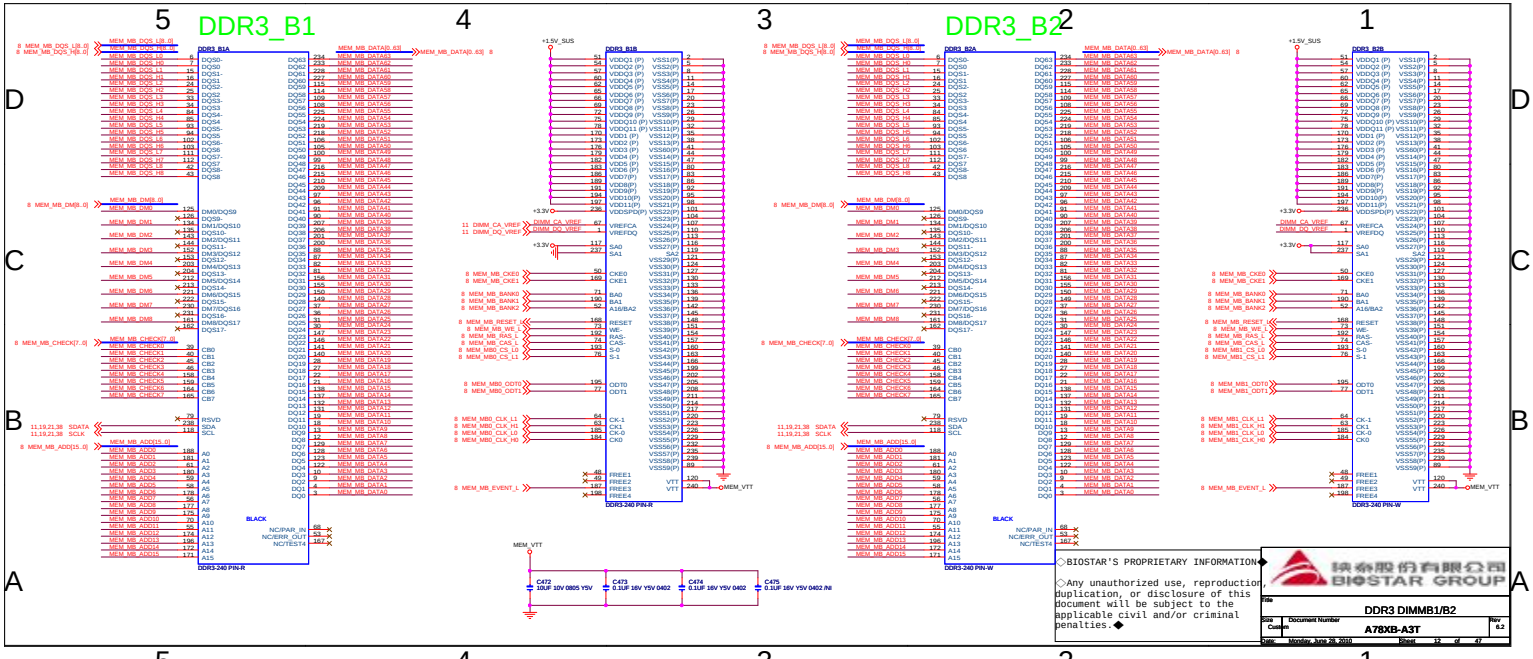
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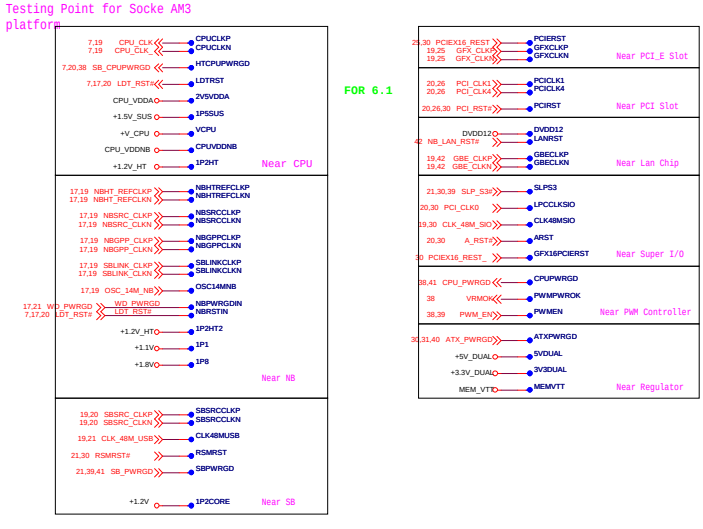
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CPU1E
POWER/GND1
SOCKET AM3 941 SMD
CPU1F
POWER/GND2
SOCKET AM3 941 SMD
CPU1G
POWER/GND3
SOCKET AM3 941 SMD
CPU1H
POWER/GND4
SOCKET AM3 941 SMD
+V_CPU
CPU_VDDNB
+1.2V_HT
+1.2V_HT_CPU
+1.5V_SUS
NP/RSVD
NP/VSS1
NP/VSS2
C57
C486
C487
C488
C489
C490
C491
C56
C492
C493
0.1UF 16V Y5V 0402
1UF 16V 0805 Y5V
10UF 10V 0805 Y5V
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+1.5V_SUS
C34 1UF 10V Y5V 0402 /NI
C37 1UF 10V Y5V 0402 /NI
C39 1UF 10V Y5V 0402 /NI
C38 1UF 10V Y5V 0402 /NI
+1.5V_SUS PLACE BOTTOM SIDE
C13 0.1UF 16V Y5V 0402
C14 10UF 10V 0805 Y5V /NI
C15 0.1UF 16V Y5V 0402
C16 0.1UF 16V Y5V 0402
C17 0.1UF 16V Y5V 0402
C18 0.1UF 16V Y5V 0402
C19 0.1UF 16V Y5V 0402
+1.5V_SUS DECOUPLING BETWEEN PROCESSOR AND DIMMS
+V_CPU
C20 0.1UF 16V Y5V 0402
C25 0.1UF 16V Y5V 0402
C22 0.1UF 16V Y5V 0402
C24
C26
C27
C28
C29
C30
C31
0.1UF 16V Y5V 0402
C12 1UF 10V Y5V 0402
C51 1UF 10V Y5V 0402
C32 1UF 10V Y5V 0402
C35 1UF 10V Y5V 0402
FOR 6.2
CPU_VDDNB
C36 10UF 10V 0805 Y5V
C328 10UF 10V 0805 Y5V
C11 10UF 10V 0805 Y5V
C23 0.1UF 16V Y5V 0402
C58 0.1UF 16V Y5V 0402
+1.5V_SUS
BC36 10UF 10V 0805 Y5V /NI
BC30 10UF 10V 0805 Y5V /NI
BC29 10UF 10V 0805 Y5V /NI
BC27 10UF 10V 0805 Y5V /NI
BC26 10UF 10V 0805 Y5V /NI
BC32 10UF 10V 0805 Y5V /NI
BC31 10UF 10V 0805 Y5V /NI
+V_CPU
C40 10UF 10V 0805 Y5V
C41 10UF 10V 0805 Y5V
C42 10UF 10V 0805 Y5V
C43 10UF 10V 0805 Y5V
C44 10UF 10V 0805 Y5V
C45 10UF 10V 0805 Y5V
C46 10UF 10V 0805 Y5V
C4 1UF 10V Y5V 0402
C8 1UF 10V Y5V 0402
C9 1UF 10V Y5V 0402
C10 1UF 10V Y5V 0402
FOR 6.2
+V_CPU
BC7 10UF 10V 0805 Y5V /NI
BC8 10UF 10V 0805 Y5V /NI
BC9 10UF 10V 0805 Y5V /NI
BC10 10UF 10V 0805 Y5V /NI
BC24 10UF 10V 0805 Y5V /NI
BC25 10UF 10V 0805 Y5V /NI
BC11 10UF 10V 0805 Y5V /NI
BC12 10UF 10V 0805 Y5V /NI
BC28 10UF 10V 0805 Y5V /NI
BC13 10UF 10V 0805 Y5V /NI
BC14 10UF 10V 0805 Y5V /NI
BC15 10UF 10V 0805 Y5V /NI
BC16 10UF 10V 0805 Y5V /NI
CPU_VDDNB
BC22 10UF 10V 0805 Y5V /NI
BC23 10UF 10V 0805 Y5V /NI
+V_CPU
BC34 10UF 10V 0805 Y5V /NI
BC35 10UF 10V 0805 Y5V /NI
BC33 10UF 10V 0805 Y5V /NI
BC17 10UF 10V 0805 Y5V /NI
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BC20 10UF 10V 0805 Y5V /NI
BC21 10UF 10V 0805 Y5V /NI
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DDR3_A1
DDR3_A2
DDR3_A1A
DDR3_A2A
DDR3_A1B
DDR3_A2B
DDR3-240 PIN-R
DDR3-240 PIN-W
DDR3-240 PIN-R
DDR3-240 PIN-W
BLACK
BLACK
+1.5V_SUS
+3.3V
MEM_VTT
DIMM_DQ_VREF
DIMM_CA_VREF
R309 16.9 1% 0402
R311 16.9 1% 0402
R310 16.9 1% 0402
R312 16.9 1% 0402
C471 0.1UF 16V Y5V 0402
0.1UF 16V Y5V 0402
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DDR3_B1
DDR3_B2
DDR3_B1A
DDR3_B1B
DDR3_B2A
DDR3_B2B
DDR3-240 PIN-R
DDR3-240 PIN-W
BLACK
MEM_VTT
C472 10UF 10V 0805 Y5V
C473 0.1UF 16V Y5V 0402
C474 0.1UF 16V Y5V 0402
C475 0.1UF 16V Y5V 0402 /NI
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5 4 3 2 1

D

C

B

A

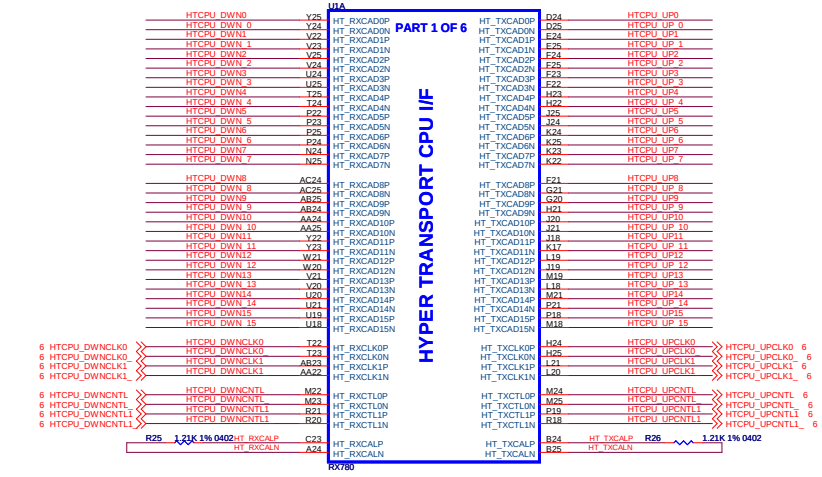
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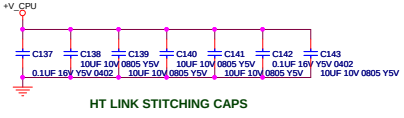
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HT LINK STITCHING CAPS

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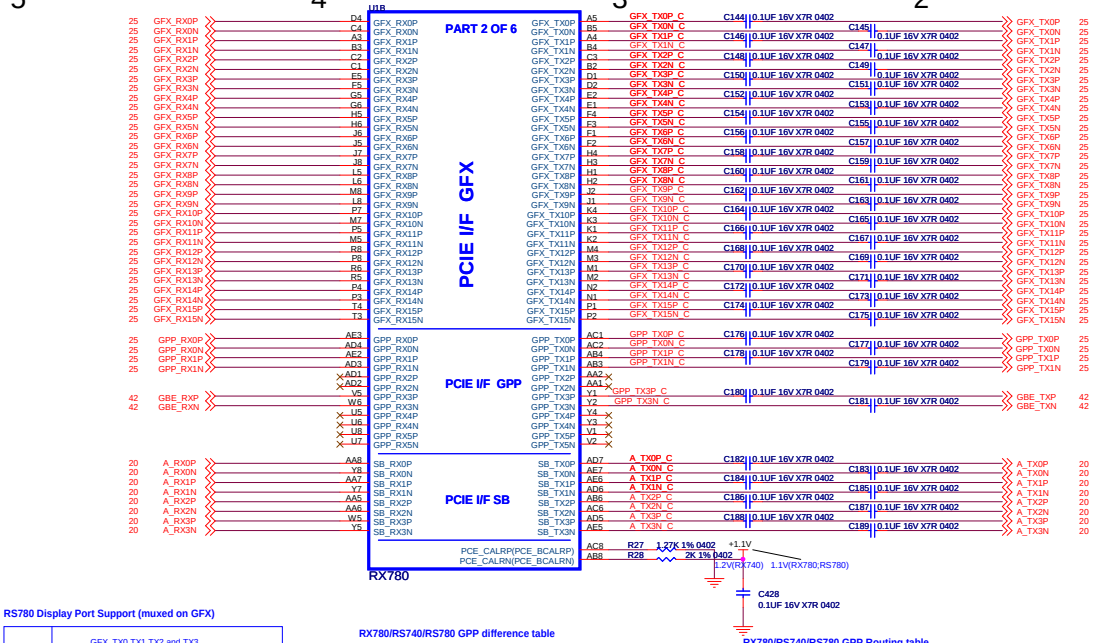
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RS780 Display Port Support (muxed on GFX)

DP0	GFX_TX0,TX1,TX2 and TX3 AUX0 and HPD0
DP1	GFX_TX4,TX5,TX6 and TX7 AUX1 and HPD1

