

SAPPORO 150A+G

LA-2101 REV0.1 Schematic

Portability Prescott/Northwood

RC300ML(RX300ML)+IXP150+ATI M11P/M10C(128MB VRAM)

2003-11-10

Compal Electronics, Inc.

Title

Cover Page

Size
B

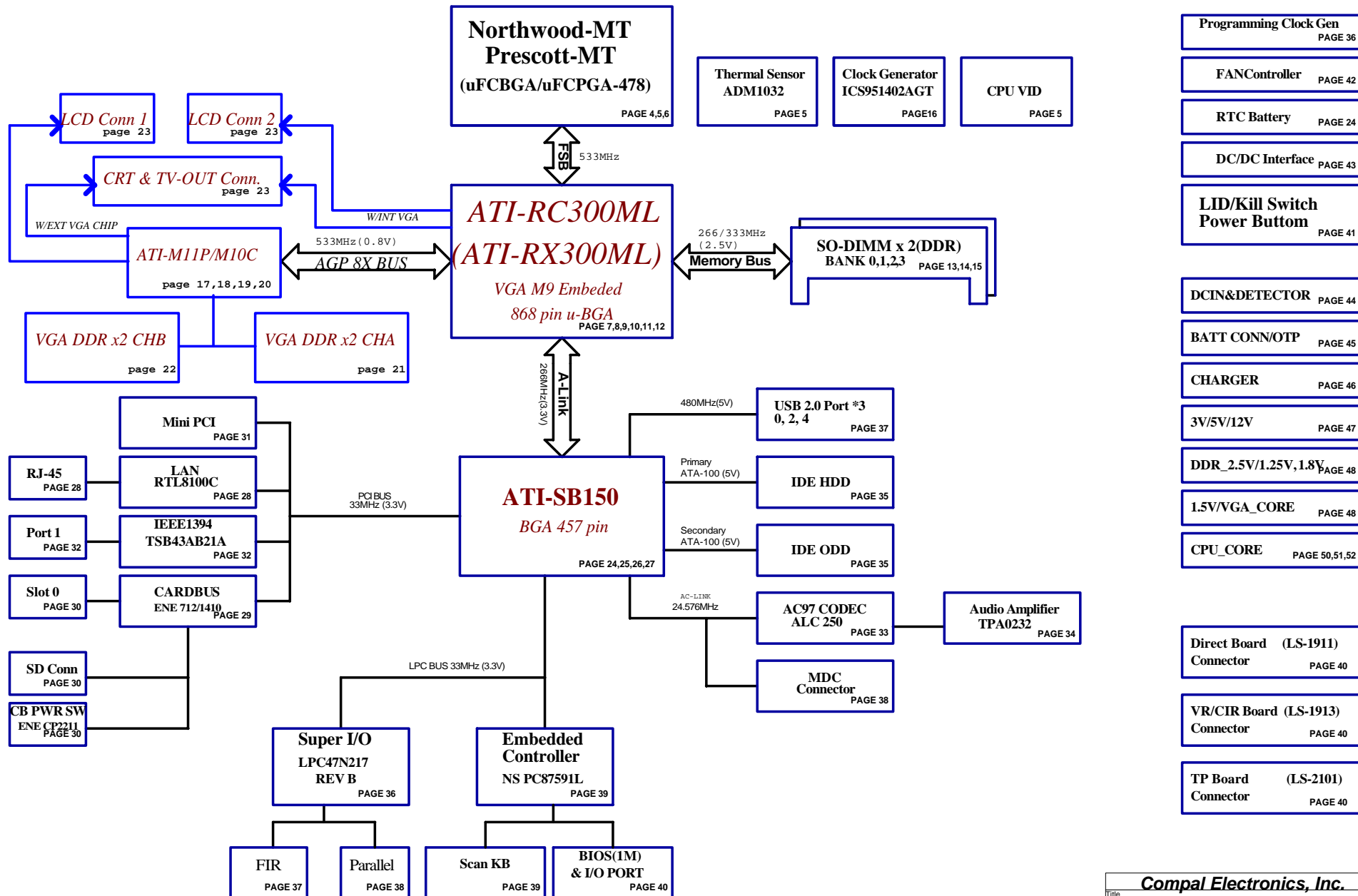
Document Number

Rev
0.1

Date: Tuesday, November 18, 2003

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http://laptopblue.vn DAL01 LA-2101 BLOCK DIAGRAM



Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	ON	ON	ON
B+	AC or battery power rail for power circuit.	ON	ON	ON
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+CPUVID	1.2V switched power rail for CPU AGTL Bus	ON	OFF	OFF
+VGA_CORE	1.0V/1.2V switched power rail for VGA chip	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VS	AGP 4X/8X	ON	OFF	OFF
+1.8VS	1.8VS switched power rail	ON	OFF	OFF
+2.5VALW	2.5V always on power rail	ON	ON	ON*
+2.5V	2.5V power rail	ON	ON	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5VS	5V switched power rail	ON	OFF	OFF
+12VALW	12V always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts
VGA	AD16		PIRQA
CardBus	AD20	2	PIRQA
LAN	AD19	3	PIRQD
Mini-PCI	AD18	1/4	PIRQC/PIRQD
1394	AD16	0	PIRQA
SD	AD20	2	PIRQB

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	ADM1032	1001 110X b
EEPROM(24C16/02)	1010 000X b	ICS960011	1101 110X b
(24C04)	1011 000Xb		

EC SM Bus2 address

IXP150 SM Bus address

Device	Address
Clock Generator (ICS951402AGT)	1101 001Xb
DDR DIMM0	1010 000Xb
DDR DIMM2	1010 001Xb

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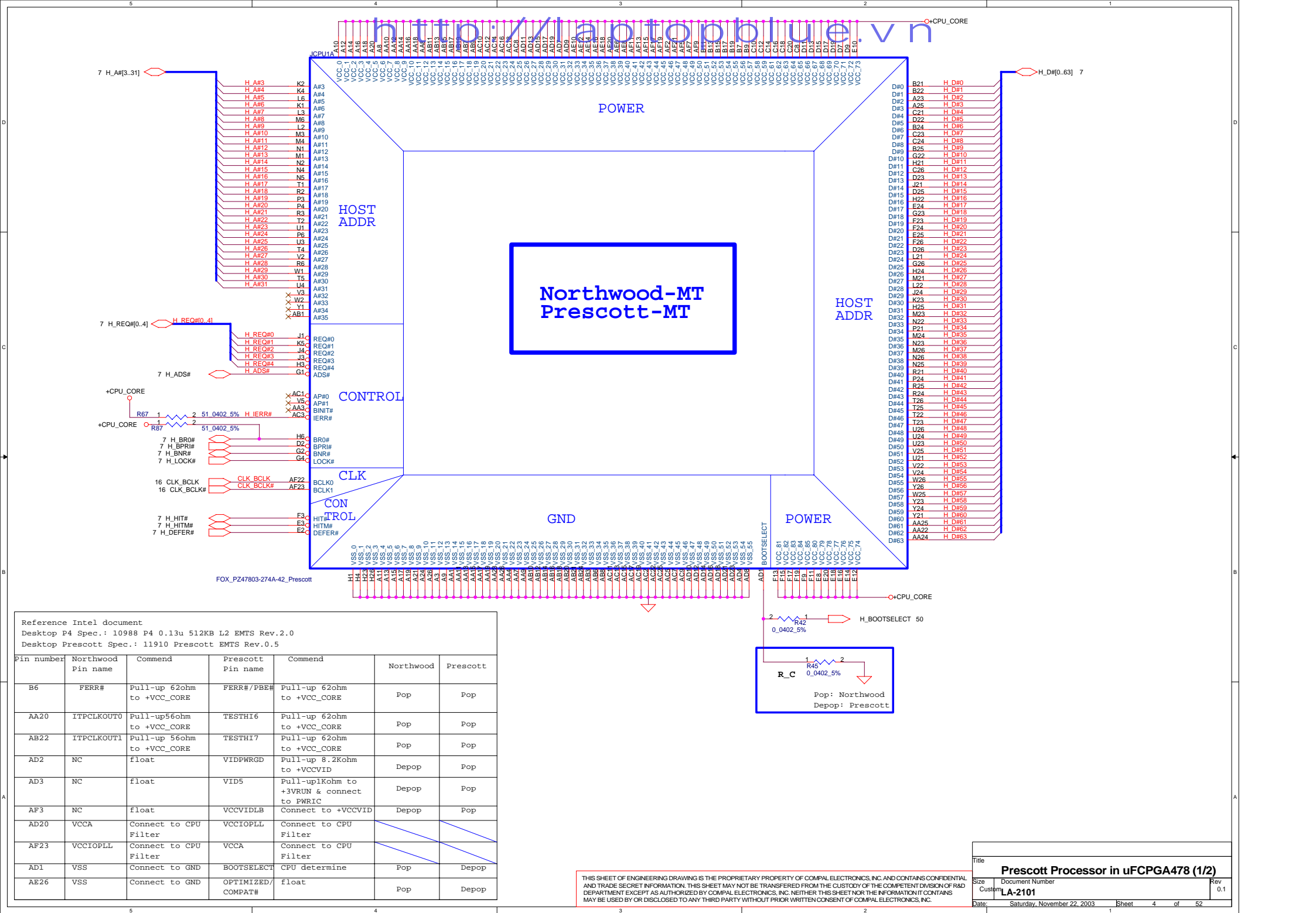
STATE	SIGNAL	SLP_S3#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	ON	ON	ON	ON
S1(Power On Suspend)		HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)		LOW	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	ON	OFF	OFF	OFF

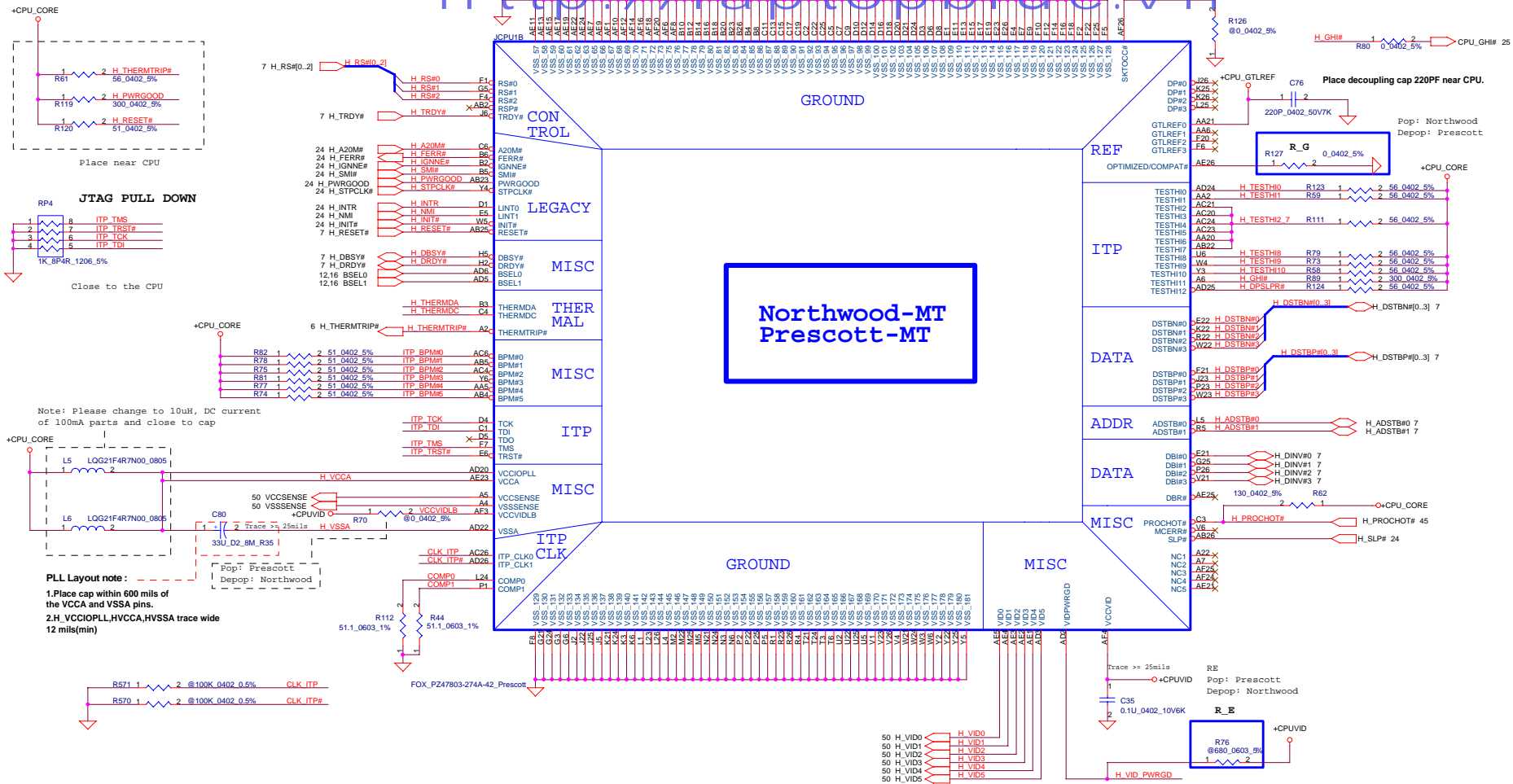
Board ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra	100K +/- 5%			
Board ID	Rb	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

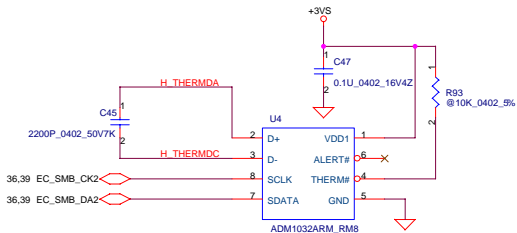
Board ID	PCB Revision
0	0.1
1	
2	
3	
4	
5	
6	
7	

Compal Electronics, Inc.			
Title			
Notes			
Size B	Document Number		Rev
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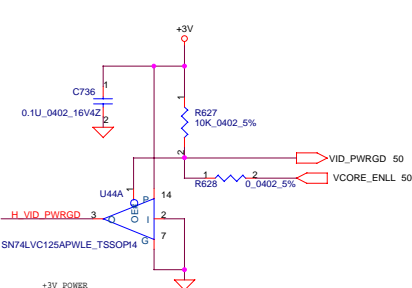




Thermal Sensor

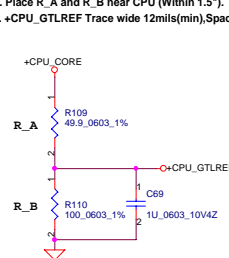


VID PWRGD Circuit

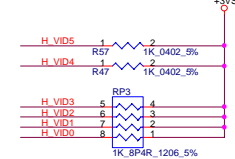


GTL Reference Voltage

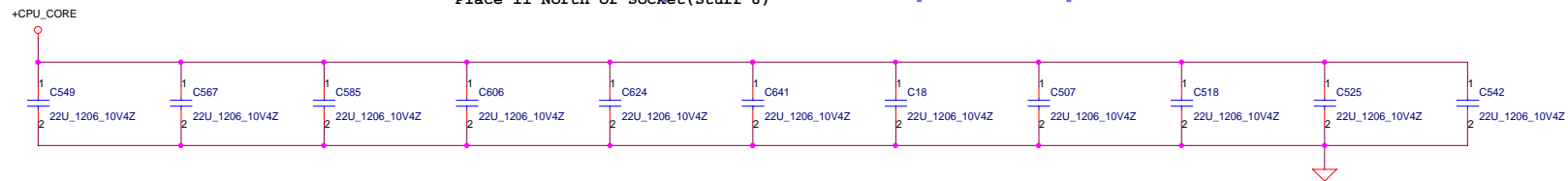
- Layout note :
- Place R_A and R_B near CPU (Within 1").
 - +CPU_{GT}REF Trace wide 12mil(min), Space 15mil



VID PULL HIGH

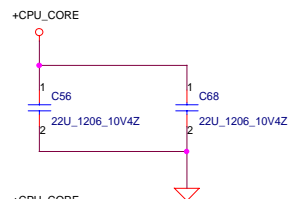
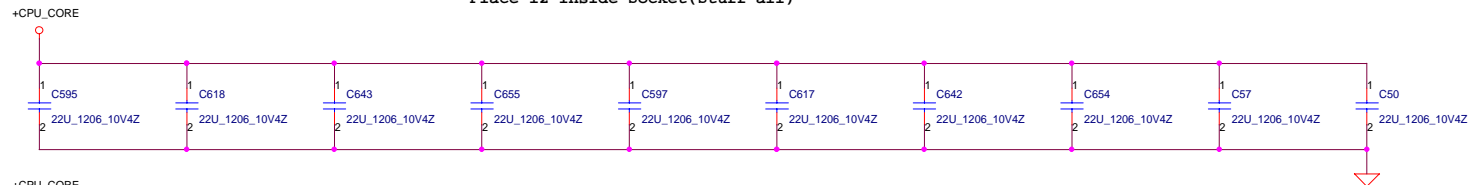


Place 11 North of Socket(Stuff 8)

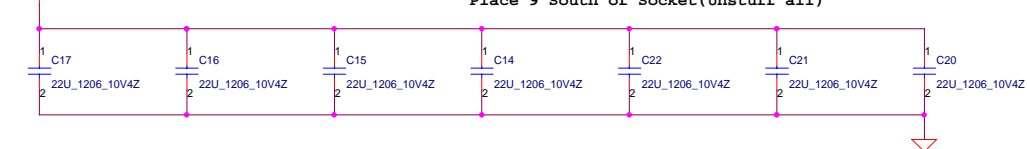


22uF depop reference
Springdale Customer Schematic R1.2 page82

Place 12 Inside Socket(Stuff all)



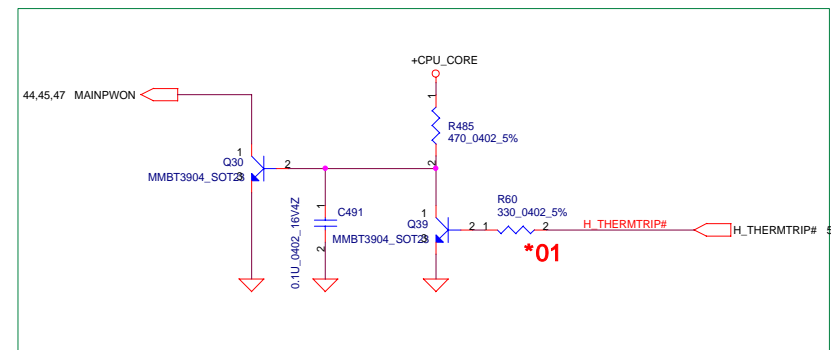
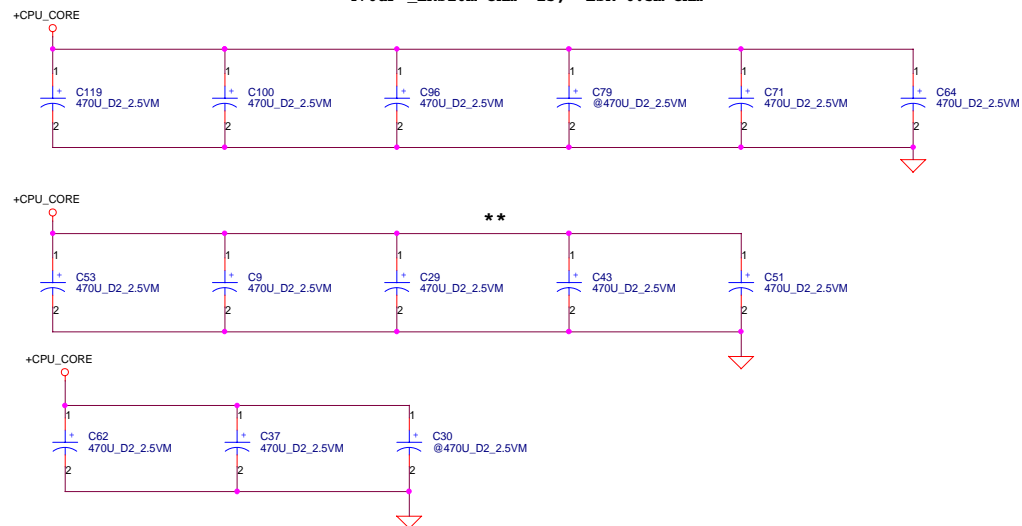
Place 9 South of Socket(Unstuff all)



Decoupling Reference Document:
Springdale Chipset Platform Design guide Rev1.11
(12474)page239

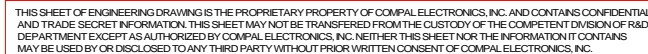
Decoupling Reference Requirement:
560uF Polymer, ESR:5m ohm(each) * 10
22uF X5R * 32

