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MS-7363L2 *Version 0B*

CPU:

- Intel Conroe
- Intel Wolfdale

System Chipset:

- Intel Bearlake G33 - GMCH (North Bridge)
- Intel ICH9DH(South Bridge)

On Board Chipset:

- BIOS -- SPI 8Mb
- Realtek CODEC(ALC 662/888)
- IEEE-1394 VIA VT6308
- Super I/O --ITE ITE8718F
- LAN-INTEL 82562V & 82566DC
- Clock Generator - ICS9LPRS906

Main Memory:

- Dual Channel DDR II * 4

Expansion Slots:

- PCI Express X16 SLOT * 1
- PCI Express X1 SLOT * 2
- PCI 2.3 SLOT * 1

Intersil PWM:

- Intersil 6312 4 Phase

MSI Link to the Future MICRO-START INT'L CO.,LTD.

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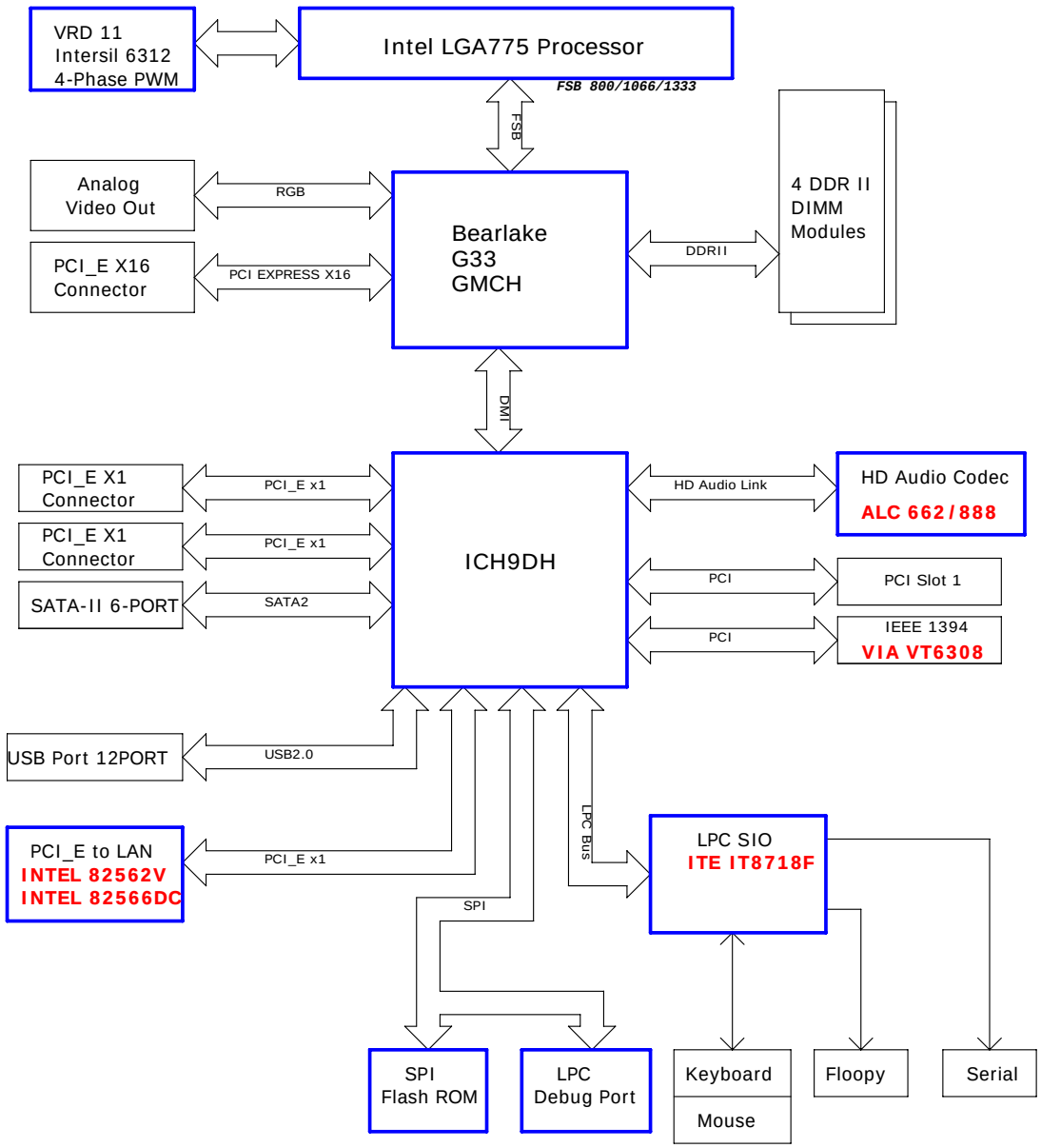
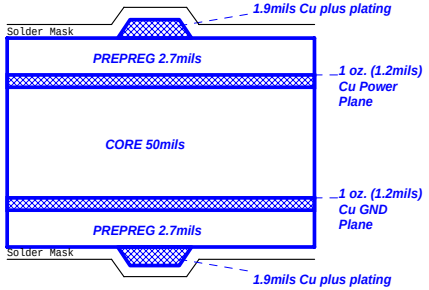
Block Diagram



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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ICH9

GPIO	Alt Func	Pin	I/O/NC	Power	PU	SMI	Tol	Default	Signal Name	
GPIO[0]	unmuxed	N7	I/O	Vcc3p3	Y	Y	3.3	GPI	straaped hi	
GPIO[1]	TACH1	AK21	I/O	Vcc3p3	Y	Y	3.3	GPI	strapped hi	
GPIO[2]	PIRQE#	K6	I/OD	V5REF	Y	Y	5	GPI	PIRQ#E	
GPIO[3]	PIRQF#	L7	I/OD	V5REF	Y	Y	5	GPI	PIRQ#F	
GPIO[4]	PIRQG#	F2	I/OD	V5REF	Y	Y	5	GPI	PIRQ#G	
GPIO[5]	PIRQH#	G2	I/OD	V5REF	Y	Y	5	GPI	PIRQ#H	
GPIO[6]	TACH2	AH22	I/O	Vcc3p3	Y	Y	3.3	GPI	strapped hi	
GPIO[7]	TACH3	AK23	I/O	Vcc3p3	Y	Y	3.3	GPI	strapped hi	
GPIO[8]	unmuxed	A20	I/O	VccSus3p3	Y	Y	3.3	GPI	strapped hi	
GPIO[9]	WOL_EN	A18	I/O	VccSus3p3	N	Y	3.3	GPI	Lenovo LEO GPIO	***
GPIO[10]	CLGPIO1	C17	I/O	VccSus3p3	Y	Y	3.3	GPI	B2_REFRESH#	
GPIO[11]	SMBALERT#	C16	I/O	VccSus3p3	N	Y	3.3	Native	SMB_ALERT#	
GPIO[12]	unmuxed	A8	I/O	VccSus3p3	N	Y	3.3	GPO	Lenovo CLR_CMOS	***
GPIO[13]	unmuxed	A19	I/O	VccSus3p3	Y	Y	3.3	GPI	SIO_PME#	***
GPIO[14]	GLGPIO2	A9	I/O	VccSus3p3	Y	Y	3.3	GPI	FP_CBL_DET#	
GPIO[15]	STO_PCI#	C15	I/O	VccSus3p3	N	Y	3.3	Native	Lenovo LEO GPIO	***
GPIO[16]	unmuxed	M2	I/O	Vcc3p3	N	N	3.3	GPO	Front Panel PLED GPIO	***
GPIO[17]	TACH0	AH21	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[18]	unmuxed	K1	I/O	Vcc3p3	N	N	3.3	GPO	Front Panel PLED GPIO	***
GPIO[19]	SATA1GP	AE20	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[20]	unmuxed	AF5	I/O	Vcc3p3	N	N	3.3	GPI	For Lenovo COM Port GPIO	***
GPIO[21]	SATA0GP	AK25	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[22]	SCLOCK	AJ24	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[23]	LDRQ1#	J3	I/O	Vcc3p3	N	N	3.3	Native	strapped hi	
GPIO[24]	MEM_LED	A14	I/O	VccSus3p3	N	N	3.3	GPO	Lenovo LEO CLOCK RUN	***
GPIO[25]	STP_CPU#	B18	I/O	VccSus3p3	N	N	3.3	GPO	Lenovo LEO GPIO	***
GPIO[26]	S4_STATE#	C11	I/O	VccSus3p3	N	N	3.3	GPO	For Lenovo SPI WP#1	***
GPIO[27]	QRT_STATE0	A11	I/O	VccSus3p3	N	N	3.3	GPO	For Lenovo SPI WP#2	***
GPIO[28]	QRT_STATE1	G18	I/O	VccSus3p3	Y	N	3.3	GPO	NC	
GPIO[29]	OC5#	N1	I/O	VccSus3p3	N	N	3.3	Native	OC#3	
GPIO[30]	OC6#	N5	I/O	VccSus3p3	Y	N	3.3	Native	OC#3	
GPIO[31]	OC7#	M1	I/O	VccSus3p3	Y	N	3.3	Native	OC#4	
GPIO[32]	unmuxed	K2	I/O	Vcc3p3	N	N	3.3	GPO	SPI_WP#(Normol)	***
GPIO[33]	unmuxed	AF6	I/O	Vcc3p3	N	N	3.3	GPO	strapped	
GPIO[34]	unmuxed	AH5	I/O	Vcc3p3	N	N	3.3	GPO	SPI HOLD GPIO	***
GPIO[35]	SATACLKREQ#	L1	I/O	Vcc3p3	N	N	3.3	GPO	NC	
GPIO[36]	SATA2GP	AE21	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[37]	SATA3GP	AE22	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[38]	SLOAD	AK24	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[39]	SDATAOUT0	AH23	I/O	Vcc3p3	Y	N	3.3	GPI	strapped hi	
GPIO[40]	OC1#	N3	I/O	VccSuS3p3	Y	N	3.3	Native	OC#1	
GPIO[41]	OC2#	P7	I/O	VccSuS3p3	Y	N	3.3	Native	OC#1	
GPIO[42]	OC3#	R7	I/O	VccSuS3p3	Y	N	3.3	Native	OC#2	
GPIO[43]	OC4#	N2	I/O	VccSuS3p3	Y	N	3.3	Native	OC#2	
GPIO[44]	OC8#	P3	I/O	VccSuS3p3	Y	N	3.3	Native	OC#4	
GPIO[45]	OC9#	R6	I/O	VccSuS3p3	Y	N	3.3	Native	OC#4	
GPIO[46]	OC10#	T7	I/O	VccSuS3p3	Y	N	3.3	Native	strapped hi	
GPIO[47]	OC11#	P1	I/O	VccSuS3p3	Y	N	3.3	Native	strapped hi	
GPIO[48]	SDATAOUT1	AD20	I/O	Vcc3p3	Y	N	3.3	GPI	ICH_SGP48_PU	
GPIO[49]	unmuxed	AJ25	I/O	Vcc3p3	N	N	3.3	GPO	DMI_STRAP	
GPIO[50]	REQ1#	G13	I/O	V5REF	N	N	5	Native	PREQ#1	
GPIO[51]	GNT1#	A7	I/O	Vcc3p3	N	N	3.3	Native	TP7	
GPIO[52]	REQ2#	F13	I/O	V5REF	N	N	5	Native	PREQ#2	
GPIO[53]	GNT2#	C7	I/O	Vcc3p3	N	N	3.3	Native	PGNT#2	
GPIO[54]	REQ3#	G8	I/O	V5REF	N	N	5	Native	PREQ#3	
GPIO[55]	GNT3#	F7	I/O	Vcc3p3	N	N	3.3	Native	PGNT#3	
GPIO[56]	GLAN_DOCK#	F16	I/O	VccSuS3p3	Y	N	3.3	GPI	strapped hi	
GPIO[57]	CLGPIO5	C12	I/O	VccSuS3p3	Y	N	3.3	GPI	strapped hi	
GPIO[58]	SPI_CS#/ GLGPIO4	F23	I/O	VccSuS3p3	Y	N	3.3	GPI	SPI_CS1#	***
GPIO[59]	OC0#	P5	I/O	VccSuS3p3	Y	N	3.3	Native	OC#1	
GPIO[60]	LINKALERT#/ GLGPIO4	F18	I/O	VccSuS3p3	N	N	3.3	Native	LINK_ALERT#	

Following are the GPIOs that need to be terminated properly if not used:
GPIO[39:36,23:21,19,7:0]: default as inputs and should be pulled up to Vcc3_3 if unused.
GPIO[31:29,15:8]: default as inputs and should be pulled up to VccSus3_3 if unused.

FWH

Note: FWH GPs should only be used for static options, do not put dynamic nets on these

GPIO	Pin#	Power	Tol	Signal Name
FPGI[0]	6	Main	3.3	pull-up
FPGI[1]	5	Main	3.3	pull-up
FPGI[2]	4	Main	3.3	pull-up
FPGI[3]	3	Main	3.3	pull-up
FPGI[4]	30	Main	3.3	pull-down

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI SLOT 1	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD16	PCI_CLK0
PCI 1394	PIRQ#C	PREQ#2 PGNT#2	AD18	CK_P_33M_1394

DDRII DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM_A1	A0H	MCLK_A0/MCLK_A#0 MCLK_A1/MCLK_A#1 MCLK_A2/MCLK_A#2
DIMM_A2	A2H	MCLK_A3/MCLK_A#3 MCLK_A4/MCLK_A#4 MCLK_A5/MCLK_A#5
DIMM_B1	A4H	MCLK_B0/MCLK_B#0 MCLK_B1/MCLK_B#1 MCLK_B2/MCLK_B#2
DIMM_B2	A6H	MCLK_B3/MCLK_B#3 MCLK_B4/MCLK_B#4 MCLK_B5/MCLK_B#5

JUMPER SETTING

CLR_CMOS	(1-2)NORMAL	(2-3)CLEAR

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Title: GPIO MAP

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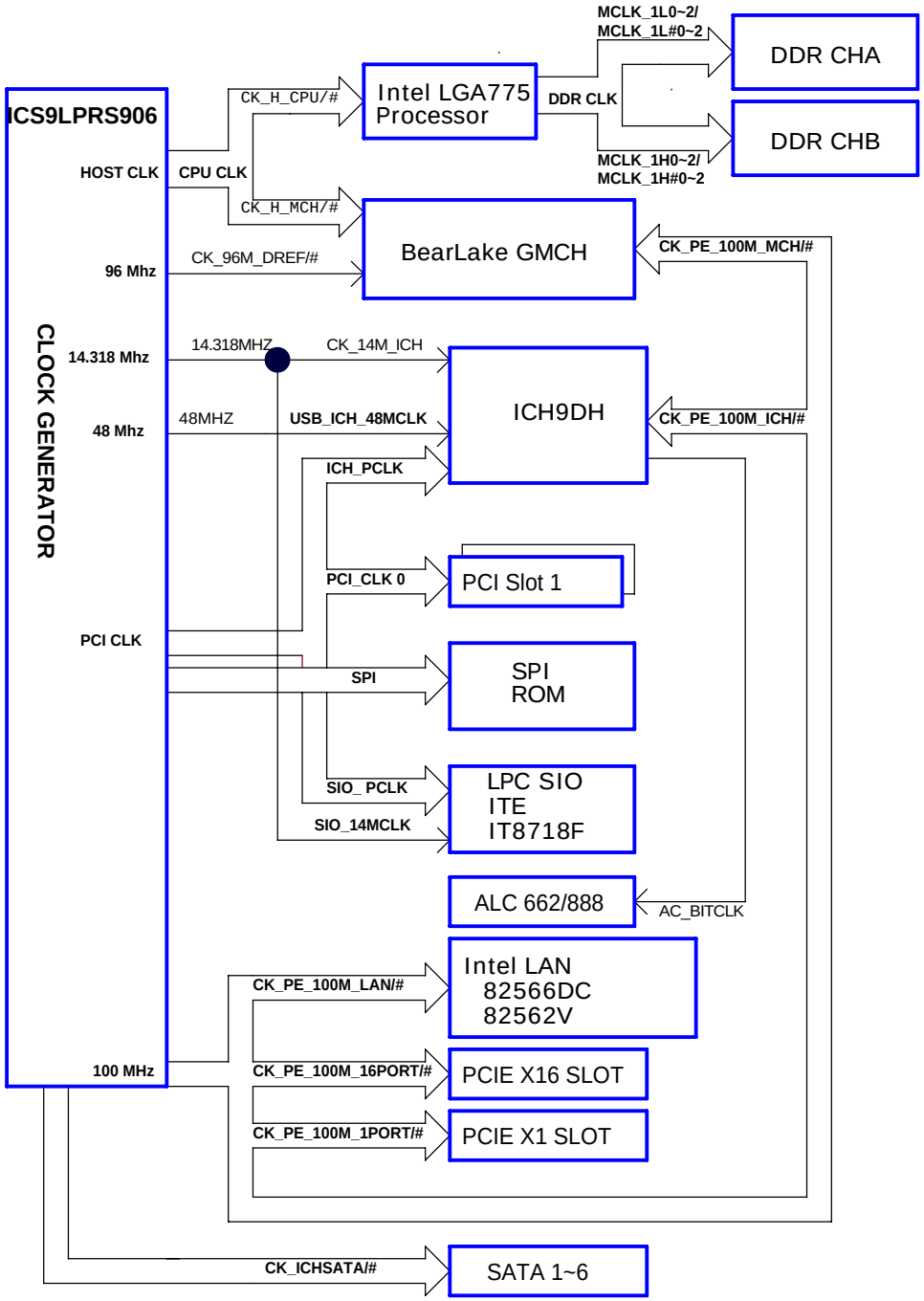
INTEL LAKEPORT PLATFORM CLOCK GENERATOR MAP



MICRO-START INT'L CO.,LTD.

Title: Clock Map		
Size: Custom	Document Number: MS-7363L2	Rev: 0A
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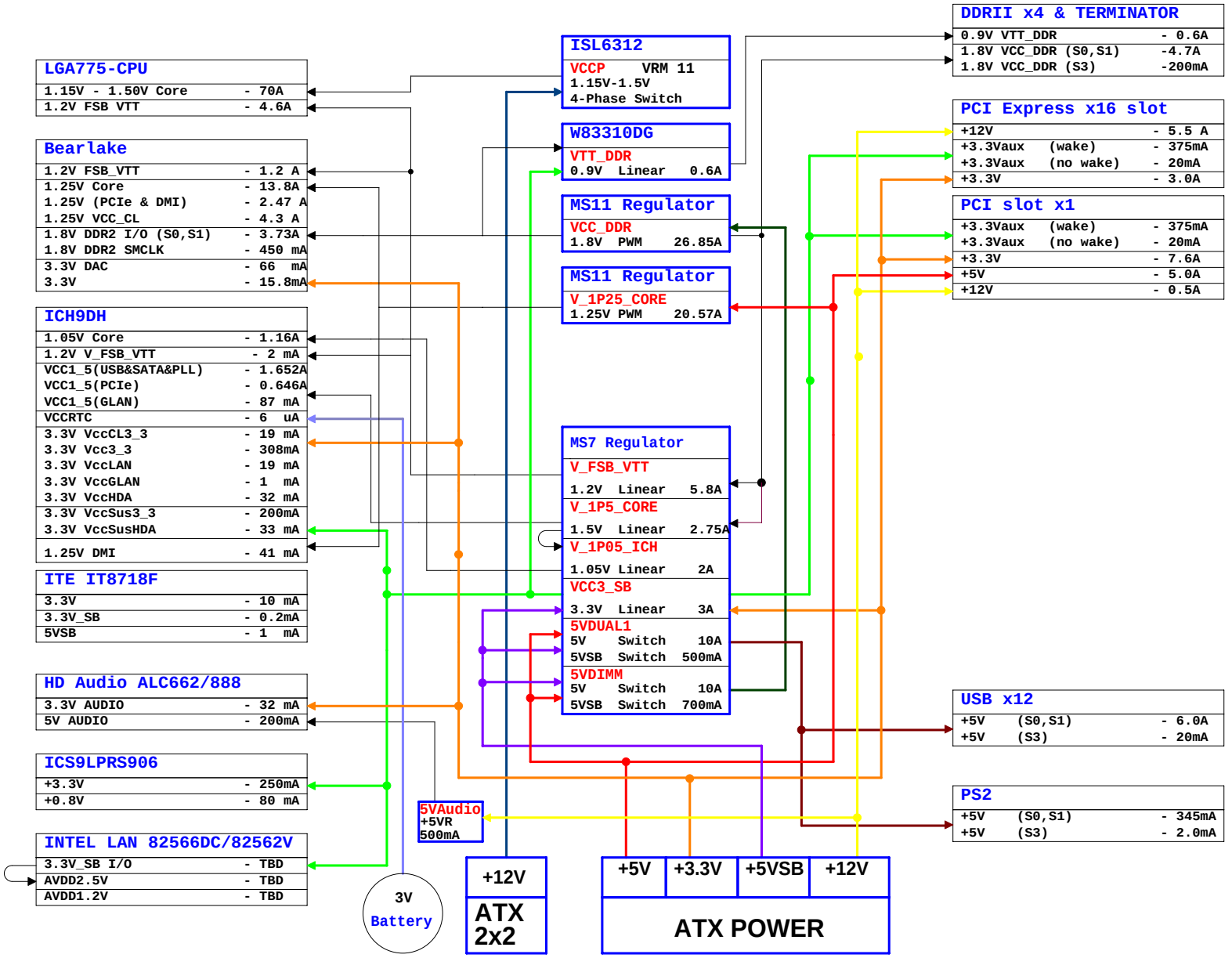


