

TORINO

PCB thickness: 1mm

CPU : INTEL YONAH-2M
Chip Set : INTEL 945GM & ICH7-M
Remarks : 2 Spindle

Model Name : TORINO
PBA Name : MAIN
PCB Code : BA41-00602A/3A
Dev. Step : MP
Revision : 1.0
T.R. Date : 2006.1.23

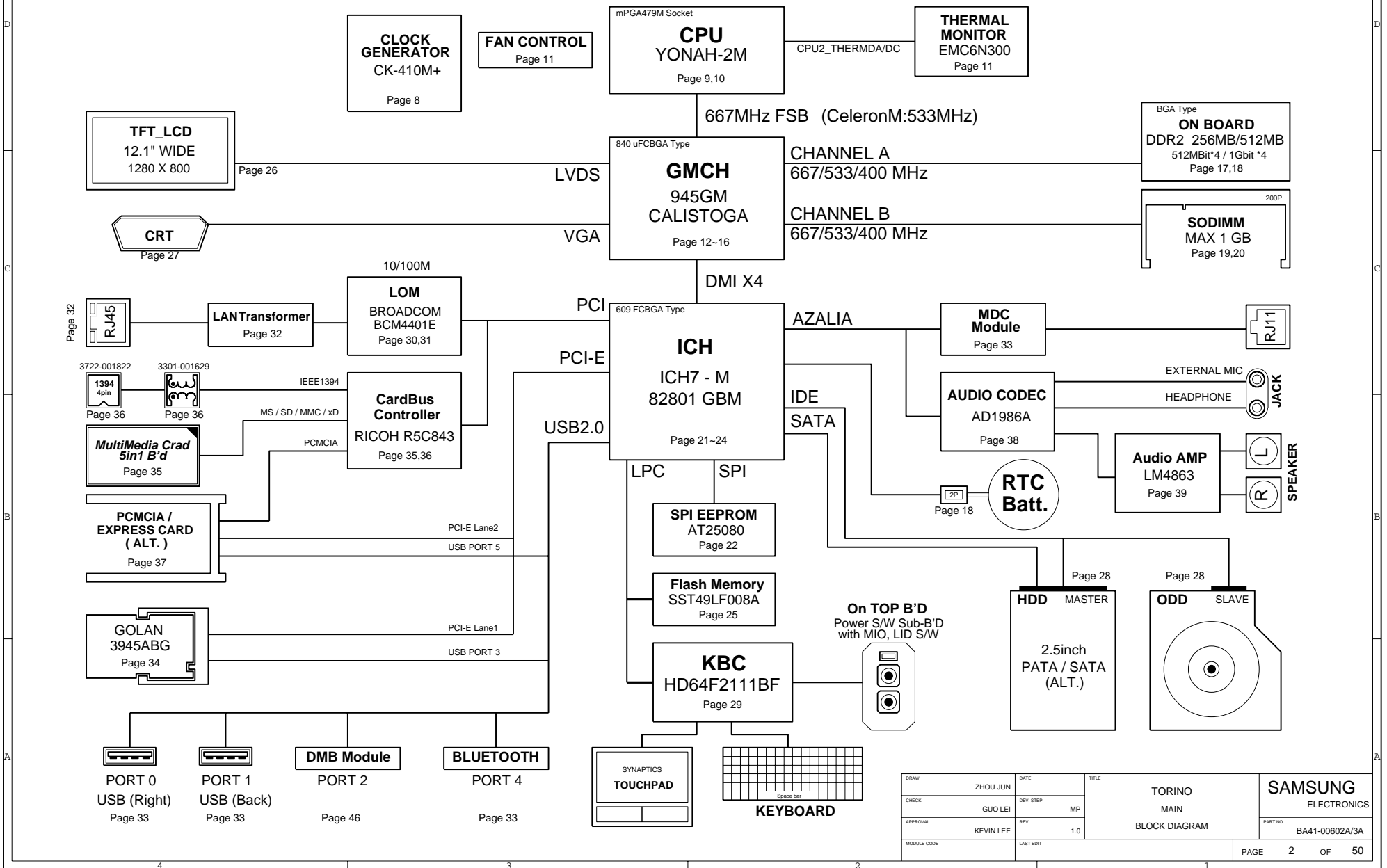
DRAW	CHECK	APPROVAL
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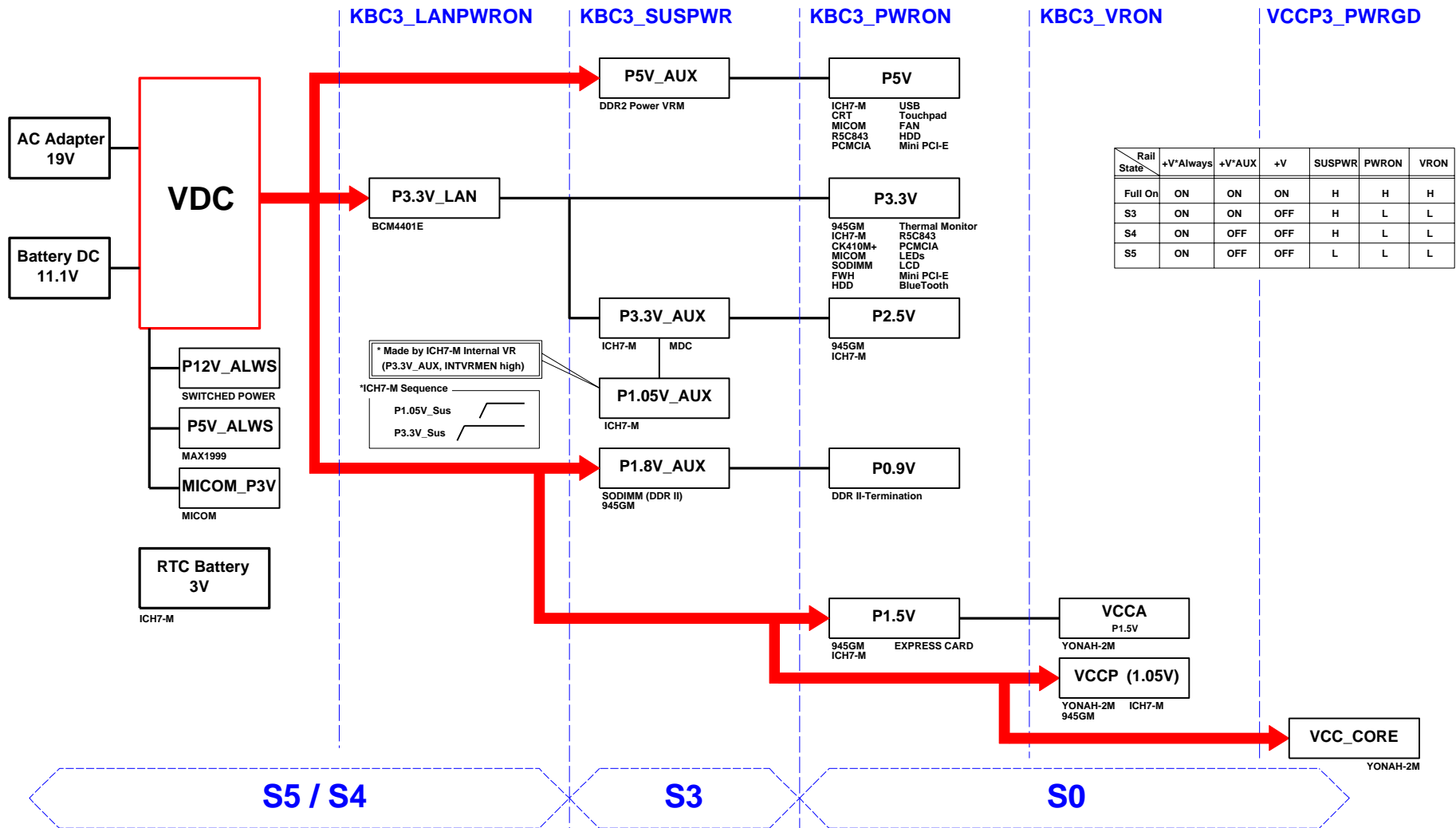
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DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO LEI	DEV. STEP	MP		COVER	ELECTRONICS
APPROVAL	KEVIN LEE	REV	1.0		CONTENTS	PART NO.
MODULE CODE		LAST EDIT				BA41-00602A/3A
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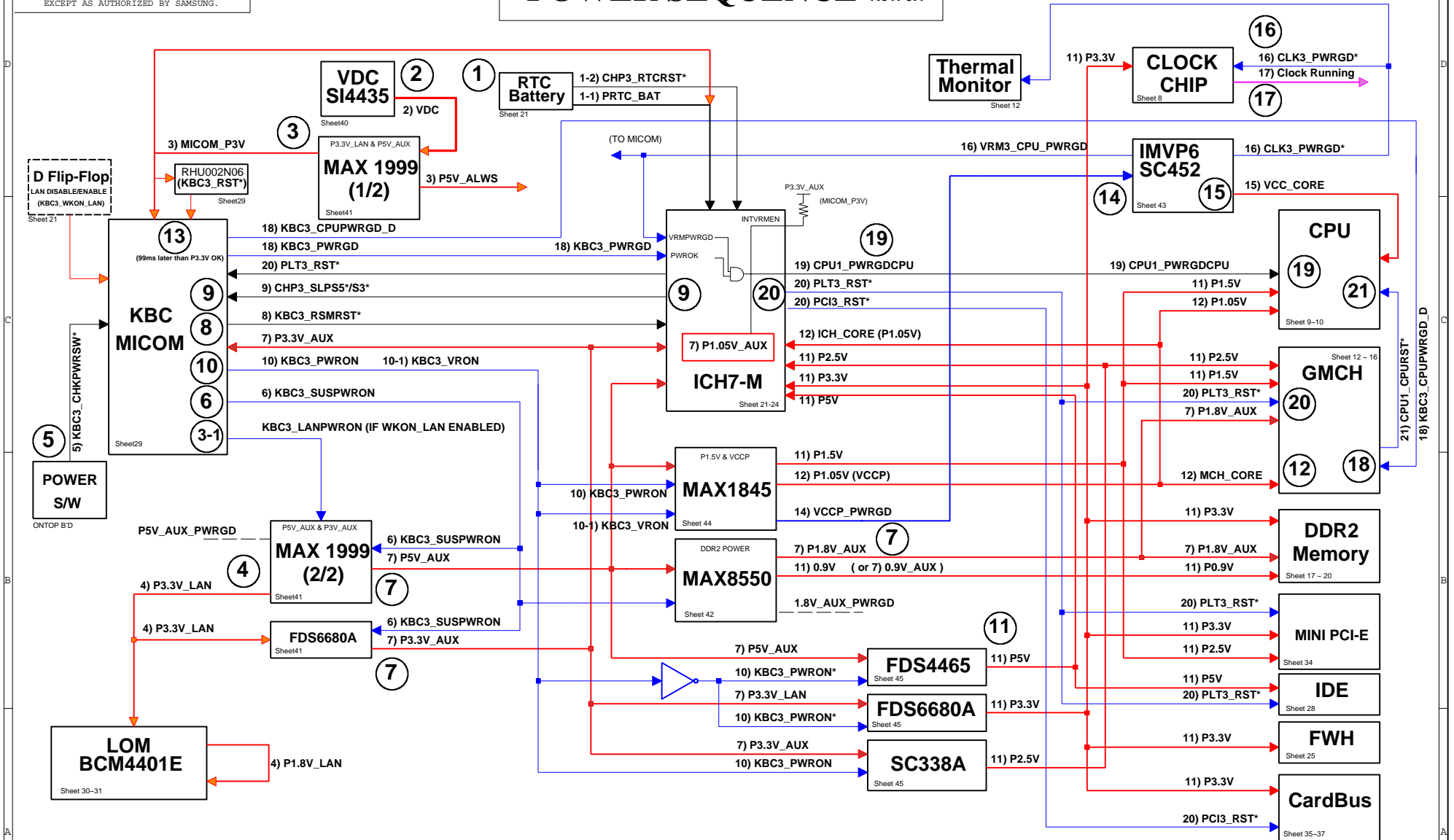
OPERATION BLOCK DIAGRAM