RX780/RS740/RS780 GPP difference table

	RS740	RX780/RS780
PCE_CALRP	562R (GND)	1.27K (GND)
GPP4	NC	GPP4
GPP5	NC	GPP5

RX780/RS740/RS780 GPP Routing table

	RS740	RX780/RS780
GPP X4 CONNECTOR	GPP[2:0]	GPP[3:0]
GPP X1 CONNECTOR		GPP4
GIGABIT ETHERNET	GPP3	GPP5

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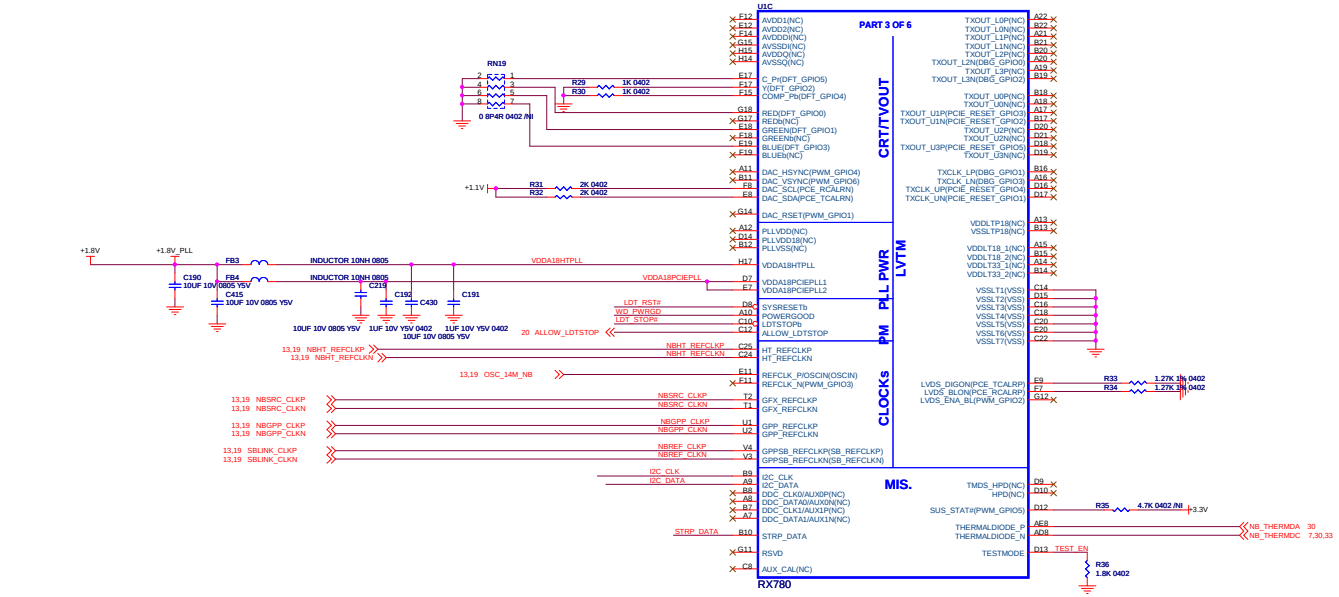
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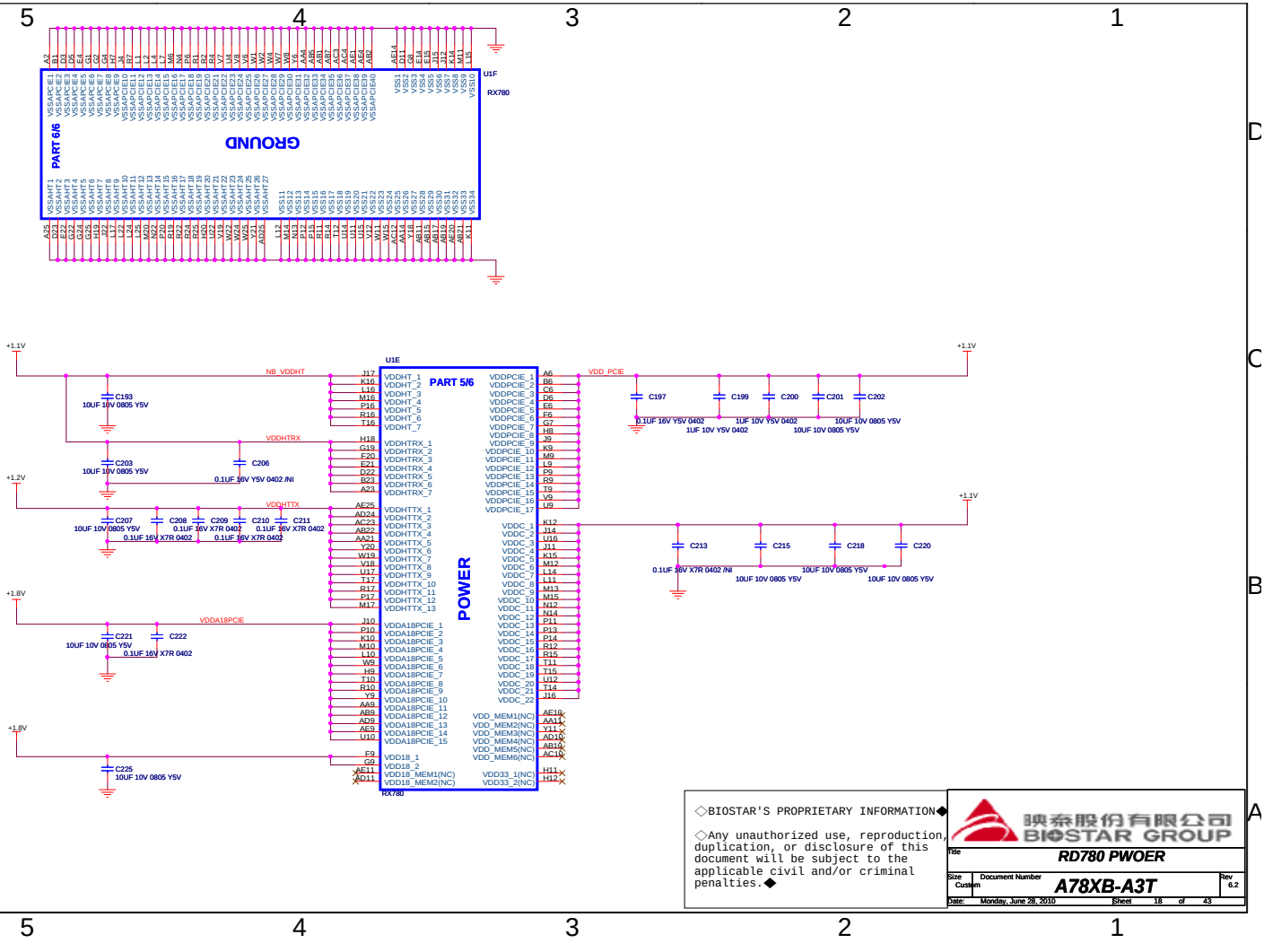
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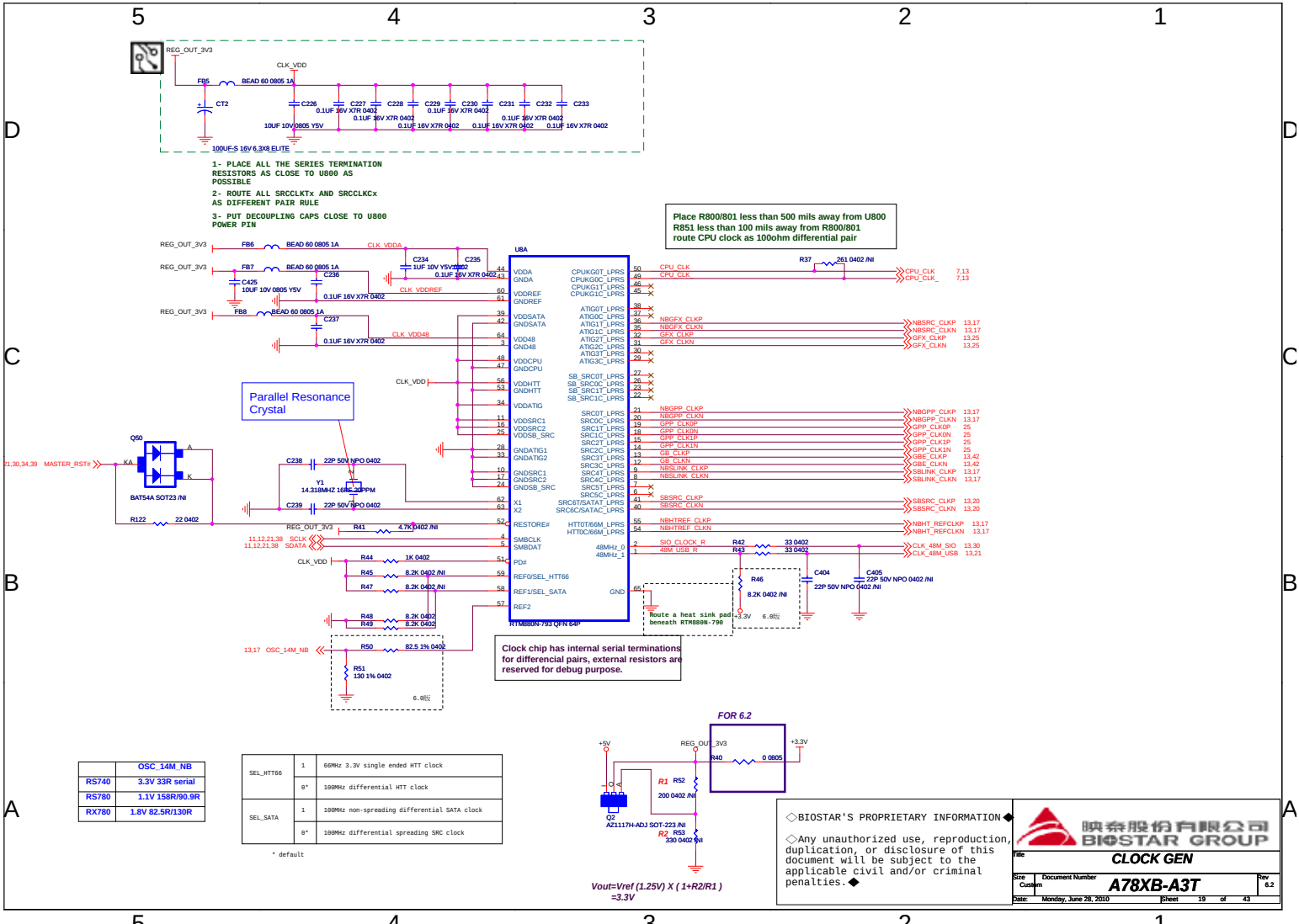


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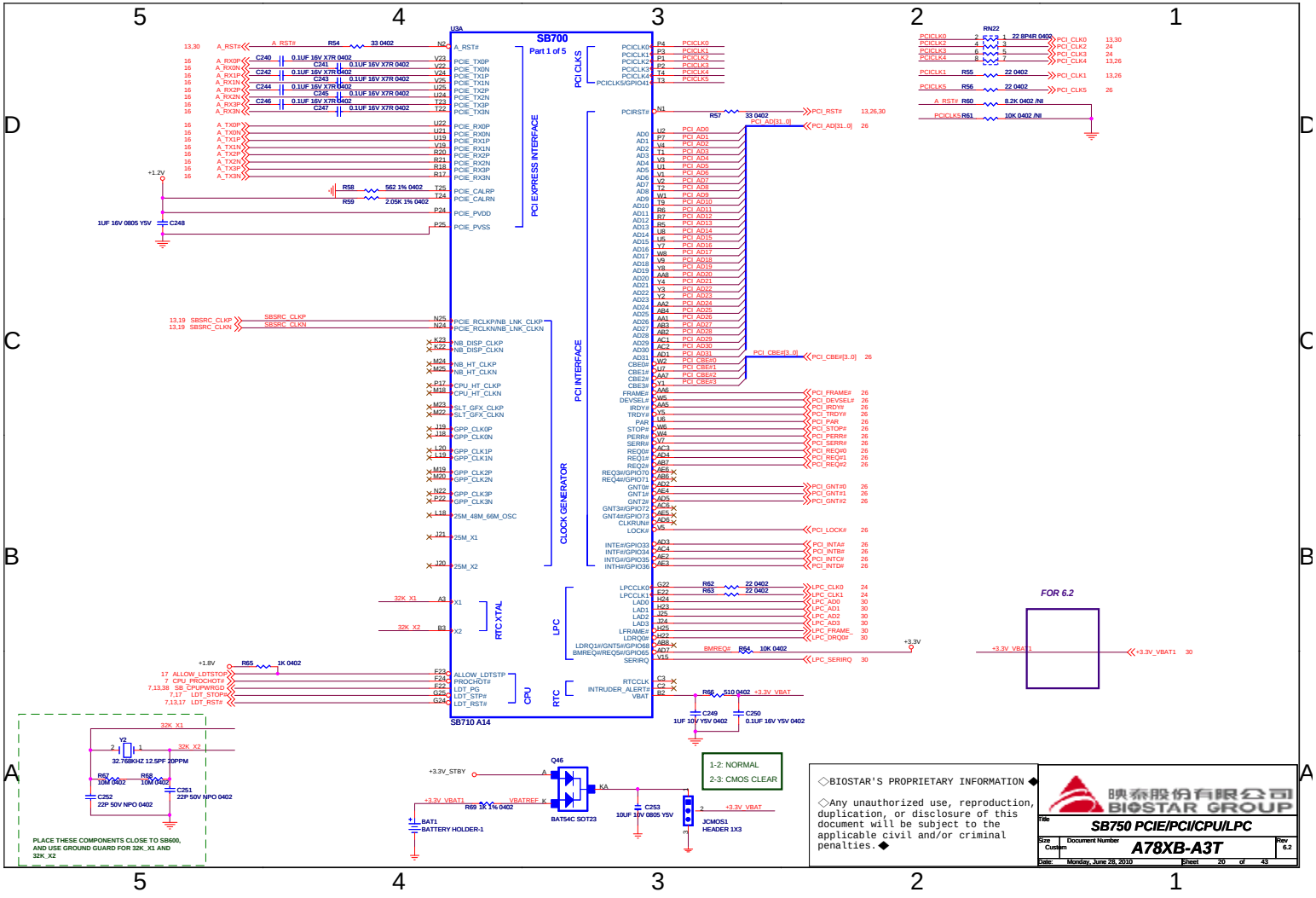
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Size: Custom	Document Number: A78XB-A3T	Rev: 6.2
Date: Monday, June 28, 2010	Sheet 18 of 43	

