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MS6720

VERSION: 0A

SIS 645DX/651 CHIPSET

Willamette/Northwood 478pin mPGA-B Processor Schematics

CPU:

Willamette/Northwood mPGA-478B Processor

System Brookdale Chipset:

SIS 645DX/651 (North Bridge)+962 (South Bridge)

On Board Chipset:

LPC Super I/O -- W83697HF

RTL8201BL MII PHY

Expansion Slots:

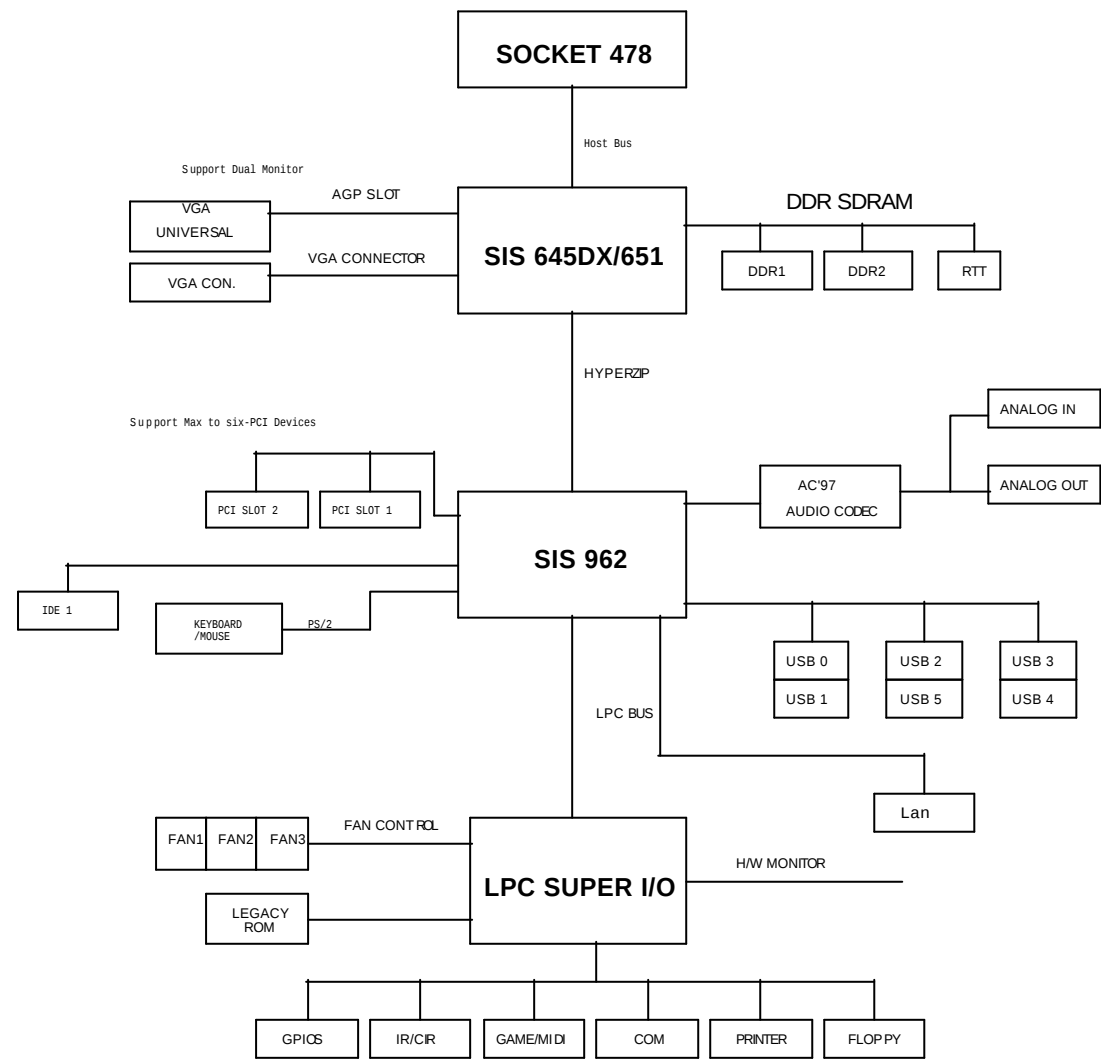
AGP2.0 SLOT * 1

PCI2.2 SLOT* 2

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Title	BLOCK DIAGRAM	Rev
Document Number	MS-6720	0A
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System Block Diagram



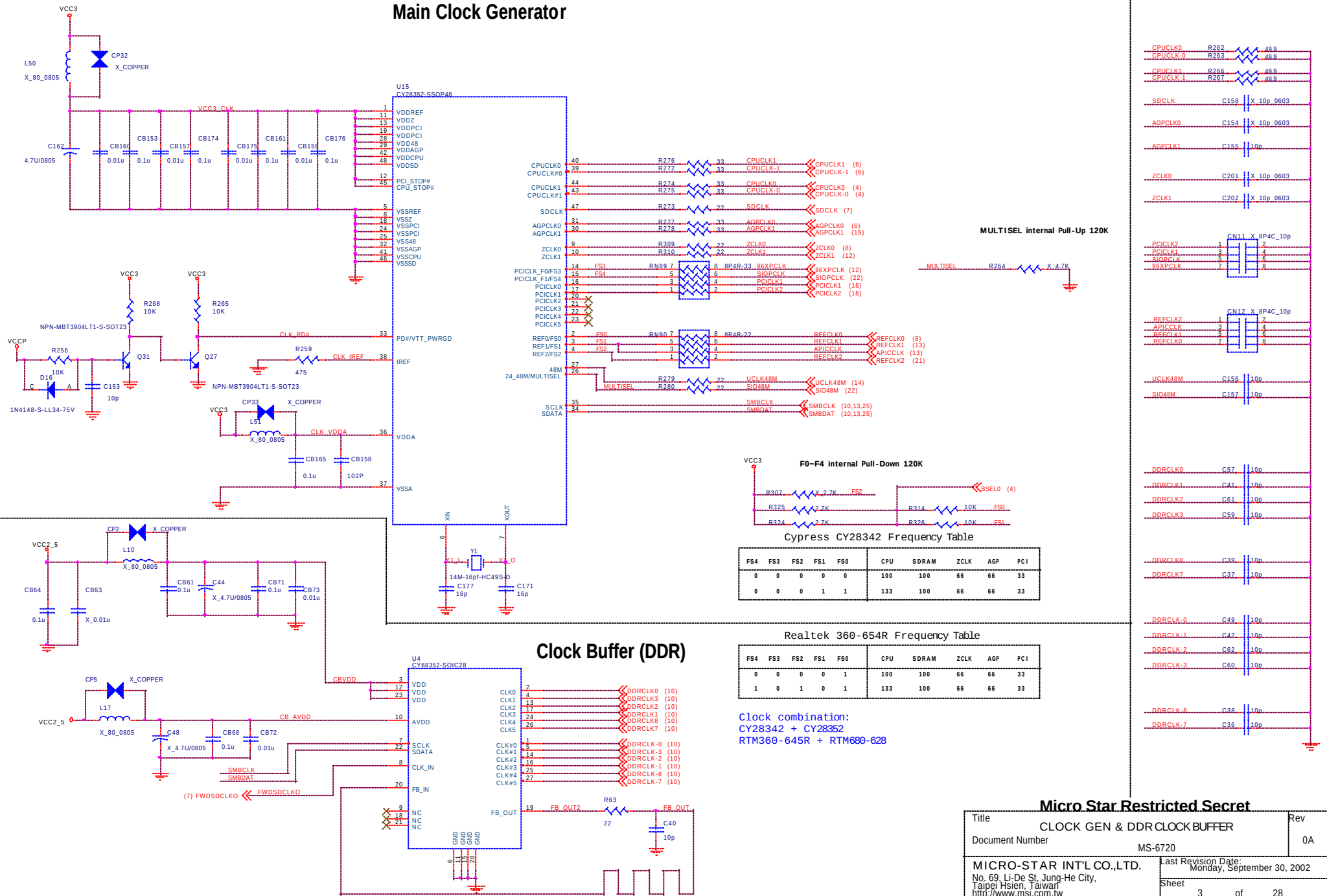
GPIO Table on SIS962

GPIO_0	I/O	MAIN	Pull-Down
GPIO_1	I/O	MAIN	Pull-Down
GPIO_2	I/O	MAIN	THERM#
GPIO_3	I/O	MAIN	EXTSMI#
GPIO_4	I/O	MAIN	Pull-Down
GPIO_5	I/O	MAIN	PREQ#5(Pull-Up)
GPIO_6	I/O	MAIN	PGNT#5(Pull-Up)
GPI_7	I/O	RESUME	LAN_WAKE#
GPI_8	I	RESUME	RING
GPI_9	I	RESUME	RESERVED
GPI_10	I	RESUME	RESERVED
GPIO_11	I/O	RESUME	RESERVED
GPIO_12	I/O	RESUME	Pull-Down
GPIO_13	I/O	RESUME	Flash Rom protection H: Disable, L: Enable
GPIO_14	I/O	RESUME	Pull-Down
GPIO_15	I/O	RESUME	KBDAT
GPIO_16	I/O	RESUME	KBCLK
GPIO_17	I/O	RESUME	MSDAT
GPIO_18	I/O	RESUME	MSCLK
GPIO_19	I/O	RESUME	SMBCLK
GPIO_20	I/O	RESUME	SMBDAT

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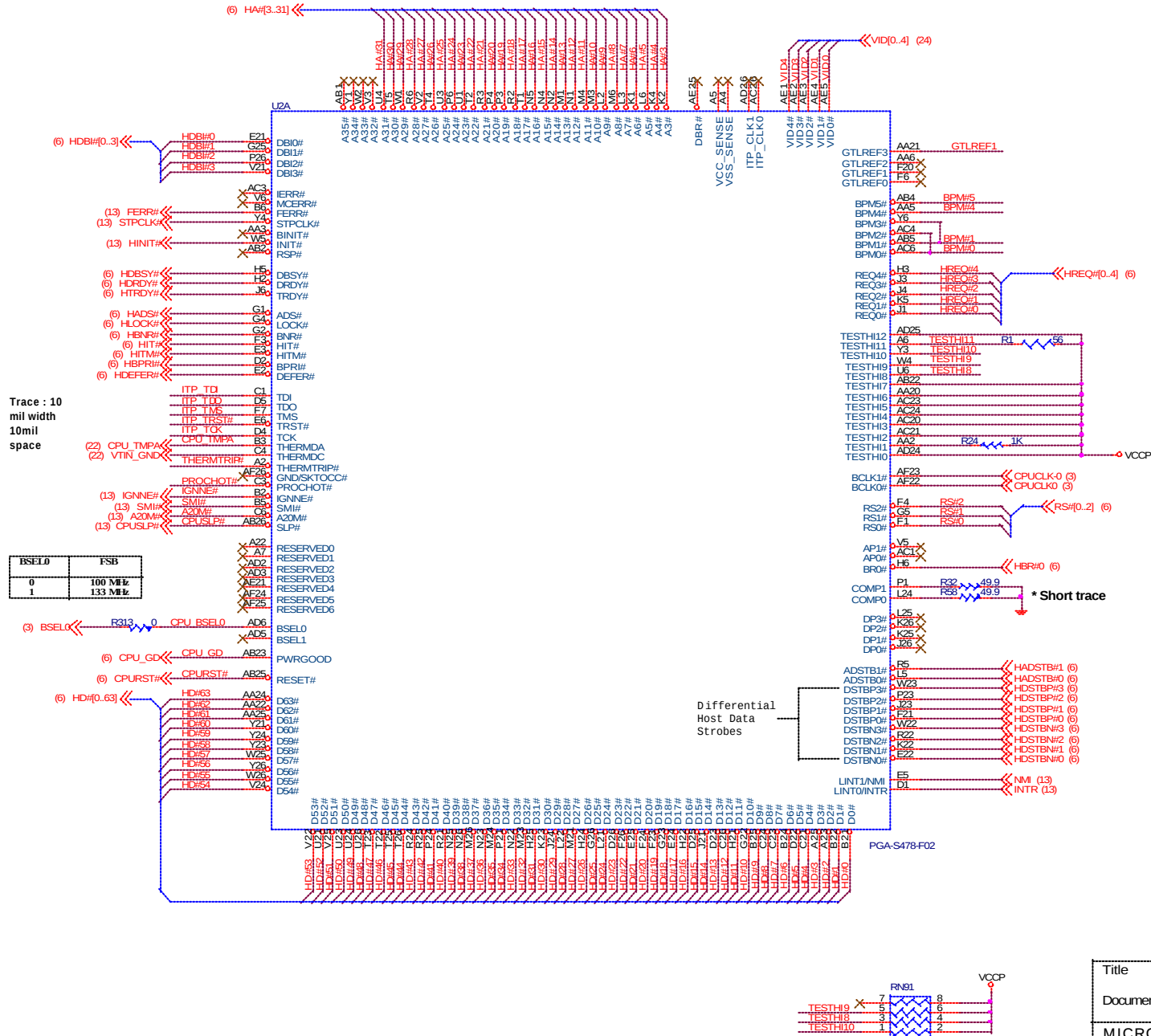
Main Clock Generator



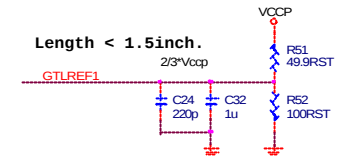
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Title CLOCK GEN & DDR CLOCK BUFFER		Rev 0A
Document Number MS-6720		
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CPU SIGNAL BLOCK



CPU GTL REFERENCE VOLTAGE BLOCK



Every pin put one 220pF cap near it.