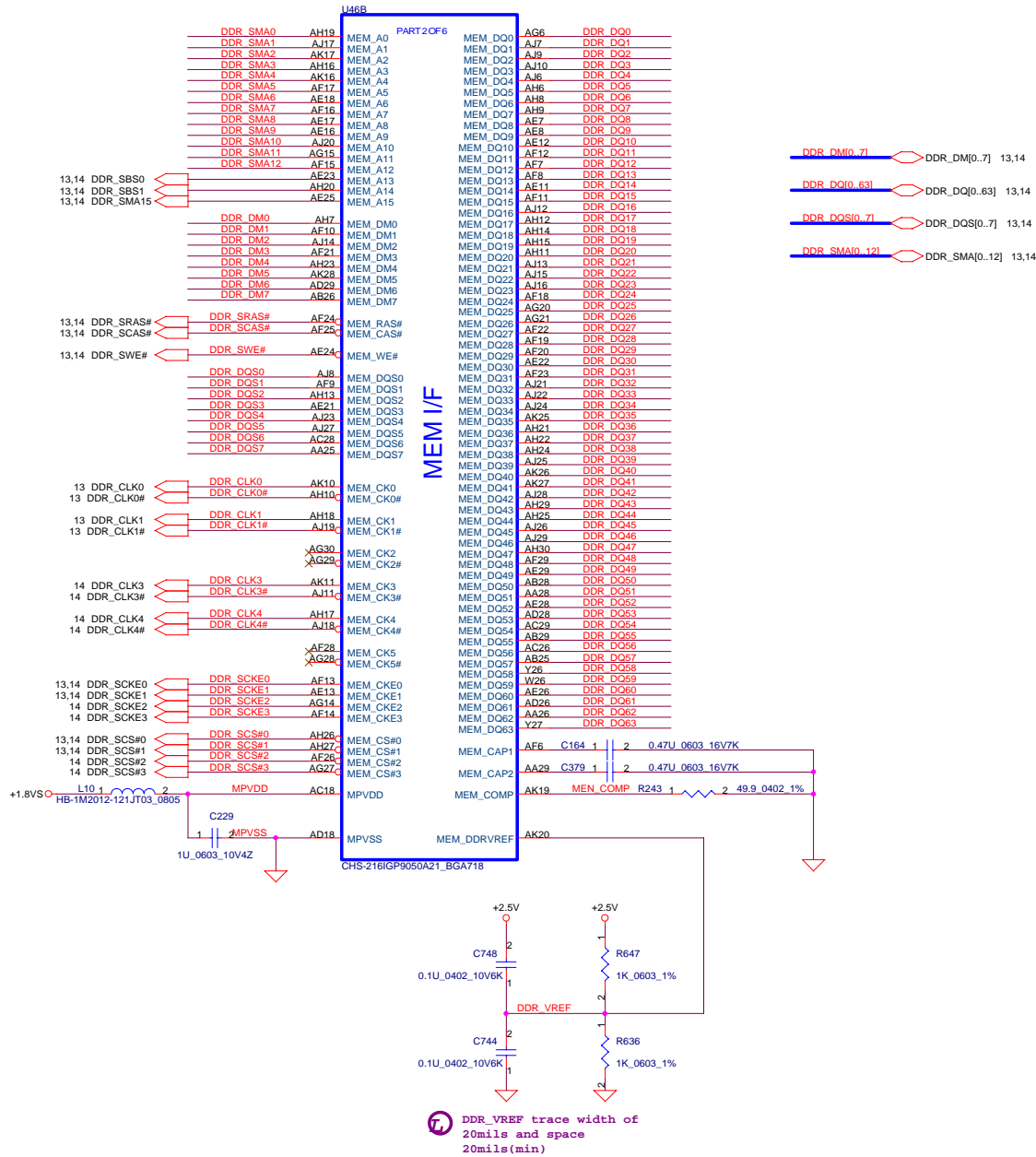
470uF _ERS10m ohm* 15, ESR=0.5m ohm

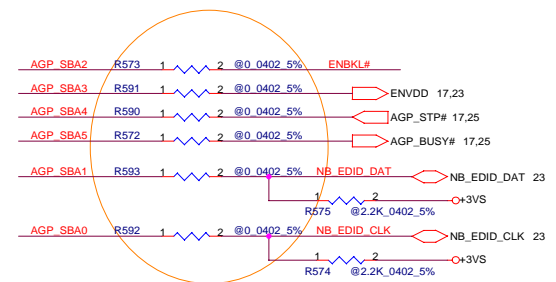
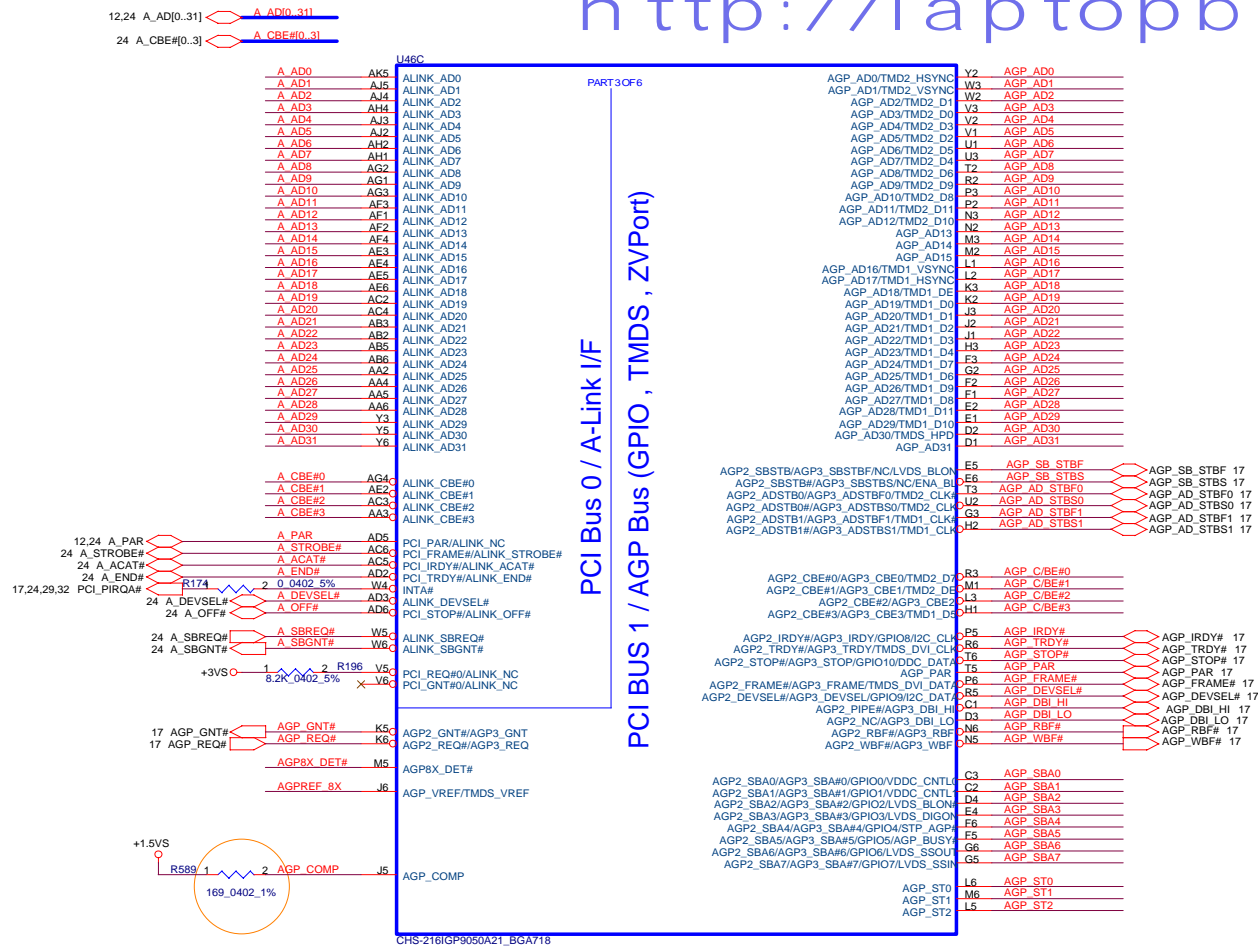


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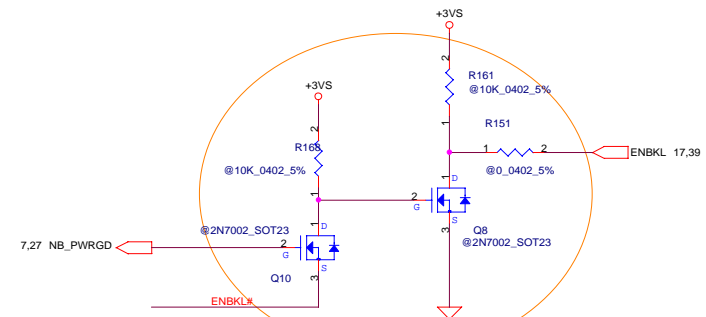
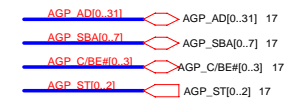
Title		
CPU Decoupling		
Size	Document Number	Rev
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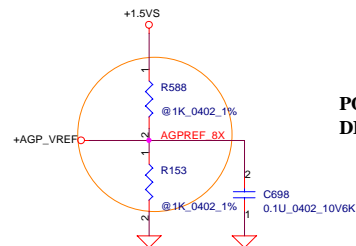
POP For 150A
DEPOP For 150G



POP For 150A
DEPOP For 150G



POP For 150G
DEPOP For 150A

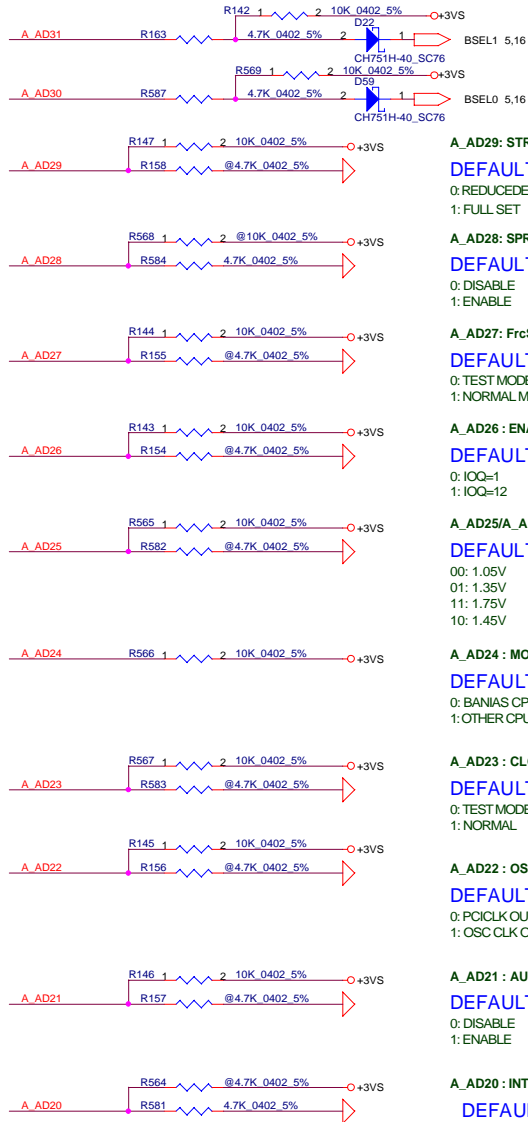


POP For 150A
DEPOP For 150G

Compal Electronics, Inc.			
Title AT1RC300M-AGP, ALINK BUS			
Size	Document Number LA-2101		Rev 0.1
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A_AD[31..30] : FSB CLK SPEED
DEFAULT: 01
00: 100 MHZ
01: 133 MHZ
10: 200MHZ
11:166 MHZ

A_AD29: STRAP CONFIGURATION
DEFAULT:1
0: REDUCEDE SET
1: FULL SET

A_AD28: SPREAD SPECTRUM ENABLE
DEFAULT:0
0: DISABLE
1: ENABLE

A_AD27: FrcShortReset#
DEFAULT: 1
0: TEST MODE
1: NORMAL MODE

A_AD26 : ENABLE IOQ
DEFAULT: 1
0: IOQ=1
1: IOQ=12

A_AD25/A_AD17 : CPU VOLTAGE[1..0]
DEFAULT: 10
AD25=1 DESTOP CPU
AD25=0 MOBILE CPU
00: 1.05V
01: 1.35V
11: 1.75V
10: 1.45V
AD17--DON'T CARE

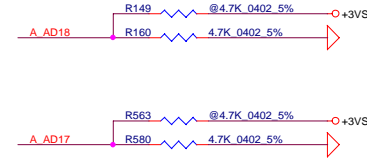
A_AD24 : MOBILE CPU SELECT
DEFAULT: 1
0: BANIAS CPU
1: OTHER CPU

A_AD23 : CLOCK BYPASS DISABLE
DEFAULT: 1
0: TEST MODE
1: NORMAL

A_AD22 : OSC PAD OUTPUT PCICLK
DEFAULT : 1
0: PCICLK OUT
1: OSC CLK OUT

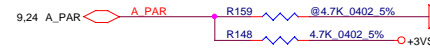
A_AD21 : AUTO_CAL ENABLE
DEFAULT : 1
0: DISABLE
1: ENABLE

A_AD20 : INTERNAL CLK GEN ENABLE
DEFAULT : 0
0: DISABLE
1: ENABLE

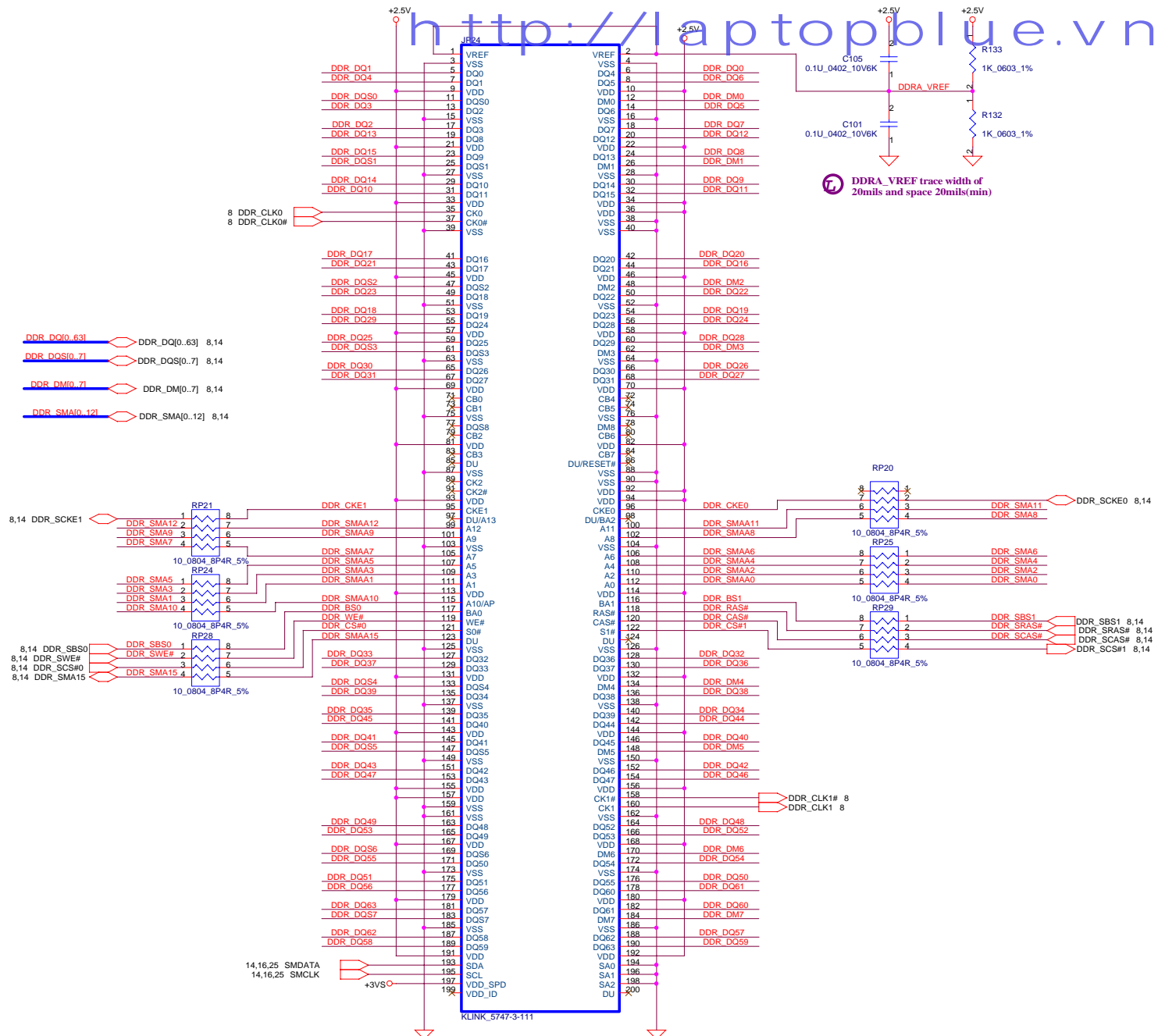


A_AD18 : ENABLE PHASE CALIBRATION
DEFAULT:0
0: DISABLE
1:ENABLE

A_AD25/A_AD17 : CPU VOLTAGE[1..0]
DEFAULT:0
00: 1.05V
01: 1.35V
11: 1.75V
10: 1.45V



PAR: EXTENDED DEBUG MODE
DEFAULT: 1
0: DEBUG MODE
1: NORMAL

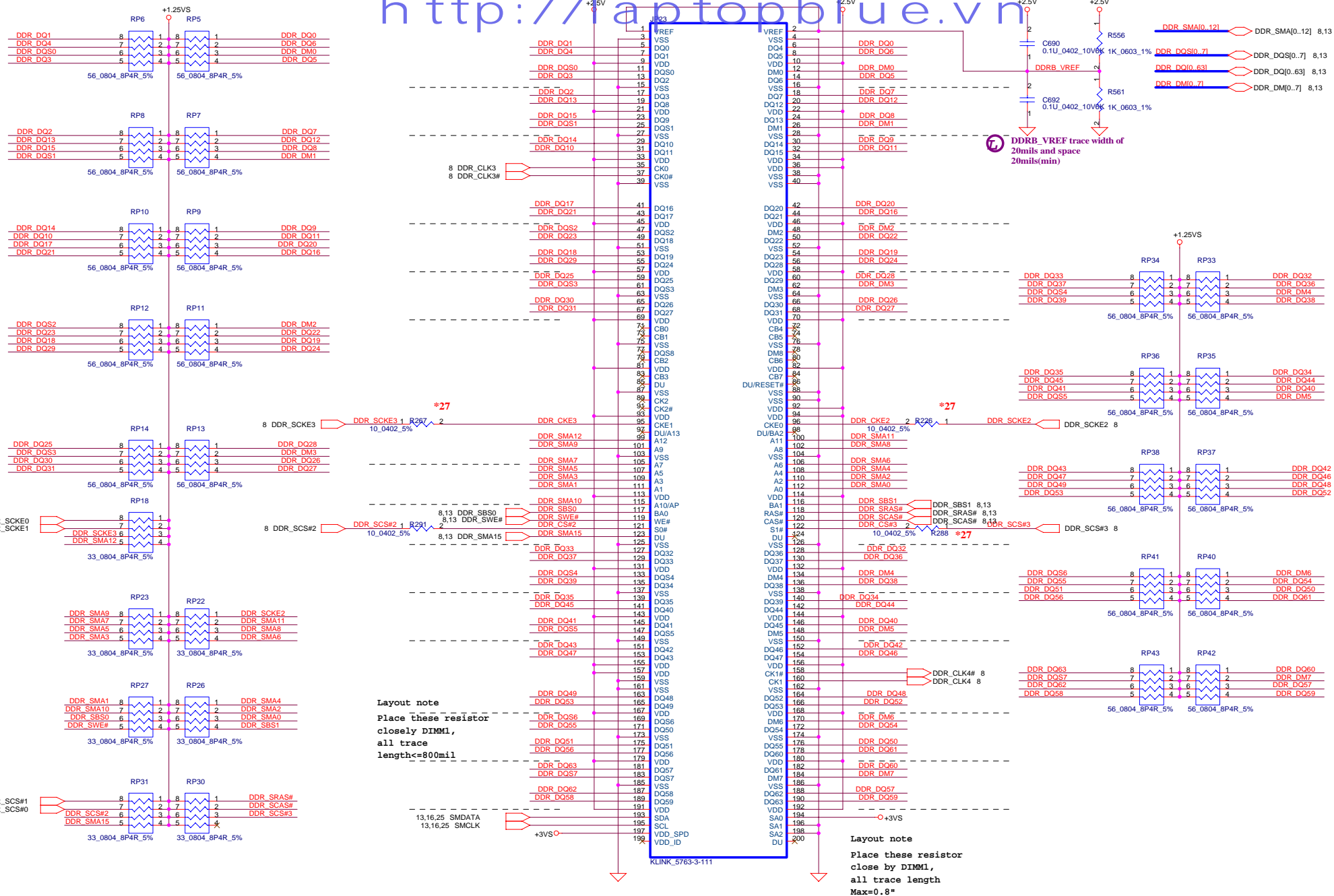


Layout note

Layout note
Place Add/Command resistors
Close to Pin, max L = 300 mils

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Title			
DDR-SODIMM SLOT0			
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DDR TOPOLOGY 1 FOR SMAA[0, 3, 6:12], SBA[1, 0], SRAS#, SCAS#, SWE#

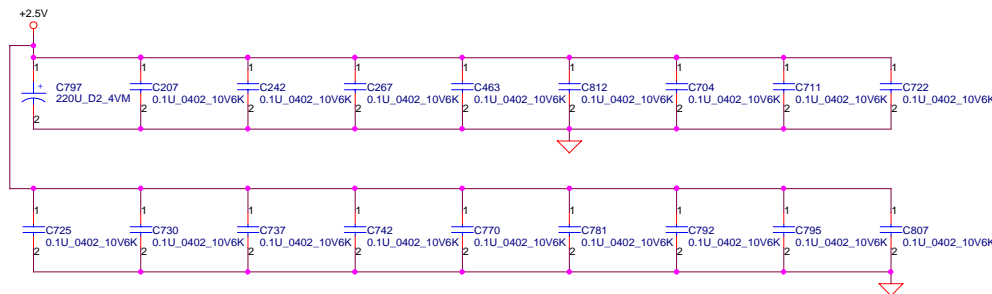
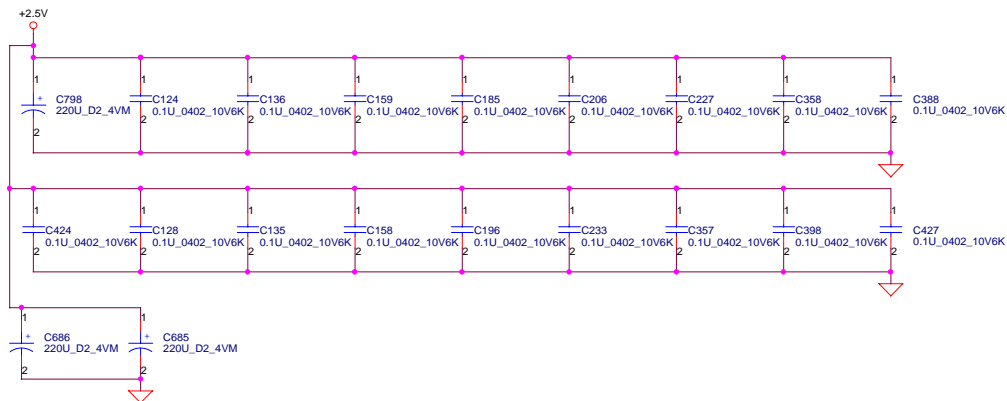
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Title				
DDR-SODIMM SLOT1				
Size	Document Number			Rev
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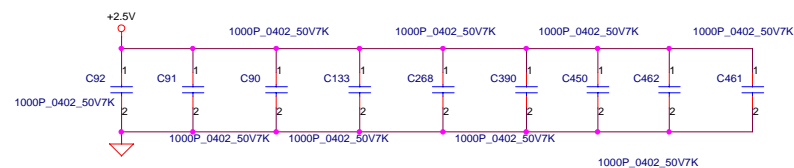
Layout note :
Distribute as close as possible
to DDR-SODIMM0.

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Layout note:
Distribute as close as possible
to DDR-SODIMM1.



Layout note :
for EMI solution

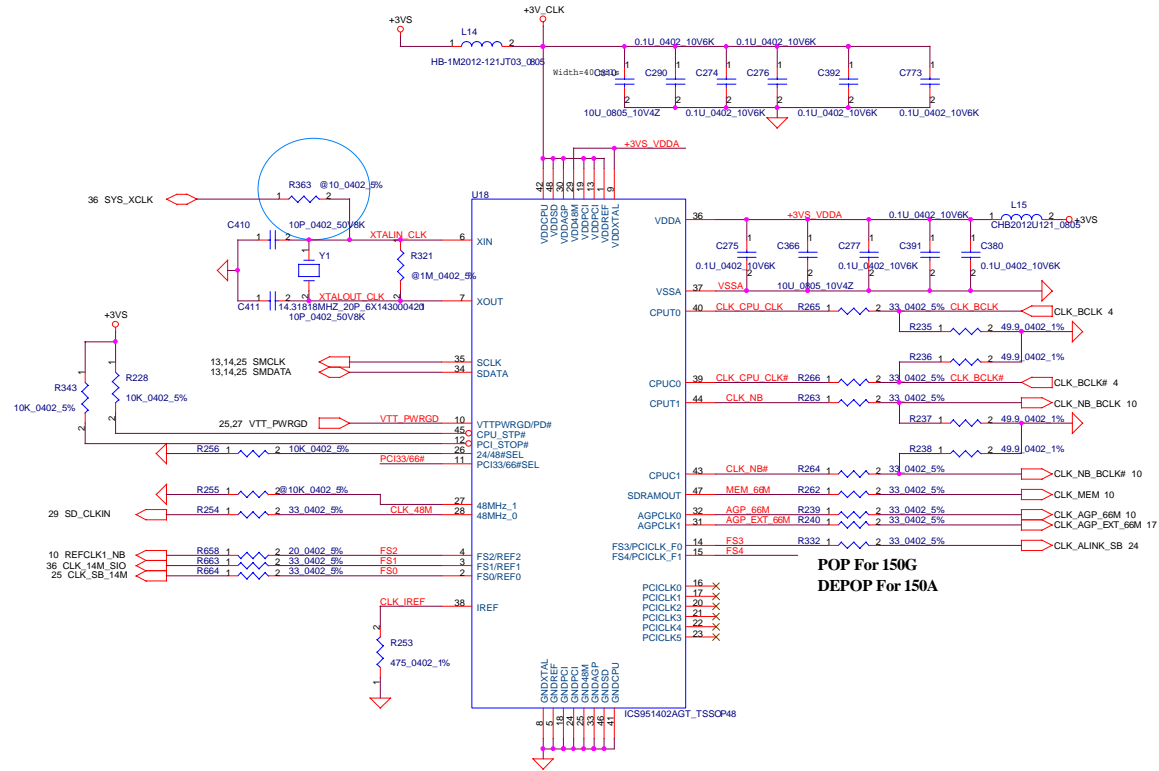


Layout note :
Place one cap close to every 2 pull up resistors termination to
+1.25VS



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Title			
DDR SODIMM Decoupling			
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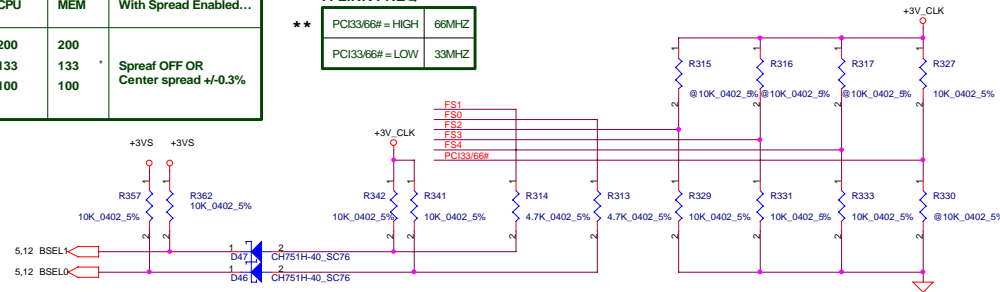
CLOCK FREQUENCY SELECT TABLE

FS4	FS3	FS2	FS1	FS0	CPU	MEM	With Spread Enabled...
0	0	0	1	0	200	200	Spread OFF OR Center spread +/-0.3%
0	0	0	0	1	133	133	
0	0	0	0	0	100	100	

A-LINK FREQ

**	PC133/66# = HIGH	66MHz
**	PC133/66# = LOW	33MHz

Note: 0 = PULL LOW
1 = PULL HIGH



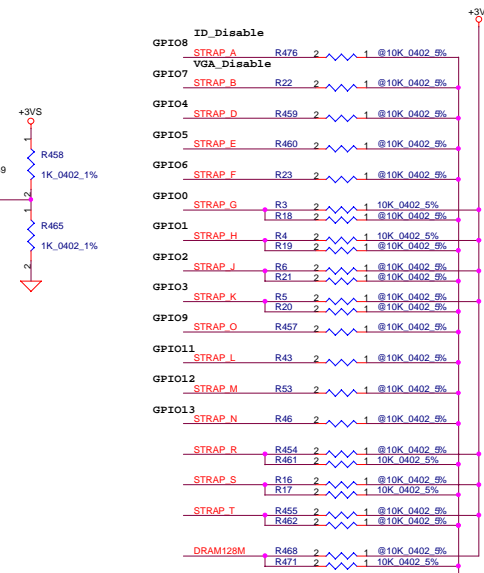
Compal Electronics, Inc.

