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# MS-7359

uATX Version: 0B

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

## System Chipset:

Intel Bearlake - Q/G/P (G33, P35, Q35/33North Bridge)  
Intel ICH9 (South Bridge)

## On Board Device:

CLOCK Gen -- ICS 9LPRS900  
LPC Super I/O -- Fintek F71882  
LAN -- Realtek 8111 (PCIE)  
HD Audio Codec -- ADI197  
1394 Controller -- VT6308 (Rear x1, Front x1)  
PCIE to PATA/SATA Bridge -- Marvel 88SE6111

## Main Memory:

Dual-channel DDR-III \* 4

## Expansion Slots:

PCI EXPRESS X16 SLOT \*1

PCI EXPRESS X1 SLOT \* 2  
PCI SLOT \* 1

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

Configuration and BOM match up

Option	Function	Orcad Configure	BOM
STD	Bearlake-G/ICH9/ICH-Fan/Non-PCIEx4	cfg-STD	601-7359-A10

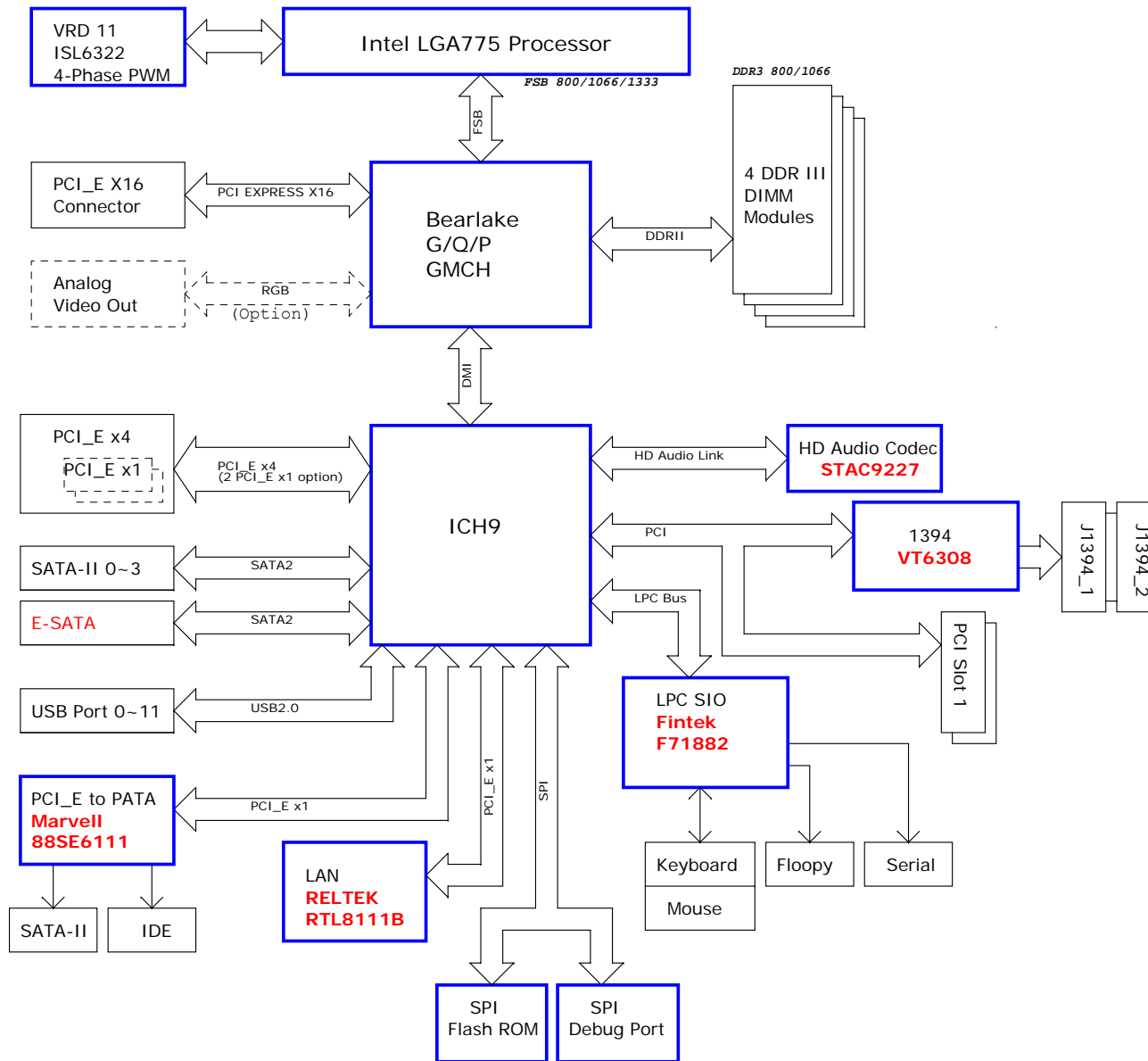


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**MS-7359**

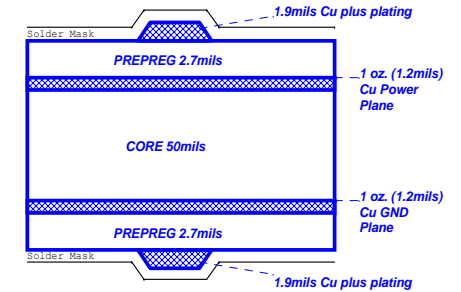
Size Custom	Document Description <b>COVER SHEET</b>	Rev 0B
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# Block Diagram



## 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

**Thermal TRIP**

VCC3

R107  
R10K5%4

VTT\_OUT\_RIGHT

R109 X 10KR/2

FORCEPH

R94 X R0R5%4

H\_PROCHOT#

R87 X R0R5%4

Q13  
X\_2N3904

CH\_THERM# 11

R112 R0R5%4

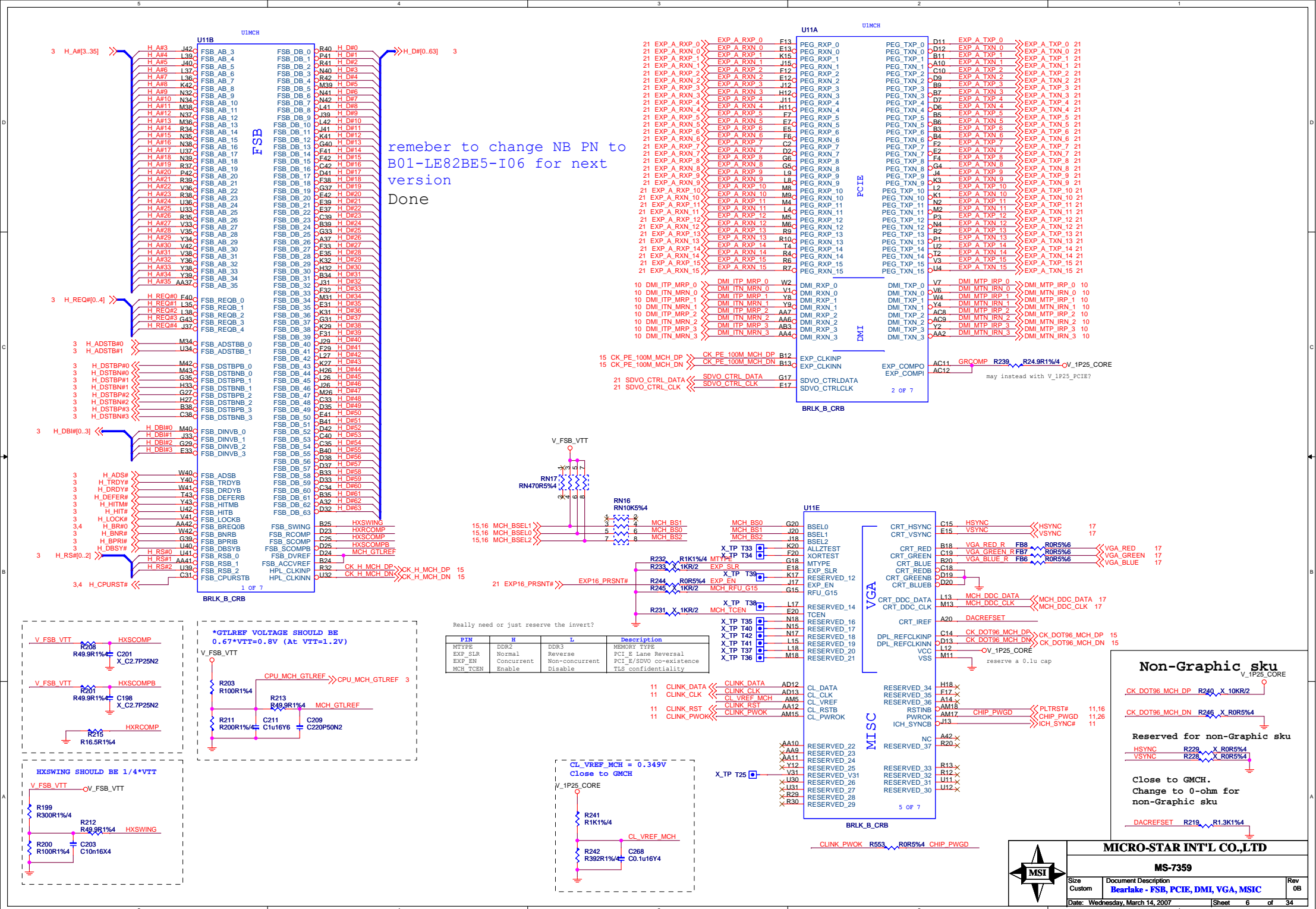


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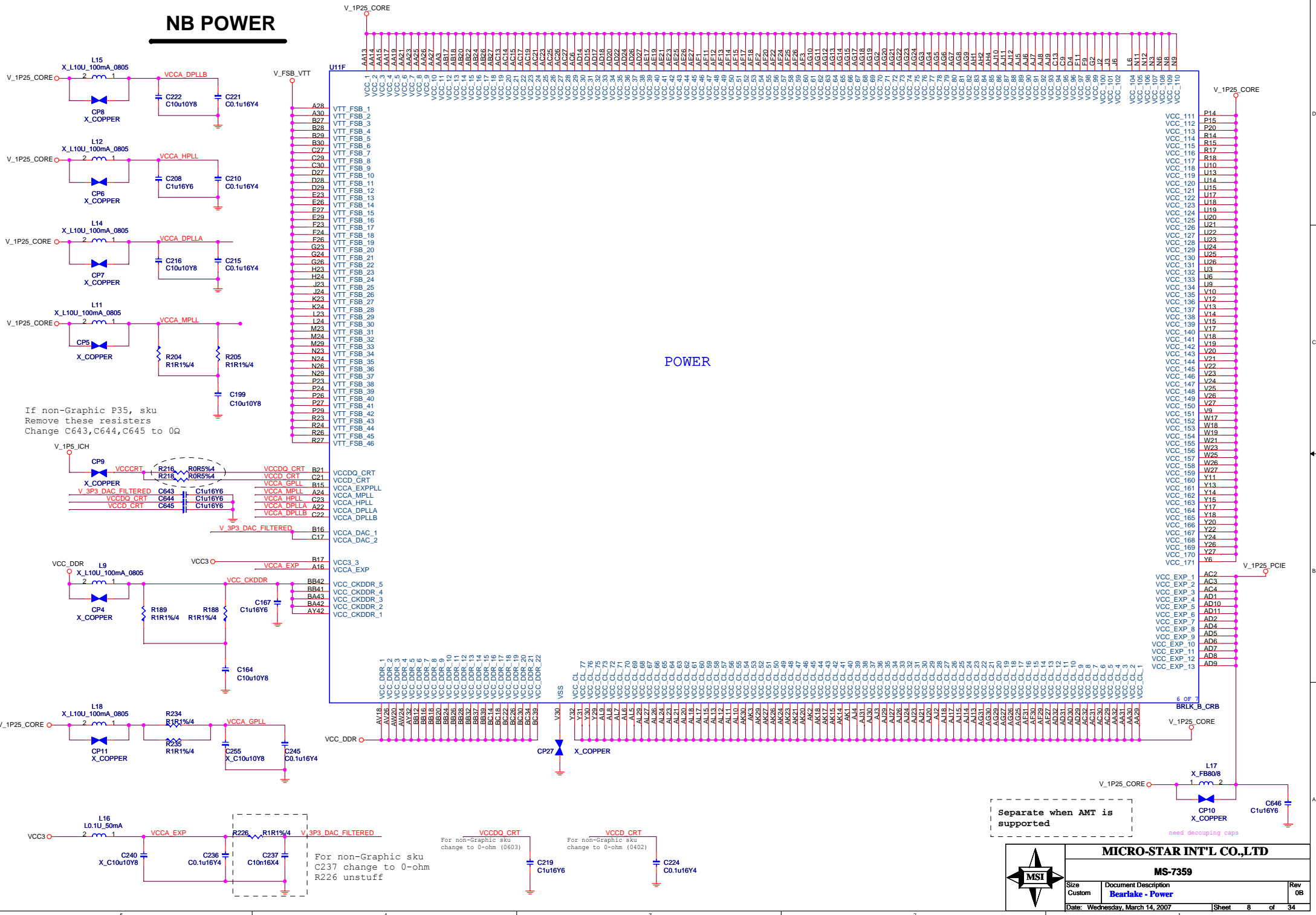