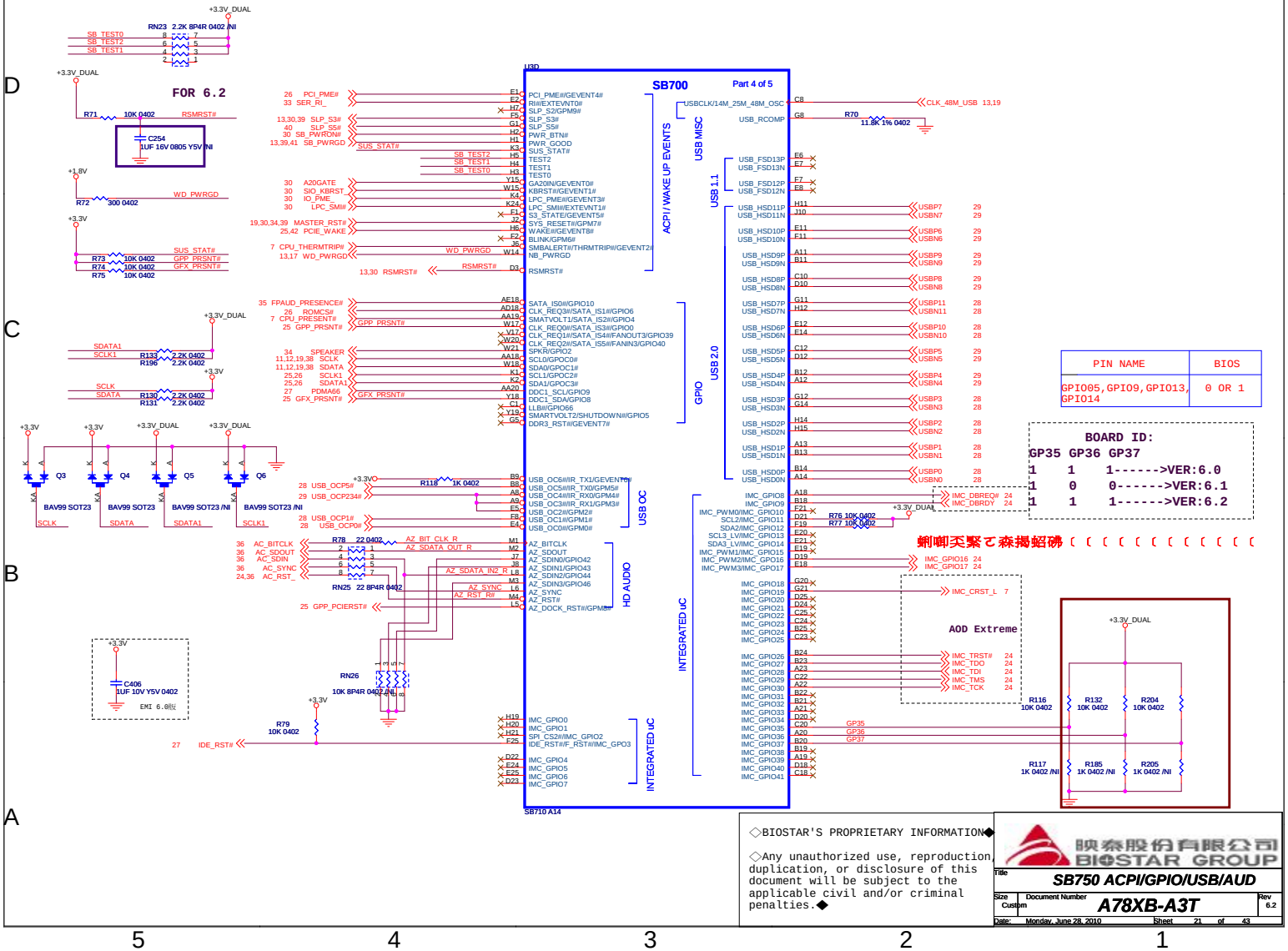


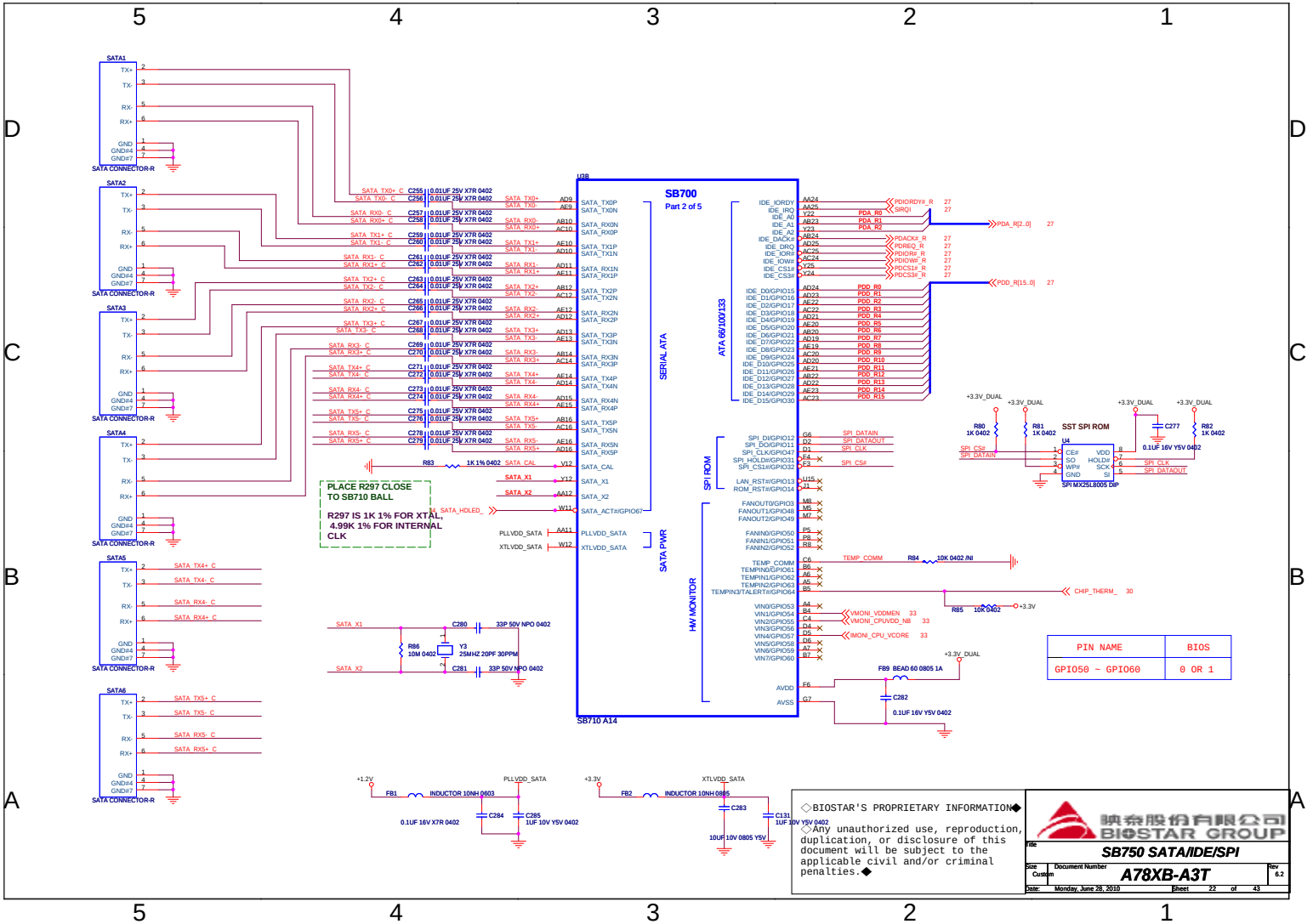
	OSC_14M_NB
RS740	3.3V 33R serial
RS780	1.1V 158R/90.9R
RX780	1.8V 82.5R/130R

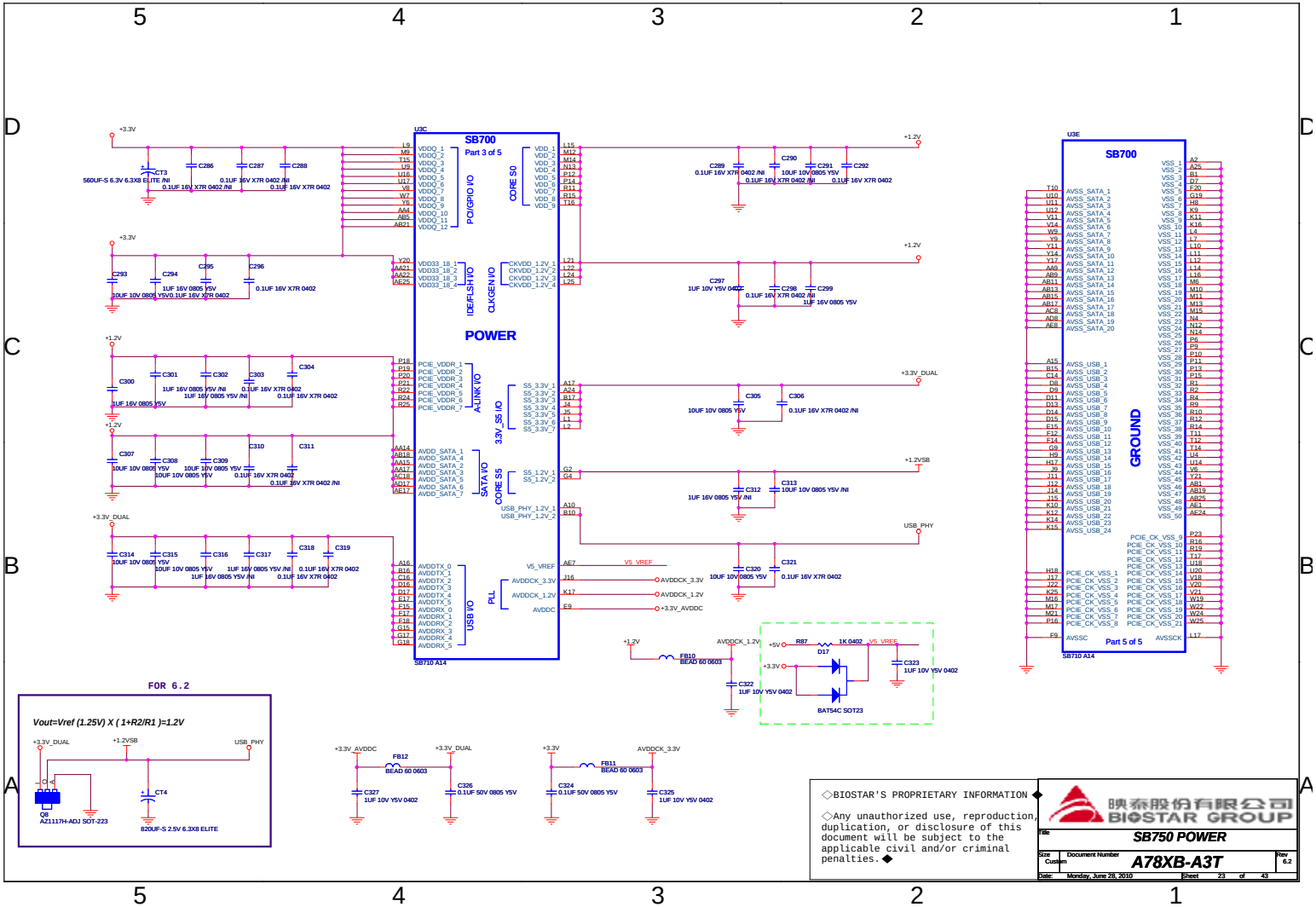
SEL_HTT66	1	66MHz 3.3V single ended HTT clock
	0*	100MHz differential HTT clock
SEL_SATA	1	100MHz non-spreading differential SATA clock
	0*	100MHz differential spreading SRC clock

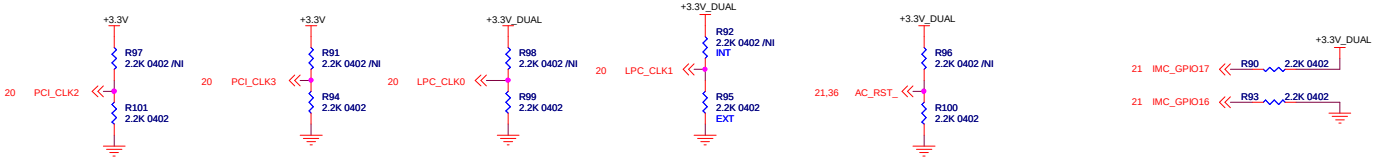
* default


SB700
Part 1 of 5
PCI CLKS
PCI EXPRESS INTERFACE
PCI INTERFACE
CLOCK GENERATOR
LPC
RTC
CPU
RTC XTAL
SB710 A14
PCI_RST#
PCI_AD[31..0]
PCI_CBE#[3..0]
PCI_FRAME#
PCI_DEVSEL#
PCI_IRDY#
PCI_TRDY#
PCI_PAR
PCI_STOP#
PCI_PERR#
PCI_SERR#
PCI_REQ#0
PCI_REQ#1
PCI_REQ#2
PCI_GNT#0
PCI_GNT#1
PCI_GNT#2
PCI_LOCK#
PCI_INTA#
PCI_INTB#
PCI_INTC#
PCI_INTD#
LPC_CLK0
LPC_CLK1
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_FRAME_
LPC_DRQ0#
LPC_SERIRQ
FOR 6.2
+3.3V_VBAT1
1-2: NORMAL
2-3: CMOS CLEAR
PLACE THESE COMPONENTS CLOSE TO SB600, AND USE GROUND GUARD FOR 32K_X1 AND 32K_X2
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SB750 PCIE/PCI/CPU/LPC
A78XB-A3T
Monday, June 28, 2010


