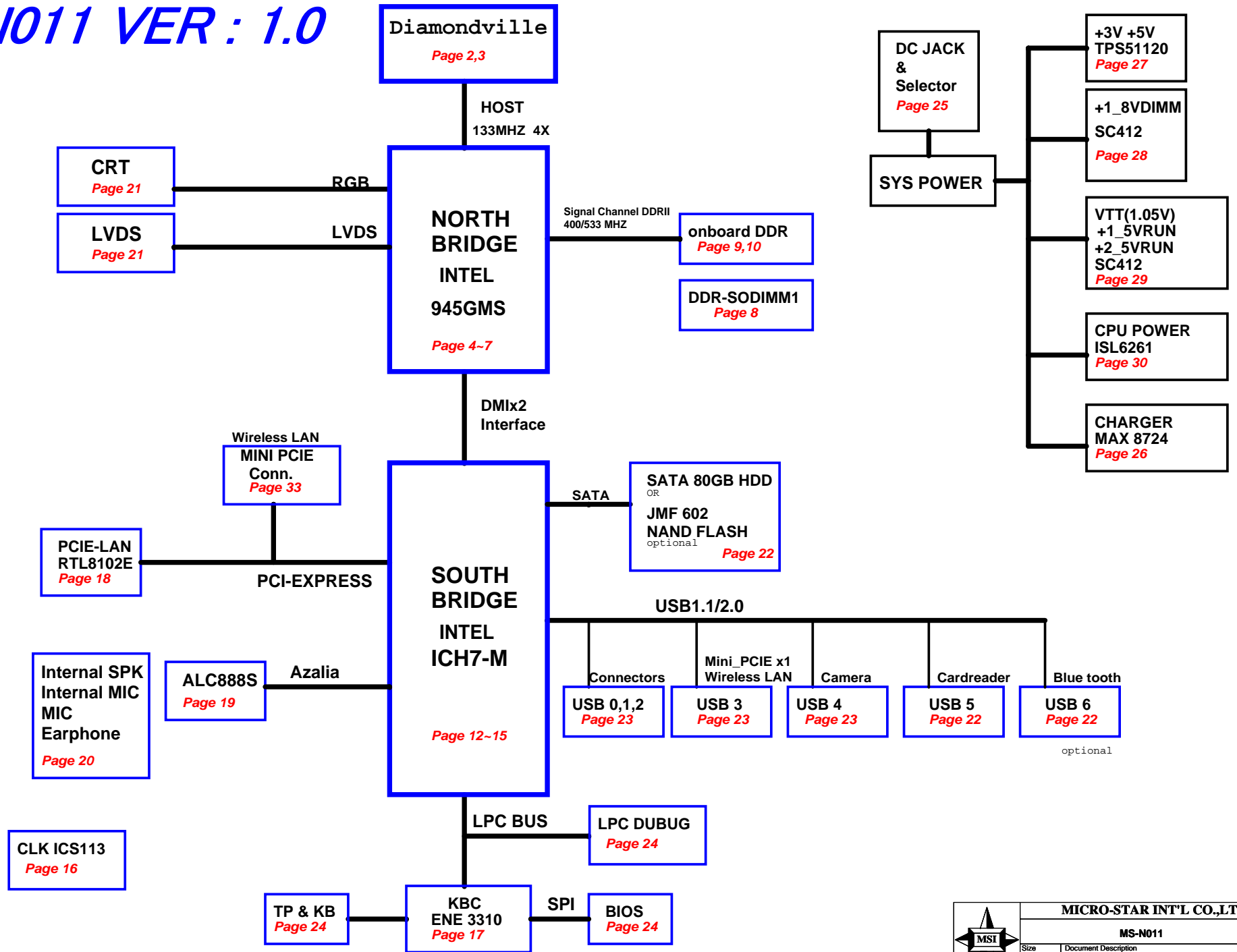


MS-N011 VER: 1.0



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H_A# [31:3] 2

U26A

U26G

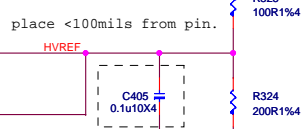
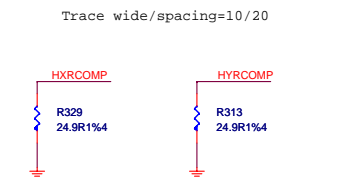
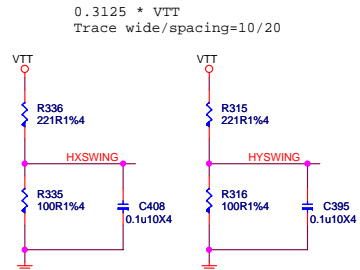
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H_D#4	E7C	H_D#_4
H_D#5	E3C	H_D#_5
H_D#6	C2C	H_D#_6
H_D#7	C3C	H_D#_7
H_D#8	K9C	H_D#_8
H_D#9	J7C	H_D#_9
H_D#10	J7C	H_D#_10
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H_D#17	J3C	H_D#_17
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H_D#20	K5C	H_D#_20
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H_D#23	J4C	H_D#_23
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H_D#30	N9C	H_D#_30
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H_D#35	T8C	H_D#_35
H_D#36	R2C	H_D#_36
H_D#37	N5C	H_D#_37
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H_D#40	U7C	H_D#_40
H_D#41	R8C	H_D#_41
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H_D#56	AB8C	H_D#_56
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H_A#_31	G17	H_A#31

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H_CPURST#_2	B10	H_CPURST#_2
H_VREF1	E1	H_VREF1
CLK_MCH_BCLK#_16	AA6	CLK_MCH_BCLK#_16
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H_DEFER#_2	C6	H_DEFER#_2
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H_DINV#_2	U6	H_DINV#_2
H_DINV#_3	G7	H_DINV#_3
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H_DSTBP#_3	H10	H_DSTBP#_3

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H_HITM#_2	C5	H_HITM#_2
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H_REQ#_2	B8	H_REQ#_2
H_REQ#_3	F12	H_REQ#_3
H_REQ#_4	A5	H_REQ#_4
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CPUSLP#_2	E10	CPUSLP#_2
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H_YSCOMP	K1	H_YSCOMP
H_YSWING	H1	H_YSWING



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AM33	NC2	NC62	Y6
AL33	NC3	NC63	Y10
C33	NC4	NC64	Y5
B33	NC5	NC65	Y11
AN32	NC6	NC66	W25
A32	NC7	NC67	W20
AN31	NC8	NC68	V24
W28	NC10	NC69	U24
V27	NC11	NC70	U10
W29	NC12	NC71	K18
J24	NC13	NC72	
H24	NC14		
W32	NC15		
G24	NC16		
F24	NC17		
D24	NC18		
K33	NC19		
A31	NC20		
E21	NC21		
C23	NC22		
AN19	NC23		
AM19	NC24		
AL19	NC25		
AK19	NC26		
AH19	NC27		
AM3	NC28		
Y9	NC29		
J19	NC30		
H19	NC31		
G19	NC32		
F19	NC33		
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AD4	NC53	RESERVED38	AB18
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AK4	NC55	RESERVED40	AB12
W31	NC56	RESERVED41	AB17
A4	NC57		
AH4	NC58		
AG4	NC59		
AE4	NC60		
AM1			

945GSE

945GSE



MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size	Document Description	Rev
Custom	945GMS_HOST	1.0
Date:	Friday, April 11, 2008	Sheet 4 of 39

945 GMS Power

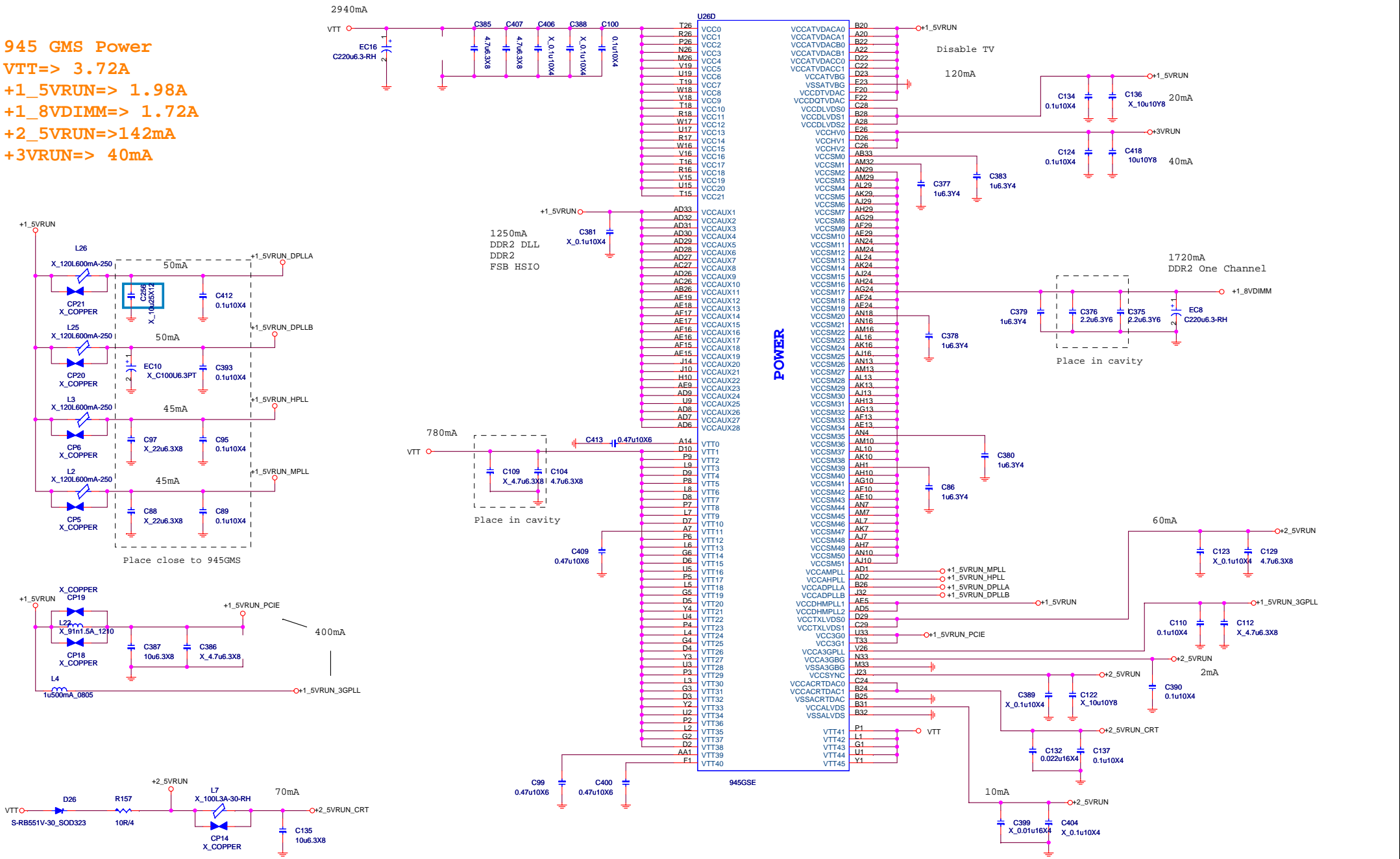
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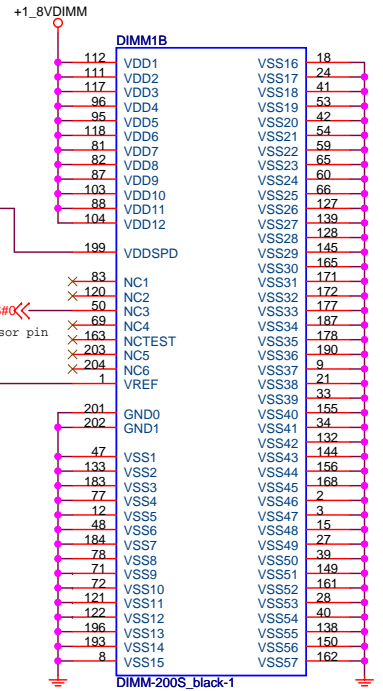
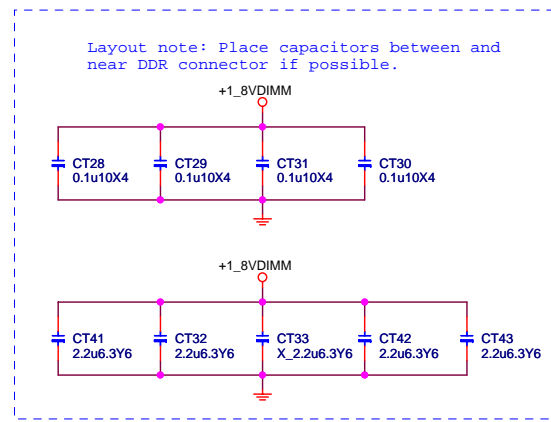
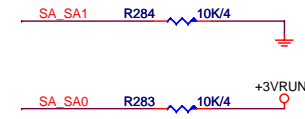
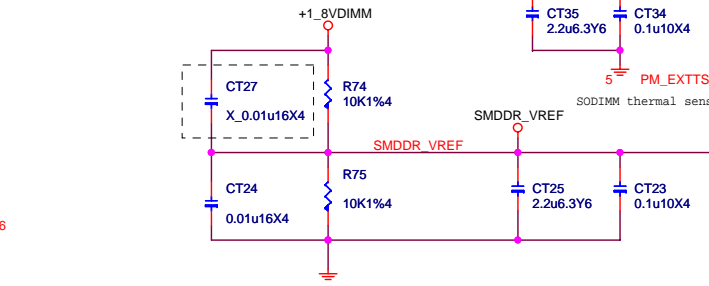
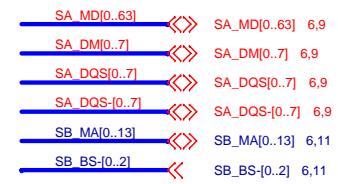
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MICRO-STAR INT'L CO.,LTD		
MSI		
MS-N011		
Size	Document Description	Rev
Custom	945GMS_POWER	1.0
Date:	Friday, April 11, 2008	Sheet 7 of 39

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SA MD2	17	DQ2	A1	100	SB MA2
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SA MD6	14	DQ6	A5	94	SB MA6
SA MD7	16	DQ7	A6	92	SB MA7
SA MD8	23	DQ8	A7	93	SB MA8
SA MD9	25	DQ9	A8	91	SB MA9
SA MD10	35	DQ10	A9	105	SB MA10
SA MD11	37	DQ11	A10/AP	90	SB MA11
SA MD12	20	DQ12	A11	89	SB MA12
SA MD13	22	DQ13	A12	116	SB MA13
SA MD14	36	DQ14	A13	86	X
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SA MD31	76	DQ31	RAS#	109	SB WE-
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SA MD46	152	DQ46	DM6	170	SA DM6
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SA MD56	179	DQ56	DQS7	188	SA DQS7
SA MD57	181	DQ57	DQS#0	11	SA DQS-0
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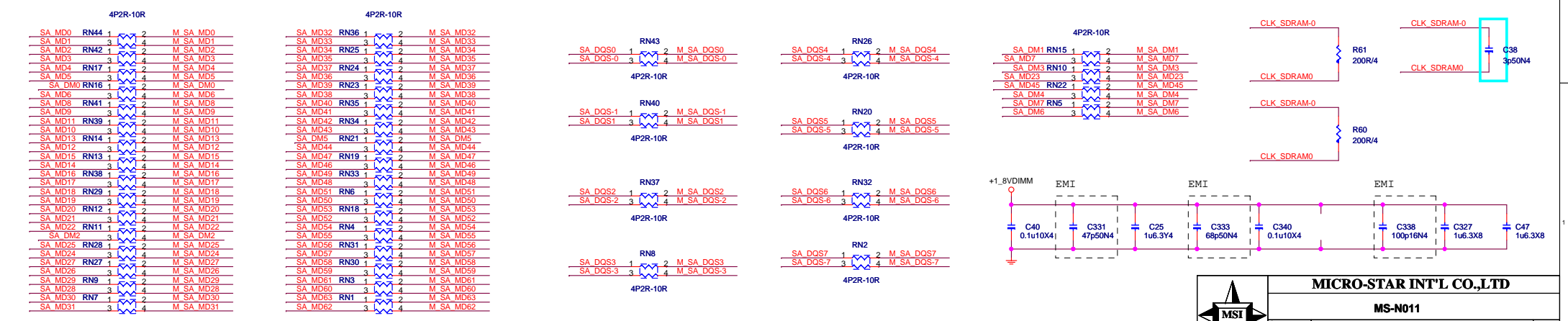
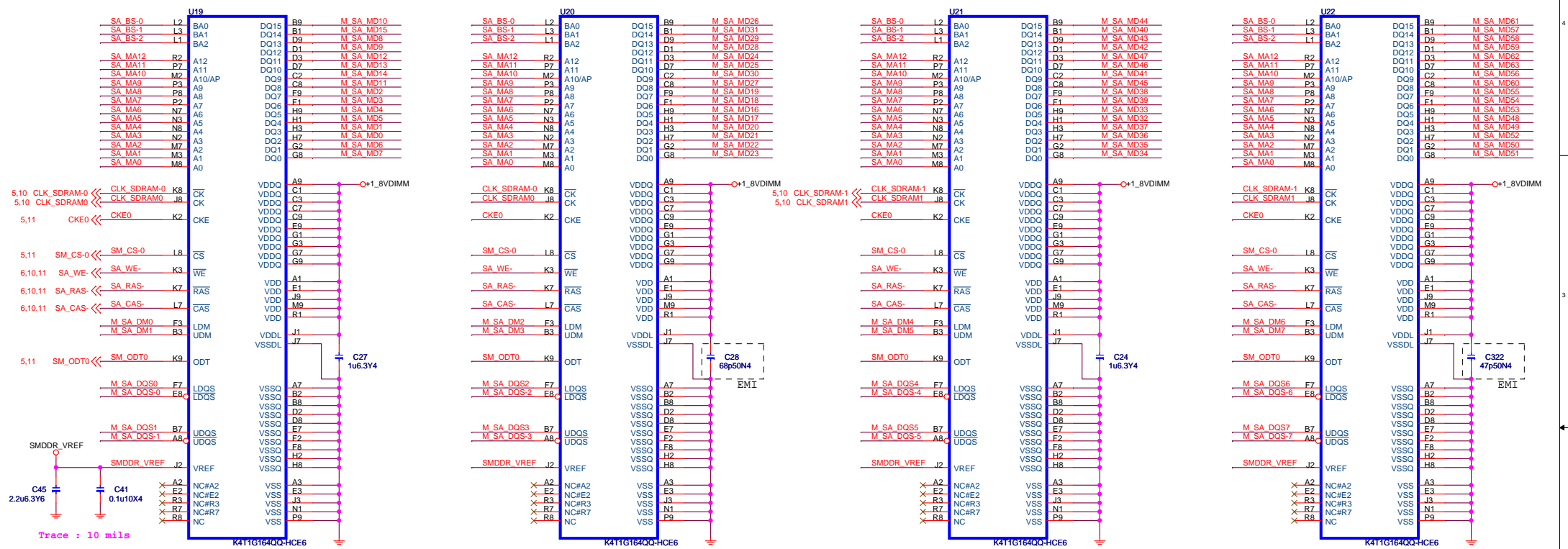
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	MICRO-STAR INT'L CO.,LTD	
	MS-N011	
	Size B	Document Description
ONBOARD DDR2 memory		
Date: Friday, April 11, 2008	Sheet 8 of 39	



