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MS-7399

Version 3.0

CPU:

Intel Prescott (L2=2MB)
 Intel Cendar Mill (65nm)
 Intel Smithfield (90nm Dual core)
 Intel Presler (65nm Dual core)
 Intel Conroe (65nm Dual core)
 Intel Kentsfield
 Intel Yorkfield
 Intel Wolfdale

System Chipset:

nVidia - MCP73PV

On Board Chipset:

BIOS -- SPI FLASH 4Mb
 Azalia CODEC(ALC 888S)
 LPC Super I/O -- ITE8718F
 LAN-Realtek RTL8211BL
 IEEE1394 -- VIA VT6308P

Main Memory:

DDR II * 2 (Max 2GB)

Expansion Slots:

PCI Express X16 SLOT * 1
 PCI Express X1 SLOT * 1
 PCI 2.3 SLOT * 2

Intersil PWM:

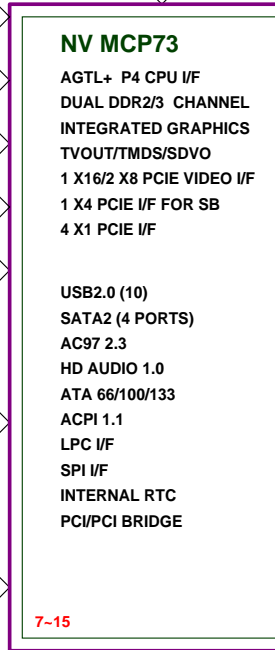
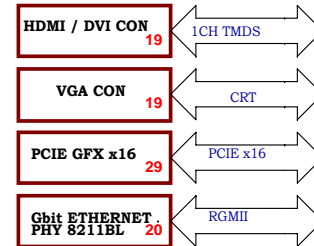
Controller: Intersil 6312 3 Phase

Block Diagram

LGA775 CONROE
LGA775 SMITHFIELD
LGA775 PENTIUM D, EE
LGA775 PRESCOTT 4,5,6

4X DATA
2X ADDRESS

AGTL+
533/800/1066/1333MHz



UNBUFFERED
DDR2 DIMM
16,18

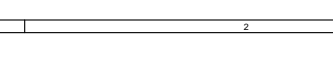
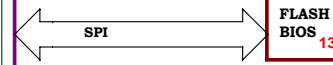
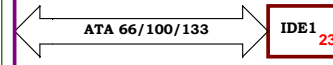
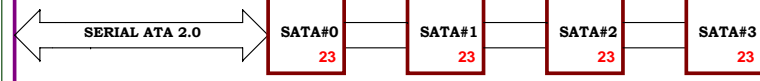
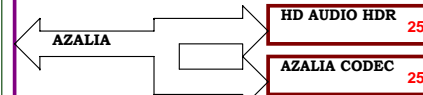
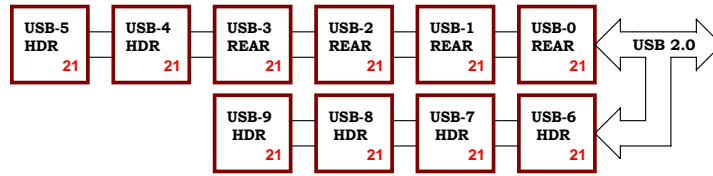
240-PIN DDR II DIMM

UNBUFFERED
DDR2 DIMM
16,18

240-PIN DDR II DIMM

533/667/800
A CHANNEL

PCIE x1 SLOT1
30



CIR Circuit 22

ITE LPC SIO 8718F 22



ACPI CONTROLLER
27

CPU CORE POWER
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CPU VTT POWER
MCP73 CORE POWER
PCIE & SB POWER
27,28

DDR2 DRAM POWER
28

ATX CON & DUAL POWER
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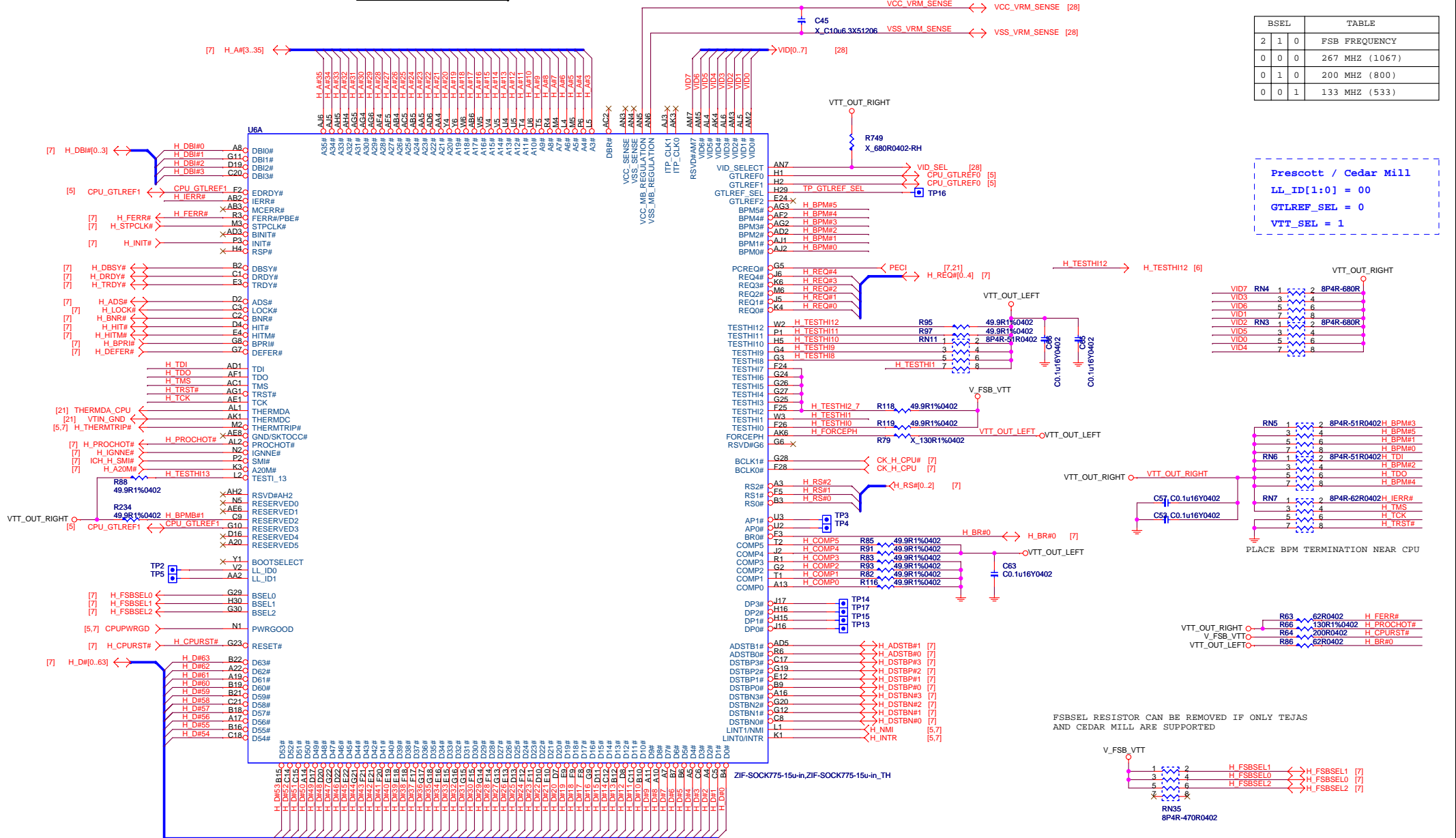
MCP73 GPIO Config.

GPIO Pin	Type	Primary State
GPIO_2/NMI/PS2_CLK0	I/O(S5_3.3V)	TMDS_DET1
GPIO_3/SMI#/PS2_DATA0	I/O(S5_3.3V)	TMDS_DET2
GPIO_4/SCI/INTR/PS2_CLK1	I/O(S5_3.3V)	Unused
GPIO_5/INIT#/PS2_DATA1	I/O(S5_3.3V)	OBR1
GPIO_6/FERR#/SYS_SERR#/IGPU_GPIO6	I/O(S5_3.3V)	Unused
GPIO_7/NFERR#/SYS_PERR#/IGPU_GPIO7	I/O(S5_3.3V)	Unused
GPIO_8/SPI_DI	I/O(S5_3.3V)	Unused
GPIO_9/SPI_DO	I/O(S5_3.3V)	Unused
GPIO_10/SPI_CS0	I/O(S5_3.3V)	Unused
GPIO_11/SPI_CLK	I/O(S5_3.3V)	Unused
LPC_DRQ1#/GPIO_19/FANRPM1	I/O(3.3V)	Unused
PROCHOT#/GPIO_20	I/O(CPU_VTT)	H_PROCHOT#
PE_WAKE#/GPIO_21	I/O(S5_3.3V)	WAKE#
HDA_SDATA_IN0/GPIO_22	I/O(S5_3.3V)	HDA_SDATA_IN
HDA_SDATA_IN1/GPIO_23/MGPIO_0	I/O(S5_3.3V)	Unused
HDA_SDATA_IN2/GPIO_24/MGPIO_2	I/O(3.3V)	Unused
USB_OC0#/GPIO_25	I/O(S5_3.3V)	OC#1
USB_OC1#/GPIO_26	I/O(S5_3.3V)	OC#2
USB_OC2#/GPIO_27	I/O(S5_3.3V)	OC#3
USB_OC3#/GPIO_28	I/O(S5_3.3V)	Pull Hi
USB_OC4#/GPIO_29	I/O(S5_3.3V)	Pull Hi
PCI_PME#/GPIO_30	I/O(S5_3.3V)	PCI_PME#
SIO_PME#/GPIO_31	I/O(S5_3.3V)	SIO_PME#
EXT_SMI#/GPIO_32	I/O(S5_3.3V)	LPC_SMI#
SUS_CLK/GPIO_34	I/O(S5_3.3V)	Unused
MII0_INTR/GPIO_35	I/O(S5_3.3V)	RGMI0_INTR#
MII0_PXER/GPIO_36/PWR_LED#	I/O(S5_3.3V)	RGMI0_RX_ER
MII0_PWRDWN/GPIO_37	I/O(S5_3.3V)	RGMI0_PREDN
PCI_REQ3#/GPIO_38/RS232_CTS#	I/O(3.3V)	PREQ#3
PCI_GNT3#/GPIO_39/RS232_RTS#	I/O(3.3V)	Unused
PCI_REQ2#/GPIO_40/RS232_DSR#	I/O(3.3V)	PREQ#2
PCI_GNT2#/GPIO_41/RS232_DTR#	I/O(3.3V)	PGNT#2
LPC_RESET#/GPIO_42	I/O(3.3V)	Unused
PCI_PERR#/GPIO_43/RS232_DCD#	I/O(3.3V)	PERR#
HDA_SYNC/GPIO_44	I/O(3.3V)	AZ_SYNC_R
HDA_SDATA_OUT/GPIO_45	I/O(3.3V)	HDA_SDATA_OUT
LPC_DRQ0#/GPIO_50	I/O(3.3V)	LPC_DRQ#0
PCI_REQ4#/GPIO52/RS232_SIN#	I/O(3.3V)	PREQ#4
PCI_GNT4#/GPIO_53/RS232_SOUT#	I/O(3.3V)	Unused
A20GATE/GPIO_55	I/O(3.3V)	A20GATE
KBRDRSTIN#/GPIO_56	I/O(3.3V)	KBRST#
SATA_LED#/GPIO_57	A(3.3V)	SATALED#
THERMTRIP#/GPIO_58	I/O(CPU_VTT)	H_THERMTRIP#
THERM#/GPIO_59	I/O(3.3V)	Unused
FANRPM0/GPIO_60	I/O(3.3V)	OBR2
FANCTL0/GPIO_61	I/O(3.3V)	AUDIO_FRONT_IO
FANCTL1/GPIO_62	I/O(3.3V)	DEPOP_GPIO
CABLE_DET_P/GPIO_63	I/O(3.3V)	ATADETO

