

	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>RALPH MV BUILD</div> <div>2011/09/20</div>								B																																																																																					
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D									D																																																																																					
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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>DATE</td><td>CHANGE NO.</td><td>REV</td></tr></table>																										DATE	CHANGE NO.	REV	<table><tr><td></td><td>EE</td><td>DATE</td><td>POWER</td><td>DATE</td><td rowspan="5">INVENTEC</td></tr><tr><td>DRAWER</td><td>Chou, Leo</td><td>2011/9/8</td><td>Hsieh, Alan</td><td>2011/9/8</td></tr><tr><td>DESIGN</td><td>Hsu, Andy</td><td>2011/9/8</td><td></td><td></td></tr><tr><td>CHECK</td><td>Hsu, Andy</td><td>2011/9/8</td><td></td><td></td></tr><tr><td>RESPONSIBLE</td><td>Hsu, Andy</td><td>2011/9/8</td><td></td><td></td></tr><tr><td colspan="5">SIZE = 3 VER : A02</td><td>TITLE</td><td>RALPH 1.0</td></tr><tr><td colspan="5">FILE NAME : RALPH-A02-MB-0908</td><td>SIZE</td><td>A3</td><td>CODE</td><td>CS</td><td>DOC. NUMBER</td><td>310A24590-0-MTR</td><td>REV</td><td>A02</td></tr><tr><td colspan="5">P/N 1310A2459001</td><td colspan="2">SHEET</td><td>1</td><td>OF</td><td>60</td><td colspan="2"></td></tr></table>							EE	DATE	POWER	DATE	INVENTEC	DRAWER	Chou, Leo	2011/9/8	Hsieh, Alan	2011/9/8	DESIGN	Hsu, Andy	2011/9/8			CHECK	Hsu, Andy	2011/9/8			RESPONSIBLE	Hsu, Andy	2011/9/8			SIZE = 3 VER : A02					TITLE	RALPH 1.0	FILE NAME : RALPH-A02-MB-0908					SIZE	A3	CODE	CS	DOC. NUMBER	310A24590-0-MTR	REV	A02	P/N 1310A2459001				
DATE	CHANGE NO.	REV																																																																																												
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P/N 1310A2459001					SHEET		1	OF	60																																																																																					
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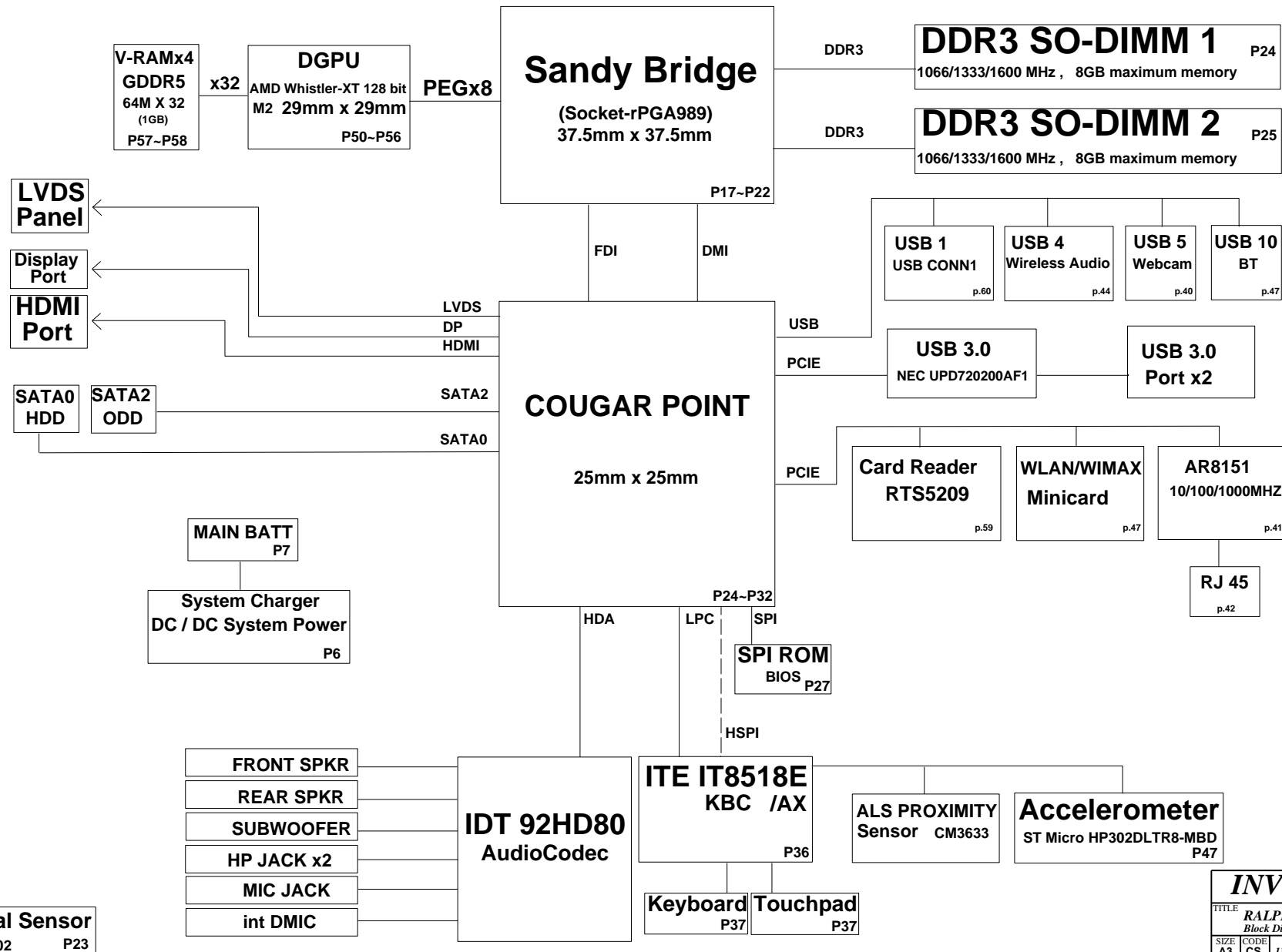
01. PROJECT NAME
02. INDEX
03. Block Diagram
04. POWER Procedure
05. BLANK
06. Charge Circuit
07. Charge Circuit
08. +V3A & +V5A
09. +V1.5 & +V0.75
10. +V1.8S & +VDDC_GPU
11. +VTT
12. +VCCSA
13. +VCC_CORE & +VGFX_CORE
14. +VCC_CORE & +VGFX_CORE
15. +V5S & +V3S
16. BLANK
17. CPU-1
18. CPU-2
19. CPU-3
20. CPU-4
21. CPU-5
22. CPU-6
23. Fan
24. DDR3-1
25. DDR3-2
26. BLANK
27. PCH-1
28. PCH-2
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32. PCH-6
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36. KBC
37. Keyboard & TouchPad
38. DISPLAY PORT CONN
39. HDMI CONN
40. LVDS
41. LAN
42. RJ-45
43. USB3.0 RE-DRIVER
44. USB2.0 CONN
45. Audio, PWB, ODD Board & HDD CONN
46. Wireless Audio,LDPS,CR,JOG,USB CONN
47. WLAN & HDD PROTECTION
48. EMI CAP. & SCREW
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50. GPU-1
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52. GPU-3
53. GPU-4
54. GPU-5
55. GPU-6
56. GPU-7
57. VRAM-1
58. VRAM-2
- Daughter Board**
59. Card Reader BOAD
60. ODD, W/A & POWER BOARD

INVENTEC			
TITLE RALPH 1.0 Index			
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CHANGE by Chou, Leo		9-Sep-2011	
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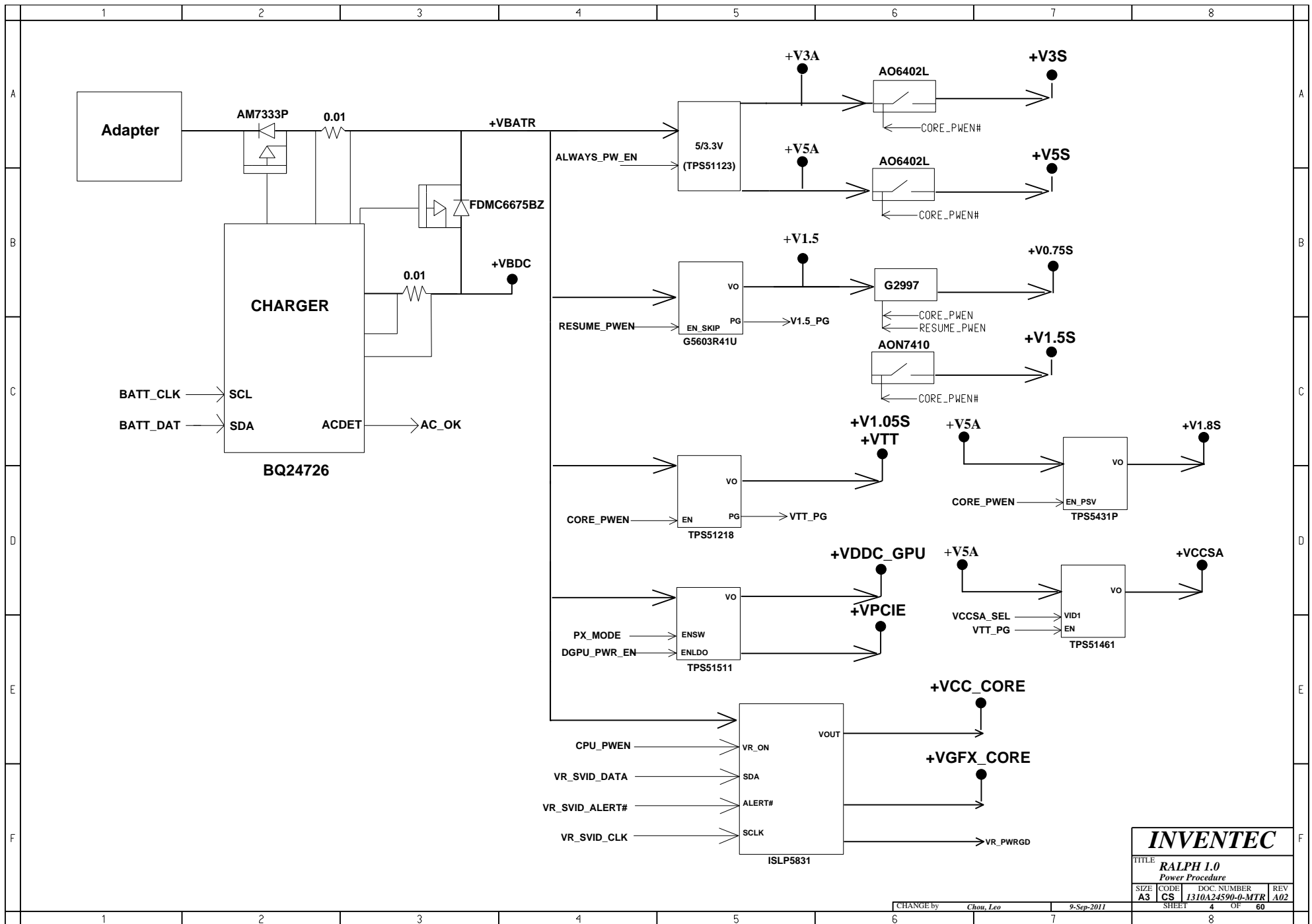
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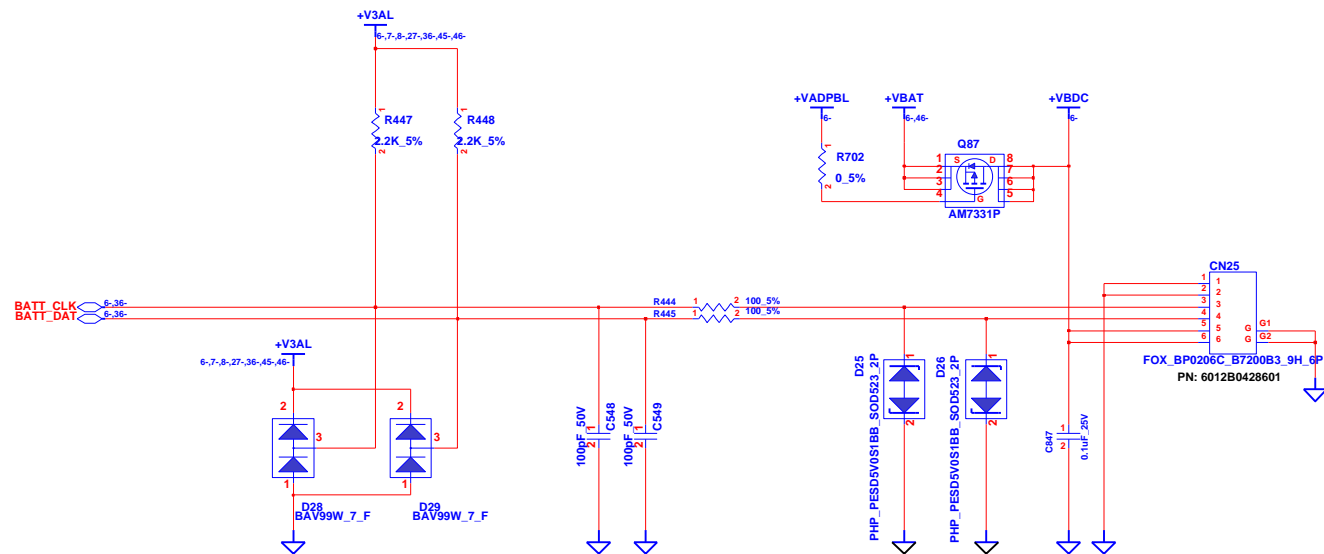
CHANGE by: *Chou, Leo* 9-Sep-2011



