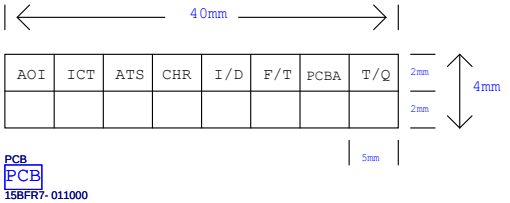
ELITEGROUP COMPUTER SYSTEMS

Project：MT50IN Schematics Rev : 01

Intel Ivy Bridge CPU + Intel Panther Point Chipset + nVidia N13P-GL

Phase	Revision History	
A	02/18/2012	Initial REV.A
B	03/29/2012	REV.B
01	05/21/2012	Risk buy REV 01



MT50IN MB Ver:01
P/N:15BFR7- 011000
PCB M/B MT50IN1.V.01 255.58*194.07*1.2mm.6L LEAD-FREE.GREEN

MT50IN1 Rev. P/N List：

Phase Revision	M/B PCB P/N	USB PCB P/N	SW PCB P/N	LED PCB P/N	
Initial REV.A					
REV.B	15BFR7-010200	15BFR7-050210	15BFR7-050212	15BFR7-050211	
REV.01	15BFR7- 011000	15BFR7-051001	15BFR7-051000	15BFR7-051002	
REV.A1		15BFR6-050100	15BFR6-050101		

ECS COMPUTER CORP.

Title: Cover Page

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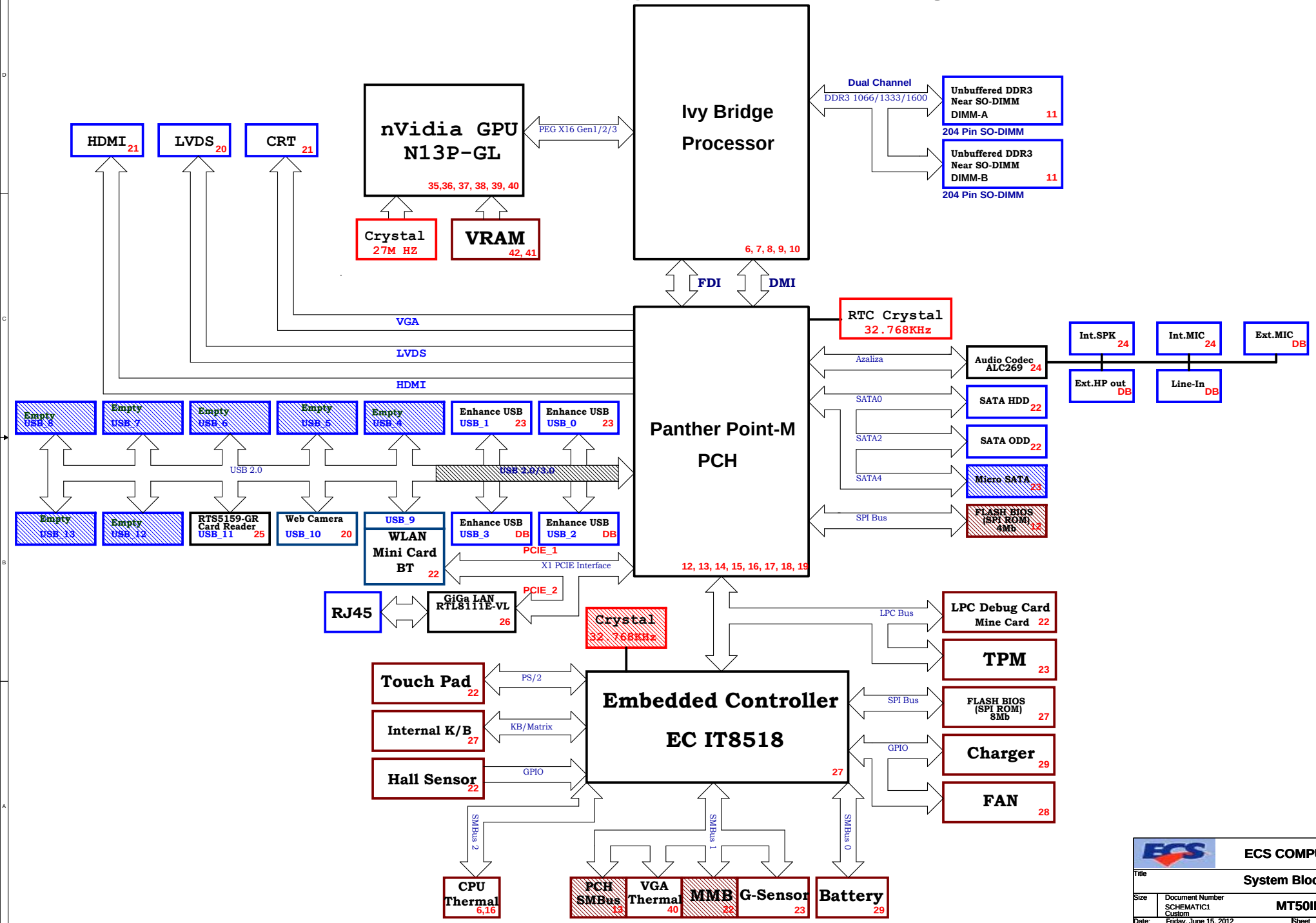
Chief River System Block Diagram



ECS COMPUTER CORP.		
Title: System Block Diagram		
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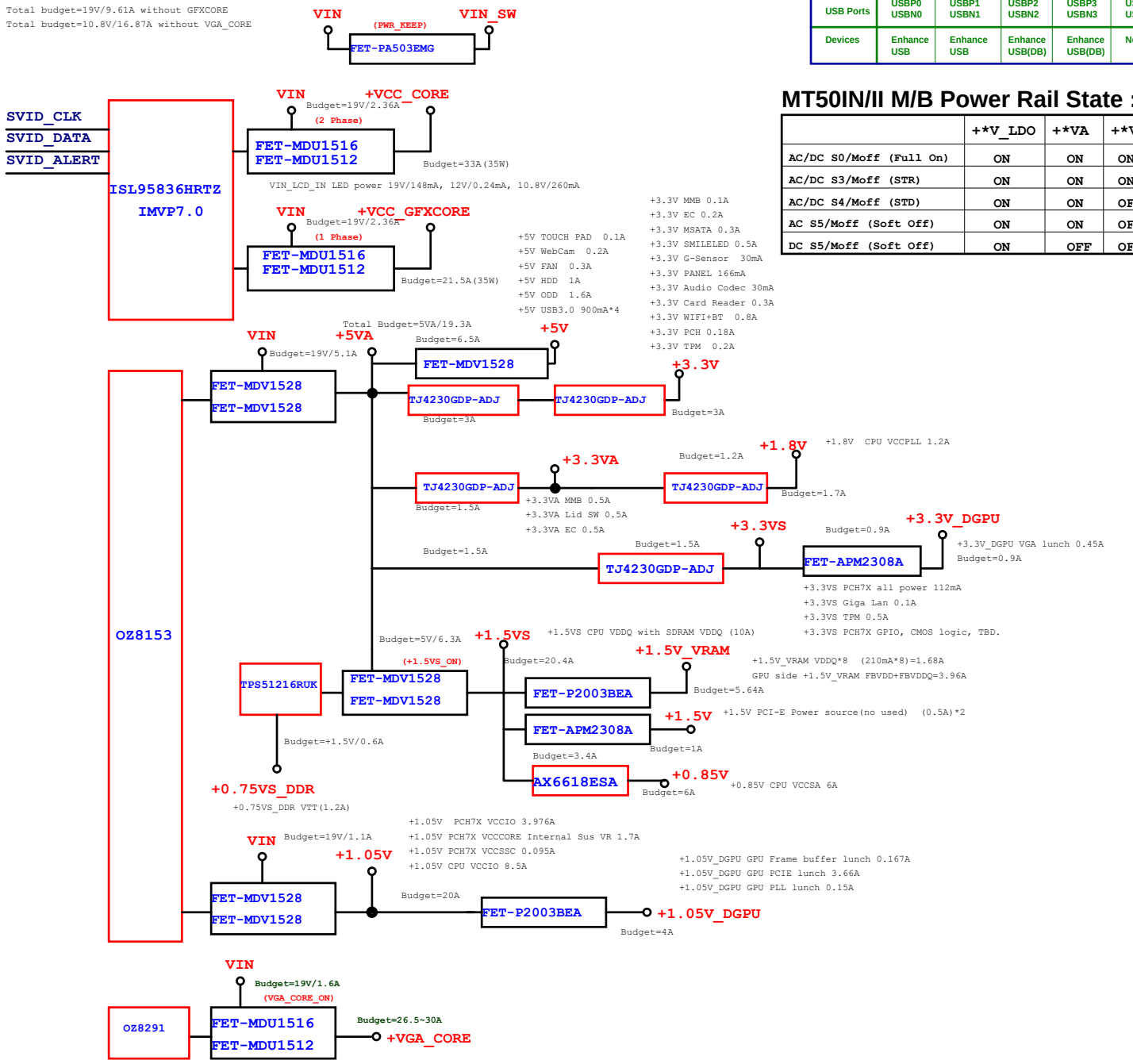
Power Block Diagram

