

Index

PAGE

- 01. PROJECT NAME
- 02. INDEX
- 03. Block Diagram
- 04. POWER Procedure
- 05. +V3A & +V5A
- 06. +V1.5 & +V0.75
- 07. +V1.8S & +VDDC_GPU
- 08. +VTT
- 09. +VCCSA
- 10. BLANK
- 11. +VCC_CORE & +VGFX_CORE
- 12. +VCC_CORE & +VGFX_CORE
- 13. +V5S & +V3S
- 14. BLANK
- 15. CPU-1
- 16. CPU-2
- 17. CPU-3
- 18. CPU-4
- 19. CPU-5
- 20. CPU-6
- 21. Fan
- 22. DDR3-1
- 23. DDR3-2
- 24. BLANK
- 25. PCH-1
- 26. PCH-2
- 27. PCH-3
- 28. PCH-4

PAGE

- 29. PCH-5
- 30. PCH-6
- 31. PCH-7
- 32. PCH-8
- 33. PCH-9
- 34. KBC
- 35. Keyboard & TouchPad
- 36. USB3.0 CONN
- 37. LCM switch & CONN
- 38. BLANK
- 39. HDMI CONN
- 40. Mini DISPLAY PORT CONN
- 41. LAN
- 42. RJ-45
- 43. EMI CAP. & SCREW
- 44. Audio, PWB, ODD Board & HDD CONN
- 45. CHG BOARD & WWAN BOARD CONN
- 46. WLAN & HDD PROTECTION
- 47. CARD READER
- 48. GPU-1
- 49. GPU-2
- 50. GPU-3
- 51. GPU-4
- 52. GPU-5
- 53. GPU-6
- 54. GPU-7
- 55. VRAM-1
- 56. VRAM-2

PAGE

- 57. VRAM-3
- 58. VRAM-4
- 59. USB BOARD-1
- 60. USB BOARD-2 & AUDIO CODEC
- 61. USB BOARD-3 & AUDIO JACK
- 62. ODD EXT BOARD
- 63. POWER SWITCH BOARD
- 64. SIM BOARD-1 & BT
- 65. SIM BOARD-2
- 66. BATTERY BOARD-1
- 67. BATTERY BOARD-2
- 68. BATTERY BOARD-3
- 69. EMC Board
- 70. USB 3.0

INVENTEC

TITLE			
ROMEO20			
Index			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		2	OF 70

CHANGE by *Drawer Name* 28-Dec-2010

Inventec Confidential

Sandy Bridge

(Socket-rPGA989)
37.5mm x 37.5mm

DDR3

DDR3 SO-DIMM 1

800/1066/1333 MHz , 8GB maximum memory P22

DDR3

DDR3 SO-DIMM 2

800/1066/1333 MHz , 8GB maximum memory P23

V-RAM

64M X 16
(1GB)
P55~P58

VGA

AMD Whistler LP - M2
P48~P54

PEG

P15~P20

FDI

DMI

COUGAR POINT

25mm x 25mm

USB

USB

USB 1
Card Reader
P47

USB 2
WLAN+BT
P46

USB 3
WWAN
P45

USB 4
Touchscreen
P37

USB 5
Webcam
P37

USB 8
USB CONN01
P44

USB 9
USB CONN02
P44

USB 10
Bluetooth
P45

LVDS
HDMI
DP

PCIE

PCIE

PCIE

SATA
SATA

SMBUS

HDA

LPC

SPI

P25~P33

SPI ROM
BIOS P25

HSPI

IDT 92HD80
AudioCodec
P60

ITE IT8572E
KBC /AX
P34

SPI ROM
EC FW
(BIOS)P34

MAIN BATT
P68

System Charger
DC / DC System Power
P67

P60 SPKR
P61 HP JACK
P61 COMBOL JACK
P37 int DMIC

Keyboard
P35

Touchpad
P35

Thermal meter
TI TMP302CDRLR
G708T1U
P21

Option R
P37

LCM

P37

HDMI

P39

DISPLAY PORT

P40

AR8151
GLAN
P41

RJ-45
P42

WLAN + BT
MiniCard
P46

USB 3.0
uPD720200
P70

USB3.0

P36

SATA ODD

P62

SATA HDD

P44

Accelerometer

ST Micro HP3DC
P46

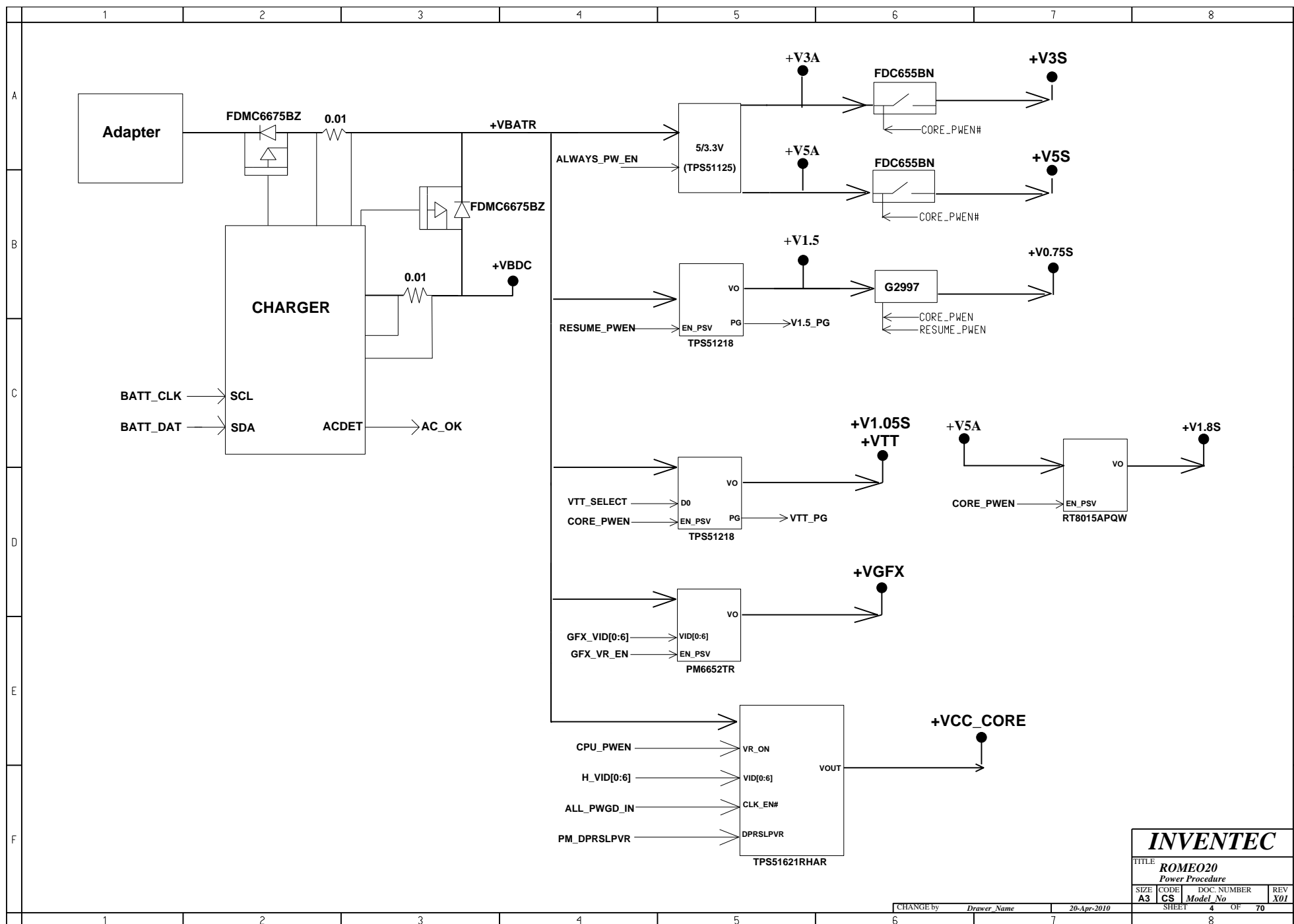
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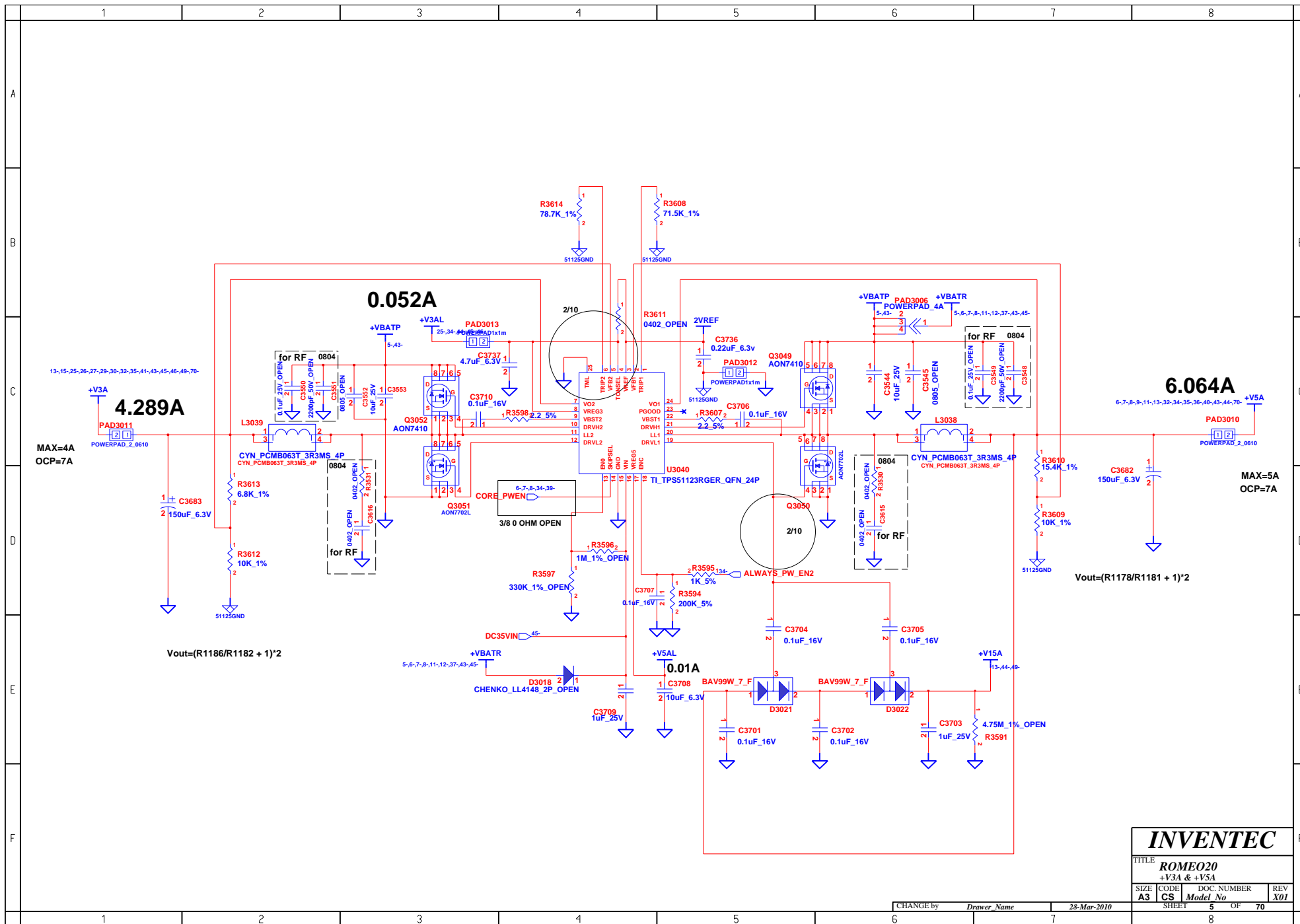
TITLE
ROMEO20
Block Diagram

SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
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CHANGE by *Drawer Name* 28-Dec-2010

SHEET 3 OF 70





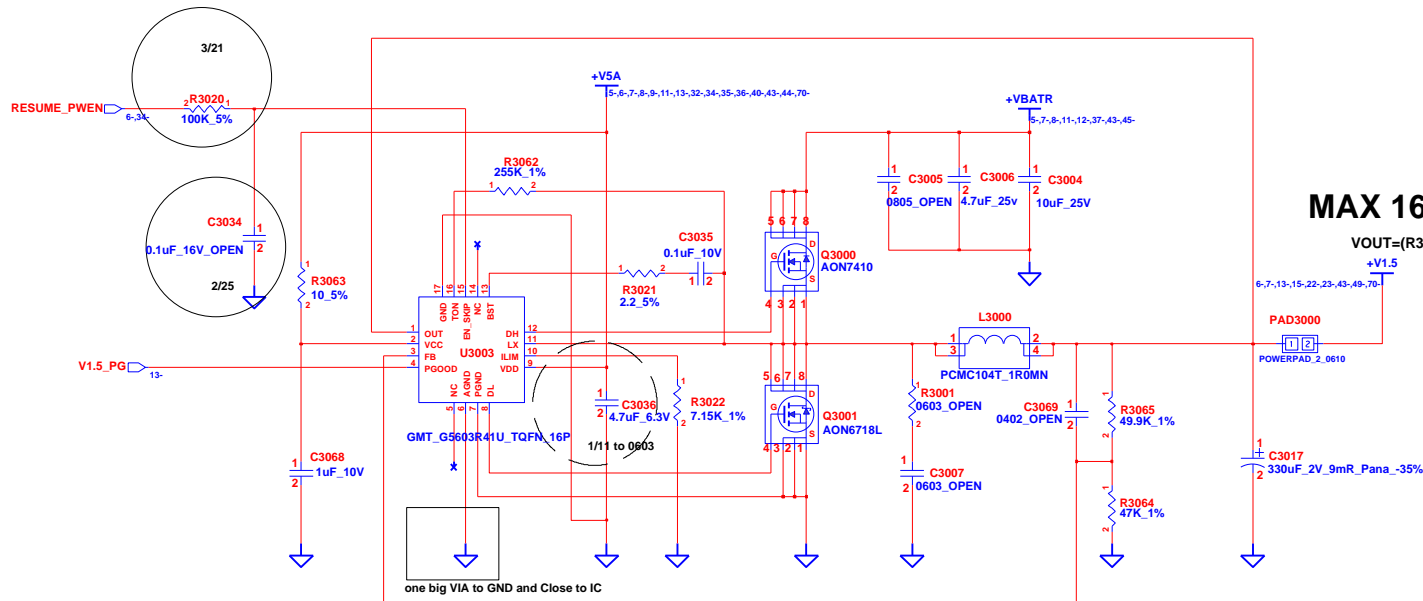
INVENTEC

TITLE: **ROME020**
+V3A & +V5A

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

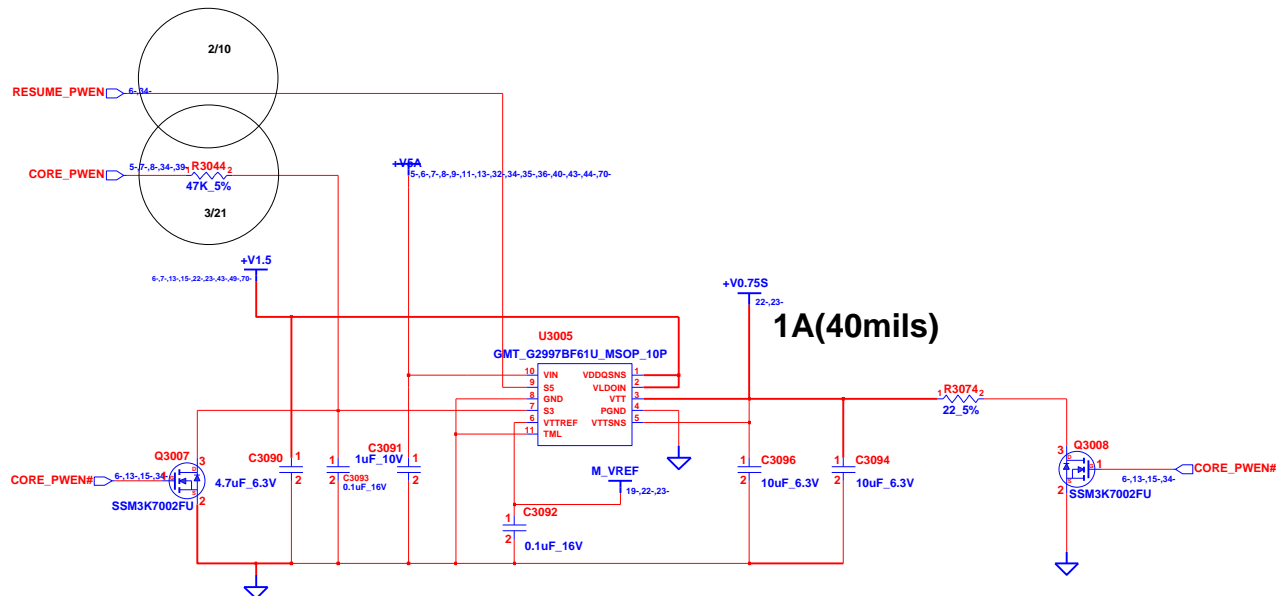
CHANGE by: *Drawer Name* 28-Mar-2010

SHEET 5 OF 70



MAX 16A(640mils)

$$VOUT = (R3065/R3064 + 1) \times 0.75$$



1A(40mils)

NOTE: DDR3 REGULATOR

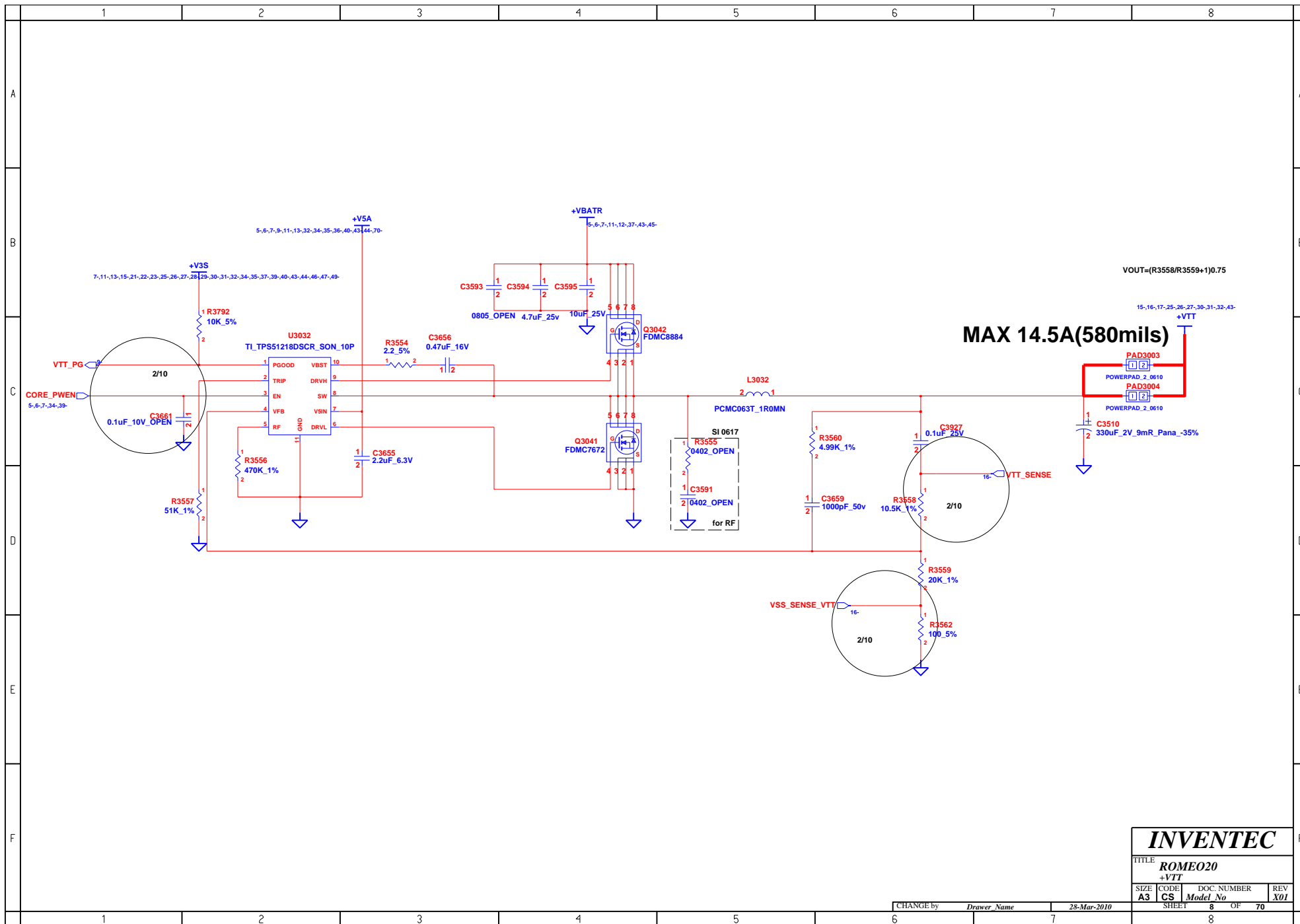
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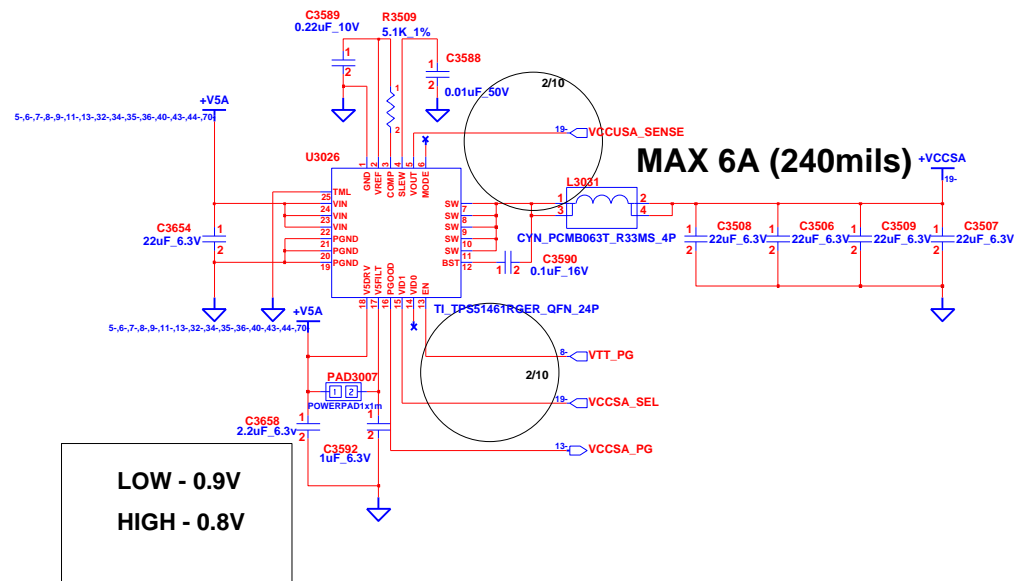
TITLE
ROMEO20
+V1.5 & +V0.75

