

	1	2	3	4	5	6	7	8																																																																													
A	THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF INVENTEC CORPORATION AND SHALL NOT BE REPRODUCED, COPIED, OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION, INVENTEC CORPORATION 2010 ALL RIGHT RESERVED								A																																																																												
	HSF Property : Halogen-Free																																																																																				
B	<div>ROMEO DISCRETE PV BUILD</div> <div>2010/03/22</div>								B																																																																												
C									C																																																																												
D									D																																																																												
E									E																																																																												
F									<table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td>DATE</td><td>CHANGE NO.</td><td>REV</td></tr></table>																													DATE	CHANGE NO.	REV	<table><tr><td>DRAWER</td><td>EE</td><td>DATE</td><td>POWER</td><td>DATE</td></tr><tr><td>DESIGN</td><td></td><td></td><td></td><td></td></tr><tr><td>CHECK</td><td></td><td></td><td></td><td></td></tr><tr><td>RESPONSIBLE</td><td></td><td></td><td></td><td></td></tr></table>		DRAWER	EE	DATE	POWER	DATE	DESIGN					CHECK					RESPONSIBLE					<table><tr><td colspan="4">INVENTEC</td></tr><tr><td colspan="4">TITLE ROMEO</td></tr><tr><td>SIZE</td><td>CODE</td><td>DOC. NUMBER</td><td>REV</td></tr><tr><td>A3</td><td>CS</td><td>1310A23166-0-MTR</td><td>A01</td></tr><tr><td>FILE NAME</td><td colspan="3">XXXX-XXXXXX-XX</td></tr><tr><td>P/N</td><td colspan="3">XXXXXXXXXXXX</td></tr><tr><td colspan="2">SHEET</td><td>1</td><td>OF 66</td></tr></table>		INVENTEC				TITLE ROMEO				SIZE	CODE	DOC. NUMBER	REV	A3	CS	1310A23166-0-MTR	A01	FILE NAME	XXXX-XXXXXX-XX			P/N
DATE	CHANGE NO.	REV																																																																																			
DRAWER	EE	DATE	POWER	DATE																																																																																	
DESIGN																																																																																					
CHECK																																																																																					
RESPONSIBLE																																																																																					
INVENTEC																																																																																					
TITLE ROMEO																																																																																					
SIZE	CODE	DOC. NUMBER	REV																																																																																		
A3	CS	1310A23166-0-MTR	A01																																																																																		
FILE NAME	XXXX-XXXXXX-XX																																																																																				
P/N	XXXXXXXXXXXX																																																																																				
SHEET		1	OF 66																																																																																		
	1	2	3	4	5	6	7	8																																																																													

Index

PAGE

01. PROJECT NAME
02. INDEX
03. Block Diagram
04. POWER Procedure
05. +V3A & +V5A
06. +V1.5 & +V0.75
07. +V1.8S & +V1.05S
08. +VTT & +VDDC_GPU
09. +VGFX_CORE
10. +VCC_CORE
11. +V5S & +V3S & +V1.5S
12. CLK GEN
13. CPU-1
14. CPU-2
15. CPU-3
16. CPU-4
17. CPU-5
18. CPU-6
19. Thermal & Fan
20. DDR3-1
21. DDR3-2
22. PCH-1
23. PCH-2
24. PCH-3
25. PCH-4
26. PCH-5
27. PCH-6
28. PCH-7

PAGE

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

PAGE

56. AUDIO BOARD-1 & USB CONN
57. AUDIO BOARD-2
58. AUDIO BOARD-3
59. ODD EXT BOARD
60. POWER BUTTON BOARD
61. WC BOARD-1 & BT
62. WC BOARD-2
63. CHG BOARD-1
64. CHG BOARD-2
65. CHG BOARD-3

INVENTEC

TITLE Romeo <i>Index</i>			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 2		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

Inventec Confidential

Arrandale/
Clarksfield
(Socket-rPGA989)

DDR3 SO-DIMM 1

800/1066/1333 MHz , 8GB maximum memory P20

DDR3 SO-DIMM 2

800/1066/1333 MHz , 8GB maximum memory P21

PCH

HM-55

USB 0
ESATA+USB
P33

USB 1
Card Reader
P44

USB 2
WLAN+BT
P42/P60

USB 3
WWAN
P60

USB 4
Touchscreen
P42

USB 5
Webcam
P34

USB 8
USB CONN01
P46

USB 9
USB CONN02
P41

USB 10
Bluetooth
P39

USB 11
FingerPrint
P39

MAIN BATT
P06

System Charger
DC / DC System Power
P05

SPI ROM
EC FW
(BIOS)
P31

SPI ROM
BIOS
P24

IDT 92HD80
AudioCodec
P42

ITE IT8502E
KBC
P31

Keyboard
P32

Touchpad
P32

Accelerometer
ST Micro HP302DLTR8-MBD
P42

P55 SPKR
P56 HP JACK
P56 COMBOL JACK
P34 int DMIC

SATA HDD
P40

SATA ODD
P40

ESATA
P44

WLAN + BT
MiniCard
P60

RTL8111DL
GLAN
P37

RJ-45
P38

VGA
AMD Madison 128 bit

HDMI
P35

DISPLAY PORT
P36

LCM
P34

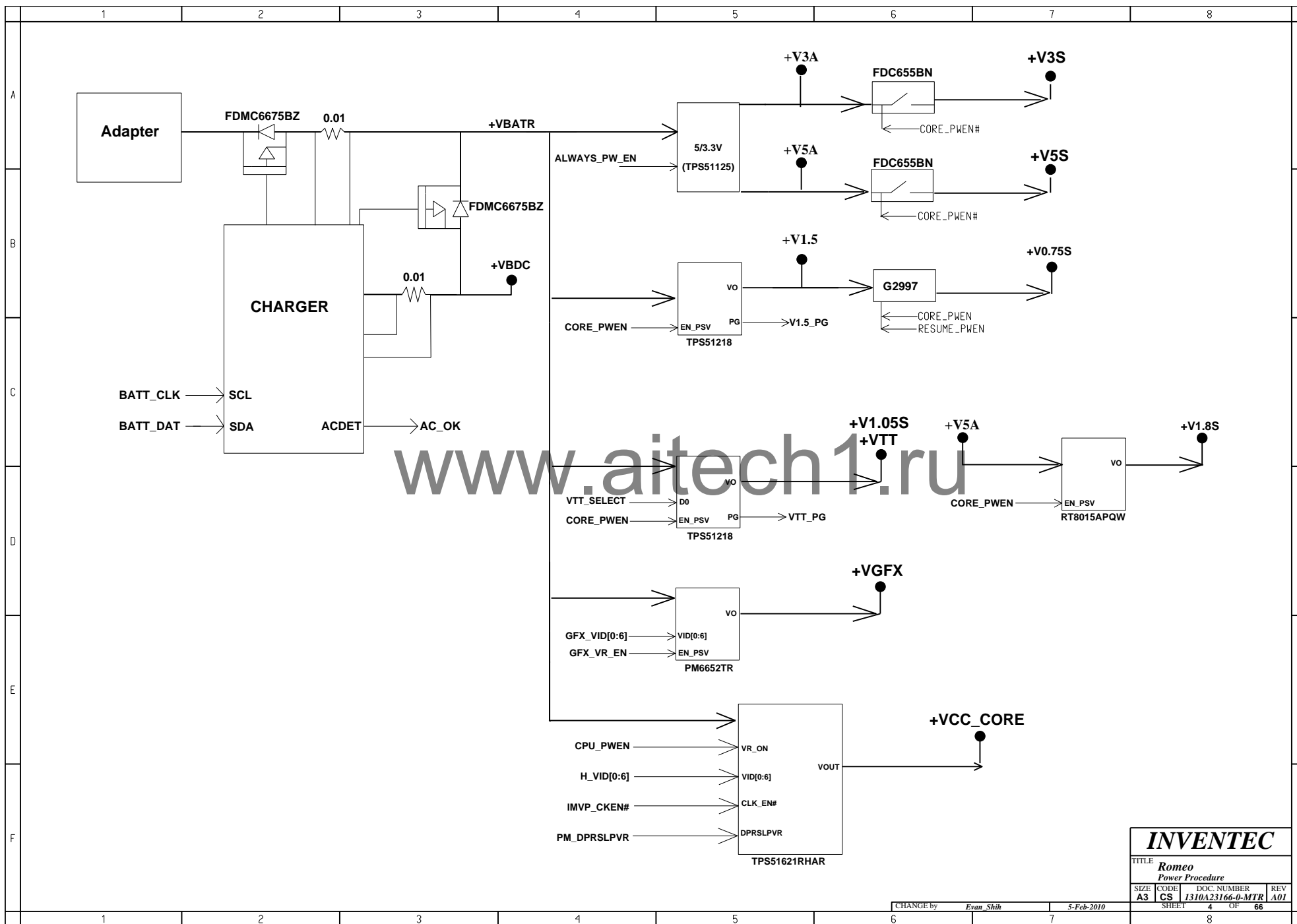
SWITCH

CLK GEN
SLG 8SP585
P12

Thermal meter
TI TMP431A
P46

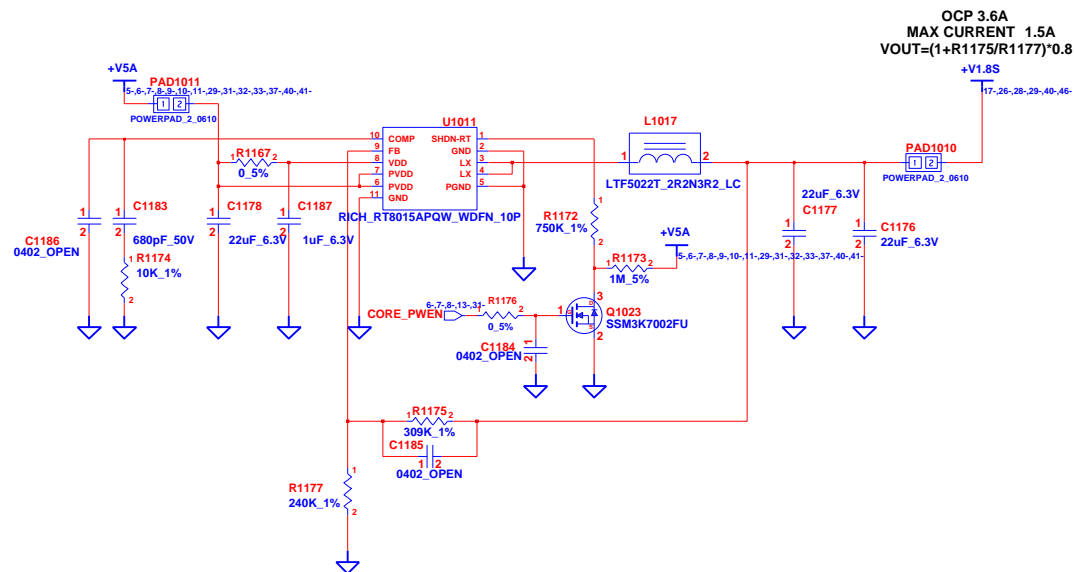
INVENTEC			
TITLE Romeo Block Diagram			
SIZE A3	CODE CS	DOC NUMBER 1310A23166-0-MTR	REV A01
SHEET		3	OF 66

CHANGE by Evan Shih 5-Feb-2010

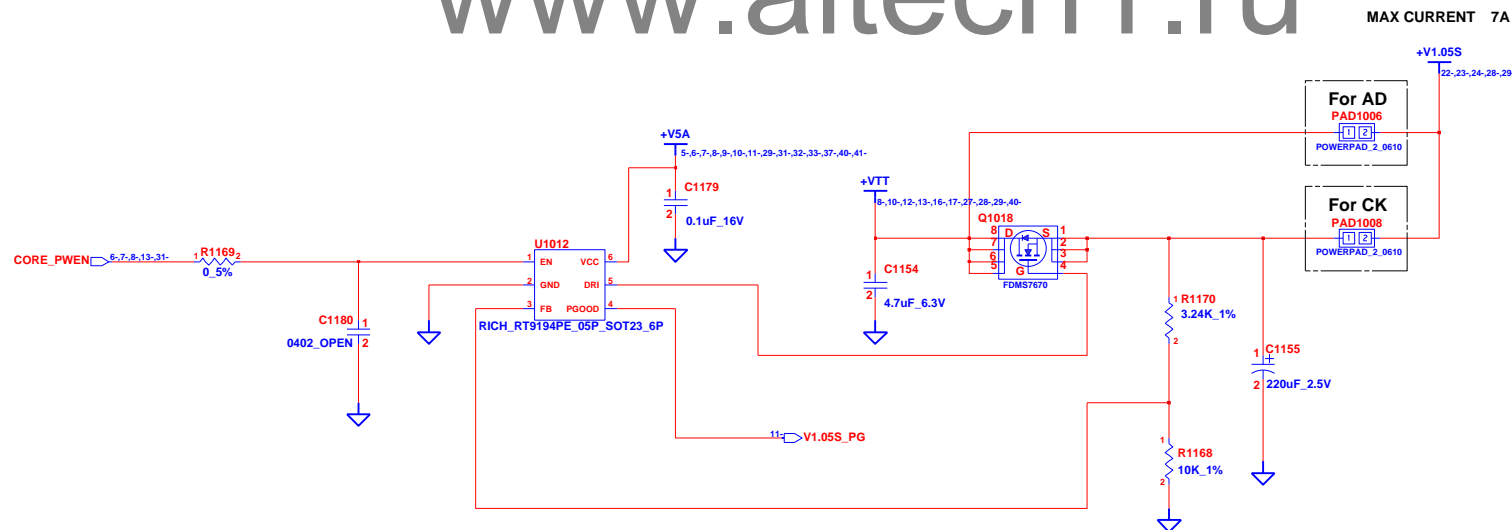


INVENTEC

TITLE Romeo Power Procedure			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 4		OF 66	



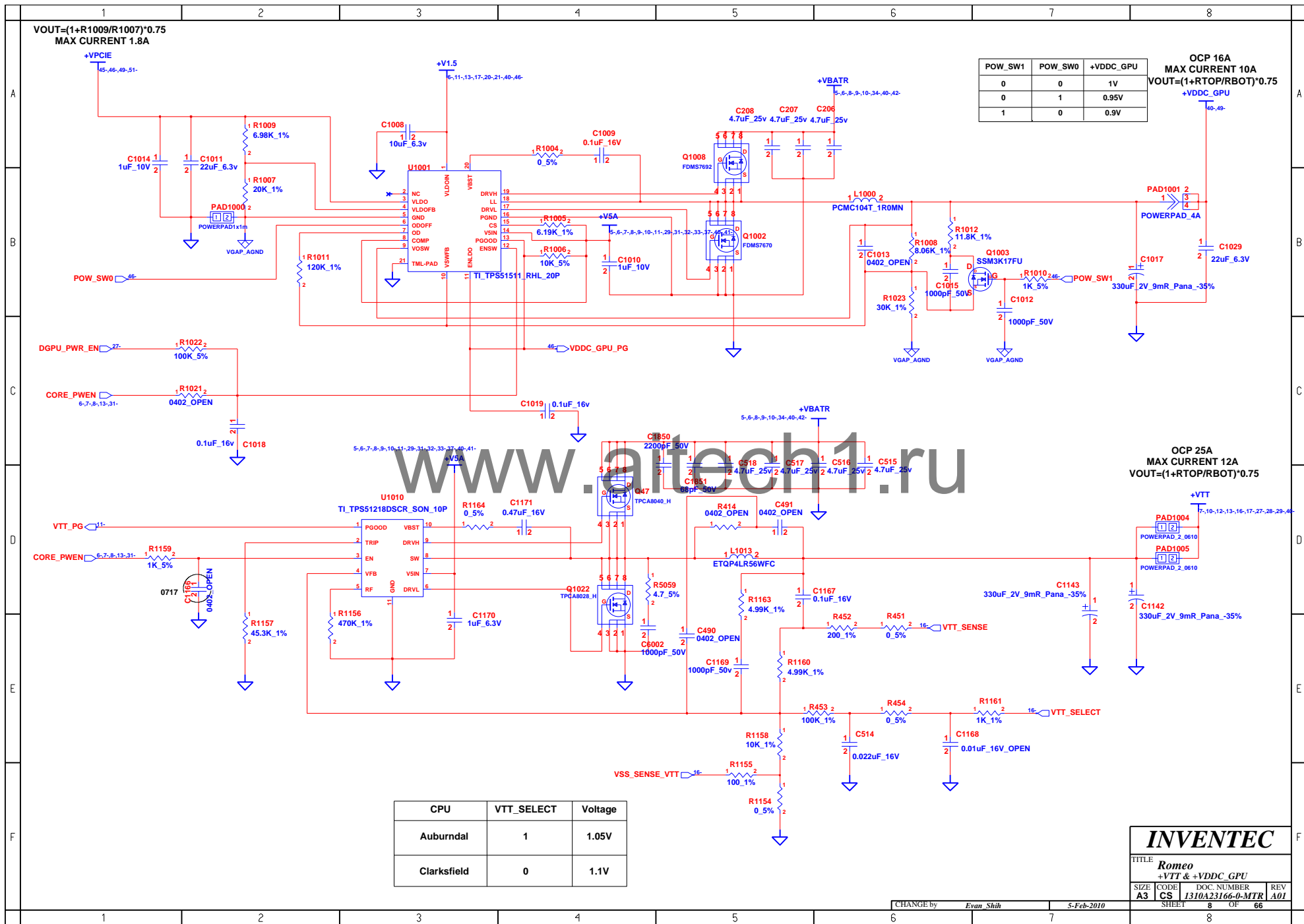
www.aitech1.ru



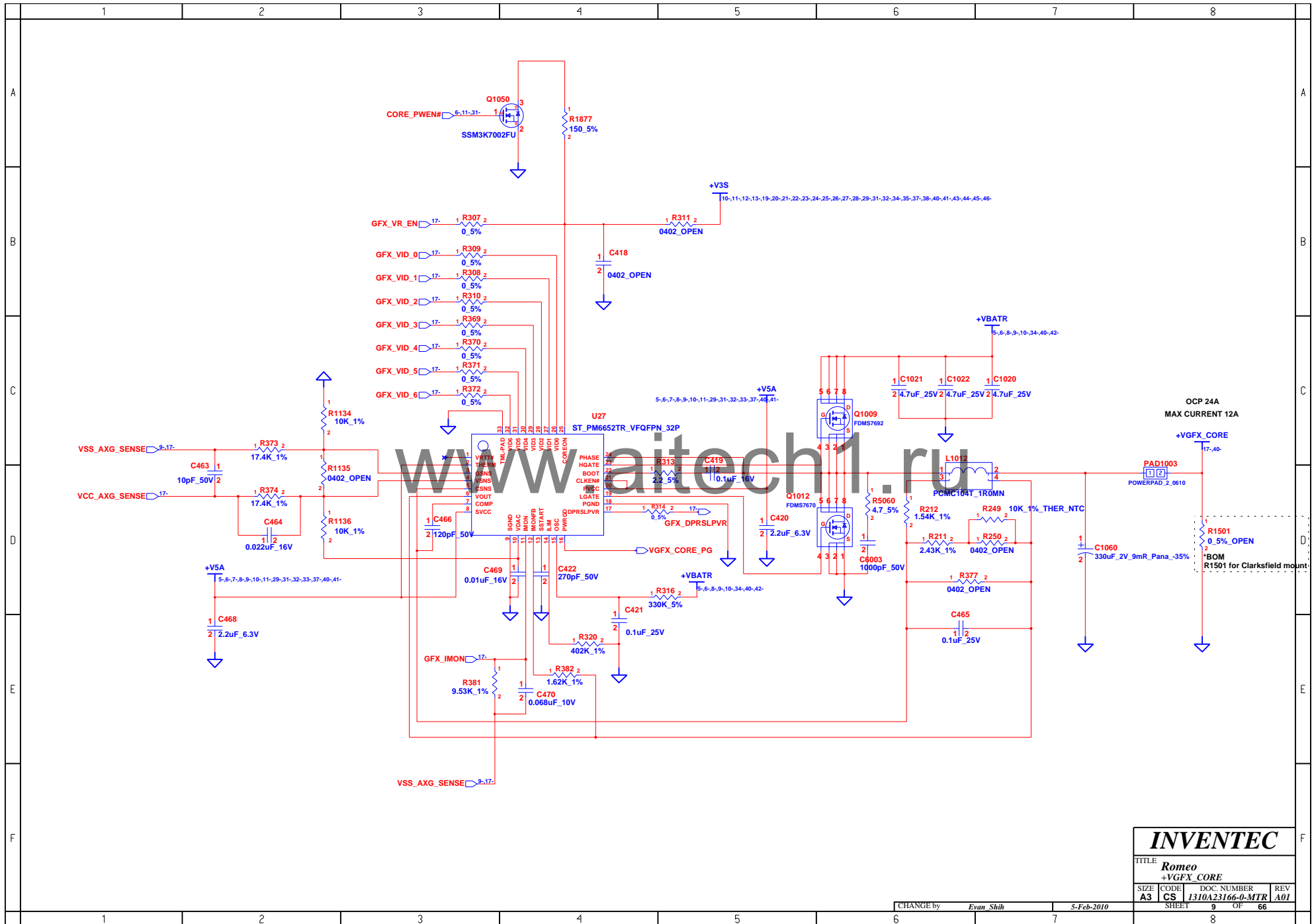
INVENTEC

TITLE			
Romeo			
+V1.8S & +V1.05S			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		7	OF 66

