First International Computer, Inc

Portable Computer Group HW Department

Board name : MotherBoard Schematic

Project : AMD S1 + Nvidia C51D + MCP51

Version : 0.4

Initial Date : 05/13/2006

Confidential

Manager Sign by : Avery Lee

Drawing by : Jason Lee

Total confirm by :Adam Cho

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3FL.,NO.300,Yang Guang St.,NeiHu
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(883-2)8751-8751

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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: TITLE | Rev: 0.4

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1. Schematic Page Description :

FIC Schematic Ver : 0.1

2. PCI BUS Description :

IDSEL	CHIP
AD22	1394 VIA VT6311S

PCIINT	CHIP
IRQA	1394 VIA VT6311S
IRQB	——
IRQC	——
IRQD	——

BUSMASTER

REQ	CHIP
REQ0 / GNT0	——
REQ1 / GNT1	1394 VIA VT6311S
REQ2 / GNT2	——
REQ3 / GNT3	——
REQ4 / GNT4	——

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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

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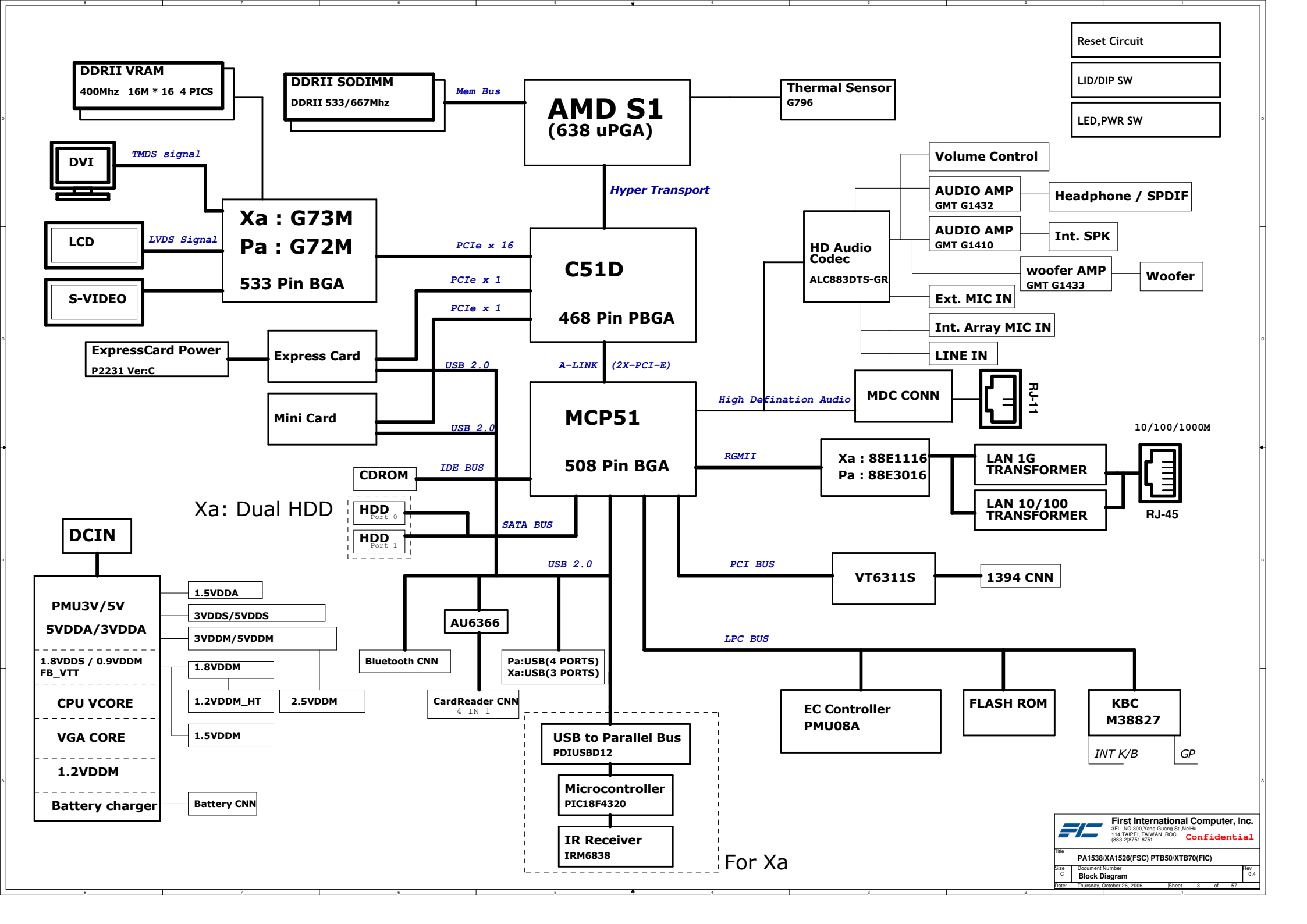

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4. Net name Description :

Voltage Rails

DCIN	Primary DC system power supply
PMU5V	5.0V always on power rail by LATCH or ACIN
PMU3V	3.3V always on power rail by LATCH or ACIN
5VDDA	5.0V always on power rail by DCON or PSUSC0
3VDDA	3.3V always on power rail by DCON or PSUSC0
1.5VDDA	1.5V always on power rail by DCON or PSUSC0
5VDDS	5.0V power rail
3VDDS	3.3V power rail
1.8VDDS	1.8V power rail
FB_VTT	0.9V power rail for VGA
0.9VDDM	0.9V DDR Termination Voltage
5VDDM	5.0V suspend power rail
3VDDM	3.3V suspend power rail
2.5VDDM	2.5V suspend power rail
1.5VDDM	1.5V suspend power rail
VDD_CORE	Core Voltage for VGA
VCPU_CORE	Core Voltage for CPU
1.2VDDM	VCC For CPU & NB
+1.2VHT	VCC For CPU & NB Hyper Transport

Part Naming Conventions

C	=	Capacitor
CN	=	Connector
D	=	Diode
F	=	Fuse
L	=	Inductor
Q	=	Transistor
R	=	Resistor
RP	=	Resistor Pack
U	=	Arbitrary Logic Device
Y	=	Crystal and Osc

Net Name Suffix

0	=	Active Low signal

Signal Conditioning

_D_	=	Damped (by a resistor)
_Q_	=	Isolated (by a Q-switch)
_L_	=	Filtered (by an inductor or bead)

5.Board Stack up Description

PCB Layers

Layer 1	TOP
Layer 2	GND
Layer 3	IN1/Mixer
Layer 4	GND
Layer 5	VCC
Layer 6	IN2/Mixer
Layer 7	GND
Layer 8	BOTTON

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6.Schematic modify Item and History :

V0.1 --> V0.2

1.Modify LED circuit for Pa and Xa co-layout.
2.Change Card Reader from AU6333 to AU6366.
3.R38,R41 change to 56k ohm,C670 change to2200pF,C658 change to 1500pF,Del R385,Add C47 0.1uF(tune power sequence)
4.CLK_PMU08 change connect point from R451 to R592
5.Add D51,R589 47k ohm (Solve HTMCP_RST# Glitch)
6.Revise CN21 Anolog connection.
7.Change Q11 from 06-20726-01 to 06-23930-01
8.Add 0.1uF between U5 pin1,pin2 ,Remove D14.
9.Change Headphone AMP from M441 to G1410
10.R236 change to NU

V0.2 --> V0.3

1.Change JP1, JP2, JP3, JP9, JP15, JP19, JP23 to 0 ohm 11-14214-00
2.Change C16, C17 from 10-40729-02 to 10-60092-01
3.Add C883 10-52810-02 on Vcpu_core plane
4.L77, L79 changed from 12-01986-01 to 12-01955-01
5.C686 changed from NU to stuff.
6.CPU VDDIO_FB_L change to NC (FSC recommend)
7.Add PCIE CLK serial 0 hm resister R603,R604,R605,R606,R607,R608 (FSC recommend)
8.C647,C652 change from 18pf to 27pf, C630,C633 change from 12pf to 18pf(tune crystal timing)
9.D13,R201,C379,R205 change to NU,R205 stuff, Add R600 10k ohm pull down (solve KBC issue)
10.For EMI solution
  Add R272,R273,R274,R275,R276,R277,R278,R279 22 ohm
  Add C870,C871,C872,C873,C874,C875,C876,C877,C6,C5,C518,C520 5pF
  Add C551,C548,C546,C880,C881 10pF
  Add C878,C568,C569 100pF,C571 150pF, C480 1000pF
  Del L41,L42, Add R238,R239,R385,R521 10ohm

V0.3 --> V0.4

1.Del R571, Change R572 from 910 to 1K, change D17 to one lens LED for behavior issue.
2.Del Q65, Change Q70 to P-MOS (06-20593-01) for behavior issue.
3.Del R56, R329, R189, R436, R528, R110 to short.
4.Add C884, C885, C886, C887 location but no stuff to prevent noise issue.
5.Del JP7, JP18, JP25, JP13, JP24, JP11, JP10, JP8, JP12, JP14, JP29, JP4, JP22, JP6, JP21, JP5, JP17 to short.
6.C45(47pF), C55(33pF) change to 150pF, R31 change from 12k to 18k.
7.Add R613 between R531 to GND.
8.C1, C2, C535, C597 from NU to stuff, add C890 on DCIN_CPU for EMI request.
9.Change L81, L82 to 0 ohm, add C891, C892, C893 for L1 enable function.
10.Add Card control power solution
11.Add Lan PHY power control circuit.
12.Modify RF LED circuit.
13.Modify DVI circuit.
14.Modify Audio Mute circuit.
15.For EMI solution
   Add C494 200pF
   Add C898,C899,C900,C901,C902,C903,C904,C905 5pF (NU)
   Add R189 0 ohm
   Add R258,R329,R436 0 ohm (NU)
   Add one spring

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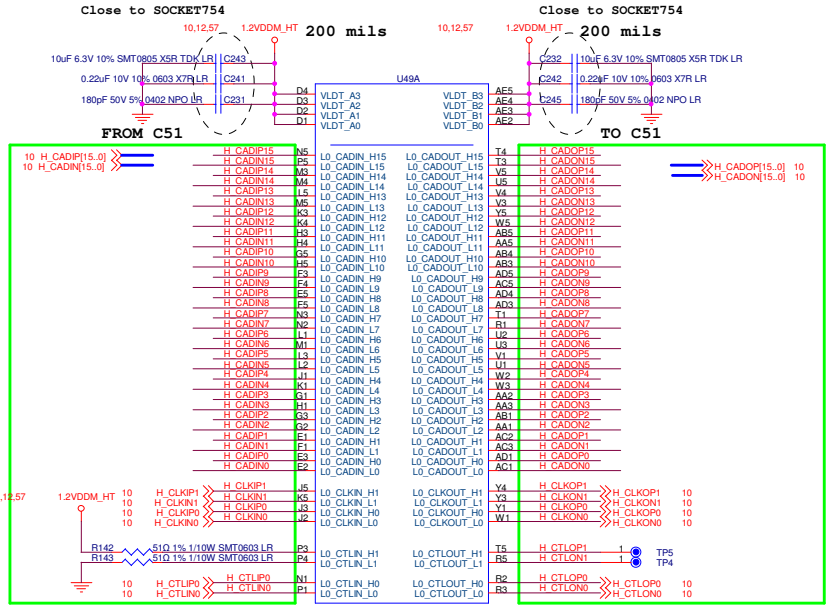
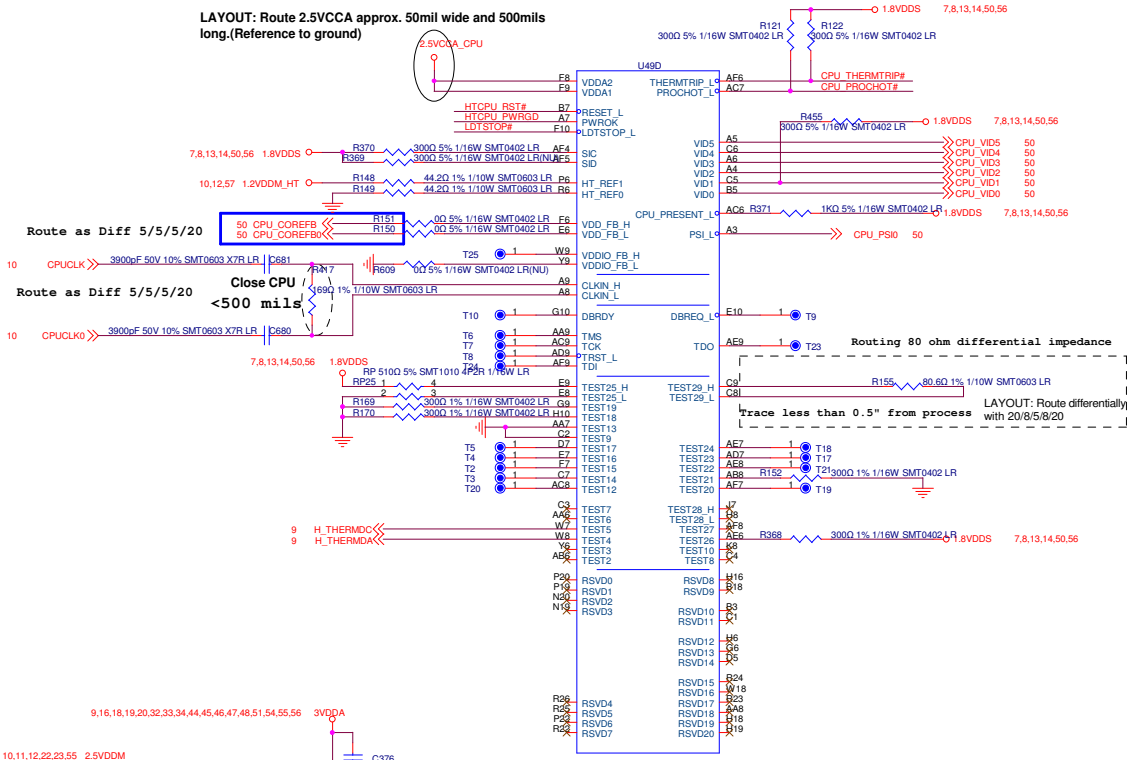
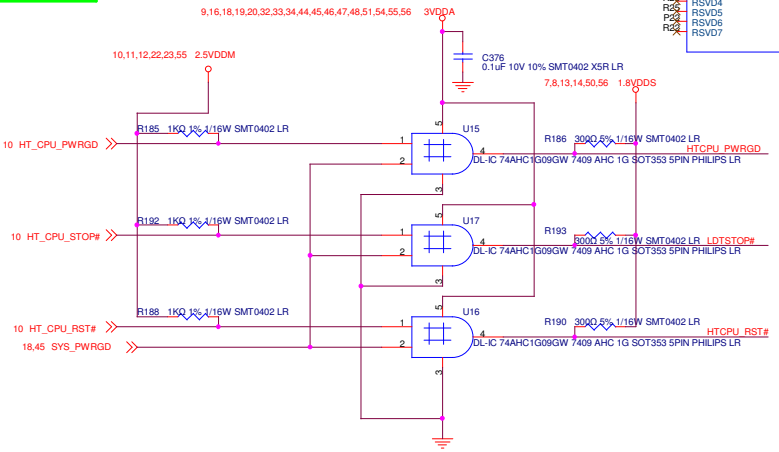
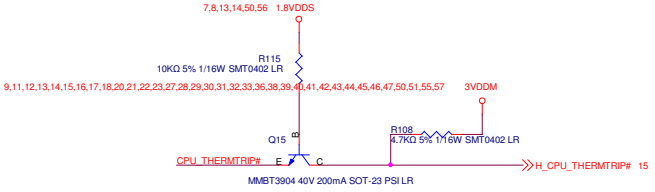
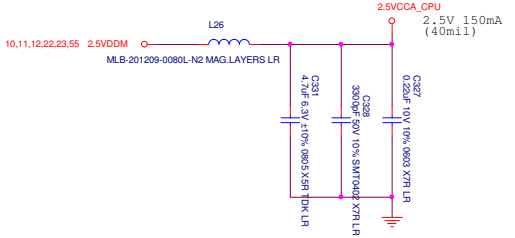
ClawHammer HT Interface





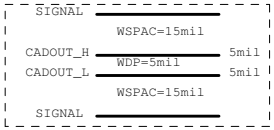


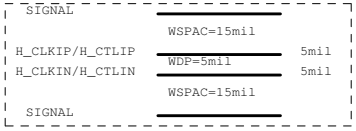


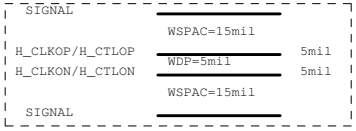


HT BUS General Routing Rules:

1. HT BUS is easy to route,and uses minmal board space.
2. HT BUS length must be greater than 1" and less than 12.0".
3. All CAD/CTL/CLK within a clock group must route at same layer.
4. HT BUS is Ground-referenced differential link.
5. Differential pair length matching within 30 mils.
6. CAD_H to CAD_L length matching within 30 mils.
7. CAD to CAD length matching within 120 mils.
8. CAD to CLK length matching within 60 mils.
9. CLK to CLK length matching within 600 mils(max).
10. CAD/CAD# and CTL/CTL# shall be treated identically within a clock group.







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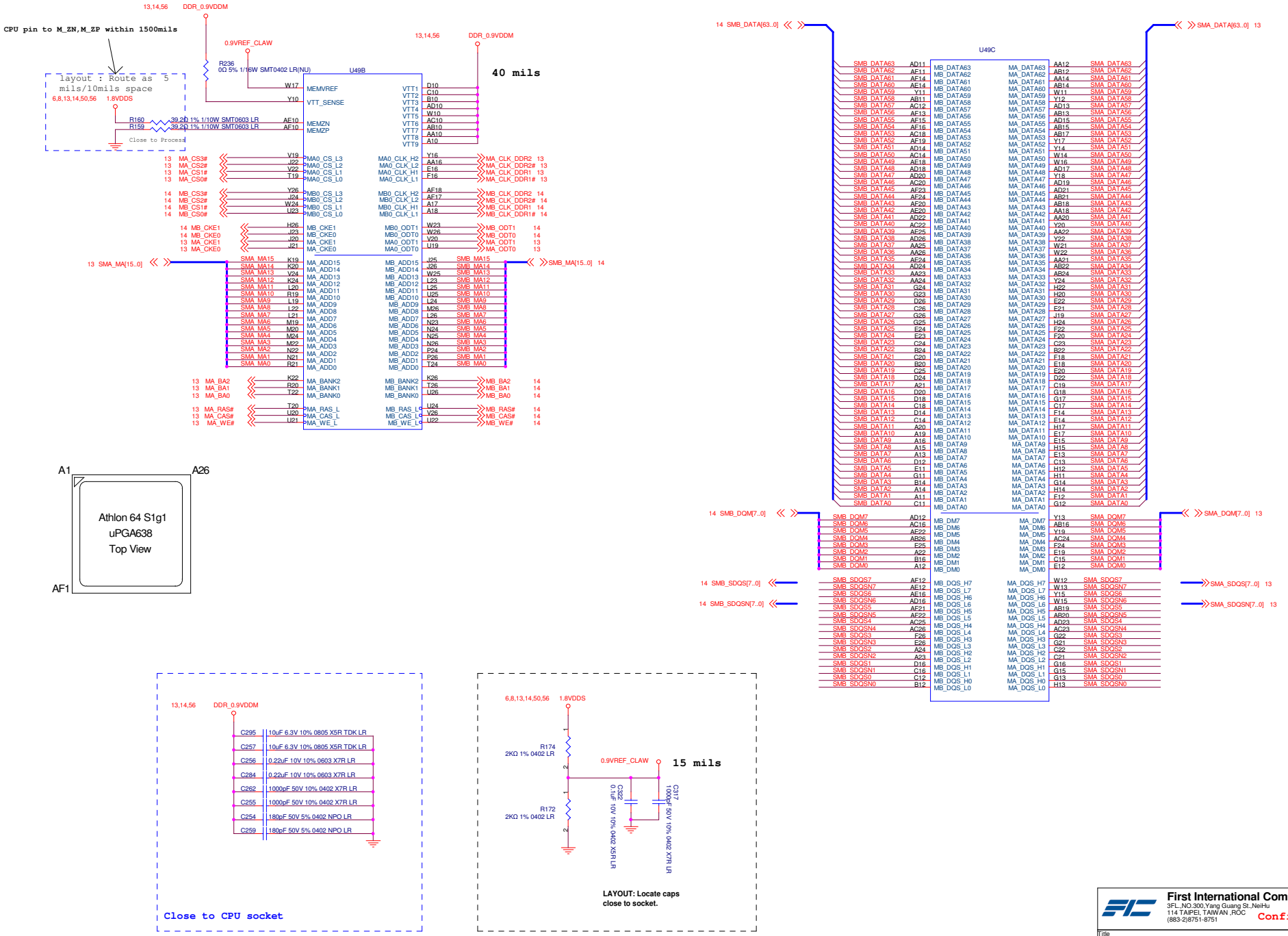
Clawhammer DDR Interface



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50 VCPU_CORE

U49E

AC4	VDD1	VDD43	V12
AD2	VDD2	VDD44	V14
G4	VDD3	VDD45	W4
H2	VDD4	VDD46	Y2
J9	VDD5	VDD47	J15
J11	VDD6	VDD48	K16
J13	VDD7	VDD49	L15
K6	VDD8	VDD50	M16
K10	VDD9	VDD51	P16
K12	VDD10	VDD52	T16
K14	VDD11	VDD53	U15
L4	VDD12	VDD54	V16
L7	VDD13		
L9	VDD14		
L11	VDD15	VDDIO1	H25
L13	VDD16	VDDIO2	J17
M2	VDD17	VDDIO3	K18
M6	VDD18	VDDIO4	K21
M8	VDD19	VDDIO5	K23
M10	VDD20	VDDIO6	K25
N7	VDD21	VDDIO7	L17
N9	VDD22	VDDIO8	M18
N11	VDD23	VDDIO9	M21
P8	VDD24	VDDIO10	M23
P10	VDD25	VDDIO11	M25
R4	VDD26	VDDIO12	N17
R7	VDD27	VDDIO13	P18
R9	VDD28	VDDIO14	P21
R11	VDD29	VDDIO15	P23
T2	VDD30	VDDIO16	P25
T6	VDD31	VDDIO17	R17
T8	VDD32	VDDIO18	T18
T10	VDD33	VDDIO19	T21
T12	VDD34	VDDIO20	T23
T14	VDD35	VDDIO21	T25
U7	VDD36	VDDIO22	U17
U9	VDD37	VDDIO23	V18
U11	VDD38	VDDIO24	V21
U13	VDD39	VDDIO25	V23
V6	VDD40	VDDIO26	V25
V8	VDD41	VDDIO27	Y25
V10	VDD42		

VCPU_CORE 50

Maximum Core Current :52A
Nominal VDD Core Voltage:1.50V

6,7,13,14,50,56 1.8VDDS

3A 120 mils

U49F

AA4	VSS1	VSS66	J6
AA11	VSS2	VSS67	J8
AA13	VSS3	VSS68	J10
AA15	VSS4	VSS69	J12
AA17	VSS5	VSS70	J14
AA19	VSS6	VSS71	J16
AB2	VSS7	VSS72	J18
AB7	VSS8	VSS73	K2
AB9	VSS9	VSS74	K7
AB23	VSS10	VSS75	K9
AB25	VSS11	VSS76	K11
AC11	VSS12	VSS77	K13
AC13	VSS13	VSS78	K15
AC15	VSS14	VSS79	K17
AC17	VSS15	VSS80	L6
AC19	VSS16	VSS81	L8
AC21	VSS17	VSS82	L10
AD6	VSS18	VSS83	L12
AD8	VSS19	VSS84	L14
AD25	VSS20	VSS85	L16
AE11	VSS21	VSS86	L18
AE13	VSS22	VSS87	M7
AE15	VSS23	VSS88	M9
AE17	VSS24	VSS89	M11
AE19	VSS25	VSS90	M17
AE21	VSS26	VSS91	N4
AE23	VSS27	VSS92	N8
B4	VSS28	VSS93	N10
B6	VSS29	VSS94	N16
B8	VSS30	VSS95	N18
B9	VSS31	VSS96	P2
B11	VSS32	VSS97	P7
B13	VSS33	VSS98	P9
B15	VSS34	VSS99	P11
B17	VSS35	VSS100	P17
B19	VSS36	VSS101	R8
B21	VSS37	VSS102	R10
B23	VSS38	VSS103	R16
B25	VSS39	VSS104	R18
D6	VSS40	VSS105	T7
D8	VSS41	VSS106	T9
D9	VSS42	VSS107	T11
D11	VSS43	VSS108	T13
D13	VSS44	VSS109	T15
D15	VSS45	VSS110	T17
D17	VSS46	VSS111	U4
D19	VSS47	VSS112	U6
D21	VSS48	VSS113	U8
D23	VSS49	VSS114	U10
D25	VSS50	VSS115	U12
E4	VSS51	VSS116	U14
F2	VSS52	VSS117	U16
F11	VSS53	VSS118	U18
F13	VSS54	VSS119	V2
F15	VSS55	VSS120	V7
F17	VSS56	VSS121	V9
F19	VSS57	VSS122	V11
F21	VSS58	VSS123	V13
F23	VSS59	VSS124	V15
F25	VSS60	VSS125	V17
H7	VSS61	VSS126	W6
H9	VSS62	VSS127	Y21
H21	VSS63	VSS128	Y23
H23	VSS64	VSS129	N6
J4	VSS65		