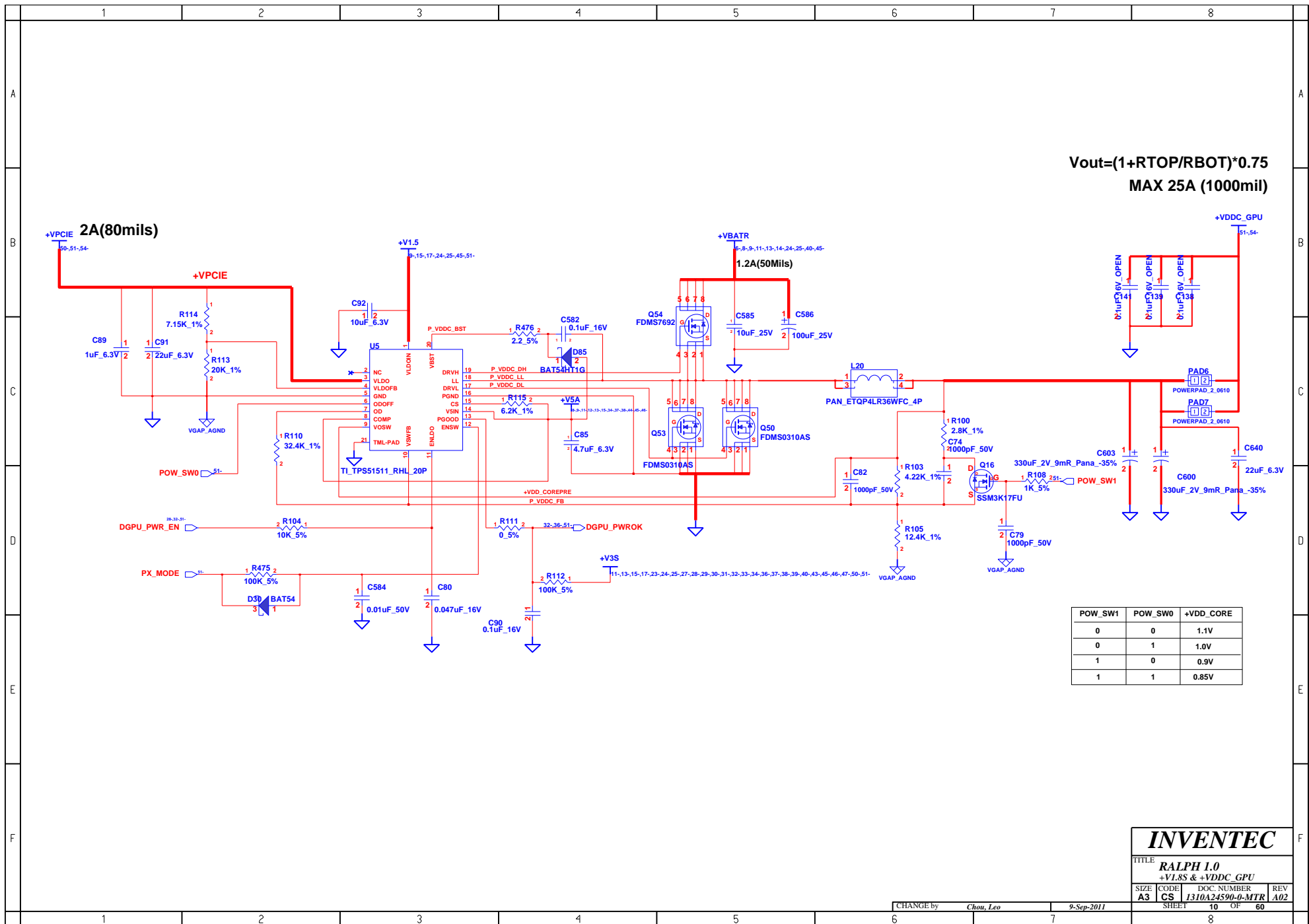
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C									C
D									D
E									E
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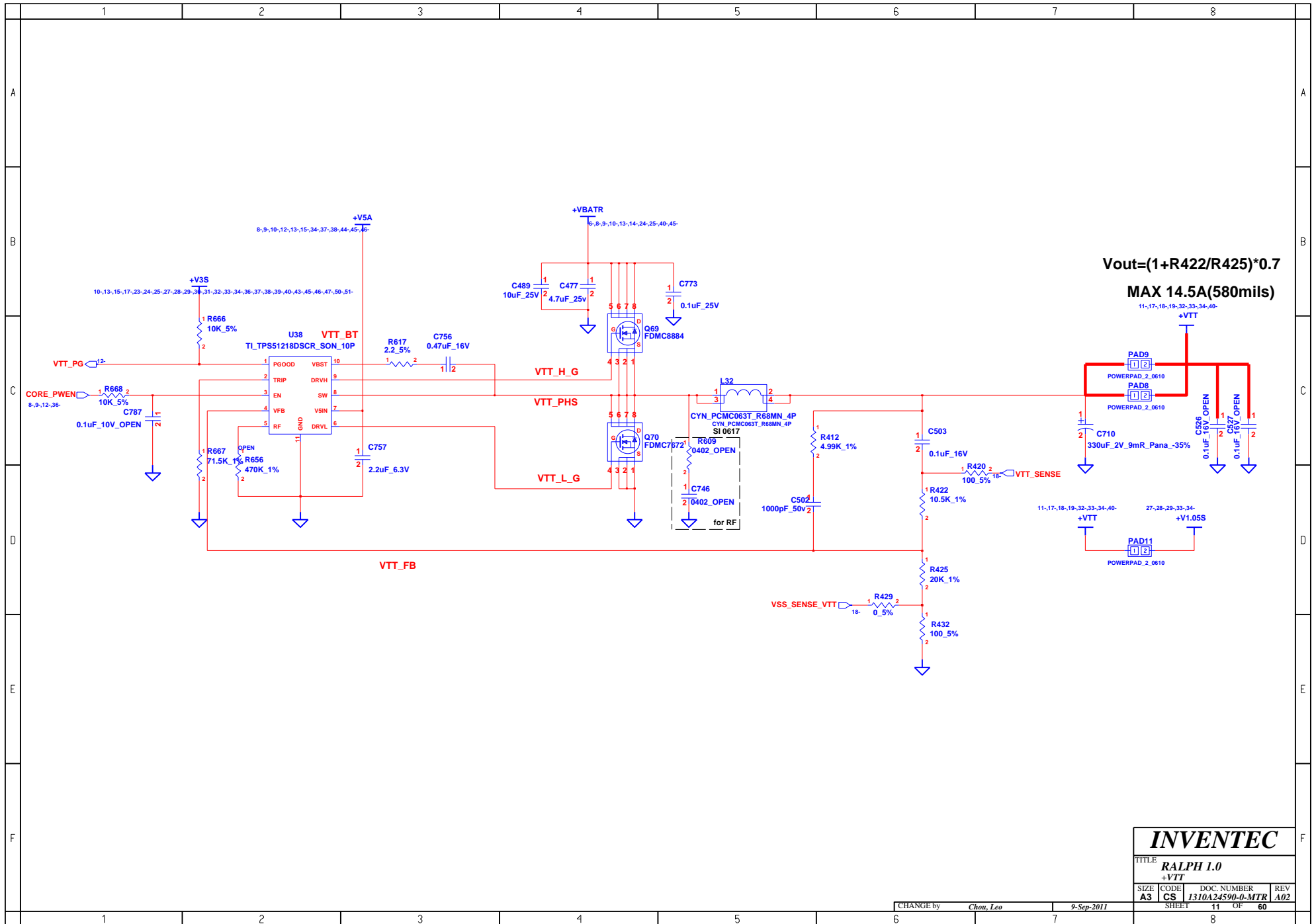
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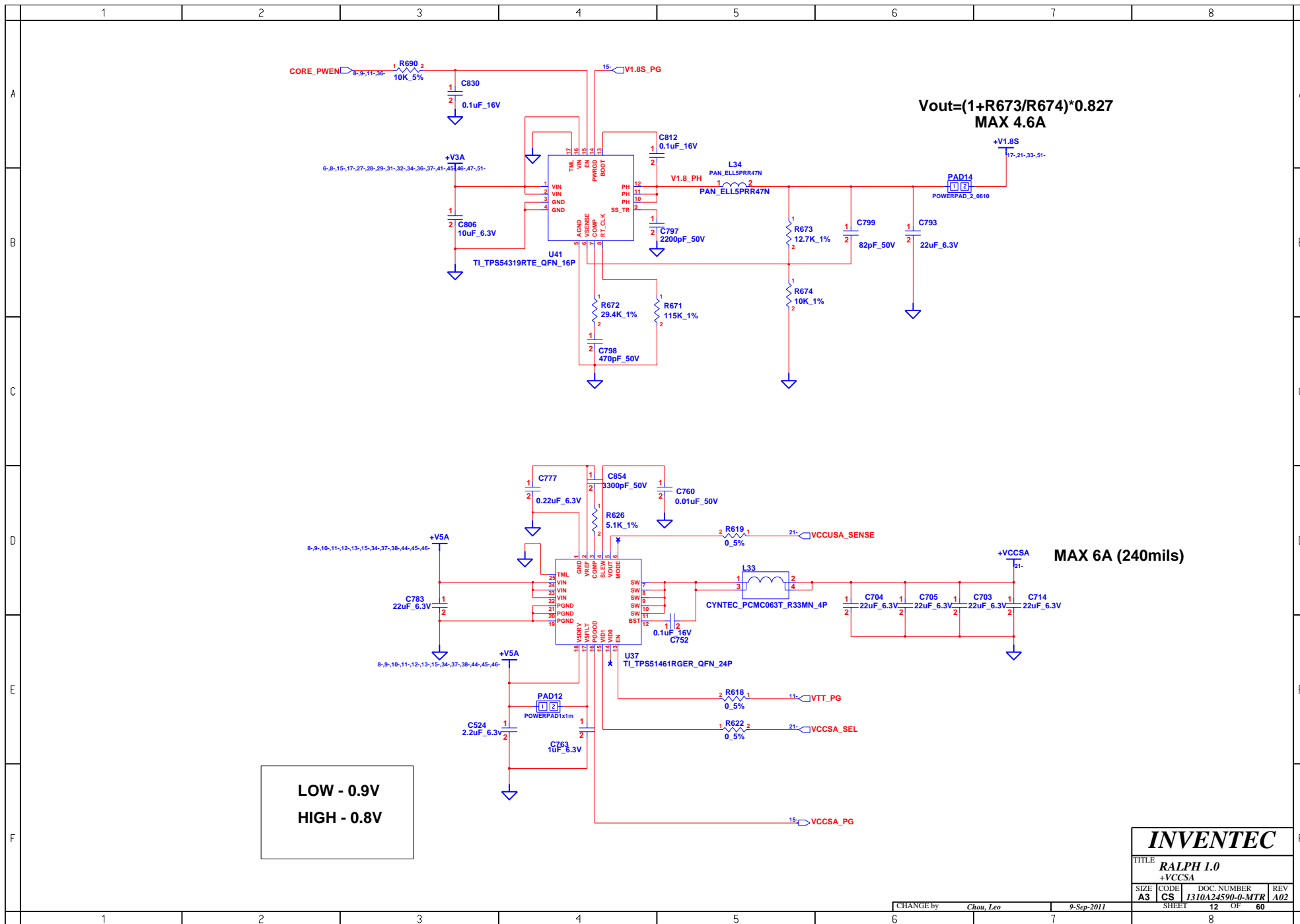
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Power Procedure			
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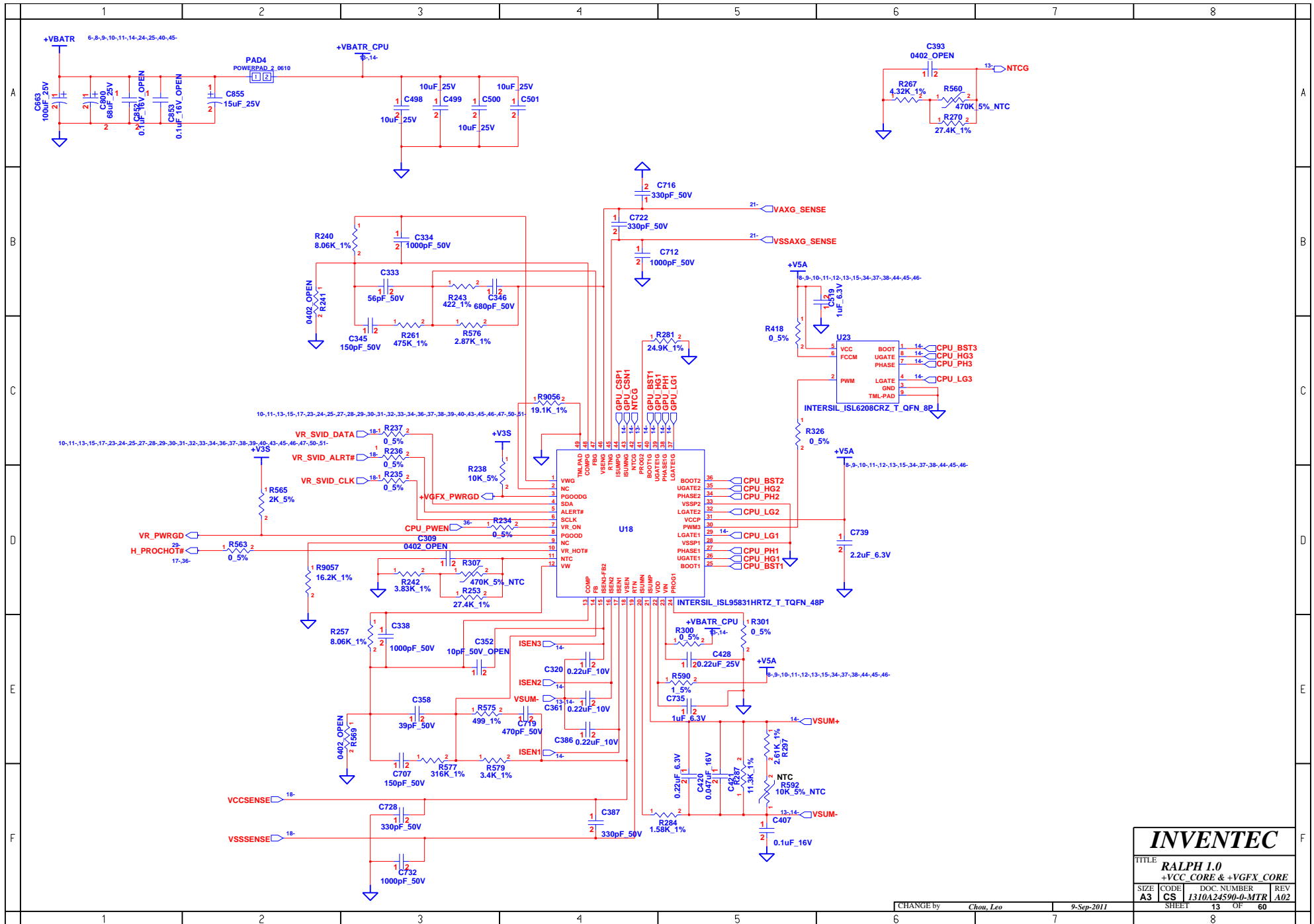


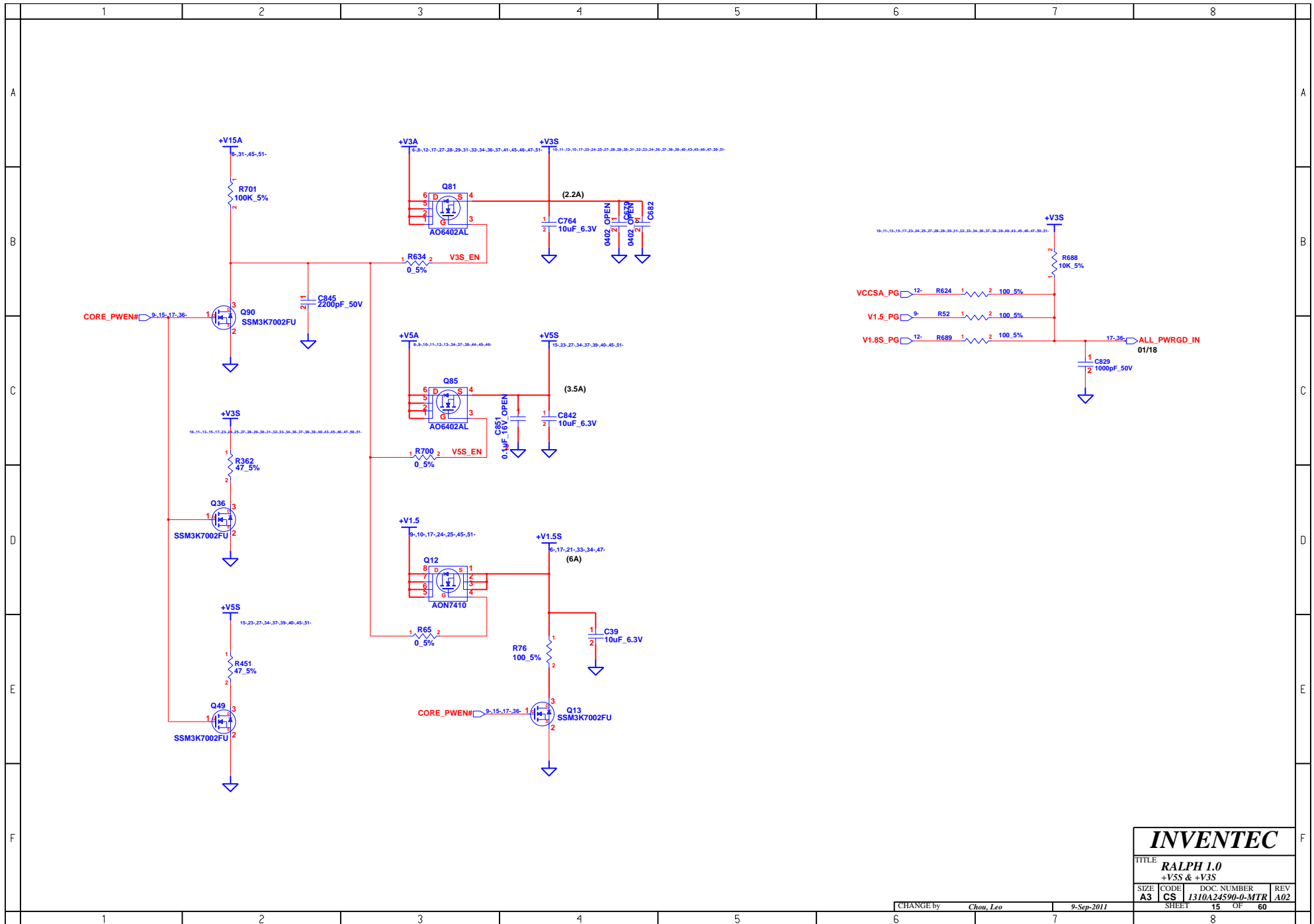
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RALPH 1.0			
Charge Board - 3			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A24590-0-MTR	A02
CHANGE by		Chou, Leo	9-Sep-2011
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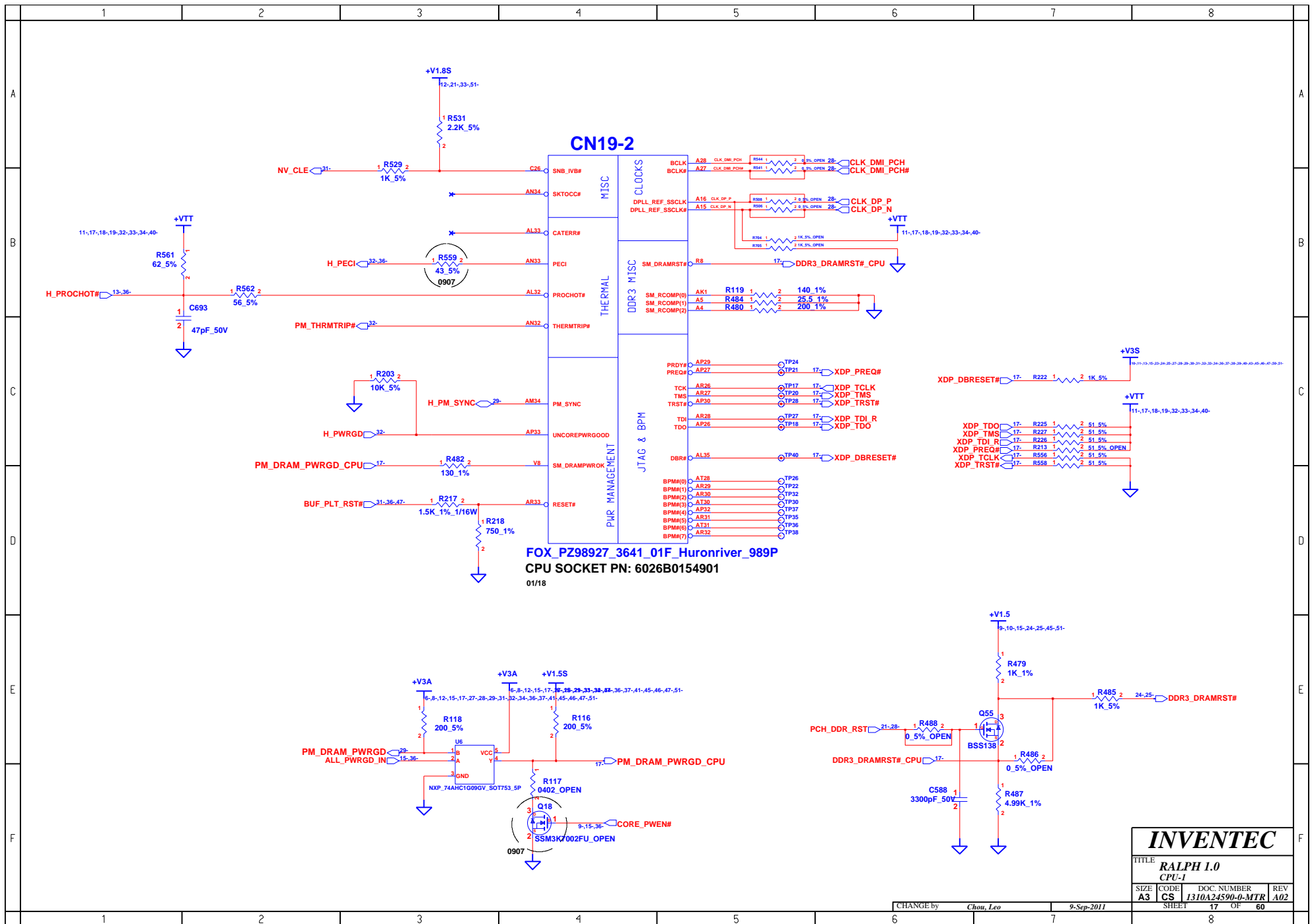


