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MS-7358 uATX **Version: 3.3**

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

System Chipset:

Intel Bearlake - Q35 North Bridge
Intel ICH9 (DO South Bridge)

On Board Device:

CLOCK Gen ICS 9LPRS906
LPC Super I/O -- Fintek F71882F
LPC TPM -- SLB9635
LAN -- INTEL Nineveh
HD Audio Codec -- ALC888

Main Memory:

Dual-channel DDR-II * 4


Expansion Slots:

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

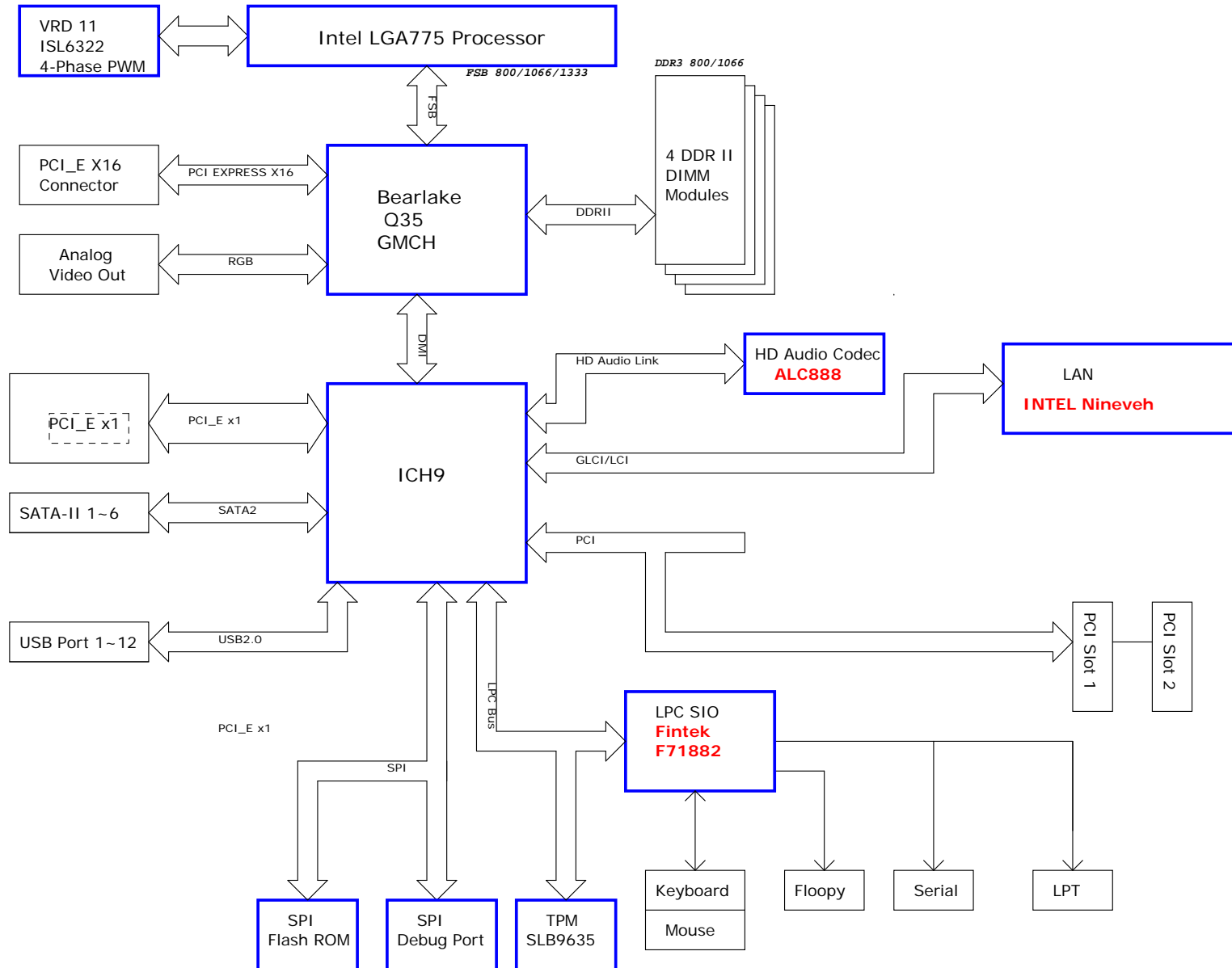
PWM: Intersil ISL6322 (4 Phases) w/ ISL6612 driver

Configuration and BOM match up

Option	Function	Orcad Configure	BOM
STD	Bearlake-Q35/ICH9DO	CFG-LG7358-STD	

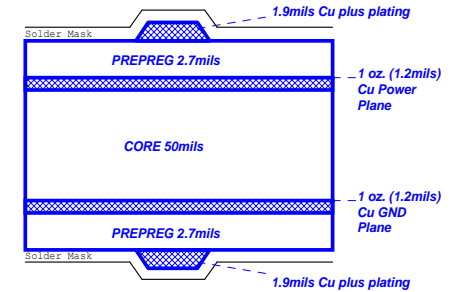
				MICRO-STAR INT'L CO.,LTD			
				MS-7358			
Size	Custom	Document Description	COVER SHEET		Rev	3.3	
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Block Diagram



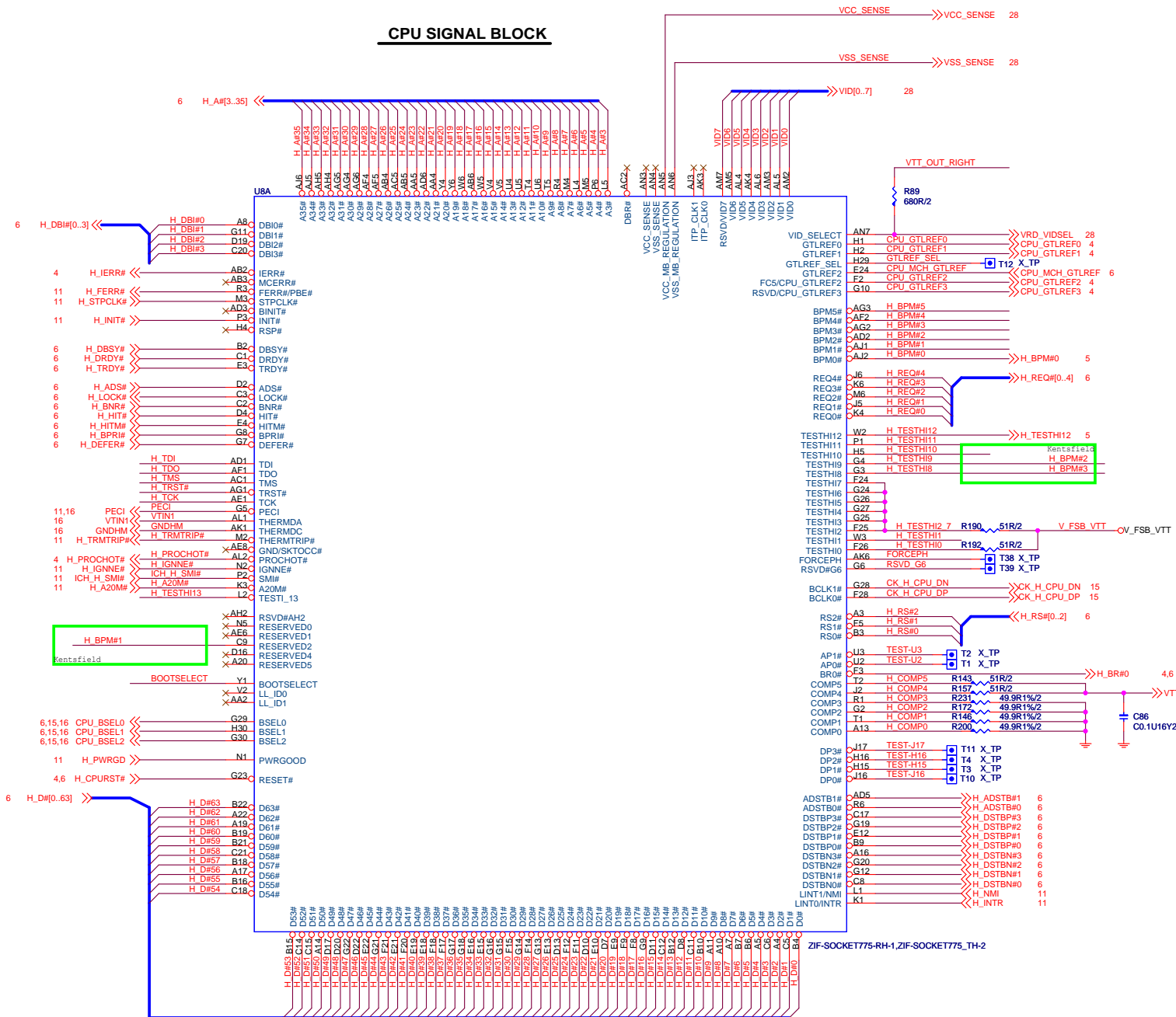
Board Stack-up

(1080 Prepreg Considerations)

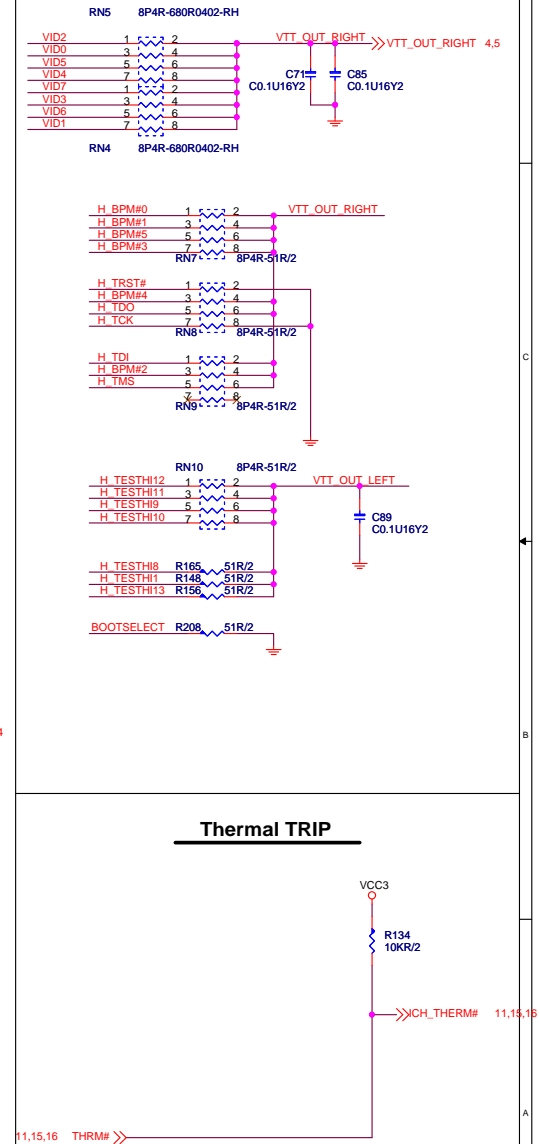


Single End 50ohm Top/Bottom : 4mils
 USB2.0 - 90ohm : 15/4.5/7.5/4.5/15
 SATA - 95ohm : 15/4/8/4/15
 LAN - 100ohm : 15/4/8/4/15
 PCIE - 95ohm : 15/4/8/4/15
 IEEE1394 - 110ohm : 15/4/9/4/15
 IDE : 15/4/8/4/15