50 VCPU_CORE

C883	10uF 6.3V 10% 0805 X5R TDK LR
C249	10uF 6.3V 10% 0805 X5R TDK LR
C252	10uF 6.3V 10% 0805 X5R TDK LR
C303	10uF 6.3V 10% 0805 X5R TDK LR
C309	10uF 6.3V 10% 0805 X5R TDK LR
C281	10uF 6.3V 10% 0805 X5R TDK LR
C282	10uF 6.3V 10% 0805 X5R TDK LR
C280	10uF 6.3V 10% 0805 X5R TDK LR
C283	10uF 6.3V 10% 0805 X5R TDK LR
C302	10uF 6.3V 10% 0805 X5R TDK LR
C304	10uF 6.3V 10% 0805 X5R TDK LR
C305	10uF 6.3V 10% 0805 X5R TDK LR
C272	0.22uF 10V 10% 0603 X7R LR
C276	0.22uF 10V 10% 0603 X7R LR
C251	0.01uF 16V 10% 0402 X7R LR
C250	180pF 50V 5% 0402 NPO LR

6,7,13,14,50,56 1.8VDDS

C325	0.22uF 10V 10% SMT0603 X7R LR
C334	0.22uF 10V 10% SMT0603 X7R LR
C333	10uF 6.3V 10% 0805 X5R TDK LR
C324	10uF 6.3V 10% 0805 X5R TDK LR

Place on CPU socket backside directly

6,7,13,14,50,56 1.8VDDS

C375	T220uF 2.5V ±20% 35mΩ 3528 KEMET LR
C369	0.22uF 10V 10% 0603 X7R LR
C368	0.22uF 10V 10% 0603 X7R LR
C367	0.01uF 16V 10% 0402 X7R LR
C366	0.01uF 16V 10% 0402 X7R LR
C349	180pF 50V 5% 0402 NPO LR
C350	180pF 50V 5% 0402 NPO LR

Close to CPU socket

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Title: **PA1538/XA1526(FSC) PTB50/XTB70(FIC)**

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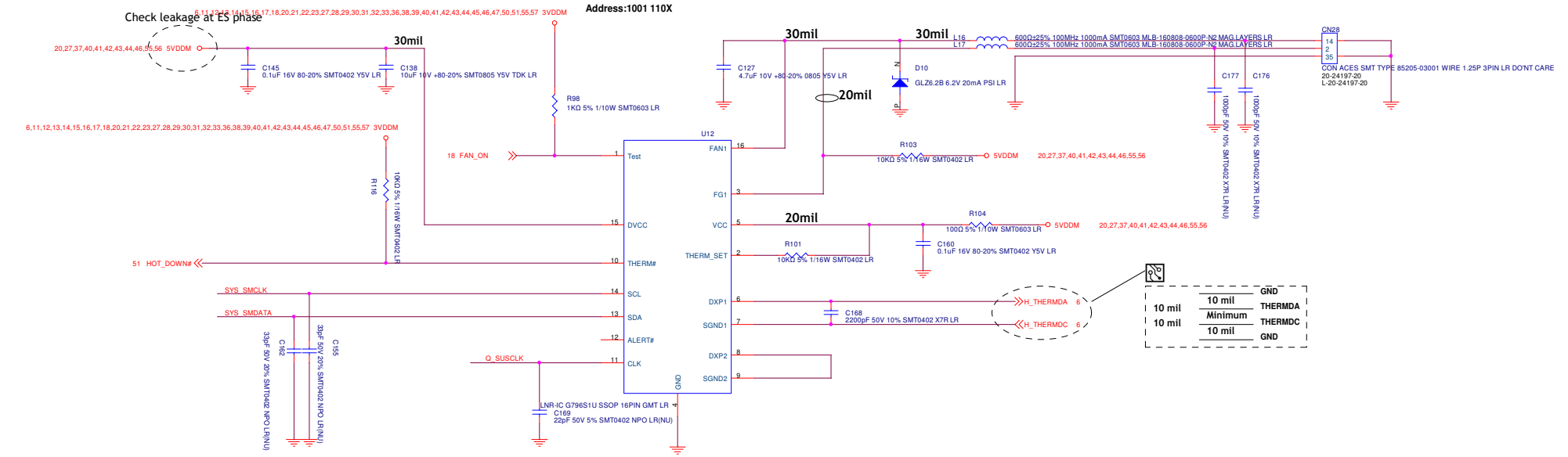
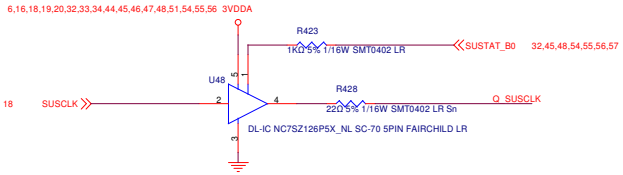
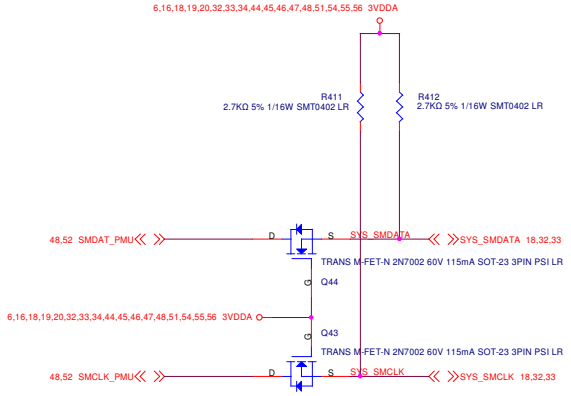
THERMAL SENSOR







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Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)	
Size C	Document Number CPU Thermal/Fan CNN	Rev 0.4
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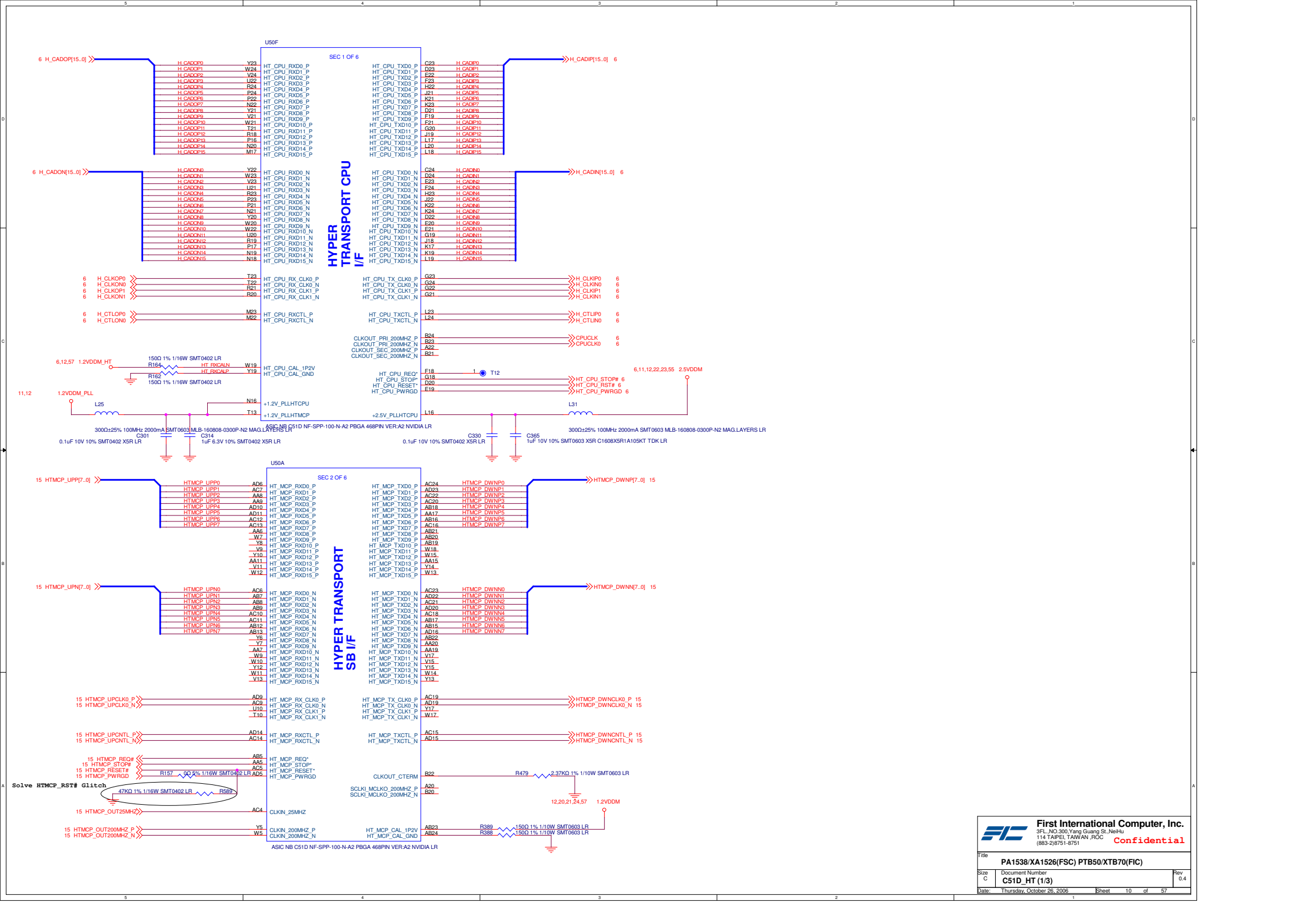
U50F
SEC 1 OF 6
HYPER TRANSPORT CPU I/F
ASIC NB C51D NF-SPP-100-N-A2 PBGA 468PIN VER:A2 NVIDIA LR
U50A
SEC 2 OF 6
HYPER TRANSPORT SB I/F
ASIC NB C51D NF-SPP-100-N-A2 PBGA 468PIN VER:A2 NVIDIA LR
Solve HTMCP_RST# Glitch
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C51D_HT (1/3)
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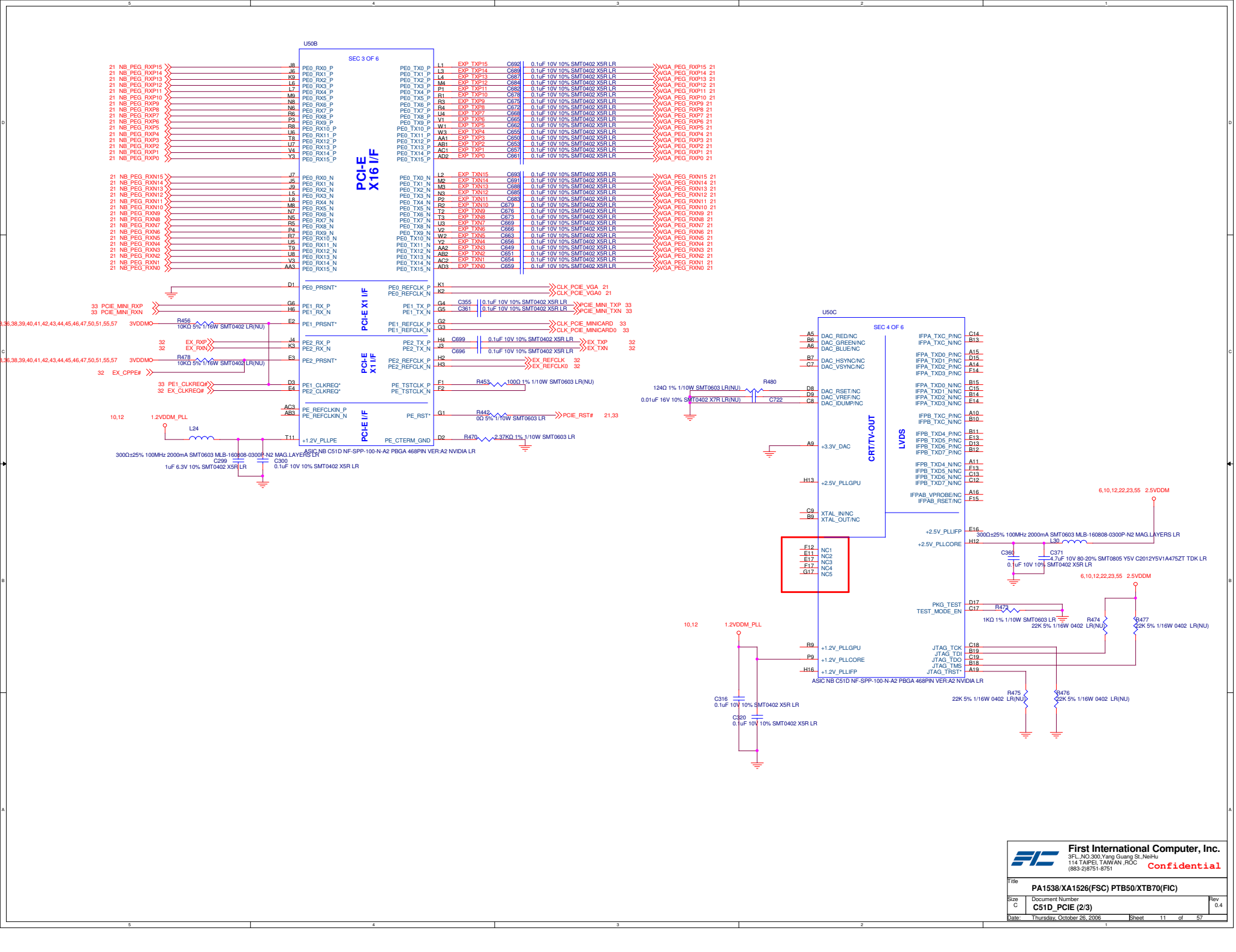
U50B
SEC 3 OF 6
PCI-E X16 I/F
PCI-E X1 I/F
PCI-E X1 I/F
PCI-E I/F
ASIC NB C51D NF-SPP-100-N-A2 PBGA 468PIN VER:A2 NVIDIA LR
U50C
SEC 4 OF 6
CRT/TV-OUT
LVDS
ASIC NB C51D NF-SPP-100-N-A2 PBGA 468PIN VER:A2 NVIDIA LR
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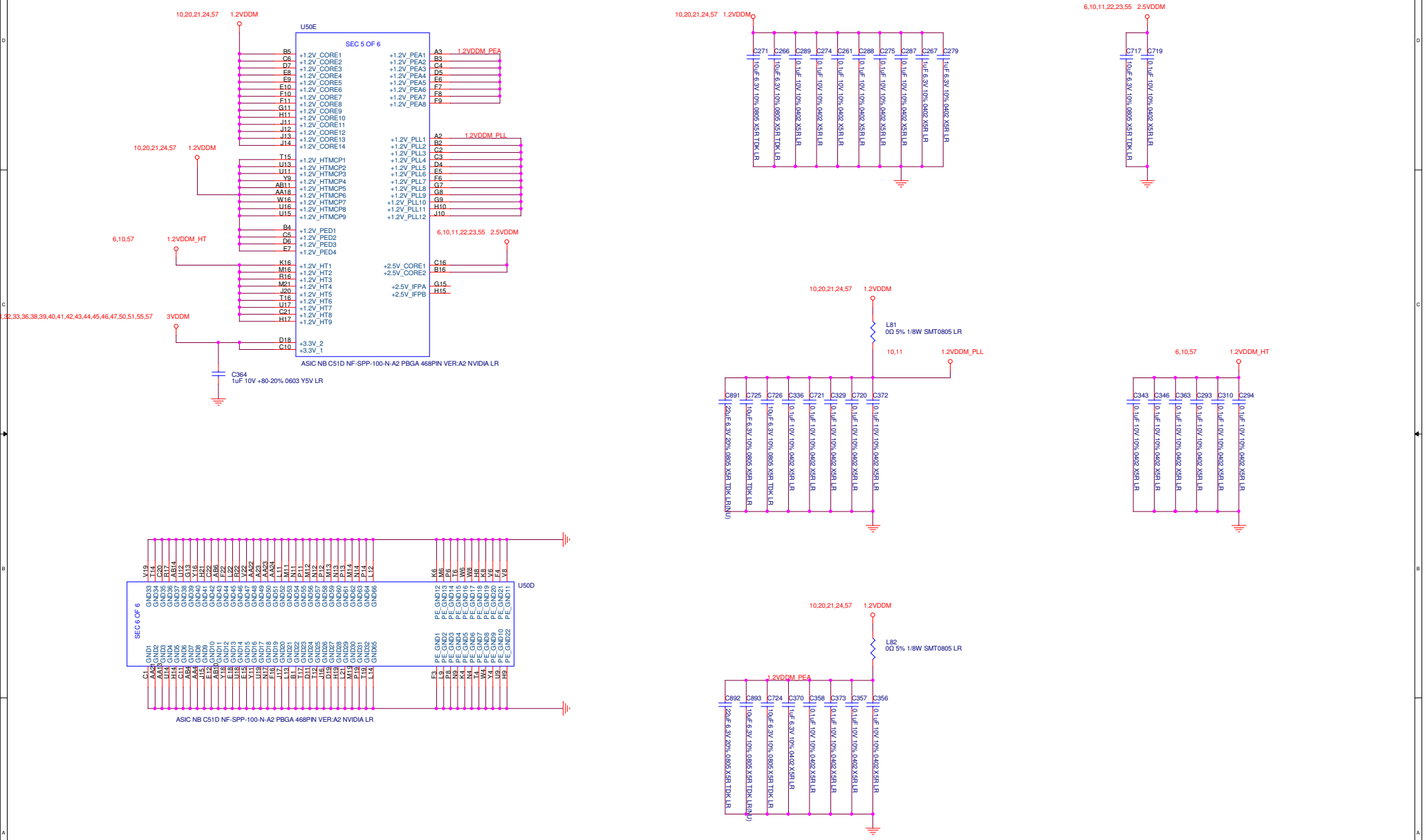
C51D_PCIE (2/3)
Thursday, October 26, 2006



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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: C51D_POWER (3/3) | Rev: 0.4

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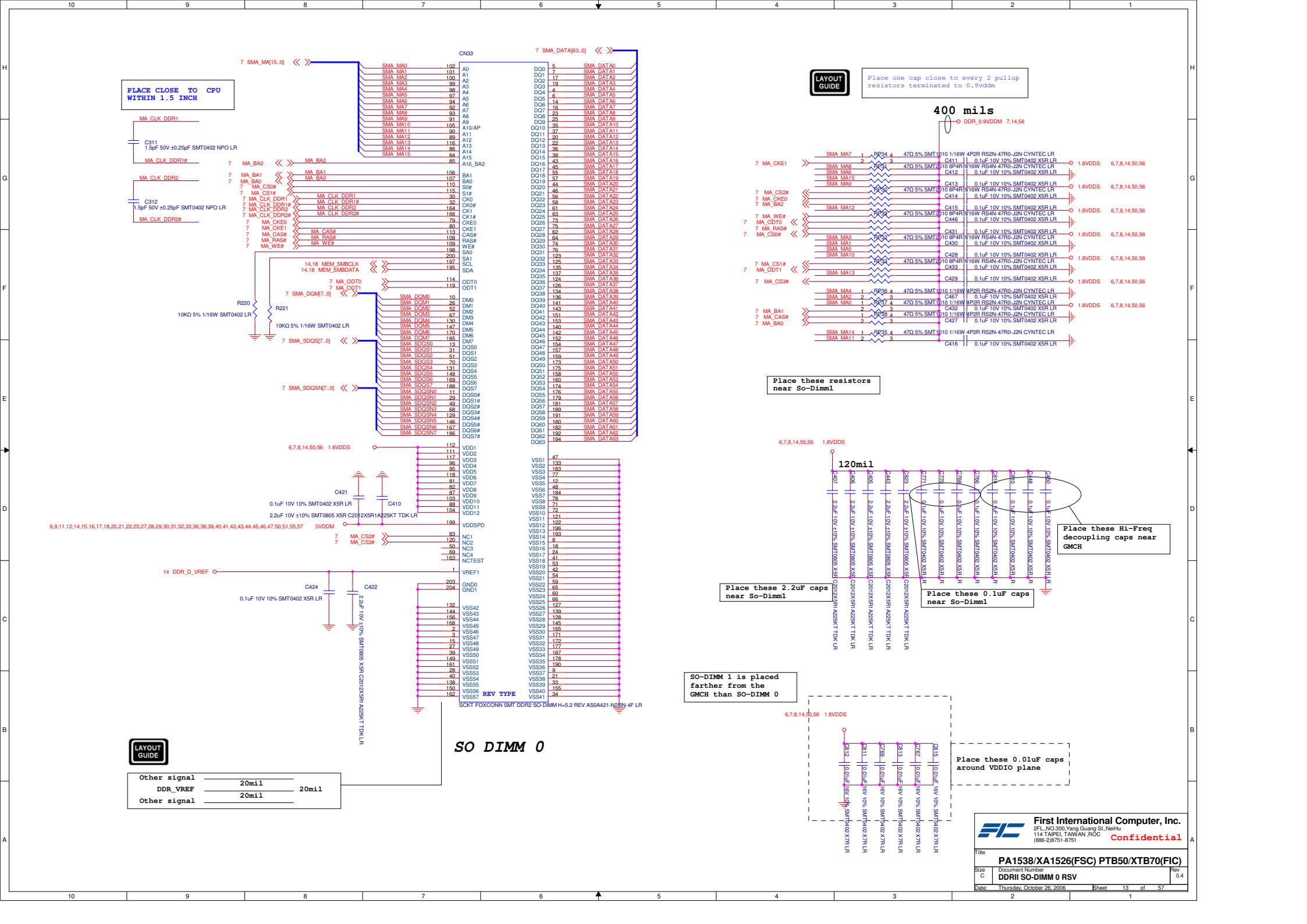
PLACE CLOSE TO CPU WITHIN 1.5 INCH
CN33
7 SMA_MA[15..0]
7 SMA_DATA[63..0]
7 SMA_DQM[7..0]
7 SMA_SDQS[7..0]
7 SMA_SDQSN[7..0]
6,7,8,14,50,56 1.8VDDS
3VDDM
14 DDR_D_VREF
6,9,11,12,14,15,16,17,18,20,21,22,23,27,28,29,30,31,32,33,36,38,39,40,41,42,43,44,45,46,47,50,51,55,57
REV TYPE
SCKT FOXCONN SMT DDR2 SO-DIMM H=5.2 REV AS0A421-N2RN-4F LR
SO DIMM 0
LAYOUT GUIDE
Other signal 20mil
DDR_VREF 20mil
Other signal
LAYOUT GUIDE
Place one cap close to every 2 pullup resistors terminated to 0.9vddm
400 mils
DDR_0.9VDDM 7,14,56
Place these resistors near So-Dimm1
120mil
Place these Hi-Freq decoupling caps near GMCH
Place these 2.2uF caps near So-Dimm1
Place these 0.1uF caps near So-Dimm1
SO-DIMM 1 is placed farther from the GMCH than SO-DIMM 0
Place these 0.01uF caps around VDDIO plane
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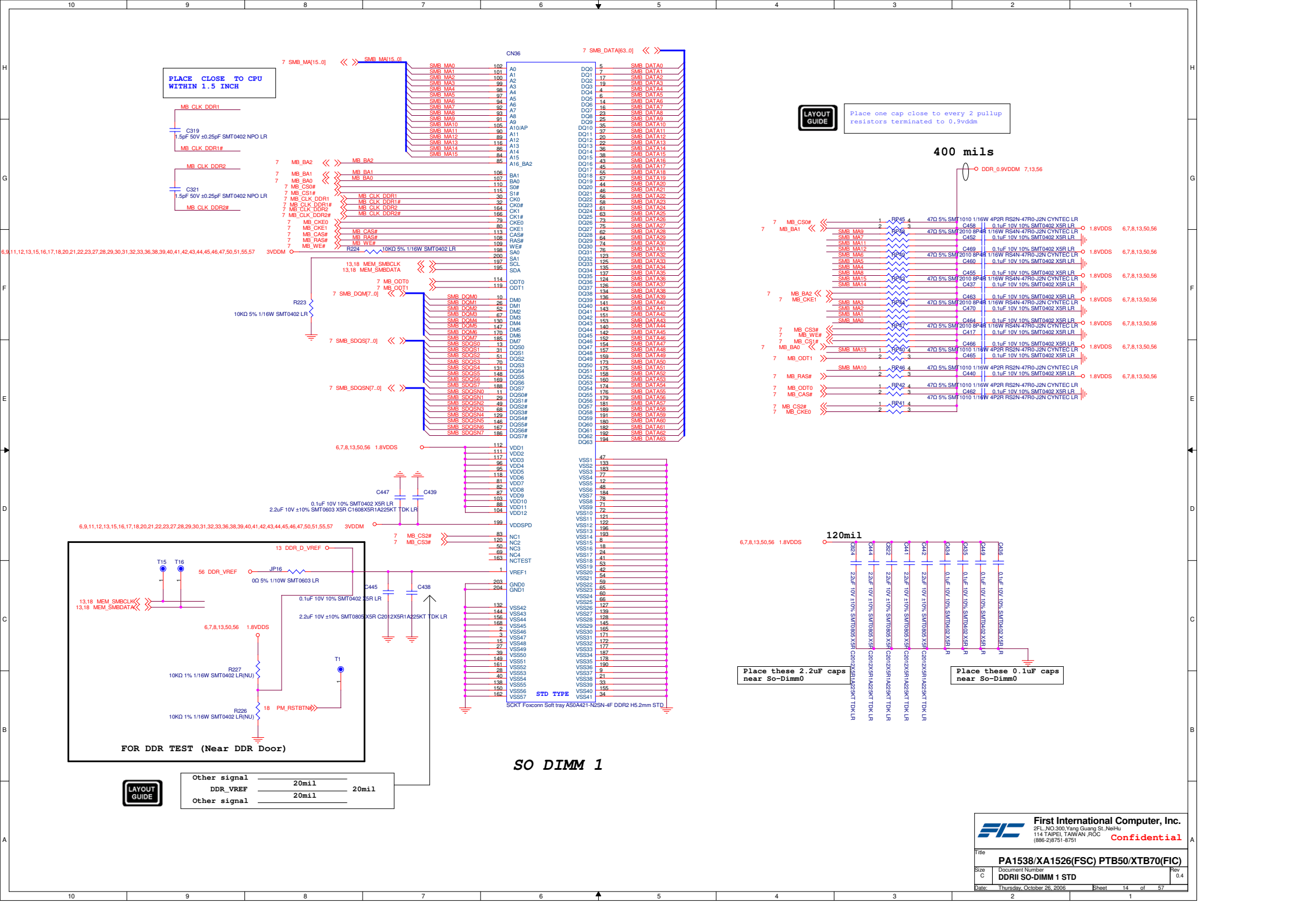
PA1538/XA1526(FSC) PTB50/XTB70(FIC)
DDRII SO-DIMM 0 RSV
Size C
Rev 0.4
Date: Thursday, October 26, 2006
Sheet 13 of 57



