

2008/05/26

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INVENTEC

TITLE
TT20

SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
SHEET 2		OF 70	

CHANGE by *Kevin Hsiao* 15-May-2008

Inventec Confidential

The diagram illustrates the system architecture for the TT20. At the top, the **AMD Lion / Sable** processor (S1G2 Socket/638 pin) is connected to **DDR II _SODIMM0** and **DDR II _SODIMM1** via **DDR2 Interface**. It also connects to the **AMD RS780 FCBGA** via **Hyper Transport 3**. The **AMD RS780 FCBGA** is connected to various docking and display components: **TV Docking**, **TV**, **LCM**, **CRT Docking**, **CRT**, **DVI Docking**, and **TMDS**. It also connects to **PCIE1** (PCIE x1 Docking), **PCIE0** (NIC: Giga-bit LAN BCM 5787M with **RJ45**), and **DDR2** (LFB). The **AMD SB700 FCBGA** is connected to the **AMD RS780 FCBGA** via **A-link**. It manages storage through **SATA 0** (HDD) and **SATA 1** (Fixed ODD). It also connects to a series of USB ports: **USB0 CONN A**, **USB2 CONN B**, **USB4 DB CONN C**, **USB5 DB CONN D**, **USB7 CAMERA**, **USB8 Docking**, **USB9 Docking**, **USB11 Bluetooth**, and **USB13 Finger Print**. A **7 in 1 Slot** connects to **USB3 Flash media** (SMSC USX2016). The **AMD SB700 FCBGA** also connects to a **Docking connector**, **1394 Controller Agere FW322-07-NV100** (via **3.3V, PCI_Interface, 33MHz**), **1394 CONN**, **Accelero Meter** (via **SMBus**), and a group of components (TPM, Super I/O, KBC) via **3.3V, LPC_Interface, 33MHz**. The **TPM V1.2** is connected to the **AMD SB700 FCBGA**. The **Super I/O 47N217** connects to **Serial Port Docking**, **Parallel Port Docking**, **PS2 Port Docking**, **Internal Keyboard**, and **BIOS**. The **KBC SMSC 1091 (128P)** connects to **PS2 Port Docking**, **Internal Keyboard**, and **BIOS**. The **AMD SB700 FCBGA** also connects to **Alalia_Interface**, which manages the **MDC Modem Module V1.5** (with **RJ11**) and **Audio ADI_1984A** (with **Line In Docking**, **Line Out Docking**, **MIC In**, and **Head Phone**). Power is provided by **MAIN BATT** and **TRAVEL BATT** to the **System Charger & DC/DC System power** block. A **CLK GEN** (ICS9LPRS476KLFT) and **Thermal Sensor** are also shown.

AMD Lion / Sable
S1G2 Socket/638 pin

DDR2 Interface

DDR II _SODIMM0

DDR II _SODIMM1

Hyper Transport 3

AMD RS780 FCBGA

PCIE1 PCIE x1 Docking

PCIE0 NIC
Giga-bit LAN BCM 5787M

RJ45

DDR2 LFB

A-link

AMD SB700 FCBGA

SATA 0 HDD

SATA 1 Fixed ODD

USB0 CONN A

USB2 CONN B

USB4 DB CONN C

USB5 DB CONN D

USB7 CAMERA

USB8 Docking

USB9 Docking

USB11 Bluetooth

USB13 Finger Print

7 in 1 Slot

USB3 Flash media
SMSC USX2016

Docking connector

1394 Controller Agere FW322-07-NV100

1394 CONN

Accelero Meter

3.3V, PCI_Interface, 33MHz

3.3V, LPC_Interface, 33MHz

Alalia_Interface

MDC Modem Module V1.5

RJ11

Audio ADI_1984A

Line In Docking

Line Out Docking

MIC In

Head Phone

TPM V1.2

Super I/O 47N217

Serial Port Docking

Parallel Port Docking

PS2 Port Docking

Internal Keyboard

BIOS

KBC SMSC 1091 (128P)

MAIN BATT

TRAVEL BATT

System Charger & DC/DC System power

CLK GEN
ICS9LPRS476KLFT

Thermal Sensor

TV Docking

TV

LCM

CRT Docking

CRT

DVI Docking

TMDS

PCIE2 USB10 MINI CARD for WLAN(MIMO)/WiMAX

PCIE3 USB1 PCIE Express card (Smart card adapter)

USB6 MINI CARD for WWAN/WLAN/WiMAX

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TITLE TT20 Block Diagram

SIZE A3

CODE CS

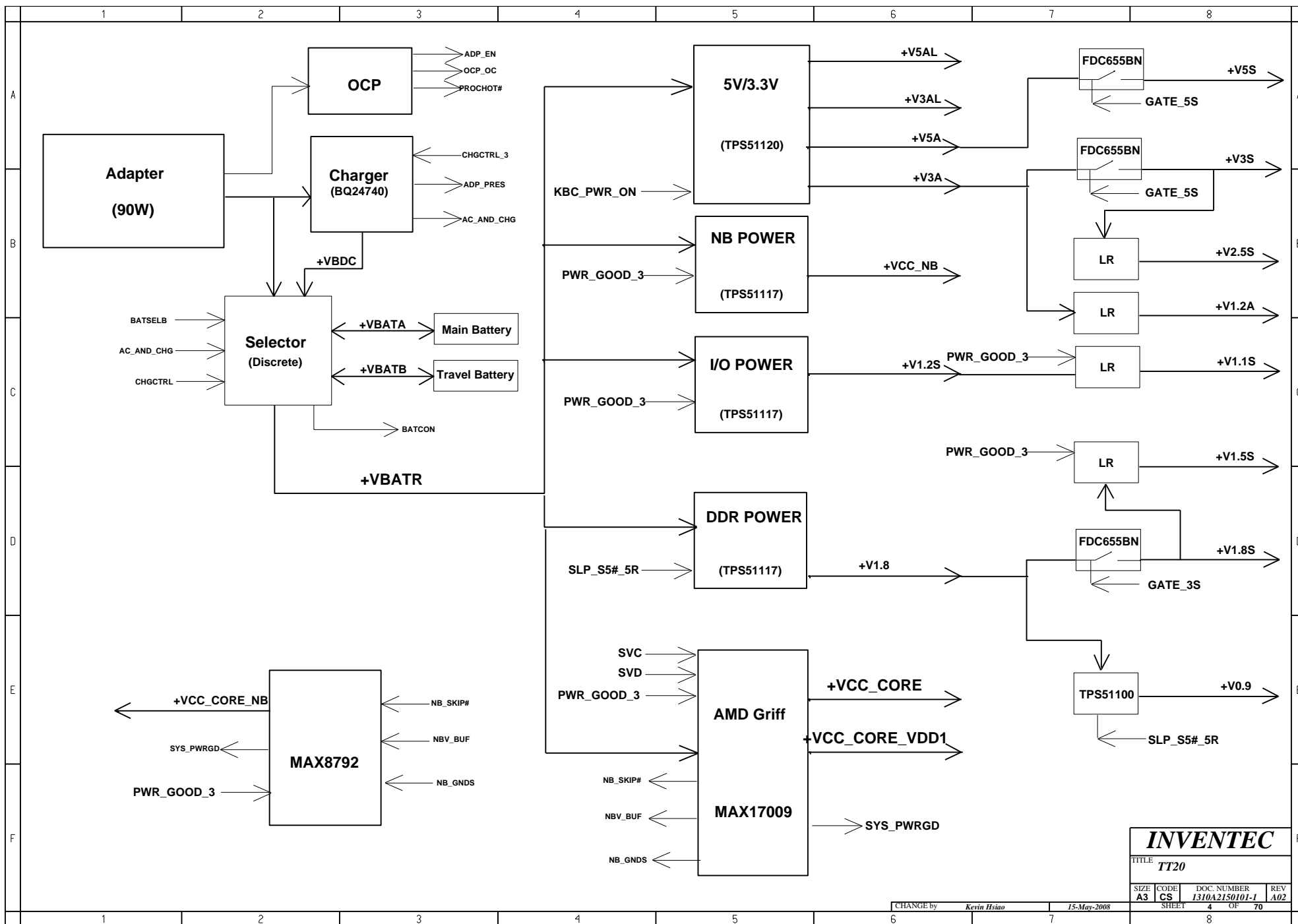
DOC. NUMBER 1310A2150101-1

REV A02

CHANGE by Kevin Hsiao

15-May-2008

SHEET 3 **OF** 70



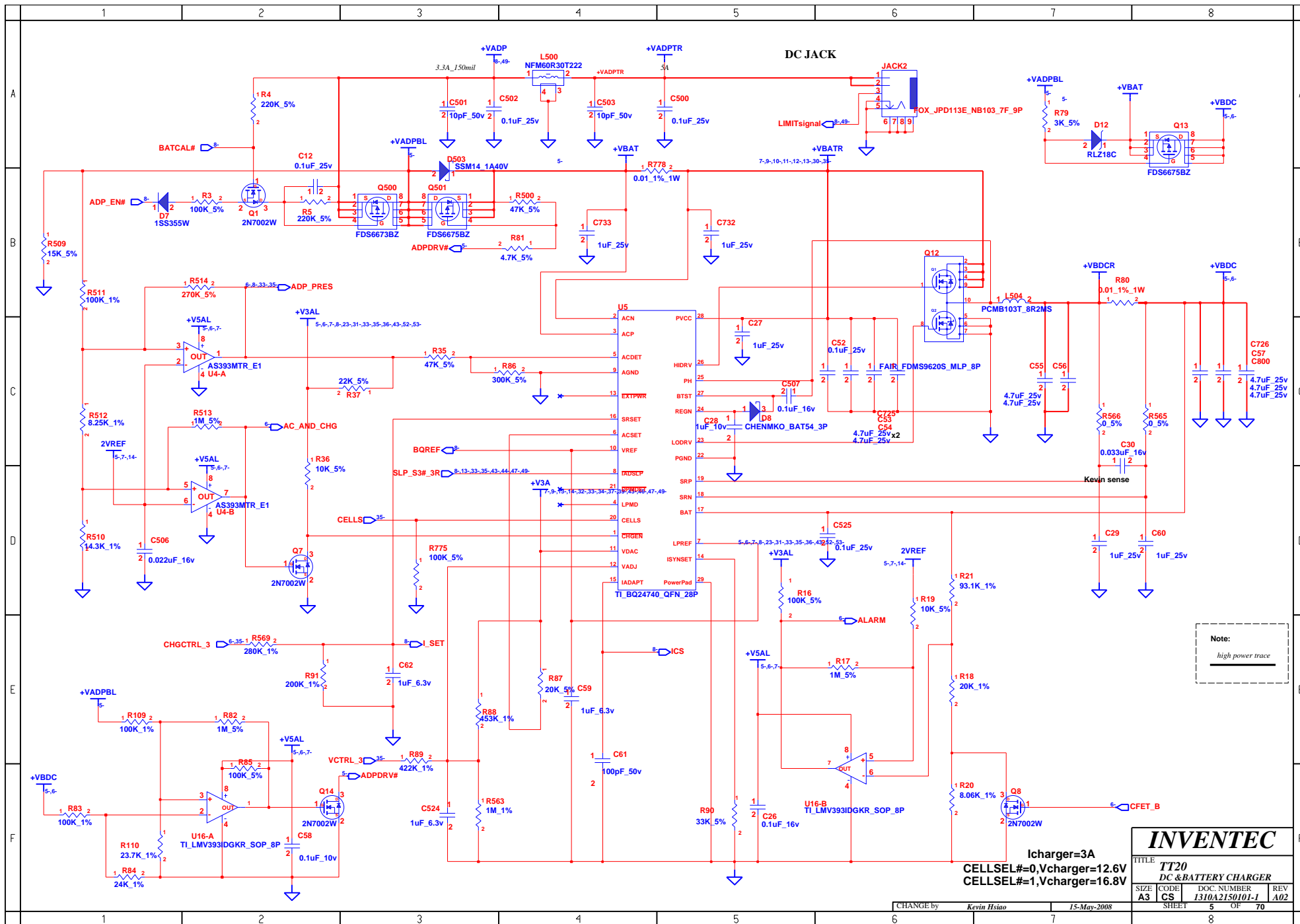
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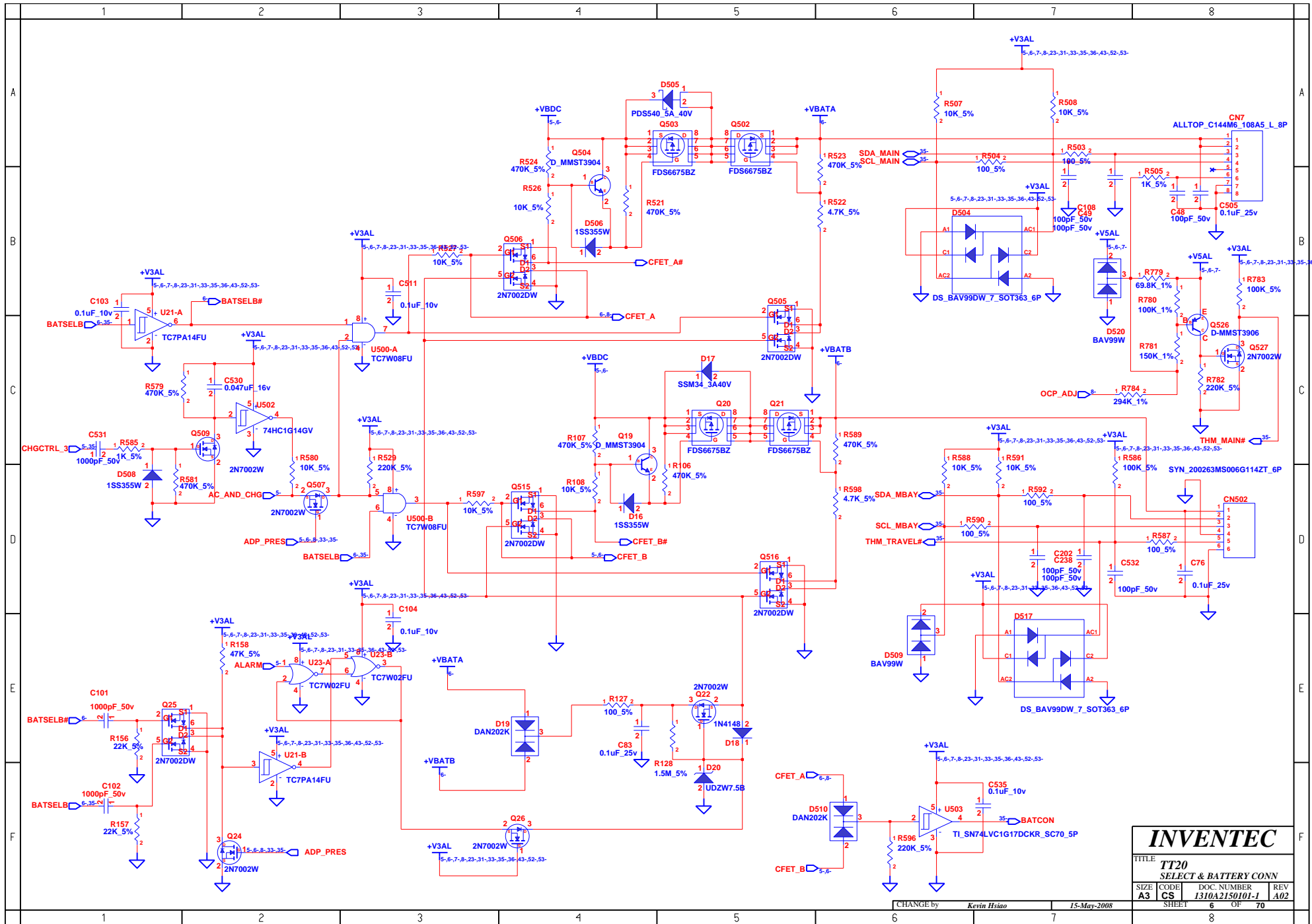
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TT20

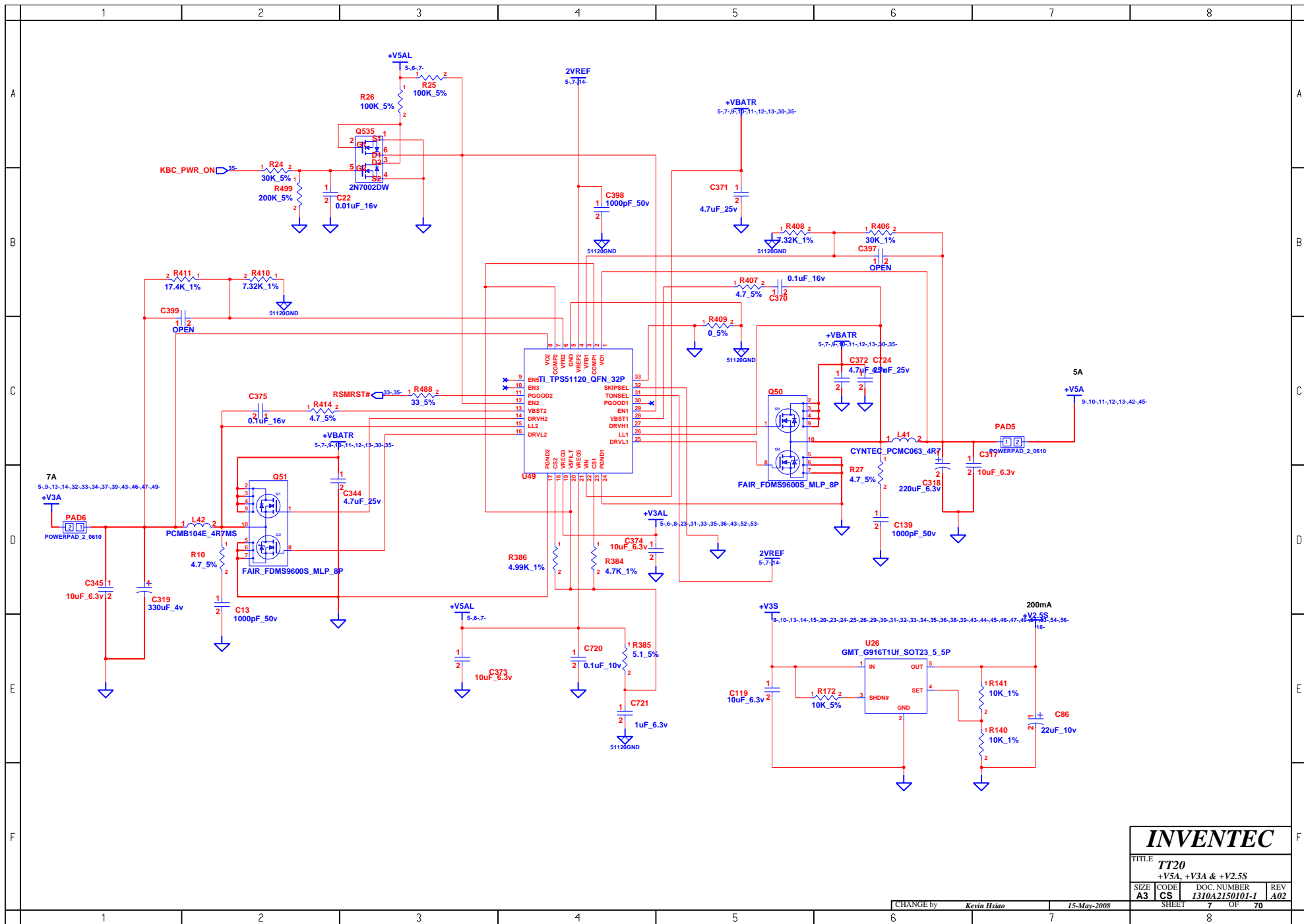
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CHANGE by Kevin Hsiao 15-May-2008

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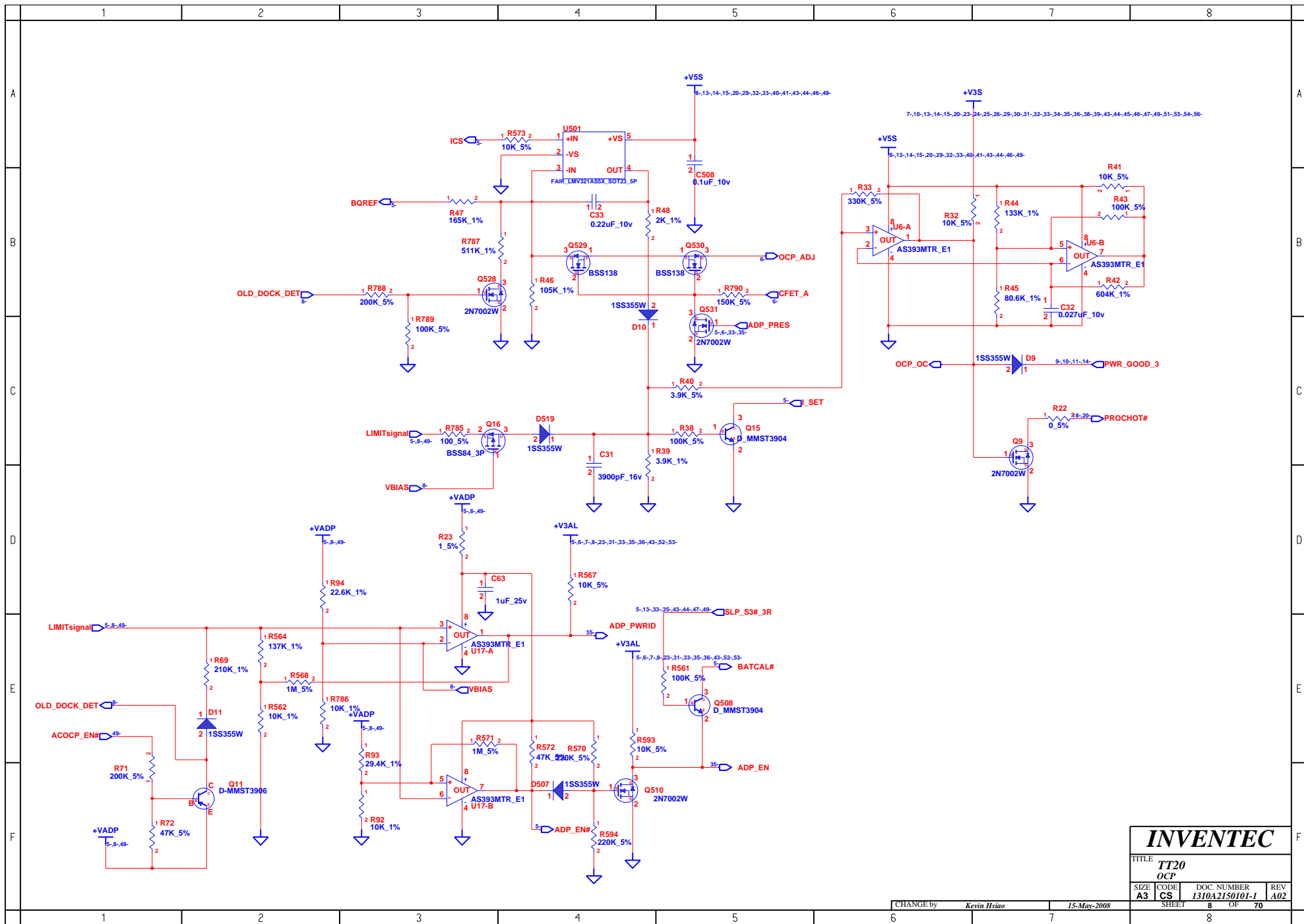


INVENTEC

TITLE			
TT20			
+V5A, +V3A & +V2.5S			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 7 OF 70

