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# MS-7122/6287 (MAGA3) *Version 100*

Intel (R) Springdale (GMCH) + ICH5 Chipset  
Intel Prescott LGA775 Processor

## CPU:

**Intel LGA775 Prescott**

## System Chipset:

**Intel Springdale - GMCH (North Bridge)**  
**Intel ICH5 (South Bridge)**

## On Board Chipset:

**BIOS -- FWH EEPROM**  
**AC'97 Codec --RealTek ALC658**  
**LPC Super I/O -- SMSC 47M292**  
**LAN --REALTEK LAN 8110S/8100C**  
**CLOCK --ICS 952617**

## Main Memory:

**DDR \* 2 (Max 2GB)**

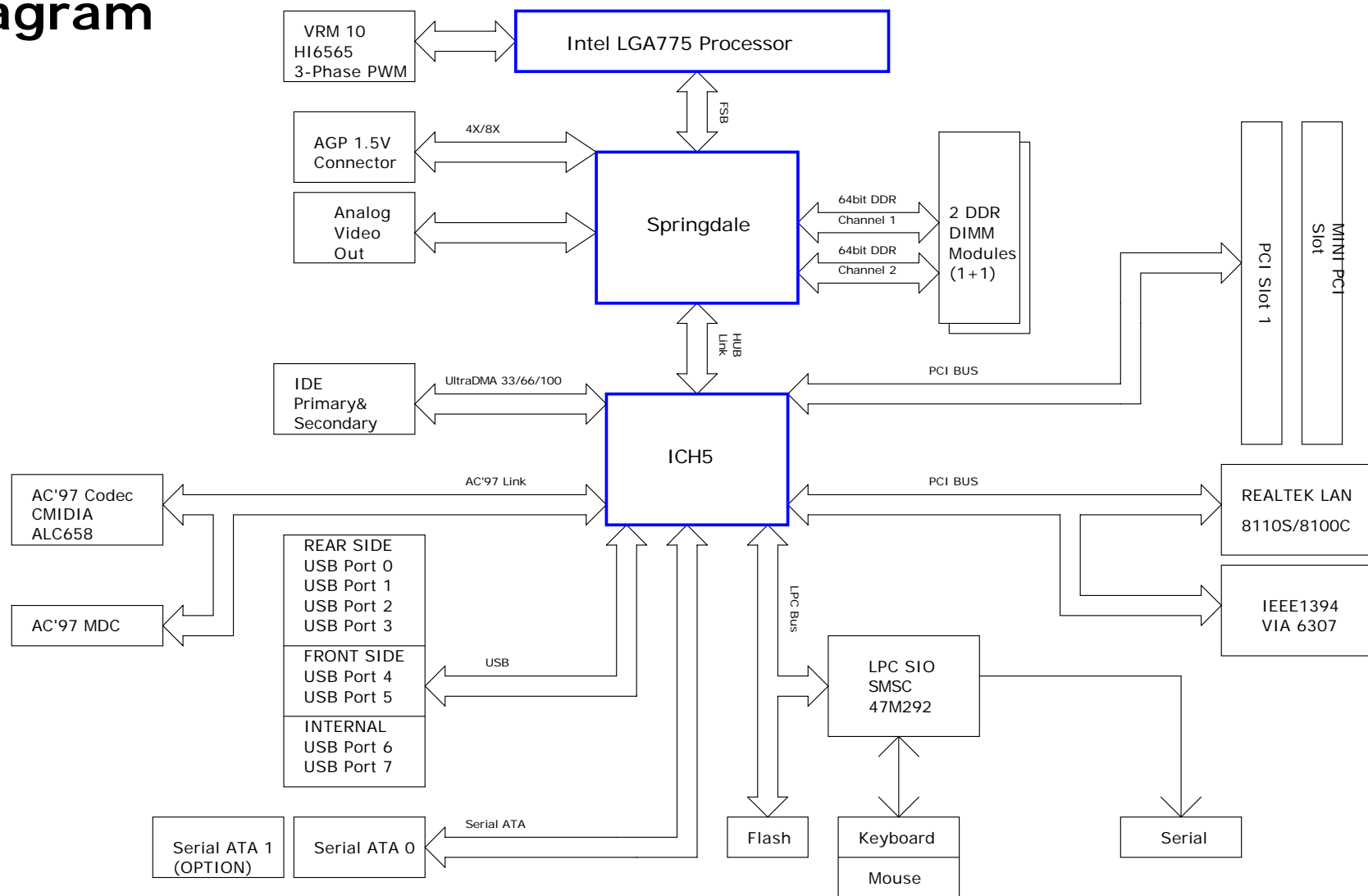
## Expansion Slots:

**PCI2.3 SLOT \*1&MINI CPI\*1**

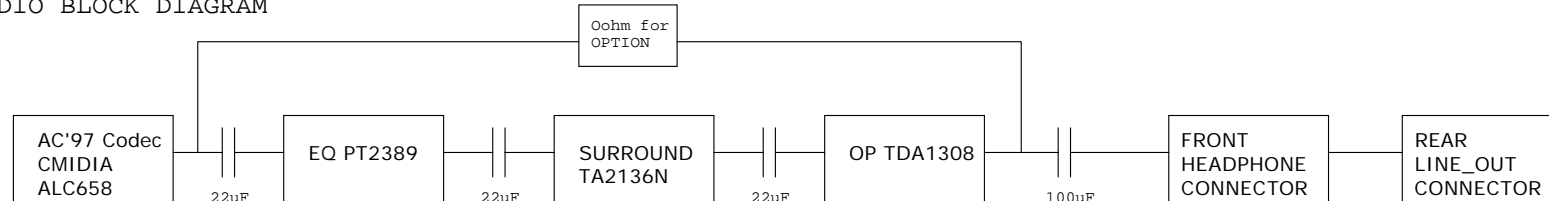
## PWM:

**Controller: Intersil 6565**

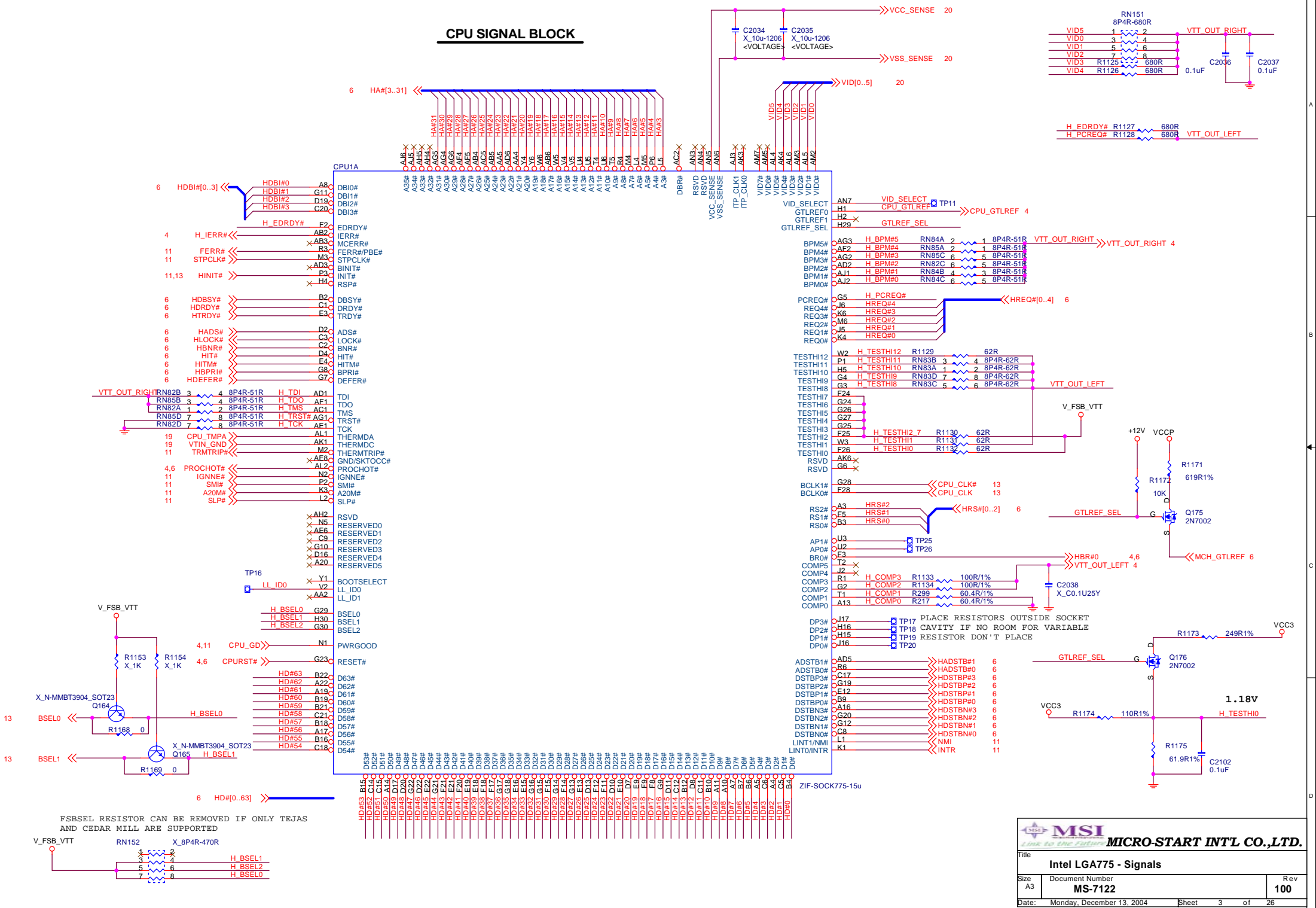
## Block Diagram



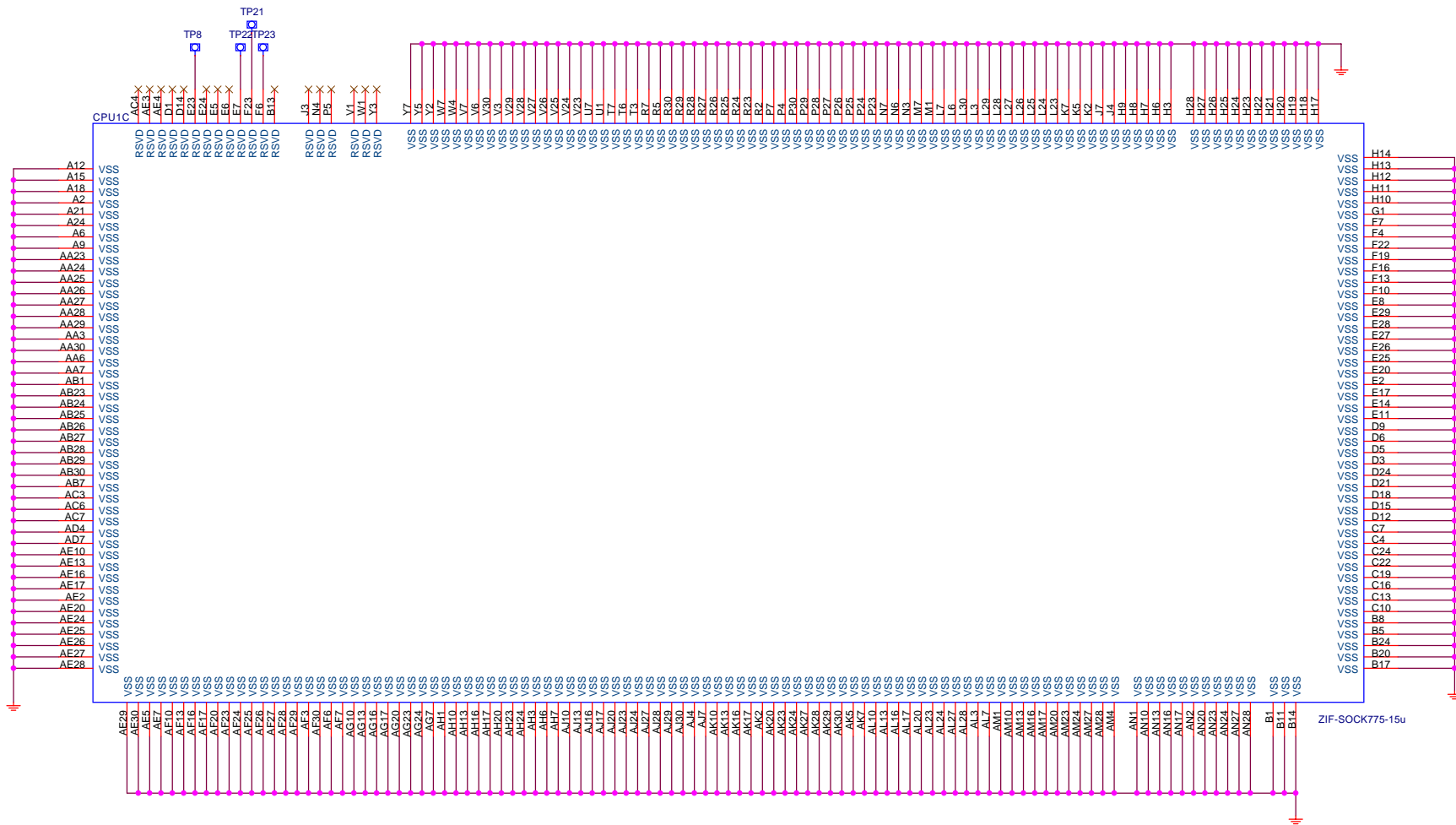
## AUDIO BLOCK DIAGRAM

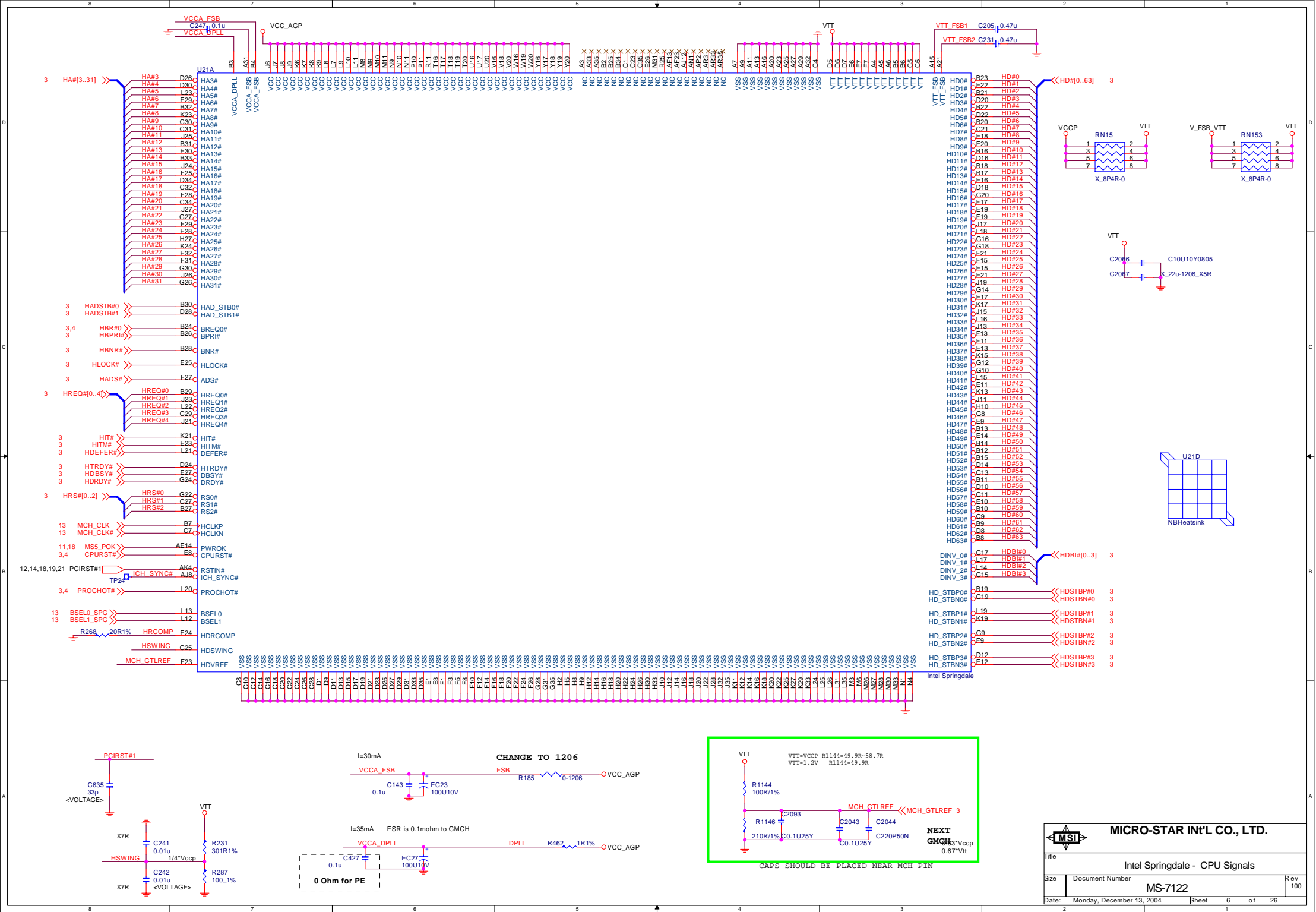


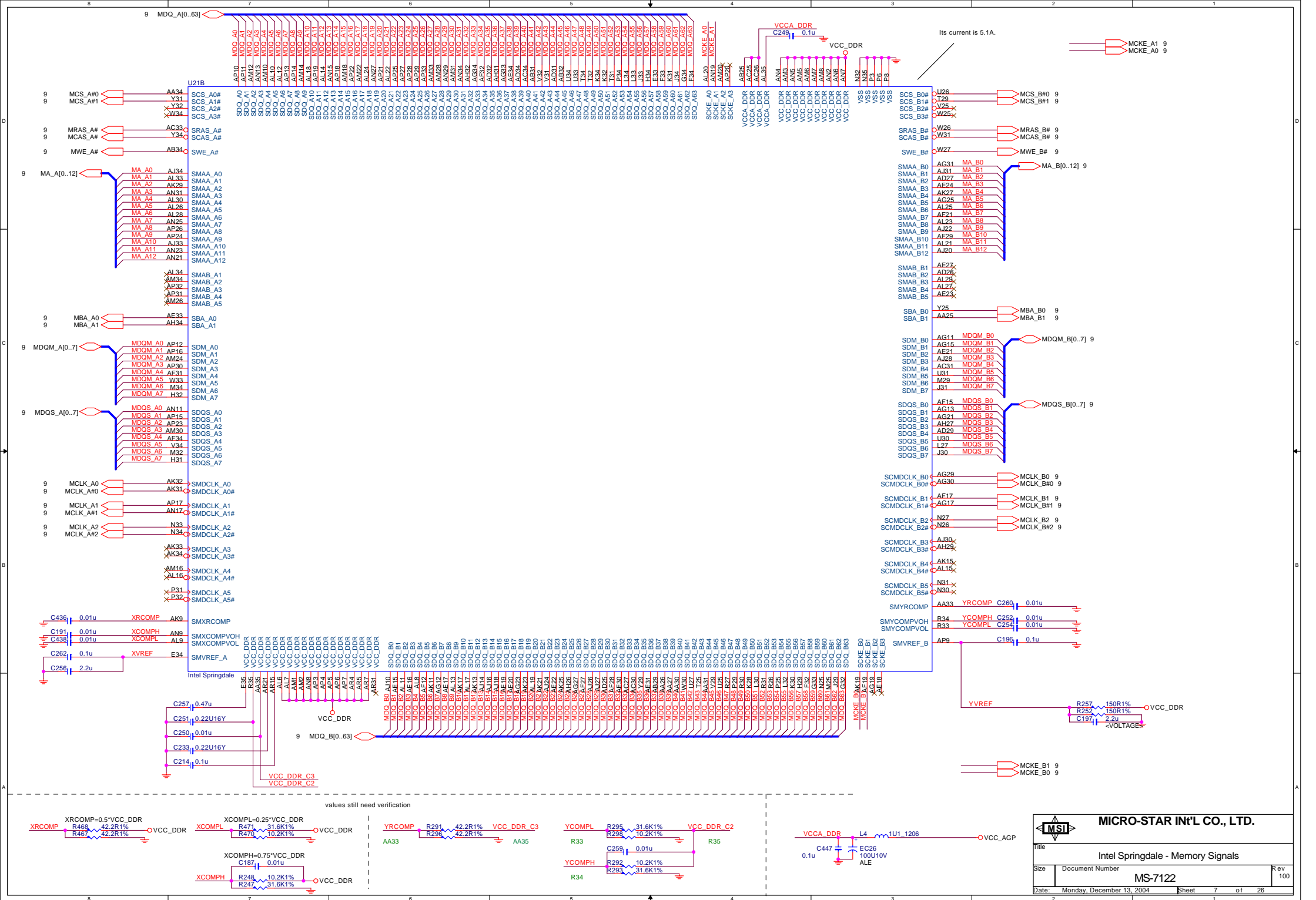
# CPU SIGNAL BLOCK

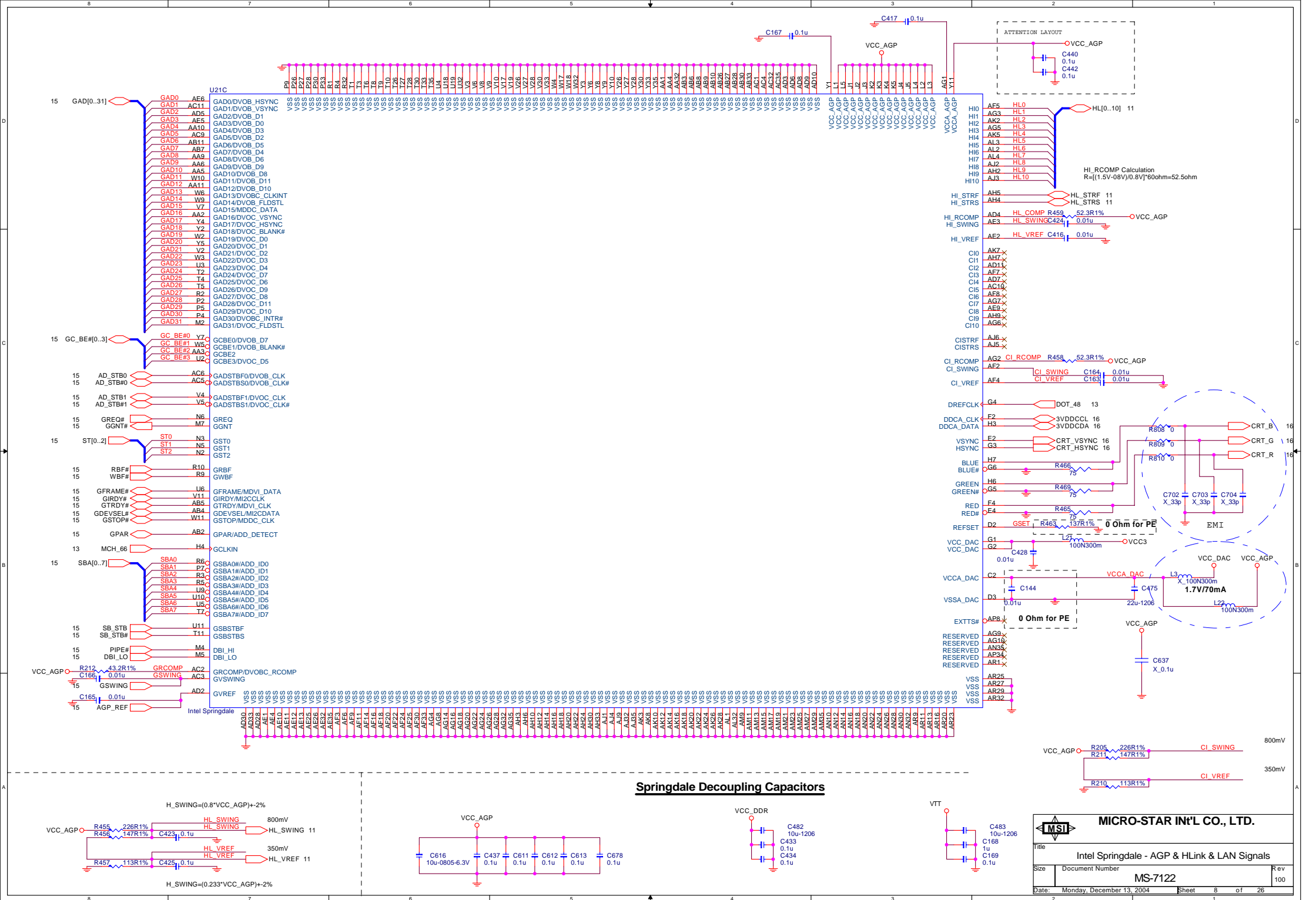








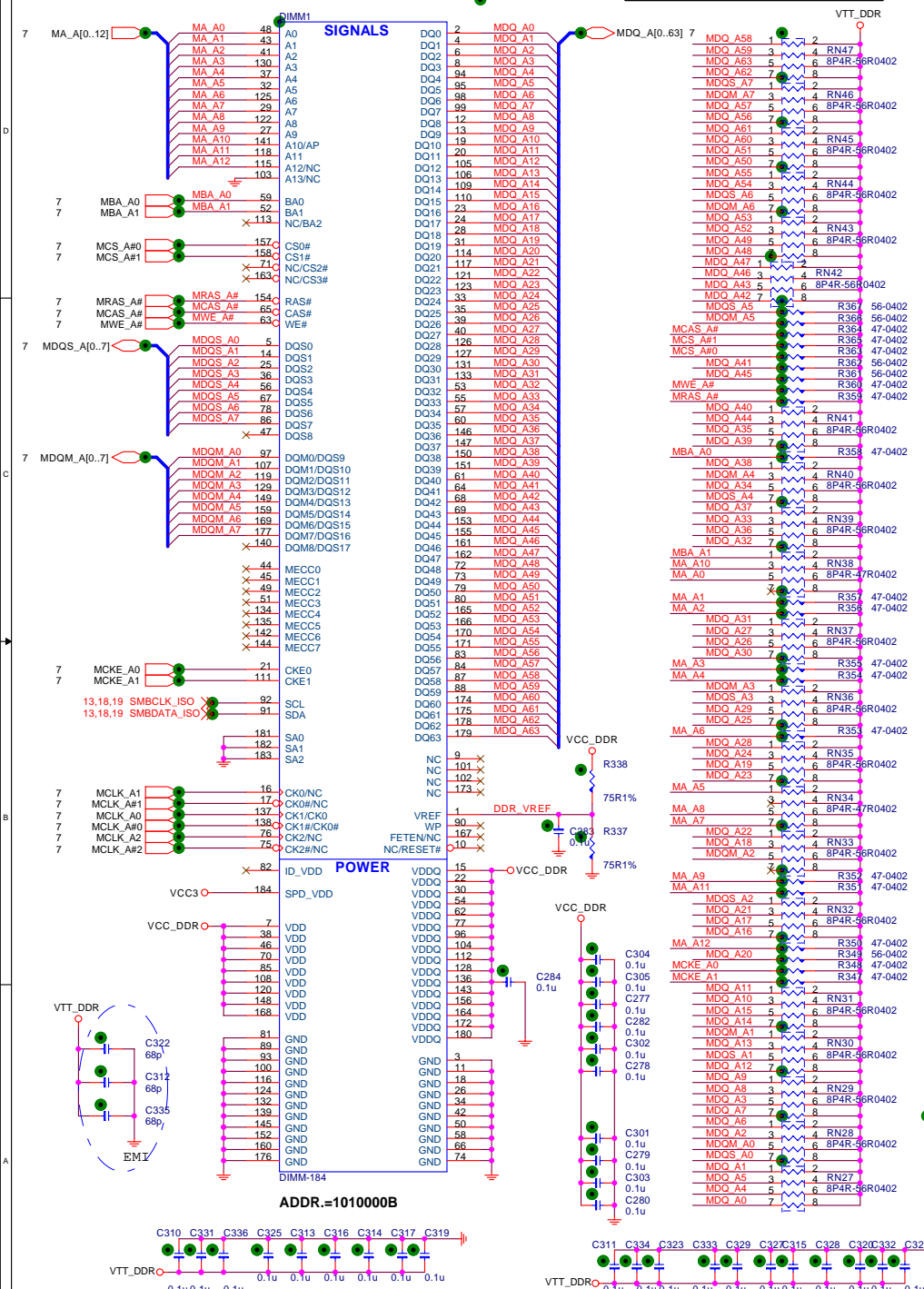






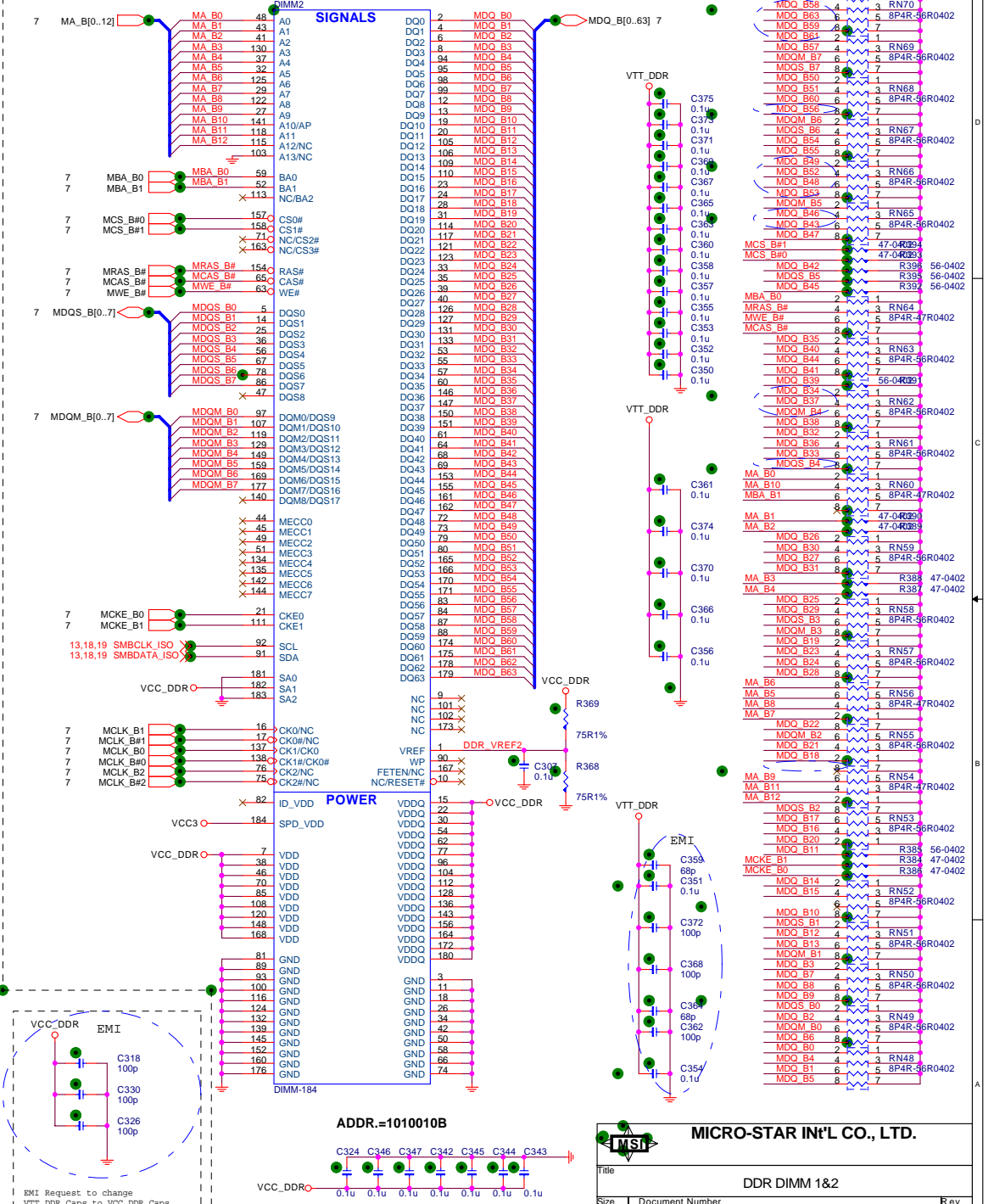
## DDR DIMM1 CHA


## DDR Terminational Resisitors

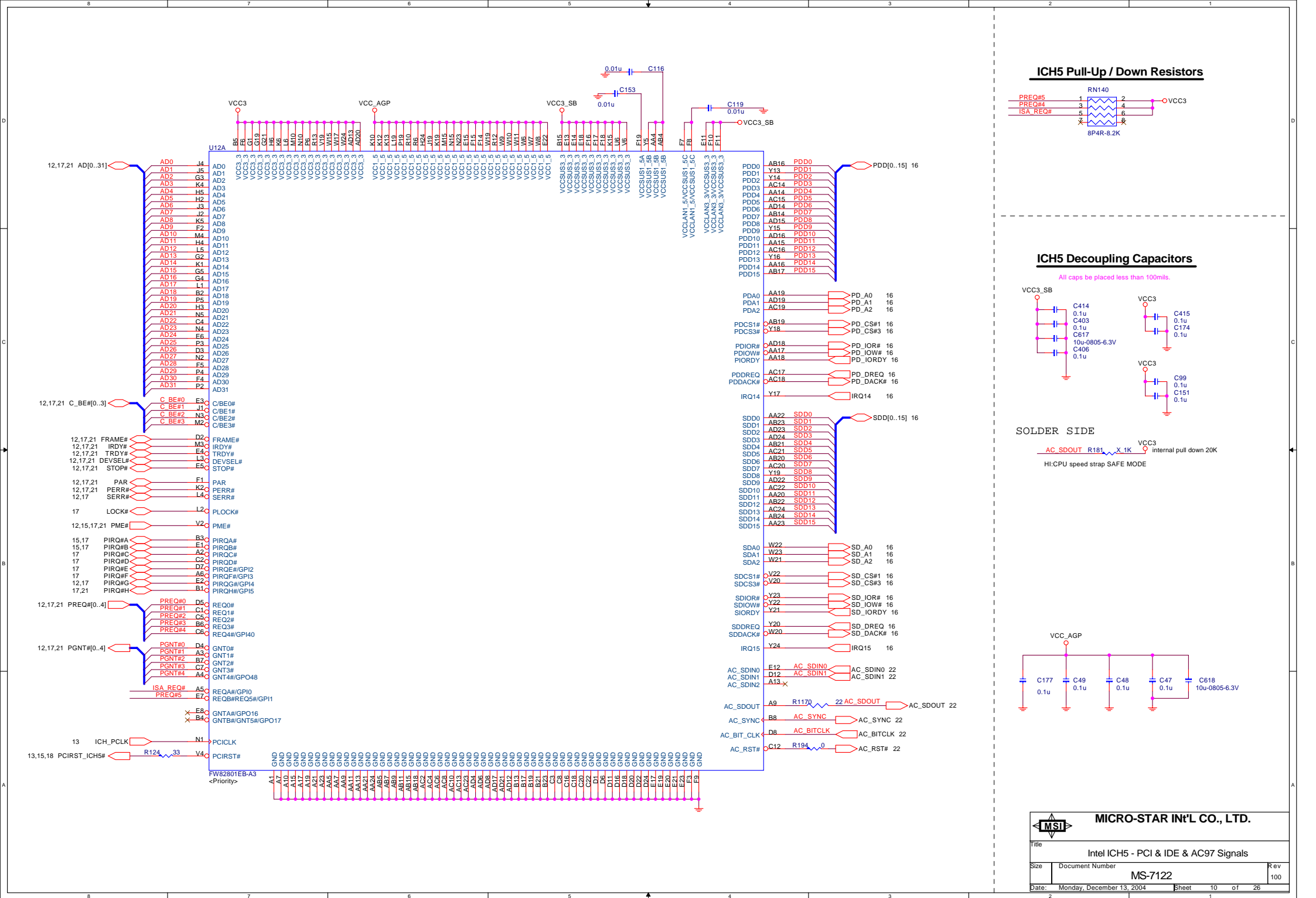


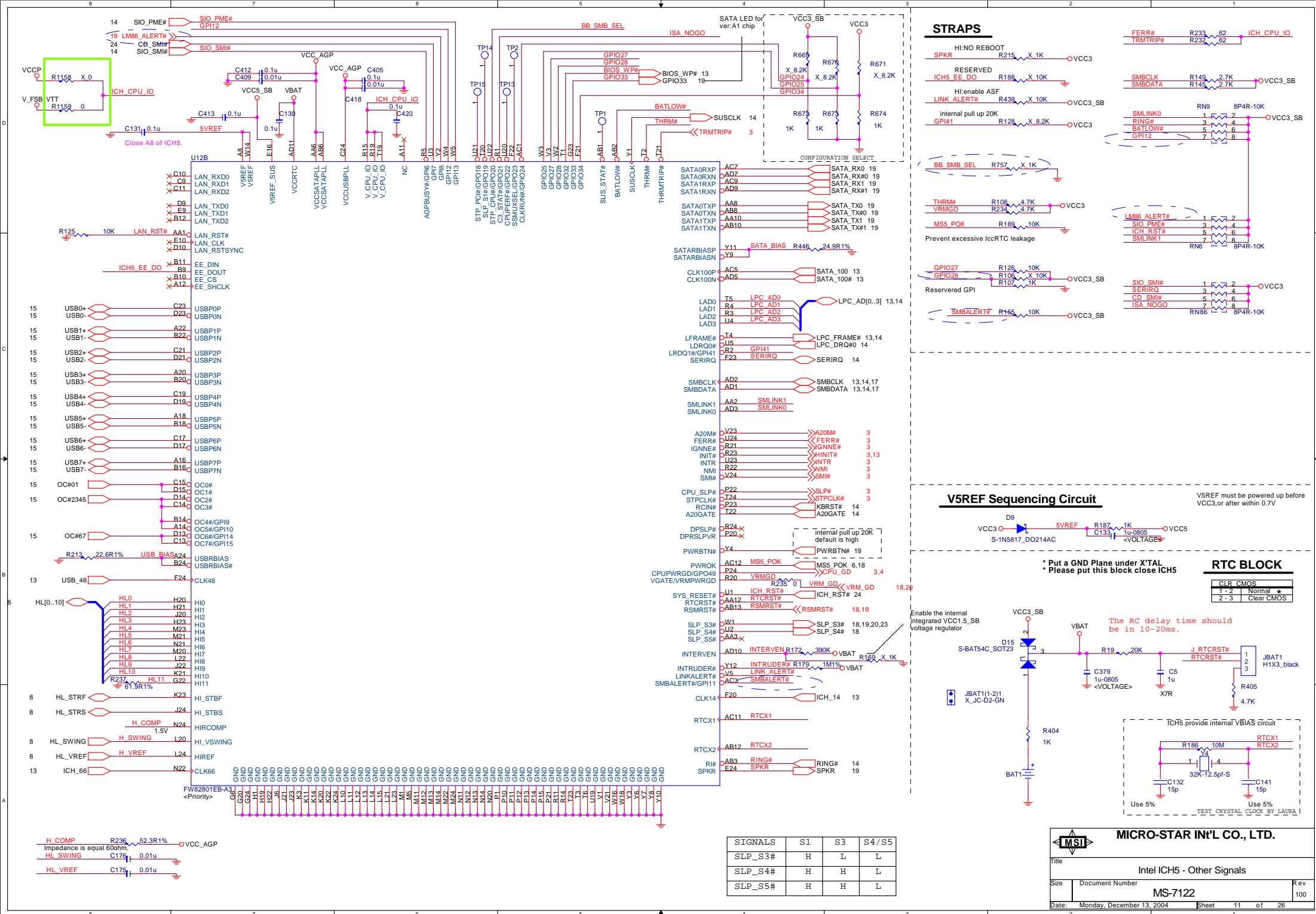
## DDR DIMM2 CHB

## DDR Terminational Resisitors

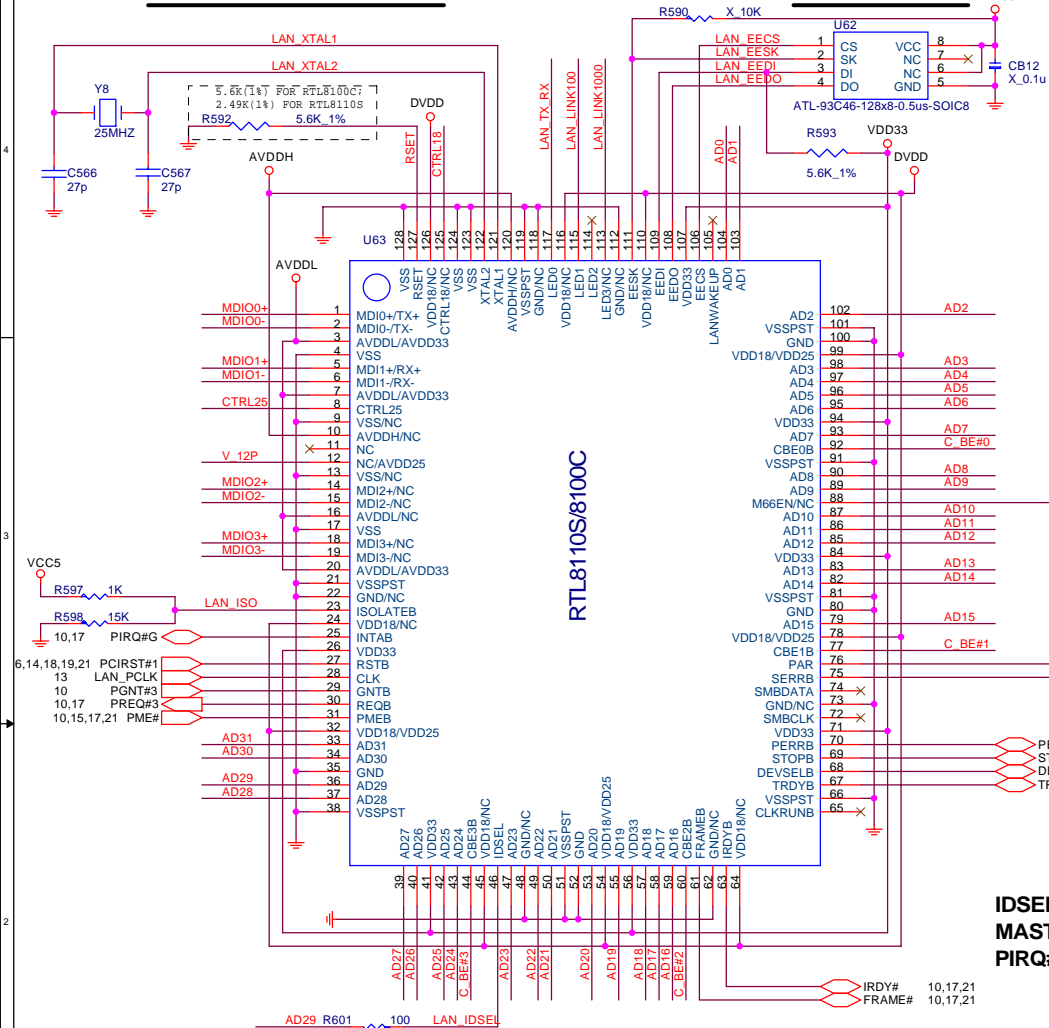


 <b>MICRO-STAR INT'L CO., LTD.</b>	
Title	
DDR DIMM 1&2	
Size	Document Number
	MS-7122