CPU SIGNAL BLOCK



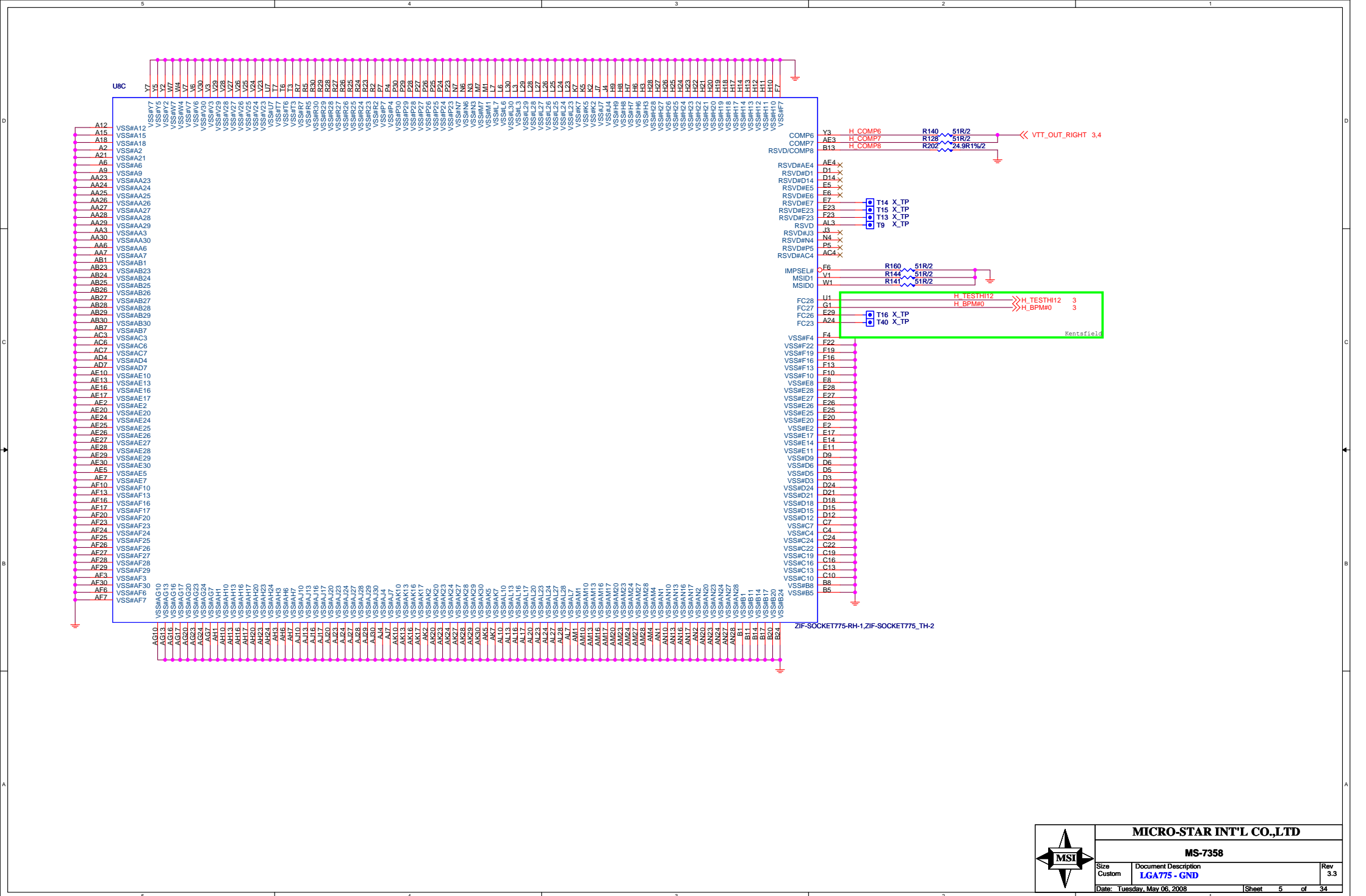
PULL HIGHT PULL DOWN



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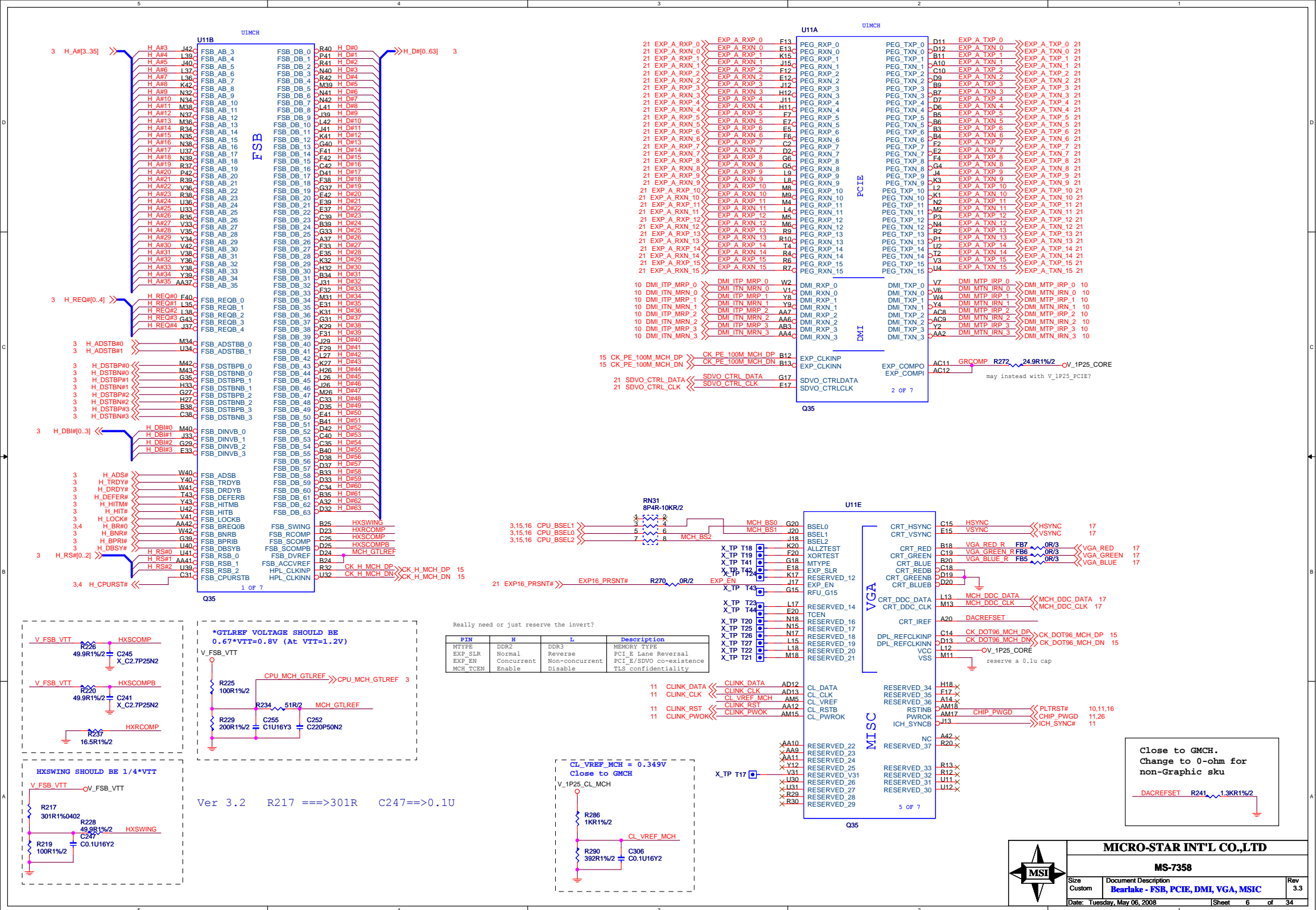
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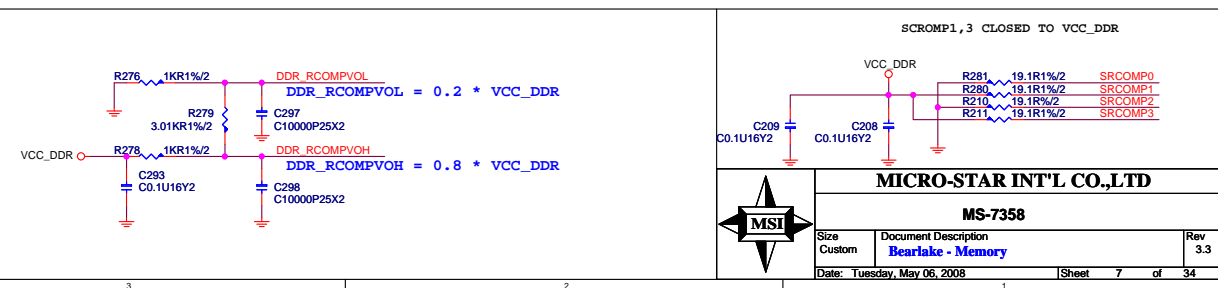
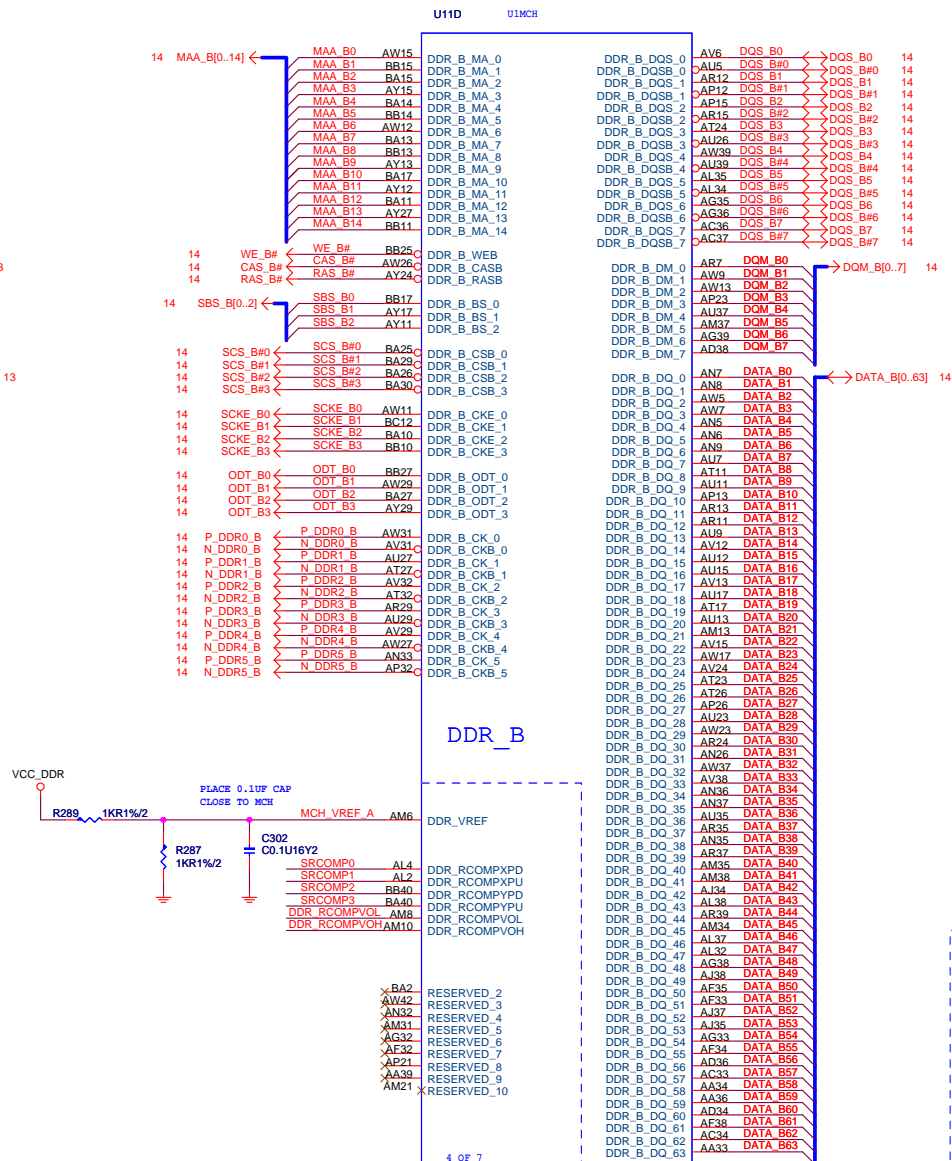
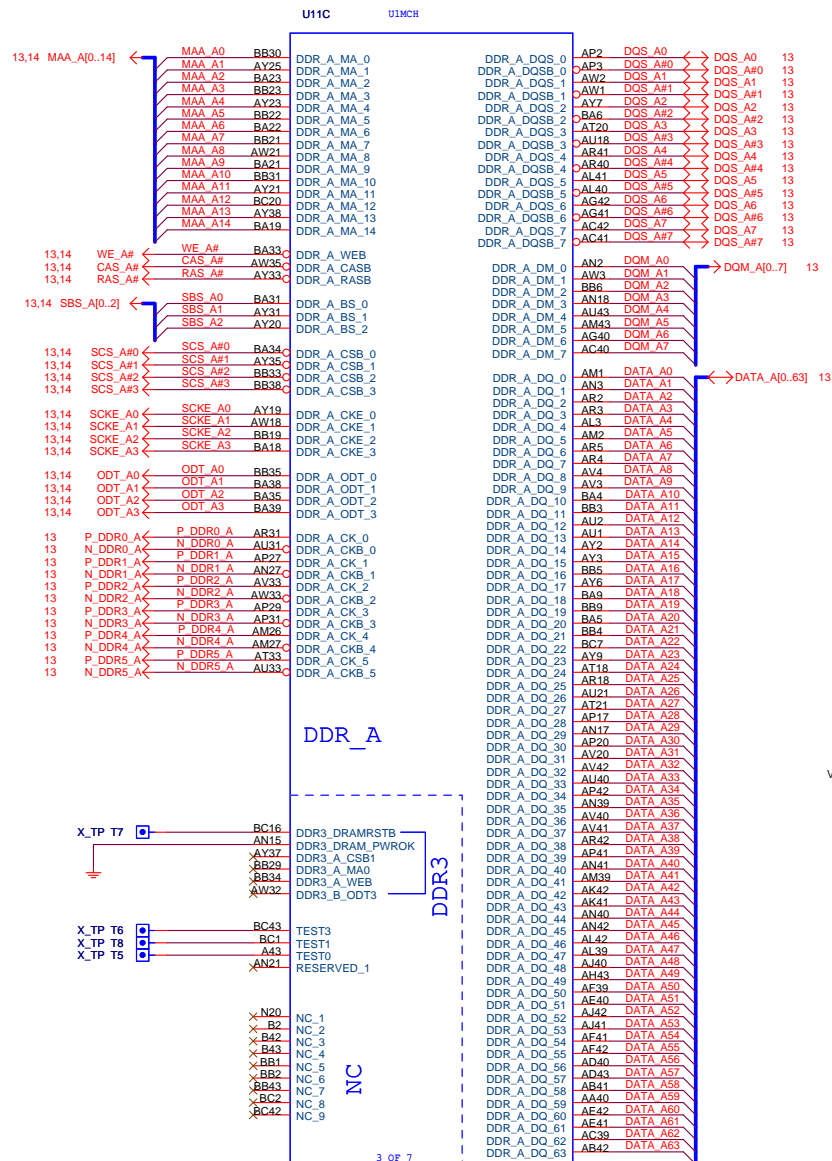
Size Custom	Document Description LGA775 - GND	Rev 3.3
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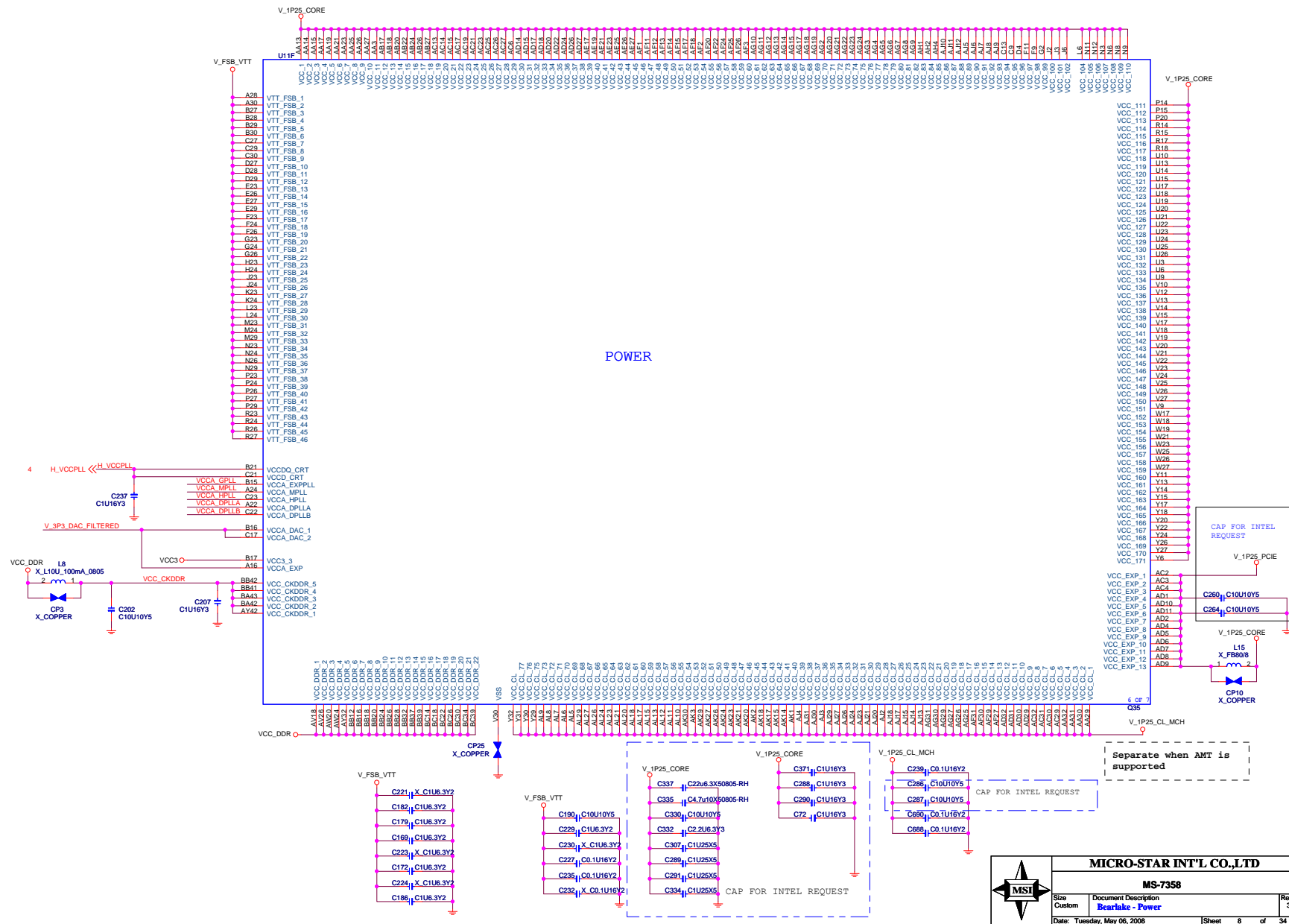
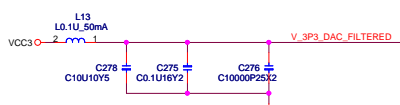
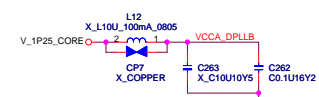
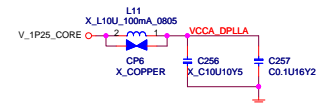
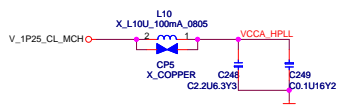
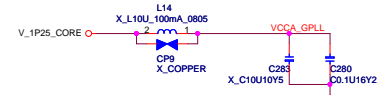
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Size Custom	Document Description Bearlake - FSB, PCIE, DMI, VGA, MSIC	Rev 3.3
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NB POWER