POWER DIAGRAM



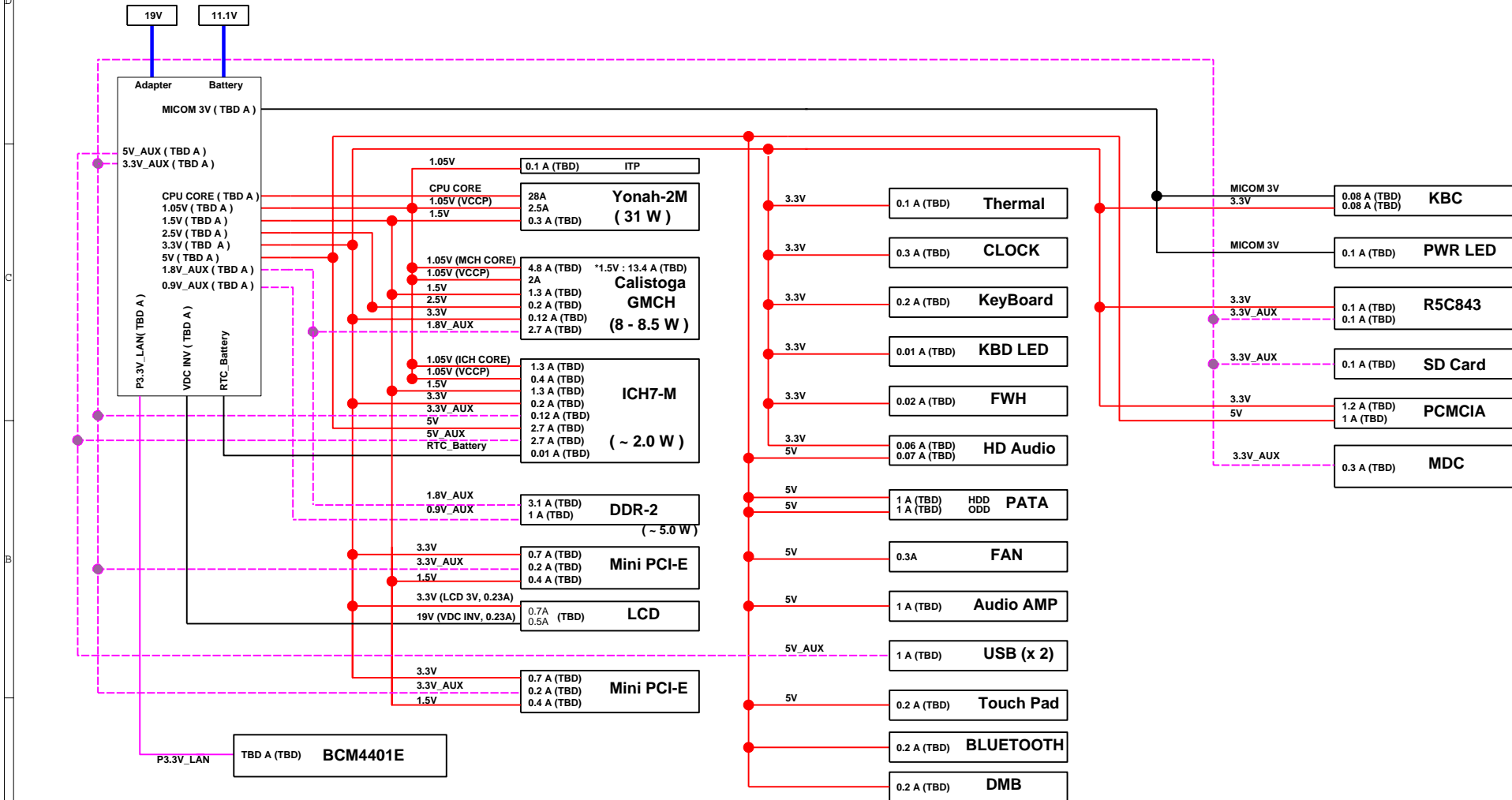
POWER SEQUENCE Rev. 0.1

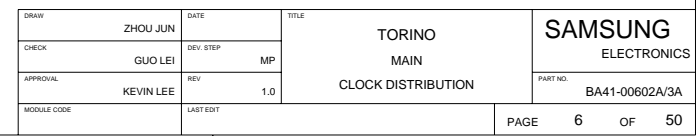


POWER RAILS ANALYSIS

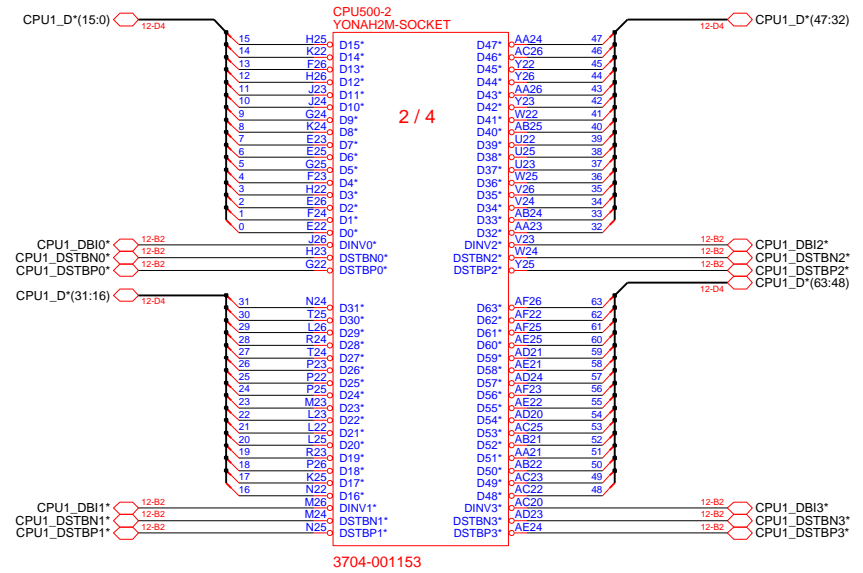
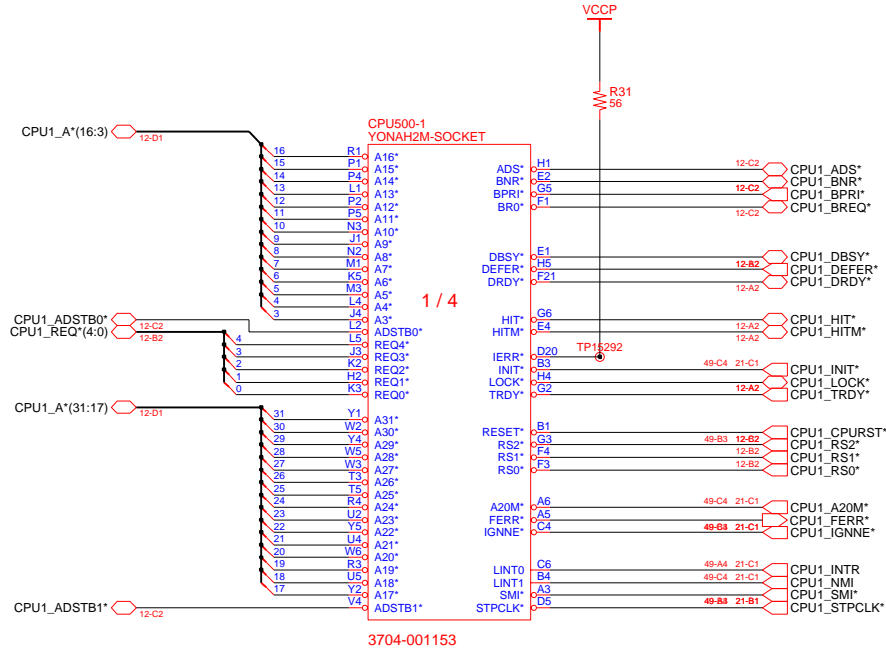
Rev. 0.1

— S0 - S5
- - - S0 - S3
— OFF IN S3 - S5



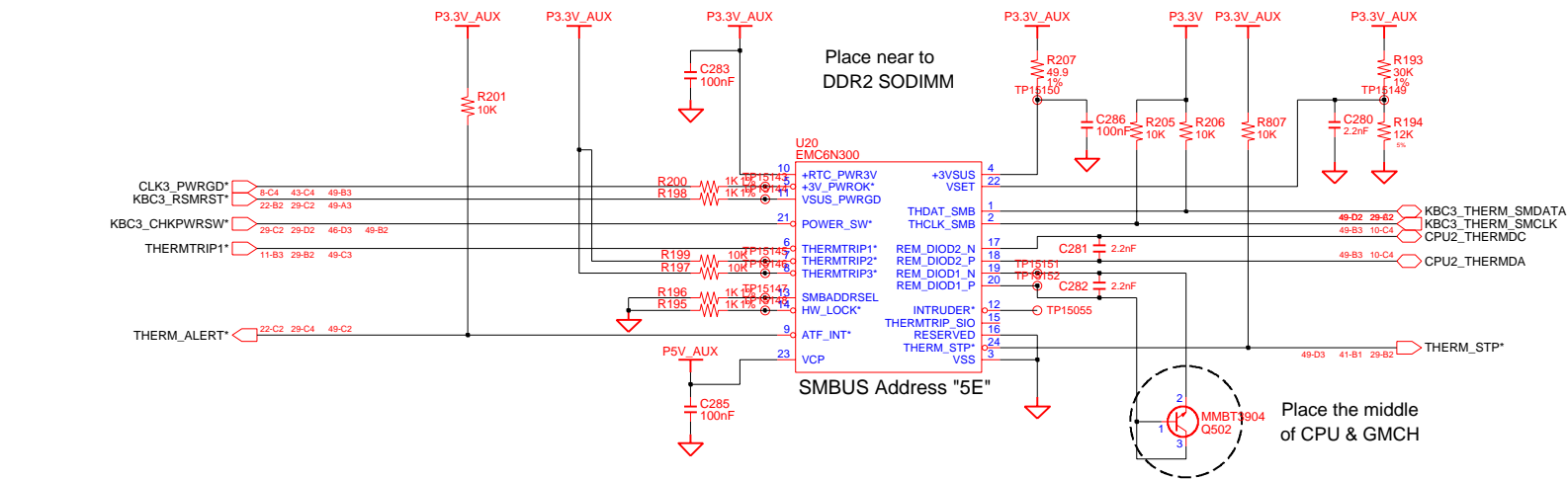


CPU SOCKET : YONAH-2M

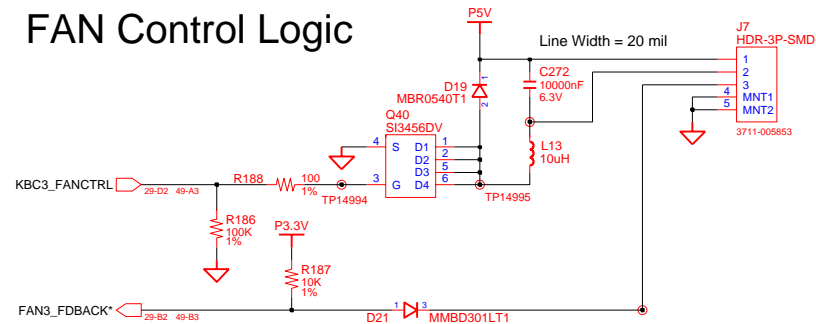
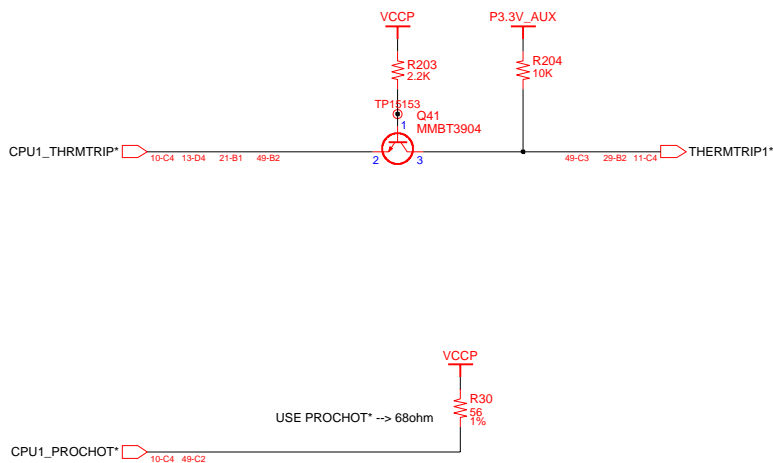


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Thermal Monitor

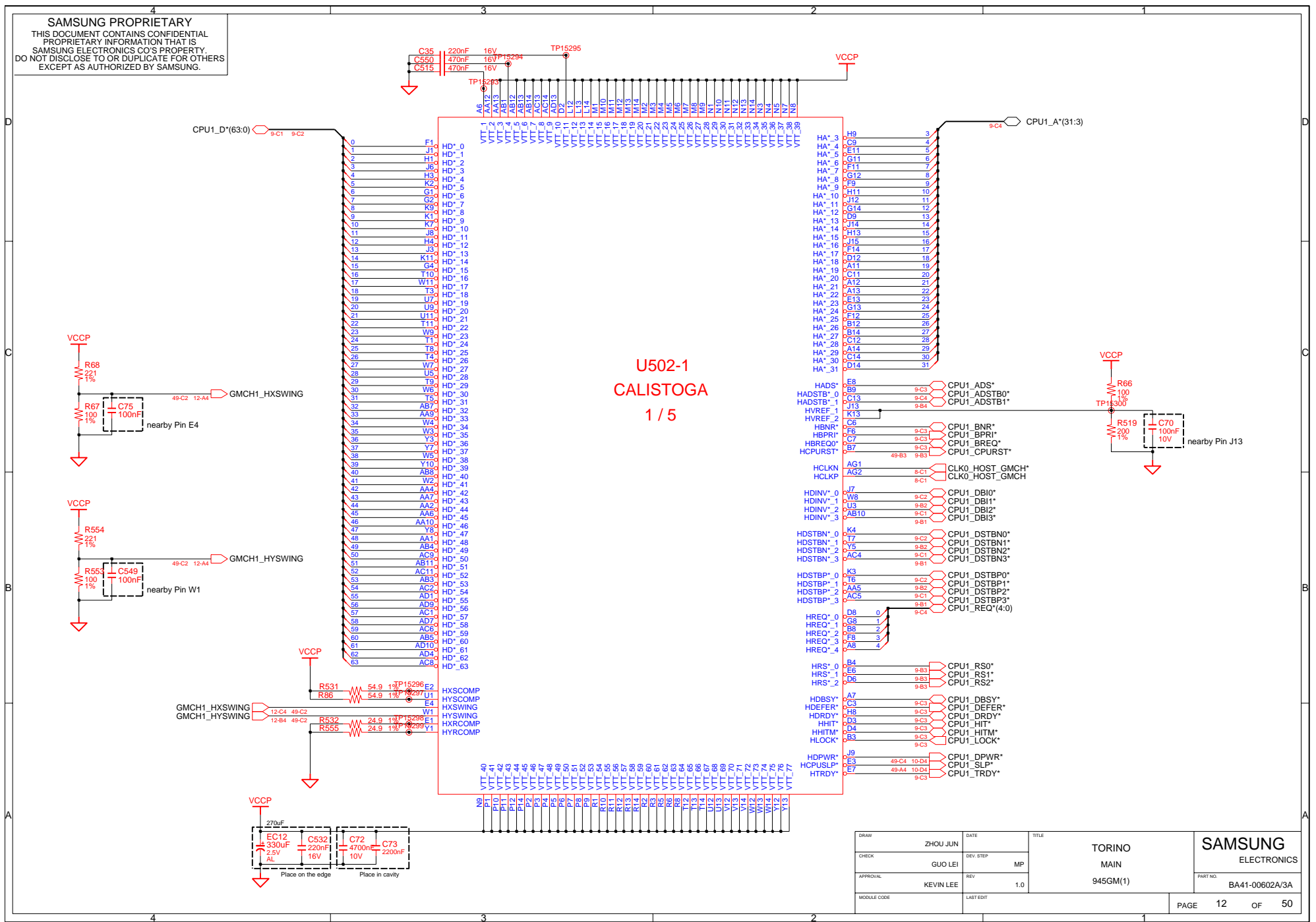


FAN Control Logic



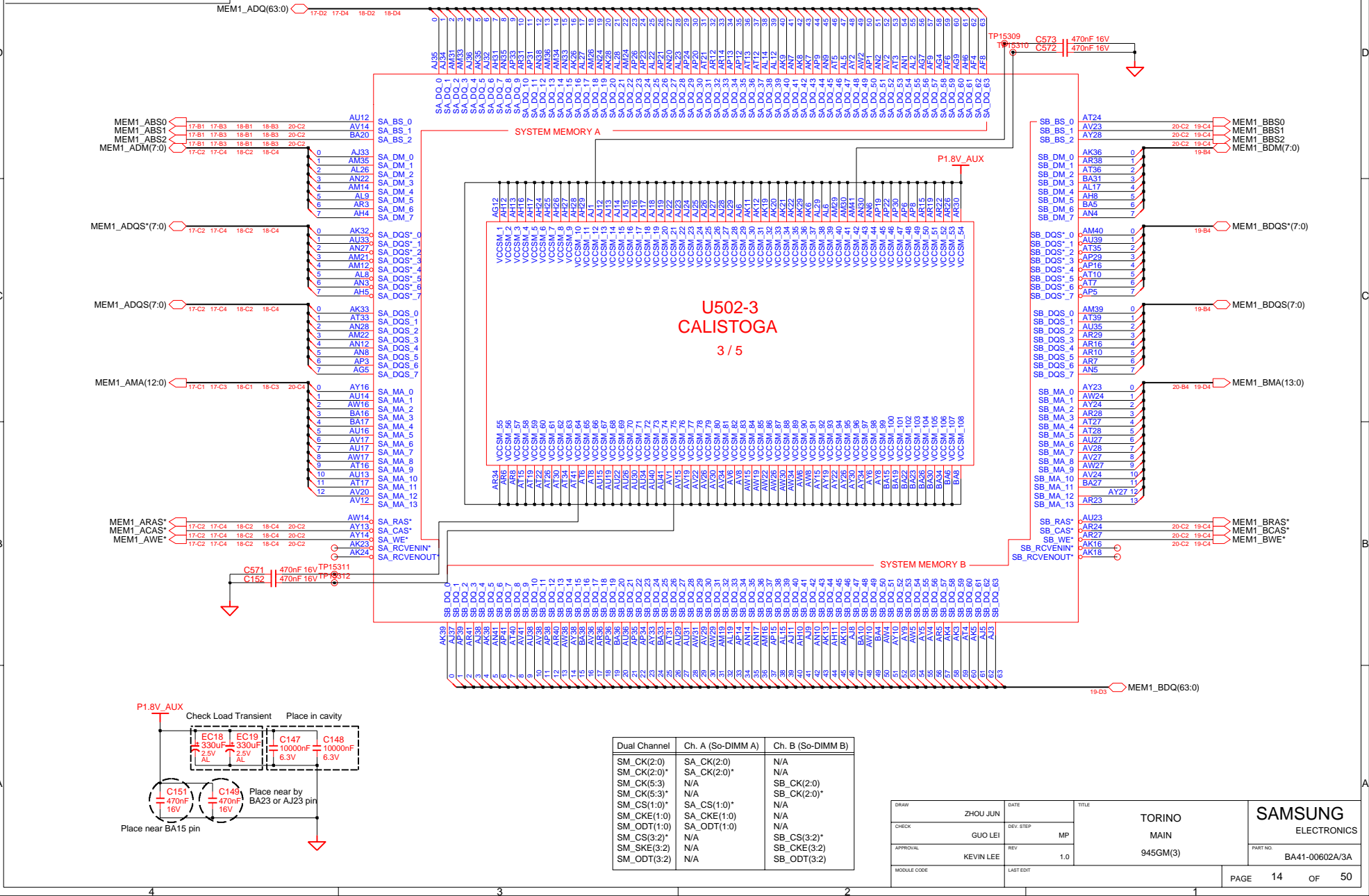
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APPROVAL	KEVIN LEE	REV	1.0		THERMAL MONITOR	BA41-00602A/3A
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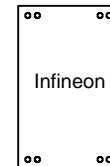


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MODULE CODE	LAST EDIT				BA41-00602A/3A
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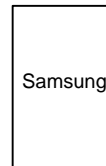
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with 8 dummy-ball
92-BALL Package