CHANGE by Evan Shih 5-Feb-2010



CPU	VTT_SELECT	Voltage
Auburndal	1	1.05V
Clarksfield	0	1.1V

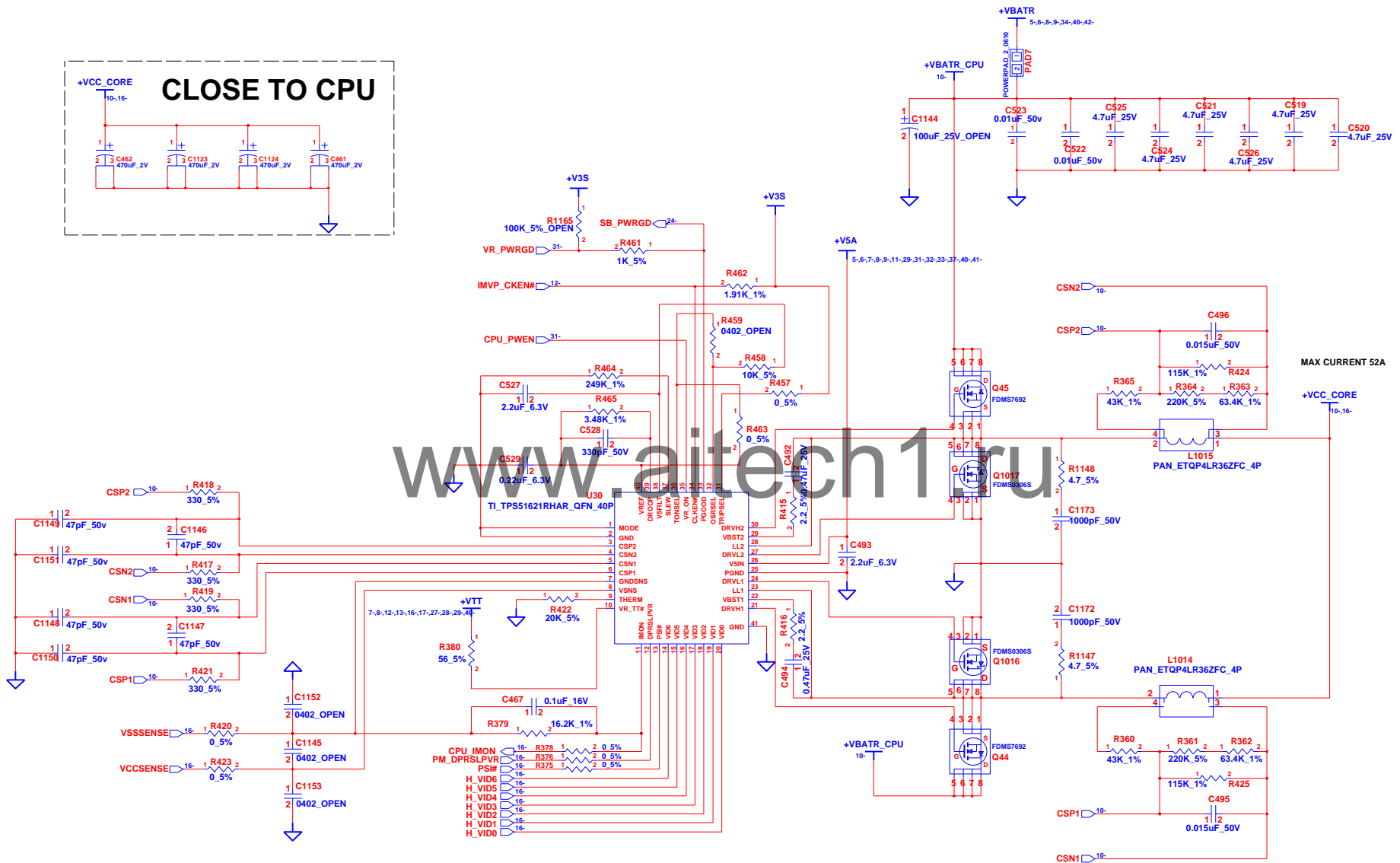
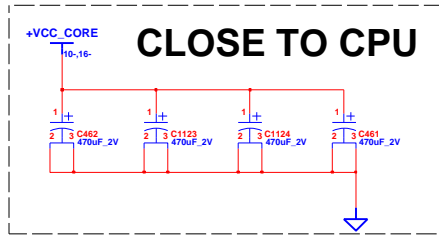


INVENTEC

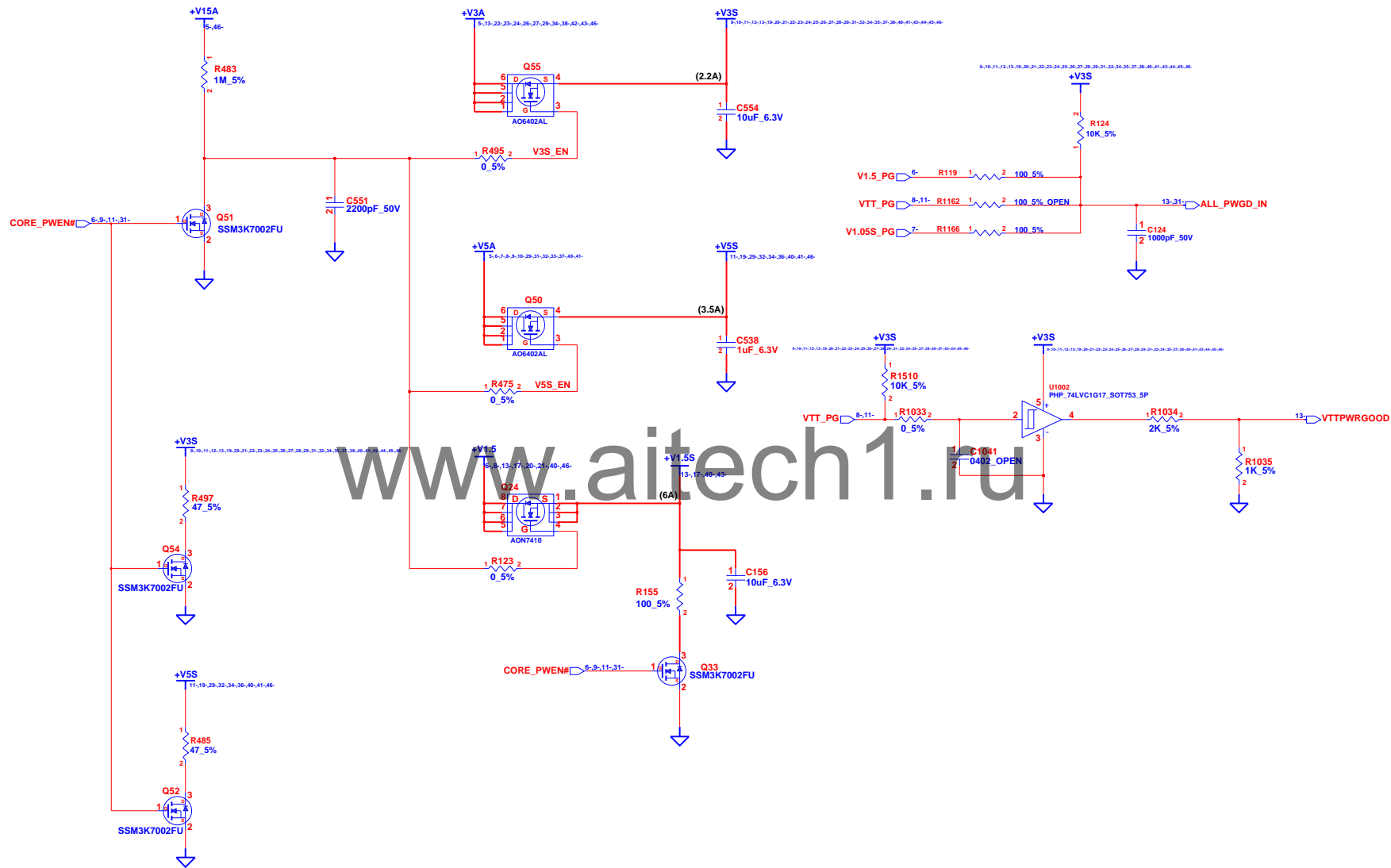
TITLE			
Romeo			
+VGFX_CORE			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		9	OF 66

CHANGE by Evan Shih 5-Feb-2010

8



INVENTEC			
TITLE Romeo +VCC_CORE			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
CHANGE by Evan Shih		5-Feb-2010	
SHEET 10		OF 66	

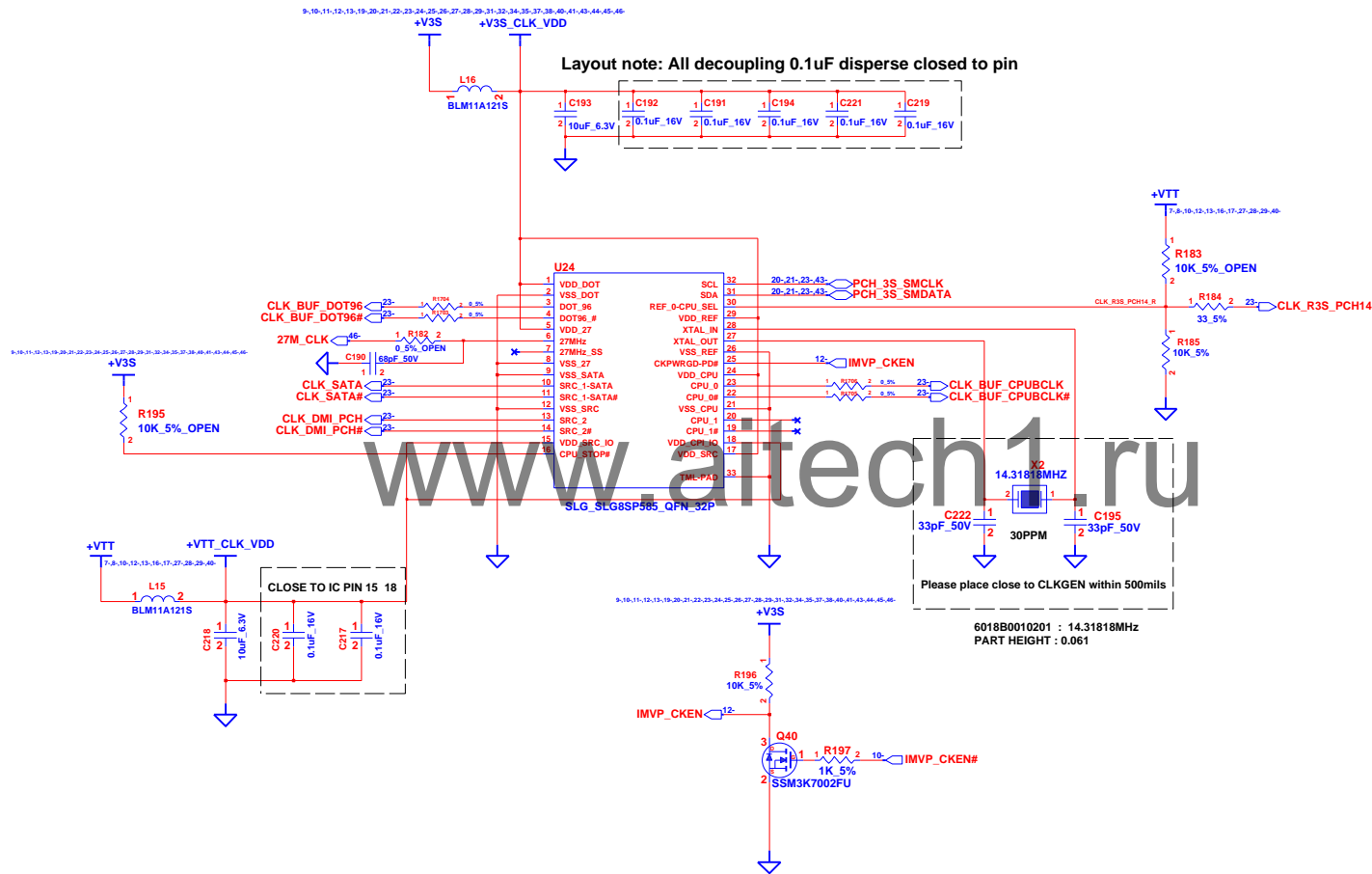


www.aitech1.ru

INVENTEC

TITLE			
Romeo			
+V5S & +V3S			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		11	OF 66

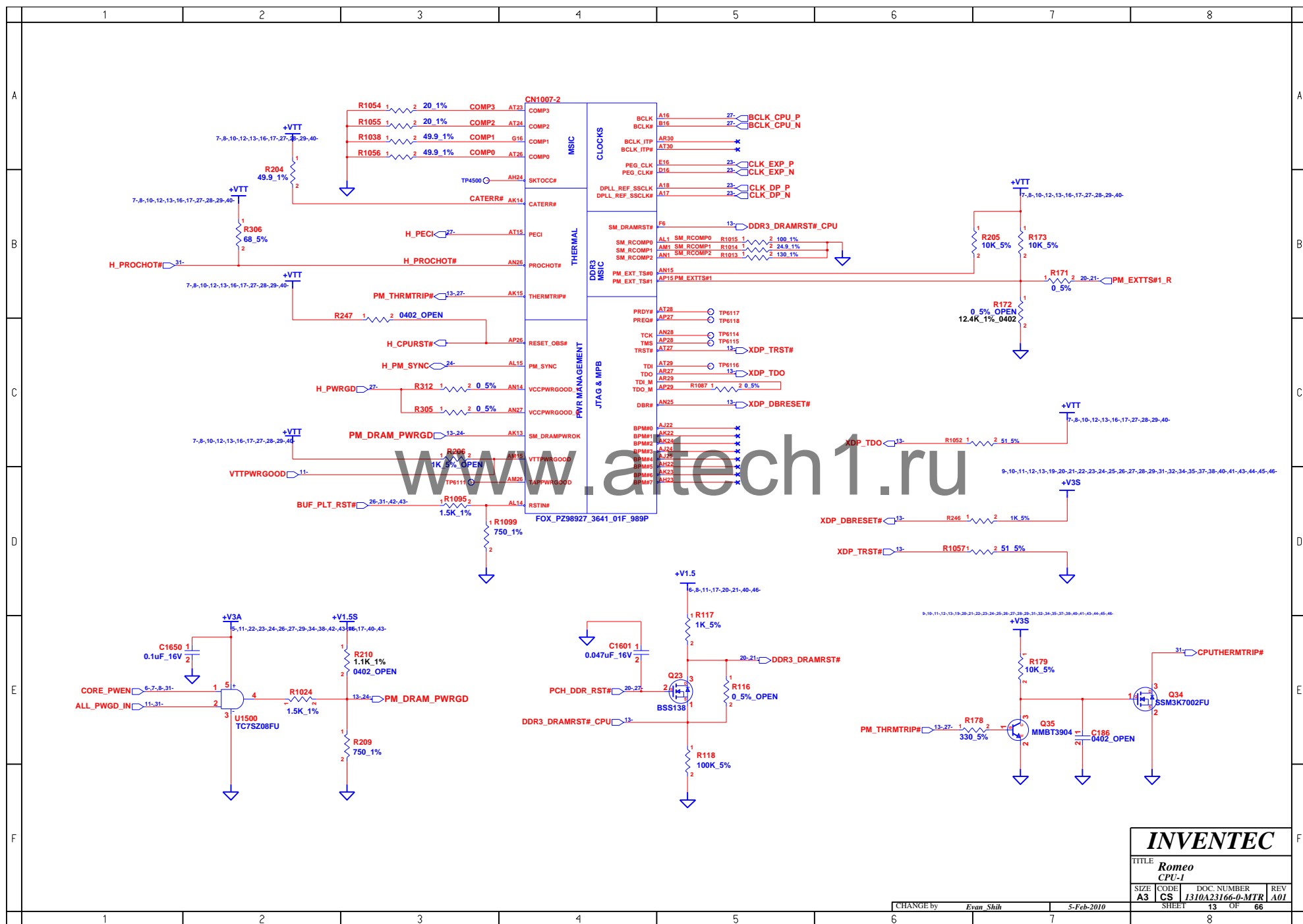
CHANGE by Evan Shih 5-Feb-2010

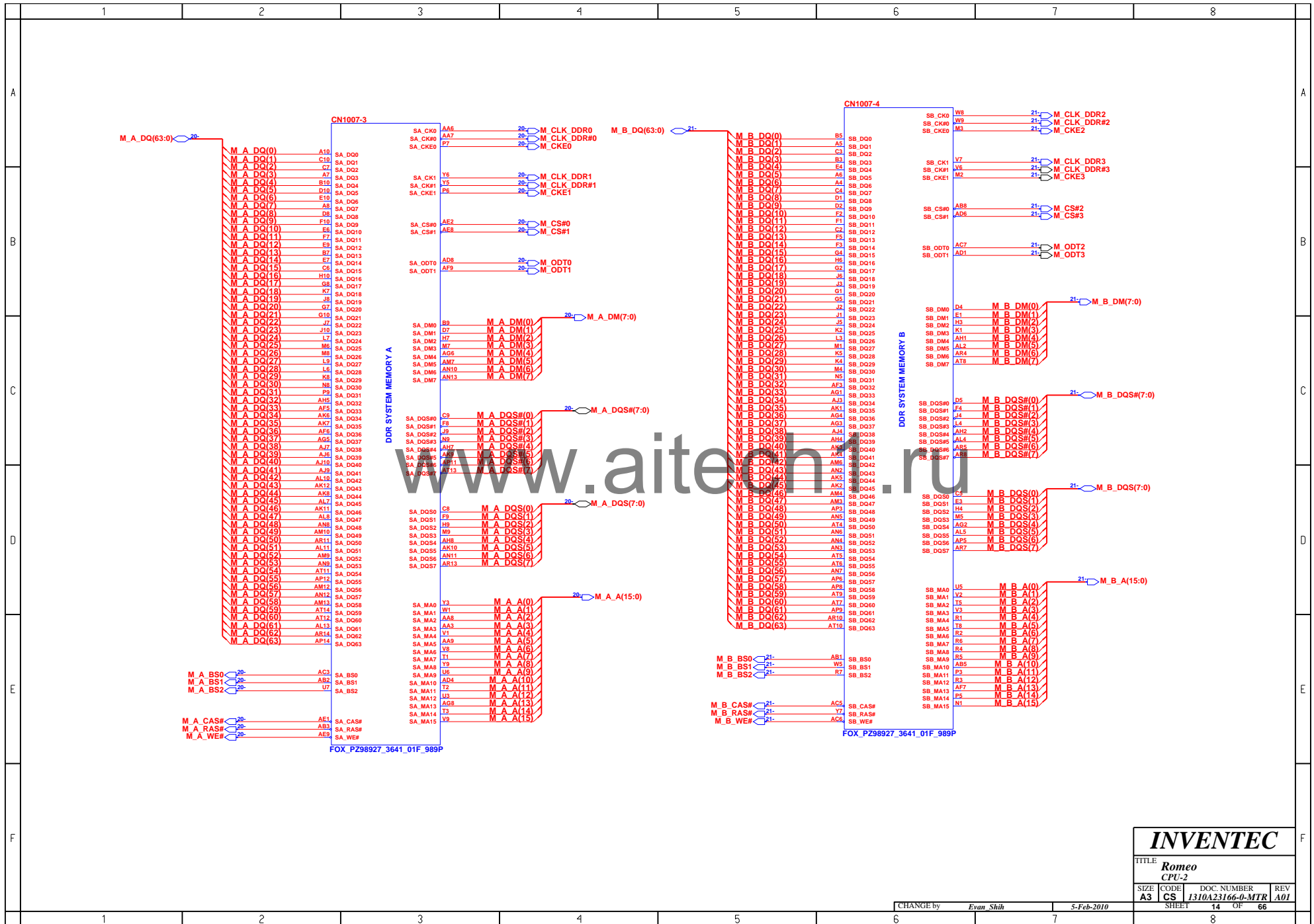


INVENTEC

TITLE Romeo CLK GEN			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 12		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

