

Compal Confidential

DCL513A Schematics Document

Banias ICP uFCBGA/uFCPGA Package with Montara-GM Core Logic

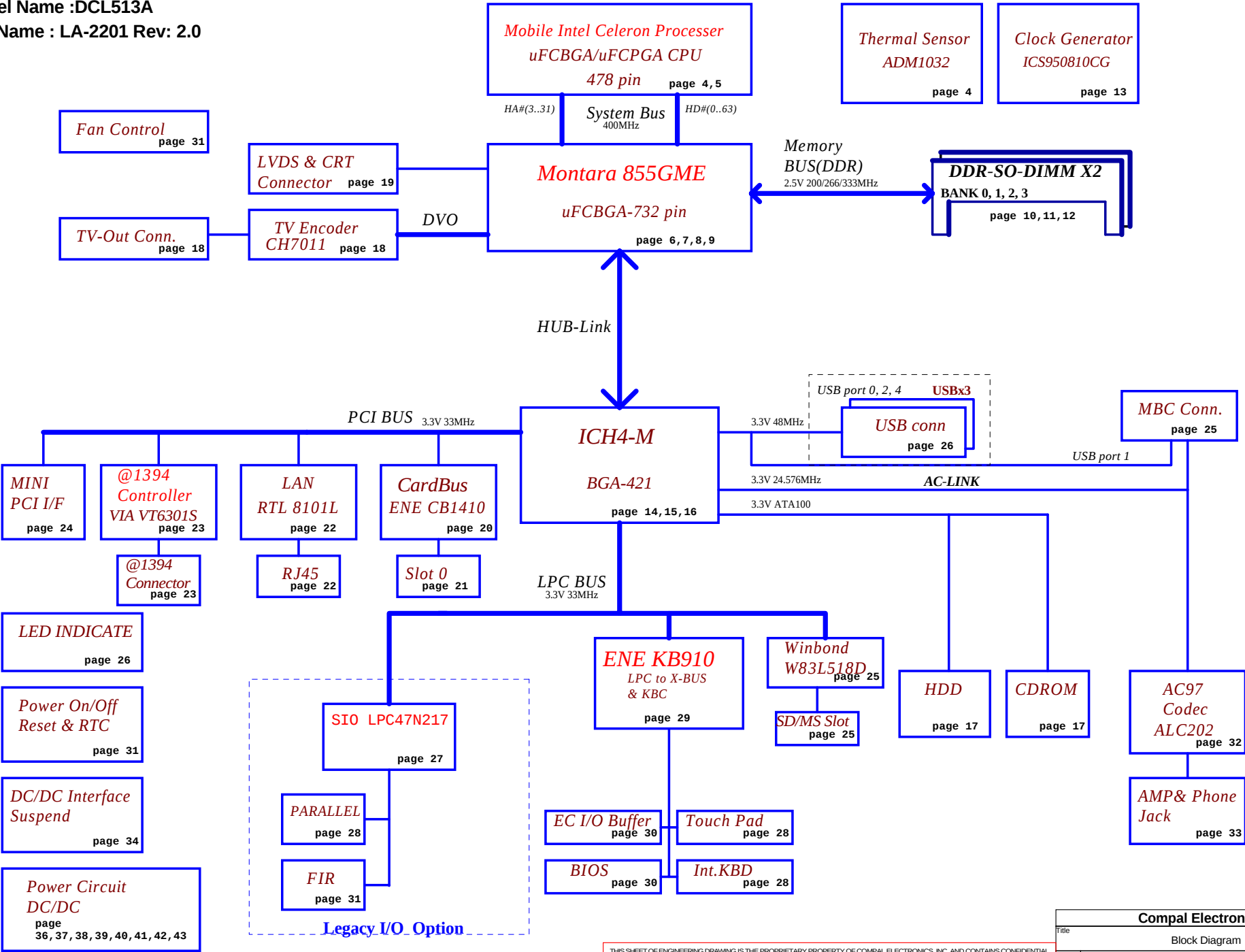
2004-05-05

REV: 1.0

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Compal Electronics, Inc.		
Title		
Cover Sheet		
Size	Document Number	Rev
	DCL55 LA-2201	1.0
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Model Name :DCL513A
File Name : LA-2201 Rev: 2.0



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Block Diagram			
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Voltage Rails

Power Plane	Description	S0-S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+VCCP	1.05V rail for Processor I/O	ON	OFF	OFF
+1.2VS	1.2VS switched power rail for GMCH	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VALW	1.5V power rail	ON	ON	ON
+1.5V	1.5V power rail	ON	ON	OFF
+1.5VS	1.5V power rail for GMCH	ON	OFF	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+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.

Board ID Table for AD channel

Vcc	3.3V +/- 5%			
R368	100K +/- 5%			
Board ID	R361	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

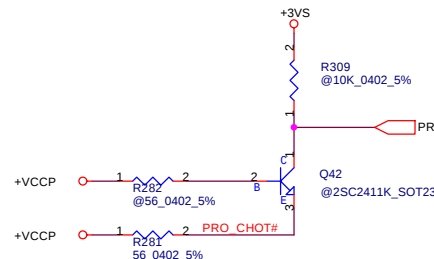
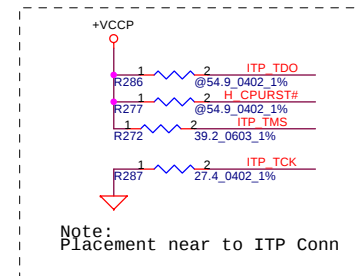
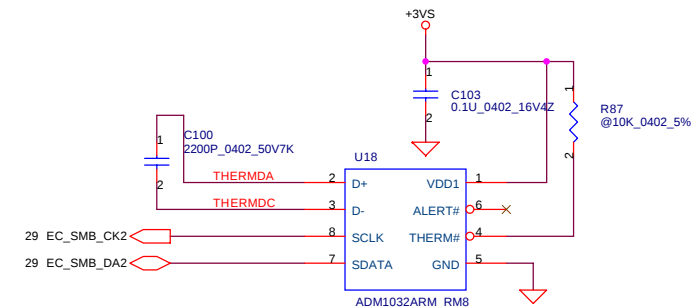
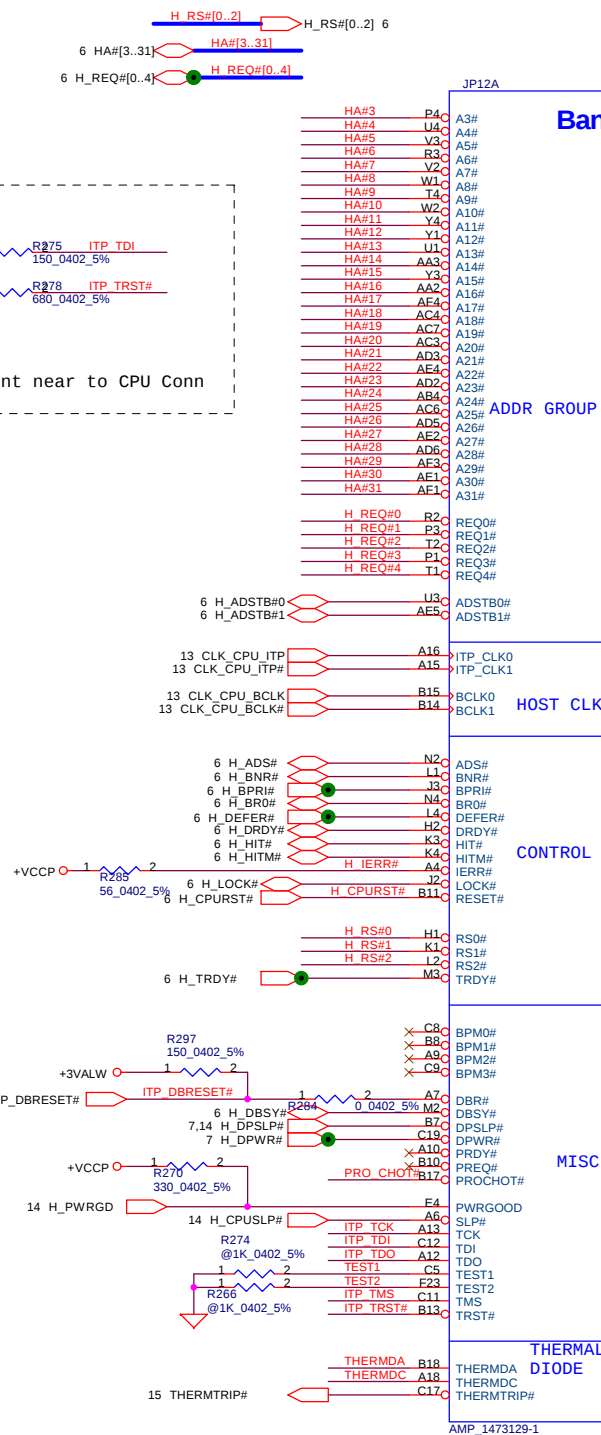
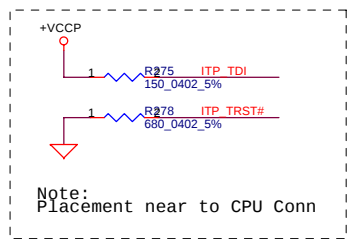
Board ID	PCB Revision
0	
1	0.1
2	0.2
3	1.0
4	
5	
6	
7	

External PCI Devices

Device	IDSEL#	REQ#GNT#	Interrupts
CardBus	AD20	2	PIRQA
LAN	AD17	3	PIRQF
Mini-PCI	AD18/AD20	1/4	PIRQG/PIRQH
1394	AD16	0	PIRQE

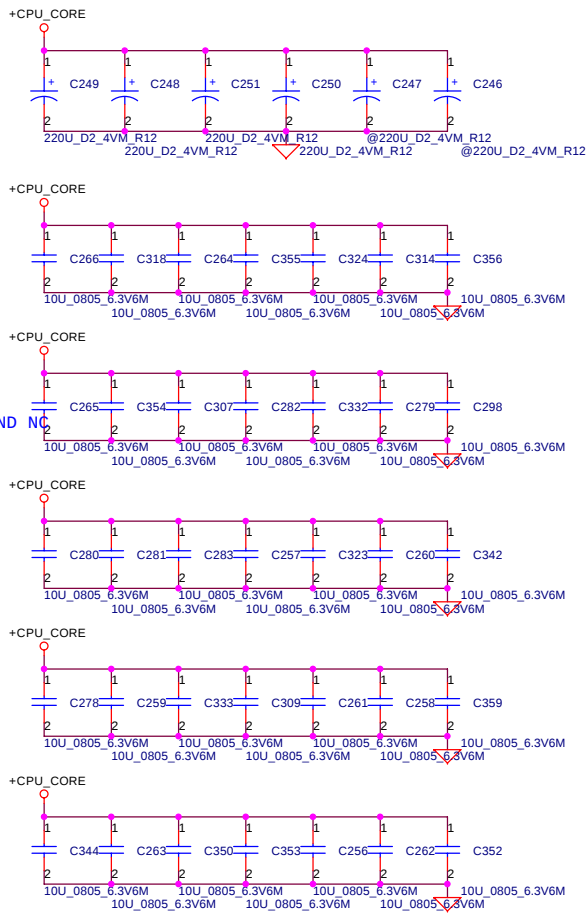
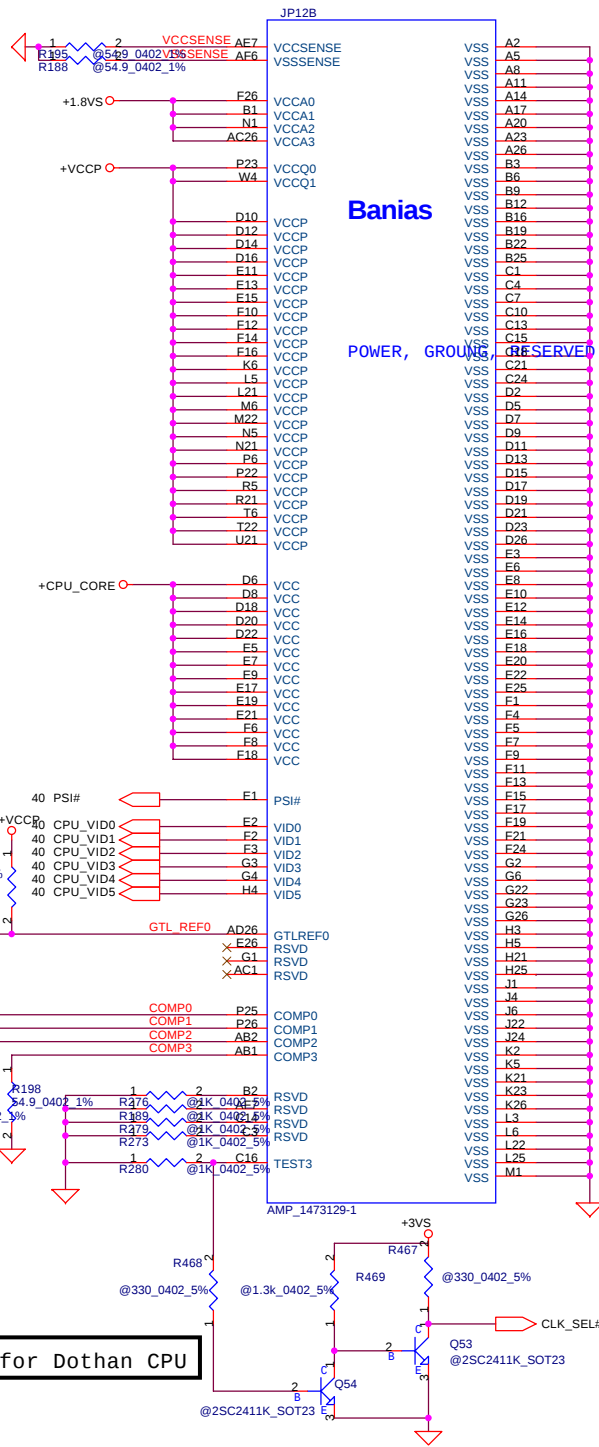
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Title			
Notes & PIR			
Size B	Document Number		Rev
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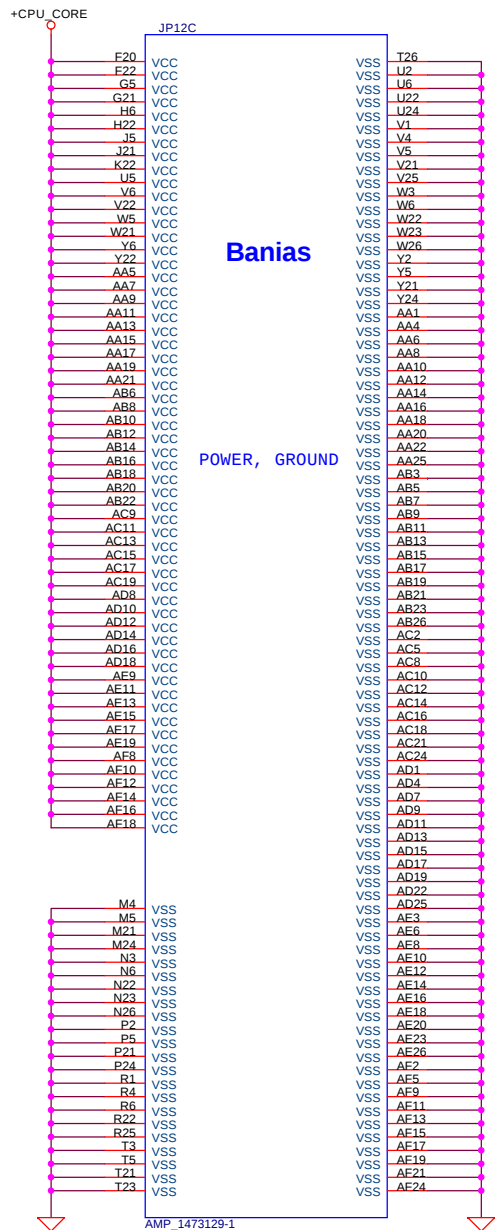
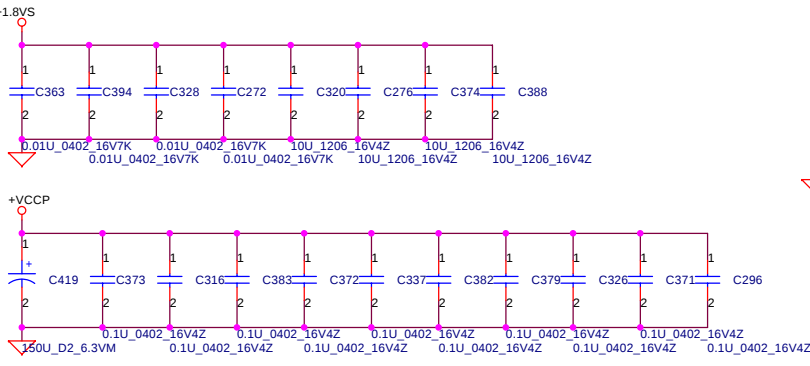


Compal Electronics, Inc.			
Title			
Banias Processor in mFCPGA479 with ITP			
Size	Document Number		Rev
A3	DCL55 LA-2201		1.0
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Vcc-core Decoupling	C, uF	ESR, mohm	ESL, nH
SPCAP, Polymer	4X220uF	12m ohm/4	3.5nH/4
MLCC 0805 X5R	35X10uF	5m ohm/35	0.6nH/35



Compal Electronics, Inc.		
Title Banias Processor in mFCPGA479		
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18 DVOC_D[0..11] ← DVOC_D[0..11]

no TV OUT mount R253

DVOCB_CLKINT

18 DVOCB_CLKINT

18 DVOC_CLK

18 DVOC_CLK#

18 DVOC_HSYNC

18 DVOC_VSYNC

18 MI2CCLK

18 MI2CDATA

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Montara-GM(L)

DAC

LVDS

CLKS

MISC

NC

BLUE#
BLUE#
GREEN#
GREEN#
RED#
RED#
HSYNC
HSYNC
REFSET
REFSET
DDCACLK
DDCACLK

TXOUT0- 19
TXOUT1- 19
TXOUT2- 19
TXOUT0+ 19
TXOUT1+ 19
TXOUT2+ 19
TZOUT0- 19
TZOUT1- 19
TZOUT2- 19
TZOUT0+ 19
TZOUT1+ 19
TZOUT2+ 19
TXCLK- 19
TXCLK+ 19
TZCLK- 19
TZCLK+ 19

LCD_CLK 19
LCD_DATA 19

INVT_PWM 19,29
ENBKL 29

ENVDD 19

LVREFH
LVREFL

LVGB
LIBG

CLK_MCH_48M 13
CLK_SSC_66M 13

LCLKCTLB

H_DPWR# 4
H_DPSP# 4,14
PCIRST# 14,18,20,21,22,23,24,25,27

VGATE 13,15,40

EXTTS 13,15,40

EXTTS0
MCHDETECTVSS

NC0
NC1
NC2
NC3
NC4
NC5
NC6
NC7
NC8
NC9
NC10
NC11

RVSD0
RVSD1
RVSD2
RVSD3
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RVSD5
RVSD6
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RVSD8
RVSD9
RVSD10
RVSD11

GST0
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1270hm For GM+

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I2C BUS PULL UP

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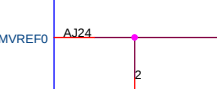
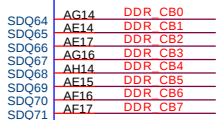
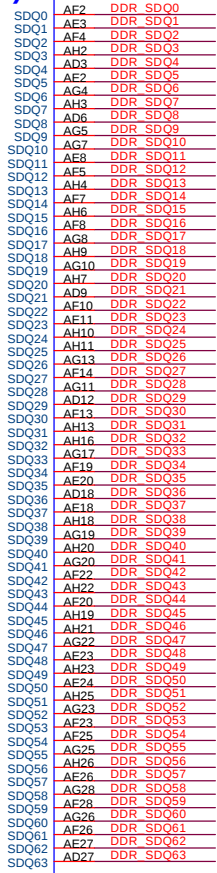
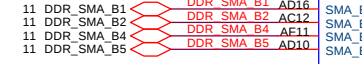
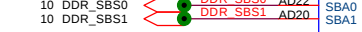
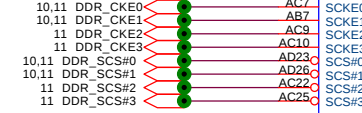
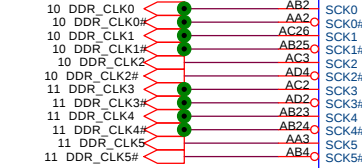
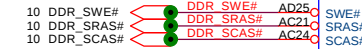
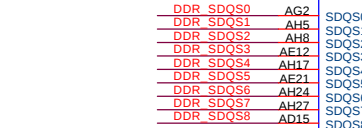
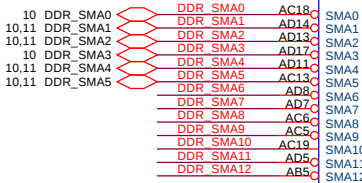
MDVICLK

MDVICLK

U12C

Montara-GM(L)