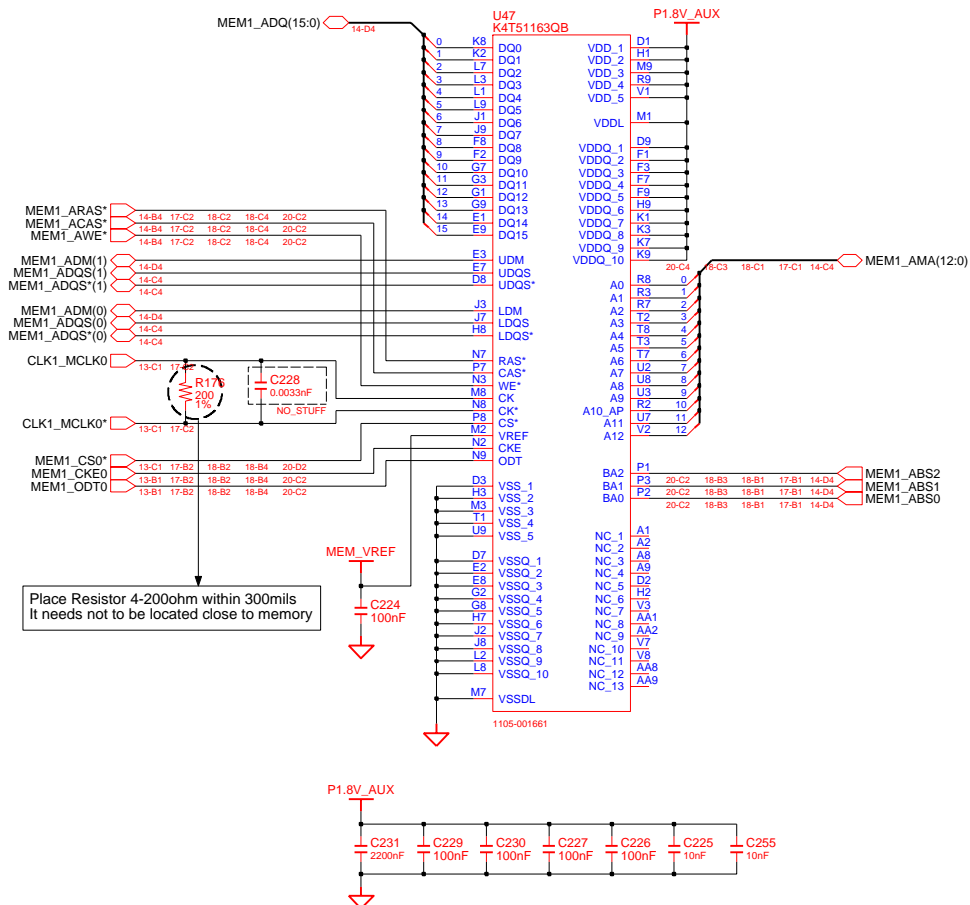


without dummy-ball
84-BALL Package

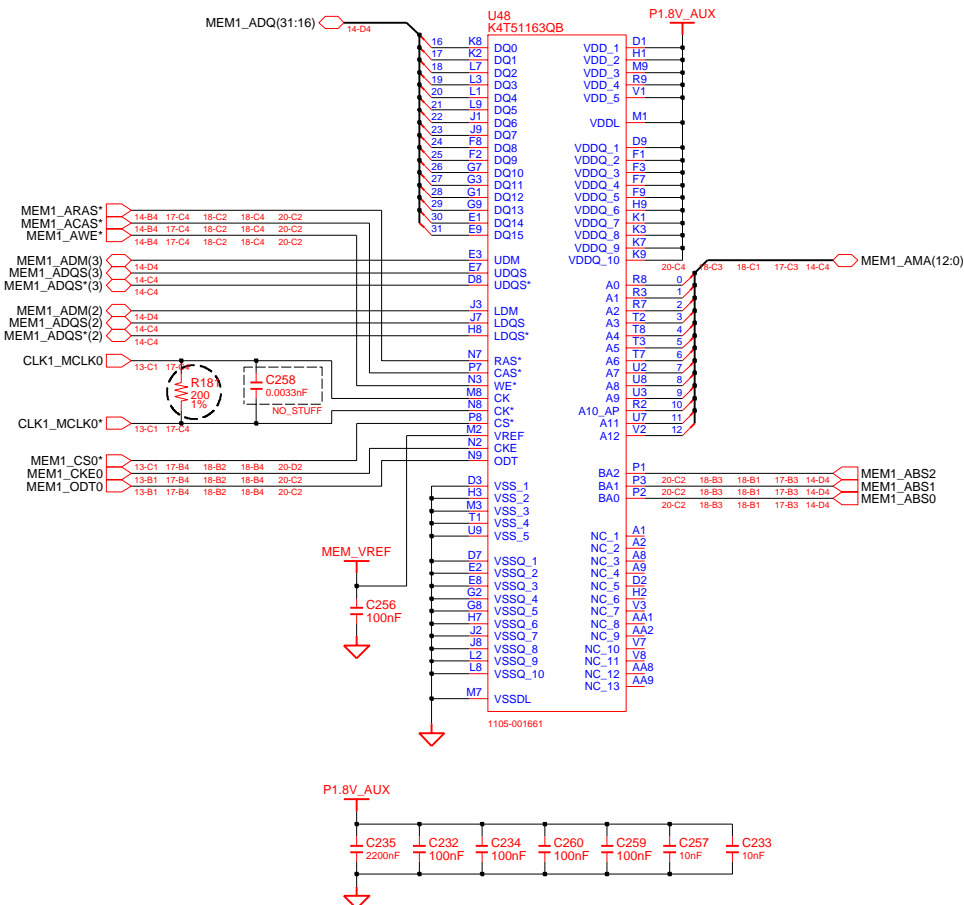
DDR2 ON BOARD MEMORY

- 1Gbit DDR2-667MHz x16 I/O
- SAMSUNG: K4T1G044QA-ZCE6
- 1Gbit DDR2-533MHz x16 I/O
- SAMSUNG: K4T1G044QA-ZCD5
- INFINEON: HYB18T1G160AF-3.7

D0

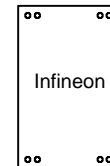


D1

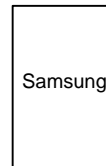


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APPROVAL	KEVIN LEE	REV	1.0	ON B'D MEMORY(1)		
MODULE CODE		LAST EDIT				PAGE 17 OF 50

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with 8 dummy-ball
92-BALL Package

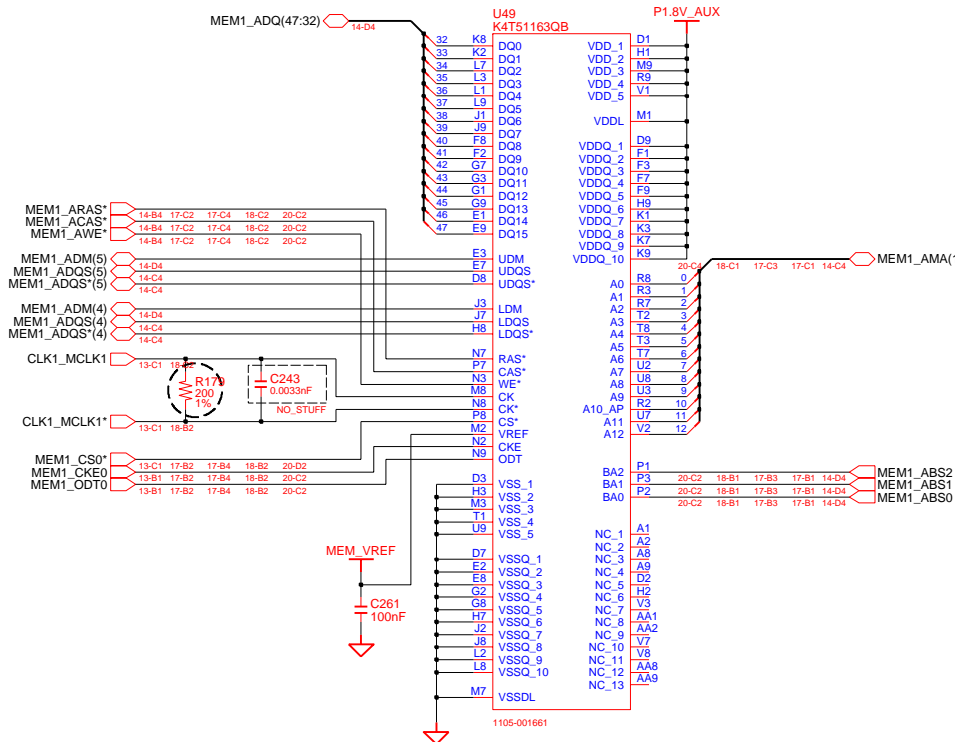


without dummy-ball
84-BALL Package

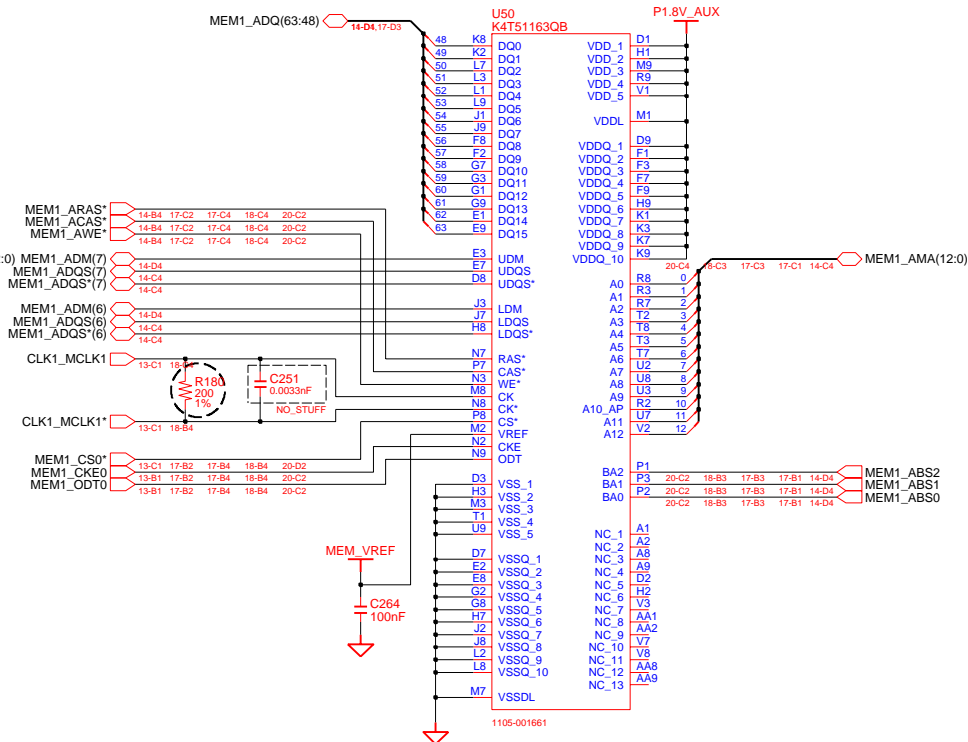
DDR2 ON BOARD MEMORY

- 1Gbit DDR2-667MHz x16 I/O
- SAMSUNG: K4T1G044QA-ZCE6
- 1Gbit DDR2-533MHz x16 I/O
- SAMSUNG: K4T1G044QA-ZCD5
- INFINEON: HYB18T1G160AF-3.7

D2

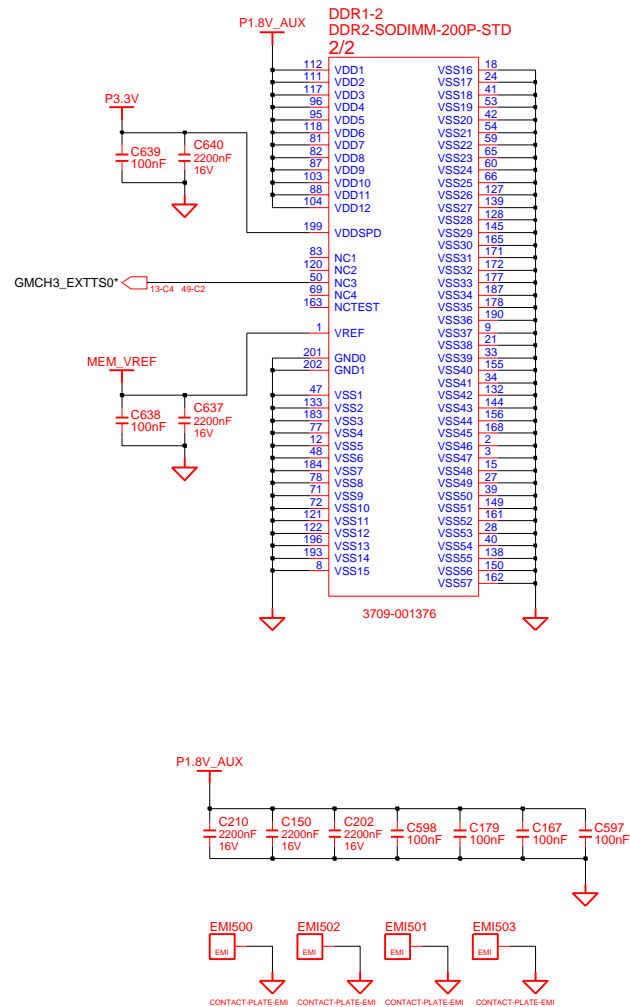
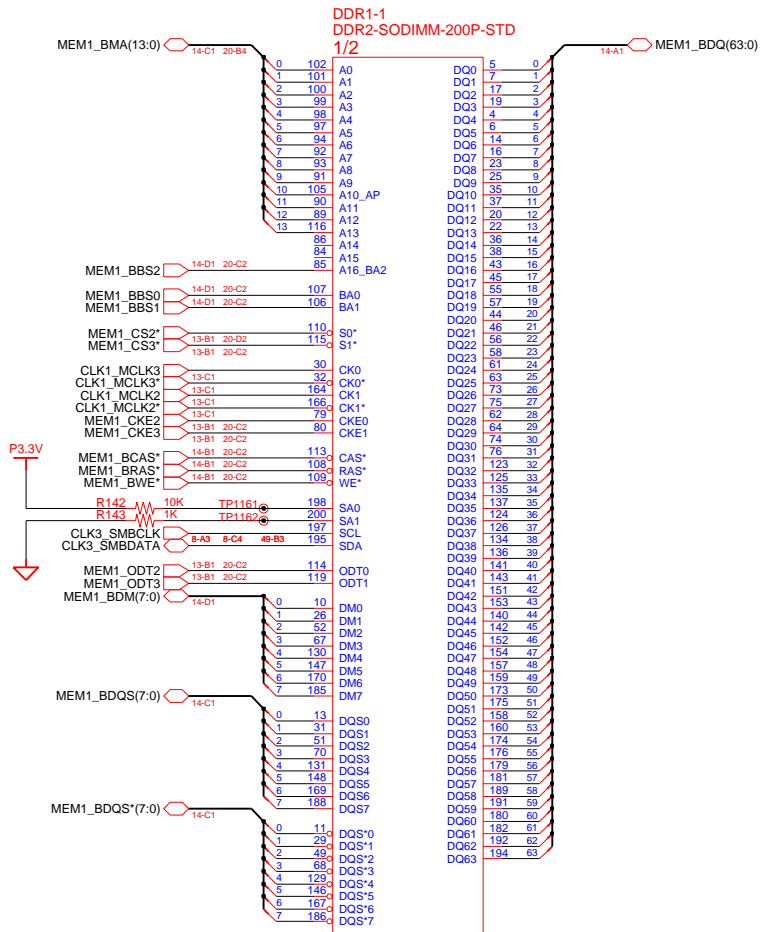


D3



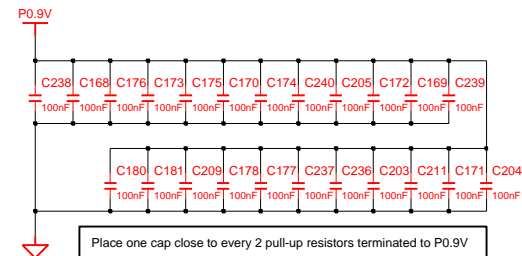
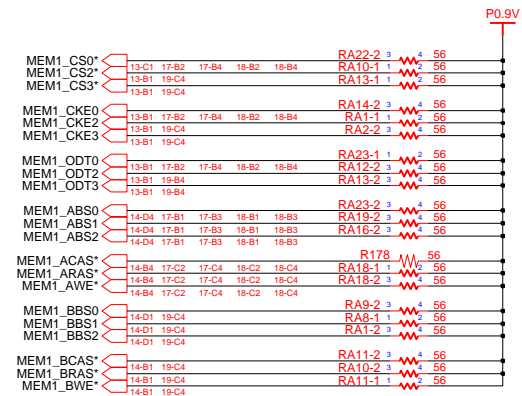
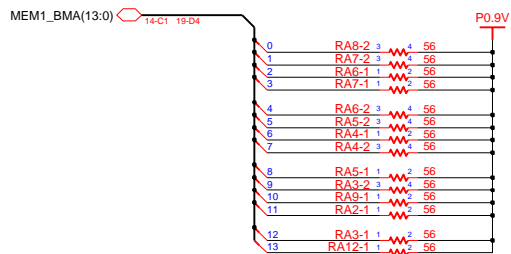
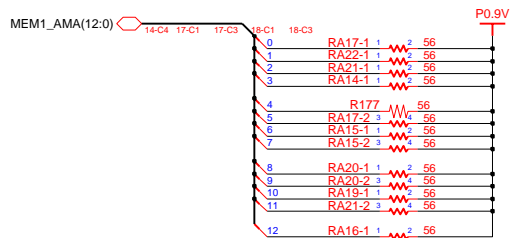
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CHECK	GUO LEI	DEV. STEP	MP			PART NO. BA41-00602A/3A
APPROVAL	KEVIN LEE	REV	1.0			PAGE 18 OF 50
MODULE CODE		LAST EDIT				