M12-K4T1G05-S02
M12-5PS1G25-H23



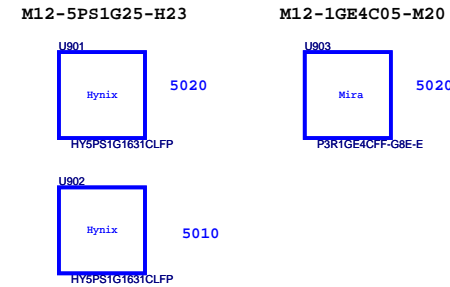
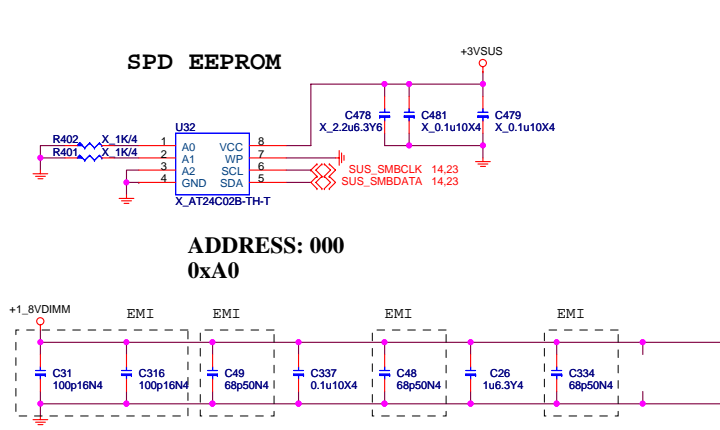
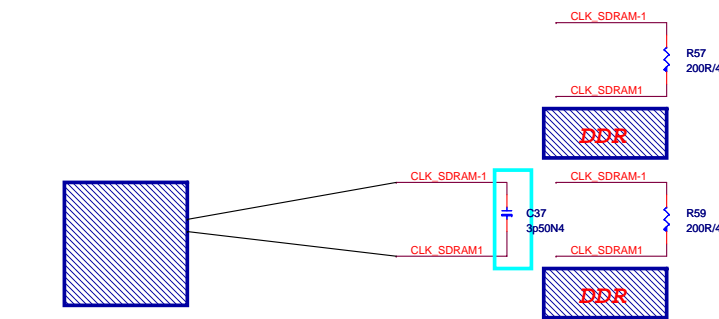
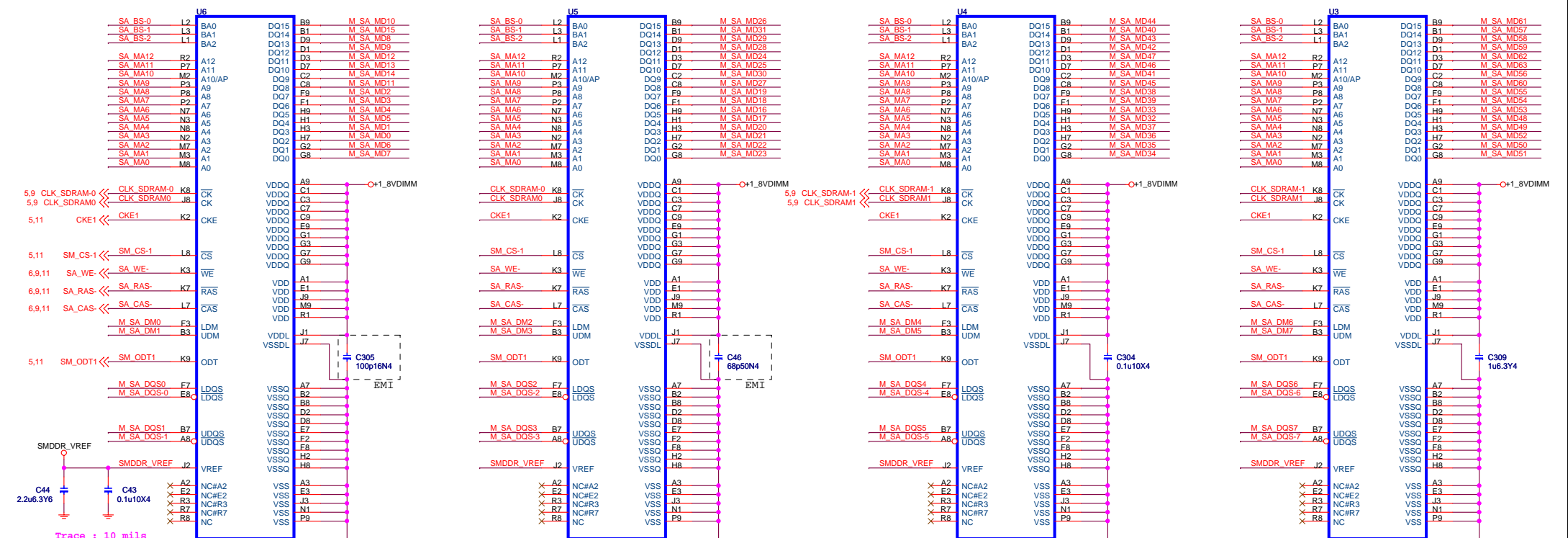
MICRO-STAR INT'L CO.,LTD

MS-N011

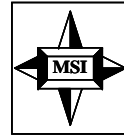
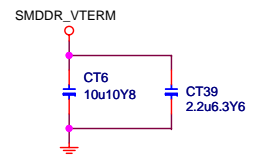
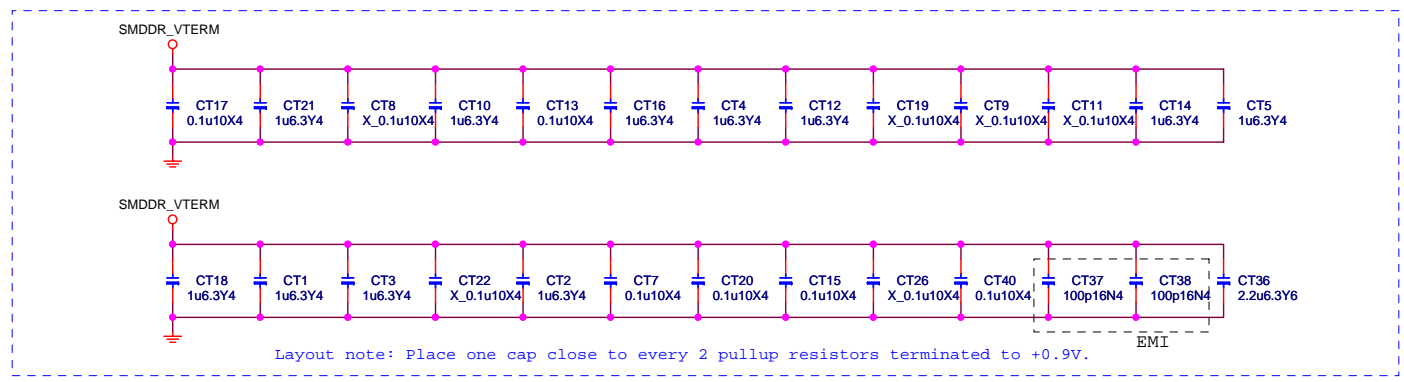
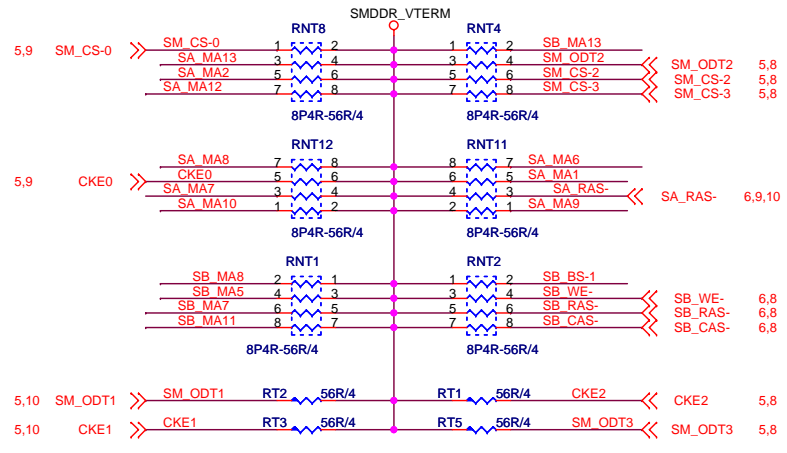
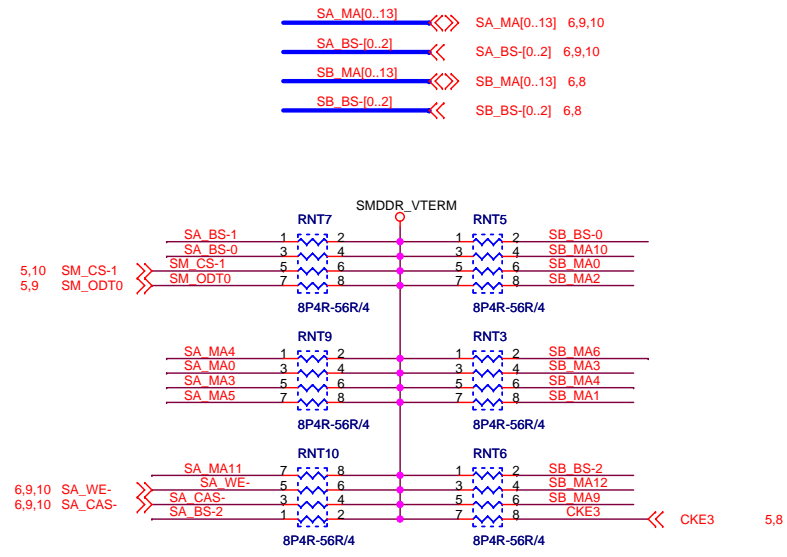
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Date: Friday, April 11, 2008 Sheet 9 of 39

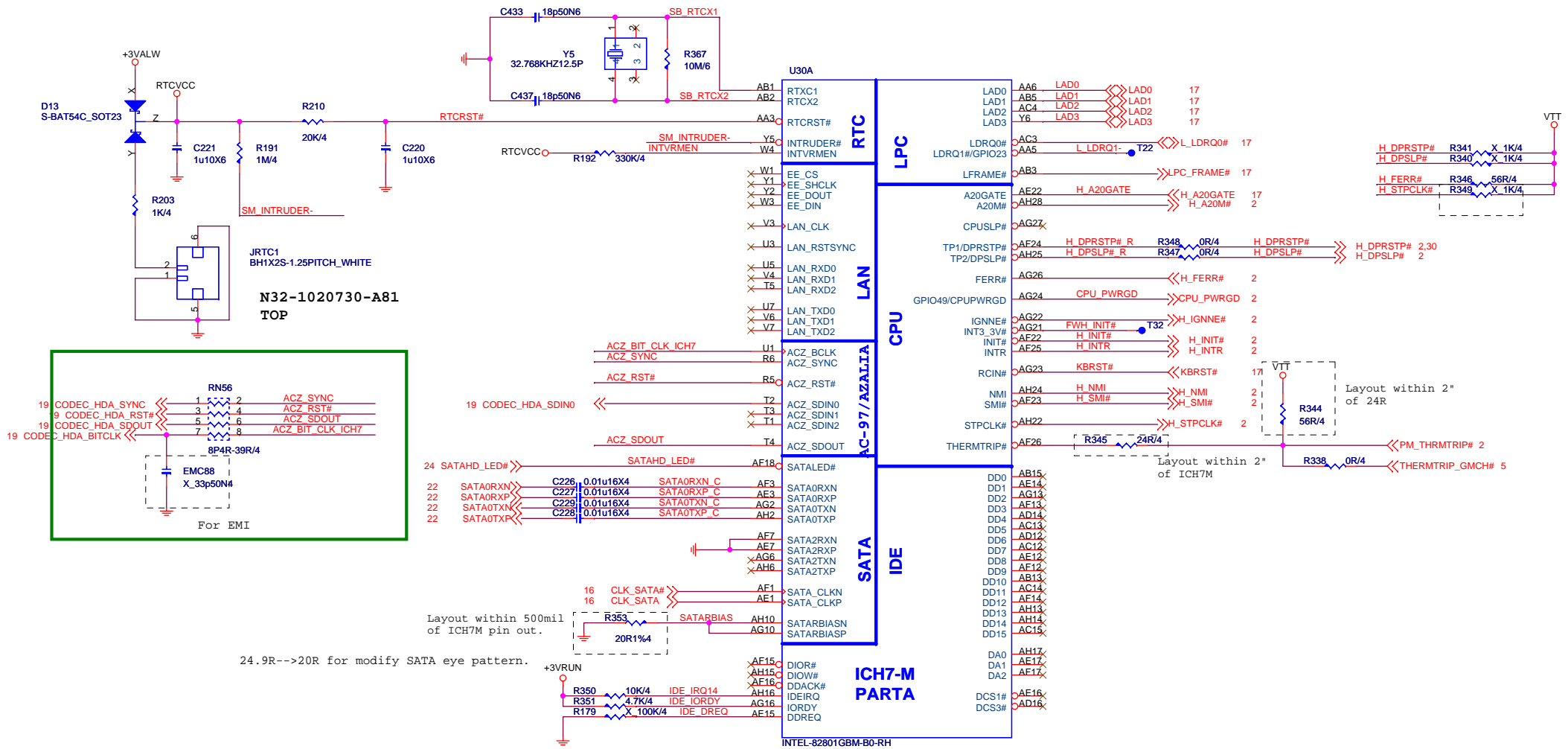
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MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size Custom	Document Description DDR2 64*16 BGA B	Rev 1.0
Date: Monday, April 14, 2008		Sheet 10 of 39

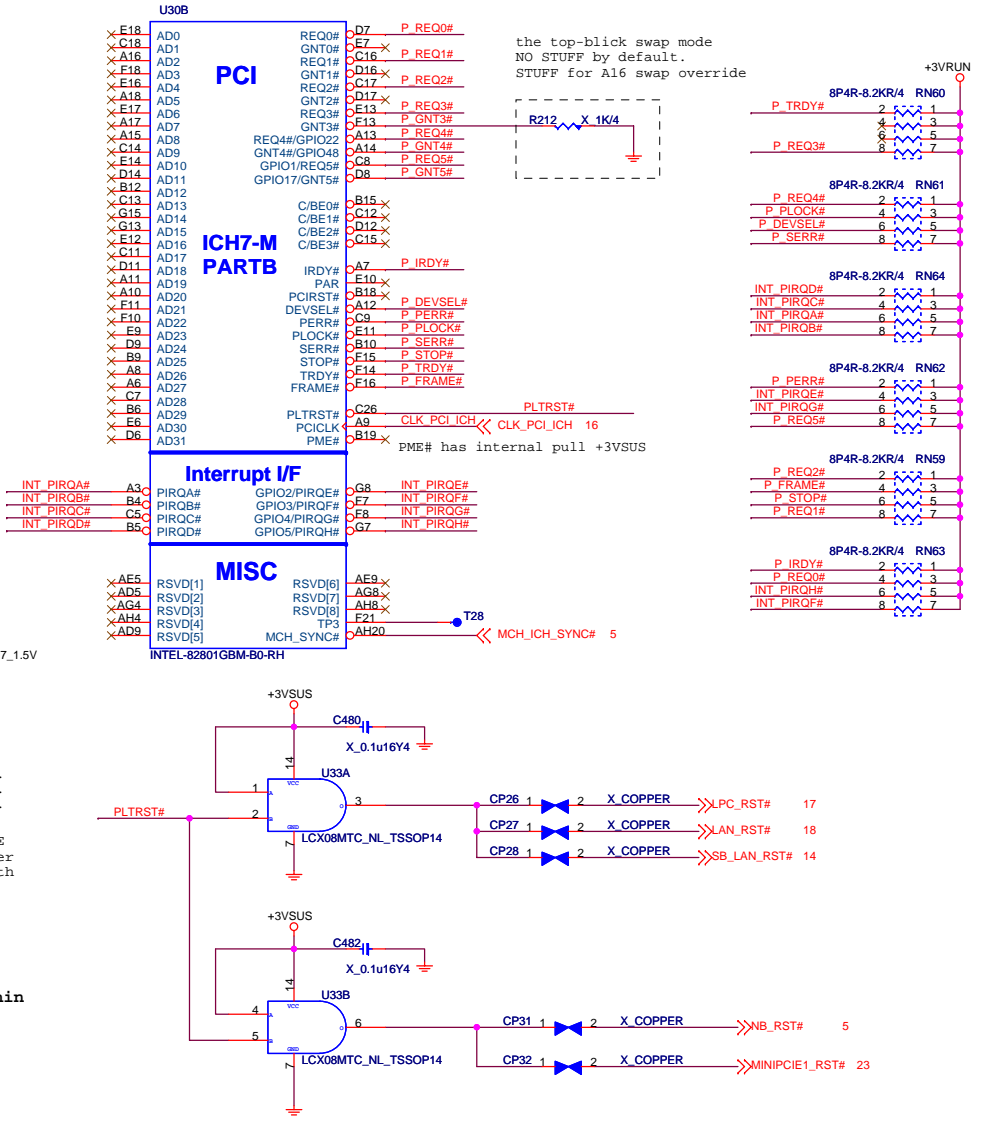
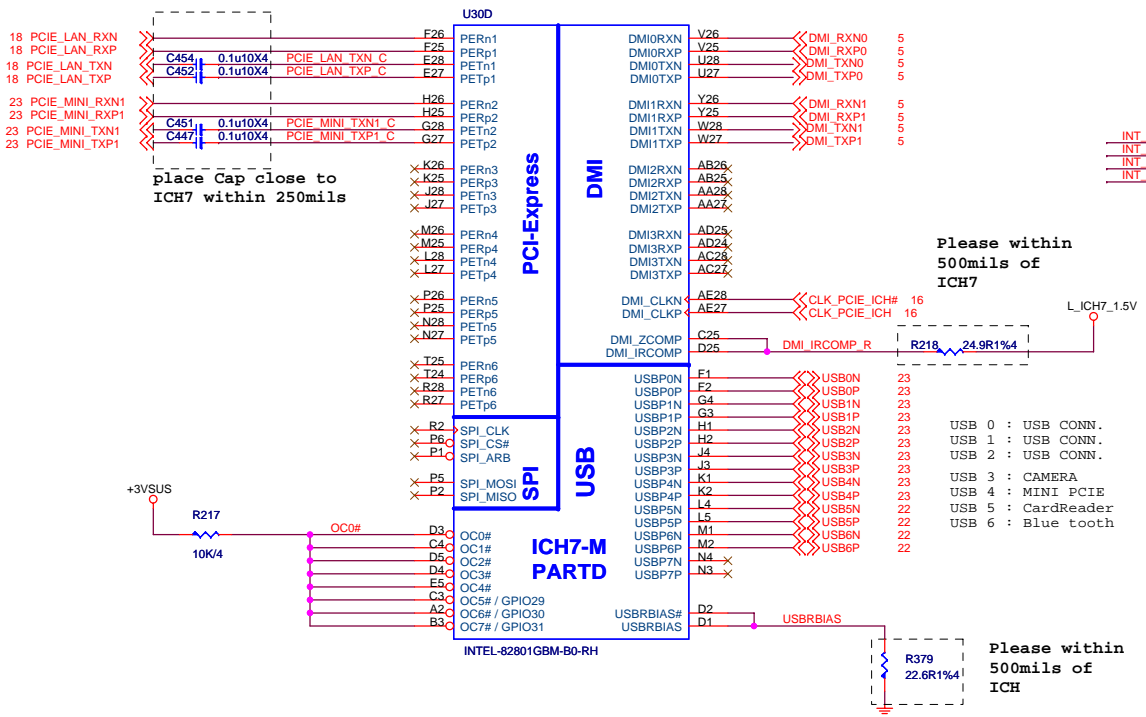


MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size B	Document Description DDR2 Termination	Rev 1.0
Date: Friday, April 11, 2008		Sheet 11 of 39



MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size Custom	Document Description ICH7M_CPU, LPC, SATA, HDA	Rev 1.0
Date: Friday, April 11, 2008		Sheet 12 of 39

BOOT BIOS SELECT STRAPS			
BOOT DEVICE	STRAPS	GNT5#	GNT4#
FWH(LPC default)	11	UNSTUFF	UNSTUFF
PCI	10	UNSTUFF	STUFF
SPI	01	STUFF	UNSTUFF



