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MS-7502 uATX Version: 1.2

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

System Chipset:

Intel Bearlake - G33 North Bridge
Intel ICH9DH 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)

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	601-7502-02S
STD	Bearlake-G33/ICH9DH	cfg-7502	601-7502-03S

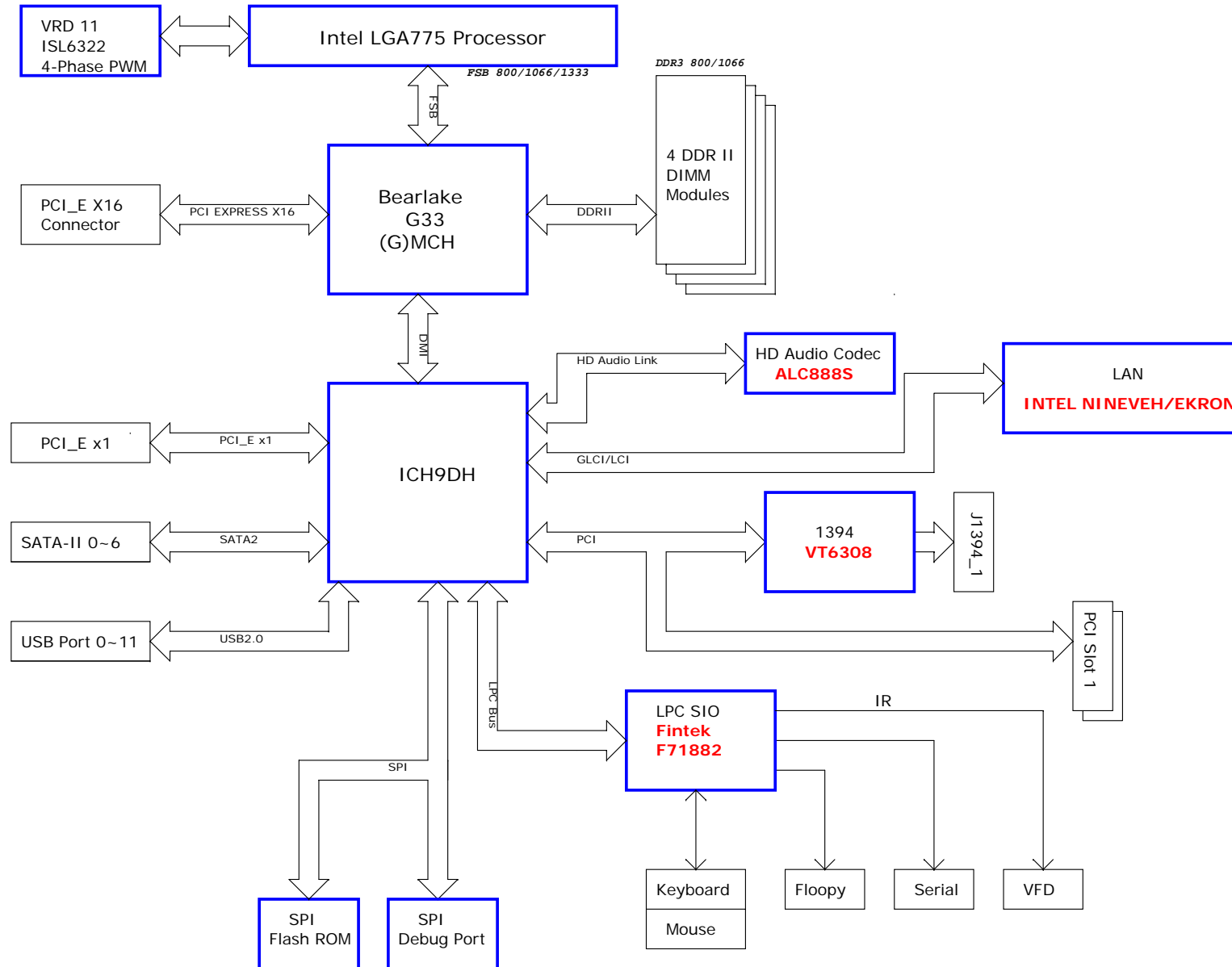


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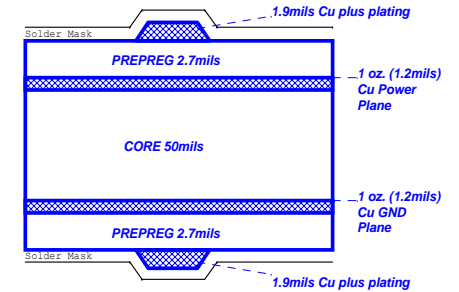
Size Custom	Document Description COVER SHEET	Rev 1.2
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Block Diagram



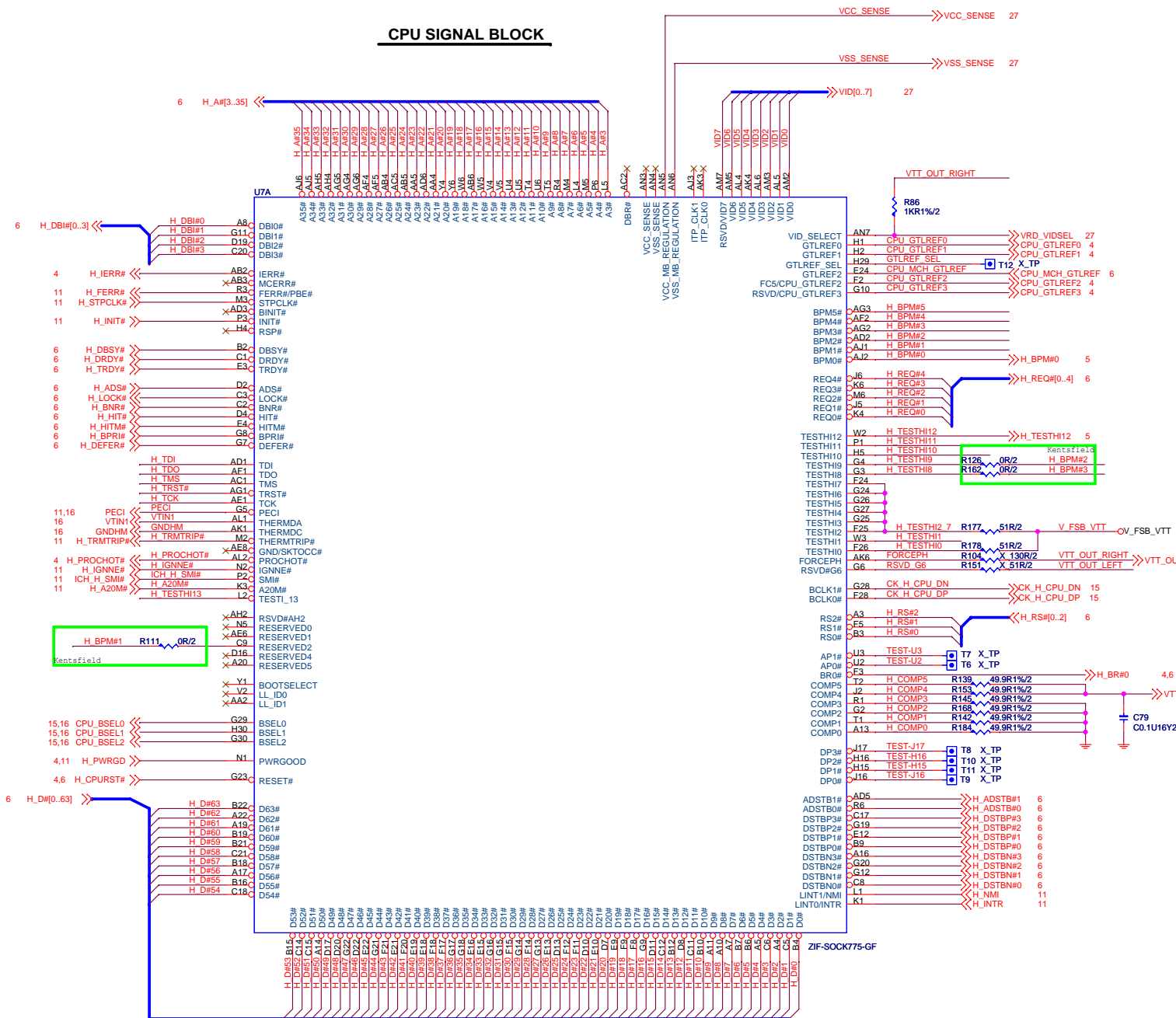
Board Stack-up

(1080 Prepreg Considerations)

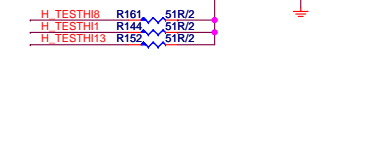
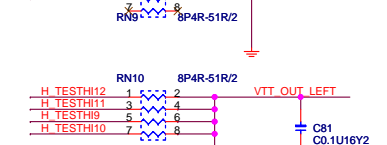
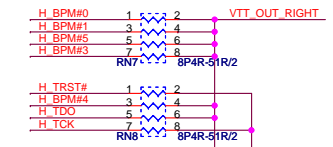
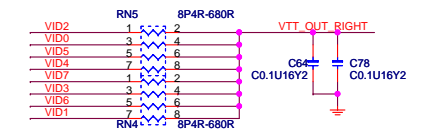


Single End 50ohm Top/Bottom : 4mils
 USB2.0 - 90ohm : 15/4.5/7.5/4.5/15
 SATA - 95ohm : 15/4/8/4/15
 LAN - 100ohm : 15/4/8/4/15
 PCIE - 95ohm : 15/4/8/4/15
 IEEE1394 - 110ohm : 15/4/9/4/15
 IDE : 15/4/8/4/15

