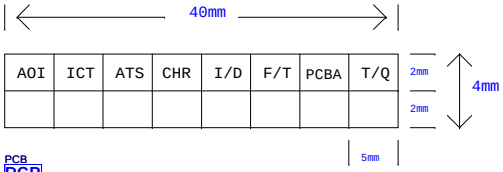
ELITEGROUP COMPUTER SYSTEMS

Project：MB40IAX Schematics Rev : B1

Intel Sandy Bridge CPU + Intel Cougar Point Chipset + ATi Whistler XT

Phase	Revision History	
A0	06/30/2010	Initial REV.A
A1	08/13/2010	Release REV.A1
A2	09/13/2010	Release REV.A2
B0	10/20/2010	Release REV.B
B1	11/08/2010	Release REV.B1
C	??/??/2010	Release REV.C
10	??/??/2010	Release REV.10



MB40IA MB Ver:B1
P/N:37GMB4100-B1
PCB M/B MB40IA1 R:B1 201.9*178.0*1.2 6L

MB40IA Rev. P/N List：

Phase Revision	PCB P/N	PCBA P/N	PCBA P/N
Initial REV.A0	37GMB4100-A0	82GMB4100-A0	None
Release REV.A1	37GMB4100-A1	82GMB4B00-A1	82GMB4110-A1
Release REV.A2	37GMB4100-A2	82GMB4C00-A2	82GMB4D00-A2
Release REV.B0	37GMB4100-B0	82GXXXXXX-B0	82GMB4D00-B0
Release REV.B1	37GMB4100-B1	82GXXXXXX-B1	82GXXXXXX-B1
Release REV.C	37GXXXXXX-C0	82GXXXXXX-C0	82GXXXXXX-C0
Release REV.10	37GXXXXXX-10	82GXXXXXX-10	82GXXXXXX-10
		Whistler ?G MB40IA2(Haier)	WhistlerPro ?G MB40IA3(Hasee)

ECS COMPUTER CORP.

Title: Cover Page

Size | Document Number: MB40IA B1-Phase Custom | MB40IA | Rev: B1

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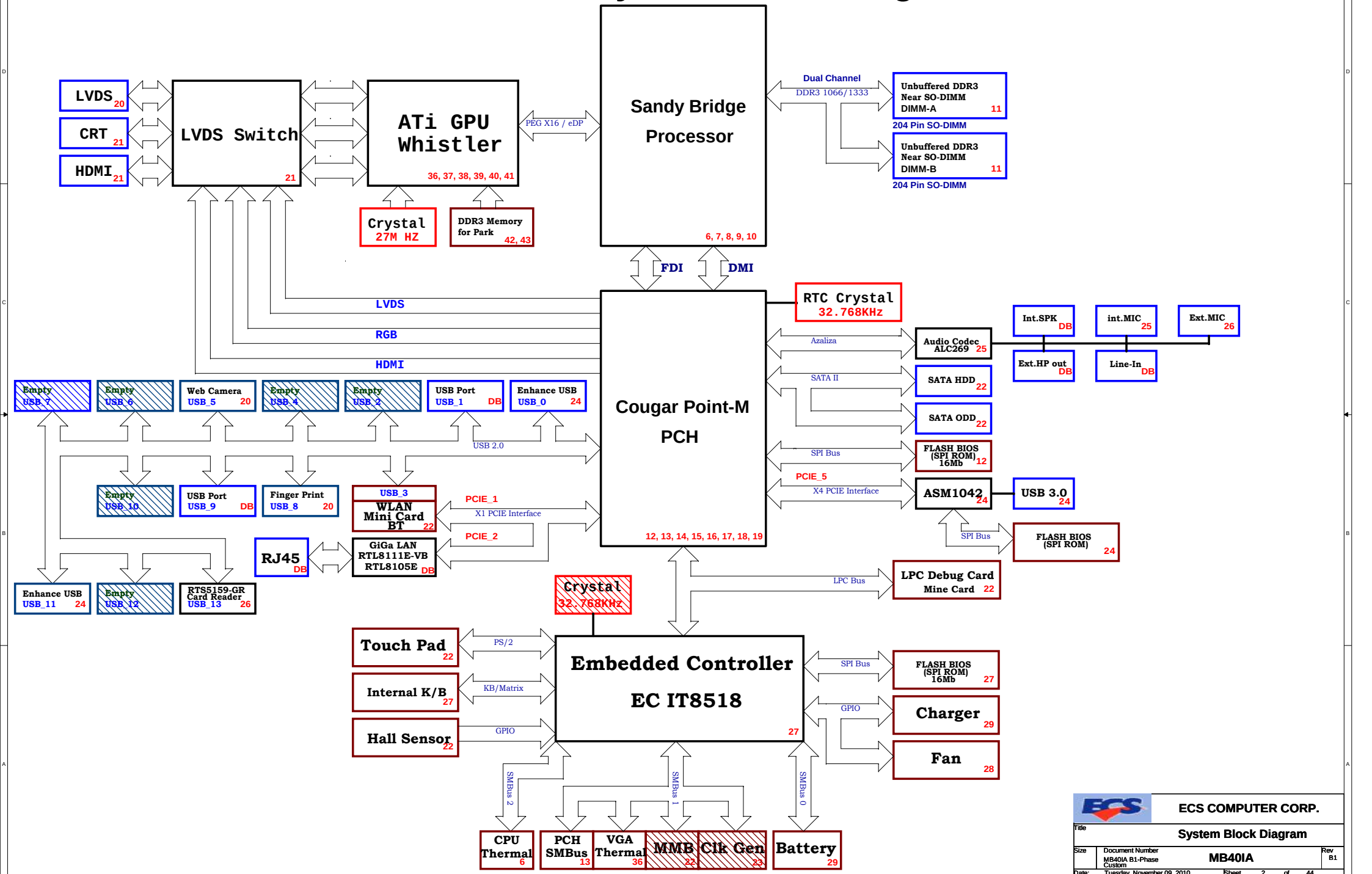
Huron River System Block Diagram



ECS COMPUTER CORP.

Title	System Block Diagram		
Size	Document Number: MB40IA B1-Phase Custom	MB40IA	Rev: B1
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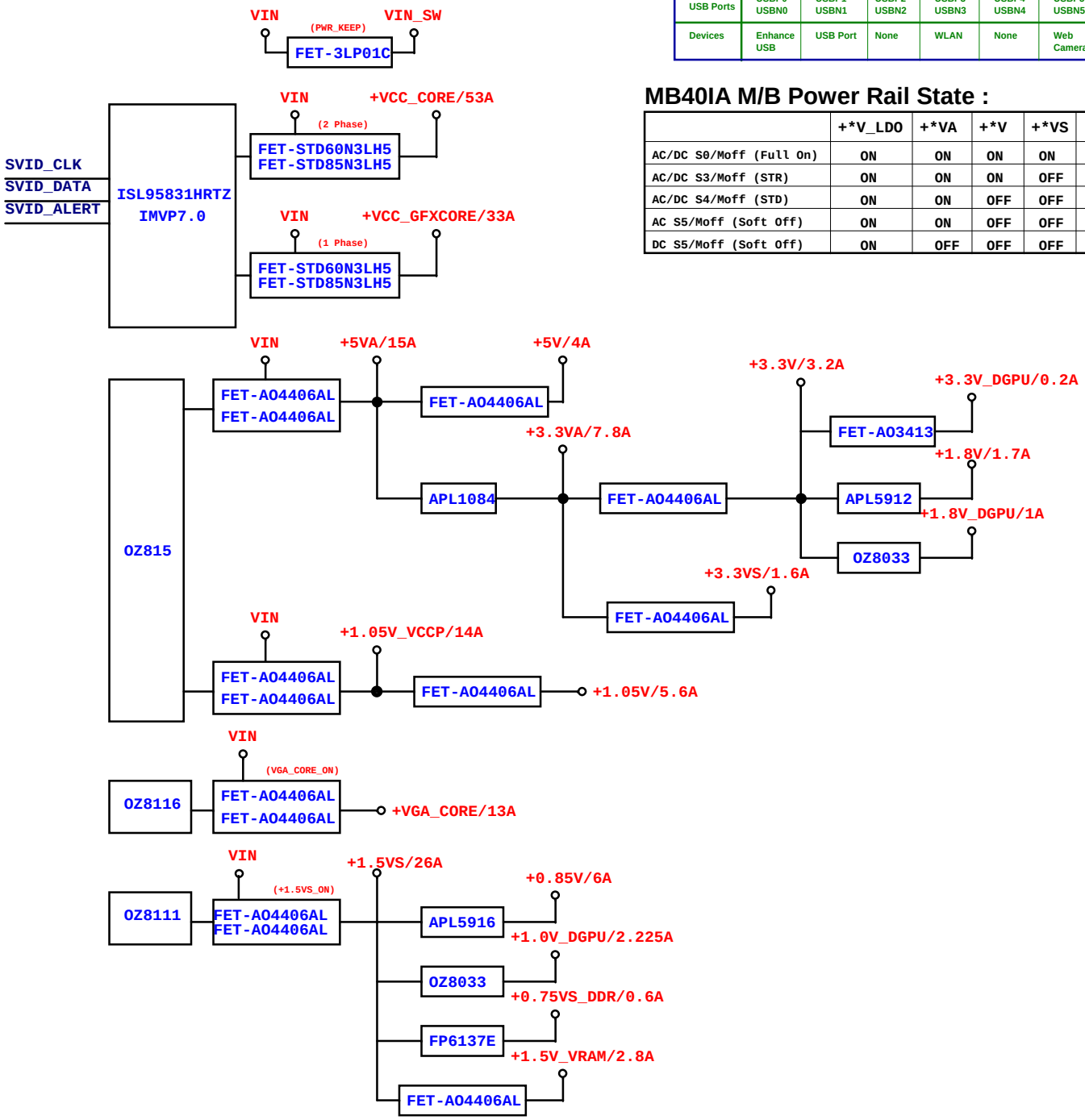
Power Block Diagram



USB Port Devices Table

USB Ports	USBP0 USBN0	USBP1 USBN1	USBP2 USBN2	USBP3 USBN3	USBP4 USBN4	USBP5 USBN5	USBP6 USBN6	USBP7 USBN7	USBP8 USBN8	USBP9 USBN9	USBP10 USBN10	USBP11 USBN11	USBP12 USBN12	USBP13 USBN13
Devices	Enhance USB	USB Port	None	WLAN	None	Web Camera	Disable	Disable	Finger Print	USB Port	None	Enhance USB	None	Card Reader

MB40IA M/B Power Rail State :

	+*V_LDO	+*VA	+*V	+*VS	CLK
AC/DC S0/Moff (Full On)	ON	ON	ON	ON	ON
AC/DC S3/Moff (STR)	ON	ON	ON	OFF	Only MCH BCLK
AC/DC S4/Moff (STD)	ON	ON	OFF	OFF	OFF
AC S5/Moff (Soft Off)	ON	ON	OFF	OFF	OFF
DC S5/Moff (Soft Off)	ON	OFF	OFF	OFF	OFF

System Power Rail		Laptop Mode				
Voltage Name	Control Pin	S0	S1	S3	S4	S5
+VGFX_CORE	GFX_IMON	ON	ON	OFF	OFF	OFF
+VCC_CORE	+VCC_CORE_ON	ON	ON	OFF	OFF	OFF
+V1.05S	+V1.5S_ON	ON	ON	OFF	OFF	OFF
+V1.5S	+V1.5S_ON	ON	ON	OFF	OFF	OFF
+V3.3S	+V3.3S_ON	ON	ON	OFF	OFF	OFF
+V5S	+V5S_ON	ON	ON	OFF	OFF	OFF
+V1.1S_VTT	+V5S	ON	ON	OFF	OFF	OFF
+V1.8S	+V5S	ON	ON	OFF	OFF	OFF
+V1.1S	+V5S	ON	ON	OFF	OFF	OFF
+V0.75DDR	+V1.5	ON	ON	ON	OFF	OFF
+V1.5	+V1.5_ON	ON	ON	ON	OFF	OFF
+V3.3	+V3.3_ON	ON	ON	ON	OFF	OFF
+V5	+V5_ON	ON	ON	ON	OFF	OFF
VIN_SW	PWR_KEEP	ON	ON	ON	OFF	OFF
+V3.3_AUX	AC:follow VIN up	ON	ON	ON	ON	ON
	DC:AUX_ON	ON	ON	ON	OFF	OFF
+V5_AUX	AC:follow VIN up	ON	ON	ON	ON	ON
	DC:AUX_ON	ON	ON	ON	OFF	OFF

CPU Huron River Power Rail		Laptop Mode				
		S0	S1	S3	S4	S5
VCC	+VCC_CORE	ON	ON	OFF	OFF	OFF
VTT	+V1.1S	ON	ON	OFF	OFF	OFF
VAXG	+VCC_CORE	ON	ON	OFF	OFF	OFF
VCCPLL1	+V1.8S	ON	ON	OFF	OFF	OFF
VDDQ	+V1.5S	ON	ON	OFF	OFF	OFF

SB Ibex Peak Power Rail		Laptop Mode				
		S0	S1	S3	S4	S5
VCCACLK	+V1.1S	ON	ON	OFF	OFF	OFF
VCCCORE	+V1.1S	ON	ON	OFF	OFF	OFF
VCCAPLLEXP	+V1.1S	ON	ON	OFF	OFF	OFF
VCCIO	+V1.1S	ON	ON	OFF	OFF	OFF
VCC3_3	+V3.3S	ON	ON	OFF	OFF	OFF
VCCFDIPLL	+V1.1S	ON	ON	OFF	OFF	OFF
VCCVRM	+V1.8S	ON	ON	OFF	OFF	OFF
VCCPNAND	+V1.8S	ON	ON	OFF	OFF	OFF
VCCDMI	+V1.1S_VTT	ON	ON	OFF	OFF	OFF
VCCALVDS	+V3.3S	ON	ON	OFF	OFF	OFF
VCCTX_LVDS	+V1.8S	ON	ON	OFF	OFF	OFF
VCCADAC	+V3.3S	ON	ON	OFF	OFF	OFF
V5REF	+V5S	ON	ON	OFF	OFF	OFF
VCCADPLLB	+V1.1S	ON	ON	OFF	OFF	OFF
VCCSATAPLL	+V1.1S	ON	ON	OFF	OFF	OFF
V_CPU_IO	+V1.1S	ON	ON	OFF	OFF	OFF
VCCADPLLA	+V1.1S	ON	ON	OFF	OFF	OFF
VCCLAN	+V1.1S	ON	ON	OFF	OFF	OFF
VCCSUSHDA	+V3.3A	ON	ON	ON	ON	ON
VCCSUS3_3	+V3.3A	ON	ON	ON	ON	ON
VCCRTC	+V3A	ON	ON	ON	ON	ON
V5REF_SUS	+V5A	ON	ON	ON	ON	ON

ECS COMPUTER CORP.

Title: Power Diagram

Size: | Document Number: MB40IA B1-Phase Custom | MB40IA | Rev: B1

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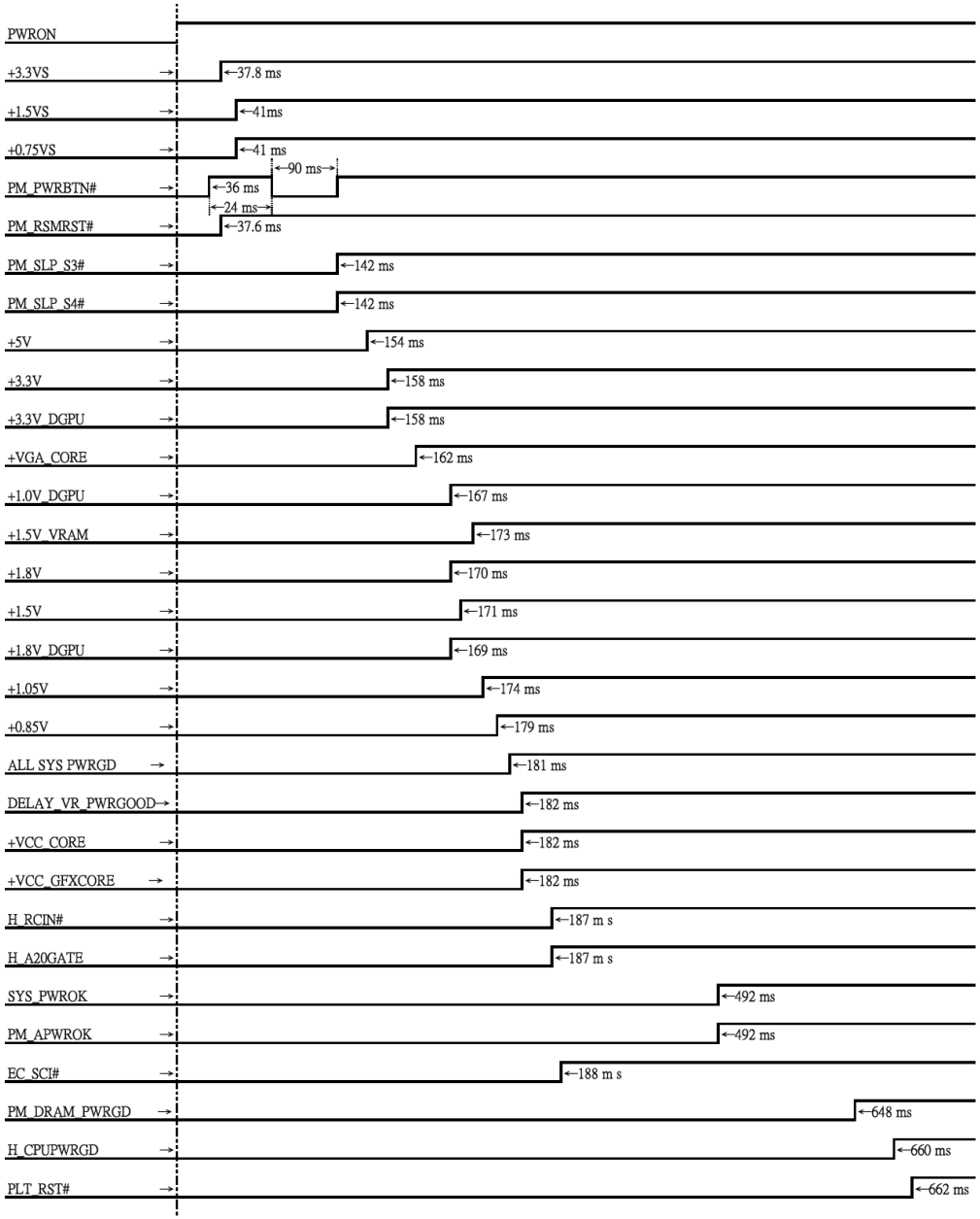
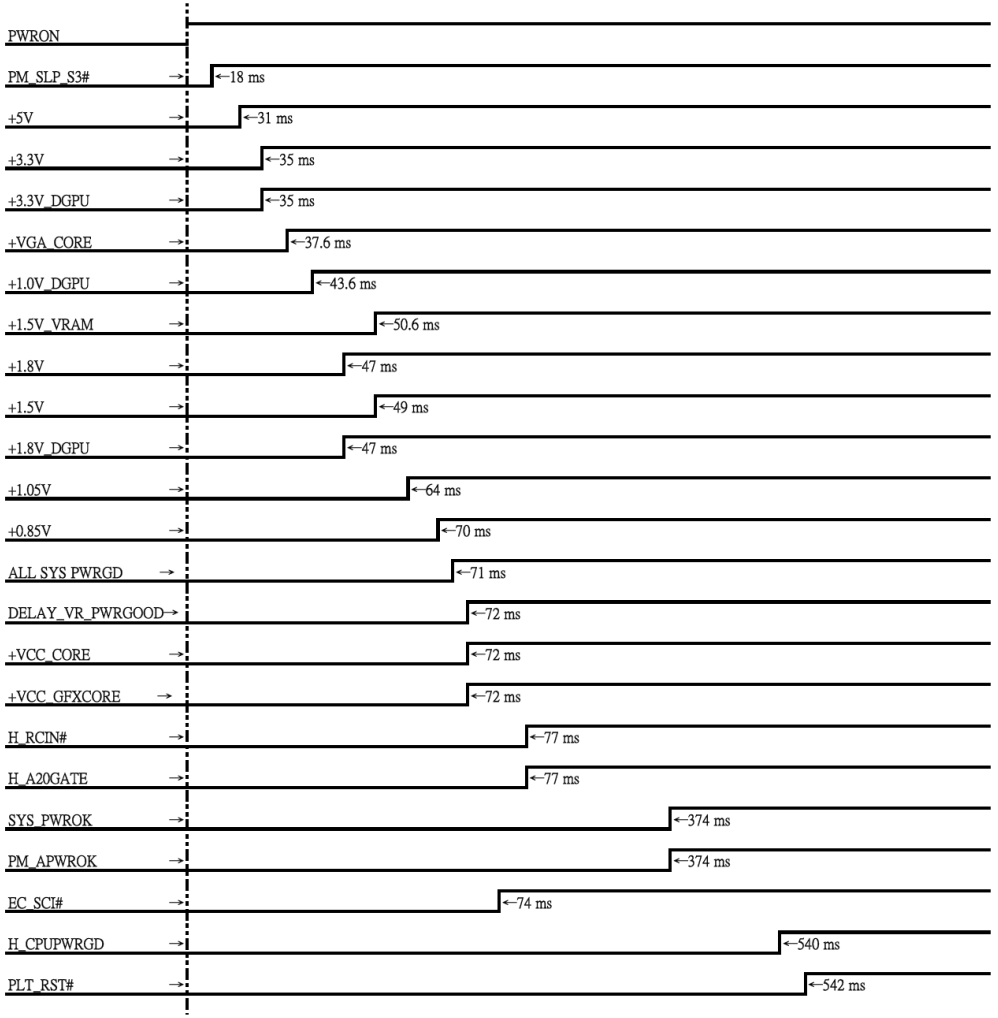
System Power On Sequence

MB40IA A2 Phase Power Sequence(Power ON)



MB40IA A2 Phase Power Sequence(S3)



ECS COMPUTER CORP.		
Title	Power Sequence	
Size	Document Number: MB40IA B1-Phase Custom	Rev: B1
	MB40IA	
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PCH GPIO

GPIO0	S_GPIO
GPIO1	SMC_RUNTIME_SCI#
GPIO2	MPC_PWR_CTRL#
GPIO3	SATA_ODD_DA#
GPIO4	EXTTS_SNI_DRV0_PCH
GPIO5	EXTTS_SNI_DRV1_PCH
GPIO6	USB_SMI
GPIO7	PCH_TACH3
GPIO8	ICC_EN#
GPIO9	USB_OC#_10_11
GPIO10	USB_OC#_12_13
GPIO11	PCH_GPIO11
GPIO12	PCH_GPIO12
GPIO13	NC
GPIO14	USB_OC#_13_14
GPIO15	HOST_ALERT#1
GPIO16	SATA_DET#4
GPIO17	PCH_TACH0
GPIO18	CLK_PCIE_LAN_REQ#_R
GPIO19	BBS_BIT0
GPIO20	NC
GPIO21	SATA DET0#
GPIO22	BIOS_REC
GPIO23	NC
GPIO24	HOST_ALERT#2
GPIO25	NC
GPIO26	CLK_USB_OE#_R
GPIO27	PCH_GPIO27
GPIO28	PLL_ODVR_EN
GPIO29	PM_SLP_LAN#
GPIO30	SUS_PWR_ACK_R
GPIO31	AC_PRESENT
GPIO32	PM_CLKRUN#
GPIO33	PORST#_PCH
GPIO34	PX_MODE
GPIO35	PLTRST#_PCH
GPIO36	PCH_GPIO36
GPIO37	FDI_OVRVLTG
GPIO38	MFG_MODE
GPIO39	GFX_CRB_DET
GPIO40	USB_OC#_2_3
GPIO41	USB_OC#_4_5
GPIO42	USB_OC#_6_7
GPIO43	USB_OC#_8_9
GPIO44	NC
GPIO45	NC
GPIO46	NC
GPIO47	PEG_CLKREQ#
GPIO48	TEST_SET_UP
GPIO49	PCH_GPIO049
GPIO50	DGPU_HOLD_RST
GPIO51	BBS_BIT1
GPIO52	PCI_REQ#2
GPIO53	NC
GPIO54	PCI_REQ#3
GPIO55	STP_A16OVR
GPIO56	NC
GPIO57	TEST_DET
GPIO58	SMB1_CLK_EC
GPIO59	USB_OC#_0_1
GPIO60	RST_GATE
GPIO61	NC
GPIO62	NC
GPIO63	NC
GPIO64	NC
GPIO65	USB_48M_P
GPIO66	LAN25M_P
GPIO67	SEL24_48M_P
GPIO68	10K to +3.3V
GPIO69	1.5K to GND
GPIO70	1.5K to +3.3V
GPIO71	1.5K to +3.3V
GPIO72	PM_BATLOW#
GPIO73	CLK_MINI1_OE#_R
GPIO74	PCH_GPIO74
GPIO75	SMB1_DAT_EC

ITE8518 GPIO Pin Definition list

GPA0	BTL_BEEP
GPA1	EC_BL_PWM
GPA2	WLAN_ON
GPA3	WEBCAM_EN
GPA4	RF_LED
GPA5	**+0.85V_ON**
GPA6	RECOVERY
GPA7	BT_EN#
GPB0	SENBAT_V
GPB1	COLOR_ENGINE_EN
GPB2	**+VGA_BACO**
GPB3	SMBCLK_EC0
GPB4	SMBDAT_EC0
GPB5	H_A20GATE
GPB6	H_RCIN#
GPB7	OPTION2
GPC0	**+1.8V_ON**
GPC1	SMBCLK_EC1
GPC2	SMBDAT_EC1
GPC3	SAFETY
GPC4	**+3.3V_ON**
GPC5	**+5V_ON**
GPC6	**+1.05V_VCCP_ON**
GPC7	PM_PWRBTN#
GPD0	AC_IN
GPD1	OPTION1
GPD2	BUF_PLT_RST#
GPD3	EC_SCI#
GPD4	SATA_ODD_PWRGT_EC +1.8V_DGPU_ON
GPD5	AC_PRESENT
GPD6	**+1.5VS_ON**
GPD7	**+1.2V_ON**
GPE0	PM_RSMRST#
GPE1	FNOPTION
GPE2	PM_APWROK
GPE3	**+VGA_ON**
GPE4	PWRON
GPE5	OPTION3
GPE6	SATA_LED1#
GPE7	MUTE_AMP#
GPF0	EC_PROCHOT
GPF1	CHG_R_LED
GPF2	CHG_B_LED
GPF3	PWR_LED
GPF4	TP_CLK
GPF5	TP_DATA
GPF6	EC_PECI
GPF7	PM_SYSRST#
GPH0	PWR_KEEP
GPH1	ME_LOCK
GPH2	USB0_EN#
GPH3	PCH_SPI_CS#
GPH4	PCH_SPI_CLK
GPH5	PCH_SPI_SO
GPH6	PCH_SPI_SI
GPG0	EC_BL_EN
GPG1	**+3.3VS_ON**
GPG2	FLFRAME#
GPG6	LID#
ADC0/GPI0	BATT_TEMP
ADC1/GPI1	ADAPTOR_I
ADC2/GPI2	BAT_I
ADC3/GPI3	BAT_V
ADC4/GPI4	NC
ADC5/GPI5	PM_SLP_S4#
ADC6/GPI6	PM_SLP_S3#
ADC7/GPI7	SUB_PWR_ACK SATA_ODD_DA#_EC PX_MODE

ITE8518 GPIO Pin Definition list

DAC0/GPJ0	Fast-charge-EN
DAC0/GPJ1	CHG_ON
DAC0/GPJ2	FAN_CTRL0
DAC0/GPJ3	CHG_I
DAC0/GPJ4	MMB_RESET#
DAC0/GPJ5	SET_V

ITE8518 KB Matrlk interface

KSI0/STB#	KB_SIN0
KSI1/AFD#	KB_SIN1
KSI2/INIT#	KB_SIN2
KSI3SLIN#	KB_SIN3
KSI4	KB_SIN4
KSI5	KB_SIN5
KSI6	KB_SIN6
KSI7	KB_SIN7
KSO0/PD0	KB_SOUT0
KSO1/PD1	KB_SOUT1
KSO2/PD2	KB_SOUT2
KSO3/PD3	KB_SOUT3
KSO4/PD4	KB_SOUT4
KSO5/PD5	KB_SOUT5
KSO6/PD6	KB_SOUT6
KSO7/PD7	KB_SOUT7
KSO8/ACK#	KB_SOUT8
KSO9/BUSY	KB_SOUT9
KSO10/PE	KB_SOUT10
KSO11/ERR#	KB_SOUT11
KSO12/SLCT	KB_SOUT12
KSO13	KB_SOUT13
KSO14	KB_SOUT14
KSO15	KB_SOUT15

ITE8518 SPI Flash ROM interface

FSSCE0#/GPG2	FLFRAME#
FSCE#	EC_SPI_CS#
FMOSI	EC_SPI_SI
FMOSO	EC_SPI_SO
DSR0#/GPG6	LID#
FSCK	EC_SPI_CLK
SCI#/GPG0	EC_BL_EN

ITE8518 System & LPC Bus

LAD0	LPC_AD0
LAD1	LPC_AD1
LAD2	LPC_AD2
LAD3	LPC_AD3
SERIRQ	INT_SERIRQ
LFRAME#	LPC_FRAME#
LPCCLK	CLK_PCI_KBC
WRST#	LRST1#

ITE8518 Clock

CLK32K	EC32KI
CK32KE	EC32KO

ITE8518 Power

VSTBY0	+3.3VA
VSTBY1	+3.3VA
VSTBY2	+3.3VA
VSTBY3	+3.3VA
VSTBY4	+3.3VA
VSTBY5	+3.3VA
VBAT	+3.3VA_RTC
AVCC	+3.3VA
VCC	+3.3V

Gantiga TDP

	CPU Socket P	GMCH GFX Freq/Core Volt	Memory	TDP
Gantiga	Penryn SV/FSB800	800MHZ/1.05V	DDR3-1066/ 2 CH	12.0W
Gantiga	Penryn SV/FSB800	800MHZ/1.05V	DDR3-1066/ 2 CH	12.0W
Gantiga	Penryn LV/FSB800	800MHZ/1.05V	DDR3-800/ 2 CH	10.5W
Gantiga	Penryn ULV/FSB800	800MHZ/1.05V	DDR3-800/ 2 CH	9.5W

Sandy Bridge CPU

IMVP-7.0

Voltage (V)	Current(mA)	Measure	Watt
+VCC_CORE	36000		
+VCC_GFXCORE	33000		
+1.05V_VCCP	8500		
+0.85V	6000		
+1.5VS	3000		
+1.8V	1200		

Cougar Point PCH

Voltage (V)	Current(mA)	Measure	Watt
+1.05V_VCCP	43		
+1.05V	5565		
+1.8V	250		
+3.3VS	129		
+3.3V	260		
+5VA	1		
+5V	1		

ITE8518

VCC	ICC(mA)	mW	TEMP(℃)
+3.3VA	100	330	70

Clock Generator

VCC	ICC(mA)	mW	TEMP(℃)
+3.3V	270	891	70

ITE8518 GND

AVSS	GND
VSS0	GND
VSS1	GND
VSS2	GND
VSS3	GND
VSS4	GND
VSS5	GND
VSS6	GND

Cantiga

VCC	ICC(mA)	W	TEMP(℃)
+3.3VS	269	0.887	105
+1.8V	192	0.345	
+1.5VS	76	1.14	
+1.05VS	6013	6.313	
GFX_CORE	6326	6.642	

PCH

VCC	ICC(mA)	mW	TEMP(℃)
+5V	2	10	70
+5VS	2	10	
+3.3VA	162	534.6	
+3.3VS	320	1056	
+1.5VS	2220	3330	
+1.05V	1636	1717.8	

ECS COMPUTER CORP.