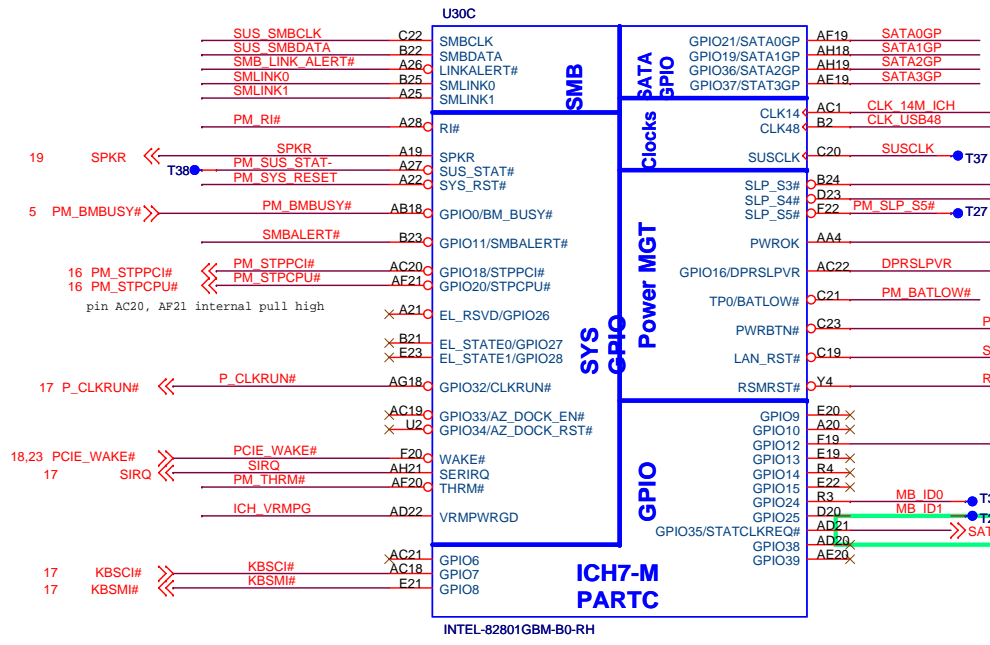
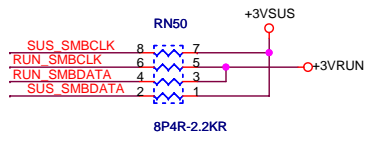
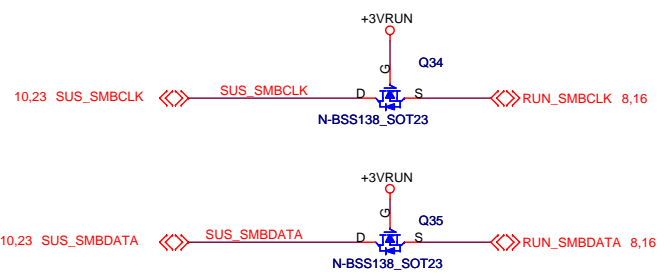
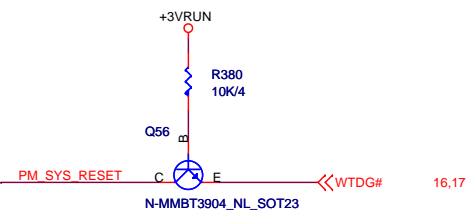
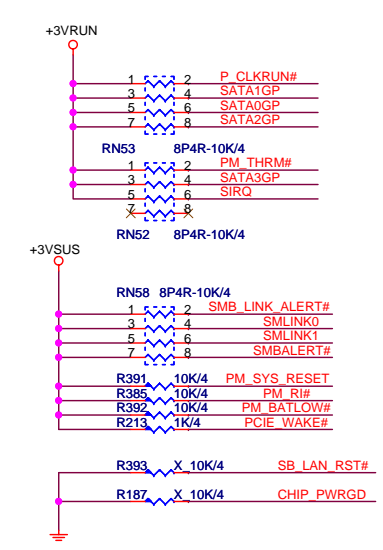
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 - PERp1 F25
 - PETn1 E28
 - PETp1 E27
 - PERn2 H26
 - PERp2 H25
 - PETn2 G28
 - PETp2 G27
 - PERn3 K26
 - PERp3 K25
 - PETn3 J28
 - PETp3 J27
 - PERn4 M26
 - PERp4 M25
 - PETn4 L28
 - PETp4 L27
 - PERn5 P26
 - PERp5 P25
 - PETn5 N28
 - PETp5 N27
 - PERn6 T24
 - PERp6 T23
 - PETn6 R28
 - PETp6 R27
 - SPI_CLK P2
 - SPI_CS# P1
 - SPI_ARB P1
 - SPI_MOSI P5
 - SPI_MISO P2
 - OC0# D3
 - OC1# C4
 - OC2# D5
 - OC3# D4
 - OC4# E5
 - OC5# / GPIO29 C3
 - OC6# / GPIO30 A2
 - OC7# / GPIO31 B3
- DMI
 - DMI0RXN V26
 - DMI0RXP V25
 - DMI0TXN U28
 - DMI0TXP U27
 - DMI1RXN Y26
 - DMI1RXP Y25
 - DMI1TXN W28
 - DMI1TXP W27
 - DMI2RXN AB26
 - DMI2RXP AB25
 - DMI2TXN AA28
 - DMI2TXP AA27
 - DMI3RXN AD25
 - DMI3RXP AD24
 - DMI3TXN AC28
 - DMI3TXP AC27
 - DMI_CLKN AE28
 - DMI_CLKP AE27
 - DMI_ZCOMP C25
 - DMI_IRCOMP D25
- USB
 - USBP0N E1
 - USBP0P F2
 - USB1N G4
 - USB1P G3
 - USB2N H1
 - USB2P H2
 - USB3N J4
 - USB3P J3
 - USB4N K1
 - USB4P K2
 - USB5N L4
 - USB5P L5
 - USB6N M1
 - USB6P M2
 - USB7N N4
 - USB7P N3
 - USBRBIAS# D2
 - USBRBIAS D1
- ICH7-M PARTB (INTEL-82801GBM-B0-RH)
 - DM1_RXN0 5
 - DM1_RXP0 5
 - DM1_TXN0 5
 - DM1_TXP0 5
 - DM1_RXN1 5
 - DM1_RXP1 5
 - DM1_TXN1 5
 - DM1_TXP1 5
 - USB0N 23
 - USB0P 23
 - USB1N 23
 - USB1P 23
 - USB2N 23
 - USB2P 23
 - USB3N 23
 - USB3P 23
 - USB4N 23
 - USB4P 23
 - USB5N 22
 - USB5P 22
 - USB6N 22
 - USB6P 22

USB 0 : USB CONN.
USB 1 : USB CONN.
USB 2 : USB CONN.
USB 3 : CAMERA
USB 4 : MINI PCIE
USB 5 : CardReader
USB 6 : Blue tooth

MICRO-STAR INT'L CO.,LTD

MS-N011

Size	Document Description	Rev
Custom	ICH7M_PCI, USB, DMI, PCIE	1.0
Date: Friday, April 11, 2008	Sheet	13 of 39



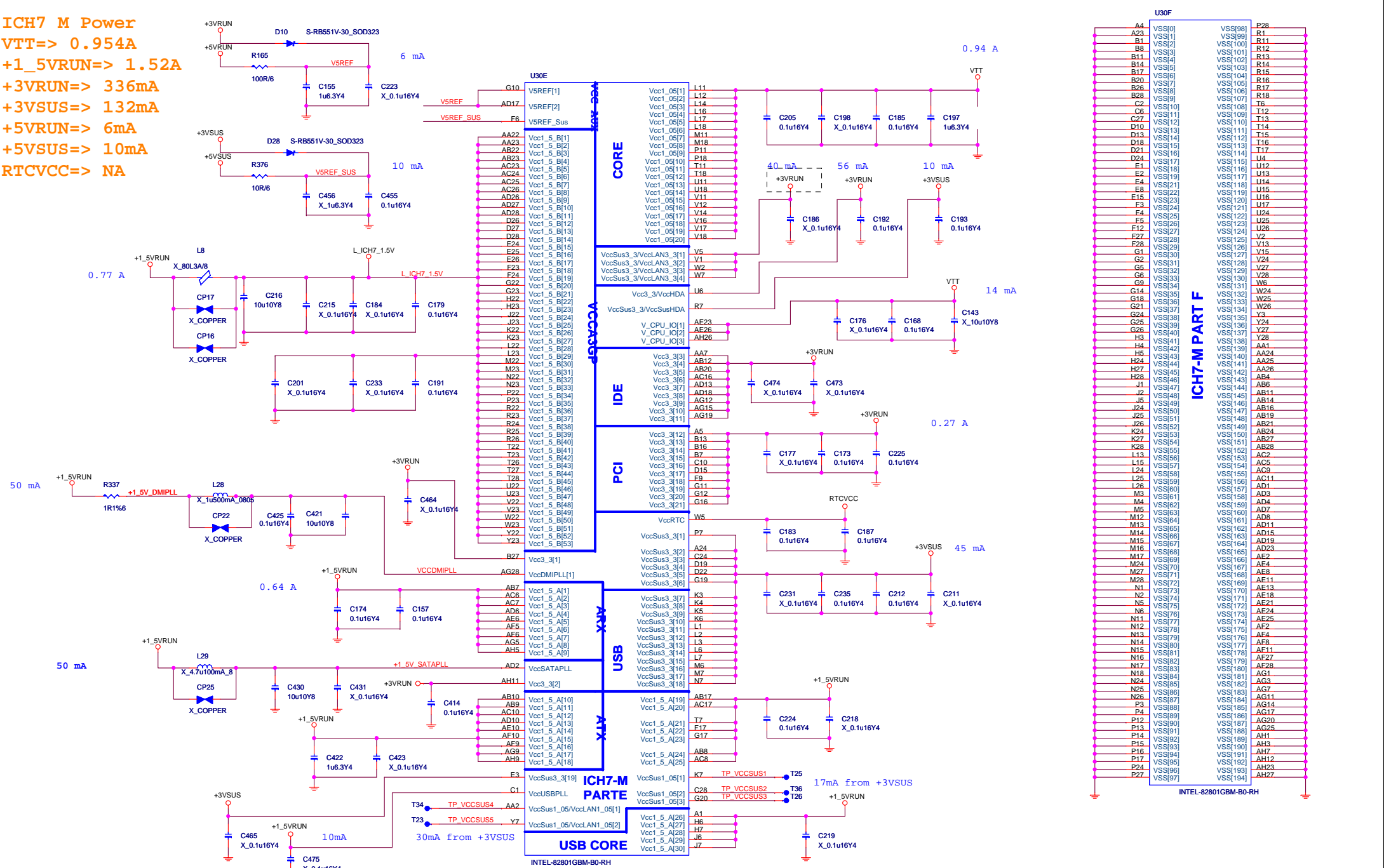
GPIO	Power Plane	Default
6, 7	Core	GPI
8~10	Resume	GPI
12~15	Resume	GPI
24, 25	Resume	GPO
38, 39	Core	GPI

MICRO-STAR INT'L CO.,LTD

MS-N011

Size Custom	Document Description ICH7M_GPIO, CLK, SM	Rev 1.0
Date: Friday, April 11, 2008		Sheet 14 of 39

ICH7 M Power
VTT=> 0.954A
+1_5VRUN=> 1.52A
+3VRUN=> 336mA
+3VSUS=> 132mA
+5VRUN=> 6mA
+5VSUS=> 10mA
RTCVCC=> NA

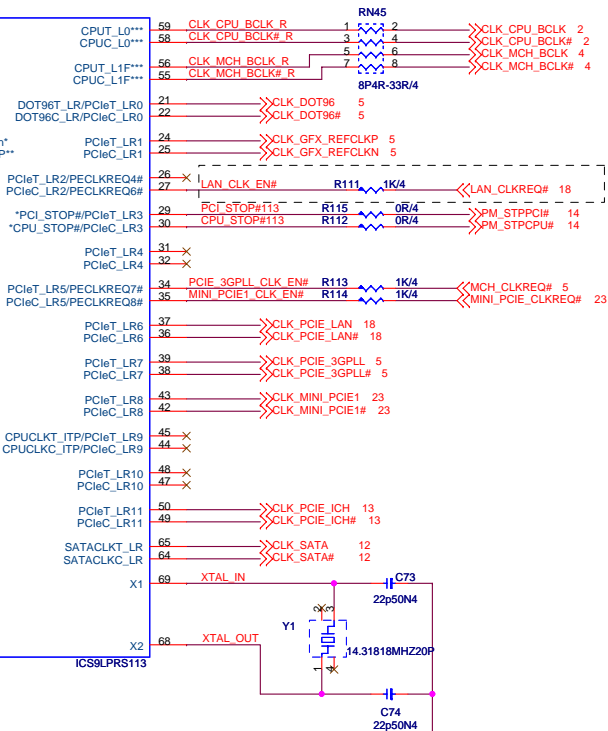
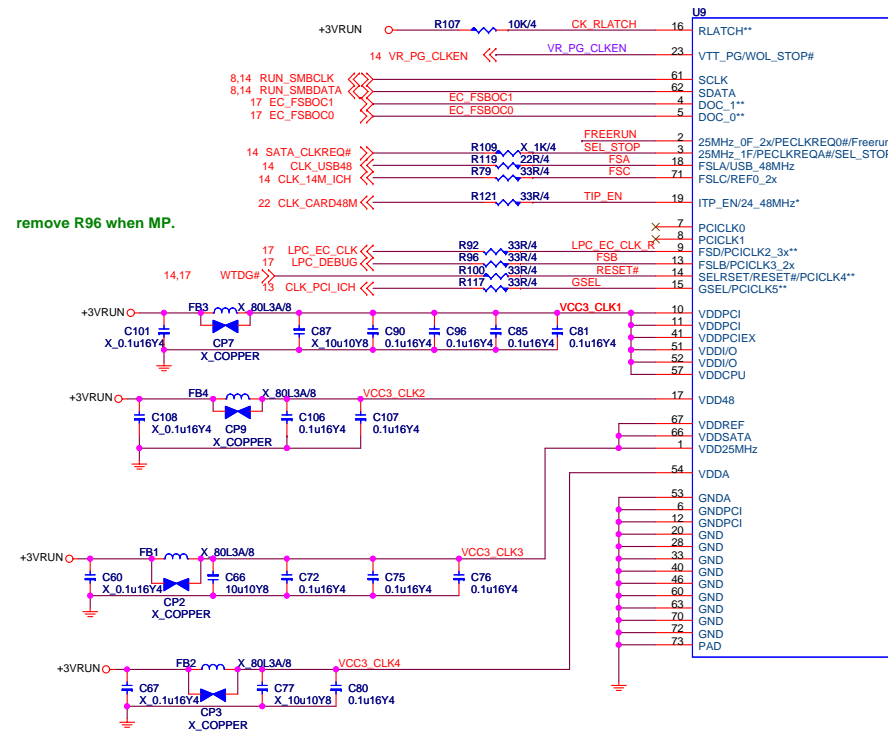


PIN AA2,Y7,K7,C28,G20 : VccSus 1.05V for RTCVCC

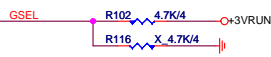
		MICRO-STAR INT'L CO.,LTD	
		MS-N011	
Size	Custom	Document Description	ICH7M_POWER
Date:	Friday, April 11, 2008	Sheet	15 of 39

CLK Gen ICS9LPRS113

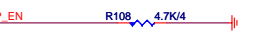
CLOCK GEN STRAPING



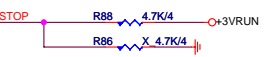
1 => Pin21/22 96MHz
0 => Pin21/22 100MHz



113 TIP_EN=0 => PCIE9, TIP_EN=1 => CPU_ITP
110 TIP_EN=0 => 48MHz, TIP_EN=1 => 24MHz

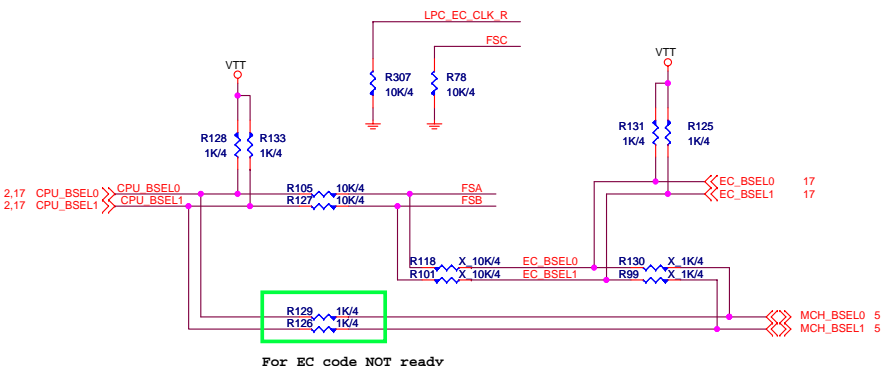


Selects pin 29/830
1 = PCI_STOP#/CPU_STOP#
0 = PCIEIX CLK output



EMI

CLK PCI ICH	EMC18	X	10p25N4
LPC DEBUG	EMC15	X	10p25N4
LPC_EC_CLK	EMC13	X	10p25N4
CLK USB48	EMC19	X	22p50N4
CLK 14M_ICH	EMC11	X	10p25N4
CLK_CARD48M	EMC96	X	10p25N4

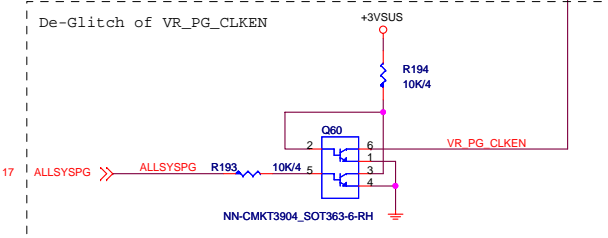


CPU Table

BSEL[2]	BSEL[1]	BSEL[0]	BCLK
L	L	L	100MHZ
L	L	H	133MHZ
L	H	L	RESERVED
L	H	H	166MHZ

CLK Gen 113

BSEL[2]	BSEL[1]	BSEL[0]	BCLK
H	L	H	100MHZ
L	L	H	133MHZ
L	H	L	200MHz
L	H	H	166MHZ

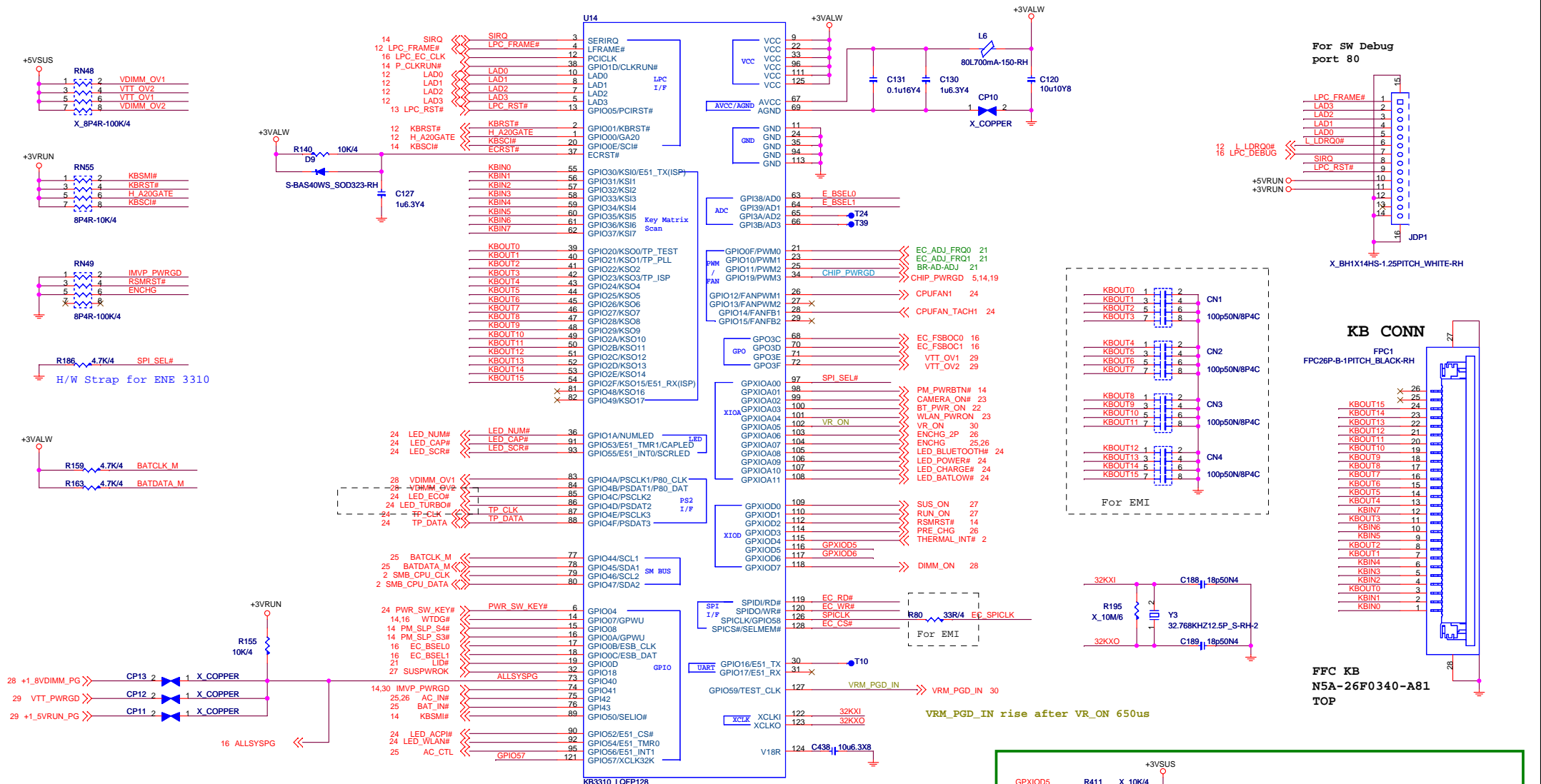


MICRO-STAR INT'L CO.,LTD

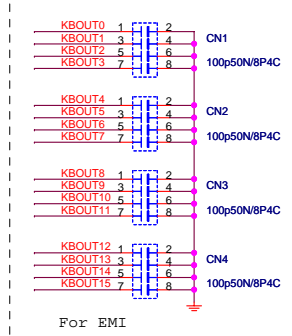
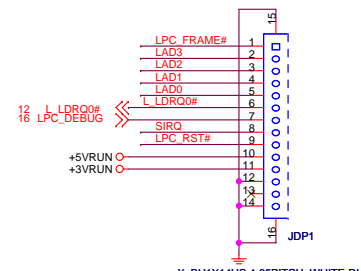
MS-N011

Size Custom Document Description **CLK GEN 113** Rev 1.0

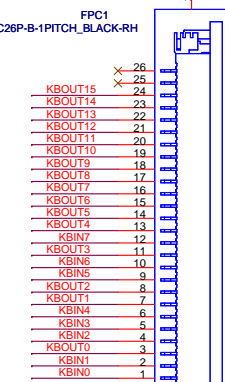
Date: Friday, April 11, 2008 Sheet 16 of 39



For SW Debug port 80

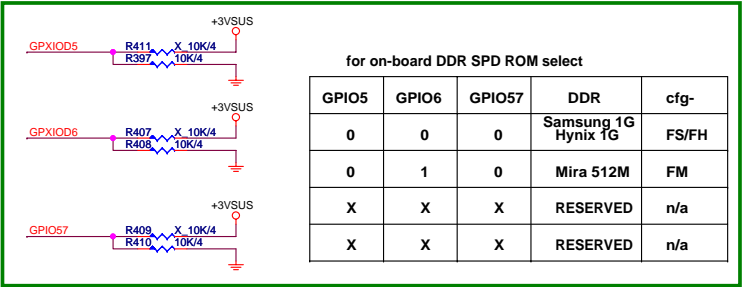


KB CONN



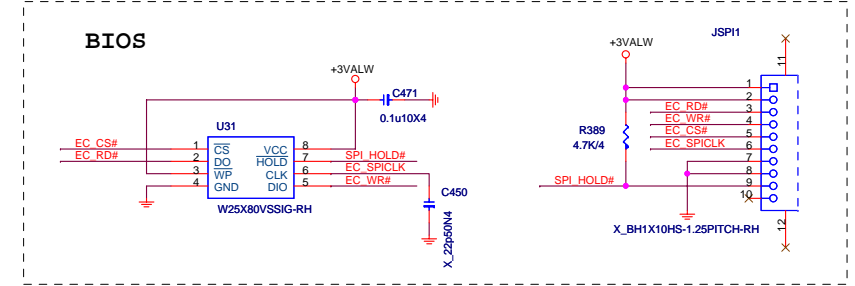
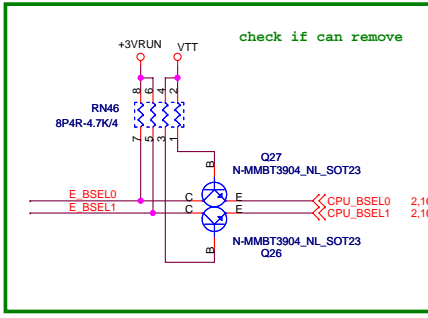
FFC KB N5A-26F0340-A81 TOP

