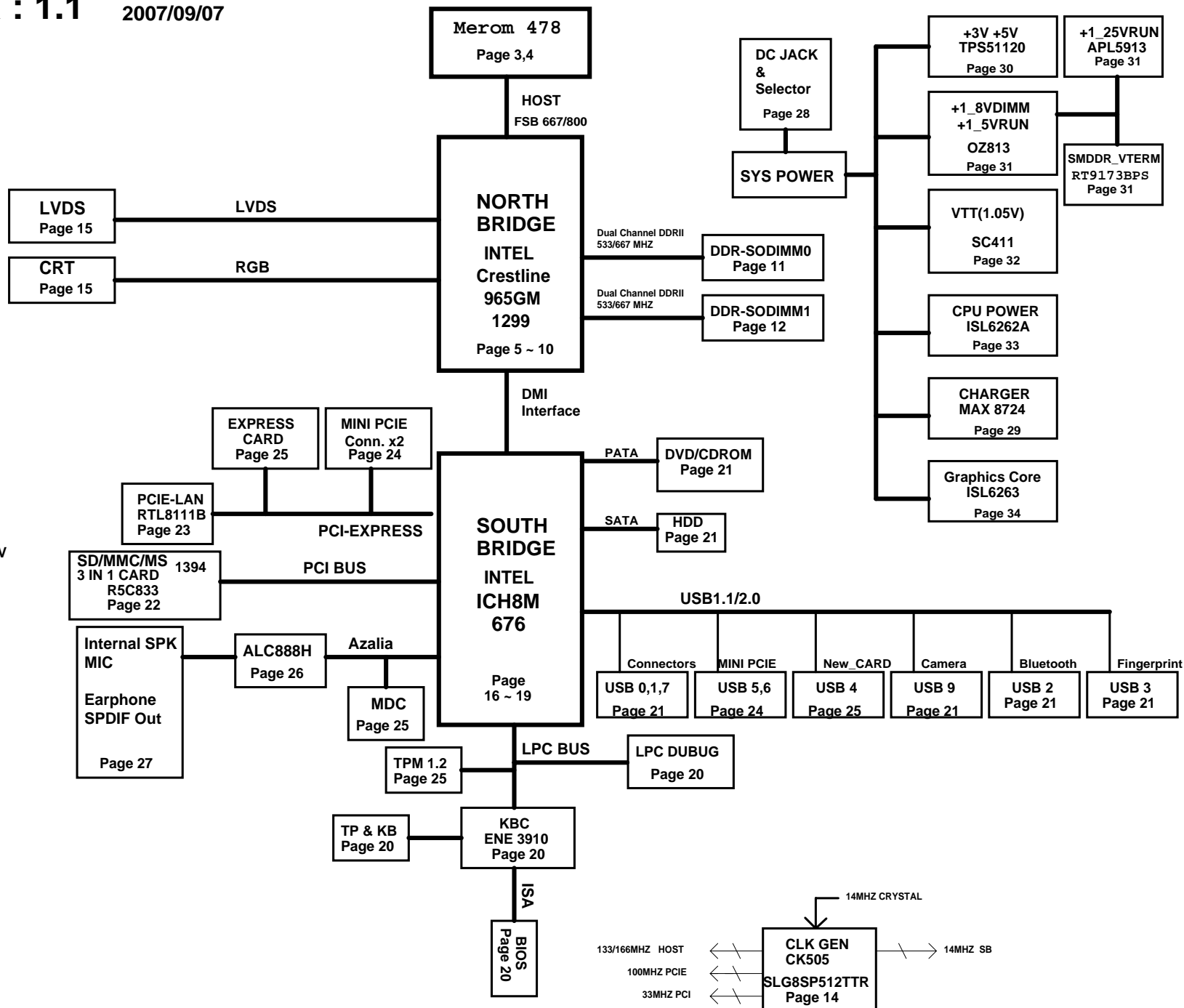


- 01 : BLOCK DIAGRAM
- 02 : PLATFORM
- 03 : Merom-1 CPU (HOST BUS)
- 04 : Merom-2 CPU (POWER/GND)
- 05 : 965GM-1 (HOST)
- 06 : 965GM-2 (DMI / VGA)
- 07 : 965GM-3 (DDR)
- 08 : 965GM-4 (Power-1)
- 09 : 965GM-5 (Power-2)
- 10 : 965GM-6 (GND)
- 11 : DDR2_SODIMM0
- 12 : DDR2_SODIMM1
- 13 : DDR2_Termination
- 14 : CLOCK GEN (ICS9LP505-1)
- 15 : VGA, LVDS, BL
- 16 : ICH8M-1 (CPU/IDE/Azalia)
- 17 : ICH8M-2 (PCI/USB/PCIE/DMI)
- 18 : ICH8M-3 (SM BUS/GPIO)
- 19 : ICH8M-4 (POWER/GND)
- 20 : ENE3910(KBC) & BIOS
- 21 : HDD,CDROM,CIR,USB CONN.
- 22 : Card Reader&1394 (R5C833)
- 23 : PCIE LAN (RTL 8111B)
- 24 : MINI_PCIE, LED, SW
- 25 : NEWCARD, MDC,TPM,FAN
- 26 : AZALIA CODEC(ALC888)
- 27 : Audio Amp. & Jacks
- 28 : M_Battery Select
- 29 : M_Battery Charger
- 30 : M_System Power
- 31 : DDR2 RAM POWER, +1.5V,+1.25V
- 32 : M_VTT
- 33 : M_CPU power
- 34 : M_Graphics Core
- 35 : EMI
- 36 : Screw
- 37 : Non-Footprint for BOM
- 38 : KBC_CTR_PWR_BD
- 39 : Power Sequency
- 40 : Change History



Voltage Rails

Voltage	Description	Control Signal
PWR_SRC	AC ADAPTER OR BATTERY IN	
VHORE	Core Voltage for Processor	VR_ON
VTT	1.05 rail for Processor & 965GM I/O	RUN_ON
+1_5VRUN	1.5V switched power rail (off in S3-S5)	RUN_ON
+3VRUN	3.3V switched power rail (off in S3-S5)	RUN_ON
+5VRUN	5.0V switched power rail (off in S3-S5)	RUN_ON
+1_25VRUN	1.25V LDO power rail (off in S3-S5)	RUN_ON
+1_8VRUN	1.8V powe rail for Sil1390 (off in S3-S5)	RUND
ADD5V	5.0V Power rail Audio codec(off in S3-S5)	+5VRUN
SMDDR_VTERM	0.9V DDR Termination voltage (off in S4-S5)	RUN_ON
+1_8VDIMM	1.8V power rail DDR (off in S4-S5)	DIMM_ON
+VGFX_CORE	Graphic core of GMCH switched power rail (off in S3-S5)	GFX_VR_EN
+3VSUS	3.3V power rail (off in S4-S5)	SUS_ON
+5VSUS	5.0V power rail (off in S4-S5)	SUS_ON
+3VALW	3.3V always on power rail	PWR_SRC
+5VALW	5.0V always on power rail	PWR_SRC

POWER STATES

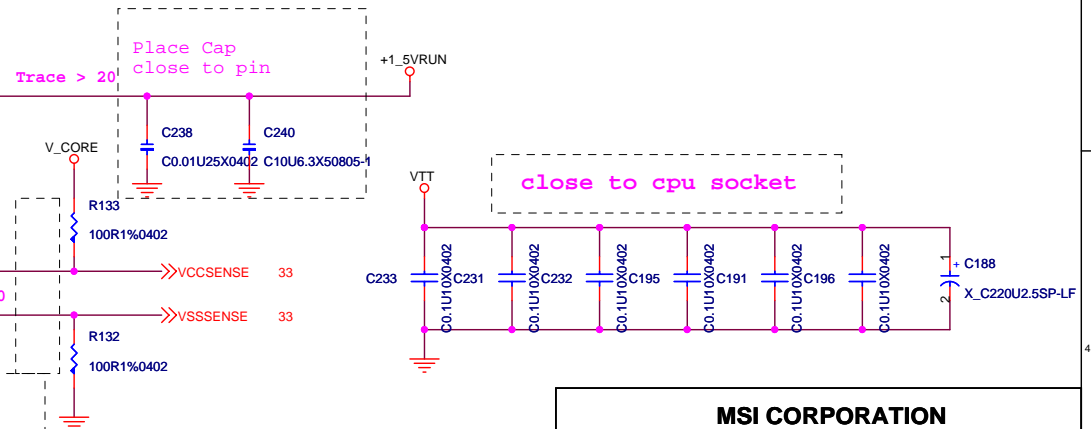
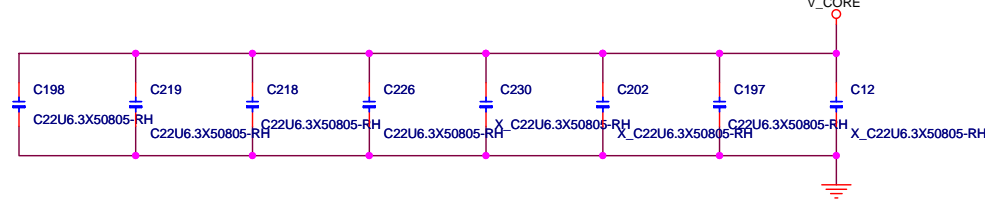
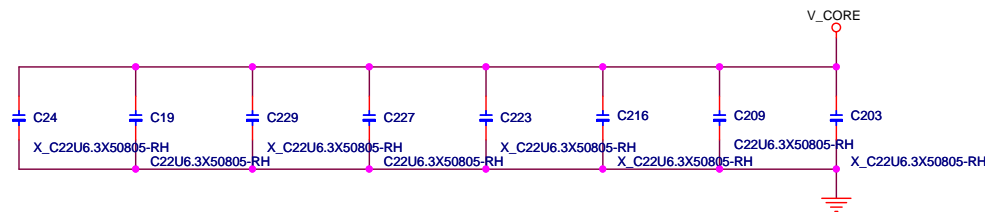
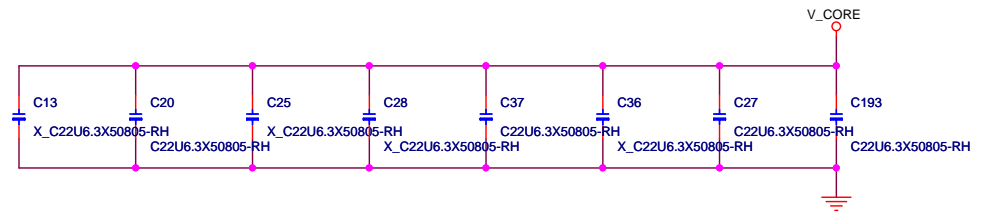
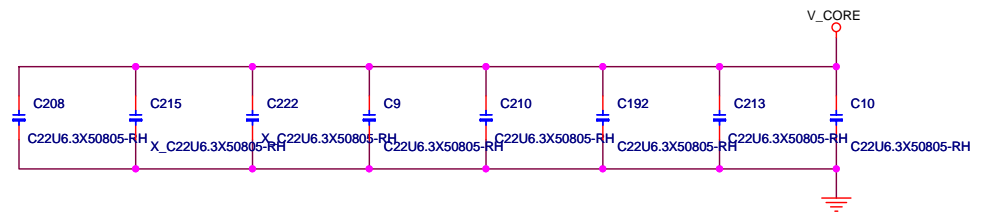
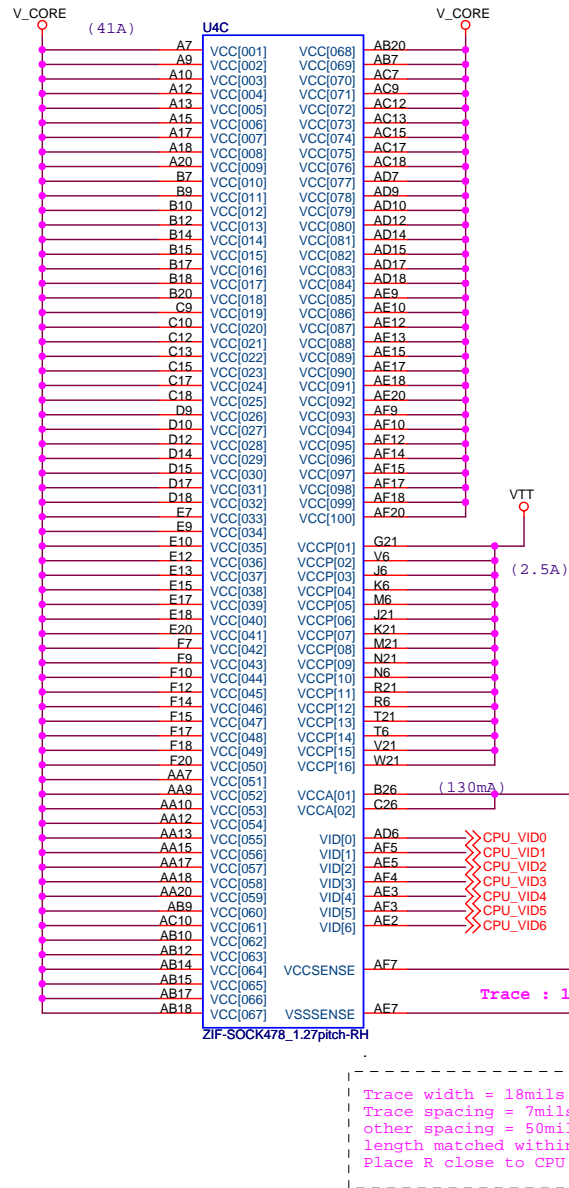
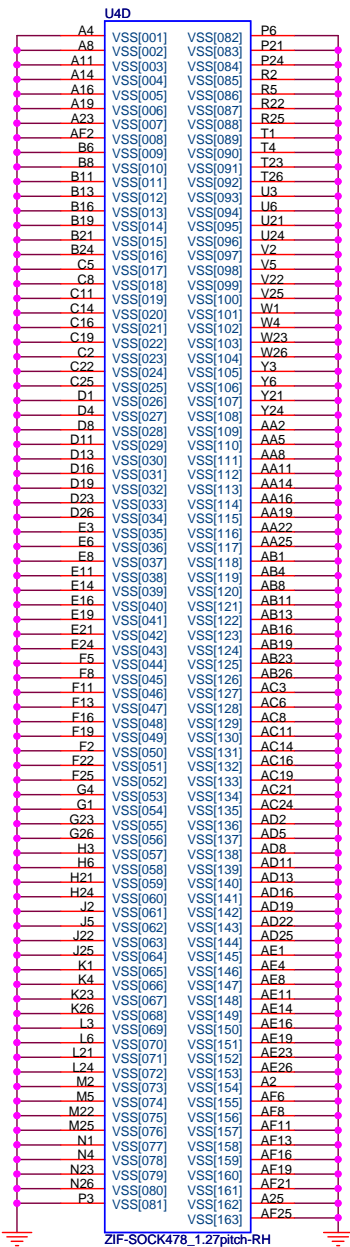
STATE \ SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+V*ALWAYS	+V*SUS	+V*RUN	Clocks
S0(Full ON)	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1M(Power On Suspend)	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3(Suspend to RAM)	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4(Suspend to Disk)	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 / Soft OFF	LOW	LOW	LOW	ON	OFF	OFF	OFF

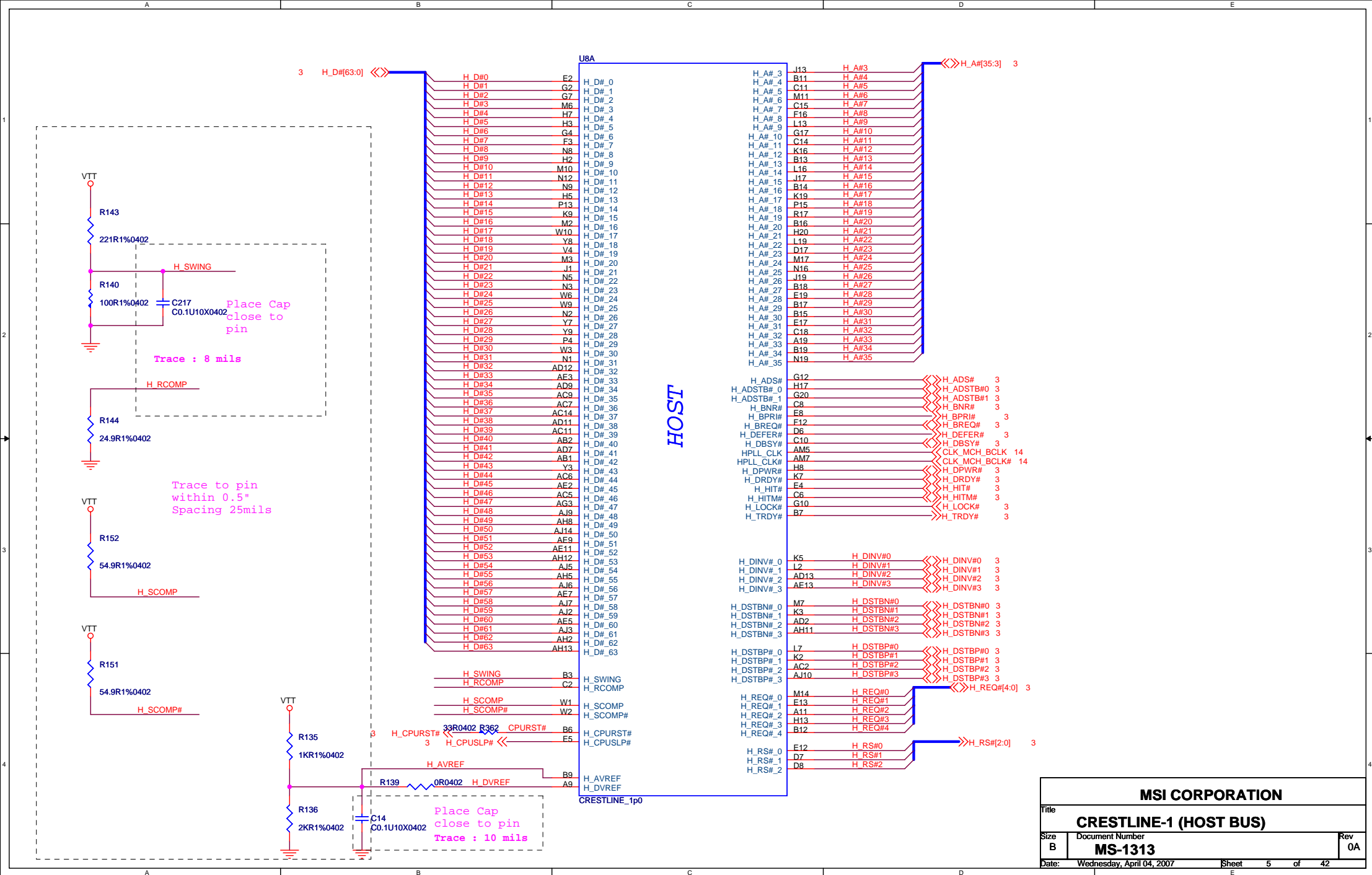
Note : WHEN AC MODE , System turn on then +V*SUS will always keep high