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CHECK	GUO LEI	DEV. STEP	MP			
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MODULE CODE		LAST EDIT				PAGE 19 OF 50

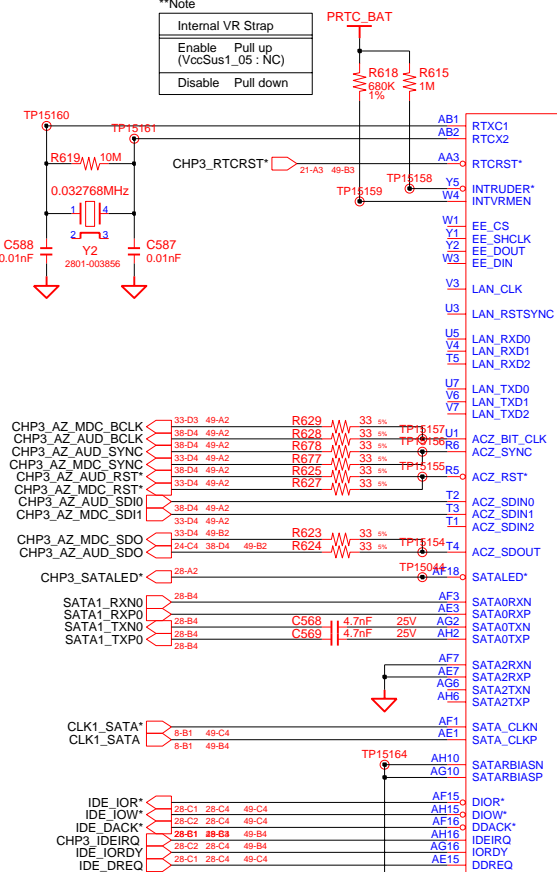
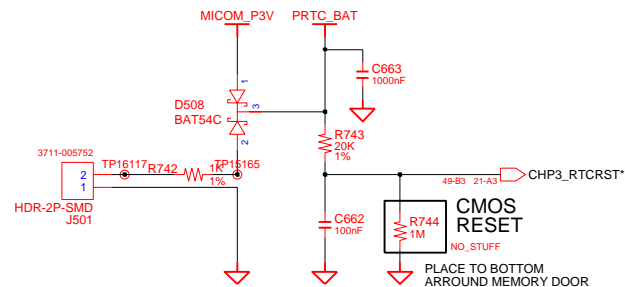
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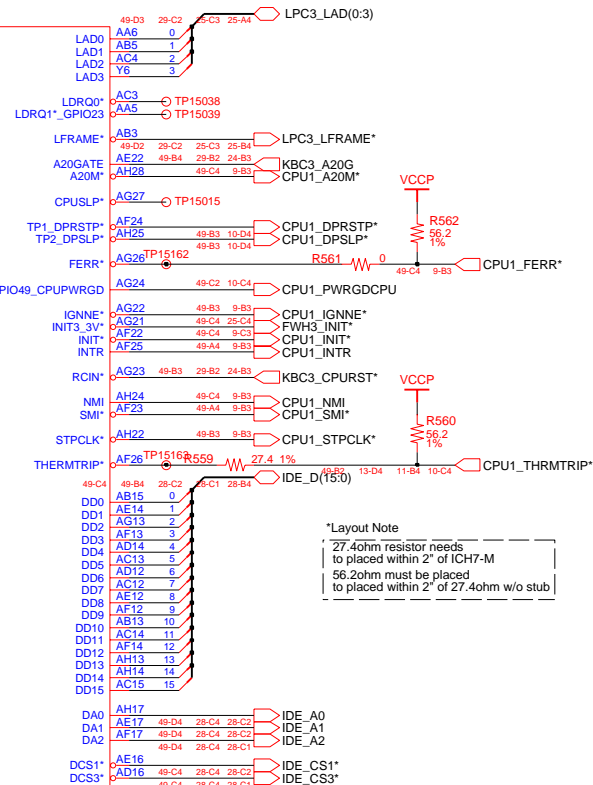
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APPROVAL	KEVIN LEE	REV	1.0	DDR2 TERMINATION		
MODULE CODE		LAST EDIT				
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**Note
Internal VR Strap
Enable Pull up
(VccSus1_05 : NC)
Disable Pull down

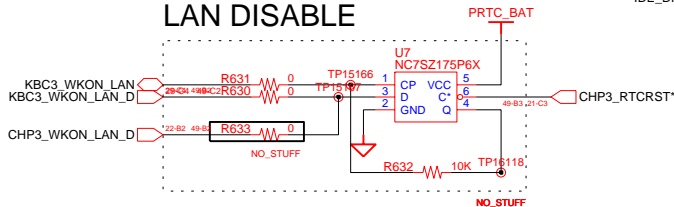


U40-1
ICH7-M
1 / 5



*Layout Note
27.4ohm resistor needs
to be placed within 2" of ICH7-M
56.2ohm must be placed
to the left of 27.4ohm w/o stub

LAN DISABLE



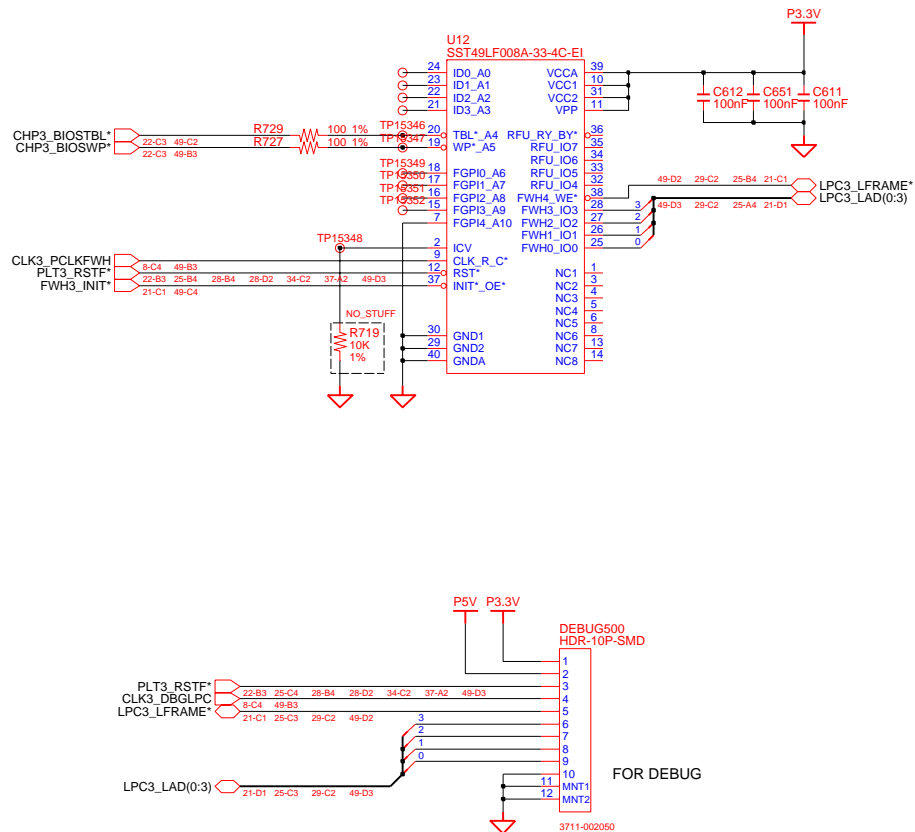
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MODULE CODE		LAST EDIT				BA41-00602A/3A
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U40-4
ICH7-M
4 / 5

DRAW	ZHOU JUN	DATE		TITLE	TORINO MAIN ICH7M(3)	SAMSUNG ELECTRONICS
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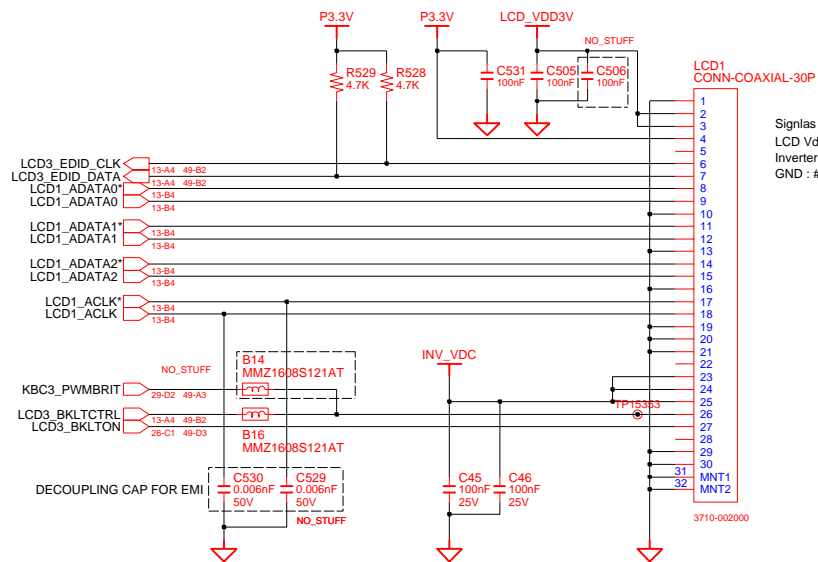
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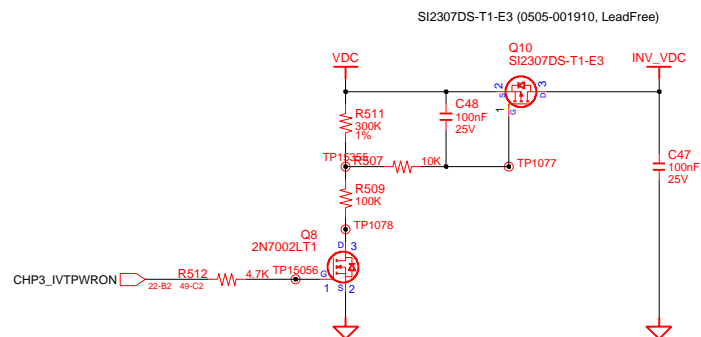
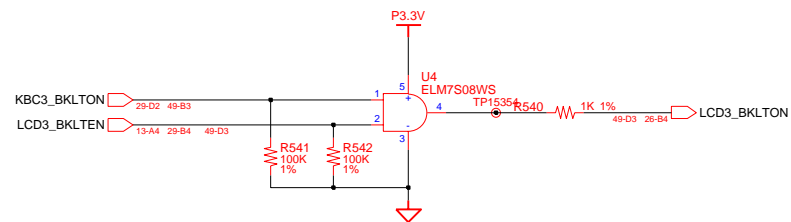
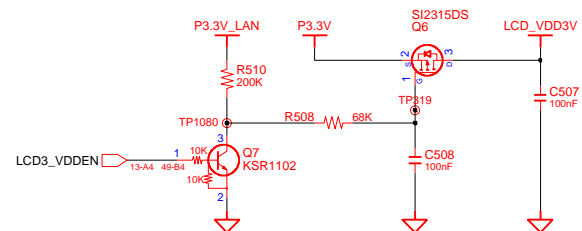
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|--|------------------------------------|
| 02 VERIFY REAL MODE | 66 CONFIGURE ADVANCE CACHE REG. |
| 03 DISABLE NMI | 6A DISPLAY EXTERNAL CACHE SIZE |
| 04 GET CPU TYPE | 6C DISPLAY SHADOW MESSAGE |
| 06 INIT. SYSTEM H/W | 6E DISPLAY NON-DISPOSABLE SEGMENT |
| 08 INIT. CHIPSET REG. | 70 DISPLAY ERROR MESSAGE |
| 09 SET IN POST FLAG | 72 CHECK FOR CONFIGURATION ERROR |
| 0A INIT CPU.REG | 74 TEST REAL-TIME CLOCK |
| 0B CPU CACHE ON | 76 CHECK FOR KEYBOARD EERROR |
| 0C INIT.CACHE TO POST | 7C SETUP HARDWARE INTERRUPT VECTOR |
| 0E INIT. I/O VALUE | 7E TEST COPROCESSER IF PRESENT |
| 0F ENABLE THE L-BUS IDE | 80 DISABLE ON-BOARD I/O PORT |
| 10 INIT. POWER MANAGER | 82 DETECT AND INSTALL EXT.RS232C |
| 11 LOAD ALTERNATE REG. | 84 DETECT AND INSTALL EXT.PARALLEL |
| 13 PCI BUS MASTER RESET
WITH INITIAL POST VALUE | 86 RE-INIT. ON-BOARD I/O PORT |
| 14 INIT. KEYBOARD CONTROLLER | 88 INIT. BIOS DATA ROM |
| 16 CHECK CHECKSUM | 8A INIT.EXTENDED BIOS DATA AREA |
| 18 8254 TIMER INIT. | 8C INIT. FDD CONTROLLER |
| 1A 8237 DMA CONTROLLER INIT. | 9A SHADOW OPTION ROMS |
| 1C RESET INTERRUPT CONTROLLER | 9C SETUP POWER MANAGEMENT |
| 20 TEST DRAM REFRESH | 9E ENABLE H/W INTERRUPT |
| 22 TEST 8742 KEYBOARD CONTROLLER | A0 SET TIME OF DAY |
| 24 SET ES SEGMENT REG. TO 4GB | A4 INIT. TYPEMATIC RATE |
| 26 ENABLE A20 | A8 ERASE F2 PROMPT |
| 28 AUTO SIZING DRAM | AA SCAN FOR F2 KEY STROKE |
| 32 COMPUTE THE CPU SPEED | AC ENTER SETUP |
| 34 TESET CMOS RAM | AE CLEAR IN POST FLAG |
| 38 SHADOW SYSTEM BIOS ROM | B0 CHECK FOR ERRORS |
| 3A AUTO SIZING CACHE | B2 POST DONE-PREPARE TO BOOT O/S |
| 3C CONFIGURE ADVANCED CHIPSET REG. | B4 ONE BEEP |
| 3D LOAD ALTER REG. WITH CMOS VALUE | B6 CHECK PASSWORD (OPTION) |
| 42 INIT. INTERRUPT VECTOR | B7 ACPI INIT |
| 44 INIT. BIOS INTERRUPT | BA DMI INIT |
| 46 CHECK ROM COPYRIGHT NOTICE | BE CLEAR SCREEN |
| 47 INIT. I20 SUPPORT IF INSTALLED | C0 TRY BOOT WITH INT19 |
| 48 CHECK VIDEO CONFIGURE AGAINST CMOS | D0 INTERRUPT HANDLER ERROR |
| 49 INIT. PCI BUS AND DEVICE | D2 UNKNOWN INTERRUPT ERROR |
| 4A INIT. ALL VIDEO BIOS ROM | D4 PENDING INTERRUPT ERROR |
| 4C SHADOW VIDEO BIOS ROM | D6 SHUTDOWN 5 |
| 50 DISPLAY CPU TYPE AND SPEED | D8 SHUTDOWN ERROR |
| 52 TEST KEYBOARD | DA EXTENDED BLOCK MOVE |
| 54 SET KEYCLICK IF ENABLED | DC SHUTDOWN 10 |
| 56 ENABLE KEYBOARD | 89 ENABLE NMI |
| 58 TEST FOR UNEXPECTED INTERRUPTS | 90 INIT. HDD CONTROLLER |
| 5A DISPLAY "PRESS SETUP" | 91 INIT. LOCAL BUS HDD CONTROLLER |
| 5C TEST RAM BETWEEN 512K AND 640K | 92 JUMP TO USER PATCH 2 |
| 60 TEST EXTENDED MEMORY | 94 DISABLE A20 ADDRESS LINE |
| 62 TEST EXTENDED MEMORY ADDRESS LINE | 96 CLEAR HUGE ES SEGMENT REG. |
| 64 JUMP TO USER PATCH 1 | 98 SEARCH FOR OPTION ROMS |