Clock Generator

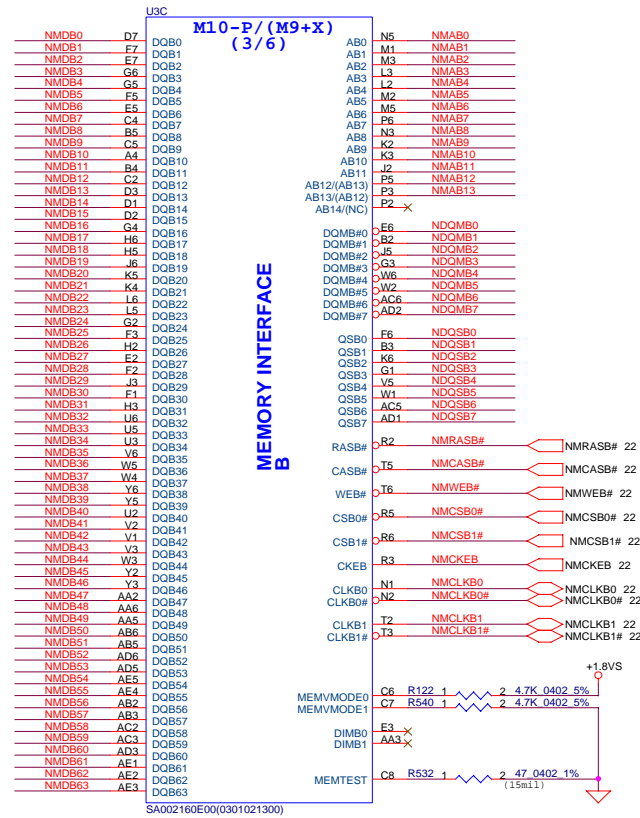
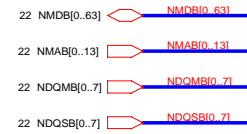
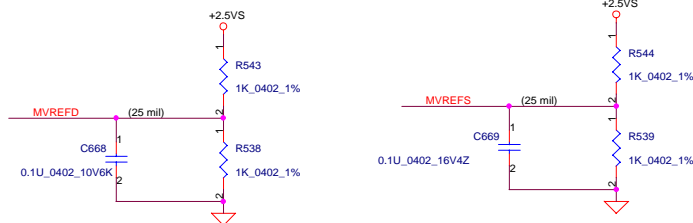
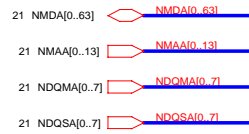
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MEMORY INTERFACE A



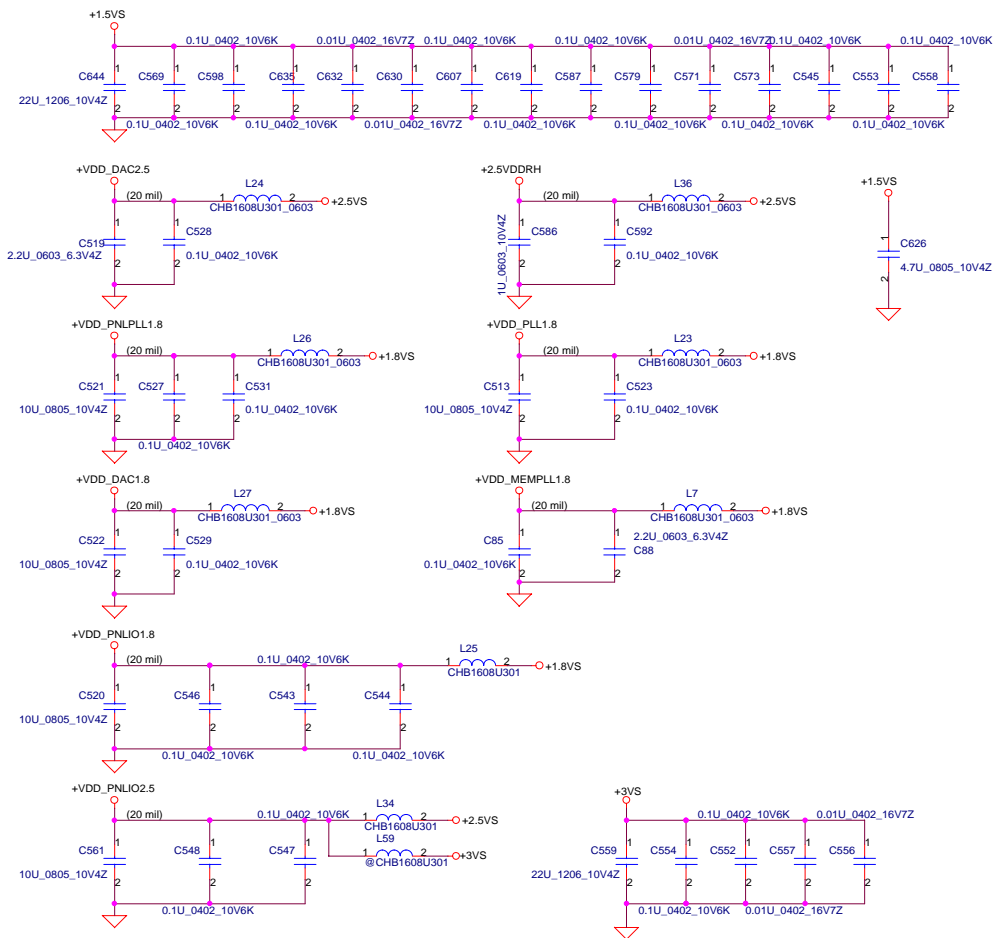
MEMORY INTERFACE B

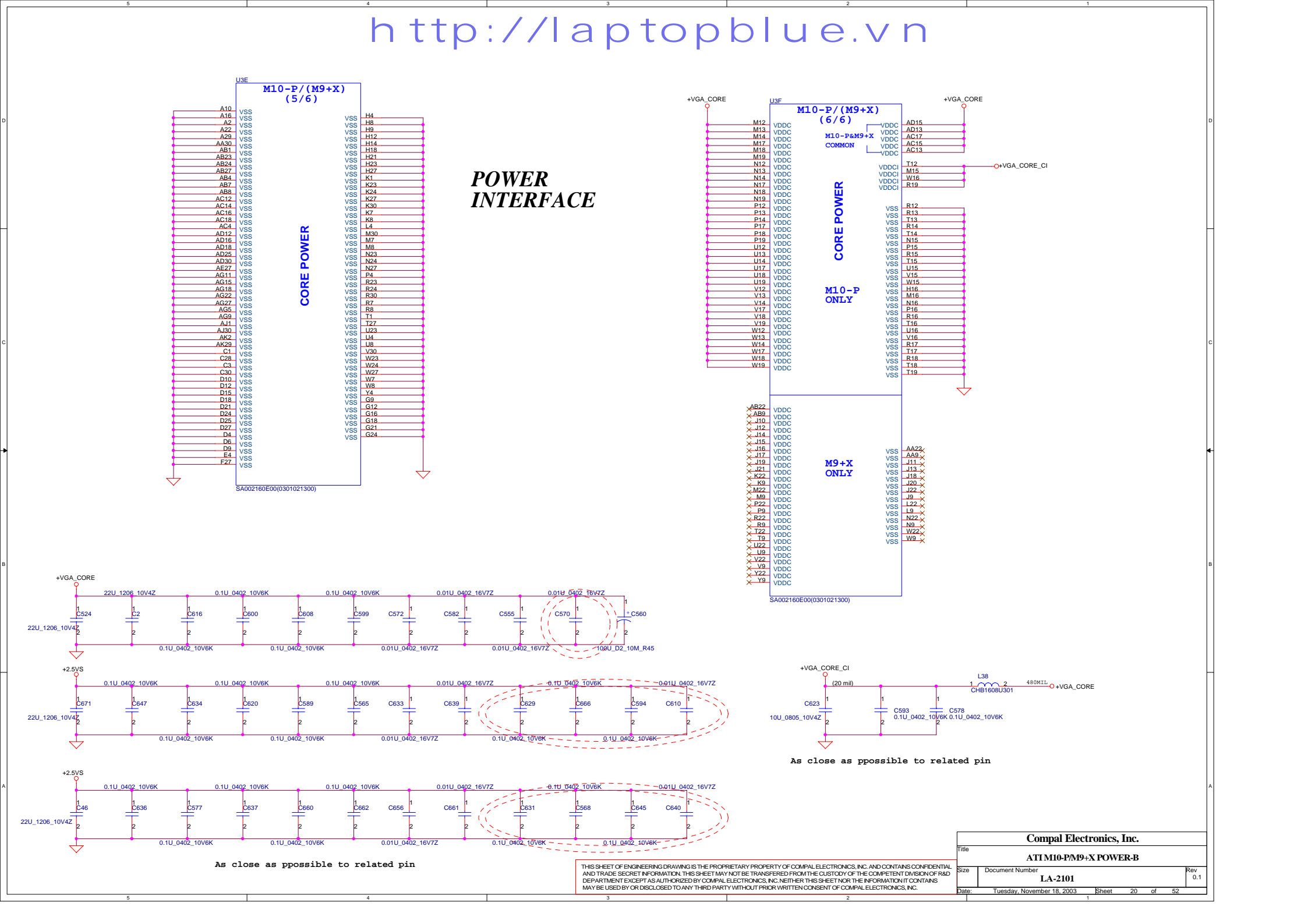
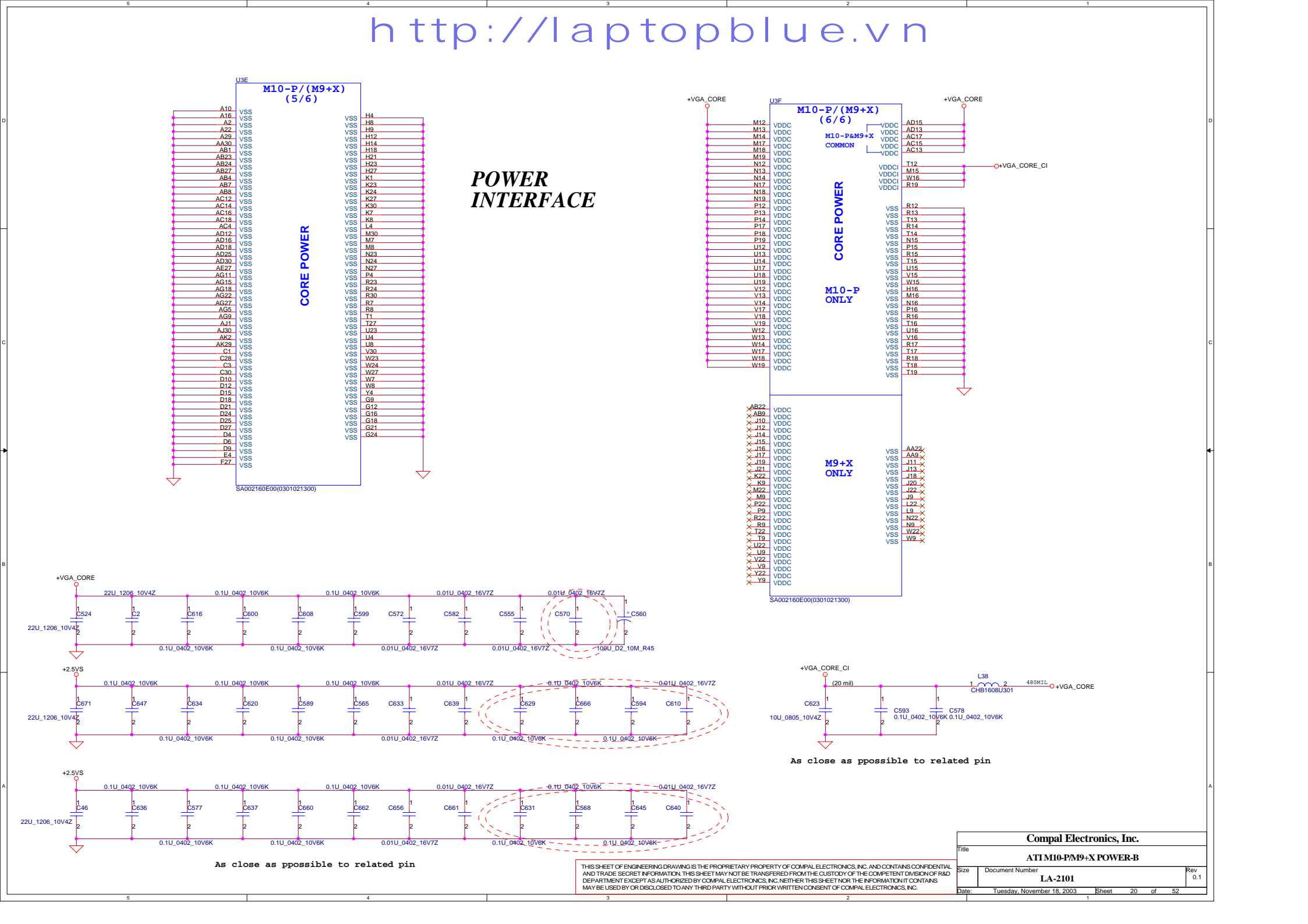
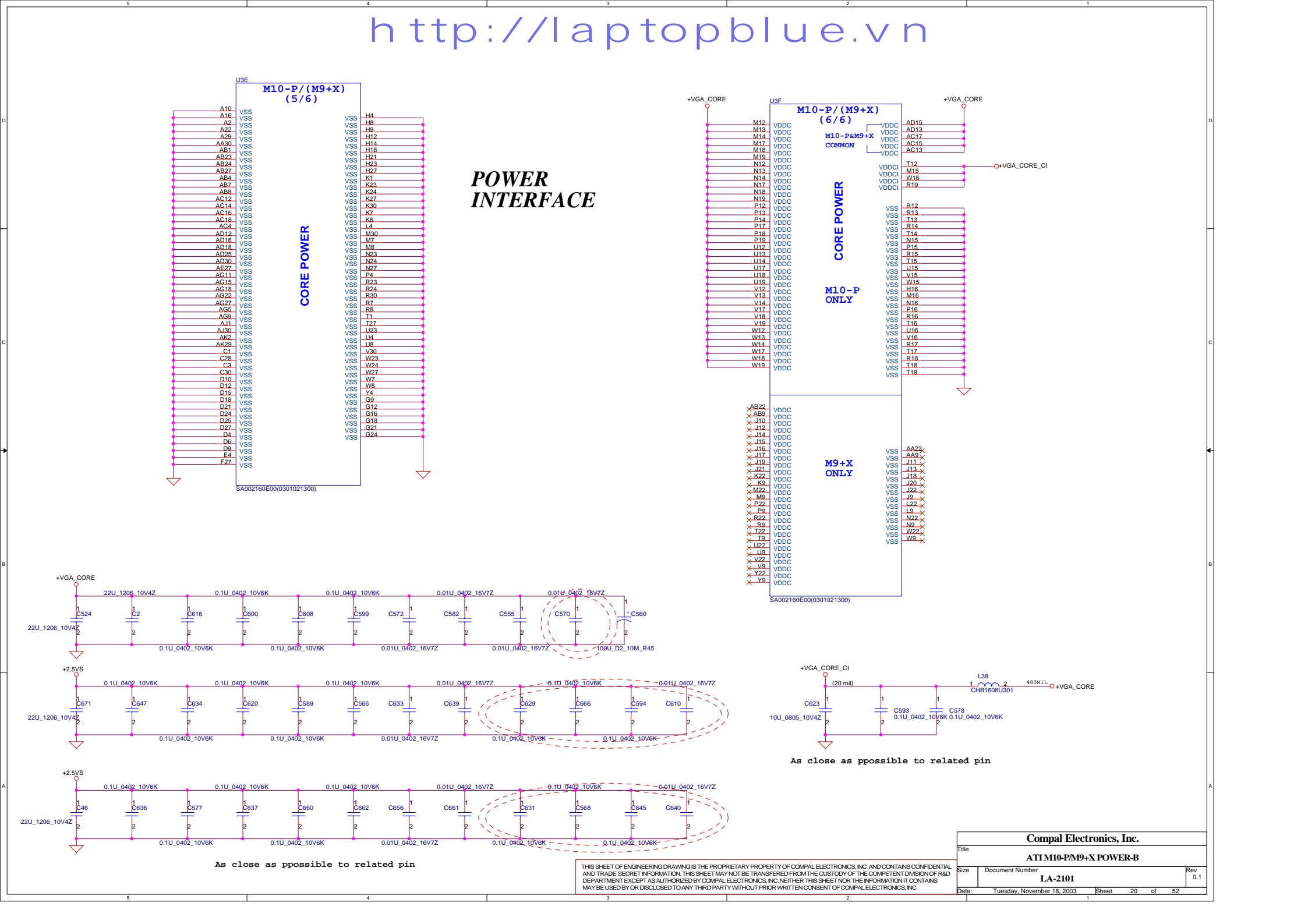
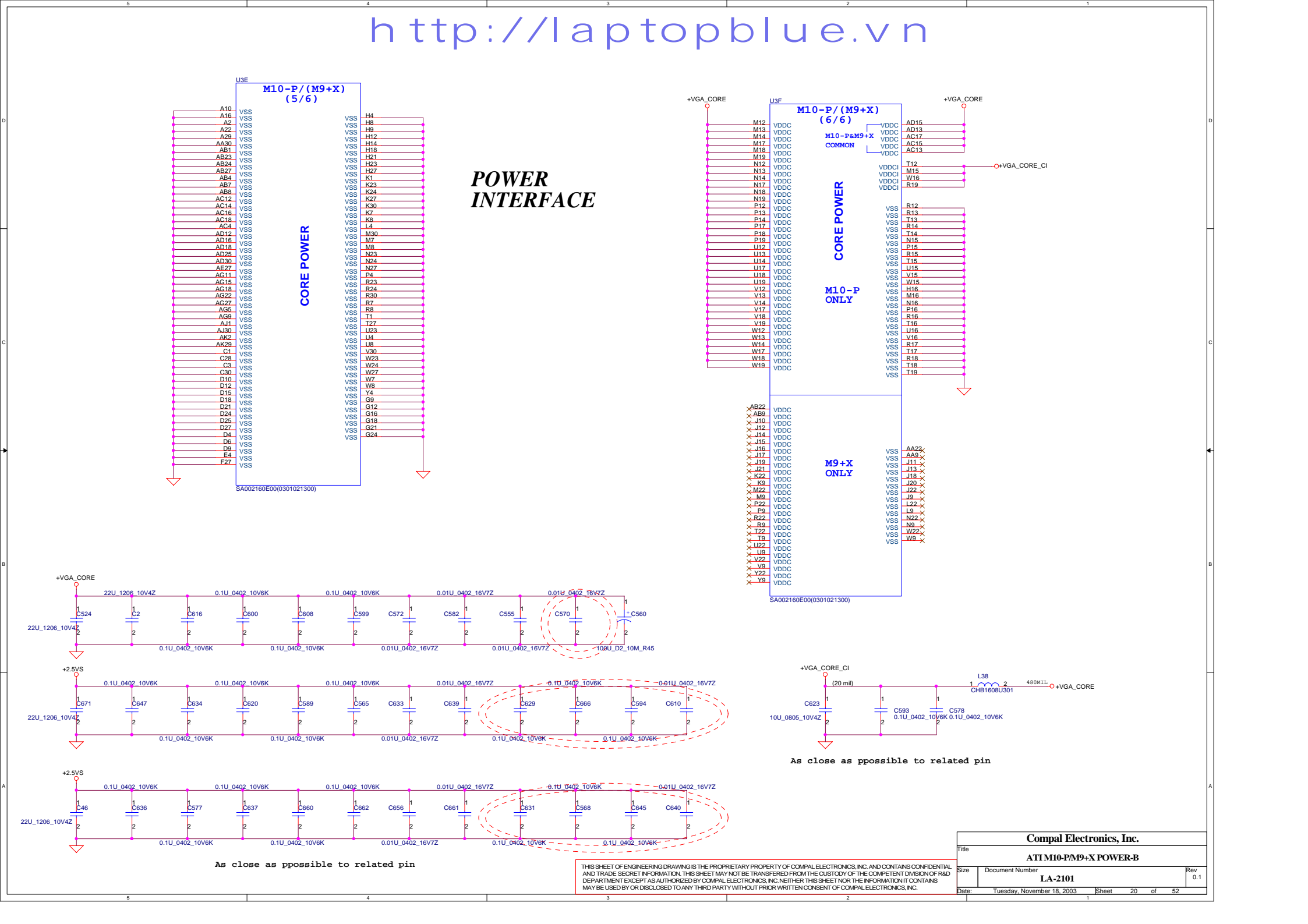
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Title			
ATI M10-P/M9+X DDR-A			
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3.3VS --> 2.5VS --> 1.8VS --> +VGA_Core --> +1.5VS

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[illegible][illegible]

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POWER INTERFACE

M10-P/(M9+X) (5/6)

VSS H4
VSS H8
VSS H9
VSS H12
VSS H17
VSS H18
VSS H21
VSS H23
VSS H27
VSS K1
VSS K23
VSS K24
VSS K27
VSS K30
VSS K7
VSS K8
VSS L4
VSS M7
VSS M8
VSS N23
VSS N24
VSS N27
VSS P4
VSS R23
VSS R24
VSS R30
VSS R7
VSS T1
VSS T27
VSS U23
VSS U4
VSS U8
VSS V30
VSS W23
VSS W24
VSS W27
VSS W7
VSS W8
VSS Y4
VSS G9
VSS G12
VSS G16
VSS G18
VSS G21
VSS G24

CORE POWER

SA002160E00(0301021300)

M10-P/(M9+X) (6/6)

VDDC M12
VDDC M13
VDDC M14
VDDC M17
VDDC M18
VDDC M19
VDDC N12
VDDC N13
VDDC N14
VDDC K23
VDDC K17
VDDC N18
VDDC N19
VDDC P12
VDDC P13
VDDC P14
VDDC P17
VDDC P18
VDDC M7
VDDC U12
VDDC U13
VDDC U14
VDDC U17
VDDC U18
VDDC U19
VDDC V12
VDDC V13
VDDC V14
VDDC V17
VDDC V18
VDDC T27
VDDC W12
VDDC W13
VDDC W14
VDDC W17
VDDC W18
VDDC W19

CORE POWER

M10-P ONLY

M9+X ONLY

SA002160E00(0301021300)

+VGA_CORE

22U_1206_10V4Z C524 1 2

0.1U_0402_10V6K C2 1 2

0.1U_0402_10V6K C616 1 2

0.1U_0402_10V6K C600 1 2

0.1U_0402_10V6K C608 1 2

0.01U_0402_10V7Z C599 1 2

0.01U_0402_10V7Z C572 1 2

0.01U_0402_10V7Z C582 1 2

0.01U_0402_10V7Z C555 1 2

0.01U_0402_10V7Z C570 1 2

0.01U_0402_10V7Z C560 1 2

100U_D2_10M_R45

+2.5VS

22U_1206_10V4Z C671 1 2

0.1U_0402_10V6K C647 1 2

0.1U_0402_10V6K C634 1 2

0.1U_0402_10V6K C620 1 2

0.1U_0402_10V6K C589 1 2

0.1U_0402_10V6K C655 1 2

0.1U_0402_10V6K C633 1 2

0.01U_0402_10V7Z C639 1 2

0.1U_0402_10V6K C629 1 2

0.1U_0402_10V6K C666 1 2

0.1U_0402_10V6K C594 1 2

0.1U_0402_10V6K C610 1 2

+2.5VS

22U_1206_10V4Z C46 1 2

0.1U_0402_10V6K C636 1 2

0.1U_0402_10V6K C577 1 2

0.1U_0402_10V6K C637 1 2

0.1U_0402_10V6K C660 1 2

0.1U_0402_10V6K C662 1 2

0.1U_0402_10V6K C656 1 2

0.01U_0402_10V7Z C661 1 2

0.1U_0402_10V6K C631 1 2

0.1U_0402_10V6K C568 1 2

0.1U_0402_10V6K C645 1 2

0.1U_0402_10V6K C640 1 2

As close as ppossible to related pin

+VGA_CORE_CI

L38 (20 mil)

CHB160BU301 480MIL

+VGA_CORE

10U_0805_10V4Z C623 1 2

0.1U_0402_10V6K C593 1 2

0.1U_0402_10V6K C578 1 2

As close as ppossible to related pin

Compal Electronics, Inc.