MEMORY

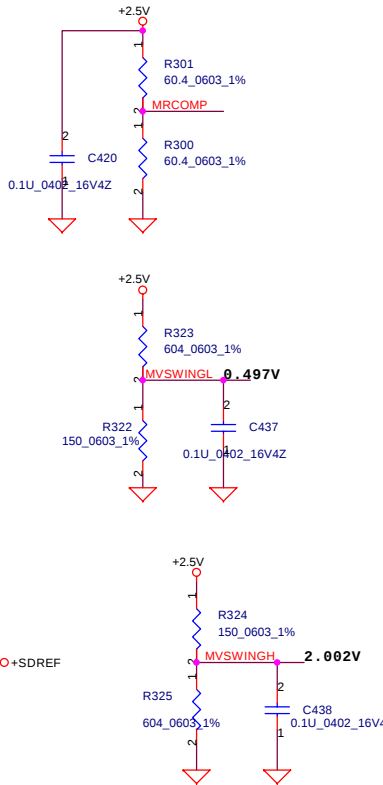


U12D

Montara-GM(L)

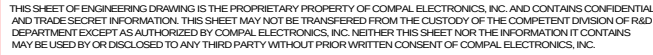


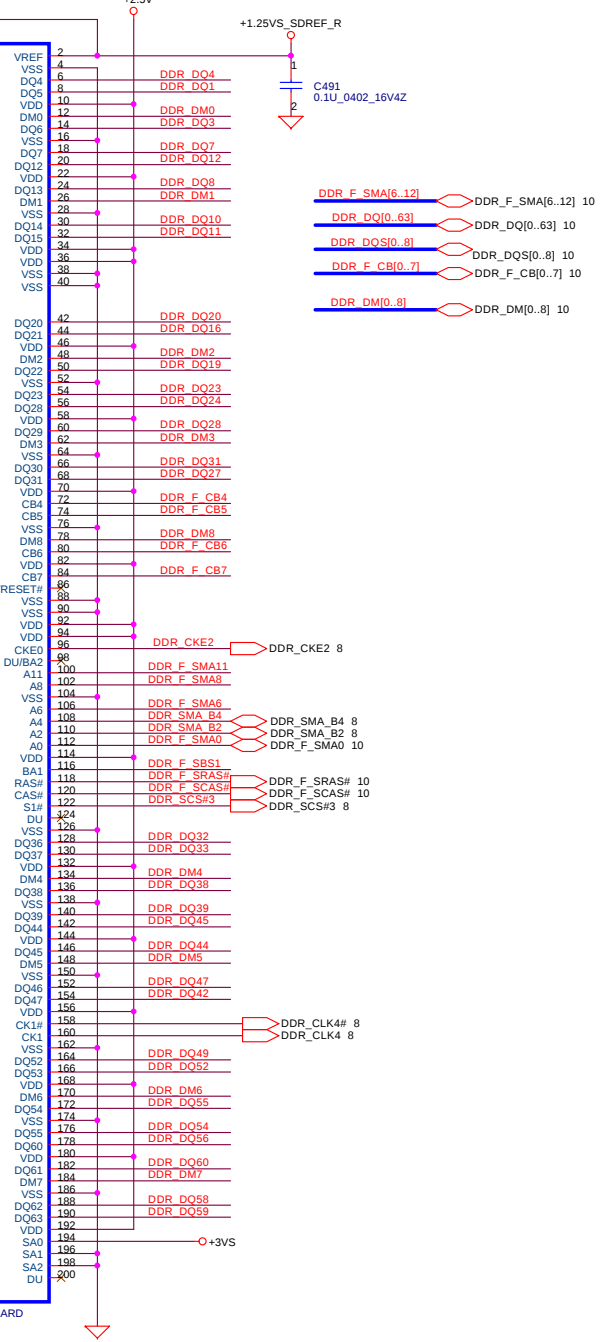
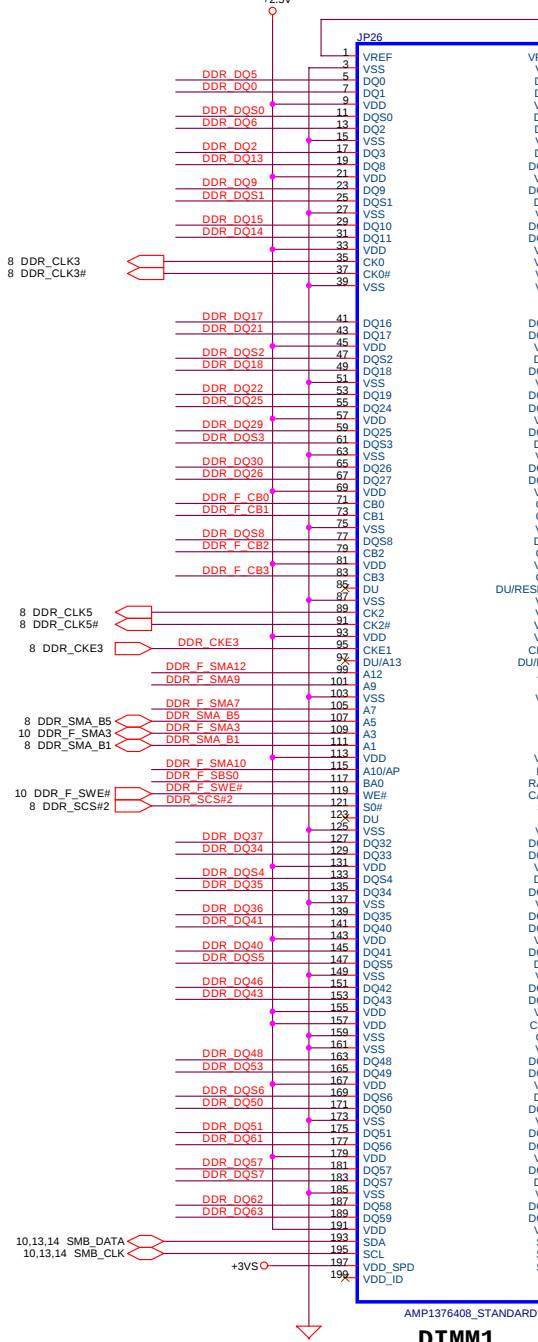
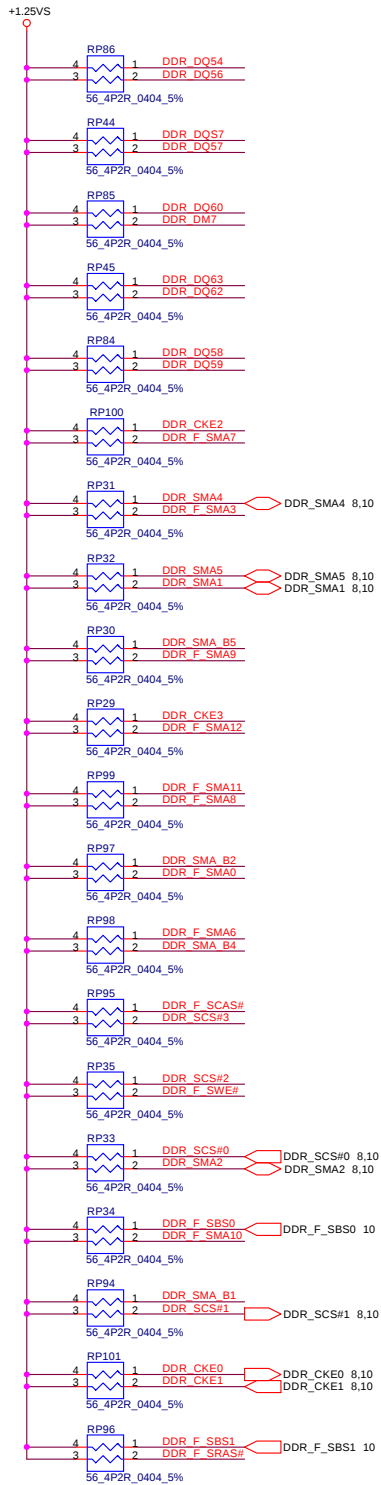
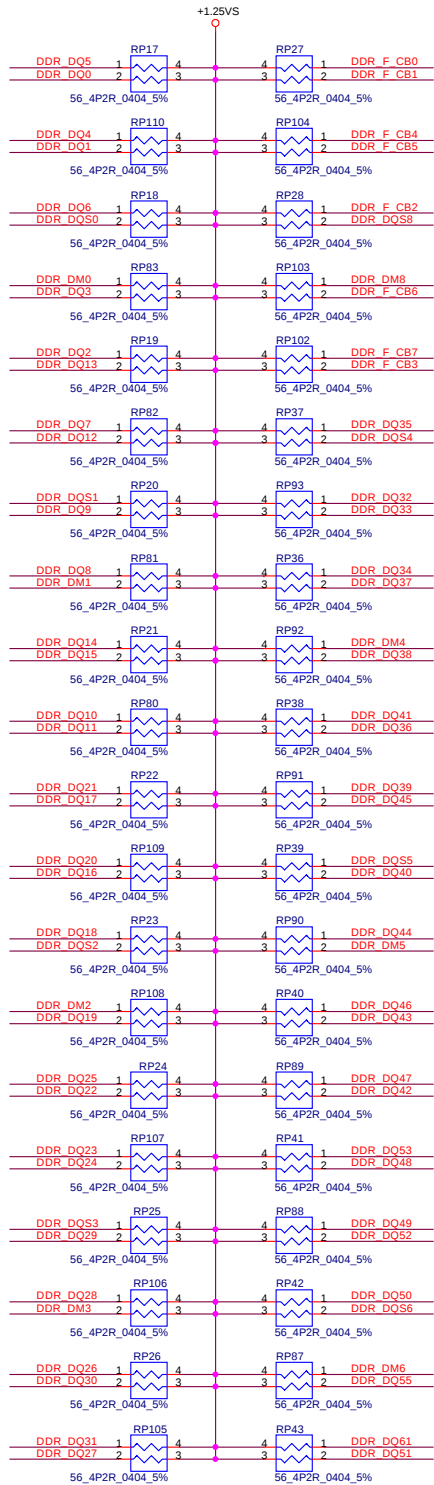
DDR REF & SWING VOLTAGE



Compal Electronics, Inc.			
Title			
MONTARA-GM-DDR(3/4)			
Size			
Document Number			
DCL55 LA-2201			
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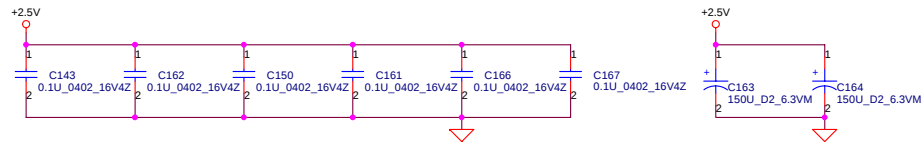
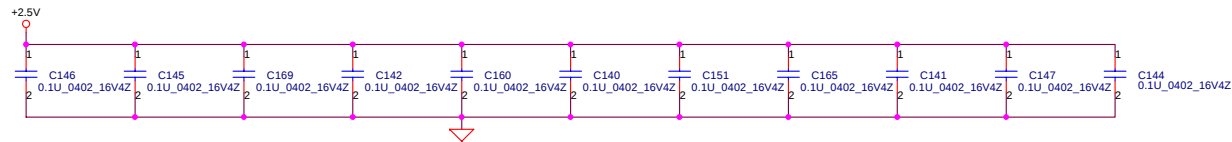
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DDR_DQ[0..63] 10
DDR_DQS[0..8] 10
DDR_F_CB[0..7] 10
DDR_DM[0..8] 10

DIMM1

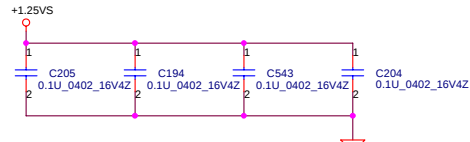
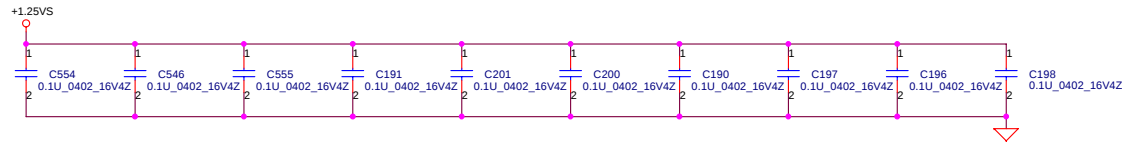
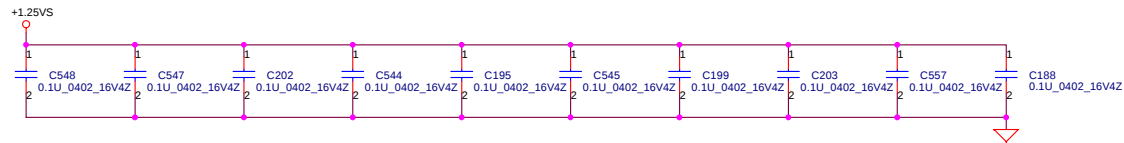
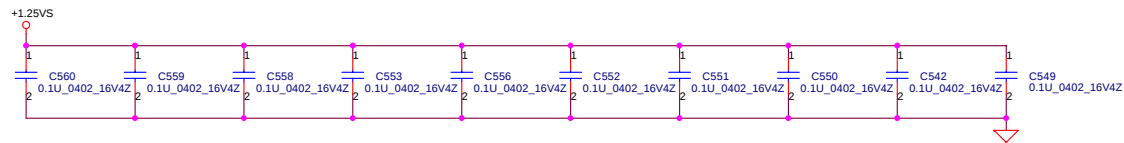
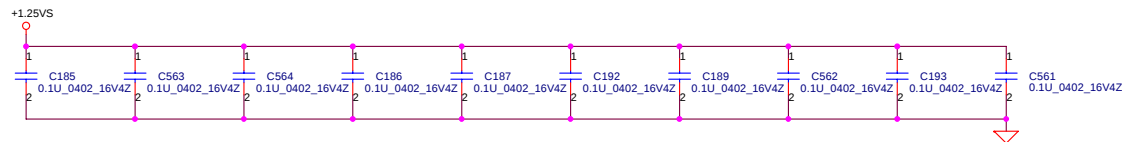
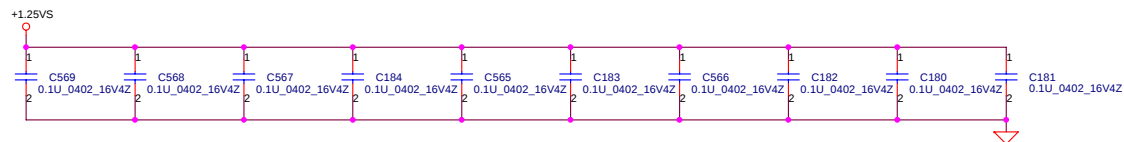
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Compal Electronics, Inc.			
DDR-SODIMM SLOT1			
Title	Document Number	Rev	
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Layout note :
Distribute as close as possible
to DDR-SODIMM.



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



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Compal Electronics, Inc.			
Title			
DDR SODIMM Decoupling			
Size	Document Number		Rev
	DCL55 LA-2201		1.0
Date:	星期四, 五月 06, 2004		Sheet 12 of 43

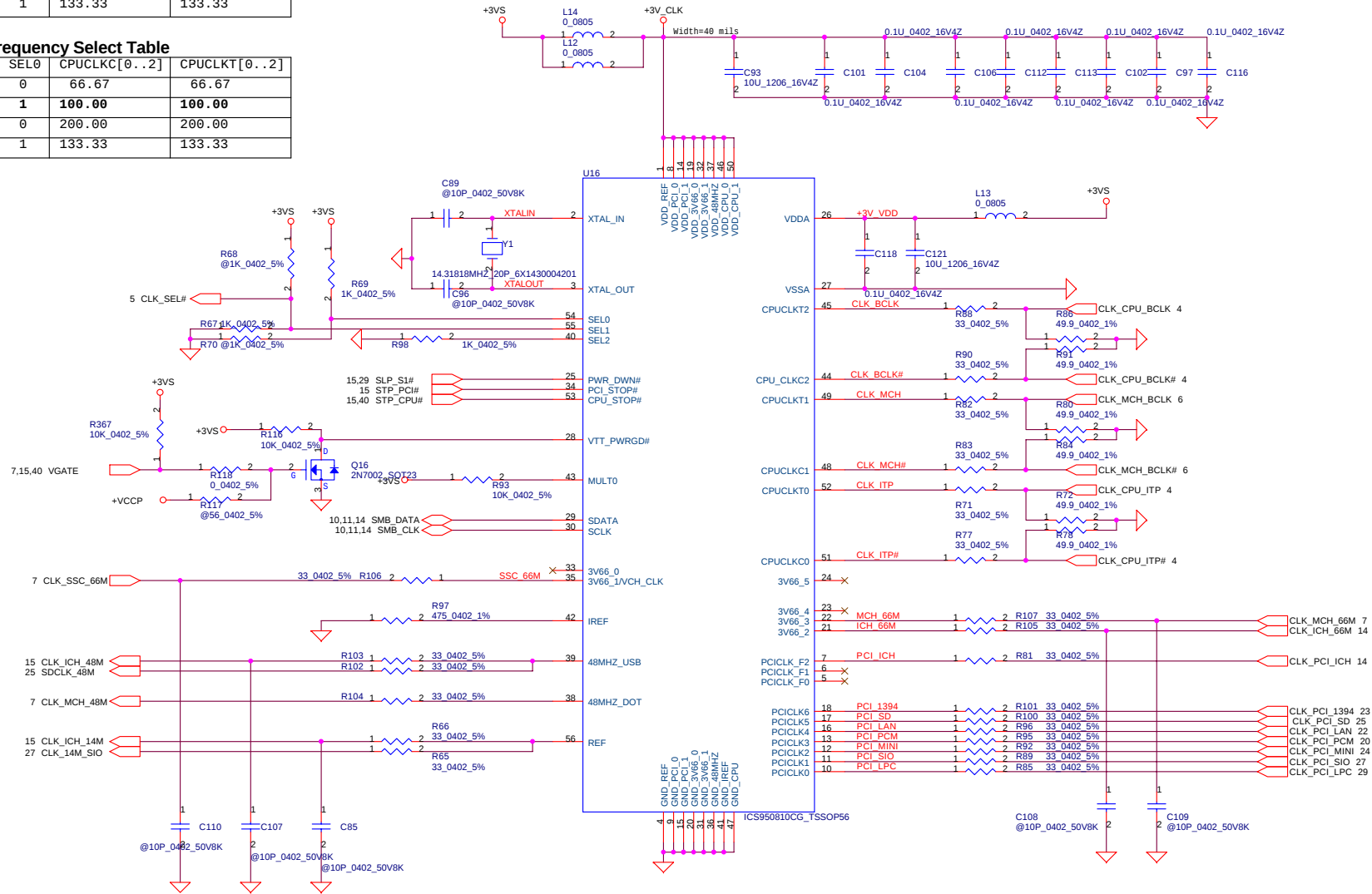
Clock Generator

ICS950810 Frequency Select Table

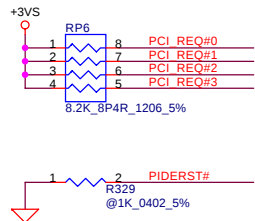
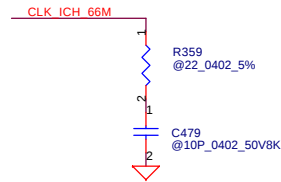
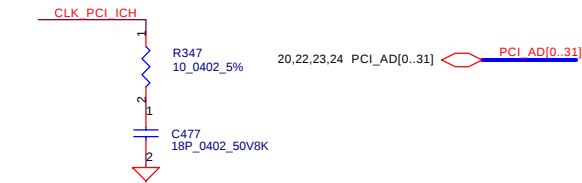
SEL2	SEL1	SEL0	CPUCLKC[0..2]	CPUCLKT[0..2]
0	0	0	166.67	166.67
0	0	1	100.00	100.00
0	1	0	200.00	200.00
0	1	1	133.33	133.33

CY28346-2 Frequency Select Table

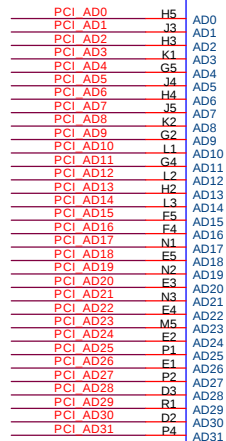
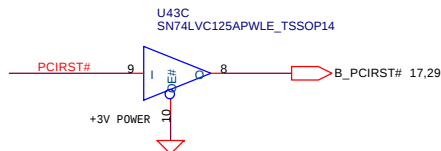
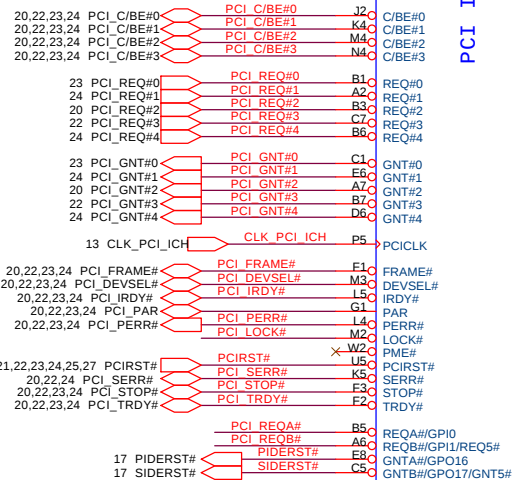
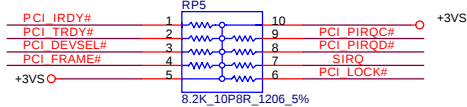
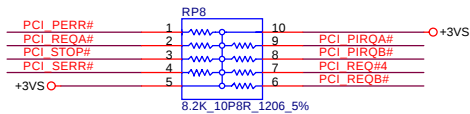
SEL2	SEL1	SEL0	CPUCLKC[0..2]	CPUCLKT[0..2]
0	0	0	66.67	66.67
0	0	1	100.00	100.00
0	1	0	200.00	200.00
0	1	1	133.33	133.33