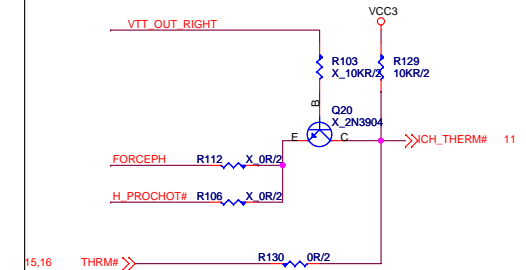
CPU SIGNAL BLOCK



PULL HIGHT PULL DOWN



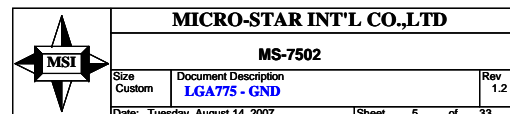
Thermal TRIP

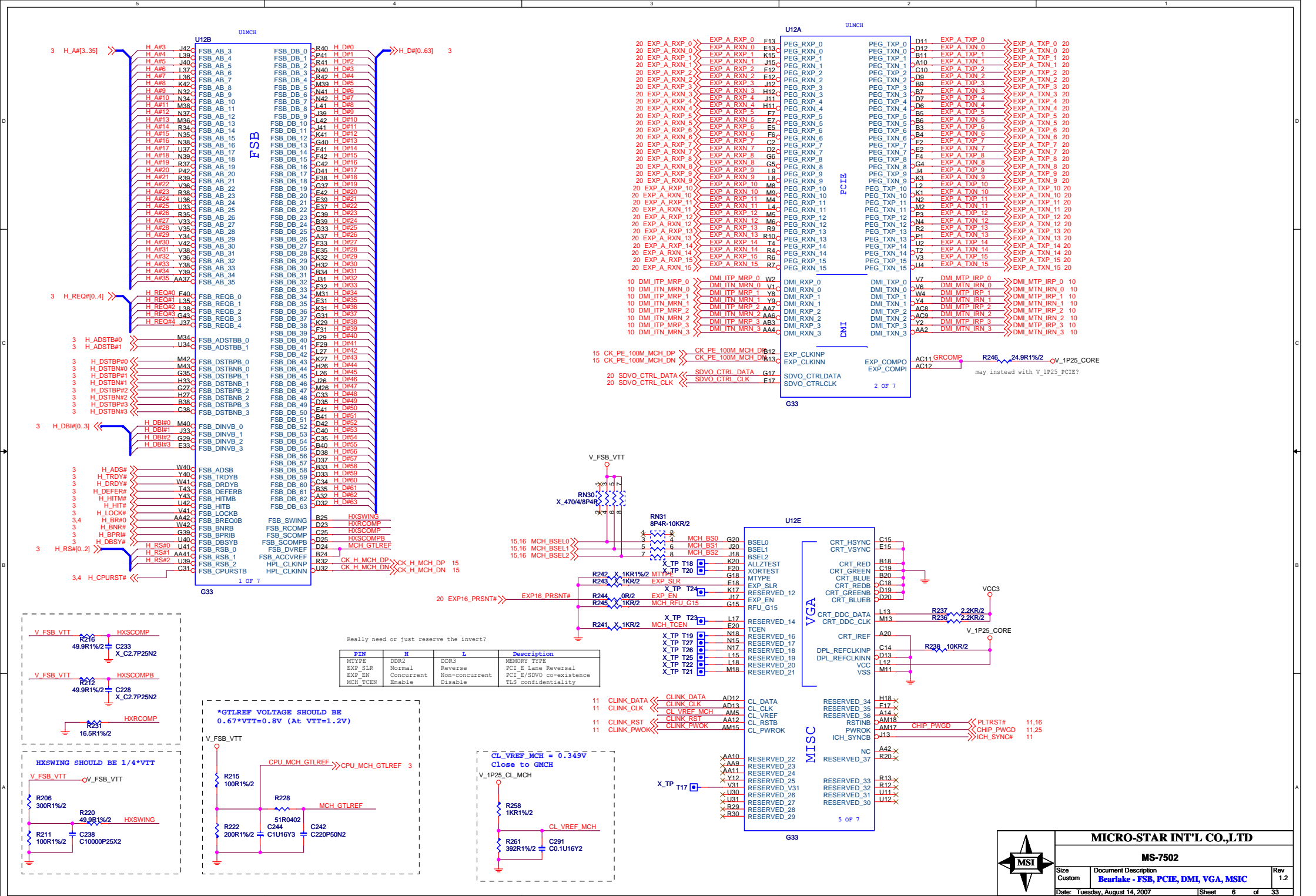


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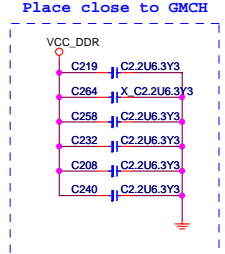
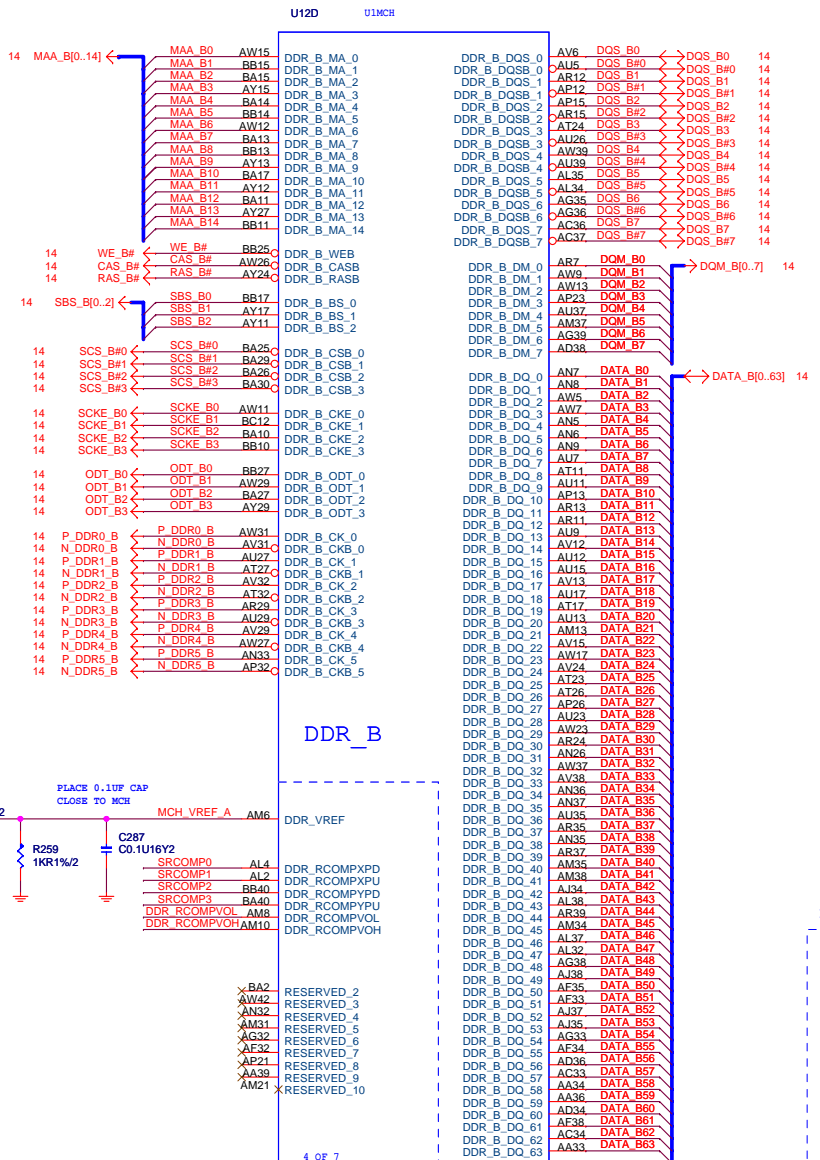
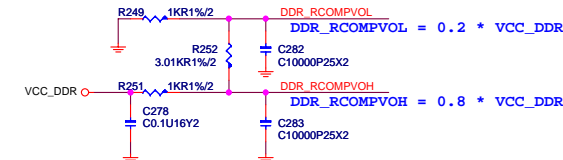
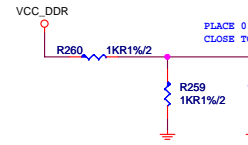
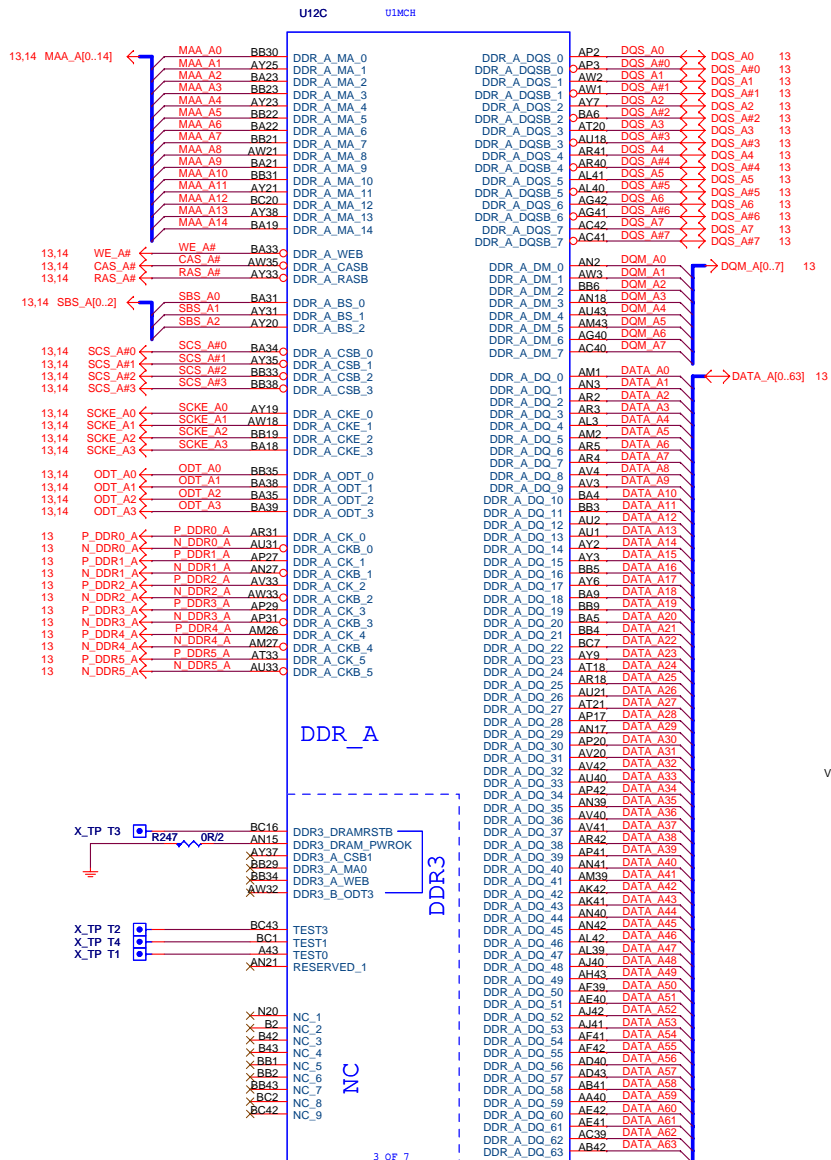


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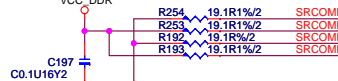
MS-7502

Size	Document Description
Custom	Bearlake - FSB, PCIE, DML, VGA, MSIC

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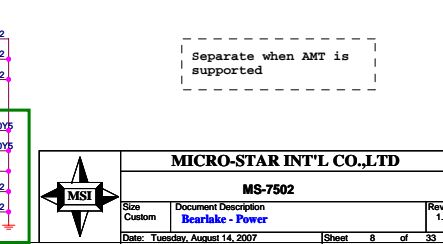
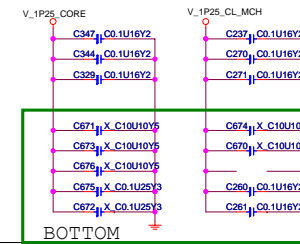
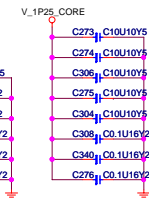
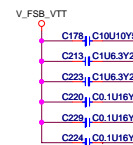
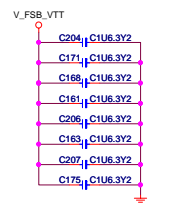
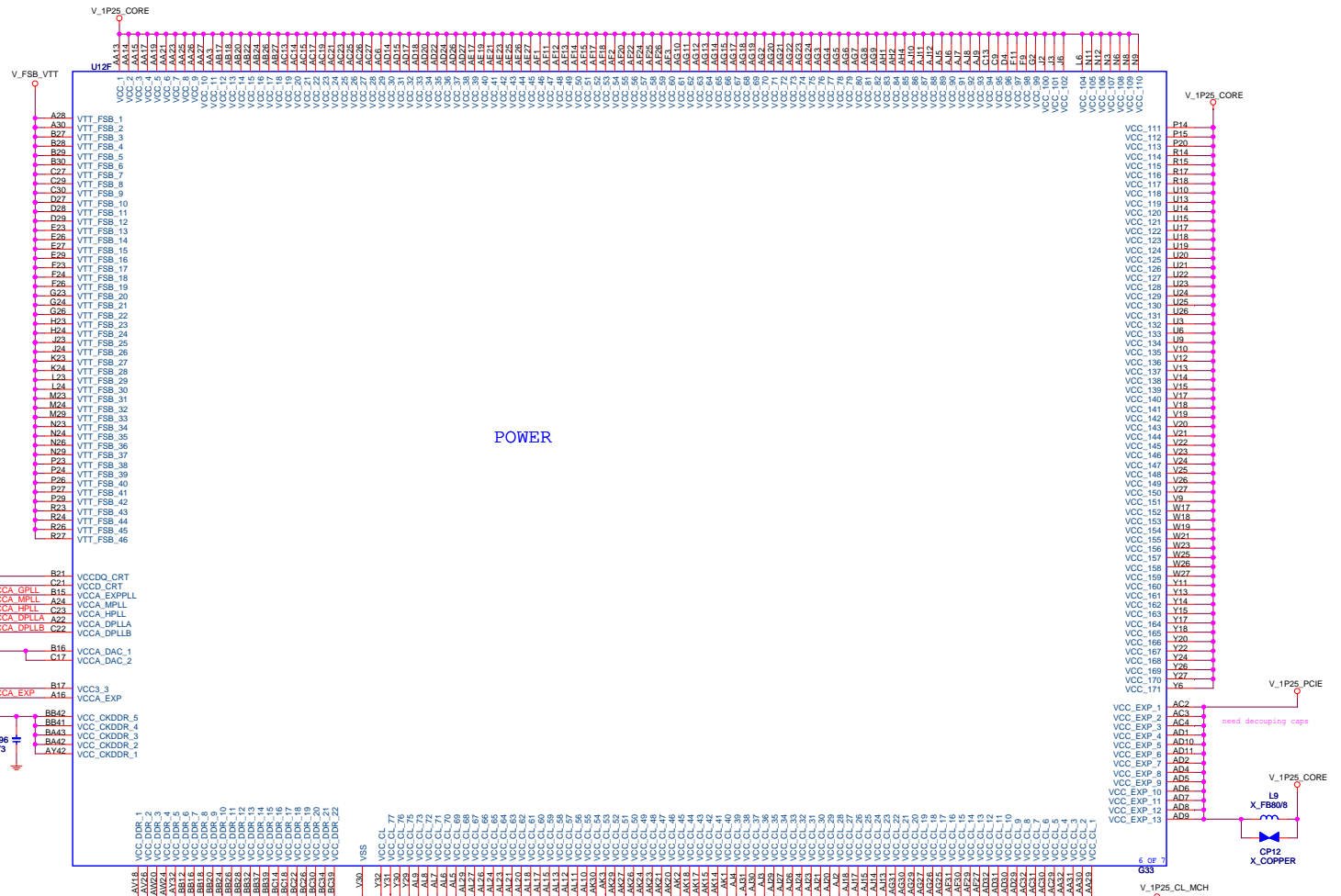
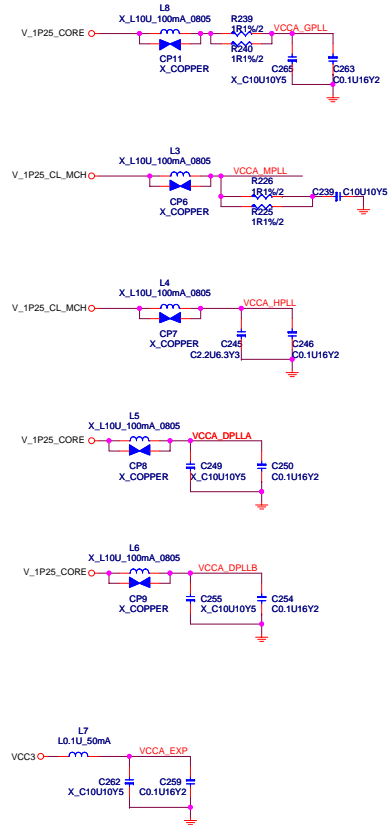


