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CRU51-M7

CRU51G+MCP51G

VER:1.3A

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Title: COVER SHEET		
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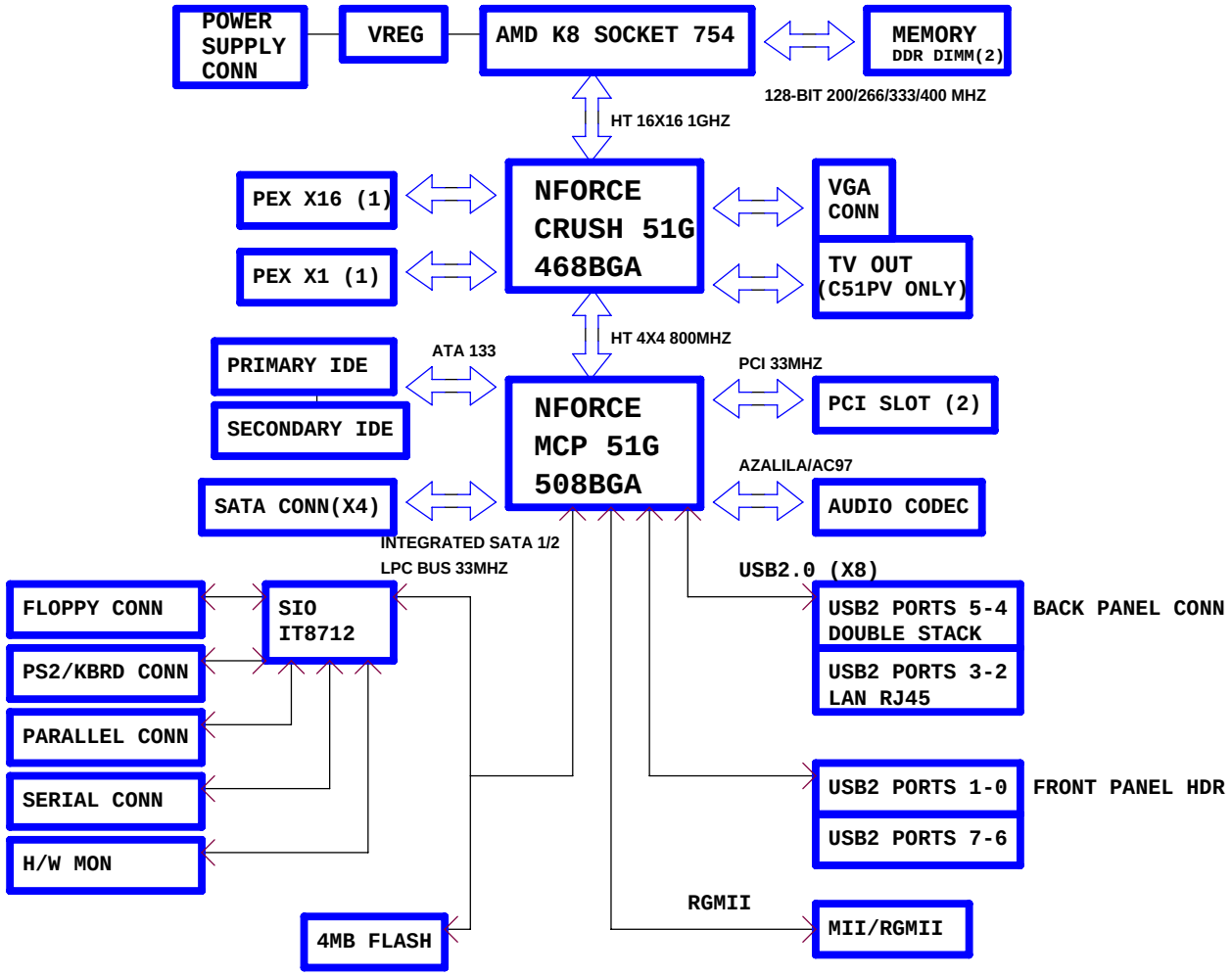

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Title: SYSTEM BLOCK		
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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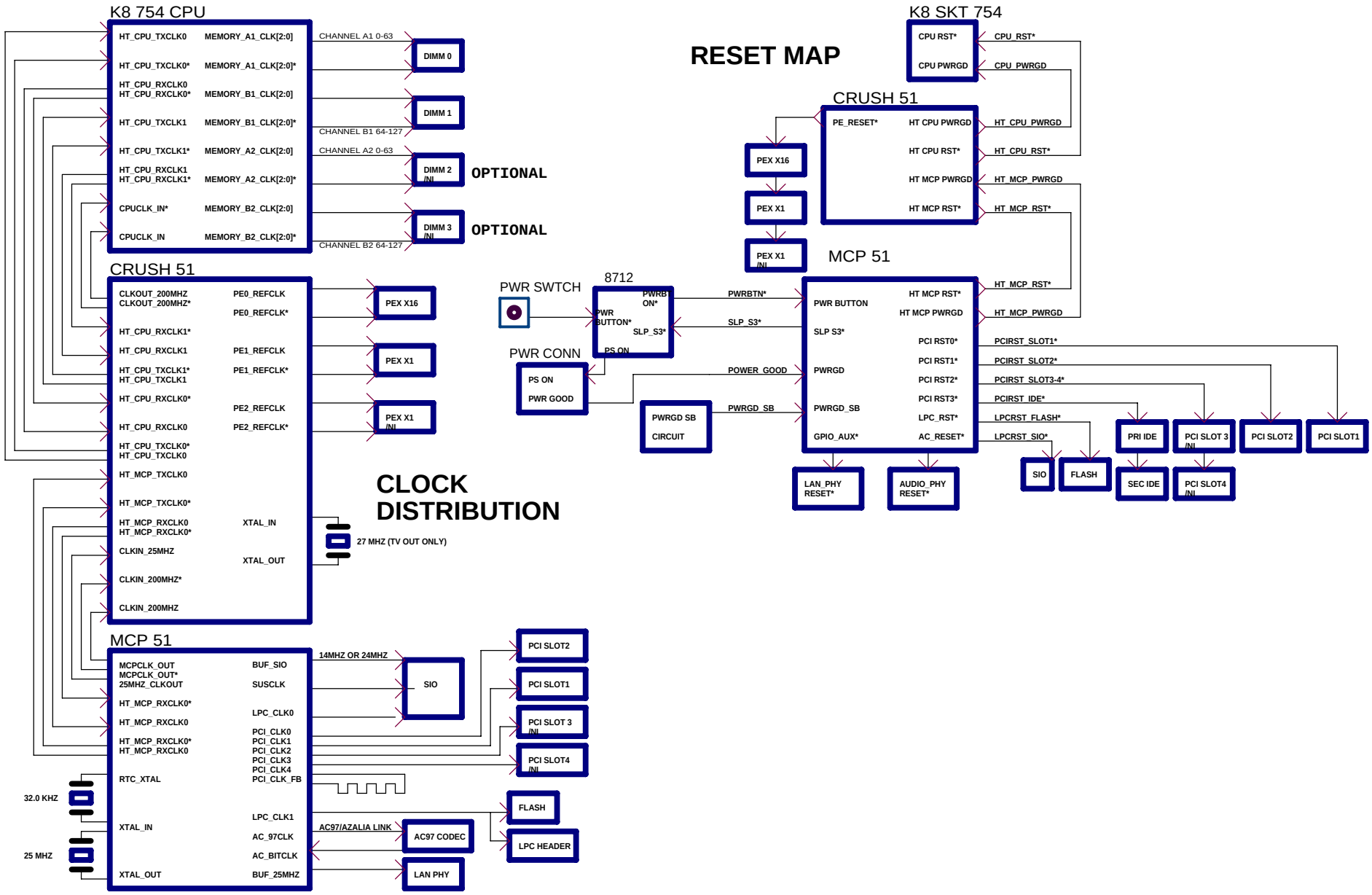

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Title	RESET&CLOCK MAP	
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CPU VID TABLE

VID [4..0]	VDD	VID [4..0]	VDD
0X00000	1.550V	0X10000	1.150V
0X00001	1.525V	0X10001	1.125V
0X00010	1.500V	0X10010	1.100V
0X00011	1.475V	0X10011	1.075V
0X00100	1.450V	0X10100	1.050V
0X00101	1.425V	0X10101	1.025V
0X00110	1.400V	0X10110	1.000V
0X00111	1.375V	0X10111	0.975V
0X01000	1.350V	0X11000	0.950V
0X01001	1.325V	0X11001	0.925V
0X01010	1.300V	0X11010	0.900V
0X01011	1.275V	0X11011	0.875V
0X01100	1.250V	0X11100	0.850V
0X01101	1.225V	0X11101	0.825V
0X01110	1.200V	0X11110	0.800V
0X01111	1.175V	0X11111	OFF

PCI INTERRUPT/IDSEL MAP

BACK PANEL SLOT	PCI BUS#	DEVICE#	IDSEL PIN	PCI SLOT INTA*	PCI SLOT INTB*	PCI SLOT INTC*	PCI SLOT INTD*	REQ/GNT
1	01	0X05	27	P_INTZ*	P_INTW*	P_INTX*	P_INTY*	5/5
2	01	0X06	26	P_INTY*	P_INTZ*	P_INTW*	P_INTX*	4/4
3	01	0X07	25	P_INTX*	P_INTY*	P_INTZ*	P_INTW*	3/3
4	01	0X08	24	P_INTW*	P_INTX*	P_INTY*	P_INTZ*	2/2
5	01	0X09	23	P_INTZ*	P_INTW*	P_INTX*	P_INTY*	1/1
6	01	0X0A	22	P_INTY*	P_INTZ*	P_INTW*	P_INTX*	0/0

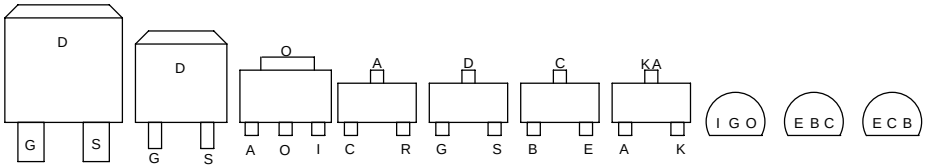
SMBUS ADDRESS MAP

DEVICE SLOT	SMBUS #	ADDRESS
DIMM 0	0	1010 000 = 0X50
DIMM 1	0	1010 001 = 0X51
DIMM 2	0	1010 010 = 0X52
DIMM 3	0	1010 011 = 0X53
SIO	1	0101 101 = 0X2D
PCI SLOT 1	1	ARP
PCI SLOT 2	1	ARP
PCI SLOT 3	1	ARP
PCI SLOT 4	1	ARP
DDC BUS	A	?
DDC BUS	B	?

PCI DEVICE MAP

DEVICE	PCI BUS#	FUNCTION	IDSEL PIN	DEVICE ID
MCP51	MCP51 LOGICAL PCI BUS 0	0X01-0X0F	- -	- -
MAC /MAC	0	XA	0	0X56/57
PCI-PCI BRIDGE	0	X9	0	0X005C
SATA1	0	X8	0	0X0055
SATA0	0	X8	0	0X0054
IDE	0	X6	0	0X0053
MODEM CODEC	0	X4	1	0X0058
AUDIO CODEC	0	X4	0	0X0059
USB 2.0	0	X2	1	0X005B
USB 1.1	0	X2	0	0X005A
SHAPE TRIM	0	X1	2	0X005F
LDT	0	X0	0	0X005E
SMBUS2	0	X1	1	0X0052
LEGACY SLAVE	0	?	?	0X00D3
LPC	0	X1	0	0X0050/51
LOGICAL PCI BUS	1	?	?	?
PCI SLOT 1				
PCI SLOT 2				
PCI SLOT 3				
PCI SLOT 4				
PCI SLOT 5				

22U/25DE	5*7 mm
100U/16DE	6.3*11 mm
220U/10DE	6.3*11 mm
470U/16DE	8*11 mm
1000U/10DE	8*14 mm
1500U/16DE	10*25 mm
3300U/25DE	10*25 mm



N51IGP-A7

1. CPU --- AMD Socket 754(3-Phase Power)
2. CHIPSET --- NF C51 IGP + NF MCP51
3. MEMORY --- DDR SDRAM X 2 (Max. 2GB)
4. SLOTS --- PEX X16 (x1),PEX X1 (x1),PCI (x2)
5. CODEC --- Realtek ALC655 5.1 Channel Audio
6. LAN PHY --- RTL8201
7. LPC/SIO --- IT8712F
8. SATA -- INTEGRATED
9. PCB Size --- 24.4cmx24.4cm, 4-Layer

CHANGE LIST

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Title: SPEC&CHANGE LIST		
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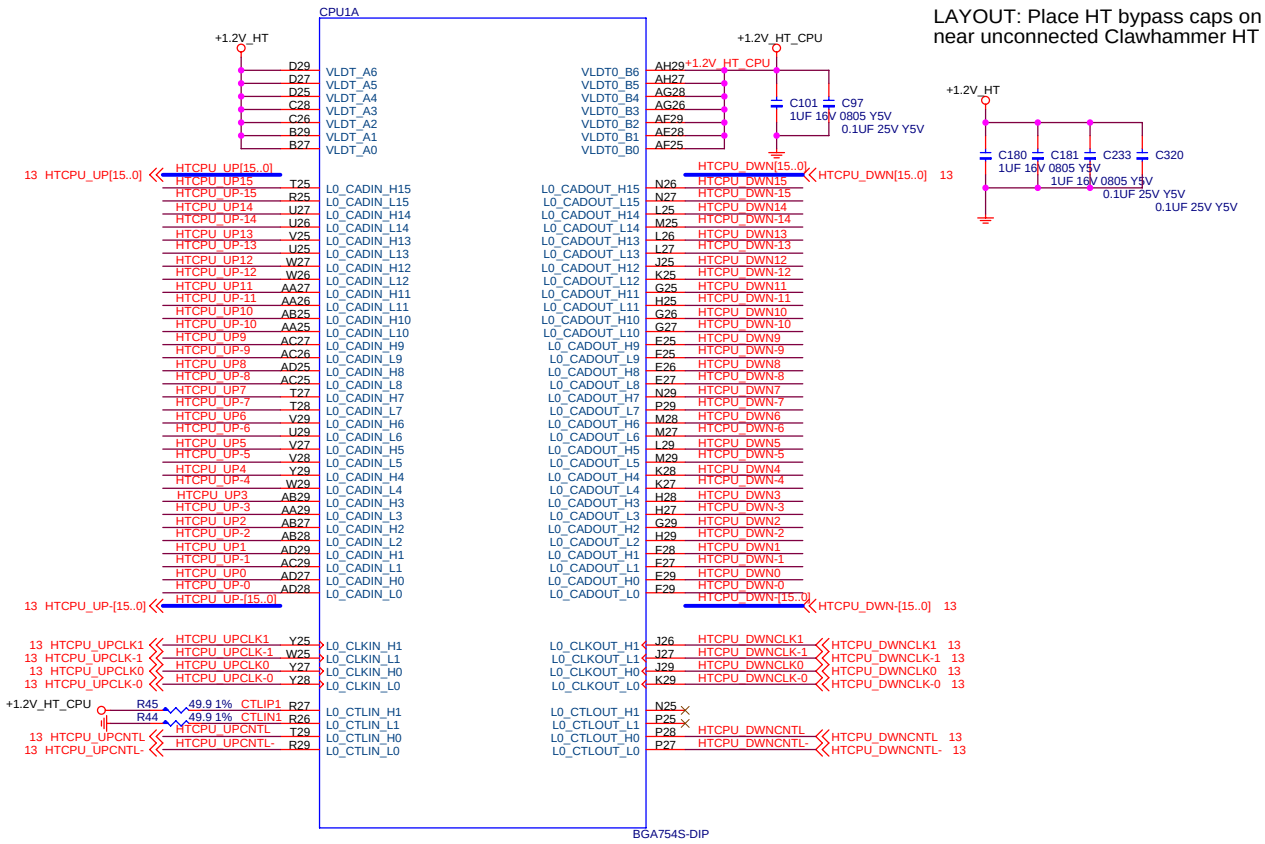

LAYOUT: Place HT bypass caps on topside near unconnected Clawhammer HT Link

Title	K8 HT		
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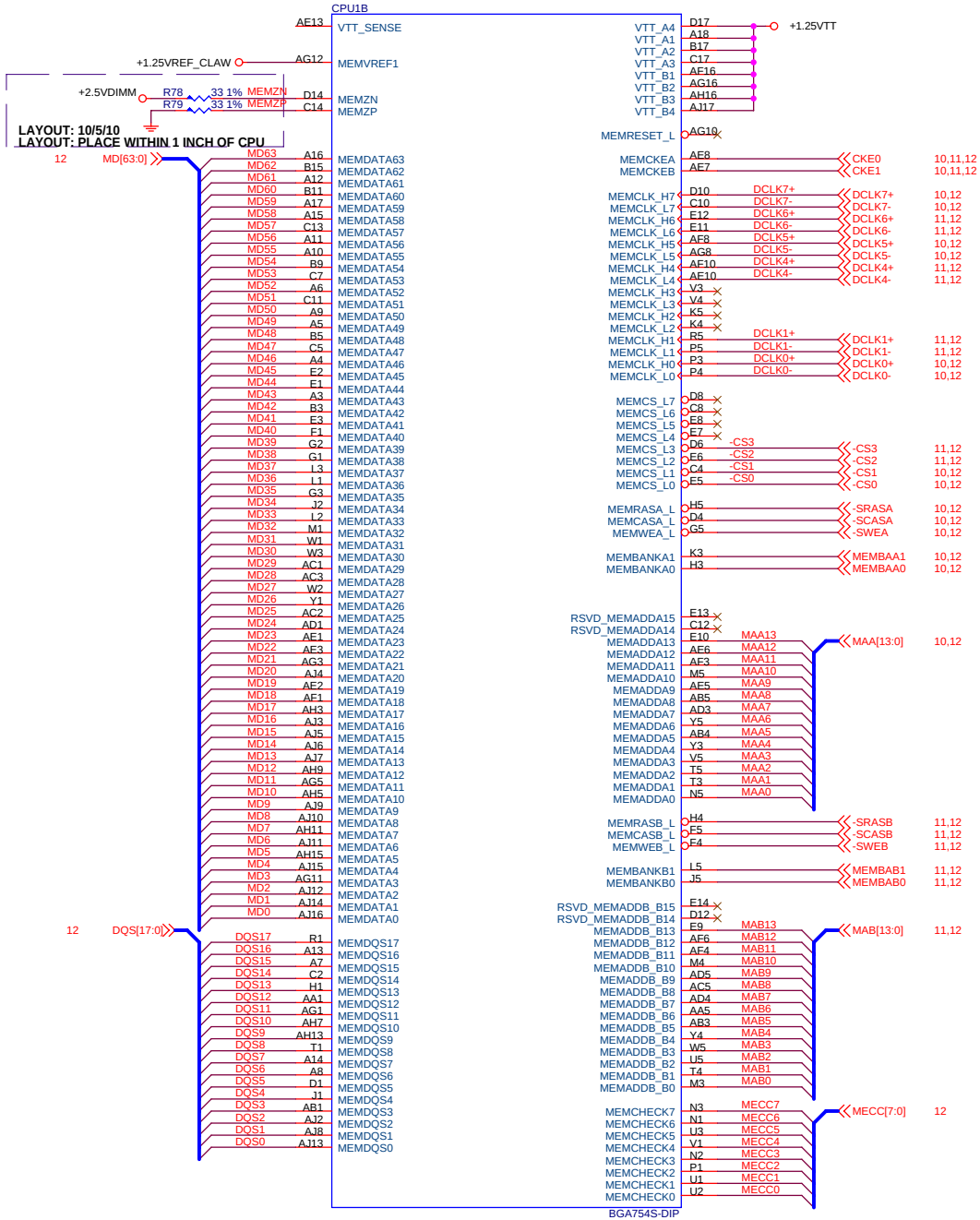
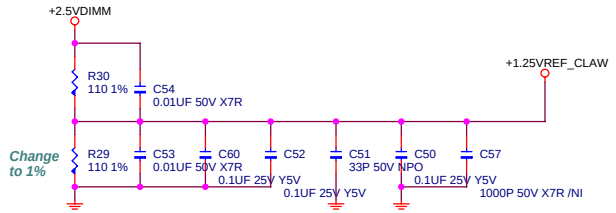


Clawhammer DDR Interface

+1.25VREF_CLAW



LAYOUT: Place on the bottom of the board.