CPU(35W)
Total budget=19V/9.61A without GFXCORE
Total budget=10.8V/16.87A without VGA_CORE



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	Enhance USB	Enhance USB(DB)	Enhance USB(DB)	None	None	Disable	Disable	Disable	WLAN BT	Web Camera	Card Reader	None	None

MT50IN/II M/B Power Rail State :

	+*V_LDO	+*VA	+*VS	+*V	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	ON	OFF	OFF
+VCC_CORE	+VCC_CORE_ON	ON	ON	ON	OFF	OFF
+V1.05S	+V1.5S_ON	ON	ON	ON	OFF	OFF
+V1.5S	+V1.5S_ON	ON	ON	ON	OFF	OFF
+V3.3S	+V3.3S_ON	ON	ON	ON	OFF	OFF
+V5S	+V5S_ON	ON	ON	ON	OFF	OFF
+V1.1S_VTT	+V5S	ON	ON	ON	OFF	OFF
+V1.8S	+V5S	ON	ON	ON	OFF	OFF
+V1.1S	+V5S	ON	ON	ON	OFF	OFF
+V0.75DDR	+V1.5	ON	ON	OFF	OFF	OFF
+V1.5	+V1.5_ON	ON	ON	OFF	OFF	OFF
+V3.3	+V3.3_ON	ON	ON	OFF	OFF	OFF
+V5	+V5_ON	ON	ON	OFF	OFF	OFF
VIN_SW	PWR_KEEP	ON	ON	OFF	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	ON	OFF	OFF
VCCCORE	+V1.1S	ON	ON	ON	OFF	OFF
VCCAPLLEXP	+V1.1S	ON	ON	ON	OFF	OFF
VCCIO	+V1.1S	ON	ON	ON	OFF	OFF
VCC3_3	+V3.3S	ON	ON	ON	OFF	OFF
VCCFDIPLL	+V1.1S	ON	ON	ON	OFF	OFF
VCCVRM	+V1.8S	ON	ON	ON	OFF	OFF
VCCPNAND	+V1.8S	ON	ON	ON	OFF	OFF
VCCDMI	+V1.1S_VTT	ON	ON	ON	OFF	OFF
VCCALVDS	+V3.3S	ON	ON	ON	OFF	OFF
VCCTX_LVDS	+V1.8S	ON	ON	ON	OFF	OFF
VCCADAC	+V3.3S	ON	ON	ON	OFF	OFF
V5REF	+V5S	ON	ON	ON	OFF	OFF
VCCADPLLB	+V1.1S	ON	ON	ON	OFF	OFF
VCCSATAPLL	+V1.1S	ON	ON	ON	OFF	OFF
V_CPU_IO	+V1.1S	ON	ON	ON	OFF	OFF
VCCADPLLA	+V1.1S	ON	ON	ON	OFF	OFF
VCCLAN	+V1.1S	ON	ON	ON	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

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System Power On Sequence (TBD)

ECS COMPUTER CORP.		
File	Power Sequence	
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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	PCH_TACH2
GPIO7	PCH_TACH3
GPIO8	COLOR_ENGINE_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	NC
GPIO27	PCH_GPIO27
GPIO28	PLL_ODVR_EN
GPIO29	PM_SLP_LAN#
GPIO30	SUS_PWR_ACK_R
GPIO31	AC_PRESENT
GPIO32	PM_CLKRUN#
GPIO33	@1K to GND
GPIO34	GPIO34
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	-CLKREQ_GFX
GPIO48	TEST_SET_UP
GPIO49	PCH_GPIO49
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	PM_SUS_STAT#
GPIO62	NC
GPIO63	NC
GPIO64	CLK_27M_TP
GPIO65	USB_48M_TP
GPIO66	LAN25M_TP
GPIO67	SEL24_48M_P
GPIO68	SATA_ODD_PWRGT
GPIO69	@1.5K to GND
GPIO70	100K to +3.3V
GPIO71	100K 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	OPTION4
GPA7	BT_EN#
GPB0	SENBAT_V
GPB1	INT1
GPB2	**PWR_LEVEL**
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_ON**
GPC7	PM_PWRBTN#
GPD0	AC_IN
GPD1	OPTION1
GPD2	BUF_PLT_RST#
GPD3	EC_SCI#
GPD4	SATA_ODD_PWRGT_EC +3.3V_DGPU_ON
GPD5	AC_PRESENT
GPD6	**+1.5VS_ON**
GPD7	Battery_MA#
GPE0	PM_RSMRST#
GPE1	FNOPTION
GPE2	PM_APWROK
GPE3	OPTION5
GPE4	PWRON_EC
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	Button3
ADC5/GPI5	PM_SLP_S4#
ADC6/GPI6	PM_SLP_S3#
ADC7/GPI7	SUB_PWR_ACK SATA_ODD_DA#_EC EC_Select

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

VSTBY	+3.3VA
VBAT	+3.3VA_RTC
AVCC	+3.3VA
VCC	+3.3V

ITE8518 GND

AVSS	GND
VSS	GND

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

Ivy Bridge CPU

IMVP-7.0

Voltage (V)	Current(mA)	Measure	Watt
+VCC_CORE	55000		
+VCC_GFXCORE	46000		
+1.05V_VCCP	8500		
+0.85V	6000		
+1.5VS	5000		
+1.8V	1200		

Panther 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		

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	

ITE8518

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

ECS COMPUTER CORP.