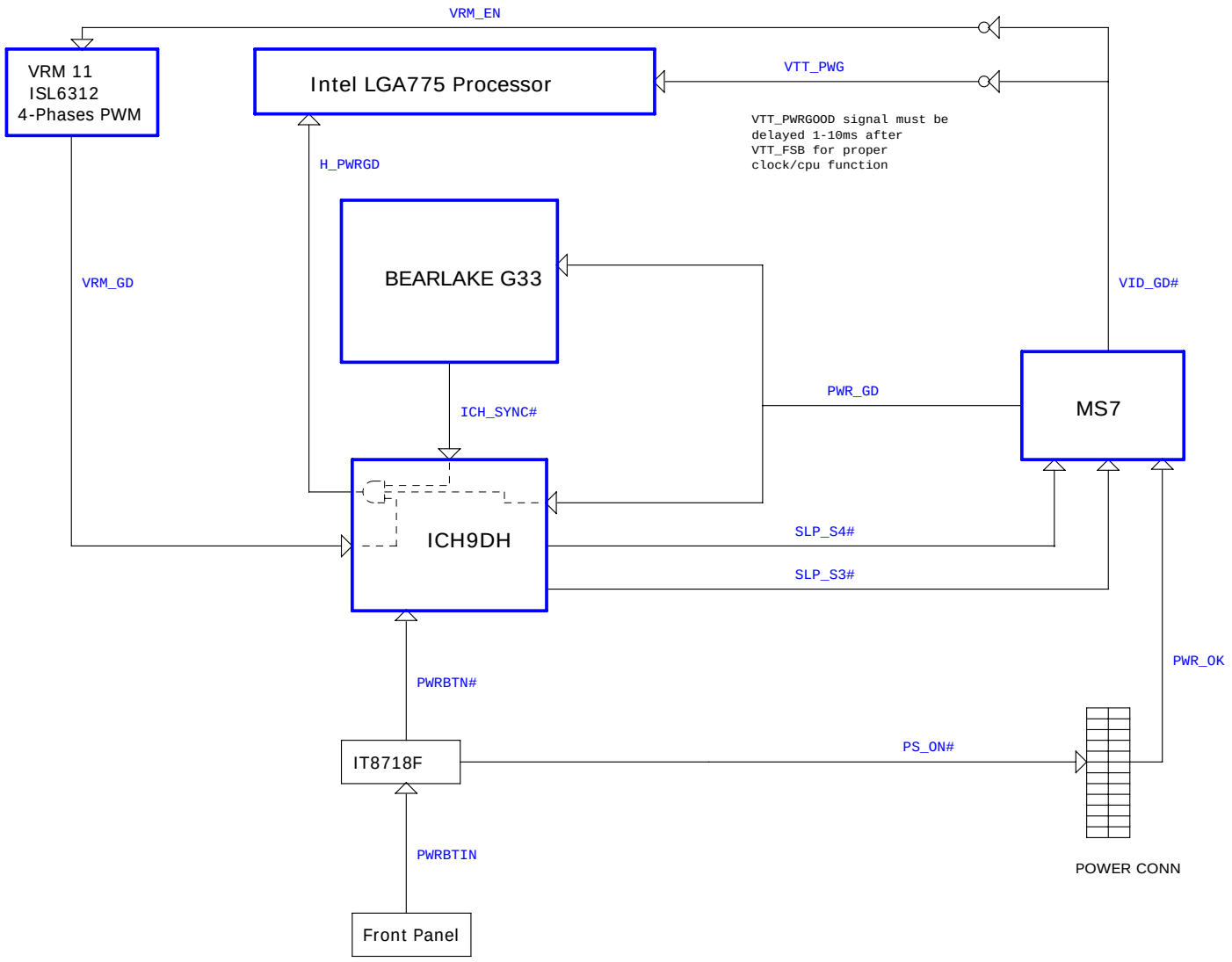
MICRO-START INT'L CO.,LTD.

Title: Power Delivery

Size: C | Document Number: MS-7363L2 | Rev: 0A

Date: Tuesday, February 27, 2007 | Sheet 5 of 36

Power OK MAP



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

Title: Power OK MAP		
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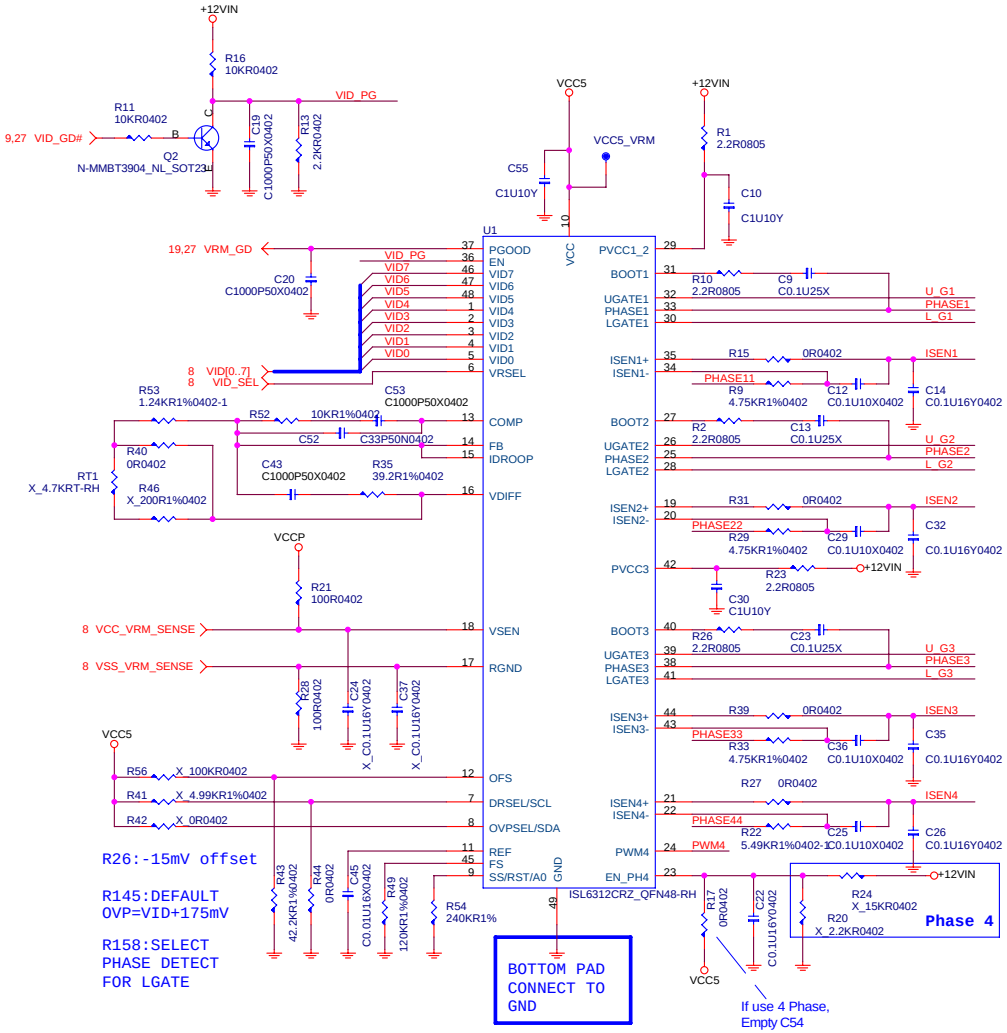
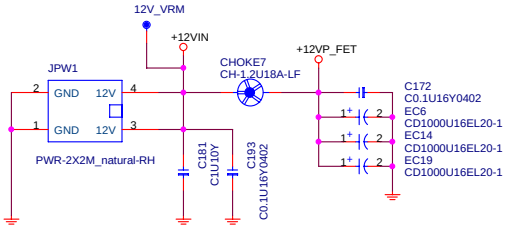
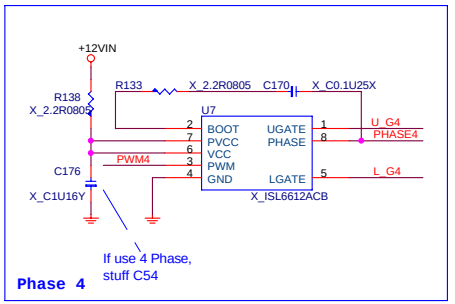
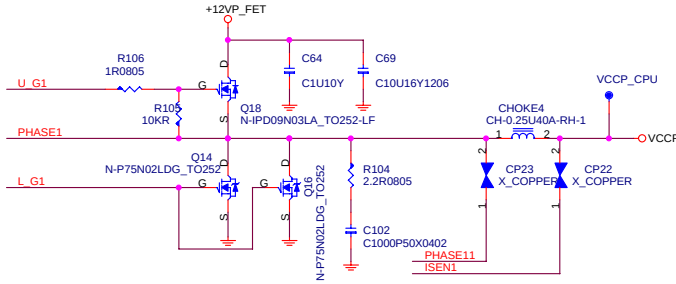
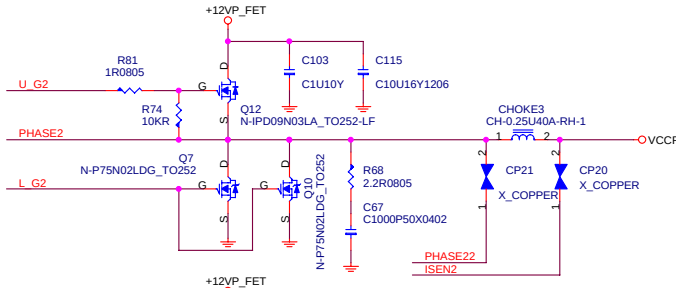
PWM Controllor ISL6312

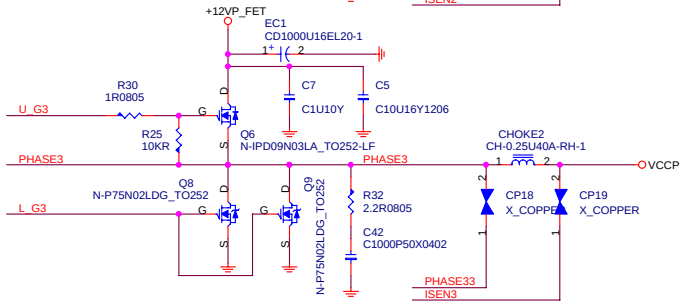


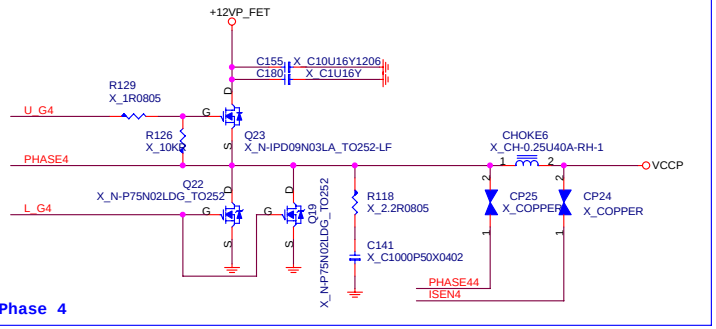




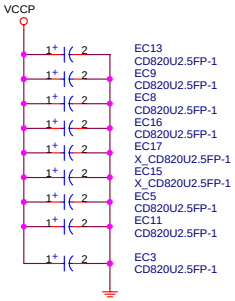






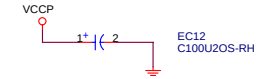


OS-CON Capactiors



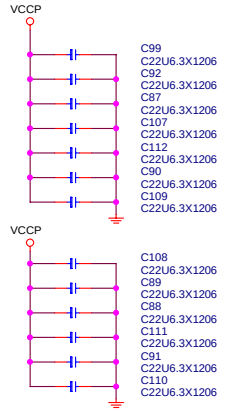
Phase 4

SP Capacitors



DECOUPLING CAPACITORS

Place these caps within socket cavity



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

Title: VRM11 Intersil 6312 4Phase		
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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)

Prescott / Cedar Mill
LL_ID[1:0] = 00
GTLREF_SEL = 0
VTT_SEL = 1

PLACE BPM TERMINATION NEAR CPU

COMP4, COMP5, COMP6 and COMP7:No Pulled up is required for Conroe and later CPU.

Kentsfield

Place close to R2087

ZIF-SOCK775-15u-in

Title	Intel LGA775 - Signals
Size	Custom
Document Number	MS-7363L2
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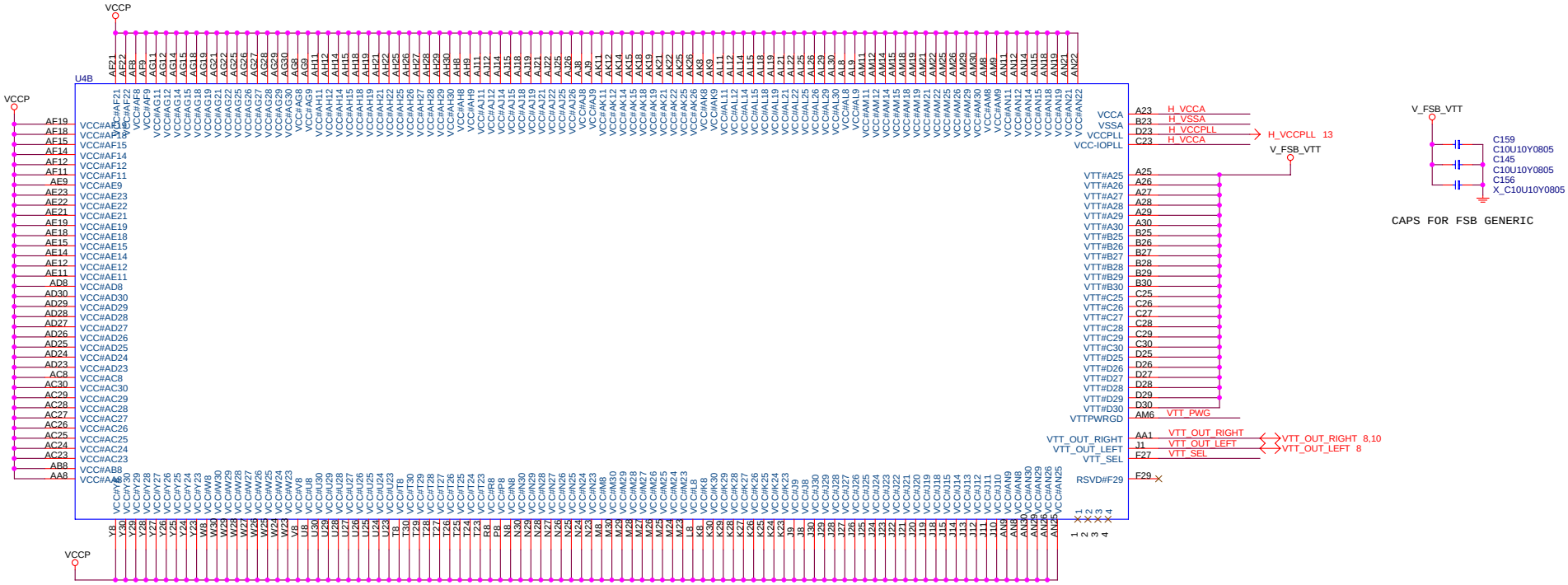
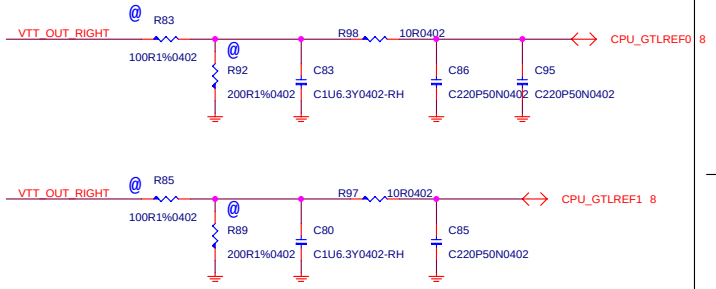
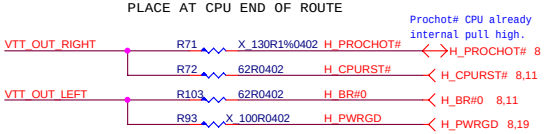
MICRO-START INT'L CO.,LTD.

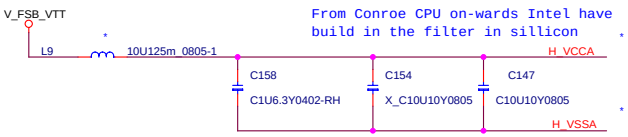


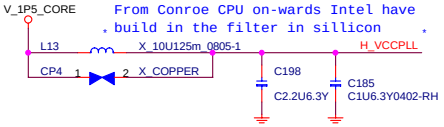


PLACE AT CPU END OF ROUTE

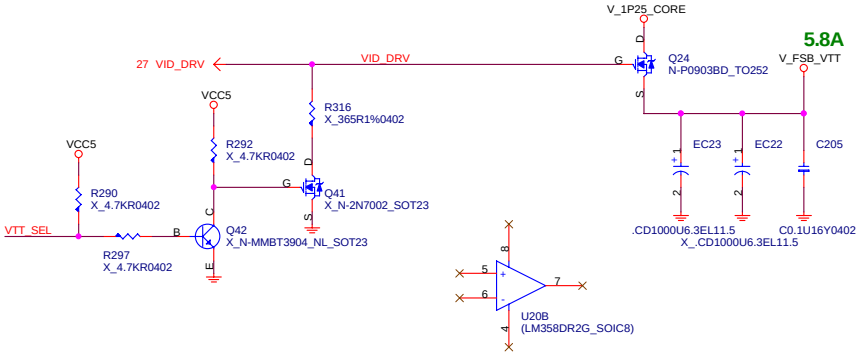


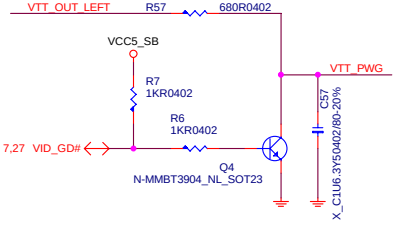
PLACE COMPONENTS AS CLOSE AS POSSIBLE TO PROCESSOR SOCKET
TRACE WIDTH TO CAPS MUST BE SMALLER THAN 12MILS





CPU FSB VTT POWER





VTT_SEL = L	V_FSB_VTT=1.1V	For future KENTSFIELD processor. (FSB1333, Quad-Core)
VTT_SEL = H	V_FSB_VTT=1.2V	For normal processors.