LAYOUT: Place 39pF EMI cap near output

LAYOUT: Locate caps close to socket.

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Title	K8 CNTL/STRAPS	
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LAYOUT: Route +2.5VDDA approx. 50mil wide
and 500mils long.(Reference to ground)

+3.3V_STBY

U2
VDD SMB_CL
D+ SMB_DA
D- ALERT#
T_CRIT_A# VSS
LM90 MSOP8 /NI

C69 2200P 50V X7R /NI

SMB_SCL SMB_SCL 18,20,22,37
SMB_SDA SMB_SDA 18,20,22,37
SMB_ALLERT SMB_ALLERT- 33

R36 0 /NI
R276 680
CHIP_THERM- 18,33
CPU_THERMTRIP- 16
+2.5VDDA

R42 0
R40 0
CPU_THERMDA 33
CPU_THERMDC 33,34

ROUTING : 10/10/10

CPU1C

+2.5VDDA
C84 47P 50V NPO /NI
AH25 VDDA1
AJ25 VDDA2

13 HTCPU_RST- HTCPU_RST- AF20 RESET_L
13 HTCPU_PWRGD HTCPU_PWRGD AE18 PWROK
13 HTCPU_STOP- HTCPU_STOP- AJ27 LDTSTOP_L

PLACE WITHIN 1 INCH
10/5/10
+1.2V_HT_CPU
R49 44.2 1% LVREF1 AF27 L0_REF1
R48 44.2 1% LVREF0 AE26 L0_REF0

31 CPU_CORE_FB CPU_CORE_FB A23 COREFB_H
31 CPU_CORE_FB- CPU_CORE_FB- A24 COREFB_L
B23 CORE_SENSE

ROUTE AS DIFF PAIR
10/5/10 10

AE12 VDDIOFB_H
AF12 VDDIOFB_L
32 VDDIO_SENSE SNS_+2.5VDIMM AE11 VDDIO_SENSE

13 CPU_CLK C75 3900P 50V X7R CPUCK+ AJ21 CLKIN_H
R50 169 1% CPUCK- AH21 CLKIN_L
13 CPU_CLK- C83 3900P 50V X7R

ROUTE AS DIF 20/5/5/20
LAYOUT: PLACE 169 OHM WITHIN 0.5INCH OF CPU

BPSCLK+ AJ23 NC
BPSCLK- AH23 NC

AE24 NC
AF24 NC

+1.25VTT C16 AG15 VTT_A5
VTT_B5

DBRDY AH17 DBRDY

C15 NC

TMS E20 TMS
TCK E17 TCK
-TRST B21 TRST_L
TDI A21 TDI

SINCHN C18 NC
-BRN A19 NC

A28 KEY1
AJ28 KEY0

CLAW_ANALOG3 AE23 NC
CLAW_ANALOG2 AF23 NC
CLAW_ANALOG1 AF22 NC
CLAW_ANALOG0 AE21 NC

C1 FREE29
J3 FREE31
R3 FREE33
AA2 FREE35
D3 FREE1
AG2 FREE37
B18 FREE4
AH1 FREE38
AF21 FREE41
C20 FREE7
AG4 FREE11
C6 FREE12
AG6 FREE13
AE9 FREE14
AG9 FREE40

THERMTRIP_L A20
THERMDA A26
THERMDC A27

VID4 AG13 VID4 K8_VID4 37
VID3 AF14 VID3 K8_VID3 37
VID2 AG14 VID2 K8_VID2 37
VID1 AF15 VID1 K8_VID1 37
VID0 AE15 VID0 K8_VID0 37

NC AG18
NC AH18
NC AG17 BP1
NC AJ18 BP0

80.6 1%-->82 1%
G_FBCLKOUT_H AH19 FBCLKOUT+ R53 80.6 1%
G_FBCLKOUT_L AJ19 FBCLKOUT-

LAYOUT: Route differentially
with 20/8/5/8/20
LAYOUT: PLACE WITHIN 0.5 INCH OF CPU

DBREQ_L AE19 -DBREQ

NC D20 SCANCLK1
NC C21 SCANCLK2
NC D18 SCANEN
NC C19 SCANSHENB
NC B19 SCANSHENA

TDO A22 TDO
NC AF18 R31 0 /NI +2.5VDIMM

RSVD_SCL D22
RSVD_SDA C22

FREE26 B13
FREE28 B7
FREE30 C3
FREE32 K1
FREE34 R2
FREE36 AA3
FREE10 F3
FREE18 C23
FREE19 AG7
FREE42 AE22
FREE24 C24
FREE25 A25
FREE27 C9

BGA754S-DIP

RN37
SCANSHENA
SCANSHENB
SCANCLK1
SCANCLK2
680 8P4R

RN9
SCANEN
BP1
BP0
680 8P4R

+2.5VDIMM
BPSCLK+ R51 820
BPSCLK- R52 820

LVREF0 C77 1000P 50V X7R
LVREF1 C78 1000P 50V X7R

+2.5VDDA
C68 0.01UF 50V X7R /NI

+2.5VDDA
+2.5VDIMM
RN38
680 8P4R
TDI
-TRST
TMS
TDO

Modify circuit
+2.5VDDA
SINCHN R76 680
-BRN R75 680

RN11
680 8P4R
+2.5VDDA
HTCPU_PWRGD
-DBREQ
DBRDY
TCK

RN12
HTCPU_STOP-
HTCPU_RST-
+2.5VDDA
680 8P4R

CLAW_ANALOG3
CLAW_ANALOG2
CLAW_ANALOG1
CLAW_ANALOG0
RN15
680 8P4R

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Title
K8 DDR MEM 0-63

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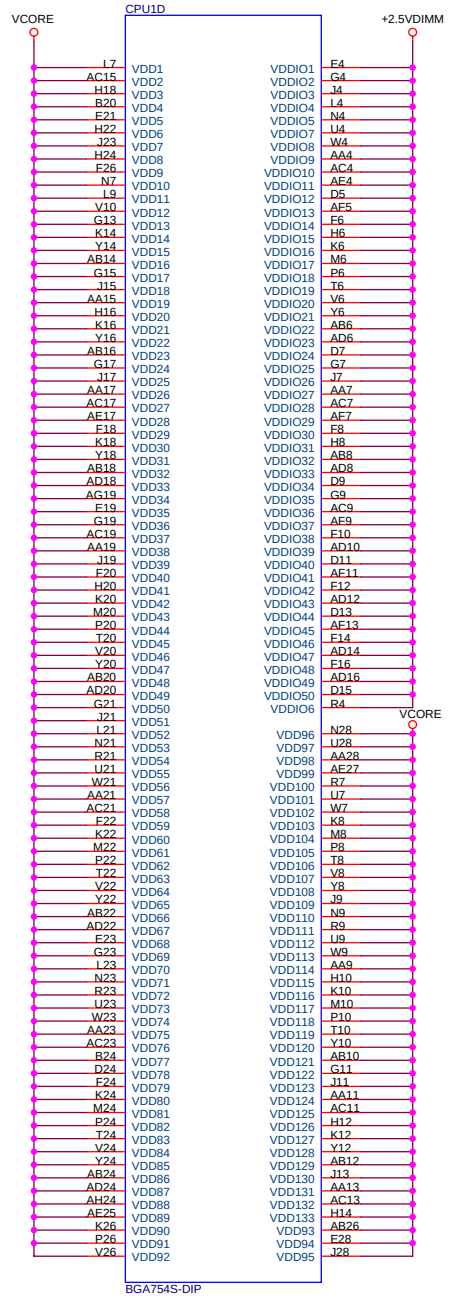
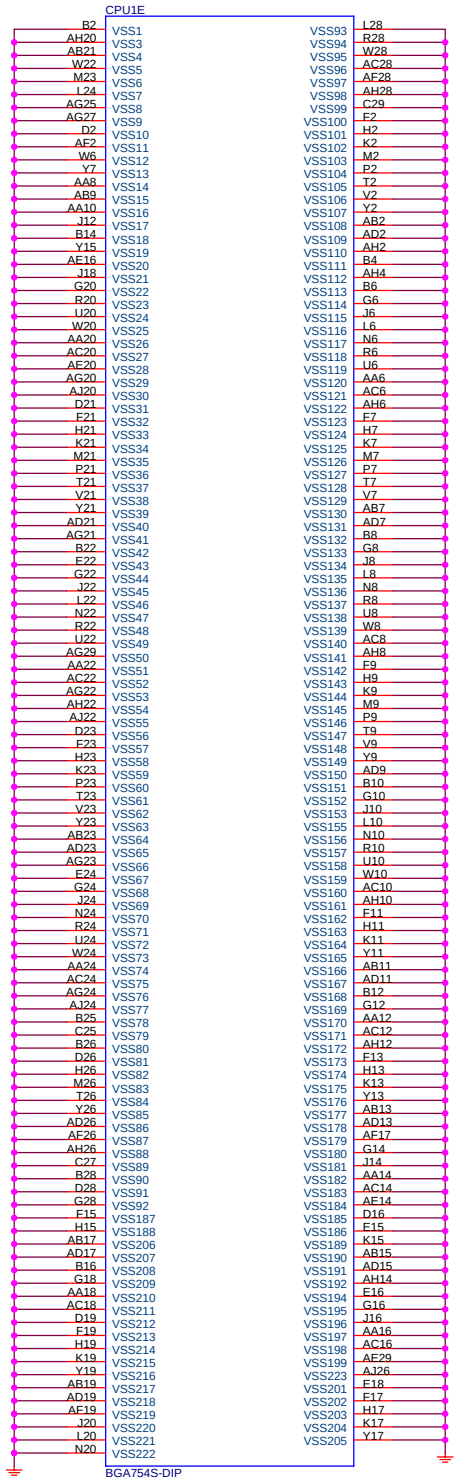
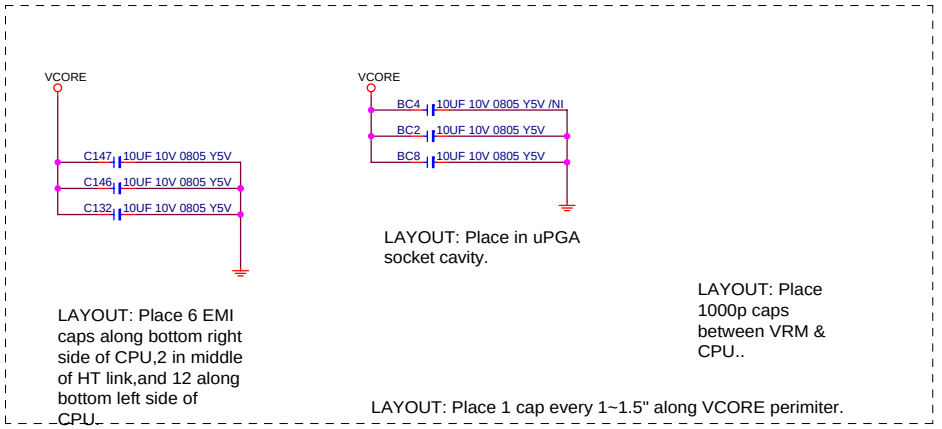
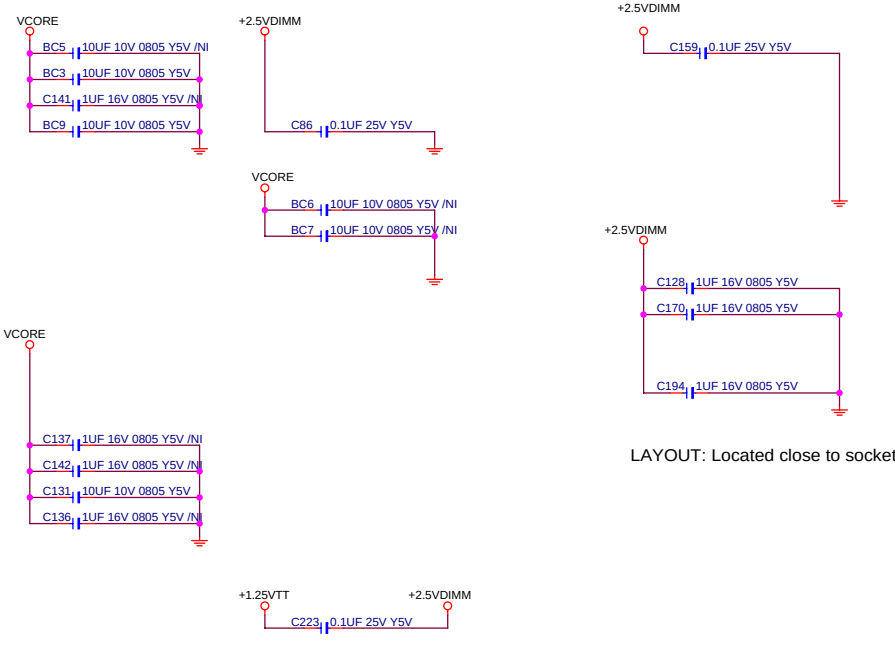
Clawhammer Power and Ground Connections









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Title	K8 DDR MEM 64-127	
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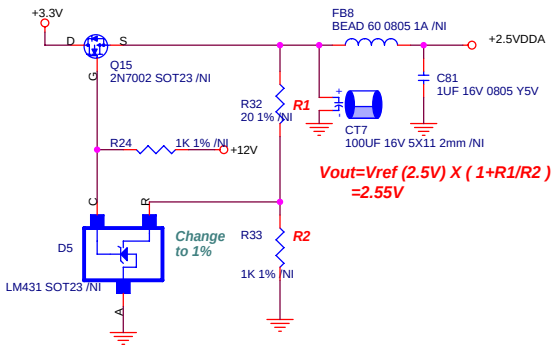
2.5V/150mA



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Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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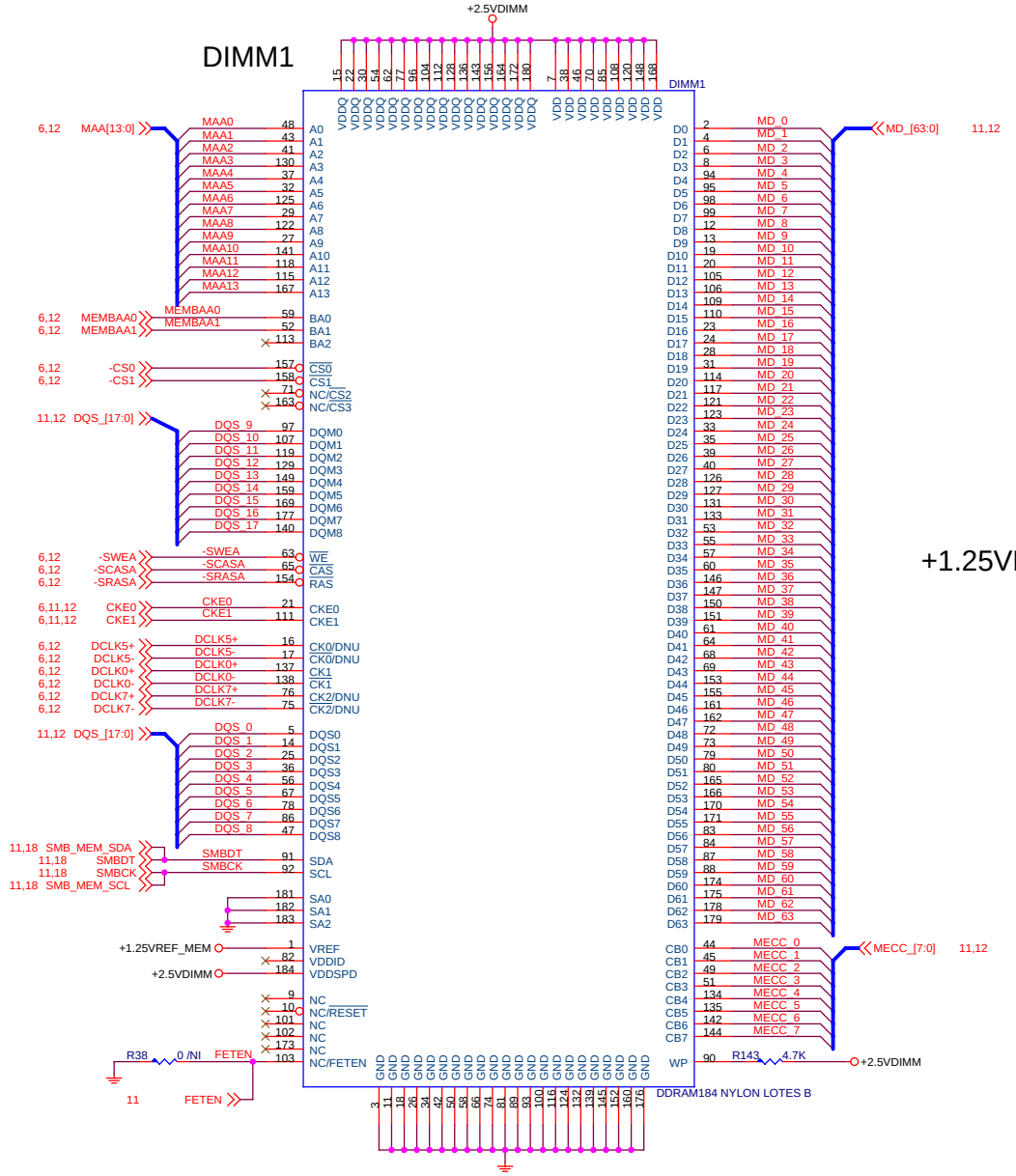