PCI DEVICE

EXTERNAL	IDSEL#	REQ/GNT#	PIRQ
CARD READER	AD20	0	A,B







Strapping Configuration

CFG[2:0]	FSB Frequency Select	010 = FSB 800 MHz
		011 = FSB 667 MHz
		Others: Reserved
CFG5	DMI X 2 Select	0 = DMI X 2
		1 = DMI X 4 (default)
CFG9	PCI Express Graphics Lane Reversal	0 = Lane Reversed
		1 = Normal mode
CFG16	FSB Dynamic ODT	0 = Dynamic ODT disabled
		1 = Dynamic ODT enabled(default)
CFG19	DMI Lane Reversal	0 = Normal mode
		1 = Lane reversed

U8B

RSVD1 P36
RSVD2 P37
RSVD3 P38
RSVD4 N35
RSVD5 AR12
RSVD6 AR13
RSVD7 AR14
RSVD8 AR15
RSVD9 AR16
RSVD10 AR17
RSVD11 AR18
RSVD12 AR19
RSVD13 AR20
RSVD14 AR21

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RSVD849 B879
RSVD850 B880

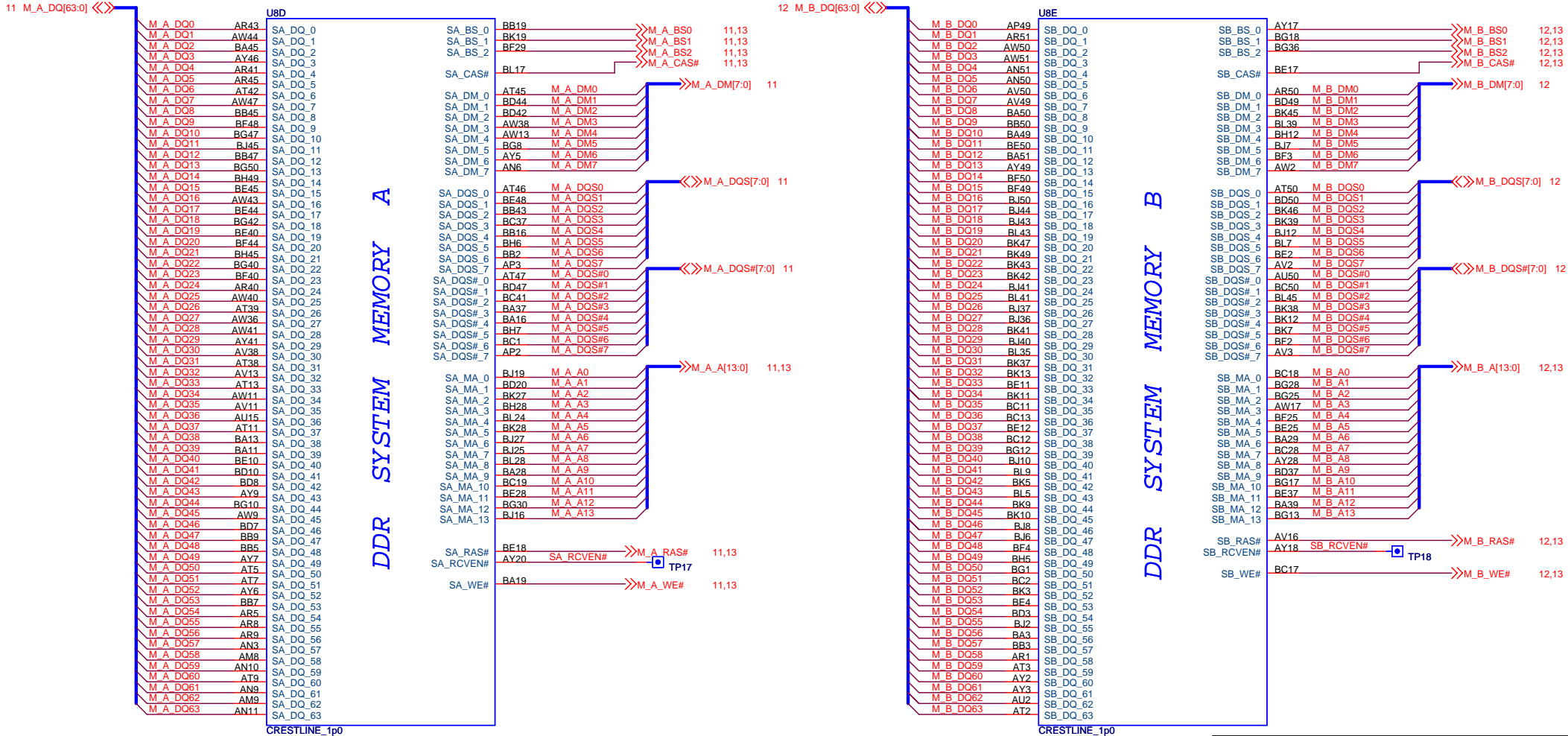
RSVD851 B881
RSVD852 B882
RSVD853 B883
RSVD854 B884
RSVD855 B885
RSVD856 B886
RSVD857 B887
RSVD858 B888
RSVD859 B889
RSVD860 B890
RSVD861 B891
RSVD862 B892
RSVD863 B893
RSVD864 B894
RSVD865 B895

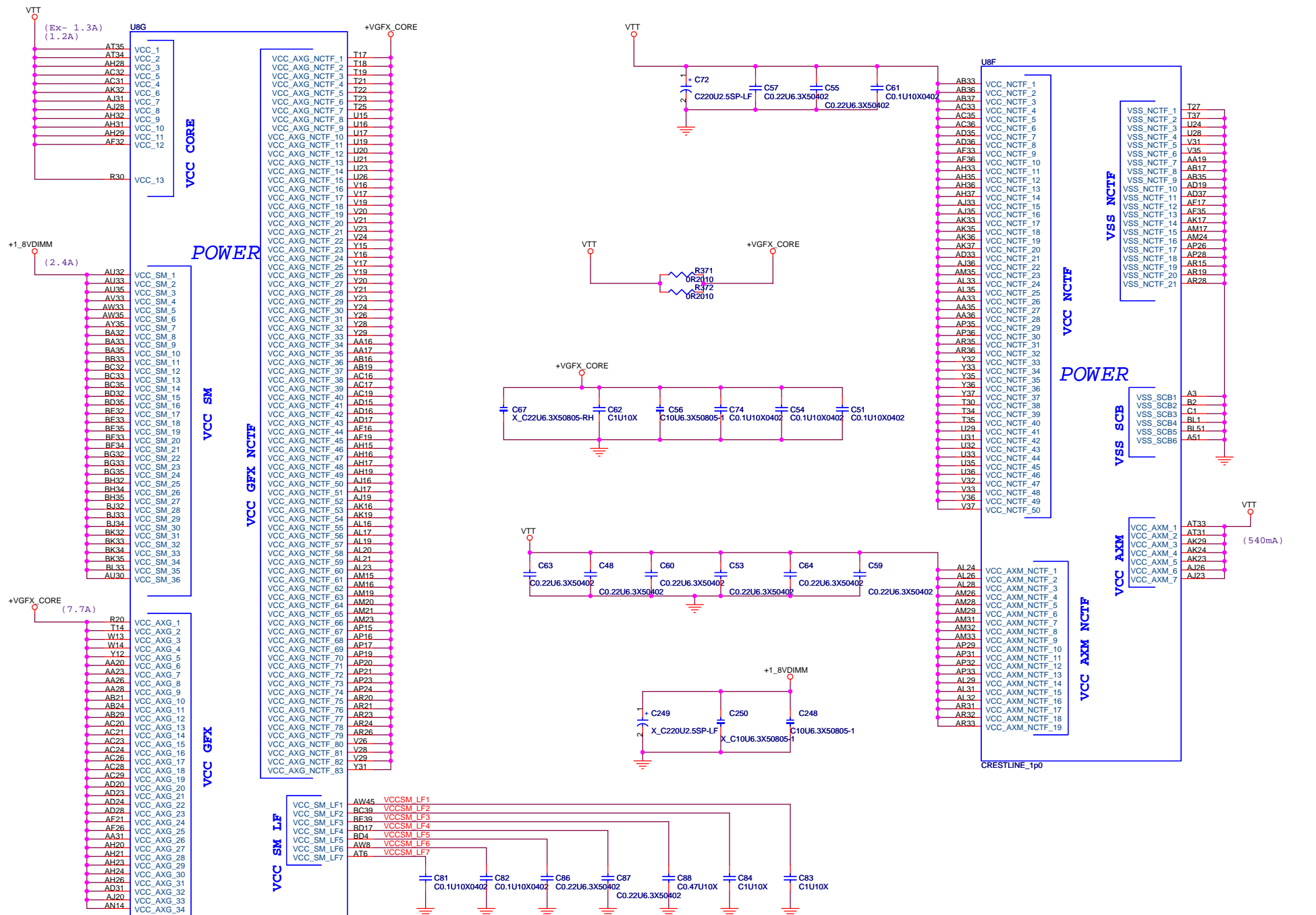
RSVD866 B896
RSVD867 B897
RSVD868 B898
RSVD869 B899
RSVD870 B900
RSVD871 B901
RSVD872 B902
RSVD873 B903
RSVD874 B904
RSVD875 B905
RSVD876 B906
RSVD877 B907
RSVD878 B908
RSVD879 B909
RSVD880 B910

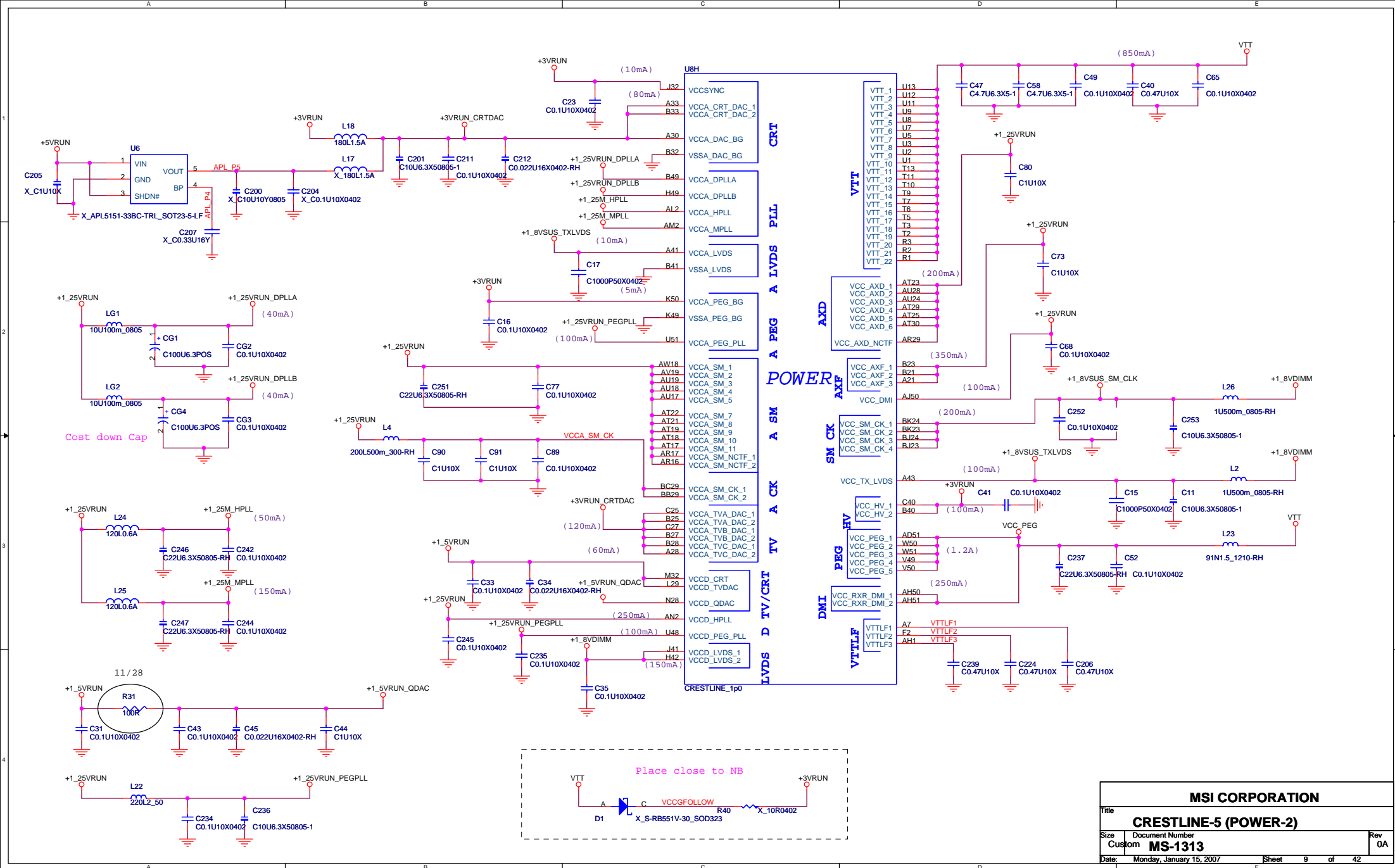
RSVD881 B911
RSVD882 B912
RSVD883 B913
RSVD884 B914
RSVD885 B915
RSVD886 B916
RSVD887 B917
RSVD888 B918
RSVD889 B919
RSVD890 B920
RSVD891 B921
RSVD892 B922
RSVD893 B923
RSVD894 B924
RSVD895 B925

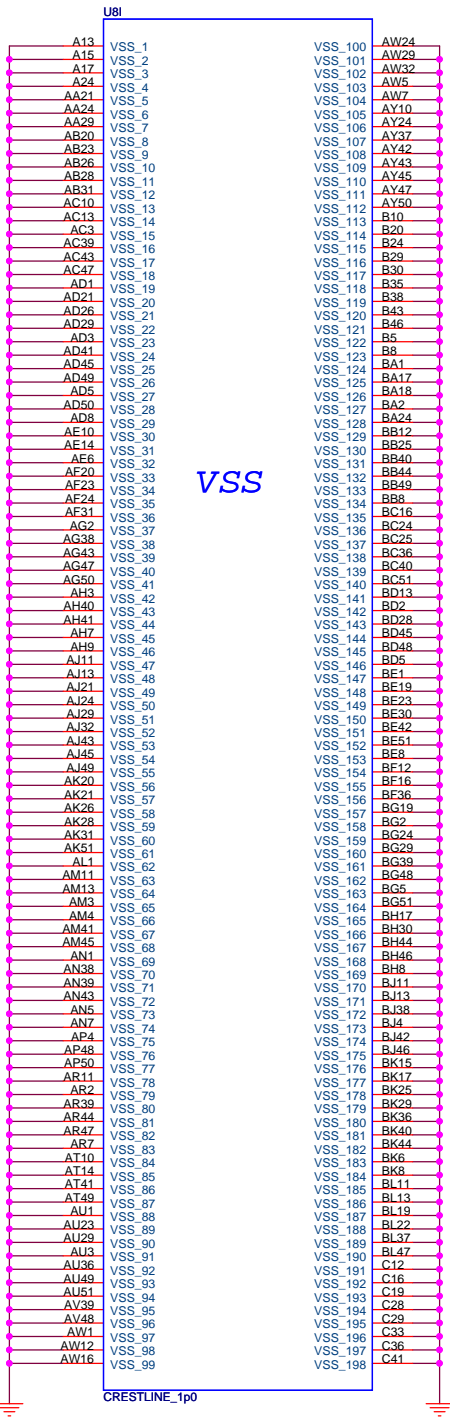
RSVD896 B926
RSVD897 B927
RSVD898 B928
RSVD899 B929
RSVD900 B930
RSVD901 B931
RSVD902 B932
RSVD903 B933
RSVD904 B934
RSVD905 B935
RSVD906 B936
RSVD907 B937
RSVD908 B938
RSVD909 B939
RSVD910 B940