SCROMP1,3 CLOSED TO VCC_DDR

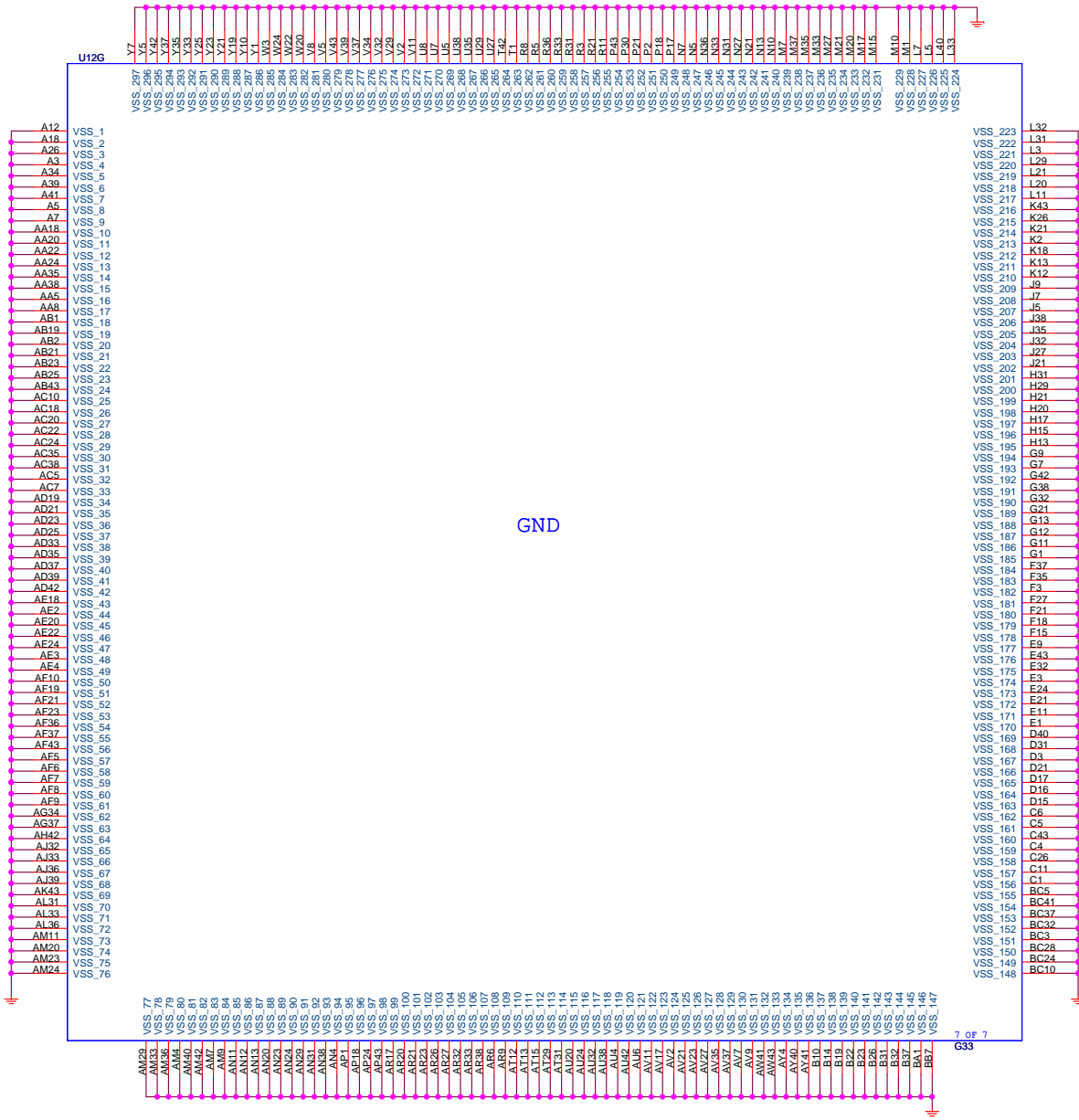


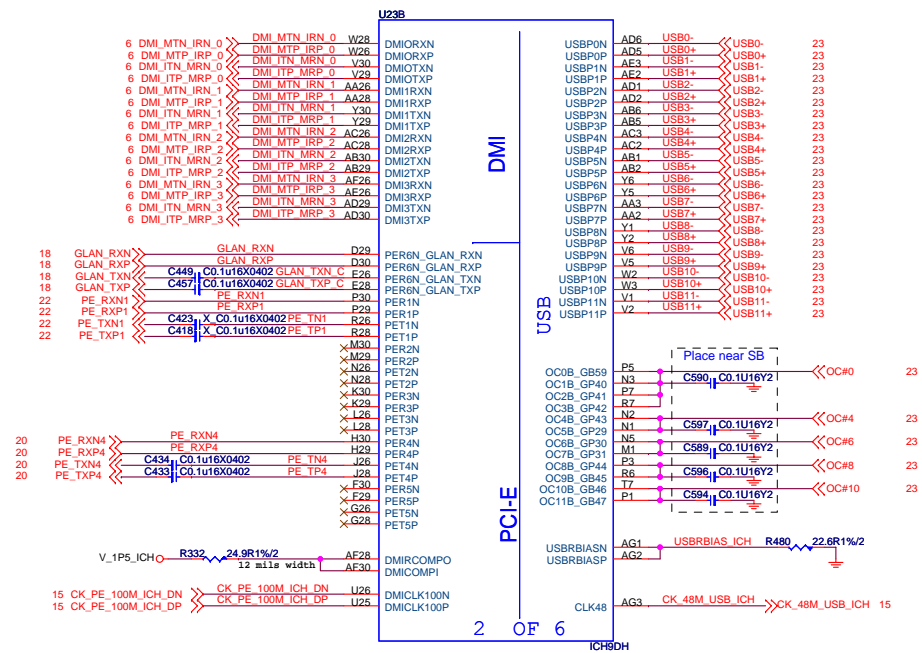
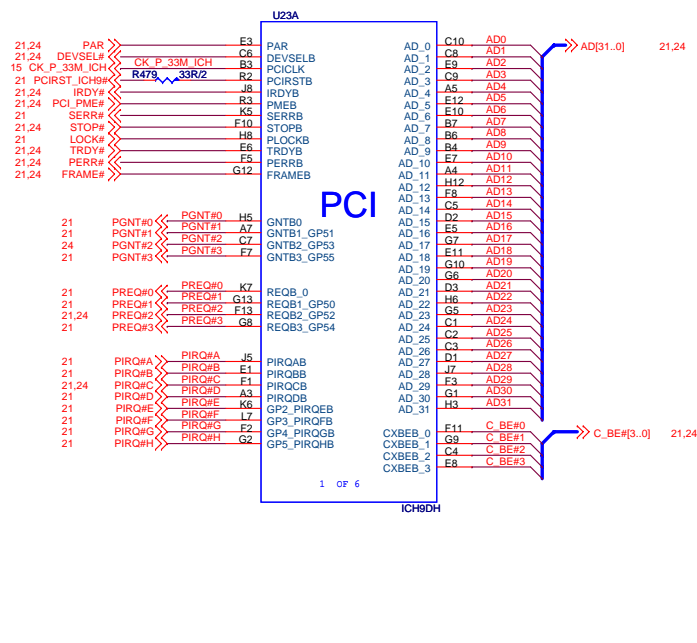
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MS-7502		
Size	Document Description	Rev
Custom	Bearlake - Memory	1.2
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NB POWER

