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MS-7502 uATX Version: 1.0

CPU: Intel Pentium 4, Pentium D, Core2 Duo, Wolfdale, Kentsfield and Yorkfield processors in LGA775 Package.

System Chipset:

Intel Bearlake - P35 North Bridge
Intel ICH9R South Bridge

On Board Device:

CLOCK Gen ICS 9LPRS906
LPC Super I/O -- Fintek F71882F
LAN INTEL NINEVEH/EKRON
Audio Codec -- ALC888S
1394 Controller -- VT6308 (2-port)
PCIE to PATA Bridge -- Marvel 88SE6111

Main Memory:

Dual-channel DDR-II * 4

Expansion Slots:


PCI EXPRESS X16 SLOT *1
PCI EXPRESS X1 SLOT *1
PCI SLOT * 2

PWM:

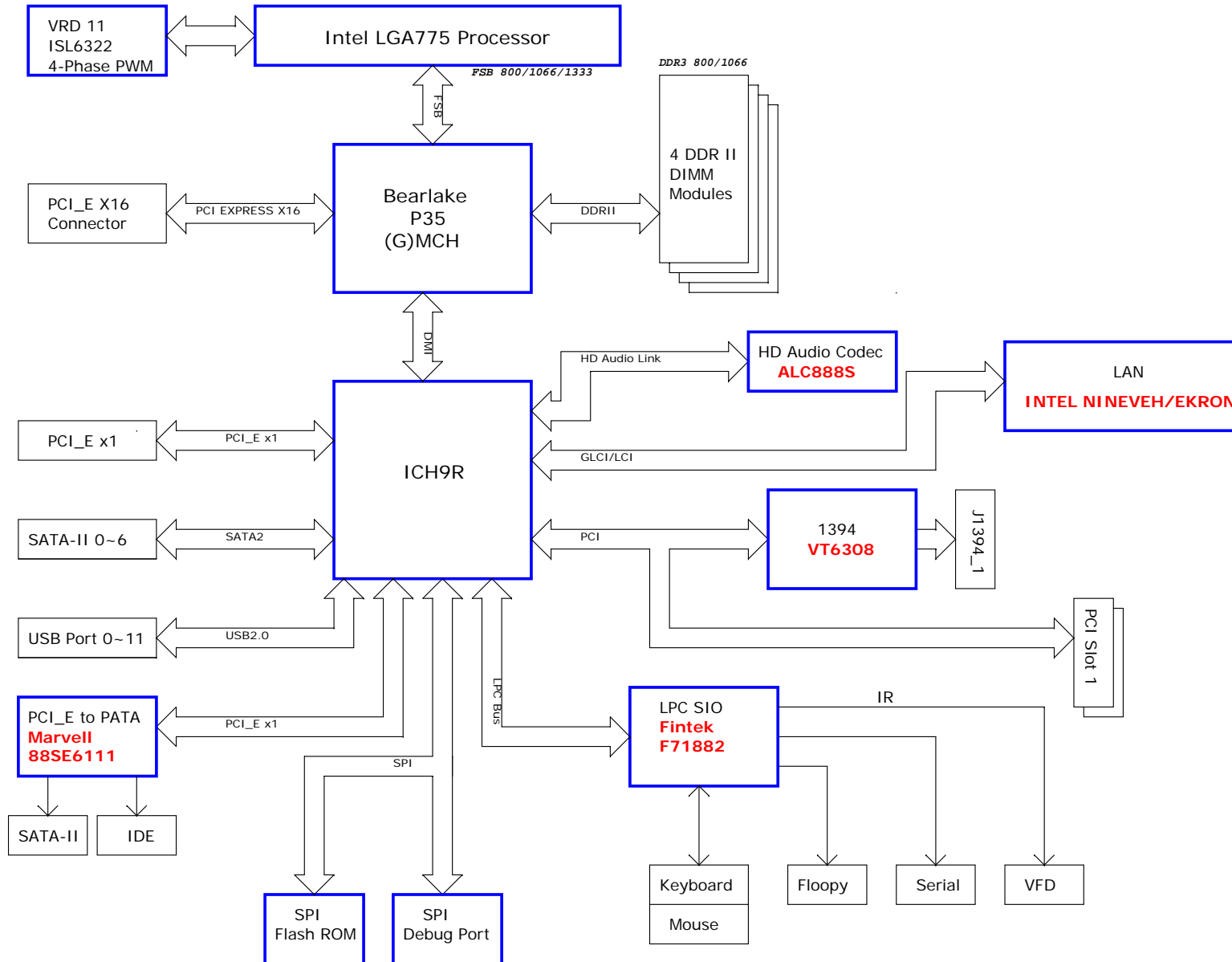
Intersil ISL6322 (4 Phases) w/ ISL6612 driver

Configuration and BOM match up

Option	Function	Orcad Configure	BOM
STD	Bearlake-P35/ICH9R	cfg-7502	

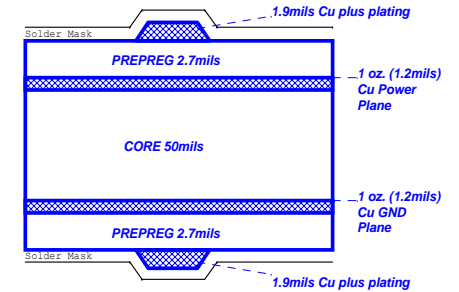
				MICRO-STAR INT'L CO.,LTD			
				MS-7502			
Size	Custom	Document Description	COVER SHEET	Rev	1.0		
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Block Diagram



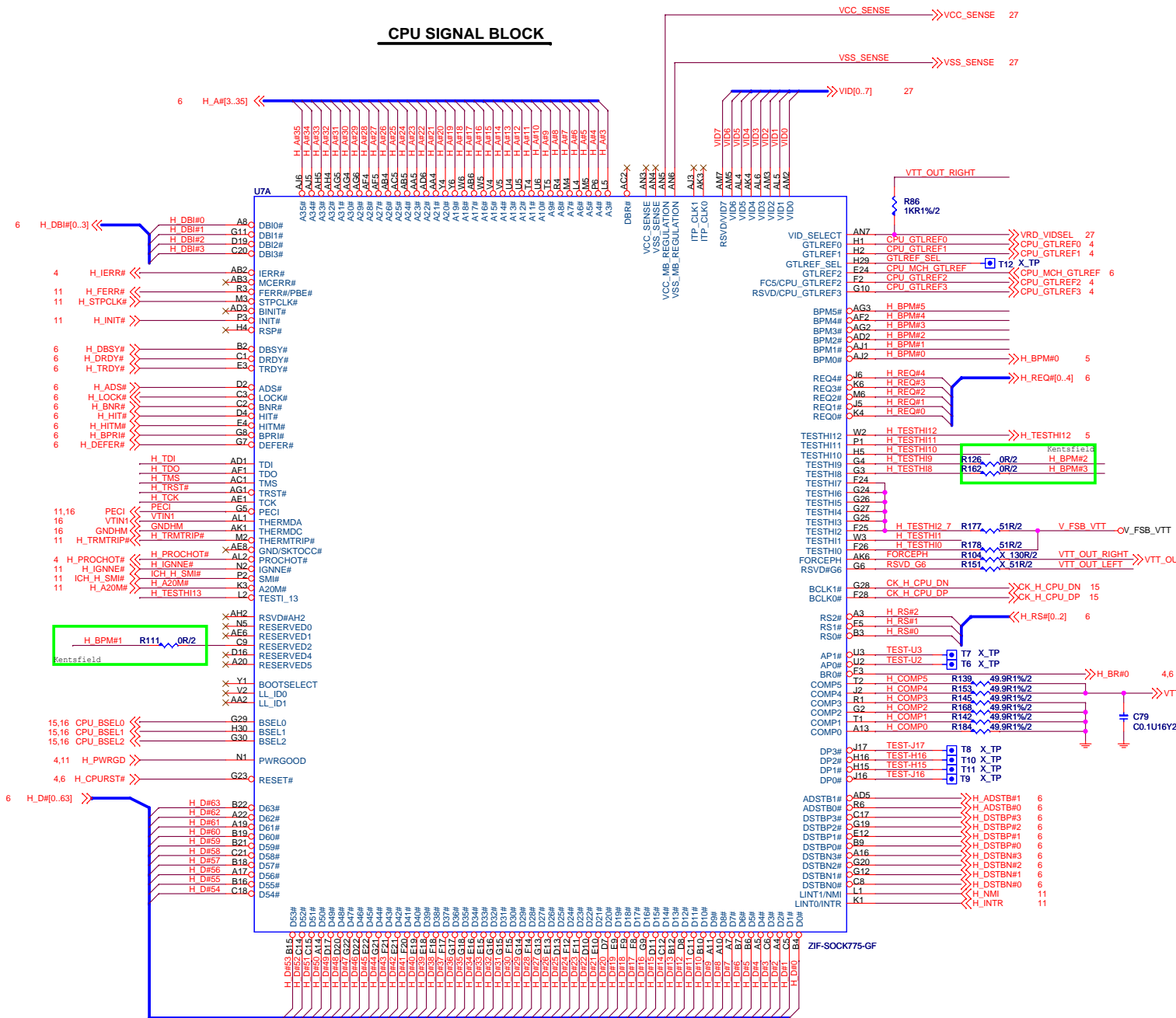
Board Stack-up

(1080 Prepreg Considerations)

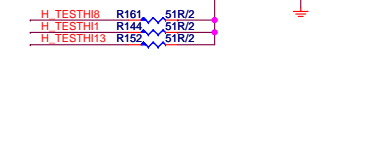
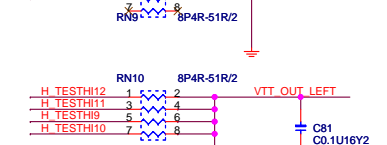
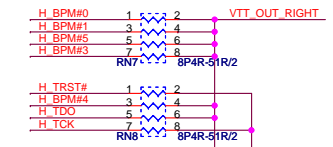
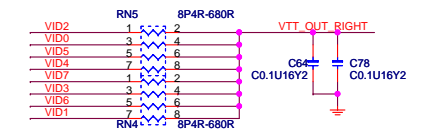


Single End 50ohm Top/Bottom : 4mils
 USB2.0 - 90ohm : 15/4.5/7.5/4.5/15
 SATA - 95ohm : 15/4/8/4/15
 LAN - 100ohm : 15/4/8/4/15
 PCIE - 95ohm : 15/4/8/4/15
 IEEE1394 - 110ohm : 15/4/9/4/15
 IDE : 15/4/8/4/15