RSVD911 B941
RSVD912 B942
RSVD9

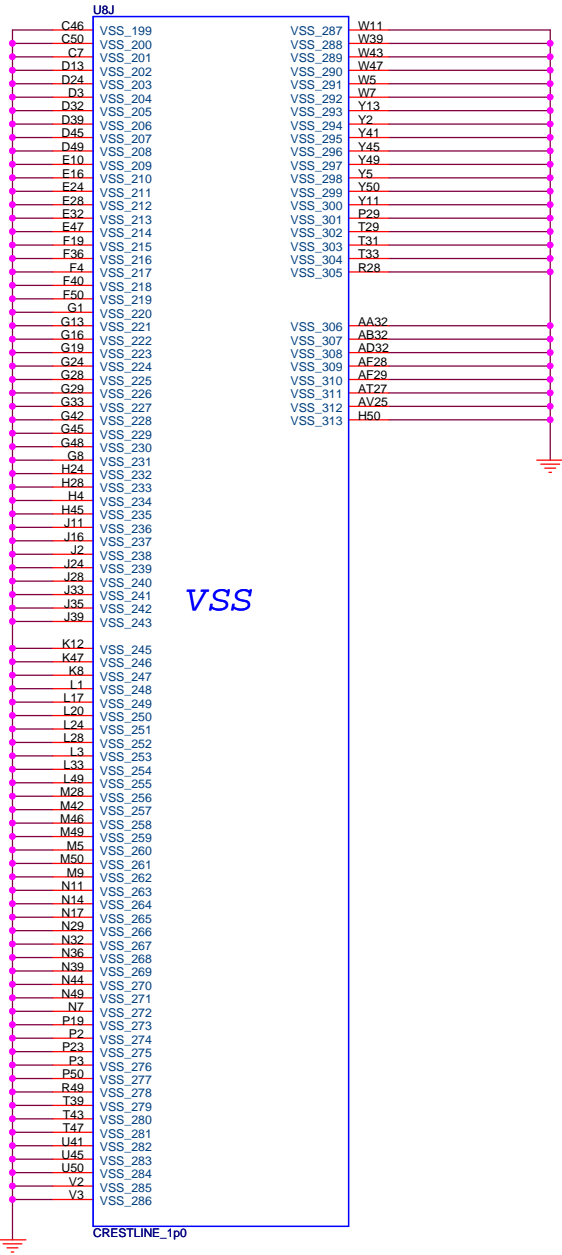








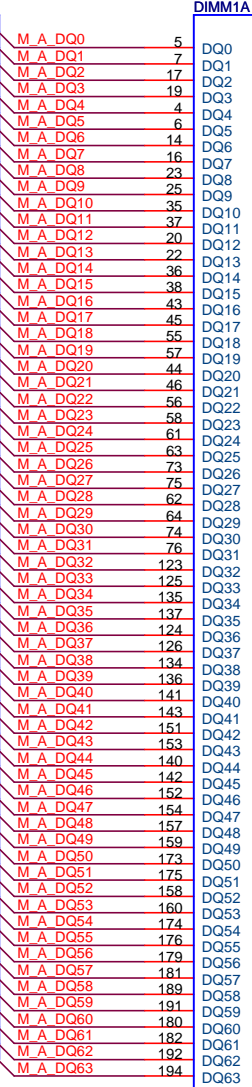
VSS



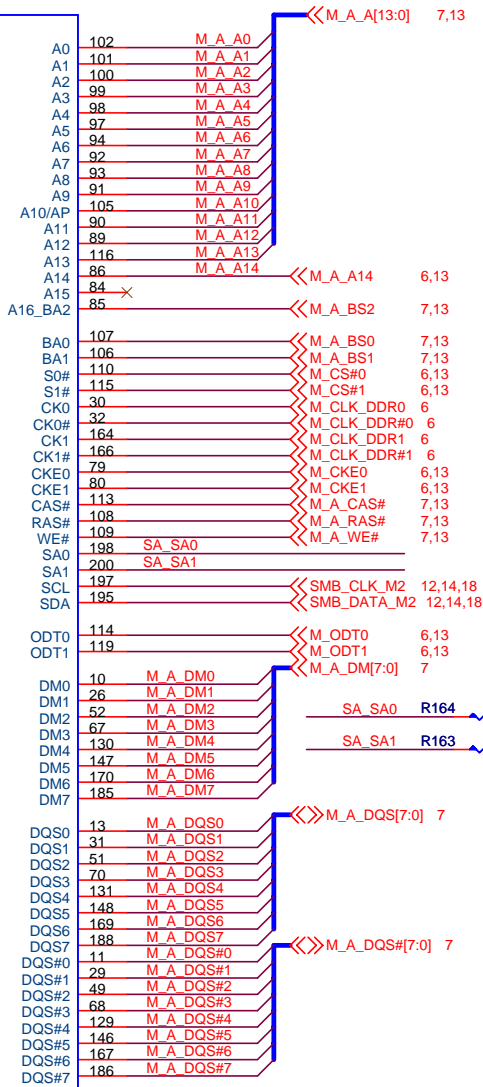
VSS

MSI CORPORATION		
Title		
CRESTLINE-6 (VSS)		
Size	Document Number	Rev
Custom	MS-1313	0A
Date:	Tuesday, January 16, 2007	Sheet 10 of 42

7 M_A_DQ[63:0] <<>



DIMM1A



DIMM-200S_black-RH-1

<<M_A_A[13:0] 7,13

<<M_A_A14 6,13

<<M_A_BS2 7,13

<<M_A_BS0 7,13

<<M_A_BS1 7,13

<<M_CS#0 6,13

<<M_CS#1 6,13

<<M_CLK_DDR0 6

<<M_CLK_DDR#0 6

<<M_CLK_DDR1 6

<<M_CLK_DDR#1 6

<<M_CKE0 6,13

<<M_CKE1 6,13

<<M_A_CAS# 7,13

<<M_A_RAS# 7,13

<<M_A_WE# 7,13

<<SMB_CLK_M2 12,14,18

<<SMB_DATA_M2 12,14,18

<<M_ODT0 6,13

<<M_ODT1 6,13

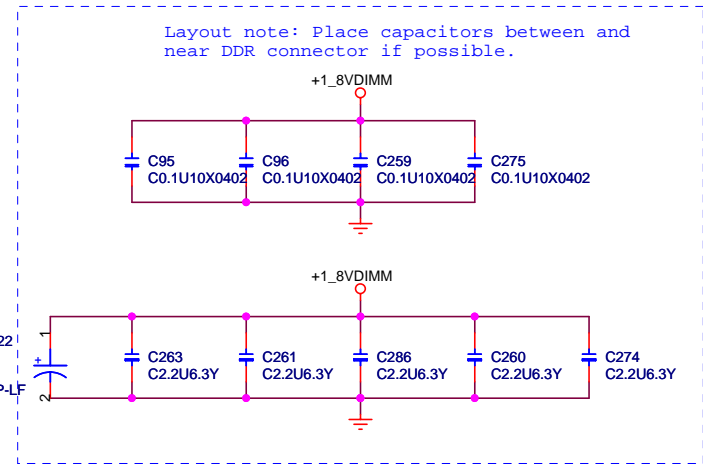
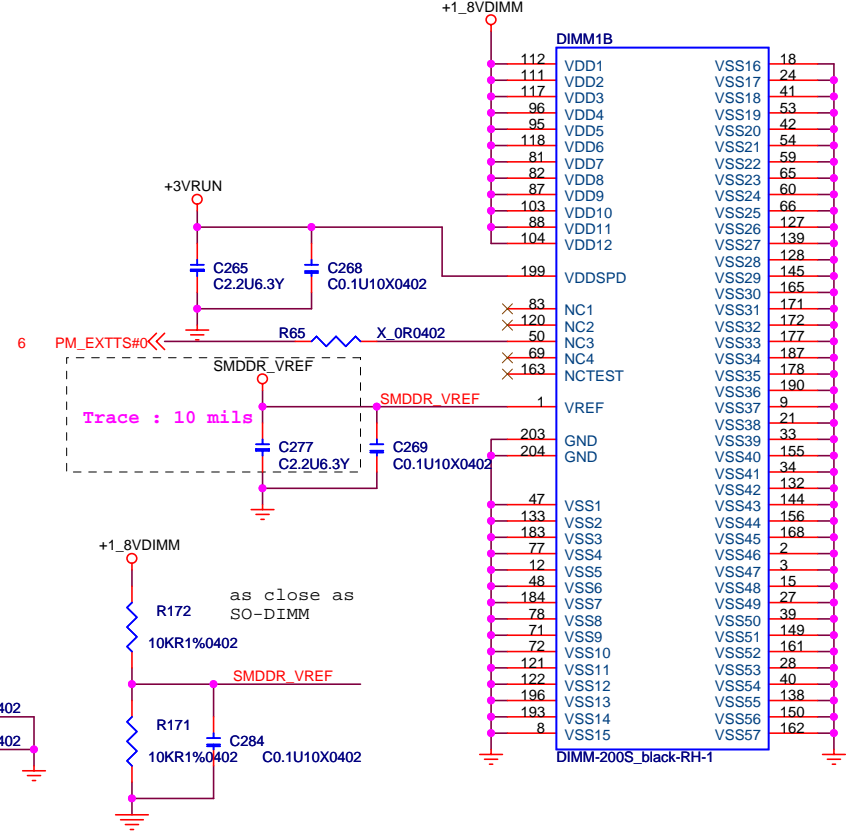
<<M_A_DM[7:0] 7

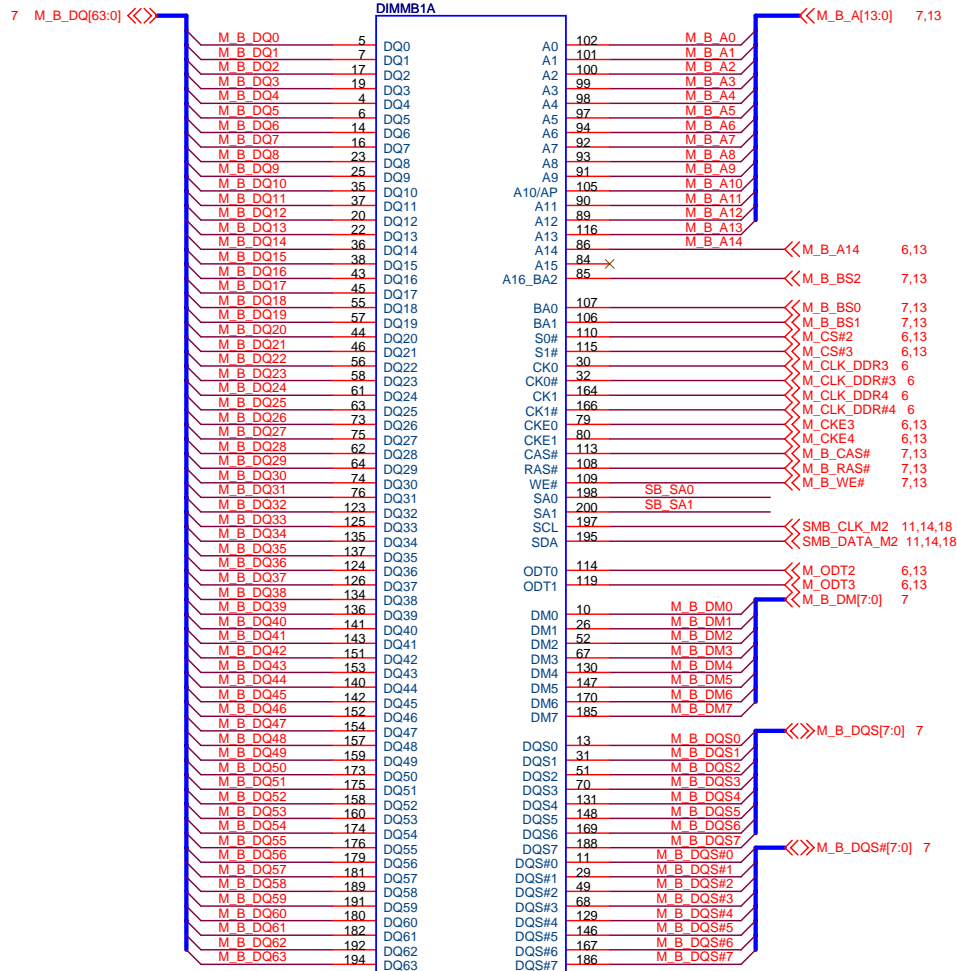
SA_SA0 R164 10KR0402

SA_SA1 R163 10KR0402

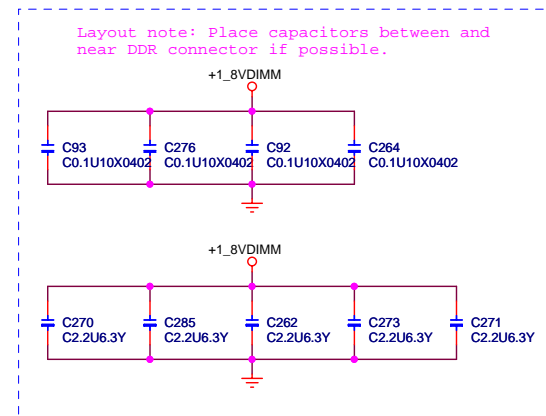
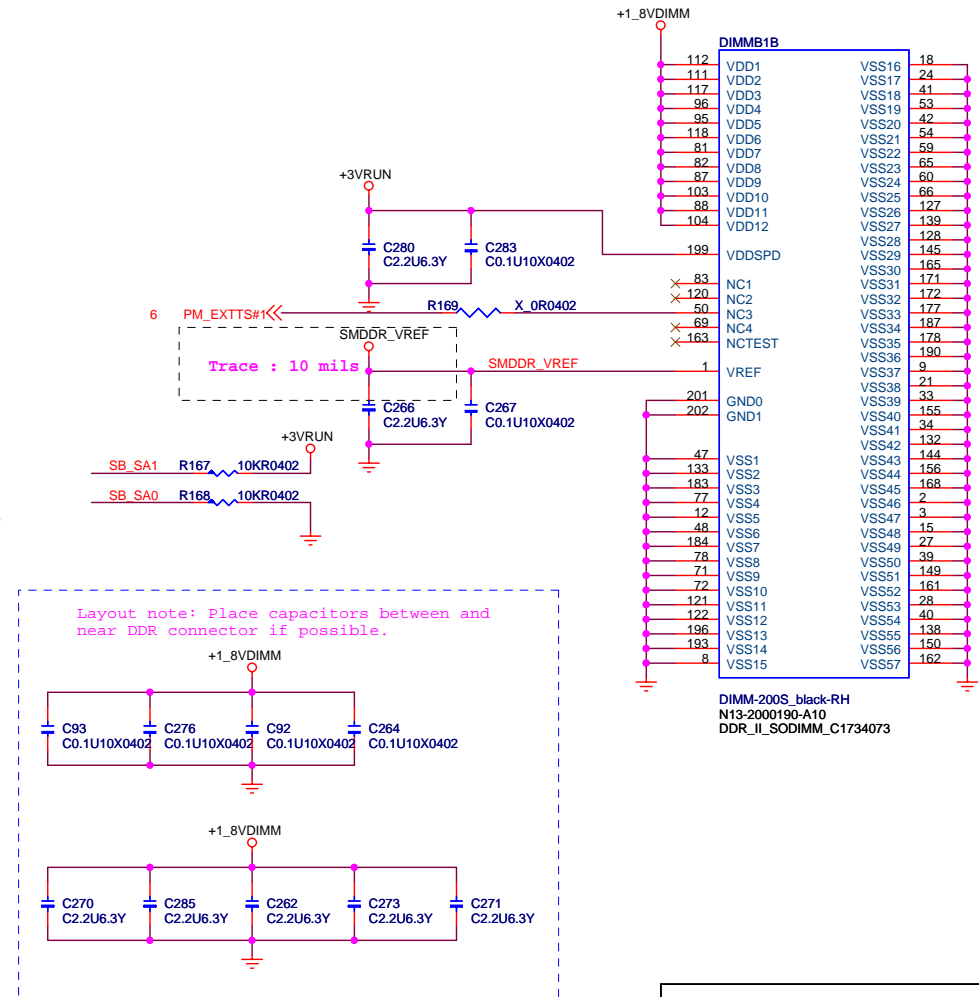
<<>M_A_DQS[7:0] 7