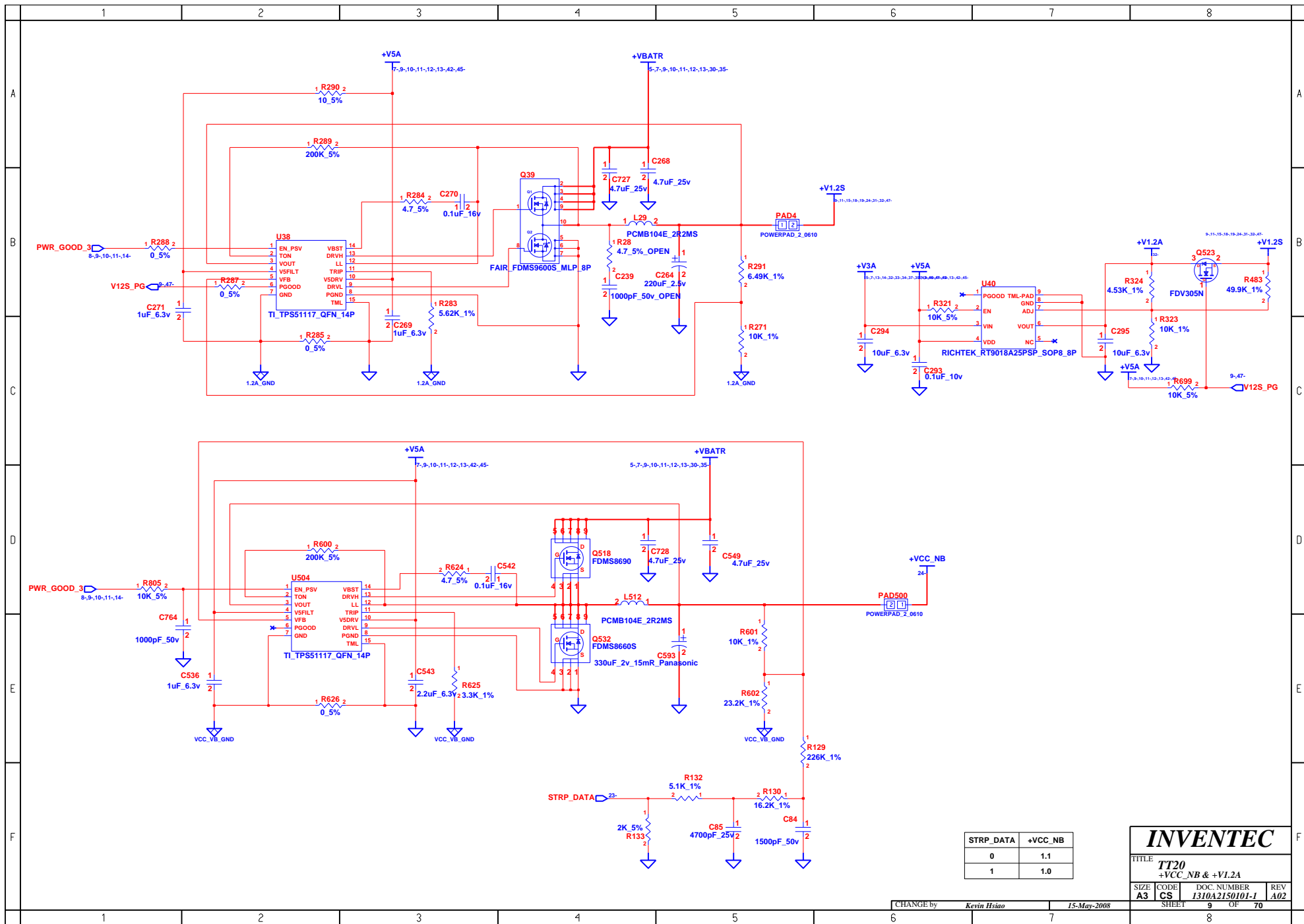


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TITLE			
TT20			
OCP			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

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SHEET 8 OF 70



STRP_DATA	+VCC_NB
0	1.1
1	1.0

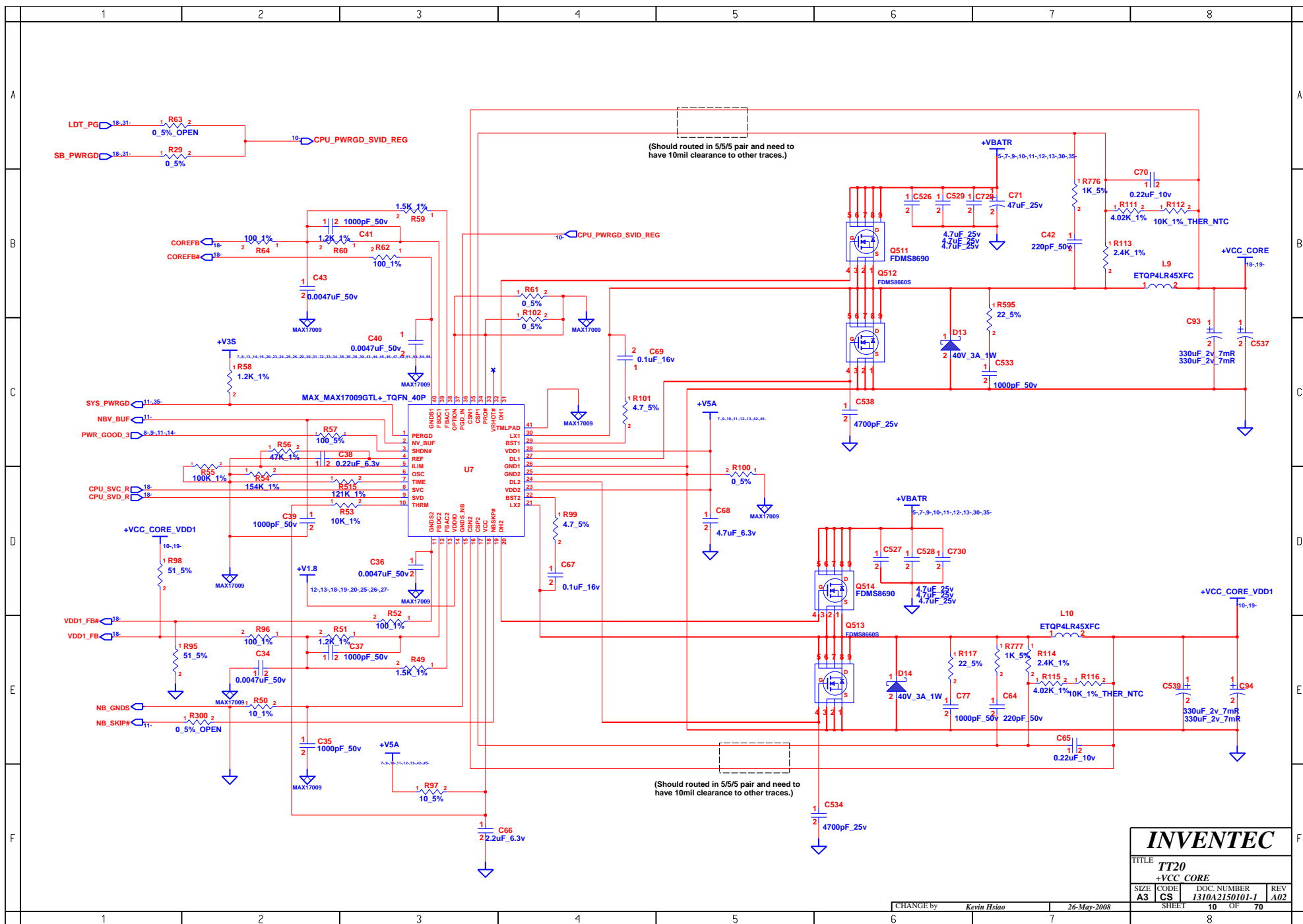
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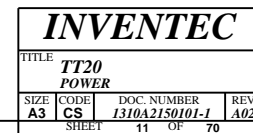
TITLE
TT20
+VCC_NB & +V1.2A

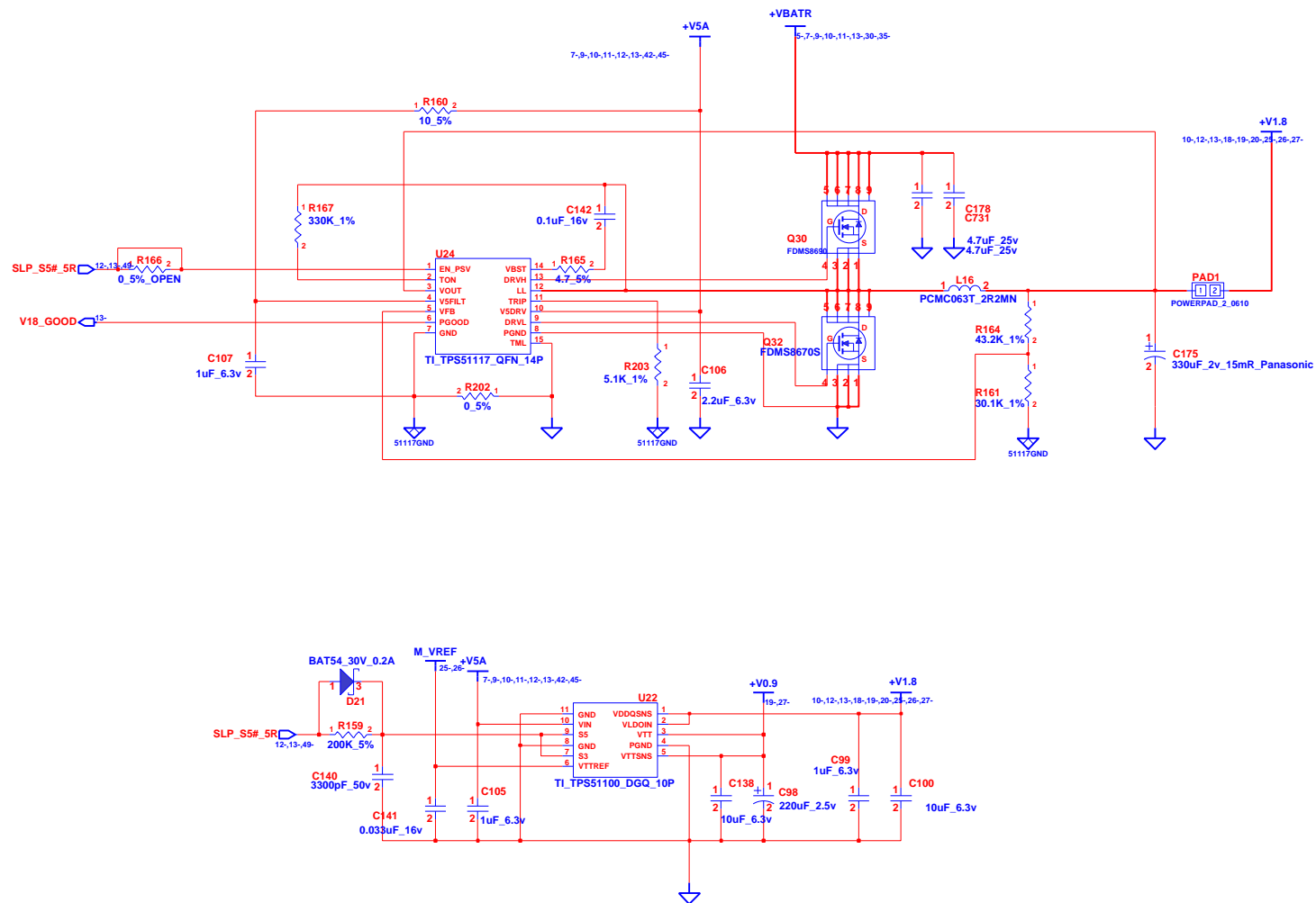
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
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CHANGE by Kevin Hsiao 15-May-2008

SHEET 9 OF 70







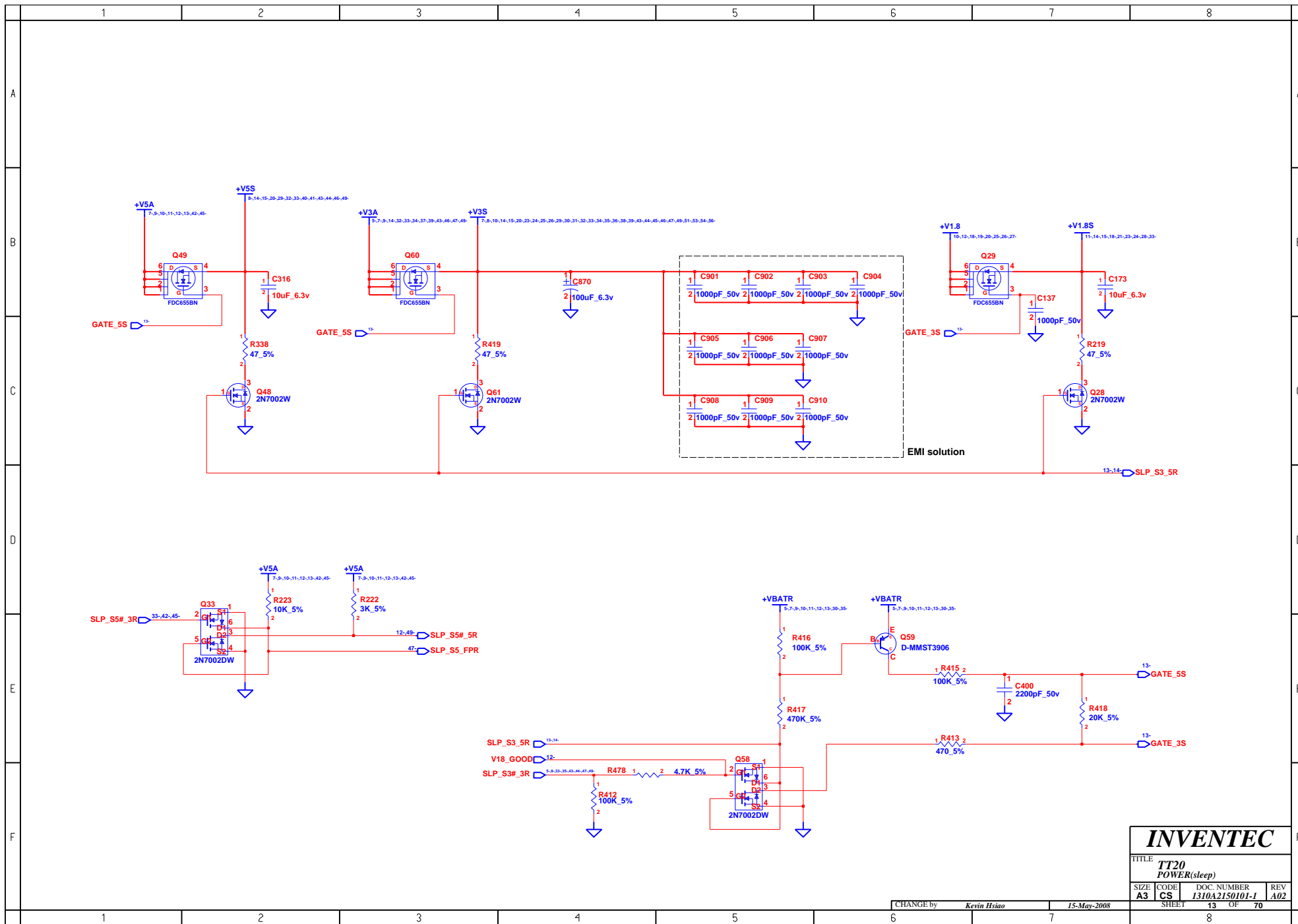
NOTE: DDR2 REGULATOR

INVENTEC

TITLE			
TT20			
DDR2 POWER			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

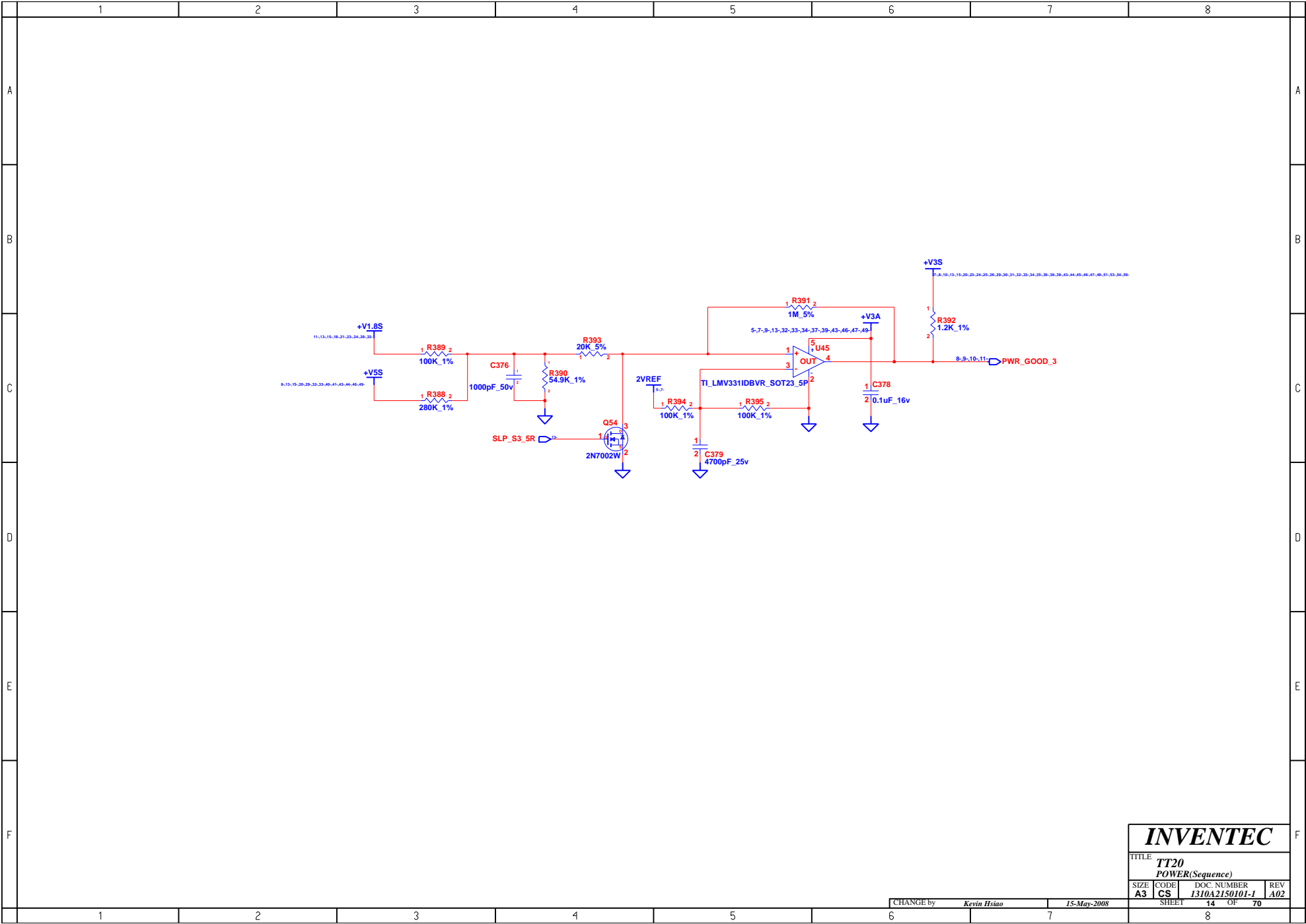
CHANGE by Kevin Hsiao 15-May-2008

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INVENTEC

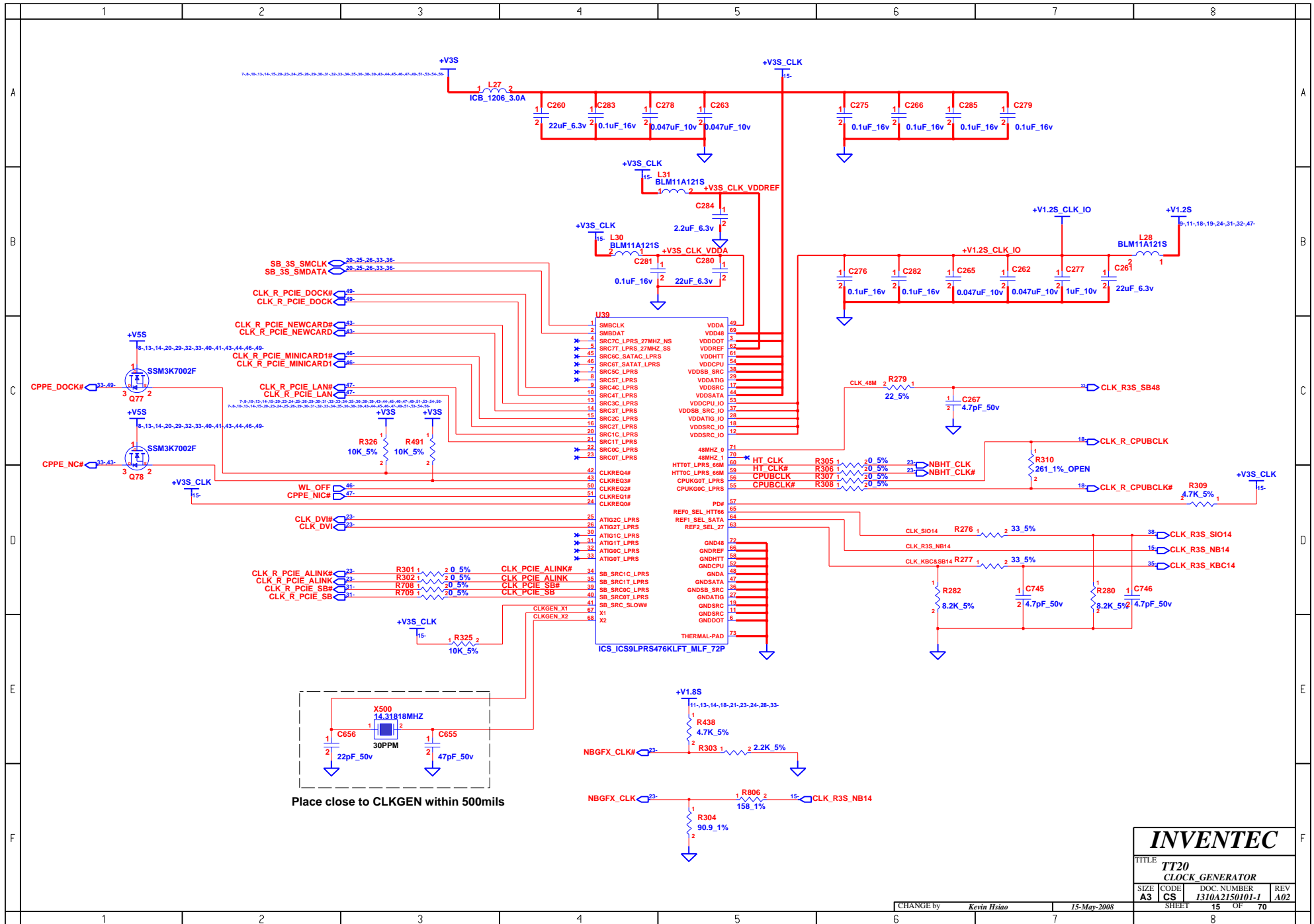
TITLE TT20 POWER(sleep)			
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
CHANGE by Kevin Hsiao		15-May-2008	
SHEET 13		OF 70	



INVENTEC

TITLE			
TT20			
POWER(Sequence)			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		14	OF 70

CHANGE by Kevin Hsiao 15-May-2008

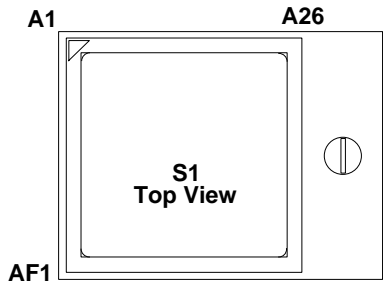
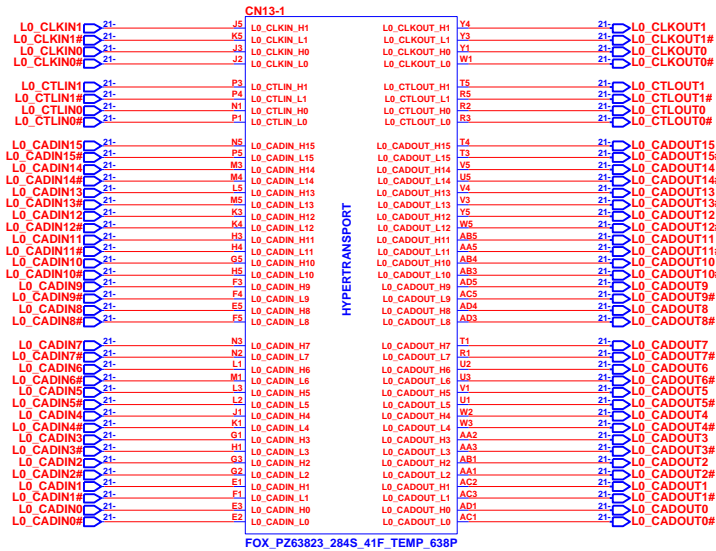
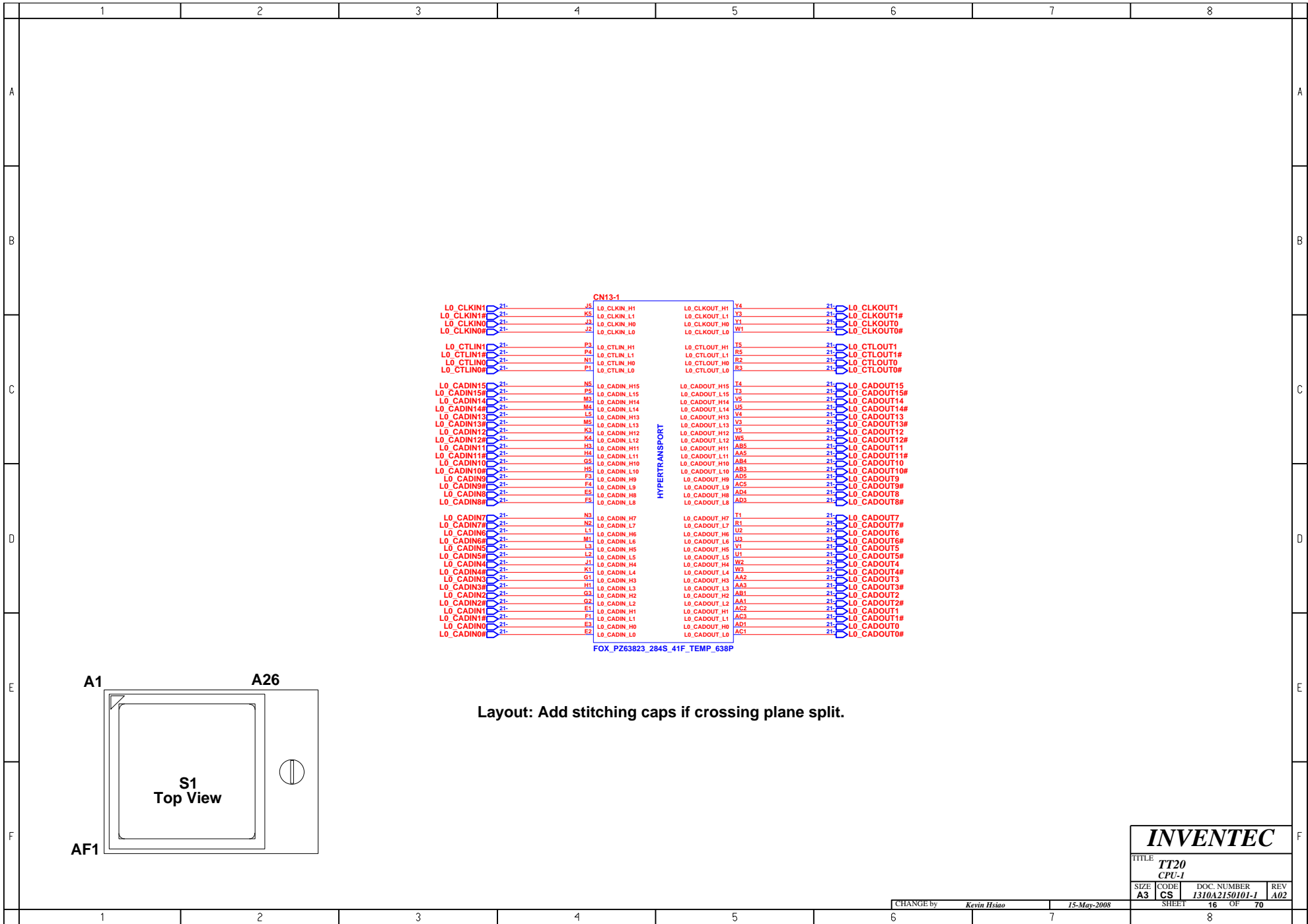