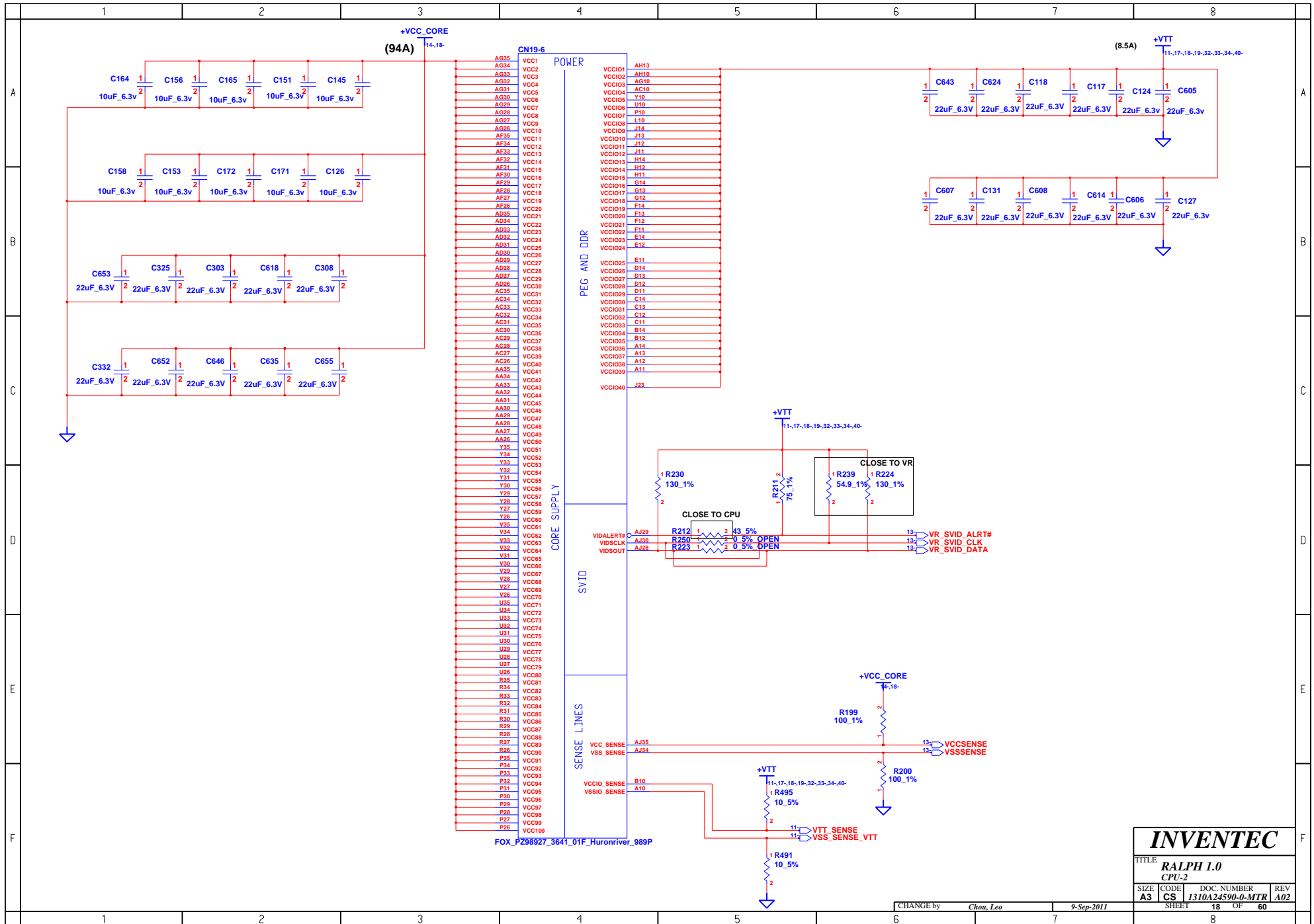


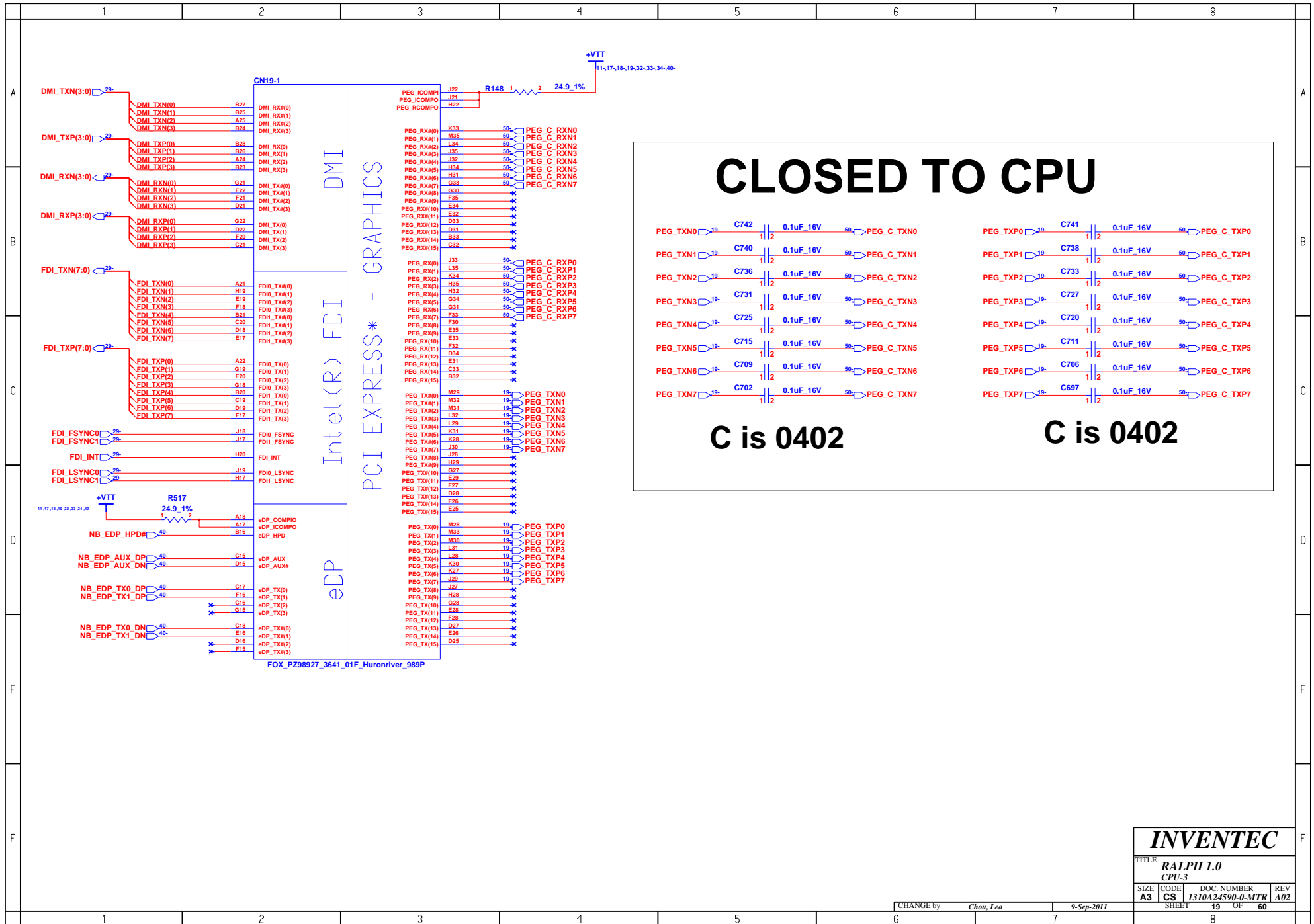


	1	2	3	4	5	6	7	8	
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B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	

INVENTEC			
TITLE RALPH 1.0 CLK GEN			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
CHANGE by Chou, Leo		9-Sep-2011	
SHEET		16	OF 60

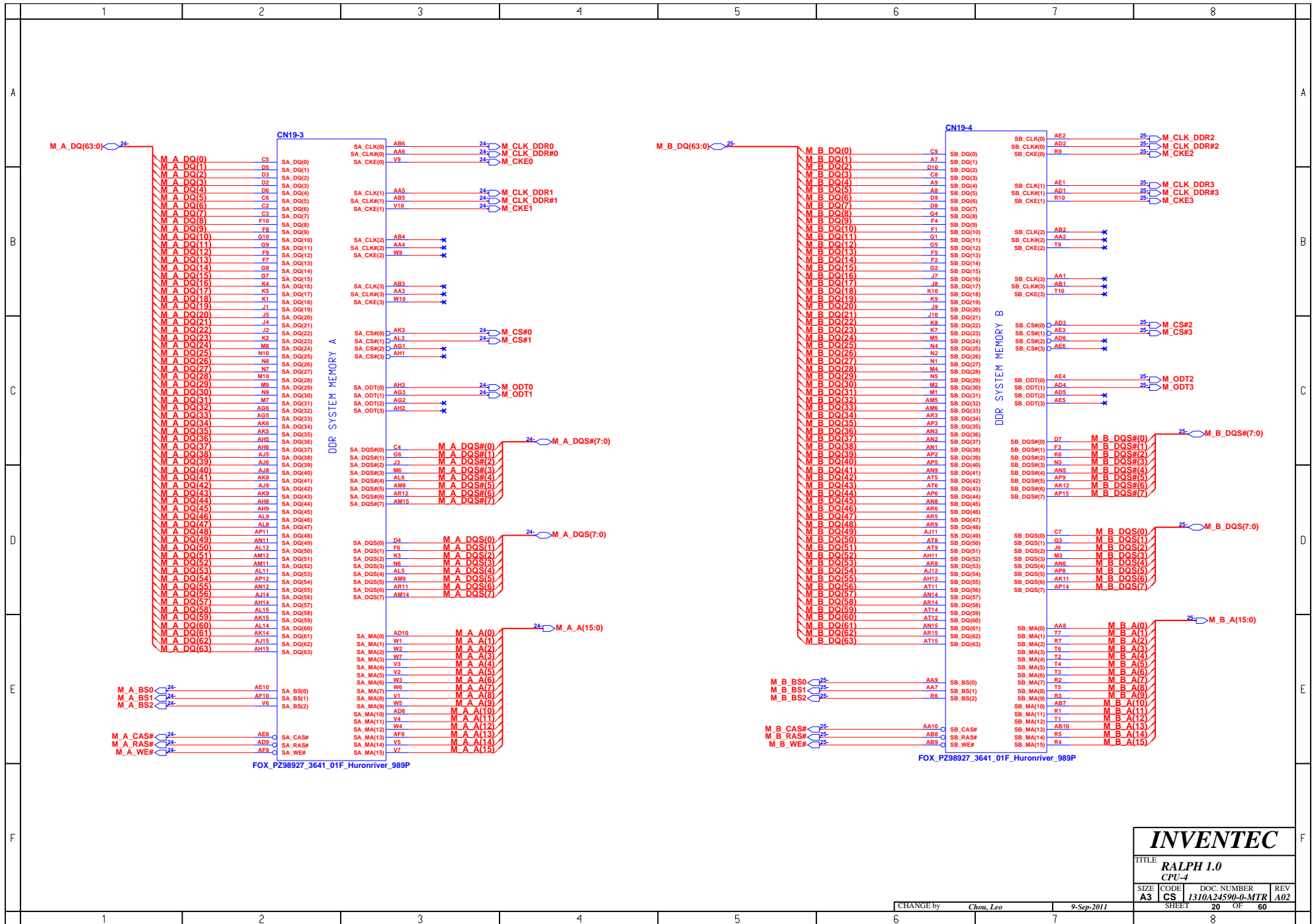


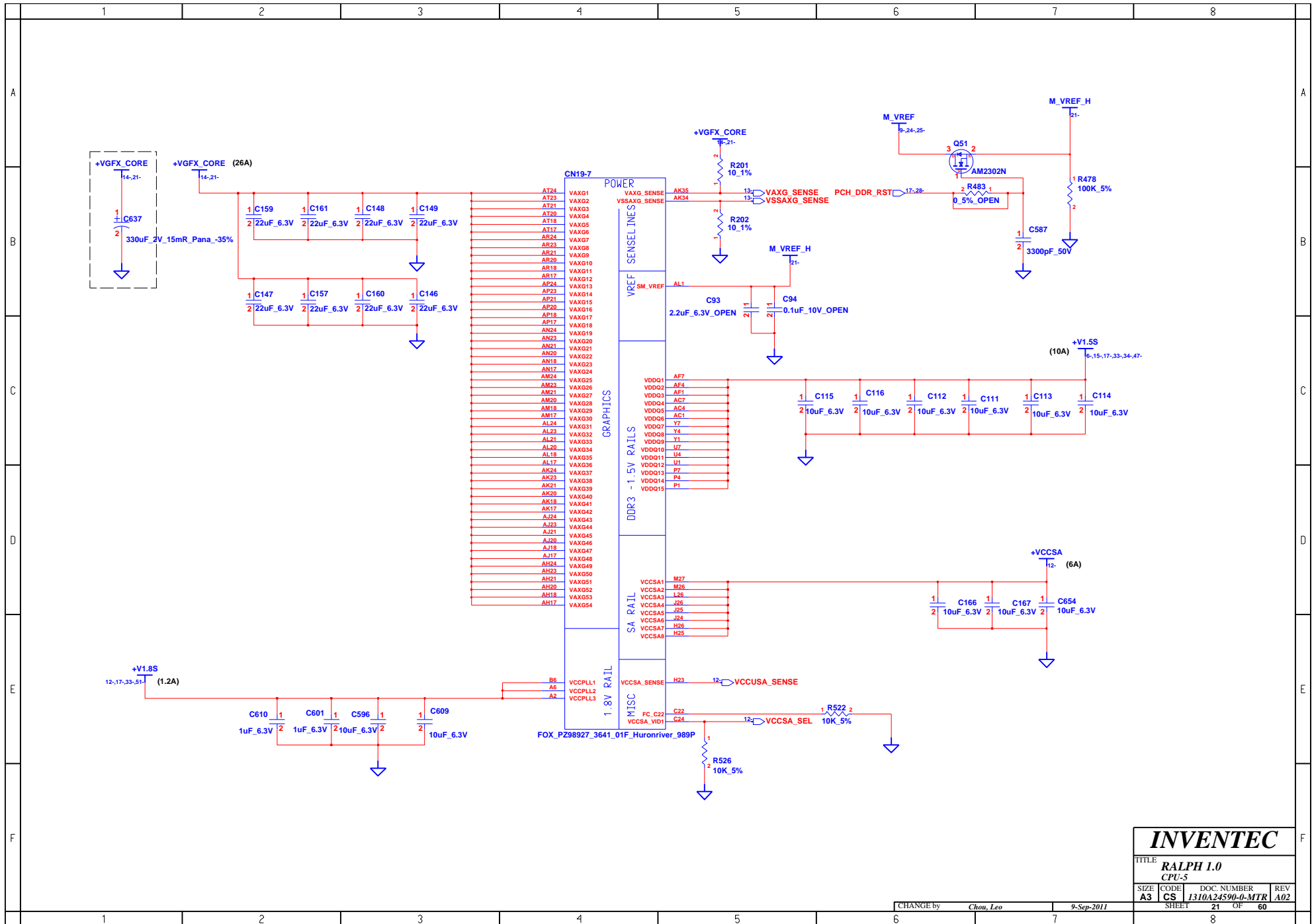




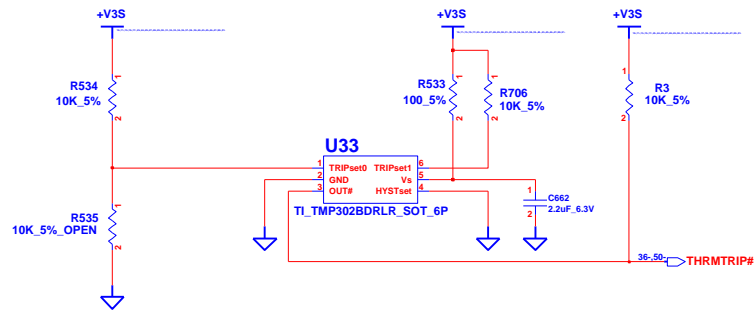
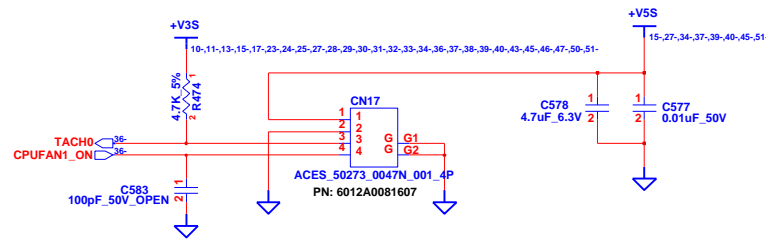
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SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
CHANGE by <i>Chou, Leo</i>		9-Sep-2011	
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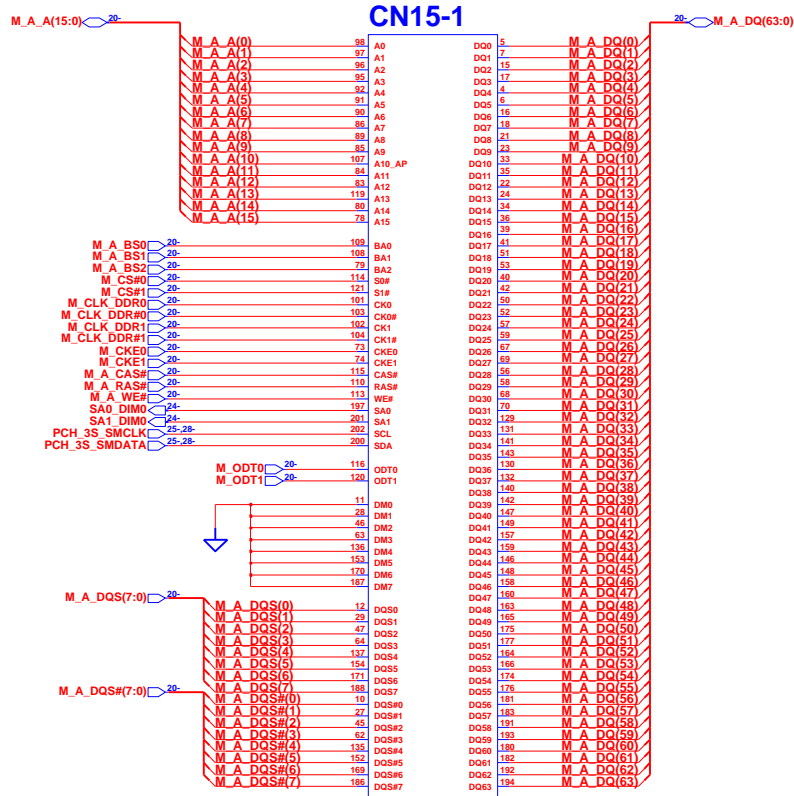