SB700
Part 4 of 5
FOR 6.2
ACPI / WAKE UP EVENTS
USB MISC
USB 1.1
USB 2.0
GPIO
USB OC
HD AUDIO
INTEGRATED uC
PIN NAME
BIOS
GPIO05,GPIO9,GPIO13,GPIO14
0 OR 1
BOARD ID:
GP35 GP36 GP37
1 1 1------>VER:6.0
1 0 0------>VER:6.1
1 1 1------>VER:6.2
AOD Extreme
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SB750 ACPI/GPIO/USB/AUD
A78XB-A3T
Monday, June 28, 2010


SB700
Part 2 of 5
SB710 A14
SERIAL_ATA
SATA PWR
SPI ROM
HW MONITOR
ATA 66/100/133
SATA CONNECTOR-R
PLACE R297 CLOSE TO SB710 BALL
R297 IS 1K 1% FOR XTAL
4.99K 1% FOR INTERNAL CLK
SST SPI ROM
SPI MX25L8005 DIP
PIN NAME
BIOS
GPIO50 ~ GPIO60
0 OR 1
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SB750 SATA/IDE/SPI
A78XB-A3T
Monday, June 28, 2010
22 of 43

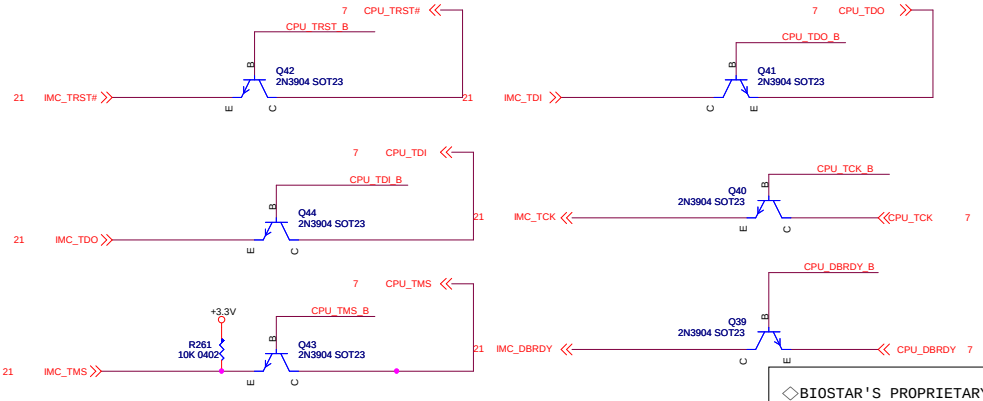

SB700
Part 3 of 5
POWER
CORE S0
IDE/FLSH I/O
CLKGEN I/O
A-LINK I/O
3.3V_S5 I/O
CORE S5
SATA I/O
USB I/O
PLL
SB710 A14
SB700
Part 5 of 5
GROUND
SB710 A14
FOR 6.2
Vout=Vref (1.25V) X (1+R2/R1)=1.2V
Q8
AZ1117H-ADJ SOT-223
820UF-S 2.5V 6.3X8 ELITE
BEAD 60 0603
BAT54C SOT23
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SB750 POWER
A78XB-A3T
Monday, June 28, 2010
23
43

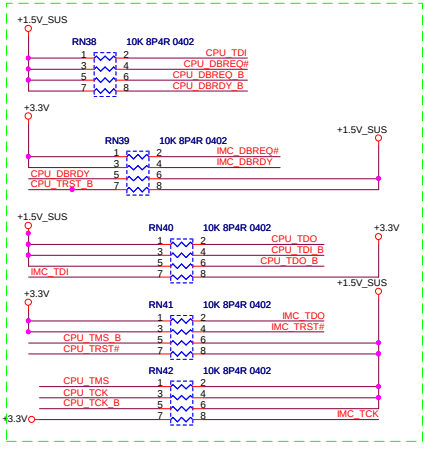


REQUIRED STRAPS

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

	PCI_CLK2	PCI_CLK3	PCI_CLK4	PCI_CLK5	LPC_CLK0	LPC_CLK1	AZ_RST#	IMC_GPIO17 IMC_GPIO16
PULL HIGH	WATCHDOG TIMER ON NB_PWRGD ENABLED	USE DEBUG STRAPS	RESERVED	RESERVED	IMC_ENABLE	CLKGEN ENABLED	IMC ENABLED	ROM TYPE: H, L = SPI ROM DEFAULT
PULL LOW	WATCHDOG TIMER ON NB_PWRGD DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT			IMC_DISABLE	CLKGEN DISABLED DEFAULT	IMC DISABLED DEFAULT	





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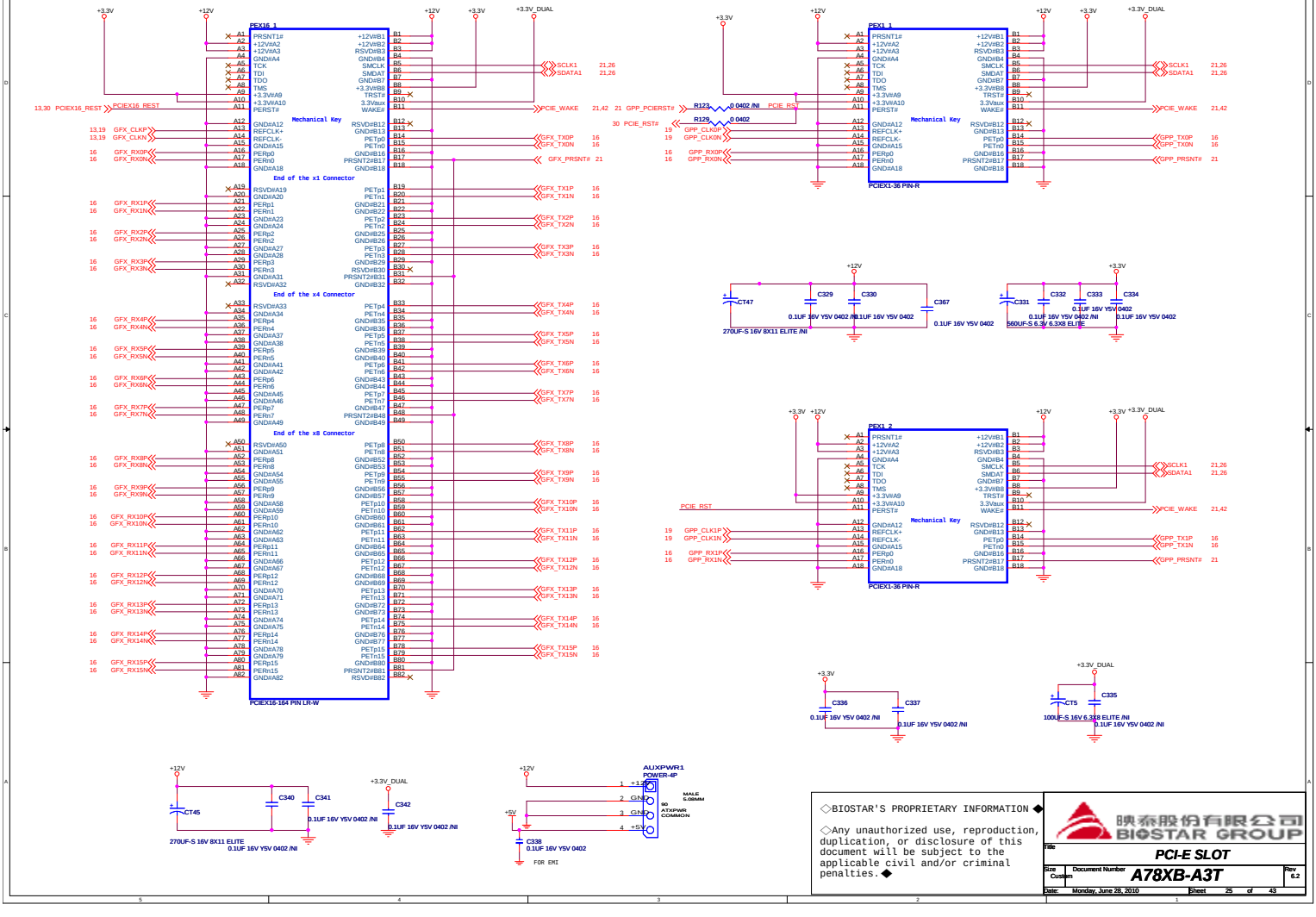
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Title: SB750 STRAP

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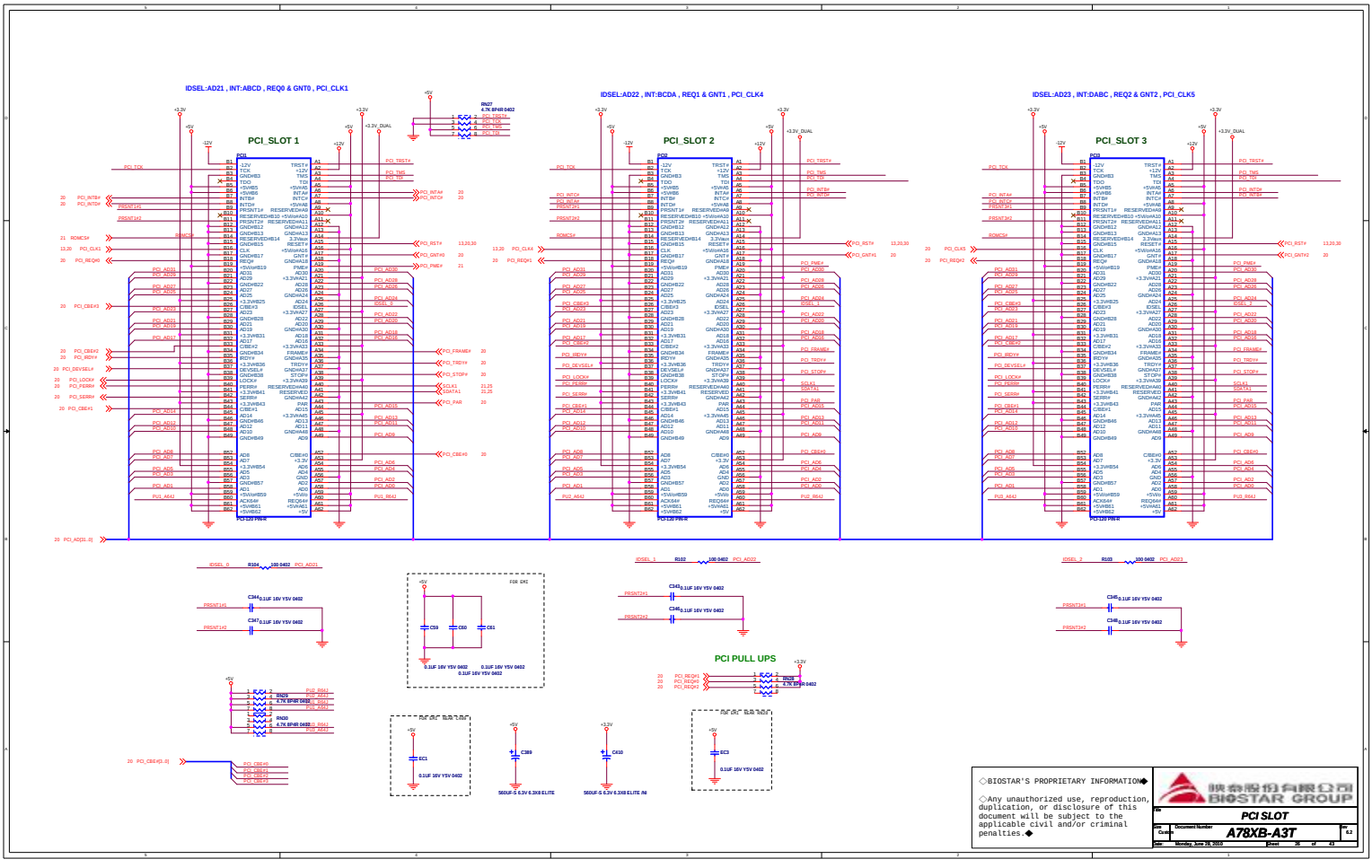


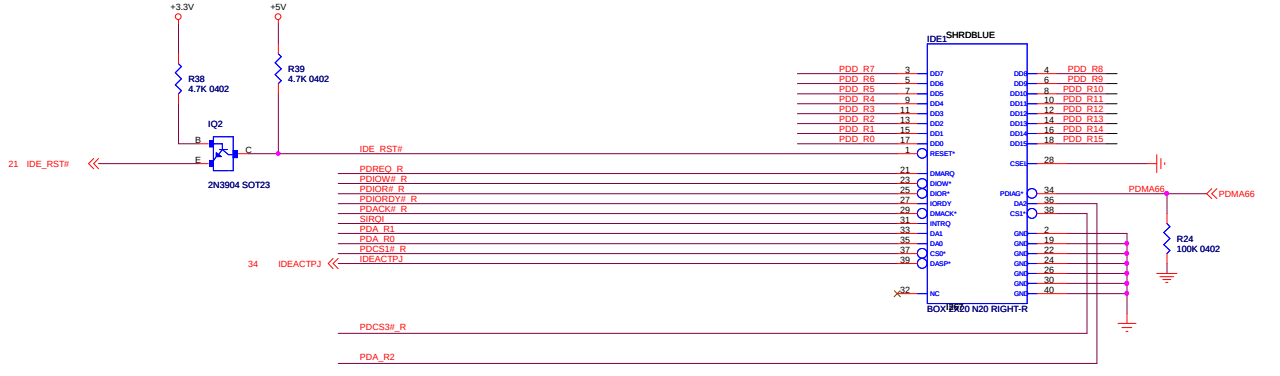
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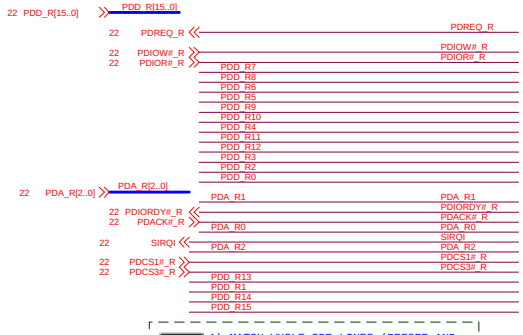
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Title	PCI-E SLOT	
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IDSEL:AD21 , INT:ABCD , REQ0 & GNT0 , PCI_CLK1
PCI_SLOT 1
IDSEL:AD22 , INT:BCDA , REQ1 & GNT1 , PCI_CLK4
PCI_SLOT 2
IDSEL:AD23 , INT:DABC , REQ2 & GNT2 , PCI_CLK5
PCI_SLOT 3
PCI PULL UPS
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PCI SLOT
A78XB-A3T
Monday, June 28, 2010





1) MATCH WHOLE IDE LINES (BEFORE AND AFTER DAMPING RESISTORS) WITHIN 0.5"

2) ALL DAMPING RESISTORS CLOSE TO IDE CONNECTORS.