VRM_PGDI IN rise after VR_ON 650us



for on-board DDR SPD ROM select

GPIO5	GPIO6	GPIO7	DDR	cfg-
0	0	0	Samsung 1G Hynix 1G	FS/FH
0	1	0	Mira 512M	FM
X	X	X	RESERVED	n/a
X	X	X	RESERVED	n/a

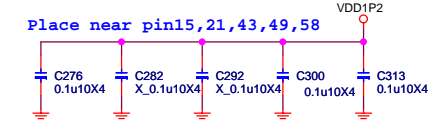
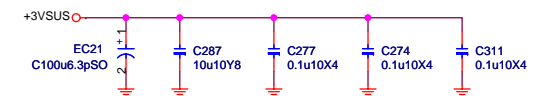
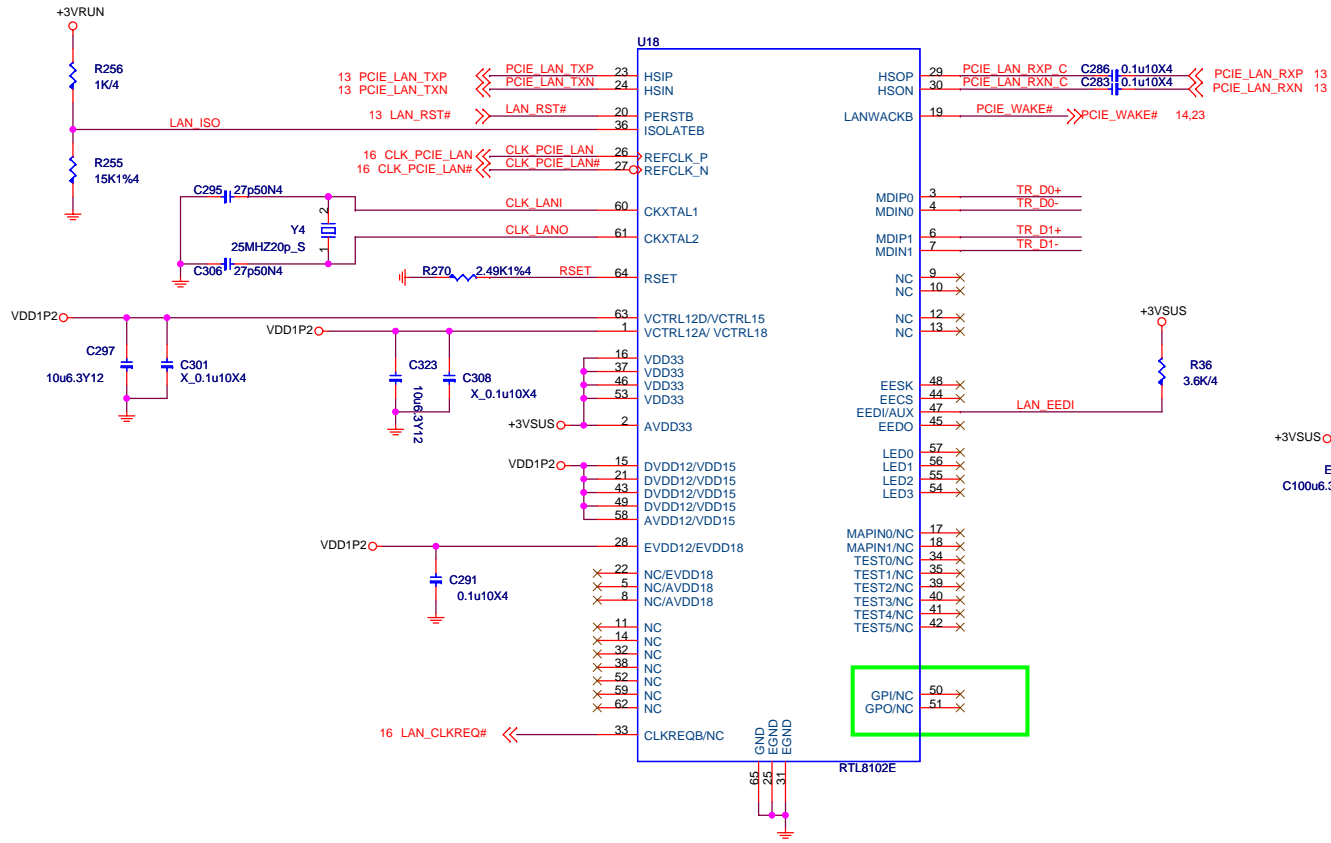


MICRO-STAR INT'L CO.,LTD

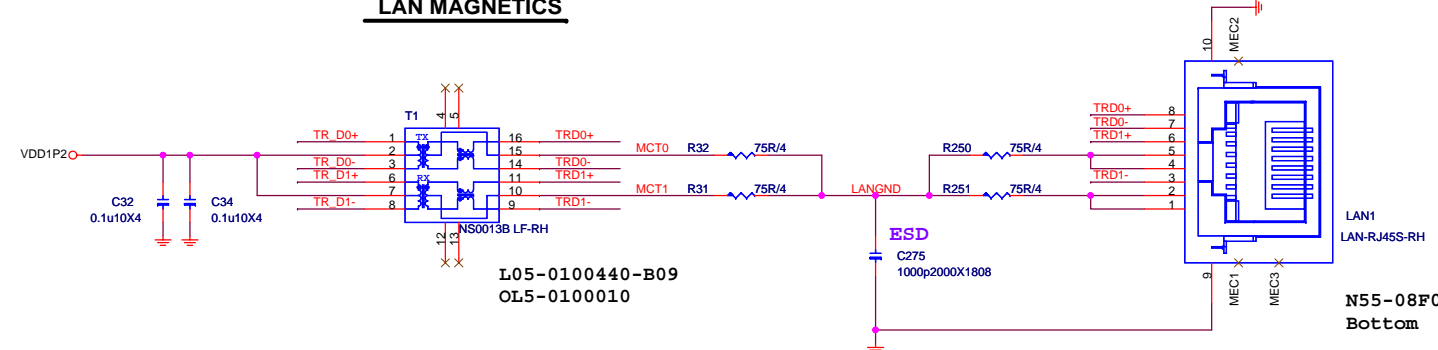
MS-N011

Size Custom	Document Description	Rev 1.0
	ENE KB3310	
Date: Tuesday, April 15, 2008	Sheet 17 of 39	

RTL8102E 10/100M LAN



LAN MAGNETICS



POWER			
BOOT DEVICE	VDD1P2	VDD1P8	VDD33
8101E (378.3mW)	1.5V	1.8V	3.3V
8102E	1.2V	NC	3.3V
365mA			

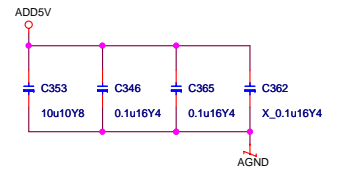
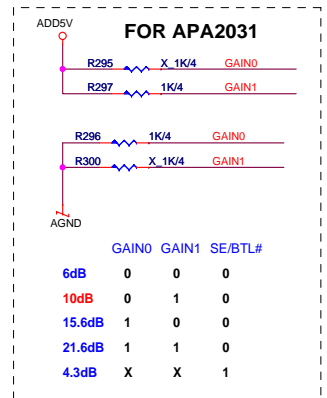
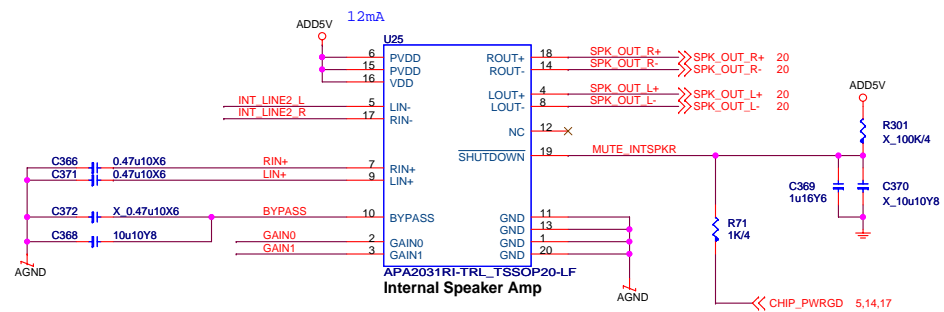
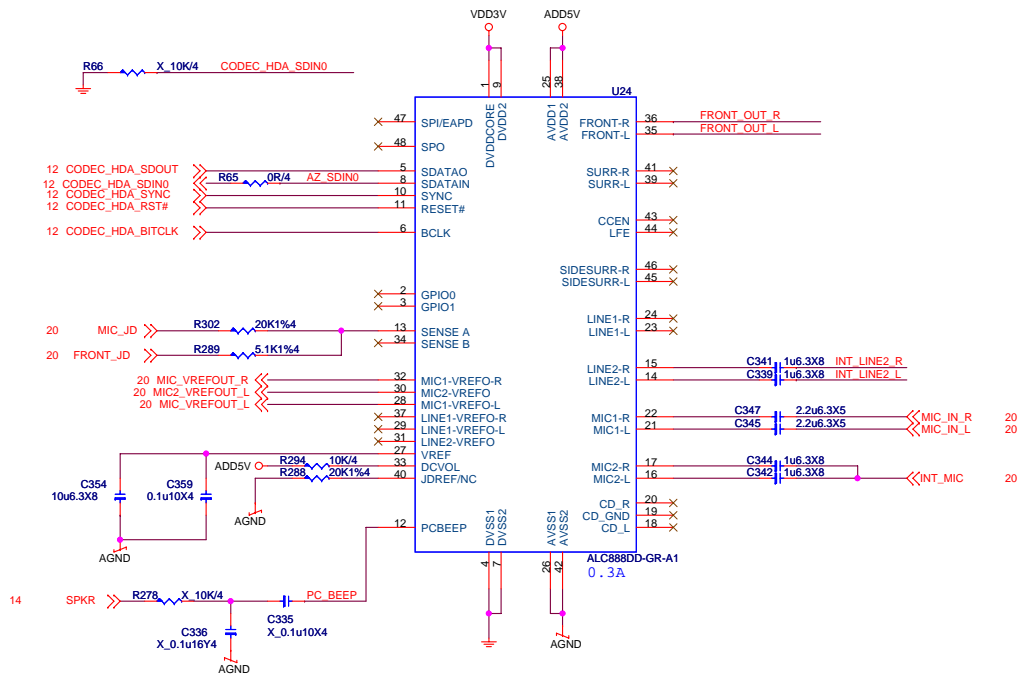
L05-0100440-B09
OL5-0100010

N55-08F0250-A10
Bottom

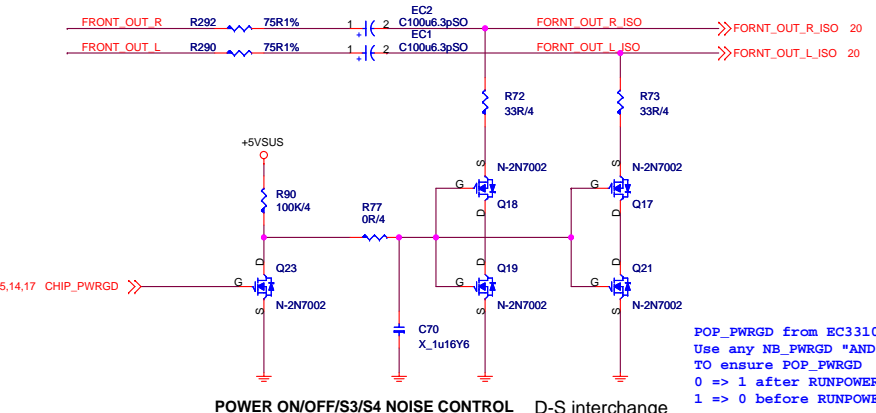
MICRO-STAR INT'L CO.,LTD

MS-N011

Size A3	Document Description LAN_RTL8102E/8101E	Rev 1.0
Date: Friday, April 11, 2008		Sheet 18 of 39

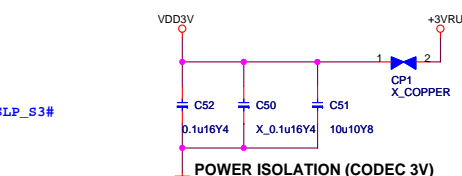
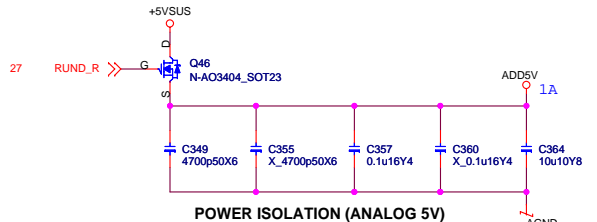


ANTIPOP CIRCUIT

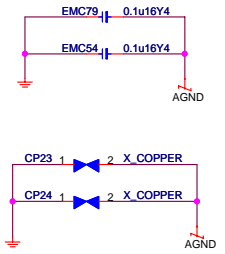


POP_PWRGD from EC3310
 Use any NB_PWRGD "AND" with SLP_S3#
 TO ensure POP_PWRGD
 0 => 1 after RUNPOWER ready
 1 => 0 before RUNPOWER drop

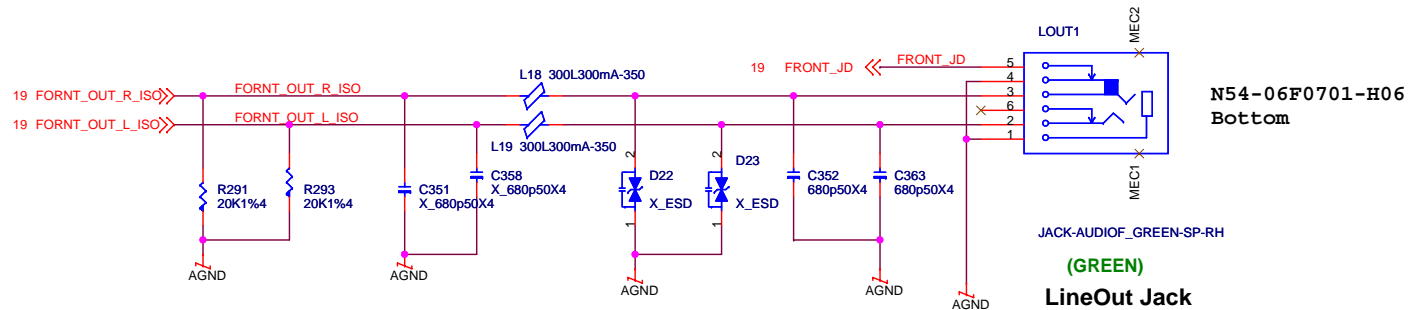
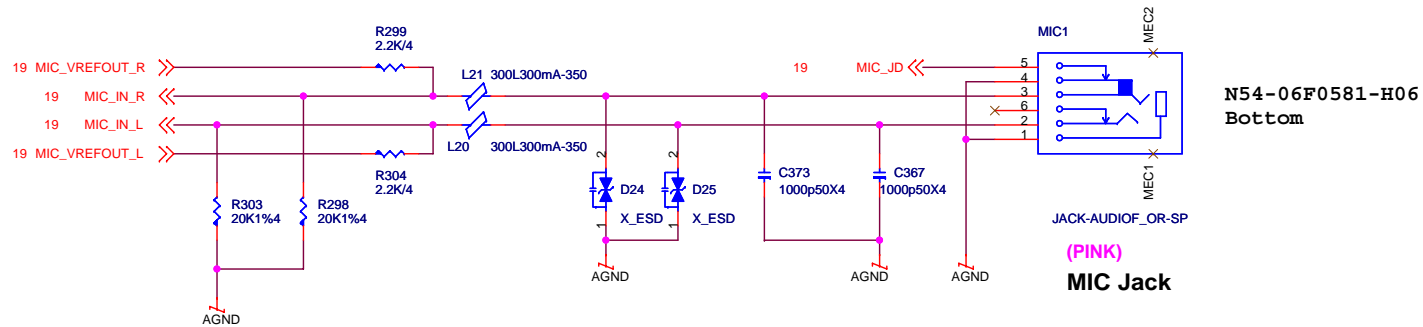
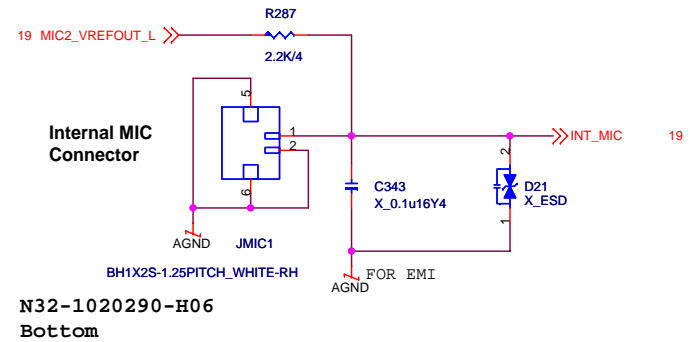
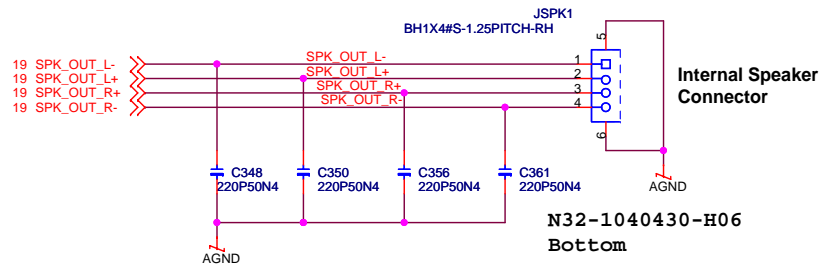
POWER ON/OFF/S3/S4 NOISE CONTROL D-S interchange

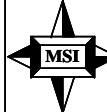


For EMI solution

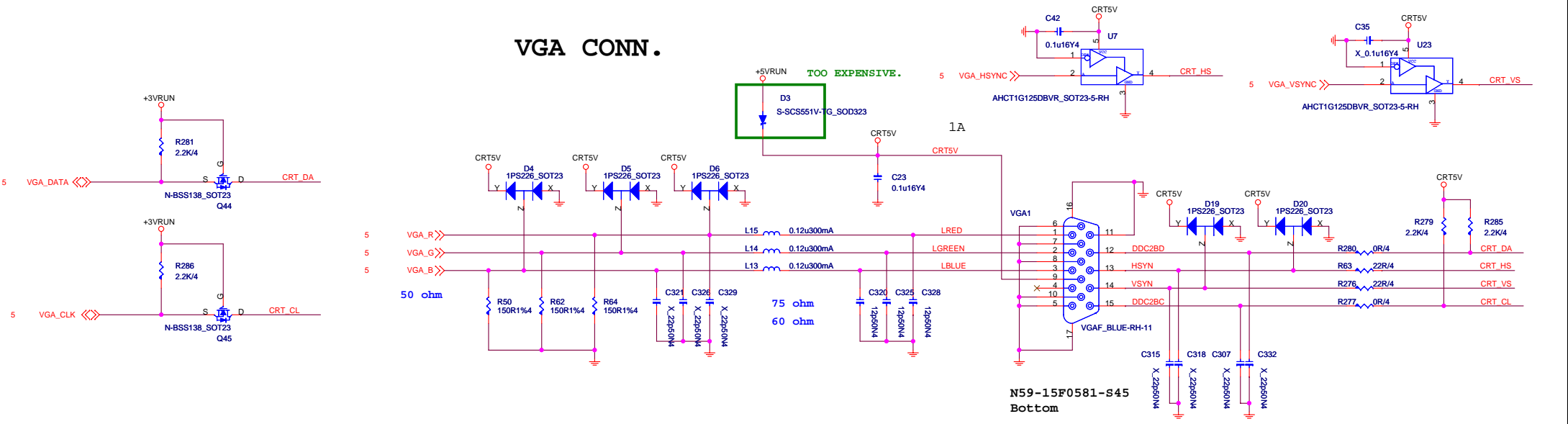


MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size	Document Description	Rev
Custom	ALC888S	1.0
Date: Friday, April 11, 2008	Sheet 19 of 39	

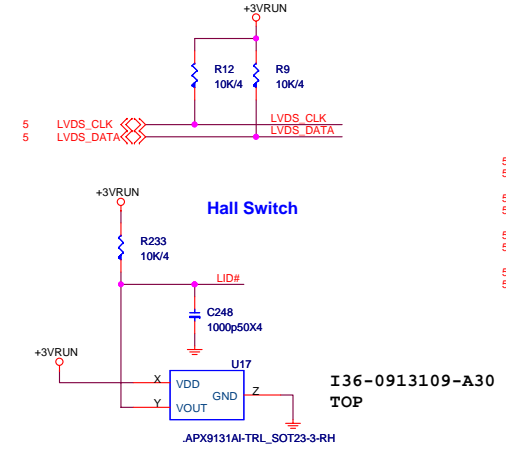
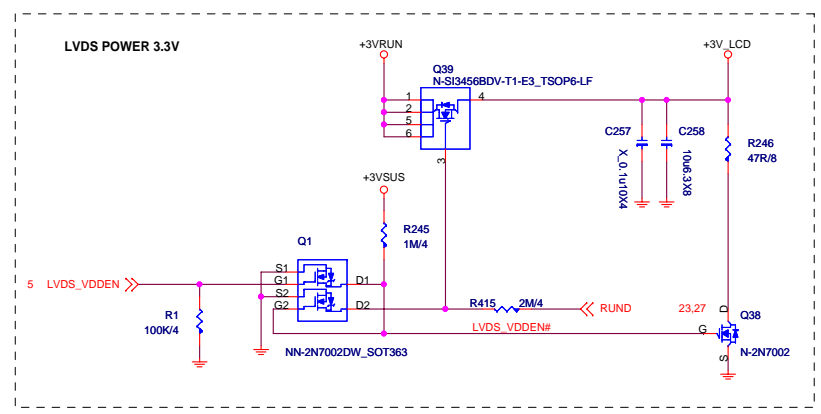


	MICRO-STAR INT'L CO.,LTD		
	MS-N011		
	Size Custom	Document Description Audio JACKS	Rev 1.0
Date: Friday, April 11, 2008		Sheet 20 of 39	

VGA CONN.