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

CHANGE by *Drawer Name* 13-Jan-2011

SHEET 6 OF 70





INVENTEC			
TITLE ROMEO20 +VCCSA			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET		9	OF 70

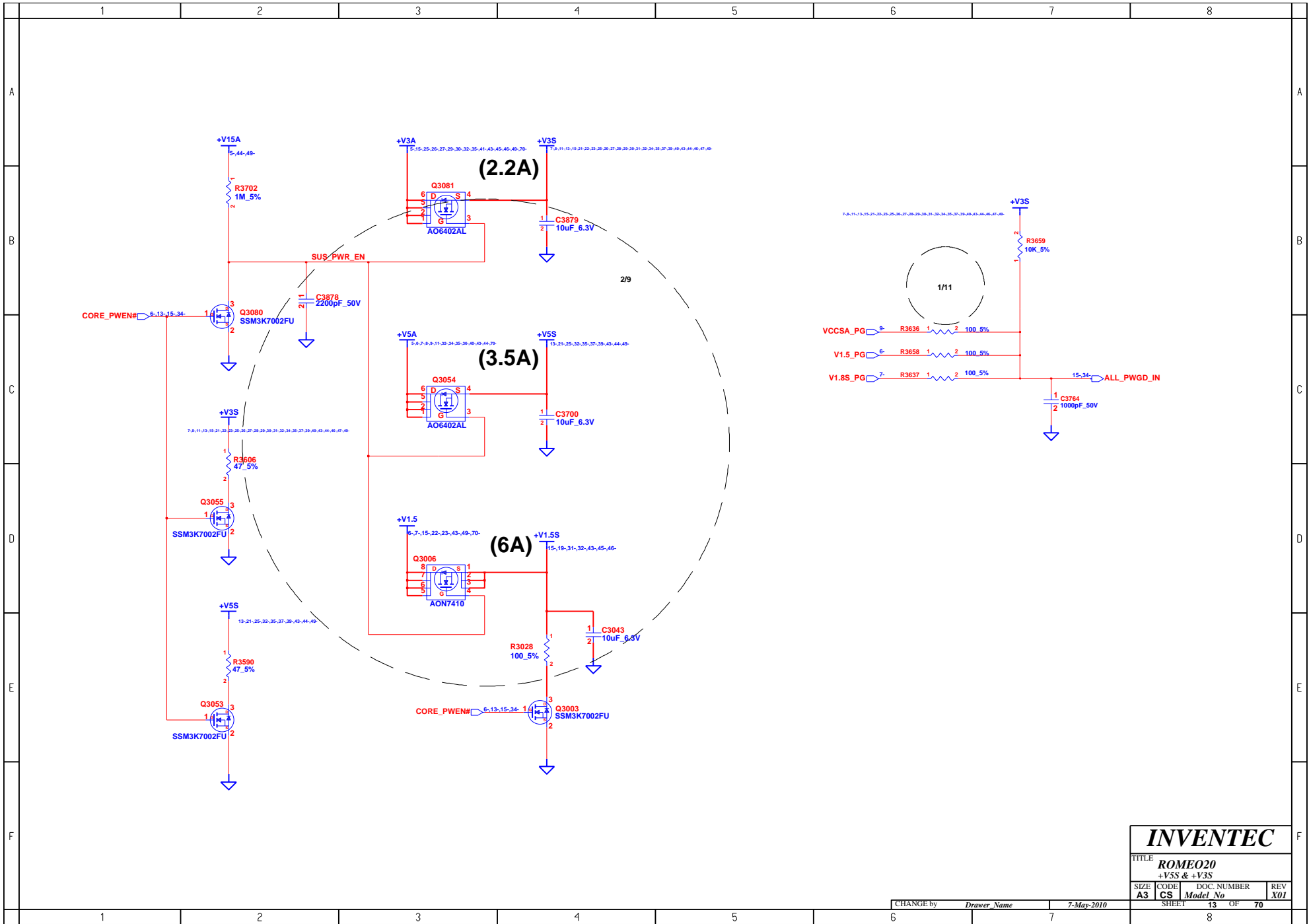
CHANGE by *Drawer Name* 28-Mar-2010

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B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	

INVENTEC

TITLE			
ROMEO20			
BLANK			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		10	OF 70

CHANGE by *Drawer Name* 14-Apr-2010

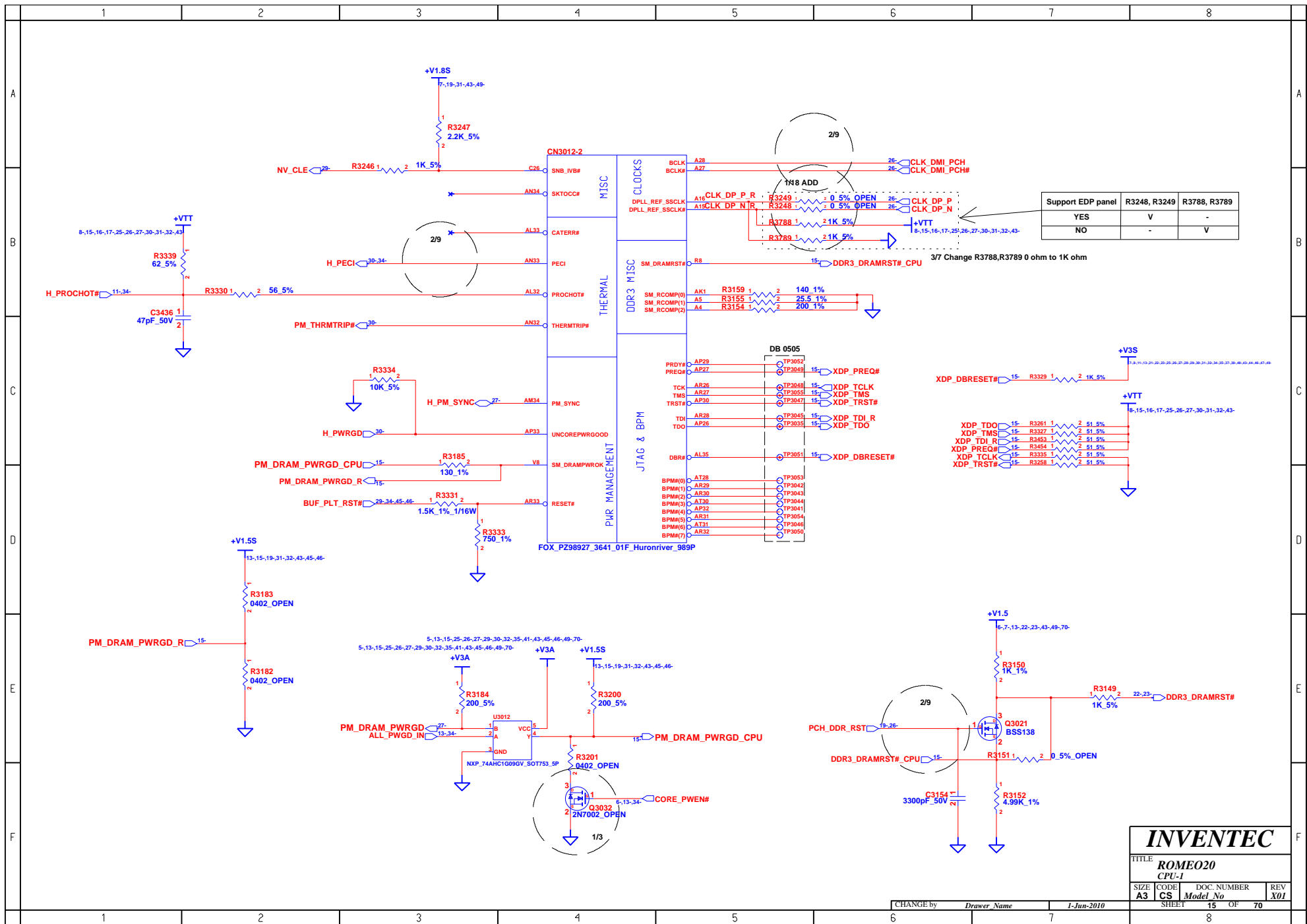


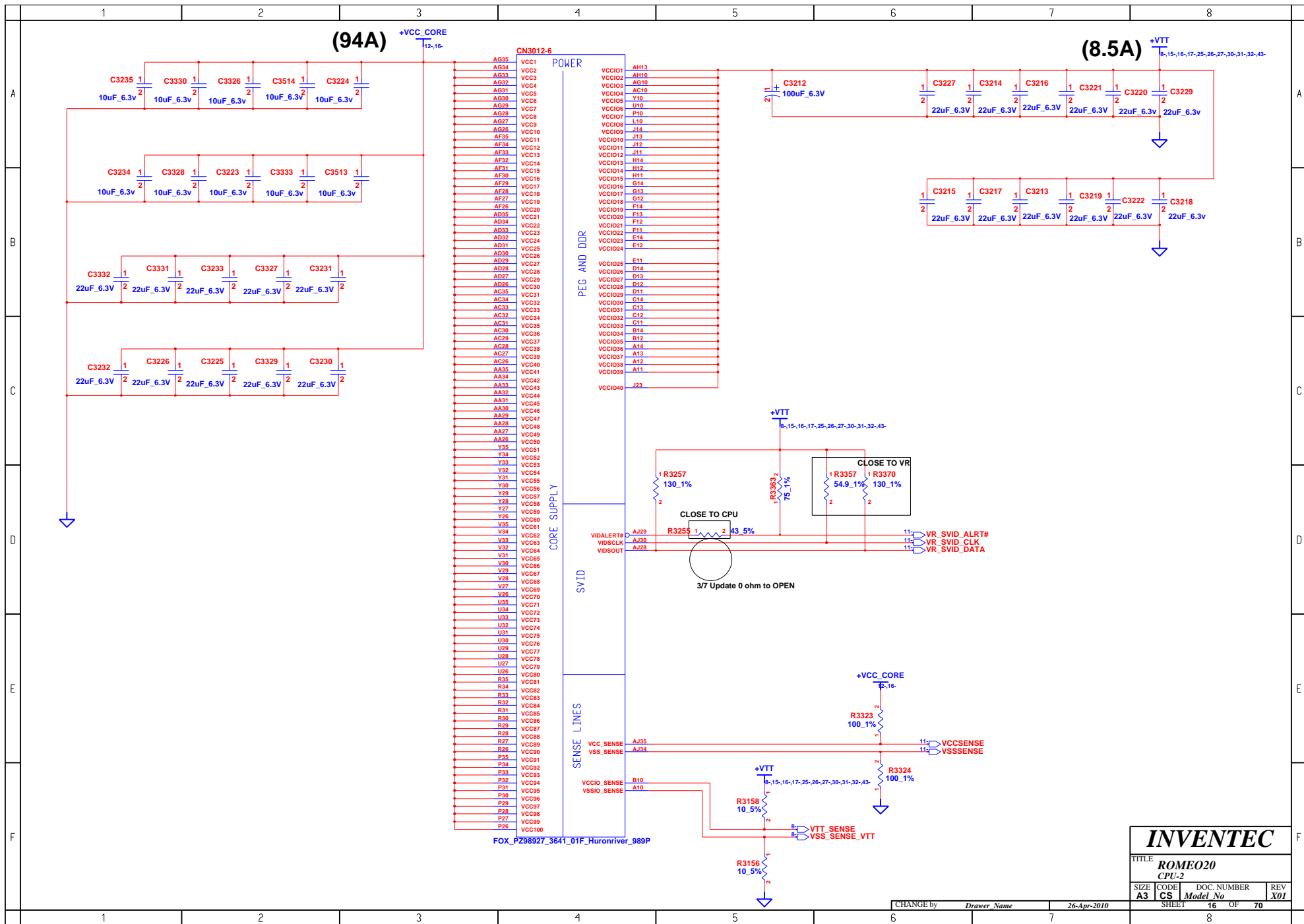
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F									F
	1	2	3	4	5	6	7	8	

INVENTEC

TITLE ROMEO20 CLK GEN			
SIZE A3	CODE CS	DOC. NUMBER <i>Model No</i>	REV X01
SHEET		14	OF 70

CHANGE by *Drawer Name* 17-Dec-2010

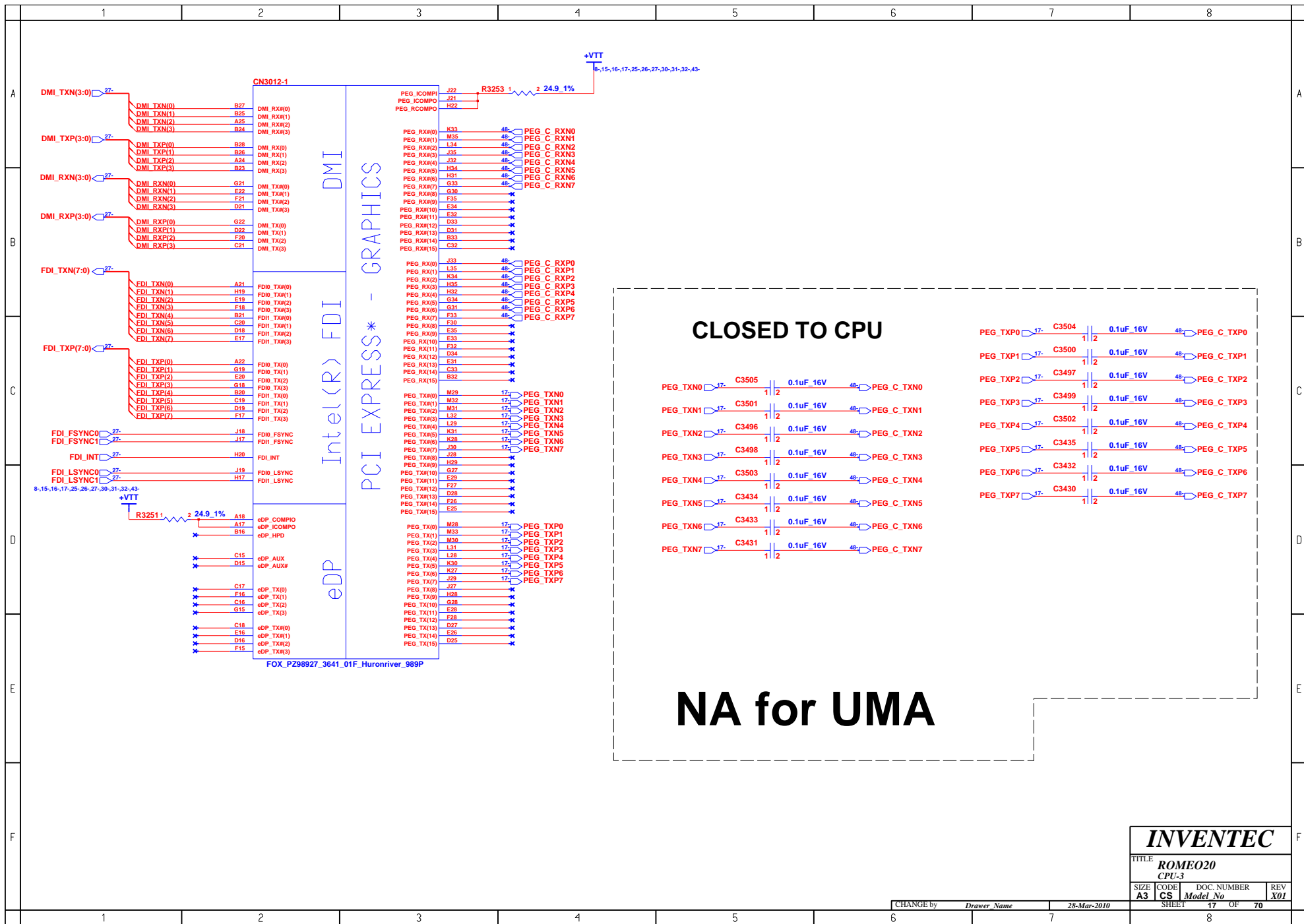




INVENTEC

TITLE			
ROME020			
CPU-2			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		16	OF 70