FAN CONN

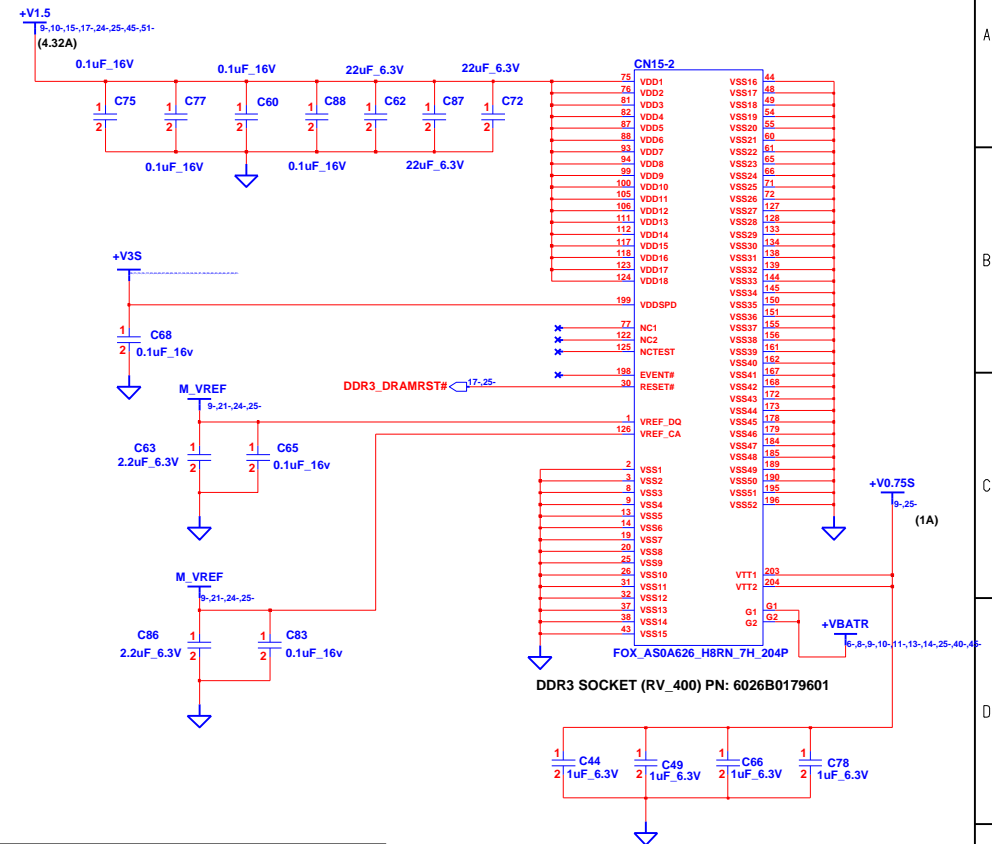


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RALPH 1.0			
FAN			
SIZE	CODE	DOC. NUMBER	REV
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CHANGE by		Chou, Leo	9-Sep-2011
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DDR3 SO-DIMM 0



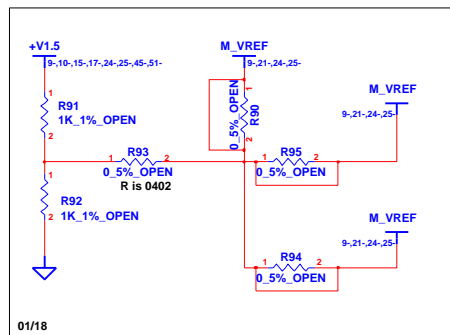
FOX_AS0A626_H8RN_7H_204P
DDR3 SOCKET (RV_800) PN: 6026B0216601



NOTE:

IF SA0_DIM0=0, SA1_DIM0=0
SO-DIMMA SPD ADDRESS IS 0xA0
SO-DIMMA TS ADDRESS IS 0x30

IF SA0_DIM0=1, SA1_DIM0=0
SO-DIMMA SPD ADDRESS IS 0xA2
SO-DIMMA TS ADDRESS IS 0x32



INVENTEC

TITLE RALPH I.0 SO-DIMM1			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
SHEET 24		OF 60	

CHANGE by Chou, Leo 9-Sep-2011

DDR3 SO-DIMM 1

A

B

C

D

E

F

A

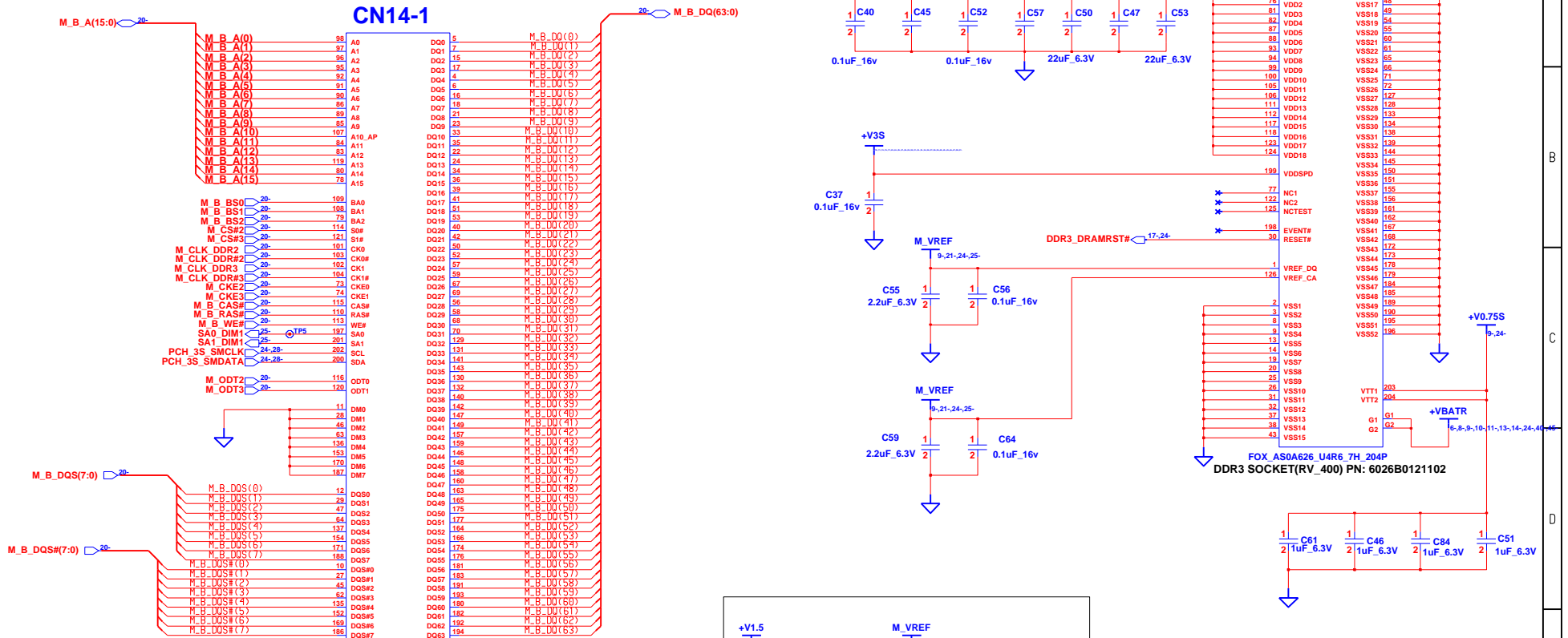
B

C

D

E

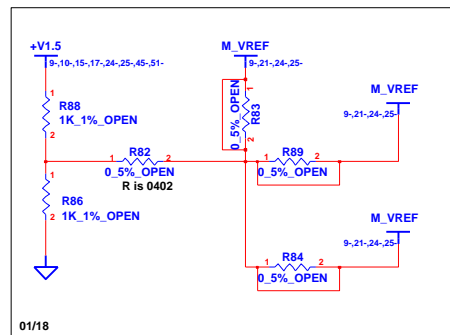
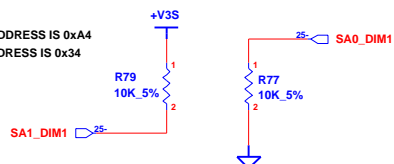
F



FOX_AS0A626_U4R6_7H_204P
DDR3 SOCKET(RV_400) PN: 6026B0121102

10-11,13-15,17-23,24-25,27-28,29,30-31,32-33,34-36,37-38,39,40-43,45-46,47-50,51-

NOTE:
SO-DIMMB SPD ADDRESS IS 0xA4
SO-DIMMB TS ADDRESS IS 0x34



01/18

INVENTEC

TITLE RALPH 1.0 SO-DIMM2			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
SHEET 25		OF 60	

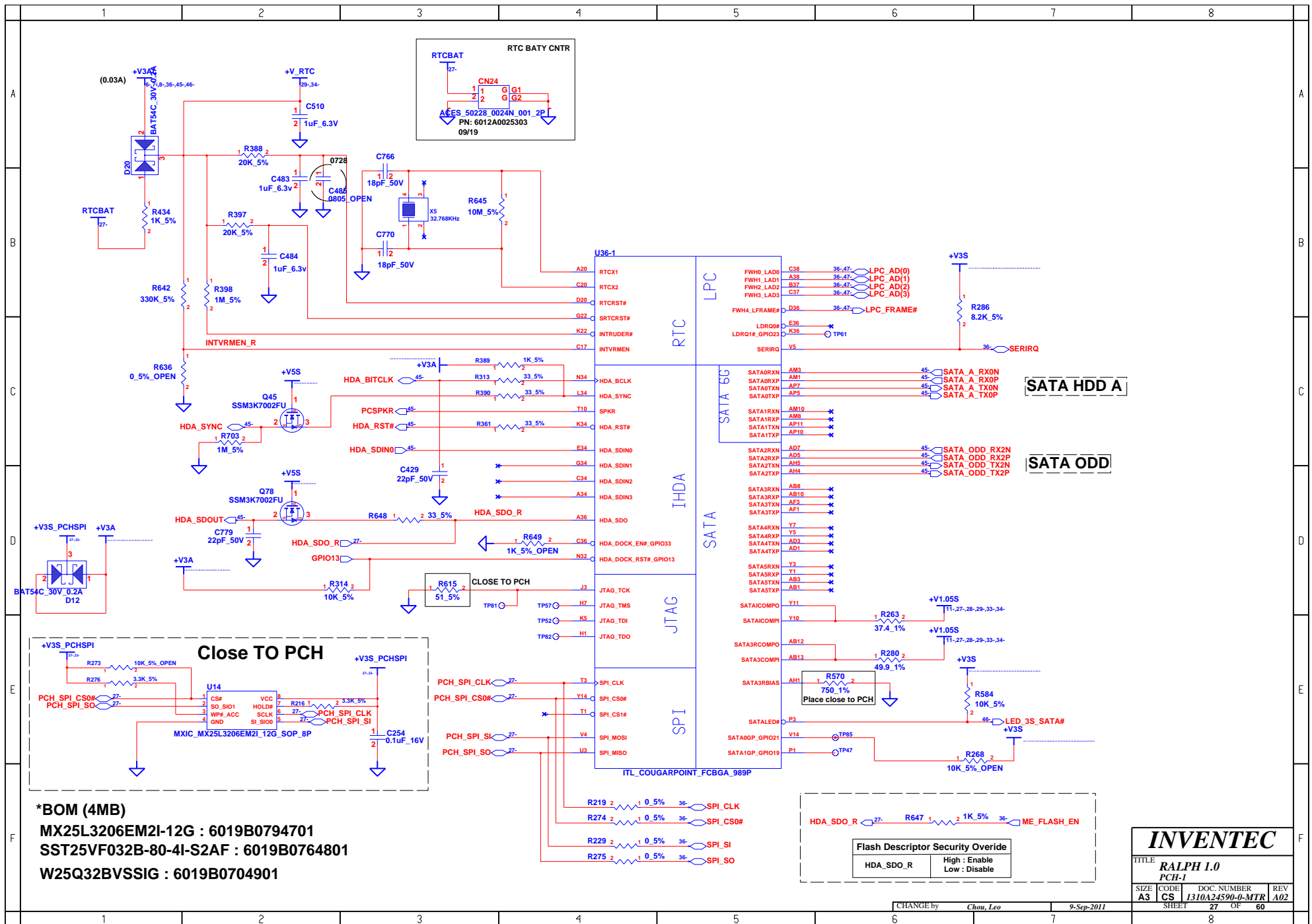
CHANGE by Chou, Leo 9-Sep-2011

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F									F
	1	2	3	4	5	6	7	8	

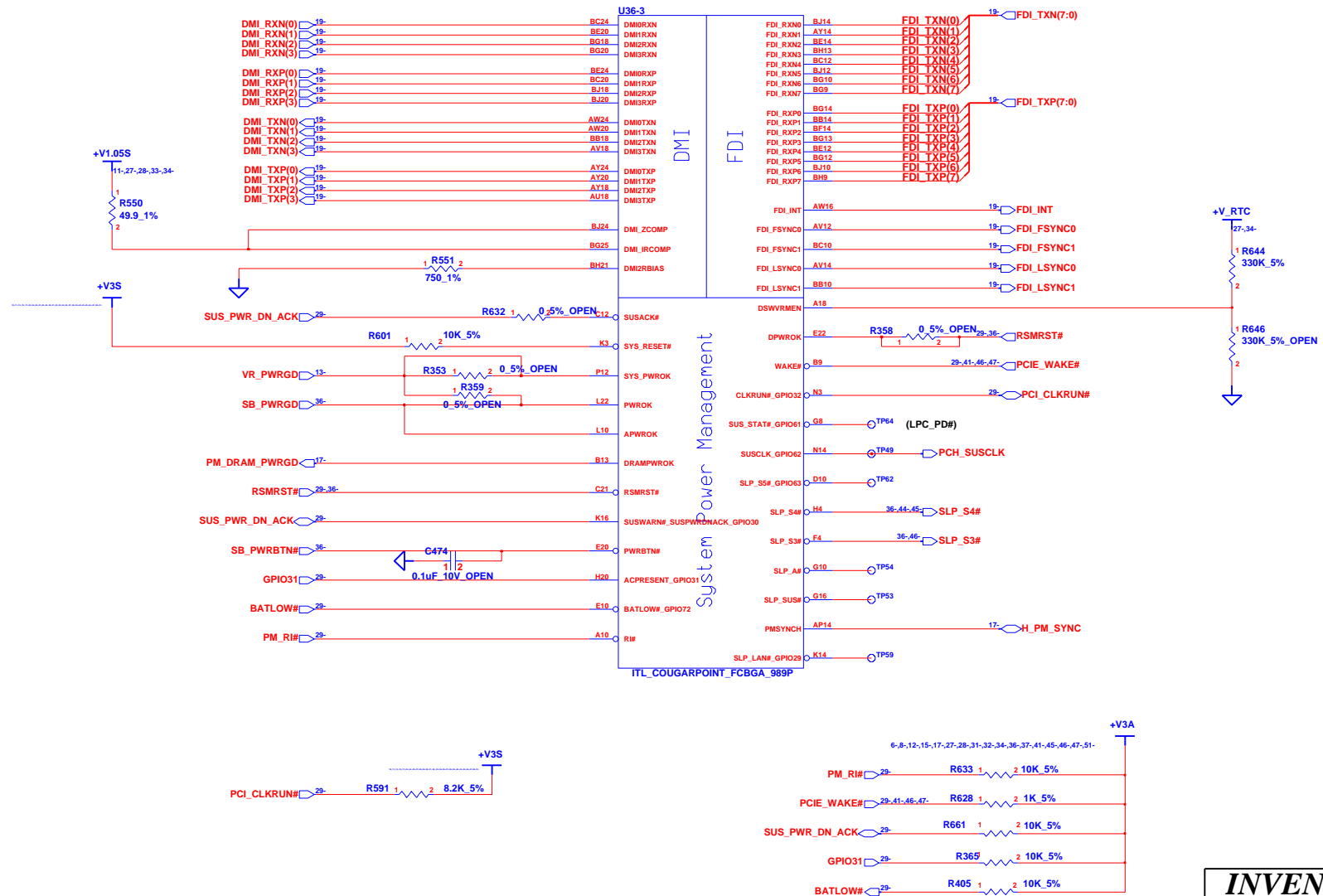
PCH

INVENTEC			
TITLE RALPH 1.0 BLANK			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
SHEET		26	OF 60

CHANGE by *Chou, Leo* 9-Sep-2011



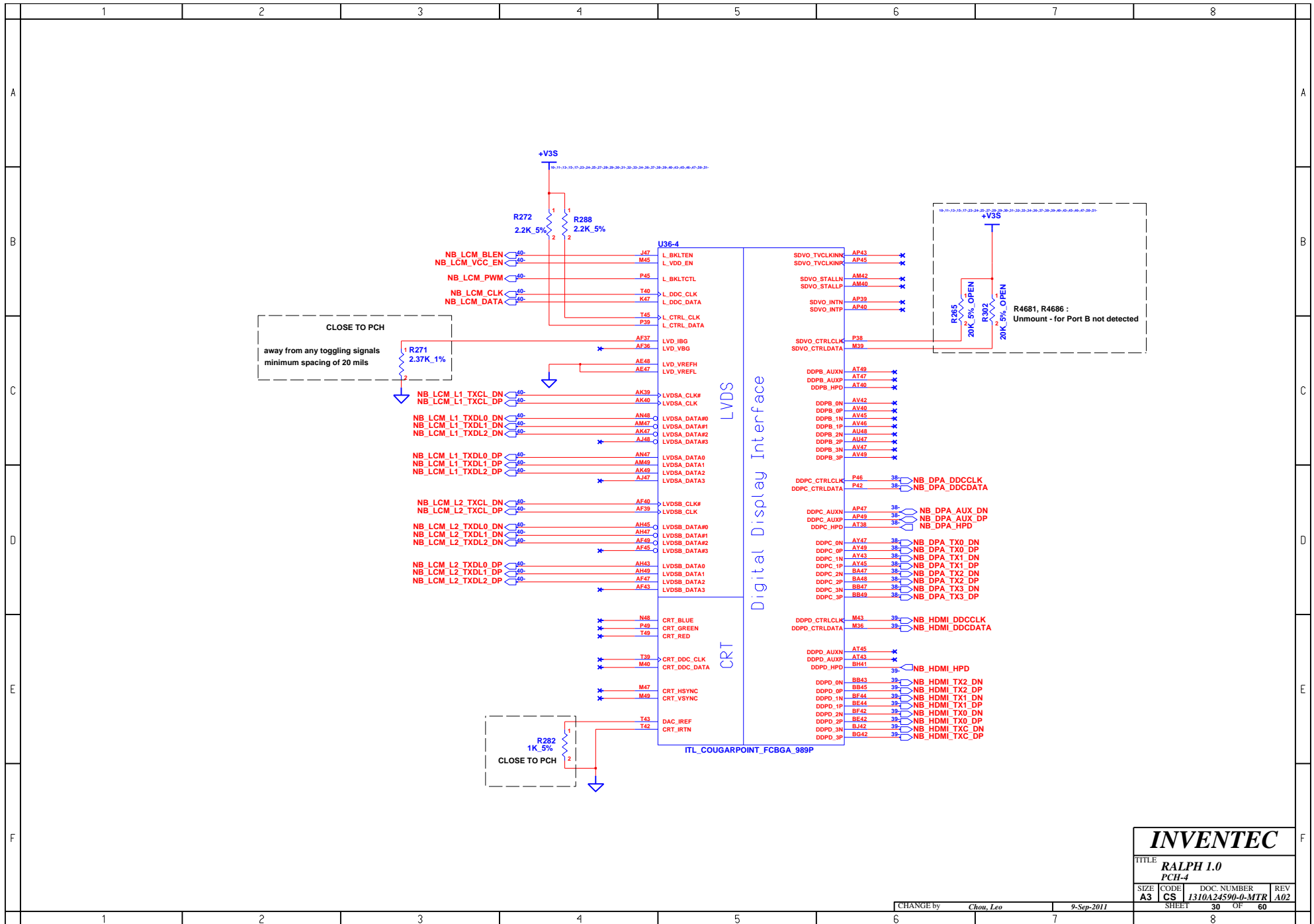
Note: 1.SLP_SUS and SUSACK# are NC if DSW is not supported
2.DPWROK should connect to RSMRST# if DSW not supported