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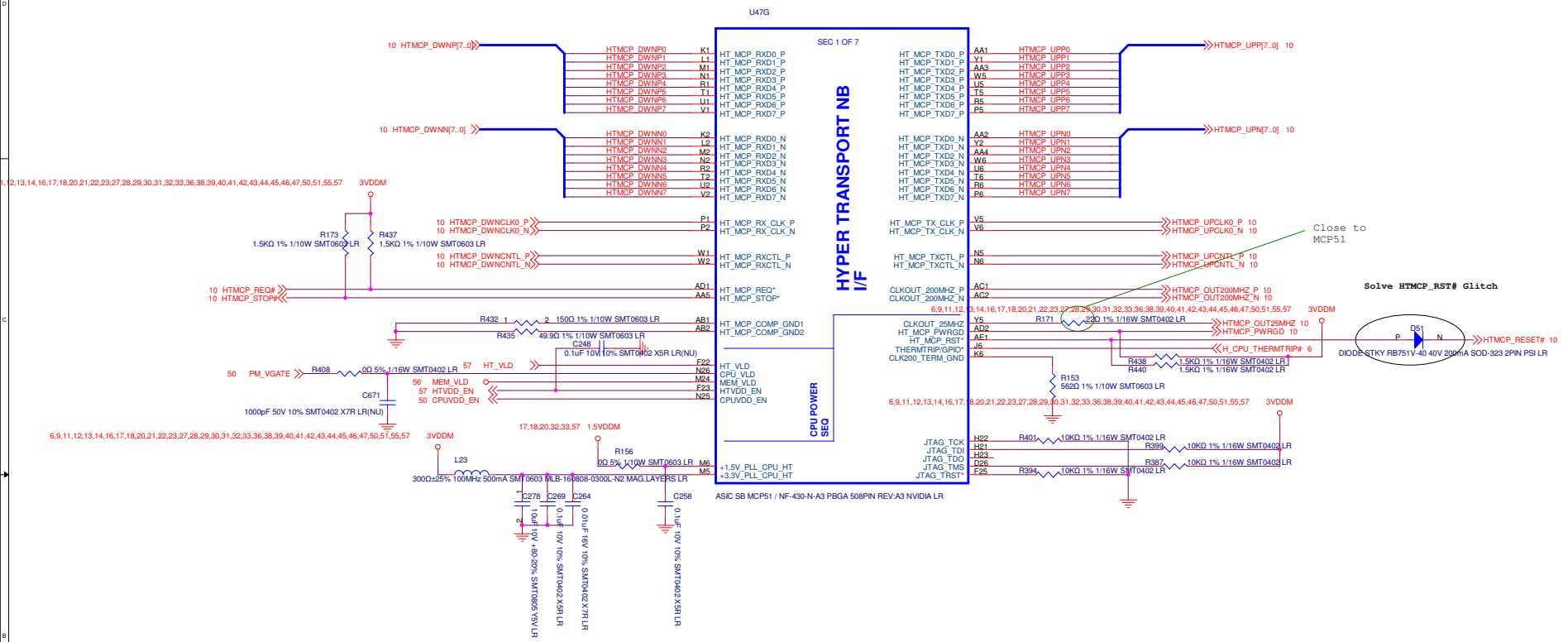
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: DDRII SO-DIMM 1 STD | Rev: 0.4

Date: Thursday, October 26, 2006 | Sheet 14 of 57



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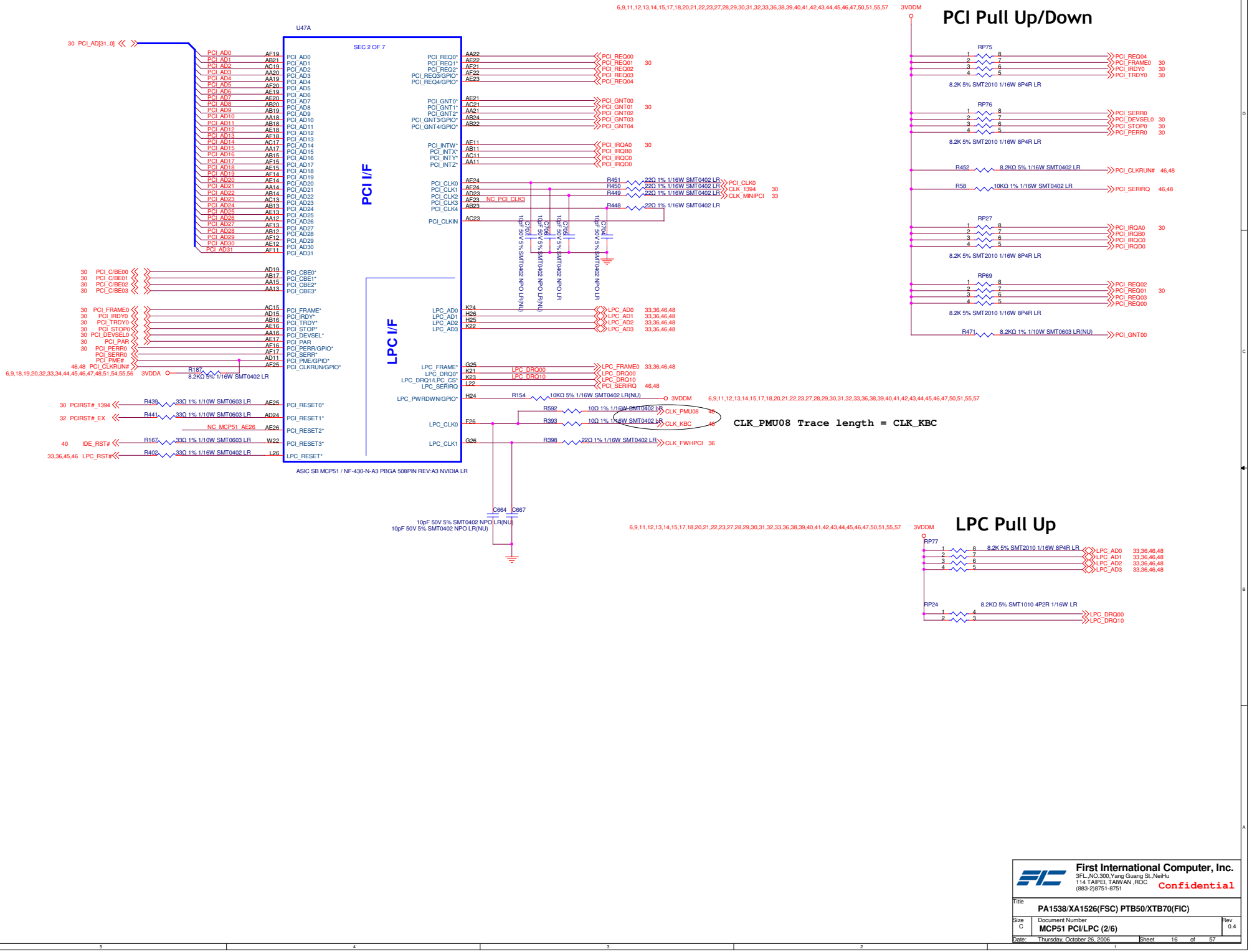
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: MCP51 HT(1/6) | Rev: 0.4

Date: Thursday, October 26, 2006 | Sheet 15 of 57


PCI Pull Up/Down
LPC Pull Up
U47A
SEC 2 OF 7
PCI I/F
LPC I/F
ASIC SB MCP51 / NF-430-N-A3 PBGA 508PIN REV:A3 NVIDIA LR
CLK_PMU08 Trace length = CLK_KBC
8.2K 5% SMT2010 1/16W 8P4R LR
8.2K 5% SMT1010 4P2R 1/16W LR
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MCP51 PCI/LPC (2/6)
Rev 0.4
Thursday, October 26, 2006
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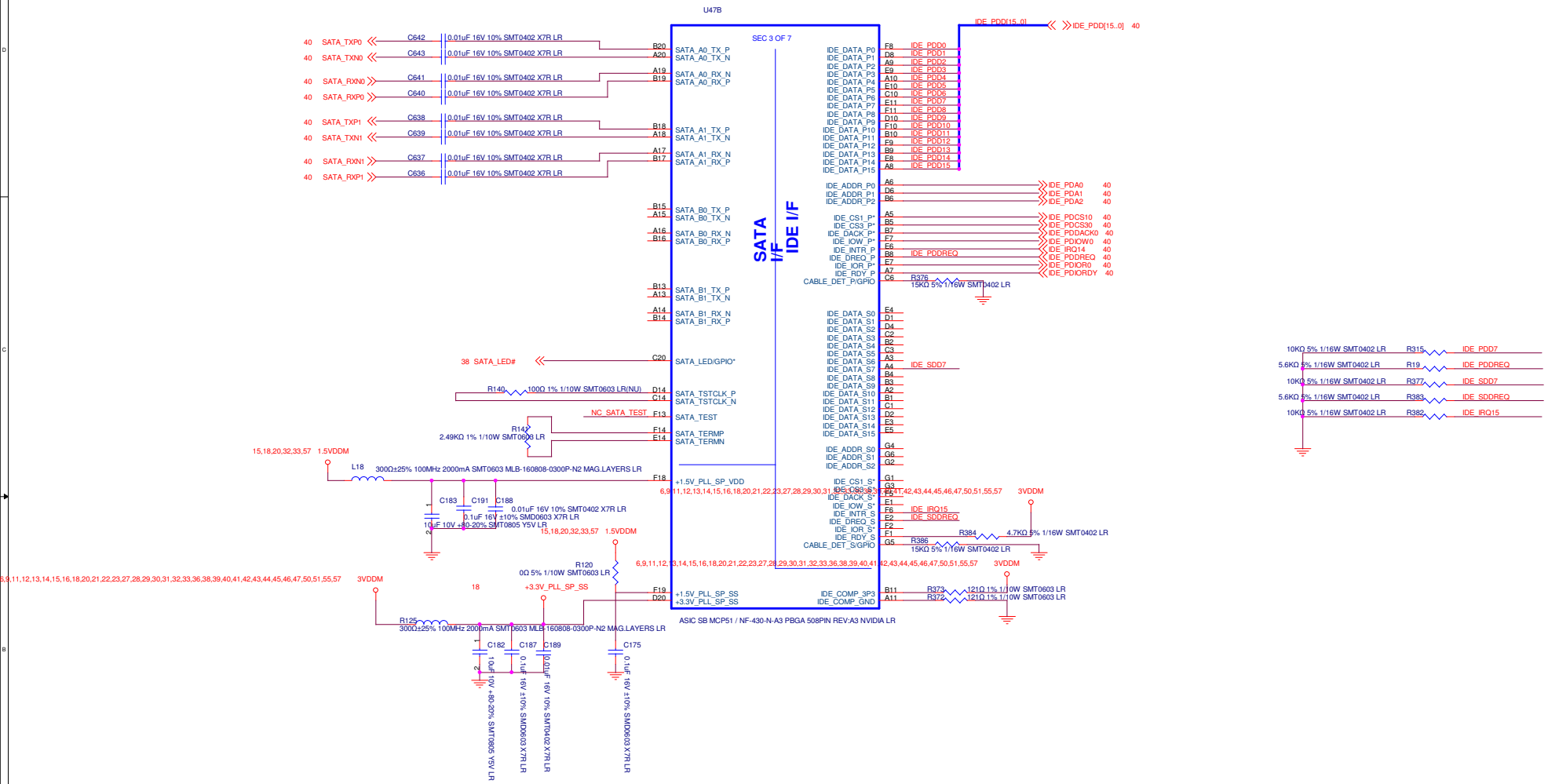

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Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)
Size	C
Document Number	MCP51 SATA/PATA (3/6)
Rev	0.4
Date	Thursday, October 26, 2006
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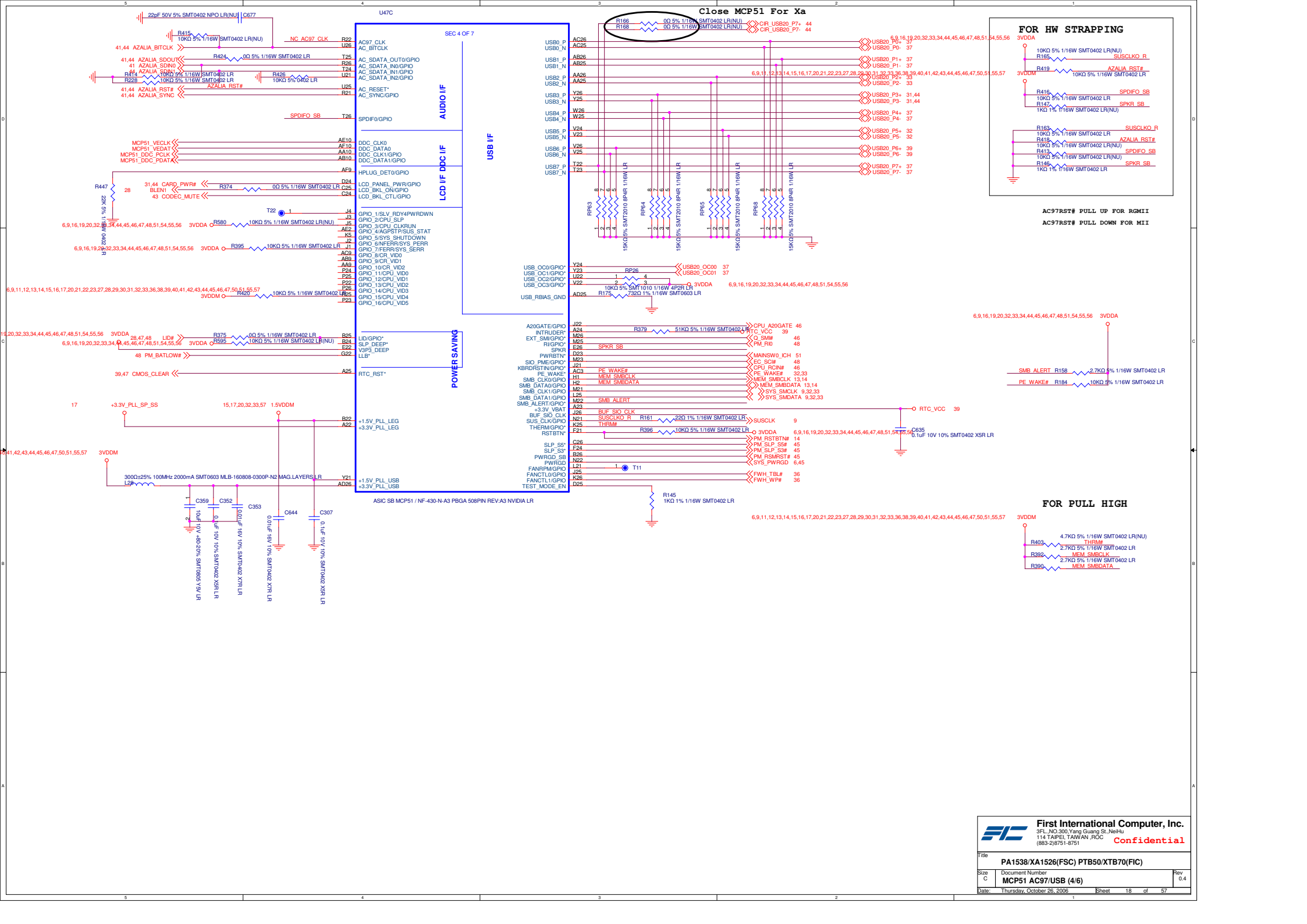

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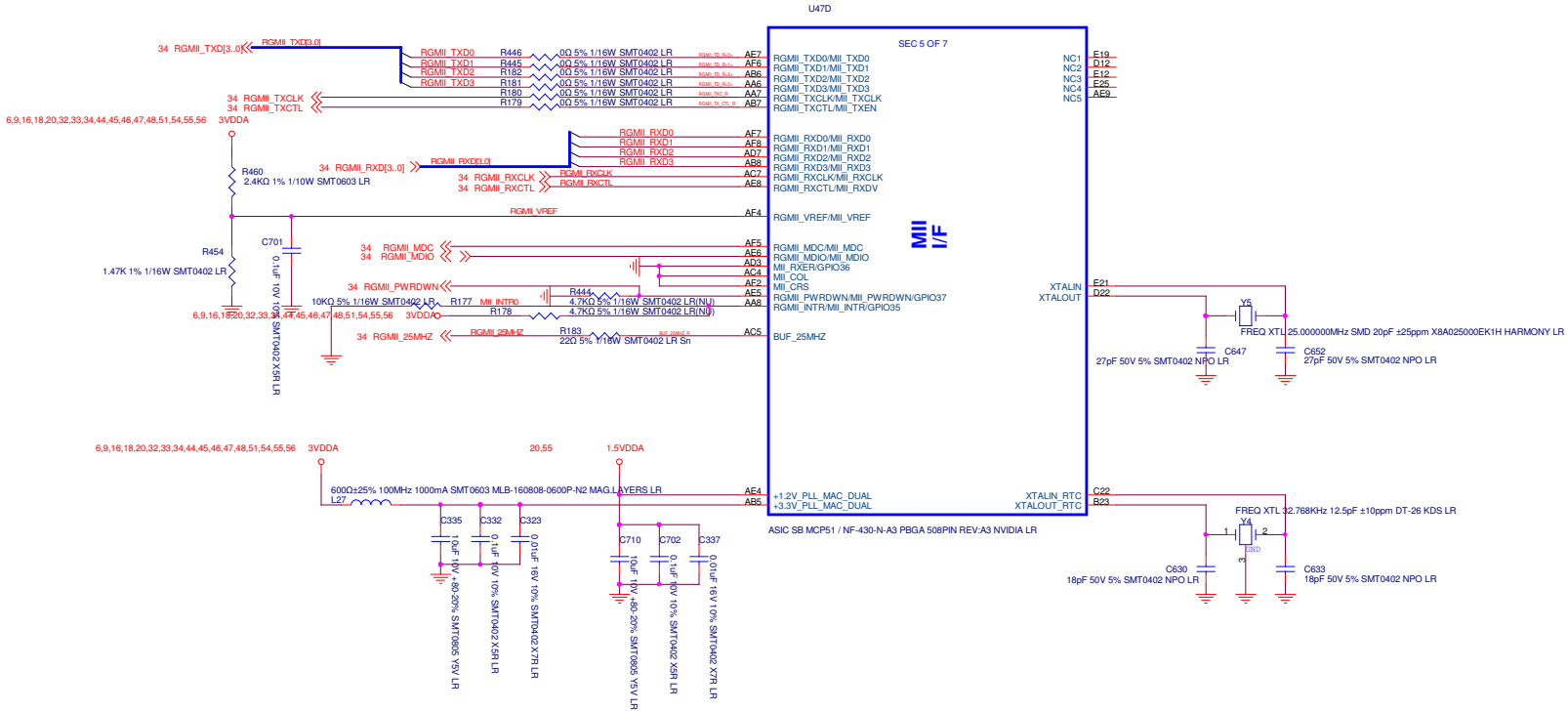
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: MCP51 AC97/USB (4/6) | Rev: 0.4

Date: Thursday, October 26, 2006 | Sheet 18 of 57



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Title: **PA1538/XA1526(FSC) PTB50/XTB70(FIC)**

Size	Document Number	Rev
C	**MCP51 RGMII (5/6)**	0.4

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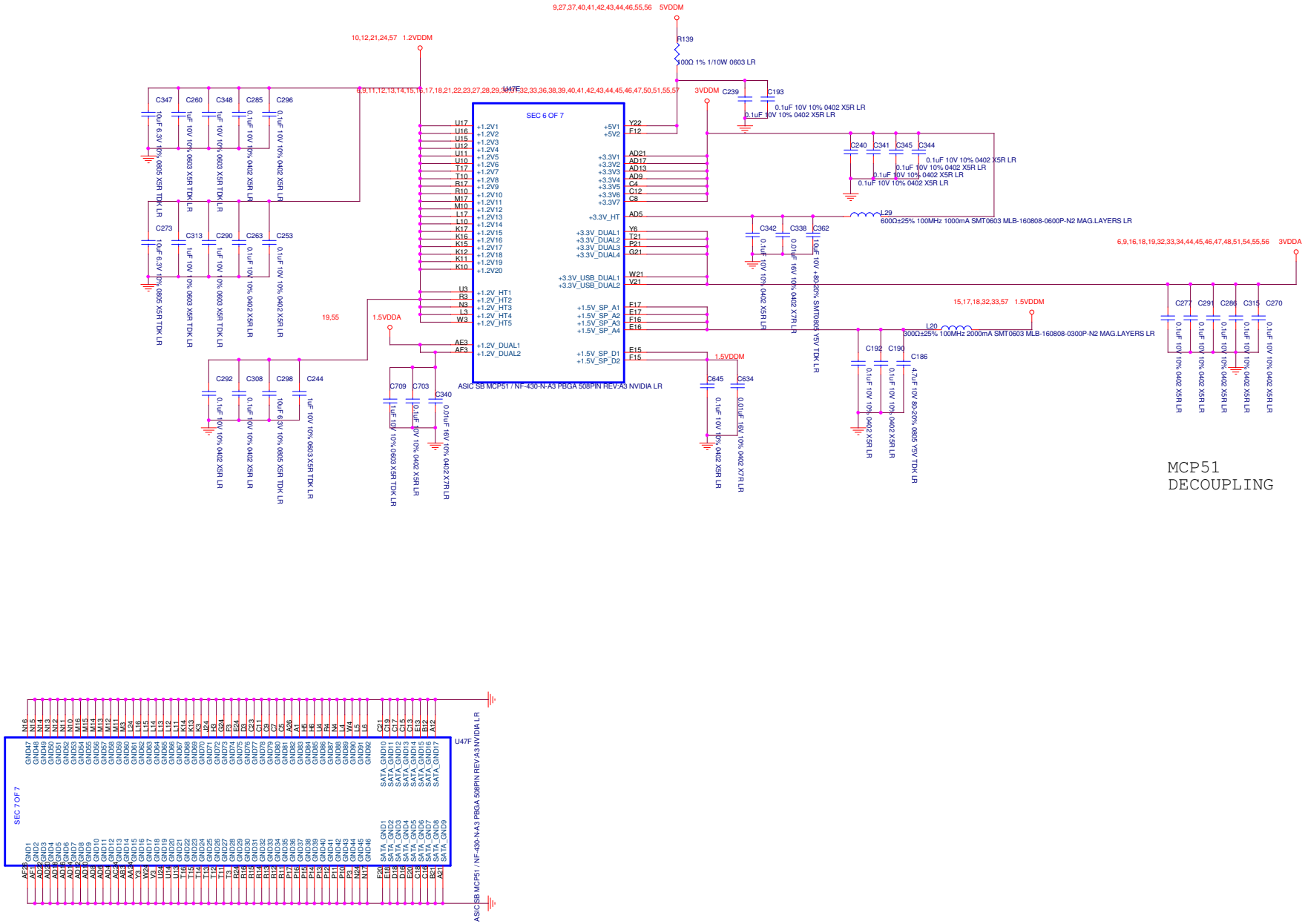

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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: MCP51 POWER (6/6) | Rev: 0.4

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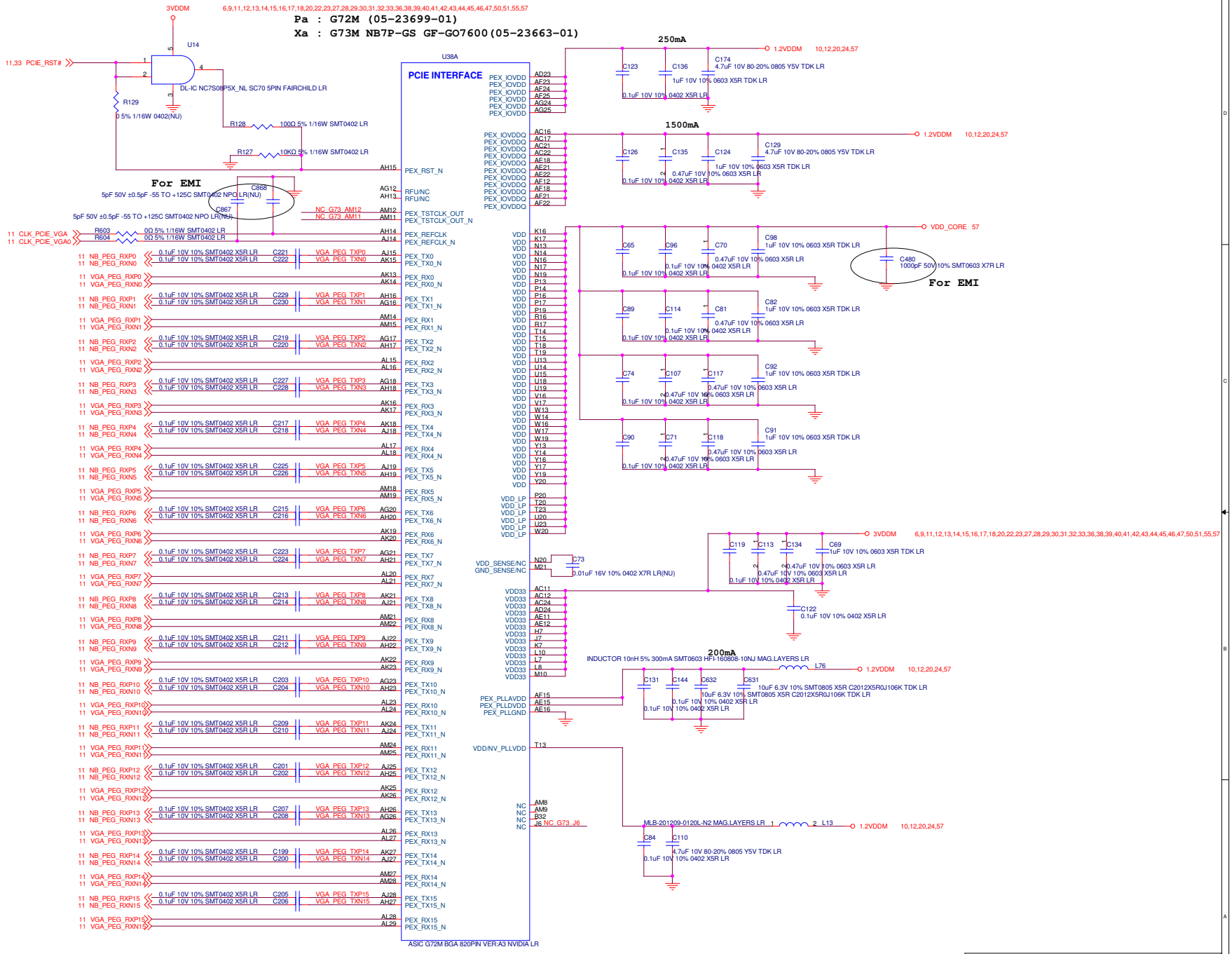
Pa : G72M (05-23699-01)