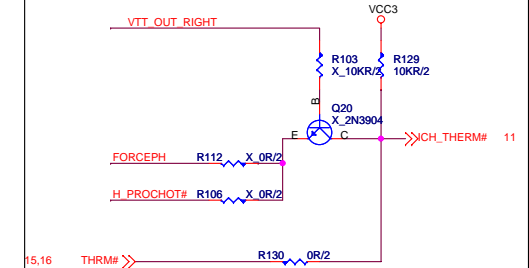
CPU SIGNAL BLOCK



PULL HIGHT PULL DOWN



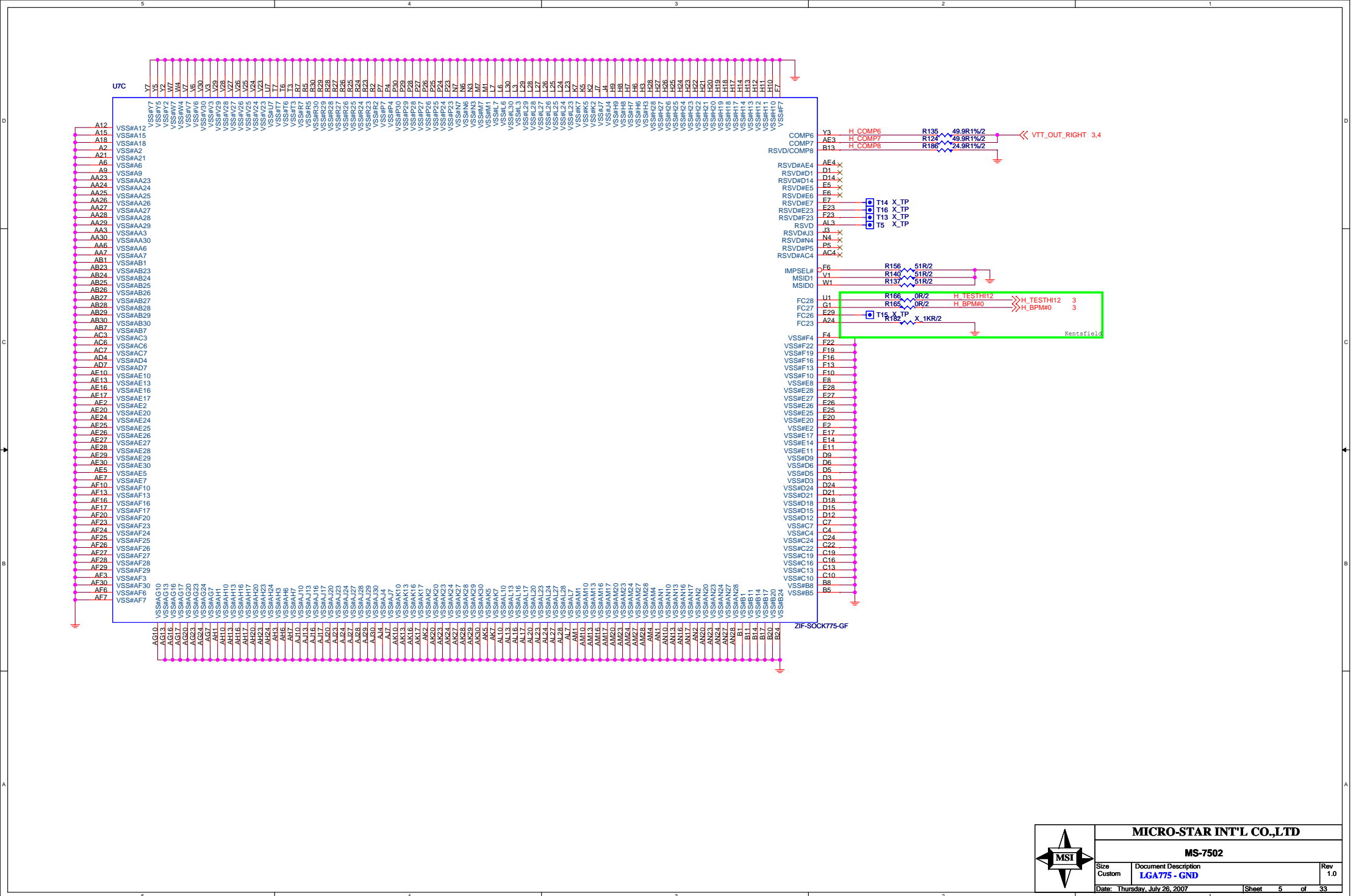
Thermal TRIP

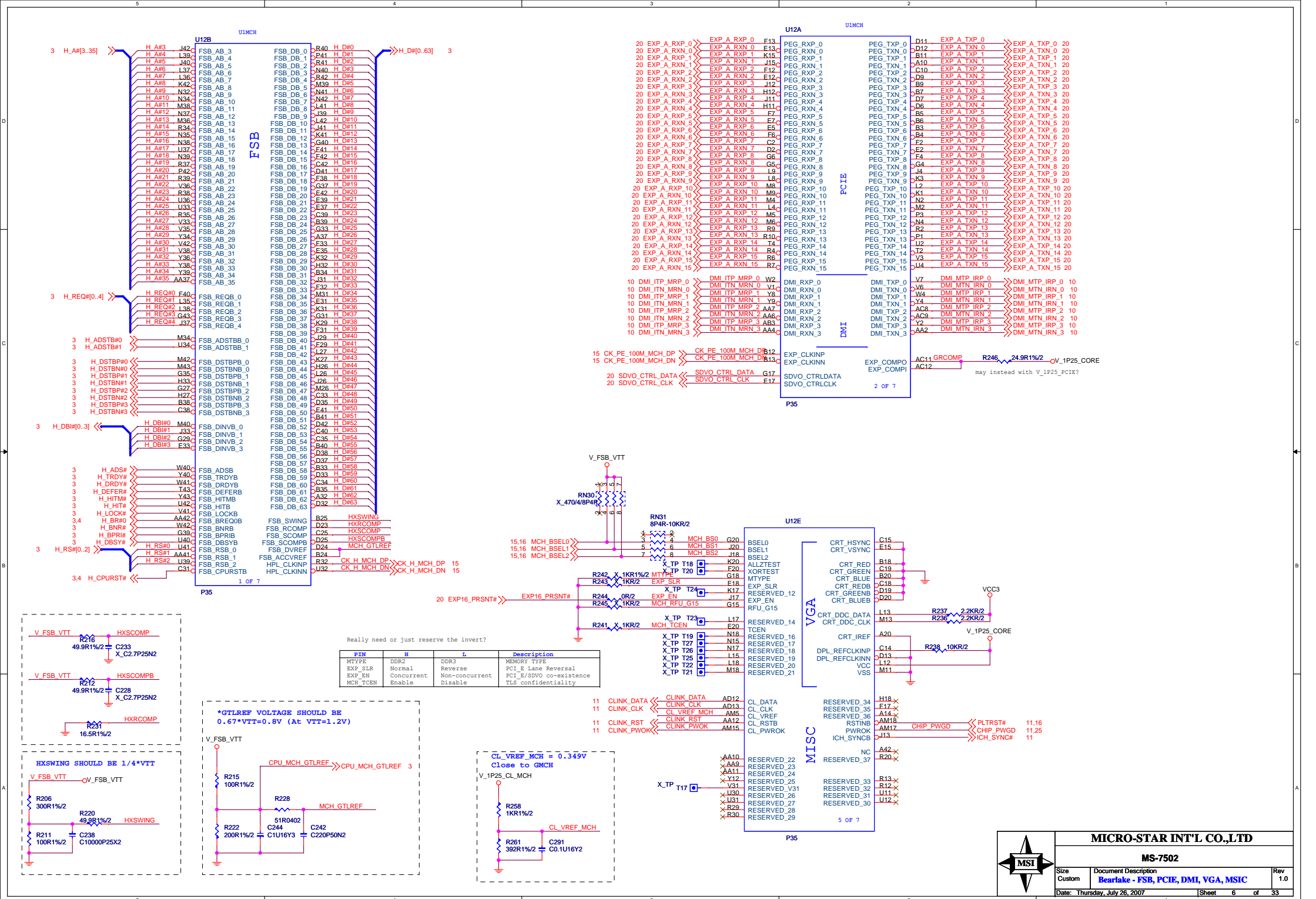


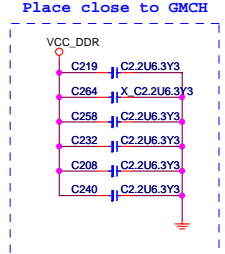
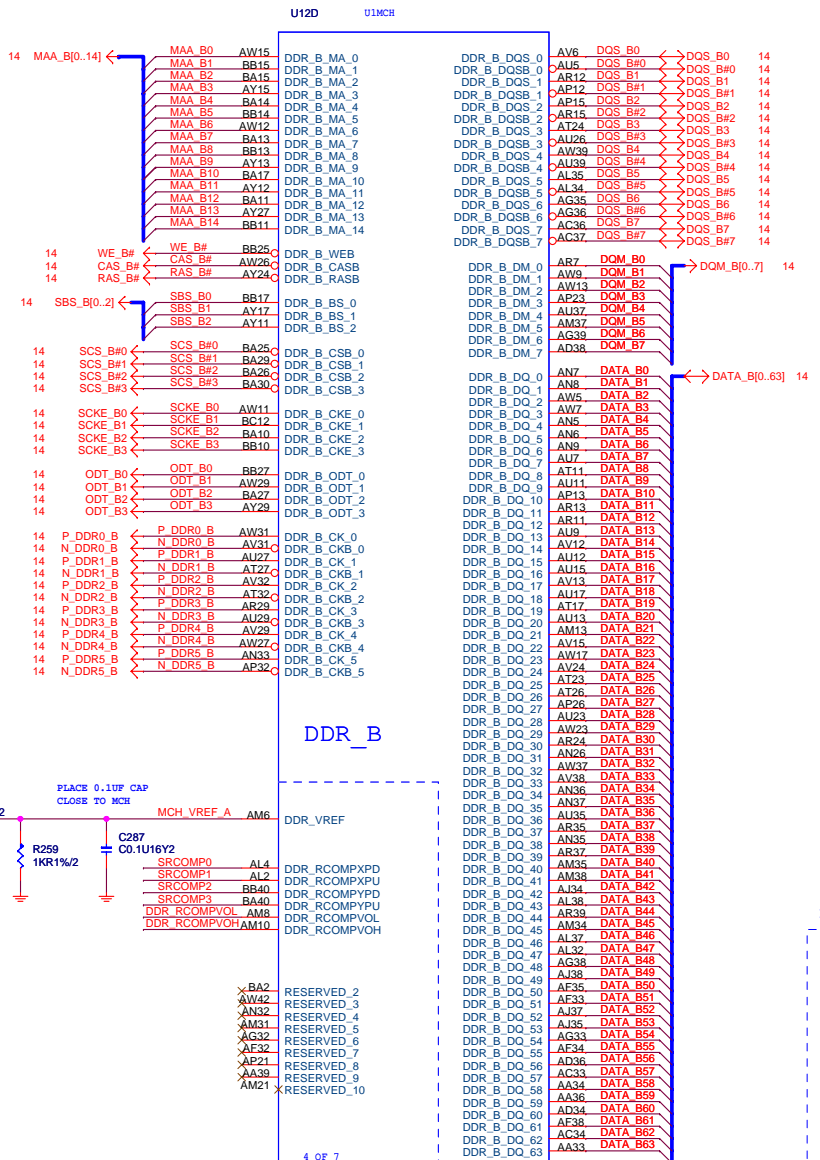
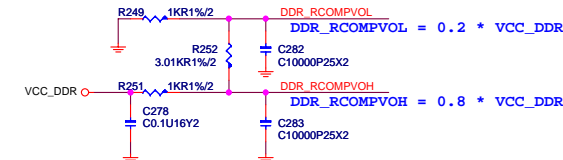
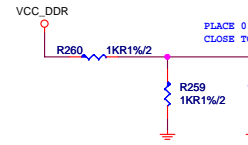
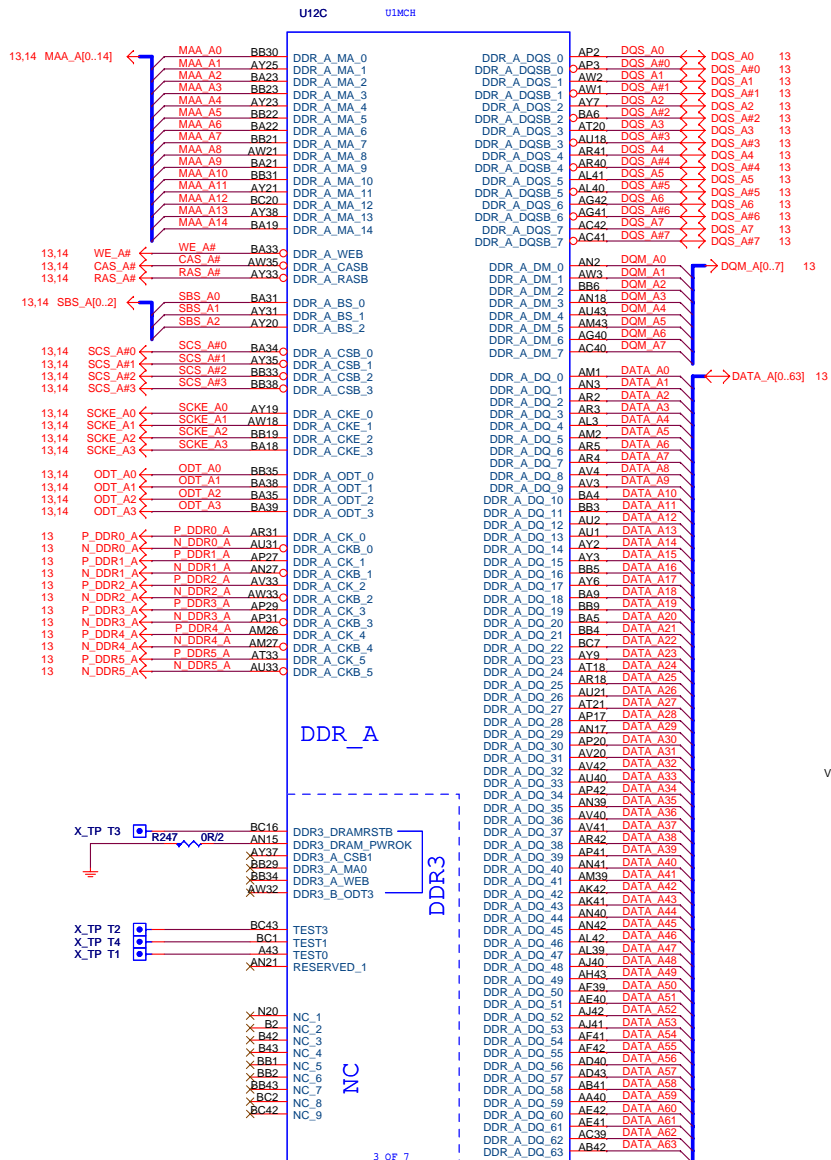
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MS-7502