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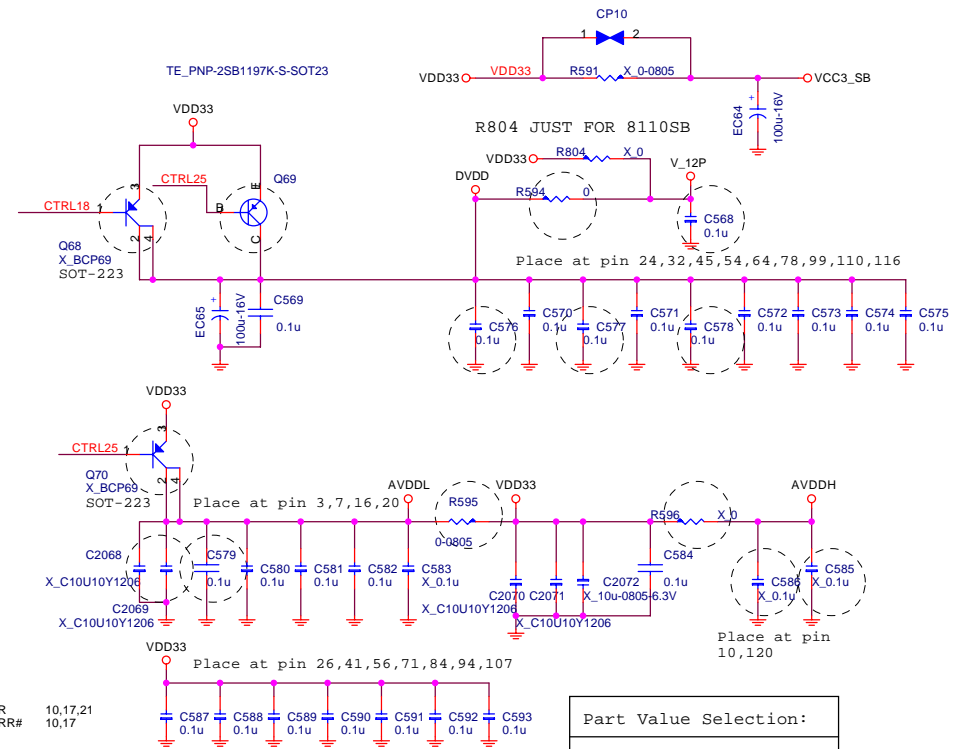




## PCI LAN RTL8110S/8100C



## LAN EEPROM



	DVDD	DVDDA	AVDDL	AVDDH	V-1
8100C	2.5V	2.5V	3.3V	X	2.5V
8110S	1.8V	1.8V	2.5V	3.3V	X

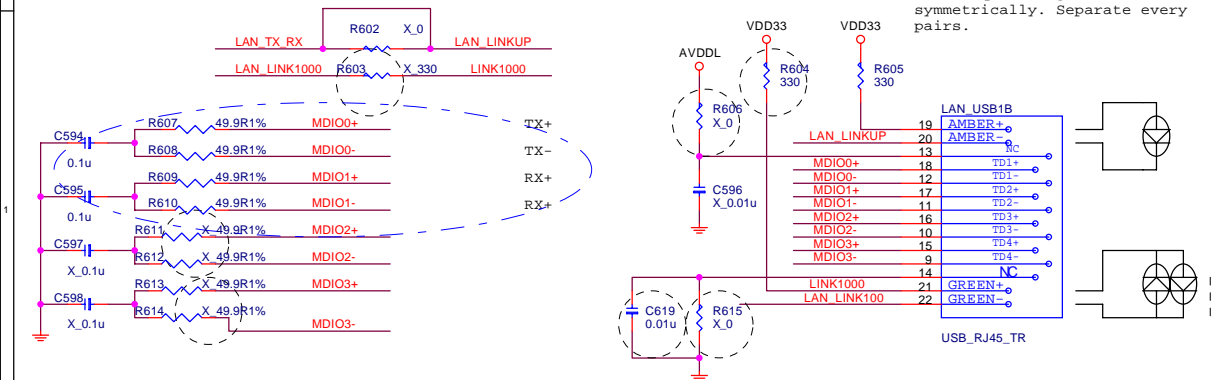
Part Value Selection:
GbE: 8110S LAN(1000M)
TE: 8100C LAN(10/100M)
L: With LAN option
X: No Stuff


```


IDSEL = AD29
MASTER = PREQ#3
PIRQ#G


```

### RJ45 Connector (with transformer)



10,17,21 AD[0..31]  AD[0..31]

10,17,21 C\_BE#[0..3]  C\_BE#[0..3]



PCIRST#1

C599  
X\_33p

The diagram shows a horizontal line labeled "PCIRST#1" connected to a vertical line. The vertical line is connected to a capacitor labeled "C599" and "X\_33p", which is then connected to a ground symbol.