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	PCI_INTX# PCI_INTY# PCI_INTZ# PCI_INTW#	PREQ#0 PGNT#0	AD21	PCICLK0
PCI Slot 2	PCI_INTY# PCI_INTZ# PCI_INTW# PCI_INTX#	PREQ#1 PGNT#1	AD22	PCICLK1
1394	PCI_INTW#	PREQ#2 PGNT#2	AD23	1394_PCLK

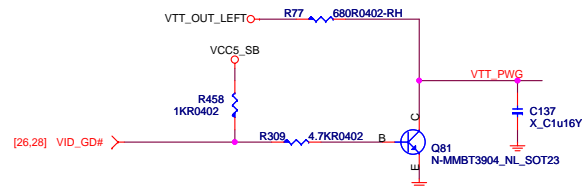
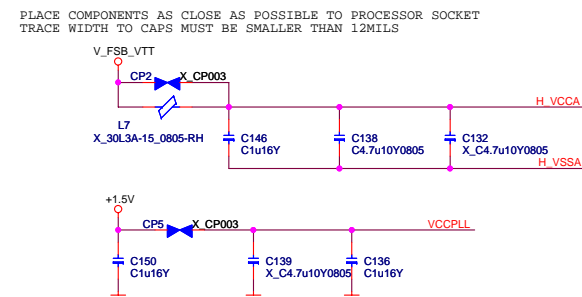
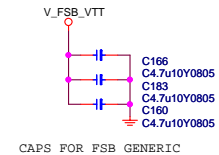
CPU SIGNAL BLOCK

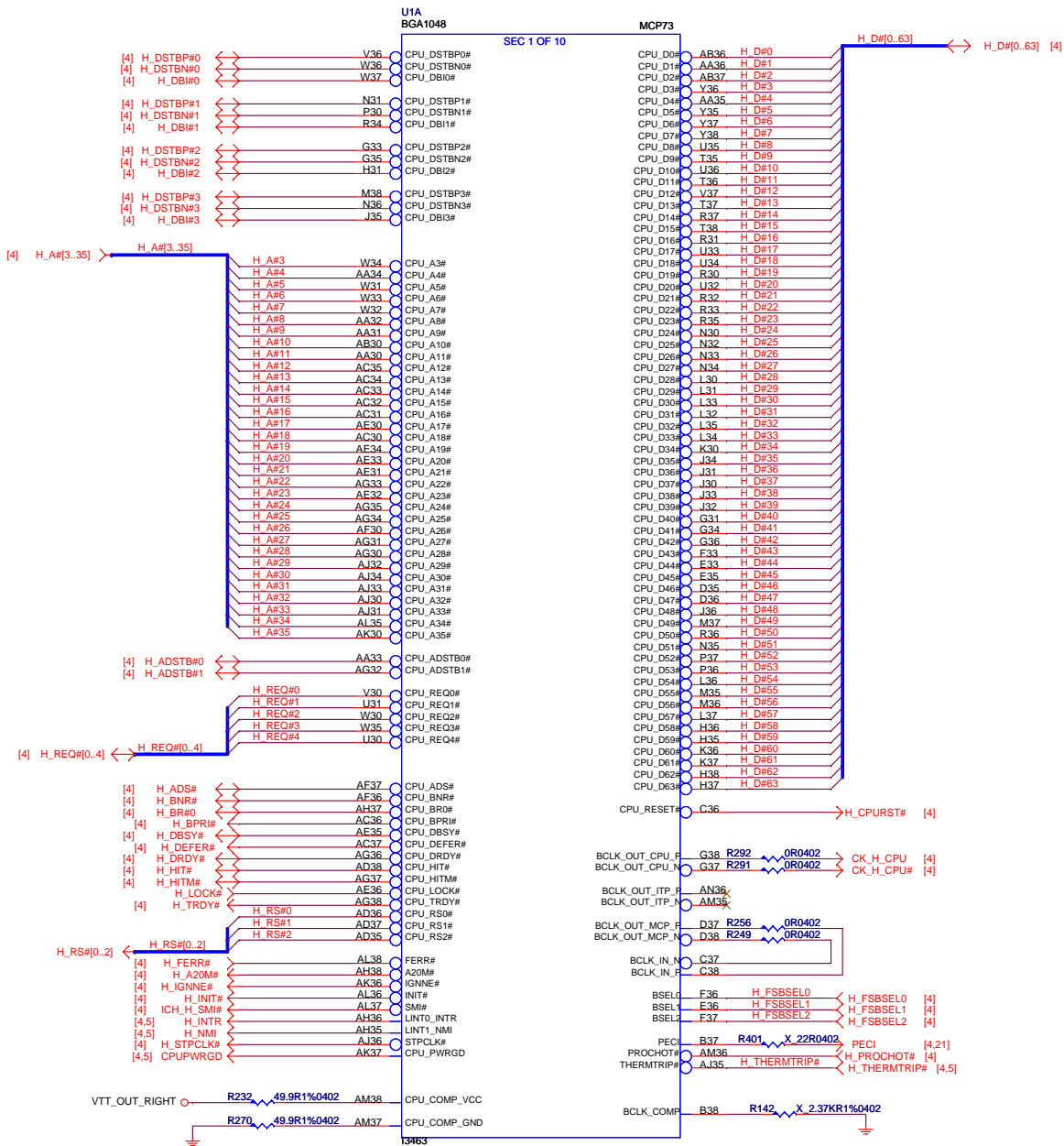


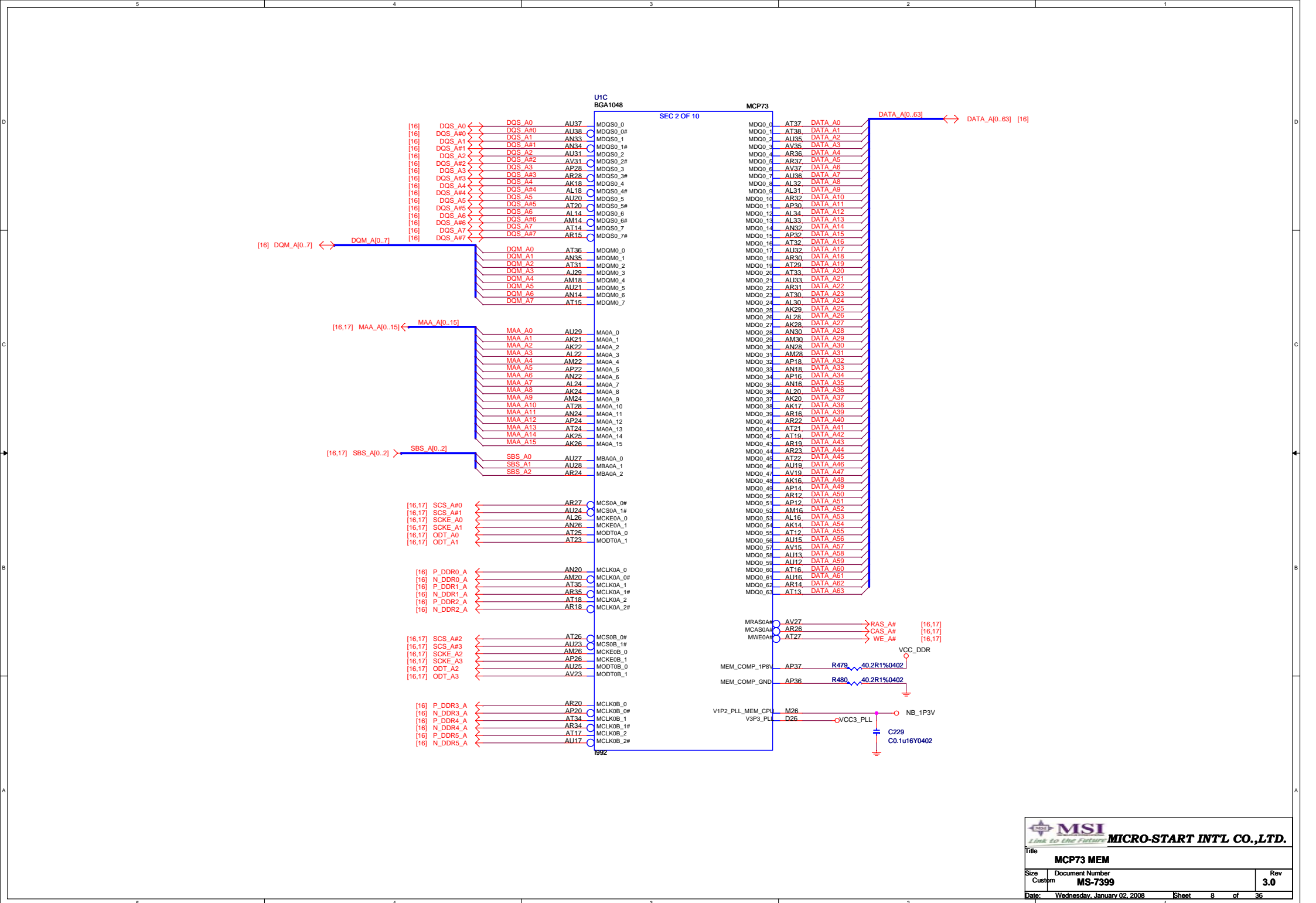
BSEL	TABLE
2 1 0	FSB FREQUENCY
0 0 0	267 MHZ (1067)
0 1 0	200 MHZ (800)
0 0 1	133 MHZ (533)

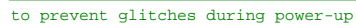
Prescott / Cedar Mill
 LL_ID[1:0] = 00
 GTLREF_SEL = 0
 VTT_SEL = 1