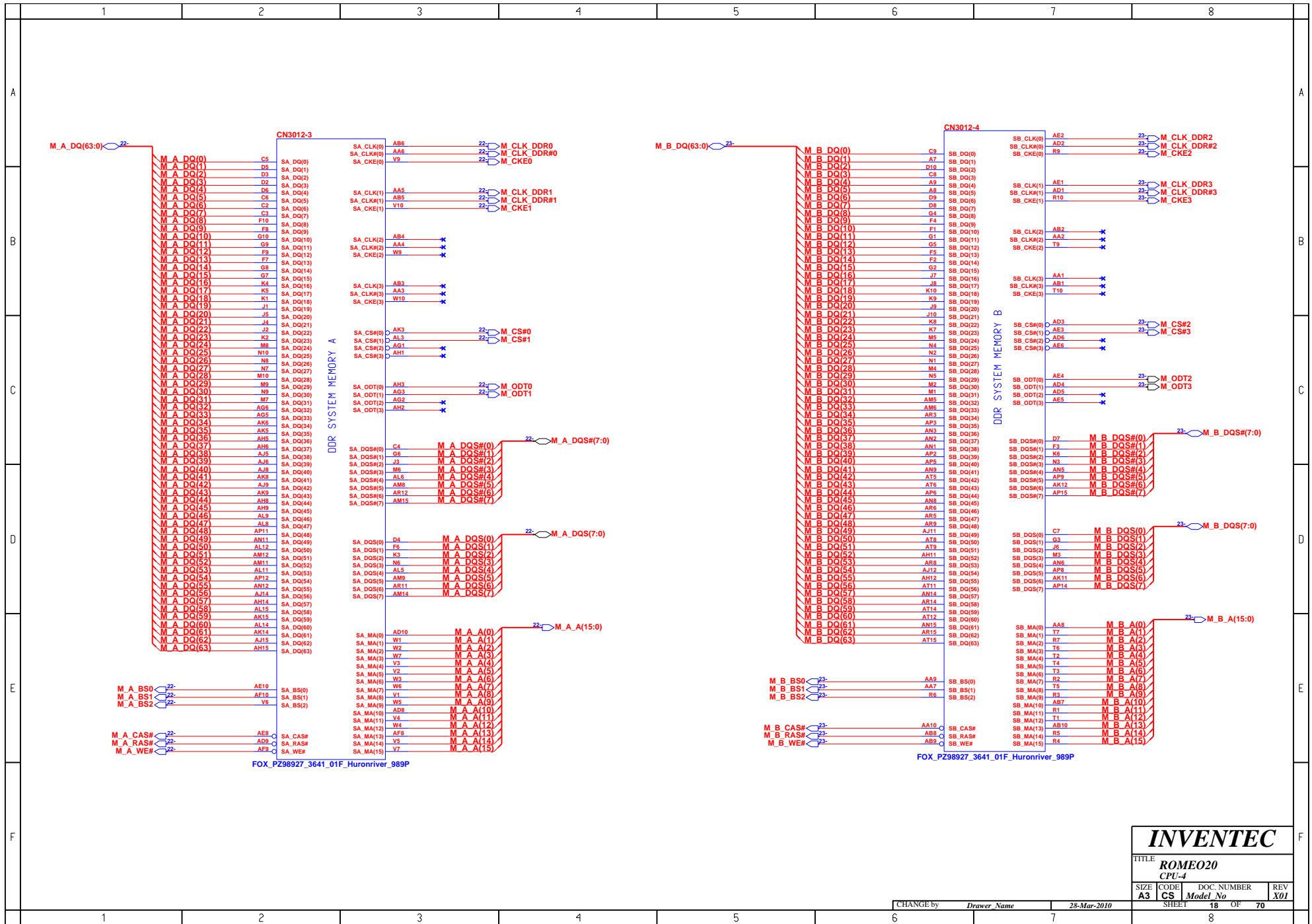
CHANGE by *Drawer Name* 26-Apr-2010

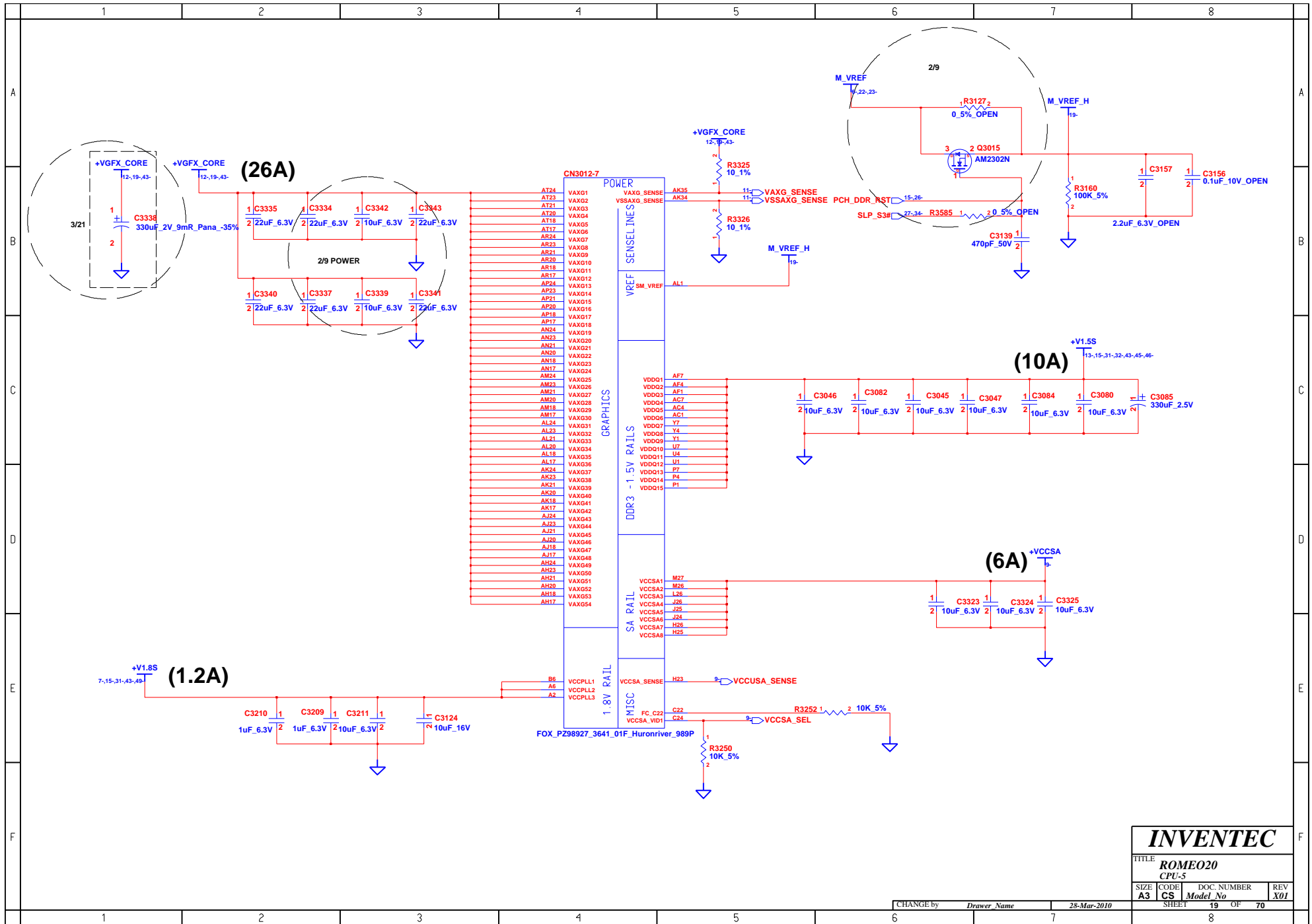


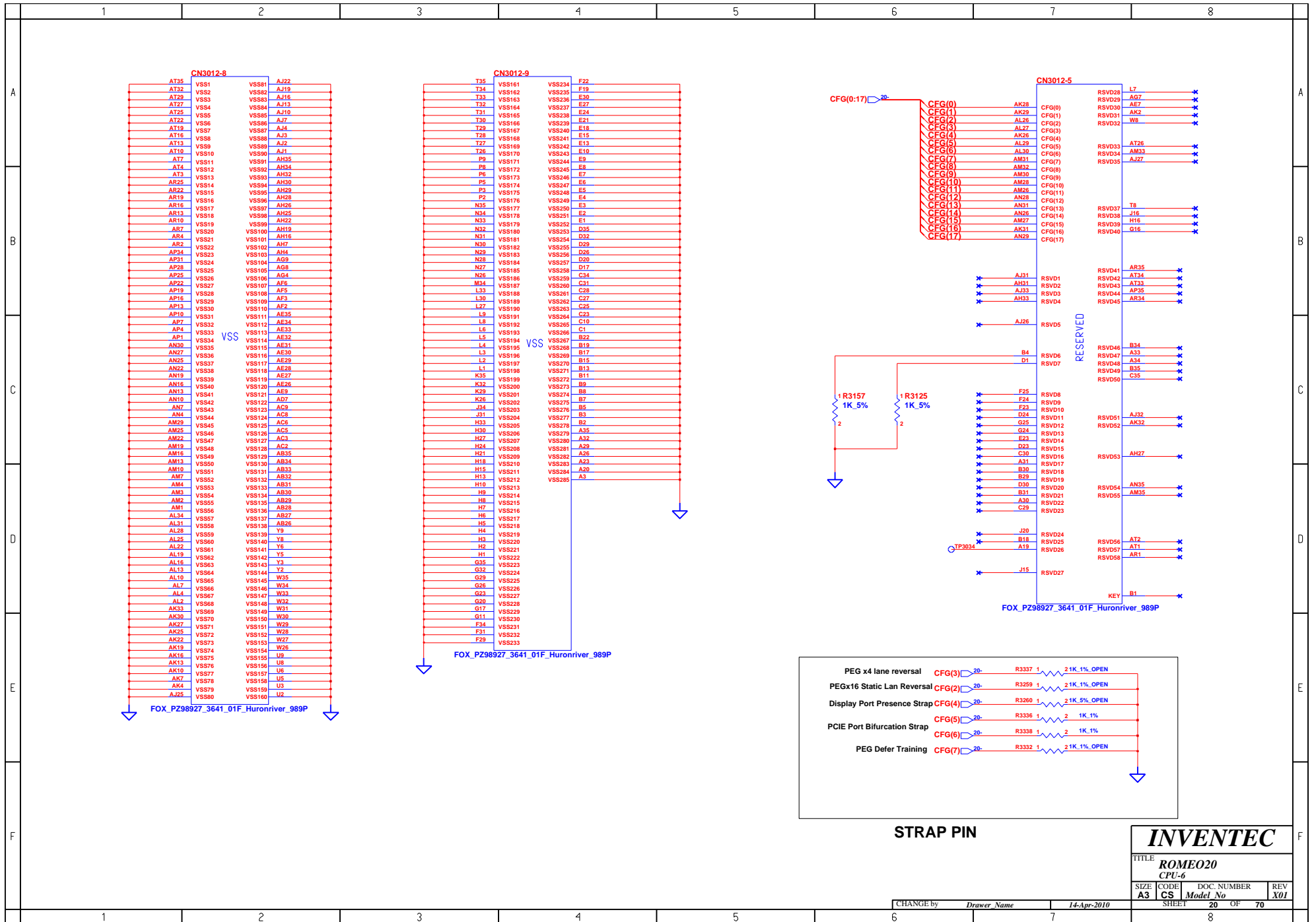
INVENTEC

TITLE			
ROME020			
CPU-3			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		17	OF 70

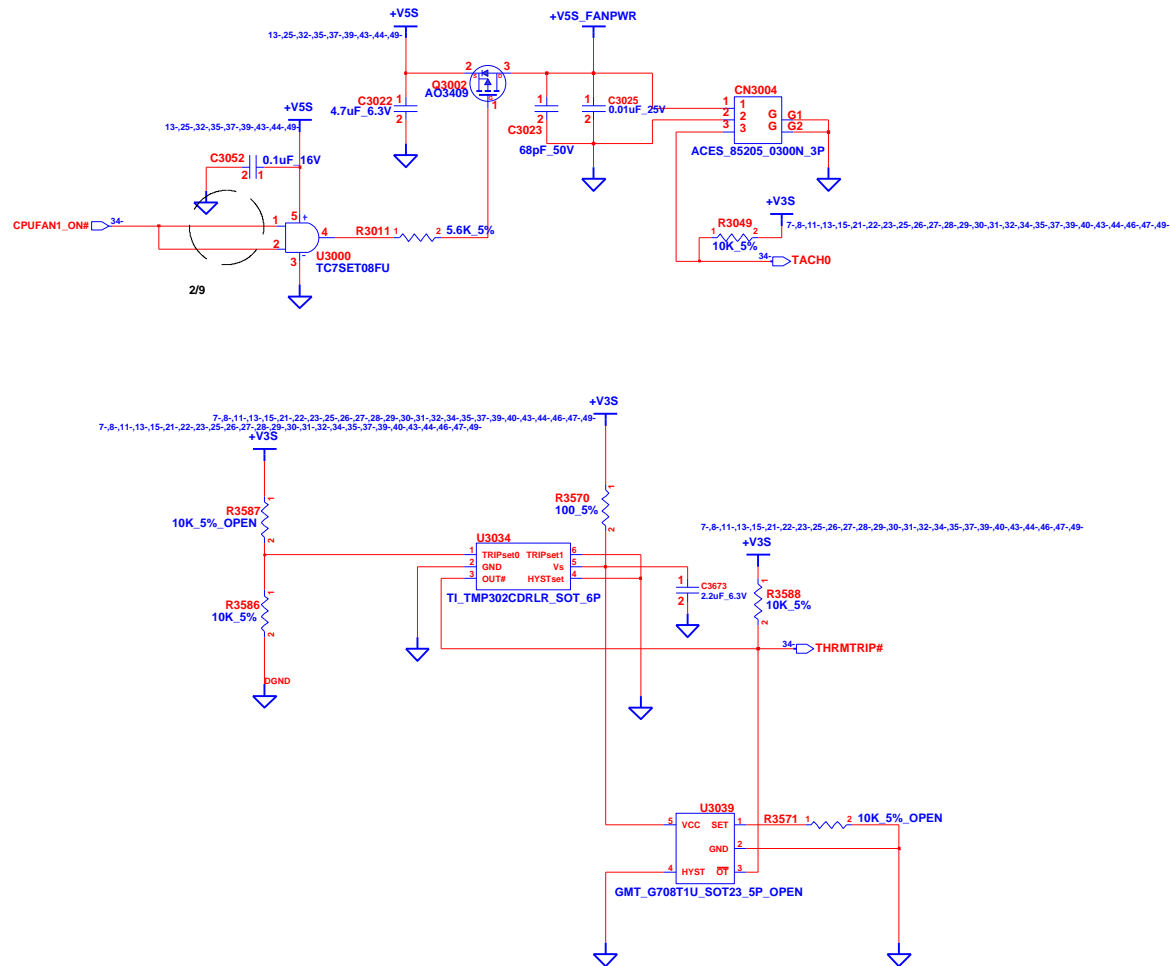
CHANGE by *Drawer Name* 28-Mar-2010





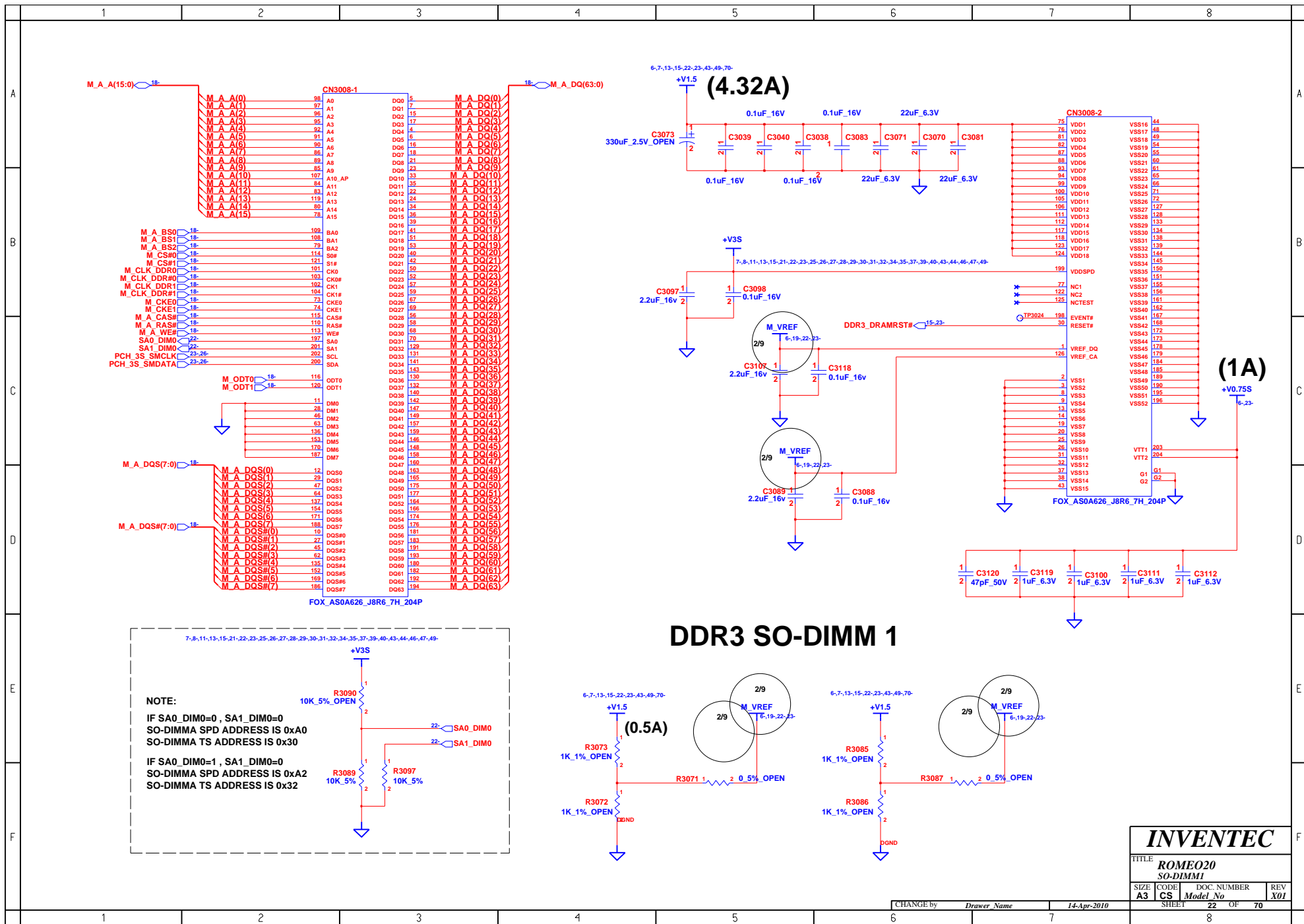


FAN CONN



INVENTEC			
TITLE: ROMEO20 FAN			
SIZE: A3	CODE: CS	DOC. NUMBER: Model No	REV: X01
SHEET: 21		OF: 70	

CHANGE by: Drawer Name 28-Mar-2010

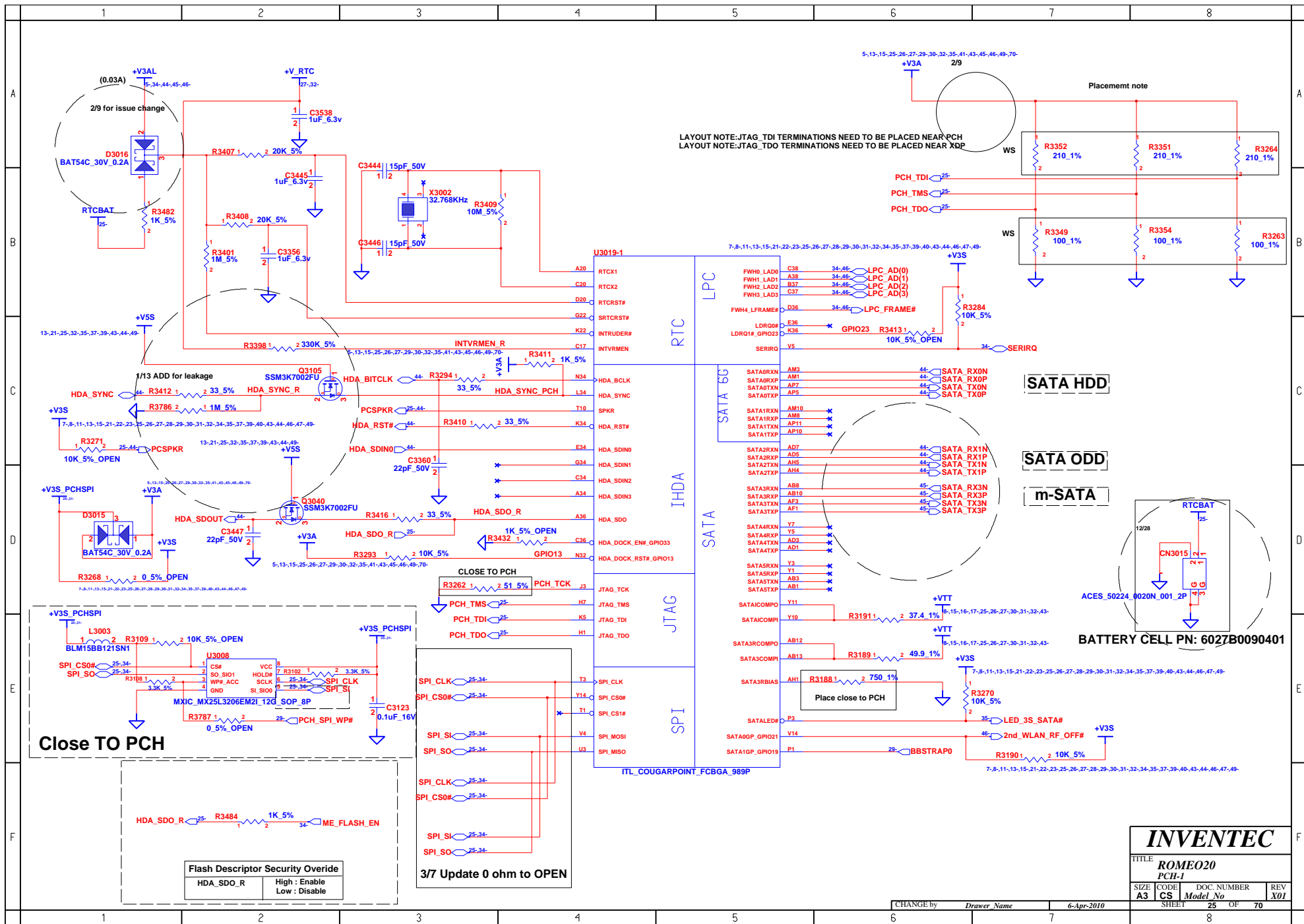


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B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	

INVENTEC

TITLE			
ROMEO20			
BLANK			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		24	OF 70

CHANGE by *Drawer Name* 14-Apr-2010



LAYOUT NOTE: JTAG_TDI TERMINATIONS NEED TO BE PLACED NEAR PCH
LAYOUT NOTE: JTAG_TDO TERMINATIONS NEED TO BE PLACED NEAR XDP

SATA HDD

SATA ODD

m-SATA

BATTERY CELL PN: 6027B0090401

Close TO PCH

Flash Descriptor Security Override	
HDA_SDO_R	High : Enable Low : Disable

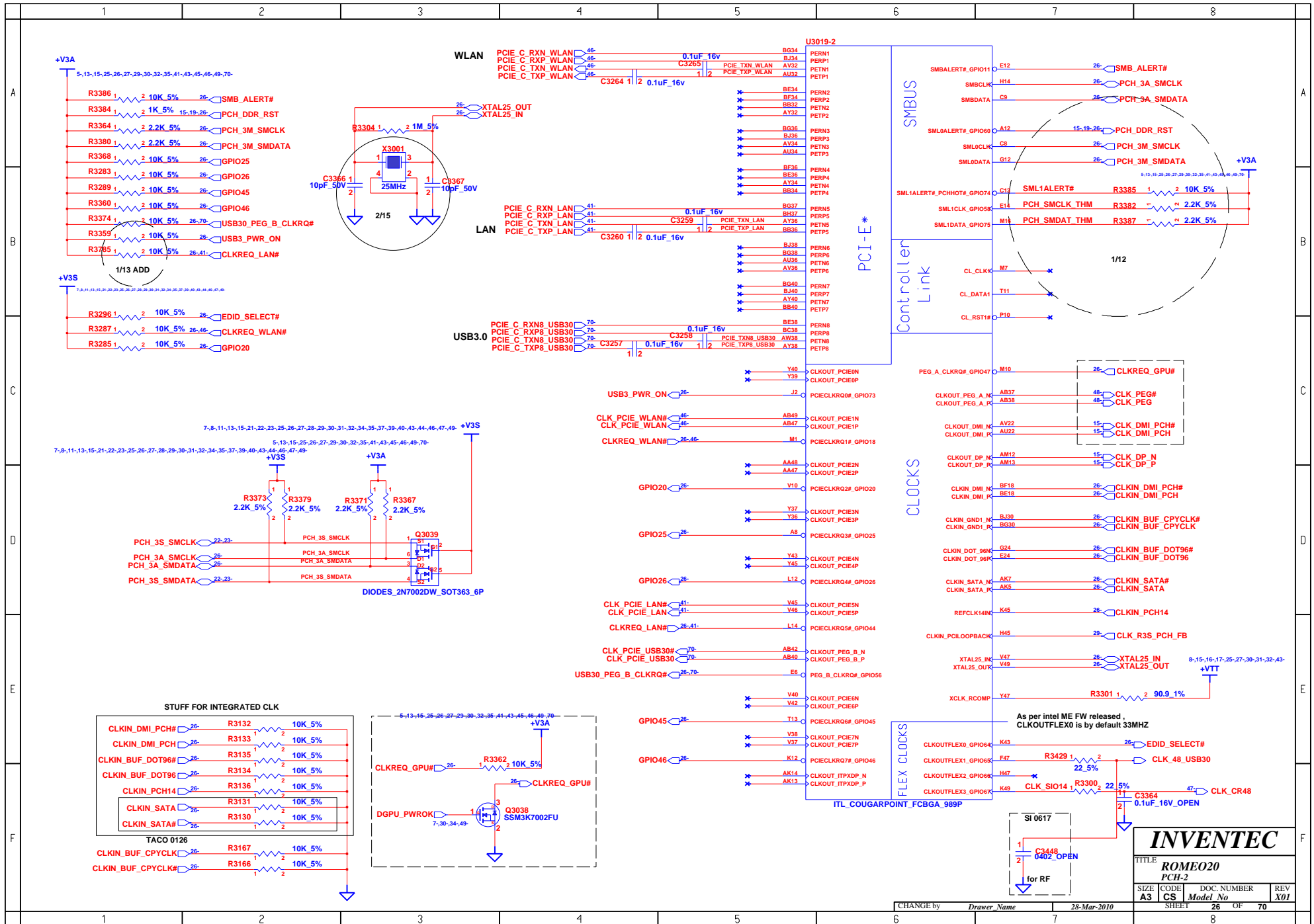
3/7 Update 0 ohm to OPEN

INVENTEC

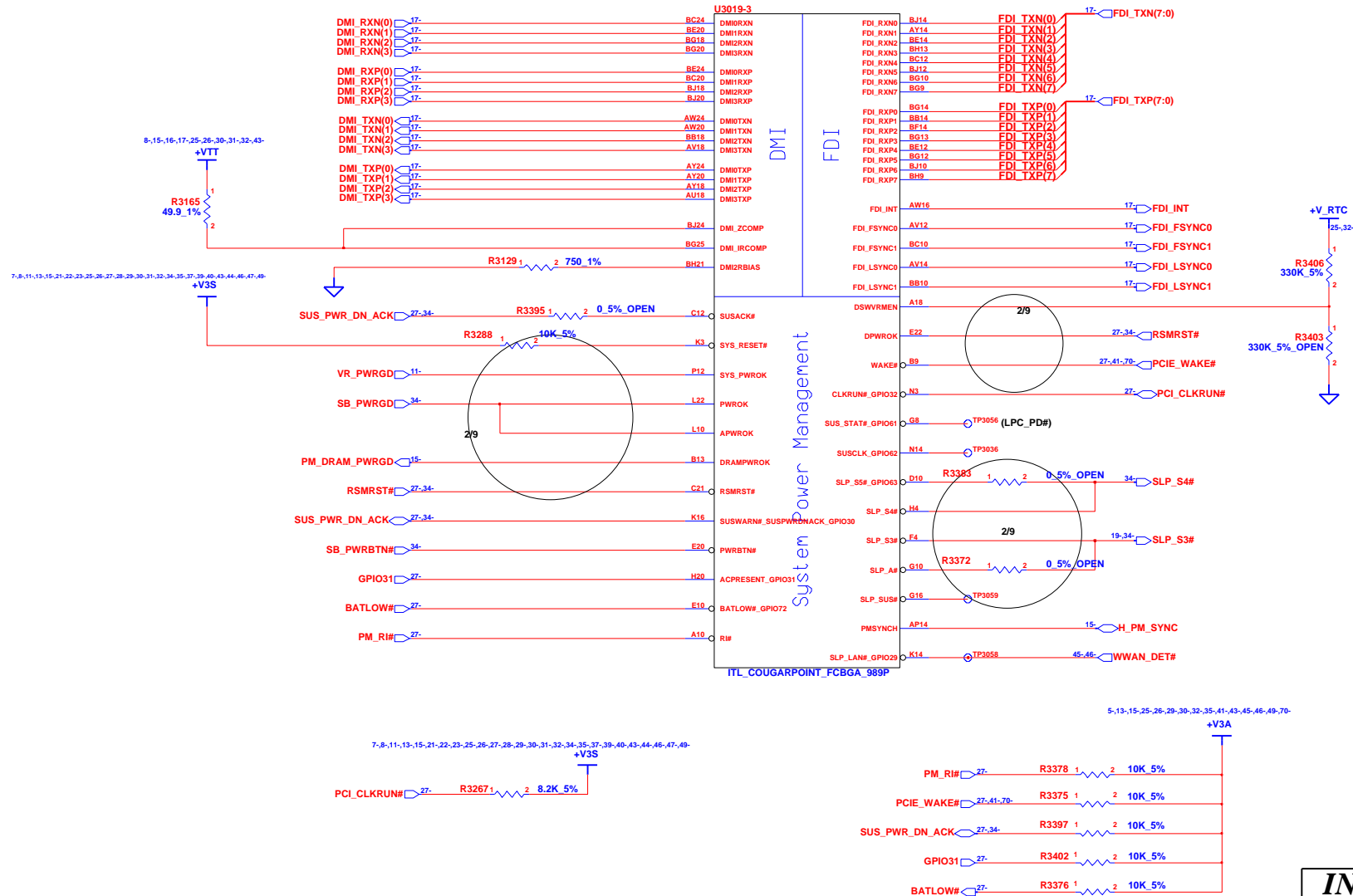
TITLE ROME020 PCH-1			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01