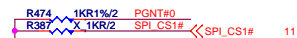


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SB STRAPPING RESISTOR



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



SIGNAL	H	L	DES.
GNT3	DIS	EN	AI6 OVERRIDE
GNT2	N/A	SET BIT	PCIe 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/1X          11:0X/0X/4X
```



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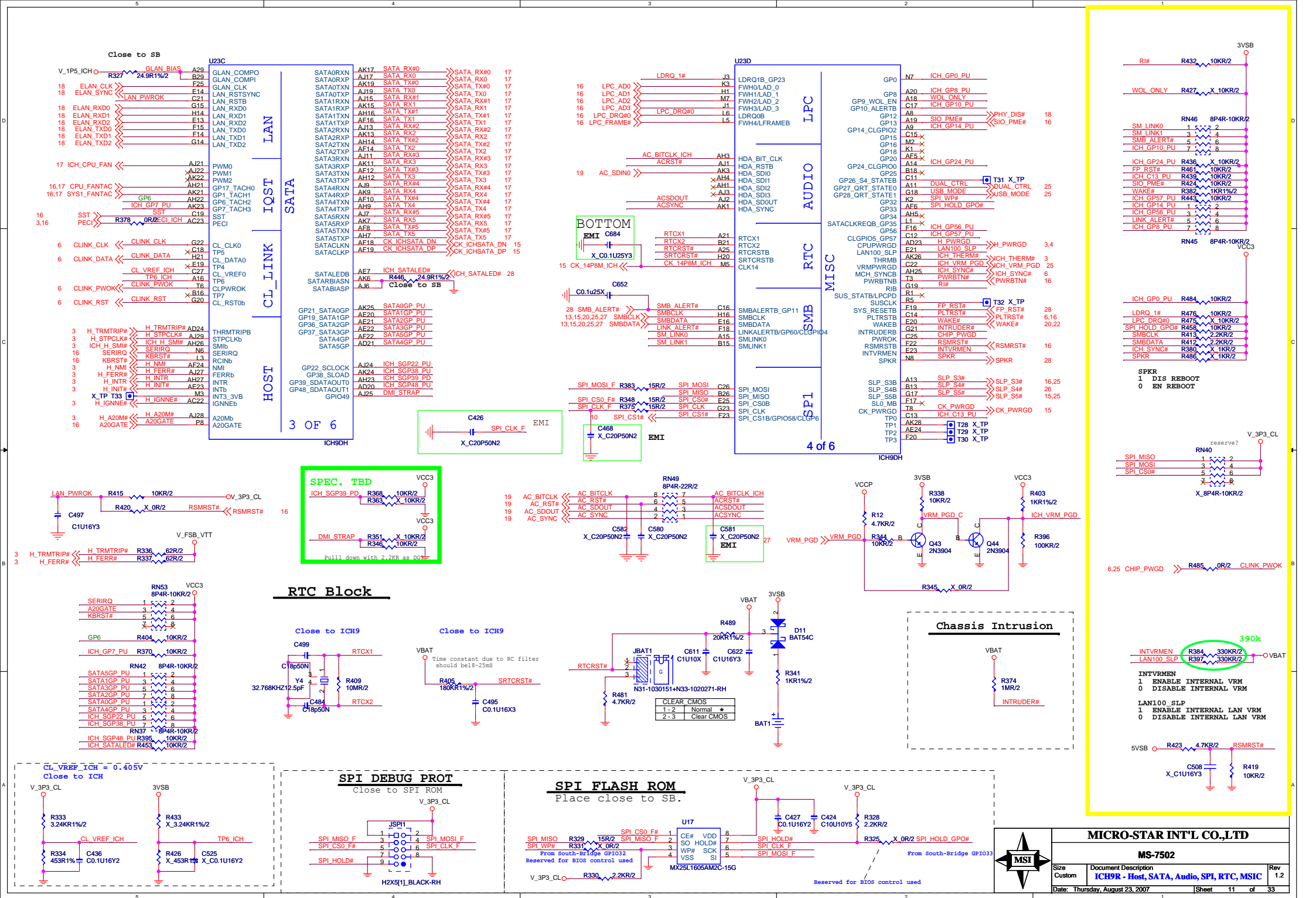
Size	Custom
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Size	Document Description
Custom	ICH9R - PCI, DMI, USB, PCIE & Slots

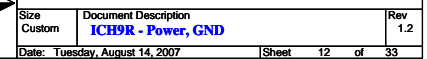
Rev	1.2
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V5REF must be powered up before VCC3 or after VCC3 within 0.7V. Also, V5REF must power down after VCC3 or before VCC3 within 0.7V. This rule is also applies to V5REF_SUS and 3VSB. However, the 3VSB is derived from the 5VSB on the power supply thru a voltage regulator and therefore, they can satisfy the requirement.





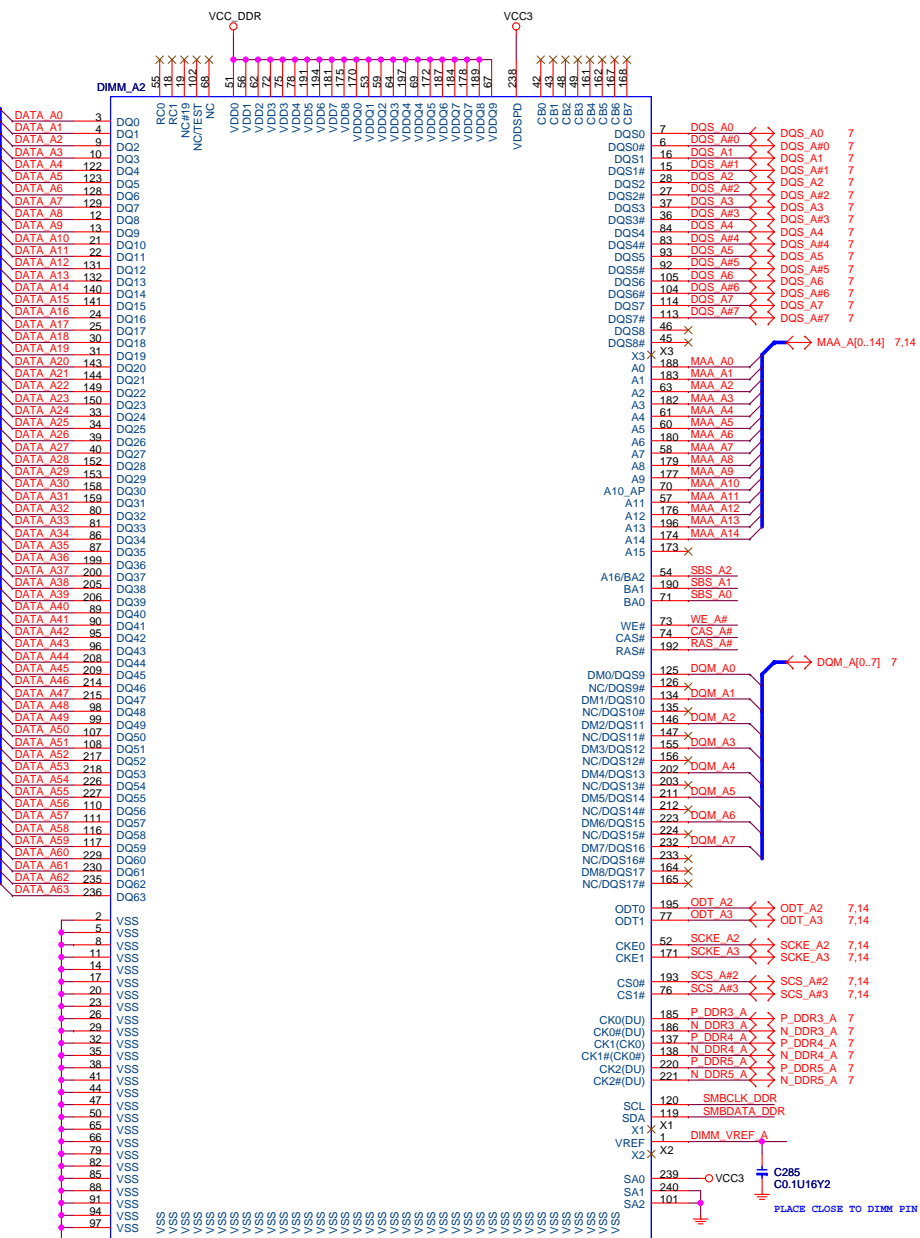
DDRII DIMM_A1



ADDRESS: 000
0xA0

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

DDRII DIMM_A2



ADDRESS: 001
0xA2

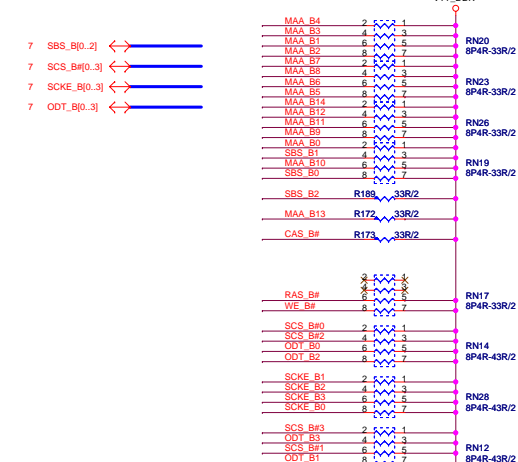
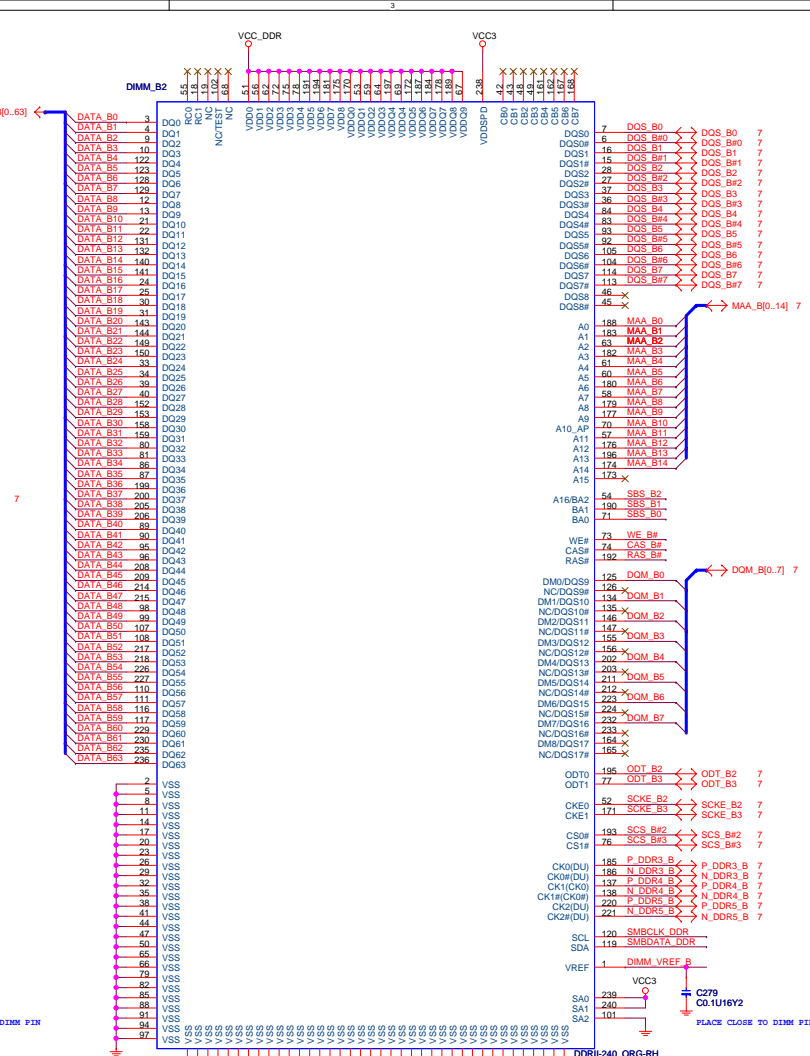


MICRO-STAR INT'L CO.,LTD

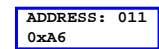
MS-7502

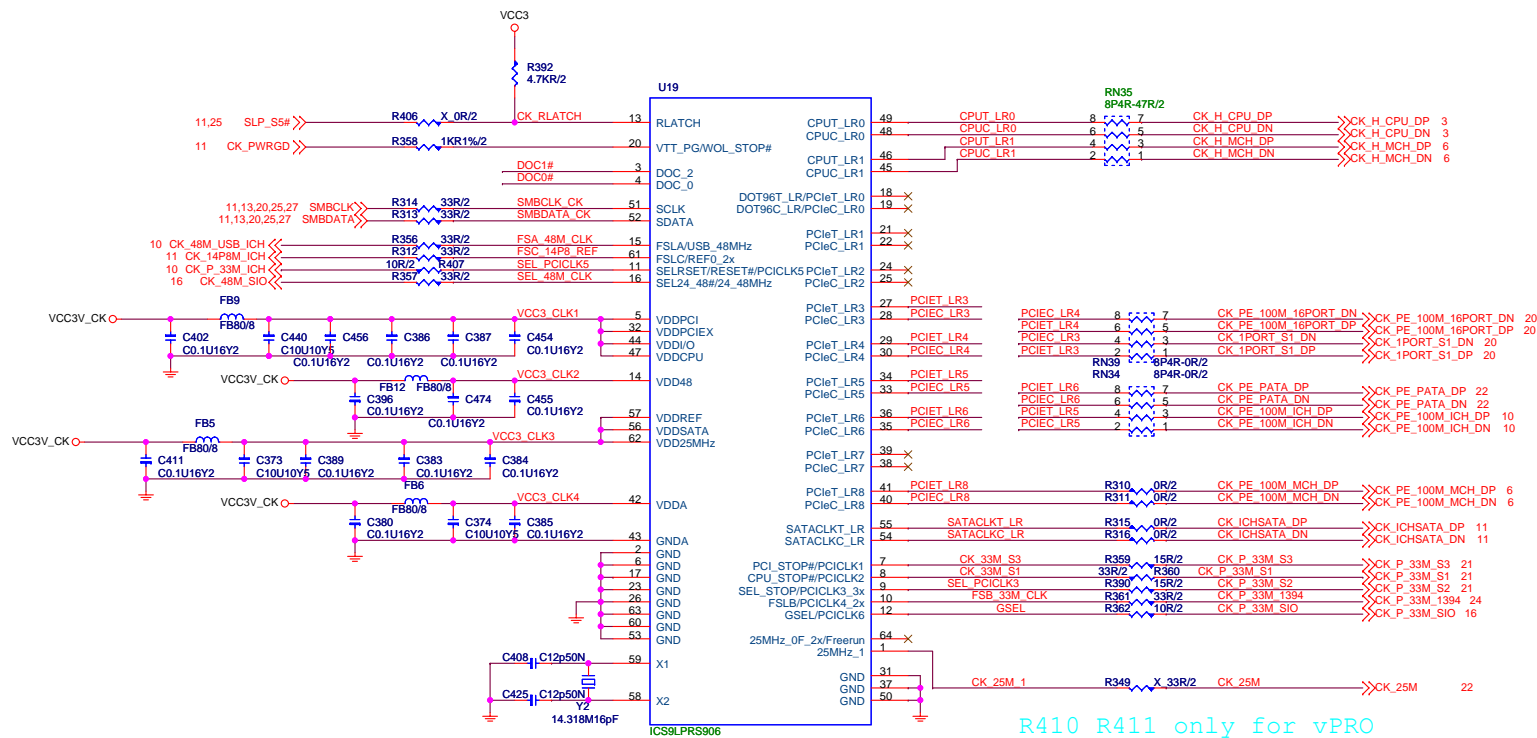
Size Custom Document Description DDR2 CHANNEL-A Rev 1.2

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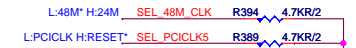