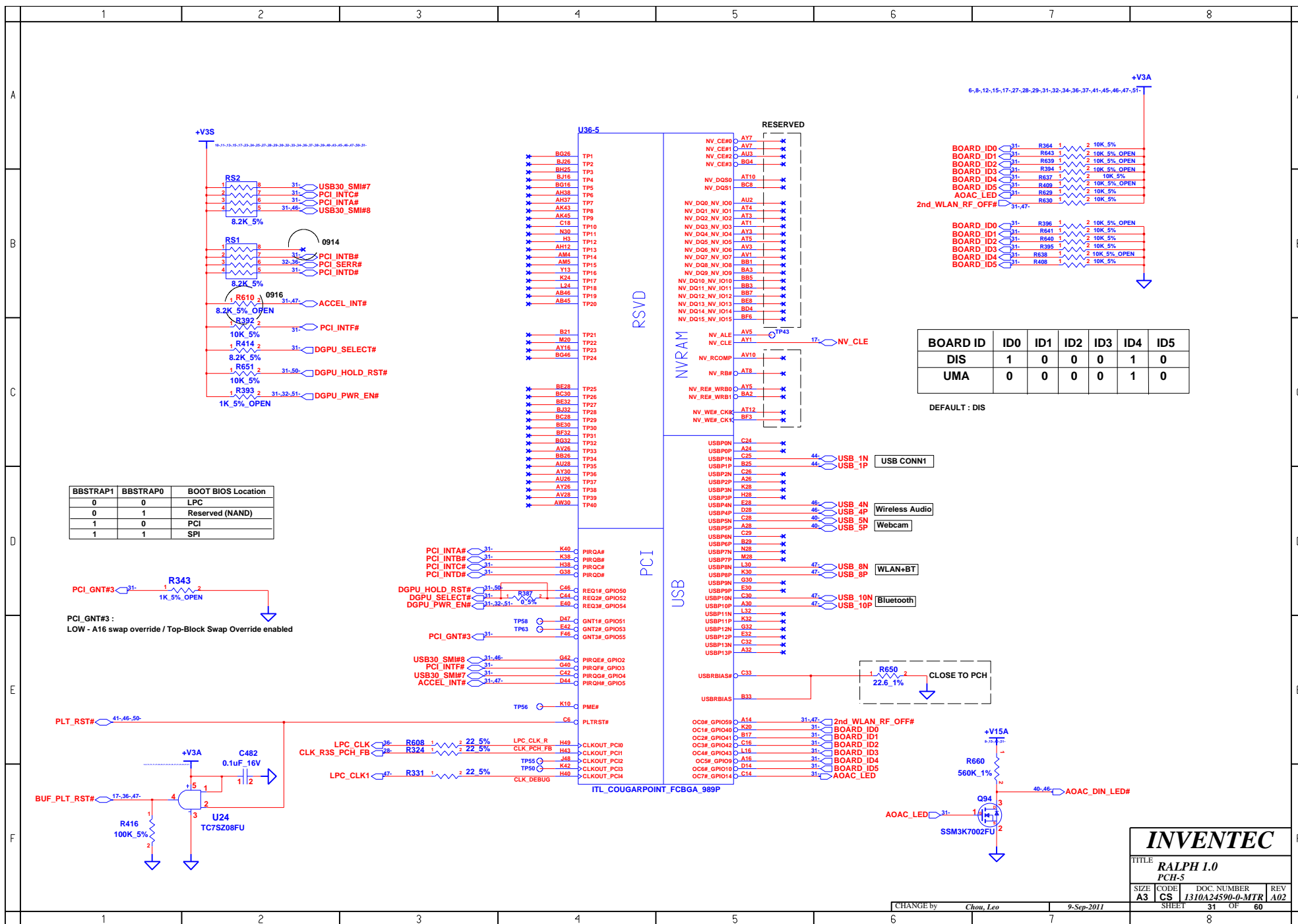


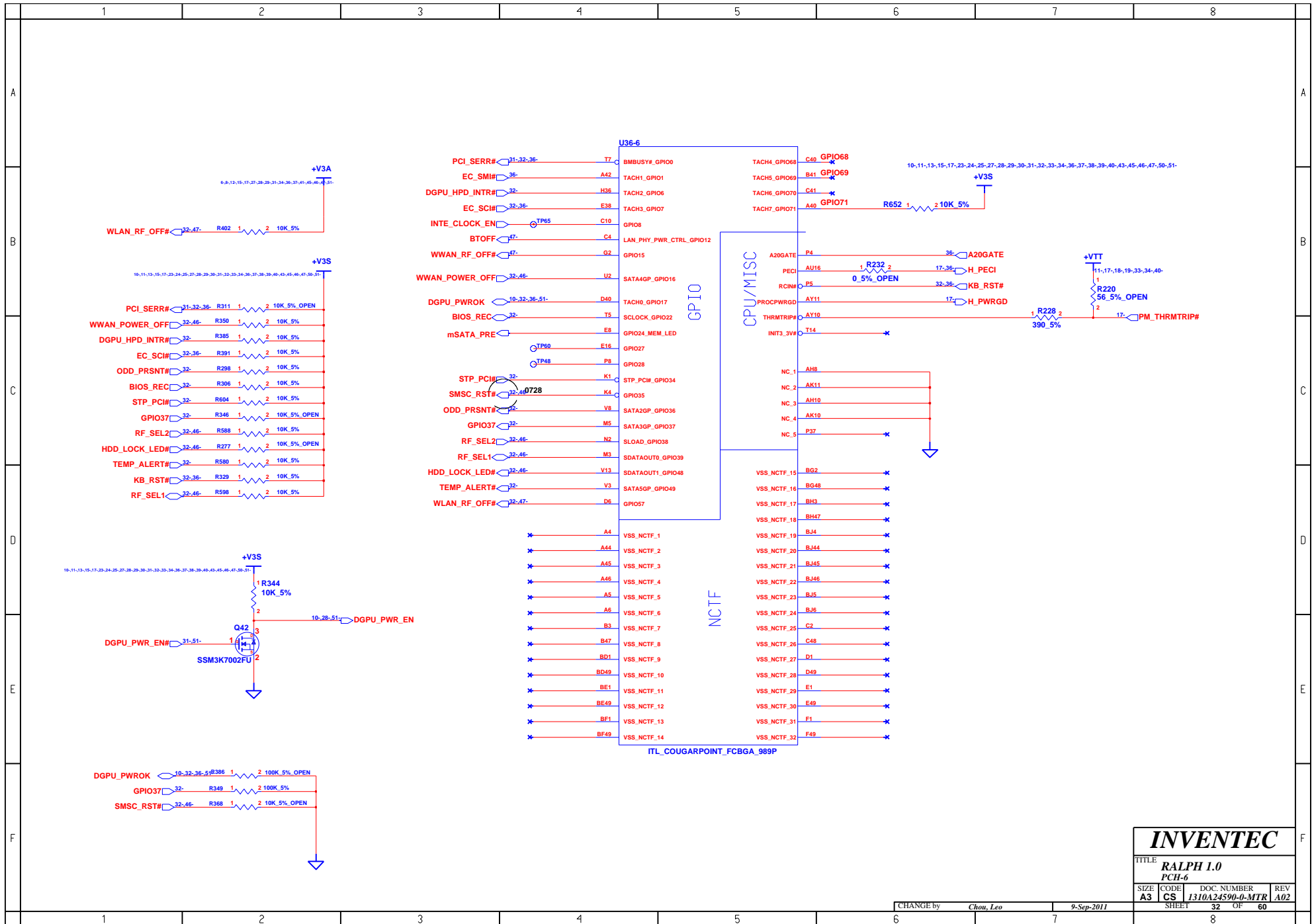
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TITLE			
RALPH I.0			
PCH-3			
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CHANGE by Chou, Leo 9-Sep-2011



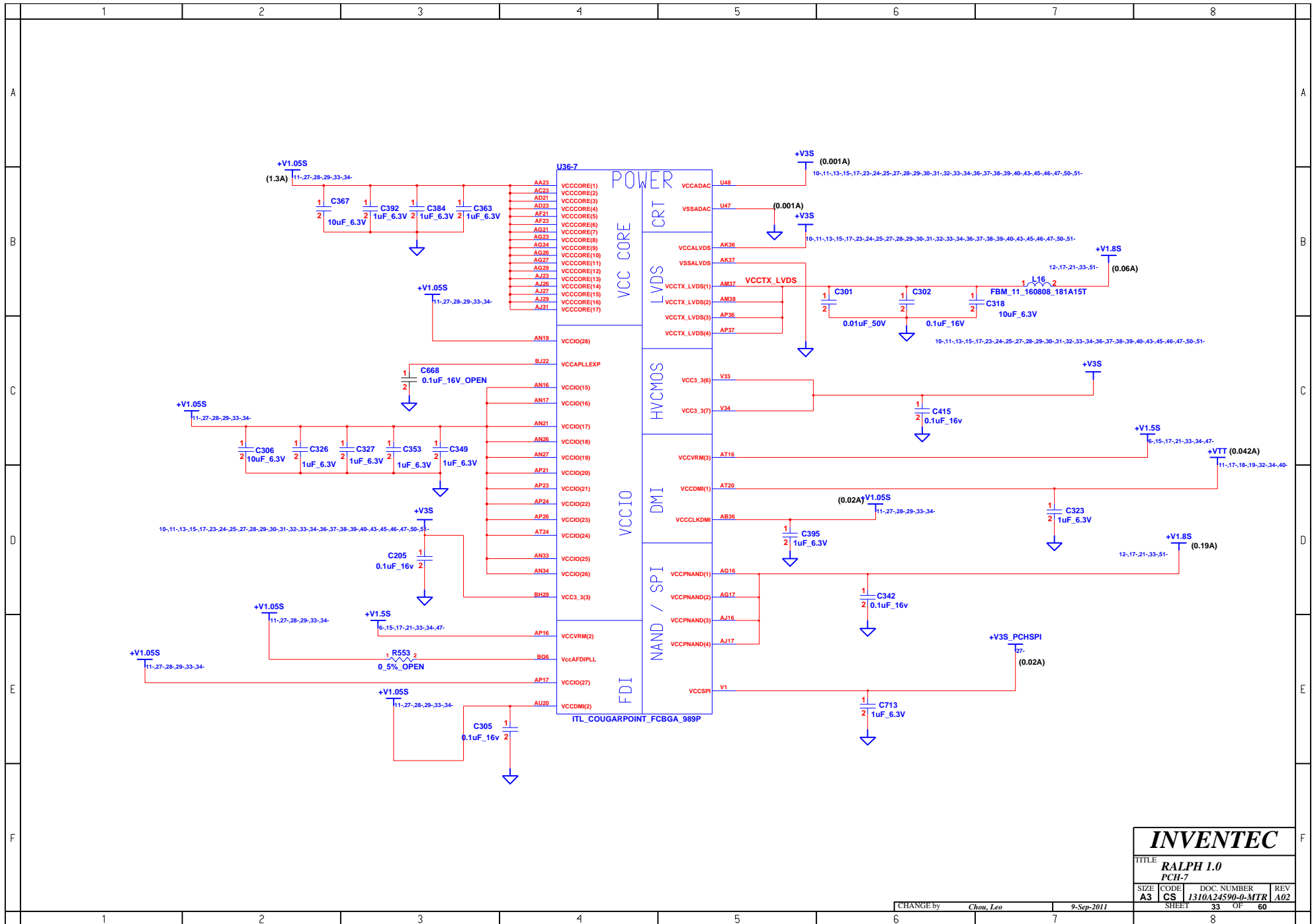


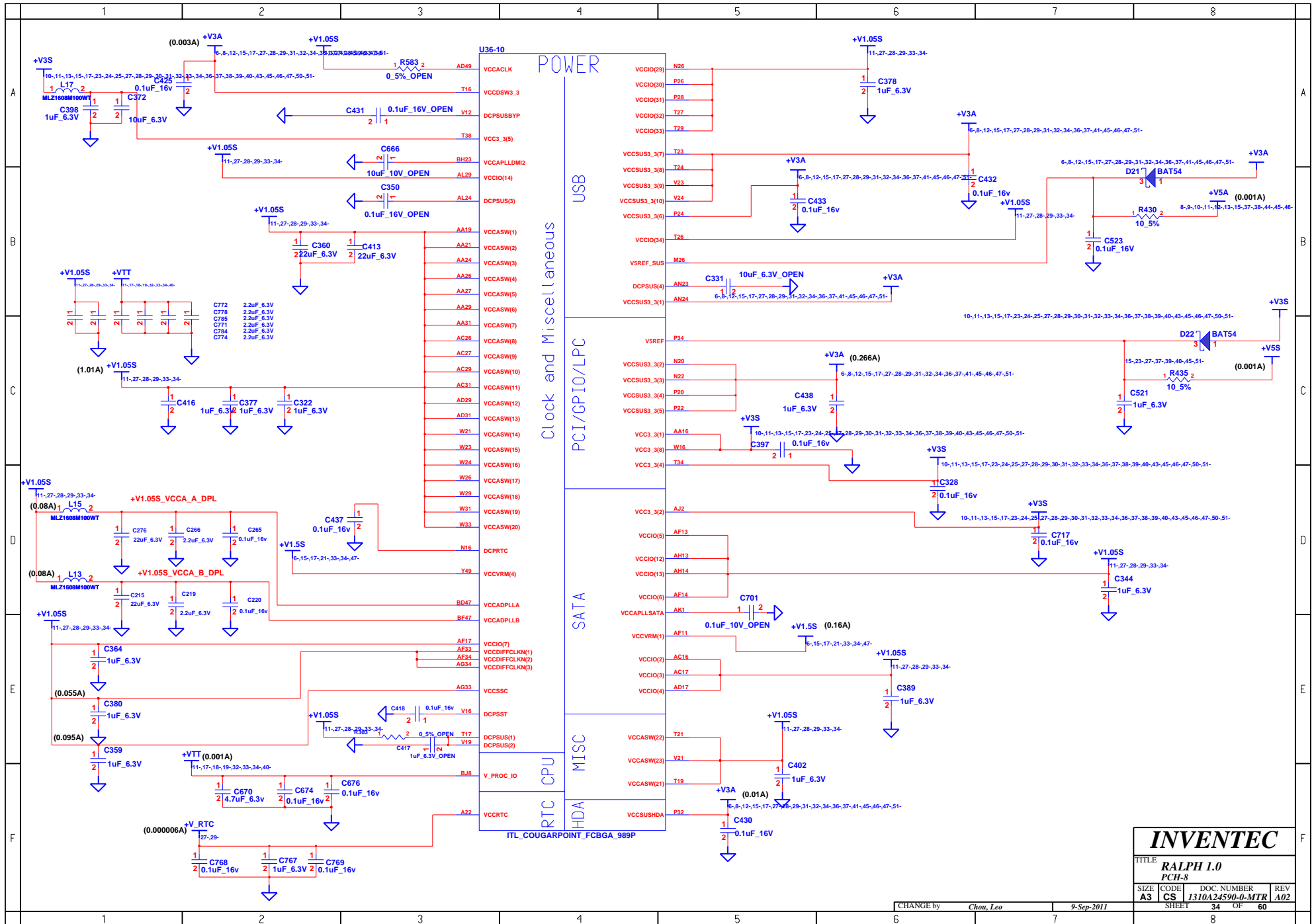


INVENTEC

TITLE RALPH I.0 PCH-6			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
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CHANGE by *Chou, Leo* 9-Sep-2011





U36-8

HS	VSS(0)	VSS(80)	AK38
AA17	VSS(1)	VSS(81)	AK4
AA2	VSS(2)	VSS(82)	AK42
AA3	VSS(3)	VSS(83)	AK46
AA31	VSS(4)	VSS(84)	AK8
AA34	VSS(5)	VSS(85)	AL16
AB11	VSS(6)	VSS(86)	AL17
AB14	VSS(7)	VSS(87)	AL19
AB33	VSS(8)	VSS(88)	AL2
AB4	VSS(9)	VSS(89)	AL21
AB43	VSS(10)	VSS(90)	AL23
AB5	VSS(11)	VSS(91)	AL26
AB7	VSS(12)	VSS(92)	AL27
AC19	VSS(13)	VSS(93)	AL33
AC2	VSS(14)	VSS(94)	AL34
AC21	VSS(15)	VSS(95)	AL48
AC24	VSS(16)	VSS(96)	AM11
AC45	VSS(17)	VSS(97)	AM14
AD19	VSS(18)	VSS(98)	AM36
AD11	VSS(19)	VSS(99)	AM39
AD12	VSS(20)	VSS(100)	AM43
AD13	VSS(21)	VSS(101)	AM45
AD19	VSS(22)	VSS(102)	AM46
AD24	VSS(23)	VSS(103)	AM7
AD25	VSS(24)	VSS(104)	AN2
AD27	VSS(25)	VSS(105)	AN29
AD33	VSS(26)	VSS(106)	AN3
AD34	VSS(27)	VSS(107)	AN31
AD38	VSS(28)	VSS(108)	AP12
AD39	VSS(29)	VSS(109)	AP19
AD39	VSS(30)	VSS(110)	AP28
AD4	VSS(31)	VSS(111)	AP28
AD4	VSS(32)	VSS(112)	AP30
AD4	VSS(33)	VSS(113)	AP32
AD40	VSS(34)	VSS(114)	AP38
AD42	VSS(35)	VSS(115)	AP4
AD43	VSS(36)	VSS(116)	AP42
AD45	VSS(37)	VSS(117)	AP46
AD45	VSS(38)	VSS(118)	AP8
AD8	VSS(39)	VSS(119)	AR2
AE2	VSS(40)	VSS(120)	AR48
AE3	VSS(41)	VSS(121)	AT11
AF10	VSS(42)	VSS(122)	AT13
AF12	VSS(43)	VSS(123)	AT18
AD14	VSS(44)	VSS(124)	AT22
AD16	VSS(45)	VSS(125)	AT26
AF16	VSS(46)	VSS(126)	AT28
AF19	VSS(47)	VSS(127)	AT30
AF24	VSS(48)	VSS(128)	AT32
AF26	VSS(49)	VSS(129)	AT34
AF27	VSS(50)	VSS(130)	AT39
AF29	VSS(51)	VSS(131)	AT42
AF30	VSS(52)	VSS(132)	AT46
AF30	VSS(53)	VSS(133)	AT7
AF4	VSS(54)	VSS(134)	AU24
AF42	VSS(55)	VSS(135)	AU30
AF46	VSS(56)	VSS(136)	AV16
AF46	VSS(57)	VSS(137)	AV20
AF5	VSS(58)	VSS(138)	AV24
AF7	VSS(59)	VSS(139)	AV30
AF8	VSS(60)	VSS(140)	AV38
AG19	VSS(61)	VSS(141)	AV4
AG2	VSS(62)	VSS(142)	AV43
AG31	VSS(63)	VSS(143)	AV8
AG45	VSS(64)	VSS(144)	AW14
AH11	VSS(65)	VSS(145)	AW18
AH3	VSS(66)	VSS(146)	AW2
AH36	VSS(67)	VSS(147)	AW22
AH39	VSS(68)	VSS(148)	AW26
AH40	VSS(69)	VSS(149)	AW28
AH42	VSS(70)	VSS(150)	AW32
AH46	VSS(71)	VSS(151)	AW34
AH7	VSS(72)	VSS(152)	AW36
AJ19	VSS(73)	VSS(153)	AW40
AJ21	VSS(74)	VSS(154)	AW48
AJ24	VSS(75)	VSS(155)	AY12
AJ33	VSS(76)	VSS(156)	AY22
AJ34	VSS(77)	VSS(157)	AY28
AK12	VSS(78)	VSS(158)	
AK3	VSS(79)	VSS(159)	

