

# Asteroid-Z MS-7423N1

Version 0A



## CPU:

YorkField, Wolfdate, Conroe, Conroe-1M,  
Conroe-L ; TDP max=65W, FSB 1333/1066/800

## System Chipset:

Intel Q45 (North Bridge)  
Intel ICH10DO (South Bridge)

## On Board Chipset:

BIOS -- SPI FLASH 32MB  
HD AUDIO Codec -- ALC262  
LPC Super I/O -- SMSC SCH5617  
LAN --INTEL 82567LM Boazman  
Clock GEN-IDTCV184-2  
TPM - SLB9635 TT1.2  
PCMCIA - Ricon 5C812/PCI

## Expansion Slots:

Half mini PCIE SLOT \* 1

## Main Memory:

DDR III \* 2 - 1066 w/o ECC

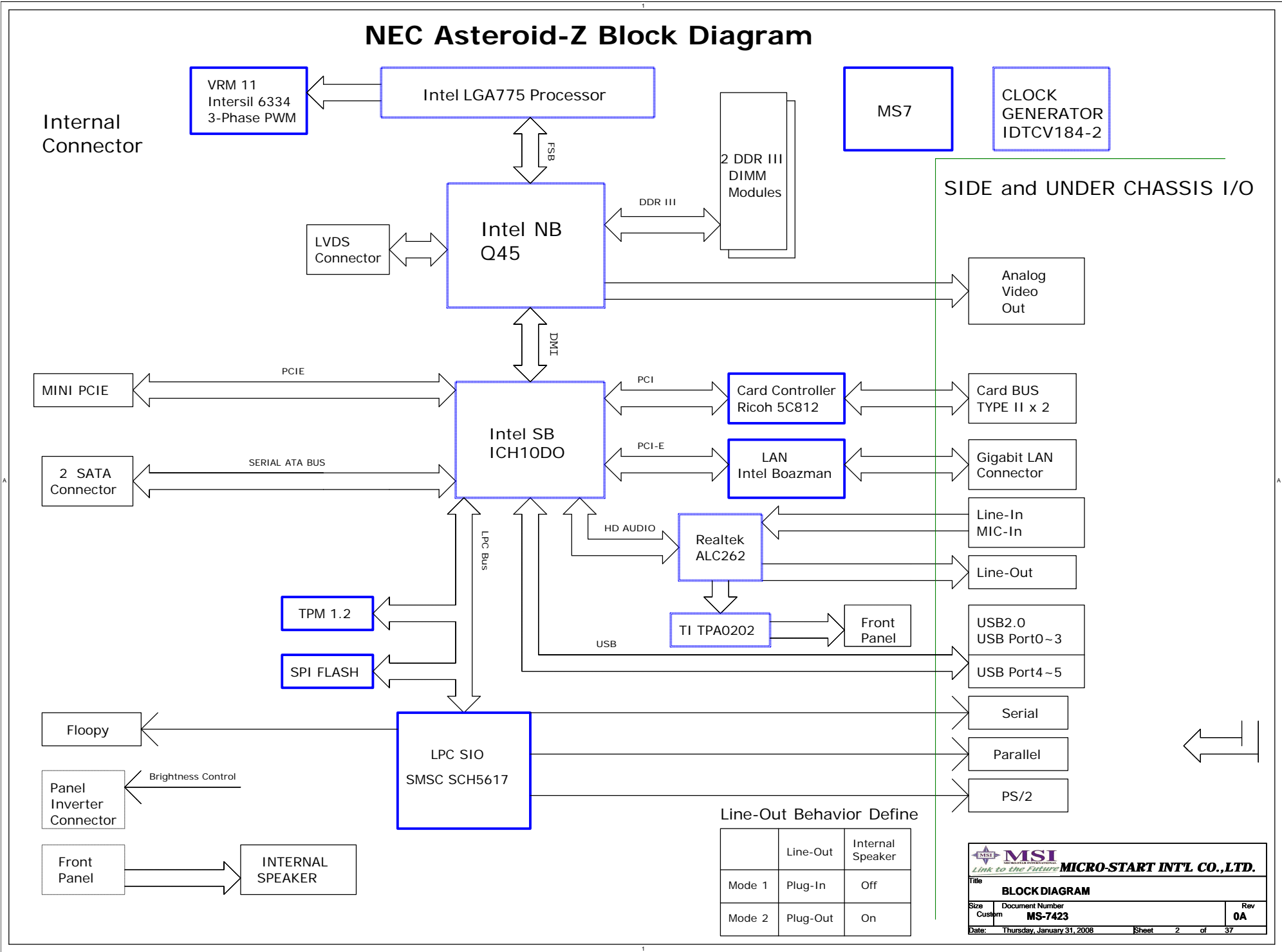
## Intersil PWM:

Controller: Intersil 6334 3Phase

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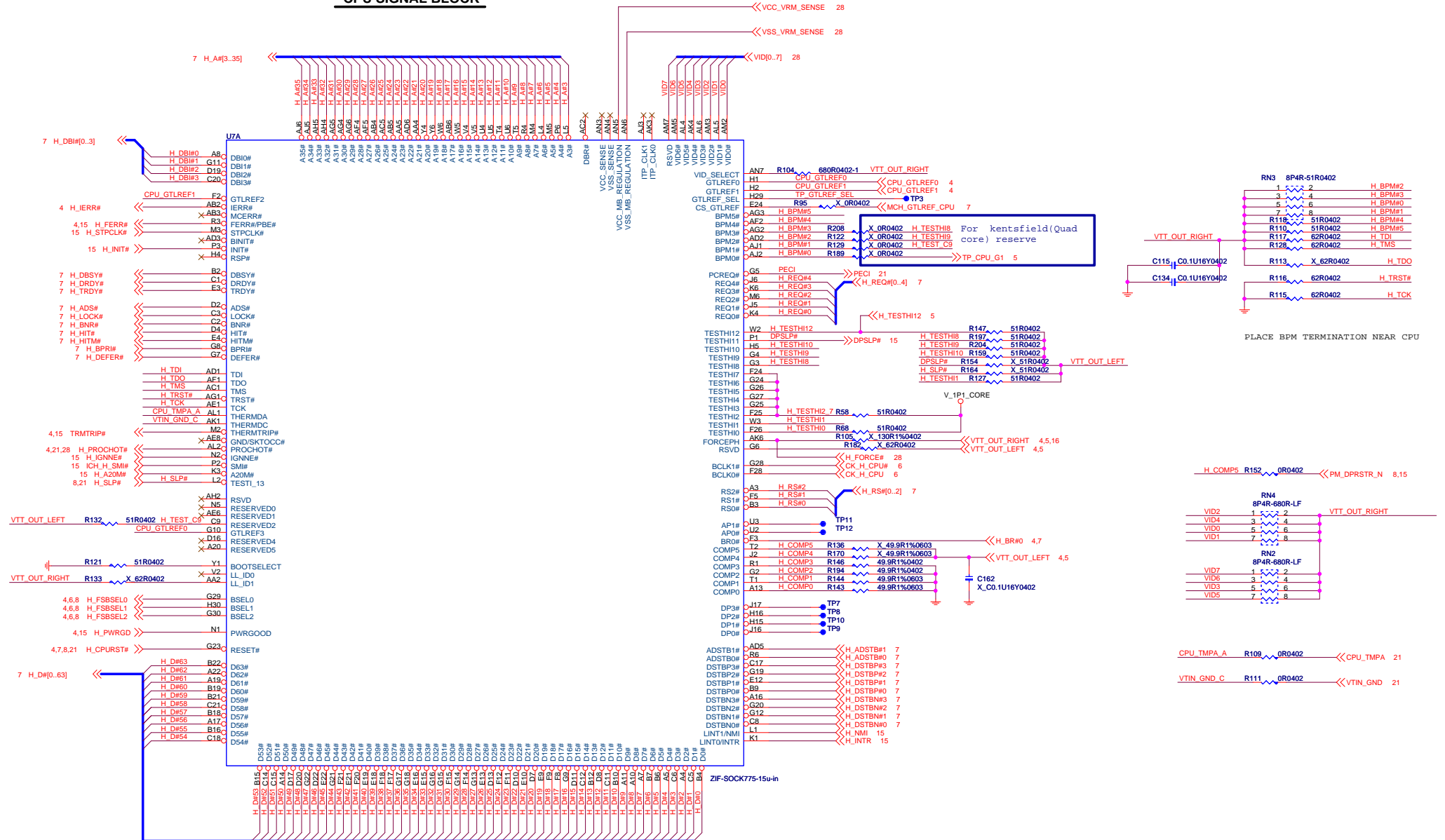


NEC Asteroid-Z Block Diagram



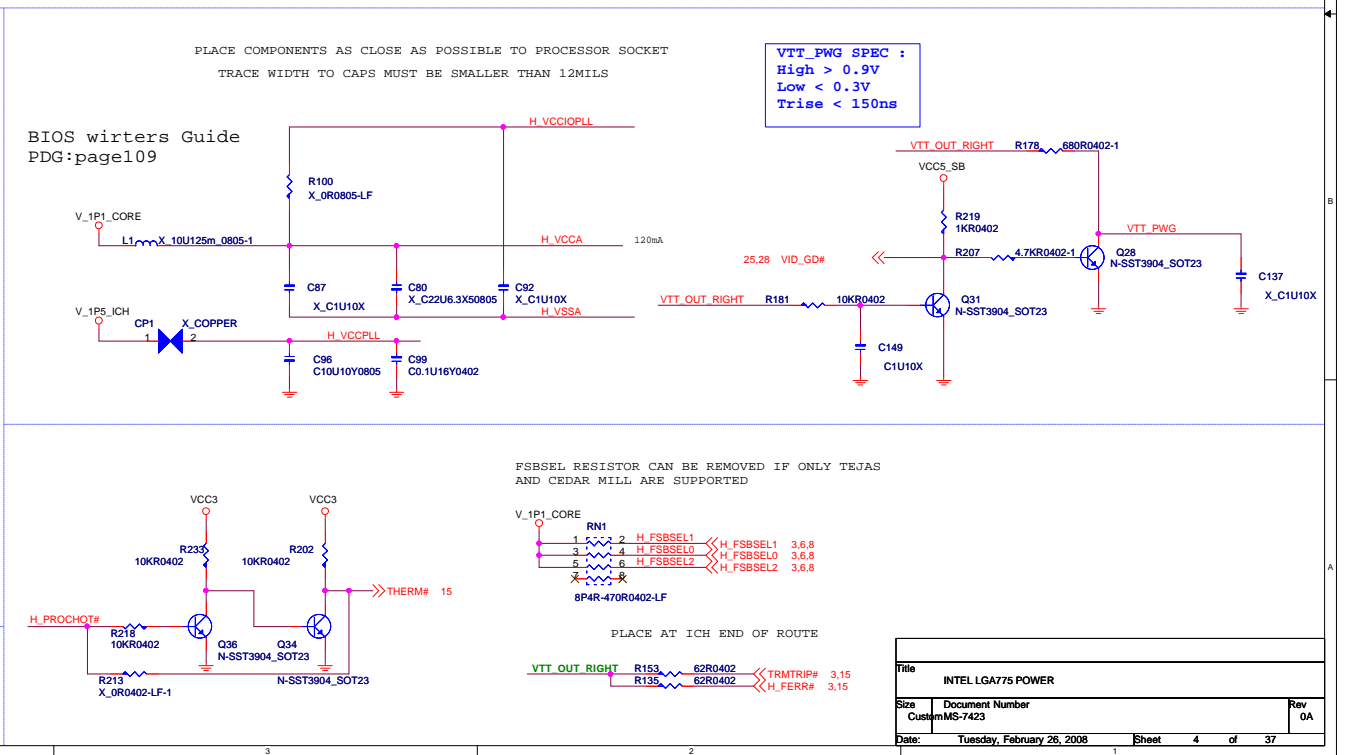
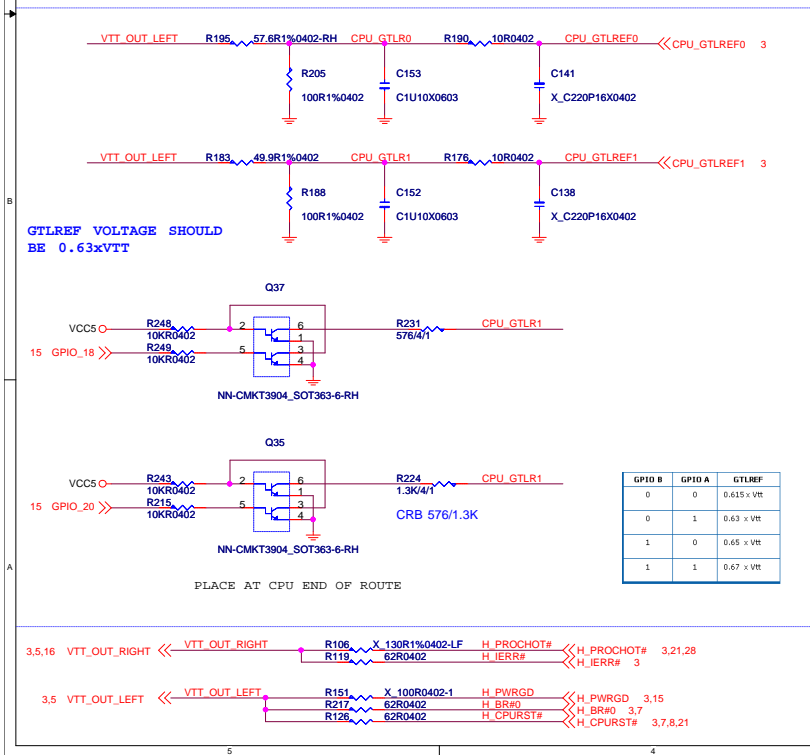
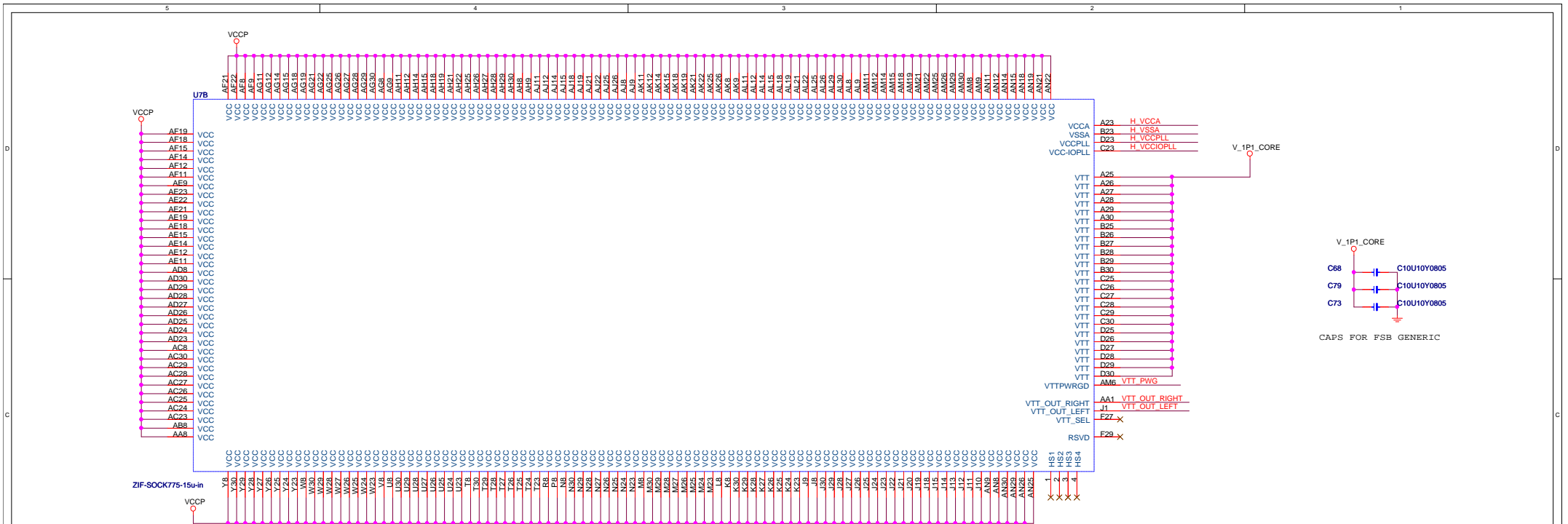