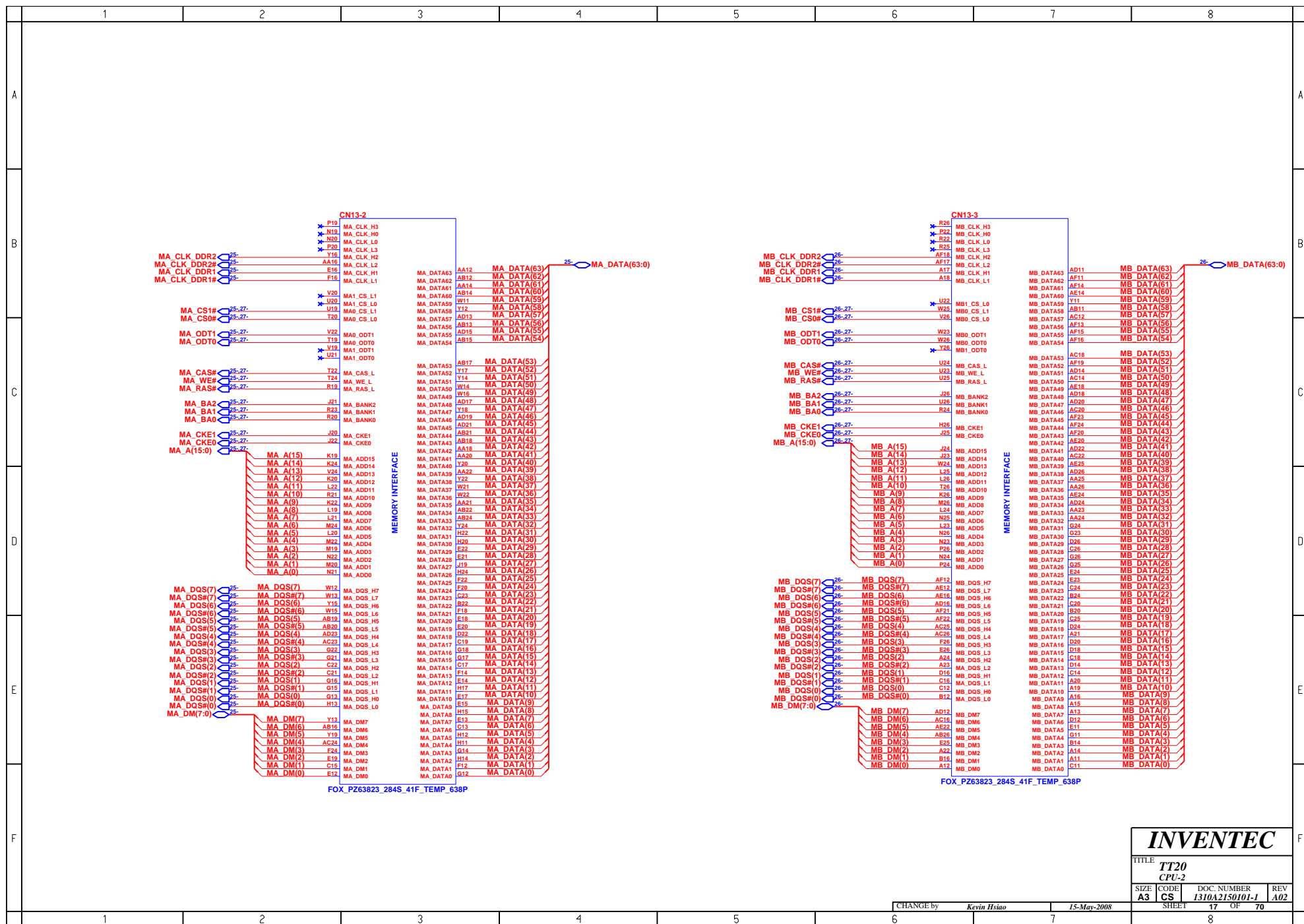
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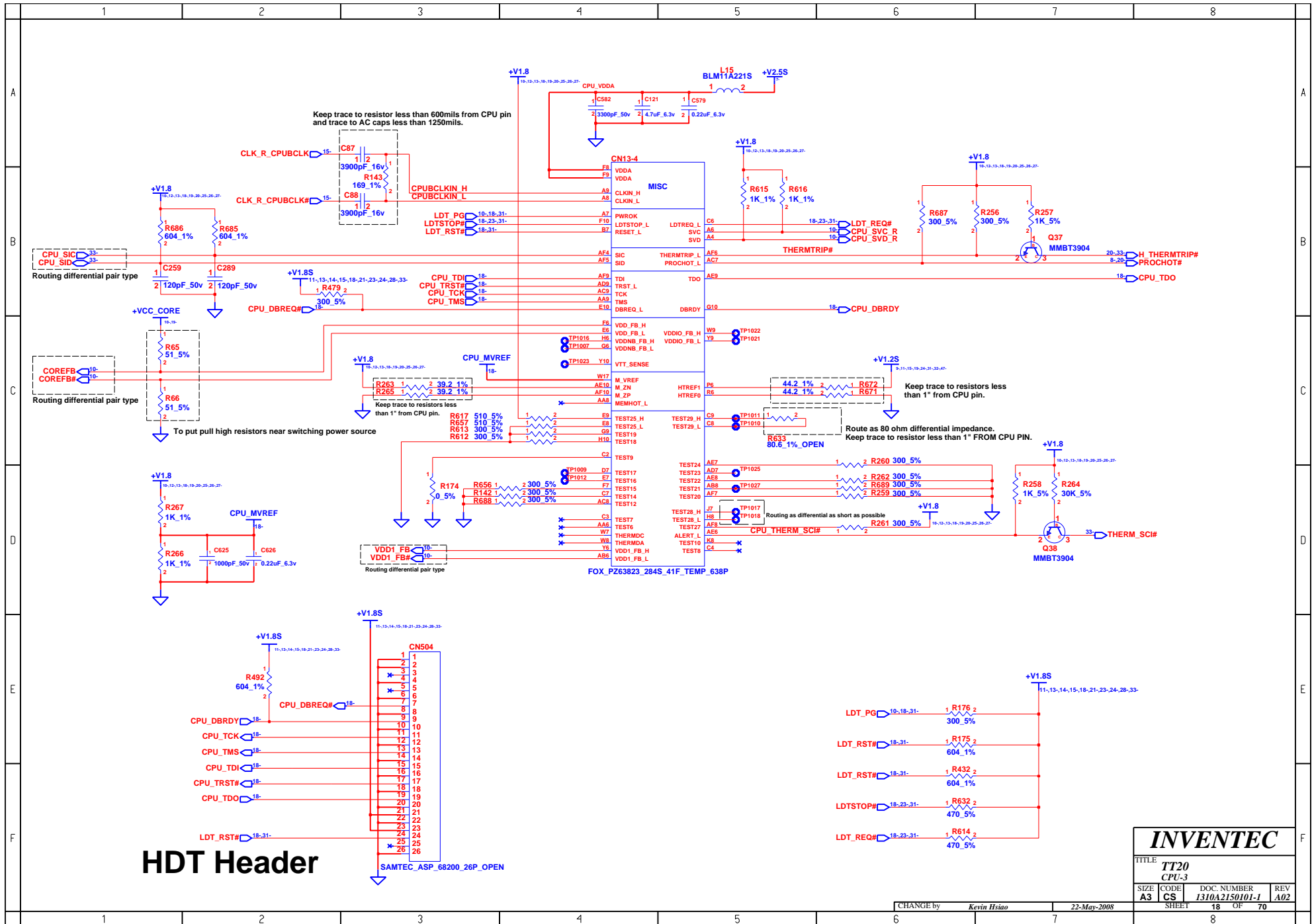
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TT20 CLOCK GENERATOR			
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A3	CS	I310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 15 OF 70





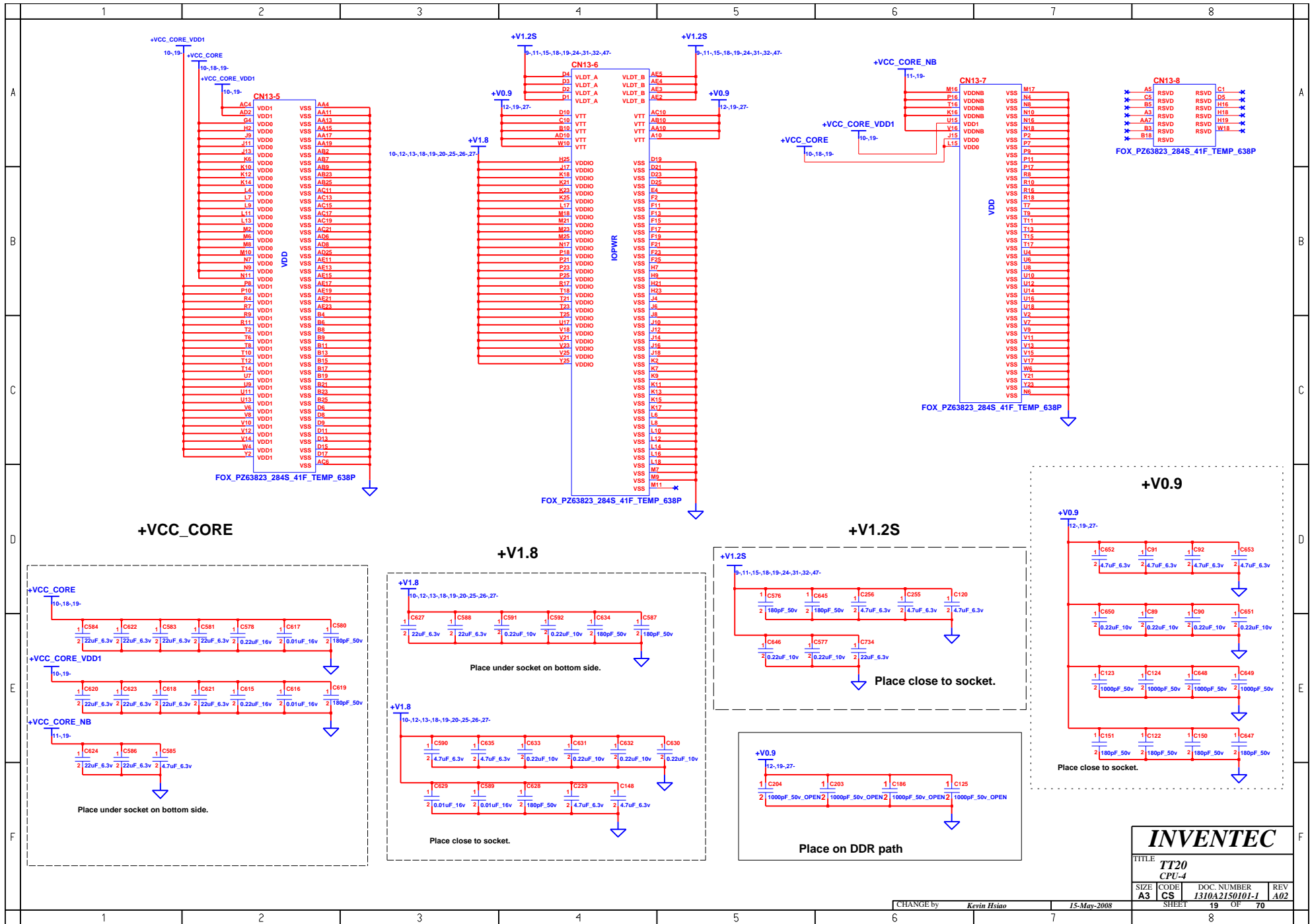


HDT Header

INVENTEC

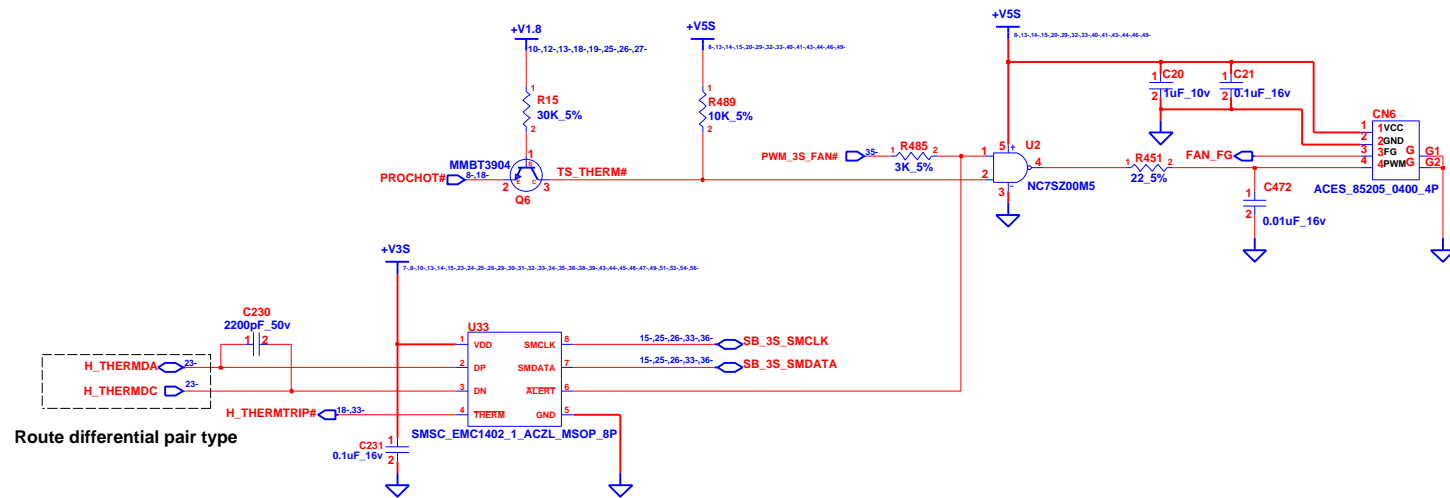
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CPU-3			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		18	OF 70

CHANGE by Kevin Hsiao 22-May-2008



INVENTEC

TITLE TT20 CPU-4			
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
CHANGE by Kevin Hsiao		15-May-2008	
SHEET 19		OF 70	



Route differential pair type

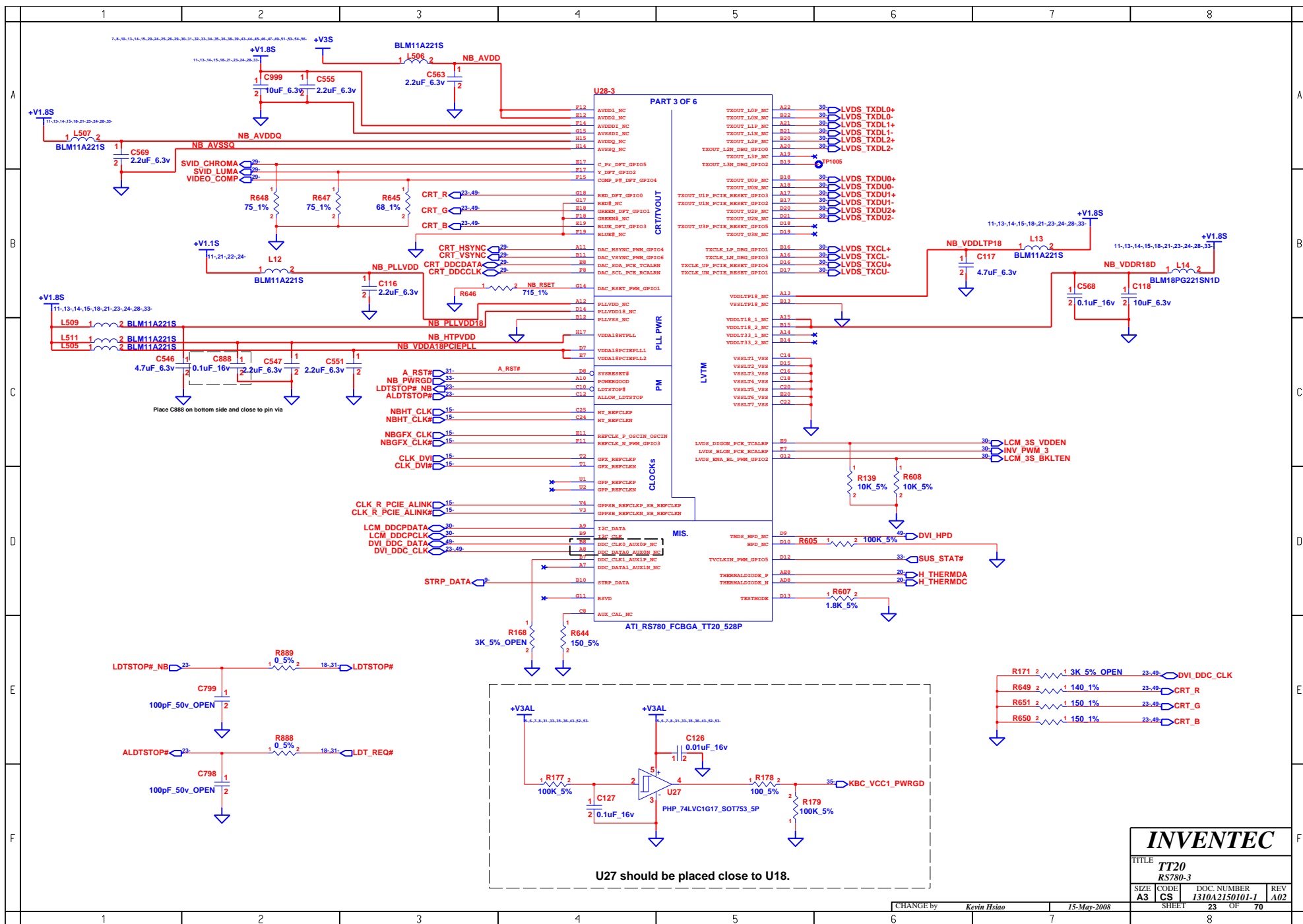
LAYOUT Note: Put the thermal sensor close to CPU.

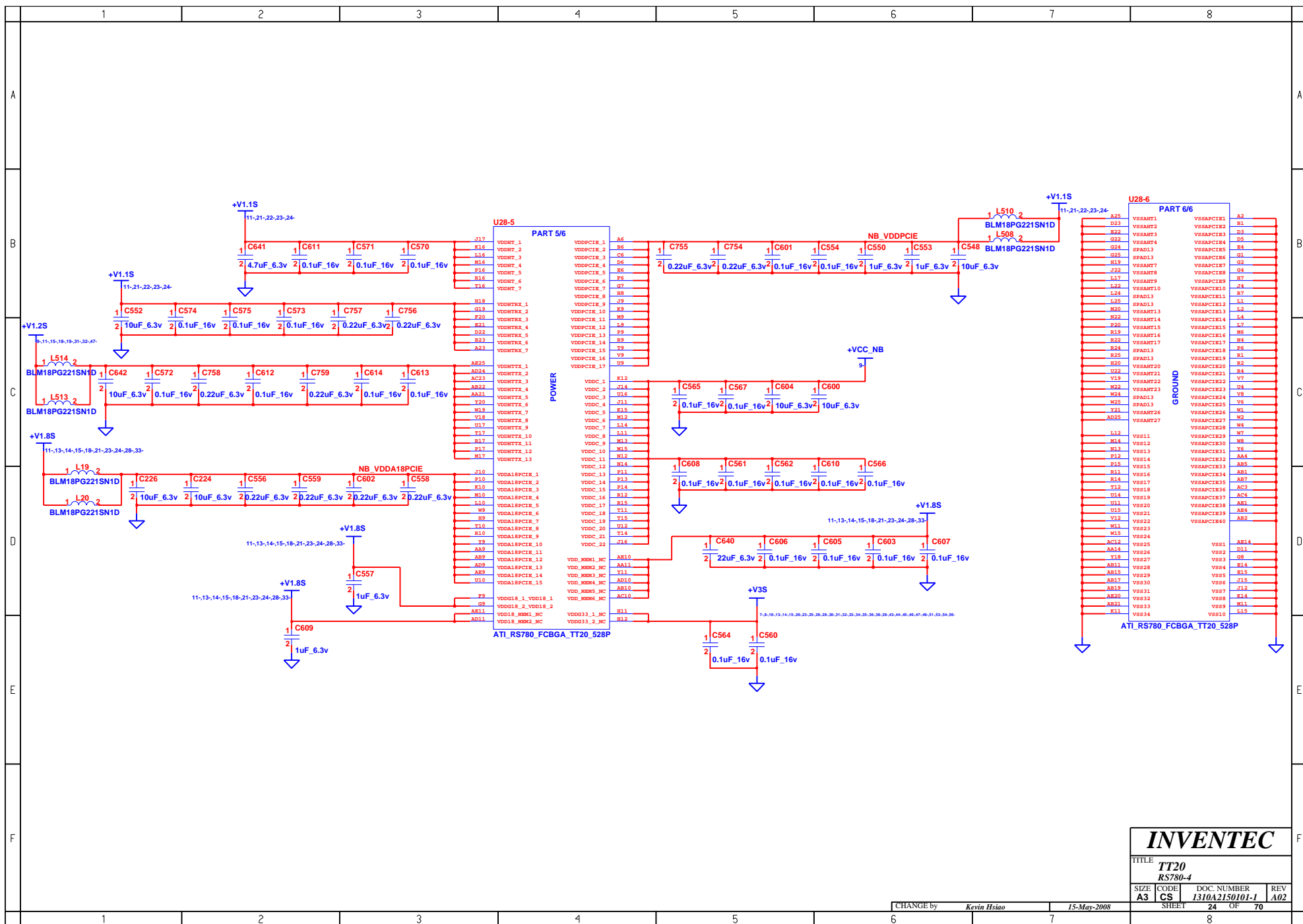
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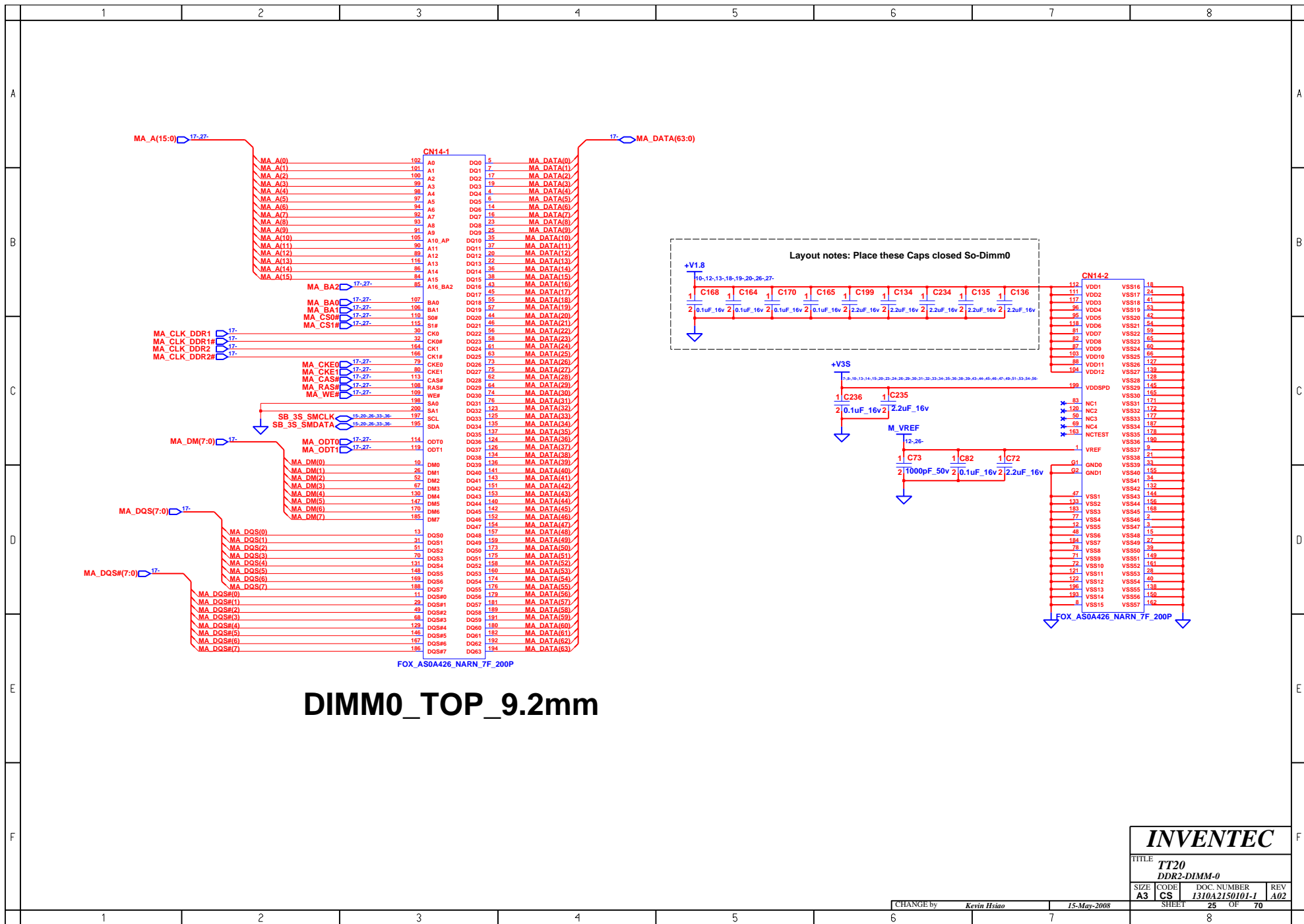
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TT20			
THERMAL&FAN CONTROLLER			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		20	OF 70