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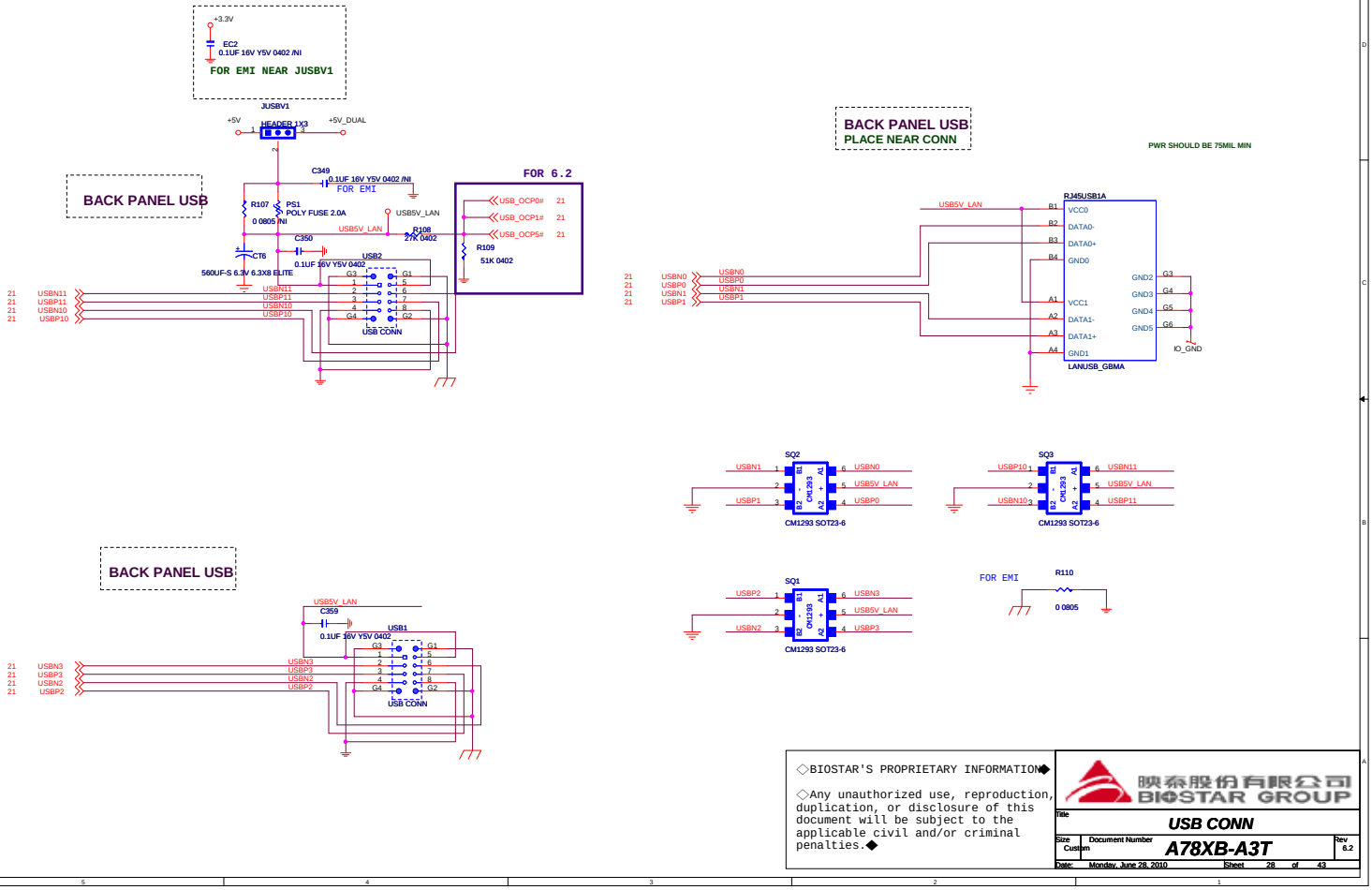
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Title: IDE ATA 133

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Date: Monday, June 28, 2010 | Sheet 27 of 43

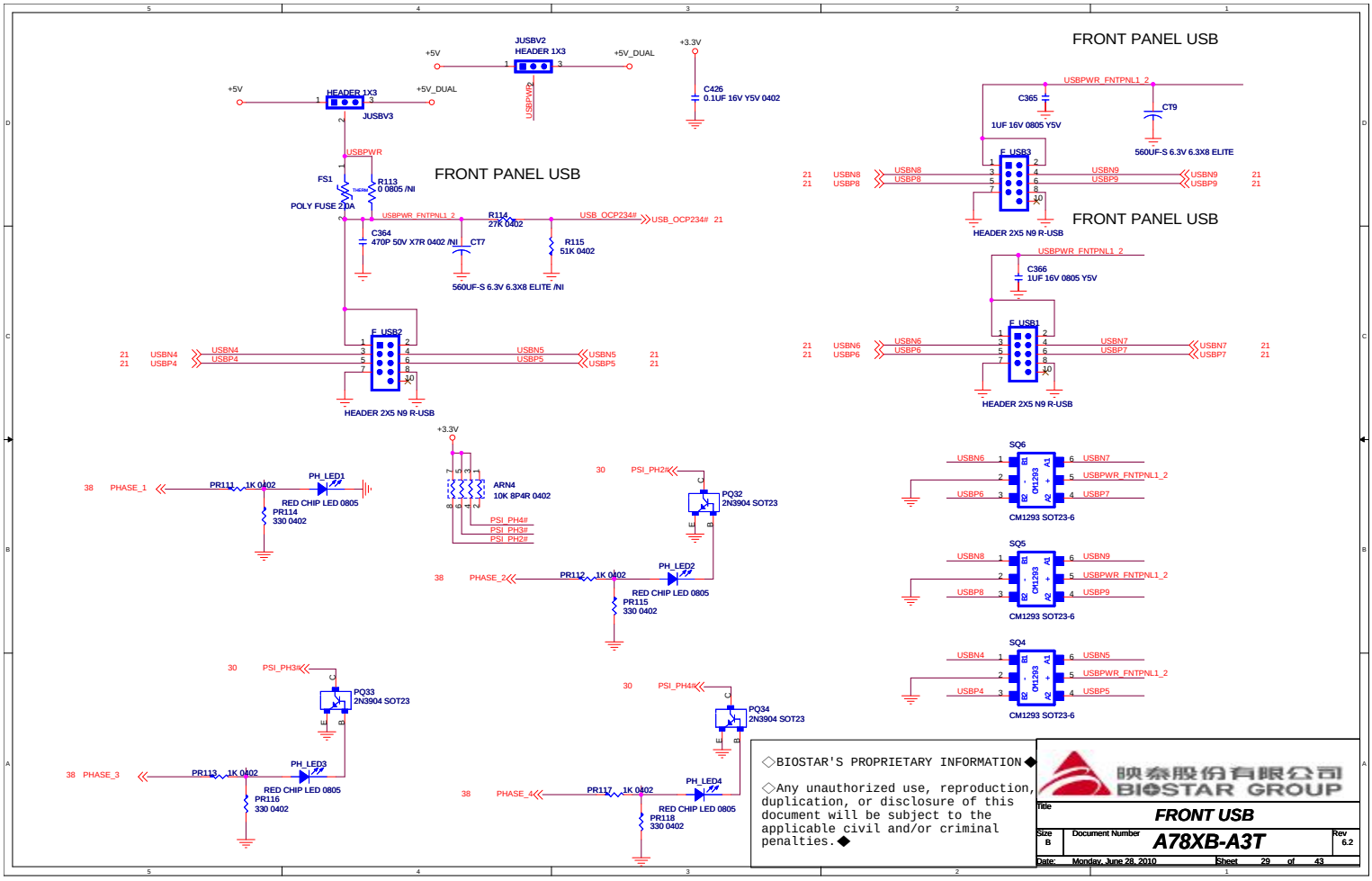


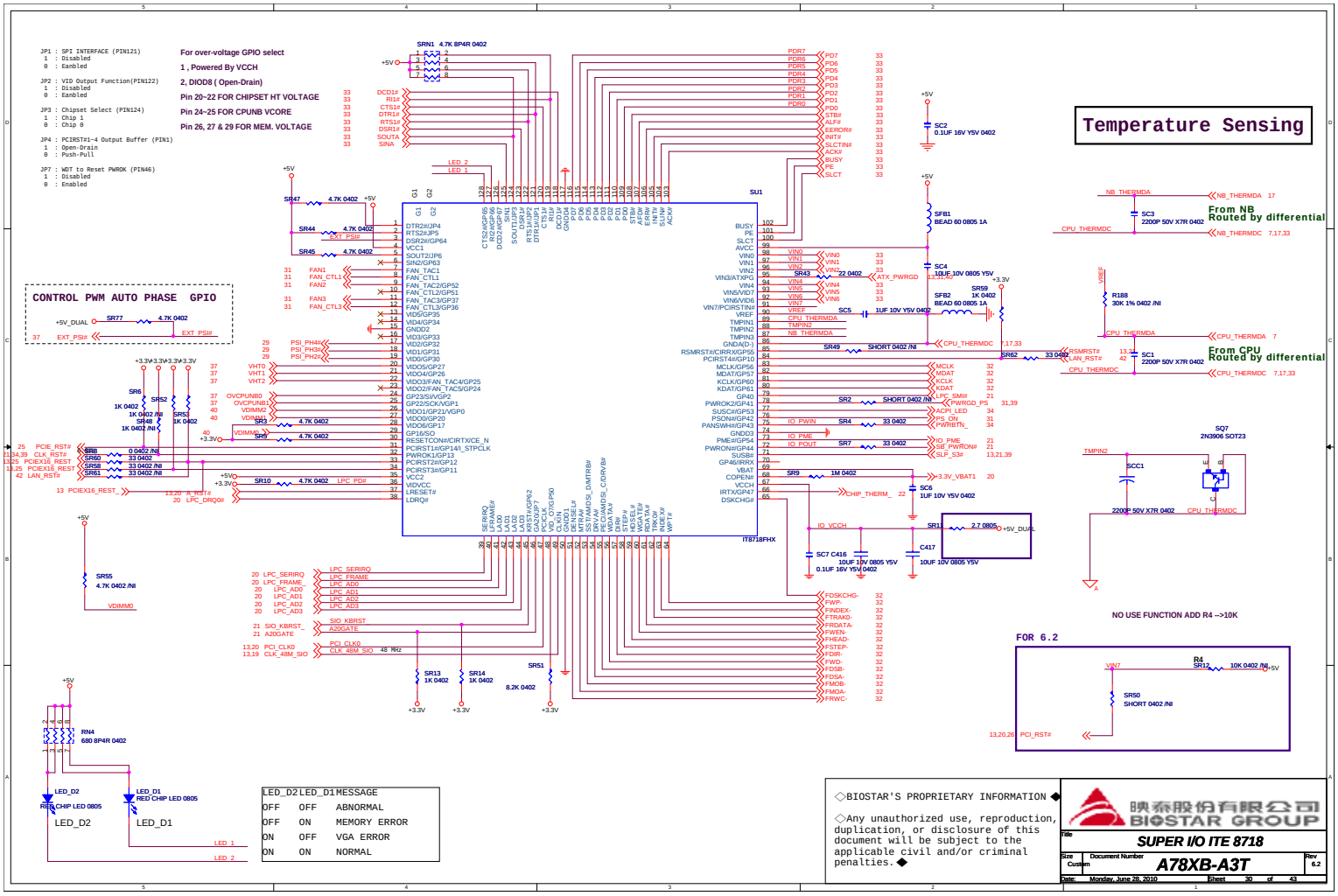
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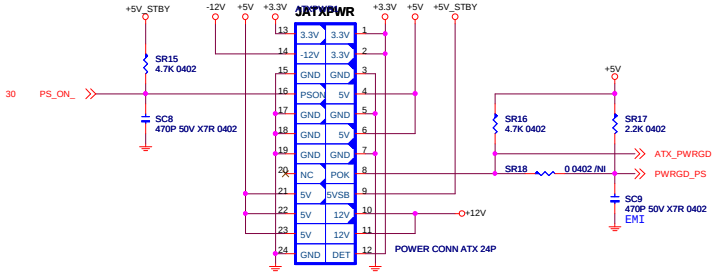
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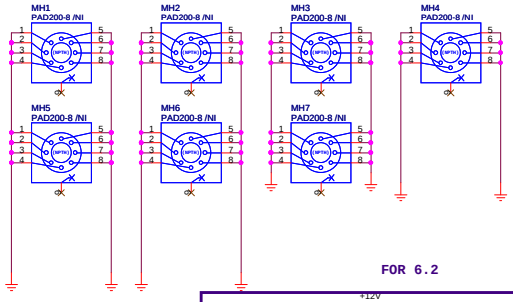
Title	USB CONN	
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JUSBV2
HEADER 1X3
+5V
+5V_DUAL
+3.3V
C426
0.1UF 16V Y5V 0402
USBPWR2
HEADER 1X3
JUSBV3
USBPWR
FS1
POLY FUSE 2.0A
R113
0 0805 /NI
FRONT PANEL USB
USBPWR_FNTPNL1_2
R114
27K 0402
USB_OCP234#
R115
51K 0402
C364
470P 50V X7R 0402 /NI
CT7
560UF-S 6.3V 6.3X8 ELITE /NI
F_USB2
HEADER 2X5 N9 R-USB
USBN4
USBP4
USBN5
USBP5
FRONT PANEL USB
C365
1UF 16V 0805 Y5V
CT9
560UF-S 6.3V 6.3X8 ELITE
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HEADER 2X5 N9 R-USB
USBN8
USBP8
USBN9
USBP9
FRONT PANEL USB
C366
1UF 16V 0805 Y5V
F_USB1
HEADER 2X5 N9 R-USB
USBN6
USBP6
USBN7
USBP7
PHASE_1
PR111
1K 0402
PH_LED1
RED CHIP LED 0805
PR114
330 0402
ARN4
10K 8P4R 0402
PSI_PH4#
PSI_PH3#
PSI_PH2#
PSI_PH2#
PQ32
2N3904 SOT23
PHASE_2
PR112
1K 0402
PH_LED2
RED CHIP LED 0805
PR115
330 0402
PSI_PH3#
PQ33
2N3904 SOT23
PHASE_3
PR113
1K 0402
PH_LED3
RED CHIP LED 0805
PR116
330 0402
PSI_PH4#
PQ34
2N3904 SOT23
PHASE_4
PR117
1K 0402
PH_LED4
RED CHIP LED 0805
PR118
330 0402
SQ6
CM1293 SOT23-6
USBPWR_FNTPNL1_2
SQ5
CM1293 SOT23-6
SQ4
CM1293 SOT23-6
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FRONT USB
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29
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43