## NB POWER

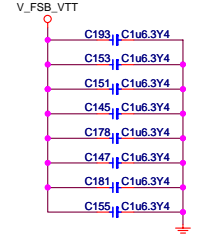
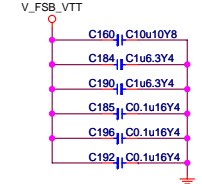
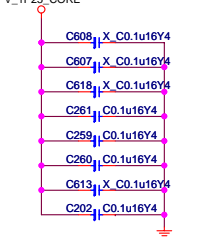
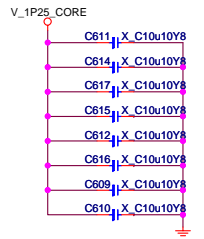
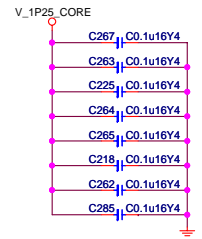
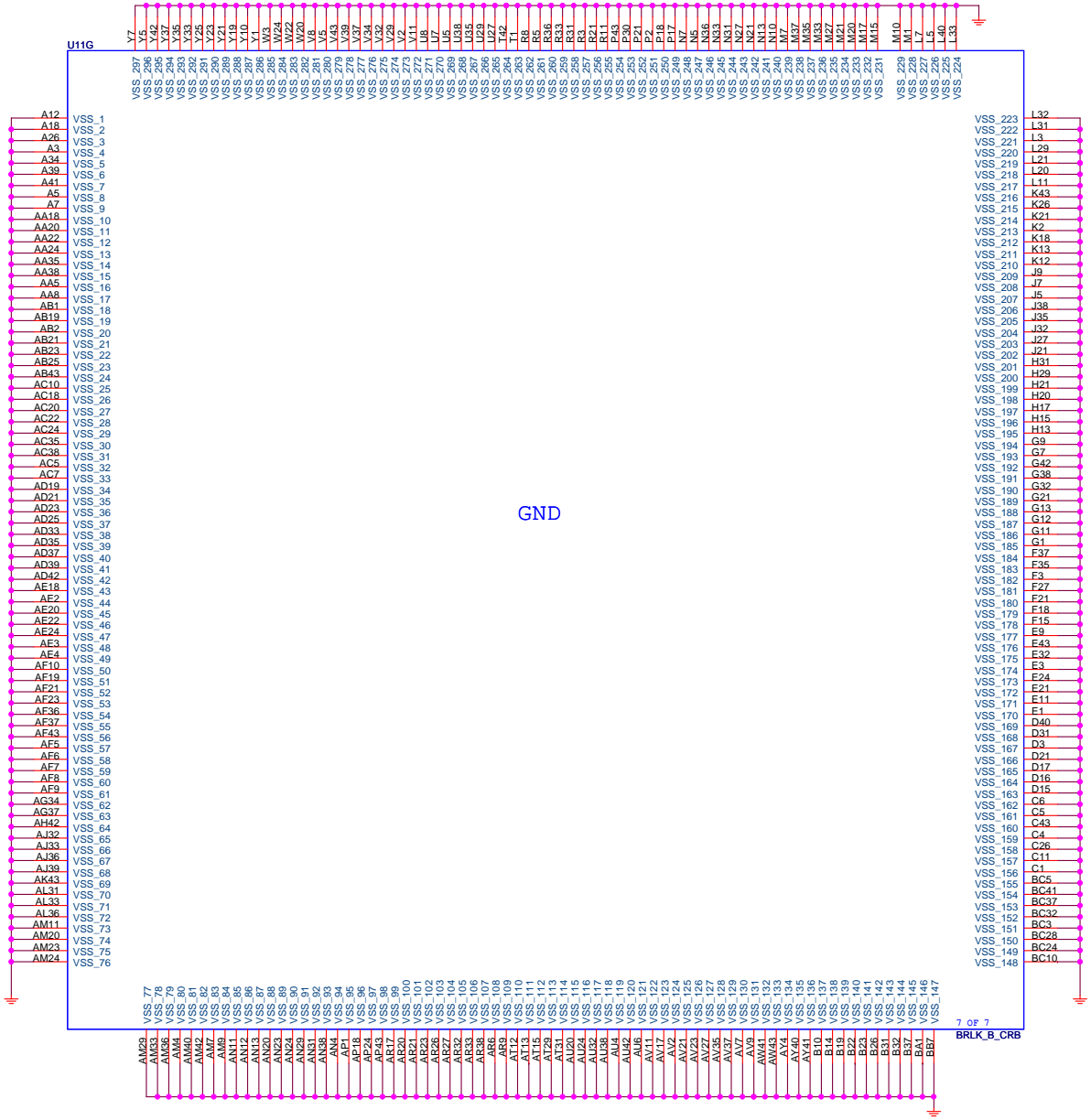
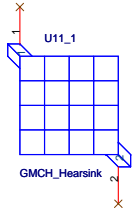



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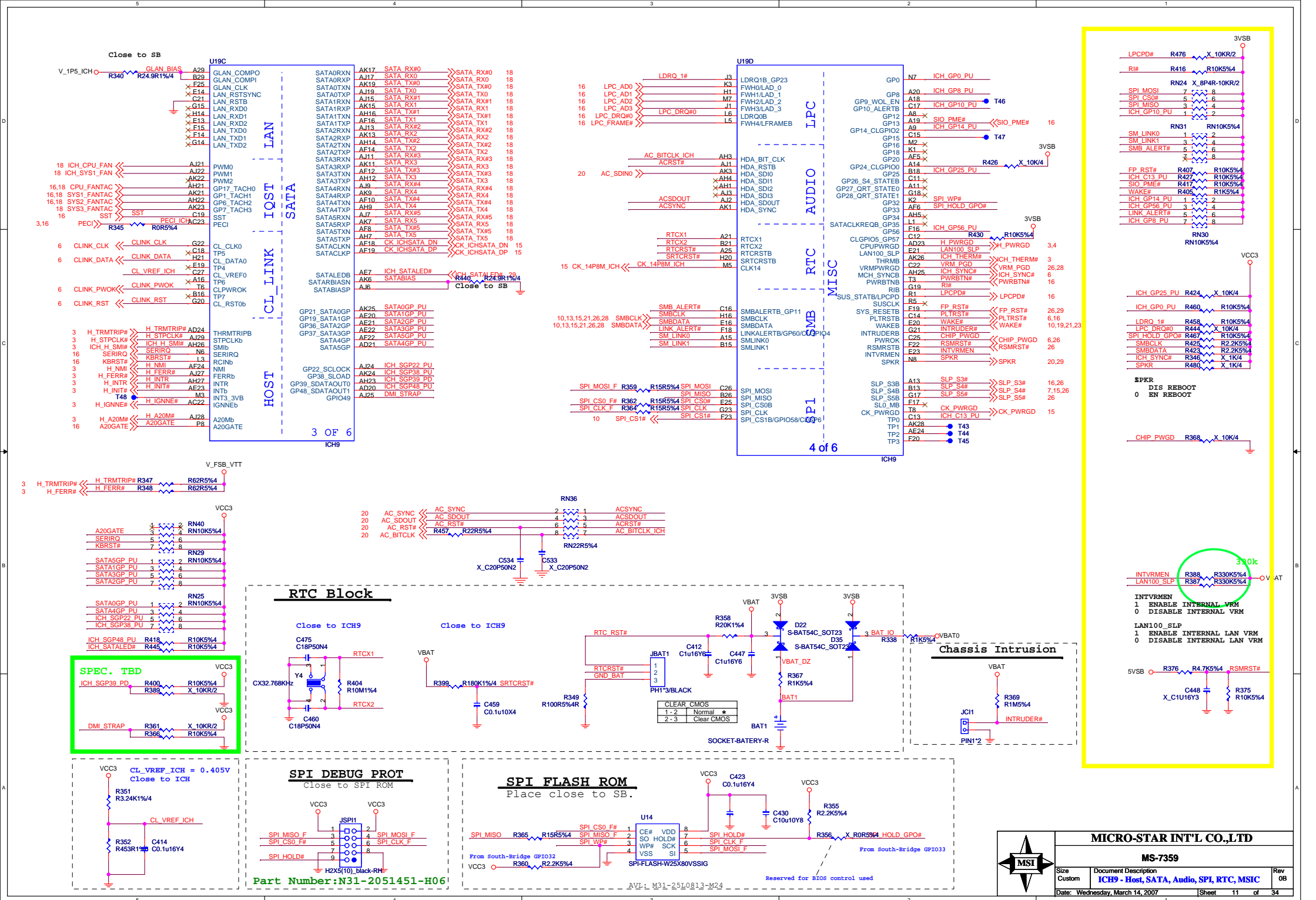
Size Custom	Document Description <b>Bearlake - Power</b>	Rev 0B
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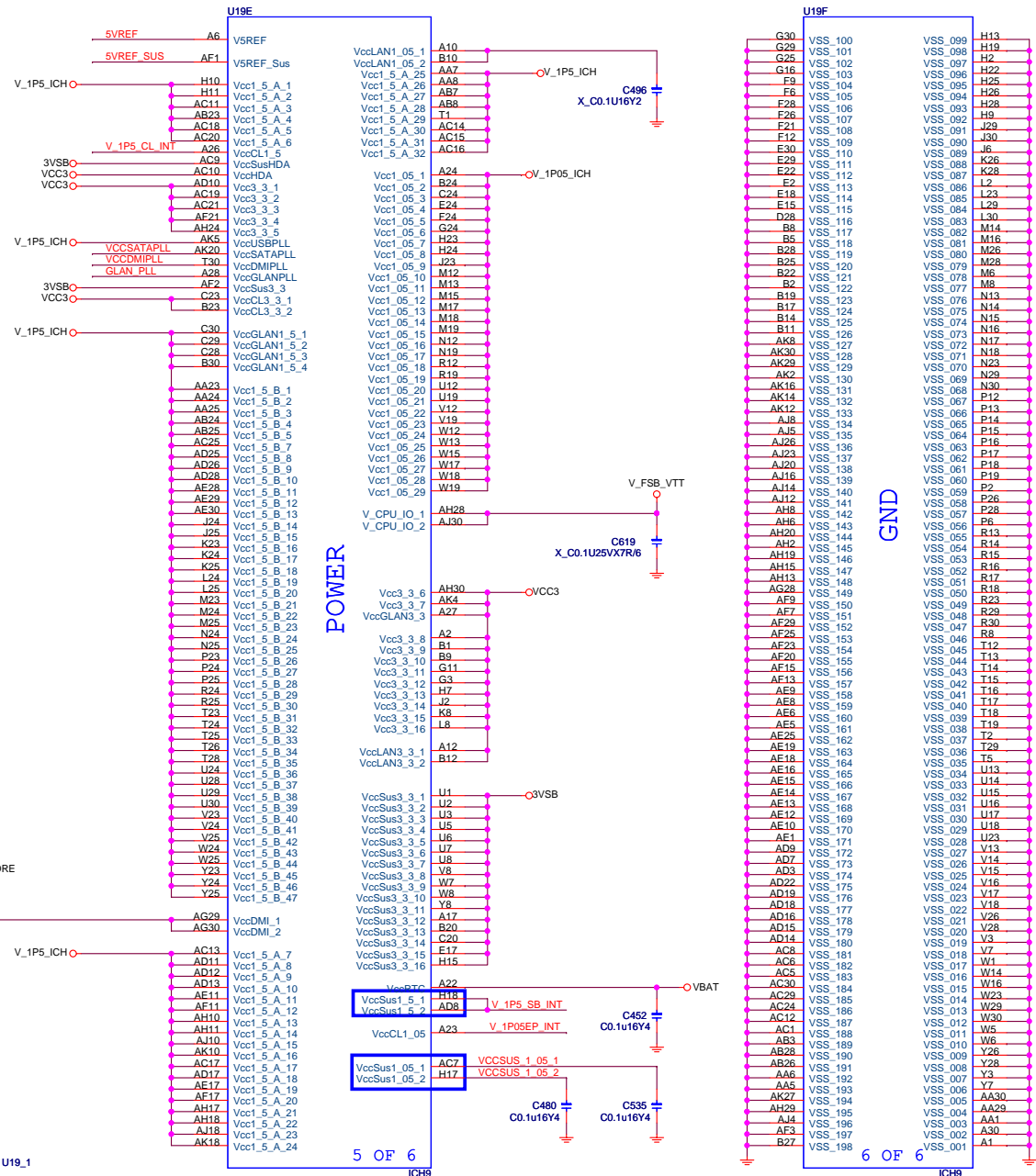
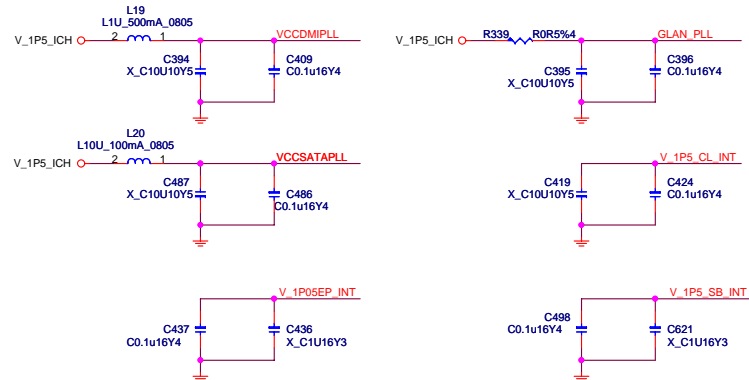