### CPU SIGNAL BLOCK

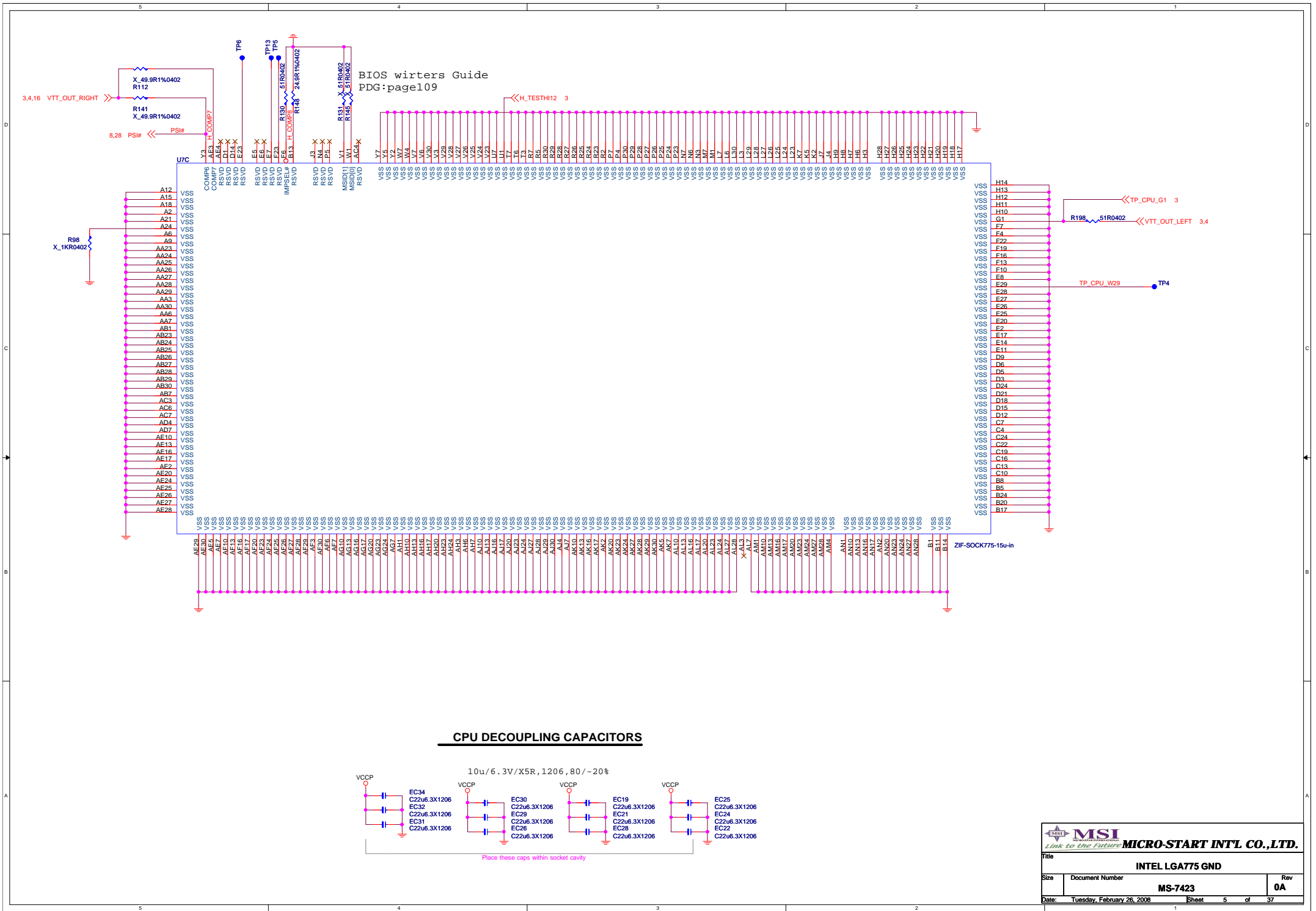


BSEL			TABLE
2	1	0	FSB FREQUENCY
0	0	0	267 MHZ (1067)
0	1	0	200 MHZ (800)
0	0	1	133 MHZ (533)
1	0	0	333 MHZ (1333)







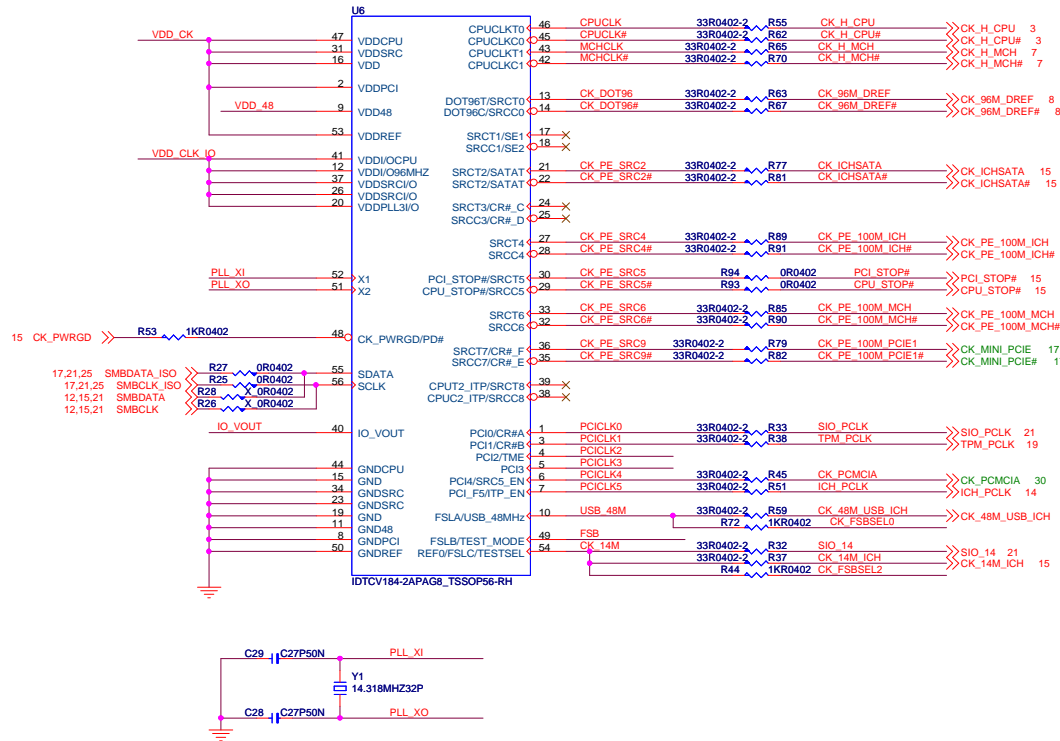




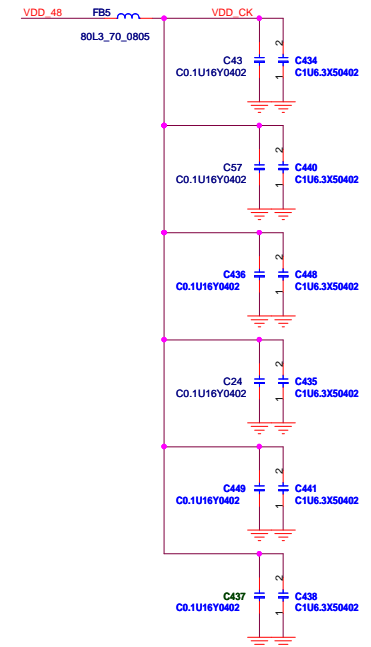
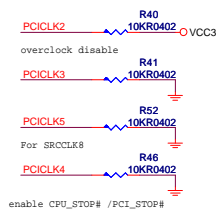
~~CLOCK Generator -~~  
IDTCV184-2

### VDD\_CK Decoupling

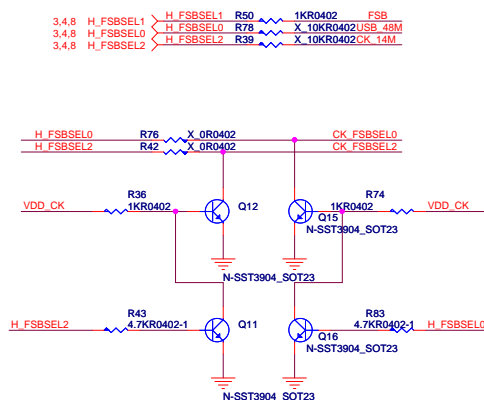
Place near each VDD\_CK Pins



### Strapping resistor

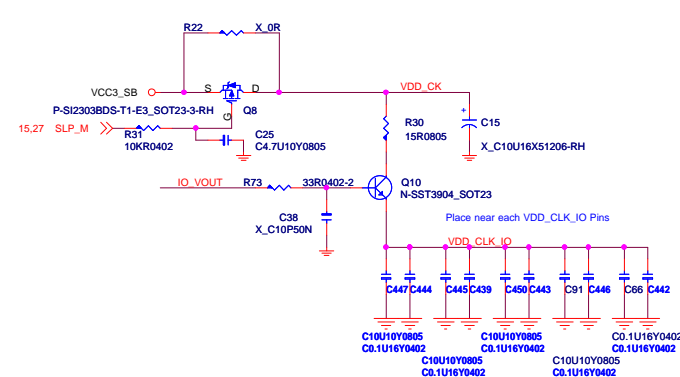


### CPU Frequency select

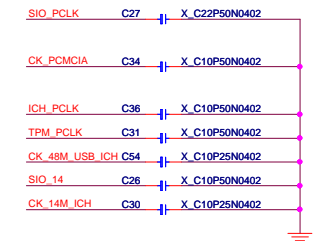


FS <sub>1</sub> C <sup>1</sup> B0b7	FS <sub>1</sub> B <sup>1</sup> B0b6	FS <sub>1</sub> A <sup>2</sup> B0b5	CPU MHz
0	0	0	266.66
0	0	1	133.33
0	1	0	200.00
0	1	1	166.66
1	0	0	333.33
1	0	1	100.00
1	1	0	400.00
1	1	1	Reserve