<<>M_A_DQS#7[7:0] 7

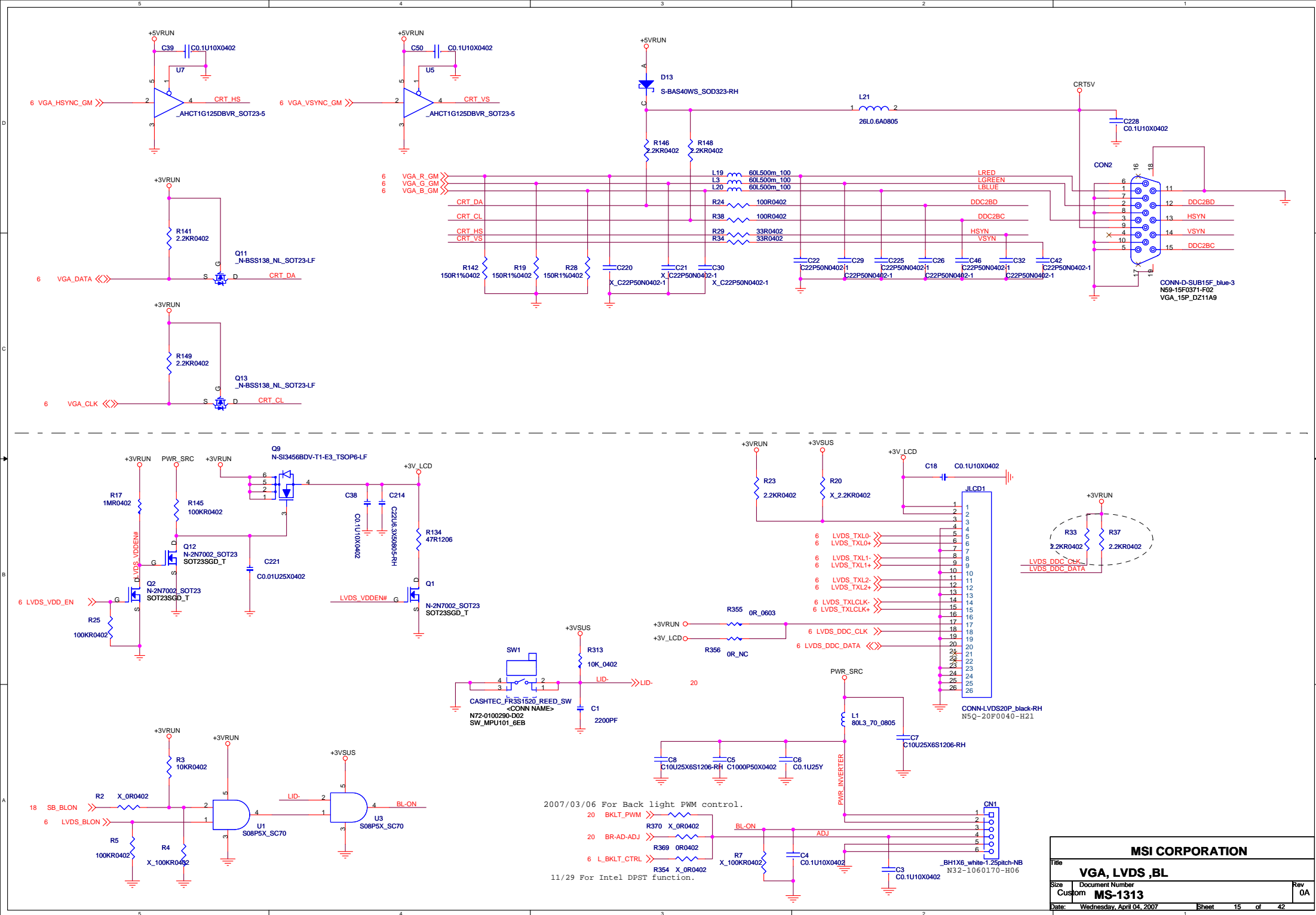


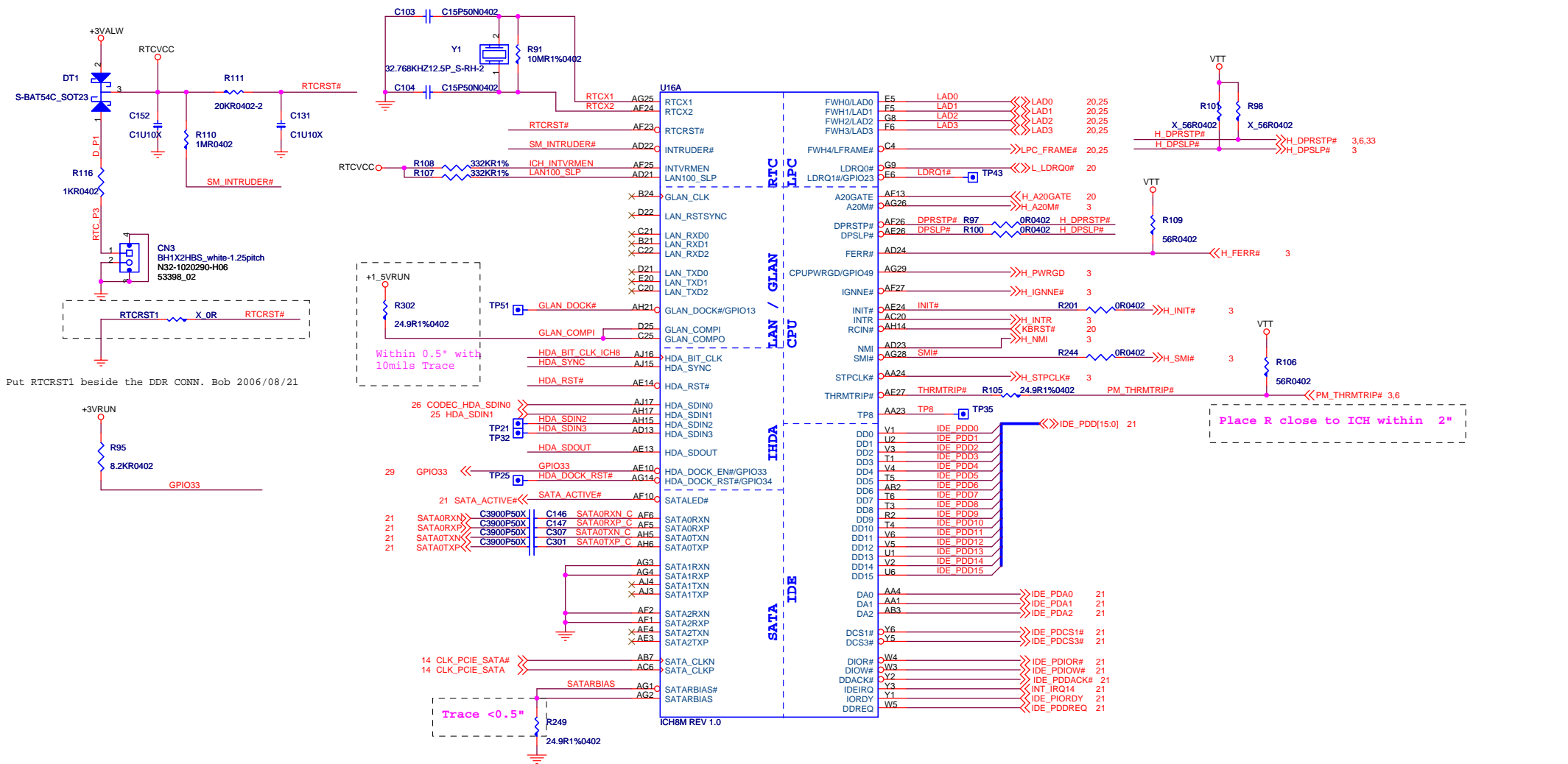


DIMM-200S_black-RH
N13-2000190-A10
DDR_IL_SODIMM_C1734073



MSI CORPORATION			
Title			
DDR2 SODIMM 1			
Size	Document Number		Rev
Custom	MS-1313		0A
Date:	Wednesday, April 04, 2007		Sheet 12 of 42





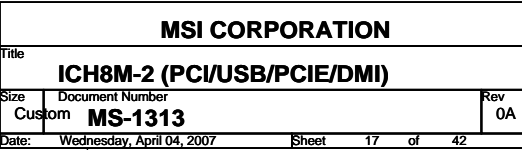
Put RTCRST1 beside the DDR CONN. Bob 2006/08/21

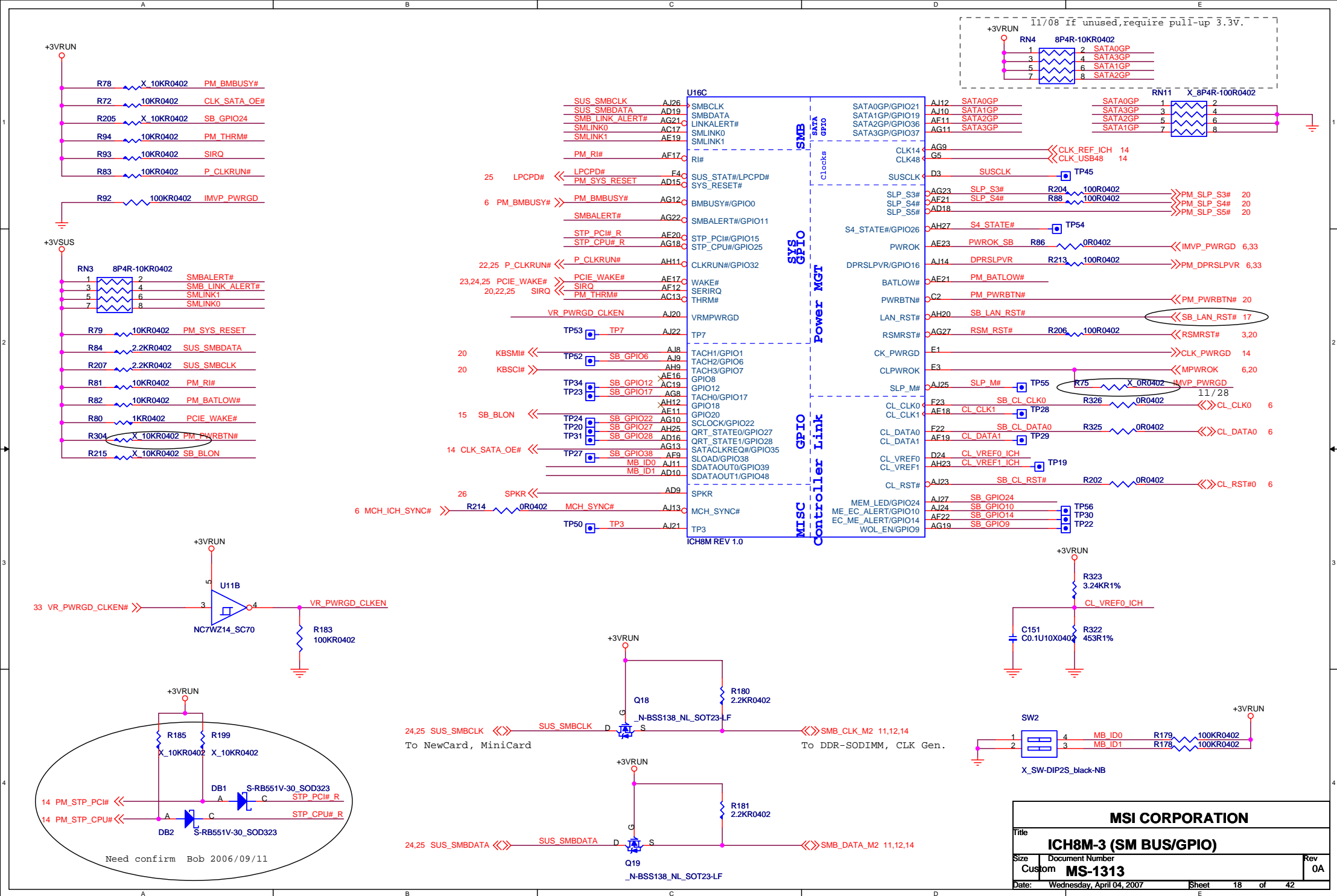
Within 0.5" with 10mils Trace

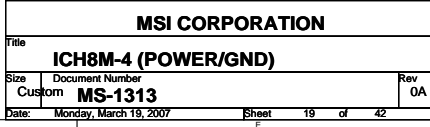
Place R close to ICH within 2"

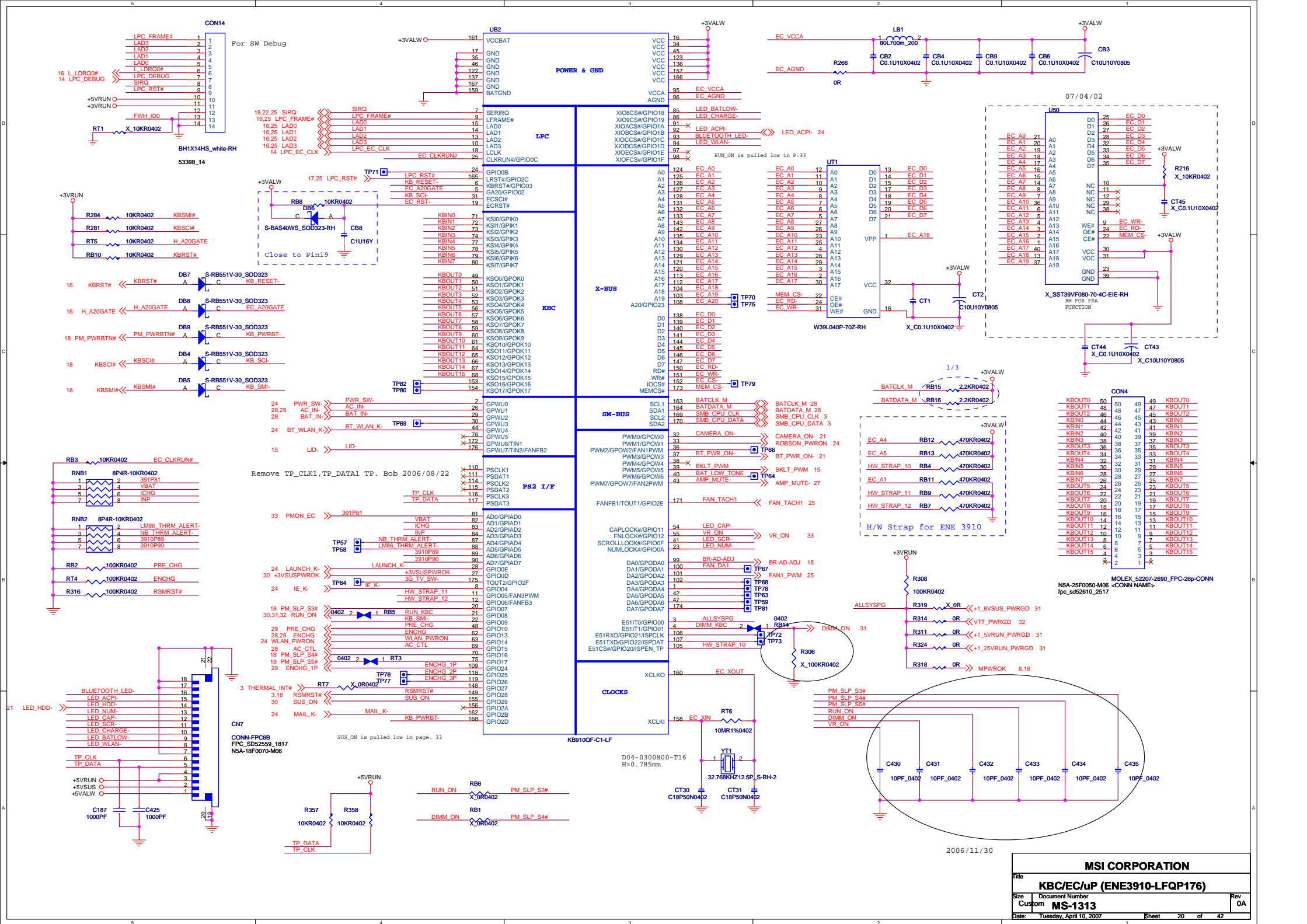
Trace <0.5"

Place R close to ICH8 within 2"



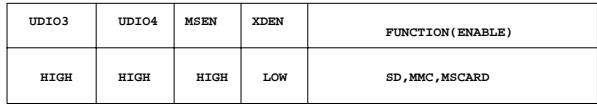


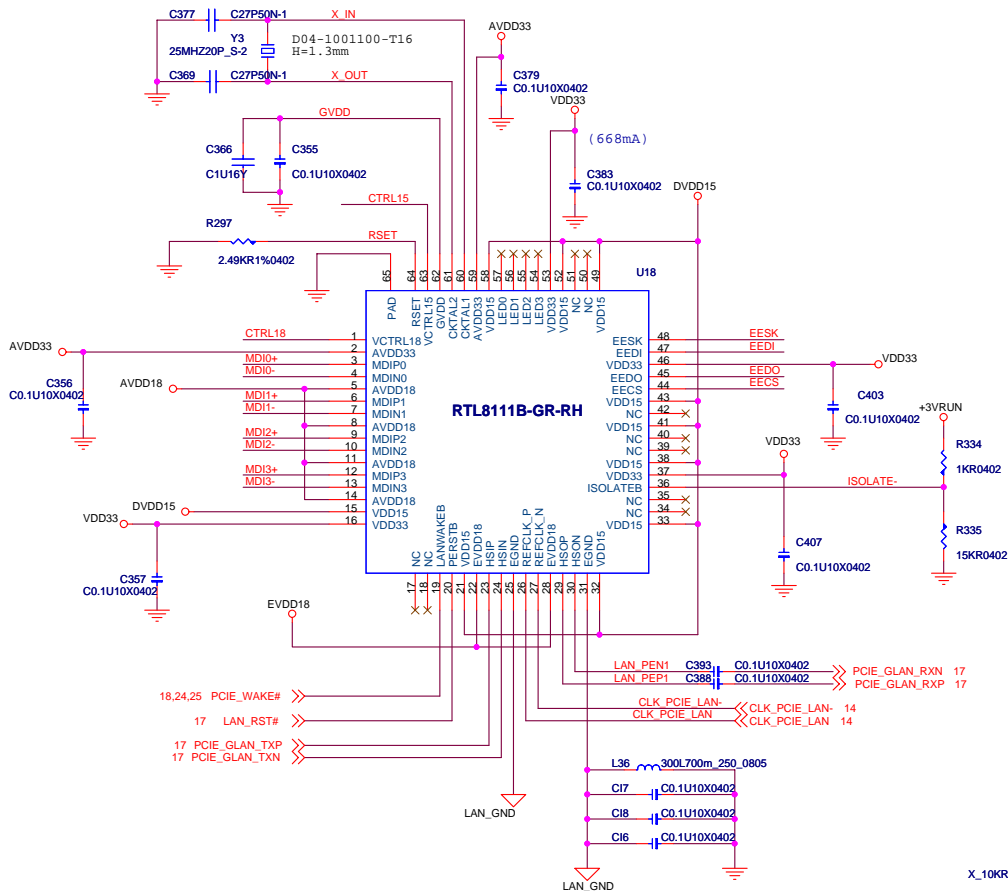






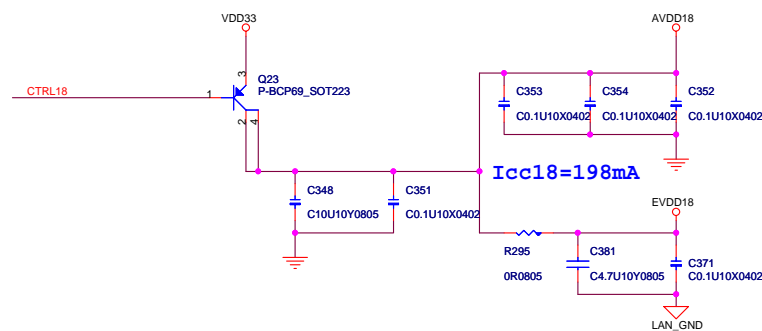
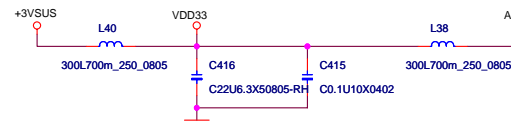
1