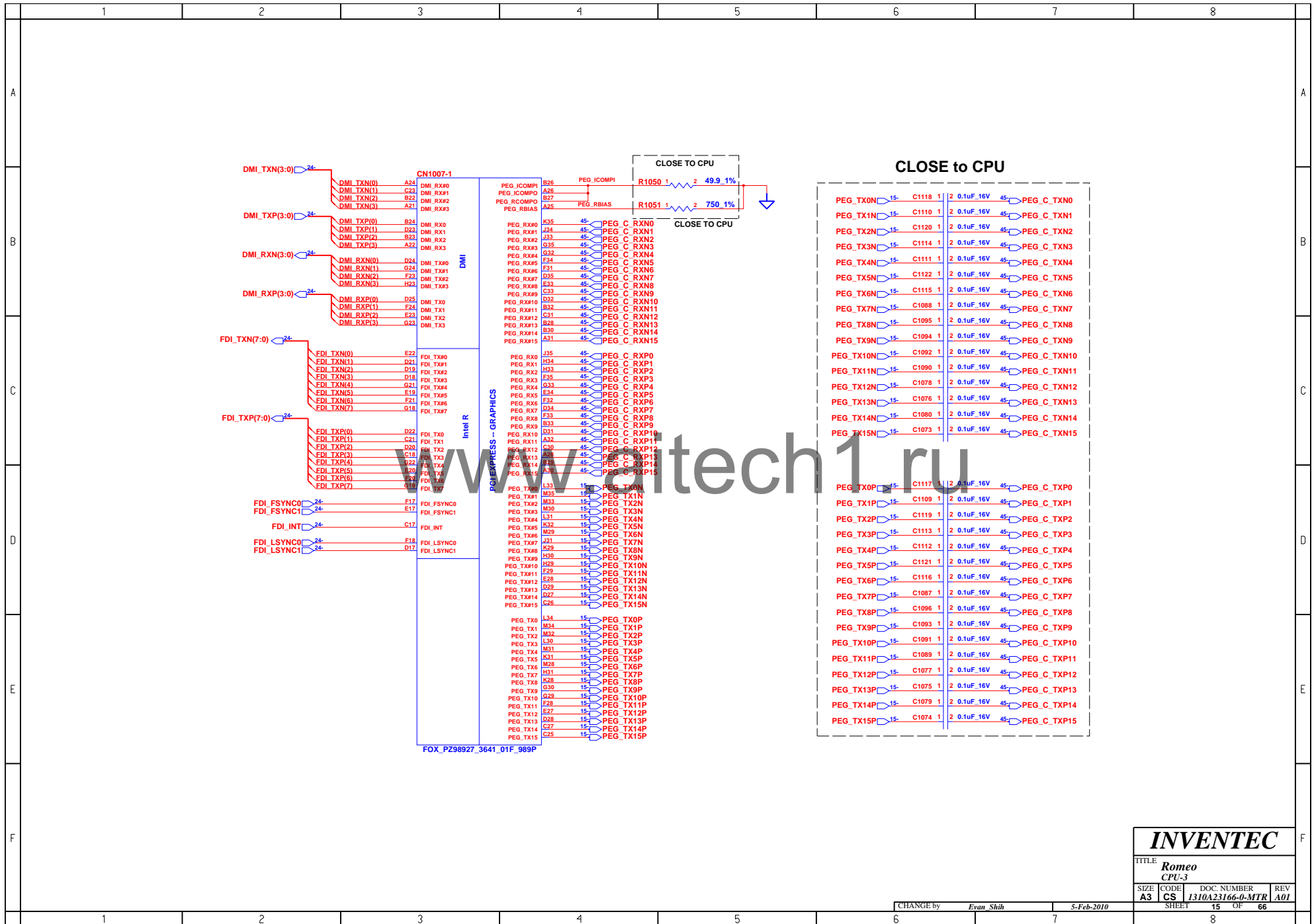




INVENTEC

TITLE			
Romeo CPU-2			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		14	OF 66

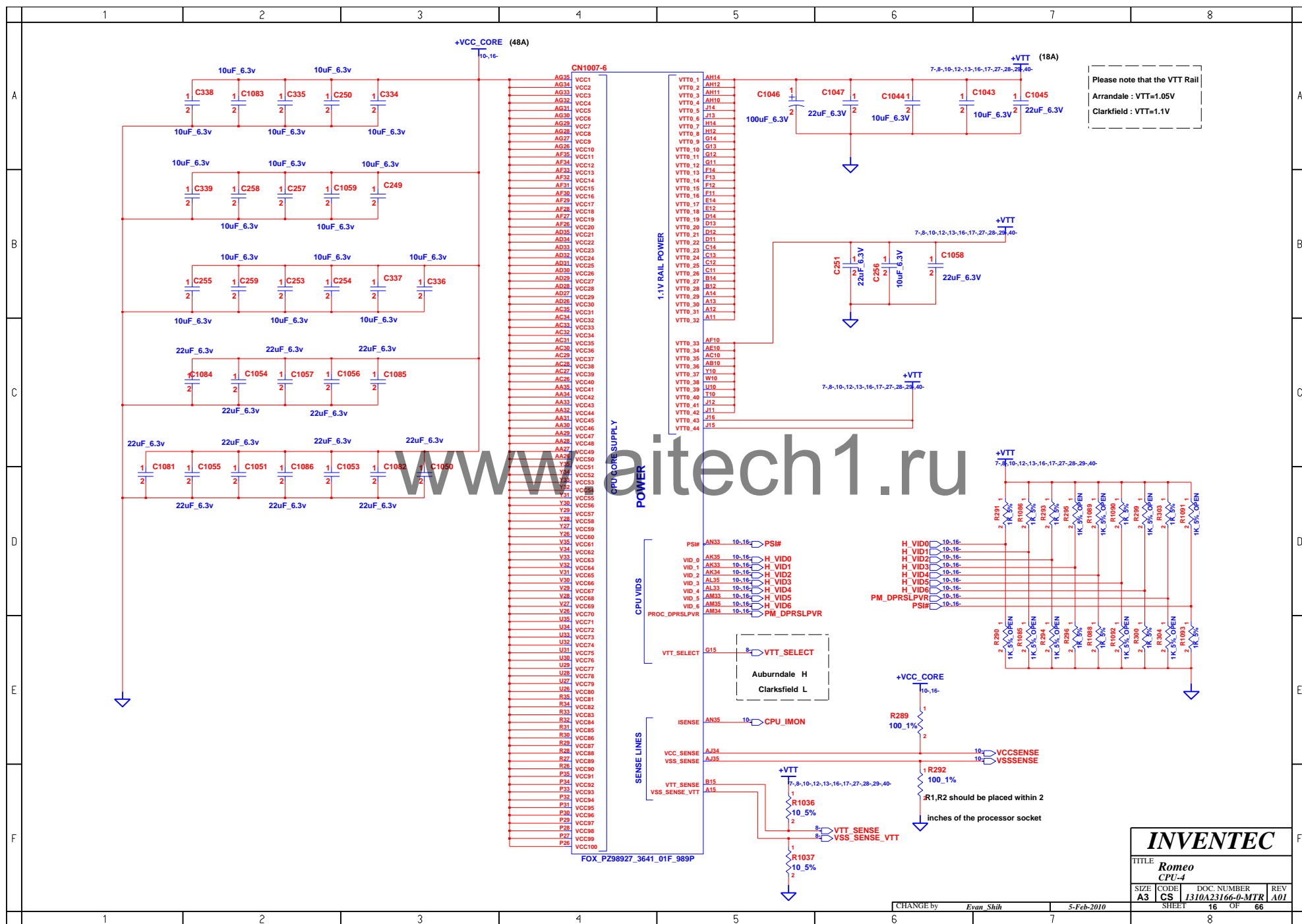
CHANGE by Evan Shih 5-Feb-2010

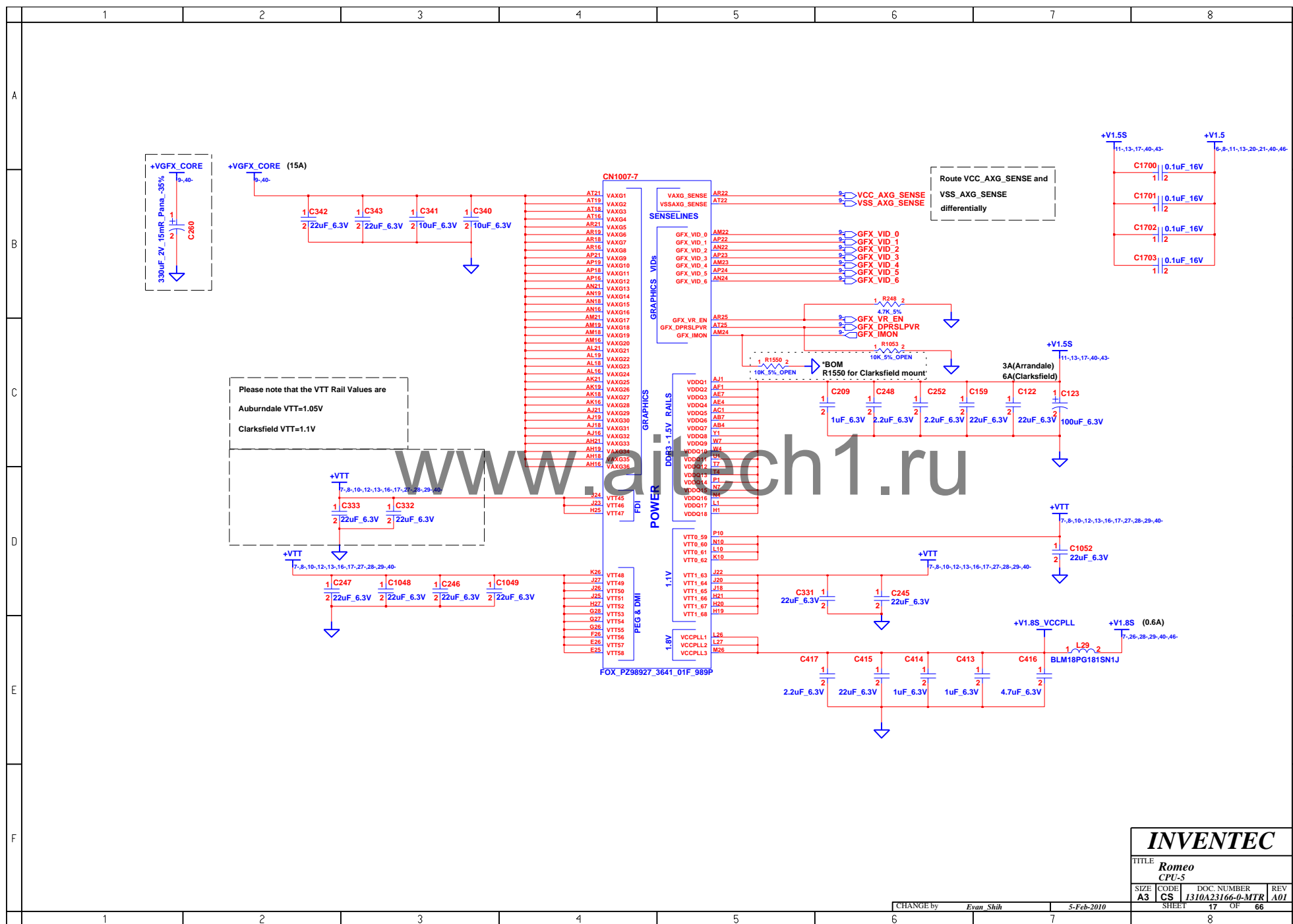


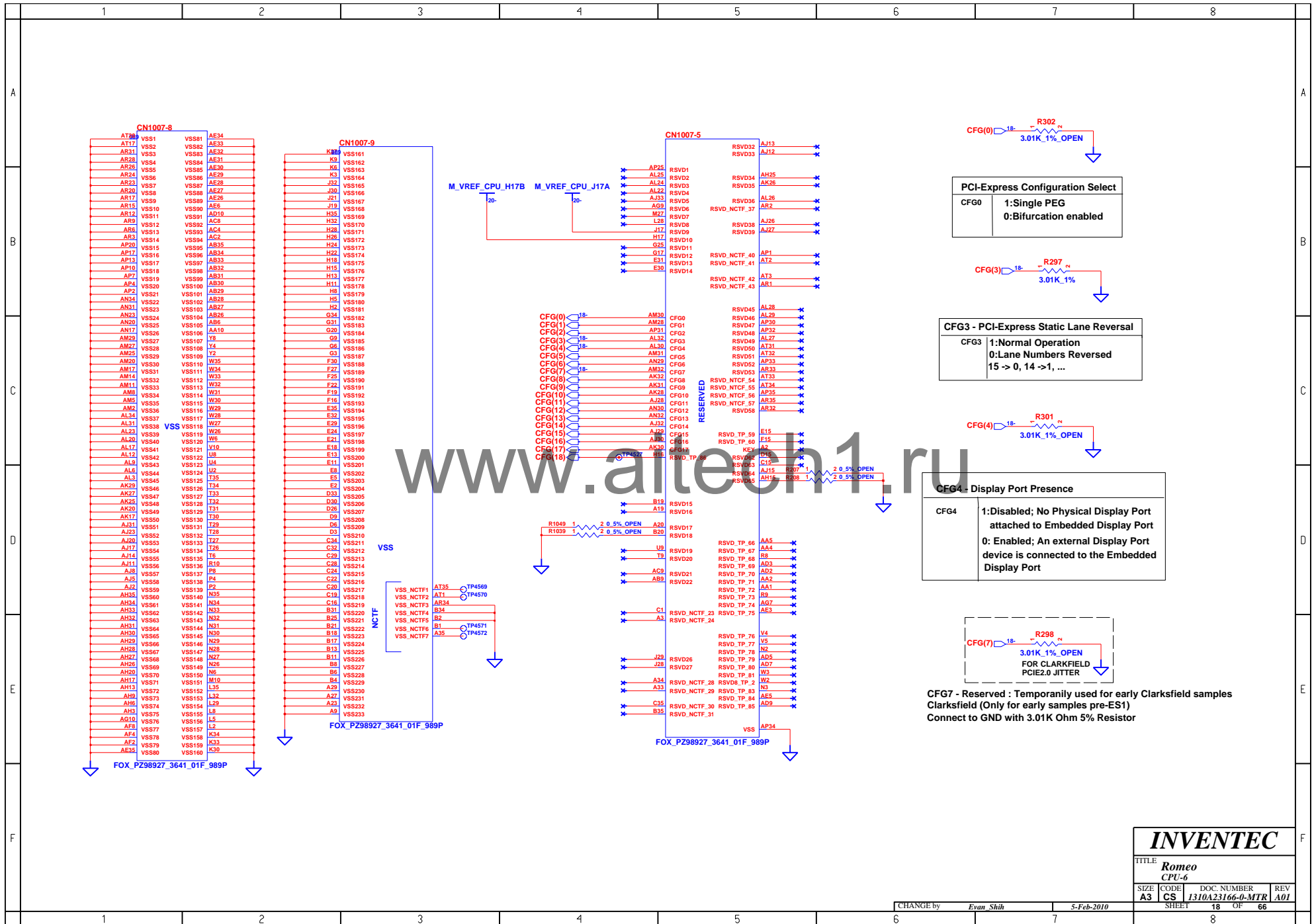
INVENTEC

TITLE Romeo CPU-3			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 15		OF 66	