Title: GPIO & Power Consumption

Size	Document Number	Rev
	MB40IA B1-Phase Custom	MB40IA B1

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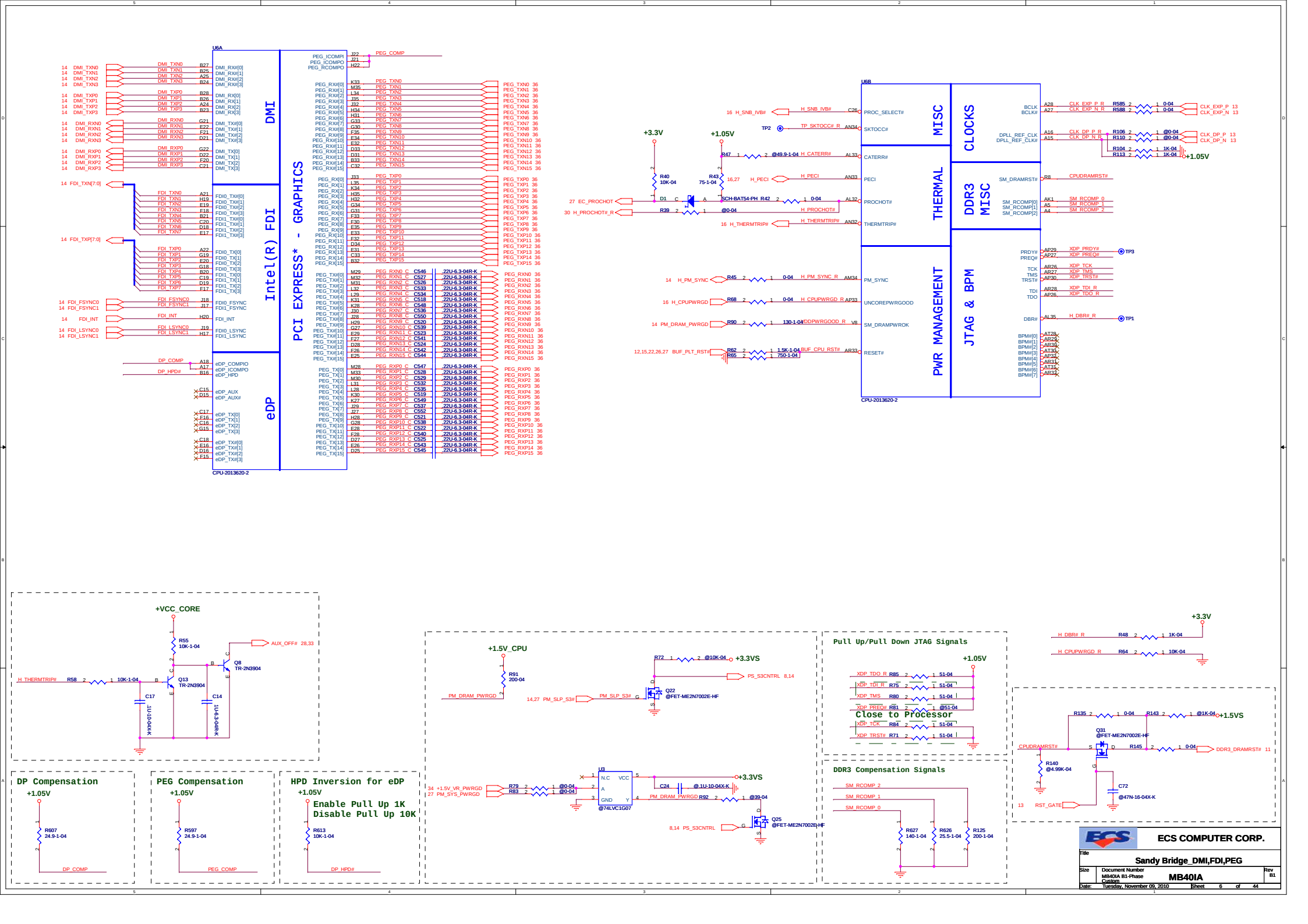
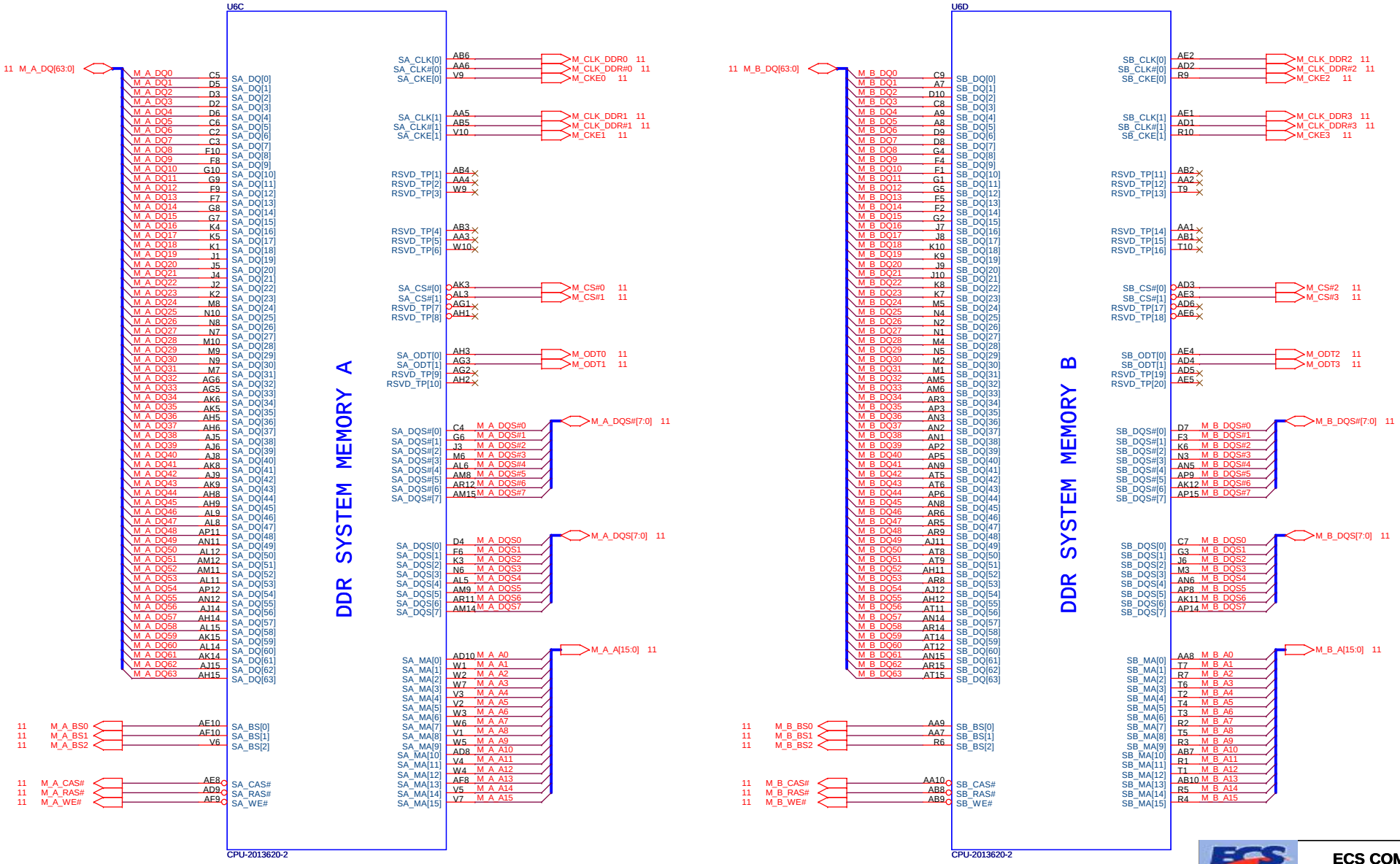

U6A
DMI
Intel(R) FDI
eDP
PCI EXPRESS* - GRAPHICS
CPU-2013620-2
U6B
PROC_SELECT#
SKTOCC#
CATERR#
PECI
PROCHOT#
THERMTRIP#
PM_SYNC
UNCOREPWRGOOD
SM_DRAMPWROK
RESET#
MISC
THERMAL
PWR MANAGEMENT
CLOCKS
DDR3 MISC
JTAG & BPM
CPU-2013620-2
+3.3V
+1.05V
+VCC_CORE
+1.5V_CPU
+3.3VS
+1.5VS
Close to Processor
DP Compensation
PEG Compensation
HPD Inversion for eDP
Enable Pull Up 1K
Disable Pull Up 10K
Pull Up/Pull Down JTAG Signals
DDR3 Compensation Signals
ECS COMPUTER CORP.
Sandy Bridge_DMI,FDI,PEG
MB40IA
Tuesday, November 09, 2010



ECS COMPUTER CORP.

Title: Sandy Bridge_DDR3

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POWER

CPU Core 53000 mA

+VCC_CORE

U6F

CORE SUPPLY

PEG AND DDR

SVID

SENSE LINES

VCCIO 8500 mA

+1.05V

C609 C47 C605 C48 C607 C49 C602 C45 C44 C606

C604 C46 C603 C601

10U-6.3-08R-K

VCCIO40

J23 R595 2 1 0-04

+1.05V

VIDALERT# VIDSCLK VIDSOUT

AJ29 H_CPU_SVIDALRT#

AJ30 H_CPU_SVIDCLK

AJ28 H_CPU_SVIDDAT

VCC_SENSE VSS_SENSE

AJ35 AJ34

R52 R51 100-1-04

+VCC_CORE

VCC_SENSE 30

VSS_SENSE 30

VCCIO_SENSE VSSIO_SENSE

B10 A10

VCCP_SENSE R115 10-1-04

VSSP_SENSE R120 10-1-04

+1.05V

TP7

Place R115,R120 Near CPU Pins

CPU-2013620-2

+VCC_CORE

C566 C10 C588 C16 C13 C9 C37 C586

C583 C35 C36 C570 C587 C576 C585 C584

10U-6.3-08R-K

C553 C555 C554 C567 C561 C563 C564 C562

1U-25-06R-K

1U-10-04X-K

C568 C559 C565 C560

1N-50-04X-K

POWER

+VCC_GFXCORE

VAXG 33000 mA

C600 C26 C27 C29 C592 C40 C33 C42

10U-6.3-08R-K

@10U-6.3-08R-K

C573 C577 C578 C589 C591 C590

1U-25-06R-K

1U-10-04X-K

When Use DGPU,C573 Change to R? Type (Value:0-06)

U6G

VAXG1 … VAXG54

GRAPHICS

1.8V RAIL

VCCPLL 1200 mA

+1.8V

C60 C62 C58

10U-6.3-08R-K

1U-6.3-04R-K

VCCPLL1 VCCPLL2 VCCPLL3

B6 A6 A2

CPU-2013620-2

SENSE LINES

VAXG_SENSE VSSAXG_SENSE

AK35 AK34

R50 R49 0-04 0-04

VCCGT_SENSE 30

VSSGT_SENSE 30

When Use UMA R49,R50 Stuff

When Use DGPU Only R49,R50 Unstuff

VREF

Note: +V_SM_VREF Should Have 10 mil Trace Width

SM_VREF

AL1 +V_SM_VREF_CNT

DDR3 -1.5V RAILS

+1.5V_CPU

VDDQ 10000 mA

VDDQ1 … VDDQ15

C613 C612 C611 C610 C624 C625 C622 C623

1U-6.3-04R-K

4.7U-6.3-06R-K

SA RAIL

VCCSA 6000 mA

+0.85V

VCCSA1 … VCCSA8

C38 C571 C572

10U-6.3-08R-K

VCCSA_SENSE

H23 VCCUSA_SENSE

VCCUSA_SENSE 34

MISC

C22 C24 VCCSA_VID1

R603 R593 1K-04

VCCSA_SEL 34

SVID Clock

+1.05V

R7 54.9-1-04 Close to Power

H_CPU_SVIDCLK R578 0-04 VR_SVID_CLK 30

SVID Alert

+1.05V

R569 75-1-04 Close to CPU

H_CPU_SVIDALRT# R570 43.2-1-04 VR_SVID_ALERT# 30

SVID Data

+1.05V

R582 130-1-04

+1.05V

R6 130-1-04 Close to Power

H_CPU_SVIDDAT R580 0-04 VR_SVID_DATA 30

+0.75VS_DDR

R124 0-04

Q29 @FET-ME2306

+V_SM_VREF_CNT

R126 @100K-04

VIN_SW

R117 @100K-04

+1.5VS

Q520 @FET-APM4826K

PJP510 OPEN_2A

R640 @0-04

C54

C632 @470P-50-04X-K

Q28 @FET-ME2N7002E-HF@10N-25-X04-K

6,14 PS_S3CNTRL PS_S3CNTRL

+1.5V_CPU

ECS COMPUTER CORP.

Title: Sandy Bridge_Power

Size	Document Number	Rev
	MB40IA B1-Phase Custom	MB40IA B1

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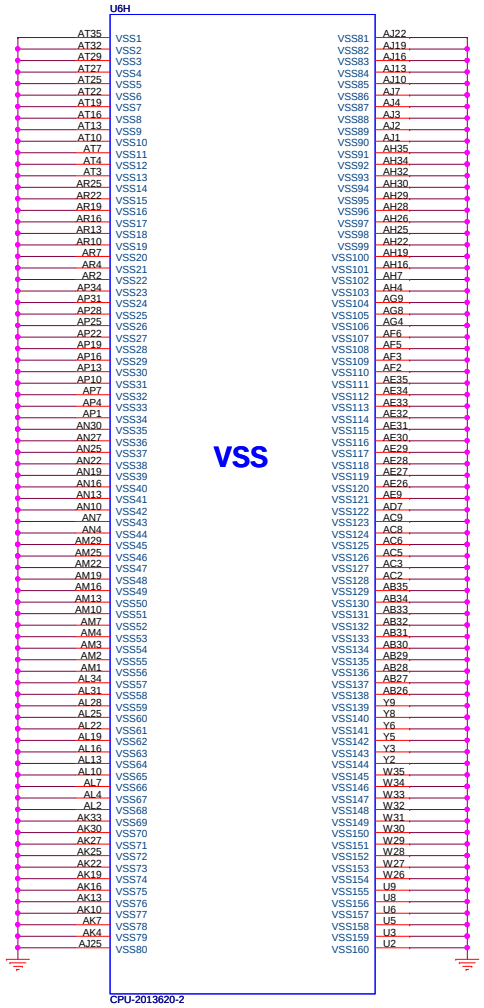
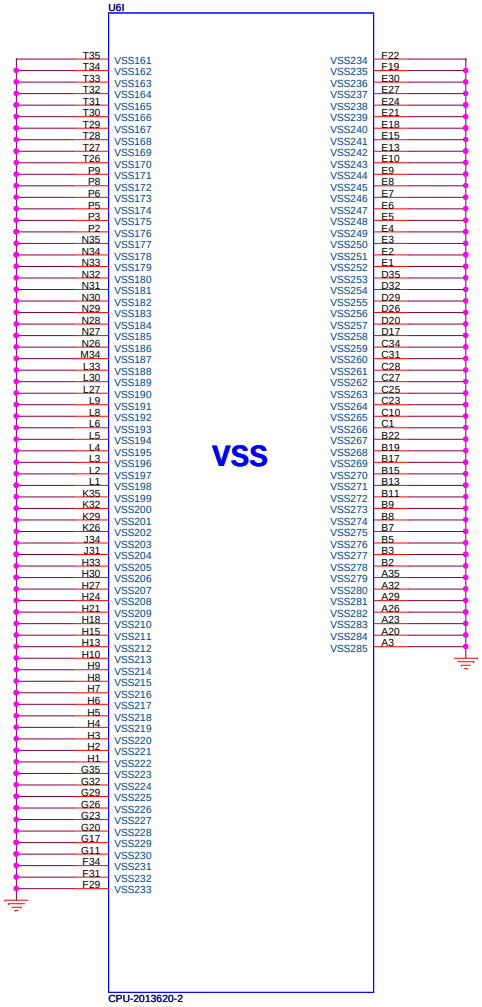


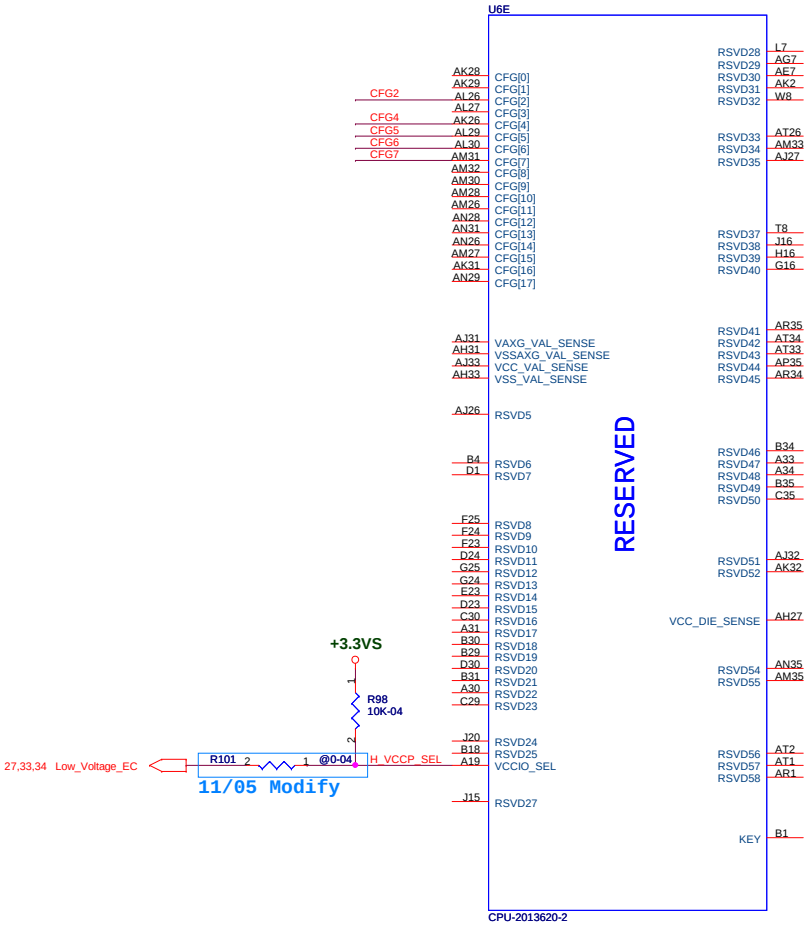


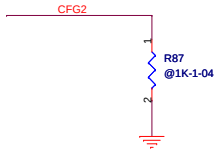
ECS COMPUTER CORP.

Title: Sandy Bridge_GND

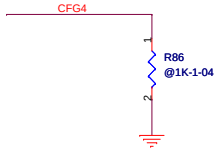
Size	Document Number	Rev
	MB40IA B1-Phase Custom: MB40IA	B1

Date: Tuesday, November 09, 2010 Sheet 9 of 44

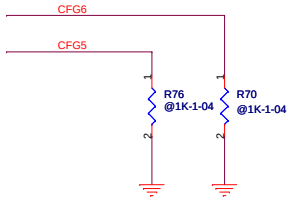




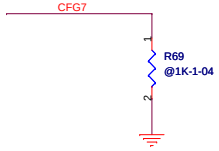
PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1:(Default) Normal Operation; Lane # definition matches socket pin map definition 0:Lane Reversed



Display Port Presence Strap	
CFG4	1:(Default) Disabled; No Physical Display Port attached to Embedded Display Port 0:Enabled; An external Display Port device is connected to the Embedded Display Port



PCIE Port Bifurcation Straps	
CFG[6:5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled



PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

ECS COMPUTER CORP.

Title: Sandy Bridge_Reserved

Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

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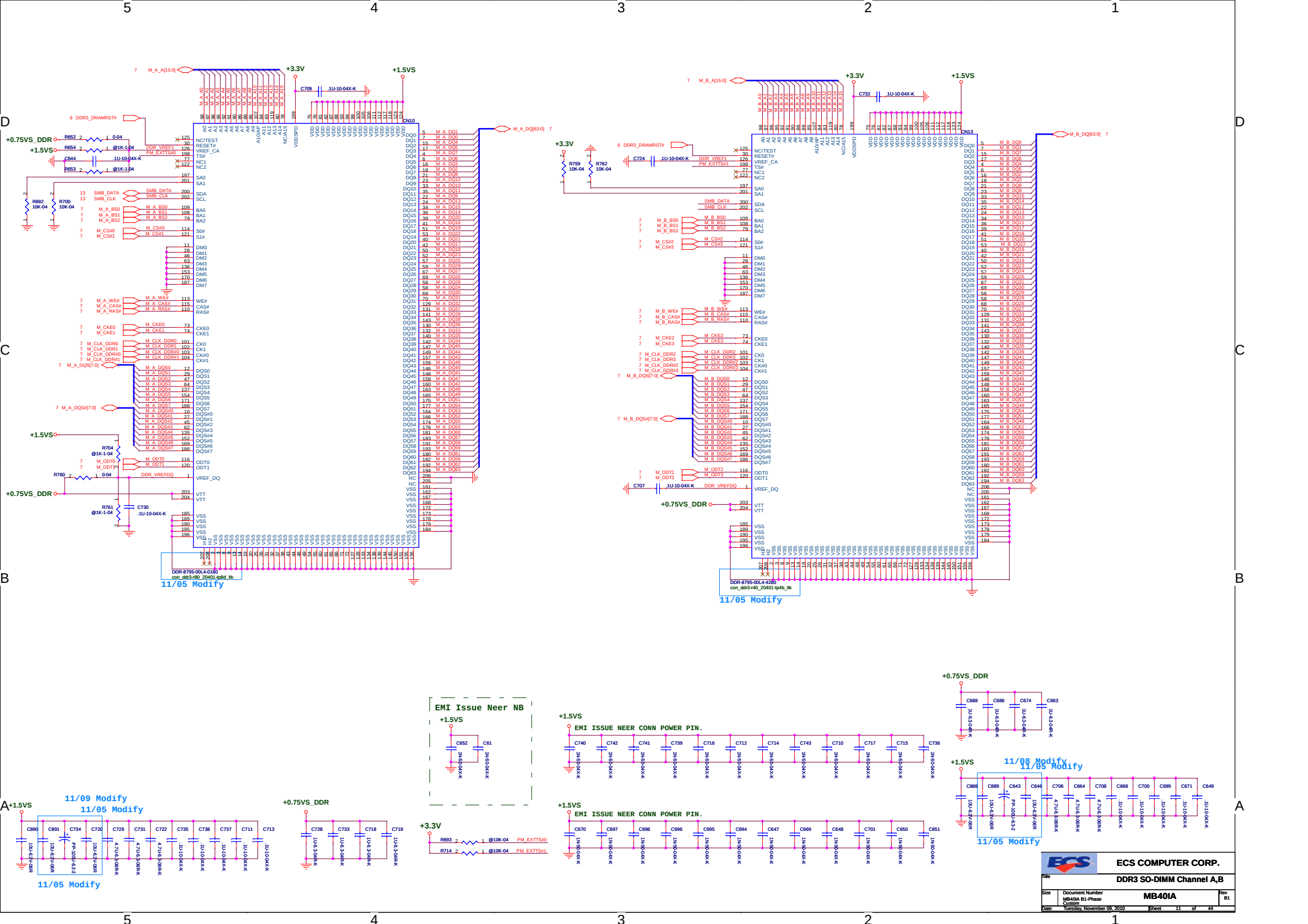
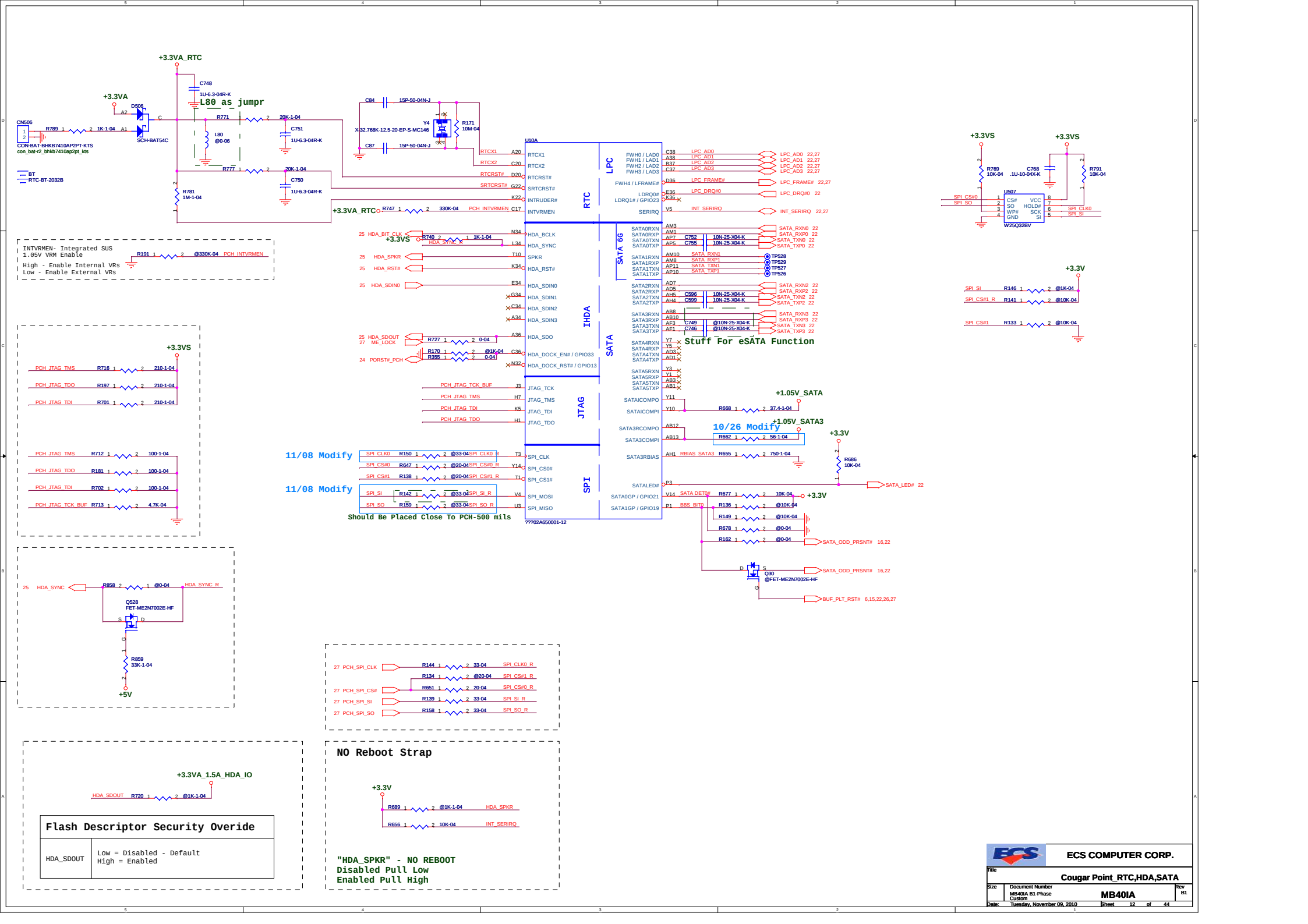
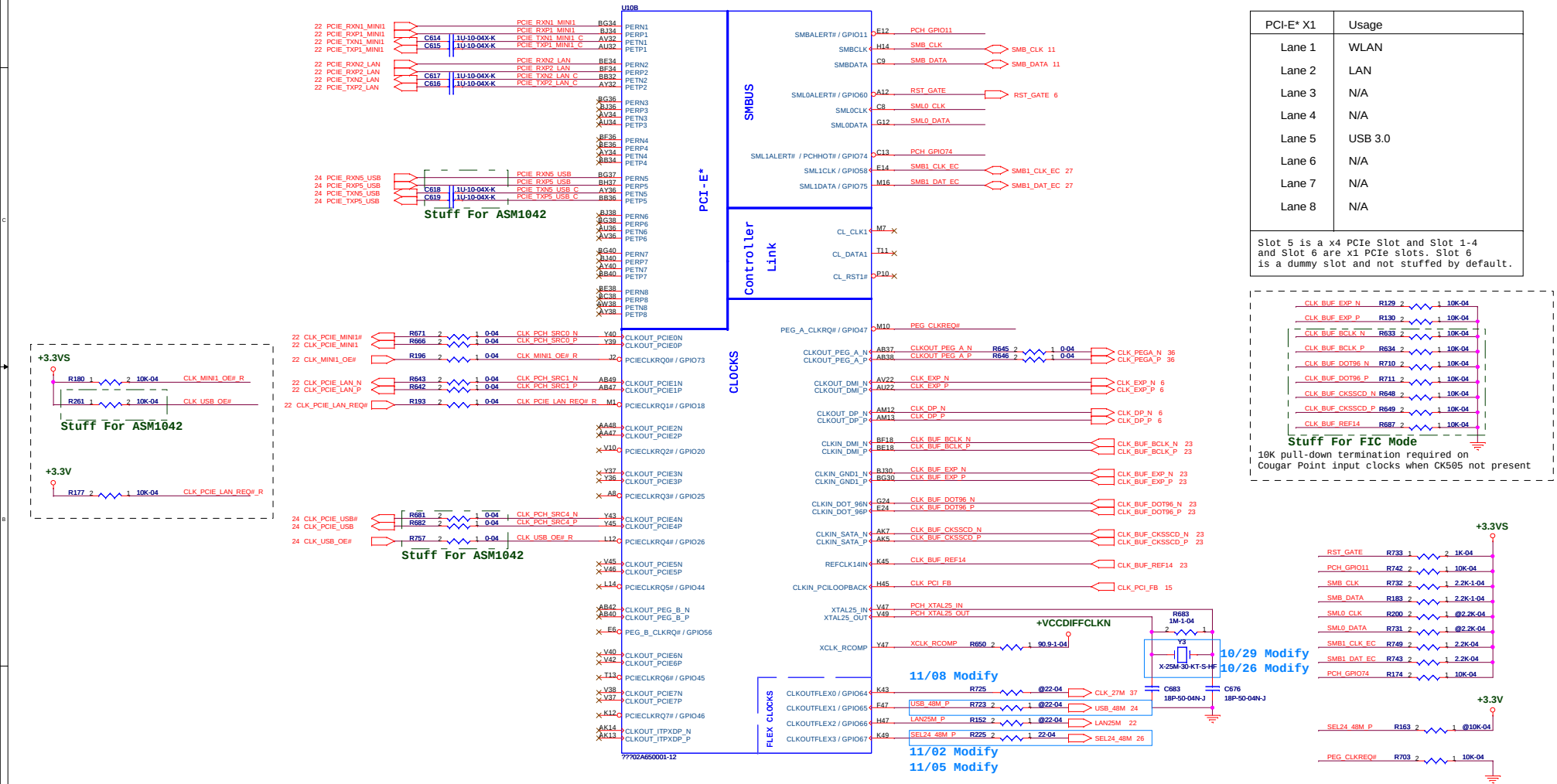