DDRII DIMM_B2



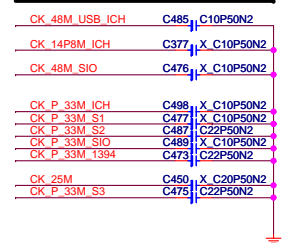


R410 R411 only for vPRO

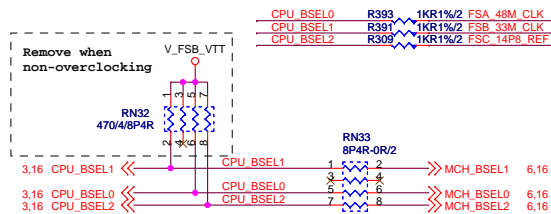
CLOCK GEN STRAPPING



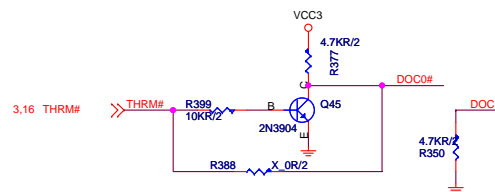
EMI



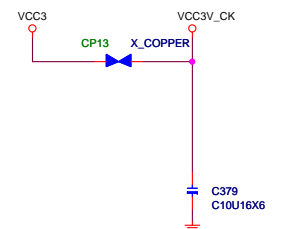
BSEL	TABLE
2 1 0	FSB FREQUENCY
0 0 0	266 MHz (1066)
0 0 1	133 MHz (533)
0 1 0	200 MHz (800)
1 0 0	333 MHz (1333)
1 1 0	400 MHz (1600)



D.O.T



AMT POWER



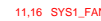
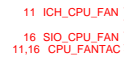
MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	Clock Gen ICS9LPRS906	1.2
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FAN-COUNTROL CIRCUIT

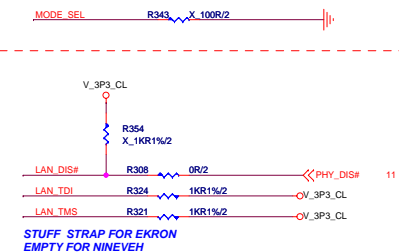


**Modify System FAN circuit & Remove PWR_FAN
for spec need 3pin DC Smart FAN 07.3.30 by Robile**

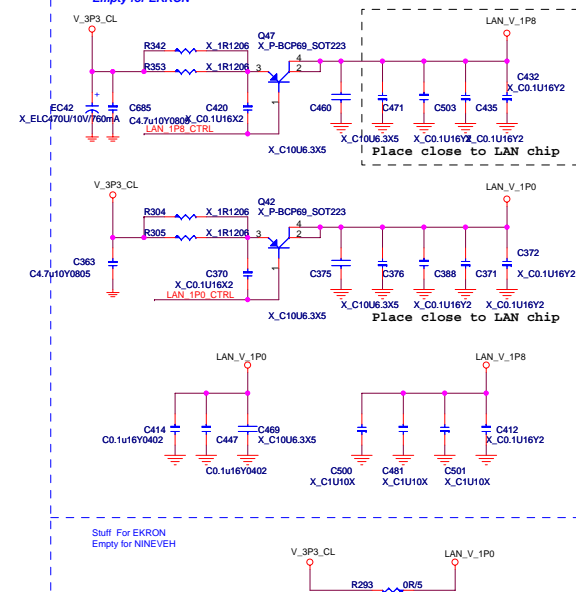


MICRO-STAR INT'L CO.,LTD			
MS-7502			
Size Custom	Document Description SATA & e-SATA Ports and Fan Control		Rev 1.2
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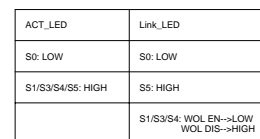
LAN CONNECTOR







Stuff for NINEVEH
Empty for EKRON



YELLOW : For Active/Link

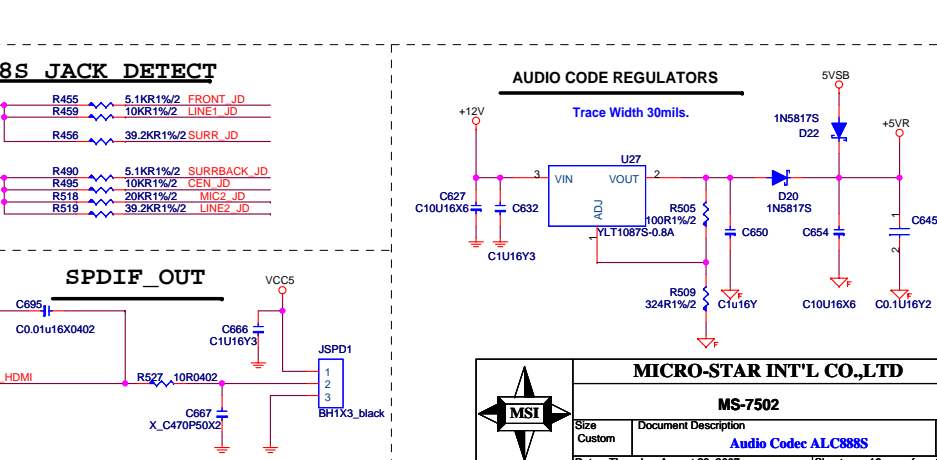
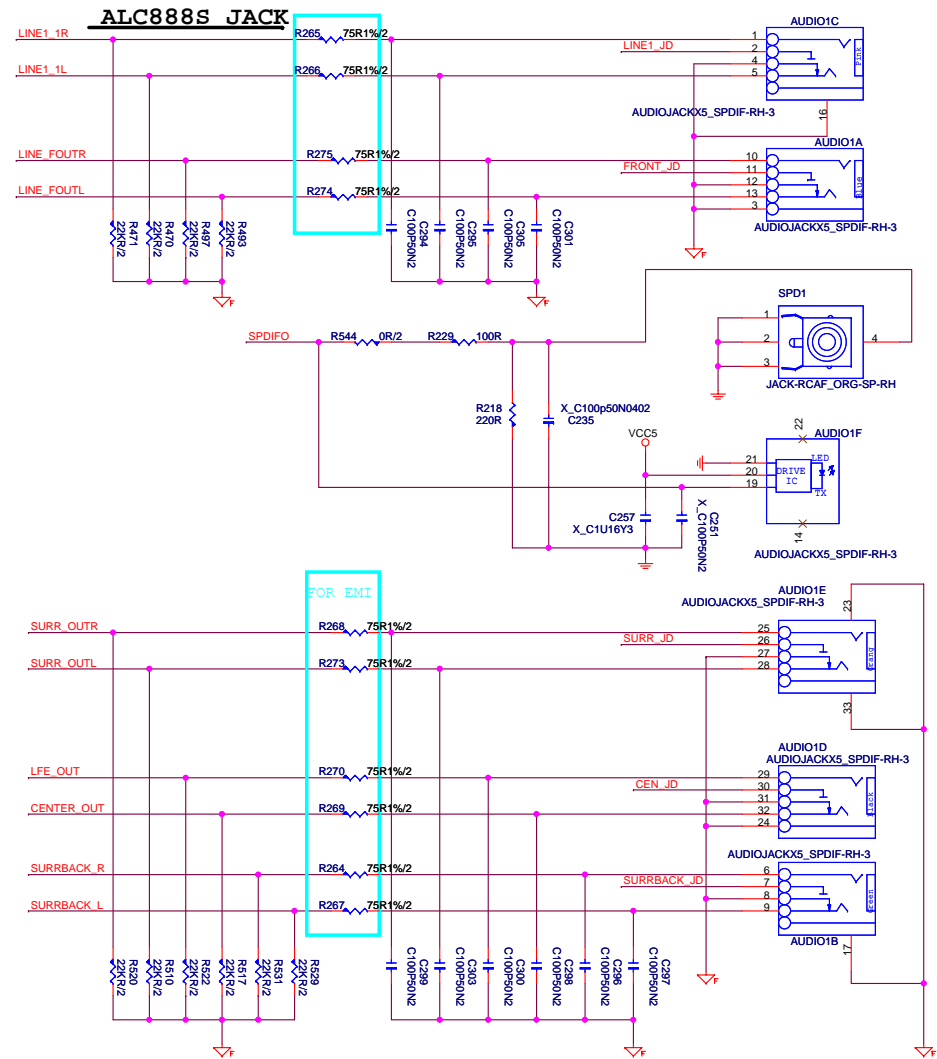
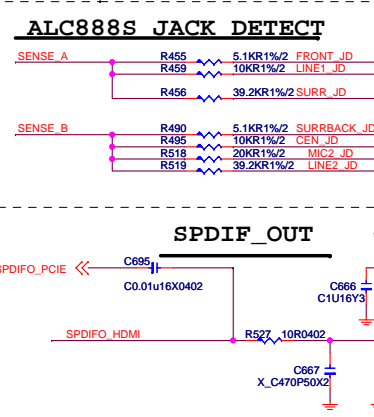
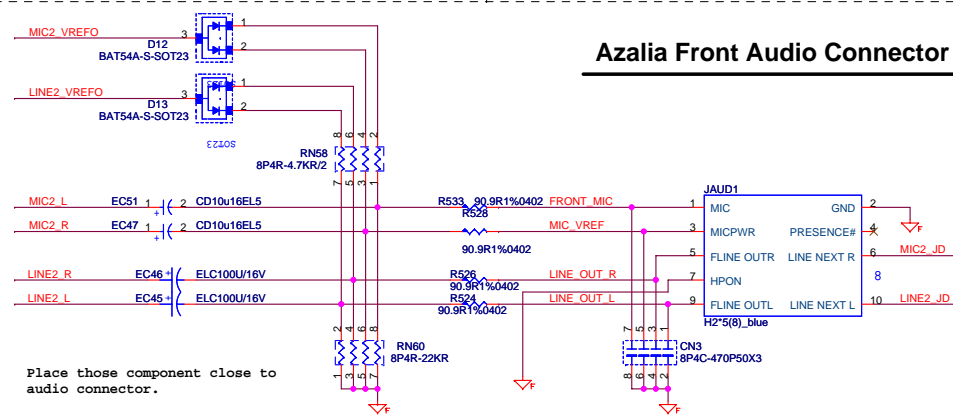
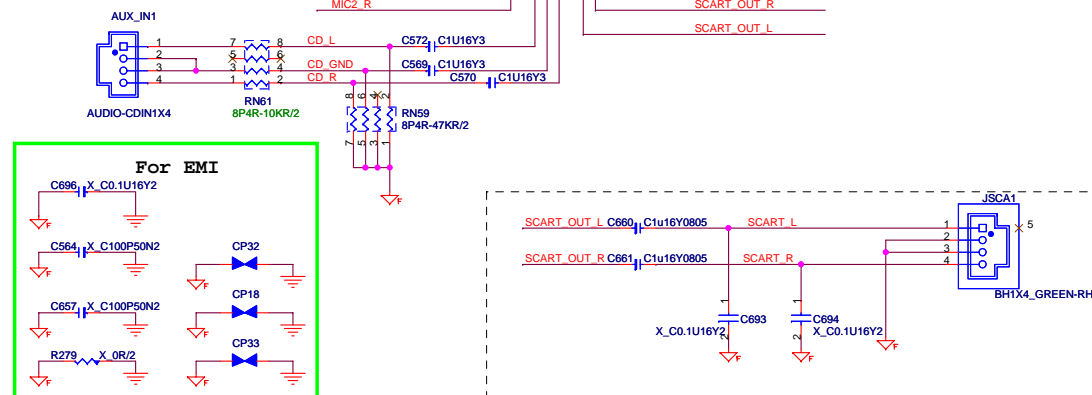
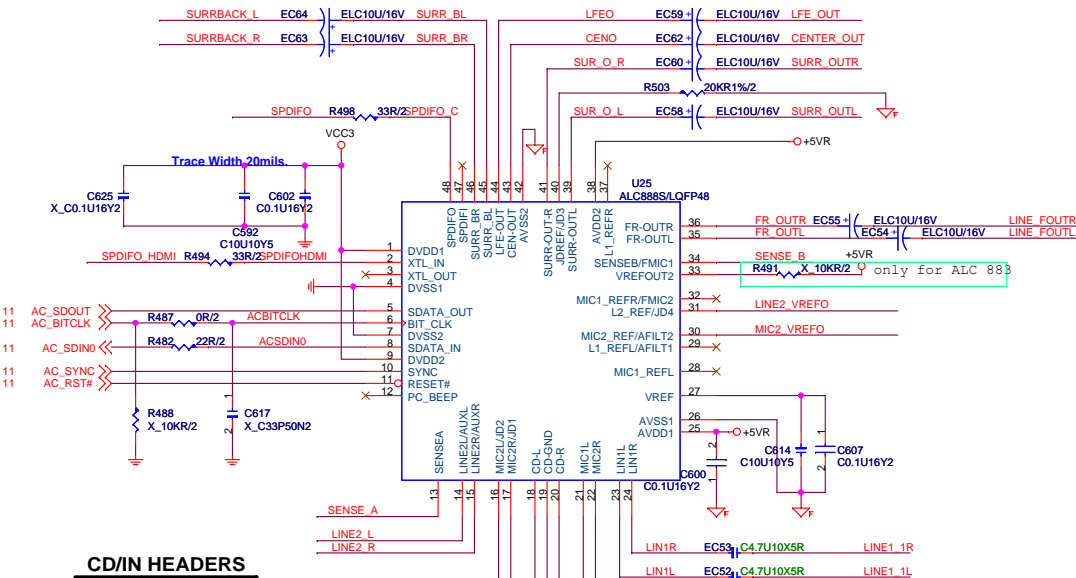


Giga-Lan		10/100-Lan	
N58-22F0181-842		N58-22F0061-842 N58-22F0061-F02	