Trace Width 15mils, Space 15mils.

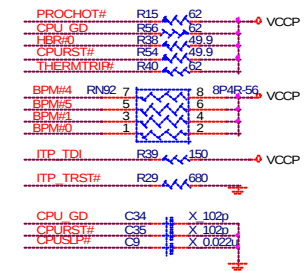
Keep the voltage dividers within 1.5 inches of the first GTLREF Pin

CPU ITP BLOCK

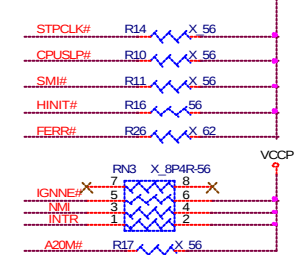


CPU STRAPPING RESISTORS

CLOSED TO SOCKET478



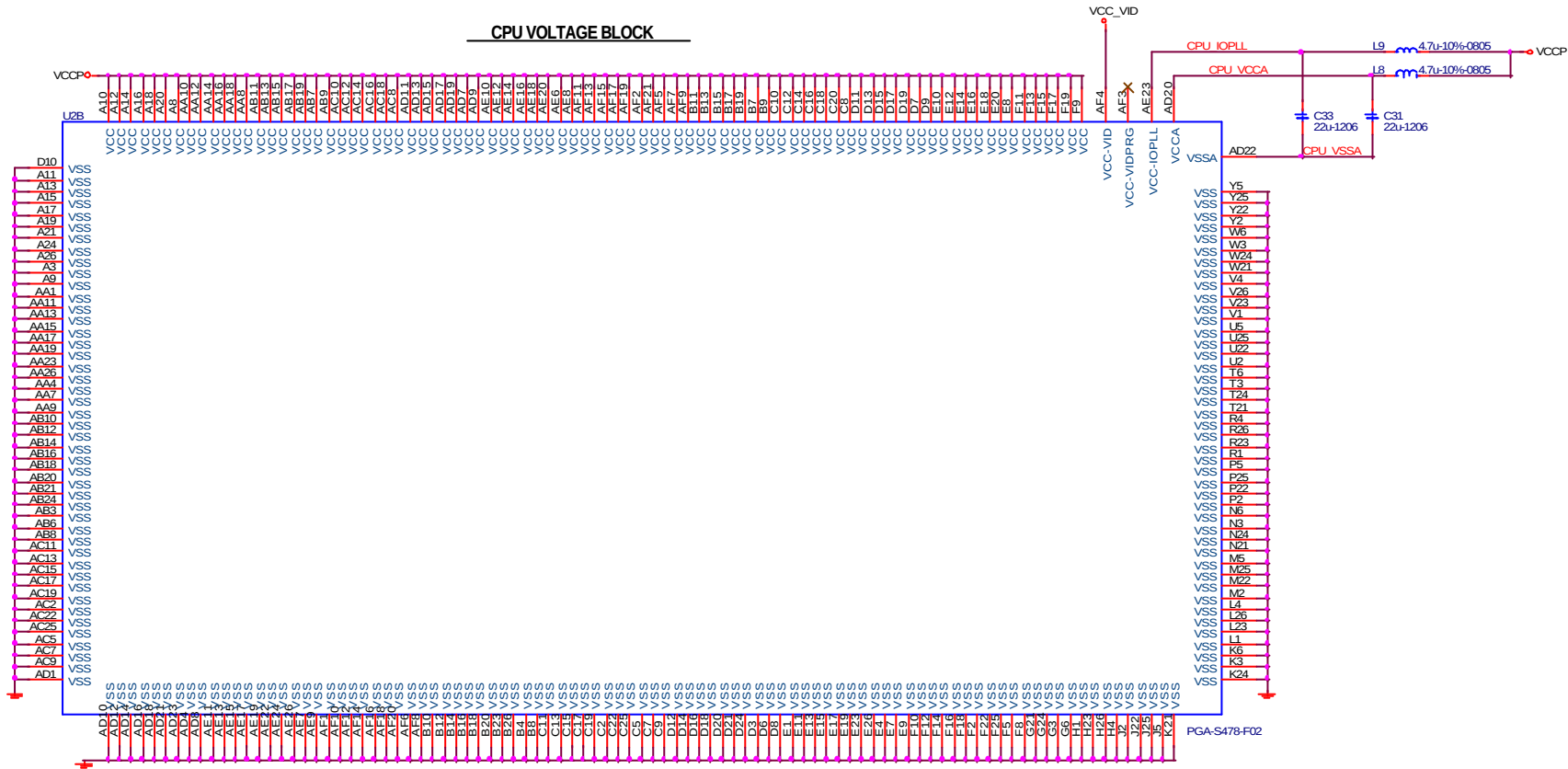
CLOSED TO SOCKET478



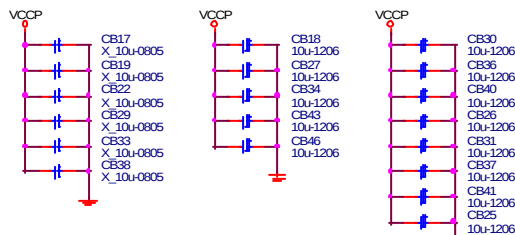
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Document Number	MS-6720		
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CPU VOLTAGE BLOCK



CPU DECOUPLING CAPACITORS

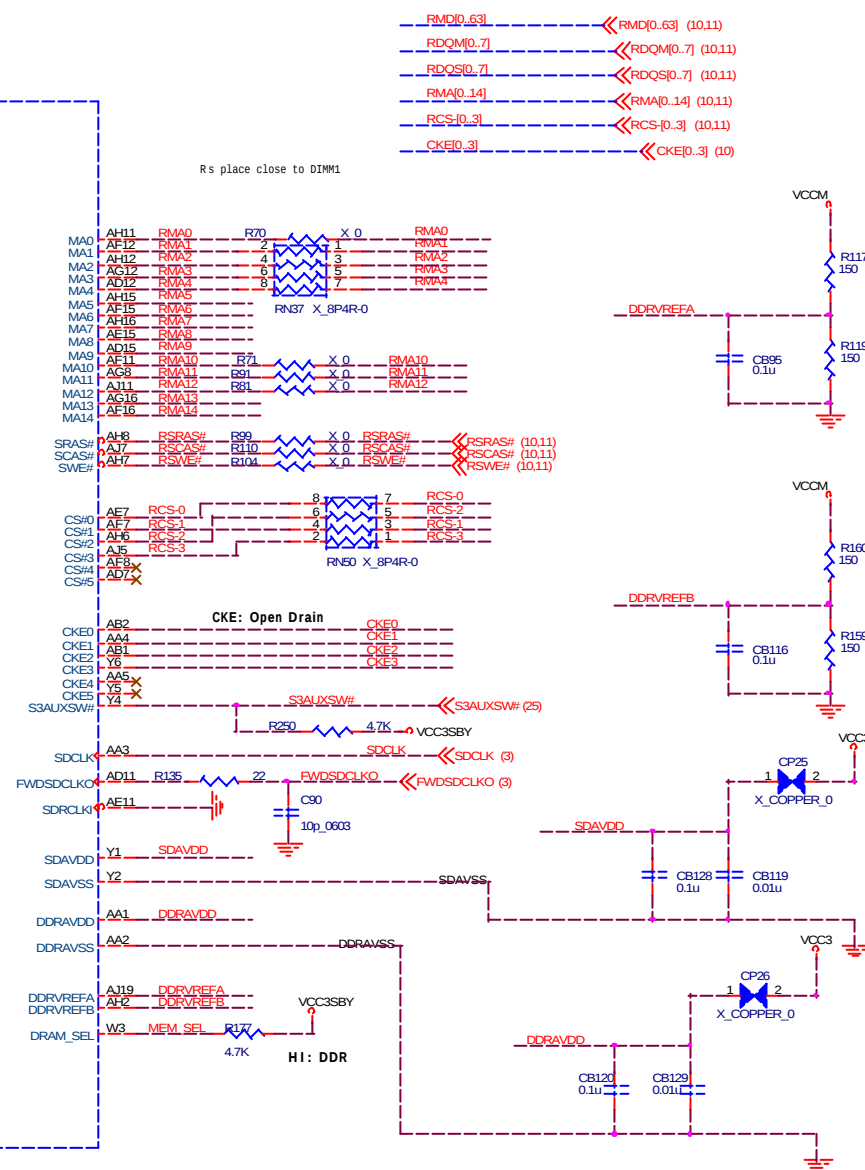
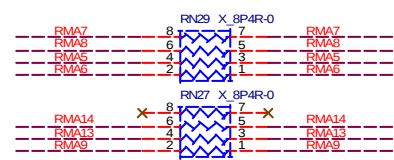