CHANGE by Evan Shih 5-Feb-2010



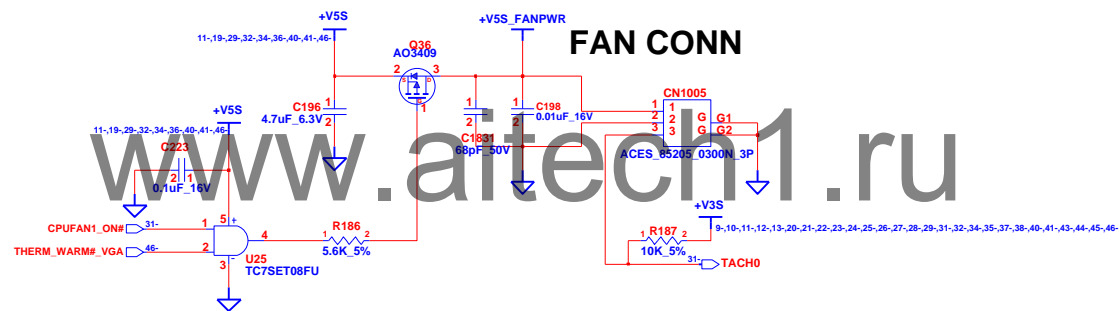




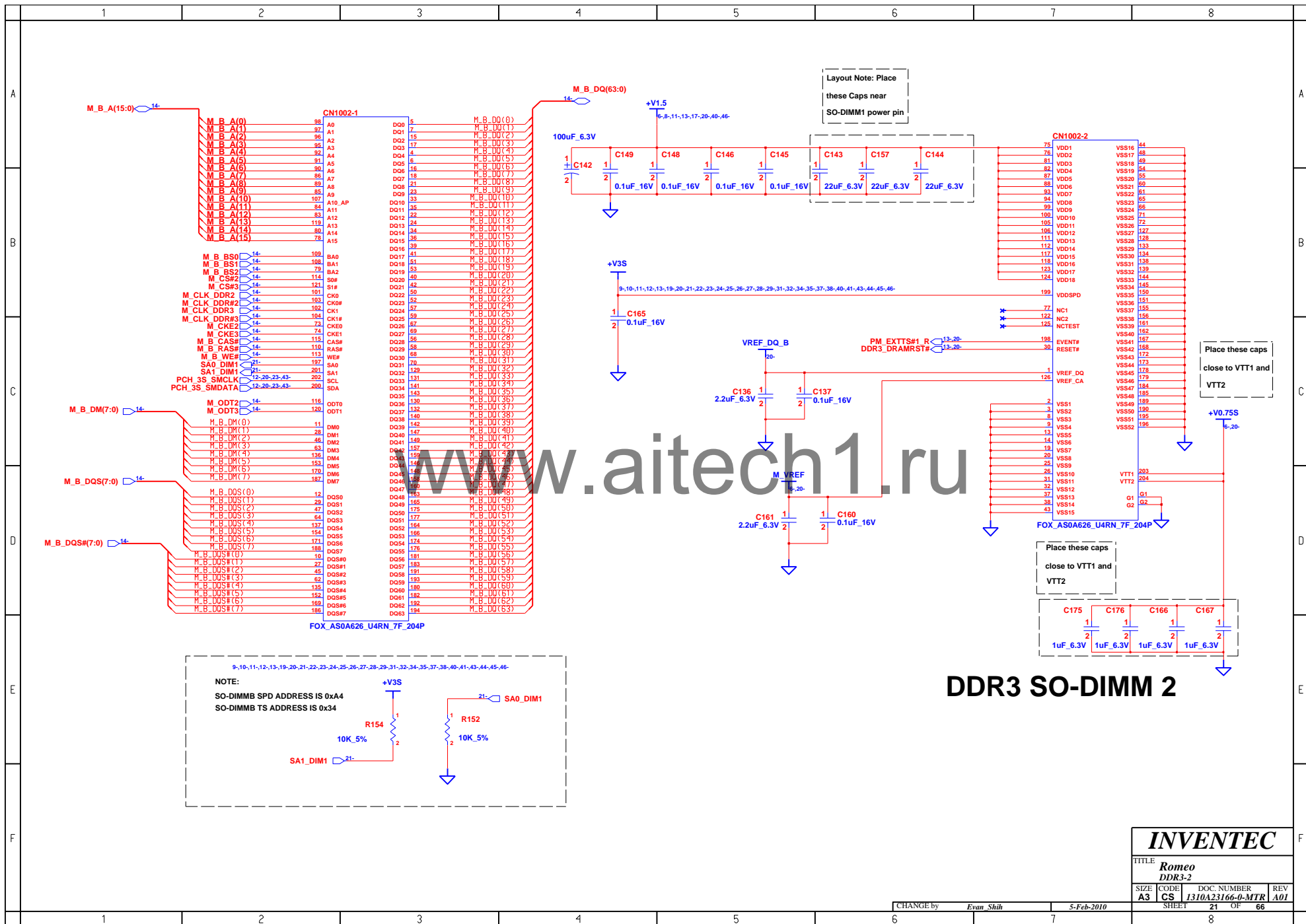
INVENTEC

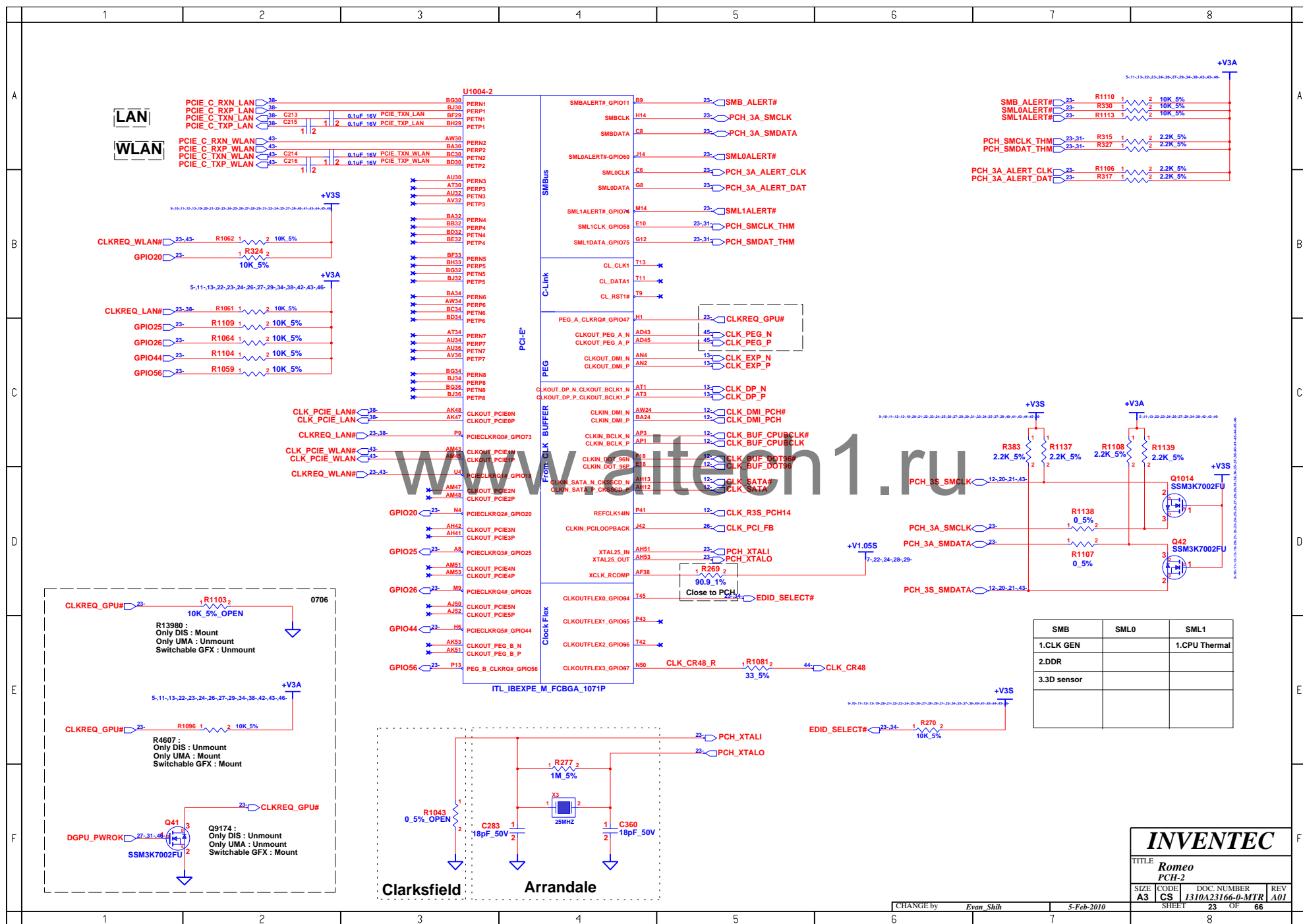
TITLE Romeo CPU-6			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 18		OF 66	

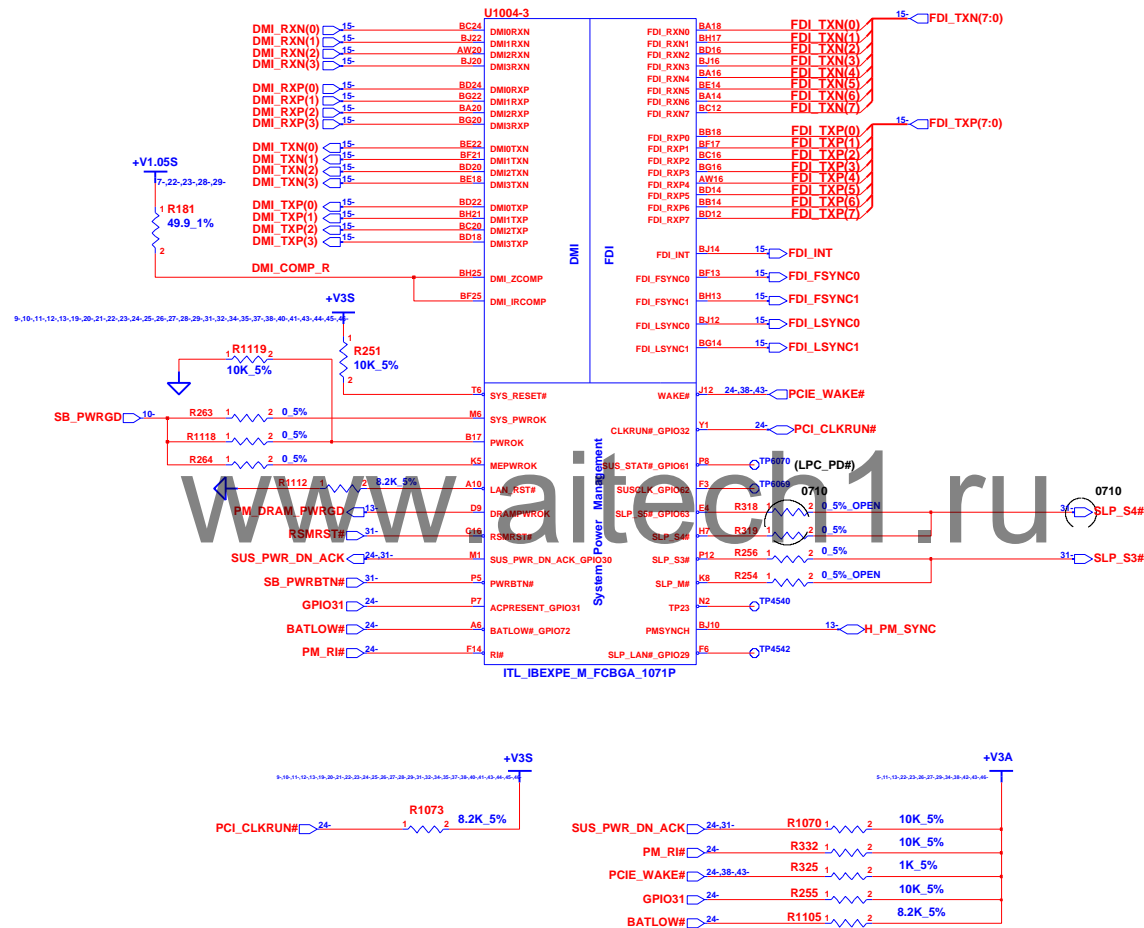
CHANGE by *Evan Shih* 5-Feb-2010



INVENTEC			
TITLE Romeo Thermal & Fan			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
CHANGE by <i>Evan Shih</i>		5-Feb-2010	
SHEET		19 OF 66	







INVENTEC

TITLE Romeo PCH-3			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 24		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

1

2

3

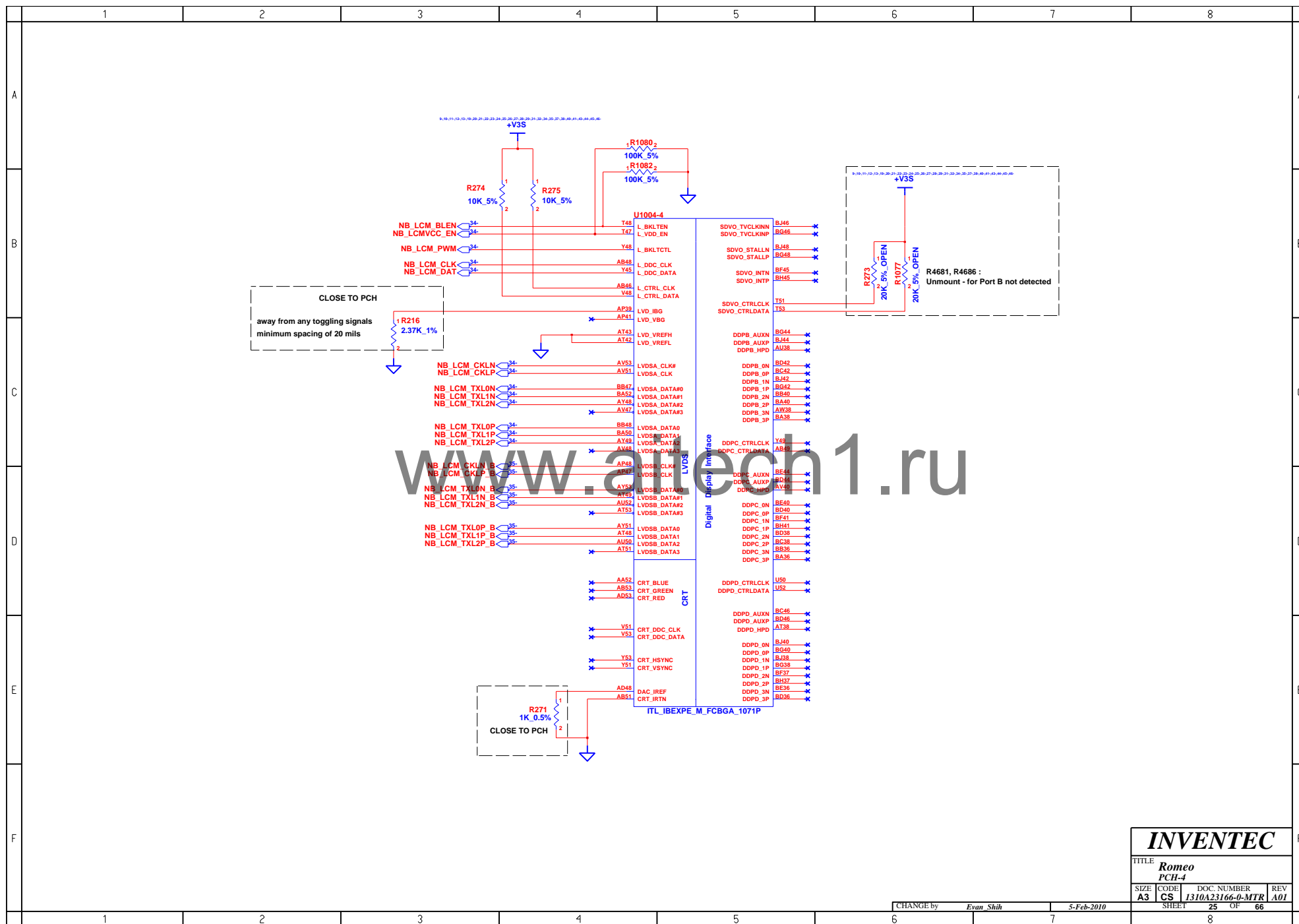
4

5

6

7

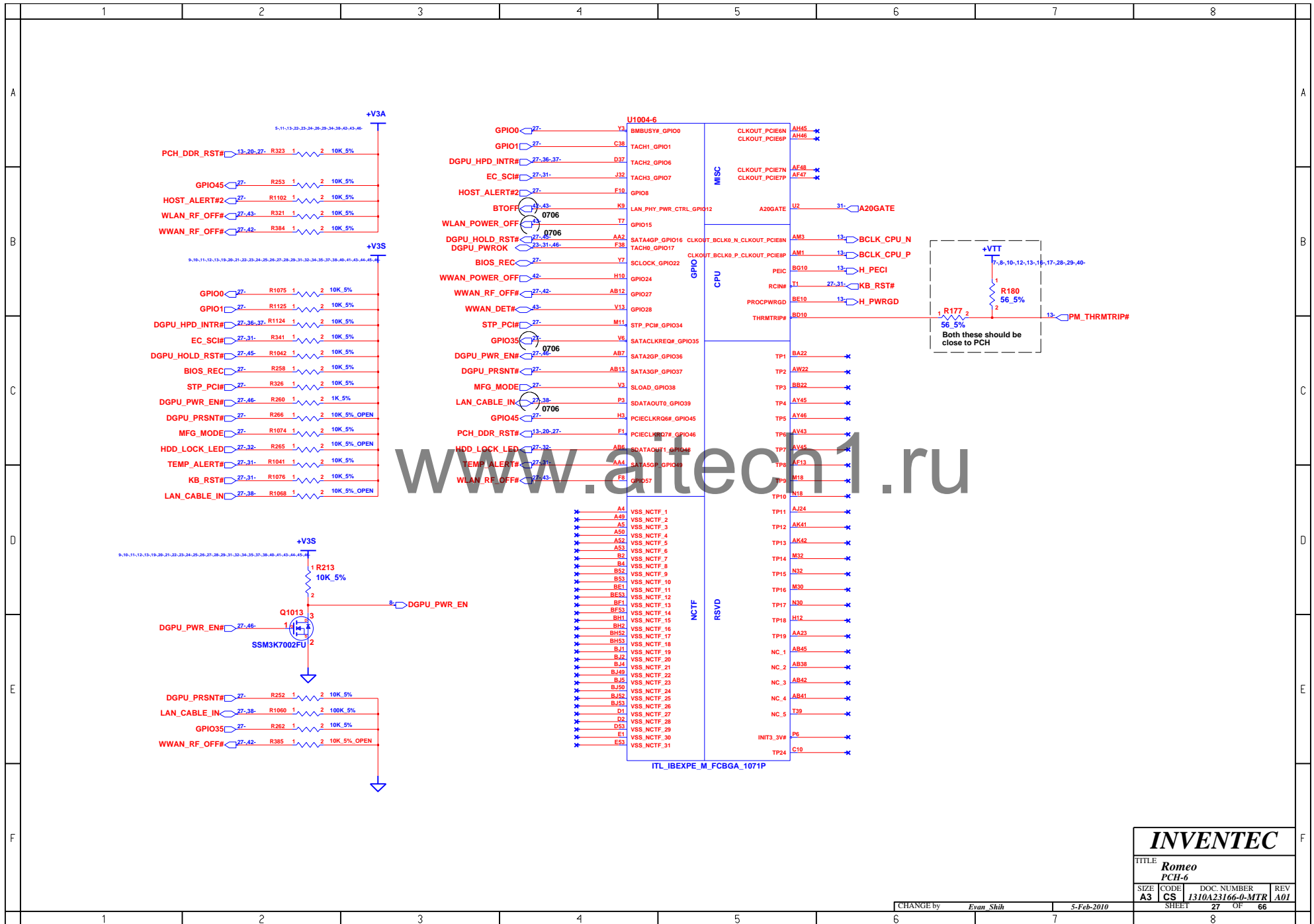
8



INVENTEC

TITLE Romeo PCH-4			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 25		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010



INVENTEC

TITLE Romeo PCH-6			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 27		OF 66	

CHANGE by **Evan Shih** 5-Feb-2010

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

U1004-9

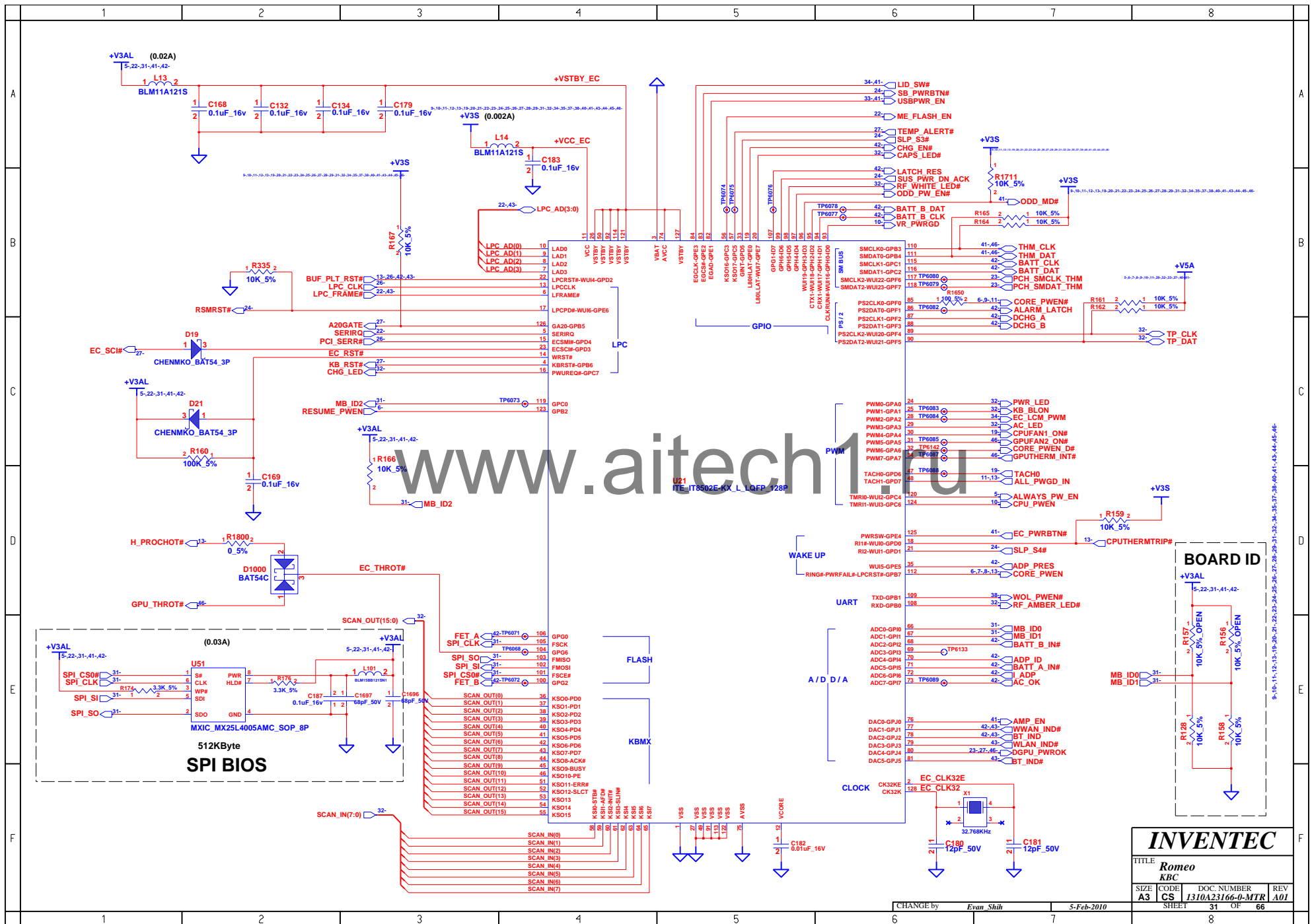
U1004-10

ITL_IBEXPE_M_FCBGA_1071P

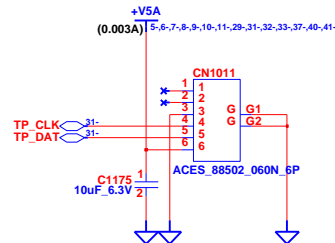
www.aitec.ru

INVENTEC			
TITLE Romeo			
PCH-9			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		30	OF 66