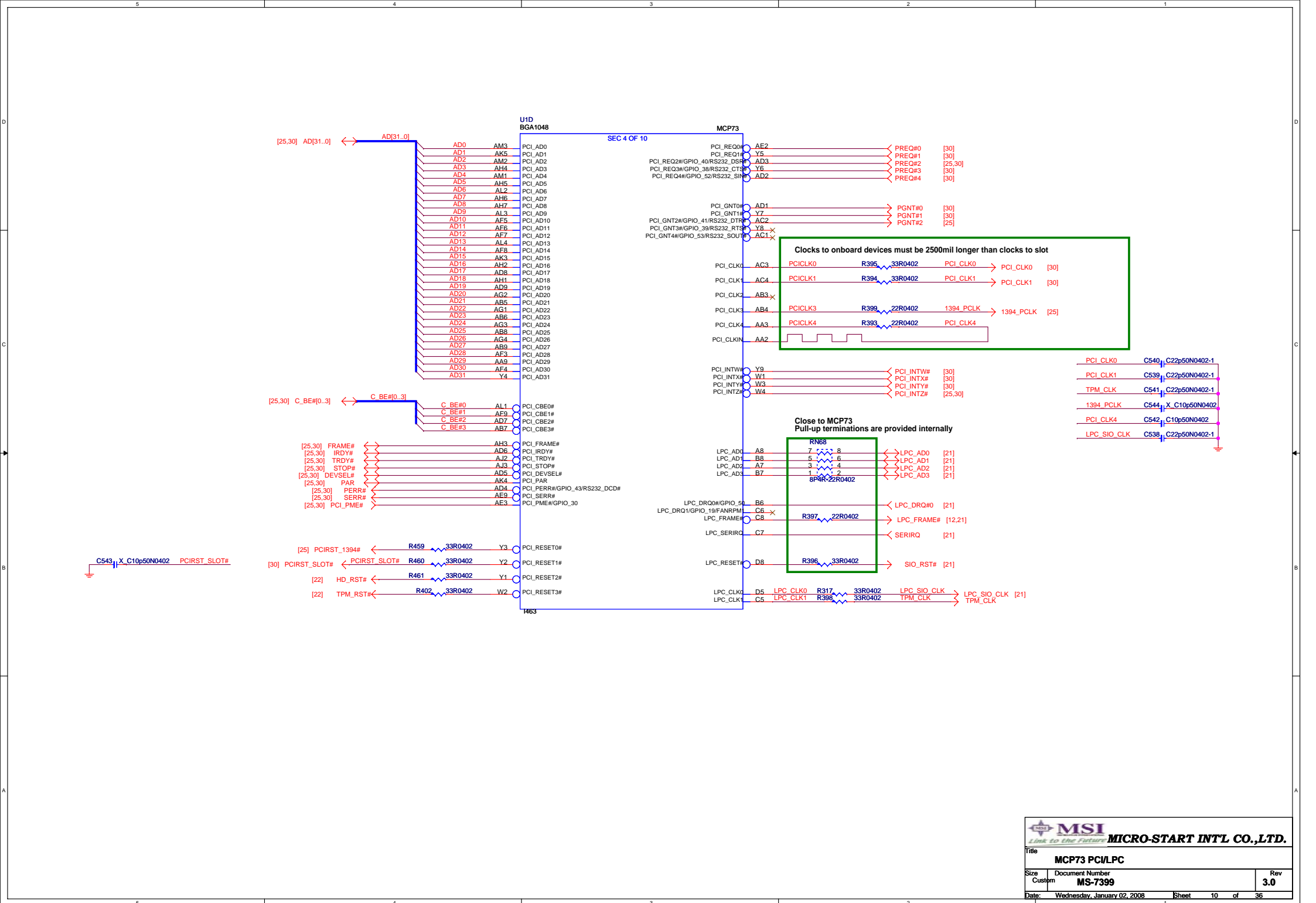
FSBSEL RESISTOR CAN BE REMOVED IF ONLY TEJAS AND CEDAR MILL ARE SUPPORTED

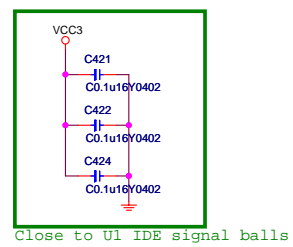
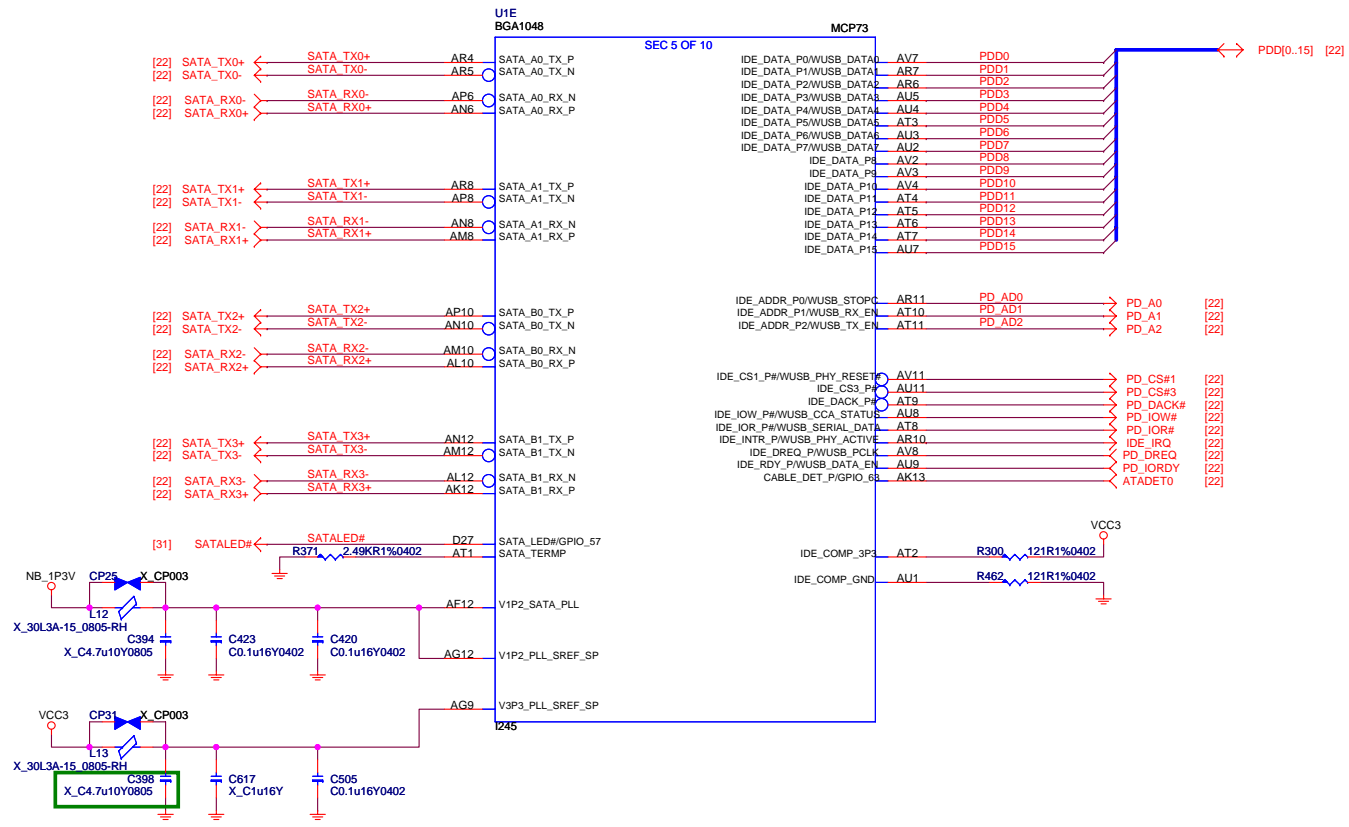




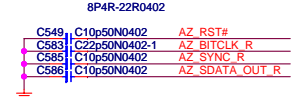
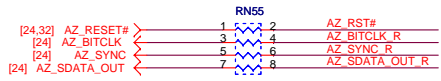






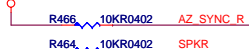


Strapping 10K ohm to VCC3_SB: RGMII



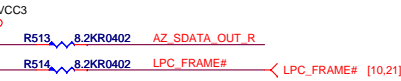
HDA_SYNC
(SIO CLK)

0 = 14.318MHZ
1 = 24MHZ +

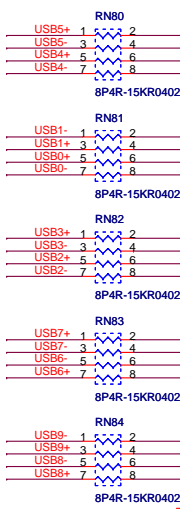
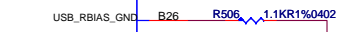
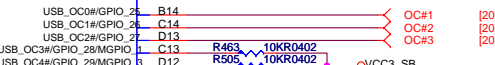
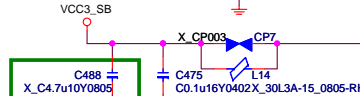
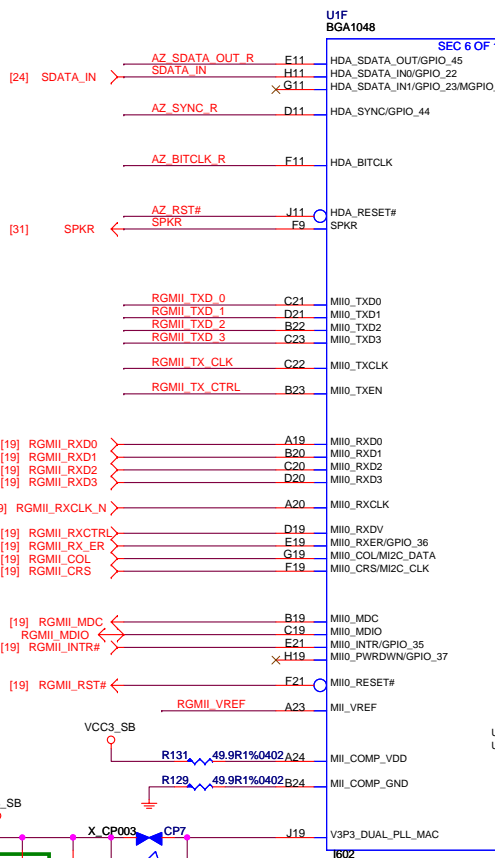
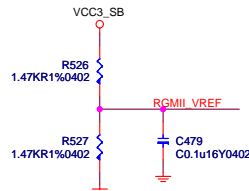


SPKR

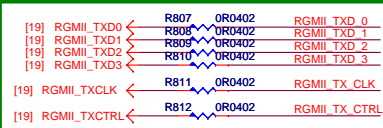
0 = USER MODE
1 = SAFE MODE

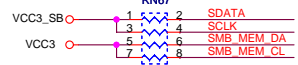
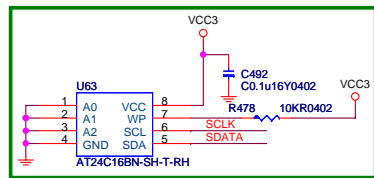