Temperature Sensing
JP1 : SPI INTERFACE (PIN121)
1 : Disabled
0 : Eanbled
JP2 : VID Output Function(PIN122)
1 : Disabled
0 : Eanbled
JP3 : Chipset Select (PIN124)
1 : Chip 1
0 : Chip 0
JP4 : PCIRST#1~4 Output Buffer (PIN1)
1 : Open-Drain
0 : Push-Pull
JP7 : WDT to Reset PWROK (PIN46)
1 : Disabled
0 : Enabled
For over-voltage GPIO select
1 , Powered By VCCH
2, DIOD8 (Open-Drain)
Pin 20~22 FOR CHIPSET HT VOLTAGE
Pin 24~25 FOR CPUNB VCORE
Pin 26, 27 & 29 FOR MEM. VOLTAGE
CONTROL PWM AUTO PHASE GPIO
From NB Routed by differential
From CPU Routed by differential
NO USE FUNCTION ADD R4 -->10K
FOR 6.2
LED_D2LED_D1MESSAGE
OFF OFF ABNORMAL
OFF ON MEMORY ERROR
ON OFF VGA ERROR
ON ON NORMAL
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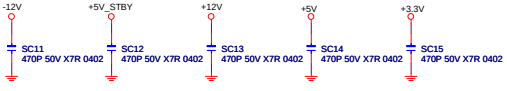
POWER CONNECTOR



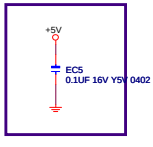


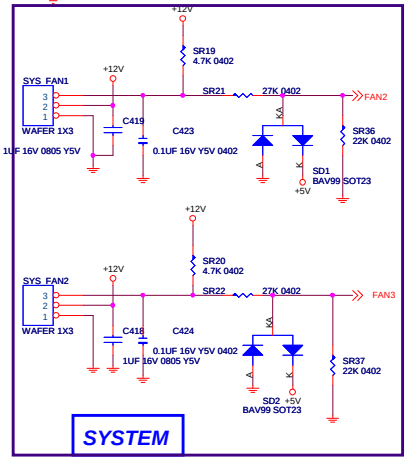
FOR 6.2

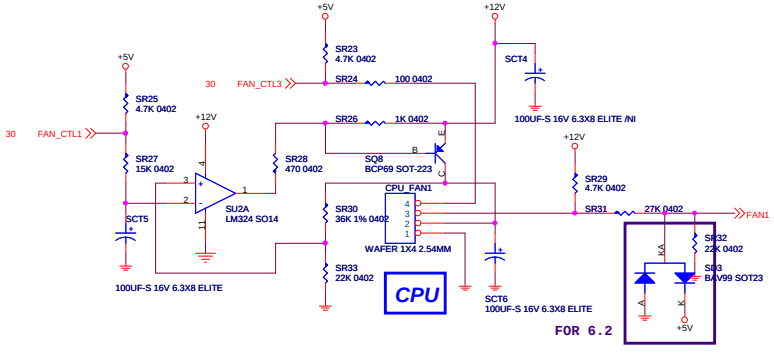
EMI **POWER CONN DECOUPING**

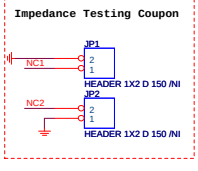


FOR 6.2 EMI









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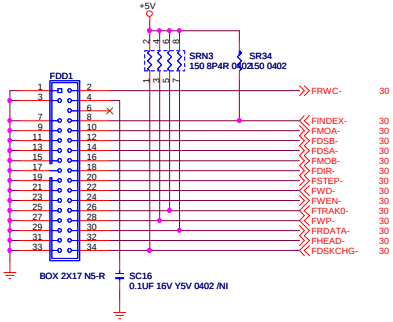
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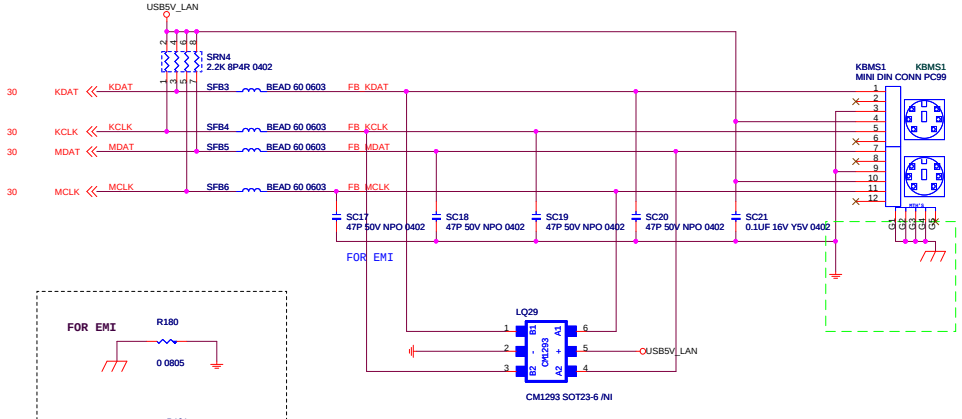
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FLOPPY CONNECTOR



FOR KEYBOARD WITH MOUSE CONN.



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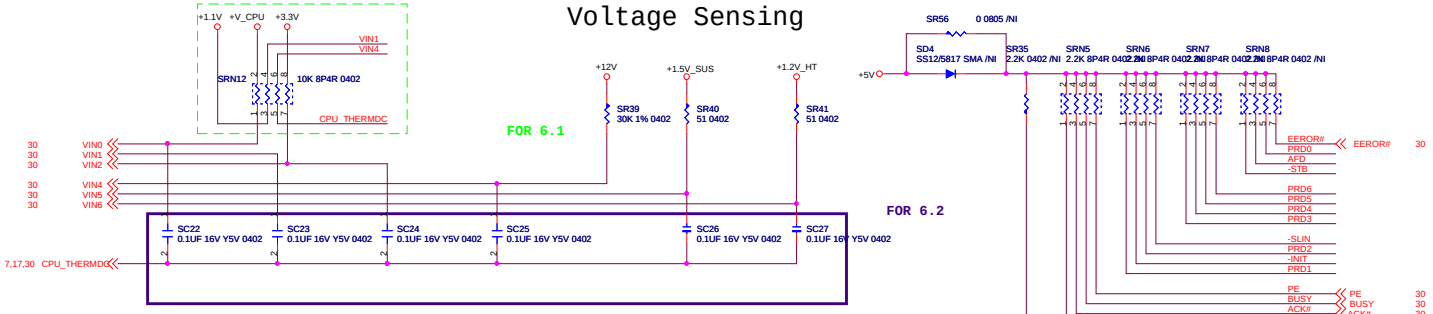
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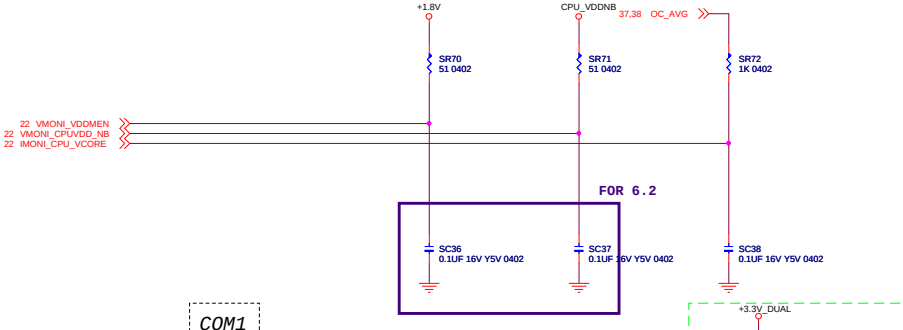
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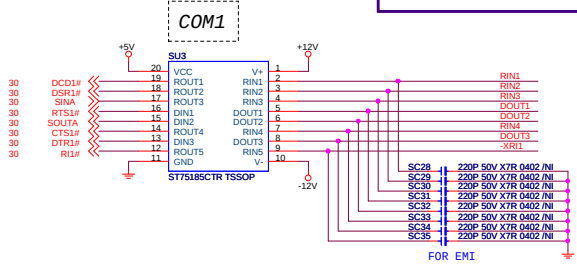
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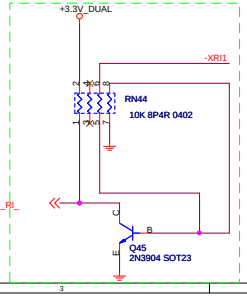
hardware monitor

Voltage Sensing

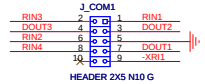




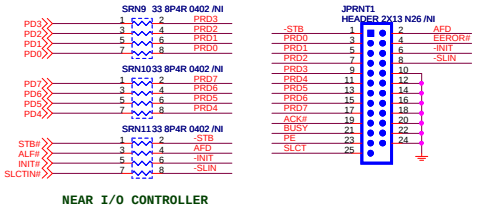




WAKE ON COM



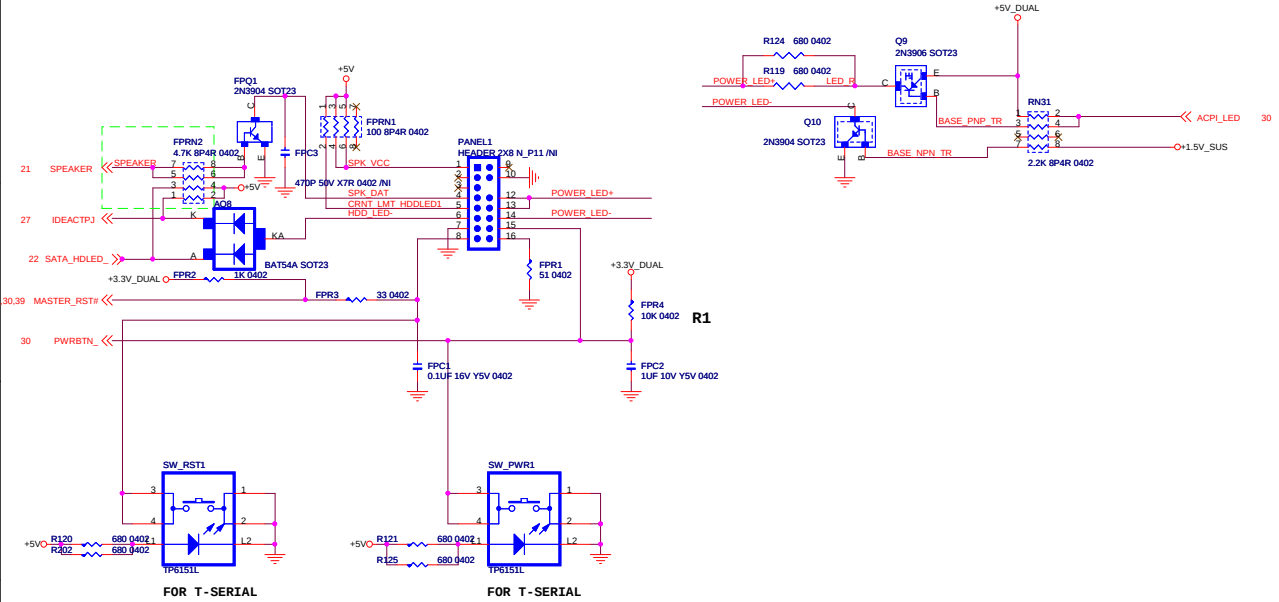
PARALLEL - CONNECTOR



NEAR I/O CONTROLLER

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Title	H/W MONITOR/COM/PARALLE		
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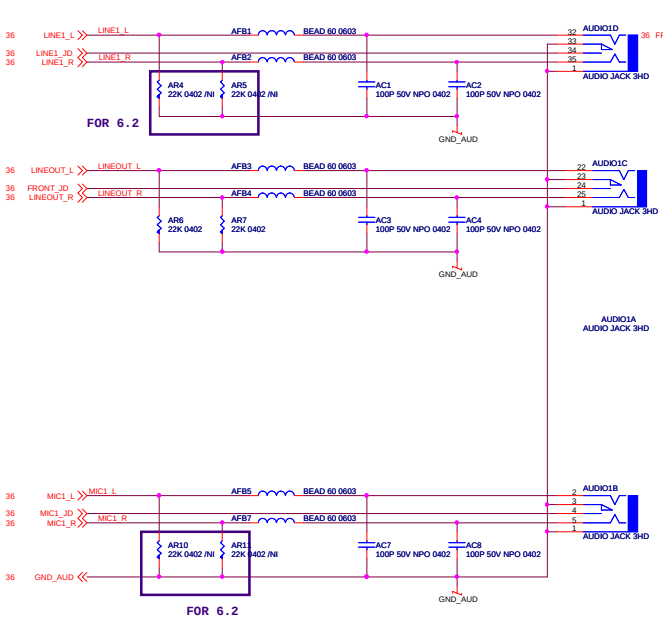
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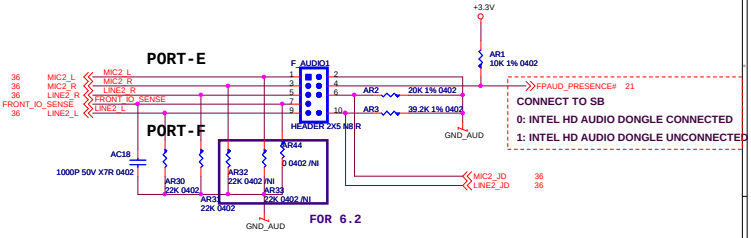
Title: **FRONT PANEL/LED**

