MS-7297 Ver:0B

CPU:

AMD K8 AM2 Athlon 64/Athlon 64 FX

System Chipset:

ATI RS485

ATI SB600

On Board Chipset:

Winbond Super I/O -- W83627EHG Ver.H
LAN -- RTL8100C/RTL8110SC
HD Codec --ALC861
BIOS --LPC FLASH ROM 4M

Main Memory:

DDR2 * 2 (Max 4GB)

Expansion Slots:

PCI-E X 1 *1
PCI-E X 16 *1
PCI 2.3 Slot X 2

PWM:

Controller--Intersil ISL6566CR 3 Phase

Clock Generator:

Controller--ICS 951464AGLF

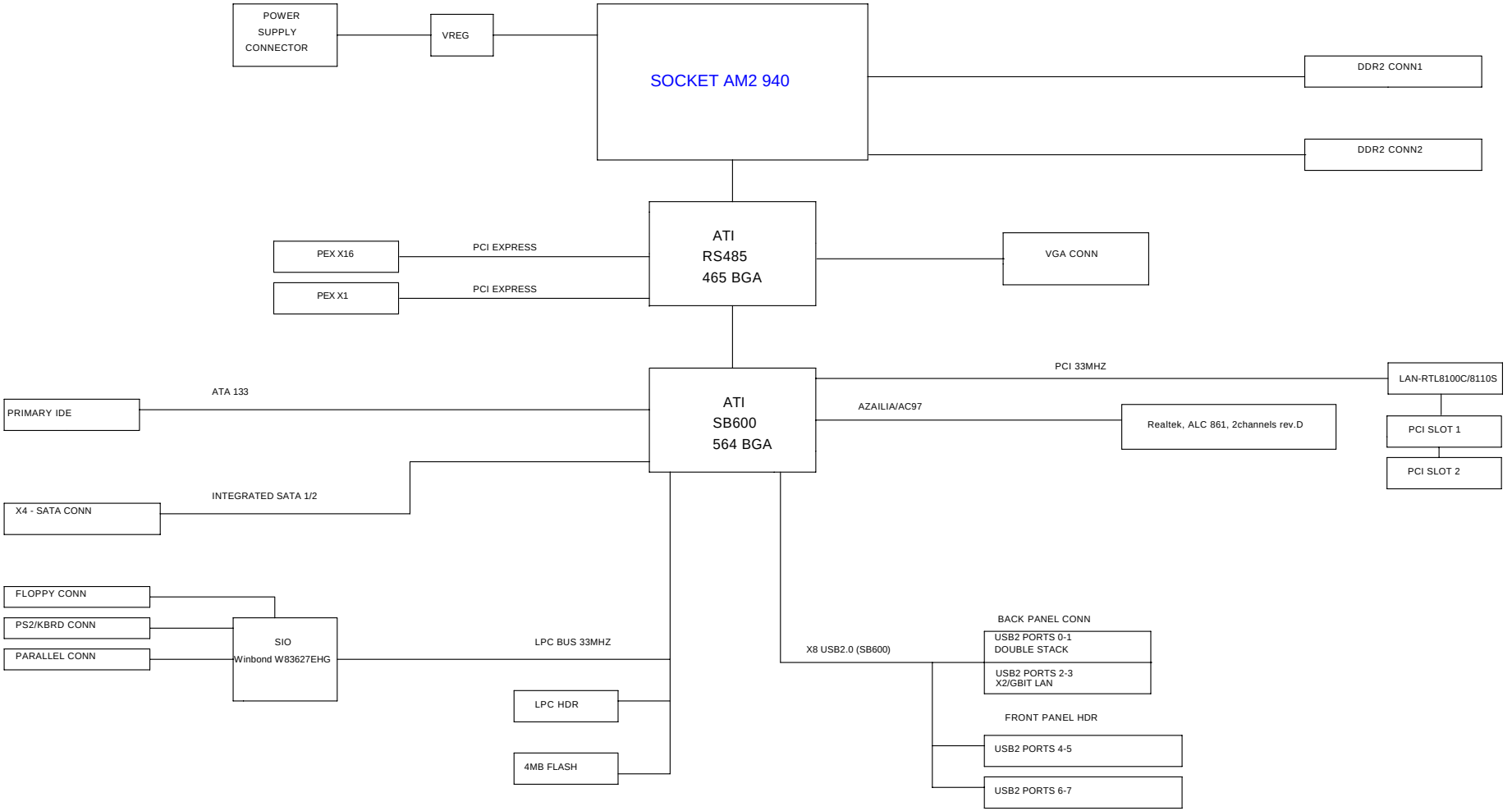
MICRO-START INT'L CO.,LTD.

Title: Cover Sheet

Size: Custom | Document Number: MS-7297 | Rev: 0B

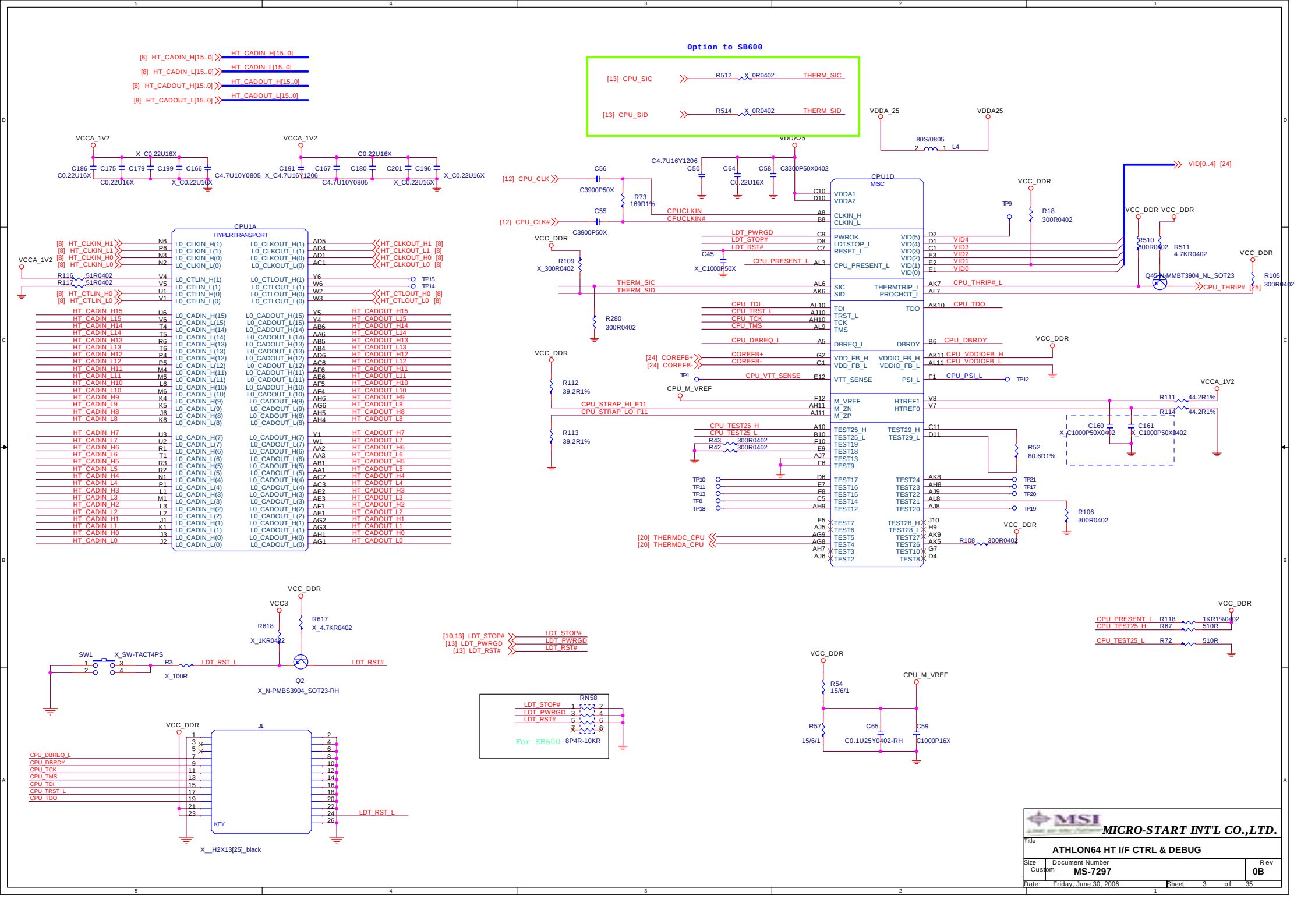
Date: Thursday, June 29, 2006 | Sheet 1 of 35

BLOCK DIAGRAM



MICRO-START INT'L CO.,LTD.

Title: Block Diagram		
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Friday, June 30, 2006	Sheet 2 of 35	