			<b>MICRO-STAR INT'L CO.,LTD</b>	
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### 5VREF & 5VREF\_SUS Sequencing Circuit



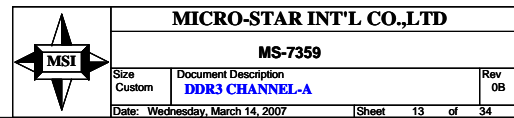
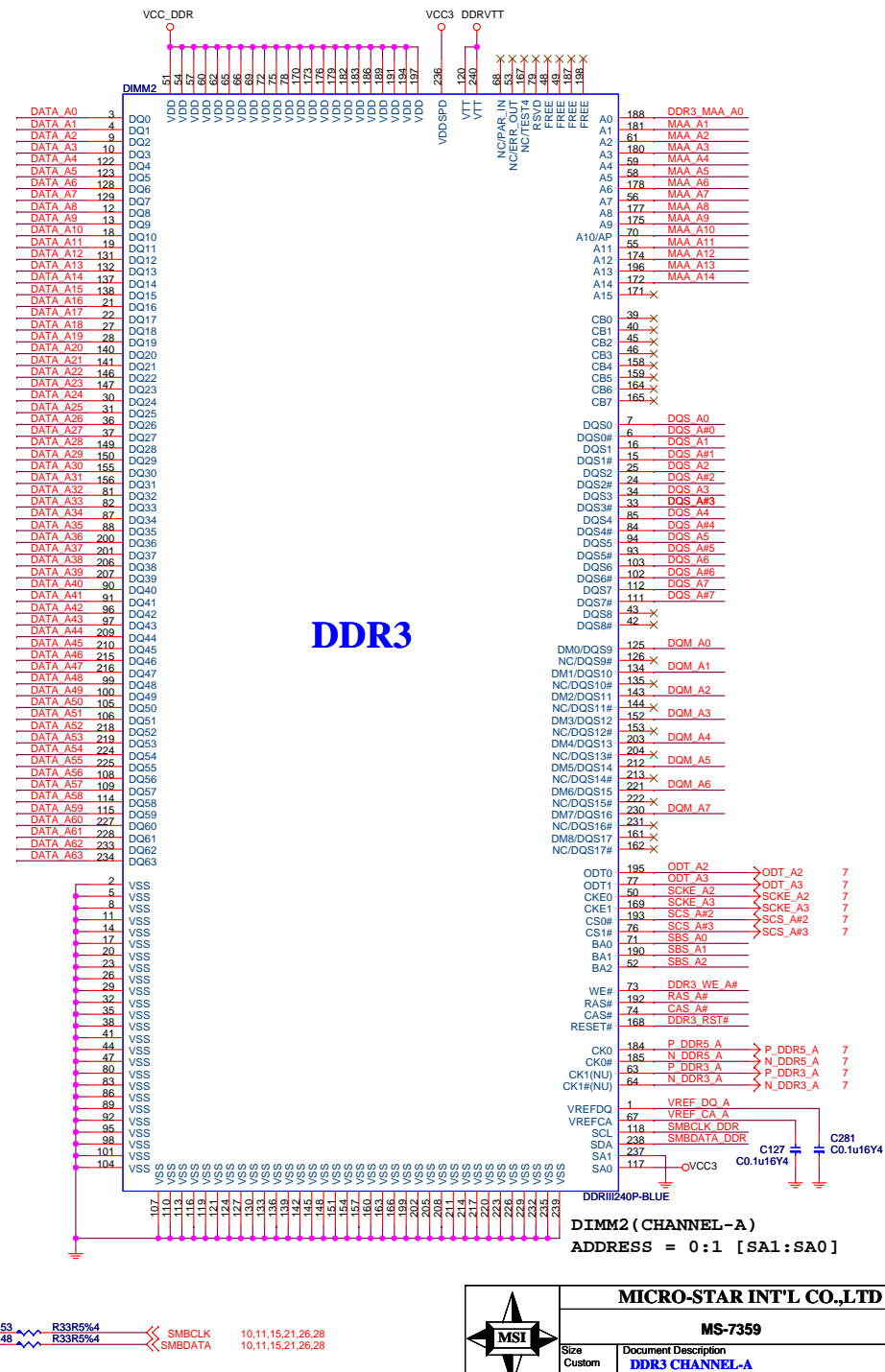
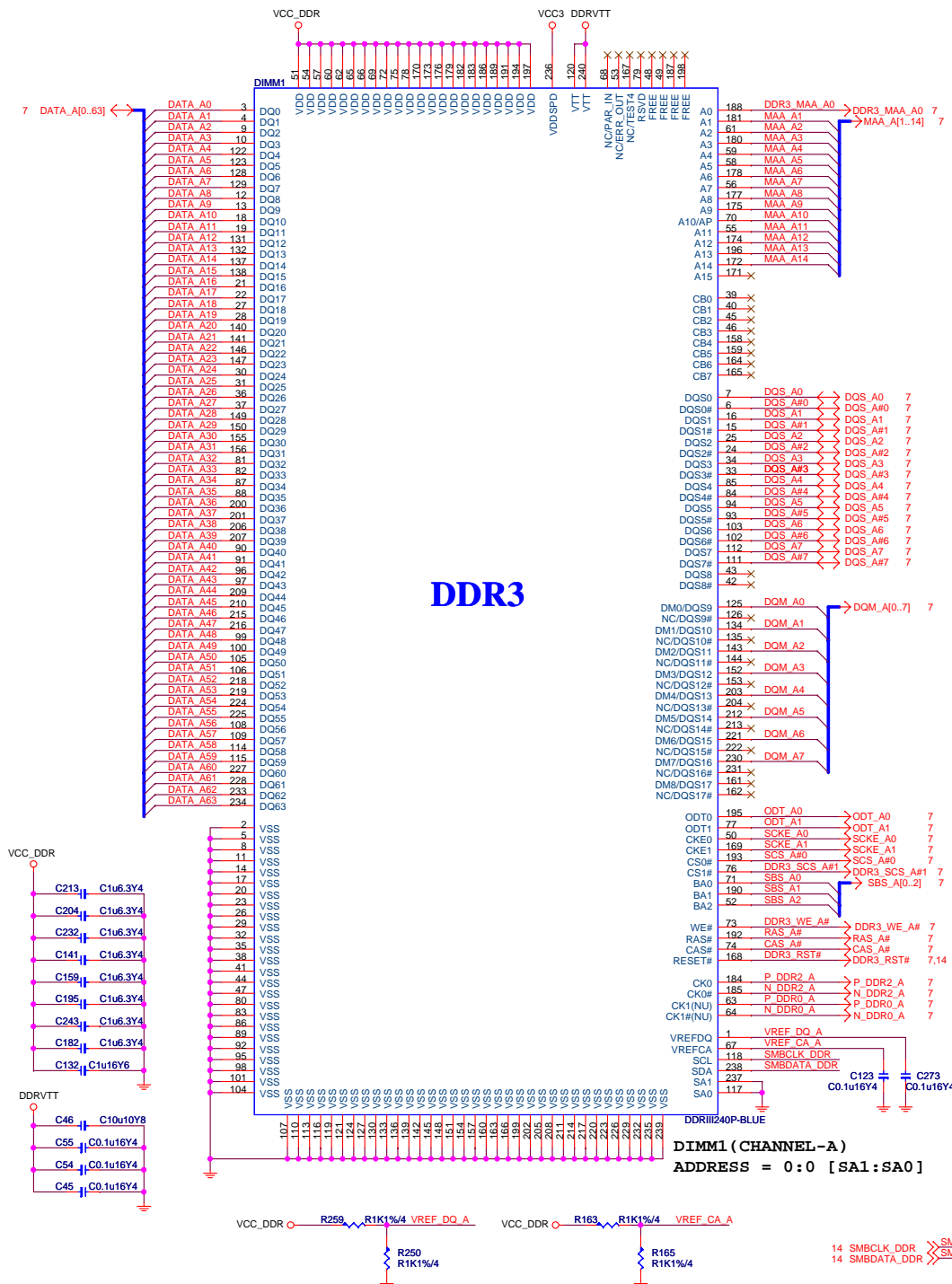
AC7, H17 & H18, AD8  
spec TBD