CHANGE by *Drawer Name* 6-Apr-2010

SHEET 25 OF 70



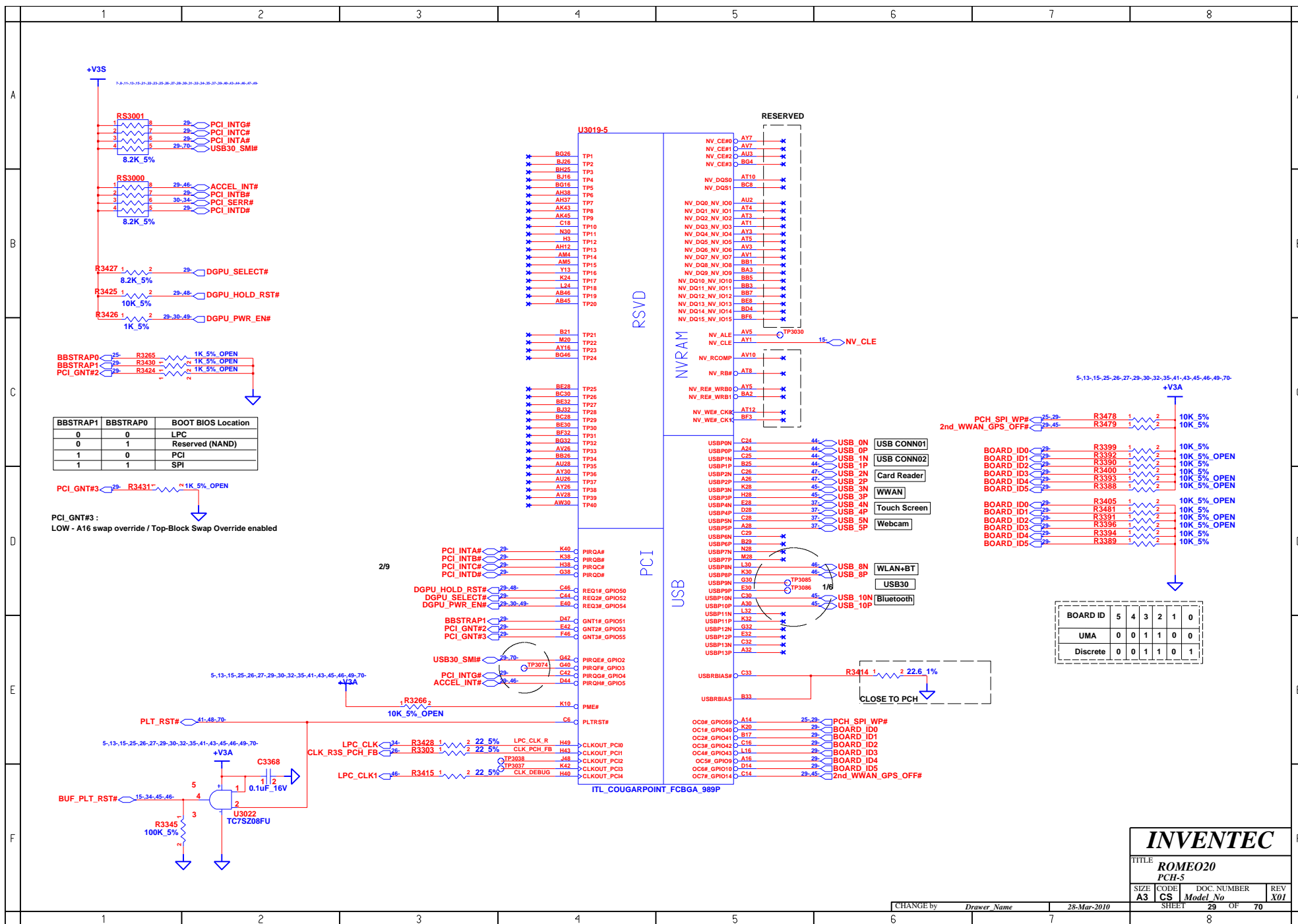
Note: 1.SLP_SUS and SUSACK# are NC if DSW is not supported
 2.DPWROK should connect to RSMRST# if DSW not supported
 3.PCH_DPWROK pull up to +V3S enables DSW support. No install R5261 to disable DSW

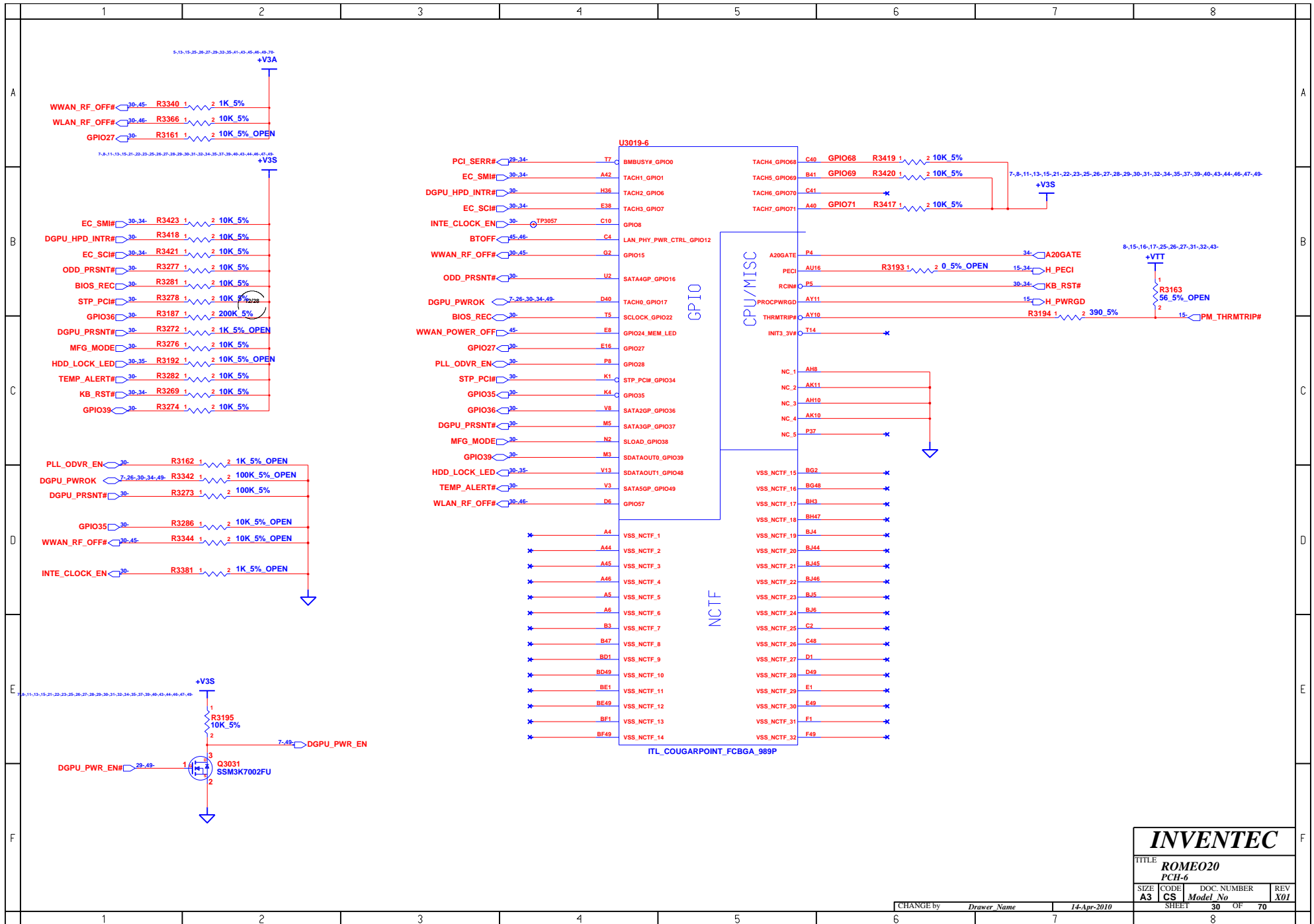


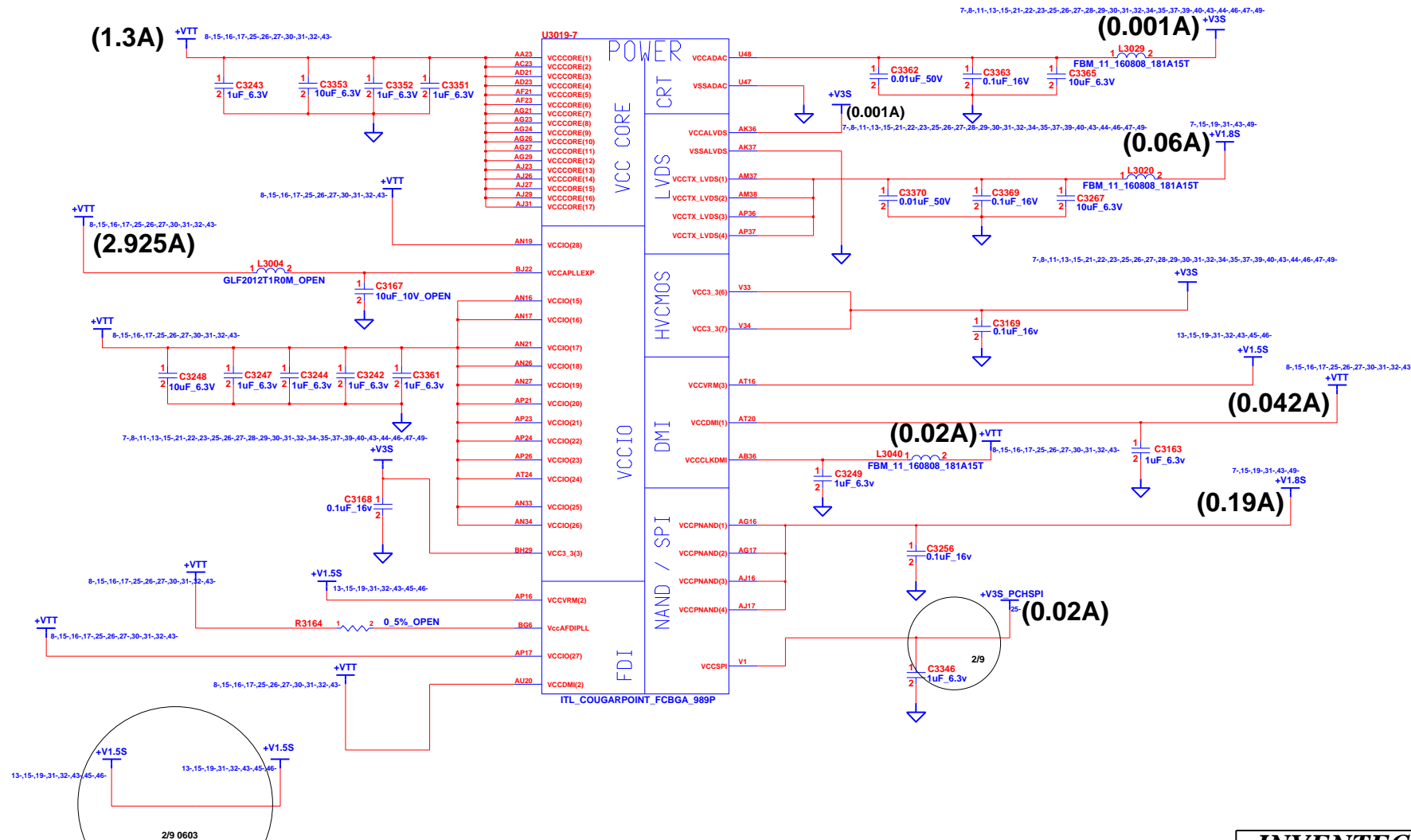
INVENTEC

TITLE ROME020 PCH-3			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET	27	OF	70

CHANGE by *Drawer Name* 24-Apr-2010







INVENTEC

TITLE ROME020 PCH-7			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET 31		OF 70	

CHANGE by *Drawer Name* 28-Mar-2010

1

2

3

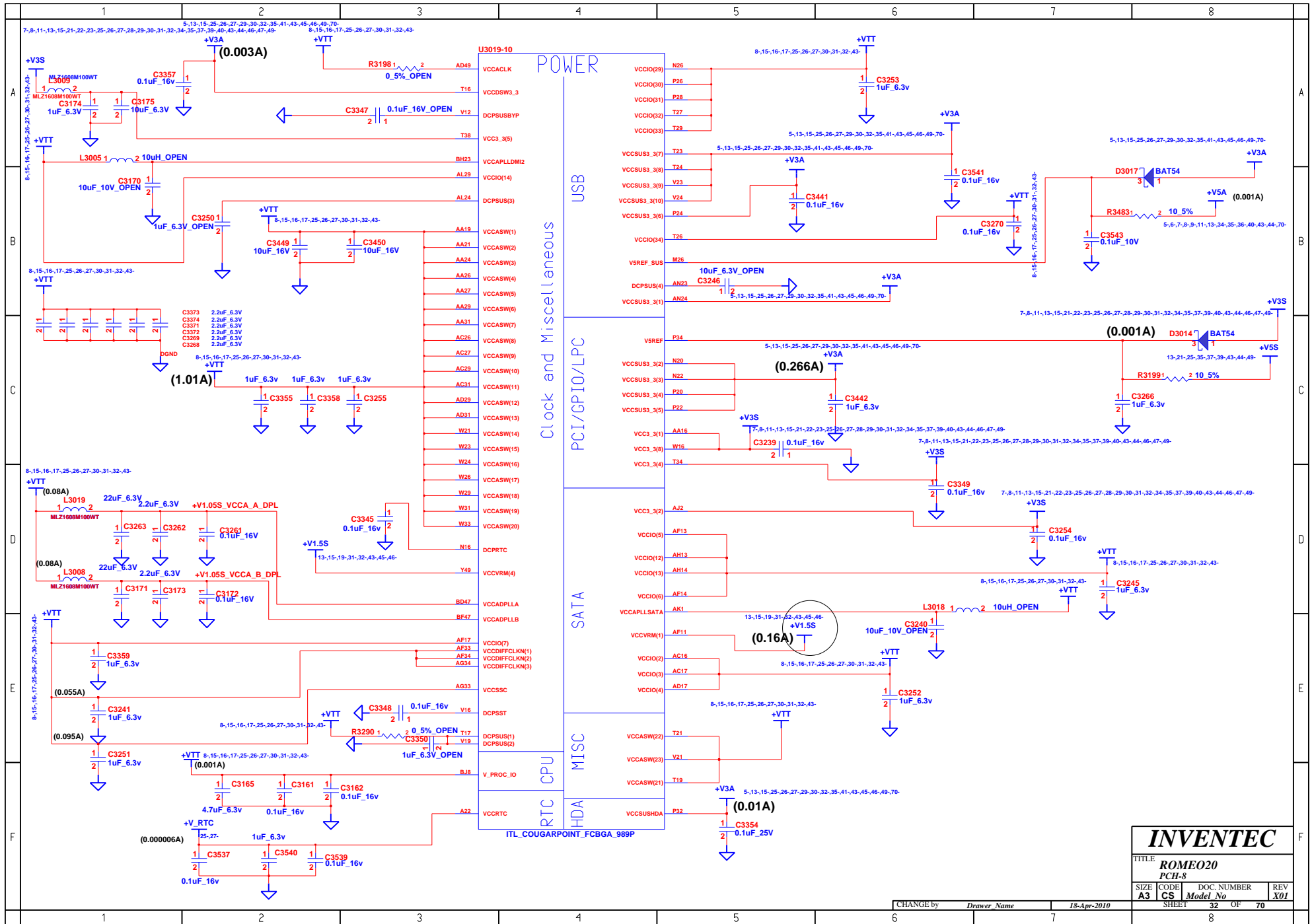
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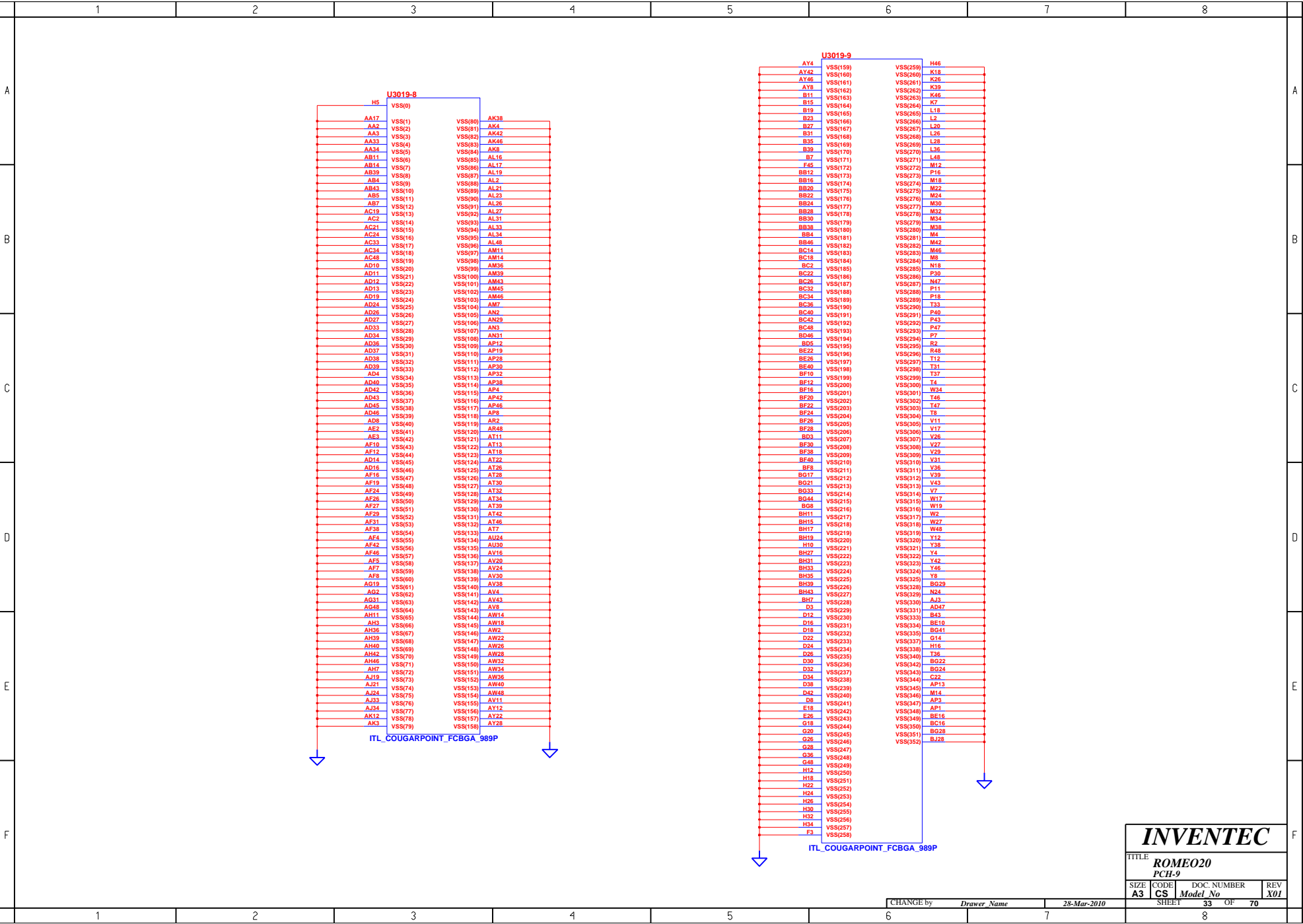
5