Option to SB600
[13] CPU_SIC
R512 X_0R0402
THERM_SIC
[13] CPU_SID
R514 X_0R0402
THERM_SID
[8] HT_CADIN_H[15..0]
HT_CADIN_H[15..0]
[8] HT_CADIN_L[15..0]
HT_CADIN_L[15..0]
[8] HT_CADOUT_H[15..0]
HT_CADOUT_H[15..0]
[8] HT_CADOUT_L[15..0]
HT_CADOUT_L[15..0]
VCCA_1V2
X_C0.22U16X
C186 C175 C179 C199 C166
C0.22U16X
C4.7U10Y0805
X_C4.7U16Y1206
C191 C167 C180 C201 C196
C0.22U16X
X_C0.22U16X
CPU1A
HYPERTRANSPORT
L0_CLKIN_H(1)
L0_CLKIN_L(1)
L0_CLKIN_H(0)
L0_CLKIN_L(0)
L0_CLKOUT_H(1)
L0_CLKOUT_L(1)
L0_CLKOUT_H(0)
L0_CLKOUT_L(0)
HT_CLKOUT_H1 [8]
HT_CLKOUT_L1 [8]
HT_CLKOUT_H0 [8]
HT_CLKOUT_L0 [8]
HT_CLKIN_H1 [8]
HT_CLKIN_L1 [8]
HT_CLKIN_H0 [8]
HT_CLKIN_L0 [8]
L0_CTLIN_H(1)
L0_CTLIN_L(1)
L0_CTLIN_H(0)
L0_CTLIN_L(0)
L0_CTLOUT_H(1)
L0_CTLOUT_L(1)
L0_CTLOUT_H(0)
L0_CTLOUT_L(0)
TP15
TP14
HT_CTLOUT_H0 [8]
HT_CTLOUT_L0 [8]
HT_CTLIN_H0 [8]
HT_CTLIN_L0 [8]
R116 51R0402
R117 51R0402
L0_CADIN_H(15..0)
L0_CADIN_L(15..0)
L0_CADOUT_H(15..0)
L0_CADOUT_L(15..0)
HT_CADIN_H15
HT_CADIN_L15
HT_CADIN_H14
HT_CADIN_L14
HT_CADIN_H13
HT_CADIN_L13
HT_CADIN_H12
HT_CADIN_L12
HT_CADIN_H11
HT_CADIN_L11
HT_CADIN_H10
HT_CADIN_L10
HT_CADIN_H9
HT_CADIN_L9
HT_CADIN_H8
HT_CADIN_L8
HT_CADIN_H7
HT_CADIN_L7
HT_CADIN_H6
HT_CADIN_L6
HT_CADIN_H5
HT_CADIN_L5
HT_CADIN_H4
HT_CADIN_L4
HT_CADIN_H3
HT_CADIN_L3
HT_CADIN_H2
HT_CADIN_L2
HT_CADIN_H1
HT_CADIN_L1
HT_CADIN_H0
HT_CADIN_L0
HT_CADOUT_H15
HT_CADOUT_L15
HT_CADOUT_H14
HT_CADOUT_L14
HT_CADOUT_H13
HT_CADOUT_L13
HT_CADOUT_H12
HT_CADOUT_L12
HT_CADOUT_H11
HT_CADOUT_L11
HT_CADOUT_H10
HT_CADOUT_L10
HT_CADOUT_H9
HT_CADOUT_L9
HT_CADOUT_H8
HT_CADOUT_L8
HT_CADOUT_H7
HT_CADOUT_L7
HT_CADOUT_H6
HT_CADOUT_L6
HT_CADOUT_H5
HT_CADOUT_L5
HT_CADOUT_H4
HT_CADOUT_L4
HT_CADOUT_H3
HT_CADOUT_L3
HT_CADOUT_H2
HT_CADOUT_L2
HT_CADOUT_H1
HT_CADOUT_L1
HT_CADOUT_H0
HT_CADOUT_L0
VDDA_25
VDDA25
80S/0805
L4
[12] CPU_CLK
C56
C3900P50X
R73
169R1%
[12] CPU_CLK#
C55
C3900P50X
C4.7U16Y1206
C50
C64
C0.22U16X
C58
C3300P50X0402
CPUCLKIN
CPUCLKIN#
CPU1D
MISC
VDDA1
VDDA2
CLKIN_H
CLKIN_L
PWROK
LDTSTOP_L
RESET_L
CPU_PRESENT_L
LDT_PWRGD
LDT_STOP#
LDT_RST#
C45
X_C1000P50X
CPU_PRESENT_L
SIC
SID
THERM_SIC
THERM_SID
THERMTRIP_L
PROCHOT_L
CPU_THRIP# L
TDI
TRST_L
TCK
TMS
TDO
CPU_TDO
CPU_TDI
CPU_TRST_L
CPU_TCK
CPU_TMS
DBREQ_L
DBRDY
CPU_DBREQ_L
CPU_DBRDY
VDD_FB_H
VDD_FB_L
VDDIO_FB_H
VDDIO_FB_L
CPU_VDDIOFB_H
CPU_VDDIOFB_L
[24] COREFB+
[24] COREFB-
COREFB+
COREFB-
VTT_SENSE
PSI_L
CPU_PSI_L
CPU_VTT_SENSE
M_VREF
M_ZN
M_ZP
HTREF1
HTREF0
CPU_M_VREF
CPU_STRAP_HI_E11
CPU_STRAP_LO_F11
TEST25_H
TEST25_L
TEST19
TEST18
TEST13
TEST9
TEST29_H
TEST29_L
CPU_TEST25_H
CPU_TEST25_L
TEST17
TEST16
TEST15
TEST14
TEST12
TEST24
TEST23
TEST22
TEST21
TEST20
TEST7
TEST6
TEST5
TEST4
TEST3
TEST2
TEST28_H
TEST28_L
TEST27
TEST26
TEST10
TEST8
[20] THERMDC_CPU
[20] THERMDA_CPU
VID[0..4] [24]
VID(5)
VID(4)
VID(3)
VID(2)
VID(1)
VID(0)
VID4
VID3
VID2
VID1
VID0
CPU_THRIP# [25]
CPU_TDO
CPU_DBRDY
CPU_VDDIOFB_H
CPU_VDDIOFB_L
CPU_PSI_L
CPU_PRESENT_L
CPU_TEST25_H
CPU_TEST25_L
TP1
TP12
TP21
TP17
TP20
TP19
TP10
TP11
TP13
TP8
TP18
VCC_DDR
R18 300R0402
R510 300R0402
R511 4.7KR0402
R105 300R0402
Q45 LMMBT3904_NL_SOT23
R109 X_300R0402
R280 300R0402
R112 39.2R1%
R113 39.2R1%
R43 300R0402
R42 300R0402
R111 44.2R1%
R114 44.2R1%
C160 X_C1000P50X0402
C161 X_C1000P50X0402
R52 80.6R1%
R106 300R0402
R108 300R0402
VCCA_1V2
VCC3
R617 X_4.7KR0402
R618 X_1KR0402
SW1 X_SW-TACT4PS
R3 X_100R
LDT_RST_L
LDT_RST#
Q2
X_N-PMBS3904_SOT23-RH
[10,13] LDT_STOP#
[13] LDT_PWRGD
[13] LDT_RST#
RN58
For SB600 8P4R-10KR
R54 15/6/1
R57 15/6/1
C65 C0.1U25Y0402-RH
C59 C1000P16X
CPU_PRESENT_L R118 1KR1%0402
CPU_TEST25_H R67 510R
CPU_TEST25_L R72 510R
J1
KEY
CPU_DBREQ_L
CPU_DBRDY
CPU_TCK
CPU_TMS
CPU_TDI
CPU_TRST_L
CPU_TDO
LDT_RST_L
X__H2X13[25]_black
MICRO-START INT'L CO.,LTD.
Title
ATHLON64 HT I/F CTRL & DEBUG
Size
Custom
Document Number
MS-7297
Rev
0B
Date: Friday, June 30, 2006
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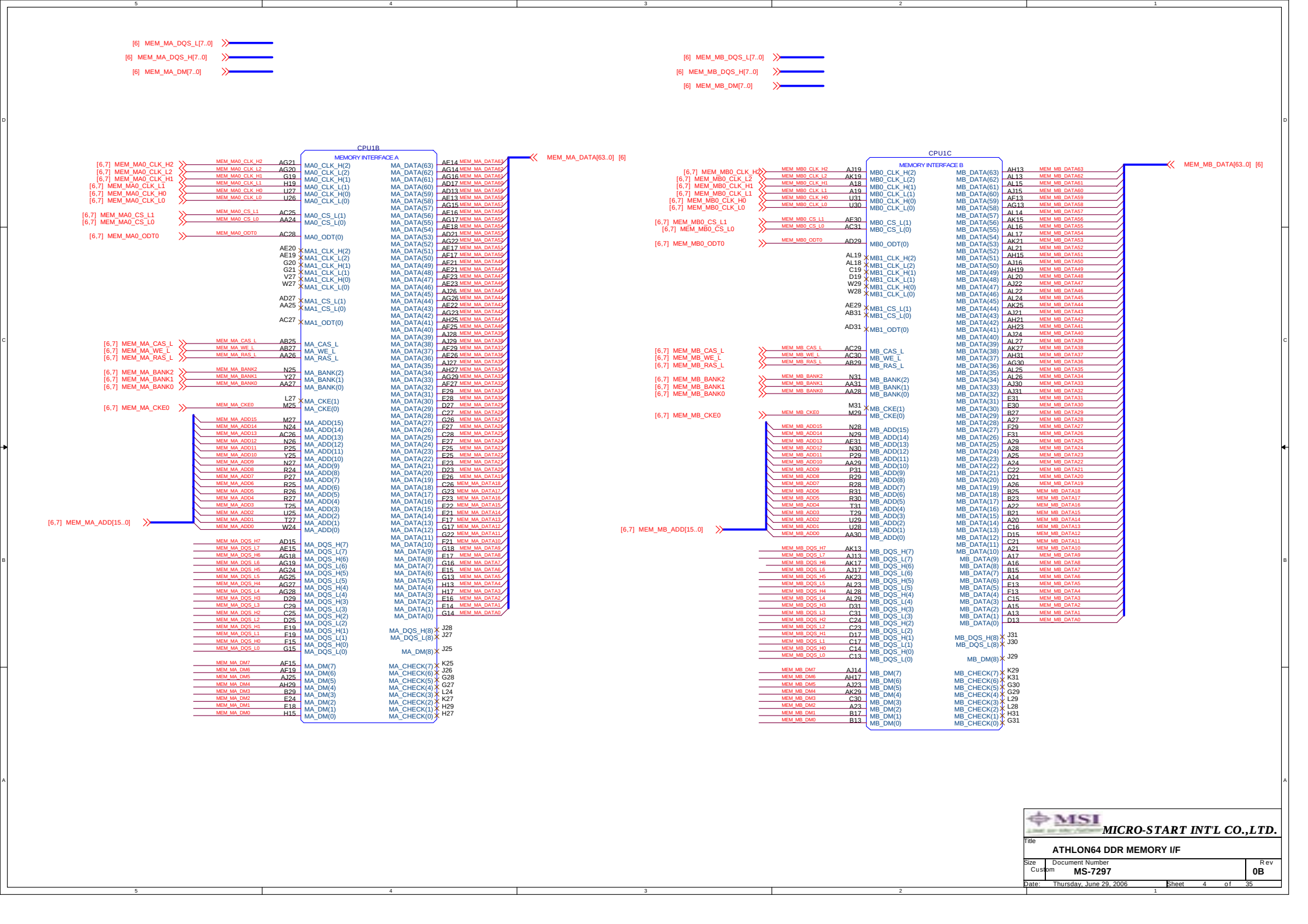
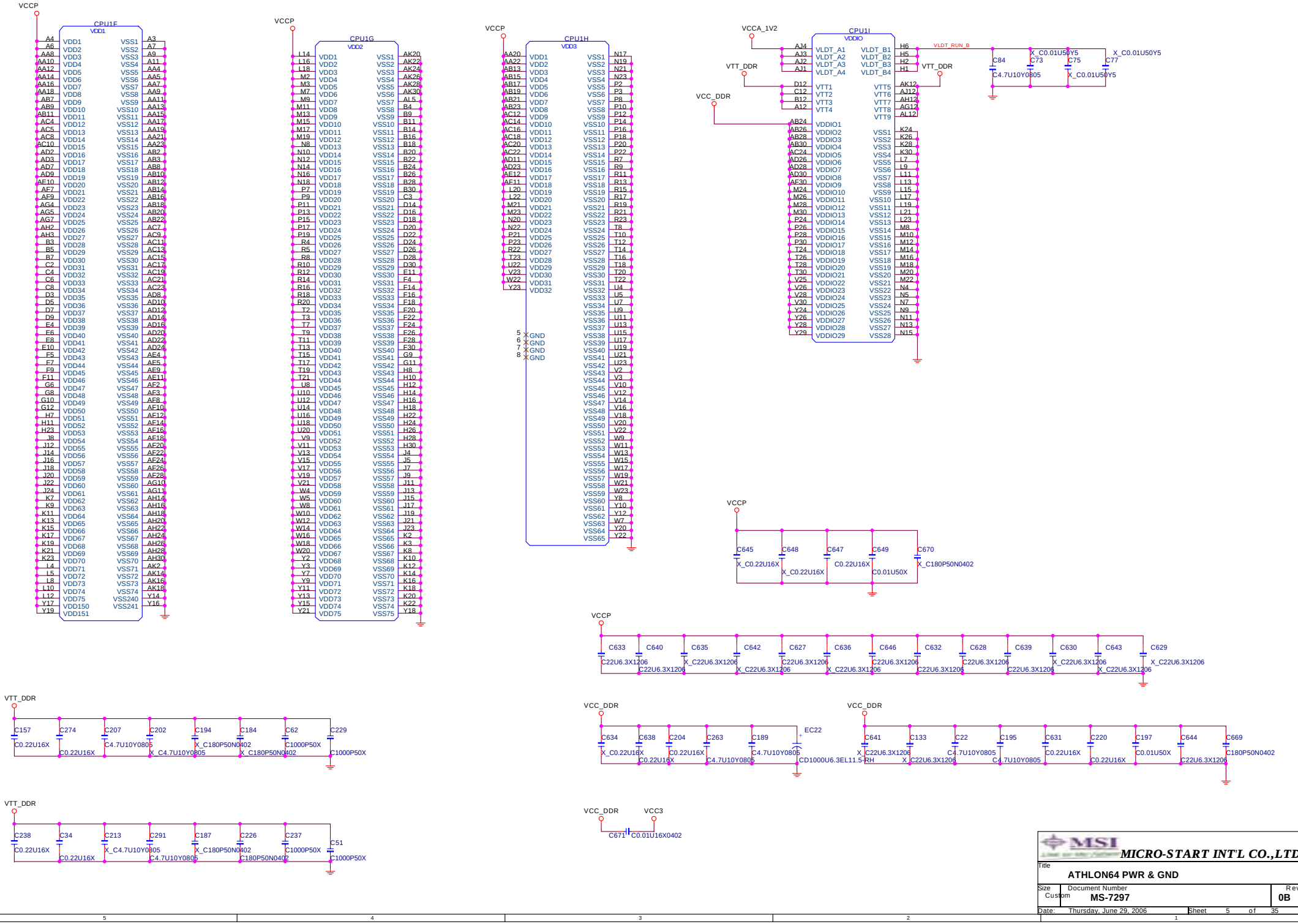

[6] MEM_MA_DQS_L[7..0]
[6] MEM_MA_DQS_H[7..0]
[6] MEM_MA_DM[7..0]
[6] MEM_MB_DQS_L[7..0]
[6] MEM_MB_DQS_H[7..0]
[6] MEM_MB_DM[7..0]
CPU1B
MEMORY INTERFACE A
MEM_MA_DATA[63..0] [6]
CPU1C
MEMORY INTERFACE B
MEM_MB_DATA[63..0] [6]
[6,7] MEM_MA_ADD[15..0]
[6,7] MEM_MB_ADD[15..0]
MICRO-START INT'L CO.,LTD.
Title
ATHLON64 DDR MEMORY I/F
Size
Custom
Document Number
MS-7297
Rev
0B
Date: Thursday, June 29, 2006
Sheet 4 of 35


VCCP
CPU1F
VDD1
VCCP
CPU1G
VDD2
VCCP
CPU1H
VDD3
VCCA_1V2
CPU1I
VDDIO
VTT_DDR
VCC_DDR
VLDT_RUN_B
C84
C4.7U10Y0805
C73
C75
C77
X_C0.01U50Y5
C645
C648
C647
C649
C670
X_C0.22U16X
C0.22U16X
C0.01U50X
X_C180P50N0402
C633
C640
C635
C642
C627
C636
C646
C632
C628
C639
C630
C643
C629
C22U6.3X1206
X_C22U6.3X1206
C157
C274
C207
C202
C194
C184
C62
C229
C0.22U16X
C4.7U10Y0805
X_C4.7U10Y0805
X_C180P50N0402
C1000P50X
C634
C638
C204
C263
C189
EC22
CD1000U6.3EL11.5-RH
C641
C133
C22
C195
C631
C220
C197
C644
C669
C238
C34
C213
C291
C187
C226
C237
C51
C671
C0.01U16X0402
VCC3
MICRO-START INT'L CO.,LTD.
Title
ATHLON64 PWR & GND
Size
Custom
Document Number
MS-7297
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0B
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Thursday, June 29, 2006
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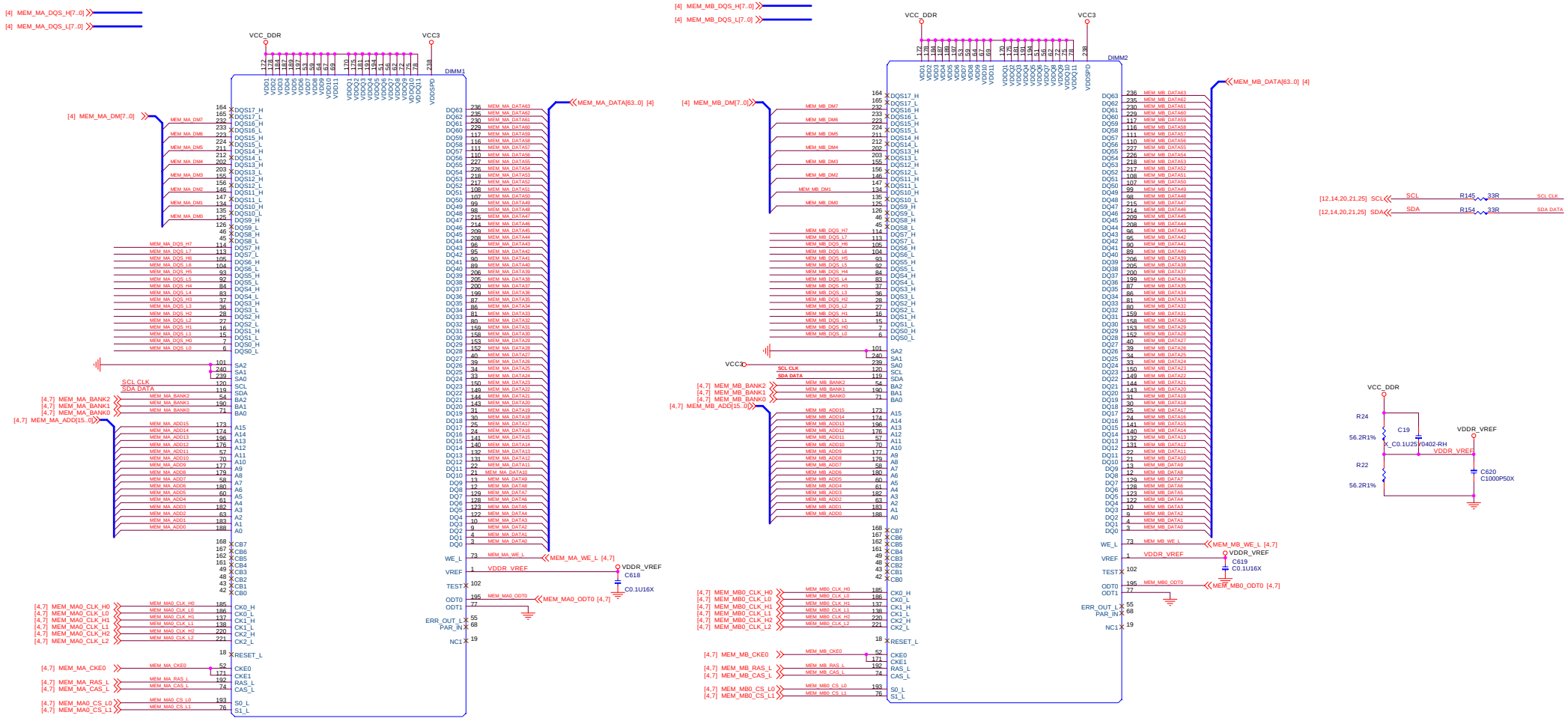
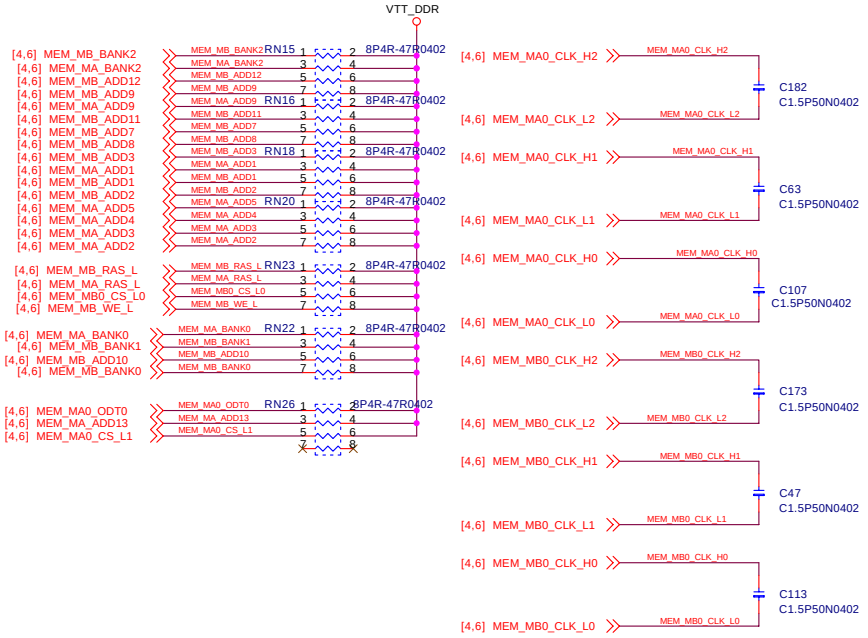
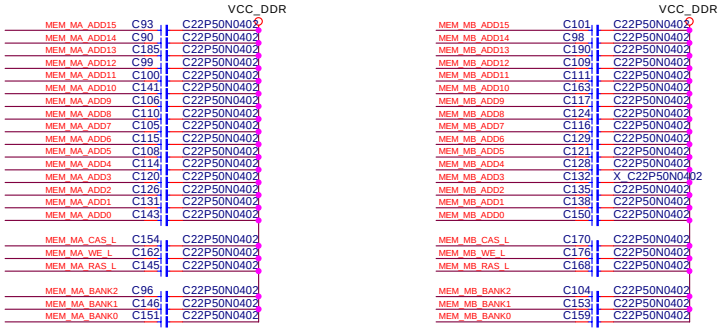
35



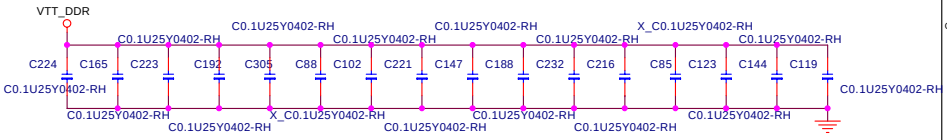
MICRO-STAR INT'L CO.,LTD.			
Title: FIRST LOGICAL DDR DIMM			
Size: Custom	Document Number: MS-7297		Rev: 0B
Date: Thursday, June 29, 2006		Sheet 6 of 35	

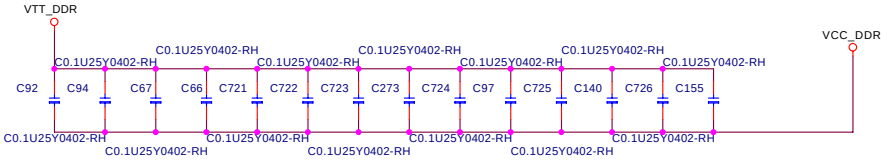


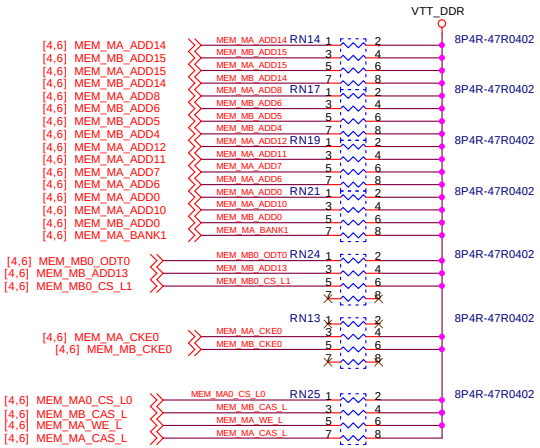


Decoupling Between Processor and DIMMs

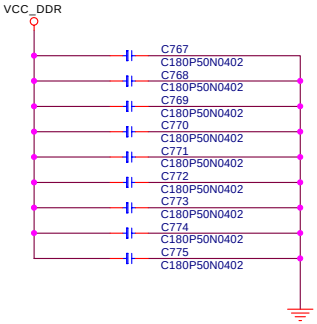
Layout: Spread out on VTT pour







For EMI solution



MICRO-START INT'L CO.,LTD.