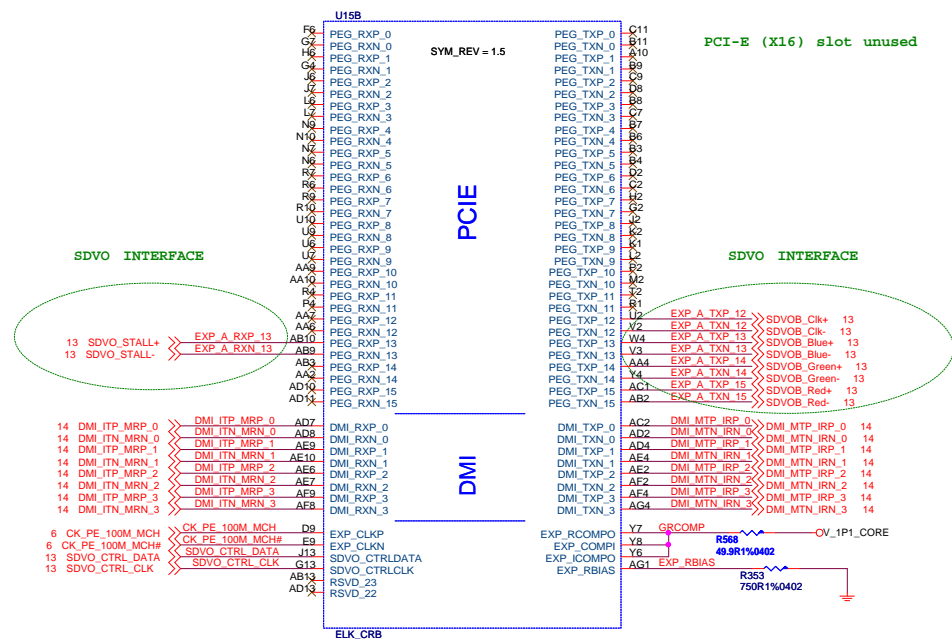
### VDD\_CK & VDD\_CLK\_IO Power



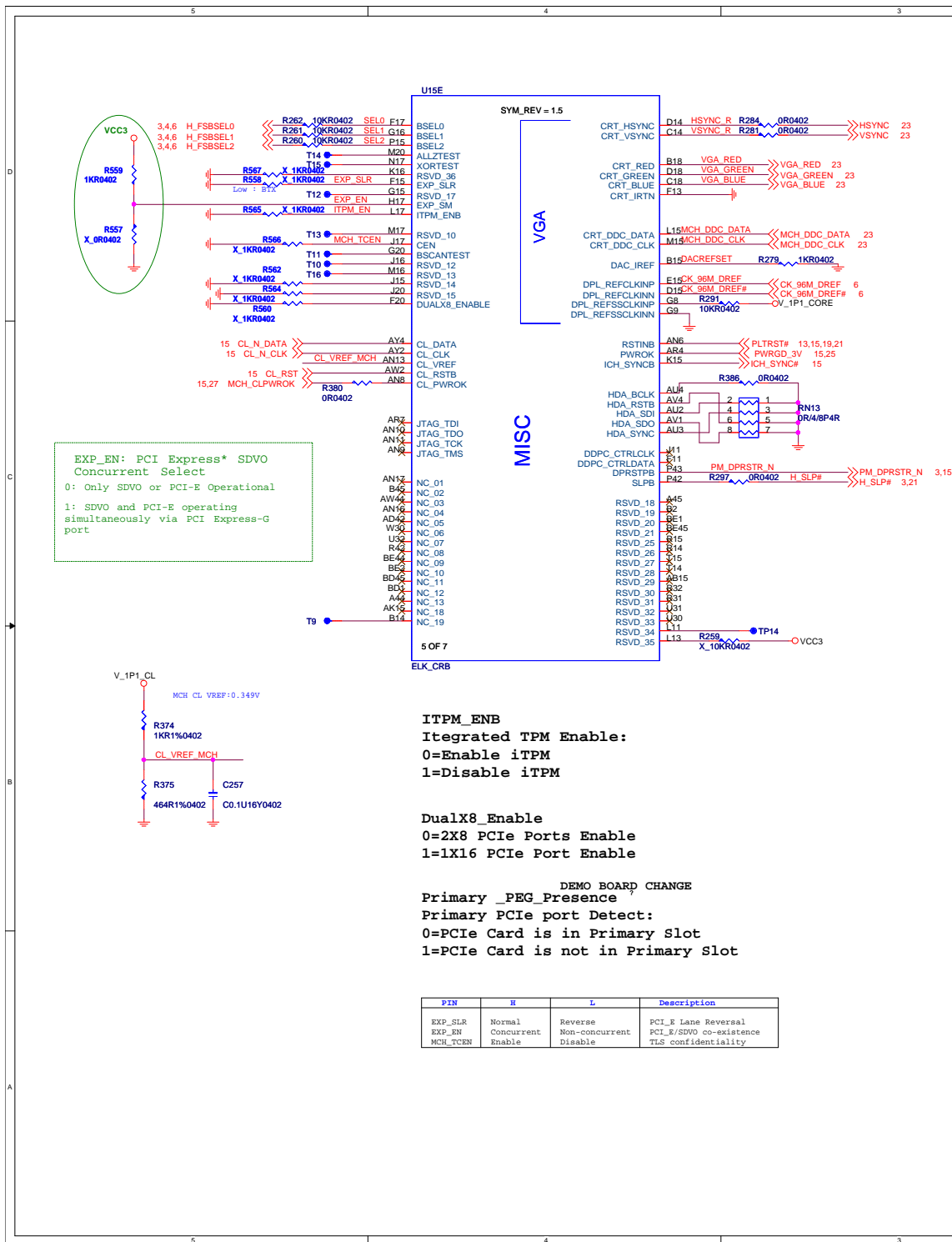
For EMI  
reserver



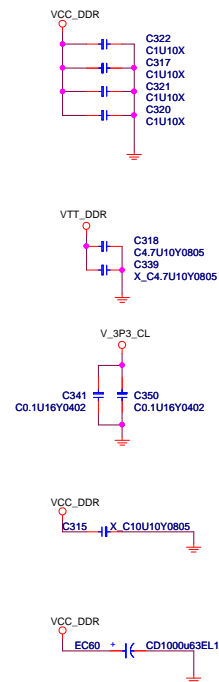




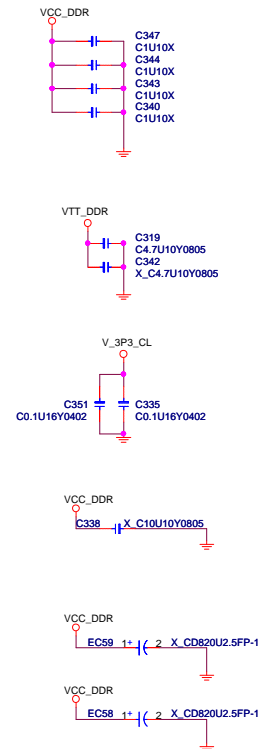




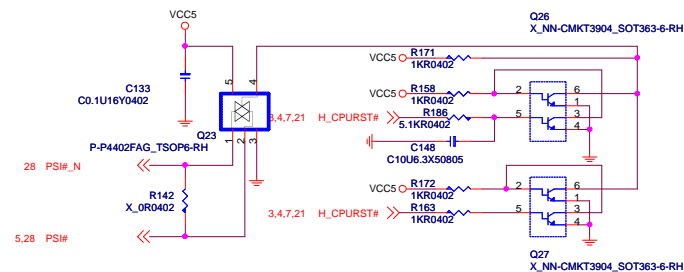
## DIMM1 decoupling cap



## DIMM2 decoupling cap

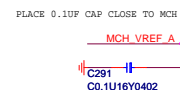
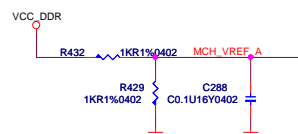


## PSI(POWER STATE INDICATOR)



PDG:page 438 ,Please put near PWM





Title			
<b>Eaglelake Memory</b>			
Size	Document Number		Rev
	<b>MS-7423</b>		<b>0A</b>
Date:	Tuesday, February 26, 2008		Sheet 9 of 37







5

4

3

2

1

U196

A12 VSS\_001  
A15 VSS\_002  
A19 VSS\_003  
A27 VSS\_004  
A31 VSS\_005  
A36 VSS\_006  
A40 VSS\_007  
A6 VSS\_008  
AA1 VSS\_009  
AA11 VSS\_010  
AA12 VSS\_011  
AA13 VSS\_012  
AA16 VSS\_013  
AA17 VSS\_014  
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AA22 VSS\_016  
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AA26 VSS\_018  
AA34 VSS\_019  
AA38 VSS\_020  
AA40 VSS\_021  
AA44 VSS\_022  
AA8 VSS\_023  
AB11 VSS\_024  
AB12 VSS\_025  
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AC24 VSS\_042  
AC26 VSS\_043  
AC5 VSS\_044  
AD12 VSS\_045  
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AD27 VSS\_050  
AD3 VSS\_051  
AD34 VSS\_052  
AD36 VSS\_053  
AD39 VSS\_054  
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AD9 VSS\_056  
AE1 VSS\_057  
AE11 VSS\_058  
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AG45 VSS\_084  
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AJ24 VSS\_091  
AJ26 VSS\_092  
VSS\_093

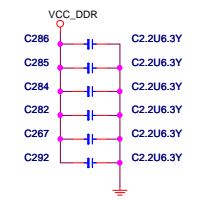
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VSS\_1000

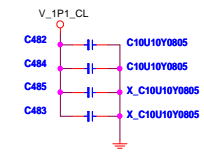
GND

All cap place close to GMCH

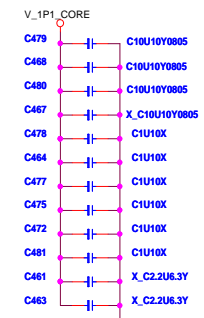
MCH memory decoupling cap



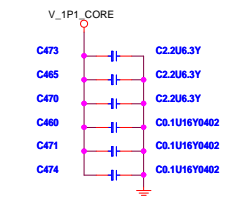
V\_1P1\_CL decoupling cap



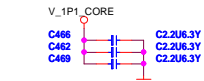
V\_1P1\_Core decoupling cap



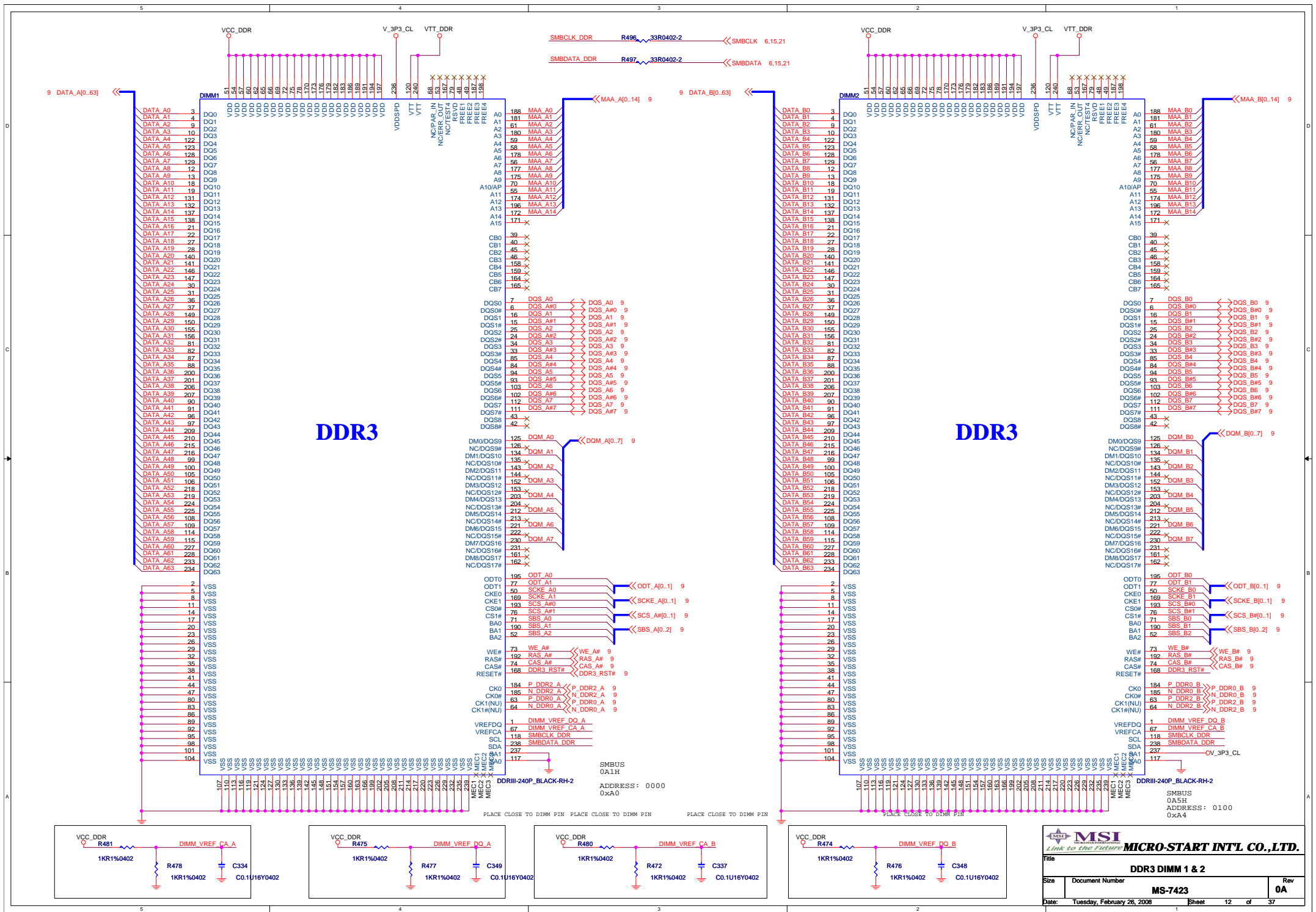
V\_1P1\_Core decoupling cap(FSB)



V\_1P1\_Core decoupling cap(PCIe)









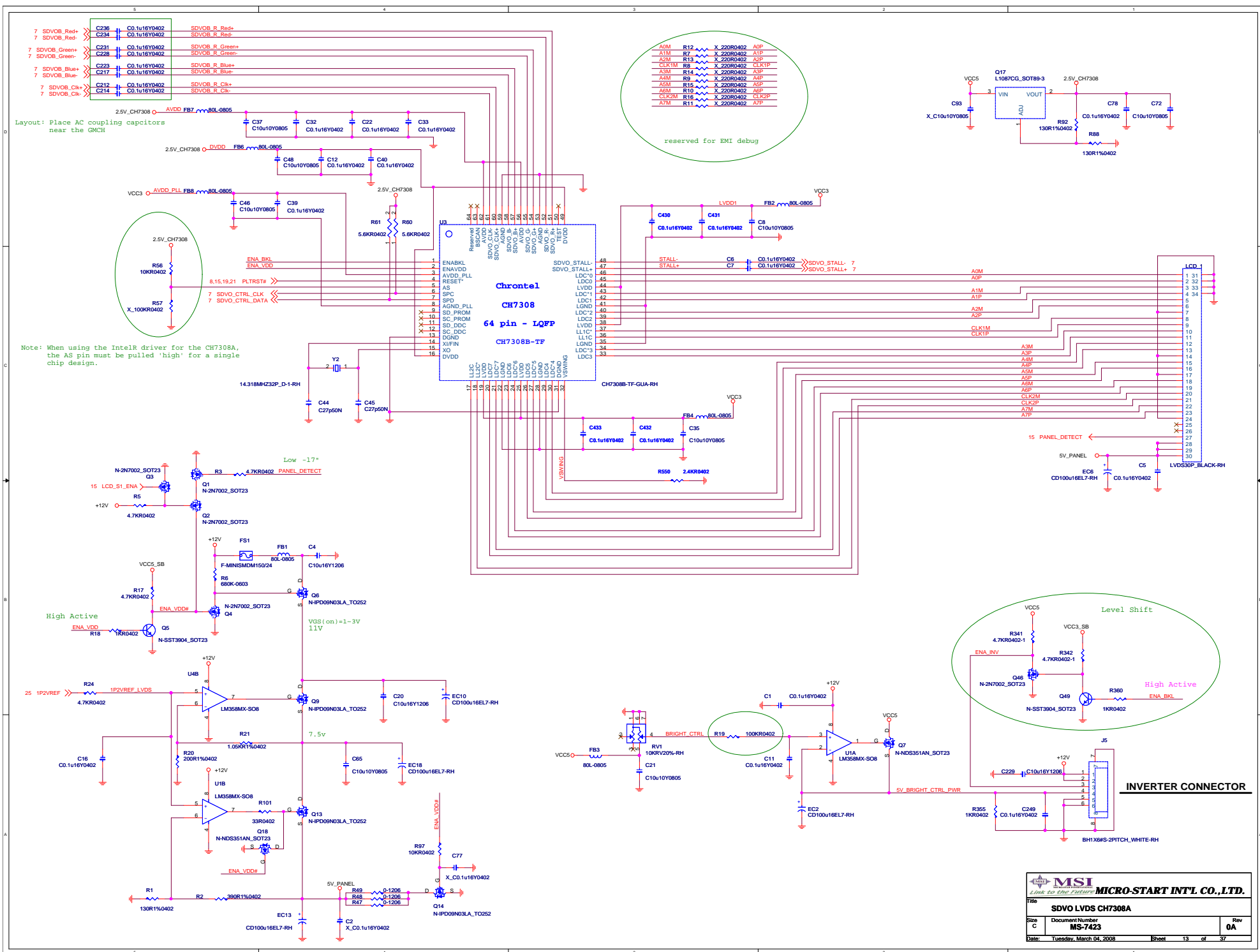




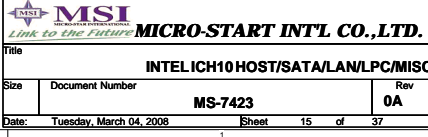
Figure 10 shows the pin connections for the 8P4R-2.7K40A02-LF component. The connections are as follows:

- VCC5:**
  - Pin 1: PREQ#3
  - Pin 2: PCI\_STOP#1
  - Pin 3: PREQ#1
  - Pin 4: PCI\_DEVSEL#
  - Pin 5: PCI\_PERR#
  - Pin 6: PCI\_LOCAL#
  - Pin 7: PCI\_FRAME#
  - Pin 8: PCI\_SERR#
- VCC3:**
  - Pin 1: PREQ#2
  - Pin 2: PCI\_IRQA
  - Pin 3: PIQ#C
  - Pin 4: PIQ#B
  - Pin 5: PIQ#D
  - Pin 6: PIQ#F
  - Pin 7: PIQ#E
  - Pin 8: PIQ#G
- VCC1:**
  - Pin 1: PREQ#0
  - Pin 2: PCI\_IRQA
  - Pin 3: PIQ#C
  - Pin 4: PIQ#B
  - Pin 5: PIQ#D
  - Pin 6: PIQ#F
  - Pin 7: PIQ#E
  - Pin 8: PIQ#G

The components are labeled 8P4R-2.7K40A02-LF, RN11, RN12, RN16, RN14, and RN15.