Title: GPIO & Power Consumption

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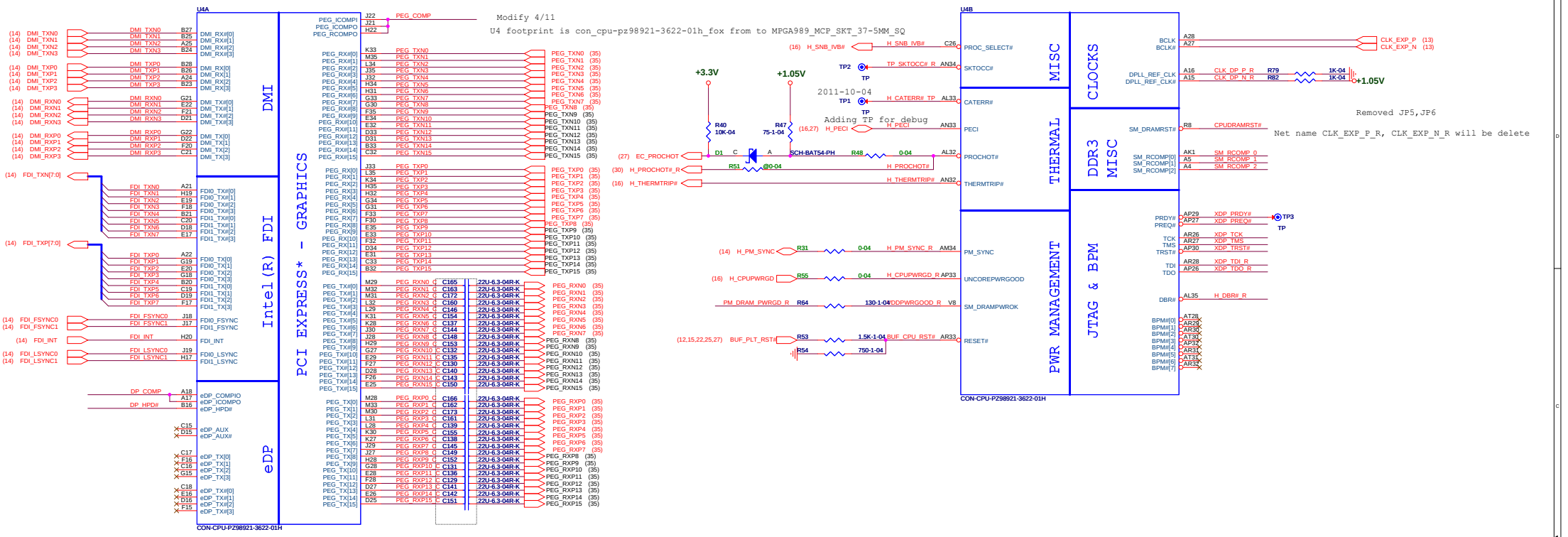
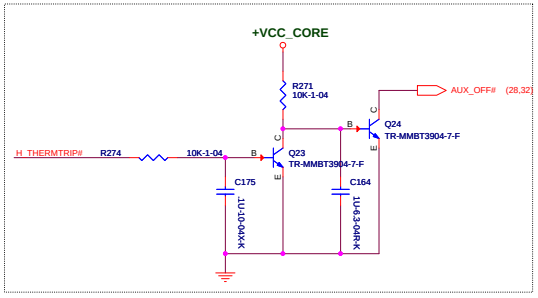
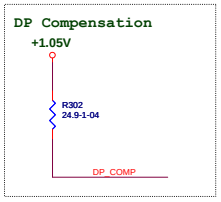
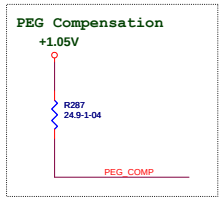


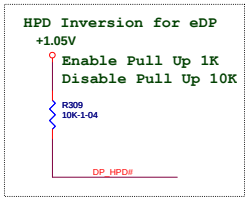
Modify Table

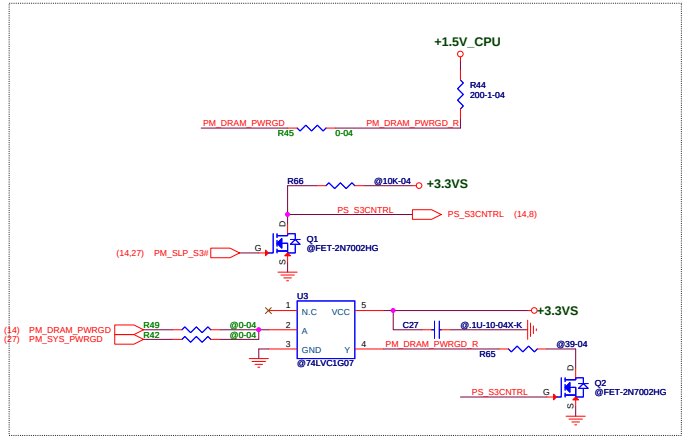
MT50INX/IIX AC Coupling Caps Select	
MT50IIX	Unstuff
MT50INX	Stuff

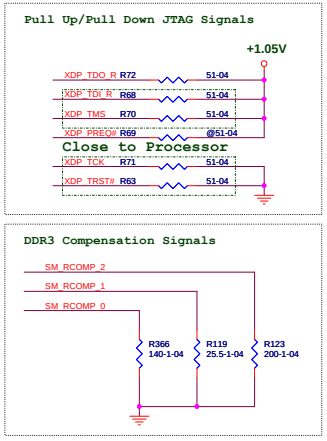


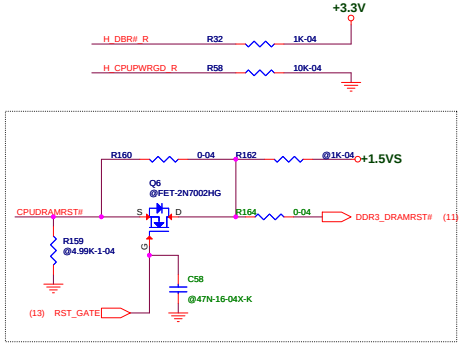












ECS COMPUTER CORP.			
Title: Ivy Bridge_DMI,FDI,PEG			
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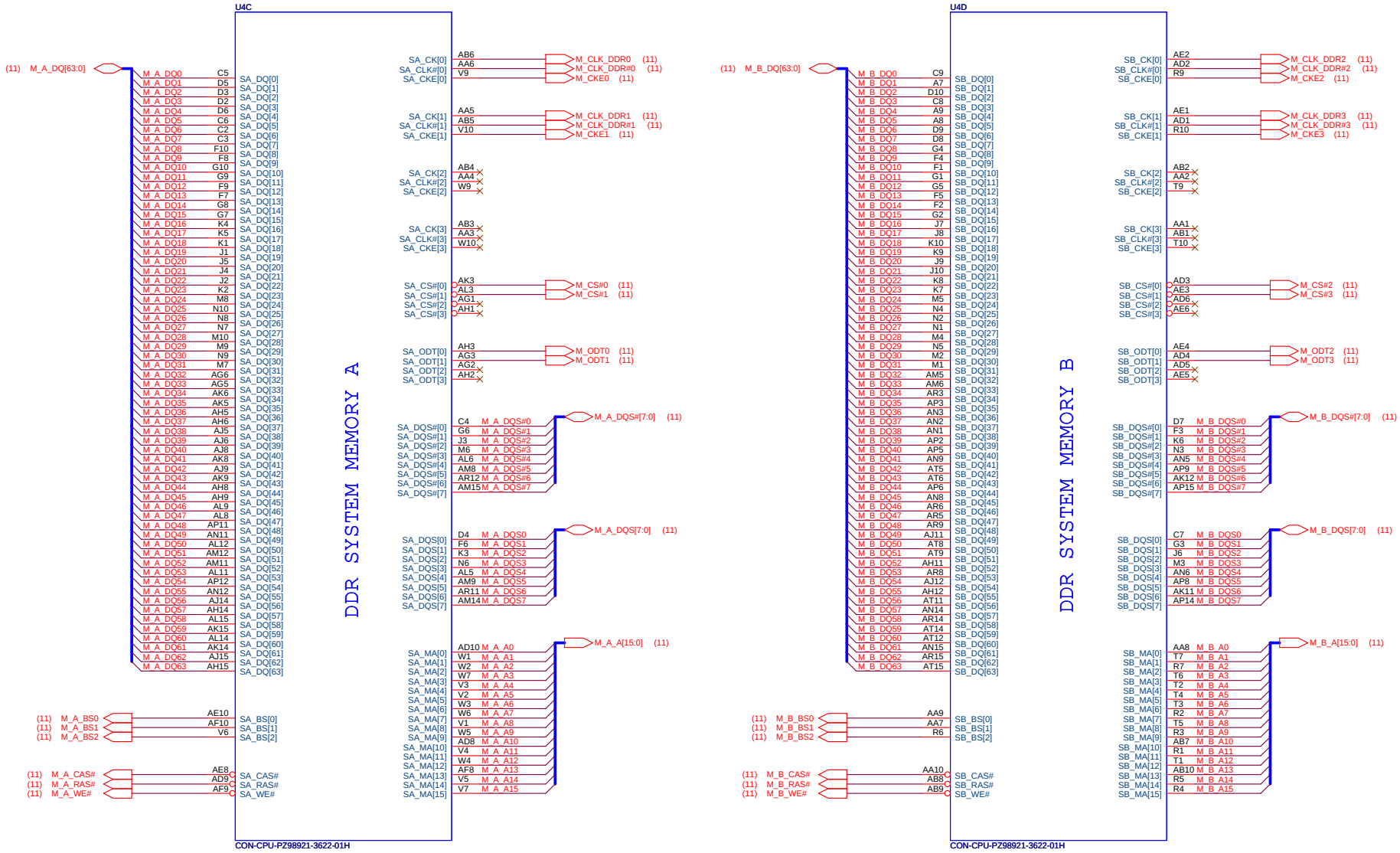

