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NEC:ROPROS-E

MS-7428 uATX

Version: 0A

CPU: Conroe family processors/WolfDale/Yorkfield in LGA775 Package

System Chipset:

Intel Eaglelake - G (North Bridge)
Intel ICH10 Series (South Bridge)

On Board Device:

CLOCK Gen -- IDTCV184-2
LPC Super I/O -- SCH5617C
LAN -- Broadcom-BCM5784M
HD Audio Codec -- ALC262 VD
TPM - SLB9635

Main Memory:

Dual-channel DDR-II * 4

Expansion Slots:

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

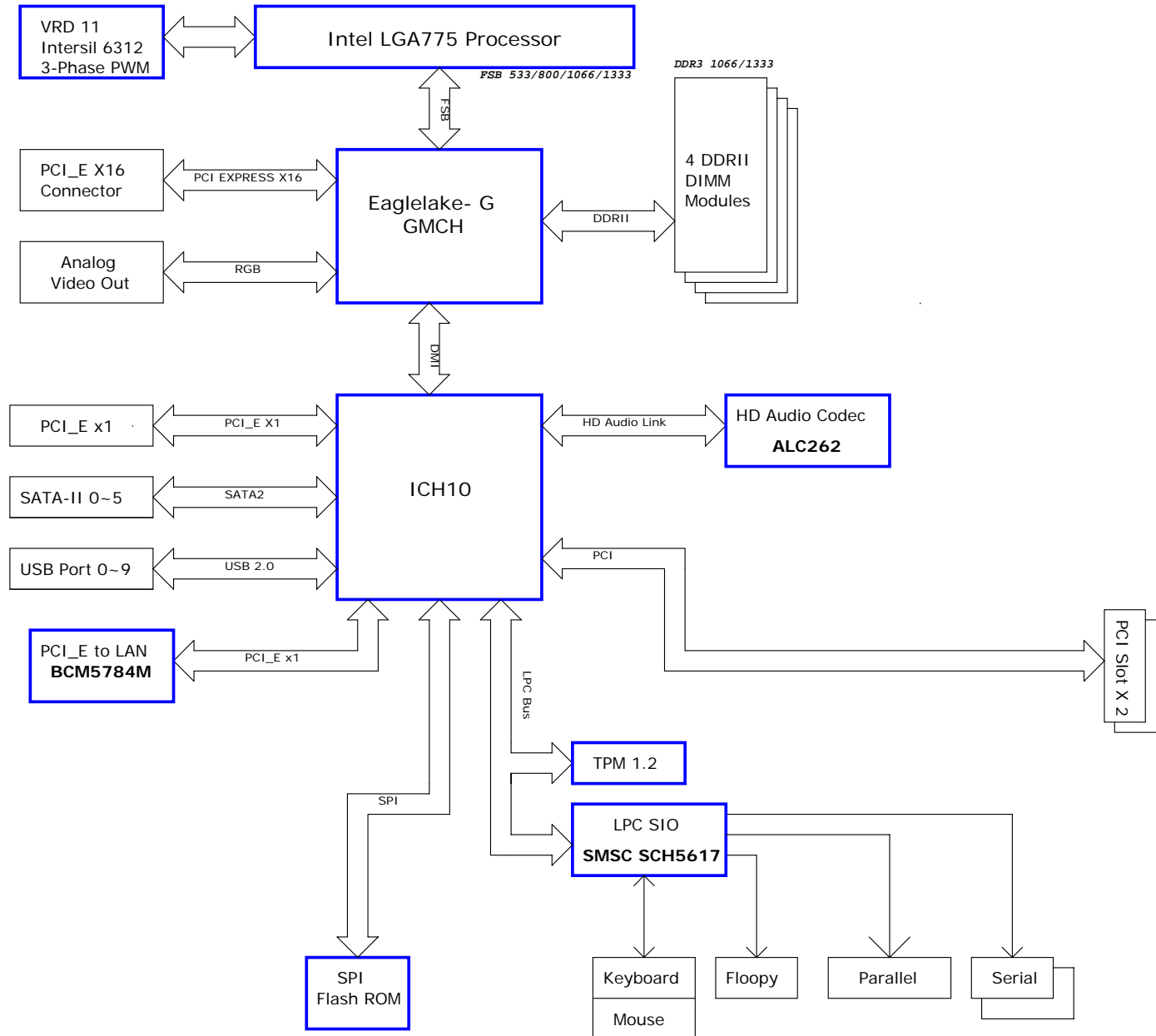
PWM: VRD11 Intersil 6312 (3Phase)



How to distinguish the different SKU

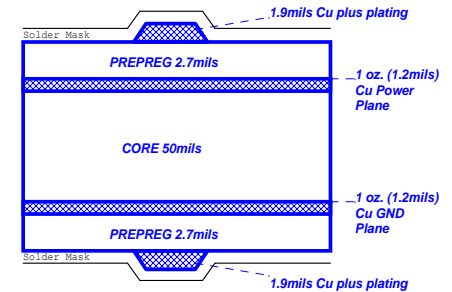
- BLUE Color which mean all model need use
- ORANGE Color which mean ROPROS-MA use
- PINK Color which mean ROPROS-VS
- BROWN Color which mean the part reserve

Block Diagram



Board Stack-up

(1080 Prepreg Considerations)



Single End 50ohm Top/Bottom : 4mils
 USB2.0 - 90ohm : 15/7.5/4.5/7.5/15
 SATA - 95ohm : 15/8/4/8/15
 LAN - 100ohm : 15/10/4/10/15
 PCIe - 95ohm : 15/8/4/8/15

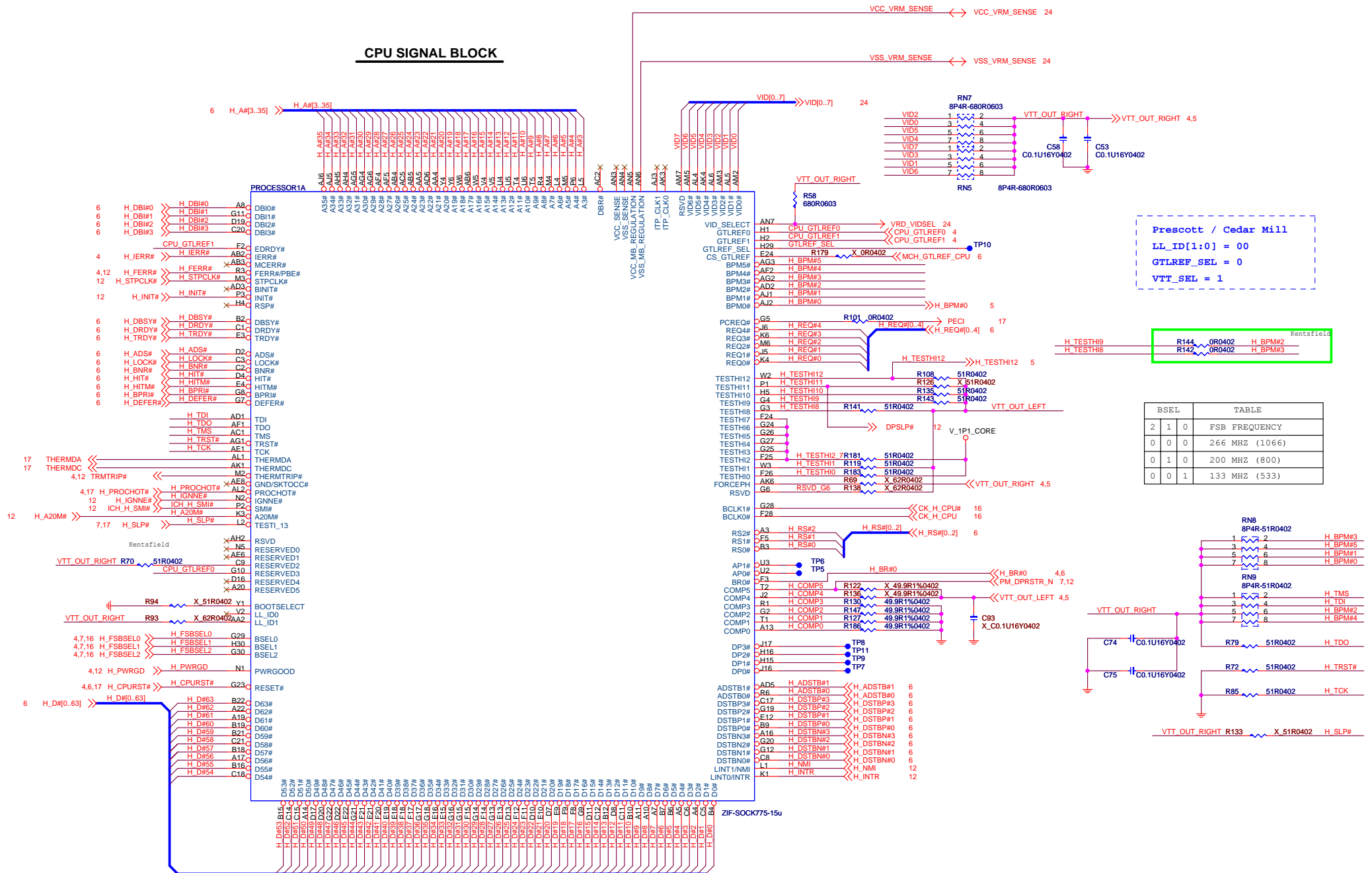


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Size	Document Description	Rev
Custom	BLOCK DIAGRAM	0A
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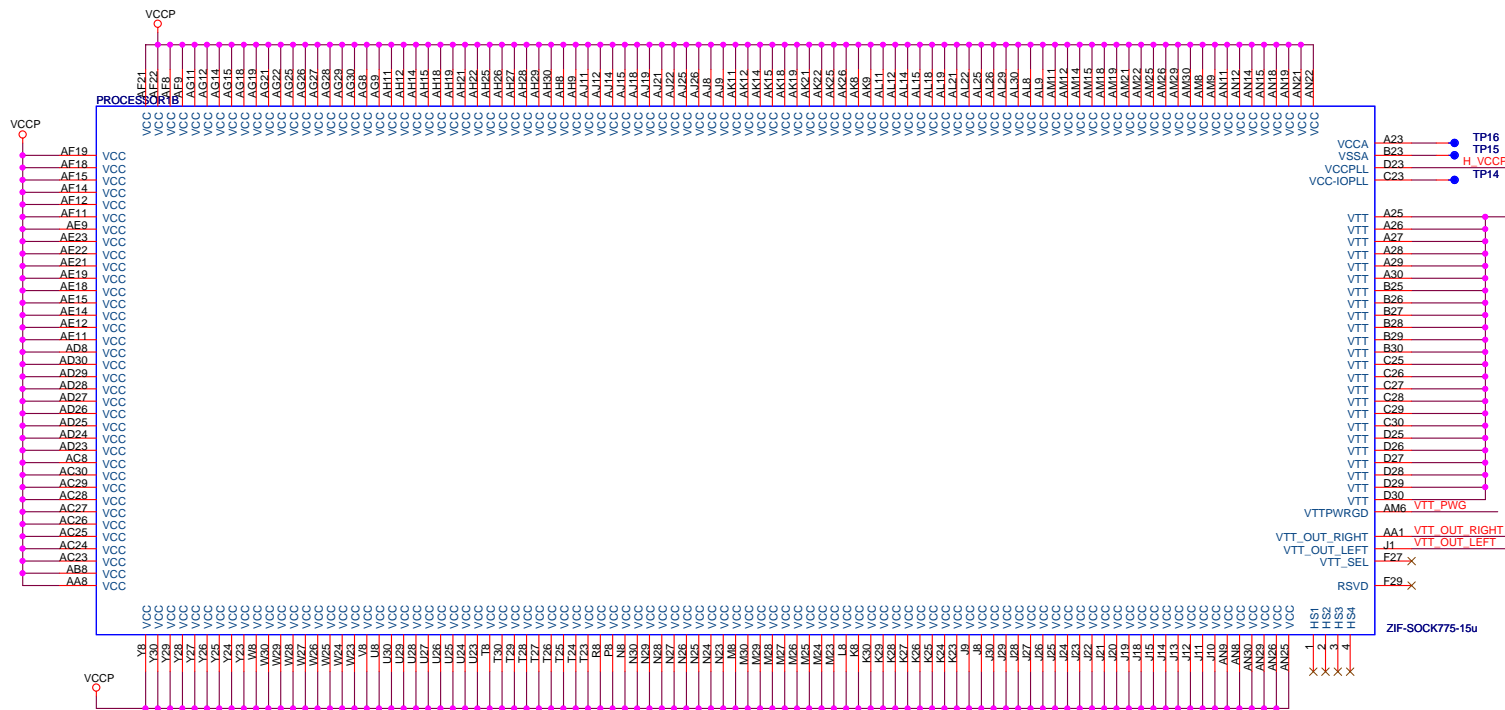
CPU SIGNAL BLOCK



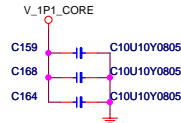
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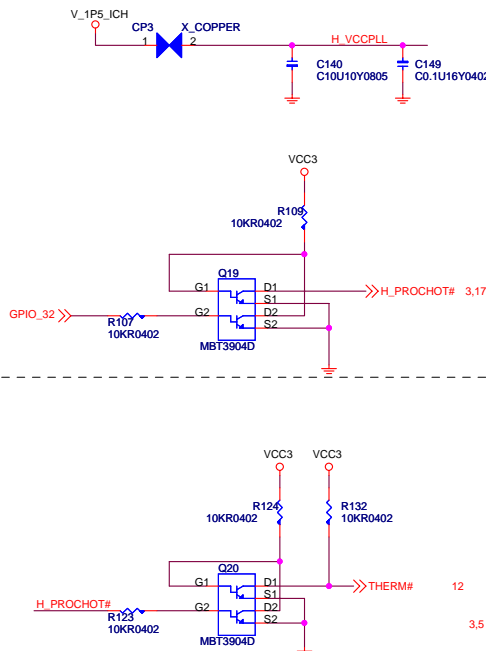
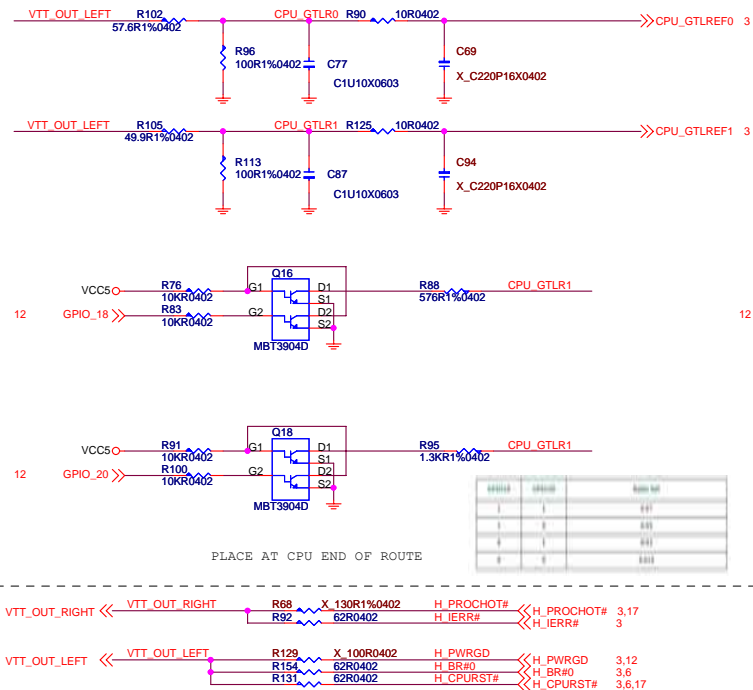
Size Custom	Document Description Intel LGA775 - Signals	Rev 0A
Date: Tuesday, May 13, 2008		Sheet 3 of 35