STRAP	HDA_SDOUT	LPC_FRAME
LPC BIOS	0	0
PCI BIOS	0	1
SPI BIOS	1	0
RESERVED	1	1

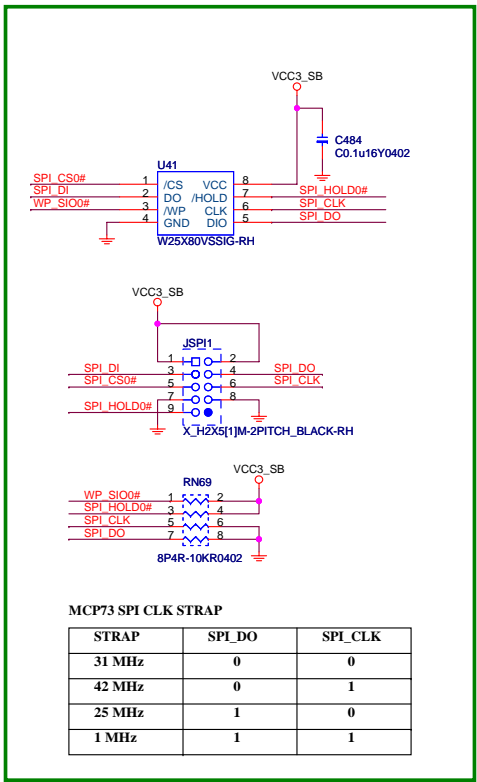
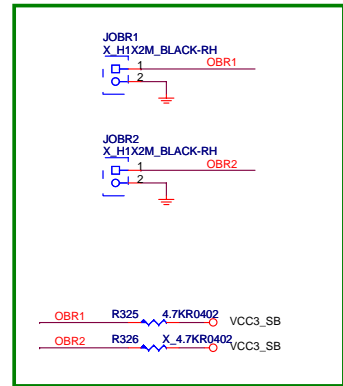
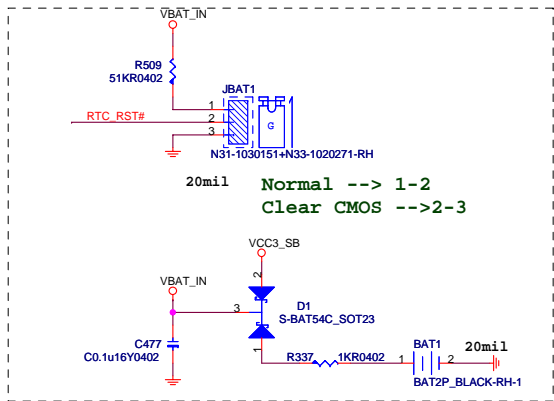
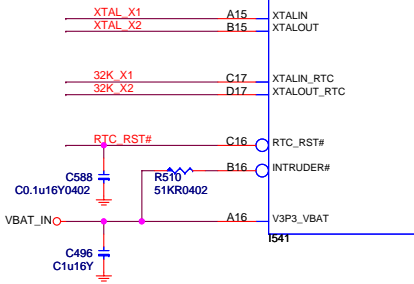
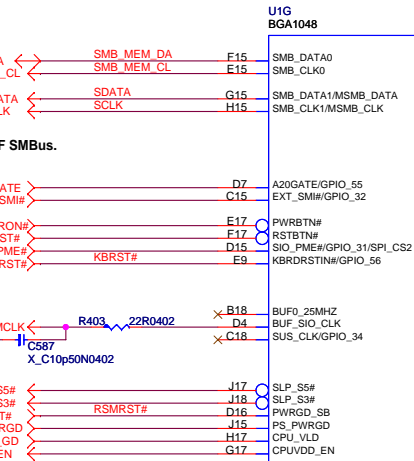
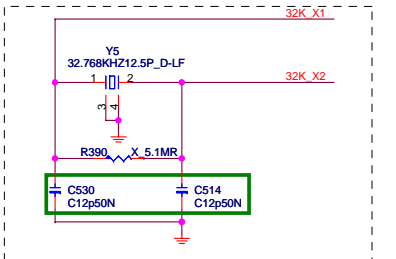
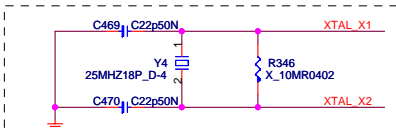
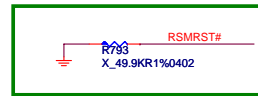
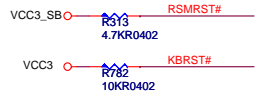


Close to U1

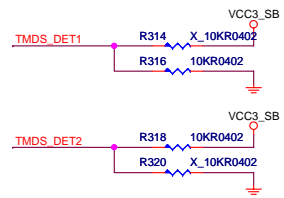




When SDA/SCLK are not used, it can be configured as ASF SMBus.



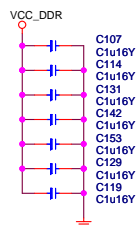
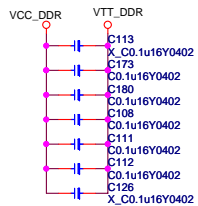
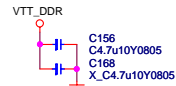
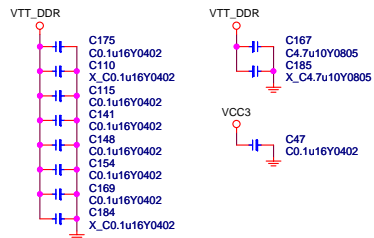
STRAP	SPI_DO	SPI_CLK
31 MHz	0	0
42 MHz	0	1
25 MHz	1	0
1 MHz	1	1



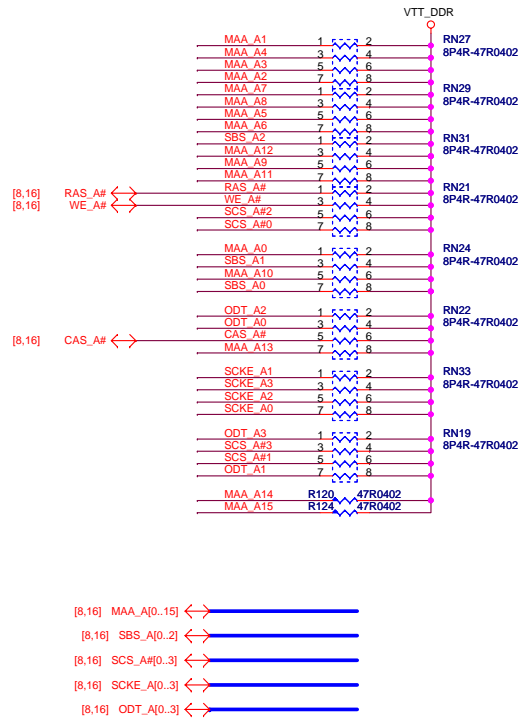
	TMDs_DET1	TMDs_DET2
DVI	1	0
HDMI	0	1
N/A	0	0

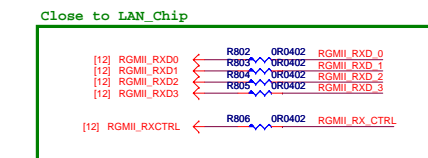
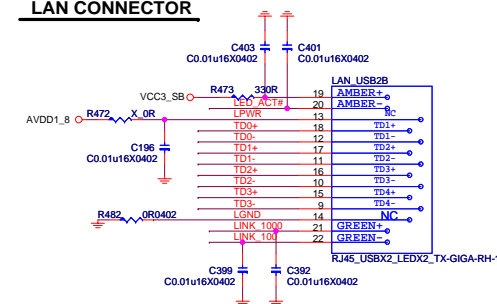
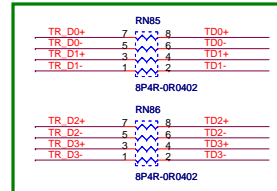
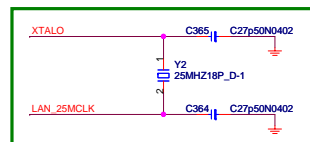
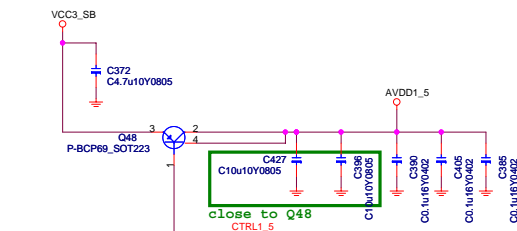


CHANNEL A VTT_DDR
DECOUPLING CAPS

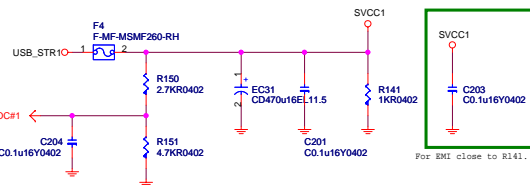


DDR II TERMINATION

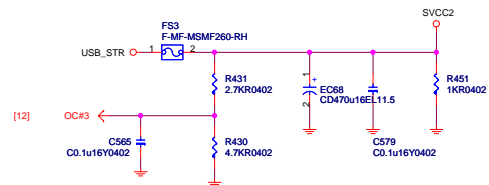




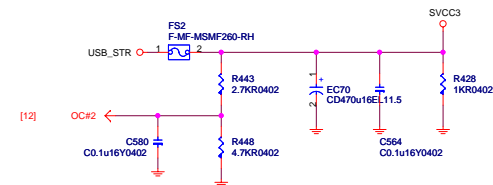
POWER CIRCUIT FOR USB PORT 0,1,2,3



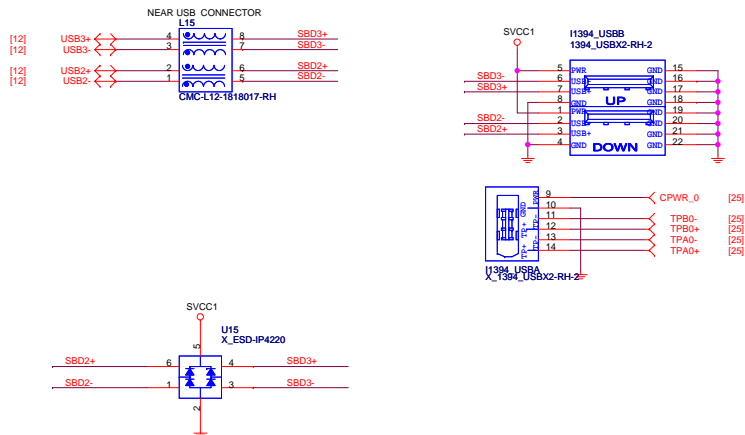
POWER CIRCUIT FOR USB PORT 4,5,6,7



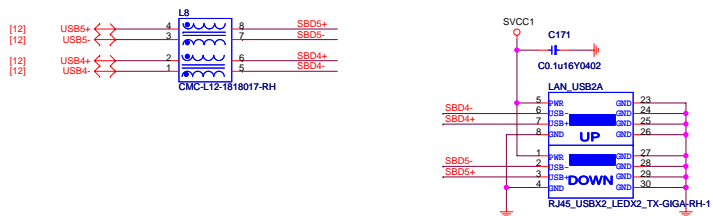
POWER CIRCUIT FOR USB PORT 8,9



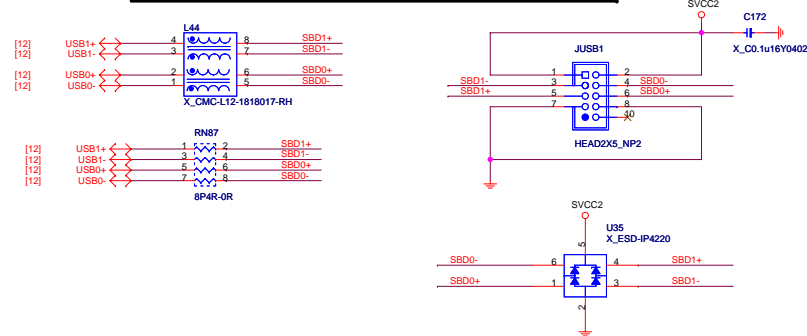
REAR PANEL USB CONNECTOR FOR USB PORT 0,1