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PCI Pullups



PCI I/F

ICH4

SM I/F

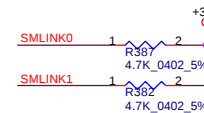
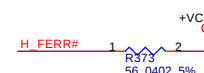
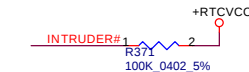
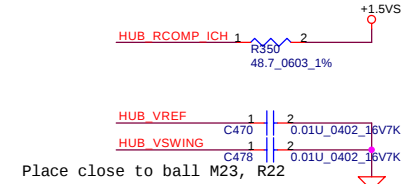
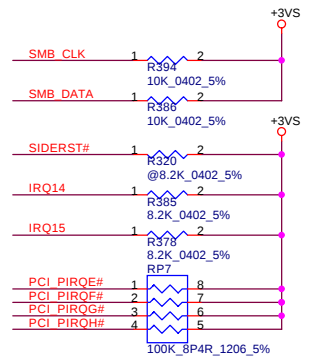
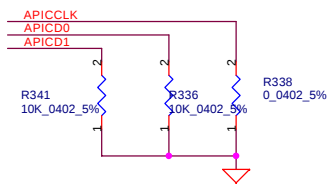
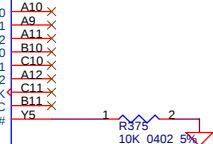
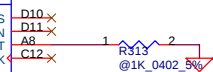
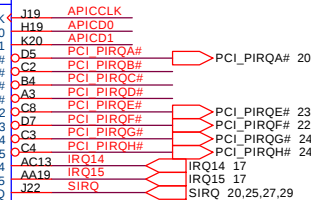
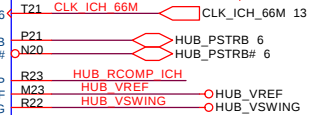
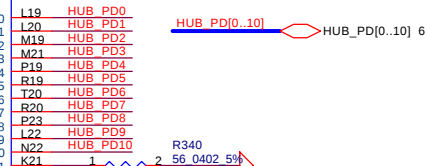
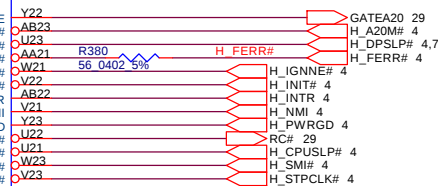
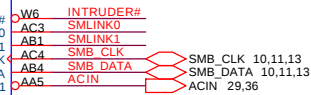
CPU I/F

HUB I/F

Interrupt I/F

EEPROM I/F

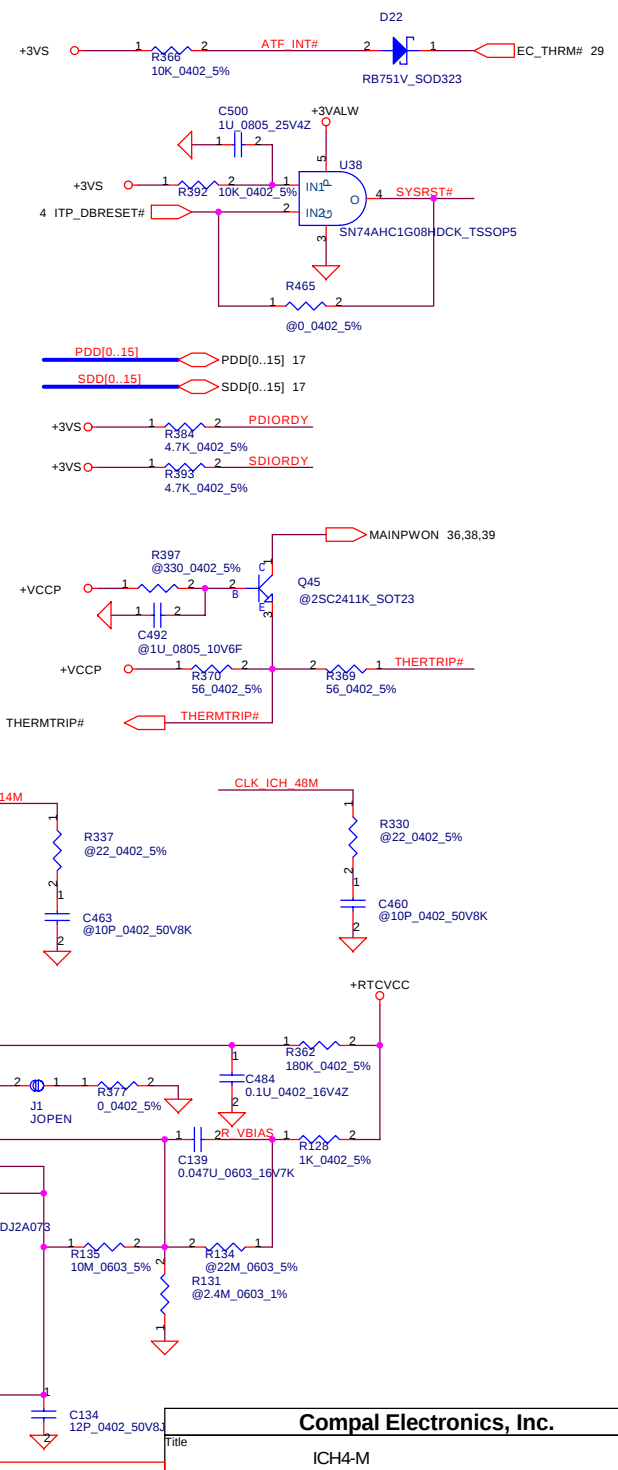
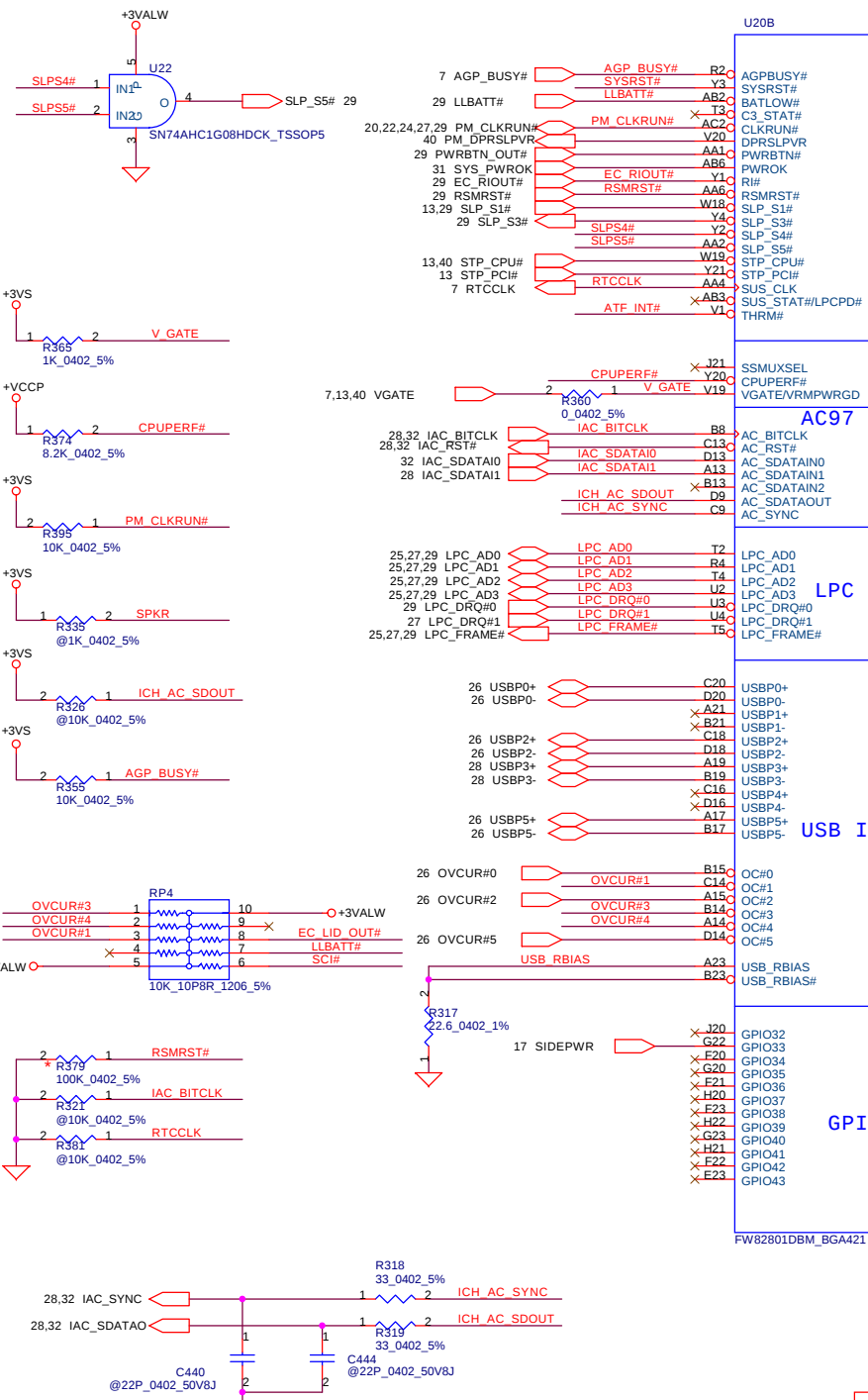
LAN I/F



Compal Electronics, Inc.

Title			ICH4-M	
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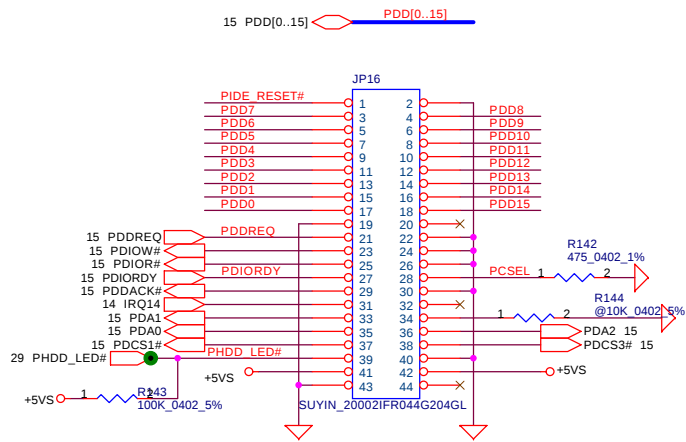
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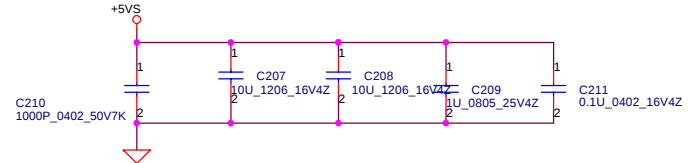
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Compal Electronics, Inc.		
Title ICH4-M		
Size	Document Number DCL55 LA-2201	Rev 1.0
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HDD Connector

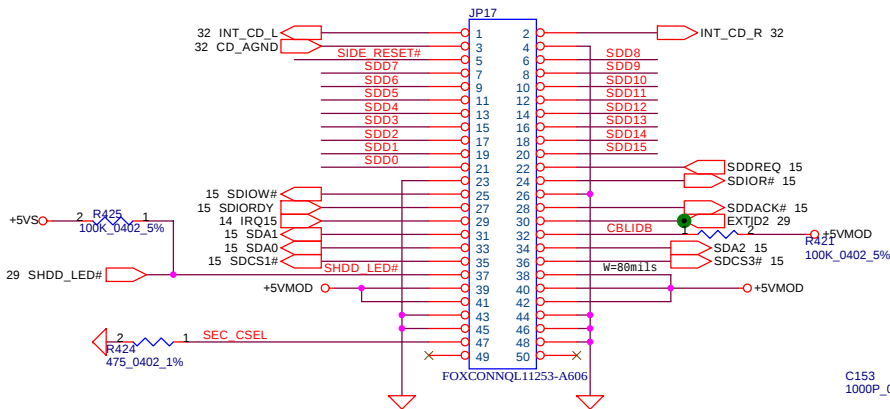


Placea caps. near HDD
CONN.

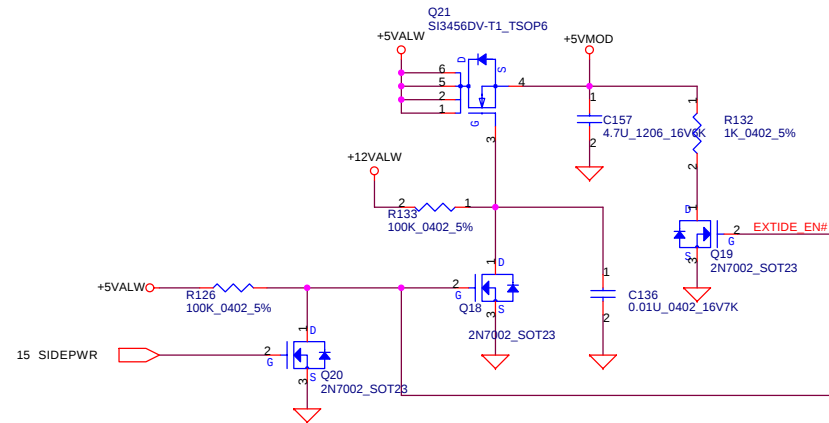
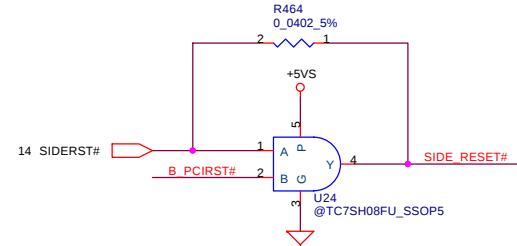
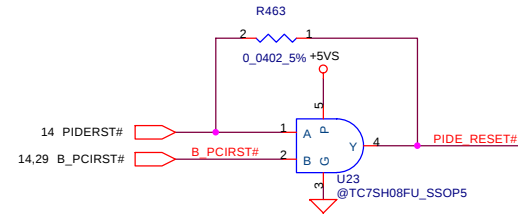
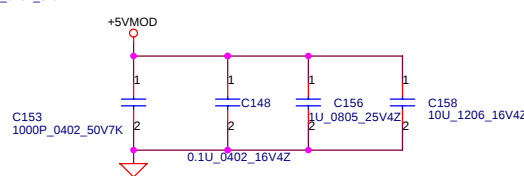


CD-ROM Connector

SDD[0..15]



Placea caps. near CDROM
CONN.



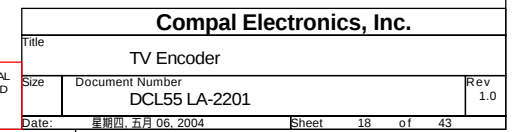
SI3456DV: N CHANNEL
VGS: 4.5V, RDS: 65 mOHM
Id(MAX): 5.1A
VGS,+20V

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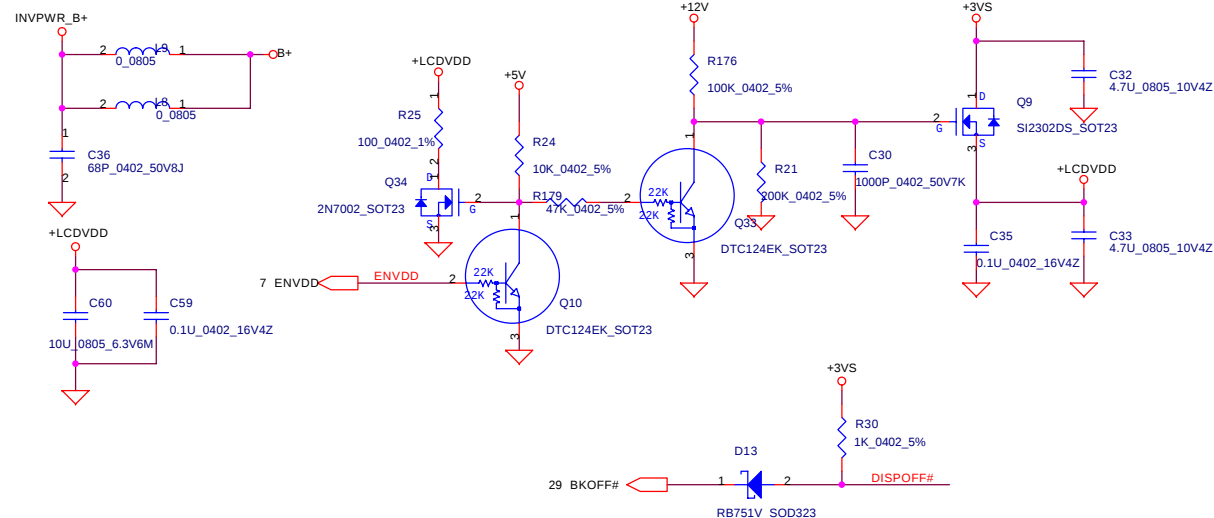
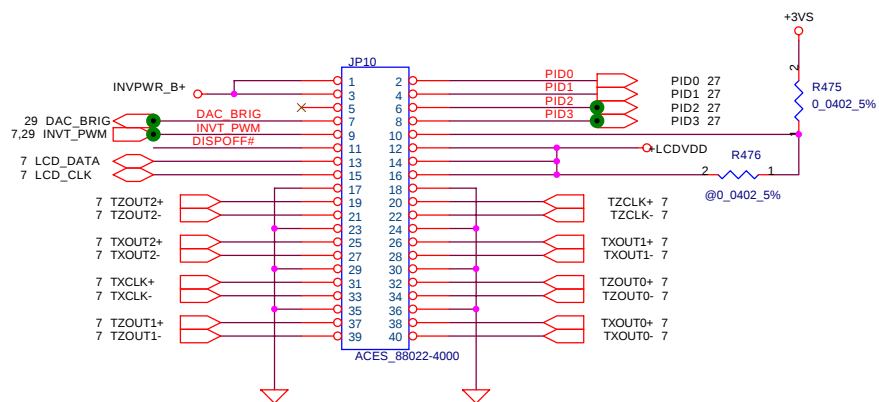
Title			IDE/CD-ROM Module	
Size	Document Number		Rev	
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TV Encoder

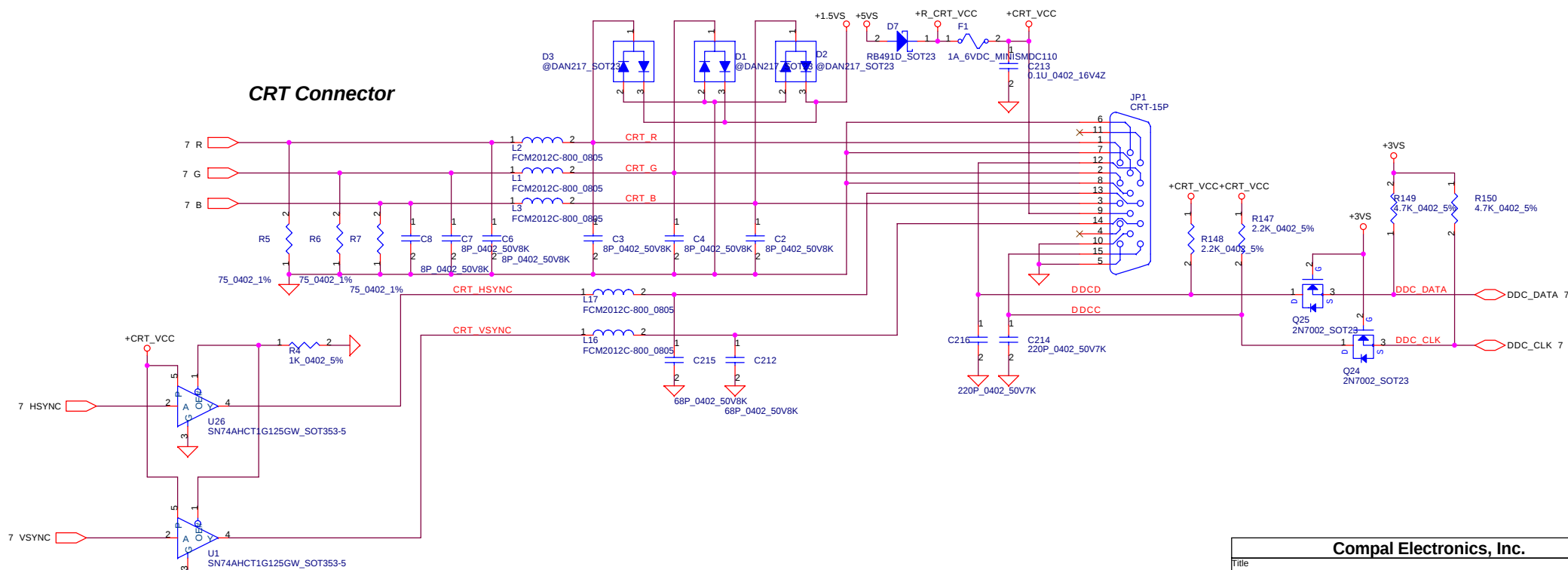


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LVDS Connector



CRT Connector



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14,22,23,24 PCI_AD[0..31]