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WXGA LCD CONNECTOR

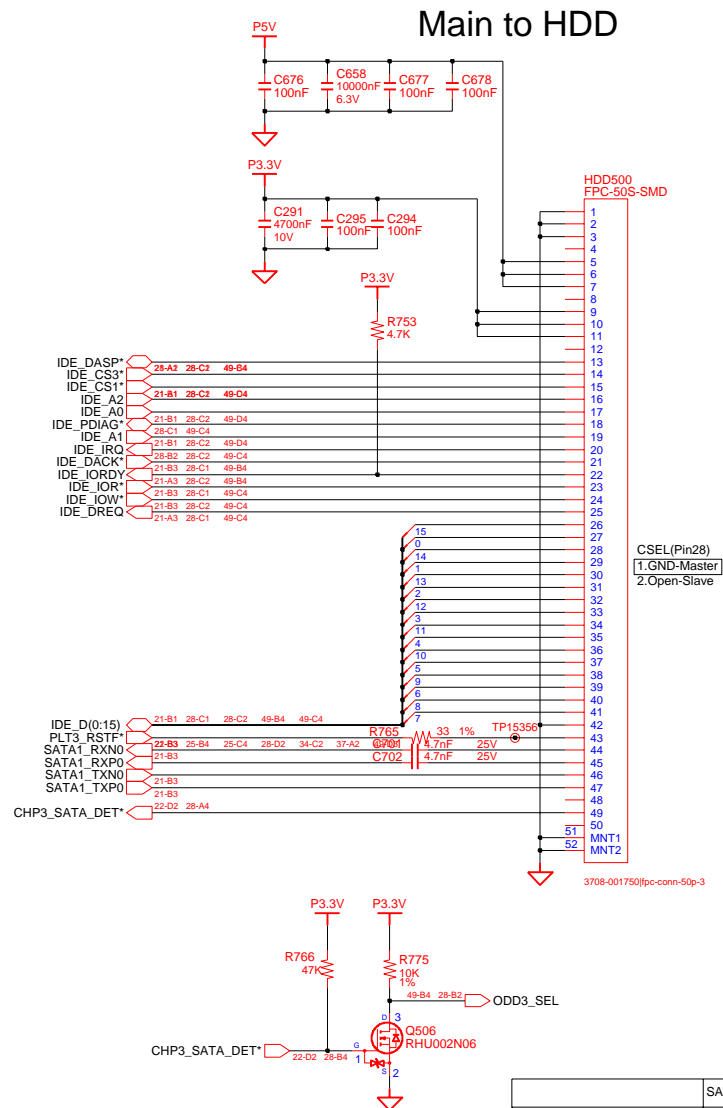


Signal : #40AWG
LCD Vdd : #36AWG
Inverter Vdd : #36AWG
GND : #36AWG

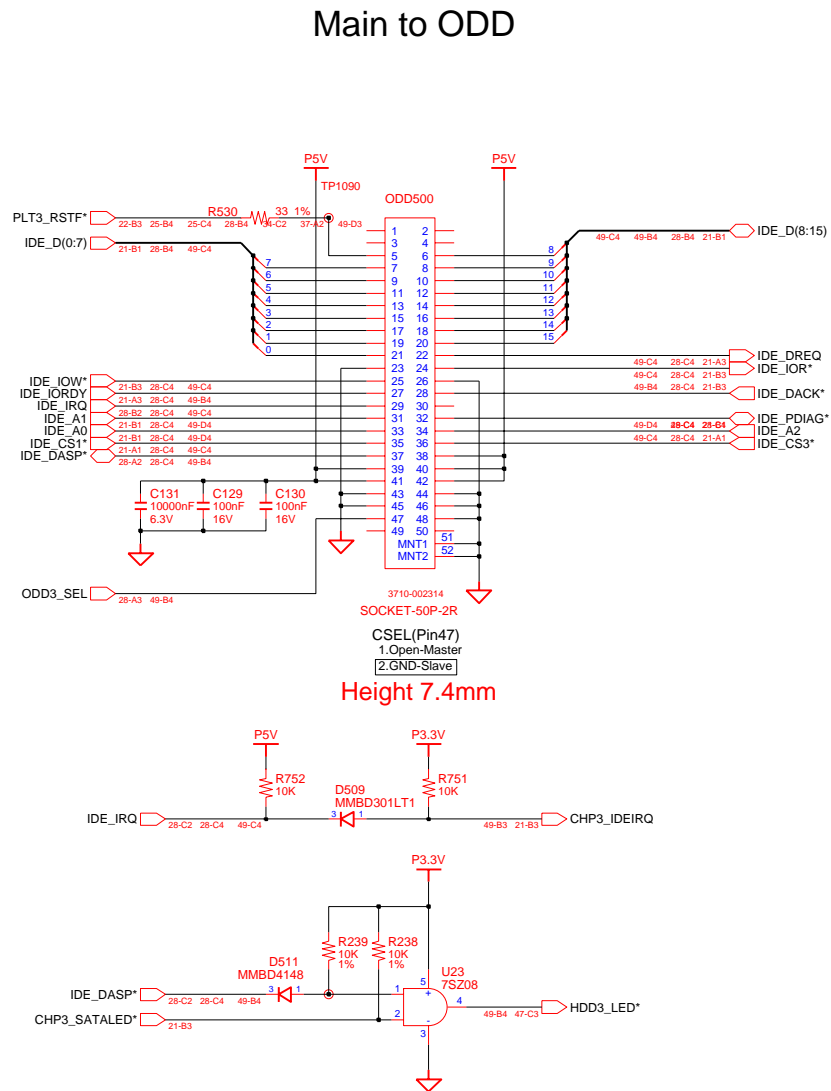


DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
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APPROVAL	KEVIN LEE	REV	1.0	LVDS		PART NO.
MODULE CODE		LAST EDIT				BA41-00602A/3A
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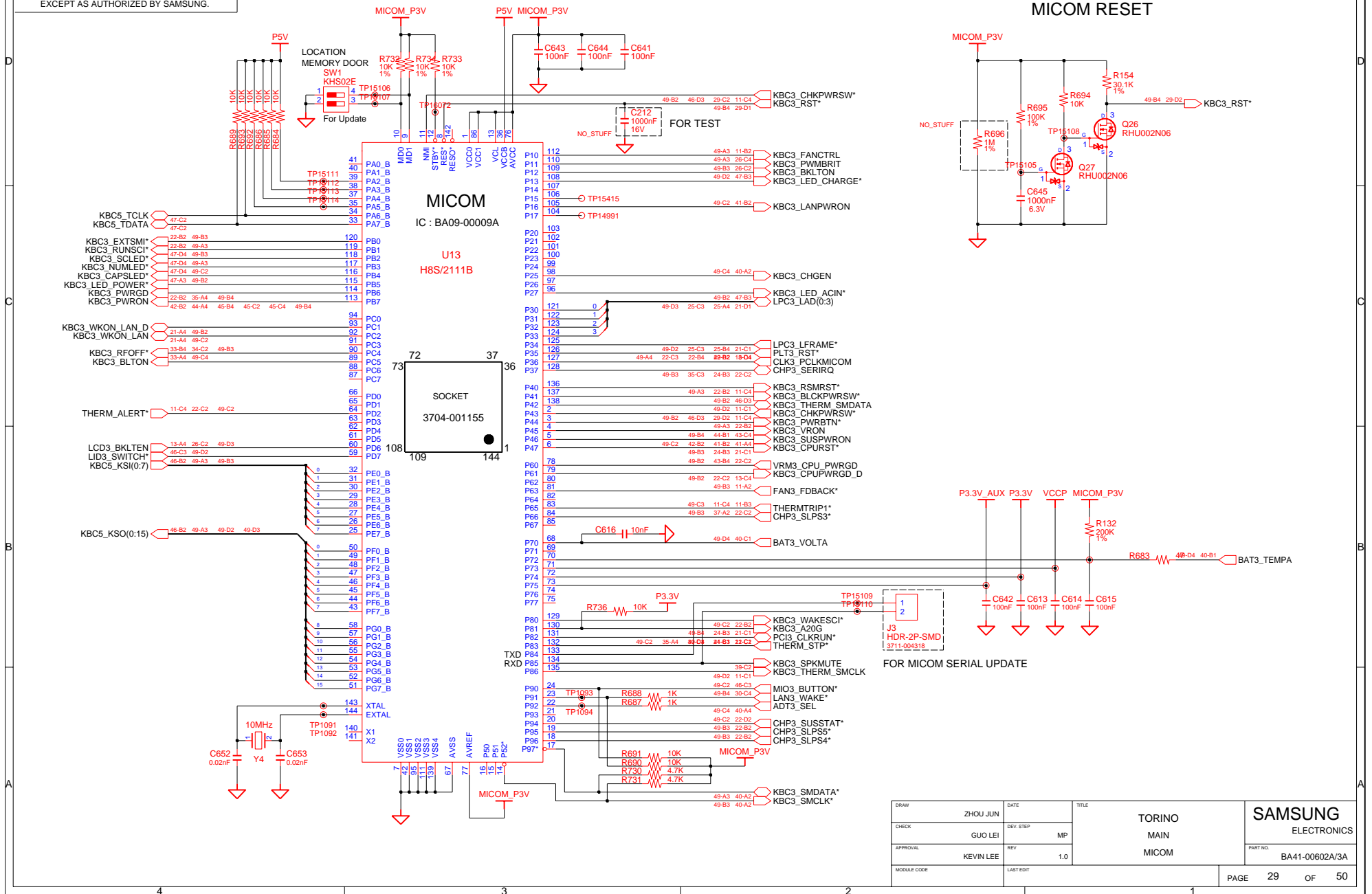


	SATA_DET*	ODD (IDE)	2nd HDD (IDE)
If SATA Detected	0	CSEL(#47) : Open (Master)	CSEL(#28) : GND (Master)
If SATA not Detected	1	CSEL(#47) : GND (Slave)	CSEL(#28) : Open (Slave)



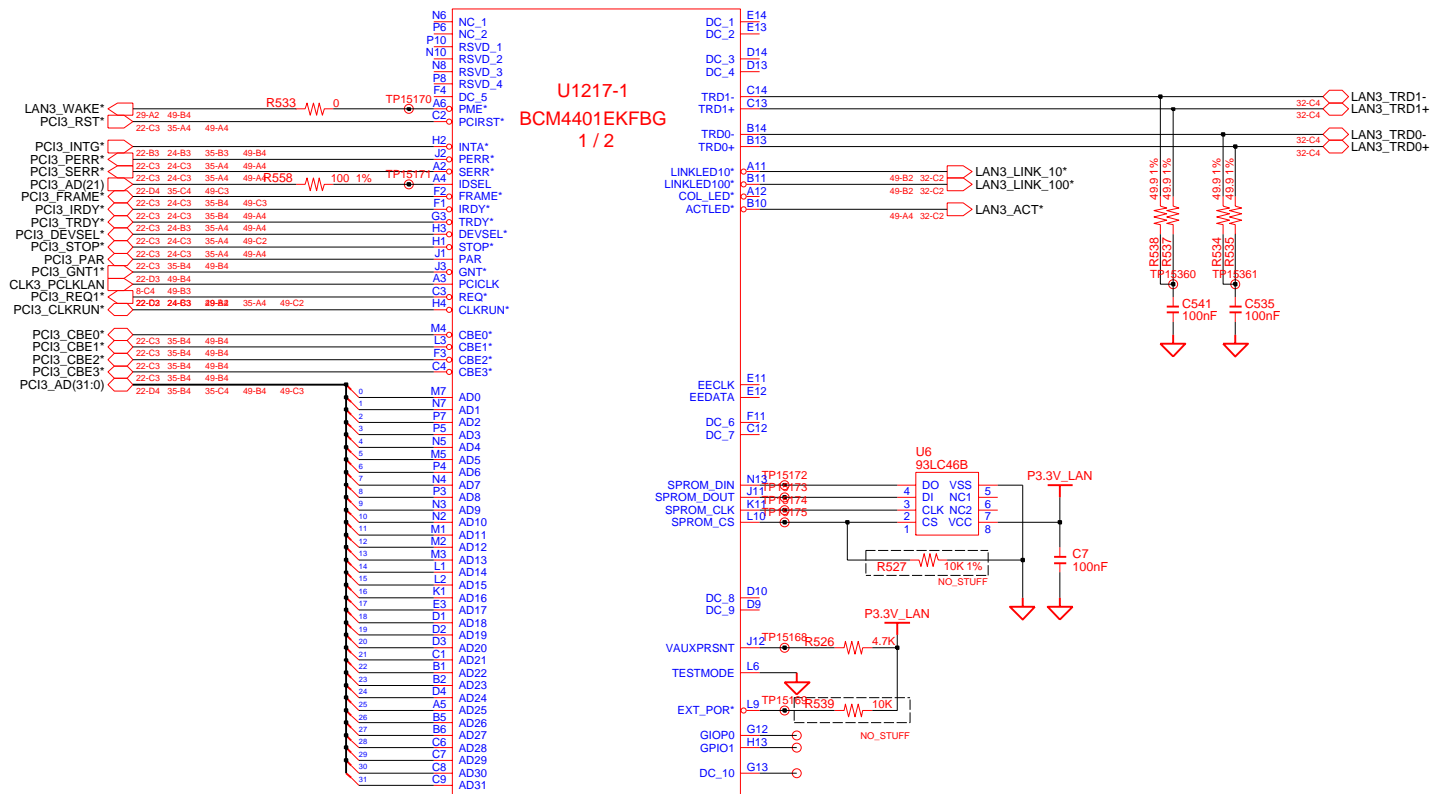
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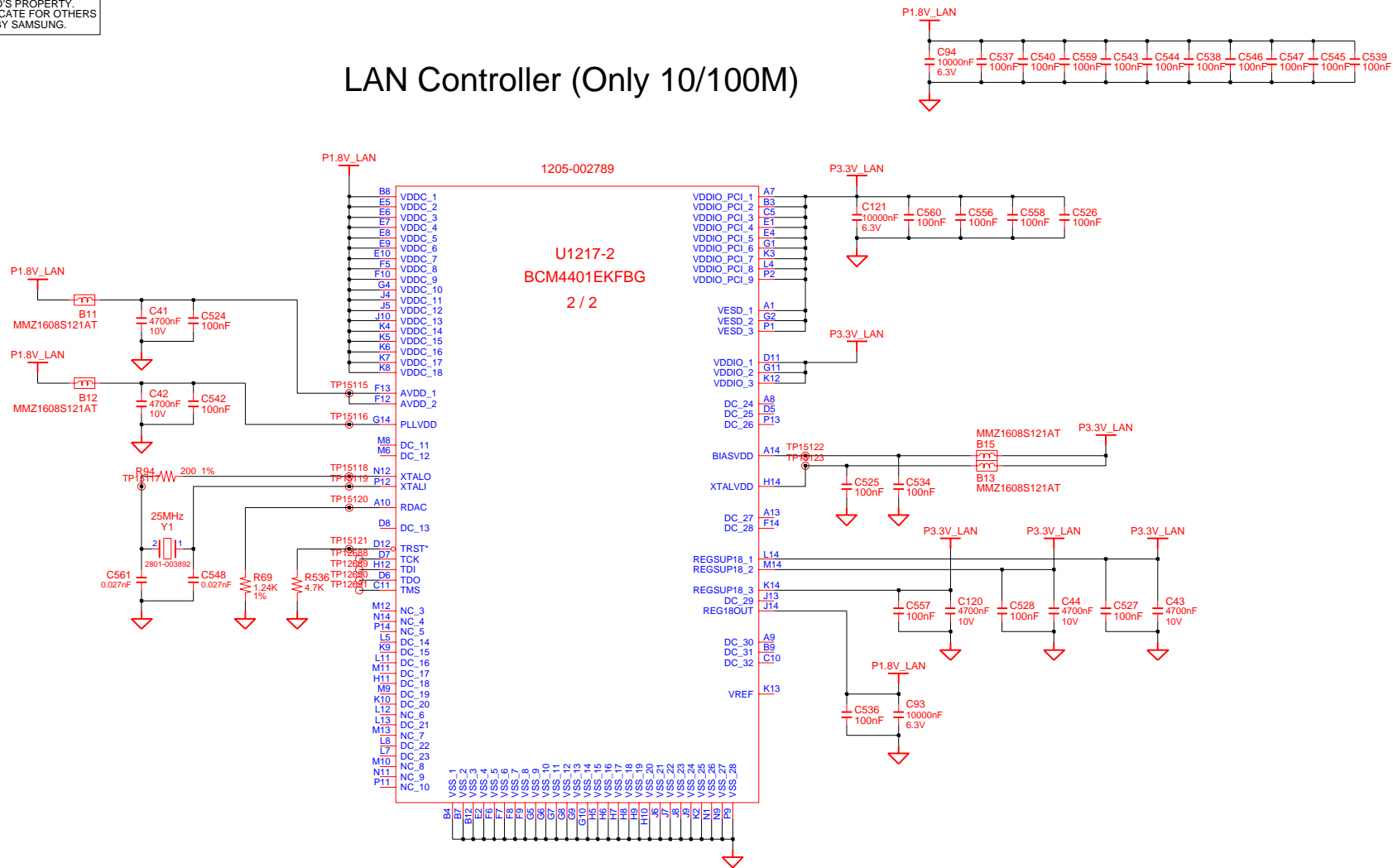