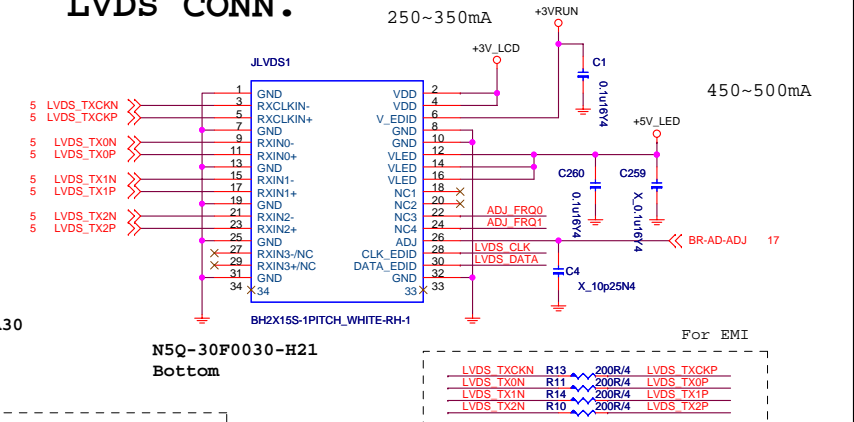


N59-15F0581-S45
Bottom

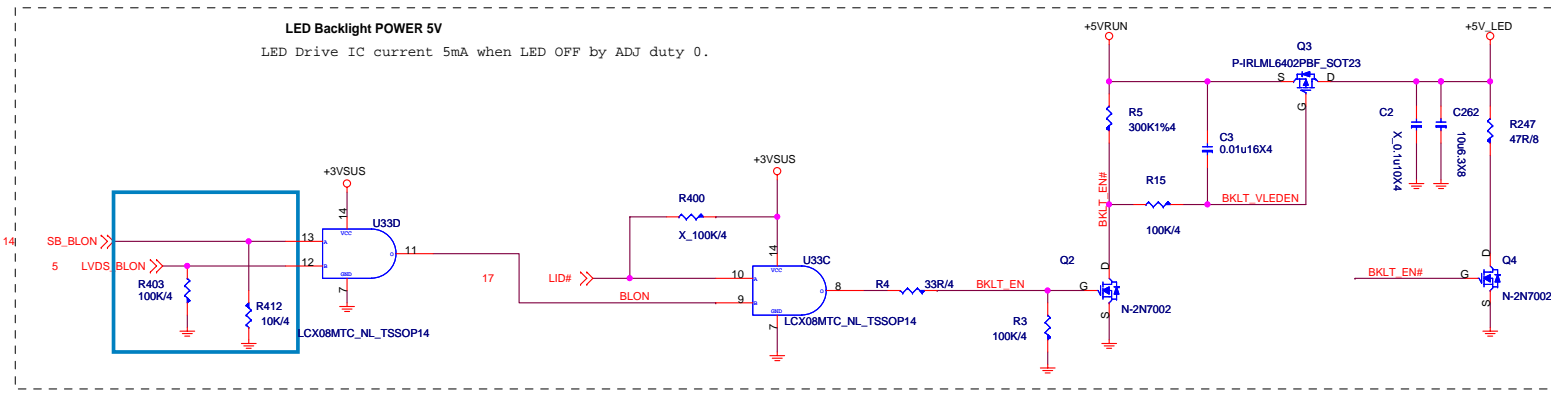


I36-0913109-A30
TOP

LVDS CONN.



N5Q-30F0030-H21
Bottom



For EMI

LVDS_TXCKN	R13	200R/4	LVDS_TXCKP
LVDS_TX0N	R11	200R/4	LVDS_TX0P
LVDS_TX1N	R14	200R/4	LVDS_TX1P
LVDS_TX2N	R10	200R/4	LVDS_TX2P

EC_ADJ_FRQ0	EC_ADJ_FRQ1	Vendor	Adj Freq
0	0	CPT/HannStar	20KHZ
0	1	INNOLUX	300Hz
1	0	Reserve	Reserve
1	1	Reserve	Reserve

MSI

MICRO-STAR INT'L CO.,LTD

MS-N011

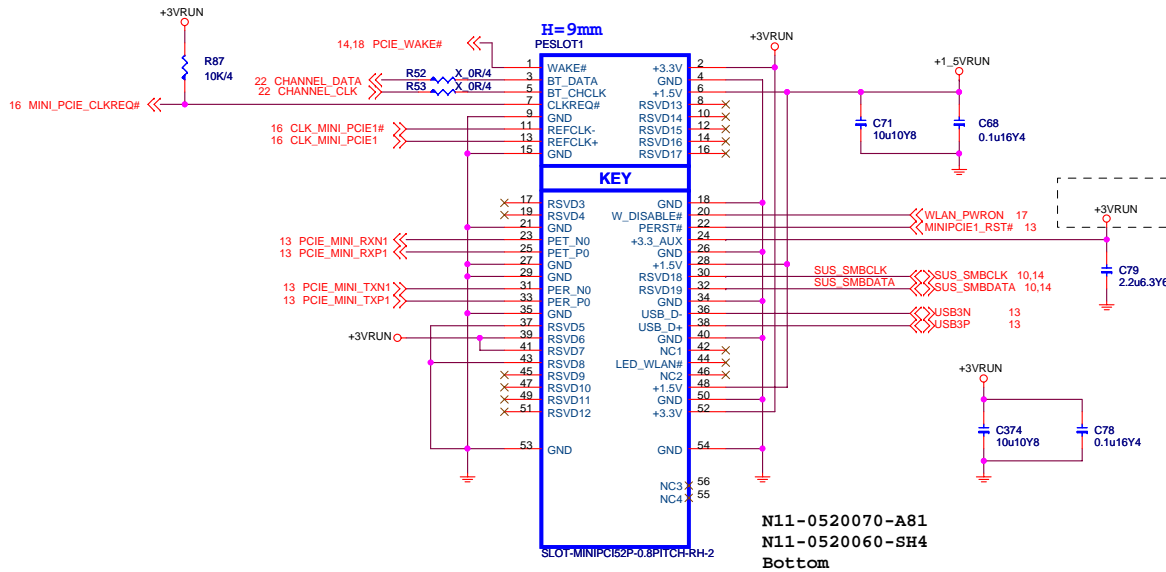
Size Custom	Document Description	Rev 1.0
	CRT, LVDS CONN	

Date: Friday, April 11, 2008 Sheet 21 of 39

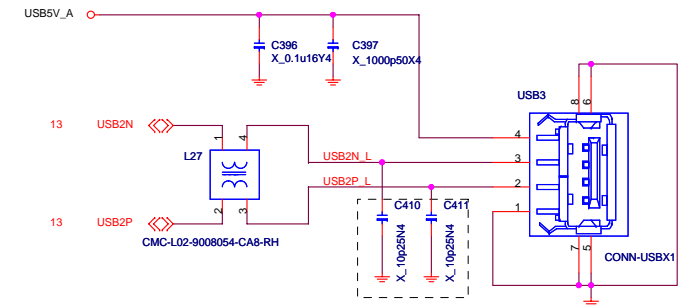
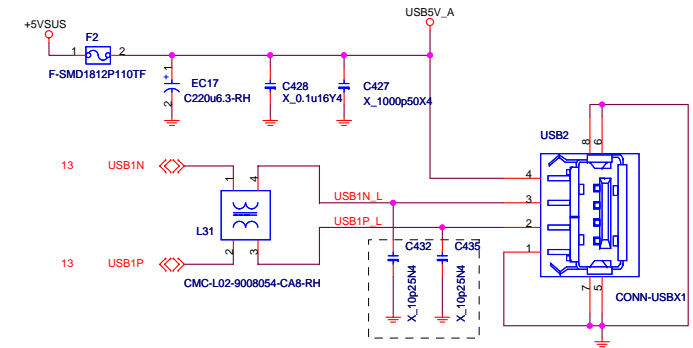
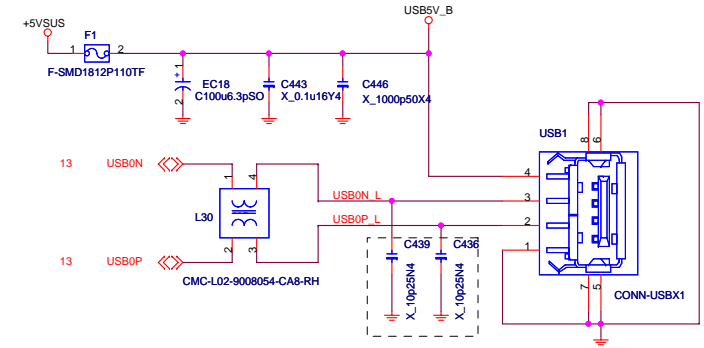
Mini PCIE Slot

Wireless LAN

+3VRUN, 1.5A
+1_5VRUN, 0.5A

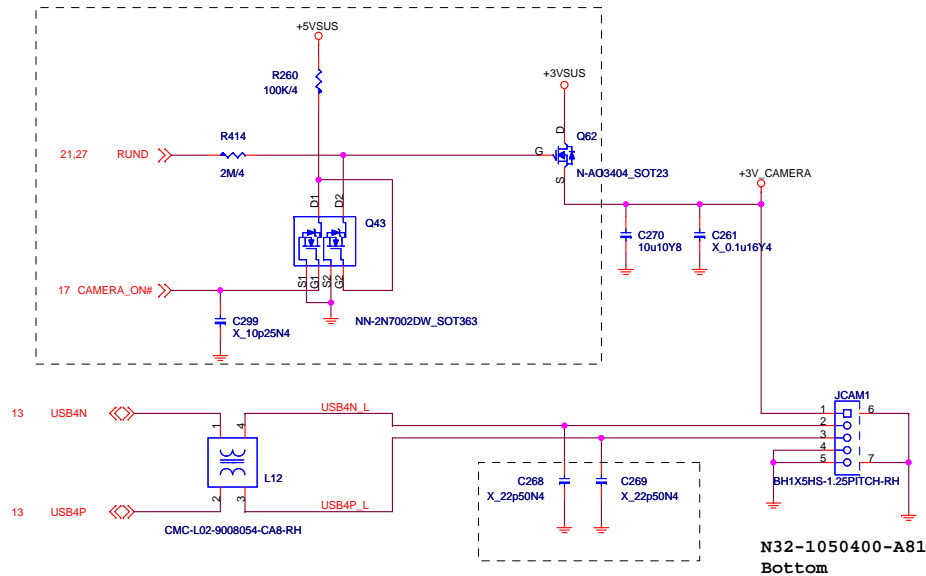



USB CONN

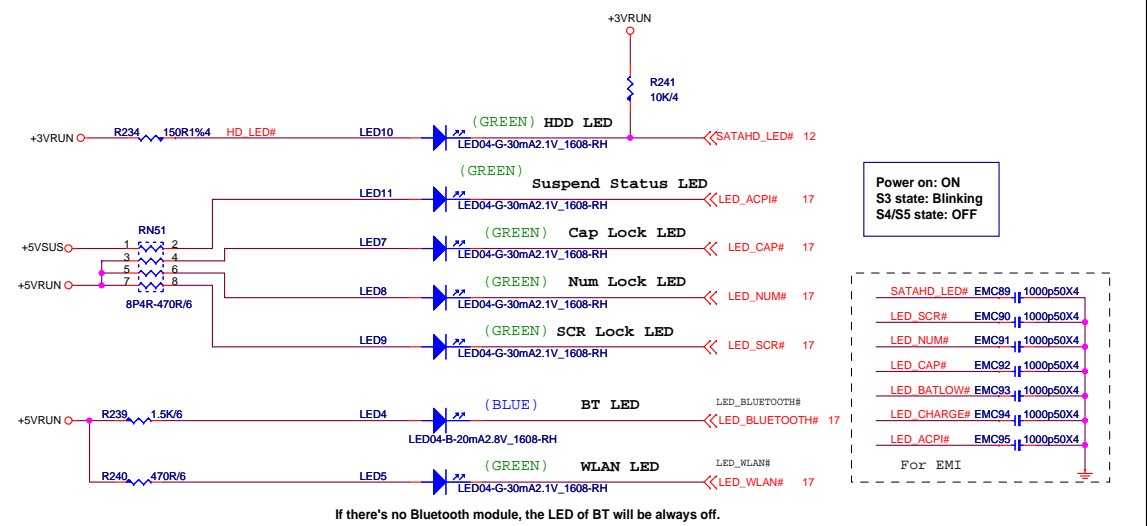
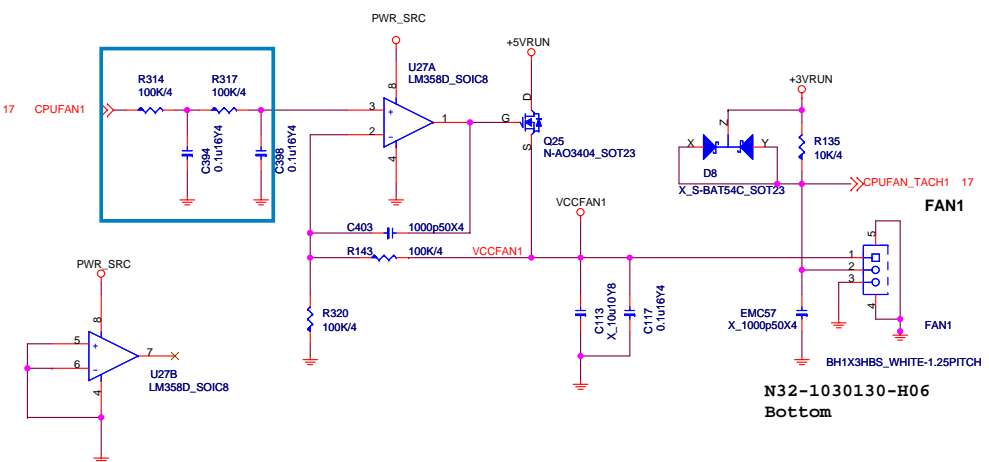


DOG-25B0600-R02
 DIS EMI/ESD PROTECTOR, RAYCHEM/PESD0402-060, 6V, 0.25pF,
 , SMD-1.0x0.5x0.38mm, ESD PROTECTOR, RoHS (EU EXEMPTION)

CAMERA



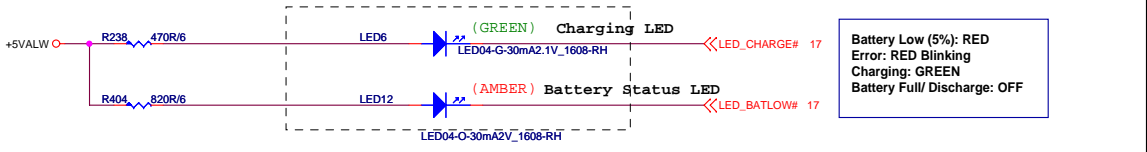
		MICRO-STAR INT'L CO.,LTD	
		MS-N011	
Size Custom	Document Description Mini PCIE, CAMERA, USB CONN	Date: Friday, April 11, 2008	Rev 1.0
		Sheet 23	of 39



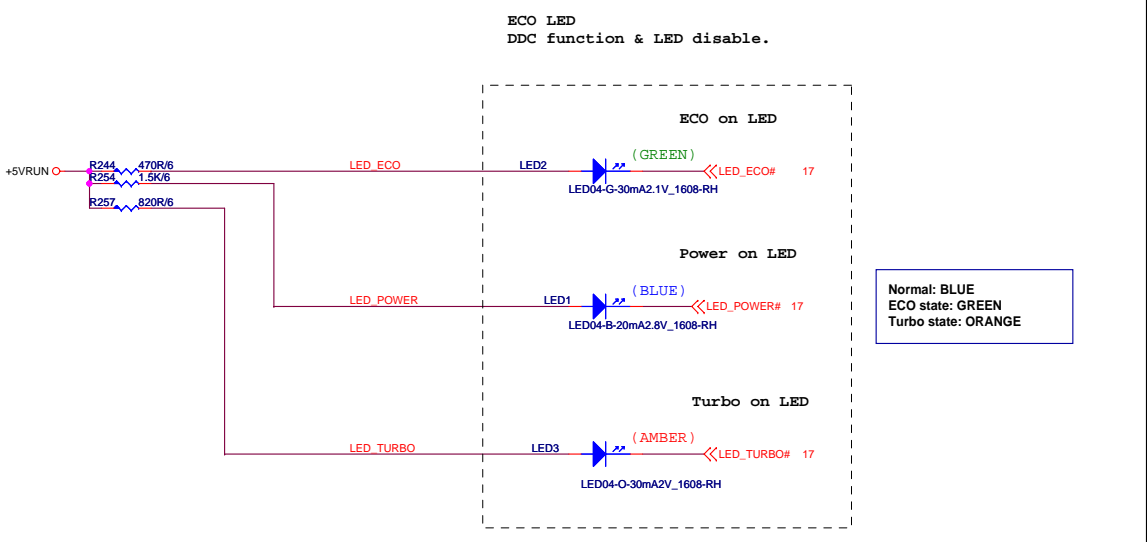
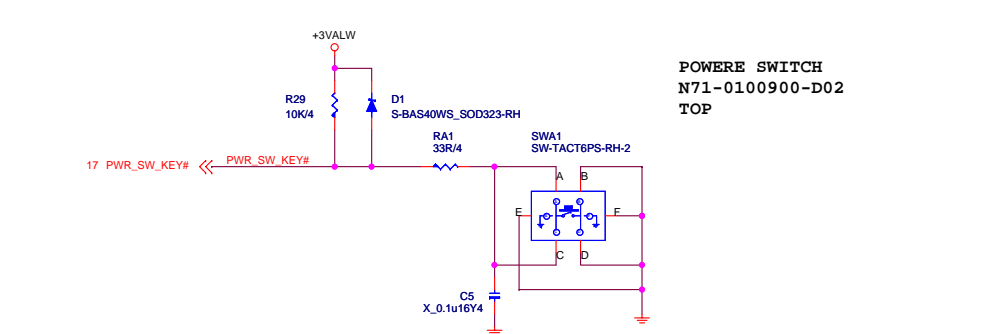
Power on: ON
S3 state: Blinking
S4/S5 state: OFF

- SATAHD_LED# EMC89 1000p50X4
- LED_SCR# EMC90 1000p50X4
- LED_NUM# EMC91 1000p50X4
- LED_CAP# EMC92 1000p50X4
- LED_BATLOW# EMC93 1000p50X4
- LED_CHARGE# EMC94 1000p50X4
- LED_ACPI# EMC95 1000p50X4
- For EMI

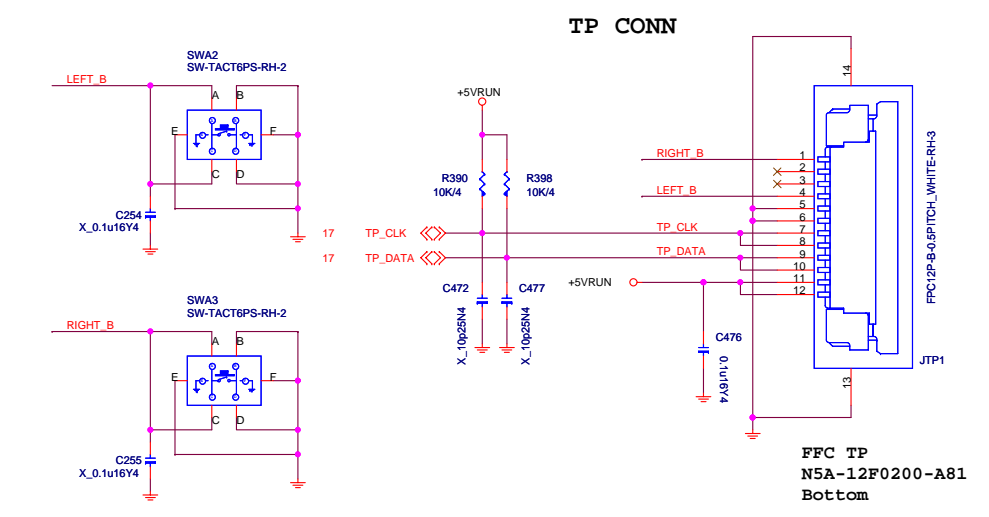
If there's no Bluetooth module, the LED of BT will be always off.