PCI_AD31 3
PCI_AD30 4
PCI_AD29 5
PCI_AD28 7
PCI_AD27 8
PCI_AD26 9
PCI_AD25 10
PCI_AD24 11
PCI_AD23 15
PCI_AD22 16
PCI_AD21 17
PCI_AD20 19
PCI_AD19 23
PCI_AD18 24
PCI_AD17 25
PCI_AD16 26
PCI_AD15 38
PCI_AD14 39
PCI_AD13 40
PCI_AD12 41
PCI_AD11 43
PCI_AD10 45
PCI_AD9 46
PCI_AD8 47
PCI_AD7 49
PCI_AD6 51
PCI_AD5 52
PCI_AD4 53
PCI_AD3 54
PCI_AD2 55
PCI_AD1 56
PCI_AD0 57

PQFP 144
22.2 X 22.2 X 1.60

14,22,23,24 PCI_C/BE#3 12
14,22,23,24 PCI_C/BE#2 27
14,22,23,24 PCI_C/BE#1 37
14,22,23,24 PCI_C/BE#0 48
7,14,18,21,22,23,24,25,27 PCIRST# 20
14,22,23,24 PCI_FRAME# 28
14,22,23,24 PCI_IRDY# 29
14,22,23,24 PCI_TRDY# 31
14,22,23,24 PCI_DEVSEL# 32
14,22,23,24 PCI_STOP# 33
14,22,23,24 PCI_PERR# 34
14,22,24 PCI_SERR# 35
14,22,23,24 PCI_PAR# 36
14 PCI_REQ#2 1
14 PCI_GNT#2 2
13 CLK_PCI_PCM 21
29,30,34,39,42 SUSP# 1
22,23,24,29 PCM_PME# 58
PCI_AD20 1
14 PCI_PIRQA# 1
29 PCM_RI# 65
14,25,27,29 SIRO 67
15,22,24,27,29 PM_CLKRUN# 69
21 CBRST# 66

CLK_PCI_PCM
R259 10_0402_5%
C361 18P_0402_50V8K

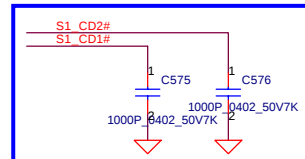
C/BE#3 12
C/BE#2 27
C/BE#1 37
C/BE#0 48
RST# 20
FRAME# 28
IRDY# 29
TRDY# 31
DEVSEL# 32
STOP# 33
PERR# 34
SERR# 35
PAR# 36
REQ# 1
GNT# 2
CLK 21
RI_OUT#/PME# 58
SUSPEND# 70
IDSEL 13
MFUNC0 60
MFUNC1 61
MFUNC2 64
MFUNC3 65
MFUNC4 67
MFUNC5 68
MFUNC6 69
VCC/GRST# 66

GND1 6
GND2 42
GND3 43
GND4 56
GND5 78
GND6 94
GND7 114
GND8 130
RSVD/D14 84
RSVD/A18 100
RSVD/D2 143

CAD31/D10 144
CAD30/D9 142
CAD29/D1 141
CAD28/D8 140
CAD27/D0 139
CAD26/A0 129
CAD25/A1 128
CAD24/A2 127
CAD23/A3 124
CAD22/A4 121
CAD21/A5 120
CAD20/A6 118
CAD19/A25 116
CAD18/A7 115
CAD17/A24 113
CAD16/A17 98
CAD15/IOWR# 96
CAD14/A9 97
CAD13/IORD# 93
CAD12/A11 95
CAD11/OE# 92
CAD10/CE2# 91
CAD9/A10 89
CAD8/D15 87
CAD7/D7 85
CAD6/D13 82
CAD5/D6 83
CAD4/D12 80
CAD3/D5 81
CAD2/D11 77
CAD1/D4 79
CAD0/D3 76
S1_REG# 125
S1_A12 112
S1_A8 99
S1_CE1# 88
S1_RST 119
S1_A23 111
S1_A15 110
S1_A22 109
S1_A21 107
S1_A20 105
S1_A14 104
S1_WAIT# 133
S1_A13 131
S1_INPACK# 101
S1_WE# 123
A16_CLK 108
S1_BVD1 135
S1_WP 136
S1_A19 103
S1_RDY# 132
PCM_SPK# 62
S1_BVD2 134
S1_CD2# 137
S1_CD1# 125
S1_VS2 117
S1_VS1 131
S1_D2 137
S1_A18 125
S1_D14 131

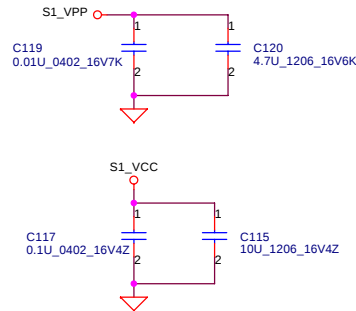
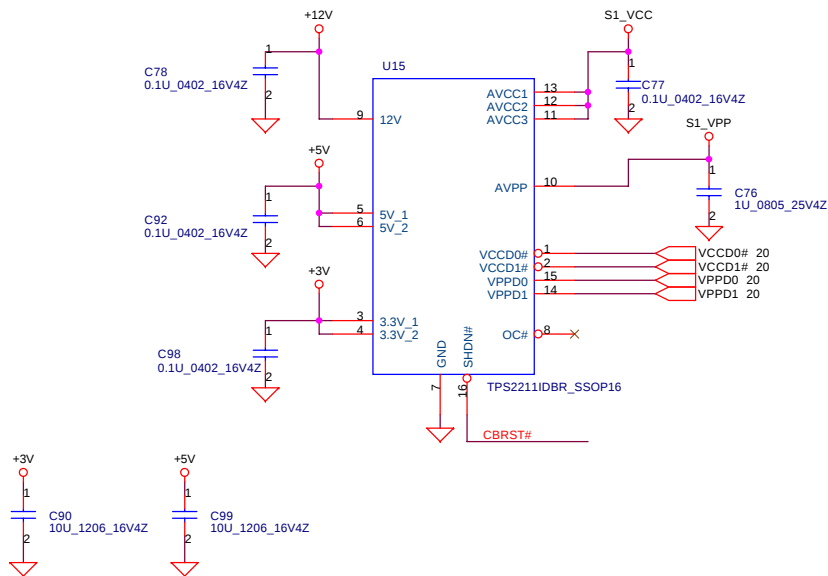
S1_A[0..25]
S1_D[0..15]

PCM_SPK#
R55 10K_0402_5%

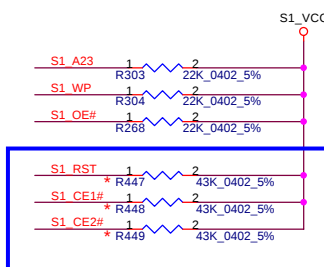
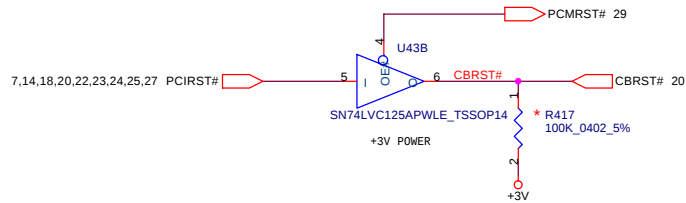
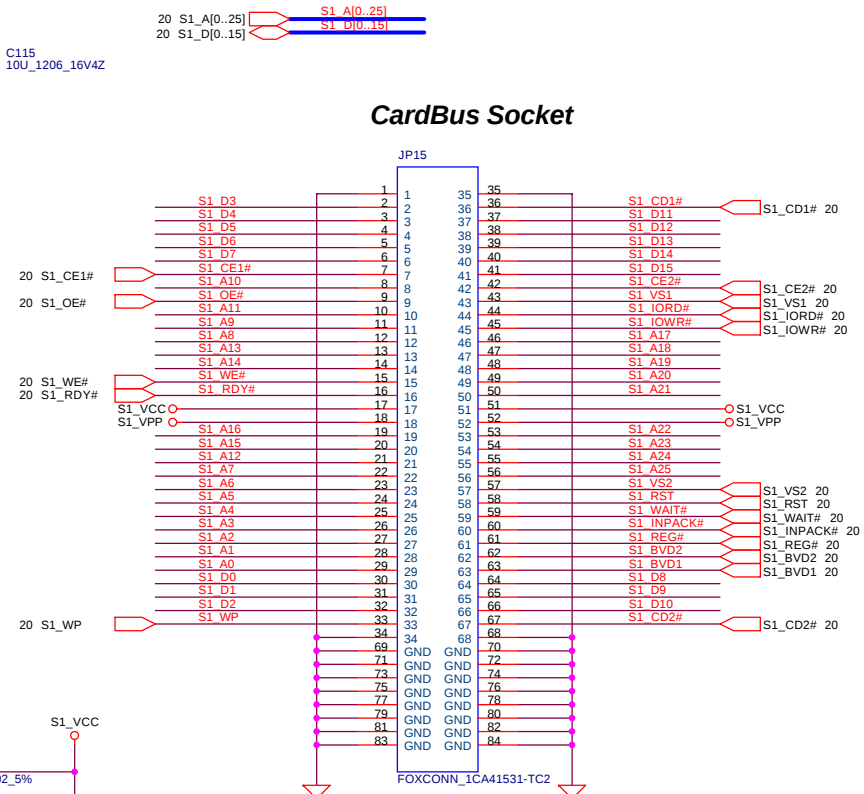


Reserve for CB1410 B0 Version

PCMCIA Power Controller



CardBus Socket

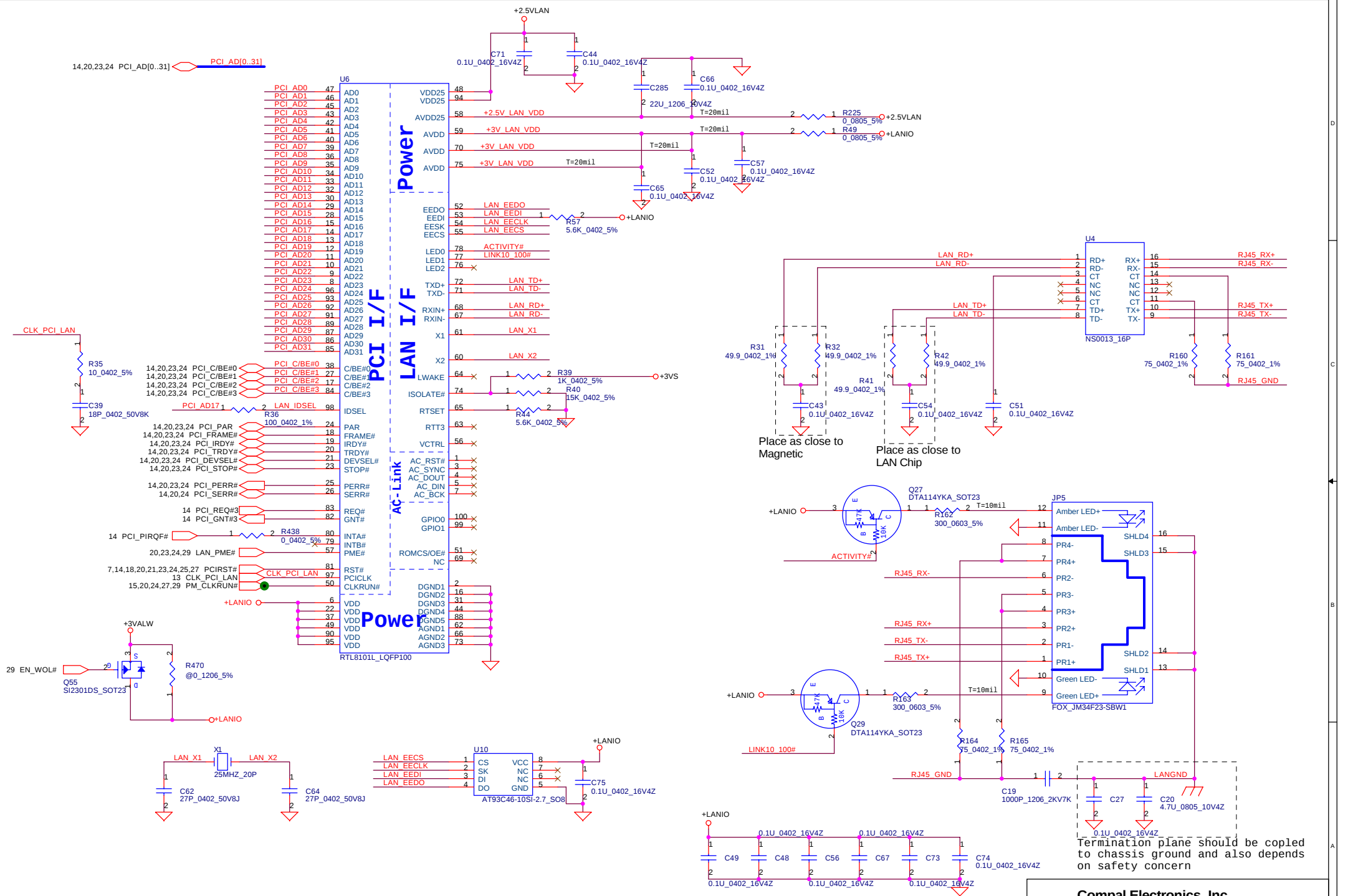


Reserve for CB1410 B0 Version

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Compal Electronics, Inc.

Title		
CardBus Socket		
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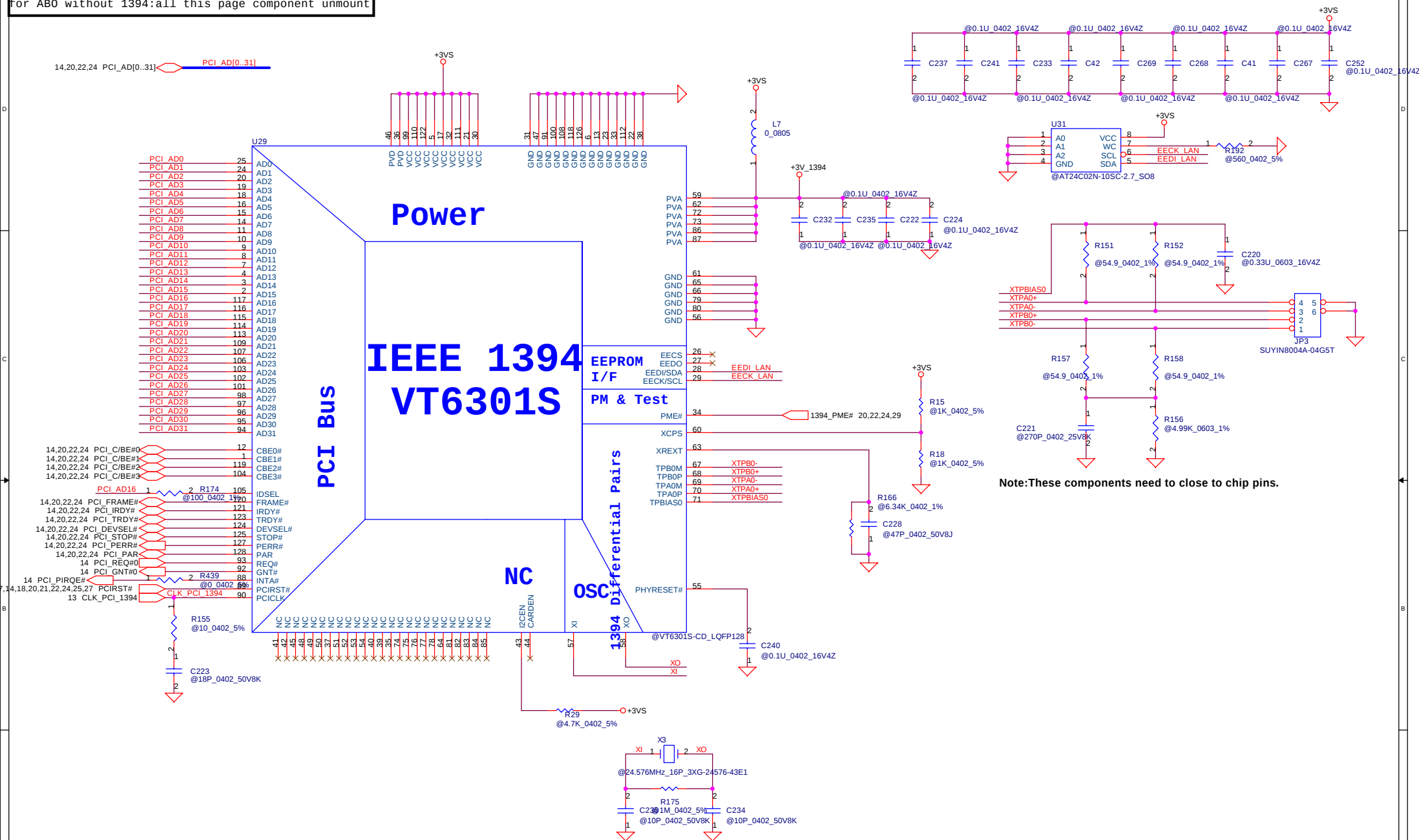
Termination plane should be copied to chassis ground and also depends on safety concern

Compal Electronics, Inc.

Title		LAN RTL8101L	
Size	B	Document Number	Rev
		DCL55 LA-2201	1.0
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for AB0 without 1394:all this page component unmount
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Compal Electronics, Inc.