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APPROVAL	KEVIN LEE	REV	1.0			
MODULE CODE		LAST EDIT				PAGE 29 OF 50

LAN Controller (Only 10/100M)

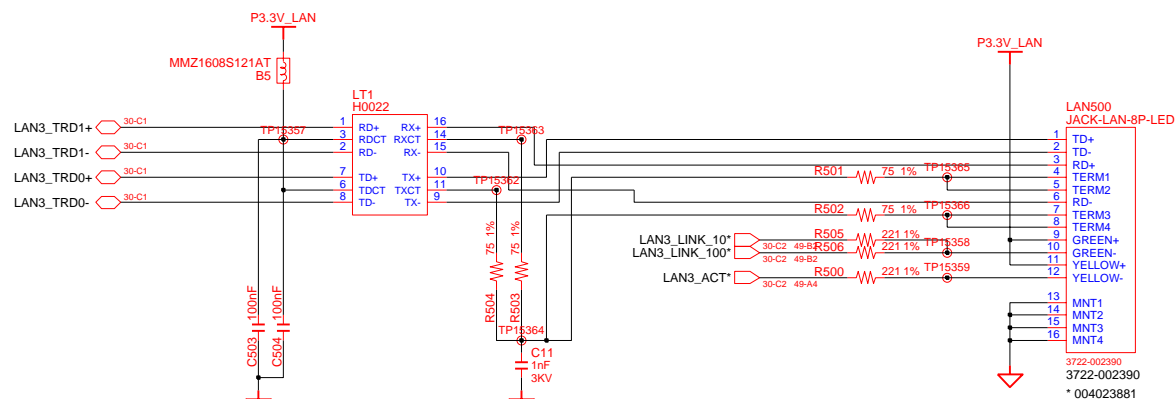


LAN Controller (Only 10/100M)

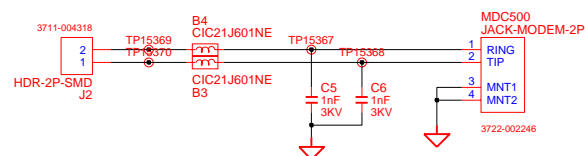


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LAN Connector



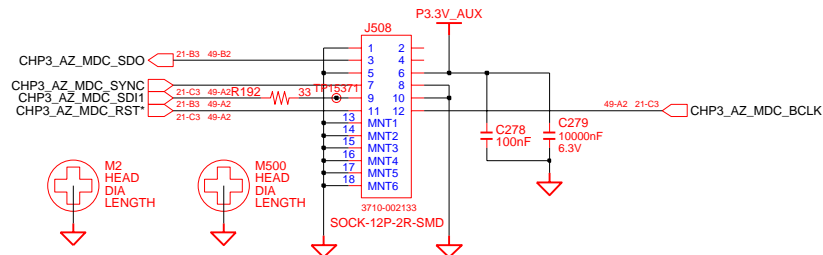
MODEM Connector



DRAWN	ZHOU JUN	DATE		TORINO MAIN LAN & MODEM JACK	SAMSUNG ELECTRONICS PART NO. BA41-0062A/3A
CHECK	GUO LEI	DEV. STEP	MP		
APPROVAL	KEVIN LEE	REV	1.0		
MODULE CODE	LAST EDIT				
				PAGE	32 OF 50

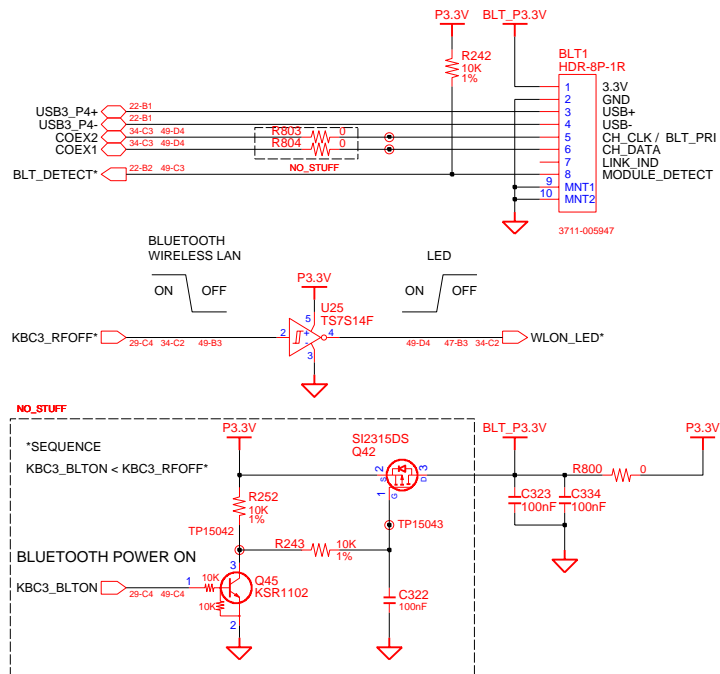
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MDC connector

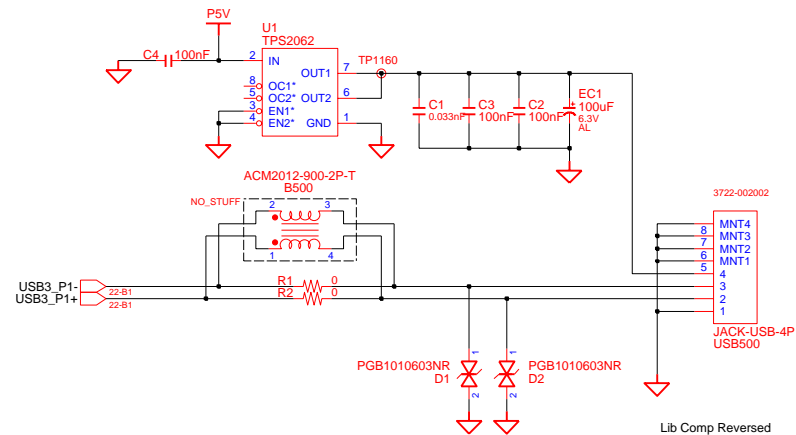
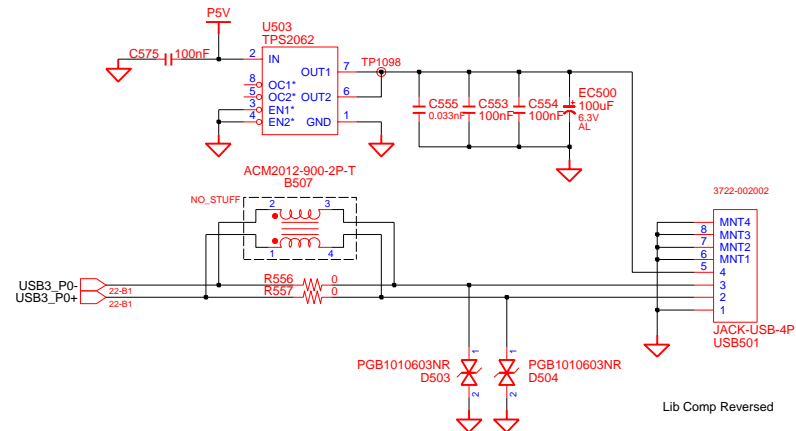


BLUETOOTH

Bluetooth 2.0 Standard

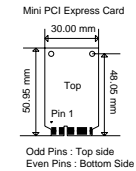
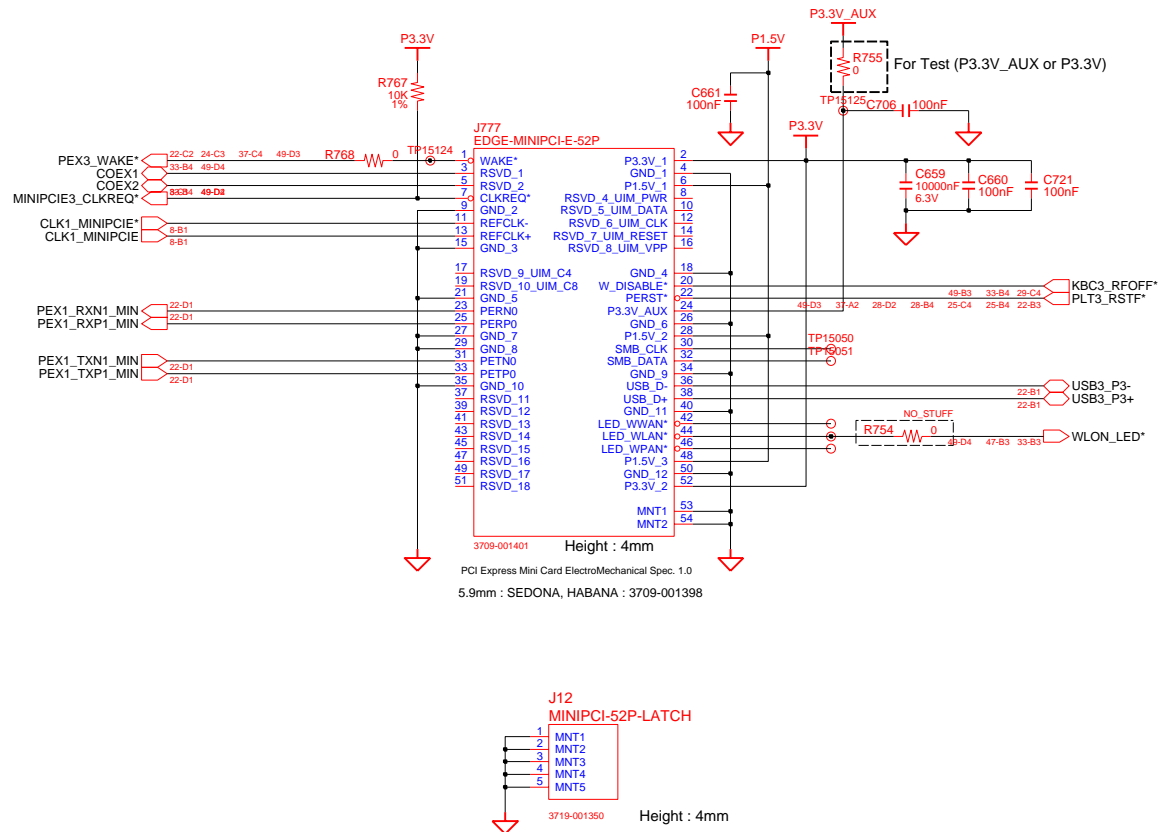


USB Port



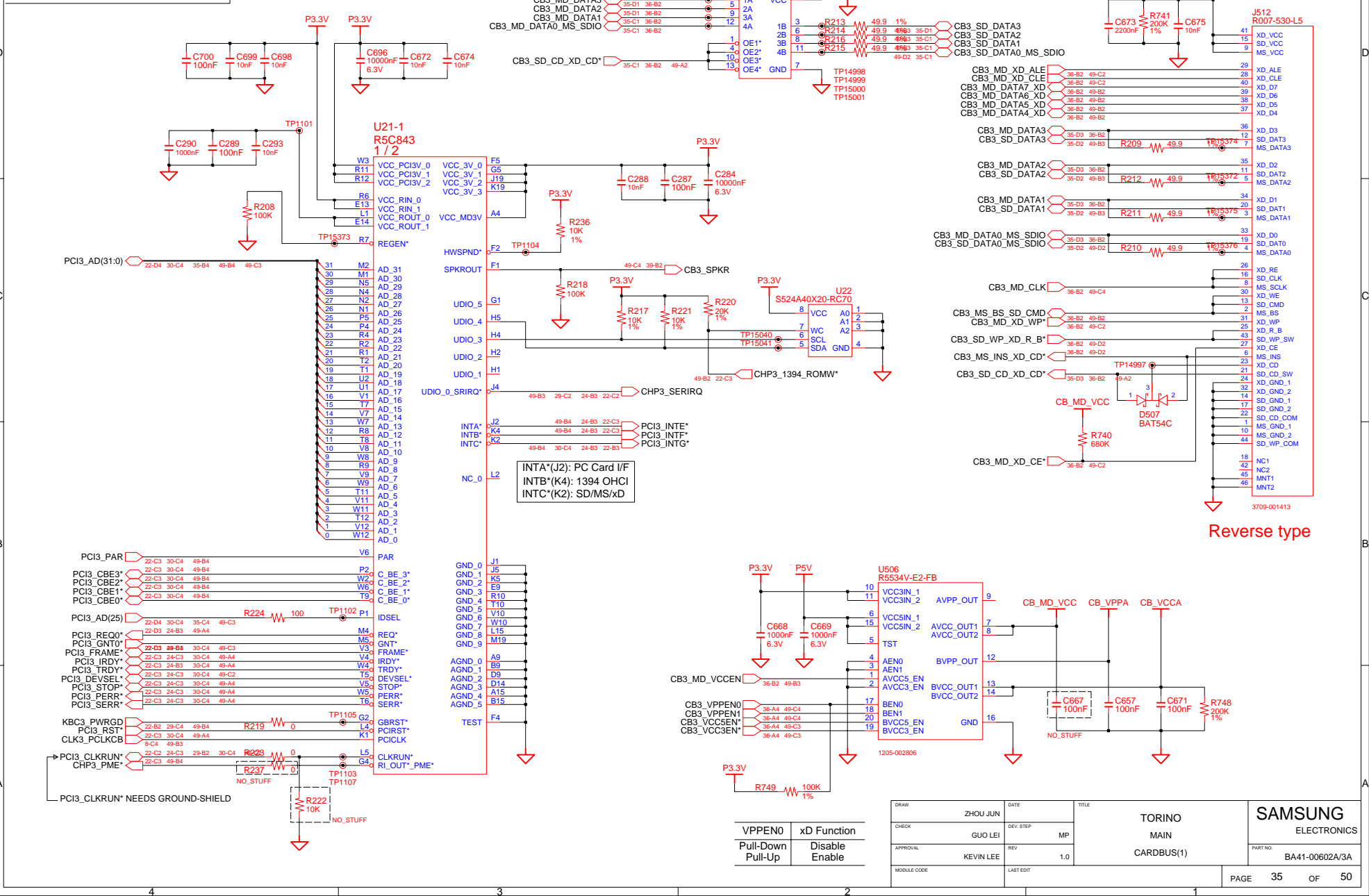
DRAW	ZHOU JUN	DATE		TITLE	TORINO MAIN	SAMSUNG ELECTRONICS
CHECK	GUO LEI	DEV. STEP	MP			PART NO. BA41-00602A/3A
APPROVAL	KEVIN LEE	REV	1.0		USB, MDC & BLUETOOTH	
MODULE CODE		LAST EDIT				PAGE 33 OF 50

Mini PCI-E Card



DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO LEI	DEV. STEP	MP	MAIN	MINI CARD	ELECTRONICS
APPROVAL	KEVIN LEE	REV	1.0			PART NO.
MODULE CODE		LAST EDIT				BA41-00602A/3A
PAGE 34 OF 50						