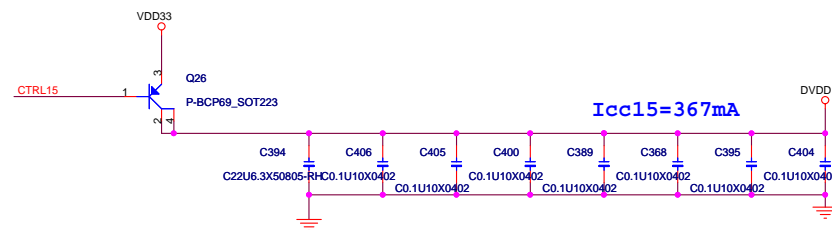


18,24,25 PCIE_WAKE#
17 LAN_RST#
17 PCIE_GLAN_TXP
17 PCIE_GLAN_TXN

Icc33=103mA

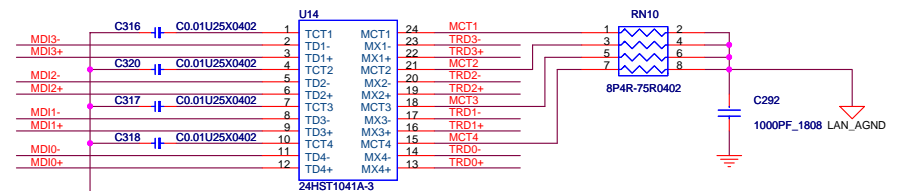


Icc18=198mA

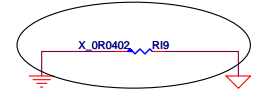
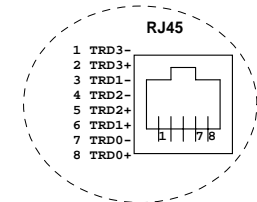
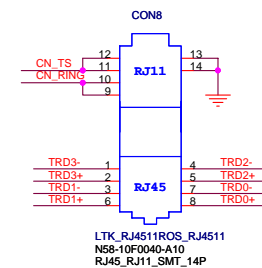


Icc15=367mA

LAN MAGNETICS

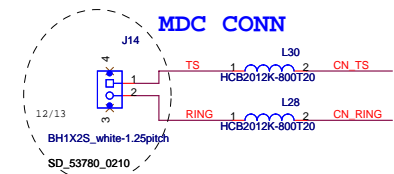


LAN CONNECTOR



For EMI request. 07/04/05

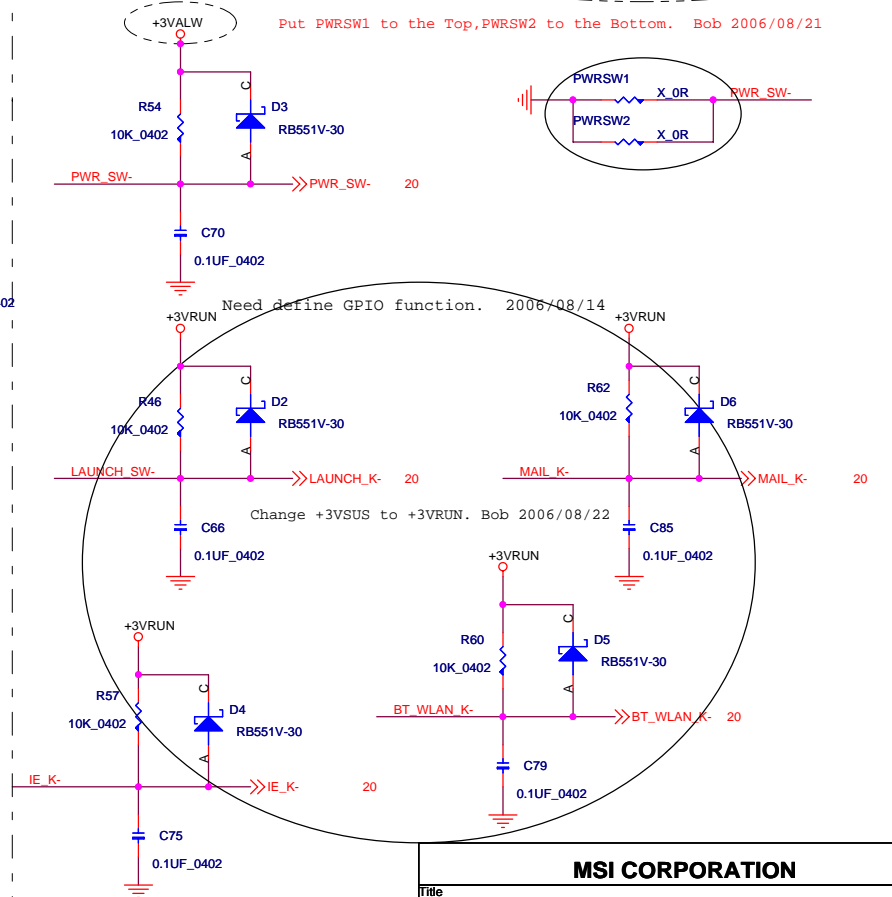
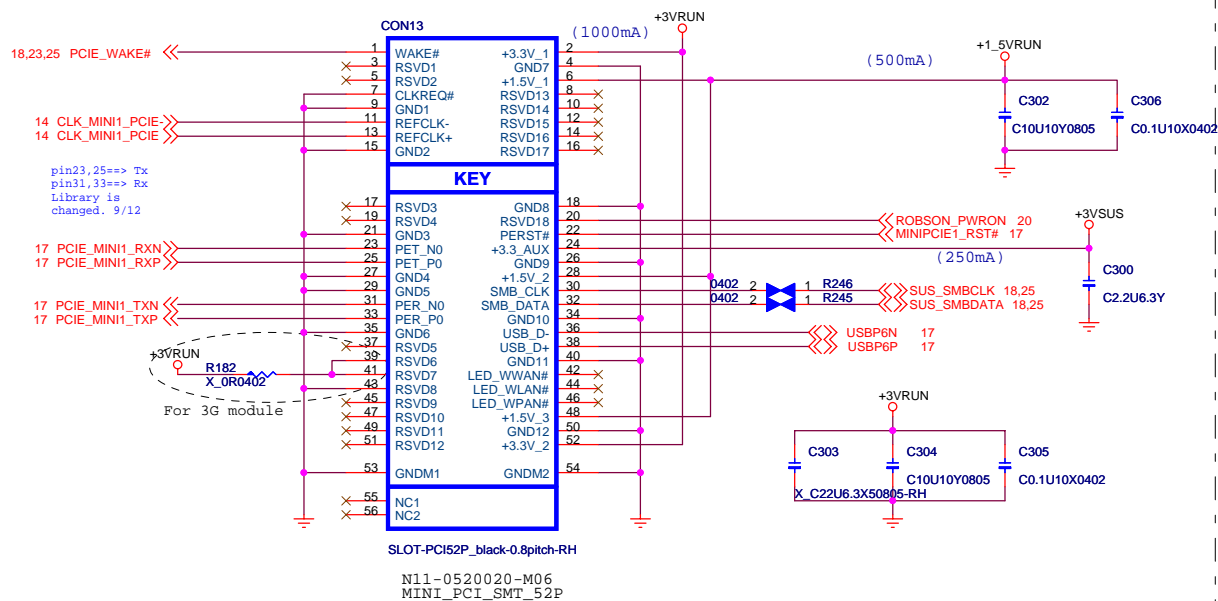
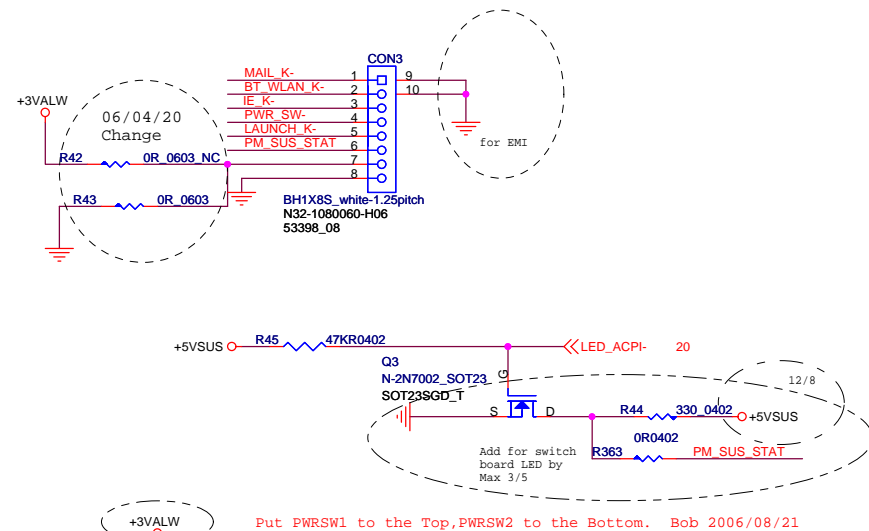
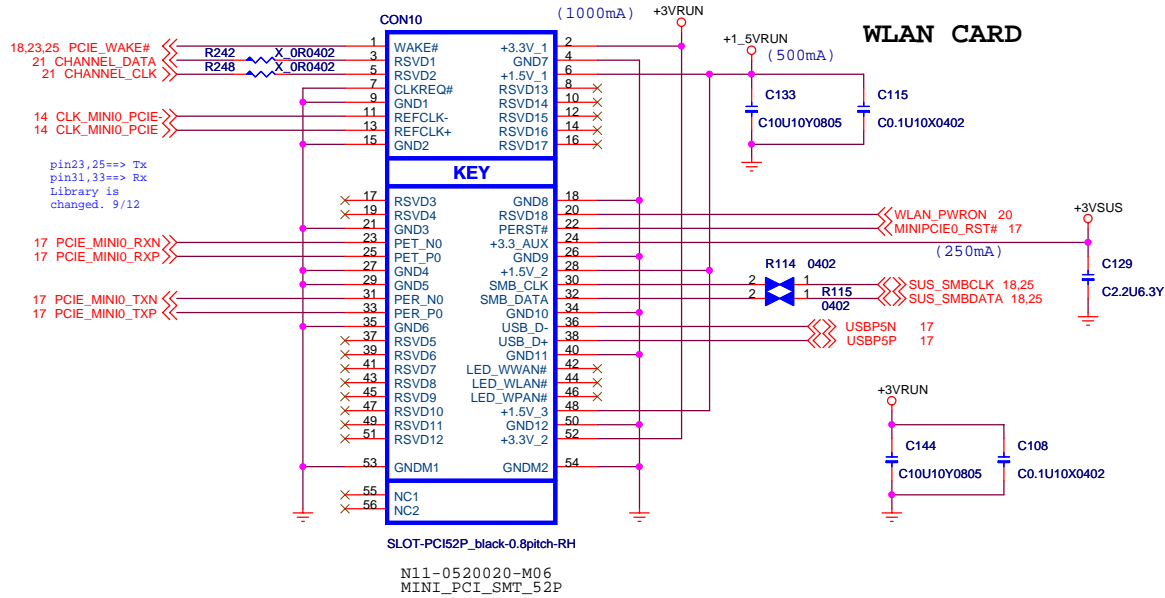
MDC CONN



OTHER SIGNALS ARE FAR AWAY THIS TWO TRACES.
*** THIS DISTANCE IS MIN. 2.5mm***
***THIS SPACE IS IN 3D SPACE AND INCLUDE ANY ***
***POWER ANG GROUND ***

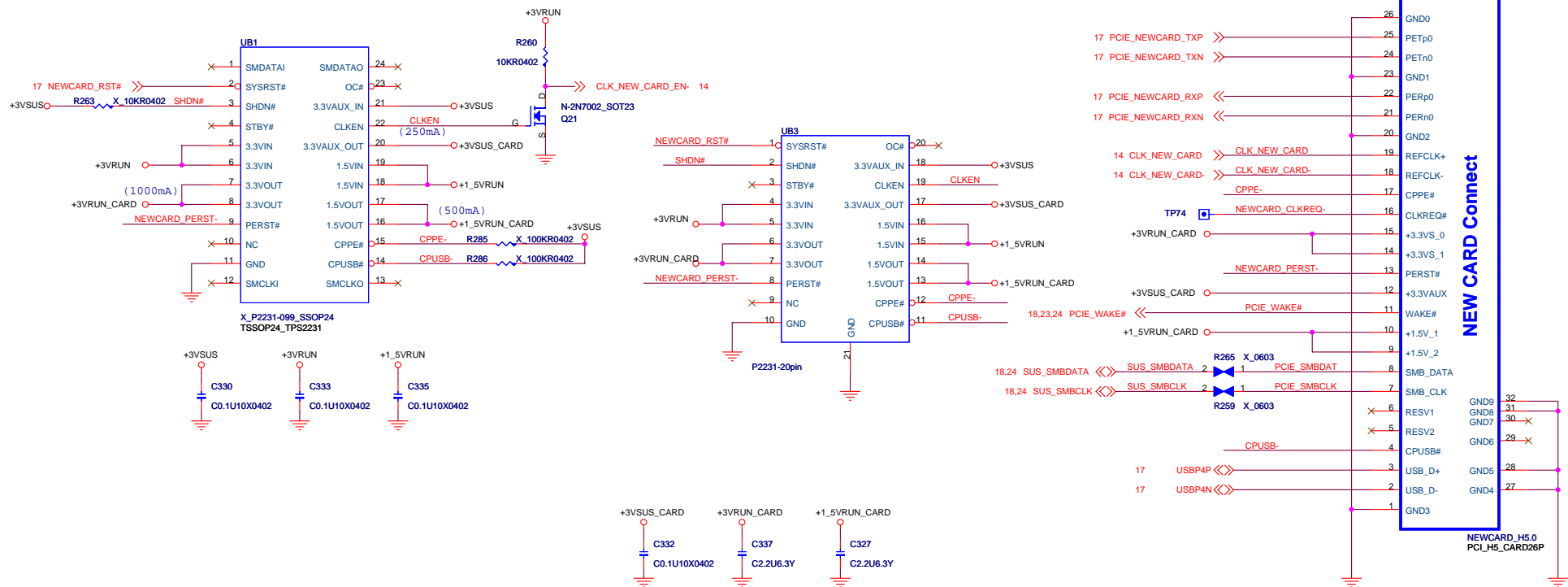
MSI CORPORATION

Title			PCIE LAN (RTL 8111B)
Size	Document Number	Rev	
Custom	MS-1313	0A	
Date:	Thursday, April 05, 2007	Sheet	23 of 42

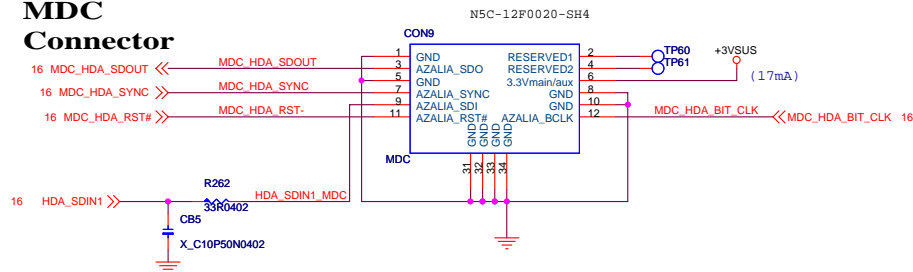


MSI CORPORATION		
Title	MINI_PCIE, LED, SW	
Size	Document Number	Rev
Custom	MS-1313	0A
Date:	Wednesday, May 09, 2007	Sheet 24 of 42