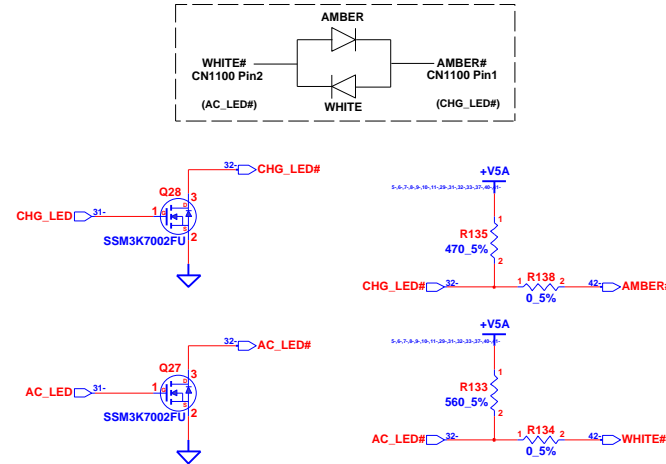
CHANGE by **Evan Shih** 5-Feb-2010



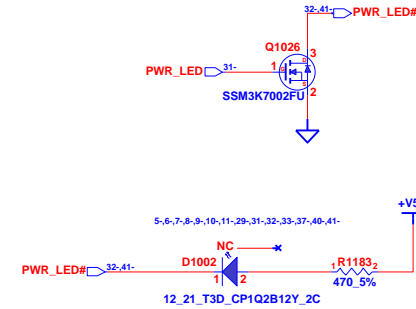
TouchPad Module CONN



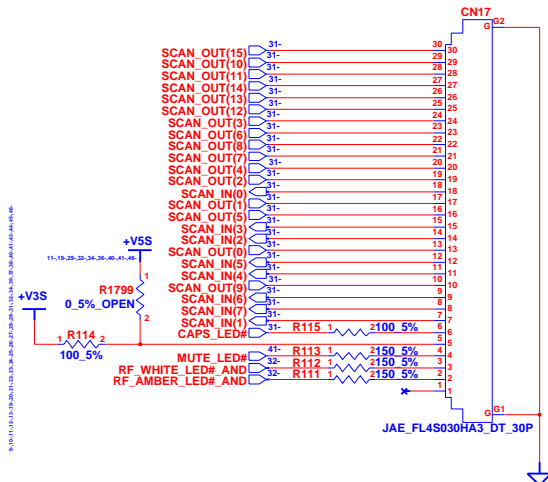
DC-JACK LED



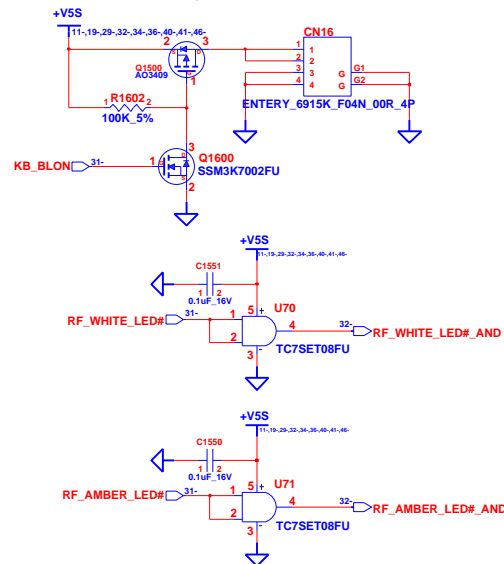
POWER LED



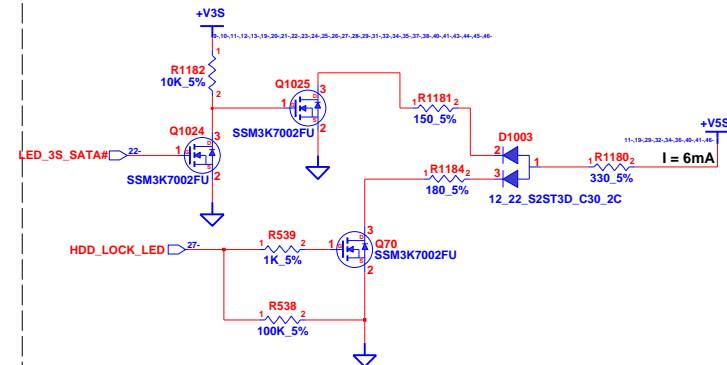
KeyBoard CONN (30 pin)



Backlight connector



SATA LED & HDD-HALTED LED

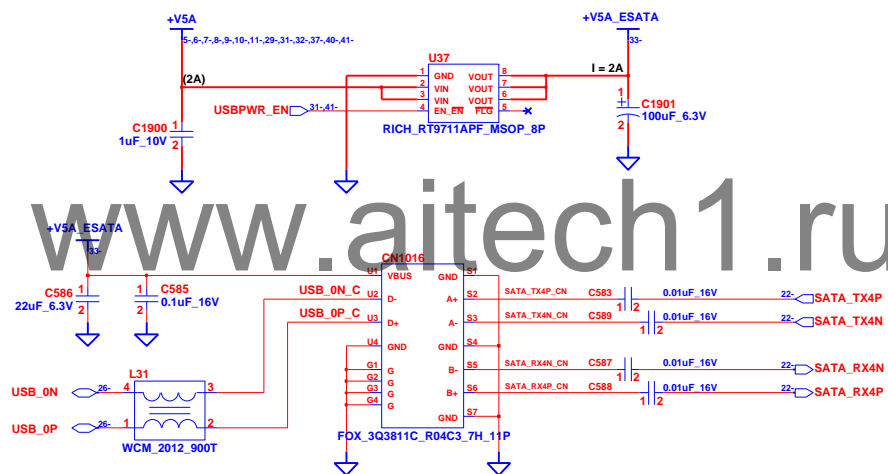


INVENTEC

TITLE			
Romeo			
Keyboard & Touchpad			
SIZE	CODE	DOC NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		32	OF 66

CHANGE by Evan Shih 5-Feb-2010

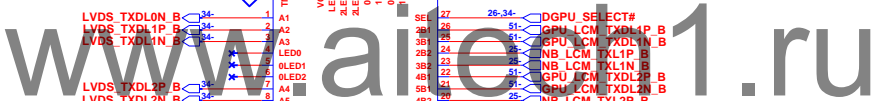
ESATA CONN (without Re-Driver chip)



INVENTEC

TITLE Romeo CRT			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 33		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

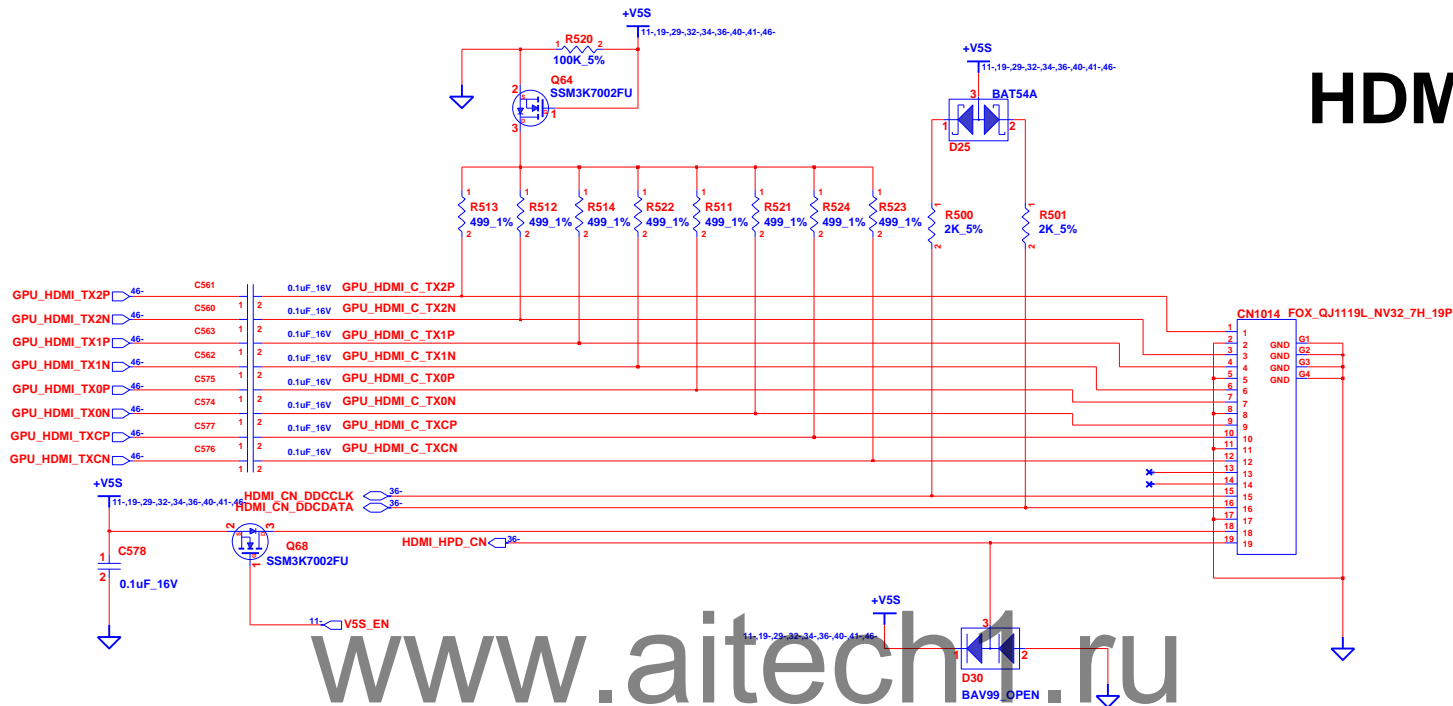


INVENTEC

SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET		35	OF 66

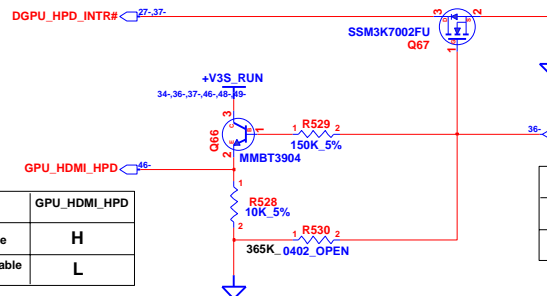
CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

HDMI



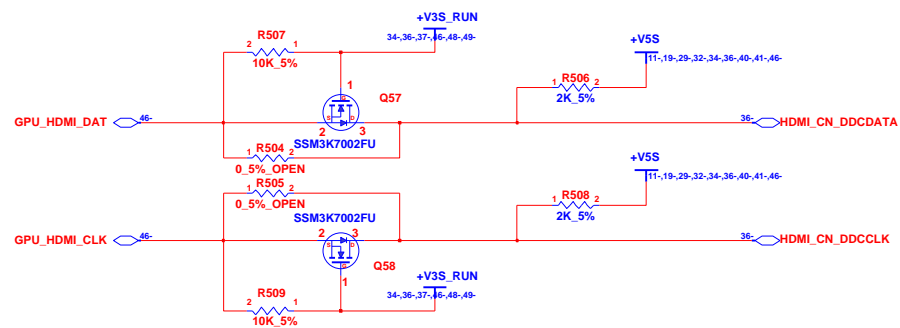
www.aitech1.ru

	DGPU_HPD_INTR#
Plug Cable	L
Unplug Cable	H



	GPU_HDMI_HPD
Plug Cable	H
Unplug Cable	L

	HDMI_HPD_CN
Plug Cable	H
Unplug Cable	L



INVENTEC

TITLE Romeo HDMI			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 36		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

Mini Display Port

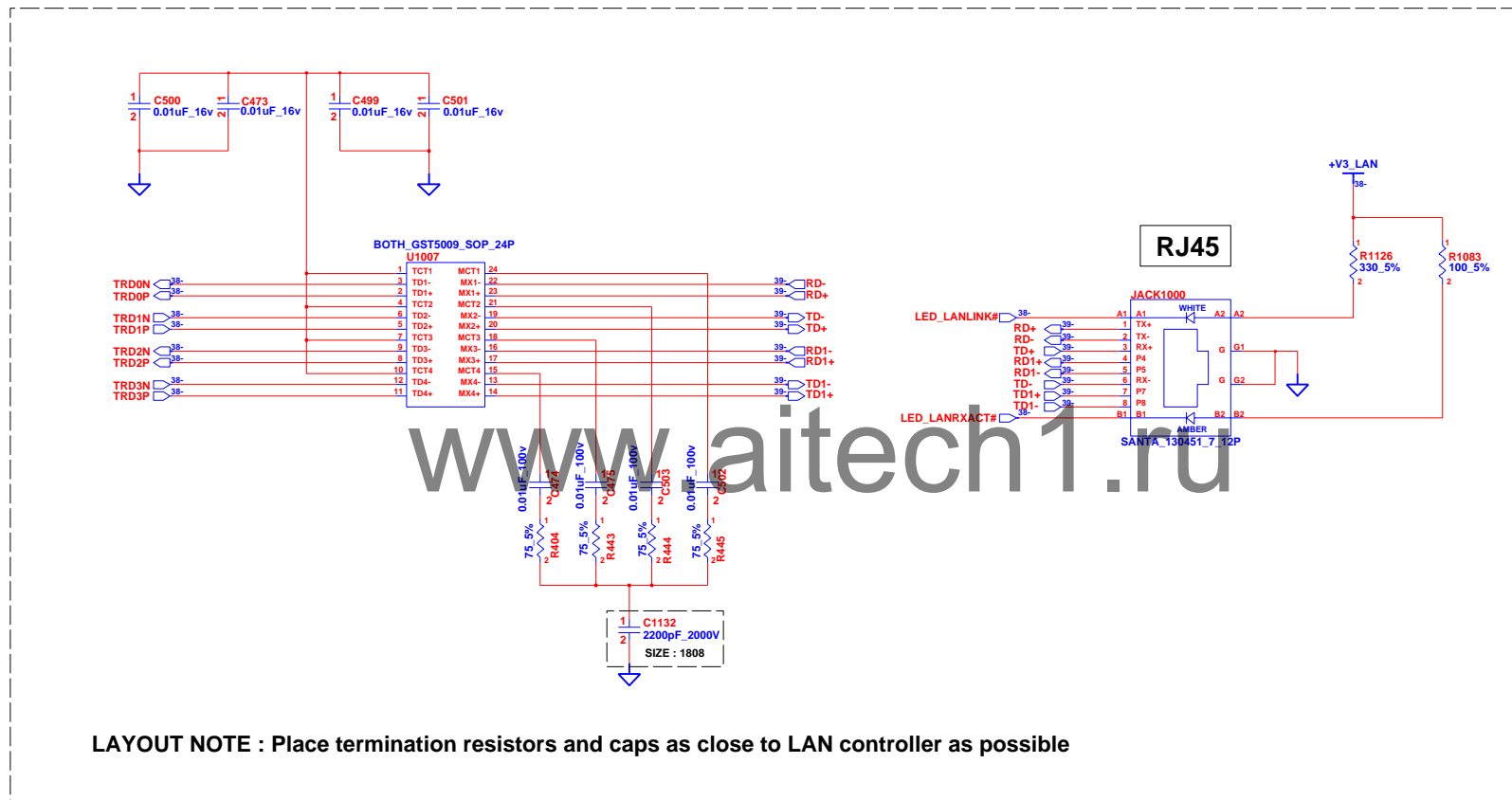
www.aitech1.ru

INVENTEC			
TITLE Romeo DisplayPort			
SIZE A3	CODE CS	DOC. NUMBER I310A23166-0-MTR	REV A01
CHANGE by <i>Evan Shih</i>		5-Feb-2010	
SHEET 37		OF 66	

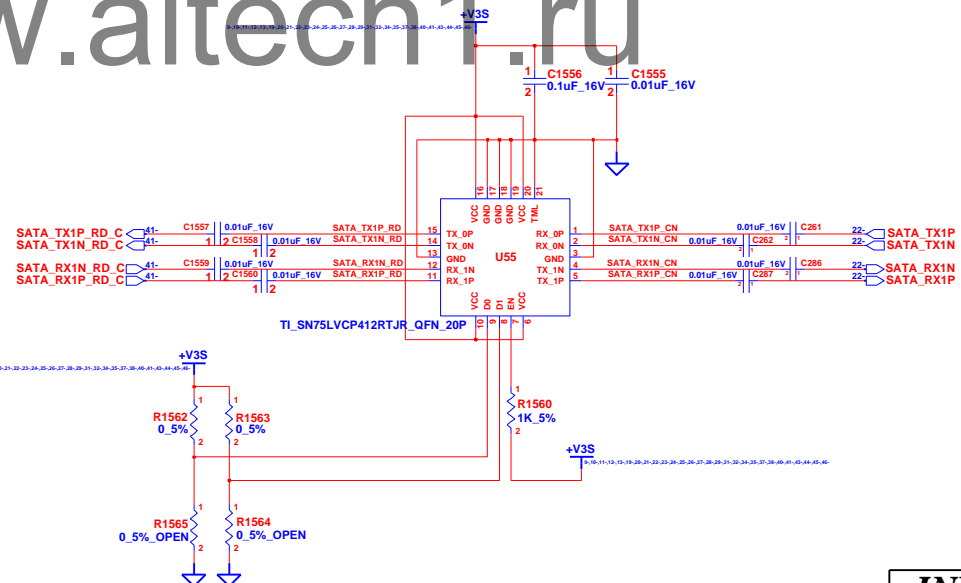
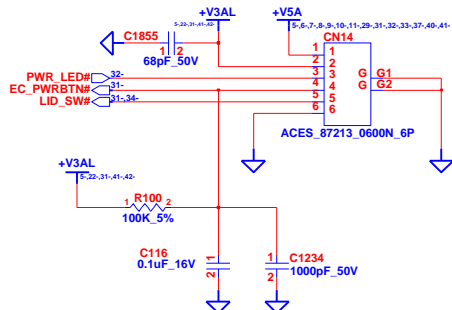
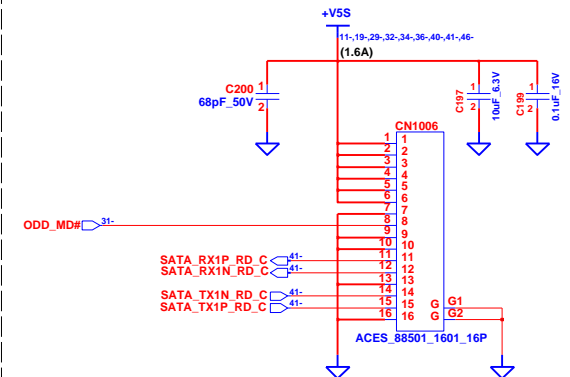
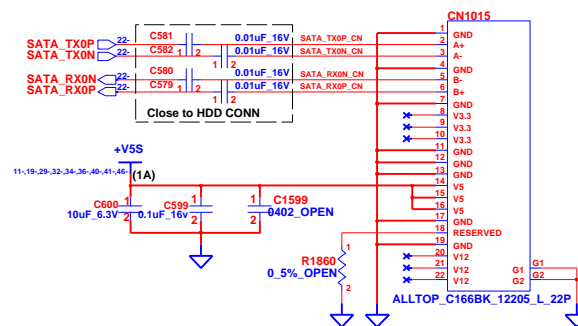
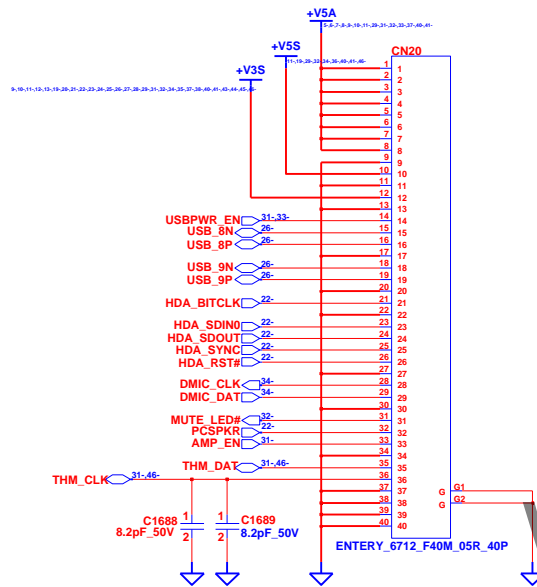
TITLE <i>Romeo DisplayPort</i>			
SIZE A3	CODE CS	DOC. NUMBER <i>1310A23166-0-MTR</i>	REV <i>A01</i>
SHEET		37	OF 66

CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

CS	1310A23166-0-M1R		
SHEET	37	OF	66



INVENTEC			
TITLE Romeo RJ-45			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
CHANGE by Evan Shih		5-Feb-2010	
SHEET 39		OF 66	

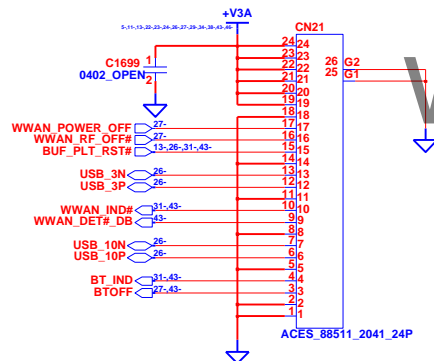


TITLE			
Romeo Connector-1			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		41	OF 66