[illegible]



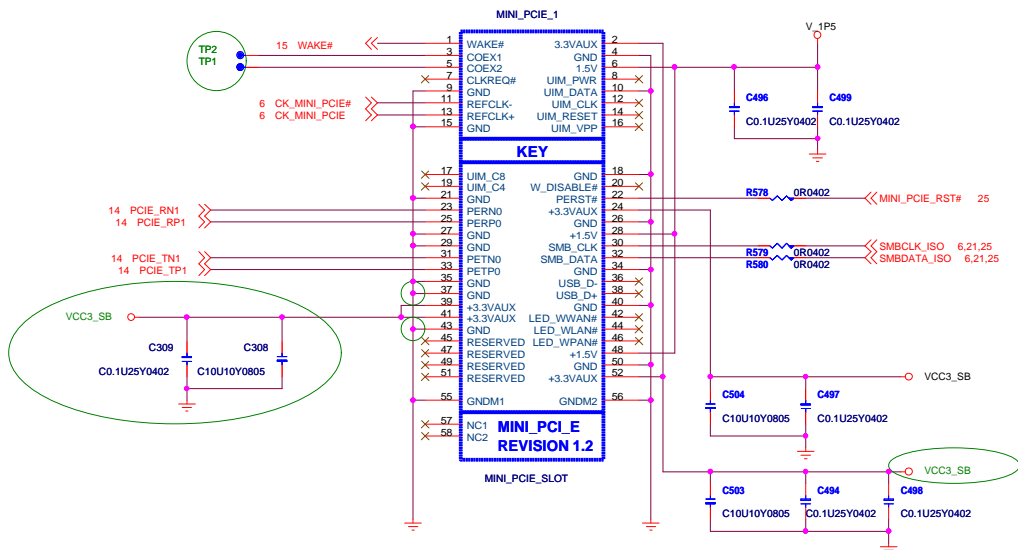




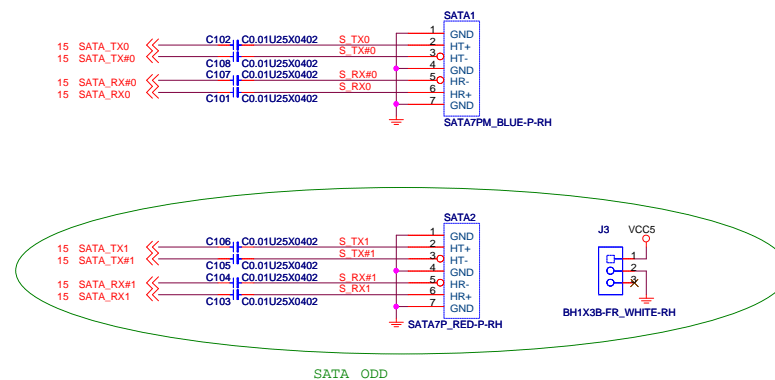




## MINI PCI-E BLOCK

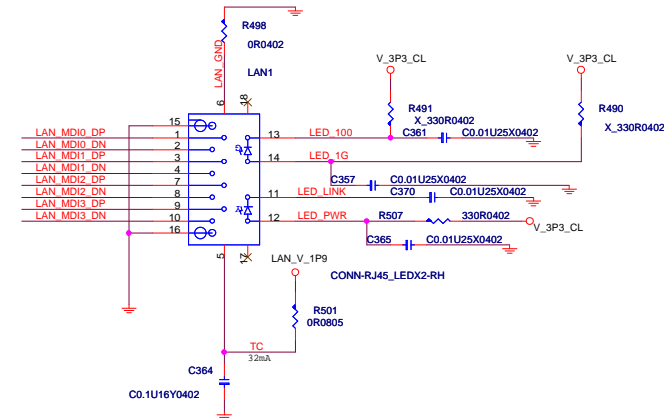


## SERIAL ATA CONNECTOR BLOCK

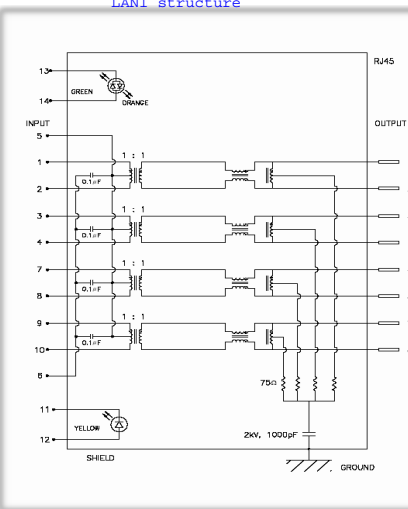




## LAN CONNECTOR



## LAN1 structure



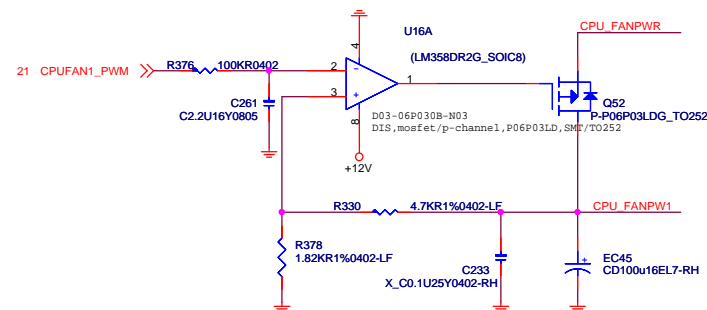
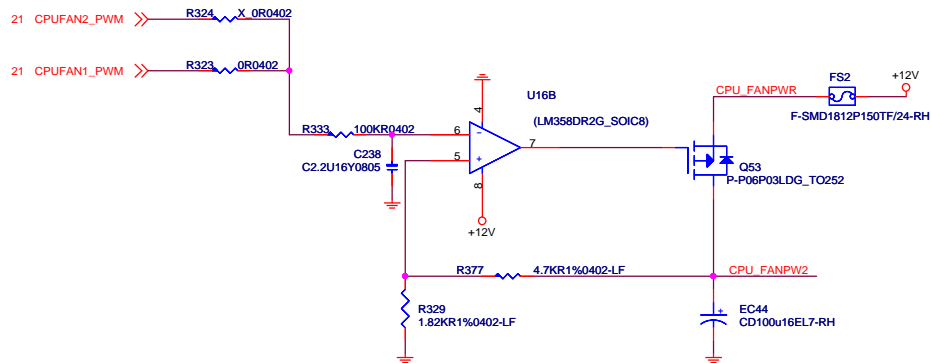
```
Speed LED Type
1000Mbps : Orange
100Mbps  : Green
10Mbps   : LED off
```



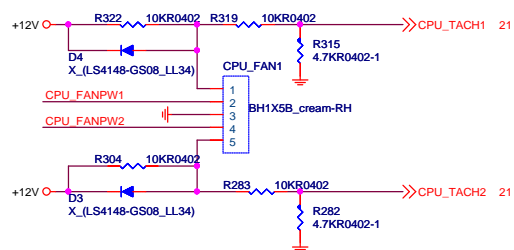
 **MSI**  
MICRO-STAR INTERNATIONAL  
*Link to the Future* **MICRO-START INTL CO.,LTD.**

Title			
LAN-Boazman			
Size	Document Number	Rev	
	MS-7423	0A	
Date:	Tuesday, February 26, 2008	Sheet	18 of 37



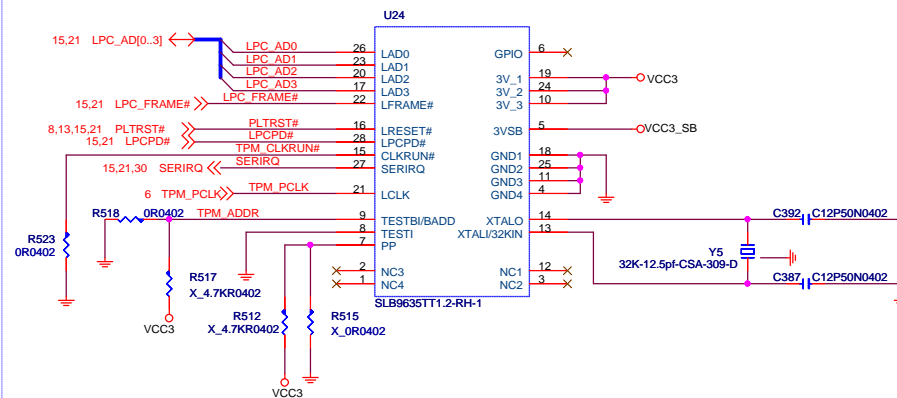


## CPU FAN



## TPM 1.2

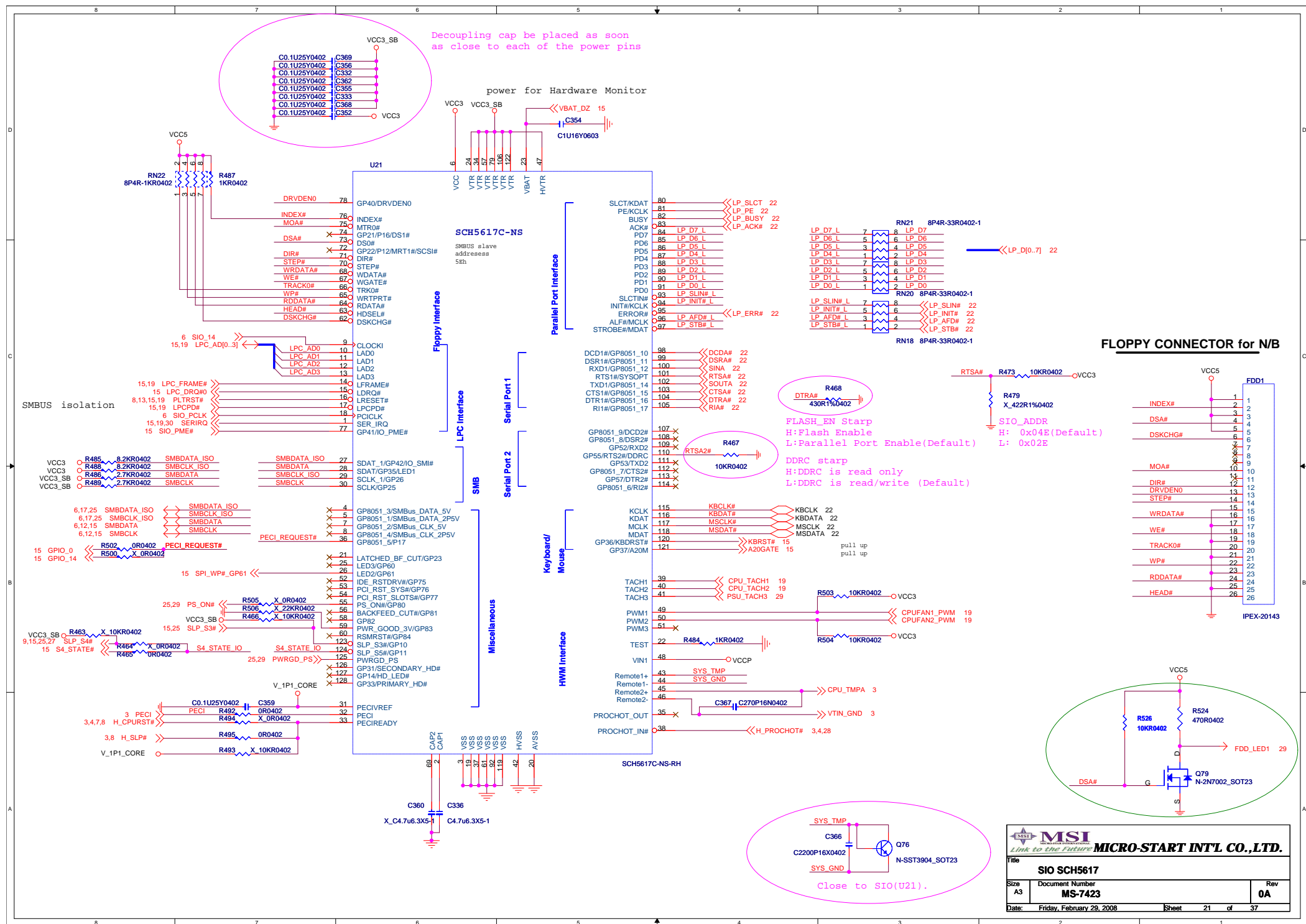
IO Address: 0x02E





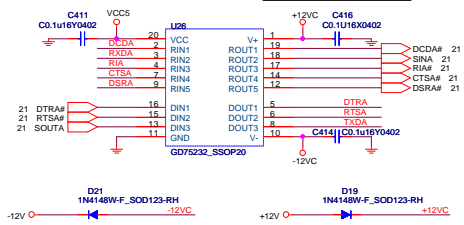




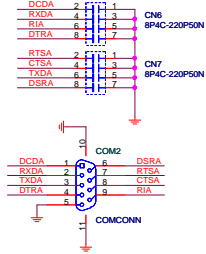
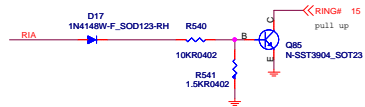




## SERIAL PORT 1

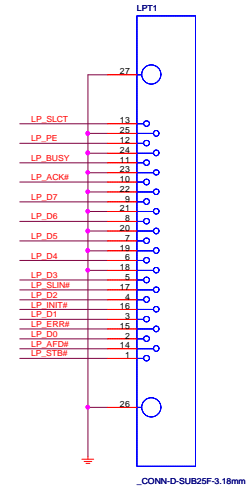
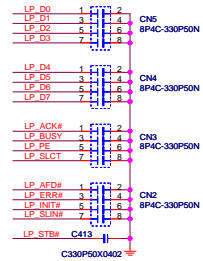
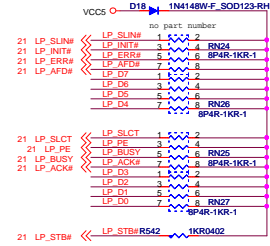