Xa : G73M NB7P-GS GF-GO7600(05-23663-01)



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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: G7X PCI-EXPRESS | Rev: 0.4

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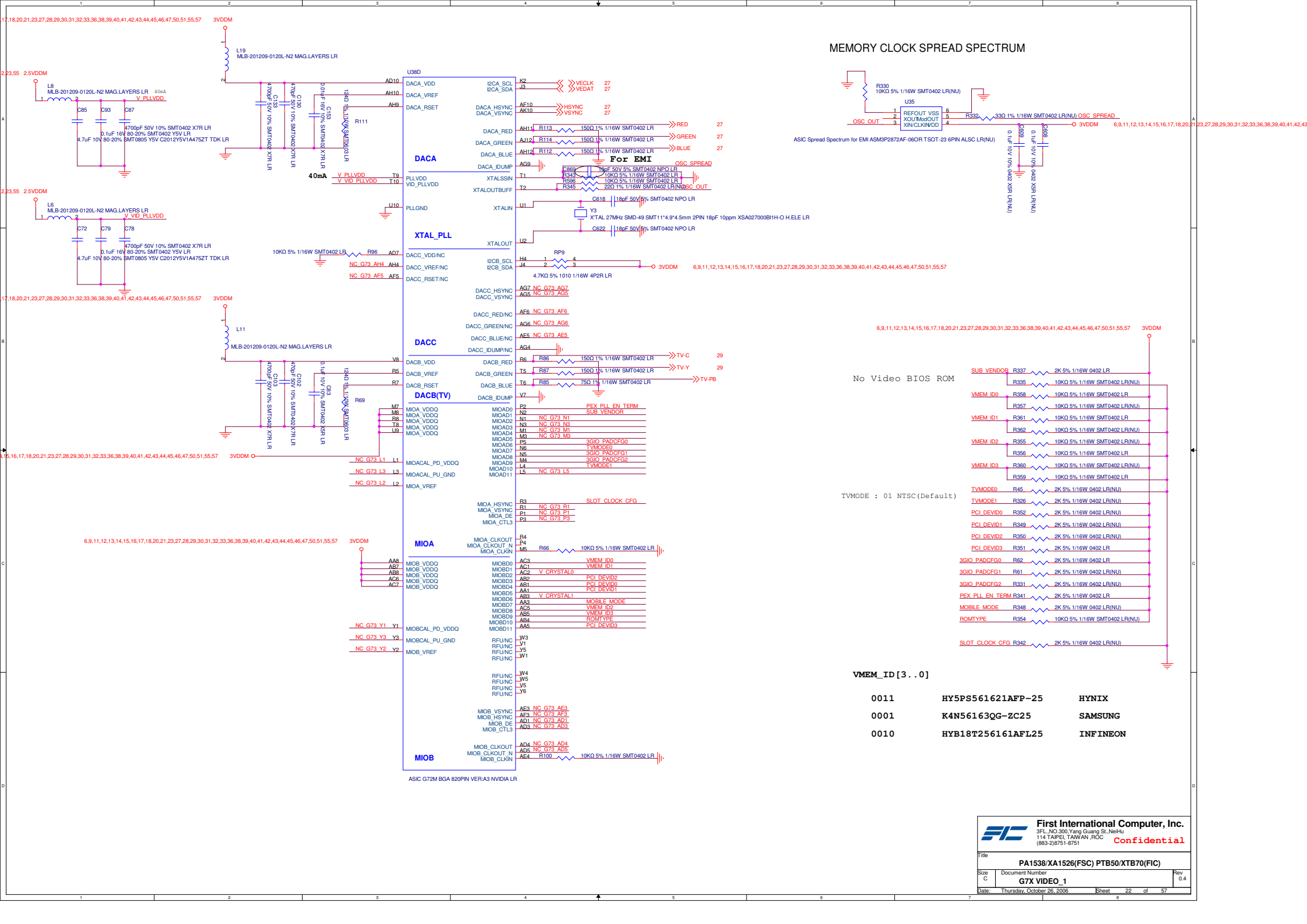
MEMORY CLOCK SPREAD SPECTRUM
U38D
DACA
DACC
DACB(TV)
MIOA
MIOB
XTAL_PLL
For EMI
ASIC G72M BGA 820PIN VER:A3 NVIDIA LR
ASIC Spread Spectrum for EMI ASM3P2872AF-06OR TSOT-23 6PIN ALSC LR(NU)
No Video BIOS ROM
TVMODE : 01 NTSC(Default)
VMEM_ID[3..0]
0011 HY5PS561621AFP-25 HYNIX
0001 K4N56163QG-ZC25 SAMSUNG
0010 HYB18T256161AFL25 INFINEON
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PA1538/XA1526(FSC) PTB50/XTB70(FIC)
G7X VIDEO_1
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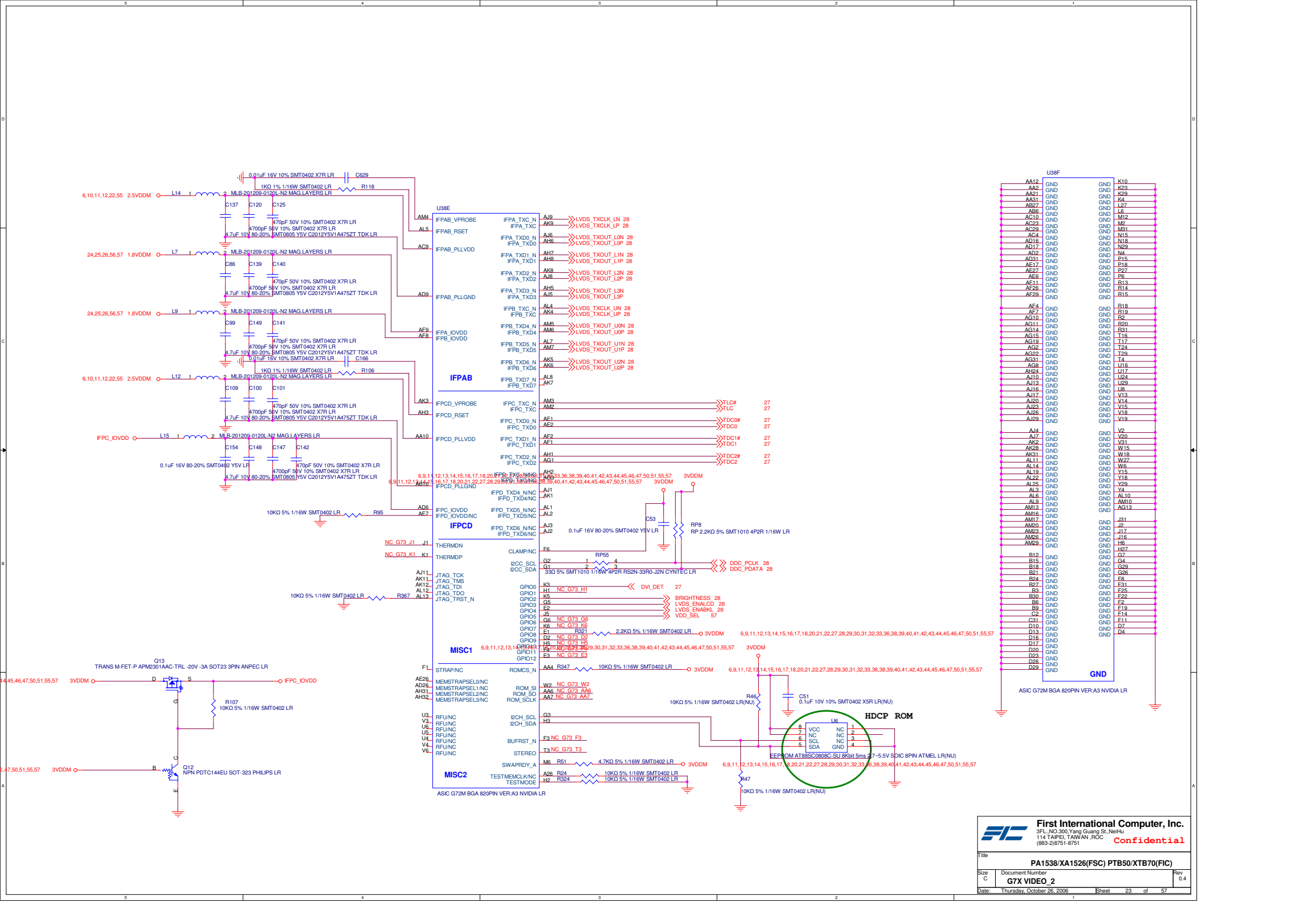

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Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)
Size	C
Document Number	G7X VIDEO_2
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Date:	Thursday, October 26, 2006
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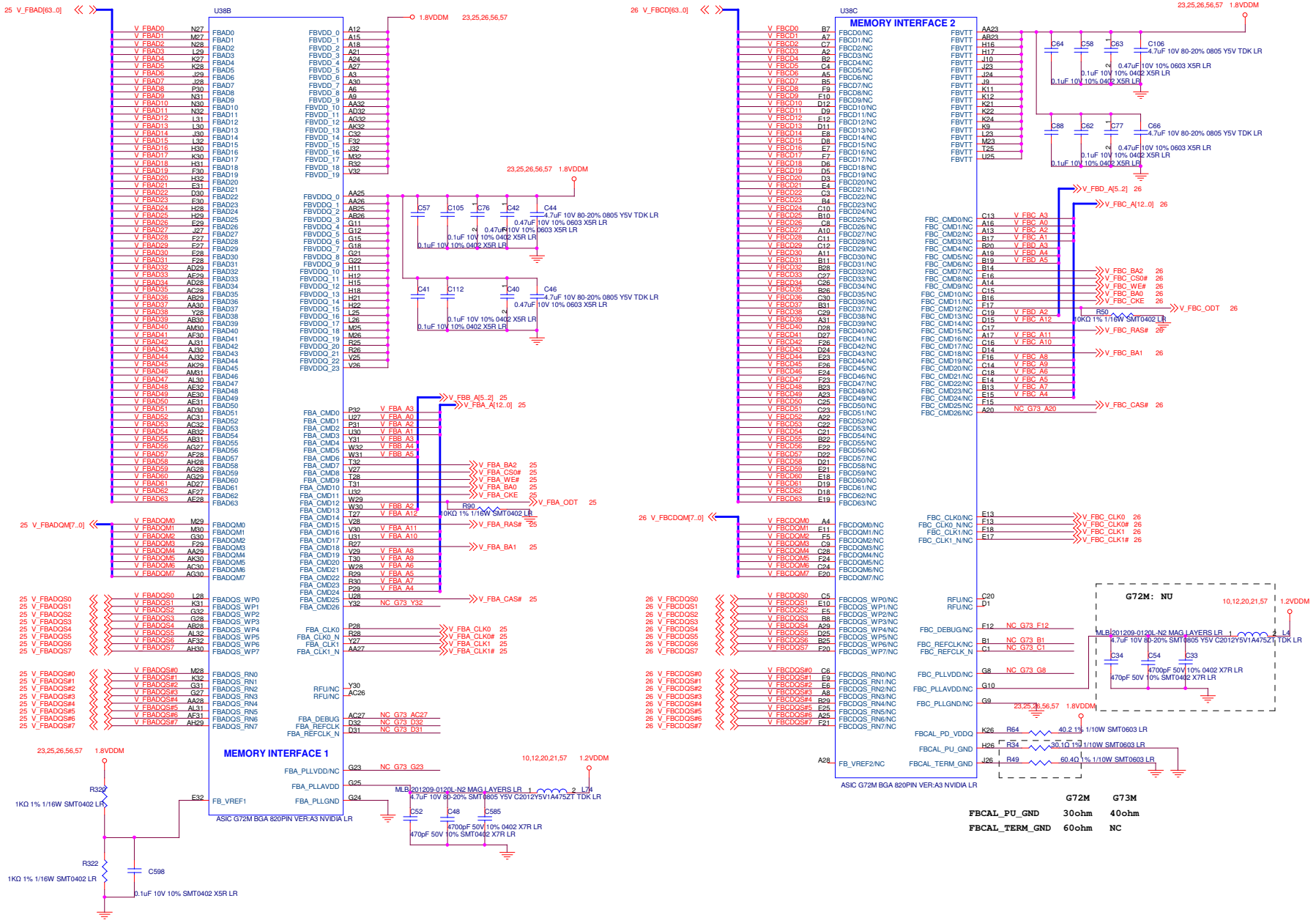

	G72M	G73M
FBCAL_PU_GND	30ohm	40ohm
FBCAL_TERM_GND	60ohm	NC

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Size	Document Number	Rev
C	G7X MEM CHANEL	0.4

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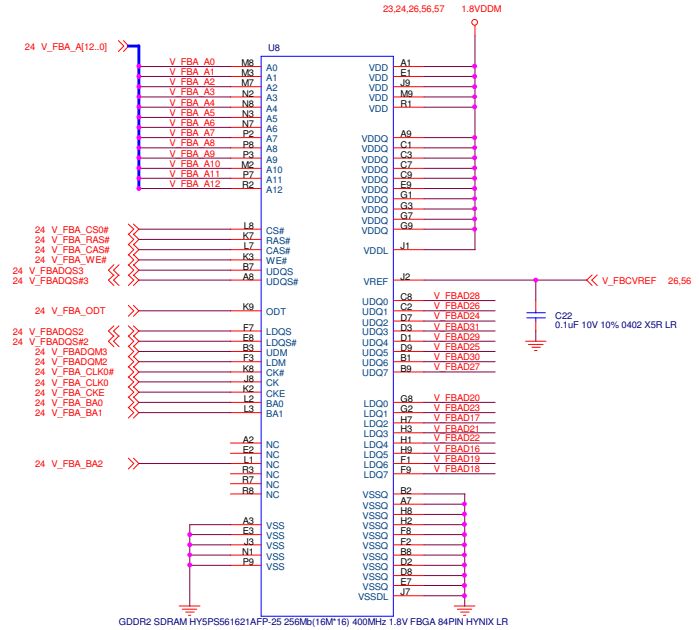
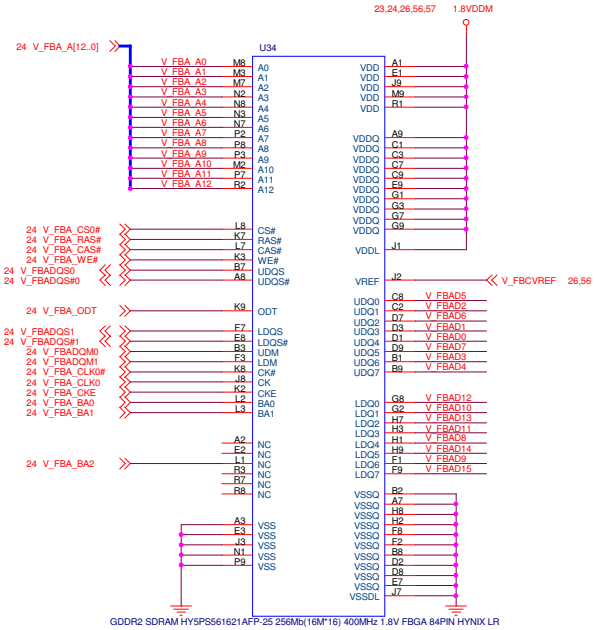
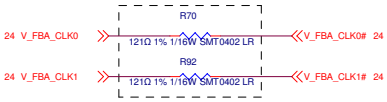
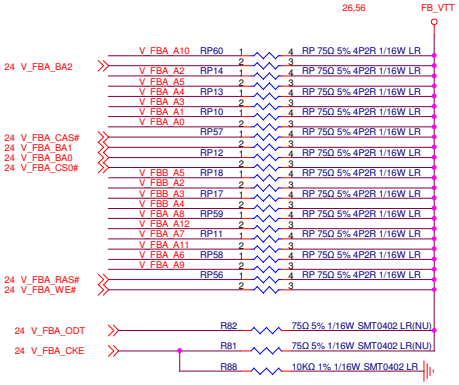
24 V_FBAD[63..0]

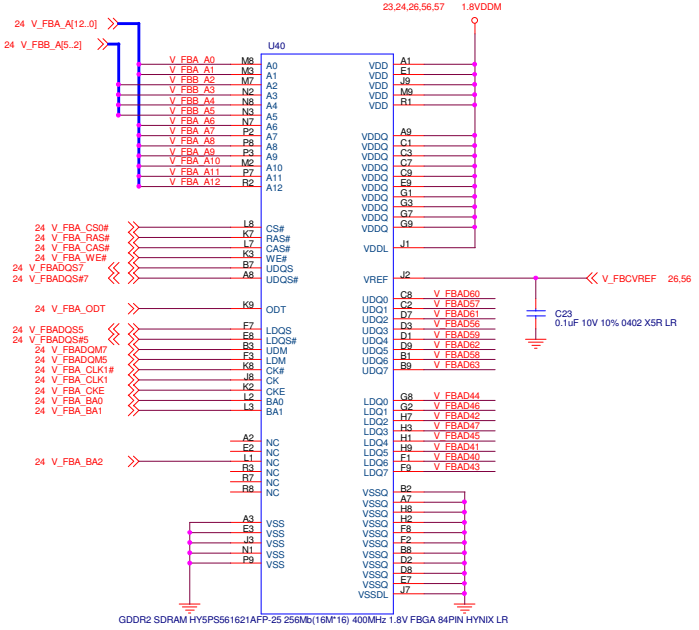


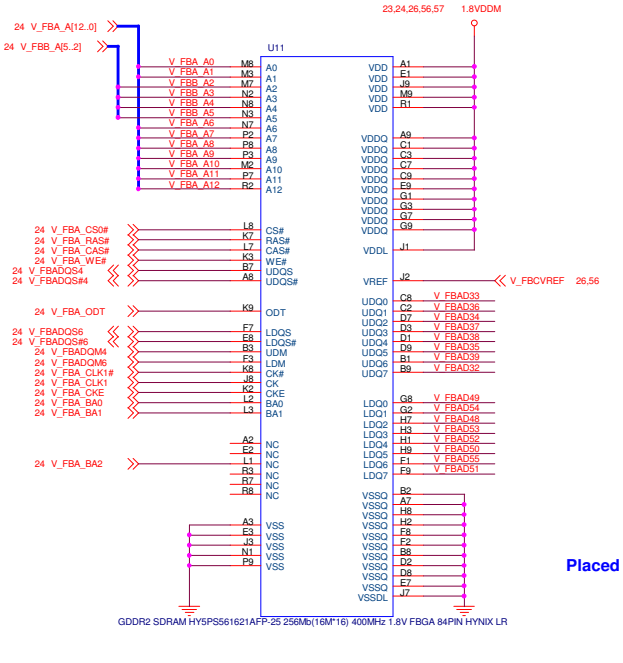


G72M :120 ohm
G73M :470 ohm(11-13130-00)









Placed between two VRAM

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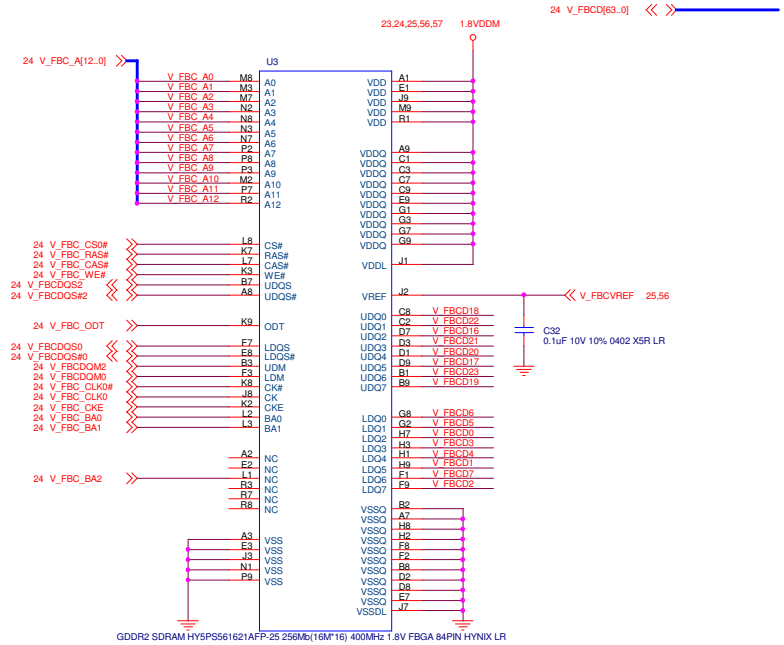
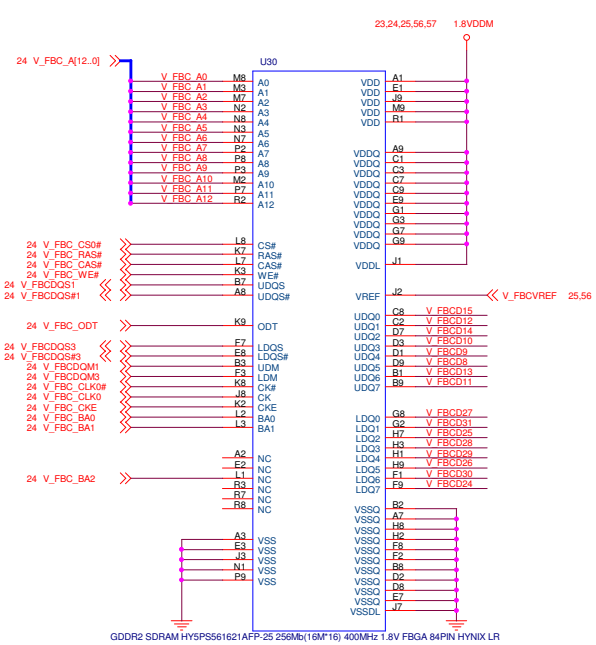
Size	Document Number	Rev
C	VGA DDR2_A CHANNEL	0.4

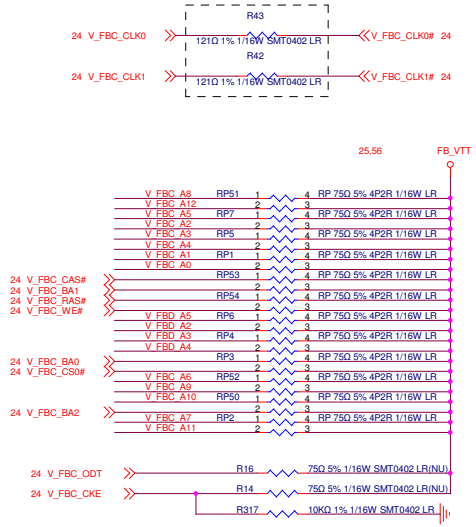
Date: Thursday, October 26, 2006 Sheet 25 of 57