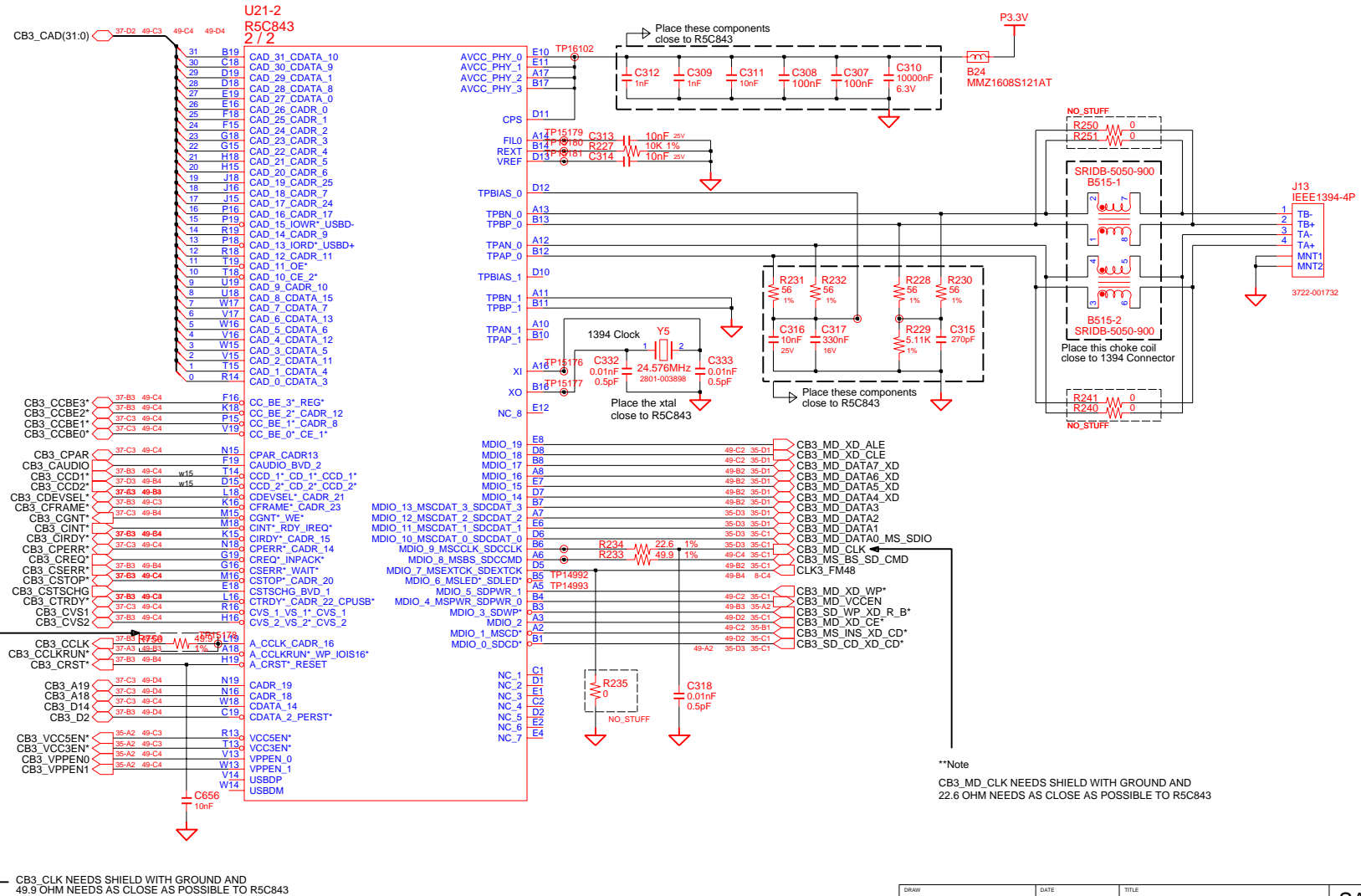
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Reverse type

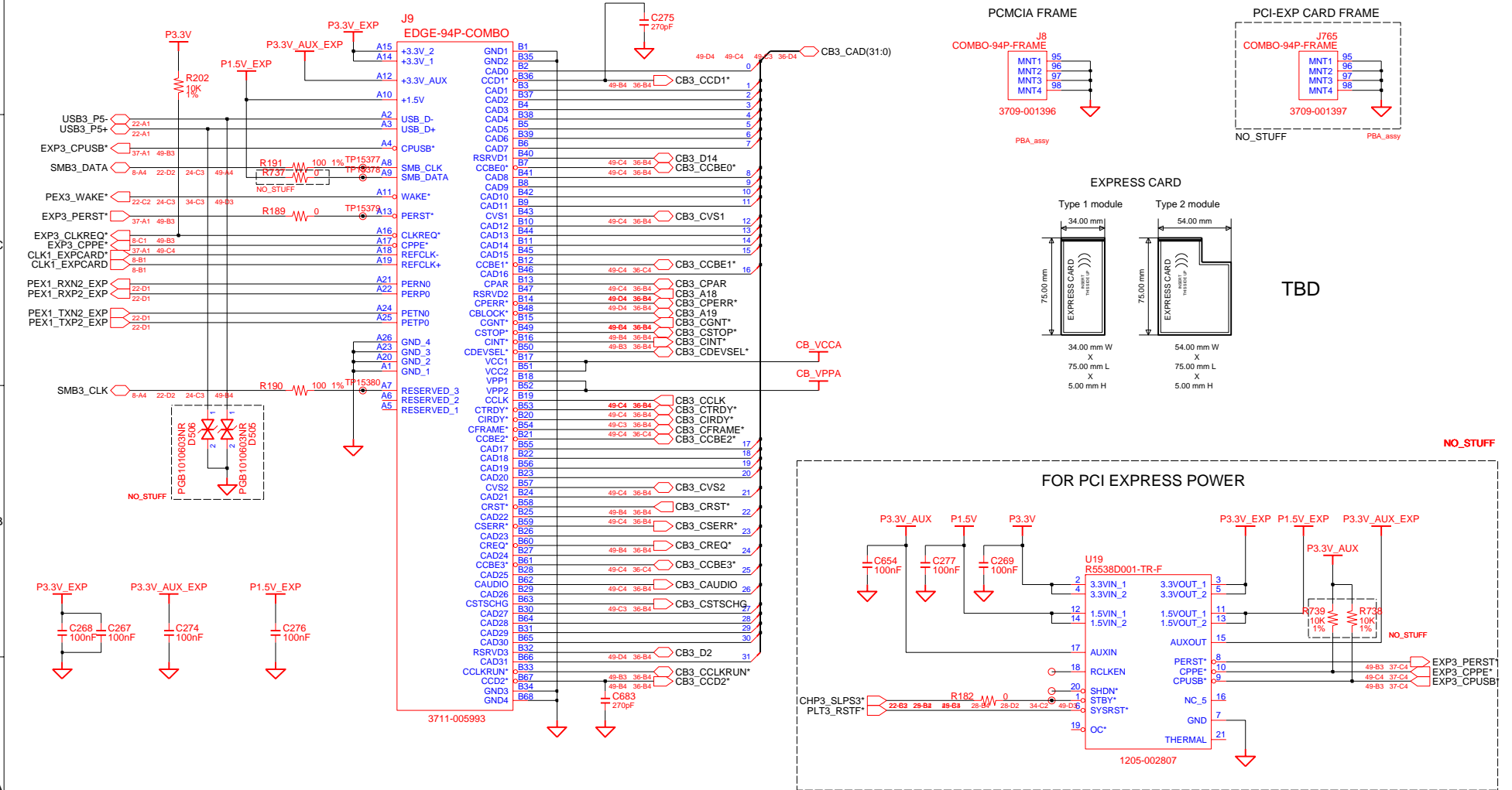
DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO LEI	DEV. STEP	MP	MAIN	ELECTRONICS	
APPROVAL	KEVIN LEE	REV	1.0	CARDBUS(1)	PART NO.	BA41-00602A/3A
MODULE CODE		LAST EDIT			PAGE	35 OF 50

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DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO LEI	DEV. STEP	MP	MAIN	ELECTRONICS	
APPROVAL	KEVIN LEE	REV	1.0	CARDBUS(2)	PART NO.	BA41-00602A/3A
MODULE CODE		LAST EDIT			PAGE	36 OF 50

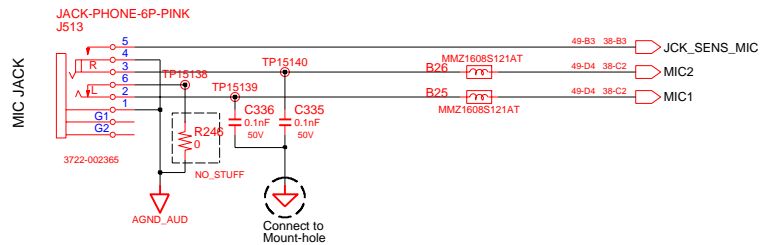
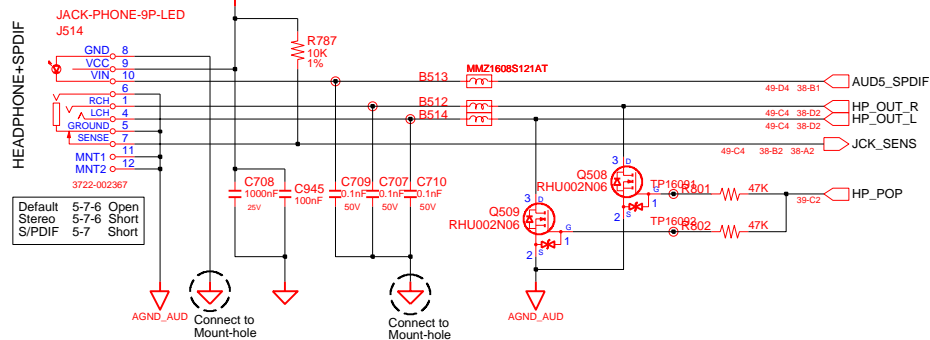
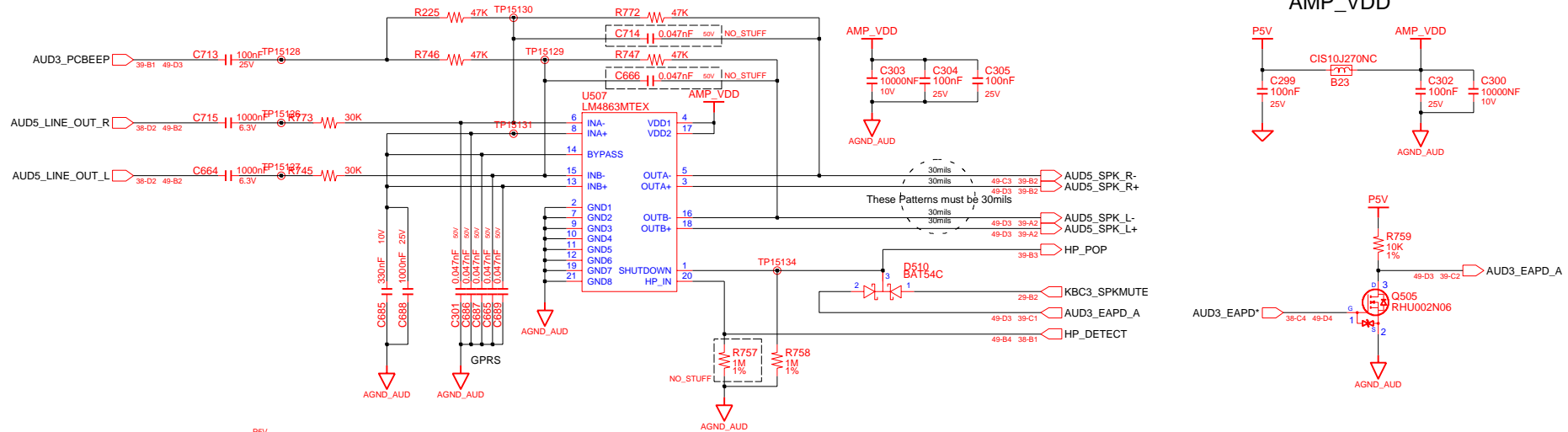
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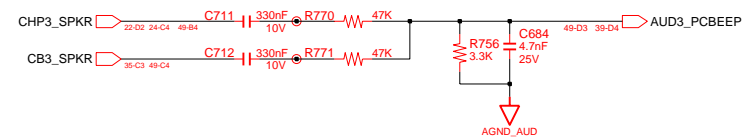
DRAW	ZHOU JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO LEI	DEV. STEP	MP	MAIN	PCMCIA	ELECTRONICS
APPROVAL	KEVIN LEE	REV	1.0			PART NO.
MODULE CODE		LAST EDIT				BA41-00602A/3A
						PAGE 37 OF 50

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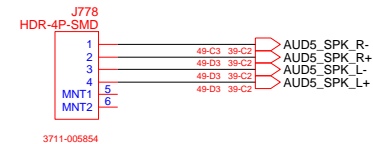
AUDIO AMP