5
4
3
2
1
D
C
B
A
+3.3V
+1.5VS
+0.75VS_DDR
DDR3_DRAMRST#
M_A_A[15:0]
M_A_DQ[63:0]
M_A_DQS[7:0]
M_A_DQS#[7:0]
M_B_A[15:0]
M_B_DQ[63:0]
M_B_DQS[7:0]
M_B_DQS#[7:0]
CN10
CN13
DDR-8795-00L4-0180
con_ddr3-r80_20401-tp8d_ltk
DDR-8795-00L4-4280
con_ddr3-r40_20401-tp4b_ltk
11/05 Modify
11/09 Modify
EMI Issue Neer NB
EMI ISSUE NEER CONN POWER PIN.
ECS COMPUTER CORP.
DDR3 SO-DIMM Channel A,B
MB40IA
Rev B1
Document Number MB40IA B1-Phase Custom
Tuesday, November 09, 2010
Sheet 11 of 44


+3.3VA_RTC
+3.3VA
L80 as jumpr
CN506
CON-BAT-BHKB7410AP2PT-KTS
con_bat-r2_bhkb7410ap2pt_kts
SCH-BAT54C
BT
RTC-BT-2032B
X-32.768K-12.5-20-EP-S-MC146
U10A
RTC
LPC
SATA 6G
IHDA
SATA
JTAG
SPI
INTVRMEN- Integrated SUS 1.05V VRM Enable
High - Enable Internal VRs
Low - Enable External VRs
Stuff For eSATA Function
+1.05V_SATA
+1.05V_SATA3
10/26 Modify
11/08 Modify
11/08 Modify
Should Be Placed Close To PCH-500 mils
+3.3VS
+3.3V
+5V
Q528
FET-ME2N7002E-HF
Q30
@FET-ME2N7002E-HF
W25Q32BV
+3.3VA_1.5A_HDA_IO
Flash Descriptor Security Overide
HDA_SDOUT
Low = Disabled - Default
High = Enabled
NO Reboot Strap
"HDA_SPKR" - NO REBOOT
Disabled Pull Low
Enabled Pull High
ECS COMPUTER CORP.
Cougar Point_RTC,HDA,SATA
MB40IA
Tuesday, November 09, 2010



PCI-E* X1	Usage
Lane 1	WLAN
Lane 2	LAN
Lane 3	N/A
Lane 4	N/A
Lane 5	USB 3.0
Lane 6	N/A
Lane 7	N/A
Lane 8	N/A

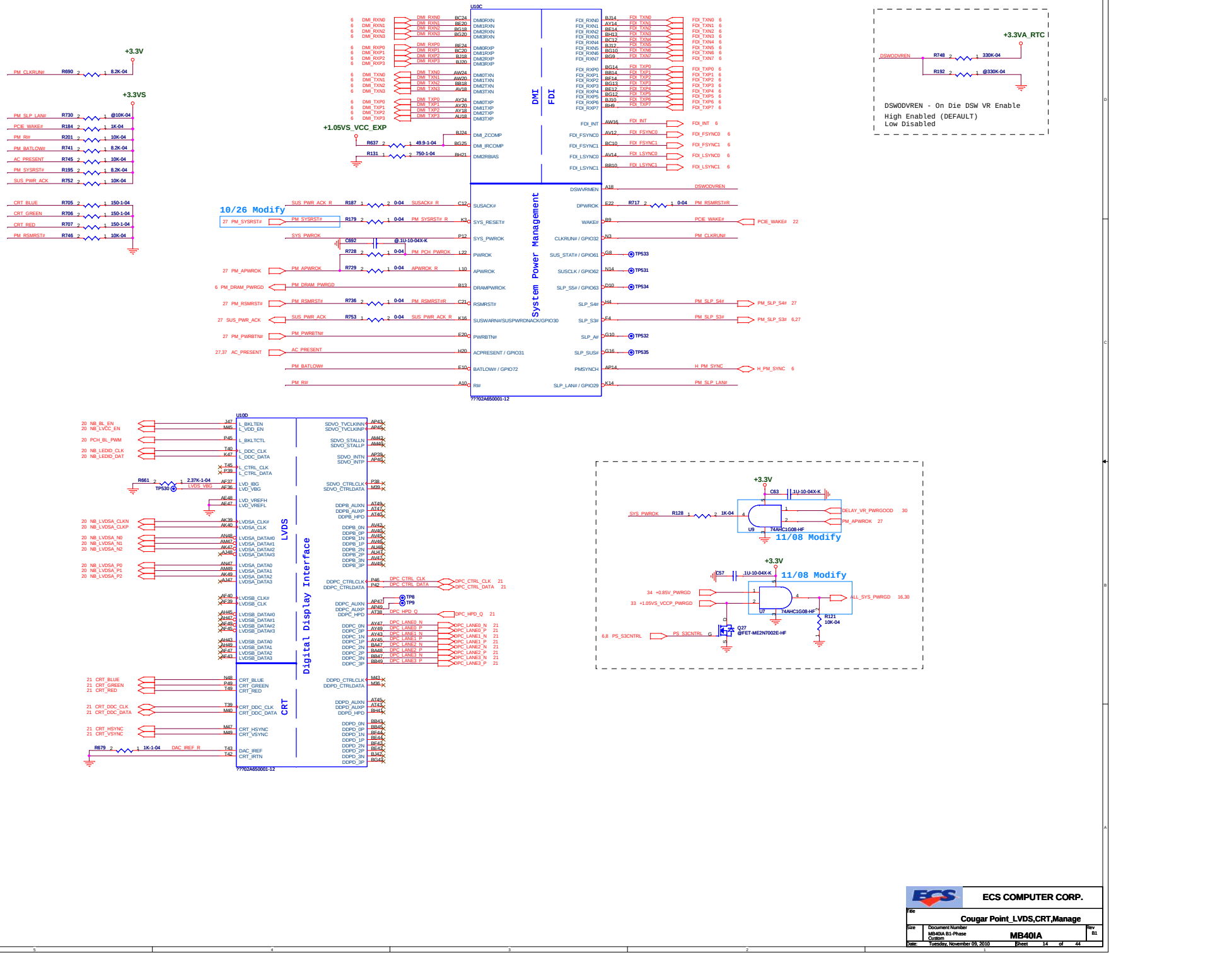
Slot 5 is a x4 PCIe Slot and Slot 1-4 and Slot 6 are x1 PCIe slots. Slot 6 is a dummy slot and not stuffed by default.

ECS COMPUTER CORP.

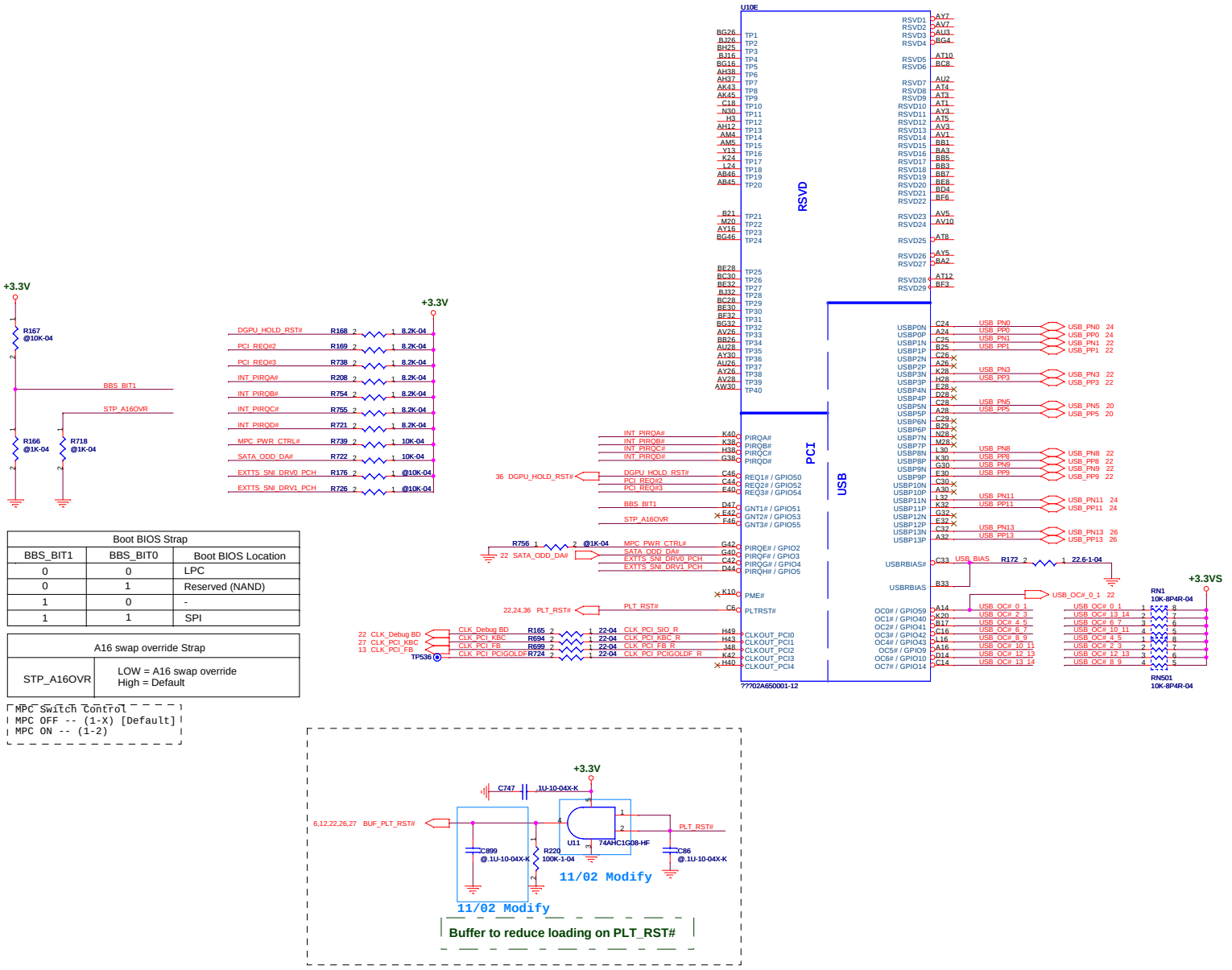
Title: Cougar Point_PCIE,CLK,SMBus

Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

Date: Tuesday, November 09, 2010 Sheet 13 of 44



ECS COMPUTER CORP.			
Title: Cougar Point_LVDS,CRT,Manage			
Size	Document Number: MB40IA B1-Phase Custom	MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 14 of 44		



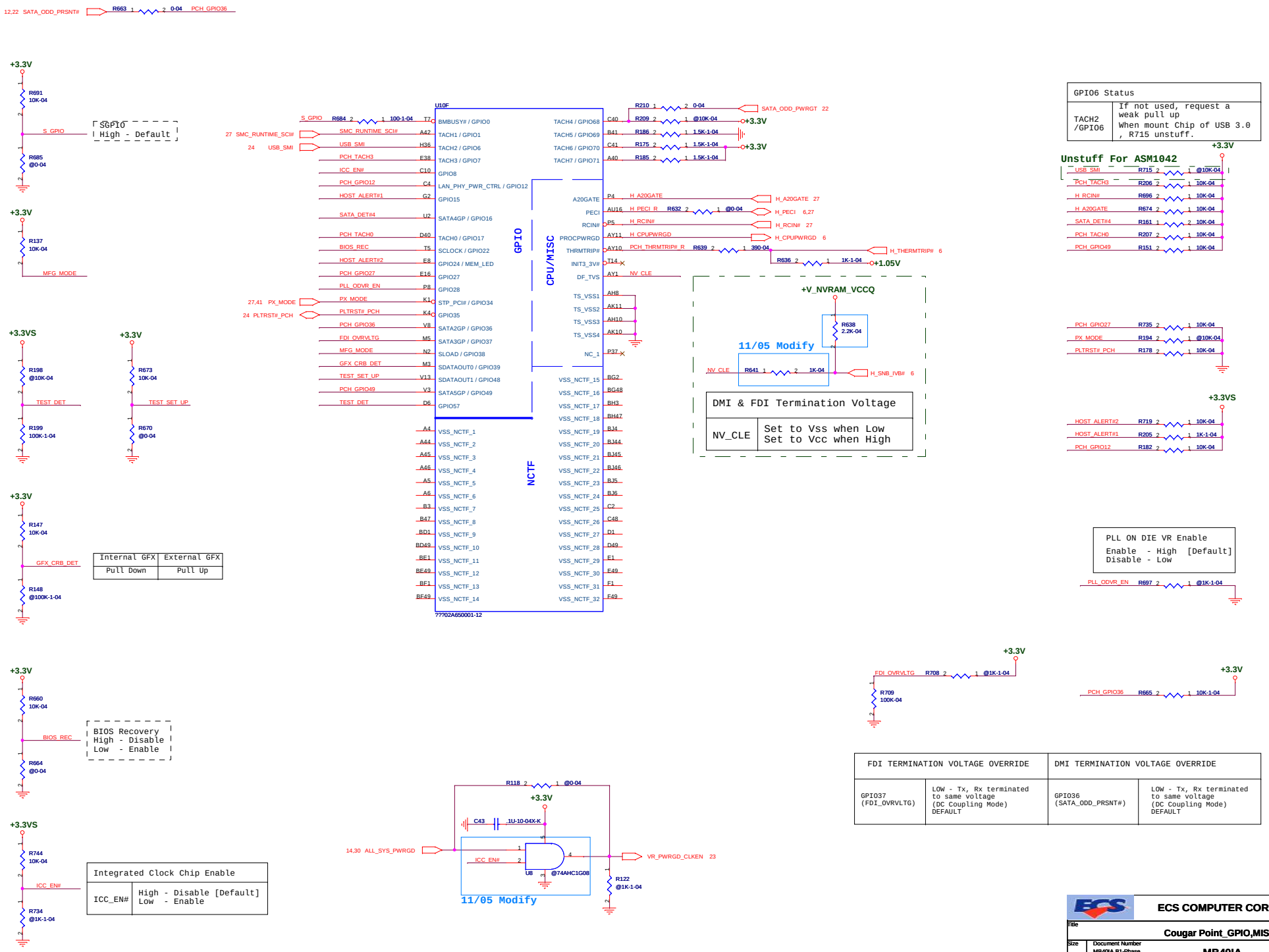
USB Ports Table	
USBP0	Enhance USB
USBN0	USB_0
USBP1	USB Port
USBN1	USB_1
USBP2	
USBN2	
USBP3	WLAN
USBN3	USB_3
USBP4	
USBN4	
USBP5	Web Camera
USBN5	USB_5
USBP6	Disable
USBN6	
USBP7	Disable
USBN7	
USBP8	Finger Print
USBN8	USB_8
USBP9	USB Port
USBN9	USB_9
USBP10	
USBN10	
USBP11	Enhance USB
USBN11	USB_11
USBP12	
USBN12	
USBP13	Card Reader
USBN13	USB_13

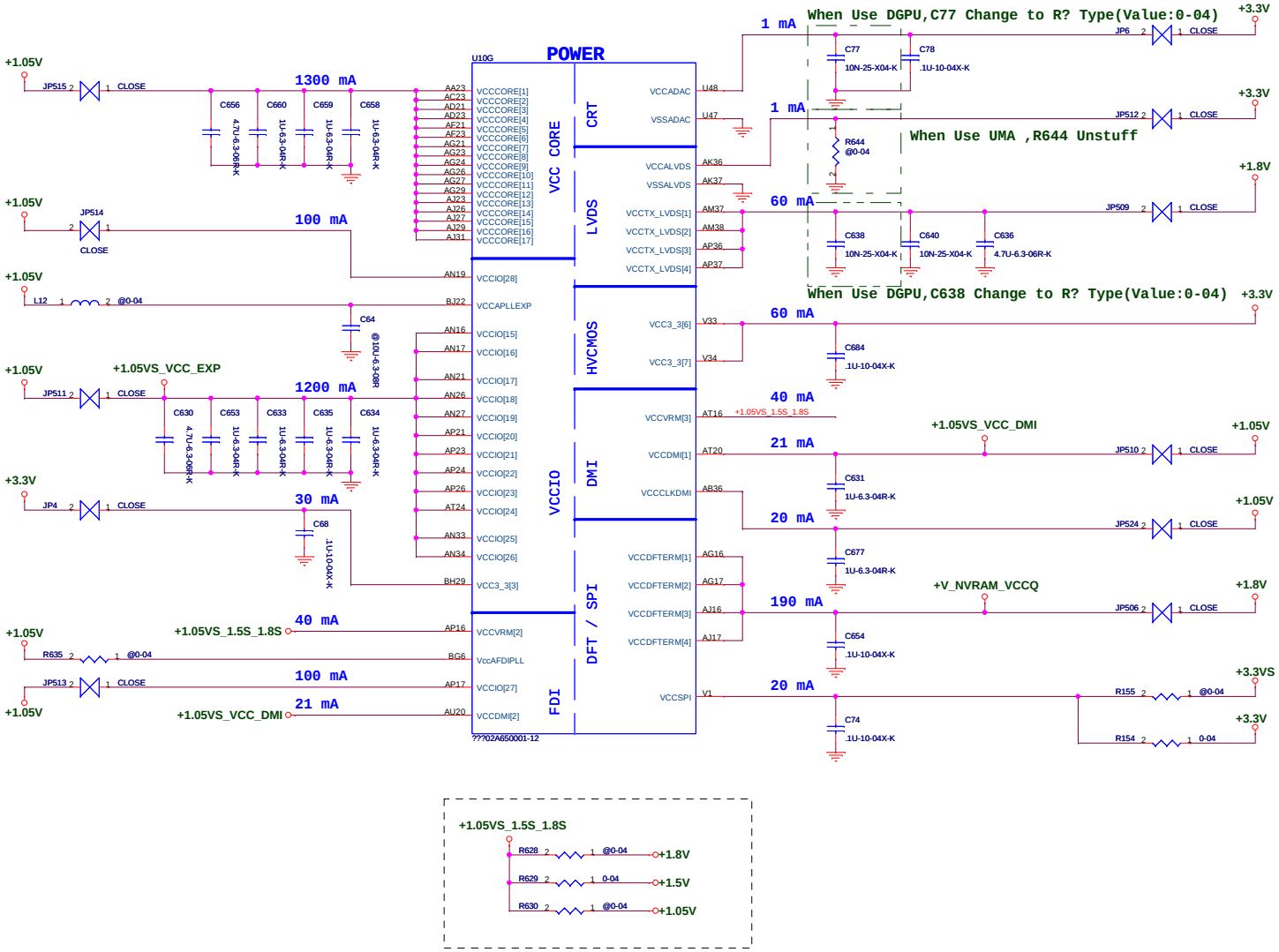
Boot BIOS Strap		
BBS_BIT1	BBS_BIT0	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	-
1	1	SPI

A16 swap override Strap	
STP_A16OVR	LOW = A16 swap override High = Default

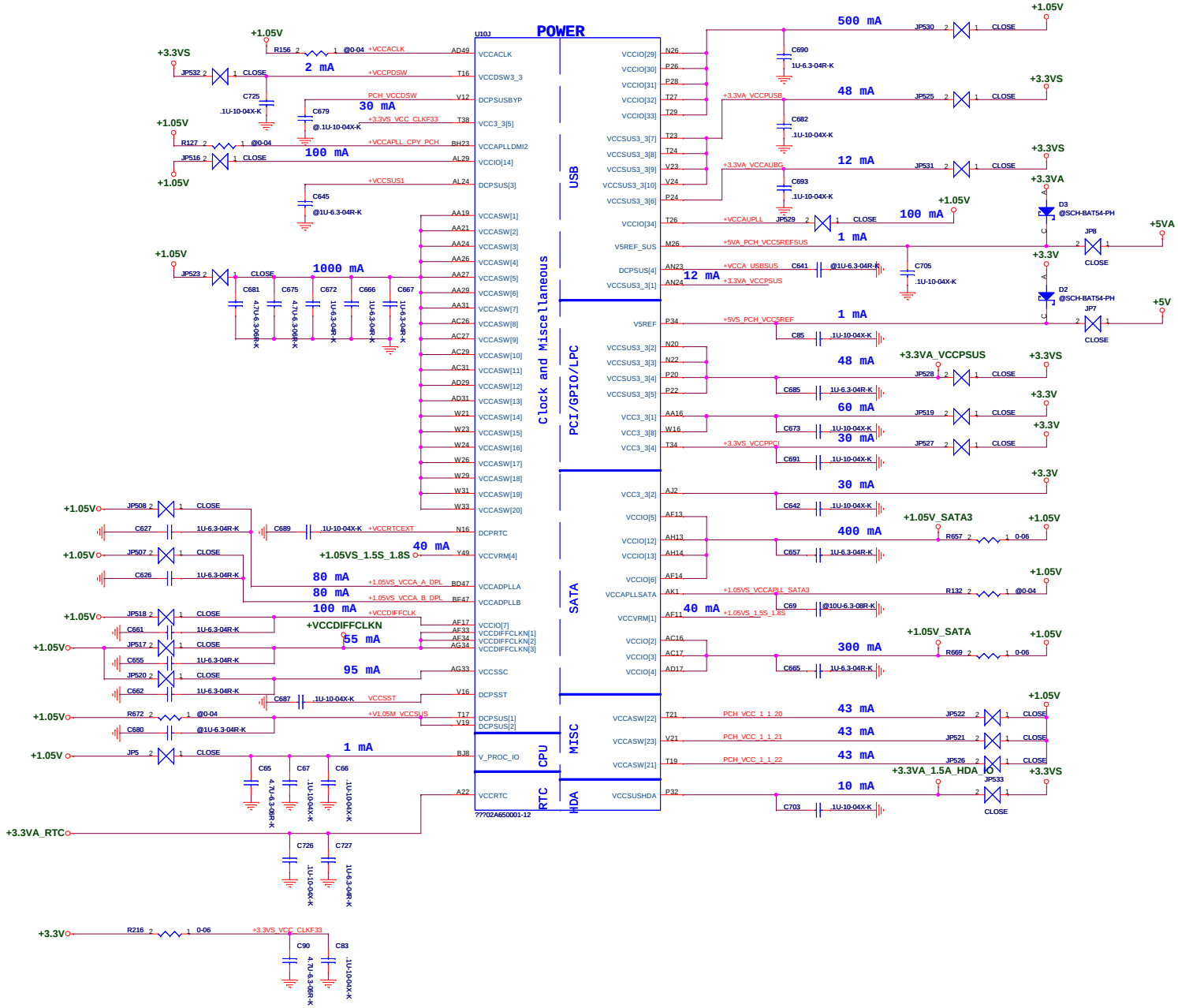
MPC Switch Control
MPC OFF -- (1-X) [Default]
MPC ON -- (1-2)

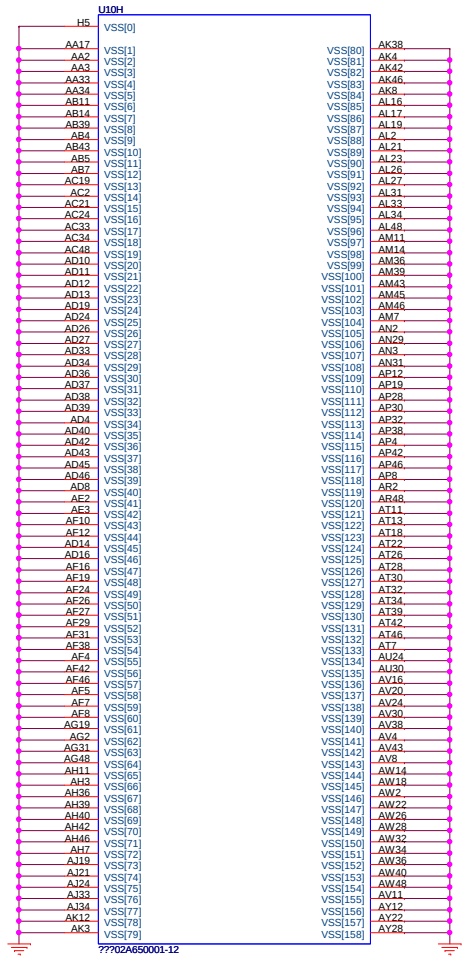
ECS COMPUTER CORP.		
Title	Cougar Point_PCI,USB	
Size	Document Number: MB40IA B1-Phase Custom	Rev: B1
	MB40IA	
Date: Tuesday, November 09, 2010	Sheet 15 of 44	

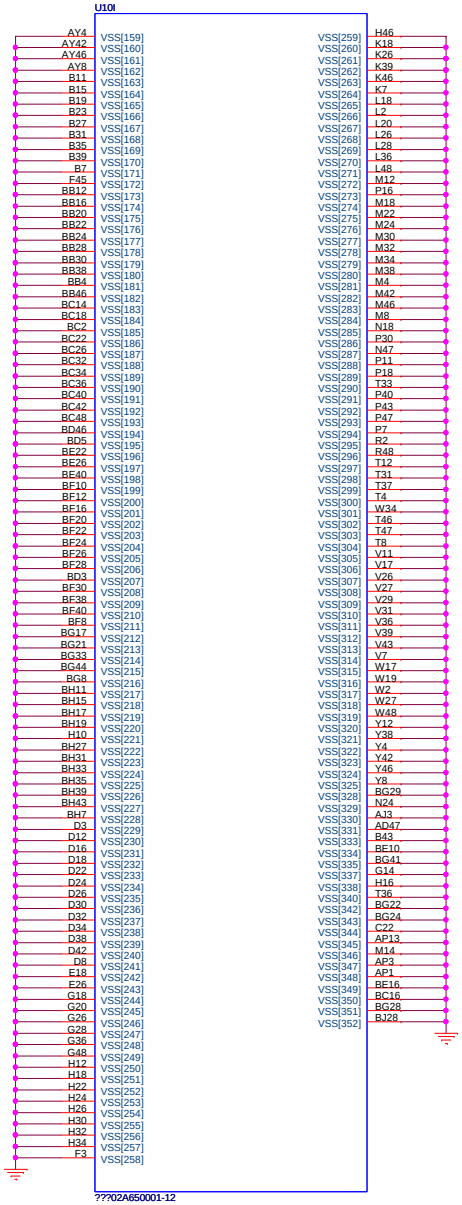

12,22 SATA_ODD_PRSNT#
R663 1 2 0-04 PCH_GPIO36
+3.3V
R691 10K-04
S_GPIO
GPIO
High - Default
R685 @0-04
+3.3V
R137 10K-04
MFG_MODE
+3.3VS
R198 @10K-04
TEST_DET
R199 100K-1-04
+3.3V
R673 10K-04
TEST_SET_UP
R670 @0-04
+3.3V
R147 10K-04
GFX_CRB_DET
R148 @100K-1-04
Internal GFX
Pull Down
External GFX
Pull Up
+3.3V
R660 10K-04
BIOS_REC
BIOS Recovery
High - Disable
Low - Enable
R664 @0-04
+3.3VS
R744 10K-04
ICC_EN#
R734 @1K-1-04
Integrated Clock Chip Enable
ICC_EN#
High - Disable [Default]
Low - Enable
U10F
S_GPIO R684 2 1 100-1-04
27 SMC_RUNTIME_SCI#
24 USB_SMI
SMC_RUNTIME_SCI#
USB_SMI
PCH_TACH3
ICC_EN#
PCH_GPIO12
HOST_ALERT#1
SATA_DET#4
PCH_TACH0
BIOS_REC
HOST_ALERT#2
PCH_GPIO27
PLL_ODVR_EN
27,41 PX_MODE
PX_MODE
24 PLTRST#_PCH
PLTRST#_PCH
PCH_GPIO36
FDI_OVRVLTG
MFG_MODE
GFX_CRB_DET
TEST_SET_UP
PCH_GPIO49
TEST_DET
GPIO
BMBUSY# / GPIO0
TACH1 / GPIO1
TACH2 / GPIO6
TACH3 / GPIO7
GPIO8
LAN_PHY_PWR_CTRL / GPIO12
GPIO15
SATA4GP / GPIO16
TACH0 / GPIO17
SCLOCK / GPIO22
GPIO24 / MEM_LED
GPIO27
GPIO28
STP_PCI# / GPIO34
GPIO35
SATA2GP / GPIO36
SATA3GP / GPIO37
SLOAD / GPIO38
SDATAOUT0 / GPIO39
SDATAOUT1 / GPIO48
SATA5GP / GPIO49
GPIO57
CPU/MISC
TACH4 / GPIO68
TACH5 / GPIO69
TACH6 / GPIO70
TACH7 / GPIO71
A20GATE
PECI
RCIN#
PROCPWRGD
THRMTRIP#
INIT3_3V#
DF_TVS
TS_VSS1
TS_VSS2
TS_VSS3
TS_VSS4
NC_1
NCTF
VSS_NCTF_1
VSS_NCTF_2
VSS_NCTF_3
VSS_NCTF_4
VSS_NCTF_5
VSS_NCTF_6
VSS_NCTF_7
VSS_NCTF_8
VSS_NCTF_9
VSS_NCTF_10
VSS_NCTF_11
VSS_NCTF_12
VSS_NCTF_13
VSS_NCTF_14
VSS_NCTF_15
VSS_NCTF_16
VSS_NCTF_17
VSS_NCTF_18
VSS_NCTF_19
VSS_NCTF_20
VSS_NCTF_21
VSS_NCTF_22
VSS_NCTF_23
VSS_NCTF_24
VSS_NCTF_25
VSS_NCTF_26
VSS_NCTF_27
VSS_NCTF_28
VSS_NCTF_29
VSS_NCTF_30
VSS_NCTF_31
VSS_NCTF_32
???02A650001-12
R210 1 2 0-04
SATA_ODD_PWRGT 22
R209 2 1 @10K-04
+3.3V
R186 2 1 1.5K-1-04
R175 2 1 1.5K-1-04
+3.3V
R185 2 1 1.5K-1-04
P4 H_A20GATE
H_A20GATE 27
AU16 H_PECI_R R632 2 1 @0-04
H_PECI 6,27
P5 H_RCIN#
H_RCIN# 27
AY11 H_CPUPWRGD
H_CPUPWRGD 6
AY10 PCH_THRMTRIP#_R R639 2 1 390-04
H_THERMTRIP# 6
R636 2 1 1K-1-04
+1.05V
T14
AY1 NV_CLE
AH8
AK11
AH10
AK10
P37
BG2
BG48
BH3
BH47
BJ4
BJ44
BJ45
BJ46
BJ5
BJ6
C2
C48
D1
D49
E1
E49
F1
F49
+V_NVRAM_VCCQ
R638 2.2K-04
11/05 Modify
NV_CLE R641 1 2 1K-04
H_SNB_IVB# 6
DMI & FDI Termination Voltage
NV_CLE
Set to Vss when Low
Set to Vcc when High
GPIO6 Status
TACH2 /GPIO6
If not used, request a weak pull up
When mount Chip of USB 3.0 , R715 unstuff.
+3.3V
Unstuff For ASM1042
USB_SMI R715 2 1 @10K-04
PCH_TACH3 R206 2 1 10K-04
H_RCIN# R696 2 1 10K-04
H_A20GATE R674 2 1 10K-04
SATA_DET#4 R161 1 2 10K-04
PCH_TACH0 R207 2 1 10K-04
PCH_GPIO49 R151 2 1 10K-04
PCH_GPIO27 R735 2 1 10K-04
PX_MODE R194 2 1 @10K-04
PLTRST# PCH R178 2 1 10K-04
+3.3VS
HOST_ALERT#2 R719 2 1 10K-04
HOST_ALERT#1 R205 2 1 1K-1-04
PCH_GPIO12 R182 2 1 10K-04
PLL ON DIE VR Enable
Enable - High [Default]
Disable - Low
PLL_ODVR_EN R697 2 1 @1K-1-04
+3.3V
FDI_OVRVLTG R708 2 1 @1K-1-04
R709 100K-04
+3.3V
PCH_GPIO36 R665 2 1 10K-04
FDI TERMINATION VOLTAGE OVERRIDE
GPIO37 (FDI_OVRVLTG)
LOW - Tx, Rx terminated to same voltage (DC Coupling Mode) DEFAULT
DMI TERMINATION VOLTAGE OVERRIDE
GPIO36 (SATA_ODD_PRSNT#)
LOW - Tx, Rx terminated to same voltage (DC Coupling Mode) DEFAULT
R118 2 1 @0-04
+3.3V
C43 .1U-10-04X-K
14,30 ALL_SYS_PWRGD
ICC_EN# 2
1
4
U8 @74AHC1G08
VR_PWRGD_CLKEN 23
R122 @1K-1-04
11/05 Modify
ECS COMPUTER CORP.
Title
Cougar Point_GPIO,MISC
Size
Document Number
MB40IA B1-Phase Custom
MB40IA
Rev B1
Date: Tuesday, November 09, 2010
Sheet 16 of 44