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: Intel LGA775 - Power		
Size: Custom	Document Number: MS-7363L2	Rev: 0A
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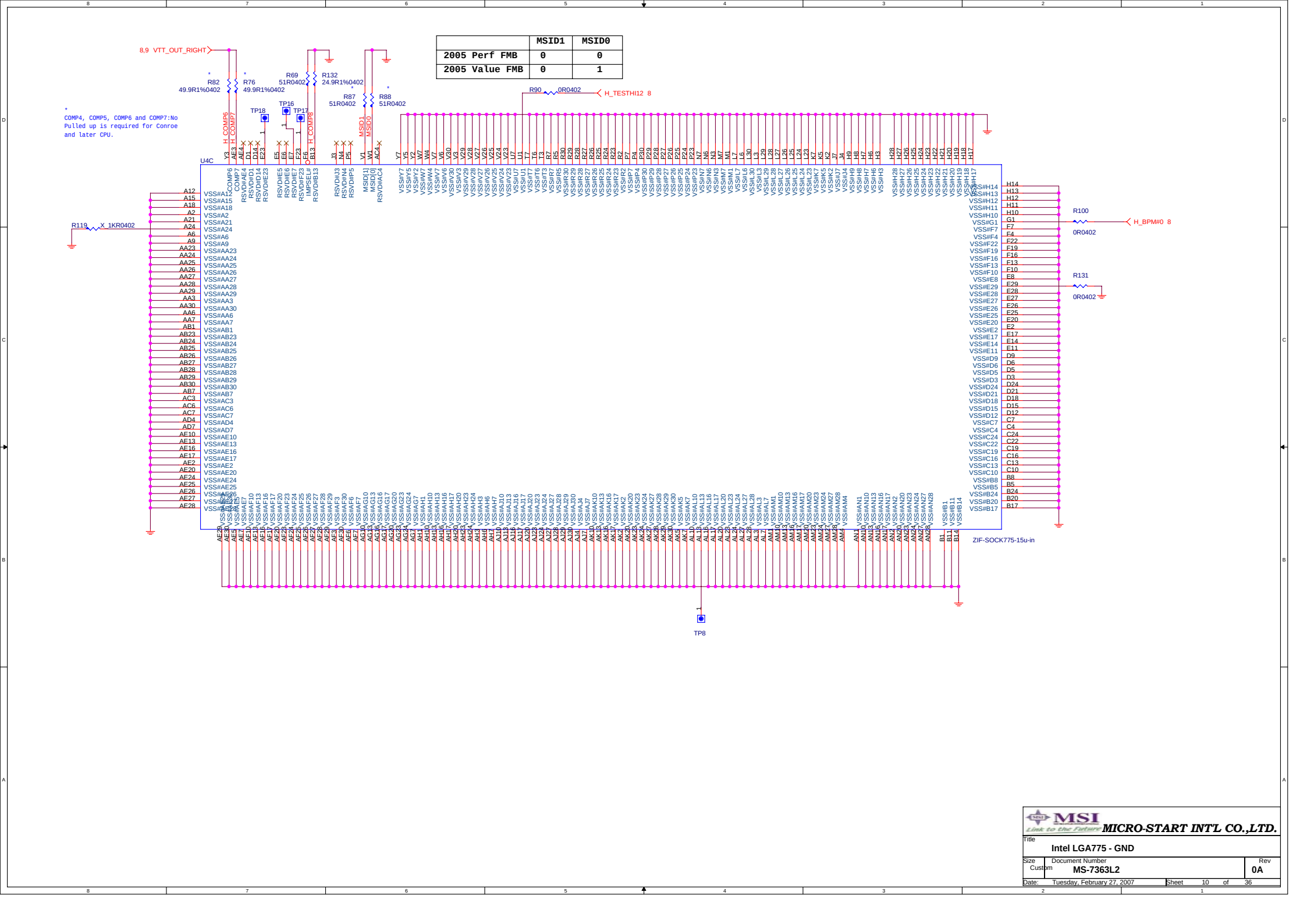
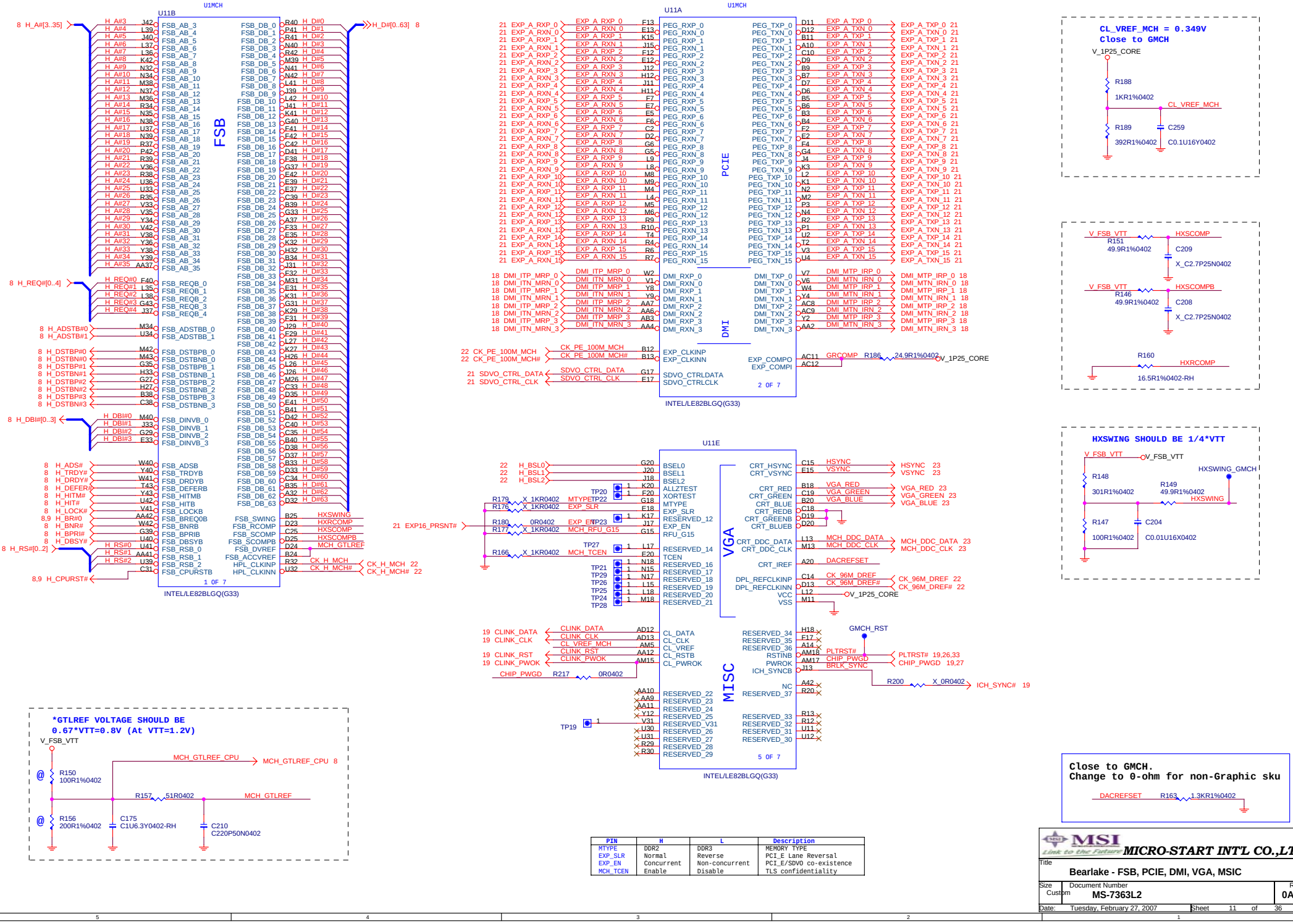
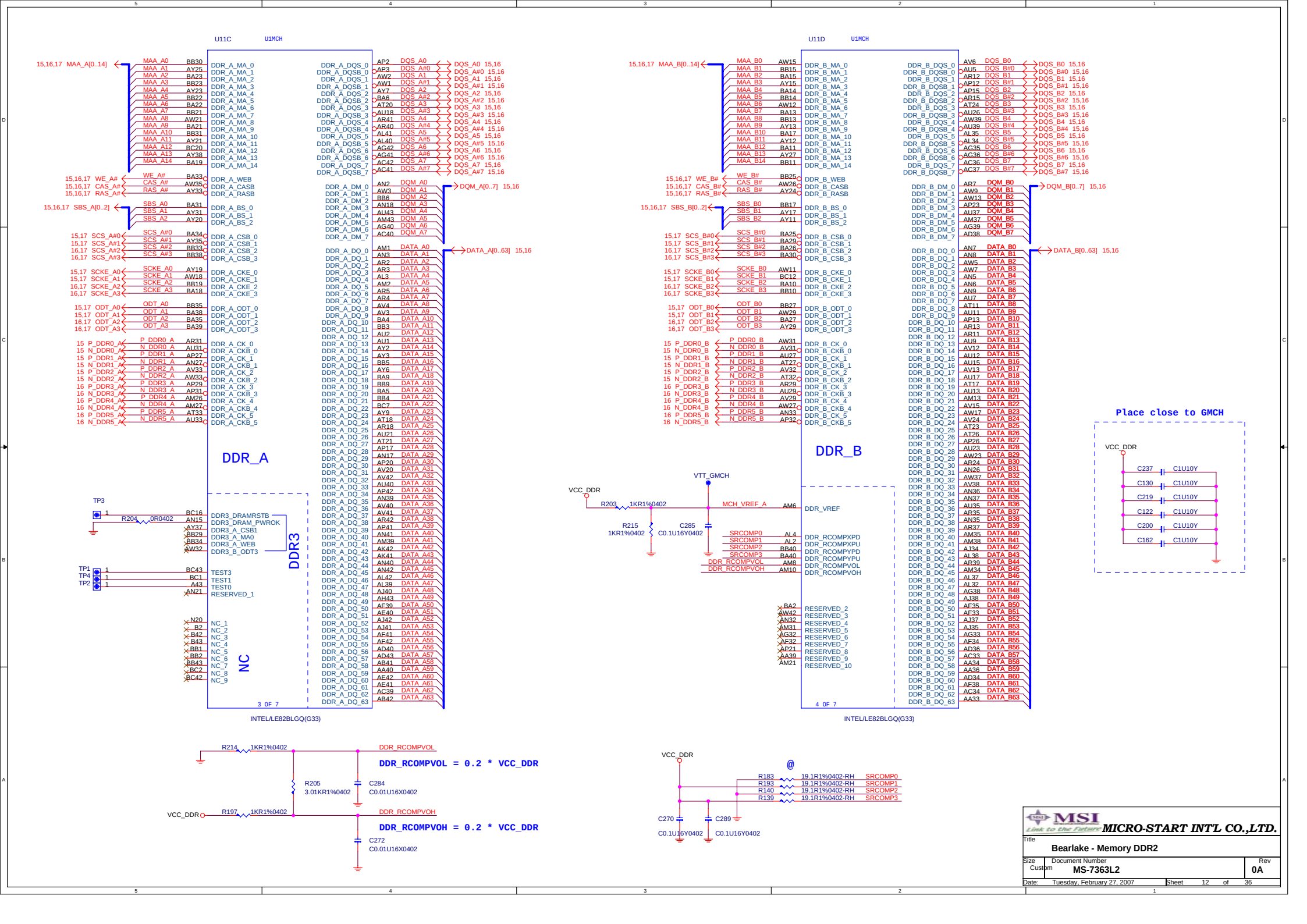


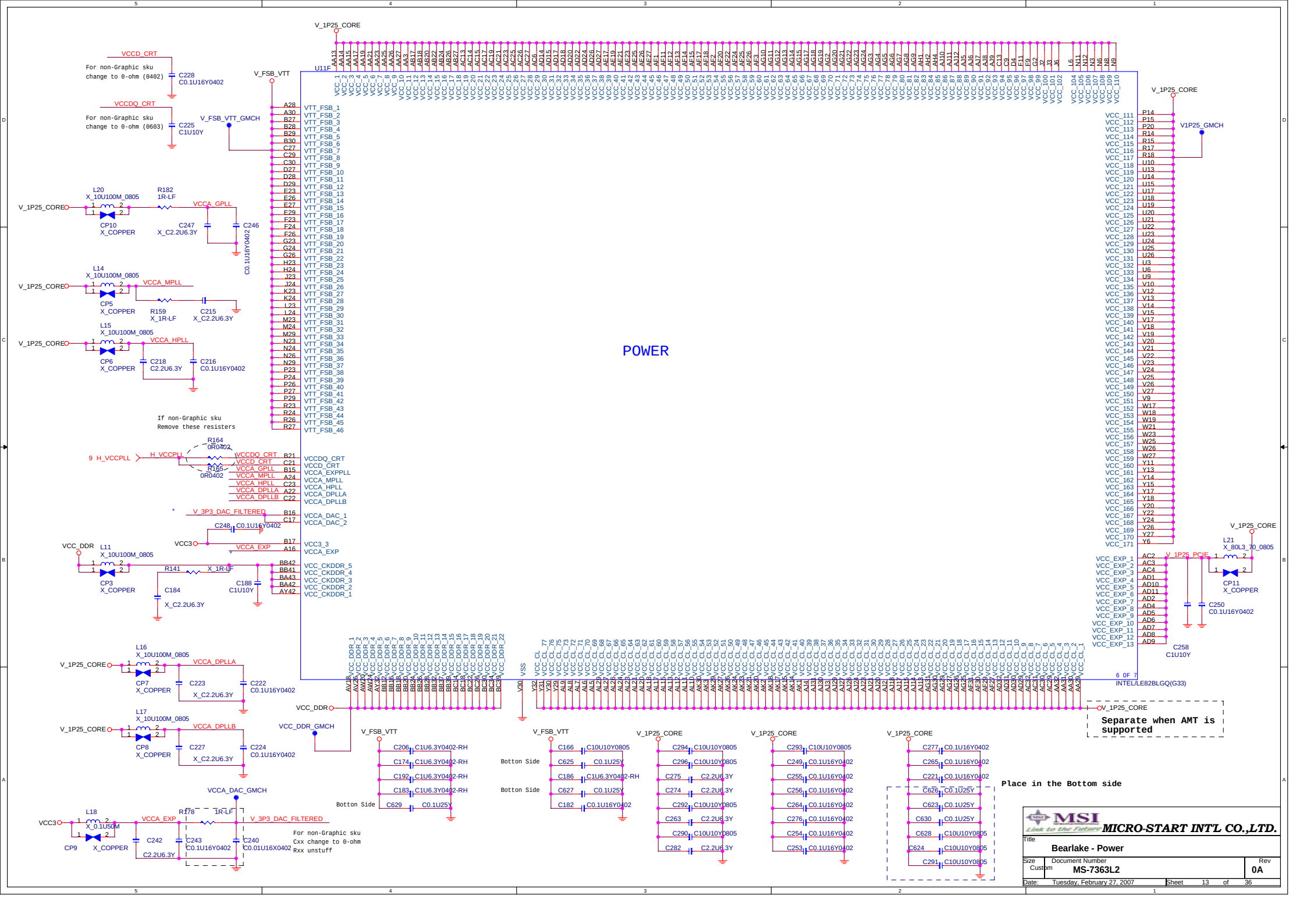
	MSID1	MSID0
2005 Perf FMB	0	0
2005 Value FMB	0	1

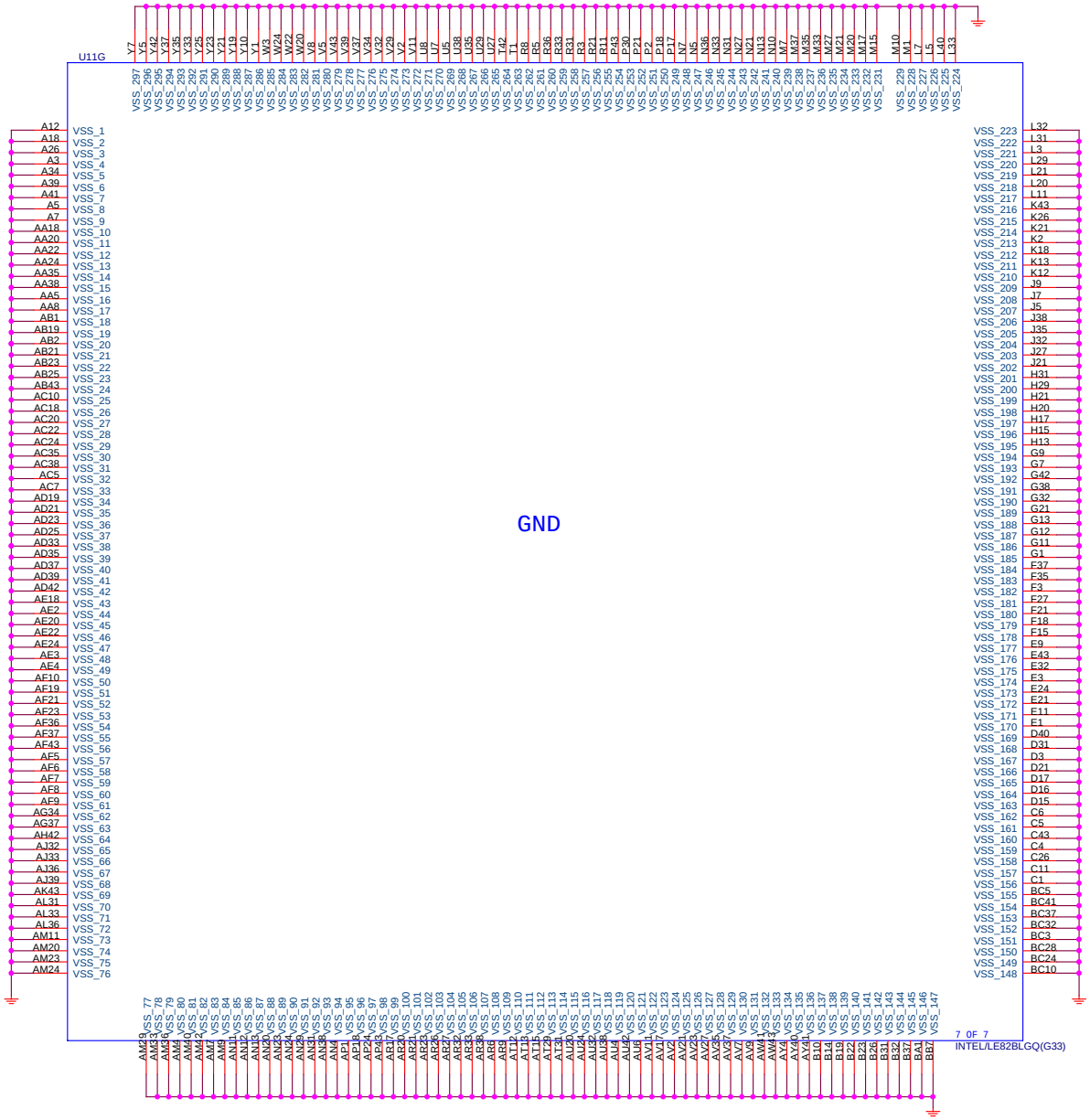
MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: Intel LGA775 - GND		
Size: Custom	Document Number: MS-7363L2	Rev: 0A
Date: Tuesday, February 27, 2007	Sheet 10 of 36	

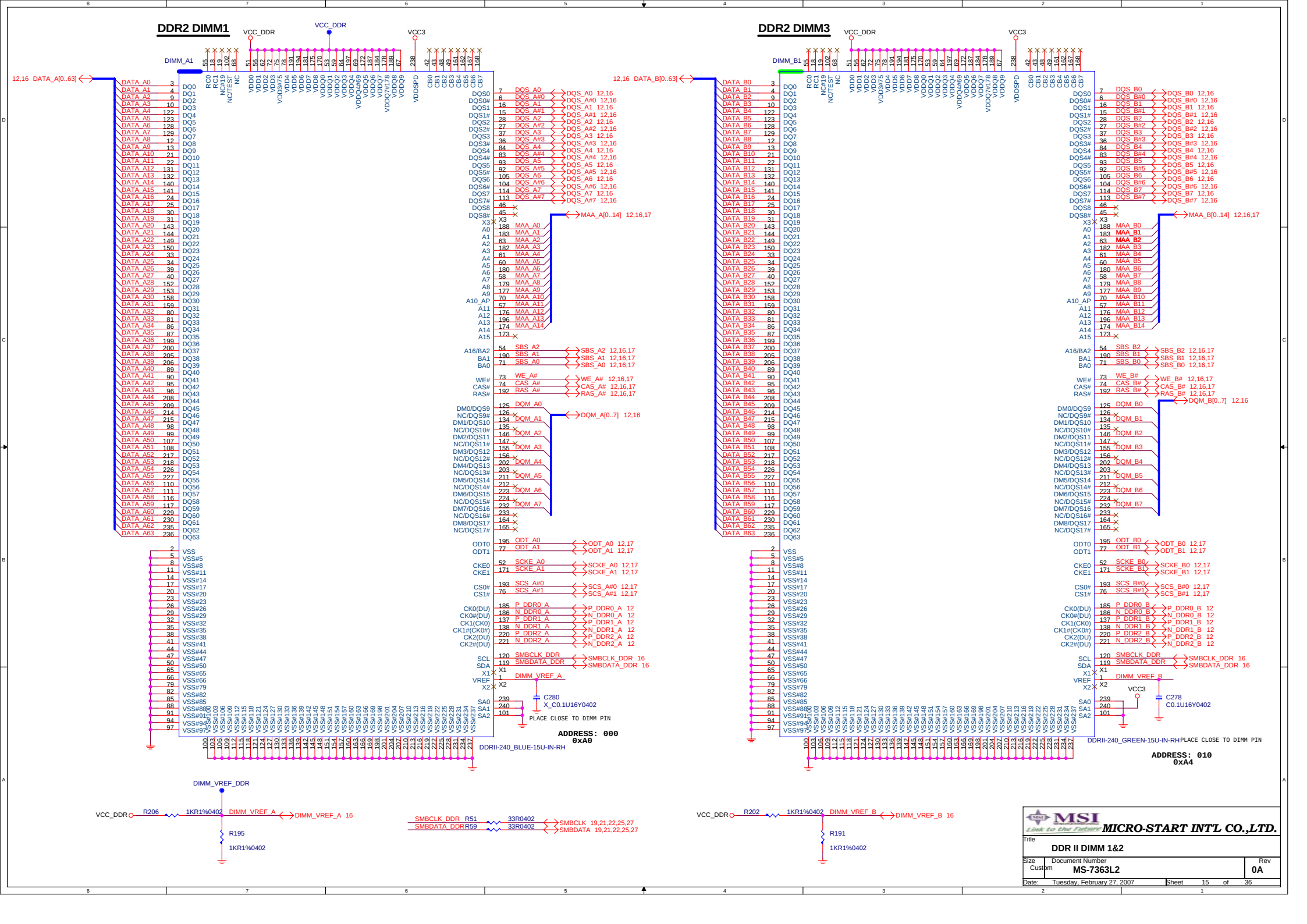

U1MCH
U11B
FSB
INTEL/LE82BLGQ(G33)
U11A
PCIE
DMI
U11E
VGA
MISC
*GTLREF VOLTAGE SHOULD BE
0.67*VTT=0.8V (At VTT=1.2V)
CL_VREF_MCH = 0.349V
Close to GMCH
HXSWING SHOULD BE 1/4*VTT
Close to GMCH.
Change to 0-ohm for non-Graphic sku
MICRO-START INT'L CO.,LTD.
Bearlake - FSB, PCIE, DMI, VGA, MSIC
MS-7363L2
Tuesday, February 27, 2007