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PDG:page109

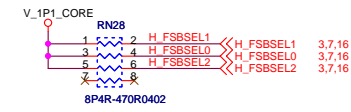


CAPS FOR FSB GENERIC



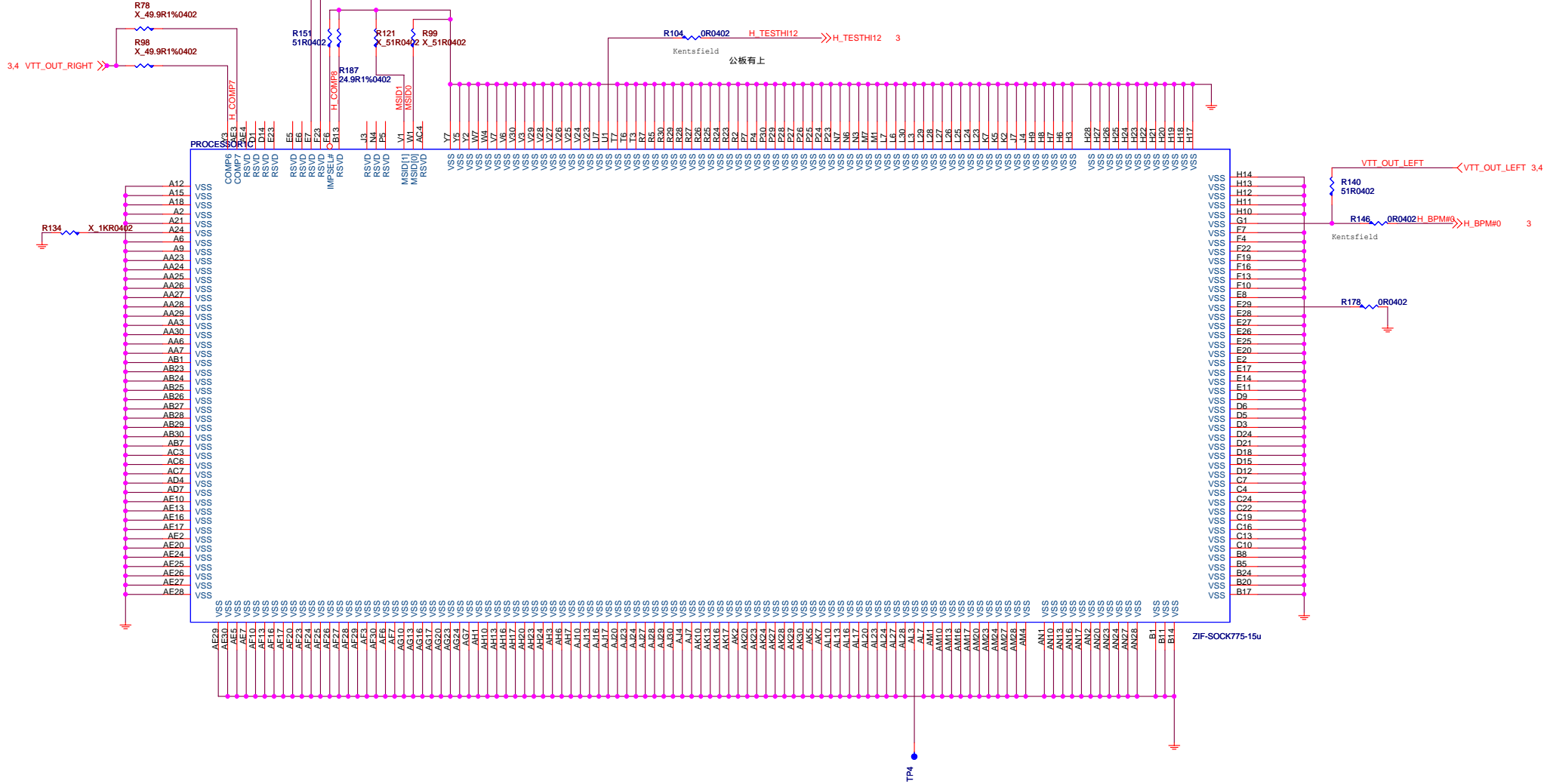
VTT_PWG SPEC :
High > 0.9V
Low < 0.3V
Trise < 150ns

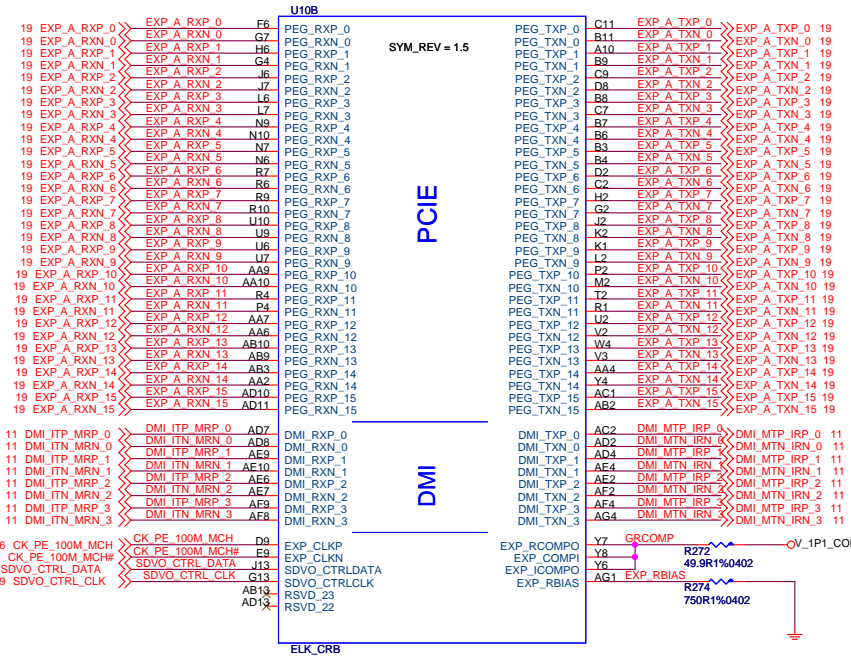
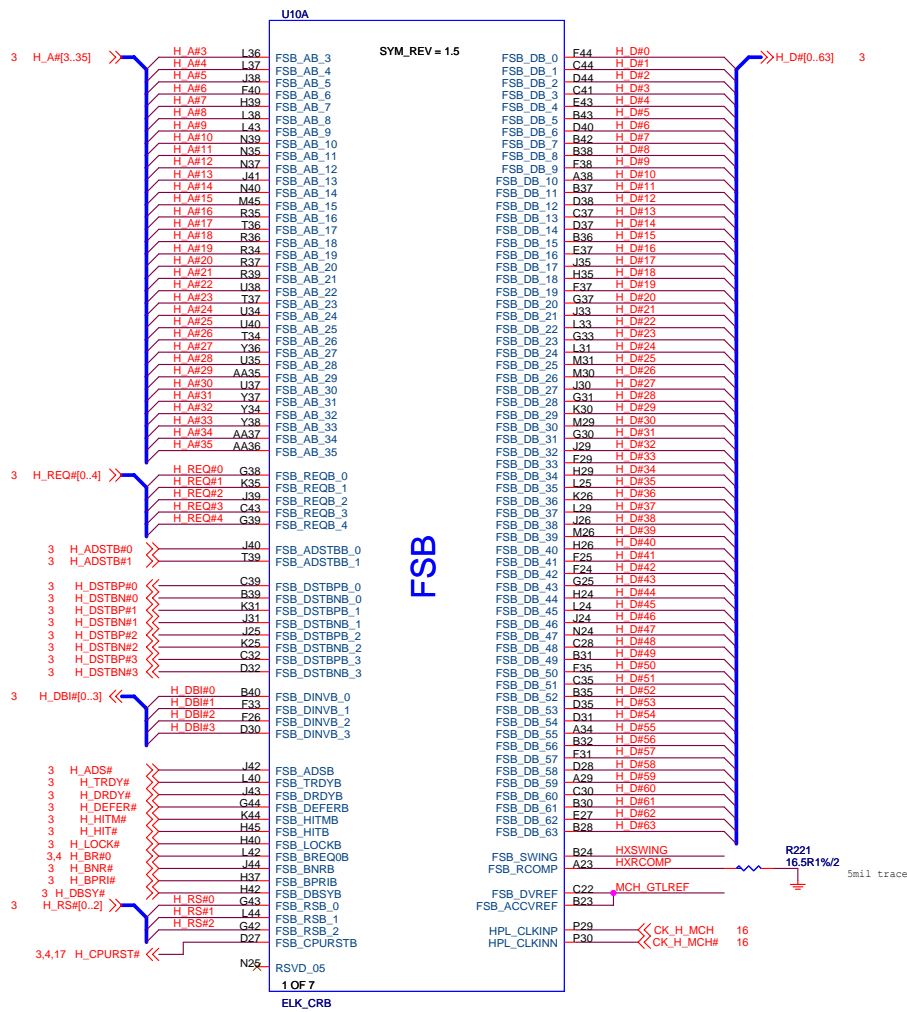
FSBSEL RESISTOR CAN BE REMOVED IF ONLY TEJAS AND CEDAR MILL ARE SUPPORTED



PLACE AT ICH END OF ROUTE

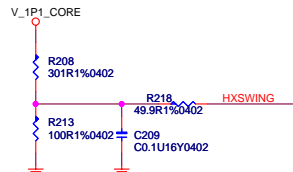
	Intel Core 2 Due or Wolfdale processor	Intel Core 2 Quad or Yorkfield Processor
MSID1	0	NC
MSID0	0	NC





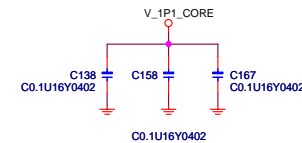
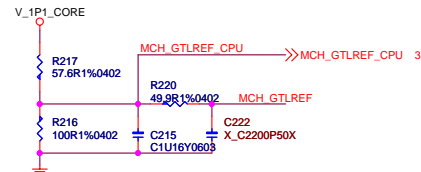
HD_SWING VOLTAGE "10 MIL TRACE , 7 MIL SPACE" HD_SWING S/B 1/4*VTT +/- 2%