CHANGE by Kevin Hsiao 22-May-2008

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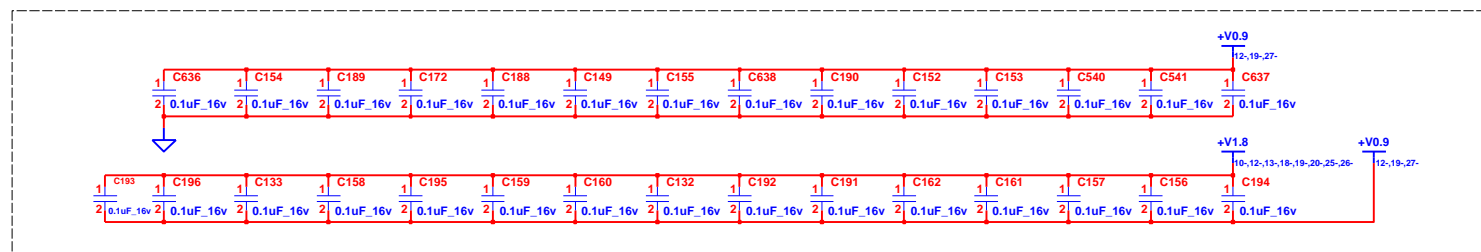


DIMM0_TOP_9.2mm

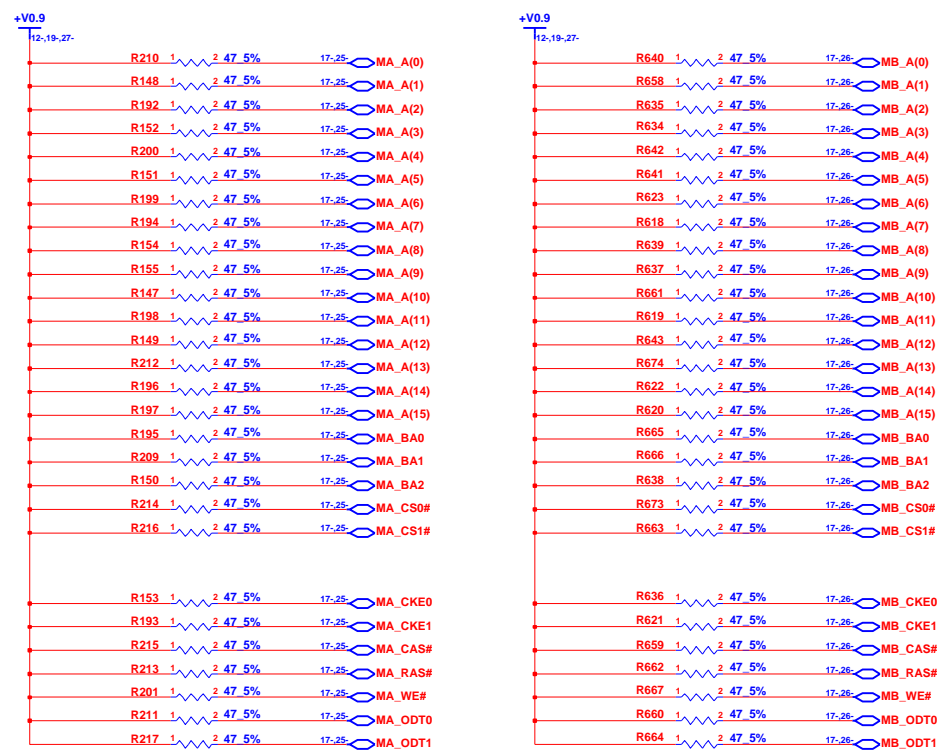
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TITLE			
TT20			
DDR2-DIMM-0			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		25	OF 70

CHANGE by Kevin Hsiao 15-May-2008



Place CAPs close to DIMM

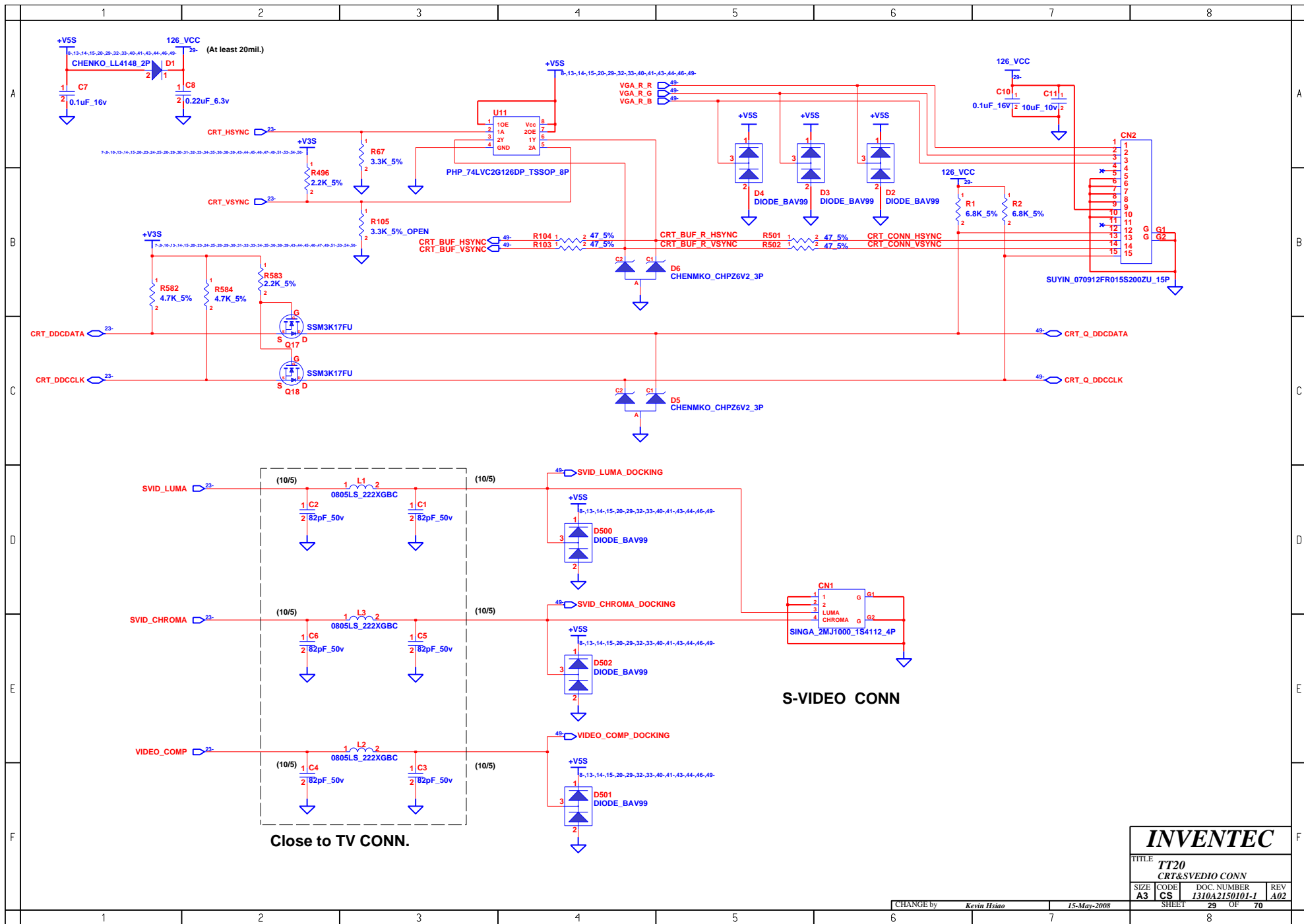
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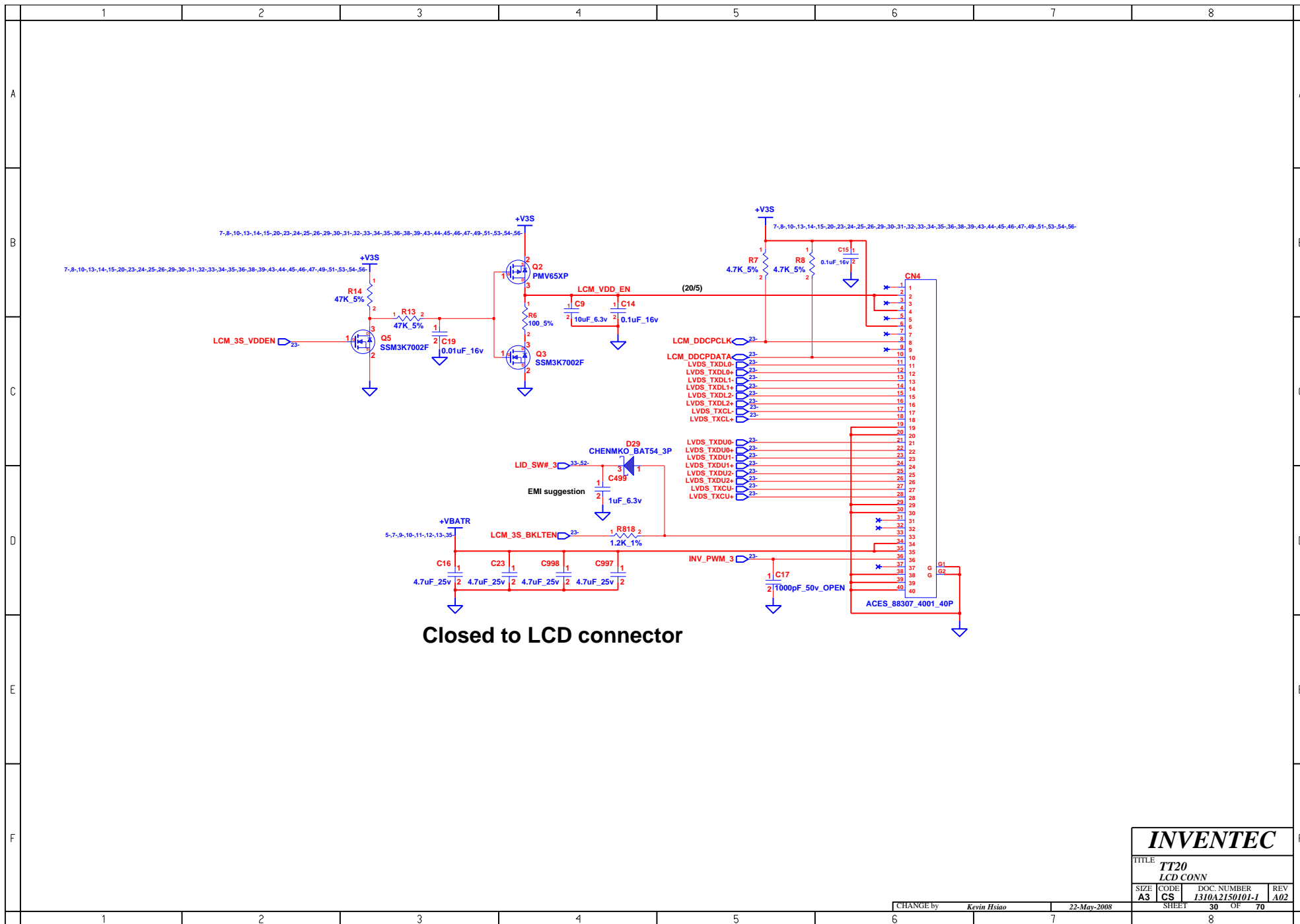
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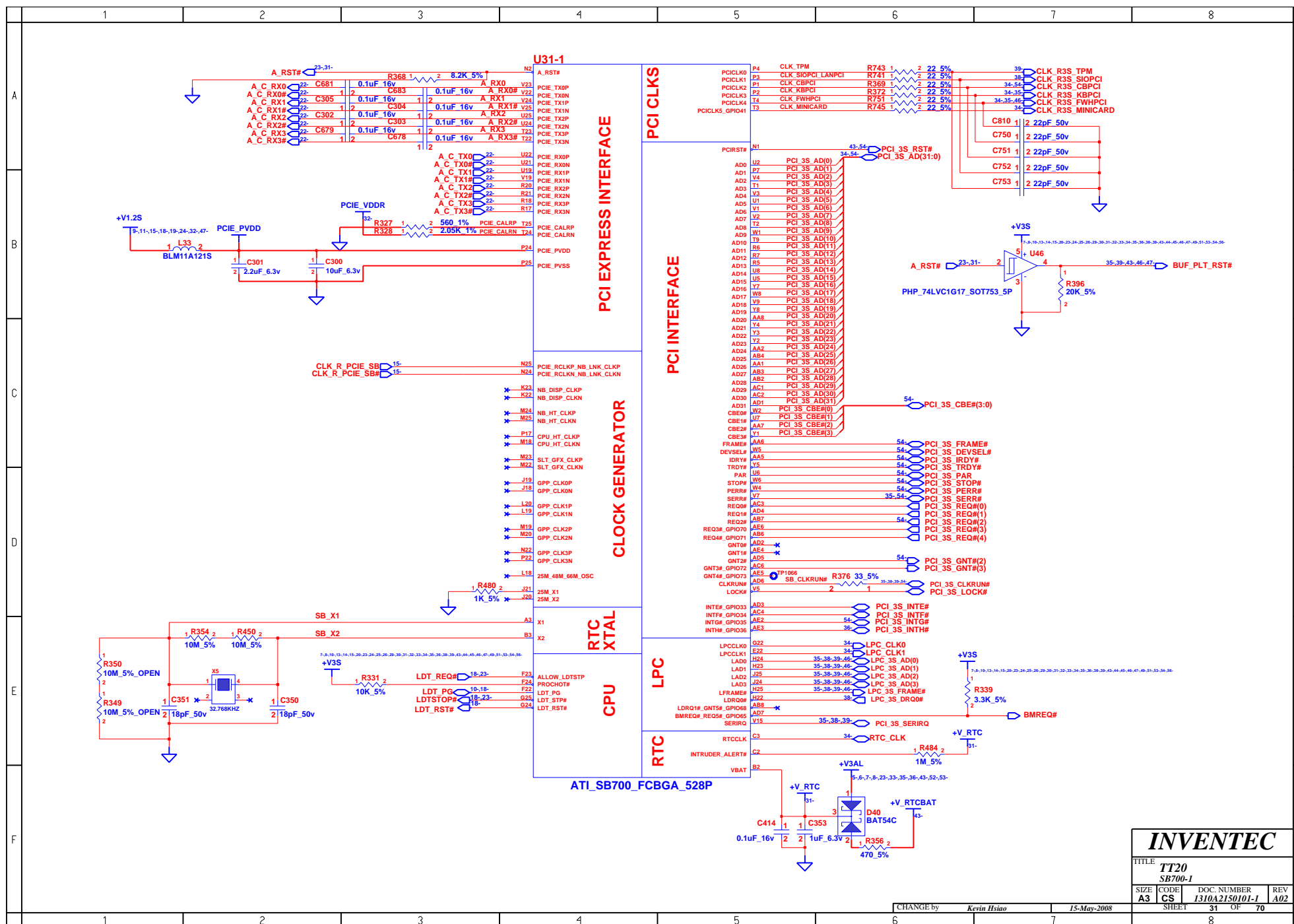
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SHEET 27 OF 70			

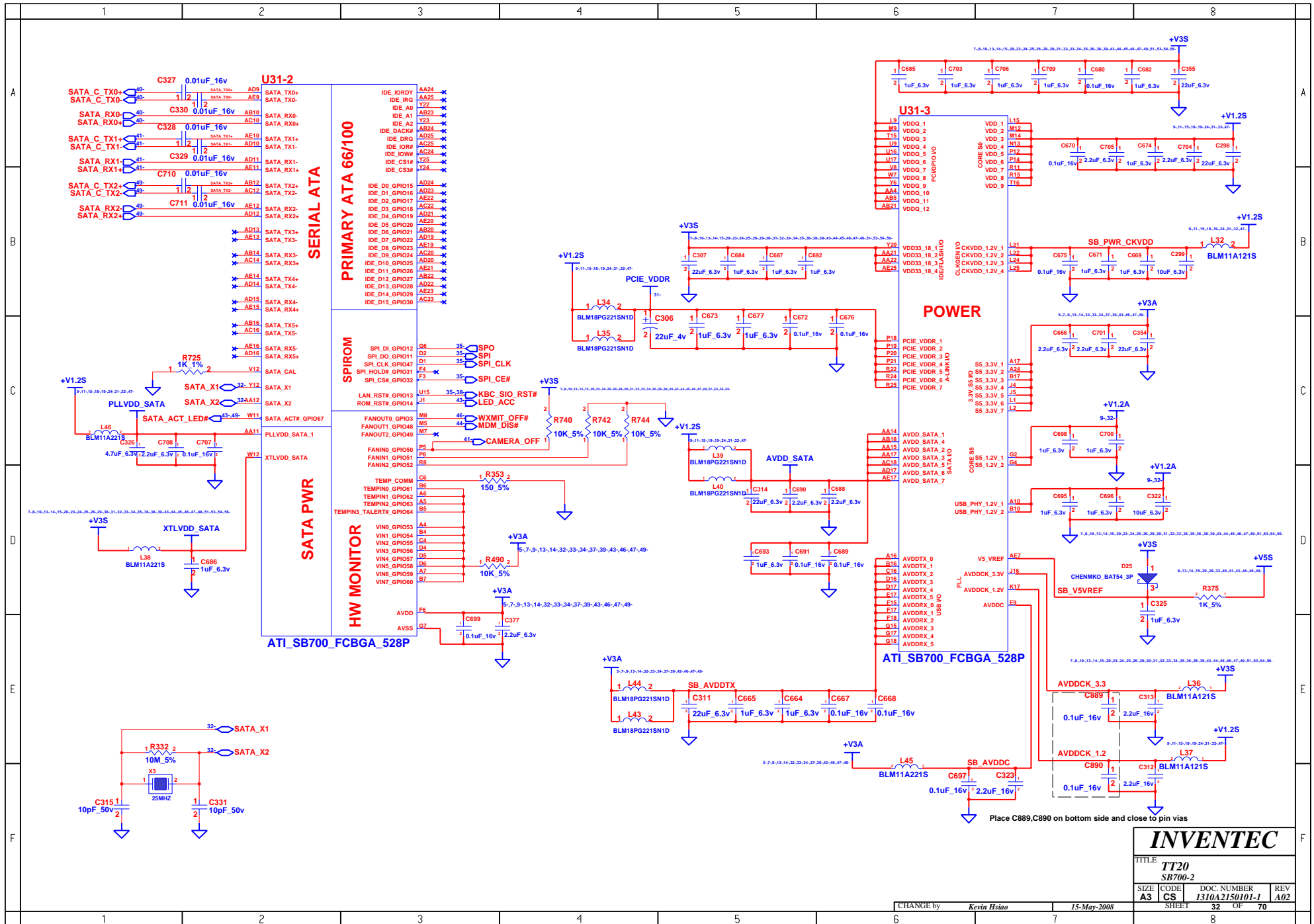
CHANGE by	<i>Kevin Hsiao</i>	<i>15-May-2008</i>
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CS	1310A2150101-1		
SHEET	27	OF	70