ECS COMPUTER CORP.			
Title: Cougar Point_Power1			
Size	Document Number: MB40IA B1-Phase Custom	MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 17 of 44		


POWER
U10J
Clock and Miscellaneous
USB
PCI/GPIO/LPC
SATA
MISC
CPU
HDA
RTC
???02A650001-12
+1.05V
+3.3VS
+3.3VA_RTC
+3.3V
+5VA
+5V
+1.05VS_1.5S_1.8S
+VCCDIFFCLKN
+3.3VA_VCCPSUS
+1.05V_SATA3
+1.05V_SATA
+3.3VA_1.5A_HDA_IO
2 mA
30 mA
100 mA
1000 mA
12 mA
1 mA
48 mA
60 mA
40 mA
80 mA
55 mA
95 mA
500 mA
400 mA
300 mA
43 mA
10 mA
CLOSE
@SCH-BAT54-PH
ECS COMPUTER CORP.
Cougar Point_Power2
MB40IA
MB40IA B1-Phase
Custom
Tuesday, November 09, 2010
Sheet 18 of 44





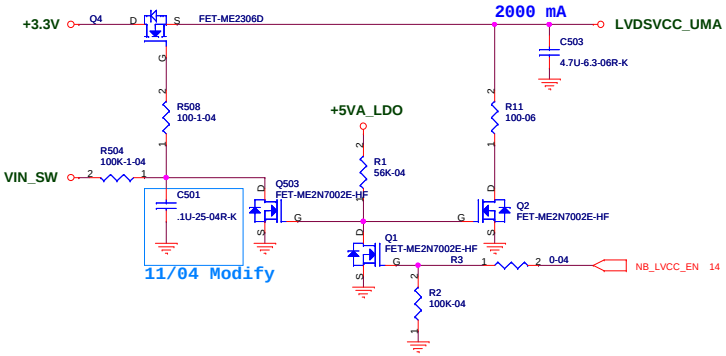
ECS COMPUTER CORP.

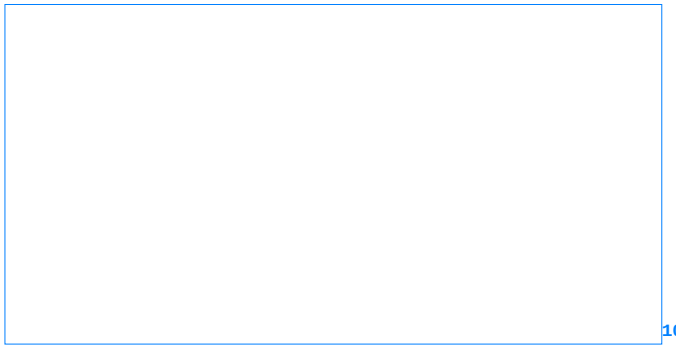
Title: Cougar Point_GND

Size	Document Number	Rev
	MB40IA B1-Phase Custom / MB40IA	B1

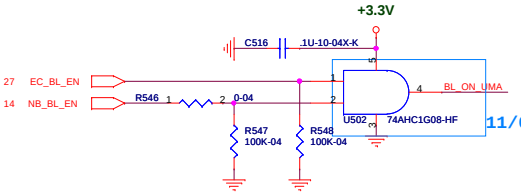
Date: Tuesday, November 09, 2010 Sheet 19 of 44

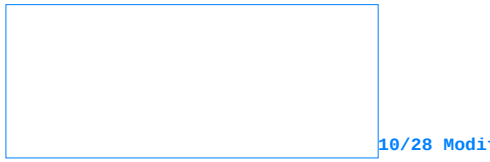
LVDS + Webcam Connector



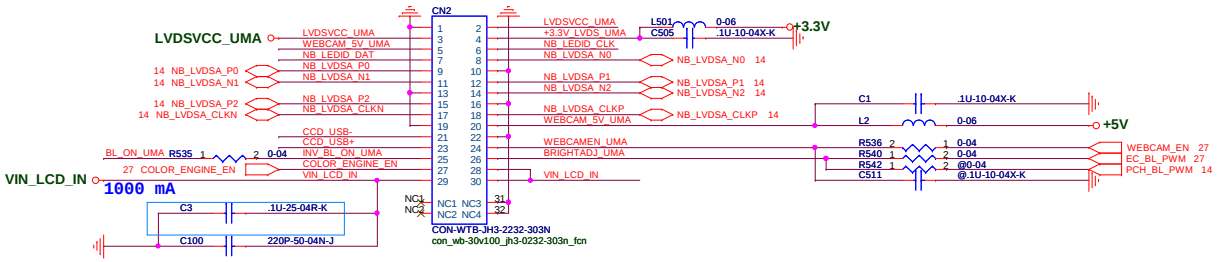


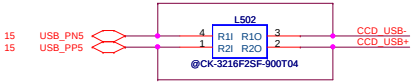
10/28 Modify

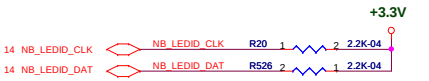




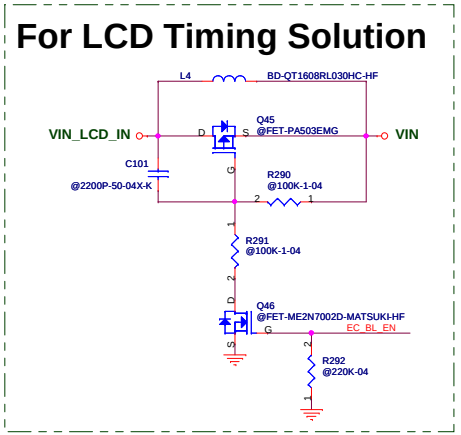
10/28 Modify

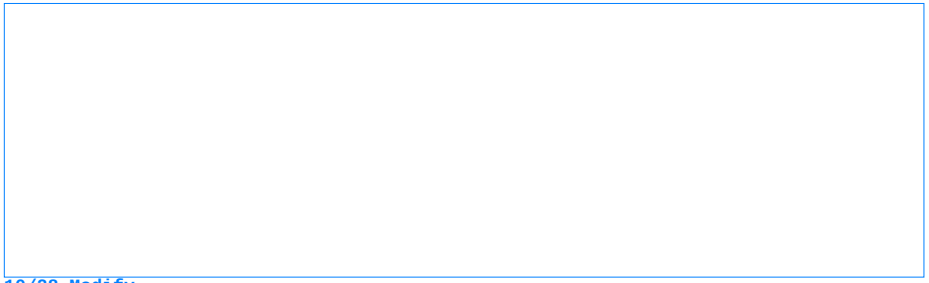






10/28 Modify

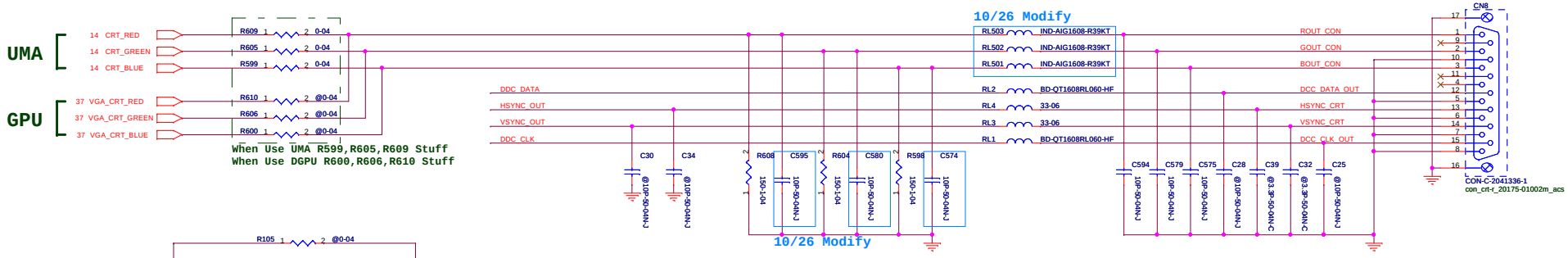


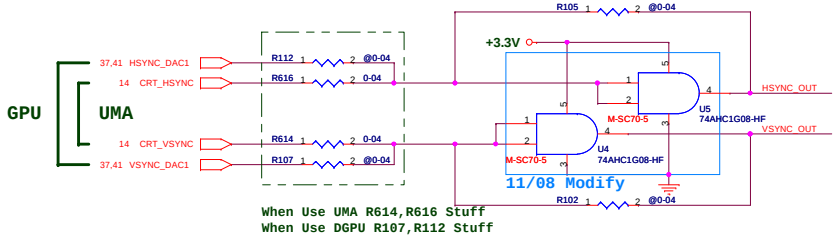


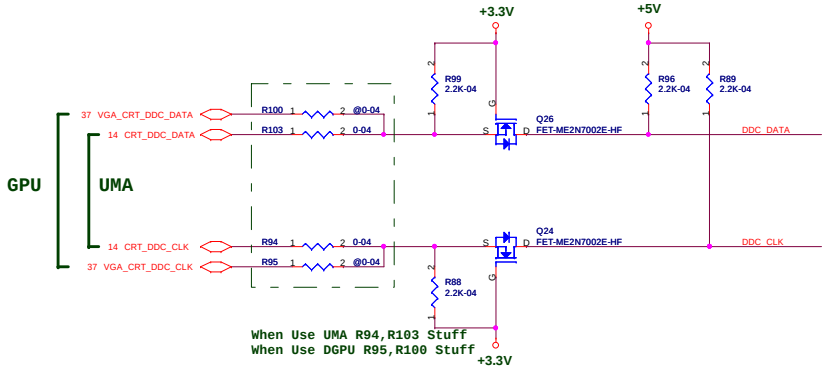
10/28 Modify

ECS COMPUTER CORP.		
Title: LVDS/Webcam		
Size	Document Number: MB40IA B1-Phase Custom	Rev: B1
	MB40IA	
Date: Tuesday, November 09, 2010	Sheet 20 of 44	

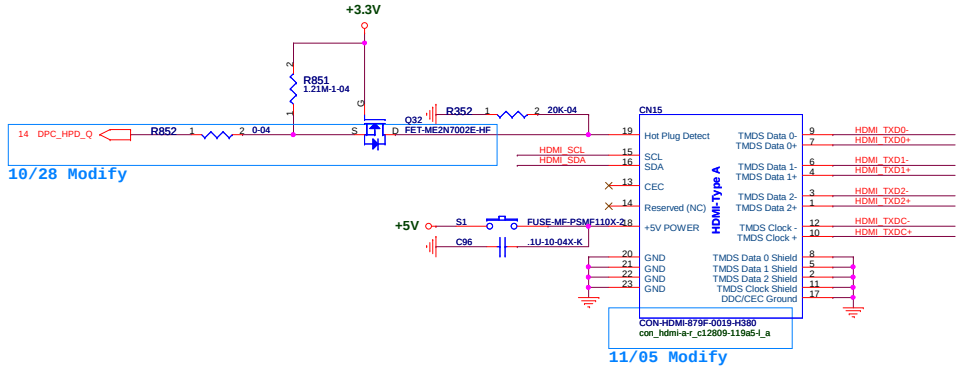
CRT Connector

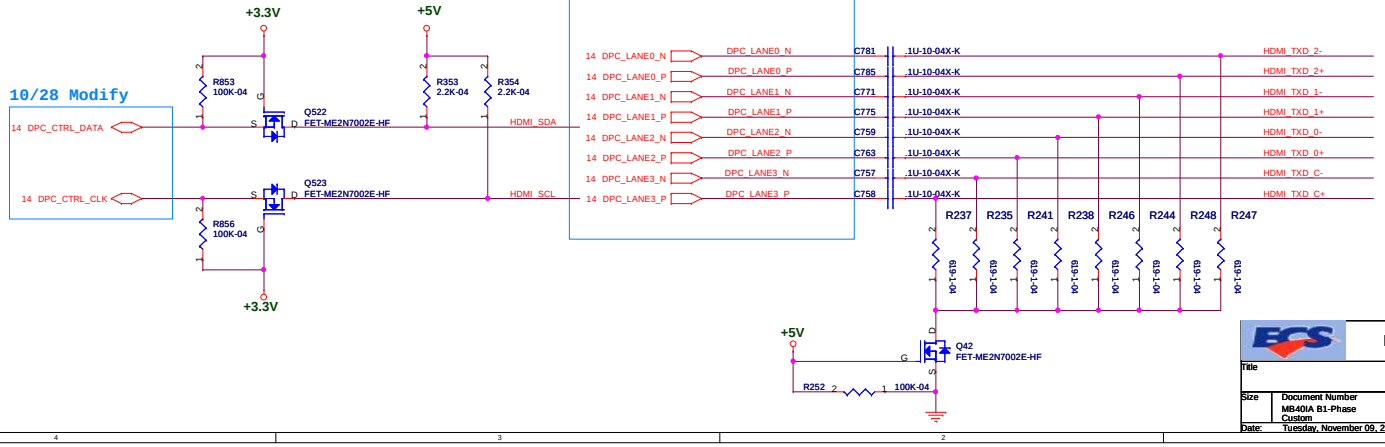




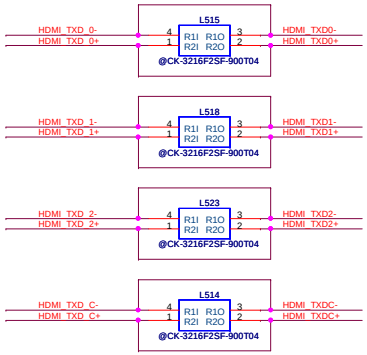


HDMI Connector



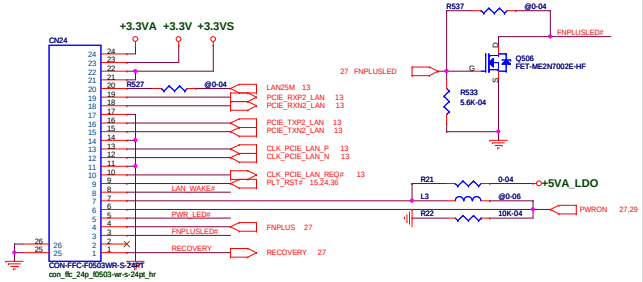


EMI Issue

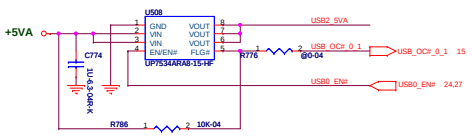


ECS COMPUTER CORP.			
Title	CRT/HDMI		
Size	Document Number	MB40IA	Rev B1
	MB40IA B1-Phase Custom		
Date: Tuesday, November 09, 2010	Sheet 21 of 44		

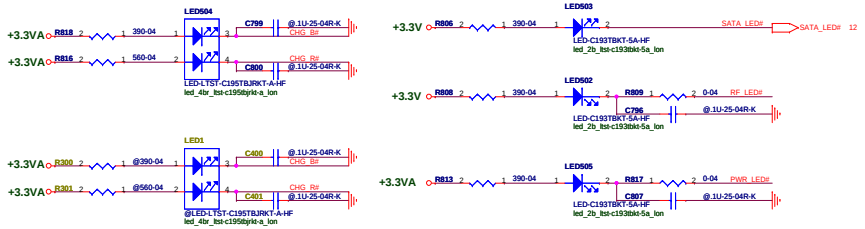
PWR SW + LAN Connector

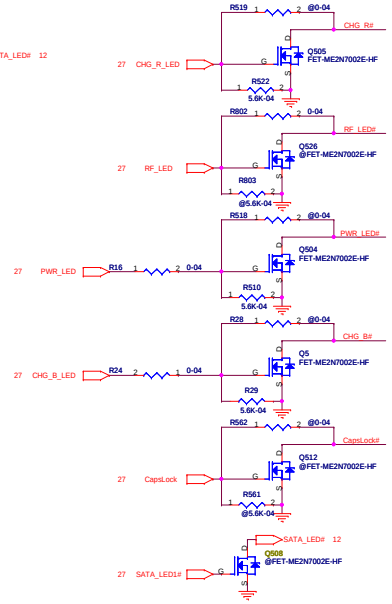


USB Port 2.0
USB 1 & USB 9



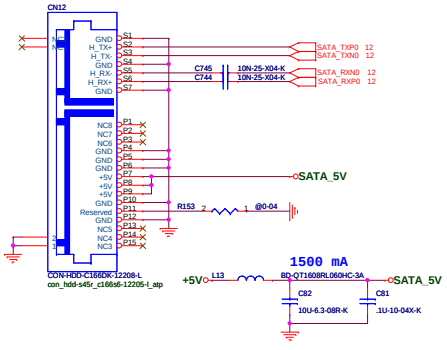
LED



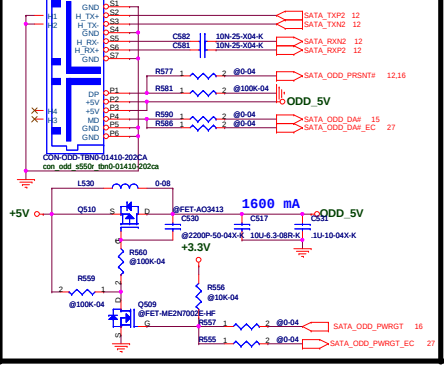


LED Select Table					
	MB40IA		MB40II		
	ID2	ID3	ID4	ID5	ID6
CHG_LED LED504	Blue 20A419300-00	Blue 20A419300-00	None	None	None
SATA_LED	Blue 20A419300-00	Blue 20A419300-00	None	None	None
RF_LED	Blue 20A419300-00	Blue 20A419300-00	None	None	None
PWR_LED	Blue 20A419300-00	Blue 20A419300-00	None	None	None
CHG_LED LED1	Blue/Red 20G419501-00	Blue/Red 20G419501-00	Blue/Red 20G419501-00	Blue/Red 20G419501-00	Green/Red 20G419500-00

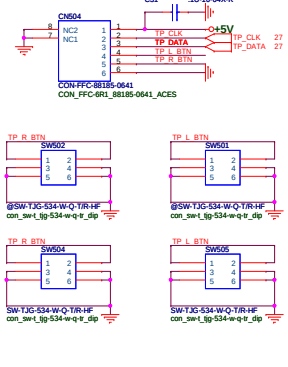
SATA HDD



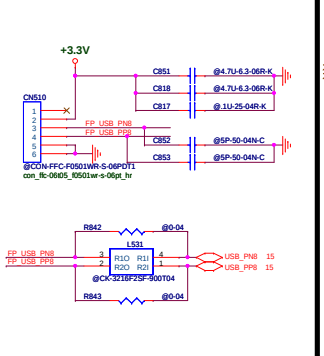
SATA ODD



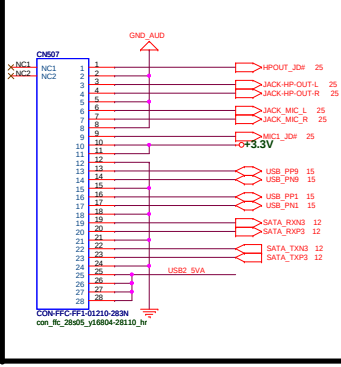
Touch Pad Connector



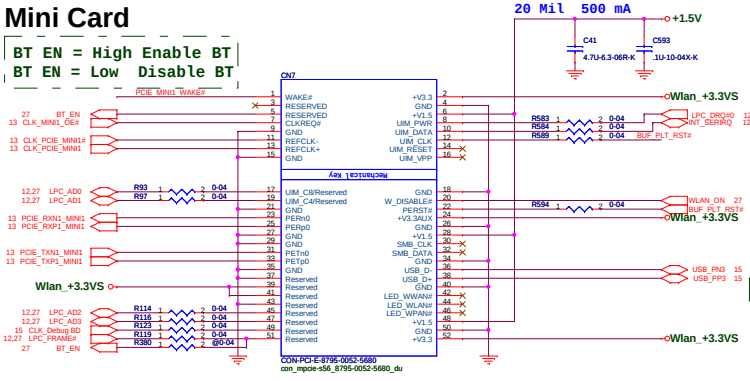
Finger Print Connector



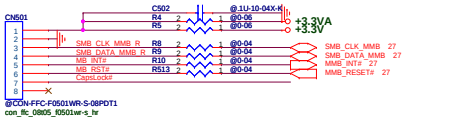
I/O Board Conn



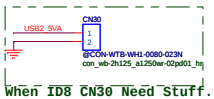
Mini Card



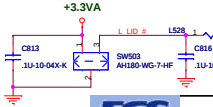
MMB Connector



USB 5VA



LID SW



ECS COMPUTER CORP.

Title: Mini Card/LED/LID/MMB/TP/HDD/ODD/IO Conn

Size	Document Number	Rev
	MB40IA B1-Phase Custom	MB40IA B1
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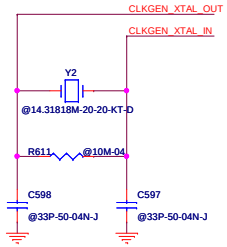
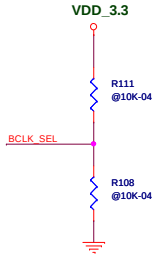
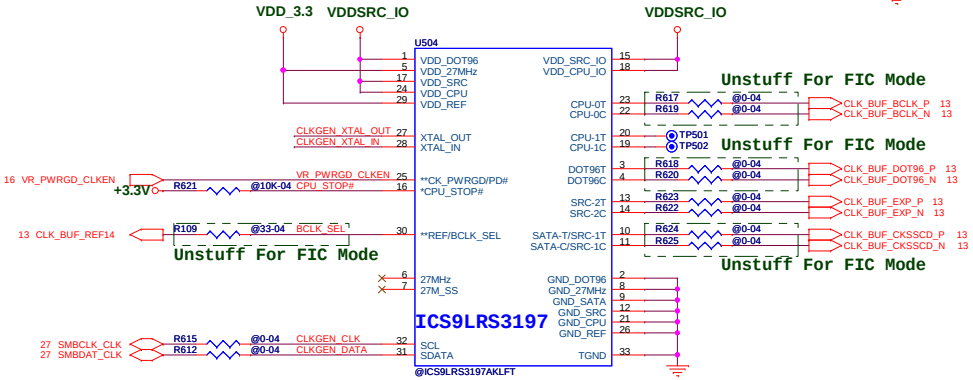
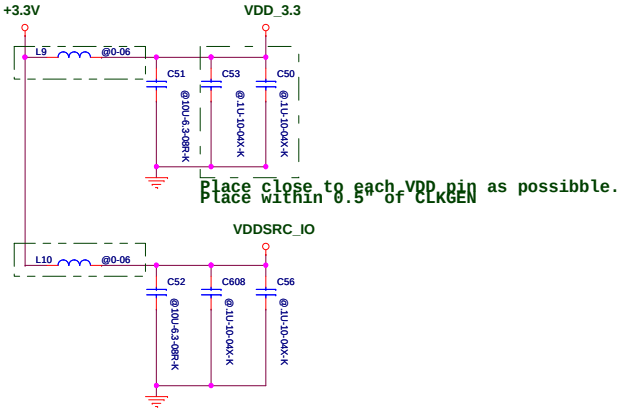
Clock Gen





BCLK SEL input	BCLK	NOTE
0	133MHz	
1	100MHz	Default





ECS COMPUTER CORP.