PLACE DIVIDER RESISTOR NEAR VTT



GTREF VOLTAGE SHOULD BE 0.635*VTT=0.7V

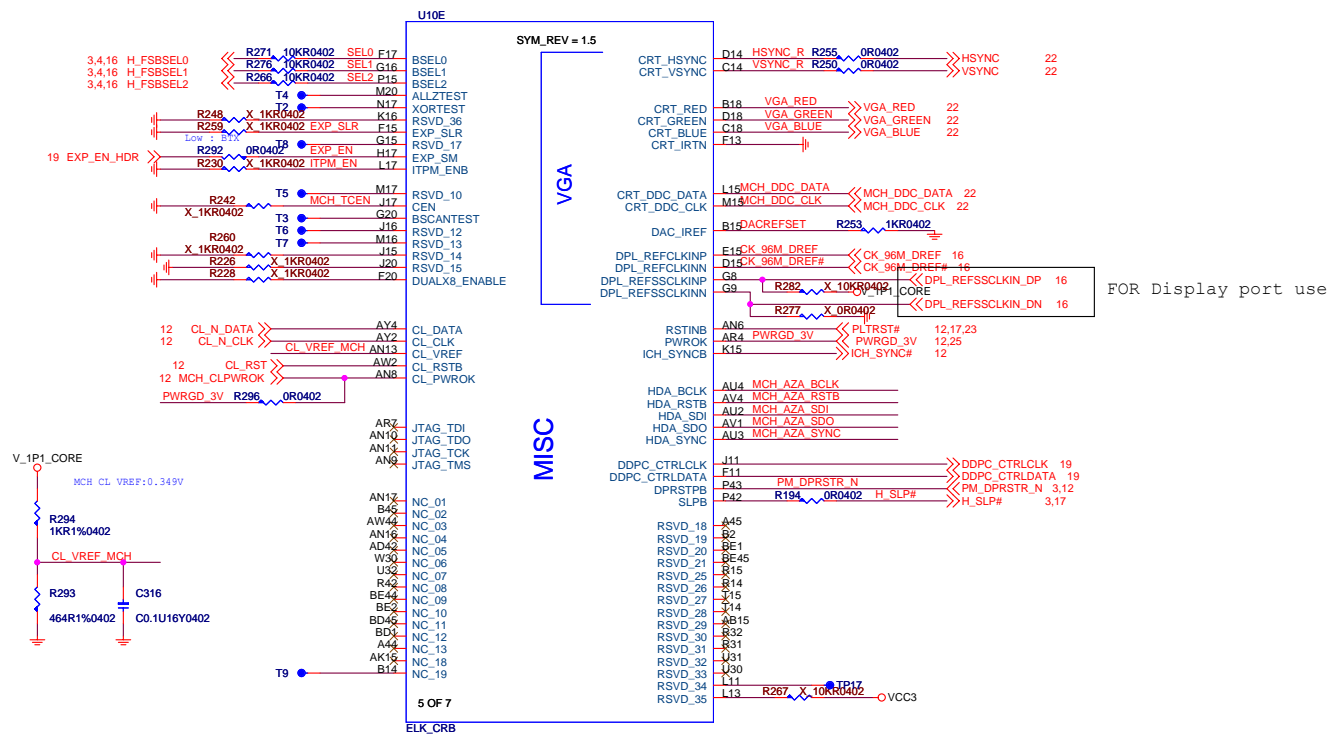
100 OHM OVER 200 RESISTORS



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```
ITPM_ENB
Integrated TPM Enable:
0=Enable iTPM
1=Disable iTPM
```

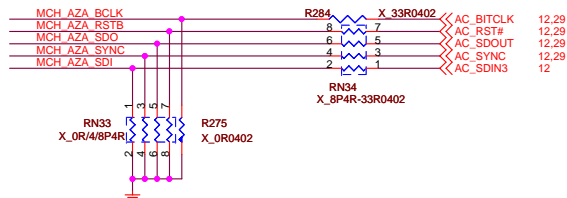
DualX8_Enable
0=2X8 PCIe Ports Enable
1=1X16 PCIe Port Enable

DEMO BOARD CHANGE

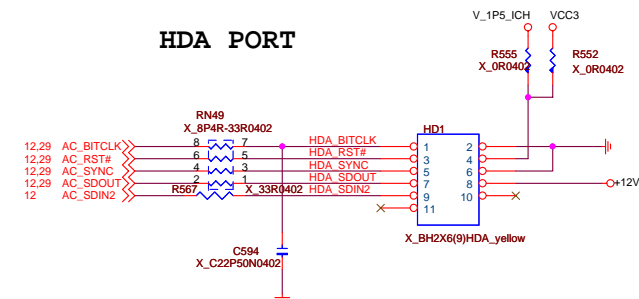
```
Primary_PEG_Presence
Primary PCIe port Detect:
0=PCIe Card is in Primary Slot
1=PCIe Card is not in Primary Slot
```

PIN	H	L	Description
EXP_SLR	Normal	Reverse	PCI_E Lane Reversal
EXP_EN	Concurrent	Non-concurrent	PCI_E/SDVO co-existence
MCH_TCEN	Enable	Disable	TLS confidentiality

HDMI SUPPORT



HDA PORT



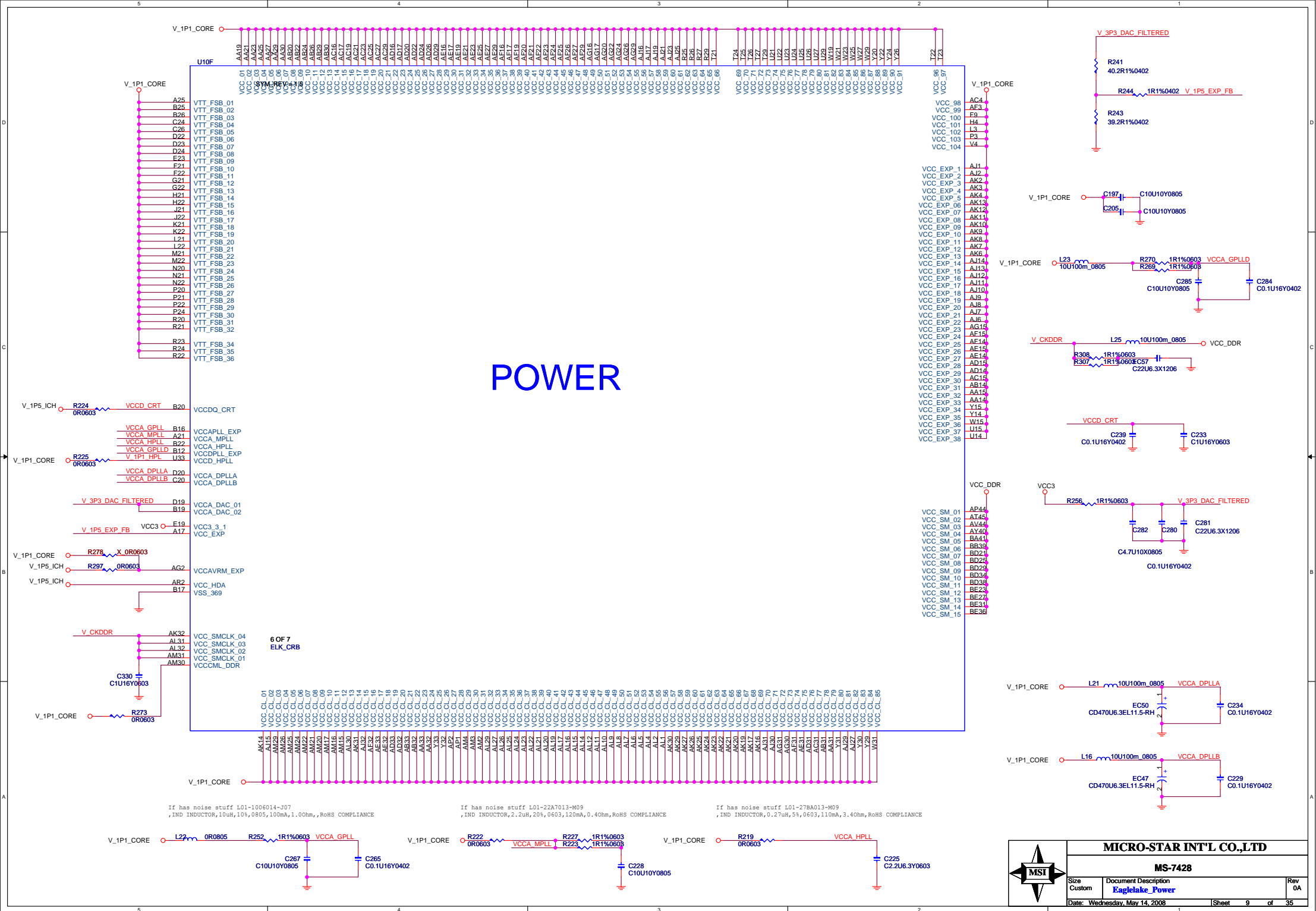
MICRO-STAR INT'L CO.,LTD

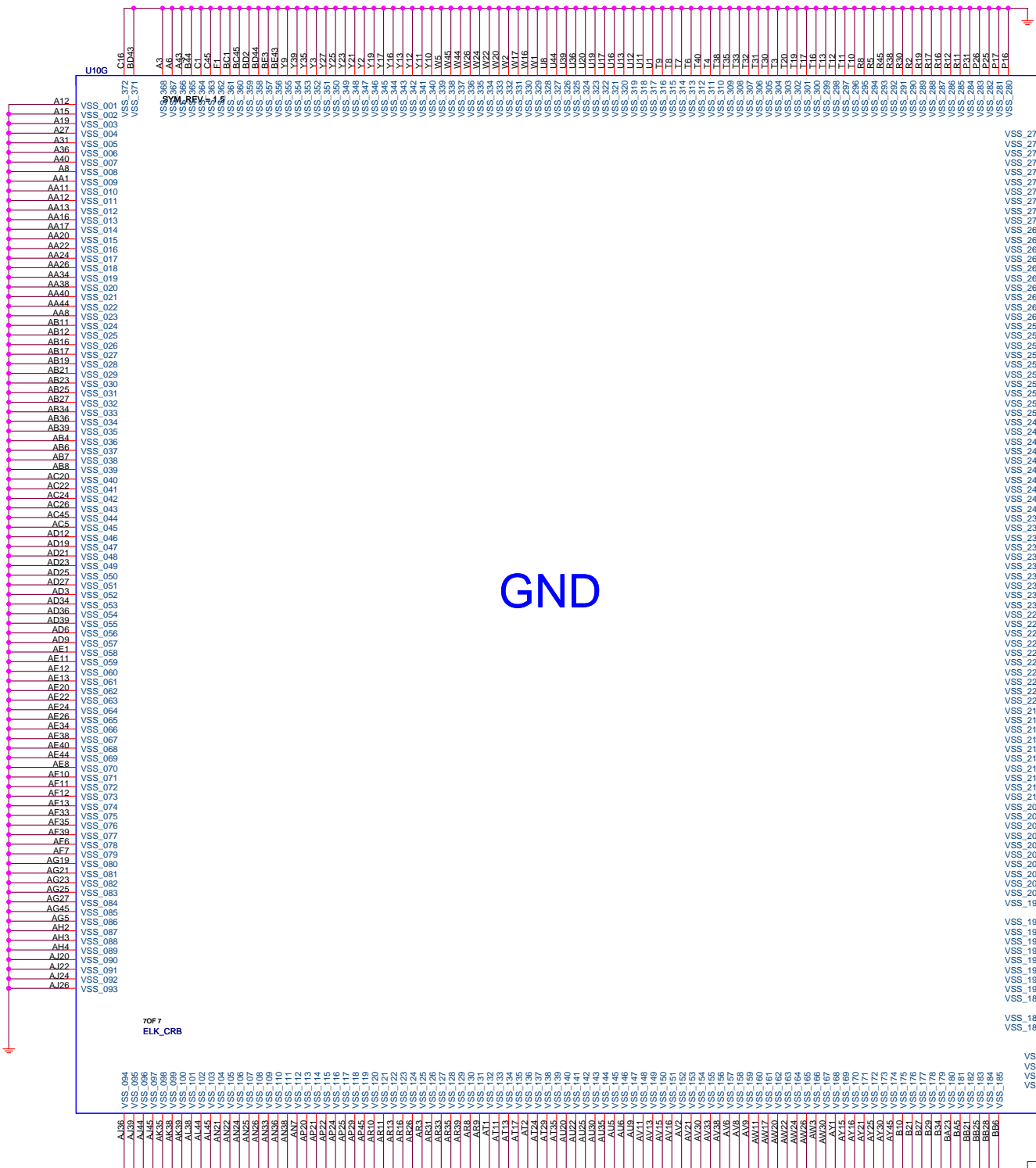
MS-7428

Size	Document Description
Custom	Eaglelake VGA/MISC

Rev	0A
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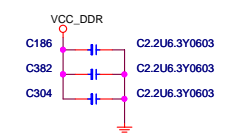
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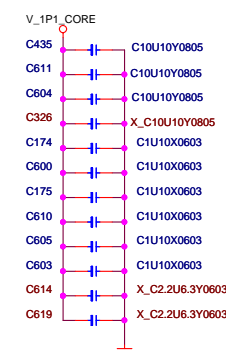
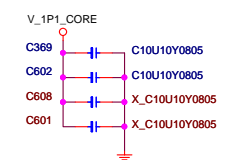


All cap place close to GMCH

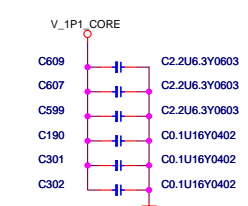
MCH memory decoupling cap



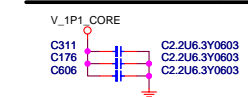
V_1P1_Core decoupling cap




V_1P1_Core decoupling cap(FSB)



V_1P1_Core decoupling cap(PCIE)

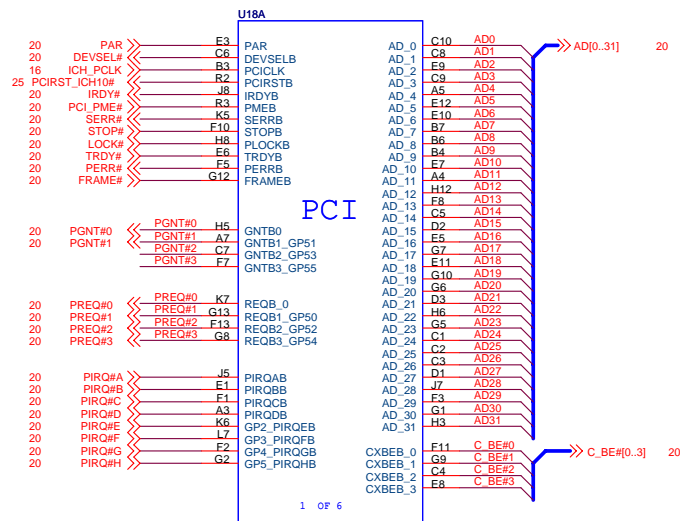




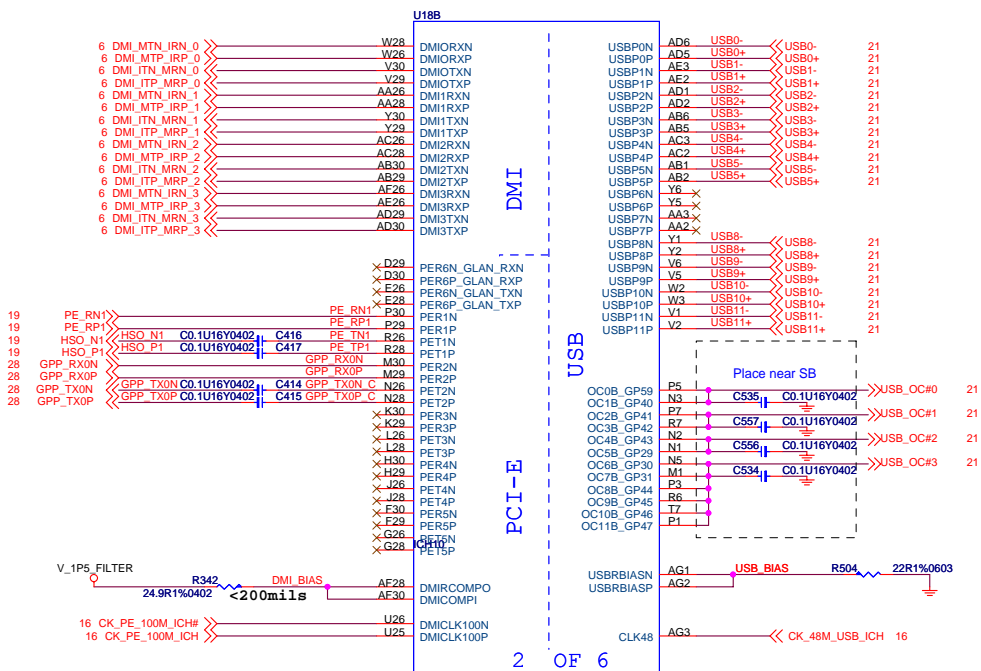
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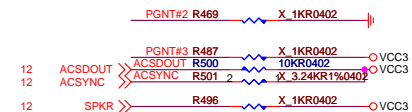
Size	Document Description	Rev
Custom	Eaglelake - GND	0A
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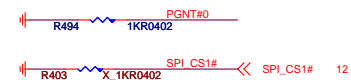
ICH10



ICH10 H/W STRAPS			
SIGNAL	H	L	DES.
SPKR	DIS	EN	REBOOT
GNT3	DIS	EN	A16 OVERRIDE
INTVRMEN	EN	DIS	INT VRM
SATALED	NORM	REVERSE	PCIE 0-3 ORDER
HDA_SDOUT	EN	DIS	Danbury Tec.
HDA_SYNC	SET BIT	N/A	PCIE PORT CONFIG BIT 0 (1-4)
GNT2	N/A	SET BIT	PCIE PORT CONFIG 2 BIT 0 (5-6)