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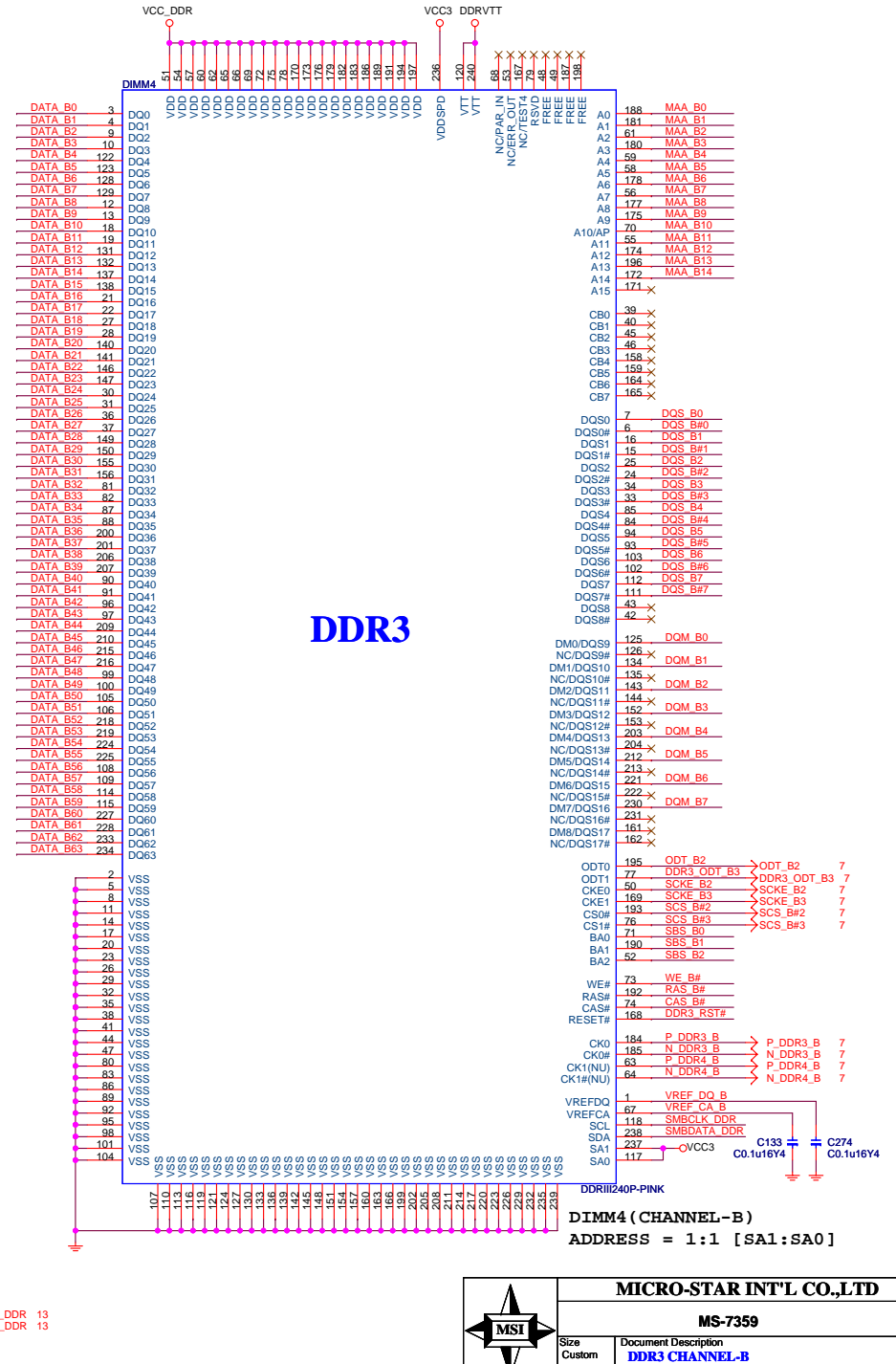
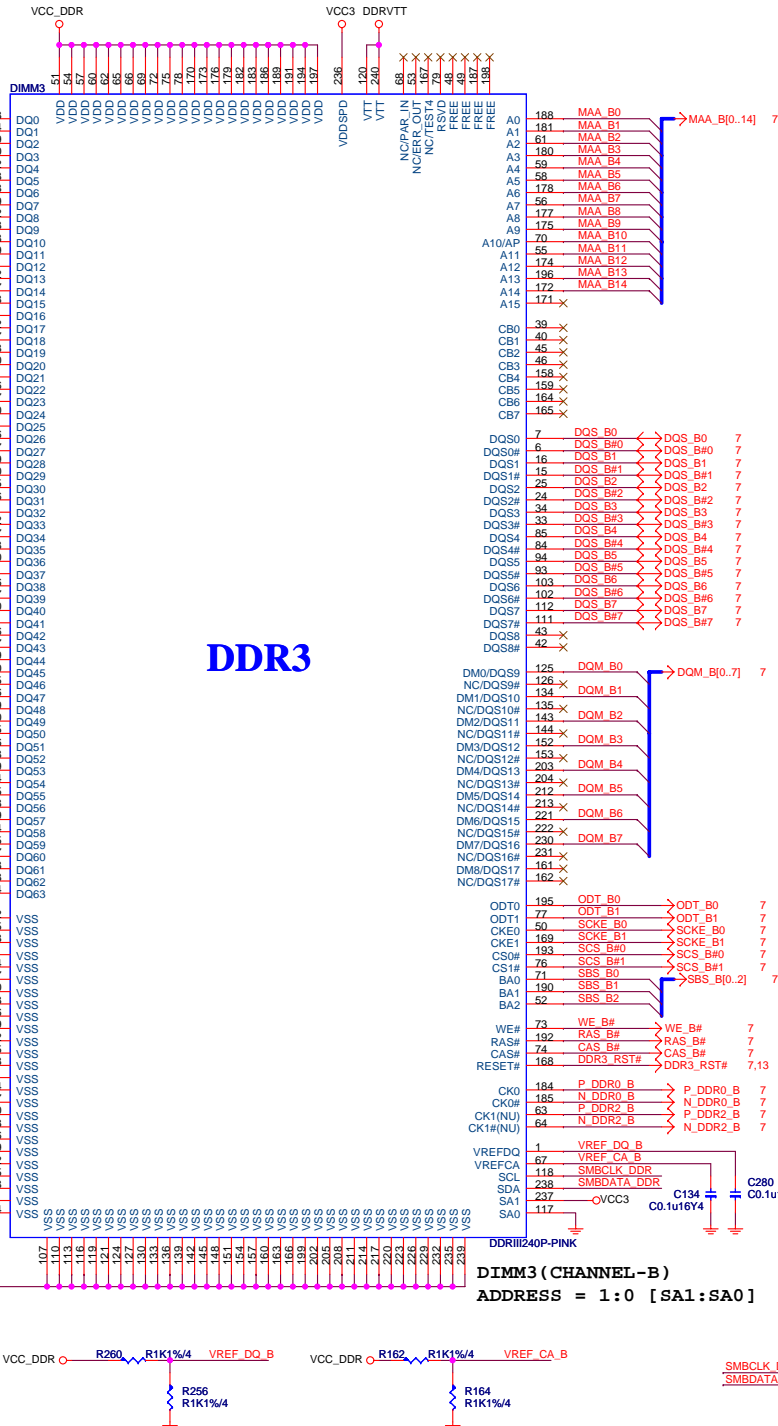
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## DDR3 CHANNEL-A



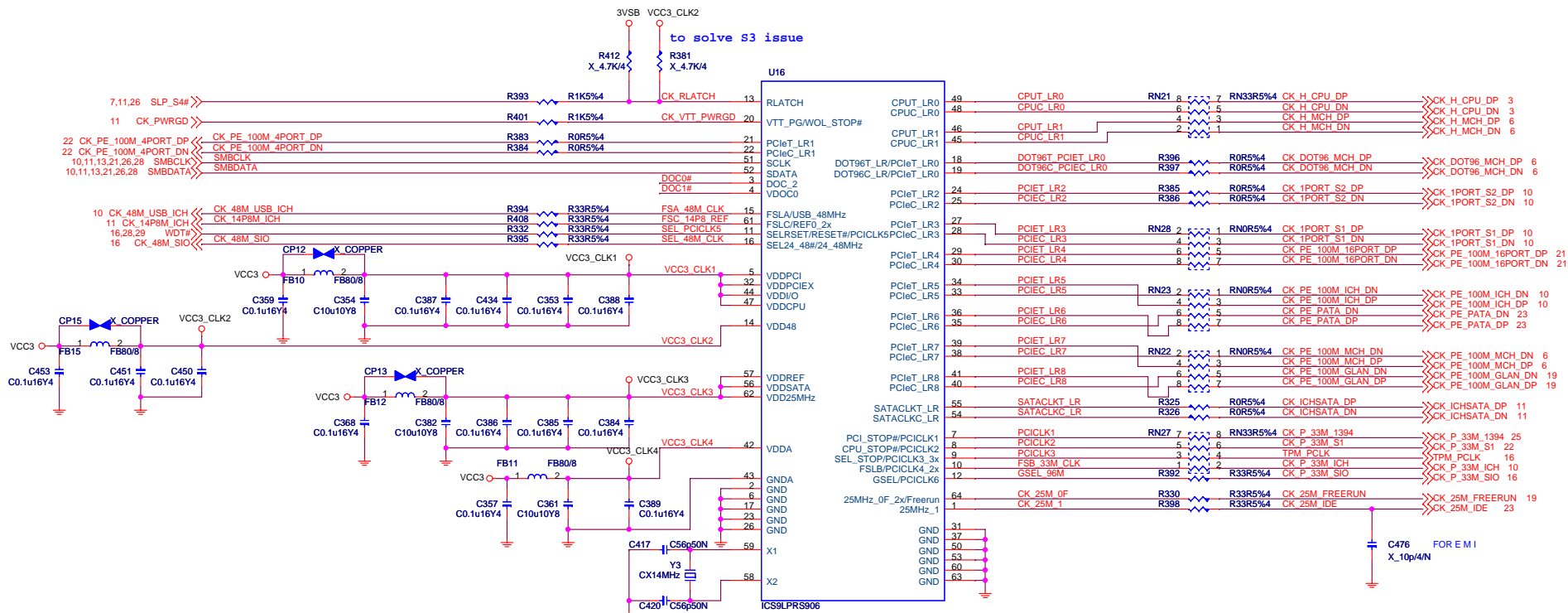


# DDR3 CHANNEL-B

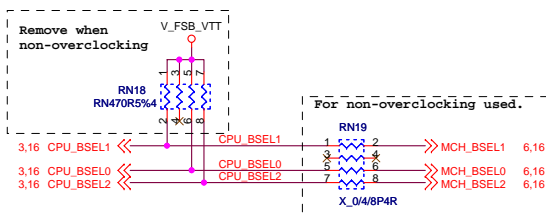


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Custom	DDR3 CHANNEL-B	0B
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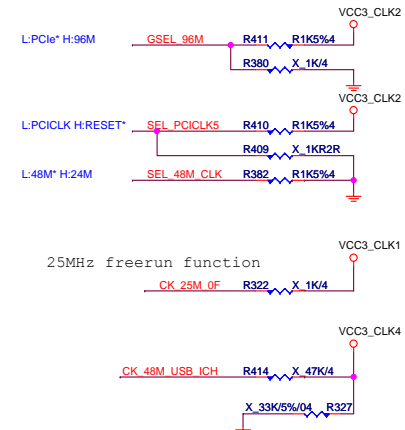
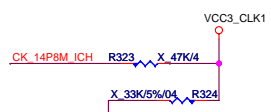
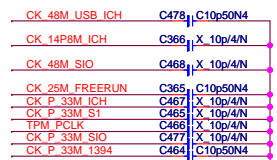
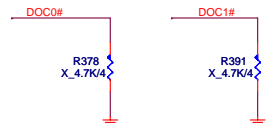