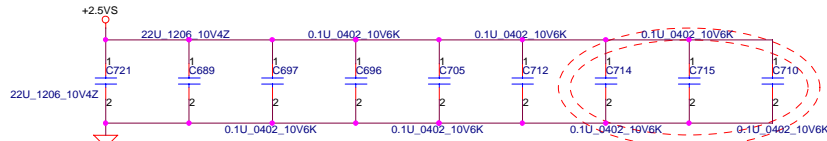
ATI M10-P/M9+X POWER-B

Size Document Number LA-2101 Rev 0.1

Date Tuesday, November 18, 2003 Sheet 20 of 52

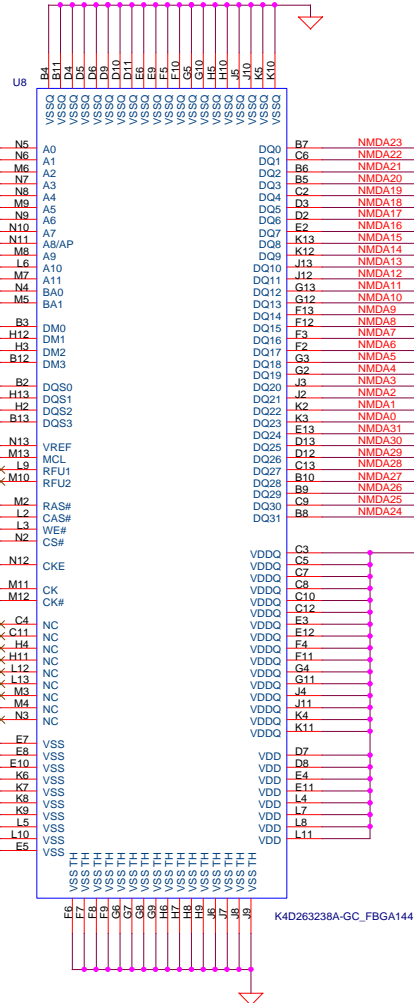
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http://laptopblue.com VGA DDR FOR CHANNEL A

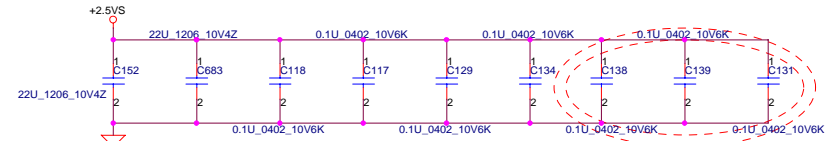


As close as possible to related pin

- 18 NMAA[0..13] \rightarrow NMAA10_131
- 18 NMDA[0..63] \rightarrow NMDA10_631
- 18 NDQMA[0..7] \rightarrow NDQMA10_71
- 18 NDQSA[0..7] \rightarrow NDQSA10_71

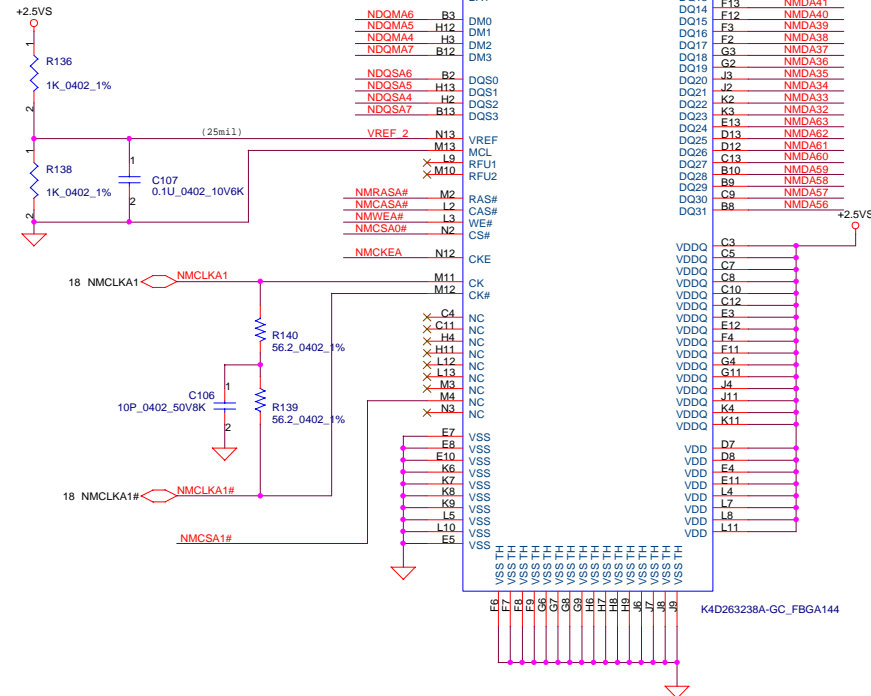


K4D263238A-GC_FBG144



As close as possible to related pin

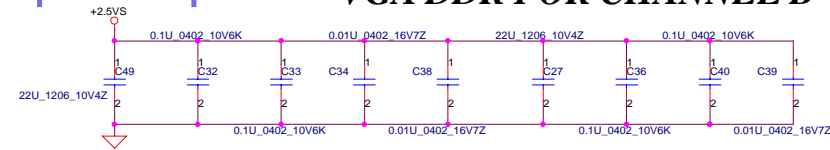
- 18 NMAA[0..13] \rightarrow NMAA10_131
- 18 NMDA[0..63] \rightarrow NMDA10_631
- 18 NDQMA[0..7] \rightarrow NDQMA10_71
- 18 NDQSA[0..7] \rightarrow NDQSA10_71



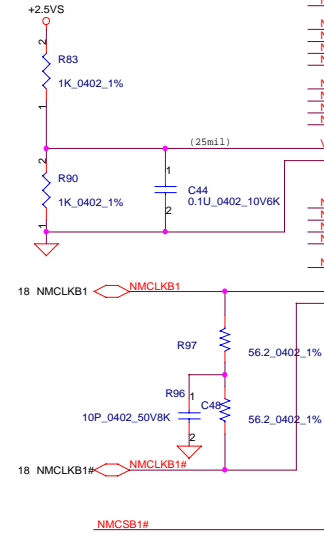
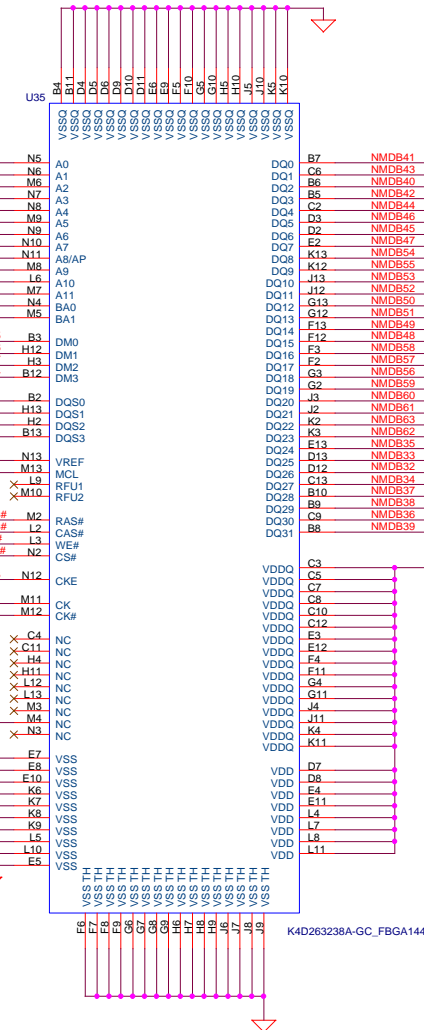
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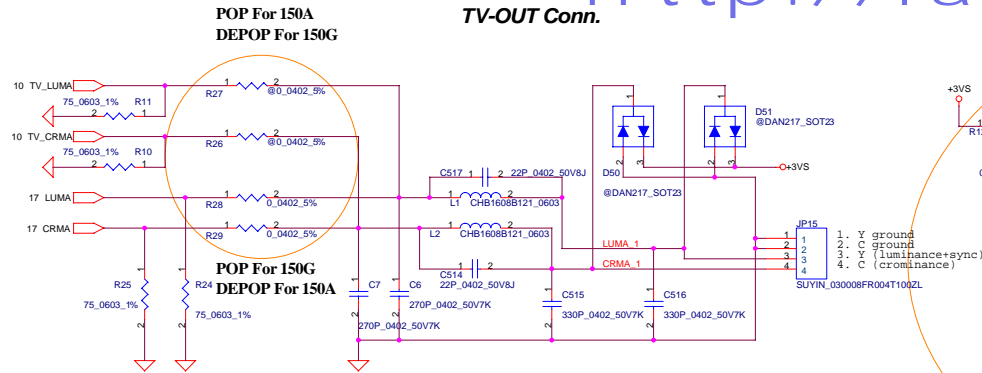
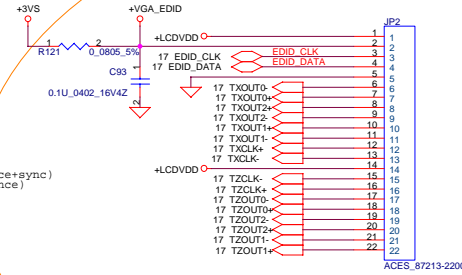
Compal Electronics, Inc.			
Title			
VGA DDR FOR CHANNEL A			
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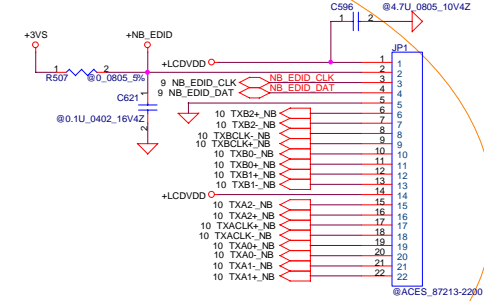
As close as ppossible to related pin



TV-OUT Conn.

**LVDS Conn.**

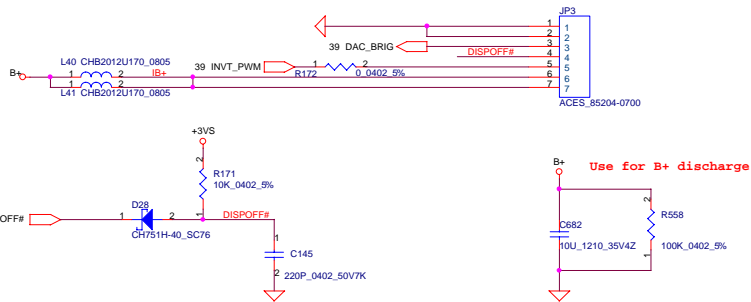
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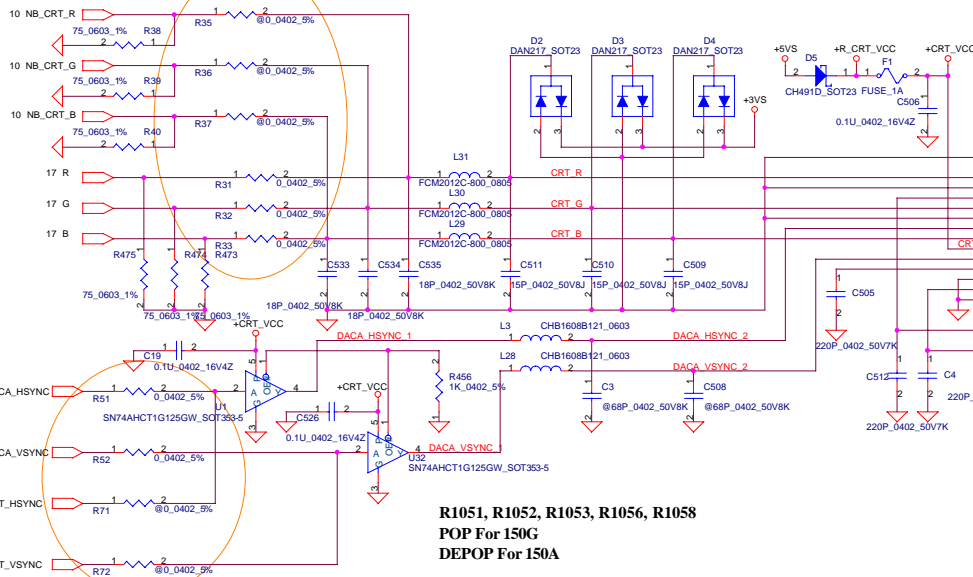
POP For 150G
DEPOP For 150A



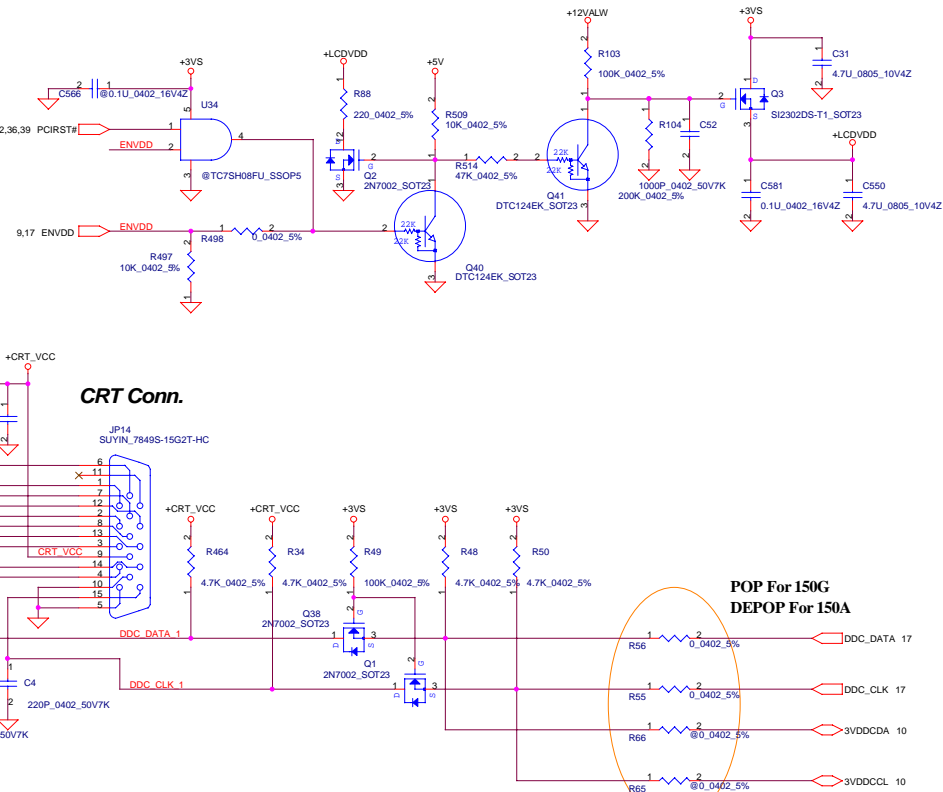
POP For 150A
DEPOP For 150G



R1045, R1047, R1049, R1060, R1061
POP For 150A
DEPOP For 150G

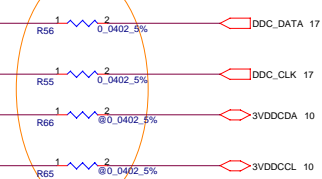


R1051, R1052, R1053, R1056, R1058
POP For 150G
DEPOP For 150A

CRT Conn.

POP For 150A
DEPOP For 150G

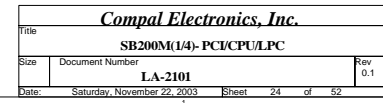
POP For 150G
DEPOP For 150A

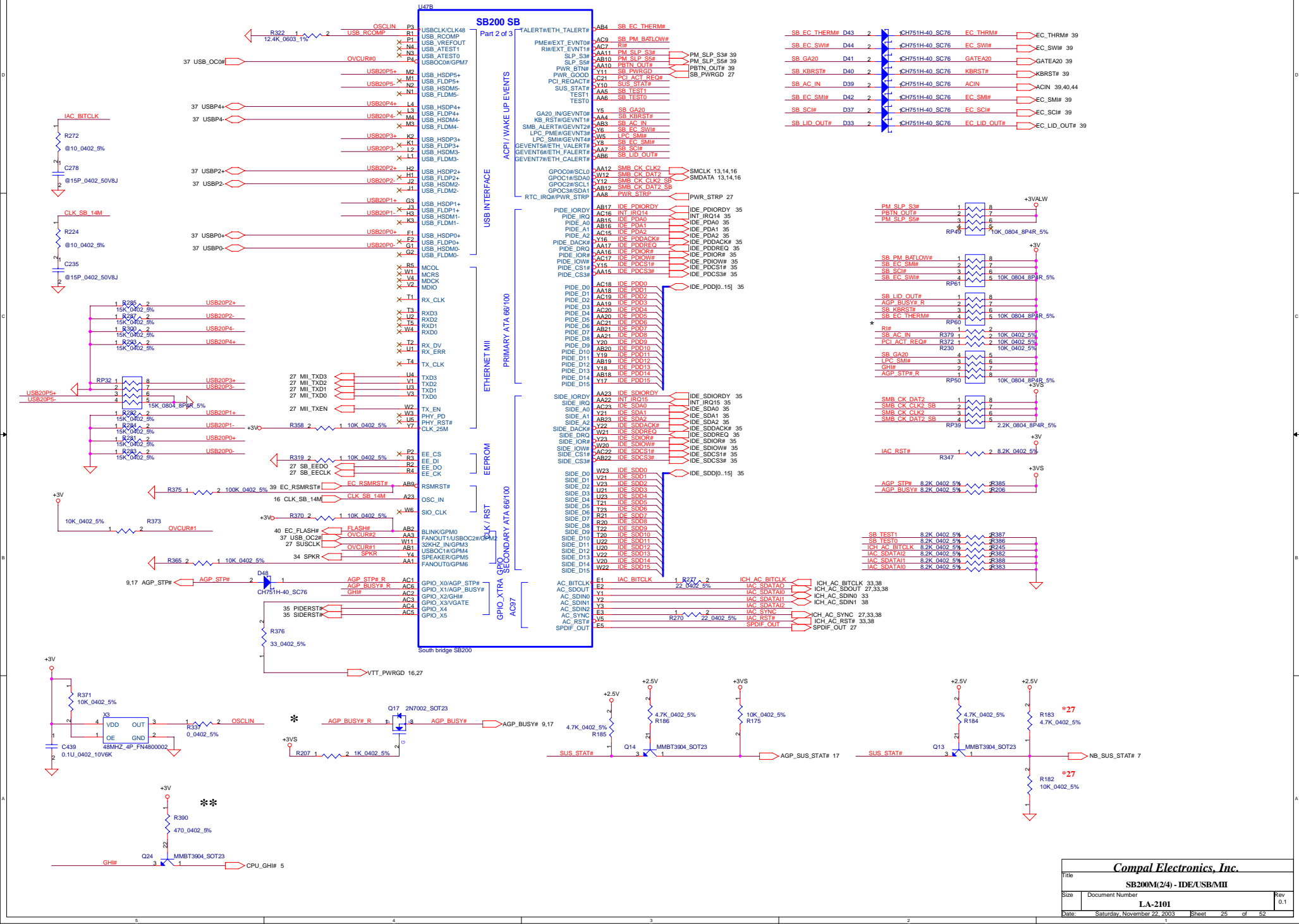


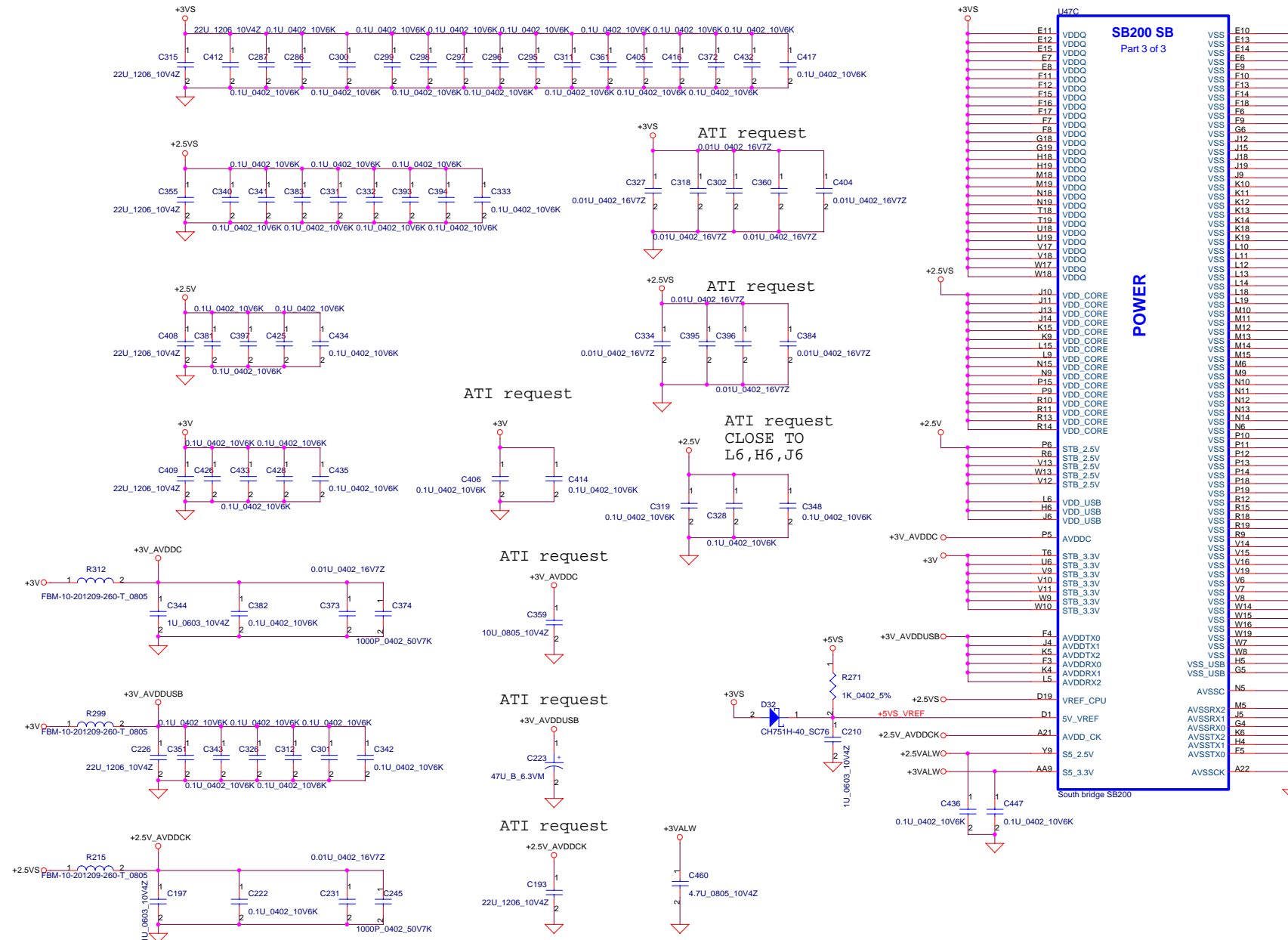
Compal Electronics, Inc.

