

Project Name : I38IIX

Platform : Calpella

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Schematic Version Change History

M/B Schematic Version Change List

Release Date	Version	PCB P/N	PCBA P/N	Note
0903'09	A	37GI38000-A0	82GI38000-A0	
1106'09	B	37GI38000-B0	82GI38000-B0	
1204'10	C	37GI38000-C0	82GI38000-C0	

D/B Schematic Version Change List

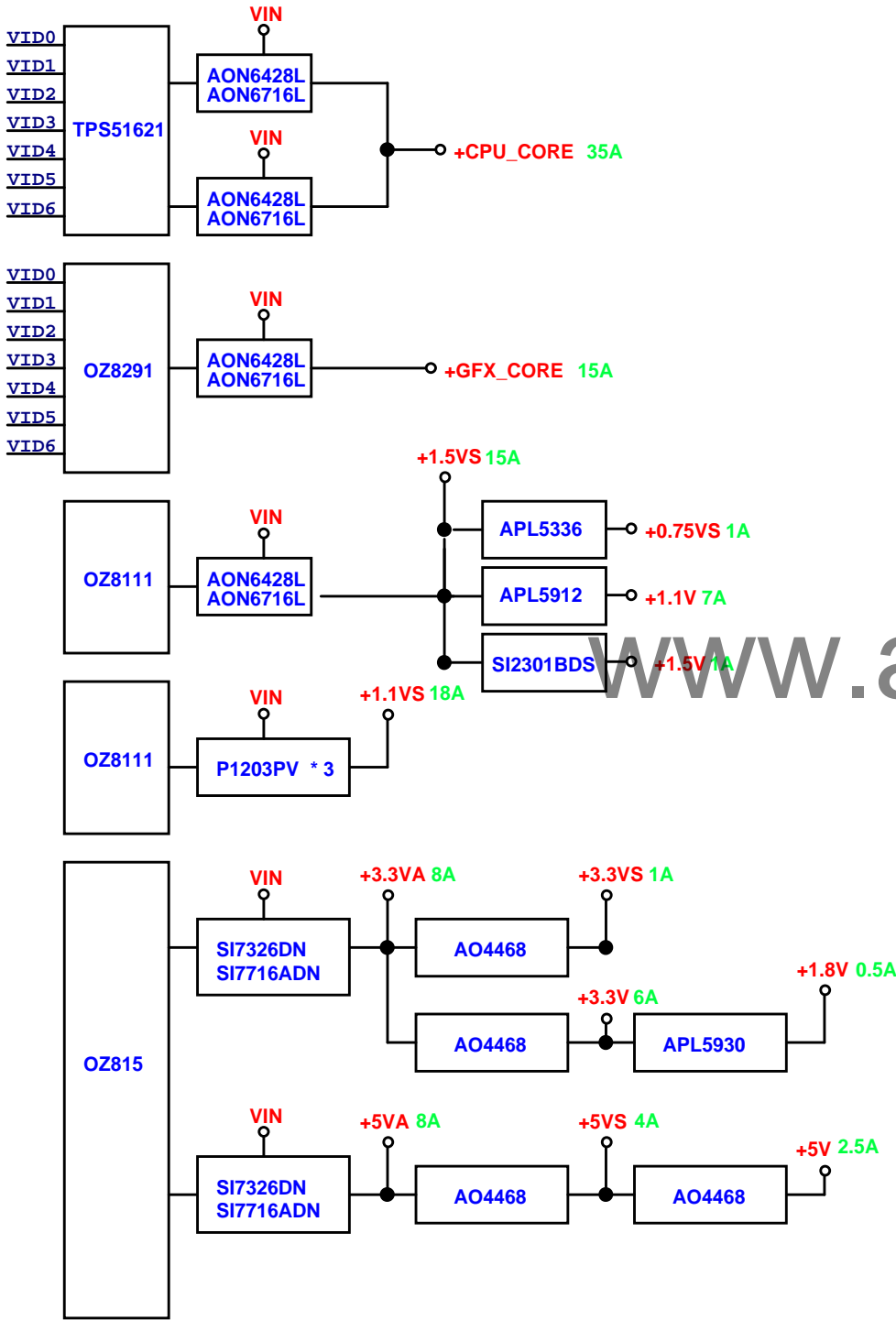
Release Date	Version	PCB P/N	PCBA P/N	Note
1201'09	C	35GJI3500-C0	80GJI3500-C0	3G
1201'09	C	35GWI3510-C0	80GWI3510-C0 80GWI35A0-C0	10/100 LAN GLAN
1201'09	C	35GMI3500-C0	80GMI3500-C0	Card
1201'09	C	35G3I3500-C0	80G3I3500-C0	CRT
1201'09	C	35GWI3500-C0	80GWI3500-C0	HDMI
1201'09	C	35G8I3500-C0	80G8I3500-C0	TP

SMT Process Identify Mark

* DIP component

PC16

POWER BLOCK DIAGRAM



POWER STATES

	+5V_ON	+1.5V_ON	+5VS_ON	+1.1VS_ON	+1.1VS_VTT_ON	VS_ON	**VA	**VS	**V	
S0	ON	ON	ON	ON	ON	ON	ON	ON	ON	
S3	ON	ON	OFF	OFF	OFF	OFF	ON	ON	OFF	
S4	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	
S5	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	

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IBEXPEAK GPIO	
GPIO0	S_GPIO
GPIO1	EC_EXTSMI#
GPIO2	INT_PIRQ#
GPIO3	INT_PIRQ#
GPIO4	INT_PIRQ#
GPIO5	INT_PIRQ#
GPIO6	DGPU_HPD_INTR#
GPIO7	EC_EXTSCI#
GPIO8	HOST_ALERT#2
GPIO9	PULL UP
GPIO10	PULL UP
GPIO11	PCH_GPIO11
GPIO12	GPIO12
GPIO13	N.C
GPIO14	PULL UP
GPIO15	HOST_ALERT#1
GPIO16	DGPU_HOLD_RST#
GPIO17	DGPU_PWROK
GPIO18	GLAN_CLKREQ1#
GPIO19	ODD_DET
GPIO20	PCIECLKRQ2#
GPIO21	SATA_DET#
GPIO22	PULL UP
GPIO23	N.C
GPIO24	BT_APM#
GPIO25	PCIECLKRQ3#
GPIO26	PCIECLKRQ4#
GPIO27	PULL DOWN
GPIO28	GPIO28
GPIO29	PM_SLP_LAN#
GPIO30	SUS_PWR_ACK
GPIO31	AC_PRESENT
GPIO32	PM_CLKRUN#
GPIO33	PULL DOWN
GPIO34	STP_PCI#
GPIO35	GPIO35
GPIO36	DGPU_PWR_EN#
GPIO37	DGPU_PRST#
GPIO38	MFG_MODE
GPIO39	CRB_SV_DET
GPIO40	PULL UP
GPIO41	PULL UP
GPIO42	PULL UP
GPIO43	PULL UP
GPIO44	PCIECLKRQ5#
GPIO45	PCIECLKRQ6#
GPIO46	PCIECLKRQ7#
GPIO47	PEG_CLKREQ#
GPIO48	SV_SET_UP
GPIO49	PM_THROTTLING#
GPIO50	PCI_REQ#1
GPIO51	PCI_GNT#1
GPIO52	DGPU_SELECT#
GPIO53	DGPU_PWM_SELECT#
GPIO54	PCI_REQ#3
GPIO55	PCI_GNT#3
GPIO56	PEG_B_CLKRQ#
GPIO57	PCH_GPIO57
GPIO58	SML1_CLK
GPIO59	PULL UP
GPIO60	FP_INIT#

IBEXPEAK GPIO	
GPIO61	PM_SUS_STAT#
GPIO62	SUS_CLK
GPIO63	PM_SLP_S5#
GPIO64	N.C
GPIO65	N.C
GPIO66	N.C
GPIO67	EDID_SELECT#
GPIO72	PM_BATLOW#
GPIO73	MINI_CLKREQ1#
GPIO74	LPD_SPI_INTR#
GPIO75	SML1_DATA

IT8502E GPIO		Default Pull/Mode
GPA0	PM_RSMRST#	UP / GPI
GPA1	N.C	UP / GPI
GPA2	BT_L_BEEP	UP / GPI
GPA3	WLAN/BT_LED	UP / GPI
GPA4	Battery_Audio#	UP / GPI
GPA5	SAFTY_PROTECT	UP / GPI
GPA6	PWR_LED	UP / GPI
GPA7	EC_BL_PWM	UP / GPI
GPB0	PM_SLP_S4#	UP / GPI
GPB1	PM_SLP_S3#	UP / GPI
GPB2	WEBCAM_ON	Dn / GPI
GPB3	BAT_SMBCLK	/ GPI
GPB4	BAT_SMBDAT	/ GPI
GPB5	H_A20GATE	/ GPO
GPB6	H_RCIN#	UP / Funcl
GPB7	RF_ON	Dn / GPI
GPC0	BT_EN	Dn / GPI
GPC1	SMBCLK_EC	/ GPI
GPC2	SMBDAT_EC	/ GPI
GPC3	N.C	Dn / GPI
GPC4	Battery_PWM	Dn / GPI
GPC5	N.C	Dn / GPI
GPC6	Fast-charge-EN#	Dn / GPI
GPC7	Battery_Saving	UP / GPI
GPD0	AC_IN	UP / GPI
GPD1	PWRBTN#	UP / GPI
GPD2	EC_LPCRST#	UP / Funcl
GPD3	EC_SCI#_A	UP / GPI
GPD4	EC_EXTSMI#_A	UP / GPI
GPD5	EC_PROCHOT#	UP / GPI
GPD6	CHG_ON#	Dn / GPI
GPD7	EC_BL_EN	Dn / GPI
GPE0	VCORE_ON	Dn / GPI
GPE1	SET_V	Dn / GPI
GPE2	ALL_SYS_PWRGD	Dn / GPI
GPE3	N.C	Dn / GPI
GPE4	PWRSW	UP / GPI
GPE5	CL_PWROK_EC	Dn / GPI
GPE6	LID#	Dn / GPI
GPE7	PWR_KEEP	UP / GPI
GPF0	N.C	UP / GPI
GPF1	N.C	UP / GPI
GPF2	CHR_G#	UP / GPI
GPF3	CHR_R#	UP / GPI
GPF4	TP_CLK	UP / GPI
GPF5	TP_DATA	UP / GPI
GPF6	SMB_CLK_VGA	UP / GPI
GPF7	SMB_DAT_VGA	UP / GPI
GPG0	AMP_MUTE#	Dn/GPO/TM
GPG1	EC_SKIP	Dn/GPO/ID7
GPG2	FLFRAME#	
GPG6	SUS_PWR_ACK	
GPH0	VS_ON	Dn/GPI/ID0
GPH1	+1.5V_ON	Dn/GPI/ID1
GPH2	SENBAT_V	Dn/GPI/ID2
GPH3	+5V_ON	Dn/GPI/ID3
GPH4	+5VS_ON	Dn/GPI/ID4
GPH5	+1.1VS_ON	Dn/GPI/ID5
GPH6	+1.1VS_VTT_ON	Dn/GPI/ID6

IT8502E GPIO		Default Pull/Mode
GPI0	BATT_TEMP	/GPI/ADC
GPI1	ADAPTOR_I	/GPI/ADC
GPI2	N.C	/GPI/ADC
GPI3	N.C	/GPI/ADC
GPI4	BAT_I	/GPI/ADC
GPI5	VGA_TEMP	/GPI/ADC
GPI6	DDR3_TEMP	/GPI/ADC
GPI7	BAT_V	/GPI/ADC
GPJ0	EC_BRGHT	/GPI/DAC
GPJ1	CHG_I	/GPI/DAC
GPJ2	FAN_CTRL0	/GPI/DAC
GPJ3	N.C	/GPI/DAC
GPJ4	N.C	/GPI/DAC
GPJ5	PM_THROTTLING#	/GPI/DAC

Auburndale CPU				
CPU	CPU CORE(V)	ICC(A)	W	TEMP(°C)
	Vcore	48		70
GPU	VAXG	22		
	+1.8VS	0.6	1.08	
	+1.5V	3	4.5	
	+1.1VS	18	19.8	

IBEXPEAK				
VCC	ICC(mA)	mW	TEMP(°C)	
+5V	1	5	70	
+5VS	1	5		
+3.3V	254	838.2		
+3.3VS	447	1475.1		
+1.8VS	411	739.8		
+1.1VS	6862	7548.2		

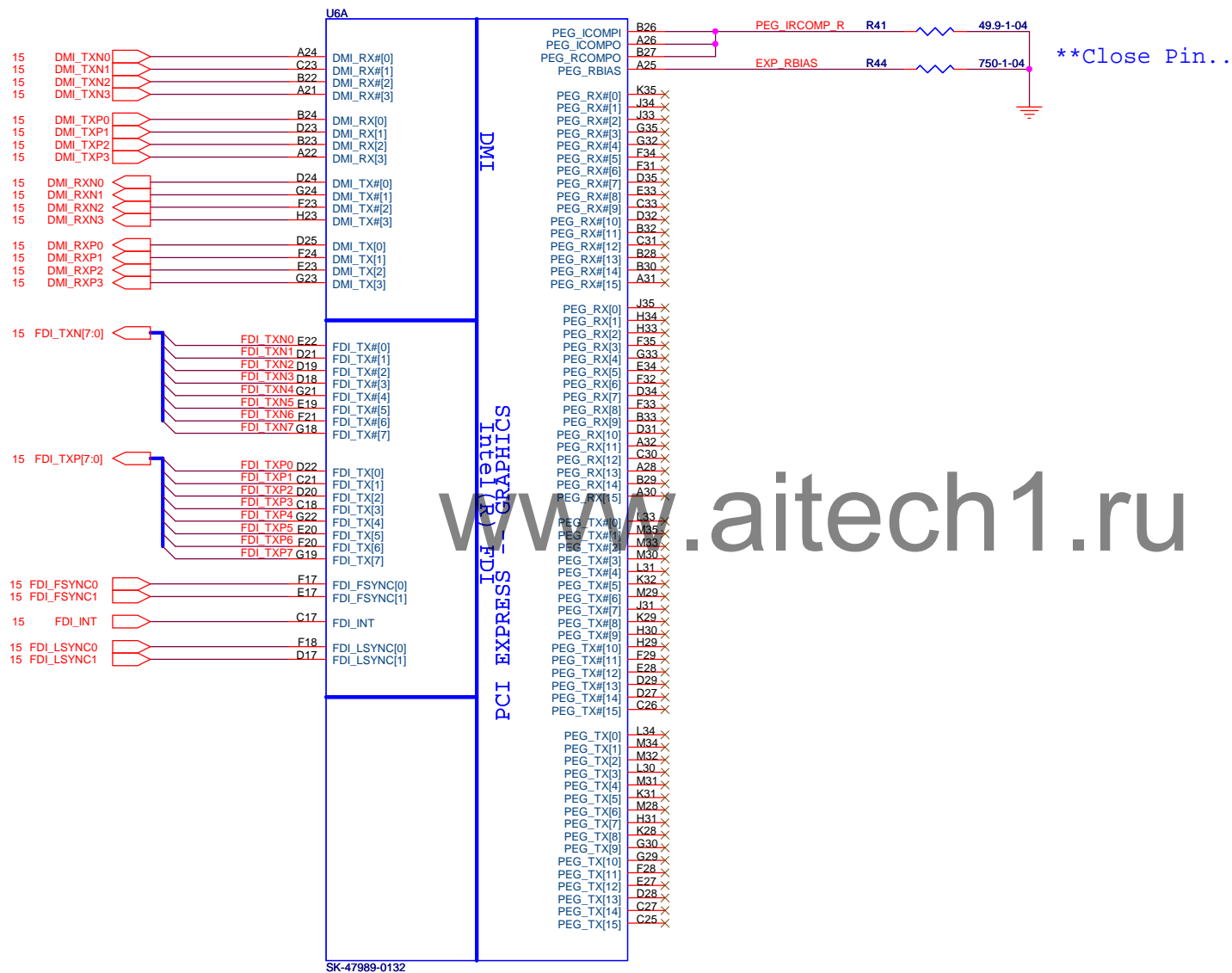
IT8502E				
VCC	ICC(mA)	mW	TEMP(°C)	
+3.3V	100	330	70	