CPU\_BSEL0 R413 R1K5%4 FSA 48M CLK  
CPU\_BSEL1 R379 R1K5%4 FSB 33M CLK  
CPU\_BSEL2 R331 R1K5%4 FSC 14P8 REF

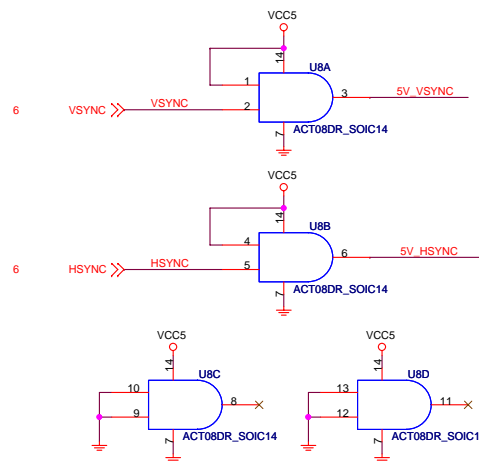
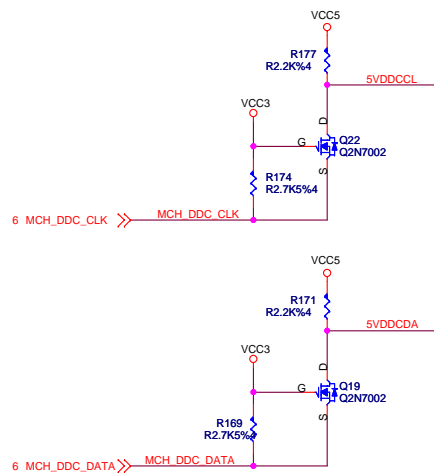
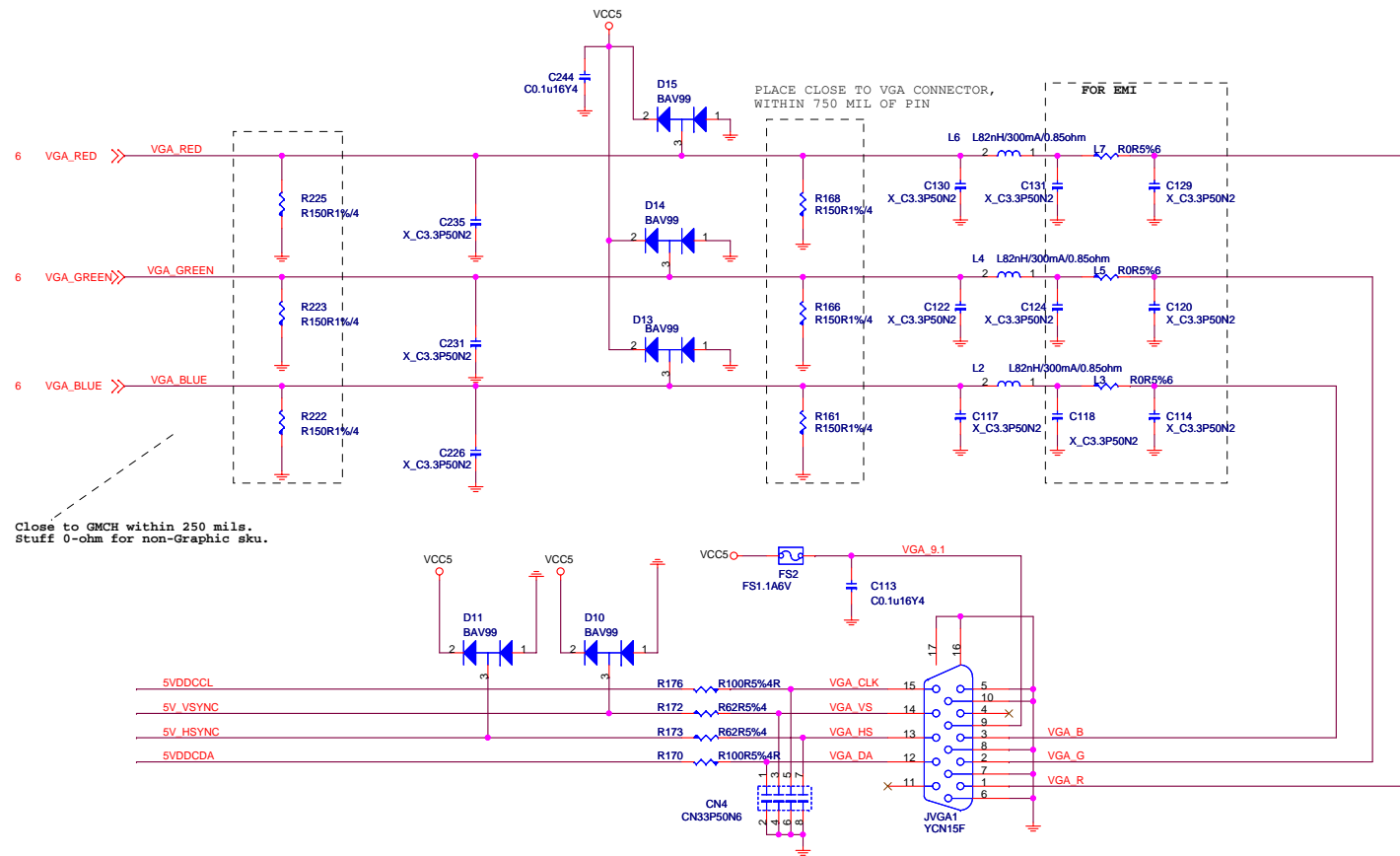


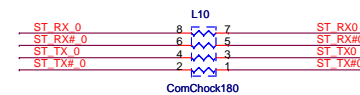
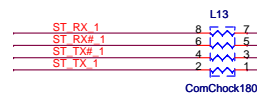
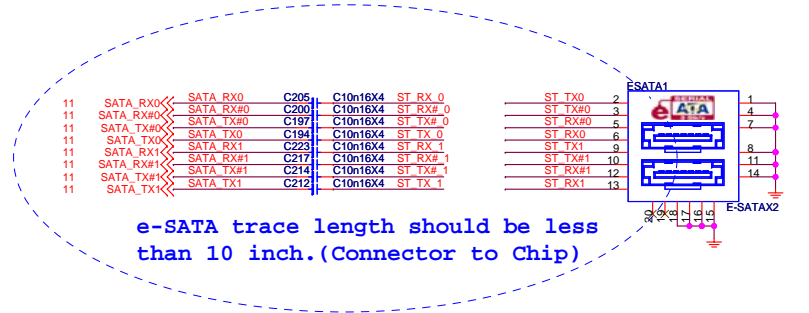
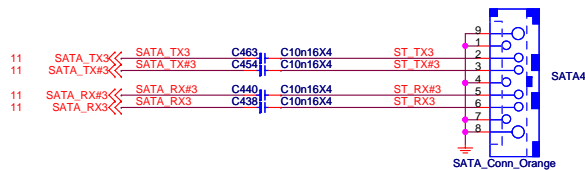
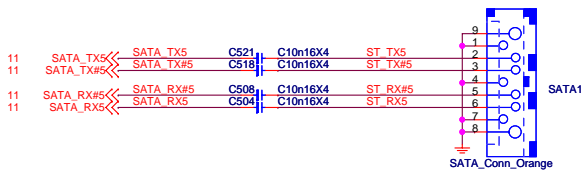
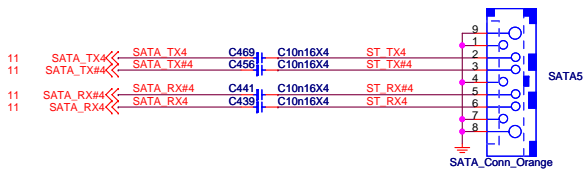
BSEL	TABLE
2 1 0	FSB FREQUENCY
0 0 0	266 MHz (1066)
0 1 0	200 MHz (800)
1 0 0	333 MHz (1333)



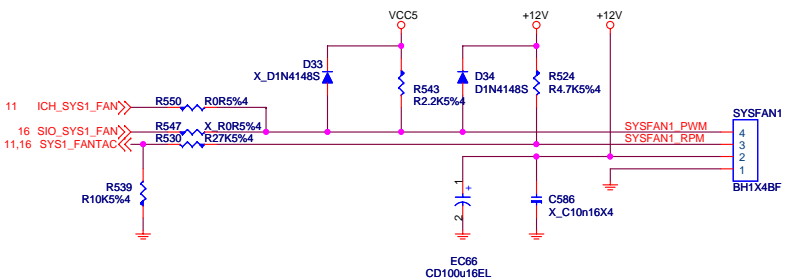
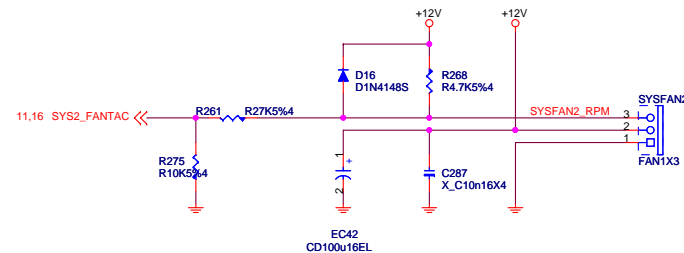
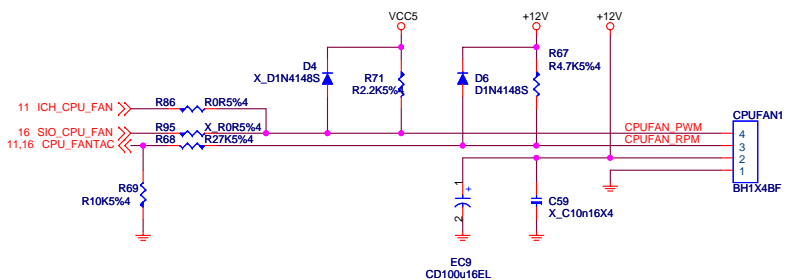


# Video Connector

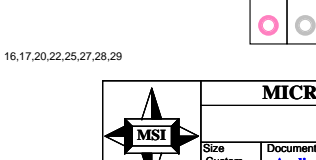
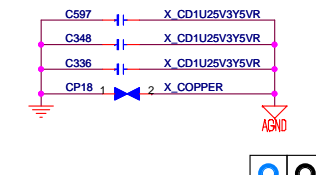
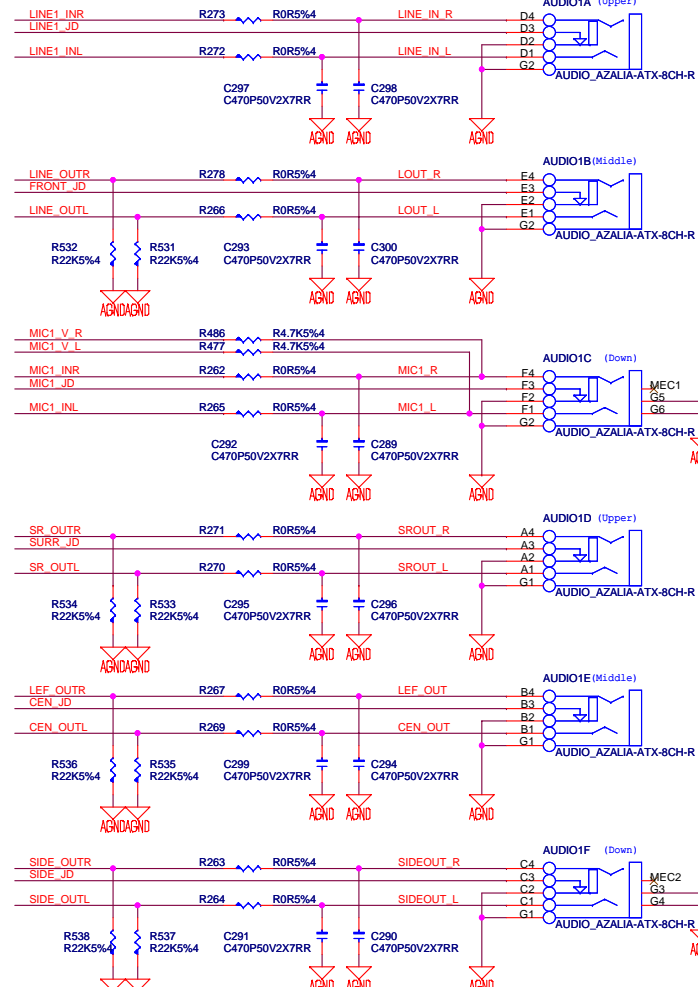
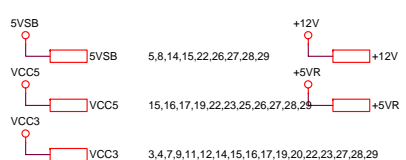
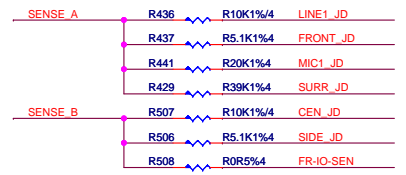
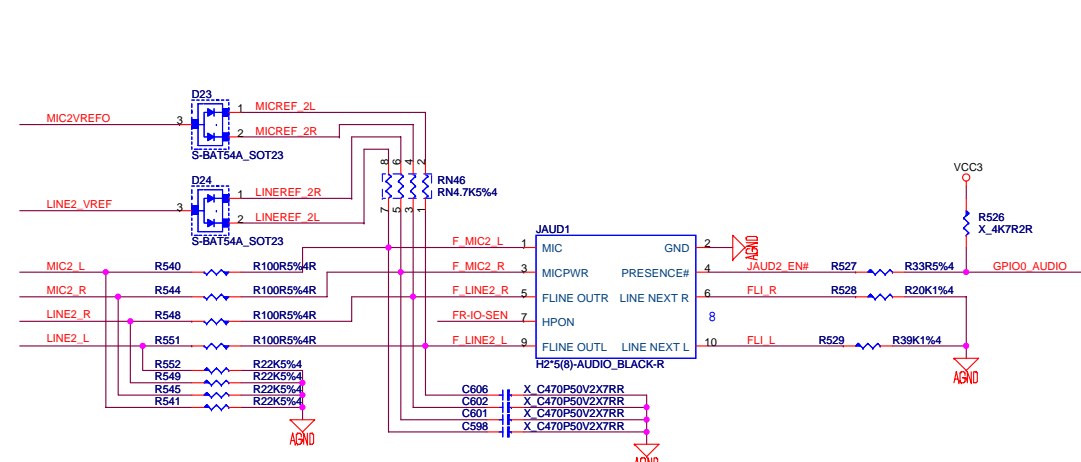
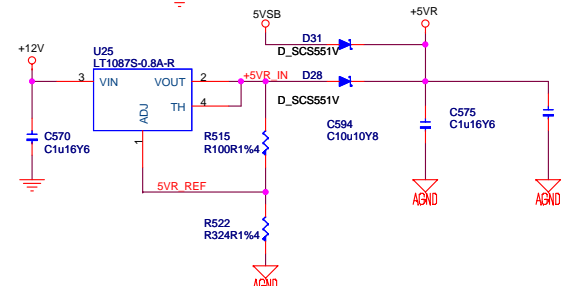
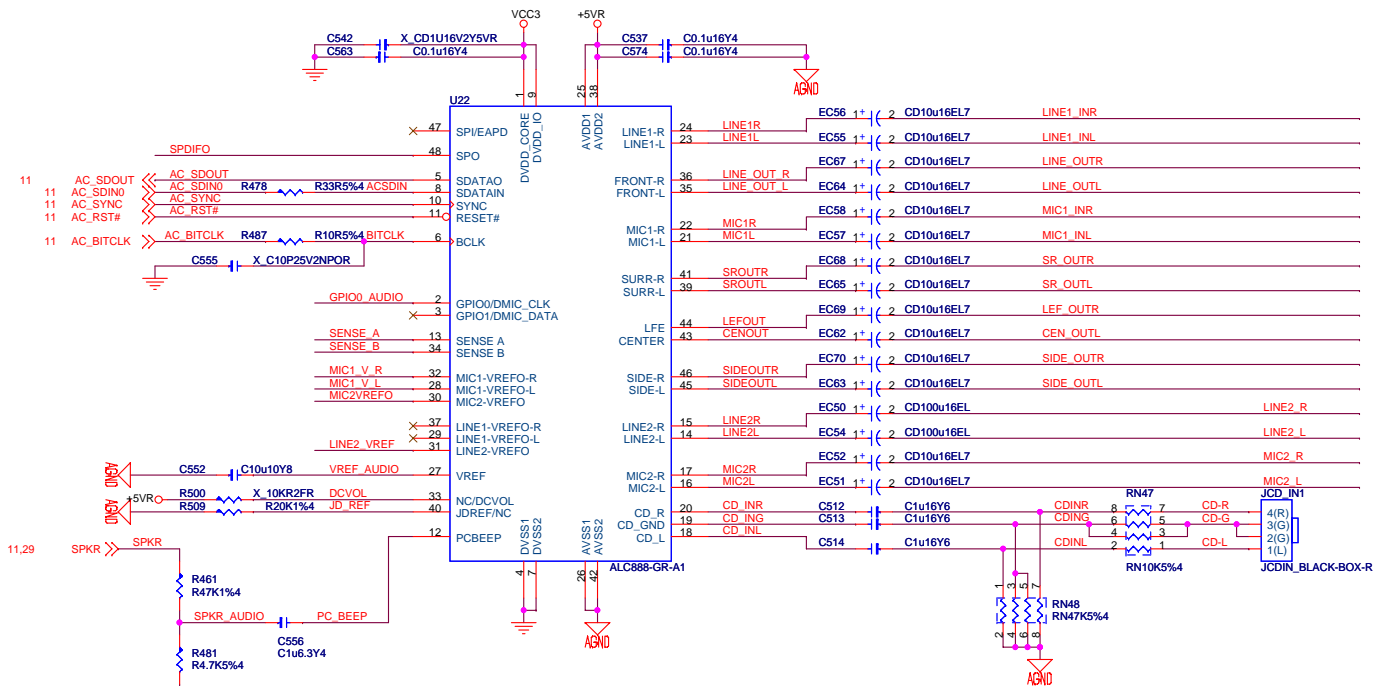