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From 53000mA to 55500mA for 45W

POWER

CPU Core 55500 mA

+VCC_CORE

U4F

CORE SUPPLY

PEG AND DDR

SVID

SENSE LINES

VCCIO 8500 mA

+1.05V

C240 C42 C238 C44 C230 C43 C235 C40 C39 C236 C243

C234 C41 C237 C232

10U-6.3-08R-K

1N-50-04X-K

VCCIO1 AH13
VCCIO2 AH10
VCCIO3 AG10
VCCIO4 AC10
VCCIO5 Y10
VCCIO6 U10
VCCIO7 P10
VCCIO8 L10
VCCIO9 J14
VCCIO10 J13
VCCIO11 J12
VCCIO12 J11
VCCIO13 H14
VCCIO14 H12
VCCIO15 H11
VCCIO16 G14
VCCIO17 G13
VCCIO18 G12
VCCIO19 F14
VCCIO20 F13
VCCIO21 F12
VCCIO22 F11
VCCIO23 E14
VCCIO24 E12
VCCIO25 E11
VCCIO26 D14
VCCIO27 D13
VCCIO28 D12
VCCIO29 D11
VCCIO30 C14
VCCIO31 C13
VCCIO32 C12
VCCIO33 C11
VCCIO34 B14
VCCIO35 B12
VCCIO36 A14
VCCIO37 A13
VCCIO38 A12
VCCIO39 A11
VCCIO40 J23

+1.05V

R285 0-04

VIDALERT# AJ29 H_CPU_SVIDALRT#
VIDSCLK AJ30 H_CPU_SVIDCLK
VIDSOUT AJ28 H_CPU_SVIDDAT

VCC_SENSE AJ35 VCC_SENSE
VSS_SENSE AJ34 VSS_SENSE

R36 @100-1-04 +VCC_CORE

VCC_SENSE (30)
VSS_SENSE (30)

R35 @100-1-04

VCCIO_SENSE B10 VCCP_SENSE R92 10-1-04
VSS_SENSE_VCCIO A10 VSSP_SENSE R93 10-1-04

+1.05V

Place R135,R138 Near CPU Pins

CON-CPU-PZ98921-3622-01H

+VCC_GFXCORE

VAXG 46000 mA

C205 1N-50-04X-K

C226 C228 C227 C33 C210 C37 C35 C38

C204 C224 C207 C208 C218 C223

10U-6.3-08R-K

@10U-6.3-08R-K

1U-6.3-04R-K

1U-10-04X-K

POWER

U4G

GRAPHICS

DDR3 -1.5V RAILS

SA RAIL

1.8V RAIL

MISC

When Use UMA R82,R81 Stuff
When Use DGPU Only R82,R81 Unstuff

SENSE LINES

VAXG_SENSE AK35
VSSAXG_SENSE AK34

R34 0-04
R33 0-04

VCCGT_SENSE (30)
VSSGT_SENSE (30)

Note: +V_SM_VREF Should Have 10 mil Trace Width

VREF

SM_VREF AL1 +V_SM_VREF_CNT

SA_DIMM_VREFDQ B4
SB_DIMM_VREFDQ D1

DDR_WR_VREF01_B4 (11)
DDR_WR_VREF01_D1 (11)

VDDQ 5000 mA

+1.5V_CPU

VDDQ1 AF7
VDDQ2 AF1
VDDQ3 AF1
VDDQ4 AC7
VDDQ5 AC4
VDDQ6 AC1
VDDQ7 Y7
VDDQ8 Y4
VDDQ9 Y1
VDDQ10 U7
VDDQ11 U4
VDDQ12 U1
VDDQ13 P7
VDDQ14 P4
VDDQ15 P1

C279 C276 C282 C278 C283 C289 C284 C281 C280

10U-6.3-08R-K

4.7U-6.3-08R-K

1N-50-04X-K

VCCSA 6000 mA

+0.85V

VCCSA1 M27
VCCSA2 M26
VCCSA3 L26
VCCSA4 J26
VCCSA5 J25
VCCSA6 J24
VCCSA7 H26
VCCSA8 H25

C34 C191 C193 C174

10U-6.3-08R-K

1N-50-04X-K

VCCPLL 1200 mA

+1.8V

VCCPLL1 B6
VCCPLL2 A6
VCCPLL3 A2

C285 C286 C50

10U-6.3-08R-K

1U-6.3-04R-K

VCCSA_SENSE H23 VCCUSA_SENSE R280 100-04 +0.85V

VCCSA_VID[0] C22
VCCSA_VID[1] C24

VCCSA_SEL R292 10K-04 VCCSA_SEL0 (33)

R283 10K-04 VCCSA_SEL1 (33)

VCCIO_SEL A19 H_VCCP_SEL R76 @0-04

SVID Clock

+1.05V

R4 54.9-1-04 Close to Power

H_CPU_SVIDCLK R273 0-04 VR_SVID_CLK (30)

SVID Alert

+1.05V

R275 75-1-04 Close to CPU

H_CPU_SVIDALRT# R272 43.2-1-04 VR_SVID_ALERT# (30)

SVID Data

+1.05V

R284 130-1-04

+1.05V

R1 130-1-04 Close to Power

H_CPU_SVIDDAT R286 0-04 VR_SVID_DATA (30)