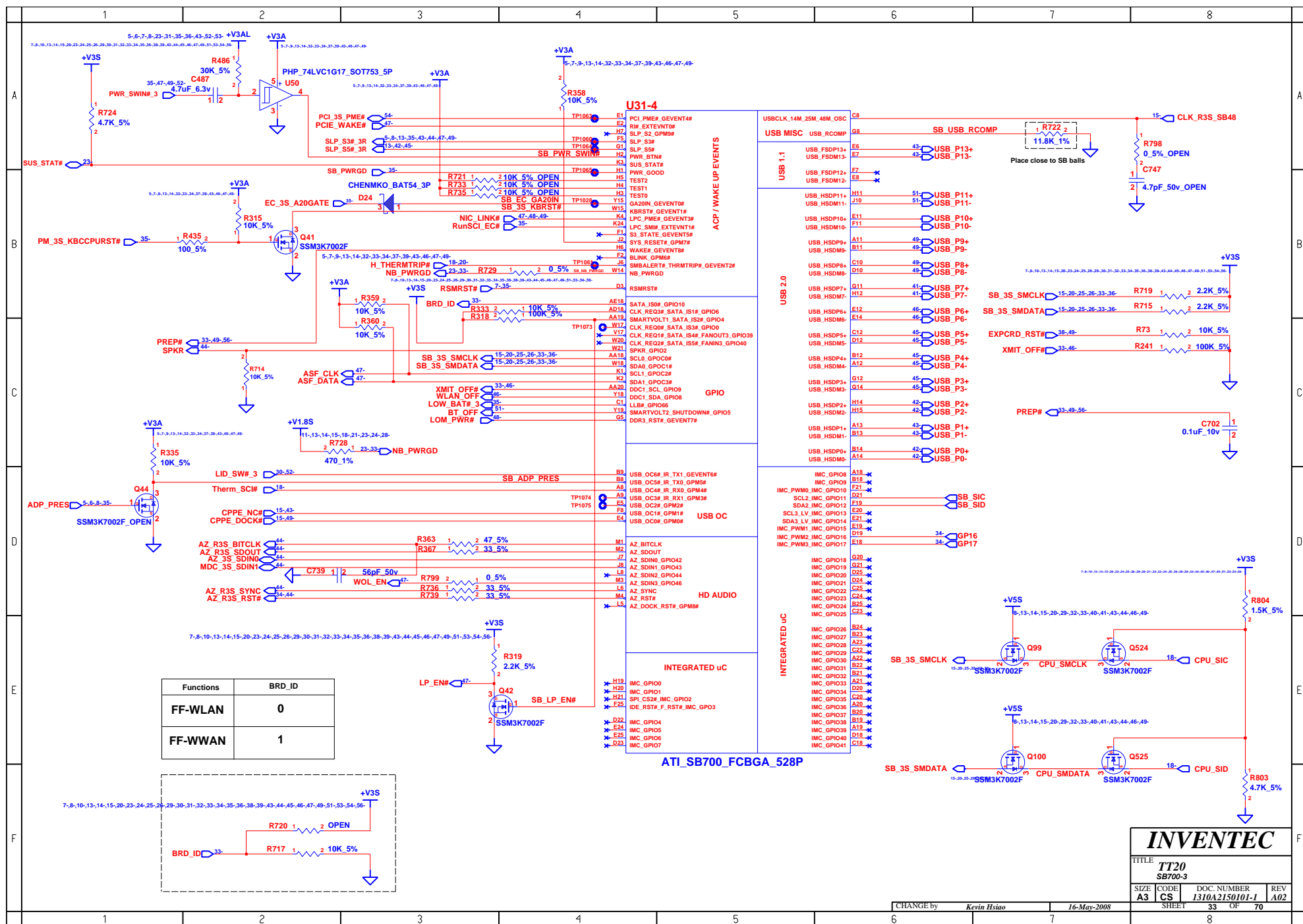


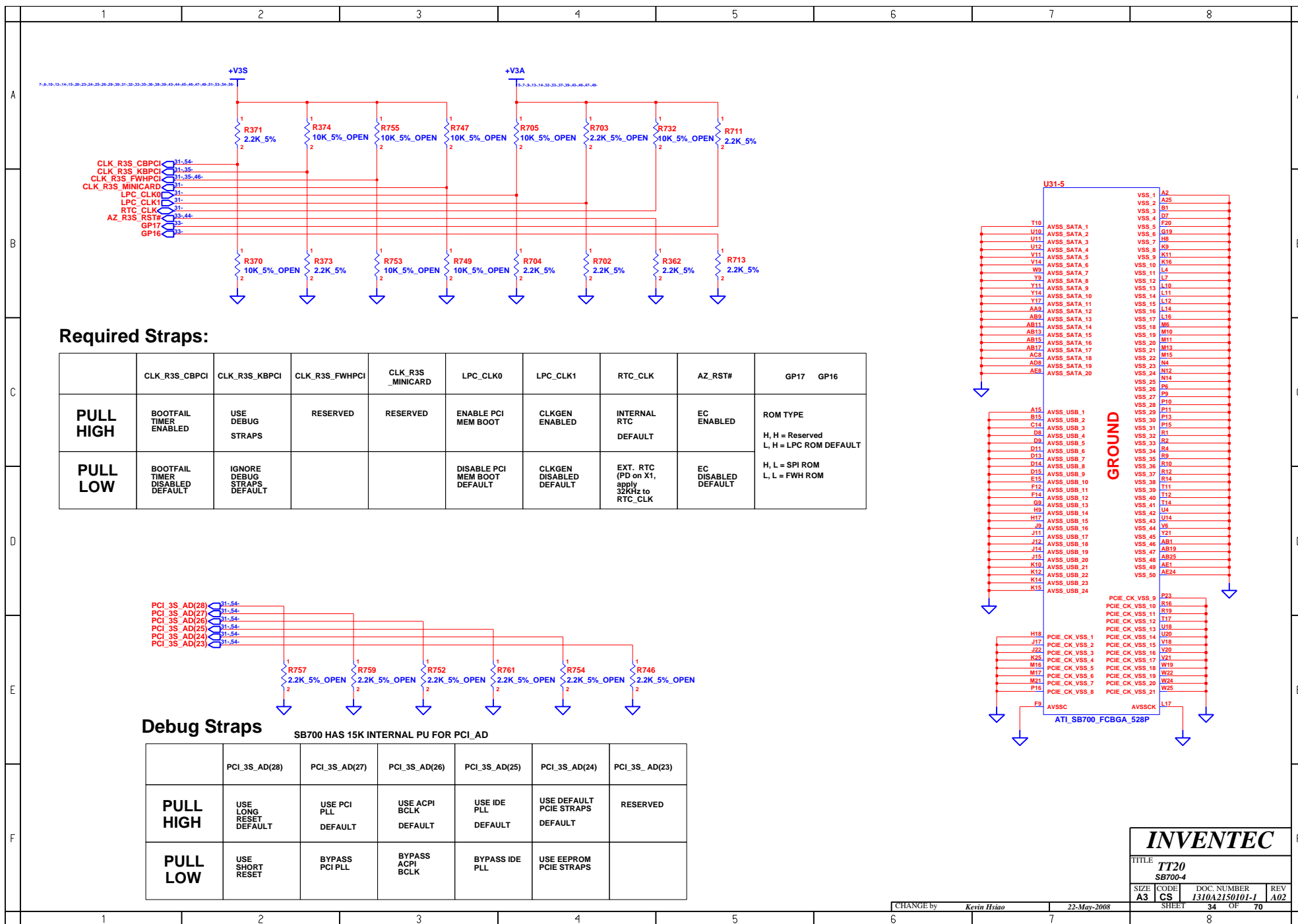


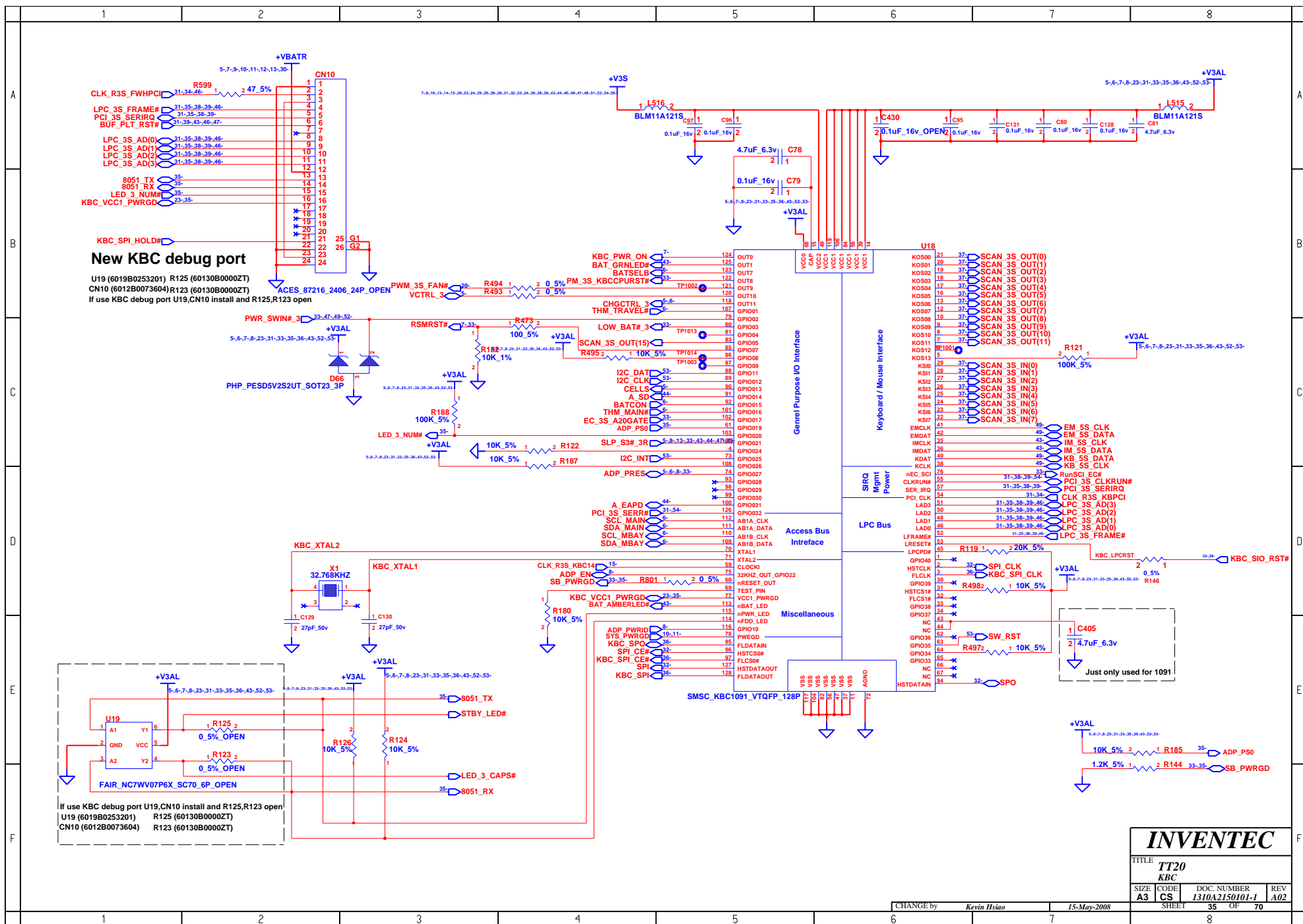
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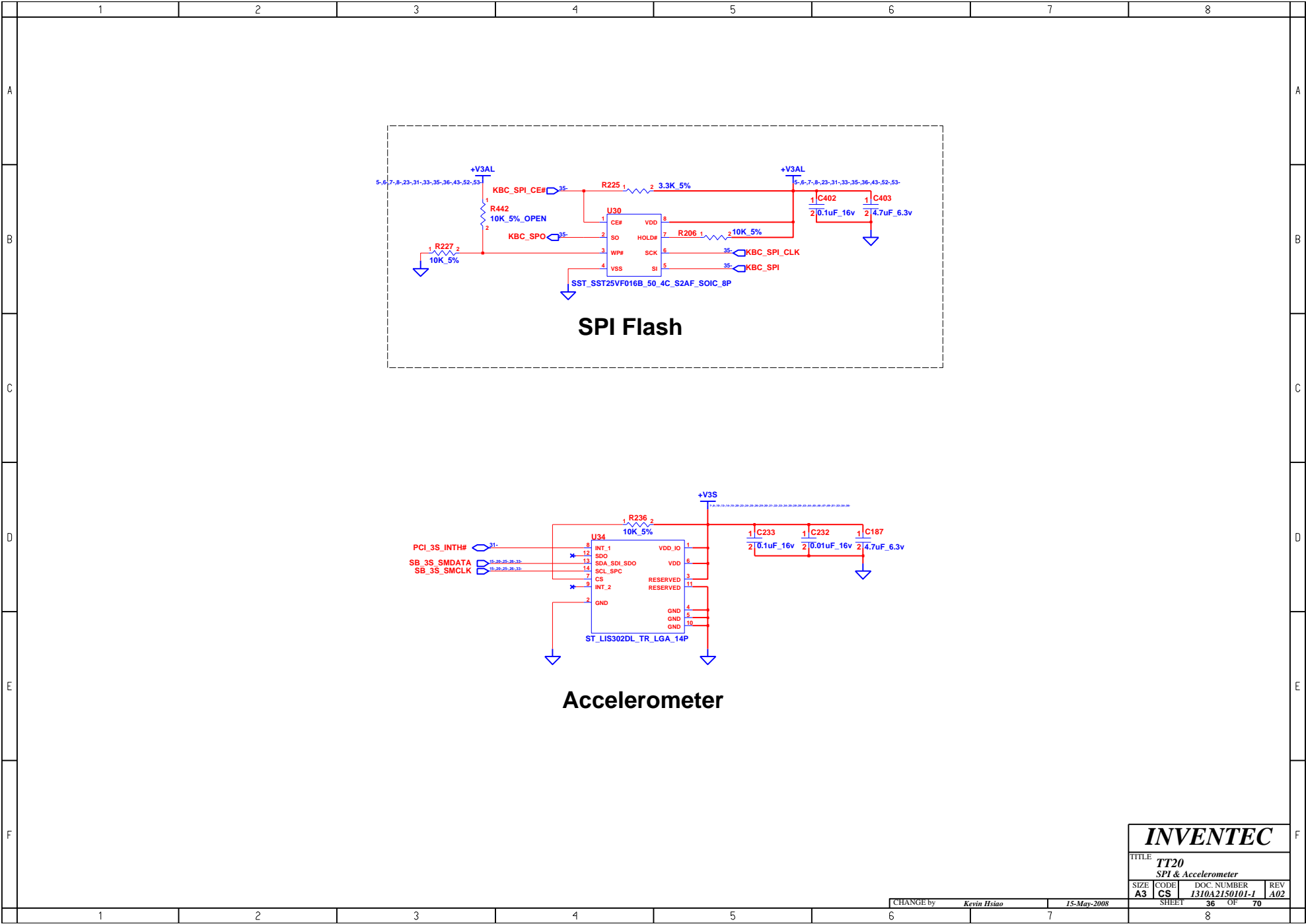
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SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
SHEET 32		OF 70	

CHANGE by Kevin Hsiao 15-May-2008







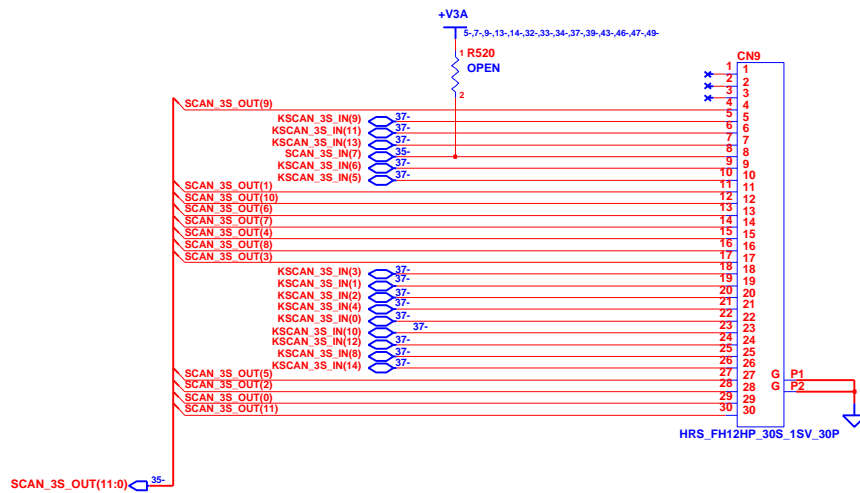


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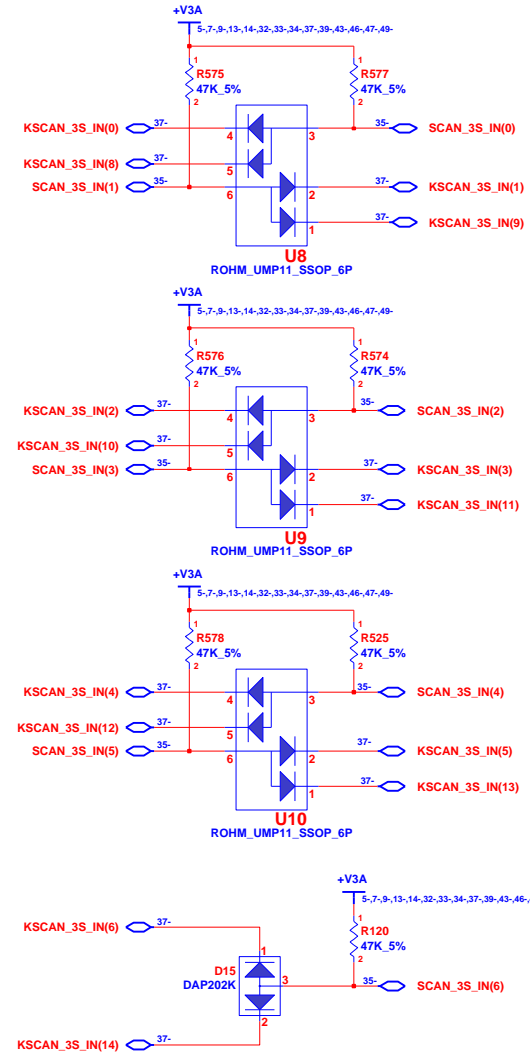
TITLE
TT20
SPI & Accelerometer

SIZE CODE DOC. NUMBER REV

A3 CS I310A2150101-1 A02



Keyboard CONN

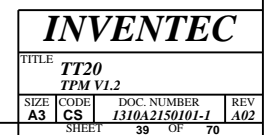


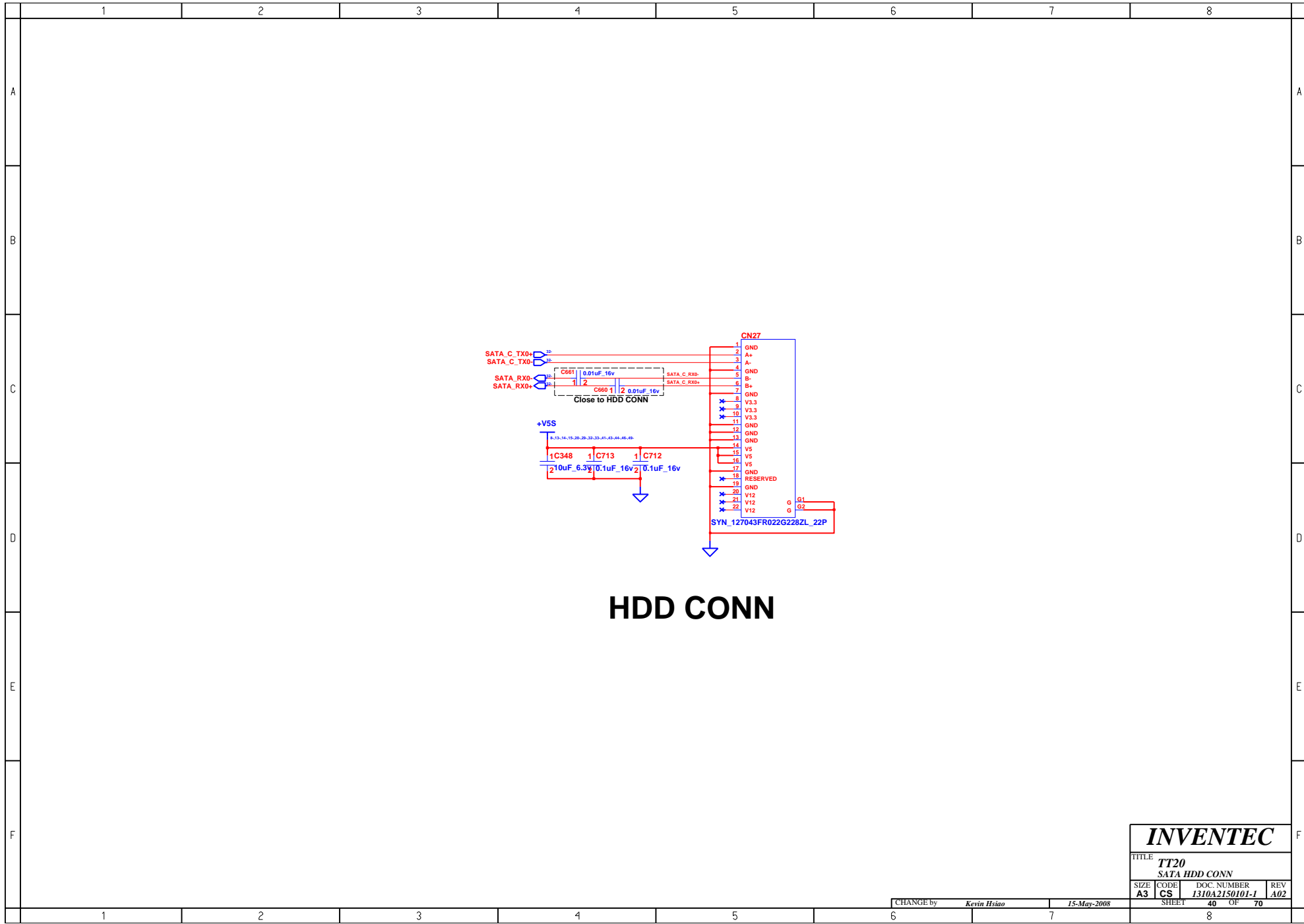
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TITLE		
TT20		
INT.KBC/POINT DEVICES		
SIZE	CODE	DOC. NUMBER
A3	CS	1310A2150101-1
REV		A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 37 OF 70



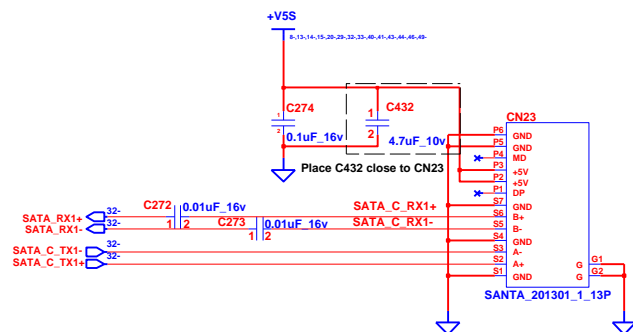


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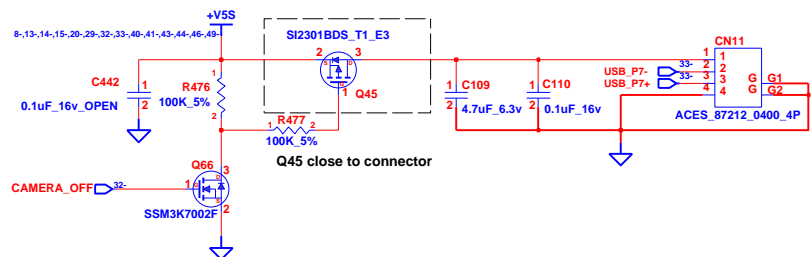
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TT20			
SATA HDD CONN			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 40 OF 70



ODD SATA CONNECTOR



USB WEBCAM CONNECTOR

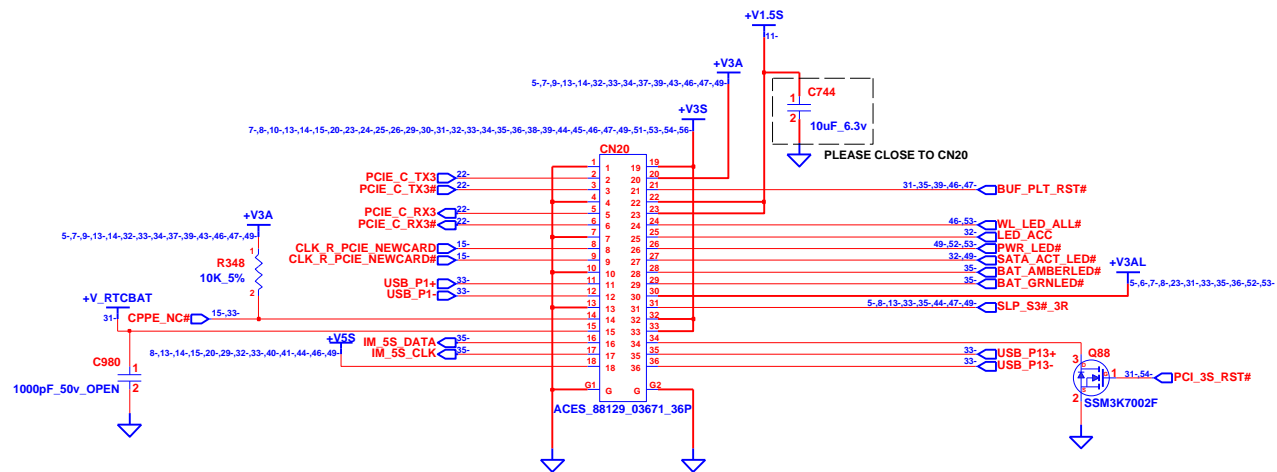
INVENTEC

TITLE			
TT20			
SATA ODD & USB WEBCAM			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 41 OF 70

CS	1310A2150101-1		
SHEET	42	OF	70



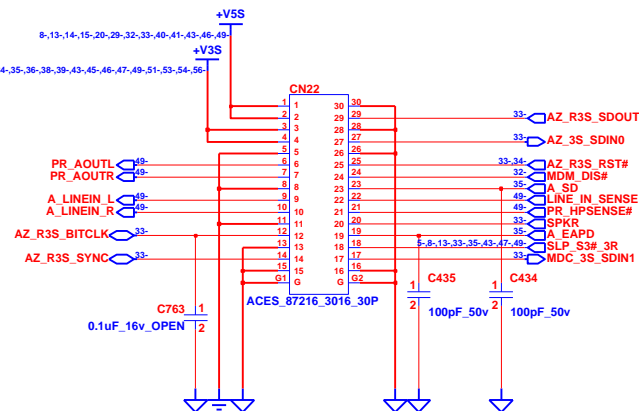
1 GND	19 +V3S
2 PCIE_C_TXP	20 +V3A
3 PCIE_C_TXN	21 PLT_RST#
4 GND	22 +V1.5S
5 PCIE_C_RXP	23 +V1.5S
6 PCIE_C_RXN	24 WL_LED_ALL#
7 GND	25 ACC_LED#
8 CLK_R_PCIE_NEWCARD	26 STBY_LED#
9 CLK_R_PCIE_NEWCARD#	27 LED_3S_SATA#
10 GND	28 BAT_AMBER_LED#
11 USB_P+	29 BAT_GRN_LED#
12 USB_P-	30 +V3AL
13 GND	31 SLP_S3#_3R
14 CLK_R_REQ#	32 +V3S
15 +V_RTCBAT	33 +V3S
16 TOUCHPAD DATA	34 FPR_OFF
17 TOUCHPAD CLK	35 USB_P+
18 +V5S	36 USB_P-

EXPRESSCARD DAUGHTER BOARD CONNECTOR MAIN SIDE

INVENTEC

TITLE TT20 Express DB CONN-MB SIDE			
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
SHEET 43		OF 70	

CHANGE by *Kevin Hsiao* 15-May-2008



- | | |
|------------------|------------------|
| 1 +V5S | 30 GND |
| 2 +V5S | 29 AZ_R3S_SDOUT |
| 3 +V3S | 28 GND |
| 4 +V3S | 27 AZ_3S_SDIN0 |
| 5 GND | 26 GND |
| 6 PR_AOUT_L | 25 AZ_R3S_RST# |
| 7 PR_AOUT_R | 24 MDM_DIS# |
| 8 GND | 23 A_SD |
| 9 A_LINEIN_L | 22 LINE_IN_SENSE |
| 10 A_LINEIN_R | 21 PR_HPSENSE# |
| 11 GND | 20 SPKR |
| 12 AZ_R3S_BITCLK | 19 A_EAPD |
| 13 GND | 18 SLP_S3#_5R |
| 14 AZ_R3S_SYNC | 17 MDC_3S_SDIN1 |
| 15 GND | 16 GND |