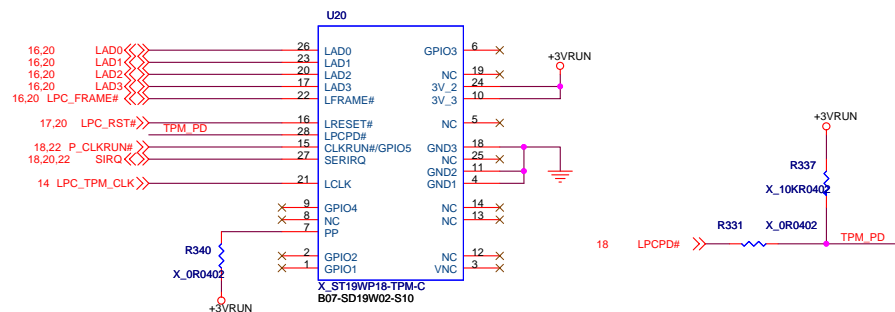
NEW CARD



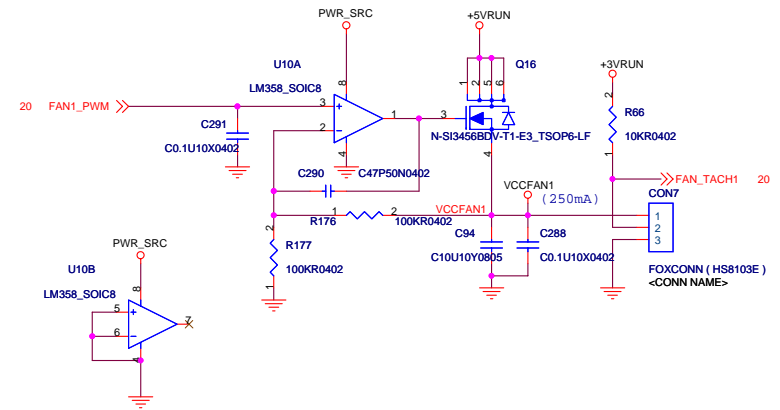
MDC Connector



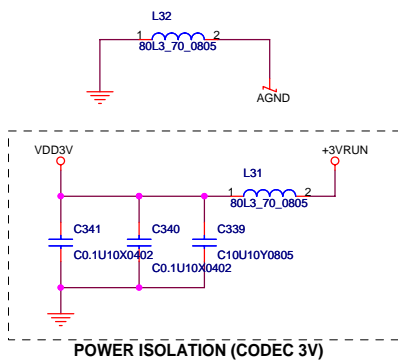
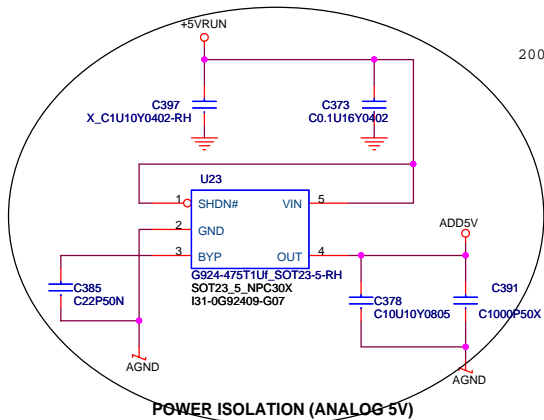
TPM 1.2



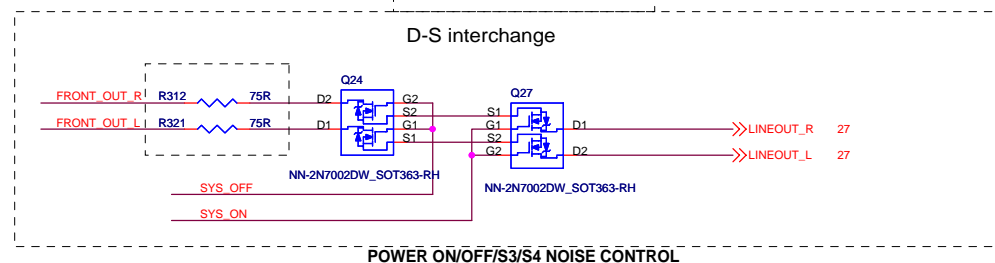
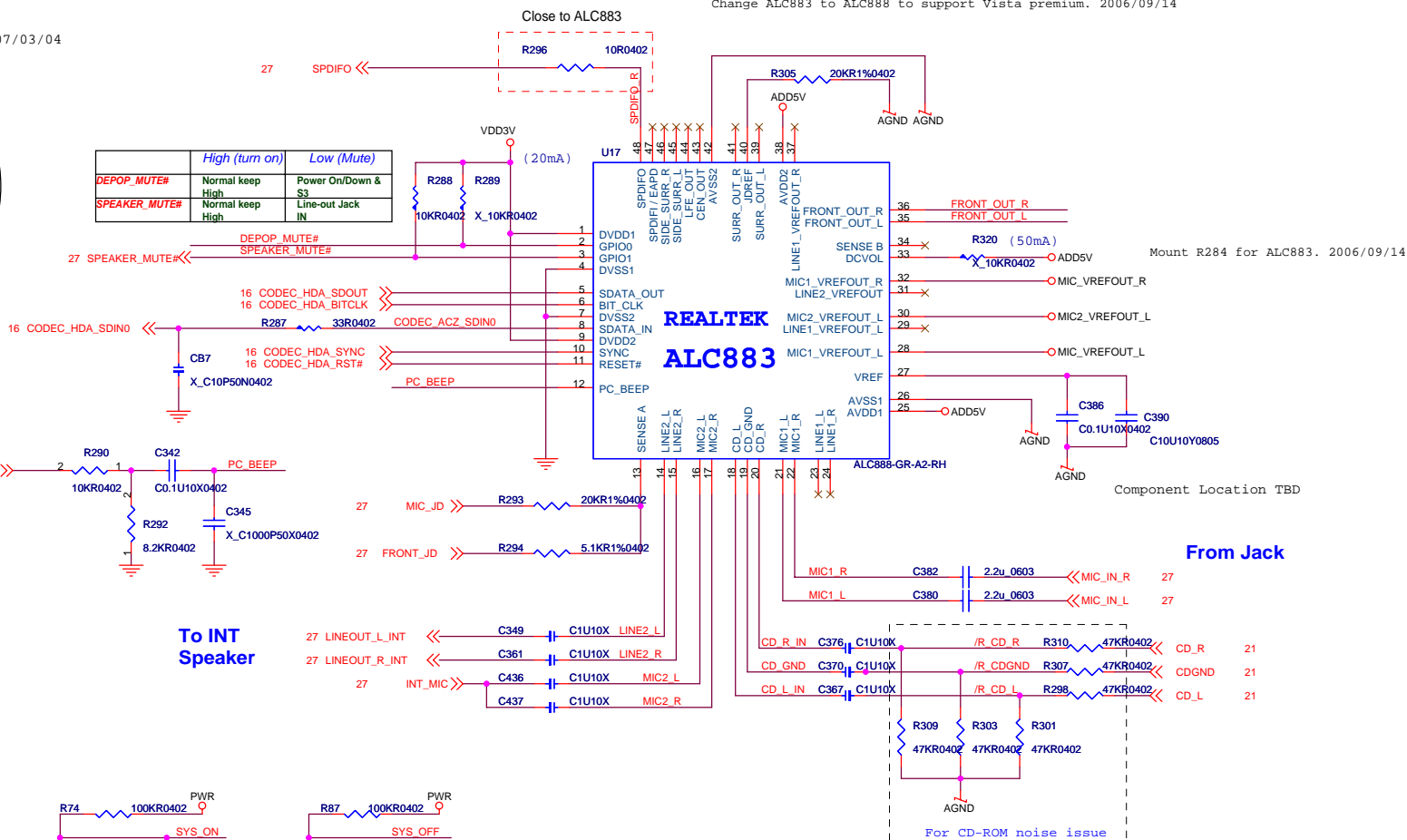
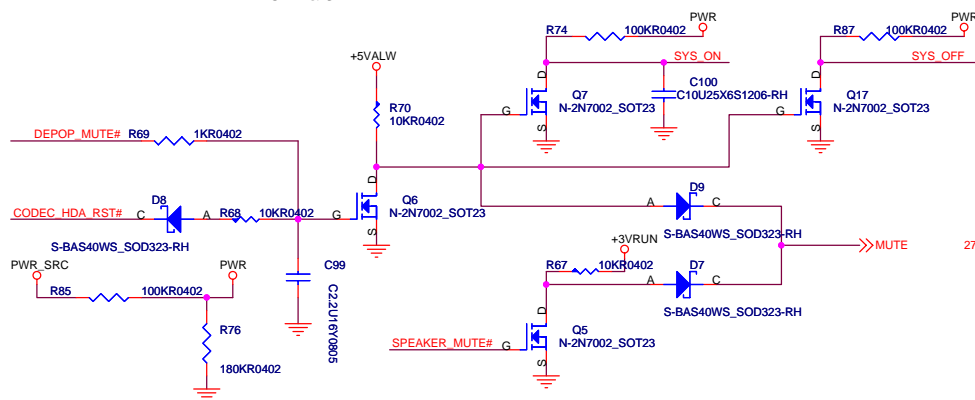
CPU FAN

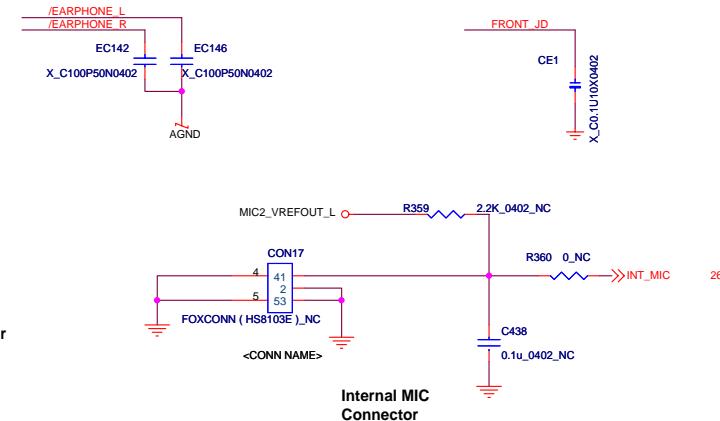
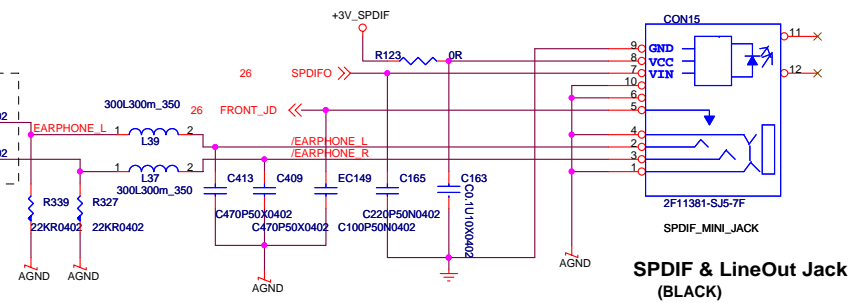
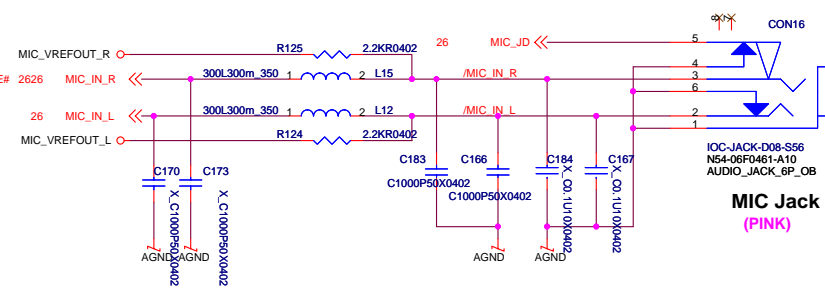
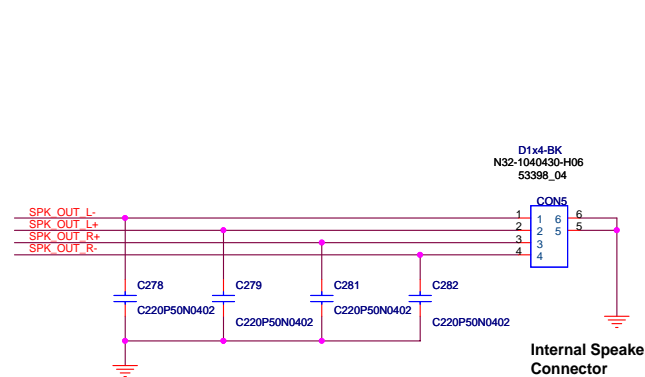
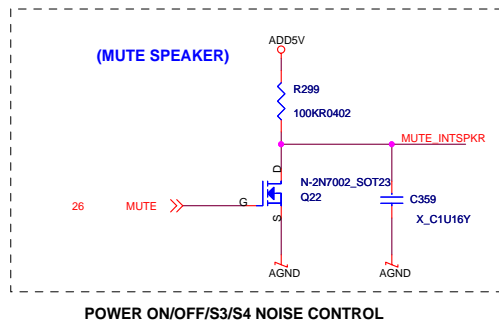
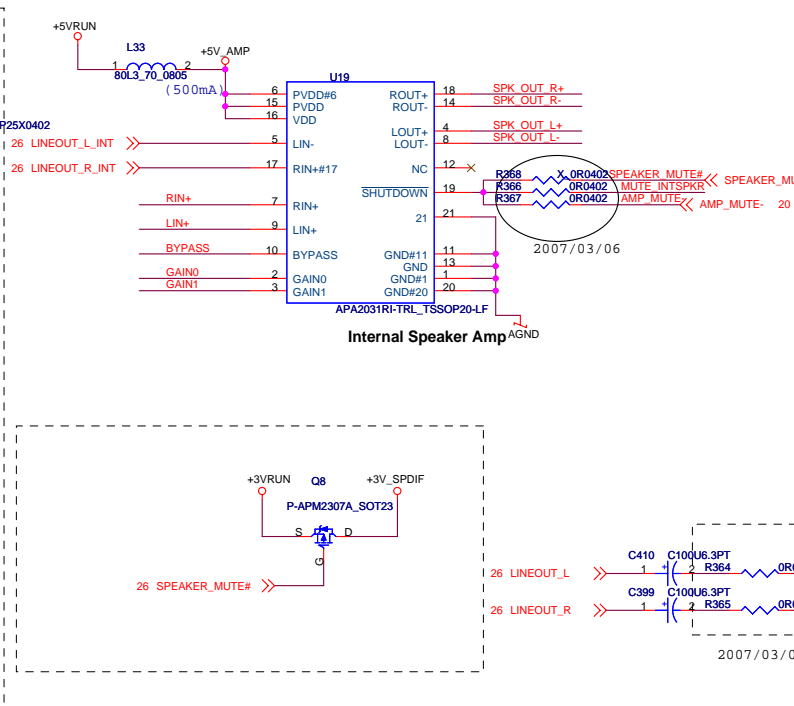
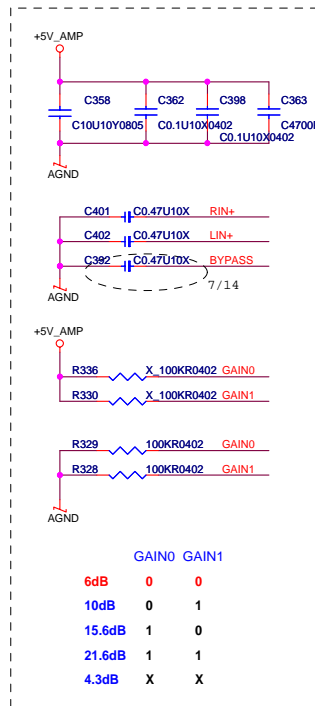


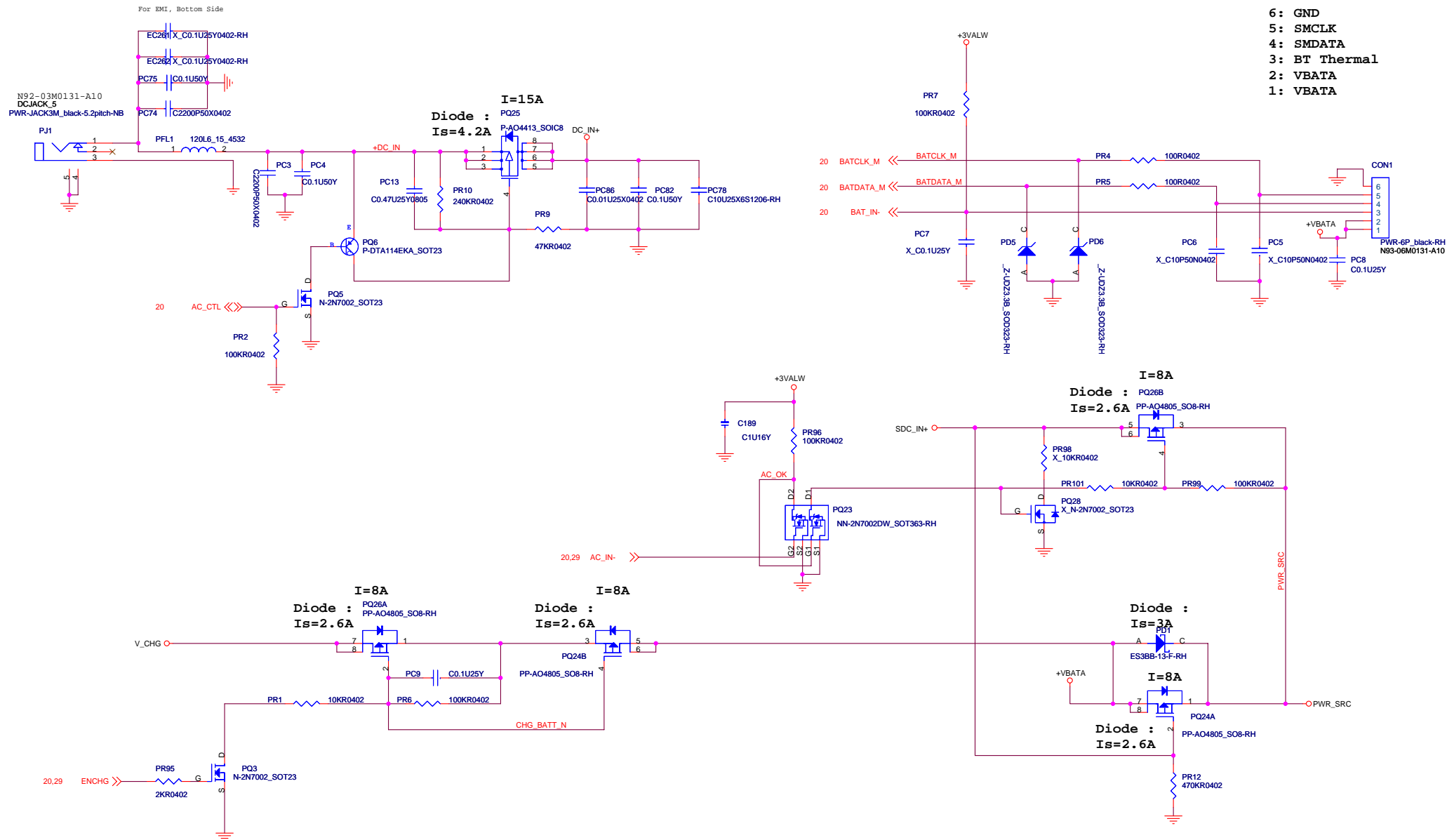
MSI CORPORATION			
Title			
NEWCARD, MDC, TPM, FAN			
Size	Document Number	Rev	
Custom	MS-1313	0A	
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TONE & SPEAKER