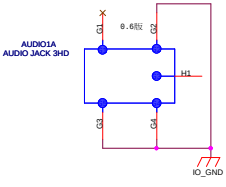
Size	Document Number	Rev
Custom	**A78XB-A3T**	6.2

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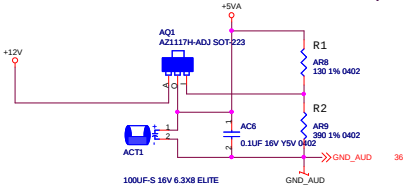
Rear Panel Onboard Analog I/O

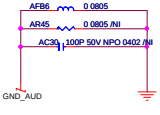




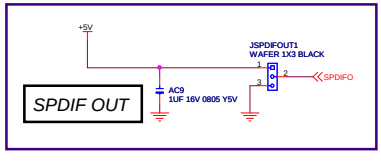


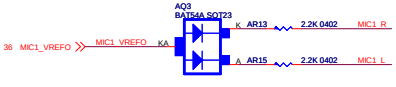
AUDIO ANALOG POWER VOUT=1.25(1+R2/R1)





FOR 6.2





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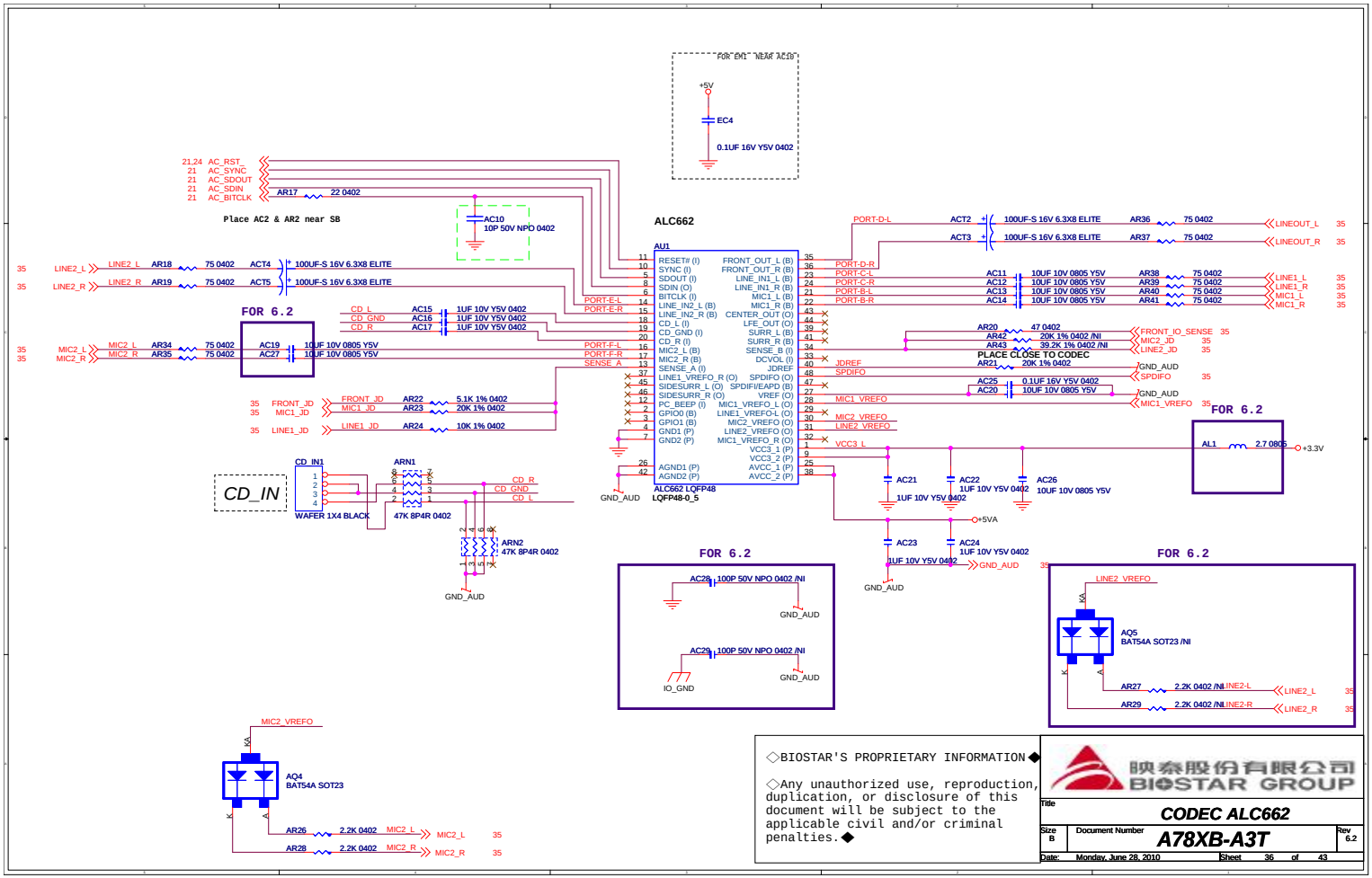
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Title: **AUDIO CONNECTOR**

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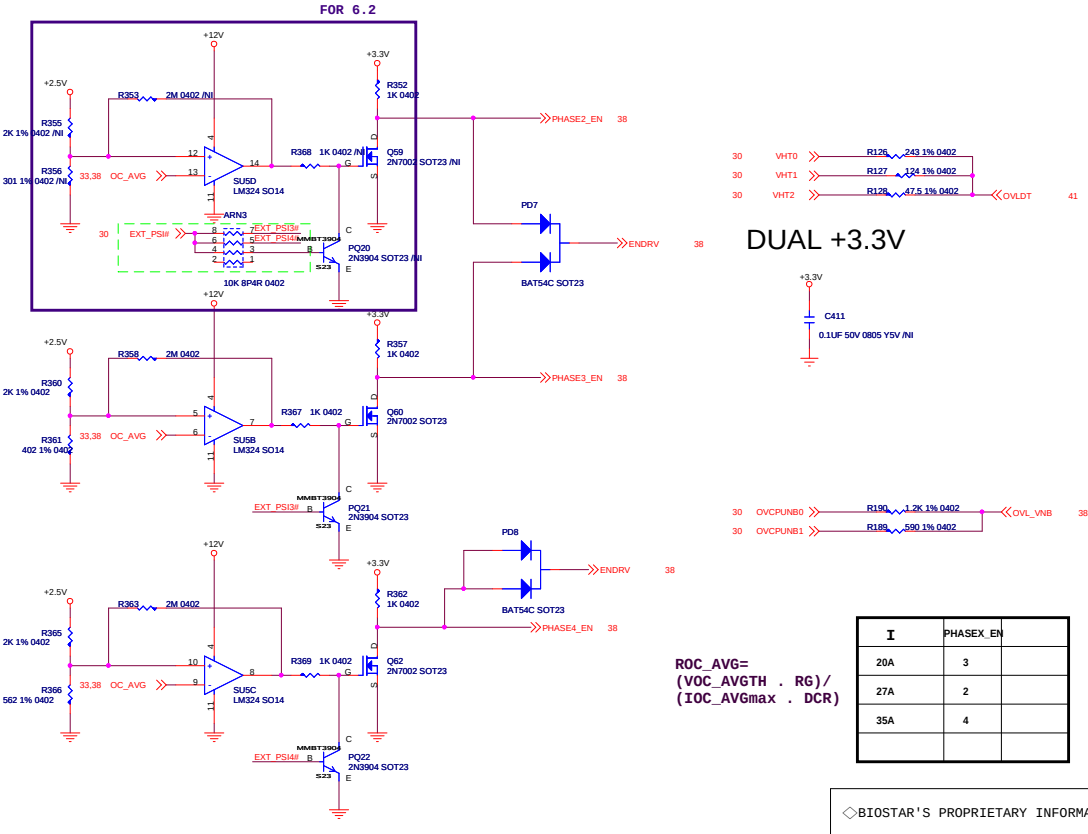
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Title: CODEC ALC662

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30 VHT0 R126 243 1% 0402
30 VHT1 R127 124 1% 0402
30 VHT2 R128 47.5 1% 0402 OVLDT 41

DUAL +3.3V

+3.3V C411 0.1UF 50V 0805 Y5V /NI

OVLDT	VHT0	VHT1	VHT2
Default 1.25V	1	1	1
1.35V	0	1	1
1.45V	1	0	1
1.55V	0	0	1
1.65V	1	1	0
1.75V	0	1	0
1.85V	1	0	0
1.95V	0	0	0

30 OVCPUNB0 R190 1.2K 1% 0402 OVL_VNB 38
30 OVCPUNB1 R189 590 1% 0402

OVL_VNB	OVCPUNB0	OVCPUNB1
Default CPU_VDDNB	1	1
+0.1V	0	1
+0.2V	1	0
+0.3V	0	0

ROC_AVG=
(VOC_AVGTH . RG)/
(IOC_AVGmax . DCR)