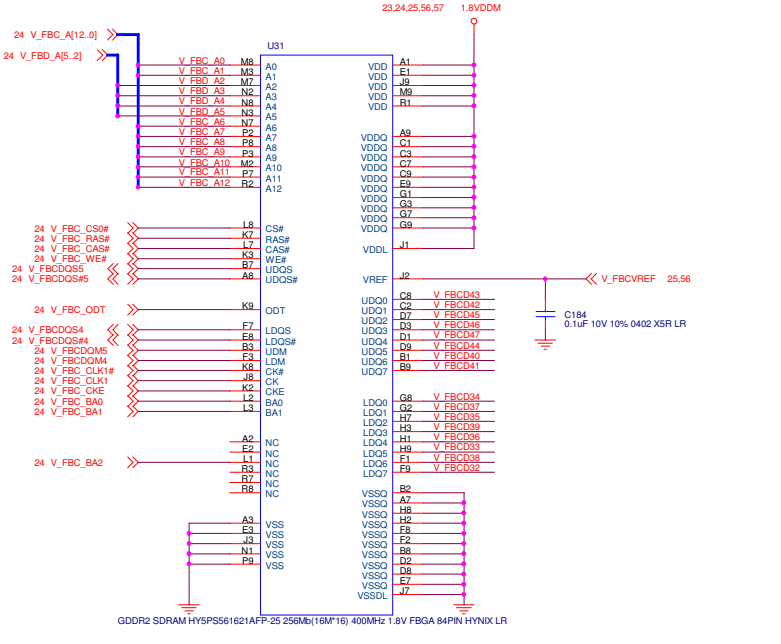
Pa: No Stuff
Xa: Stuff

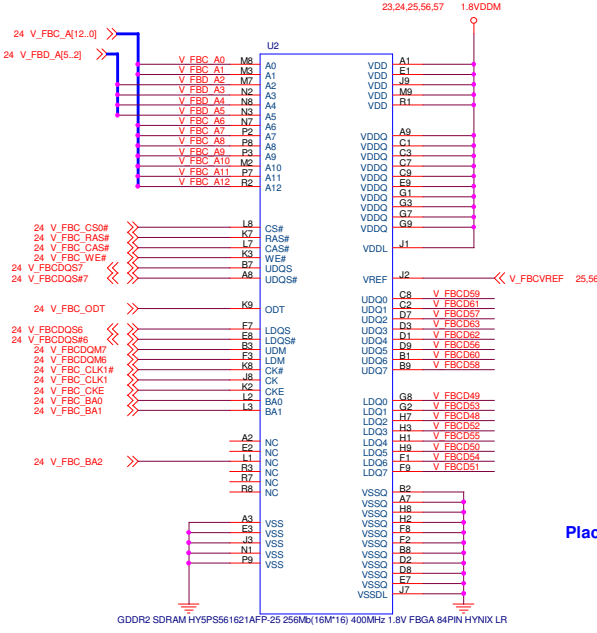
G72M :120 ohm
G73M :470 ohm(11-13130-00)











Placed between two VRAM

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Size C	Document Number VGA DDR2_C CHANNEL	Rev 0.4
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CRT CIRCUIT

USE 47 ohms@100MHZ
BLM18BB470SN1(MURATA)

LAYOUT GUIDE

20 mil	Other Signal
20 mil	MXM_RED
20 mil	MXM_GREEN
20 mil	MXM_BLUE
	Other Signal

22 RED
22 GREEN
22 BLUE

WIDTH=5 MILS Z0=50 ohms
WIDTH=5 MILS Z0=50 ohms
WIDTH=5 MILS Z0=50 ohms

(10mil)
(10mil)

WIDTH= 8 MILS Z0=75 ohms
WIDTH= 8 MILS Z0=75 ohms
WIDTH= 8 MILS Z0=75 ohms

CRT5VS
C542 0.1uF 16V 80-20% 0402 Y5V LF(NU)
D26A D26B D26C
IMN10T108 SC-74 ROHM LR(NU)
D25A D25B D25C
IMN10T108 SC-74 ROHM LR(NU)

9,20,37,40,41,42,43,44,46,55,56 5VDDM
DIODE STKY MSCD104 40V 1A SMT0805 2PIN LR
D2
20mil
L2 600Ω±25% 100MHz 2000mA SMT0805 MLB-201209-0600P-N2 MAG.LAYERS LR
CRT5VS
20mil
C3 0.1uF 16V 80-20% 0402 Y5V LF

L62 68nH±5% SMT0805 CLH2012T-68NJ-N CHILISIN LR
L63 68nH±5% SMT0805 CLH2012T-68NJ-N CHILISIN LR
L64 68nH±5% SMT0805 CLH2012T-68NJ-N CHILISIN LR

CNN_RED
CNN_GREEN
CNN_BLUE

10Ω 5% 1/16W SMT0402 LR R271
10Ω 5% 1/16W SMT0402 LR R270

CNN_HSYNC
CNN_VSYNC

R282 150Ω 1% 1/16W 0402 LF
R283 150Ω 1% 1/16W 0402 LF
R284 150Ω 1% 1/16W 0402 LF

C538 22pF 50V 5% SMT0402 NPO LR(NU)
C539 22pF 50V 5% SMT0402 NPO LR(NU)
C540 22pF 50V 5% SMT0402 NPO LR(NU)
C530 22pF 50V 5% SMT0402 NPO LR
C529 22pF 50V 5% SMT0402 NPO LR
C528 22pF 50V 5% SMT0402 NPO LR
C527 27pF 50V 5% 0402 NPO LF(NU)
C531 27pF 50V 5% 0402 NPO LF(NU)

22 HSYNC
U27 DL-IC 74AHCT1G126GW SC-88A(SOT353) 5PIN PHILIPS LR
WIDTH=4 MILS Z0=55 ohms

CRT5VS
C534 0.1uF 16V 80-20% 0402 Y5V LF

22 VSYNC
U26 DL-IC 74AHCT1G126GW SC-88A(SOT353) 5PIN PHILIPS LR
WIDTH=4 MILS Z0=55 ohms

C870 5pF 50V ±0.5pF SMT0402 NPO LR(NU)
C871 5pF 50V ±0.5pF SMT0402 NPO LR(NU)

R615 300Ω 1% 1/10W SMT0603 LR
C894 0.068uF 16V 10% SMT0402 X5R LR

23 TDC2#
23 TDC2
R272 0Ω 5% 1/16W SMT0402 LR
R273 0Ω 5% 1/16W SMT0402 LR

TMDS_D2-
TMDS_D2+

VECLK_CONN
VEDAT_CONN

For EMI
56pF 50V 5% 0402 NPO LR
56pF 50V 5% 0402 NPO LR

23 TDC1#
23 TDC1
R274 0Ω 5% 1/16W SMT0402 LR
R275 0Ω 5% 1/16W SMT0402 LR

R616 300Ω 1% 1/10W SMT0603 LR
C895 0.068uF 16V 10% SMT0402 X5R LR

C872 5pF 50V ±0.5pF SMT0402 NPO LR(NU)
C873 5pF 50V ±0.5pF SMT0402 NPO LR(NU)

CNN_VSYNC
TMDS_D1-
TMDS_D1+
CRT5VS
DVI_DET_A

23 TDC0#
23 TDC0
R276 0Ω 5% 1/16W SMT0402 LR
R277 0Ω 5% 1/16W SMT0402 LR

R617 300Ω 1% 1/10W SMT0603 LR
C896 0.068uF 16V 10% SMT0402 X5R LR

C874 5pF 50V ±0.5pF SMT0402 NPO LR(NU)
C875 5pF 50V ±0.5pF SMT0402 NPO LR(NU)

TMDS_D0-
TMDS_D0+

23 TLC
23 TLC#
R278 0Ω 5% 1/16W SMT0402 LR
R279 0Ω 5% 1/16W SMT0402 LR

R618 300Ω 1% 1/10W SMT0603 LR
C897 0.068uF 16V 10% SMT0402 X5R LR

C876 5pF 50V ±0.5pF SMT0402 NPO LR(NU)
C877 5pF 50V ±0.5pF SMT0402 NPO LR(NU)

TMDS_CLK-
TMDS_CLK+

CNN_BLU
CNN_HSYN
CNN_RED
CNN_GREEN

R1 0Ω 5% 1/10W SMT0603 LR

06/2
MODIFI

CN21
CASE
CASE#M3
TMDS Data2-
TMDS Data2+
TMDS Data2/4 Shield
TMDS Data4-
TMDS Data4+
DDC Clock
DDC Data
Analog VSYNC
TMDS Data1-
TMDS Data1+
TMDS Data1/3 Shield
TMDS Data3-
TMDS Data3+
+5V Power
GND (for +5V)
Hot Plug Detect
TMDS Data0-
TMDS Data0+
TMDS Data0/5 Shield
TMDS Data5-
TMDS Data5+
TMDS Clock Shield
TMDS Clock+
TMDS Clock-
Analog Red
Analog Green
Analog Blue
Analog HYNC
Analog GND
Analog GND#C6
CASE#M4
CASE#M2

CON SUYIN DIP CN 29P 070939FR029SX37PR SUYIN 29PIN

42,43,44,45,46,47,50,51,55,57 3VDDM
CRT5VS
R280 2.2KΩ 5% 1/16W SMT0402 LR
Q2
R5 4.7KΩ 5% 1/16W SMT0402 LR
22 VECLK
VECLK_CONN
TRANS M-FET-N 2N7002 60V 115mA SOT-23 3PIN PSI LR

41,42,43,44,45,46,47,50,51,55,57 3VDDM
CRT5VS
R281 2.2KΩ 5% 1/16W SMT0402 LR
Q1
R4 4.7KΩ 5% 1/16W SMT0402 LR
22 VEDAT
VEDAT_CONN
TRANS M-FET-N 2N7002 60V 115mA SOT-23 3PIN PSI LR

6,9,11,12,13,14,15,16,17,18,20,21,22,23,28,29,30,31,32,33,36,38,39,40,41,42,43,44,45,46,47,50,51,55,57 3VDDM
10KΩ 5% 1/16W 0402 LF R3
L1 MLB-201209-0120L-N2 MAG.LAYERS LR
23 DVI_DET
DVI_DET_A
C4 220pF 50V 10% SMT0402 X7R LR
D1
For EMI
C878 100pF 50V 5% SMT0402 NPO LR
R2 100KΩ 5% 1/16W SMT0402 LR
DIODE SWITCHING BAV99 SOT-23 3PIN PANJIT LR

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Title
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Size	Document Number	Rev
C	DVI Port	0.4

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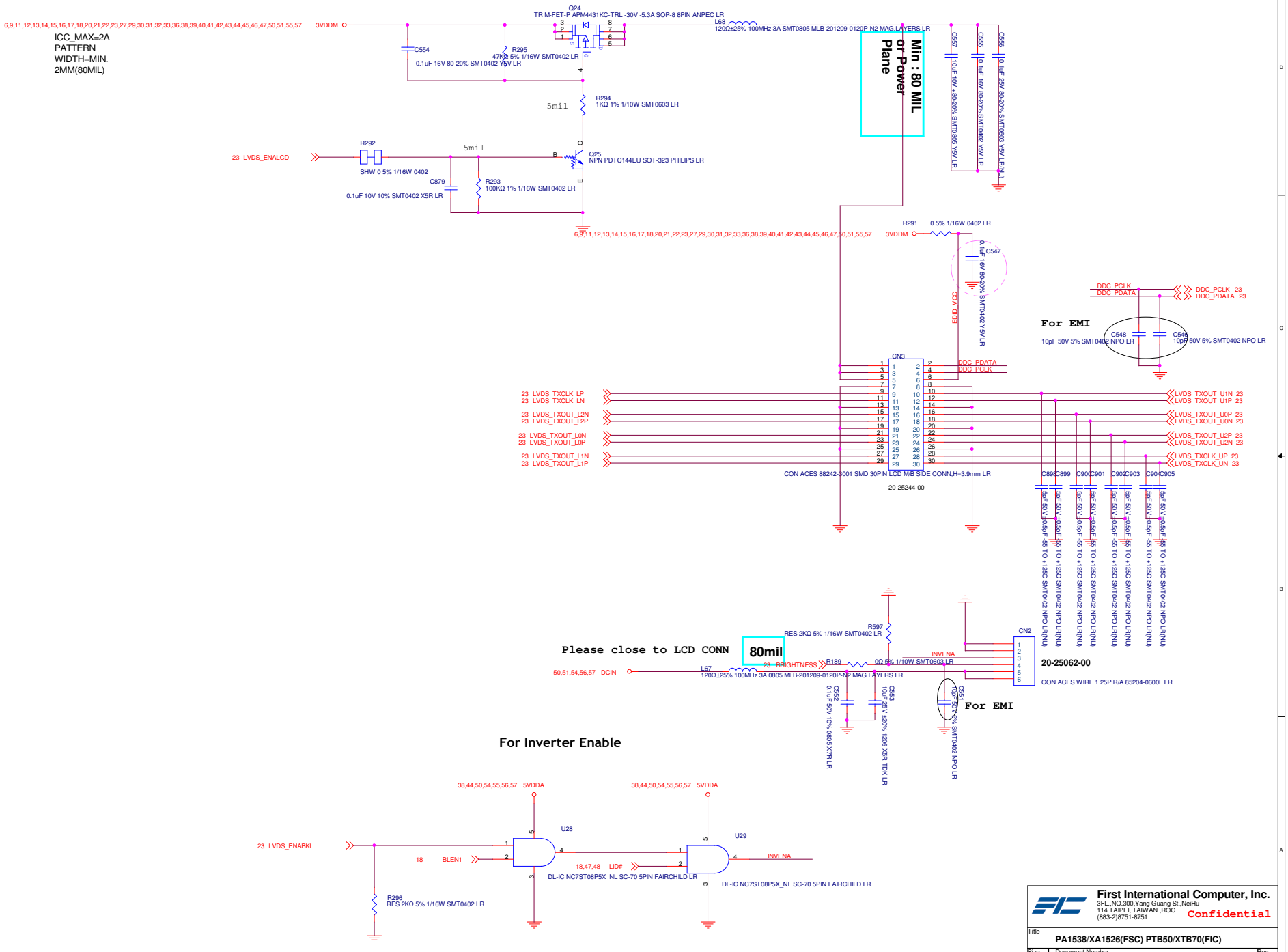

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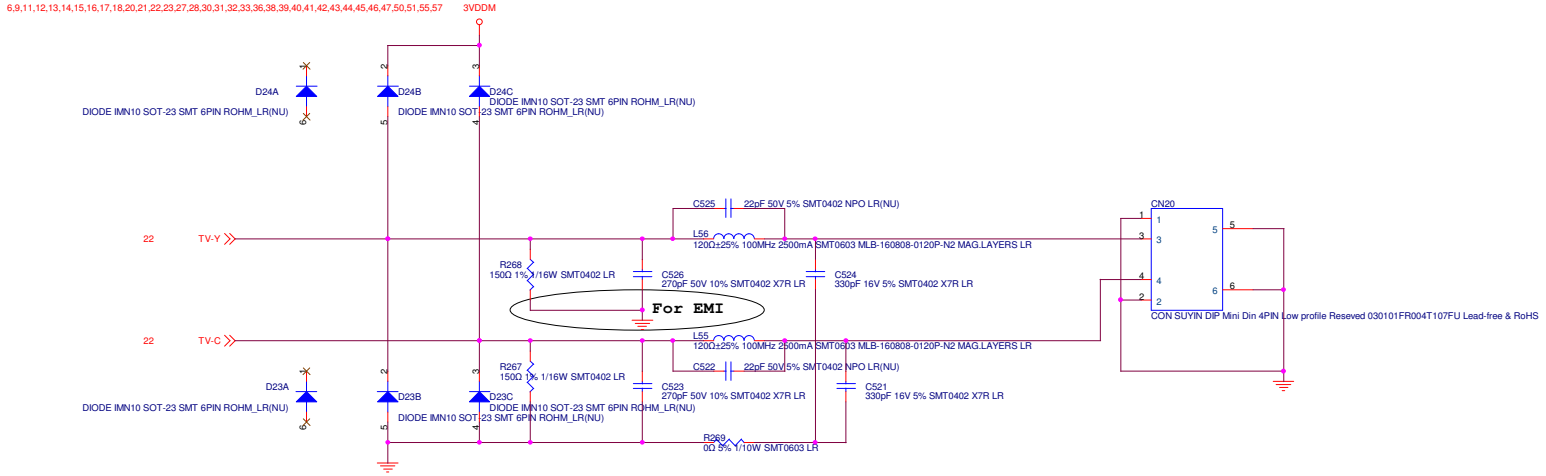
Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)	
Size C	Document Number LCD CNN	Rev 0.4
Date: Thursday, October 26, 2006	Sheet 28 of 57	

TV OUT CIRCUIT



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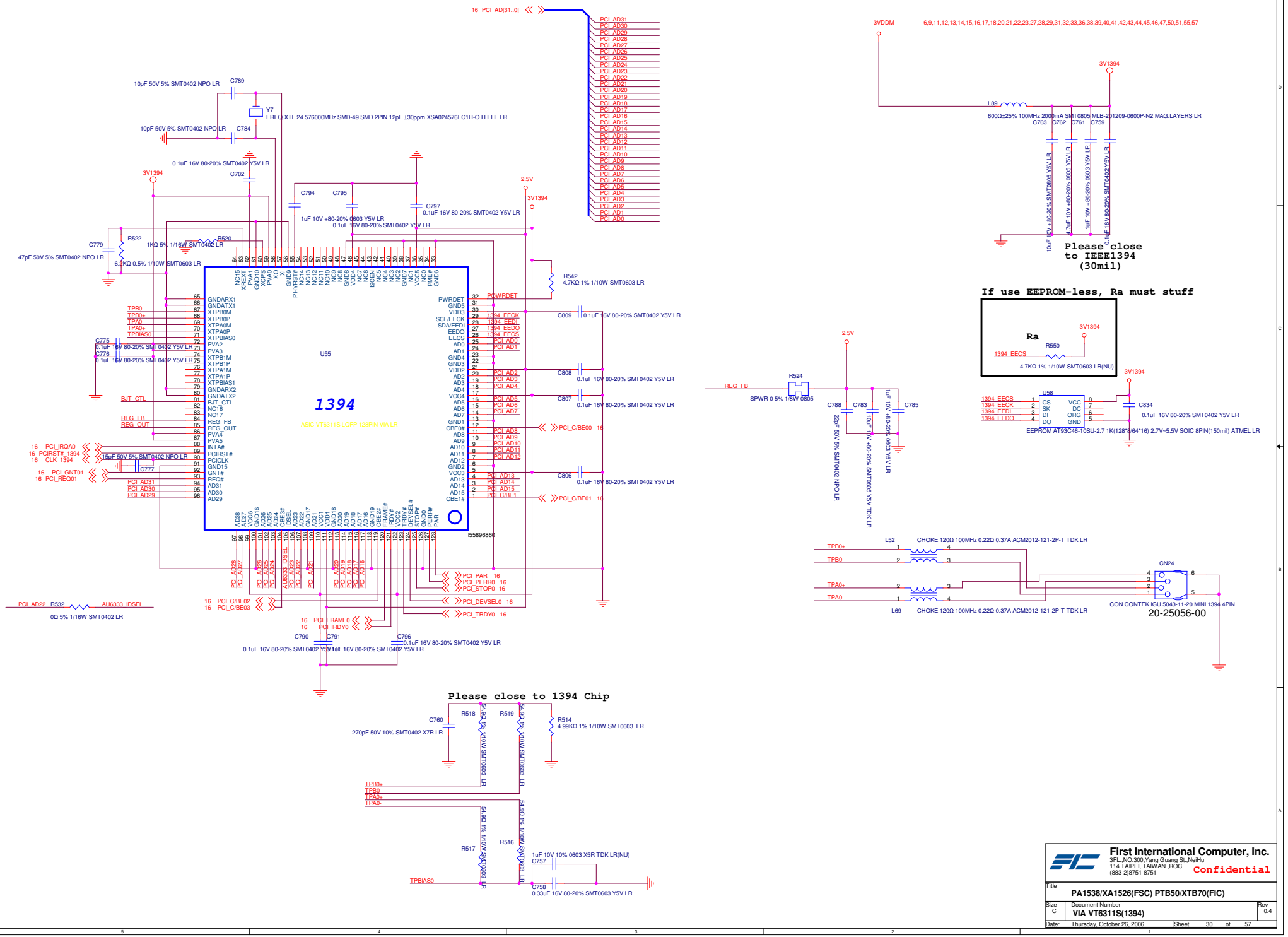
Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)	
Size: C	Document Number: TV Port	Rev: 0.4
Date: Thursday, October 26, 2006	Sheet 29 of 57	



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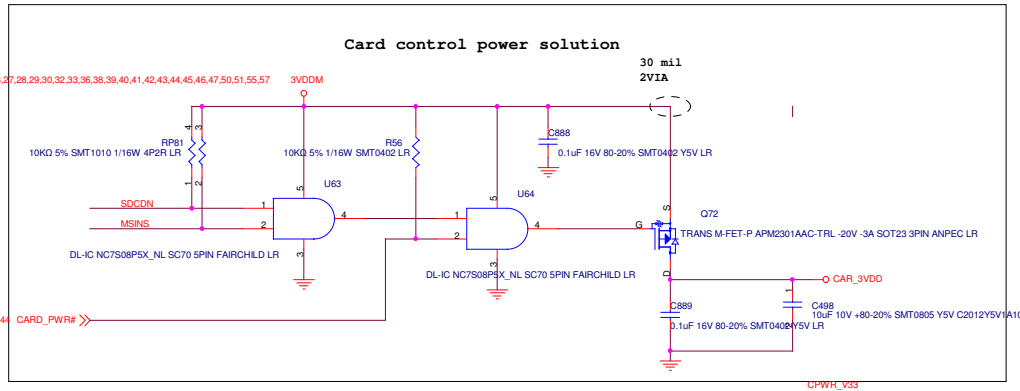
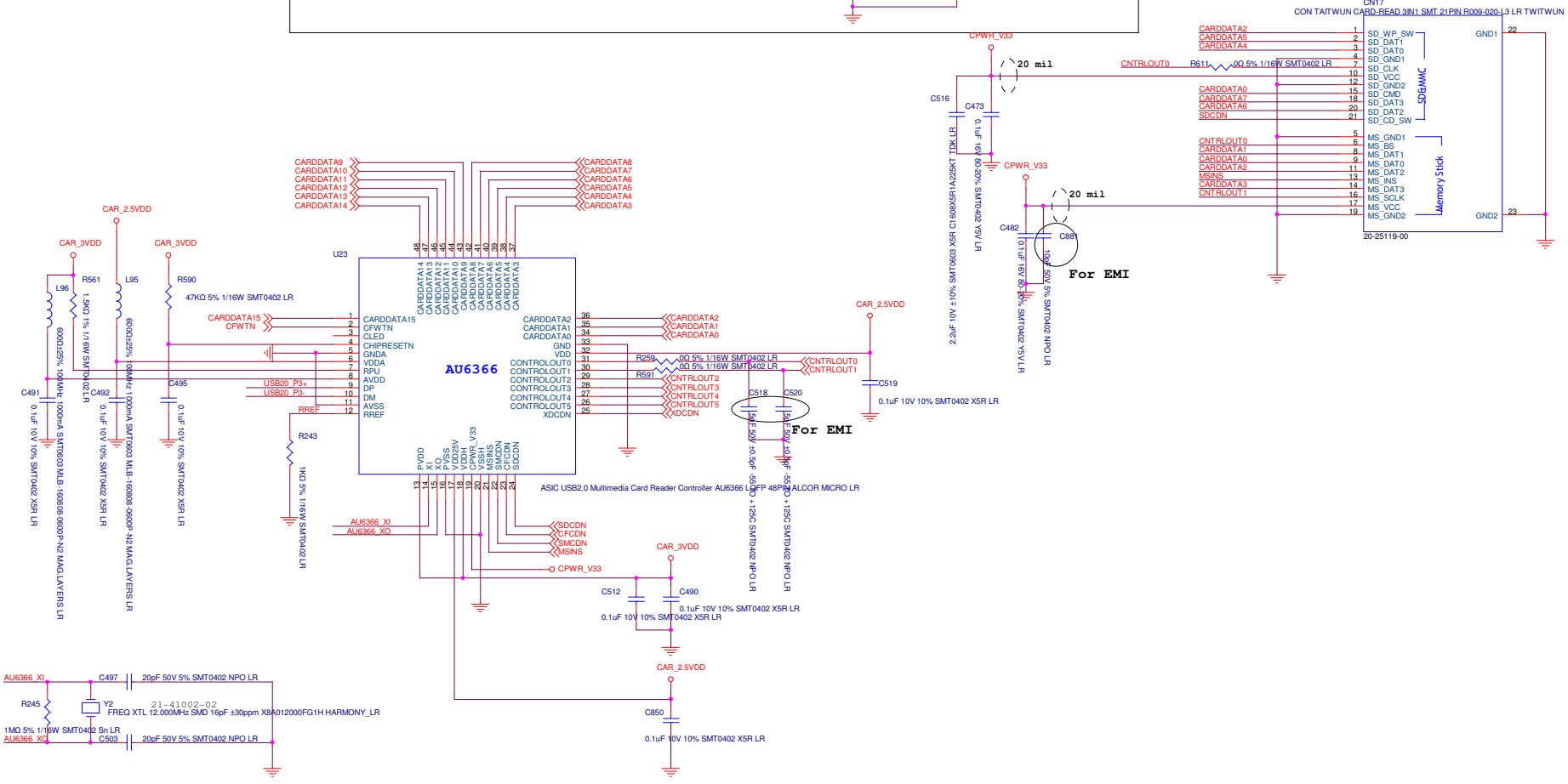
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: VIA VT6311S(1394) | Rev: 0.4

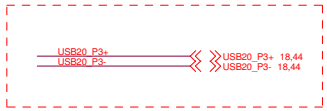
Date: Thursday, October 26, 2006 | Sheet 30 of 57