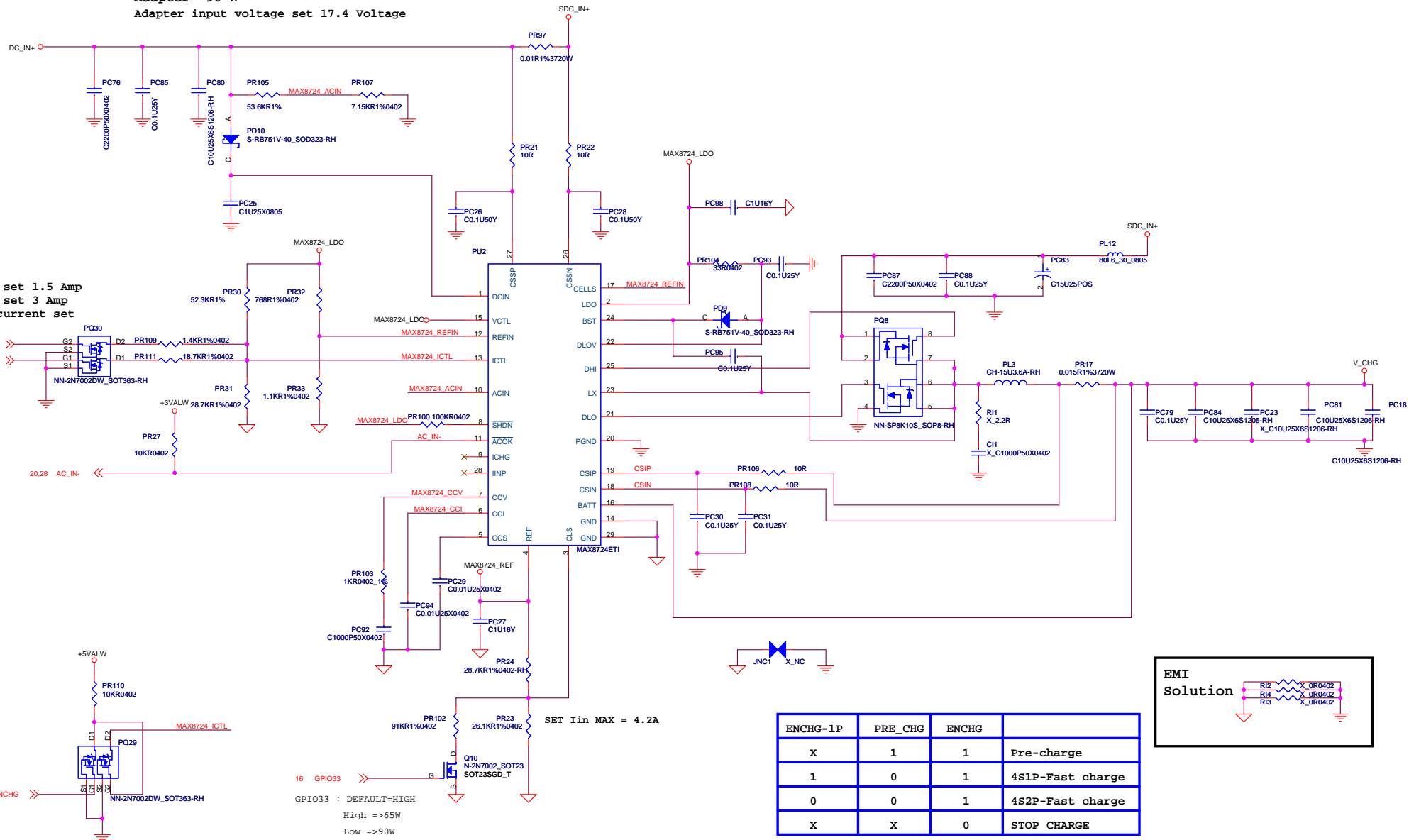


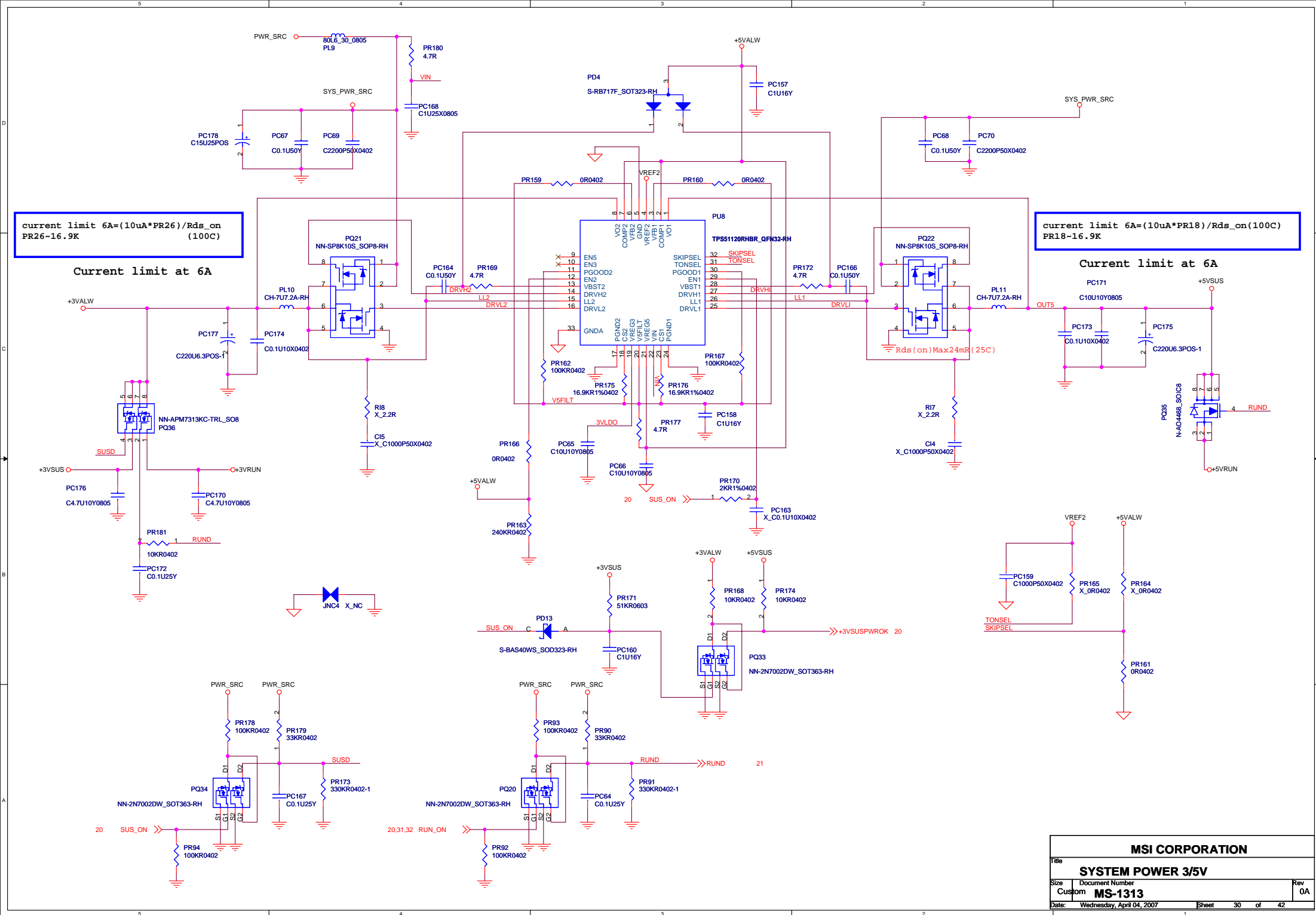




MSI CORPORATION			
Title			
Battery Select			
Size	Document Number		Rev
Custom	MS-1313		0A
Date:	Monday, May 14, 2007		Sheet 28 of 42

Adapter= 90 W
Adapter input voltage set 17.4 Voltage





Current Limit at 10 Amp

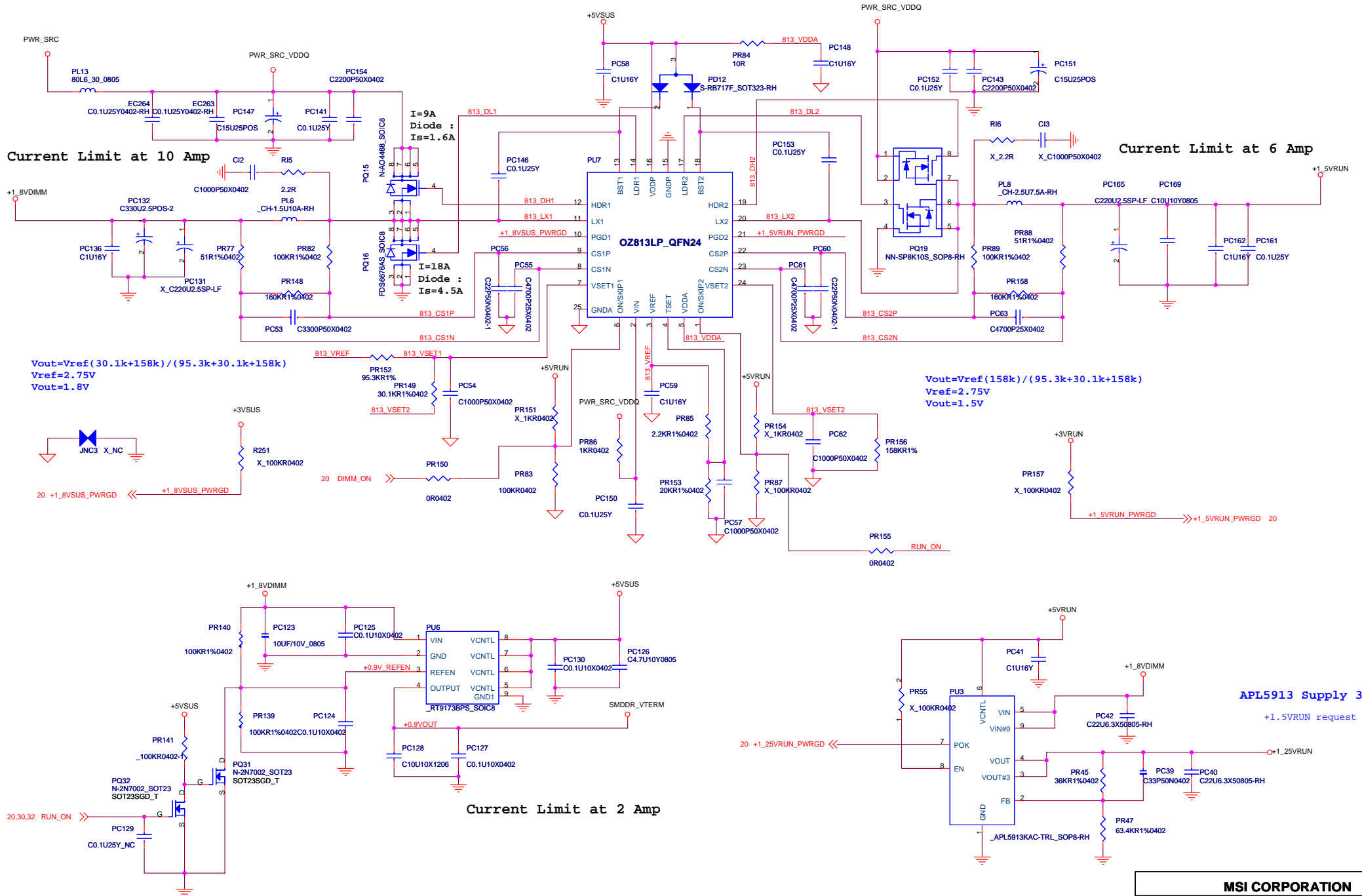
Current Limit at 6 Amp

Current Limit at 2 Amp

APL5913 Supply 3A MAX

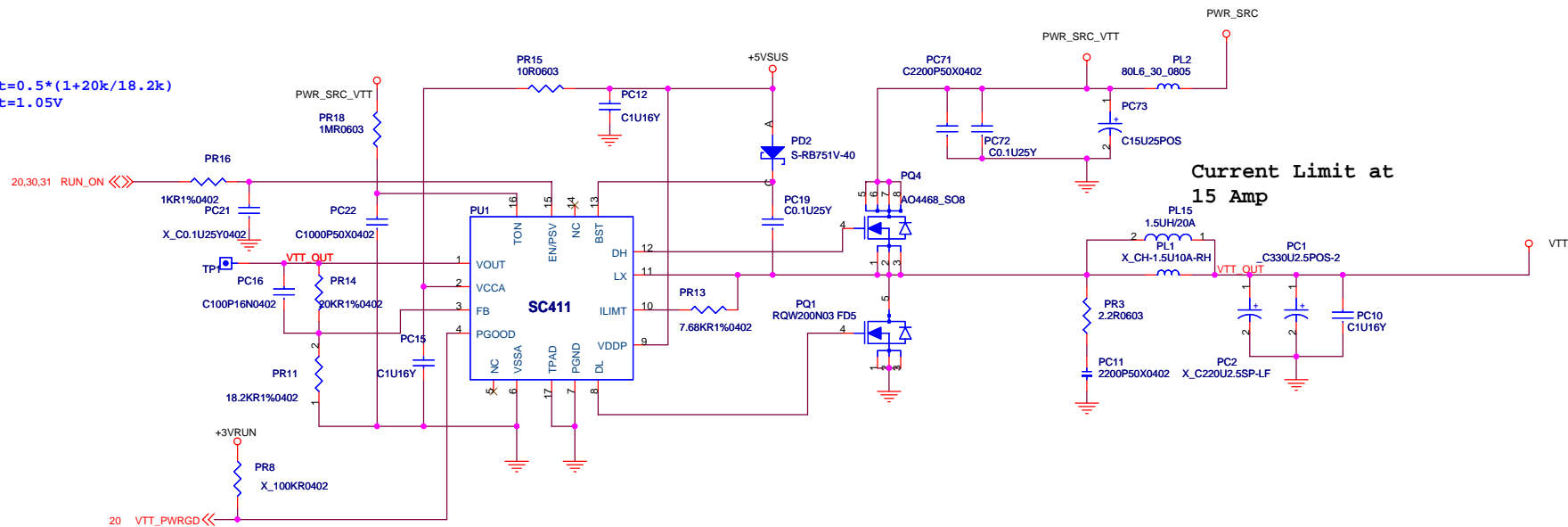
+1.5VRUN request 1.28A

MSI CORPORATION			
File	DDR2 RAM POWER, +1.25V		
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$$V_{out} = 0.5 * (1 + 20k / 18.2k)$$

$$V_{out} = 1.05V$$



Current Limit at
15 Amp

MSI CORPORATION			
Title: +1_5VRUN , VTT POWER			
Size: Custom	Document Number: MS-1313		Rev: 0A
Date: Thursday, April 05, 2007	Sheet: 32	of 42	

PMON_EC

Throttling temp.
105 degree C

Current Limit at 55Amp

Iocset=Roc*Iocp*Rdroop
PR154=Roc=55A*2.1m Ohms/10uA ~ 11.5K
Where :
Rdroop is Intel spec : -2.1m Ohms
Iocp is desire over current
Iocset is recommendation 10uA from
Rbias

100 mil Trace list for layout
DH1_VCORE & DH2_VCORE
LX1_VCORE & LX2_VCORE
DL1_VCORE & DL2_VCORE

$R_{droop2} = [N * R_{droop} / (DCR * G) - 1] * R_{in}$
 $R_{S2} = [2 * 2.1m / (1.8m * 0.83) - 1] * 1K = 1.8K$
Rdroop: Intel spec. -2.1m Ohms