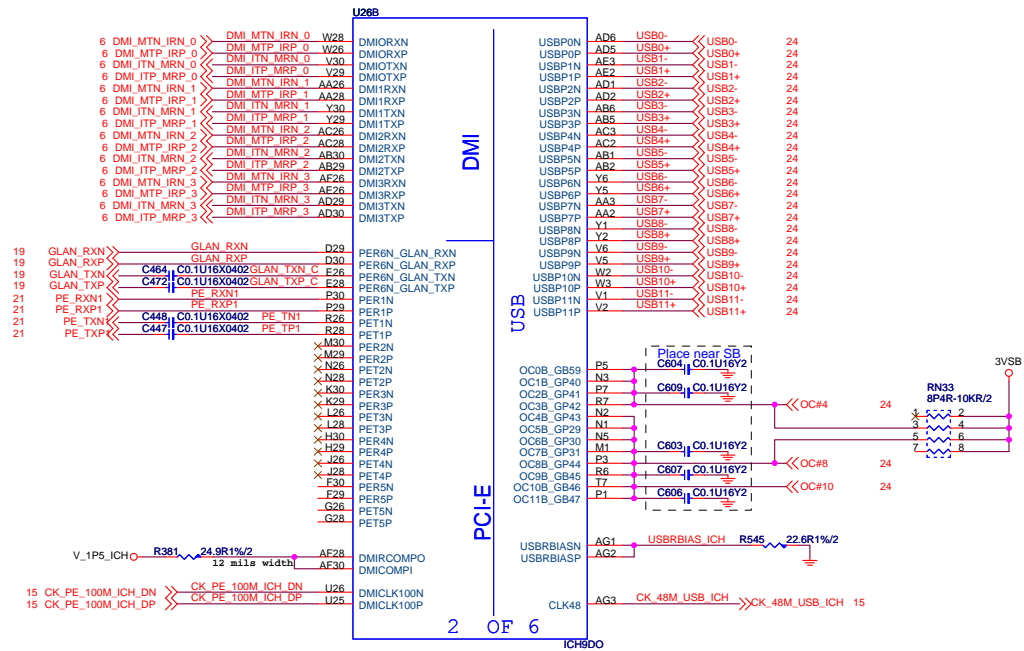
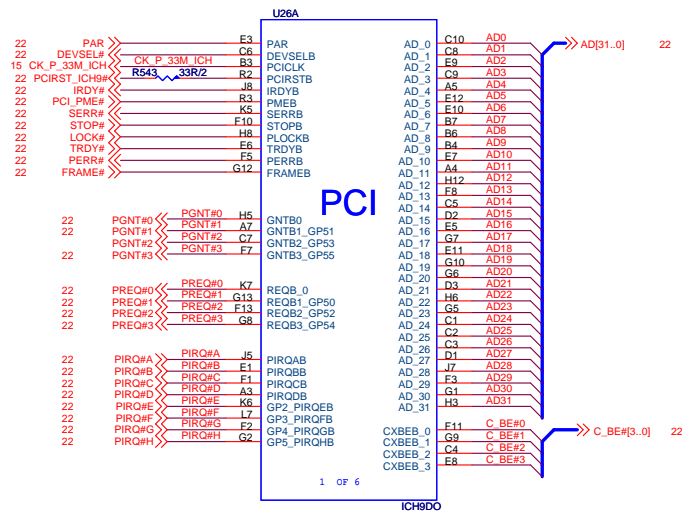
MSI

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Size: Custom Document Description: **Beastlake - Power** Rev: 3.3

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SB STRAPPING RESISTOR

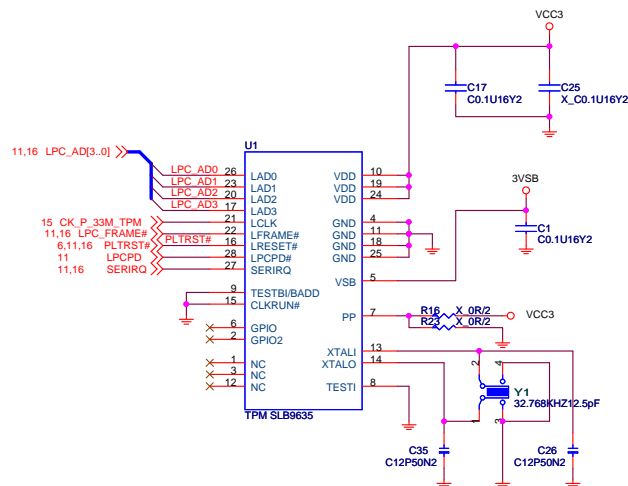
R539 1K1%2 PGNT#0

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	A16 OVERRIDE
GNT2	N/A	SET	PCI PORT CONFIG 2
		BIT	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

TPM - Security Controller



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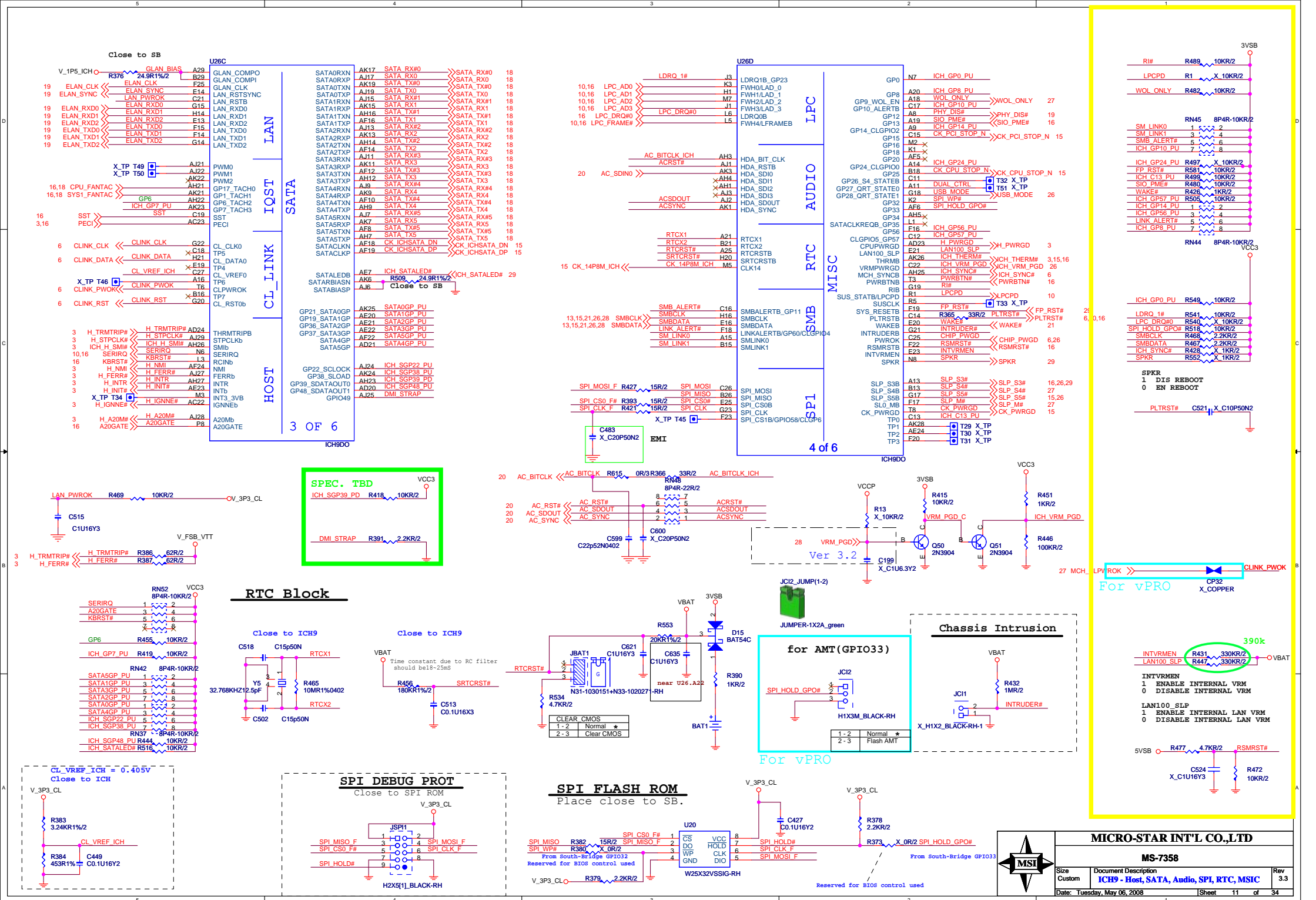
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Custom

Document Description
ICH9 - PCI, DMI, USB, PCIE & Slots

Rev
3.3

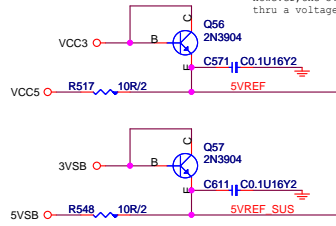
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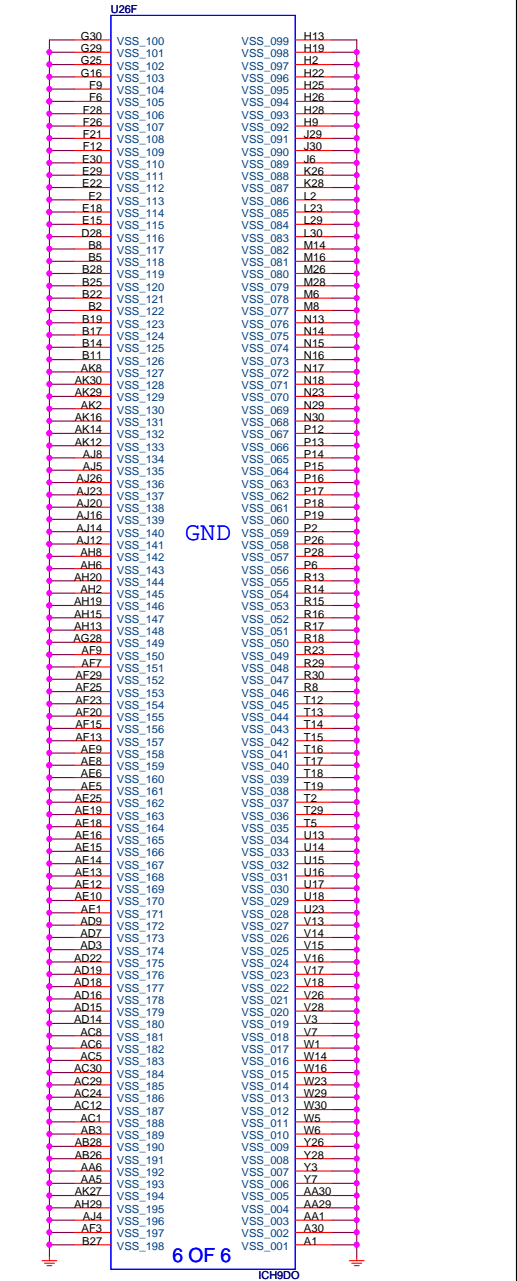
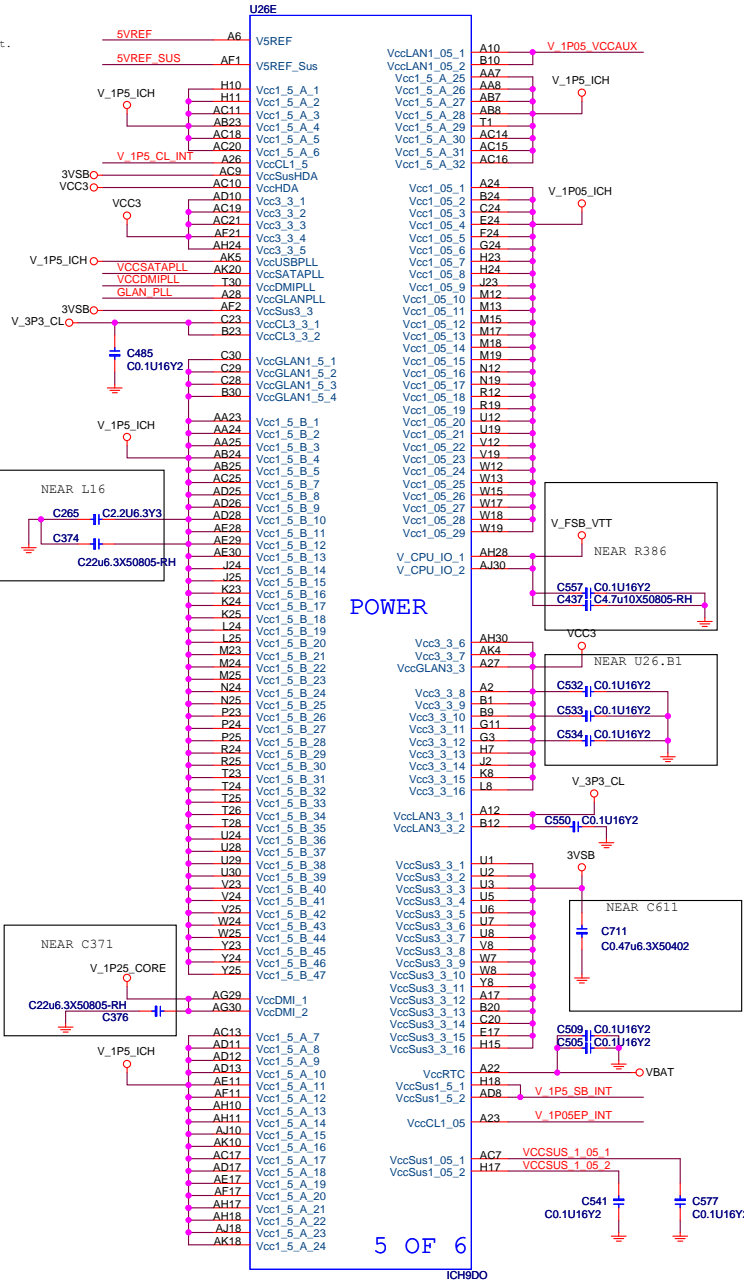
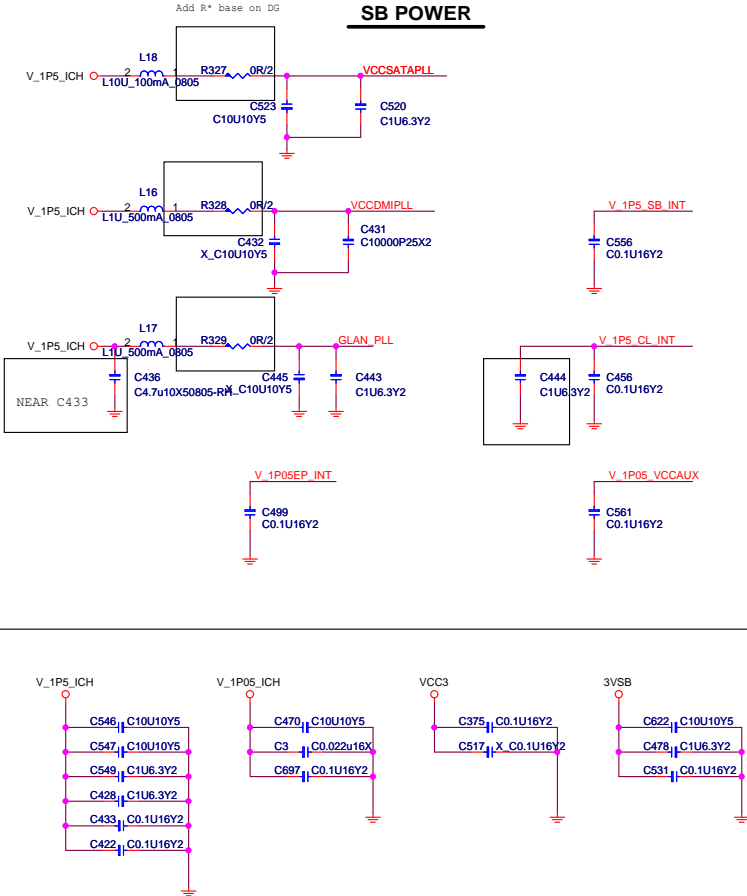