Link	Yellow	Link	Yellow
Active	Blinking	Active	Blinking
1000	Orange	100	Green
100	Green	10	None
10	None		
19		19	
20	Yellow	20	Yellow
21		21	
22	Green	22	Green

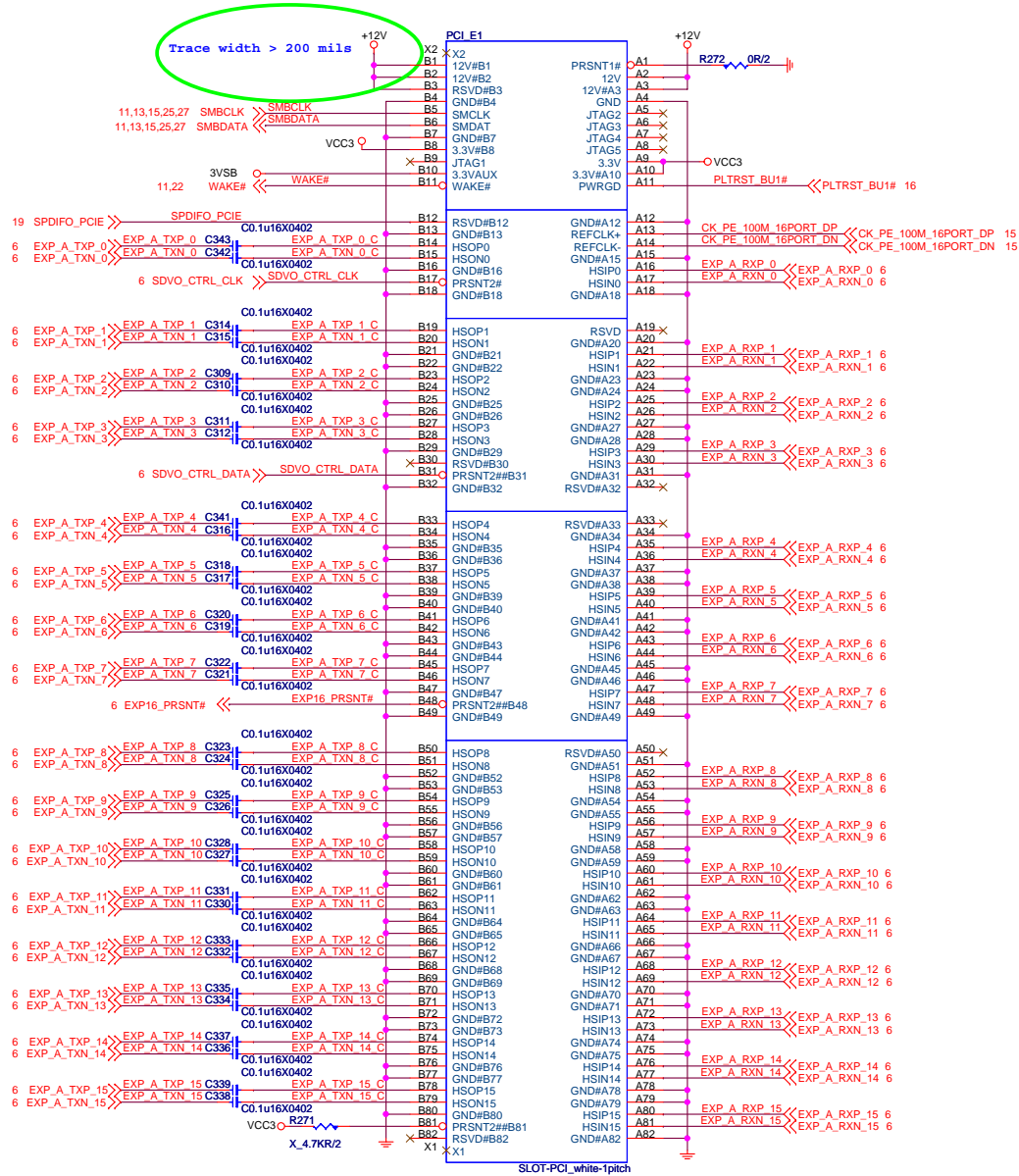


Size C	Document Description INTEL NINEVEH/EKRON	Rev 1.2
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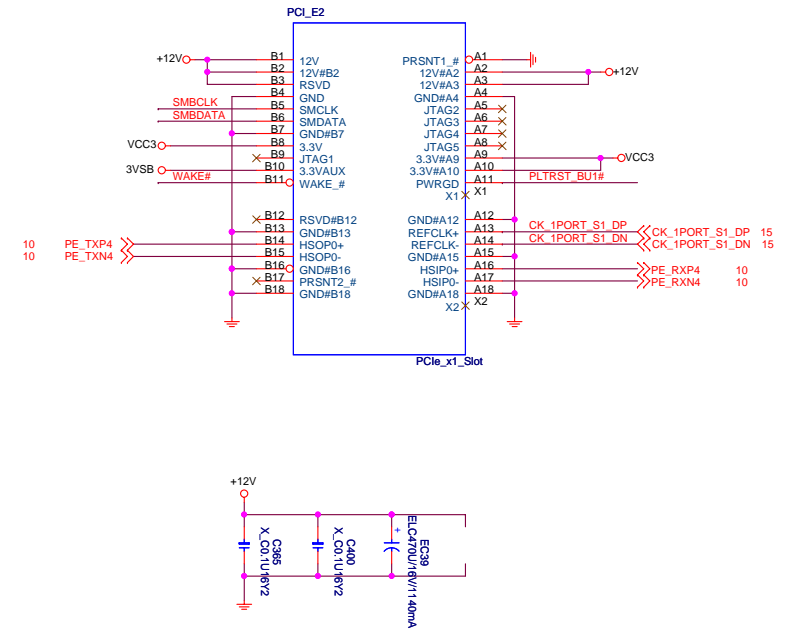
ALC888S CODEC



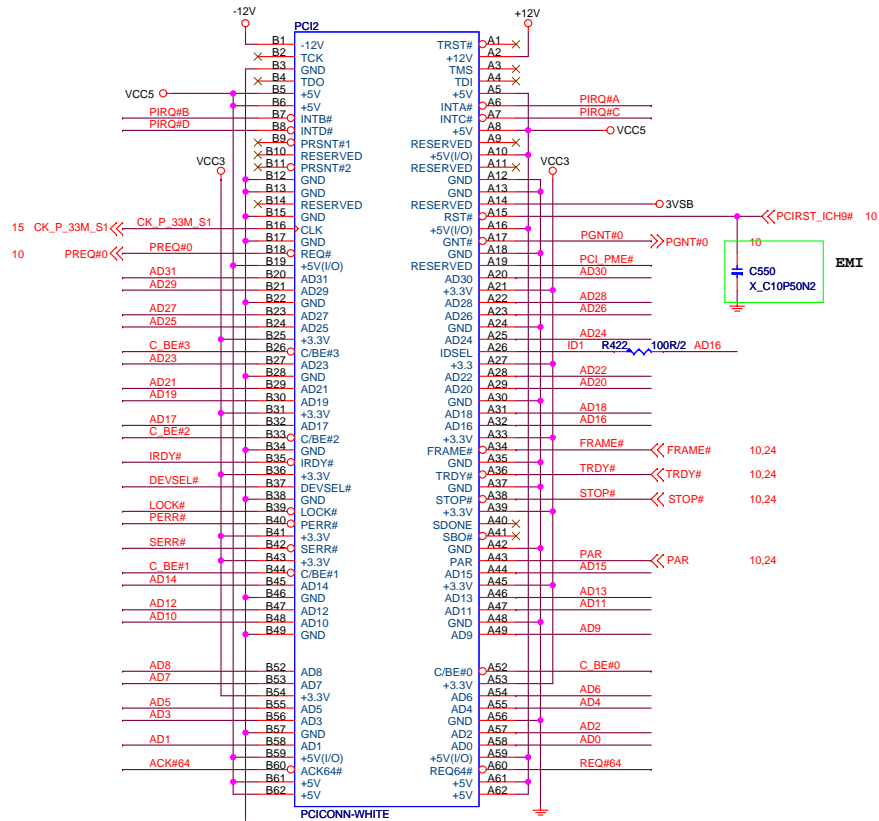
PCI_Express X16 Slot



PCI_Express X4 Slot (Share with PCI_E x1 Slots)

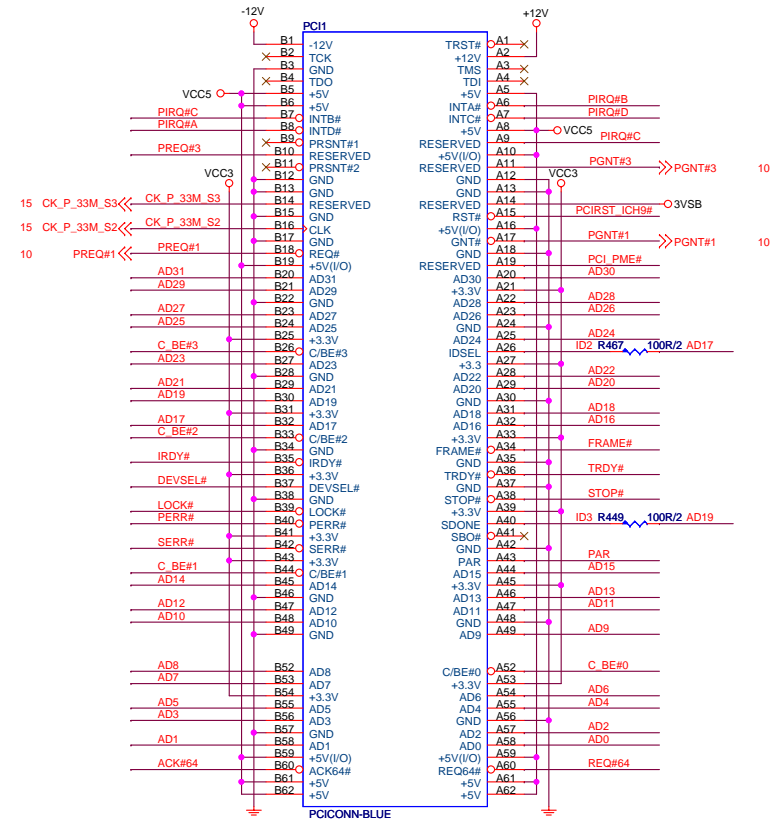


PCI SLOT 2 (PCI VER: 2.2 COMPLY)



IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

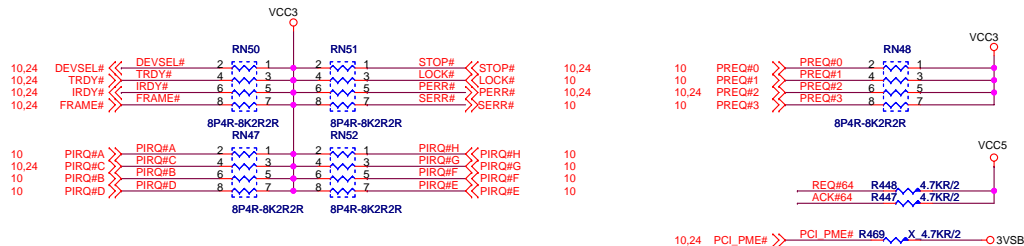
PCI SLOT 1 (PCI VER: 2.2 COMPLY)



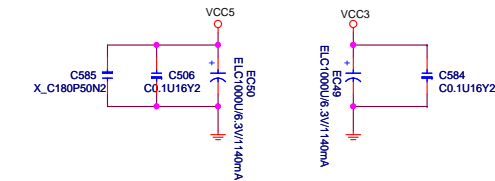
IDSEL = AD17
MASTER = PREQ#1
PIRQ#B

IDSEL = AD19
MASTER = PREQ#3
PIRQ#C

PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS

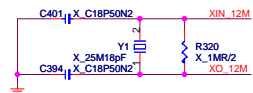
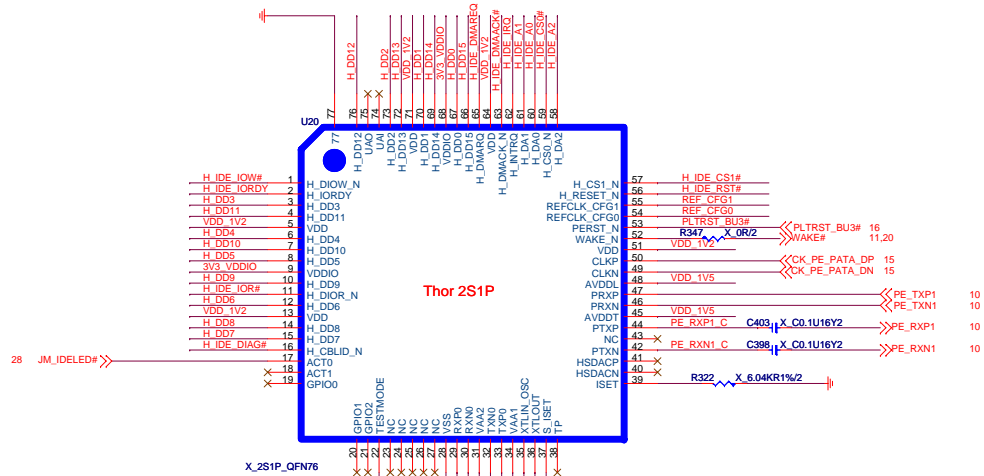


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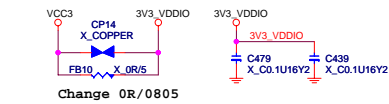
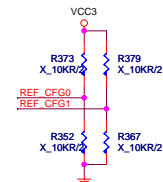
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Size	Document Description	Rev
Custom	PCI Slot 1 & 2	1.2
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Hi-Speed PCIE to SATA/PATA Bridge

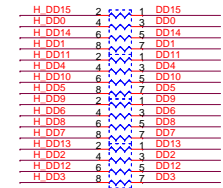
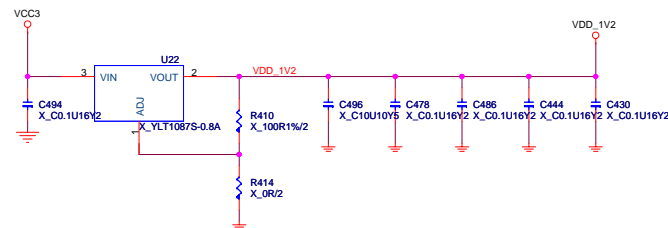
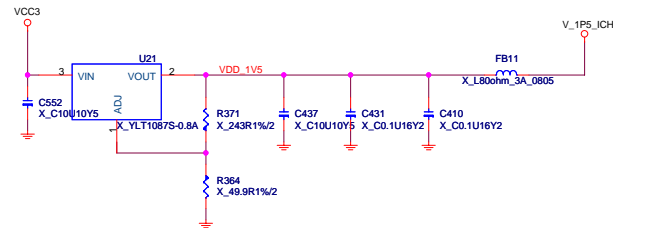
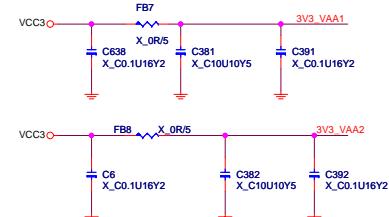