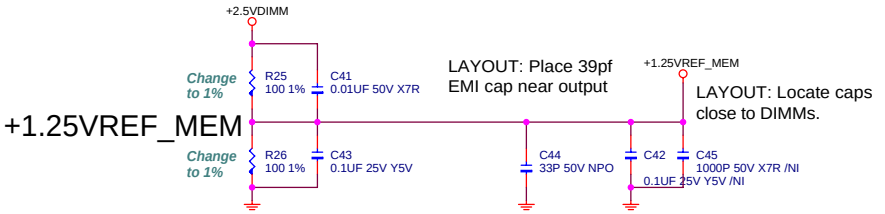

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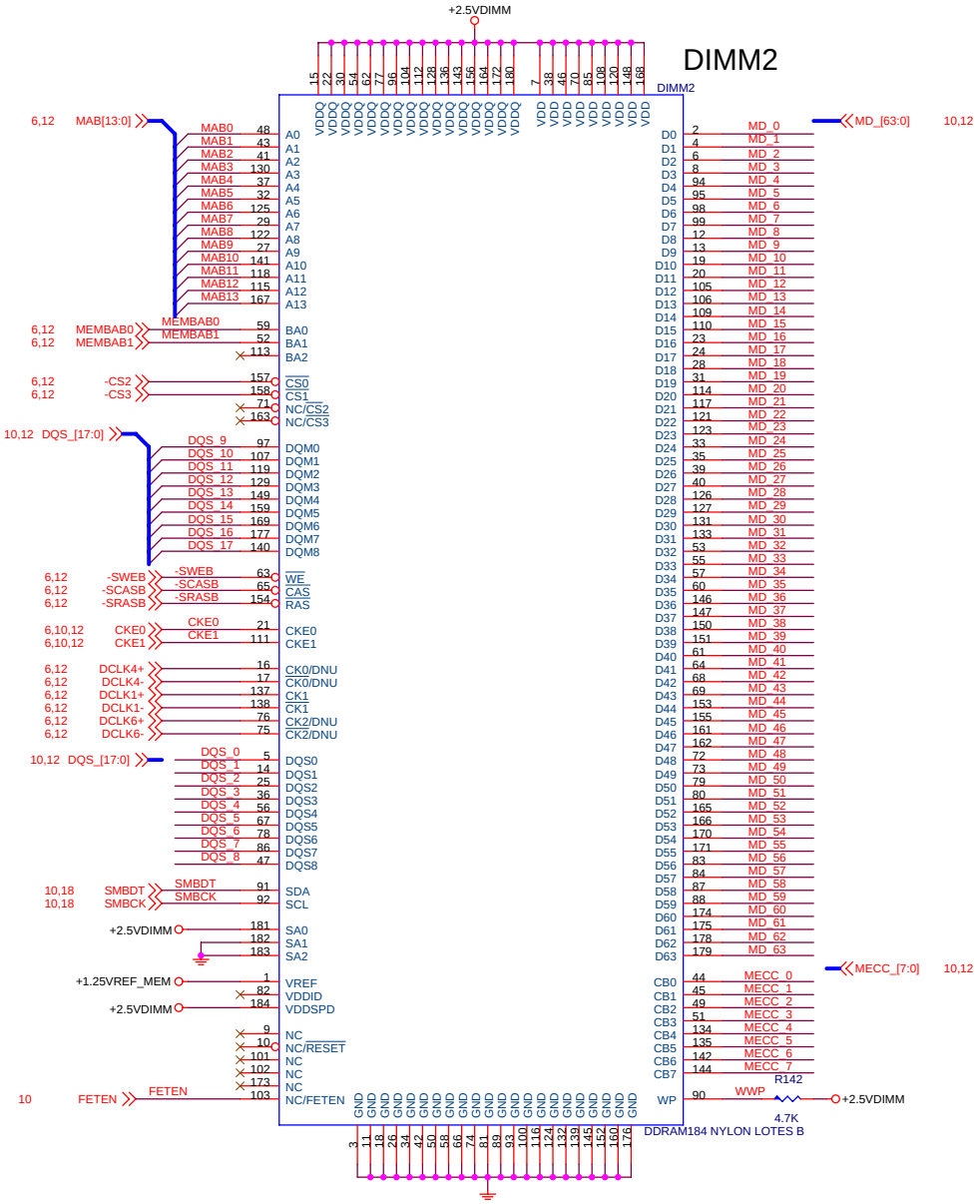
Title	DDR DIMM1	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
Date: Wednesday, April 12, 2006	Sheet 10 of 39	



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Title	DDR DIMM2	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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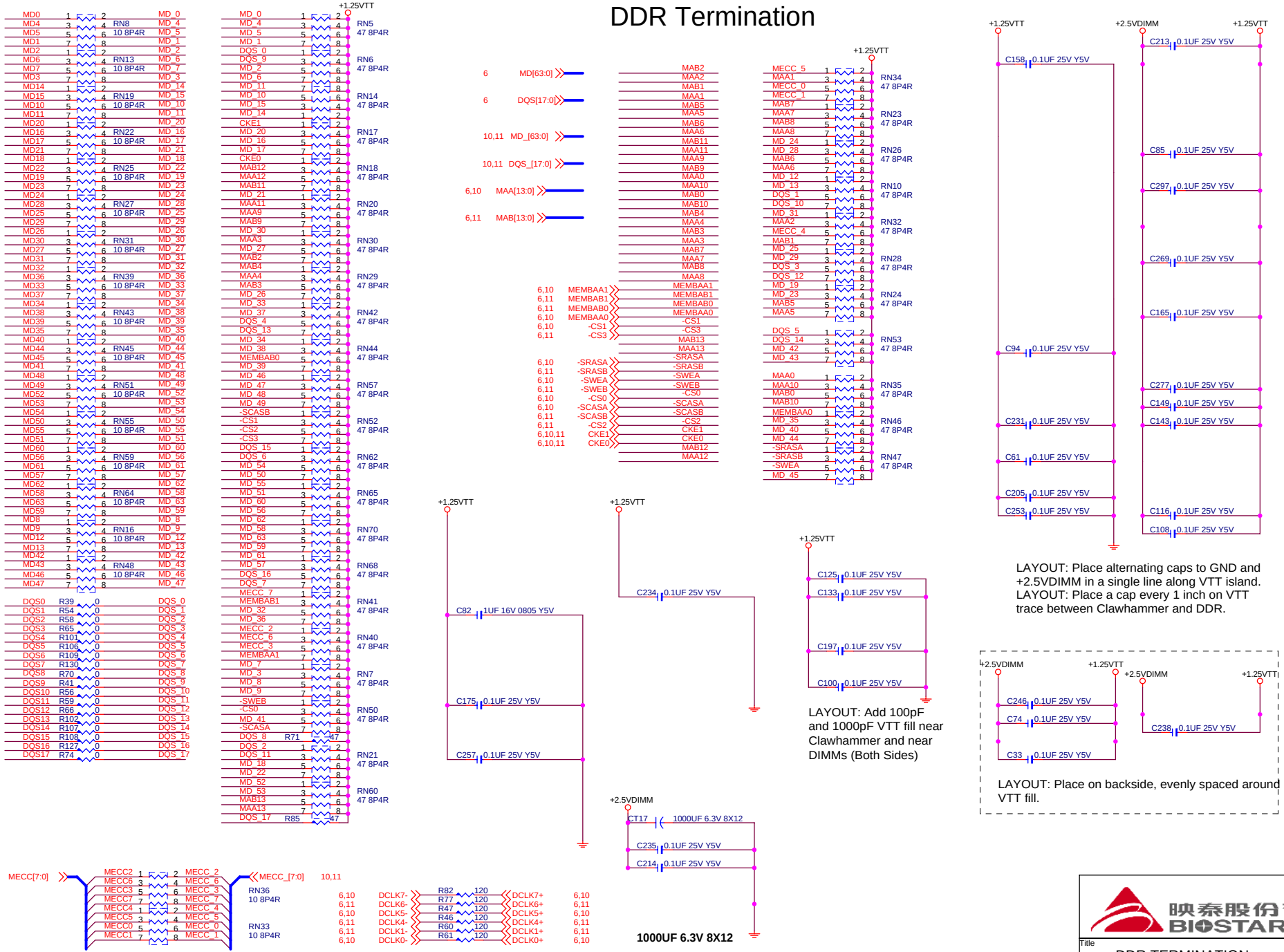
DDR Termination



Title	DDR TERMINATION
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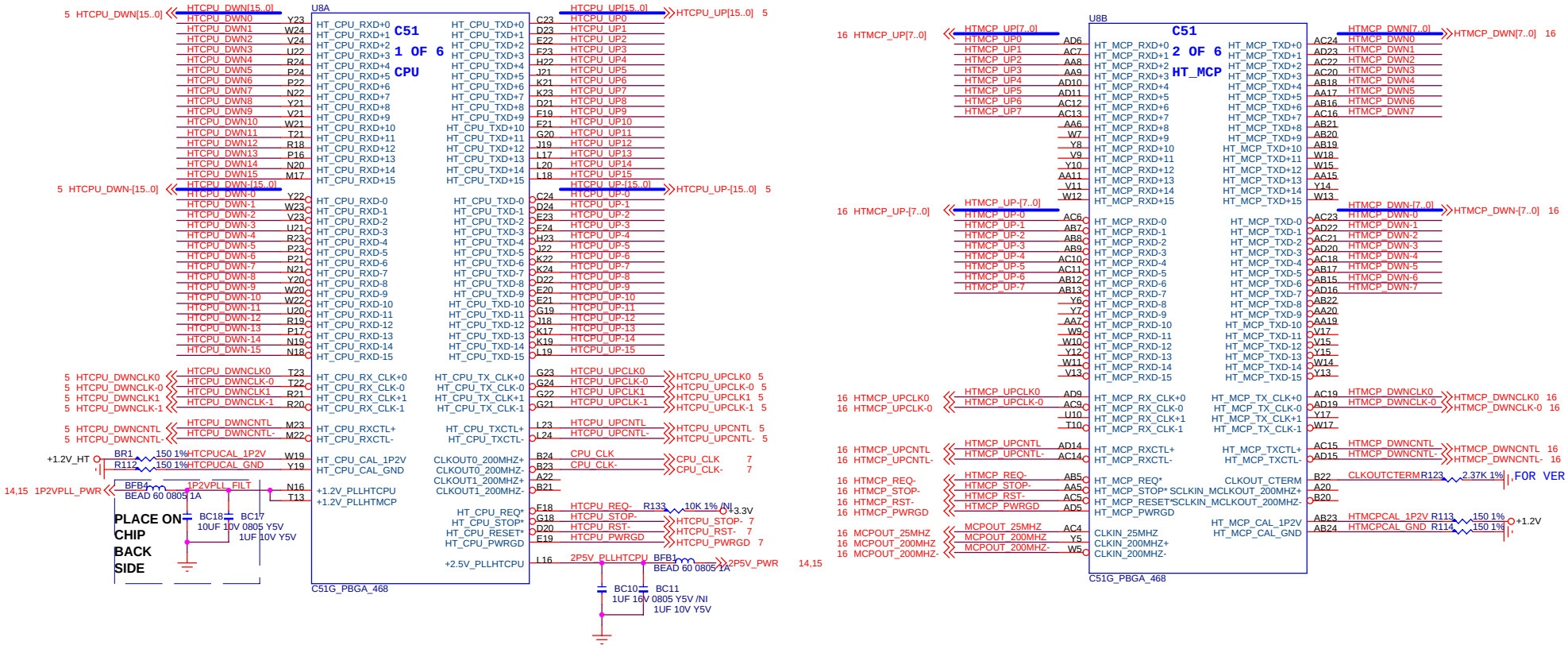
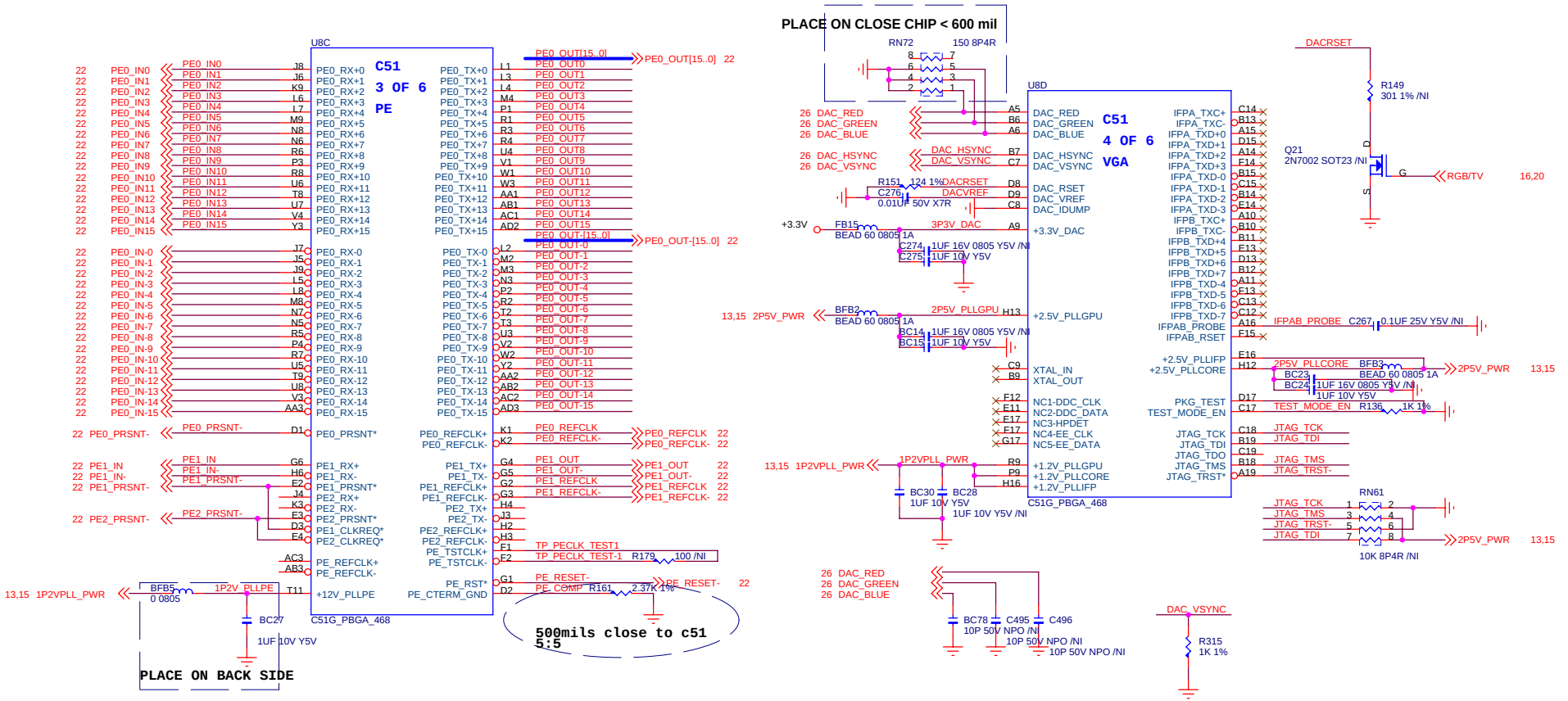
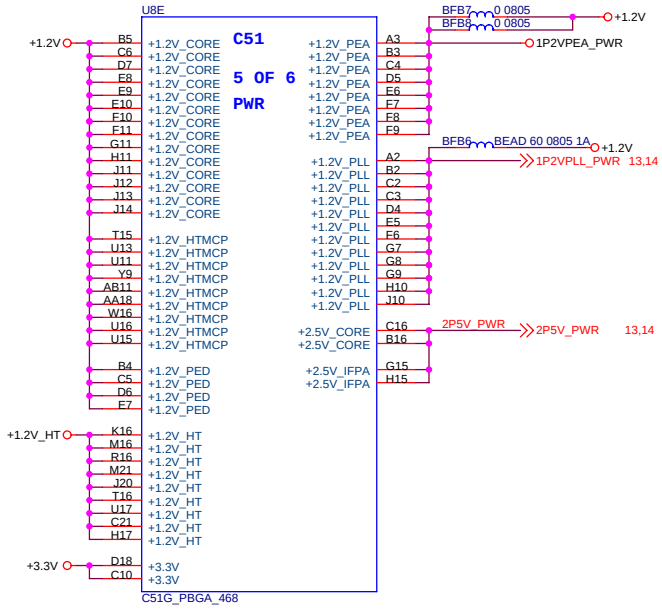
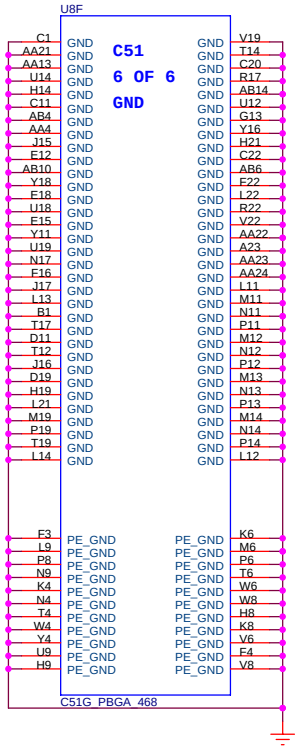