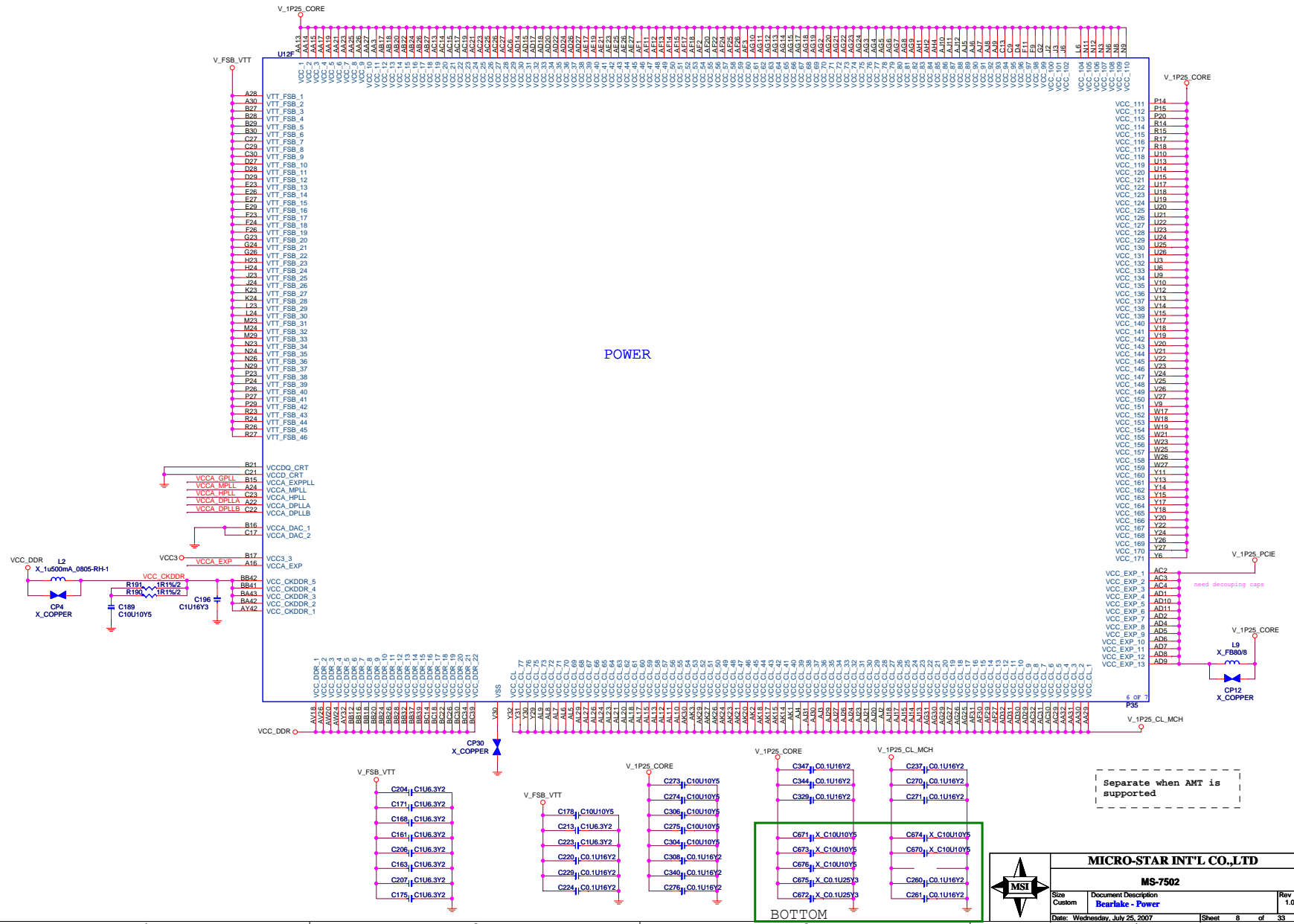
Size Custom	Document Description LGA775 - Signal	Rev 1.0
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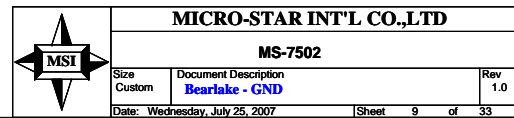


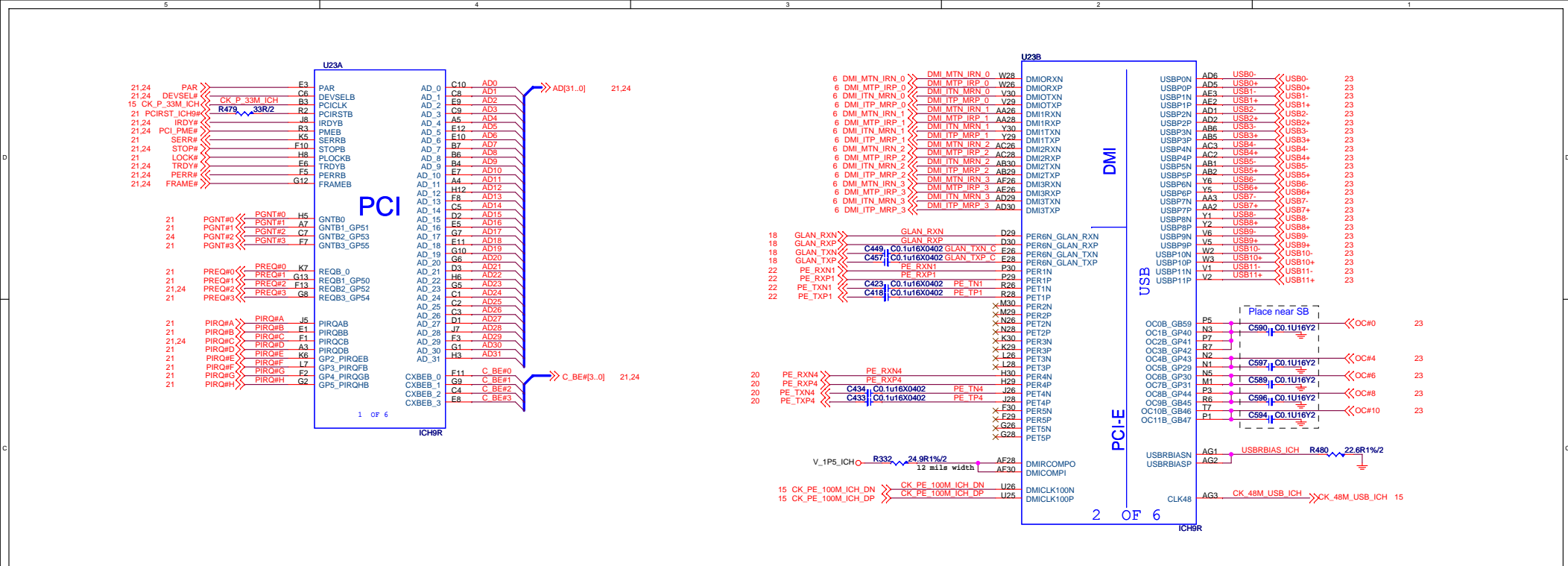
SCROMP1,3 CLOSED TO VCC_DDR		
VCC_DDR	R254 19.1R1%/2	SRCOMP0
	R192 19.1R1%/2	SRCOMP2
	R193 19.1R1%/2	SRCOMP3
C197 C0.1U16Y2		
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MS-7502		
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SB STRAPPING RESISTOR

R474 1KR1%2 PGNT#0
R387 1KR1%2 SPI_CS1#

BOOT SELECT STRAPS		
BOOT DEVICE	GNT#0	SPI_CS1#
FWH	1	1
SPI	0	1
PCI	1	0

PGNT#(3:0) Internal Pull-up

PGNT#2 R451 1KR1%2
PGNT#3 R463 1KR1%2

SIGNAL	H	L	DES.
GNT3	DIS	EN	A16 OVERRIDE
GNT2	N/A	SET BIT	PCI-E PORT CONFIG 2 BIT 0 (5-6)

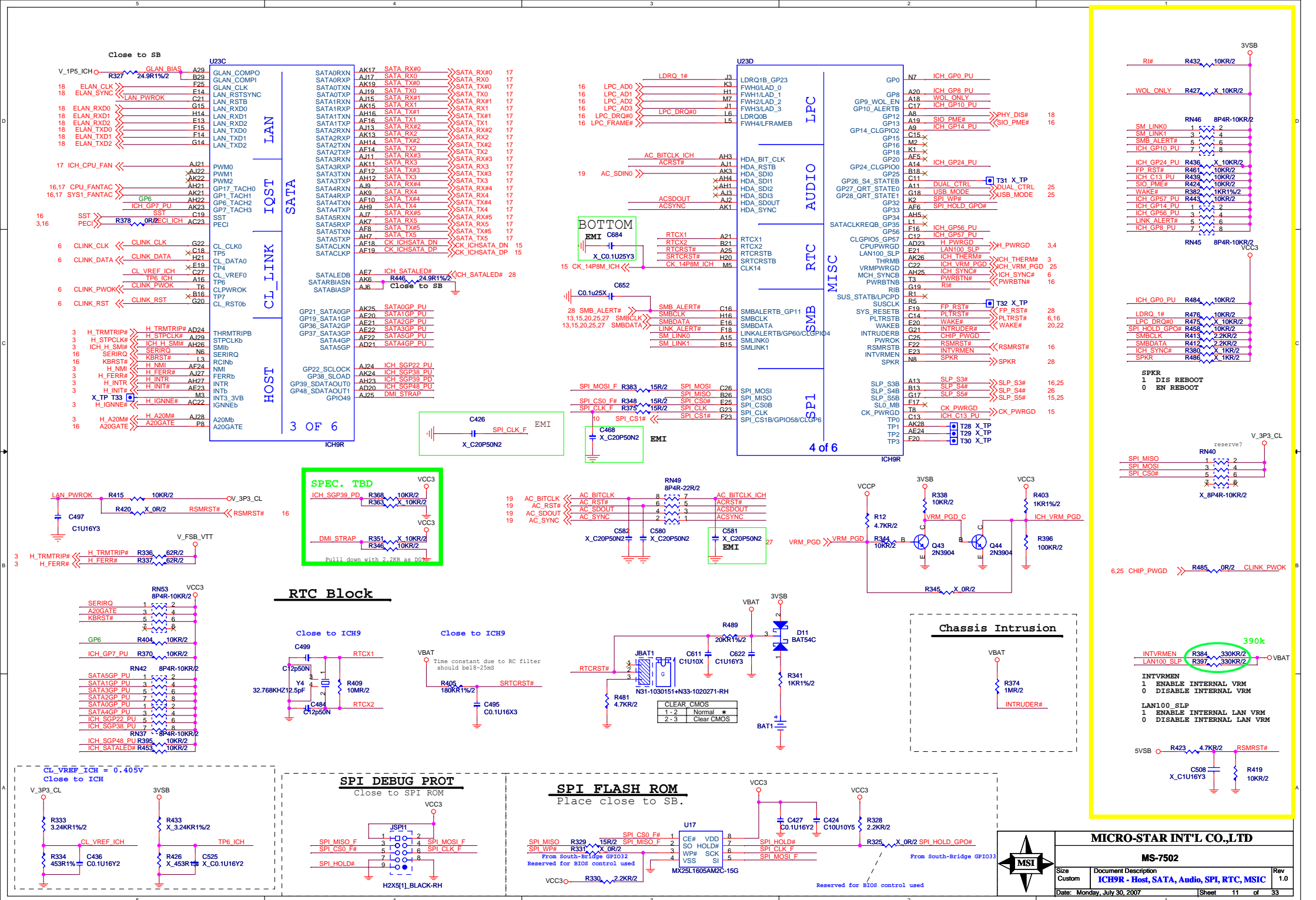
HDA_SDOUT/HDA_SYNC strap PCI-E port configuration bit[1:0]. Internal weak pull down.
00:1X/1X/1X 11:0X/0X/4X



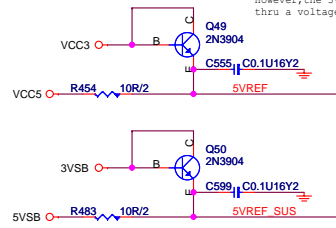
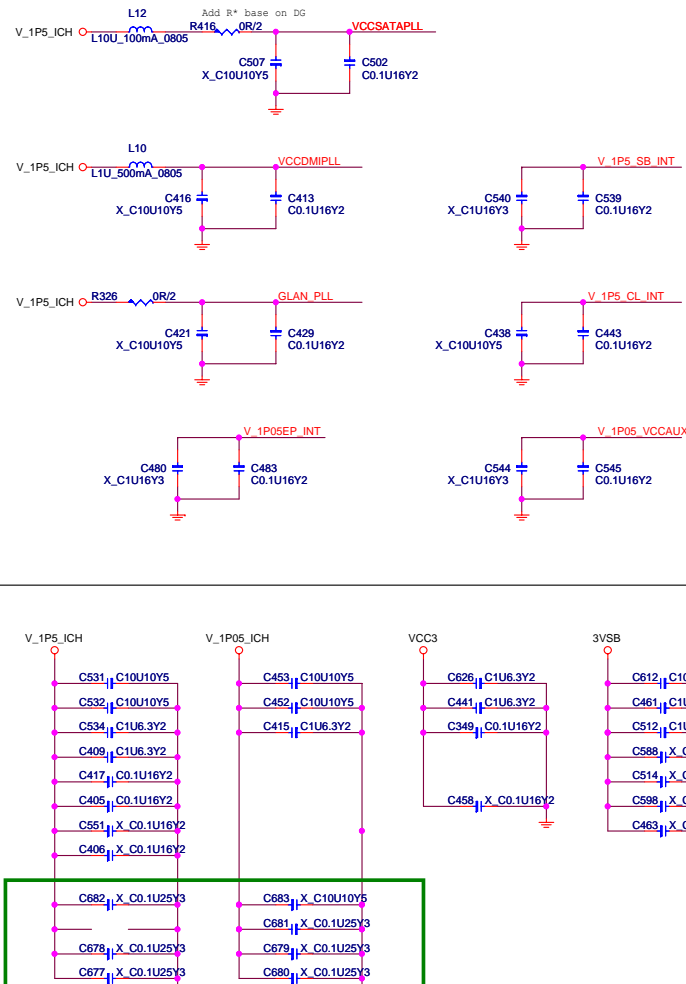
MICRO-STAR INT'L CO.,LTD