PLACE CAPS WITHIN CPU CAVITY

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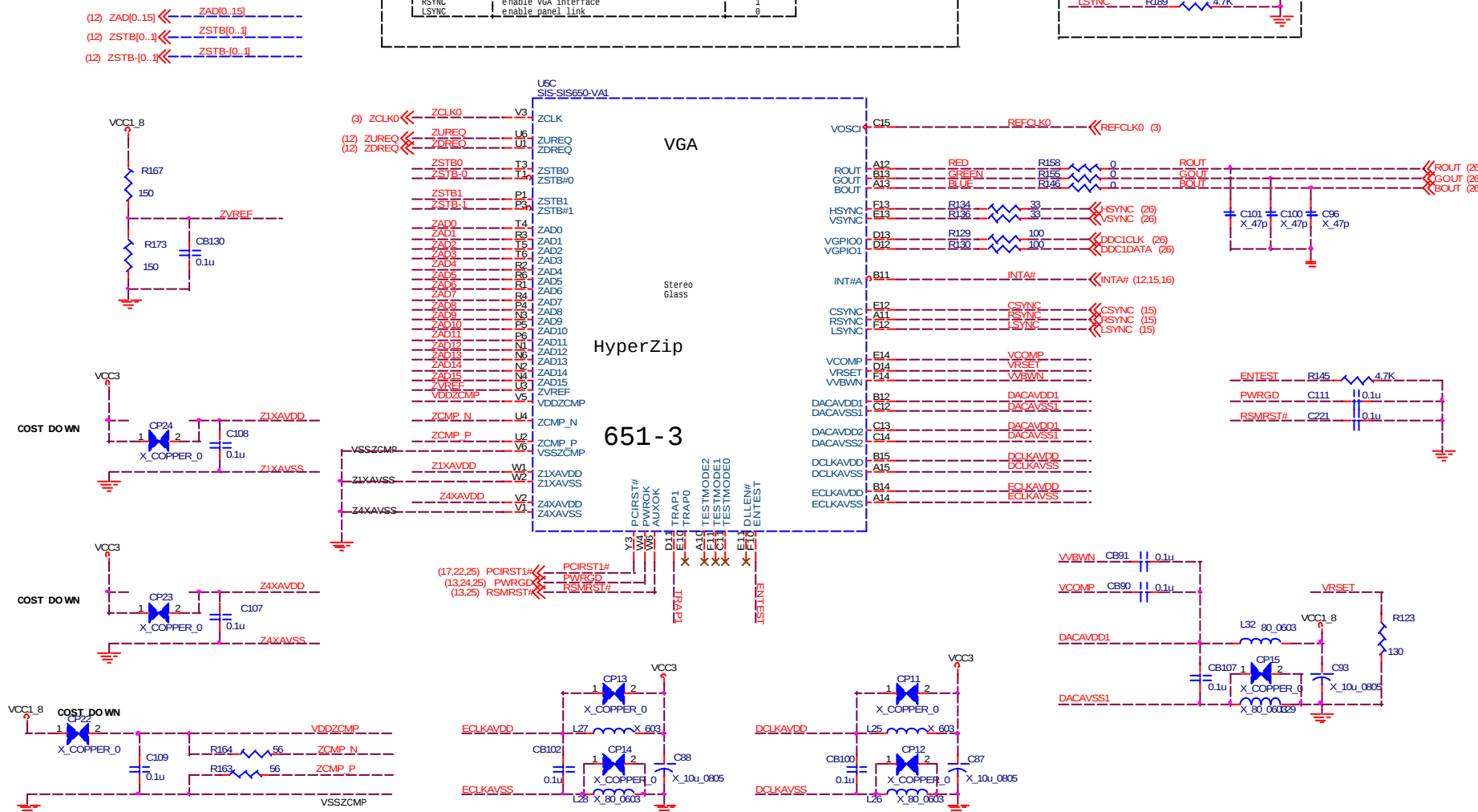
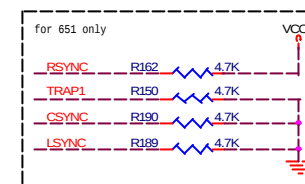
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Document Number	MS-6720	0A
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RMD1	RS6	1	2	MD1
RMD2		3	4	MD2
RMD3		5	6	MD3
RMD4		7	8	MD4
RMD5	SP4R-10	1	2	MD5
RMD6	RN7	3	4	MD6
RMD7		5	6	MD7
RMD8		7	8	MD8
RMD9	SP4R-10	1	2	MD9
RMD10	RN11	3	4	MD10
RMD11		5	6	MD11
RMD12		7	8	MD12
RMD13	SP4R-10	1	2	MD13
RMD14	RN17	3	4	MD14
RMD15		5	6	MD15
RMD16		7	8	MD16
RMD17	SP4R-10	1	2	MD17
RMD18	RN14	3	4	MD18
RMD19		5	6	MD19
RMD20		7	8	MD20
RMD21	SP4R-10	1	2	MD21
RMD22	RN23	3	4	MD22
RMD23		5	6	MD23
RMD24		7	8	MD24
RMD25	SP4R-10	1	2	MD25
RMD26	RN25	3	4	MD26
RMD27		5	6	MD27
RMD28		7	8	MD28
RMD29	SP4R-10	1	2	MD29
RMD30	RN30	3	4	MD30
RMD31		5	6	MD31
RMD32		7	8	MD32
RMD33	SP4R-10	1	2	MD33
RMD34	RN34	3	4	MD34
RMD35		5	6	MD35
RMD36		7	8	MD36
RMD37	SP4R-10	1	2	MD37
RMD38	RN32	3	4	MD38
RMD39		5	6	MD39
RMD40		7	8	MD40
RMD41	SP4R-10	1	2	MD41
RMD42	RN40	3	4	MD42
RMD43		5	6	MD43
RMD44		7	8	MD44
RMD45	SP4R-10	1	2	MD45
RMD46	RN44	3	4	MD46
RMD47		5	6	MD47
RMD48		7	8	MD48
RMD49	SP4R-10	1	2	MD49
RMD50	RN49	3	4	MD50
RMD51		5	6	MD51
RMD52		7	8	MD52
RMD53	SP4R-10	1	2	MD53
RMD54	RN52	3	4	MD54
RMD55		5	6	MD55
RMD56		7	8	MD56
RMD57	SP4R-10	1	2	MD57
RMD58	RN56	3	4	MD58
RMD59		5	6	MD59
RMD60		7	8	MD60
RMD61	SP4R-10	1	2	MD61
RMD62	RN54	3	4	MD62
RMD63		5	6	MD63
RMD64		7	8	MD64
RMD65	SP4R-10	1	2	MD65
RMD66	RN59	3	4	MD66
RMD67		5	6	MD67
RMD68		7	8	MD68
RMD69	SP4R-10	1	2	MD69
RMD70	RN63	3	4	MD70
RMD71		5	6	MD71
RMD72		7	8	MD72
RMD73	SP4R-10	1	2	MD73
RMD74	RN62	3	4	MD74
RMD75		5	6	MD75
RMD76		7	8	MD76
RMD77	SP4R-10	1	2	MD77
RMD78	RN60	3	4	MD78
RMD79		5	6	MD79
RMD80		7	8	MD80
RMD81	SP4R-10	1	2	MD81
RMD82	RN67	3	4	MD82
RMD83		5	6	MD83
RMD84		7	8	MD84
RMD85	SP4R-10	1	2	MD85
RMD86	RN62	3	4	MD86
RMD87		5	6	MD87
RMD88		7	8	MD88
RMD89	SP4R-10	1	2	MD89
RMD90	RN63	3	4	MD90
RMD91		5	6	MD91
RMD92		7	8	MD92
RMD93	SP4R-10	1	2	MD93
RMD94	RN62	3	4	MD94
RMD95		5	6	MD95
RMD96		7	8	MD96
RMD97	SP4R-10	1	2	MD97
RMD98	RN62	3	4	MD98
RMD99		5	6	MD99
RMD100		7	8	MD100

[illegible]

Title		SIS 645DX / 651 PART2		Rev
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NB Hardware Trap Table				
	0	1	Default	
DLLEN	enable PLL	disable PLL	0	embedded pull-low (30~50K Ohm)
DRAM_SEL	SDR	DDR	I(DDR)	yes
RAPB	normal	NB debug mode	0	yes
TRAPT	TV selection, NtSC/PAL(871)			0
CSYNC	enable VB			0
VSNC	enable VGA interface			1
LSYNC	enable panel link			0



Title		SIS 645DX / 651 PART3		Rev
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(7.11) RMD[0..63] << RMA[0..14]
 (7.11) RMA[0..14] << RDQM[0..7]
 (7.11) RDQM[0..7] << RDQS[0..7]

NOTE:

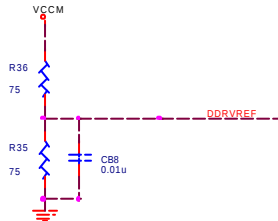
VDDID IS A TRAP ON THE DIMM
 MODULE TO INDICATE:

VDDID	REQUIRED POWER
OPEN	VDD=VDDQ
GND	VDD1=VDDQ

MEMORY MUX TABLE:

SDR	DDR
CS0	CS0
CS1	CS1
CS2	CS2
CS3	CS3
CS4	CS4
CS5	CS5
CSB0	DQS0
CSB1	DQS1
CSB2	DQS2
CSB3	DQS3
CSB4	DQS4
CSB5	DQS5
CSB6	DQS6
CSB7	DQS7

DDRREF GEN. & DECOUPLING



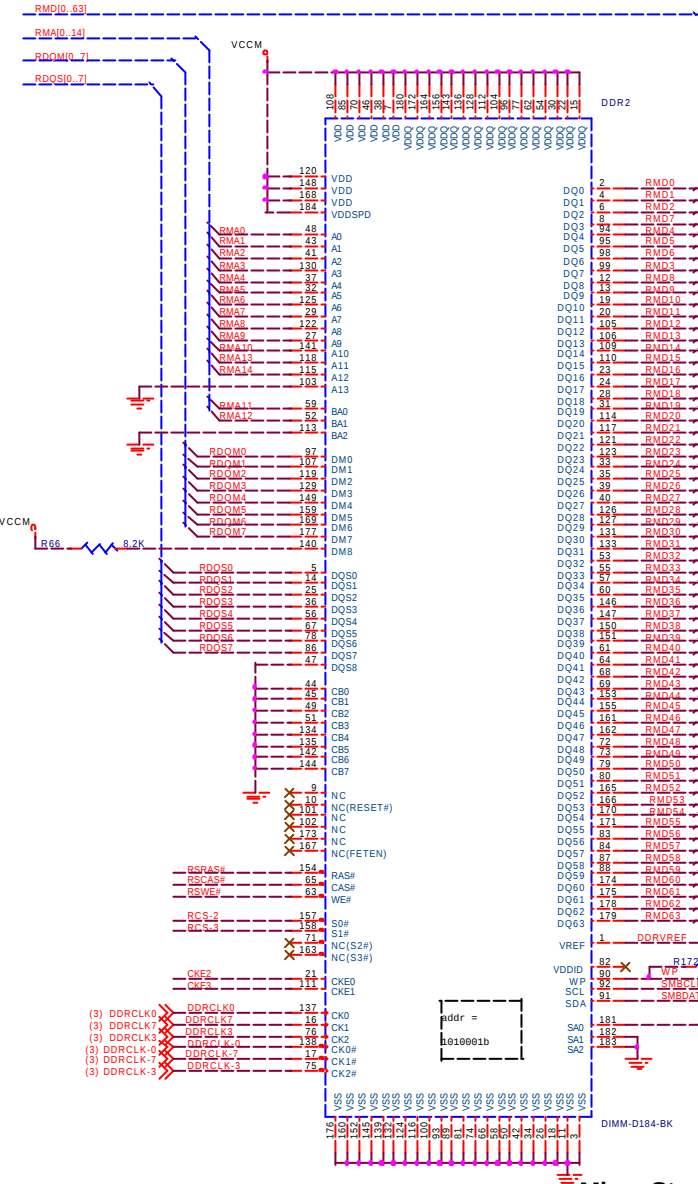
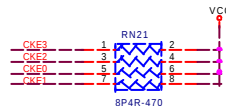
(7.11) RCS[0..3] << RCS[0..3]
 (7) CKE[0..3] << CKE[0..3]

(7.11) RSRAS# << RSPAS#
 (7.11) RSCAS# << RSCAS#
 (7.11) RSWE# << RSWE#

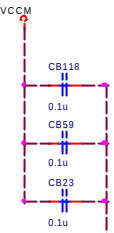
CKE0 << CKE1

(3) DDRCLK1 << DDRCLK1
 (3) DDRCLK2 << DDRCLK2
 (3) DDRCLK-1 << DDRCLK-1
 (3) DDRCLK-8 << DDRCLK-8
 (3) DDRCLK-2 << DDRCLK-2