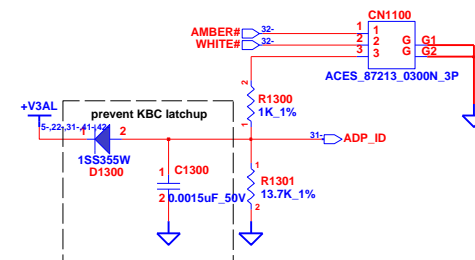
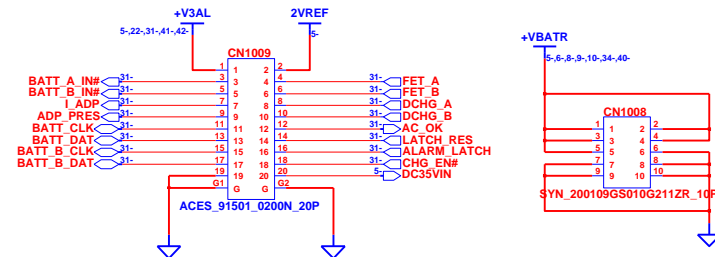
CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

WC Board CN on MB

WWAN & BT



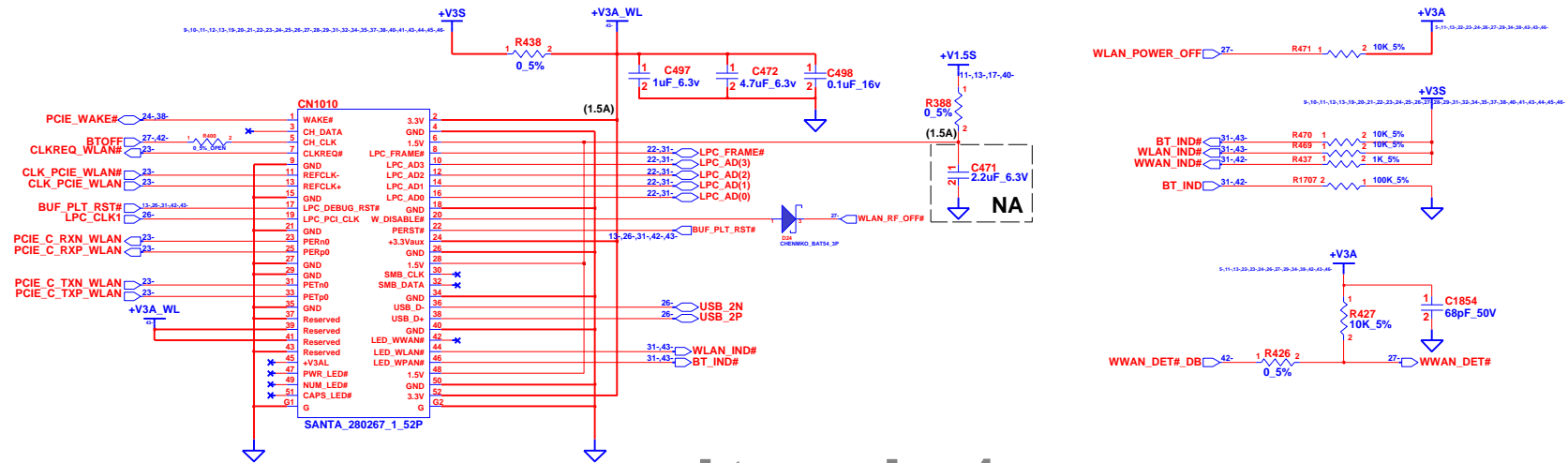
CHG Board CN on MB



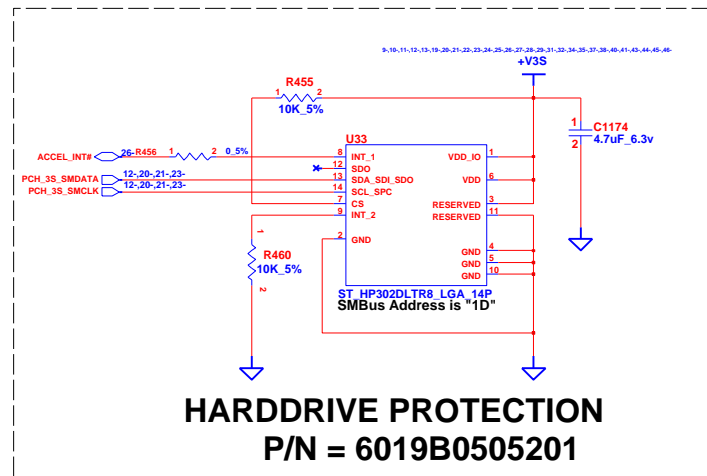
INVENTEC

TITLE Romeo Connector-2			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
CHANGE by <i>Evan Shih</i>		5-Feb-2010	
SHEET 42		OF 66	

WLAN CONN (MINICARD)



www.aitech1.ru

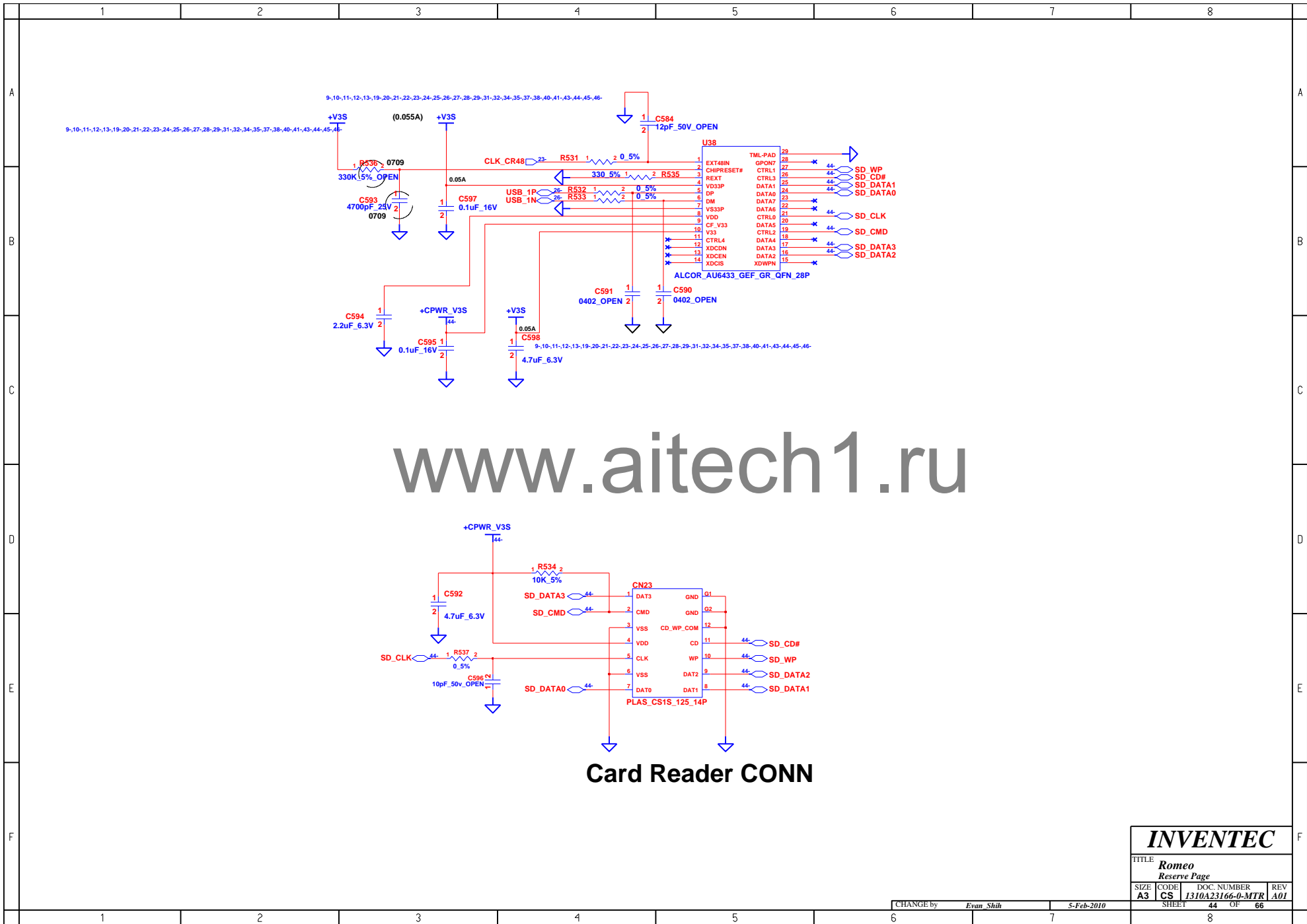


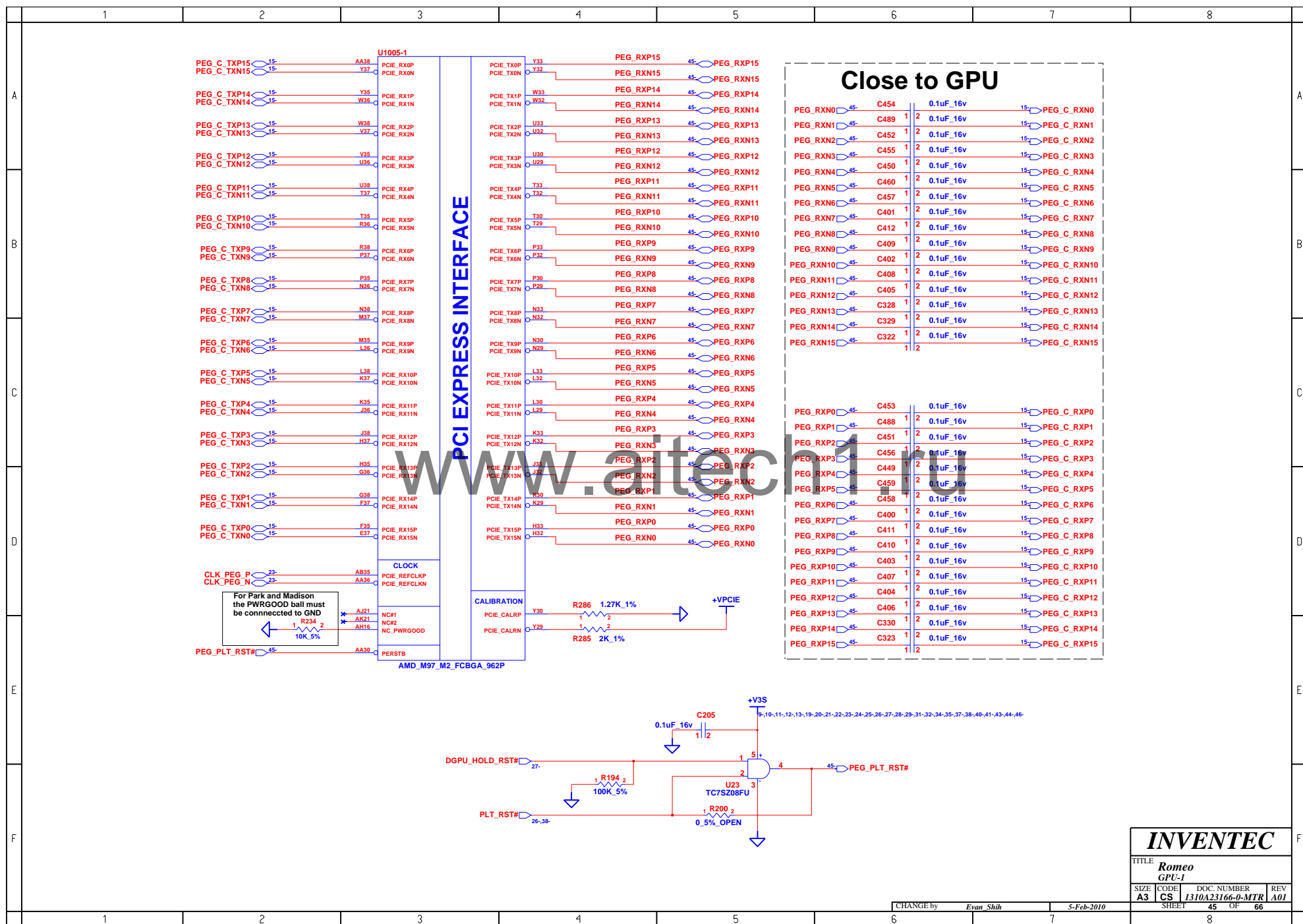
HARDDRIVE PROTECTION
P/N = 6019B0505201

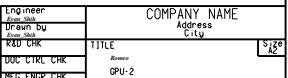
INVENTEC

TITLE			
Romeo			
WLAN & HDD Lock			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		43	OF 66

CHANGE by: Evan Shih 5-Feb-2010







Channel A

DDR3/GDDR3 Memory 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

INVENTEC

TITLE: **Romeo GPU.3**

SIZE: **A3 CS** | CODE: **1310A23166-0-MTR** | REV: **A01**

SHEET: **47** OF **66**

CHANGE by: **Evan Shih** | DATE: **5-Feb-2010**

	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

INVENTEC

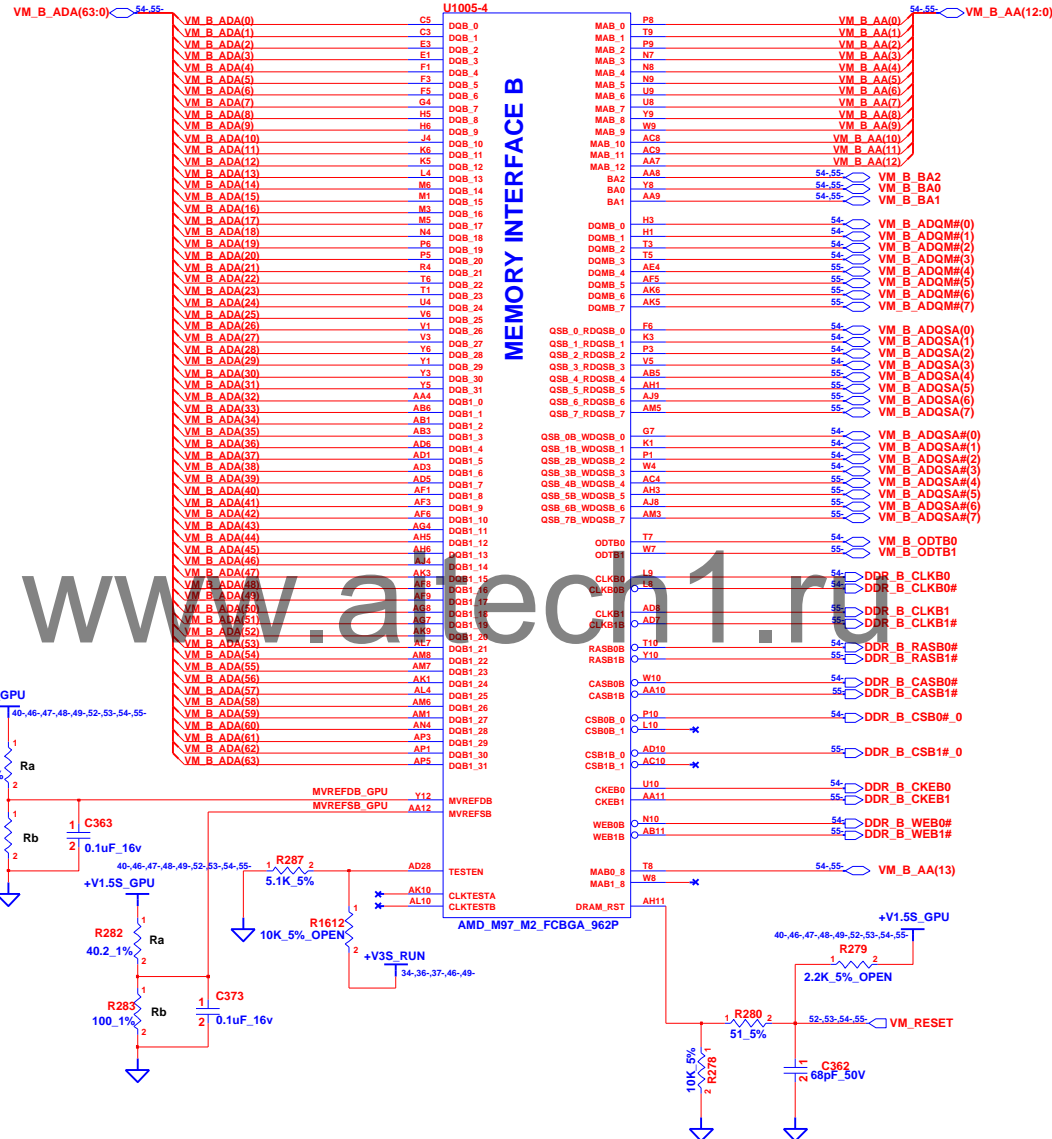
TITLE			
Romeo GPU-3			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23166-0-MTR	A01
SHEET		47	OF 66

CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

Channel B

DDR3/GDDR3Memory Stuff Option

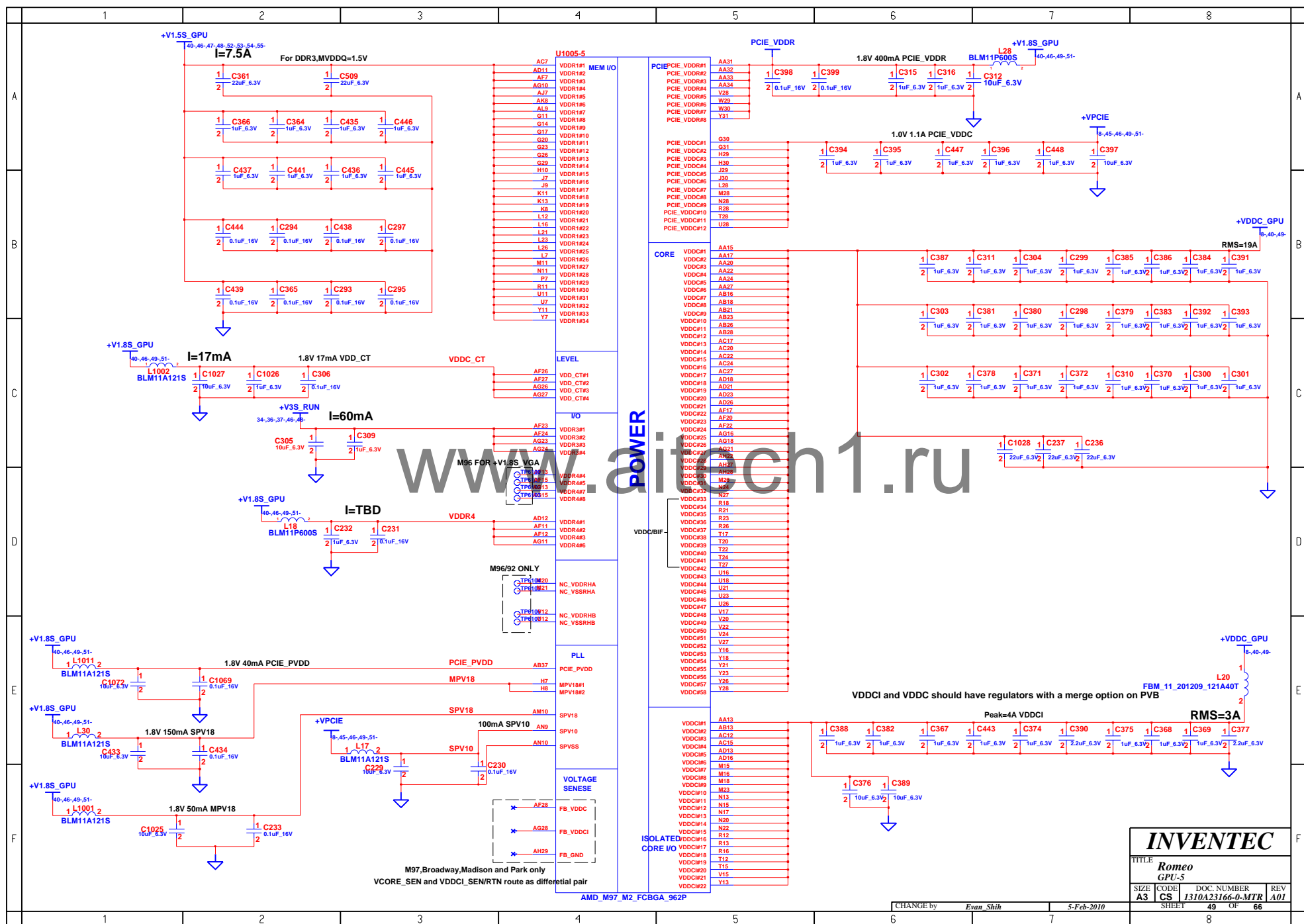
	GDDR5	GDDR3	DDR3
MVDDQ	1.5V	1.8V/1.5V	1.5V
Ra	40.2R	40.2R	40.2R
Rb	100R	100R	100R