Title	IEEE-1394 VT6301S
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Size	Document Number
	DCL55 LA-2201

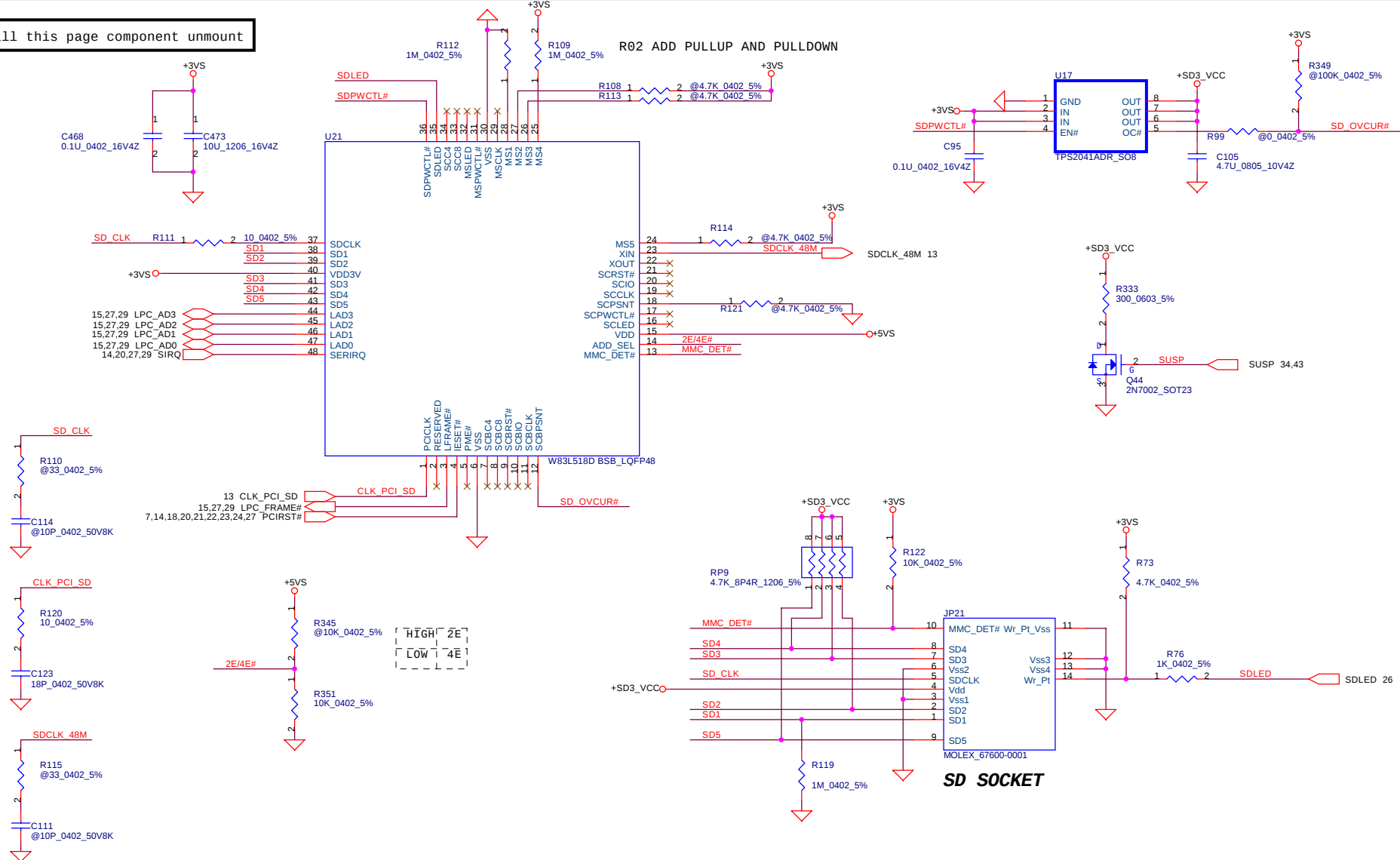
Rev	1.0
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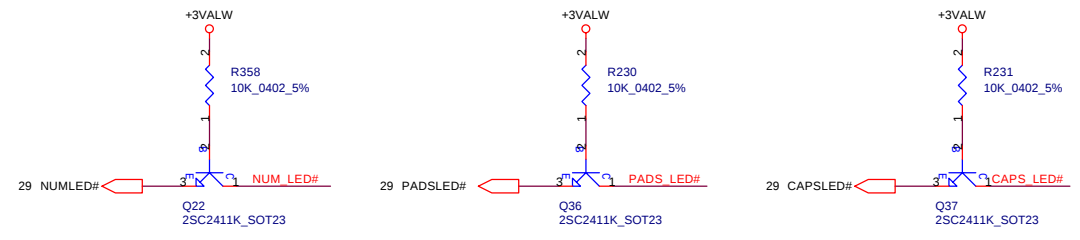
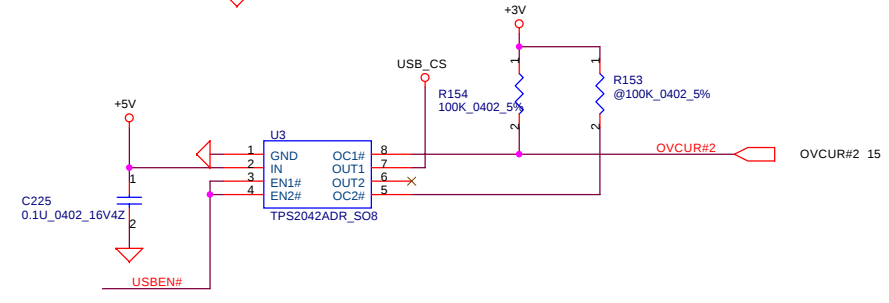
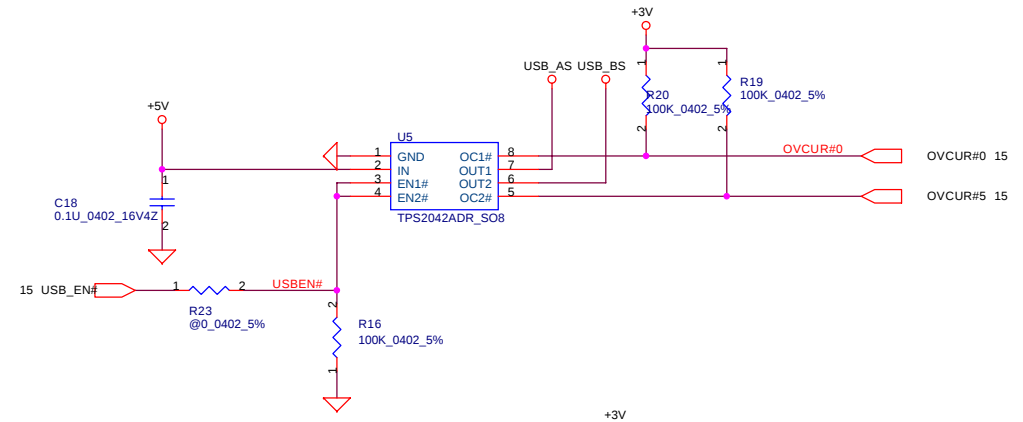
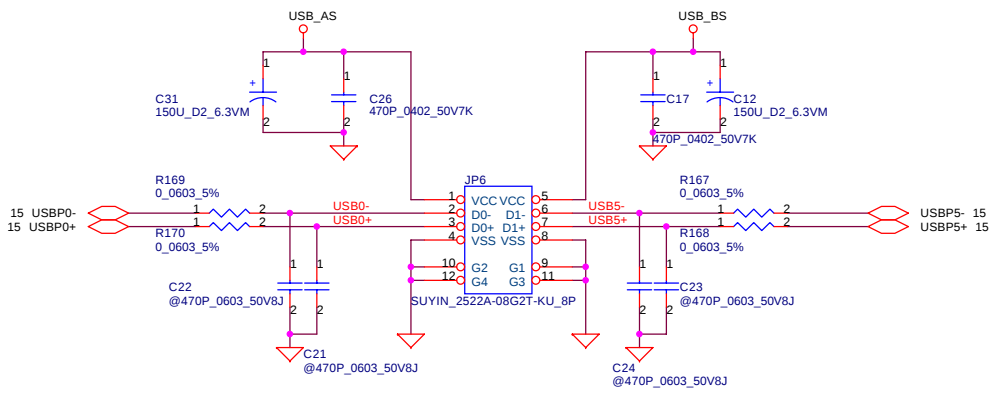
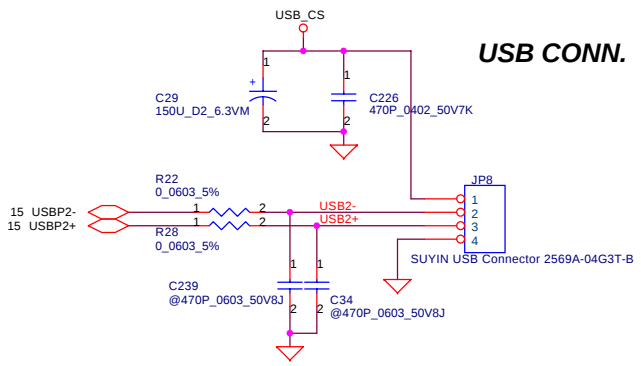
FOR AB0: all this page component unmount



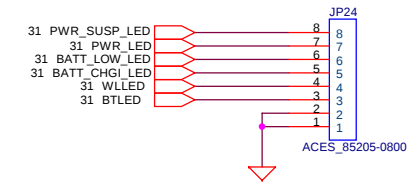
Compal Electronics, Inc.

Title			
SD CARD Controller/Socket			
Size B	Document Number DCL55 LA-2201		Rev 1.0
Date:	星期四, 五月 06, 2004	Sheet	25 of 43

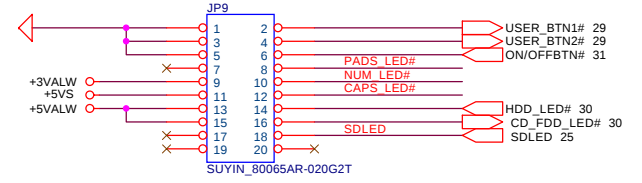
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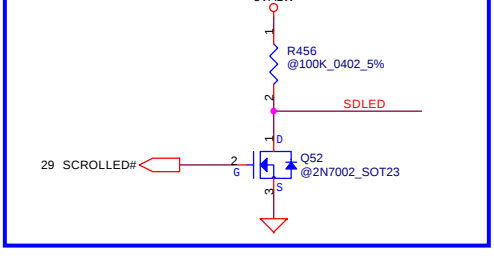
LED/B CONN.



POWER/B CONN.



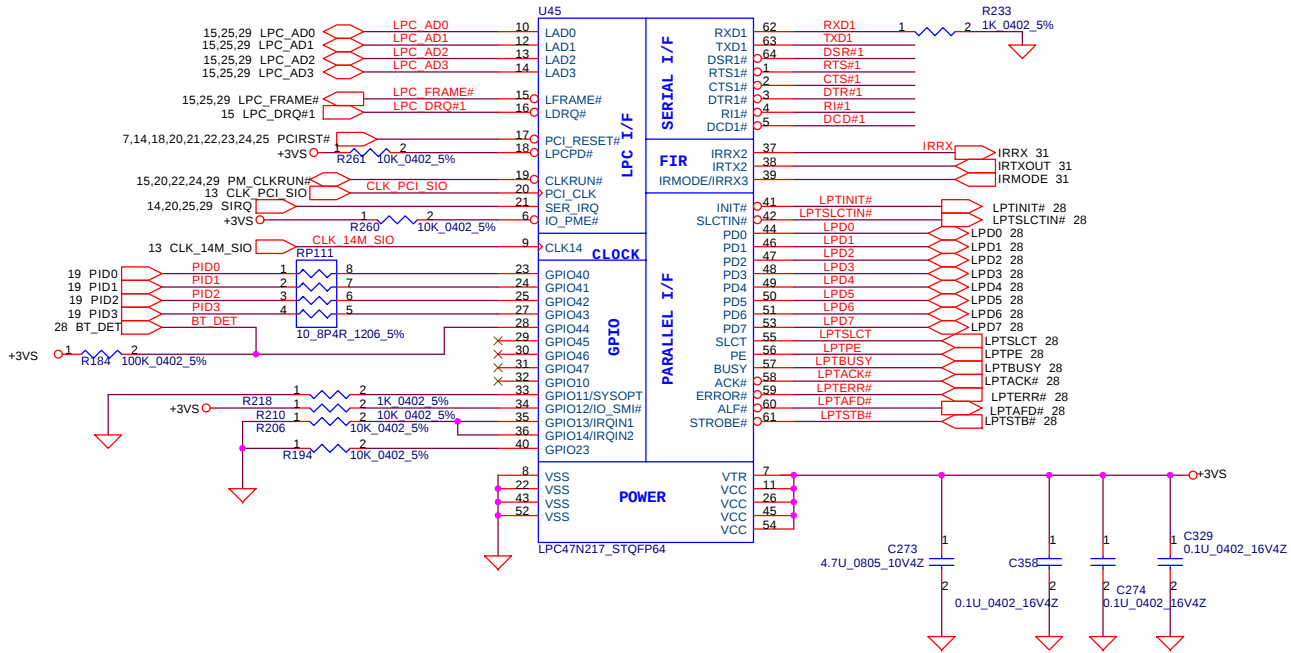
Reserve For ABO



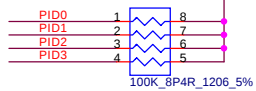
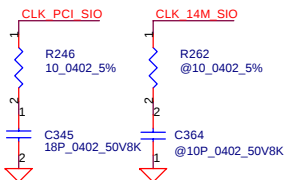
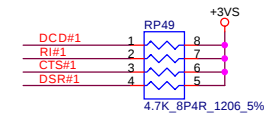
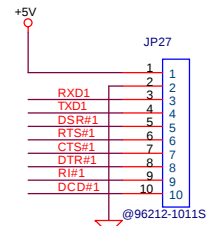
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Compal Electronics, Inc.		
Title		
USB & LED		
Size	Document Number	Rev
B	DCL55 LA-2201	1.0
Date:	星期四, 五月 06, 2004	Sheet 26 of 43

SUPER I/O SMsC FDC47N227



Base I/O Address
 * 0 = 02Eh
 1 = 04Eh



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Compal Electronics, Inc.

Title	SUPER I/O
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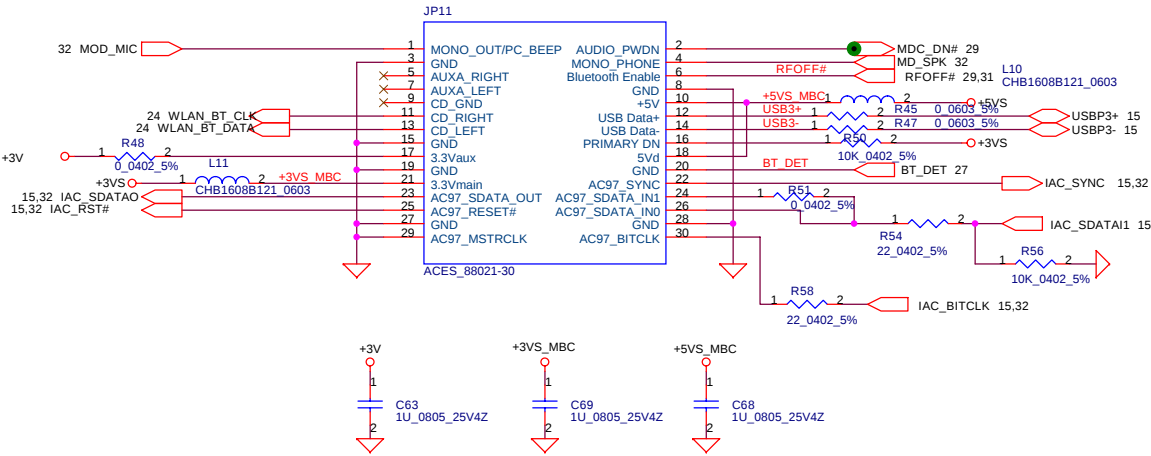
Size B	Document Number DCL55 LA-2201
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Rev	
1.0	

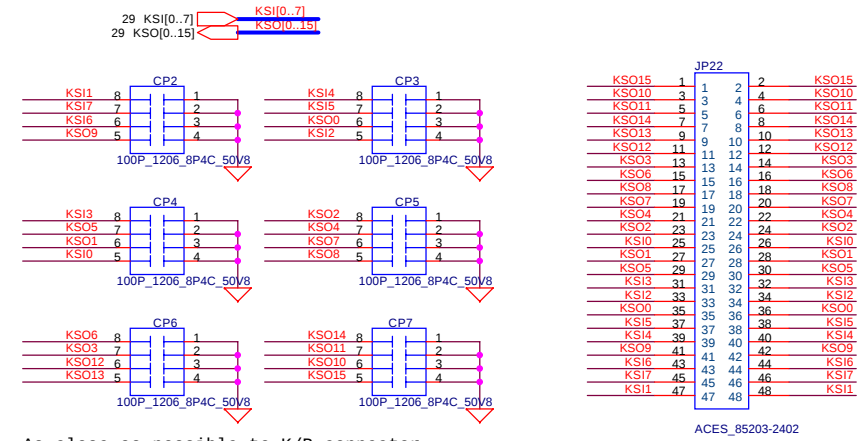
Date: 星期四, 五月 06, 2004

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MBC CONN.

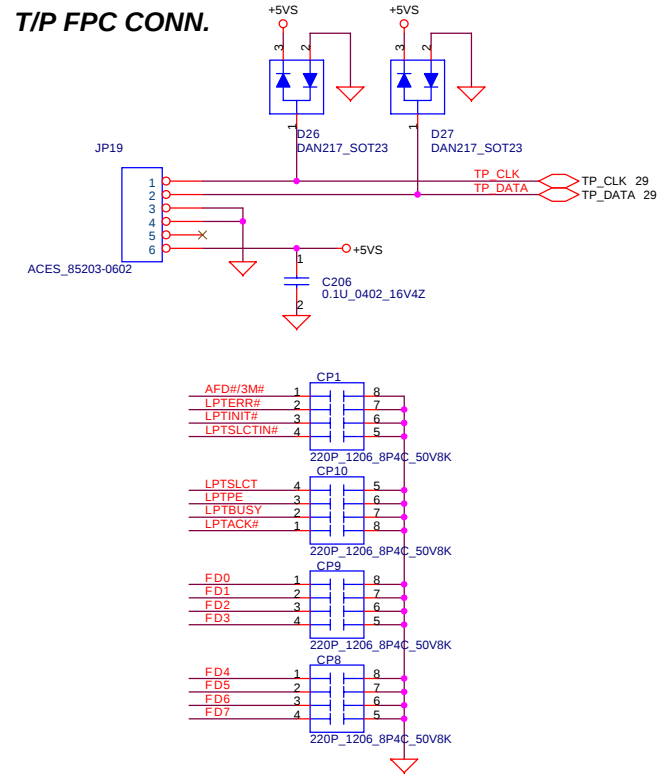


INT_KBD CONN.

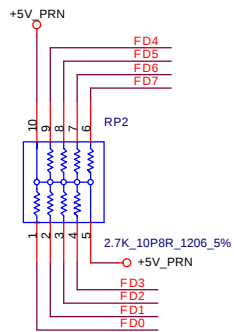
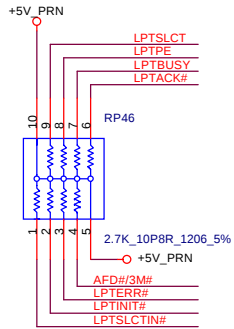
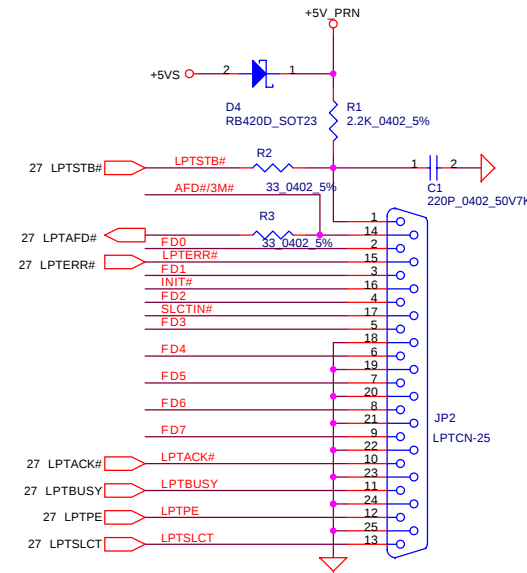


As close as possible to K/B connector

T/P FPC CONN.



PARALLEL PORT



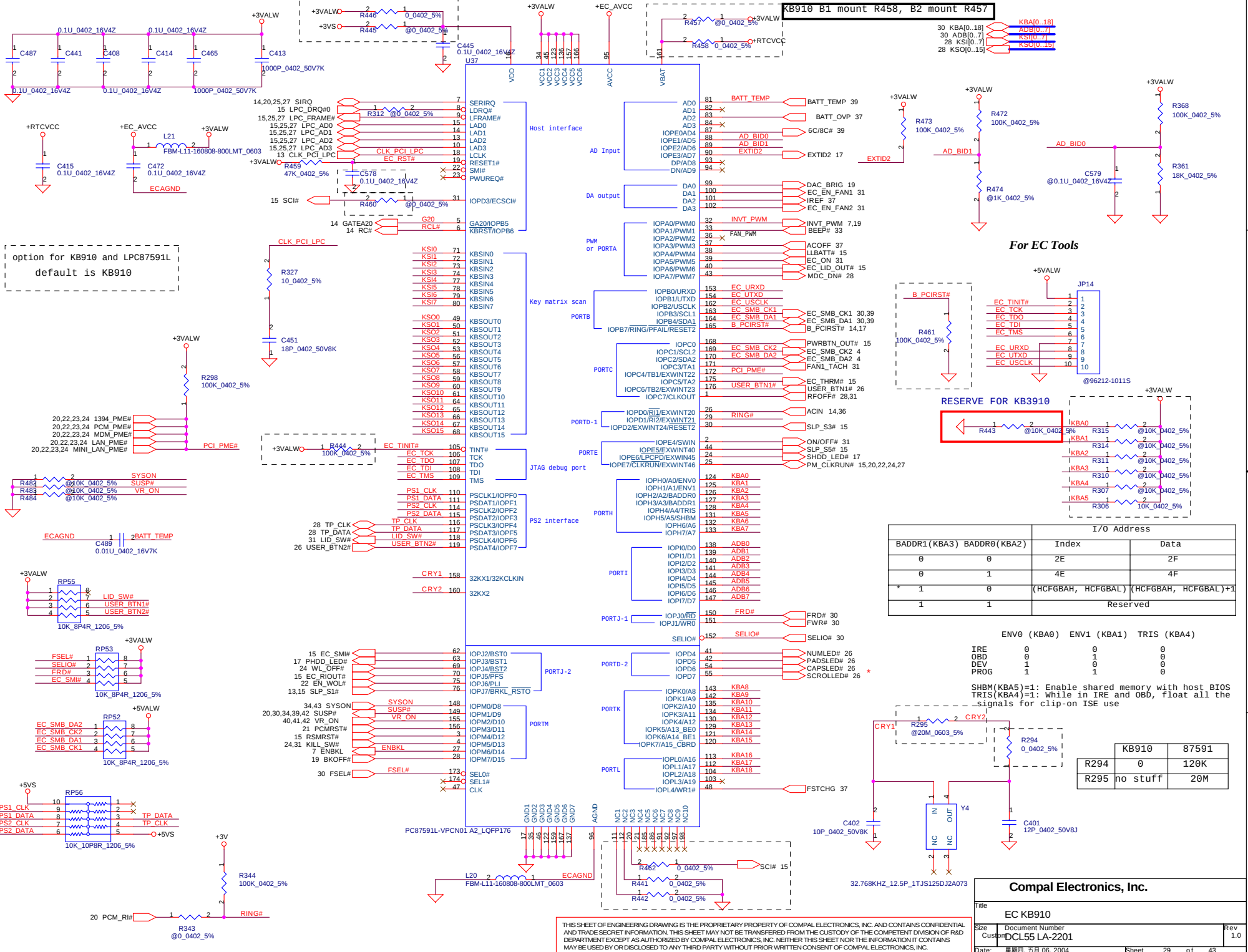
27 LPD[0..7] LPD[0..7]

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Compal Electronics, Inc.