Title: Clock Gen (ICS9LRS3197)

Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

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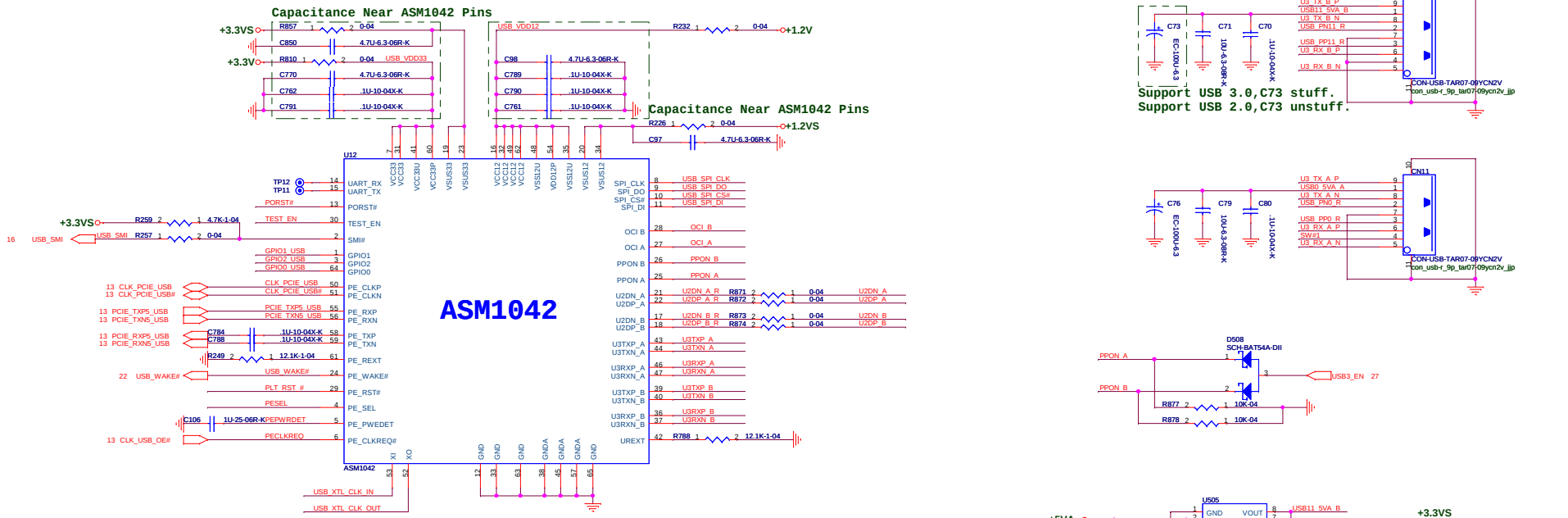
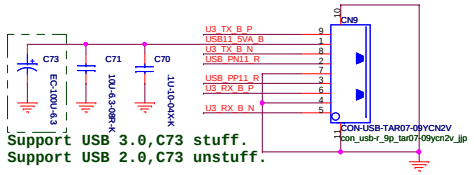
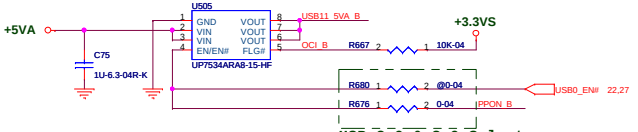
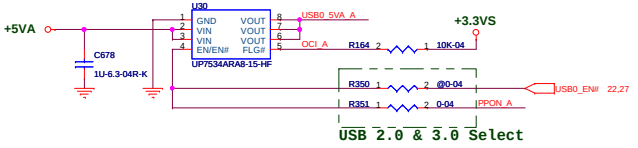
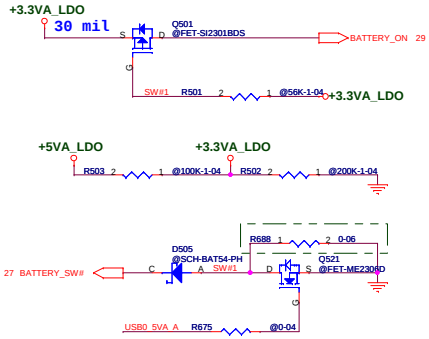






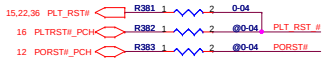


For USB Charger Function



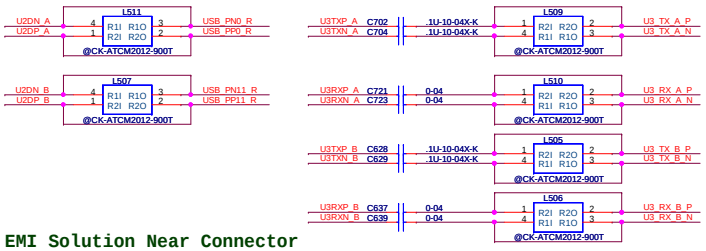
None USB charger function,R688 need stuff

For USB 2.0/3.0 Function



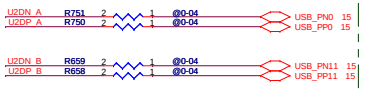
USB 2.0/3.0 Function Select	
Location	Stuff
R381	X
R382	R383
R383	MB40II

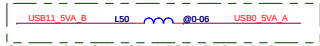
EMI Issue



EMI Solution Near Connector

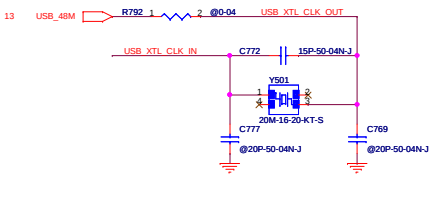
PCH USB 0 & 11 Ports

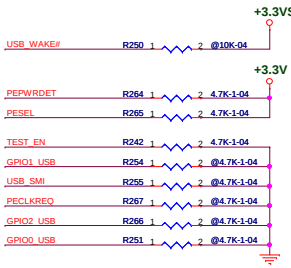




Support PCH USB,L50,R658,R659 ,R750,R751 stuff then U505,C75,R667,R676,R680 unstuff

USB 2.0 & 3.0 Select	
Location	Function
R680	R350 USB 2.0
R676	R351 USB 3.0

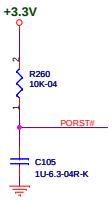


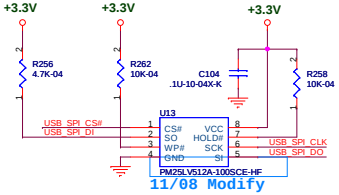


USB 3.0 ASM1042			
GPIO0_USB	GPIO1_USB	GPIO2_USB	Function
1	1	0	Synchronous Mode
1	1	1	Asynchronous Mode [Default]
0	0	X	Debug/Test Mode

USB 3.0 ASM1042 Clock Select		
Clock Source	USB 2.0	USB 3.0
Sync	48 MHz	100 MHz From PCIE Clock
Async	20 MHz X'tal	20 MHz X'tal [For PCIE Over Clock]

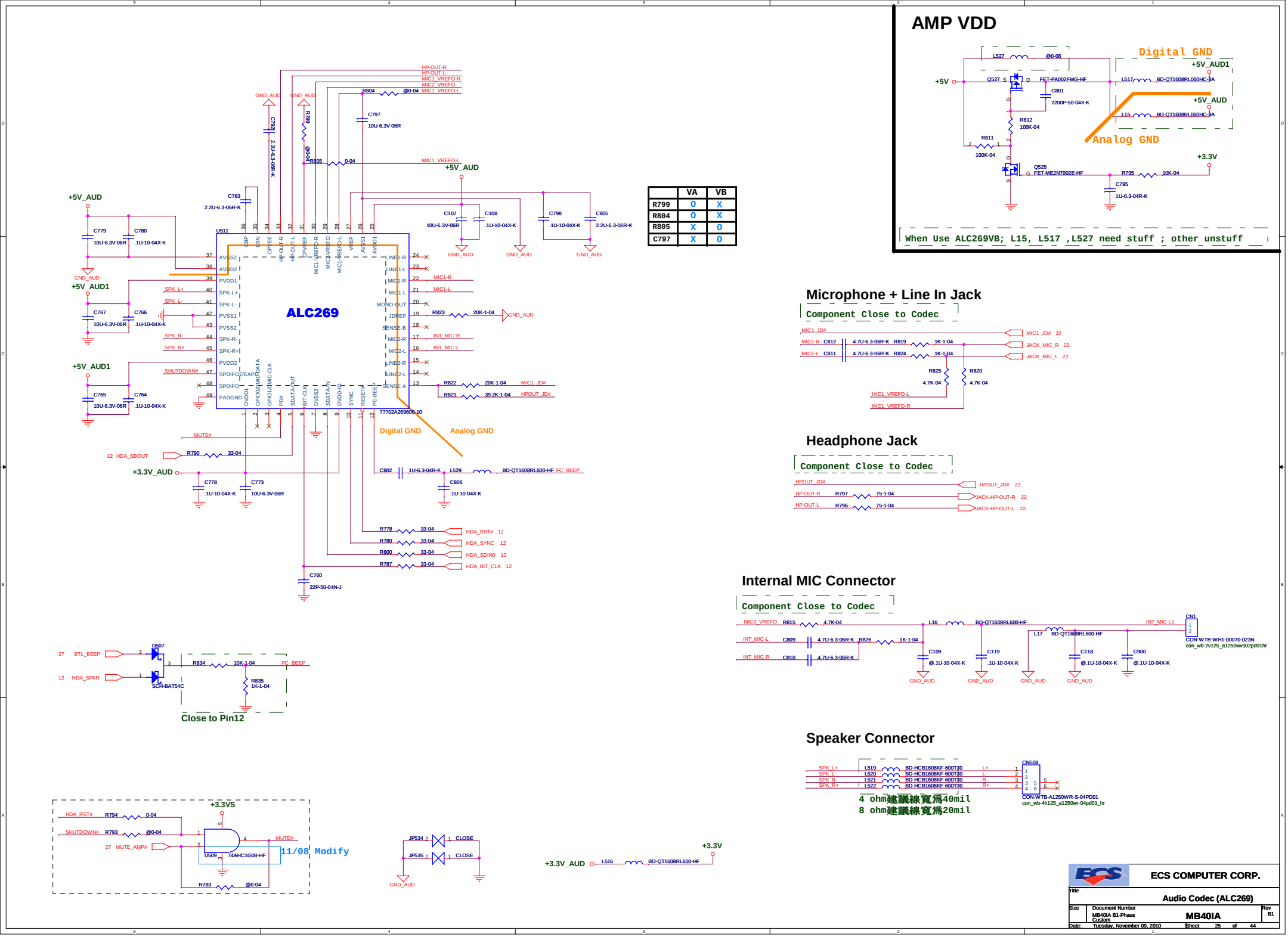
PEPWRDET	
PCIE Remote/Wakeup Indicator	
Pull High	Support D3 Cold
Pull Low	Support D3 Hot





ECS COMPUTER CORP.

Title	USB 3.0 (ASM1042)	
Size	Document Number: MB40IA B1-Phase Custom — MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 24 of 44	


AMP VDD
Digital GND
+5V_AUD1
+5V
Q527
FET-PA002FMG-HF
L527
@0-08
L517
BD-QT1608RL060HC-3A
C801
2200P-50-04X-K
+5V_AUD
L15
BD-QT1608RL060HC-3A
R812
100K-04
Analog GND
R811
100K-04
+3.3V
Q525
FET-ME2N7002E-HF
R795
10K-04
C795
1U-6.3-04R-K
When Use ALC269VB; L15, L517 ,L527 need stuff ; other unstuff
ALC269
U511
HP-OUT-R
HP-OUT-L
MIC1_VREFO-R
MIC2_VREFO
MIC1_VREFO-L
R804
@0-04
C797
10U-6.3V-06R
R805
0-04
C783
2.2U-6.3-06R-K
C779
10U-6.3V-06R
C780
.1U-10-04X-K
C767
10U-6.3V-06R
C766
.1U-10-04X-K
C765
10U-6.3V-06R
C764
.1U-10-04X-K
C107
10U-6.3V-06R
C108
.1U-10-04X-K
C798
.1U-10-04X-K
C805
2.2U-6.3-06R-K
GND_AUD
+5V_AUD
+5V_AUD1
+3.3V_AUD
SPK_L+
SPK_L-
SPK_R-
SPK_R+
SHUTDOWN#
MUTE#
HDA_SDOUT
R790
33-04
R823
20K-1-04
R822
20K-1-04
MIC1_JD#
R821
39.2K-1-04
HPOUT_JD#
INT_MIC-R
INT_MIC-L
MIC1-R
MIC1-L
???02A269600-10
Digital GND
Analog GND
C802
1U-6.3-04R-K
L529
BD-QT1608RL600-HF
PC_BEEP
C806
.1U-10-04X-K
C778
.1U-10-04X-K
C773
10U-6.3V-06R
R778
33-04
R780
33-04
R800
33-04
R787
33-04
HDA_RST#
HDA_SYNC
HDA_SDIN0
HDA_BIT_CLK
C760
22P-50-04N-J
Microphone + Line In Jack
Component Close to Codec
MIC1_JD#
MIC1-R
MIC1-L
C812
4.7U-6.3-06R-K
C811
4.7U-6.3-06R-K
R819
1K-1-04
R824
1K-1-04
JACK_MIC_R
JACK_MIC_L
R825
4.7K-04
R820
4.7K-04
MIC1_VREFO-L
MIC1_VREFO-R
Headphone Jack
Component Close to Codec
HPOUT_JD#
HP-OUT-R
HP-OUT-L
R797
75-1-04
R796
75-1-04
JACK-HP-OUT-R
JACK-HP-OUT-L
Internal MIC Connector
Component Close to Codec
MIC2_VREFO
R815
4.7K-04
INT_MIC-L
C809
4.7U-6.3-06R-K
R826
1K-1-04
INT_MIC-R
C810
4.7U-6.3-06R-K
L16
BD-QT1608RL600-HF
L17
BD-QT1608RL600-HF
INT_MIC-L1
CN1
CON-WTB-WH1-00070-023N
con_wb-2v125_a1250wvs02pd01hr
C109
@.1U-10-04X-K
C119
.1U-10-04X-K
C118
@.1U-10-04X-K
C900
@.1U-10-04X-K
Speaker Connector
SPK_L+
SPK_L-
SPK_R-
SPK_R+
L519
L520
L521
L522
BD-HCB1608KF-600T30
L+
L-
R-
R+
CN508
CON-WTB-A1250WR-S-04PD01
con_wb-4h125_a1250wr-04pd01_hr
4 ohm建議線寬爲40mil
8 ohm建議線寬爲20mil
D507
SCH-BAT54C
BTL_BEEP
HDA_SPKR
R834
10K-1-04
PC_BEEP
R835
1K-1-04
Close to Pin12
+3.3VS
HDA_RST#
SHUTDOWN#
MUTE_AMP#
MUTE#
R794
0-04
R793
@0-04
R783
@0-04
U509
74AHC1G08-HF
11/08 Modify
JP534
JP535
CLOSE
+3.3V_AUD
L516
BD-QT1608RL600-HF
+3.3V
VA VB
R799 0 X
R804 0 X
R805 X 0
C797 X 0
ECS COMPUTER CORP.
Title
Audio Codec (ALC269)
Size
Document Number
MB40IA B1-Phase
Custom
MB40IA
Rev
B1
Date: Tuesday, November 09, 2010
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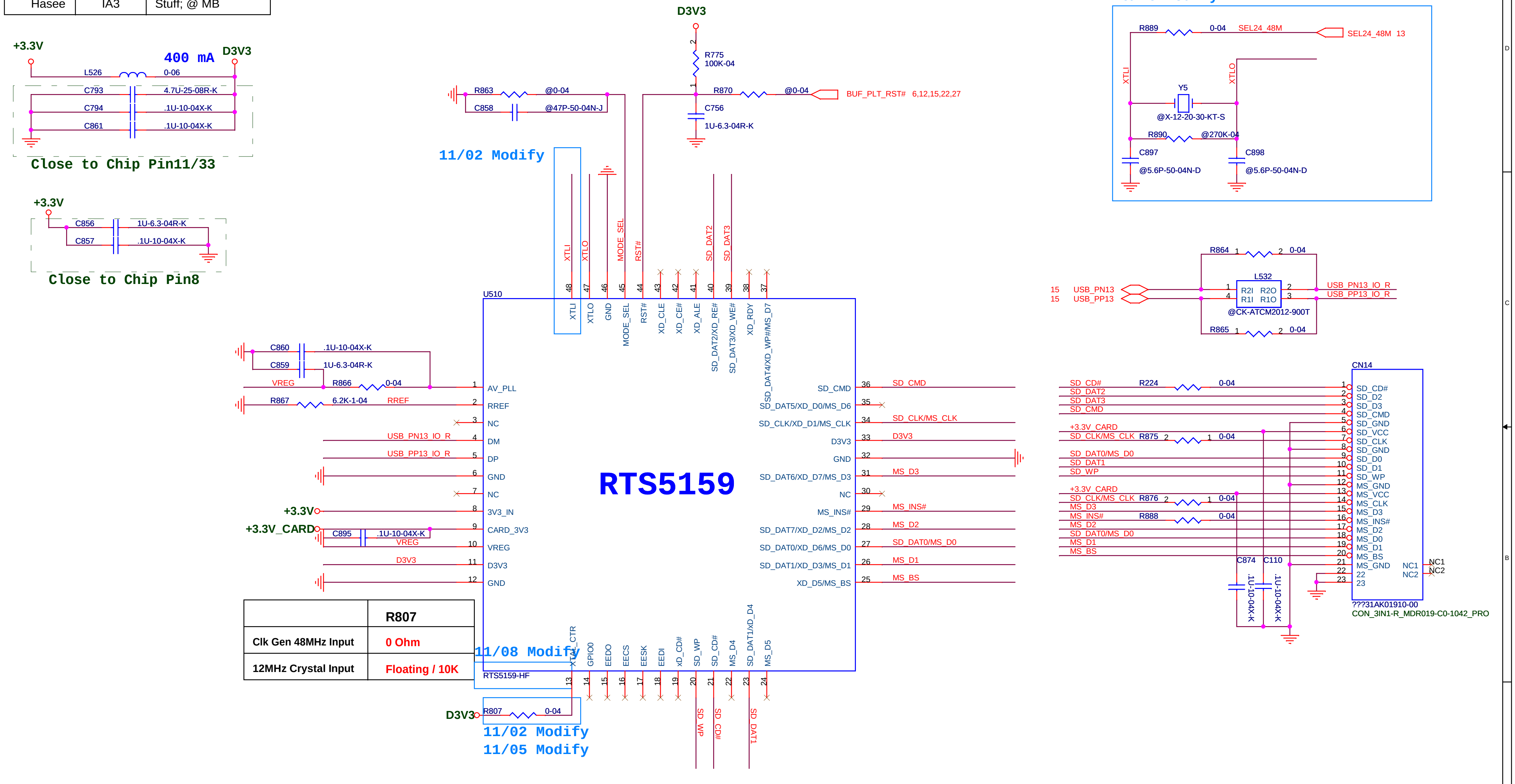
Card Reader

CardReader ID Select		
Haier	IA2	Nustuff; @ Small BD
Hasee	IA3	Stuff; @ MB

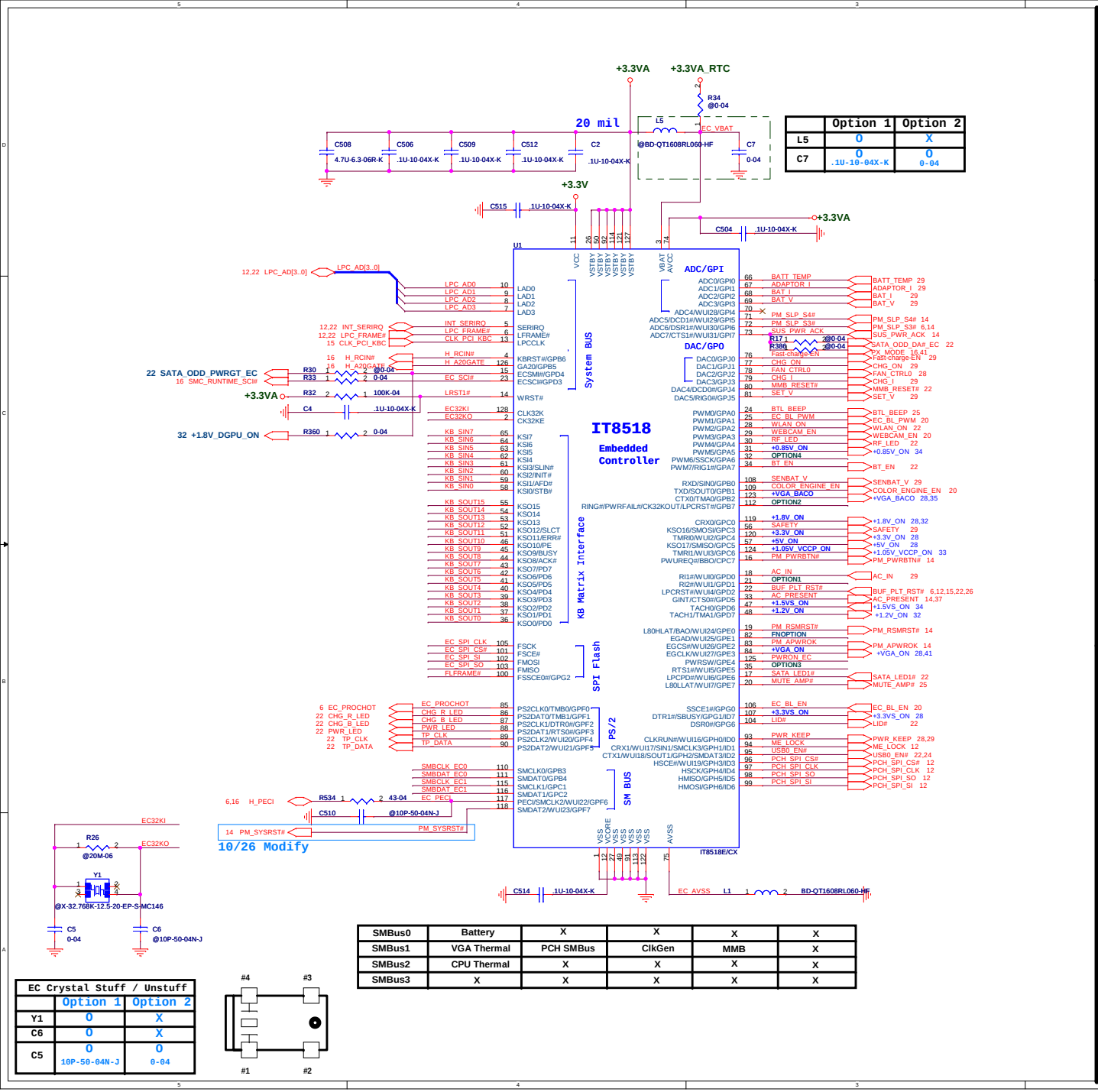


11/05 Modify
11/02 Modify
10/28 Modify
10/26 Modify
+3.3V
400 mA
D3V3
L526 0-06
C793 4.7U-25-08R-K
C794 .1U-10-04X-K
C861 .1U-10-04X-K
Close to Chip Pin11/33
+3.3V
C856 1U-6.3-04R-K
C857 .1U-10-04X-K
Close to Chip Pin8
D3V3
R775 100K-04
R863 @0-04
C858 @47P-50-04N-J
R870 @0-04
BUF_PLT_RST# 6,12,15,22,27
C756 1U-6.3-04R-K
11/02 Modify
R889 0-04 SEL24_48M
SEL24_48M 13
XTLI
XTLO
Y5
@X-12-20-30-KT-S
R890 @270K-04
C897 @5.6P-50-04N-D
C898 @5.6P-50-04N-D
R864 0-04
L532
@CK-ATCM2012-900T
R865 0-04
USB_PN13
USB_PP13
USB_PN13_IO_R
USB_PP13_IO_R
U510
RTS5159
RTS5159-HF
C860 .1U-10-04X-K
C859 1U-6.3-04R-K
R866 0-04
VREG
R867 6.2K-1-04
RREF
AV_PLL
RREF
NC
DM
DP
GND
NC
3V3_IN
CARD_3V3
VREG
D3V3
GND
+3.3V
+3.3V_CARD
C895 .1U-10-04X-K
SD_CMD
SD_DAT5/XD_D0/MS_D6
SD_CLK/XD_D1/MS_CLK
D3V3
GND
SD_DAT6/XD_D7/MS_D3
NC
MS_INS#
SD_DAT7/XD_D2/MS_D2
SD_DAT0/XD_D6/MS_D0
SD_DAT1/XD_D3/MS_D1
XD_D5/MS_BS
SD_CLK/MS_CLK
MS_D3
MS_INS#
MS_D2
SD_DAT0/MS_D0
MS_D1
MS_BS
XTLI XTLO GND MODE_SEL RST# XD_CLE XD_CE# XD_ALE XD_DAT2/XD_RE# SD_DAT3/XD_WE# XD_RDY SD_DAT4/XD_WP#/MS_D7
XTAL_CTR GPIO0 EEDO EECS EESK EEDI XD_CD# SD_WP SD_CD# MS_D4 SD_DAT1/XD_D4 MS_D5
SD_WP SD_CD# SD_DAT1
11/08 Modify
D3V3
R807 0-04
11/02 Modify
11/05 Modify
CN14
SD_CD# SD_D2 SD_D3 SD_CMD SD_GND SD_VCC SD_CLK SD_GND SD_D0 SD_D1 SD_WP MS_GND MS_VCC MS_CLK MS_D3 MS_INS# MS_D2 MS_D0 MS_D1 MS_BS MS_GND NC1 NC2
R224 0-04
R875 0-04
R876 0-04
R888 0-04
+3.3V_CARD
C874 .1U-10-04X-K
C110 .1U-10-04X-K
???31AK01910-00
CON_3IN1-R_MDR019-C0-1042_PRO

	R807
Clk Gen 48MHz Input	0 Ohm
12MHz Crystal Input	Floating / 10K

ECS COMPUTER CORP.

Title	Card Reader (RTS5159-GR)	
Size: Custom	Document Number: MB40IA B1-Phase — MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 26 of 44	

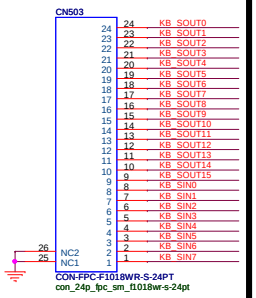


	Option 1	Option 2
L5	0	X
C7	0 .1U-10-04X-K	0 0-04

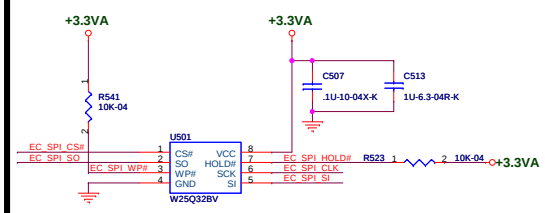
EC Crystal Stuff / Unstuff		
	Option 1	Option 2
Y1	0	X
C6	0	X
C5	0 10P-50-04N-J	0 0-04

SMBus0	Battery	X	X	X	X
SMBus1	VGA Thermal	PCH SMBus	ClkGen	MMB	X
SMBus2	CPU Thermal	X	X	X	X
SMBus3	X	X	X	X	X

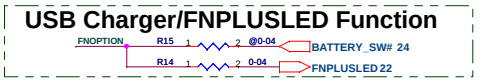
K/B Connector



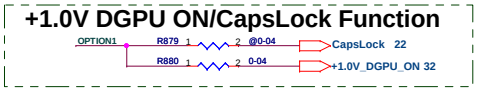
Flash ROM (SPI)



USB Charger/FNPLUSLED Function

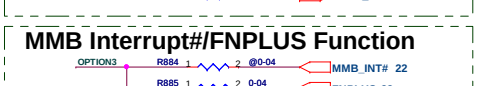


+1.0V DGPU ON/CapsLock Function

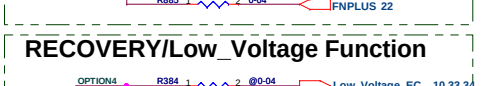


PM SYS PWRGD/USB3_EN Function

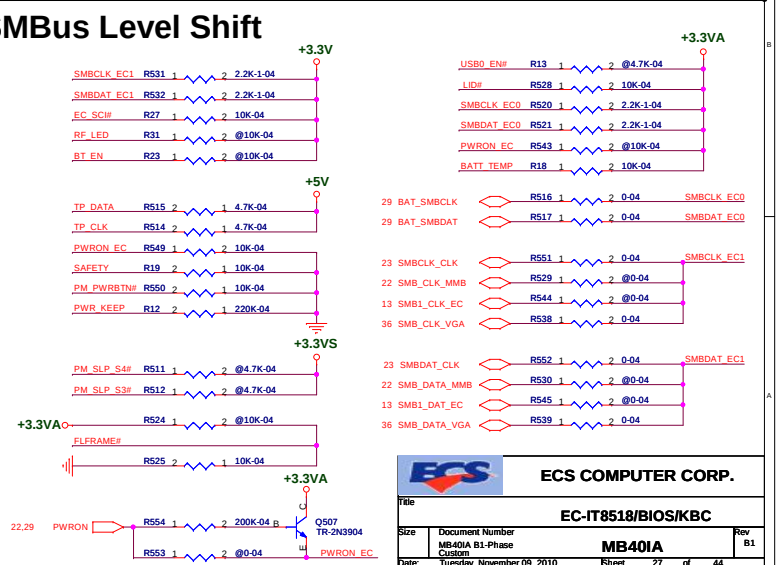
MMB Interrupt#/FNPLUS Function



RECOVERY/Low_Voltage Function



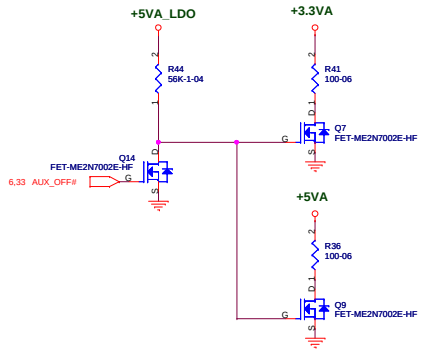
SMBus Level Shift

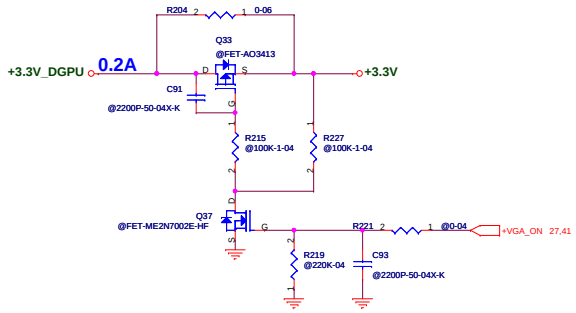


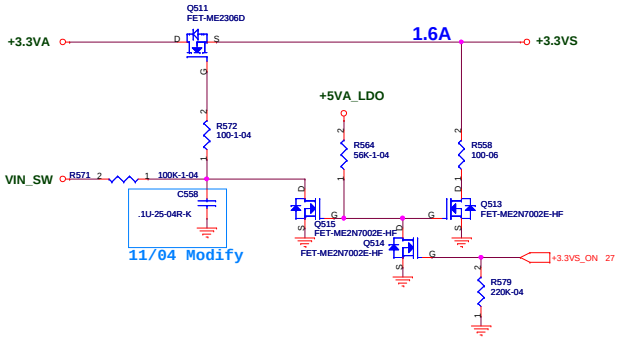
ECS COMPUTER CORP.