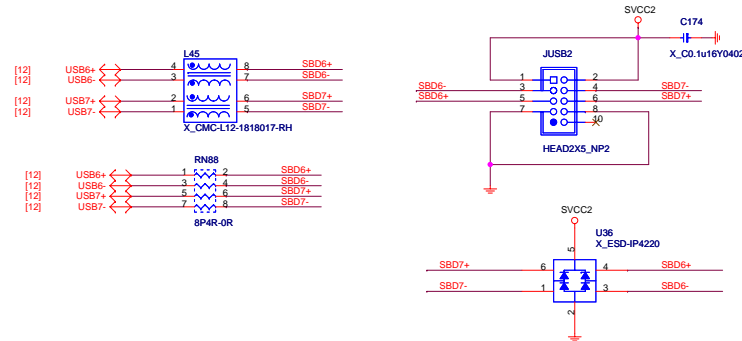
REAR PANEL USB CONNECTOR FOR USB PORT 2,3



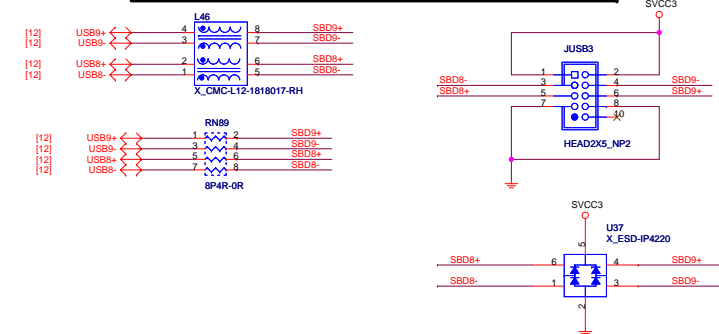
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



FRONT PANEL USB CONNECTOR FOR USB PORT 6,7



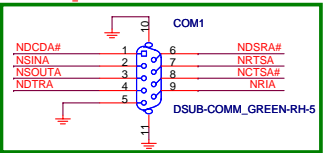
USB CARD READER + IR MODULE FOR USB PORT 8,9



[11] PDD[0..15] \longleftrightarrow



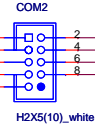
SERIAL PORT 1



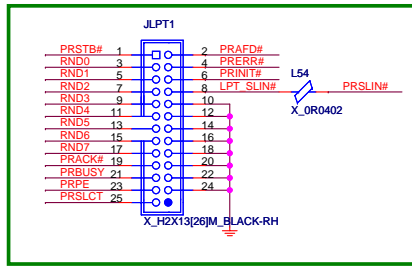
SERIAL ATA CONNECTOR BLOCK



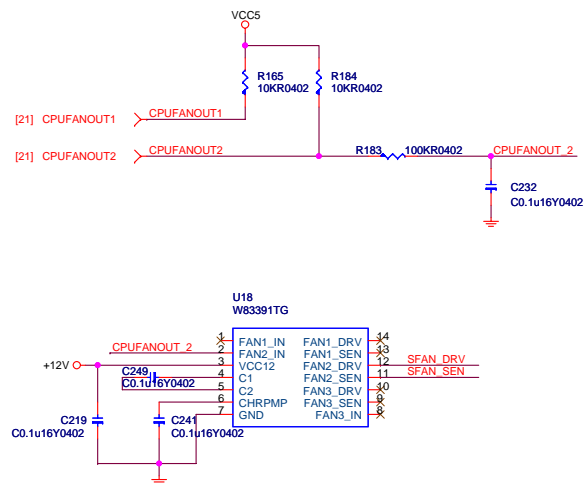
SERIAL PORT 2



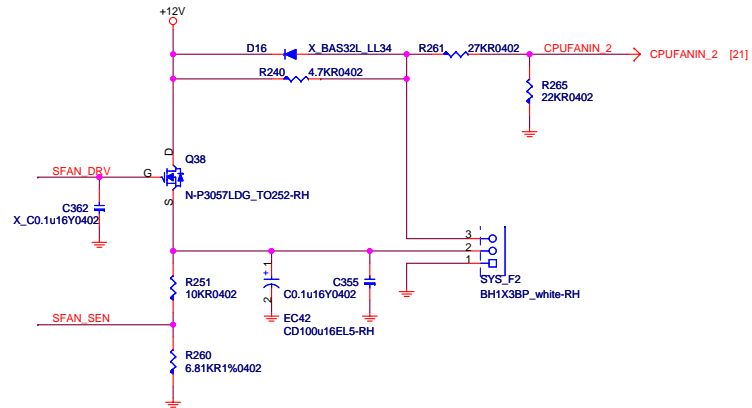
PARALLAL PORT



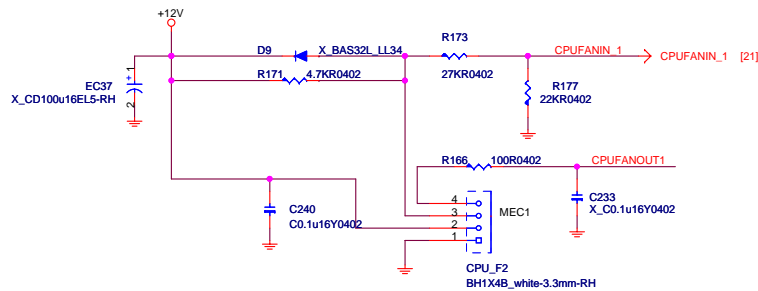
PWM FAN CONTROL



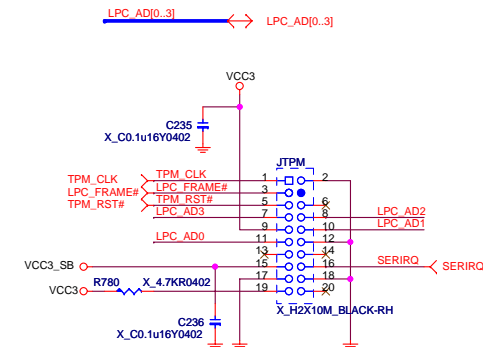
SYS FAN



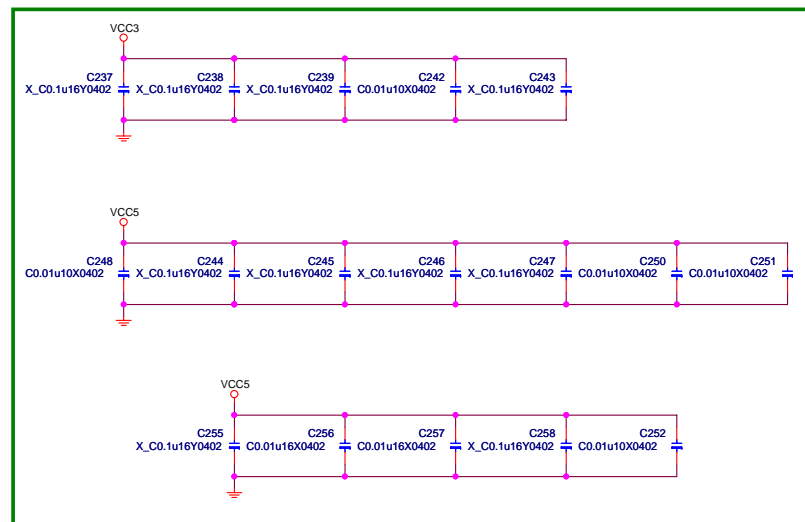
CPU FAN

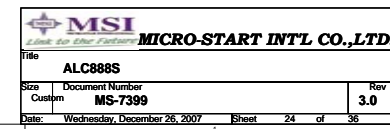


TPM Header

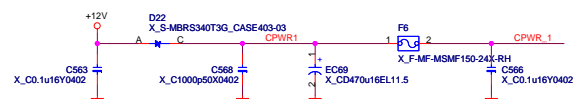


For EMI






```
IDSEL = AD23
MASTER = PREQ#2/PGNT#2
PCI_INTZ#
```



3VSB MODE SELECT	
3VSB MODE	3VDLDEC#
SINGLE MOSFET	PULL HIGH
DUAL MOSFET	PULL LOW

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

VCC_SB

EC34
X_CD1000u63EL15-RH

C226
X_C0.1u16Y0402

VCC_DDR

R163
1KR1%0402

VTT_DDR

R170
1KR1%0402

VCC3

EC57
CD1000u63EL15-RH

EC45
CD1000u63EL15-RH

W83310DG, SOP8-RH

VREF2
8

ENABLE
7

VCTRL
6

BOOT_SEL
5

GND9
9

VIN
1

GND2
2

VREF1
3

VOUT
4

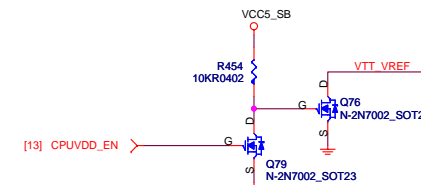
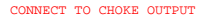
C225
C0.1u16Y0402