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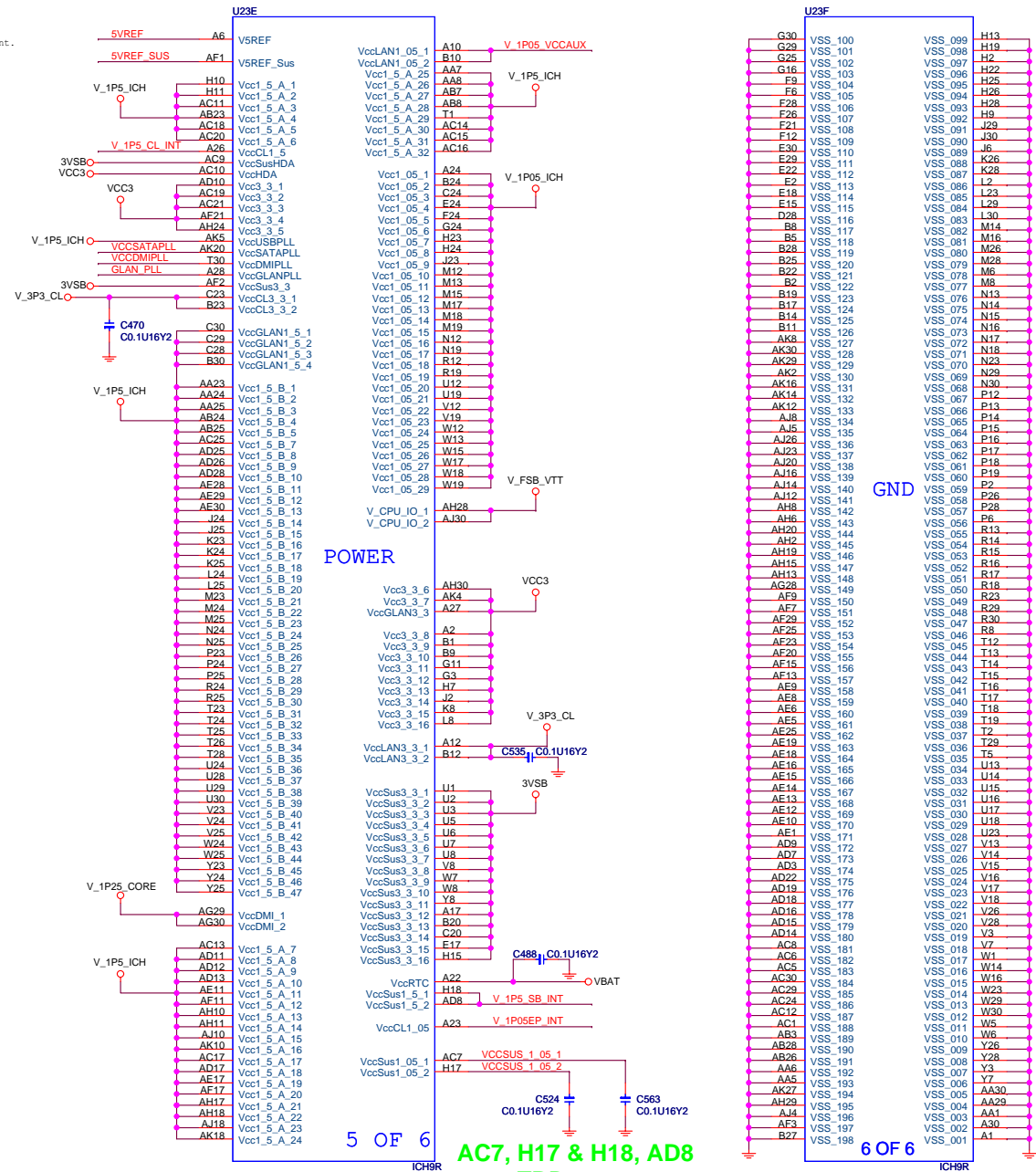
Size	Document Description	Rev
Custom	ICH9R - PCI, DMI, USB, PCIE & Slots	1.0
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V5REF must be powered up before VCC3 or after VCC3 within 0.7V. Also, V5REF must power down after VCC3 or before VCC3 within 0.7V. This rule is also applies to V5REF_SUS and 3VSB. However, the 3VSB is derived from the 5VSB on the power supply thru a voltage regulator and therefore, they can satisfy the requirement.

**SB POWER**

BOTTOM



POWER

5 OF 6

AC7, H17 & H18, AD8
spec TBD

GND

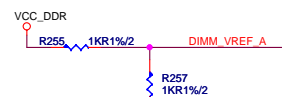


MS-7502

Size Custom	Document Description ICH9R - Power, GND	Rev 1.0
Date: Wednesday, July 25, 2007	Sheet 12 of 33	

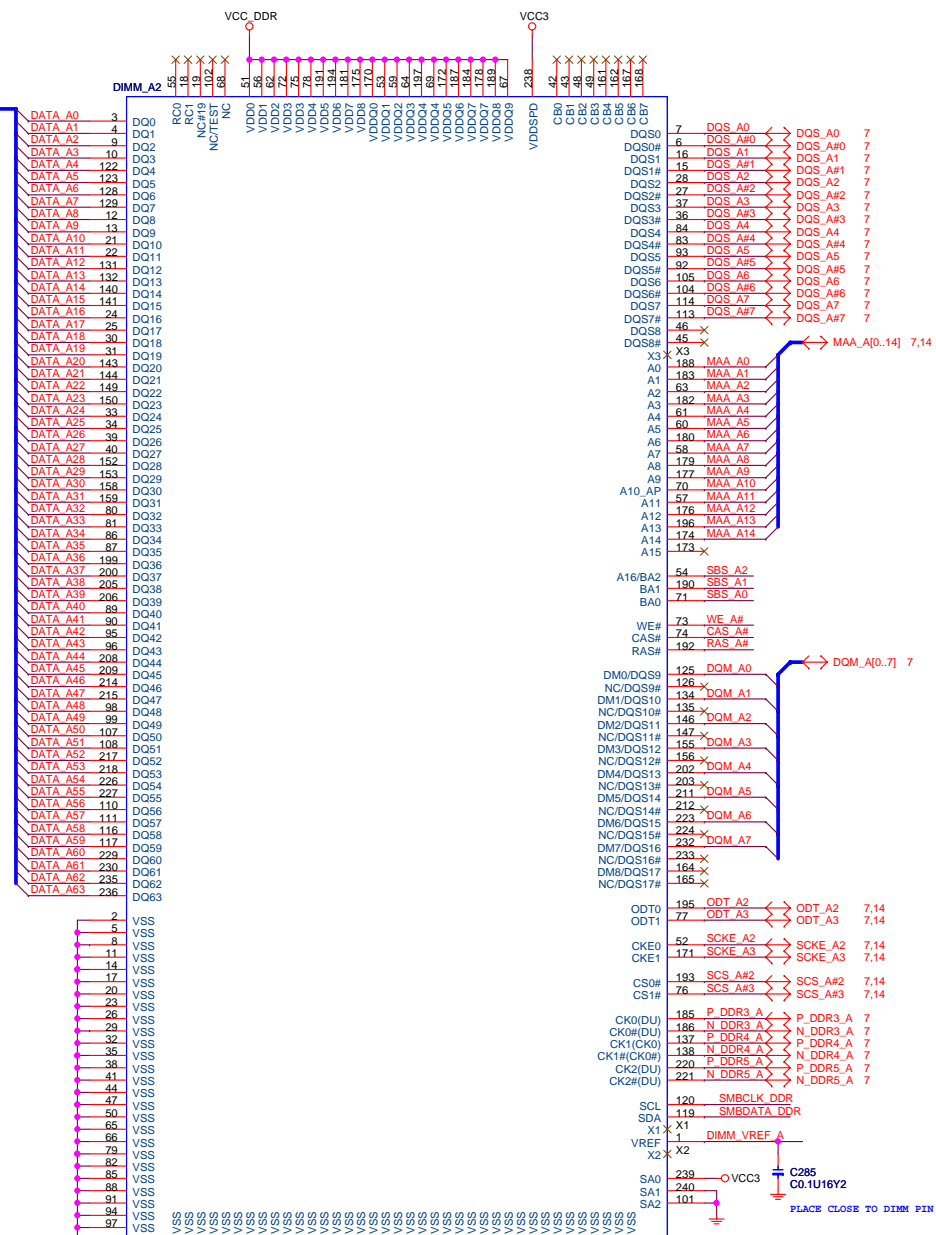


DDRII DIMM_A1



SMBCLK_DDR R74 33R/2
SMBDATA_DDR R78 33R/2

DDRII DIMM_A2



ADDRESS: 001
0xA2

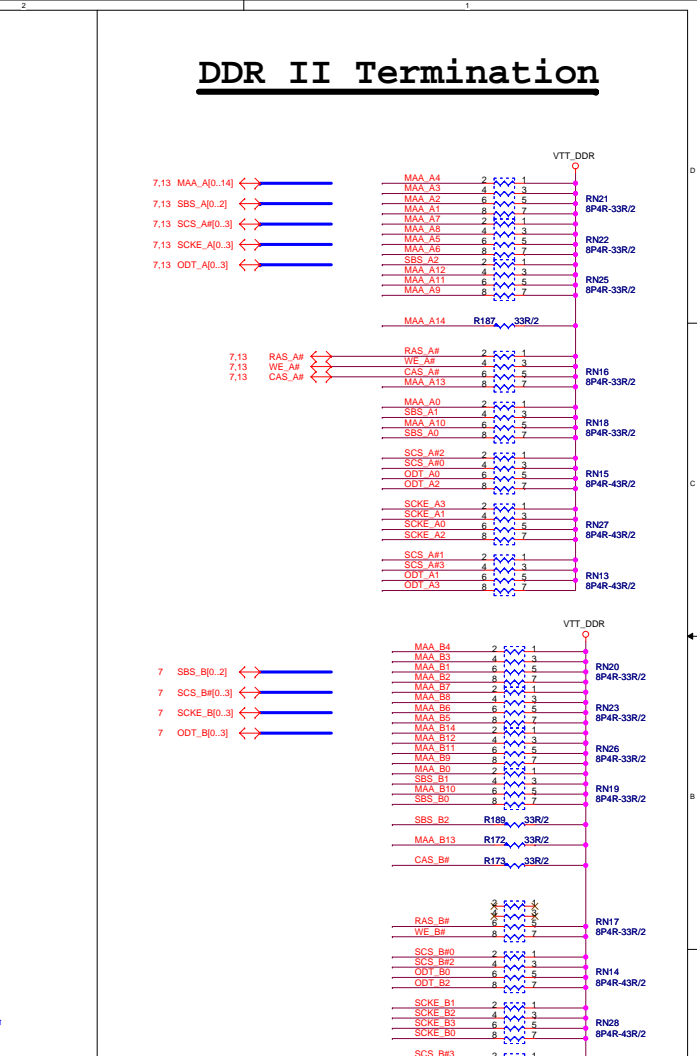


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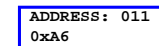
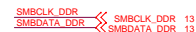
MS-7502

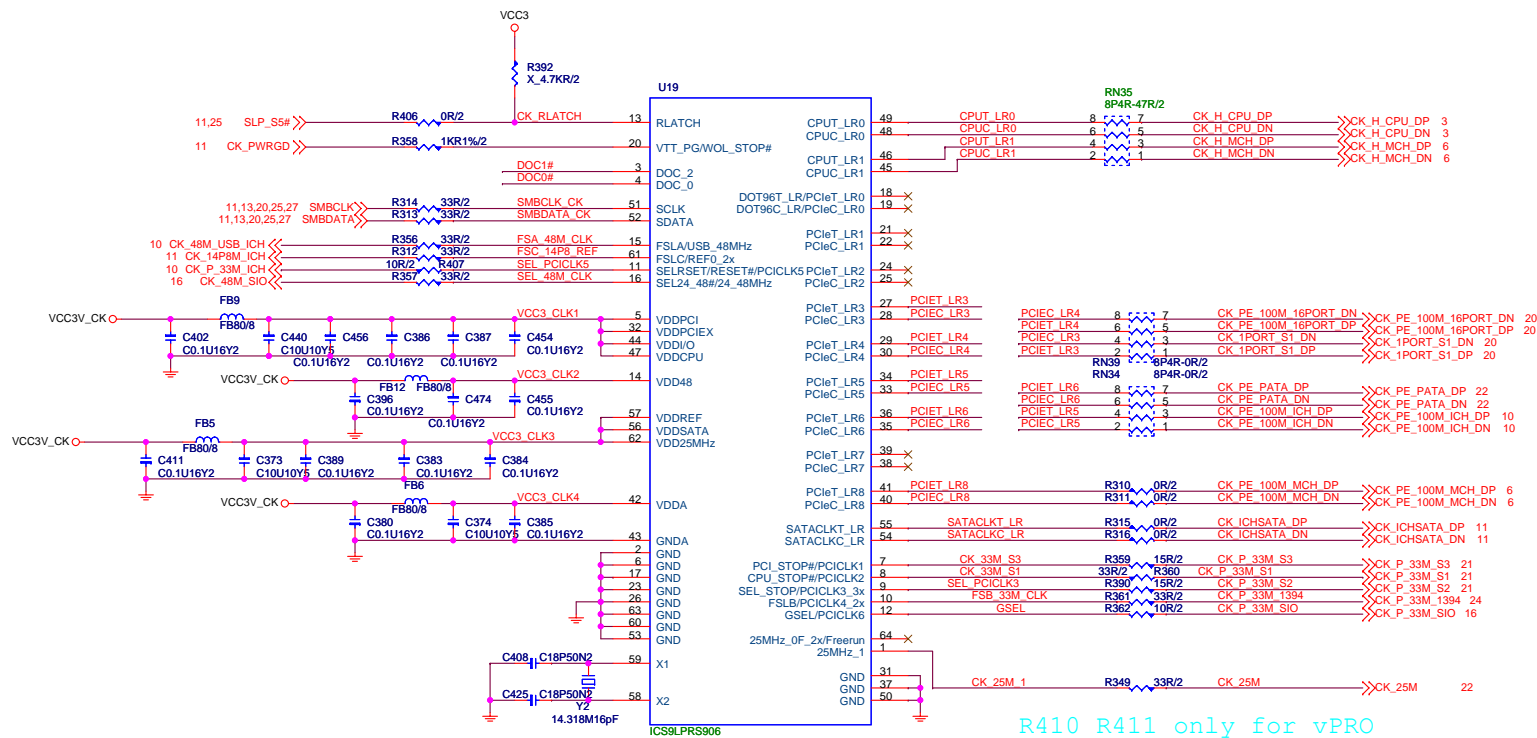
Size Custom Document Description DDR2 CHANNEL-A Rev 1.0