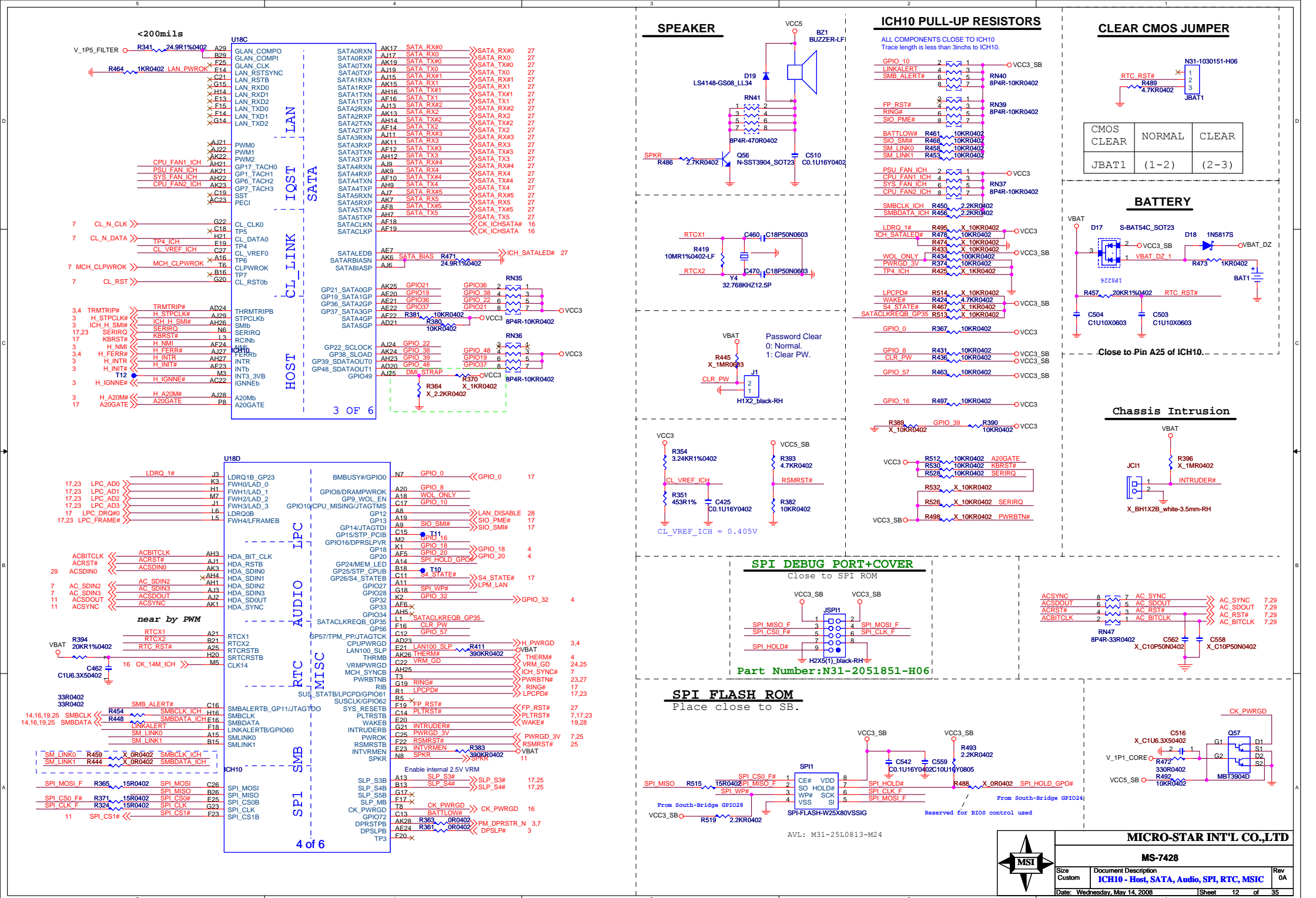
BOOT SELECT STRAPS			
BOOT DEVICE	GNT#0	SPI_CS1#	
FWH	1	1	
SPI	0	X	(Default)
PCI	1	0	



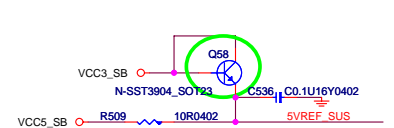
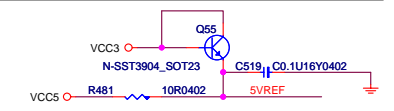
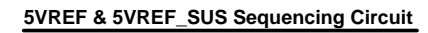
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Size	Document Description	Rev
Custom	ICH10 - PCI, DMI, USB, PCIE & Slots	0A
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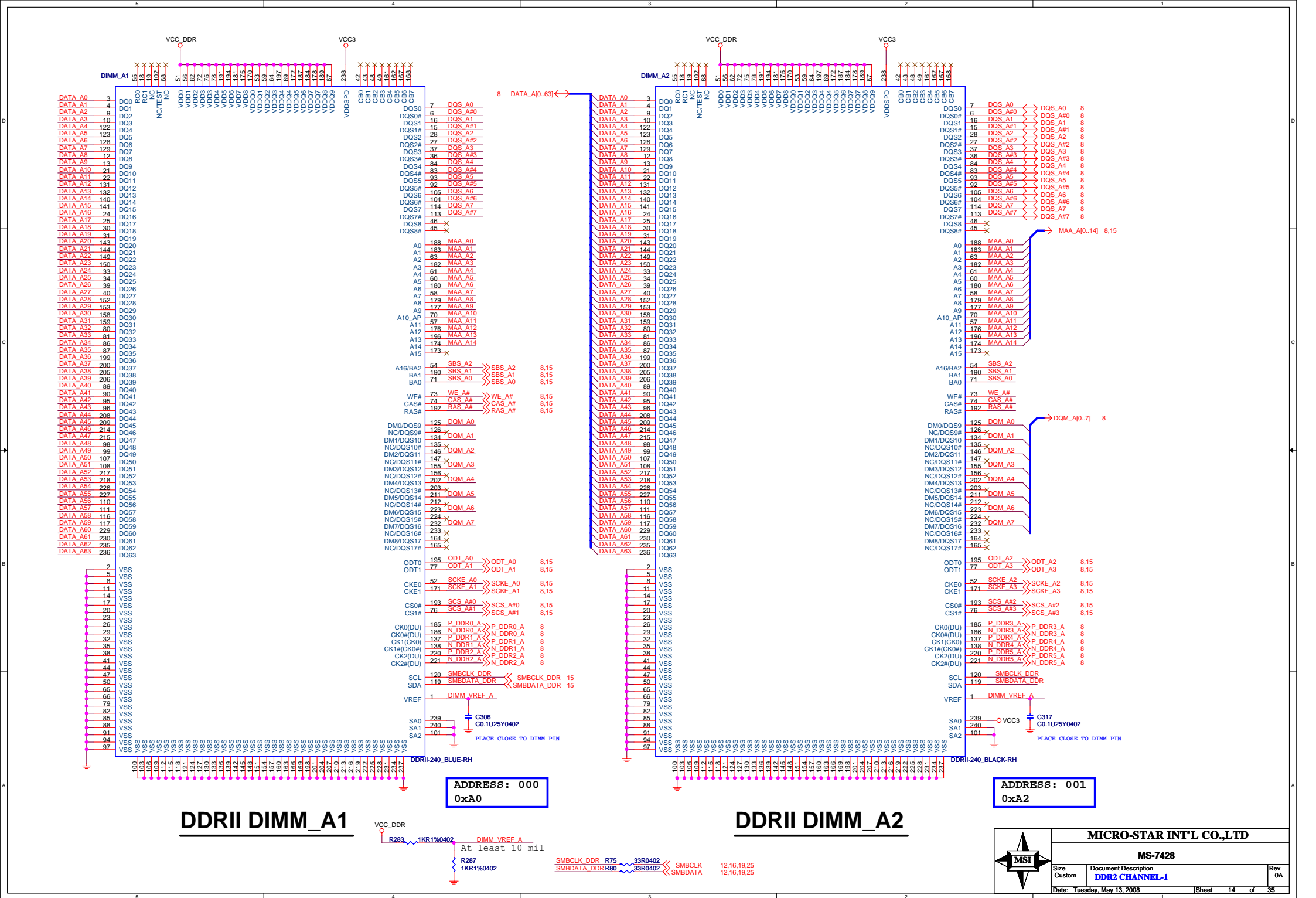


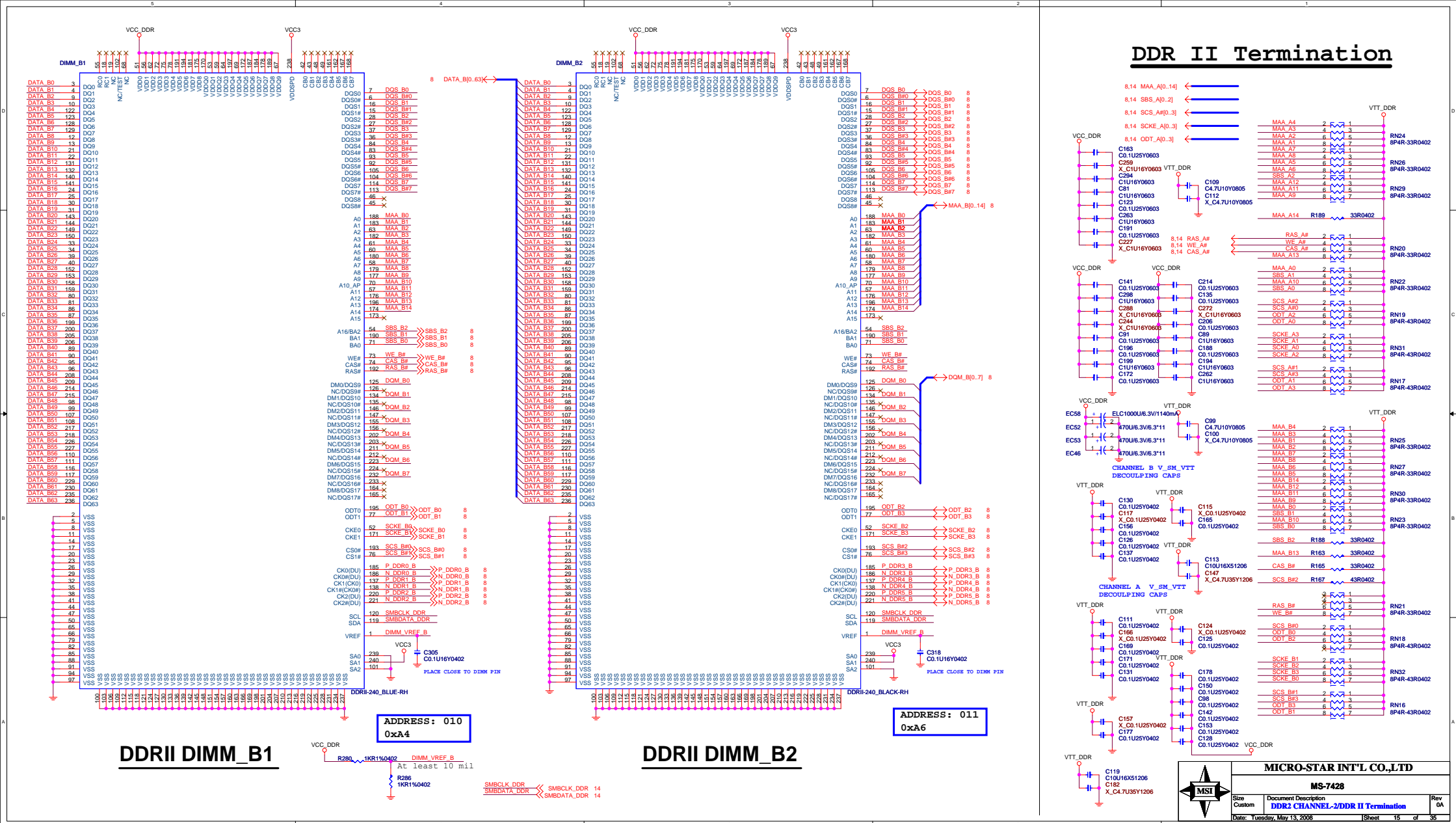
HDMI	VccHDA	VccSusHDA	Description
Enable	1.5V	1.5V_SB	STAFF R485 R499 (R499=0 ohm)
Disable (Default)	3.3V	VCC3_SB	STAFF R484 R499 R568 (R499=18 ohm, R568=150ohm)



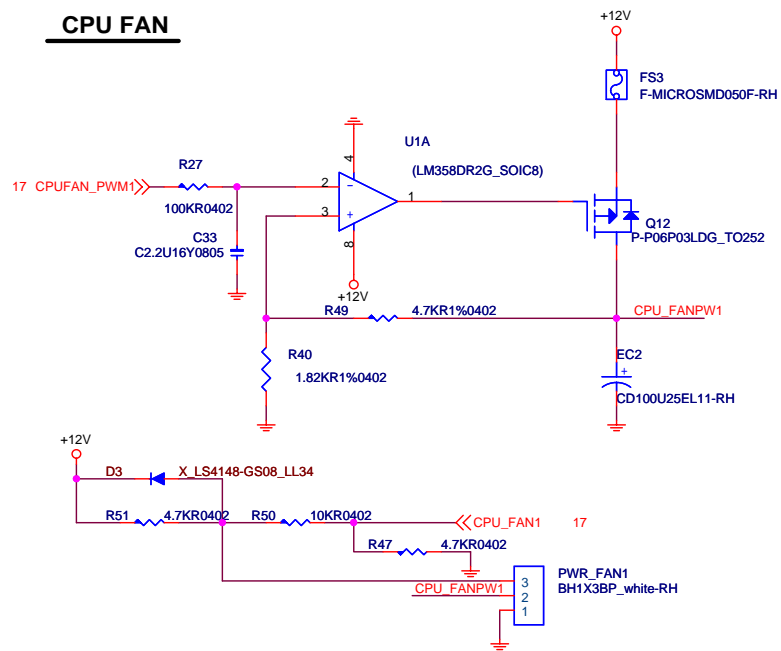
MS-7428

Size Custom	Document Description ICH10 - Power, GND	Rev 0A
Date: Wednesday, May 14, 2008		Sheet 13 of 35

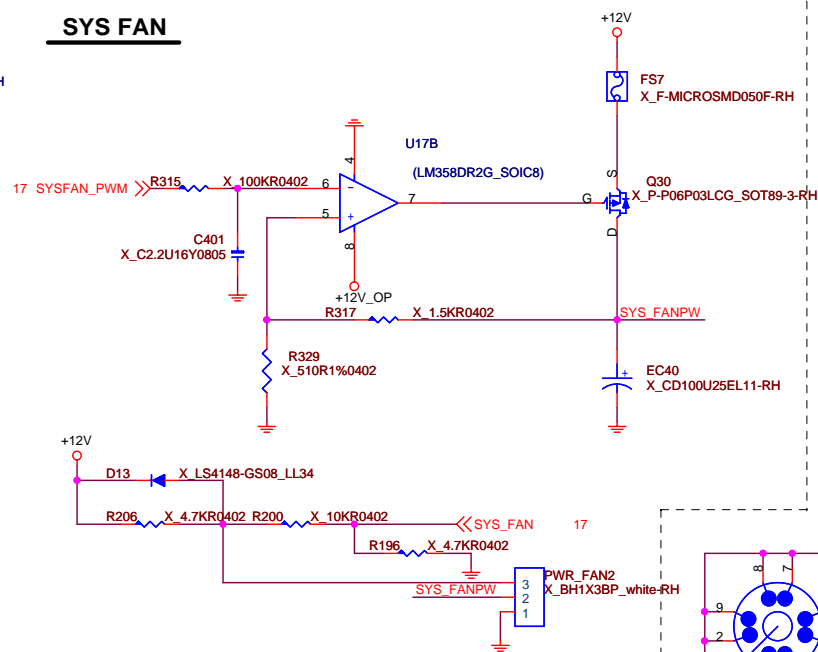




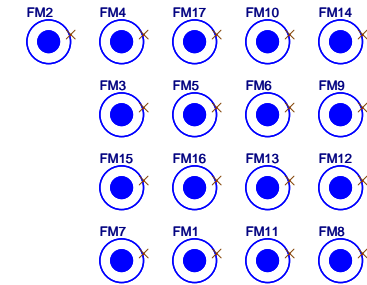
CPU FAN



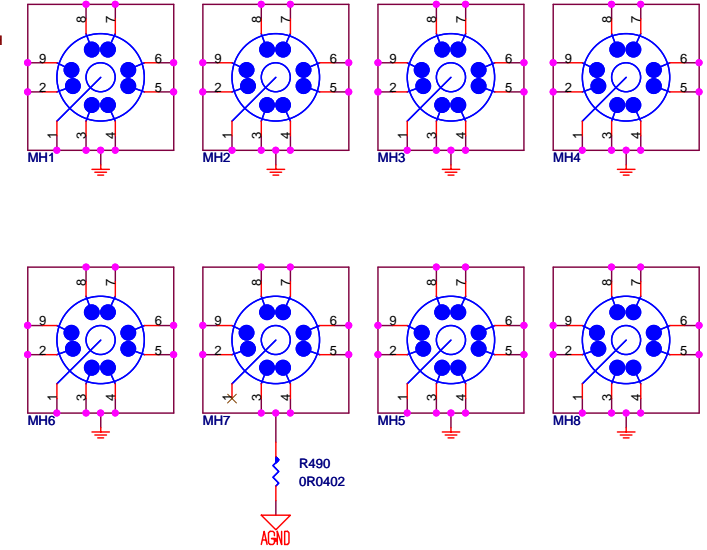
SYS FAN



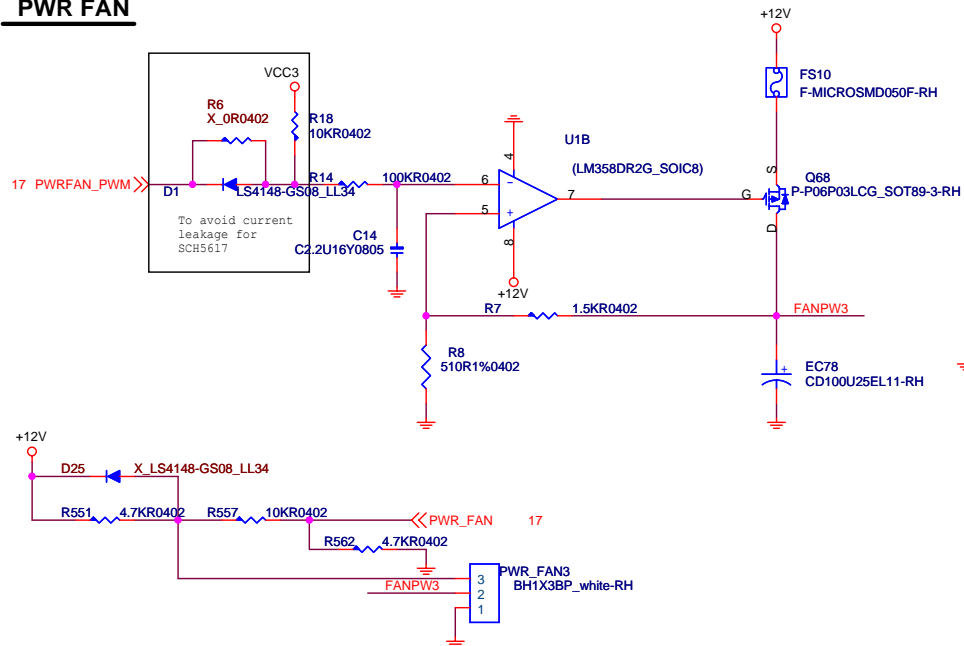
Optical Fiducial Marks




Mounting Holes

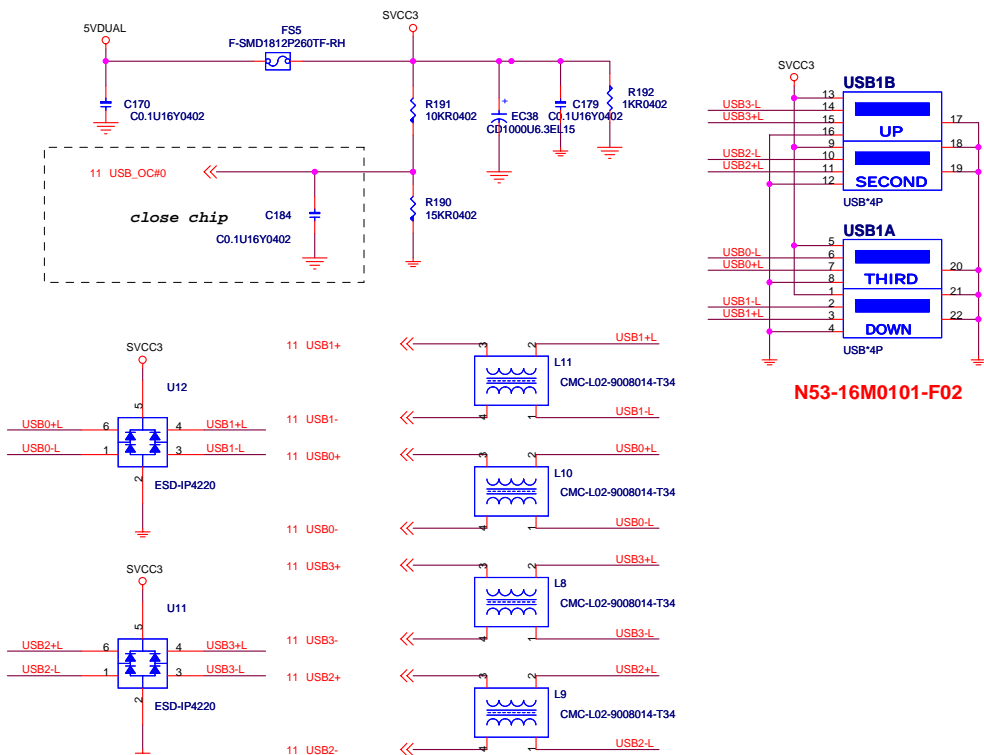


PWR FAN

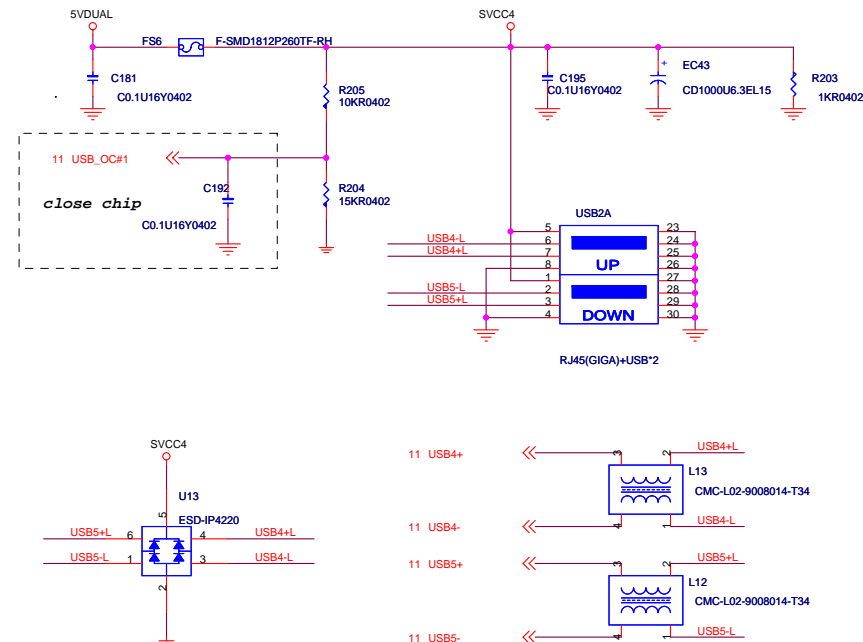


	MICRO-STAR INT'L CO.,LTD			
	MS-7428			
	Size B	Document Description		Rev 0A
		CPU/SYS/PWR FAN		
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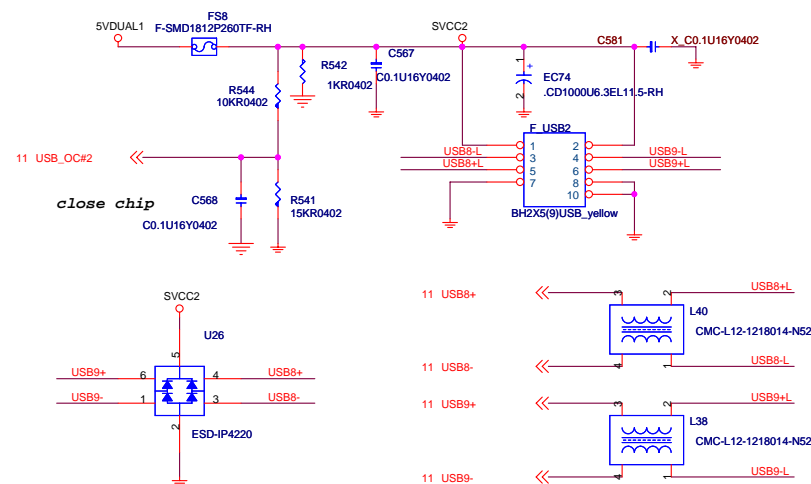
REAR PANEL USB CONNECTOR FOR USB PORT 0,1,2,3 Iout=2A



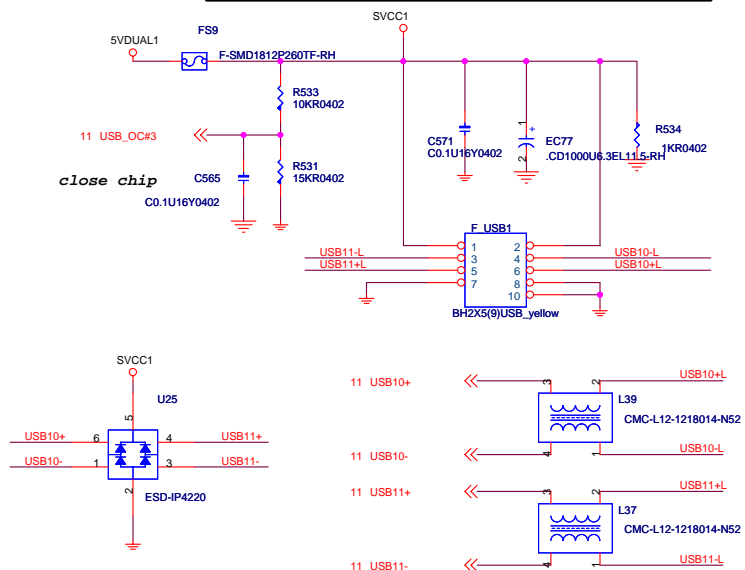
REAR PANEL USB CONNECTOR FOR USB PORT 4,5 Iout=1A



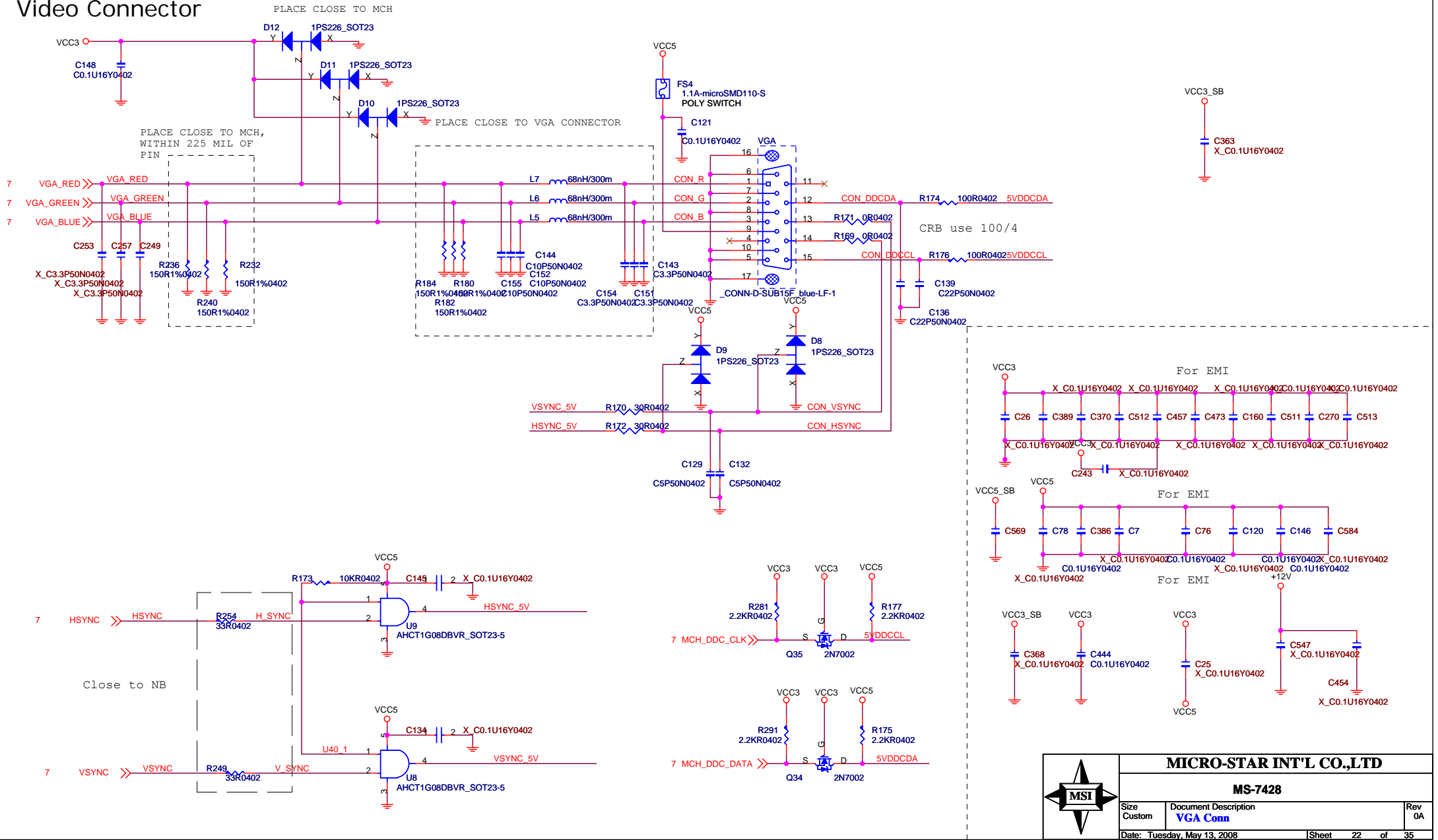
Memory card reader USB CONNECTOR FOR USB PORT 8,9 (pinth 2.0) Iout=1A



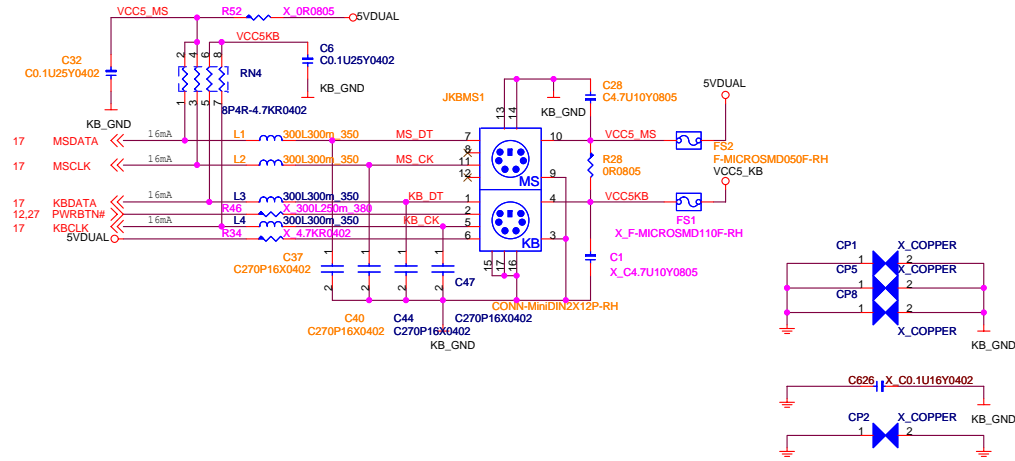
Front USB PORT 10,11 (right angel type) Iout=1A



Video Connector

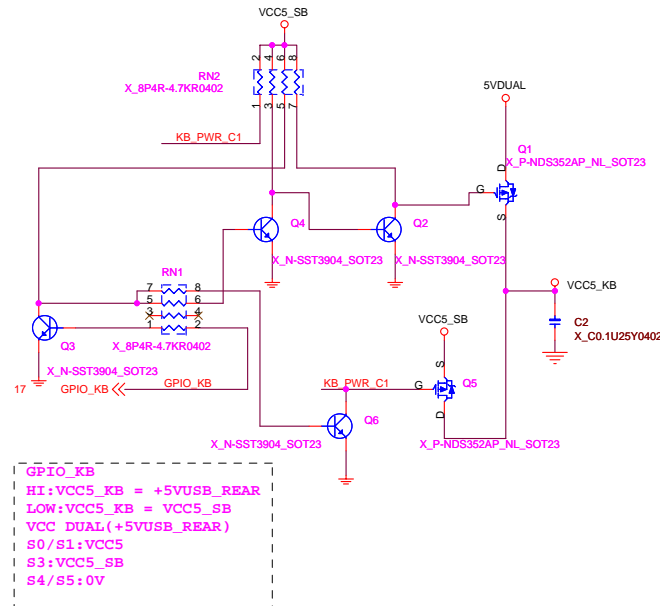


PS2 KEYBOARD & MOUSE CONNECTOR

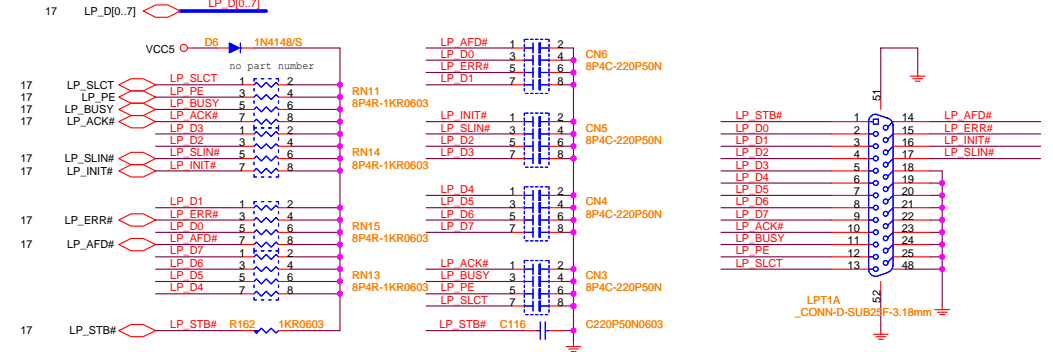


	FS2	R20	C24	L1	L2	C33	C33	C34	C38	FS1	C1	R27	R36
ROPROS-MA	V	V	V	V	V	V	V	V	V	X	X	X	X
ROPROS-VS	X	X	X	X	X	X	X	X	X	V	V	V	V
ROPROS-NECCA	V	V	V	V	V	V	V	V	V	X	X	X	X

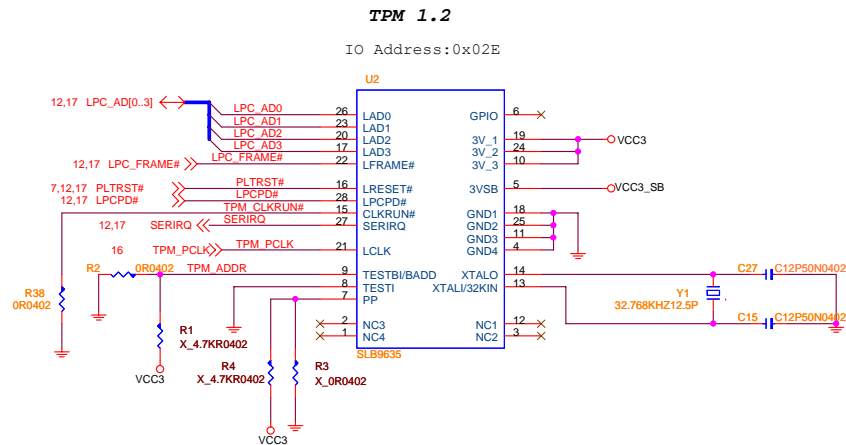