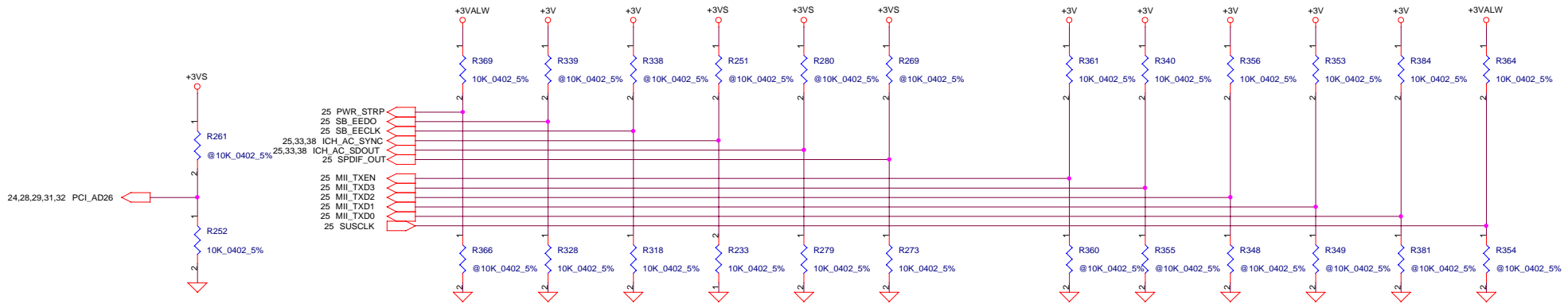
INITIAL R&D	Title			
	CRT,TV-OUT & LVDS Connector			
	Size	Document Number	Rev	
	C	LA-2101	0.1	
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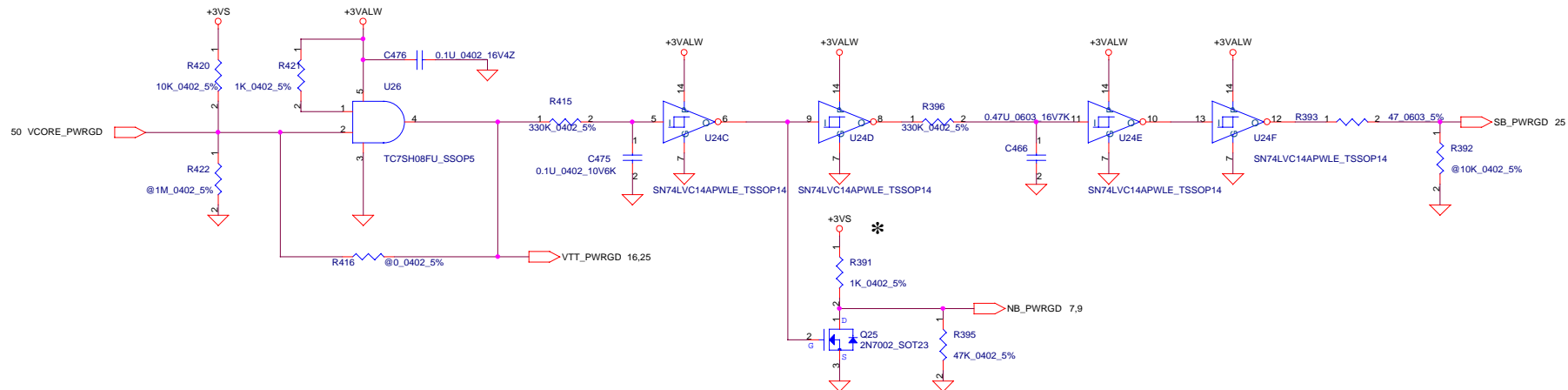






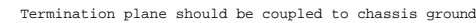
REQUIRED SYSTEM STRAPS

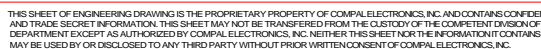
	PWR_STRP	IGN DEBUG EEDO	EECK	AC_SYNC	AC_SDOUT	SPDIF_OUT	SPEEDSTEP CPU_STP#	FREQLTCH TX_EN	ETHERNET TXD[3:0]	32KHZ_S5
STRAP HIGH	MANUAL PWR ON DEFAULT	USE DEBUG STRAPS	ROM ON PCI BUS	INIT ACTIVE HIGH	33MHz NB BUS	SIO 24MHz	ENABLE SPEED STEP	DISABLE CPU FREQ SETTING DEFAULT	PROCESSOR FREQ MULTIPLIER	32KHZ OUTPUT FROM SB200 (INT RTC) DEFAULT
STRAP LOW	AUTO PWR ON	IGNORE DEBUG STRAPS DEFAULT	ROM ON LPC BUS DEFAULT	INIT ACTIVE LOW (Pll)	HI SPEED A-LINK DEFAULT	SIO 48MHz DEFAULT	DISABLE SPEED STEP DEFAULT	ENABLE CPU FREQ SETTING		32KHZ INPUT TO SB200 (EXT RTC)



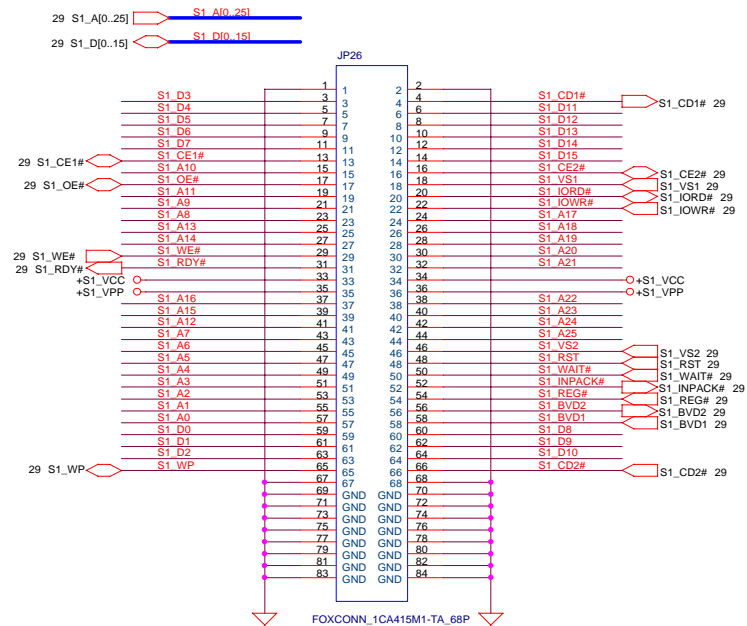
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Title			
Compal Electronics, Inc.			
SB200M(4/4) - STRAPS			
Size	Document Number	Rev	
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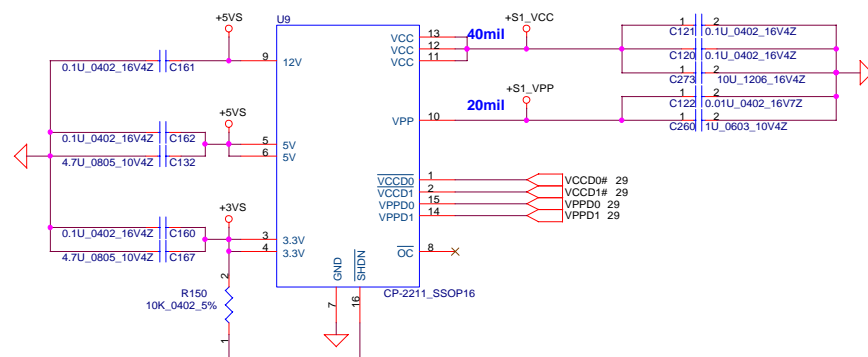




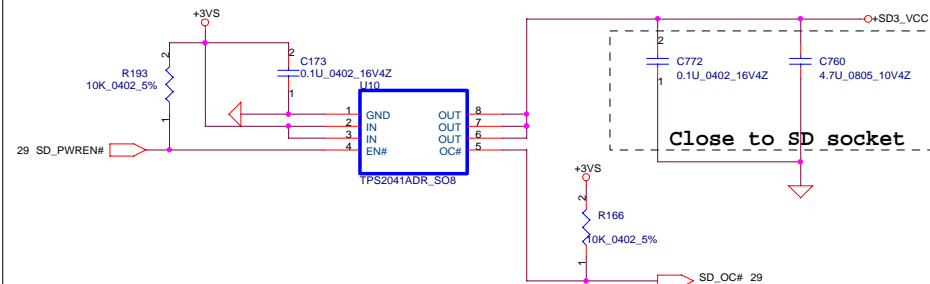
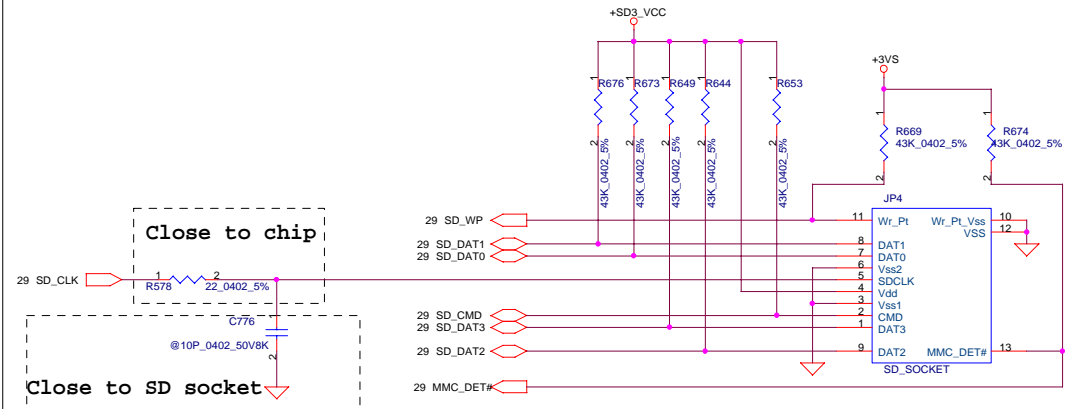
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PCMCIA Power Controller

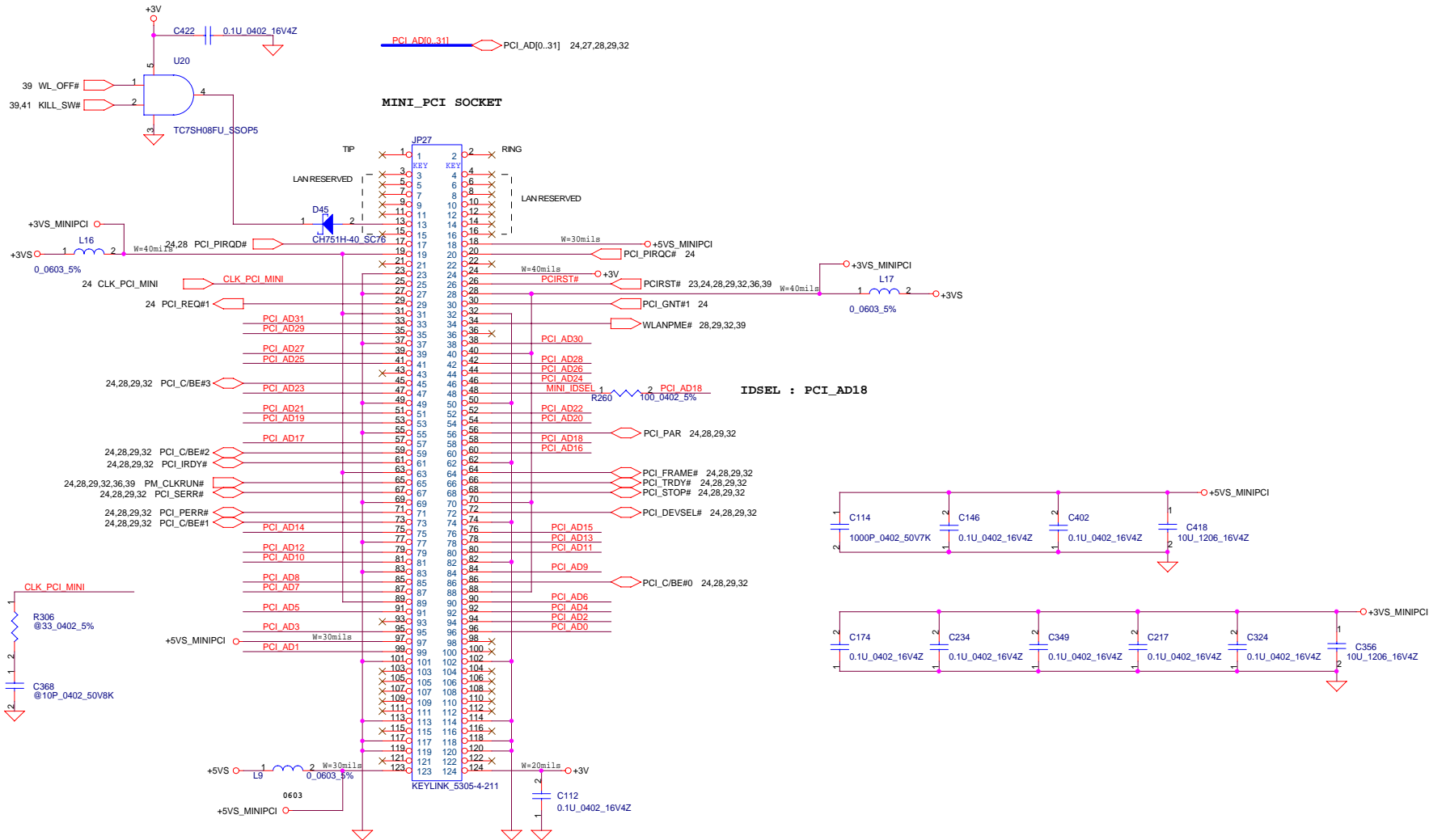


SD SOCKET



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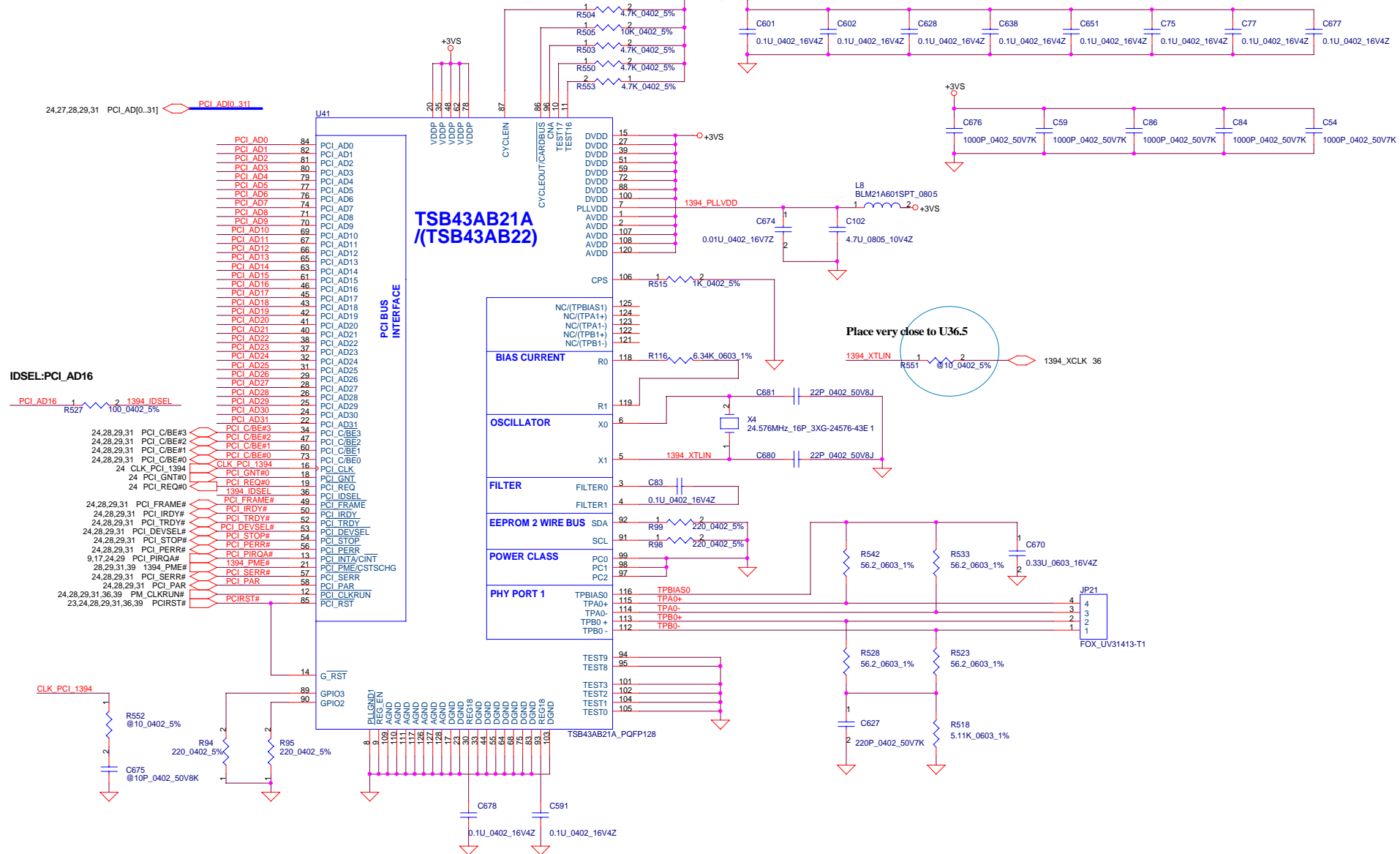
Compal Electronics, Inc.			
Title	PCMCIA/SD SOCKET		
Size	Document Number	Rev	
Customer	LA-2101	0.1	
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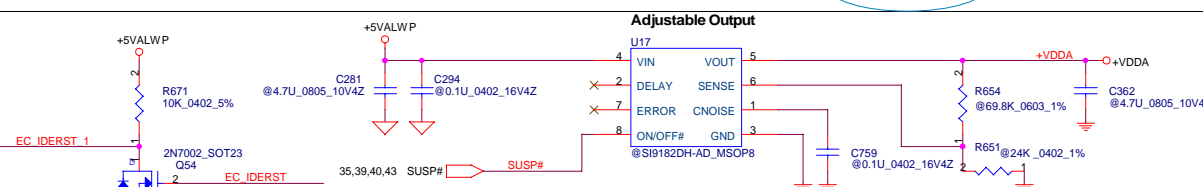
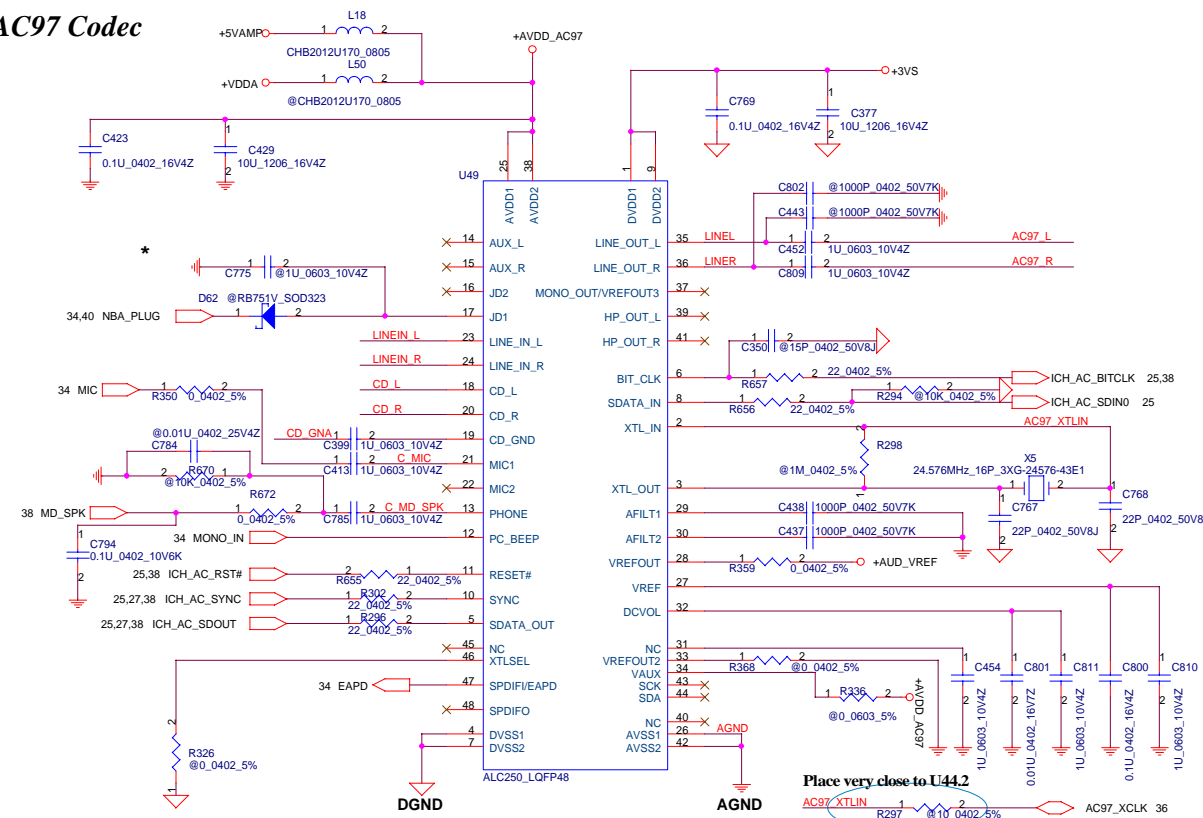
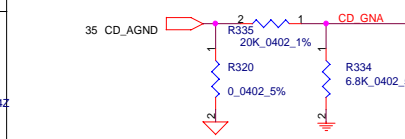
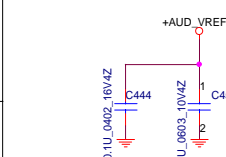
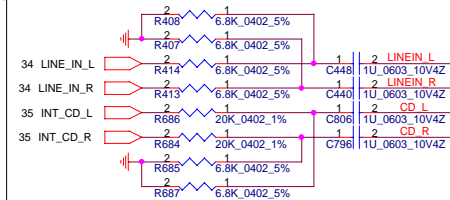
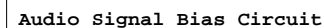
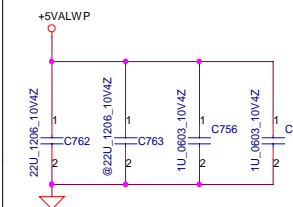
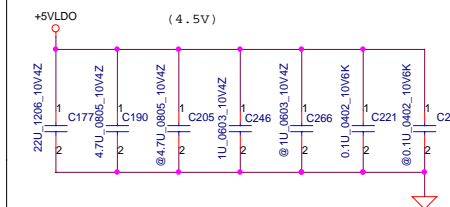
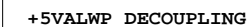
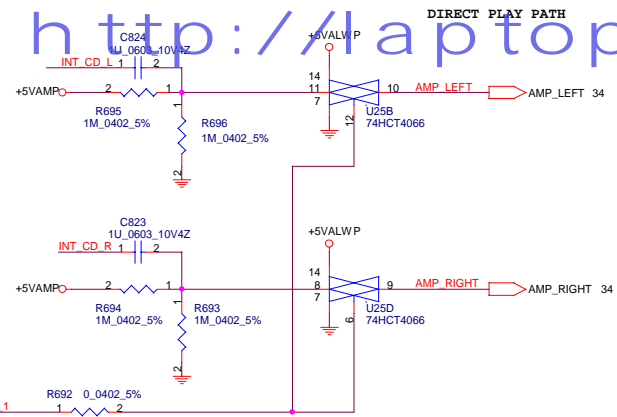


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Compal Electronics, Inc.			
Title			
MINI_PCI			
Size	Document Number	Rev	
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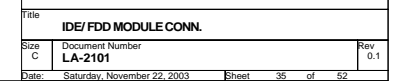
Left Speaker Connector