CD1000u63EL15-RH

X_CD1000u63EL15-RH

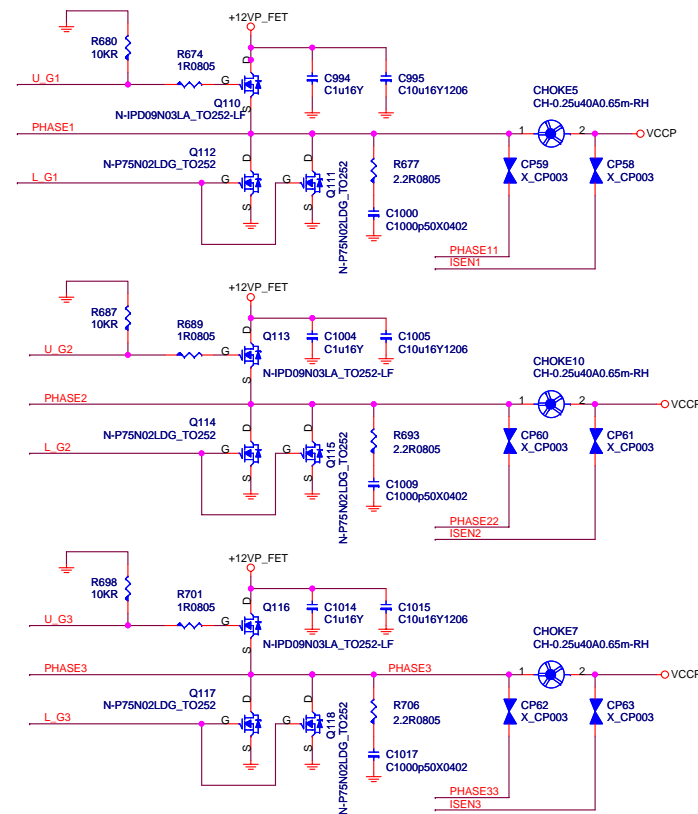
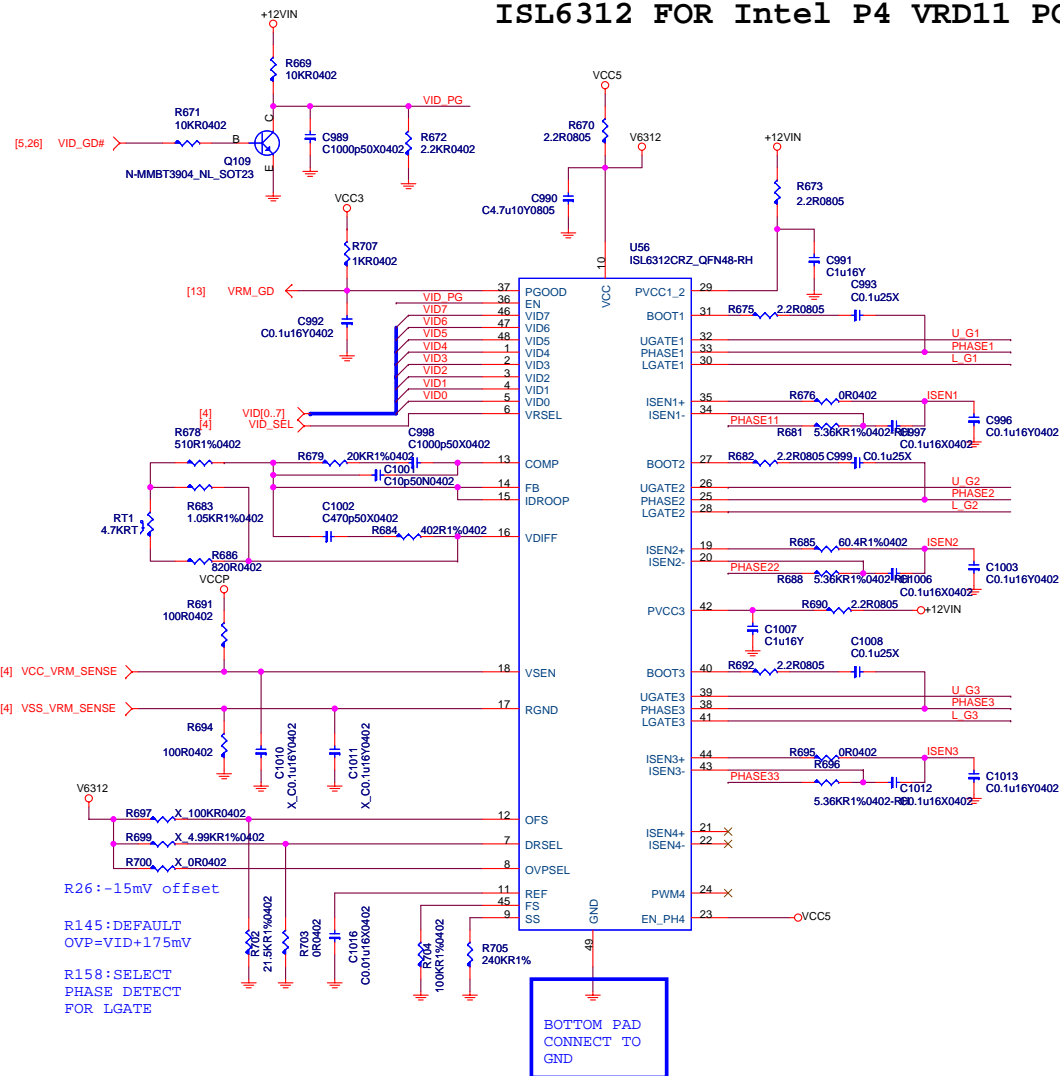
(1.3V--8.776A+V_FSB_VTT---5.6A=14.376)

Rated Ripple Current (65 degree): $1800\text{mA} * 2.3 * 2 = 8.28\text{A} > 6.393\text{A}$

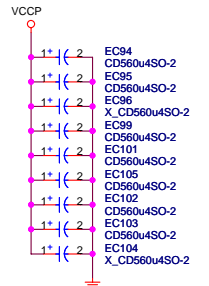


VTT_SEL = L	V_FSB_VTT=1.1V	(FSB1333, Quad-Core)
VTT_SEL = H	V_FSB_VTT=1.2V	For normal processors.

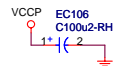
ISL6312 FOR Intel P4 VRD11 POWER CKT



OS-CON Capacitors

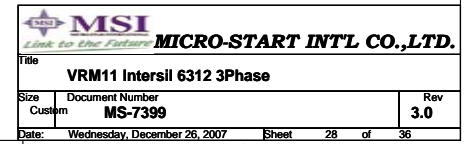
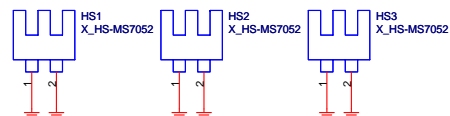
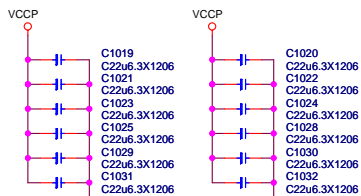


SP Capacitors

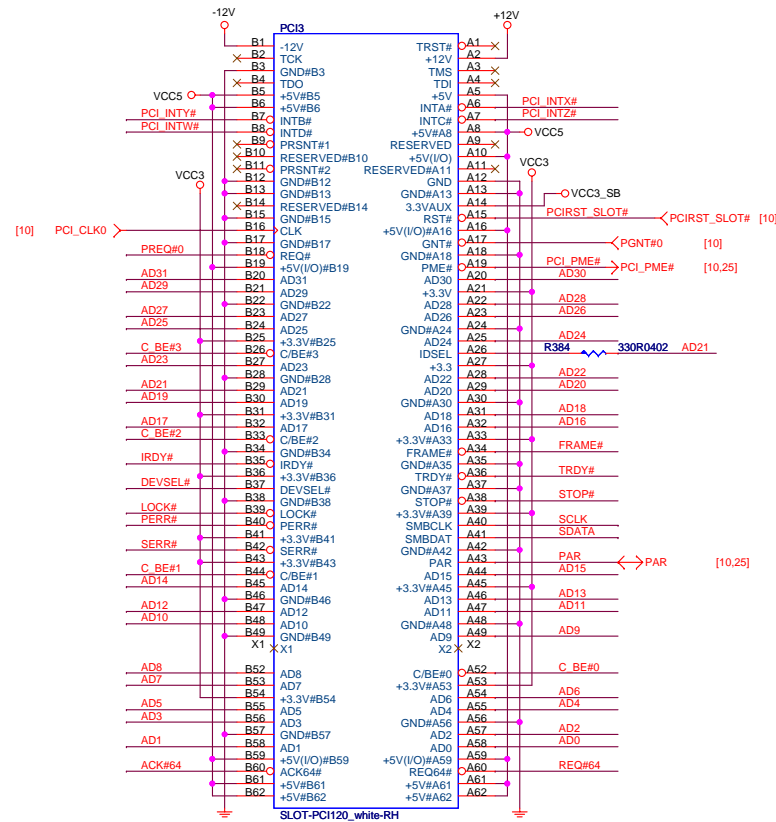


CPU DECOUPLING CAPACITORS

Place these caps within socket cavity

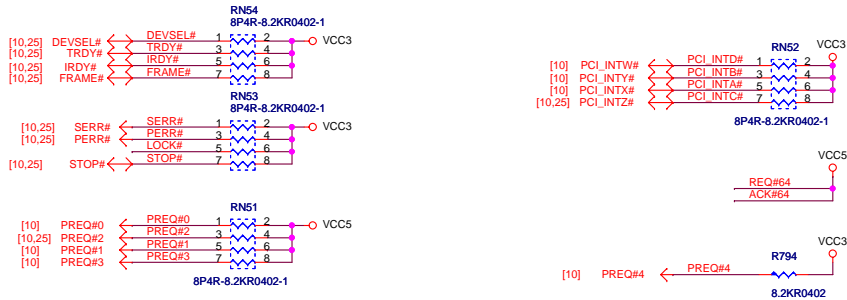


PCI SLOT 1 (PCI VER: 2.3 COMPLY)

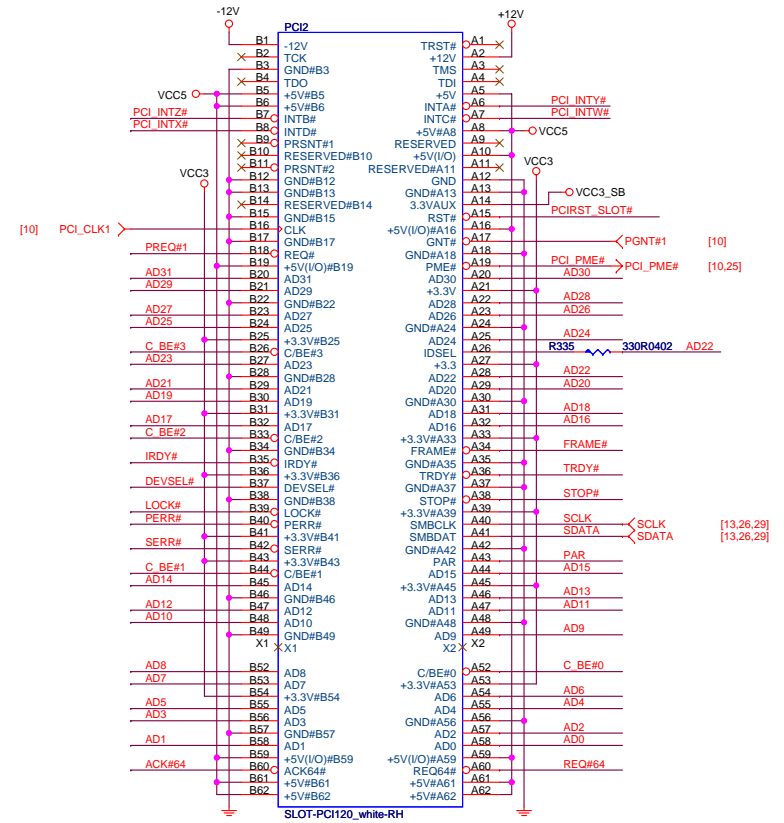


IDSEL = AD21
MASTER = PREQ#0
PCI_INTX#

PCI PULL-UP / DOWN RESISTORS

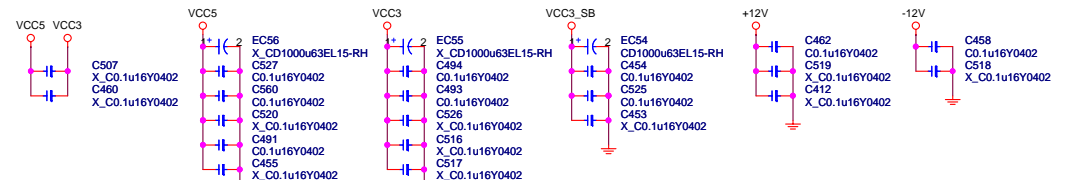


PCI SLOT 2 (PCI VER: 2.3 COMPLY)