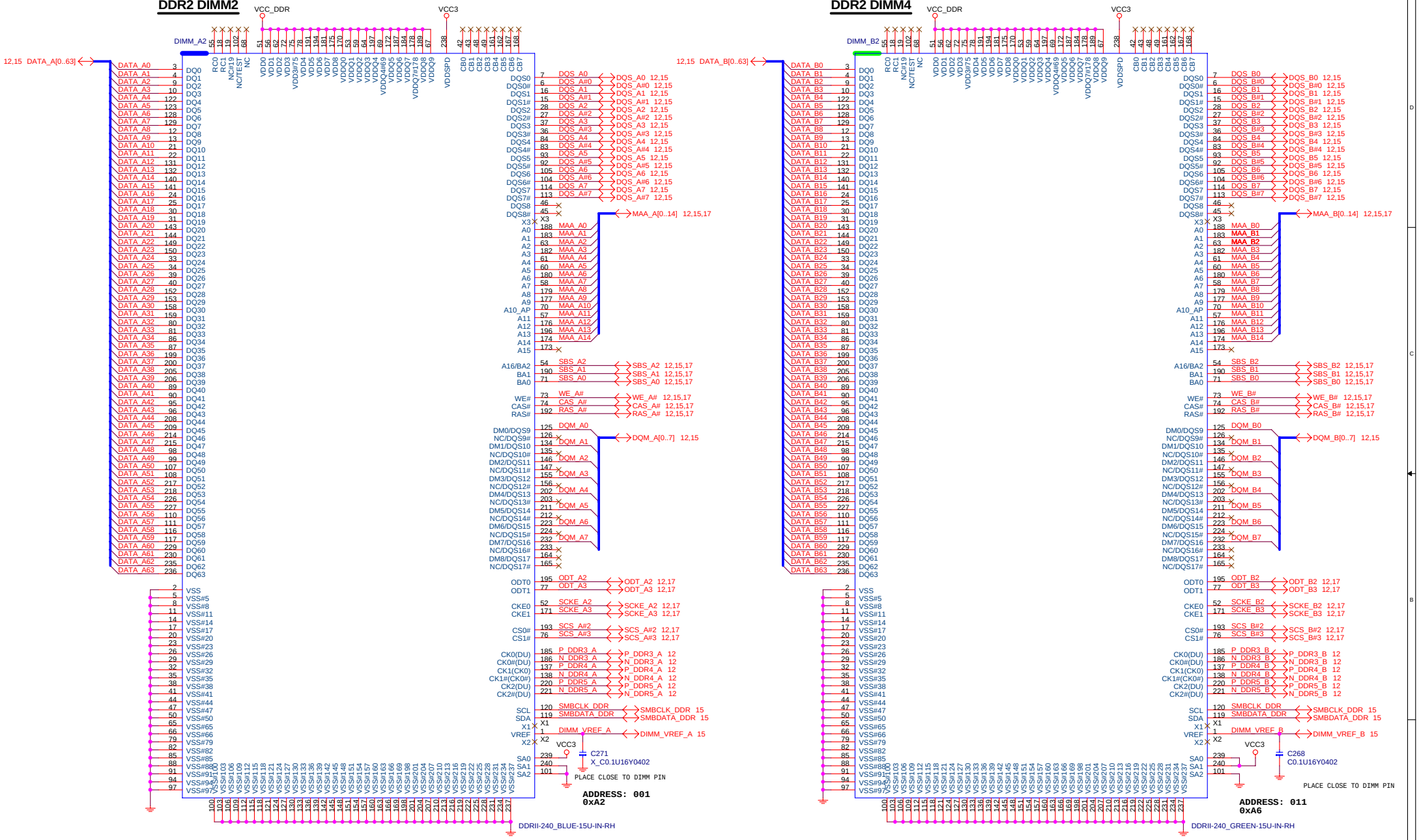

U11C
U1MCH
DDR_A
DDR3
NC
3 OF 7
INTEL/LE82BLGQ(G33)
U11D
U1MCH
DDR_B
DDR_VREF
4 OF 7
INTEL/LE82BLGQ(G33)
Place close to GMCH
VCC_DDR
C237 C1U10Y
C130 C1U10Y
C219 C1U10Y
C122 C1U10Y
C200 C1U10Y
C162 C1U10Y
VTT_GMCH
R203 1KR1%0402
MCH_VREF_A
R215 1KR1%0402
C285 C0.1U16Y0402
DDR_RCOMPVOL = 0.2 * VCC_DDR
DDR_RCOMPVOH = 0.2 * VCC_DDR
R214 1KR1%0402
R205 3.01KR1%0402
C284 C0.01U16X0402
R197 1KR1%0402
C272 C0.01U16X0402
R183 19.1R1%0402-RH SRCOMP0
R193 19.1R1%0402-RH SRCOMP1
R140 19.1R1%0402-RH SRCOMP2
R139 19.1R1%0402-RH SRCOMP3
C270 C0.1U16Y0402
C289 C0.1U16Y0402
MICRO-START INT'L CO.,LTD.
Title
Bearlake - Memory DDR2
Size Custom
Document Number MS-7363L2
Rev 0A
Date: Tuesday, February 27, 2007
Sheet 12 of 36


POWER
U11F
V_1P25_CORE
V_FSB_VTT
V_FSB_VTT_GMCH
VCCD_CRT
VCCDQ_CRT
V1P25_GMCH
VCCA_GPLL
VCCA_MPLL
VCCA_HPLL
VCCA_DPLLA
VCCA_DPLLB
VCCA_DAC_GMCH
V_3P3_DAC_FILTERED
VCC_DDR
VCC_DDR_GMCH
VCC3
VCCA_EXP
V_1P25_PCIE
If non-Graphic sku
Remove these resisters
For non-Graphic sku
change to 0-ohm (0402)
For non-Graphic sku
change to 0-ohm (0603)
For non-Graphic sku
Cxx change to 0-ohm
Rxx unstuff
Botton Side
Separate when AMT is supported
Place in the Bottom side
6 OF 7
INTEL/LE82BLGQ(G33)
MICRO-START INT'L CO.,LTD.
Bearlake - Power
MS-7363L2
0A
Tuesday, February 27, 2007
Sheet 13 of 36



MSI MICRO-STAR INT'L CO.,LTD.	
Title	Bearlake - GND
Size: Custom	Document Number: MS-7363L2
Rev	0A
Date: Tuesday, February 27, 2007	Sheet 14 of 36


DDR2 DIMM1
DDR2 DIMM3
DIMM_A1
DIMM_B1
VCC_DDR
VCC3
DDRII-240_BLUE-15U-IN-RH
DDRII-240_GREEN-15U-IN-RH
PLACE CLOSE TO DIMM PIN
ADDRESS: 000
0xA0
ADDRESS: 010
0xA4
DIMM_VREF_DDR
DIMM_VREF_A
DIMM_VREF_B
R206
1KR1%0402
R195
R202
R191
C280
X_C0.1U16Y0402
C278
C0.1U16Y0402
SMBCLK_DDR R51
SMBDATA_DDR R59
33R0402
SMBCLK 19,21,22,25,27
SMBDATA 19,21,22,25,27
MICRO-START INT'L CO.,LTD.
Title
DDR II DIMM 1&2
Size
Custom
Document Number
MS-7363L2
Rev
0A
Date: Tuesday, February 27, 2007
Sheet 15 of 36


DDR2 DIMM2
DIMM_A2
VCC_DDR
VCC3
12,15 DATA_A[0..63]
DATA_A0
DATA_A1
DATA_A2
DATA_A3
DATA_A4
DATA_A5
DATA_A6
DATA_A7
DATA_A8
DATA_A9
DATA_A10
DATA_A11
DATA_A12
DATA_A13
DATA_A14
DATA_A15
DATA_A16
DATA_A17
DATA_A18
DATA_A19
DATA_A20
DATA_A21
DATA_A22
DATA_A23
DATA_A24
DATA_A25
DATA_A26
DATA_A27
DATA_A28
DATA_A29
DATA_A30
DATA_A31
DATA_A32
DATA_A33
DATA_A34
DATA_A35
DATA_A36
DATA_A37
DATA_A38
DATA_A39
DATA_A40
DATA_A41
DATA_A42
DATA_A43
DATA_A44
DATA_A45
DATA_A46
DATA_A47
DATA_A48
DATA_A49
DATA_A50
DATA_A51
DATA_A52
DATA_A53
DATA_A54
DATA_A55
DATA_A56
DATA_A57
DATA_A58
DATA_A59
DATA_A60
DATA_A61
DATA_A62
DATA_A63
DQS_A0
DQS_A#0
DQS_A1
DQS_A#1
DQS_A2
DQS_A#2
DQS_A3
DQS_A#3
DQS_A4
DQS_A#4
DQS_A5
DQS_A#5
DQS_A6
DQS_A#6
DQS_A7
DQS_A#7
MAA_A[0..14] 12,15,17
MAA_A0
MAA_A1
MAA_A2
MAA_A3
MAA_A4
MAA_A5
MAA_A6
MAA_A7
MAA_A8
MAA_A9
MAA_A10
MAA_A11
MAA_A12
MAA_A13
MAA_A14
SBS_A2
SBS_A1
SBS_A0
WE_A#
CAS_A#
RAS_A#
DQM_A0
DQM_A1
DQM_A2
DQM_A3
DQM_A4
DQM_A5
DQM_A6
DQM_A7
DQM_A[0..7] 12,15
ODT_A2
ODT_A3
SCKE_A2
SCKE_A3
SCS_A#2
SCS_A#3
P_DDR3_A
N_DDR3_A
P_DDR4_A
N_DDR4_A
P_DDR5_A
N_DDR5_A
SMBCLK_DDR
SMBDATA_DDR
DIMM_VREF_A
C271
X_C0.1U16Y0402
PLACE CLOSE TO DIMM PIN
ADDRESS: 001
0xA2
DDRII-240_BLUE-15U-IN-RH
DDR2 DIMM4
DIMM_B2
12,15 DATA_B[0..63]
DATA_B0
DATA_B1
DATA_B2
DATA_B3
DATA_B4
DATA_B5
DATA_B6
DATA_B7
DATA_B8
DATA_B9
DATA_B10
DATA_B11
DATA_B12
DATA_B13
DATA_B14
DATA_B15
DATA_B16
DATA_B17
DATA_B18
DATA_B19
DATA_B20
DATA_B21
DATA_B22
DATA_B23
DATA_B24
DATA_B25
DATA_B26
DATA_B27
DATA_B28
DATA_B29
DATA_B30
DATA_B31
DATA_B32
DATA_B33
DATA_B34
DATA_B35
DATA_B36
DATA_B37
DATA_B38
DATA_B39
DATA_B40
DATA_B41
DATA_B42
DATA_B43
DATA_B44
DATA_B45
DATA_B46
DATA_B47
DATA_B48
DATA_B49
DATA_B50
DATA_B51
DATA_B52
DATA_B53
DATA_B54
DATA_B55
DATA_B56
DATA_B57
DATA_B58
DATA_B59
DATA_B60
DATA_B61
DATA_B62
DATA_B63
DQS_B0
DQS_B#0
DQS_B1
DQS_B#1
DQS_B2
DQS_B#2
DQS_B3
DQS_B#3
DQS_B4
DQS_B#4
DQS_B5
DQS_B#5
DQS_B6
DQS_B#6
DQS_B7
DQS_B#7
MAA_B[0..14] 12,15,17
MAA_B0
MAA_B1
MAA_B2
MAA_B3
MAA_B4
MAA_B5
MAA_B6
MAA_B7
MAA_B8
MAA_B9
MAA_B10
MAA_B11
MAA_B12
MAA_B13
MAA_B14
SBS_B2
SBS_B1
SBS_B0
WE_B#
CAS_B#
RAS_B#
DQM_B0
DQM_B1
DQM_B2
DQM_B3
DQM_B4
DQM_B5
DQM_B6
DQM_B7
DQM_B[0..7] 12,15
ODT_B2
ODT_B3
SCKE_B2
SCKE_B3
SCS_B#2
SCS_B#3
P_DDR3_B
N_DDR3_B
P_DDR4_B
N_DDR4_B
P_DDR5_B
N_DDR5_B
SMBCLK_DDR
SMBDATA_DDR
DIMM_VREF_B
C268
C0.1U16Y0402
PLACE CLOSE TO DIMM PIN
ADDRESS: 011
0xA6
DDRII-240_GREEN-15U-IN-RH
MSI
MICRO-START INT'L CO.,LTD.
Title
DDR II DIMM 3 & 4
Size
Custom
Document Number
MS-7363L2
Rev
0A
Date: Tuesday, February 27, 2007
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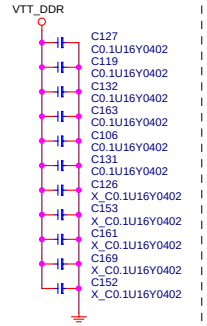
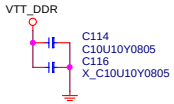
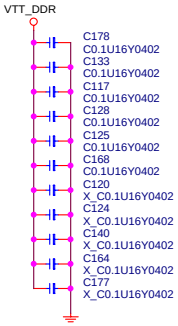
DDR II TERMINATION

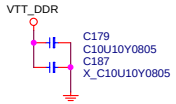
CHANNEL A VTT_DDR DECOULPING CAPS

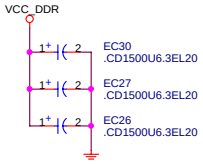


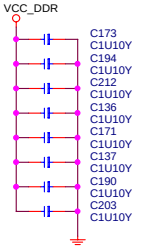


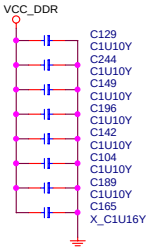
CHANNEL B VTT_DDR DECOULPING CAPS

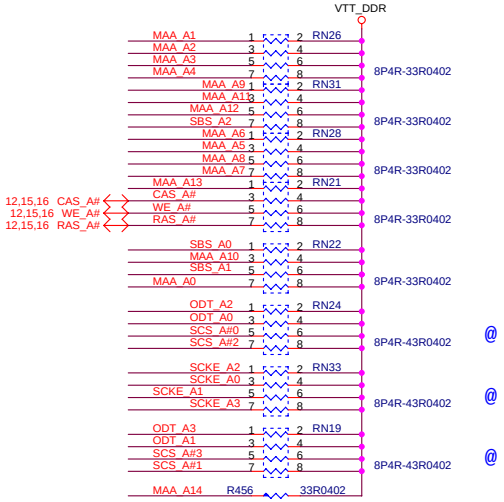


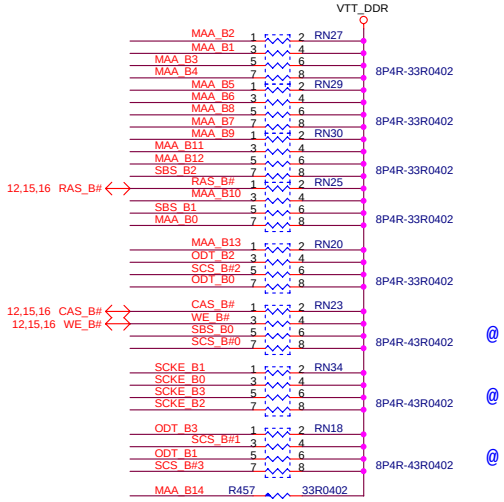










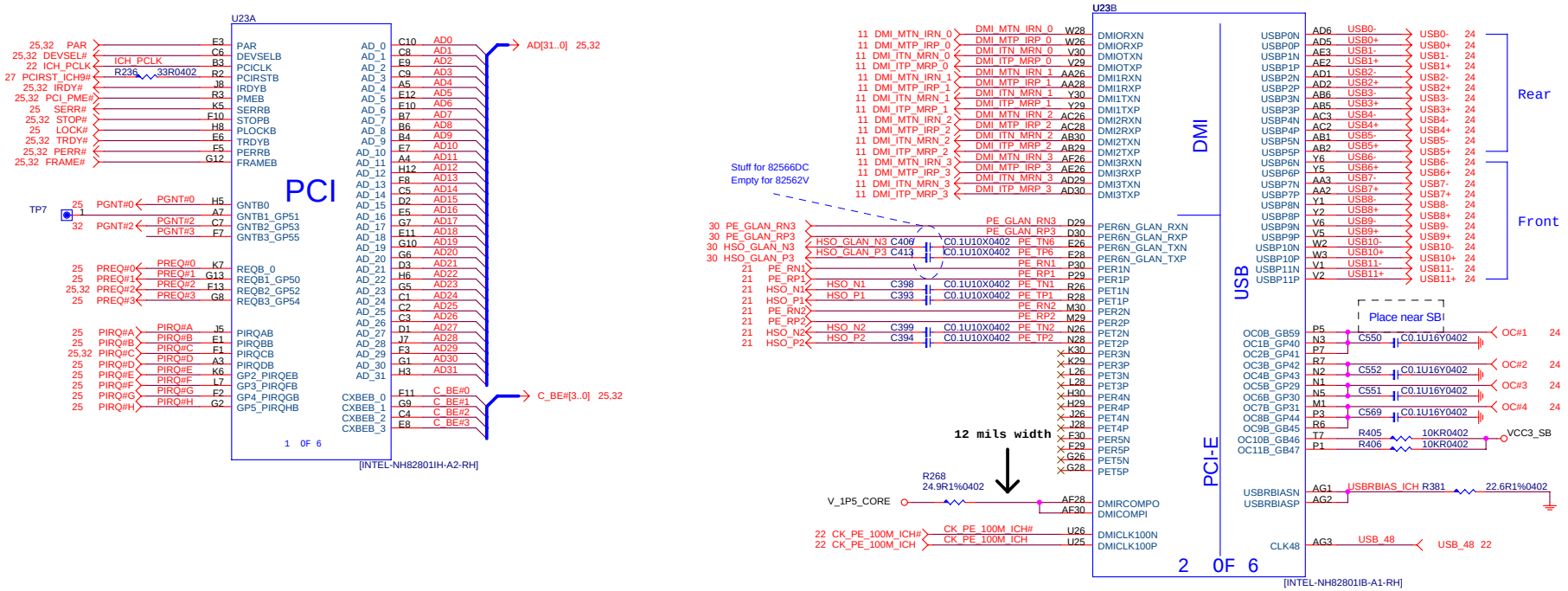


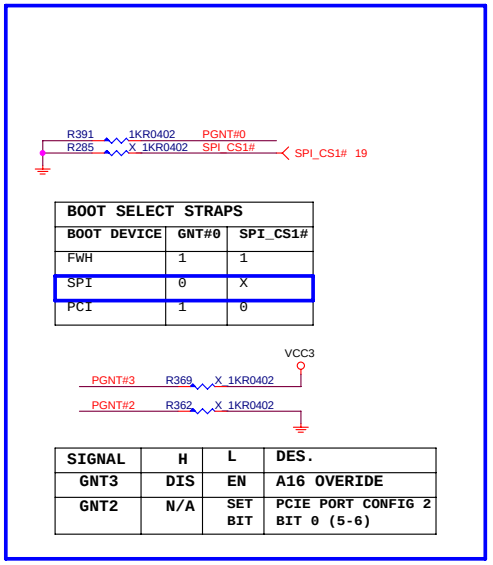
12,15,16 MAA_A[0..14]
12,15,16 SBS_A[0..2]
12,15,16 SCS_A#[0..3]
12,15,16 SCKE_A[0..3]
12,15,16 ODT_A[0..3]

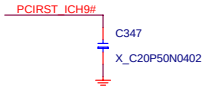
12,15,16 MAA_B[0..14]
12,15,16 SBS_B[0..2]
12,15,16 SCS_B#[0..3]
12,15,16 SCKE_B[0..3]
12,15,16 ODT_B[0..3]

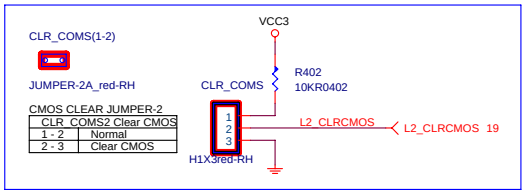
MICRO-START INT'L CO.,LTD.

Title: DDR II Termination		
Size: Custom	Document Number: MS-7363L2	Rev: 0A
Date: Tuesday, February 27, 2007	Sheet 17 of 36	







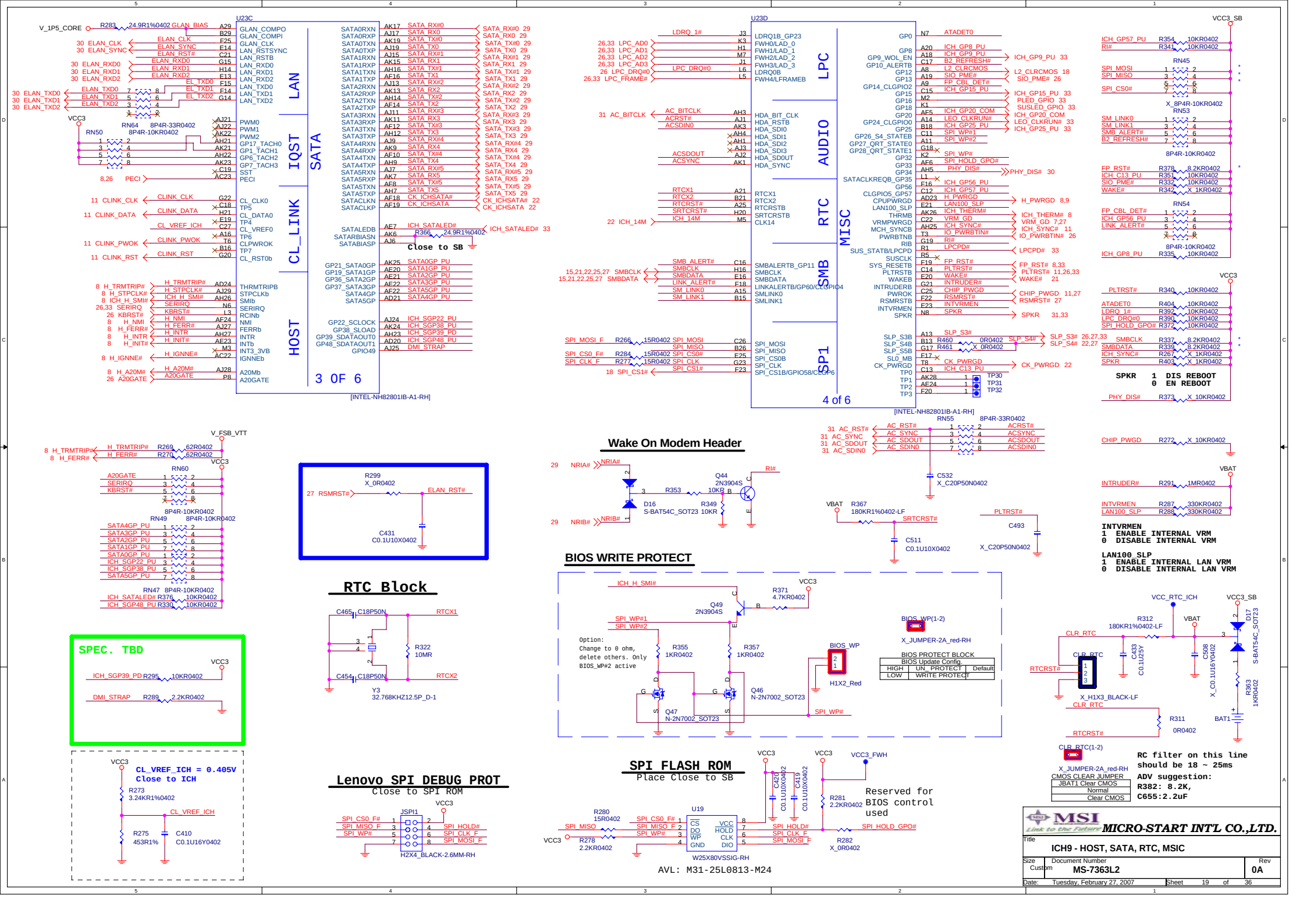


MSI MICRO-START INT'L CO.,LTD.