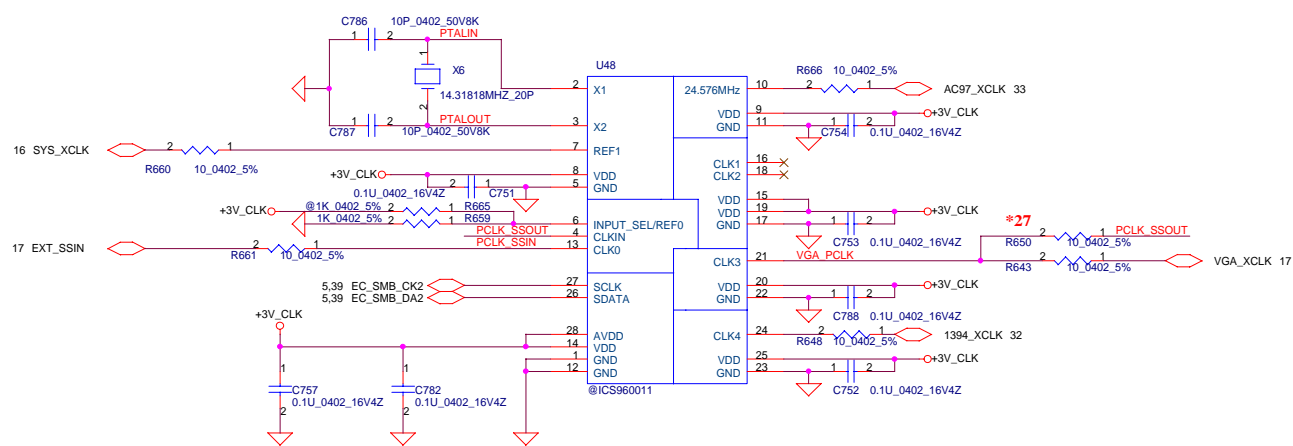


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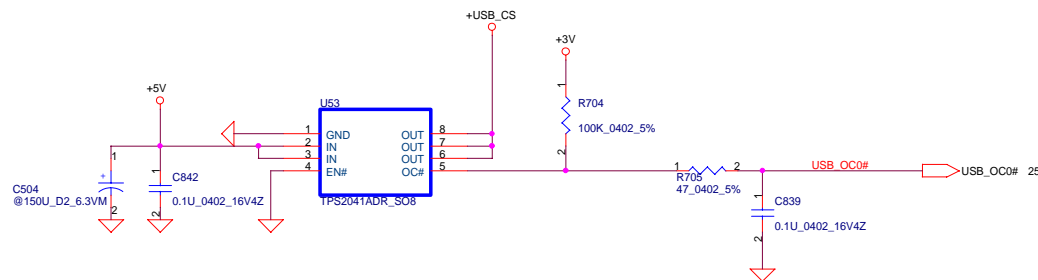
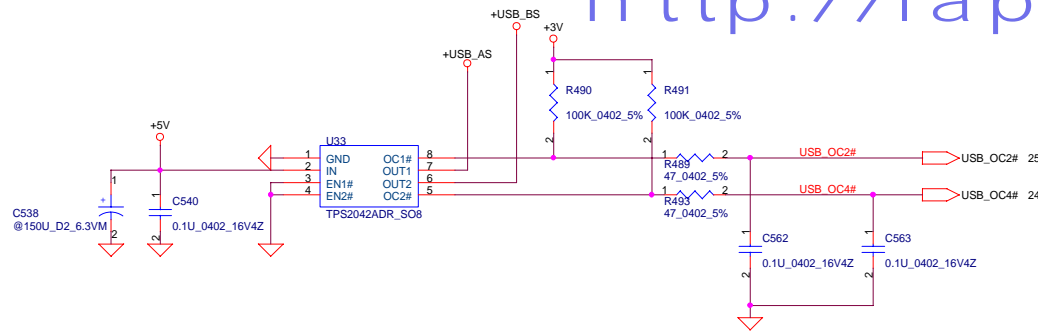
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HDD CONNECTOR

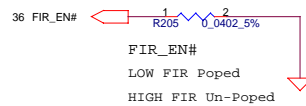
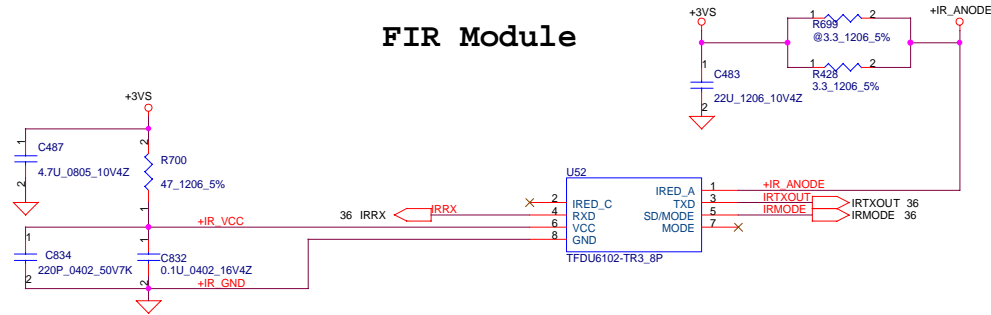




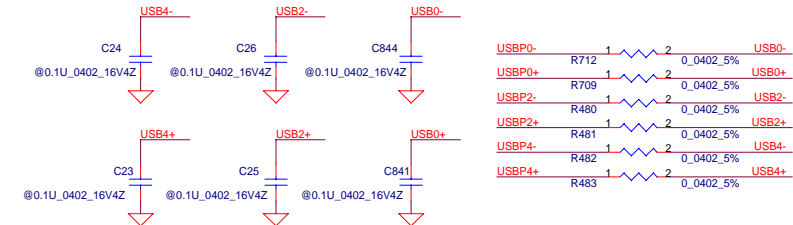
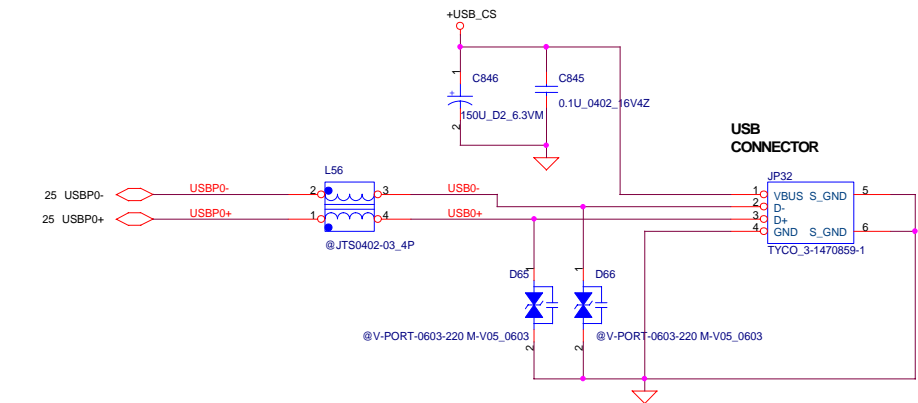
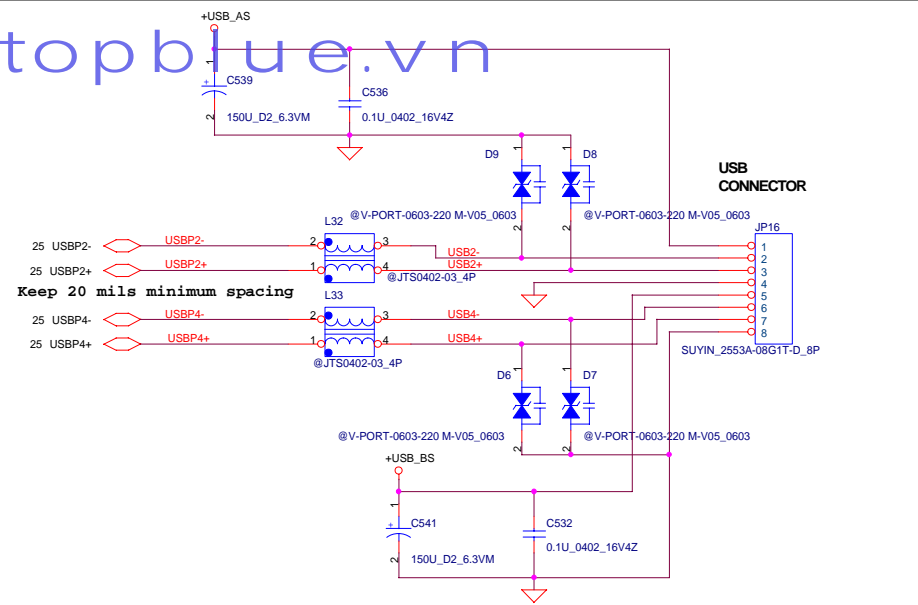
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FIR Module



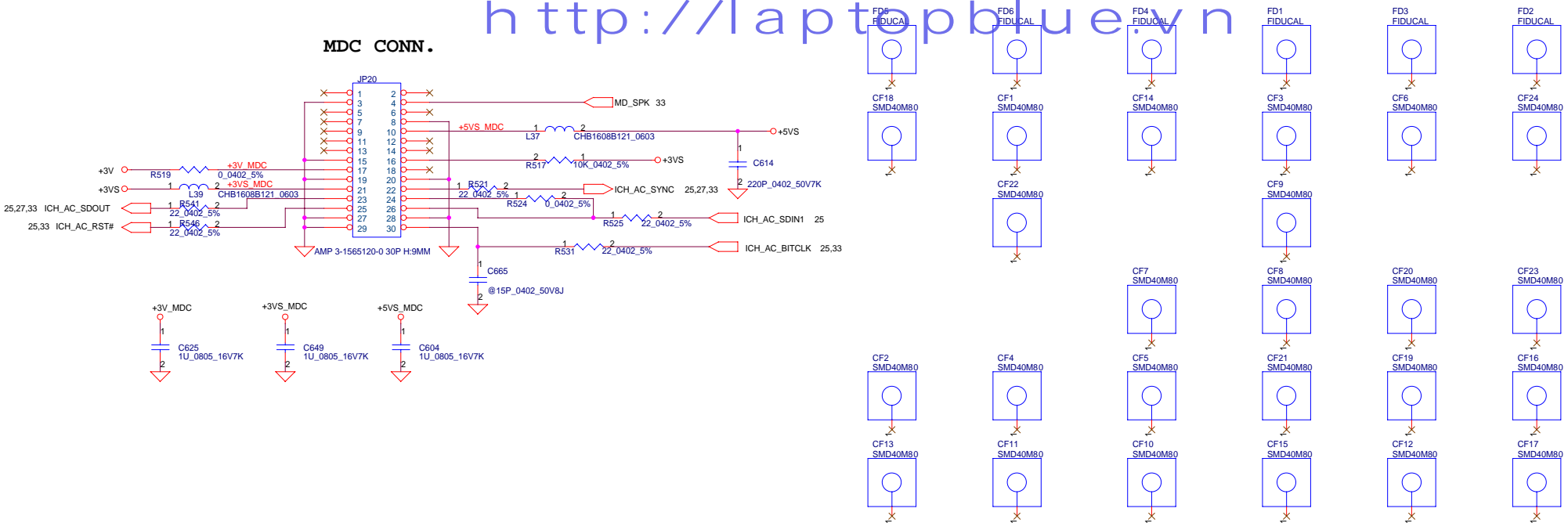
The component's most place
cloely IRDA MODULE.



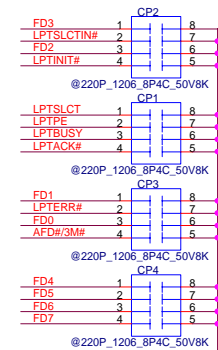
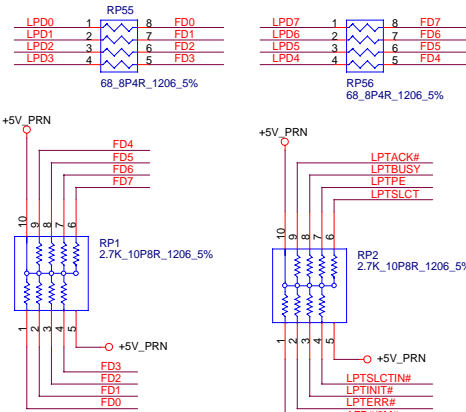
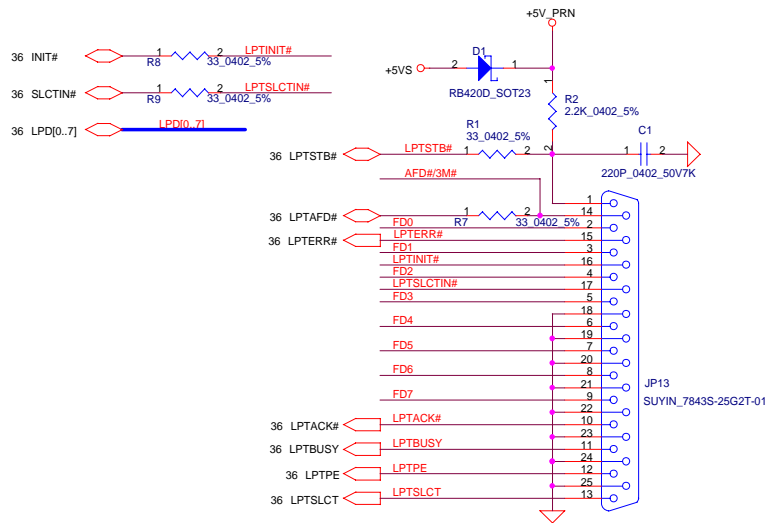
Compal Electronics, Inc.			
Title			
USB Conn.			
Size	Document Number	Rev	
Custom	LA-2101	0.1	
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MDC CONN.

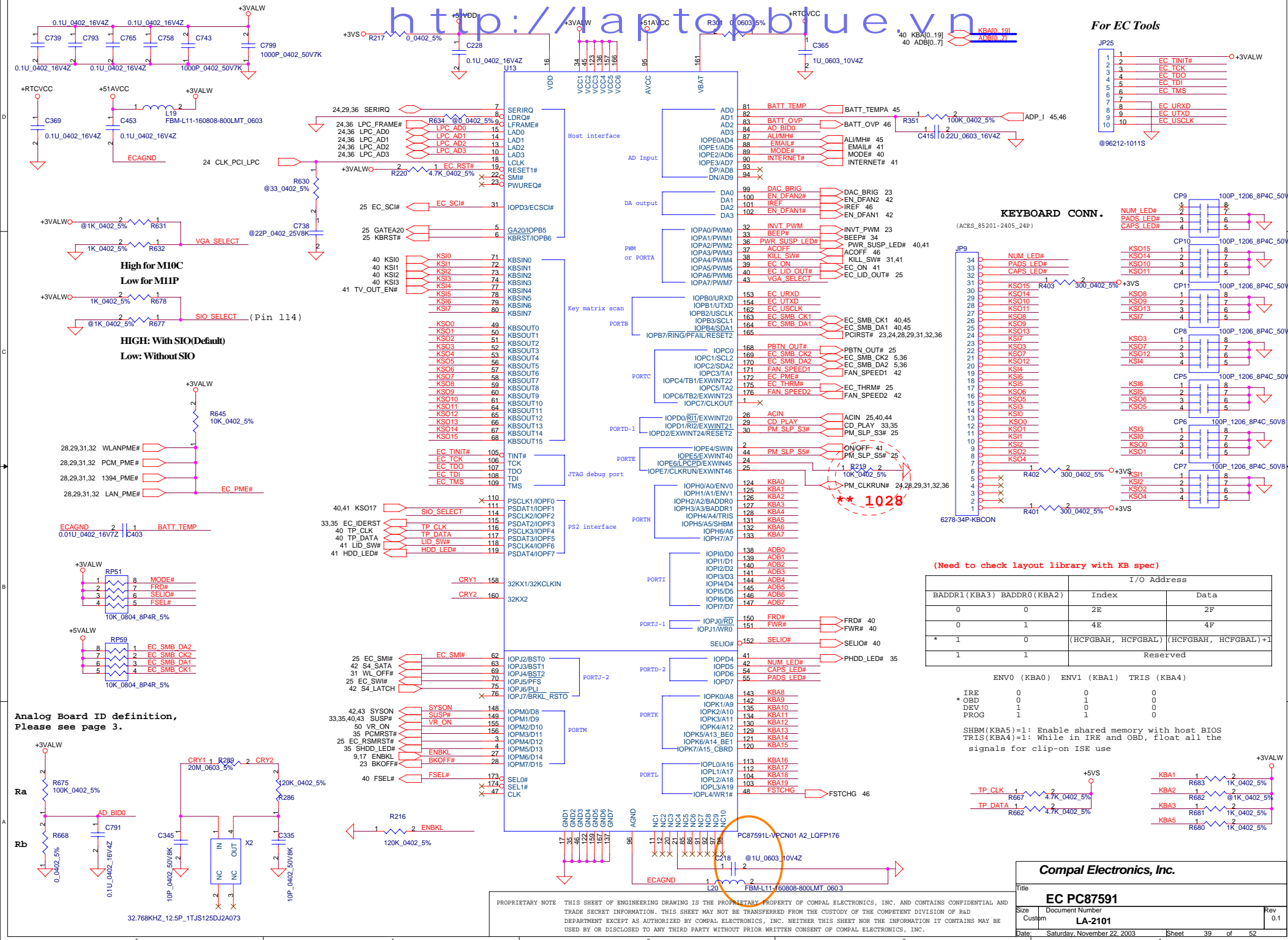


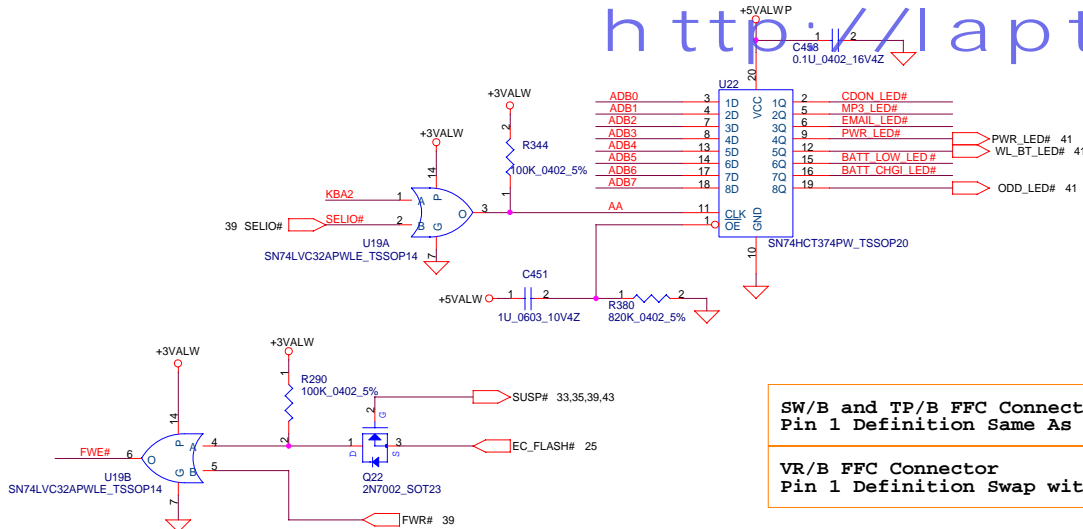
PARALLEL PORT



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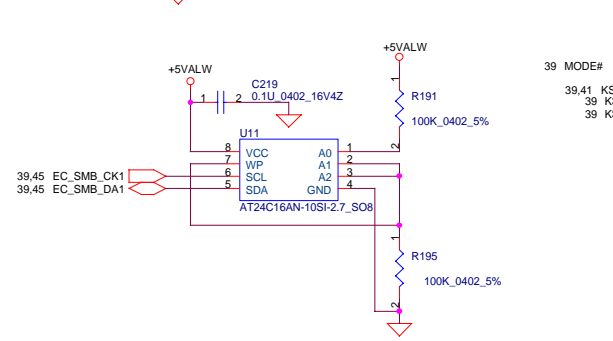
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Title		
PARALLEL/MDC PORT		
Size	Document Number	Rev
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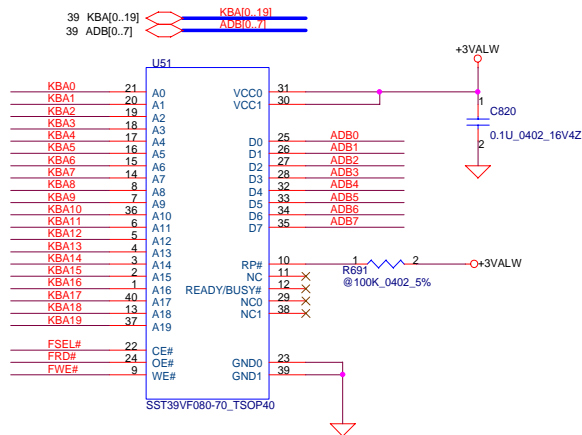


SW/B and TP/B FFC Connector
Pin 1 Definition Same As SW/B and TP/B

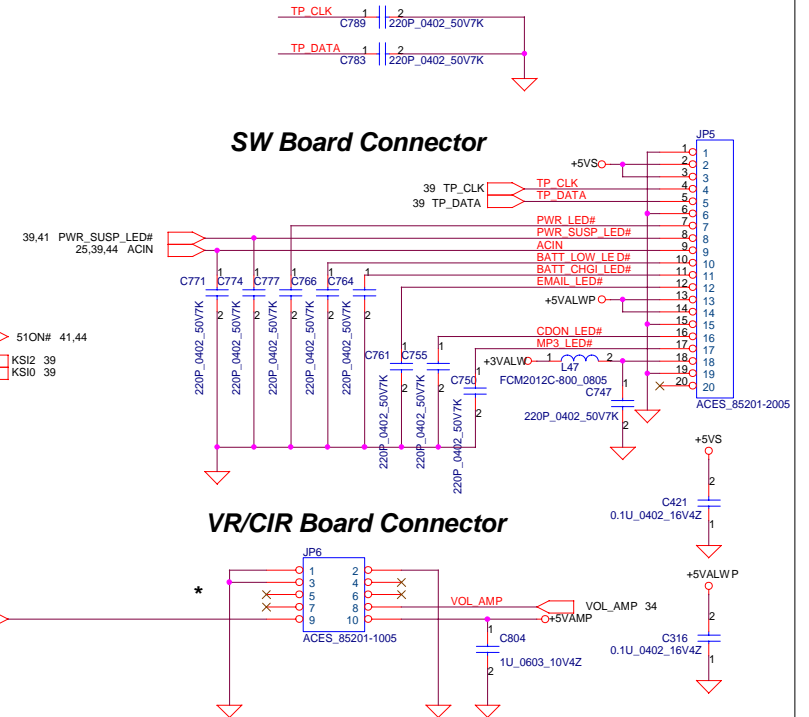
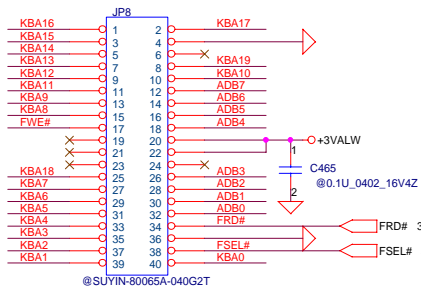
VR/B FFC Connector
Pin 1 Definition Swap with VR/B