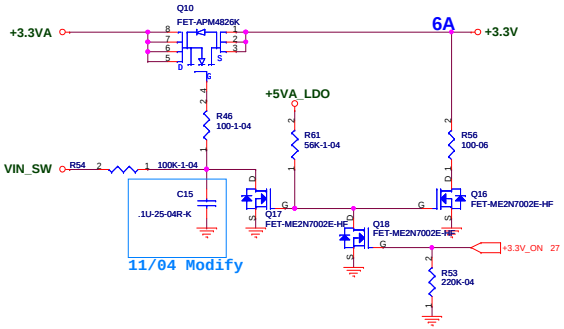
Title: EC-IT8518/BIOS/KBC

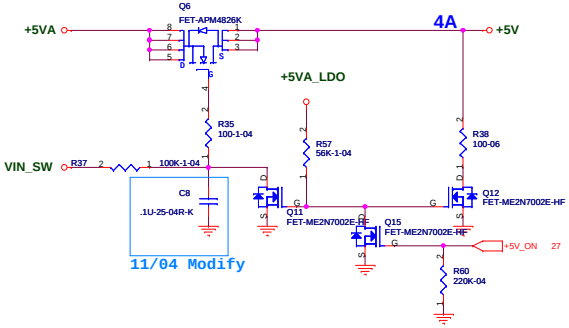
Size	Document Number	Rev
	MB40IA B1-Phase Custom	B1
Date: Tuesday, November 09, 2010	Sheet 27 of 44	

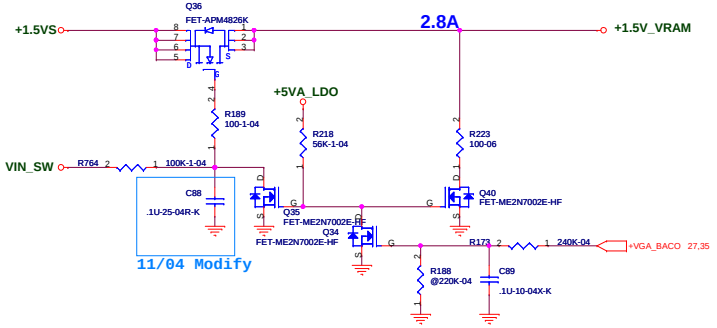


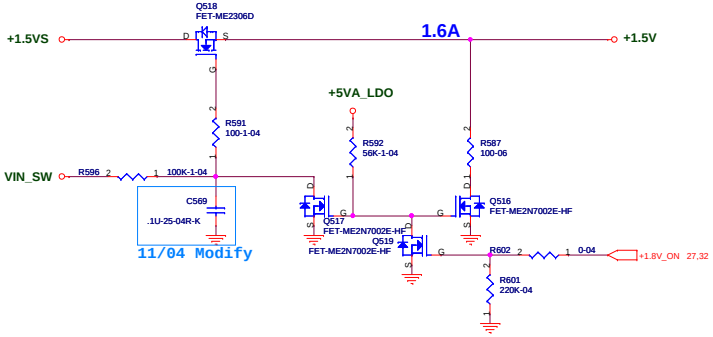


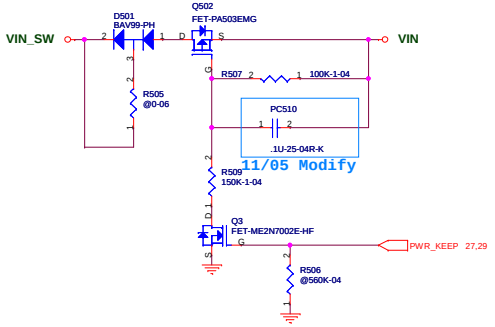




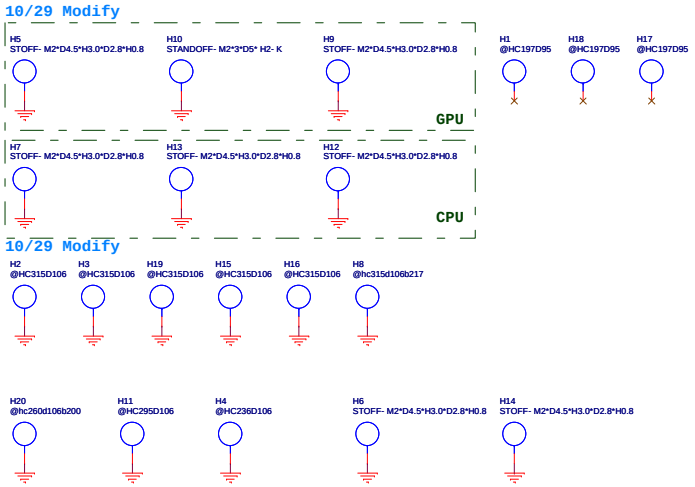




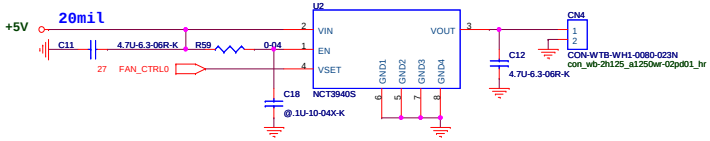




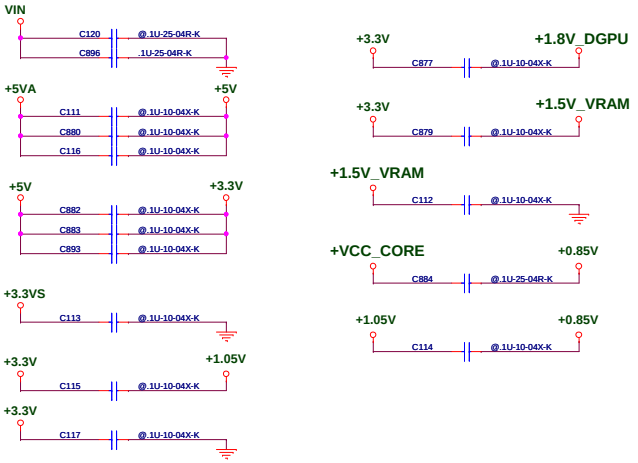
Hole/Screw



Fan Control



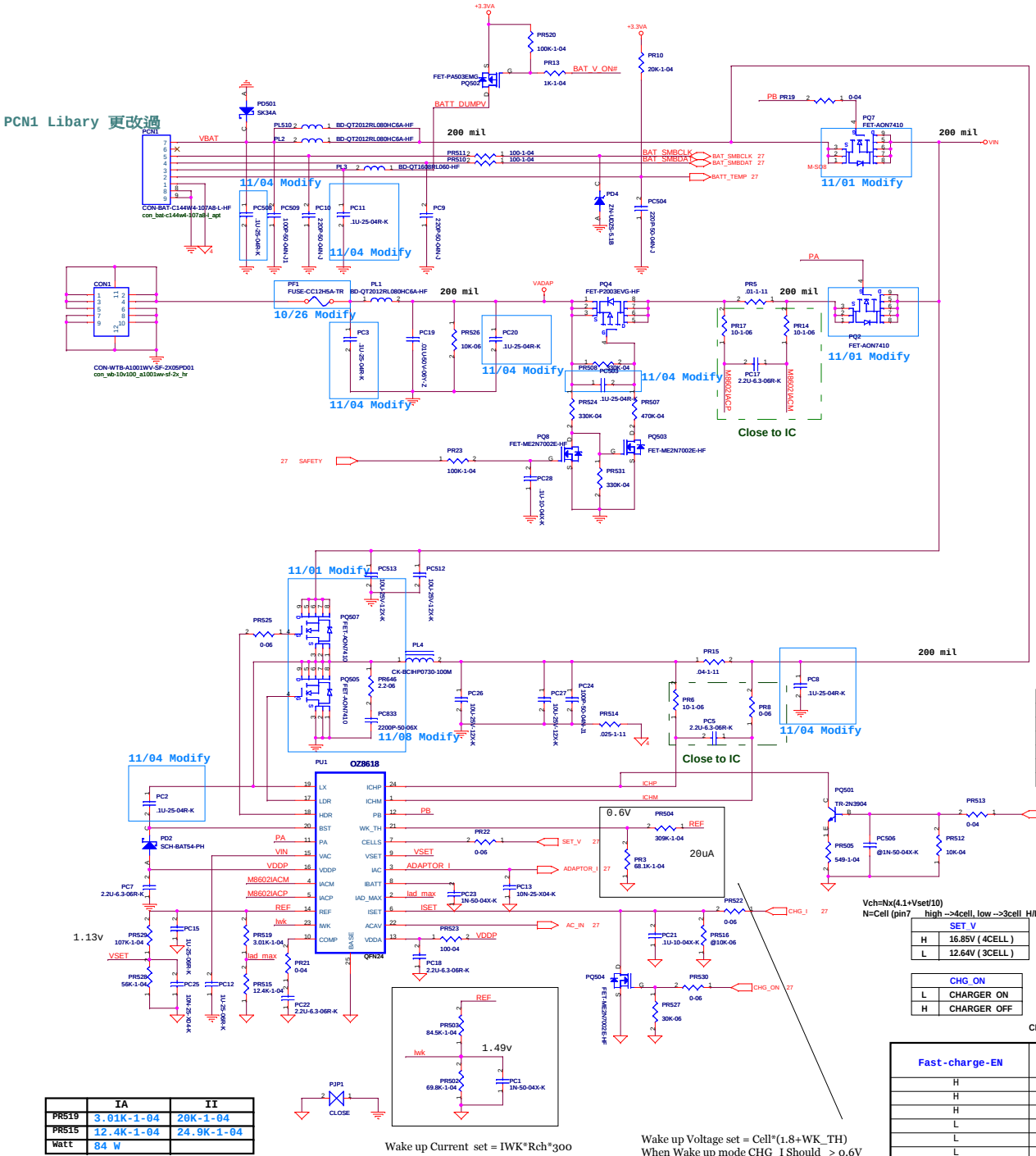
EMI Request



ECS COMPUTER CORP.

Title	Power Switch/Hole/FAN	
Size	Document Number: MB40IA B1-Phase Custom	Rev: B1
	MB40IA	
Date: Tuesday, November 09, 2010	Sheet 28 of 44	

PCN1 Libary 更改過



	IA	II
PR519	3.01K-1-04	20K-1-04
PR515	12.4K-1-04	24.9K-1-04
Watt	84 W	

Wake up Current set = IWK*Rch*300

Wake up Voltage set = Cell*(1.8+WK_TH)
When Wake up mode CHG_I Should > 0.6V

Iac=Iad*Rad*60

ADAPTOR_I	
1A	0.6V
1.5A	0.9V
2A	1.2V
2.5A	1.5V
3A	1.8V
3.5A	2.1V

Vch=Nx(4.1+Vset/10)
N=Cell (pin7 high -->4cell, low -->3cell H/L=2cell)

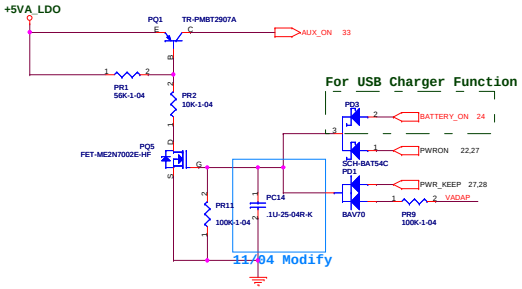
SET_V	
H	16.85V (4CELL)
L	12.64V (3CELL)

CHG_ON	
L	CHARGER ON
H	CHARGER OFF

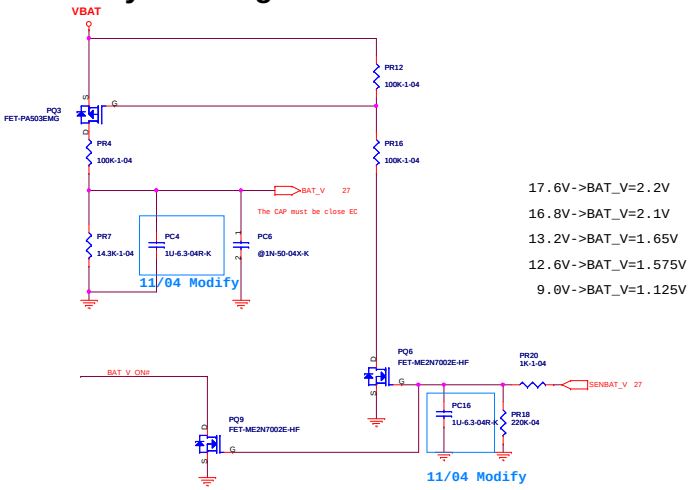
CHG_I=Ich* Rch * 60

Fast-charge-EN	CHG_I	Ich
H	3V	2.5A
H	1.8V	2A
H	0.6V	1.5A
L	2.4V	1A
L	1.2V	0.5A
L	3V	0.25A
L	1.5V	0.125A

CHG_I Should > 0.6V

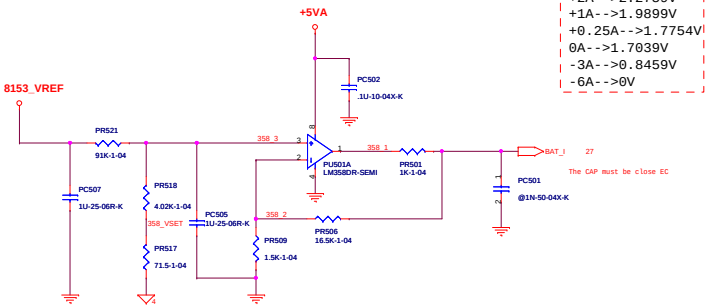


Battery Voltage Detect



17.6V->BAT_V=2.2V
16.8V->BAT_V=2.1V
13.2V->BAT_V=1.65V
12.6V->BAT_V=1.575V
9.0V->BAT_V=1.125V

Charge / Discharge Detect



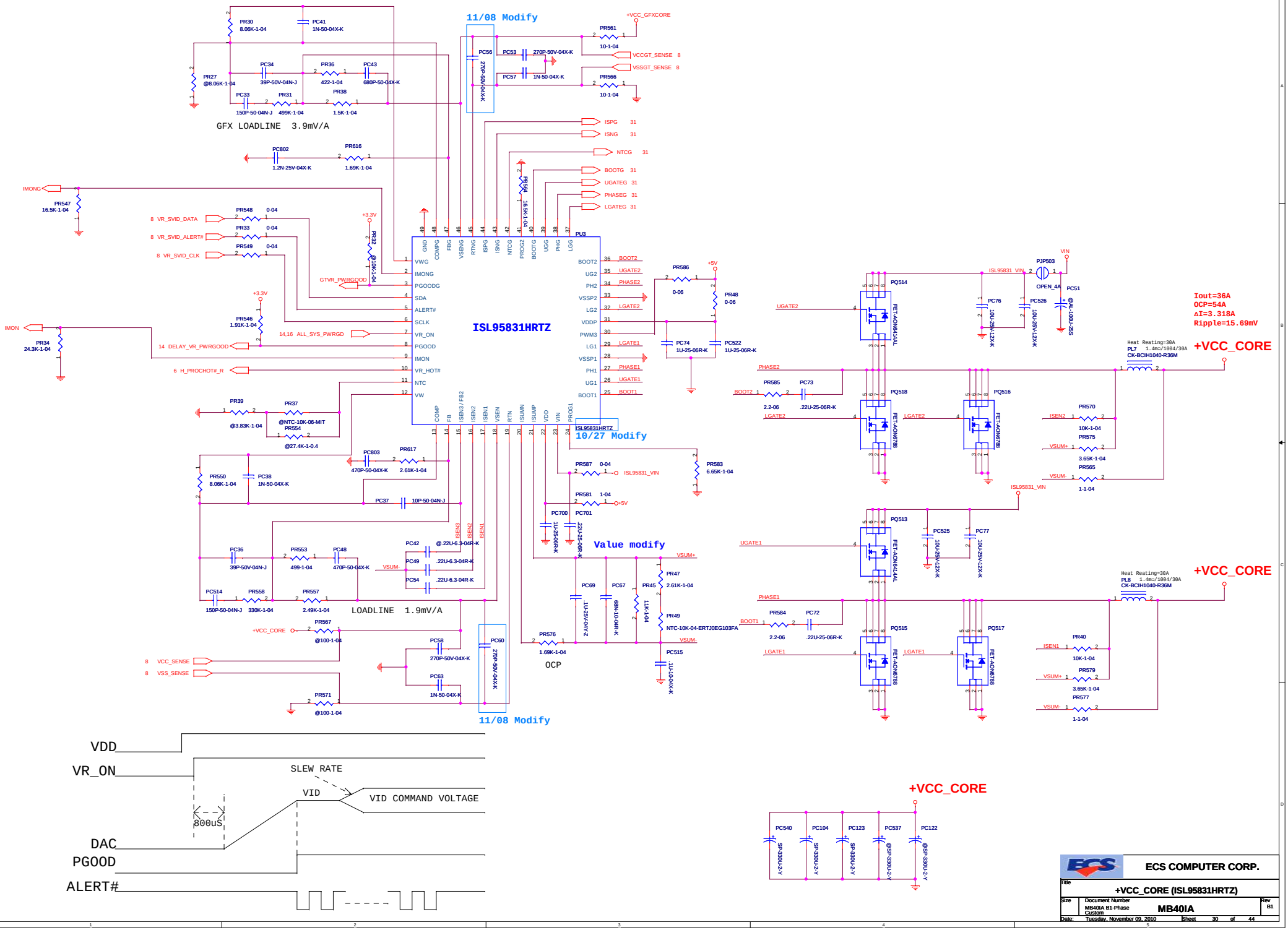
+3A-->2.5619V
+2.5A-->2.4189V
+2A-->2.2759V
+1A-->1.9899V
+0.25A-->1.7754V
0A-->1.7039V
-3A-->0.8459V
-6A-->0V

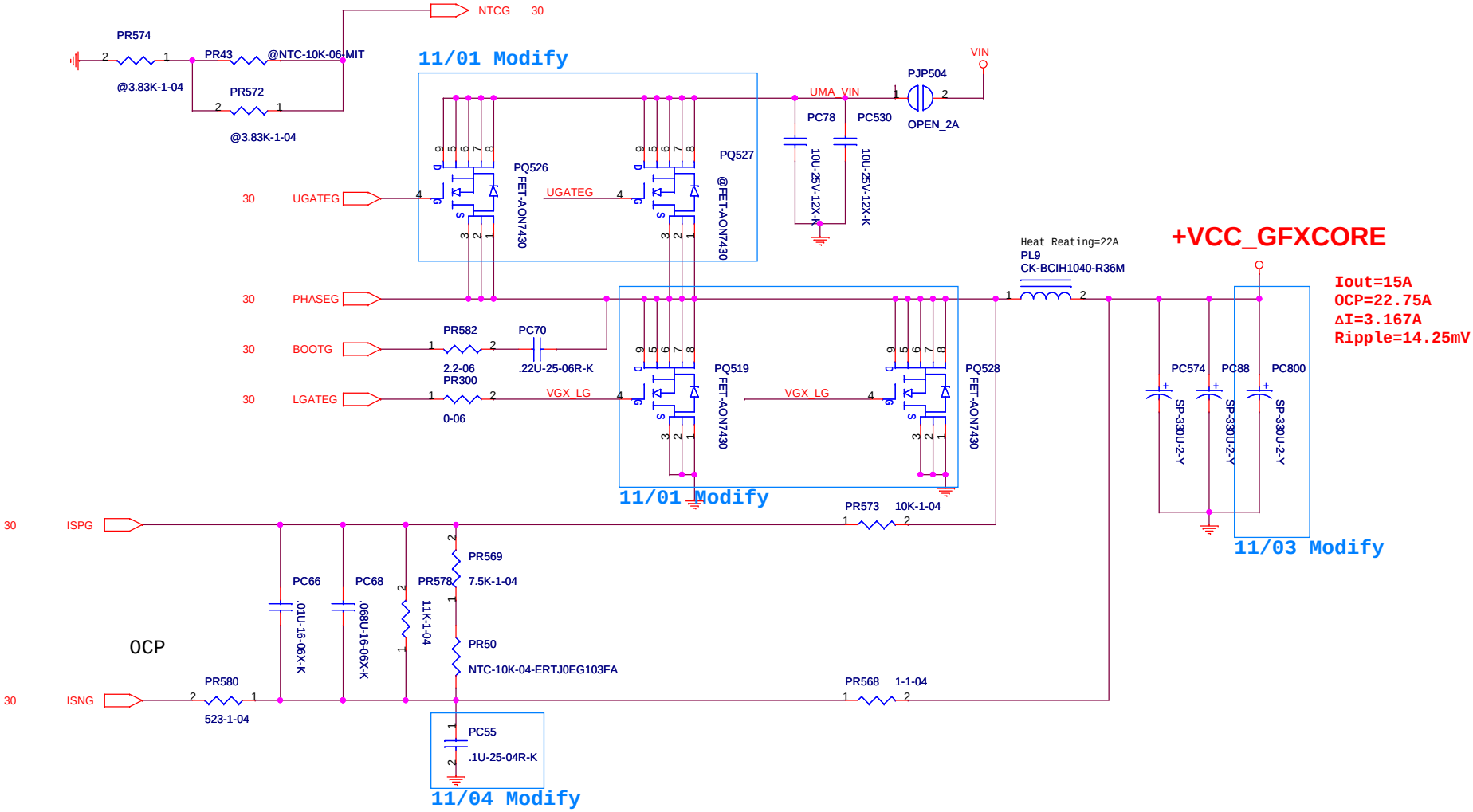
ECS COMPUTER CORP.

Title: DC IN & CHARGER (OZ8618)

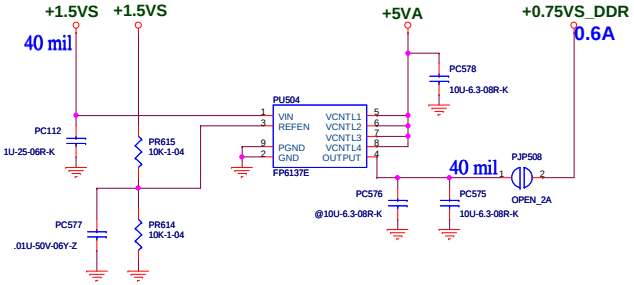
Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

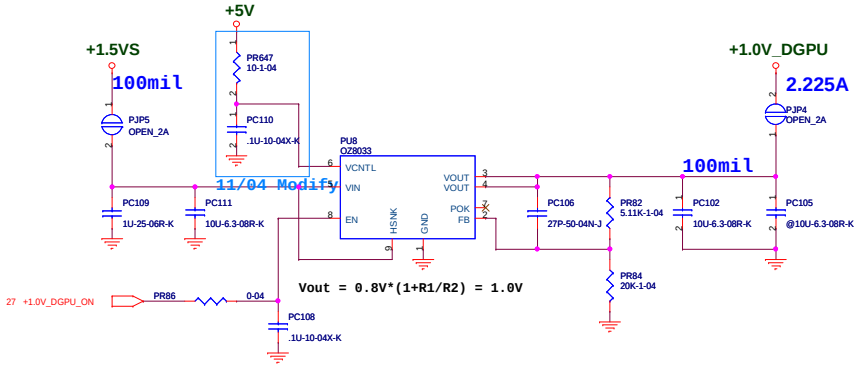
Date: Tuesday, November 09, 2010 Sheet 29 of 44

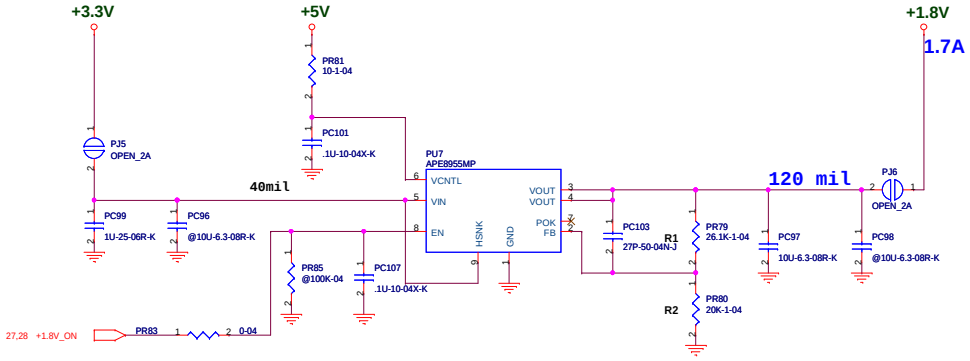

11/08 Modify
ISL95831HRTZ
10/27 Modify
Value modify
11/08 Modify
GFX LOADLINE 3.9mV/A
LOADLINE 1.9mV/A
OCP
Iout=36A
OCP=54A
ΔI=3.318A
Ripple=15.69mV
+VCC_CORE
+VCC_CORE
+VCC_CORE
VDD
VR_ON
SLEW RATE
VID
VID COMMAND VOLTAGE
800uS
DAC
PGOOD
ALERT#
ECS COMPUTER CORP.
+VCC_CORE (ISL95831HRTZ)
MB40IA
Tuesday, November 09, 2010

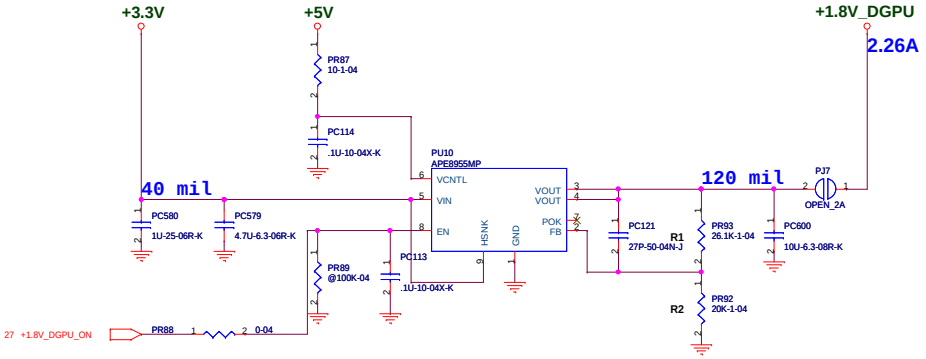


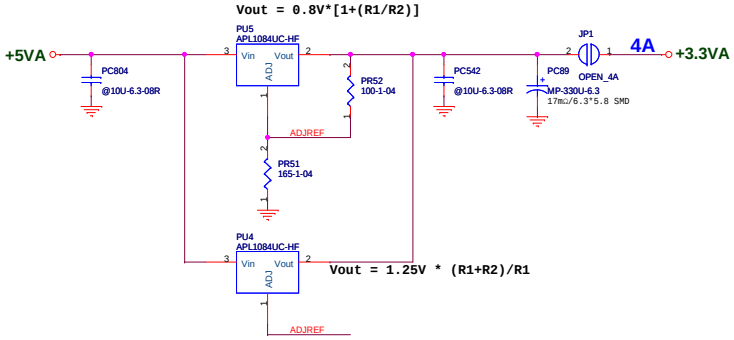
ECS COMPUTER CORP.		
Title	+VGFX_CORE (ISL95831HRTZ)	
Size	Document Number: MB40IA B1-Phase Custom — MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 31 of 44	

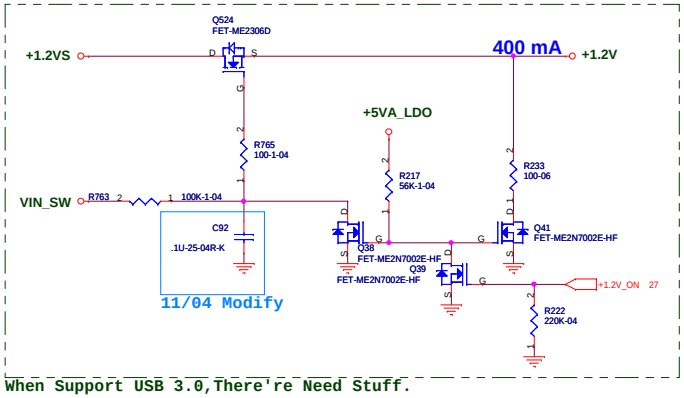




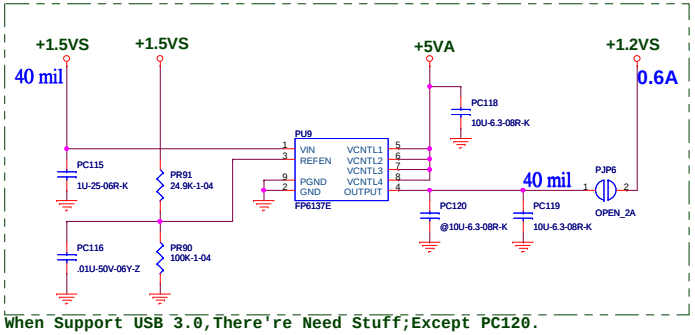






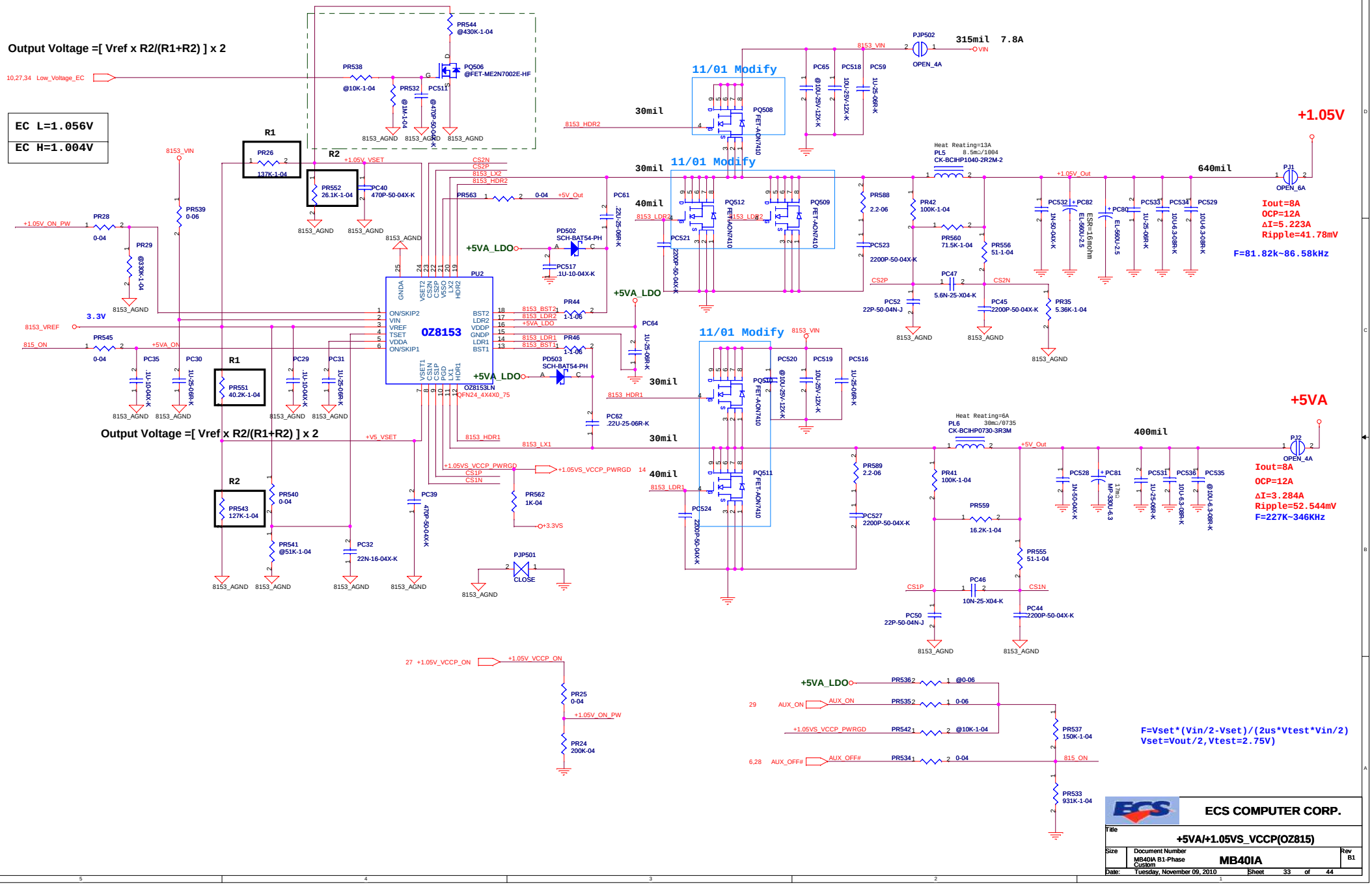


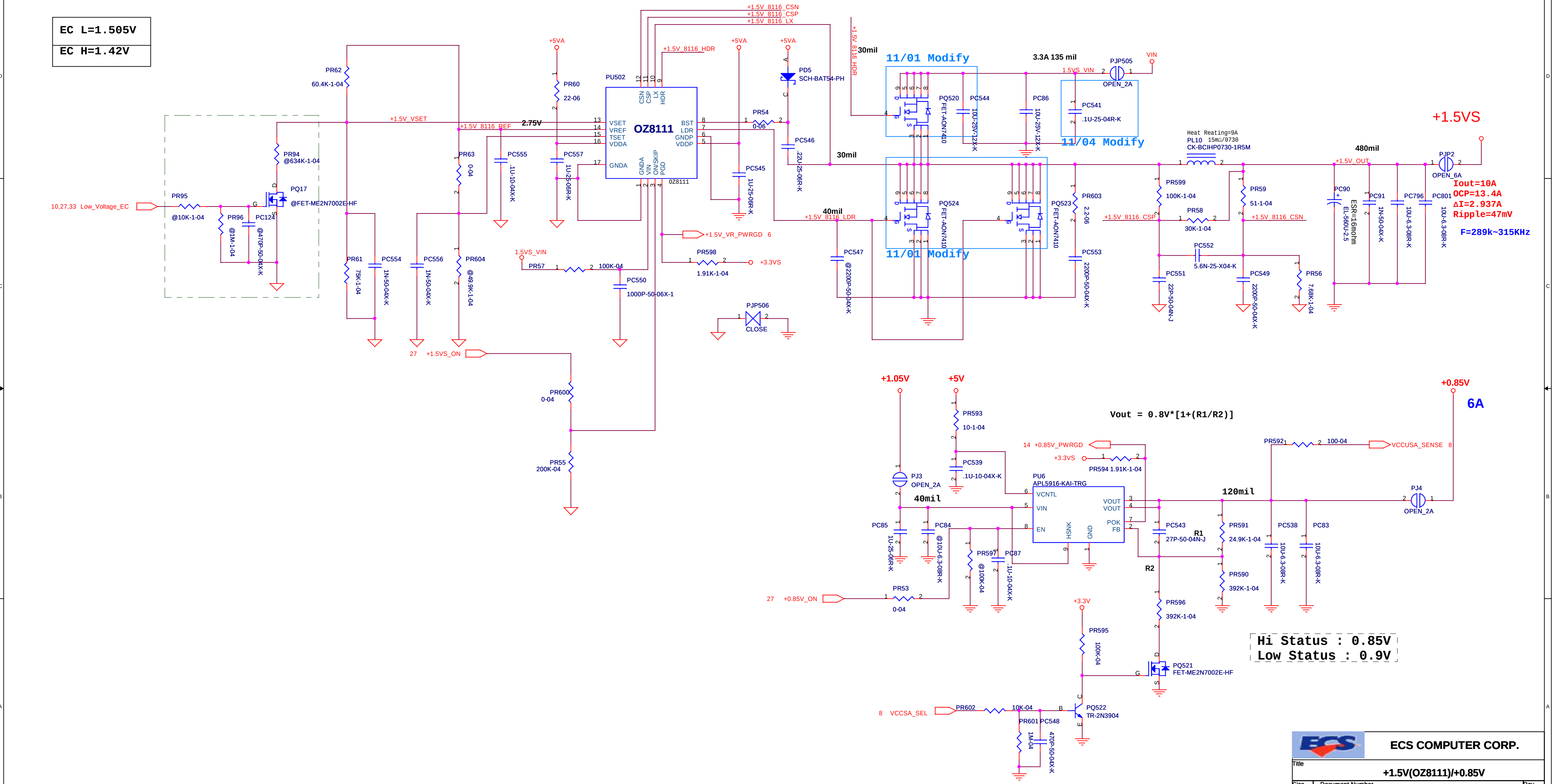
When Support USB 3.0,There're Need Stuff.