Title: ICH9 - PCI, USB, DMI, PCIEX1

Size	Document Number	Rev
Custom	MS-7363L2	0A

Date: Tuesday, February 27, 2007 Sheet 18 of 36


U23C
SATA
LAN
IQST
CL_LINK
HOST
3 0F 6
[INTEL-NH82801IB-A1-RH]
U23D
LPC
AUDIO
RTC
MISC
SMB
CP1
4 of 6
[INTEL-NH82801IB-A1-RH]
Close to SB
Wake On Modem Header
RTC Block
BIOS WRITE PROTECT
SPI FLASH ROM
Place Close to SB
Lenovo SPI DEBUG PROT
Close to SPI ROM
SPEC. TBD
CL_VREF_ICH = 0.405V
Close to ICH
Reserved for
BIOS control
used
AVL: M31-25L0813-M24
SPKR 1 DIS REBOOT
0 EN REBOOT
INTVRMEN
1 ENABLE INTERNAL VRM
0 DISABLE INTERNAL VRM
LAN100_SLP
1 ENABLE INTERNAL LAN VRM
0 DISABLE INTERNAL LAN VRM
RC filter on this line
should be 18 ~ 25ms
ADV suggestion:
R382: 8.2K,
C655:2.2uF
MICRO-START INT'L CO.,LTD.
ICH9 - HOST, SATA, RTC, MSIC
MS-7363L2
0A
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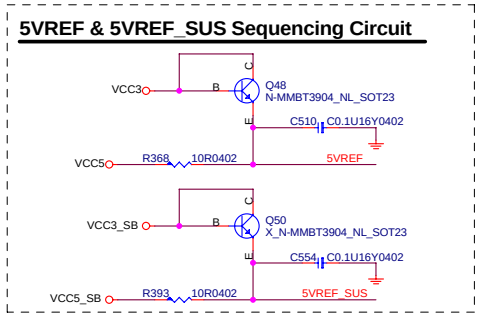
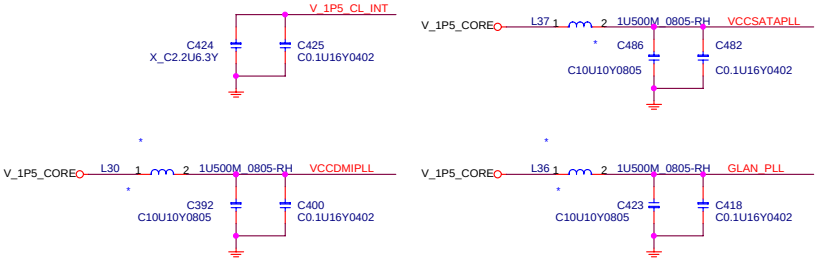
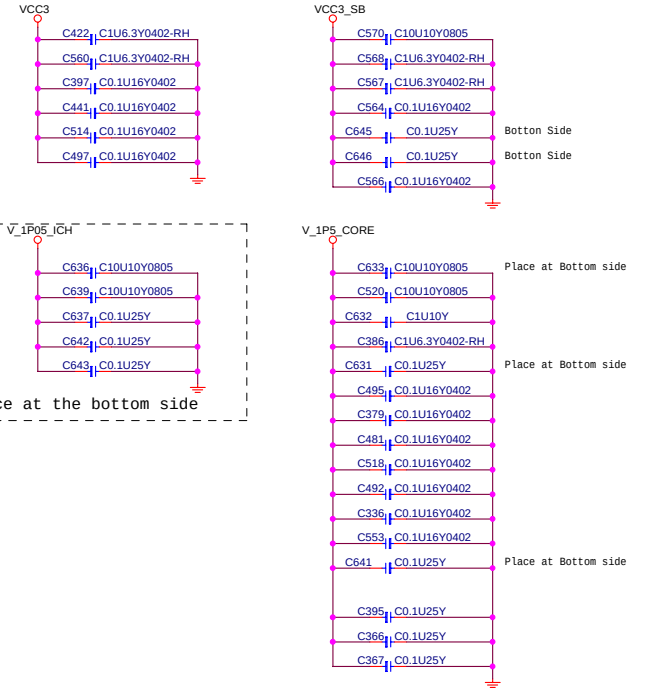
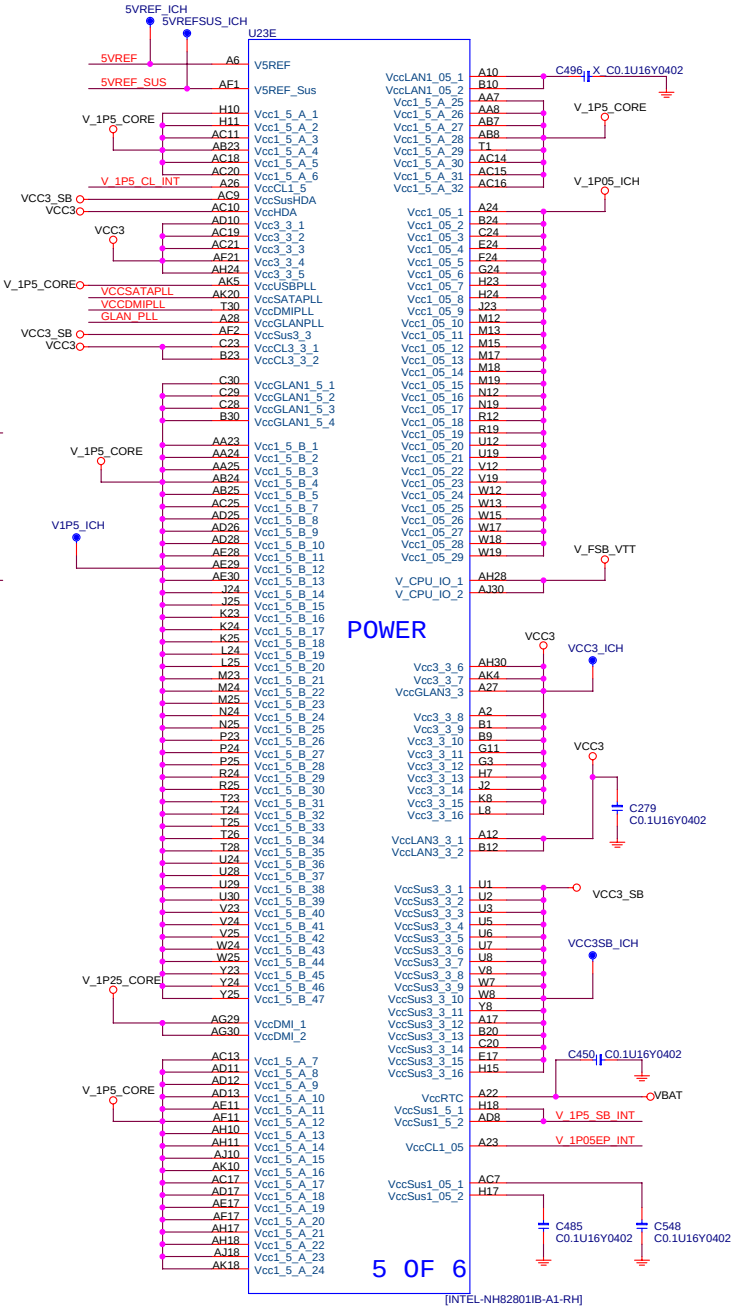
Sheet 19 of 36

5VREF & 5VREF_SUS Sequencing Circuit



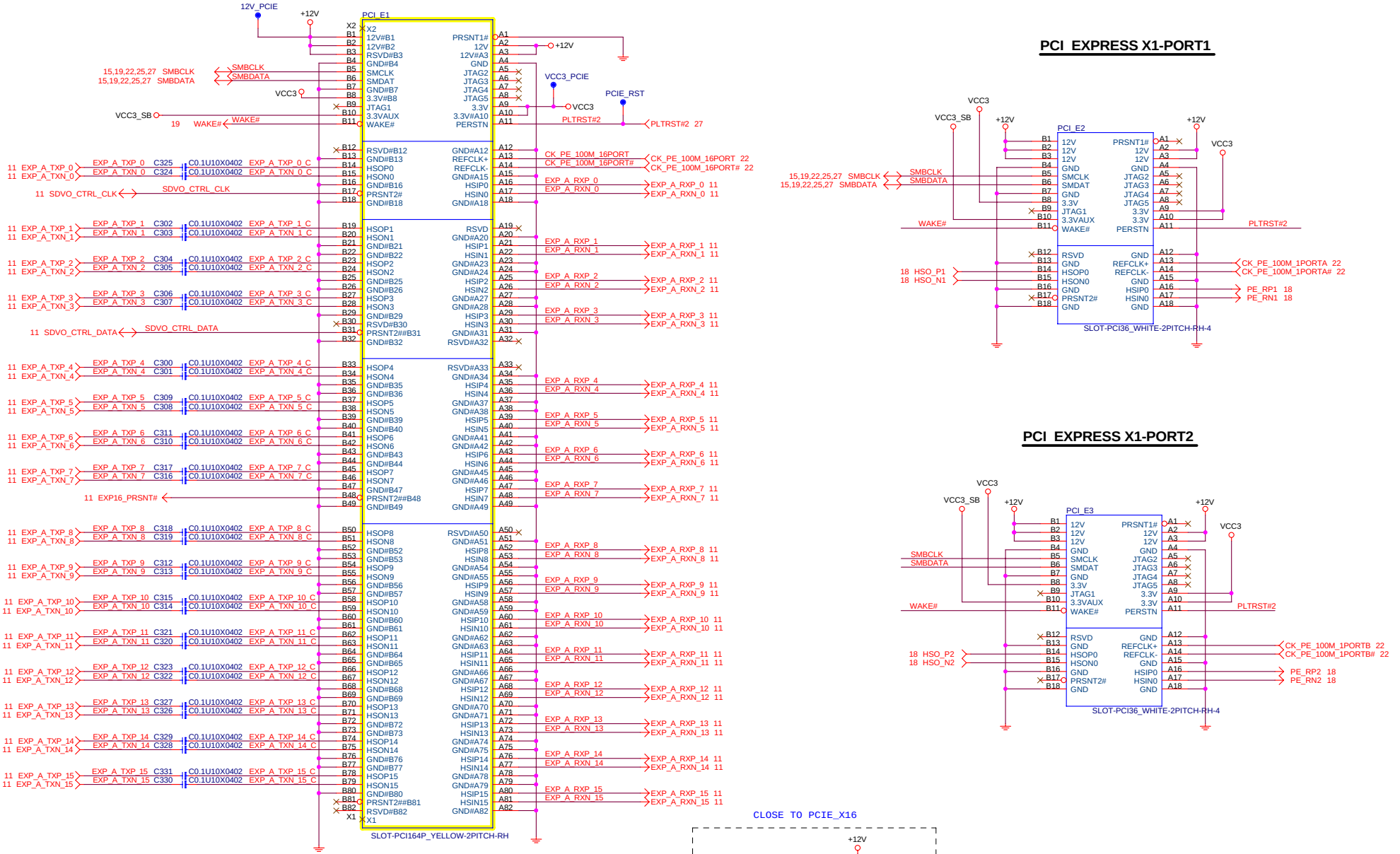






MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title	ICH9 - POWER, GND	
Size: Custom	Document Number: MS-7363L2	Rev: 0A
Date: Tuesday, February 27, 2007	Sheet 20 of 36	



PCI EXPRESS X1-PORT1

PCI EXPRESS X1-PORT2

MSI Link to the Future	MICRO-START INT'L CO.,LTD.	
Title	PCI Express Slot - X16, X1	
Size: Custom	Document Number: MS-7363L2	Rev: 0A
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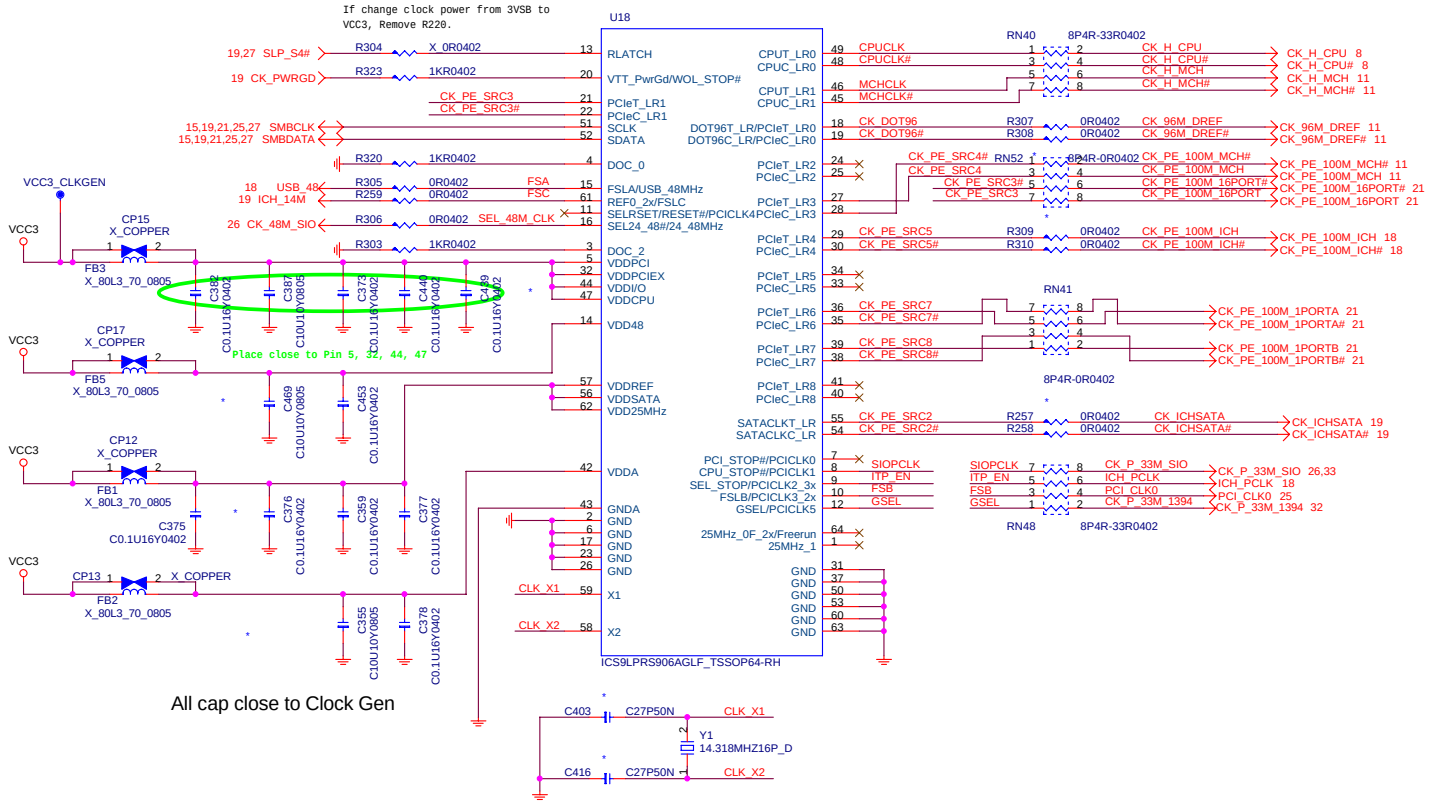
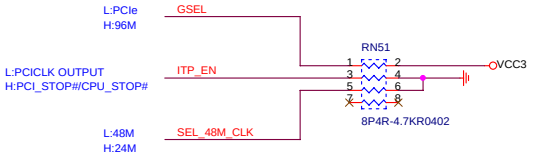
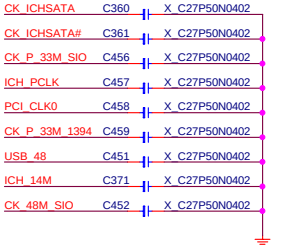
Clock Generator ICSLPRS906



CLOCK GEN STRAPING

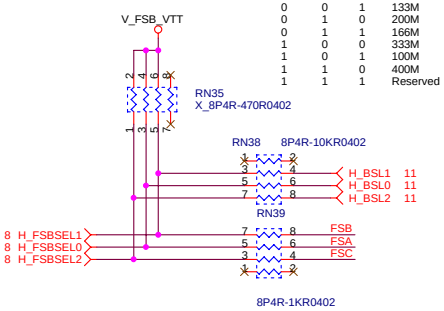


CLOCK GEN RISE/FALL TIME MODIFY



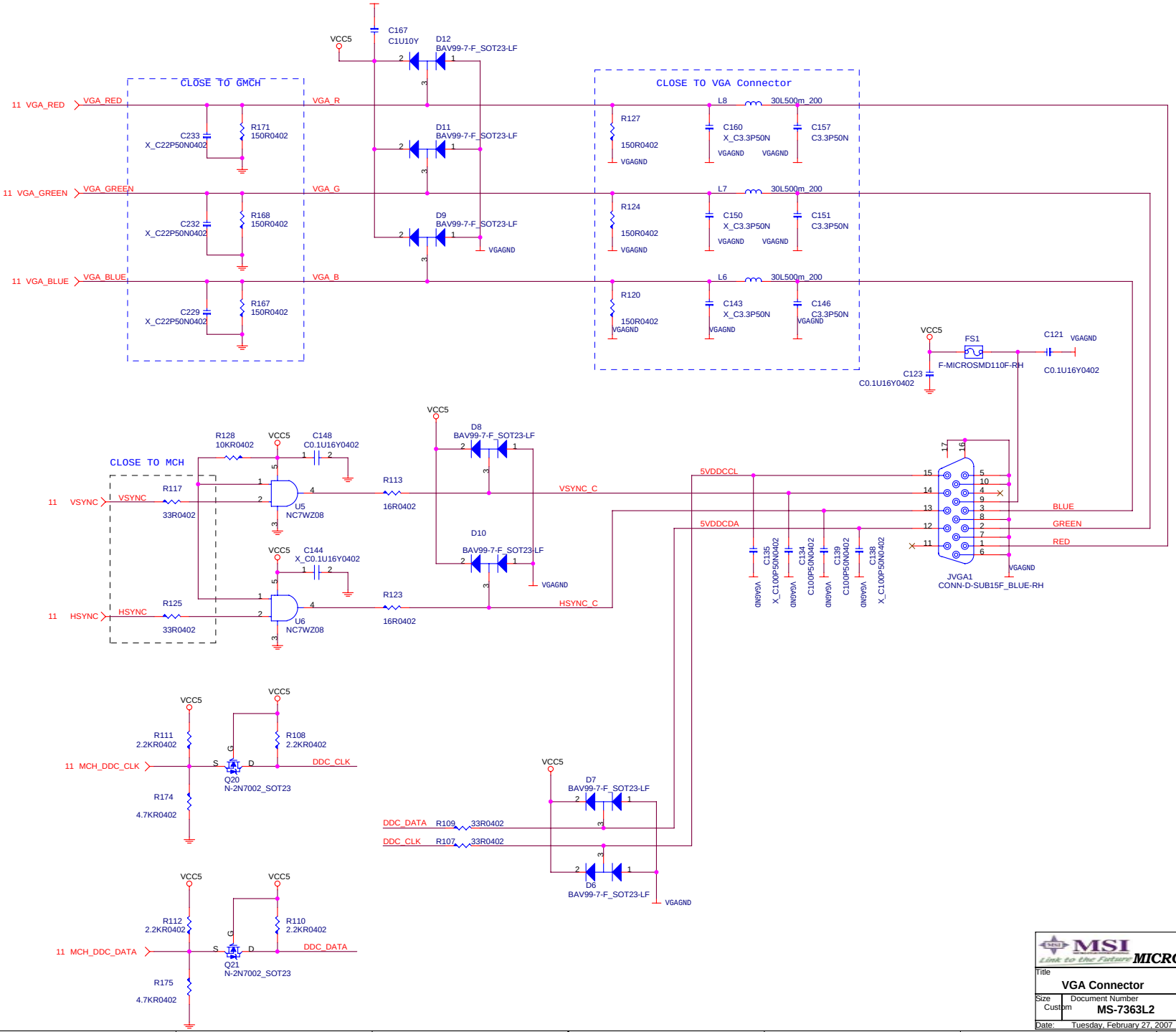
BSEL[0..2] Level Shift

FS_C	FS_B	FS_A	CPU
0	0	0	266M
0	0	1	133M
0	1	0	200M
0	1	1	166M
1	0	0	333M
1	0	1	100M
1	1	0	400M
1	1	1	Reserved