K/B Power supply function for ROPROS-VS



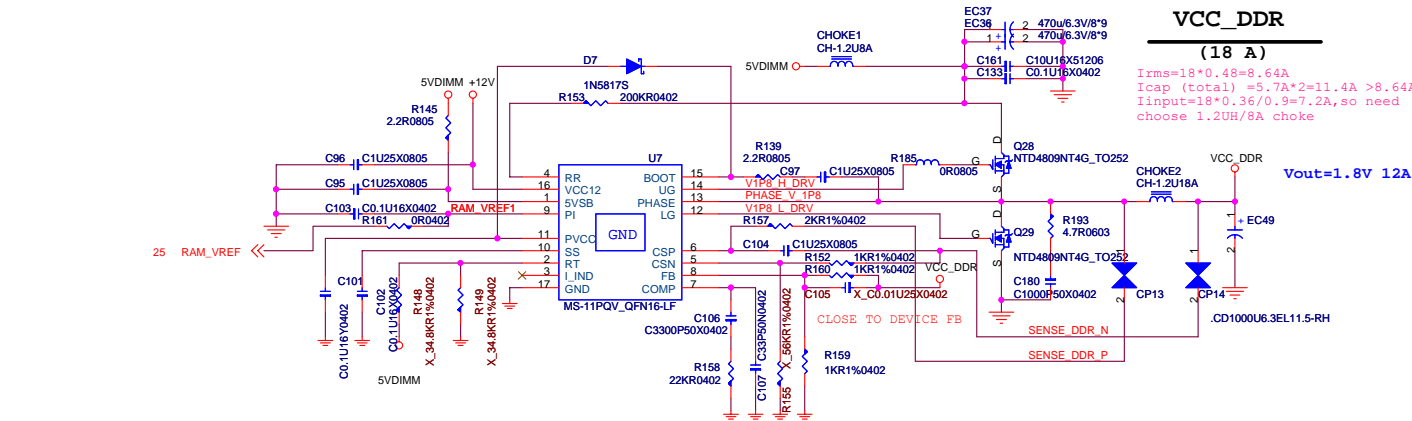
PARALLAL PORT



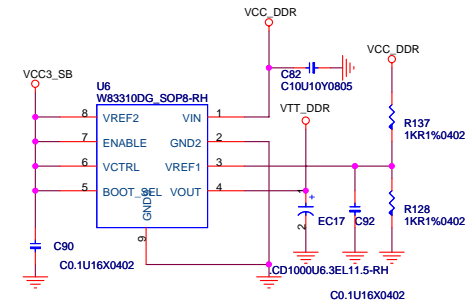
T.P.M FOR ROPROS-MA



	MICRO-STAR INT'L CO.,LTD		
	MS-7428		
	Size Custom	Document Description MS7 ACPI Controller	Rev 0A
	Date: Wednesday, May 14 2008	Sheet 2E of 2E	

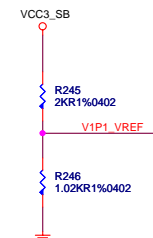
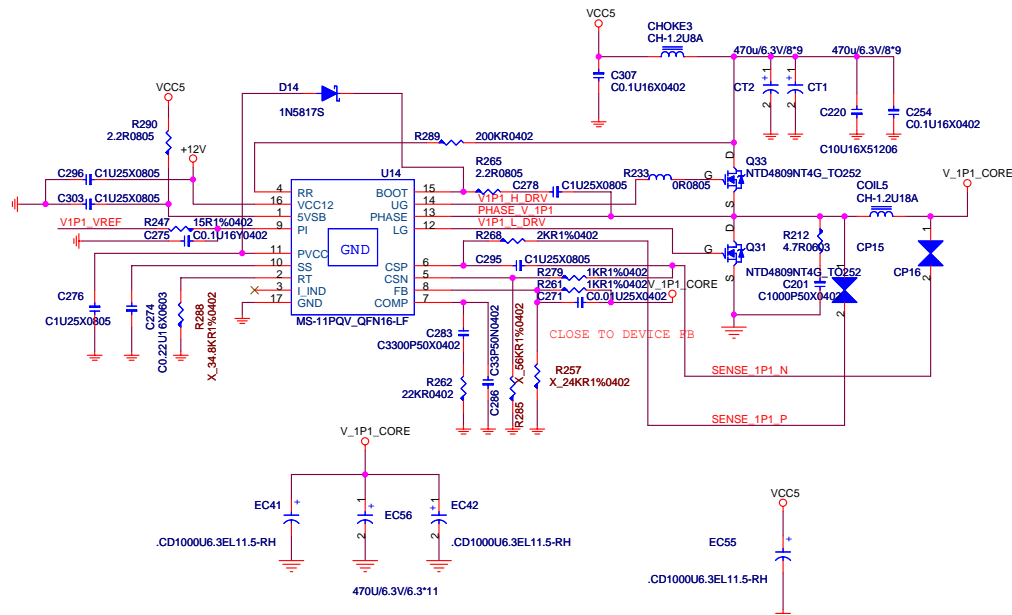


DDR VTT Power
(0.83A)

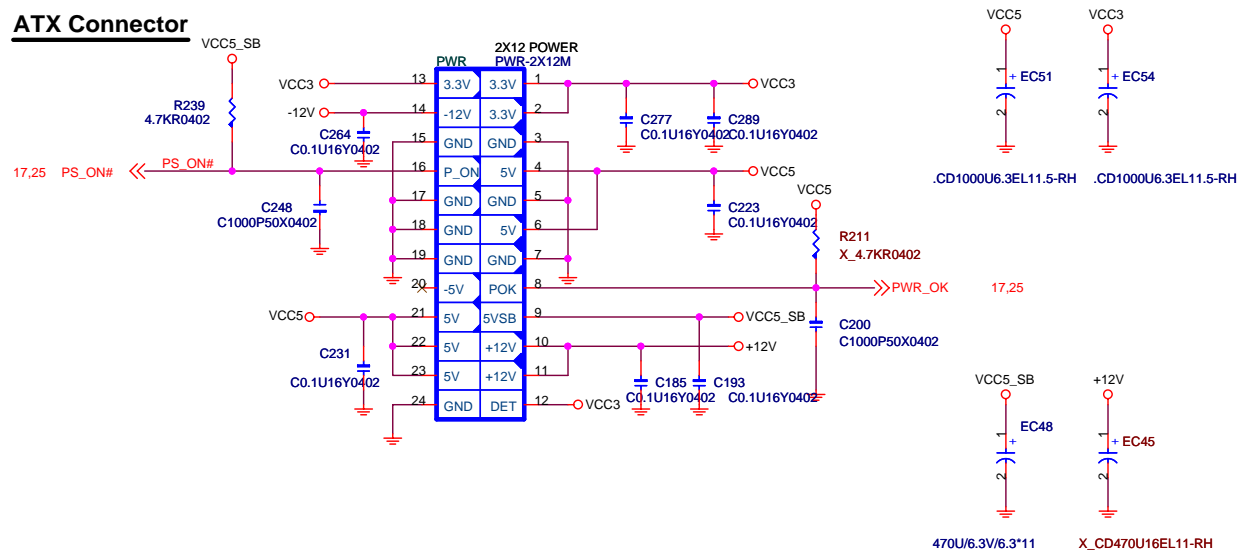


GMCH 1.1V POWER
(21.3A)

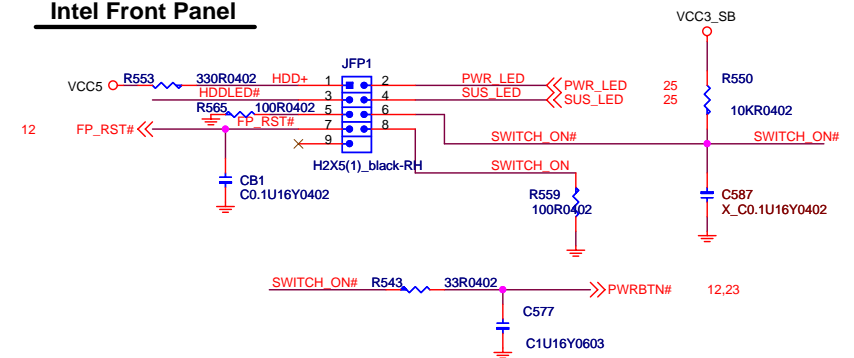
$I_{rms} = 21 \times 0.433 = 9.09A$
 $I_{cap} (total) = 5.7A \times 2 = 11.4A > 9A$
 $I_{input} = 21 \times 0.25 / 0.9 = 5.83A$, so need choose 1.2UH/8A choke



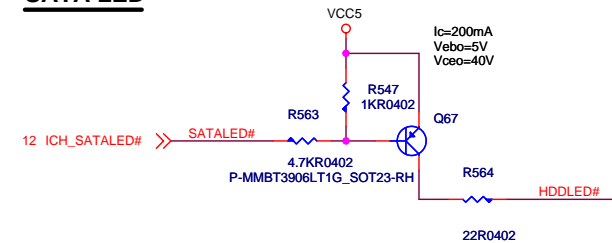
ATX Connector



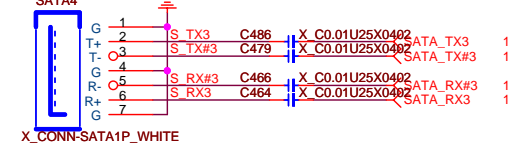
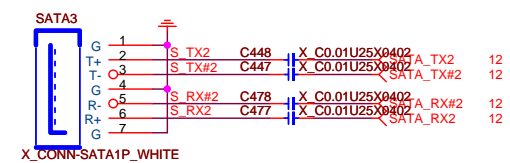
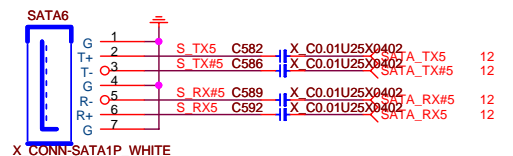
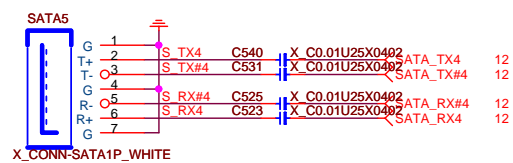
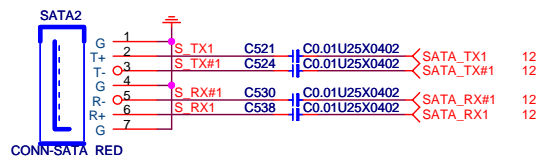
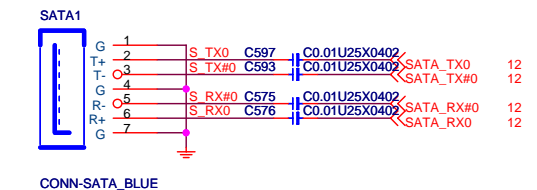
Intel Front Panel



SATA LED



SERIAL ATA CONNECTOR BLOCK SATA1&SATA2 FOR ROPROS-MA/VS BLUE



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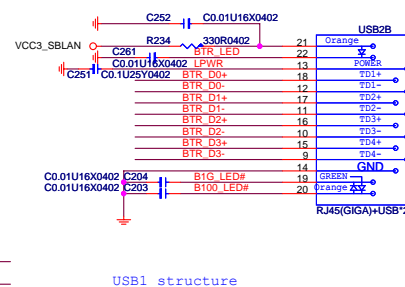
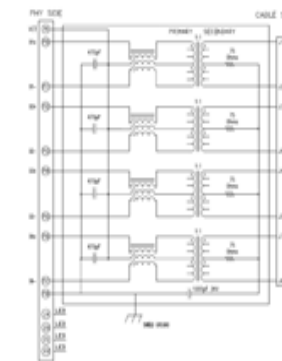
MS-7428

Size	Document Description	Rev
Custom	ATX ,Front Panel,SATA Conn	0A
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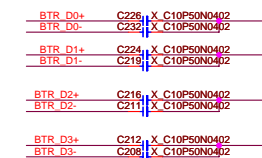
BCM5784M LAN CHIP (ROPROS-MA)

LAN Connector

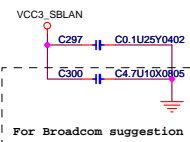
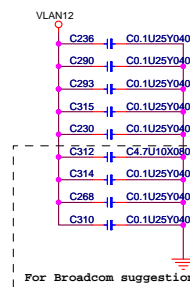
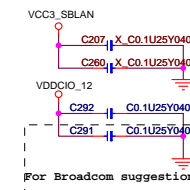
Giga-Lan	
N58-22F0571-F02	
Link	Orange
Active	Blinking
1000	Orange
100	Green
10	None
21	Orange
22	Orange
20	Green
19	Orange



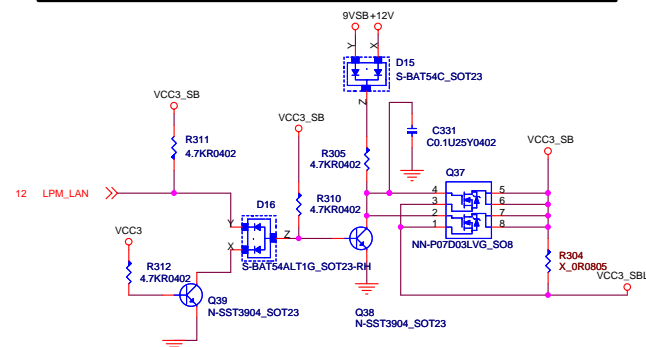
EMI SUGGESTION



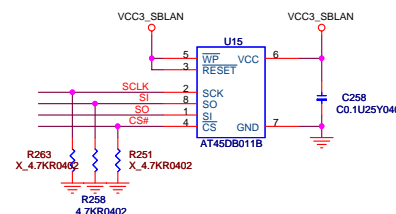
Bypass CAPs



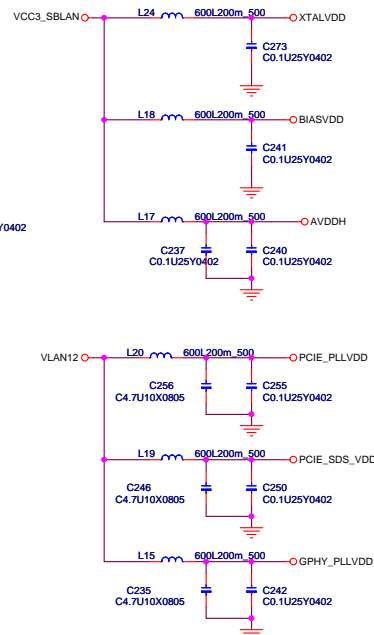
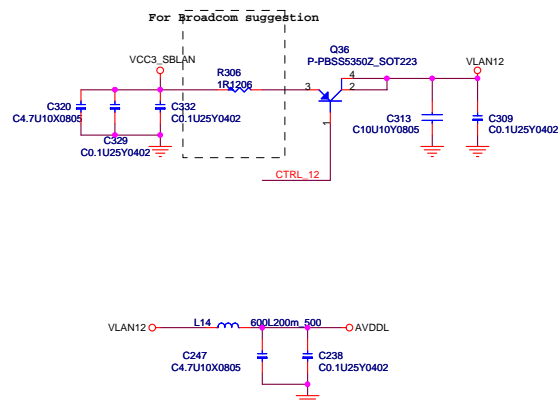
Power control for power consumption



LAN EEPROM



LAN 1.2 POWER (590mA)



MICRO-STAR INT'L CO.,LTD

MS-7428