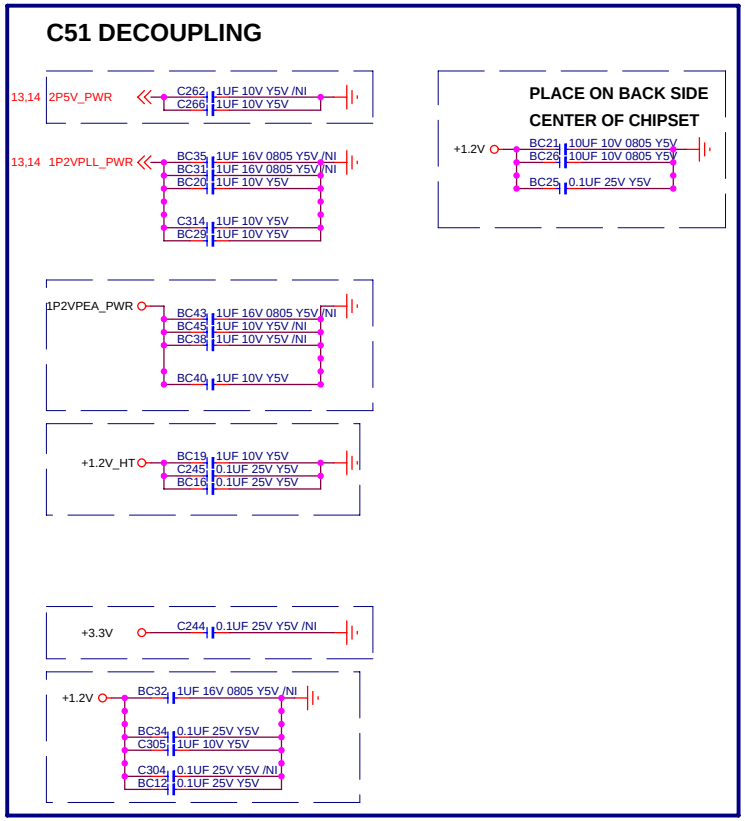
Title	C51 (1&2) OF 6		
Size: Custom	Document Number: CRU51-M7		Rev: 1.3
Date: Wednesday, April 12, 2006	Sheet 13 of 39		

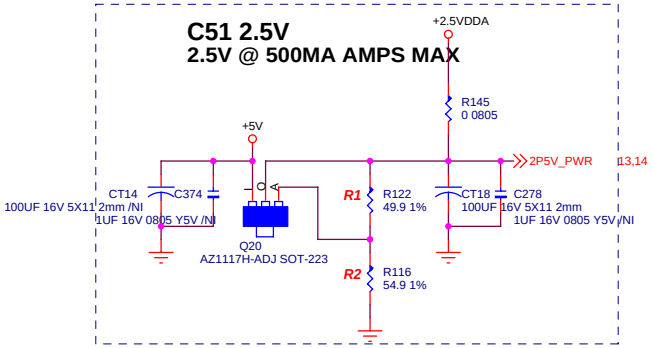


Title	C51 (3&4) OF 6		
Size	Document Number	CRU51-M7	Rev 1.3
Custom			
Date:	Wednesday, April 12, 2006	Sheet 14 of 39	









Vout=Vref (1.25V) X (1+R2/R1)
=2.5V

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Title	C51 (5&6) OF 6	
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U12A
MCP51
1 OF 7
HT
MCP51G_PBGA_508
U12B
MCP51
2 OF 7
PCI
MCP51G_PBGA_508
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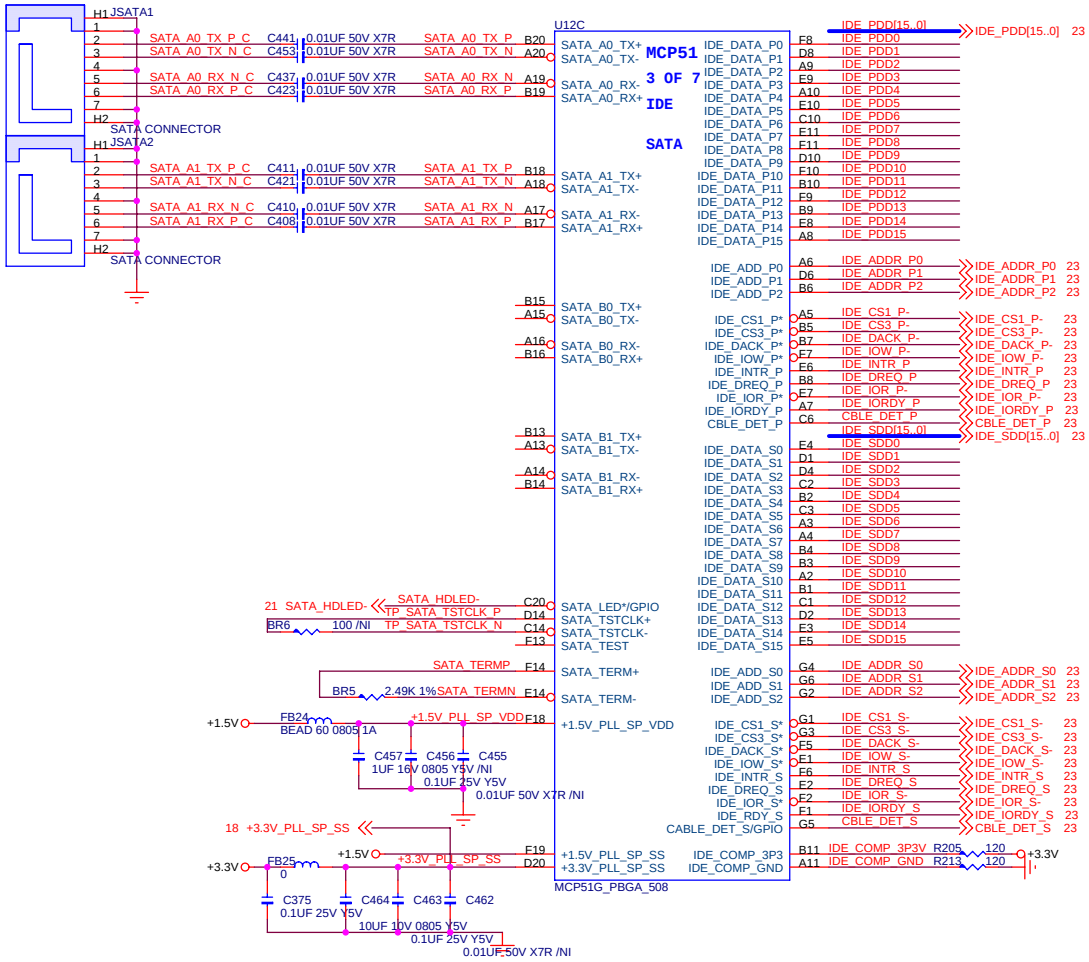

Title	MCP51 (3) OF 7	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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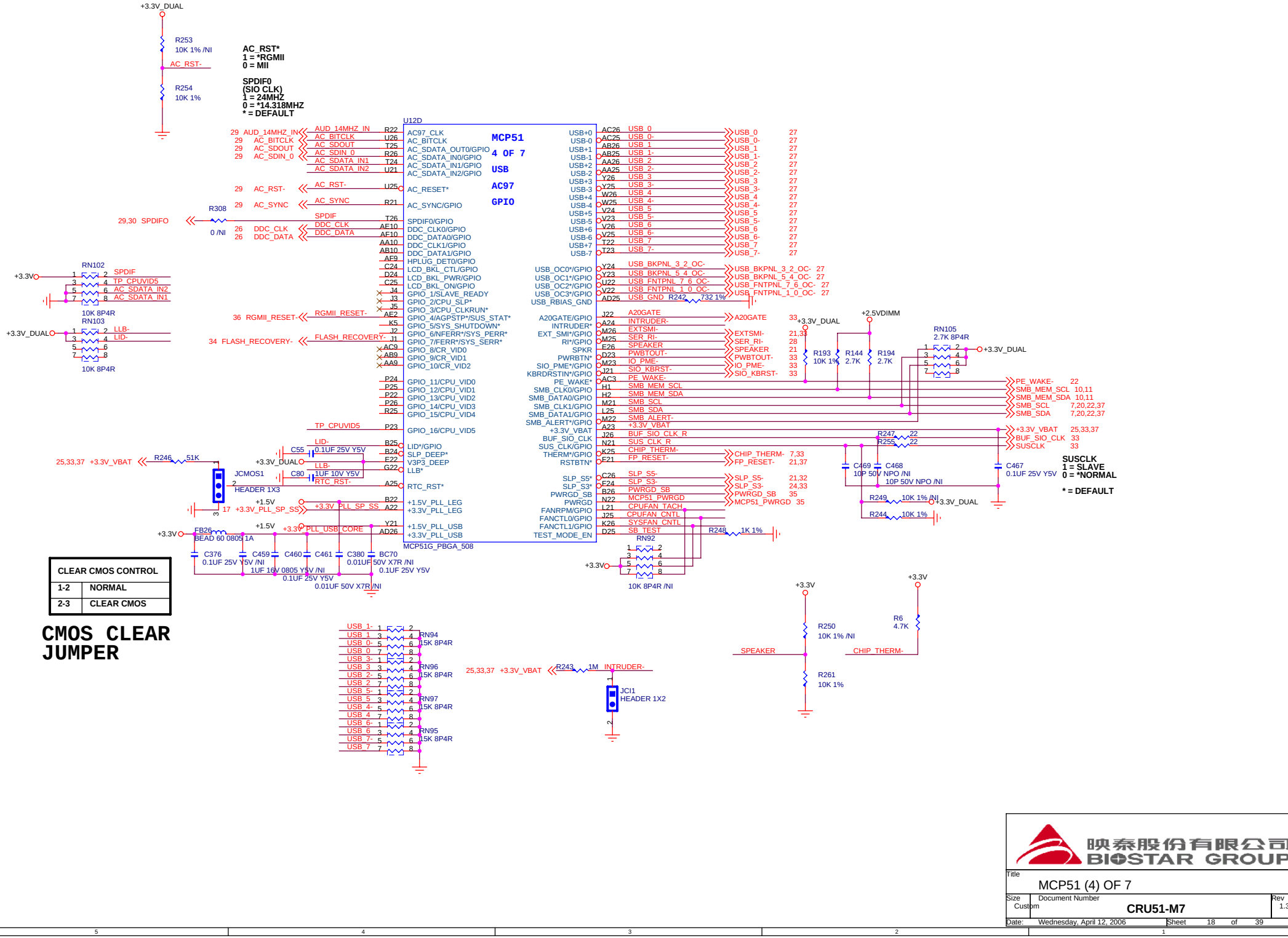

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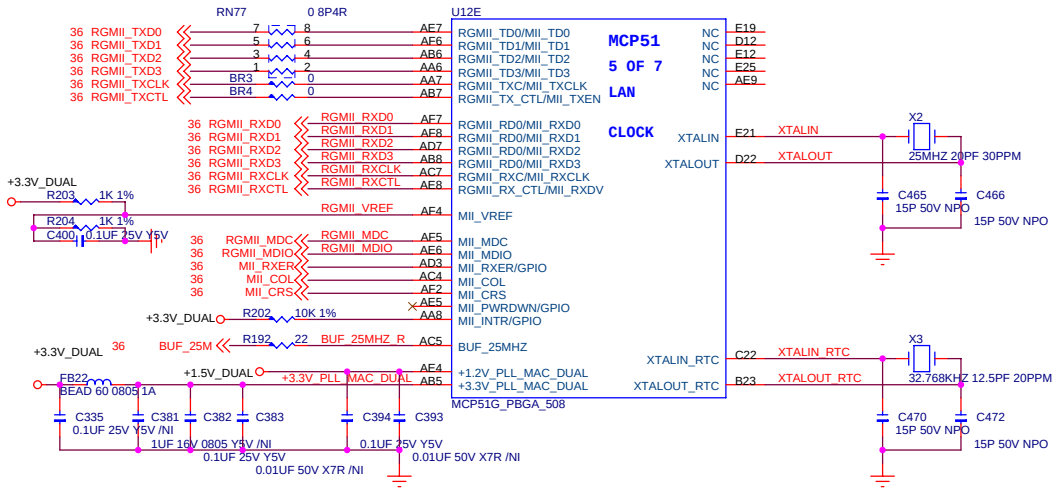
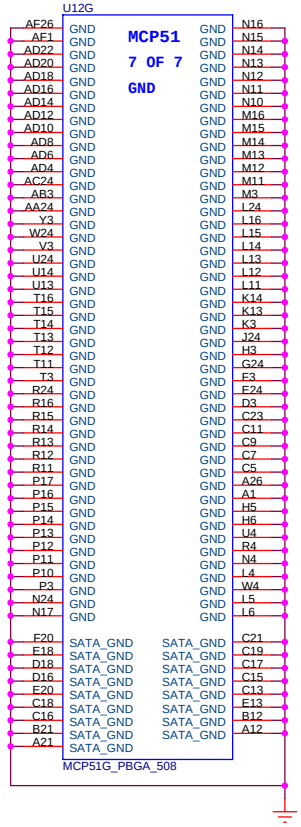
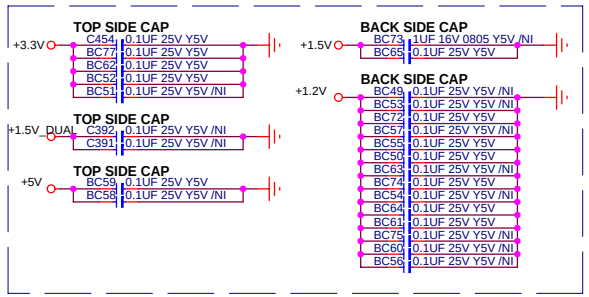
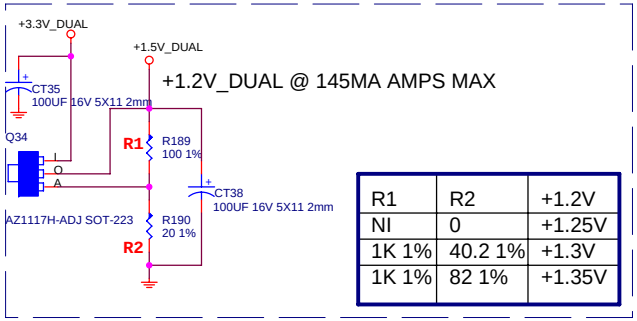


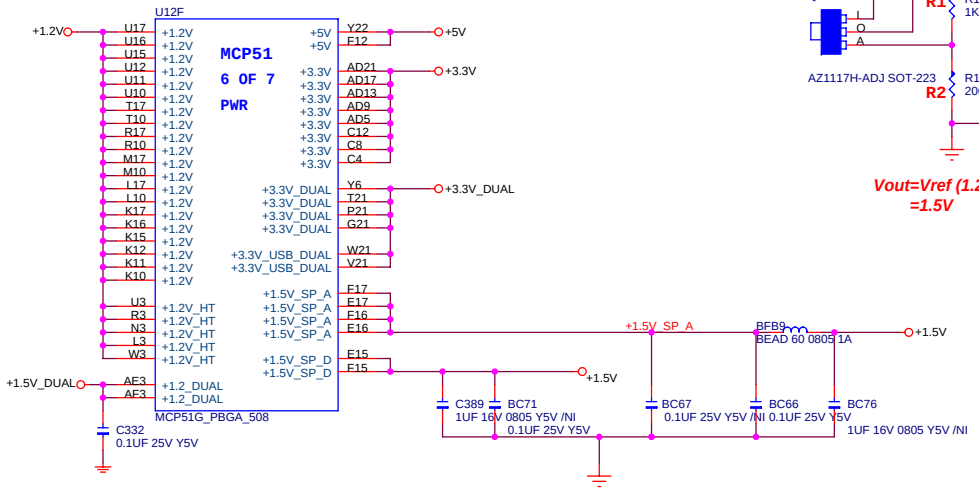


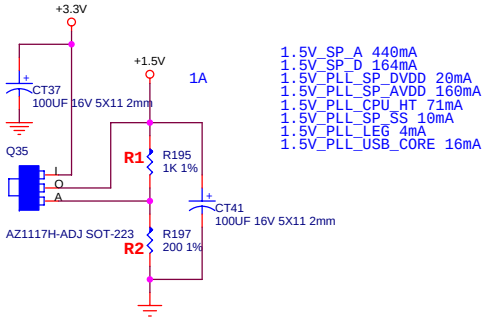




R1	R2	+1.2V
NI	0	+1.25V
1K 1%	40.2 1%	+1.3V
1K 1%	82 1%	+1.35V

Vout=Vref (1.25V) X (1+R2/R1)
=1.25V





Vout=Vref (1.25V) X (1+R2/R1)
=1.5V

```
1.5V_SP_A 440mA
1.5V_SP_D 164mA
1.5V_PLL_SP_DVDD 20mA
1.5V_PLL_SP_AVDD 160mA
1.5V_PLL_CPU_HT 71mA
1.5V_PLL_SP_SS 10mA
1.5V_PLL_LEG 4mA
1.5V_PLL_USB_CORE 16mA
```