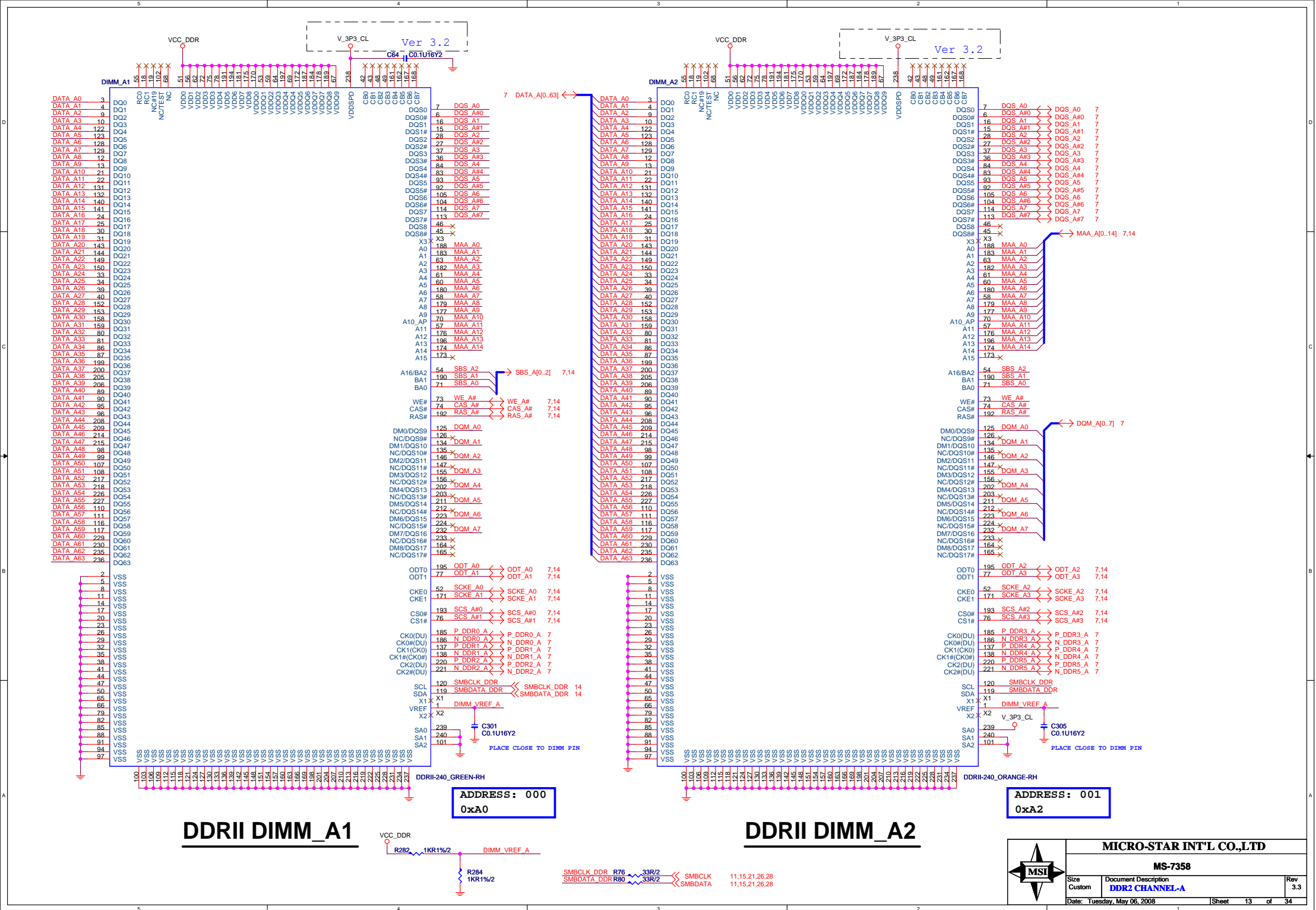
5VREF & 5VREF_SUS Sequencing Circuit

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.

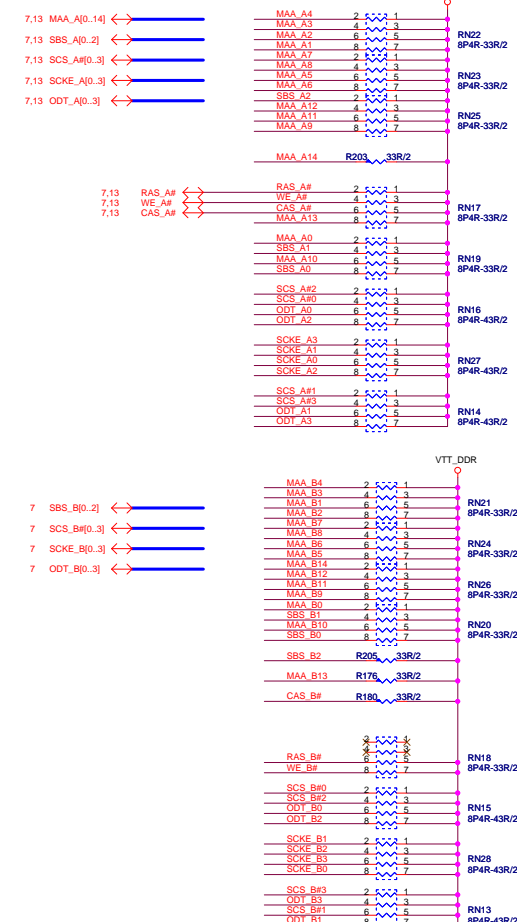


SB POWER

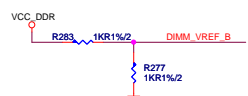




DDR II Termination

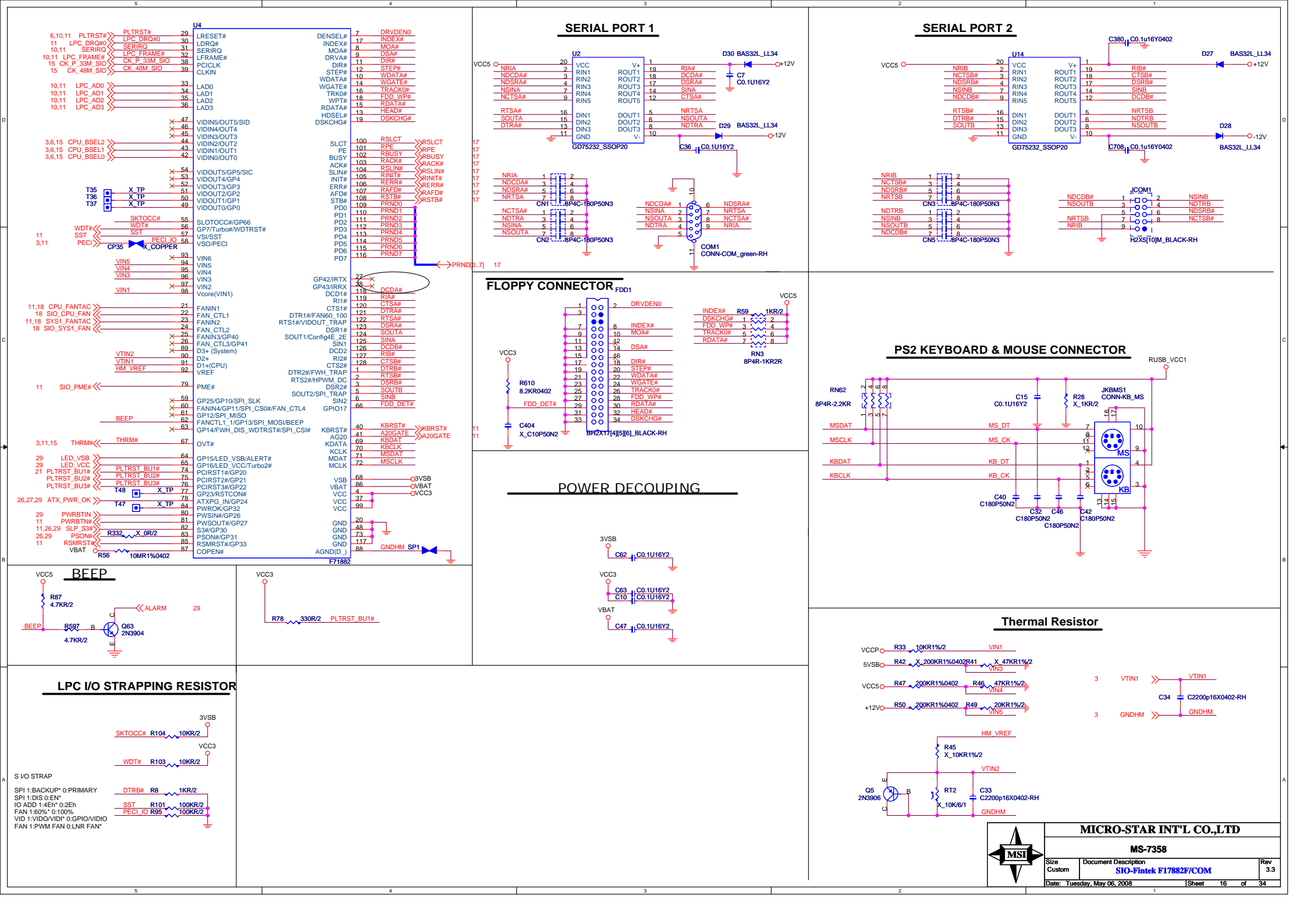


DDR II DIMM_B1

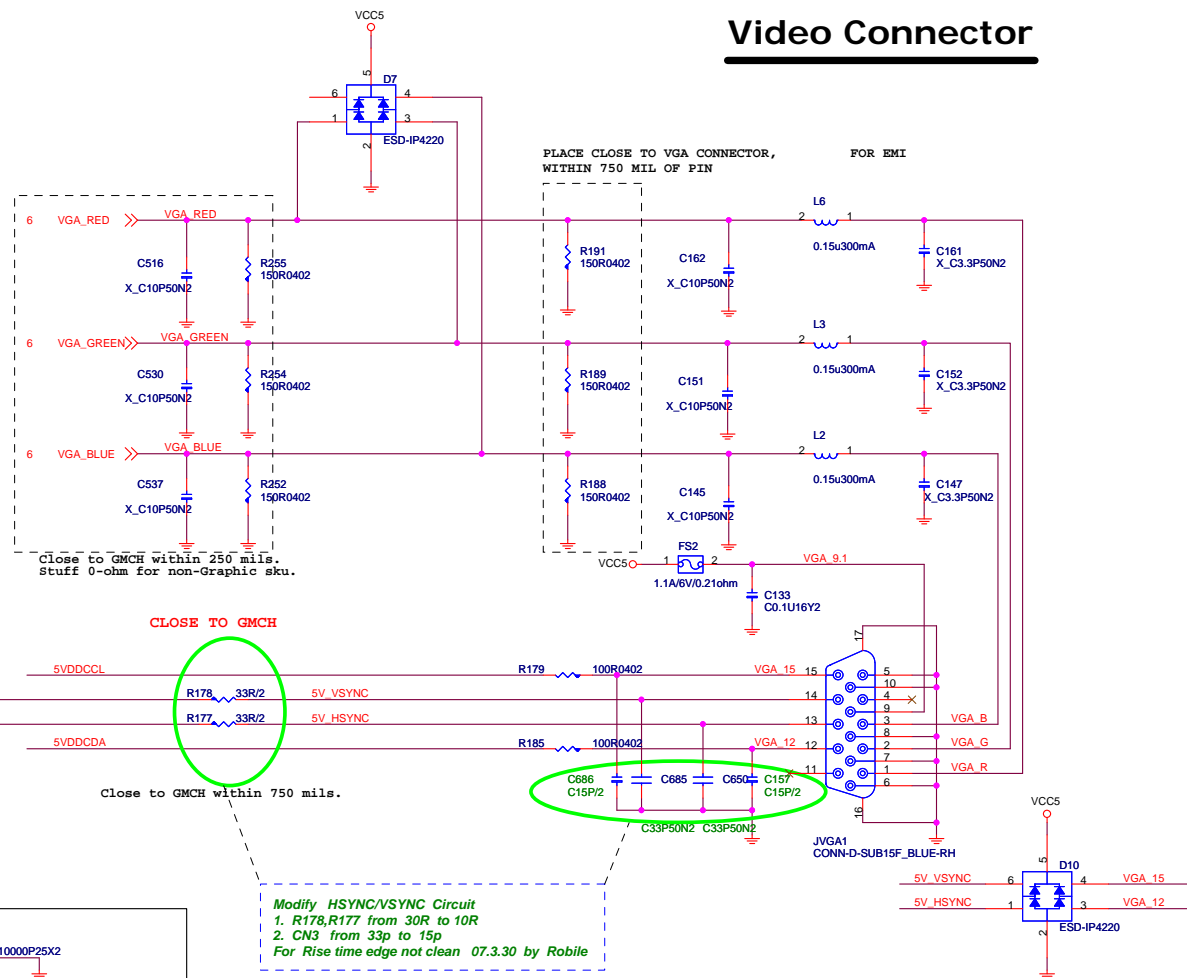
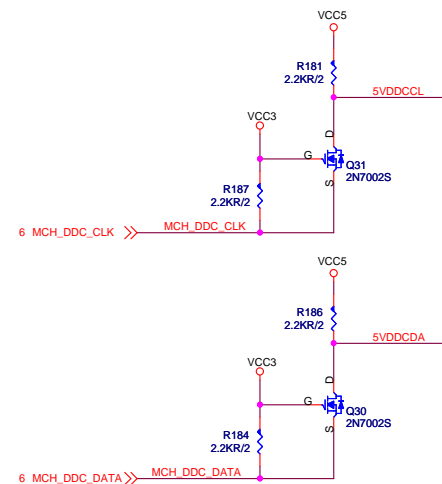