+VCC_CORE

C179 C11 C216 C10 C17 C14 C13 C214

C212 C18 C12 C187 C215 C196 C213 C217

C206 C168 C184 C183 C181 C180 C167 C169

10U-6.3-08R-K

1U-6.3-04R-K

1U-10-04X-K

C182 C178 C170 C171 C185

1N-50-04X-K

+1.5V_CPU

R419 @0-04

Q28 @FET-ME2306

+0.75VS_DDR

R420 1K-1-04

+V_SM_VREF_CNT

C295 1U-10-04X-K

R418 1K-1-04

+1.5VS

VIN_SW

R425 @220K-04

Q30 @FET-APM4826

PJP20 CLOSE_2A

R426 @0-04

C302 @10N-25-X04-K

C303 @470P-50-04X-K

(14,6) PS_S3CNTRL

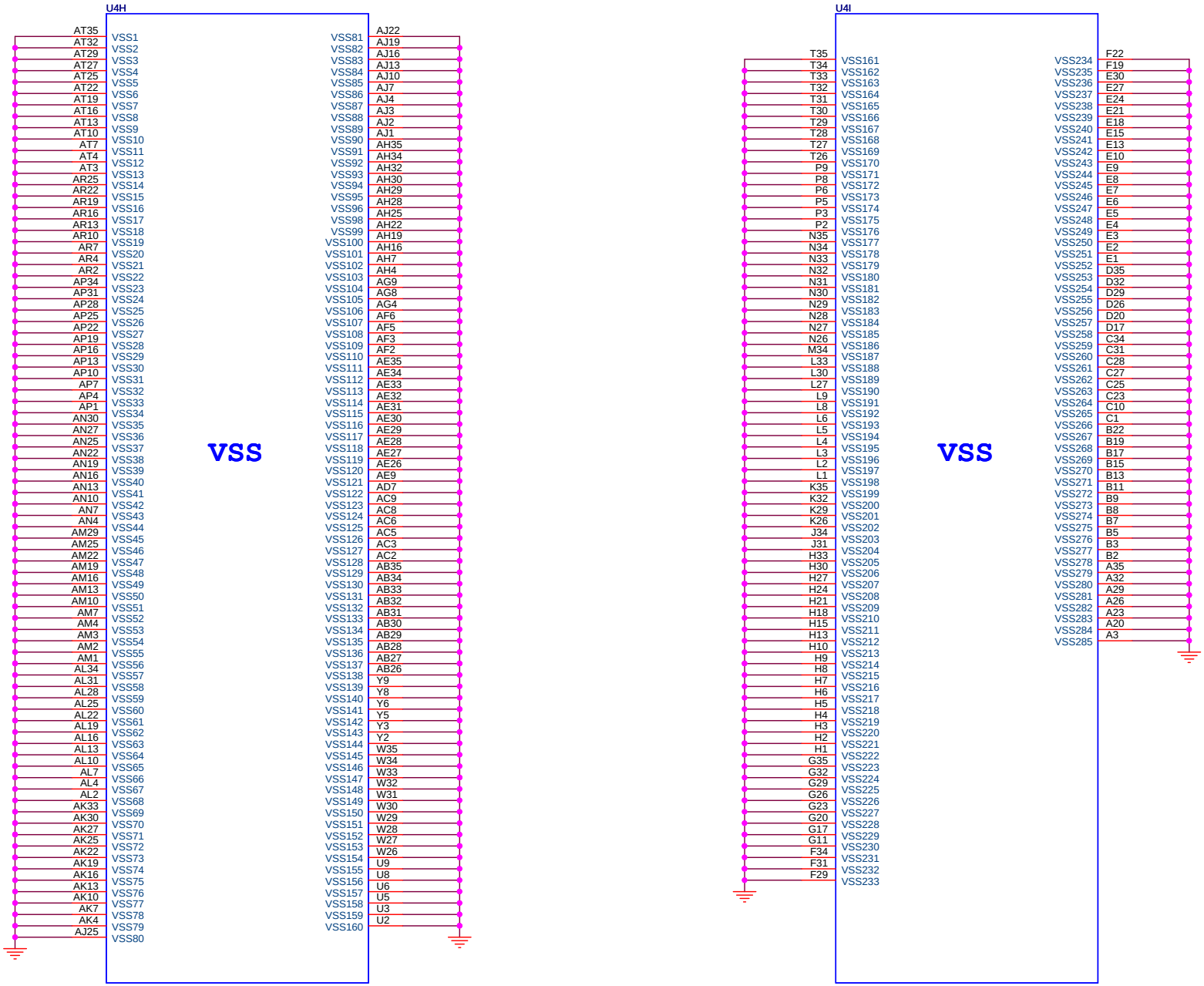
Q29 @FET-2N7002HG

+1.5V_CPU

ECS COMPUTER CORP.

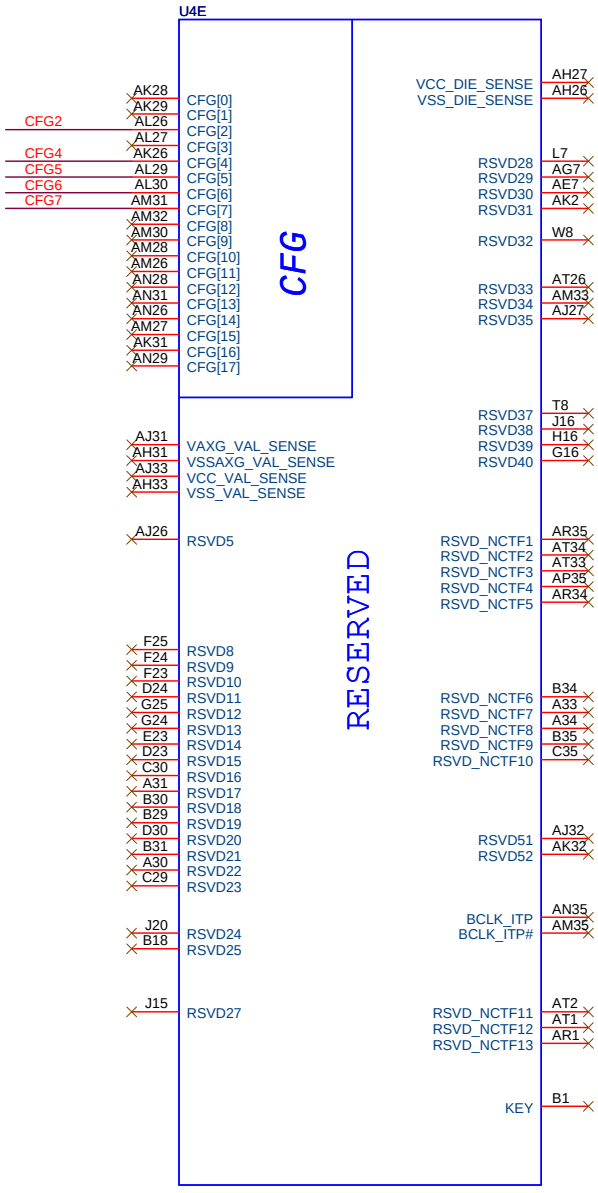
Title: Ivy Bridge_Power

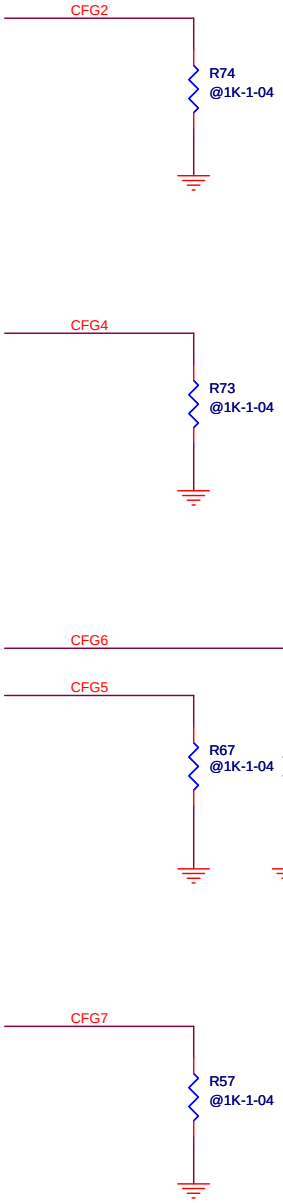
Size	Document Number	Rev
	SCHEMATIC1	01
	Custom MT50IN	
Date: Friday, June 15, 2012	Sheet 8 of 44	



ECS COMPUTER CORP.