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Title	MCP51 (5&6&7) OF 7	
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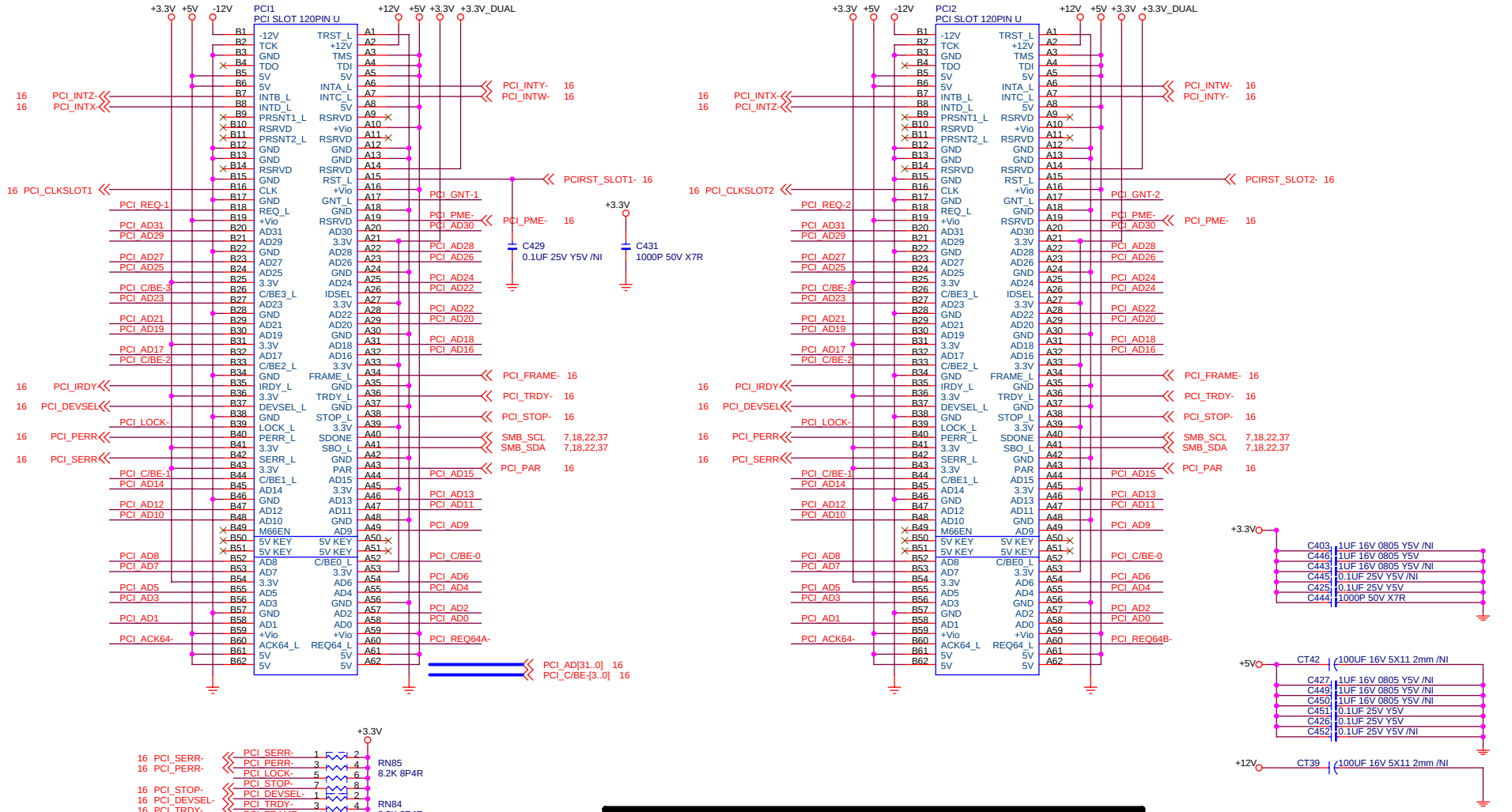

	PCI SLOT 1	PCI SLOT 2
PCICLK	PCI_CLKSLOT1	PCI_CLKSLOT2
INTR	PCI_INTY*	PCI_INTW*
IDSEL	PCI_AD22	PCI_AD24
GNT/REQ	PCI_GNT*1/REQ*1	PCI_GNT*2/REQ*2

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Title	PCI SLOT 1&2	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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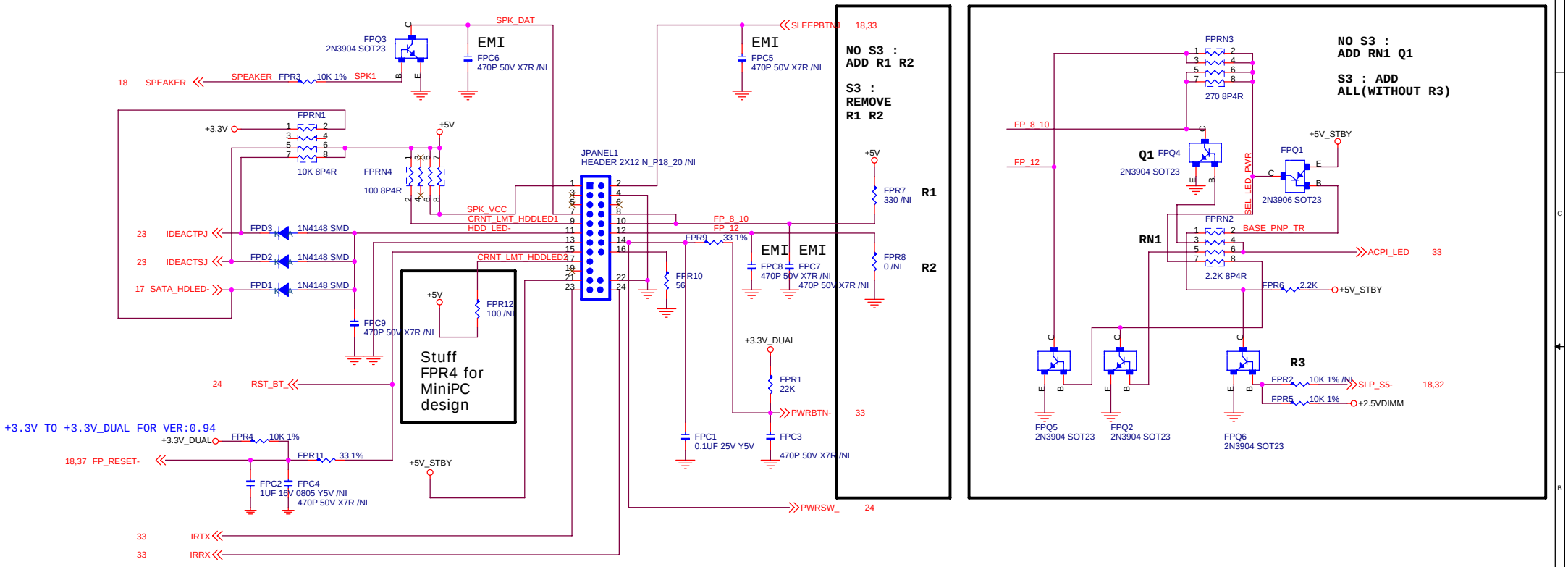

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Title	FRONT PANEL HEADER	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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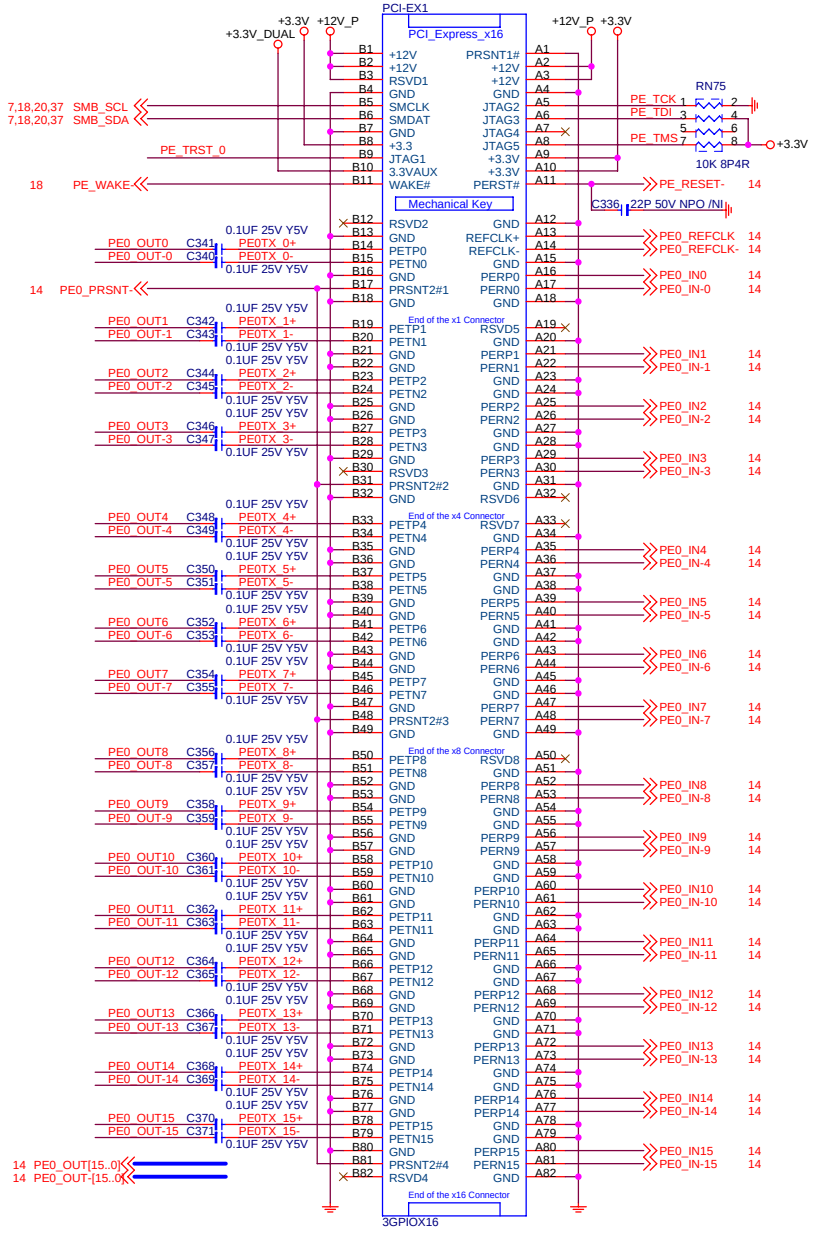
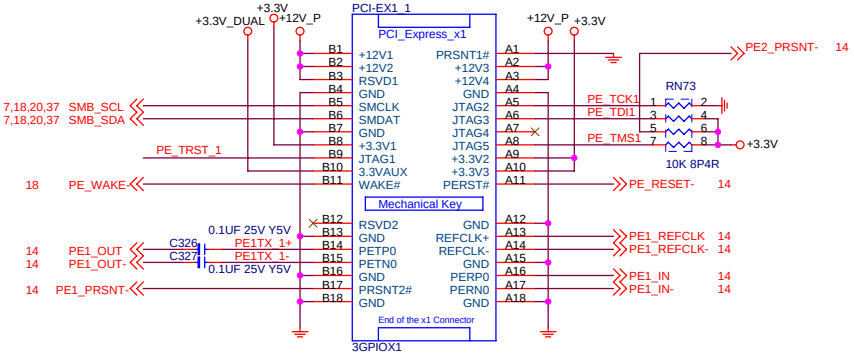
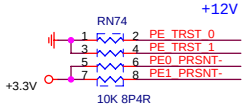
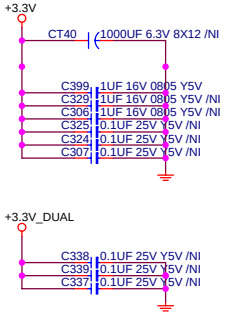
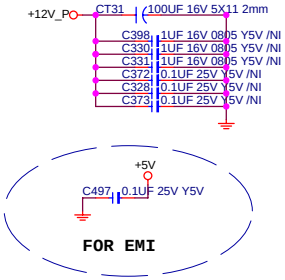




+12V Change to +12V_P







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Title	PCIEXPRESS	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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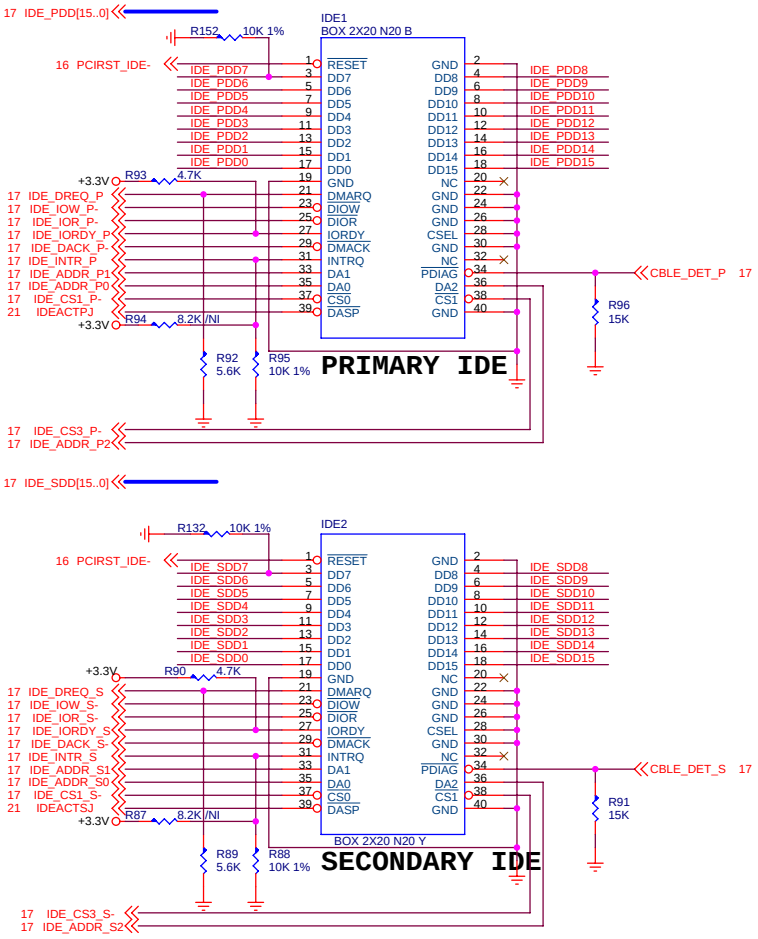

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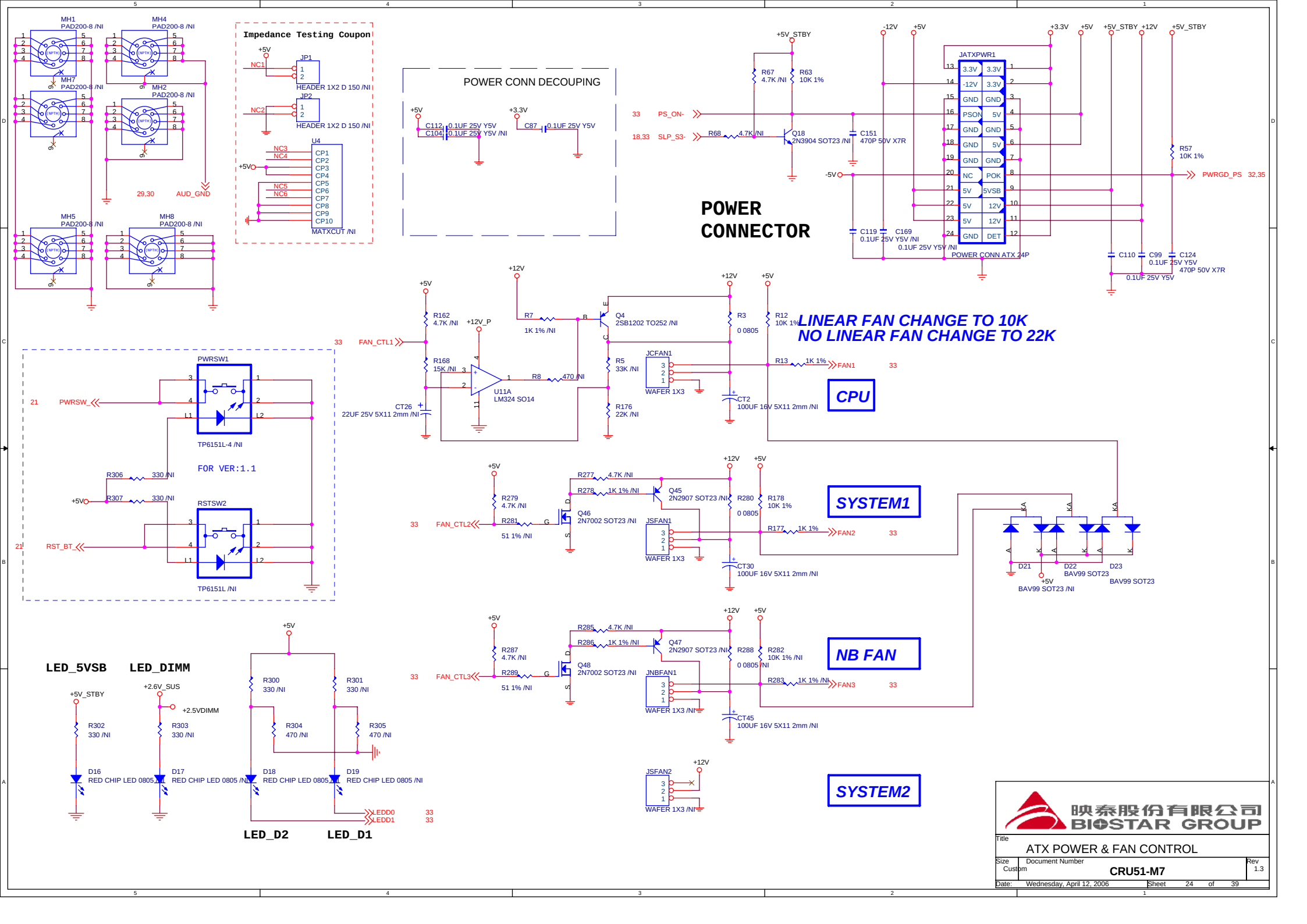
Title	IDE CONNECTORS	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
Date: Wednesday, April 12, 2006	Sheet 23 of 39	