Title: DDR Terminatior

Size	Document Number	Rev
Custom	MS-7297	0B

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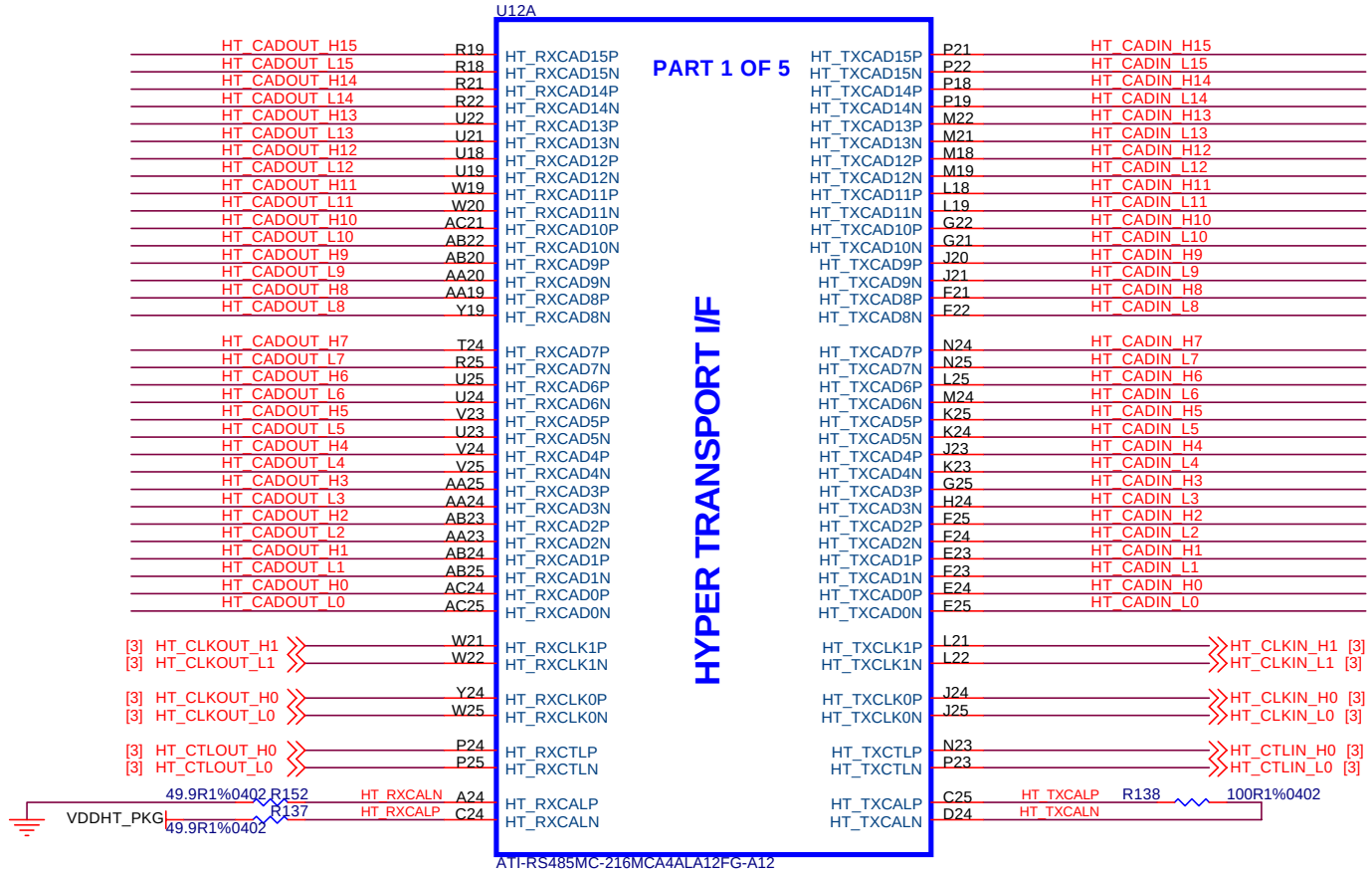

[3] HT_CADIN_H[15..0] HT_CADIN_H[15..0]

[3] HT_CADIN_L[15..0] HT_CADIN_L[15..0]

[3] HT_CADOUT_H[15..0] HT_CADOUT_H[15..0]

[3] HT_CADOUT_L[15..0] HT_CADOUT_L[15..0]

MICRO-START INT'L CO.,LTD.

Title: RS485 HT LINK I/F

Size: Custom | Document Number: MS-7297 | Rev: 0B

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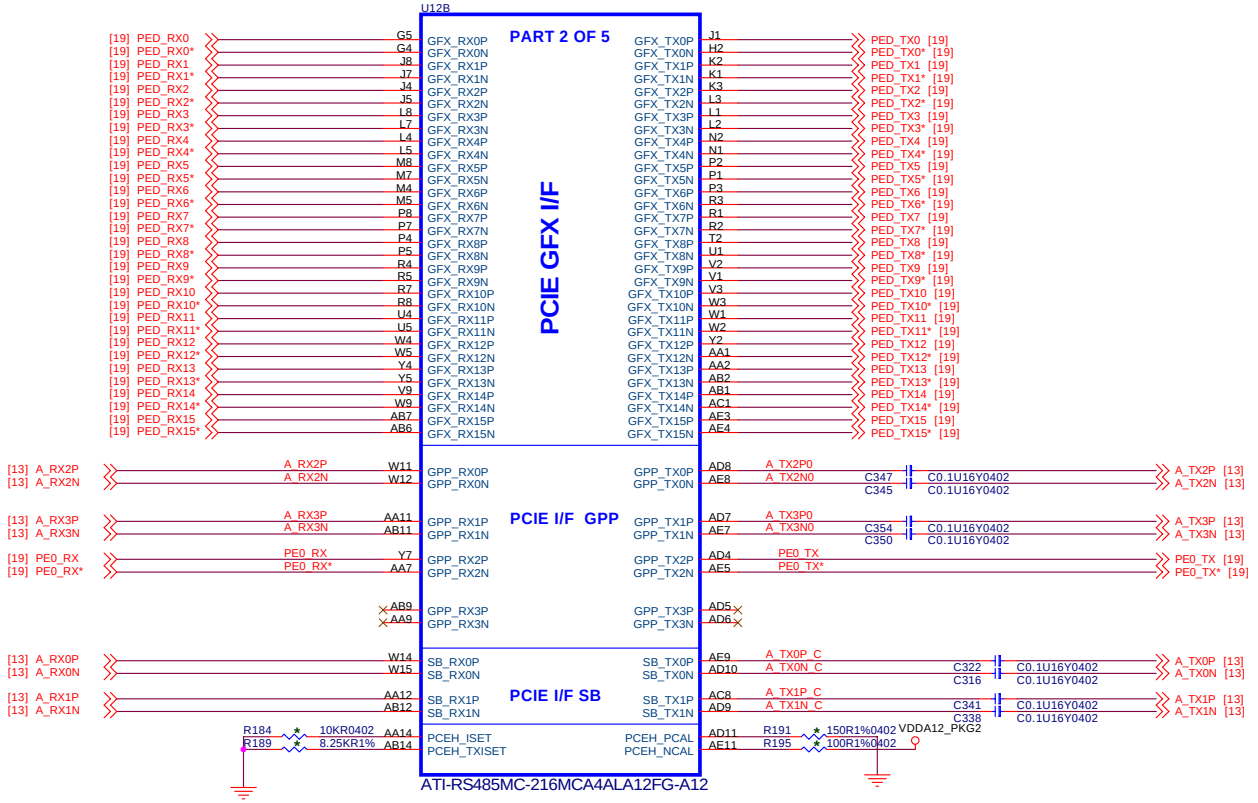

RS690/RS485 CHANGE TABLE

NB/DIFF	R189	R184	R195	R191
RS690	DNI	1.47K	2K	562R
RS485	8.25K	10K	82.5R	150R

MICRO-START INT'L CO.,LTD.

Title: RS485 PCIE I/F

Size: Custom | Document Number: MS-7297 | Rev: 0B

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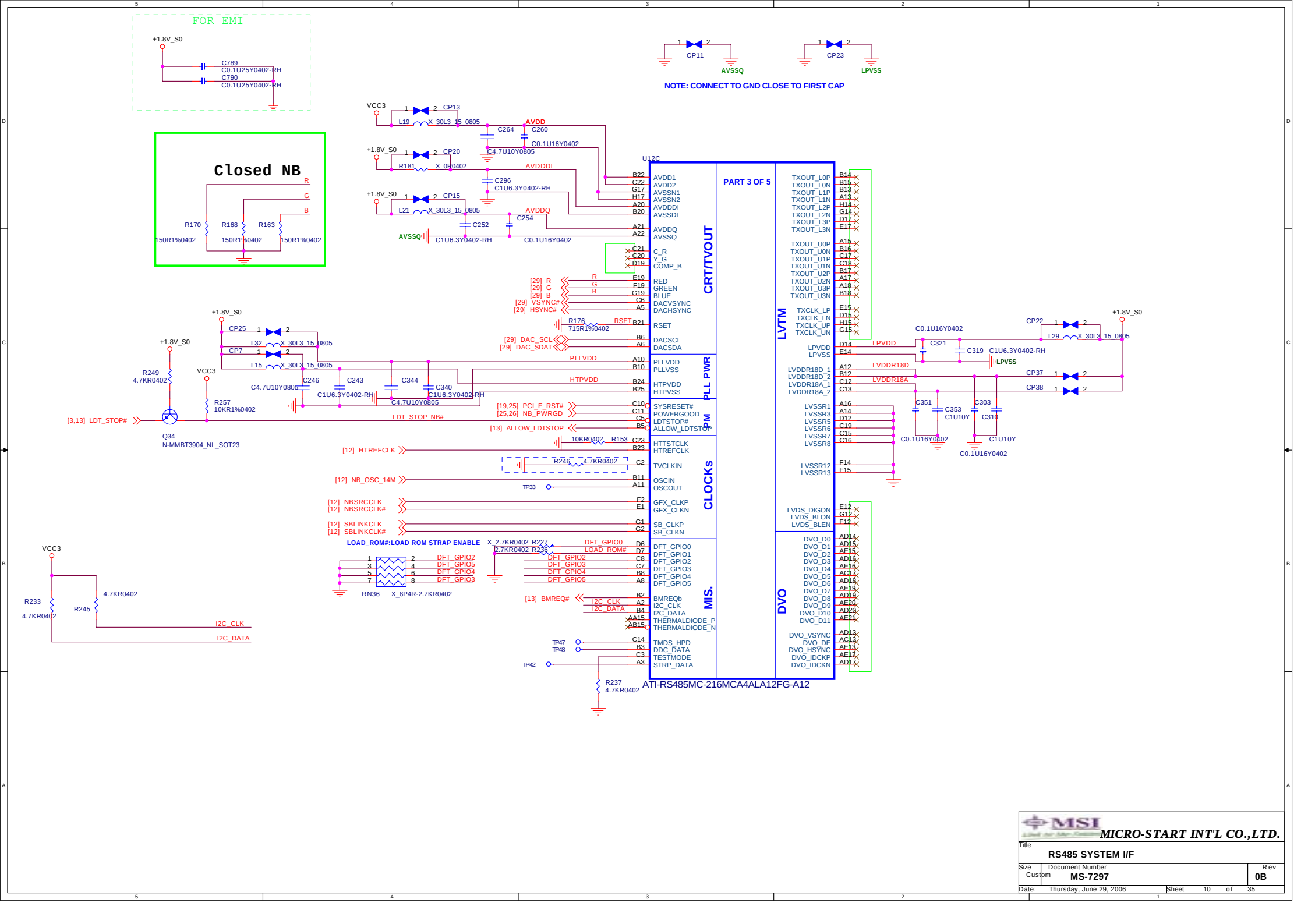
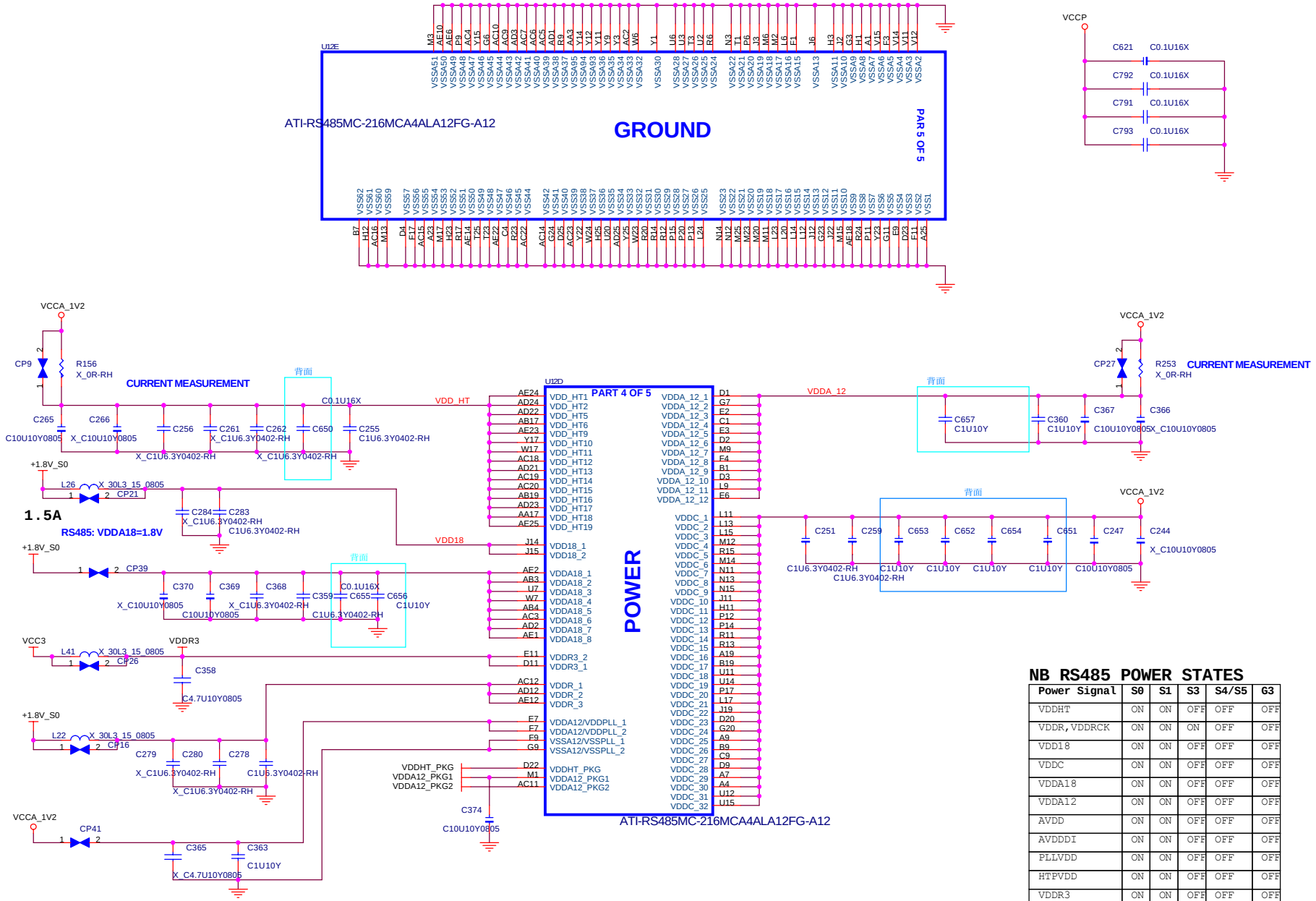