Title	Ivy Bridge_GND	
Size	Document Number: SCHEMATIC1, Custom — MT50IN	Rev: 01
Date: Friday, June 15, 2012	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

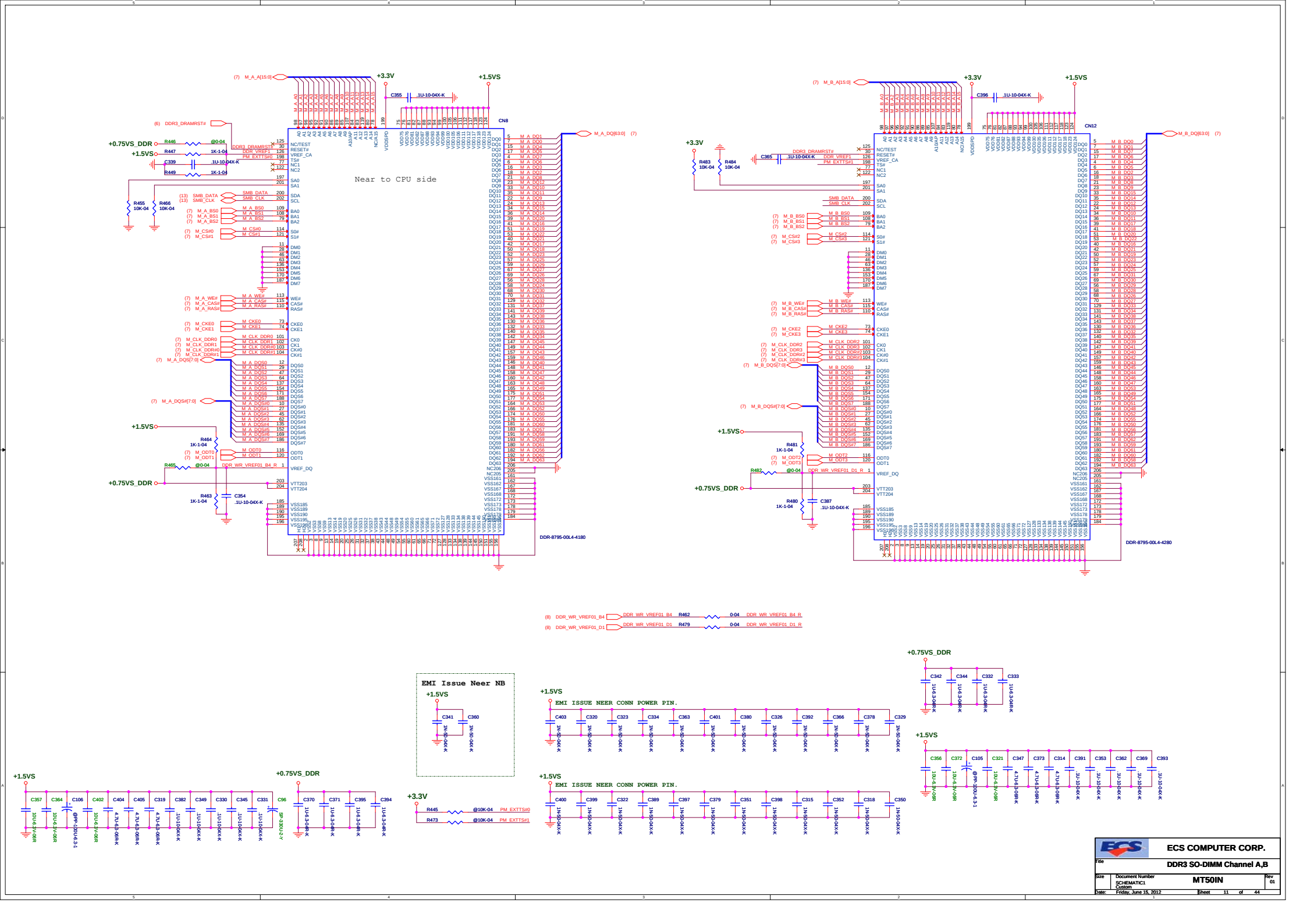
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

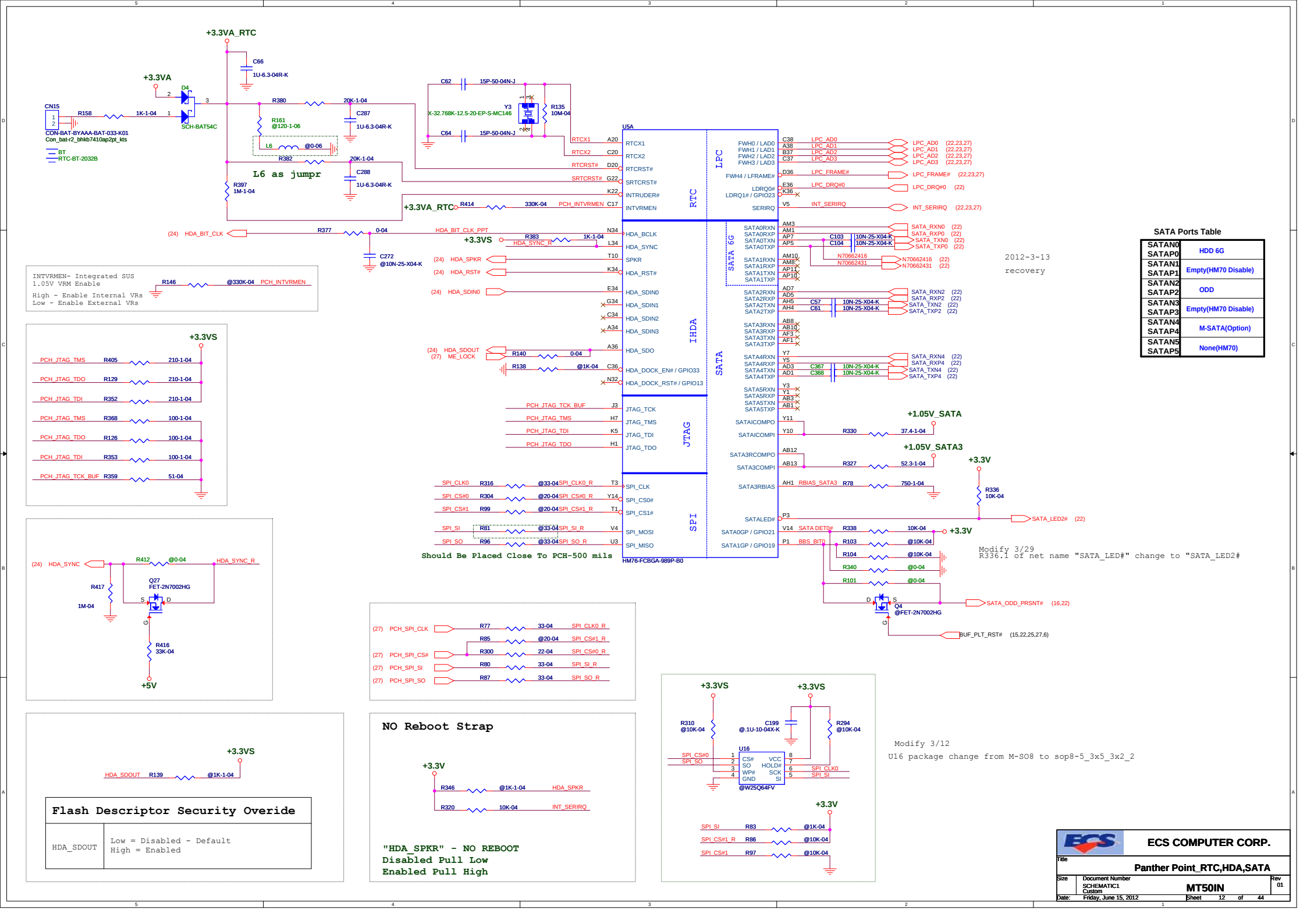
ECS COMPUTER CORP.