PC BEEP SOUND



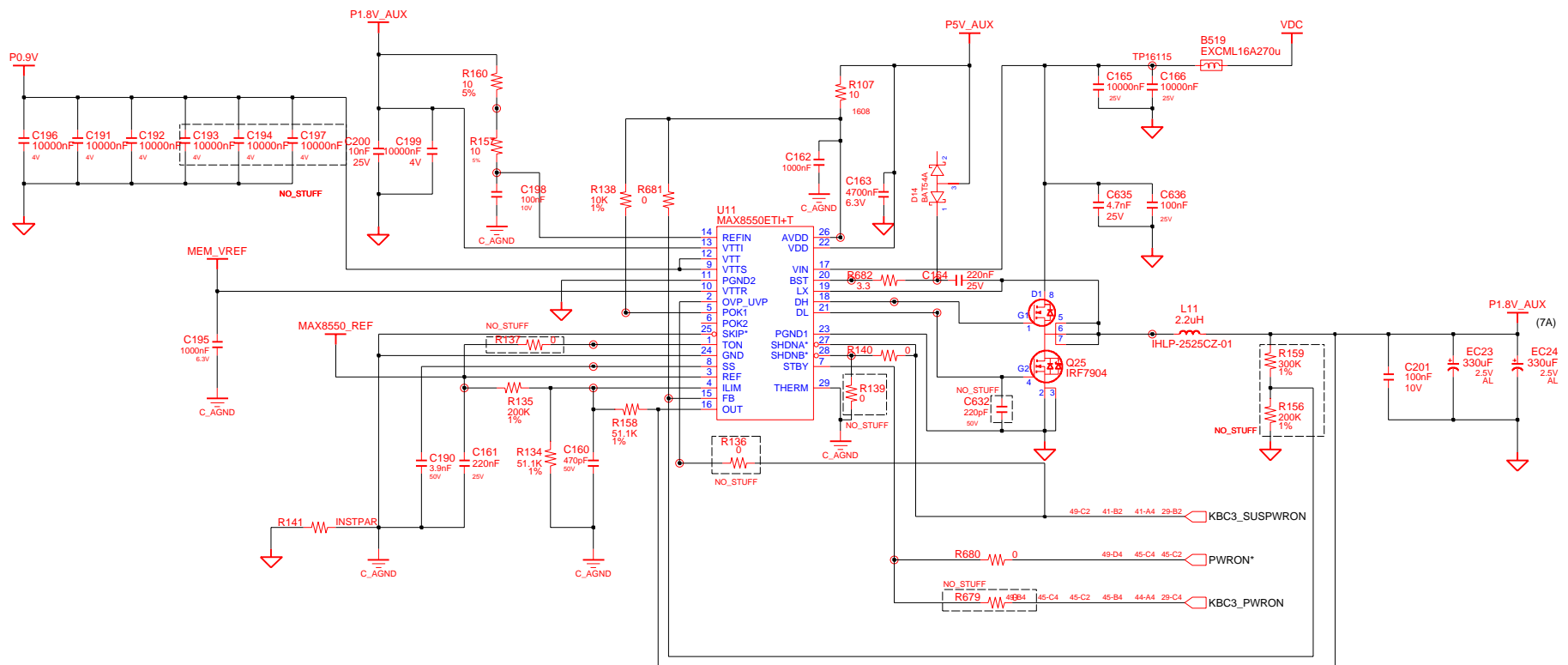
INTERNAL STEREO SPEAKERS



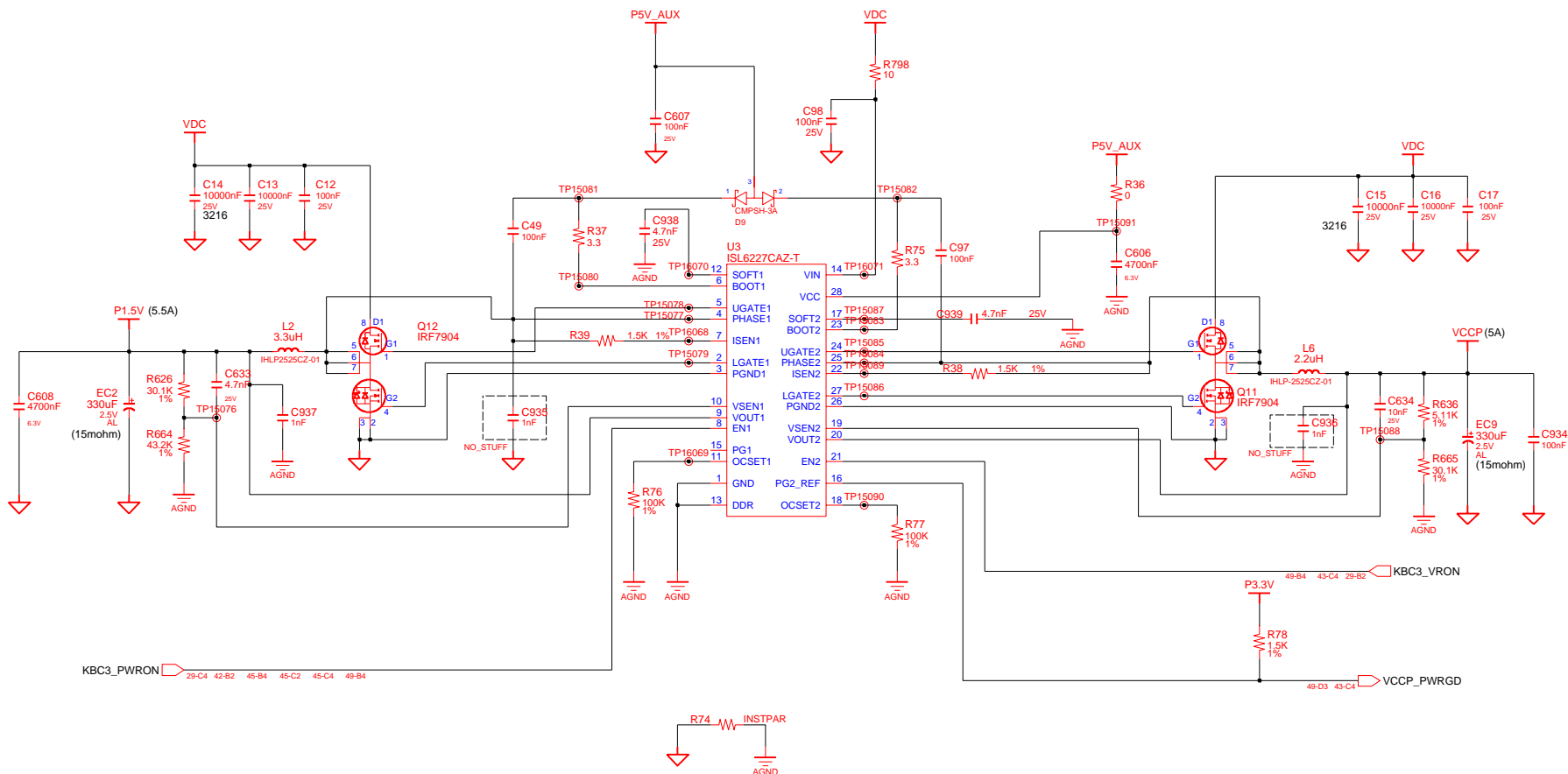
Should be written sign "LEFT", "RIGHT" on the PCB

DRAW	ZHOU JUN	DATE		TITLE	TORINO MAIN AUDIO AMPLIFIER	SAMSUNG ELECTRONICS
CHECK	GUO LEI	DEV. STEP	MP			PART NO. BA41-00602A/3A
APPROVAL	KEVIN LEE	REV	1.0			PAGE 39 OF 50
MODULE CODE		LAST EDIT				

DDR2 POWER



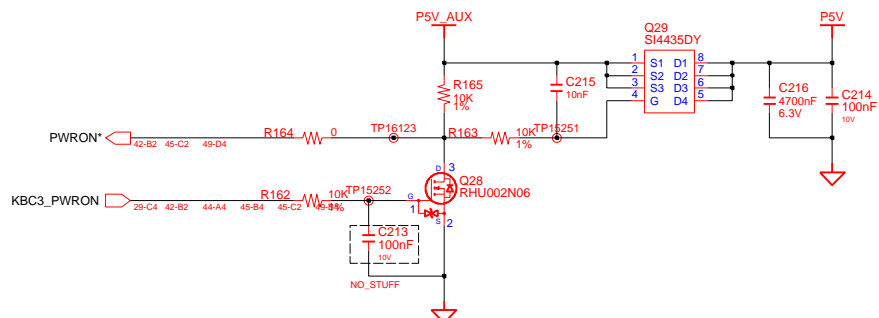
P1.5V & VCCP



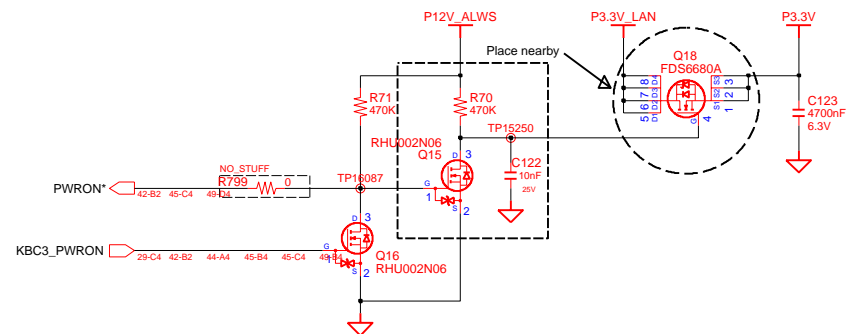
DRAW	ZHOU JUN	DATE	TORINO MAIN P1.5V_AUX & VCCP			SAMSUNG	
CHECK	GUO LEI	DEV. STEP				ELECTRONICS	
APPROVAL	KEVIN LEE	REV				PART NO.	
		1.0				BA41-00602A/3A	
MODULE CODE		LAST EDIT				PAGE	44 OF 50

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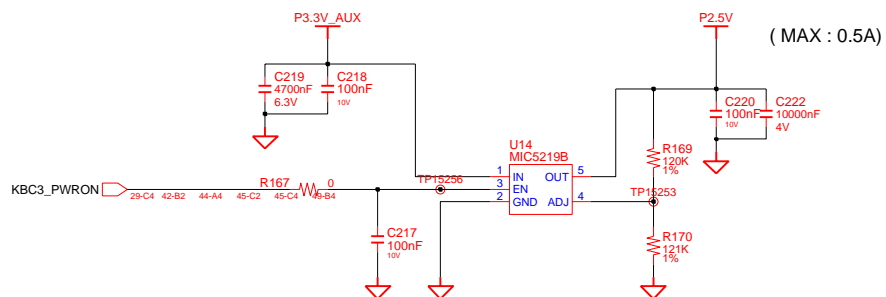
Switched Power On (P5V)



Switched Power On (P3.3V)



Switched Power On (P2.5V)



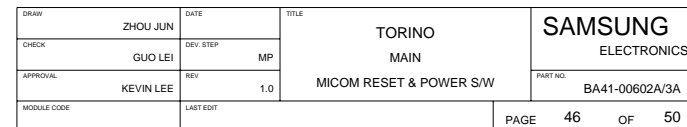
DRAW	ZHOU JUN	DATE		TITLE	TORINO MAIN	SAMSUNG ELECTRONICS
CHECK	GUO LEI	DEV. STEP	MP			
APPROVAL	KEVIN LEE	REV	1.0	SWITCHED POWER		PART NO. BA41-00602A/3A
MODULE CODE		LAST EDIT				PAGE 45 OF 50

A

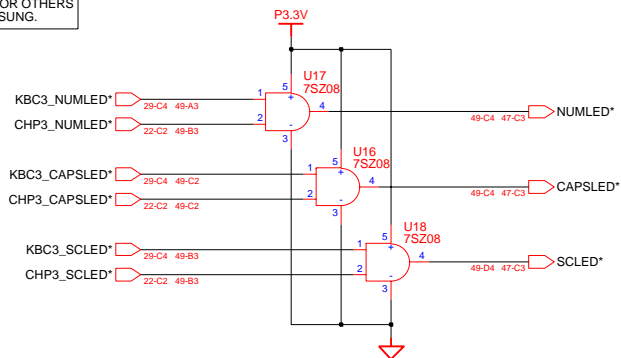
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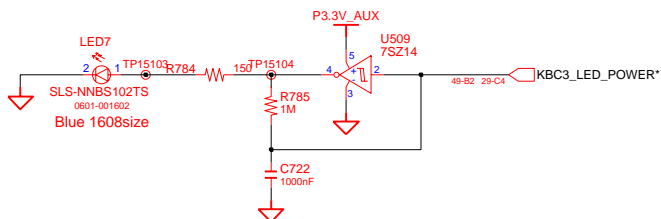
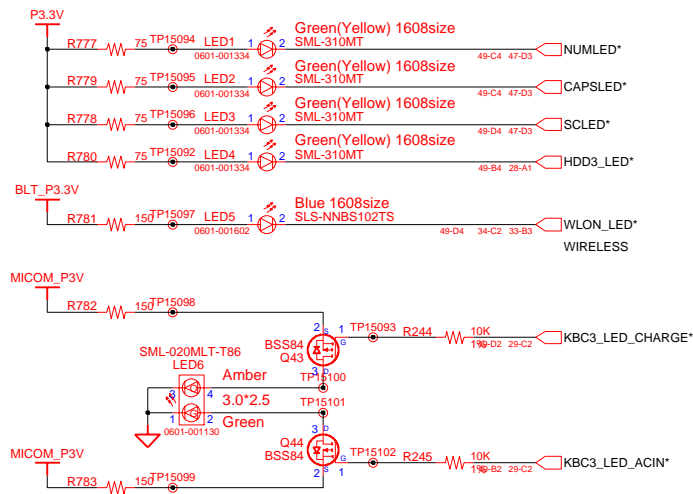
4



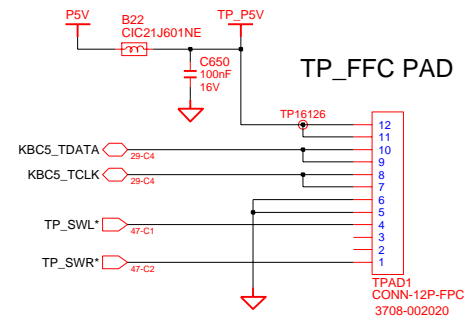
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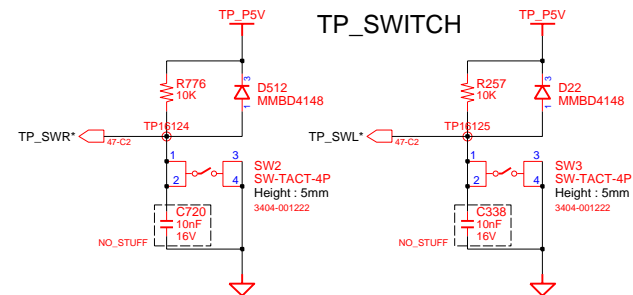
LEDS



TOUCH PAD



TP_SWITCH



* 1608 Size LEDs

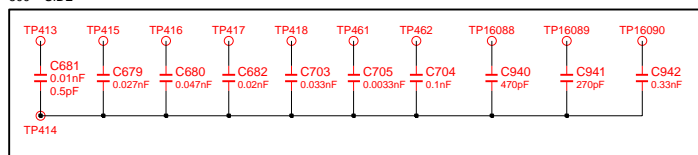
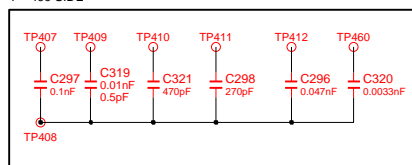
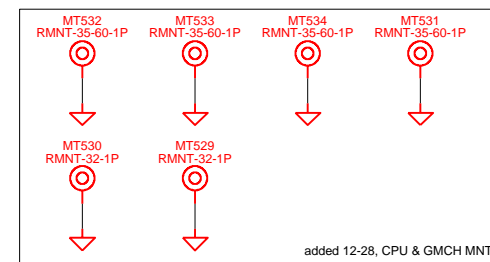
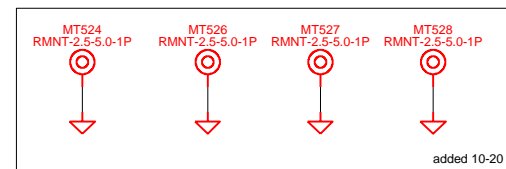
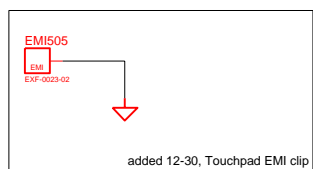
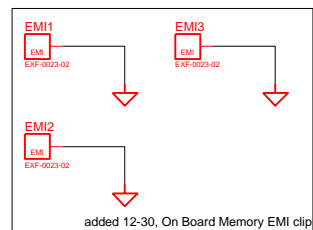
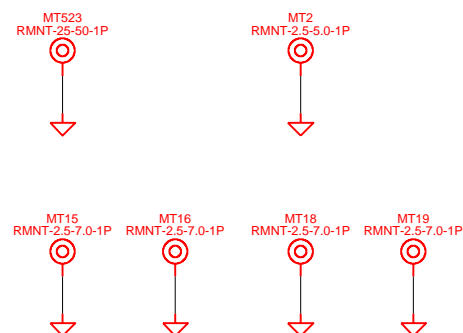
0601-001334	Green	C Grade
0601-001602	Blue	C Grade
0601-001784	Yellow	B Grade

* 3216 Size LEDs

0601-000189	Green	3.2*1.6*1.1
0601-001737	Blue	3.0*1.5*1.4
0601-001130	Amber,Green	3.0*2.5

DRAW	ZHOU JUN	DATE		TITLE		TORINO MAIN SUB B'D & LED	SAMSUNG ELECTRONICS PART NO. BA41-00602A/3A
CHECK	GUO LEI	DEV. STEP	MP				
APPROVAL	KEVIN LEE	REV	1.0				
MODULE CODE		LAST EDIT					
PAGE 47 OF 50							

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PCB REVISION CONTROL (ICT)				
NO	CONNECTION	DATE(Y/M/M/DD)	REVISION	STEP
1	N.C.			
2	1-2			
3	2-3			
4	3-1			
5	1-2-3			
6	N.C.			
7	1-2			
8	2-3			
9	3-1			
10	1-2-3			

REV1
1
2 3

DRAW	ZHOU JUN	DATE	TITLE TORINO MAIN MOUNT HOLE			SAMSUNG ELECTRONICS			
CHECK	GUO LEI	DEV. STEP							MP
APPROVAL	KEVIN LEE	REV				1.0	PART NO.	BA41-00620A/3A	
MODULE CODE		LAST EDIT				PAGE	48	OF	50

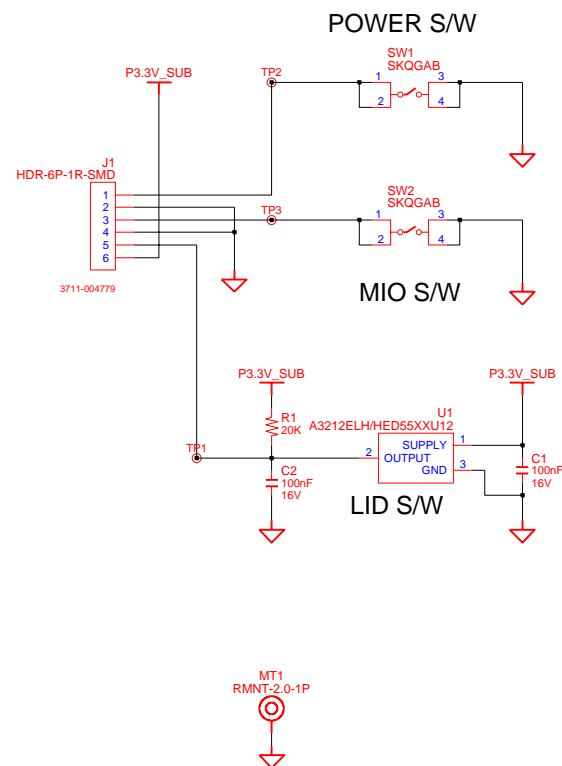
ON-TOP BOARD

CPU : Intel YONAH
Chip Set : Intel 945GM & ICH7-M
Remarks : ON TOP BOARD

Model Name : TORINO
PBA Name : On-Top
PCB Code : BA59-01851A
Dev. Step : MP
Revision : 1.0
T.R. Date : 2006.1.5

DRAW	CHECK	APPROVAL

ON TOP BOARD



DRAW	ZHOU, JUN	DATE		TITLE	TORINO	SAMSUNG
CHECK	GUO, LEI	DEV. STEP	MP	ON TOP	ON TOP	ELECTRONICS
APPROVAL	LEE, KEVIN	REV	1.0	ON TOP		PART NO.
MODULE CODE		LAST EDIT				BA59-01851A
PAGE 1 OF 1						