1MB Flash ROM



1MB BIOS Connector



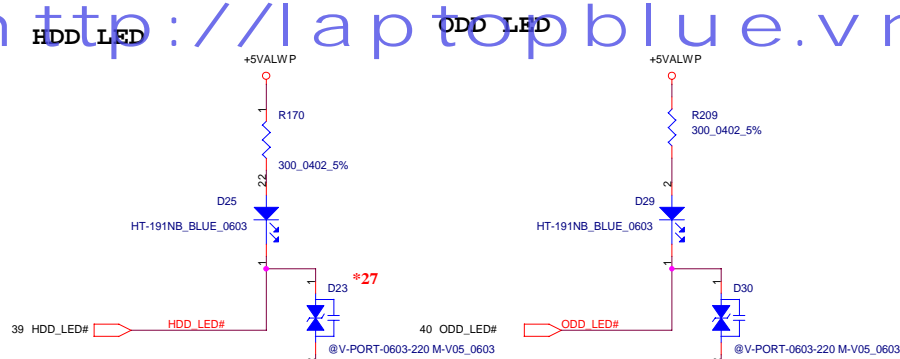
SW Board Connector

VR/CIR Board Connector

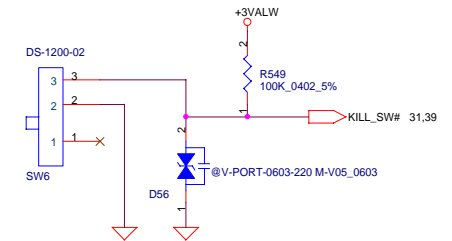
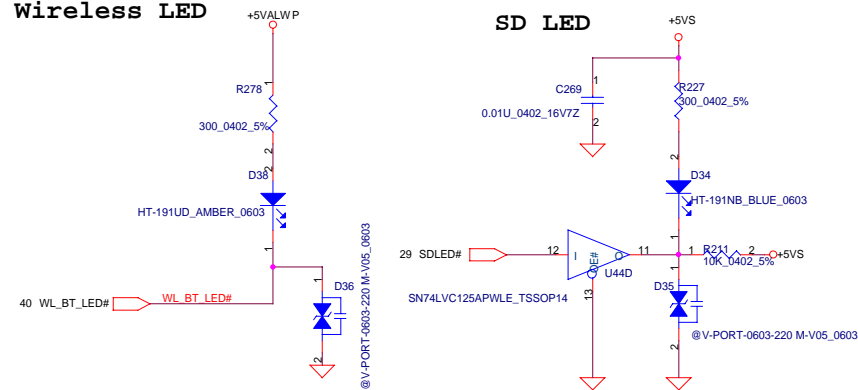
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Compal Electronics, Inc.			
Title			
BIOS & EXT. I/O PORT			
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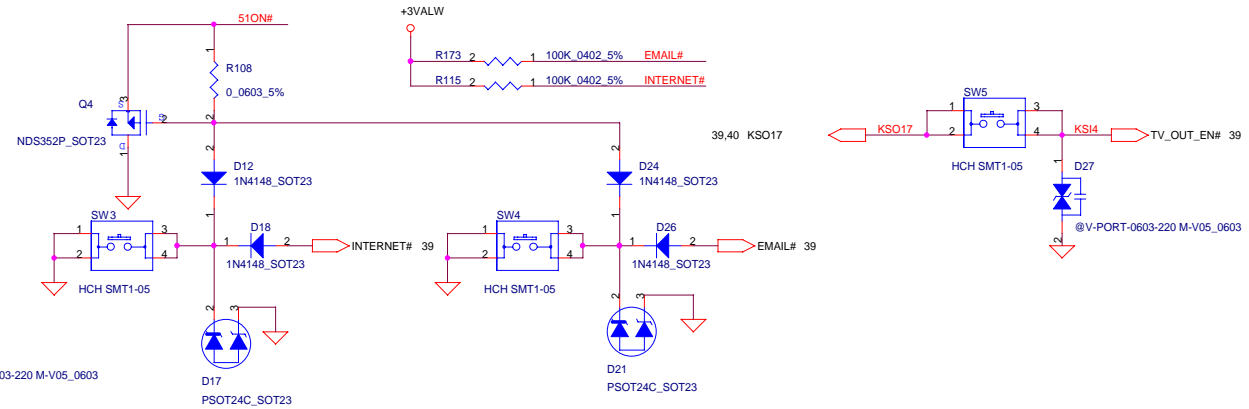
http://laptopblue.vn



Kill SWITCH



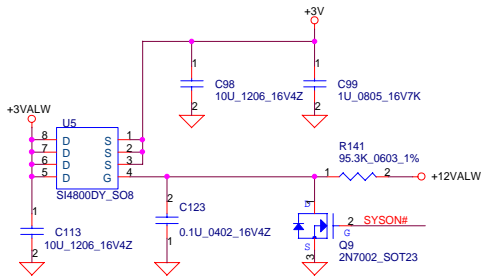
TV OUT Button



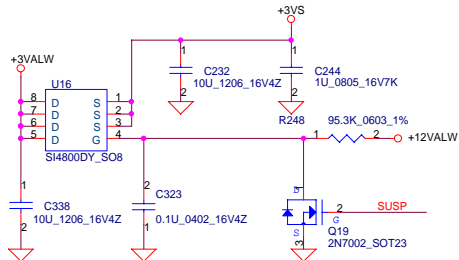
Compal Electronics, Inc.			
Title			
Switches & Connectors			
Size	Document Number	Rev	
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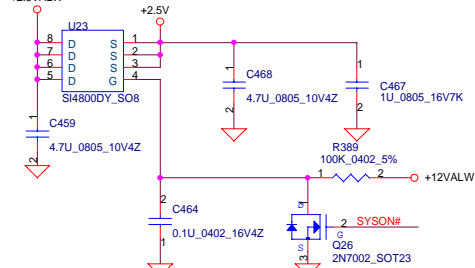
+3VALW TO +3V



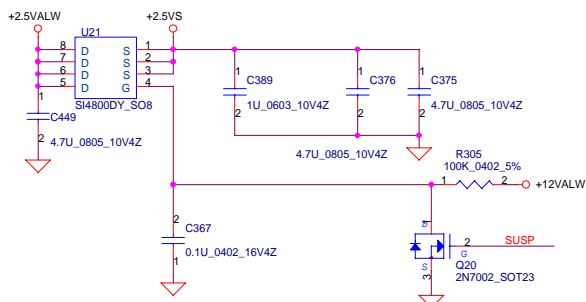
+3VALW TO +3VS



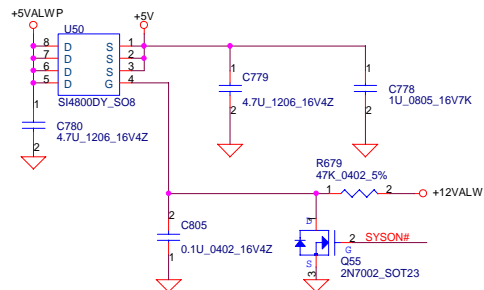
+2.5VALW TO +2.5V



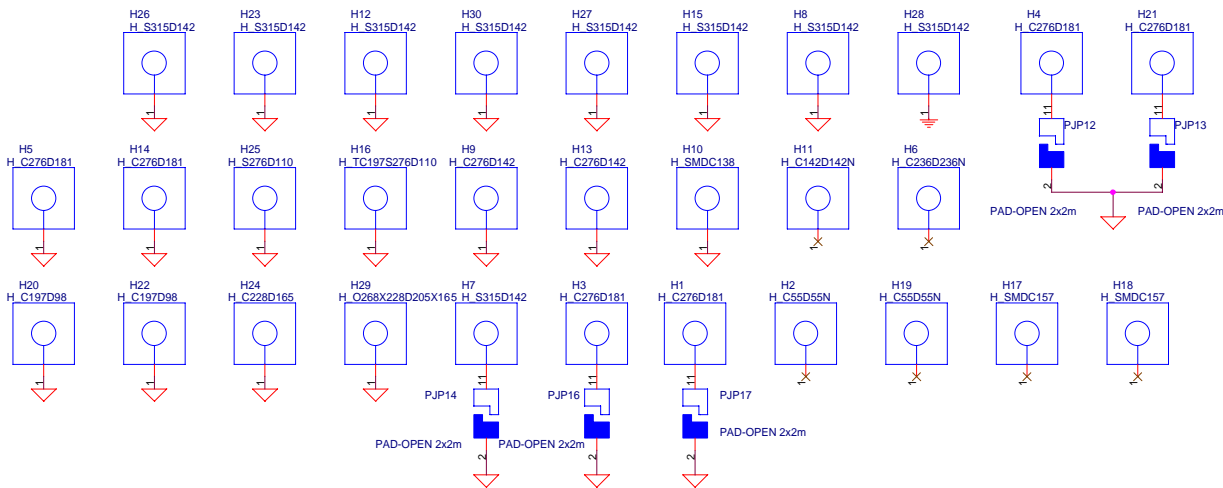
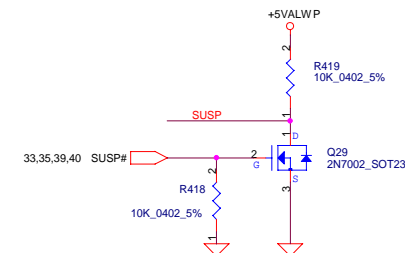
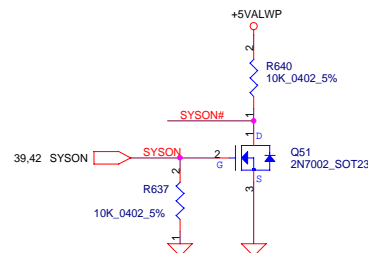
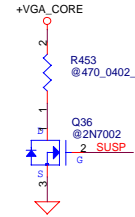
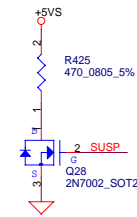
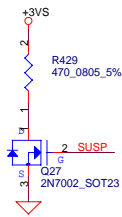
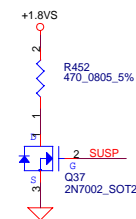
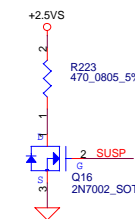
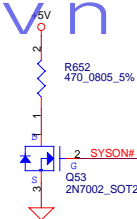
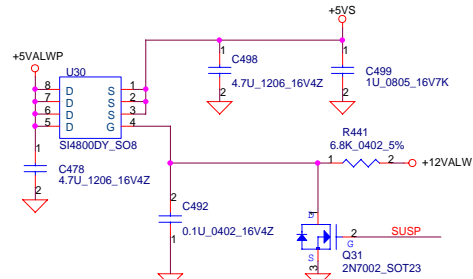
+2.5VALW TO +2.5VS



+5VALW TO +5V



+5VALW TO +5VS

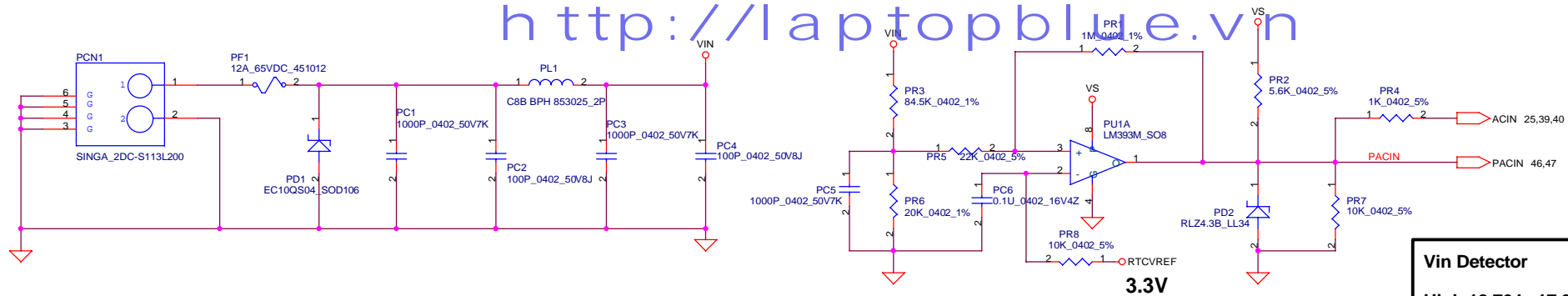


Compal Electronics, Inc.

POWER CONTROL CKT

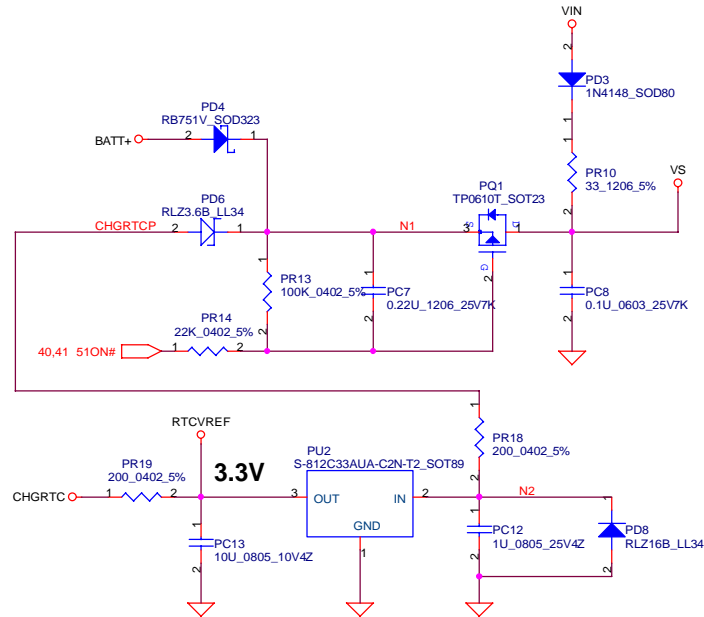
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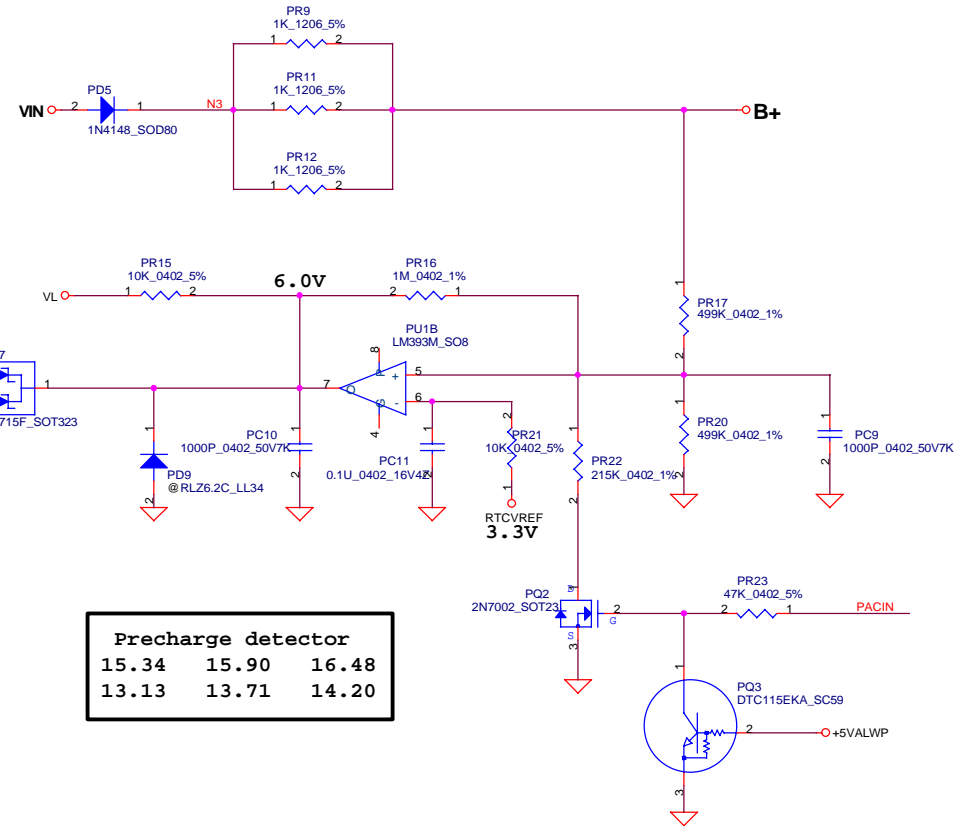


Vin Detector

High 18.764 17.901 17.063
Low 17.745 16.903 16.038

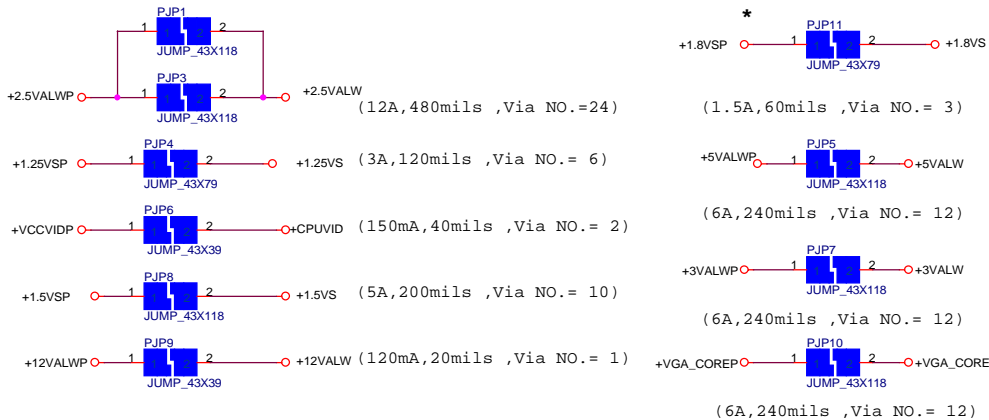


6,45,47 MAINPWON
46 ACON



Precharge detector

15.34 15.90 16.48
13.13 13.71 14.20

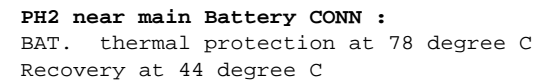
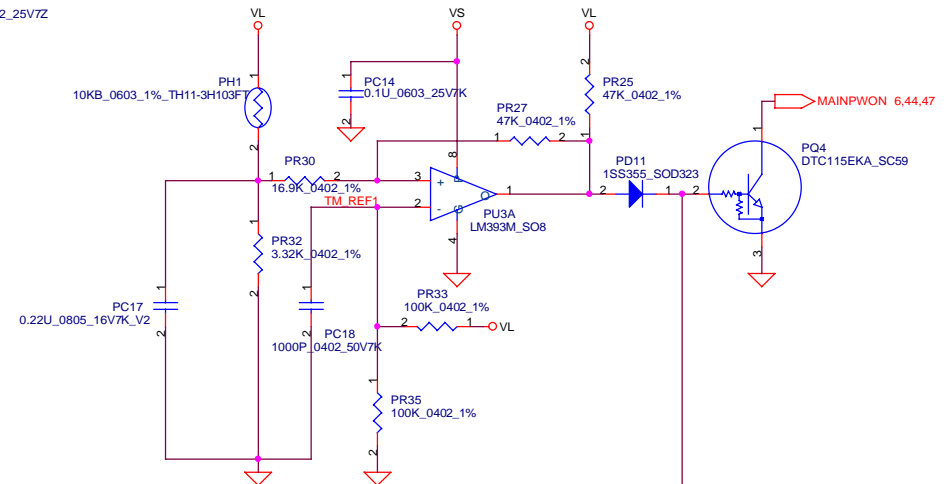
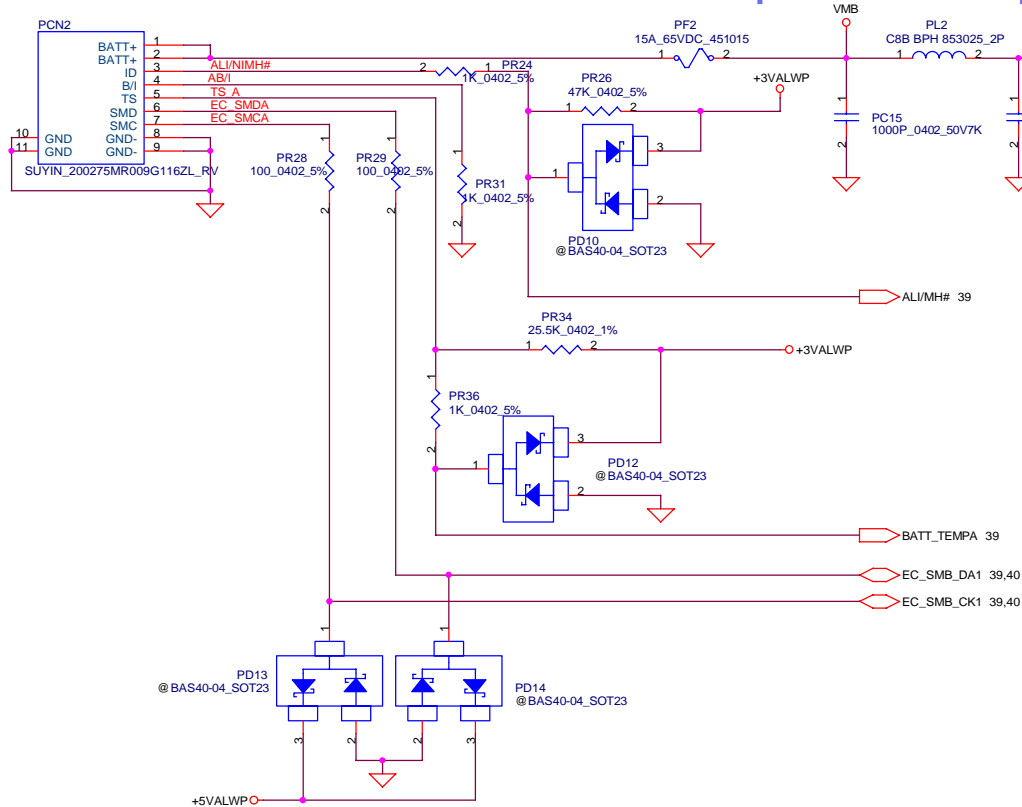


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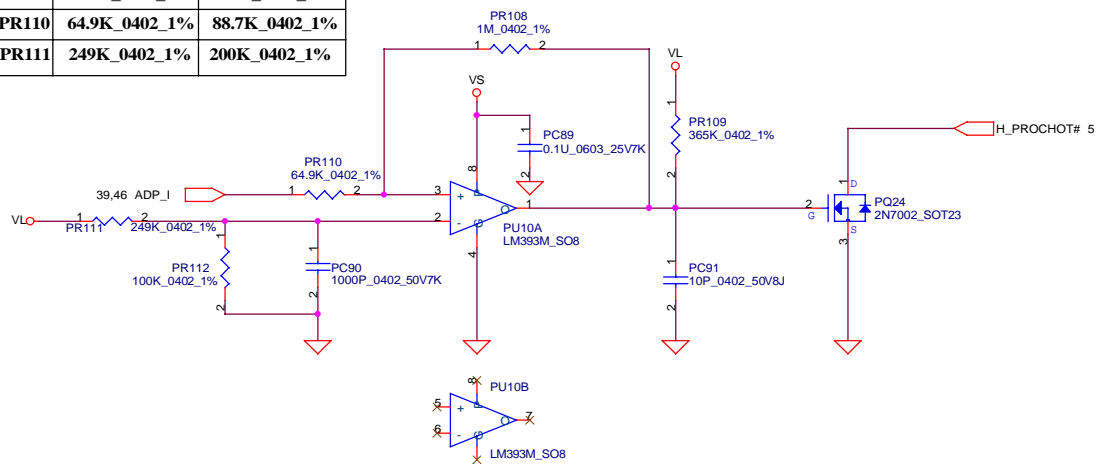
Compal Electronics, Inc.