Pa: Stuff
Xa: No Stuff





INTERFACE



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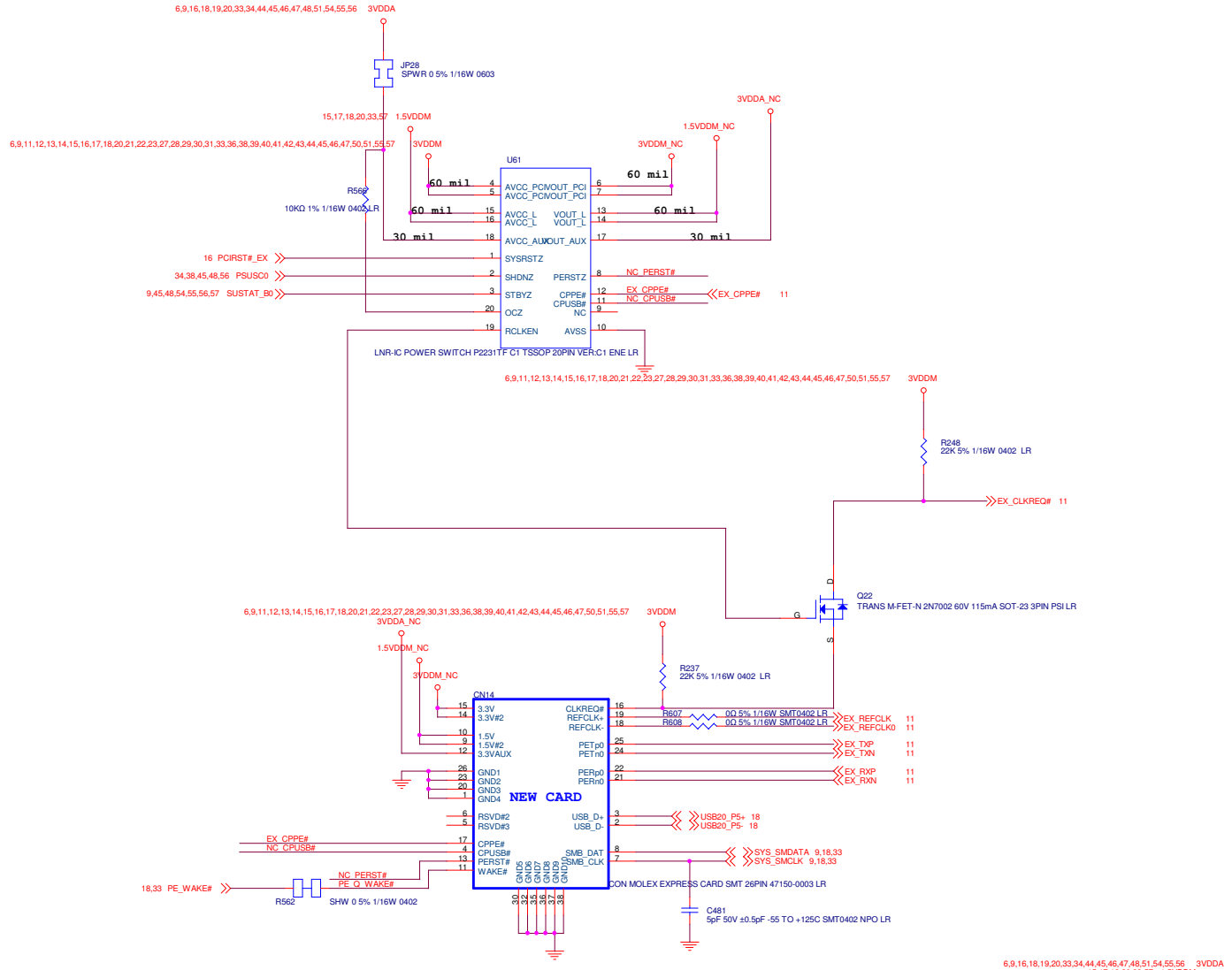
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size	Document Number	Rev
C	Cardreader AU6366	0.4

Date: Thursday, October 26, 2006 Sheet 31 of 57



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Title
PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size	Document Number	Rev
C	New Card(express card)	0.4

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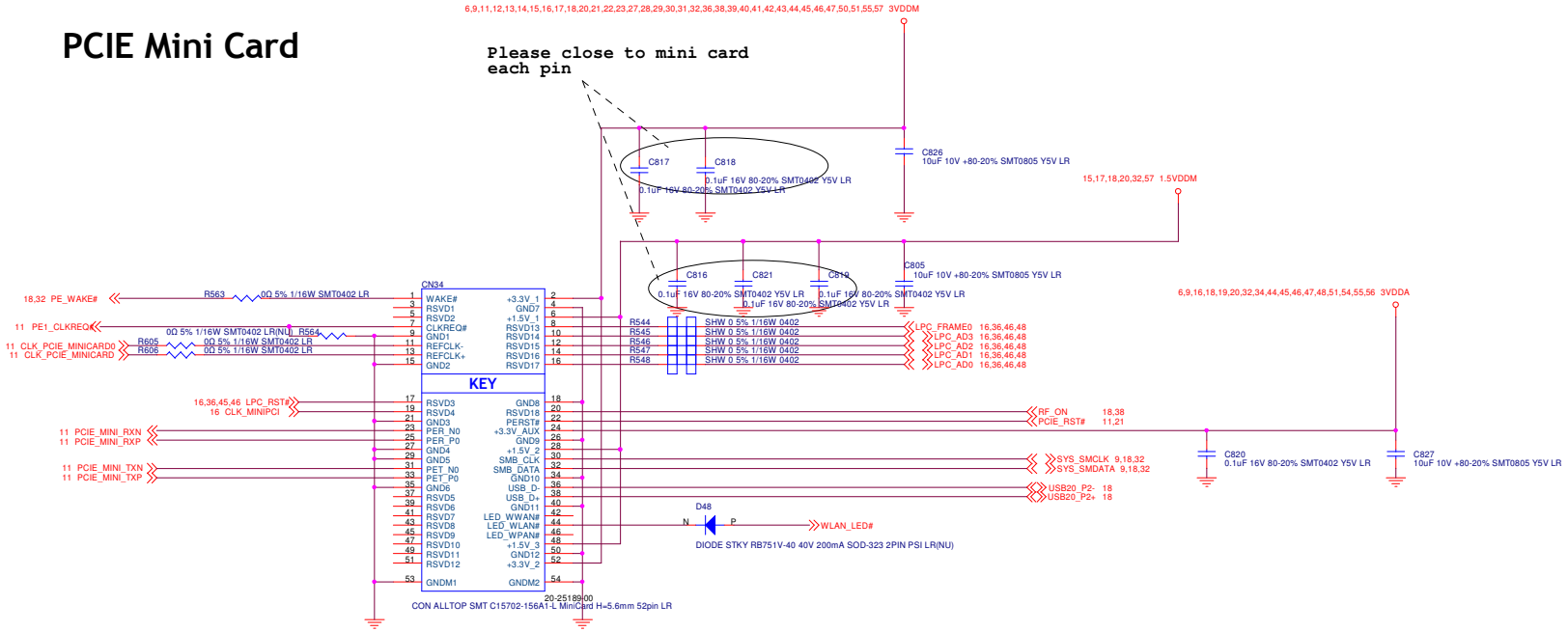
PCIE Mini Card



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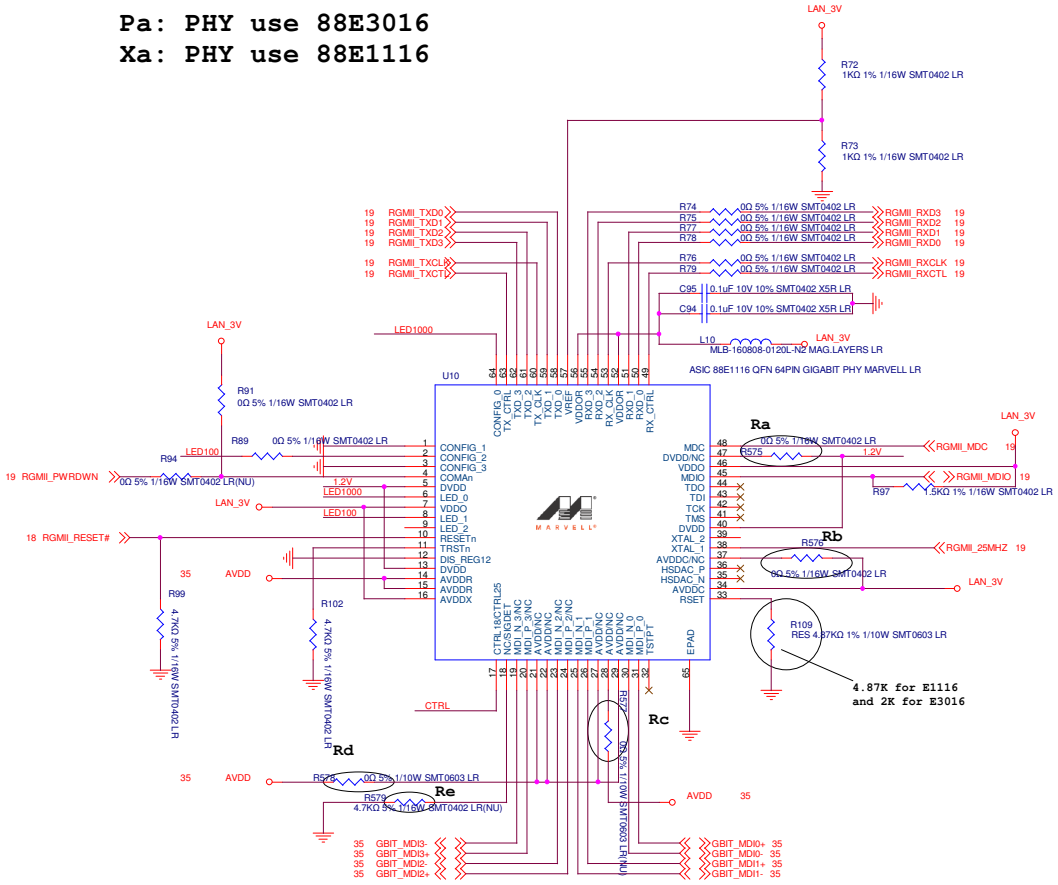
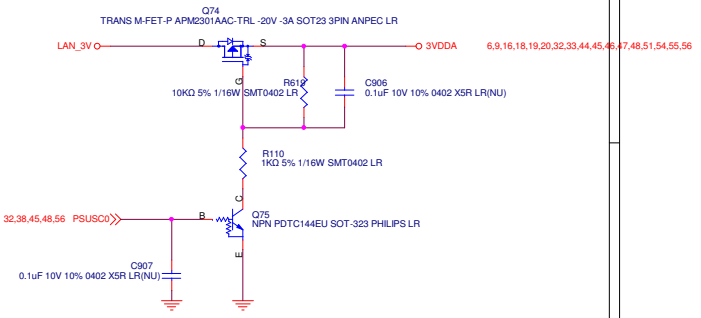
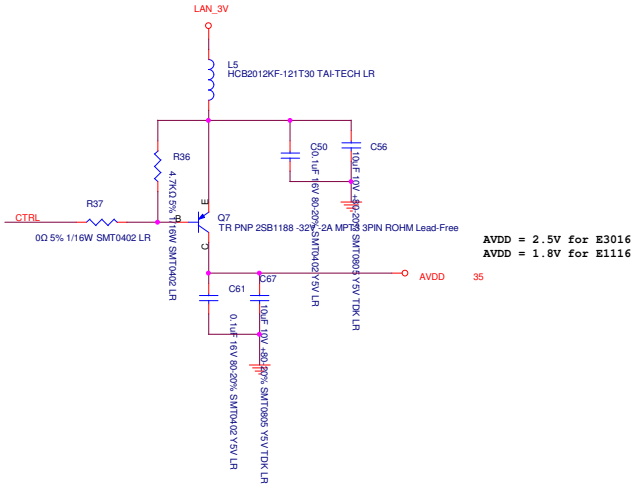
Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)	
Size C	Document Number PCIE Mini Card	Rev 0.4
Date: Thursday, October 26, 2006	Sheet 33 of 57	

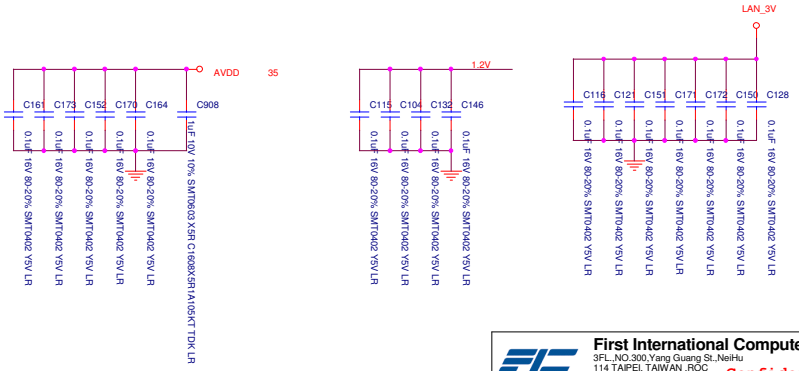
Pa: PHY use 88E3016
Xa: PHY use 88E1116



	for 88E3016	for 88E1116
Ra	NU	STUFF
Rb	NU	STUFF
Rc	STUFF	NU
Rd	NU	STUFF
Re	STUFF	NU







Layout Guide

1. The Lan Chip should be placed as close as possible to the transfer.
2. The resistor connected to RSET pin should be placed near to the Lan Chip,and away from signal traces(ex:MDI0+/-) and clock signals as far as possible.
3. The transfer should be placed as close as possible to the RJ45 connector.
4. The crystal should be placed far away from I/O ports and high frequency signal.
5. The termination resistors and capacitors should be placed closely to the Lan Chip.
6. The decoupling capacitors should be placed as close as posslble to the power pins,such that the distance from IC power pin to the capacitor is within 200mils.
7. Traces routed from the Lan Chip to the transfer,and to the RJ45 connector should be as short as possible.
8. The 10-12cm maximum lenghth between Lan Chip and transfer is achievable only when there's no interferences around.
9. All 4 pairs of the differential resister(49.9k) must close to Lan Chip,and make them(4pairs) as same as distant.
10. PLACE GND PLANE AS LARGE AS POSSIBLE
11. If power pins are next to each other and there is not much room to accommodate multipe capacitors,then the power pins can share the same capacitors.
12. It's important to separate digital signals from analog signals.If it is unavoidable to cross digtal signals with analong power do it at 90 degree angle.
13. The digital power plane should be separated from analog areas.
14. All analog decoupling capacitors should be placed as close to the IC as possible and the traces should be short.
15. The Lan Chip pin 1 facing the transformer,then you can make the signal shorter.

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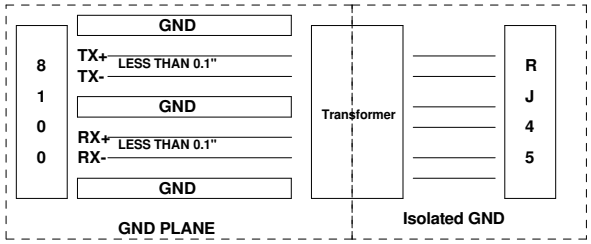
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: GIGA PHY 88E1116 | Rev: 0.4

Date: Thursday, October 26, 2006 | Sheet 34 of 57

TX
RX

100 ohm ---> trace 4 mil , space 10 mil
50 mil space from other signals
Total Tace Length no more thans 4.8"
2 Differential pairs must have the same length



Pa: Transformer use LFE8450(12-01905-01)
Xa: Transformer use LFE9248(12-01904-01)

34 AVDD
R126 0Ω 5% 1/10W SMT0603 LR
R130 0Ω 5% 1/16W SMT0402 LR

U44 TRANSFOMER LFE9248 24PIN DELTA LR

34 GBIT_MDI0+	1 TCT1	MCT1 24	R407 75Ω 1% 1/16W SMT0402 LR		LAN_TXD0+
34 GBIT_MDI0-	2 TD1+	MX1+ 23			LAN_TXD0-
	3 TD1-	MX1- 22			
34 GBIT_MDI1+	4 TCT2	MCT2 21	R406 75Ω 1% 1/16W SMT0402 LR		LAN_TXD1+
34 GBIT_MDI1-	5 TD2+	MX2+ 20			LAN_TXD1-
	6 TD2-	MX2- 19			
34 GBIT_MDI2+	7 TCT3	MCT3 18	R405 75Ω 1% 1/16W SMT0402 LR		LAN_TXD2+
34 GBIT_MDI2-	8 TD3+	MX3+ 17			LAN_TXD2-
	9 TD3-	MX3- 16			
34 GBIT_MDI3+	10 TCT4	MCT4 15	R404 75Ω 1% 1/16W SMT0402 LR		LAN_TXD3+
34 GBIT_MDI3-	11 TD4+	MX4+ 14			LAN_TXD3-
	12 TD4-	MX4- 13			

C180 0.1uF 16V 80-20% SMT0402 Y5V LR
C181 0.1uF 16V 80-20% SMT0402 Y5V LR

C246 1500pF 2KV ±10% SMT1206 X7R 1206B152K202LT WALSIN LR

PLACE RC NETWORKS CLOSE TO PHY CHIP

R128 49.9Ω 1% 1/16W SMT0402 LR
R137 49.9Ω 1% 1/16W SMT0402 LR
R136 49.9Ω 1% 1/16W SMT0402 LR
R135 49.9Ω 1% 1/16W SMT0402 LR
R134 49.9Ω 1% 1/16W SMT0402 LR
R133 49.9Ω 1% 1/16W SMT0402 LR
R132 49.9Ω 1% 1/16W SMT0402 LR
R131 49.9Ω 1% 1/16W SMT0402 LR

C197 0.01uF 16V 10% SMT0402 X7R LR
C196 0.01uF 16V 10% SMT0402 X7R LR
C195 0.01uF 16V 10% SMT0402 X7R LR
C194 0.01uF 16V 10% SMT0402 X7R LR

All stuff for use 88E1116 ,
NU for use 88E3016

LAN_CGND
R144 0Ω 5% 1/4W SMT1206 LR

LAN_CGND
C238 1000pF 50V 10% SMT0402 X7R LR
C236 1000pF 50V 10% SMT0402 X7R LR
C233 10uF 10V +80-20% SMT0805 Y5V LR
C234 10uF 10V +80-20% SMT0805 Y5V LR
C237 1000pF 50V 10% SMT0402 X7R LR
C235 1000pF 50V 10% SMT0402 X7R LR

These 3 capacitors across the CHASSIS_GND to GND split, are located below the magnetics module. Place as close as possible to the magnetics module.

These 3 capacitors across the CHASSIS_GND to GND split, are located below the magnetics module. Place as close as possible to the magnetics module.

10mil

L21 COMMON-MODE CHOKE 180Ω 25% 100MHz 400mA SMT1012 8PIN YCM1012V4SF-181T04 YOSONIC LR

LAN_TXD1+	4	5	LAN_L_TXD1+
LAN_TXD1-	3	6	LAN_L_TXD1-
LAN_TXD0-	2	7	LAN_L_TXD0-
LAN_TXD0+	1	8	LAN_L_TXD0+

L22

LAN_TXD3-	4	5	LAN_L_TXD3-
LAN_TXD3+	3	6	LAN_L_TXD3+
LAN_TXD2-	2	7	LAN_L_TXD2-
LAN_TXD2+	1	8	LAN_L_TXD2+

COMMON-MODE CHOKE 180Ω 25% 100MHz 400mA SMT1012 8PIN YCM1012V4SF-181T04 YOSONIC LR

CN29 CN 8PIN C10005-10804 ALLTOP 20-21321-03

LAN_L_TXD0+	1	SP1	9
LAN_L_TXD0-	2	5V1	13
LAN_L_TXD1+	3		
LAN_L_TXD1-	4		
	5		
	6		
LAN_L_TXD2+	7	5V2	14
LAN_L_TXD2-	8	SP2	10
LAN_L_TXD3+			
LAN_L_TXD3-			

LAN_CGND

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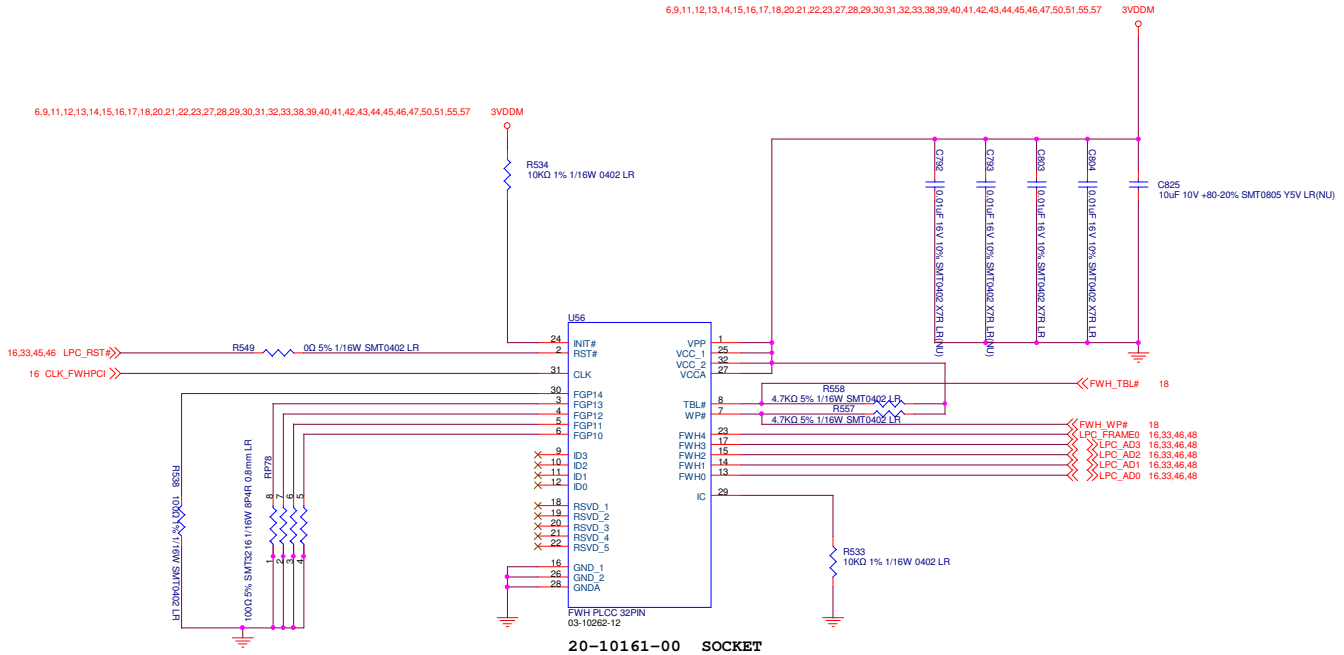
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)
Size: C | Document Number: GIGA TRANSFORMER | Rev: 0.4
Date: Thursday, October 26, 2006 | Sheet 35 of 57



20-10161-00 SOCKET

03-10262-12 Flash ROM PM49FL004TL-33JCE
4Mbit(512K*8) PMC LR

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Title: **PA1538/XA1526(FSC) PTB50/XTB70(FIC)**

Size	Document Number	Rev
C	**FirmWare Hub**	0.4

Date: Thursday, October 26, 2006 Sheet 36 of 57

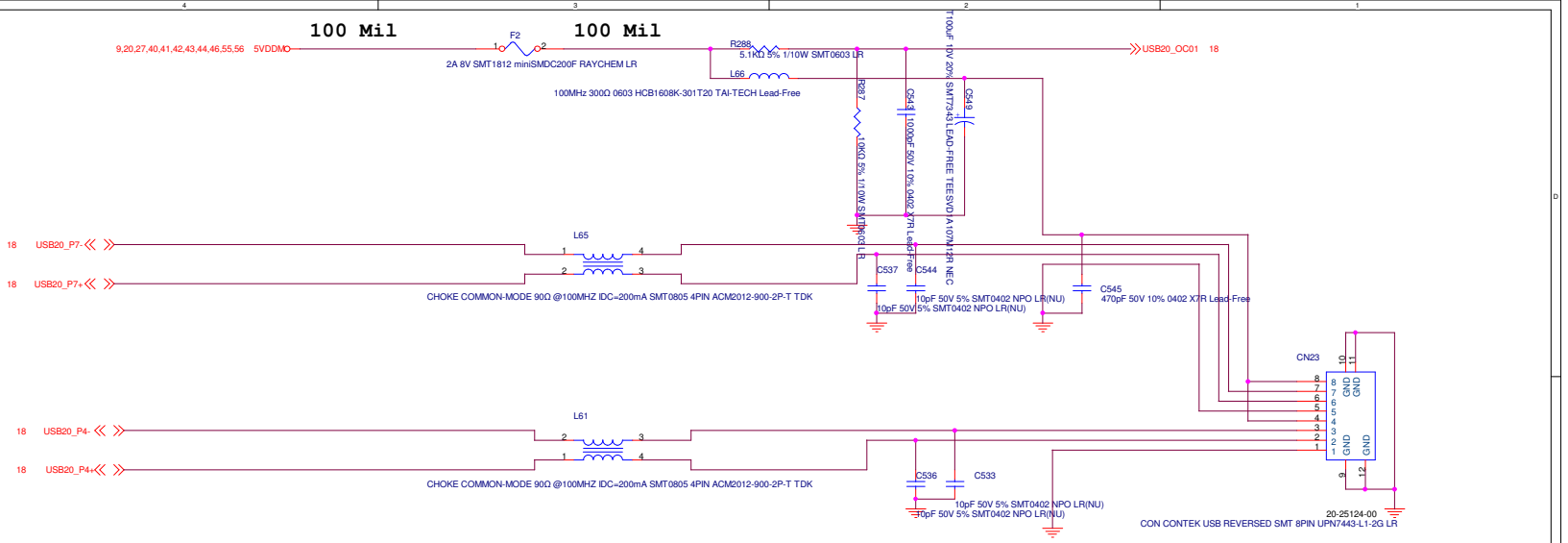
5 mil ——— GND_POWER

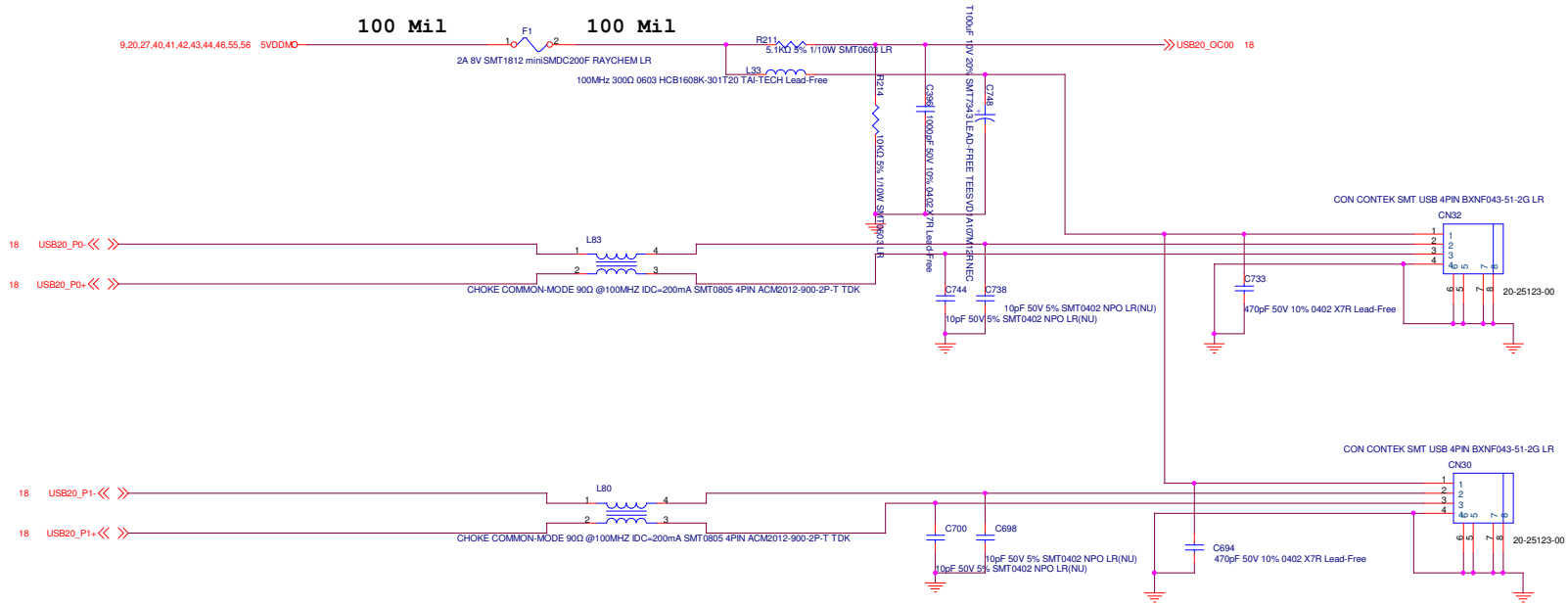
5 mil (10 mil) ——— USB20_P+

5 mil (5 mil) ——— USB20_P-

5 mil (10 mil) ——— GND_POWER

USBP+/- must same length





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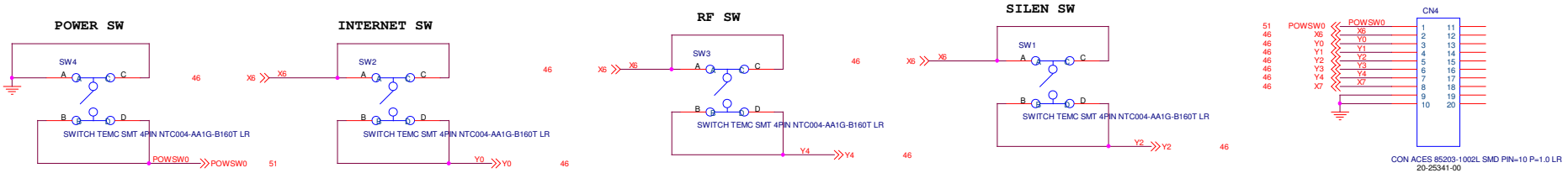
Title: **PA1538/XA1526(FSC) PTB50/XTB70(FIC)**