## Wake On Modem Header

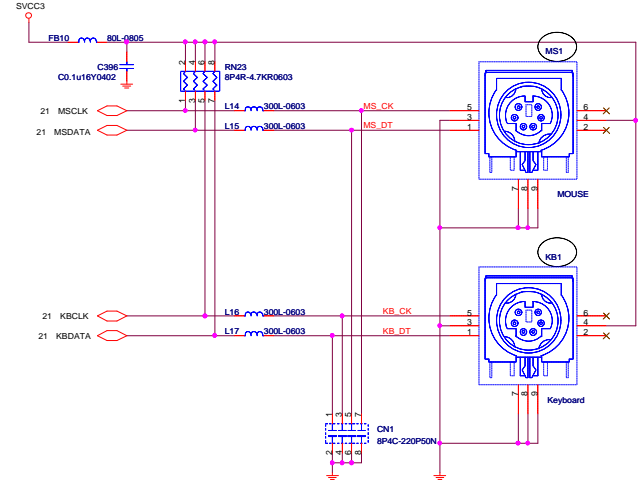


21 LP\_D0[0..7] << LP\_D0[0..7]

## PARALLAL PORT

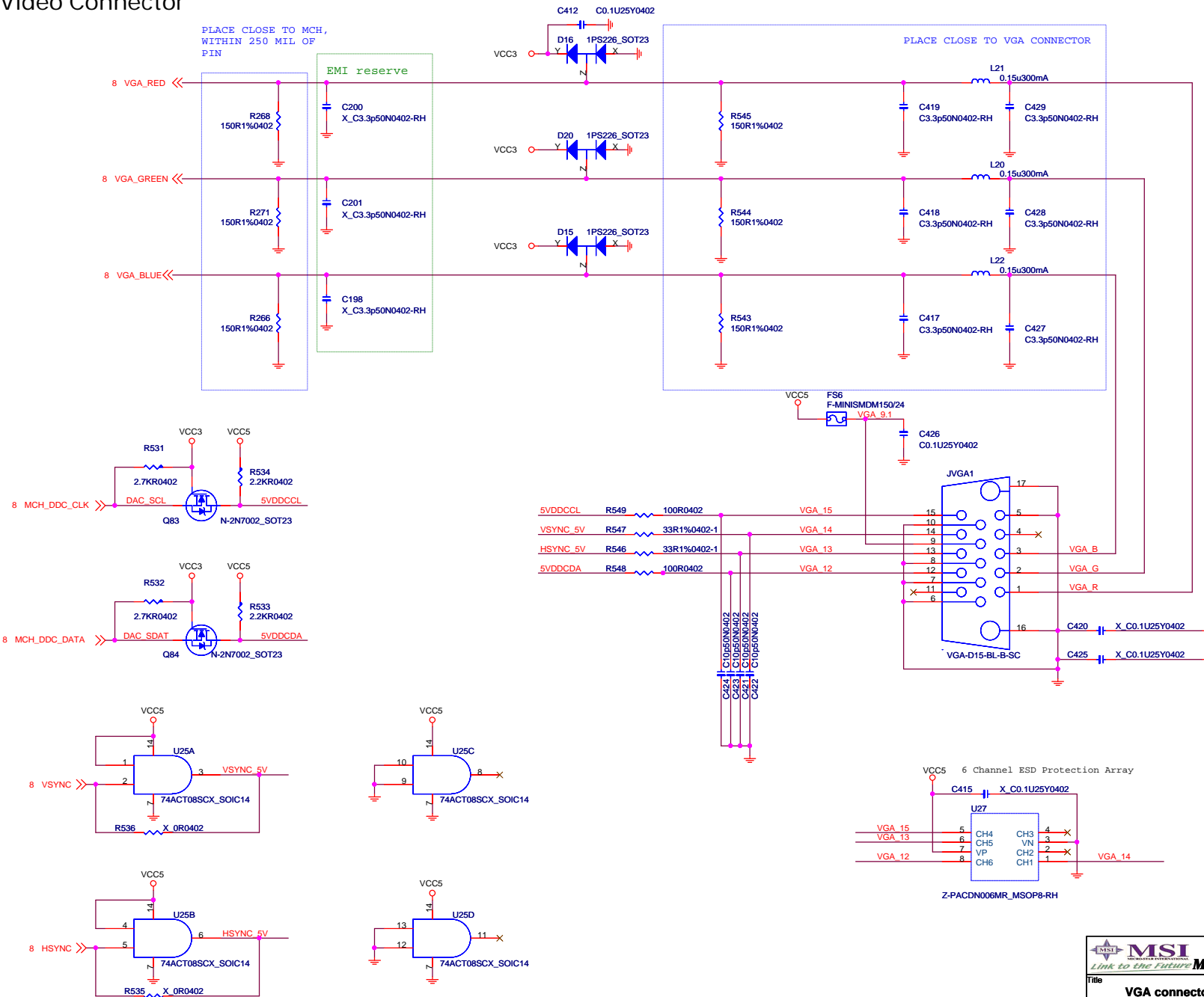


## PS2 KEYBOARD & MOUSE CONNECTOR



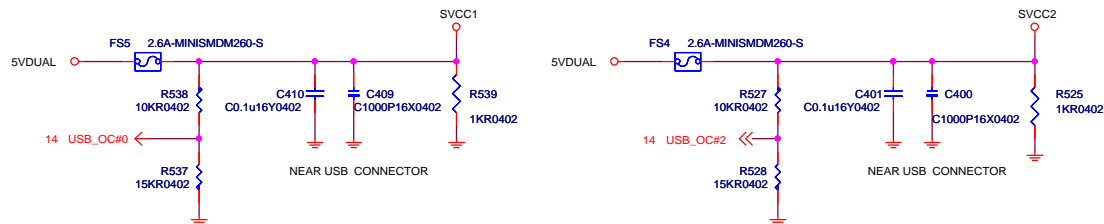


## Video Connector

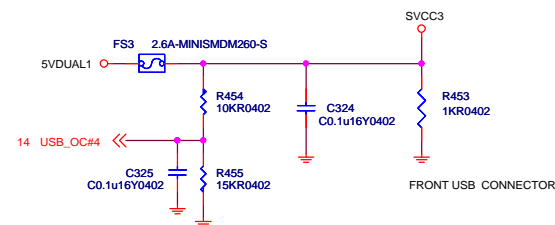




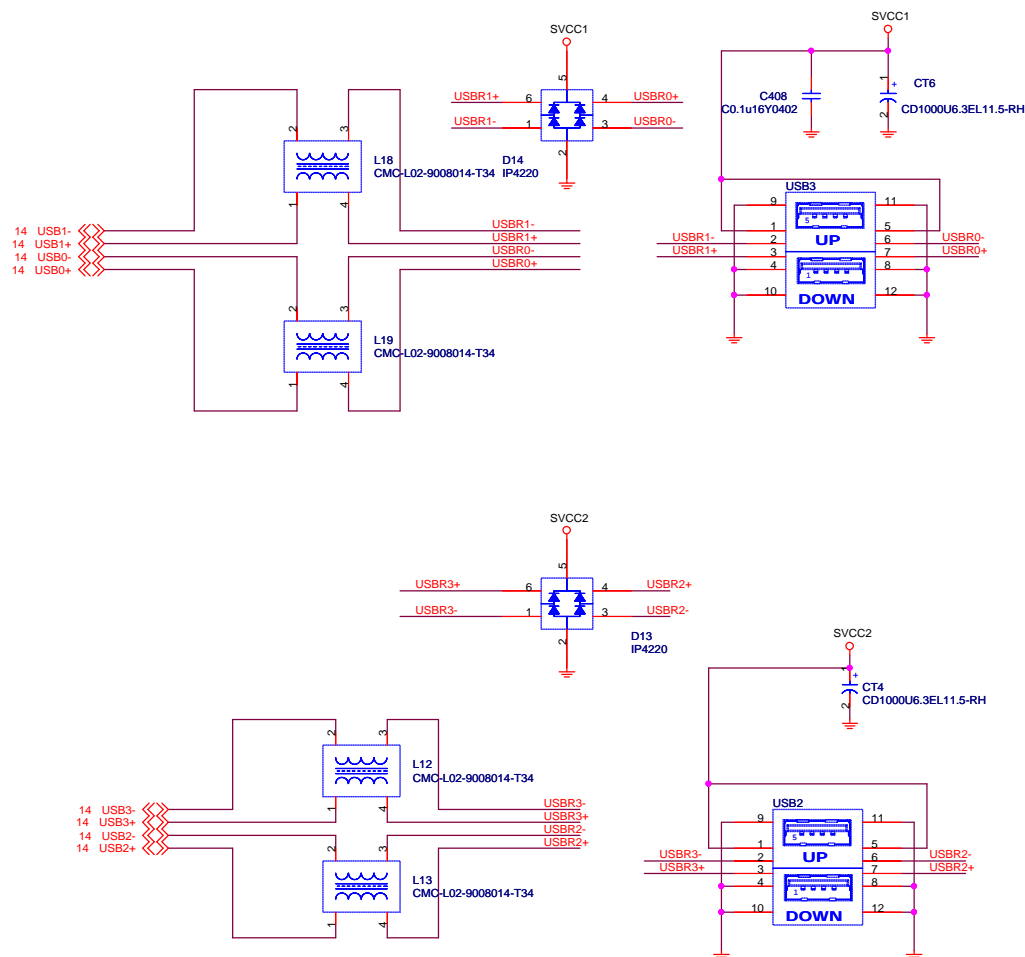
## POWER CIRCUIT FOR USB PORT 0,1,2,3



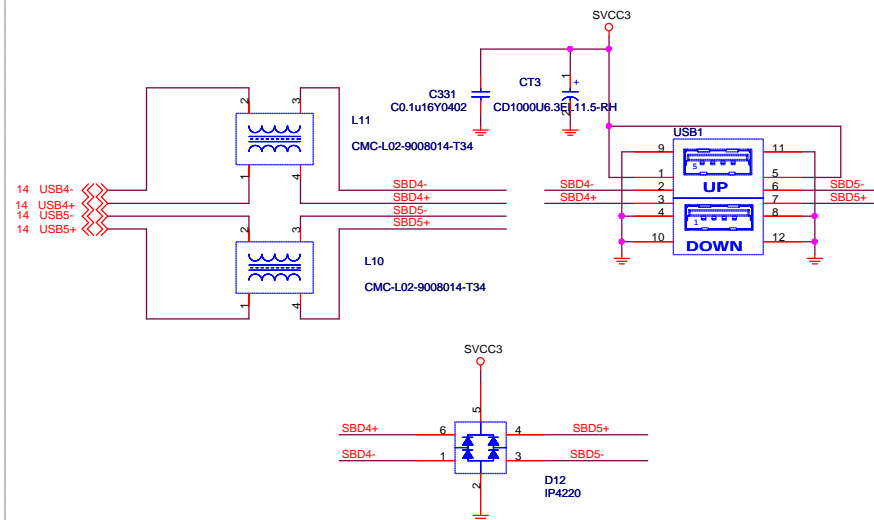
## POWER CIRCUIT FOR USB PORT 4,5



## REAR PANEL USB CONNECTOR FOR USB PORT 0,1,2,3



## FRONT PANEL USB CONNECTOR FOR USB PORT 4,5

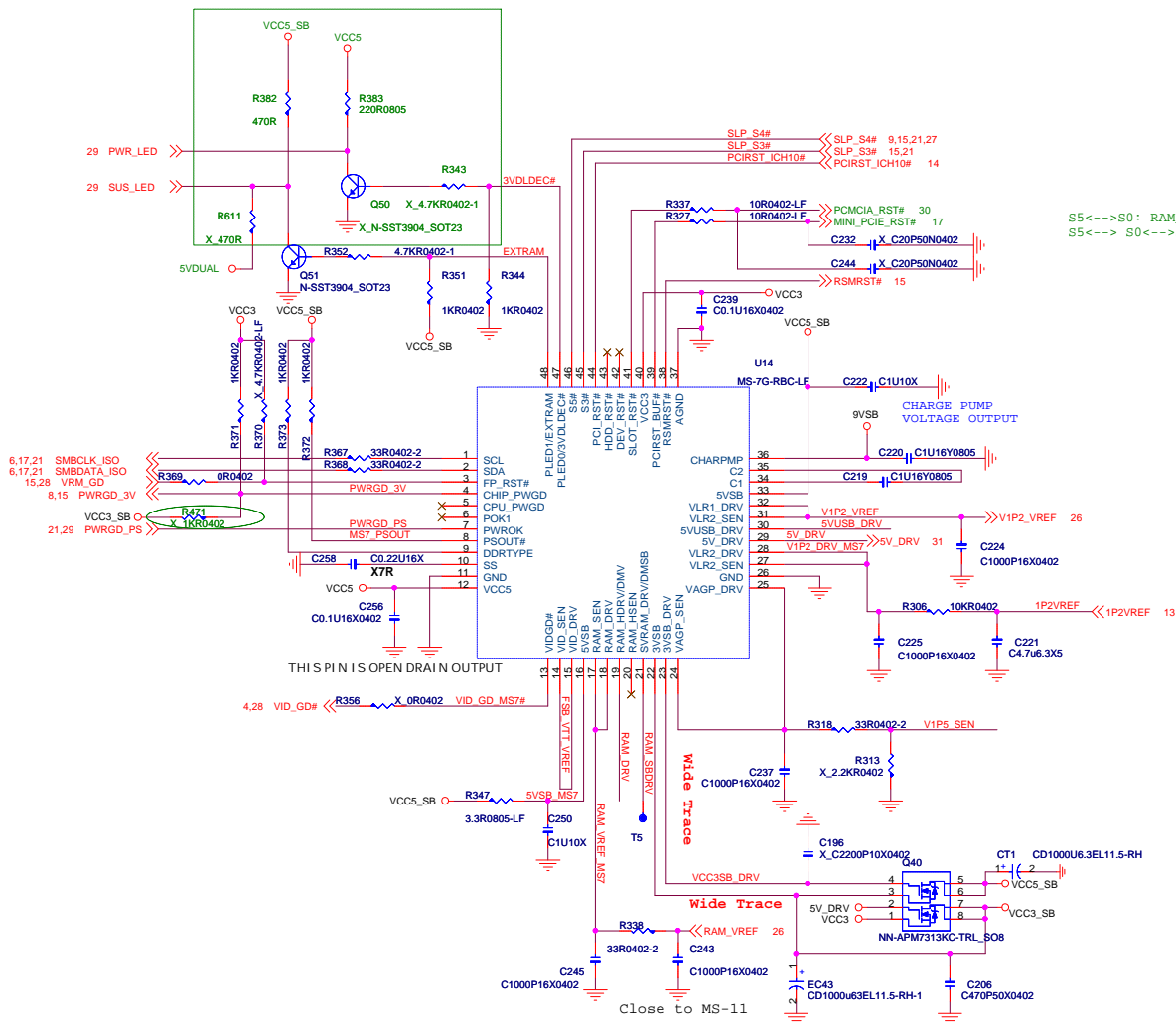
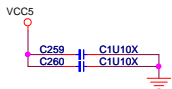




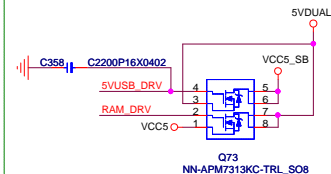
## ACPI Controller

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

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

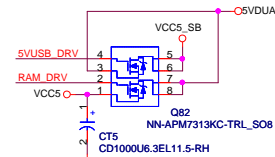


**5V DUAL Front Power**  
( 2A )

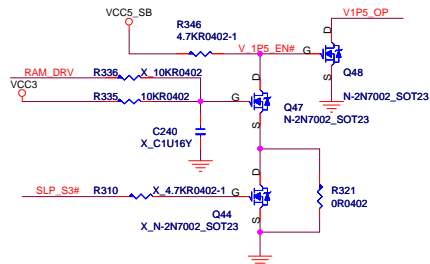


near USB      The same as ROPROS

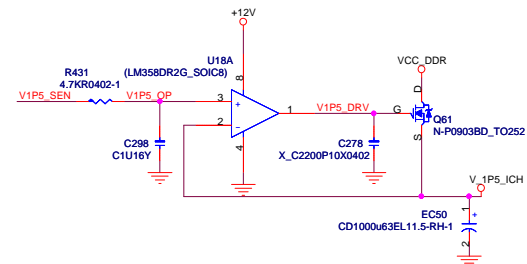
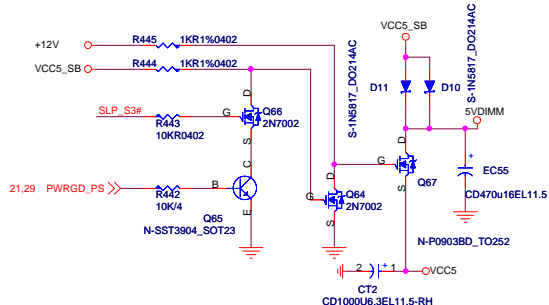
**5V DUAL Rear Power**  
( 2A )