```
REF_CFG[1:0] =  
00:20MHz  
01:25MHz
```



Change 0R/0805

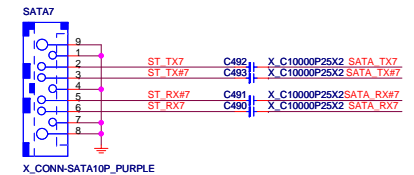
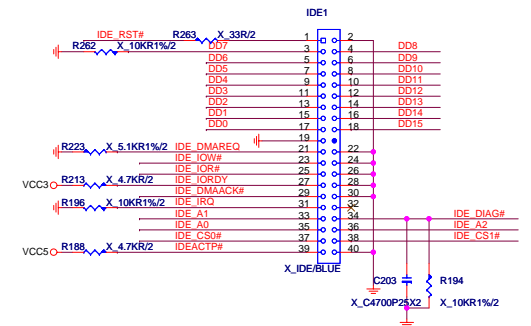
L02-8008074-J07 FOR BEAD



RN44	X _{8P4R-33R/2}
RN38	X _{8P4R-33R/2}
RN36	X _{8P4R-33R/2}
RN41	X _{8P4R-33R/2}

H_IDE_IOW#	R376	X	Z2R/2	IDE_IOW#
H_IDE_IOR#	R335	X	Z2R/2	IDE_IOR#
H_IDE_A2	R385	X	Z2R/2	IDE_A2
H_IDE_A1	R400	X	Z2R/2	IDE_A1
H_IDE_A0	R381	X	Z2R/2	IDE_A0
H_IDE_DMAACK#	R408	X	Z2R/2	IDE_DMAACK#
H_IDE_CS0#	R386	X	Z2R/2	IDE_CS0#
H_IDE_CS1#	R365	X	Z2R/2	IDE_CS1#
H_IDE_RST#	R401	X	Z2R/2	IDE_RST#

H IDE DMAREQ	R411	X	82.5R1%/2DE DMAREQ
H IDE IORDY	R366	X	82.5R1%/2DE IORDY
H IDE IRQ	R398	X	82.5R1%/2DE IRQ
H IDE DIAG#	R323	X	82.5R1%/2DE DIAG#



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MS-7502

Size Custom	Document Description Marvell 88SE6111 PCIE to PATA/SATA	Rev 1.2
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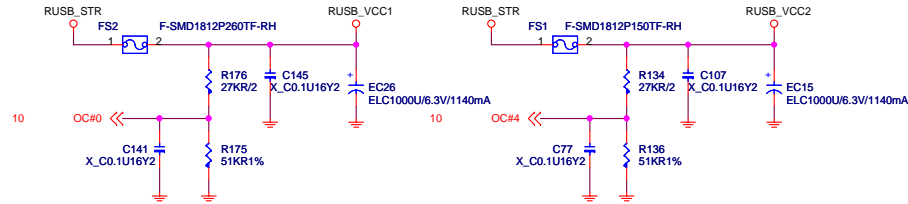
Rear USB Connector

USB POWER FOR PORT 0,1,2,3

NEAR CONNECTOR

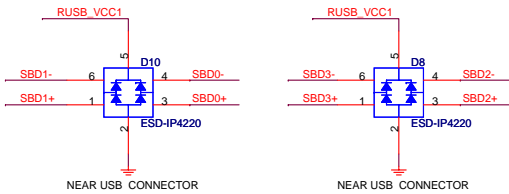
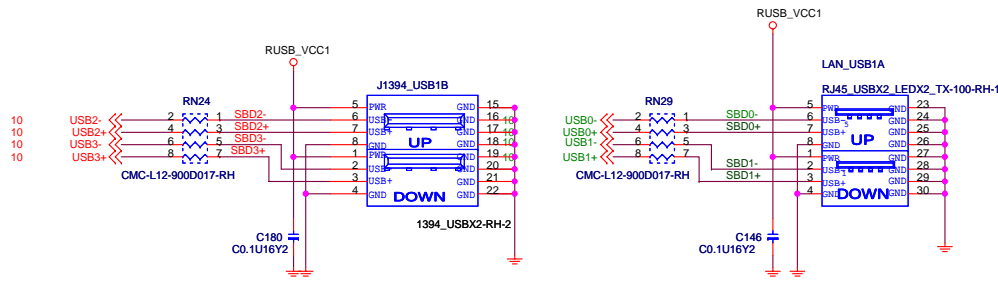
USB POWER FOR PORT 4,5

NEAR CONNECTOR

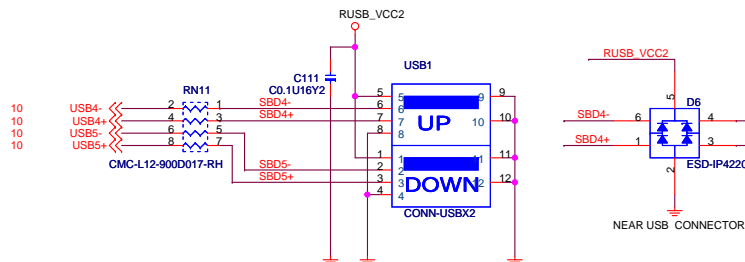


REAR USB PORT 2,3(With 1394)

REAR USB PORT 0,1 (With LAN)



REAR USB PORT 4,5



Front USB Connector

USB POWER FOR PORT 6,7

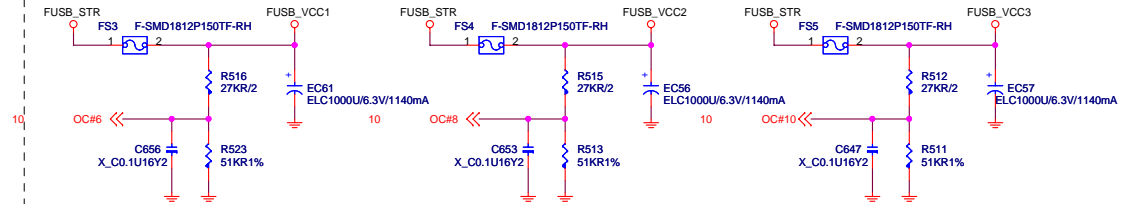
NEAR CONNECTOR

USB POWER FOR PORT 8,9

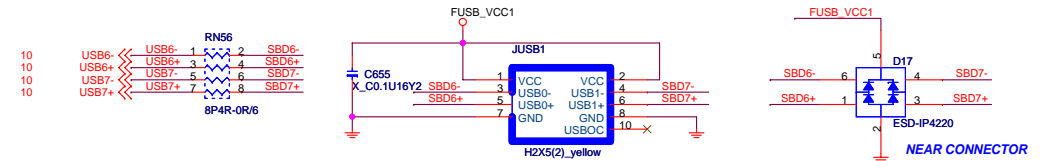
NEAR CONNECTOR

USB POWER FOR PORT 10,11

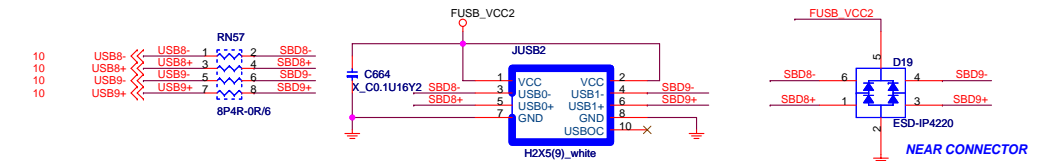
NEAR CONNECTOR



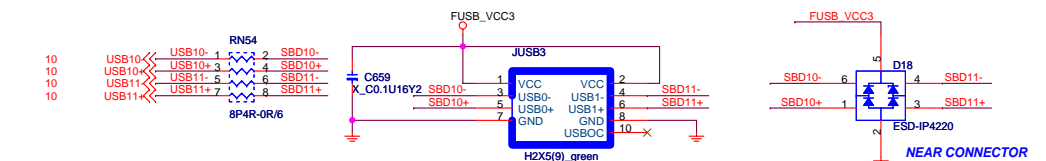
FRONT USB PORT 6,7



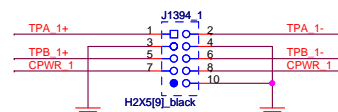
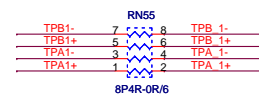
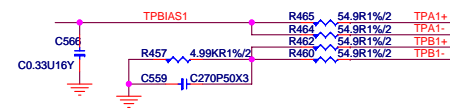
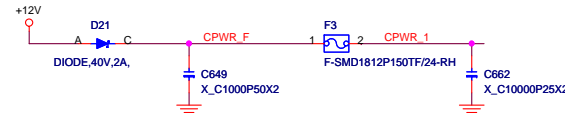
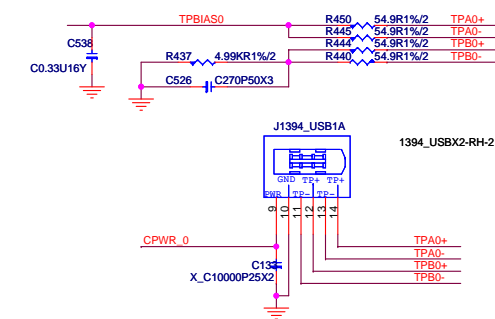
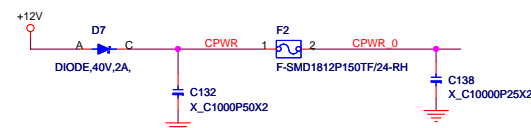
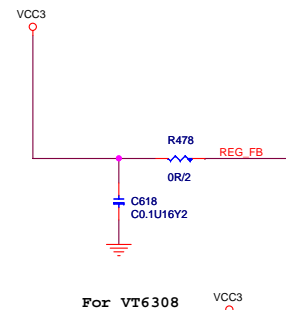
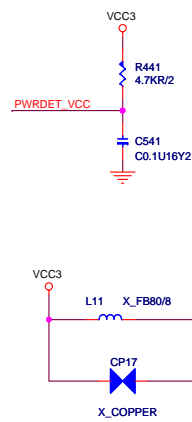
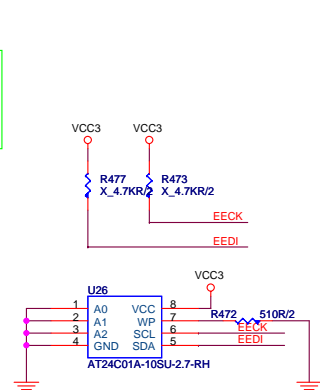
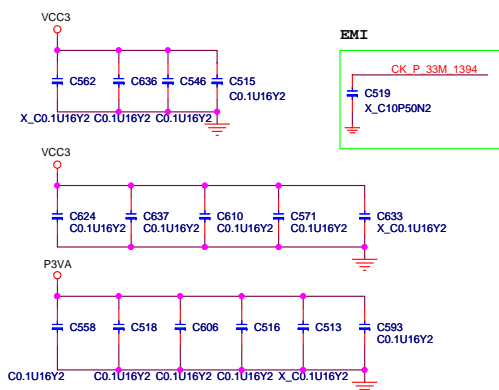
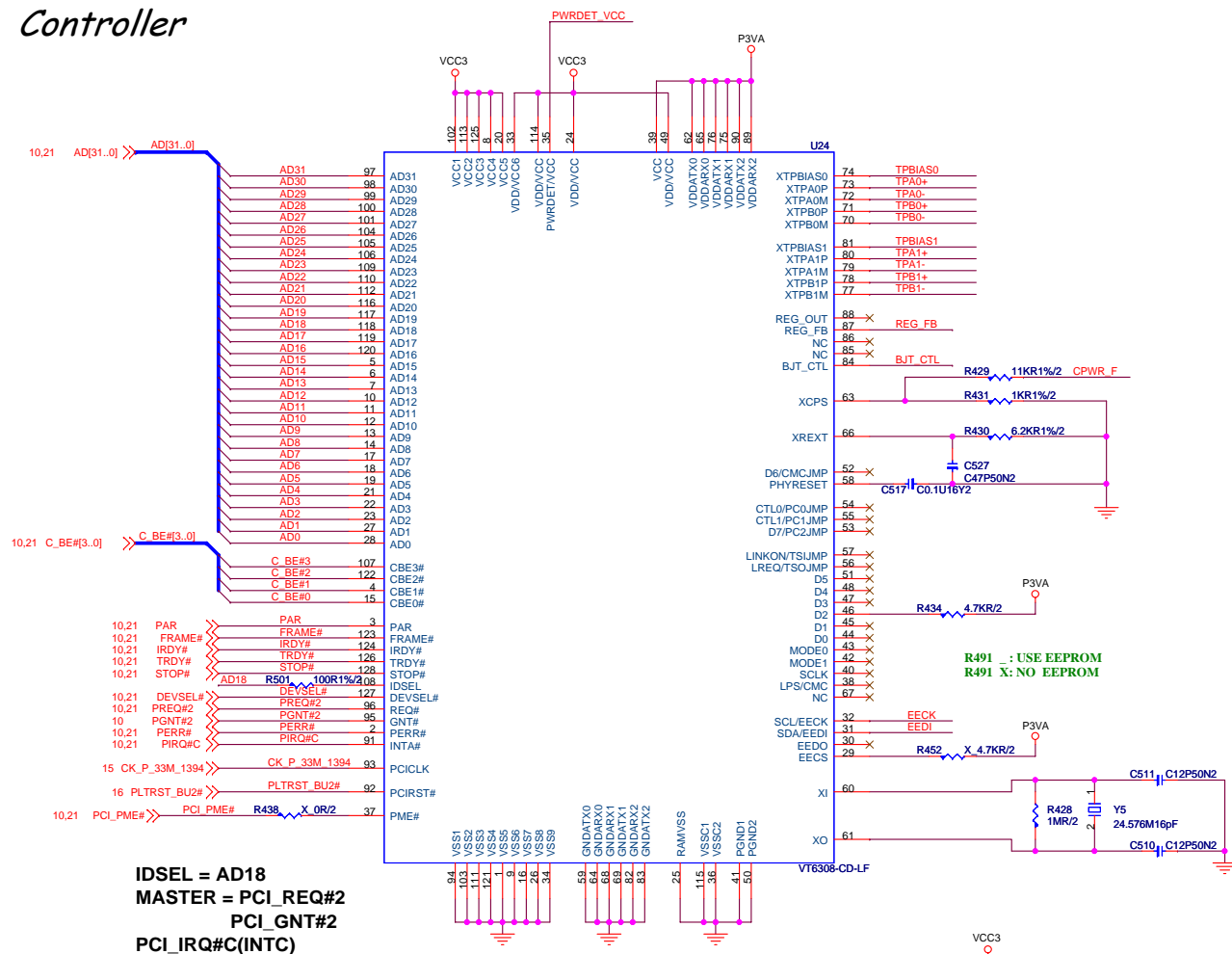
FRONT USB PORT 8,9



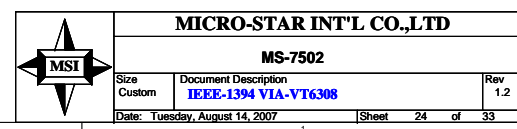