Size	Document Number	Rev
C	**USB CNN**	0.4

Date: Thursday, October 26, 2006 Sheet 37 of 57

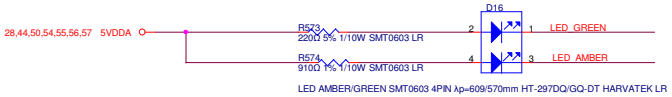
Pa: Switch Xa: No stuff



Pa: LED indicator control logic

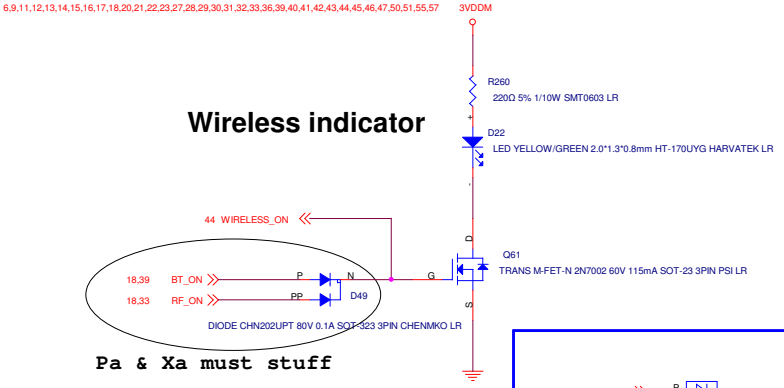
Xa: No stuff

Power indicator

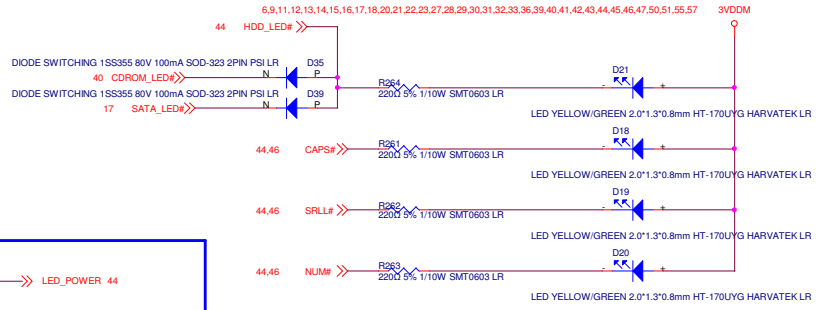


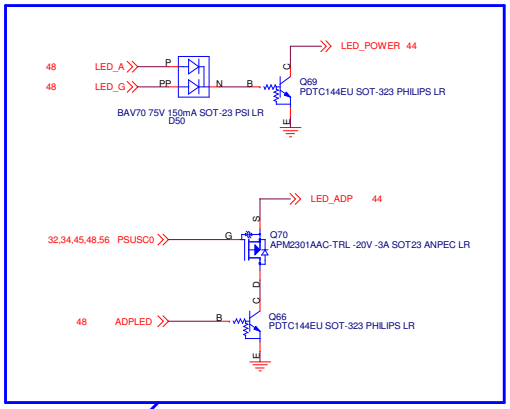
Charge indicator

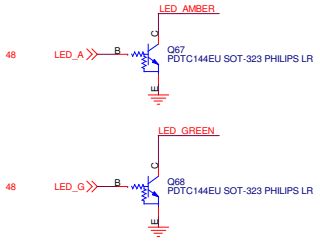
Wireless indicator



Pa & Xa must stuff







NOTICE

PTB50 → NO STUFF
XTB70 → ALL STUFF

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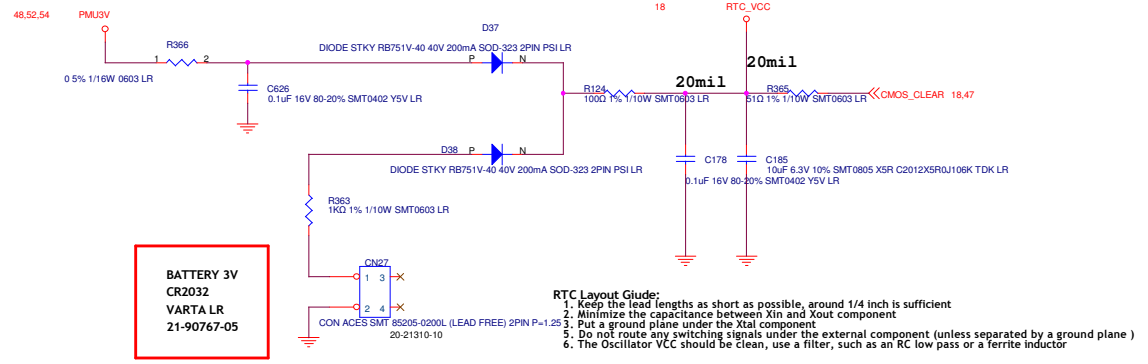
Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

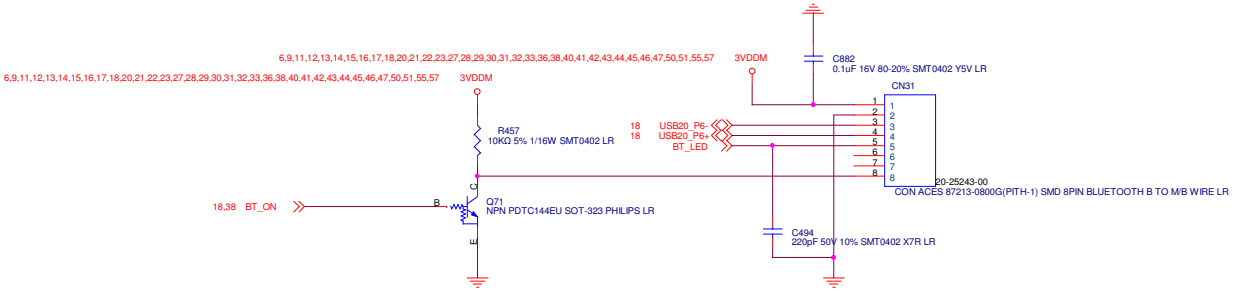
Size: C | Document Number: LED / SW | Rev: 0.4

Date: Thursday, October 26, 2006 | Sheet 38 of 57

RTC Discharge Circuit



BLUETOOTH



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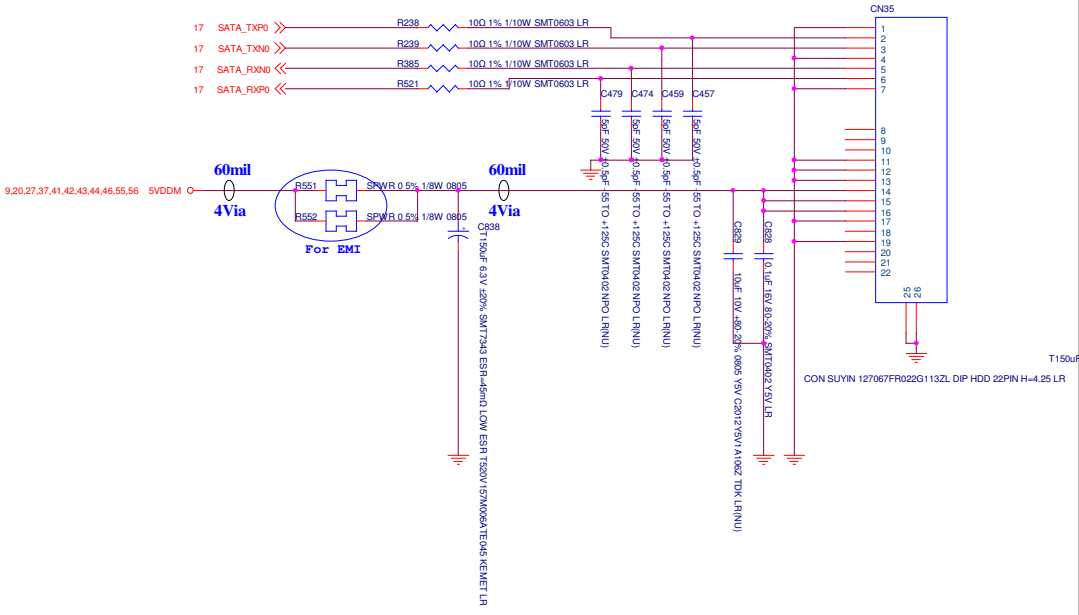
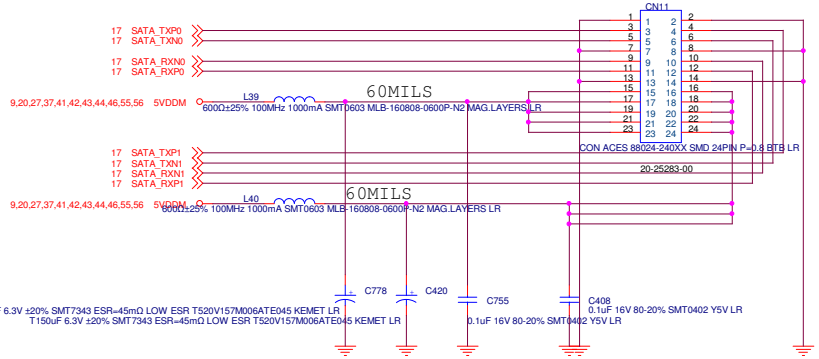
Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)	
Size C	Document Number RTC/ MDC CNN	Rev 0.4
Date: Thursday, October 26, 2006	Sheet 39 of 57	

HDD I/F

For Pa



For Xa



LAYOUT GUIDE **SATA Layout Note:**

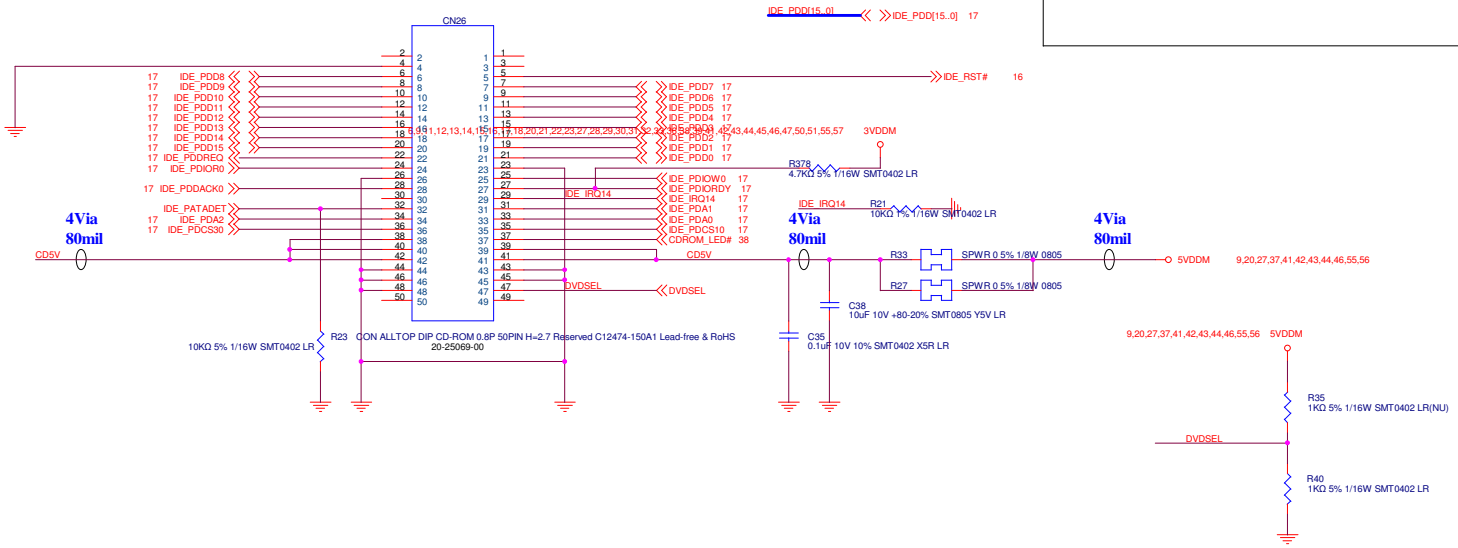
MS or SL:

5mils 20mils + 8mils 5mils − 20mils TX

5mils 20mils − 8mils 5mils + 20mils RX

* Zdif = 100 Ohm +/- 10%. TX & RX should refer GND.No via & stubs.The Best layer is Top.
* TX/RX trace length < 2 inchs.
* TX+/- need matching trace ±10 mils length.
* RX+/- need matching trace ±10 mils length.
* SATA Pair to Pair Trace matching trace ±10 mils length.

CD-ROM CNN



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Title	PA1538/XA1526(FSC) PTB50/XTB70(FIC)
Size C	Document Number SATA HD / CD-ROM CNN
Rev	0.4
Date:	Thursday, October 26, 2006
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AC97/AZALIA CODEC DUAL LAYOUT

USE AL883 GR / AZALIA

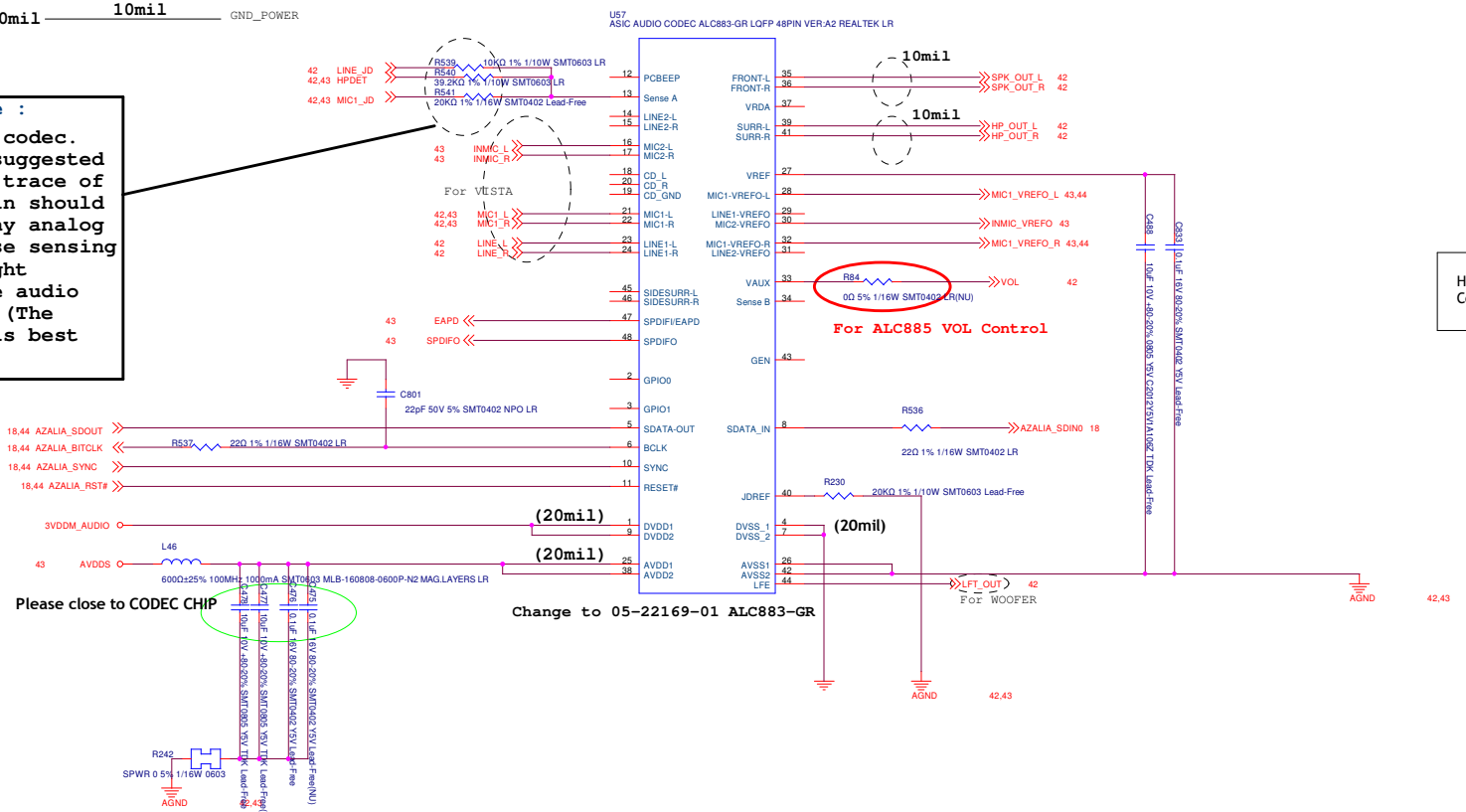
10mil GND_POWER
10mil 10mil AZALIA_PCBEEP
10mil 10mil GND_POWER

10mil GND_POWER
10mil 10mil AZALIA_BITCLK
10mil 10mil GND_POWER

10mil GND_POWER
10mil 10mil 14MCLK_AZALIA
10mil 10mil GND_POWER

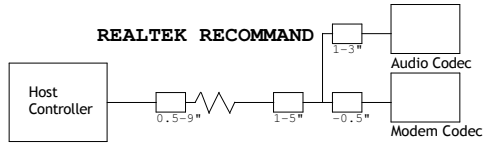
Layout guide :

1. Close to codec.
2. Realtek suggested that layout trace of the sense pin should away form any analog trace because sensing current might distorts the audio performance (The bottom lay is best choice).

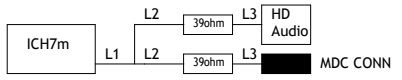


A_GND 10mil
SPK_OUT_R / HP_OUT_L 10mil
A_GND 10mil
SPK_OUT_R / HP_OUT_L 10mil
A_GND 10mil

REALTEK RECOMMAND



HD Audio-ACZ_SDOUT/ACZ_SYNC/ACZ_BITCLK/ACZ_RESET#



Trace Impedance	Routing Requirement	Trace Length
55 +/- 15%	4 on 7(stripline) 5 on 7(microstrip)	L1 = 0.5"~2.5" L2 <= 0.1" L3 = 1"~8"

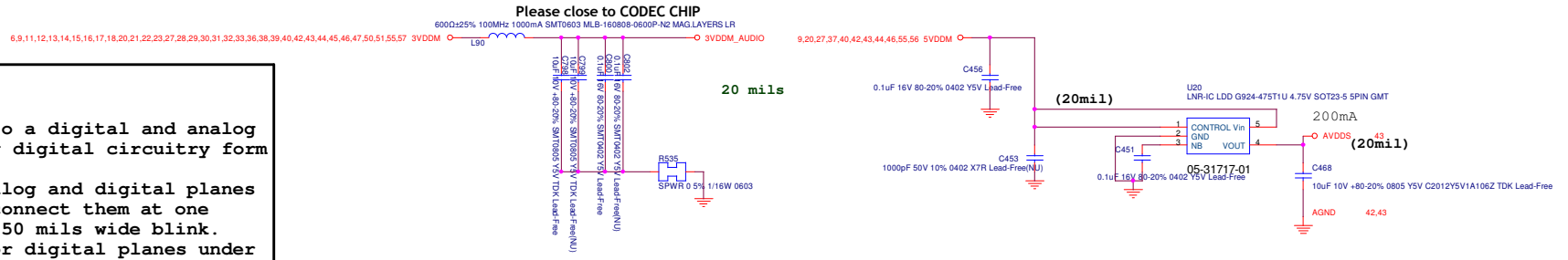
*** L3 can be extened up to 15" if HD Audio docking is not used

HD Audio-ACZ_SDIN

Trace Impedance	Routing Requirement	Trace Length
55 +/- 15%	4 on 7(stripline) 5 on 7(microstrip)	L1 = 0.1"~15" L2 <= 0.5"

*** Breakout can be routed 4 on 4 up to 500 mils

CODEC POWER



Layout guide :

1. The codec is partitioned into a digital and analog sections to help isolated noisy digital circuitry form quiet analog circuitry.
2. The layout separates the analog and digital planes with a 60 to 100 mils gap and connect them at one point beneath the codec with a 50 mils wide blink.
3. Never route digital traces or digital planes under the analog ground areas. Analog components should be located over analog planes (ground and power planes) and digital components should be located over digital planes.