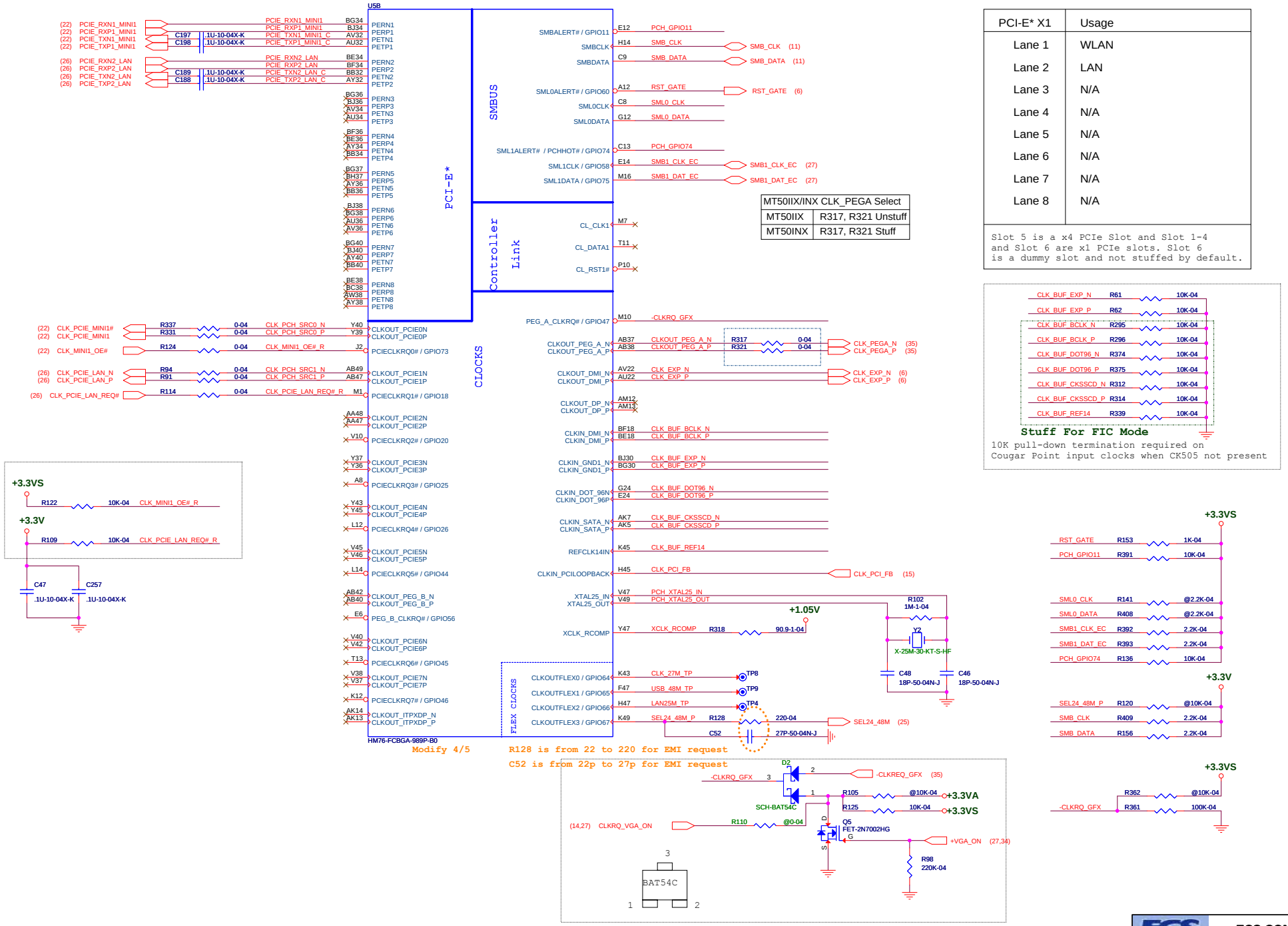
Title: Ivy Bridge_Reserved

Size | Document Number: SCHEMATIC1 Custom | MT50IN | Rev: 01

Date: Friday, June 15, 2012 | Sheet 10 of 44


Near to CPU side
CN8
CN12
DDR-8795-00L4-4180
DDR-8795-00L4-4280
EMI Issue Neer NB
EMI ISSUE NEER CONN POWER PIN.
EMI ISSUE NEER CONN POWER PIN.
ECS COMPUTER CORP.
DDR3 SO-DIMM Channel A,B
MT50IN