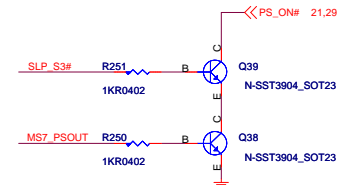
V1P5\_SEN S3 power sequency



**ICH10 1.5V POWER**  
**(2.385A)**

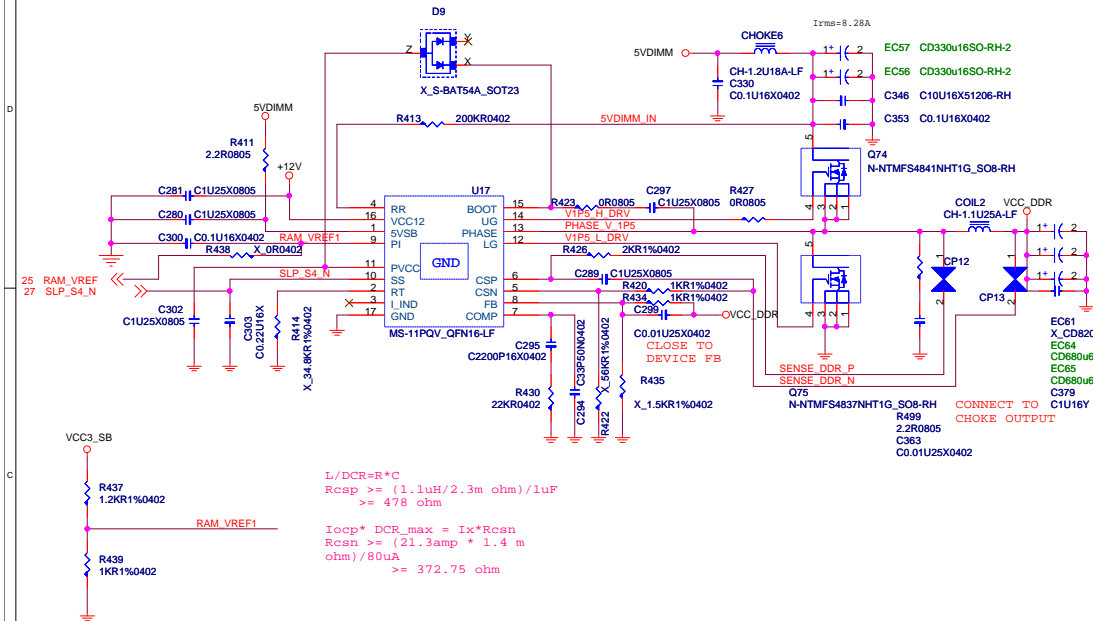
5VDIMM

**PSON#**

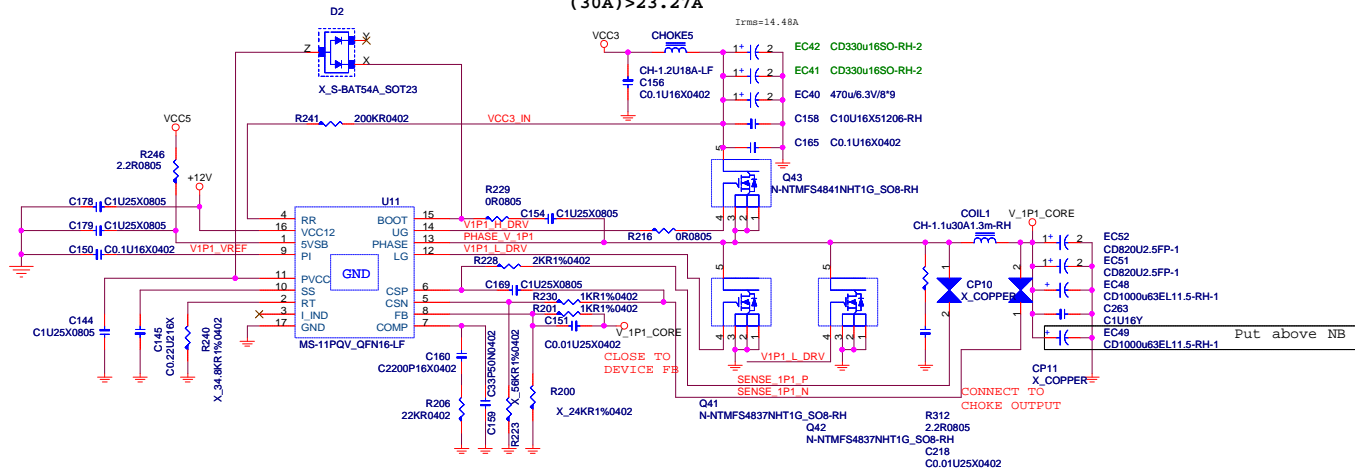




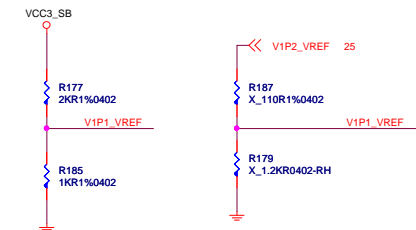
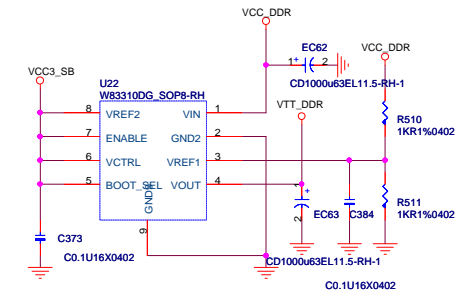
DDRIII 1.5V POWER  
(18A) > 13.86A



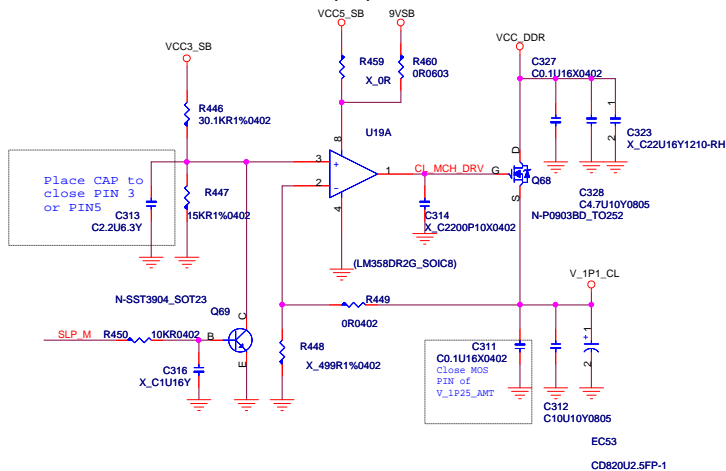
GMCH/ICH10 1.1V POWER  
(30A)>23.27A



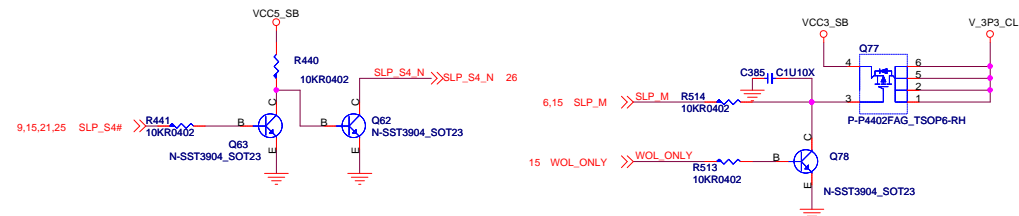
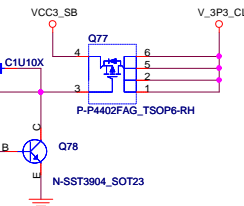
**DDR VTT Power**  
**( 0.83A )**



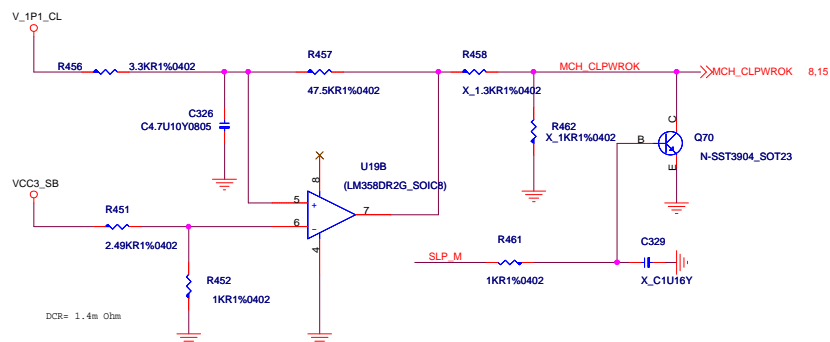


$$\frac{V_{1P1\_CL}}{(3A)}$$


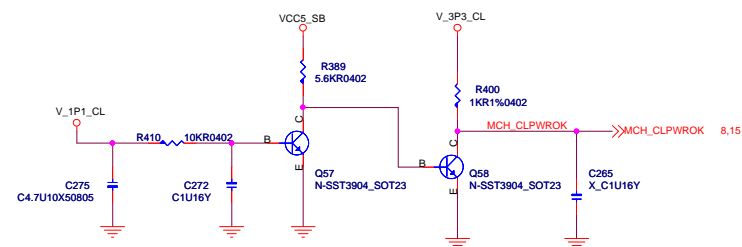
## DIMM Softsart for iAMT


$$\frac{V_{3P3\_CL}}{(711mA)}$$


### Reserve CL\_PWROK circuit



## CL\_PWROK

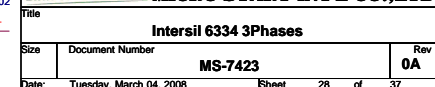
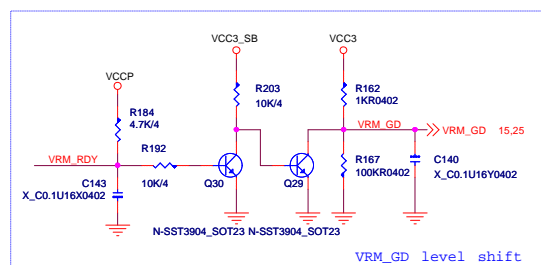


Note:

- SLP\_S4#
  - AMT Disable-->indicate ACPI S4 state,DRAM power off.
  - AMT Enable-->not be asserted ACPI S4 state,DRAM power ON
- SLP\_M#
  - AMT Enable SLP\_M#-->Control the overall power to Intel AMT during ACPI S3-S5.
- S4\_SATE#
  - AMT Enable-->indication of ACPI S4 state