Title			PARALLEL/MDC PORT
Size			Document Number
			DCL55 LA-2201
Date:			Rev 1.0
Date:			Rev 1.0
Date:			Rev 1.0

option for KB910 and LPC87591L
default is KB910



I/O Address			
BADDR1(KBA3)	BADDR0(KBA2)	Index	Data
0	0	2E	2F
0	1	4E	4F
* 1	0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1
1	1	Reserved	

ENV0 (KBA0)	ENV1 (KBA1)	TRIS (KBA4)
0	0	0
1	0	0
0	1	0
1	1	0

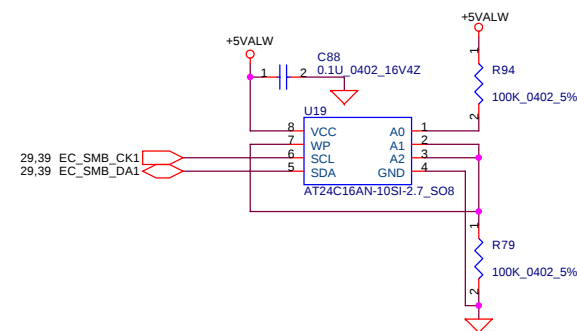
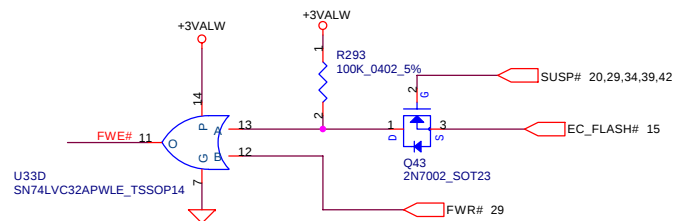
SHBM(KBA5)=1: Enable shared memory with host BIOS
TRIS(KBA4)=1: while in IRE and OBD, float all the signals for clip-on ISE use

	KB910	87591
R294	0	120K
R295	no stuff	20M

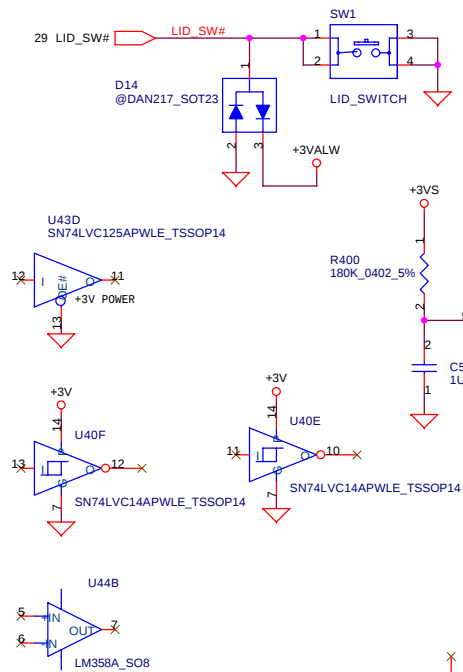
Compal Electronics, Inc.

EC KB910			
Size	Document Number	Rev	
Custom	DCL55 LA-2201	1.0	
Date:	星期四, 五月 06, 2004	Sheet	29 of 43

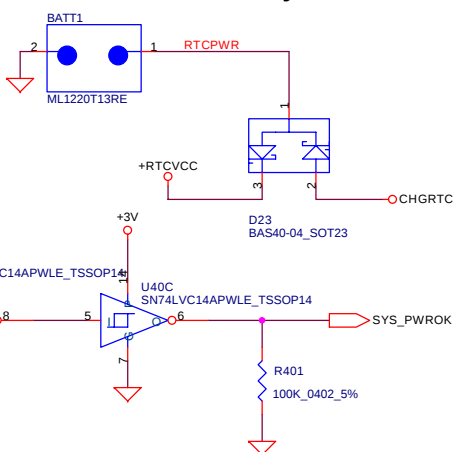
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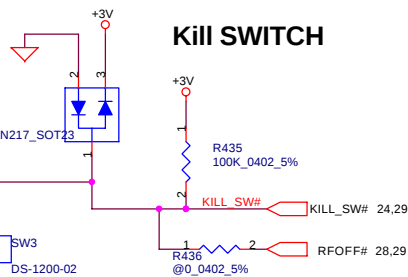
Power ON Circuit



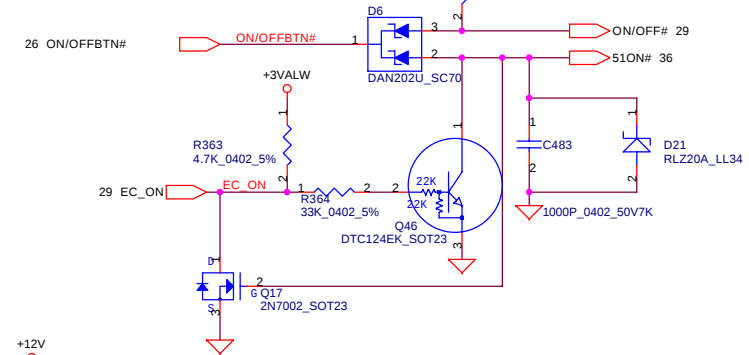
RTC Battery



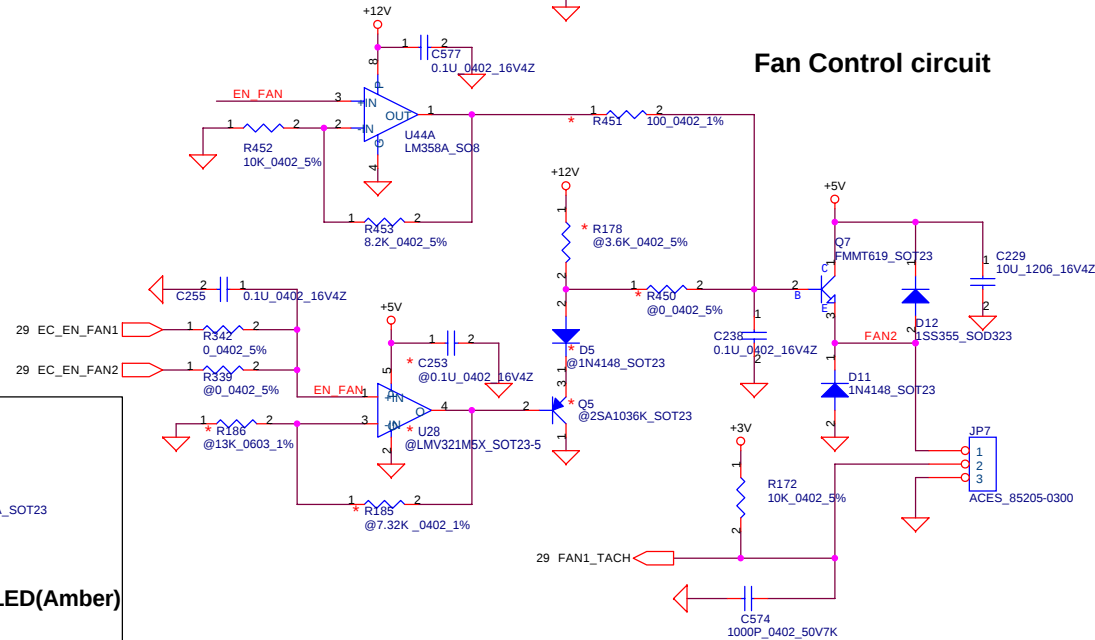
Kill SWITCH



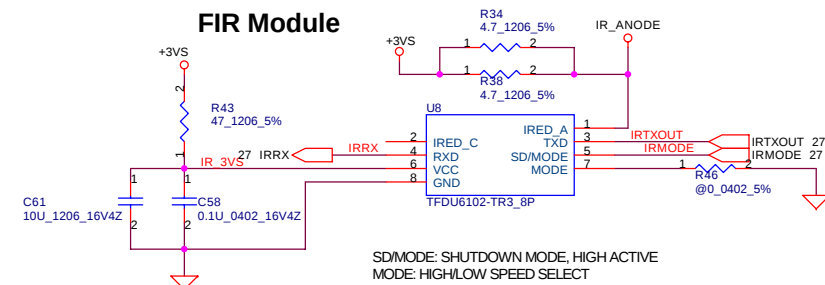
Power BTN



Fan Control circuit



FIR Module

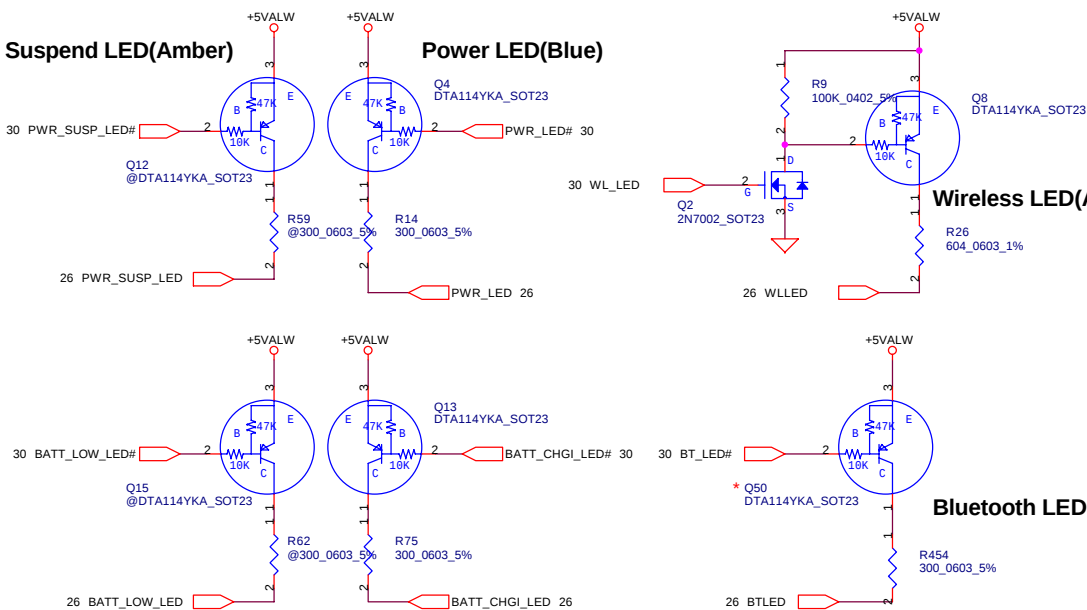


Suspend LED(Amber)

Power LED(Blue)

Wireless LED(Amber)

Bluetooth LED(Blue)



BATT Low LED(Amber)

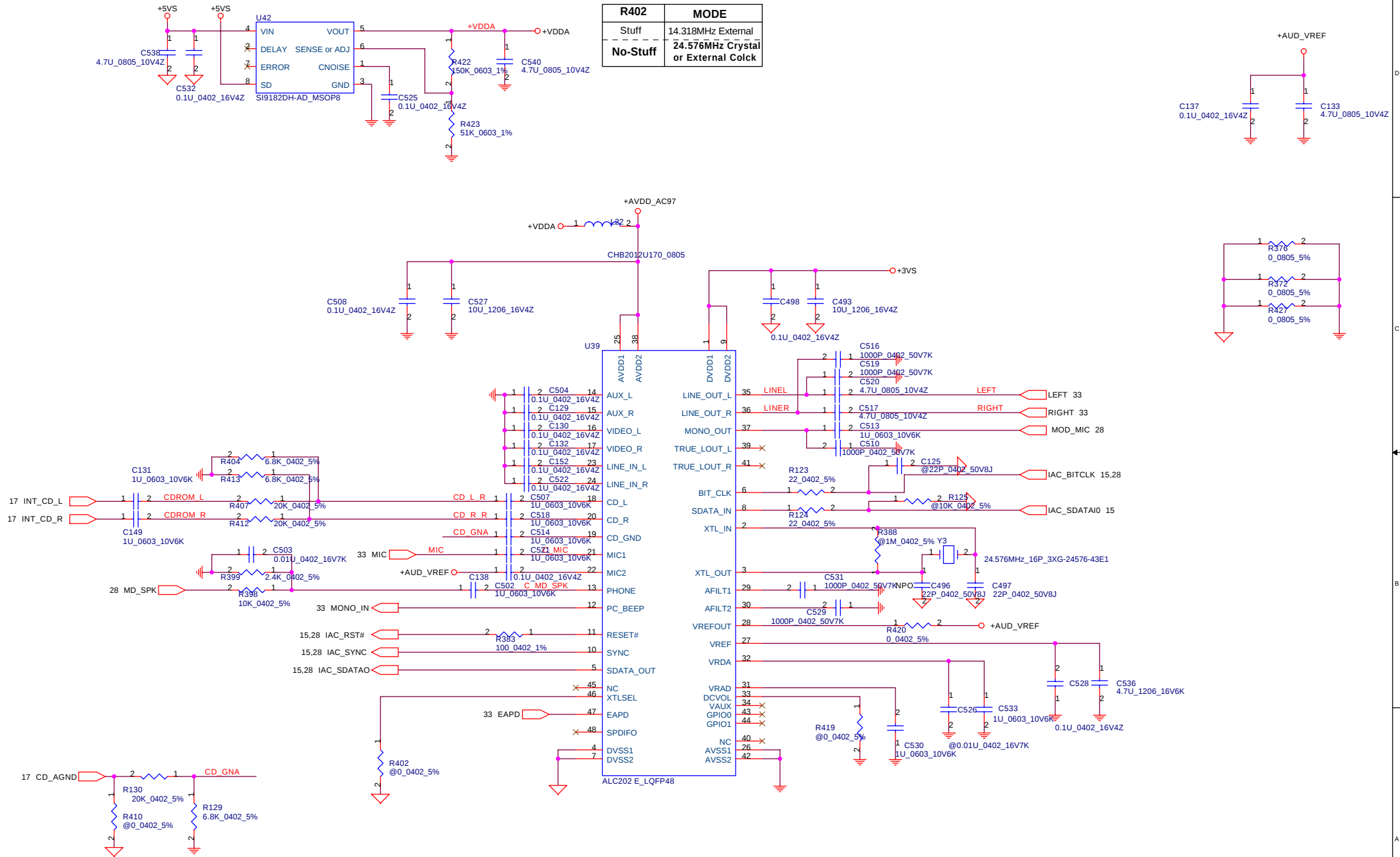
BATT Charge LED(Blue)

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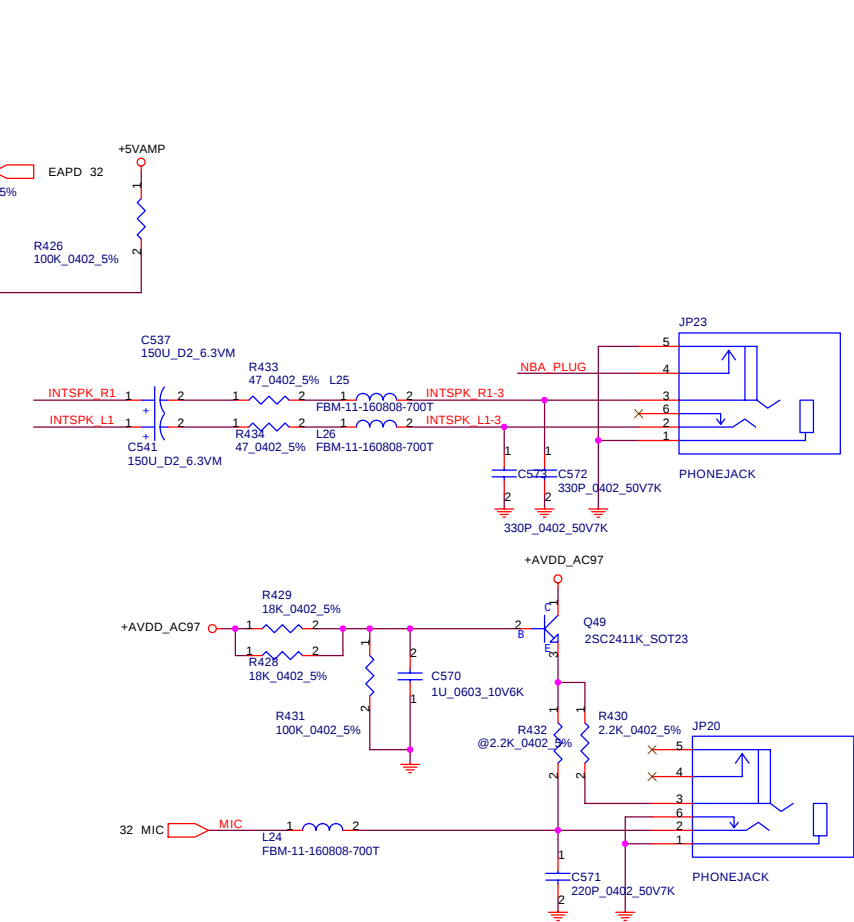
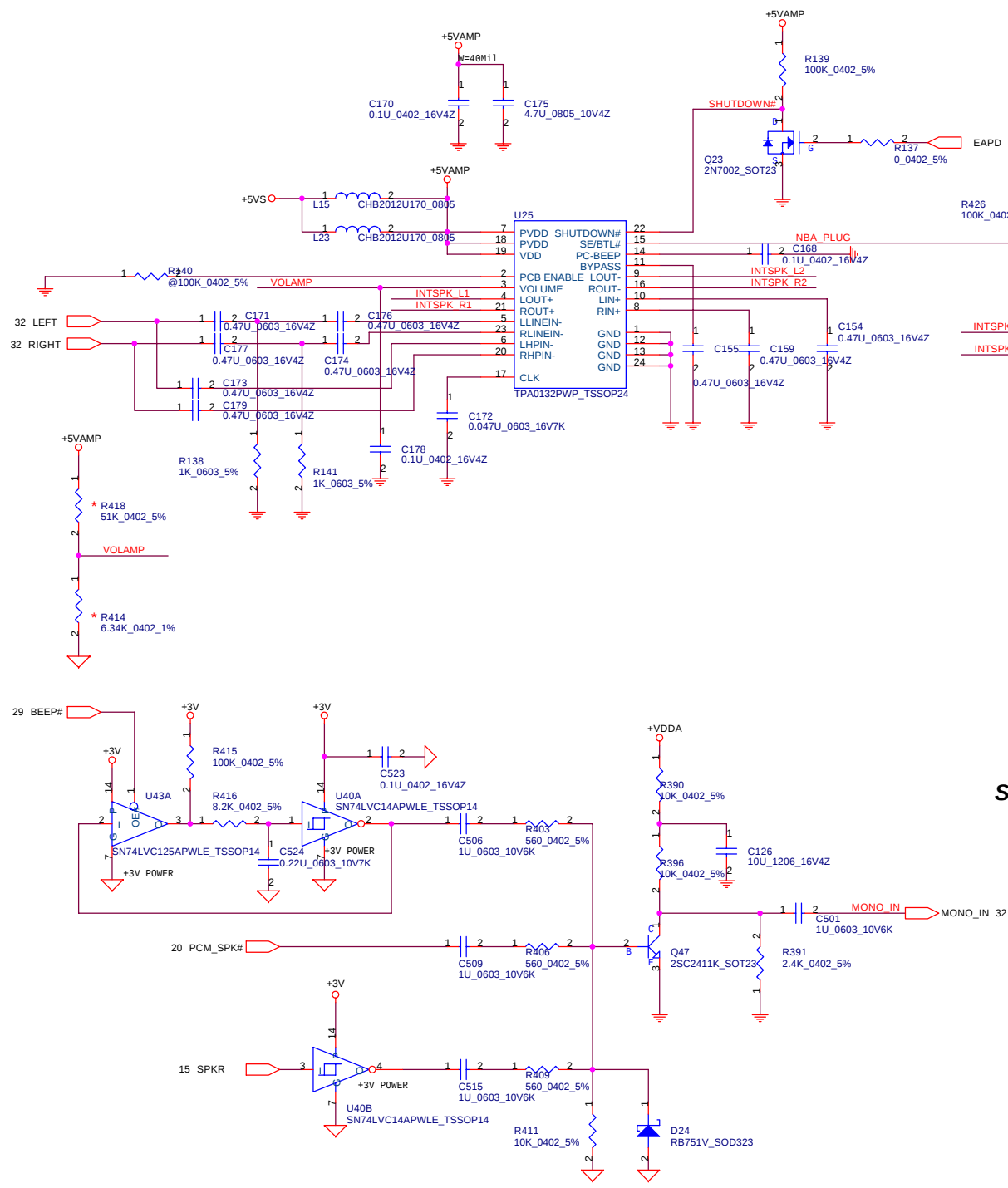
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Size	Document Number	Rev	
	DCLE55 LA-2201	1.0	
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AC97 Codec