MICRO-START INT'L CO.,LTD.		
Title: RS485 SYSTEM I/F		
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Thursday, June 29, 2006	Sheet 10 of 35	

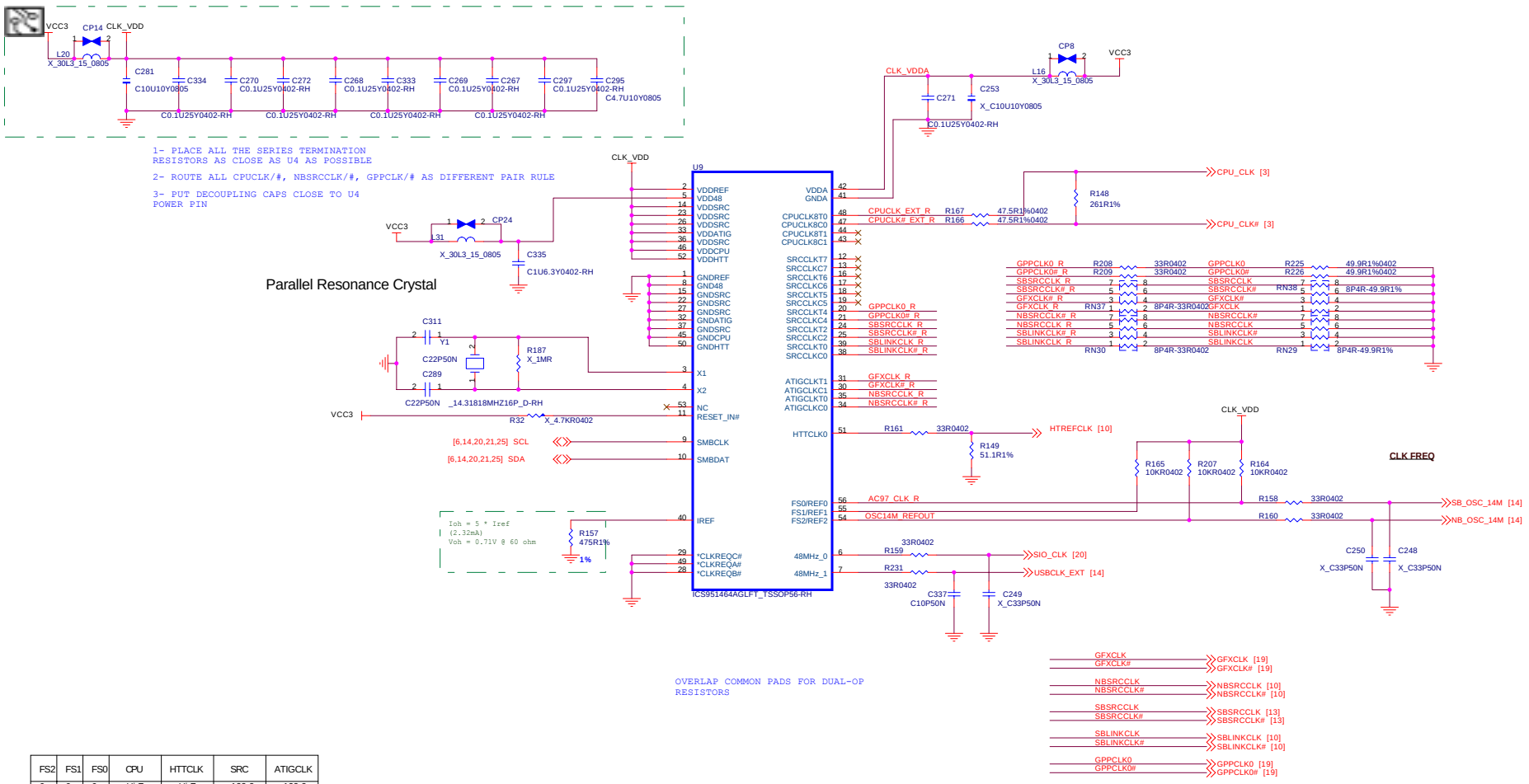


NB RS485 POWER STATES

Power Signal	S0	S1	S3	S4/S5	G3
VDDHT	ON	ON	OFF	OFF	OFF
VDDR,VDDRCK	ON	ON	ON	OFF	OFF
VDD18	ON	ON	OFF	OFF	OFF
VDDC	ON	ON	OFF	OFF	OFF
VDDA18	ON	ON	OFF	OFF	OFF
VDDA12	ON	ON	OFF	OFF	OFF
AVDD	ON	ON	OFF	OFF	OFF
AVDDDI	ON	ON	OFF	OFF	OFF
PLLVDD	ON	ON	OFF	OFF	OFF
HTPVDD	ON	ON	OFF	OFF	OFF
VDDR3	ON	ON	OFF	OFF	OFF
LPVDD	ON	ON	OFF	OFF	OFF
LVDDR18D	ON	ON	OFF	OFF	OFF
LVDDR18A	ON	ON	OFF	OFF	OFF

MICRO-START INT'L CO.,LTD.

Title: RS485 POWER		
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Thursday, June 29, 2006	Sheet 11 of 35	



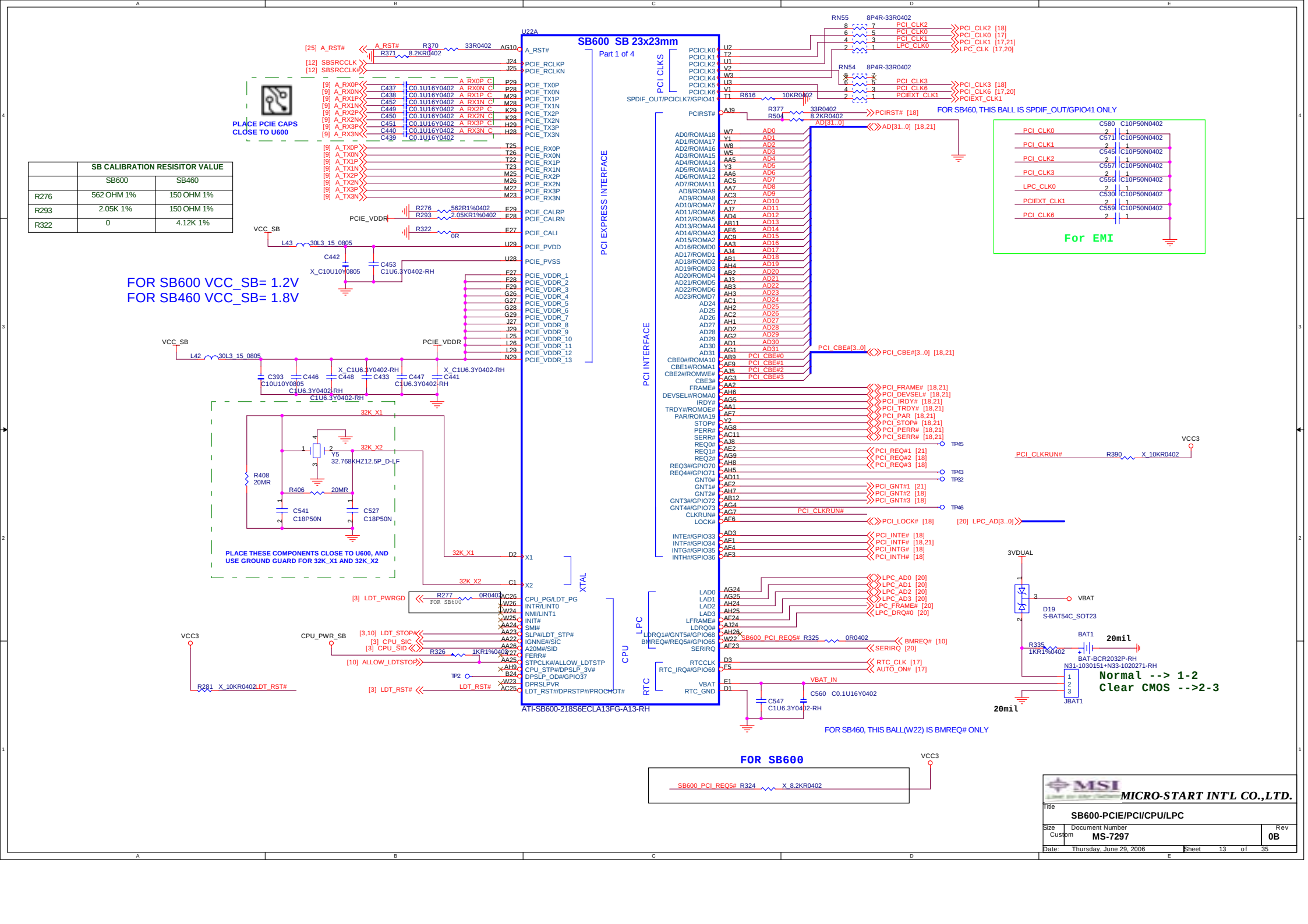
FS2	FS1	FS0	CPU	HTTCLK	SRC	ATIGCLK
0	0	0	Hi-Z	Hi-Z	100.0	100.0
0	0	1	REF	REF	100.0	100.0
0	1	0	230.0	76.7	100.0	100.0
0	1	1	240.0	80.0	100.0	100.0
1	0	0	100.0	66.6	100.0	100.0
1	0	1	133.3	66.6	100.0	100.0
1	1	0	166.6	66.6	100.0	100.0
1	1	1	200.0	66.6	100.0	100.0

MICRO-START INT'L CO.,LTD.