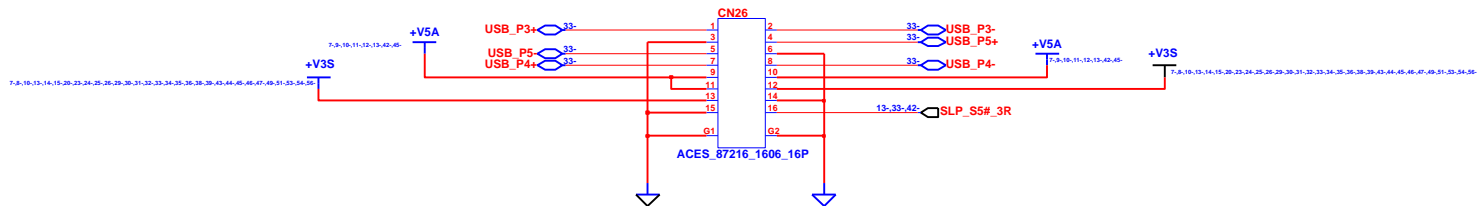
AUDIO DAUGHTER BOARD CONNECTOR MAIN BOARD SIDE

INVENTEC

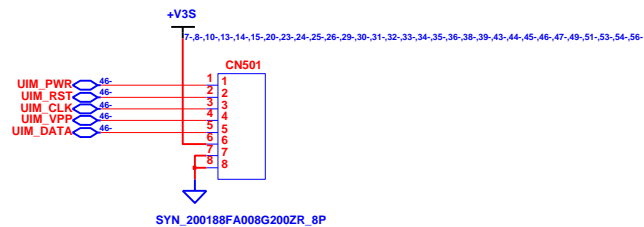
TITLE			
TT20			
Audio DB CONN-MB SIDE			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 44 OF 70

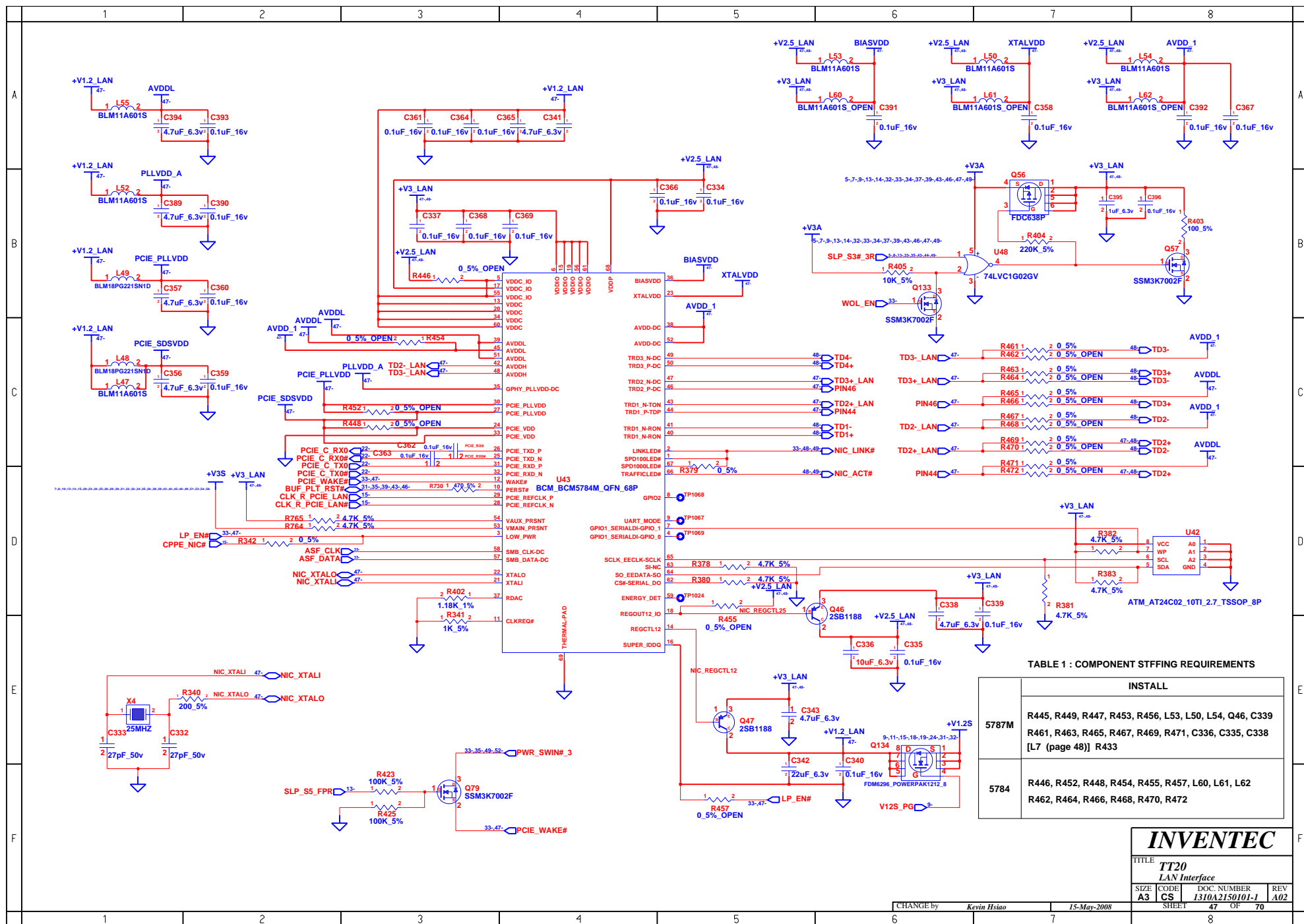


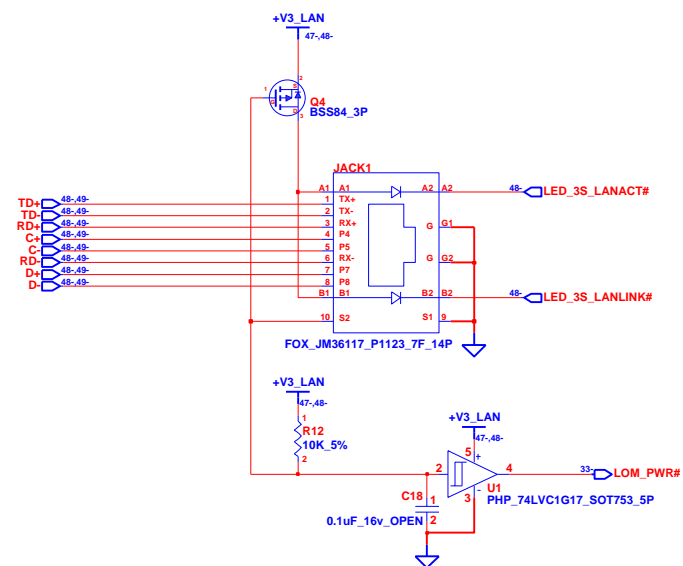
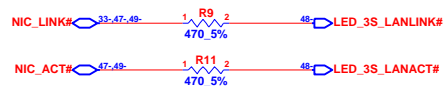
7 IN 1 daughter board connector MB SIDE



SIM card daughter board connector MB SIDE

INVENTEC			
TITLE			
TT20			
7 IN 1 & SIM DB CONN			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
CHANGE by		SHEET	
Kevin Hsiao		45 OF 70	
15-May-2008		8	

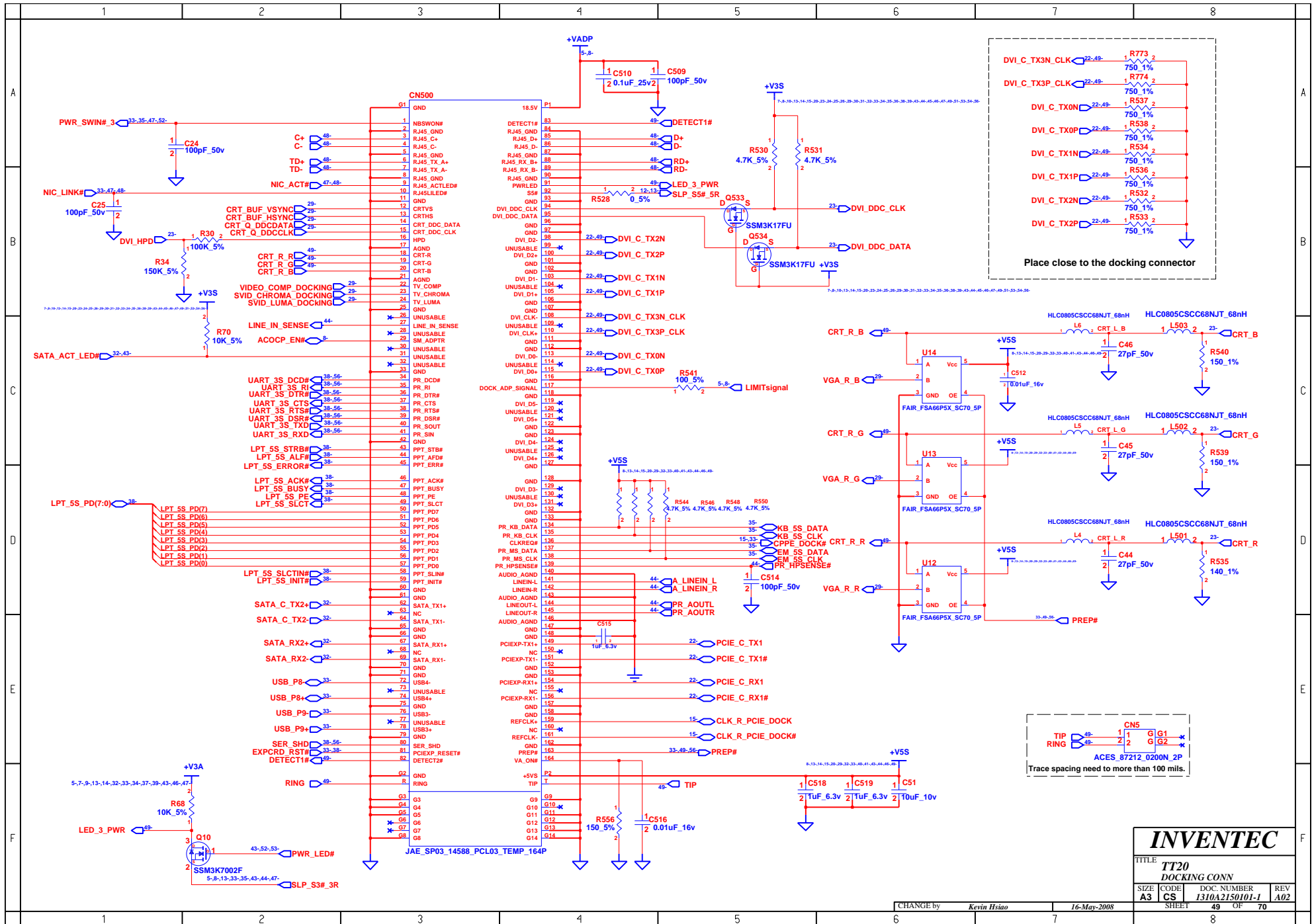


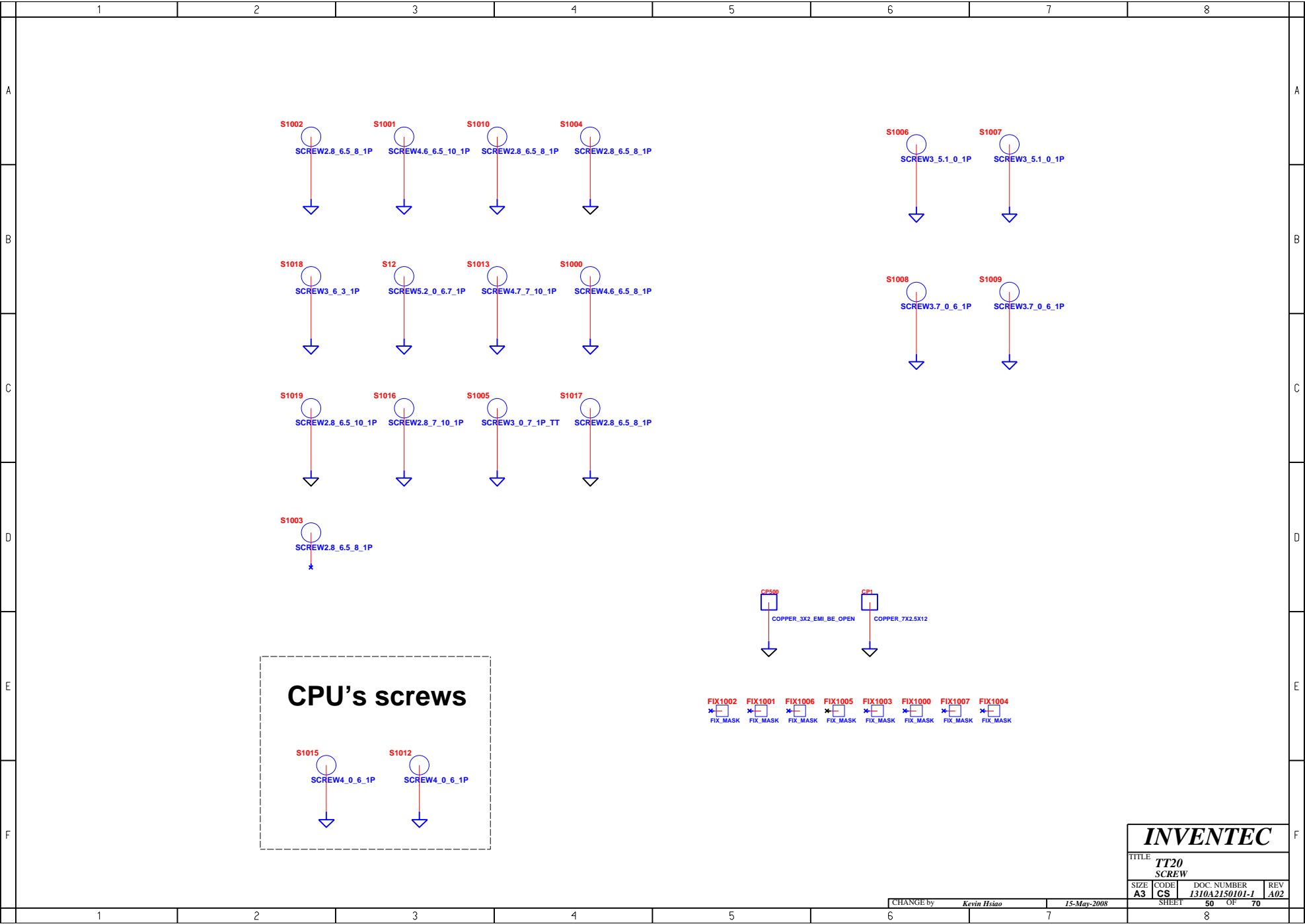


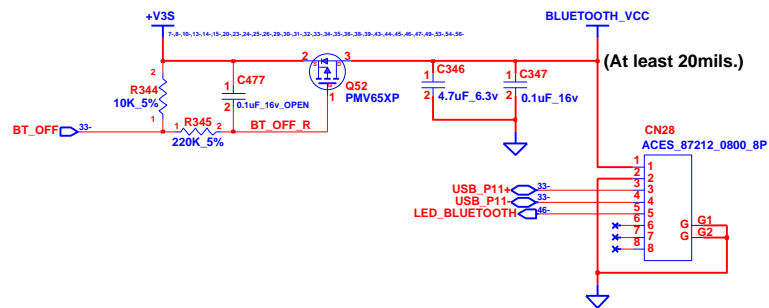
SIZE A3	CODE CS	DOC. NUMBER 1310A2150101-1	REV A02
SHEET 48 OF 70			

CHANGE by	<i>Kevin Hsiao</i>	<i>15-May-2008</i>
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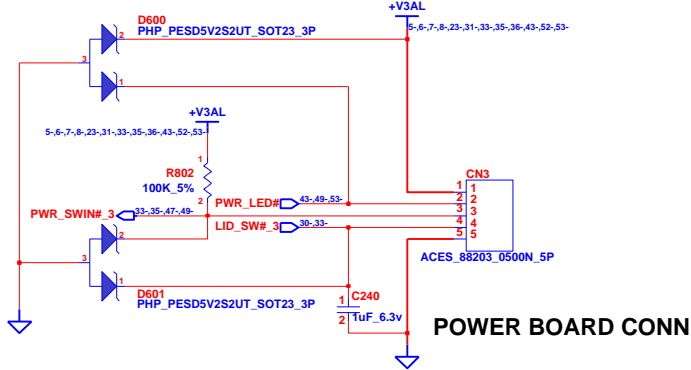
8







INVENTEC			
TITLE			
TT20			
BLUETOOTH			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
CHANGE by		SHEET	
Kevin Hsiao		51 OF 70	
15-May-2008		8	

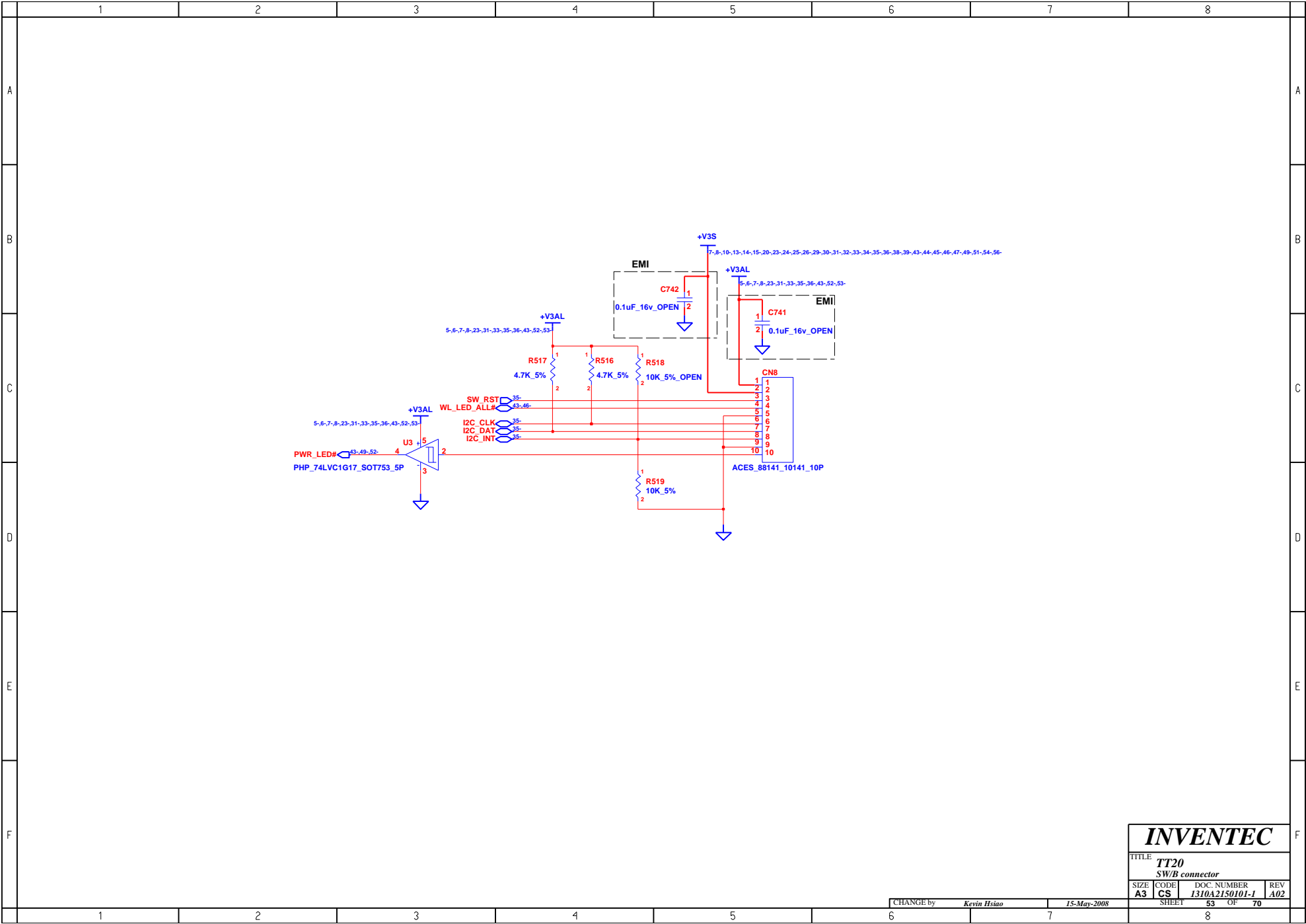


C240, D600 & D601 are using for ESD solution

INVENTEC

TITLE			
TT20			
LED/POWER SWITCH			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		52	OF 70

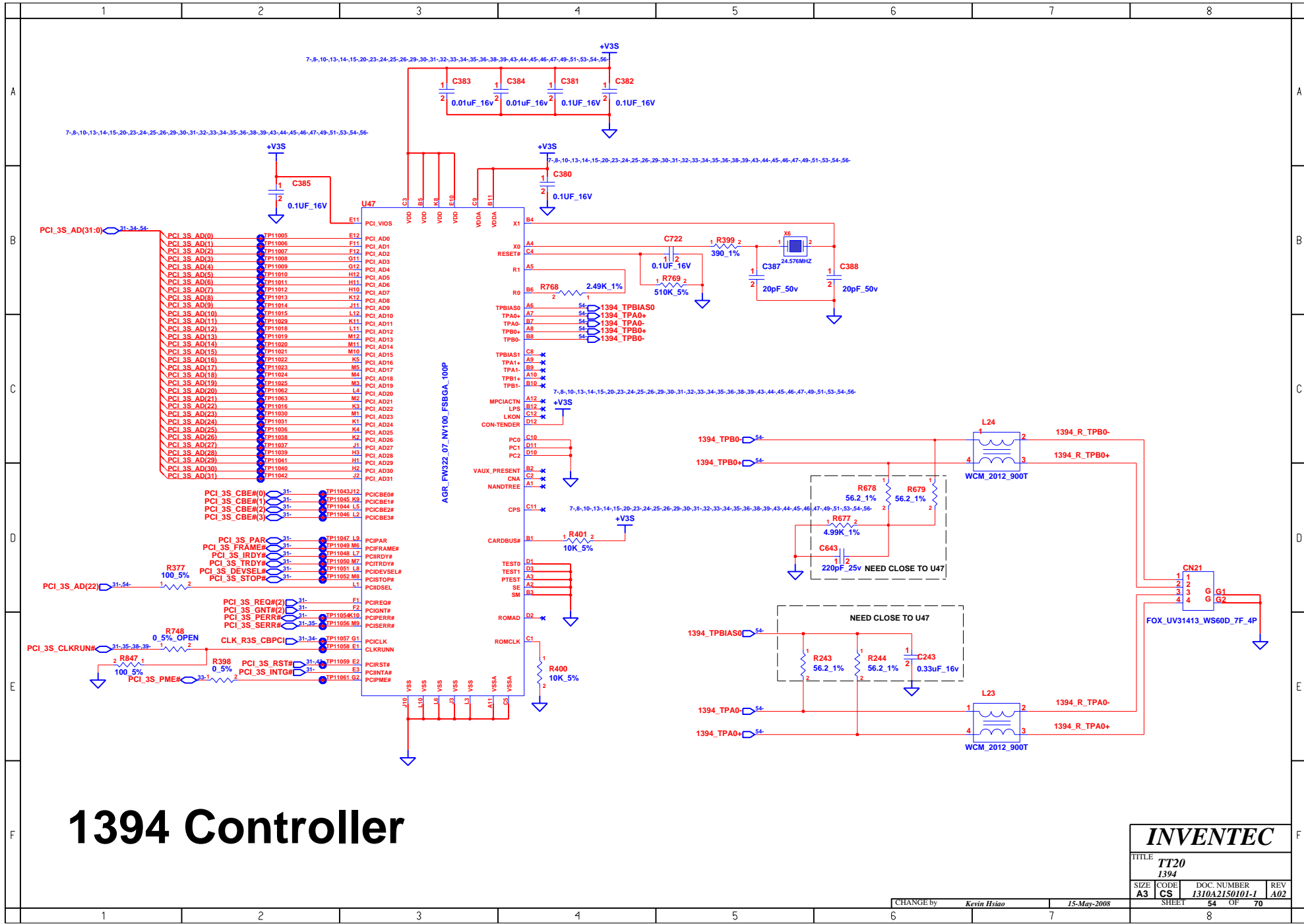
CHANGE by Kevin Hsiao 15-May-2008



INVENTEC

TITLE			
TT20			
SW/B connector			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		53	OF 70