DEFAULT 10/100, ( ) for GIGALAN OPTION



Title				REALTEK LAN 8110S/8100C			
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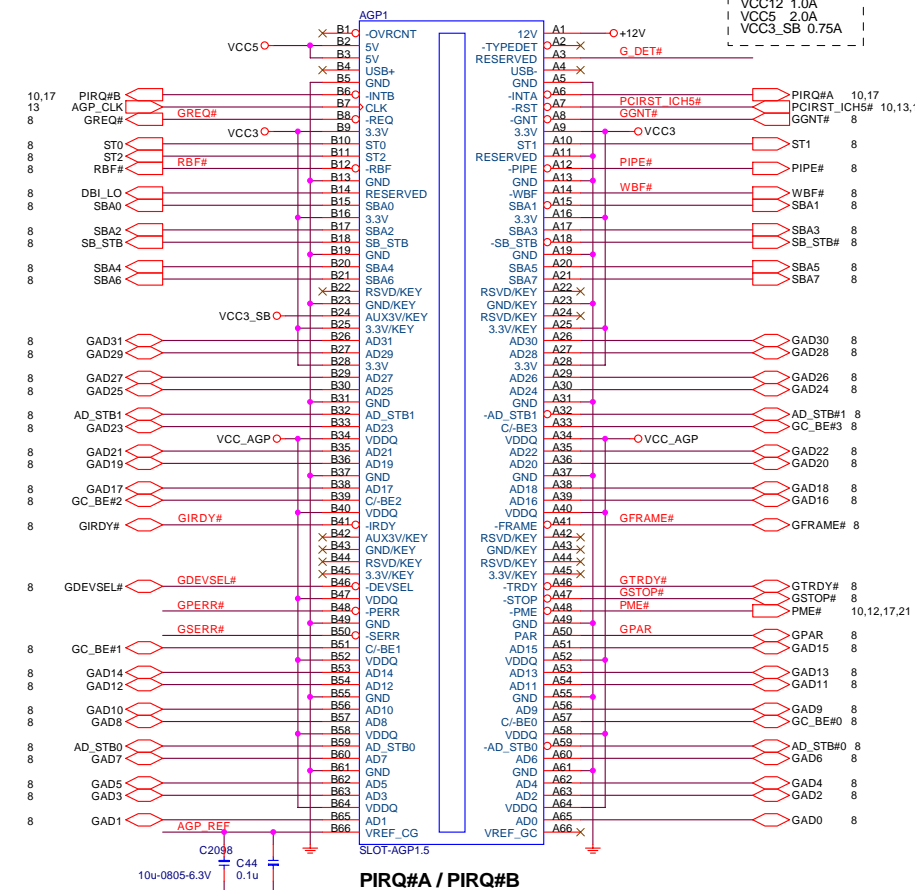




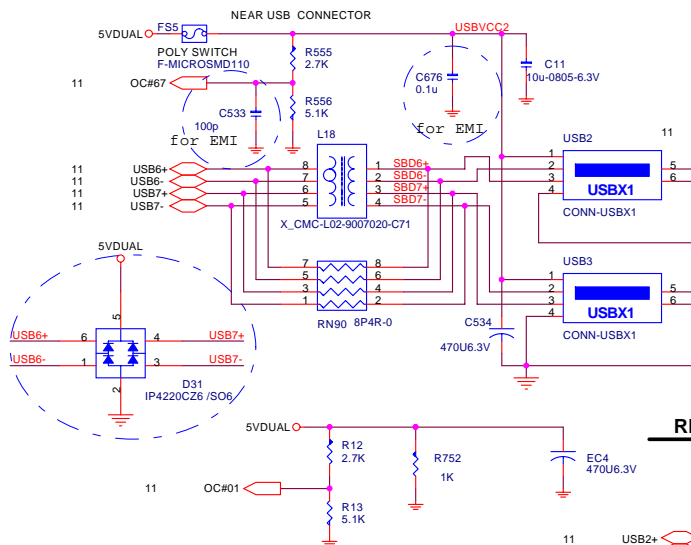
# AGP 1.5V 4X/8X SLOT(AGP VER:3.0)

VCC5 = 60mils trace / 15 mils space

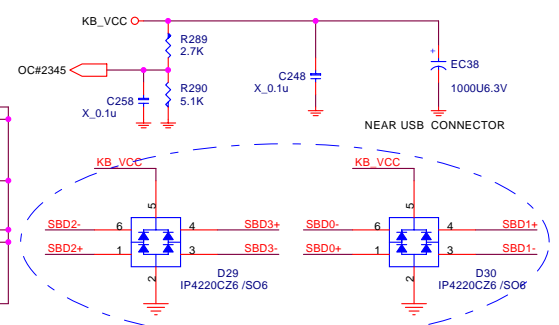
AGP Slot I<sub>max</sub>  
VCCg 2.0A  
VCC3 6.0A  
VCC12 1.0A  
VCC5 2.0A  
VCC3\_SB 0.75A



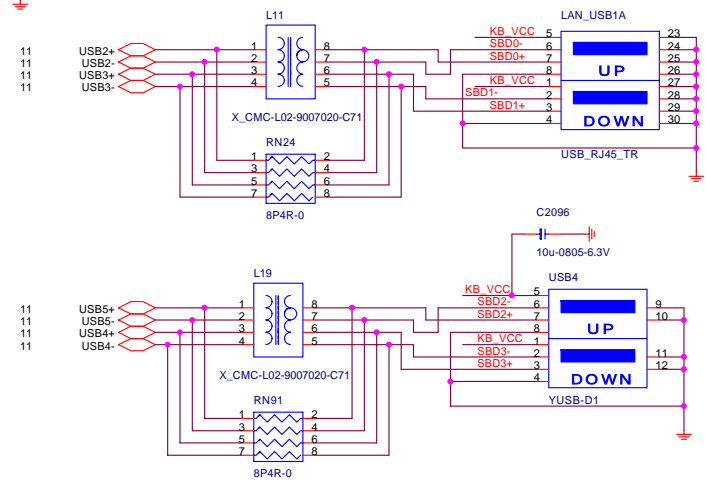
# FRONT PANEL USB CONNECTOR FOR USB PORT 5, 6



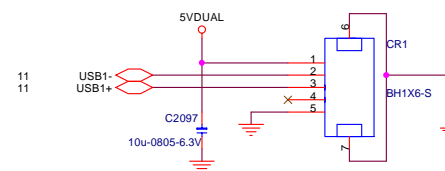
# POWER CIRCUIT FOR USB PORT 1~4



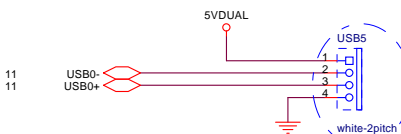
# REAR PANEL USB CONNECTOR FOR USB PORT 1~4



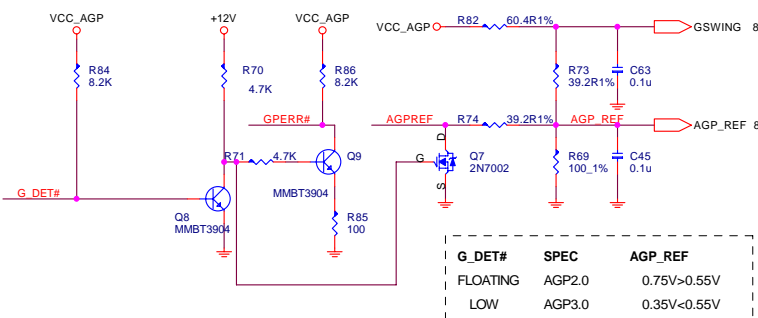
# FRONT CARD READER USB CONNECTOR



# PS2 RF/ BT USB CONNECTOR



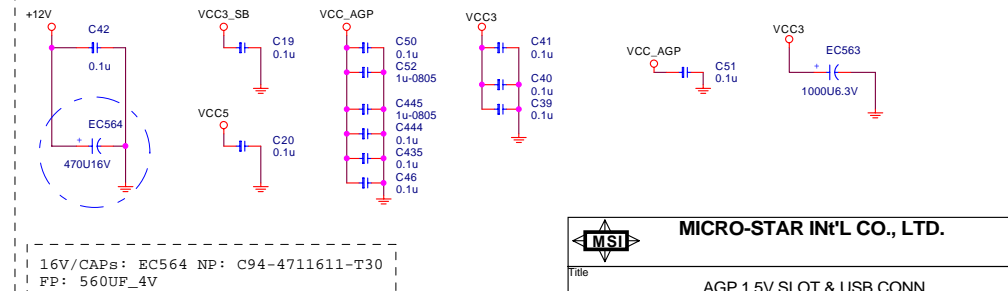
# Springdale Reference & Swing Voltage Circuit