Title: Clock Generator ICS951464 & SLG84607

Size: Custom | Document Number: MS-7297 | Rev: 0B

Date: Thursday, June 29, 2006 | Sheet 12 of 35


SB600 SB 23x23mm
Part 1 of 4
U22A
PCI CLKS
PCI EXPRESS INTERFACE
PCI INTERFACE
XTAL
LPC
CPU
RTC
SB CALIBRATION RESISITOR VALUE
SB600
SB460
R276 562 OHM 1% 150 OHM 1%
R293 2.05K 1% 150 OHM 1%
R322 0 4.12K 1%
PLACE PCIE CAPS CLOSE TO U600
FOR SB600 VCC_SB= 1.2V
FOR SB460 VCC_SB= 1.8V
PLACE THESE COMPONENTS CLOSE TO U600, AND USE GROUND GUARD FOR 32K_X1 AND 32K_X2
FOR SB460, THIS BALL IS SPDIF_OUT/GPIO41 ONLY
FOR SB460, THIS BALL(W22) IS BMREQ# ONLY
FOR SB600
For EMI
Normal --> 1-2
Clear CMOS -->2-3
ATI-SB600-218S6ECLA13FG-A13-RH
MICRO-START INT'L CO.,LTD.
SB600-PCIE/PCI/CPU/LPC
MS-7297
0B
Thursday, June 29, 2006
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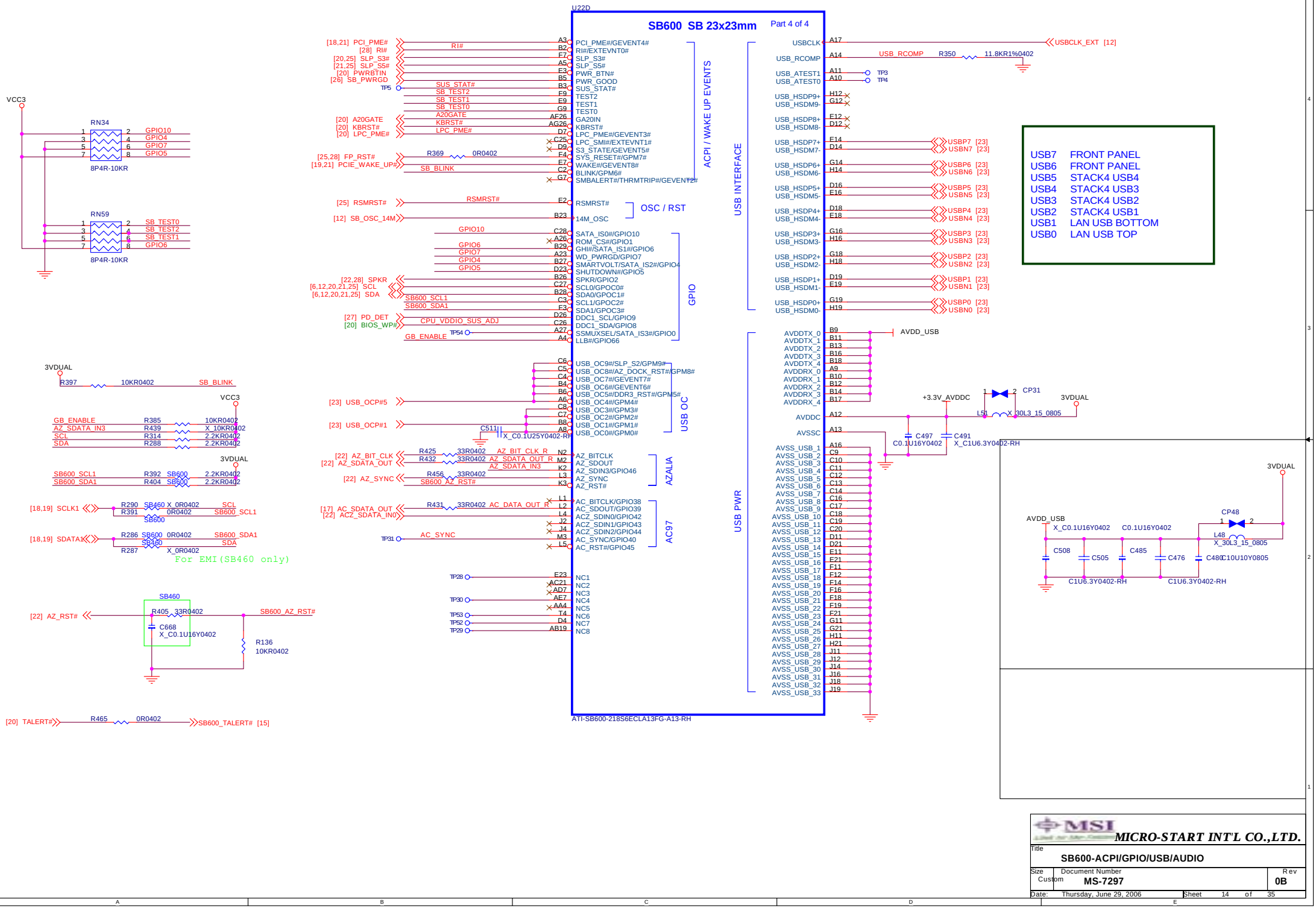
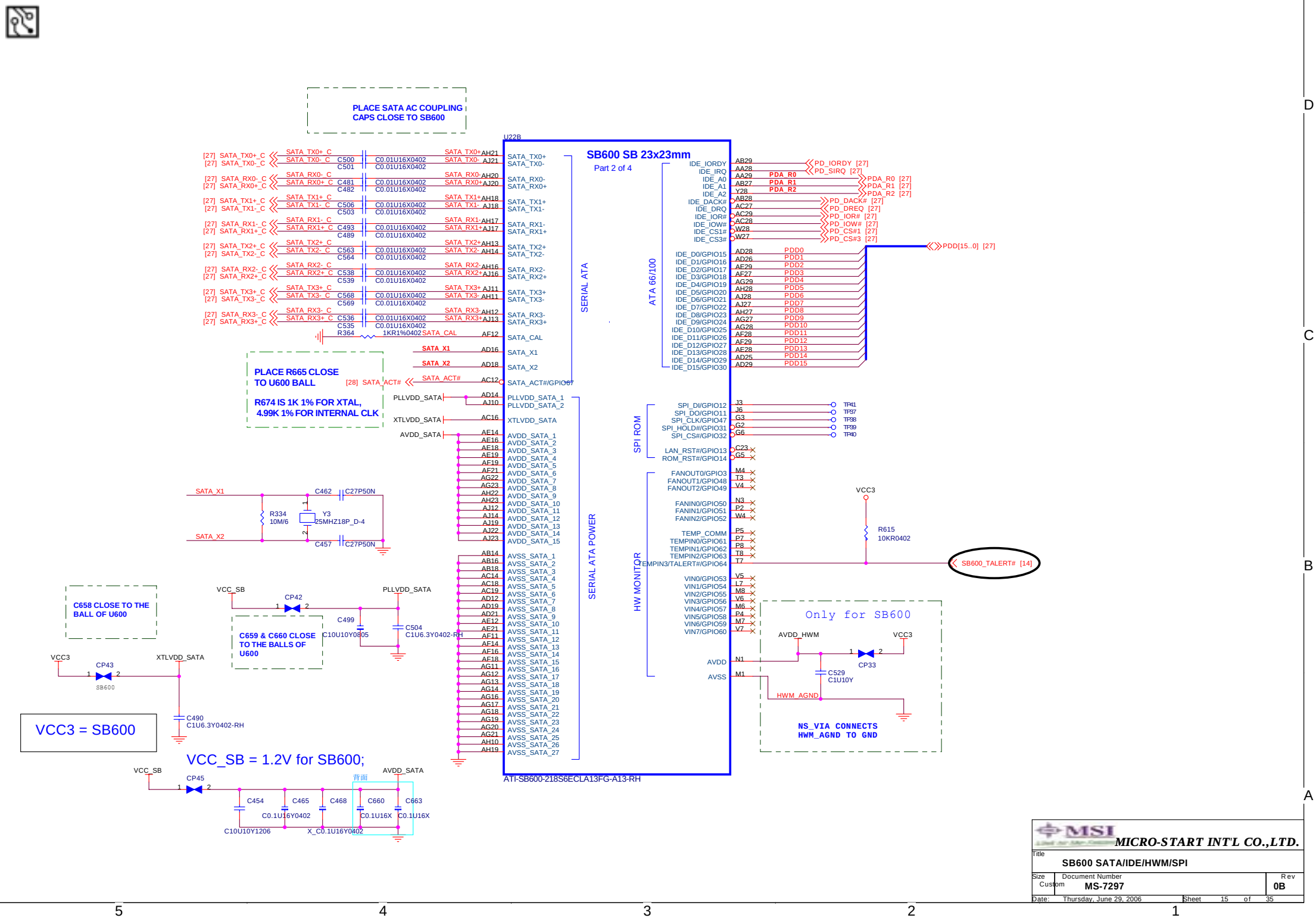
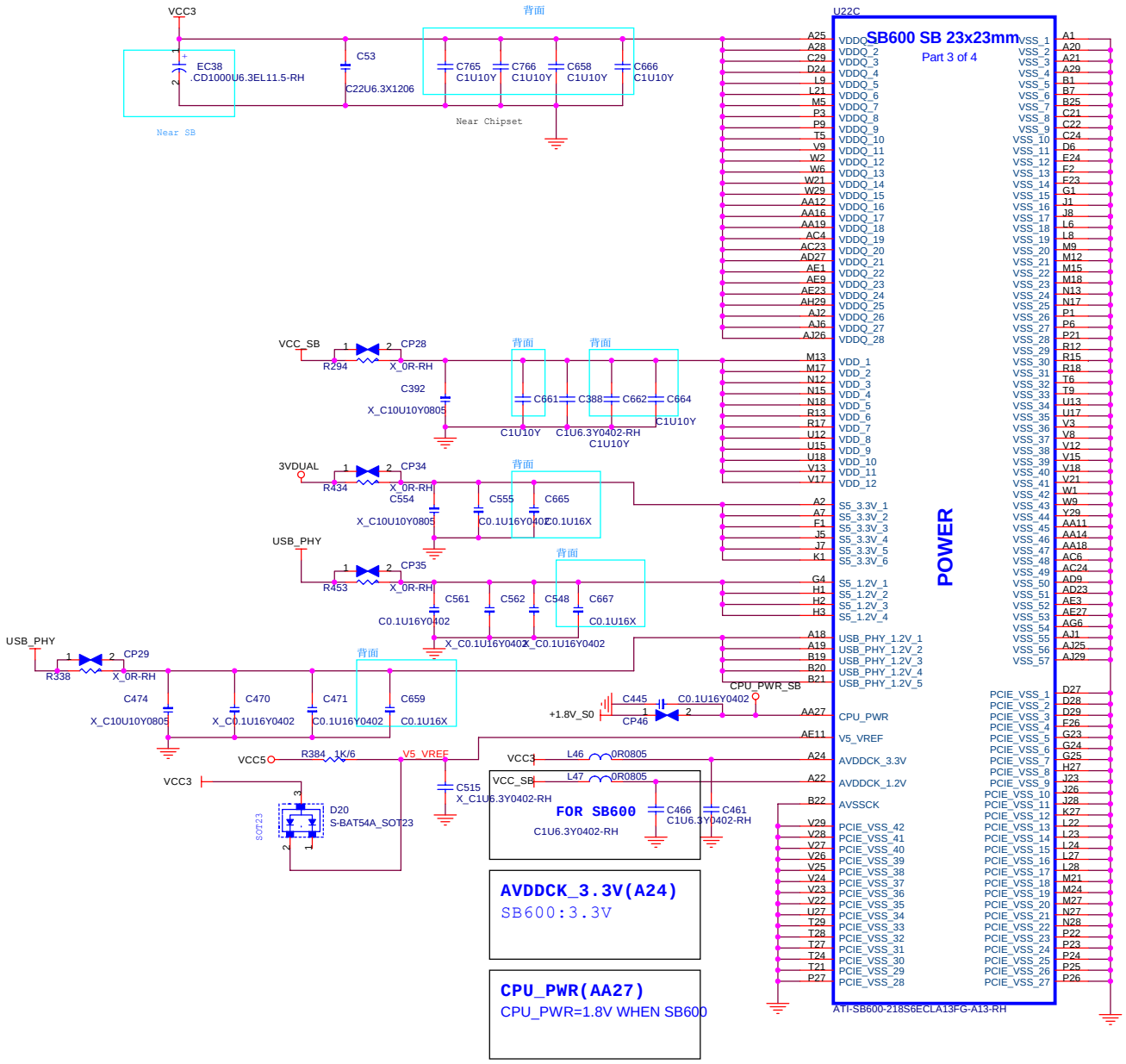

SB600 SB 23x23mm
Part 4 of 4
U22D
ATI-SB600-218S6ECLA13FG-A13-RH
ACPI / WAKE UP EVENTS
USB INTERFACE
GPIO
USB OC
AZALIA
AC97
USB PWR
OSC / RST
PCI_PME#/GEVENT4#
RI#/EXTEVNT0#
SLP_S3#
SLP_S5#
PWR_BTN#
PWR_GOOD
SUS_STAT#
TEST2
TEST1
TEST0
GA20IN
KBRST#
LPC_PME#/GEVENT3#
LPC_SMI#/EXTEVNT1#
S3_STATE/GEVENT5#
SYS_RESET#/GPM7#
WAKE#/GEVENT8#
BLINK/GPM6#
SMBALERT#/THRMTRIP#/GEVENT12#
RSMRST#
14M_OSC
SATA_IS0#/GPIO10
ROM_CS#/GPIO1
GHI#/SATA_IS1#/GPIO6
WD_PWRGD/GPIO7
SMARTVOLT/SATA_IS2#/GPIO4
SHUTDOWN#/GPIO5
SPKR/GPIO2
SCL0/GPOC0#
SDA0/GPOC1#
SCL1/GPOC2#
SDA1/GPOC3#
DDC1_SCL/GPIO9
DDC1_SDA/GPIO8
SSMUXSEL/SATA_IS3#/GPIO0
LLB#/GPIO66
USB_OC9#/SLP_S2/GPM9#
USB_OC8#/AZ_DOCK_RST#/GPM8#
USB_OC7#/GEVENT7#
USB_OC6#/GEVENT6#
USB_OC5#/DDR3_RST#/GPM5#
USB_OC4#/GPM4#
USB_OC3#/GPM3#
USB_OC2#/GPM2#
USB_OC1#/GPM1#
USB_OC0#/GPM0#
AZ_BITCLK
AZ_SDOUT
AZ_SDIN3/GPIO46
AZ_SYNC
AZ_RST#
AC_BITCLK/GPIO38
AC_SDOUT/GPIO39
ACZ_SDIN0/GPIO42
ACZ_SDIN1/GPIO43
ACZ_SDIN2/GPIO44
AC_SYNC/GPIO40
AC_RST#/GPIO45
NC1
NC2
NC3
NC4
NC5
NC6
NC7
NC8
USBCLK
USB_RCOMP
USB_ATEST1
USB_ATEST0
USB_HSDP9+
USB_HSDM9-
USB_HSDP8+
USB_HSDM8-
USB_HSDP7+
USB_HSDM7-
USB_HSDP6+
USB_HSDM6-
USB_HSDP5+
USB_HSDM5-
USB_HSDP4+
USB_HSDM4-
USB_HSDP3+
USB_HSDM3-
USB_HSDP2+
USB_HSDM2-
USB_HSDP1+
USB_HSDM1-
USB_HSDP0+
USB_HSDM0-
AVDDTX_0
AVDDTX_1
AVDDTX_2
AVDDTX_3
AVDDTX_4
AVDDRX_0
AVDDRX_1
AVDDRX_2
AVDDRX_3
AVDDRX_4
AVDDC
AVSSC
AVSS_USB_1
AVSS_USB_2
AVSS_USB_3
AVSS_USB_4
AVSS_USB_5
AVSS_USB_6
AVSS_USB_7
AVSS_USB_8
AVSS_USB_9
AVSS_USB_10
AVSS_USB_11
AVSS_USB_12
AVSS_USB_13
AVSS_USB_14
AVSS_USB_15
AVSS_USB_16
AVSS_USB_17
AVSS_USB_18
AVSS_USB_19
AVSS_USB_20
AVSS_USB_21
AVSS_USB_22
AVSS_USB_23
AVSS_USB_24
AVSS_USB_25
AVSS_USB_26
AVSS_USB_27
AVSS_USB_28
AVSS_USB_29
AVSS_USB_30
AVSS_USB_31
AVSS_USB_32
AVSS_USB_33
USB7 FRONT PANEL
USB6 FRONT PANEL
USB5 STACK4 USB4
USB4 STACK4 USB3
USB3 STACK4 USB2
USB2 STACK4 USB1
USB1 LAN USB BOTTOM
USB0 LAN USB TOP
VCC3
RN34
RN59
8P4R-10KR
3VDUAL
R397 10KR0402 SB_BLINK
GB_ENABLE R385 10KR0402
AZ_SDATA_IN3 R439 X_10KR0402
SCL R314 2.2KR0402
SDA R288 2.2KR0402
SB600_SCL1 R392 SB600 2.2KR0402
SB600_SDA1 R404 SB600 2.2KR0402
[18,19] SCLK1 R290 SB460 X_0R0402 SCL
R391 0R0402 SB600_SCL1
SB600
[18,19] SDATA1 R286 SB600 0R0402 SB600_SDA1
SB460 SDA
R287 X_0R0402
For EMI(SB460 only)
SB460
[22] AZ_RST# R405 33R0402 SB600_AZ_RST#
C668 X_C0.1U16Y0402
R136 10KR0402
[20] TALERT# R465 0R0402 SB600_TALERT# [15]
R369 0R0402
C511 X_C0.1U25Y0402-RH
+3.3V_AVDDC
3VDUAL
CP31
L51 X_30L3_15_0805
C497 C0.1U16Y0402
C491 X_C1U6.3Y0402-RH
AVDD_USB
CP48
L48 X_30L3_15_0805
C508 C505 C485 C476 C480
C0.1U16Y0402
X_C0.1U16Y0402
C1U6.3Y0402-RH
C10U10Y0805
MICRO-START INT'L CO.,LTD.
Title
SB600-ACPI/GPIO/USB/AUDIO
Size Custom
Document Number MS-7297
Rev 0B
Date: Thursday, June 29, 2006
Sheet 14 of 35



MICRO-START INT'L CO.,LTD.	
Title	SB600 SATA/IDE/HWM/SPI
Size: Custom	Document Number: MS-7297
Rev	0B
Date: Thursday, June 29, 2006	Sheet 15 of 35



MICRO-START INT'L CO.,LTD.

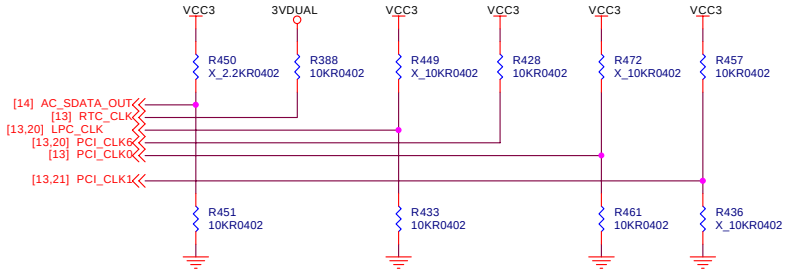
Title: SB600 POWER & DECOUPLING

Size: Custom | Document Number: MS-7297 | Rev: 0B

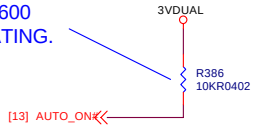
Date: Thursday, June 29, 2006 | Sheet 16 of 35

REQUIRED STRAPS

SB600 HAS 15K INTERNAL PD FOR AC_SDATA_OUT, 15K PU FOR RTC_CLK, EXTERNAL PU/PD IS NOT REQUIRED; FOR SB460, EXTERNAL PU/PD ARE REQUIRED

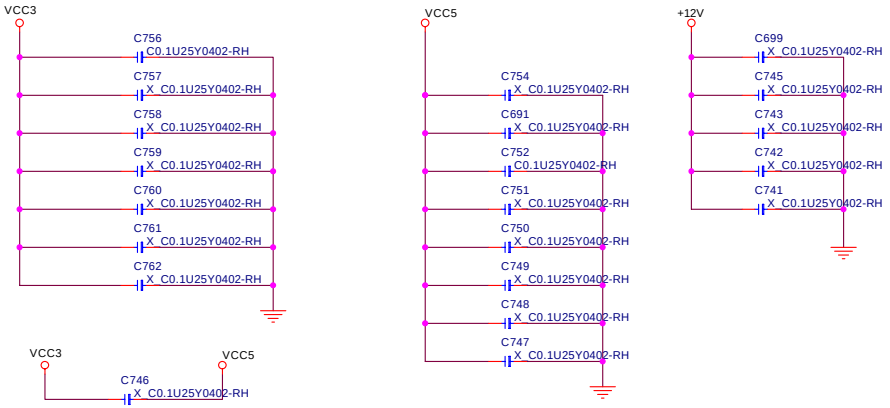


NOTE: R386 PU RESISTOR FOR RTC_IRQ# IS REQUIRED FOR SB600 TO KEEP THE INPUT FROM FLOATING.