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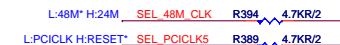


DDRII DIMM_B2

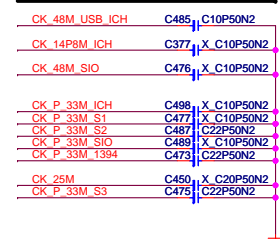




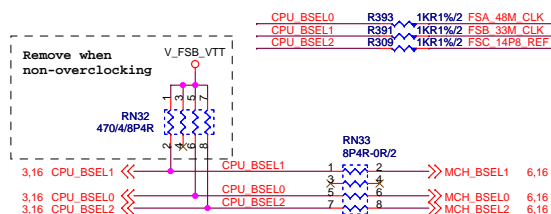
CLOCK GEN STRAPPING



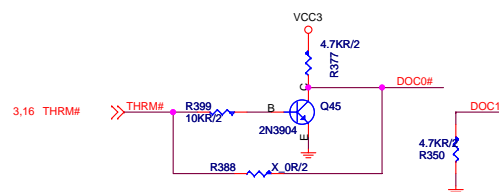
EMI



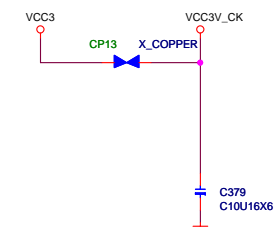
BSEL	TABLE
2 1 0	FSB FREQUENCY
0 0 0	266 MHz (1066)
0 0 1	133 MHz (533)
0 1 0	200 MHz (800)
1 0 0	333 MHz (1333)
1 1 0	400 MHz (1600)



D.O.T



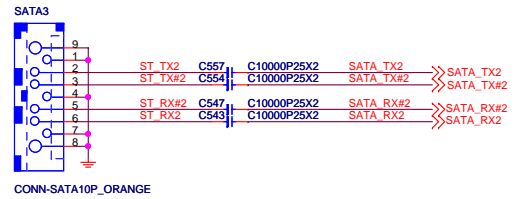
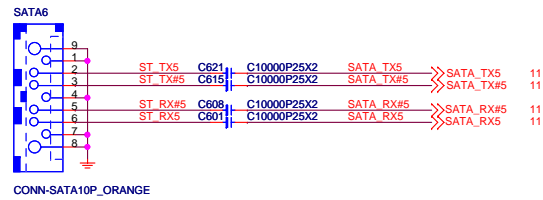
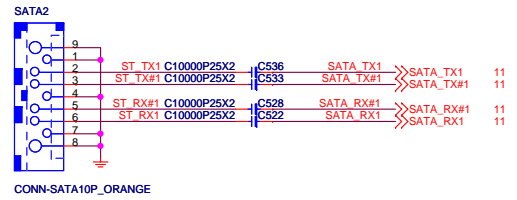
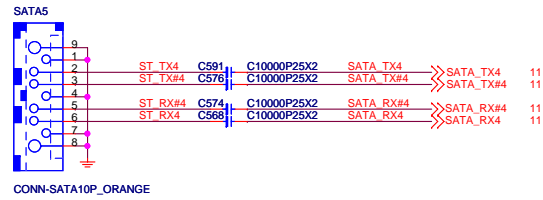
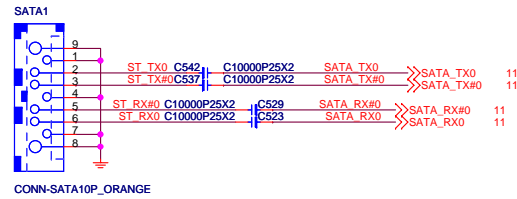
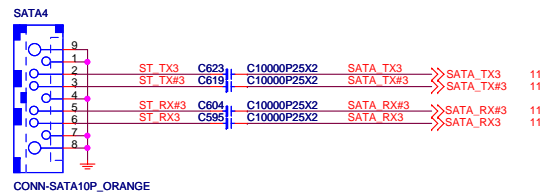
AMT POWER



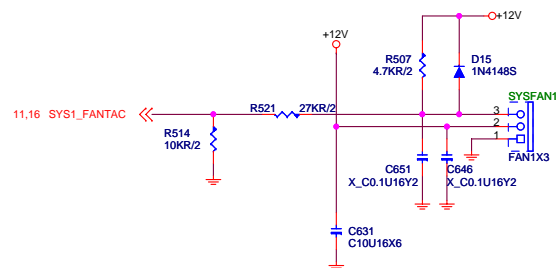
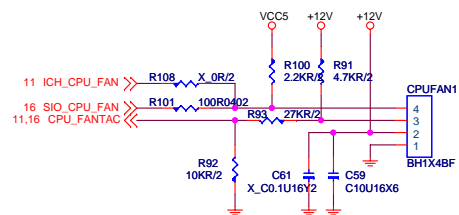
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Custom	Clock Gen ICS9LPRS906	1.0
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FAN-COUNTROL CIRCUIT



Modify System FAN circuit & Remove PWR_FAN
for spec need 3pin DC Smart FAN 07.3.30 by Robile

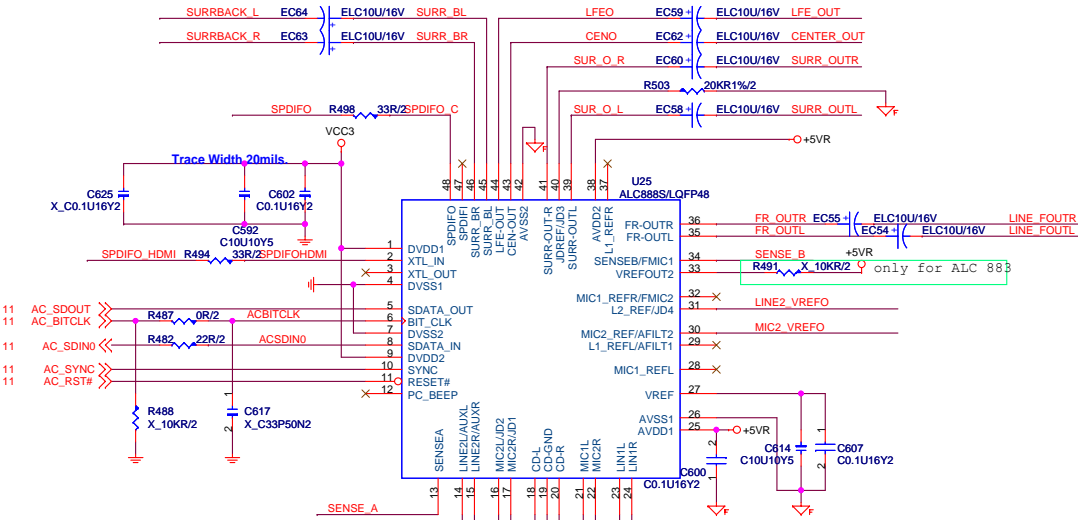


MICRO-STAR INT'L CO.,LTD

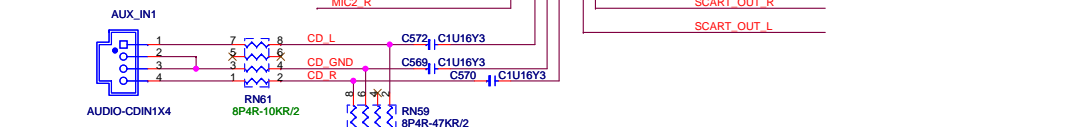
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Size	Document Description	Rev
Custom	SATA & e-SATA Ports and Fan Control	1.0
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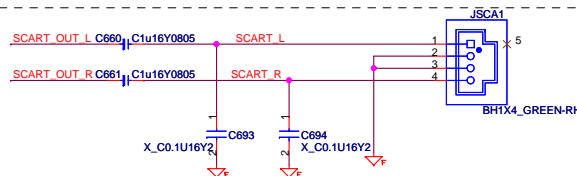
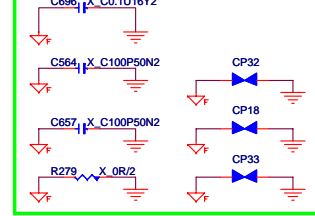
ALC888S CODEC



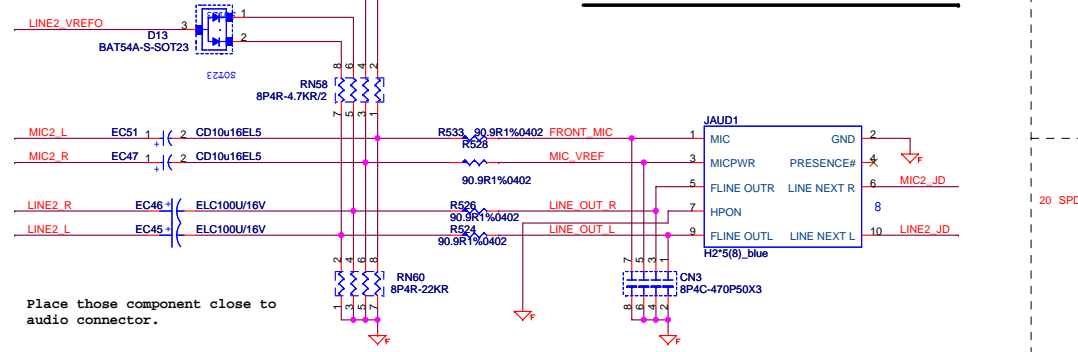
CD/IN HEADERS



For EMI

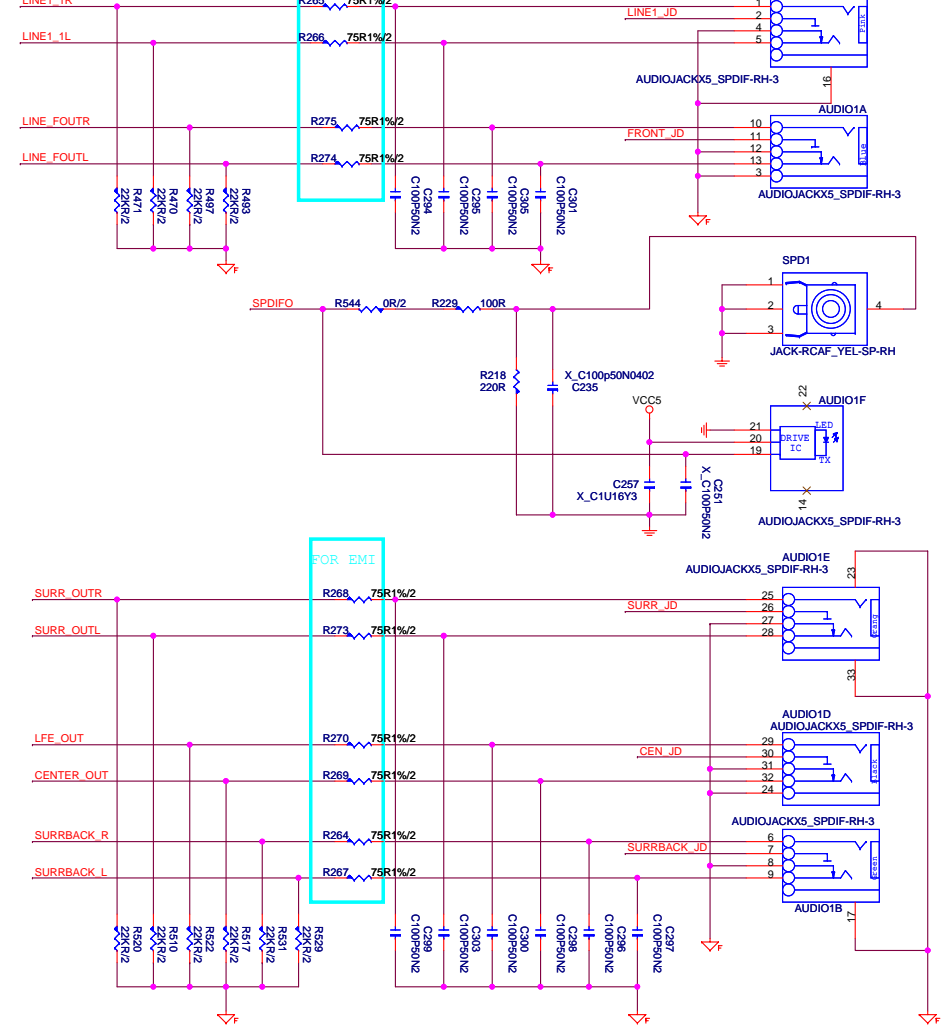


Azalia Front Audio Connector

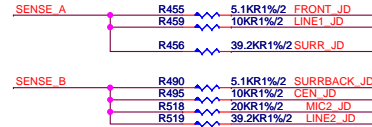


Place those component close to audio connector.