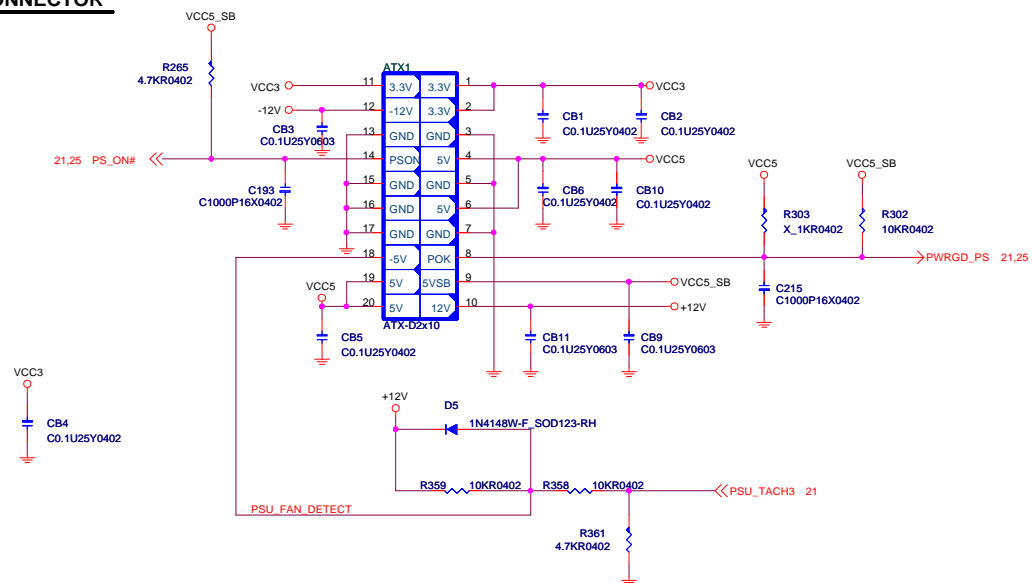


### 3 Phases

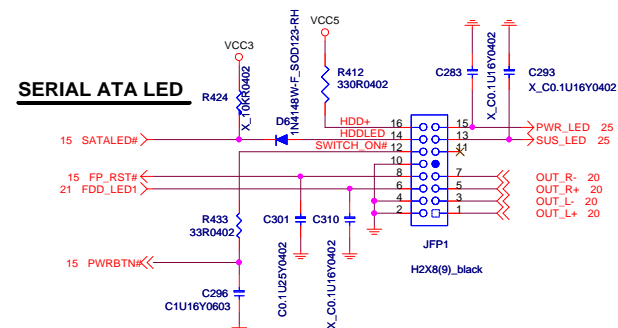




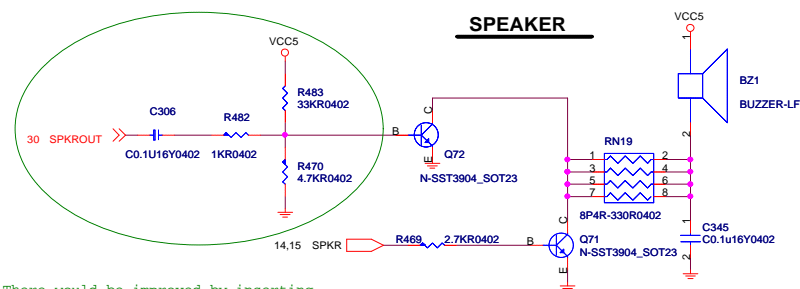
## ATX CONNECTOR



### Front Panel

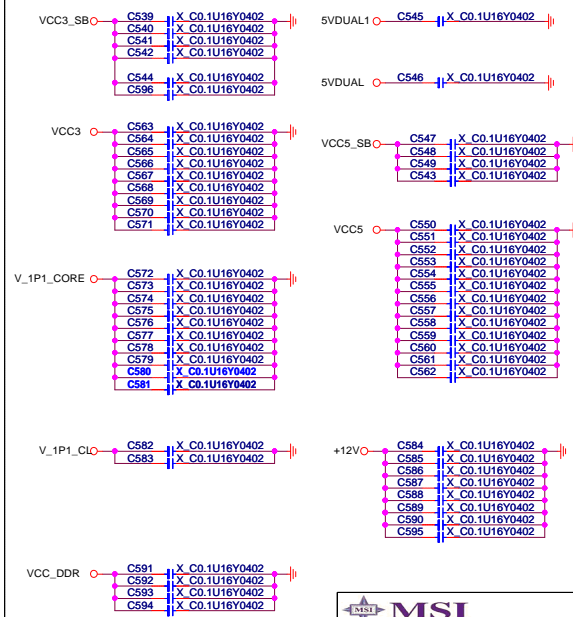


**SPEAKER**

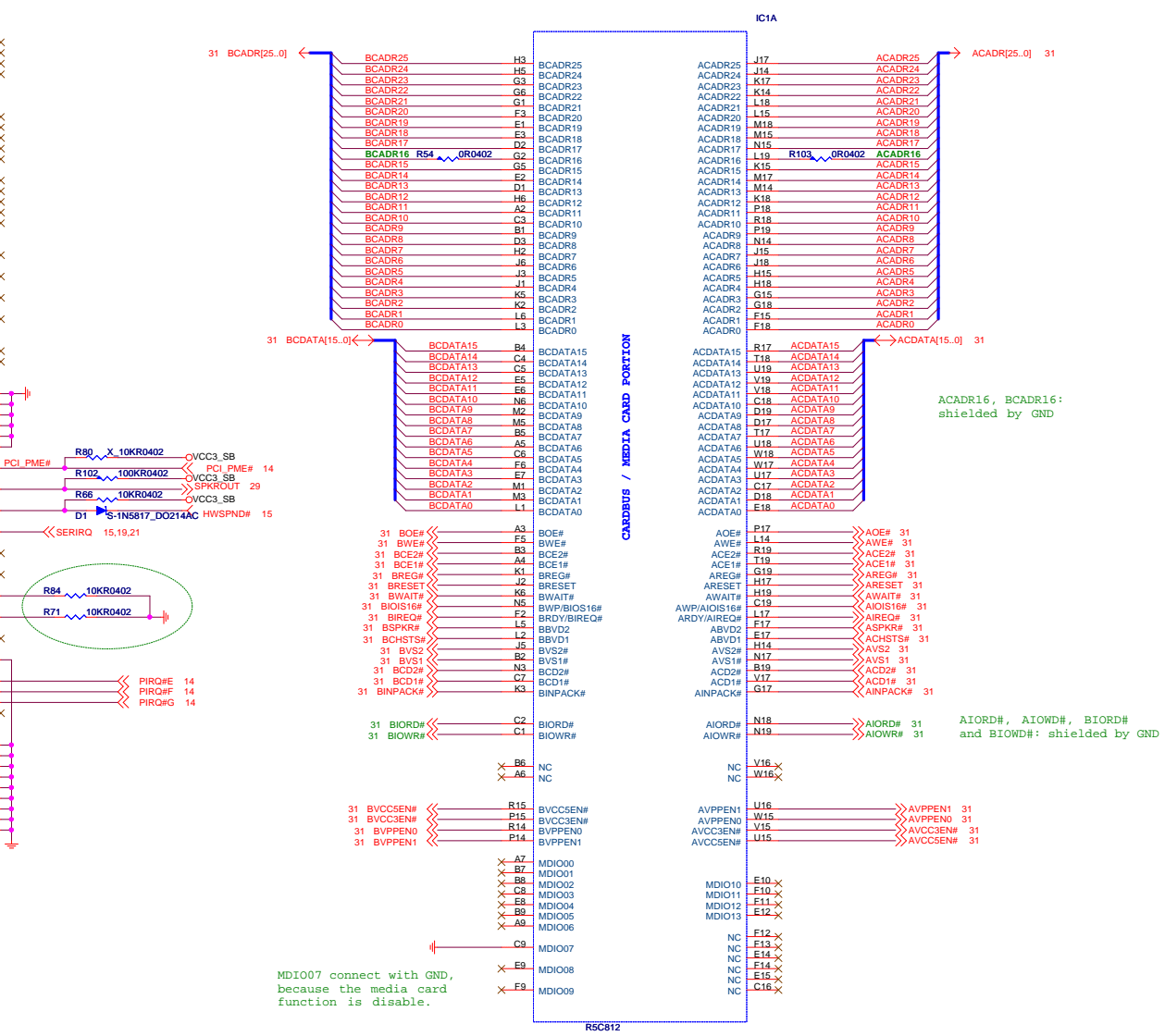
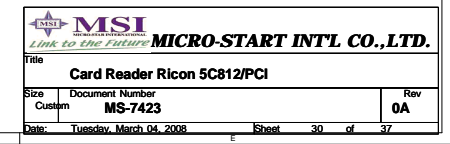


There would be improved by inserting  
some 32bits CardBus card

**EMI decoupling cap**

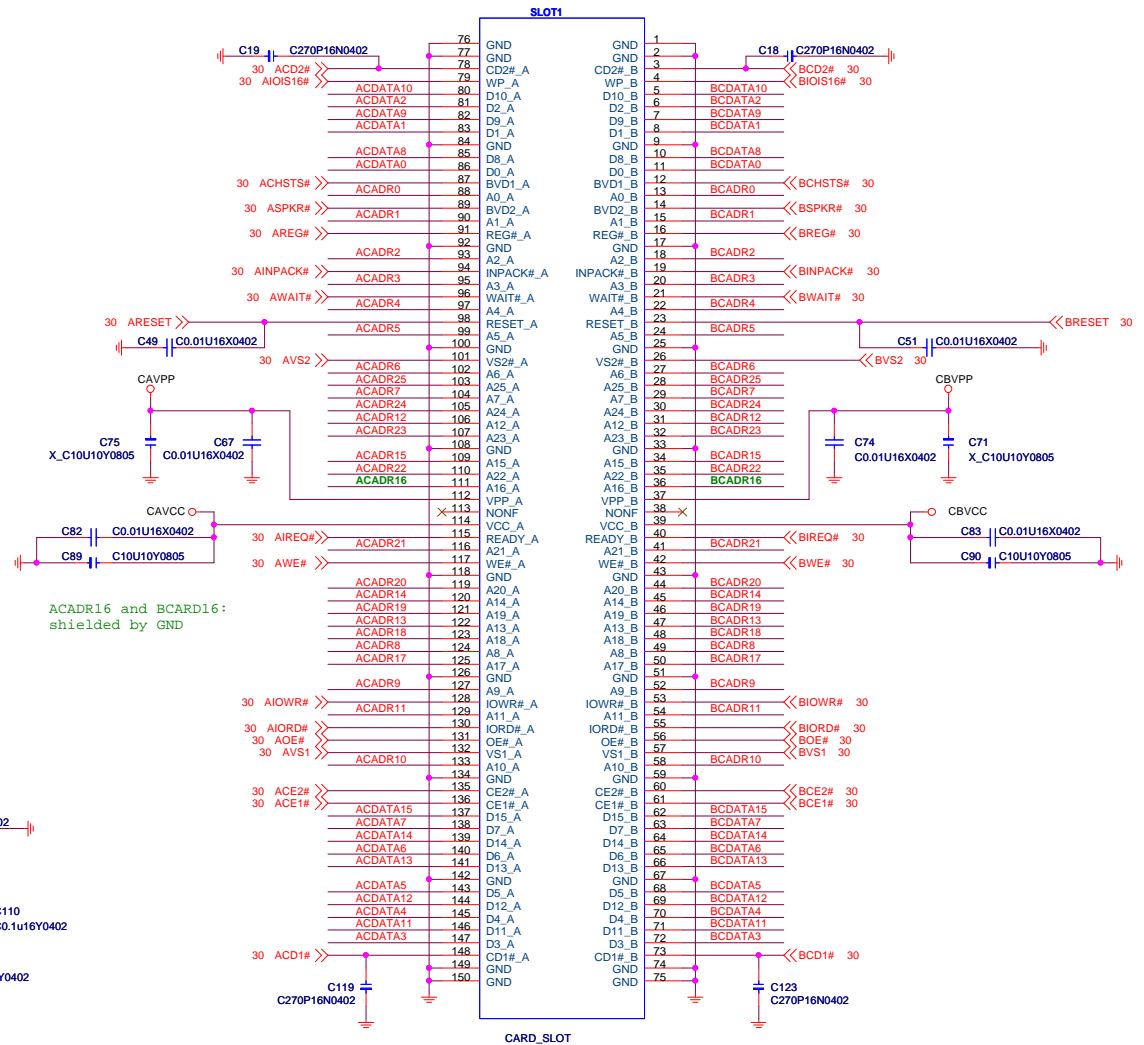
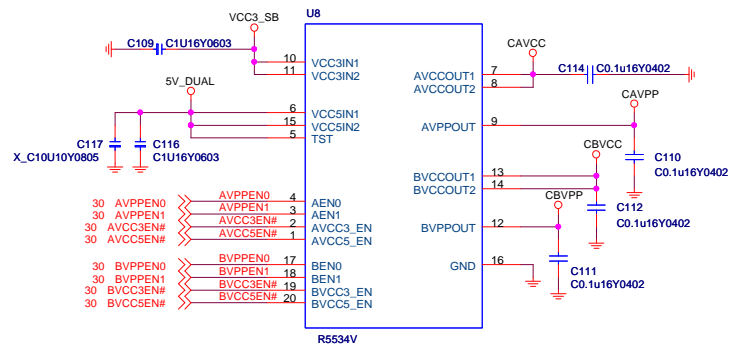
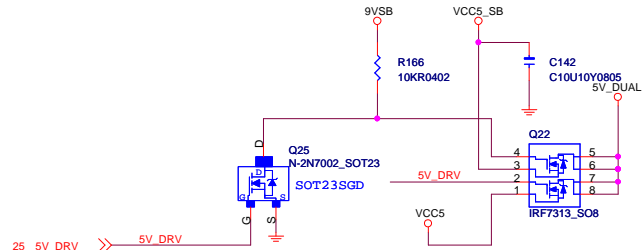








30 BCADR[25..0] >=====  
 30 BCDA[15..0] <=====  
 30 ACADR[25..0] >=====  
 30 ACDA[15..0] <=====









# ICH10

GPIO Pin	Type	Default	Function	Power	MUXED/ UNMUXED	Pin-out
GPIO 0	I/O	GPIO	BMBUSY# function, Pull-up to VCC3 with 10K	VCC3	MUXED	N7
GPIO 1	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3	MUXED	AK21
GPIO 2	I/O	GPIO	PIRQ#E pull-up to VCC3 with 8.2K	VCC3		K6
GPIO 3	I/O	GPIO	PIRQ#F pull-up to VCC3 with 8.2K	VCC3		L7
GPIO 4	I/O	GPIO	PIRQ#G pull-up to VCC3 with 8.2K	VCC3		F2
GPIO 5	I/O	GPIO	PIRQ#H pull-up to VCC3 with 8.2K	VCC3		G2
GPIO 6	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3	MUXED	AH22
GPIO 7	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3	MUXED	AK23
GPIO 8	I/O	GPIO	Pull-up to VCC3_SB with 10K	VCC3_SB	UNMUXED	A20
GPIO 9	I/O	GPO/WOL	WOL_ENABLE/GPIO9, pull-down with 100K	VCC3_SB	MUXED	A18
GPIO 10	I/O	GPIO	Detect AUDIO Devices, Pull-up to VCC3_SB with 10K	VCC3_SB	MUXED	C17
GPIO 11	I/O	SMBALERT#	SMB_ALERT# pull-up to VCC3_SB with 10K	VCC3_SB		C16
GPIO 12	I/O	GPO	LAN_DISABLE connect to LAN Boazman	VCC3_SB	UNMUXED	A8
GPIO 13	I/O	GPIO	SIO_PME# connect to SIO, pull-up VCC3_SB with 10K	VCC3_SB	UNMUXED	A19
GPIO 14	I/O	GPIO	Pull-up to VCC3_SB with 10K directly	VCC3_SB	MUXED	A9
GPIO 15	I/O	GPO	PCI_STOP# connect to CLK Gen and R5C812	VCC3_SB	MUXED	C15
GPIO 16	I/O	GPO	NC	VCC3	UNMUXED	M2
GPIO 17	I/O	GPIO	Pull-up to VCC3 with 10K directly	VCC3	MUXED	AH21
GPIO 18	I/O	GPO	GTREF GPO , Pull-up to VCC3 with 10K directly	VCC3	UNMUXED	K1
GPIO 19	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3		AE20
GPIO 20	I/O	GPO	GTREF GPO	VCC3	UNMUXED	AF5
GPIO 21	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3		AK25
GPIO 22	I/O	GPIO	Pull-up to VCC3 with 10K	VCC3	MUXED	AJ24
GPIO 23	I/O	LDRO1#	LDRO_1# pull-up VCC3 with 10K(reserved)	VCC3	MUXED	J3
GPIO 24	I/O	GPO	NC	3.3V_SB	MUXED	A14
GPIO 25	I/O	GPO	CPU_STOP# connect to CLK Gen	3.3V_SB	UNMUXED	B18
GPIO 26	I/O	GPO	S4 STATE# pull-up to VCC3_SB with 1K ohm(reserved)	3.3V_SB		C11
GPIO 27	I/O	GPO	PANEL_DETECT pull up to VCC3 with 10Kohm	3.3V_SB		A11
GPIO 28	I/O	GPO	LCD_S1_ENA pull up to VCC3_SB with 10Kohm(reserved)	3.3V_SB		G18
GPIO 29	I/O	OC5#	OC#4 connect to USB connector	3.3V_SB		N1
GPIO 30	I/O	OC6#	OC#4 connect to USB connector	3.3V_SB		N5
GPIO 31	I/O	OC7#	OC#4 connect to USB connector	3.3V_SB		M1
GPIO 32	I/O	GPO	NC	VCC3	UNMUXED	K2
GPIO 33	I/O	GPO	Pull-up to VCC3 with 4.7K through JC11 jumper. (Default)	VCC3	UNMUXED	AF6
GPIO 34	I/O	GPO	GPIO34 connect to HWSPND# directly	VCC3	UNMUXED	AH5
GPIO 35	I/O	GPO	GP35 pull-up to VCC3_SB with 10Kohm(reserved)	VCC3		L1
GPIO 36	I/O	GPIO	Pull-up to VCC3 with 10K directly	VCC3		AE21
GPIO 37	I/O	GPIO	Pull-up to VCC3 with 10K directly	VCC3		AE22
GPIO 38	I/O	GPIO	Pull-up to VCC3 with 10K directly	VCC3		AK24
GPIO 39	I/O	GPIO	Pull-up to VCC3 with 10K directly	VCC3		AH23
GPIO 40	I/O	OC1#	OC#0 connect to USB connector	3.3V_SB		N3
GPIO 41	I/O	OC2#	OC#2 connect to USB connector	3.3V_SB		P7
GPIO 42	I/O	OC3#	OC#2 connect to USB connector	3.3V_SB		R7
GPIO 43	I/O	OC4#	OC#4 connect to USB connector	3.3V_SB		N2
GPIO 44/45	I/O	OC8/9#	OC#4 connect to USB connector	3.3V_SB		P3 / R6
GPIO 46/47	I/O	OC10/11#	OC#4 connect to USB connector	3.3V_SB		T7 / P1
GPIO 48	I/O	GPIO	pull-up VCC3 with 10K	VCC3		AD20
GPIO 49	I/O	GPO	DMI strapping , pull-down 2.2K(reserved) to GND	VCC3		AJ25
GPIO 50	I/O	REQ1#	REQ1 pull-up to VCC5 with 2.7K	VCC5	MUXED	G13
GPIO 51	I/O	GNT1#	GNT1#(Unused)	VCC3	MUXED	A7
GPIO 52	I/O	REQ2#	REQ2 pull-up to VCC3 with 8.2K	VCC5	MUXED	F13
GPIO 53	I/O	GNT2#	GNT2#(Unused) , pull-down 1K ohm(reserved) to GND	VCC3	MUXED	C7
GPIO 54	I/O	REQ3#	REQ3 pull-up to VCC5 with 2.7K	VCC5	MUXED	G8
GPIO 55	I/O	GNT3#	GNT3#(Unused) , pull-up 1K ohm(reserved) to VCC3	VCC3	MUXED	F7
GPIO 56	I/O	GPIO	Clear password, pull-up to VCC3_SB with 10K.	3.3V_SB	MUXED	F16
GPIO 57	I/O	GPIO	Pull-up to V_3P3_CL with 1K	3.3V_SB	MUXED	C12
GPIO 58	I/O	SPI_CS1	SPI_CS#(Not Use) , SPI_CS1_F#(Not Use)	3.3V_SB	MUXED	F23
GPIO 59	I/O	OC0#	OC#0 connect to USB connector	3.3V_SB		P5
GPIO 60	I/O	LINKALERT	LINKALERT# pull-up to VCC3_SB with 10K	3.3V_SB		F18
GPIO 61	I/O		LPCPD# pull-up to VCC3_SB with 10Kohm(reserved)	3.3V_SB		R1
GPIO 62	I/O		NC	3.3V_SB		R5
GPIO 72	I/O		BATTLOW# pull-up to VCC3_SB with 10K ohm	3.3V_SB		C13

## SIO - SMSC-5617C Configuration

PIN NAME	PIN#	USAGE	Input/Output
GP41	77	SIO_PME#	OUTPUT
GP25	30	SMBCLK	INPUT
GP26	29	SMBCLK_ISO	INPUT
GP35	28	SMBDATA	OUTPUT
GP42	27	SMBDATA_ISO	OUTPUT