Size	Document Description	Rev
Custom	Broadcom-BCM5784M	0A
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ICH10

GPIO Pin	Type	Default	Function	Power	MUXED/ UNMUXED	Pin-out
GPIO 0	I/O	GPI	PECI_REQUEST# function,Pull-up to VCC3 with 10K	VCC3	MUXED	N7
GPIO 1	I/O	GPI	Pull-up to VCC3 with 10K	VCC3	MUXED	AK21
GPIO 2	I/O	GPI	PIRO#E pull-up to VCC3 with 8.2K	VCC3		K6
GPIO 3	I/O	GPI	PIRO#F pull-up to VCC3 with 8.2K	VCC3		L7
GPIO 4	I/O	GPI	PIRO#G pull-up to VCC3 with 8.2K	VCC3		F2
GPIO 5	I/O	GPI	PIRO#H pull-up to VCC3 with 8.2K	VCC3		G2
GPIO 6	I/O	GPI	Pull-up to VCC3 with 10K	VCC3	MUXED	AH22
GPIO 7	I/O	GPI	Pull-up to VCC3 with 10K	VCC3	MUXED	AK23
GPIO 8	I/O	GPI	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	GPI	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,control both of Broadcom	VCC3_SB	UNMUXED	A8
GPIO 13	I/O	GPI	SIO_PME# connect to SIO,pull_up VCC3_SB with 10k	VCC3_SB	UNMUXED	A19
GPIO 14	I/O	GPI	SIO_SMI# connect to SIO,Pull-up to VCC3_SB with 10K	VCC3_SB	MUXED	A9
GPIO 15	I/O	GPO	PCI_STOP# for CK505 iAMT,not use	VCC3_SB	MUXED	C15
GPIO 16	I/O	GPO	pull_up VCC3 with 10K.	VCC3	UNMUXED	M2
GPIO 17	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3	MUXED	AH21
GPIO 18	I/O	GPO	GTLREF GPO	VCC3	UNMUXED	K1
GPIO 19	I/O	GPI	Pull-up to VCC3 with 10K	VCC3		AE20
GPIO 20	I/O	GPO	GTLREF GPO	VCC3	UNMUXED	AF5
GPIO 21	I/O	GPI	Pull-up to VCC3 with 10K	VCC3		AK25
GPIO 22	I/O	GPI	Pull-up to VCC3 with 10K	VCC3	MUXED	AJ24
GPIO 23	I/O	LDRO1#	LDRO_1# pull_up VCC3 with 10K(Not Use)	VCC3	MUXED	J3
GPIO 24	I/O	GPO	SPI_HOLD_GPO#,not use	3.3V_SB	MUXED	A14
GPIO 25	I/O	GPO	CPU_STOP# for CK505 iAMT,not use	3.3V_SB	UNMUXED	B18
GPIO 26	I/O	GPO	S4 STATE#	3.3V_SB		C11
GPIO 27	I/O	GPO	LPM_LAN ,control VCC3_SBLAN power	3.3V_SB		A11
GPIO 28	I/O	GPO	SPI_WP#	3.3V_SB		G18
GPIO 29	I/O	OC5#	OC#2 connect to USB connector	3.3V_SB		N1
GPIO 30	I/O	OC6#	OC#3 connect to USB connector	3.3V_SB		N5
GPIO 31	I/O	OC7#	OC#3 connect to USB connector	3.3V_SB		M1
GPIO 32	I/O	GPO	PROHOT# for NEC Economy mode	VCC3	UNMUXED	K2