6

7

8





INVENTEC

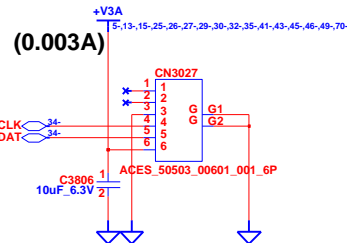
TITLE
ROME020
PCH-9

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

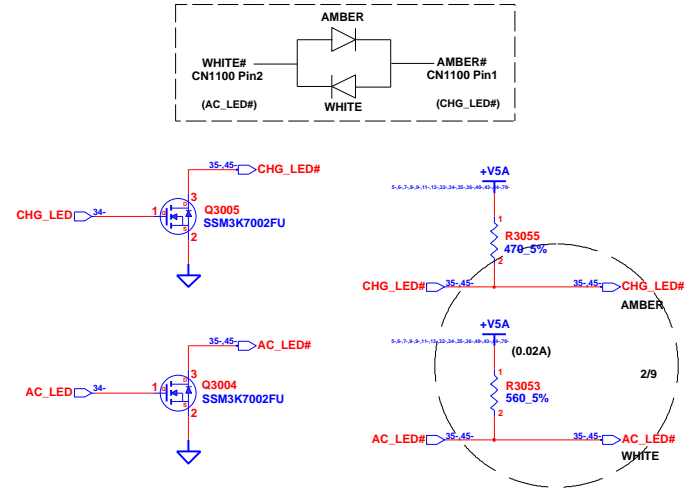
CHANGE by *Drawer Name* 28-Mar-2010

SHEET 33 OF 70

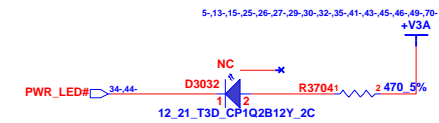
TouchPad Module CONN



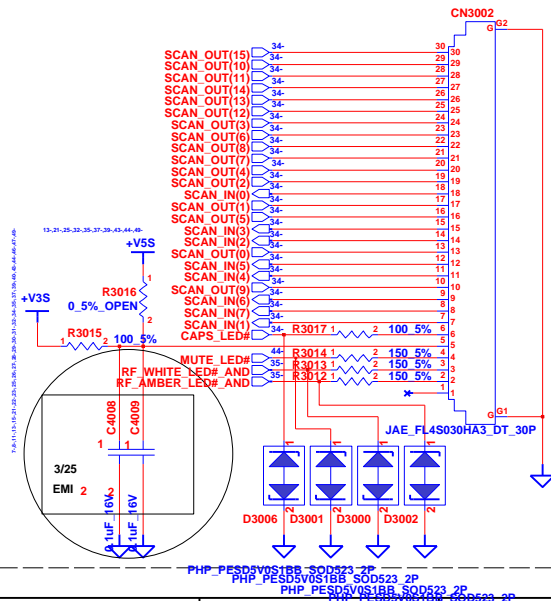
DC-JACK LED



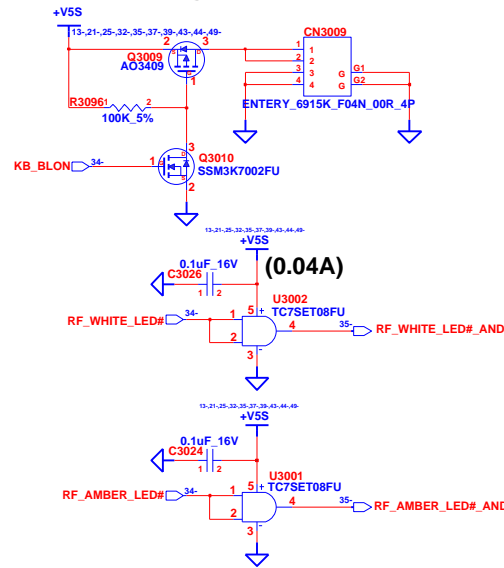
POWER LED



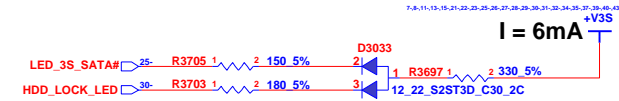
KeyBoard CONN (30 pin)



Backlight connector



SATA LED & HDD-HALTED LED



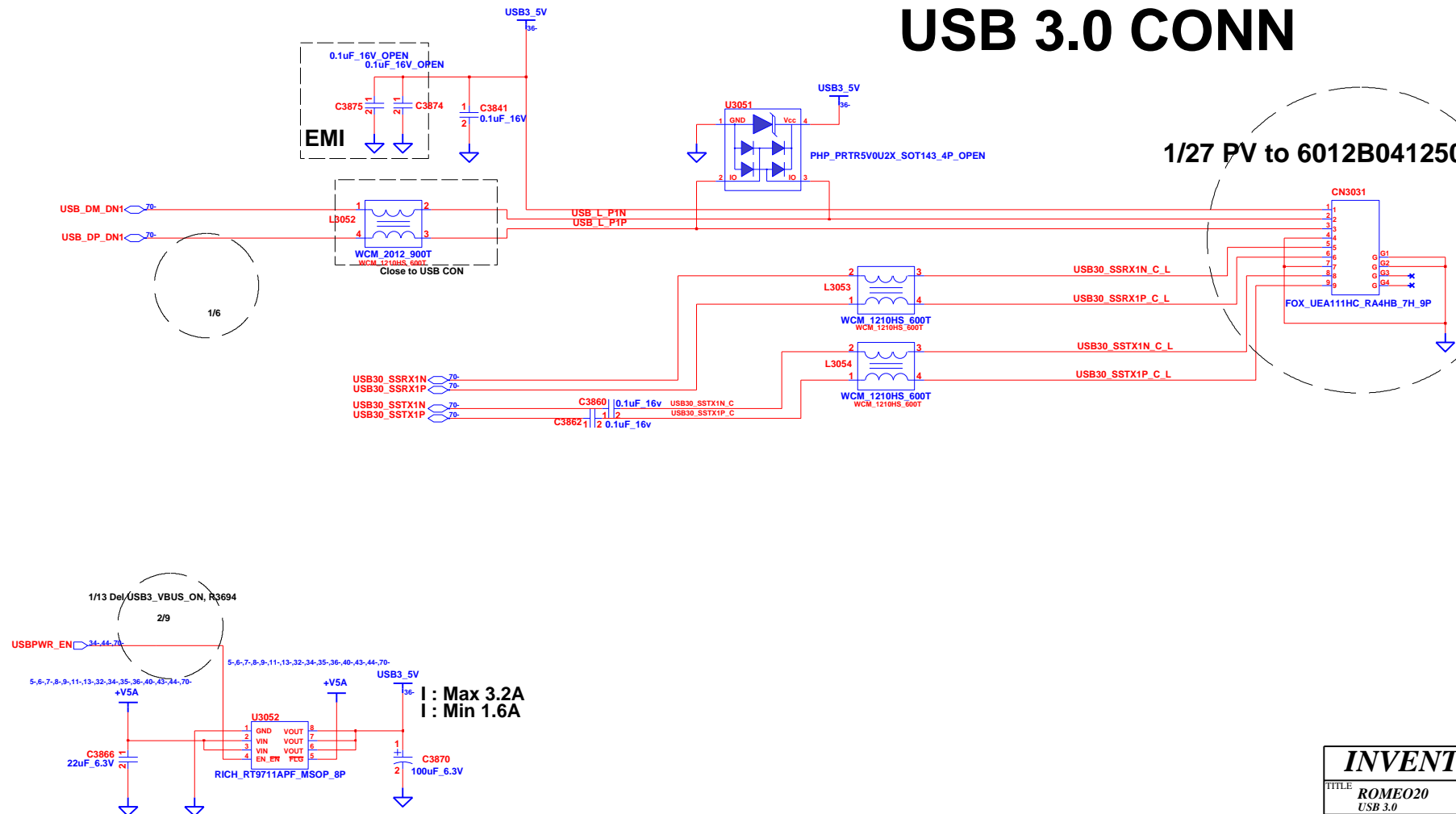
INVENTEC

TITLE ROME020 Keyboard & Touchpad			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET 35		OF 70	

CHANGE by *Drawer Name* 28-Mar-2010

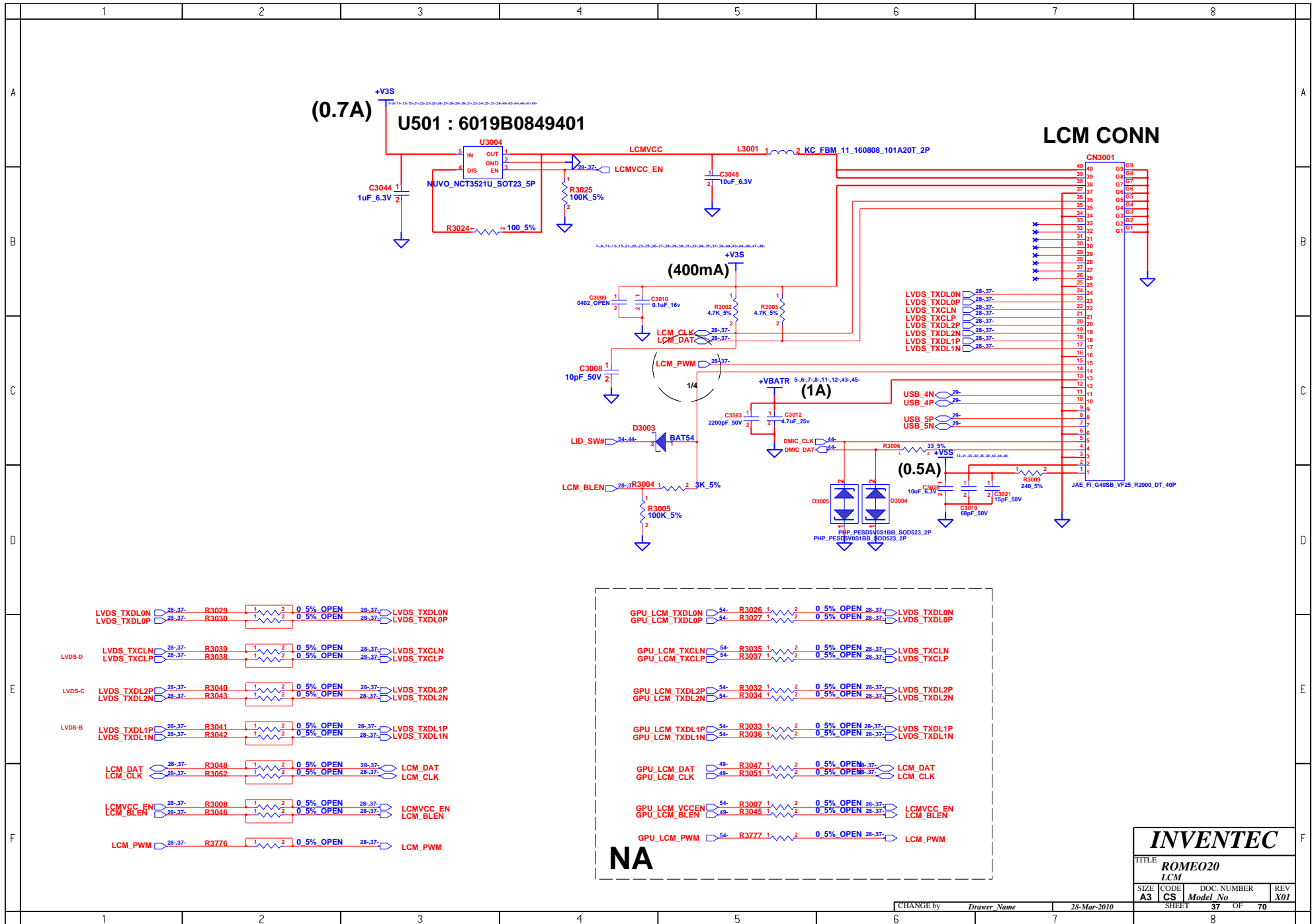
USB 3.0 CONN

1/27 PV to 6012B0412501

***INVENTEC***

TITLE			
ROMEO20 USB 3.0			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	<i>Model No</i>	<i>X01</i>
SHEET		36	OF 70

CHANGE by	<i>Drawer Name</i>	<i>19-Apr-2010</i>
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B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	

INVENTEC

TITLE
ROMEO20

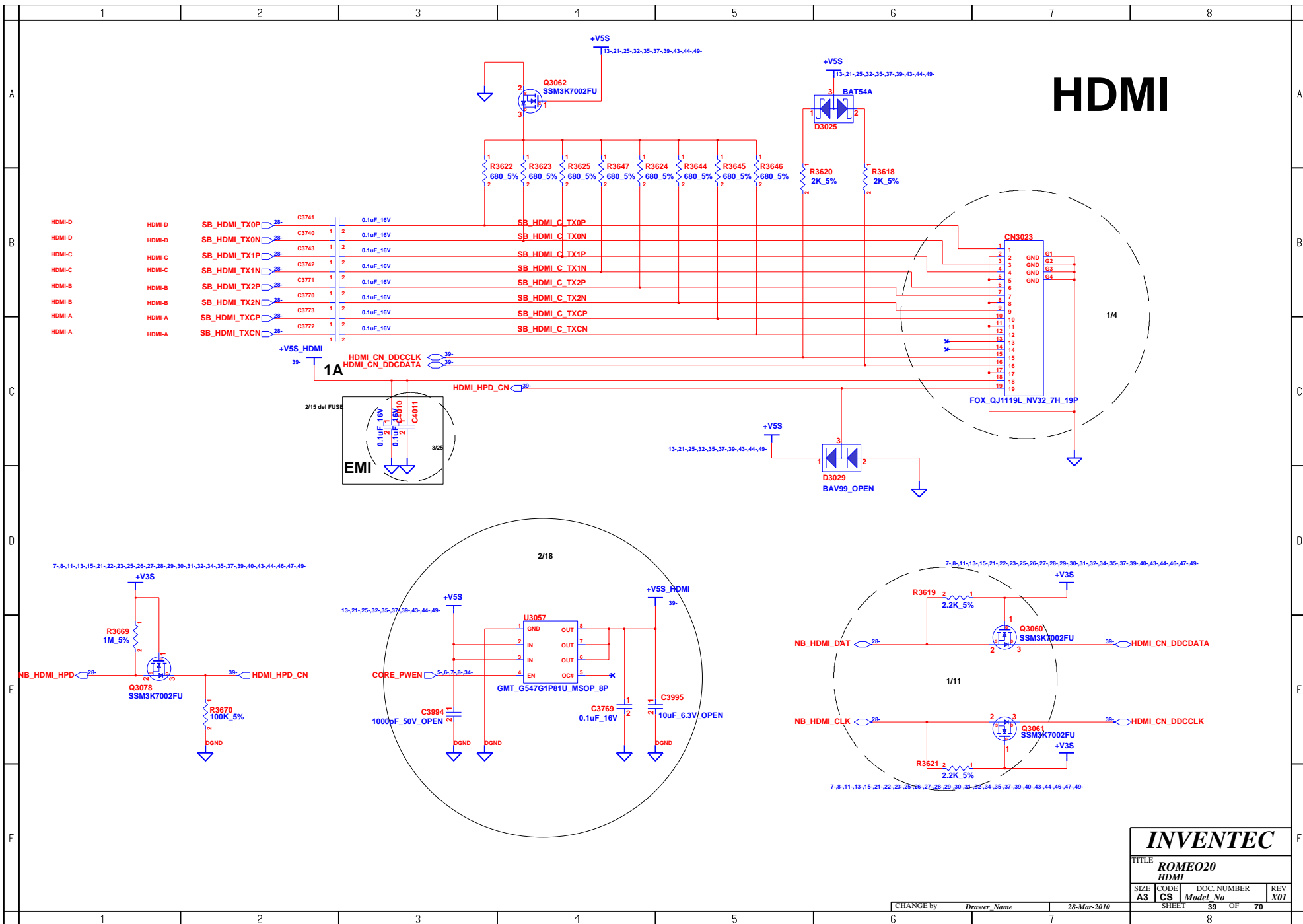
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
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CHANGE by
Drawer Name

6-May-2010

SHEET 38 OF 70

HDMI



INVENTEC

TITLE
ROMEO20
HDMI

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

CHANGE by *Drawer Name* 28-Mar-2010

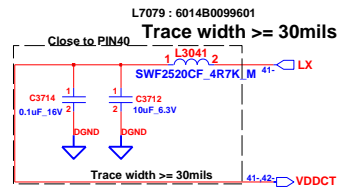
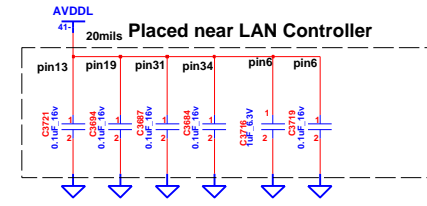
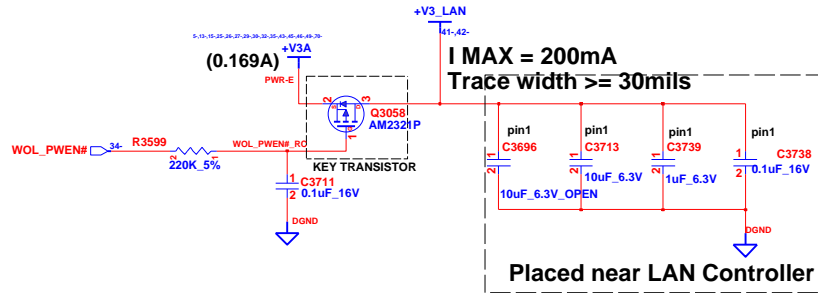
SHEET 39 OF 70

A

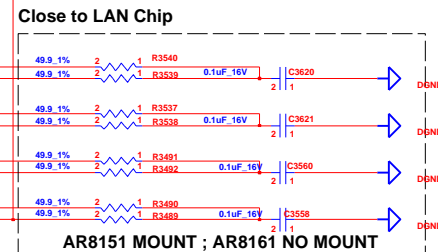
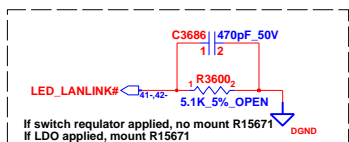
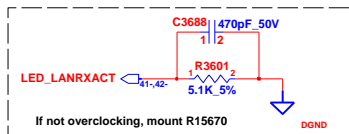
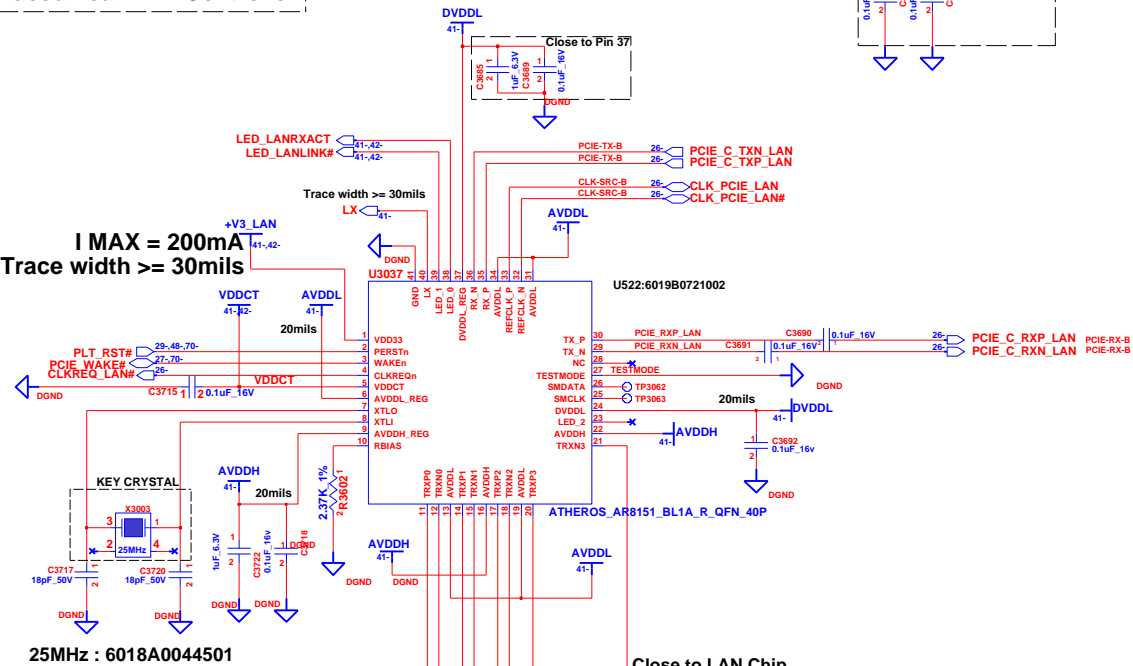
**F**