ITL_COUGARPOINT_FCBGA_989P

U36-9

AY4	VSS(159)	VSS(259)	H46
AY42	VSS(160)	VSS(260)	K18
AY46	VSS(161)	VSS(261)	K26
AY8	VSS(162)	VSS(262)	K39
B11	VSS(163)	VSS(263)	K46
B15	VSS(164)	VSS(264)	K7
B19	VSS(165)	VSS(265)	L18
B23	VSS(166)	VSS(266)	L2
B27	VSS(167)	VSS(267)	L20
B31	VSS(168)	VSS(268)	L26
B35	VSS(169)	VSS(269)	L28
B39	VSS(170)	VSS(270)	L36
B7	VSS(171)	VSS(271)	L48
B46	VSS(172)	VSS(272)	M12
BB12	VSS(173)	VSS(273)	M16
BB16	VSS(174)	VSS(274)	M18
BB20	VSS(175)	VSS(275)	M22
BB22	VSS(176)	VSS(276)	M24
BB24	VSS(177)	VSS(277)	M30
BB28	VSS(178)	VSS(278)	M32
BB30	VSS(179)	VSS(279)	M34
BB36	VSS(180)	VSS(280)	M38
BB4	VSS(181)	VSS(281)	M4
BB46	VSS(182)	VSS(282)	M42
BC14	VSS(183)	VSS(283)	M46
BC18	VSS(184)	VSS(284)	M8
BC2	VSS(185)	VSS(285)	N18
BC22	VSS(186)	VSS(286)	P30
BC26	VSS(187)	VSS(287)	N47
BC32	VSS(188)	VSS(288)	P11
BC34	VSS(189)	VSS(289)	P18
BC36	VSS(190)	VSS(290)	T33
BC40	VSS(191)	VSS(291)	P40
BC42	VSS(192)	VSS(292)	P43
BC48	VSS(193)	VSS(293)	P47
BD46	VSS(194)	VSS(294)	P7
BD5	VSS(195)	VSS(295)	R2
BE22	VSS(196)	VSS(296)	R48
BE26	VSS(197)	VSS(297)	T12
BE40	VSS(198)	VSS(298)	T31
BF10	VSS(199)	VSS(299)	T37
BF12	VSS(200)	VSS(300)	T4
BF16	VSS(201)	VSS(301)	W34
BF20	VSS(202)	VSS(302)	T46
BF22	VSS(203)	VSS(303)	T47
BF24	VSS(204)	VSS(304)	T5
BF26	VSS(205)	VSS(305)	V11
BF28	VSS(206)	VSS(306)	V17
BF3	VSS(207)	VSS(307)	V26
BF30	VSS(208)	VSS(308)	V27
BF38	VSS(209)	VSS(309)	V29
BF40	VSS(210)	VSS(310)	V31
BF8	VSS(211)	VSS(311)	V36
BG17	VSS(212)	VSS(312)	V39
BG21	VSS(213)	VSS(313)	V43
BG33	VSS(214)	VSS(314)	V7
BG44	VSS(215)	VSS(315)	W17
BG8	VSS(216)	VSS(316)	W19
BH11	VSS(217)	VSS(317)	W2
BH15	VSS(218)	VSS(318)	W27
BH17	VSS(219)	VSS(319)	W48
BH19	VSS(220)	VSS(320)	Y12
H10	VSS(221)	VSS(321)	Y38
BH27	VSS(222)	VSS(322)	Y4
BH31	VSS(223)	VSS(323)	Y42
BH33	VSS(224)	VSS(324)	Y46
BH35	VSS(225)	VSS(325)	Y8
BH39	VSS(226)	VSS(326)	BG29
BH43	VSS(227)	VSS(327)	N24
BH7	VSS(228)	VSS(328)	AJ3
D3	VSS(229)	VSS(329)	AD47
D12	VSS(230)	VSS(330)	R43
D16	VSS(231)	VSS(331)	BE10
D18	VSS(232)	VSS(332)	BG41
D22	VSS(233)	VSS(333)	G14
D24	VSS(234)	VSS(334)	H16
D26	VSS(235)	VSS(335)	T36
D30	VSS(236)	VSS(336)	BG22
D32	VSS(237)	VSS(337)	BG24
D34	VSS(238)	VSS(338)	C22
D38	VSS(239)	VSS(339)	AP13
D42	VSS(240)	VSS(340)	M14
D8	VSS(241)	VSS(341)	AP3
E18	VSS(242)	VSS(342)	AP1
E26	VSS(243)	VSS(343)	BE16
G18	VSS(244)	VSS(344)	BC16
G20	VSS(245)	VSS(345)	BG28
G26	VSS(246)	VSS(346)	BJ28
G28	VSS(247)	VSS(347)	
G36	VSS(248)	VSS(348)	
G48	VSS(249)	VSS(349)	
H12	VSS(250)	VSS(350)	
H18	VSS(251)	VSS(351)	
H22	VSS(252)	VSS(352)	
H24	VSS(253)	VSS(353)	
H26	VSS(254)	VSS(354)	
H30	VSS(255)	VSS(355)	
H32	VSS(256)	VSS(356)	
H34	VSS(257)	VSS(357)	
H36	VSS(258)	VSS(358)	

ITL_COUGARPOINT_FCBGA_989P

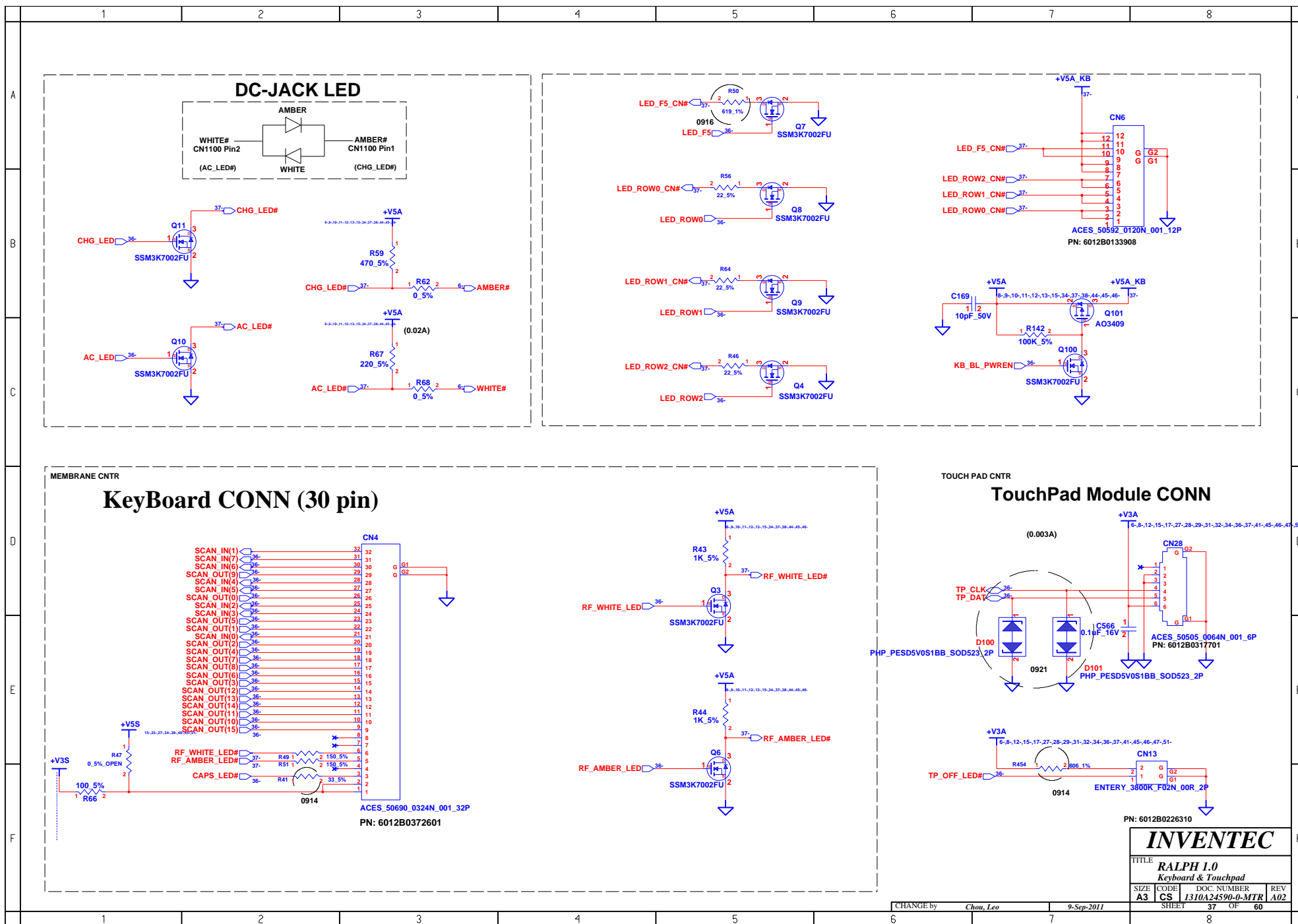
INVENTEC

TITLE
RALPH 1.0
PCH-9

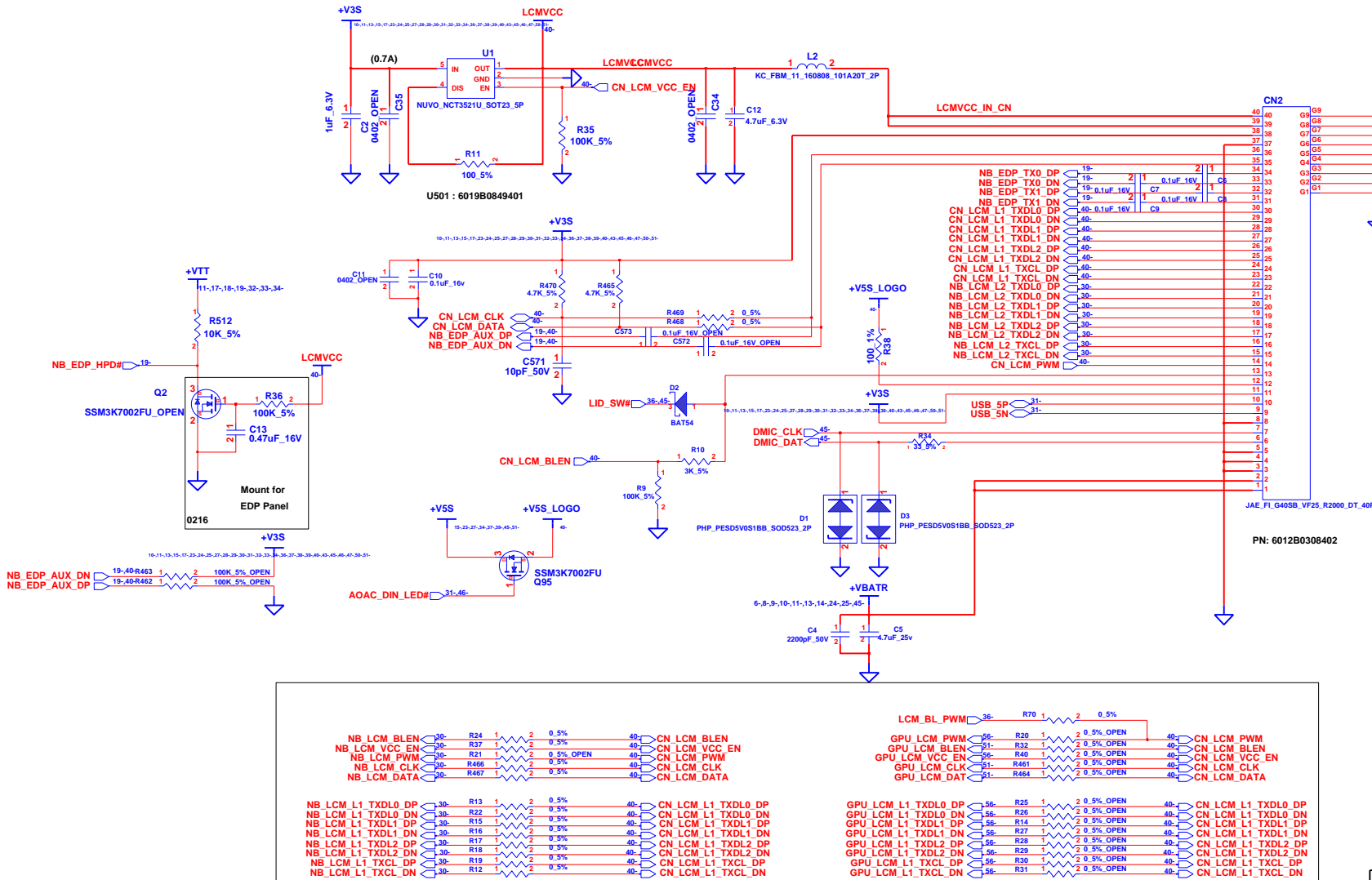
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A3	CS	1310A24590-0-MTR	A02