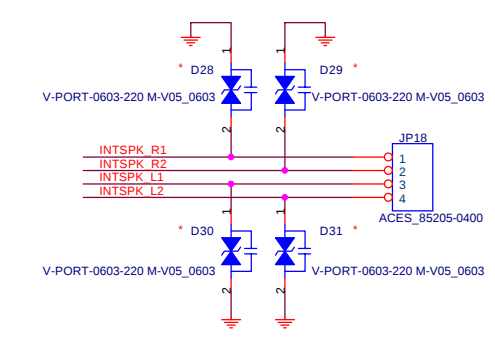


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Compal Electronics, Inc.			
Title AC97 Codec			
Size B	Document Number DCL55 LA-2201		Rev 1.0
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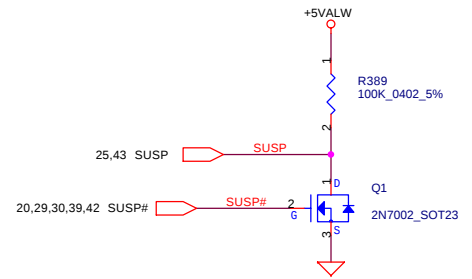
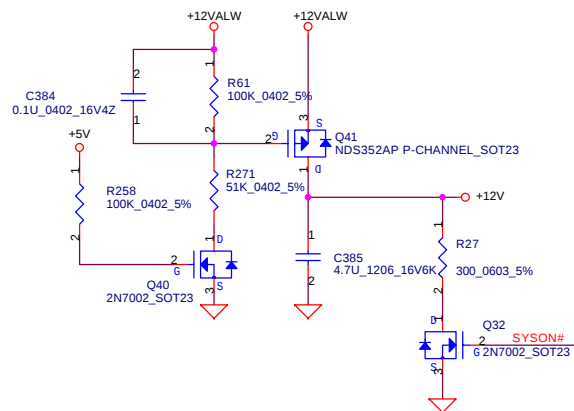
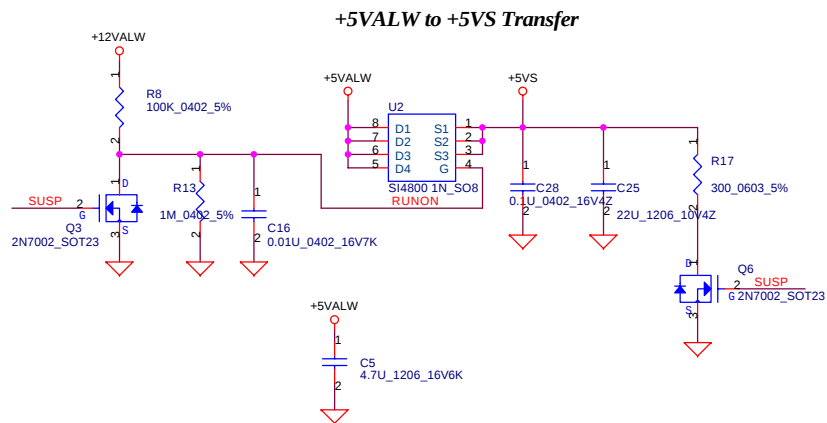
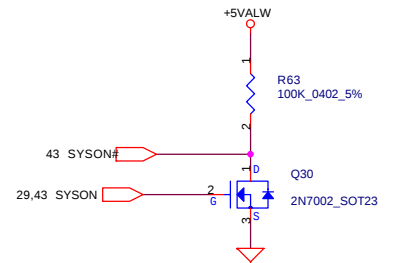
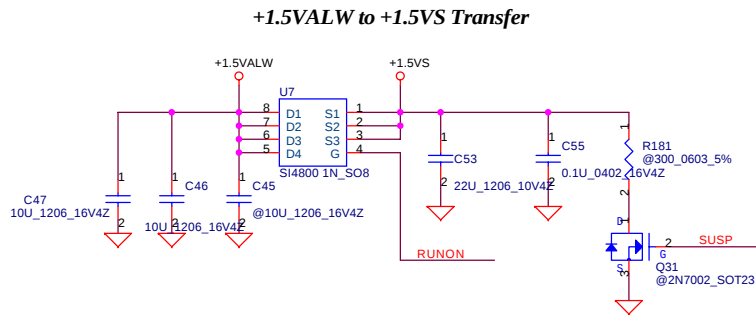
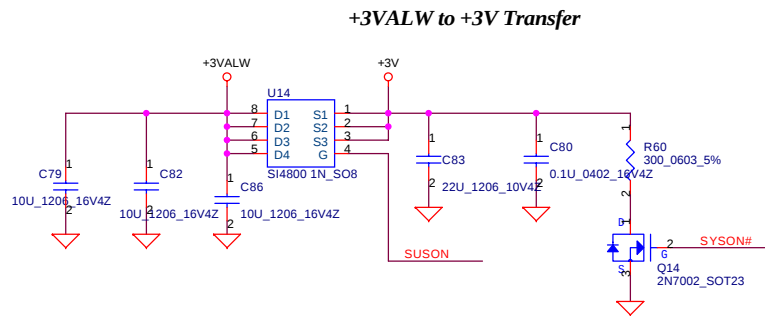
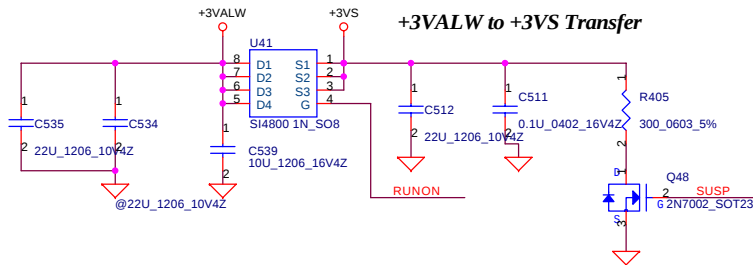
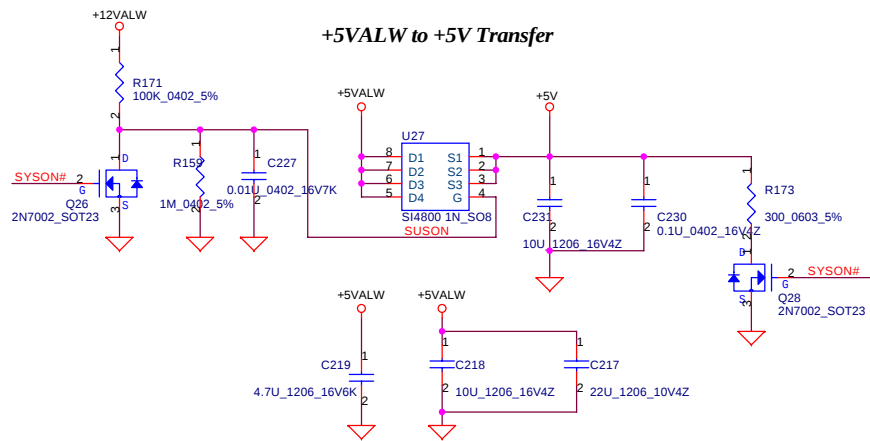


SPEAKER CONN.



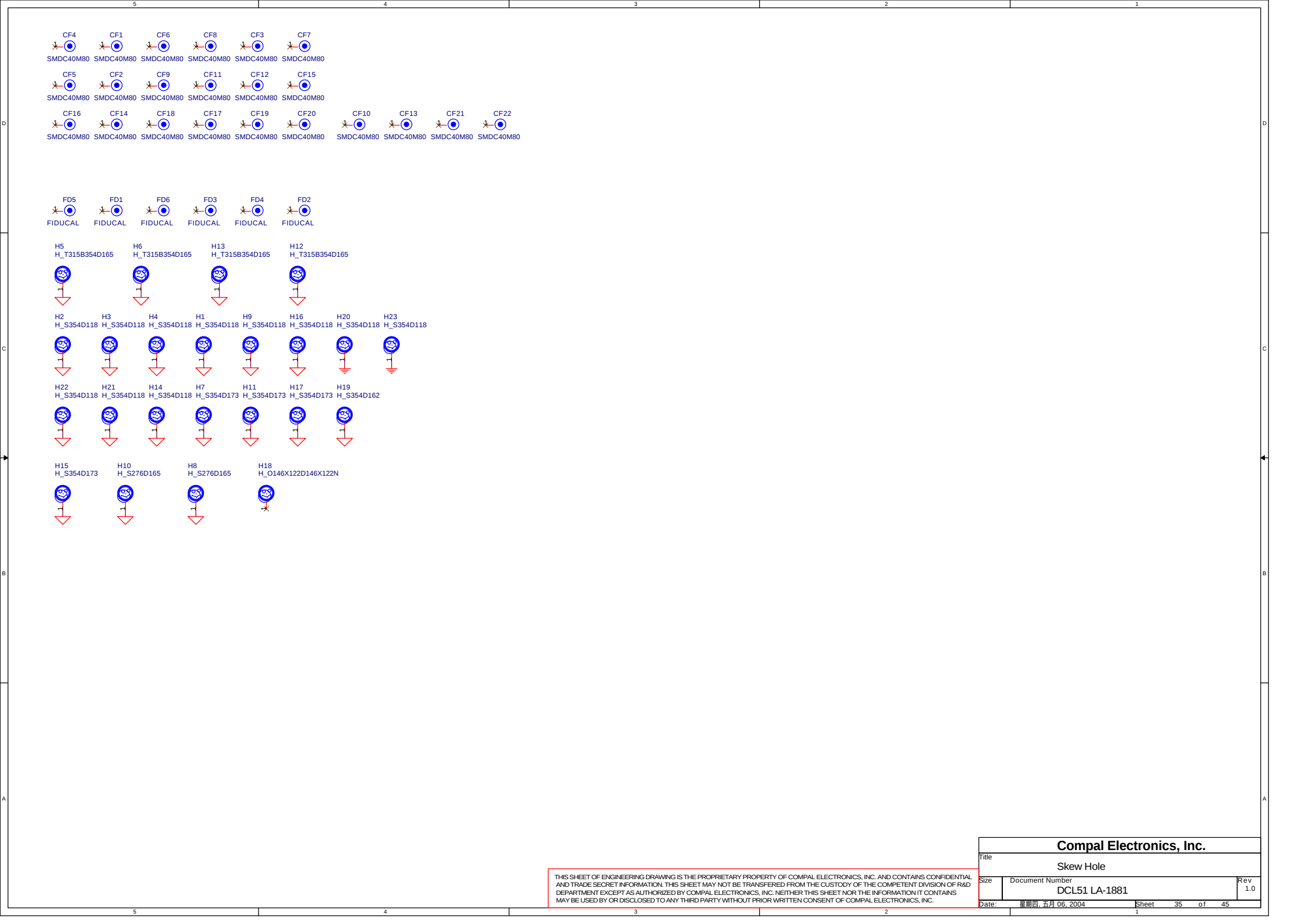
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Compal Electronics, Inc.			
Title			
AMP & Audio Jack			
Size	Document Number	Rev	
	DCL55 LA-2201	1.0	
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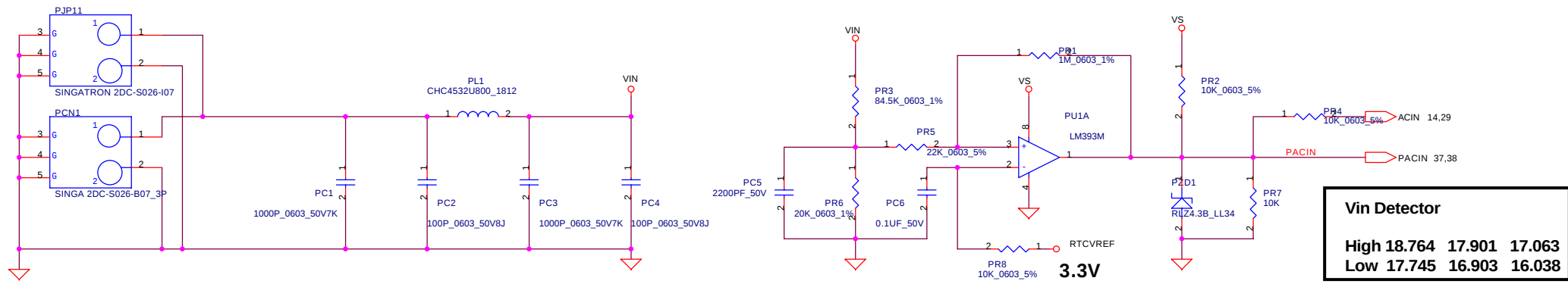
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Compal Electronics, Inc.			
Title DC/DC Circuit Interface			
Size	Document Number DCL55 LA-2201		Rev 1.0
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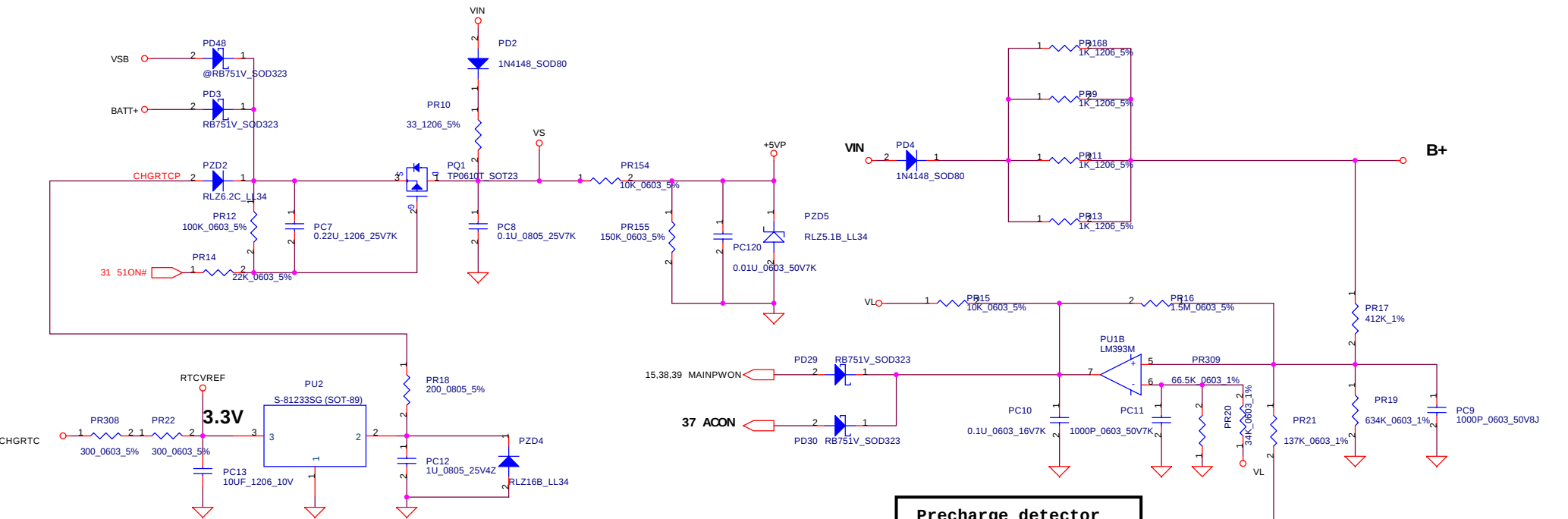


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Compal Electronics, Inc.			
Title		Skew Hole	
Size	Document Number		Rev
	DCL51 LA-1881		1.0
Date:	星期四, 五月 06, 2004	Sheet	35 of 45