addr =
 1010000b



DIMM DECOUPLING



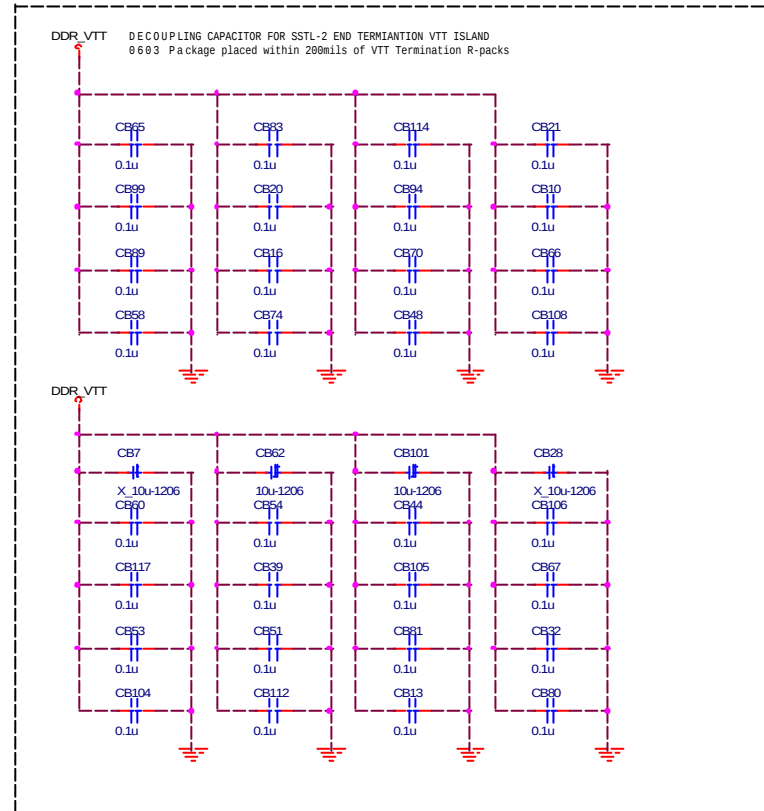
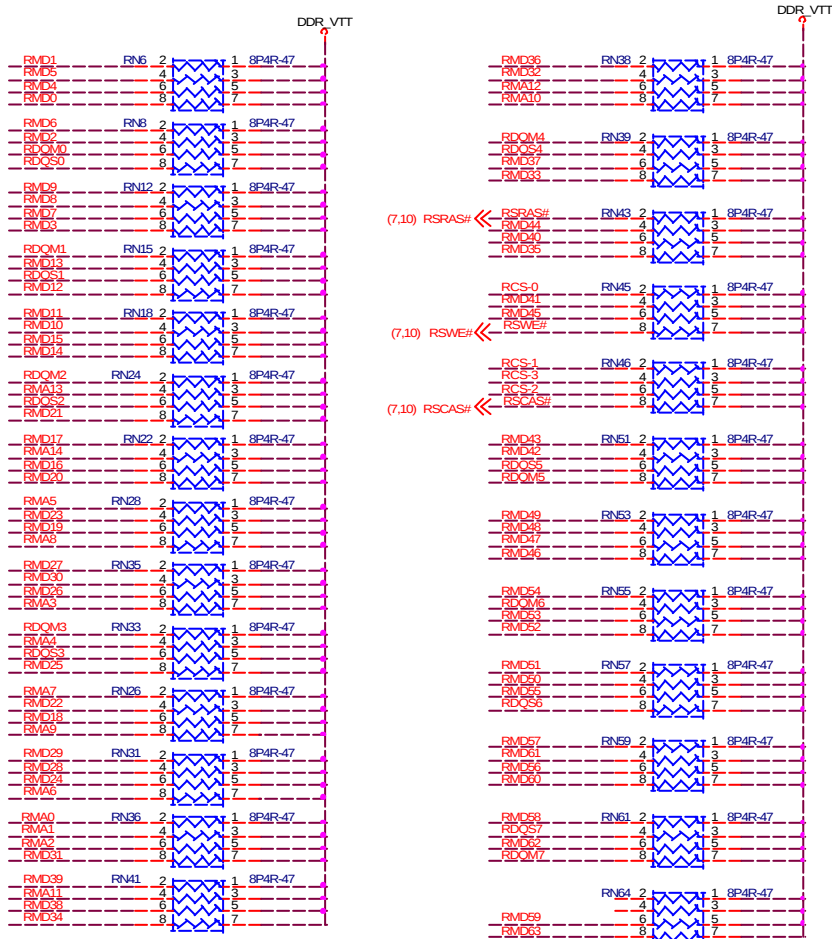
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SSTL-2 Termination Resistors

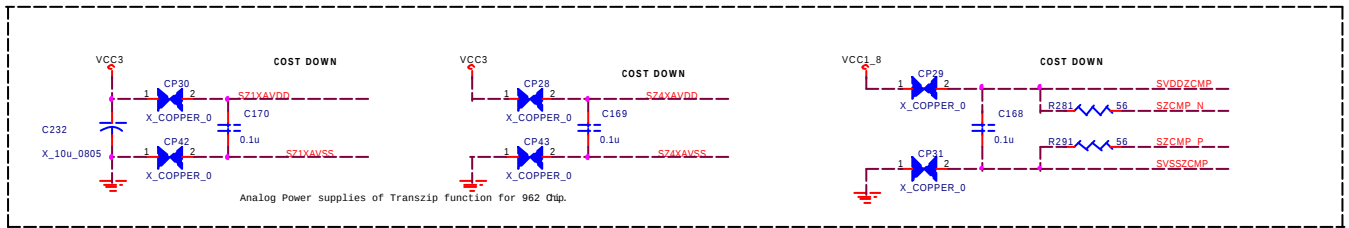
RMD[0..63] << RMD[0..63] (7,10)
RDQM[0..7] << RDQM[0..7] (7,10)
RDQS[0..7] << RDQS[0..7] (7,10)
RMA[0..14] << RMA[0..14] (7,10)
RCS[0..3] << RCS[0..3] (7,10)

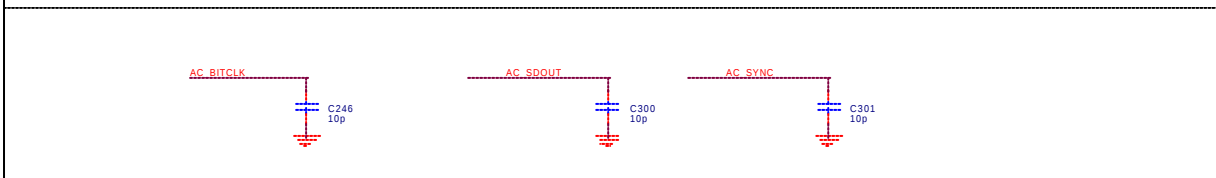
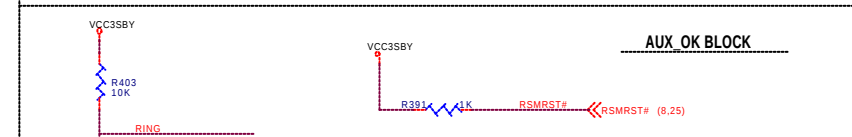
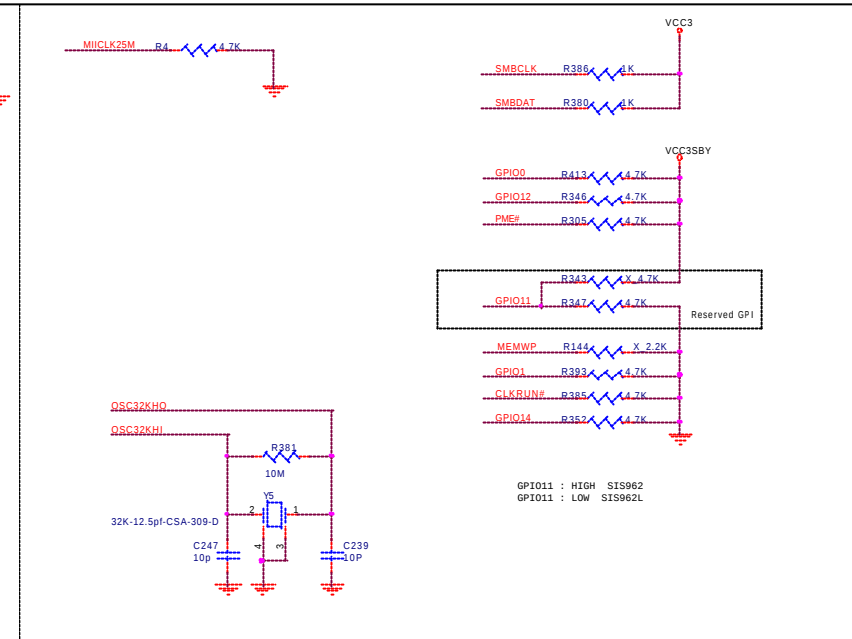
	DDR	DDR	DDR	DDR	DDR
RD/DQM(/DQS)	LV-CMOS	9/18/-	SSTL-2	18	47
RAV/Control	LV-CMOS	10	SSTL-2	6	47
CS	LV-CMOS	9	SSTL-2	6	47
CKE	DD 3.3V		DD 2.5V		



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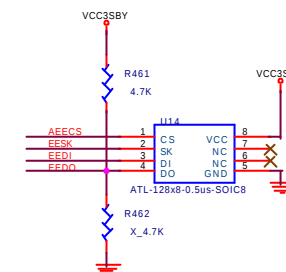
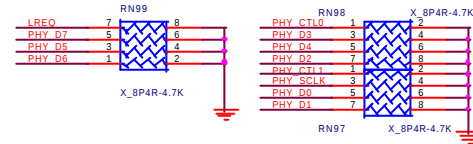
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Document Number	MS-6720		
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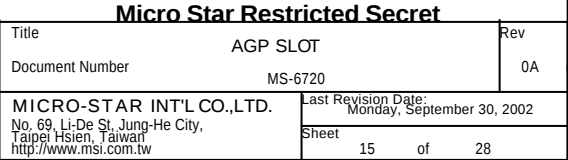


962L-3

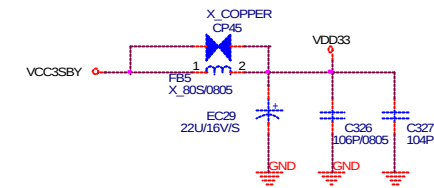
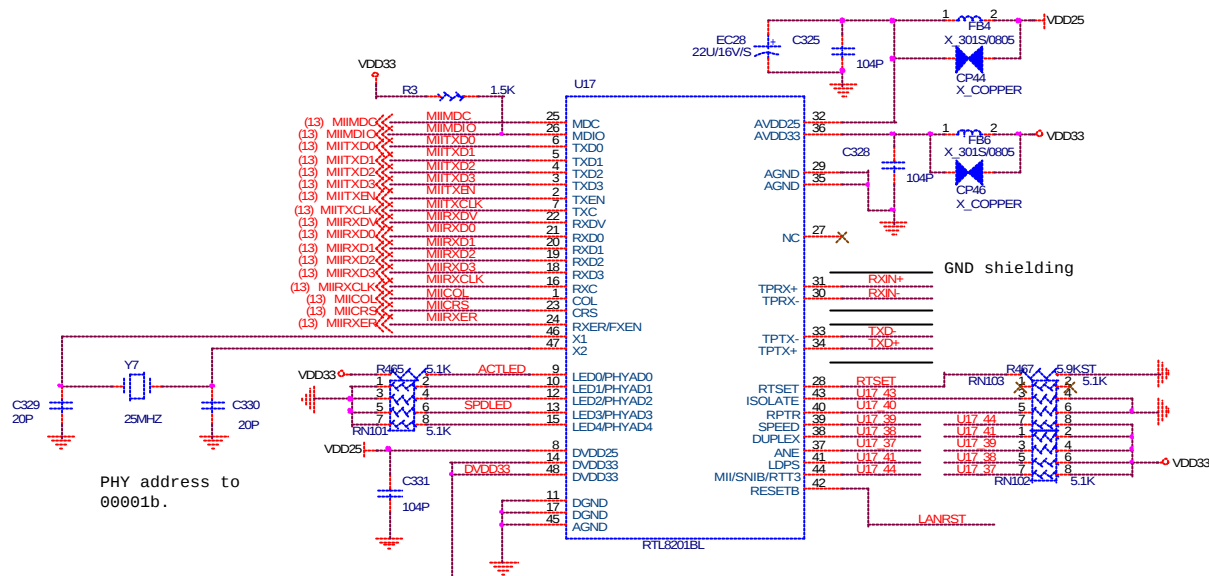


	0	1	Default	embedded pull-low (30-50k Ohm)
SPKR(LPC addr mapping)	disable	enable	0	yes
SDATO(PCICLK PLL)	enable	disable	0	yes
OC2-(SB debug mode)	enable	disable	1	yes
OC5-(Trap mode)	PC1 AD	ROM	1	yes