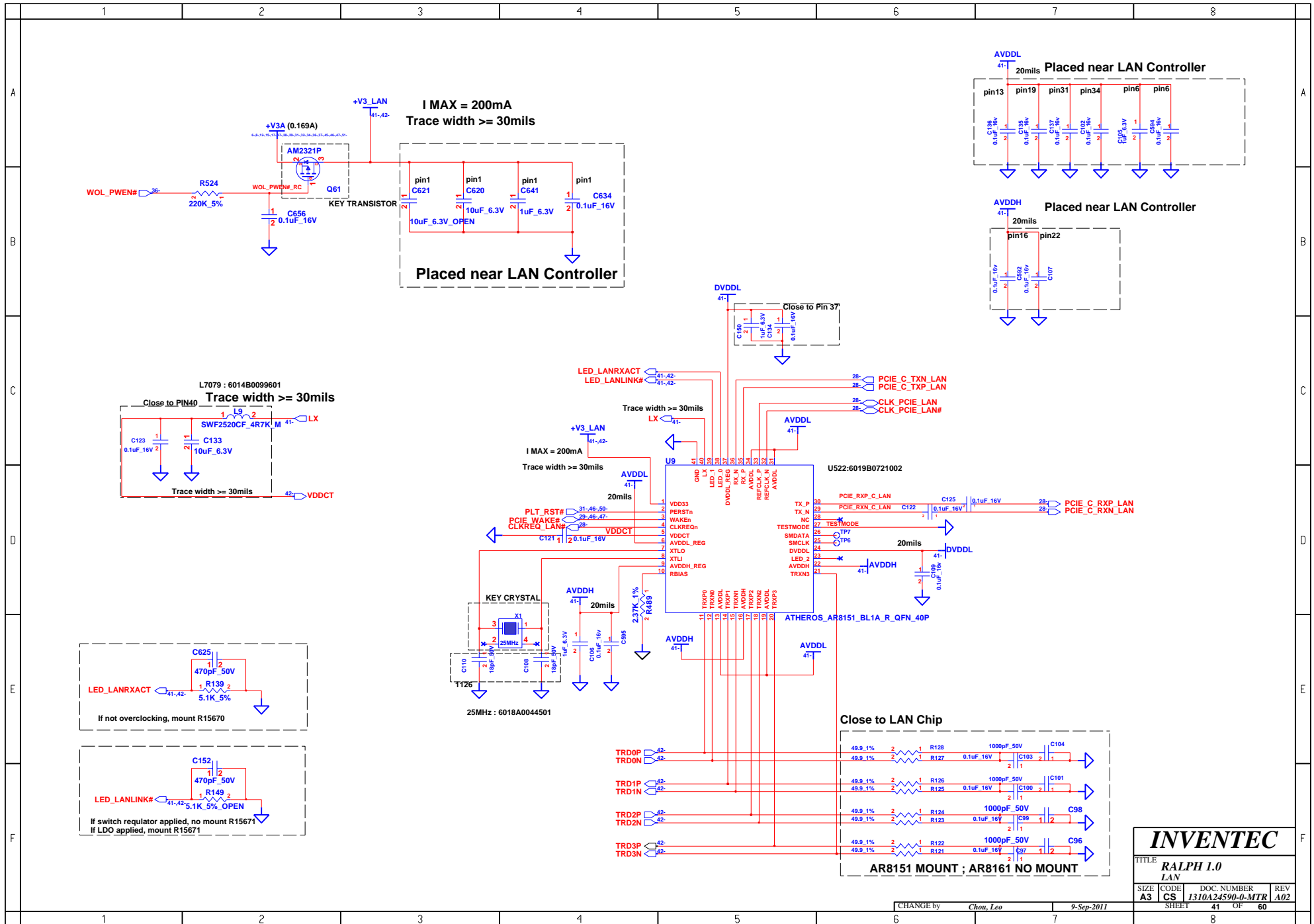
SHEET 35 OF 60

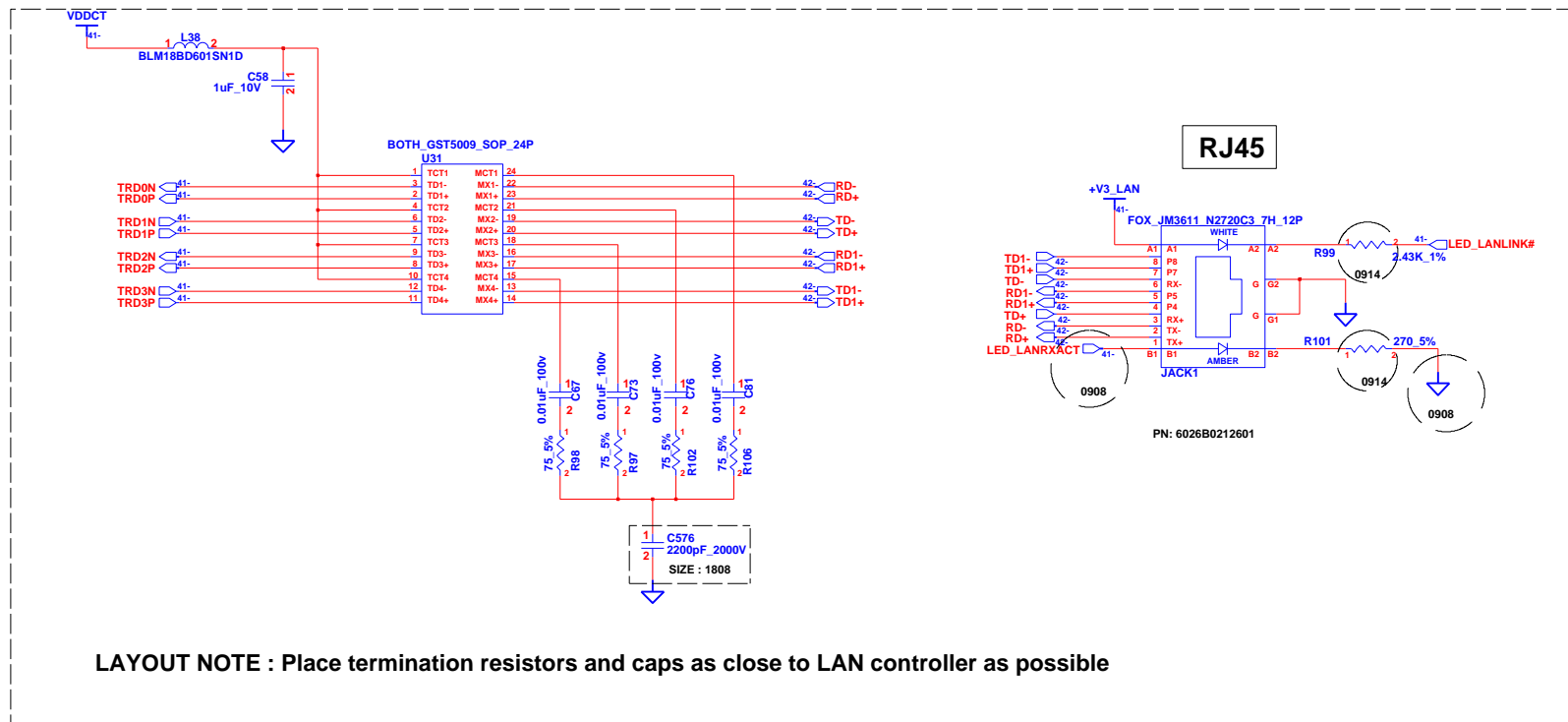
CHANGE by Chou, Leo 9-Sep-2011



LCM CONN

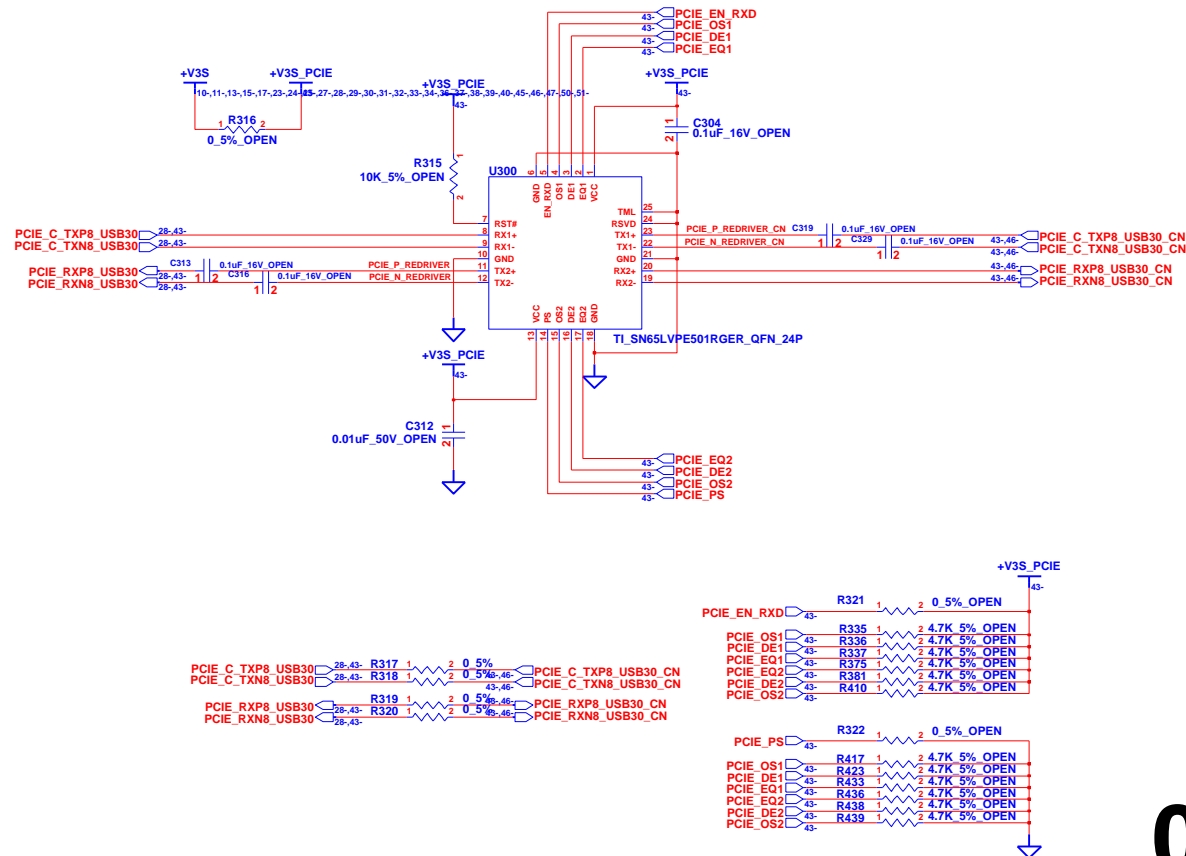






INVENTEC			
TITLE			
RALPH I.0			
RJ-45			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A24590-0-MTR	A02
CHANGE by		Chou, Leo	9-Sep-2011
SHEET		42	OF 60

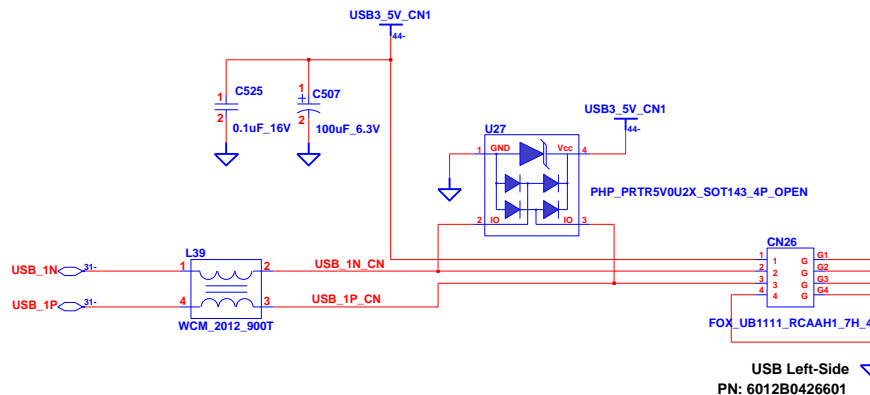
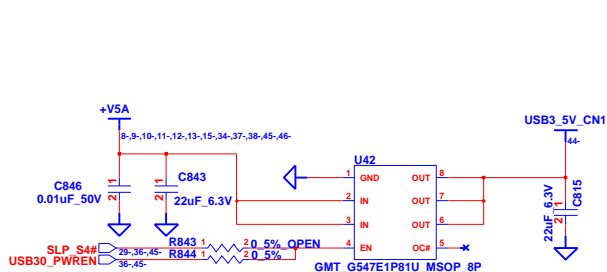
RE-DRIVER



0418

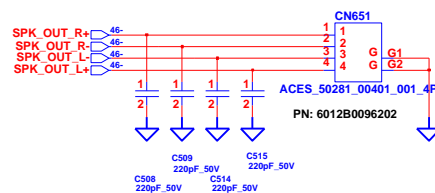
INVENTEC			
TITLE RALPH 1.0			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
CHANGE by Chou, Leo		9-Sep-2011	
SHEET 43		OF 60	

USB 2.0



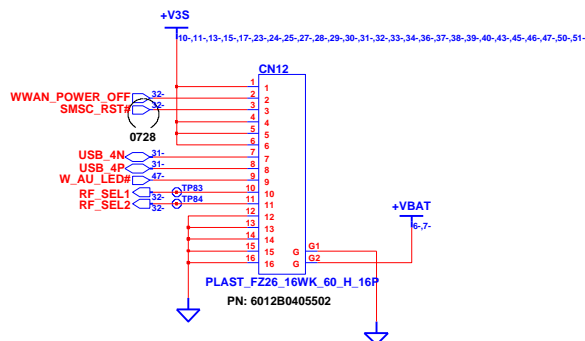
USB CONN01

REAR SPEAKER

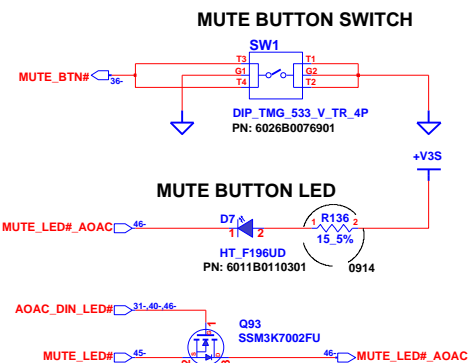


INVENTEC			
TITLE			
RALPH 1.0			
USB 3.0			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A24590-0-MTR	A02
CHANGE by		9-Sep-2011	
Chou, Leo			
SHEET		44	OF 60

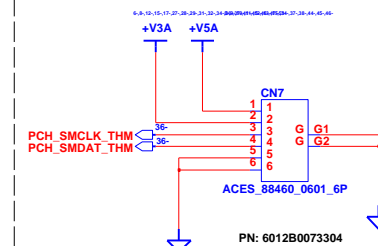
Wireless Audio Board CN on MB



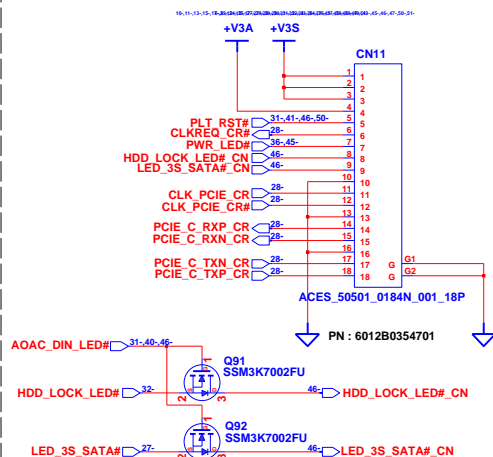
MUTE Button



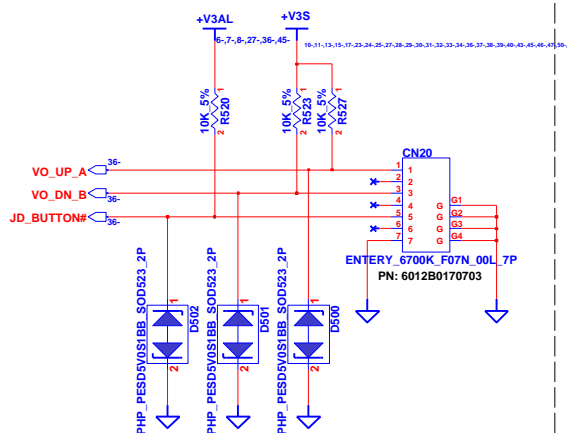
LDPS Board CN on MB



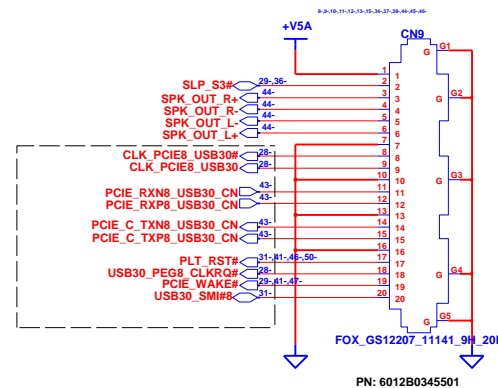
CR Board CN on MB



JOG DIAL CN ON MB



AU-USB30 CN ON MB

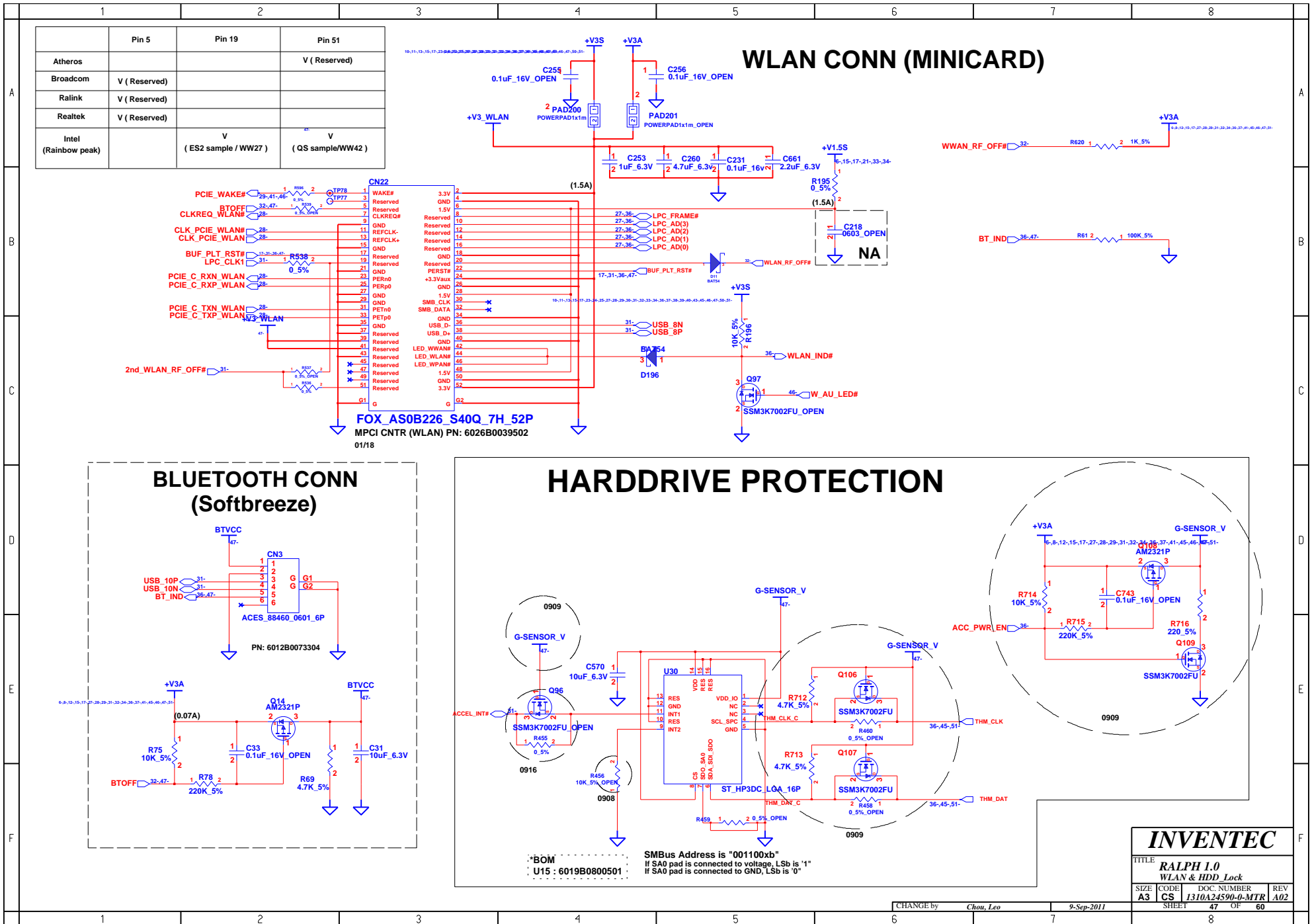


INVENTEC

TITLE: **RALPH 1.0**
Connector-2
SIZE: **A3** CODE: **CS** DOC. NUMBER: **1310A24590-0-MTR** REV: **A02**

CHANGE by: **Chou, Leo** 9-Sep-2011

SHEET: **46** OF **60**



	1	2	3	4	5	6	7	8	
A	<div>CPU screws</div>								
B	<div>VGA screws</div>								
C	<div>FAN screws</div>								
D	<div>WWAN screws</div>								
E									
F	<div>INVENTEC</div> <div> <div>TITLE</div> <div>RALPH 1.0</div> <div>SCREW</div> </div> <div> <div>SIZE</div> <div>A3</div> <div>CODE</div> <div>CS</div> <div>DOC. NUMBER</div> <div>1310A24590-0-MTR</div> <div>REV</div> <div>A02</div> </div> <div> <div>CHANGE by</div> <div>Chou, Leo</div> <div>9-Sep-2011</div> </div> <div> <div>SHEET</div> <div>48</div> <div>OF</div> <div>60</div> </div>								
	1	2	3	4	5	6	7	8	

	1	2	3	4	5	6	7	8	
A	<div>GPU</div>								A
B									B
C									C
D									D
E									E
F									F
	1	2	3	4	5	6	7	8	