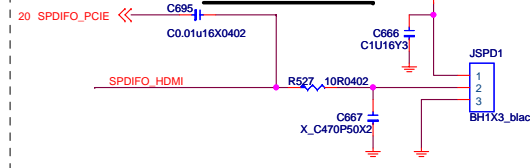
ALC888S JACK



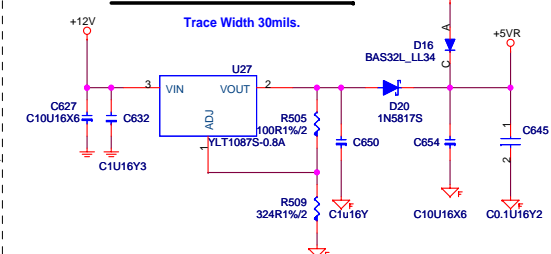
ALC888S JACK DETECT



SPDIF_OUT

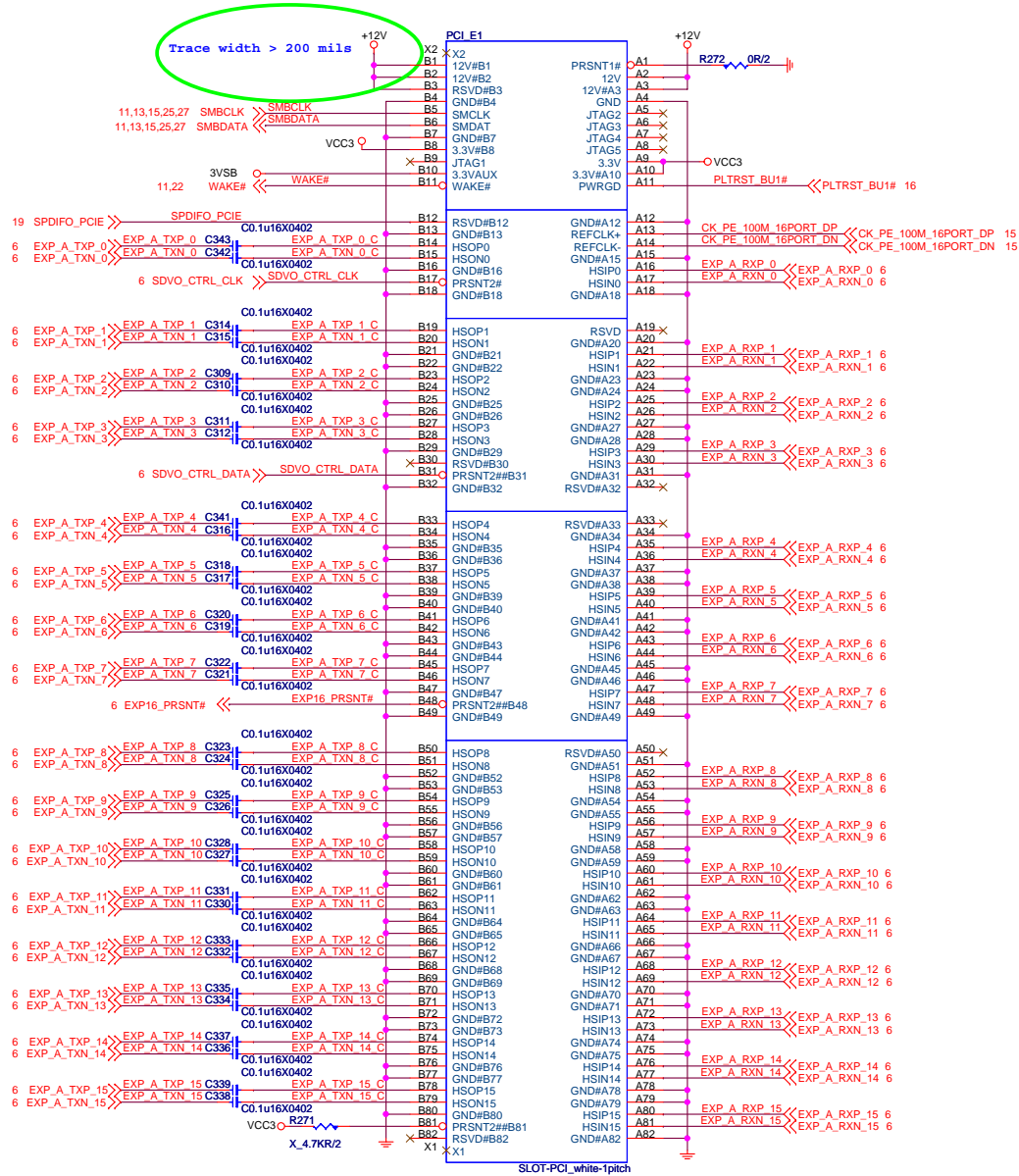


AUDIO CODE REGULATORS

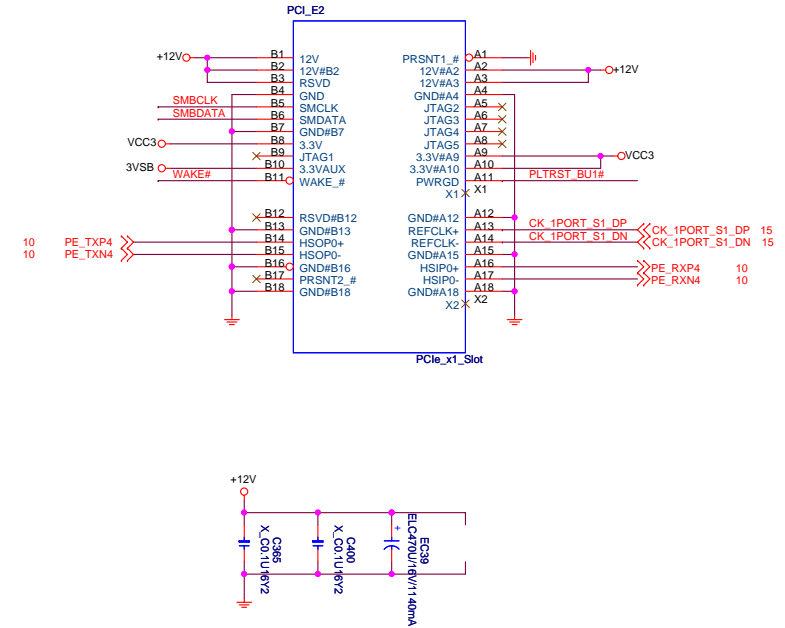


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Size	Document Description	Rev	
Custom	Audio Codec ALC888S	1.0	
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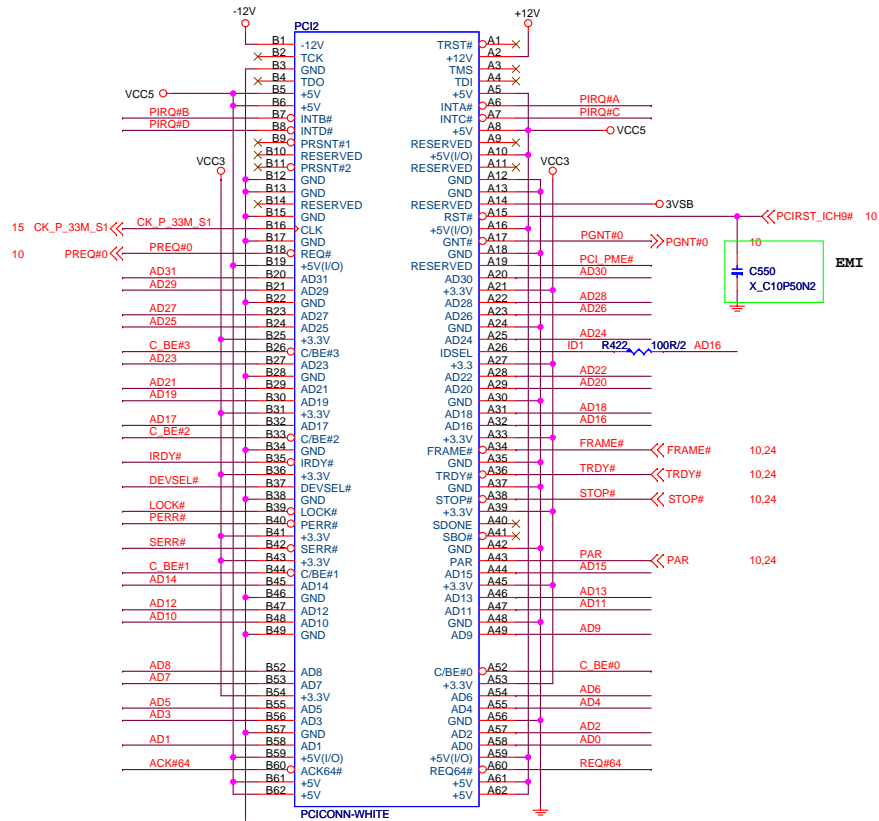
PCI_Express X16 Slot



PCI_Express X4 Slot (Share with PCI_E x1 Slots)



PCI SLOT 2 (PCI VER: 2.2 COMPLY)



IDSEL = AD16

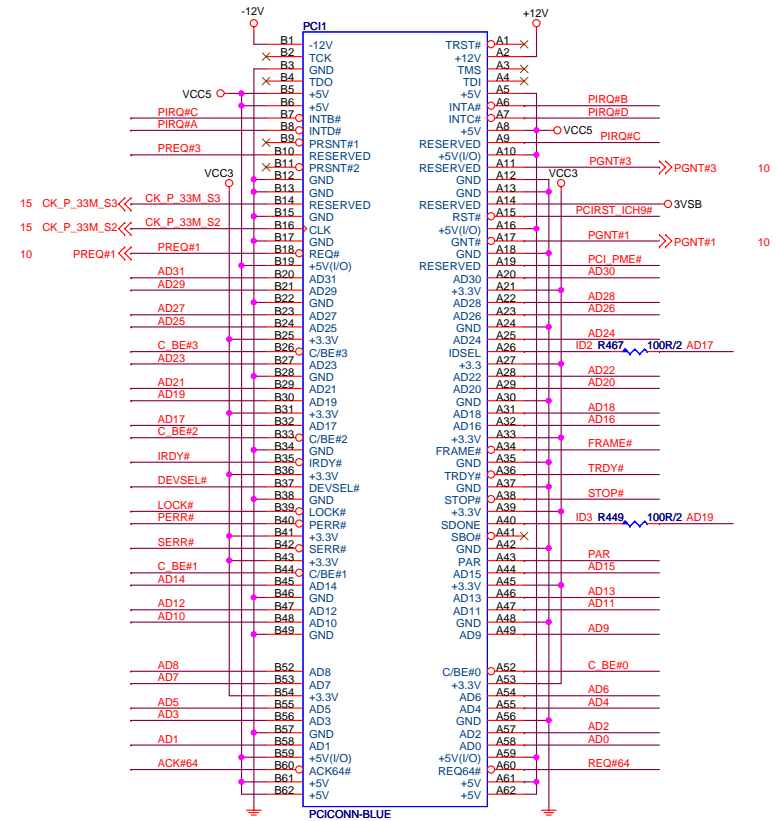
MASTER = PREQ#0

PIRQ#A

10.24 AD[31..0] << AD[31..0]

10.24 C_BE#[3..0] << C_BE#[3..0]

PCI SLOT 1 (PCI VER: 2.2 COMPLY)



IDSEL = AD17

MASTER = PREQ#1

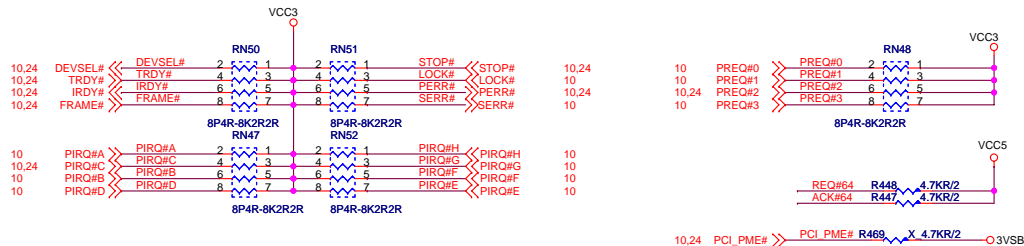
PIRQ#B

IDSEL = AD19

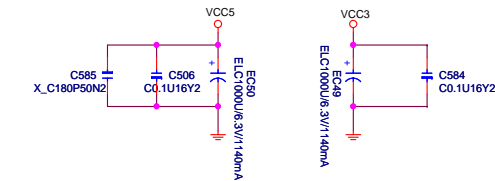
MASTER = PREQ#3

PIRQ#C

PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS



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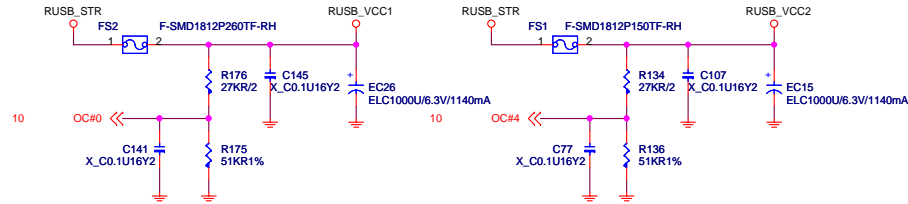
Rear USB Connector