MH1 PAD200-8 /NI
MH4 PAD200-8 /NI
MH7 PAD200-8 /NI
MH2 PAD200-8 /NI
MH5 PAD200-8 /NI
MH8 PAD200-8 /NI
29,30
AUD_GND
Impedance Testing Coupon
JP1
HEADER 1X2 D 150 /NI
JP2
HEADER 1X2 D 150 /NI
U4
MATXCUT /NI
POWER CONN DECOUPING
C112 0.1UF 25V Y5V
C104 0.1UF 25V Y5V /NI
C87 0.1UF 25V Y5V
POWER CONNECTOR
R67 4.7K /NI
R63 10K 1%
PS_ON-
SLP_S3-
R68 4.7K /NI
Q18 2N3904 SOT23 /NI
C151 470P 50V X7R
JATXPWR1
POWER CONN ATX 24P
C119 0.1UF 25V Y5V /NI
C169 0.1UF 25V Y5V /NI
R57 10K 1%
PWRGD_PS 32,35
C110 C99 C124
0.1UF 25V Y5V
470P 50V X7R
PWRSW1
TP6151L-4 /NI
FOR VER:1.1
R306 330 /NI
R307 330 /NI
RSTSW2
TP6151L /NI
R162 4.7K /NI
R168 15K /NI
FAN_CTL1
R7 1K 1% /NI
Q4 2SB1202 TO252 /NI
U11A LM324 SO14
R8 470 /NI
R5 33K /NI
R176 22K /NI
CT26 22UF 25V 5X11 2mm /NI
JCFAN1
WAFER 1X3
R3 0 0805
R12 10K 1%
R13 1K 1%
FAN1
CT2 100UF 16V 5X11 2mm /NI
LINEAR FAN CHANGE TO 10K
NO LINEAR FAN CHANGE TO 22K
CPU
R279 4.7K /NI
R281 51 1% /NI
FAN_CTL2
R277 4.7K /NI
R278 1K 1% /NI
Q45 2N2907 SOT23 /NI
Q46 2N7002 SOT23 /NI
JSFAN1
R280 0 0805
R178 10K 1%
R177 1K 1%
FAN2
CT30 100UF 16V 5X11 2mm /NI
SYSTEM1
D21
D22 BAV99 SOT23
D23 BAV99 SOT23
BAV99 SOT23 /NI
R287 4.7K /NI
R289 51 1% /NI
FAN_CTL3
R285 4.7K /NI
R286 1K 1% /NI
Q47 2N2907 SOT23 /NI
Q48 2N7002 SOT23 /NI
JNBFAN1
R288 0 0805 /NI
R282 10K 1% /NI
R283 1K 1% /NI
FAN3
CT45 100UF 16V 5X11 2mm /NI
NB FAN
JSFAN2
SYSTEM2
LED_5VSB
LED_DIMM
R302 330 /NI
R303 330 /NI
R300 330 /NI
R301 330 /NI
R304 470 /NI
R305 470 /NI
D16 RED CHIP LED 0805 /NI
D17 RED CHIP LED 0805 /NI
D18 RED CHIP LED 0805 /NI
D19 RED CHIP LED 0805 /NI
LEDD0
LEDD1
LED_D2
LED_D1
映泰股份有限公司
BIOSTAR GROUP
Title
ATX POWER & FAN CONTROL
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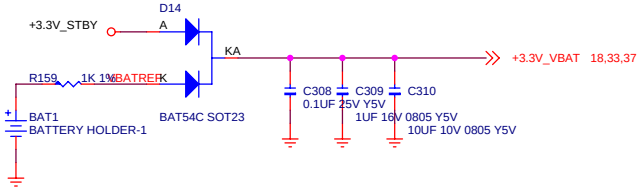
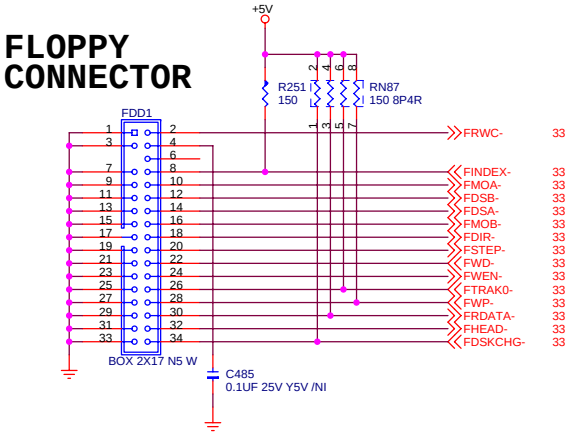
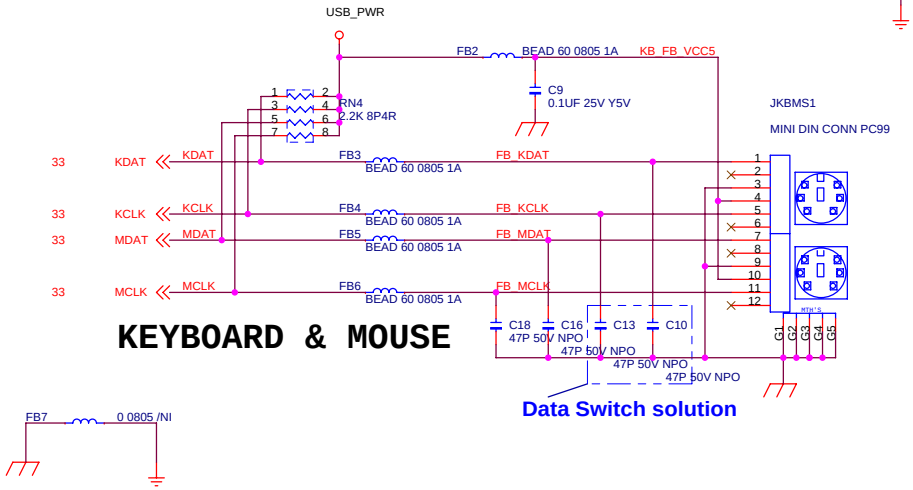


FLOPPY CONNECTOR



KEYBOARD & MOUSE



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Title	FLOOY ,KEYBOARD & MOUSE ,CMOS CLEAR	
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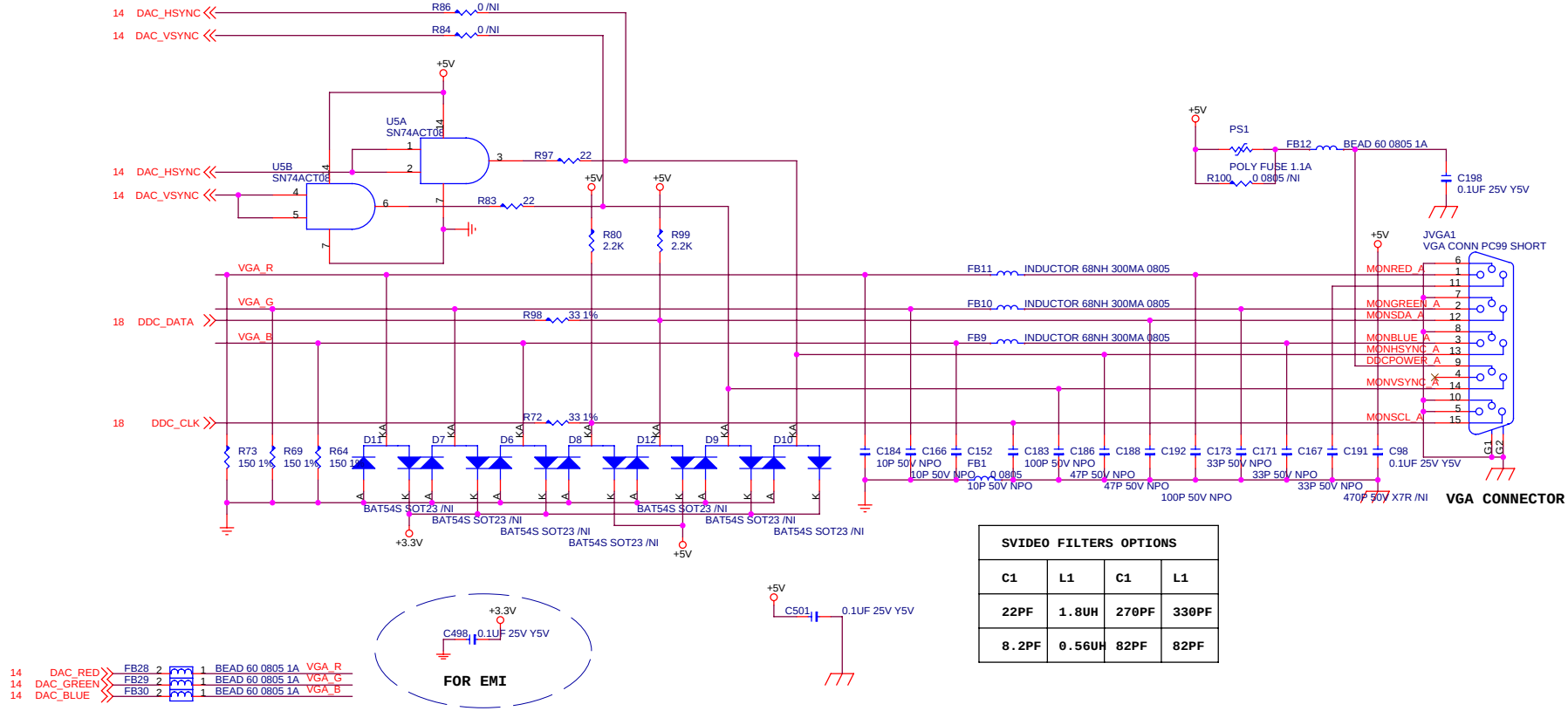

SVIDEO FILTERS OPTIONS			
C1	L1	C1	L1
22PF	1.8UH	270PF	330PF
8.2PF	0.56UH	82PF	82PF

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Title: VGA CONNECTOR		
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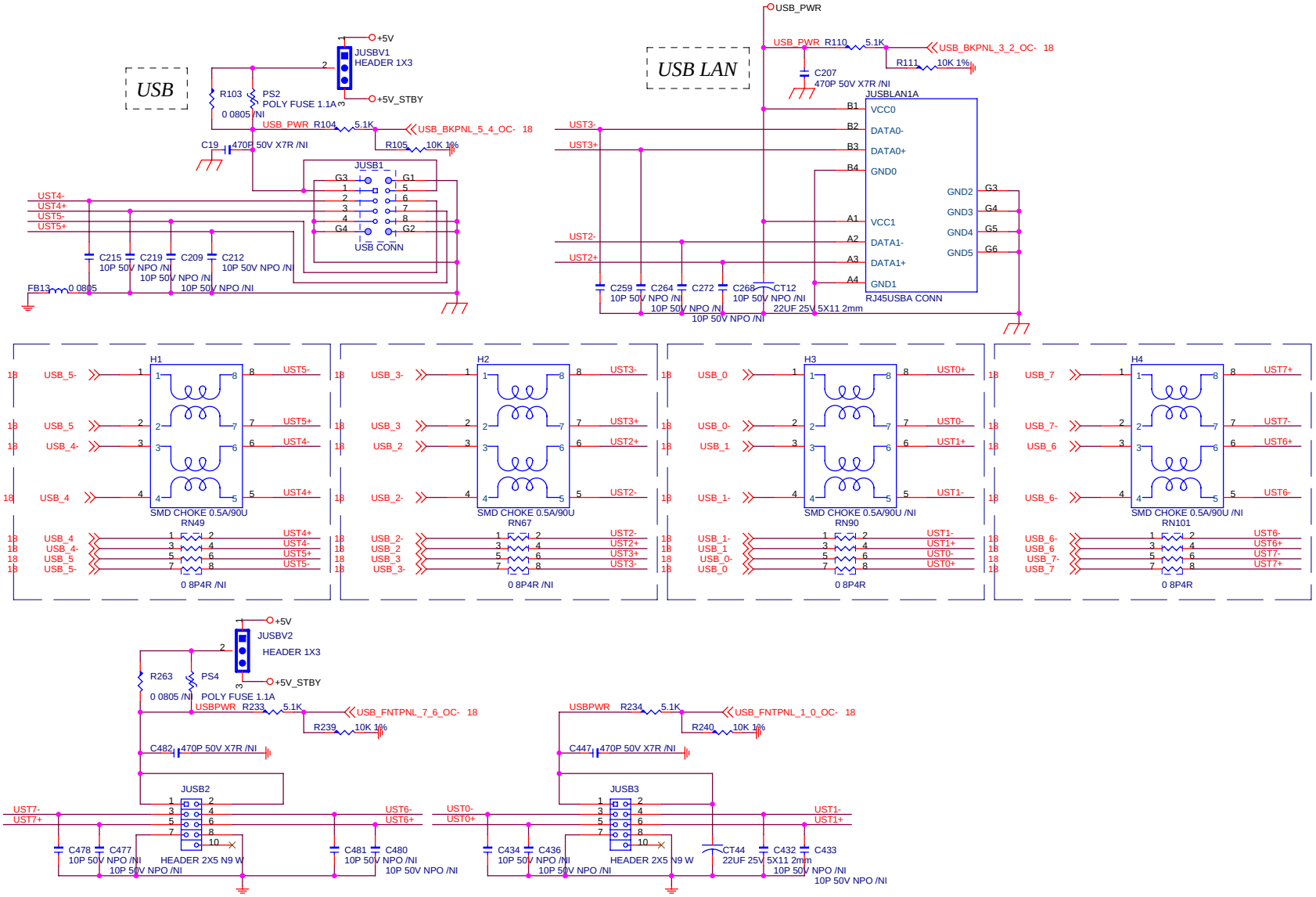

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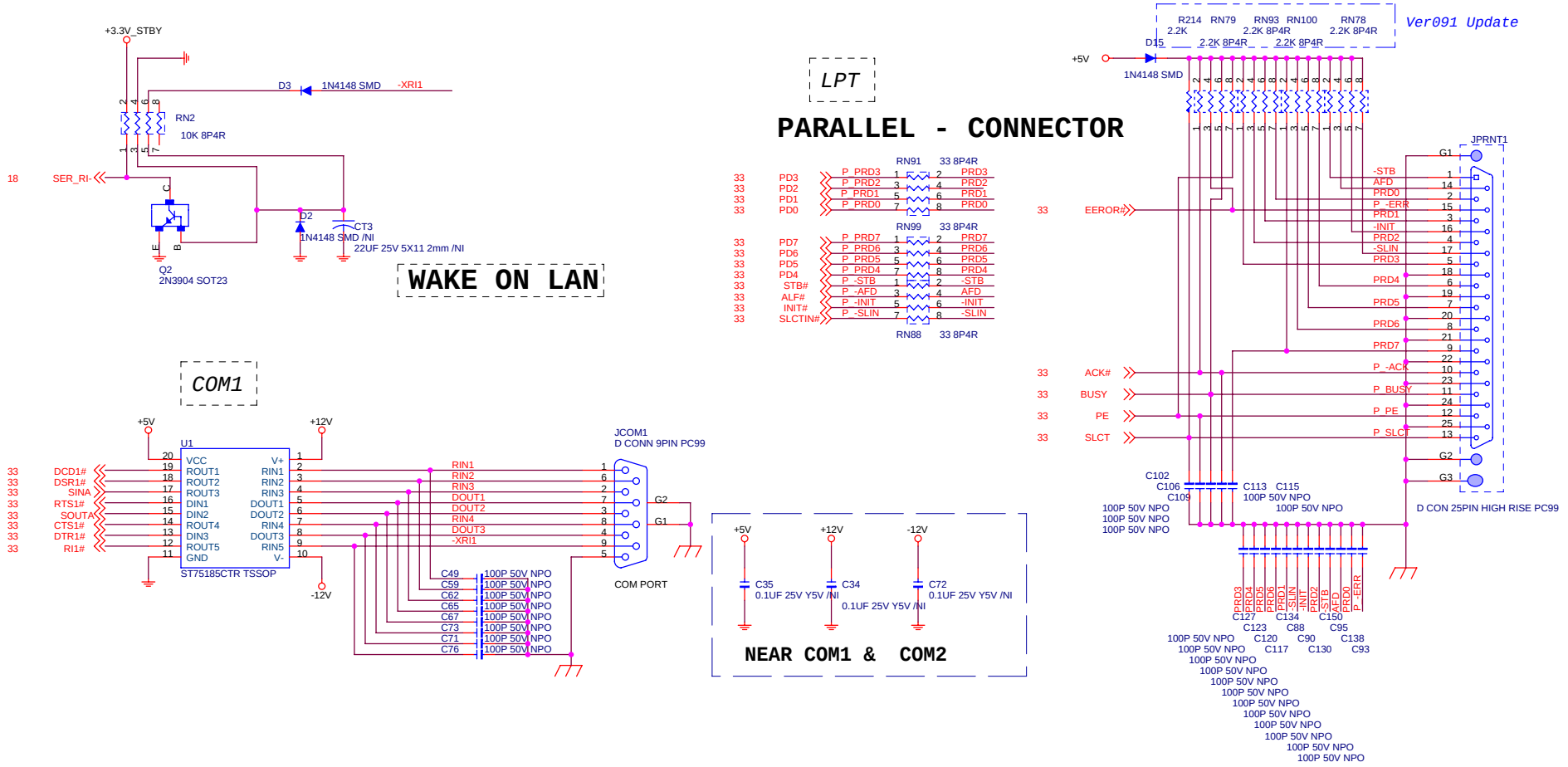
Title	USB INTERFACE	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
Date: Wednesday, April 12, 2006	Sheet 27 of 39	



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Title	LPT & COM1 & COM2(COLAY)	
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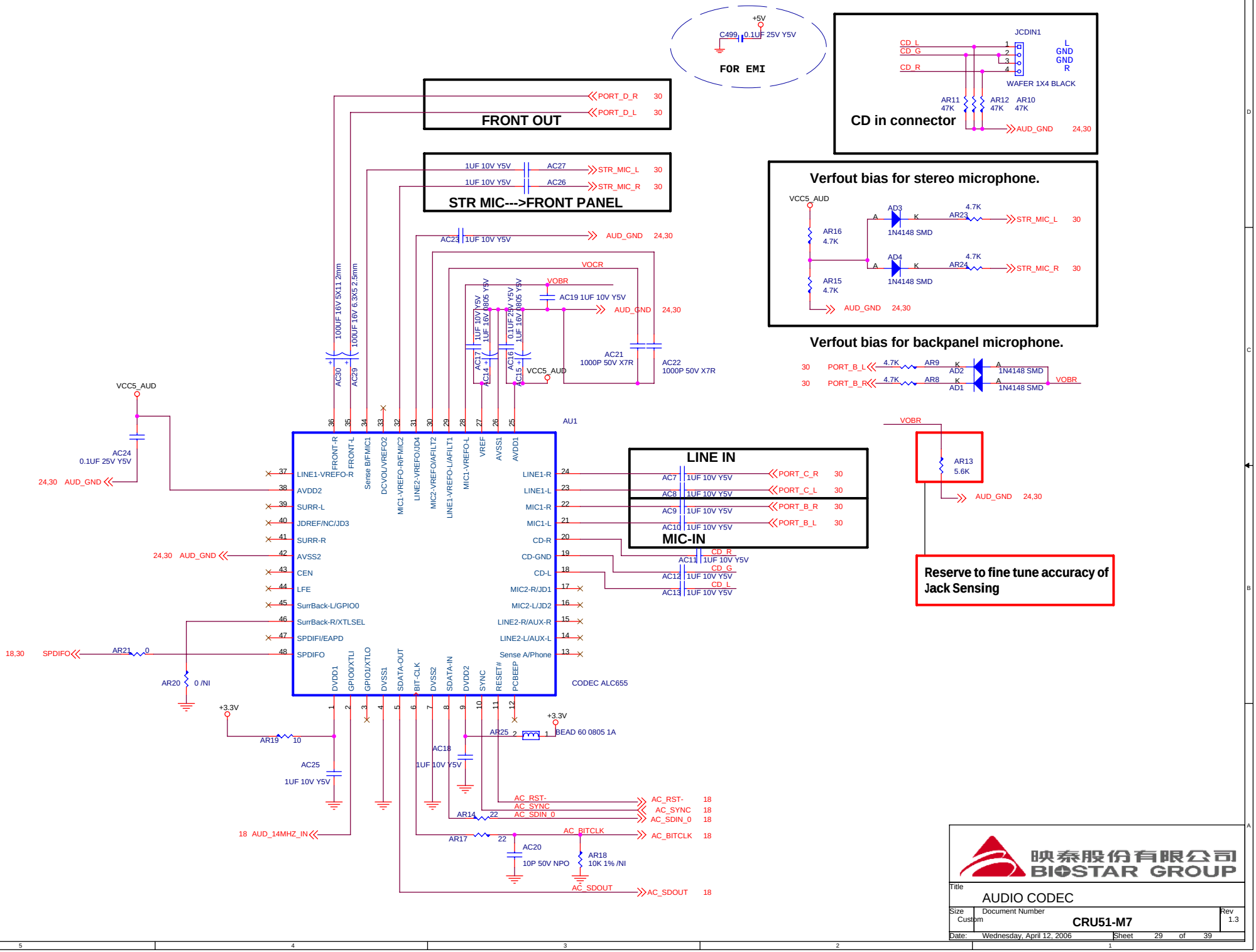