# AGP TERMINATION RESISTORS

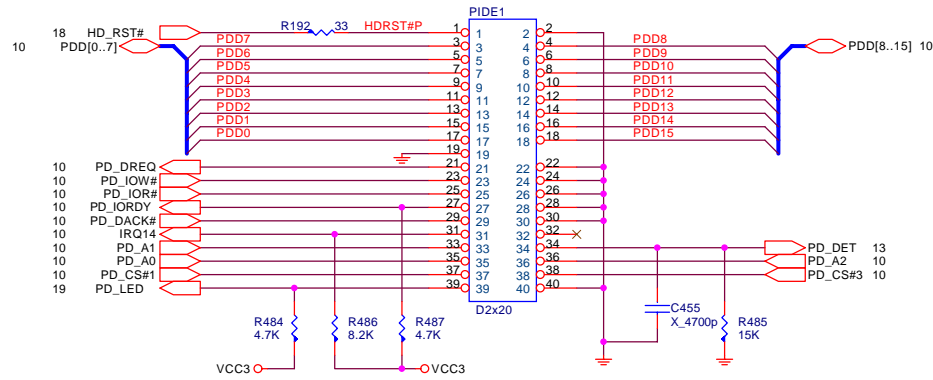


# AGP SLOT DECOUPLING CAPACITORS

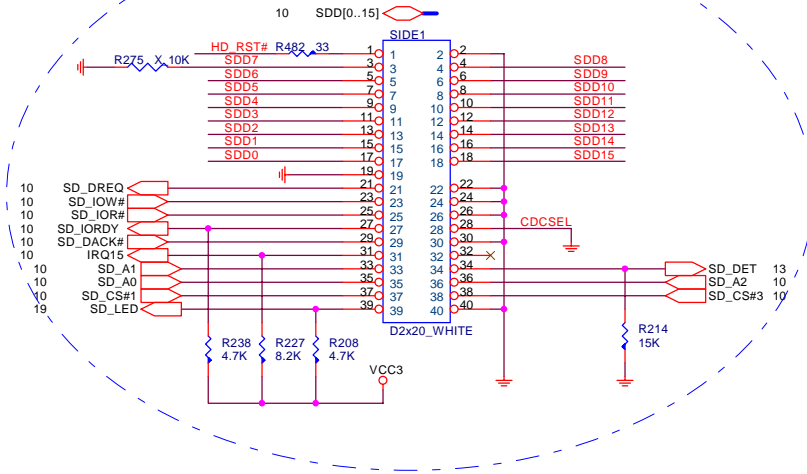


## PRIMARY IDE BLOCK

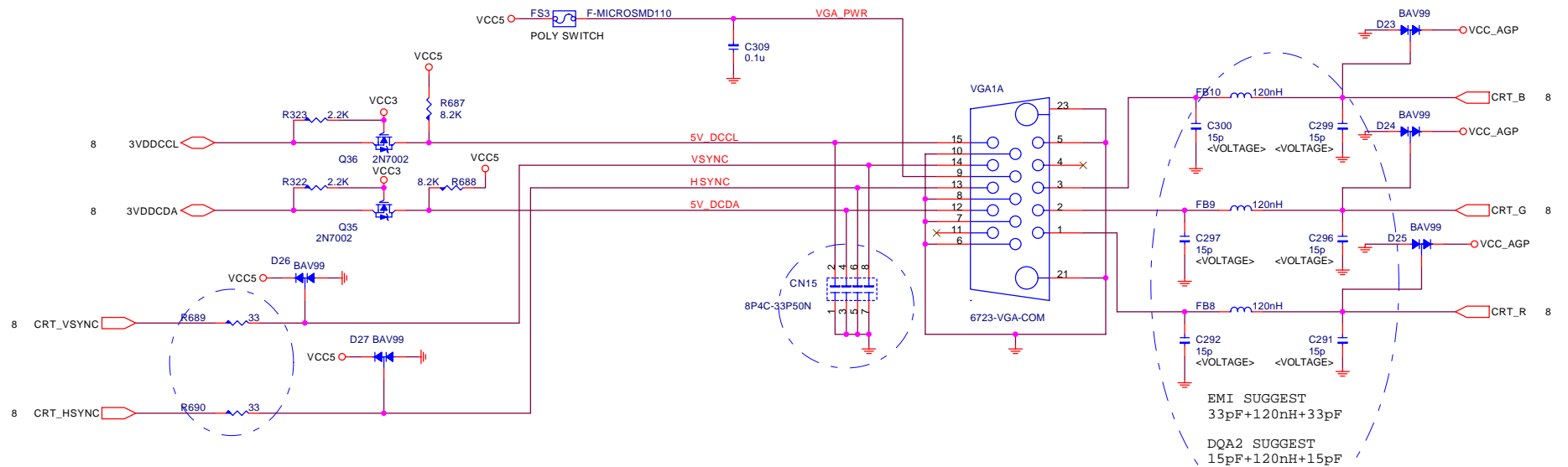
## ATA 33/66/100 IDE Connectors



## SECONDARY IDE BLOCK

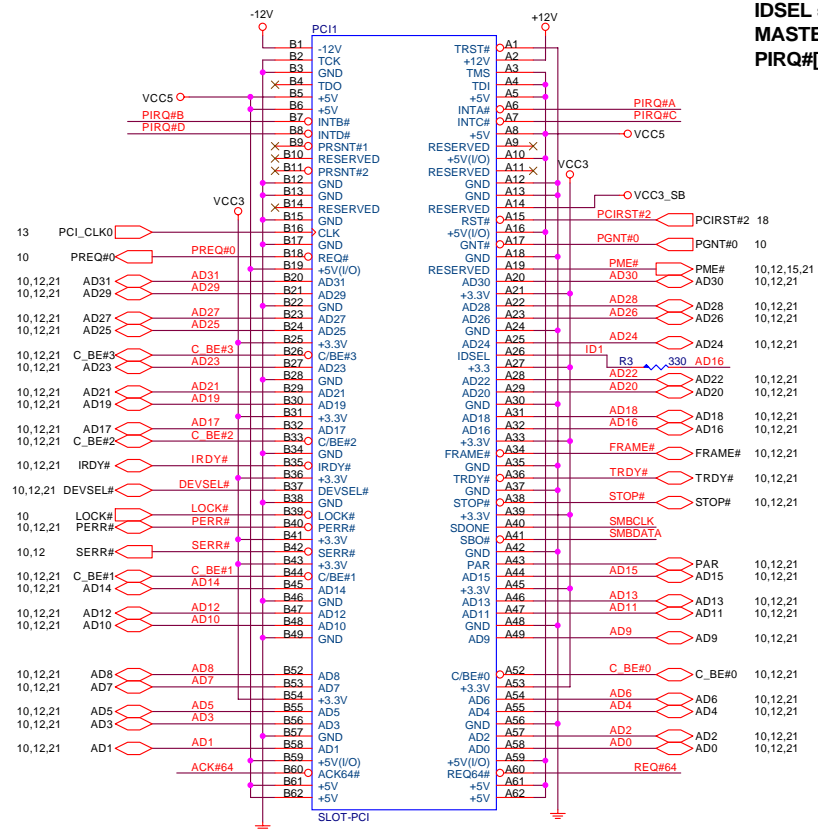


## Video Connector





### PCI SLOT 1 (PCI VER: 2.2 COMPLY)

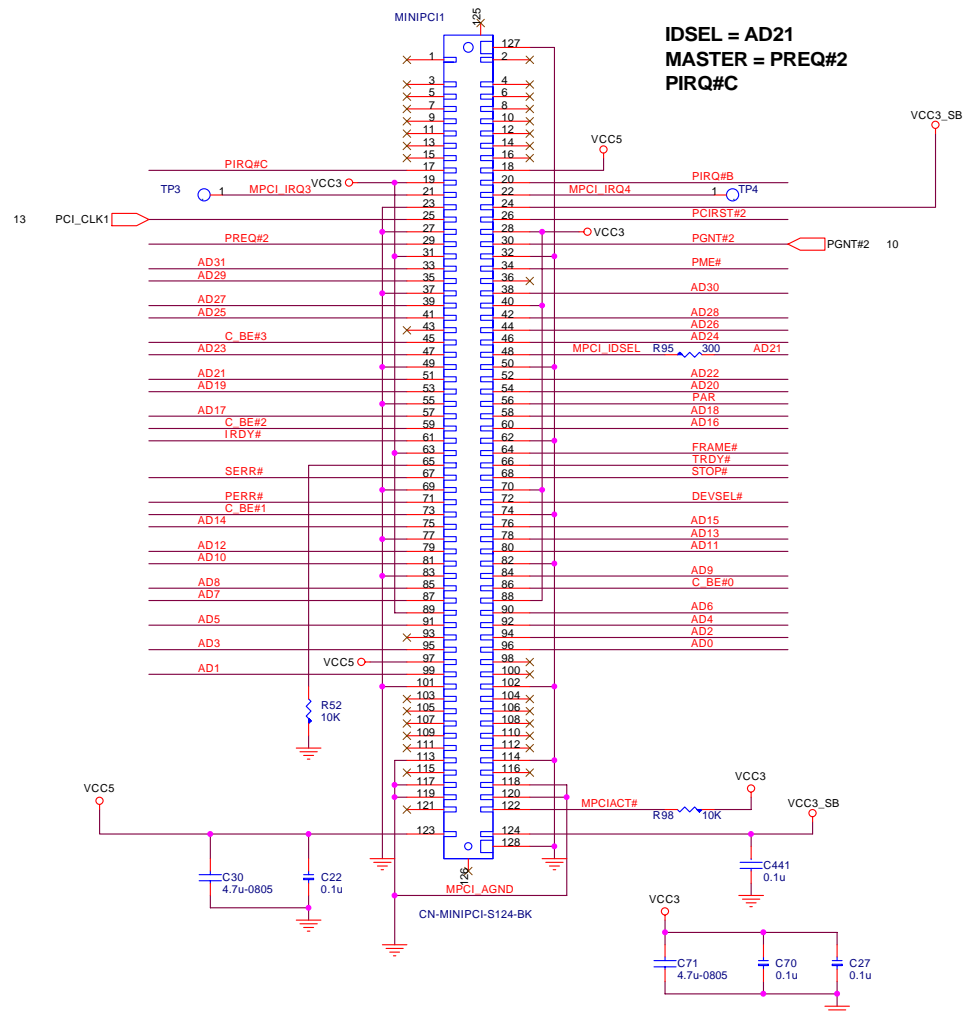


```
IDSEL = AD16
MASTER = PREQ#0
PIRQ#[A..D]
```

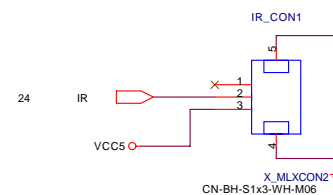
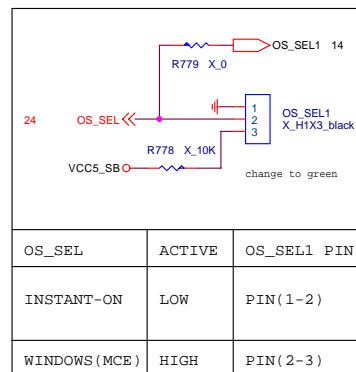
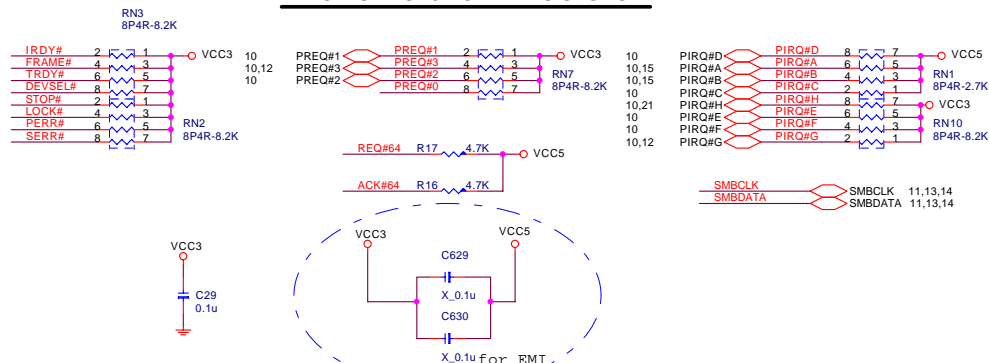
```

IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

```



## PCI PULL-UP / DOWN RESISTORS



OS_SEL	ACTIVE	OS_SEL1 PIN
INSTANT-ON	LOW	PIN(1-2)
WINDOWS(MCE)	HIGH	PIN(2-3)

# ACPI Controller

**3VSB MODE SELECT**

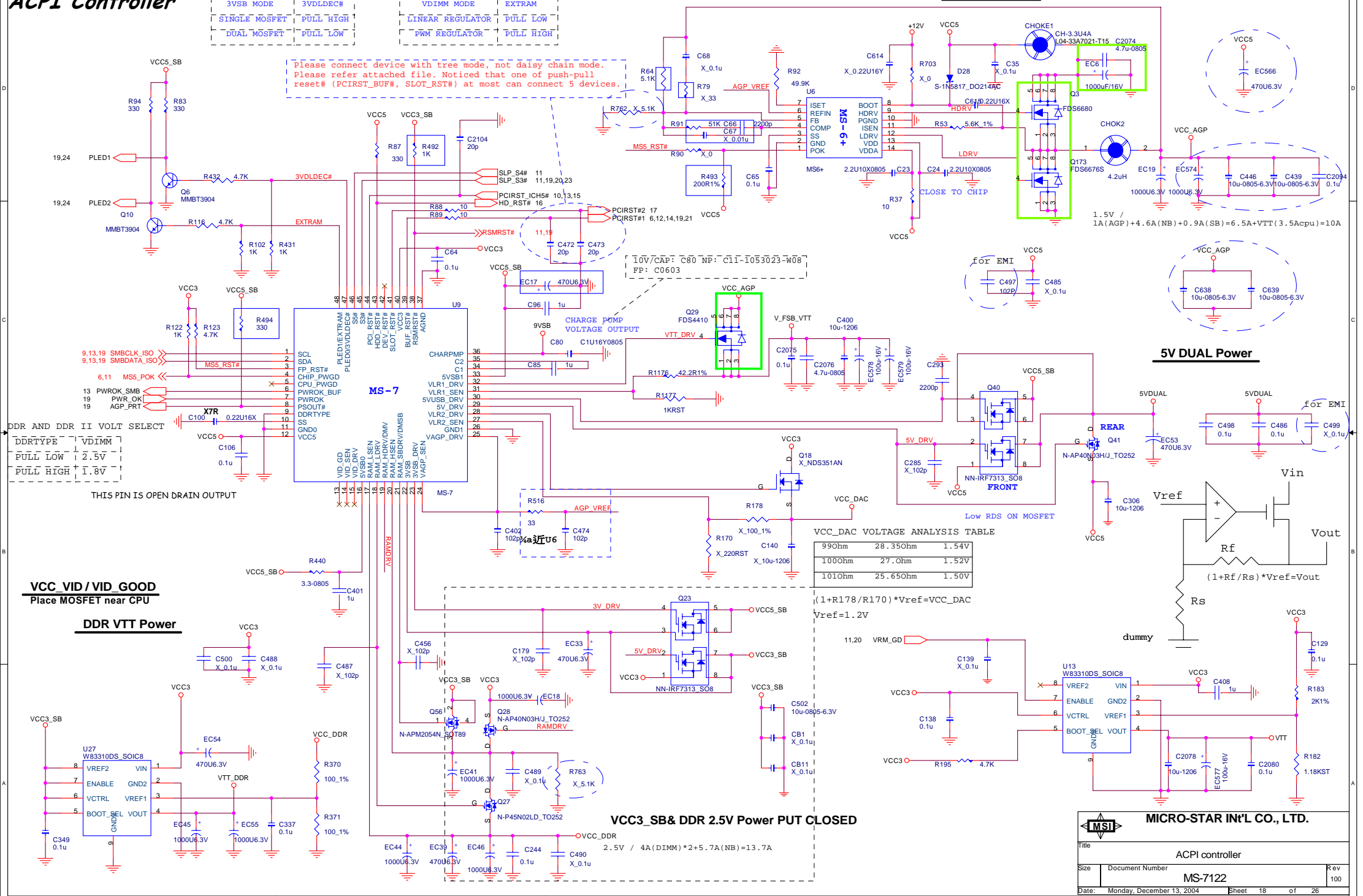
3VSB MODE	3VBLDEC#
SINGLE MOSFET	PULL HIGH
DUAL MOSFET	PULL LOW

**VDIMM LINEAR OR PWM SELECT**

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

## AGP POWER

Please connect device with tree mode, not daisy chain mode.  
Please refer attached file. Noticed that one of push-pull  
reset# (PCIRST\_BUF#, SLOT\_RST#) at most can connect 5 devices.



**VCC\_VID / VID\_GOOD**  
Place MOSFET near CPU

## DDR VTT Power

**VCC\_DAC VOLTAGE ANALYSIS TABLE**

990ohm	28.350ohm	1.54V
1000ohm	27.0ohm	1.52V
1010ohm	25.650ohm	1.50V

$(1+R178/R170) * Vref = VCC\_DAC$   
 $Vref = 1.2V$

## 5V DUAL Power

## VCC3\_SB & DDR 2.5V Power PUT CLOSED

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MSI

Title: ACPI controller

Size: Document Number

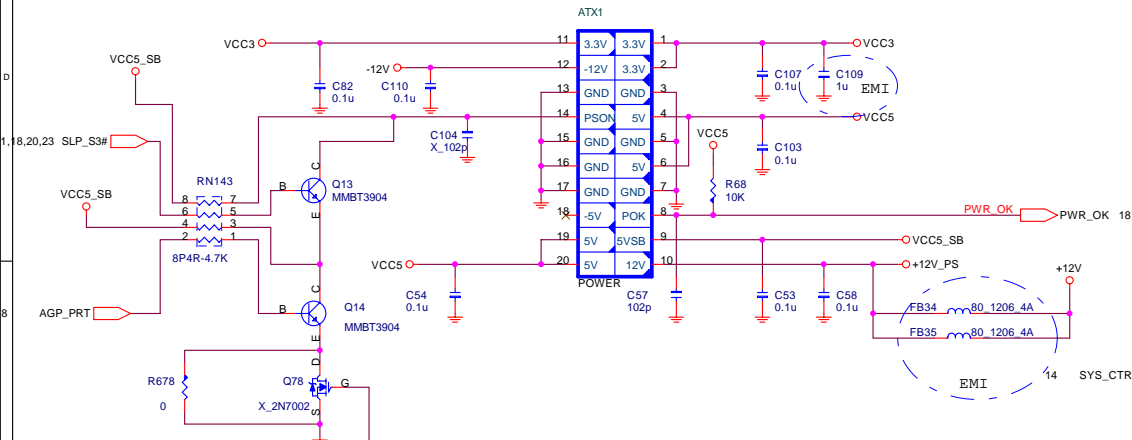
MS-7122

Date: Monday, December 13, 2004

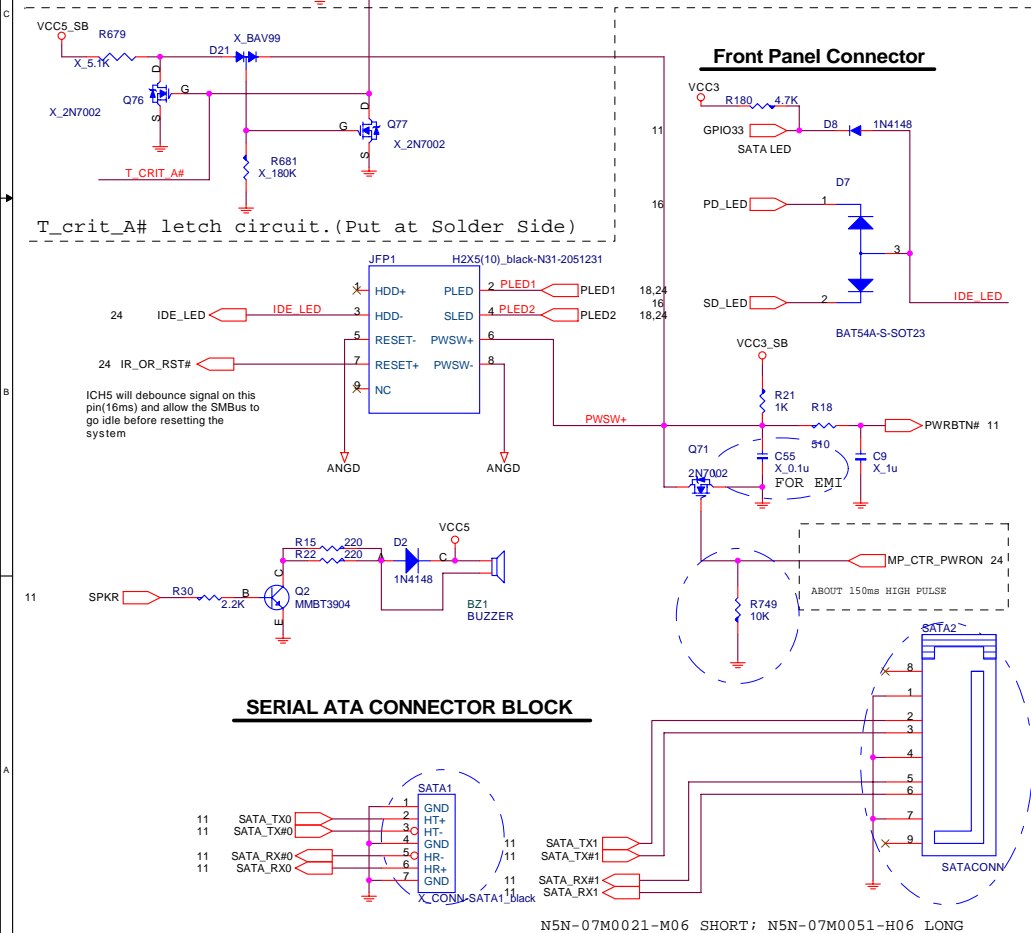
Sheet 18 of 26

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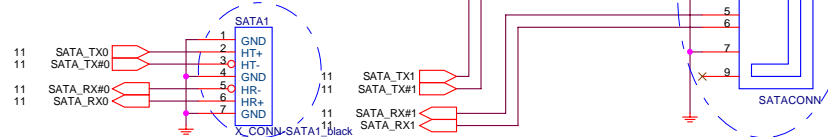
## ATX Connector