1

LAN



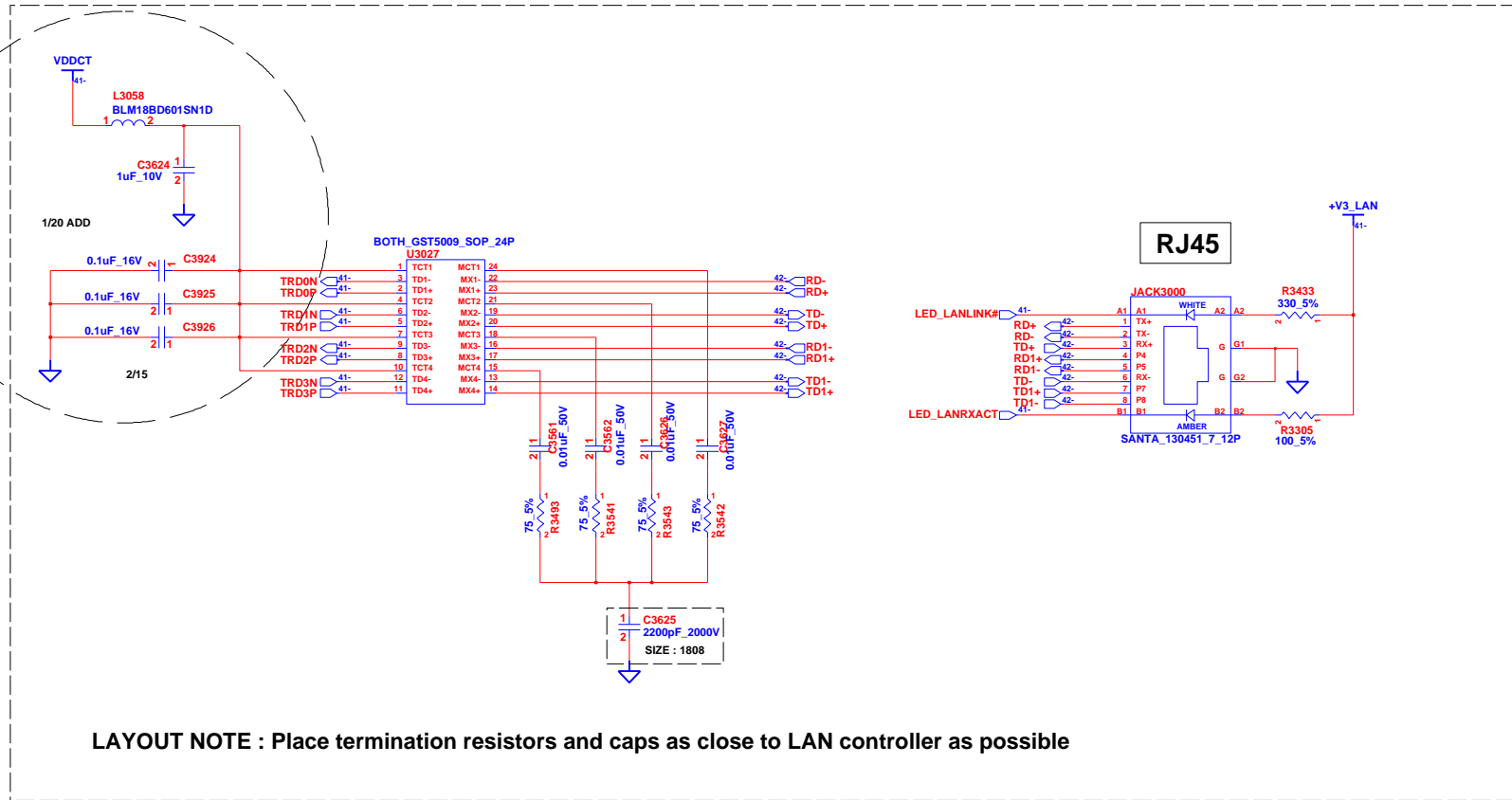
I MAX = 200mA
Trace width >= 30mils



INVENTEC

TITLE ROME020 LAN			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET 41		OF 70	

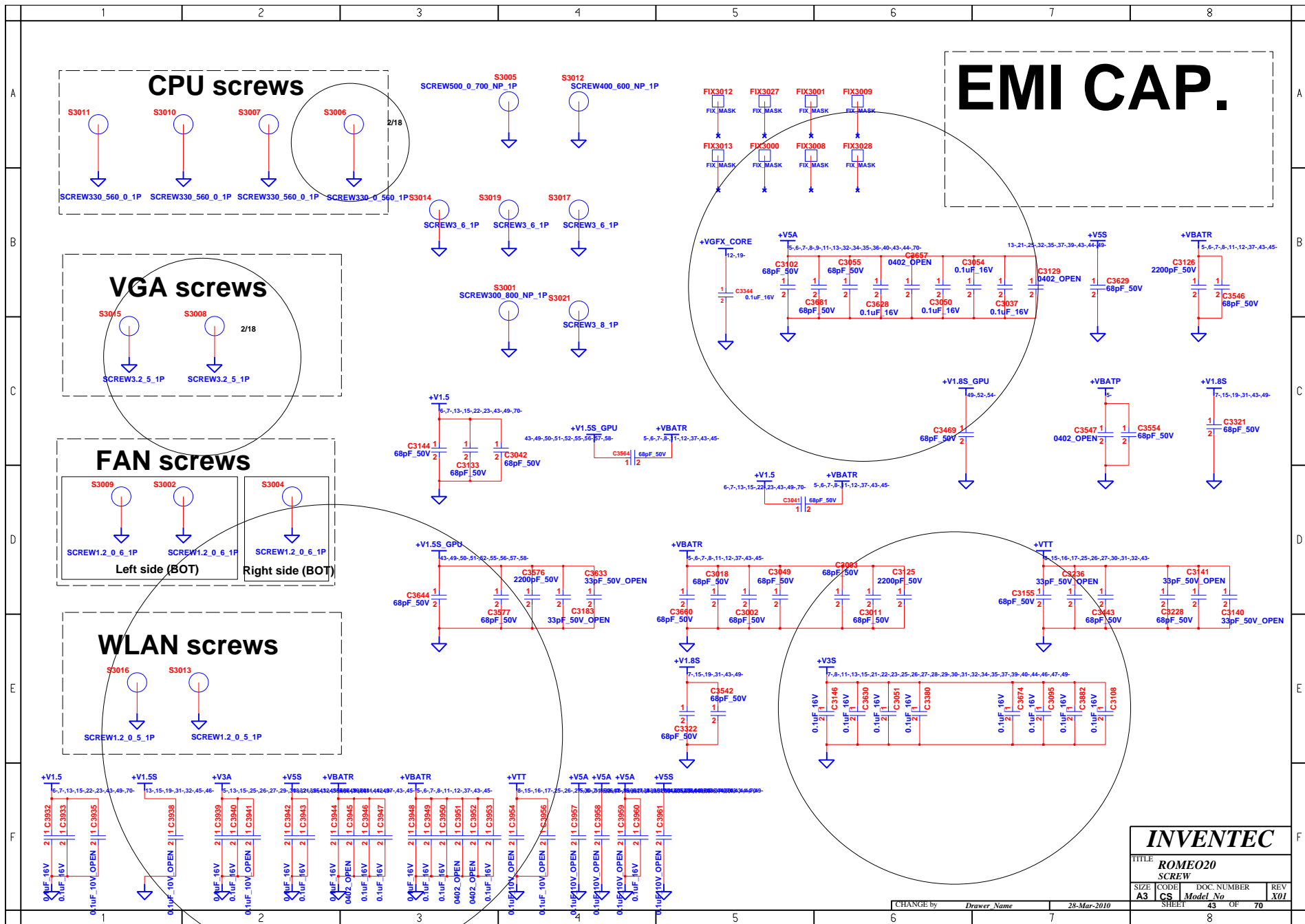
CHANGE by: *Drawer Name* 28-Mar-2010



INVENTEC

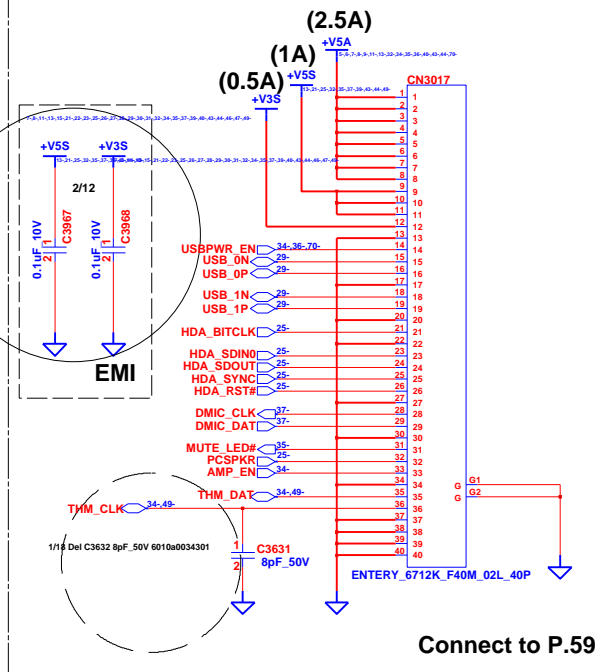
TITLE			
ROME020			
RJ-45			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		42	OF 70

CHANGE by *Drawer Name* 28-Mar-2010

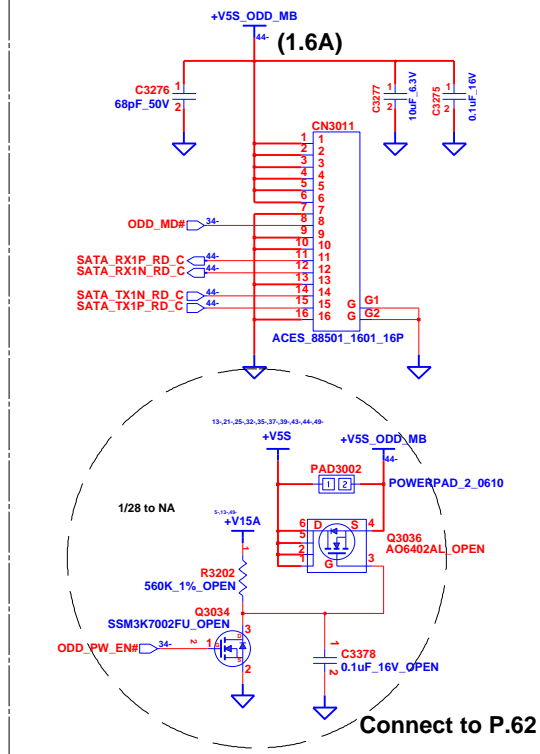


INVENTEC			
TITLE ROME020			
SCREW			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
CHANGE by		Drawer Name	28-Mar-2010
SHEET		43	OF 70

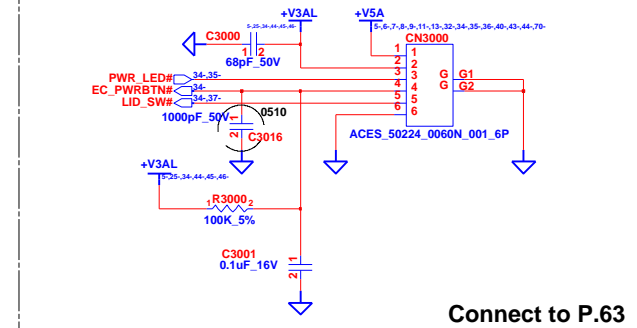
USB Board CN on MB



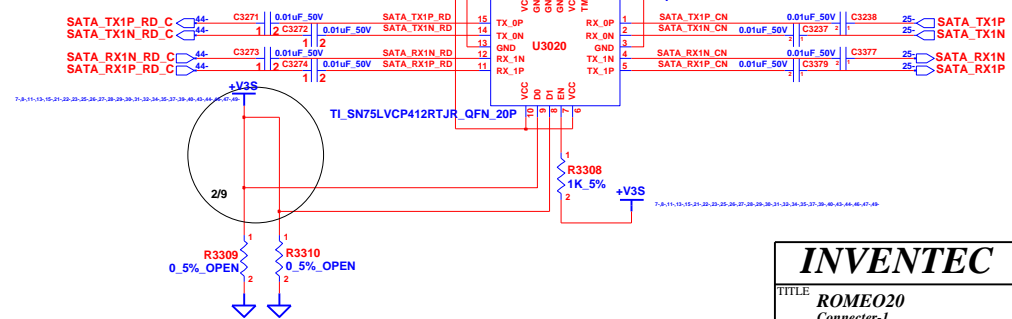
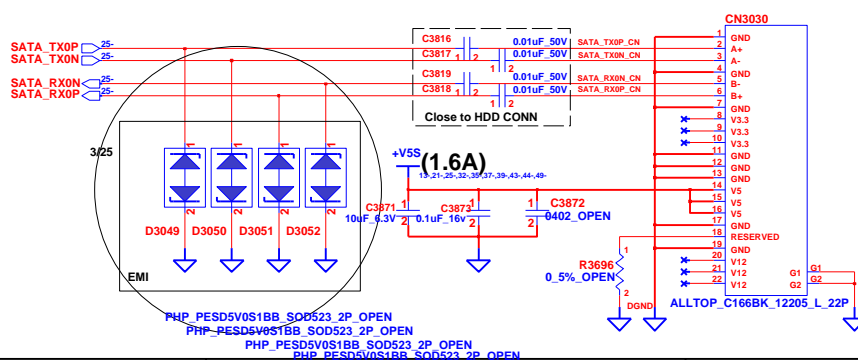
SATA ODD FFC CONN on MB



Power Switch BOARD CN on MB



SATA HDD CONN

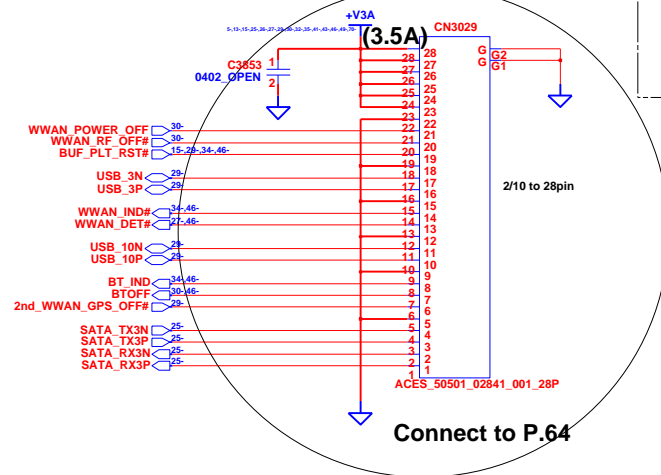


INVENTEC

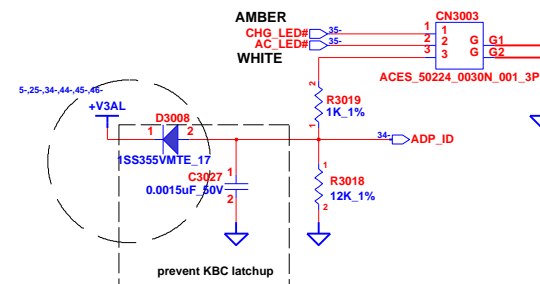
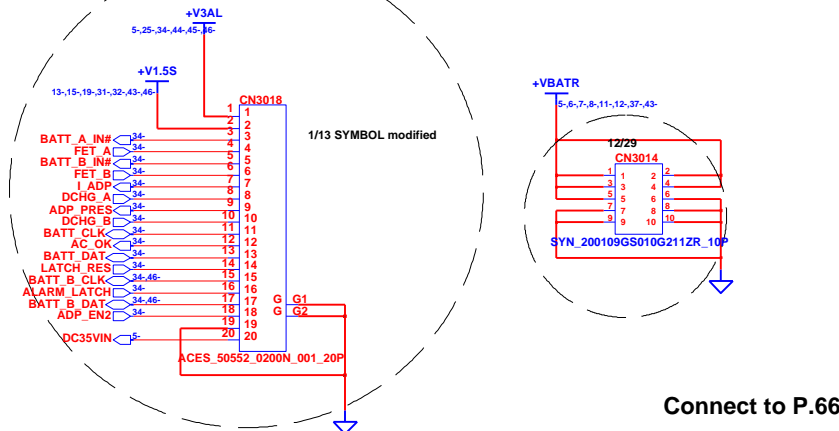
TITLE ROME020 Connector-1			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET 44		OF 70	

CHANGE by Drawer Name 17-Dec-2010

WWAN & mSATA & BT CONN on MB



BATTERY Board CN on MB

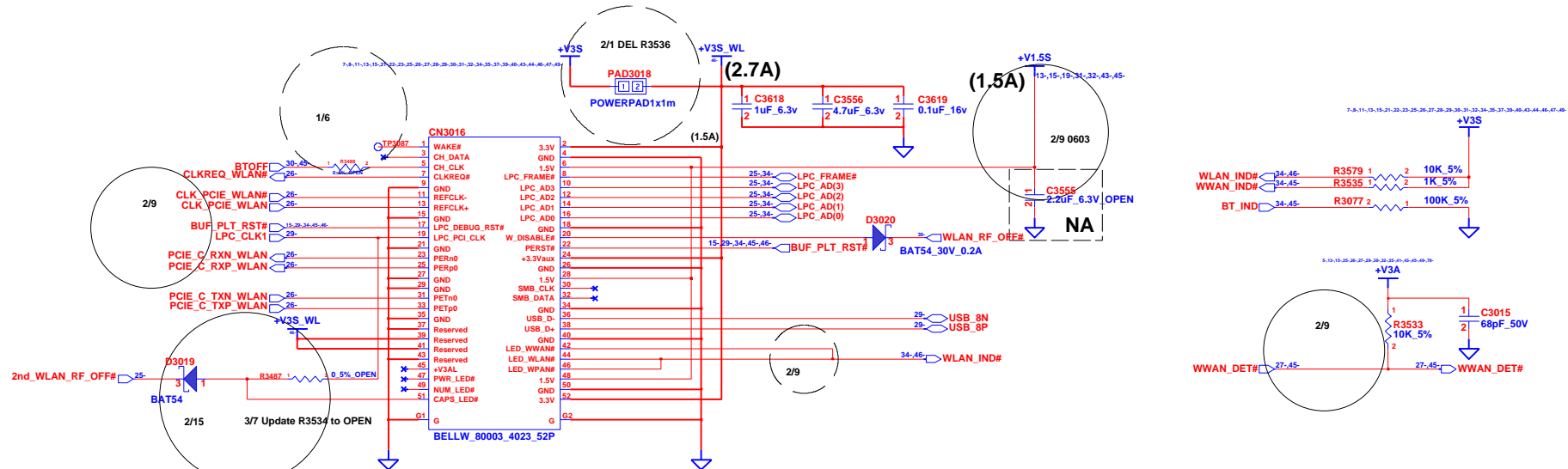


INVENTEC

TITLE ROMEO20 Connector-2			
SIZE A3	CODE CS	DOC. NUMBER <i>Model No</i>	REV X01
SHEET 45		OF 70	

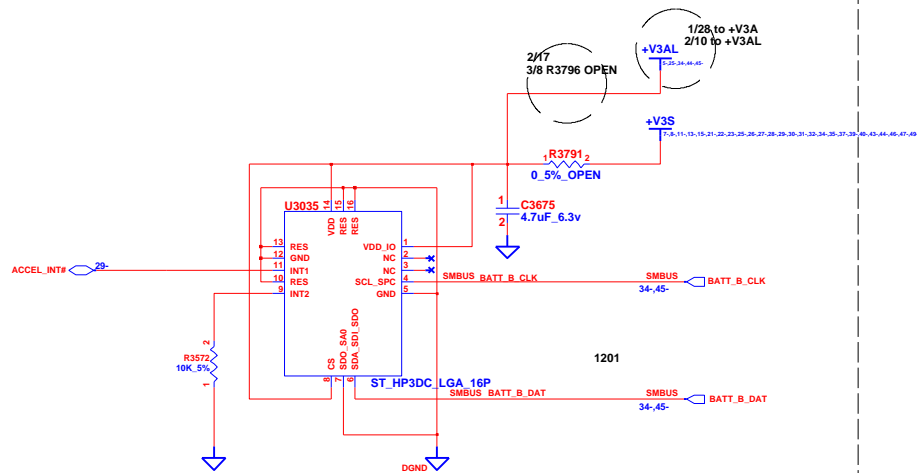
CHANGE by *Drawer Name* 28-Mar-2010

WLAN CONN (MINICARD)



	Pin 5	Pin 19	Pin 51
Atheros			V (Reserved)
Broadcom	V (Reserved)		
Ralink	V (Reserved)		
Realtek	V (Reserved)		
Intel (Rainbow peak)		V (ES2 sample / WW27)	V (QS sample/WW42)

HARDDRIVE PROTECTION



SMBus Address is "001100xb"
If SA0 pad is connected to voltage, LSb is "1"
If SA0 pad is connected to GND, LSb is "0"

INVENTEC

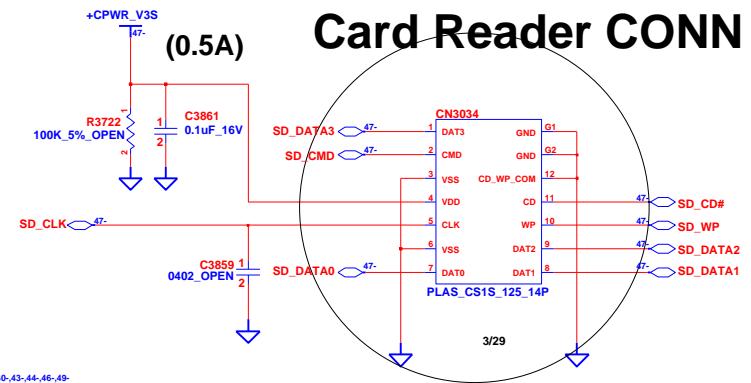
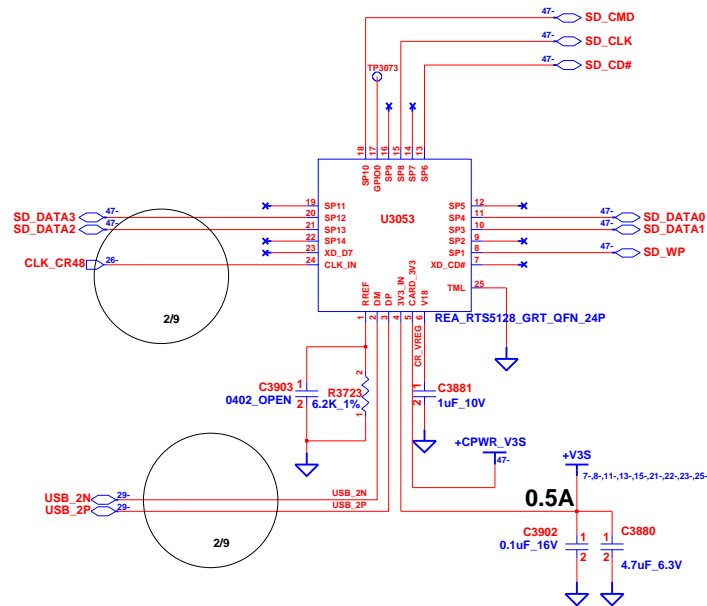
TITLE
ROME020
WLAN & HDD Lock