Battery Low (5%): RED
Error: RED Blinking
Charging: GREEN
Battery Full/ Discharge: OFF



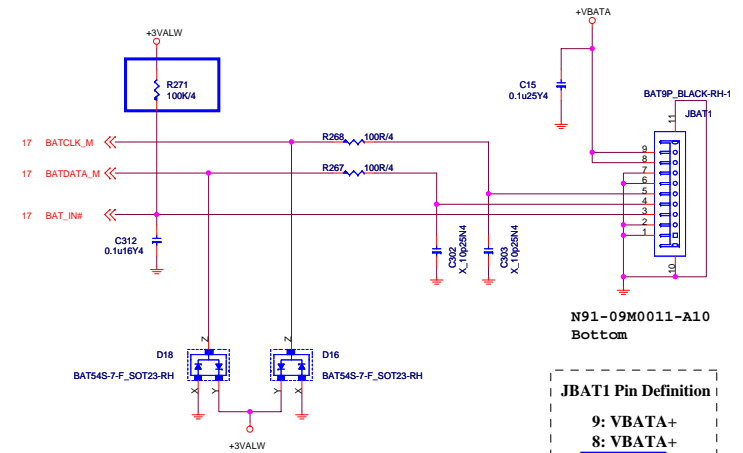
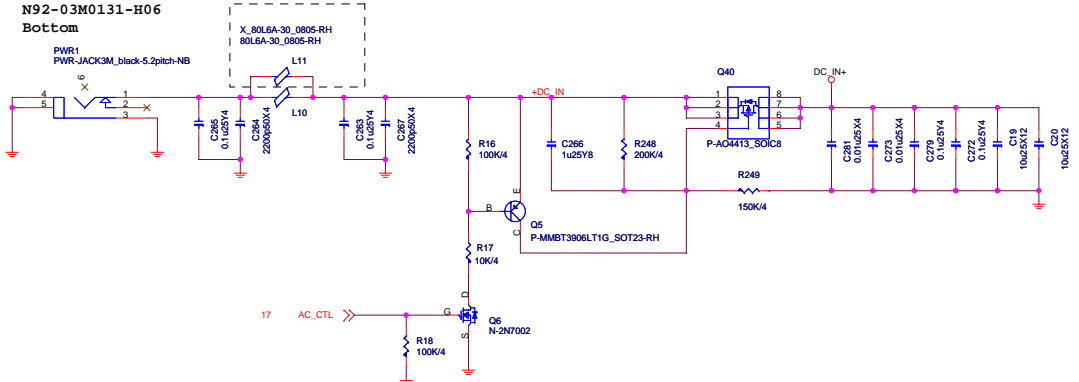
Normal: BLUE
ECO state: GREEN
Turbo state: ORANGE



DOC-0400700-L05 (OLD)--->470R
DOC-0409200-L05 (NEW)--->330R

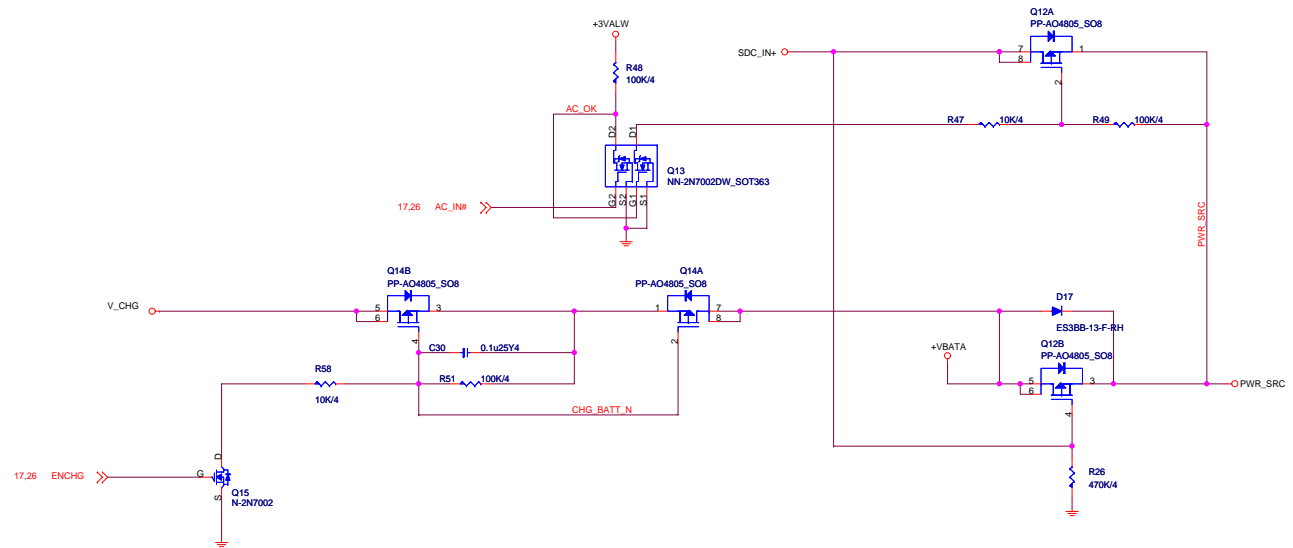
		MICRO-STAR INT'L CO.,LTD	
		MS-N011	
Size Custom	Document Description FAN, LED & SW	Date: Friday, April 11, 2008	Rev 1.0
		Sheet 24	of 39

N92-03M0131-A10
N92-03M0131-H06
Bottom

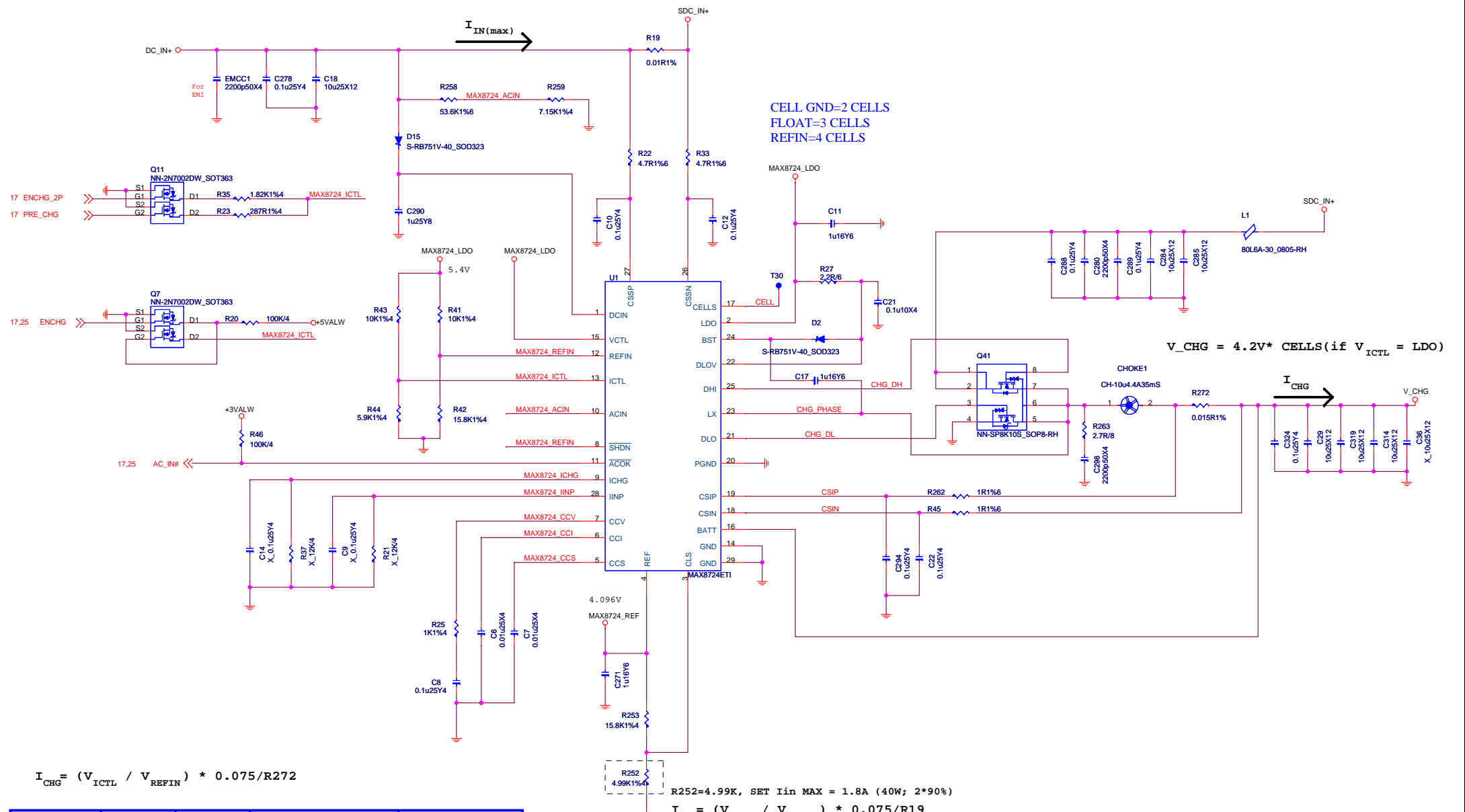


N91-09M0011-A10
Bottom

- JBAT1 Pin Definition**
- 9: VBATA+
 - 8: VBATA+
 - 7: NC
 - 6: NC
 - 5: SMBCLK
 - 4: SMBDATA
 - 3: BAT_IN#
 - 2: GND
 - 1: GND




Adapter= 40 W
 Adapter input voltage set 20 Voltage 2 Amps



3S battery max charge current 1540mA, 0.7C=>1000mA

ENCHG-2P	PRE_CHG	ENCHG	charge status	charge current
0	1	1	Pre-charge	220 mA
1	0	1	3S-Fast charge	1.0 A
0	0	1	3S2P-Fast charge	3A
X	X	0	STOP CHARGE	0



MICRO-STAR INT'L CO.,LTD

MS-N011

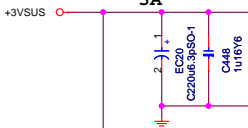
Size Custom	Document Description Battery Charger	Rev 1.0
Date: Friday, April 11, 2008		Sheet 26 of 39

0.747A
 ICH7M : 132mA ;
 PCIE LAN: 365mA ;
 MINI PCIE +3VRUN: 250mA ;

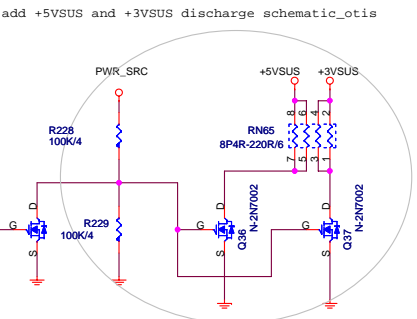
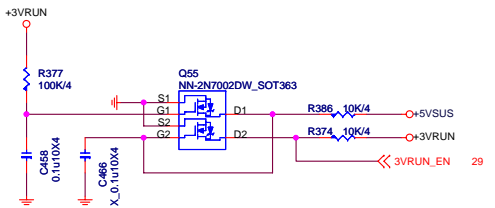
2.188A
 945GMS +3VRUN : 40mA ;
 ICH7M +3VRUN : 336mA ;
 ICH7M +2_5VRUN : 142mA ;
 MINI PCIE +3VRUN: 1250mA ;
 CLOCK Gen: 200mA ;
 CardReader: 170mA ;
 Audio 888S: 50mA ;
 CAMERA: ??mA ;

Current limit at 4A for +3.3V

+3VSUS

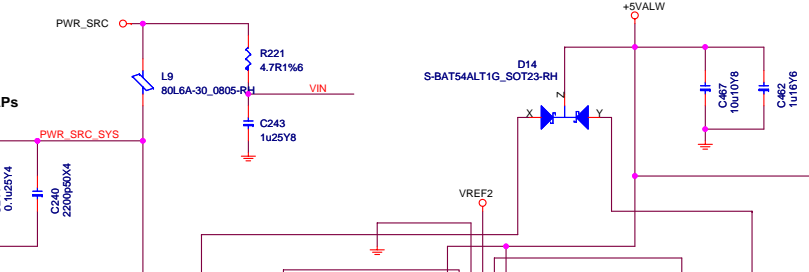


+3VRUN



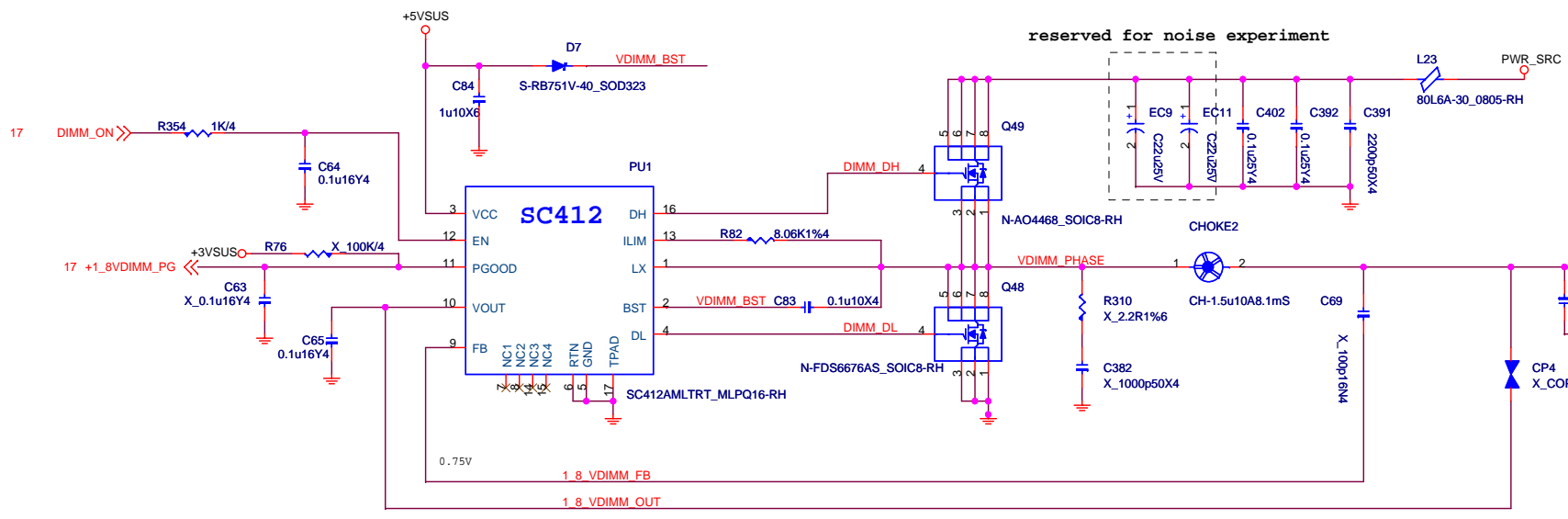
add +5VSUS and +3VSUS discharge schematic_otis

+5VALW

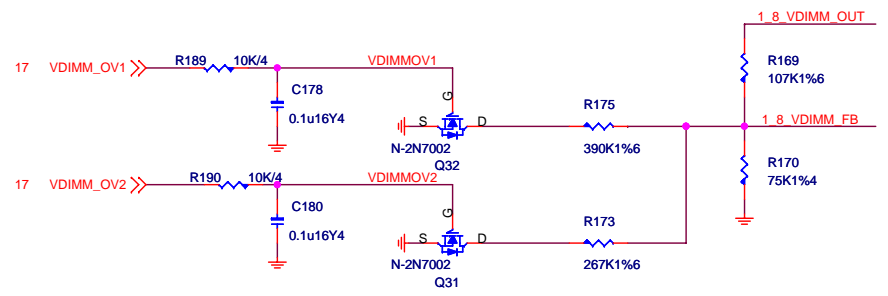


+1_8VDIMM

Current Max at 10.3A
 GMCH 1Channel: 1720mA ;
 DDR2 4 Rnaks/16 pcs: 3840mA;
 DDR_VTT*2: 600mA;
 +1.5VRUN: 4130mA;



VDIMM OC



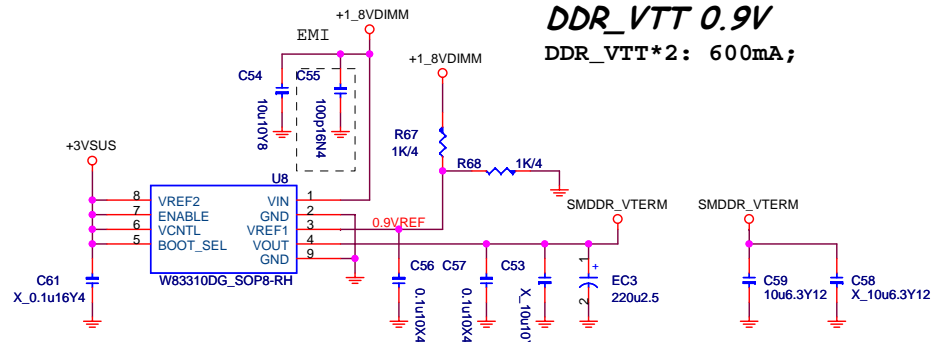
VDIMM OverVoltage TABLE

OV1	OV2	VDIMM OverVoltage
0	0	1.85V(default)
1	0	2V
0	1	2.15V

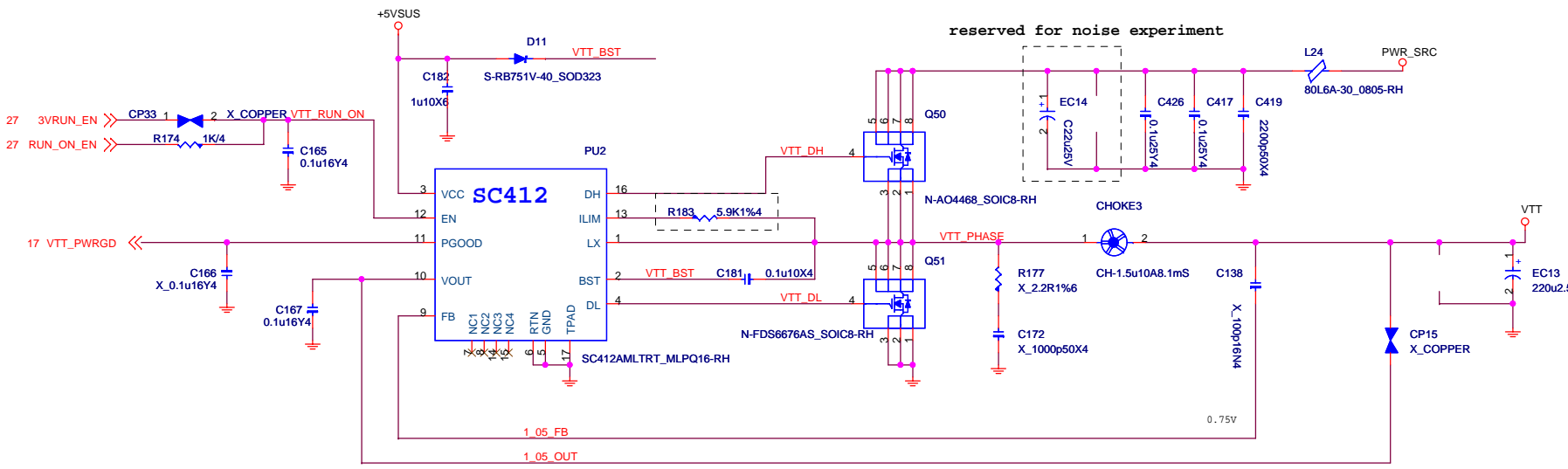
Note: 1=> HIGH 0=> LOW

DDR_VTT 0.9V

DDR_VTT*2: 600mA;



MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size B	Document Description DDR & VTT_DDR Power	Rev 1.0
Date: Friday, April 11, 2008		Sheet 28 of 39

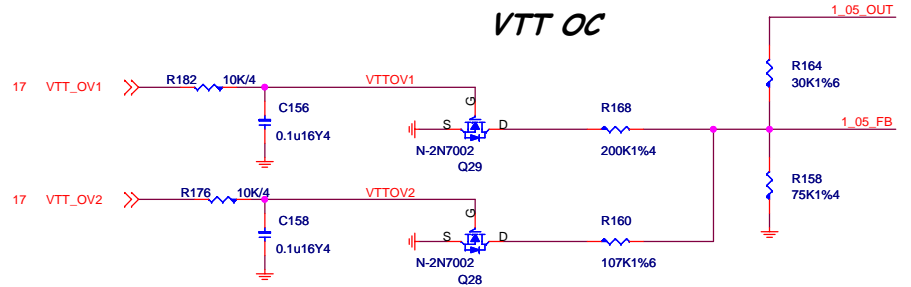


VTT /+1.05Vcore
6.674A

Current Limit at 10A
Current MAX at 8A

CPU Vccp: 2000mA
GMCH core:2940mA
GMCH Vccp:780mA
ICH7M core:940mA
ICH7M Vcc_IO:14mA