CLOCK GENERATOR ICS91RS3197				
VCC	ICC(mA)	mW	TEMP(°C)	
+3.3V	250	825	70	

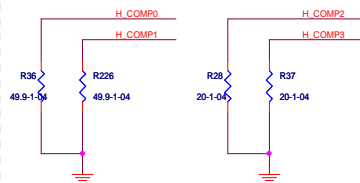
RTS5159				
VCC	ICC(mA)	mW	TEMP(°C)	
+3.3V	250	825	70	

RTL8111DL				
VCC	ICC(mA)	mW	TEMP(°C)	
+3.3VS	66	217.8	70	

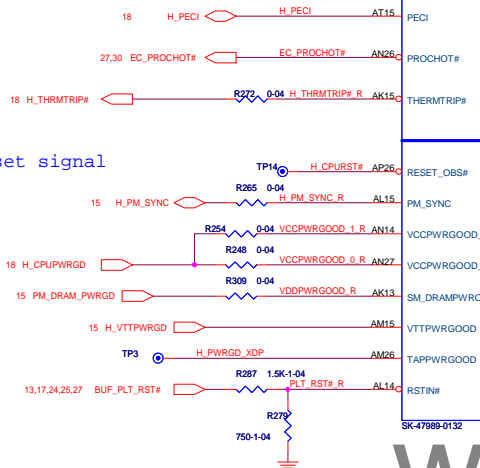
ALC269				
VCC	ICC(mA)	mW	TEMP(°C)	
+3.3V(DVDD)	35	115.5	70	
+5V(AVDD)	68	340		



Processor Compensation Signals

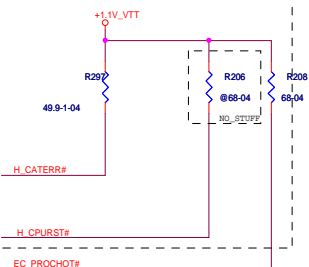


Output CPU Reset signal

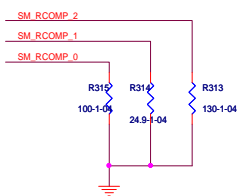


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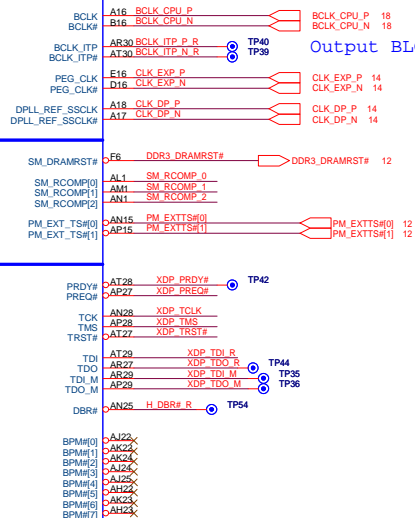
Processor Pullups



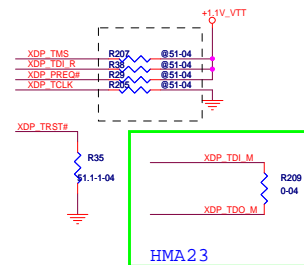
DDR3 Compensation Signals

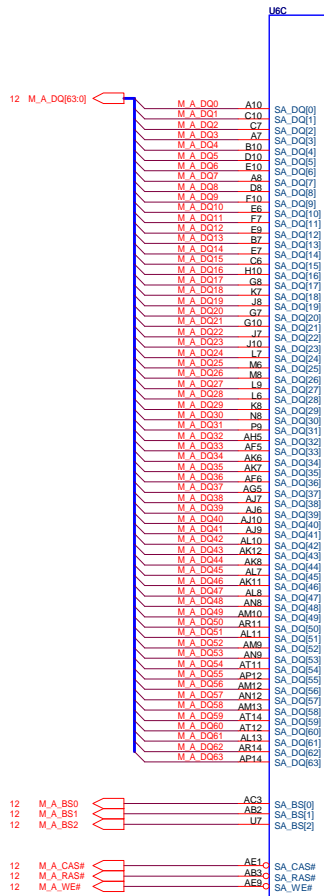


CLOCKS
THERMAL
DDR3
MISC
JTAG & BPM
PWR MANAGEMENT



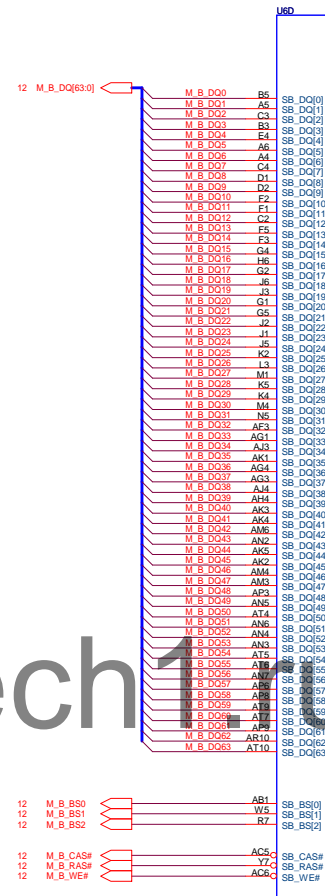
Output BCLK for other one.





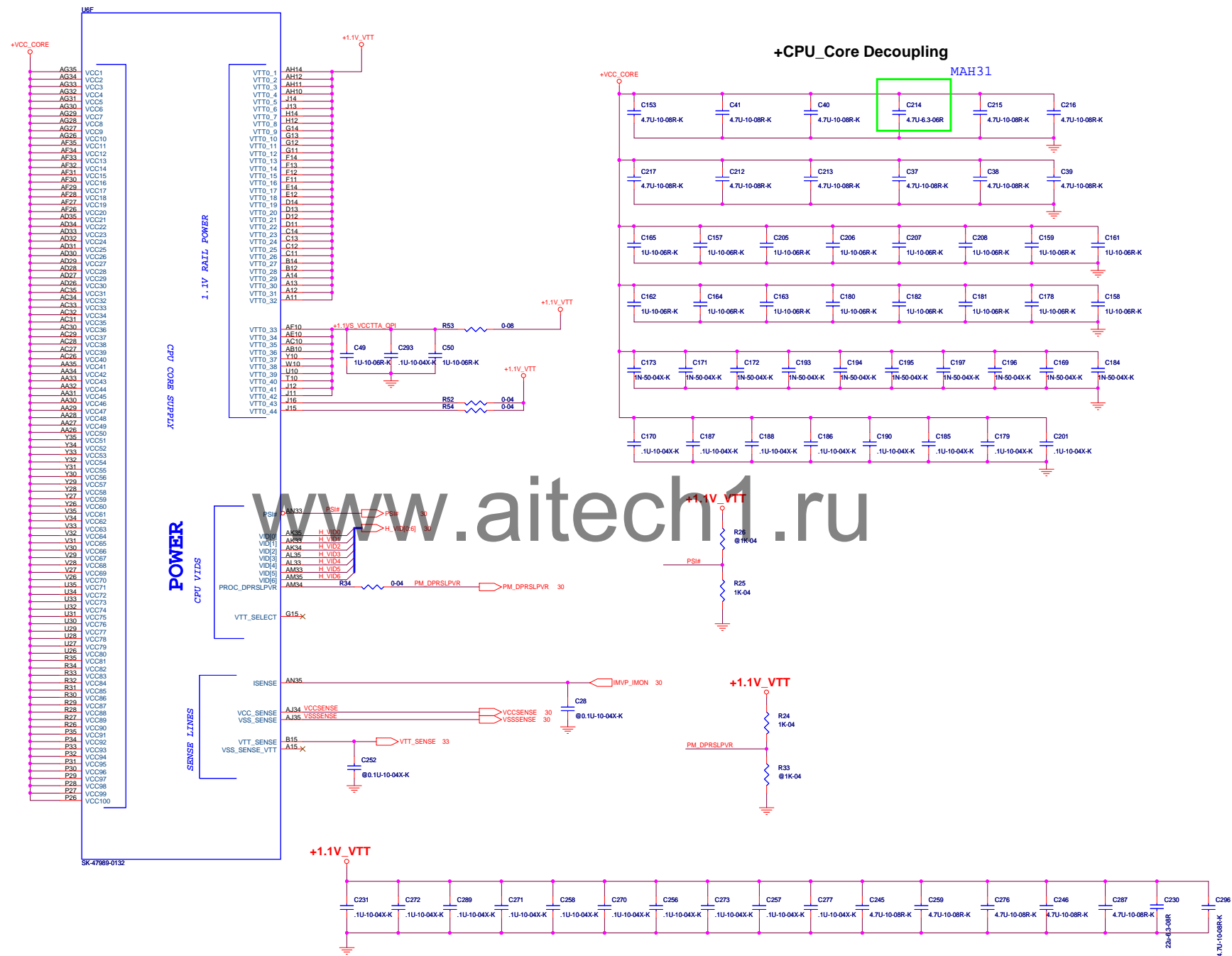
DDR SYSTEM MEMORY A

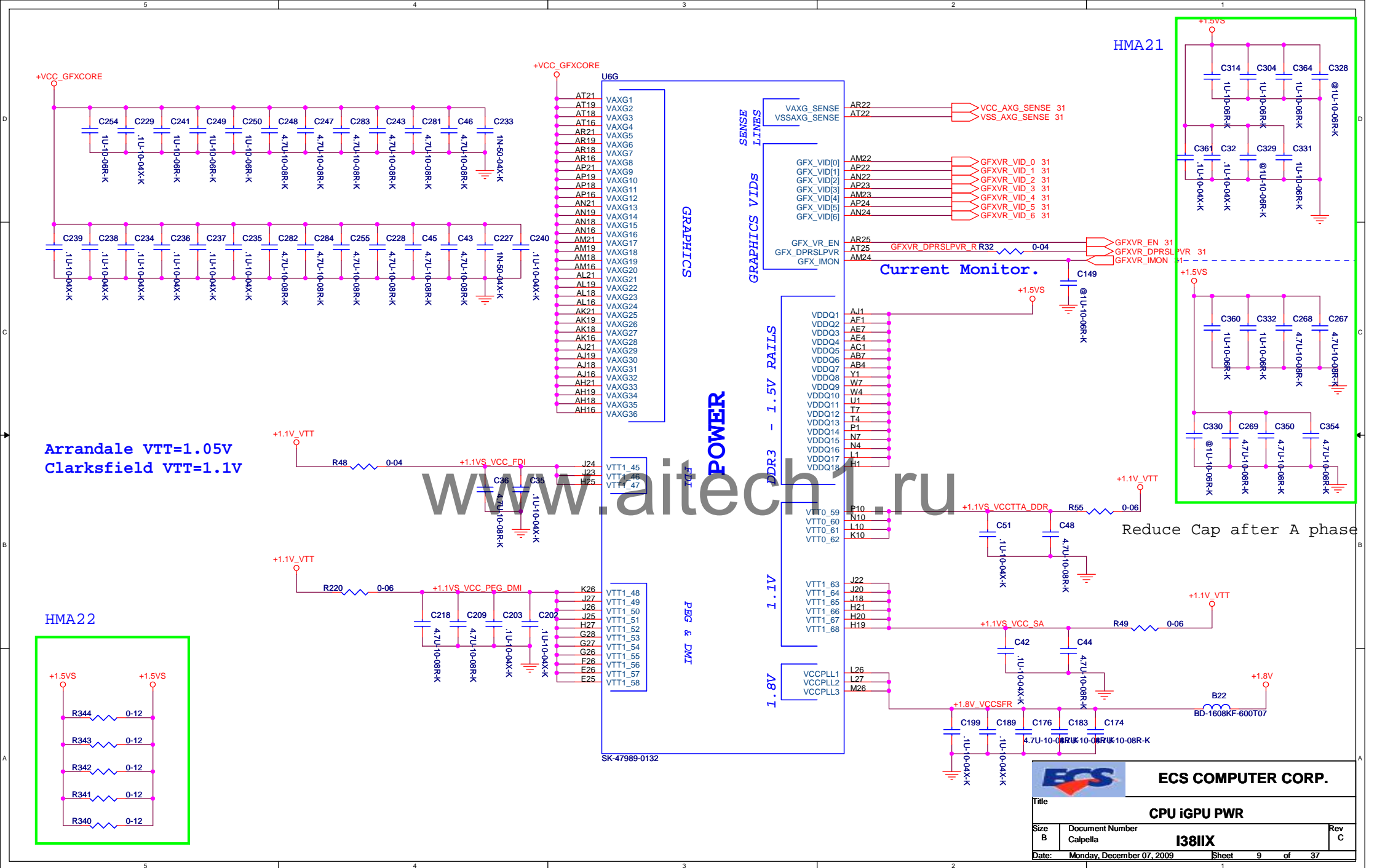
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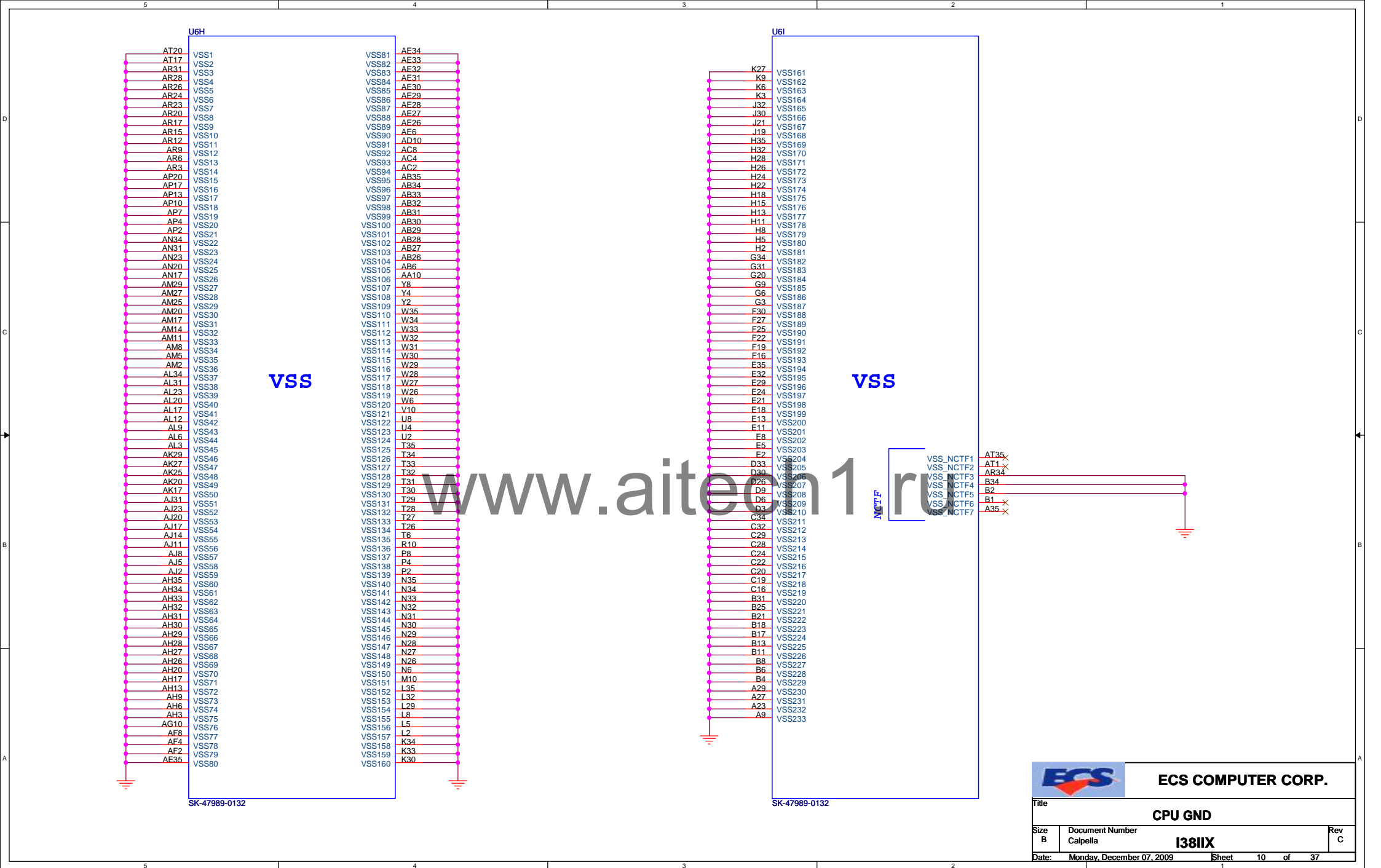