## FAN-COUNTROL CIRCUIT





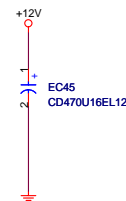
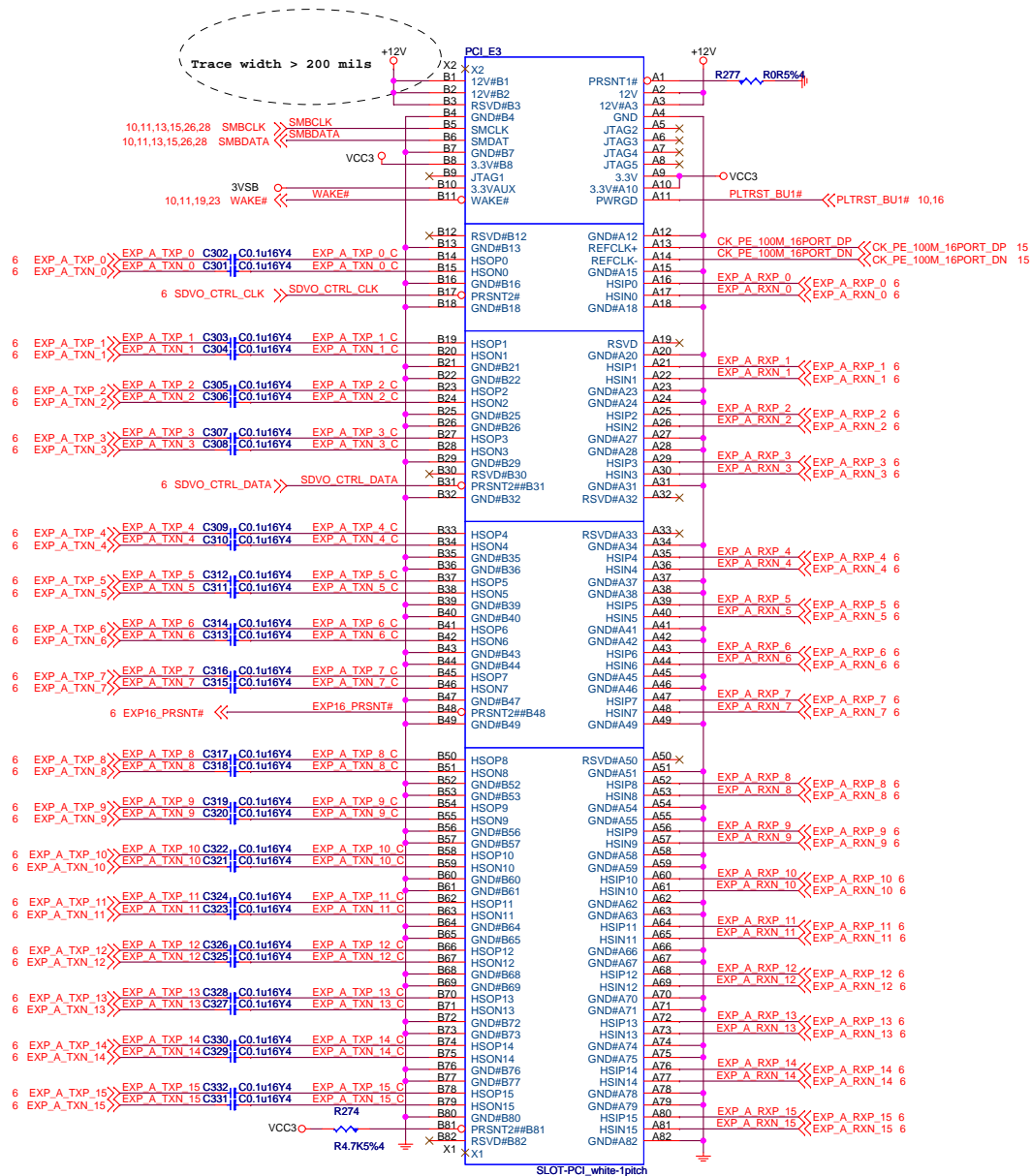




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PCI\_Express X16 slot



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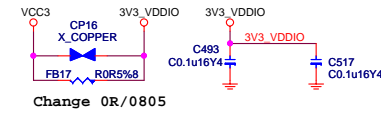
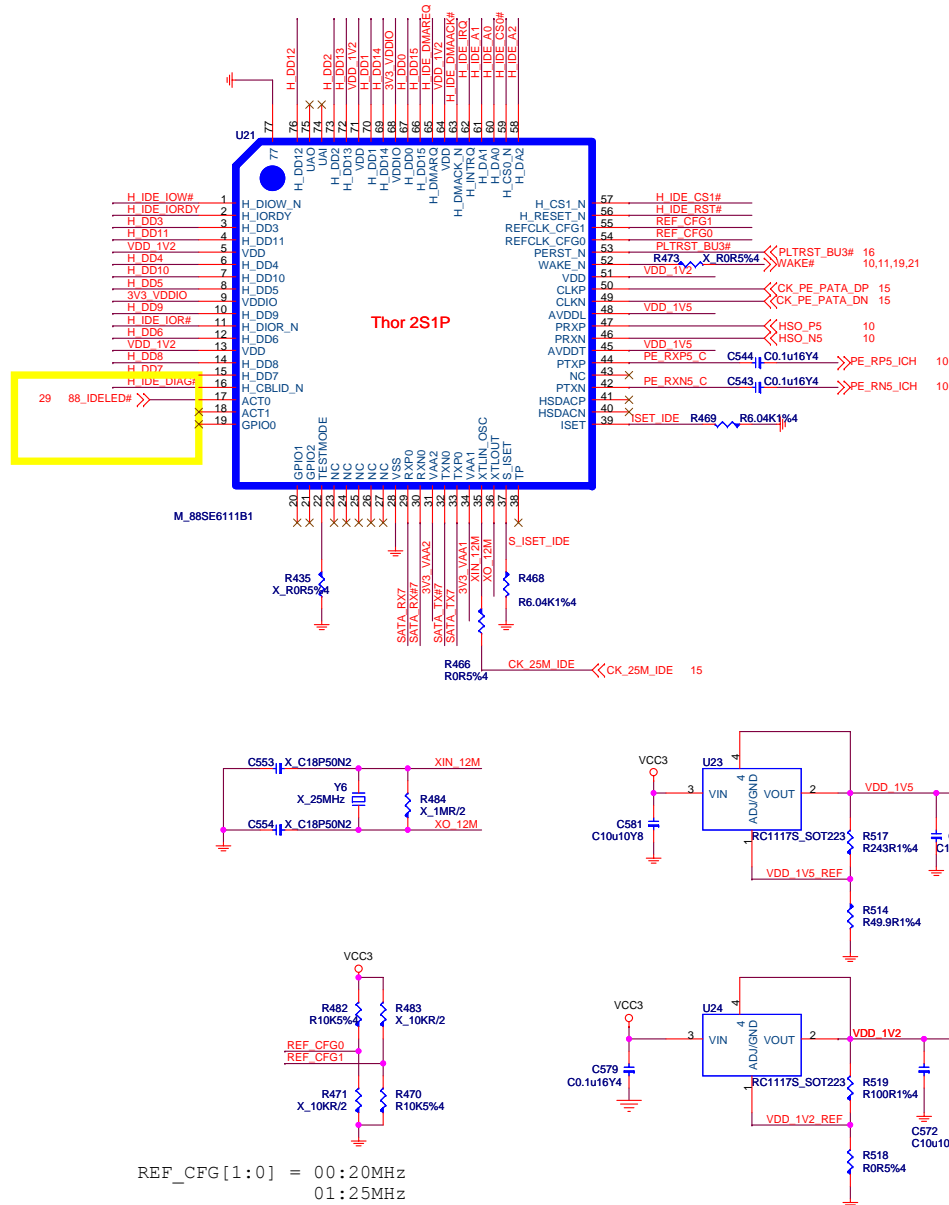
Size Custom	Document Description <b>PCIe x16 &amp; x4 Slot</b>	Rev 0B
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10,25 C\_BE#[3..0] << C\_BE#[3..0]