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

Title: Clock Generator ICS9LPRS906		
Size: Custom	Document Number: MS-7363L2	Rev: 0A
Date: Tuesday, February 27, 2007	Sheet 22 of 36	



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

Title: VGA Connector

Size	Document Number	Rev
Custom	MS-7363L2	0A

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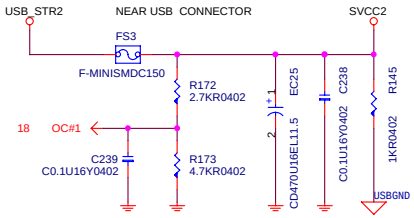
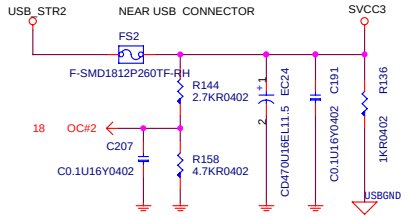
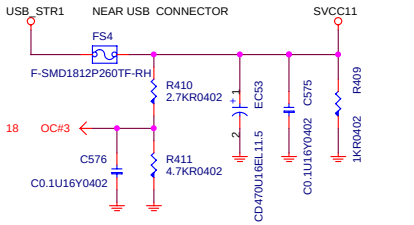
POWER CIRCUIT FOR USB PORT 0,1 — Rear



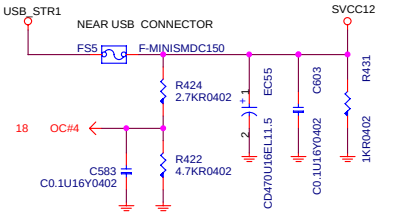
POWER CIRCUIT FOR USB PORT 2,3,4,5 — Rear



POWER CIRCUIT FOR USB PORT 6,7,8,9 — Front

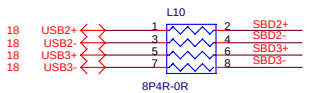


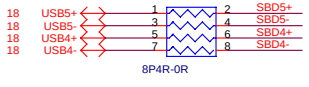
POWER CIRCUIT FOR USB PORT 10,11 — Front

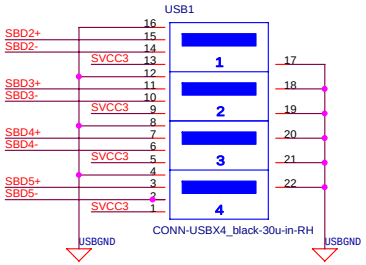


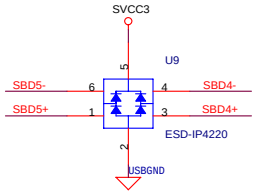
REAR PANEL USB CONNECTOR FOR USB PORT 2,3,4,5

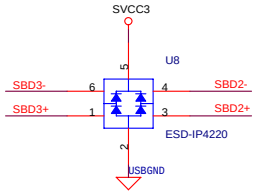
L12-181D017-CA8



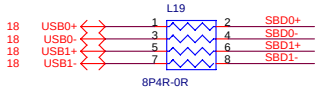


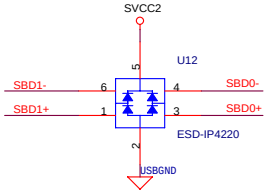


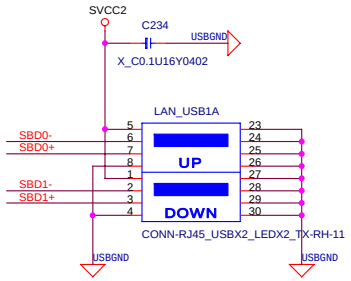




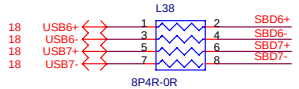
REAR PANEL USB CONNECTOR FOR USB PORT 0,1

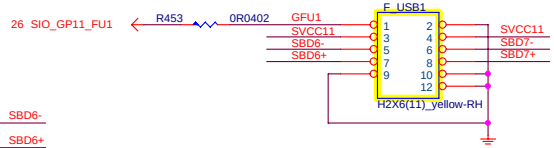


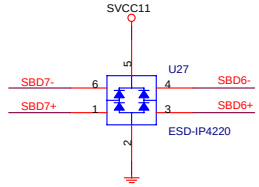




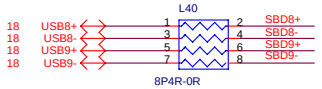
FRONT PANEL USB CONNECTOR FOR USB PORT 6,7

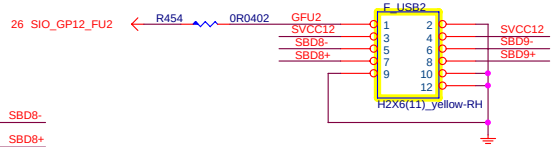


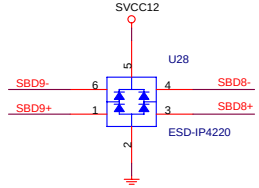




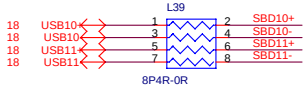
FRONT PANEL USB CONNECTOR FOR USB PORT 8,9

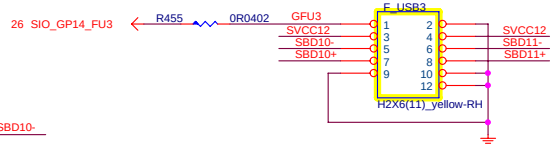


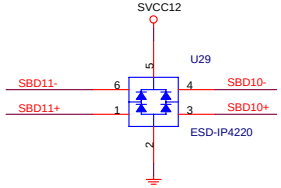




FRONT PANEL USB CONNECTOR FOR USB PORT 10,11







MSI Link to the Future MICRO-START INT'L CO.,LTD.

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Size: Custom	Document Number: MS-7363L2	Rev: 0A
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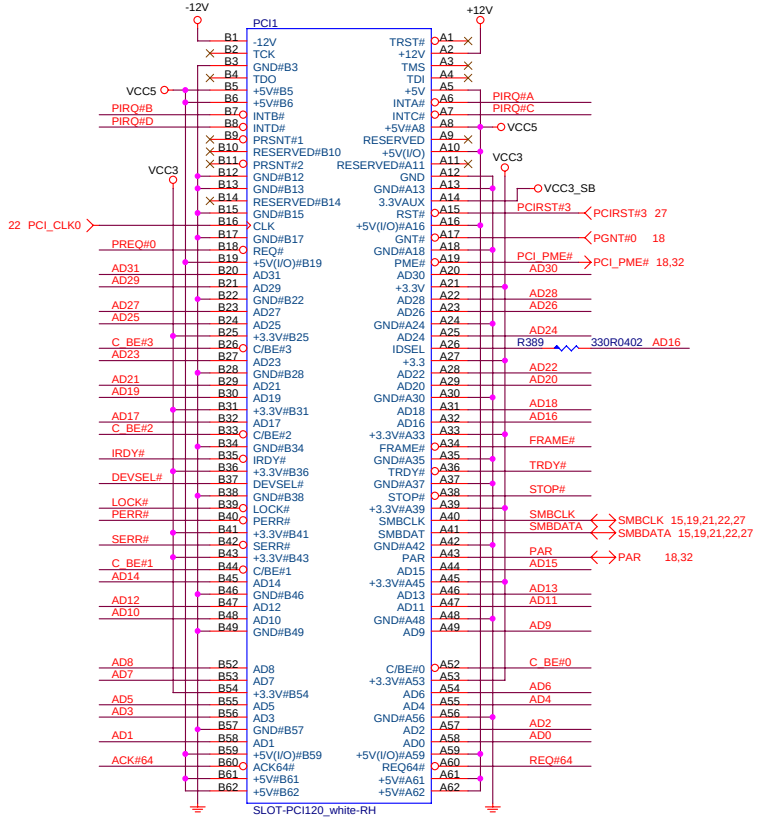
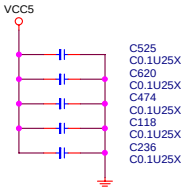
PCI SLOT 1 (PCI VER: 2.3 COMPLY)





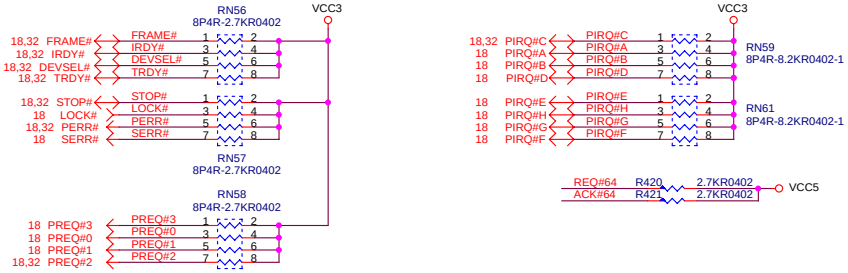
Place close to VGA side

18,32 AD[0..31] AD[0..31]

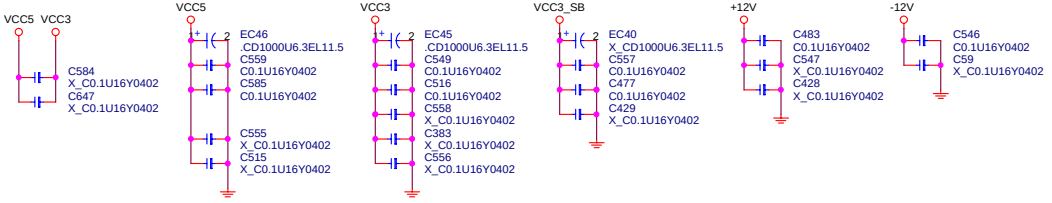
18,32 C_BE#[0..3] C_BE#[0..3]

IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS



MSI Link to the Future **MICRO-START INT'L CO.,LTD.**

Title	PCI SLOT 1 & 2	
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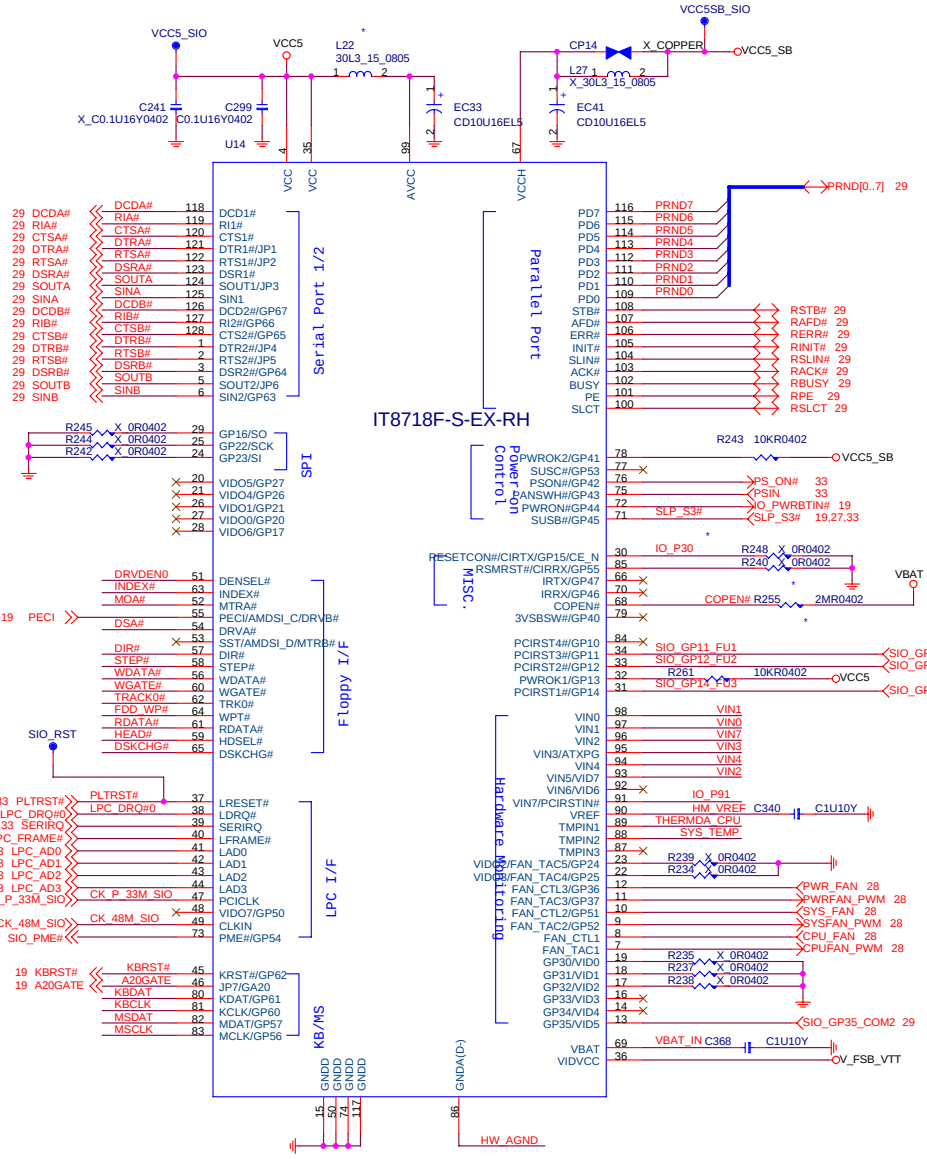
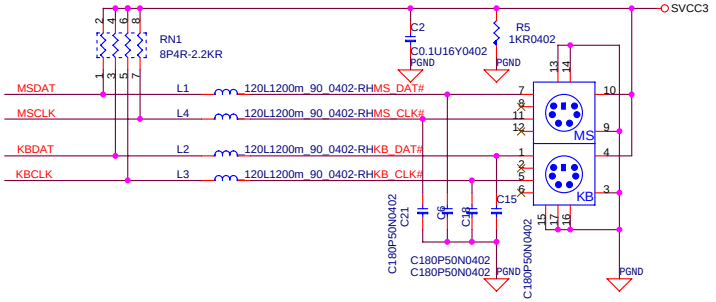
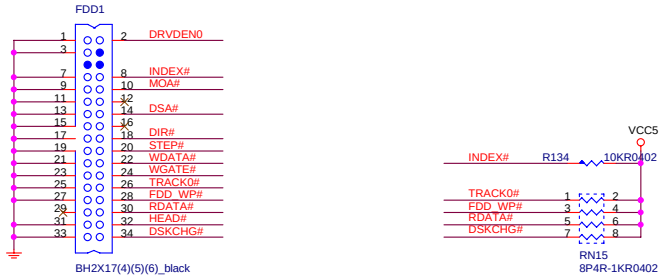


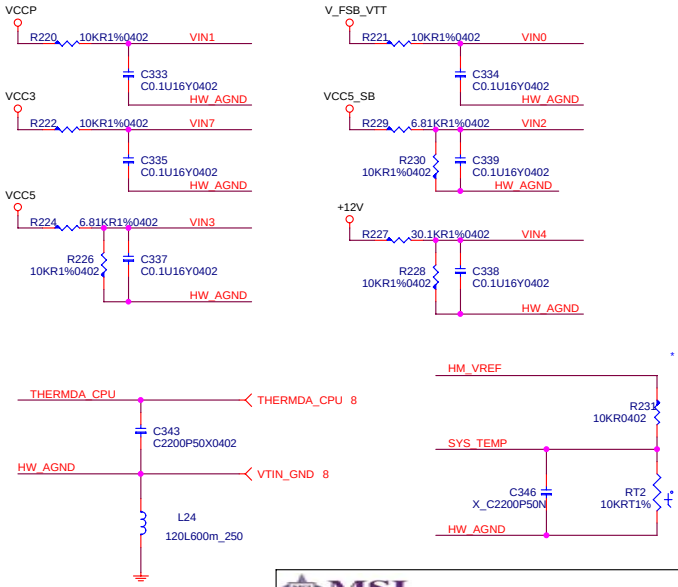
PS2 KEYBOARD & MOUSE CONNECTOR



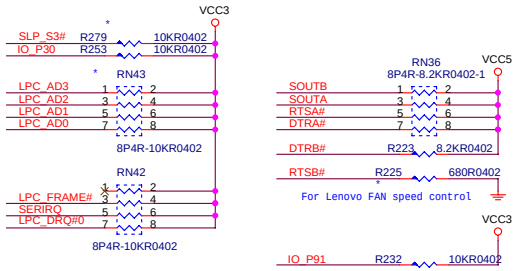
FLOPPY CONNECTOR



Thermal Resistor



SUPER I/O STRAPPING RESISTOR



Power On Strapping Options

Symbol	value	Description
Flashseg1_EN	1	Disabled.
	0	Flash I/F Address Segment 1 (FFFE_0000h~FFFF_FFFFh, 000F_0000h~000F_FFFFh) is enabled
VIDO_SEL	1	Disable VIDOUT pins(except VIDO6 & VIDO7)
	0	Enable VIDOUT pins
CHIP_SEL	--	Chip selection in configuration.
BUF_SEL	1	The output buffers of PCIRST1#, PCIRST2#, PCIRST3#, PCIRST4# are open-drain.
	0	The output buffers are push-pull.
FAN_CTL_SEL	1	The default value of EC Index 15h / 16h / 17h is 00h
	0	The default value of EC Index 15h / 16h / 17h is 40h
VID_ISEL	1	The threshold voltage of VID is 2.0 / 0.8V
	0	The threshold voltage of VID is 0.8 / 0.4V

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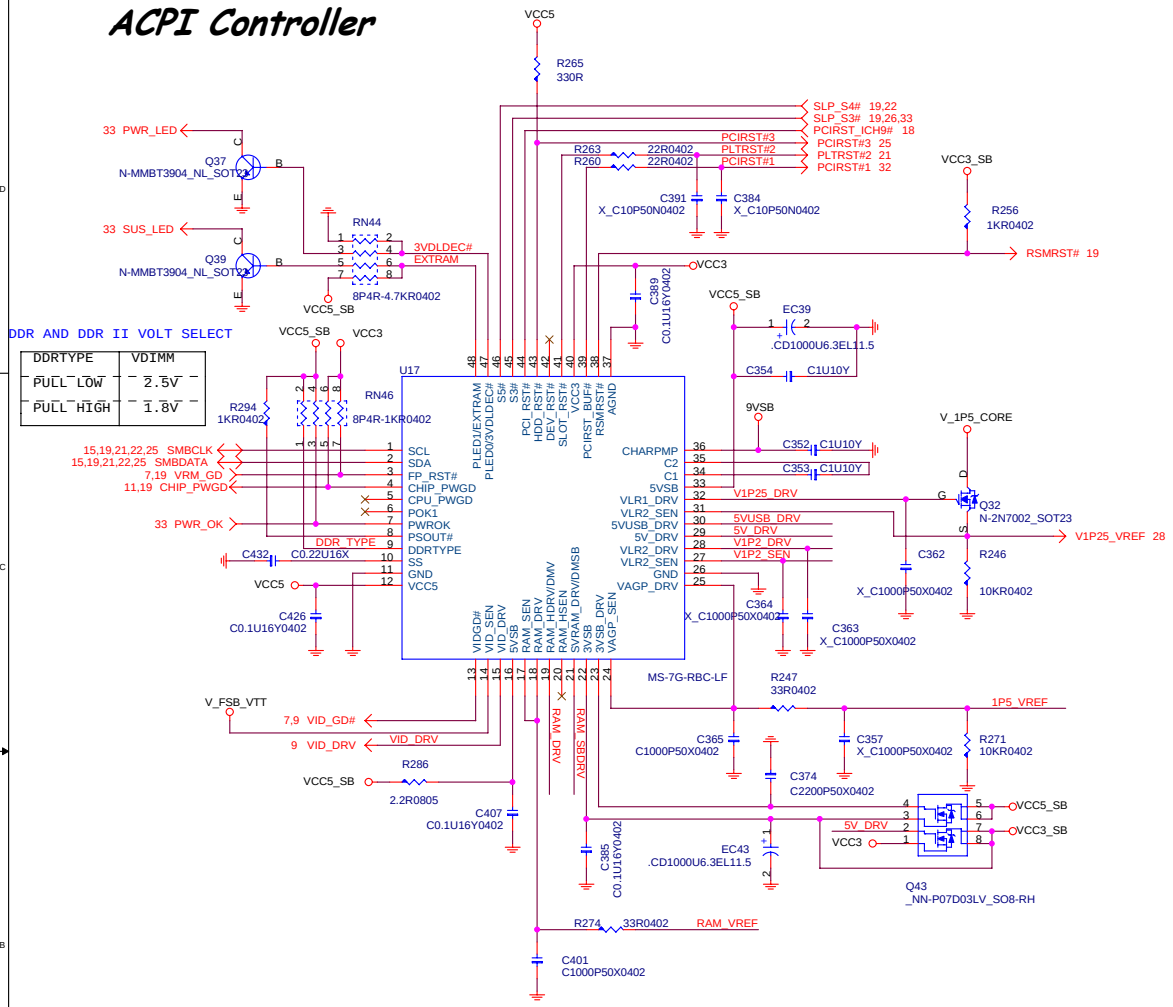
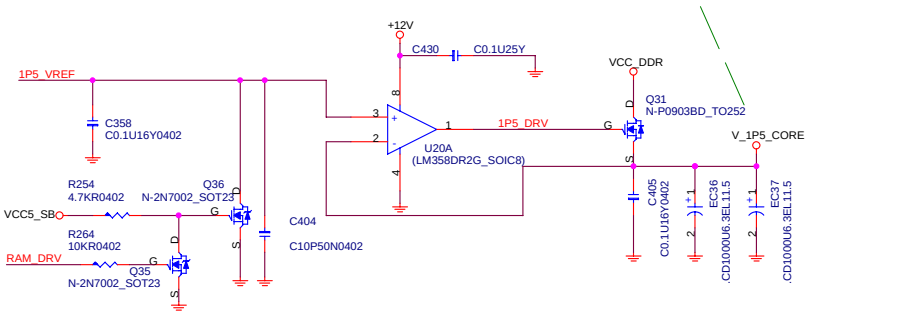
ACPI Controller