CHANGE by Kevin Hsiao 15-May-2008



1394 Controller

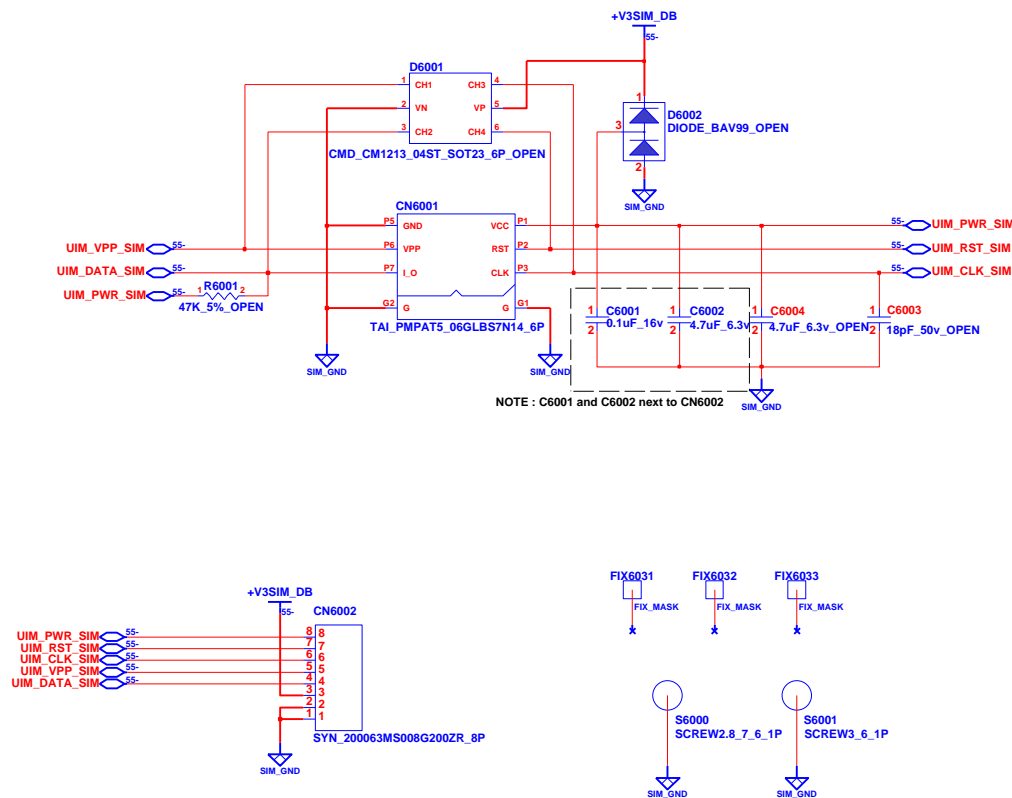
INVENTEC

TITLE			
TT20			
1394			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 54 OF 70

SIM CARD Daughter Board

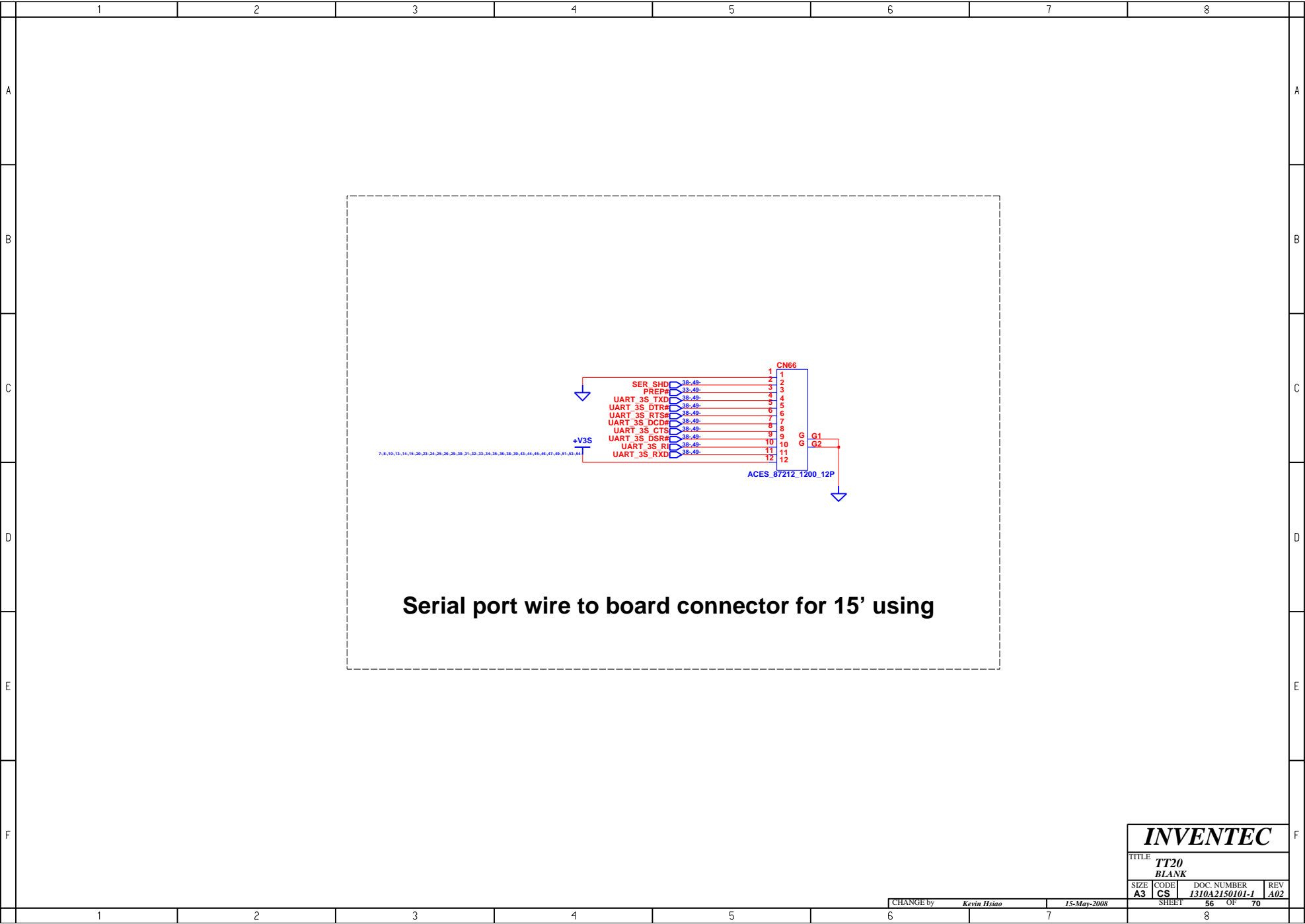


INVENTEC

TITLE			
TT20			
SIM CARD Daughter Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02

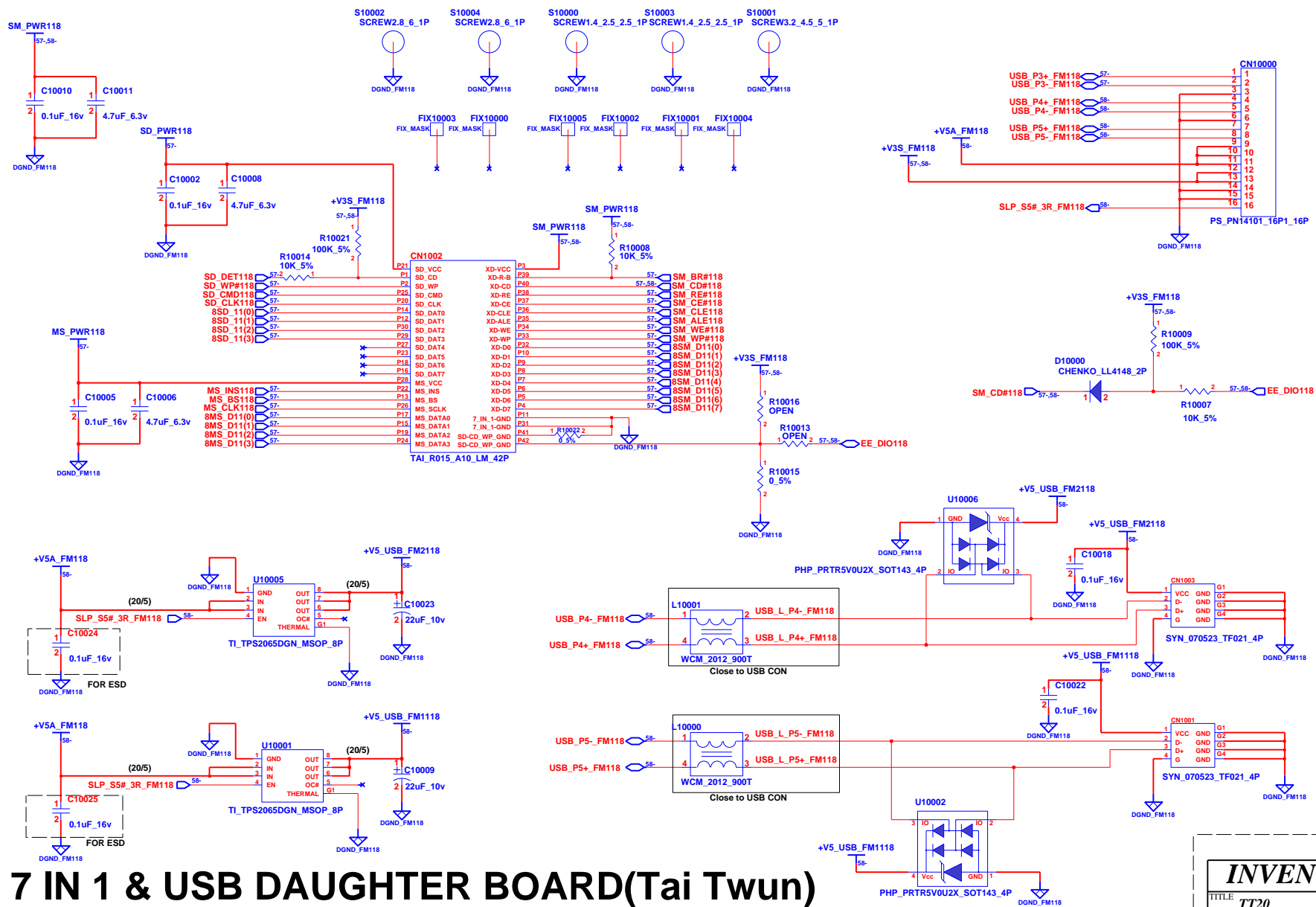
CHANGE by Kevin Hsiao 15-May-2008

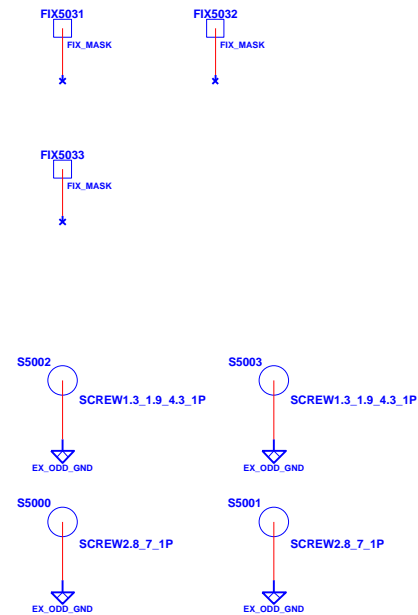
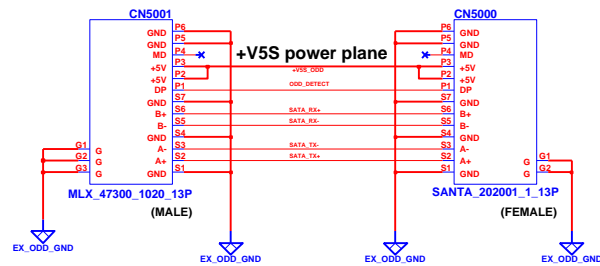
SHEET 55 OF 70



7 IN 1 & USB DAUGHTER BOARD(Tai Twun)

INVENTEC			
TITLE TT20			
7 IN 1 & USB Daughter Board (TT)			
SIZE A3	CODE CS	DOC. NUMBER 1310A2150101-1	REV A02
CHANGE by Kevin Hsiao		15-May-2008	
SHEET 58		OF 70	

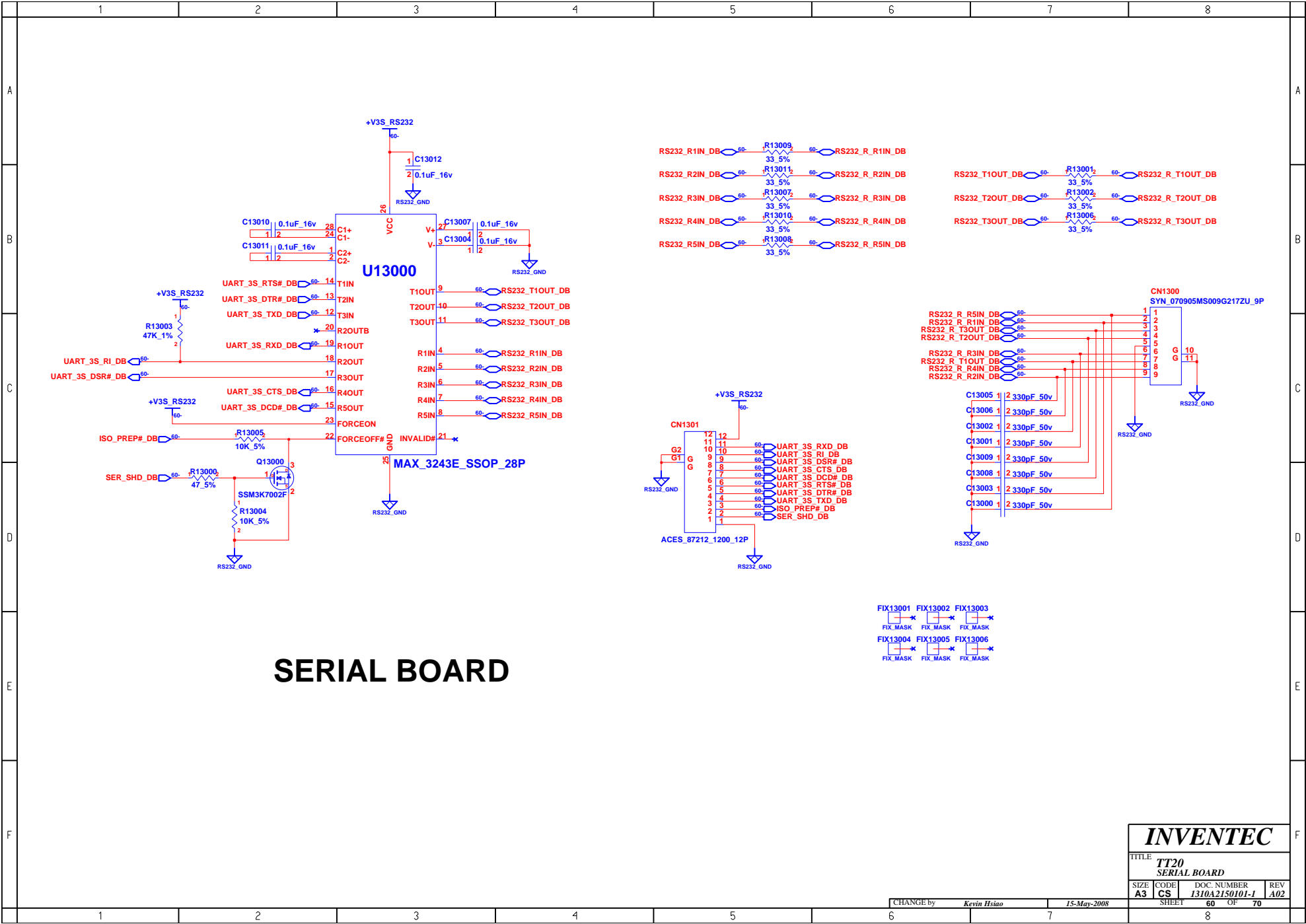


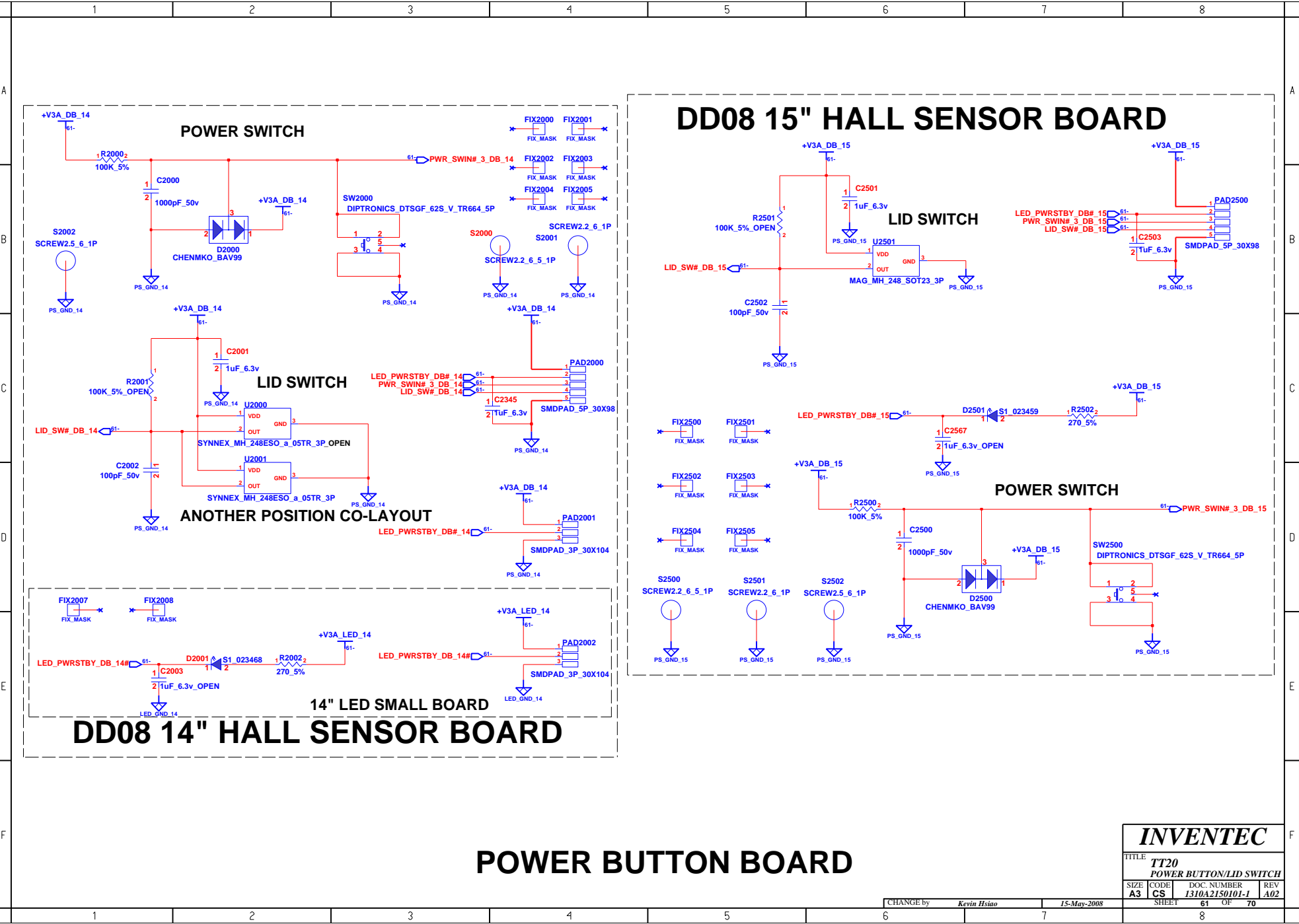


15" only

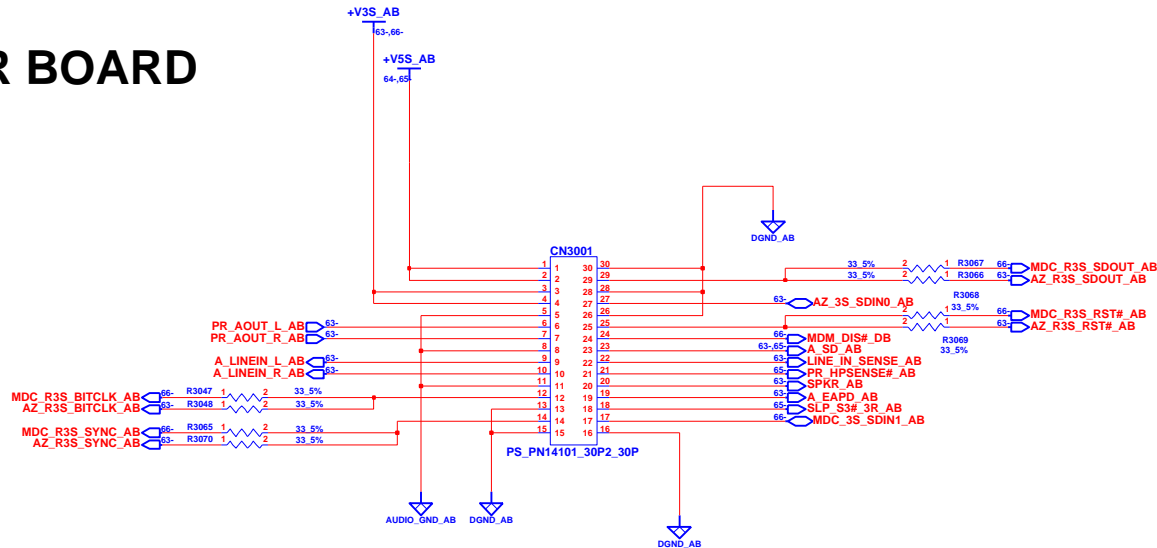
ODD Extension Board

INVENTEC			
TITLE TT20 ODD Extension Board			
SIZE A3	CODE CS	DOC. NUMBER 1310A2150101-1	REV A02
CHANGE by Kevin Hsiao		15-May-2008	
SHEET 59		OF 70	





AUDIO DAUGHTER BOARD



Audio CONN

- | | |
|-----------------------------------|----------------------|
| 1. AGND | 16. AZ_3S_SDIN0_AB |
| 2. PR_AOUT_L | 17. MDC_3S_SDIN1_AB |
| 3. PR_AOUT_R | 18. SLP_S3#_3R_AB |
| 4. AGND | 19. A_EAPD_AB |
| 5. PR_LINEIN_L | 20. SPKR_AB |
| 6. PR_LINEIN_R | 21. PR_HPSENSE#_AB |
| 7. AGND | 22. LINE_IN_SENSE_AB |
| 8. +V5S | 23. A_SD_AB |
| 9. +V5S | 24. MODEM DISABLE# |
| 10. +V3S | 25. DGND |
| 11. +V3S | 26. DGND |
| 12. AZ_R3S_BITCLK(MDC_R3S_BITCLK) | 27. DGND |
| 13. AZ_R3S_SDOUT(MDC_R3S_SDOUT) | 28. DGND |
| 14. AZ_R3S_SYNC(MDC_R3S_SYNC) | 29. DGND |
| 15. AZ_R3S_RST#(MDC_R3S_RST#) | 30. DGND |



INVENTEC

TITLE		
TT20		
AUDIO CONNECTOR		
SIZE	CODE	DOC. NUMBER
A3	CS	1310A2150101-1
SHEET		REV
62		A02

CHANGE by Kevin Hsiao 15-May-2008

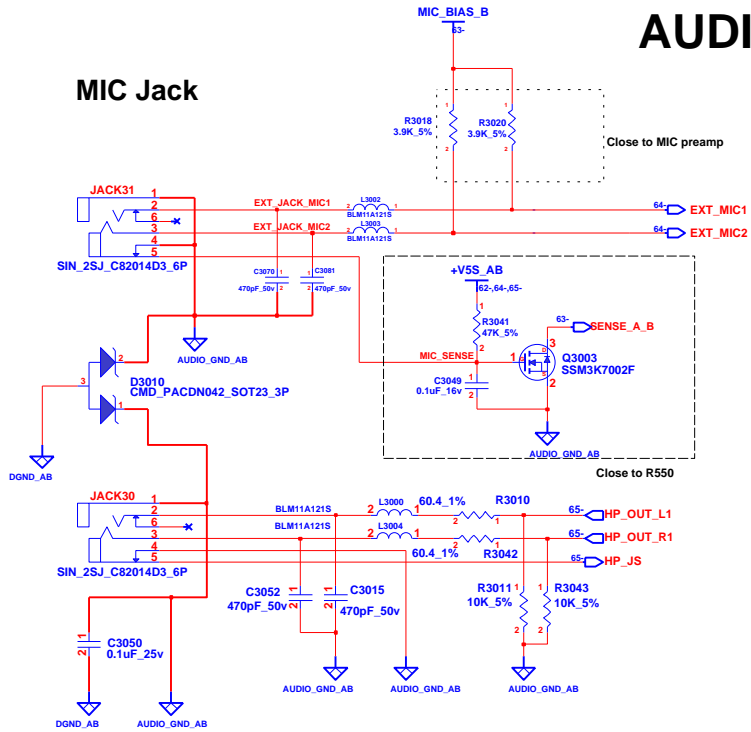
8

[illegible]

TITLE			
<i>TT20</i> <i>AUDIO DAUGHTER BOARD</i>			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	<i>1310A2150101-1</i>	<i>A02</i>
SHEET		63	OF 70