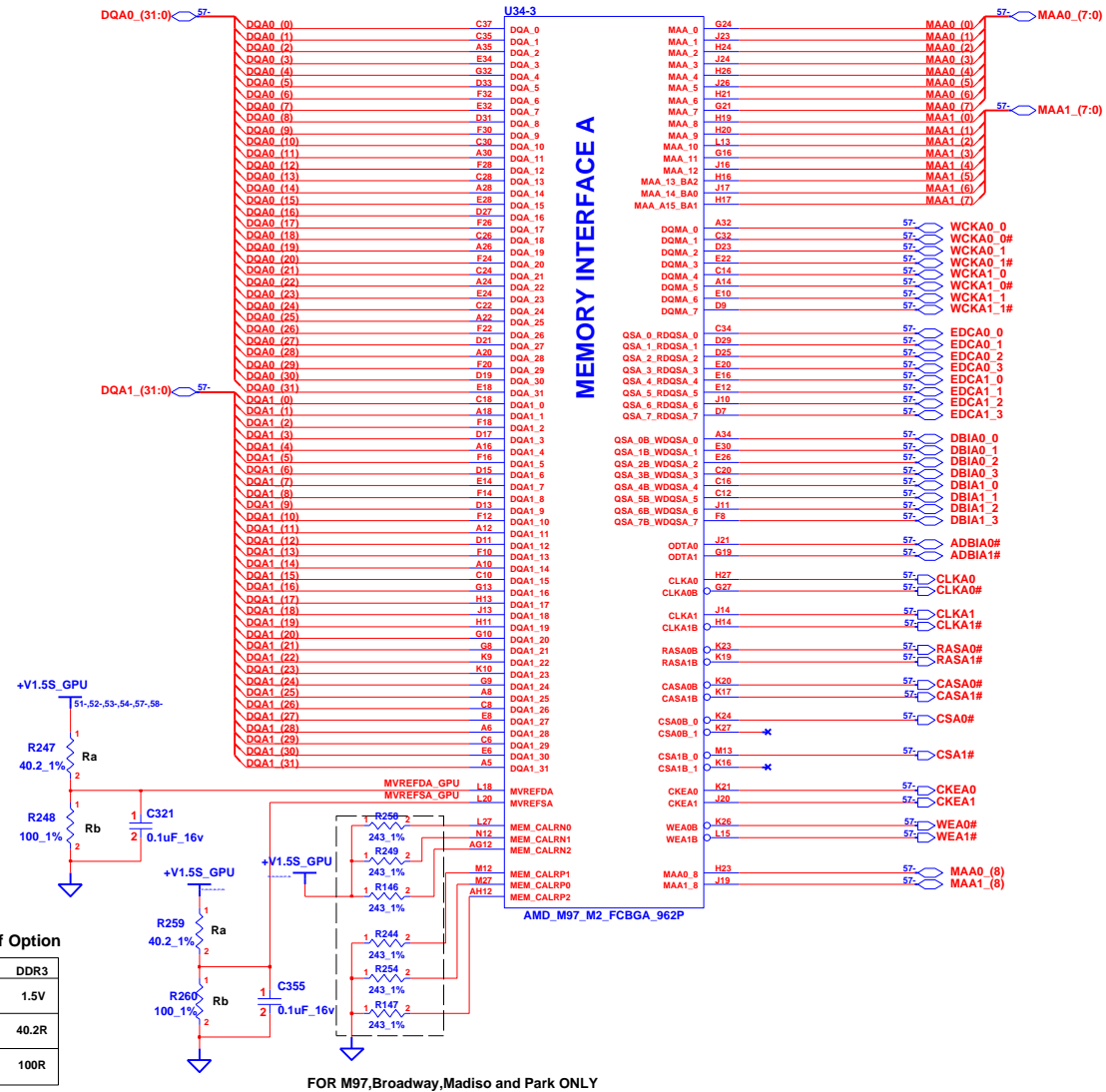
INVENTEC			
TITLE RALPH 1.0			
FAN			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
SHEET 49		OF 60	

CHANGE by Chou, Leo 9-Sep-2011

Channel A

DDR3/GDDR3Memory Stuff Option

	DDR5	DDR3	DDR3
MVDDQ	1.5V	1.8V/1.5V	1.5V
Ra	40.2R	40.2R	40.2R
Rb	100R	100R	100R



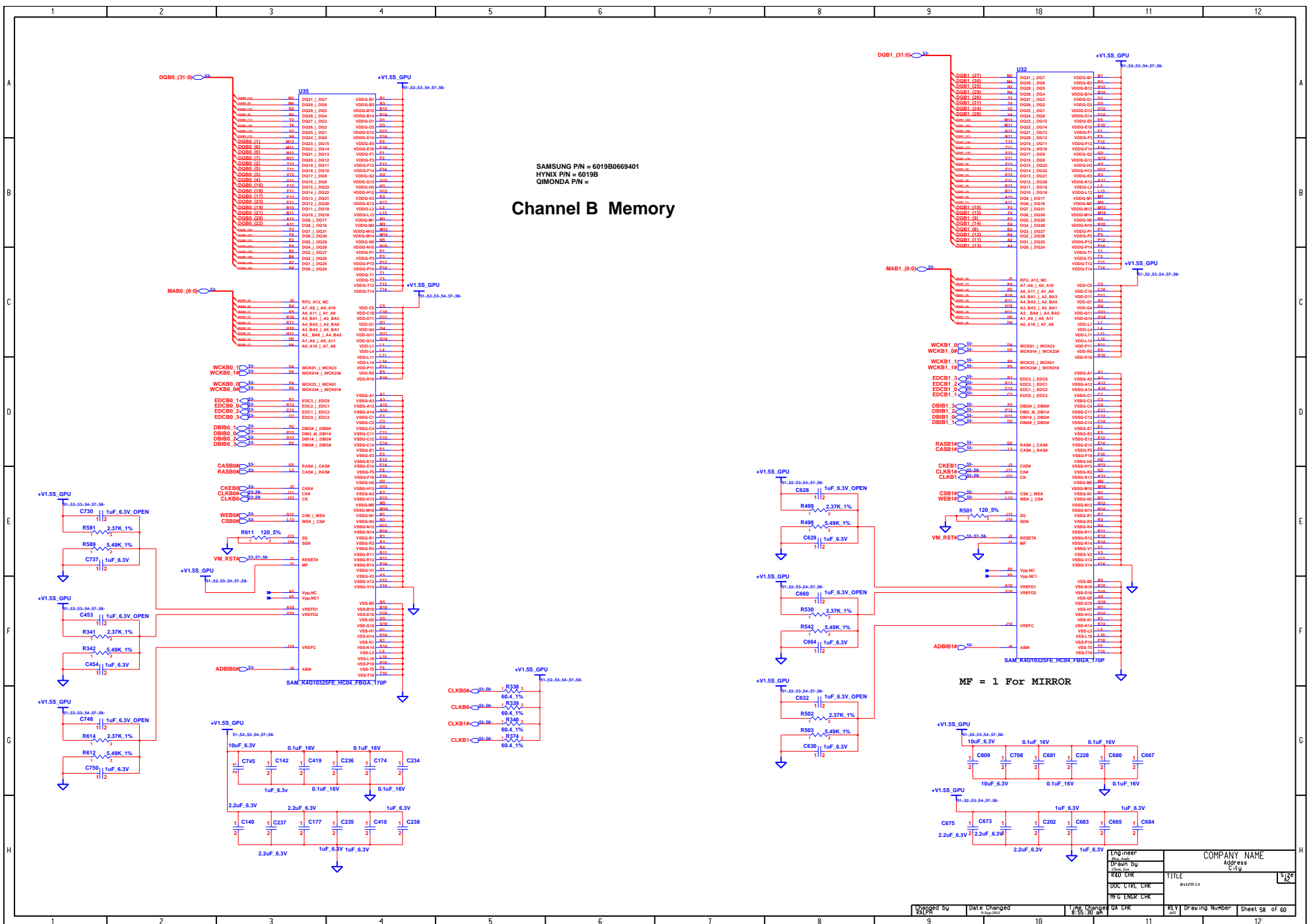
INVENTEC

TITLE			
RALPH I.0			
GPU-3			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A24590-0-MTR	A02
SHEET		52	OF 60

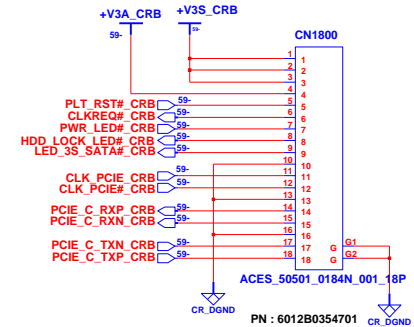
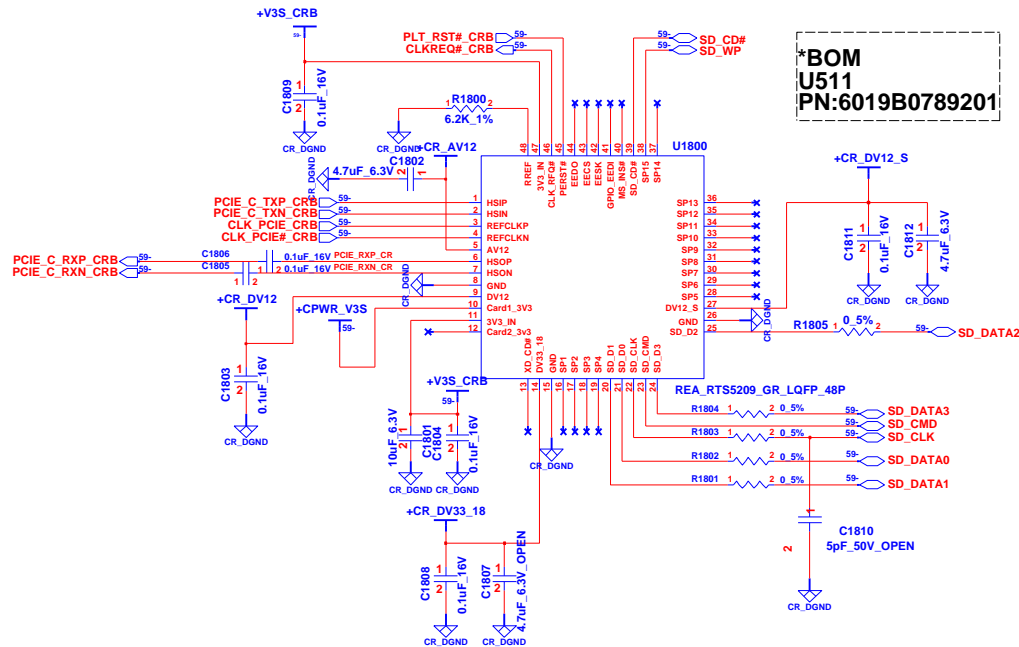
CHANGE by Chou, Leo 9-Sep-2011

Channel A Memory

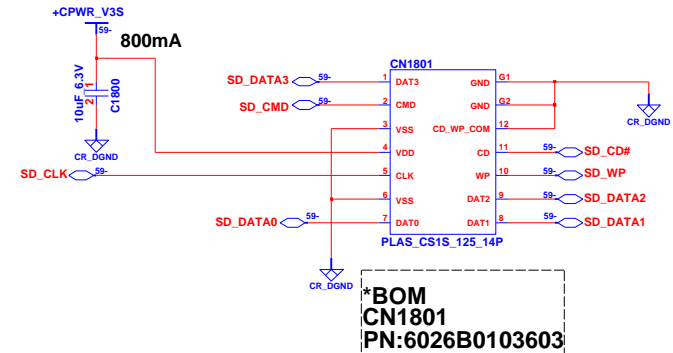
Vender	Density	Vender PN	IEC PN
Samsung	32Mx32	K4G10325FG-HC04	6019B0889201
Hynix	32Mx32	H5GQ1H24BFR-T2C	6019B0866701
Samsung	64Mx32	K4G20325FC-HC04	6019B0842201
Hynix	64Mx32	H5GQ2H24MFR-T2C	6019B0843001



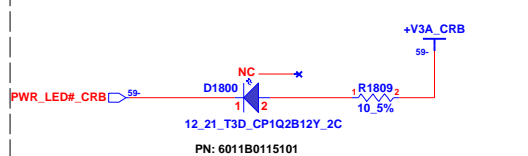
CardReader BOARD



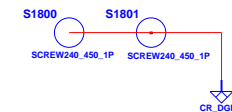
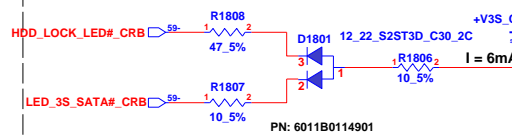
Card Reader CONN



POWER LED



SATA LED & HDD-HALTED LED

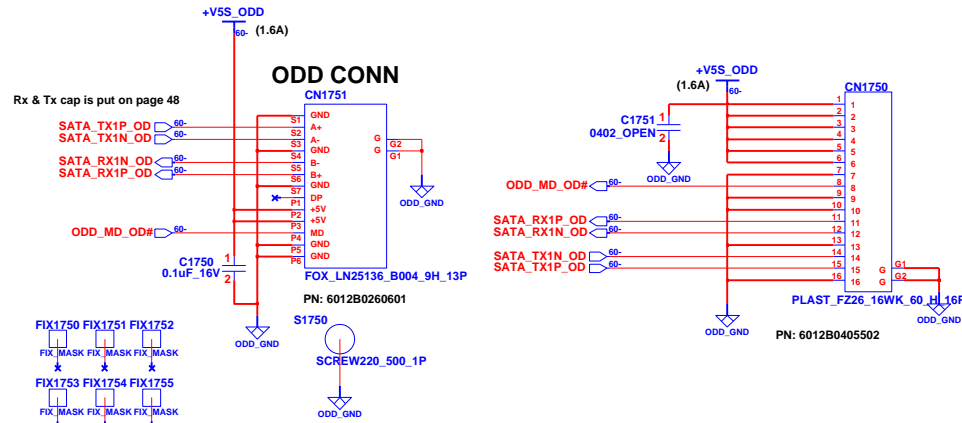


INVENTEC

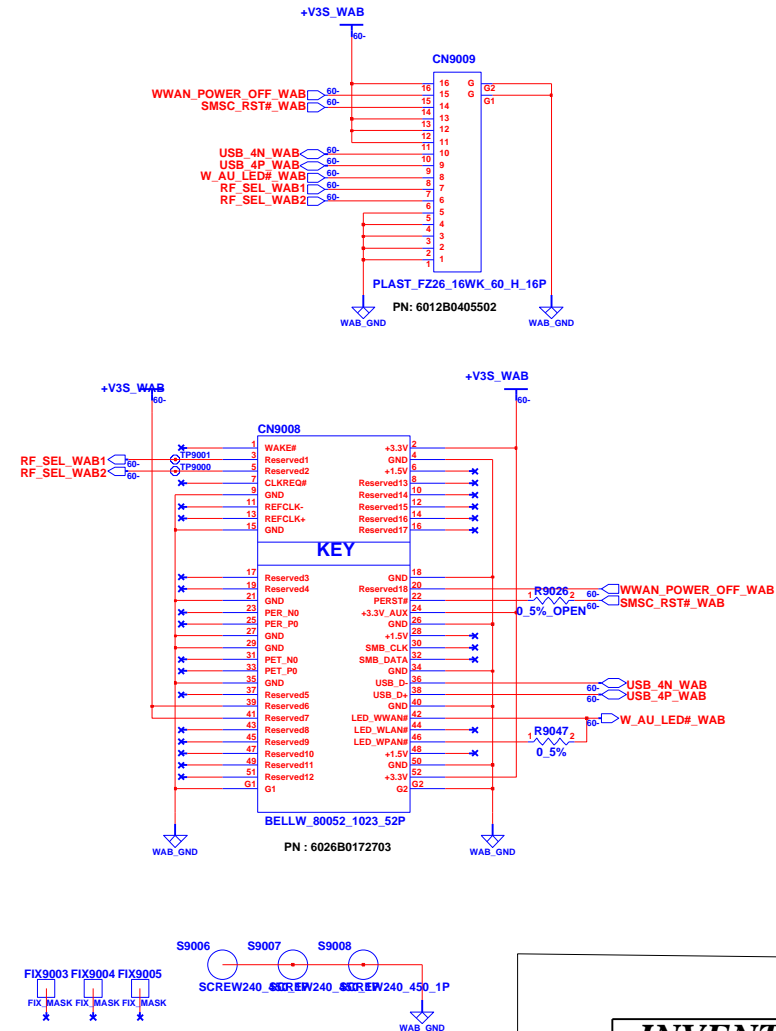
TITLE RALPH I.0 CARD READER			
SIZE A3	CODE CS	DOC. NUMBER 1310A24590-0-MTR	REV A02
SHEET		59	OF 60

CHANGE by Chou, Leo 9-Sep-2011

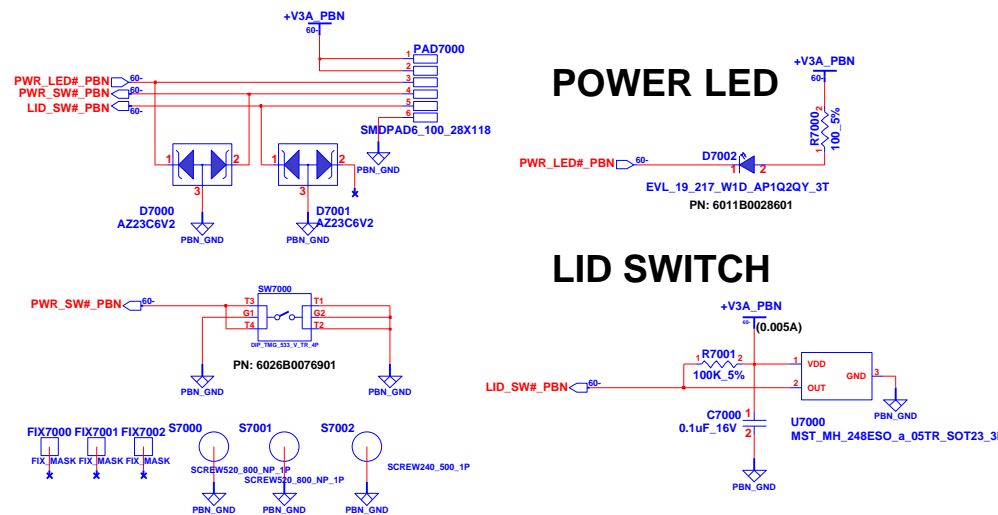
ODD Board



Wireless Audio Board



Power Button Board



INVENTEC

TITLE			
RALPH I.0			
Charge Board - 1			
SIZE	CODE	DOC. NUMBER	REV
A3	CS	1310A24590-0-MTR	A02
SHEET		60	OF 60