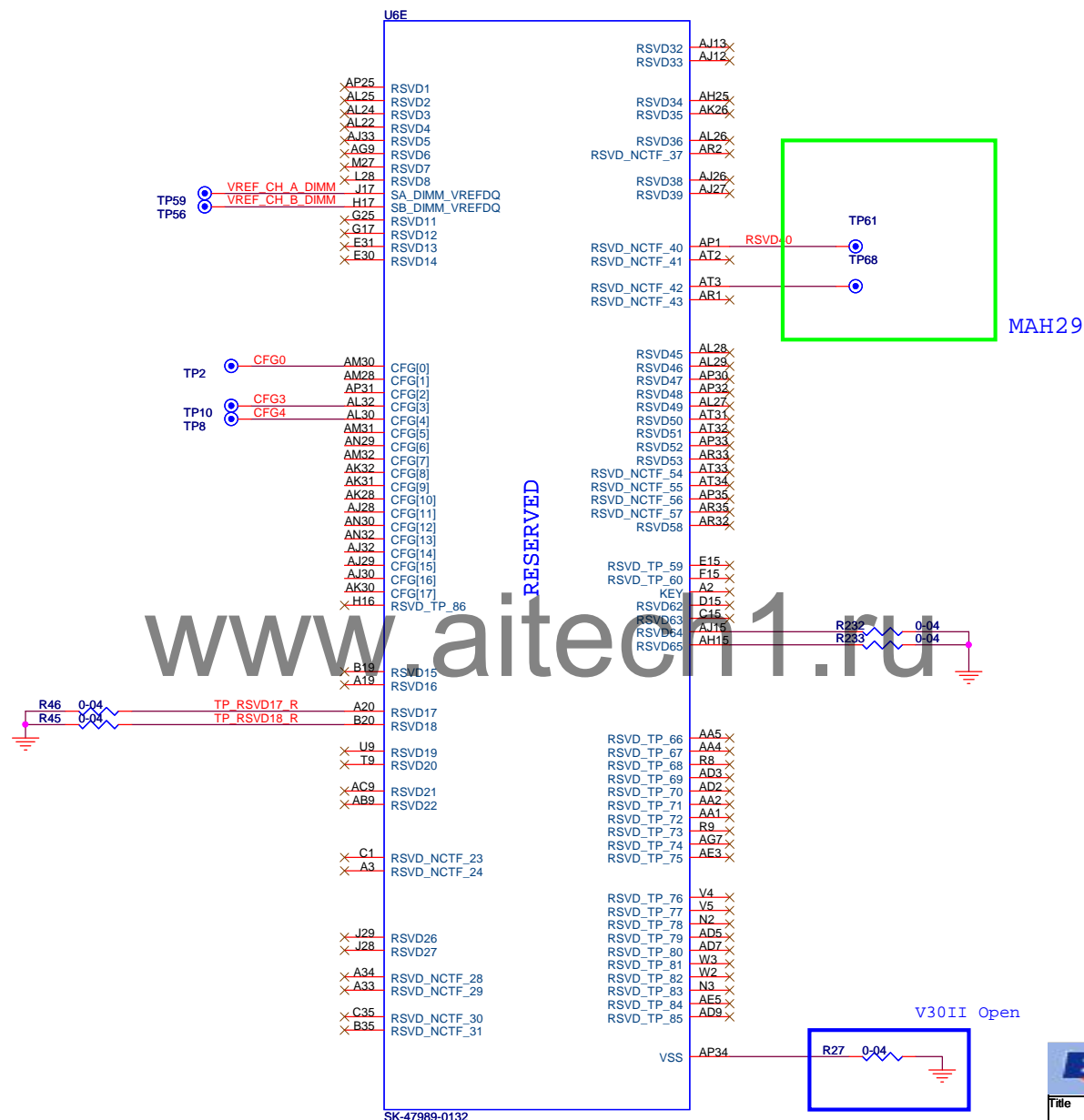
DDR SYSTEM MEMORY - B

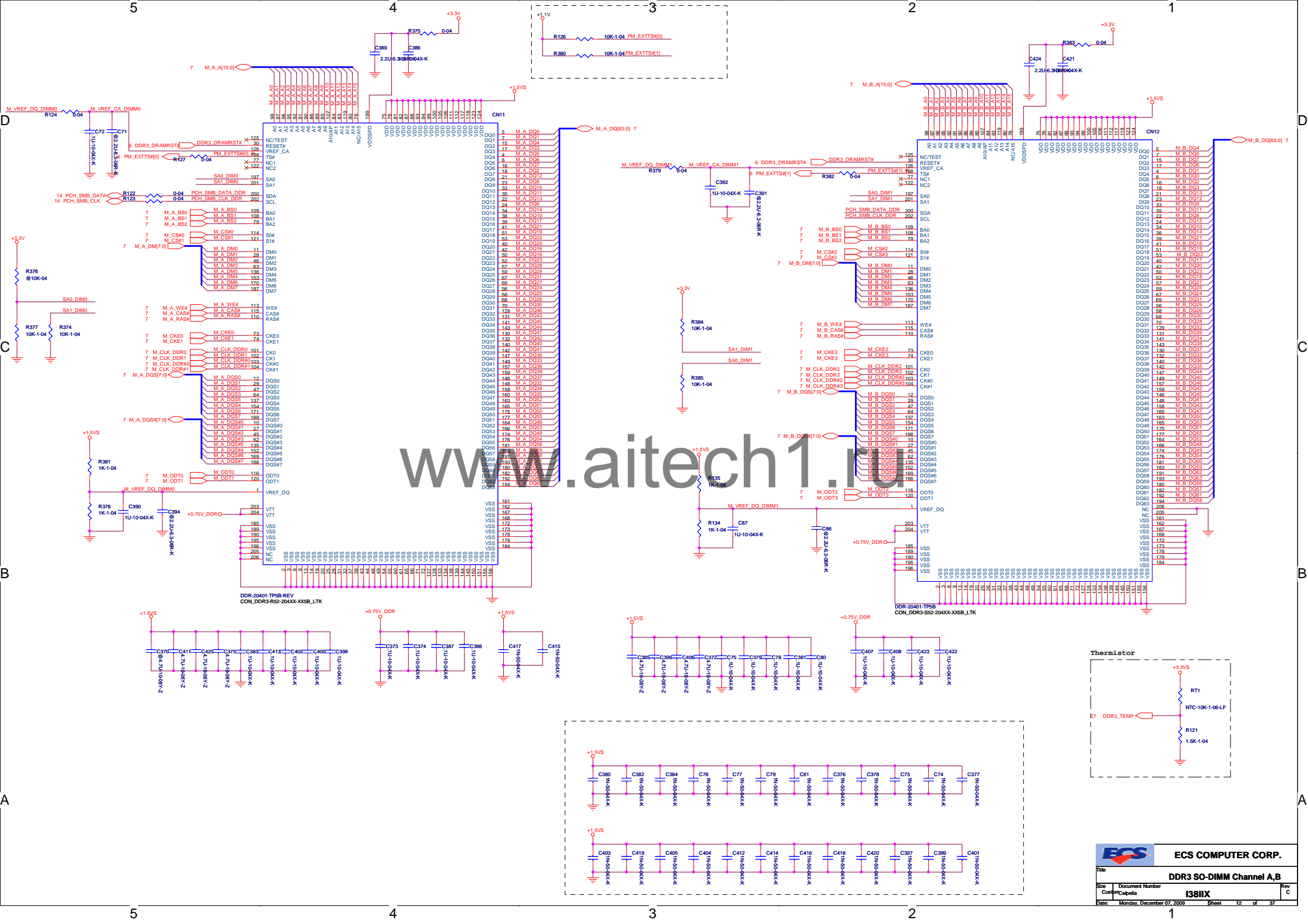
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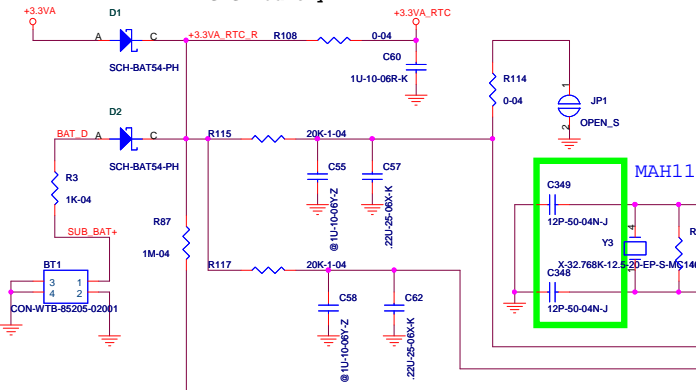






TPM

RTC Circuitry



MAH11

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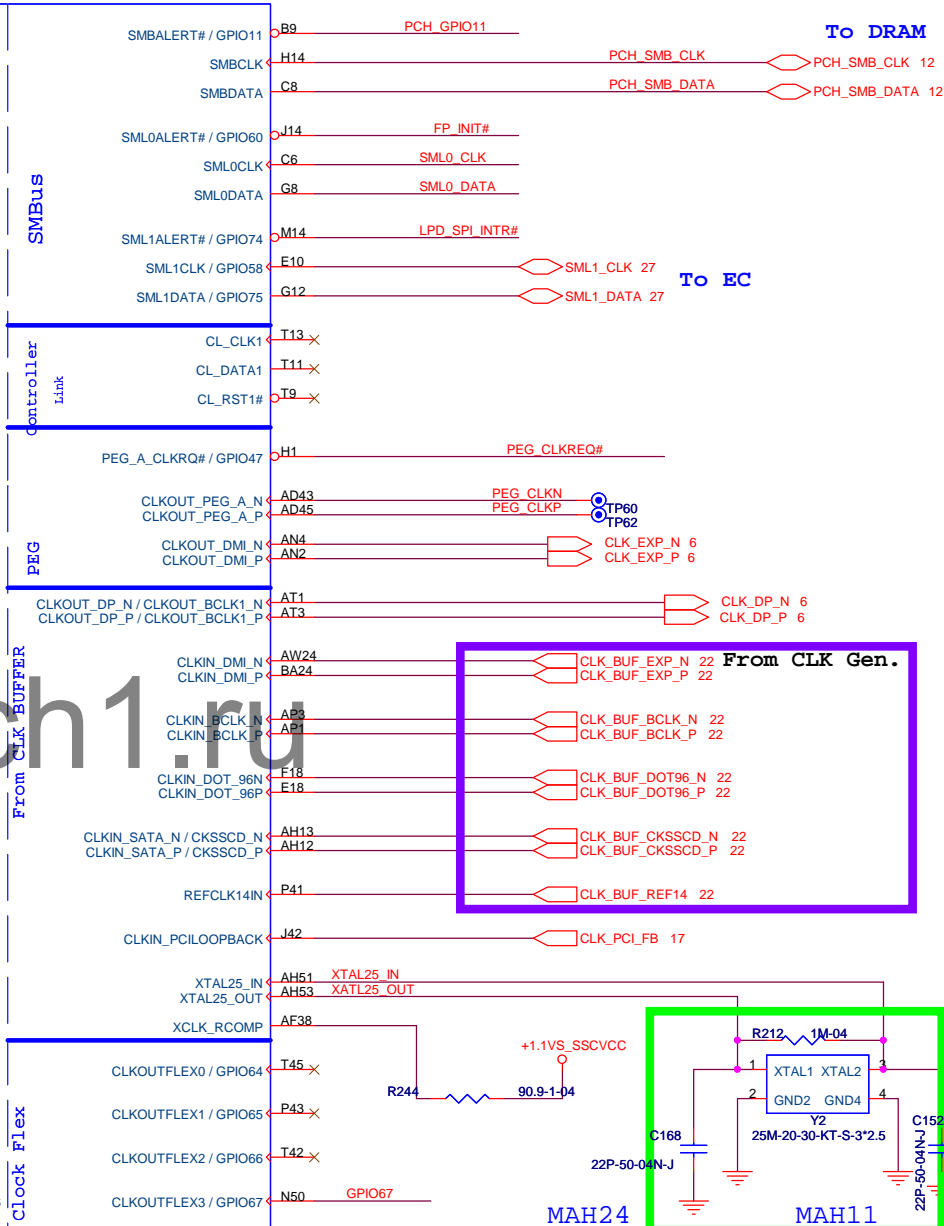
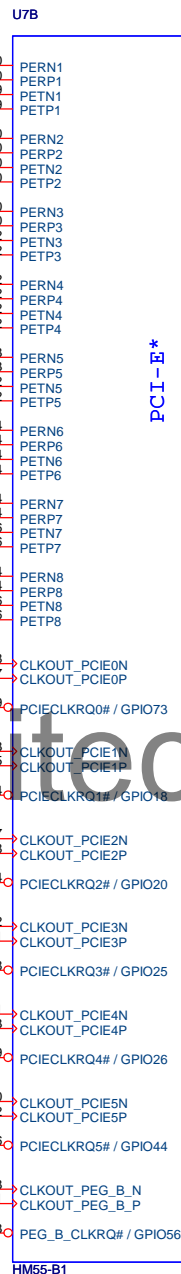
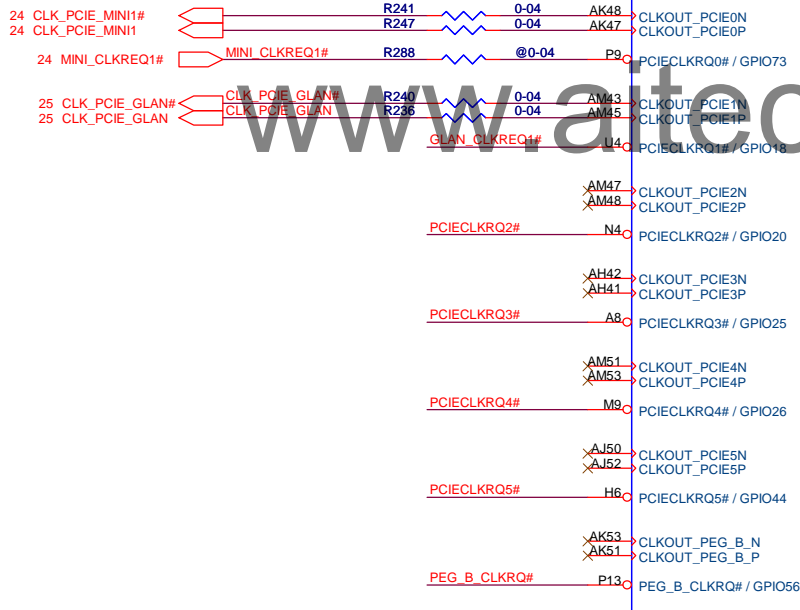
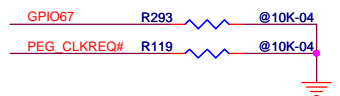
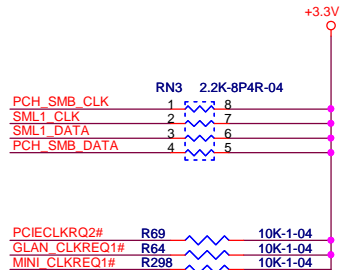
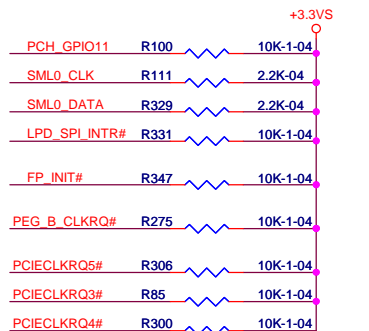
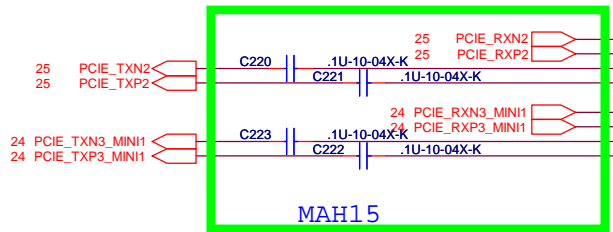
MAH11