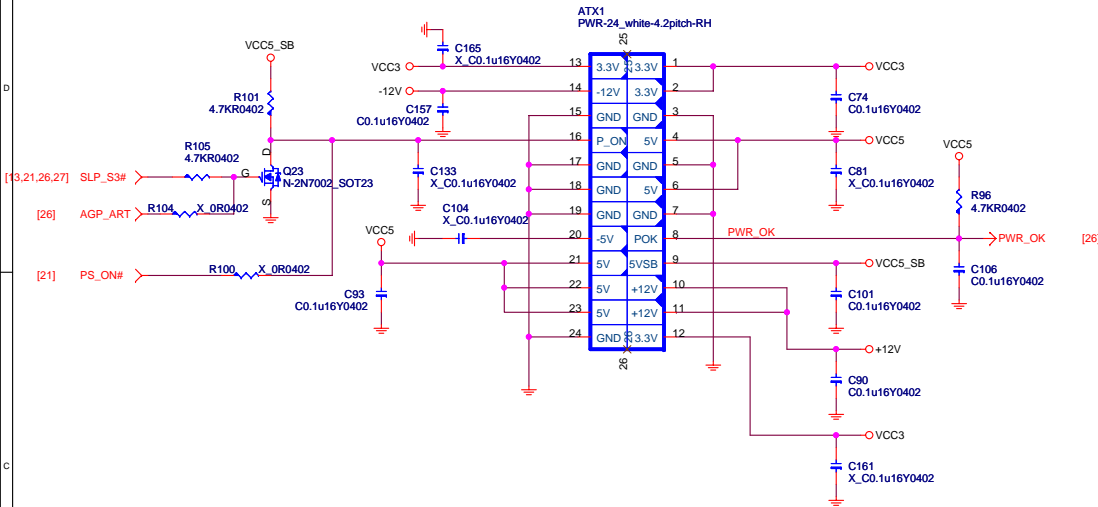


IDSEL = AD22
MASTER = PREQ#1
PCI_INTY#

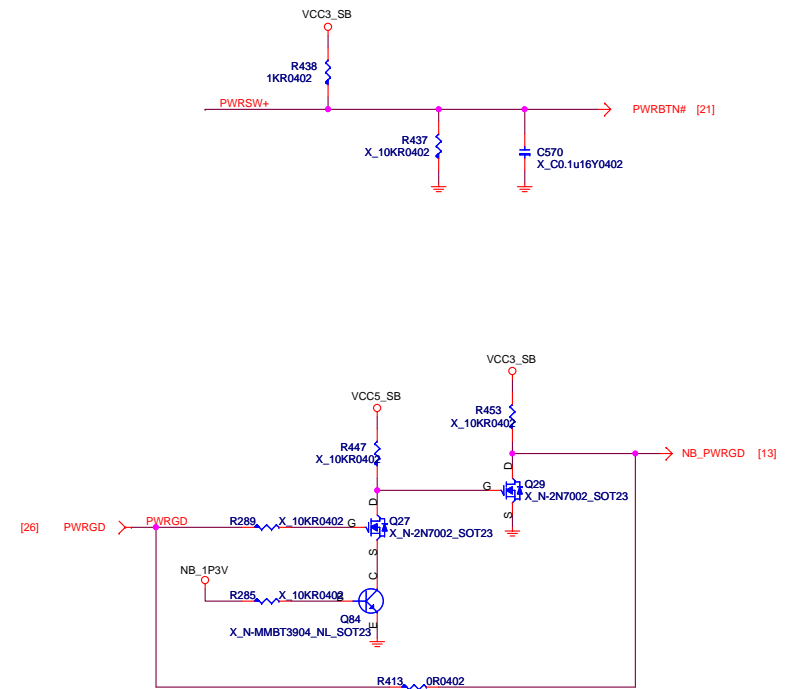
PCI SLOT DECOUPLING CAPACITORS



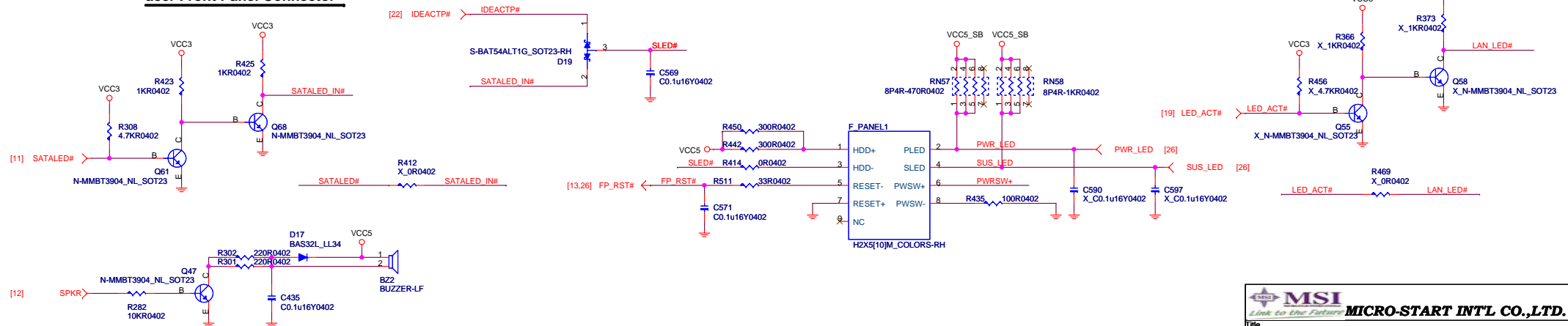
ATX CONNECTOR



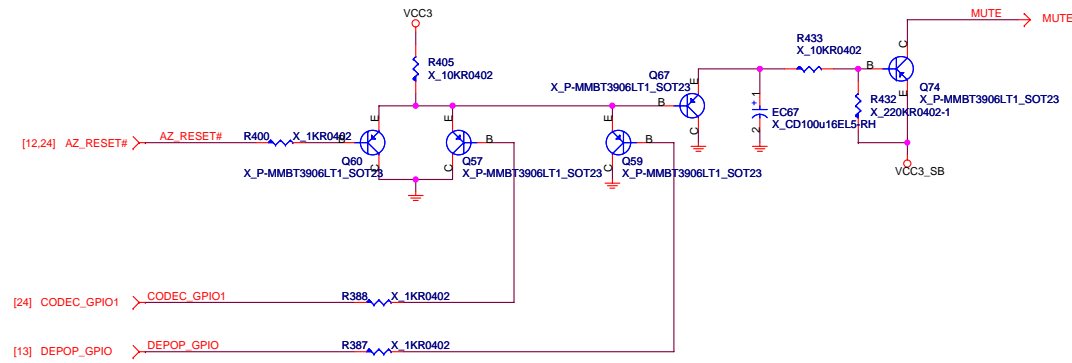
POWER BUTTON



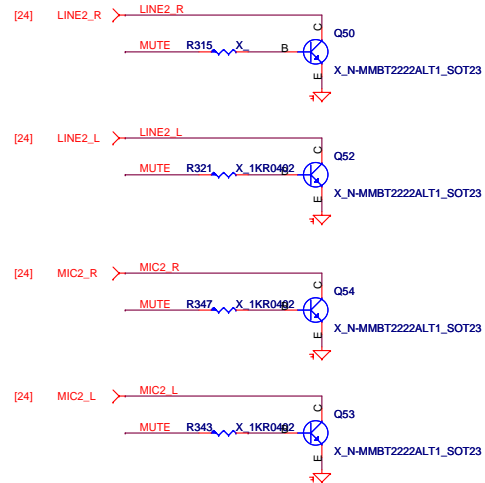
acer Front Panel Connector



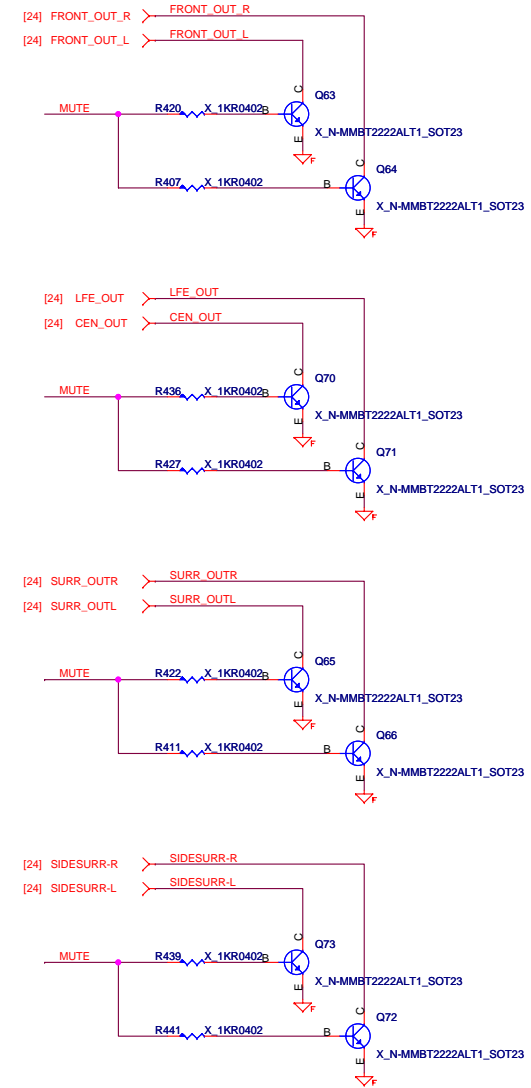
Audio De-Pop Control Circuit



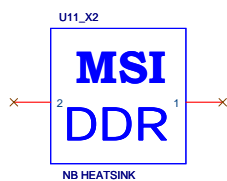
Front Audio Port De-Pop Circuit



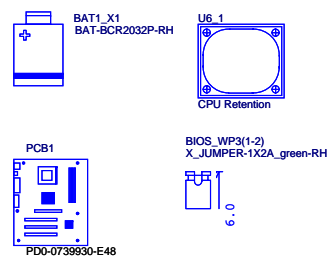
Rear Audio Port De-Pop Circuit



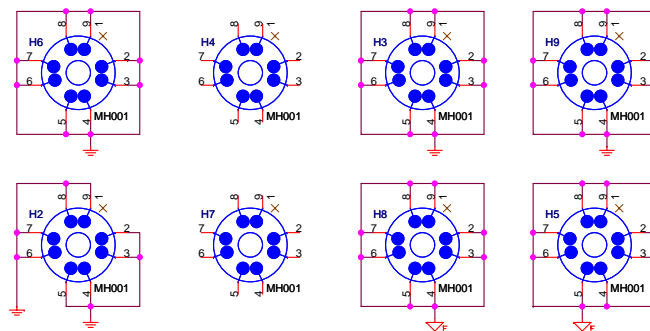
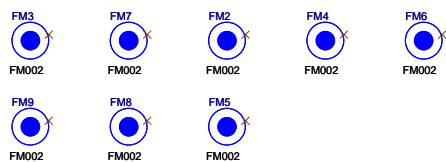
HEAT SINK