GPIO 33	I/O	GPO	NC	VCC3	UNMUXED	AF6
GPIO 34	I/O	GPO	NC	VCC3	UNMUXED	AH5
GPIO 35	I/O	GPO	SATACLKREQB_GP35,not use	VCC3		L1
GPIO 36	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3		AE21
GPIO 37	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3		AE22
GPIO 38	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3		AK24
GPIO 39	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3		AH23
GPIO 40	I/O	OC0#	OC#0 connect to USB connector	3.3V_SB		N3
GPIO 41	I/O	OC1#	OC#1 connect to USB connector	3.3V_SB		F7
GPIO 42	I/O	OC1#	OC#1 connect to USB connector	3.3V_SB		R7
GPIO 43	I/O	OC2#	OC#2 connect to USB connector	3.3V_SB		N2
GPIO 44/45	I/O	OC8/9#	OC#3 connect to USB connector	3.3V_SB		P3/R6
GPIO 46/47	I/O	OC10/11#	OC#3 connect to USB connector	3.3V_SB		T7/P1
GPIO 48	I/O	GPI	Pull-up to VCC3 with 10K directly	VCC3		AD20
GPIO 49	I/O	GPO	DMI strapping ,not use	VCC3		AJ25
GPIO 50	I/O	REQ1#	REQ1 pull-up to VCC5 with 2.7K	VCC5	MUXED	G13
GPIO 51	I/O	GNT1#	GNT1#	VCC3	MUXED	A7
GPIO 52	I/O	REQ2#	REQ2 pull-up to VCC5 with 8.2K	VCC5	MUXED	F13
GPIO 53	I/O	GNT2#	GNT2#	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#(Not Use)	VCC3	MUXED	F7
GPIO 56	I/O	GPI	Clear password, pull-up to VCC3_SB with 10K.	3.3V_SB	MUXED	F16
GPIO 57	I/O	GPI	Pull-up to VCC3_SB with 10K directly	3.3V_SB	MUXED	C12
GPIO 58	I/O	SPT_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	GPO	LPCPD#,connect to SIO and TPM	3.3V_SB	MUXED	R1
GPIO 62	I/O	GPO	(Not Use)	3.3V_SB	MUXED	R5
GPIO 63	I/O	GPO	(Not Use)	3.3V_SB		G17
GPIO 72	I/O	GPO	BATTLOW#, pull-up to VCC3_SB with 10K	3.3V_SB		C13

PCI Configuration

DEVICE	MCP1 INT Pin	REQ# /GNT#	IDSEL	CLOCK
PC11	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD16	PCI_CLK0
PC12	PIRQ#B PIRQ#D PIRQ#C PIRQ#A	PREQ#1 PGNT#1	AD17	PCI_CLK1

DDR2 DIMM Configuration

DEVICE	ADDRESS	CLOCK
DIMM 1	0A0H	SCLK_A0/SCLK_A0# SCLK_A2/SCLK_A2#
DIMM 2	0A4H	SCLK_B0/SCLK_B0# SCLK_B2/SCLK_B2#
DIMM 3	0A0H	SCLK_A0/SCLK_A0# SCLK_A2/SCLK_A2#
DIMM 4	0A4H	SCLK_B0/SCLK_B0# SCLK_B2/SCLK_B2#

SIO - SMSC-5617C Configuration