USB POWER FOR PORT 0,1,2,3

NEAR CONNECTOR

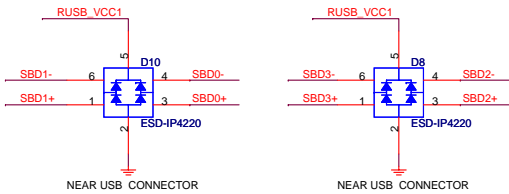
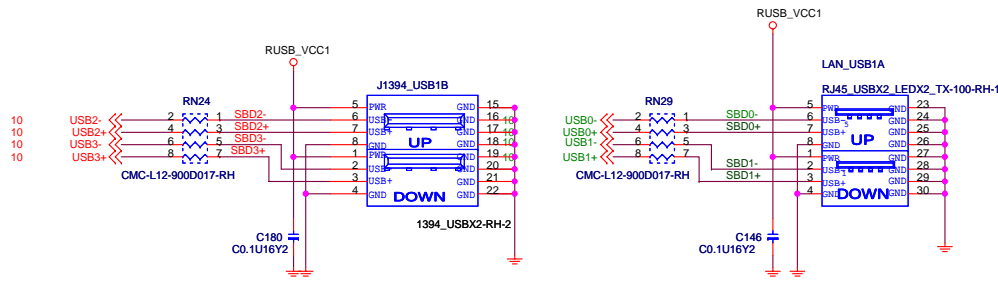
USB POWER FOR PORT 4,5

NEAR CONNECTOR

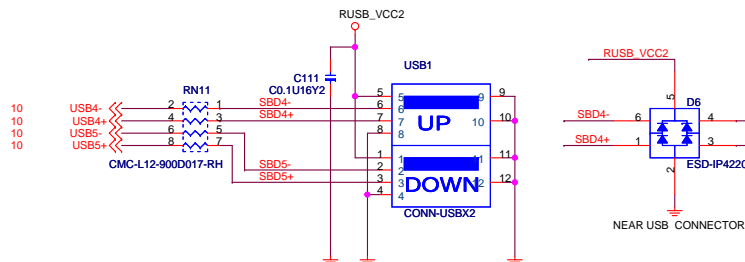


REAR USB PORT 2,3(With 1394)

REAR USB PORT 0,1 (With LAN)



REAR USB PORT 4,5



Front USB Connector

USB POWER FOR PORT 6,7

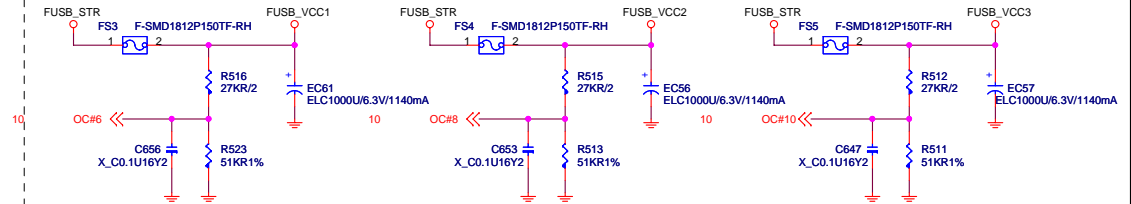
NEAR CONNECTOR

USB POWER FOR PORT 8,9

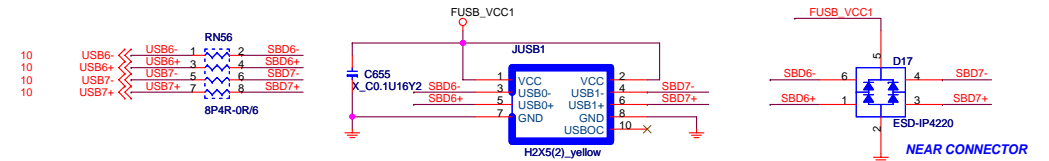
NEAR CONNECTOR

USB POWER FOR PORT 10,11

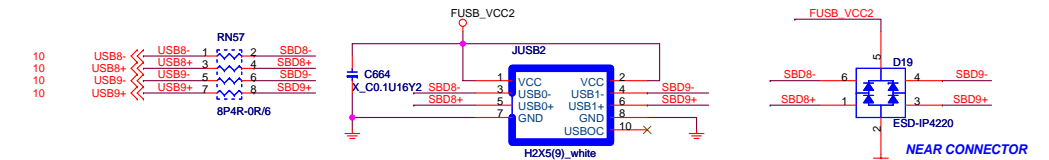
NEAR CONNECTOR



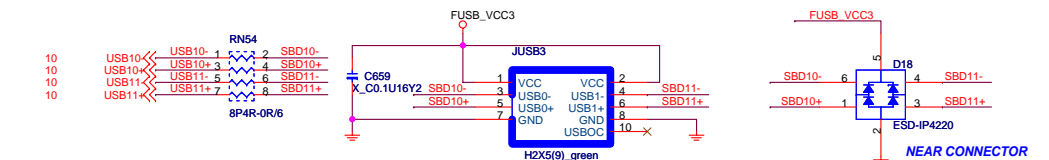
FRONT USB PORT 6,7



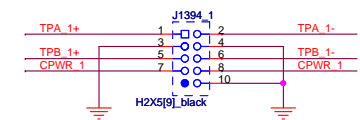
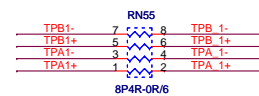
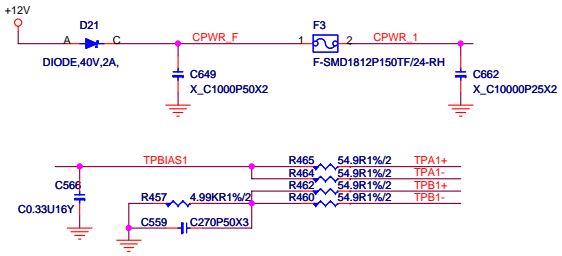
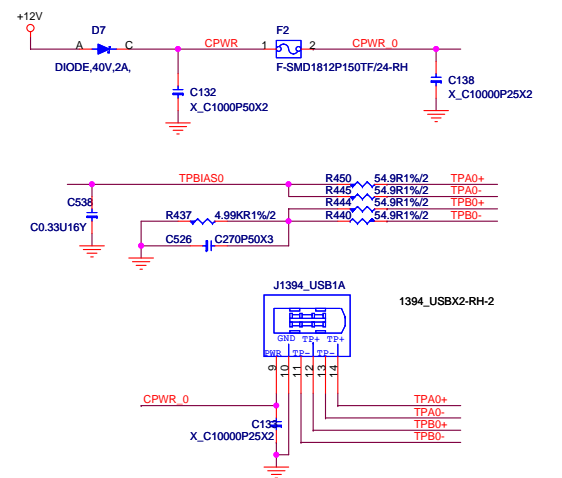
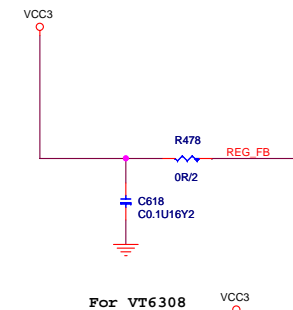
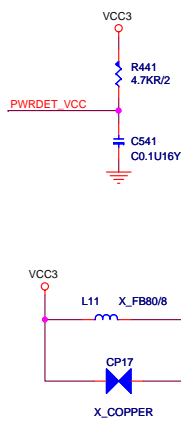
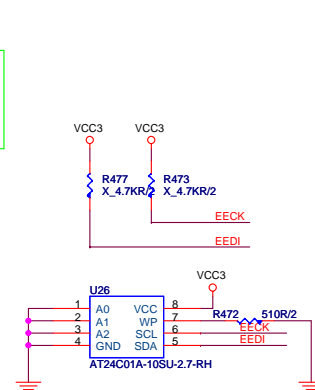
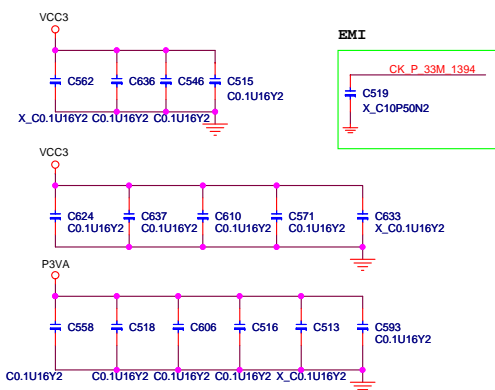
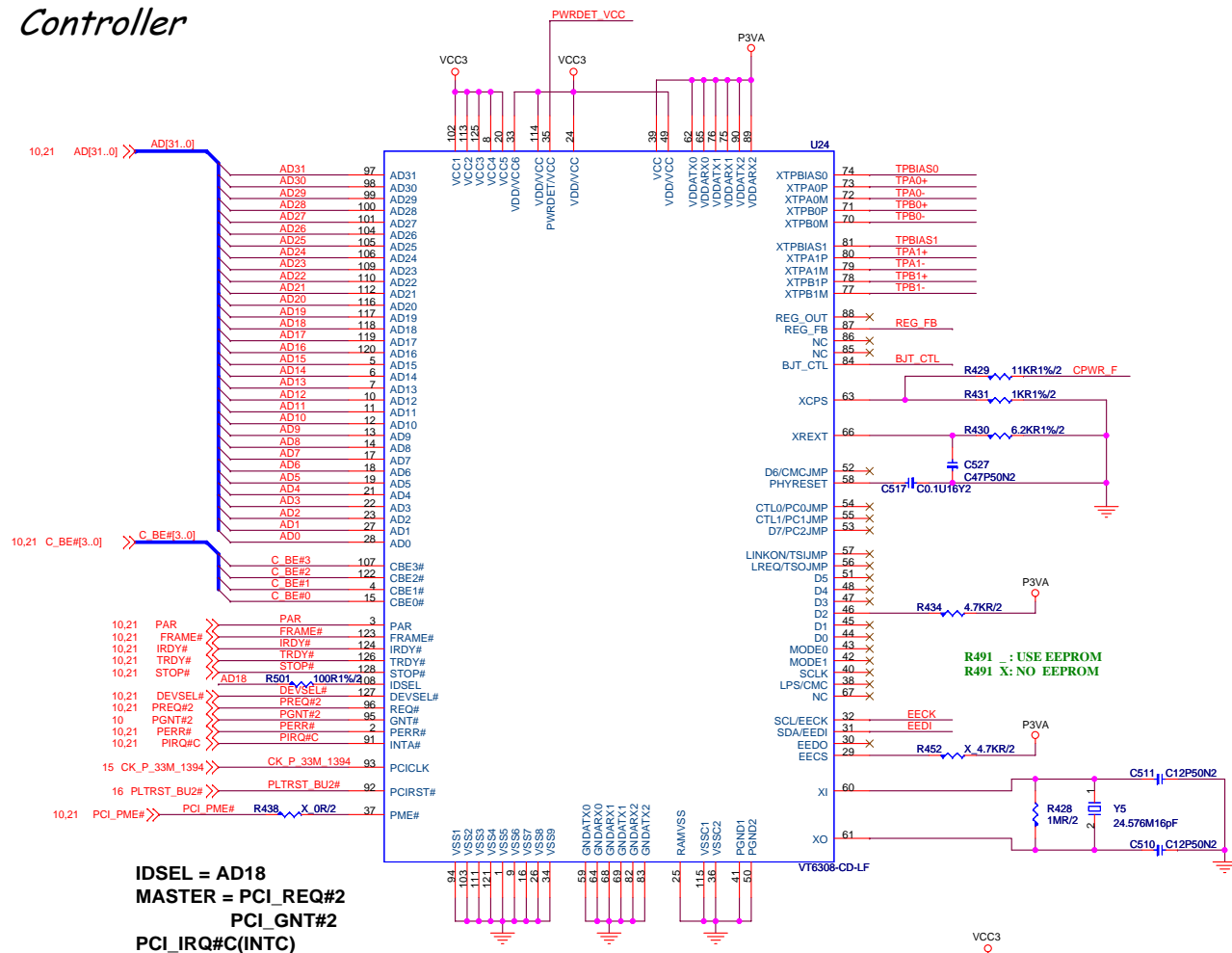
FRONT USB PORT 8,9