MAH11

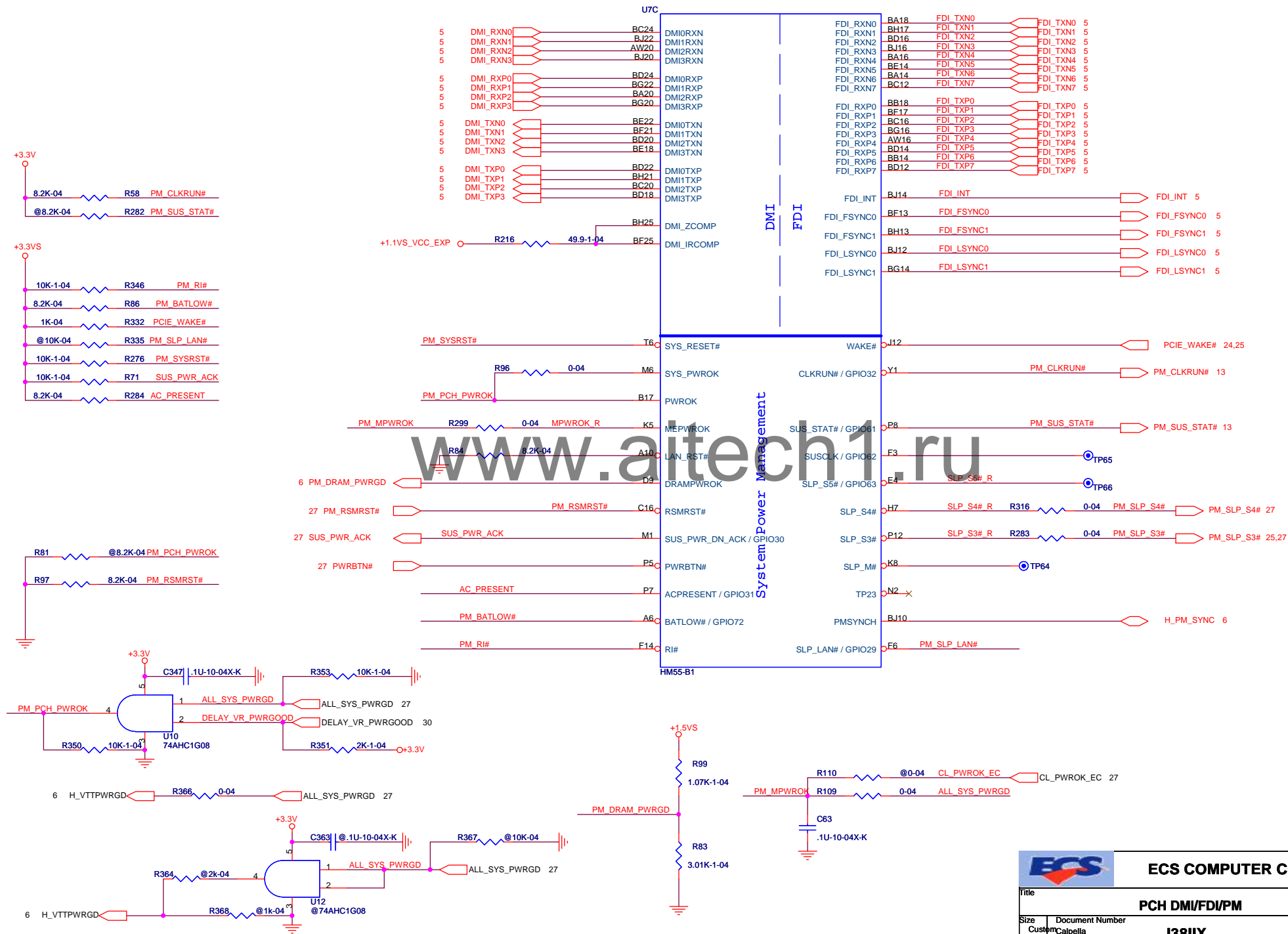
MAH11

MAH11

MAH11

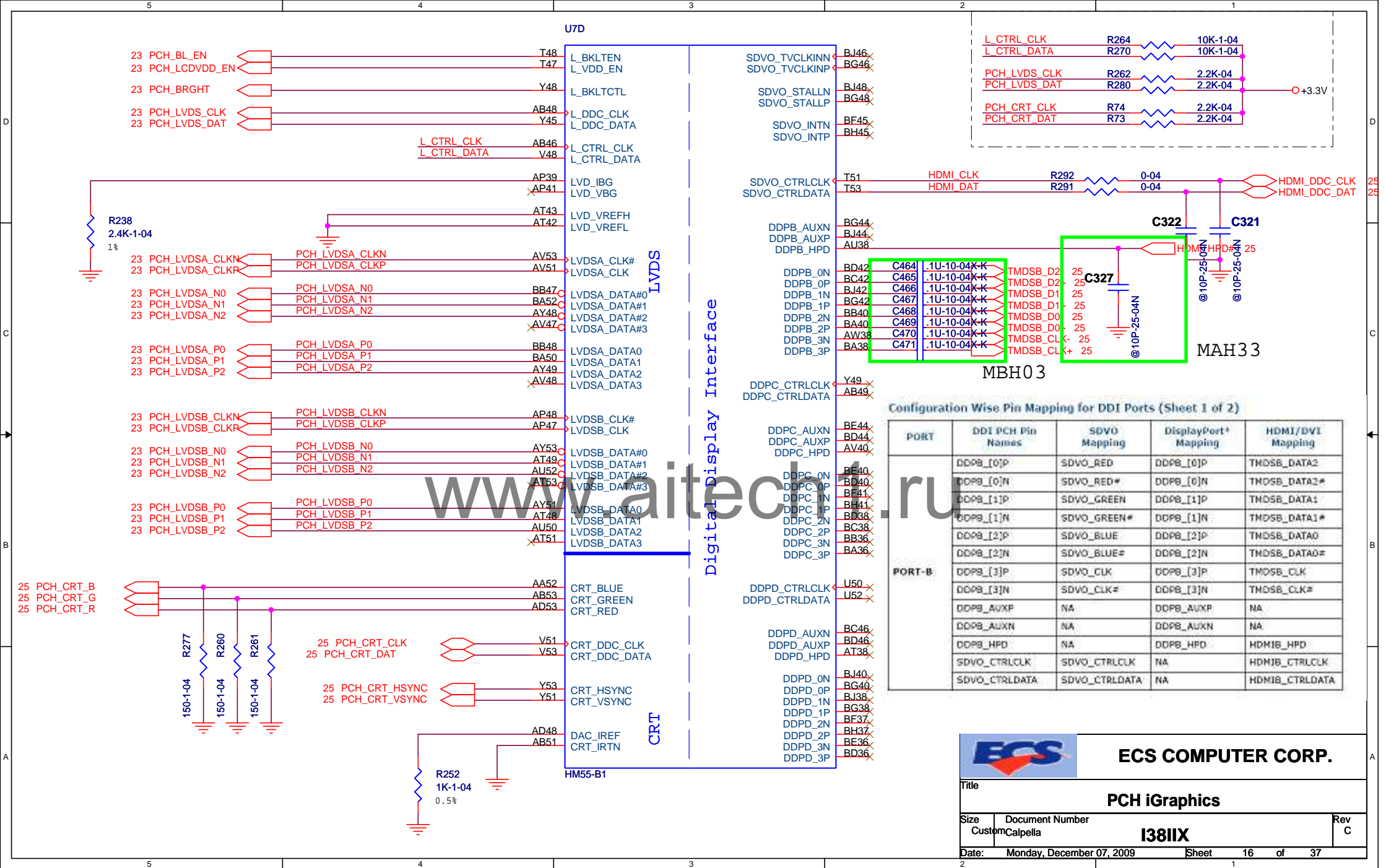


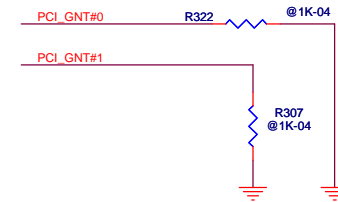
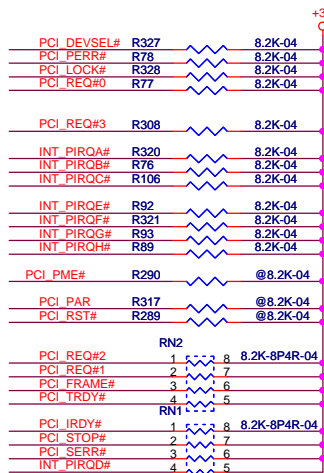
IBEXPEAK - M (DMI, FDI, GPIO)



ECS COMPUTER CORP.

Title		
PCH DMI/FDI/PM		
Size	Document Number	Rev
Custom	Caipella	C
Date:	Monday, December 07, 2009	Sheet 15 of 37

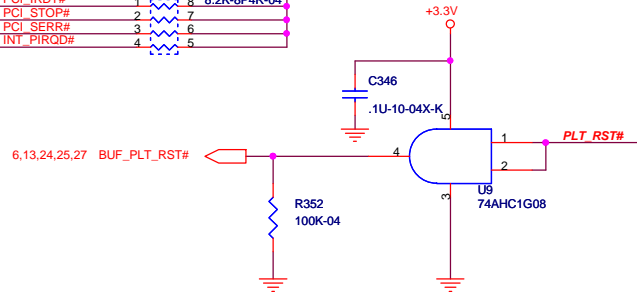




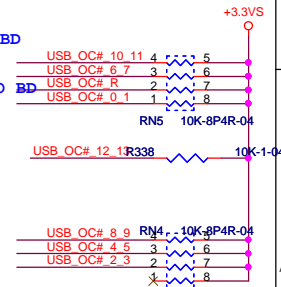
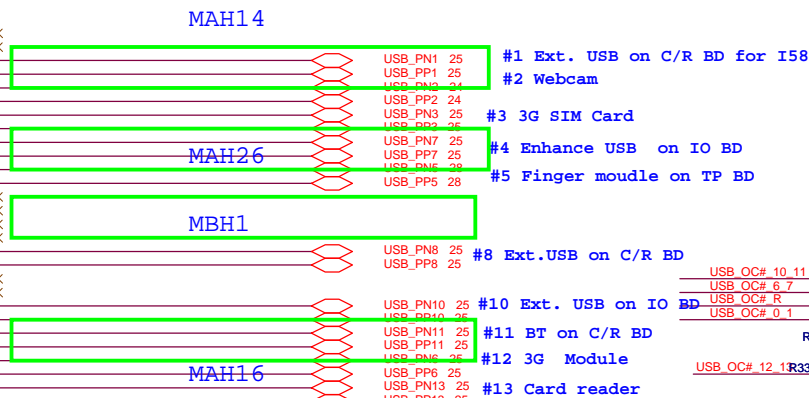
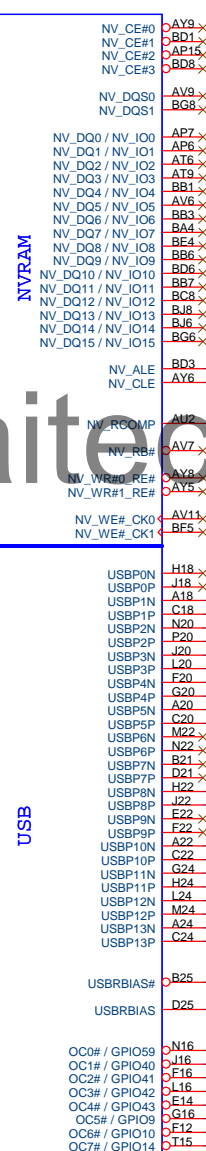
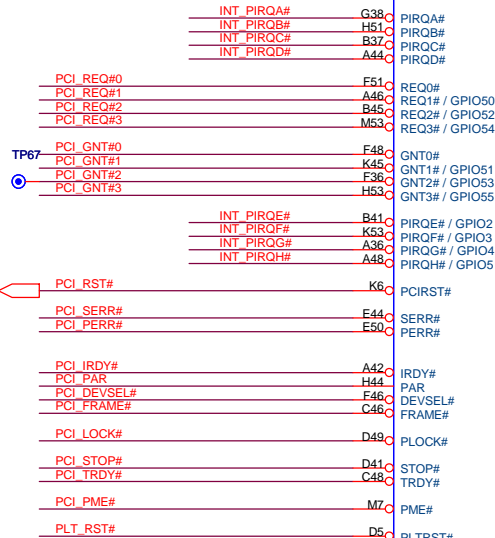
PCI_GNT#1	PCI_GNT#0	
0	0	LPC
1	1	SPI