## PCI Configuration

DEVICE	MCP1 INT Pin	REQ# / GNT#	IDSEL	CLOCK
Ricoh R5C812	PIRQ#E PIRQ#F PIRQ#G	PREQ#0 PGNT#0	AD16	CK_PCMCIA

## PCI\_RST# DISTRIBUTION

SOURCE	PCIRST#	LOAD
ICH10	PCMCIA_RST#	Ricoh R5C812
	PCIRST_ICH10#	MS7
MS7	MINI_PCIE_RST#	MINI PCIE
	PLTRST#	TPM
	RSMRST#	ICH10
NB	H_CPU_RST#	CPU

## DDR III DIMM Config.


DEVICE	ADDRESS	CLOCK
DIMM 1	A0H	SCLK_A0 / SCLK_A0#
		SCLK_A2 / SCLK_A2#
DIMM 2	A4H	SCLK_B0 / SCLK_B0#
		SCLK_B2 / SCLK_B2#

## Jumper Setting

JBAT1	(1-2)Normal	(2-3)Clear CMOS
JCI1	(1-2)Normal	(2-3)ME Disable for FPROG
J4	(1-2)short: Normal	(1-2)Open: Clear PW

## SMBus Distribution

SMBus	Power	Load
SMBCLK	VCC3_SB	SIO, ICH10, MINI PCI EXPRESS
SMBCLK_ISO	VCC3	DIMM, CLK GEN, MS7


**MICRO-START INT'L CO., LTD.**

**GPIO MAP**

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Size: Custom

Document Number: **MS-7423**

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LGA775-CPU		
0.8375V - 1.6000V Core	-	84A
1.1V FSB Vtt	-	4.6A

Bearlake (GMCH)		
1.1V FSB_VTT	-	1.2 A
1.1V Core TBD (USE LB)	-	13.8A
1.1V DMI/PCI Exp.	-	2.47 A
1.5V VCC_DDR	-	3.33A
1.5V VCC_SMCLK	-	350mA
3.3V VCCA_DAC	-	66 mA
3.3V VCC33	-	15.8mA
1.1V Vcc CL	-	4.3A

ICH9		
1.1V DMI	-	41 mA
1.1V Core	-	1.16A
1.5V_A USB/SATA/PLL	-	1.652A
1.5V_B PCI Exp.	-	0.646A
VCCRTC	-	6 uA
3.3V CL	-	19 mA
1.5V GbE LAN	-	87 mA
3.3V VccSus3_3	-	200mA
3.3V Vcc3_3	-	308mA
3.3V 10/100 LAN	-	19 mA
3.3V GbE LAN	-	1 mA
3.3V HDA	-	32 mA
3.3V SusHDA	-	33 mA

HD Audio ALC262		
3.3V AUDIO	-	40mA
5V AUDIO	-	200mA

CK505		
3.3V VDD_48/PCI/REF	-	250mA
0.3V-1V CPU/SRC/DOT/PLL	-	80mA

Nineveh GbE		
3.3V_SB I/O & LED	-	15.5mA
1.8V AVDD	-	418.2mA
1.0V Core	-	277.2mA

ISL6326		
VCCP VRD11.1	-	0.8375V-1.6000V
3-Phase Switch	-	

W83310DS		
VTT_DDR	-	0.75V Linear 0.83A

MS11+ SW-Power		
VCC_DDR	-	1.5V PWM 13.86A

MS11+ SW-Power		
V_1P1_CORE	-	1.1V PWM 23.27A

MS7 Controller		
V_1P1_CL	-	1.1V Linear 3A

V_1P5_ICH		
	-	1.5V Linear 2.385A

VCC3_SB		
	-	3.3V Linear 3.96A

5VDUAL1		
	-	5V Switch 4.85A

5VDIMM		
	-	5V Switch 8.29A

DDRII x2 & TERMINATOR		
0.9V VTT_DDR	-	
1.8V VCC_DDR	-	
1.8V VCC_DDR	-	

USB x 9		
+5V	-	
+5V	-	

PS2		
+5V	-	
+5V	-	

5VAudio		
+5VR	-	500mA

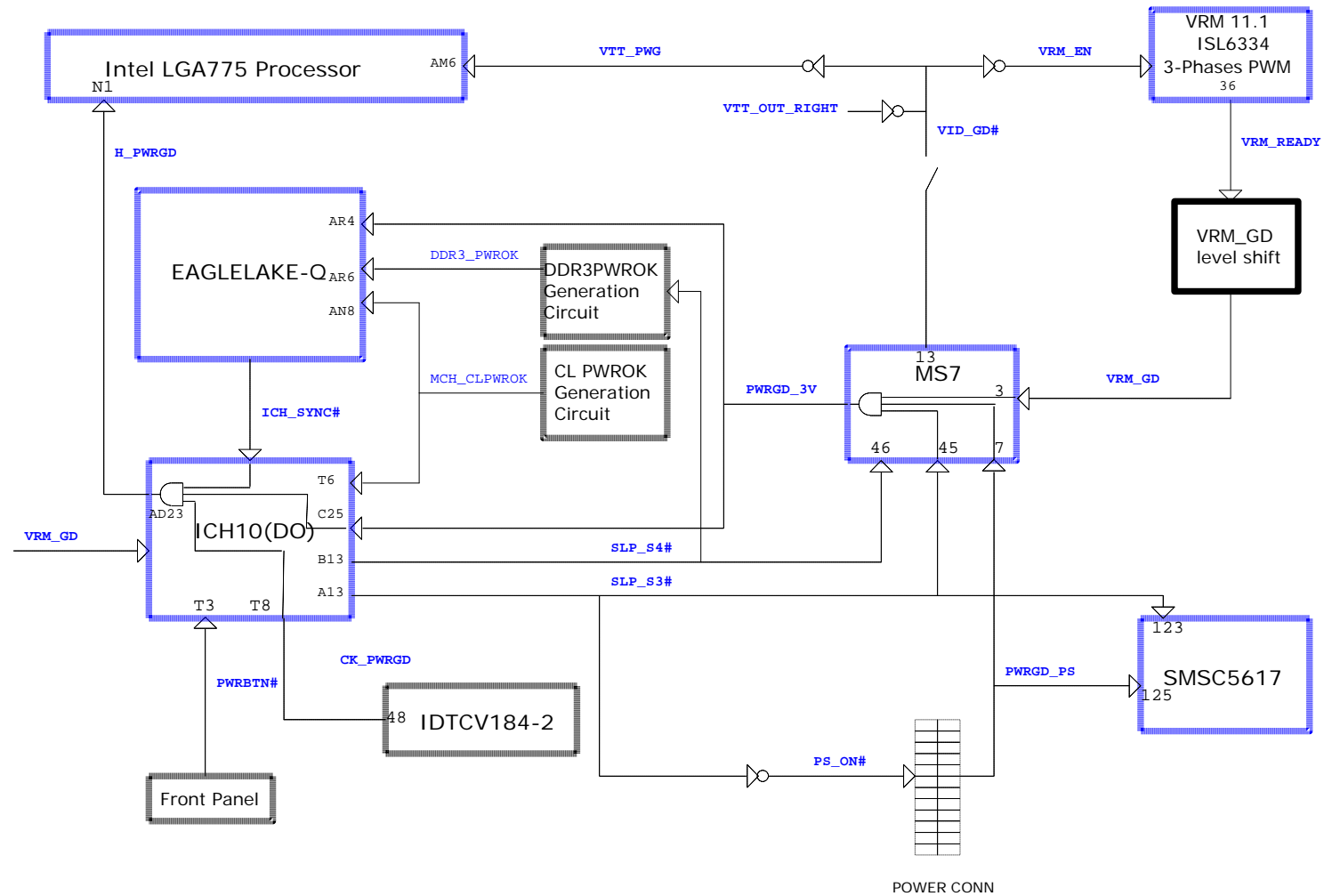
3V  
Battery

+12V		
ATX	-	2x2

+5V	+3.3V	+5VSB	+12V
24.97A			
ATX POWER			

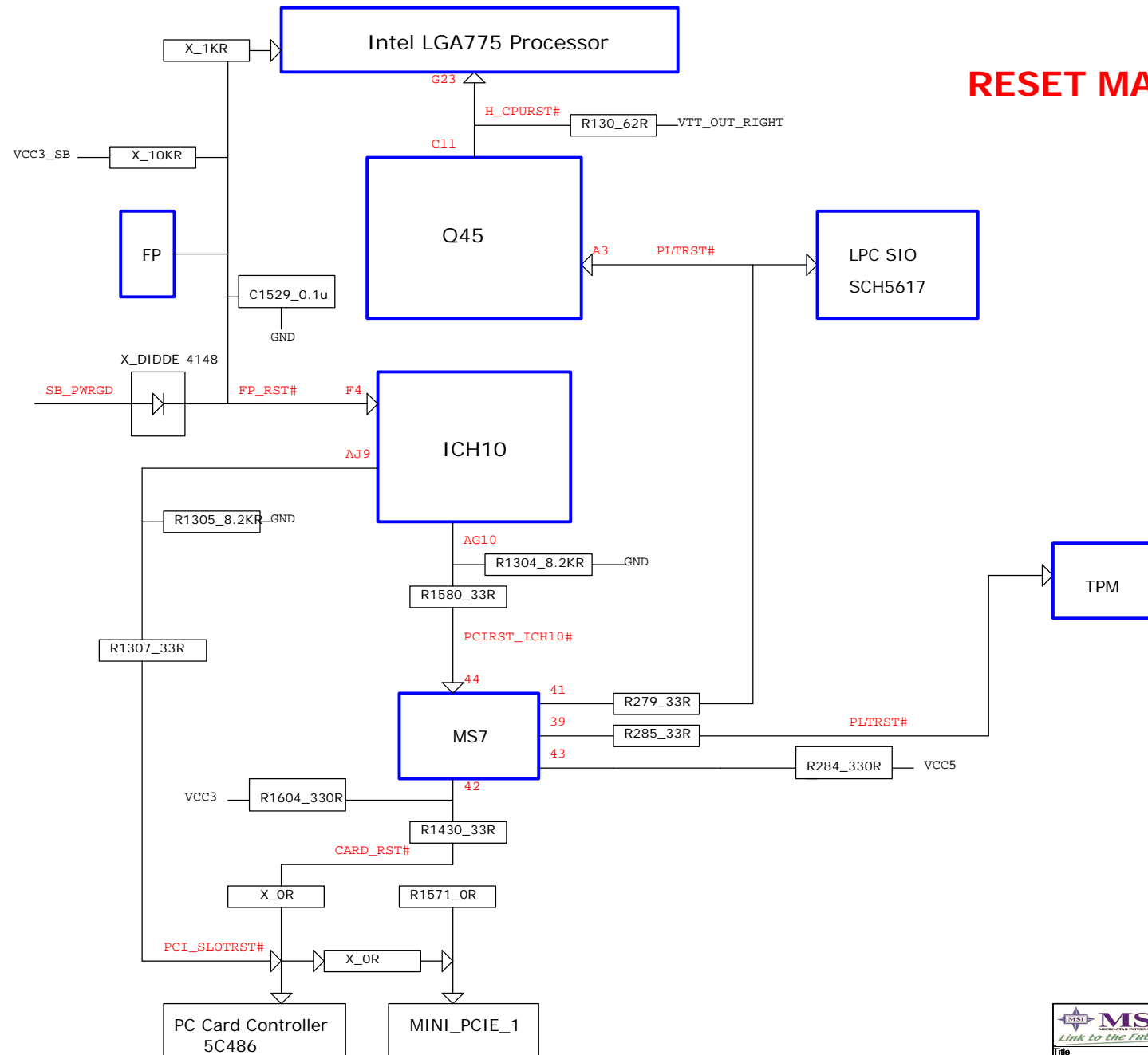


# PWROK MAP

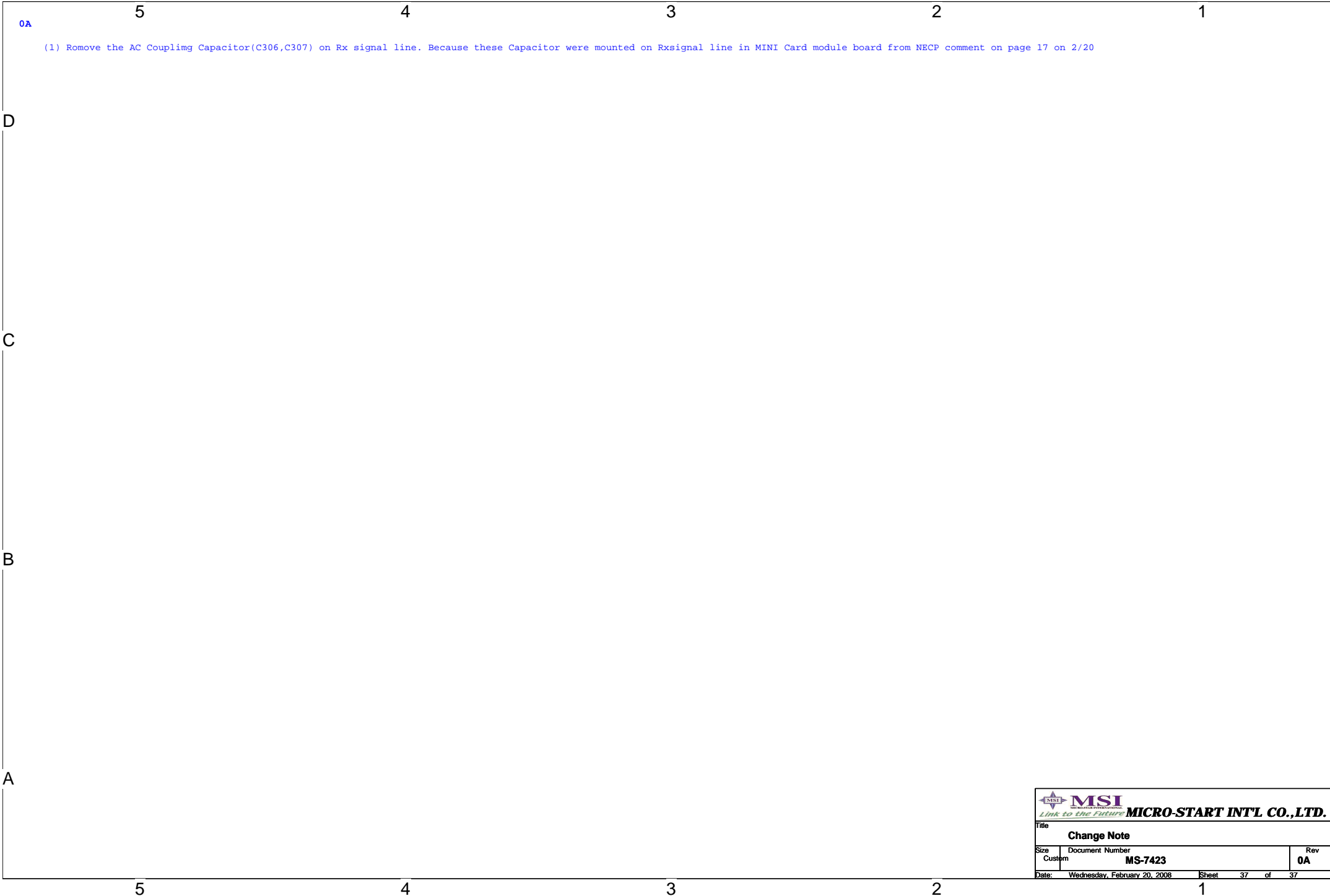




# RESET MAP








0A

(1) Remove the AC Coupling Capacitor(C306,C307) on Rx signal line. Because these Capacitor were mounted on Rxsignal line in MINI Card module board from NECP comment on page 17 on 2/20



**MICRO-START INT'L CO.,LTD.**

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Change Note		
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