FRONT USB PORT 10,11



1394a OHCI Link Layer Controller



For Intel 1394 pinheader



[illegible]

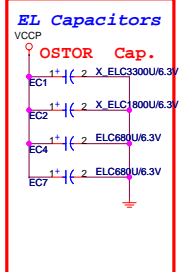
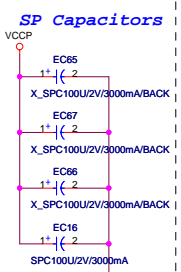
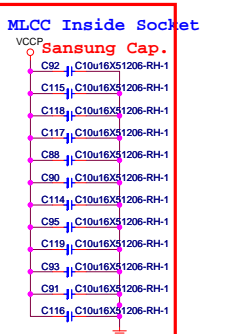
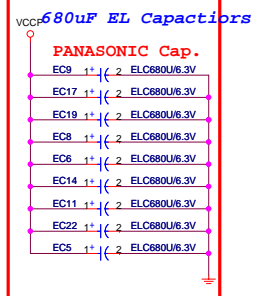
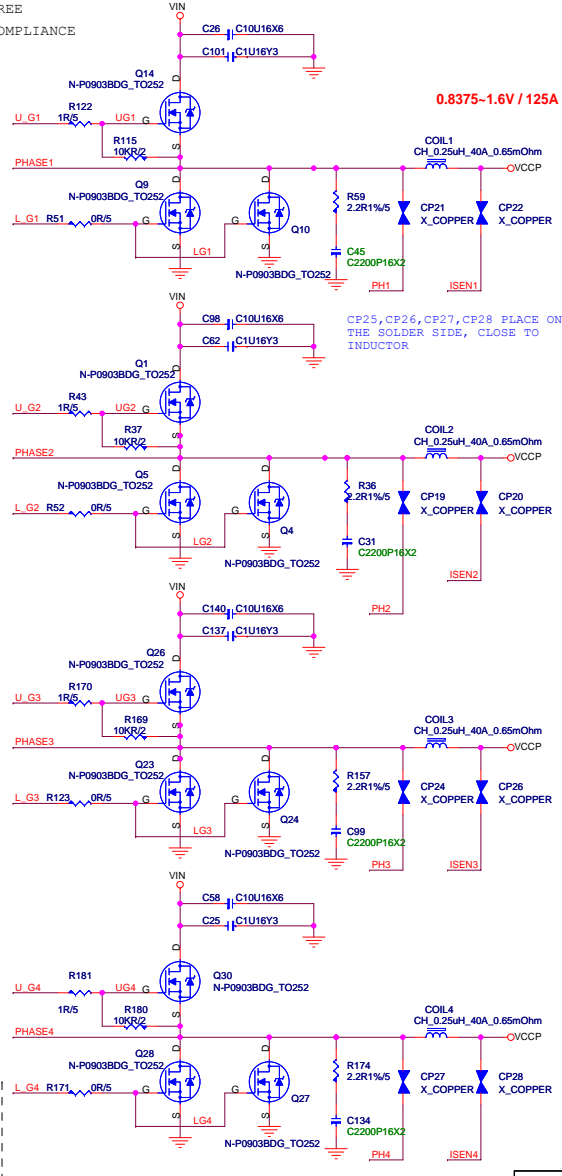
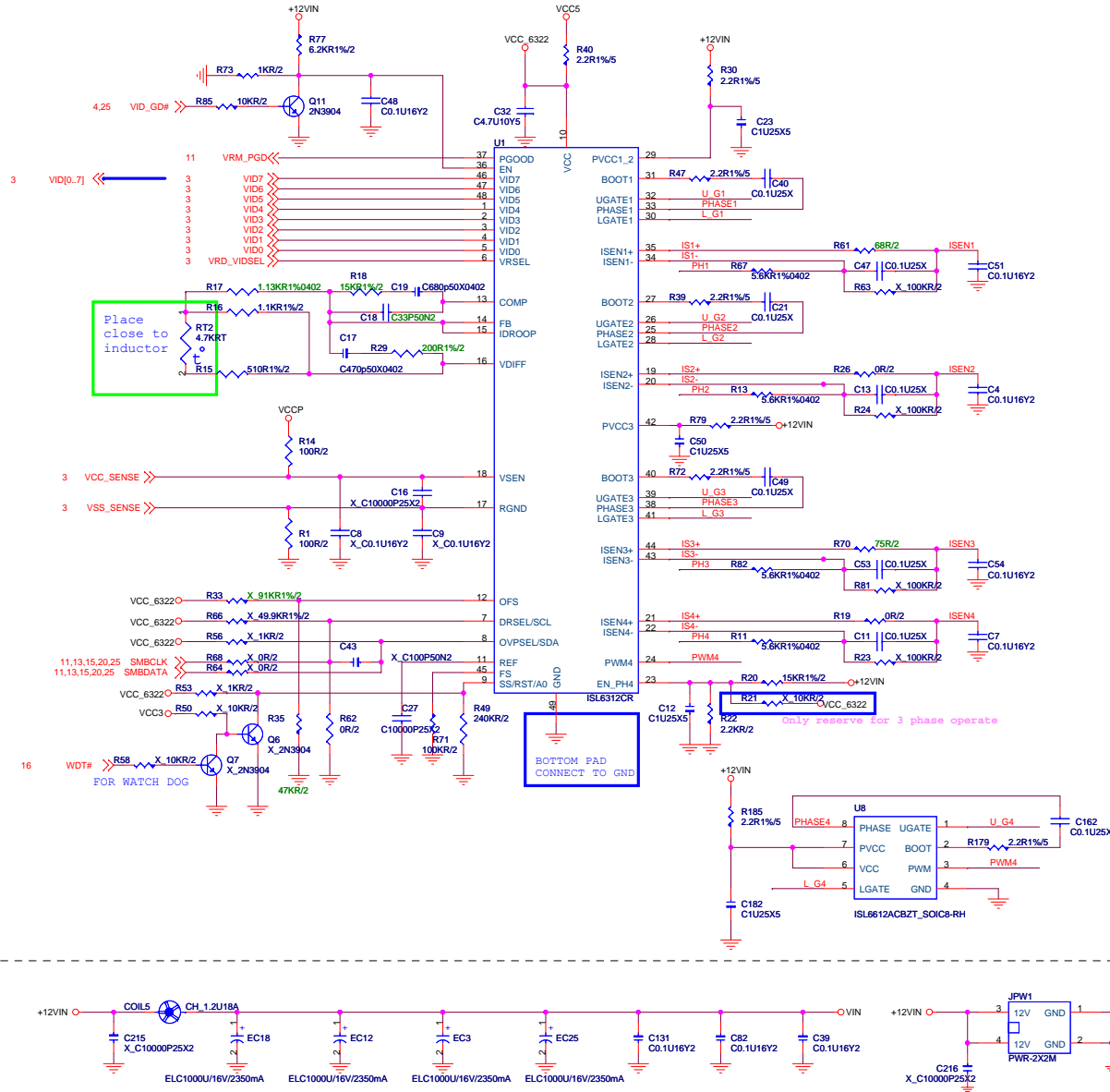
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Size Custom	Document Description NB Core Power & DDR Power	Rev 1.2
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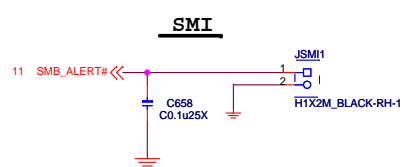
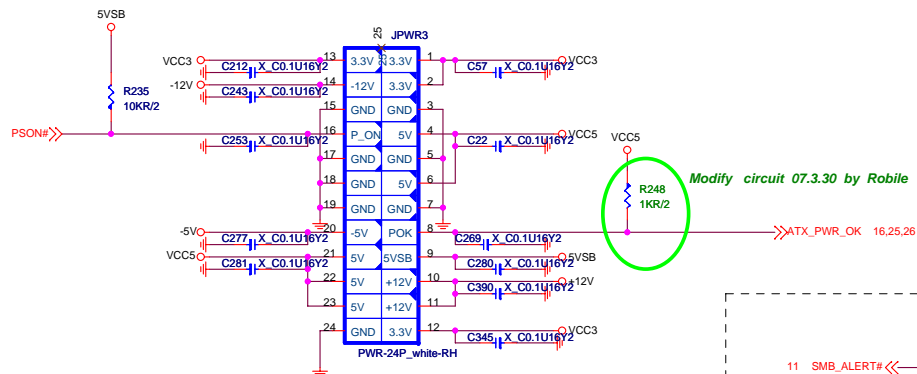
Voltage Regular Module

N-P0903BDG_TO252
P75N02LDG/TO252
C100U2SP
CD506U40S-2
1800UF/6.3V
0.25uH/40A
CH-1.1U25A-LF
CD100U16EL20-2

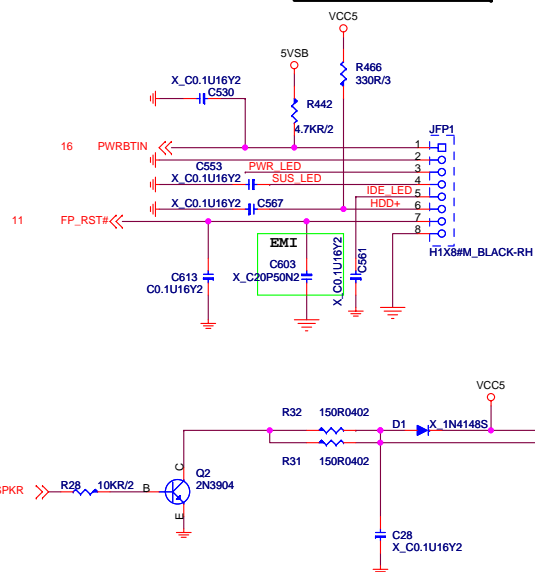
mosfet/n-channel, P0903BDG, SMT/TO252, Rds(on)=9.5mΩ(10V/25A), Vgs(on)=1~3V, Id=50A, Ciss=1800pF, Qg=50nC, Vds=25V, Vgs=±20V, RoHS COMPLIANCE
mosfet/n-channel, P75N02LDG, SMT/TO252, Rds(on)=7mΩ(10V, 30A), Vgs(on)=1~3V, Id=75A, Ciss=5000pF, Qg=140nC, Vds=25V, Vgs=±20V, RoHS COMPLIANCE
ESR<13mΩ, Ripple cur.<2.7A, LC<12uA, 105C
CAP, OS-CON, 560u/4V, Dip-2/8*9/3.5mm, ESR<7mohm, Ripple cur.=6100mA, LC. <500uA, SPEC series, RoHS compliance
ESR<12mΩ, Ripple cur.<2350mA, 105C, longlife change from 2000hrs to 3000hrs, KZJ
SMD CHOKE, 0.25uH, 20%, DIP/8.5mm, 40A, 0.6mOhm, , , PEW, FERRITE, SQUARE, RoHS COMPLIANCE
IND CHOKE, 1.1uH, 20%, DIP/9mm, 25A, 1.4mOhm, 5.5T, 0.9mmx3, PEW, IRON, , LEAD FREE
CAP, EL, 1000u, 16V, Dip-8x20/3.5mm, 20%, 12mOhm, 2350mA, 105C, 3000hrs, RoHS COMPLIANCE



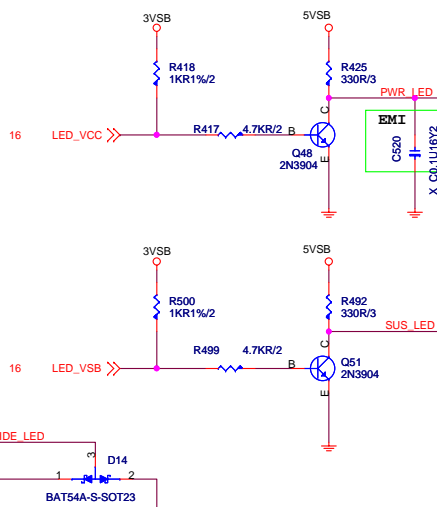
ATX POWER CONNECTOR



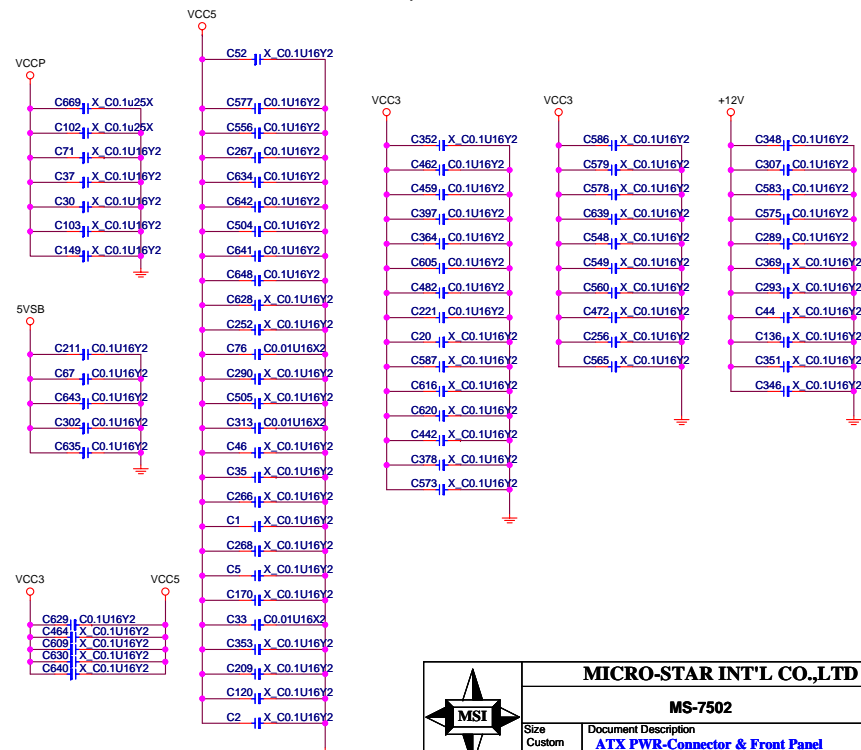
FRONT PANNEL



LED (for Fintek 71882)



Cap. for EMI & Power



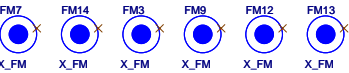
MICRO-STAR INT'L CO.,LTD

MS-7502

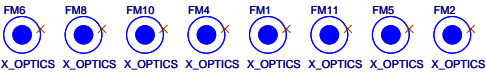
Size	Document Description
Custom	ATX PWR-Connector & Front Panel

Rev	1.2
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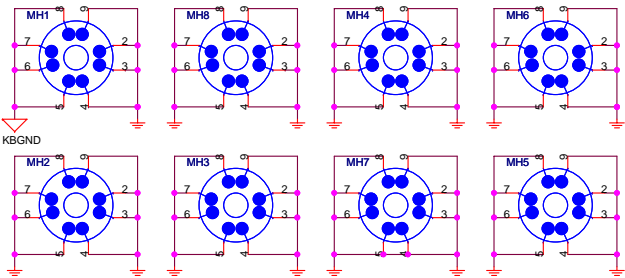
Optical Fiducial Marks-120



Optical Fiducial Marks-100



Mounting Holes



Simulation