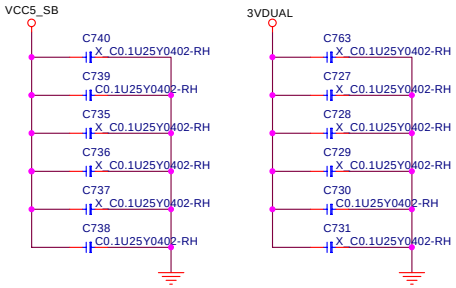


	AC_SDOUT	RTC_CLK	PCI_CLK4	PCI_CLK6	SB600 PCI_CLK0	SB600 PCI_CLK1	SB460 PCI_CLK0	SB460 PCI_CLK1
PULL HIGH	USE DEBUG STRAPS	INTERNAL RTC DEFAULT	USE INT. PLL48	CPU IF=K8 DEFAULT	ROM TYPE: H, H = PCI ROM; H, L = SPI ROM; L, H = LPC ROM DEFAULT; L, L = FWH ROM		ROM TYPE: H, H = PCI ROM; H, L = LPC I ROM DEFAULT; L, H = LPC II ROM; L, L = FWH ROM	
PULL LOW	IGNORE DEBUG STRAPS DEFAULT	EXTERNAL RTC	USE EXT. 48MHZ DEFAULT	CPU IF=P4			NOTE: FOR SB460, PCICLK[8:7] ARE CONNECTED TO SUBSTRATE BALLS PCICLK[1:0]	

For EMI



For EMI



MICRO-START INT'L CO.,LTD.

Title: SB600 STRAPS

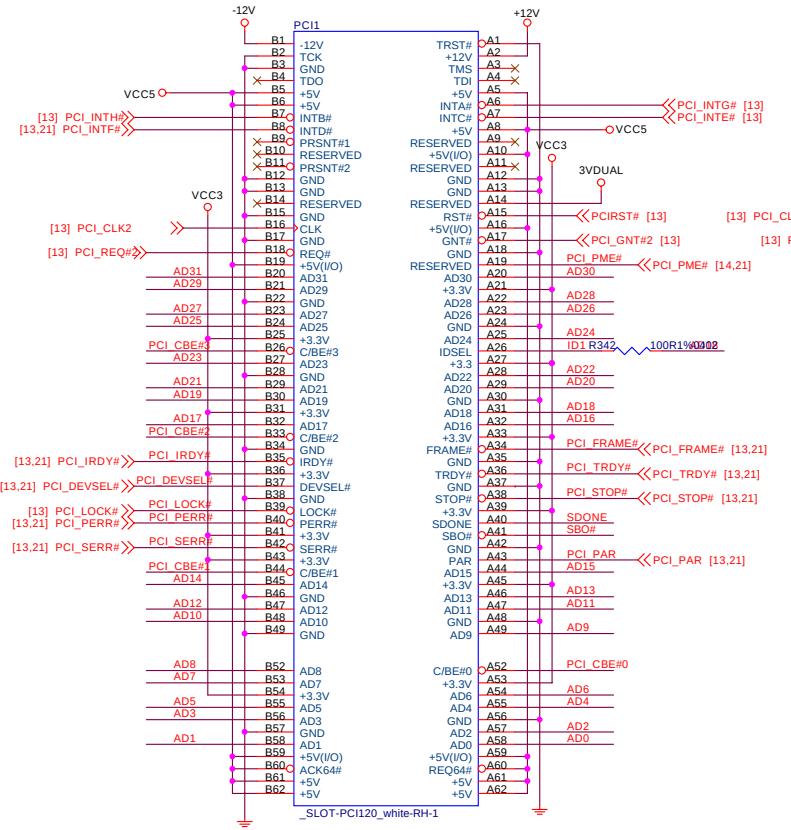
Size: Custom | Document Number: MS-7297 | Rev: 0B

Date: Thursday, June 29, 2006 | Sheet 17 of 35

[13,21] AD[31..0] AD[31..0]

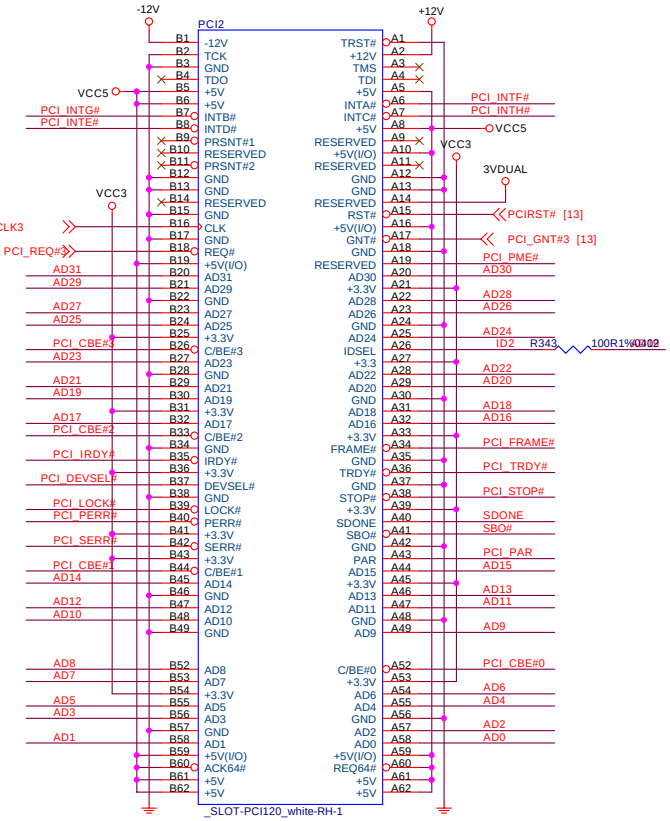
[13,21] PCI_CBE#[3..0] PCI_CBE#[3..0]

PCI SLOT 1 (PCI VER: 2.2 COMPLY)



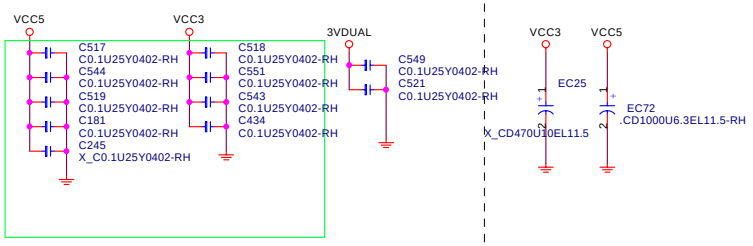
IDSEL = AD18
MASTER = PCI_REQ#2
PCI_GNT#2

PCI SLOT 2 (PCI VER: 2.2 COMPLY)



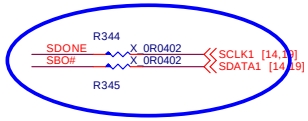
IDSEL = AD19
MASTER = PCI_REQ#3
PCI_GNT#3

PCI SLOT DECOUPLING CAPACITORS



For EMI

PCI PULL-UP / DOWN RESISTORS

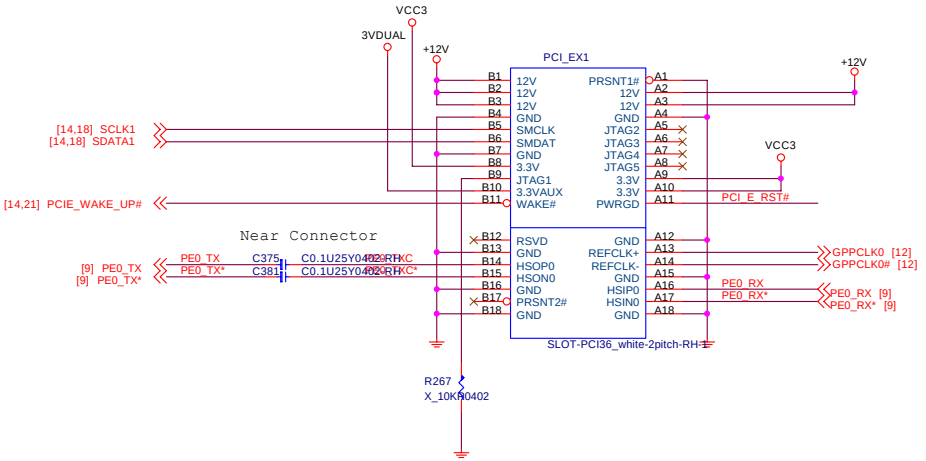


MICRO-START INT'L CO.,LTD.

Title: PCI Slot 1,2 & PCI Extender		
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Thursday, June 29, 2006	Sheet 18 of 35	

PCI EXPRESS_16

PCI-Express x1 SLOT 1



MICRO-START INT'L CO.,LTD.			
Title: PCI-E X16 , X1 Slot			
Size: Custom	Document Number: MS-7297		Rev: 0B
Date: Thursday, June 29, 2006		Sheet 19 of 35	

Super I/O

LPC SUPER I/O W83627EHG

83627EHF

U4

W83627EHG-H-RH

FANPWM2 & FANPWM3 are default PWM mode

FANPWM1 & CPUFANOUT1 are default DC mode

When PSIN function is disable, set CRE7 bit 0 as 1

Winbond APnote

FLOPPY CONNECTOR

FDD1

BH2X17[3][4][5][6]_black-RH

RN3 8P4R-1KR0402

CPU TEMPERATURE SENSOR

U31 SNSR-F75383S-LF

CO-LAY

BIOS PROTECT BLOCK

BIOS Update Config.		
HIGH	Un_protected	Default
LOW	Protected	

BIOS1 W39V040APZ-RH

MCP51 GPO3 default value is HIGH

default is high

JLPC1 H2X7[10]_black-2pitch-RH

LPC I/O STRAPPING RESISTOR

RN5 8P4R-1KR0402

RTSA#	L: CFAD=2E	H: CFAD=4E
GP50	L: TTL LEVEL	H: VRM10 LEVEL
SOUTA	L: KBC DISABLE	H: KBC ENABLE
DTRA#	L: DISABLE SPI	H: DIABLE SPI

Chasis Intrusion

JCI1 H1X2_black-15u-in-RH

BEEP

Ver.,H

Thermal Resistor

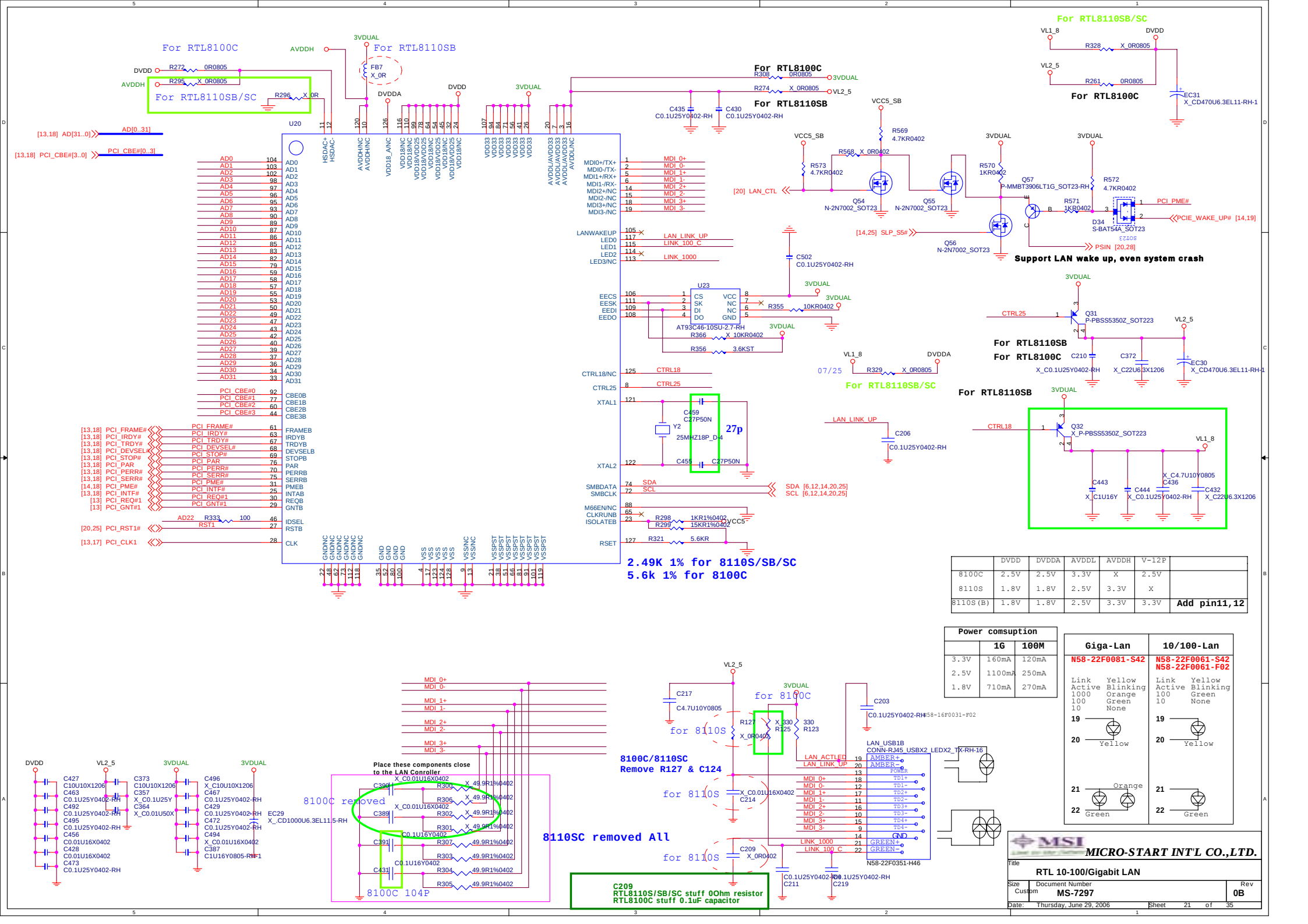
NOTE: LOCATE CLOSE STATUS PANEL

MICRO-START INT'L CO.,LTD.

Title: LPC SUPER I/O & LPC & CONNECTORS

Size: Custom | Document Number: MS-7297 | Rev: 0B

Date: Thursday, June 29, 2006 | Sheet 20 of 35



	DVDD	DVDDA	AVDDL	AVDDH	V-12P	
8100C	2.5V	2.5V	3.3V	X	2.5V	
8110S	1.8V	1.8V	2.5V	3.3V	X	
8110S(B)	1.8V	1.8V	2.5V	3.3V	3.3V	Add pin11,12

Power comsuption	1G	100M
3.3V	160mA	120mA
2.5V	1100mA	250mA
1.8V	710mA	270mA

ALC861 CODEC

Trace Width 20mils.

For ALC861-Version D

U25 ALC861DTS-GR-D/R

AUDIO CODE CD / AUX IN HEADERS

AUDIO CODE REGULATORS

Trace Width 30mils.

SPEKER OUT JACK

FOR ALC861

JACK-EARX3-13P-RH-5

EMI Solution

Speaker Out Decoupling

Place those component close to audio connector.

HD Front Audio Connector

H2X5[8]_green-2.6mm-RH

Internal Speaker

SSM2211SZ_SOIC8-LF

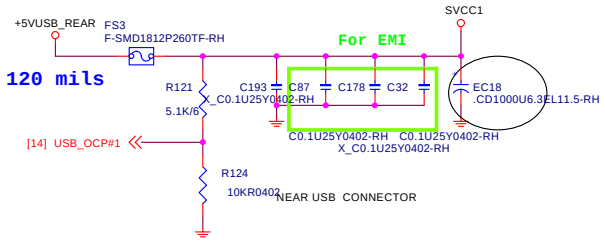
BH1X2H_white-2.5pitch-RH

SPEAKER OUT CIRCUIT

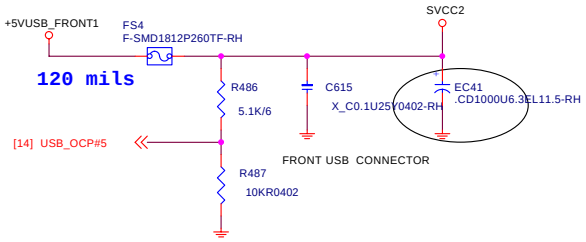
MSI MICRO-START INT'L CO.,LTD.