When Support USB 3.0,There're Need Stuff;Except PC120.

ECS COMPUTER CORP.		
Title: +3.3VA/0.75VS_DDR/1.8V/1.8V_DGPU/+1.0V_DGPU		
Size: C	Document Number: MB40IA B1-Phase MB40IA	Rev: B1
Date: Tuesday, November 09, 2010	Sheet 32 of 44	


Output Voltage =[Vref x R2/(R1+R2)] x 2
EC L=1.056V
EC H=1.004V
10,27,34 Low_Voltage_EC
PR544 @430K-1-04
PR538 @10K-1-04
PQ506 @FET-ME2N7002E-HF
PR532 @1M-1-04
PC511 @470P-50-04X-K
8153_AGND
R1
R2
PR26 137K-1-04
PR552 26.1K-1-04
PC40 470P-50-04X-K
8153_VIN
+1.05V_VSET
PR539 0-06
PR28 0-04
PR29 @330K-1-04
+1.05V_ON_PW
3.3V
8153_VREF
PR545 0-04
815_ON
+5VA_ON
PC35 .1U-10-04X-K
PC30 1U-25-06R-K
PR551 40.2K-1-04
PC29 .1U-10-04X-K
PC31 1U-25-06R-K
PU2
OZ8153
OZ8153LN
QFN24_4X4X0_75
GNDA VSET2 CS2N CS2P VSSO LX2 HDR2
ON/SKIP2 VIN VREF TSET VDDA ON/SKIP1
BST2 LDR2 VDDP GNDP LDR1 BST1
VSET1 CS1N CS1P PGD LX1 HDR1
CS2N
CS2P
8153_LX2
8153_HDR2
PR563 0-04
+5V_Out
PC61 .22U-25-06R-K
+5VA_LDO
PD502 SCH-BAT54-PH
PC517 .1U-10-04X-K
PR44 1-1-06
PD503 SCH-BAT54-PH
PC64 1U-25-06R-K
PR46 1-1-06
8153_BST2
8153_LDR2
8153_LDR1
8153_BST1
+5VA_LDO
8153_HDR1
PC62 .22U-25-06R-K
8153_LX1
+V5_VSET
+1.05VS_VCCP_PWRGD
CS1P
CS1N
PR562 1K-04
+3.3VS
PC39 470P-50-04X-K
PR540 0-04
PR543 127K-1-04
PR541 @51K-1-04
PC32 22N-16-04X-K
PJP501 CLOSE
27 +1.05V_VCCP_ON
PR25 0-04
+1.05V_ON_PW
PR24 200K-04
11/01 Modify
30mil
40mil
PQ508 FET-AON7410
PQ512 FET-AON7410
PQ509 FET-AON7410
PQ510 FET-AON7410
PQ511 FET-AON7410
8153_HDR2
8153_LDR2
8153_LDR1
8153_VIN
PC65 @10U-25V-12X-K
PC518 10U-25V-12X-K
PC59 1U-25-06R-K
PC520 @10U-25V-12X-K
PC519 10U-25V-12X-K
PC516 1U-25-06R-K
PC521 2200P-50-04X-K
PC524 2200P-50-04X-K
PJP502 OPEN_4A
315mil 7.8A
+1.05V
Heat Reating=13A
PL5 8.5mΩ/1004
CK-BCIHP1040-2R2M-2
PR588 2.2-06
PR42 100K-1-04
PR560 71.5K-1-04
PR556 51-1-04
PC523 2200P-50-04X-K
PC47 5.6N-25-X04-K
PC52 22P-50-04N-J
PC45 2200P-50-04X-K
PR35 5.36K-1-04
+1.05V_Out
PC532 1N-50-04X-K
PC82 EL-560U-2.5
ESR=16mohm
PC80 EL-560U-2.5
PC533 1U-25-06R-K
PC534 10U-6.3-08R-K
PC529 10U-6.3-08R-K
640mil
PJ1 OPEN_6A
Iout=8A
OCP=12A
ΔI=5.223A
Ripple=41.78mV
F=81.82k~86.58kHz
+5VA
Heat Reating=6A
PL6 30mΩ/0735
CK-BCIHP0730-3R3M
PR589 2.2-06
PR41 100K-1-04
PR559 16.2K-1-04
PR555 51-1-04
PC46 10N-25-X04-K
PC50 22P-50-04N-J
PC44 2200P-50-04X-K
PC528 1N-50-04X-K
PC81 MP-330U-6.3
17mΩ
PC531 1U-25-06R-K
PC536 10U-6.3-08R-K
PC535 @10U-6.3-08R-K
400mil
PJ2 OPEN_4A
Iout=8A
OCP=12A
ΔI=3.284A
Ripple=52.544mV
F=227K~346KHz
+5VA_LDO
PR536 @0-06
PR535 0-06
PR542 @10K-1-04
PR534 0-04
29 AUX_ON
+1.05VS_VCCP_PWRGD
6,28 AUX_OFF#
PR537 150K-1-04
PR533 931K-1-04
F=Vset*(Vin/2-Vset)/(2us*Vtest*Vin/2)
Vset=Vout/2,Vtest=2.75V)
ECS COMPUTER CORP.
Title
+5VA/+1.05VS_VCCP(OZ815)
Size
Document Number
MB40IA B1-Phase Custom
MB40IA
Rev B1
Date: Tuesday, November 09, 2010
Sheet 33 of 44


EC L=1.505V
EC H=1.42V
OZ8111
PU502
+1.5V_8116_CSN
+1.5V_8116_CSP
+1.5V_8116_LX
+1.5V_8116_HDR
+1.5V_VSET
+1.5V_8116_REF
2.75V
+5VA
PR62 60.4K-1-04
PR60 22-06
PR94 @634K-1-04
PQ17 @FET-ME2N7002E-HF
PR95 @10K-1-04
PR96 @1M-1-04
PC124 @470P-50-04X-K
10,27,33 Low_Voltage_EC
PR61 75K-1-04
PC554 1N-50-04X-K
PC556 1N-50-04X-K
PR63 0-04
PR604 @49.9K-1-04
PC555 .1U-10-04X-K
PC557 1U-25-06R-K
PR57 100K-04
1.5VS_VIN
PC550 1000P-50-06X-1
+1.5V_VR_PWRGD 6
PR598 1.91K-1-04
+3.3VS
PD5 SCH-BAT54-PH
PR54 0-06
PC546 .22U-25-06R-K
PC545 1U-25-06R-K
PJP506 CLOSE
27 +1.5VS_ON
PR600 0-04
PR55 200K-04
30mil
11/01 Modify
11/04 Modify
3.3A 135 mil
PQ520 FET-AON7410
PC544 10U-25V-12X-K
PC86 10U-25V-12X-K
PJP505 OPEN_2A
VIN
PC541 .1U-25-04R-K
PQ524 FET-AON7410
PQ523 FET-AON7410
40mil
+1.5V_8116_LDR
PC547 @2200P-50-04X-K
PR603 2.2-06
PC553 2200P-50-04X-K
Heat Reating=9A
PL10 15mΩ/0730
CK-BCIHP0730-1R5M
PR599 100K-1-04
PR58 30K-1-04
+1.5V_8116_CSP
+1.5V_8116_CSN
PR59 51-1-04
PC552 5.6N-25-X04-K
PC551 22P-50-04N-J
PC549 2200P-50-04X-K
PR56 7.68K-1-04
480mil
+1.5V_OUT
PC90 ESR=16mohm EL-560U-2.5
PC91 1N-50-04X-K
PC796 10U-6.3-08R-K
PC801 10U-6.3-08R-K
PJP2 OPEN_6A
+1.5VS
Iout=10A
OCP=13.4A
ΔI=2.937A
Ripple=47mV
F=289k~315KHz
+1.05V
+5V
PR593 10-1-04
PC539 .1U-10-04X-K
PJ3 OPEN_2A
40mil
PC85 1U-25-06R-K
PC84 @10U-6.3-08R-K
PR597 @100K-04
PC87 .1U-10-04X-K
PR53 0-04
27 +0.85V_ON
14 +0.85V_PWRGD
+3.3VS
PR594 1.91K-1-04
PU6 APL5916-KAI-TRG
VCNTL VIN EN HSNK GND VOUT VOUT POK FB
Vout = 0.8V*[1+(R1/R2)]
PR592 100-04
VCCUSA_SENSE 8
+0.85V
6A
120mil
PJ4 OPEN_2A
PC543 27P-50-04N-J
R1
PR591 24.9K-1-04
R2
PR590 392K-1-04
PC538 10U-6.3-08R-K
PC83 10U-6.3-08R-K
+3.3V
PR595 100K-04
PR596 392K-1-04
PQ521 FET-ME2N7002E-HF
Hi Status : 0.85V
Low Status : 0.9V
8 VCCSA_SEL
PR602 10K-04
PR601 1M-04
PC548 470P-50-04X-K
PQ522 TR-2N3904

ECS COMPUTER CORP.

Title	+1.5V(OZ8111)/+0.85V
Size: Custom	Document Number: MB40IA B1-Phase — MB40IA
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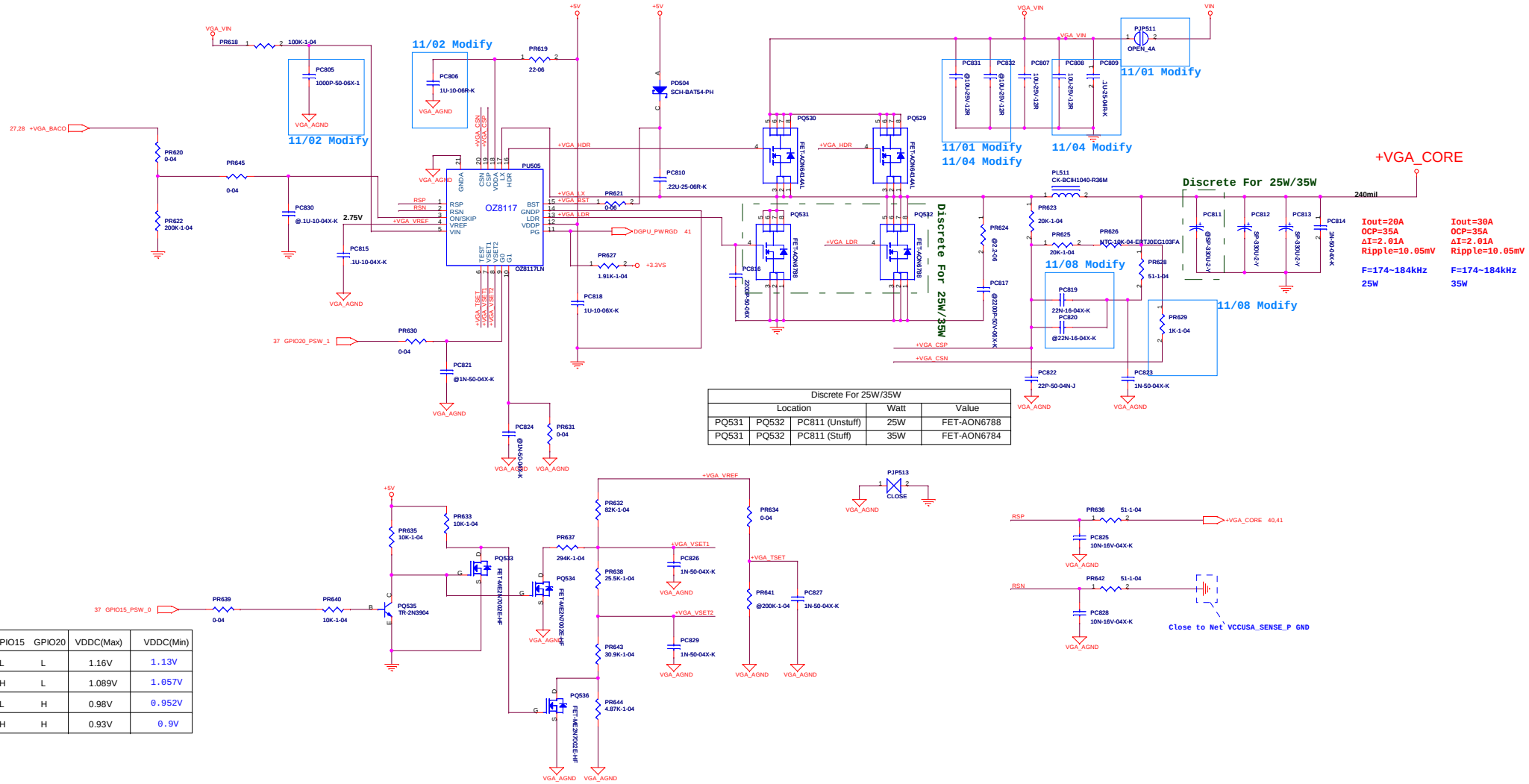

Discrete For 25W/35W				
Location			Watt	Value
PQ531	PQ532	PC811 (Unstuff)	25W	FET-AON6788
PQ531	PQ532	PC811 (Stuff)	35W	FET-AON6784

GPIO15	GPIO20	VDDC(Max)	VDDC(Min)
L	L	1.16V	1.13V
H	L	1.089V	1.057V
L	H	0.98V	0.952V
H	H	0.93V	0.9V

ECS COMPUTER CORP.

Title: +VGA_CORE(OZ8116)

Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

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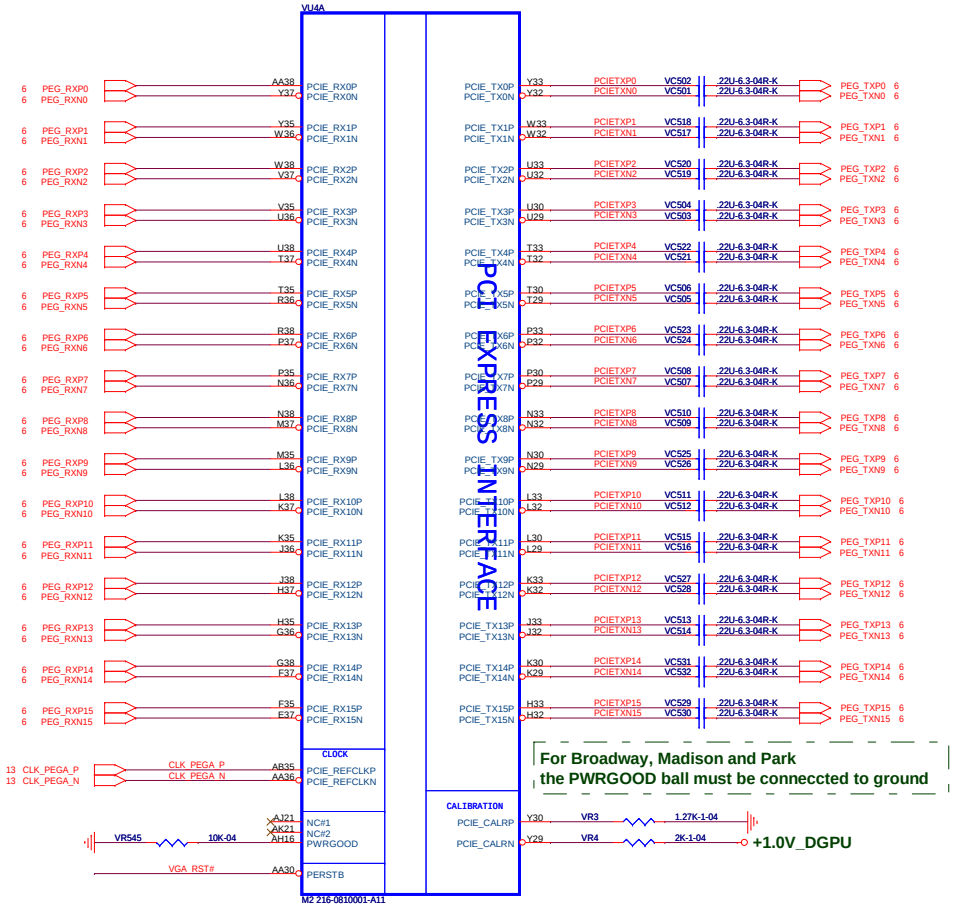
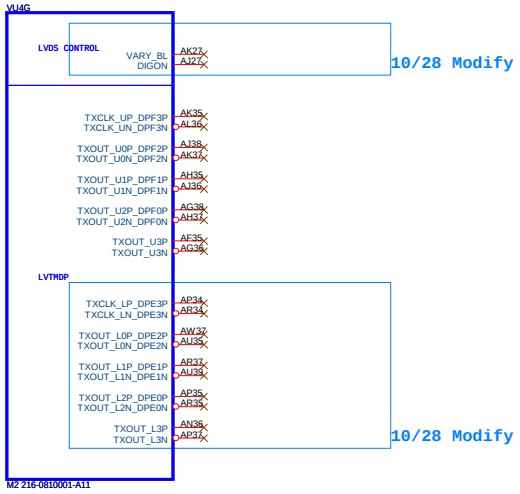
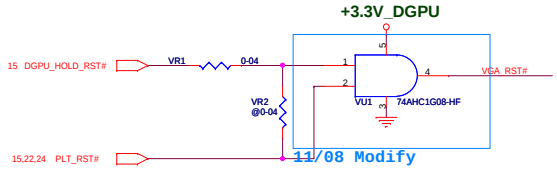


For Broadway, Madison and Park
the PWRGOOD ball must be conneccted to ground

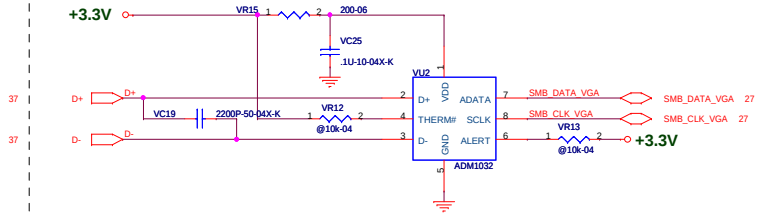
LVDS Interface



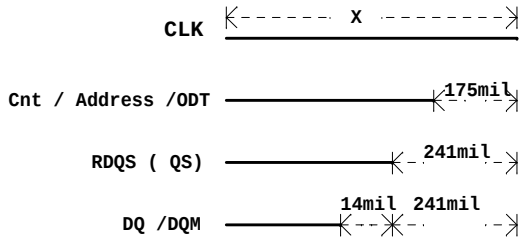


VGA Chip Select		
Name	Value	Material
Whistler XT	M2 216-0810001-A11	02A216081-10
Whistler Pro	216-0810005	02A216082-10
Seymour	216-0809000-A11	02A216080-10

VGA Thermal Sensor



Madison of the trace length - <skew >



ECS COMPUTER CORP.

Title: VGA PCIE/LVDS

Size	Document Number	Rev
	MB40IA B1-Phase Custom MB40IA	B1

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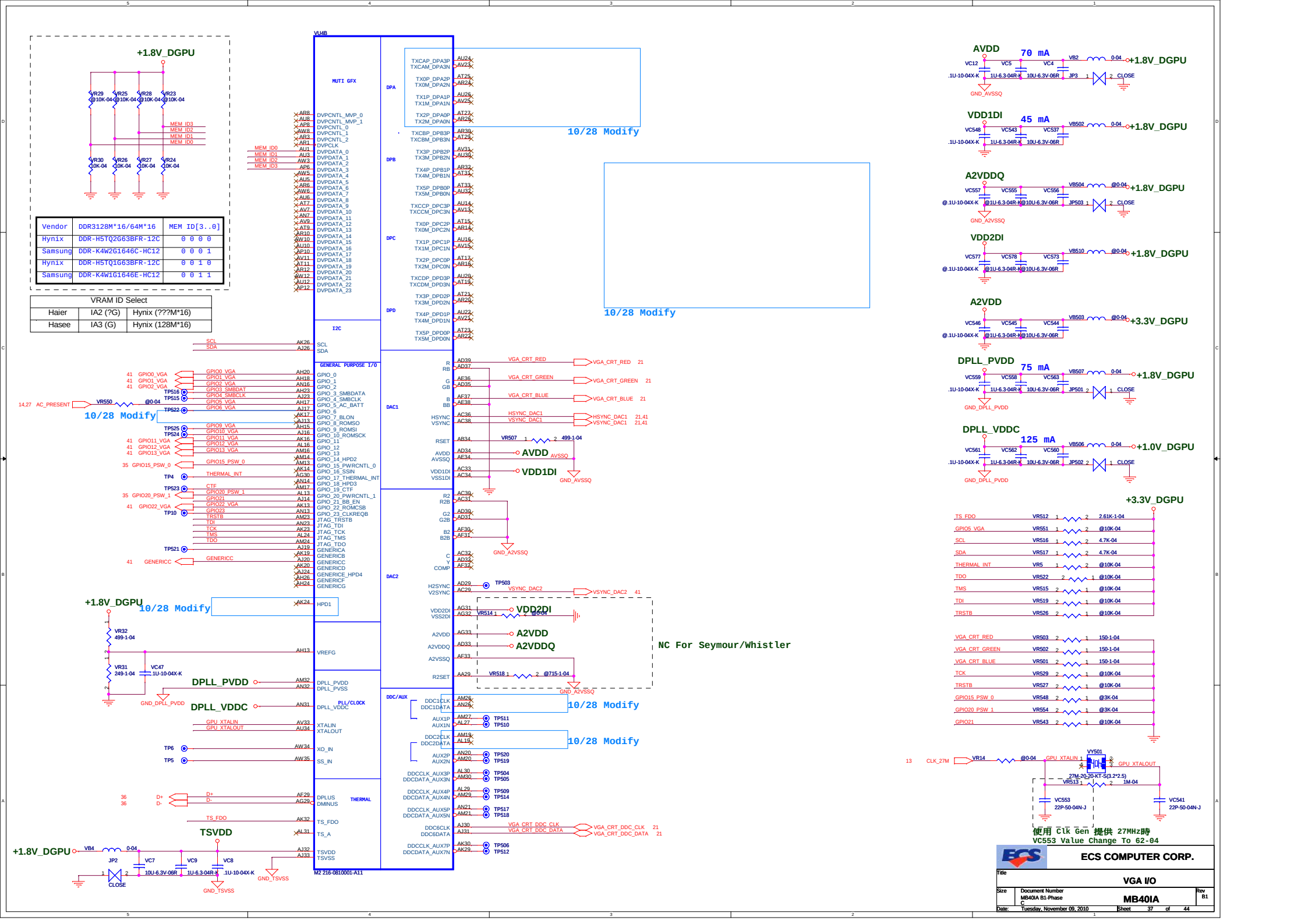
+1.8V_DGPU
VR29 @10K-04
VR25 @10K-04
VR28 @10K-04
VR23 @10K-04
MEM_ID3
MEM_ID2
MEM_ID1
MEM_ID0
VR30 10K-04
VR26 10K-04
VR27 10K-04
VR24 10K-04
Vendor | DDR3128M*16/64M*16 | MEM ID[3..0]
Hynix | DDR-H5TQ2G63BFR-12C | 0 0 0 0
Samsung | DDR-K4W2G1646C-HC12 | 0 0 0 1
Hynix | DDR-H5TQ1G63BFR-12C | 0 0 1 0
Samsung | DDR-K4W1G1646E-HC12 | 0 0 1 1
VRAM ID Select
Haier | IA2 (?G) | Hynix (???M*16)
Hasee | IA3 (G) | Hynix (128M*16)
VU4B
MUTI GFX
DPA
DPB
DPC
DPD
I2C
GENERAL PURPOSE I/O
DAC1
DAC2
DDC/AUX
PLL/CLOCK
THERMAL
M2 216-0810001-A11
10/28 Modify
10/28 Modify
10/28 Modify
10/28 Modify
10/28 Modify
NC For Seymour/Whistler
VGA_CRT_RED
VGA_CRT_GREEN
VGA_CRT_BLUE
HSYNC_DAC1
VSYNC_DAC1
AVDD
VDD1DI
VDD2DI
A2VDD
A2VDDQ
VSYNC_DAC2
VGA_CRT_DDC_CLK
VGA_CRT_DDC_DATA
DPLL_PVDD
DPLL_VDDC
TSVDD
GND_AVSSQ
GND_A2VSSQ
GND_DPLL_PVDD
GND_TSVSS
AVDD 70 mA
VDD1DI 45 mA
A2VDDQ
VDD2DI
A2VDD
DPLL_PVDD 75 mA
DPLL_VDDC 125 mA
+3.3V_DGPU
使用 Clk Gen 提供 27MHz時
VC553 Value Change To 62-04
ECS COMPUTER CORP.
Title
VGA I/O
Size
Document Number
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C
MB40IA
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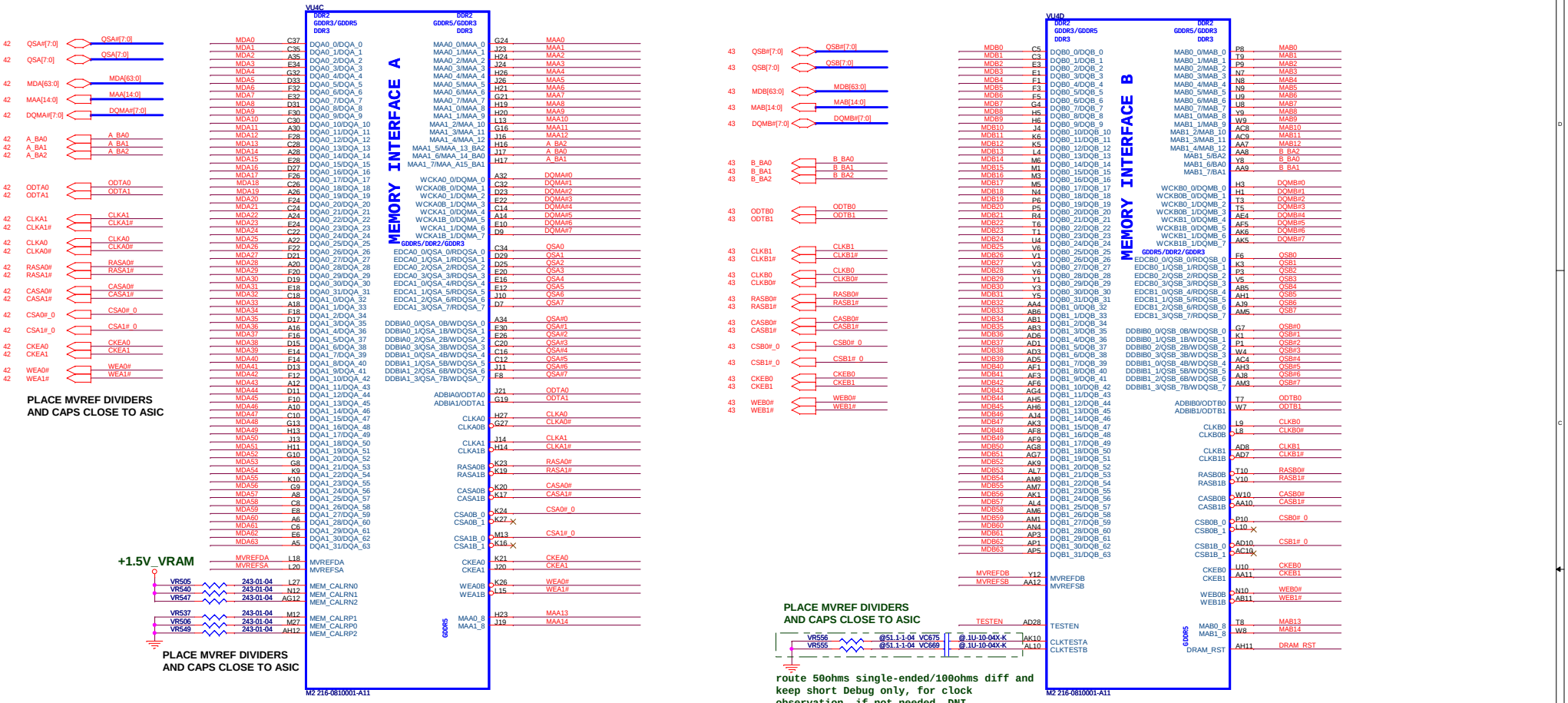
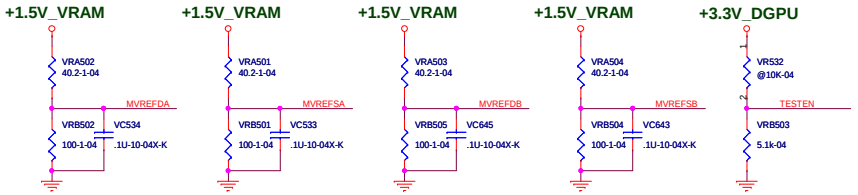
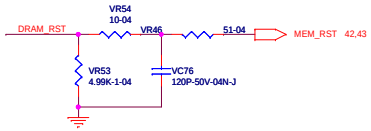


Designator	Madison
R_MEM_1	10K
R_MEM_2	51R
R_MEM_3	DNI
C_MEM	68pF





ECS COMPUTER CORP.