VTT OC



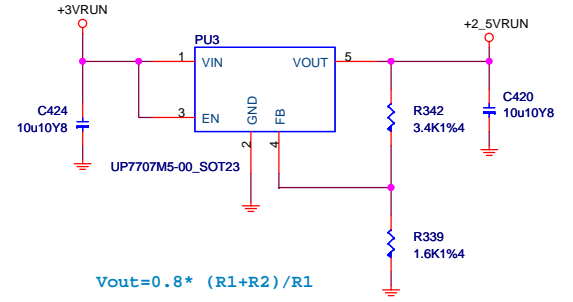
VTT OverVoltage TABLE

OV1	OV2	VTT OverVoltage
0	0	1.05V(default)
1	0	1.15V
0	1	NA

Note: 1=> HIGH 0=> LOW

+2.5VRUN 142mA

up7707: 600mA Low Dropout Linear Regulator

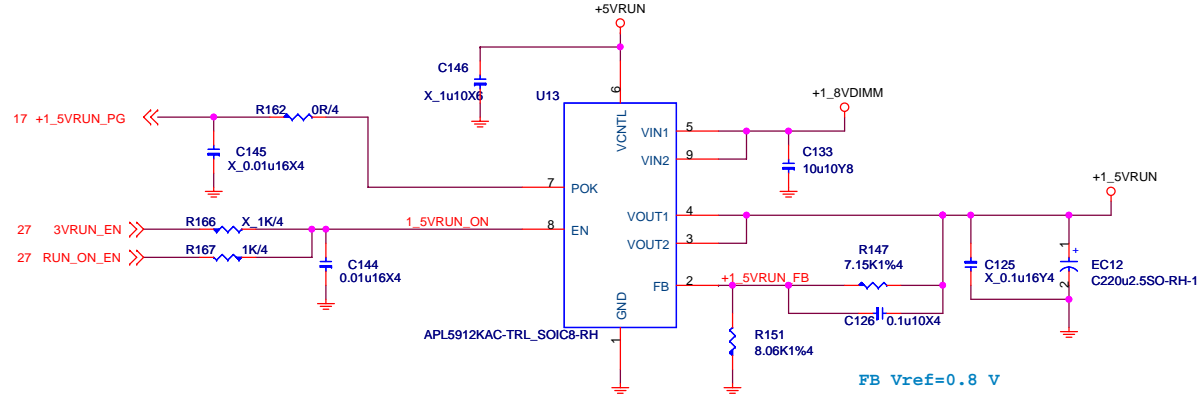


$V_{out} = 0.8 * (R1 + R2) / R1$

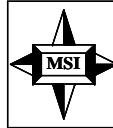
+1.5Vcore

4.13A

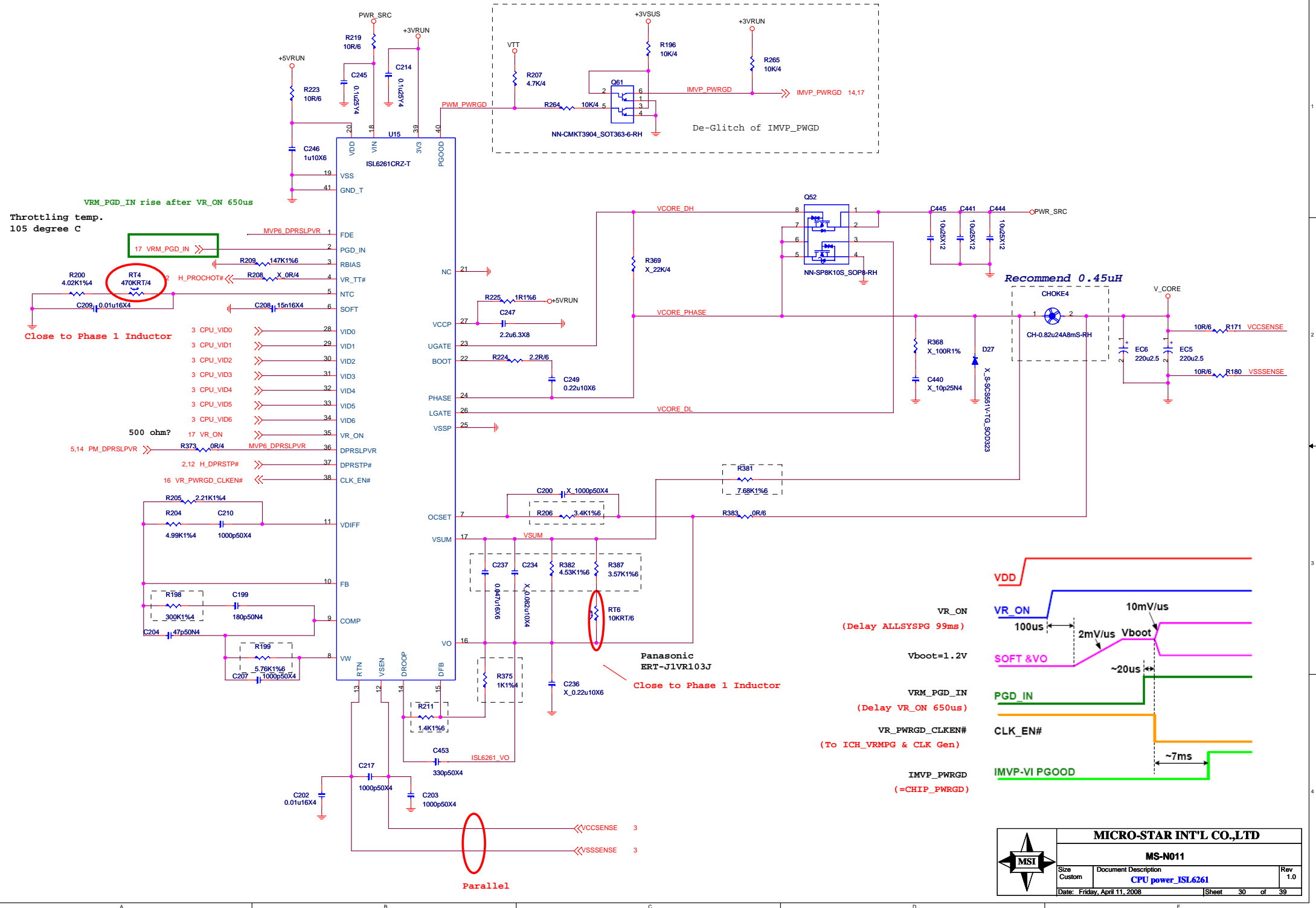
CPU Vccp: 130mA
GMCH core:1980mA
ICH7M core:1520mA
MINI PCIE :500mA



FB Vref=0.8 V

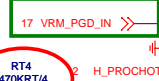


MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size Custom	Document Description 1.05V, 1.5V, 2.5V- POWER	Rev 1.0
Date: Friday, April 11, 2008	Sheet 29	of 39



VRM_PGD_IN rise after VR_ON 650us

Throttling temp.
105 degree C



Close to Phase 1 Inductor

500 ohm?

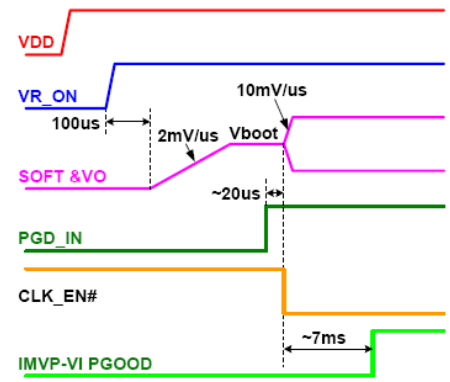
VR_ON
(Delay ALLSYSPPG 99ms)

Vboot=1.2V

VRM_PGD_IN
(Delay VR_ON 650us)

VR_PWRGD_CLKEN#
(To ICH_VRMPG & CLK Gen)

IMVP_PWRGD
(=CHIP_PWRGD)

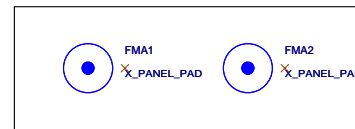
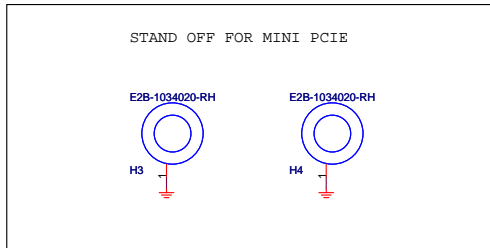
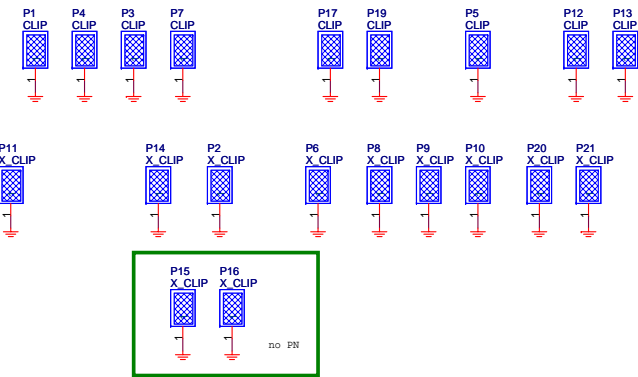
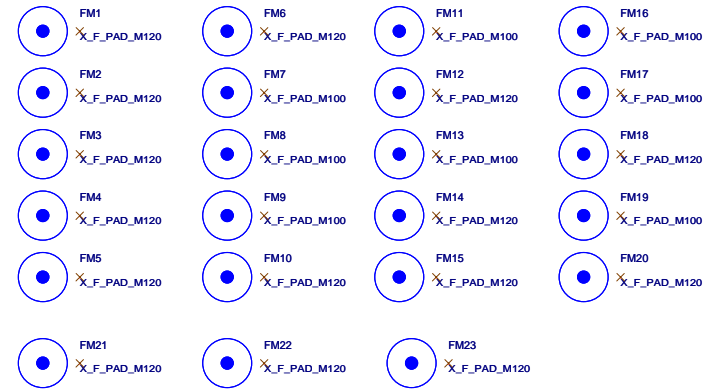
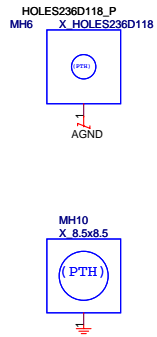
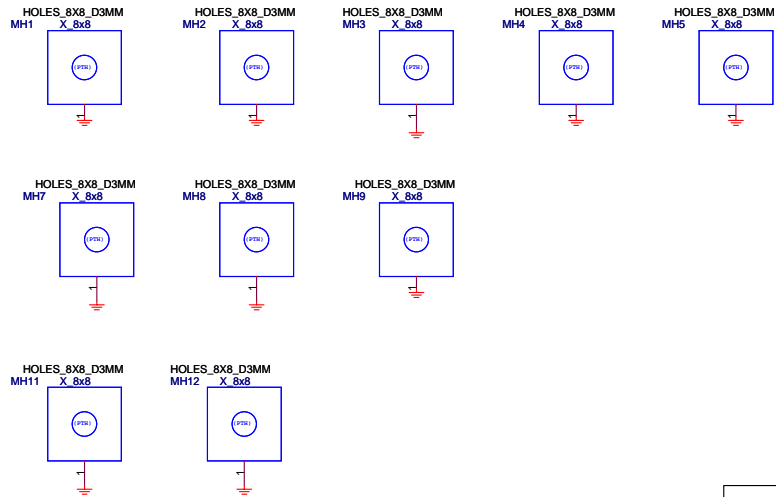


Recommend 0.45uH

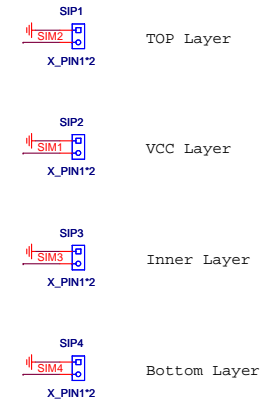
Parallel

Parallel

MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size Custom	Document Description CPU power_ISL6261	Rev 1.0
Date: Friday, April 11, 2008		Sheet 30 of 39



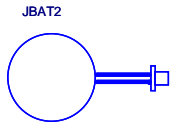
Simulation



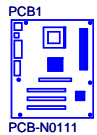
OPT	Configure	BOM	Function
A	cfg-FS	607-N0111-01S	MS-N0111 OPT:A Diamondville CPU, 945GMS+ICH7M, 1G SAMSUNG DDR2), ALC888S,ENE3310,Relteak 5158E+RTL8102E
B	cfg-FH	607-N0111-02S	MS-N0111 OPT:B Diamondville CPU, 945GMS+ICH7M, 1G HYNIX DDR2), ALC888S,ENE3310,Relteak 5158E+RTL8102E
C	cfg-FM	607-N0111-03S	MS-N0111 OPT:C Diamondville CPU, 945GMS+ICH7M, 512M MIRA DDR2), ALC888S,ENE3310,Relteak 5158E+RTL8102E



MICRO-STAR INT'L CO.,LTD		
MS-N011		
Size Custom	Document Description Screw	Rev 1.0
Date: Tuesday, April 15, 2008	Sheet	31 of 39

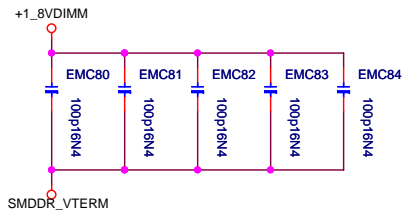
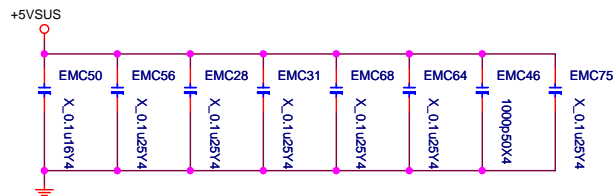
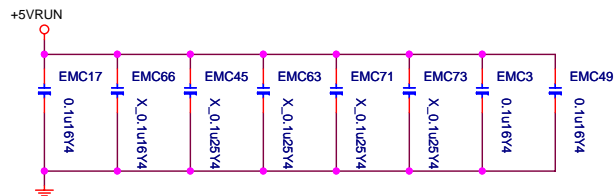
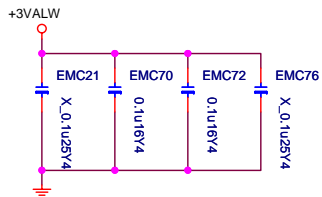
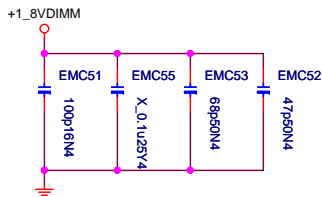


BAT-CR2032

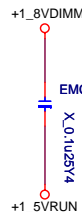
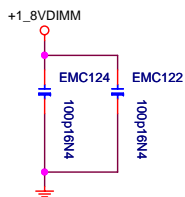
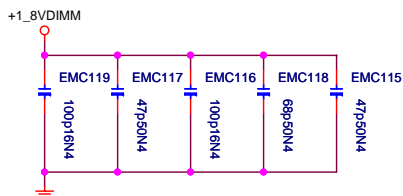
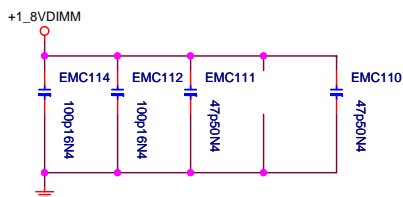
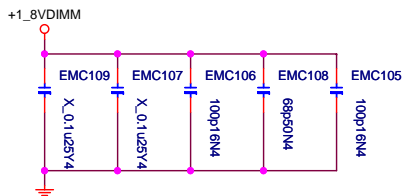
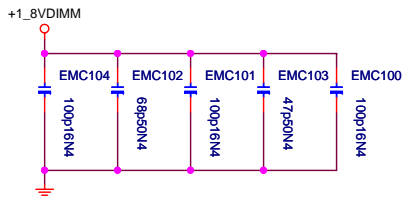
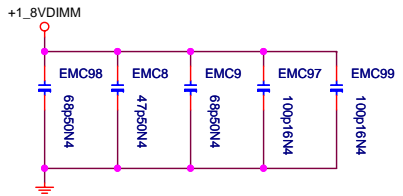


PCB-N0111

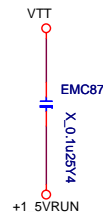
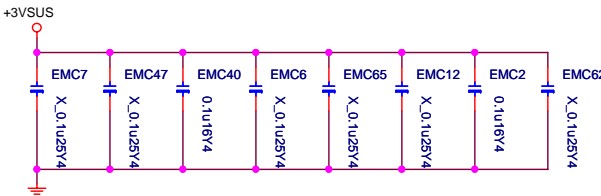
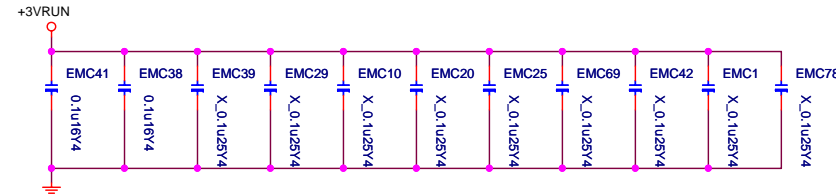
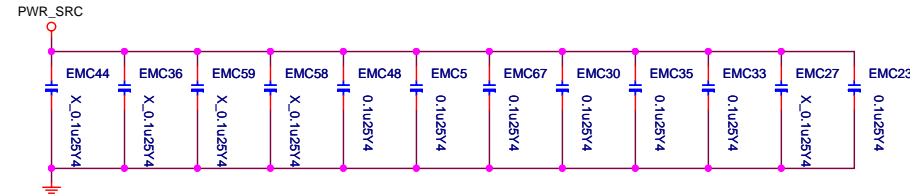
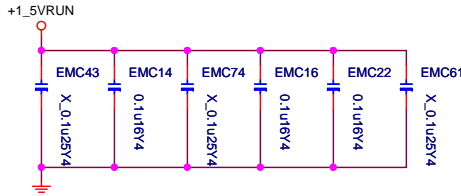
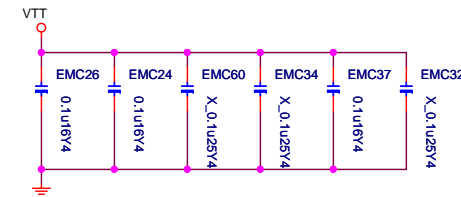
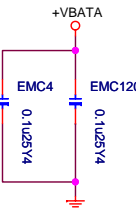
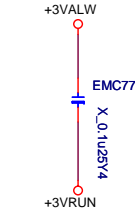
P30-N011110-H73/D05/Y34