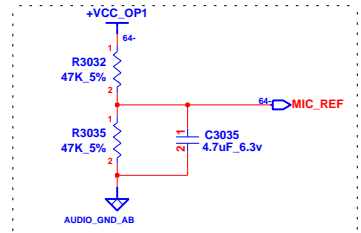
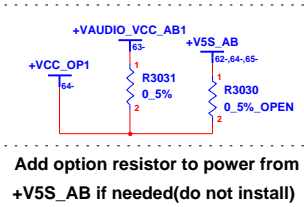
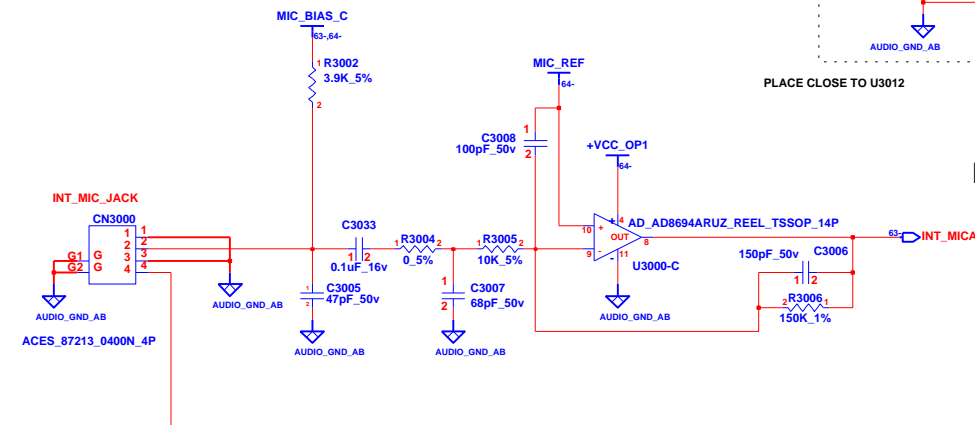
AUDIO DAUGHTER BOARD

MIC Jack

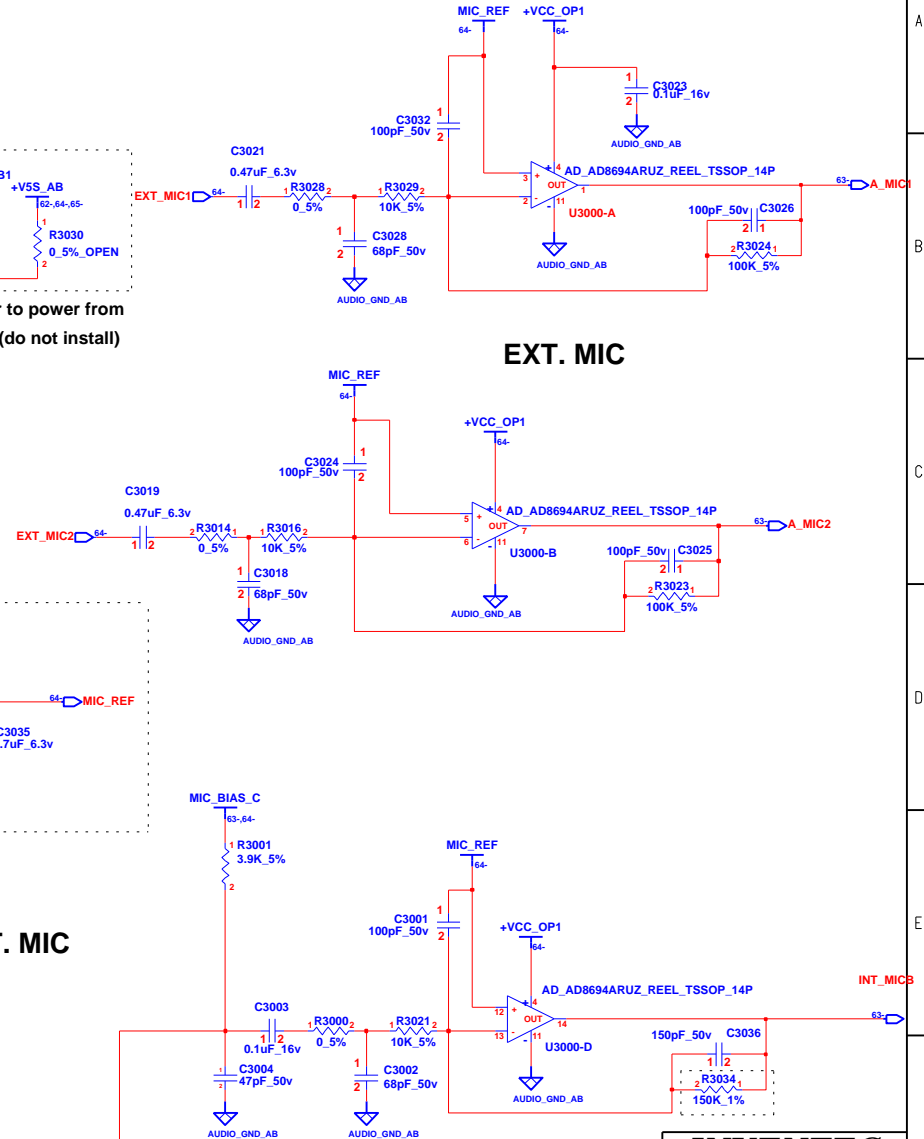


Earphone Jack

R3176 need to be place very close to jack pin1 with heavy copper traces(20 mil min)



INT. MIC



EXT. MIC

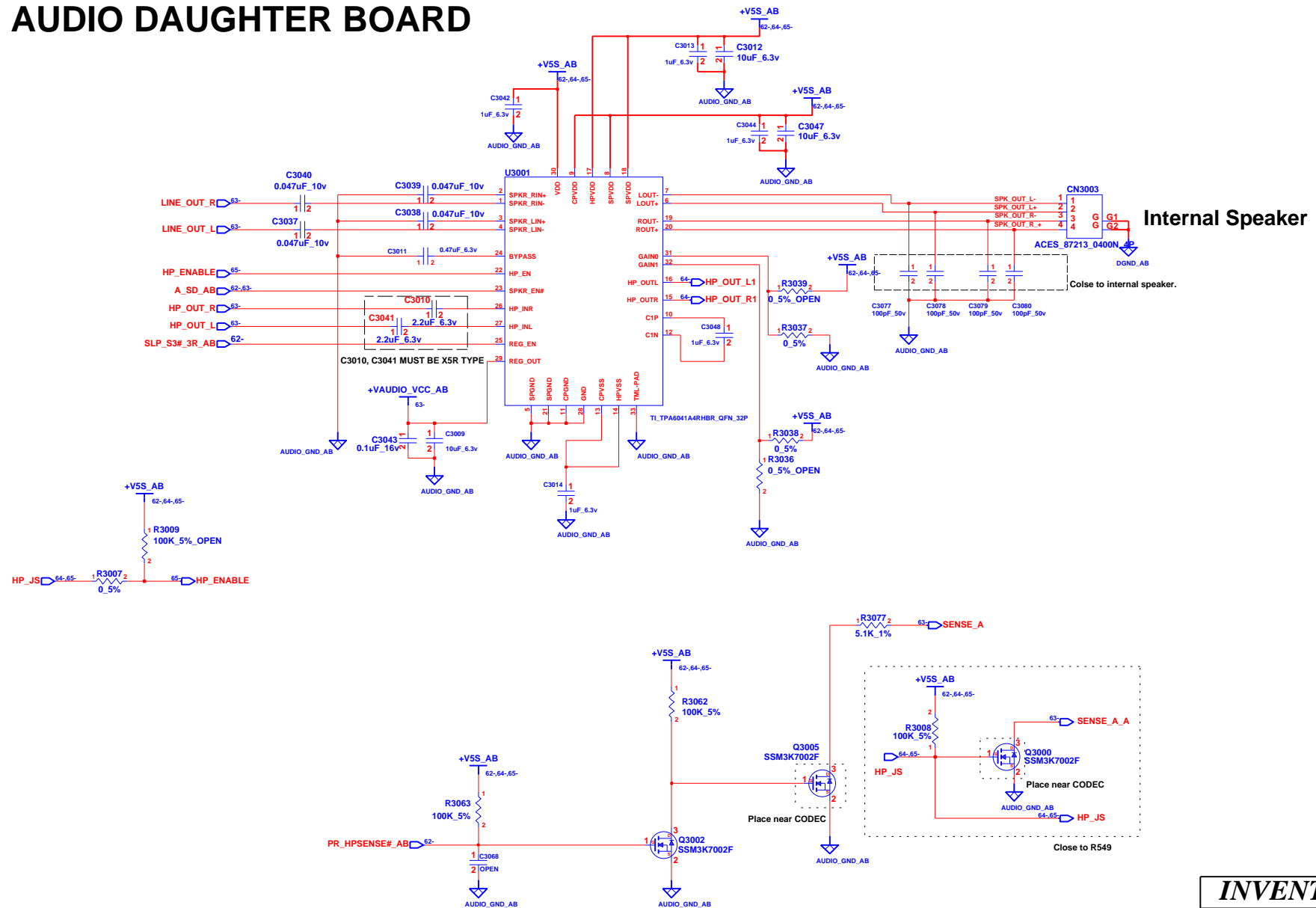
INVENTEC

TITLE			
TT20			
EARPHONE & MIC JACK			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 64 OF 70

AUDIO DAUGHTER BOARD



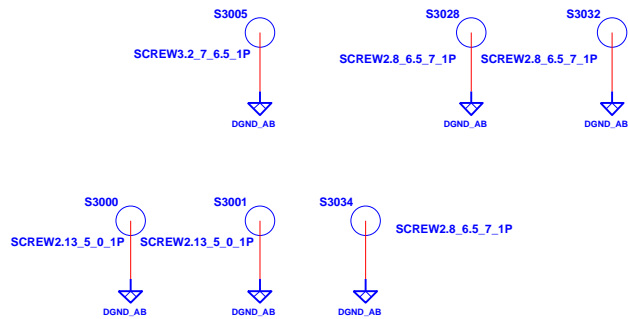
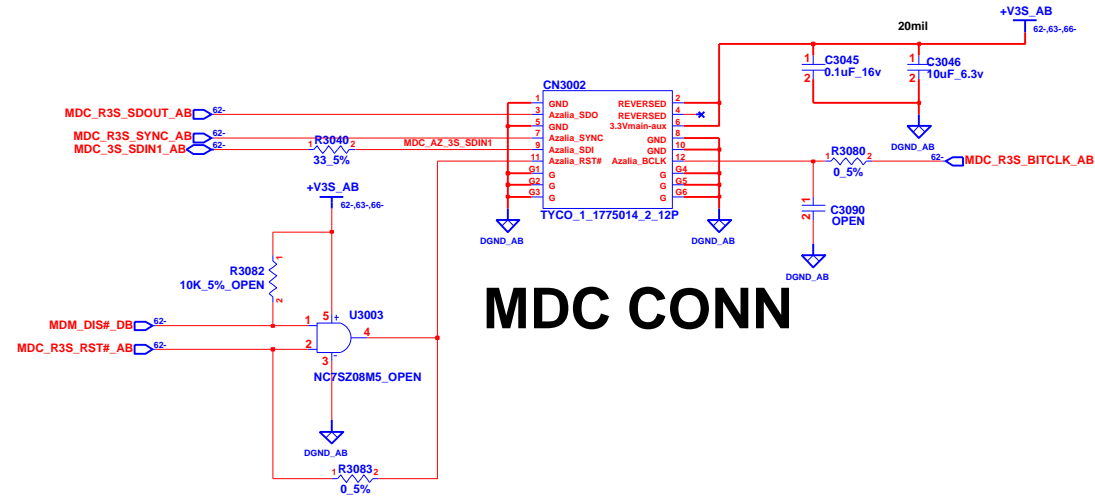
INVENTEC

TITLE			
TT20			
AUDIO AMP & INT SPEAKER			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A2150101-1	A02

CHANGE by Kevin Hsiao 15-May-2008

SHEET 65 OF 70

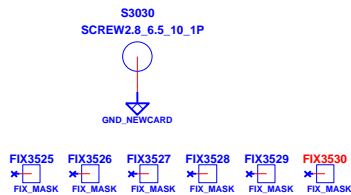
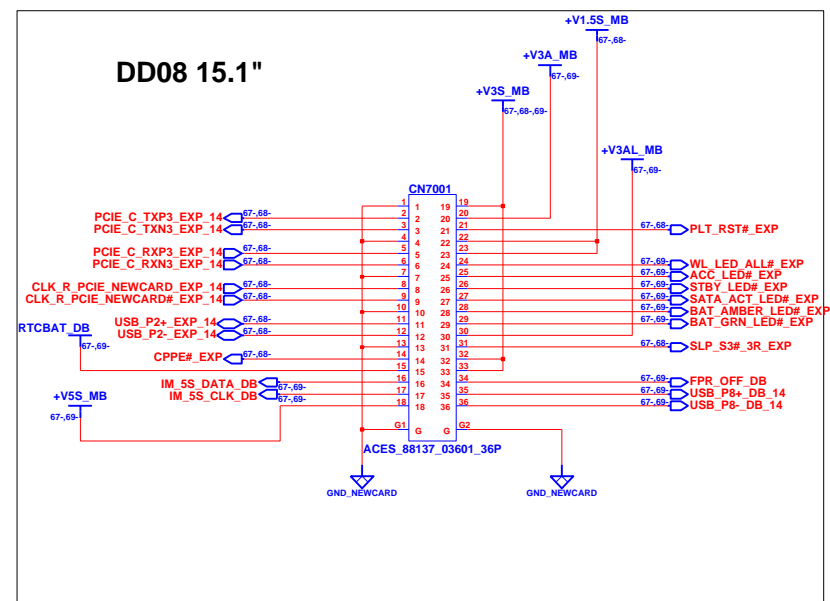
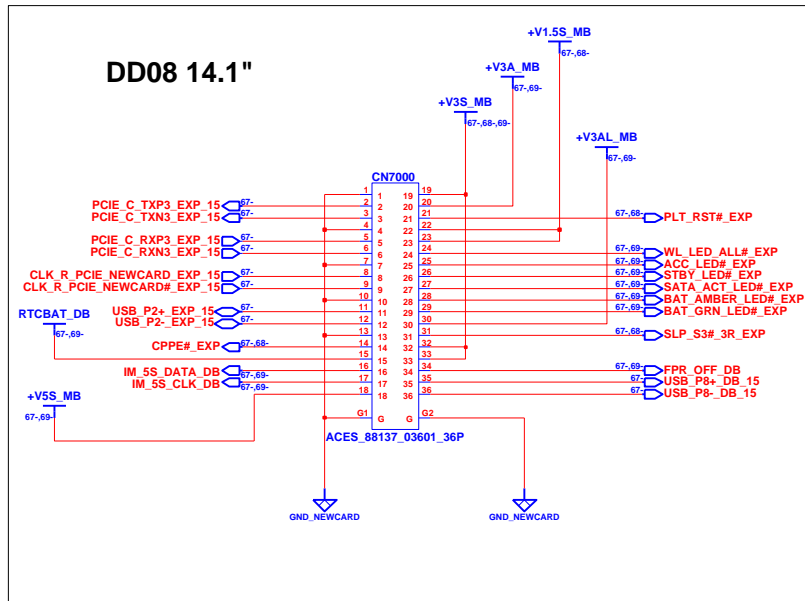
AUDIO DAUGHTER BOARD



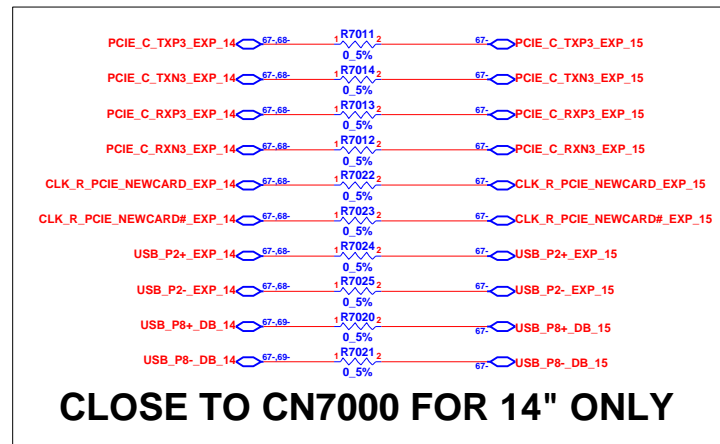
INVENTEC

TITLE			
TT20			
MDC CONNECTOR			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A2150101-1	A02
SHEET		66	OF 70

CHANGE by Kevin Hsiao 15-May-2008



- | | |
|-----------------------|------------------|
| 1 GND | 19 +V3S |
| 2 PCIE_C_TXP | 20 +V3A |
| 3 PCIE_C_TXN | 21 PLT_RST# |
| 4 GND | 22 +V1.5S |
| 5 PCIE_C_RXP | 23 +V1.5S |
| 6 PCIE_C_RXN | 24 WL_LED_ALL# |
| 7 GND | 25 ACC_LED# |
| 8 CLK_R_PCIE_NEWCARD | 26 STBY_LED# |
| 9 CLK_R_PCIE_NEWCARD# | 27 LED_3S_SATA# |
| 10 GND | 28 BAT_AMBERLED# |
| 11 USB_P+ | 29 BAT_GRNLED# |
| 12 USB_P- | 30 LED_3S_ODD# |
| 13 GND | 31 SLP_S3#_3R |
| 14 CLK_R_REQ# | 32 +V3S |
| 15 RTCBAT | 33 +V3S |
| 16 TOUCHPAD DATA | 34 FPR_OFF |
| 17 TOUCHPAD CLK | 35 USB_P8+ |
| 18 +VSS | 36 USB_P8- |



EXPRESS CARD DAUGHTER BOARD

INVENTEC

TITLE TT20			
NEW CARD CONNECTOR			
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
SHEET 67		OF 70	

CHANGE by *Kevin Hsiao* 26-May-2008

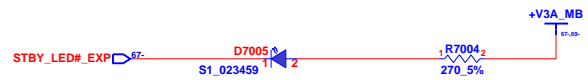
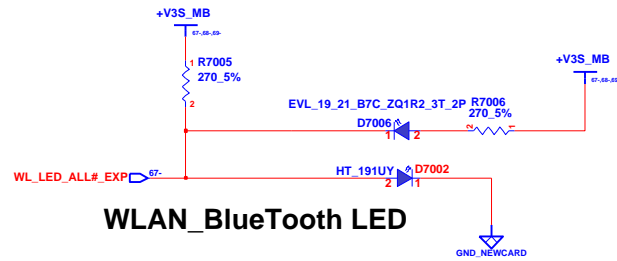


TITLE			
TT20 NEW CARD			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A2150101-1	A02
SHEET		68	OF 70

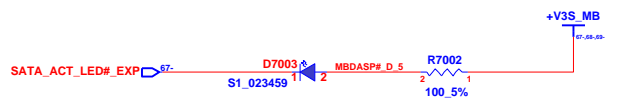
CHANGE by	<i>Kevin Hsiao</i>	<i>15-May-2008</i>
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68	OF	70
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EXPRESS CARD DAUGHTER BOARD



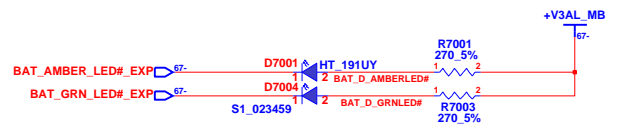
Power / Standby LED



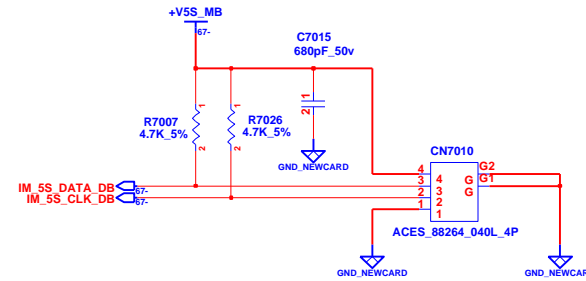
HDD & ODD LED



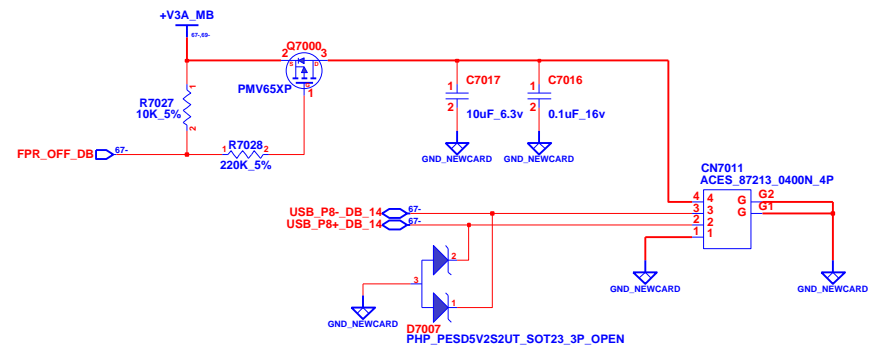
Accelero-Meter LED



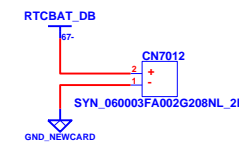
Battery-Charge LED



TOUCH PAD CNTR



FINGER PRINTER CNTR

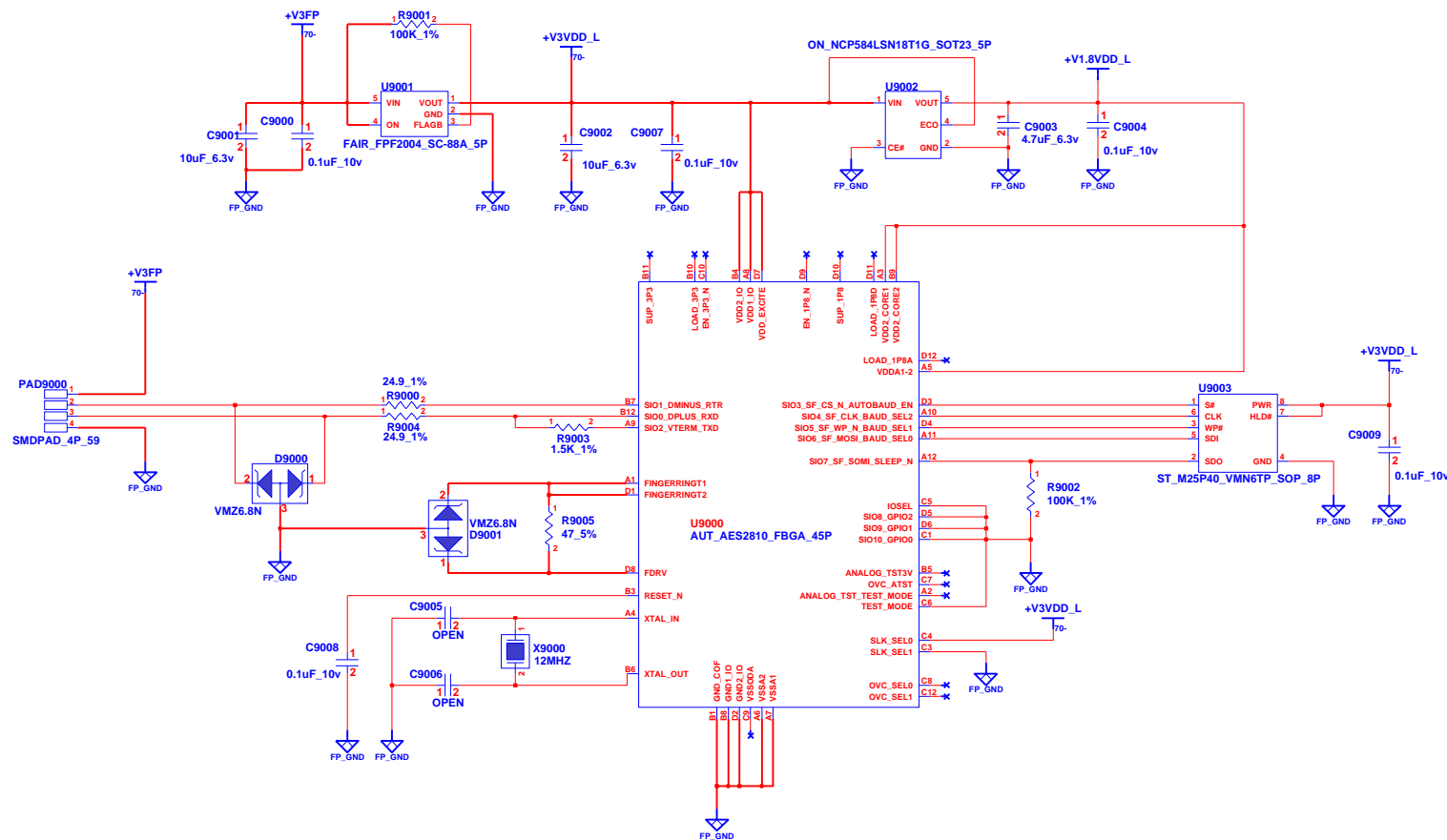


RTC CNTR

INVENTEC

TITLE			
TT20			
NEW CARD LED			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	I310A2150101-1	A02
SHEET		69	OF 70

CHANGE by Kevin Hsiao 16-May-2008



Layout notes :

1. Placed R5 close to U1
2. Placed D1 closed to R5
3. D1 & D2 pin_A to GND should be a short trace(20mil max) using three via to connect to GND.

Finger Print Reader DB

INVENTEC

TITLE TT20 FINGER PRINT READER			
SIZE A3	CODE CS	DOC. NUMBER I310A2150101-1	REV A02
SHEET		70	OF 70

CHANGE by *Kevin Hsiao* 15-May-2008