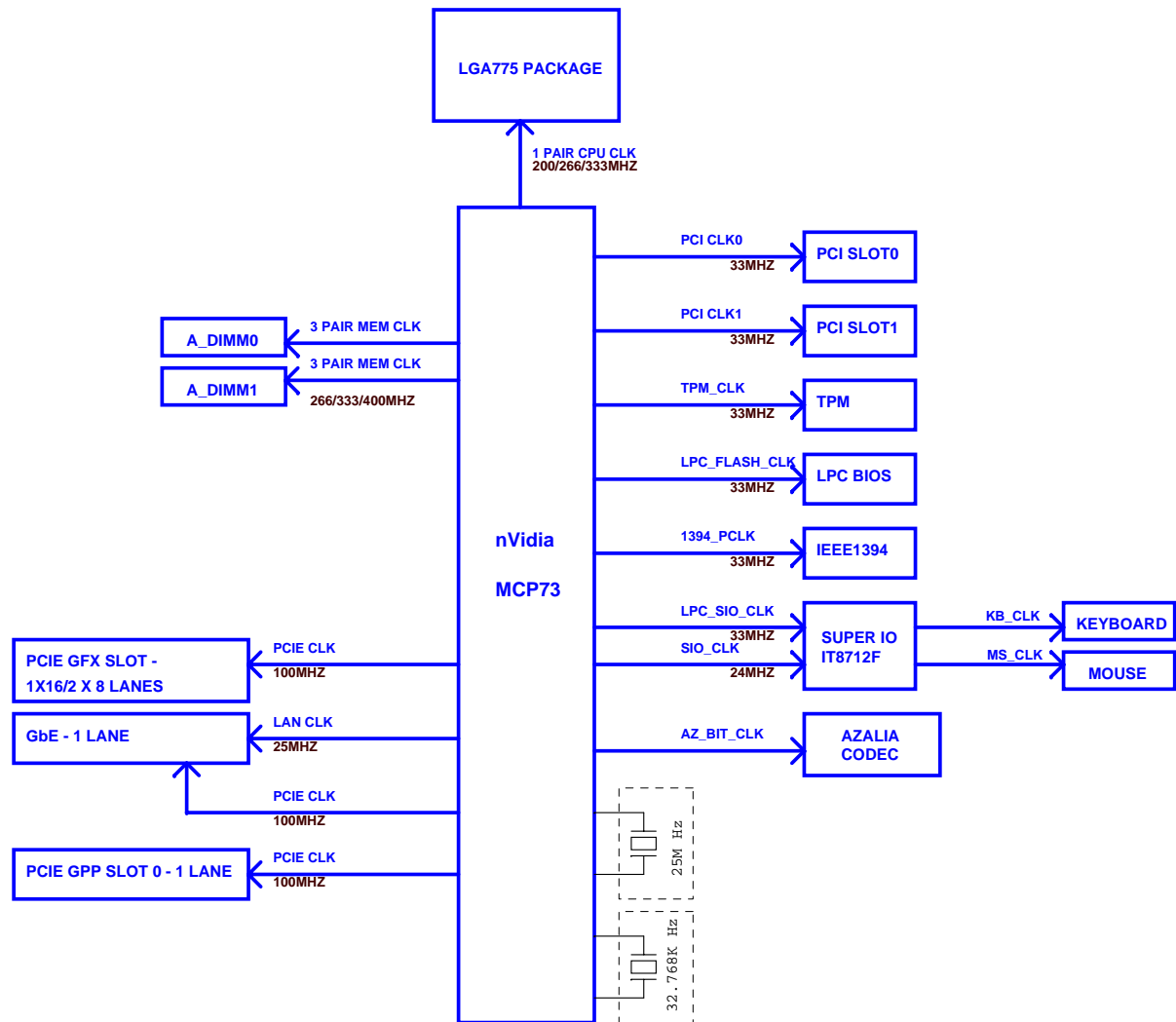


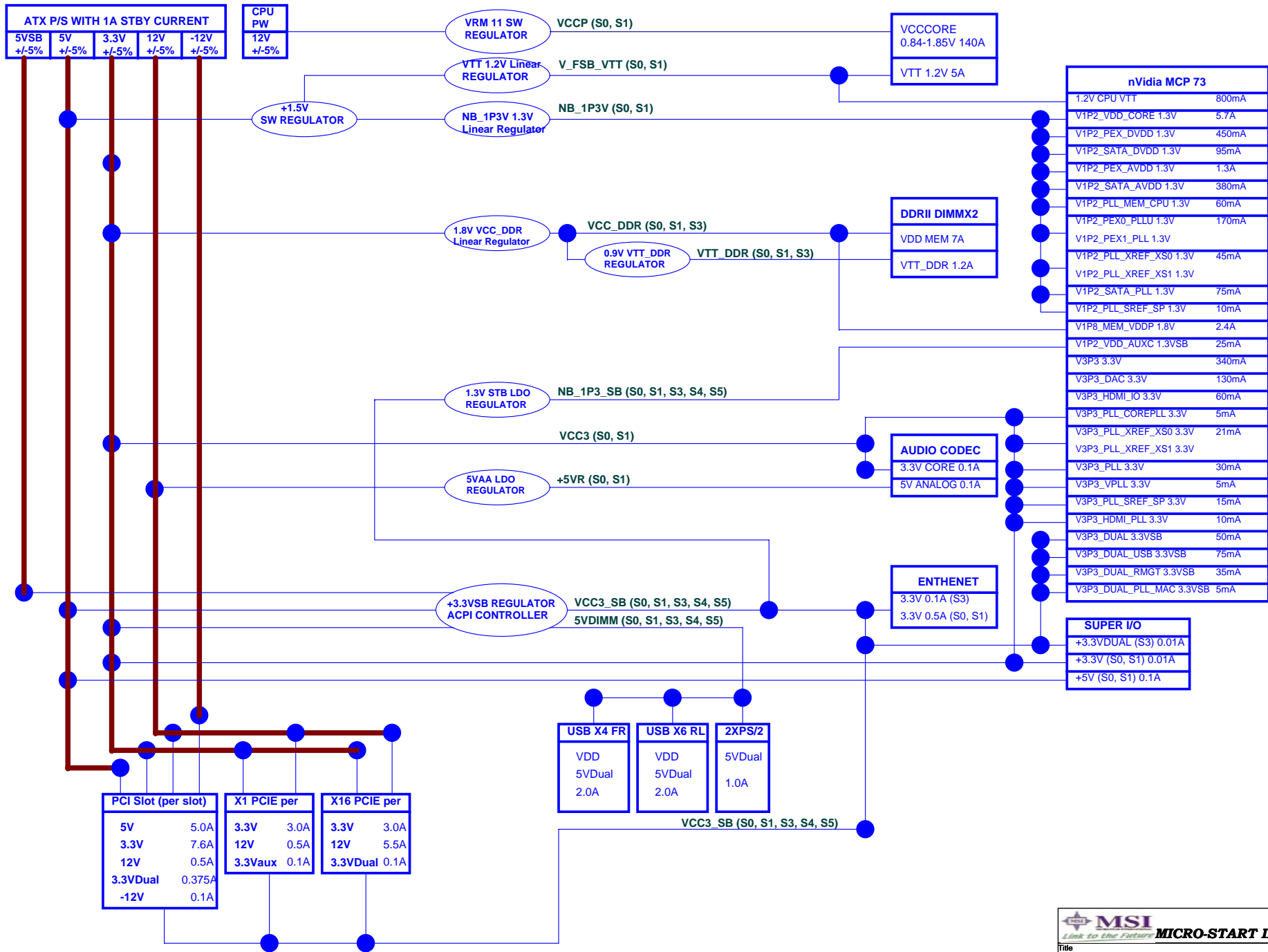
MANUAL PART

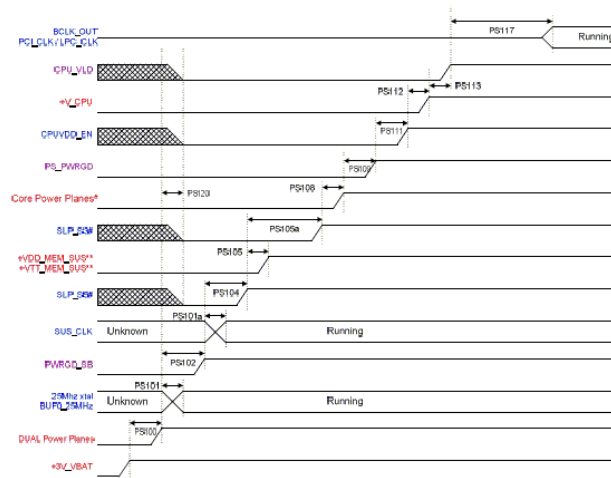


Optics Orientation Holes





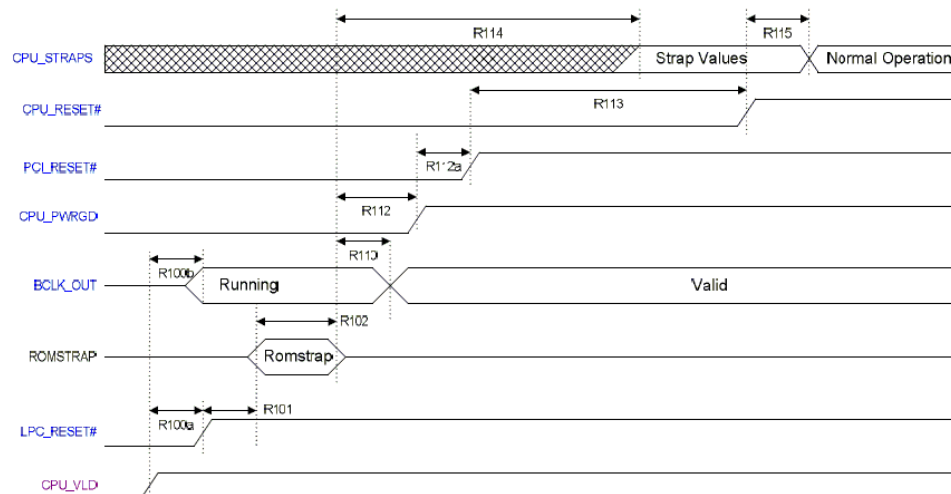




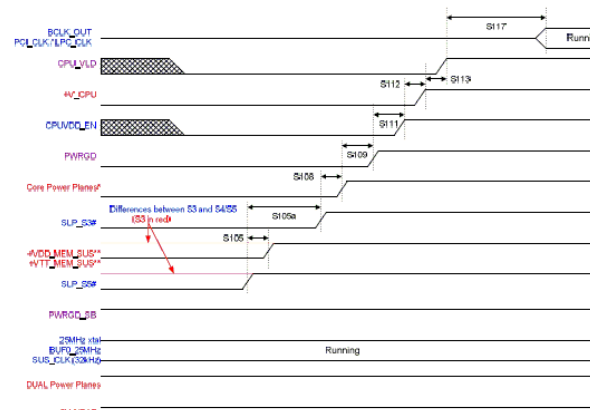
Power Planes in Red MCP73 output signals in Blue Motherboard generated signals in Purple

* Core Planes include:
All power planes without _DUAL or _SUS in the
name except:
CPU Core Power Plane

MCP73 G3-to-S0 Power-Up Sequence



MCP73 Cold Reset Power-Up Sequence

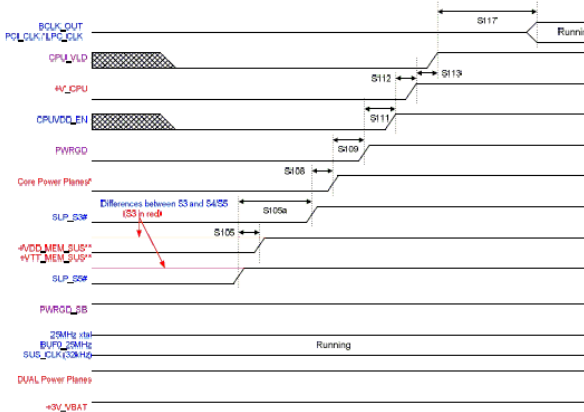


Power Planes in Red MCP73 output signals in Blue Motherboard generated signals in Purple

* Core Planes include:
All power planes without _DUAL or _SUS in the name except
- CPU Core Power Plane

** DDR2 Memory Power Planes:
- VDD = 1.8V
- VTT = 0.9V

MCP73 S3/S4/S5 to S0 Power Resume Sequence



Power Planes in Red MCP73 output signals in Blue Motherboard generated signals in Purple

* Core Planes include:
All power planes without _DUAL or _SUS in the name except:
- CPU Core Power Plane

** DDR2 Memory Power Planes:
- VDD = 1.8V
- VTT = 0.9V

MCP73 S3/S4/S5 to S0 Power Resume Sequence