### Front Panel Connector

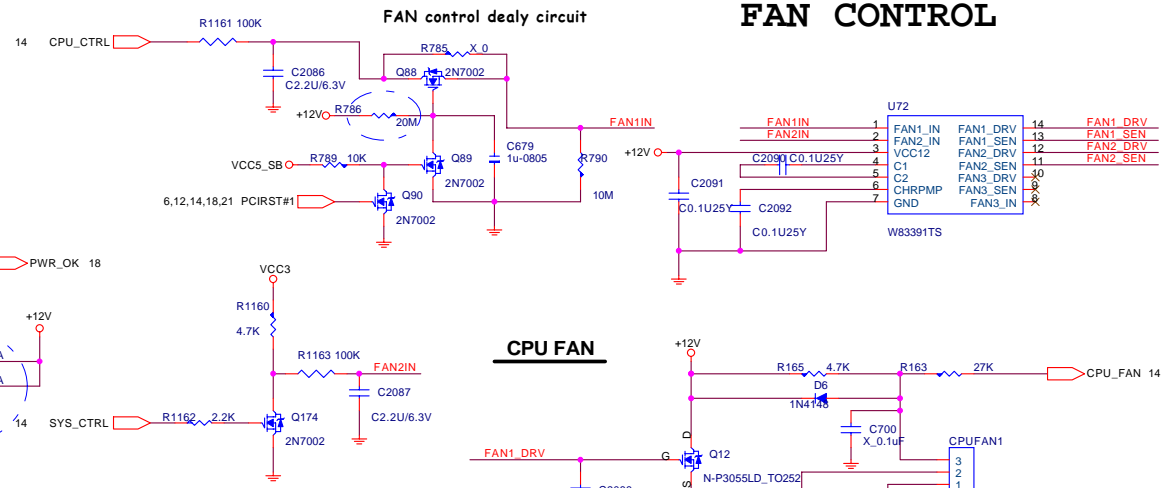


## SERIAL ATA CONNECTOR BLOCK

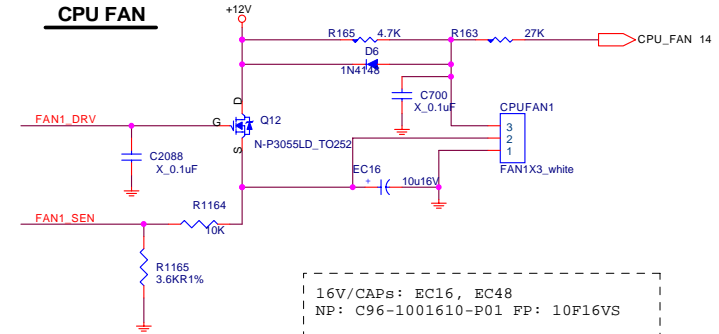


N5N-07M0021-M06 SHORT; N5N-07M0051-H06 LONG

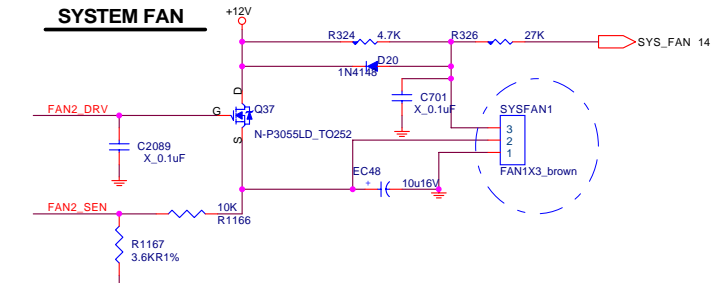
### FAN control dealy circuit



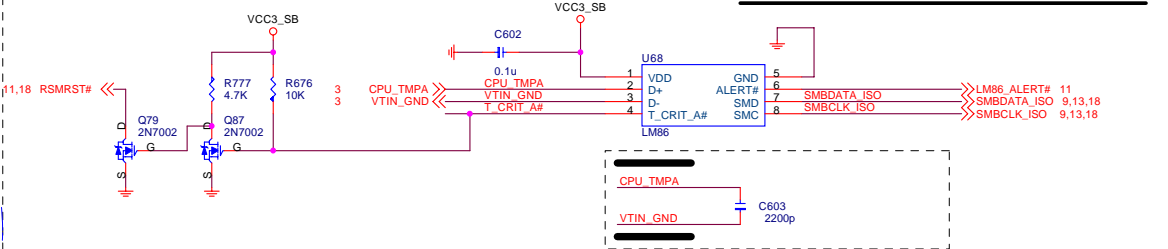
## CPU FAN



## SYSTEM FAN



## LM86 DIGITAL TEMPERATURE SENSOR

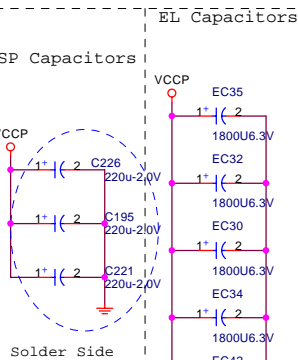
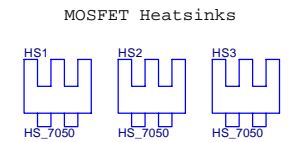
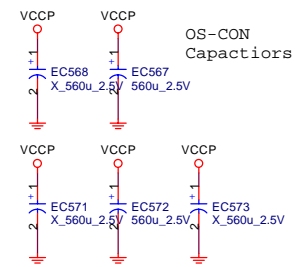
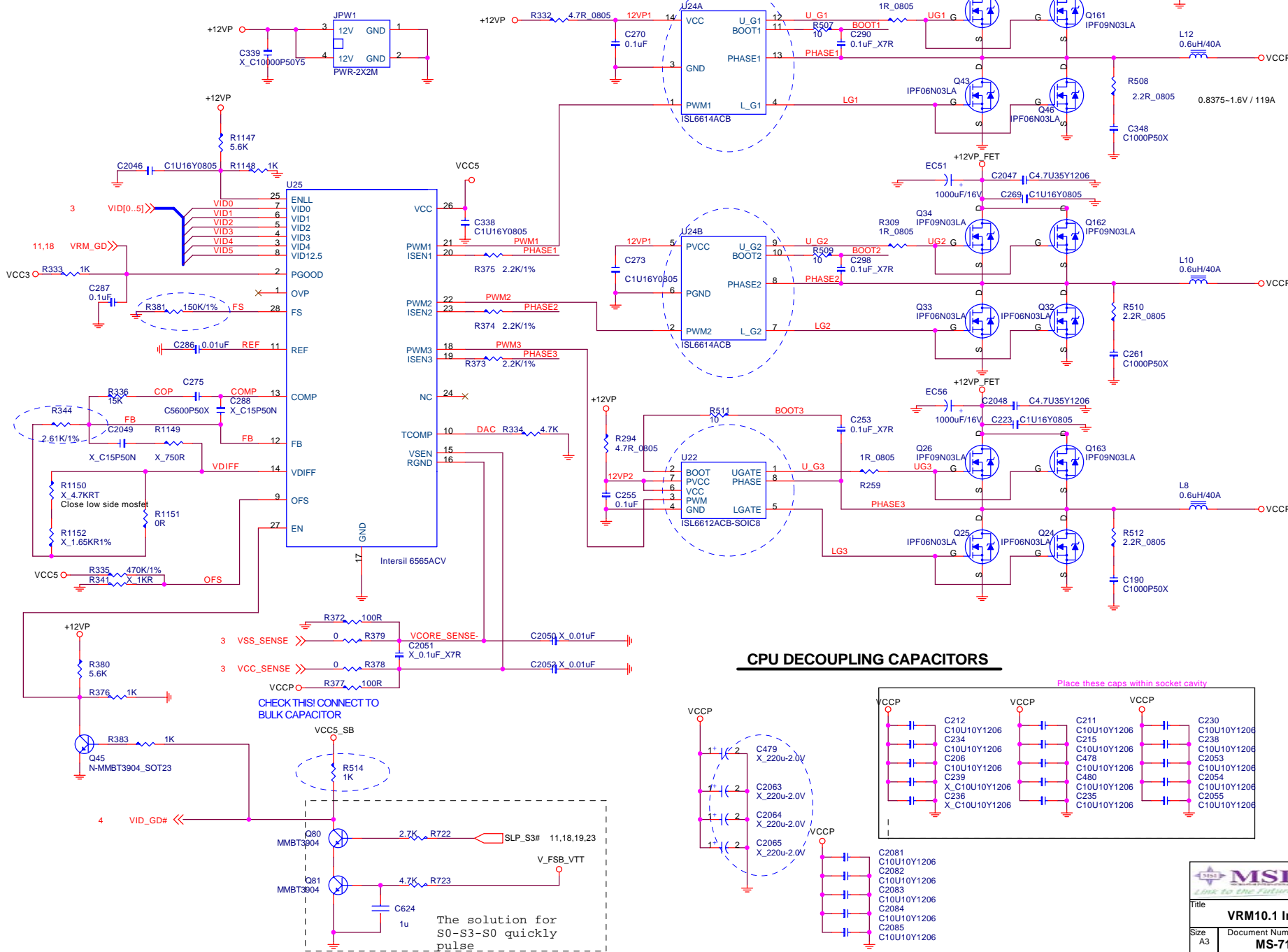


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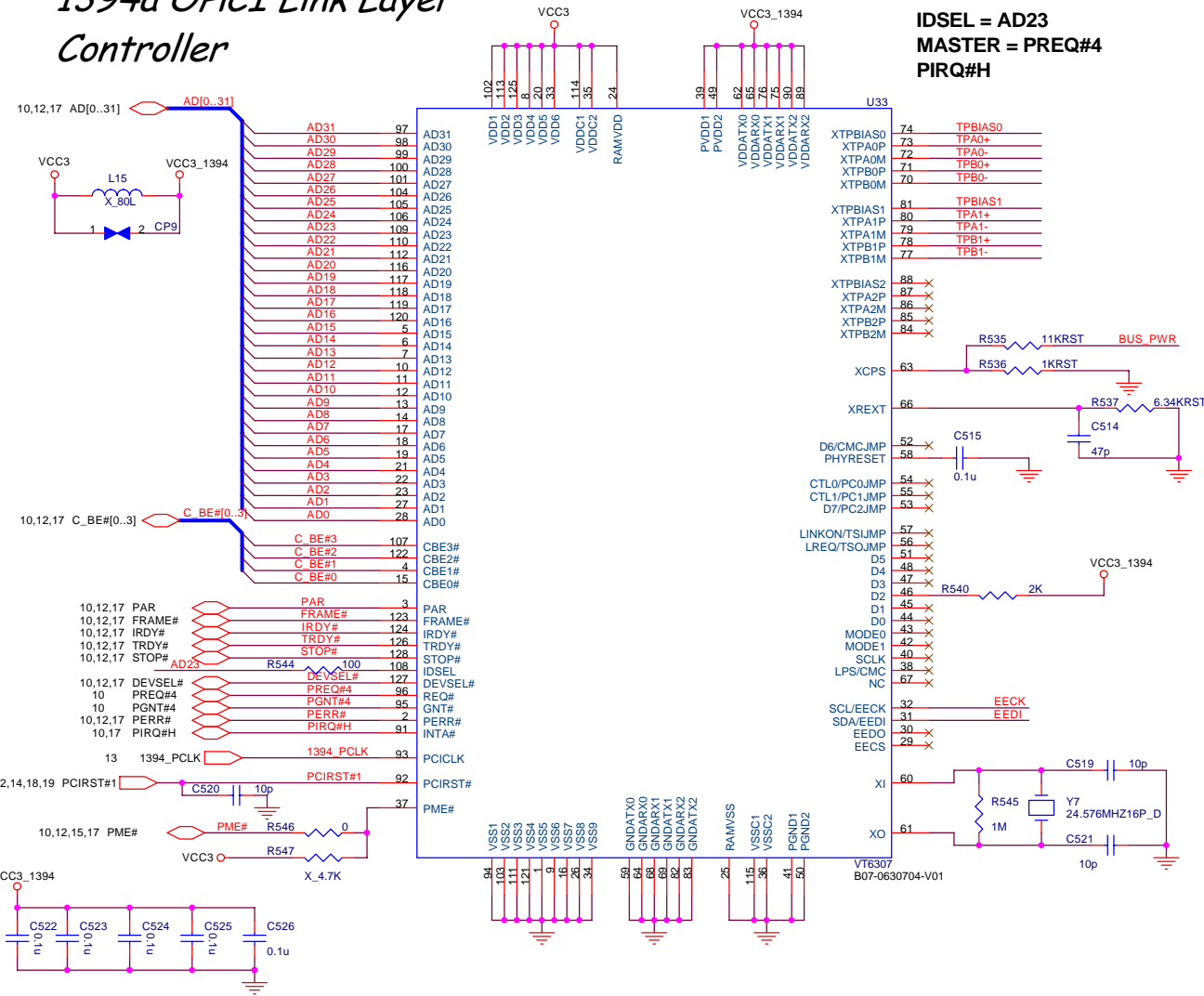
Title			
Front Panel/Fan/LM86			
Size	Document Number		Rev
	MS-7122		100
Date:	Monday, December 13, 2004	Sheet	19 of 26