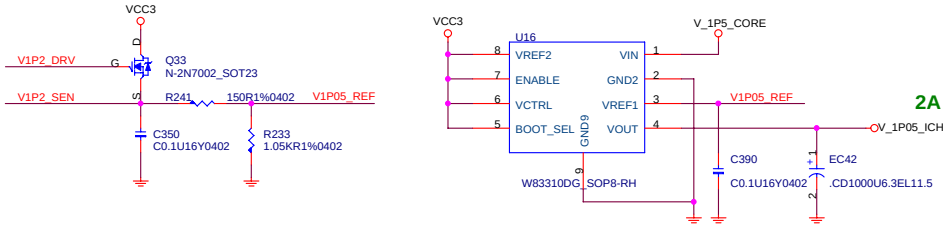


1.5V POWER

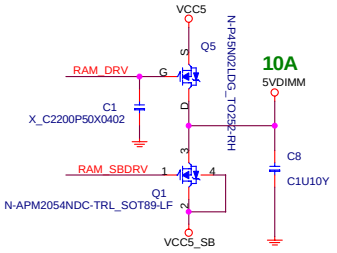
(1.0V-2A+V_FSB_VTT-5.8A+1.5V-2.75A)=10.55A



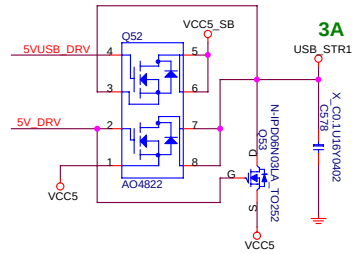
V_1P05_ICH Power



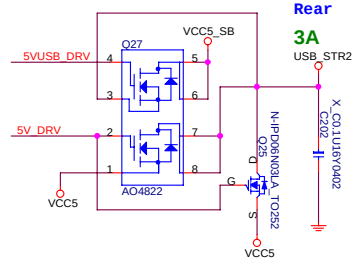
5V DIMM Power



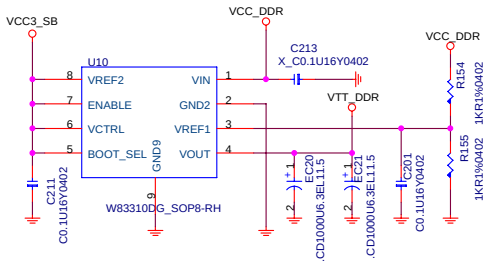
USB_STR1 Front



USB_STR2

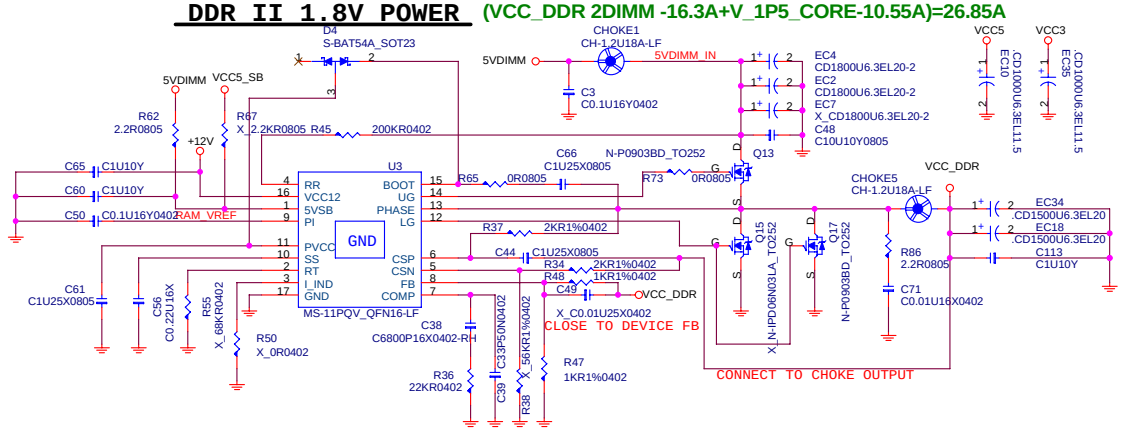


DDR II VTT POWER



DDR II 1.8V POWER

(VCC_DDR 2DIMM -16.3A+V_1P5_CORE-10.55A)=26.85A



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

Title: MS-7 ACPI Controller

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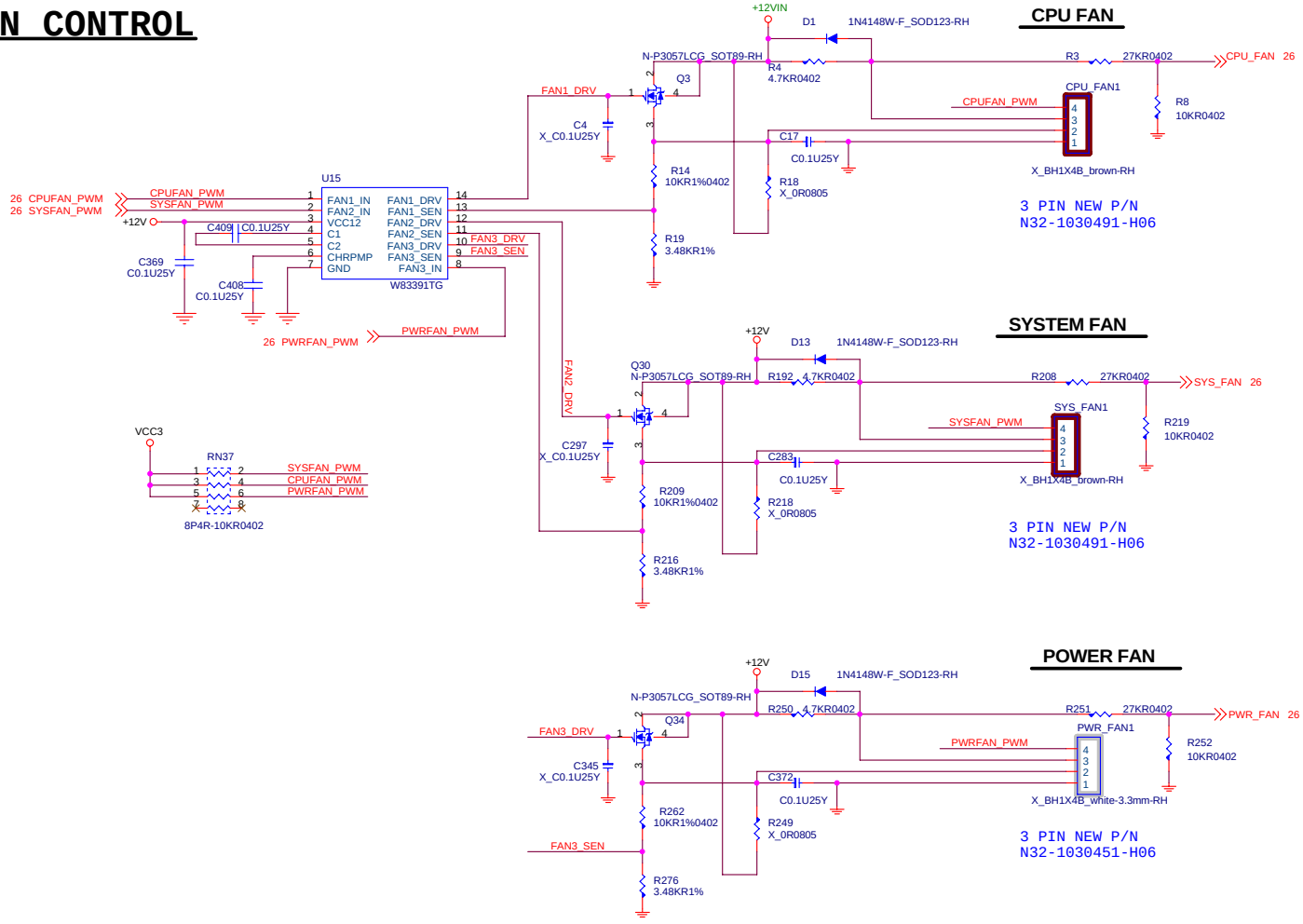
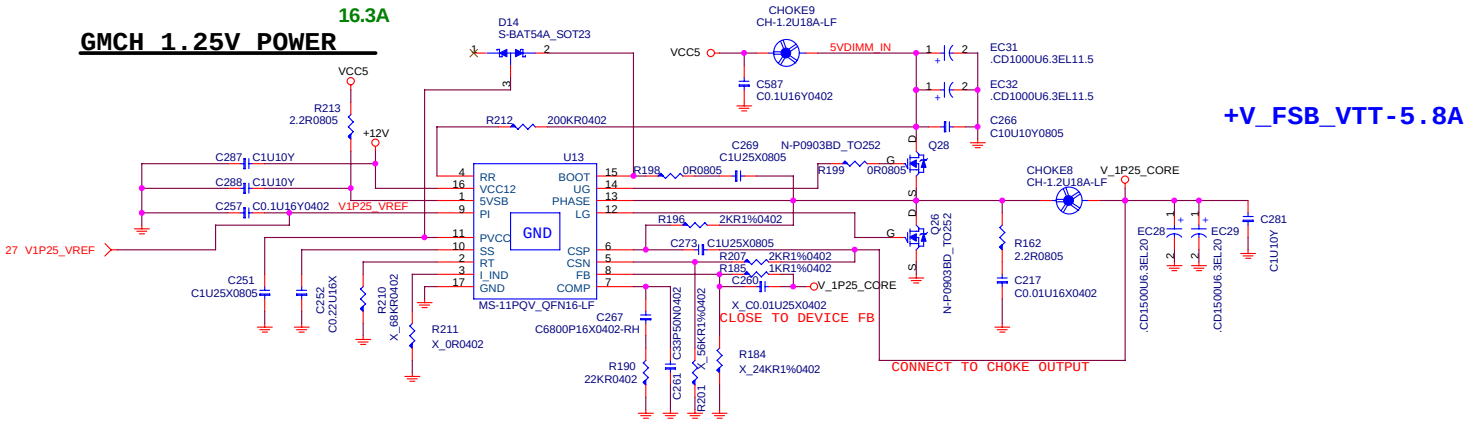
FAN CONTROL





MSI Link to the Future **MICRO-START INT'L CO.,LTD.**

Title: FWH & FAN & V_1P25_CORE		
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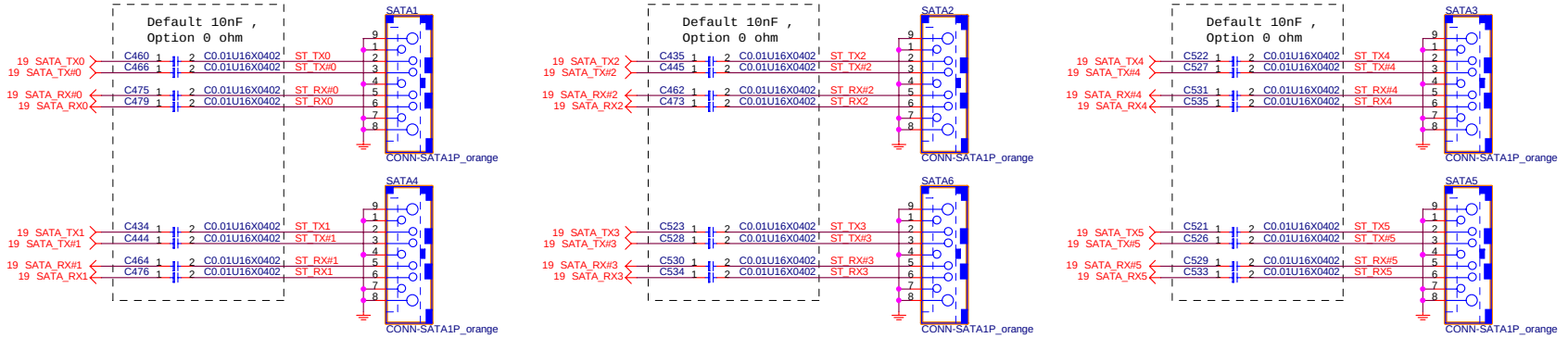
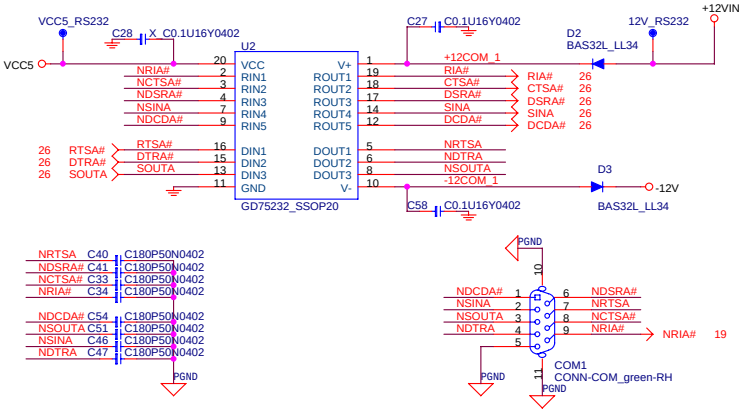
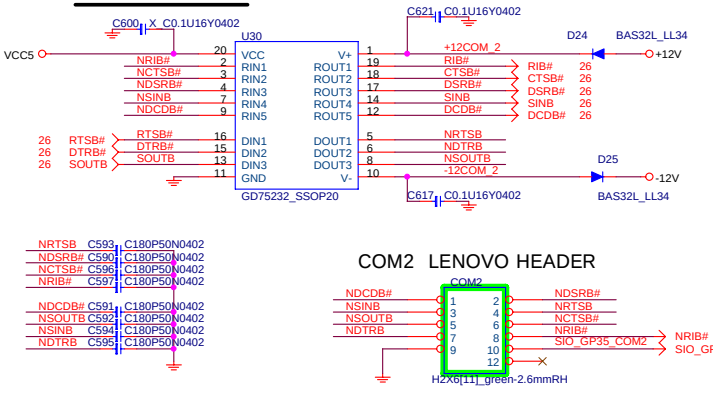
SERIAL ATA CONNECTOR BLOCK



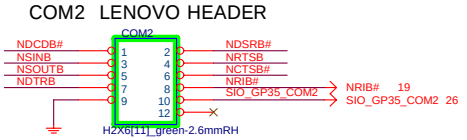
SERIAL PORT 1



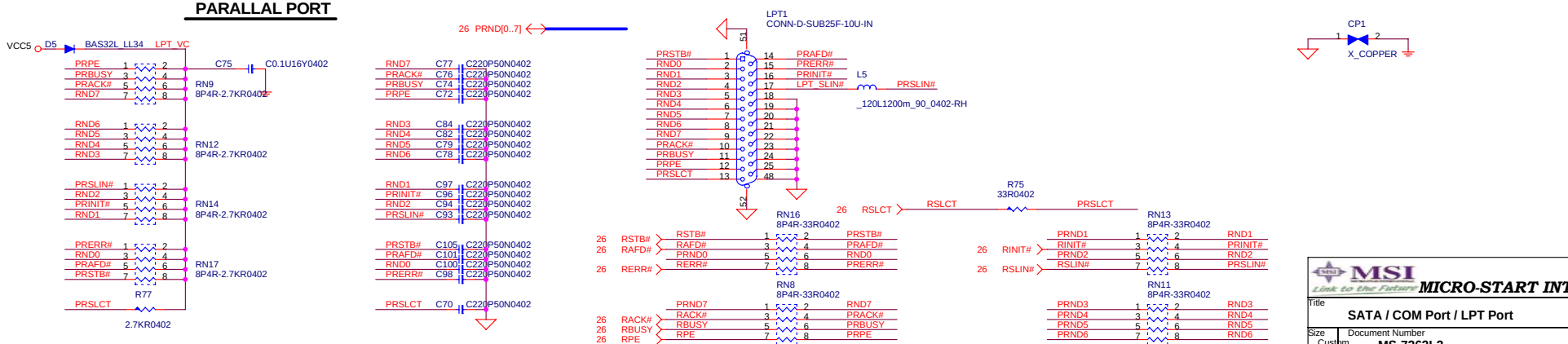
SERIAL PORT 2



COM2 LENOVO HEADER



PARALLAL PORT



MSI Link to the Future	MICRO-START INT'L CO.,LTD.		
Title	SATA / COM Port / LPT Port		
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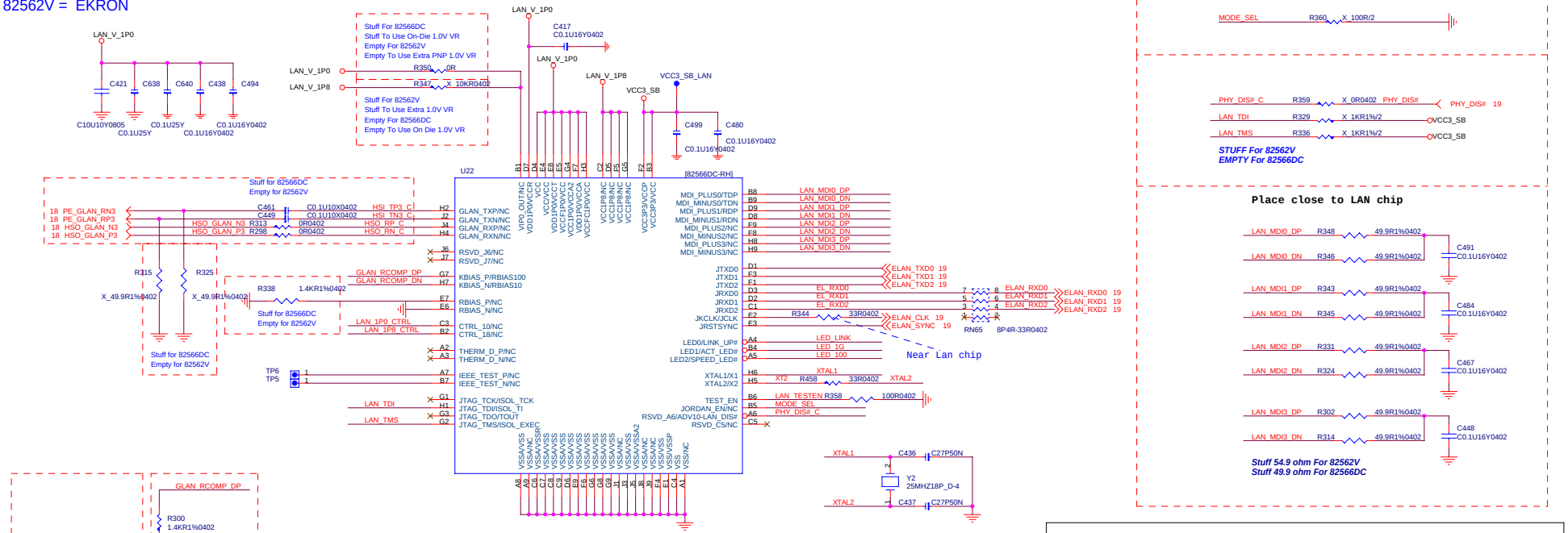
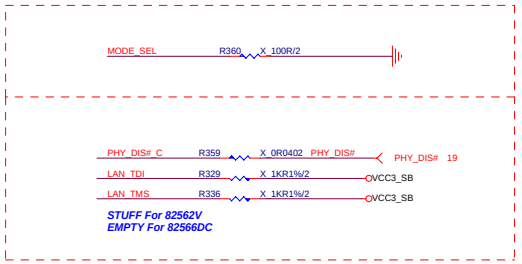
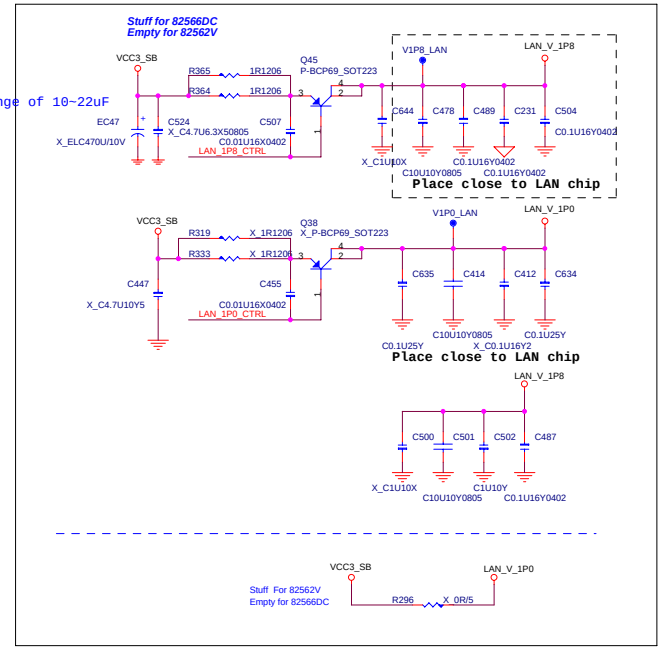
LAN - Intel LAN 82566DC/82562V

82566DC = NINEVEH
82562V = EKRON





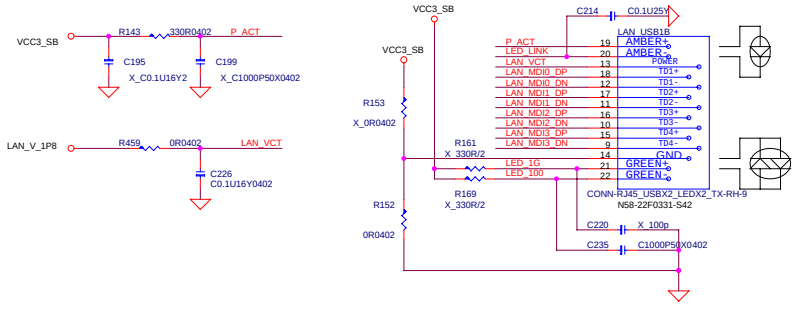


Intel 82556DC
For consumer desktop PC.Support Digital Home capabilities,WoL,PXE.
Intel 82562V
Basic 10/100 Ethernet connection.