DDR II DIMM_B2

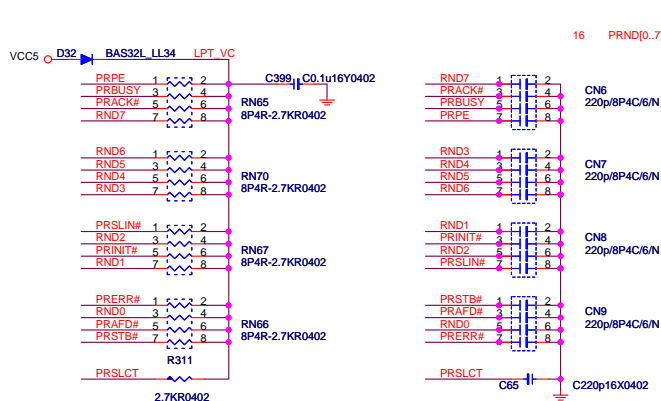




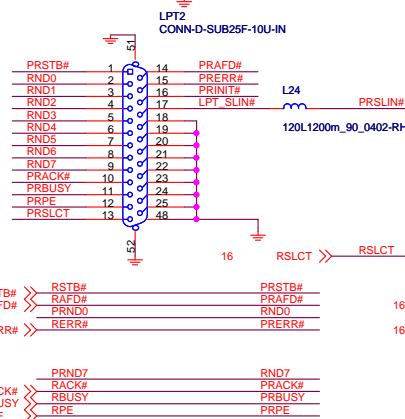
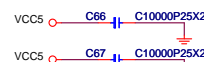
Video Connector



PARALLAL PORT



EMI

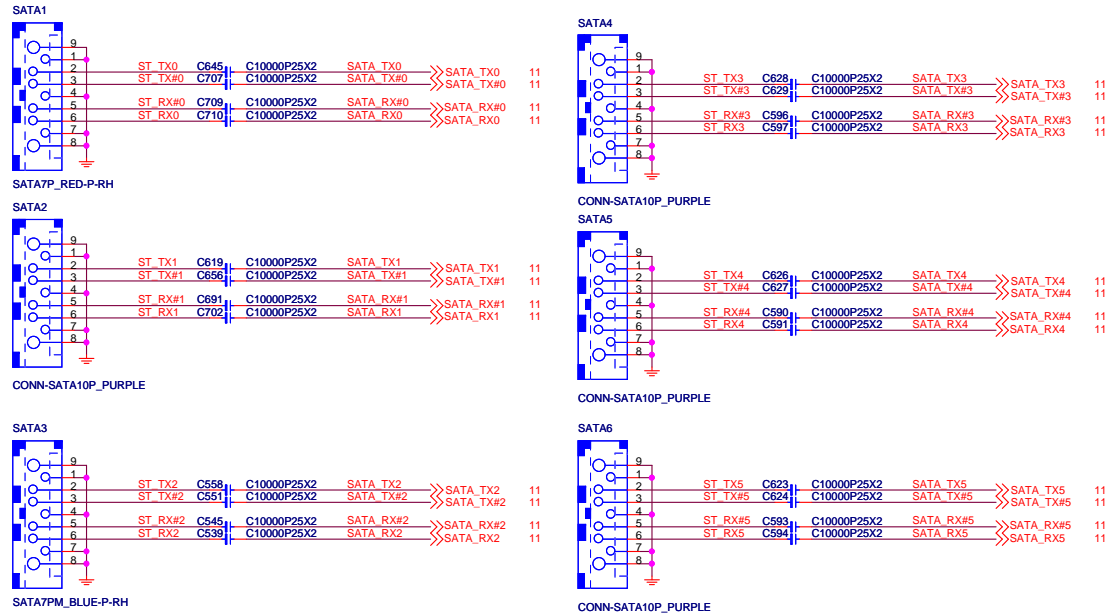


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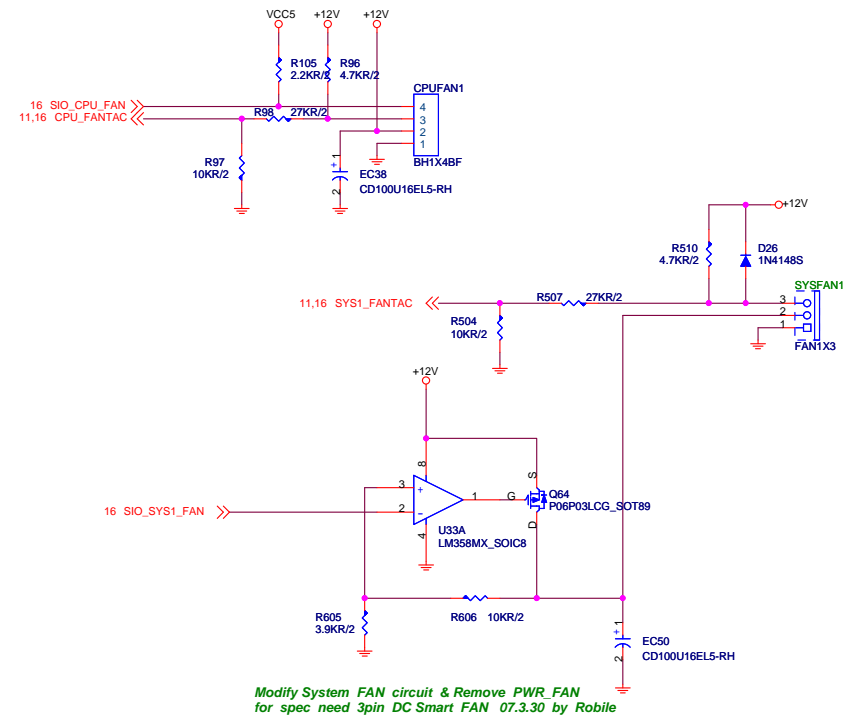
Size	Document Description	Rev
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SATA 1- 6 PORT



james modify

FAN-COUNTROL CIRCUIT

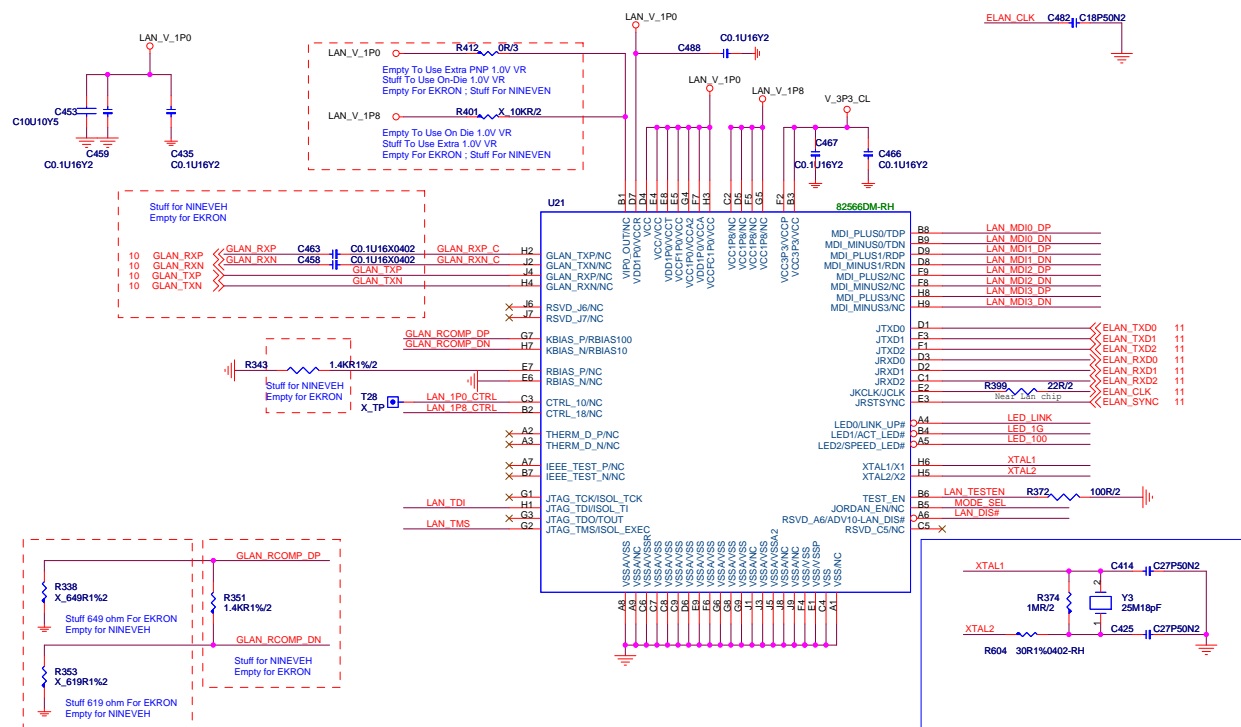


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LAN - NINEVEH/EKRON

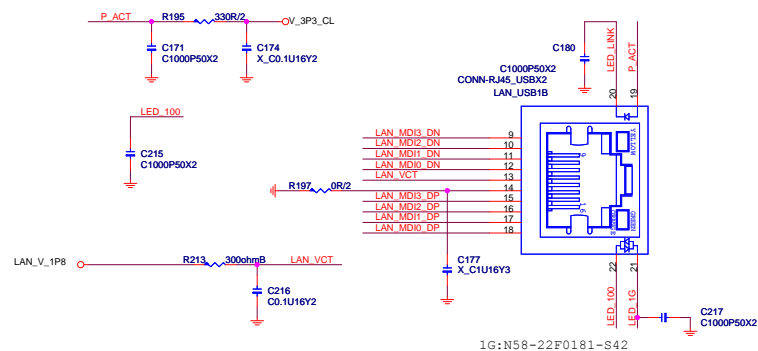


B06-825661S-IY6
For NECP CONSIGN,CHIP LAN,INTEL/82566DM,,BGA-81pin,NINEVEH GIGA LAN CHIP(PHY),RoHS COMPLIANCE
Intel 82566DM
 For business desktop PCs.Support Intel AMT2 or ASF 2.0 alerting,Circuit Breaker,WoL,PXE,Multiprot teaming,RSS,Intel Stable Image Platform Program drivers.
Intel 82566DC
 For consumer desktop PC.Support Digital Home capabilities,WoL,PXE.
Intel 82562V
 Basic 10/100 Ethernet connection.

B06-825661S-I06
,CHIP LAN,INTEL/82566DC,,BGA-81pin,NINEVEH GIGA LAN CHIP(PHY),RoHS COMPLIANCE

B06-825620S-I06
,CHIP LAN,INTEL/82562V,,BGA-81pin,NINEVEH GIGA LAN CHIP(PHY),RoHS COMPLIANCE

LAN CONNECTOR

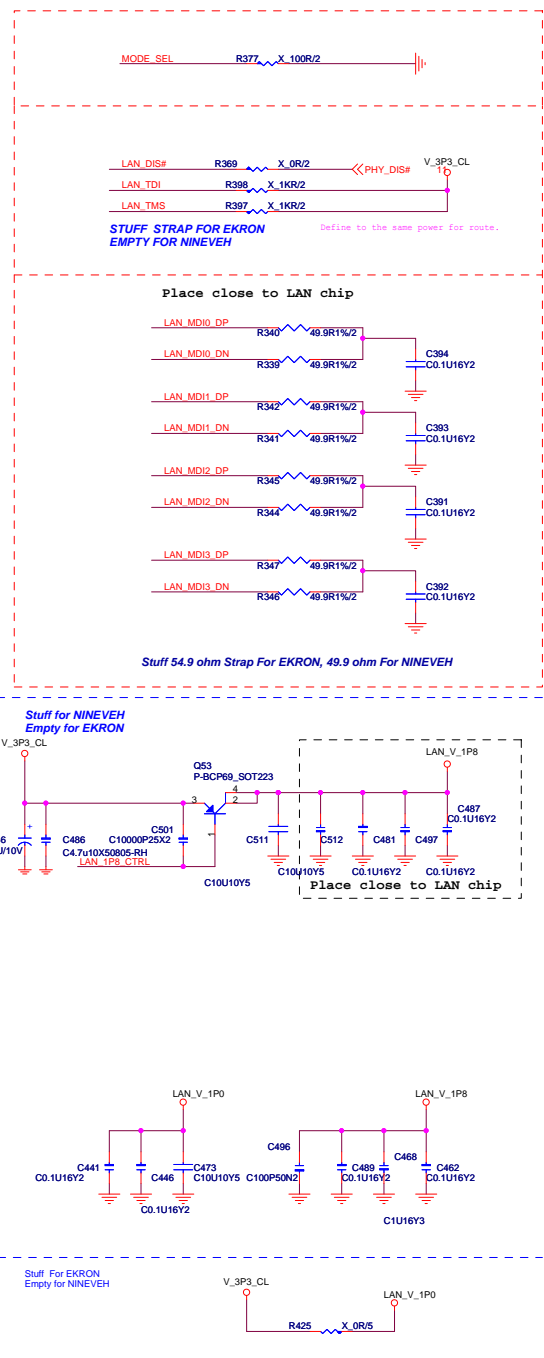


```
Speed LED Type
1000Mbps : Orange
100Mbps  : Green
10Mbps   : LED off
```

YELLOW : For Active/Link

ACT_LED	Link_LED
S0: LOW	S0: LOW
S1/S3/S4/S5: HIGH	S5: HIGH
	S1/S3/S4: WOL EN-->LOW WOL DIS-->HIGH

Giga-Lan		10/100-Lan	
N58-22F0181-842		N58-22F0061-842	
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	Orange	21	
22	Green	22	Green