Title	AUDIO CODEC
Size	Custom
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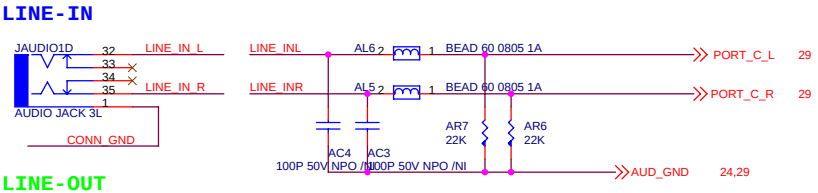
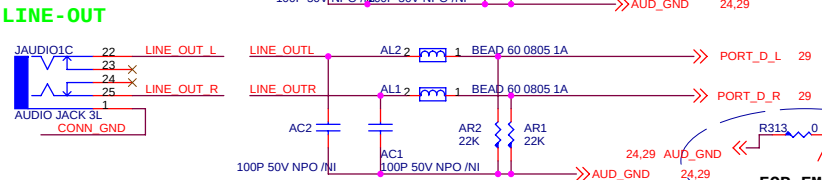
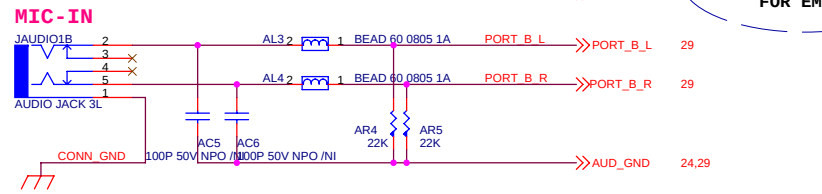
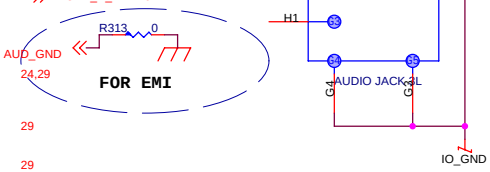
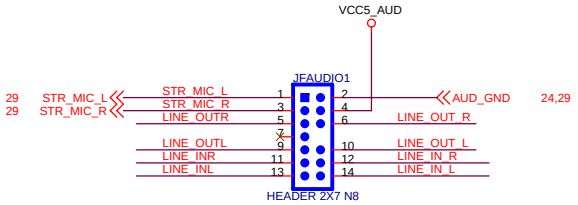
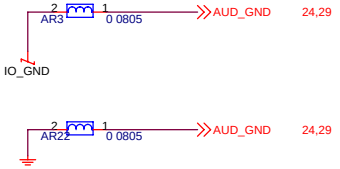




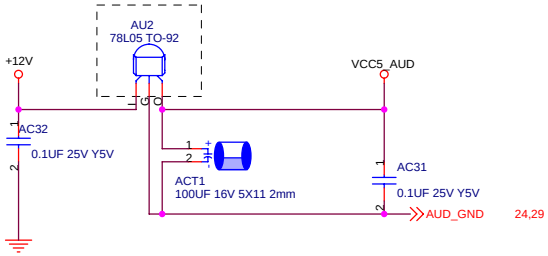


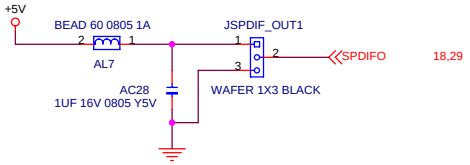




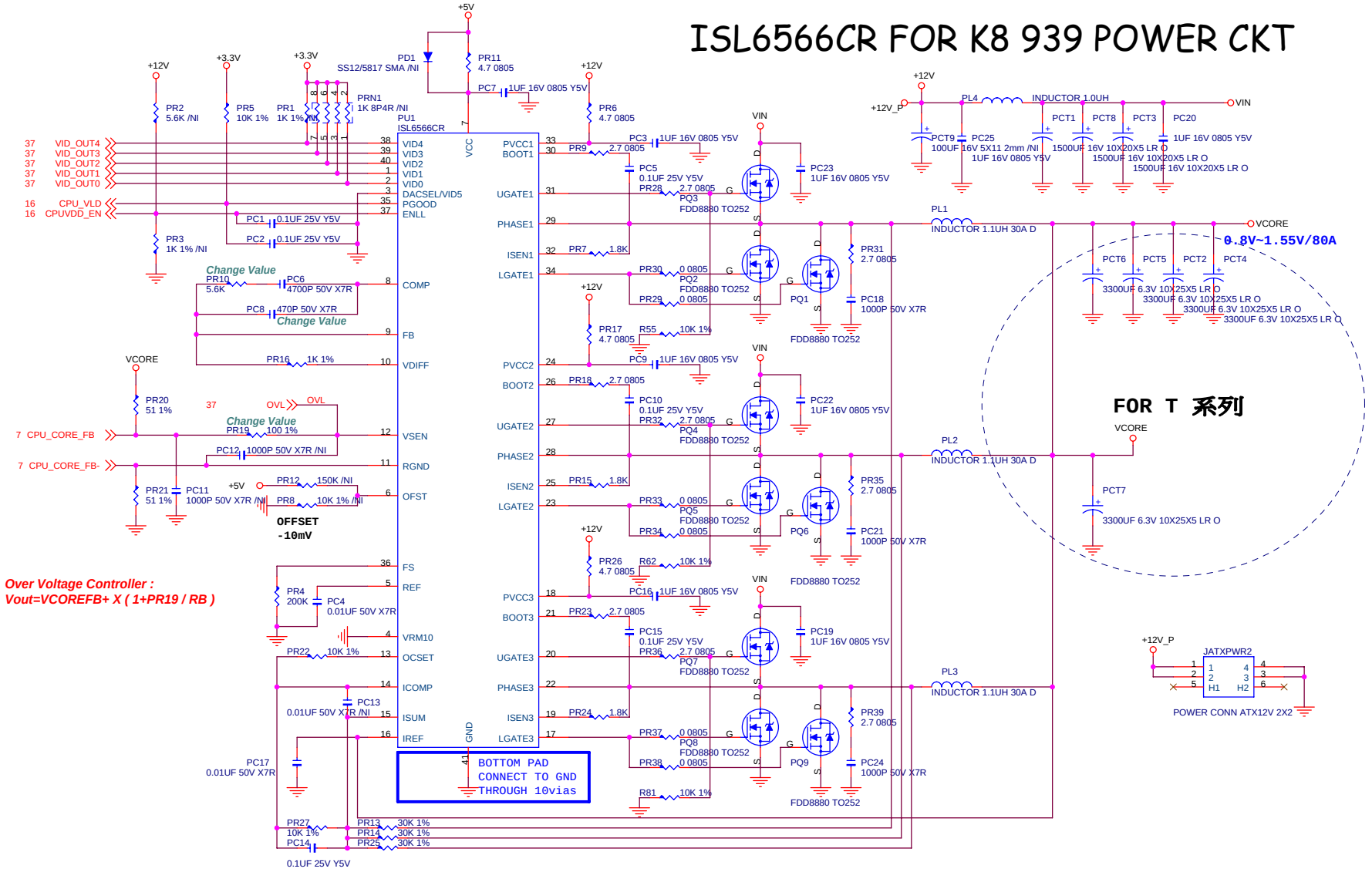


AUDIO ANALOG POWER





ISL6566CR FOR K8 939 POWER CKT



Title	VCORE POWER SUPPLY
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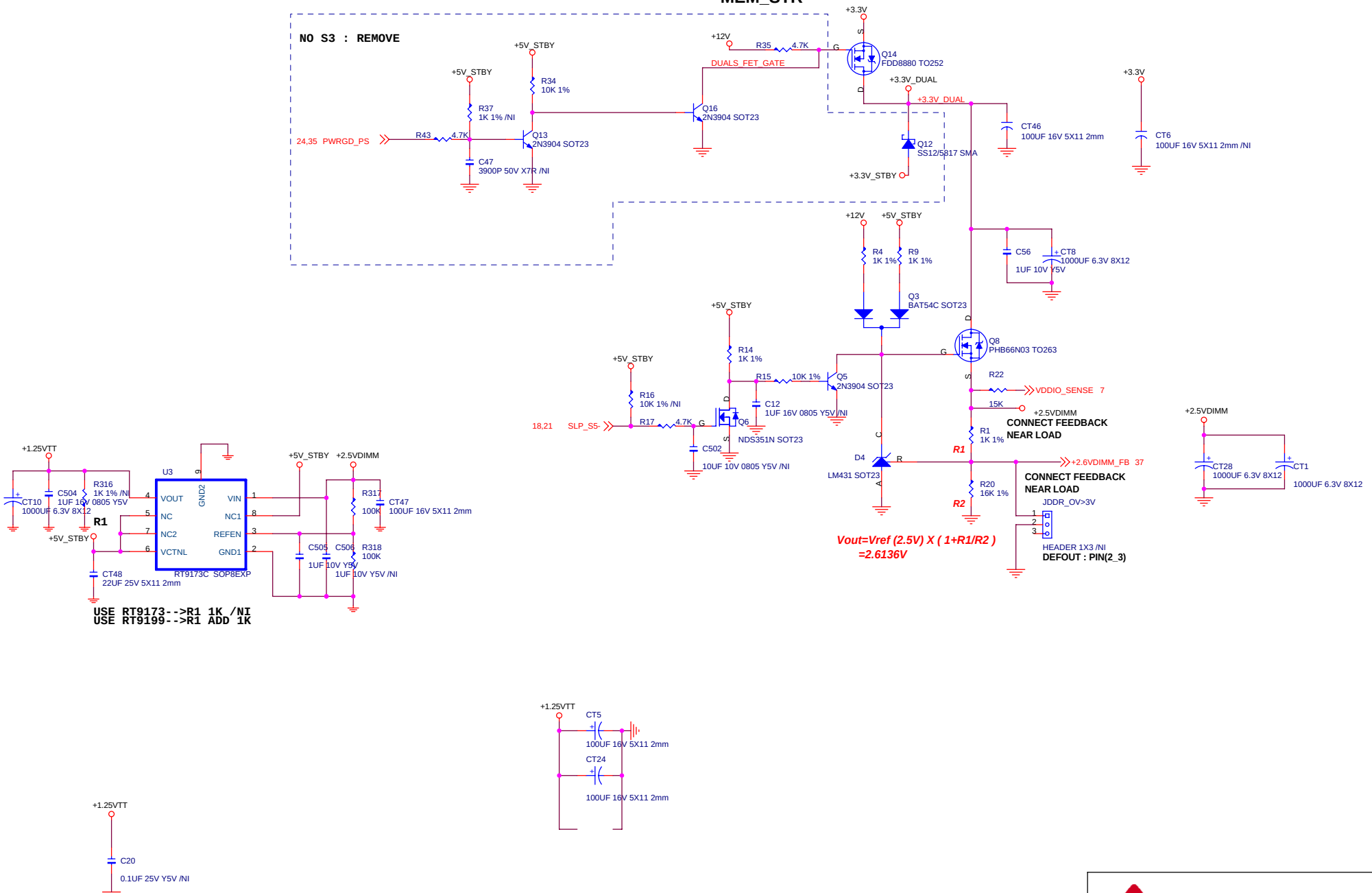
MEM_VDD

MEM_STR



Title	PLL DELAY / PWRGD / MEM VREG	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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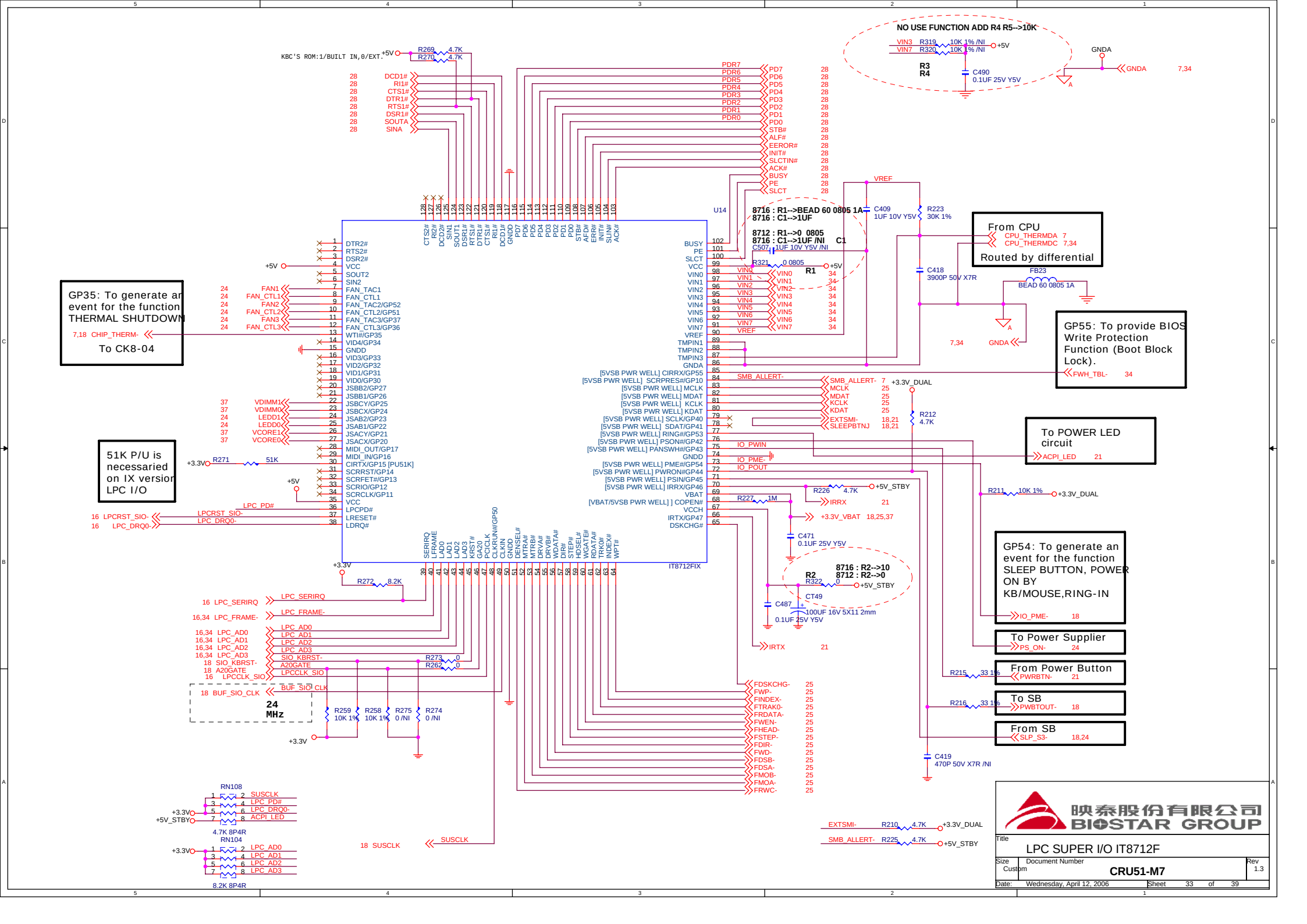
NO USE FUNCTION ADD R4 R5-->10K
R3
R4
C490
0.1UF 25V Y5V
GNDA
From CPU
CPU_THERMDA 7
CPU_THERMDC 7,34
Routed by differential
U14
8716 : R1-->BEAD 60 0805 1A
8716 : C1-->1UF
8712 : R1-->0 0805
8716 : C1-->1UF /NI C1
C507 1UF 10V Y5V /NI
R321 0 0805
R1
C409 1UF 10V Y5V
R223 30K 1%
C418 3900P 50V X7R
FB23
BEAD 60 0805 1A
GP35: To generate an event for the function THERMAL SHUTDOWN
7,18 CHIP_THERM-
To CK8-04
GP55: To provide BIOS Write Protection Function (Boot Block Lock).
FWH_TBL- 34
51K P/U is necessaried on IX version LPC I/O
R271 51K
SMB_ALLERT-
R212 4.7K
To POWER LED circuit
ACPI_LED 21
IO_PWIN
IO_PME-
IO_POUT
R226 4.7K
IRRX 21
R227 1M
+3.3V_VBAT 18,25,37
R211 10K 1%
C471 0.1UF 25V Y5V
R2
8716 : R2-->10
8712 : R2-->0
R322 0
CT49
C487
100UF 16V 5X11 2mm
0.1UF 25V Y5V
GP54: To generate an event for the function SLEEP BUTTON, POWER ON BY KB/MOUSE,RING-IN
IO_PME- 18
To Power Supplier
PS_ON- 24
From Power Button
PWRBTN- 21
To SB
PWBTOUT- 18
From SB
SLP_S3- 18,24
R215 33 1%
R216 33 1%
C419 470P 50V X7R /NI
IRTX 21
R272 8.2K
R273 0
R262 0
R259 10K 1%
R258 10K 1%
R275 0 /NI
R274 0 /NI
24 MHz
BUF_SIO_CLK
SUSCLK
RN108
SUSCLK
LPC_PD#
LPC_DRQ0-
ACPI_LED
4.7K 8P4R
RN104
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
8.2K 8P4R
EXTSMI- R210 4.7K +3.3V_DUAL
SMB_ALLERT- R225 4.7K +5V_STBY
IT8712FIX
Title
LPC SUPER I/O IT8712F
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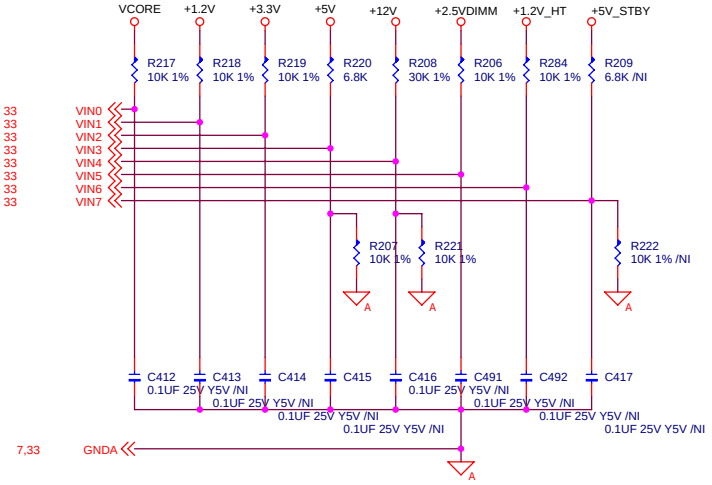
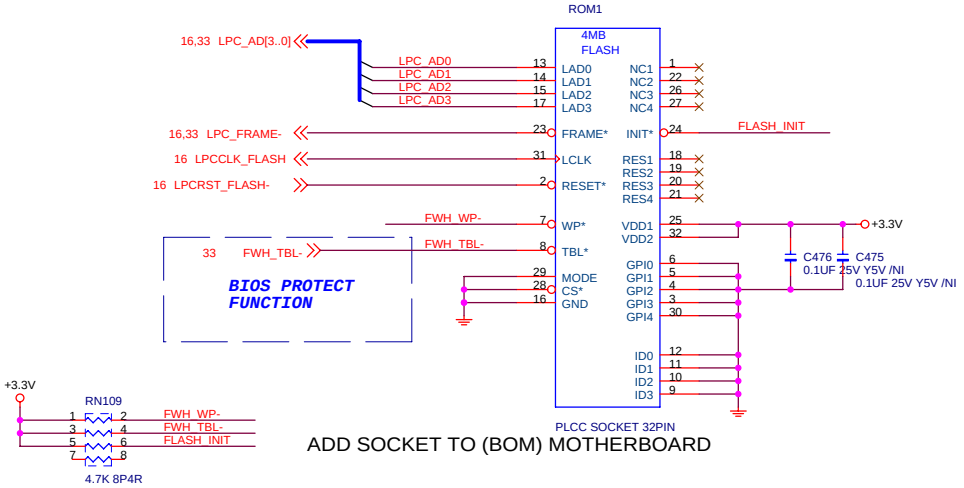
Voltage Sensing