B06-8256615-I06
,CHIP LAN,INTEL/82566DC,,BGA-81pin,NINEVEH GIGA LAN CHIP(PHY),RoHS COMPLIANCE

B06-8256205-I06
,CHIP LAN,INTEL/82562V,,BGA-81pin,NINEVEH GIGA LAN CHIP(PHY),RoHS COMPLIANCE

LAN CONNECTOR



Speed LED Type
1000Mbps : Orange
100Mbps : Green
10Mbps : LED off
YELLOW : For Active/Link

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

Default

10/100-Lan	Giga-Lan
10/100 (BCM4401):	GIGA(BCM5788):
N58-22F0301-S42	N58-22F0331-S42
P25@157-P5P9	P25@153-P5Z9
Link Yellow Active Blinking 100 Green	Link Yellow Active Blinking 1000 Orange 100 Green
19 20 Yellow 21 22 Green	19 20 Yellow 21 Orange 22 Green

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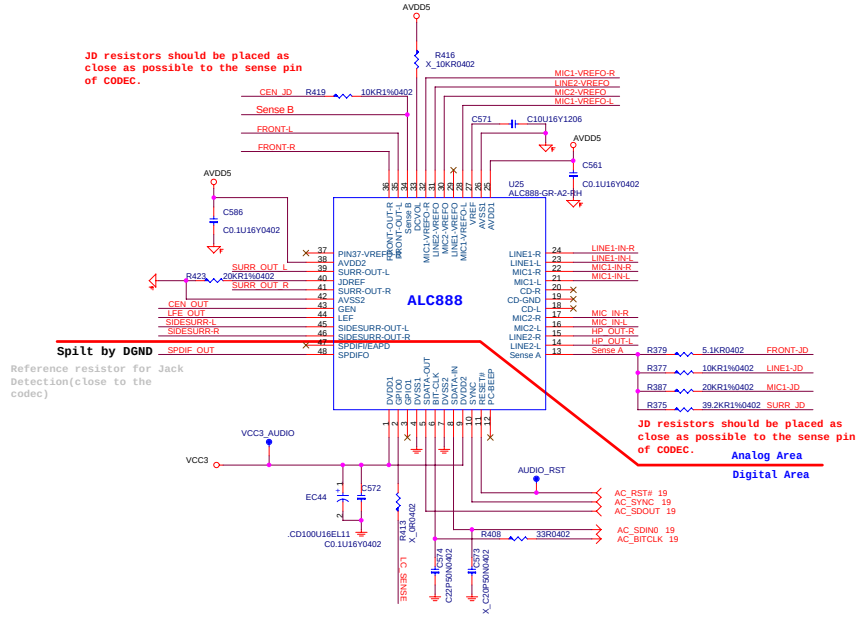
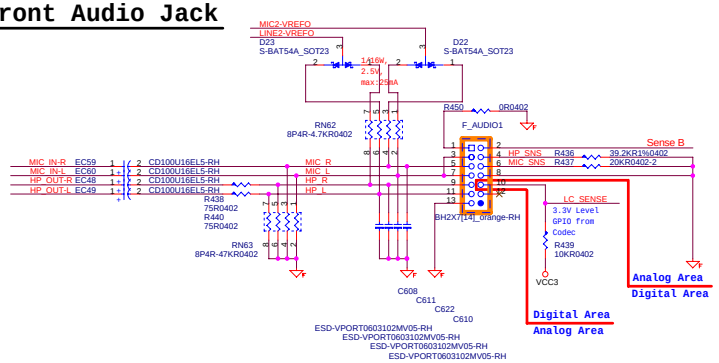
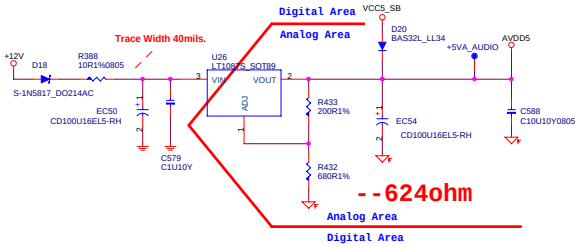
Audio Codec -ALC662/888



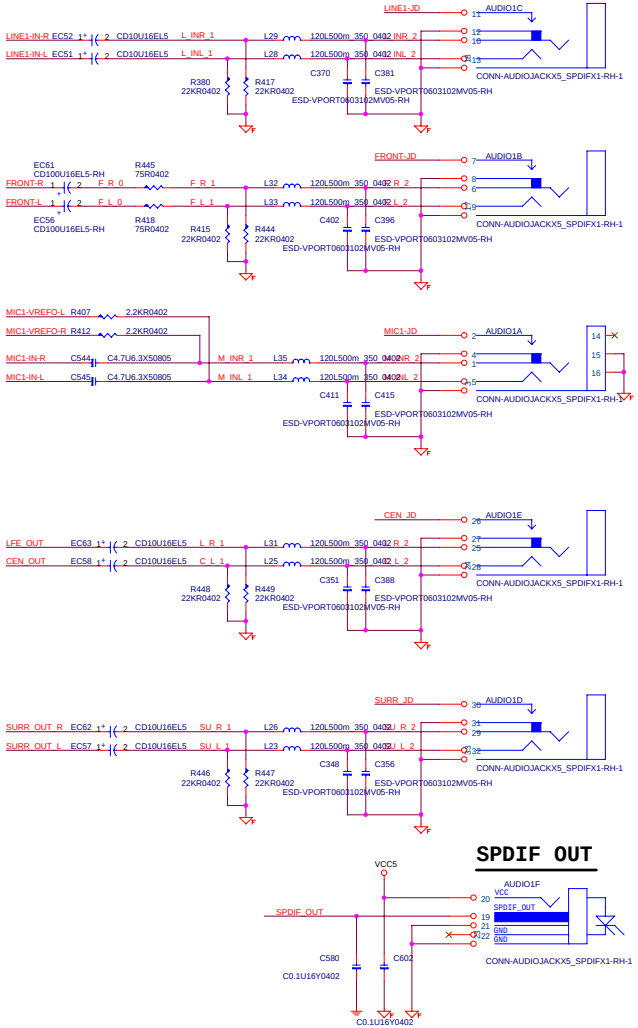
Front Audio Jack



Audio Power

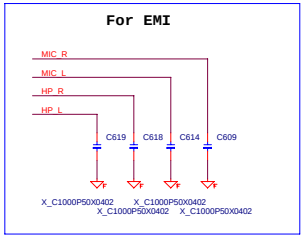


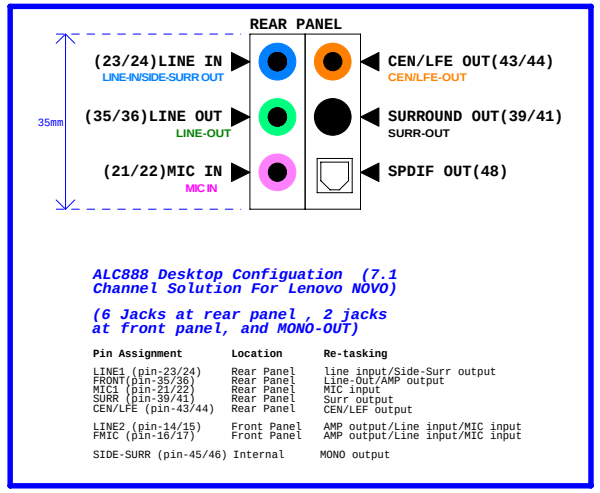
Rear HD Phone Jack_2*3



SPDIF OUT

EMI



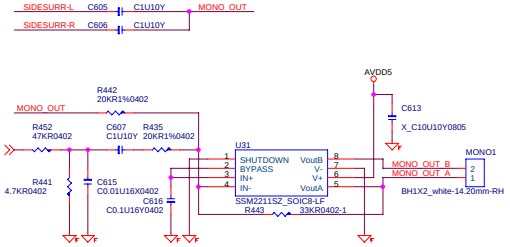


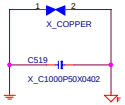
ALC888 Desktop Configuation (7.1 Channel Solution For Lenovo NOVO)

(6 Jacks at rear panel , 2 jacks at front panel, and MONO-OUT)

Pin Assignment	Location	Re-tasking
LINE1 (pin-23/24)	Rear Panel	line input/Side-Surr output
FRONT(pin-35/36)	Rear Panel	Line-Out/AMP output
MIC1 (pin-21/22)	Rear Panel	MIC input
SURR (pin-39/41)	Rear Panel	Surr output
CEN/LFE (pin-43/44)	Rear Panel	CEN/LEF output
LINE2 (pin-14/15)	Front Panel	AMP output/Line input/MIC input
FMIC (pin-16/17)	Front Panel	AMP output/Line input/MIC input
SIDE-SURR (pin-45/46)	Internal	MONO output

MONO Amplifier





Tied at one point only under the codec or near the codec

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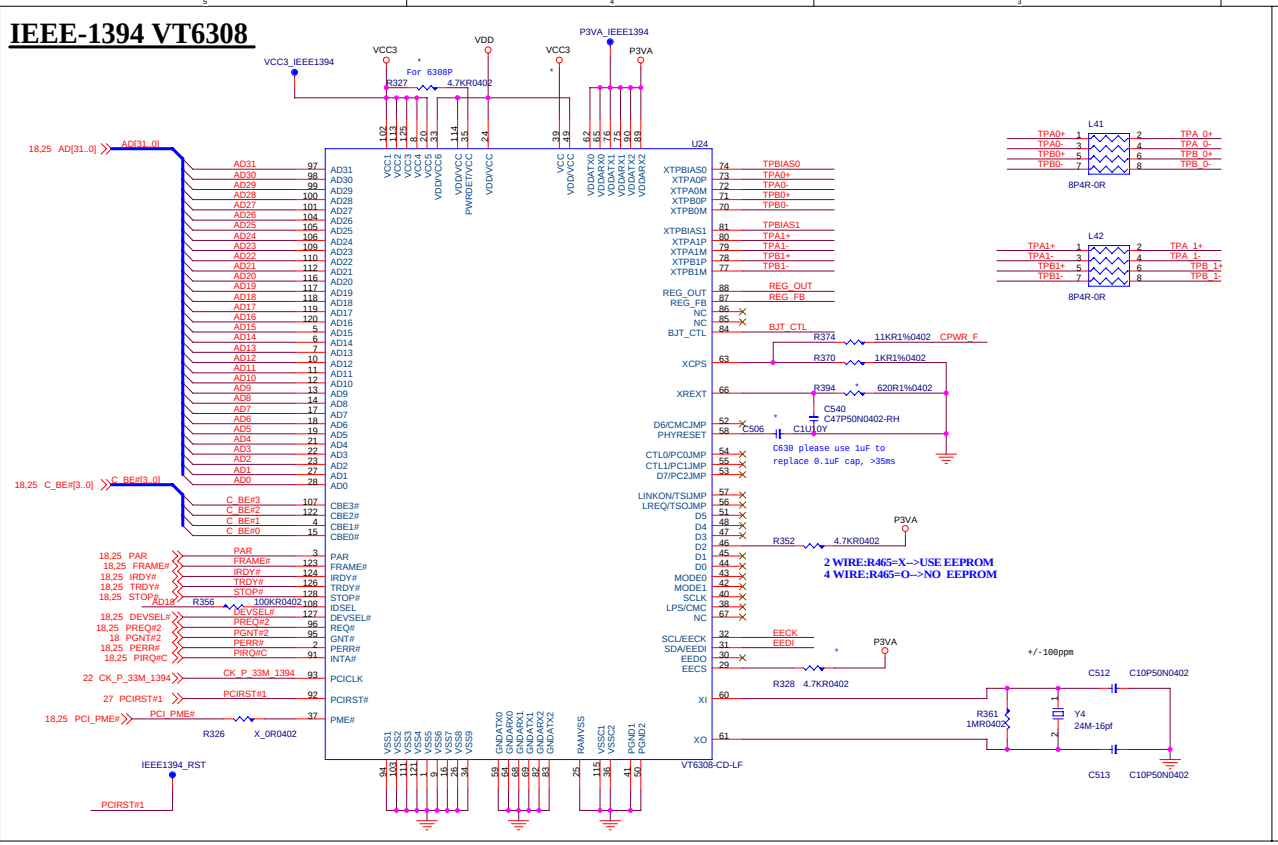
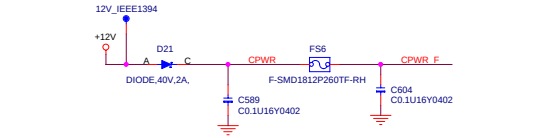
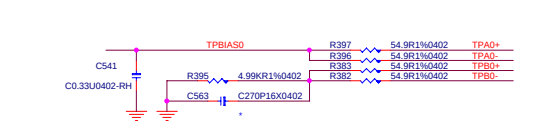
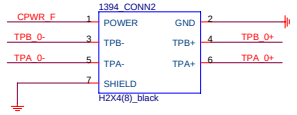
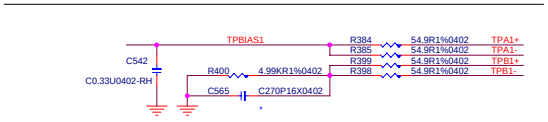
IEEE-1394 VT6308

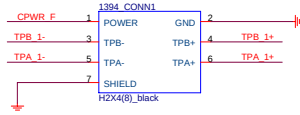


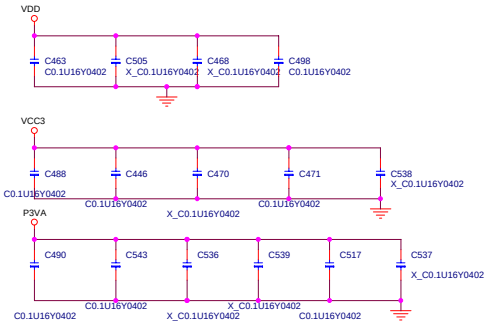


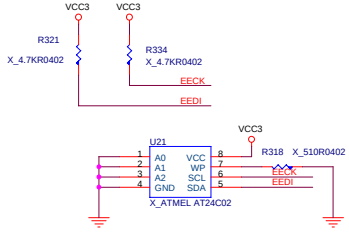


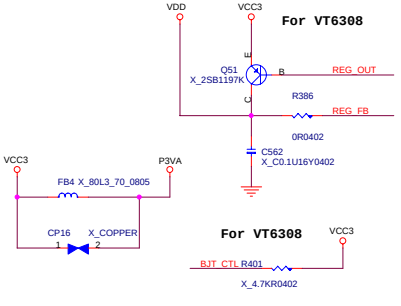












MSI Link to the Future	MICRO-START INT'L CO.,LTD.	
Title: IEEE-1394 VT6308		
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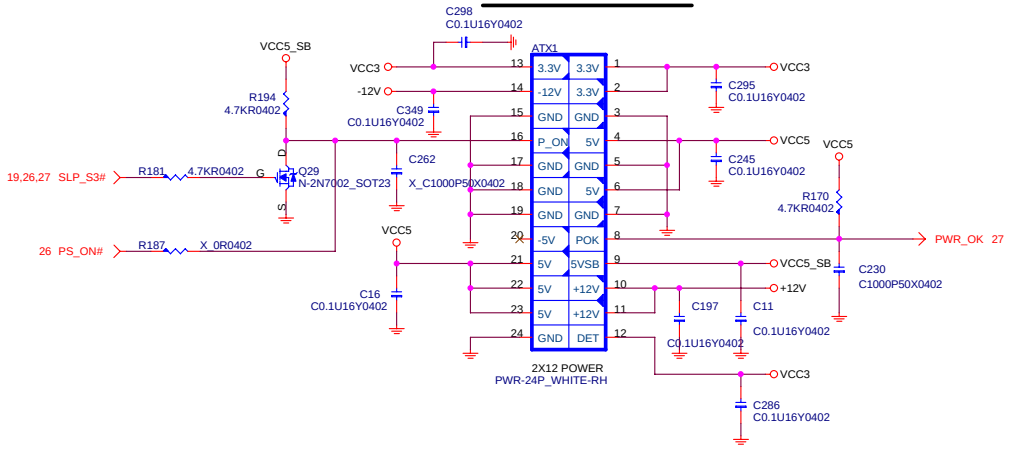
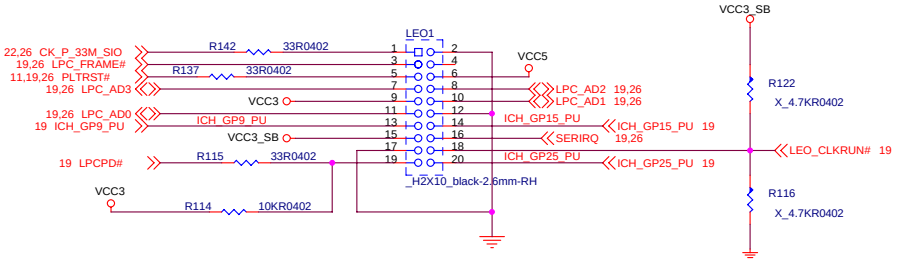
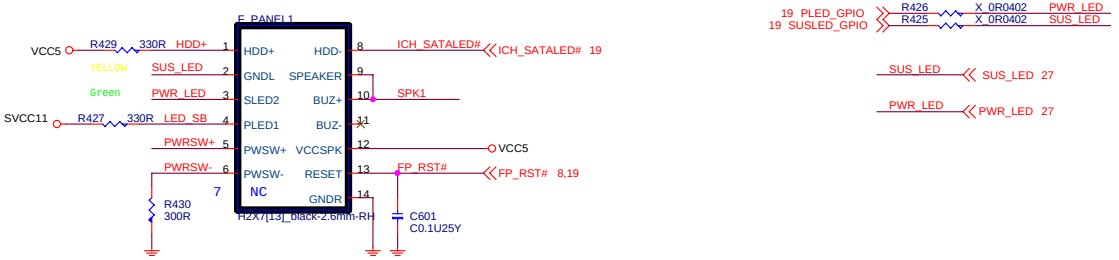
ATX CONNECTOR



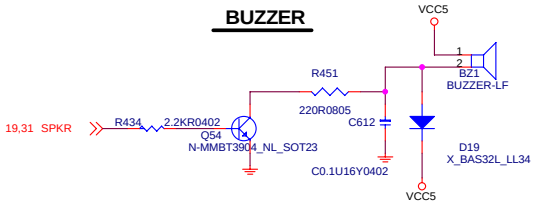
Lenovo LEO Chipset



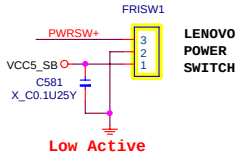
LENOVO Front Panel Connector

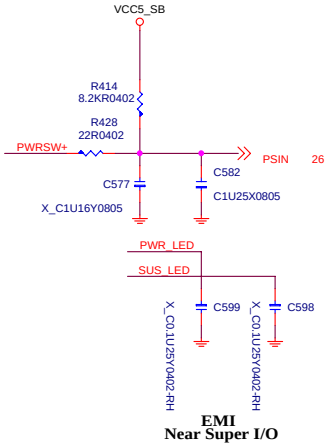


BUZZER



POWER BUTTON





EMI
Near Super I/O

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

Title: ATX & FRONT PANEL		
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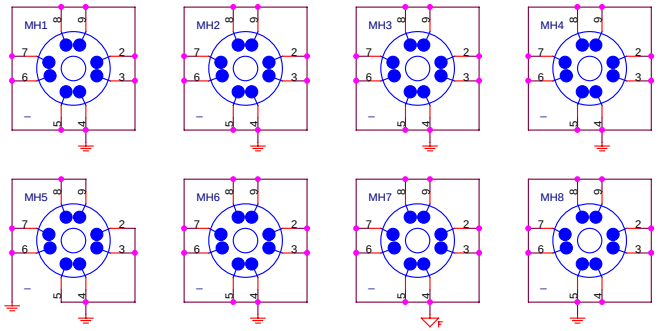
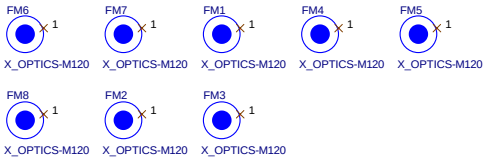


Optics Orientation Holes



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Version 0A

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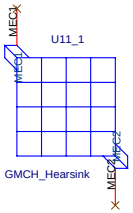
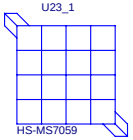
MANUAL PART

HEAT SINK



GMCH_Hearsink



U11_1

HS-MS7059

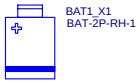
U23_1

PCB1

P30-073630B-E48

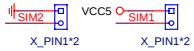
P30-073630A-E48
P30-073630A-G37

P30-073630B-E48
P30-073630B-E55



BAT1_X1
BAT-2P-RH-1

Simulation



LAN

U900

[82562V-RH]

N900

CONN-RJ45_USBX2_LEDX2_TX-RH-9

R900

54.9R1%0402

R901

649R1%2

LEGEND SPEC:

F_AUDIO1(1)

_JUMPER-1X2A_green-1

FRONT AUDIO MIC JUMP	
3 -5	MIC

MICRO-START INT'L CO.,LTD.

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