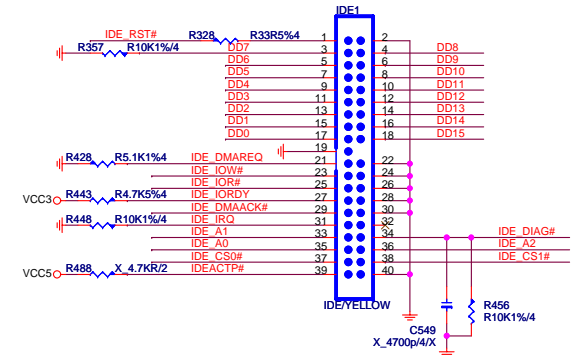
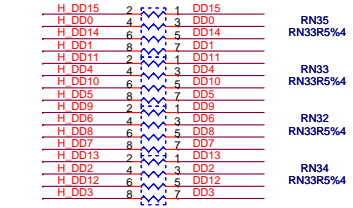
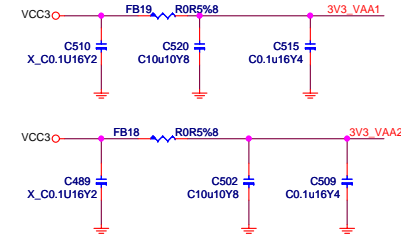
Size Custom	Document Description <b>PCI Slot 1 &amp; 2</b>	Rev 0B
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## Hi-Speed PCIE to SATA/PATA Bridge



Change 0R/0805

L02-8008074-J07 FOR BEAD



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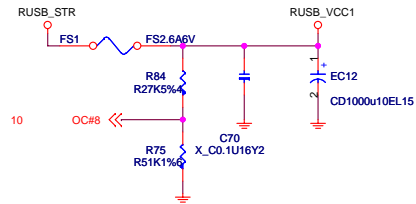
MS-7359

Size Custom	Document Description <b>Marvell 88SE6111 PCIE to PATA/SATA</b>	Rev 0B
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## Rear USB Connector

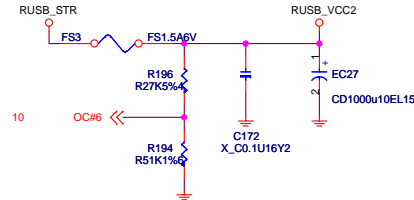
### USB POWER FOR PORT 8,9,10,11

NEAR CONNECTOR

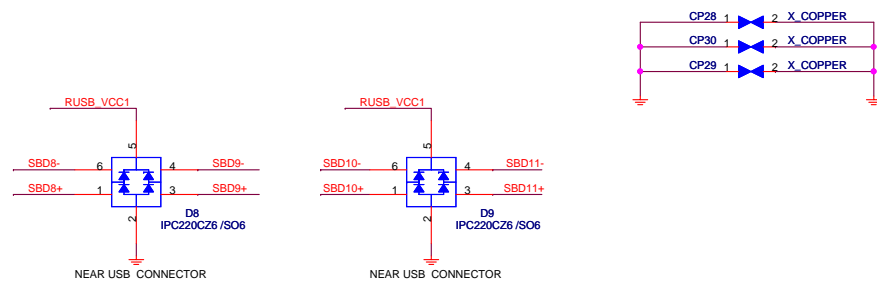
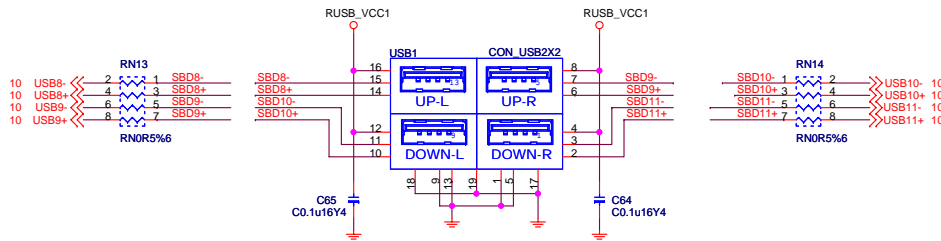


### USB POWER FOR PORT 6,7

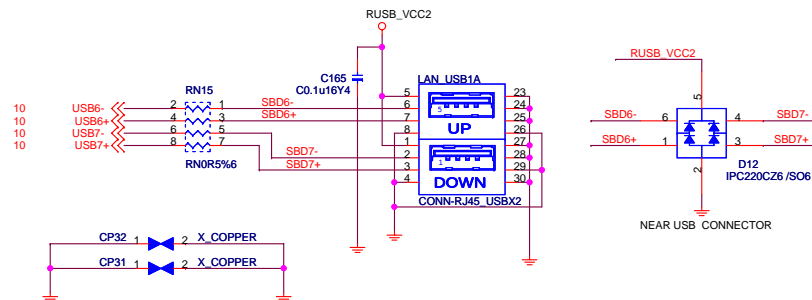
NEAR CONNECTOR



### REAR USB PORT 8-11 (2x2)



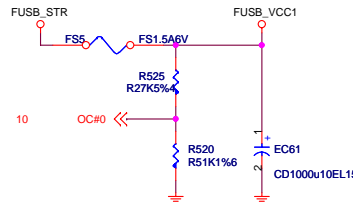
### REAR USB PORT 6,7 (With LAN)



## Front USB Connector

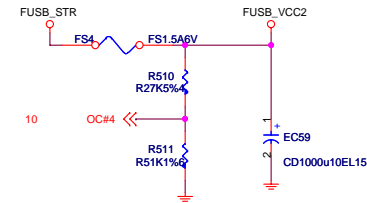
### USB POWER FOR PORT 0,1

NEAR CONNECTOR



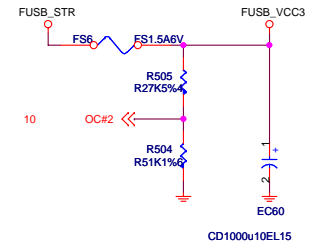
### USB POWER FOR PORT 4,5

NEAR CONNECTOR

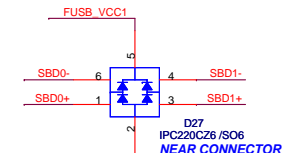
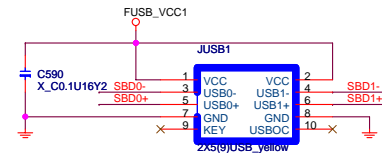


### USB POWER FOR PORT 2,3

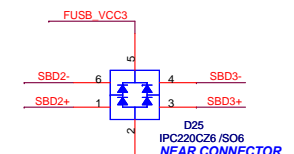
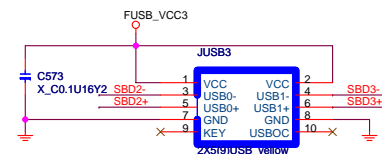
NEAR CONNECTOR



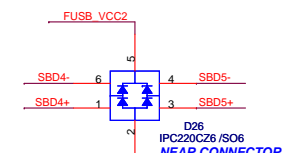
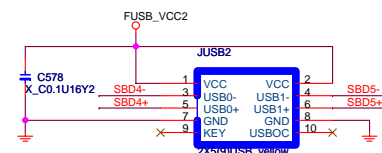
### FRONT USB PORT 0,1



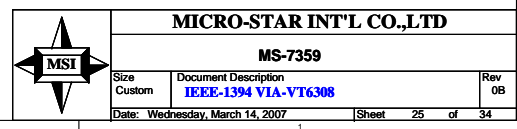
### FRONT USB PORT 2,3



### FRONT USB PORT 4,5

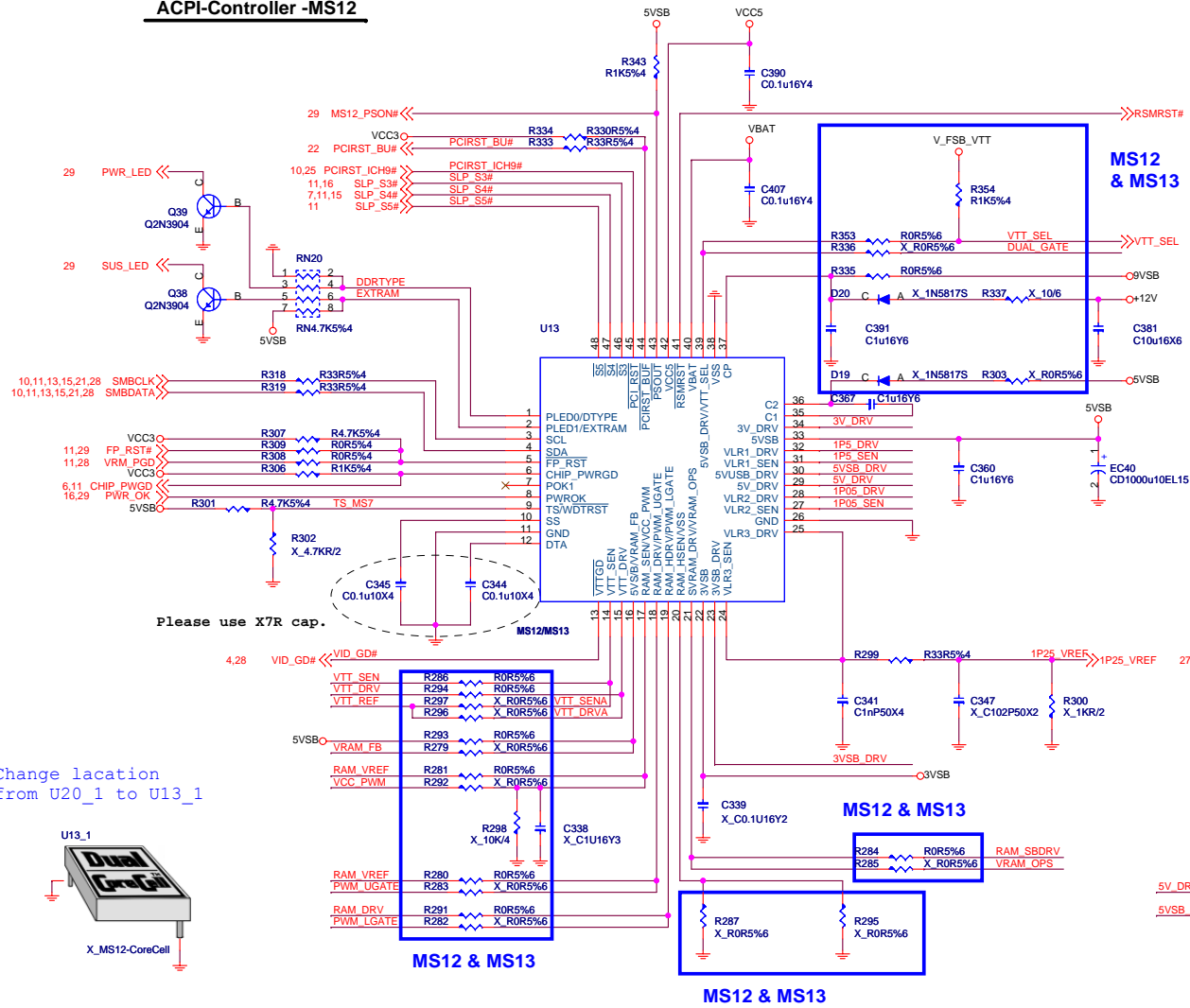


10,22     $AD[31..0] \gg AD[31..0]$

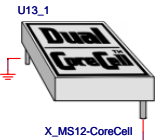


ADD P/N for MS12 while the P/N is available

### ACPI-Controller -MS12



Change location from U20\_1 to U13\_1

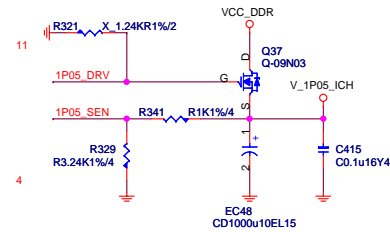


PIN	MS12		MS13	
	Attach	Delete	Attach	Delete
14	R286	R297	R297	R286
15	R294	R296	R296	R294
16	R293	R279	R279	R293
17	R281	C338, R292, R298	C338, R292, R298	R281
18	R280	R283	R283	R280
19	R291	R282	R282	R291
20	N/A	R287	R287	N/A
21	R284	R285	R285	R284
36	N/A	D19, R303	D19, R303	N/A
37	R335	D20, R337	D20, R337	R335

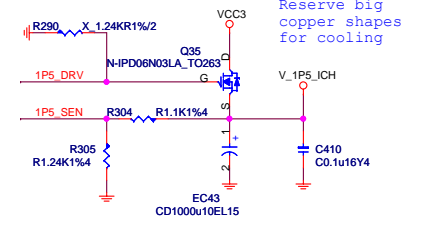
PIN	PIN INTRODUCTION
1	PLED0/DDRTYPE DDRTYPE 0: DDR3(1.5V) 1: DDR2(1.8V)
2	PLED1/EXTRAM EXTRAM 0: LINEAR MODE 1: PWM MODE
9	TS_MS7 TS_MS7: 0: MS12 Timing 1: MS7 Timing
39	VTT_SEL VTT_SEL (Pin-39) 0: VTT=1.1V 1: VTT=1.2V