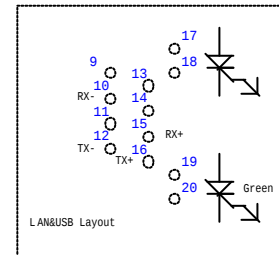
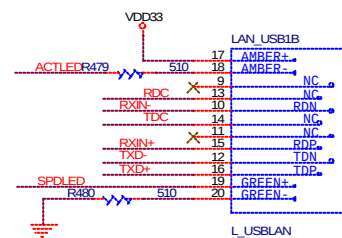
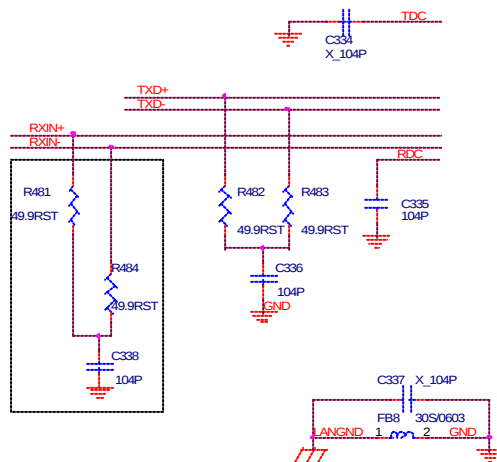
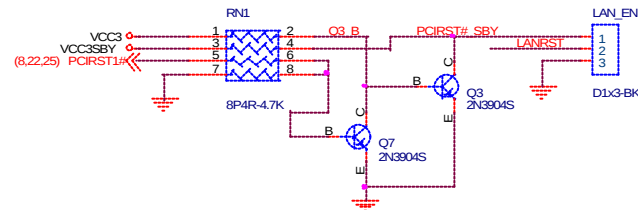
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REALTEK 8201BL MII PHY



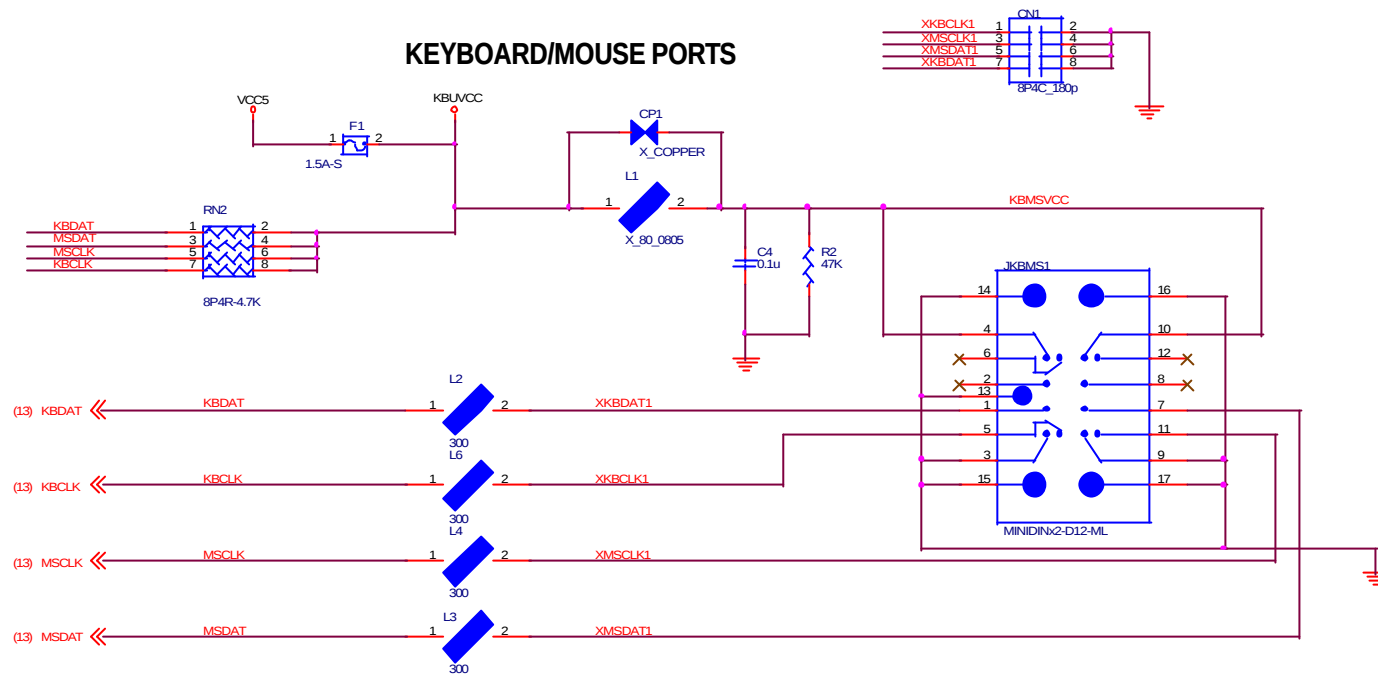
JLAN1	LAN SELECT
1-2	ENABLED
2-3	DISABLED



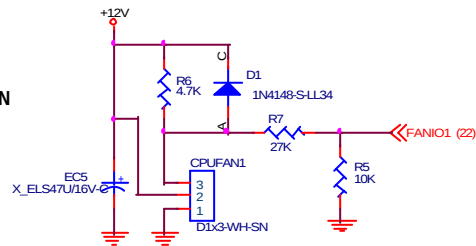
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Document Number		QA
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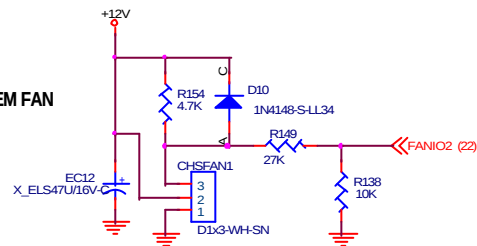
KEYBOARD/MOUSE PORTS



CPU FAN

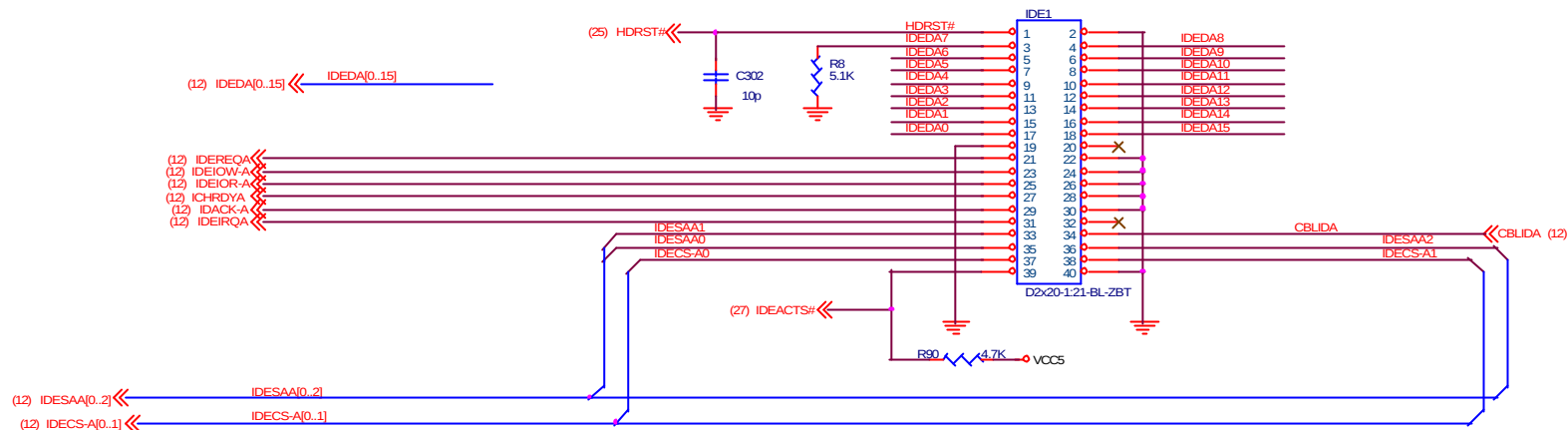


SYSTEM FAN

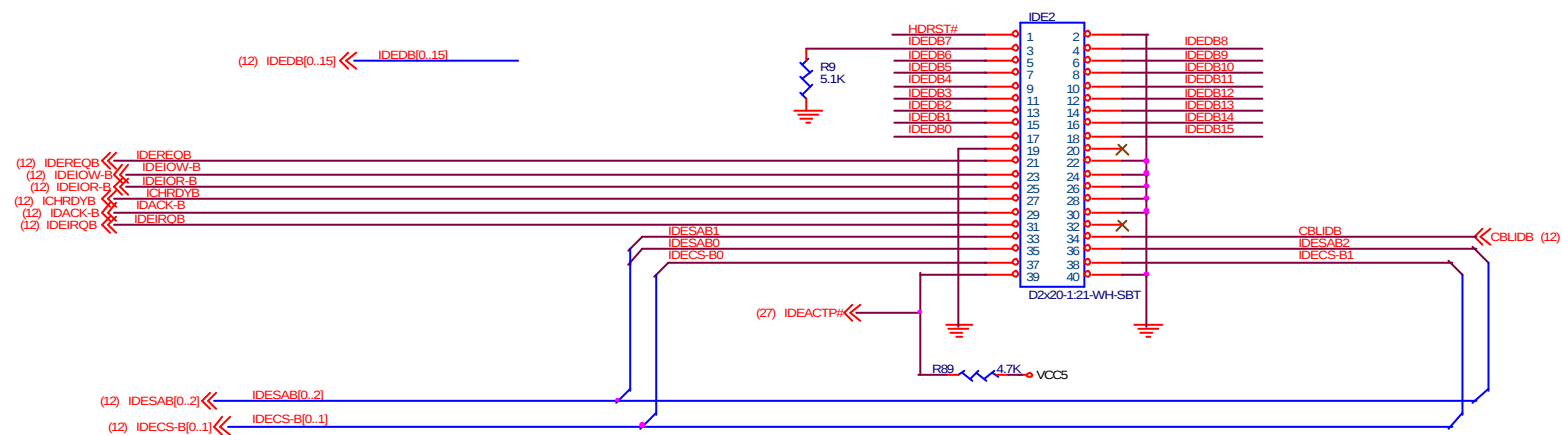


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Document Number	MS-6720	0A
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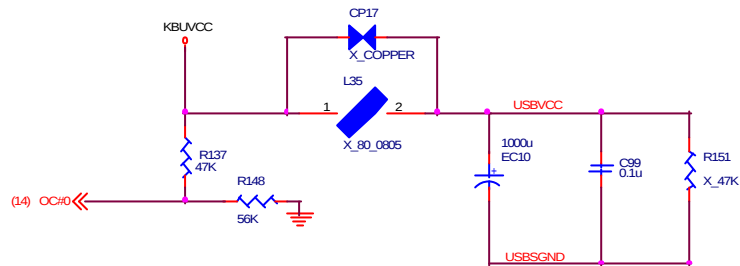


- NOTE
1. RN80/81/82/83/88/89/90/92 R275/280/304/312/315/326 NEAR IDE CONNECTOR
 2. OTHERS NEAR SIS961AB

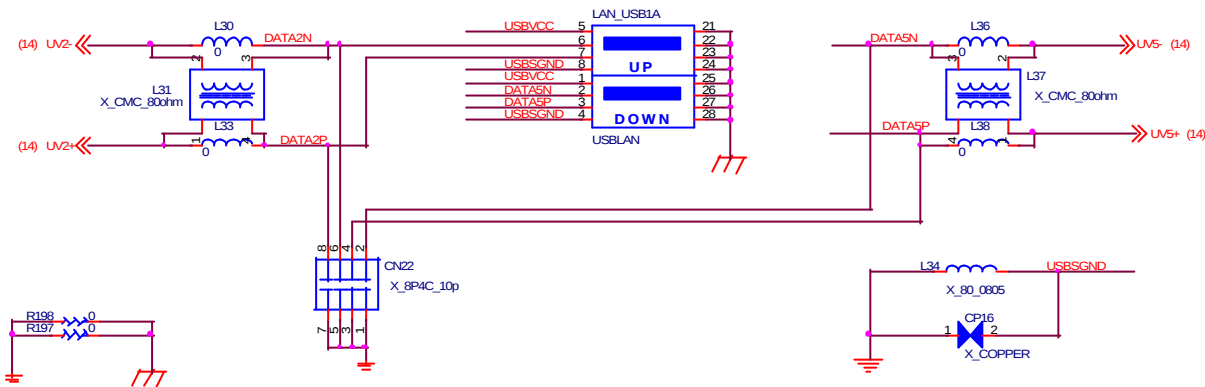


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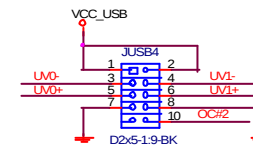
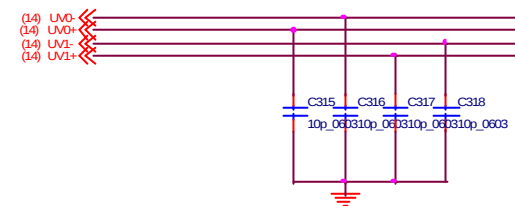
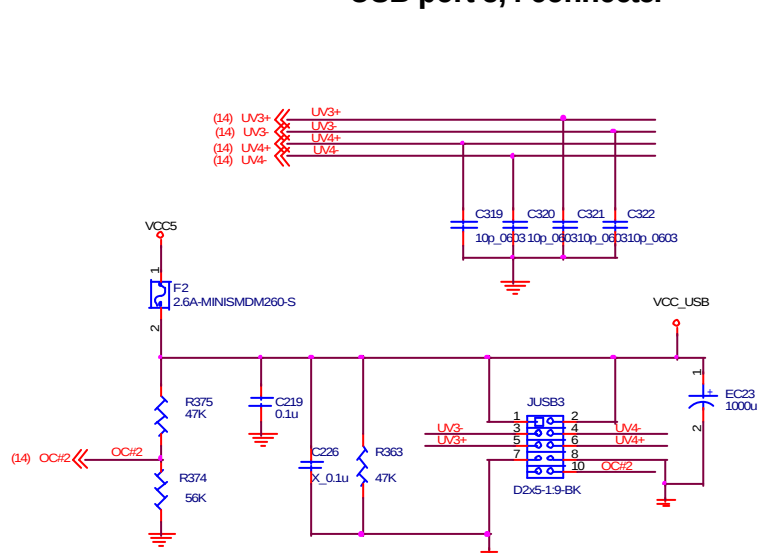
Title	IDE Connectors	Rev
Document Number	MS-6720	0A
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USB port 1,2 connector