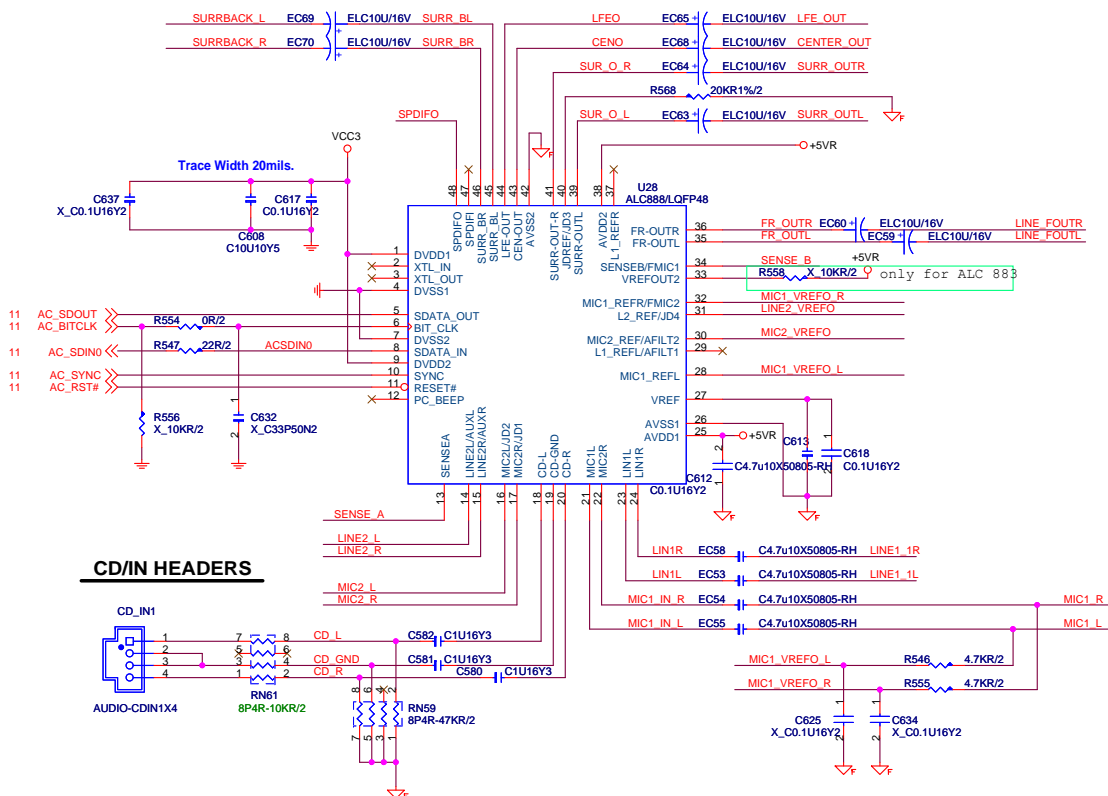


MICRO-STAR INT'L CO.,LTD

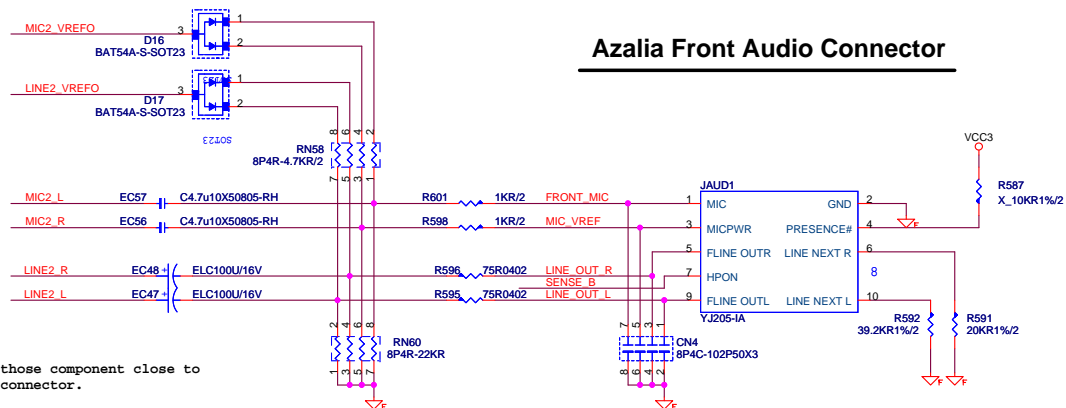
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Size Custom	Document Description LAN NINEVEH/EKRON	Re
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ALC888 CODEC

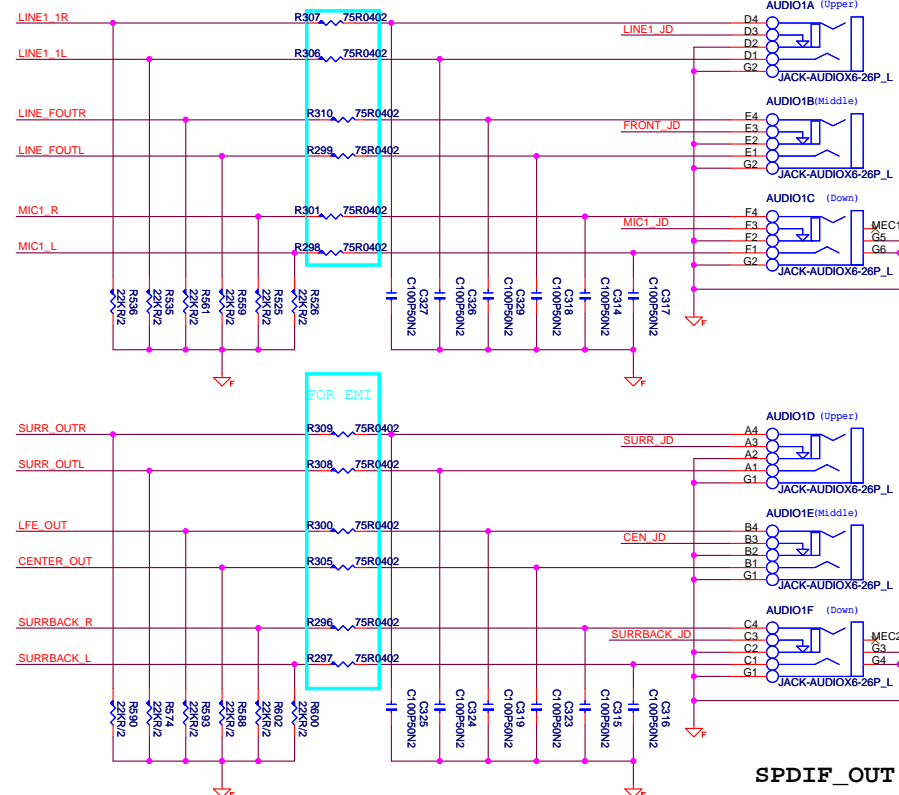


Azalia Front Audio Connector

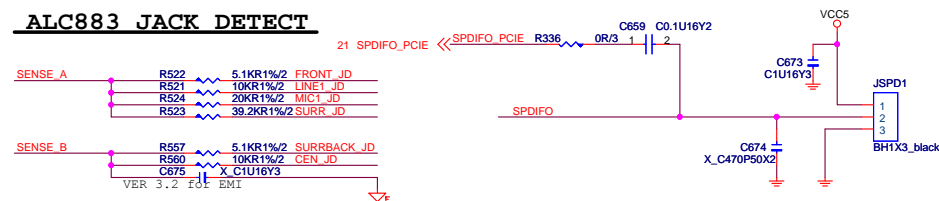


Place those component close to
audio connector.

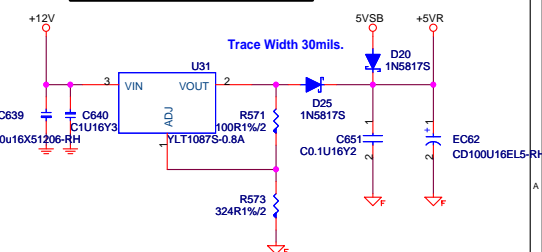
ALC883 JACK



ALC883 JACK DETECT

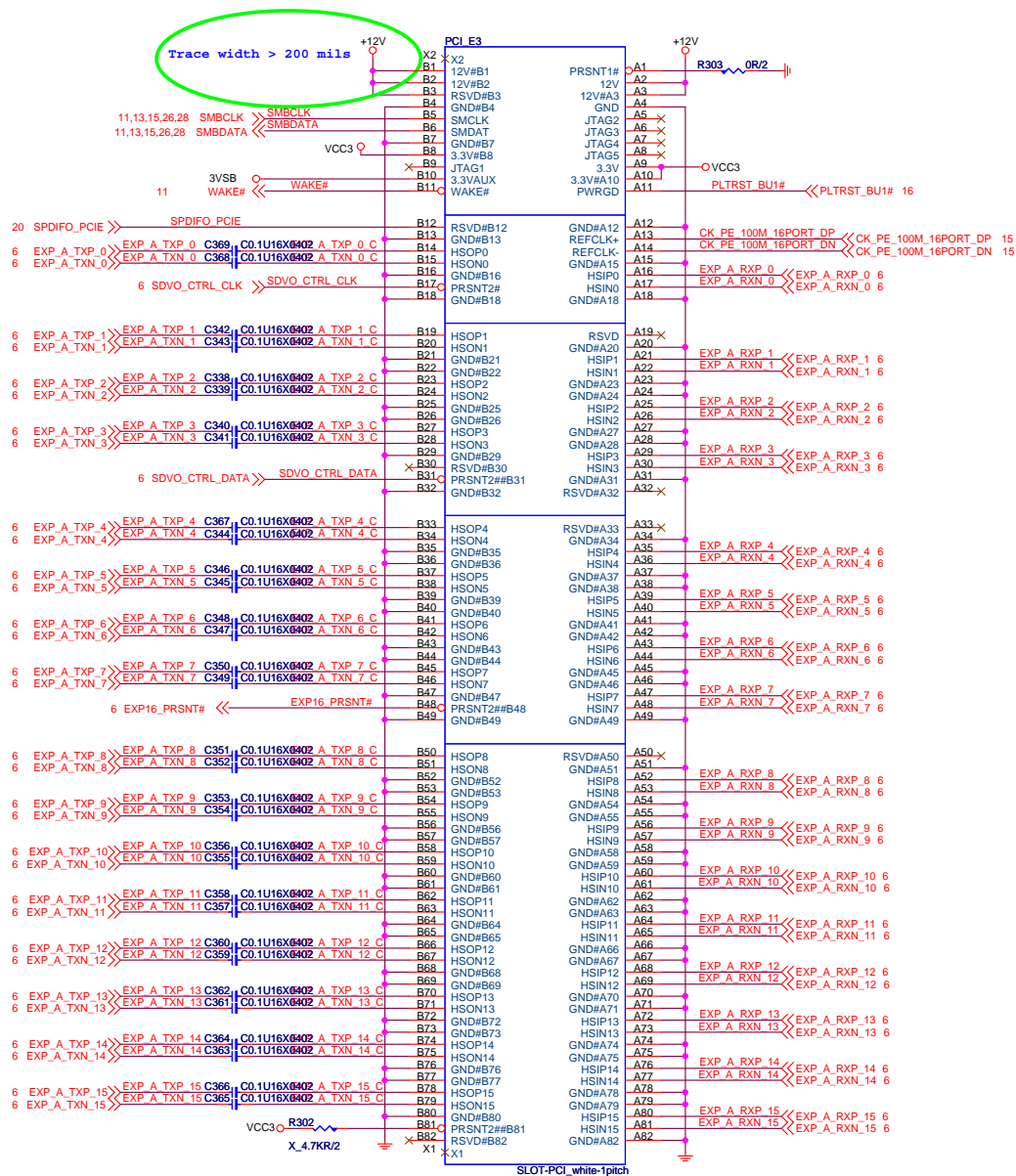


AUDIO CODE REGULATORS



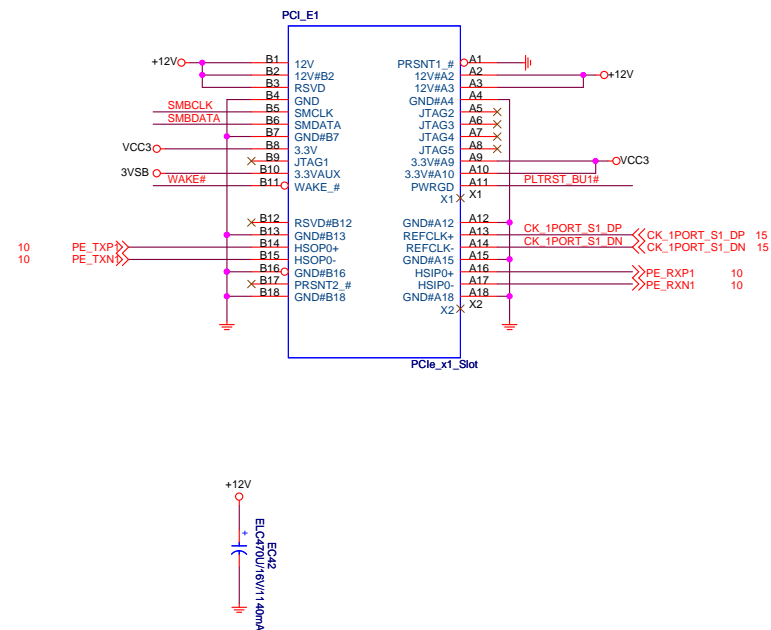
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PCI_Express X16 Slot



PCI_Express X4 Slot

(Share with PCI E x1 Slots)



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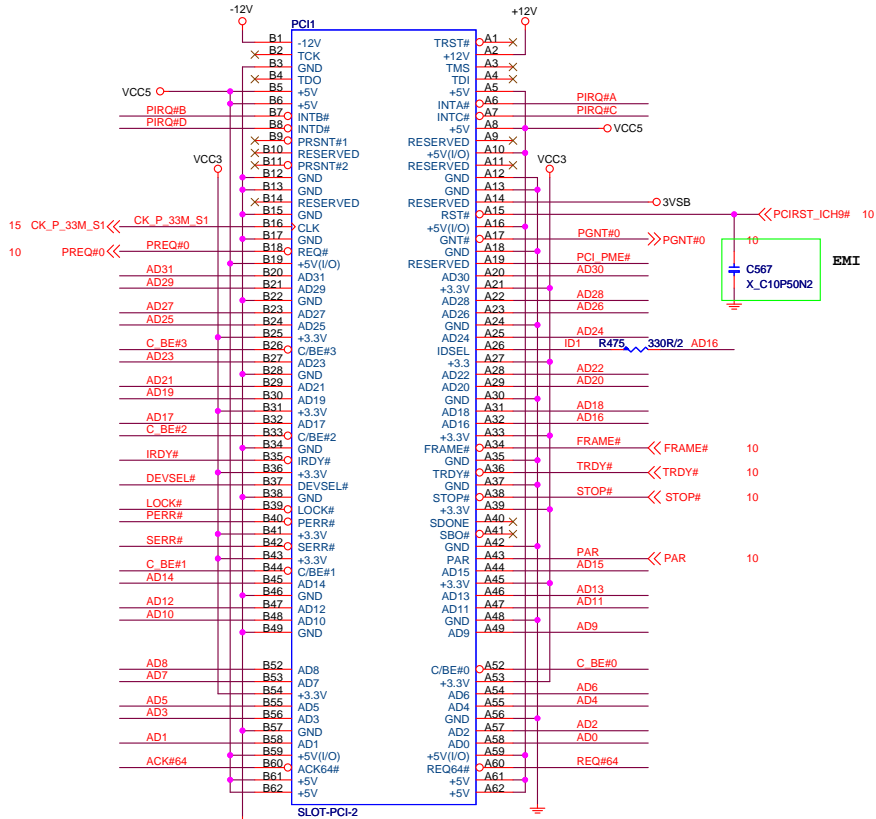
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Size	Document Description
Custom	PCIE x16, x1 & Bus Switch

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PCI SLOT 1 (PCI VER: 2.2 COMPLY)