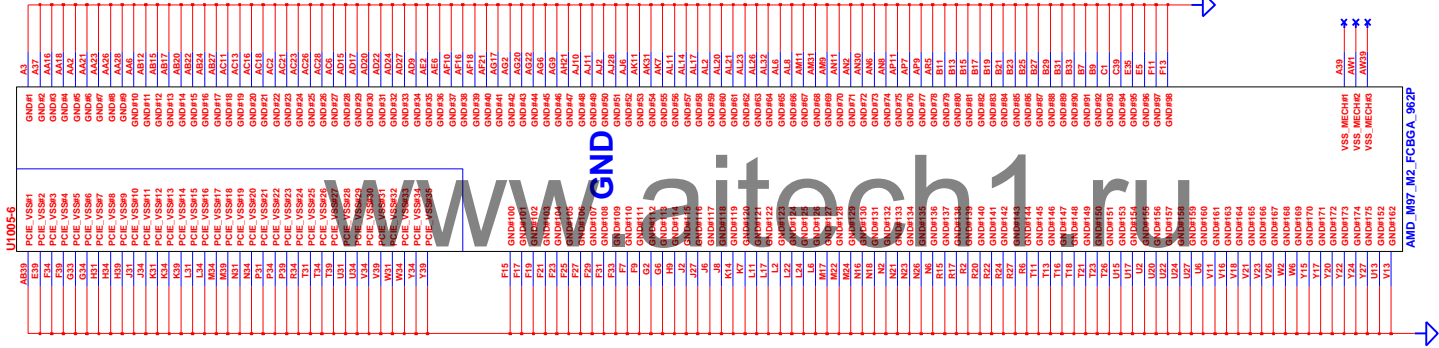
INVENTEC

TITLE Romeo GPU-4			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET 48		OF 66	

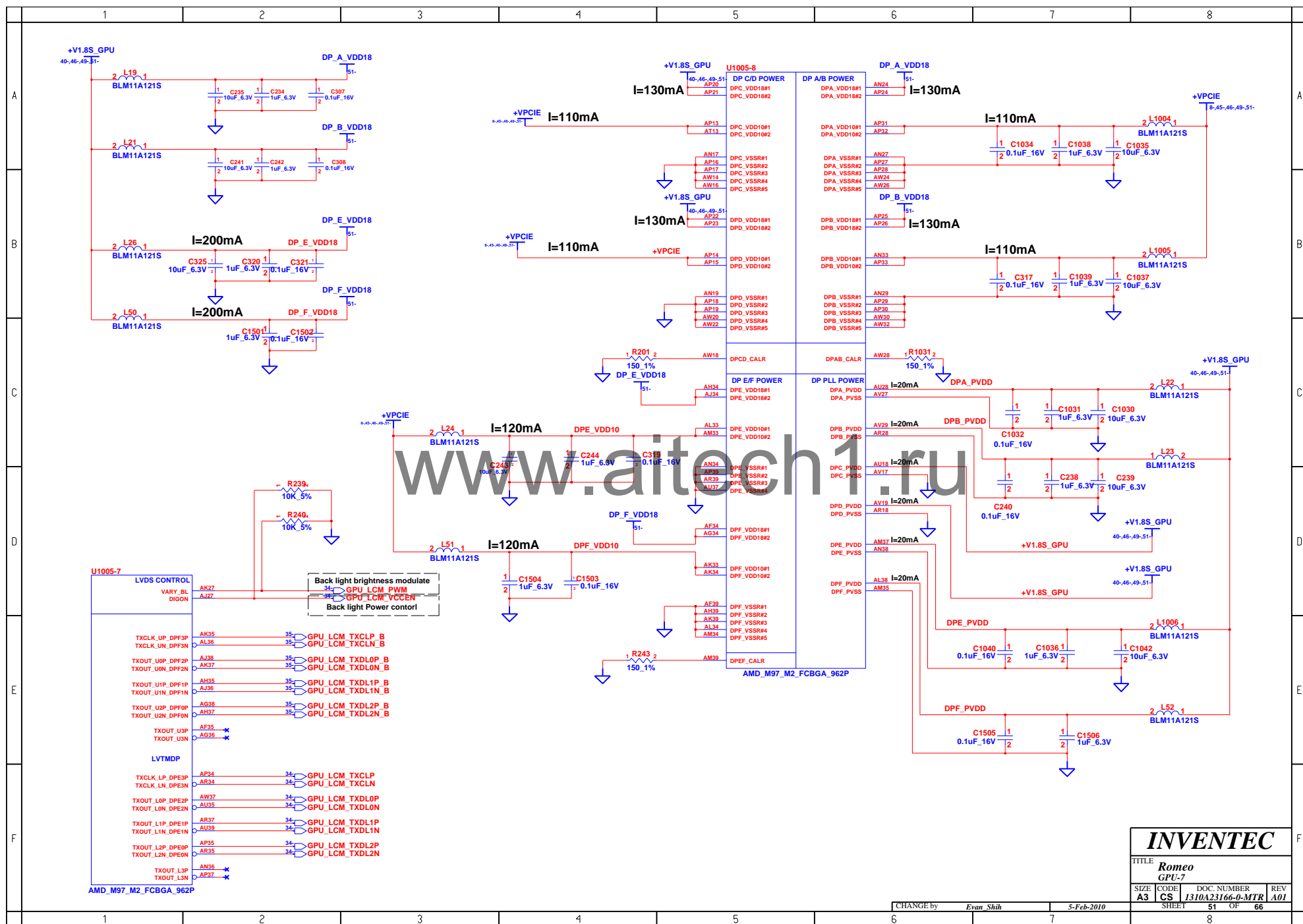
CHANGE by *Evan Shih* 5-Feb-2010

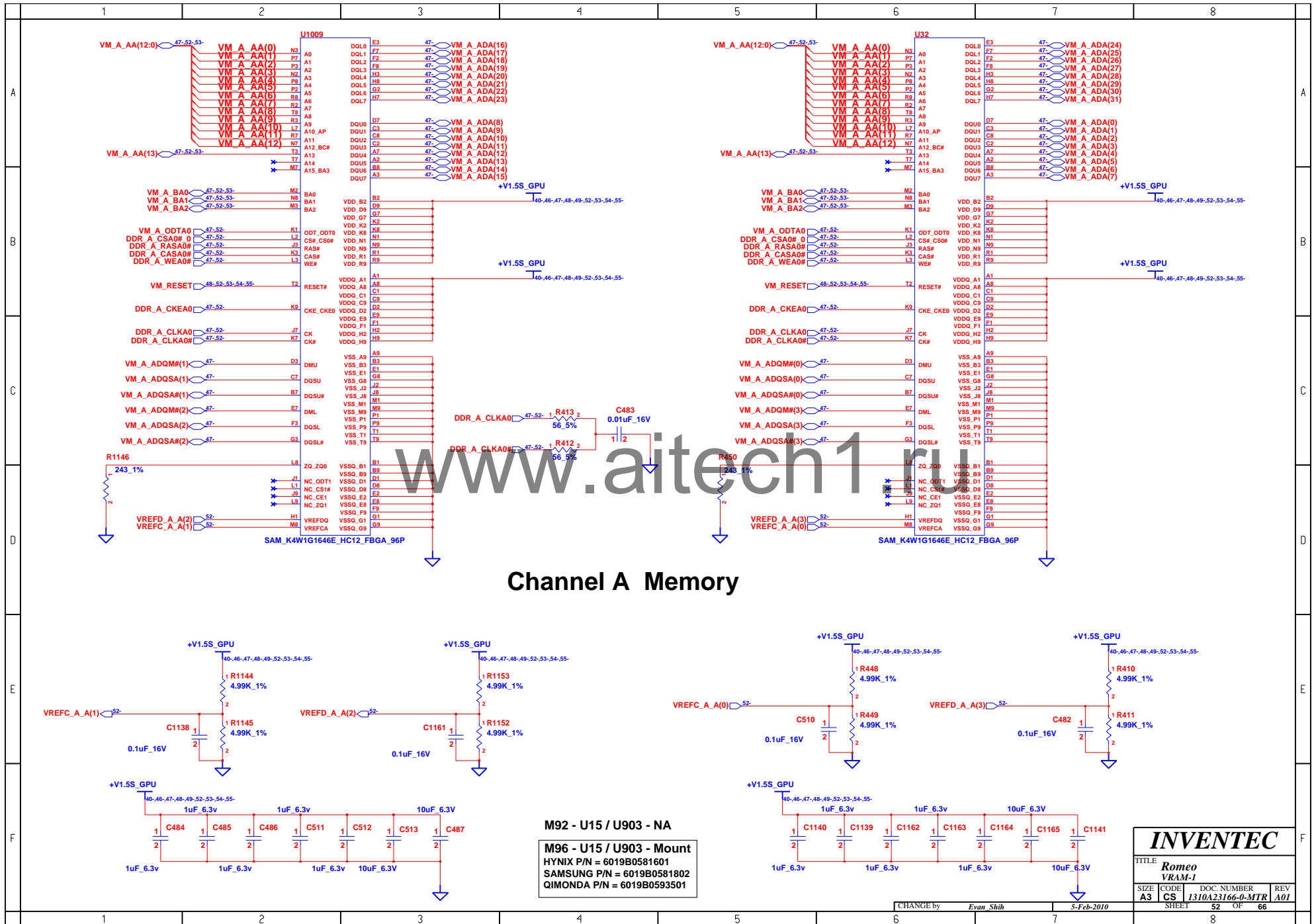


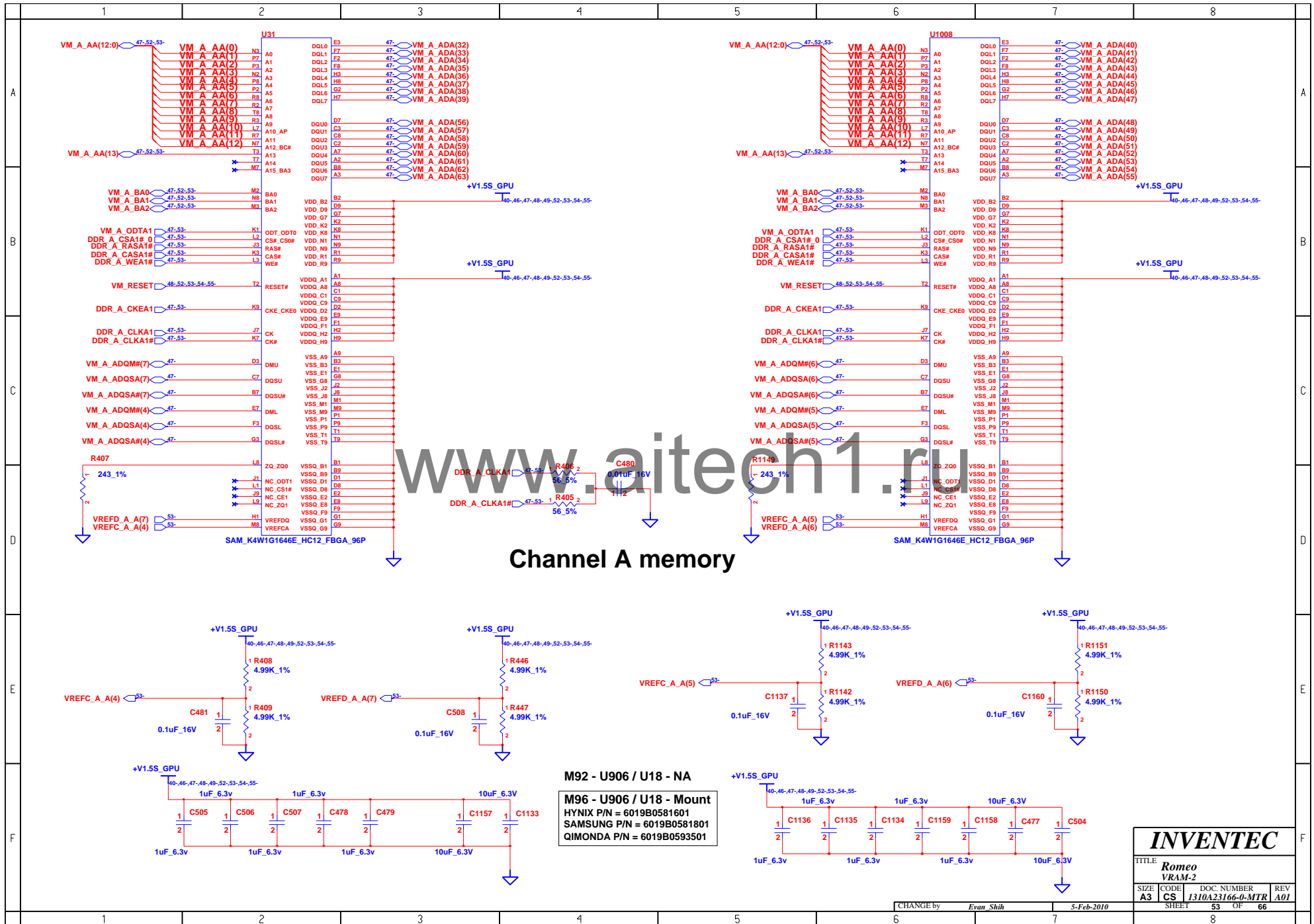
	1	2	3	4	5	6	7	8	
A									A
B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	



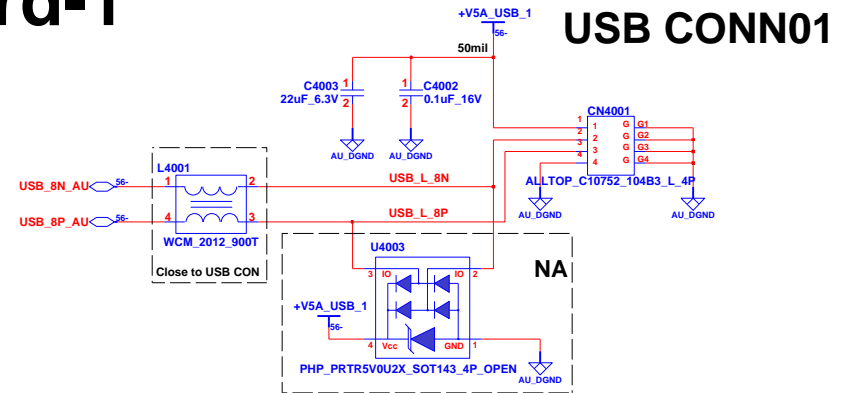
INVENTEC			
TITLE Romeo GPU-6			
SIZE A3	CODE CS	DOC. NUMBER 1310A23166-0-MTR	REV A01
SHEET		50 OF	66



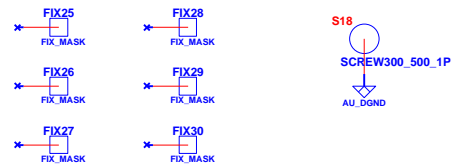
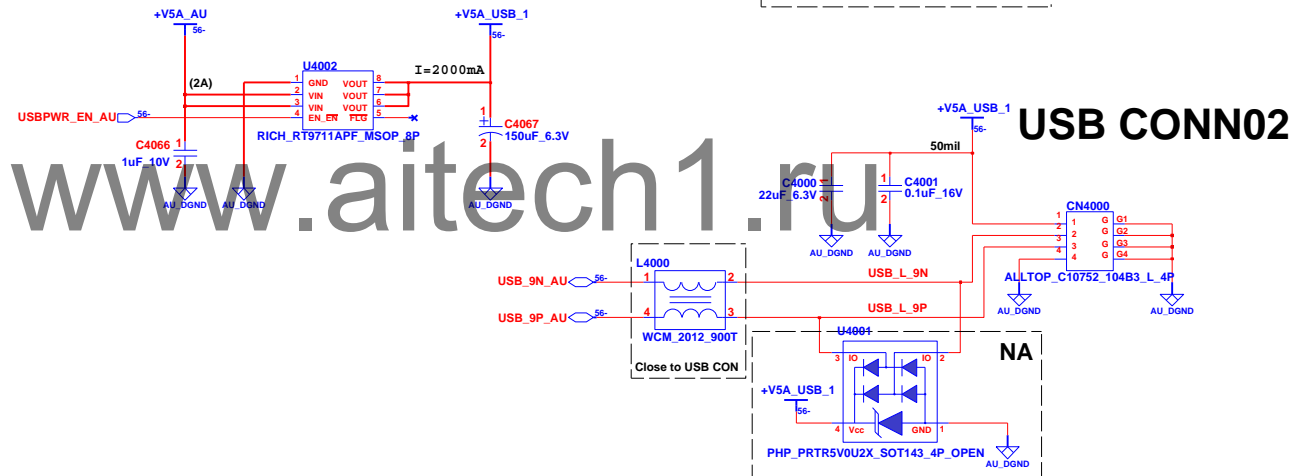
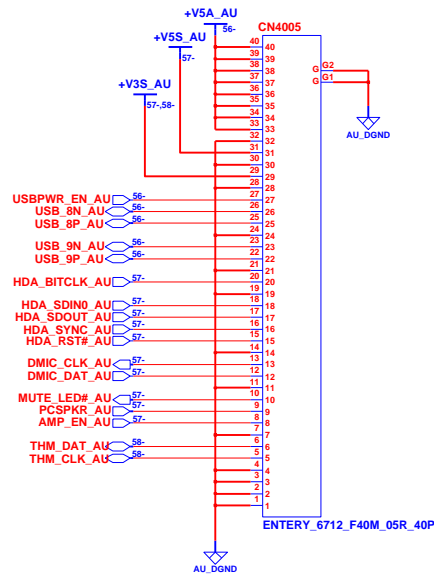




AU Board-1



AU Board CN on DB

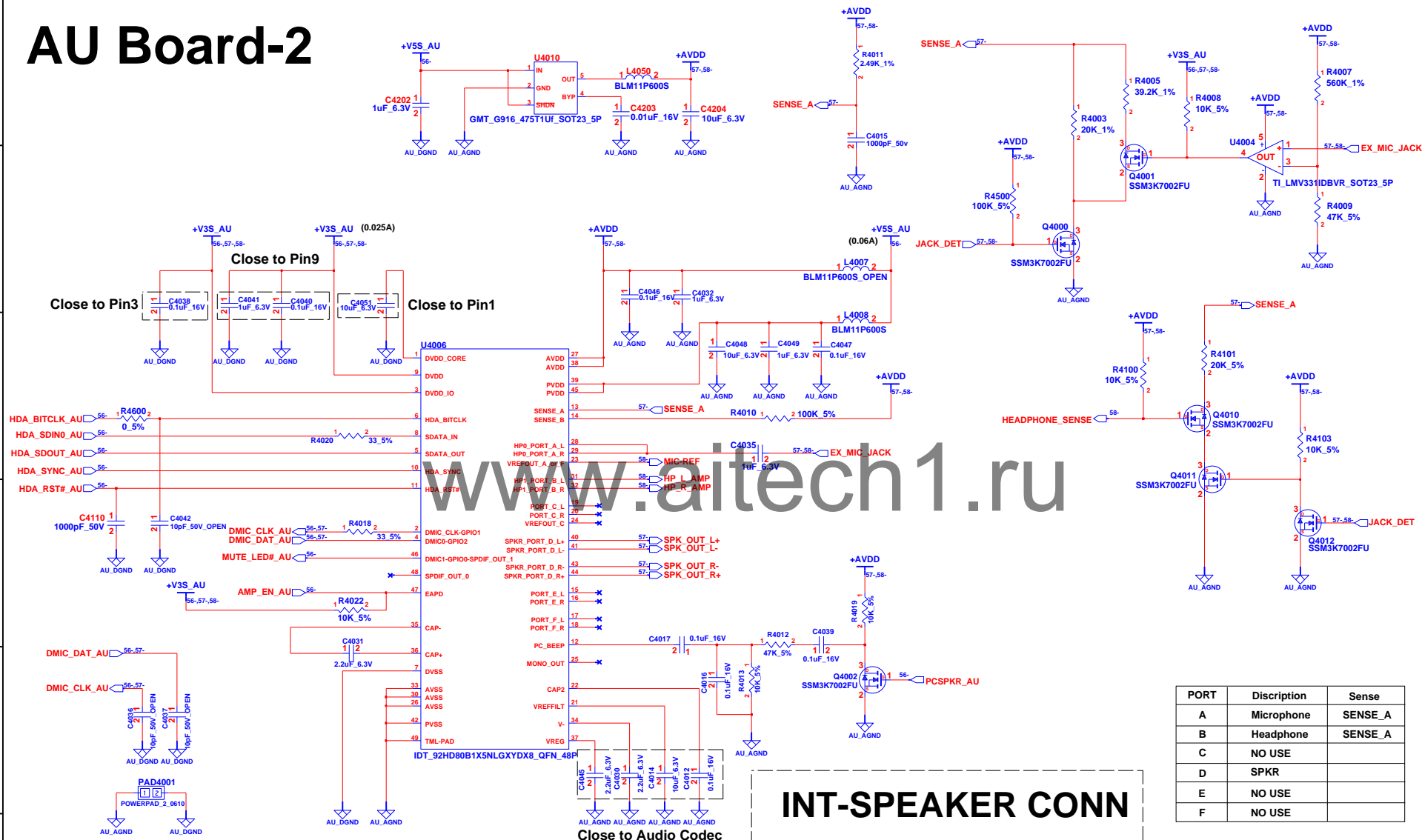


INVENTEC

TITLE			
Romeo AUDIO & USB Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23165-0-MTR	A01
SHEET		56	OF 66