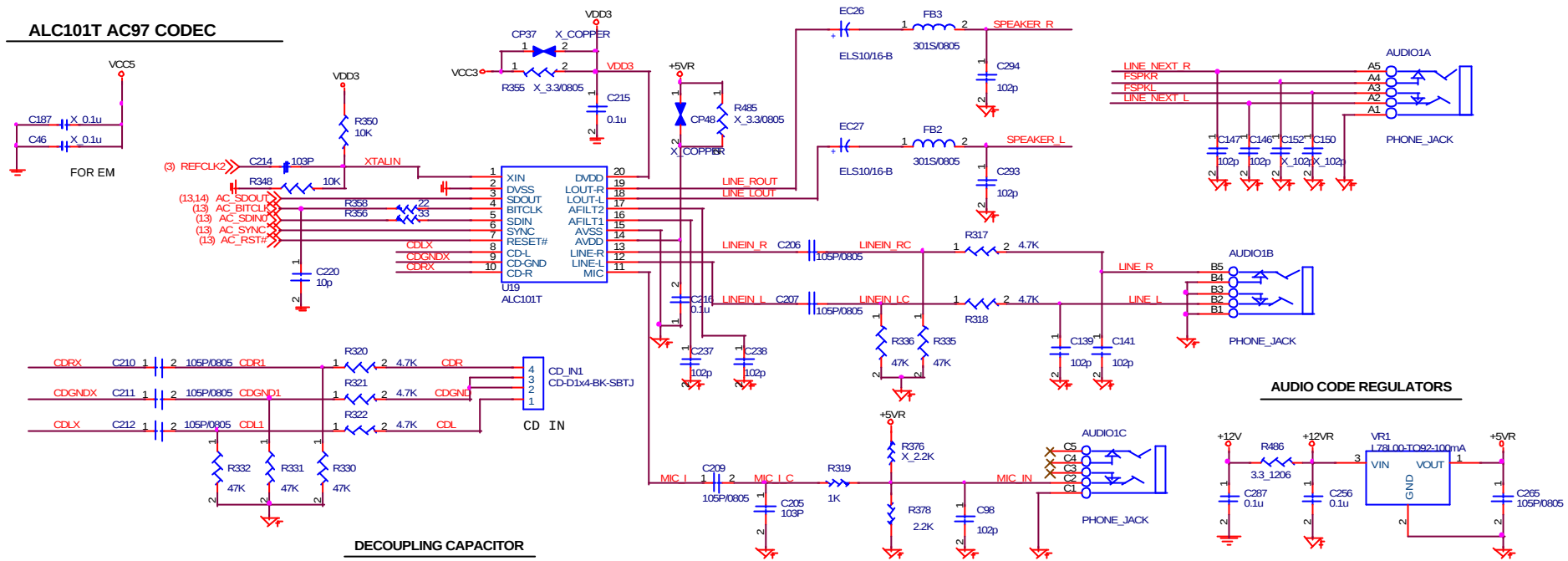
USB port 3,4 connector



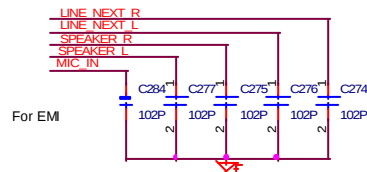
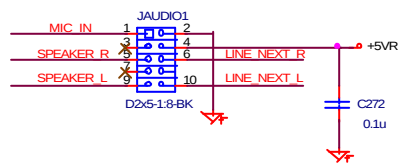
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Title	USB 1.0 Connectors	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO., LTD.		Last Revision Date:
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ALC101T AC97 CODEC



Front Audio Pin Header

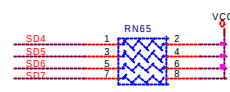
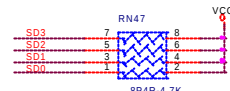
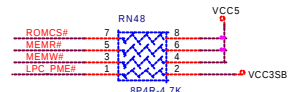
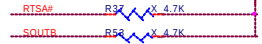


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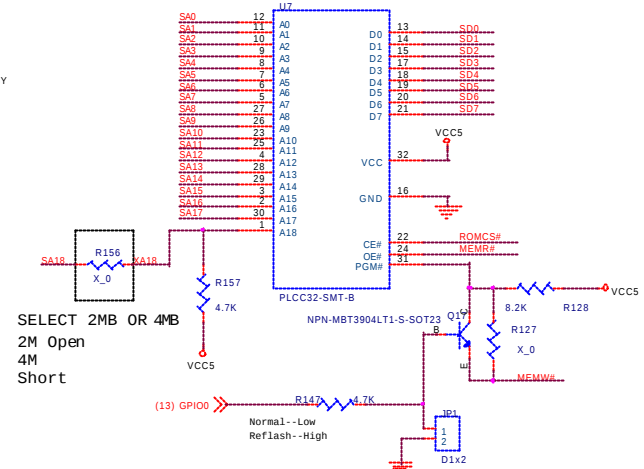
Title	AC' 97 CODEC & AUDIO Connectors	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO., LTD.		Last Revision Date:
No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan		Monday, September 30, 2002
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RTSA#	V. CEAD#	H. CEAD#
SOUTB	L. 24MHZ	H. 48MHZ