SIZE CODE DOC. NUMBER REV
A3 CS Model No 46 OF 70 X01

CHANGE by *Drawer Name* 28-Mar-2010

SHEET 46 OF 70

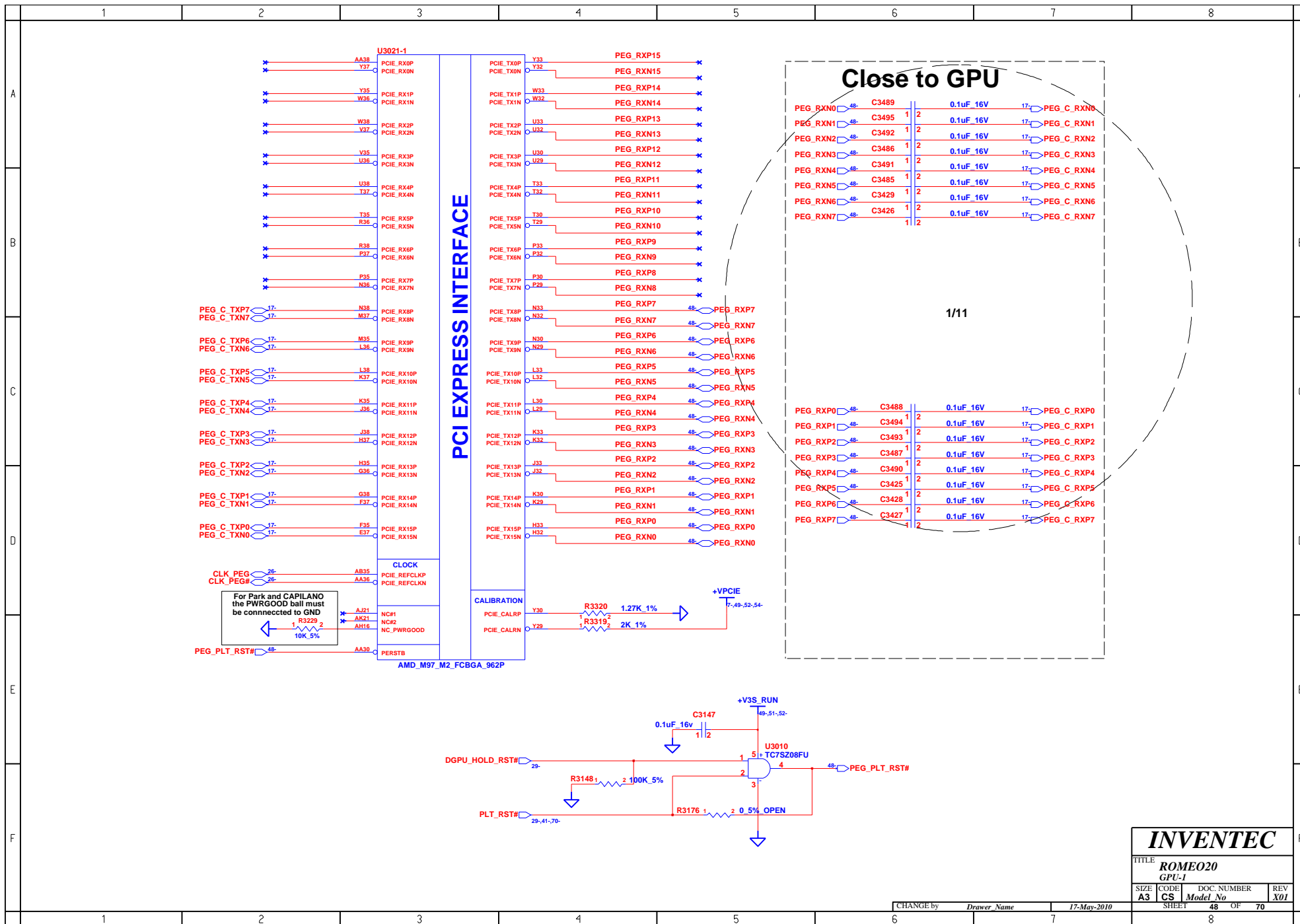
Card Reader



INVENTEC

TITLE ROME020 CARD READER			
SIZE A3	CODE CS	DOC. NUMBER <i>Model No</i>	REV X01
SHEET 47		OF 70	

CHANGE by *Drawer Name* 28-Mar-2010



Channel A

DDR3/GDDR3Memory Stuff Option

	GDDR5	GDDR3	DDR3
MVDDQ	1.5V	1.8V/1.5V	1.5V
Ra	40.2R	40.2R	40.2R
Rb	100R	100R	100R

FOR M97,Broadway,Madiso and Park ONLY

MEMORY INTERFACE A

INVENTEC

TITLE
ROMEO20
GPU-3

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

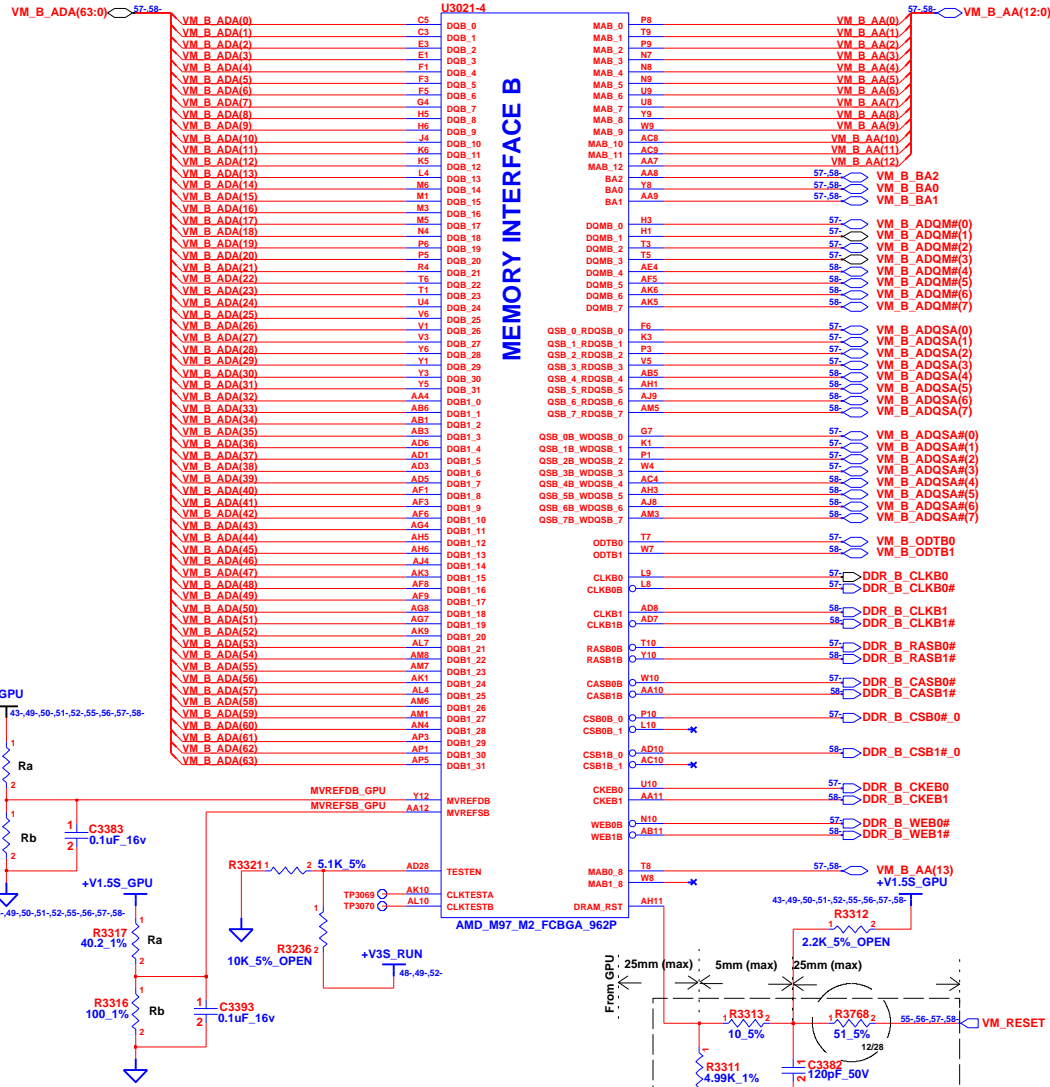
CHANGE by *Drawer Name* 28-Mar-2010

SHEET 50 OF 70

Channel B

DDR3/GDDR3Memory Stuff Option

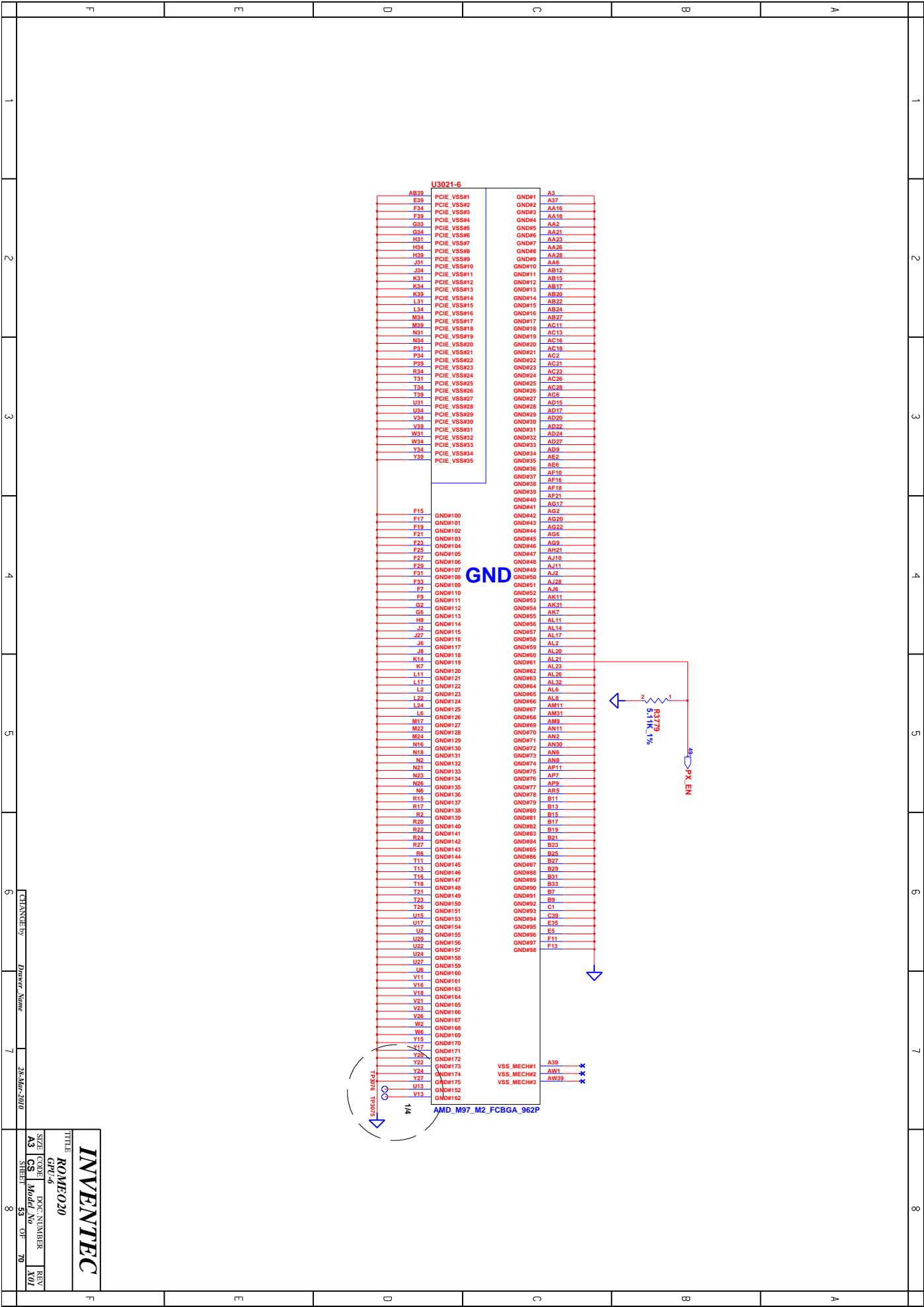
	GDDR5	GDDR3	DDR3
MVDDQ	1.5V	1.8V/1.5V	1.5V
Ra	40.2R	40.2R	40.2R
Rb	100R	100R	100R



Place all these components vry close to GPU (Within 25mm)
and keep all component close to each other (within 5mm) except Rser2
** This basic topology should be used for DRAM_RST for DDR3/GDDR3/GDDR5
These Capacitors and Resistor values are an example only.
The Series R and || Cap values will depend on the DRAM load and will have to be
calculated for different Memory , DRAM Load and board to pass Reset Signal Spec.

INVENTEC

TITLE ROMEO20 GPU-4			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
CHANGE by Drawer Name		28-Mar-2010	
SHEET 51		OF 70	



INVENTEC

ROMEO20

GPU_6

SIZE CODE

CS Model No

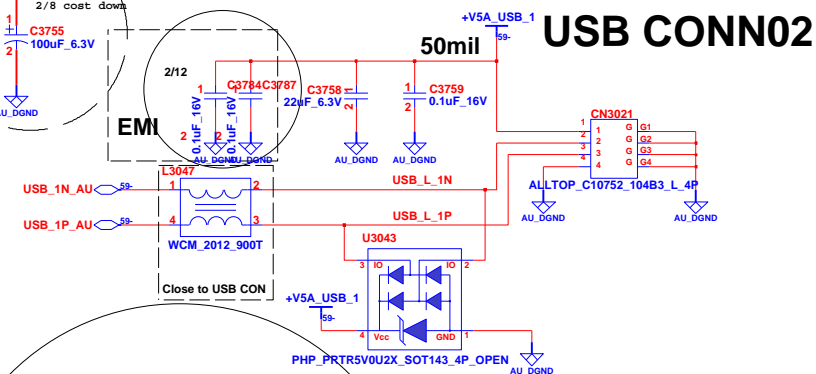
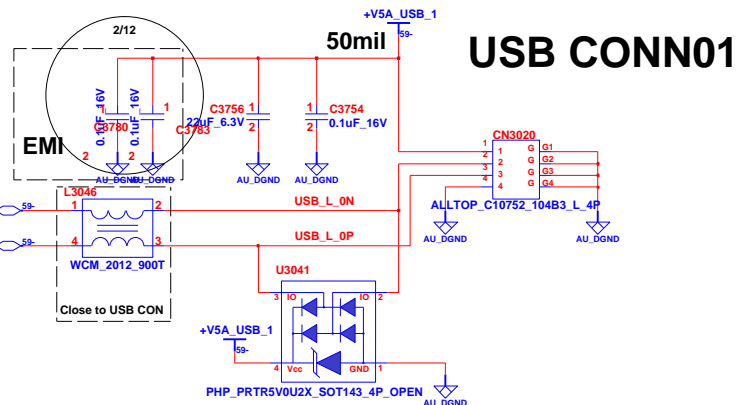
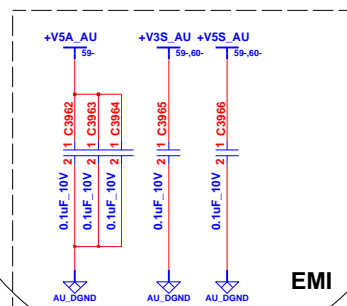
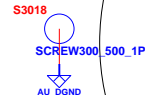
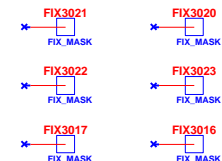
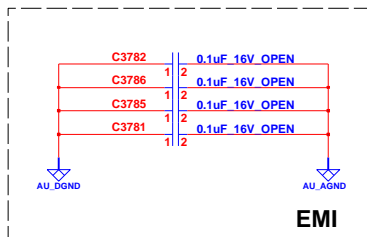
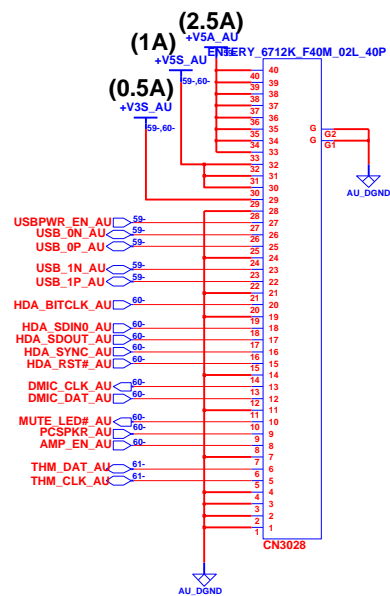
SHR1 83 OF 70

REV

X01

USB Board-1

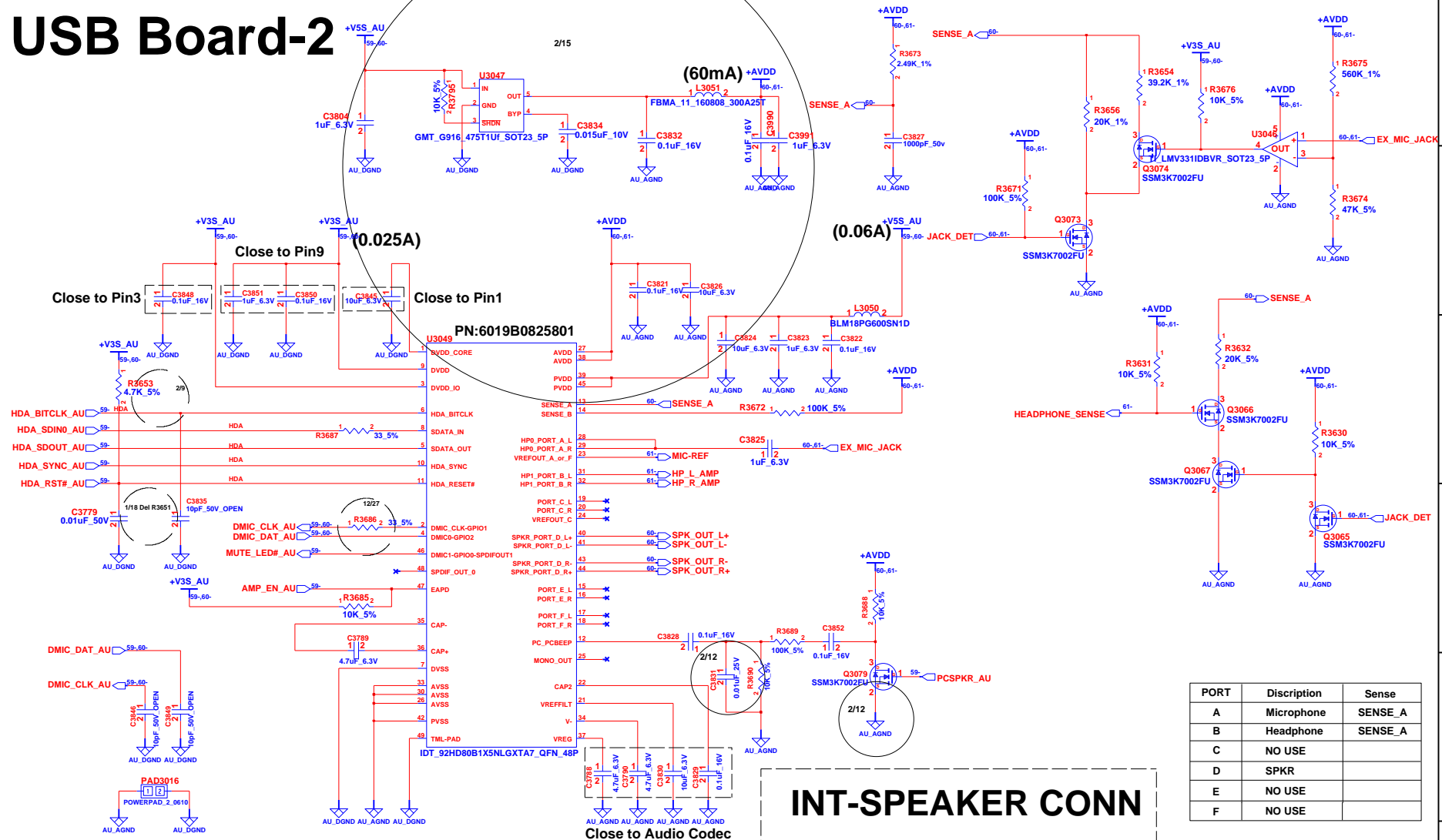
USB Board CN on DB



INVENTEC			
TITLE ROME020 AUDIO & USB Board			
SIZE A3	CODE CS	DOC NUMBER Model No	REV X01
SHEET 59	OF 70		

CHANGE by Drawer Name 13-Apr-2010

USB Board-2



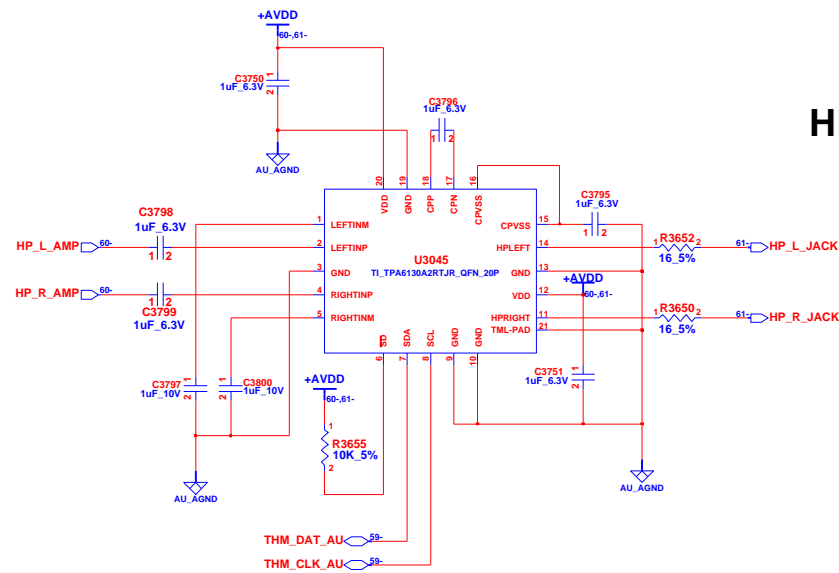
PORT	Discription	Sense
A	Microphone	SENSE_A
B	Headphone	SENSE_A
C	NO USE	
D	SPKR	
E	NO USE	
F	NO USE	