VTT\_DRV → VTT\_DRV 27  
VTT\_SEN → VTT\_SEN 27  
PWM\_UGATE → PWM\_UGATE 27  
VRAM\_OPS → VRAM\_OPS 27  
PWM\_LGATE → PWM\_LGATE 27  
RAM\_VREF → RAM\_VREF 27  
VRAM\_FB → VRAM\_FB 27

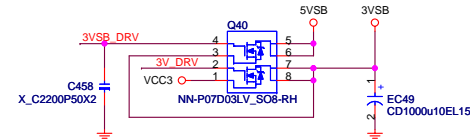
### V\_1P05\_ICH...1.43A



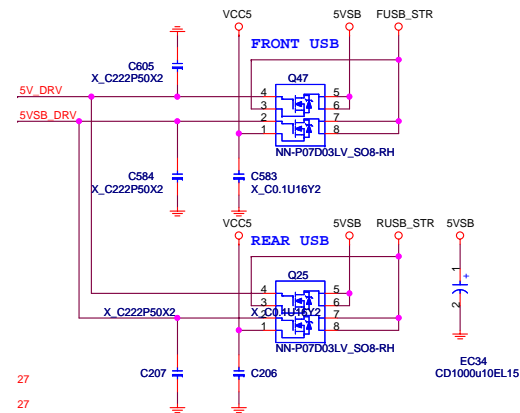
### V\_1P5\_ICH...2.75A



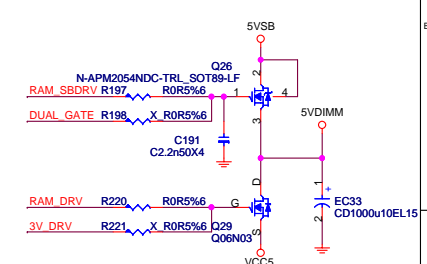
### 3VSB Power



### 5V-USB Power 3A/Per-side



### 5VDIMM



MS12	MS13
R197, R220 X_R198, X_R221	X_R197, X_R220 R198, R221



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Size	Document Description	Rev
Custom	MS12 & MS13 COLAY & DDR POWER	0B
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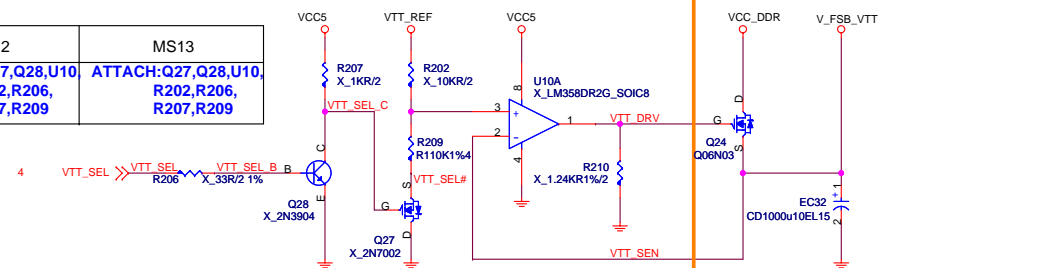


[illegible]

26	PWM_UGATE	>> PWM_UGATE
26	VRAM_OPS	>> VRAM_OPS
26	PWM_LGATE	>> PWM_LGATE
26	RAM_VREF	>> RAM_VREF
26	VRAM_FB	>> VRAM_FB
26	VTT_DRV	>> VTT_DRV
26	VTT_SEN	>> VTT_SEN

FOR MS13 VTT\_REF

MS12	MS13
DELETE: Q27,Q28,U10, R202,R206, R207,R209	ATTACH:Q27,Q28,U10, R202,R206, R207,R209



MS12	MS13
ATTACH:D7,U5,C75,C83,C91,C97, R113,R118,R123,R124,R128, R136,R148,R143,R154	ATTACH:R121,R138,R152,R153
DELETE: R121,R138,R152,R153	DELETE: D7,U5,C75,C83,C91,C97, R113,R118,R123,R124,R128, R136,R148,R143,R154



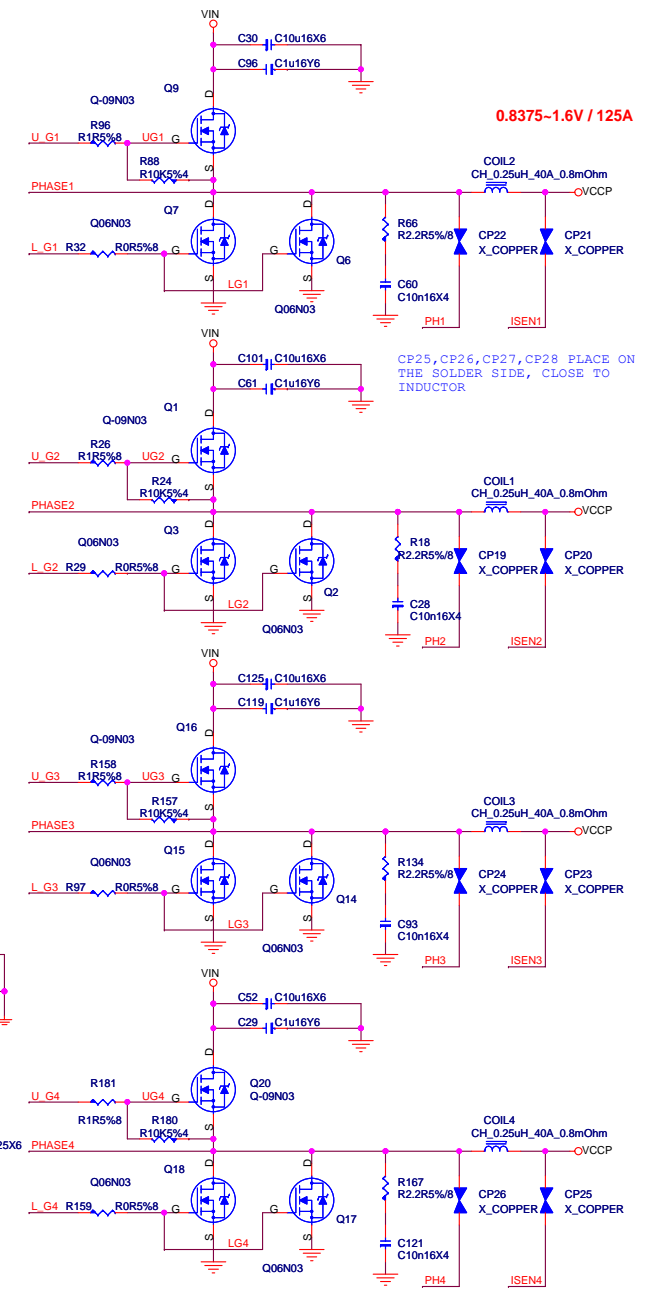
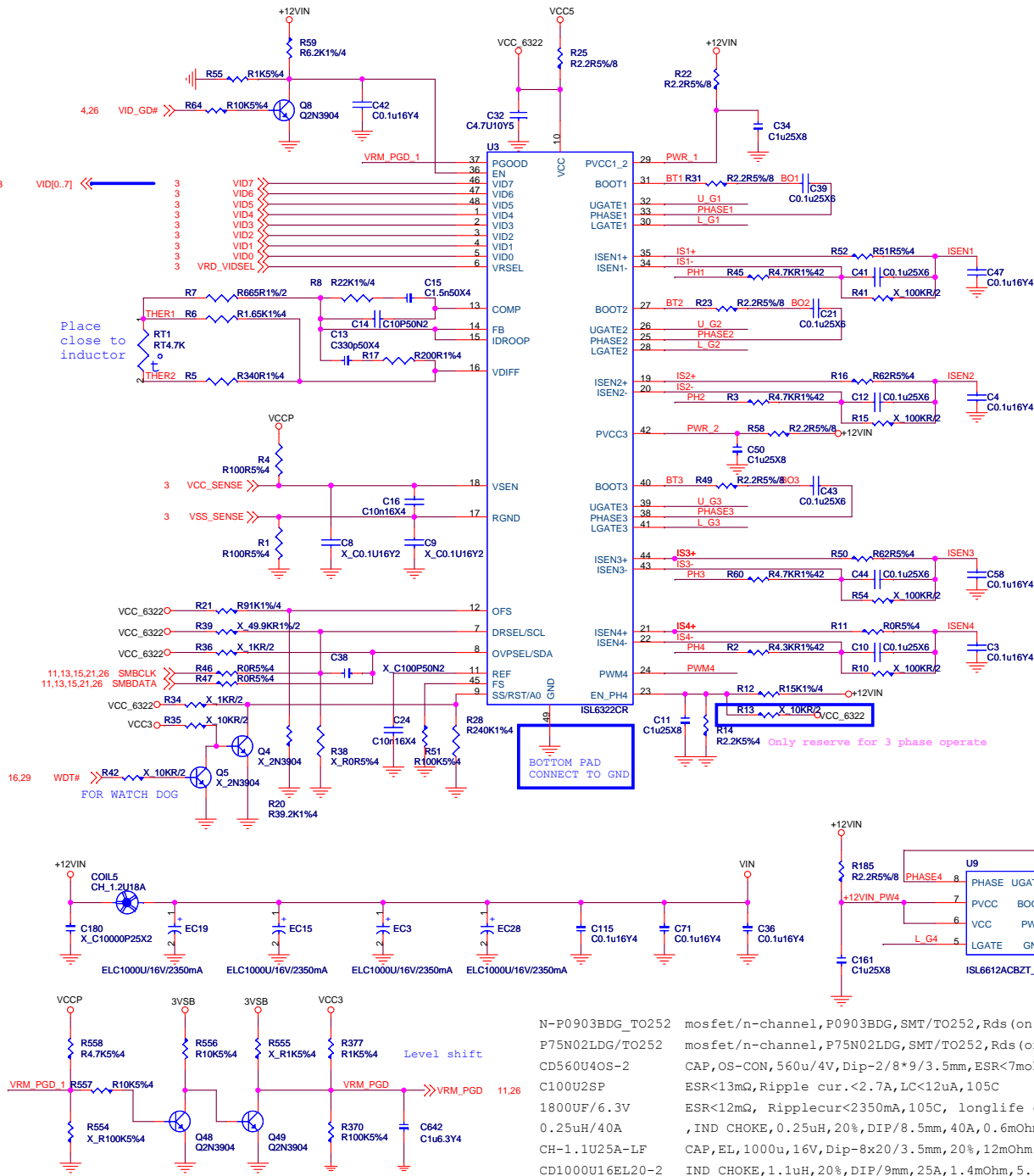
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**MS-7359**

Size	Document Description
Custom	<b>GMCH CORE POWER (1.25V_21.3A)</b>

Rev  
0B

## Voltage Regular Module



N-P0903BDG\_TO252  
P75N02LDG/TO252  
CD560U4OS-2  
C100U2SP  
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= mosfet/n-channel,P75N02LDG,SMT/TO252,Rds(on)=7mΩ(@10V,30A),Vgs(on)=1~3V,Id=75A,Ciss= CAP,OS-CON,560u/4V,Dip-2/8\*9/3.5mm,ESR<7mohm,Ripplecur=6100mA,Lc.<500uA,SPEC ser ESR<13mΩ,Ripple cur.<2.7A,LK<12uA,10SC

ESR<12mΩ,Ripplecur<2350mA,10SC, longlife change from 2000hrs to 3000hrs ,KZJ series ,IND CHOKE,0.25uH,20%,DIP/8.5mm,40A,0.6mOhm,,PEW,FERRITE,SQUARE,ROHS COMPLIANCE CAP,EL,1000u,16V,Dip-8x20/3.5mm,20%,12mOhm,2350mA,10SC,3000hrs,ROHS COMPLIANCE IND CHOKE,1.1uH,20%,DIP/9mm,25A,1.4mOhm,5.5T,0.9mmx3,PEW,IRON,LEAD FREE



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Size Custom	Document Description <b>VRD11-ISL6322 4-phase</b>	Rev 0B
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