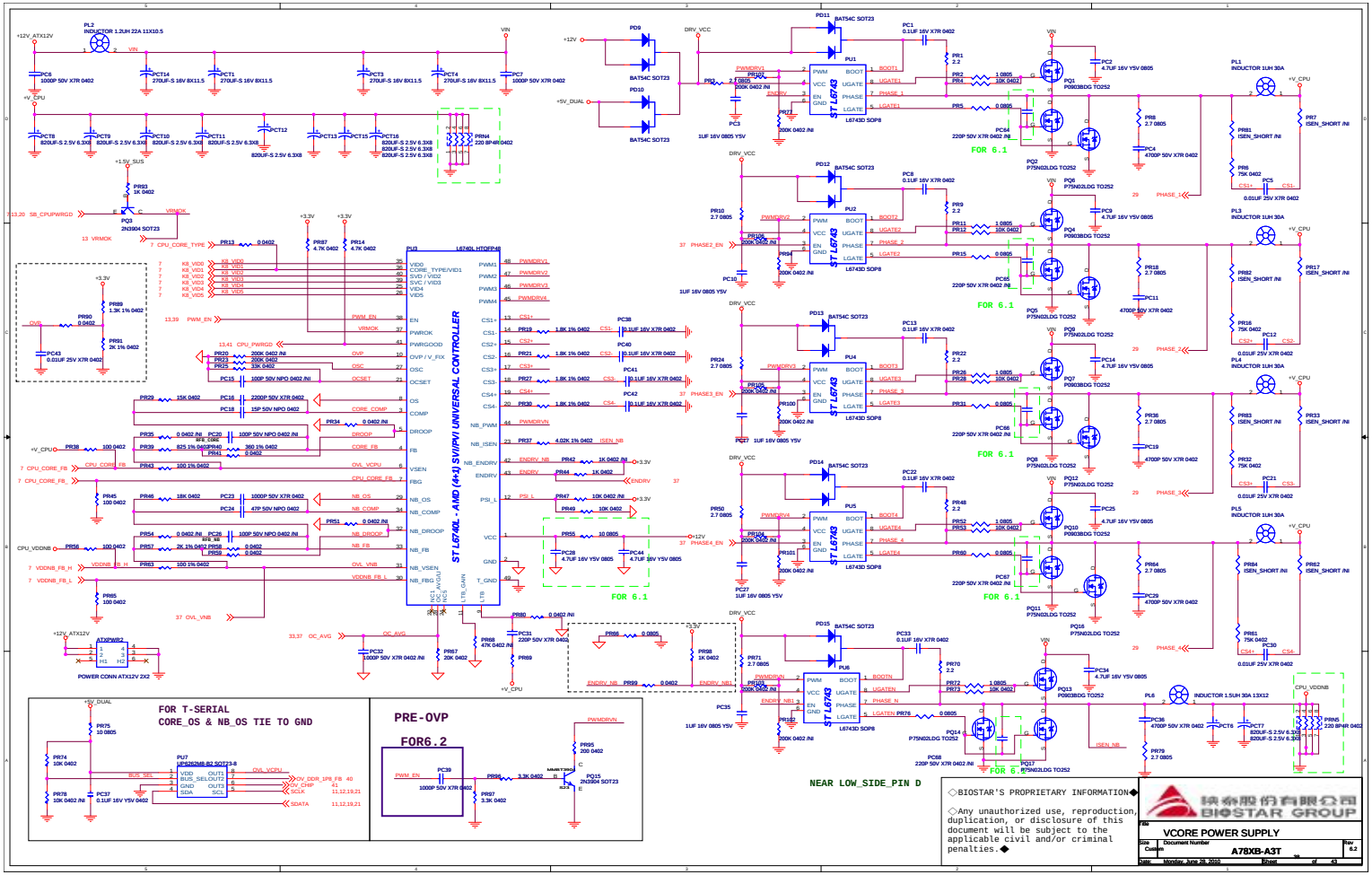
I	PHASEX_EN	
20A	3	
27A	2	
35A	4	

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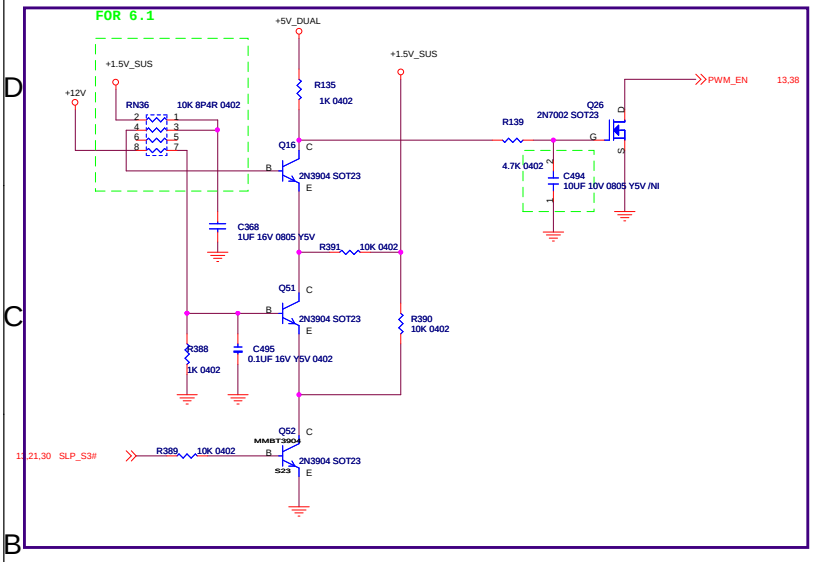
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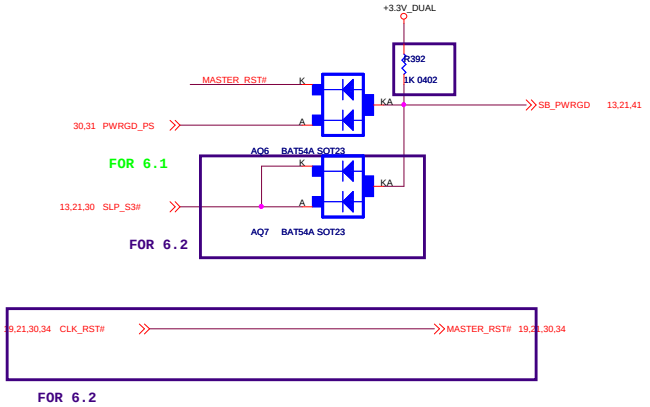
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Title: OVER VOLTAGE
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ST L6740 - AMD (4+1) SVI/PVI UNIVERSAL CONTROLLER
L6740L HTQFP48
L6743D SOP8
FOR 6.1
PRE-OVP
FOR6.2
FOR T-SERIAL
CORE_OS & NB_OS TIE TO GND
NEAR LOW_SIDE_PIN D
POWER CONN ATX12V 2X2
INDUCTOR 1.2UH 22A 11X10.5
INDUCTOR 1UH 30A
INDUCTOR 1.5UH 30A 13X12
VCORE POWER SUPPLY
A78XB-A3T
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ATHLON64 POWER GOOD & ENABLES CIRCUIT





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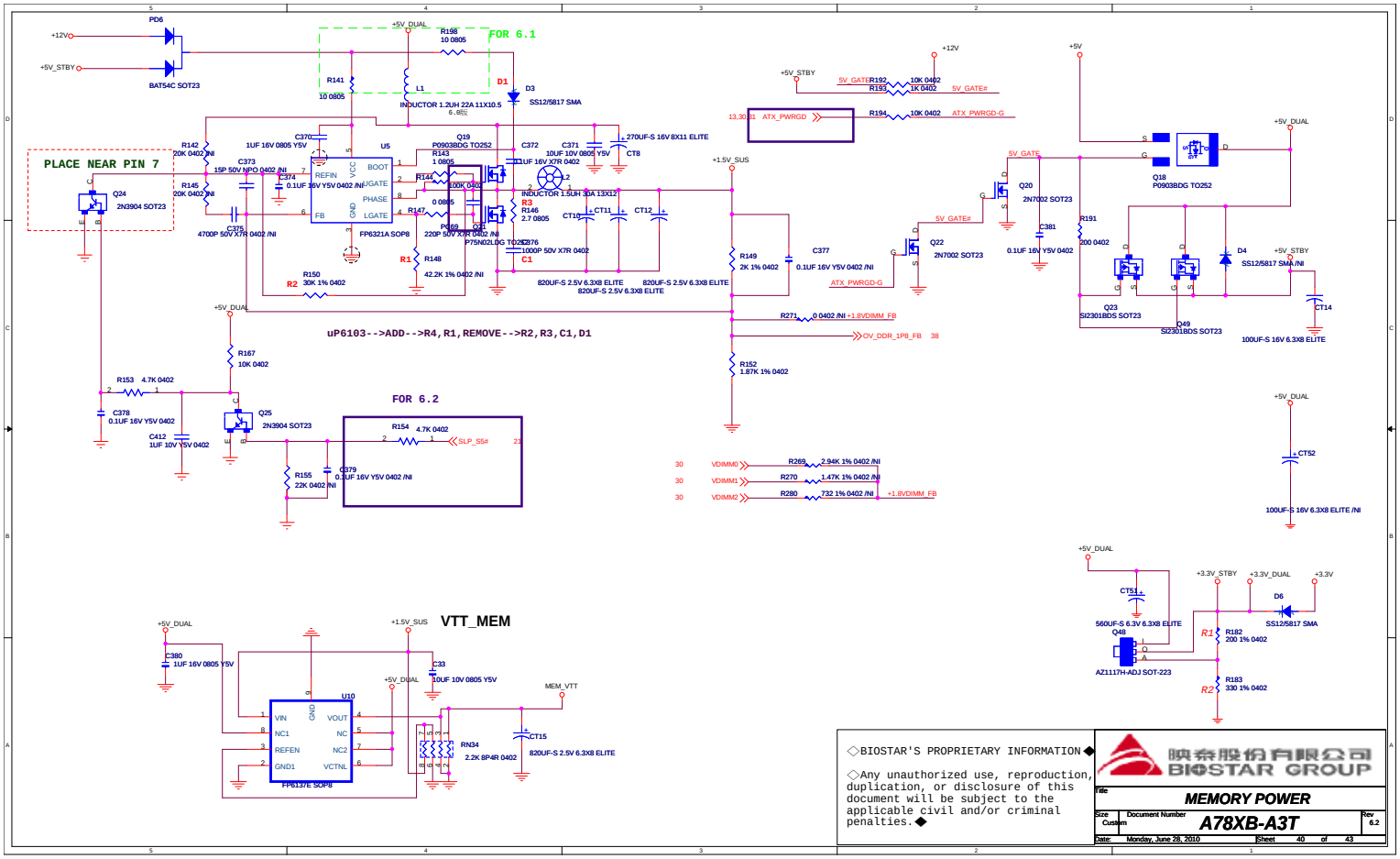
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Title: **PWR GD / MISC POWER**

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PLACE NEAR PIN 7
FOR 6.1
FOR 6.2
uP6103-->ADD-->R4, R1, REMOVE-->R2, R3, C1, D1
VTT_MEM
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MEMORY POWER
A78XB-A3T
Monday, June 28, 2010

NB/SB +1.1V/+1.2V POWER 1.1V @3A FOR RX780/RS780
NB CORE POWER 1.1V @8A FOR RX780/RS780

uP6103-->ADD-->RA1,RA2,REMOVE-->RA3,RA4,CA1,DA1
RT9214-->REMOVE-->RA1,RA2,ADD-->RA3,RA4,CA1,DA1

RT9202NC/RT9214

RT9202/RT9214NC

1.1V

NB
+1.1V @ 8A AMPS MAX

FOR 6.1

PLACE NEAR PIN 7

Vout=0.8(1+R1/R2)----for FP6321A
R1 , R2 阻值不要選超過 K ohm

CORE VOLTAGE	VCHIP1	VCHIP0
+1.15V	1	1
+1.25V	1	0
+1.35V	0	1
+1.45V	0	0

Vout=1.25 X (1+R1/R2)

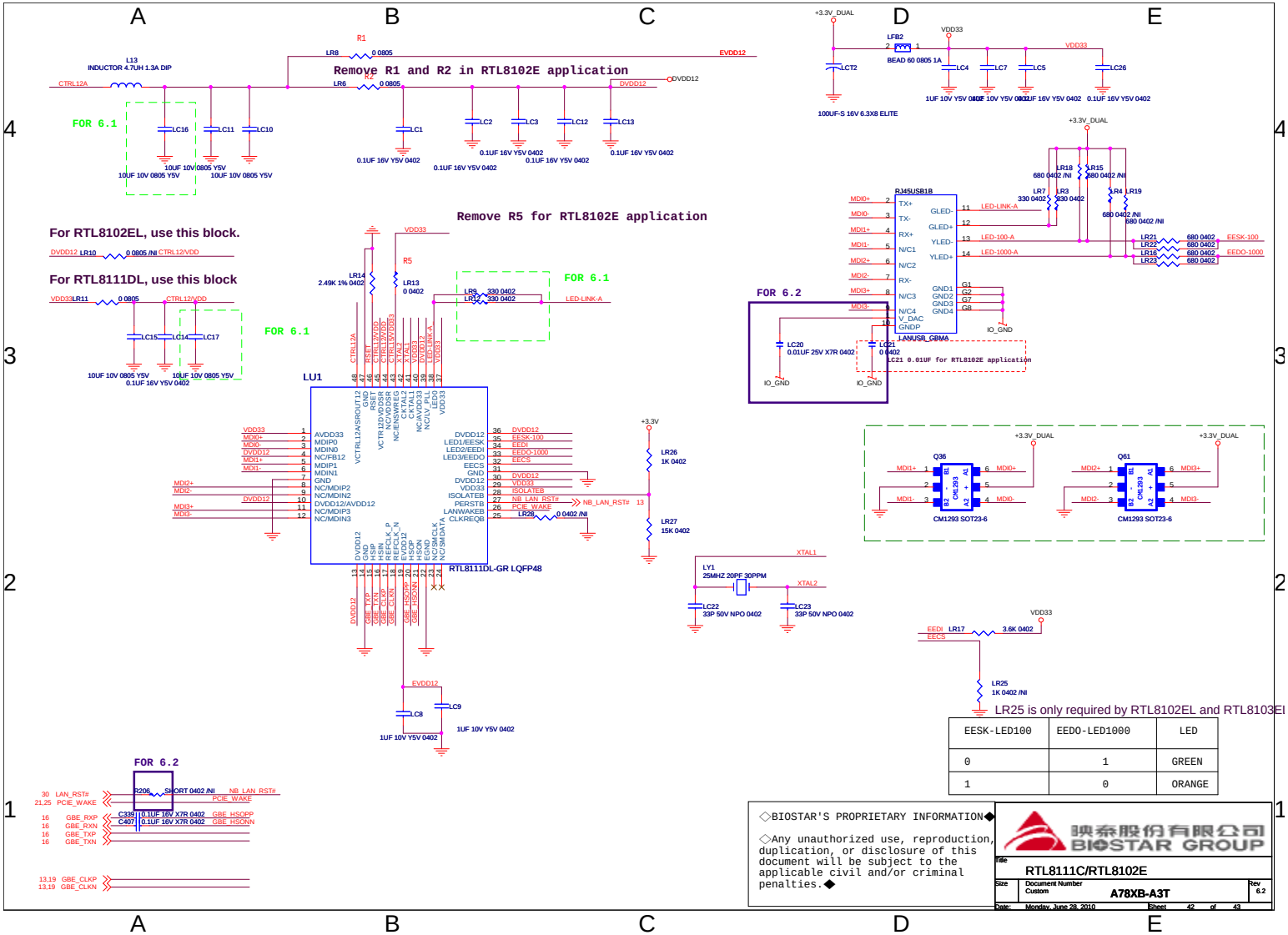
FOR 6.2

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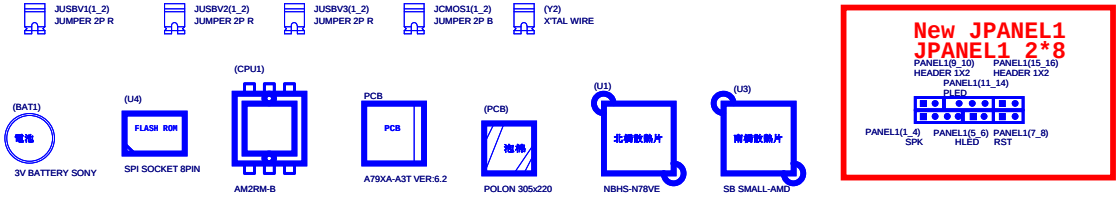
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Title	NB/SB CORE POWER	
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EESK-LED100	EEDO-LED1000	LED
0	1	GREEN
1	0	ORANGE



15-N37-162000R11 ... A78XB-A3T VER:6.2 箭 OSP+窪 (219.96*305.00*1.6)mm 4L ?

86-A78XBA3T-R03P-62

96-A78XBA3T-R03P-62

EMI FOR 6.2:1.AR47,AR25.AR46 傖100P珂 NI 2. SC11袒源樓玲褷 +5V GND脞0.1UF?

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Title: BOM

Size: B | Document Number: A78XB-A3T | Rev: 6.2

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