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Size: C | Document Number: Azalia ALC883GR- Codec | Rev: 0.4

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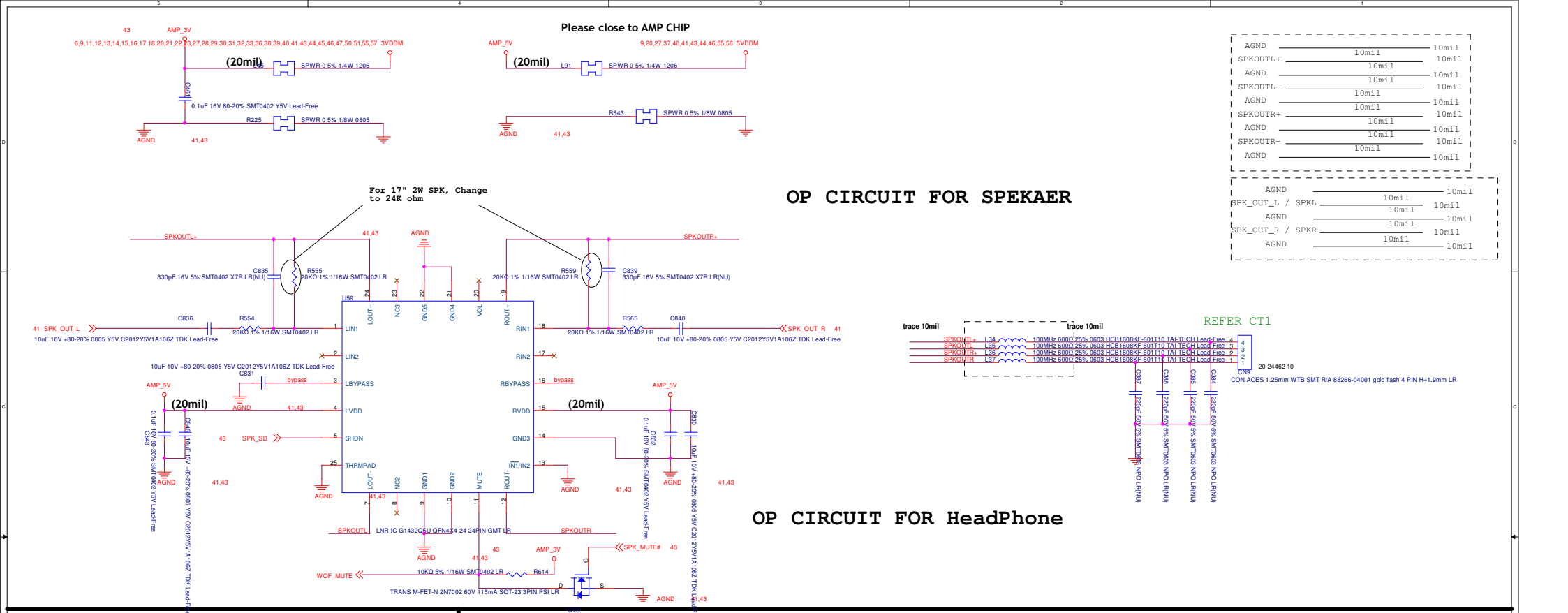
Please close to AMP CHIP
OP CIRCUIT FOR SPEKAER
For 17" 2W SPK, Change to 24K ohm
OP CIRCUIT FOR HeadPhone
REFER CT1
trace 10mil
AGND
SPKOUTL+
SPKOUTL-
SPKOUTR+
SPKOUTR-
SPK_OUT_L / SPKL
SPK_OUT_R / SPKR
10mil
SPWR 0.5% 1/4W 1206
SPWR 0.5% 1/8W 0805
0.1uF 16V 80-20% SMT0402 Y5V Lead-Free
10uF 10V +80-20% 0805 Y5V C2012Y5V1A106Z TDK Lead-Free
220uF 50V 5% SMT0603 NPO LR(NU)
20-24462-10
CON ACES 1.25mm WTB SMT R/A 88266-04001 gold flash 4 PIN H=1.9mm LR
LNR-IC G1432C5U QFN4X4-24 24PIN GMT LR
TRANS M-FET-N 2N7002 60V 115mA SOT-23 3PIN PSI LR
Pa: No Stuff
Xa: Stuff
AUDIO A CNN
CON ALLTOP C17405-120A1-L SMD 20PIN P=1.27 BTB LR
LNR-IC G1410Q4U QFN3X3-16 16PIN GMT LR
For VISTA
First International Computer, Inc.
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AMP (G1432&G1410)/AD CN
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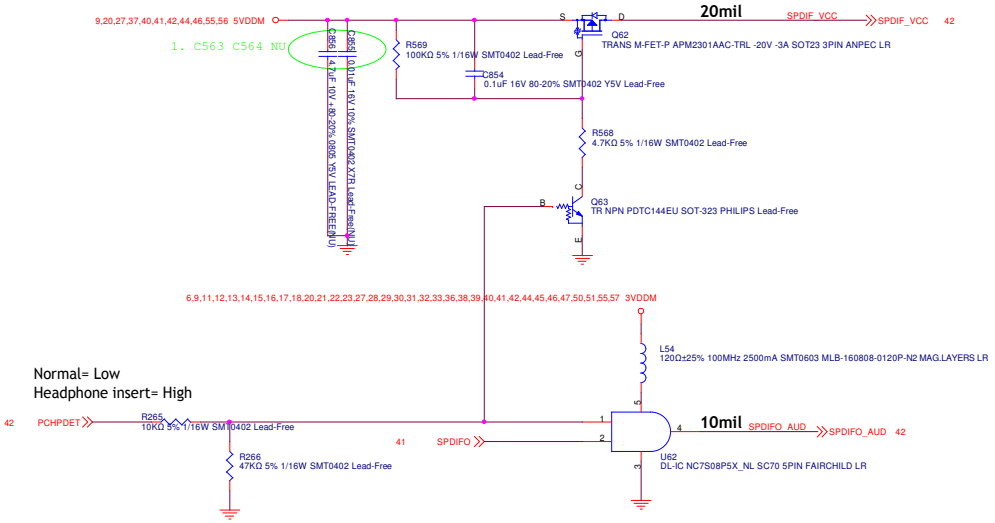
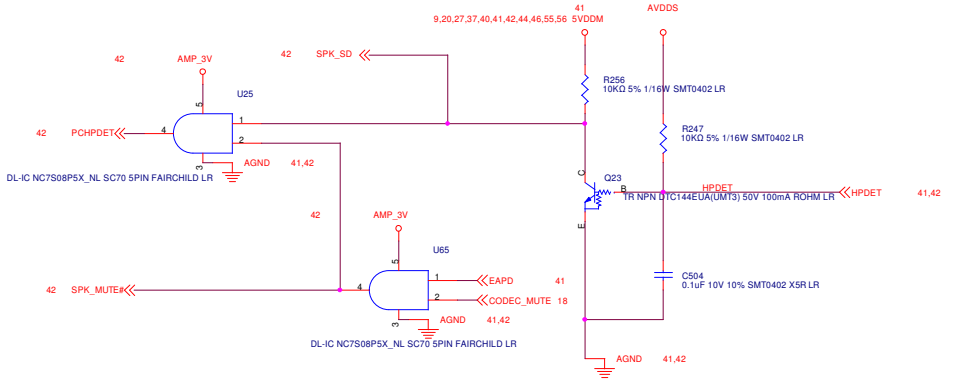
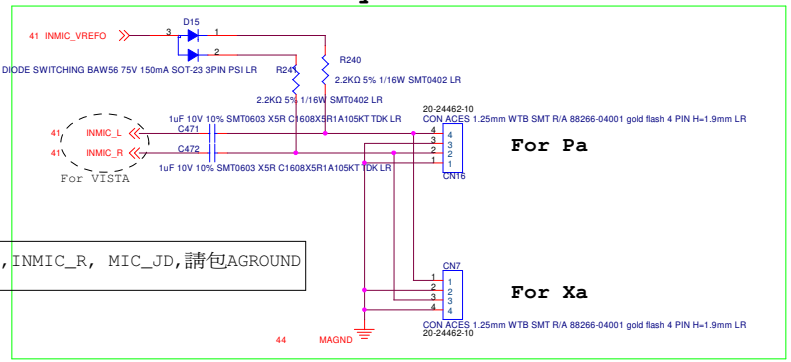
S/PDIF Power





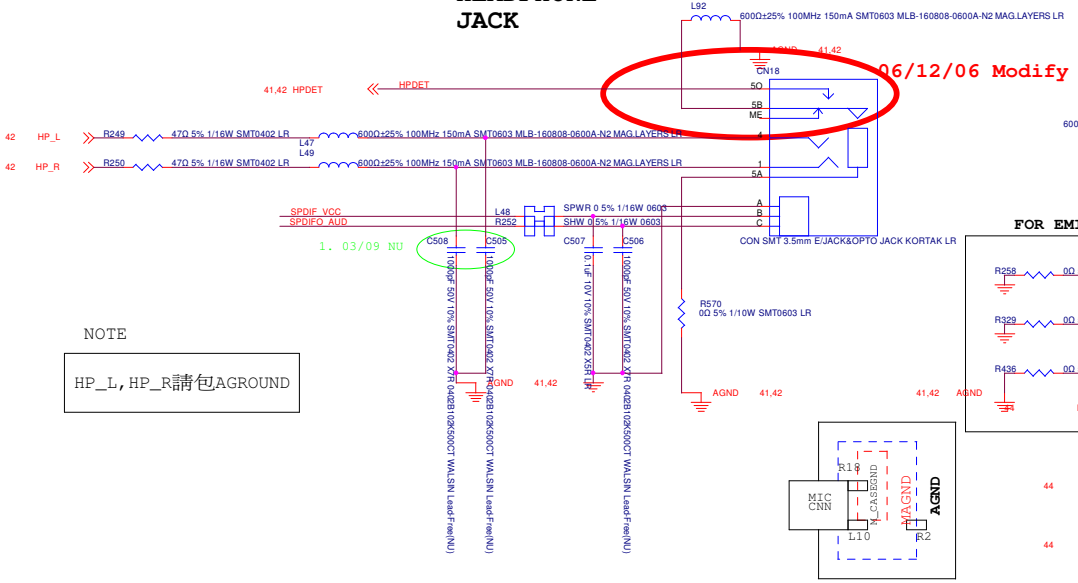
Internal arrary MIC



NOTE

INMIC_L,INMIC_R, MIC_JD,請包AGROUND

SPDIF & HEADPHONE JACK

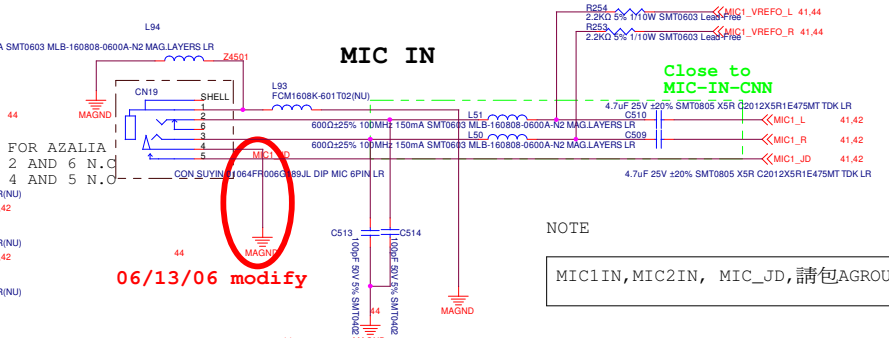


NOTE

HP_L,HP_R請包AGROUND

FOR EMI

MIC IN



NOTE

MIC1IN,MIC2IN, MIC_JD,請包AGROUND

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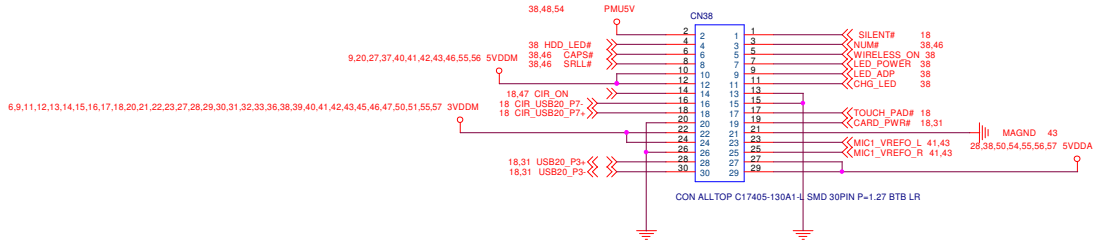
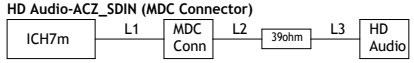
Pa: No Stuff
Xa: Stuff

AUDIO B CNN



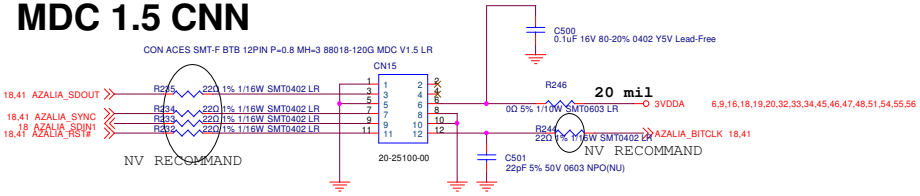
HD Audio-ACZ_SDIN (MDC Connector)



Trace Impedance	Routing Requirement	Trace Length
55 +/- 15%	4 on 7(stripline)	L1 = 0.1"~15" L2 = 0.5"~1.5" L3 = 0.5"

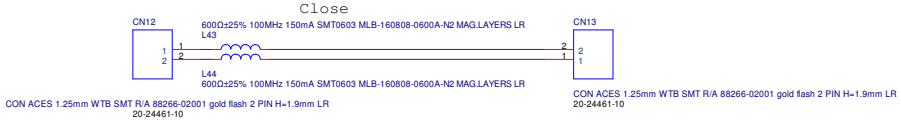
*** Breakout can be routed 4 on 4 up to 400 mils

MDC 1.5 CNN



FOR EMI Solution

Close



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Title: PA1538/XA1526(FSC) PTB50/XTB70(FIC)

Size: C | Document Number: DIP SW/CIR/SCREW | Rev: 0.4

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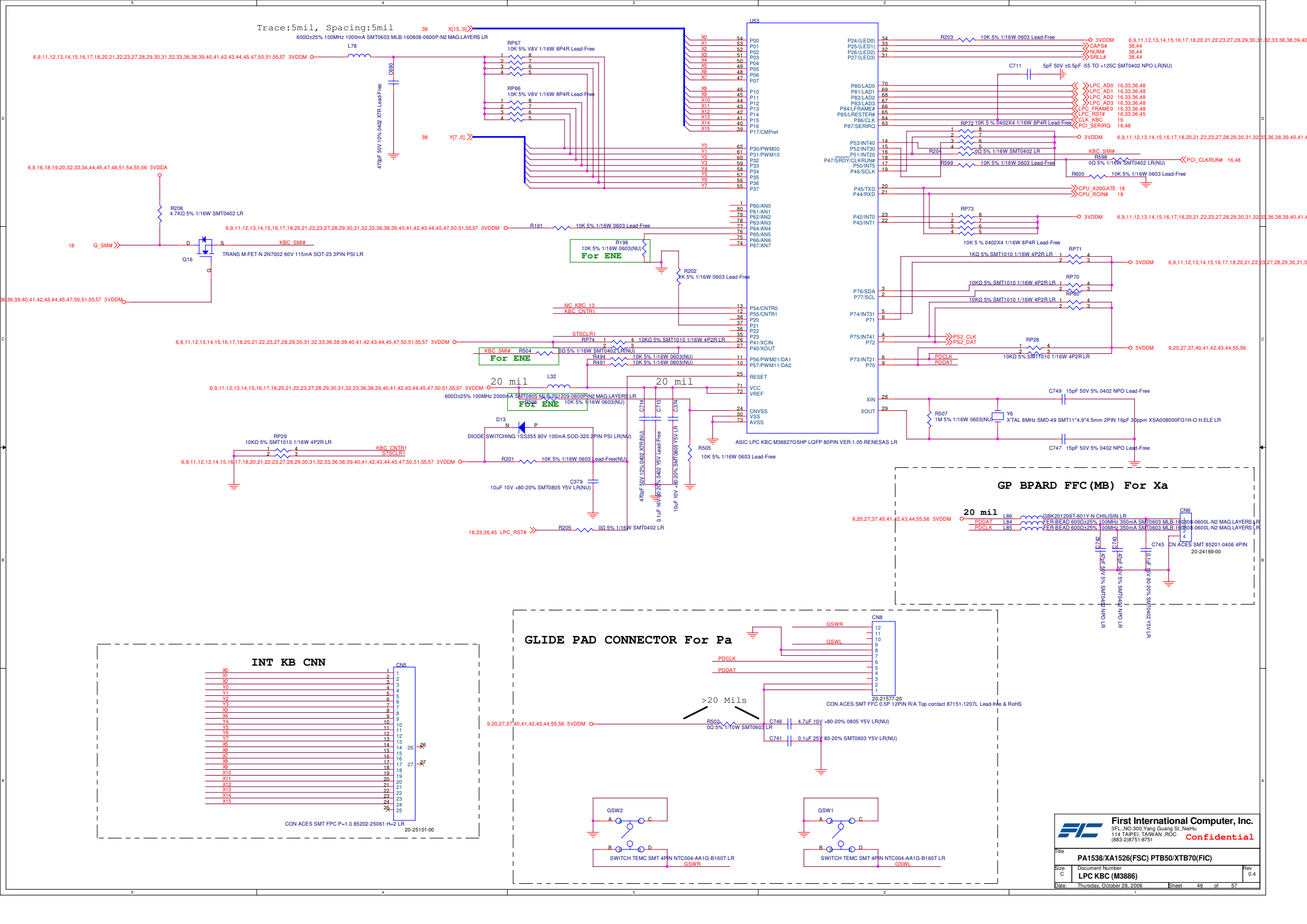
Trace:5mil, Spacing:5mil
600Ω±25% 100MHz 1000mA SMT0603 MLB-160808-0600P-N2 MAG.LAYERS LR
L78
RP67
10K 5% V8V 1/16W 8P4R Lead-Free
RP66
10K 5% V8V 1/16W 8P4R Lead-Free
C690
470pF 50V 10% 0402 X7R Lead-Free
U53
ASIC LPC KBC M38827G5HP LQFP 80PIN VER:1.05 RENESAS LR
R203
10K 5% 1/16W 0603 Lead-Free
C711
5pF 50V ±0.5pF -55 TO +125C SMT0402 NPO LR(NU)
RP72 10K 5 % 0402X4 1/16W 8P4R Lead-Free
R204
0Ω 5% 1/16W SMT0402 LR
R598
0Ω 5% 1/16W SMT0402 LR(NU)
R599
10K 5% 1/16W 0603 Lead-Free
R600
10K 5% 1/16W 0603 Lead-Free
RP73
10K 5 % 0402X4 1/16W 8P4R Lead-Free
RP71
1KΩ 5% SMT1010 1/16W 4P2R LR
RP70
10KΩ 5% SMT1010 1/16W 4P2R LR
RP80
10KΩ 5% SMT1010 1/16W 4P2R LR
RP28
10KΩ 5% SMT1010 1/16W 4P2R LR
R206
4.7KΩ 5% 1/16W SMT0402 LR
Q16
TRANS M-FET-N 2N7002 60V 115mA SOT-23 3PIN PSI LR
R191
10K 5% 1/16W 0603 Lead-Free
R196
10K 5% 1/16W 0603(NU)
For ENE
R202
K 5% 1/16W 0603 Lead-Free
R504
0Ω 5% 1/16W SMT0402 LR(NU)
For ENE
R494
10K 5% 1/16W 0603(NU)
R491
10K 5% 1/16W 0603(NU)
L32
600Ω±25% 100MHz 2000mA SMT0805 MLB-201209-0600P-N2 MAG.LAYERS LR
R506
10K 5% 1/16W 0603(NU)
For ENE
20 mil
20 mil
D13
DIODE SWITCHING 1SS355 80V 100mA SOD-323 2PIN PSI LR(NU)
RP29
10KΩ 5% SMT1010 1/16W 4P2R LR
R201
10K 5% 1/16W 0603 Lead-Free(NU)
C379
10uF 10V +80-20% SMT0805 Y5V LR(NU)
C714
470pF 50V 10% 0402 X7R(NU)
C713
0.1uF 16V +80-20% 0402 Y5V Lead-Free
C374
10uF 10V +80-20% SMT0805 Y5V LR
R505
10K 5% 1/16W 0603 Lead-Free
R205
0Ω 5% 1/16W SMT0402 LR
C749
15pF 50V 5% 0402 NPO Lead-Free
R507
1M 5% 1/16W 0603(NU)
Y6
X'TAL 8MHz SMD-49 SMT11*4.9*4.5mm 2PIN 16pF 30ppm XSA008000FG1H-O H.ELE LR
C747
15pF 50V 5% 0402 NPO Lead-Free
GP BPARD FFC(MB) For Xa
20 mil
L86
L84
L85
GBK201209T-601Y-N CHILISIN LR
FER-BEAD 600Ω±25% 100MHz 350mA SMT0603 MLB-160808-0600L-N2 MAG.LAYERS LR
FER-BEAD 600Ω±25% 100MHz 350mA SMT0603 MLB-160808-0600L-N2 MAG.LAYERS LR
CN6
C745
CN ACES SMT 85201-0406 4PIN
20-24169-00
C742
C743
C744
INT KB CNN
CN5
CON ACES SMT FPC P=1.0 85202-25061 H=2 LR
20-25101-00
GLIDE PAD CONNECTOR For Pa
CN8
>20 Mils
R502
0Ω 5% 1/10W SMT0603 LR
C746
4.7uF 10V +80-20% 0805 Y5V LR(NU)
C741
0.1uF 25V 80-20% SMT0603 Y5V LR(NU)
20-21577-20
CON ACES SMT FFC 0.5P 12PIN R/A Top contact 87151-1207L Lead-free & RoHS
GSW2
SWITCH TEMC SMT 4PIN NTC004-AA1G-B160T LR
GSWR
GSW1
SWITCH TEMC SMT 4PIN NTC004-AA1G-B160T LR
GSWL
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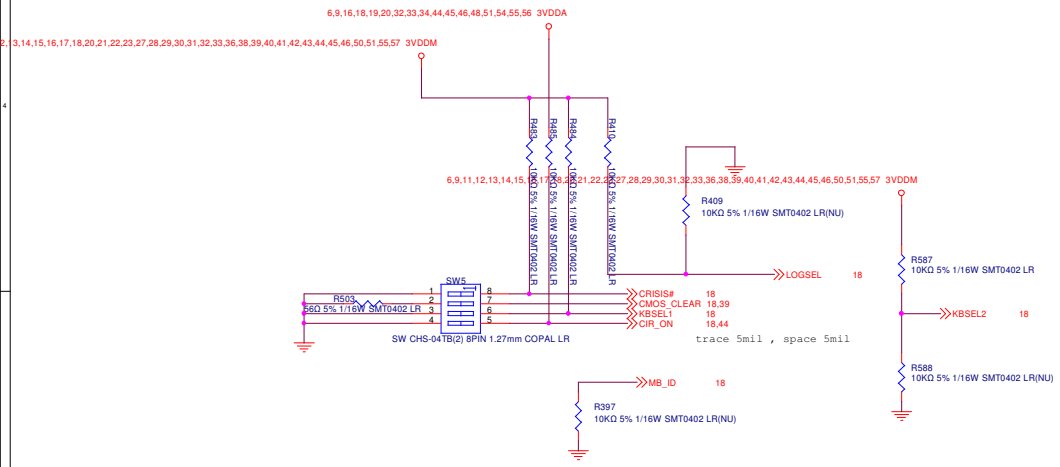
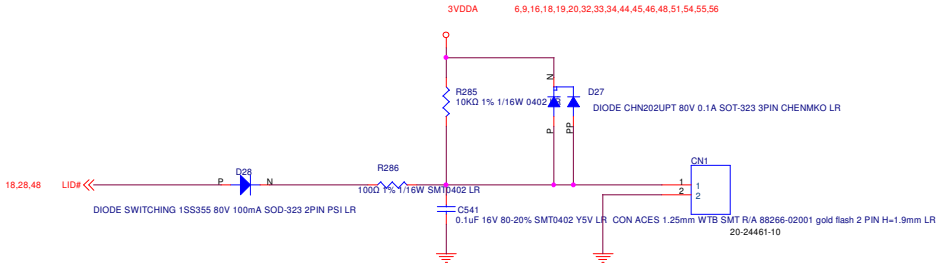
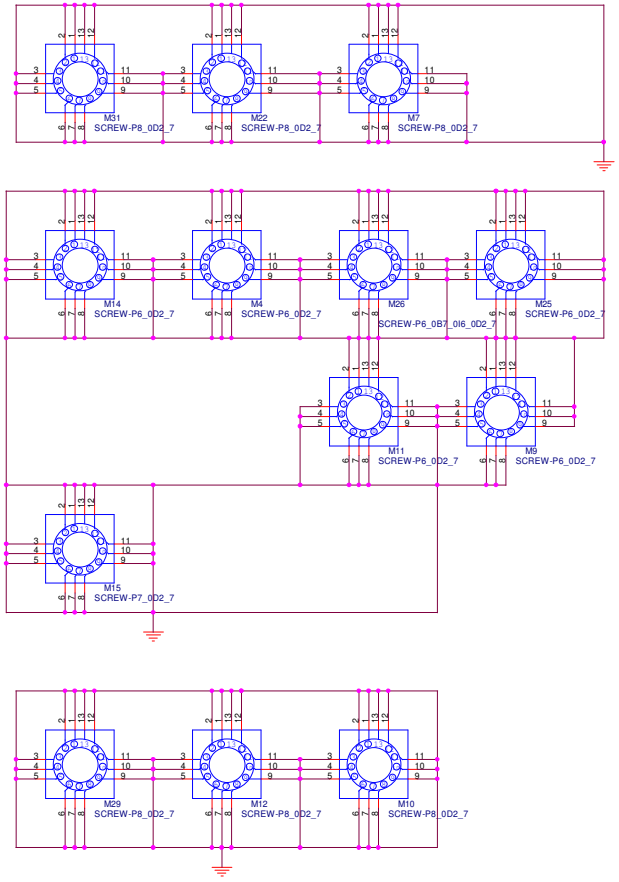
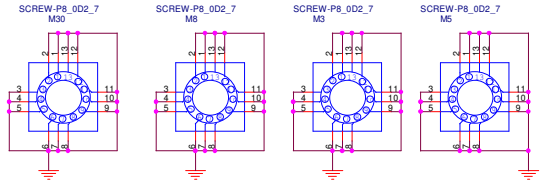
DIP SWITCH

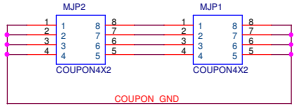


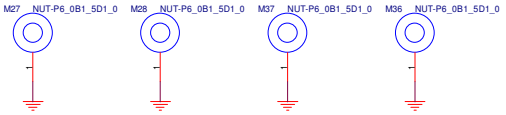
LID Switch

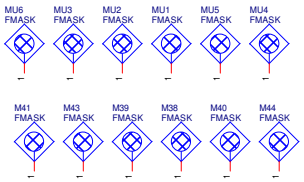


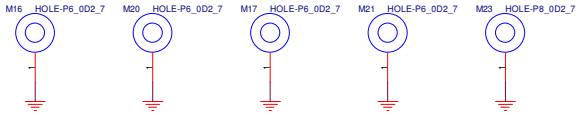


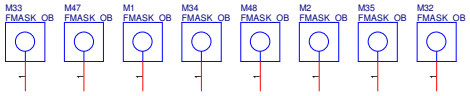


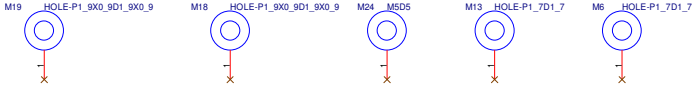












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