INVENTEC

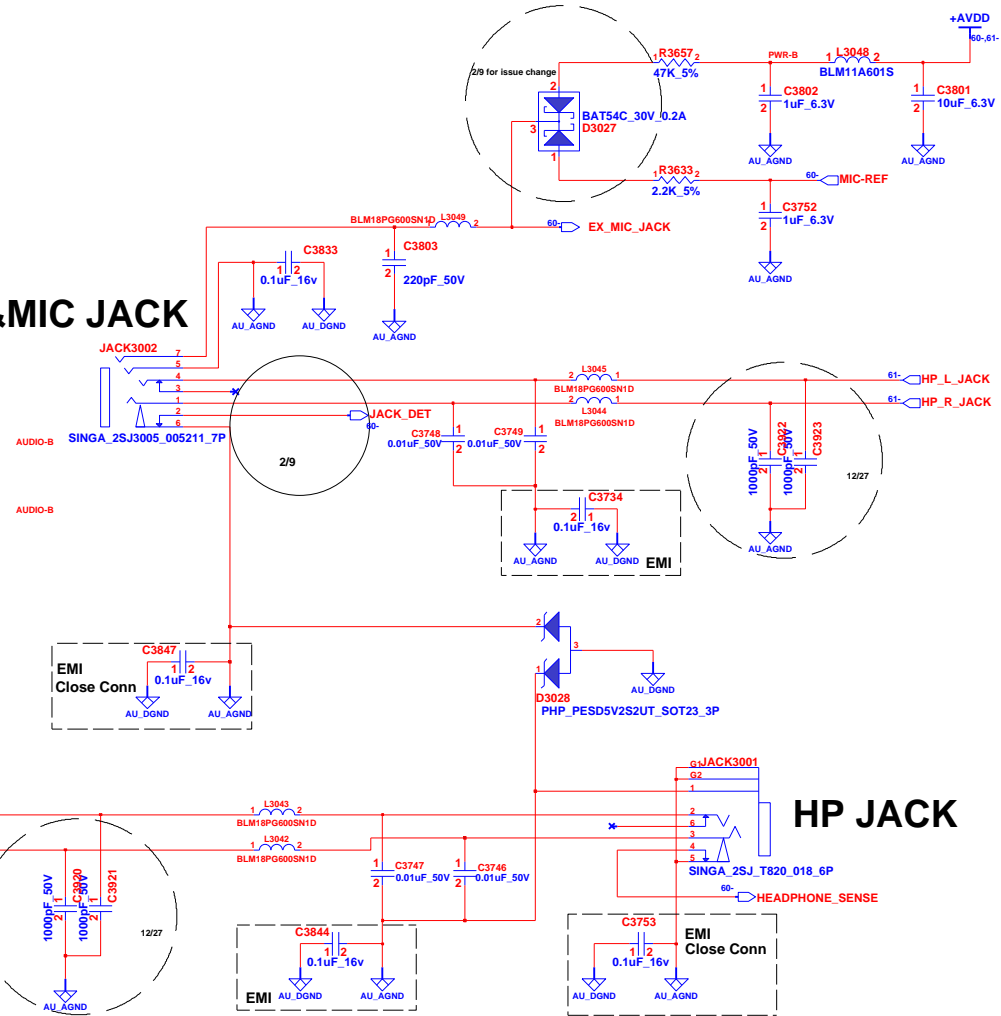
TITLE: ROMEO20 AUDIO & USB Board			
SIZE: A3	CODE: CS	DOC. NUMBER: Model No	REV: X01
SHEET: 60		OF: 70	

CHANGE by **Drawer Name** 18-May-2010

USB Board-3



HP&MIC JACK



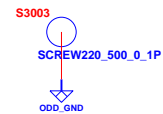
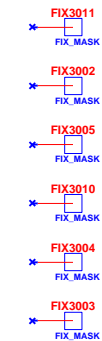
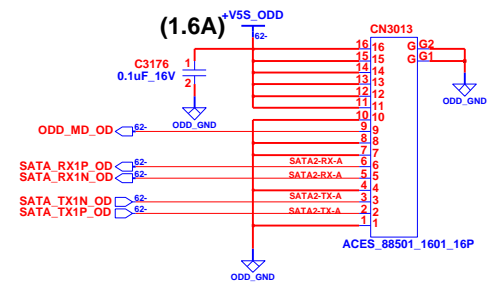
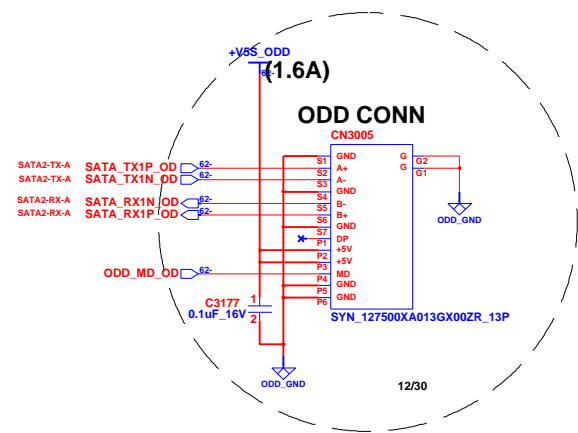
INVENTEC

TITLE ROMEO20 AUDIO & USB Board			
SIZE A3	CODE CS	DOC. NUMBER Model No	REV X01
SHEET 61		OF 70	

CHANGE by *Drawer Name* 28-Mar-2010

ODD Board

SATA ODD



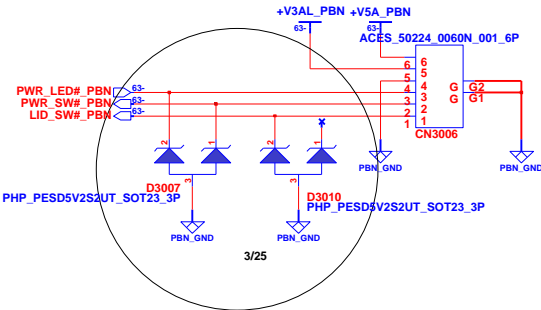
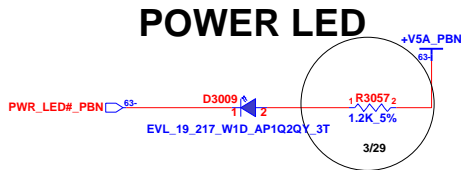
INVENTEC

TITLE ROME020 ODD EXT BOARD			
SIZE A3	CODE CS	DOC. NUMBER <i>Model No</i>	REV X01
SHEET		62	OF 70

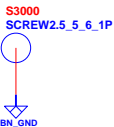
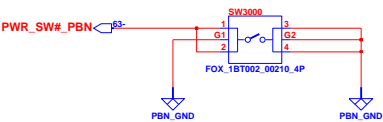
CHANGE by *Drawer Name* 28-Mar-2010

SWITCH BOARD

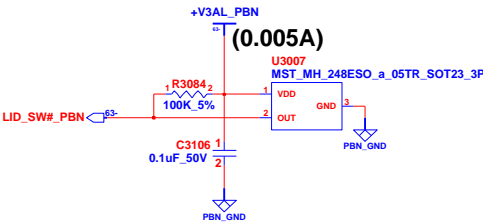
Power Button



POWER BUTTON



LID SWITCH

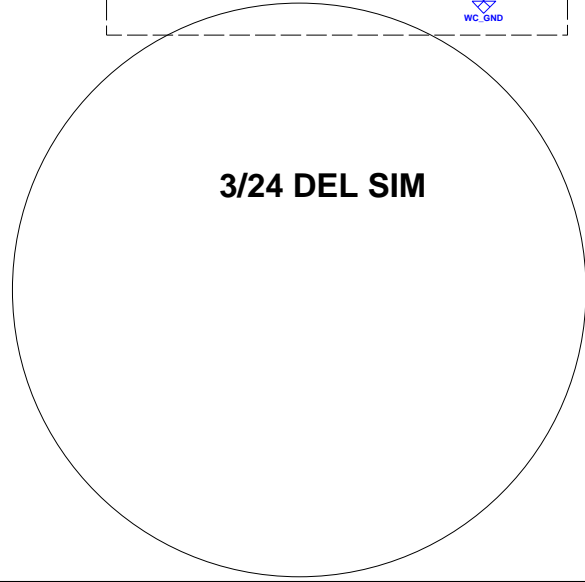
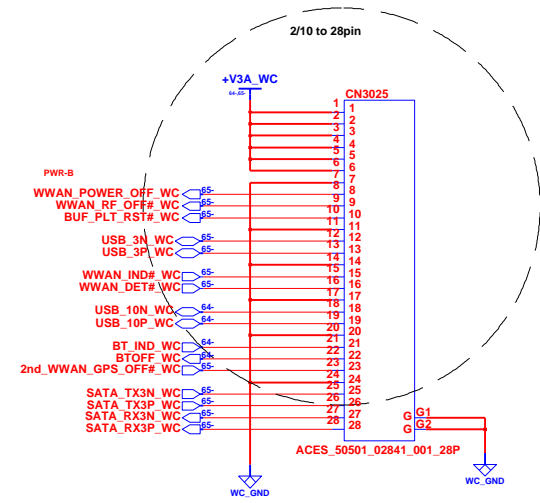
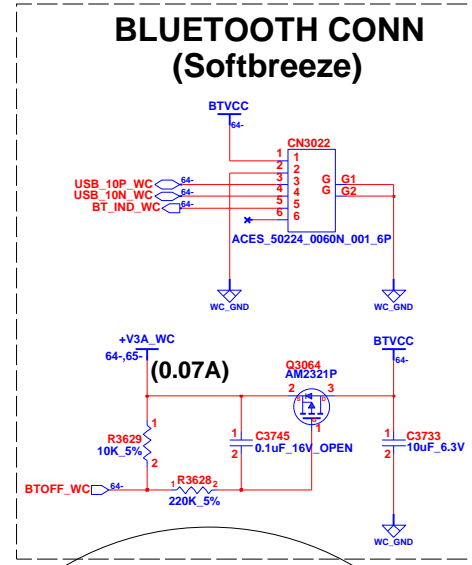


INVENTEC

TITLE			
ROMEO20			
Power SW Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		63	OF 70

CHANGE by Drawer Name 28-Mar-2010

SIM Board-1



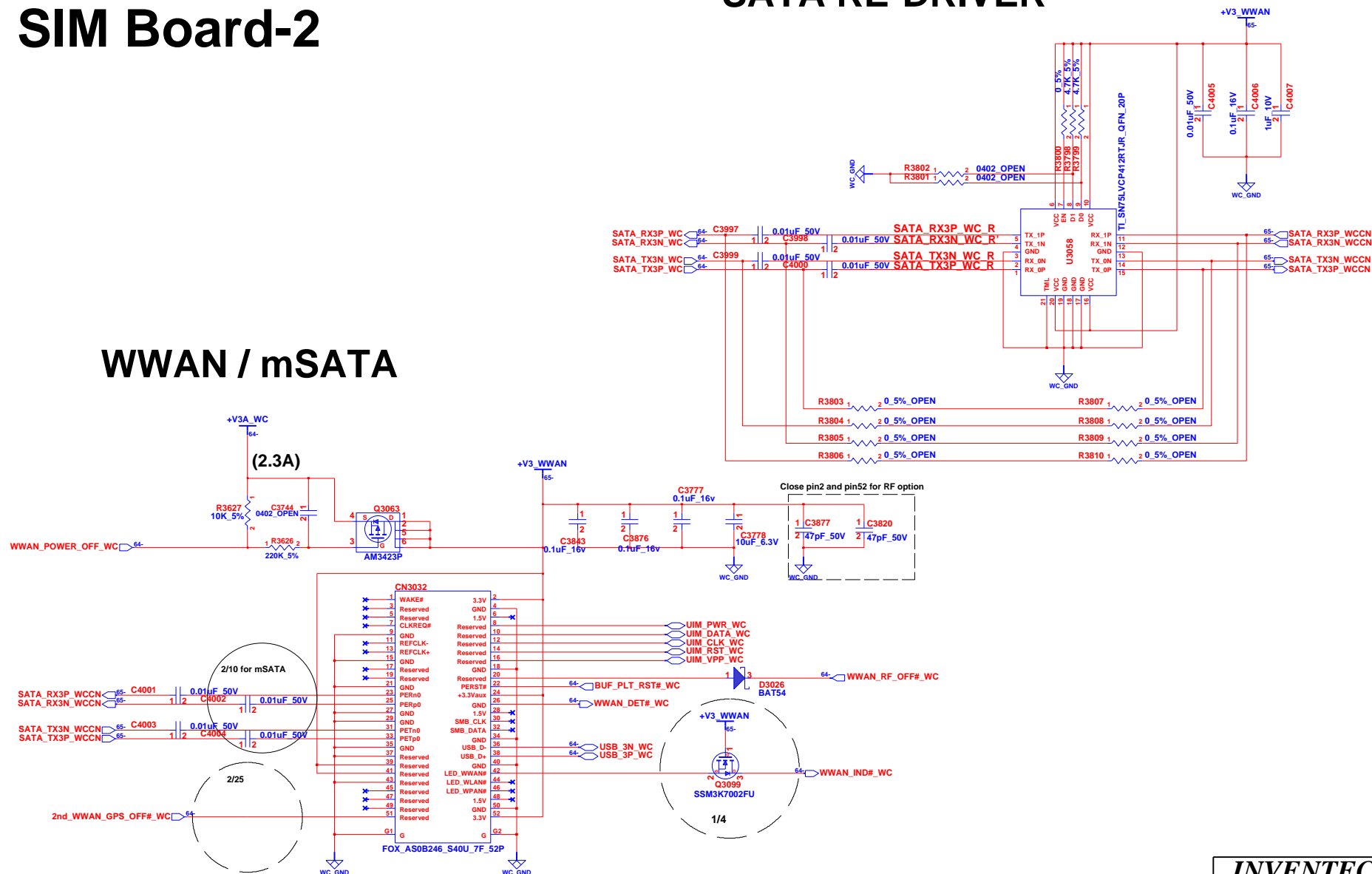
3/24 DEL SIM

INVENTEC			
TITLE			
ROMEO20			
WIRELESS Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
CHANGE by		28-Mar-2010	
Drawer Name			
SHEET		64	OF 70
		8	

SIM Board-2

SATA RE-DRIVER

WWAN / mSATA



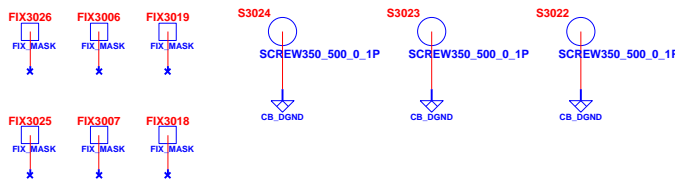
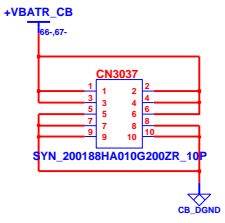
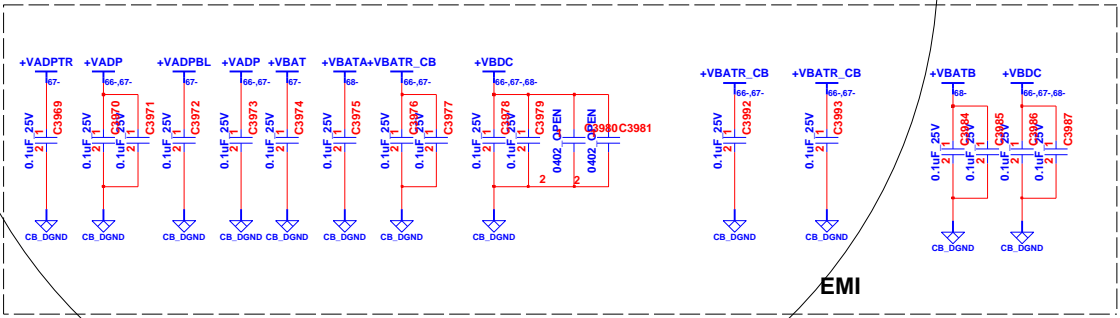
INVENTEC

TITLE			
ROME020			
WIRELESS Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01
SHEET		65	OF 70

CHANGE by: Drawer Name 28-Mar-2010

BATTERY Board-1

2/12



INVENTEC

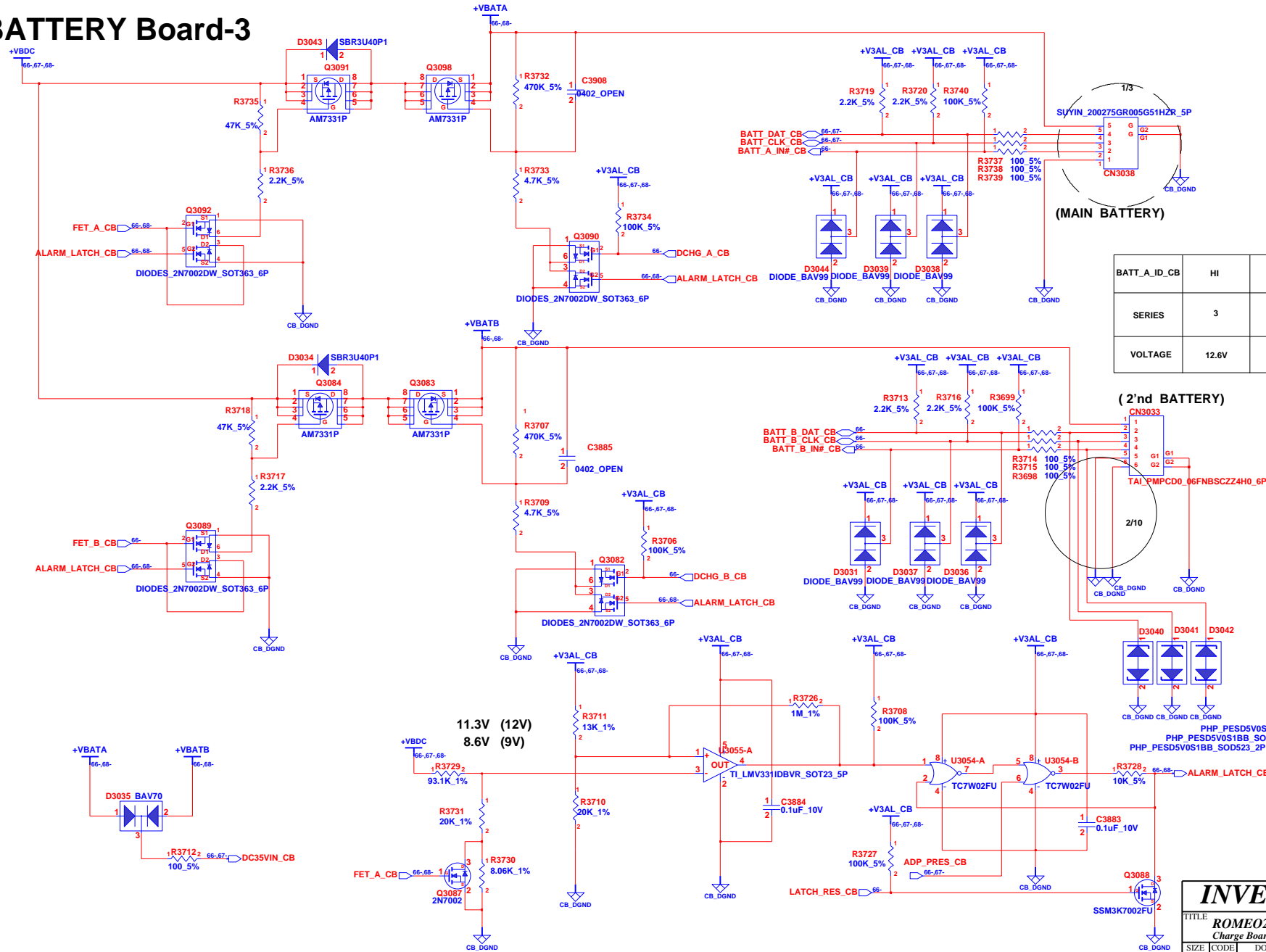
TITLE
ROMEO20
Charge Board - 1

SIZE	CODE	DOC. NUMBER	REV
A3	CS	Model No	X01

CHANGE by *Drawer Name* 28-Mar-2010

SHEET 66 OF 70

BATTERY Board-3



BATT_A_ID_CB	HI	LOW
SERIES	3	4
VOLTAGE	12.6V	16.8V

(2'nd BATTERY)	
CN3033	TAI_PMPCD0_06FNBSCZZ4H0_6P
2/10	

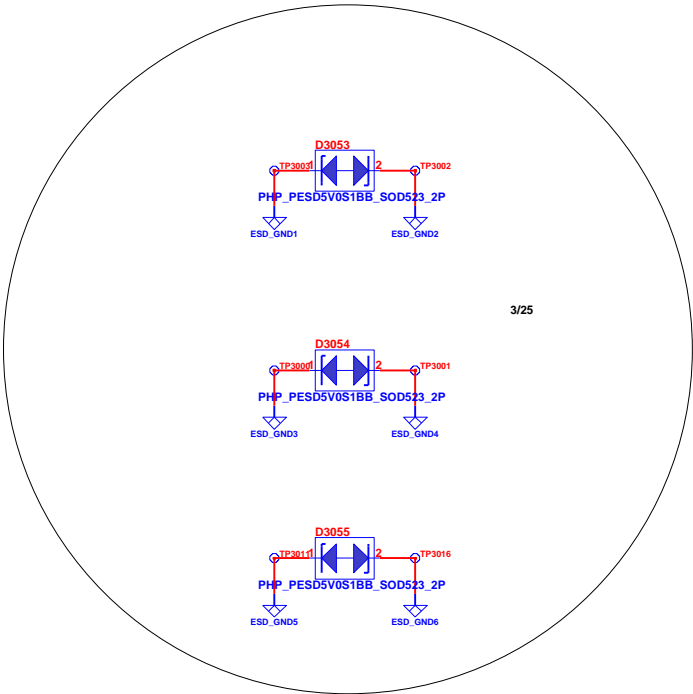
PHP_PESD5V0S18B_SOD523_2P
PHP_PESD5V0S18B_SOD523_2P
PHP_PESD5V0S18B_SOD523_2P

INVENTEC

TITLE: ROME020			
Charge Board - 3			
SIZE: A3	CODE: CS	DOC. NUMBER: Model No	REV: X01
SHEET: 68		OF: 70	

CHANGE by: *Drawer Name* 28-Mar-2010

EMC Board



INVENTEC

TITLE
ROMEO20
EMC

SIZE A3	CODE CS	DOC. NUMBER <i>Model No</i>	REV X01
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CHANGE by *Drawer Name* 28-Mar-2010

SHEET 69 OF 70