Title: VGA MEM_Interface

Size	Document Number	Rev
C	MB40IA B1-Phase C / MB40IA	B1

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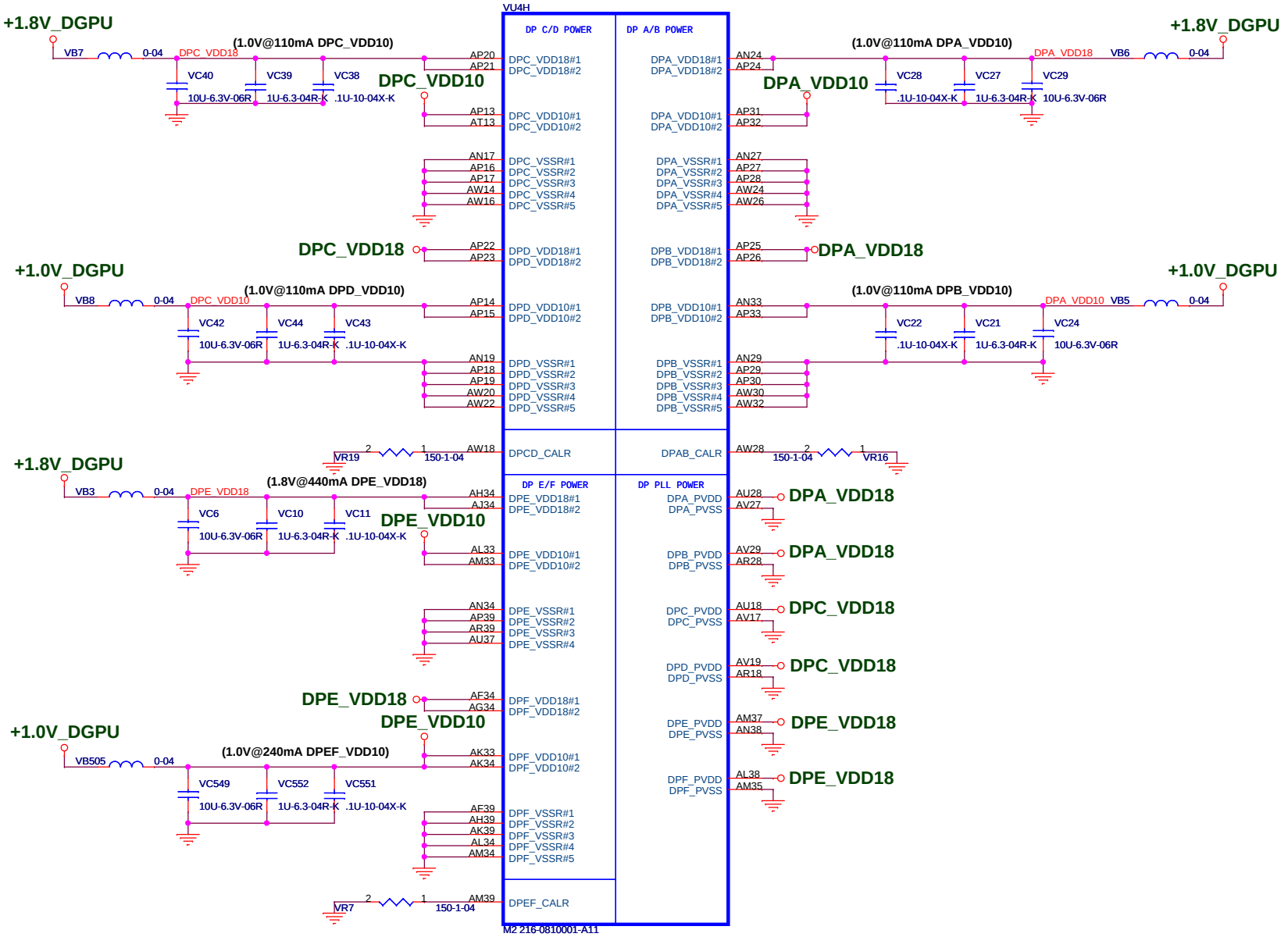

For M97/M96, DPF_VDD18 can be shared with DPE_VDD18

For M97/M96, DPF_VDD10 can be shared with DPE_VDD10

For dual link DVI using DPA AND DPB, DPA_VDDxx and DPB_VDDxx can be shared respectively

For dual link DVI using DPC AND DPD, DPC_VDDxx and DPD_VDDxx can be shared respectively

For dual link LVDS, DPE_VDDxx and DPF_VDDxx can be shared respectively

ECS COMPUTER CORP.

Title	VGA Power 1	
Size	Document Number: MB40IA B1-Phase Custom — MB40IA	Rev: B1
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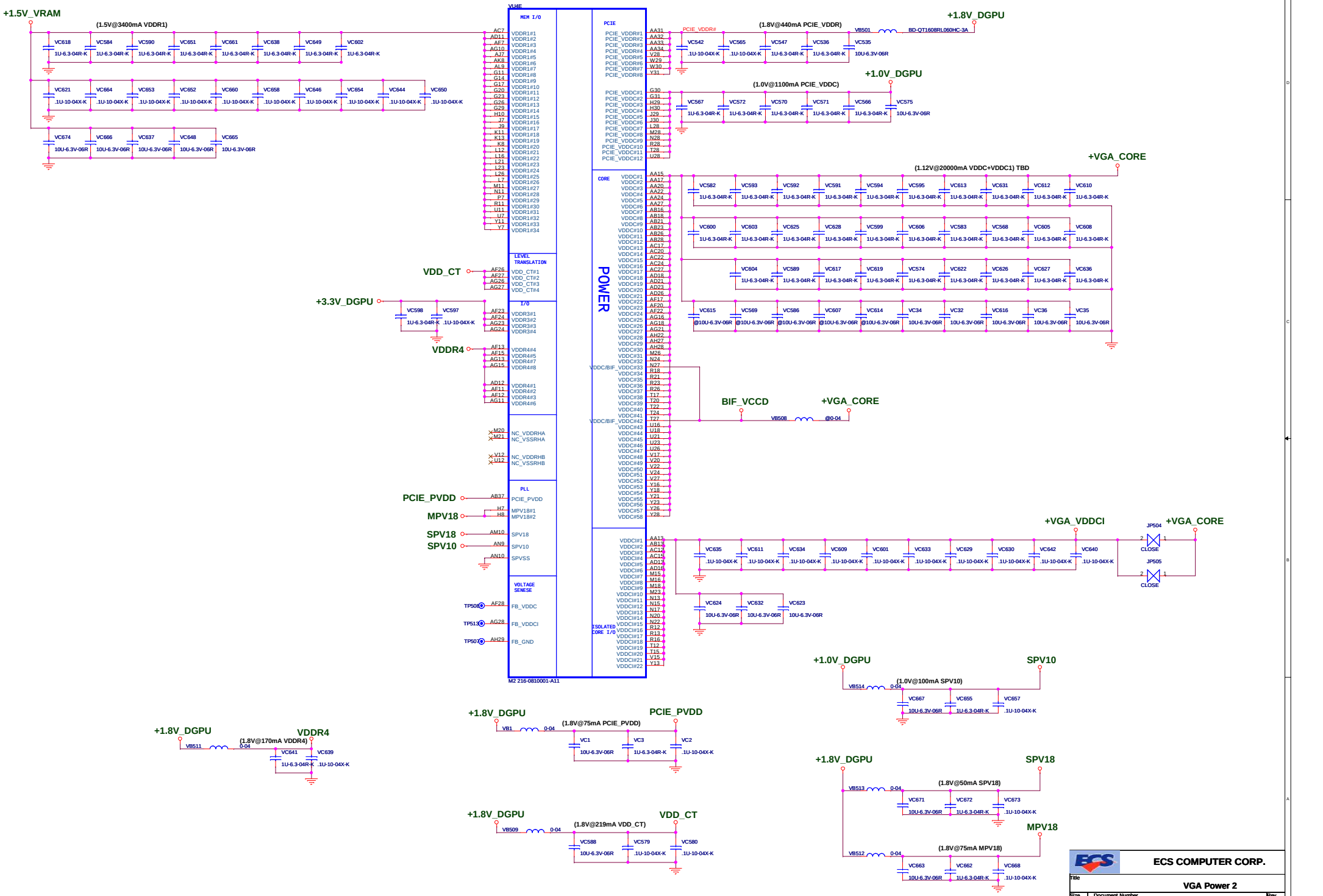

ECS	ECS COMPUTER CORP.		
Title	VGA Power 2		
Size	Document Number: MB40IA B1-Phase Custom	MB40IA	Rev: B1
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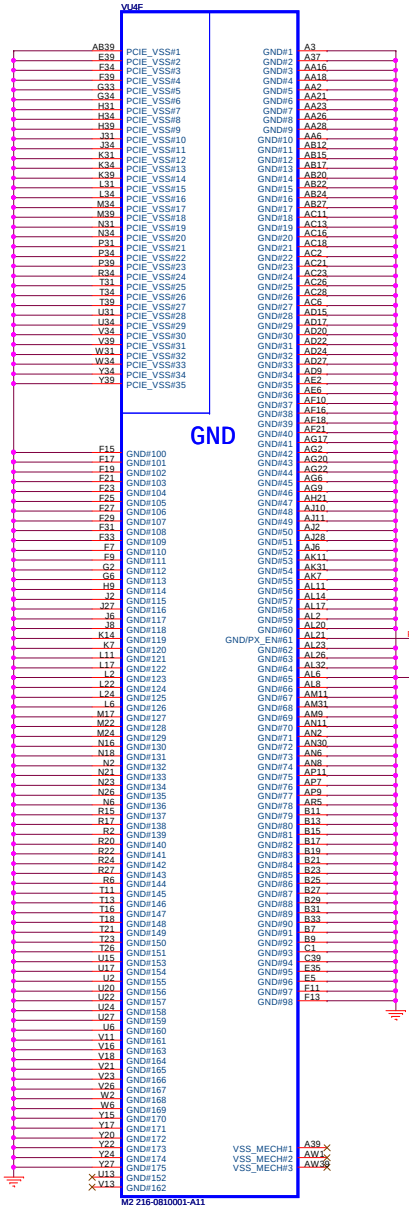
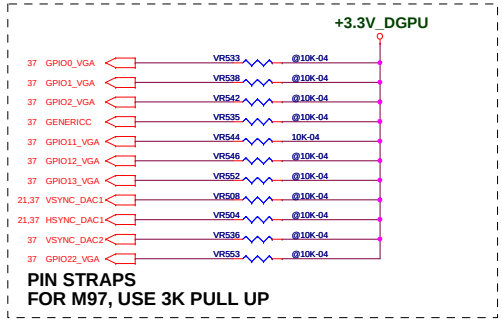
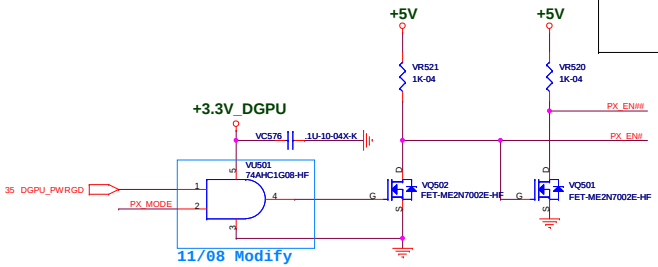
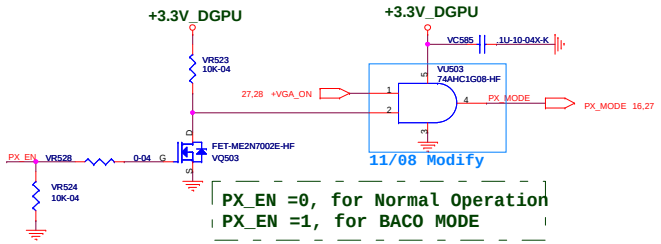
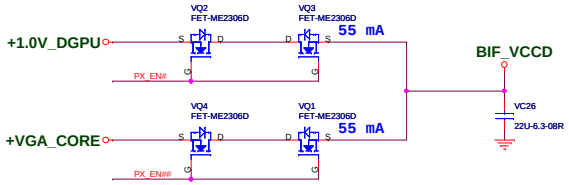




STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	Default	Setting
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	LOW	LOW
TX_DEEMPH_ENB	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	LOW	LOW
VIP_DEVICE _STRAP_ENA	V2SYNC	IGNORE VIP DEVICE STRAPS	LOW	
BIF_VGA DIS	GPIO9	VGA ENABLED	LOW	LOW
AUD[1] AUD[0]	HSYNC VSYNC	AUD[1] AUD[0] 0 0 No audio function 0 1 Audio for DisplayPort only 1 0 Audio for DisplayPort and HDMI if dongle is detected 1 1 Audio for both DisplayPort and HDMI	00	
GPIO22_ROMCSB	GPIO22	ENABLE EXTERNAL BIOS ROM NO EXTERNAL BIOS ROM:LOW , if GPIO22 is high GPIO11~13 is primary memory aperture size	LOW	LOW
ROM_ID(0:2)	GPIO11 GPIO12 GPIO13	GPIO22:high ROM_ID(2:0) / Part 010 / AT25F512A 100 / PM25LV512A GPIO22:low ROM_ID(2:0) / Size 000 / 128MB 001 / 256MB 010 / 64MB 011 / 32MB	XXX	001
RESERVED	H2SYNC GPIO_8 GPIO_2 GPIO_21 GENERICC	GPIO21 MUST BE LOW DURING PERSTB WHEN BEING USED TO CONTROL MVDDQ FOR BROADWAY, MADISON AND PARK	LOW	







ECS COMPUTER CORP.

Title: VGA_GND/Straps/BACO

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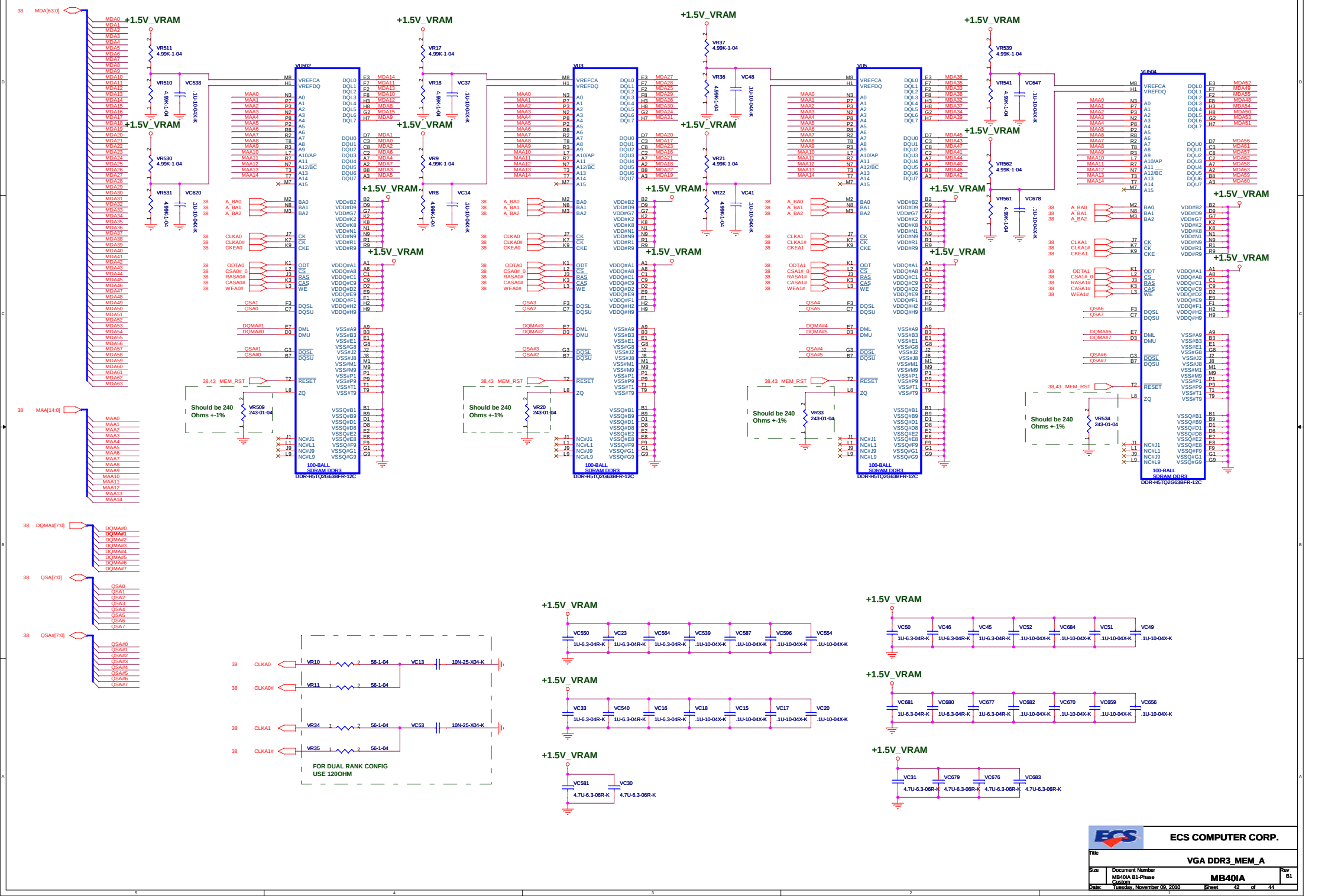
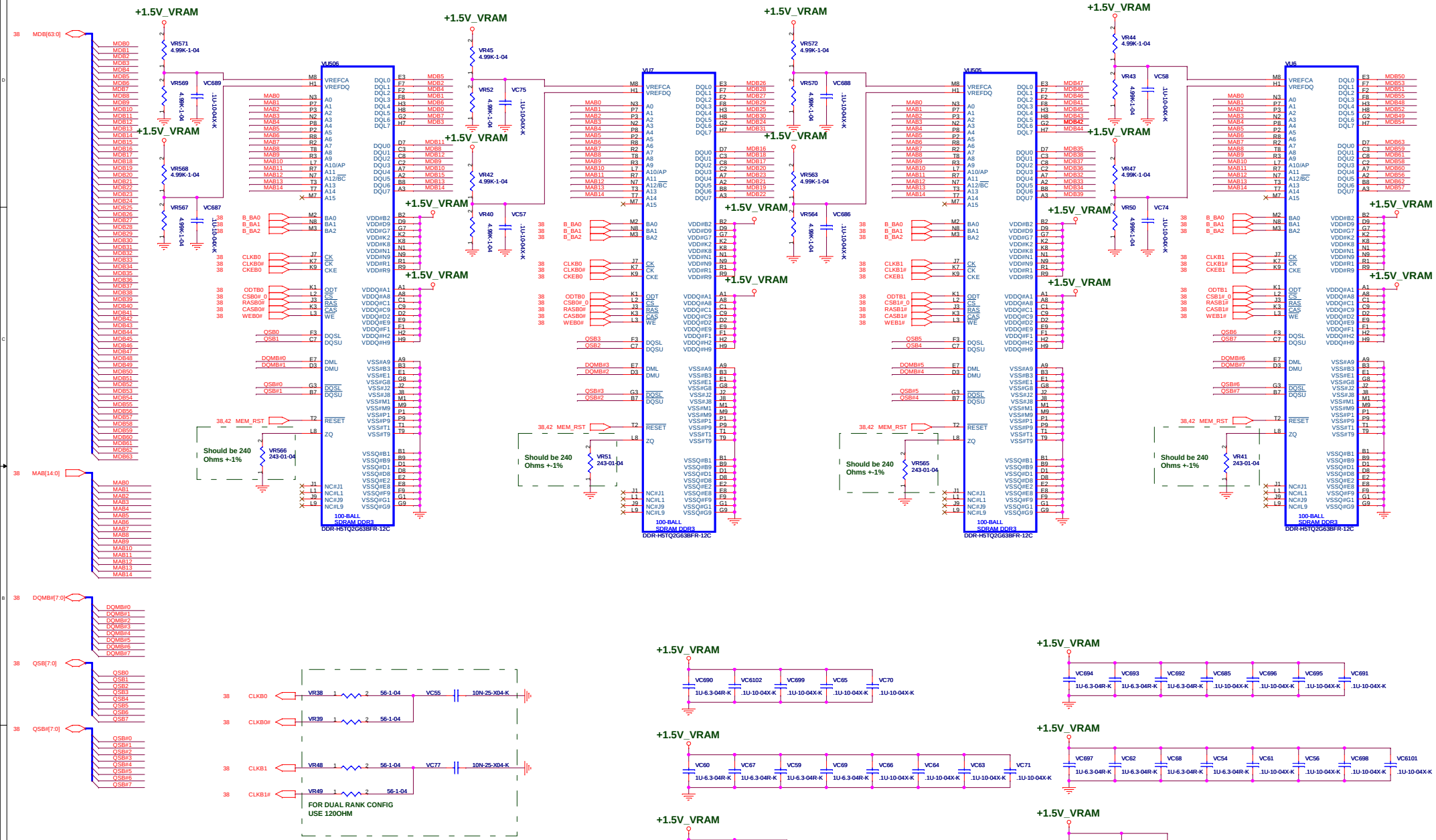
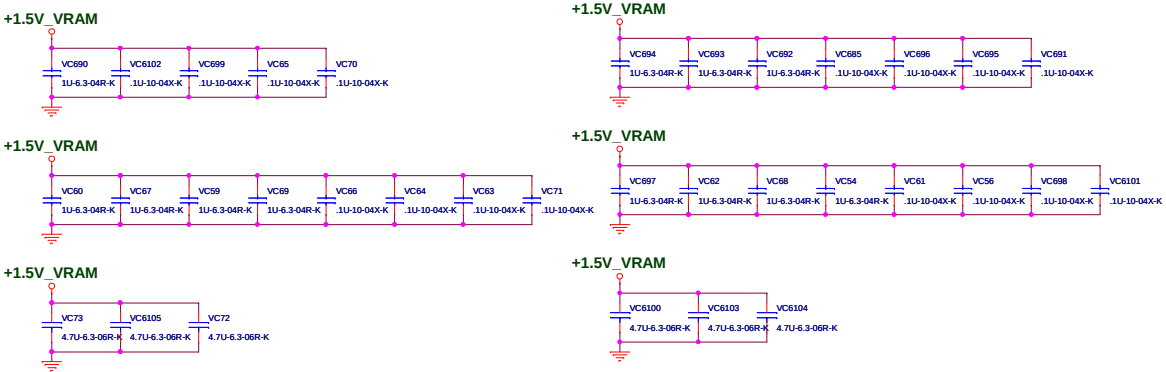
CHANNEL A: 256MB/512MB DDR3 (RANK0)



CHANNEL B: 256MB/512MB DDR3 (RANK1)





Title	VGA DDR3_MEM_B
Size	Document Number: MB40IA B1-Phase Custom: MB40IA
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ECS COMPUTER CORP.

EE Schematics Modify

10/16 Modify

01. Page 12 ：R662 change value to 56-1-04.
02. Page 13 ：Y3 modify;value is X-25M-30-KT-S-HF & footprint is HC-49_3HSM.
03. Page 14 ：PM_SYSRTS# net connect with 118 pin of EC.
04. Page 20 ：Add LCD timing solution for GPU.
05. Page 21 ：RL501/RL502/RL503 change value to IND-AIG1608-R39KT;595/C580/C574 stuff.
06. Page 26 ：Add Y5 crystal For CardReader.
07. Page 29 ：PF1 cahnge value to FUSE-CC12H5A-TR.
08. Page 30 ：PU3 change footprint to qfn48_6x6x1.

10/28 Modify

01. Page 20 ：Del R576,R575.
02. Page 37 ：Del VGA_LEDID_CLK net & VGA_LEDID_DAT net.
03. Page 37 ：Del VGA_BL_EN net
04. Page 20 ：Del U503/C557/R574/R568R567.
05. Page 36 ：Del TXCLK_L+/TXCLK_L-/TXOUT_L0+/TXOUT_L0-/TXOUT_L1+/TXOUT_L1-/TXOUT_L2+/TXOUT_L2- net
06. Page 36 ：Del VGA_LCDBL_PWM/VGA_LVDD_EN net.
07. Page 20 ：Del CN5 & Peripheral schematics / Del GPU power switch schematics.
08. Page 37 ：Del VR557/VR558/VQ504/VR560/VR559.
09. Page 21 ：Del R854/R855 & Del R766/R768 then be short.
10. Page 21 ：Del VGA_HDMI_DAT net/VGA_HDMI_CLK net.
11. Page 37 ：Del VGA_HDMI_DAT net/VGA_HDMI_CLK net.
12. Page 21 ：Del RP1/RP2 ;Del RP502/RP504 then be short.
13. Page 21 ：Del VGA_TMDS2+ net/VGA_TMDS2- net/VGA_TMDS1+ net/VGA_TMDS1+ net/VGA_TMDS0+ net/VGA_TMDS0+ net/VGA_TMD_CLK+ net/VGA_TMD_CLK- net.

10/29 Modify

01. Page 29 ：H7/H13/H12/H5/H10/H9 change footprint to hc236d118.
02. Page XX ：Y3/Y5 change footprint to XTAL-2P-11_4X4_6X3_1.
03. Page XX
：PQ2/PQ7/PQ505/PQ507/PQ508/PQ509/PQ510/PQ511/PQ512/PQ519/PQ520/PQ523/PQ524/PQ526/PQ527/PQ528 change footprint to TDFN8_3X3X0_8.
04. Page 35 ：Add PC831/PC832.

11/02 Modify

01. Page 13 ：R225 unstuff.
02. Page 26 ：R889 unstuff;Y5/R890/C897/C898 stuff.
03. Page 35：PC806/PC805 change footprint to M-R0603.
04. Page 29：Add PR646/PC833.
05. Page 15：Add C899.
06. Page 26：R807 unstuff.

11/03 Modify

01. Page 31 ：Add PC800.(@ bottom side)
02. Page 35 ：Modify PJP511 (Support 4A.;TOPOPEN-4MM)

11/04 Modify

01. Page 35 ：PC808 stuff;PC832 unstuff.
02. Page 24 ：USB Charger Function unstuff.
03. Page XX ：+1.5VS & +1.05V "Low_Voltage_EC" peripheral component all unstuff.

11/05 Modify

01. Page 25 ：C118 connect with GND_AUD.
02. Page 10 ：R101 unsutff.
03. Page 11 ：C889/C881 stuff;C646/C720 change value to 10U-6.3V-06R.
04. Page 16 ：R638 change value to 2.2K-04;R641 change value to 1K-04;
05. Page 16 ：U8 unstuff.
06. Page 13 ：R225 stuff.
07. Page 26 ：R807/R889 stuff;Y5/R890/C897/C898 unstuff.
08. Page 11 ：CN13 chane value to DDR-8795-00L4-4280.
09. Page 11 ：CN10 chane value to DDR-8795-00L4-0180.
10. Page 26 ：CN14 chane value to ???31AK01910-00.
11. Page 21 ：CN15 chane value to CON-HDMI-879F-0019-H380.
12. Page 25 ：Add C900.

11/08 Modify

01. Page 13 ：R723 unstuff.
02. Page 13 ：PC60/PC56 stuff.
03. Page 35 ：PC819/PC820 change value to 22N-16-04X-K.
04. Page 33 ：PC833 change value to 2200P-50-06X.
05. Page 35 ：PR629 change value to 1K-1-04.
06. Page 32 ：PU4/PU5 change value to APL1084UC-HF.
07. Page 35 ：PU505 change value to OZ8117LN.
08. Page 25 ：U509/VU1/U4/U5/U7/U9//U11/VU501/VU502/VU503 change value to 74AHC1G08-HF.
09. Page 24 ：U13 change value to PM25LV512A-100SCE-HF.
10. Page 26 ：U510 change value to RTS5159-HF.
11. Page XX ：U508/U505/U30 change value to UP7534ARA8-15-HF.
12. Page 35 ：PC811 unstuff;PQ531/PQ532 change value to FET-AON6788. (For 25W)
13. Page 12 ：R150/R142/R159 unstuff.

11/09 Modify

01. Page XX ：U10 change value to ???02A650001-12.
02. Page 11 ：C734/C643 stuff.
03. Page 22 ：CN30 unstuff.

Power Schematics Modify

ECS COMPUTER CORP.

File: Change Notes

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