# Voltage Regular Module

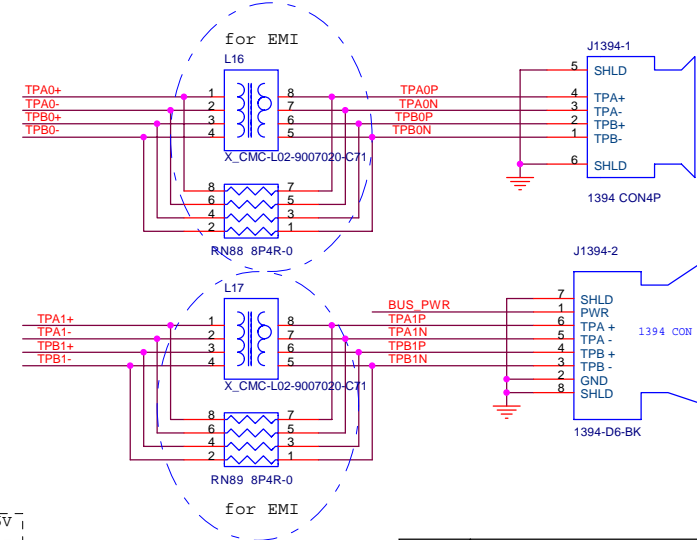
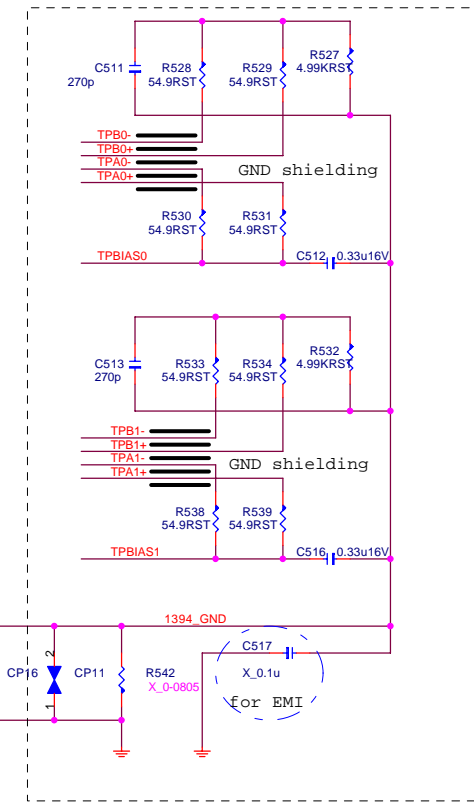
MOSFET Gate signal : 20 mils  
Phase signal : 20 mils  
Boot signal : 16 mils

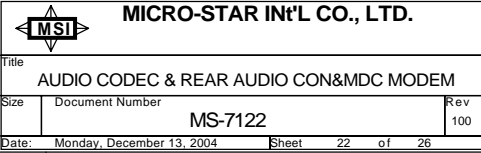


# 1394a OHCI Link Layer Controller

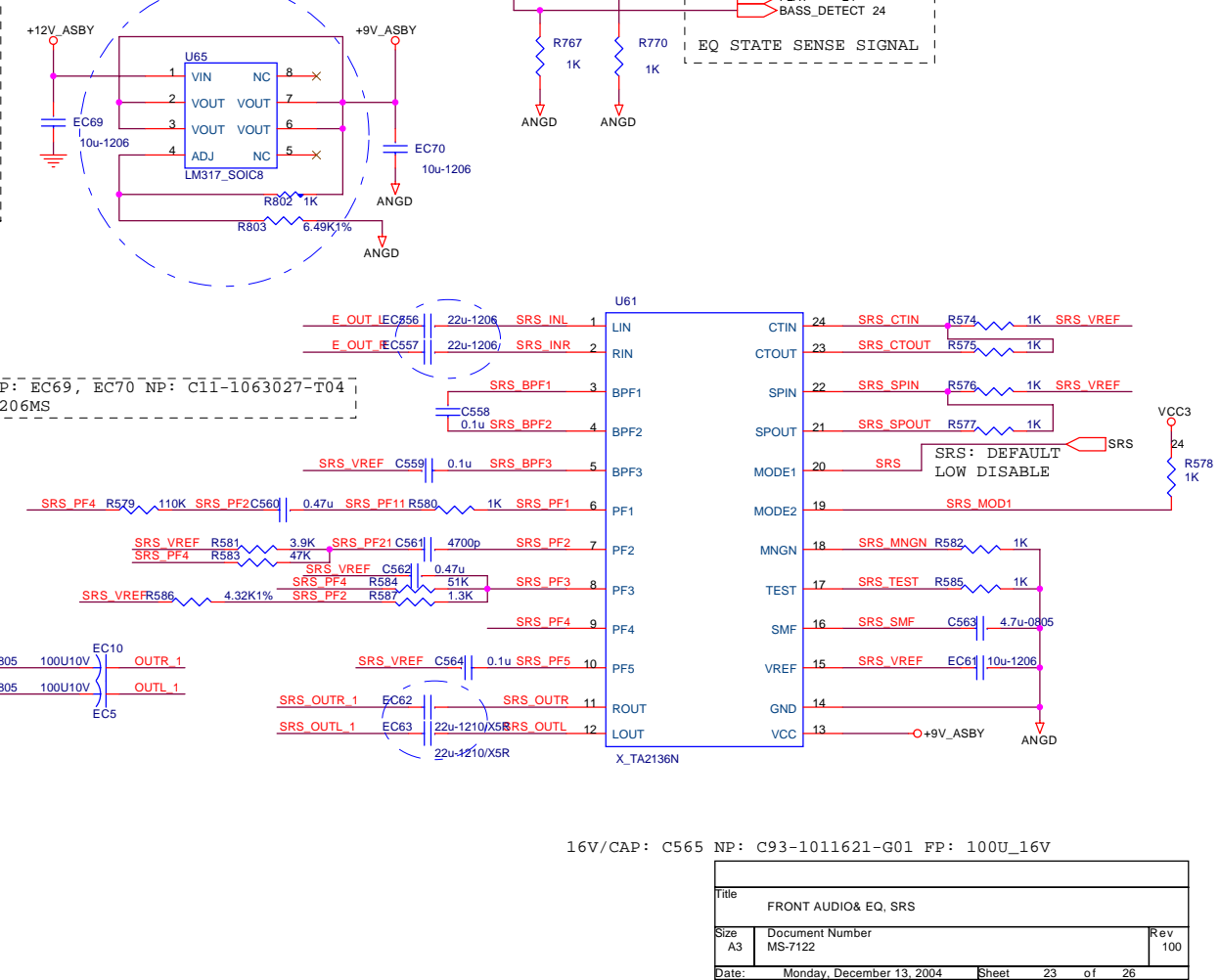
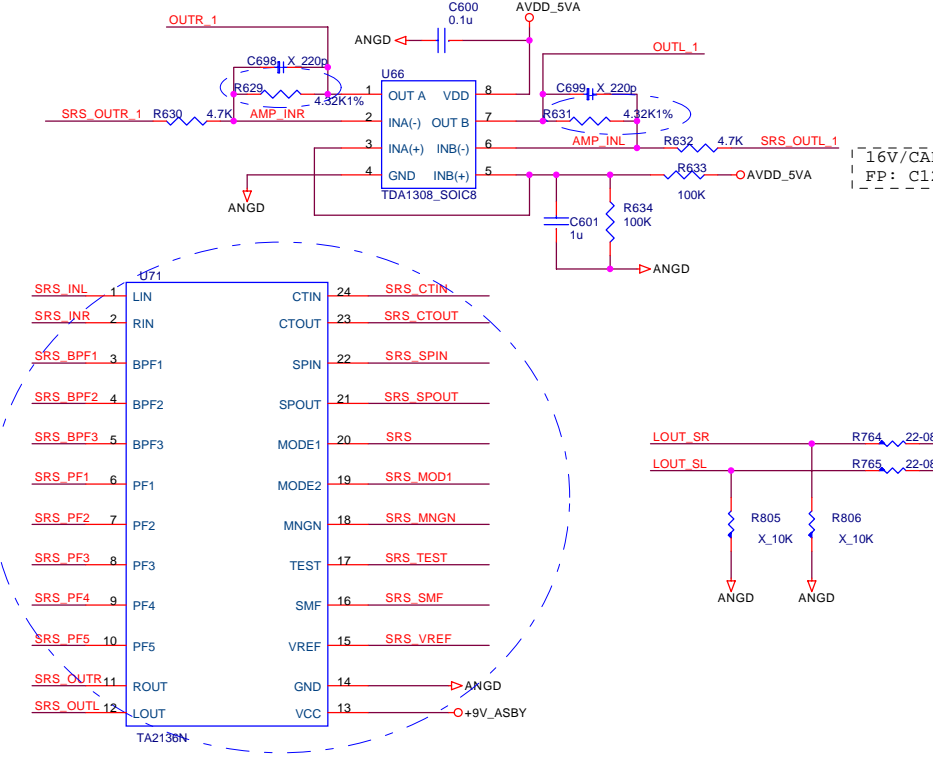
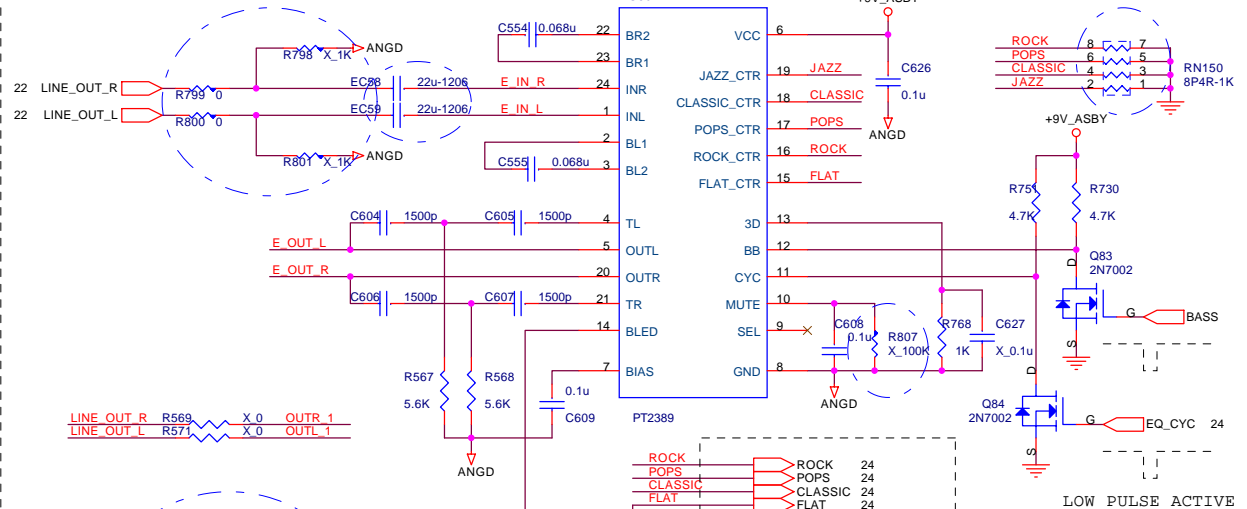
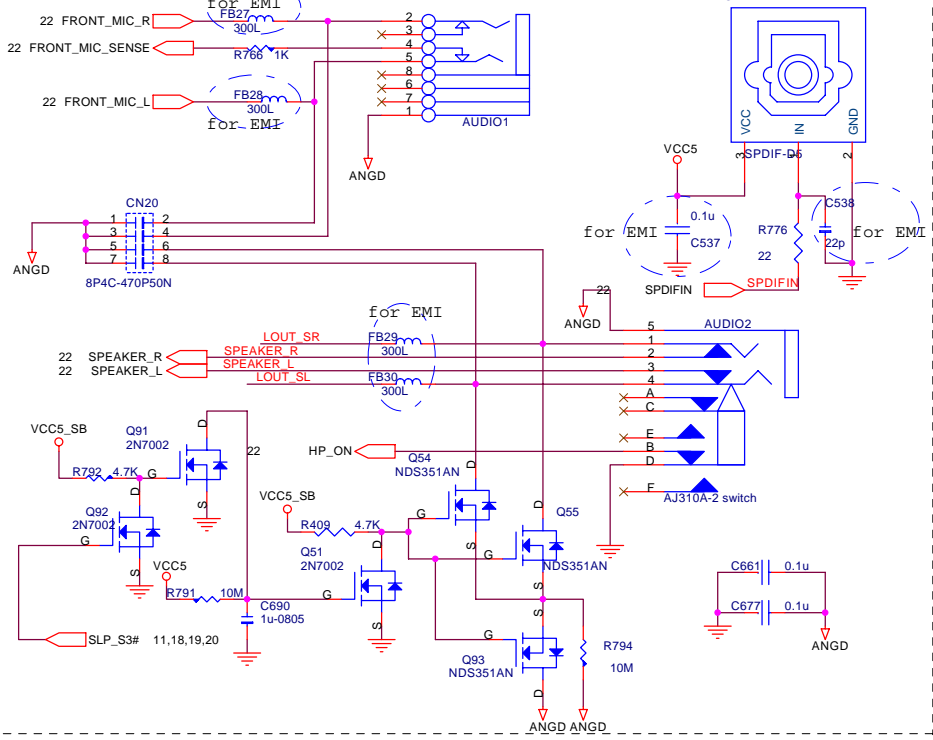