SMDDR_VTERM



+1_5VRUN



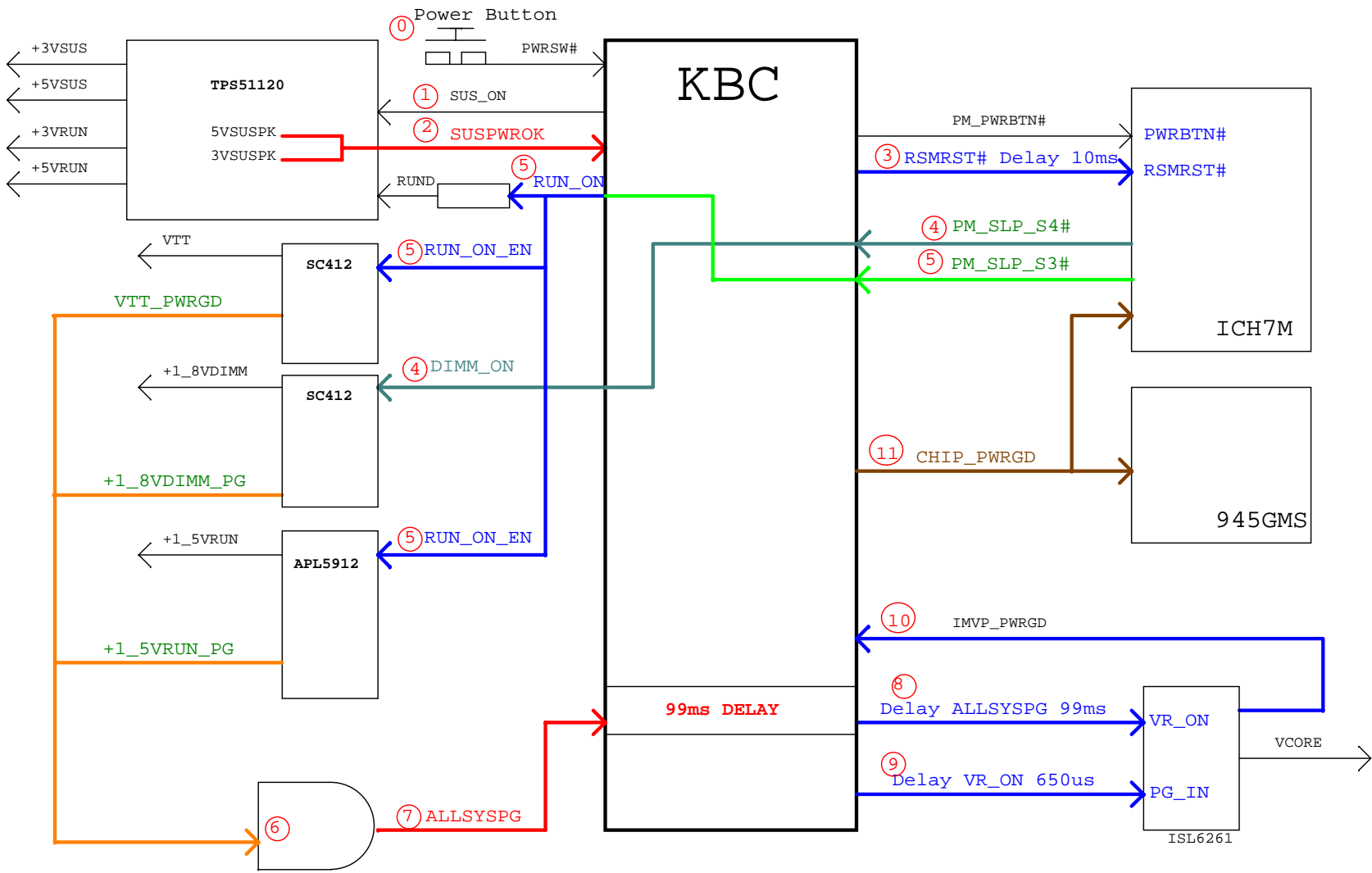
+1_5VRUN

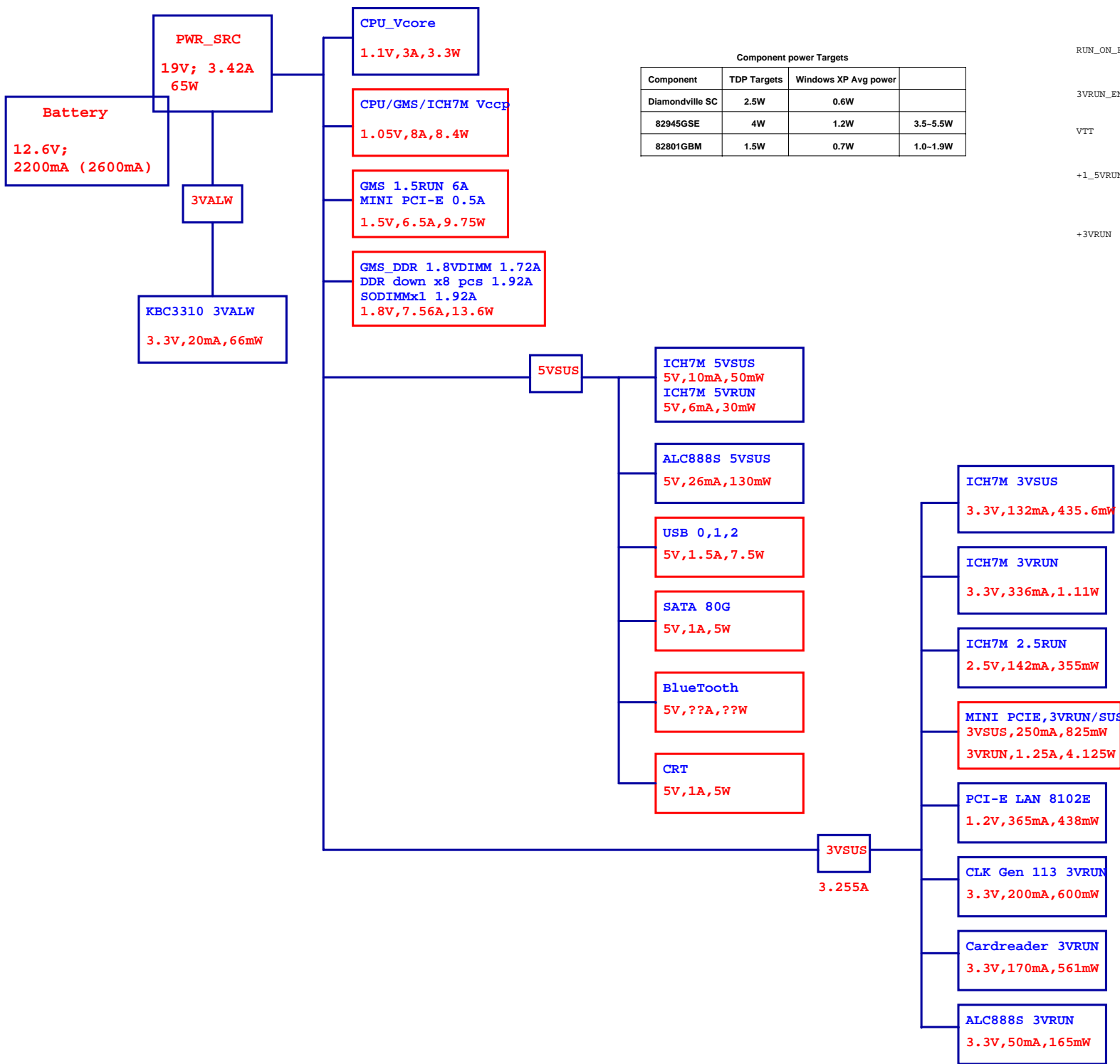


MICRO-STAR INT'L CO.,LTD

MS-N011

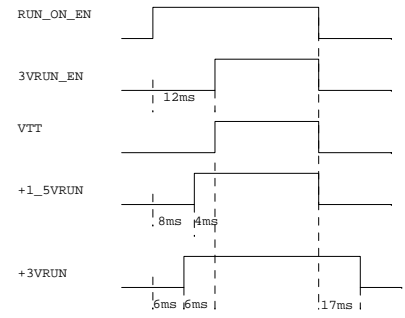
Size B	Document Description	Rev 1.0
Manual Parts		
Date: Friday, April 11, 2008	Sheet 32	of 39





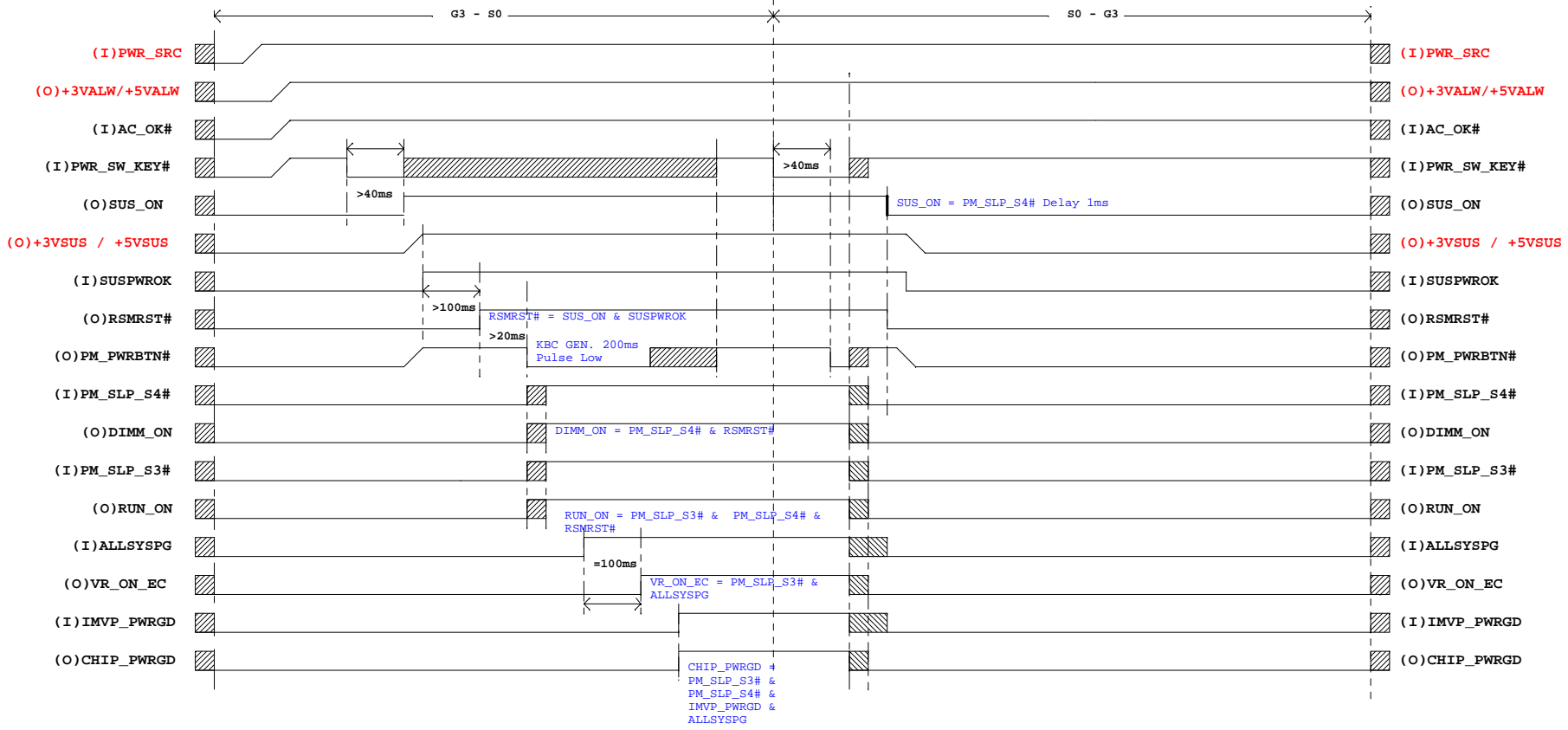
Component power Targets


Component	TDP Targets	Windows XP Avg power	
Diamondville SC	2.5W	0.6W	
82945GSE	4W	1.2W	3.5-5.5W
82801GBM	1.5W	0.7W	1.0-1.9W



RED: POWER
BLACK: KBC

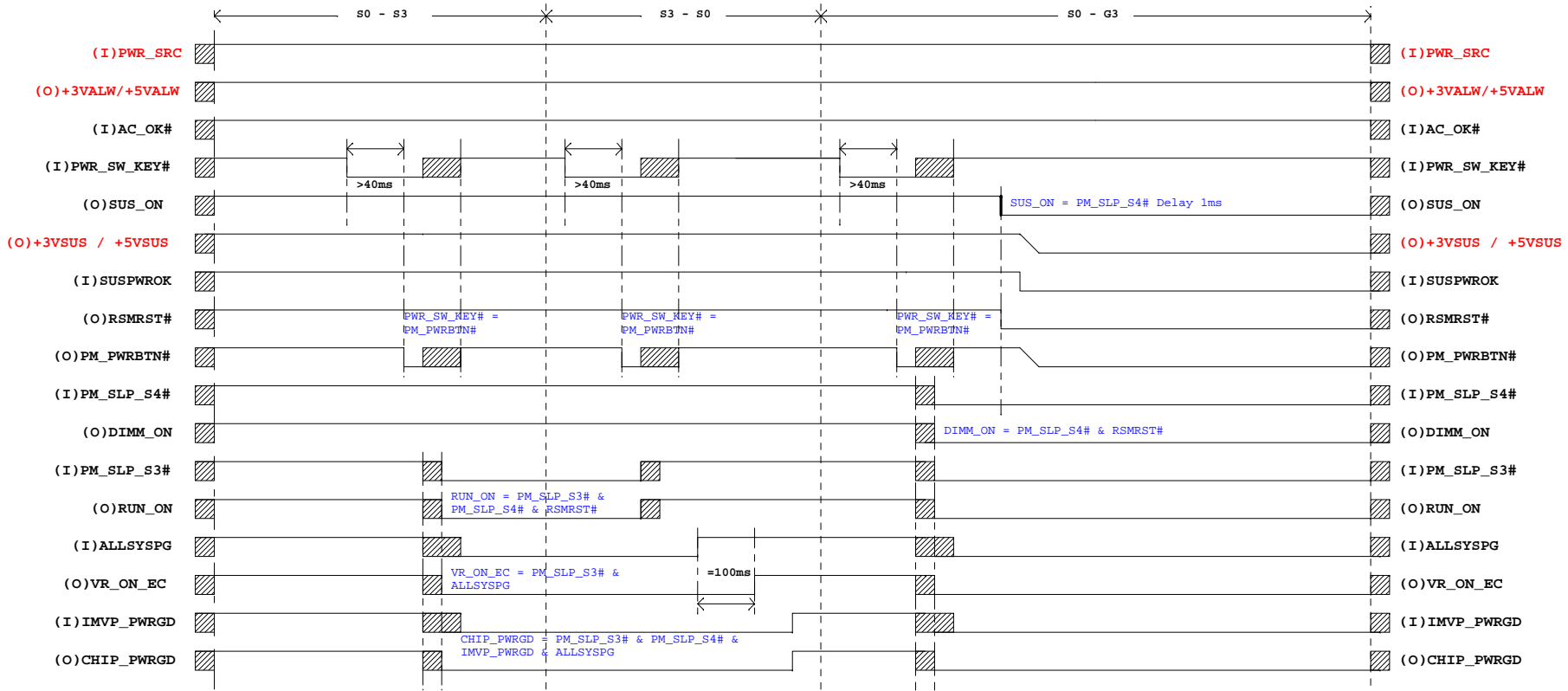
Battery Mode G3 - S0 - G3



	MICRO-STAR INT'L CO.,LTD		
	MS-N011		
	Size Custom	Document Description Timing1	Rev 1.0
Date: Friday, March 28, 2008		Sheet 35 of 39	

RED: POWER
BLACK: KBC

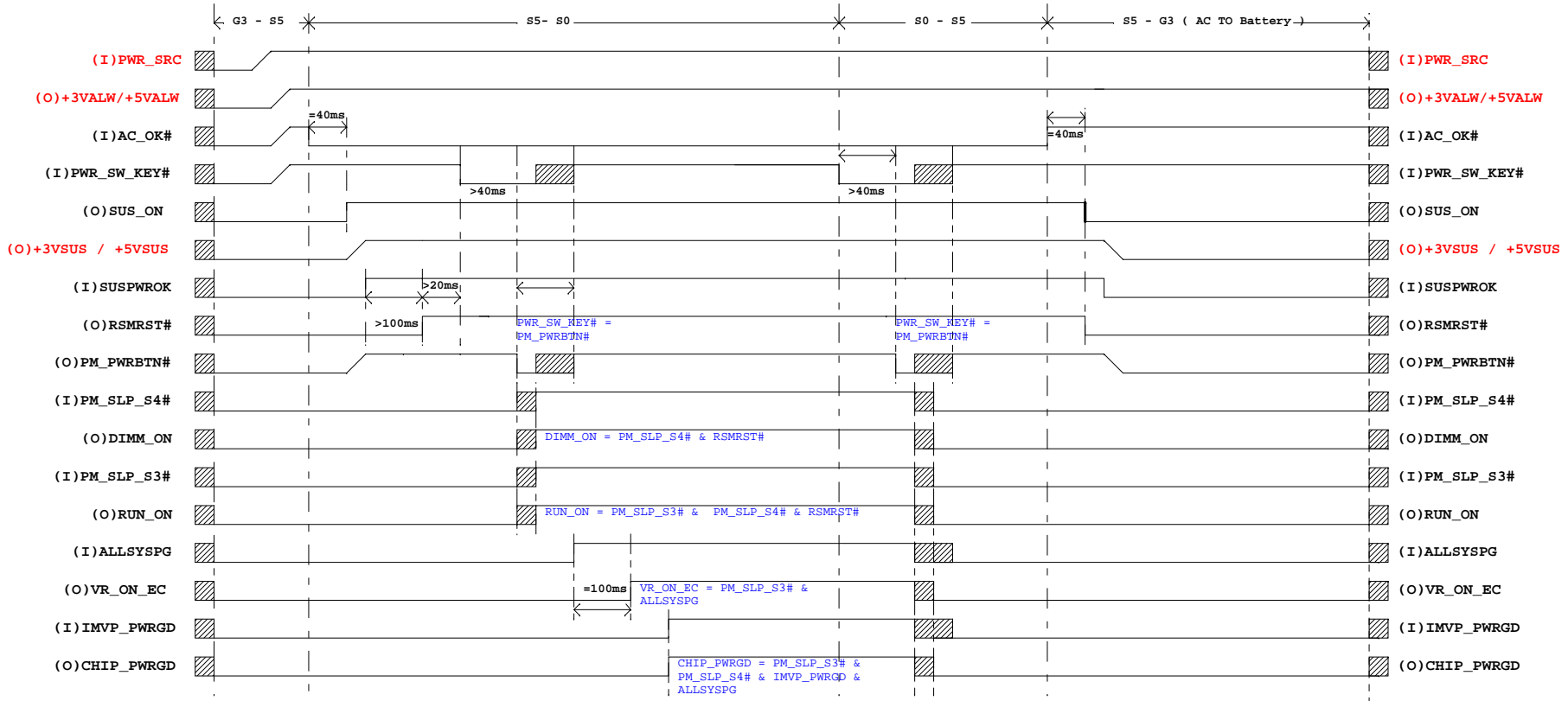
Battery Mode S0 - S3 - S0



MICRO-STAR INT'L CO.,LTD			
MS-N011			
Size Custom	Document Description timing2	Rev 1.0	
Date: Friday, March 28, 2008		Sheet	36 of 39

RED: POWER
BLACK: KBC

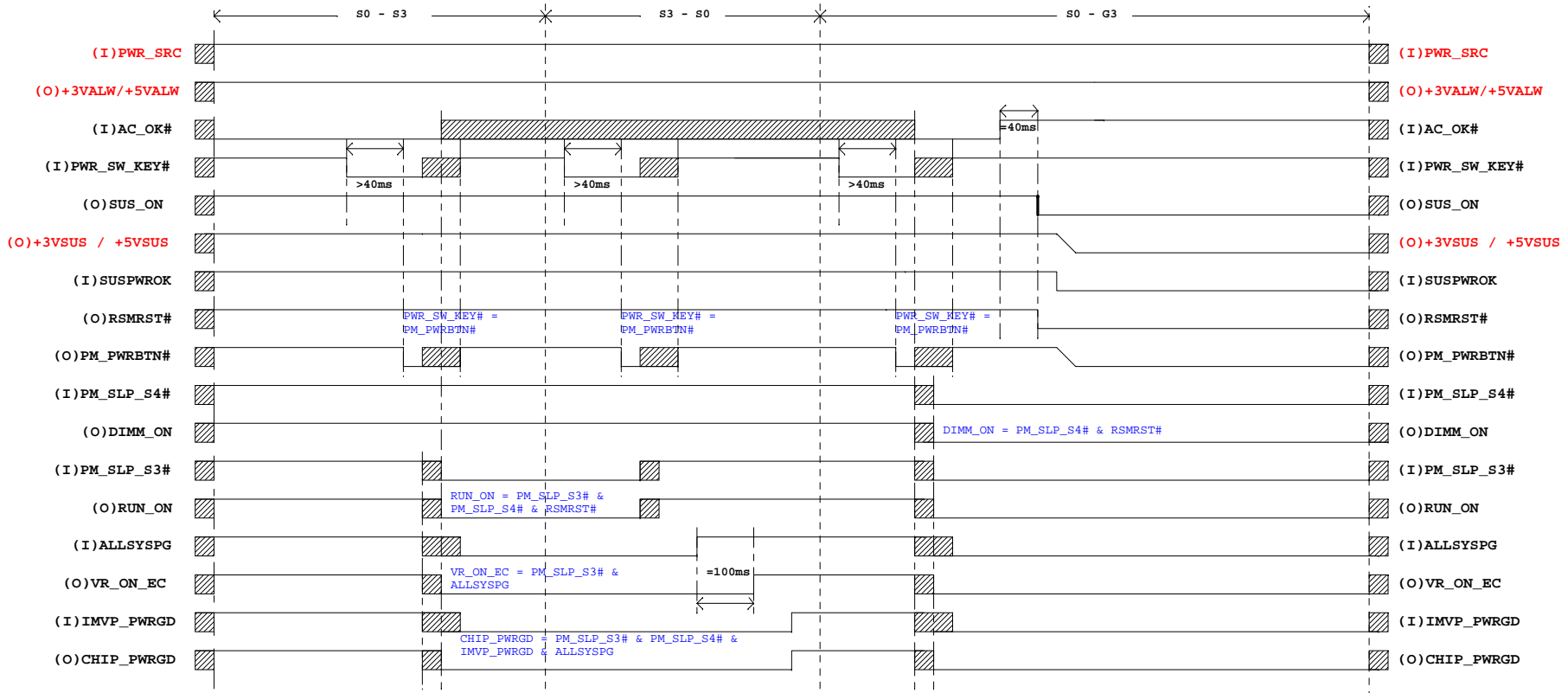
AC Mode G3 - S5 - S0 - S5 - G3



MICRO-STAR INT'L CO.,LTD			
MS-N011			
MSI	Size	Document Description	Rev
	Custom	timing3	1.0
Date: Friday, March 28, 2008		Sheet	37 of 39


RED: POWER
BLACK: KBC

AC Mode S0 - S3 - S0



	MICRO-STAR INT'L CO.,LTD		
	MS-N011		
	Size Custom	Document Description timing4	Rev 1.0
	Date: Friday, March 28, 2008	Sheet 38 of 39	

1. PAGE7: EC15 close to ICH7M cause RMA difficult to rework, change EC15 to C256 (1206) size.
2. PAGE21: Remove R413 & change R412 pull down to GND for LCD backlight blinking while power on.
3. Swap BT & WLAN LED.
4. PAGE25: JBAT1 pin6,7 connector to GND.
5. PAGE23: Remove CP35, CP34.
6. PAGE24: RN47 separate to R244, R254, R257. For tune LED brightness.
7. PAGE23: USB add CMC for EMI request.
8. PAGE23: Add EMC96 for EMI request.
9. PAGE26: Modify R252 value to match new 40W /20V Adapter.
9. PAGE27,29: Modify R215=9.31KR, R216=10KR, R183=5.9KR by power team.

				MICRO-STAR INT'L CO.,LTD			
				MS-N011			
Size	Custom	Document Description	History		Rev	1.0	
Date:	Thursday, April 10, 2008		Sheet	39	of	39	