DCIN / DETECTOR

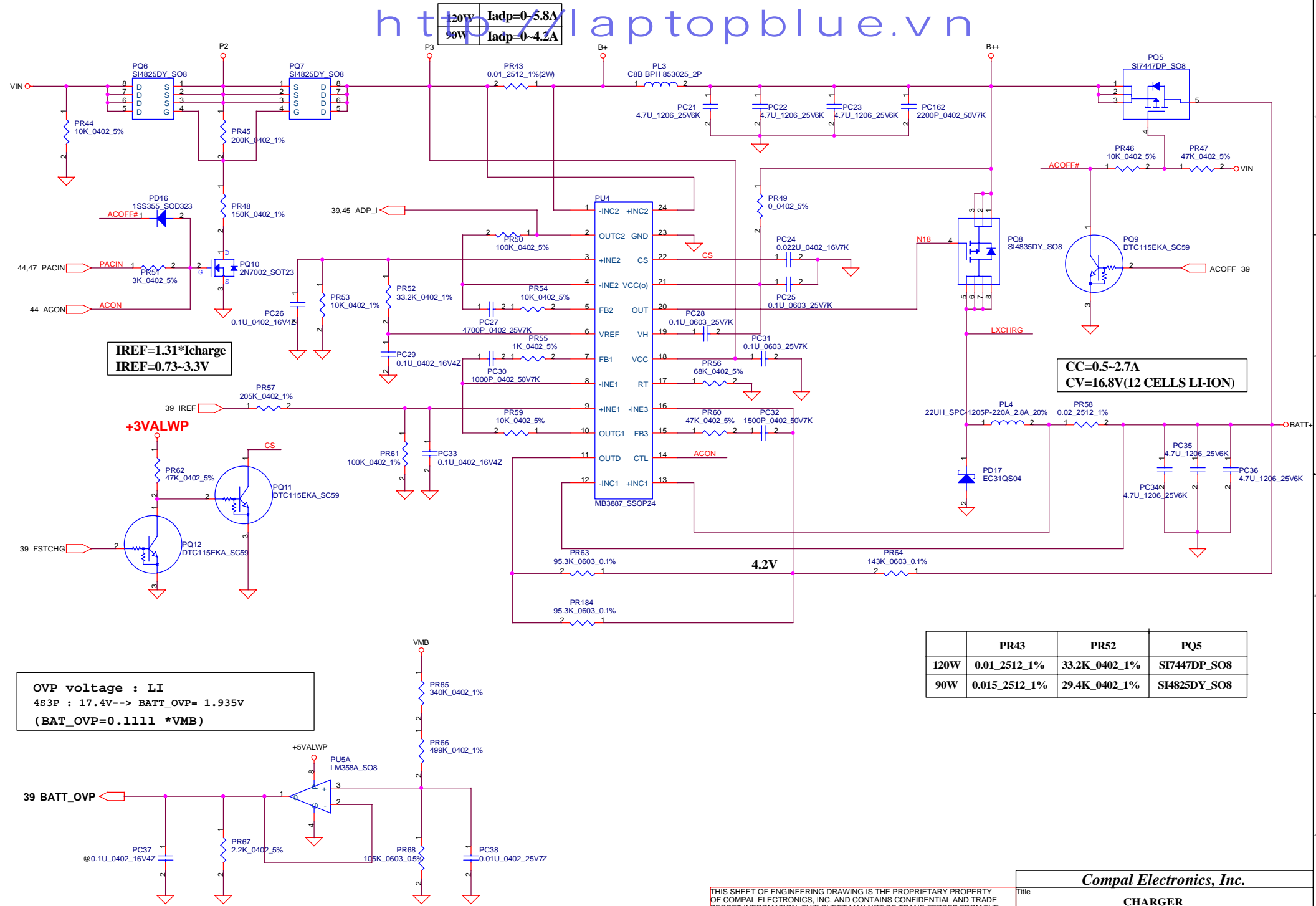
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	120W	90W
PR109	365K_0402_1%	205K_0402_1%
PR110	64.9K_0402_1%	88.7K_0402_1%
PR111	249K_0402_1%	200K_0402_1%



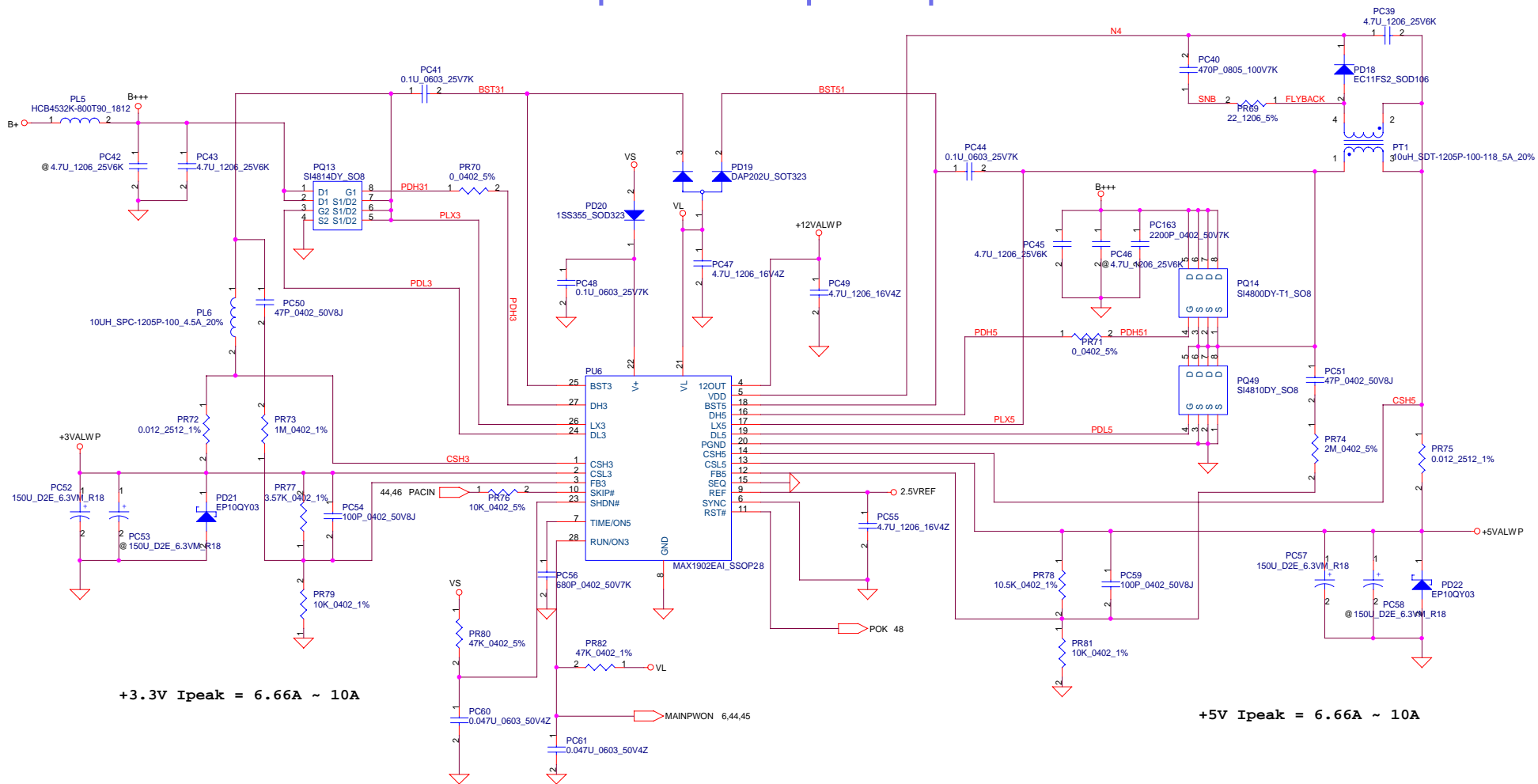
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	PR43	PR52	PQ5
120W	0.01_2512_1%	33.2K_0402_1%	SI7447DP_SO8
90W	0.015_2512_1%	29.4K_0402_1%	SI4825DY_SO8

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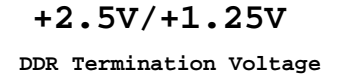
<http://laptopblue.vn>



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Compal Electronics, Inc.

Computer Electronics, Inc. Title 5V/3.3V/12V			
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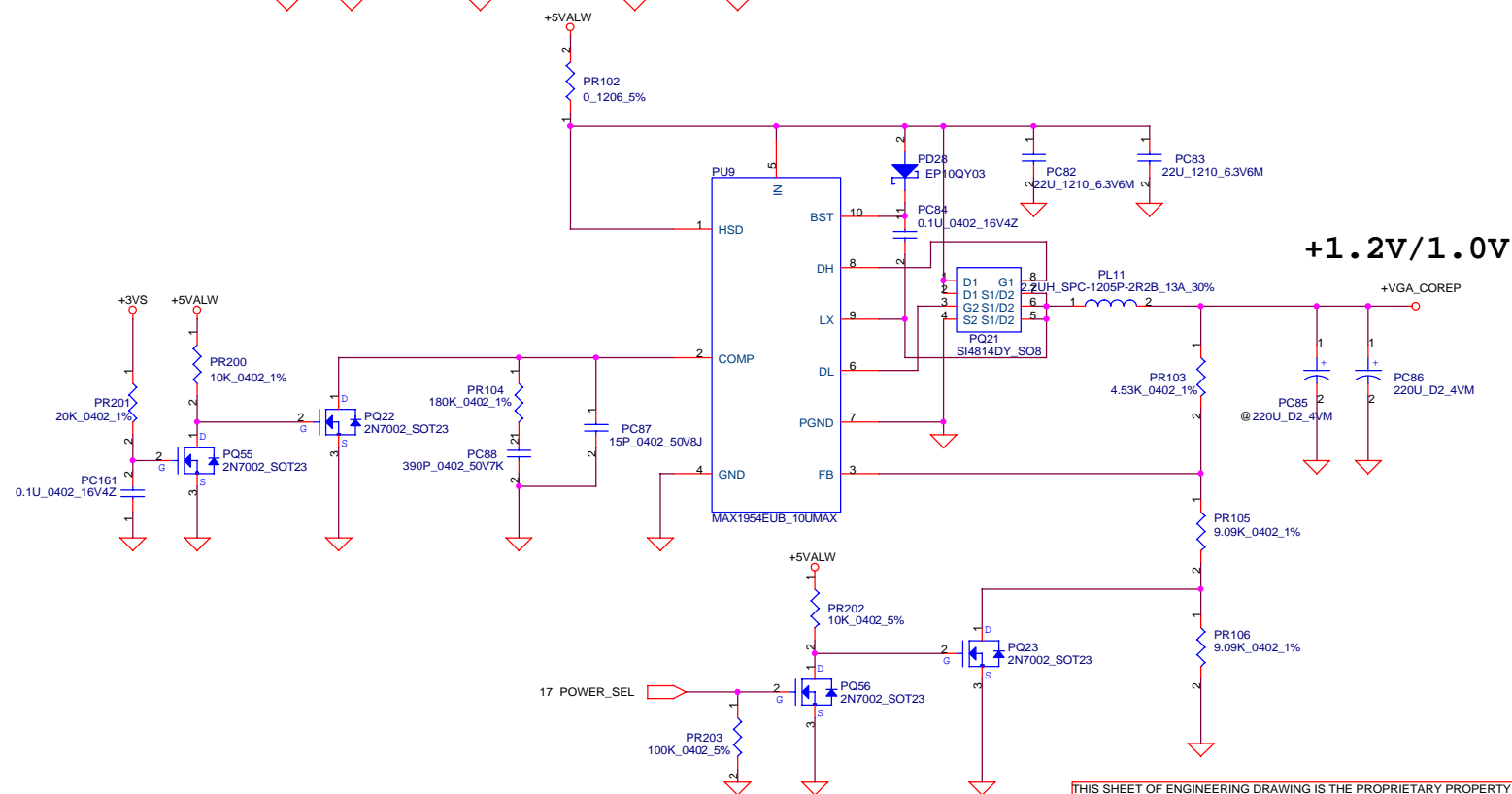
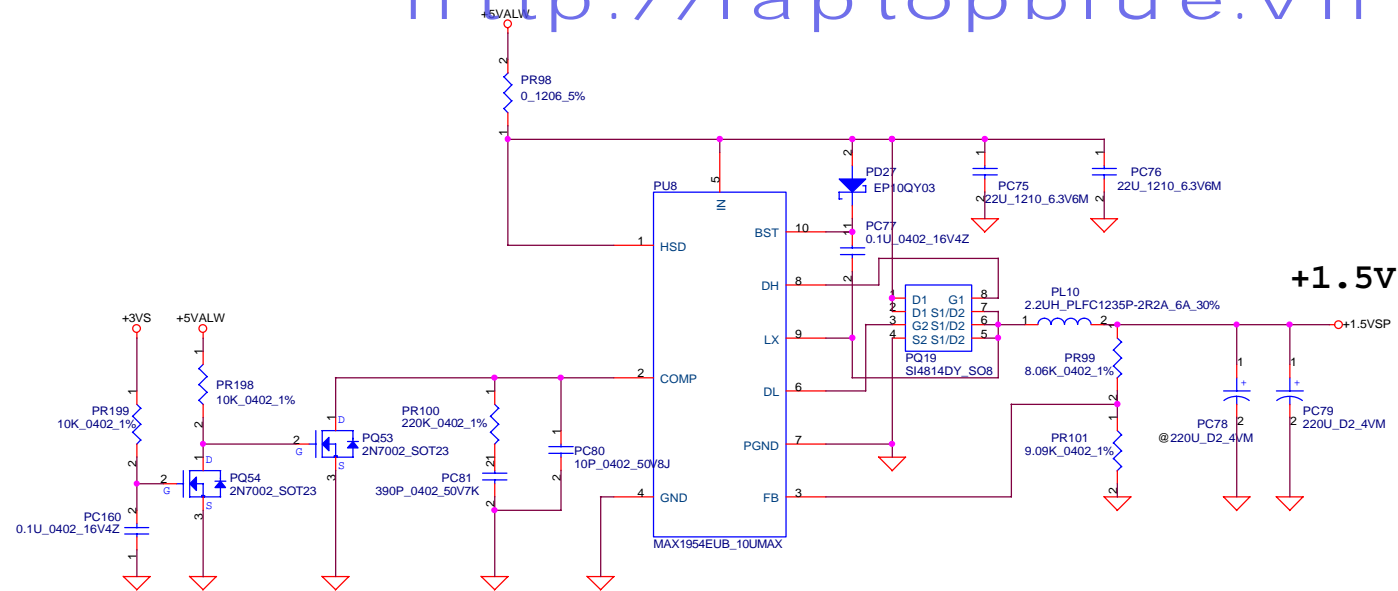


Compal Electronics, Inc.

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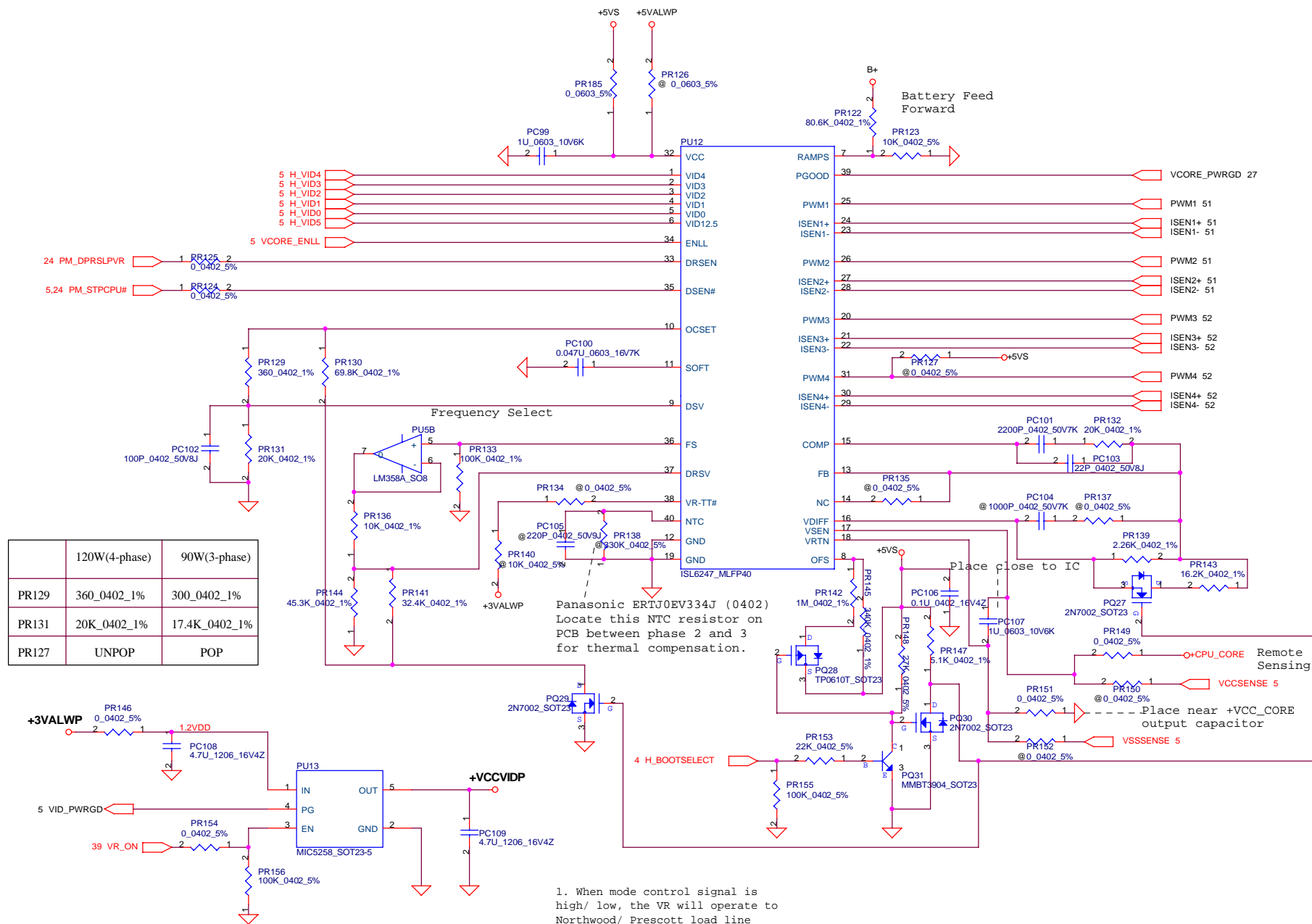
Compal Electronics, Inc.

1.5V/VGA_CORE

Number **LA-2101**

rev		
0.1		

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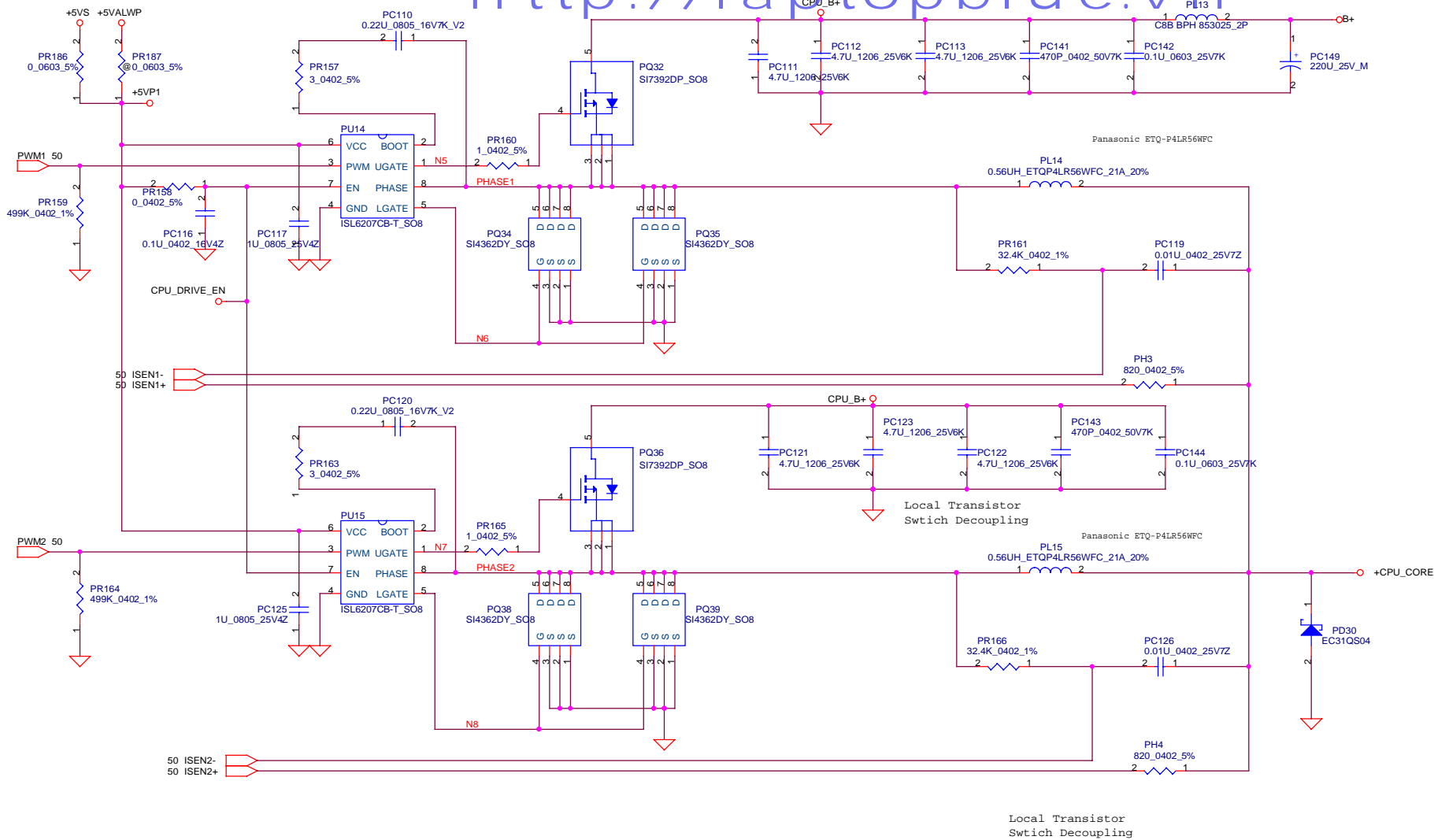
	120W(4-phase)	90W(3-phase)
PR129	360_0402_1%	300_0402_1%
PR131	20K_0402_1%	17.4K_0402_1%
PR127	UNPOP	POP

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Compal Electronics, Inc.

CPU_CORE_Controller

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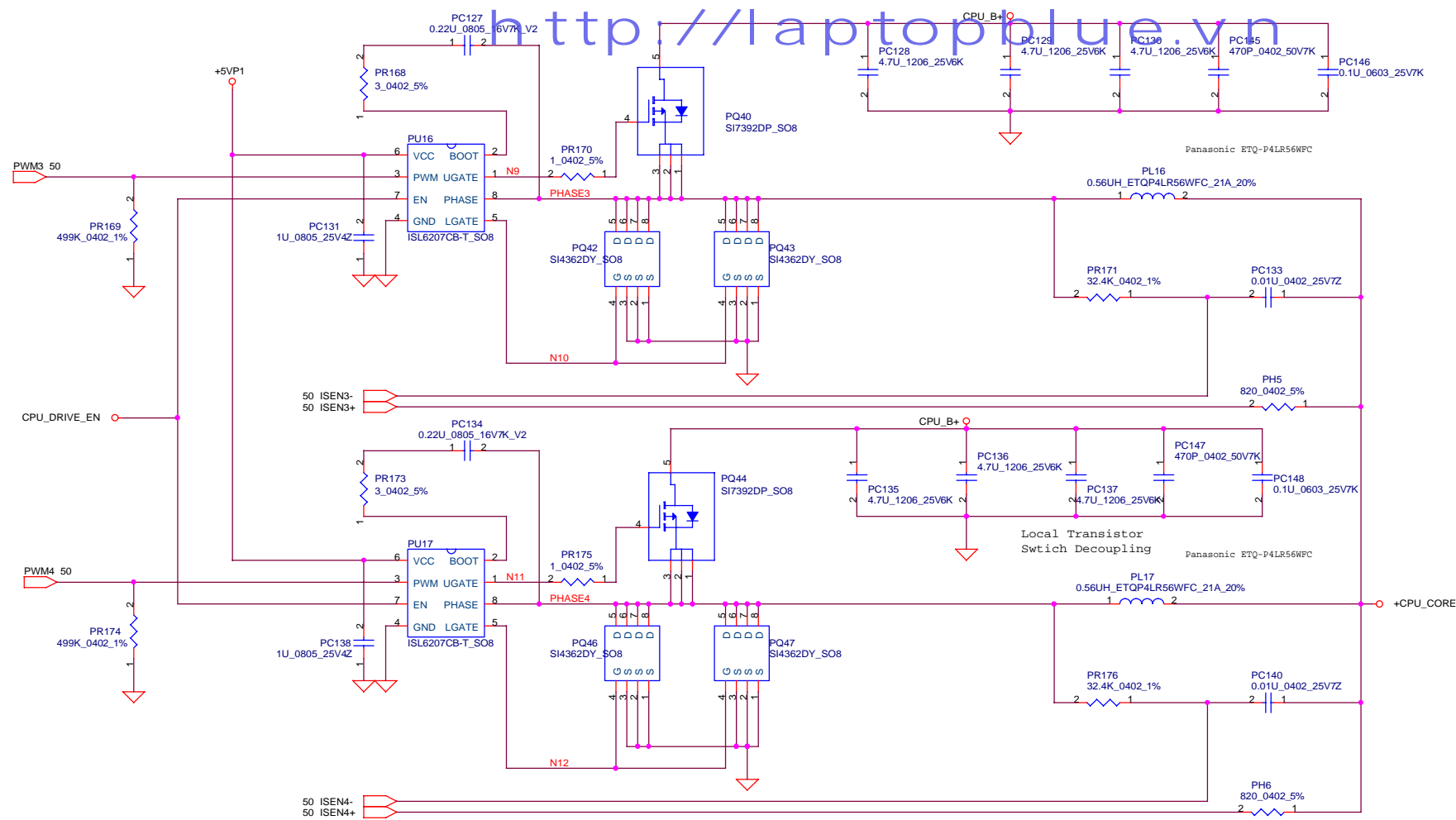


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Compal Electronics, Inc.

CPU_CORE Power stage 1

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	PC134,PC135,PC136,PC137,PC138,PC140, PC147,PC148,PR173,PR174,PR175,PR176, PQ44,PQ46,PQ47,PU17,PL17,PH6
120W(4-phase)	POP
90W(3-phase)	UNPOP

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Compal Electronics, Inc.

Title	CPU_CORE Power stage 2		
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