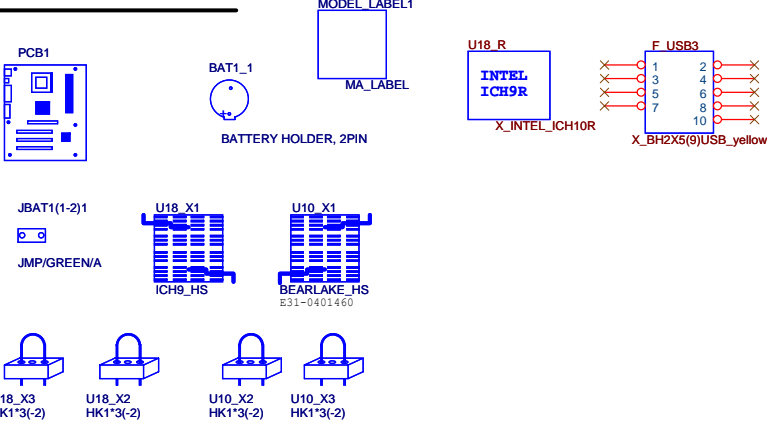
PIN NAME	PIN#	USAGE	Input/Output
GP76	53	GPIO_KB	OUTPUT
GP42	27	SIO_SMI#	OUTPUT
GP41	77	SIO_PME#	OUTPUT

Jumper Setting

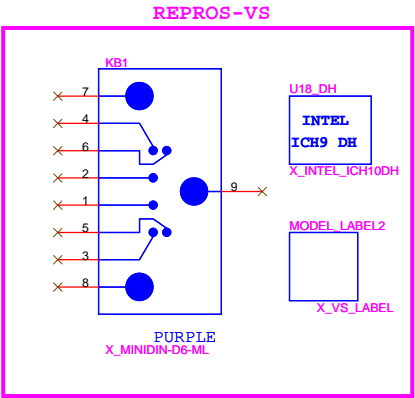
JBAT1	(1-2)Normal	(2-3)Clear CMOS
J1	(1-2)short: Normal	(1-2)Open: Clear PW



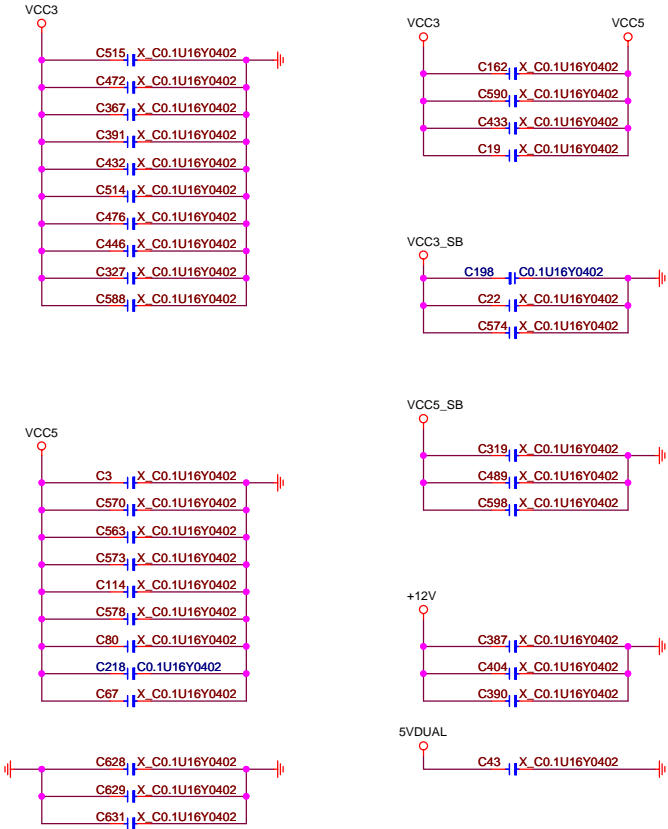
MANUAL PART



CPU Retention Module



EMI SUGGESTION



Model option table

Model type	Function	BOM Config	ERP BOM No.
MS7428			

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

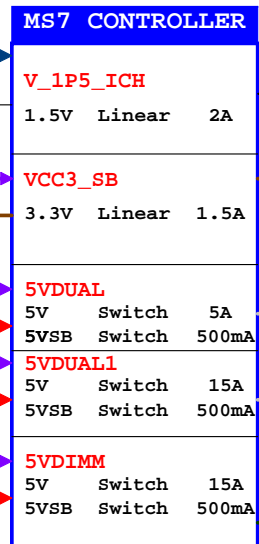
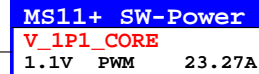
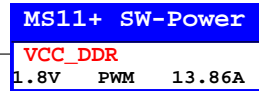
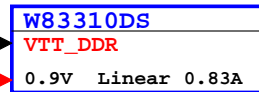
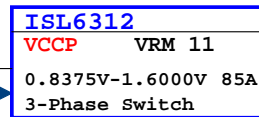
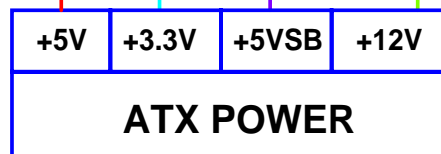
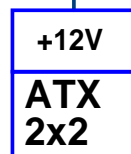
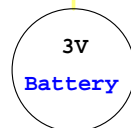
Eaglelake (GMCH)		
1.1V FSB_VTT	-	1.2 A
1.1V Core TBD (USE LB)	-	13.8A
1.1V DMI/PCI Exp.	-	2.47 A
1.1V Vcc CL	-	4.3A
1.8V VCC_DDR	-	3.33A
1.8V VCC_SMCLK	-	350mA
3.3V VCCA_DAC	-	66 mA
3.3V VCC33	-	15.8mA

ICH10		
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 ALC262VD		
3.3V AUDIO	-	40mA
5V AUDIO	-	200mA

IDTCV184-2		
3.3V VDD_48/PCI/REF	-	250mA
0.3V-1V CPU/SRC/DOT/PLL	-	80mA

BCM5784M		
3.3V_SB I/O & LED	-	15.5mA
1.2V ANALOG	-	0.418A



DDRII x4 & TERMINATOR		
0.9V VTT_DDR	-	1.2A
1.8V VCC_DDR (S0,S1)	-	9.4A
1.8V VCC_DDR (S3)	-	400mA

PCI Express x16 slot		
+12V	-	5.5 A
+3.3Vaux (wake)	-	375mA
+3.3Vaux (no wake)	-	20mA
+3.3V	-	3.0A

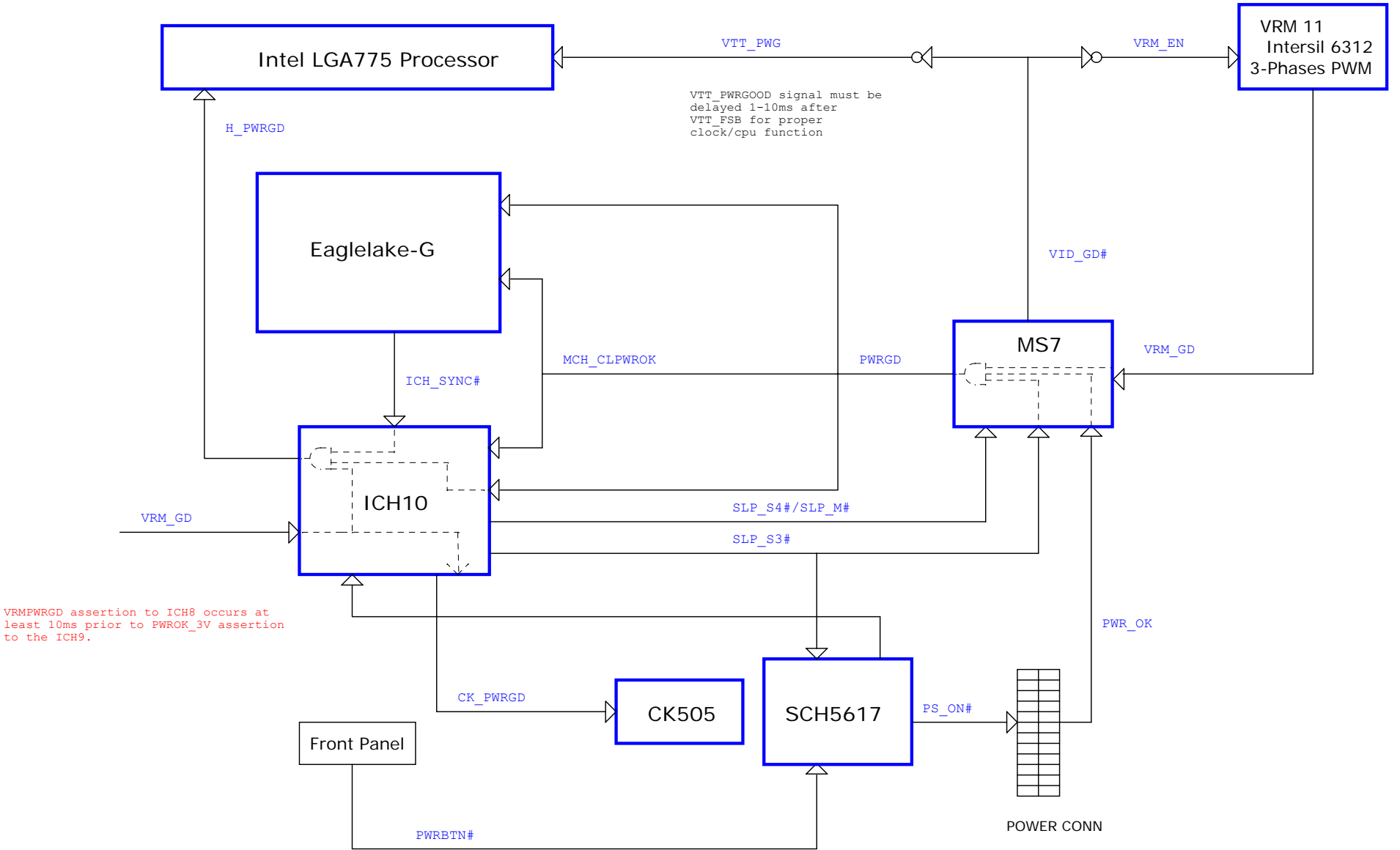
PCI slot x1		
+3.3Vaux (wake)	-	375mA
+3.3Vaux (no wake)	-	20mA
+3.3V	-	7.6A
+5V	-	5.0A
+12V	-	0.5A

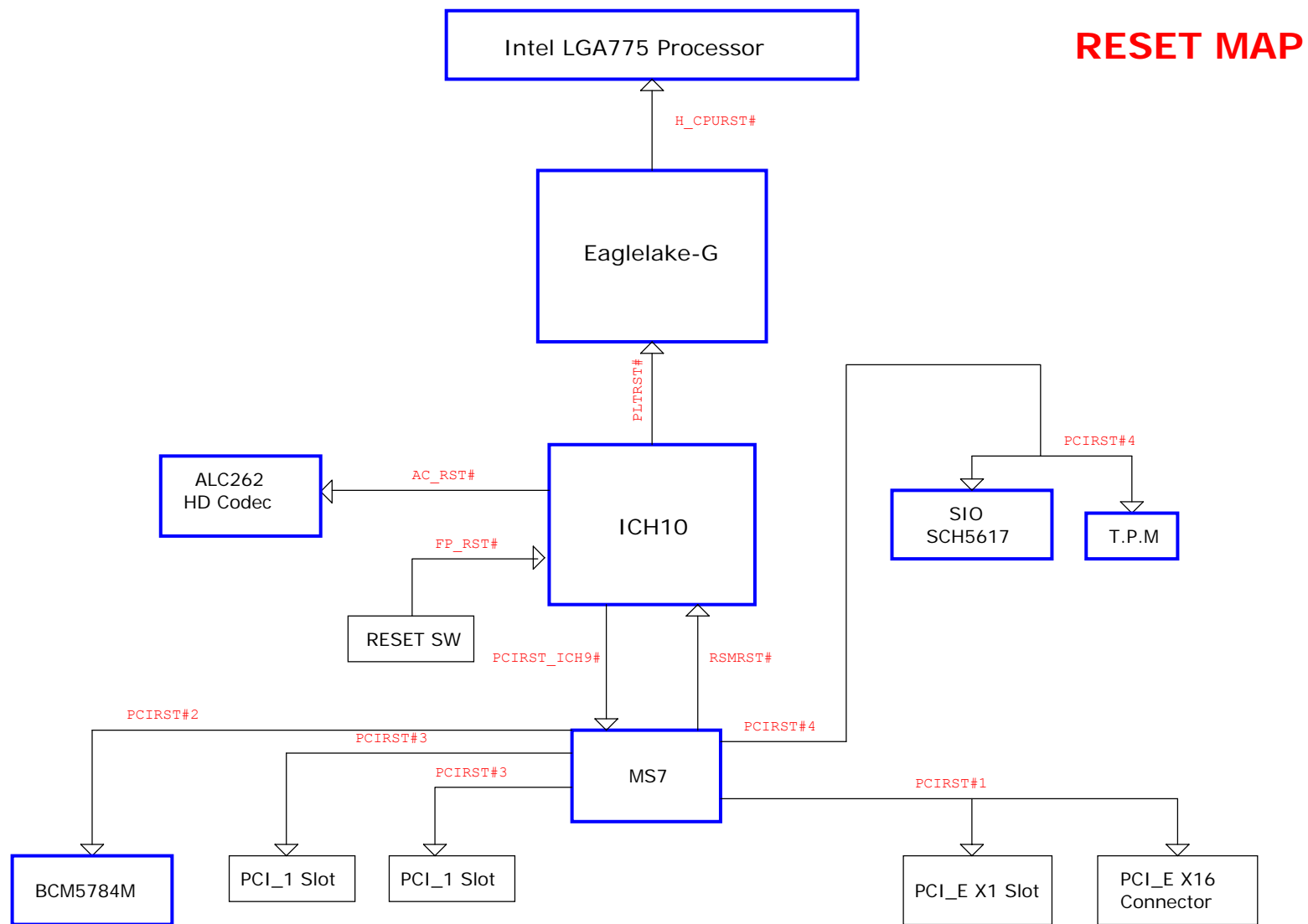
PCI Express x 1 slot *2		
+12V	-	0.5 A
+3.3Vaux (wake)	-	375mA
+3.3Vaux (no wake)	-	20mA
+3.3V	-	3.0A

USB x8		
+5V (S0,S1)	-	6.0A
+5V (S3)	-	20mA

PS2		
+5V (S0,S1)	-	345mA
+5V (S3)	-	2.0mA

PWROK MAP





MICRO-STAR INT'L CO.,LTD

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Change Note

Ver:0A



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