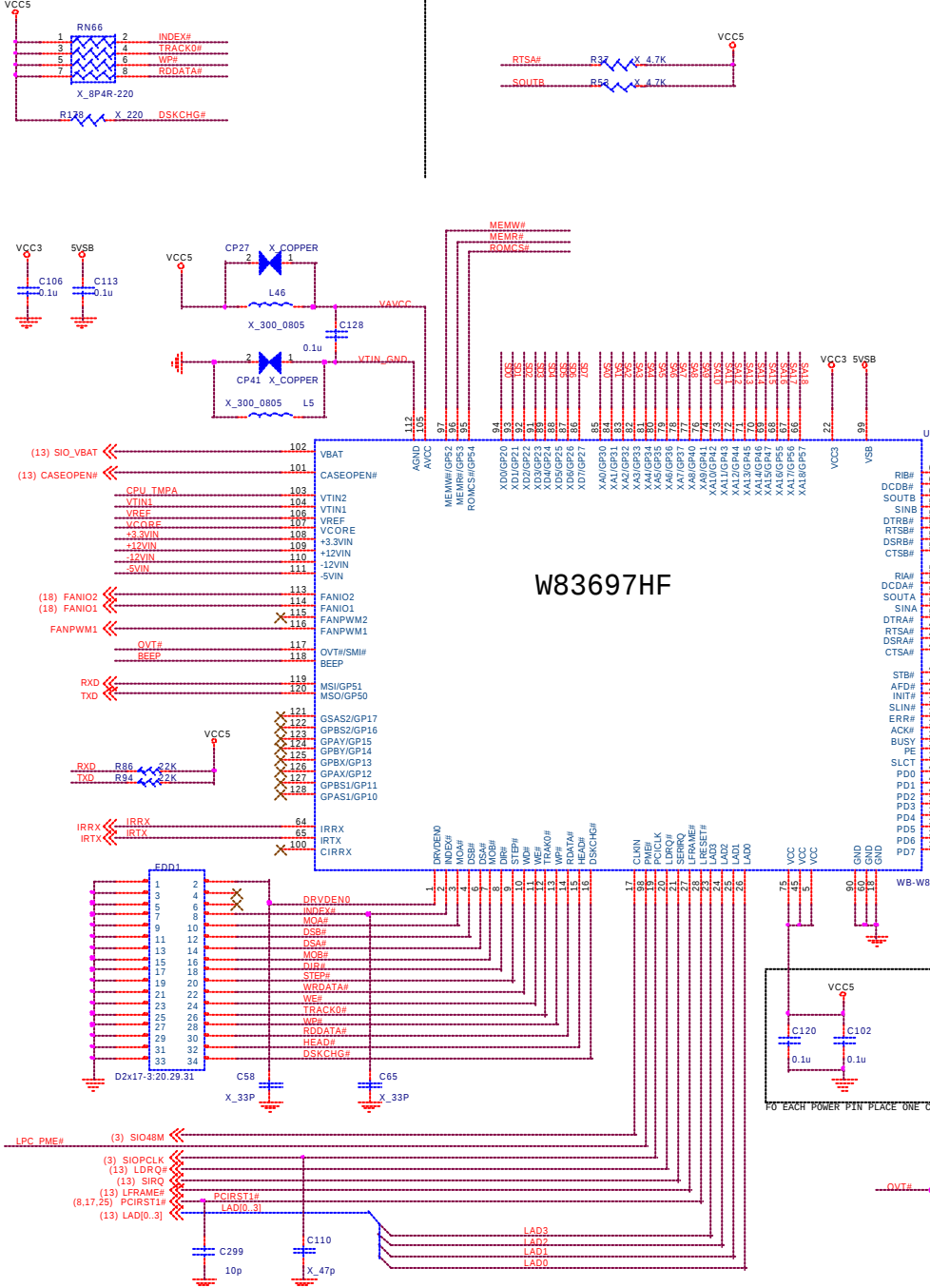
STRAPS



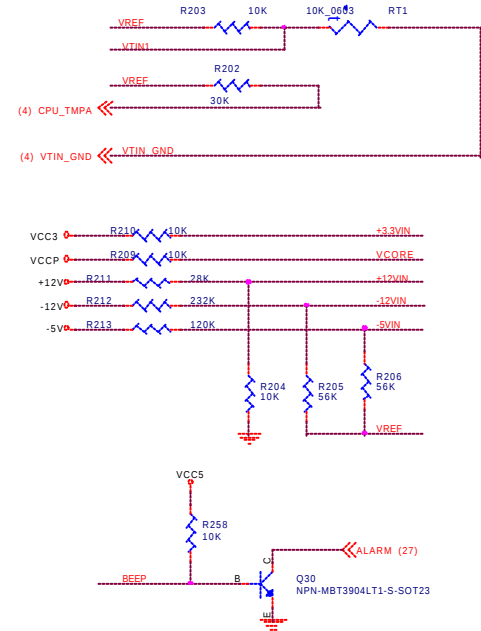
Flash Rom



W83697HF



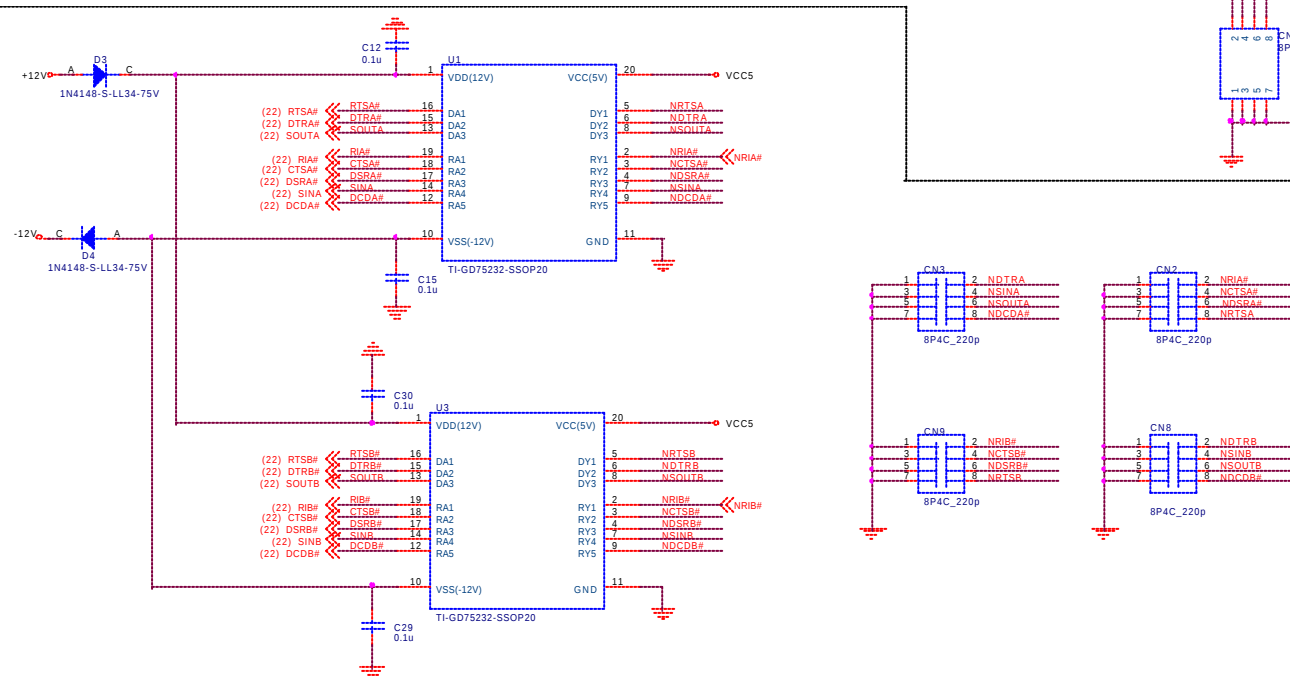
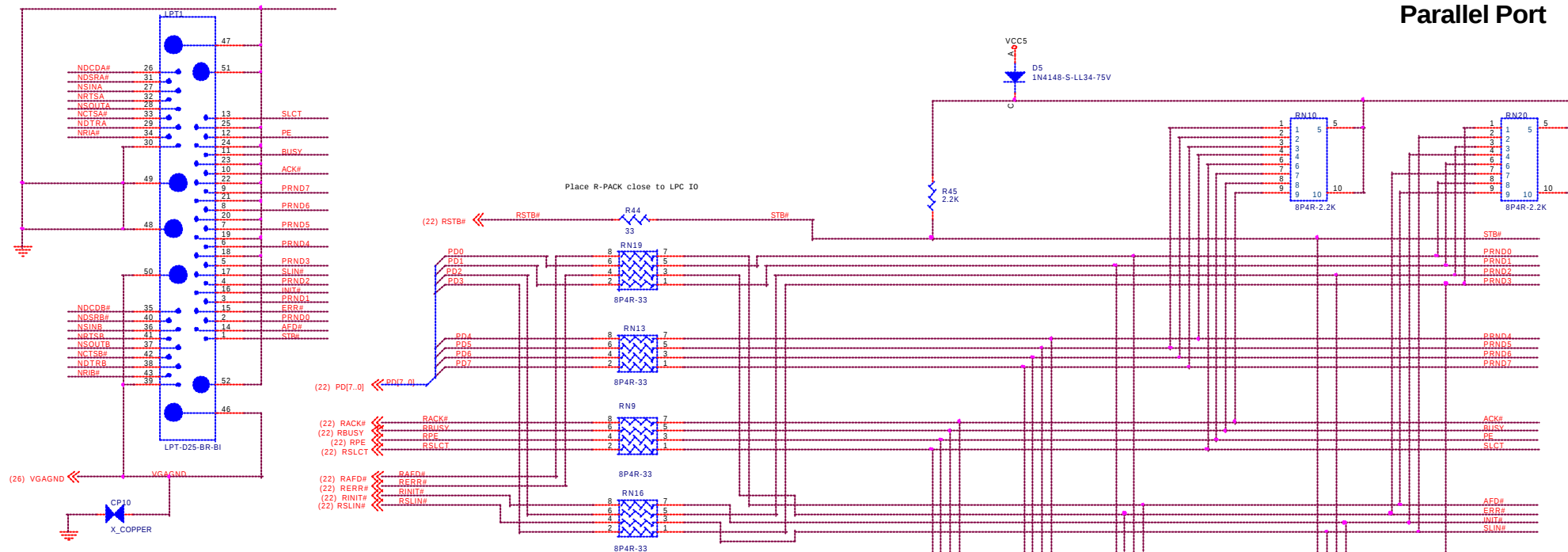
Hardware Monitor



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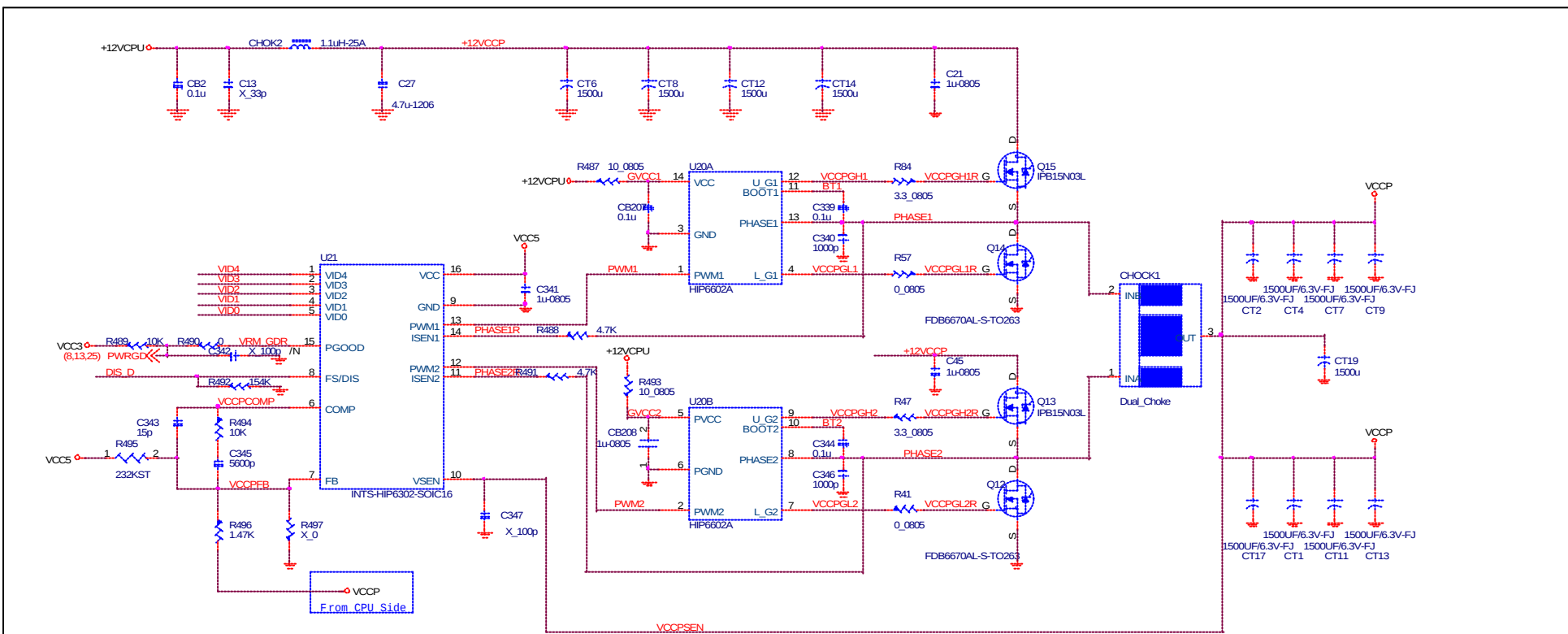
Title	Winbond LPC IO 83967HF	Rev	0A
Document Number	MS-6720		
MICRO-STAR INT'L CO., LTD.	Last Revision Date: Monday, September 30, 2002	Sheet	22 of 28
No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan			
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Parallel Port



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Title		Rev
Paralle & Serial Port		
Document Number	MS-6720	0A
MICRO-STAR INT'L CO.,LTD.		Last Revision Date:
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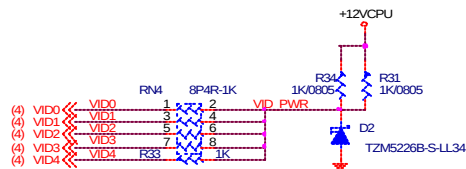
HIP6301 -- VRM 9.0/9.2

VID4	VID3	VID2	VID1	VID0	VDC(V)
1	1	1	1	1	OFF
1	1	1	1	0	1.100
1	1	1	0	1	1.125
1	1	1	0	0	1.150
1	1	0	1	1	1.175
1	1	0	1	0	1.200
1	1	0	0	1	1.225
1	1	0	0	0	1.250
1	0	1	1	1	1.275
1	0	1	1	0	1.300

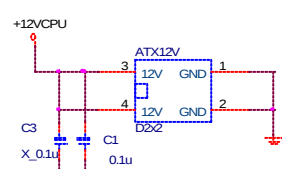
VID4	VID3	VID2	VID1	VID0	VDC(V)
1	0	1	0	1	1.325
1	0	1	0	0	1.350
1	0	0	1	1	1.375
1	0	0	1	0	1.400
1	0	0	0	1	1.425
1	0	0	0	0	1.450
0	1	1	1	1	1.475
0	1	1	1	0	1.500
0	1	1	0	1	1.525
0	1	1	0	0	1.550

VID4	VID3	VID2	VID1	VID0	VDC(V)
0	1	0	1	1	1.575
0	1	0	1	0	1.600
0	1	0	0	1	1.625
0	1	0	0	0	1.650
0	0	1	1	1	1.675
0	0	1	1	0	1.700
0	0	1	0	1	1.725
0	0	1	0	0	1.750
0	0	0	1	1	1.775
0	0	0	1	0	1.800

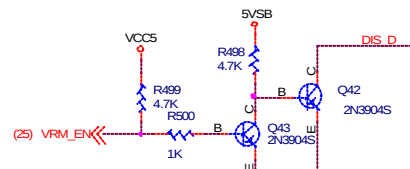
VID PULL-UP RESISTORS



ATX12V POWER CONNECTOR



PWM GOOD



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Title	VRM 9.0	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO., LTD.		
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POWER Bulk Decoupling		
	470UF	1000UF
VCC_DIMM		2
VDDQ		1
VCC5	1	
VCC3		1
5VDUAL		2
DDR_VTT		2
VCC1_8		1
VCC3SBY	1	1
VCC5_SB	1	