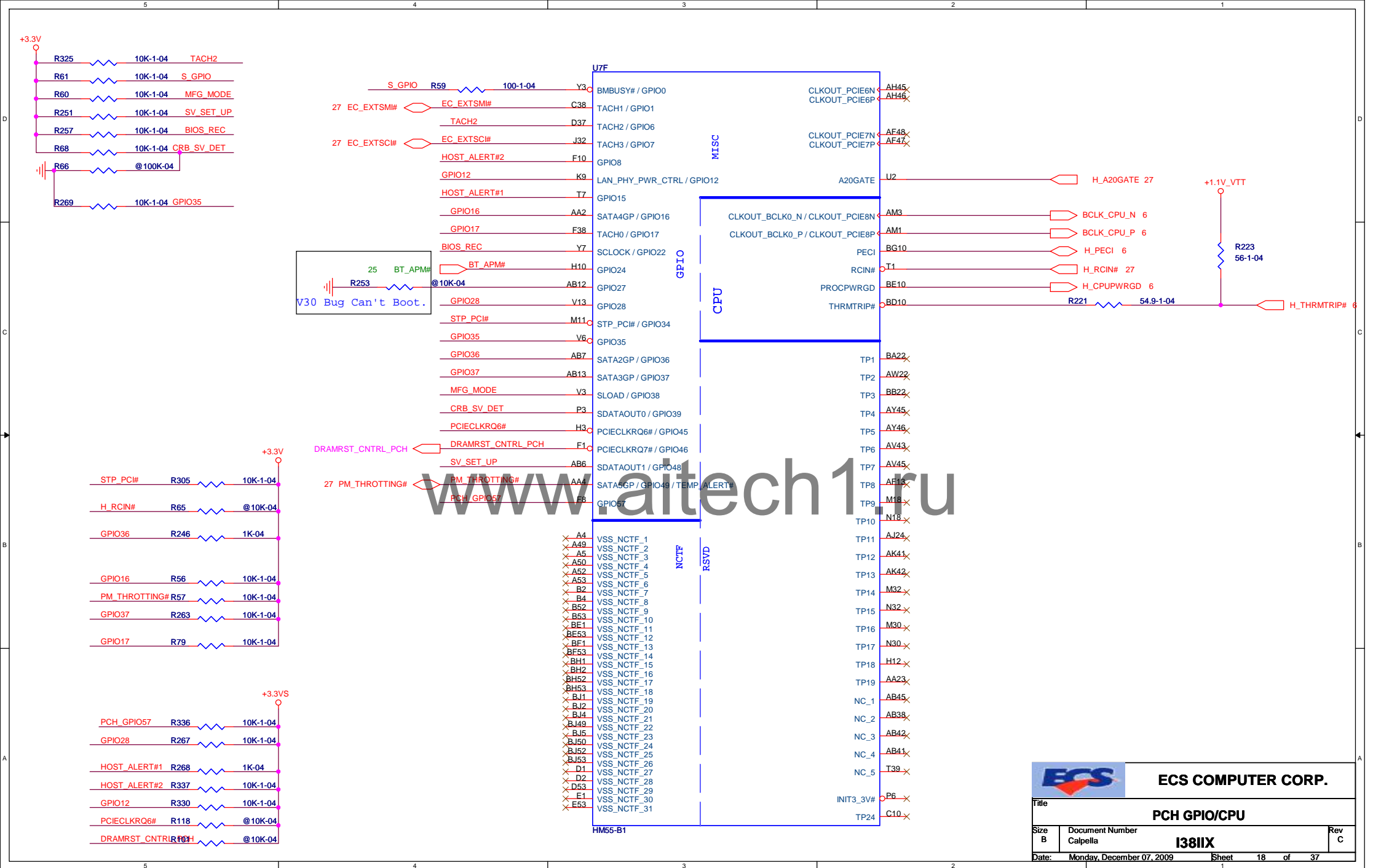
DMI Termination Voltage	
NV_CLE	Set to Vss when LOW Set to Vcc when HIGH

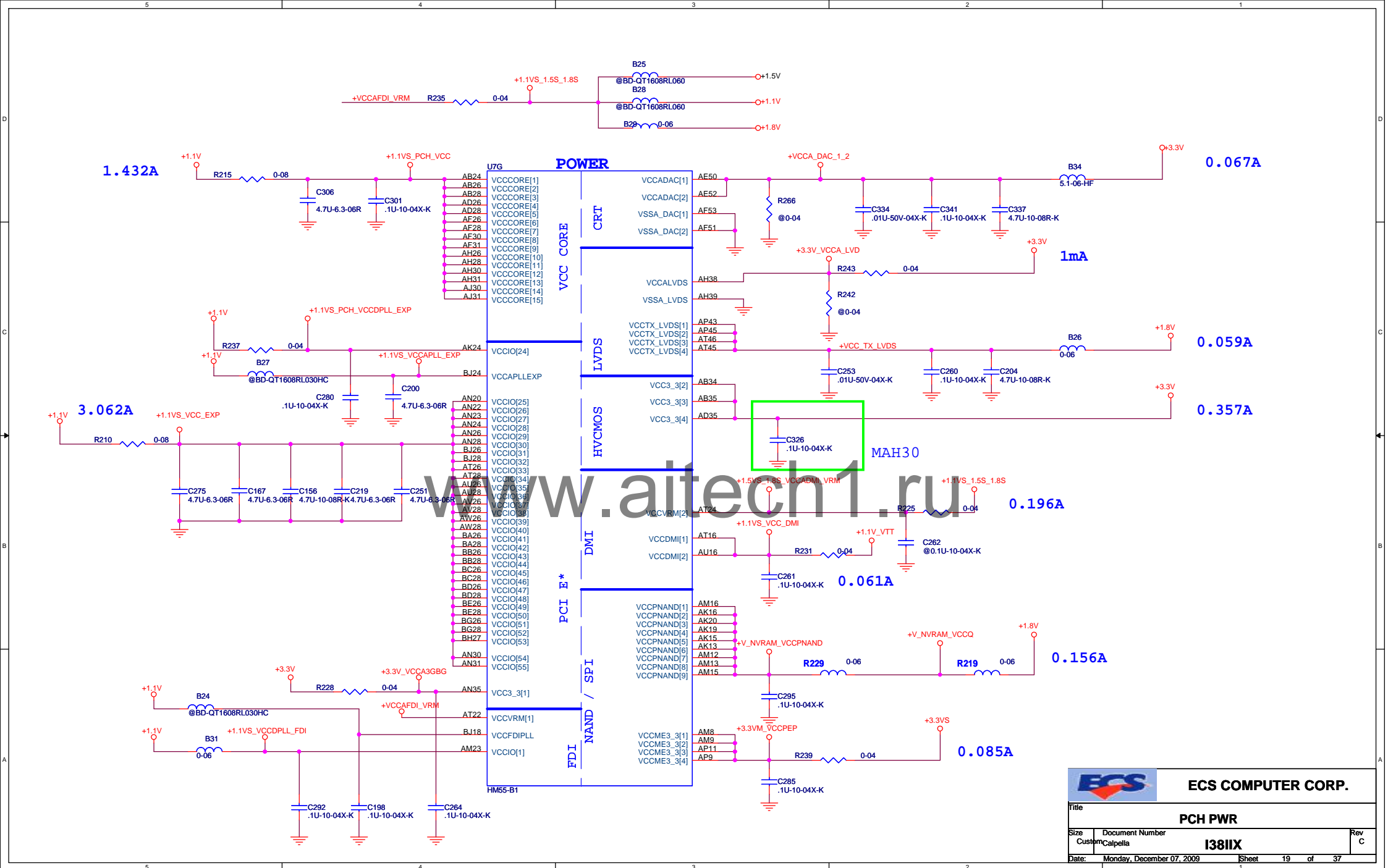
Danbury Technology
Disabled when Low
Enabled when High

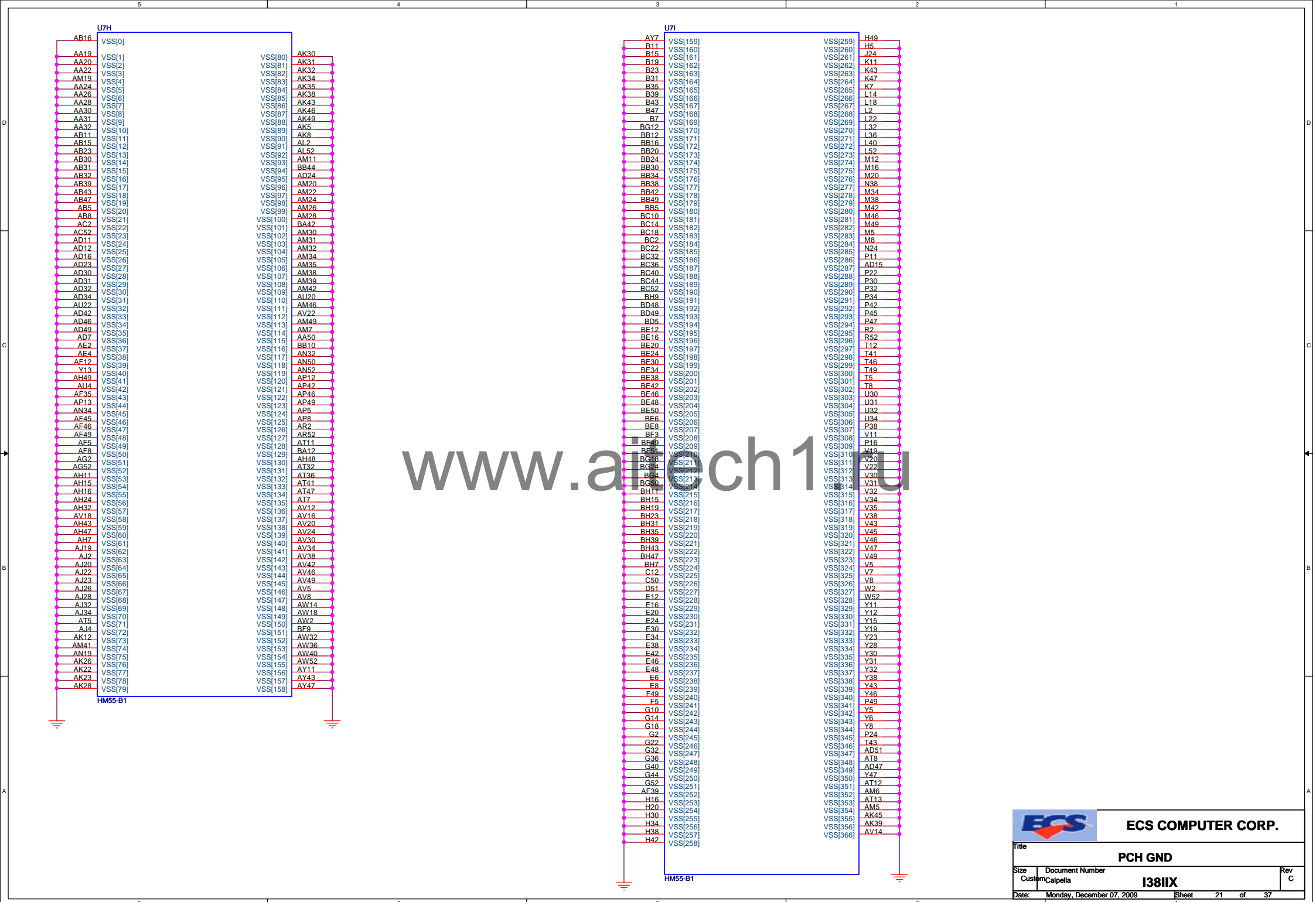


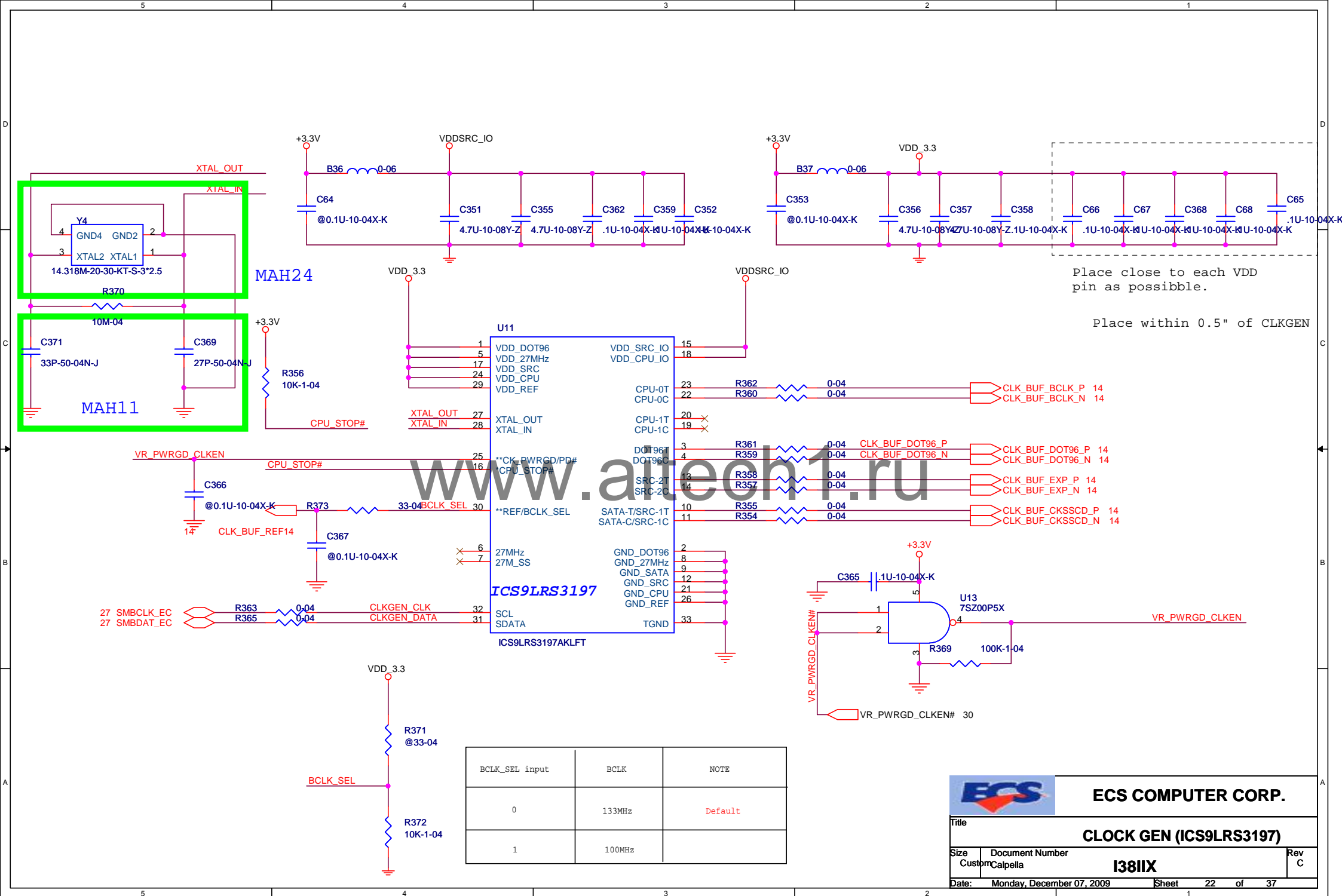
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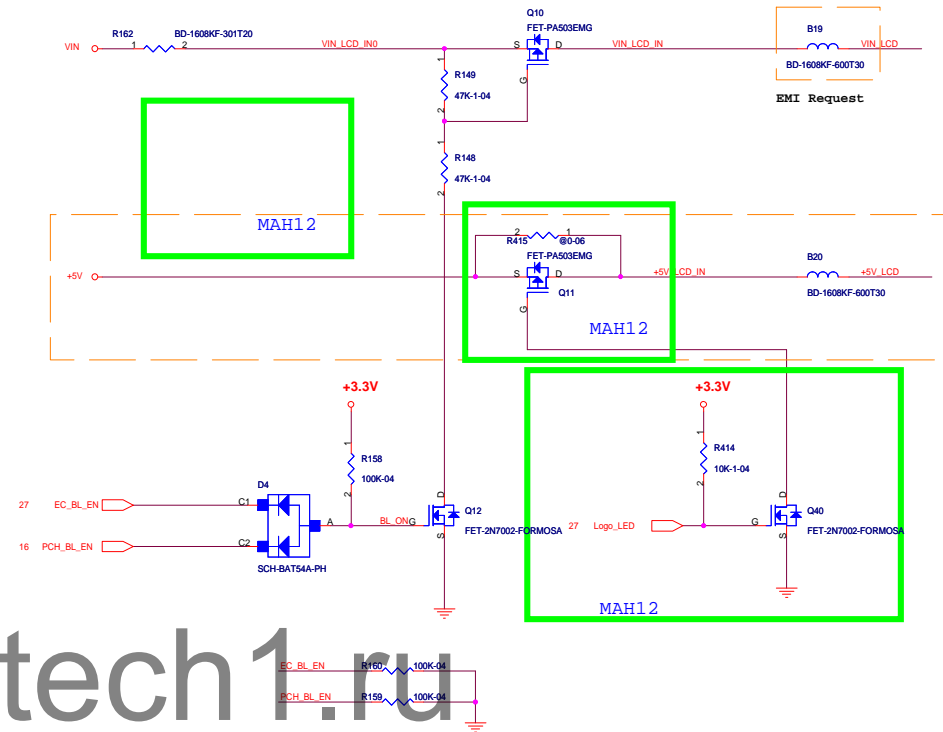
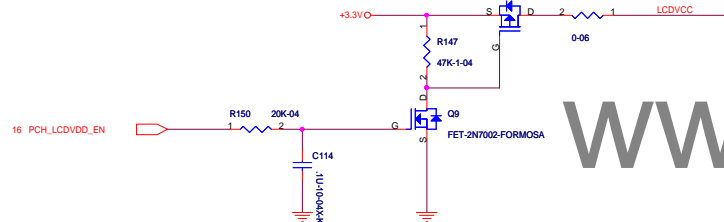