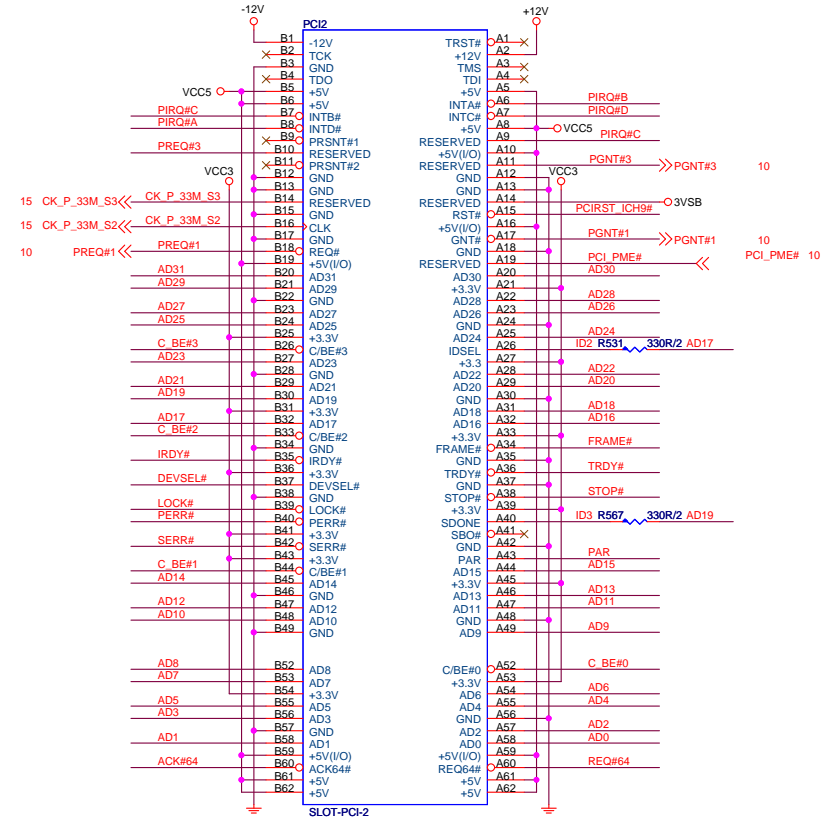
IDSEL = AD16

MASTER = PREQ#0

PIRQ#A

10 AD[31..0] << AD[31..0]
10 C_BE#[3..0] << C_BE#[3..0]

PCI SLOT 2 (PCI VER: 2.2 COMPLY)

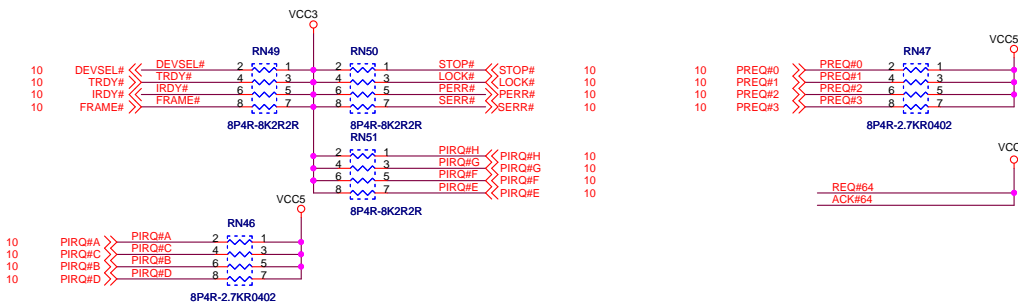


IDSEL = AD17

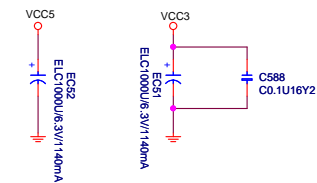
MASTER = PREQ#1

PIRQ#B

PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS




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Reserve

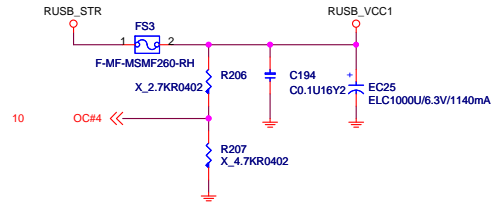


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Size Custom	Document Description Marvell 88SE6111 PCIE to PATA/SATA	Rev 3.3
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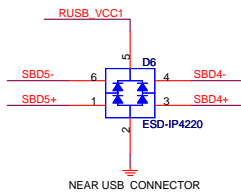
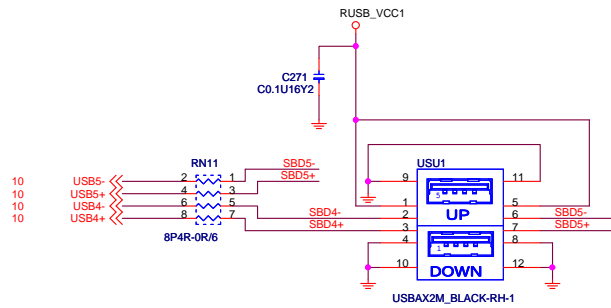
Rear USB Connector

USB POWER FOR PORT 1,2,3,4

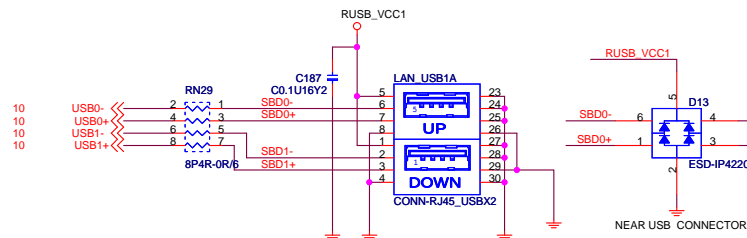
NEAR CONNECTOR



REAR USB PORT 0,1 (1394)



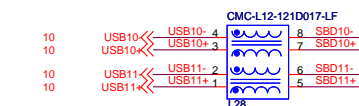
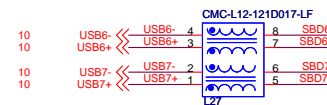
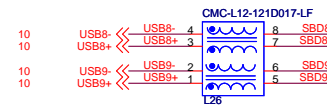
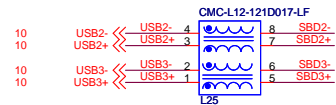
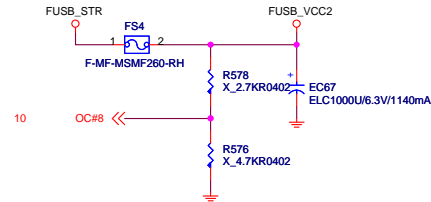
REAR USB PORT 4,5 (With LAN)



Front USB Connector

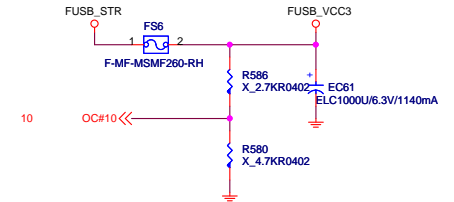
USB POWER FOR PORT 7,8,11,12

NEAR CONNECTOR

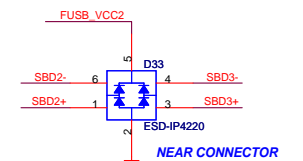
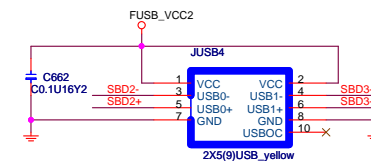


USB POWER FOR PORT 5,6,9,10

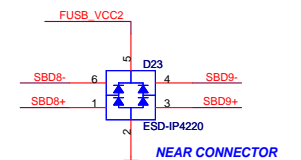
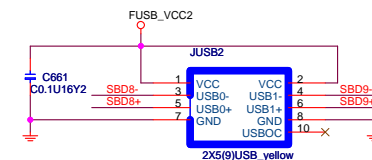
NEAR CONNECTOR



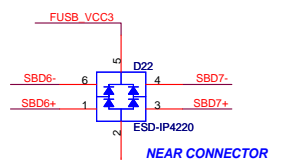
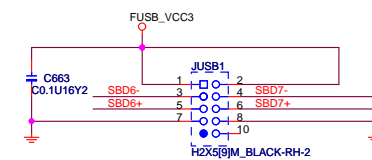
FRONT USB PORT 8,9



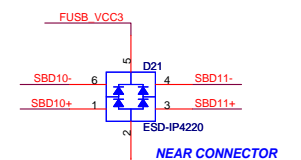
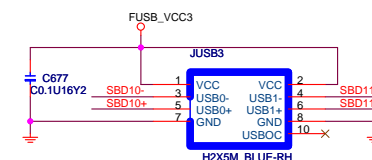
FRONT USB PORT 8,9



FRONT USB PORT 6,7

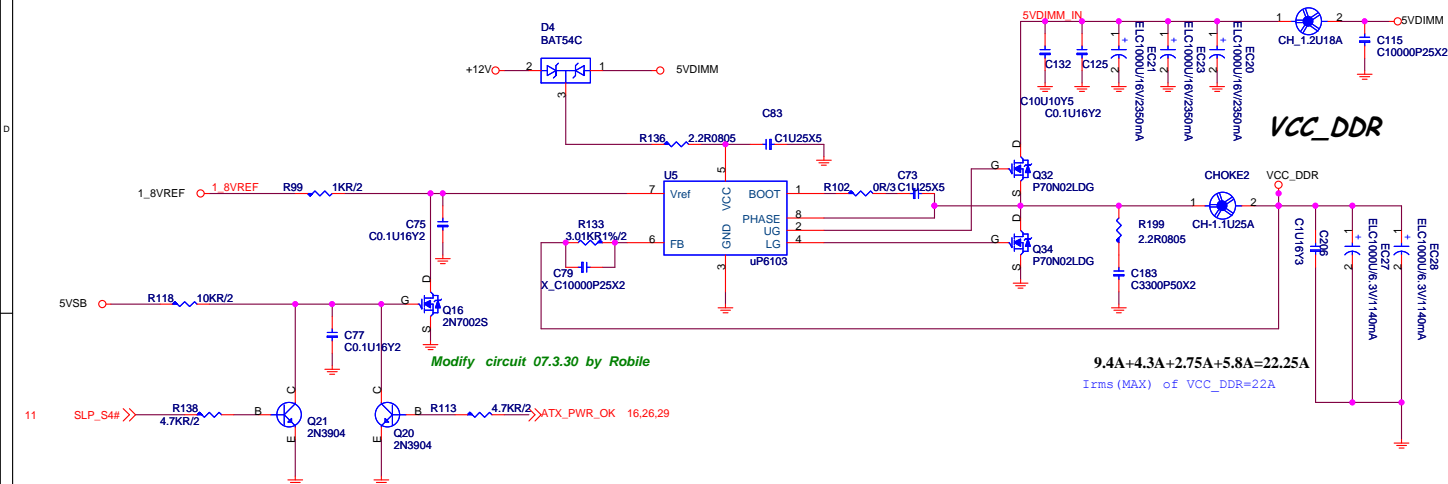


FRONT USB PORT 10,11



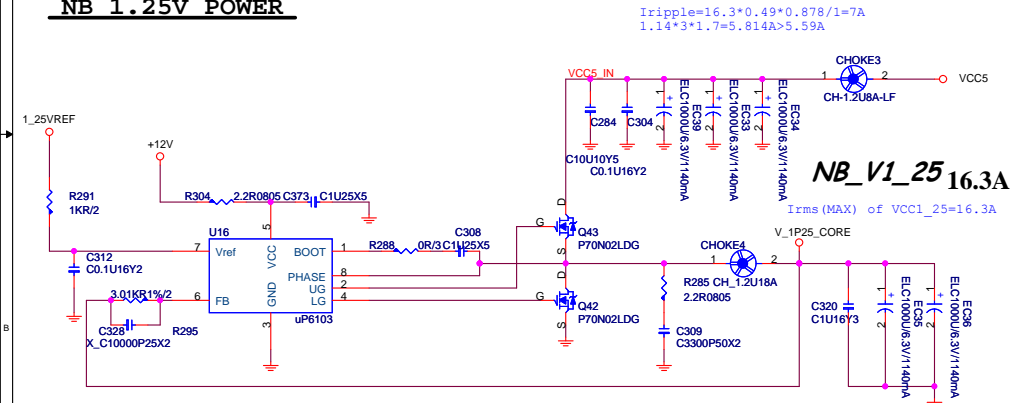
Reserve

DDR II 1.8V POWER

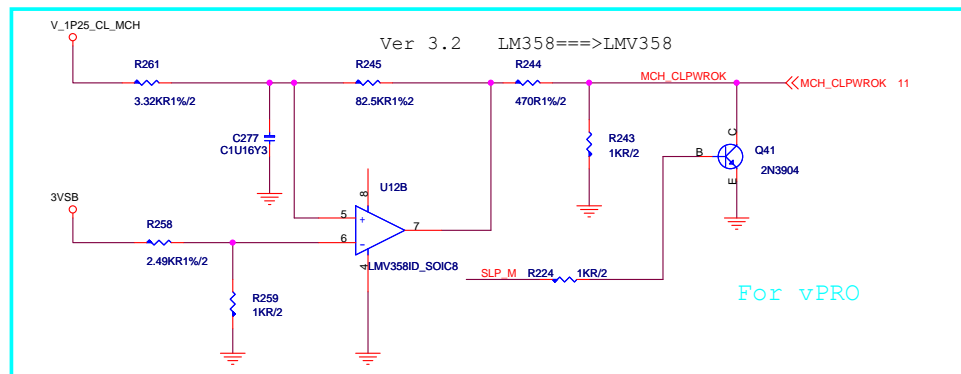


To meet Intel power down sequence.

NB 1.25V POWER



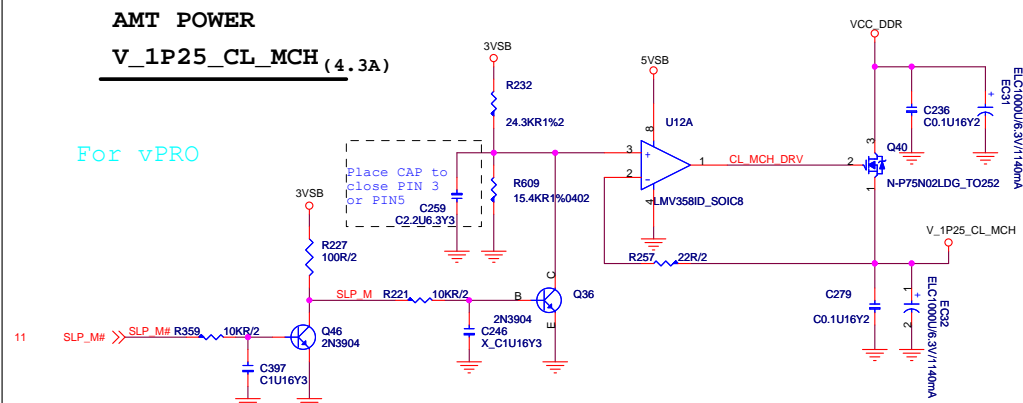
CLINK PWROK GENERATION



AMT POWER

V_1P25_CL_MCH (4.3A)

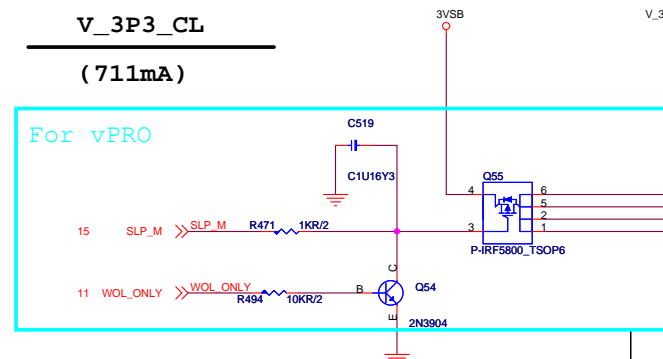
For vPRO



V 3P3 CL

(711mA)