Title	ALC-861 ANTI-POP	
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Monday, July 03, 2006	Sheet 22 of 35	

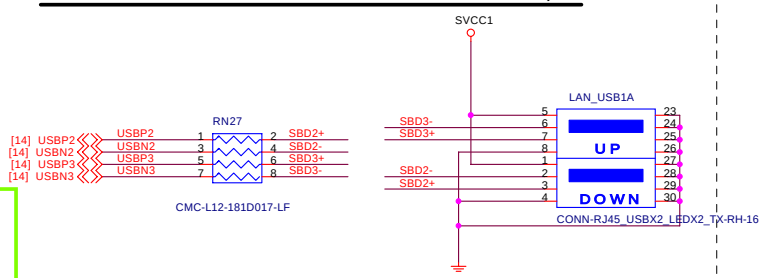
POWER CIRCUIT FOR USB PORT 0,1

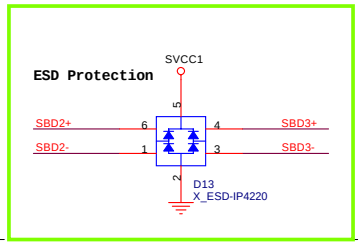


POWER CIRCUIT FOR USB PORT 4,5,6,7



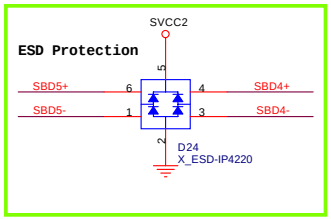
REAR PANEL USB CONNECTOR FOR USB PORT 0,1





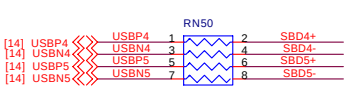
NEAR USB CONNECTOR

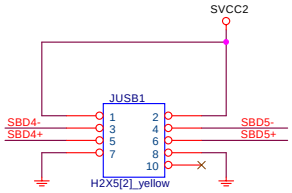
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22



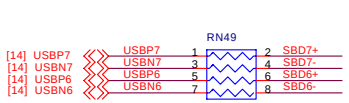
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5

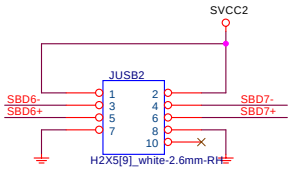
Reserved, can be taken off riser card within bead

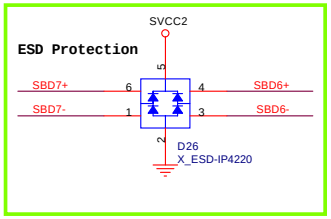




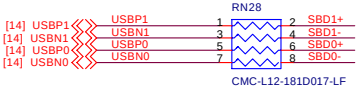
FRONT PANEL USB CONNECTOR FOR USB PORT 6,7

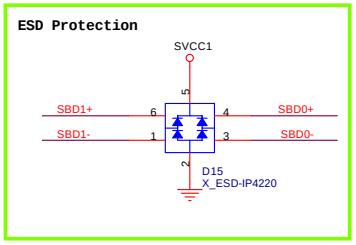


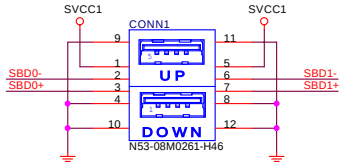




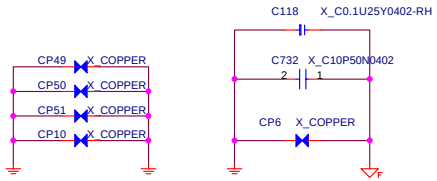
REAR PANEL USB CONNECTOR FOR USB PORT 2,3







EMI TEST



22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

MICRO-START INT'L CO.,LTD.

Title: USB CONNECTORS

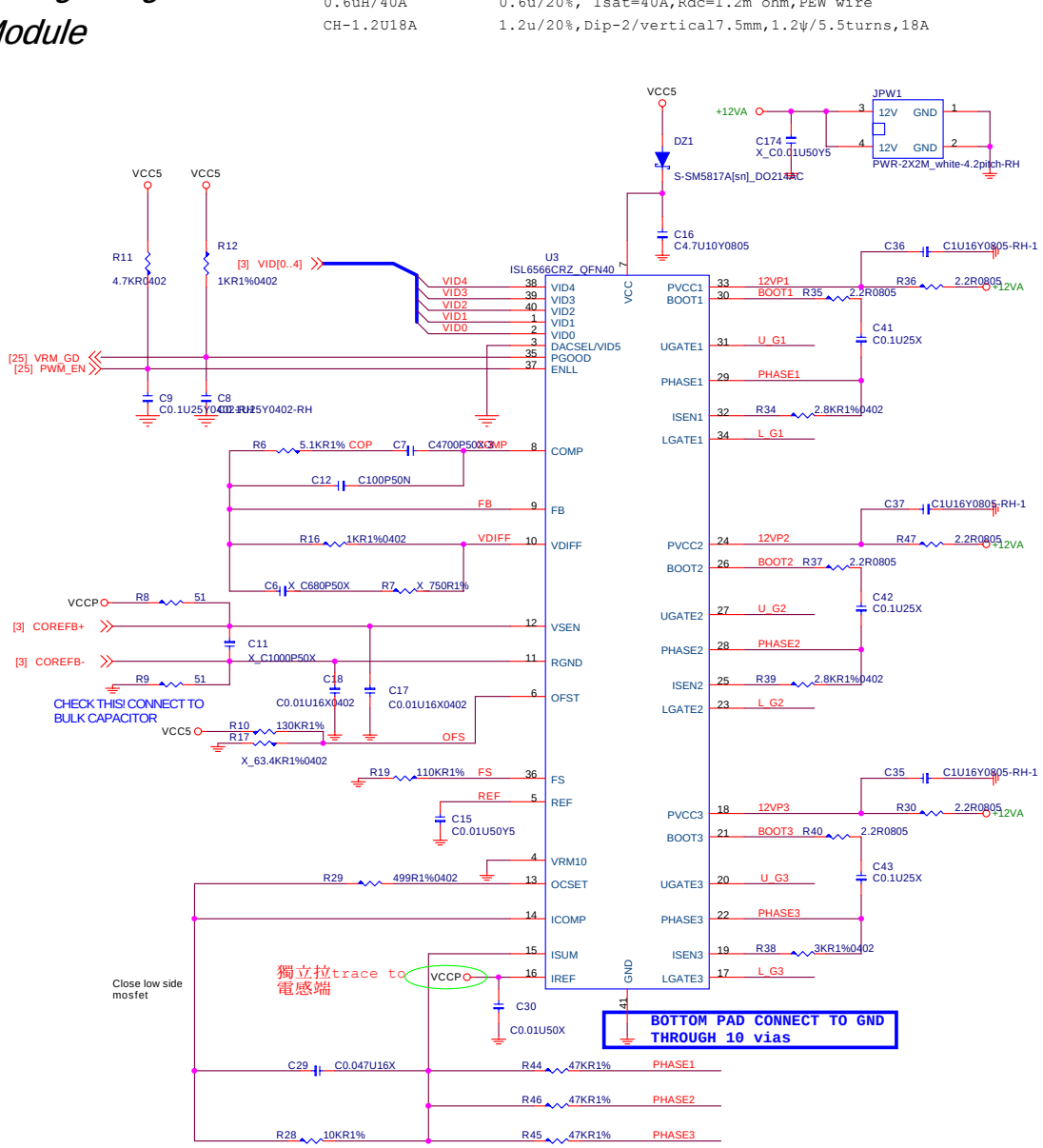
Size: Custom | Document Number: MS-7297 | Rev: 0B

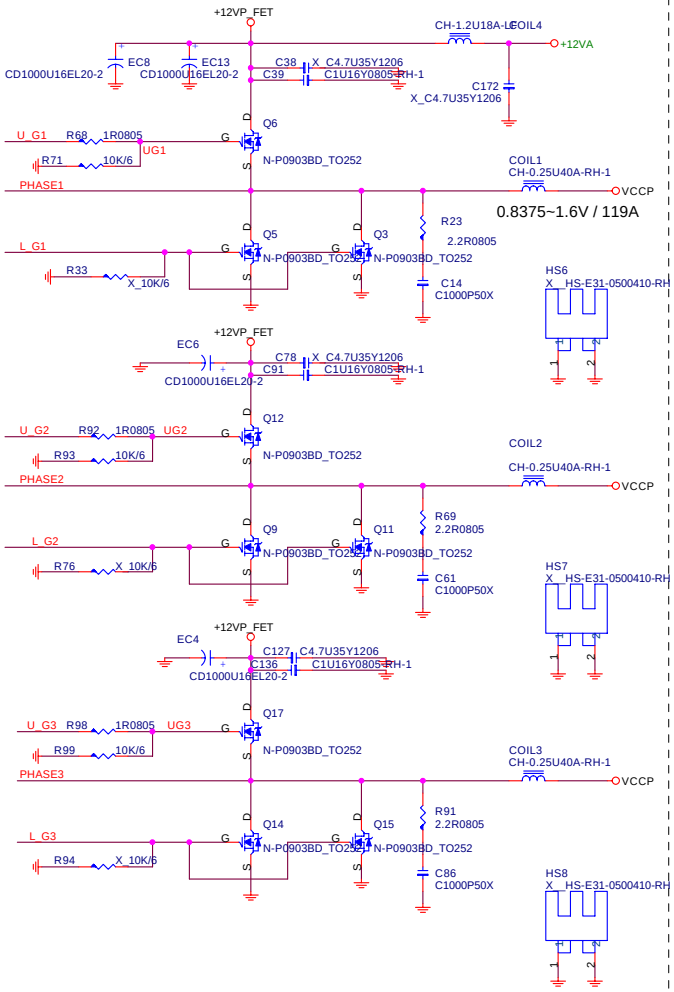
Date: Thursday, June 29, 2006 | Sheet 23 of 35

Voltage Regular Module

IPF06N03LA	Rds(on)=8.7mΩ(@4.5V,30A),Vgs(on)=1.2~2V,Id=50A,Ciss=3110pf,Qg=10nC,Vds=25V,Vgs=±20V
C100U2SP	ESR<13mΩ,Ripple cur.<2.7A,LC<12uA,105C
.CD3300U6.3EL25	ESR<12mΩ,Ripplecur.<2800mA,105C,longlife3000hrs,KZGSeries
560u_2.5V	ESR=6mΩ,Ripplecur.=4400mA,Lc.<500uA,105C/2000hrs
1800UF/6.3V	ESR<12mΩ, Ripplecur<2350mA,105C, longlife change from 2000hrs to 3000hrs ,KZJ series
0.6uH/40A	0.6u/20%, Isat=40A,Rdc=1.2m ohm,PEW wire
CH-1.2U18A	1.2u/20%,Dip-2/vertical7.5mm,1.2ψ/5.5turns,18A

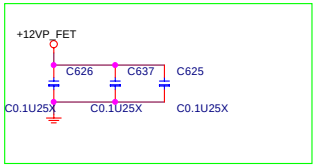
TDP = 115 W
VR_TDC = 101 A
Icc(max) = 119 A
Tejas Tcase = [P x 0.213] + 43.3
Prescott Tcase = [P x 0.25] + 43.3



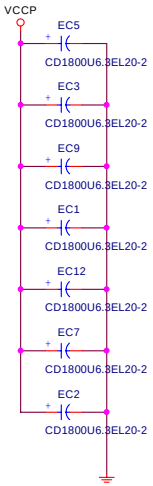


MOSFET Heatsinks

For EMI



EL Capacitors



MICRO-START INT'L CO.,LTD.

Title	Intersil 6565ACV 3 Phase	
Size: Custom	Document Number: MS-7297	Rev: 0B
Date: Thursday, June 29, 2006	Sheet 24 of 35	

PWM MODE

THESE OUTPUT AND INPUT PIN MUST BE PULL HIGH

CPU_PWR_GD OUTPUT
CHIP_PWR_GD OUTPUT
I2C BUS
I2C BUS
CONNECT TO SOUTH BRIDGE RSMRST# SIGNAL
SOUTH BRIDGE POWER CONTROL(SLP_S4# OR SUSB#) SIGNAL
SOUTH BRIDGE POWER CONTROL(SLP_S3# OR SUSC#) SIGNAL
ATX POWER OK INPUT

SB600=1.2V
SB460=1.8V

18A

1.5A

6.5A

0.6A

CHARGE PUMP VOLTAGE OUTPUT

CLOSE TO CPU SECKET

CONNECT TO CPU

3VSB REGULATE BY 5VSB AND VCC3

3VDUAL

THE TWO BLOCK CHOICE ONE SUPPORT SYSTEM POWER CONTROL

DDR AND DDR II VOLT SELECT

DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

3VSB MODE SELECT

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

VDIMM LINEAR OR PWM SELECT

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

WATCHING DOG TIMER SELECT

WD_DET	TIMER
PULL LOW	OFF
PULL HIGH	ON

THE VDIMM_HSEN IN LINEAR MODE

DDRTYPE	VDIMM_HSEN VREF
DDR	2.0V
DDR II	1.7V

THE TWO MODE ONLY ONE MODE PRESENT

SINGLE MODE — THIS MODE SELECT BY PIN 47 PULL HIGH 5VSB

DUAL MODE — THIS MODE SELECT BY PIN 47 PULL LOW

FOR SB600 VCC_SB= 1.2V

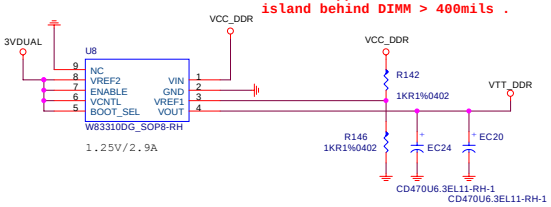
Title	MS-6 ACPI Controller	
Size C	Document Number MS-7297	Rev 0B
Date: Thursday, June 29, 2006	Sheet 25 of 35	

MSI MICRO-START INTL CO.,LTD.

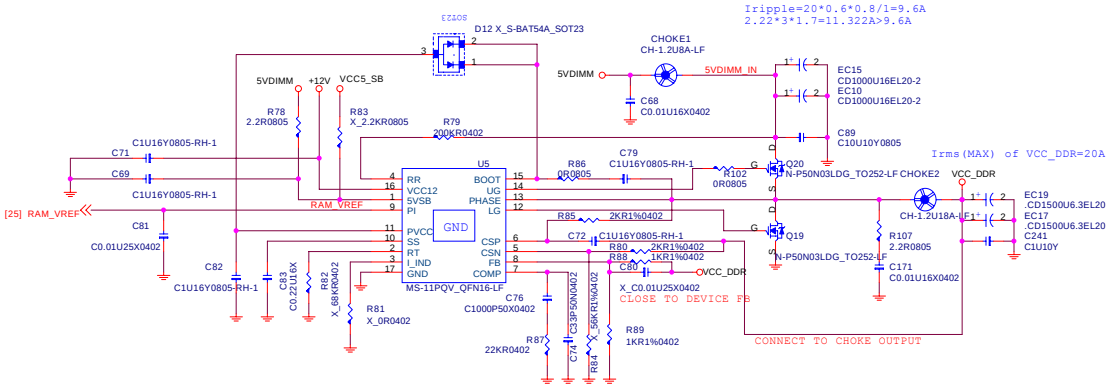
EMI solution

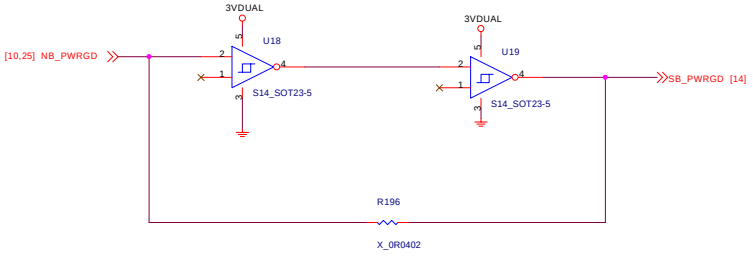
DDR VTT Power

To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .

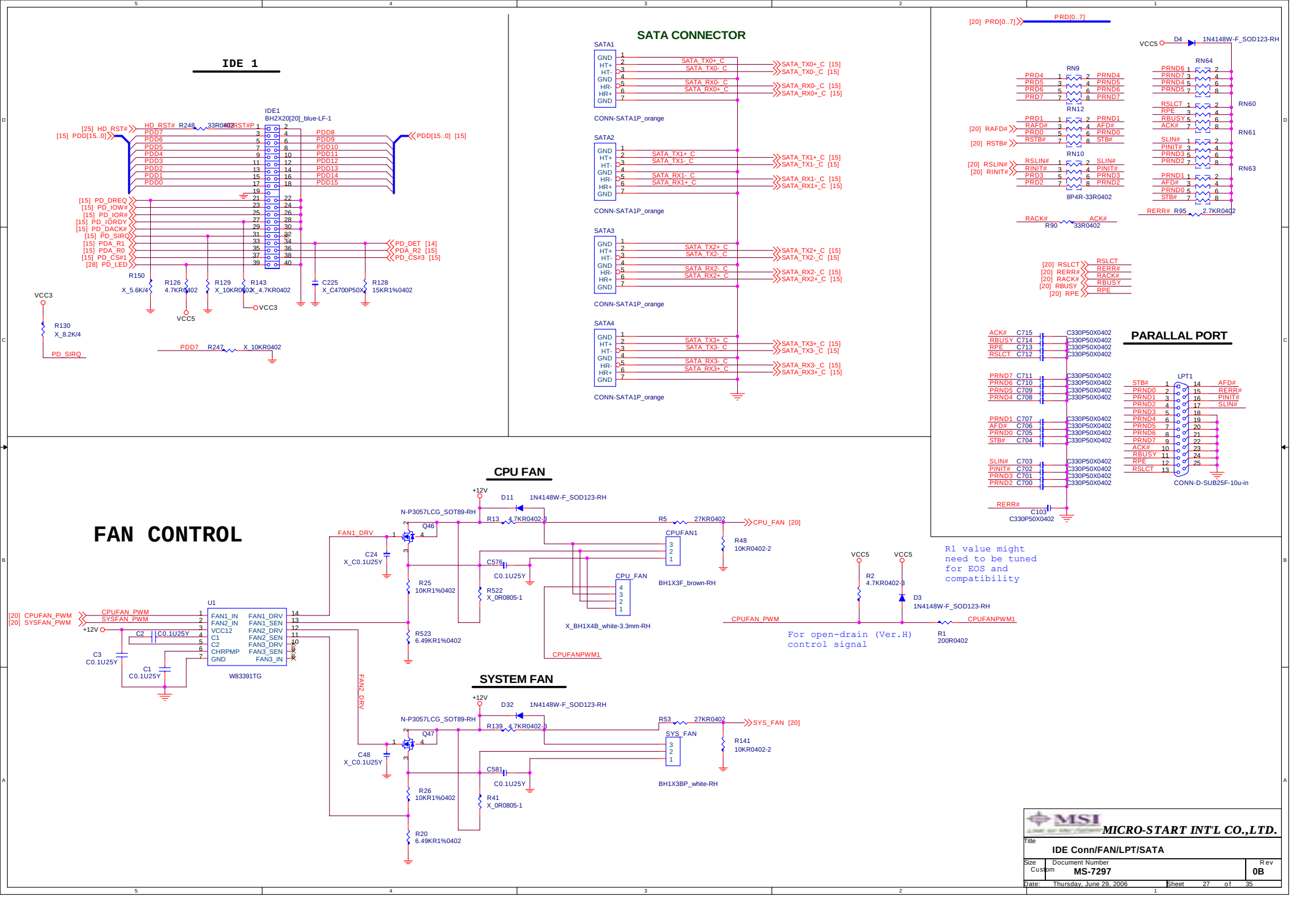


DDR II 1.8V POWER





MSI MICRO-START INT'L CO.,LTD.		
Title: MS-6 ACPI Controller		
Size: C	Document Number: MS-7297	Rev: 0B
Date: Thursday, June 29, 2006	Sheet 26 of 35	


IDE 1
IDE1
BH2X20[20]_blue-LF-1
SATA CONNECTOR
SATA1
SATA2
SATA3
SATA4
CONN-SATA1P_orange
PRD[0..7]
RN9
RN10
RN12
RN64
RN60
RN61
RN63
8P4R-33R0402
PARALLAL PORT
LPT1
CONN-D-SUB25F-10u-in
FAN CONTROL
CPU FAN
SYSTEM FAN
U1
W83391TG
CPUFAN1
SYS_FAN
R1 value might need to be tuned for EOS and compatibility
For open-drain (Ver.H) control signal
MICRO-START INT'L CO.,LTD.
Title
IDE Conn/FAN/LPT/SATA
Size
Custom
Document Number
MS-7297
Rev
0B
Date: Thursday, June 29, 2006
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ATX connector / Front Panel

Intel Front Panel

ESD Protect

VCC3 R31 X_10KR0402

SATA_ACT# [15]

D21 S-BAT54A_SOT23

PD_LED [27]

C593 X_C180P50N

EMI

VCC5 C589 X_C0.1U25Y0402-RH

For MSI / Intel Front Panel

JFP1

HDD+	PLED	PLED1	PWR_LED [25]
HDD-	SLED	PLED2	SUS_LED [25]
RESET-	PWSW+		
RESET+	PWSW-		
NC			

H2X5[10]_black-RH-2

R492 330/6 HDD+

[14,25] FP_RST#

R494 33R0402

C594 C0.1U25Y0402-RH

3VDUAL R489 1KR1%0402

PLED1 PLED2 X_C0.1U25Y0402-RH

C613 X_C0.1U25Y0402-RH C597

EMI

R56 100R1%0402 Near Super I/O PSIN [20,21]

C591 X_C0.1U25Y0402-RH EMI

R490 10KR0402 C590 C0.1U25Y0402-RH

BUZZER

VCC5

[20,22] ALARM

R495 220R0805

BZ1 BUZZER-LF

[14,22] SPKR

R501 2.2KR0402

Q43 N-MMBT3904_NL_SOT23

C596 C0.1U25Y0402-RH

D27 X_BAS32L_LL34

VCC5

pull up resistor at S/B side

Support ring wake up

RI# [14]

NRIA# R532 10KR

Q48 N-2N7002_SOT23

R531 10KR D33 1N4148W-F_SOD123-RH

PS2 KEYBOARD & MOUSE CONNECTOR

SVCC1

RN4 8P4R-4.7KR0402

[20] MSDATA	MSDAT#	FB1	0R-RH
[20] MSCLK	MSCLK#	FB2	0R-RH
[20] KBDATA	KBDAT#	FB3	0R-RH
[20] KBCLK	KBCLK#	FB4	0R-RH

C10 X_C0.1U25Y0402-RH R14 X_1KR1%0402

JKBMS1 CONN-MiniDIN2X12P-RH

MS KB

C28 C180P50N0402 C13 C180P50N0402

C27 C180P50N0402 C23 C180P50N0402

SERIAL PORT 1

U2 GD75232_SSOP20

NRIA#	RIN1	ROUT1	RIA#
NCTSA#	RIN2	ROUT2	CTSA#
NDSRA#	RIN3	ROUT3	DSRA#
NSINA	RIN4	ROUT4	SINA
NDCDA#	RIN5	ROUT5	DCDA#
RTSA#	DIN1	DOUT1	NRTSA
DTRA#	DIN2	DOUT2	NDTRA
SOUTA	DIN3	DOUT3	NSOUTA

VCC5 GND V+ V- +12VCOM -12VCOM

C5 X_C0.1U25Y0402-RH D2 1N4148W-F_SOD123-RH +12V

C26 X_C0.1U25Y0402-RH D1 1N4148W-F_SOD123-RH -12V

RIA# [20] CTSA# [20] DSRA# [20] SINA [20] DCDA# [20]

[20] RTSA# [20] DTRA# [20] SOUTA

COM1 CONN-COM_green-RH N51-09M0091-K06

NDCDA# NSINA NSOUTA NDTRA NDSRA# NRTSA NCTSA# NRIA#

C681 C180P50N0402
C674 C180P50N0402
C675 C180P50N0402
C676 C180P50N0402
C677 C180P50N0402
C678 C180P50N0402
C679 C180P50N0402
C680 C180P50N0402

ATX Connector

ATX1 2X12 POWER _N93-24M0101

3.3V	3.3V	1	
-12V	3.3V	2	VCC3
GND	GND	3	
P_ON	5V	4	VCC5
GND	GND	5	
GND	5V	6	
GND	GND	7	
-5V	POK	8	ATX_PWROK [25]
5V	5VSB	9	VCC5_SB
5V	+12V	10	+12V
5V	+12V	11	
GND	3.3V	12	VCC3

VCC3 C230 X_C0.1U25Y0402-RH -12V C228 C1000P50X0402

[25] ATX_PSON# C239 C1000P50X0402

C240 C0.1U25Y0402-RH

C308 C0.1U25Y0402-RH

R174 10KR0402

C290 C0.1U25Y0402-RH

C298 X_C0.1U25Y0402-RH C309 C0.1U25Y0402-RH C318 C0.1U25Y0402-RH

EMI solution

VCC5 C534 C0.1U16Y0402 C542 C0.1U16Y0402 C614 X_C0.1U16Y0402 C384 C0.1U16Y0402 C231 C0.1U16Y0402 C227 X_C0.1U16Y0402 C567 X_C0.1U25Y0402-RH

VCC3 C578 C0.1U16Y0402 C383 X_C0.1U16Y0402 C617 C0.1U16Y0402 C31 X_C0.1U16Y0402

CP5 CP2

+12V C4 C0.1U25Y0402-RH C242 X_C0.1U25Y0402-RH

VCCP C57 X_C0.1U16Y0402

MICRO-START INT'L CO.,LTD.

Title	ATX connector / Front Panel/COM1/KB	
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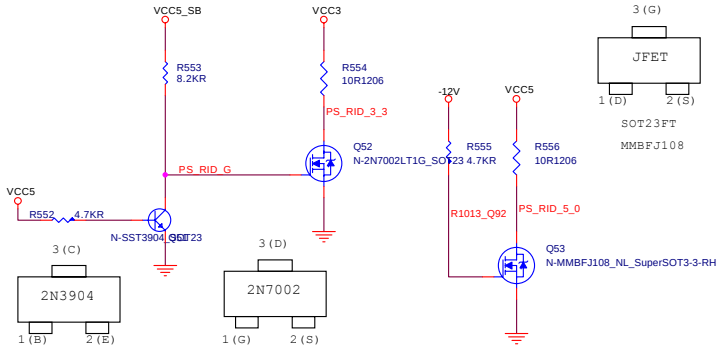
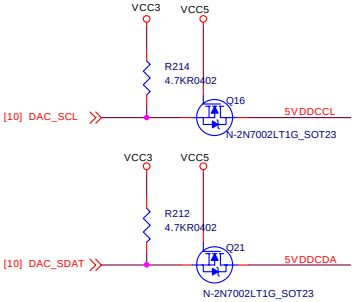
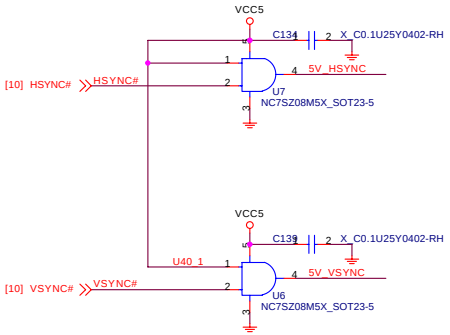
Near ATX POWER Connector

BLEED-OFF CIRCUIT



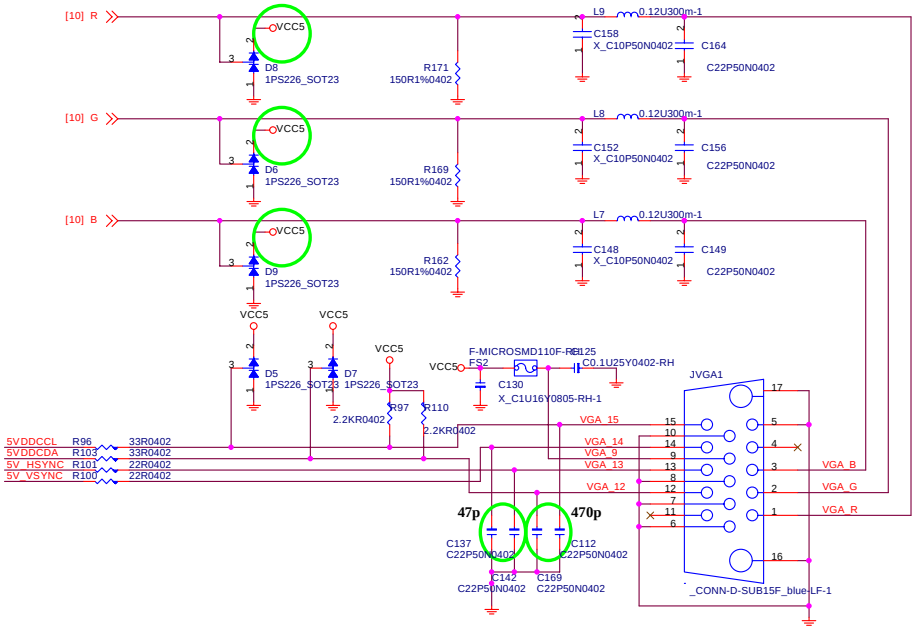
DESIGN NOTE:THIS CIRCUIT IS USED TO BLEED OFF 5.0V & 3.3V





VGA CONNECTOR

close VGA connector



MICRO-START INT'L CO.,LTD.

Title	TV_OUT & VGA CONNECTOR	
Size: Custom	Document Number: MS-7297	Rev: 0B
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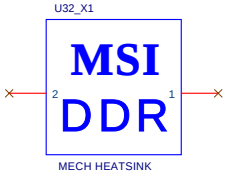
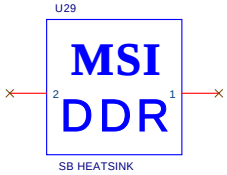
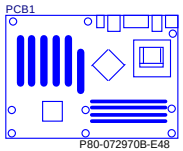
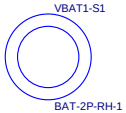
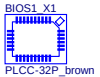


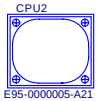




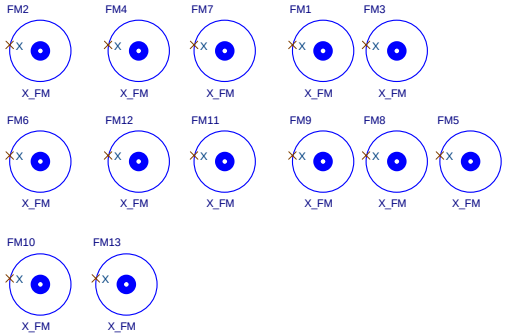
P80-072970B-E48,競華
P80-072970B-G37,穎成
P80-072970B-CD7,全□走H



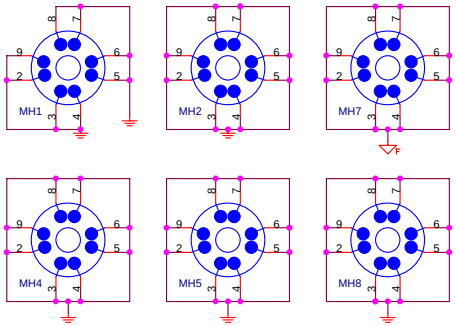




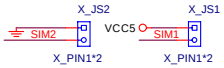
Optics Orientation Holes



Mounting Holes



Simulation



Model option table

Model type	Function	BOM Config	ERP BOM No.
MS-7297	RS485+SB600+RTL8110SB+ALC861+2PCI+u-ATX +2PS2+8USB+1COM+VGA+1Audio+LPT+RJ45	cfg-7297-0A	601-7297-01S

MICRO-START INT'L CO.,LTD.

Title: MANUAL PARTS		
Size: Custom	Document Number: MS-7297	Rev: 0B
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