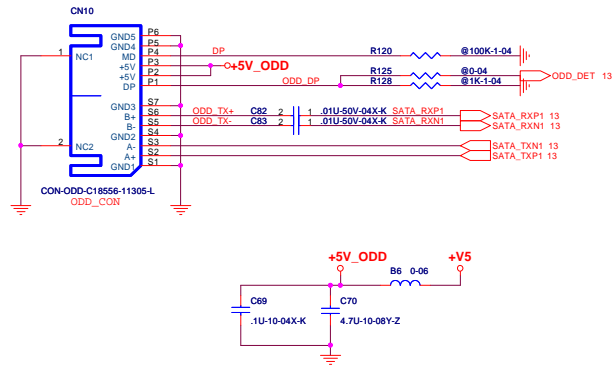




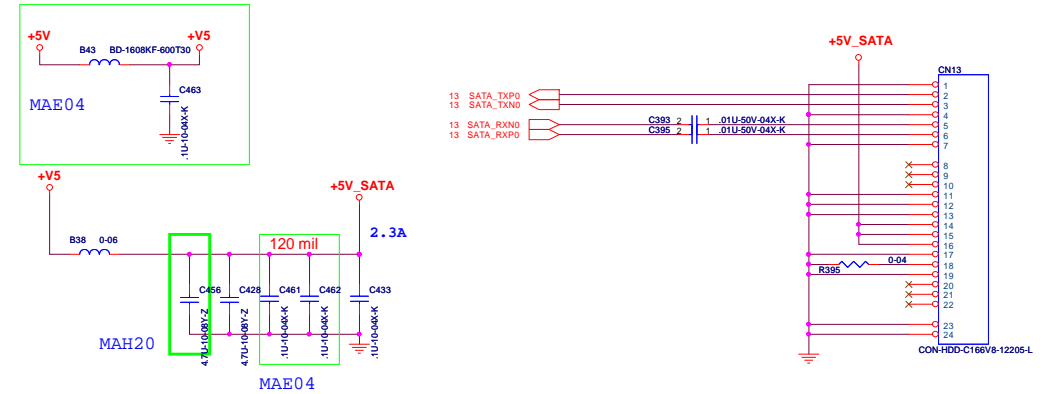




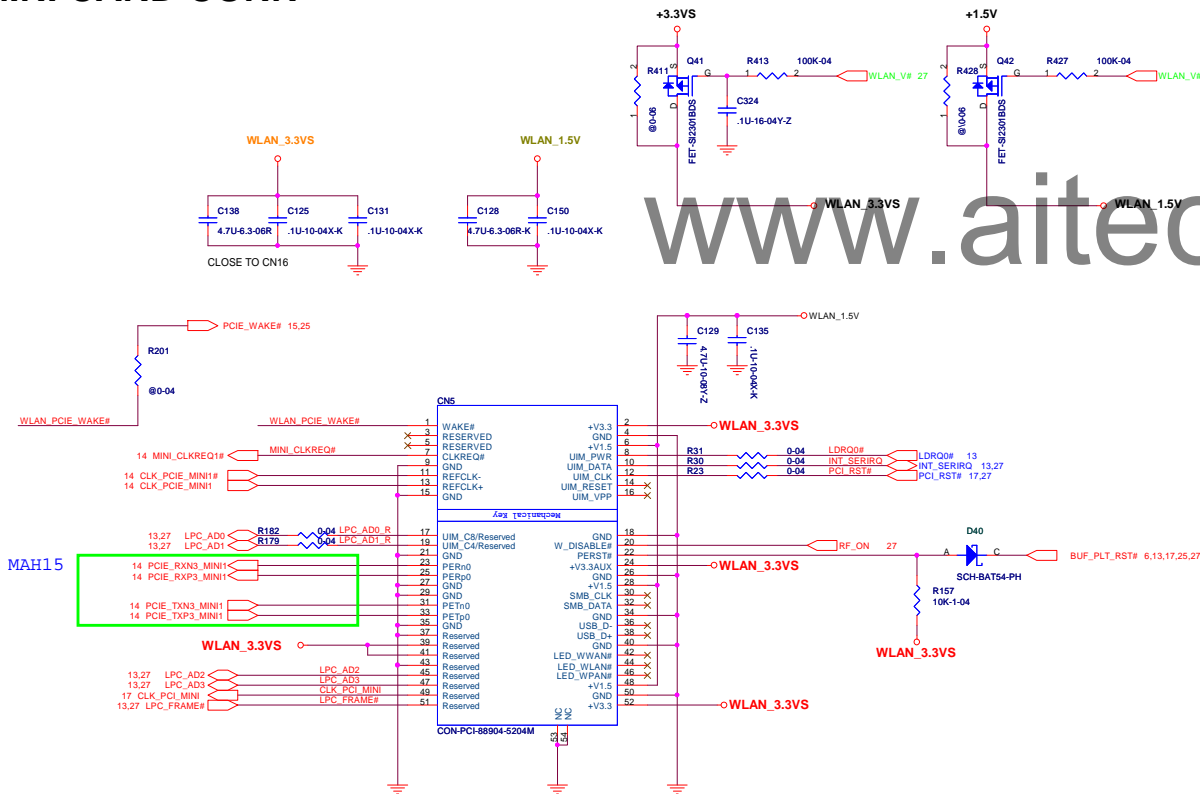
SATA ODD



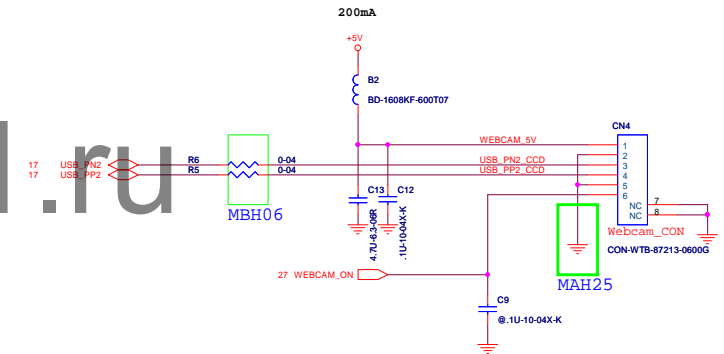
SATA-HDD



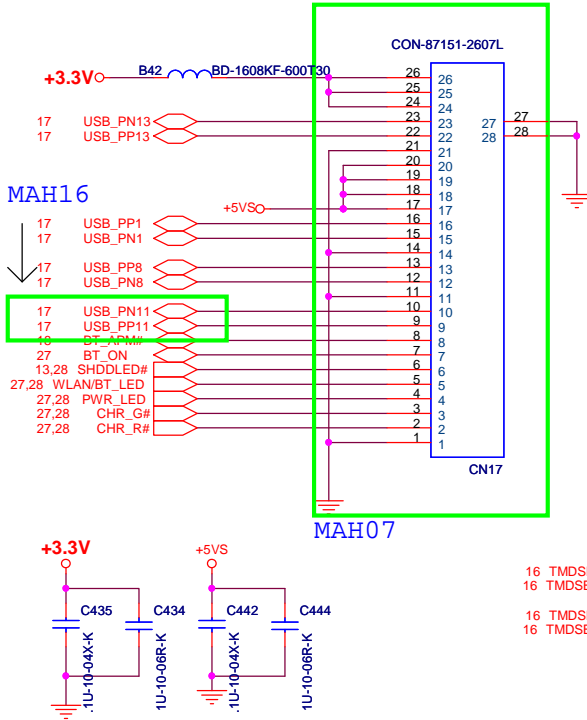
MINI CARD CONN



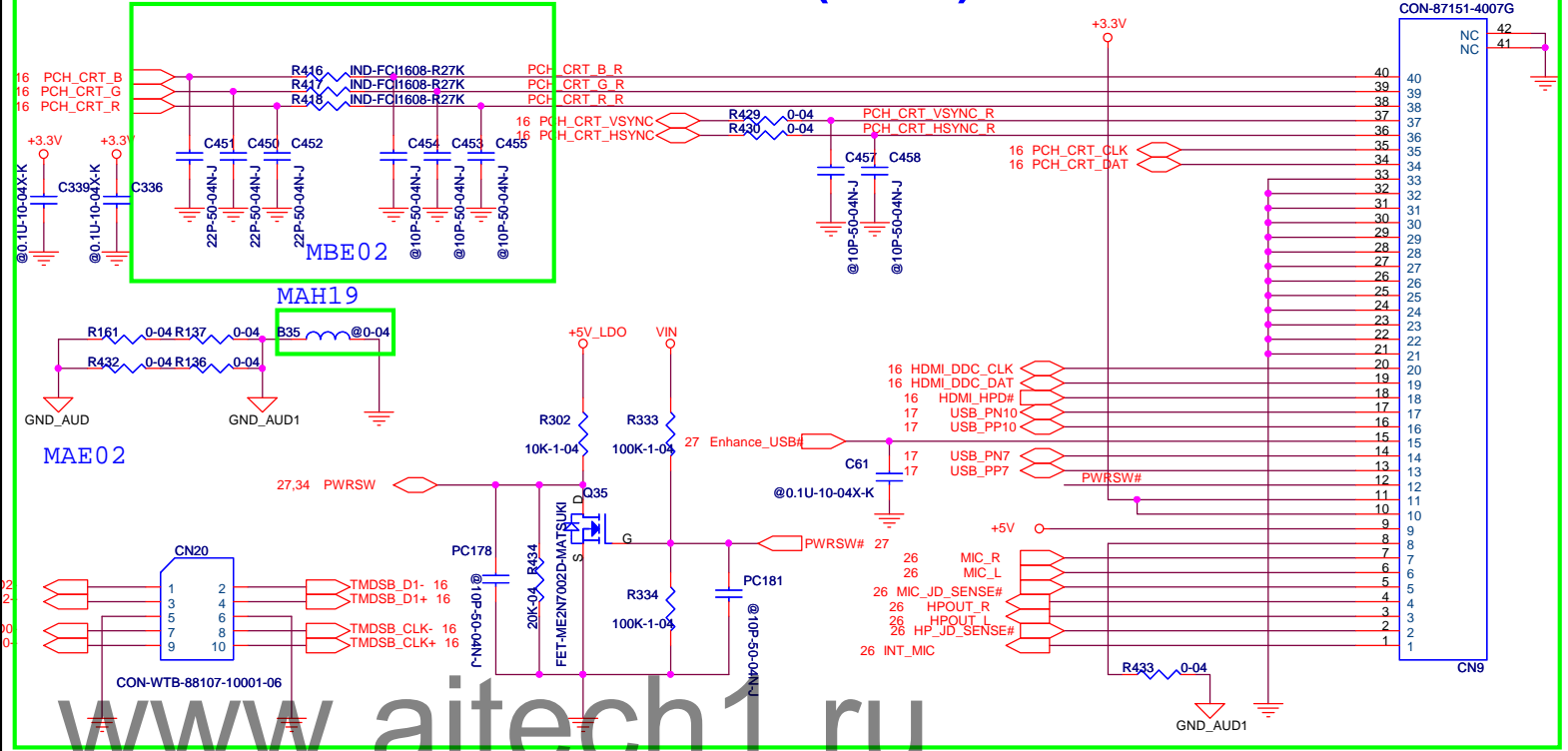
Webcam



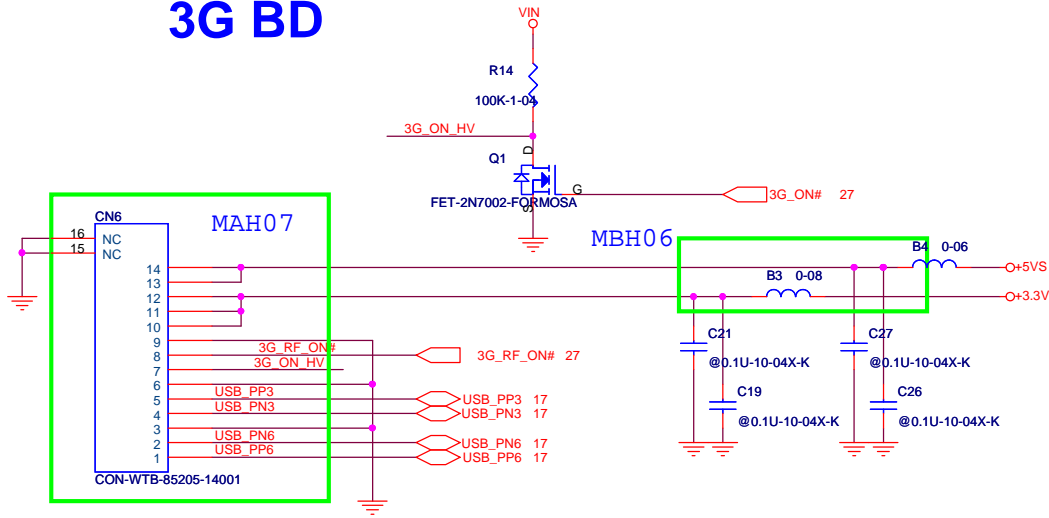
Card Reader & LED BD



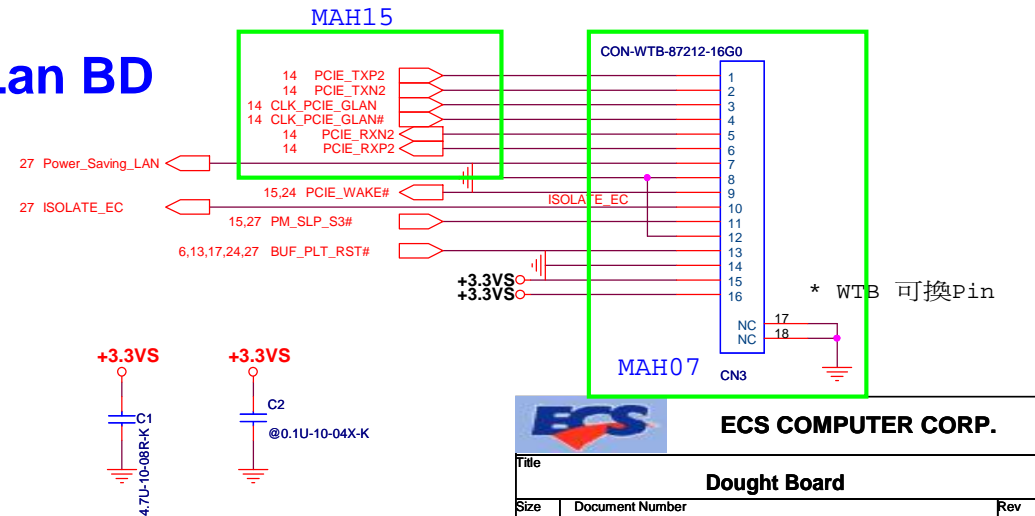
Audio / CRT(HDMI) / USB BD ==> I/O BD



3G BD

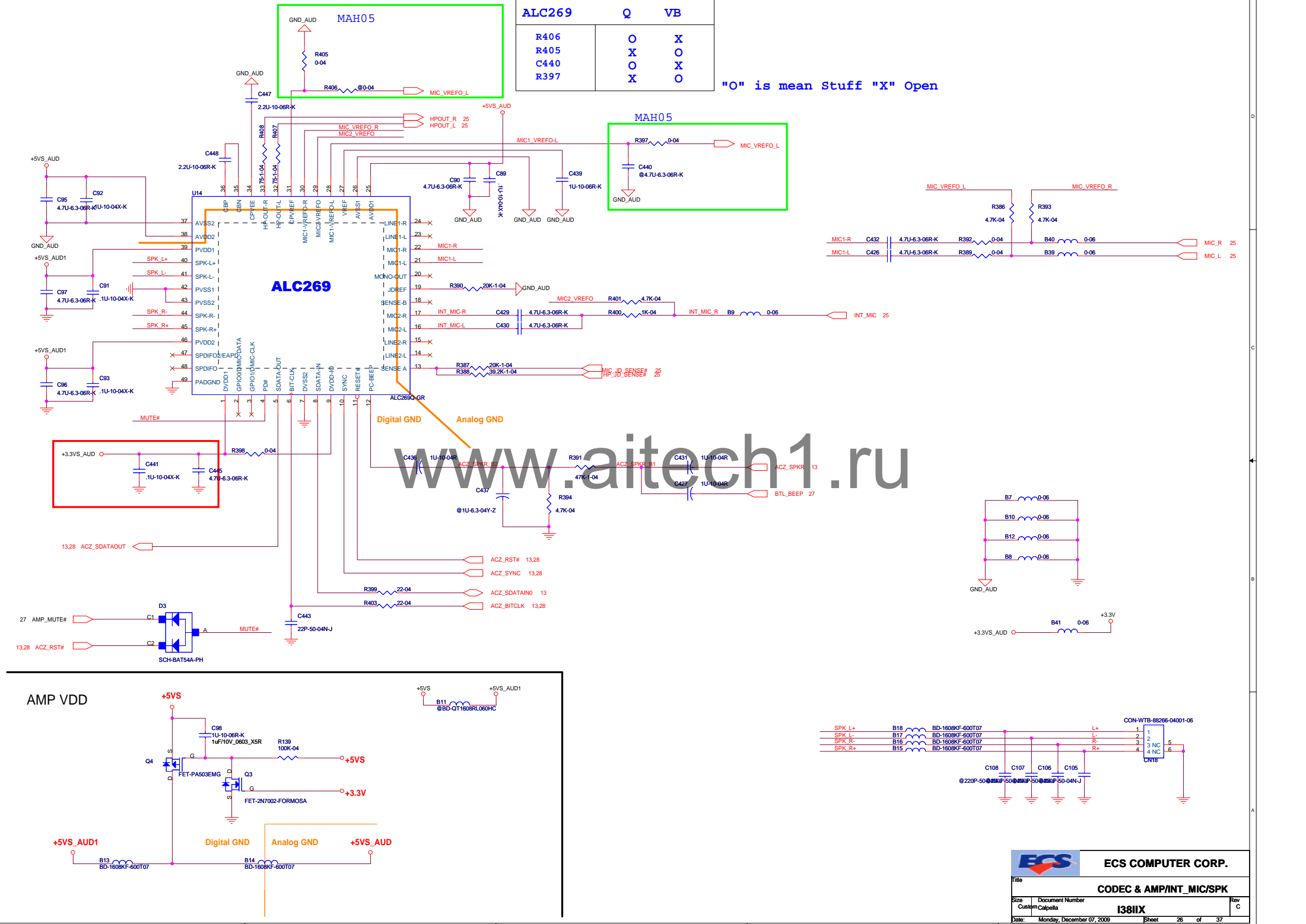


Lan BD



ECS COMPUTER CORP.

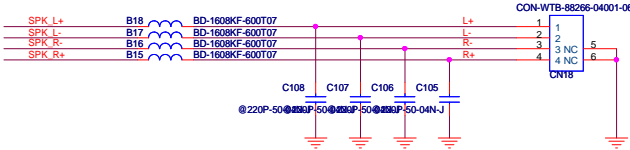
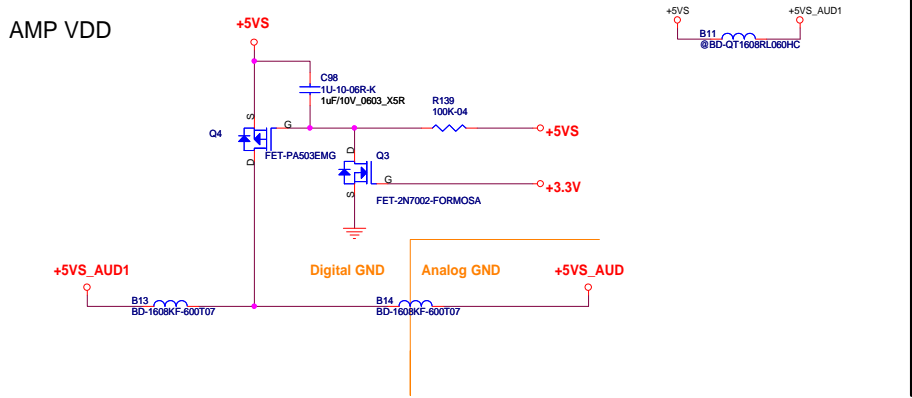
Title			
Dought Board			
Size	Document Number	Rev	