ADD SOCKET TO (BOM) MOTHERBOARD

RECOVERY HEADER

JUMPER 1-2	NORMAL
JUMPER REMOVED	RECOVERY

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Title		
FLASH ROM & H/W MON		
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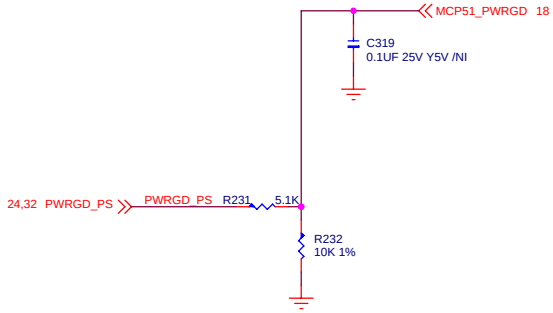
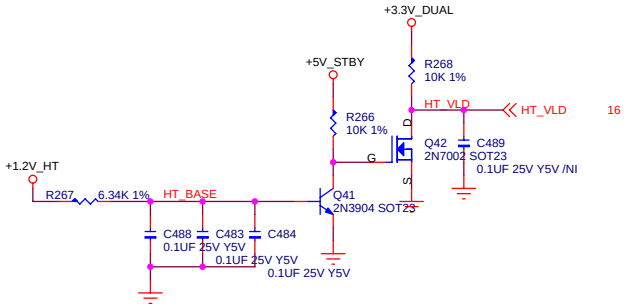
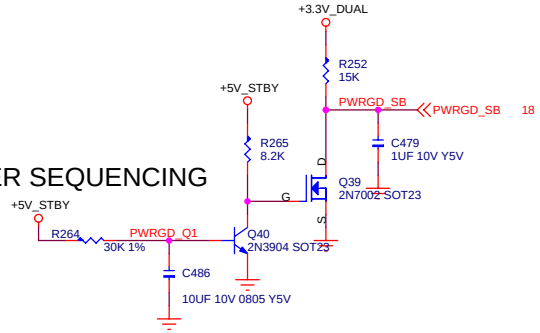


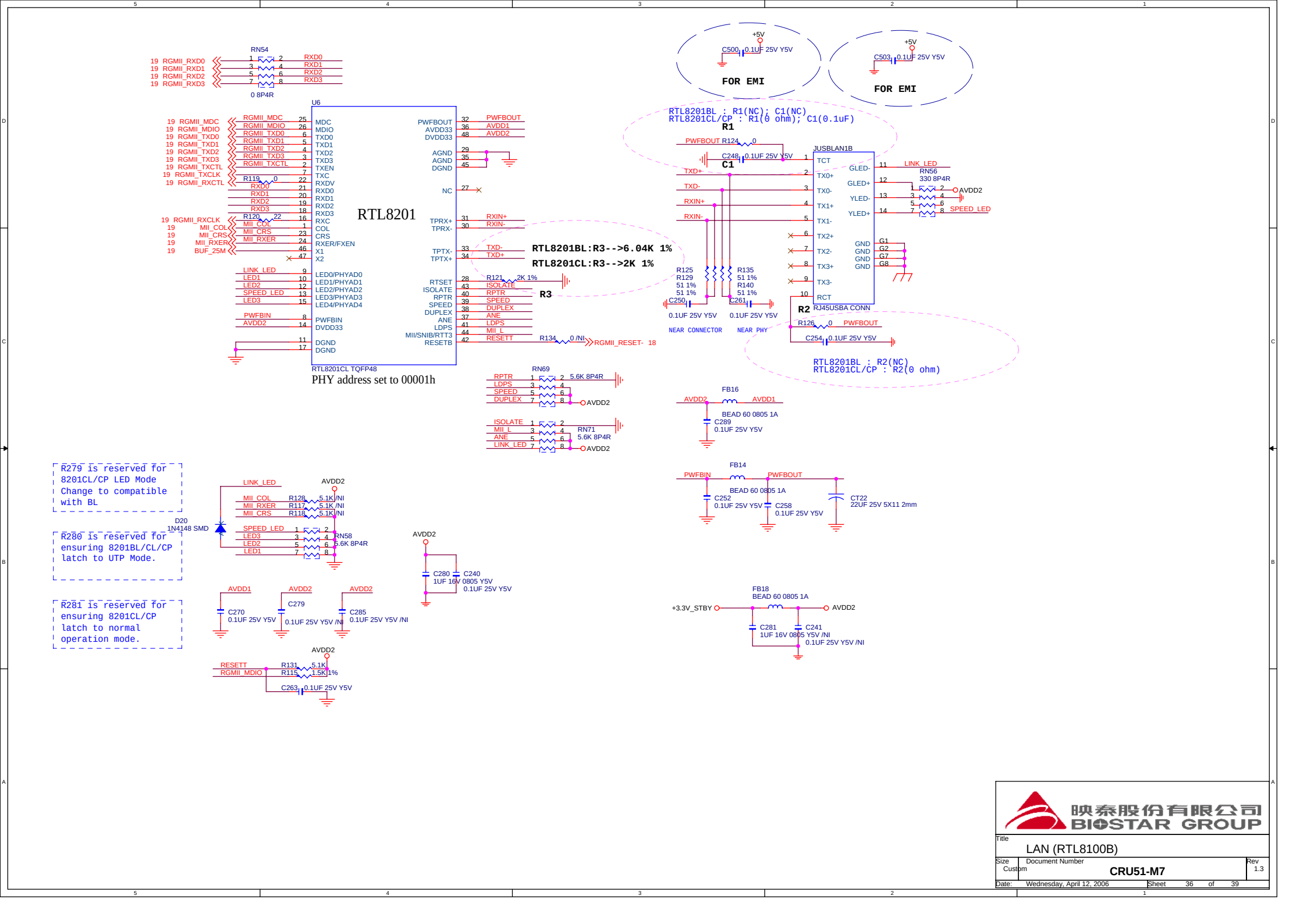


POWER SEQUENCING



映泰股份有限公司
BIOSTAR GROUP

Title	POWER SEQUENCING	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
Date: Wednesday, April 12, 2006	Sheet 35 of 39	



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BIOSTAR GROUP

Title	LAN (RTL8100B)	
Size: Custom	Document Number: CRU51-M7	Rev: 1.3
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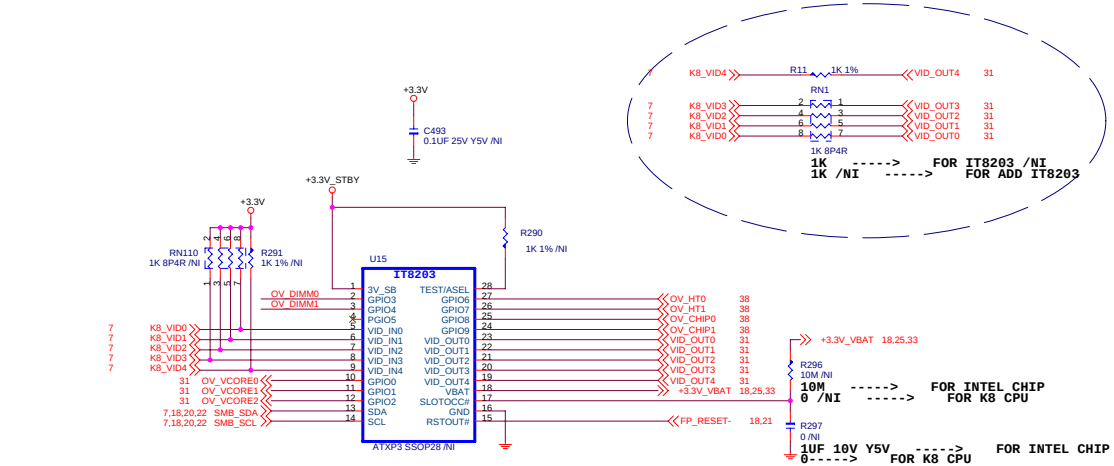
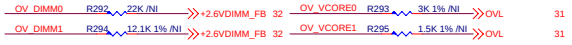
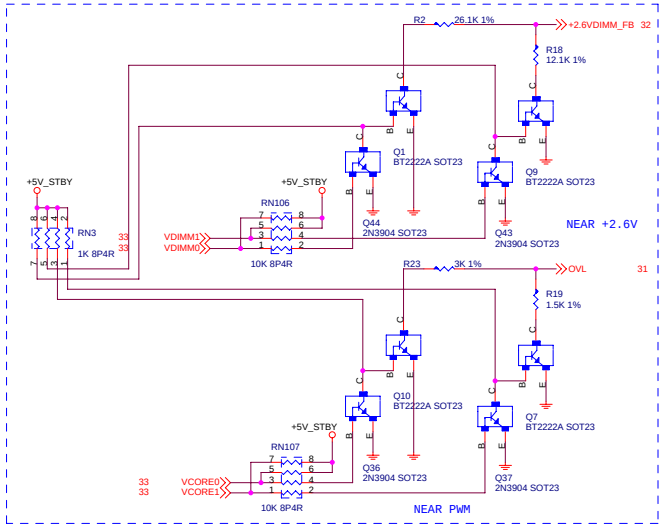


Dimm over volgate	DIMM0 GPIO	DIMM1 GPIO
Default	3 1	4 1
2.72V	0	1
2.82V	1	0
2.93V	0	0

VCORE_OVL	VCORE0 GPIO0	VCORE1 GPIO1
Default 1.550V	1	1
1.602V	0	1
1.653V	1	0
1.705V	0	0





+2.6VDIMM_FB	VDIMM0	VDIMM1
Default 2.656V	1	1
2.72V	0	1
2.82V	1	0
2.93V	0	0

VCORE_OVL	VCORE0	VCORE1
Default 1.550V	1	1
1.602V	0	1
1.653V	1	0
1.705V	0	0

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Title: OVER VOLTAGE

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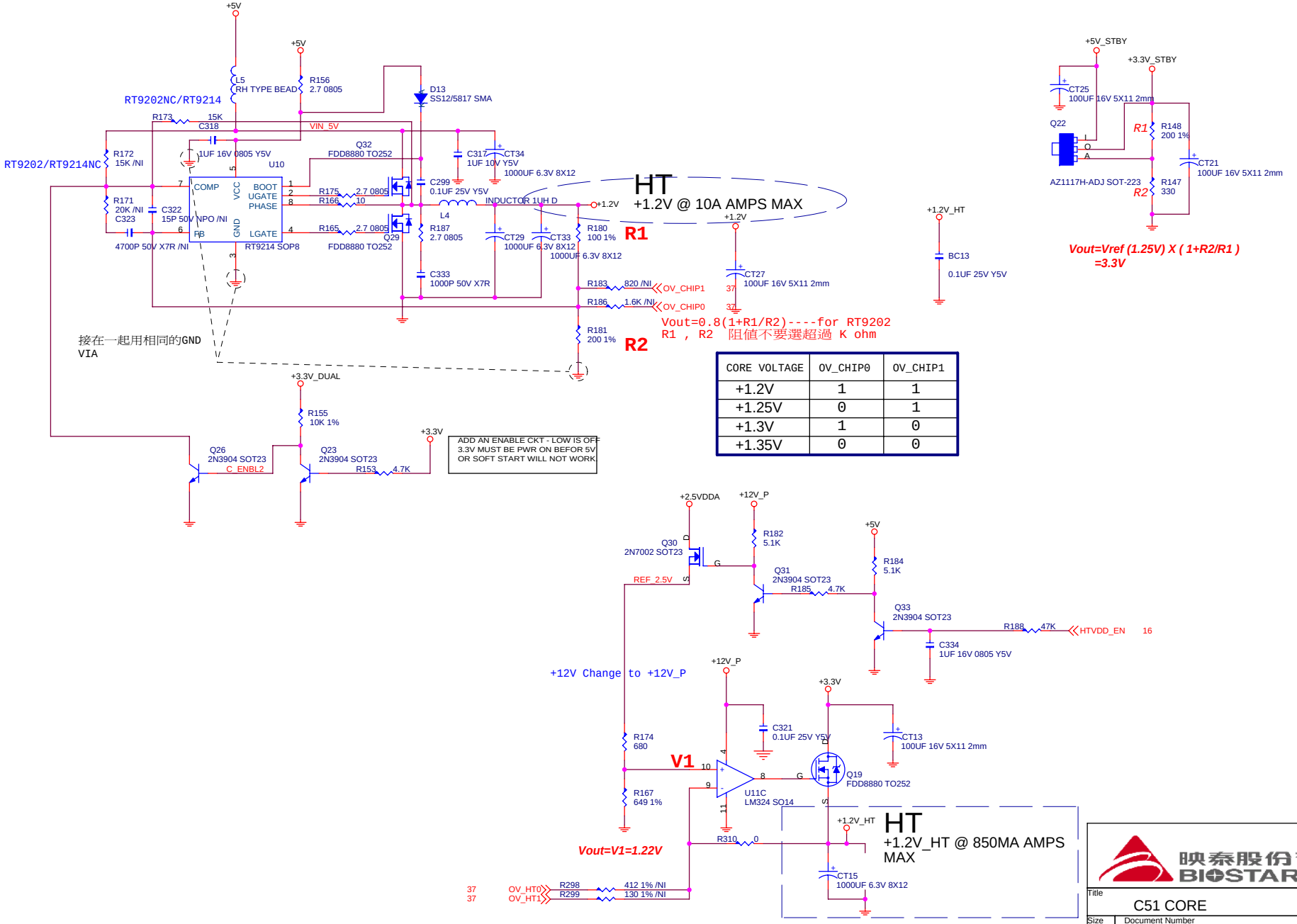
CK51 CORE



CORE VOLTAGE	OV_CHIP0	OV_CHIP1
+1.2V	1	1
+1.25V	0	1
+1.3V	1	0
+1.35V	0	0

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JDDR_OV>3V(2_3)
JUMPER 2P R /NI

JUSBV1(1_2)
JUMPER 2P R

JUSBV2(1_2)
JUMPER 2P R

JFAUDIO1(5_6)
JUMPER 2P B

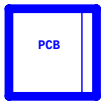
JFAUDIO1(9_10)
JUMPER 2P B

JFAUDIO1(11_12)
JUMPER 2P B

JFAUDIO1(13_14)
JUMPER 2P B

JCMOS1(1_2)
JUMPER 2P B

PCB



CRU51-M7 1.3

(PCB)

POLON 245x220

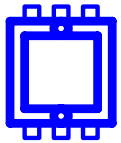
(BAT1)

3V BATTERY SONY

(ROM1)

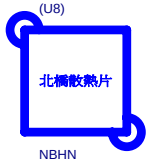
PLCC 4MF+L

(CPU1)



K8RM

(U8)



NBHN

(U12)

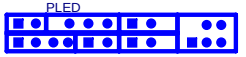
SBNP SMALL

New JPANEL1 含IR
JPANEL1 2*12

JPANEL1(2_4)
HEADER 1X2

JPANEL1(14_16)
HEADER 1X2_3

JPANEL1(6_8_10_12)
PLED



JPANEL1(19_24)
IR

JPANEL1(1_3_5_7)
SPK

JPANEL1(9_11)
HLED

JPANEL1(13_15)
RST_3

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