FDE single high
should be < 3.3V

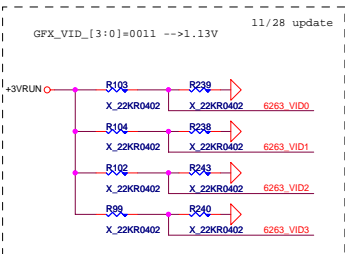
Current Limit at 15Amp

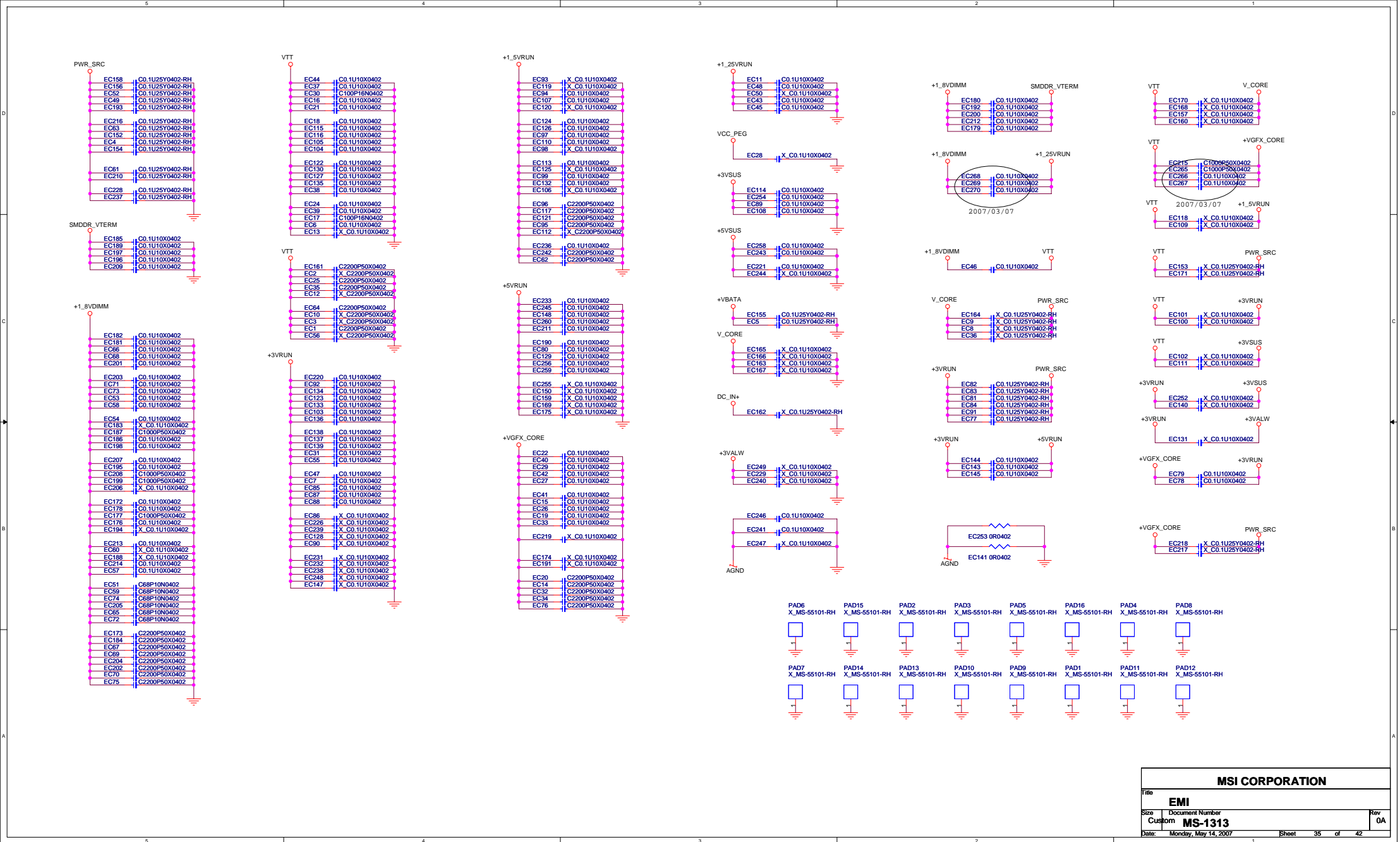
0.7~1.25V

close to inductor

Parallel

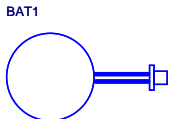
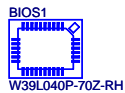
$I_{ocset} * R_{oc} = I_{ocp} * R_{droop}$
 $PR105 = R_{oc} = 15A * 8m\ Ohms / 10uA \sim 12.1K$
Where :
Rdroop is Intel spec : -8m Ohms
Iocp is desire over current
Iocset is recommendation 10uA from Rbias



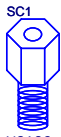




PCB_V11



_BAT-CR2032



VGASC
E42-5040501-H29



VGASC
E42-5040501-H29



M2X4_NC
E43-1203003-H29



M2X4_NC
E43-1203003-H29



M2X4
E43-1205003-H29



M2X4
E43-1205003-H29

Close MDC

Close new card



VGA SHIELDING
E2M-2110211-Y28



NB MYLAR
E2Y-Z000711-G40



NB MYLAR
E2P-6311311-G40



MYLAR
E2P-3113611-G40



NB MYLAR
E26-1057020-G40



NB MYLAR
E26-1057030-G40



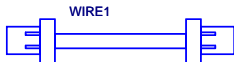
BLUETOOTH MYLAR
E26-1012090-G40



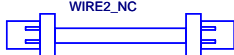
CONDUCTIVE GASKET FOR RJ11
E2Y-X006311-CA7



HDD MYLAR
E2P-2143211-G40



MDCWIRE_NC
K10-3002073-H39



BLUETOOTH-WIRE_NC
S79-1800330-Y01



SB MYLAR_NC
E26-1013220-G40



SB MYLAR
E26-1013220-G40



KBMYLAR
E2P-3112111-G40



KBMYLAR
E26-1006100-G40



DDRMYLAR
E26-1003120-G40



DDRMYLAR_1_NC
E26-1057060-F49



DDRMYLAR_2_NC
E26-1057050-F49



SB MYLAR_3
E2P-3113511-G40



SB MYLAR
E26-1013220-G40

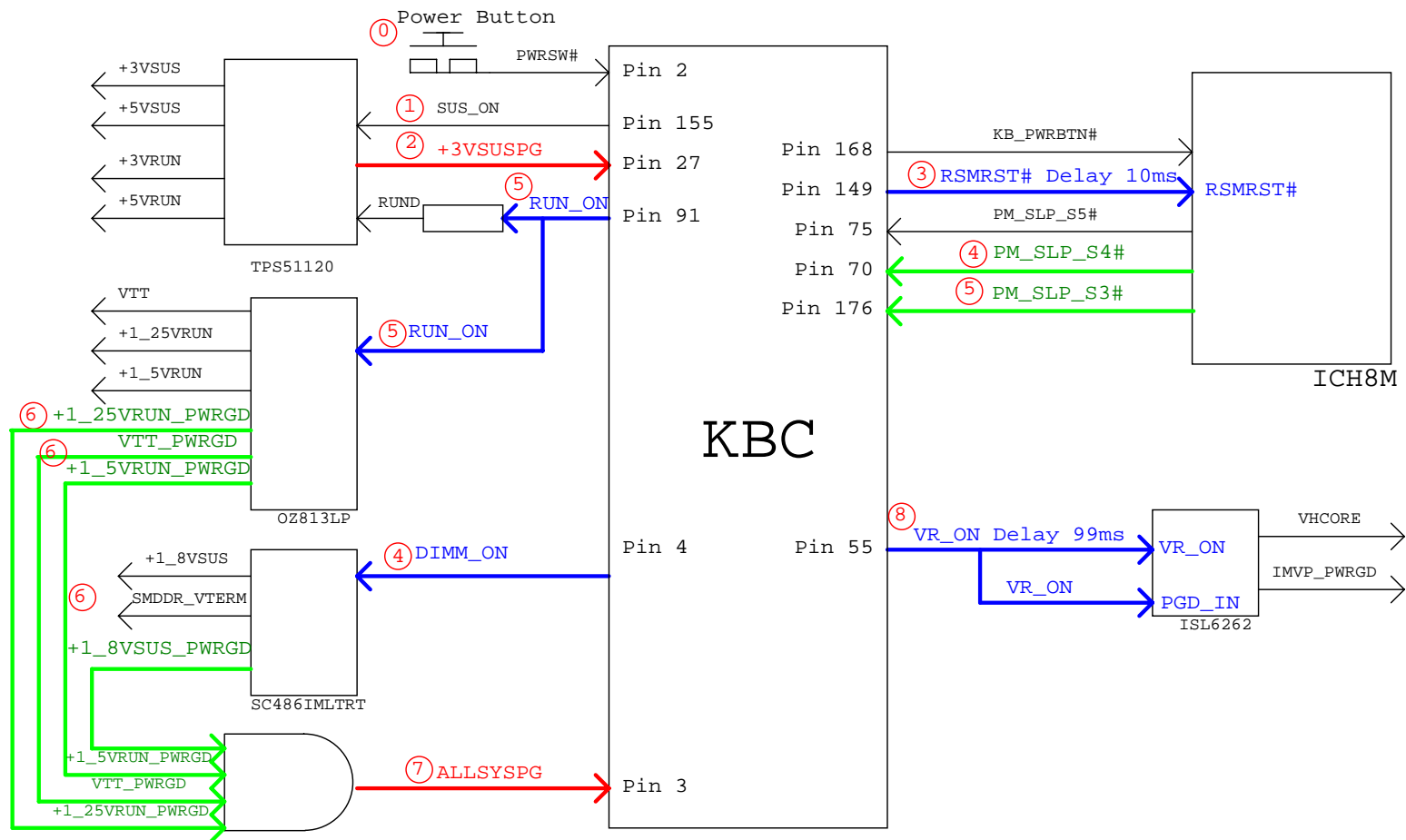


Modem
E2P-3113211-G40



Modem Cable
E2P-3113311-G40

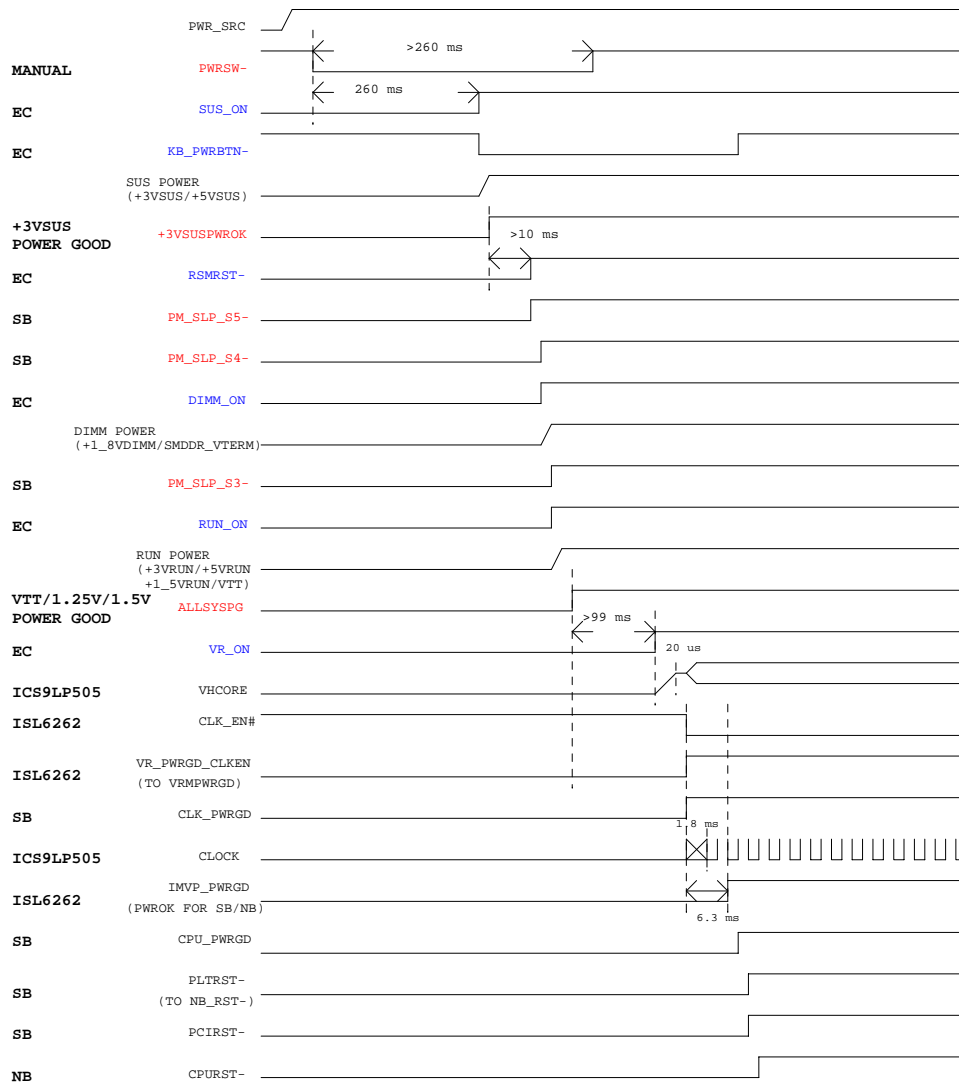
MSI CORPORATION			
Title			
Non-Footprint for BOM			
Size	Document Number		Rev
B	MS-1313		0A
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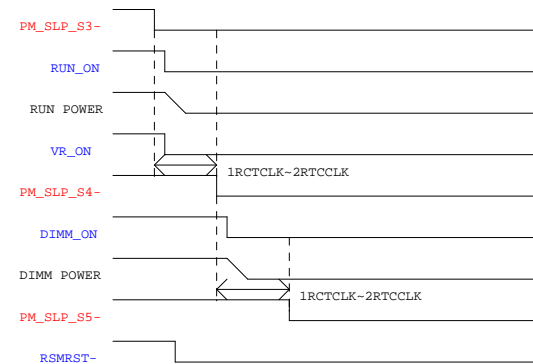
MSI CORPORATION			
Title			
KBC_CTR_PWR_BD			
Size	Document Number		Rev
B	MS-1313		0A
Date:	Friday, December 01, 2006		Sheet 38 of 42

DRIVE SOURCE

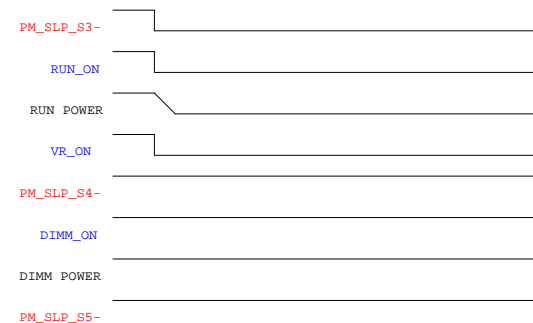
Power Up



Power Down



S3



5

4

3

2

1

1. Change TP connector,reference MS-1412. Page20 2006/08/14

2. Delete fingerprint. Page21 2006/08/14

3. Change LED circuit,reference MS-1412. Page24 2006/08/14

4. Change power switch board connector,reference MS-1412. Page24 2006/08/14

5. Change SATA HDD connector,reference MS-14141. Page21 2006/08/14

6. Change CRT connector,reference MS-1412. Page15 2006/08/14

7. Change LVDS connector,reference MS-1412. Page15 2006/08/14

8. Change R183 from 39R to 56R,R182 from 150R to 56R,R185 from 27R to 56R,R190 from 680R to 56R. Page3 2006/08/14

9. Change SPDIF&LineOut Jack connector,reference MS-1412. Page 27 2006/08/15

10. Change MIC Jack connector,reference MS-1412. Page 27 2006/08/15

11. Change Internal Speaker connector,reference MS-1412. Page 27 2006/08/15

12. Add Internal MIC,reference MS-1412. Page 27 2006/08/15

13. Change RJ45 Connector,reference MS-1412. Page 23 2006/08/15

14. Delete Camera. Page21 2006/08/15

15. Change USB Connector,reference MS-1412. Page 21 2006/08/15

16. Delete SW2,R227,R228. Page14 2006/08/15

17. Change NEW CARD Connector,reference MS-1412. Page 25 2006/08/16

18. Delete TPM. Page25 2006/08/16

19. Change MDC Connector,reference MS-1412. Page 25 2006/08/16

20. Change Card reader Connector,reference MS-1412. Page 22 2006/08/16

21. Delete SW1,R92,R106. Page18 2006/08/16

22. Add one AND Gate U? . Page 17 2006/08/16

23. Add LINE IN,reference MS-1412. Page 26,27 2006/08/16

24. Change C312,C300 from 4.7U 0805 to 2.2U 0603,reference MS-1412. Page 26 2006/08/16

25. Add BIOS Socket. Page 20 2006/08/16

26. Add BIOS1 as Non footprint component. Page 38 2006/08/16

27. Change KB Connector,reference MS-1412. Page 20 2006/08/16

28. Delete Q13,Q14,R178,R177. Page20 2006/08/16

29. Delete RSVD Test point. Page6 2006/08/17

30. Delete Array Mic FM2010 circuit. Page36 2006/08/17

31. Delete R133(LPC_TPM_CLK). Page14 2006/08/17

32. Change U1 to LM358,delete R5,R4. Page 25 2006/08/17

33. Change CPU fan connector,reference MS-1412. Page 25 2006/08/17

34. Delete LDO U30. Page26 2006/08/17

35. Change U22 to EC2648,reference MS-14141. Page 15 2006/08/17

39. Update Power circuit. Page28---34 2006/08/18

40. Add a bead to CRT5V. Page15 2006/08/21

41. Add PWRSW1,PWRSW2. Page24 2006/08/21

42. Remove R14,change the net name of +3VSUS_SOCKET to +3VRUN_SOCKET. Page22 2006/08/22

43. Change R202 from 2.37K to 2.4K. Page 6 2006/09/11

44. Change RN7 from 8P4R 2.2K to 8P4R 22K. Page 6 2006/09/11

45. Add LC decoupling circuit for VCCGLANPLL,VCCGLAN1_5 and VCCGLAN3. Page 19 2006/09/12

46. Change Card reader conttroller from MR510 to R5C832. Page 22 2006/09/29

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