B	Calpella	C	
Date:	Monday, December 07, 2009	Sheet	25 of 37

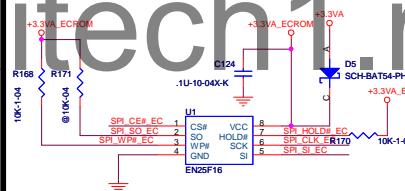
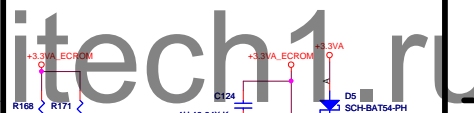
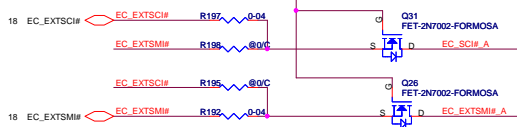
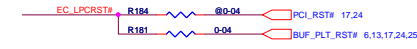
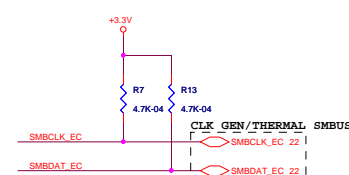
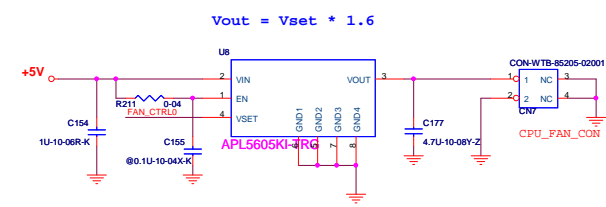


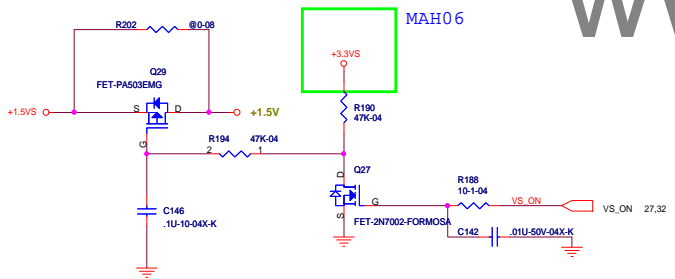
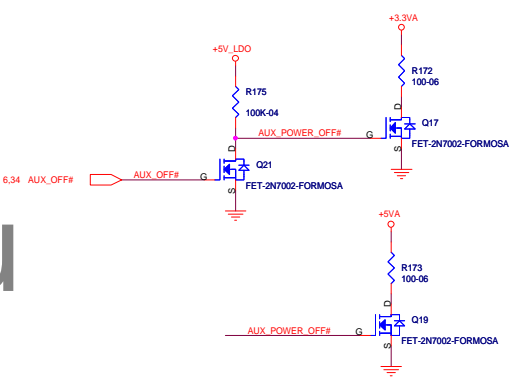
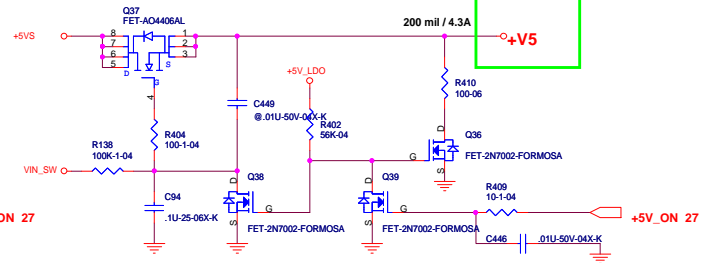
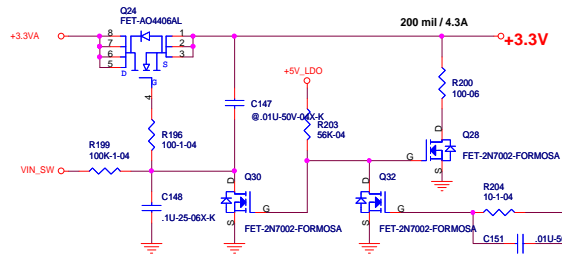
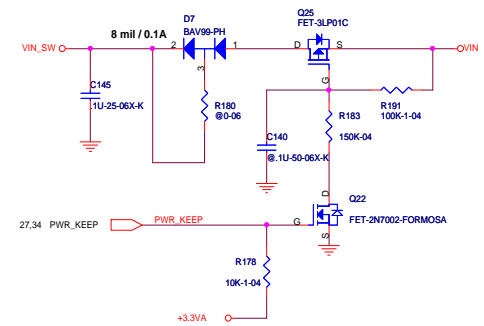
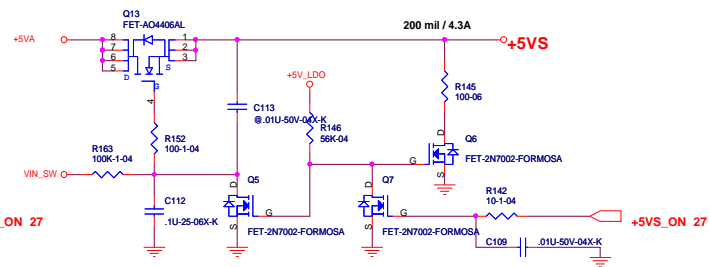
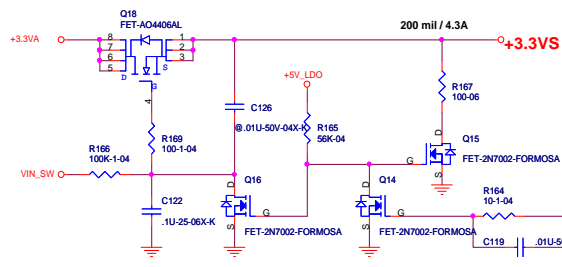
ALC269	Q	VB
R406	O	X
R405	X	O
C440	O	X
R397	X	O