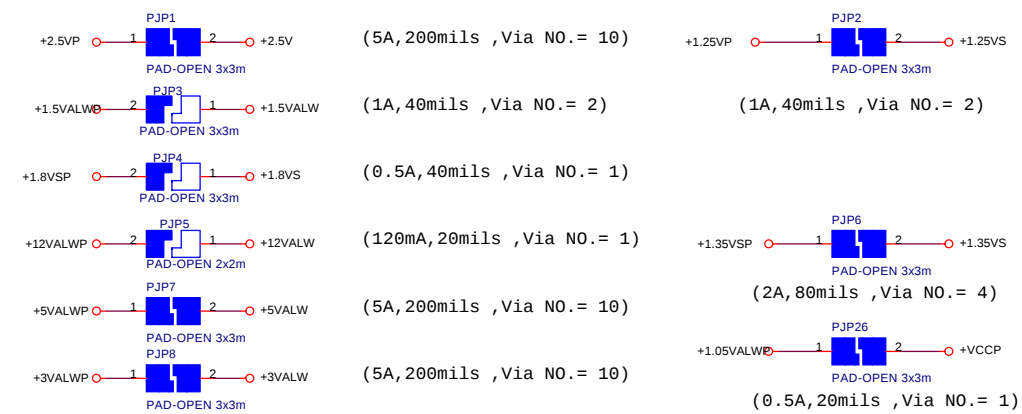


Vin Detector		
High	18.764	17.901
Low	17.745	16.038

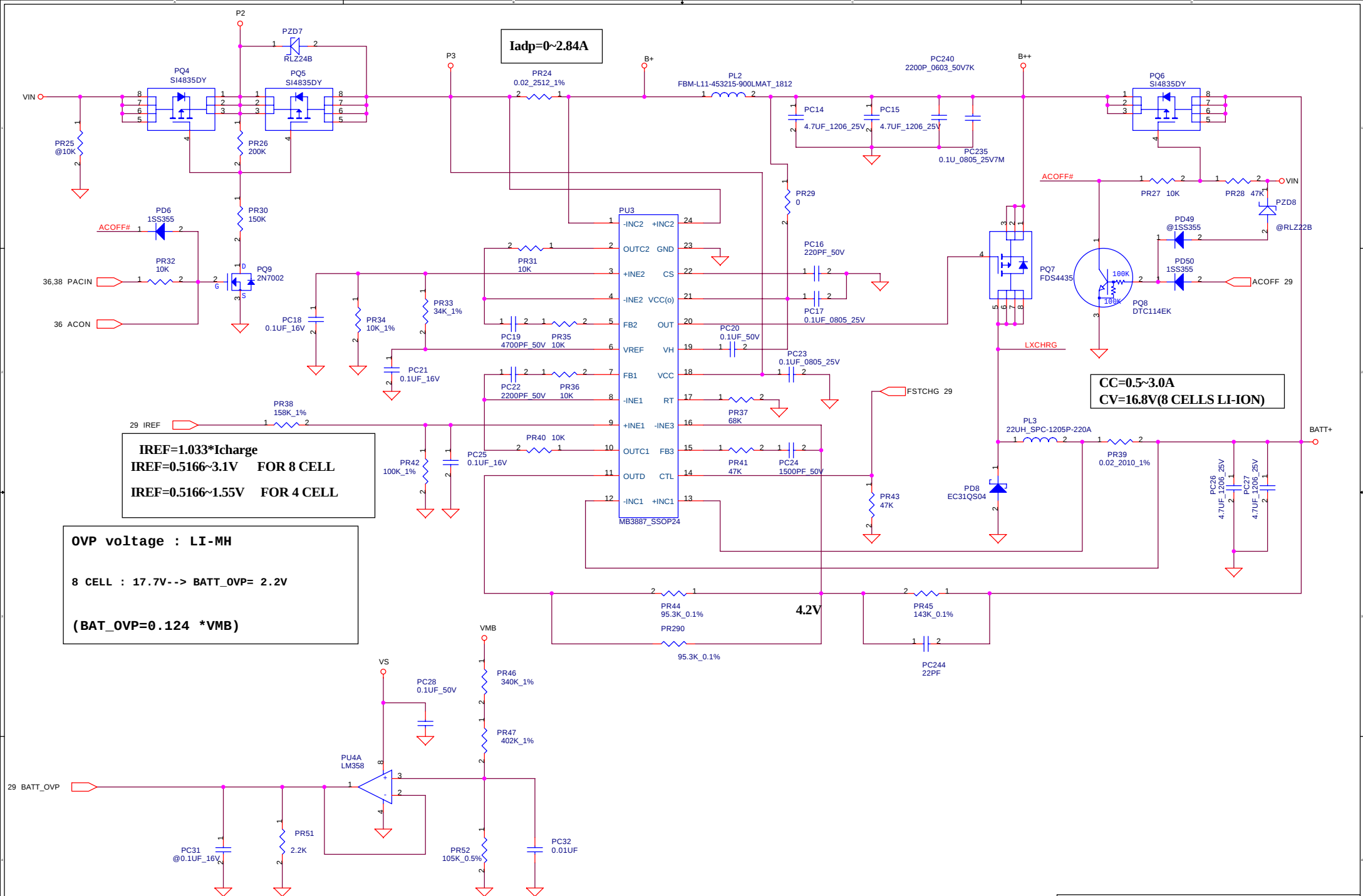


Precharge detector AC ADAPTOR		
16.69	16.05	15.42
15.6	15.02	14.35

Precharge detector AC ADAPTOR		
6.33	6.12	5.92
5.227	5.09	4.85



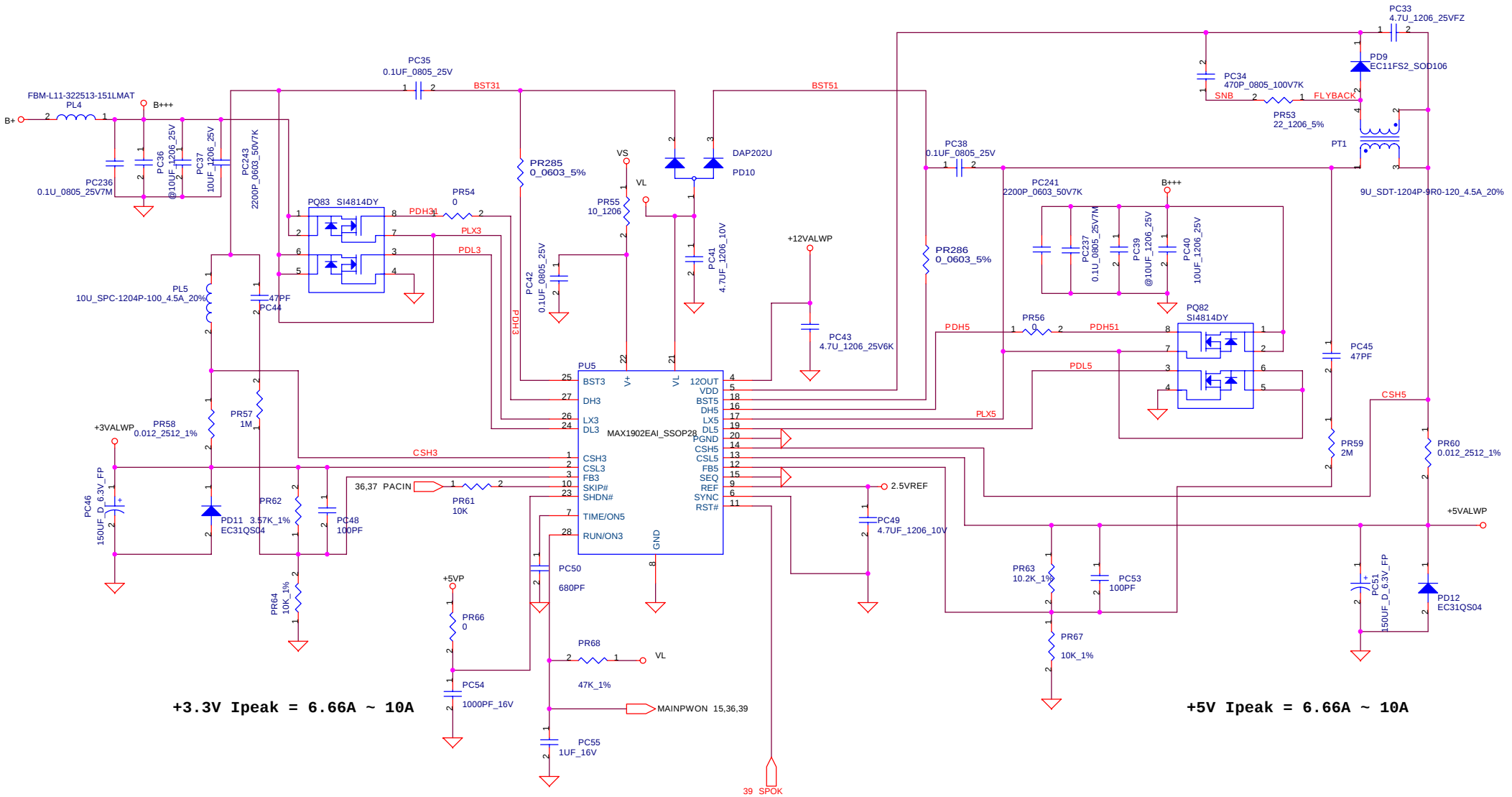
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Compal Electronics, Inc.

Title		CHARGER	
Size	Document Number	Rev	
B	DCL55 LA-2201	1.0	
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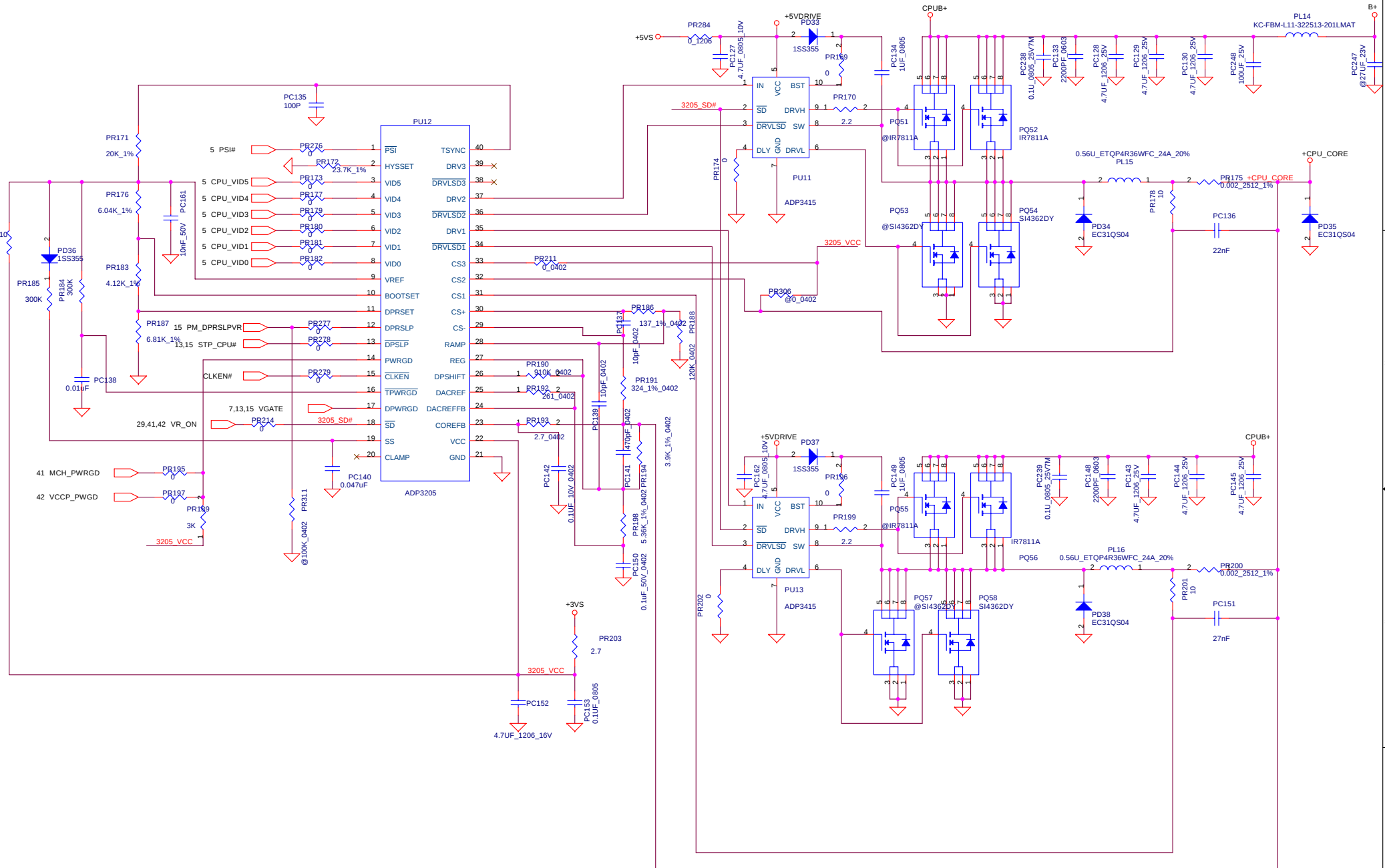


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Title		5V/3.3V/12V	
Size	Document Number	DCL55 LA-2201	
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CPU-CORE



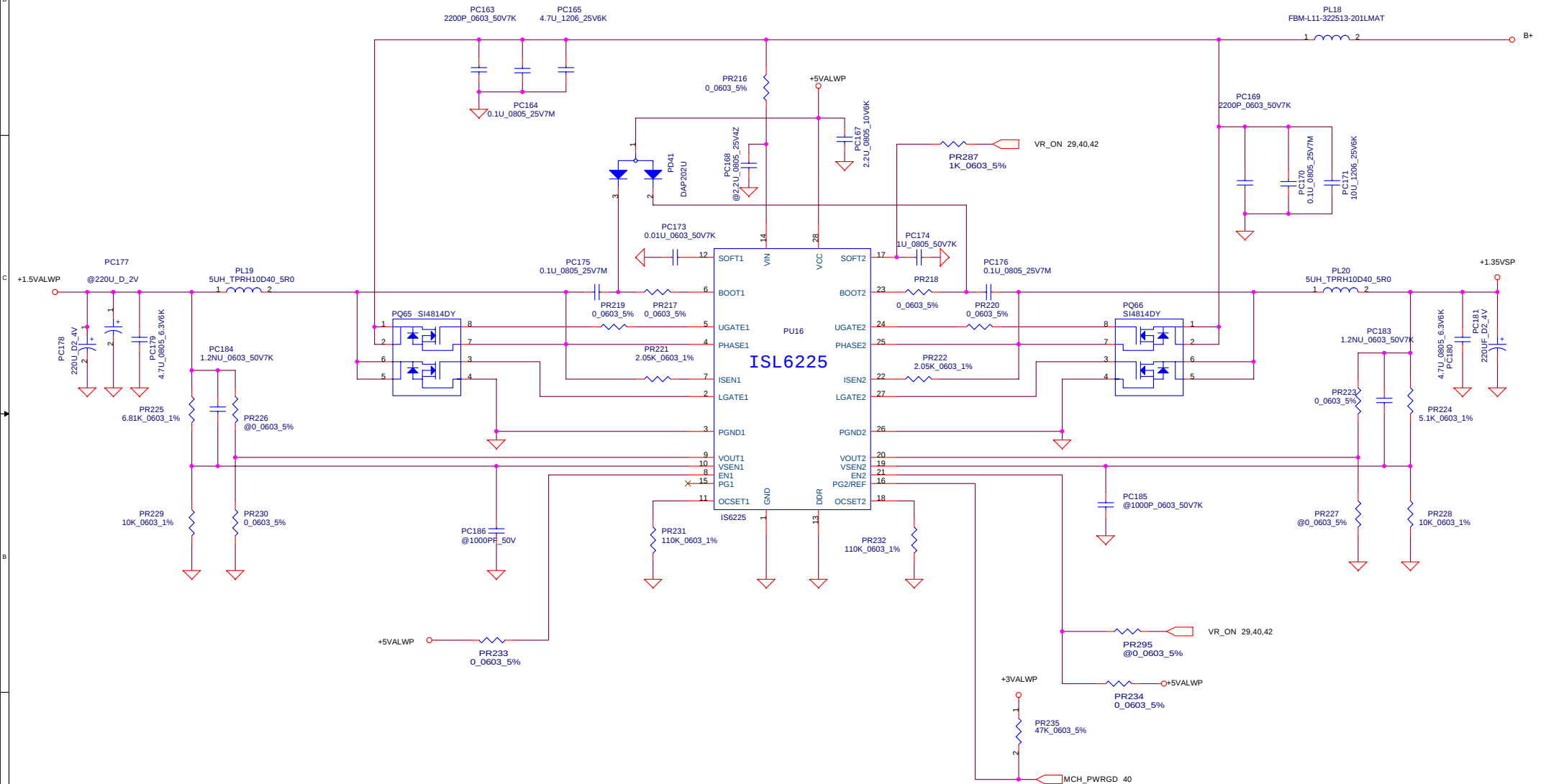
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+VCC_H_CORE

Size B	Document Number DCL55 LA-2201	Rev 1.0
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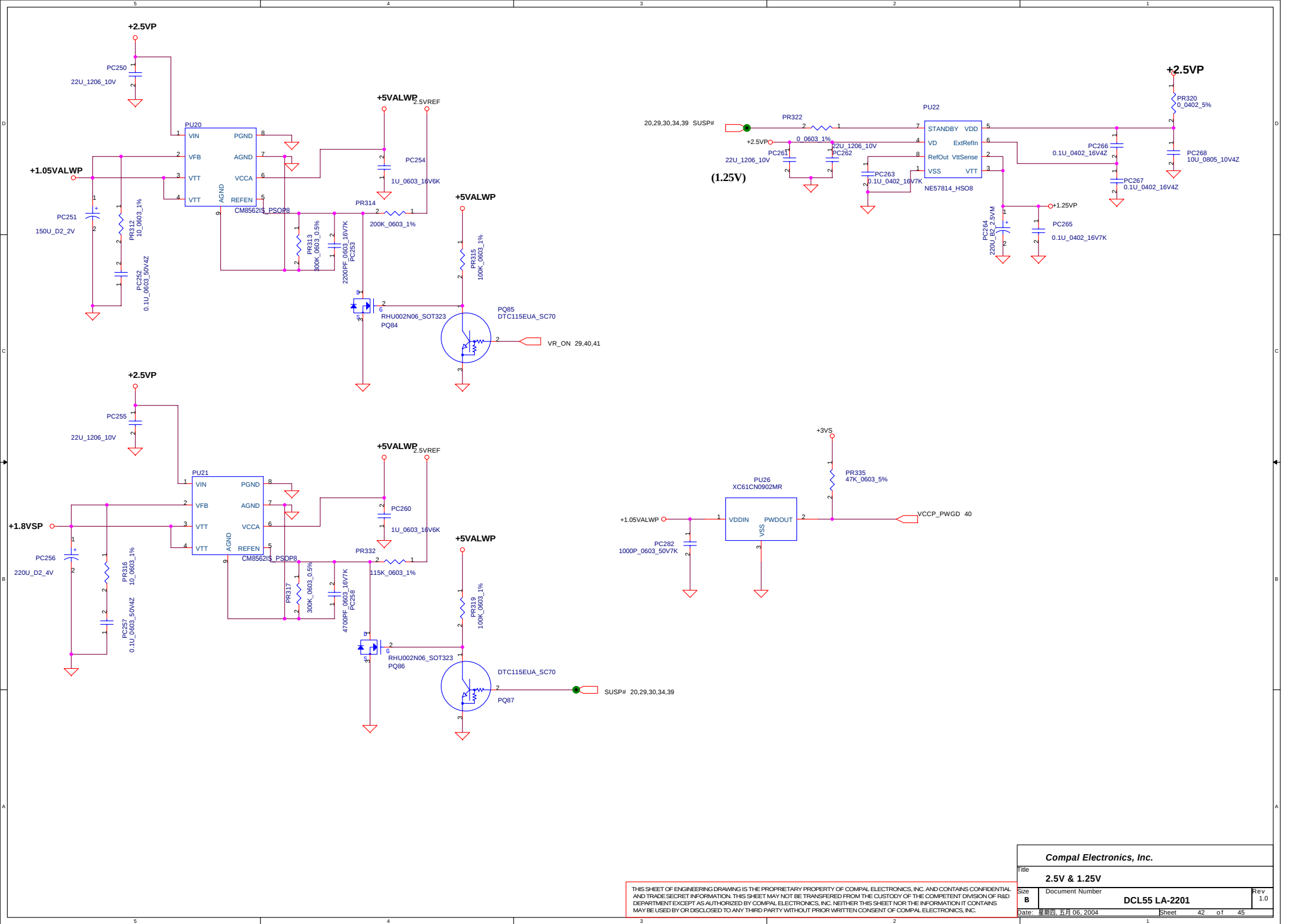
+1.5VALWPV/+1.2VSP



Compal Electronics, Inc.

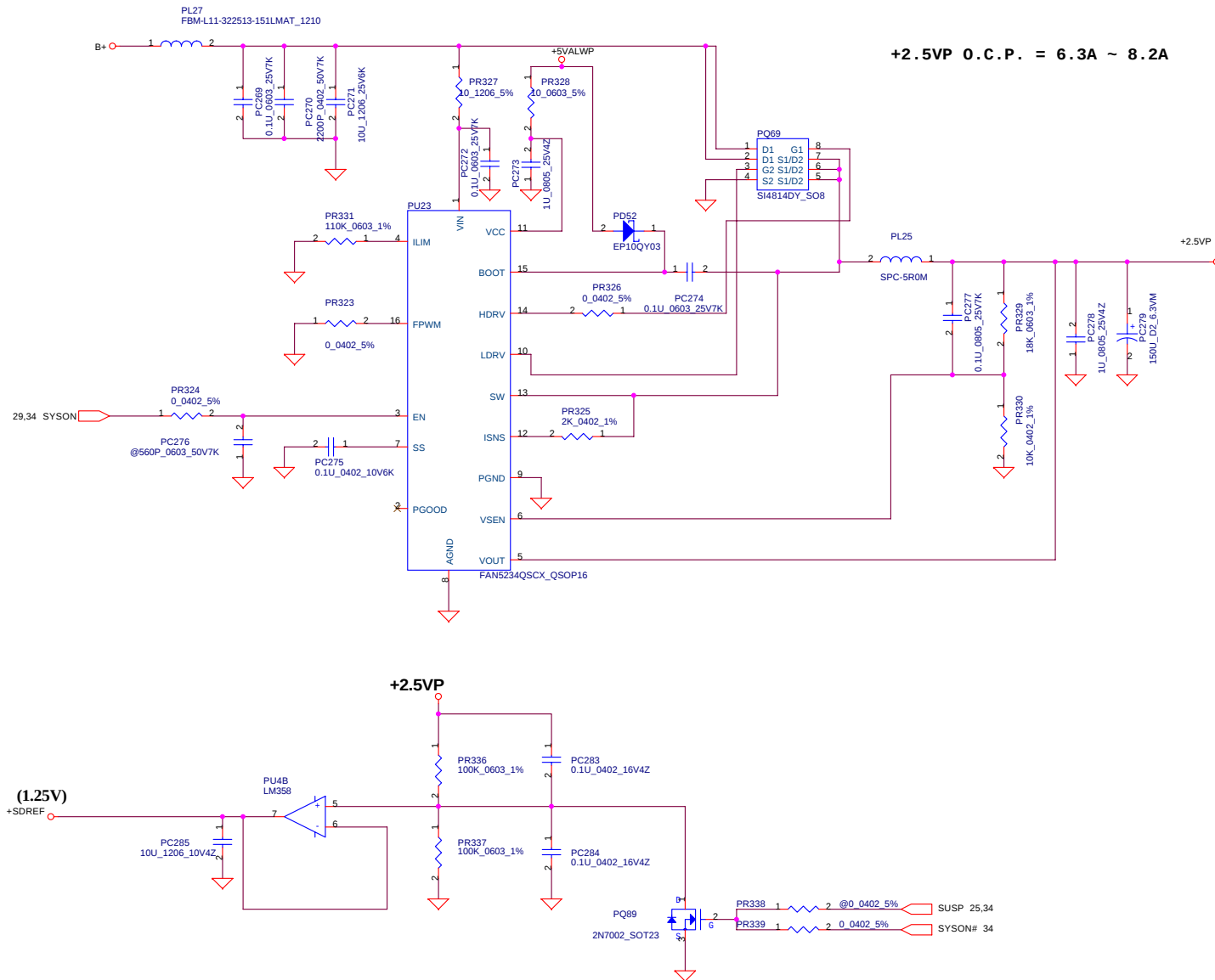
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Size	Document Number		Rev
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Version change list (P.I.R. List)

Item	Fixed Issue	Reason for change	Rev.	PG #	Modify List	VER	Phase
1		Set c4 mode controlled by bios based difference CPU		40	DELETE PR311:100K ; ADD PR277:0		DVT
2		Modify 1.05VP voltage level		42	1. change PR314 to 200k		DVT
3		modify 1.05VP,1.8VP soft start time		42	add PC253, PC258 to be 0.1U		DVT
4		add +SDREF signal circuit		43	add PR339:0; PQ89: 2N7002; PC283,PC284 :0.1U 16V;PR336,PR337:100K;PC285:10U 1206		PVT
5		Add one set power good:VCCP_PWGD		42,41	ADD LDO PU26 :XC61CN;PR335:47K;PC282:1000P 50V,PCHANGE R235 FROM 10K TO 47K		PVT
6		modify 1.05VP,1.8VP soft start time		42	CHANGE PC253 from 0.1u to 2200PF, PC258 from 0.1U to 4700PF		PVT
7		CHANGE PU5 from MAX1631 to MAX1902 (BECAUSE MAX1631 shortage)		38	CHANGE PT1 from 10u_1205P to 9u_sdt-1204p-9r0-120;delete PU19;CHANGE pl5 FROM 10U_SPC-1205P-100 to 10u_1204p-100_4.5A;change PC39 from 180PF to 470PF;DELETE PZD6;change PU5 from max1631 to max1902		MP
8		FOR CL53A ; To change 1.2VSP to 1.35 VSP		37,41	CHANGE PR224 from 3.48K to 5.1K, delete PD49,DELETE PZD8		
9							

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Item	Fixed Issue	Reason for change	Rev.	PG #	Modify List	VER	Phase
1		reserve +SDREF signal circuit		8	reserve R477,R479		PVT
2		reserve +SDREF signal circuit		10	reserve R480,R481		PVT
3		EMI performance		8	change C420_net from MRCOMP to +2.5V		PVT
4		reserve syson,susp#,vr_on pull low resister		29	reserve R482,R483,R484		
5		cost down			change L18,L19,L14,L13,L12,L8,L9,L7 to 0 ohm del C534,C45		PVT
6		board version update		29	change R361 from 8.2k to 18k		PVT
7		for customer request			del TV_out , 1394 funtion		PVT
8		solove leakage			del D15		preMP
9		board version update		29	change R361 from 8.2k to 33k		preMP