ISEL = AD23  
MASTER = PREQ#4  
PIRQ#H





# FRONT AUDIO CONNECTOR



16V/CAP: C565 NP: C93-1011621-G01 FP: 100U\_16V

Title		
FRONT AUDIO& EQ, SRS		
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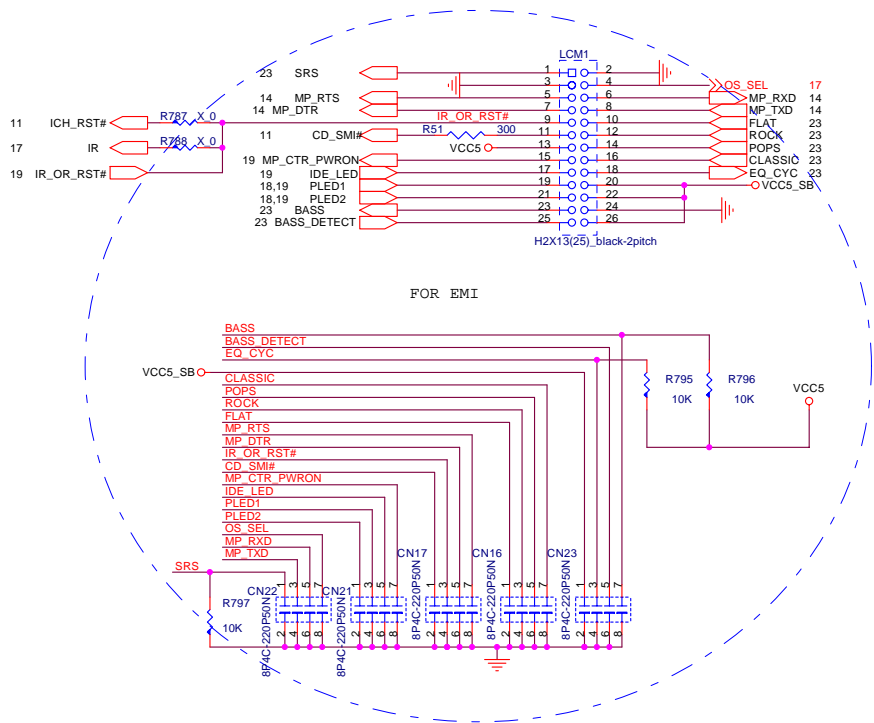
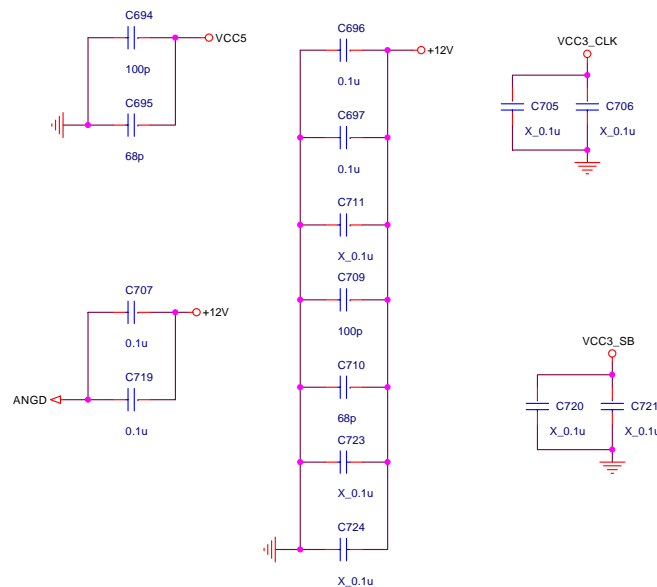
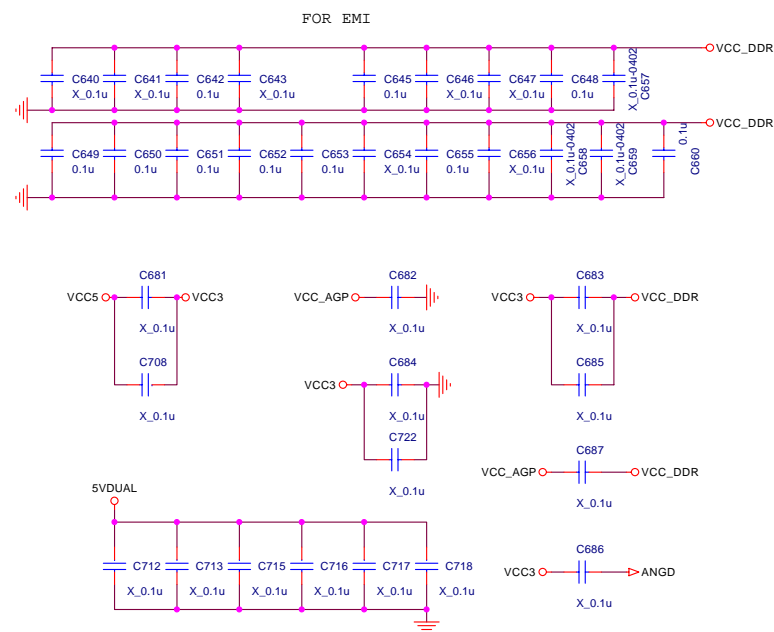


Table for POWER LED's behavior on LCM.

LCM 1 MODE	PLED1 PIN19	PLED2 PIN21	LED State
S0/ INSTANT-ON	H	L	Green
S1	Flash	L	Flash Green / 1Hz
S3	L	H	Yellow
S4/5	L	L	Dark





ICH5

GPIO Pin	Target	Function	Power well	PULL RESISTOR	
GPI 0	NA	ISA_REQ#	MAIN	8.2K	VCC3
GPI 1	NA	PREQ#5	MAIN	8.2K	VCC3
GPI 2	NA	PIRQ#E	MAIN	8.2K	VCC3
GPI 3	NA	PIRQ#F	MAIN	8.2K	VCC3
GPI 4	LAN	PIRQ#G	MAIN	8.2K	VCC3
GPI 5	1394	PIRQ#H	MAIN	8.2K	VCC3
GPI 6	SIO	SIO_SMI#	MAIN	10K	VCC3
GPI 7	MP	CD_SMI#	MAIN	10K	VCC3
GPI 8	LM86	LM86_ALERT#	RESUME	10K	VCC3_SB
GPI 9	USB	OC#45	RESUME	2.7K/5.1K	5VDUAL
GPI 10	USB	OC#45	RESUME	2.7K/5.1K	5VDUAL
GPI 11	NA	SMBALERT#	RESUME	10K	VCC3_SB
GPI 12	NA	GPI12	RESUME	10K	VCC3_SB
GPI 13	SIO	SIO_PME#	RESUME	10K	VCC3_SB
GPI 14	USB	OC#67	RESUME	2.7K/5.1K	5VDUAL
GPI 15	USB	OC#67	RESUME	2.7K/5.1K	5VDUAL
GPO 16	NA	ISA_GNT#	MAIN	NA	
GPO 17	NA	PGNT#5	MAIN	NA	
GPO 18	NA	GPO18	MAIN	NA	
GPO 19	NA	GPO19	MAIN	NA	
GPO 20	U72	BB_SMB_SEL	MAIN	1K	GND
GPO 21	NA	ISA_NOGO	MAIN	10K	VCC3
GPO 22	NA	GPO22	MAIN	NA	
GPO 23	NA	GPO23	MAIN	NA	
GPIO 24/I	NA	CFG_SEL1	RESUME	BY CFG	
GPIO 25/I	NA	CFG_SEL2	RESUME	BY CFG	
GPIO 27	NA	GPO27	RESUME	10K	VCC3_SB
GPIO 28	NA	GPIO 28	RESUME	1K	GND
GPIO 32	BIOS	BIOS_WP#	MAIN	1K	VCC3
GPIO 33/O	I/O	SATA LED	MAIN	4.7K	VCC3
GPIO 34/I	NA	CFG_SEL3	MAIN	BY CFG	
GPI 40	1394	PREQ#4	MAIN	8.2K	VCC3
GPI 41	NA	GPI41	MAIN	X_8.2K	VCC3
GPO 48	1394	PGNT#4	MAIN	NA	
GPO 49	CPU	CPU_GD	MAIN	620hm	VCCP

PS: GPIO 24~25, 27~28, 32~34 Default Output

FWH

GPIO Pin	Type	Function
GPI 0	I	PD_DET
GPI 1	I	SD_DET
GPI 2	I	Pull down through 1K ohms (unused)
GPI 3	I	Pull down through 1K ohms (unused)
GPI 4	I	Pull down through 1K ohms (unused)

SIO

GPIO Pin	Type	Function
GP26	I	VID5
GP25	I	VID4

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK	CLK GEN PIN OUT
PCI Slot 1	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD16	PCICLK0	13 (PCI1)
MPCI	PIRQ#B PIRQ#C	PREQ#2 PGNT#2	AD21	PCICLK1	14 (PCI2)
REALTEK LAN 8110S/8100C	PIRQ#G	PREQ#3 PGNT#3	AD29	LAN_PCLK	12 (PCIO)
IEEE 1394 VIA 6307	PIRQ#H	PREQ#4 PGNT#4	AD23	1394_PCLK	15 (PCI3)

CONFIGURATION SELECT

GPIO Pin	Type	DEFAULT	CONFIG 1	CONFIG 2	CONFIG 3
ICH5 GPIO 24	I	LOW			
ICH5 GPIO 25	I	LOW			
ICH5 GPIO 34	I	LOW			

PS: PULL LOW BY 1K; PULL HIGH BY 8.2K

DDR DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	1010000B	MCLK_A0/MCLK_A0# MCLK_A1/MCLK_A1# MCLK_A2/MCLK_A2#
DIMM 3	1010010B	MCLK_B0/MCLK_B0# MCLK_B1/MCLK_B1# MCLK_B2/MCLK_B2#

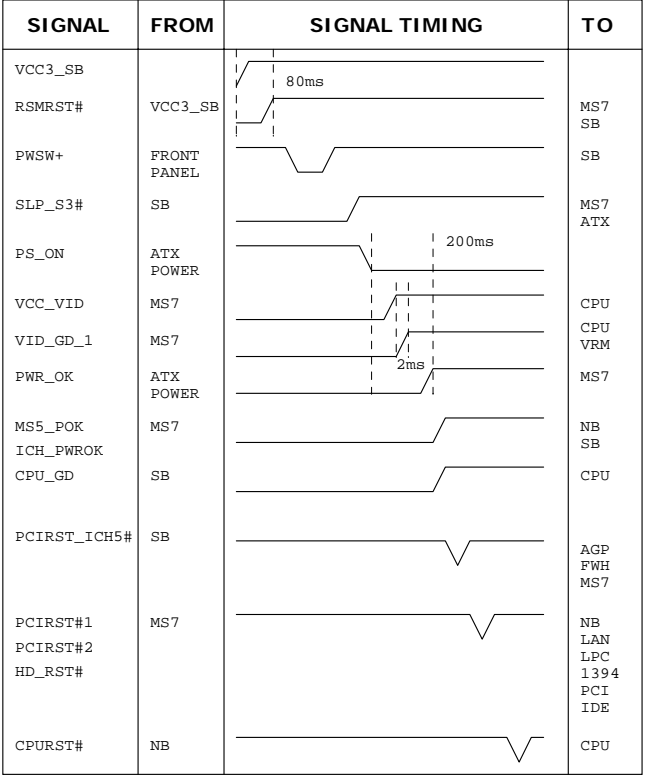
PCI RESET DEVICE

Signals	Target
PCIRST#_ICH5	AGP slot, FWH, MS7
PCIRST#1	Springdale,LAN, Super I/O,1394, CPU FAN
PCIRST#2	PCI slot 1, ext PCI slot
HD_RST#	Primary, Scondary IDE

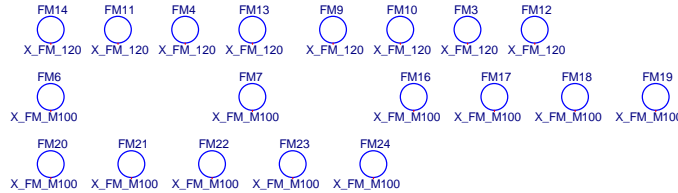
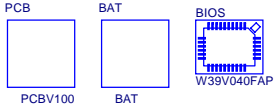
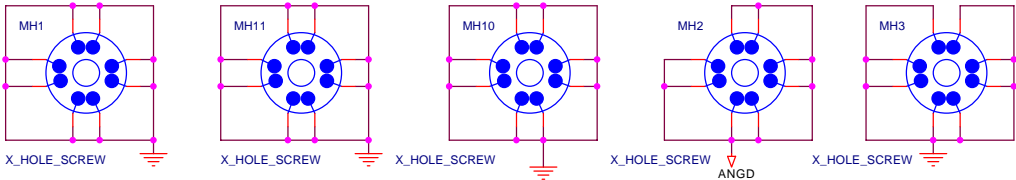
SMBus DEVICE

Signals	Target	POWER
SMBCLK SMBDATA	ICH5, LAN, PCI SLOT, LPC I/O, BLUEBIRD	VCC3_SB
SMBCLK_ISO SMBDATA_ISO	DIMM1, DIMM2, CLK GEN, MS7, LM86	VCC3

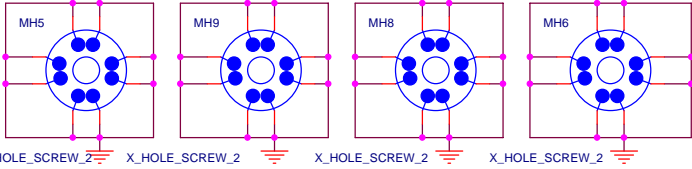
POWER ON SEQUENCE



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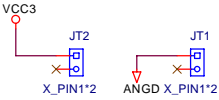


## CPU Holes

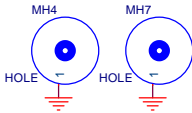


## MODE/BUTTON BEHAVIOR

MODE \ BUTTON	PC	Instant-On
PC S0	depend on windows function	X
PC S3	S3 → S0	X
PC S4/S5	S4/S5 → S0	S4/S5 → INST
Instant-On	INST → S5 → S0	INST → S5



## MDC Holder



## 865G& ICH5 POWER MAP

PART	POWER	VOLTAGE	CURRENT
CPU	VCCP	1.05~1.55V	95A
	V_FSB_VTT 1.2V		2.9A~3.5A
NB	VCC_AGP 1.5V		4.6A
	VTT 1.05~1.55V		1.6A
	VCC_DDR 2.5V		5.7A
	VCC_DAC 1.5V		70mA
	VCCA_DDR 1.5V		1A
DDR/ CHANNEL	VCC_DDR 2.5V		4A
	VTT_DDR 1.25V		900mA
	DDR_VREF 1.25V		
	VCC_AGP 1.5V		1A
	VCC3 3.3V		6A
AGP	VCC3_SB 3.3V		750mA
	VCC5 5V		2A
	+12V 12V		1A
	VCC_AGP 1.5V		880mA
	VCC3_SB 3.3V		356mA
SB	VCC3 3.3V		528mA
	VCC5_SB 5V		
	VCCP 1.05~1.55V		3mA
I/O	USB/ PORT 5V		500mA

HISTORY  
VERSION:0A  
1.PAGE3 ADD R1171-R1175,Q175,Q176,C2102 FOR E.EP4(OPTION)  
2.PAGE10 ADD R1170 FOR SIGNAL QULITY  
3.PAGE11 R233,R232 CONNECT TO ICH\_CPU\_IO  
4.PAGE14 REMOVE R1156,R1157,RN154,Q166-Q171 (REMOVE SUPERIO VID SENCE)  
5.PAGE15 ADD C2097,C2096,C11 (FOR USB VOLTAGE)  
6.PAGE18 ADD R1176,R1177 (FOR CHANGE V\_FSB\_VTT VOLTAGE)  
7.PAGE18 CHANGE EC45,EC55 TO 1000U(FOR VTT POWER),ADD EC39 FOR VCC\_DDR  
8.PAGE19 R1160,Q174,R1162 CHANGE TO CONNECT SYS\_CTRL(FOR FAN CONTROL)  
9.PAGE22 ADD C2099 FOR VCC3 QULITY,ADD C2100,C2101 FOR SIGNAL QULITY  
10.PAGE22 CHANGE R781,R782 TO 10K ohm REDUCE AUDIO NOISE  
11.EC62,EC63 CHANGE TO 22U/1210/X5R FOR AUDIO PASSBAND RIPPLE

VERSION:100  
1.PAGE4 ADD R1178, C2105 AT CPURST# FOR E.EP4(OPTION)  
2.PAGE15 ADD D29, D30, D31 USB PROTECTION DIODE  
3.PAGE16 CHANGE RGB FILTER C299, C300, C296, C297, C291, C292 TO BE 15PF  
4.PAGE9, 15, 24 EMI SOLUTION: C359, C364, C312, C322, C335, C695, C710 PUT ON 68PF; C318, C326, C330, C533, C709, C694, C362, C368, C372 PUT ON 100PF  
5.PAGE20 CHANGE U24 TO BE ISL6614ACB; U22 TO BE ISL6612ACB; R381->150K/1%; R344->2.61K/1%; REMOVE C479, C2063, C2064, C2065 AND PUT ON C221, C195, C226  
6.PAGE19 CHANGE R786 TO BE 20MOHM FOR FAN DELAY  
7.PAGE23 CHANGE R631 AND R629 TO BE 4.32KOHM FOR 1VRMS  
8.PAGE4, 20 CHANGE R1136, R1141, R514 TO BE 1KOHM FOR VID\_GD# RISE-TIME

## MOSFET PACKAGE FEATURE

PACKAGE	NEW PN	VOLTAGE& CURRENT FEATURE
TO263	D03-10N03LB	Vgs(on)=1.2V; Id=73A; Vds=30V
TO252	D03-06N030B	Vgs(on)=1.2~2V; Id=50A; Vds=25V
SOT89	D03-2054N09	Vgs(on)=0.6~1.5V; Id=6A; Vds=20V
SOT23	D03-351AN09	Vgs(on)=0.8V; Id=1.2A; Vds=30V



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Title Others/ Power Map		
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