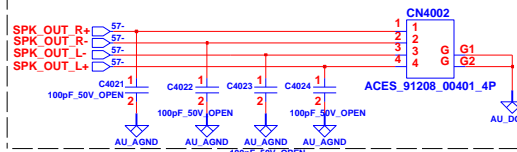
CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

AU Board-2



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

INT-SPEAKER CONN

**INVENTEC**

TITLE	<i>Romeo</i> <i>AUDIO & USB Board</i>
-------	--

AUDIO & USB Board			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23165-0-MTR	A01
SHEET 57 OF 66			

CHANGE by	<i>Evan Shih</i>	<i>10-Feb-2010</i>
-----------	------------------	--------------------

8

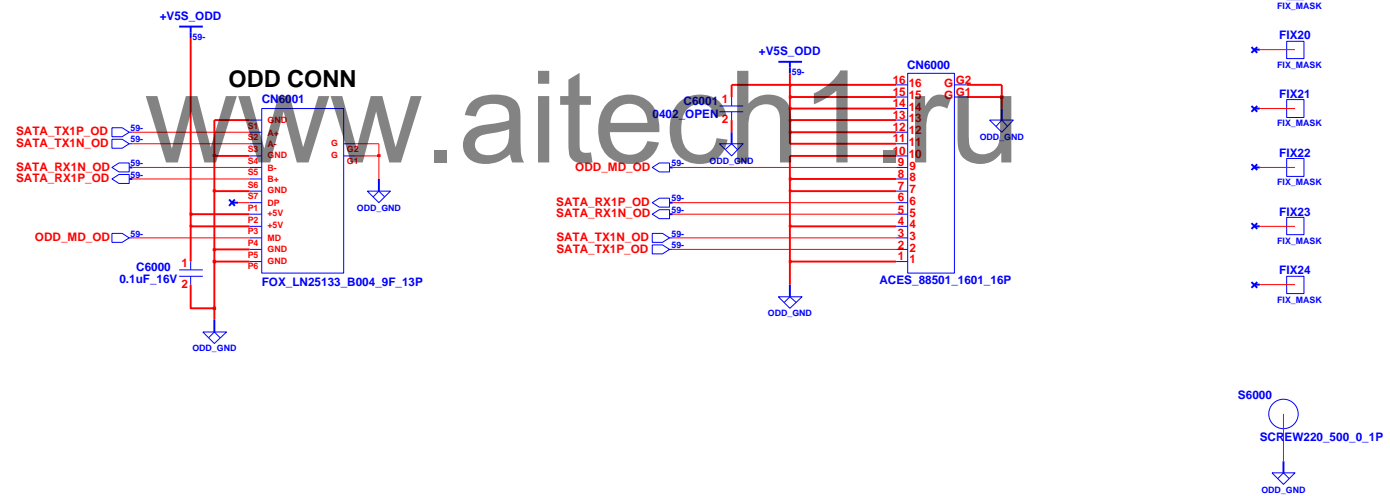
HP&MIC JACK



CHANGE by	<i>Evan Shih</i>	<i>5-Feb-2010</i>
-----------	------------------	-------------------

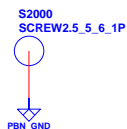
SATA ODD

ODD Board



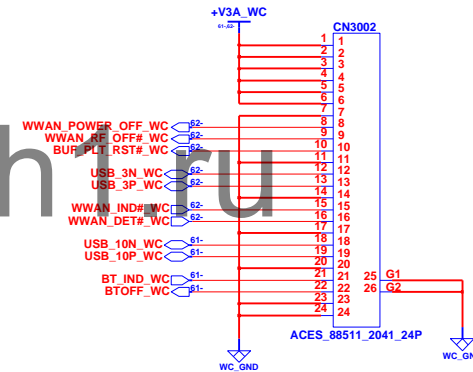
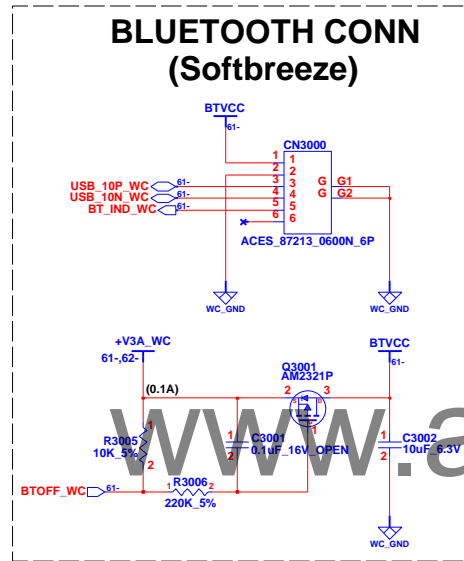
INVENTEC

TITLE Romeo ODD EXT BOARD			
SIZE A3	CODE CS	DOC. NUMBER 1310A23162-0-MTR	REV A01
CHANGE by <i>Evan Shih</i>		5-Feb-2010	
SHEET		59	OF 66

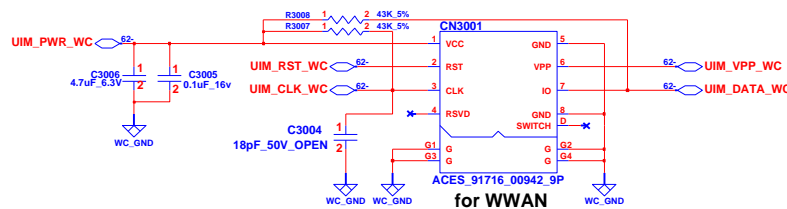
[illegible]

INVENTEC			
TITLE Romeo <i>Power SW Board</i>			
SIZE A3	CODE CS	DOC. NUMBER I310A23174-0-MTR	REV A01
SHEET 60		OF 66	

WC Board-1



SIM CARD CONN



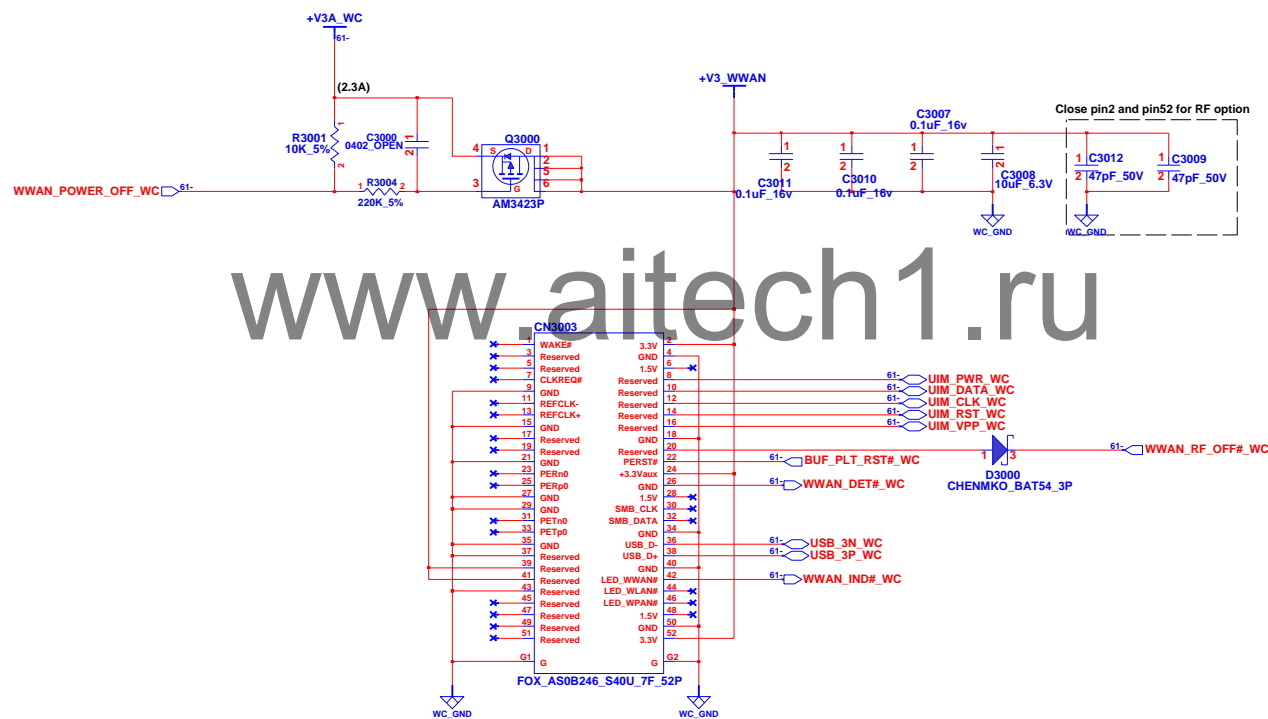
INVENTEC

TITLE Romeo WIRELESS Board			
SIZE A3	CODE CS	DOC. NUMBER 1310A23164-0-MTR	REV A01
SHEET 61		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

WC Board-2

WWAN

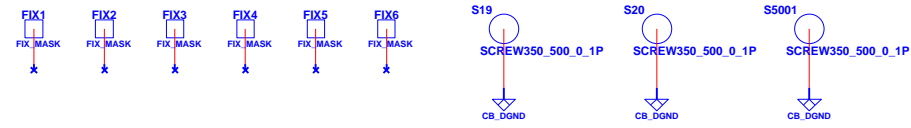
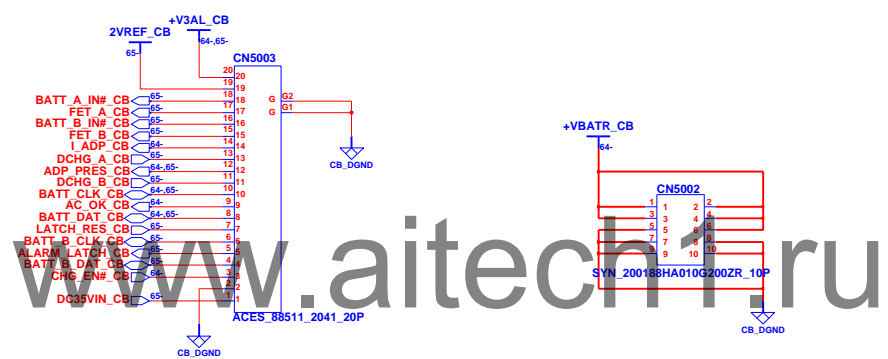


INVENTEC

TITLE Romeo WIRELESS Board			
SIZE A3	CODE CS	DOC. NUMBER 1310A23164-0-MTR	REV A01
SHEET 62		OF 66	

CHANGE by *Evan Shih* 5-Feb-2010

CHG Board-1

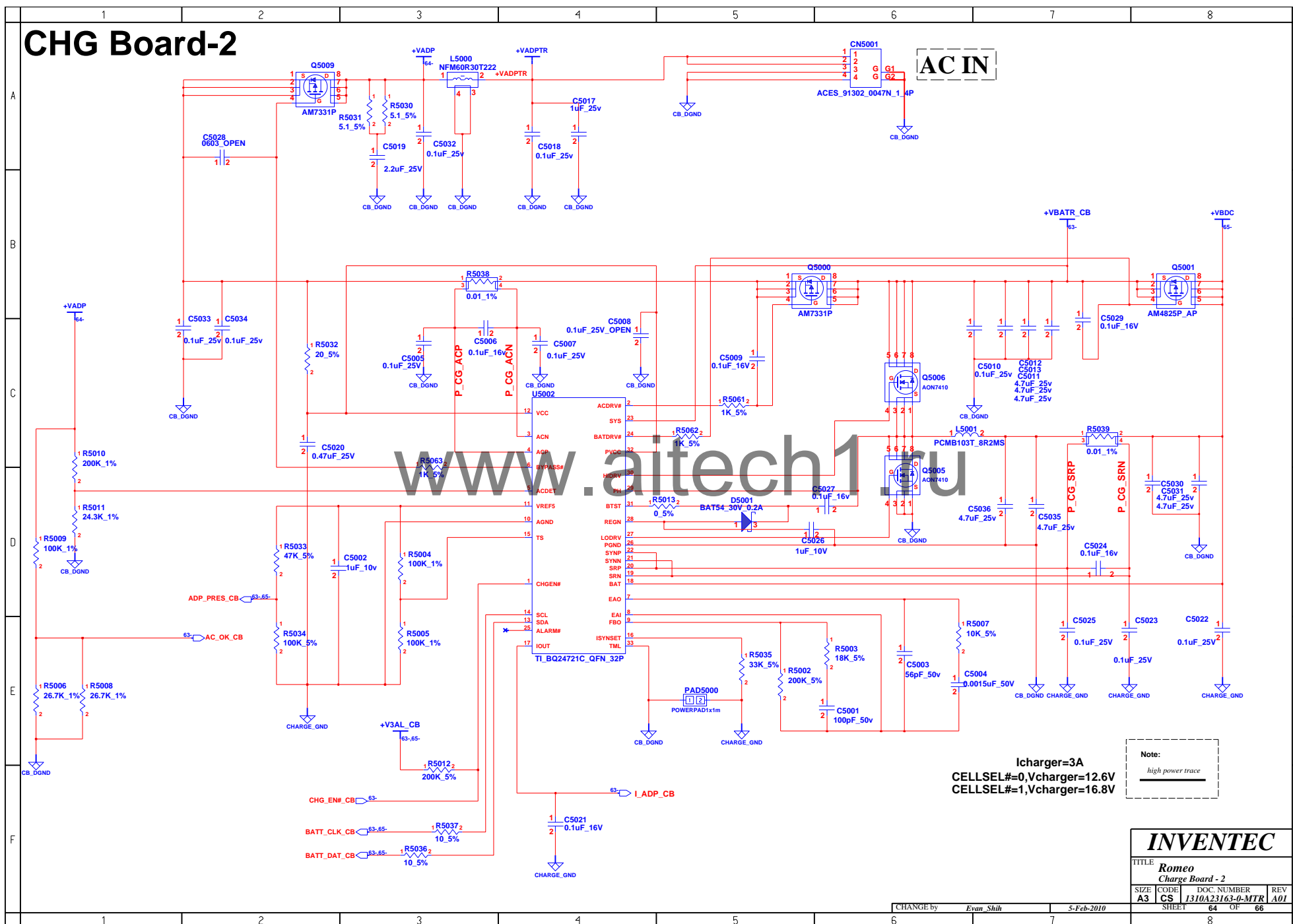


INVENTEC

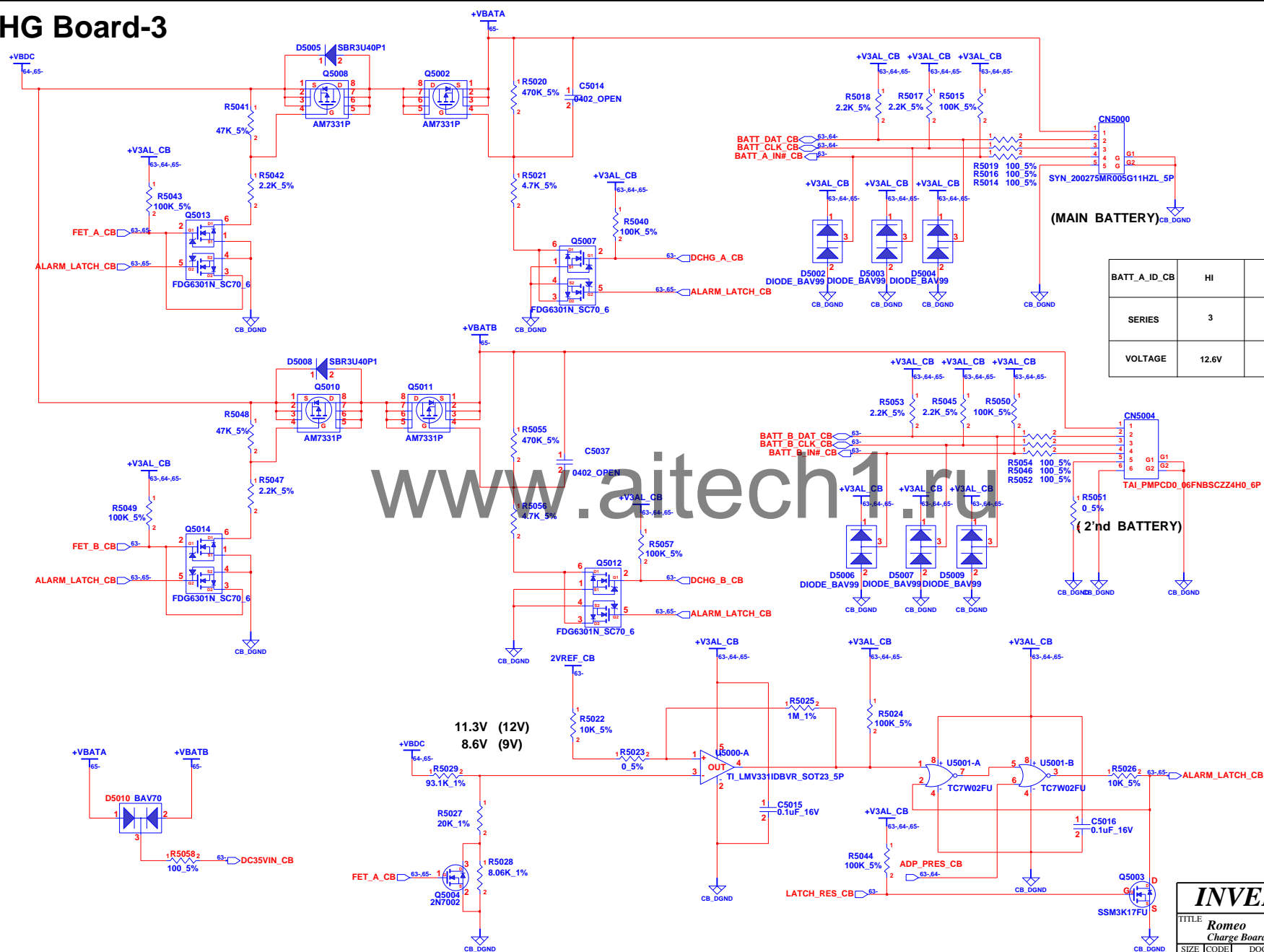
TITLE			
Romeo			
Charge Board - 1			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23163-0-MTR	A01
SHEET		63	OF 66

CHANGE by Evan Shih 5-Feb-2010

CHG Board-2



CHG Board-3



BATT_A_ID_CB	HI	LOW
SERIES	3	4
VOLTAGE	12.6V	16.8V

(2'nd BATTERY

INVENTEC

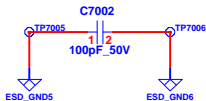
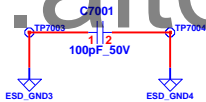
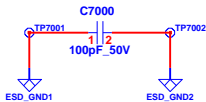
TITLE	<i>Romeo</i> <i>Charge Board - 3</i>
-------	---

SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A23163-0-MTR	A01
SHEET		65	OF 66

CHANGE by	<i>Evan Shih</i>	<i>3-Feb-2010</i>
-----------	------------------	-------------------

EMC Board

www.aitech1.ru



INVENTEC			
TITLE <i>Romeo</i> EMC			
SIZE A3	CODE CS	DOC. NUMBER 1310A23671-0-MTR	REV A01
CHANGE by EV145I		5-Feb-2010	
SHEET 66		OF 66	