SEL0	5VUSB
H	2 MOSFET
L	1 MOSFET

**S50# pin function(Hi level = 5V)
same as 5VUSB(Hi level = 12V)

(8,13) RSMRST#
(8,13,24) PWRGD
(27) FP_RST#
(26) PWR_OK
(27) PWR_LED
(27) SUS_LED

**INPUT 2 AND 3 MUST BE HI LEVEL WHEN USE
OUTPUT 1 AND 2 FOR GPIO FUNCTION

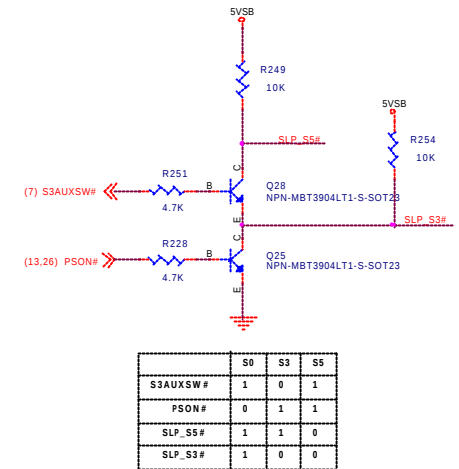
(15) PCIRST3#

(12) PCIRST#
(19) HDRST#
(15,16) PCIRST2#
(8,17,22) PCIRST1#
(3,10,13) SMBDAT
(3,10,13) SMBCLK

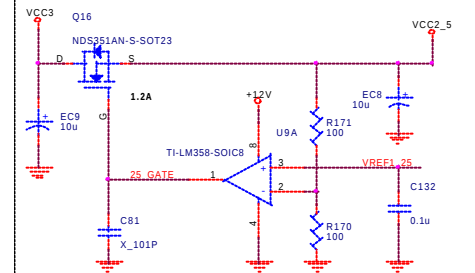
SEL1	VRAM	VRAM_2.5
H	3.3VDUAL	2.5V
TRI-STATE	3.3VSB	2.5V
L	3.3VSTR	1.25V

FOR 3VSB OR 3VSTR
SETTING BY SEL1

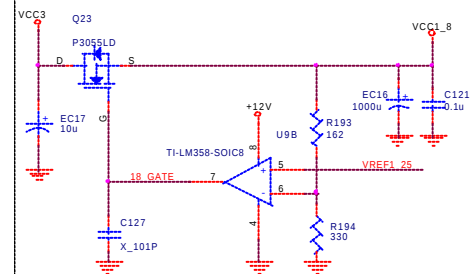
FOR 3VDUAL ** SETTING 3VSTR THEN VRAM_2.5
SETTING BY SEL1 BECOME TO 1.25 VREF



2.5V POWER TRANSLATOR



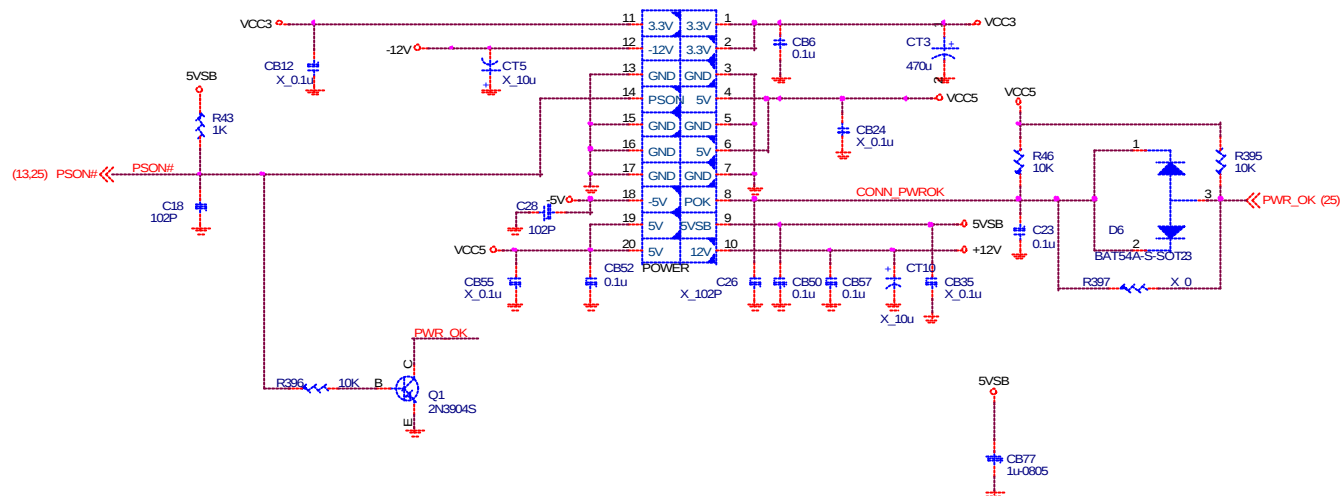
1.8V POWER TRANSLATOR



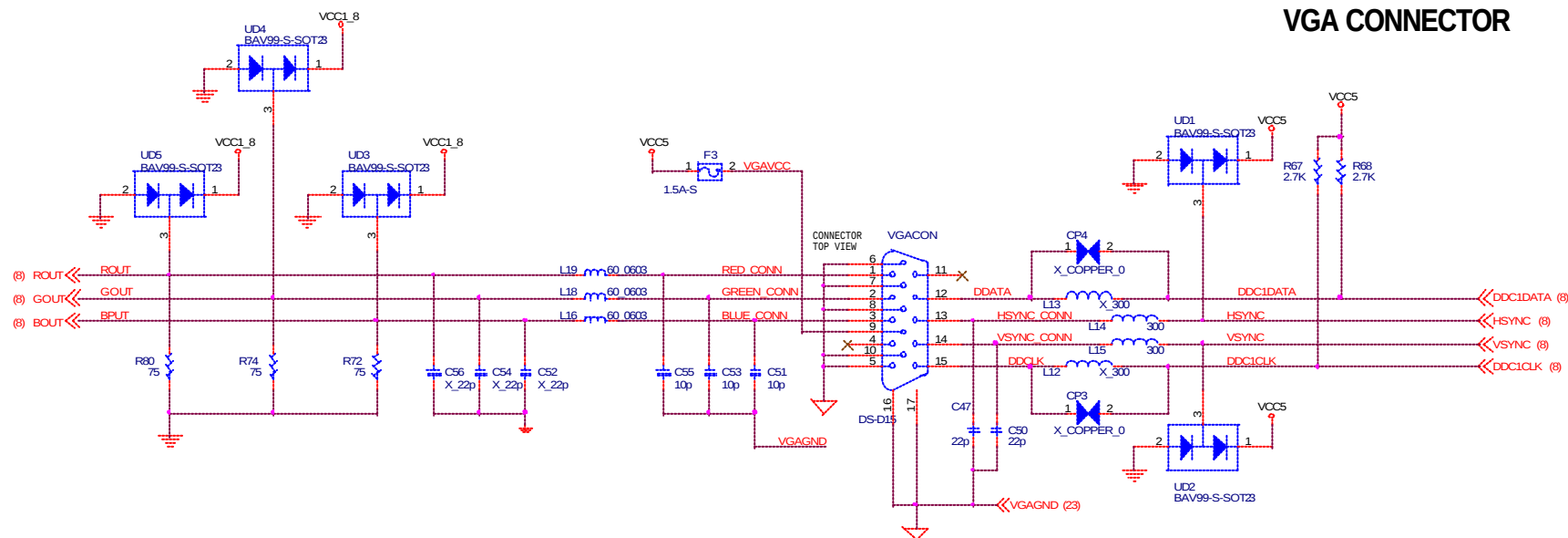
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Title	MS-5 ACPI Controller	Rev	0A
Document Number	MS-6720		
MICRO-STAR INT'L CO.,LTD.		Last Revision Date:	
No. 69, Li-De St, Jung-He City, Taiper Hsien, Taiwan http://www.msi.com.tw		Monday, September 30, 2002	
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ATX CONNECTOR



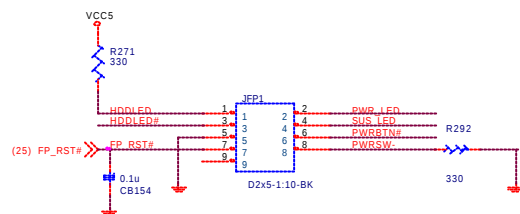
VGA CONNECTOR



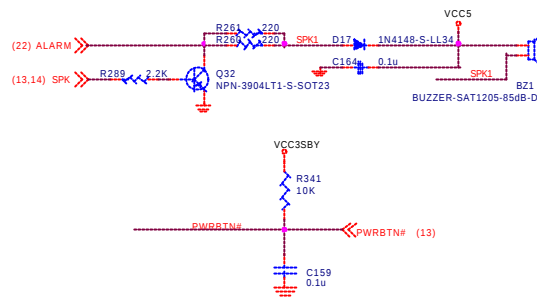
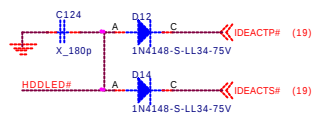
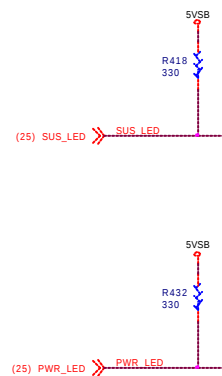
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Title	ATX Connector & VGA Connector	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO., LTD.		Last Revision Date:
No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan		Monday, September 30, 2002
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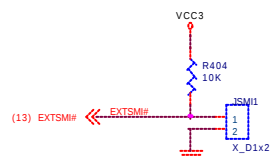
Intel FRONT PANEL



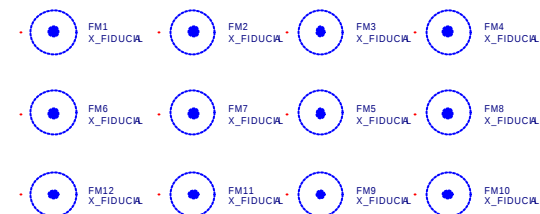
Dual Color LED Block



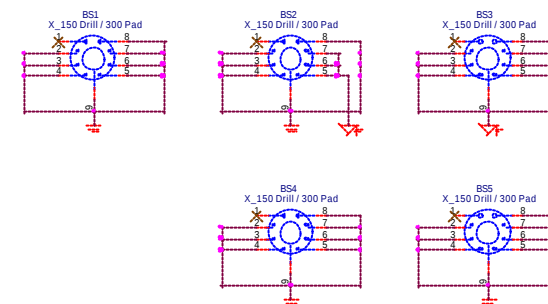
Sleep Button



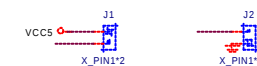
PCB Component



PCB OTHER COMPONENT



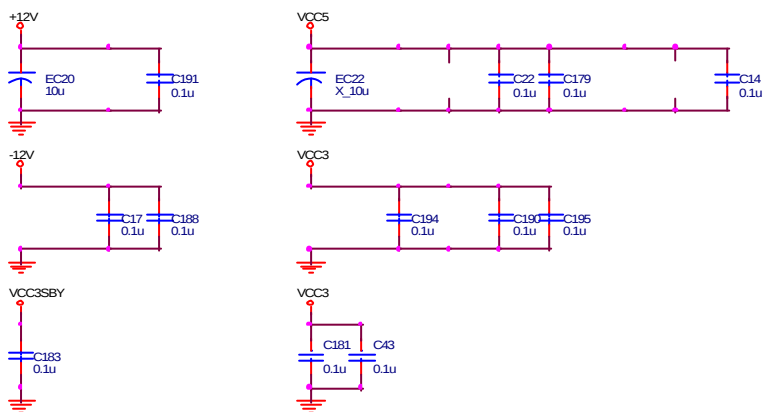
SIMULATION TRACE



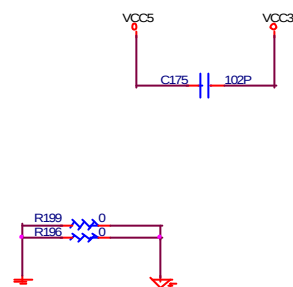
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Title	Front Panel	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO.,LTD.		Last Revision Date:
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System Decoupling Capacitors



High Freq. return current decoupling



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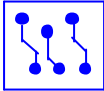
Title	BLOCK DIAGRAM	Rev
Document Number	MS-6720	0A
MICRO-STAR INT'L CO., LTD. No. 69 Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw		Last Revision Date: Monday, September 30, 2002
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JBAT1 Clear CMOS		
1 - 2	Normal	*
2 - 3	Clear CMOS	

JBAT1(1-2)
YJUMPER-MG

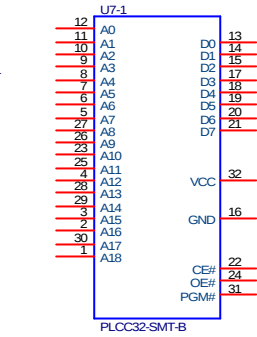
MS6720 PCB

PCB



PCB, MB, 6720,00A, 4,

BAT SOCKET



COM1



YCN9M-1

COM2

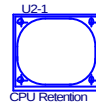
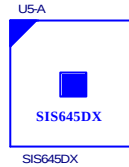


YCN9M-1

INTEL AUDIO



BIOS WRITE PROTECT



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Title	Manual Parts	Rev
Document Number	MS-6720	0A
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