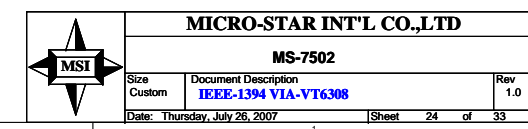
FRONT USB PORT 10,11



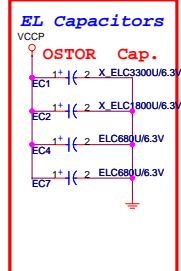
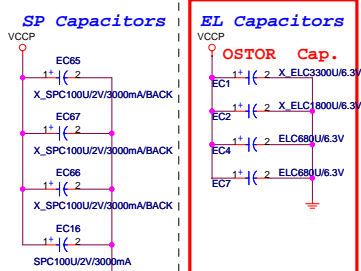
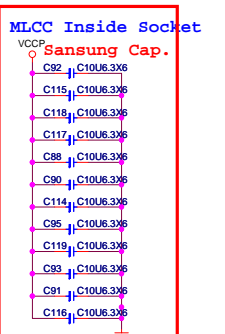
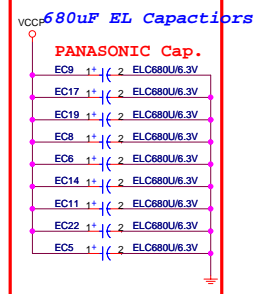
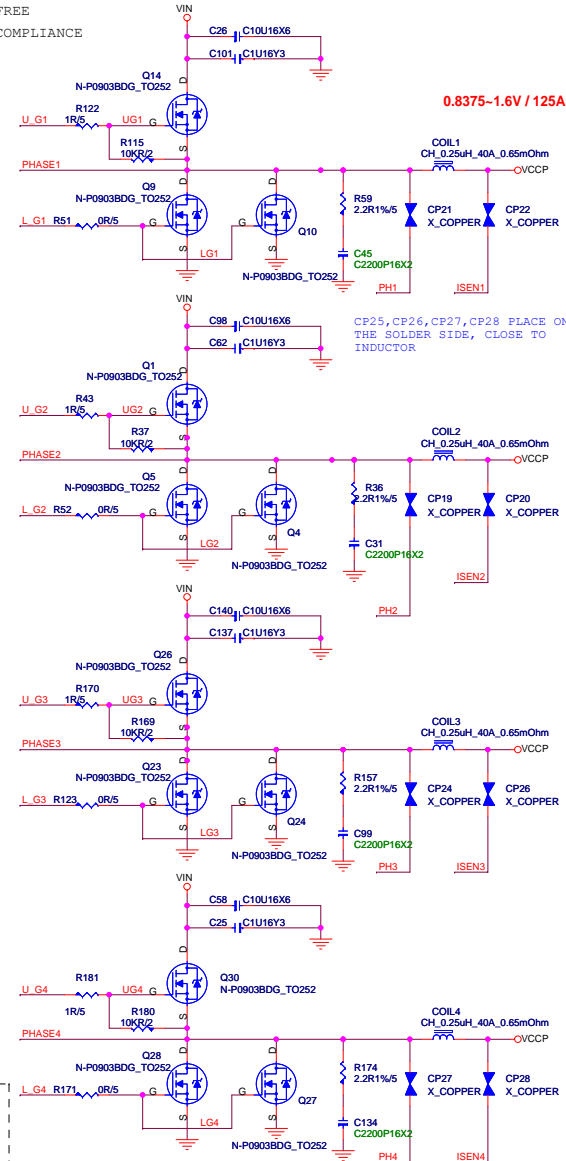
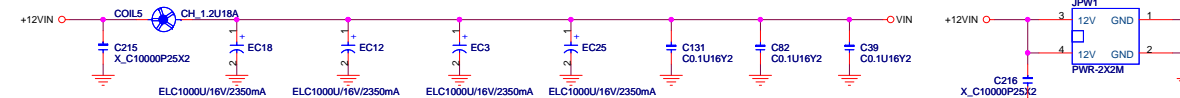
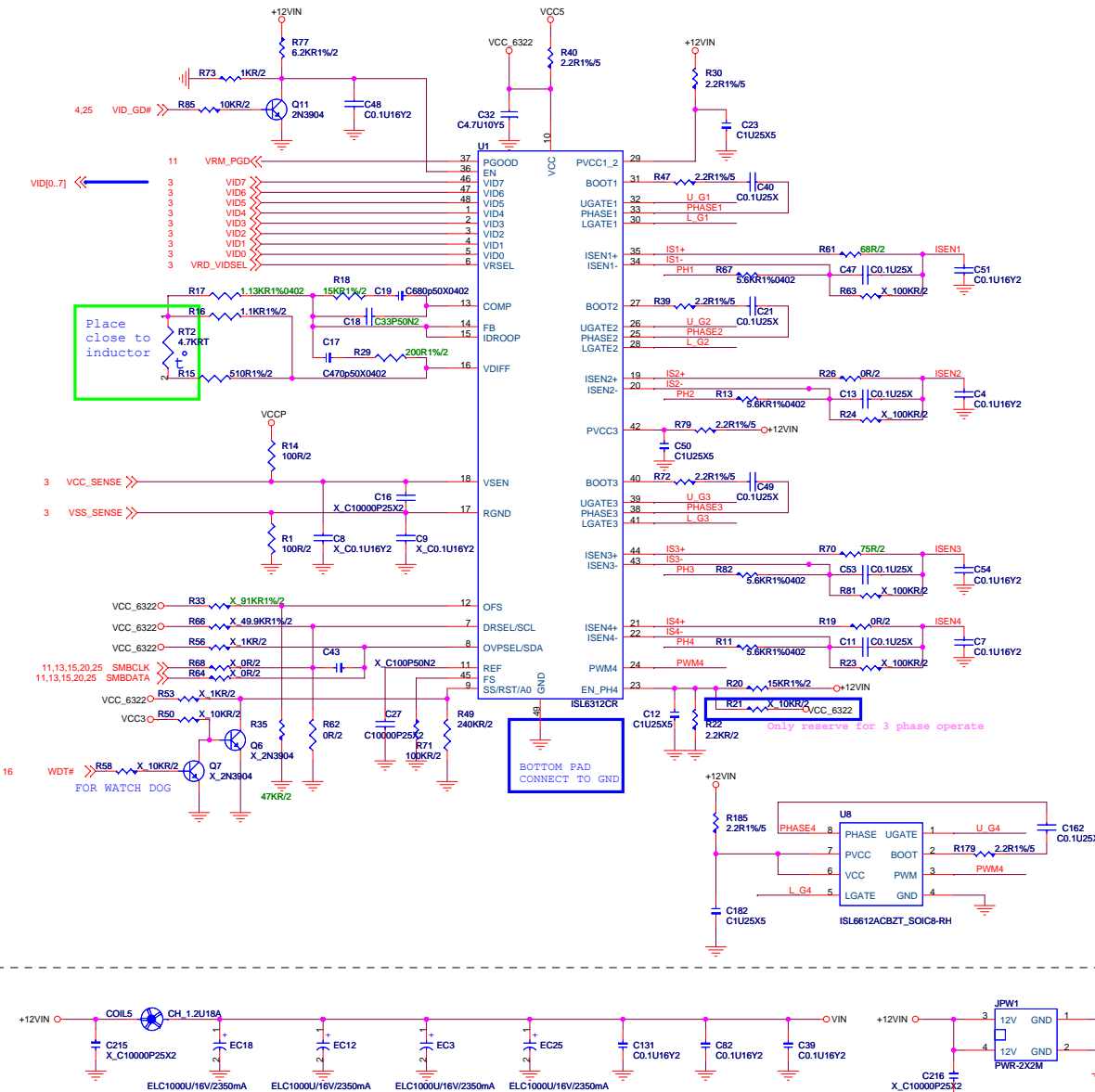
1394a OHCI Link Layer Controller



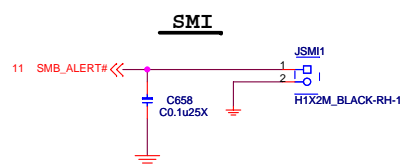
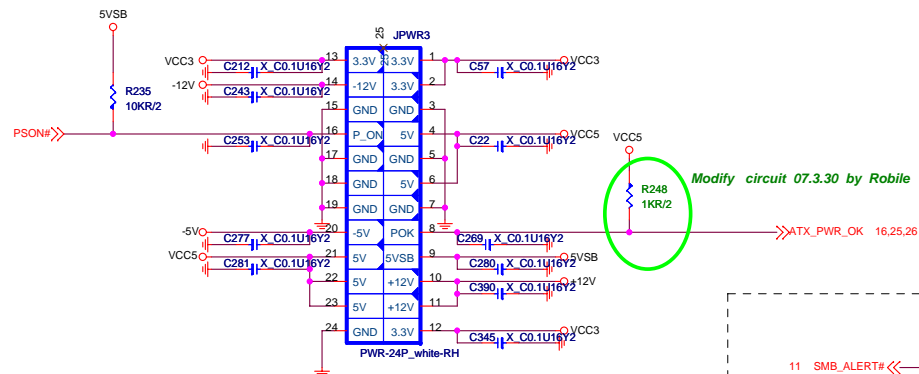
For Intel 1394 pinheader



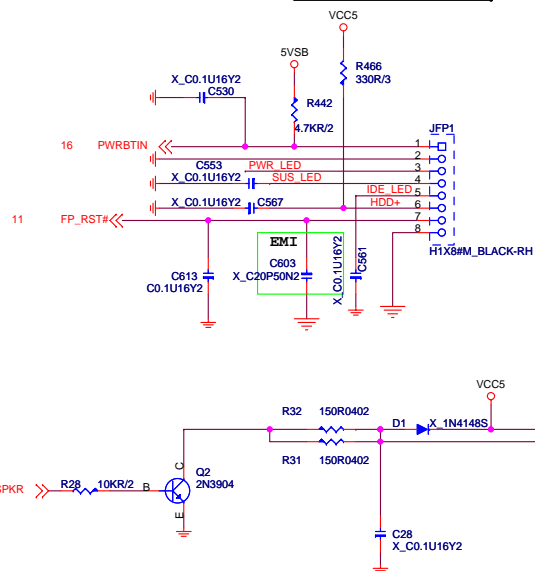
Voltage Regular Module



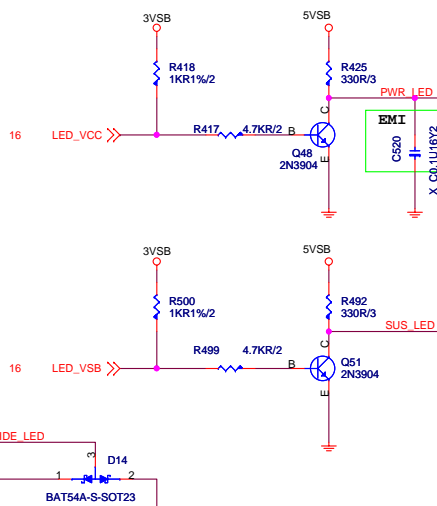
ATX POWER CONNECTOR



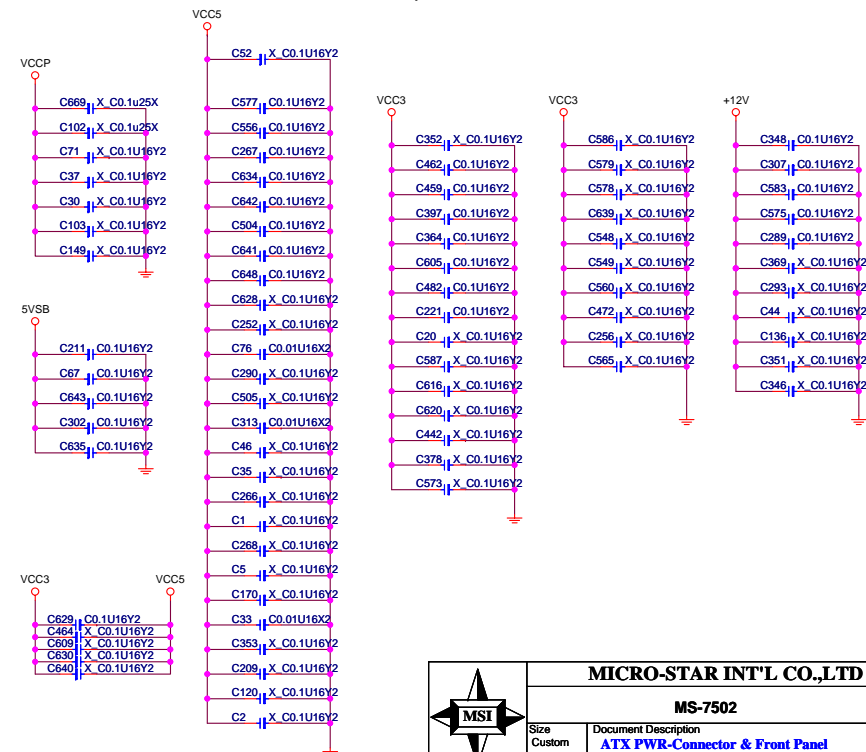
FRONT PANNEL



LED (for Fintek 71882)



Cap. for EMI & Power



MICRO-STAR INT'L CO.,LTD

MS-7502

Size	Document Description
Custom	ATX PWR-Connector & Front Panel

Rev	1.0
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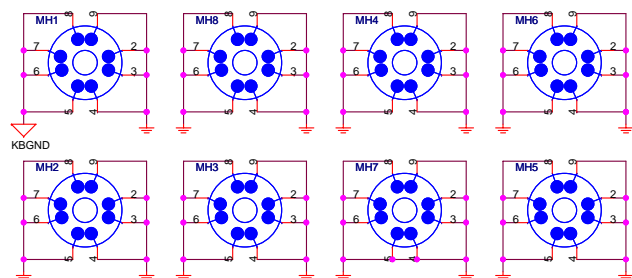
Optical Fiducial Marks-120



Optical Fiducial Marks-100



Mounting Holes



Simulation