"O" is mean Stuff "X" Open

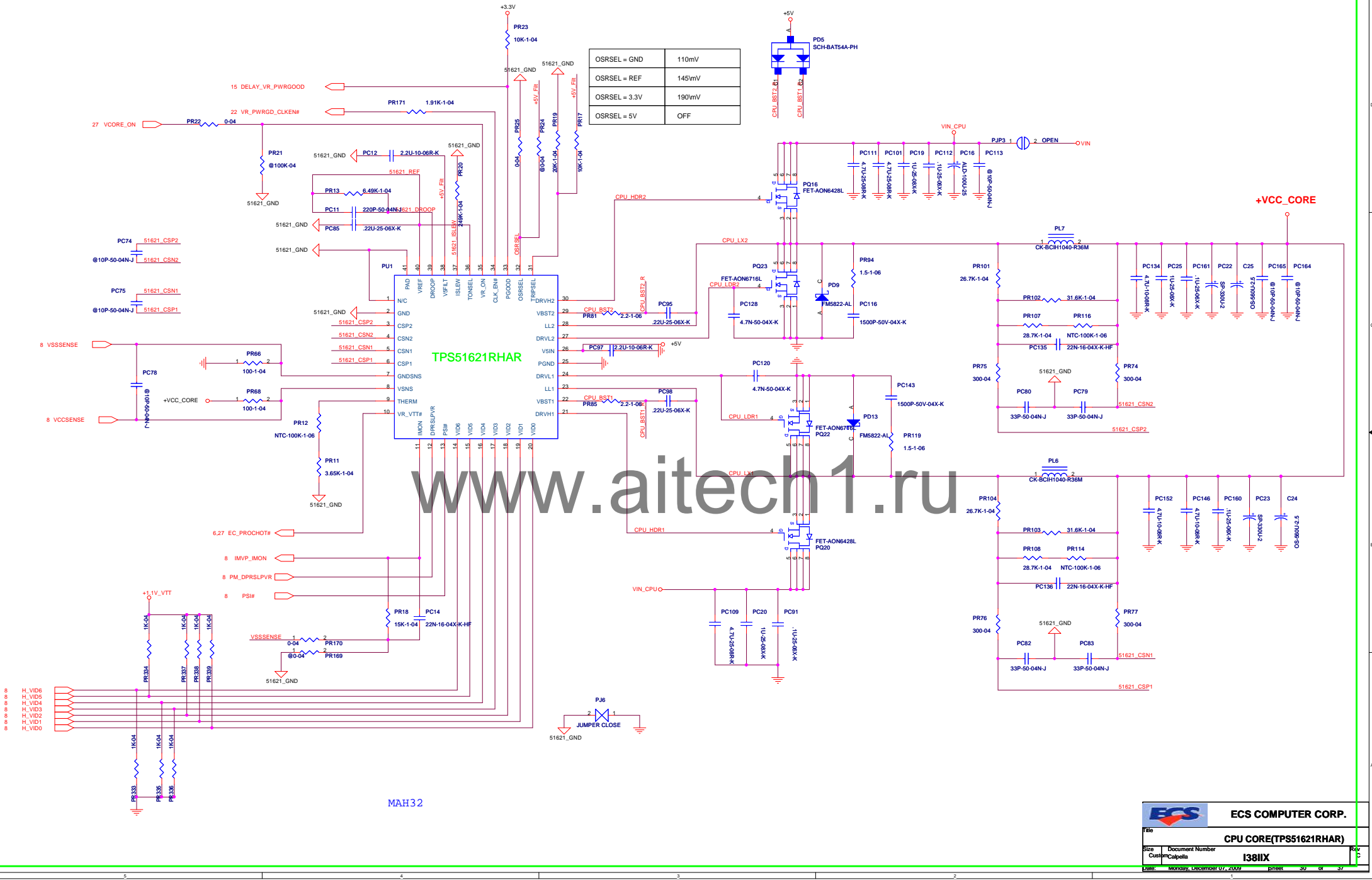
AMP VDD

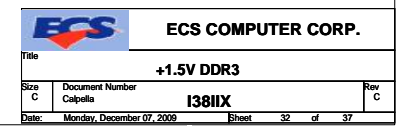



$$V_{out} = V_{set} * 1.6$$


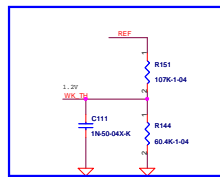


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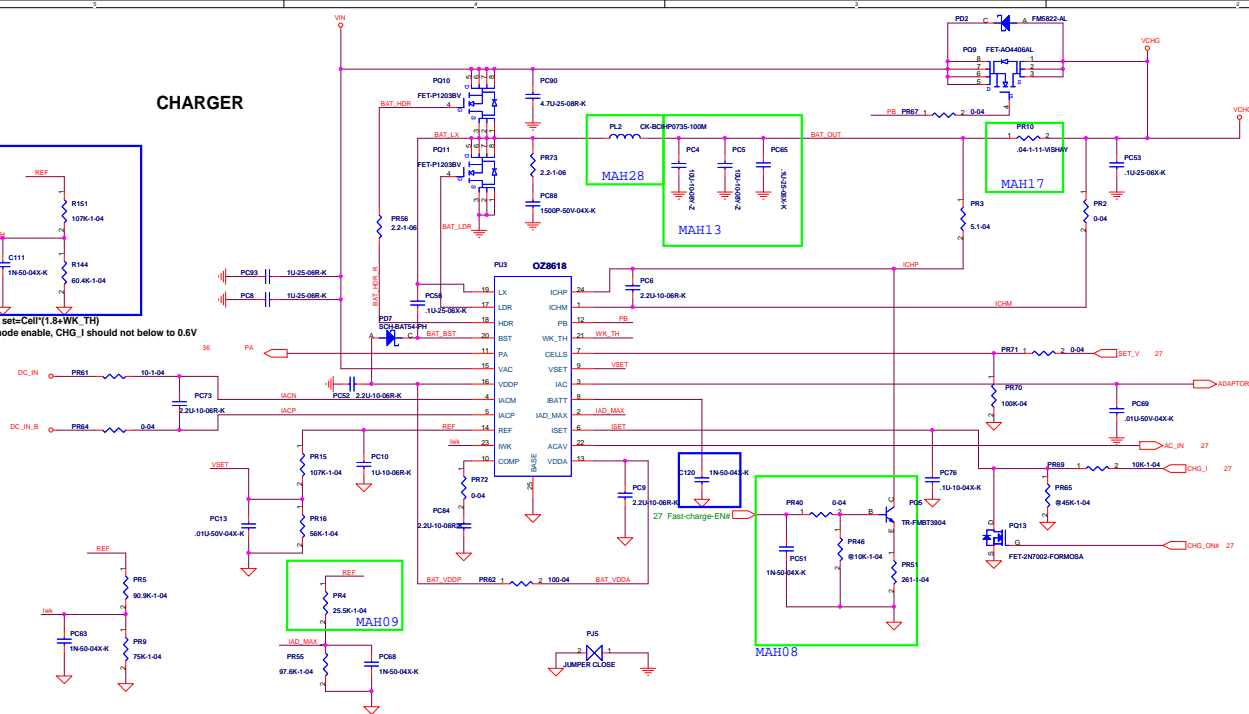




CHARGER



Wake up voltage set=Cell*(1.8*WK_TH)
When wake up mode enable, CHG_I should not below to 0.6V



SET_V	
H	16.84V (4CELL)
L	12.71V (3CELL)

$V_{ch} = N \times (4.1 + V_{set}/10)$
 $N = \text{Cell (pin2=high} \rightarrow 4, \text{low} \rightarrow 3)$

CHARGER CURRENT $V_{SET}(F\text{-low}) = (I_{chg} \times R_{ch}) \times 60$
CHARGER CURRENT $V_{SET}(F\text{-high}) = (I_{chg} \times R_{ch} - 50mV) \times 60$

Fast-charge-EN#	CHG_I	Charge Current
H	3V	2.5A
H	1.8V	2A
H	0.6V	1.5A
L	2.5V	1A
L	0.9V	0.25A

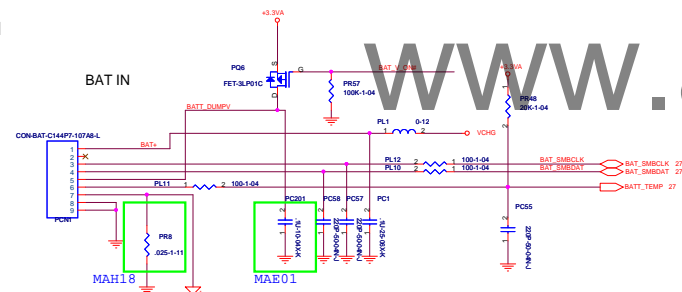
Wake up charge current 0.125A
Fast-charge-EN# : L need add 100mV offset
Table blue work already add offset

CHG_ON	
L	CHARGER ON
H	CHARGER OFF

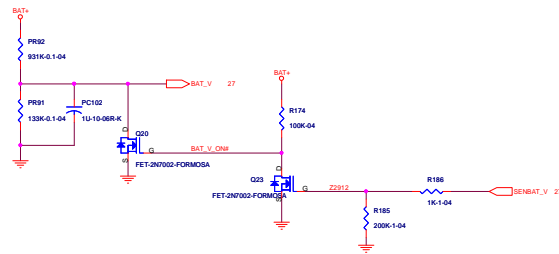
ADAPTOR_I	
Voltage	W
900mV	20W
1.8V	40W
2.7V	60W
3.3V	80W
X	X
X	X

$V_{chg} = RAD1 \times I_{sense} \times 60$

BATTERY CON

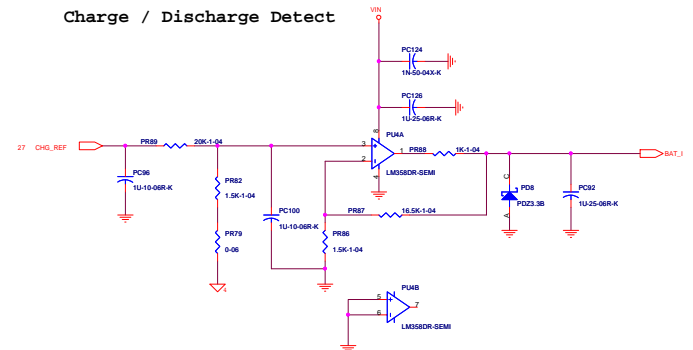


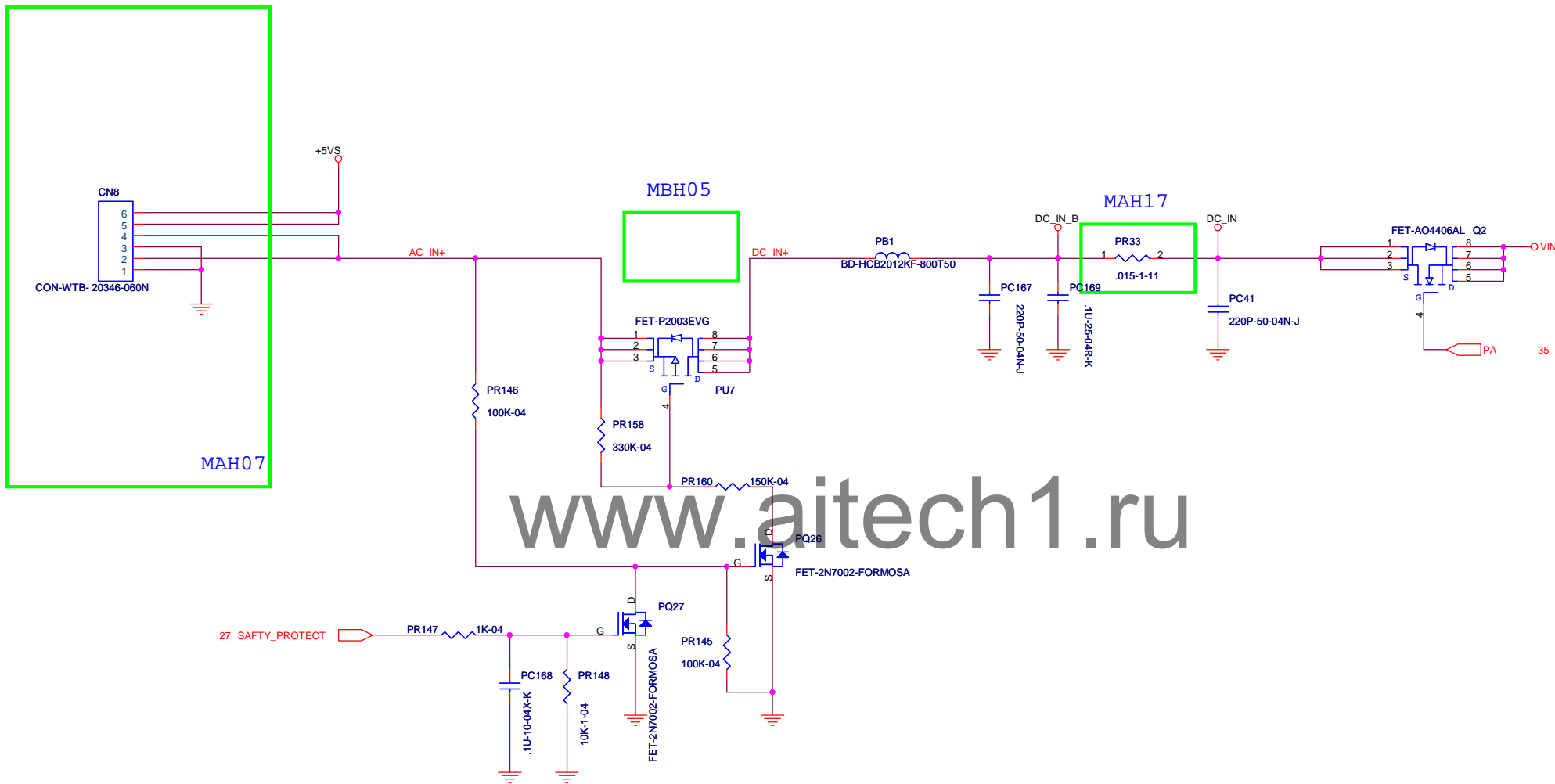
Battery Voltage Detect



17.6V->BAT_V=2.2V
16.8V->BAT_V=2.1V
13.2V->BAT_V=1.65V
12.6V->BAT_V=1.575V
9V->BAT_V=1.125V

Charge / Discharge Detect





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RA to RB Modify list: D Delete ; C Change ; A ADD

TEST				
Symbol	Description	Reason	Page	Note
MA701				
EMI				
Symbol	Description	Reason	Page	Note
MAE01	A PC201 0.1uF	EMI Request.	35	
MAE02	A CN20, C CN9 Pin define.	From EMI Request.	25	
MAE03	A C459,C460,R431	From EMI Request.	28	
MAE04	A C461,462	From EMI Request.	24	
MAE05	A Power Plan +V5	From EMI Request.		

EE				
Symbol	Description	Reason	Page	Note
MAH01	D C84	To slove MDC can't recogninse.	28	
MAH02	C PC1,PC53, PC56,PC65,PC91,C94,PC112,C112, PC115,PC119,C122,C145,C148,PC160,PC161	Package Size error. Change BOM to .1U-25-06X-K.		
MAH03	C PC47,PC130	Package Size error. Change BOM to 5.6N-25-X04-K.	32,33	
MAH04	A R156,R412	Add LCD ID for choose 13" or 15"	23,27	
MAH05	A R405,R397 D R406,C440	Change Codec from 269Q to 269VB.	26	
MAH06	Change net from +3.3V to +3.3VS	Sequence is mistake.	29	
MAH07	C CN2,CN3,CN6,CN17	ME Change Conn type.	25,36	
MAH08	A PR40 0-04 ,C PR51 to 261-1-04 D PR46	Fine tune Fast Charger Func.	23,25	
MAH09	C PR4 25.5K-1-04	Modify Charger OCP Value from 40W to 65W.	35	
MAH10	D R1,	Schematic design logic error. Change connect net to PWR5W	35	
MAH11	C C14,C15,C348,C349,C152,C168,C369	Fine tune Crystal cap.	14,22	
MAH12	A R414,R415,Q40 D R161.	Add Light Guide LED function.	23	
MAH13	C PC4,PC5 to 10uF	To solve wake-up charger ripple.	35	
MAH14	C Net. Extend USB poart change from USB0 to USB1	SW Request USB port1 to debug.	17	
MAH15	C Net. PC58 from port1,2 to Port-5,6	For combine BIOS. From SW Request. Cancel....	14,24	25
MAH16	A USB port11 to Card reader Board	For I58IIX.	17,25	
MAH17	C PR18,PR10 package from 2512 to 1206	For Sourcer request.	35,36	
MAH18	D G_Sensor Pin. C Swap Logo enable pin	1.G-sensor remove. 2. LOGO_LED pin choose error	27	
MAH19	D B35	To solve Audio noise.	25	
MAH20	A C456	To WD HDD Power drop.	24	
MAH21	D C324-C327	Reduce Cap. Cost Down.	9	
MAH22	A R340-R344	Improve 1.5VS power drop.	9	
MAH23	A R209	Reserve for XDP(JTAG)	6	
MAH24	C V2,V4 Package 0325	For Sourcer suggest.	14,22	
MAH25	D B1	For layout improve.	24	
MAH26	D Net USB4. A WLAN Power Switch	Remove WLAN USB support and Add Wlan power switch to control power.	17,24	
MAH27	D G-sensor Function.	Remover G-Sensor Function.	27	
MAH28	C FL2 Package from 1005 to 0735	For SMT Request.	35	
MAH29	Del R312,R311	Remove Reserver change to TP.	11	
MAH30	Del R255, Add C326	For power improve.	19	
MAH31	Change Package from 0805 to 0603	For SMT Request.	7	
MAH32	A PR333 ~ PR339	For improve CPU power and fix turbo boost.	30	
MAH33	A C327	Reserve for ESD.	16	

RB to RC Modify list:

EMI				
Symbol	Description	Reason	Page	Note
MBE01	A C472,C473	For ESD Request.	28	
MBE02	C R416,R417,R418,C450-C455 Value.	For ESD Request.	25	

EE				
Symbol	Description	Reason	Page	Note
MBH01	C USB port 6,7 to 4,12	HM55 disable USB port 6,7.	17	
MBH02	A Net ME_Flash for flash ME. Control By EC.	Intel recommend.	13,27	
MBH03	A C464-C471 0.1uF	For HDMI Level Shift 2nd source.	16	
MBH04	Change TP Pull high voltage.	A phase mistake.	28	
MBH05	Change B3 Footprint from 0603 to 0805.	For ratting current.	25	
MBH06	Remove co-lay component.	For SMT Request.	24	
MBH07	ADD VID PR172-PR178 Res.	For GFX VID default setting.	31	