For vPRO



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MS-7358

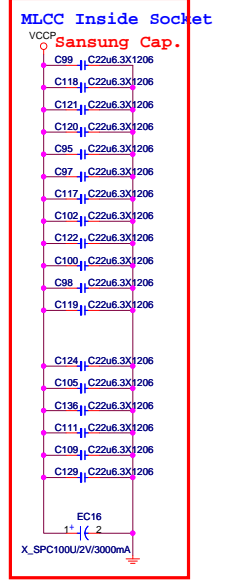
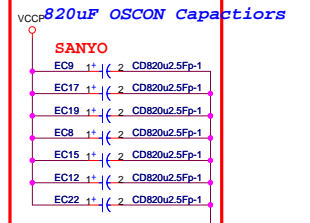
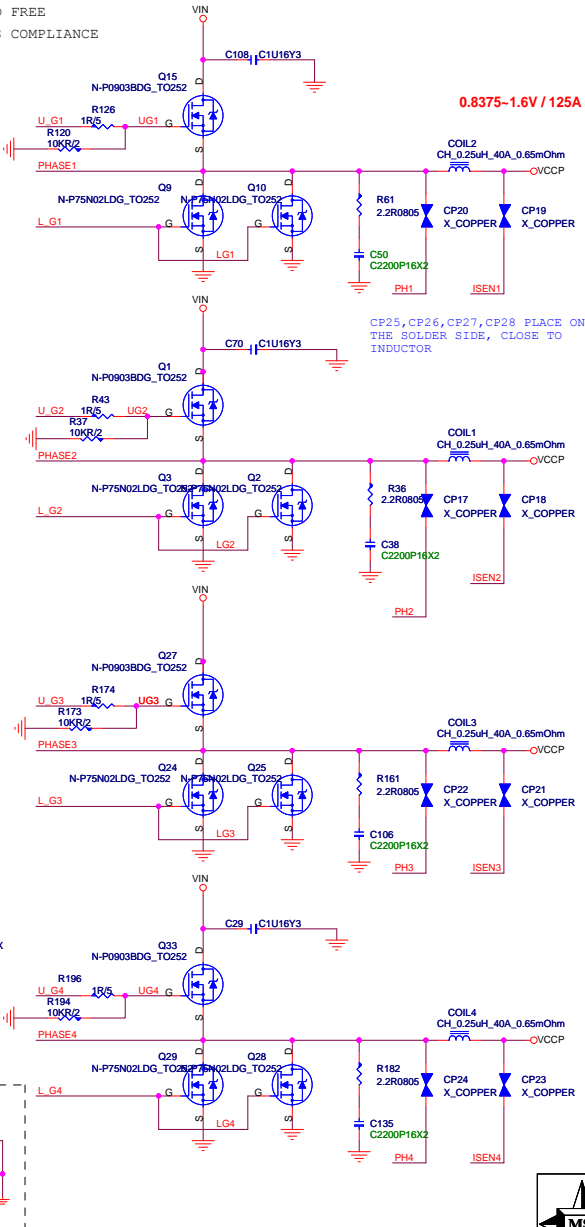
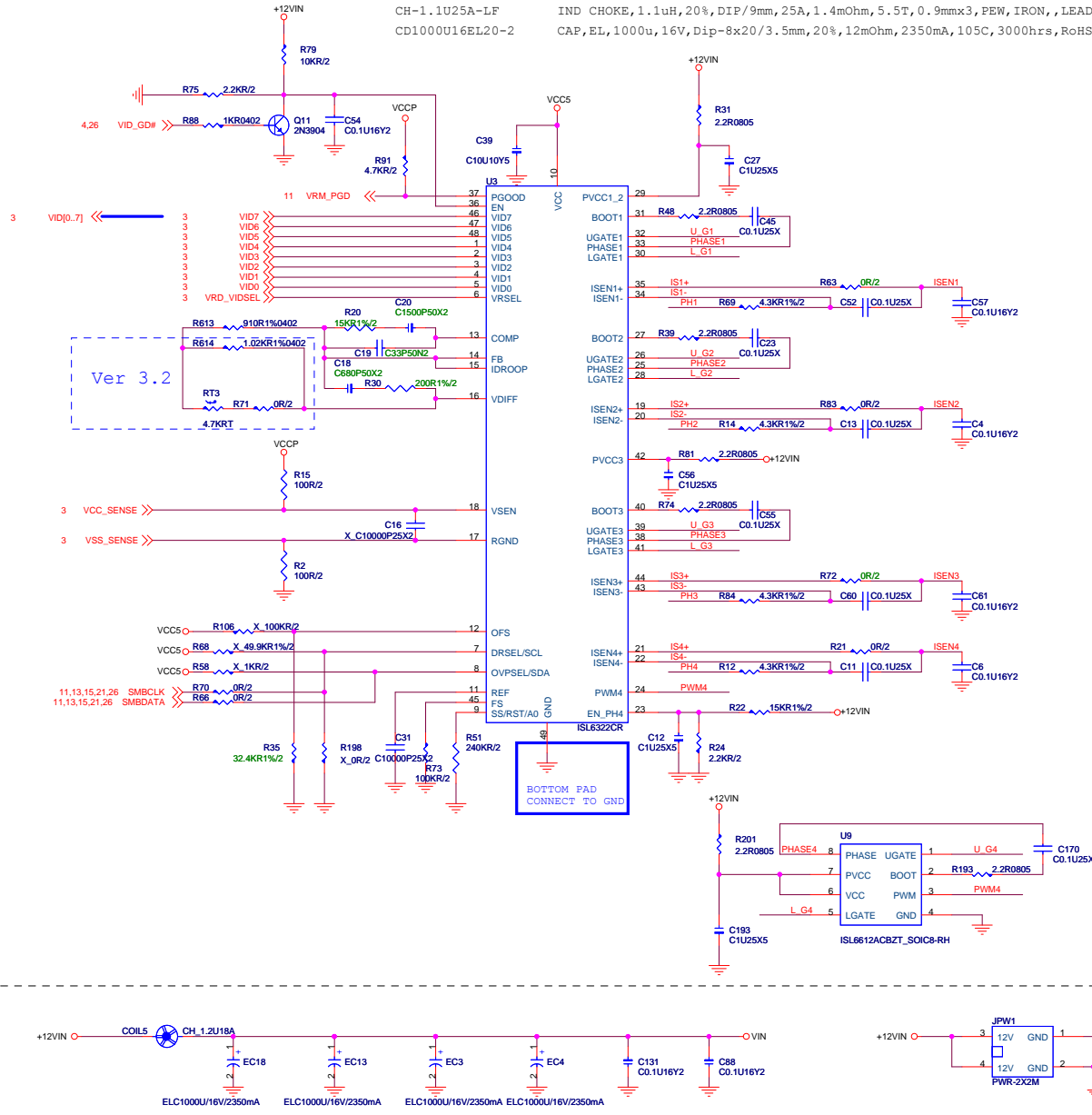
Size	Document Description	Rev
Custom	NB Core Power & DDR Power	3.3

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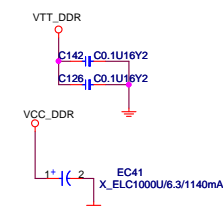
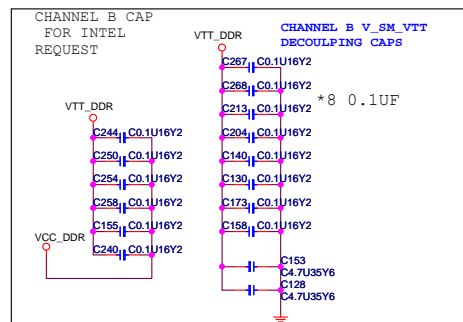
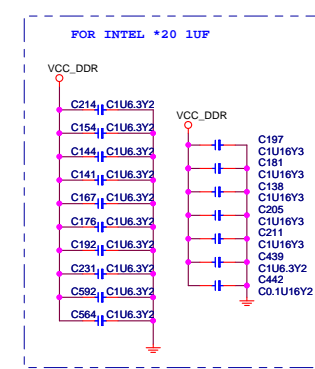
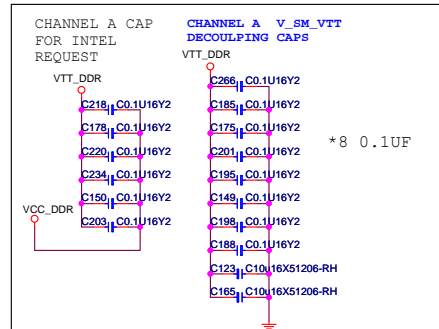
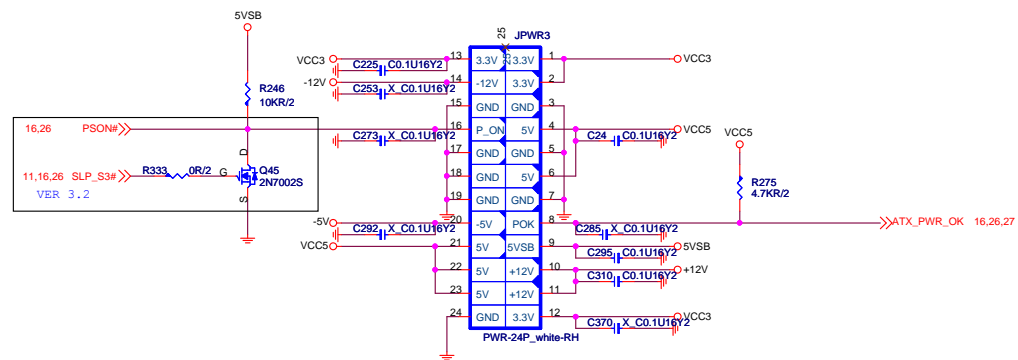
Voltage Regular Module

N-P0903BDG_TO252
P75N02LDG/TO252
C100U2SP
CD560U40S-2
1800UF/6.3V
0.25uH/40A
CH-1.1U25A-LF
CD1000U16EL20-2

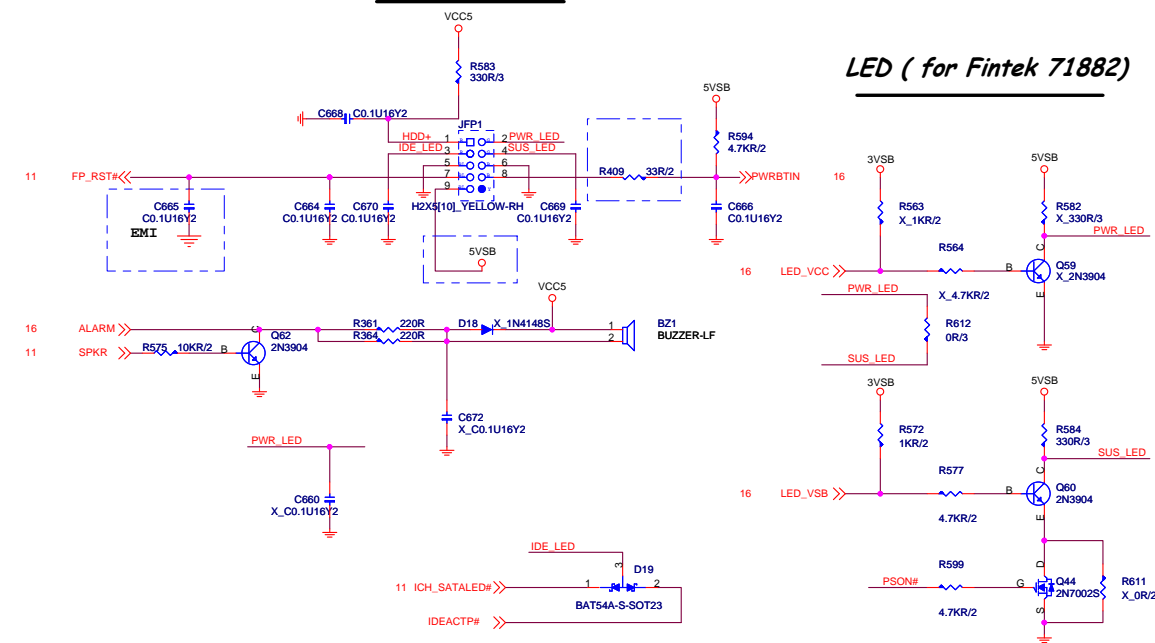
mosfet/n-channel, P0903BDG, SMT/TO252, Rds(on)=9.5mΩ(10V/25A), Vgs(on)=1~3V, Id=50A, Ciss=1800pF, Qg=50nC, Vds=25V, Vgs=±20V, RoHS COMPLIANCE
mosfet/n-channel, P75N02LDG, SMT/TO252, Rds(on)=7mΩ(10V/30A), Vgs(on)=1~3V, Id=75A, Ciss=5000pF, Qg=140nC, Vds=25V, Vgs=±20V, RoHS COMPLIANCE
CAP, OS=CON, 560u/4V, 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



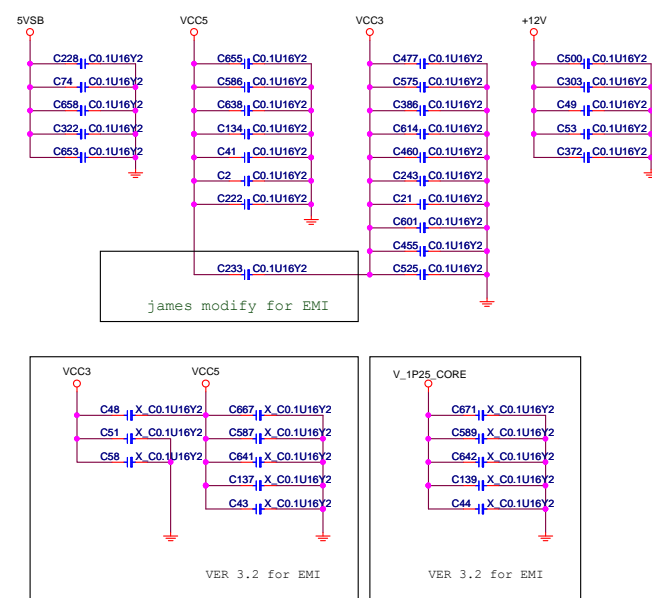
ATX POWER CONNECTOR



FRONT PANNEL



Cap. for EMI & Power



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Size Custom	Document Description ATX PWR-Connector & Front Panel	Rev 3.3
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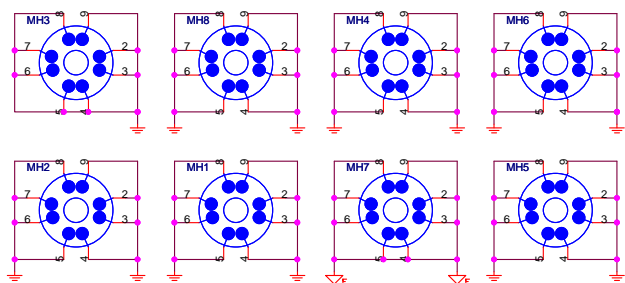
Optical Fiducial Marks-120



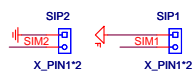
Optical Fiducial Marks-100



Mounting Holes



Simulation



7358-3.3

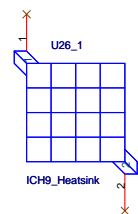
JFP2(4-6)



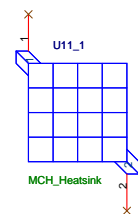
X_JUMPER-1X2A_green



BATTERY-CR2032



ICH9_Heatsink



MCH_Heatsink