+3.3VA_RTC
+3.3VA
CN15
CON-BAT-BYAAA-BAT-033-K01
Con_bat-r2_bhkb7410ap2pt_kts
BT
RTC-BT-2032B
D4
SCH-BAT54C
R158
1K-1-04
C66
1U-6.3-04R-K
R380
20K-1-04
R161
@120-1-06
L6
@0-06
R382
C287
C288
R397
1M-1-04
L6 as jumpr
C62
C64
15P-50-04N-J
Y3
X-32.768K-12.5-20-EP-S-MC146
R135
10M-04
U5A
RTCX1
RTCX2
RTCRST#
SRTCRST#
INTRUDER#
INTVRMEN
RTC
R414
330K-04
PCH_INTVRMEN
INTVRMEN- Integrated SUS
1.05V VRM Enable
High - Enable Internal VRs
Low - Enable External VRs
R146
@330K-04
HDA_BIT_CLK
R377
0-04
HDA_BIT_CLK_PPT
R383
1K-1-04
HDA_SYNC_R
C272
@10N-25-X04-K
HDA_SPKR
HDA_RST#
HDA_SDIN0
HDA_SDOUT
ME_LOCK
R140
R138
@1K-04
HDA_BCLK
HDA_SYNC
SPKR
HDA_RST#
HDA_SDIN1
HDA_SDIN2
HDA_SDIN3
HDA_SDO
HDA_DOCK_EN# / GPIO33
HDA_DOCK_RST# / GPIO13
IHDA
PCH_JTAG_TCK_BUF
PCH_JTAG_TMS
PCH_JTAG_TDI
PCH_JTAG_TDO
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG
SPI_CLK0
SPI_CS#0
SPI_CS#1
SPI_SI
SPI_SO
R316
R304
R99
R81
R96
@33-04SPI_CLK0_R
@20-04SPI_CS#0_R
@20-04SPI_CS#1_R
@33-04SPI_SI_R
@33-04SPI_SO_R
SPI_CLK
SPI_CS0#
SPI_CS1#
SPI_MOSI
SPI_MISO
SPI
Should Be Placed Close To PCH-500 mils
HM76-FCBGA-989P-B0
LPC
FWH0 / LAD0
FWH1 / LAD1
FWH2 / LAD2
FWH3 / LAD3
FWH4 / LFRAME#
LDRQ0#
LDRQ1# / GPIO23
SERIRQ
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_FRAME#
LPC_DRQ#0
INT_SERIRQ
SATA 6G
SATA0RXN
SATA0RXP
SATA0TXN
SATA0TXP
SATA1RXN
SATA1RXP
SATA1TXN
SATA1TXP
SATA_RXN0
SATA_RXP0
SATA_TXN0
SATA_TXP0
C103
C104
10N-25-X04-K
N70662416
N70662431
SATA2RXN
SATA2RXP
SATA2TXN
SATA2TXP
SATA_RXN2
SATA_RXP2
SATA_TXN2
SATA_TXP2
C57
C61
SATA3RXN
SATA3RXP
SATA3TXN
SATA3TXP
SATA4RXN
SATA4RXP
SATA4TXN
SATA4TXP
SATA_RXN4
SATA_RXP4
SATA_TXN4
SATA_TXP4
C367
C368
SATA5RXN
SATA5RXP
SATA5TXN
SATA5TXP
SATA
SATAICOMPO
SATAICOMPI
SATA3RCOMPO
SATA3COMPI
SATA3RBIAS
SATALED#
SATA0GP / GPIO21
SATA1GP / GPIO19
+1.05V_SATA
+1.05V_SATA3
+3.3V
R330
37.4-1-04
R327
52.3-1-04
R78
750-1-04
R336
10K-04
SATA_LED2#
SATA DET0#
BBS_BIT0
R338
R103
R104
R340
R101
@10K-04
@0-04
SATA_ODD_PRSNT#
Q4
@FET-2N7002HG
BUF_PLT_RST#
SATA Ports Table
SATAN0 SATAP0 HDD 6G
SATAN1 SATAP1 Empty(HM70 Disable)
SATAN2 SATAP2 ODD
SATAN3 SATAP3 Empty(HM70 Disable)
SATAN4 SATAP4 M-SATA(Option)
SATAN5 SATAP5 None(HM70)
2012-3-13
recovery
Modify 3/29
R336.1 of net name "SATA_LED#" change to "SATA_LED2#
+3.3VS
PCH_JTAG_TMS R405 210-1-04
PCH_JTAG_TDO R129 210-1-04
PCH_JTAG_TDI R352 210-1-04
PCH_JTAG_TMS R368 100-1-04
PCH_JTAG_TDO R126 100-1-04
PCH_JTAG_TDI R353 100-1-04
PCH_JTAG_TCK_BUF R359 51-04
HDA_SYNC
R412
@0-04
HDA_SYNC_R
R417
1M-04
Q27
FET-2N7002HG
R416
33K-04
+5V
PCH_SPI_CLK R77 33-04 SPI_CLK0_R
PCH_SPI_CS# R85 @20-04 SPI_CS#1_R
PCH_SPI_CS# R300 22-04 SPI_CS#0_R
PCH_SPI_SI R80 33-04 SPI_SI_R
PCH_SPI_SO R87 33-04 SPI_SO_R
HDA_SDOUT R139 @1K-1-04
Flash Descriptor Security Overide
HDA_SDOUT
Low = Disabled - Default
High = Enabled
NO Reboot Strap
R346 @1K-1-04 HDA_SPKR
R320 10K-04 INT_SERIRQ
"HDA_SPKR" - NO REBOOT
Disabled Pull Low
Enabled Pull High
R310 @10K-04
C199 @.1U-10-04X-K
R294 @10K-04
U16
@W25Q64FV
SPI_CS#0
SPI_SO
SPI_CLK0
SPI_SI
R83 @1K-04
R86 @10K-04
R97 @10K-04
Modify 3/12
U16 package change from M-SO8 to sop8-5_3x5_3x2_2
ECS COMPUTER CORP.
Panther Point_RTC,HDA,SATA
MT50IN
Rev 01
Date: Friday, June 15, 2012
Sheet 12 of 44



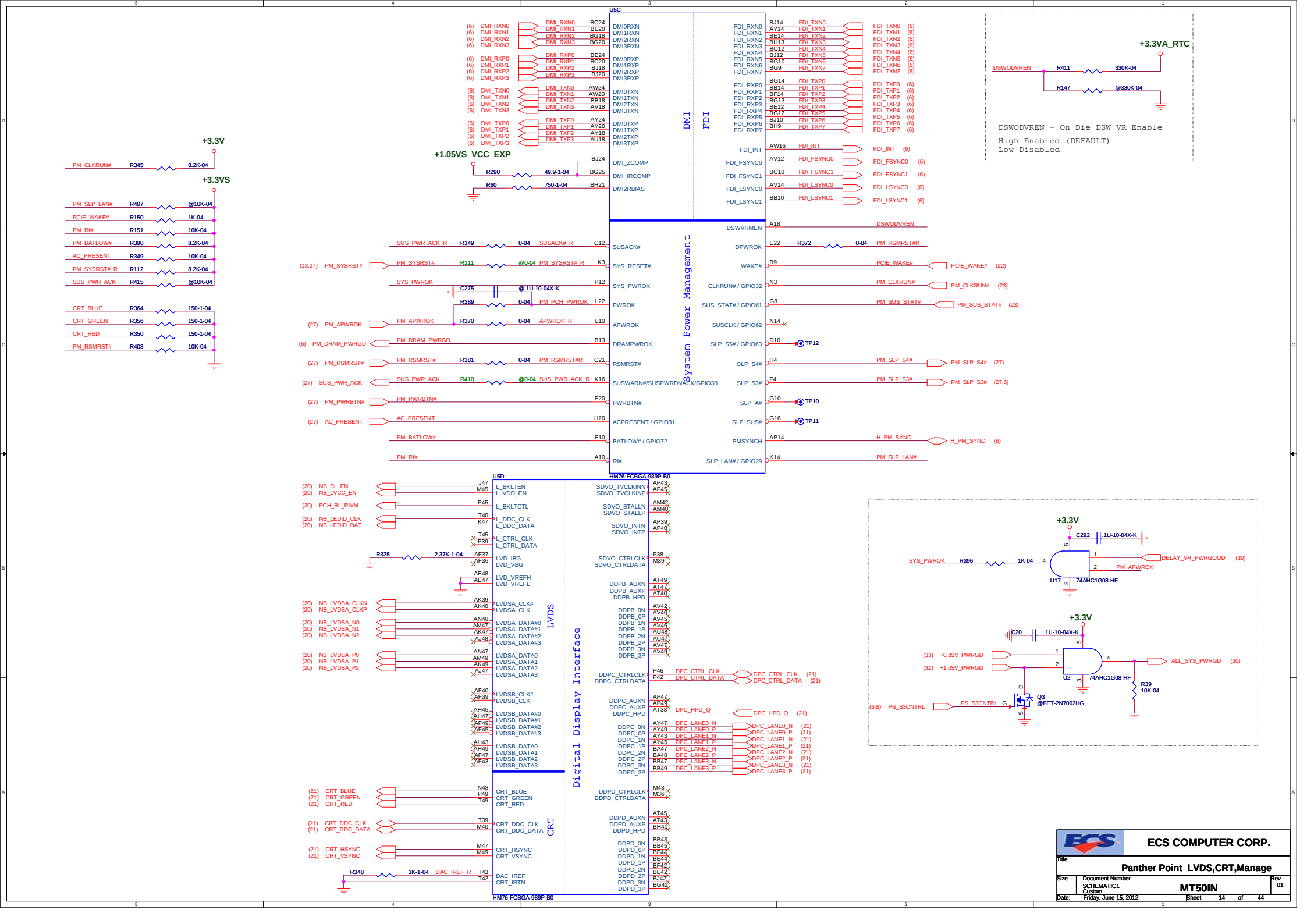
MT50IIX/INX CLK_PEGA Select	
MT50IIX	R317, R321 Unstuff
MT50INX	R317, R321 Stuff

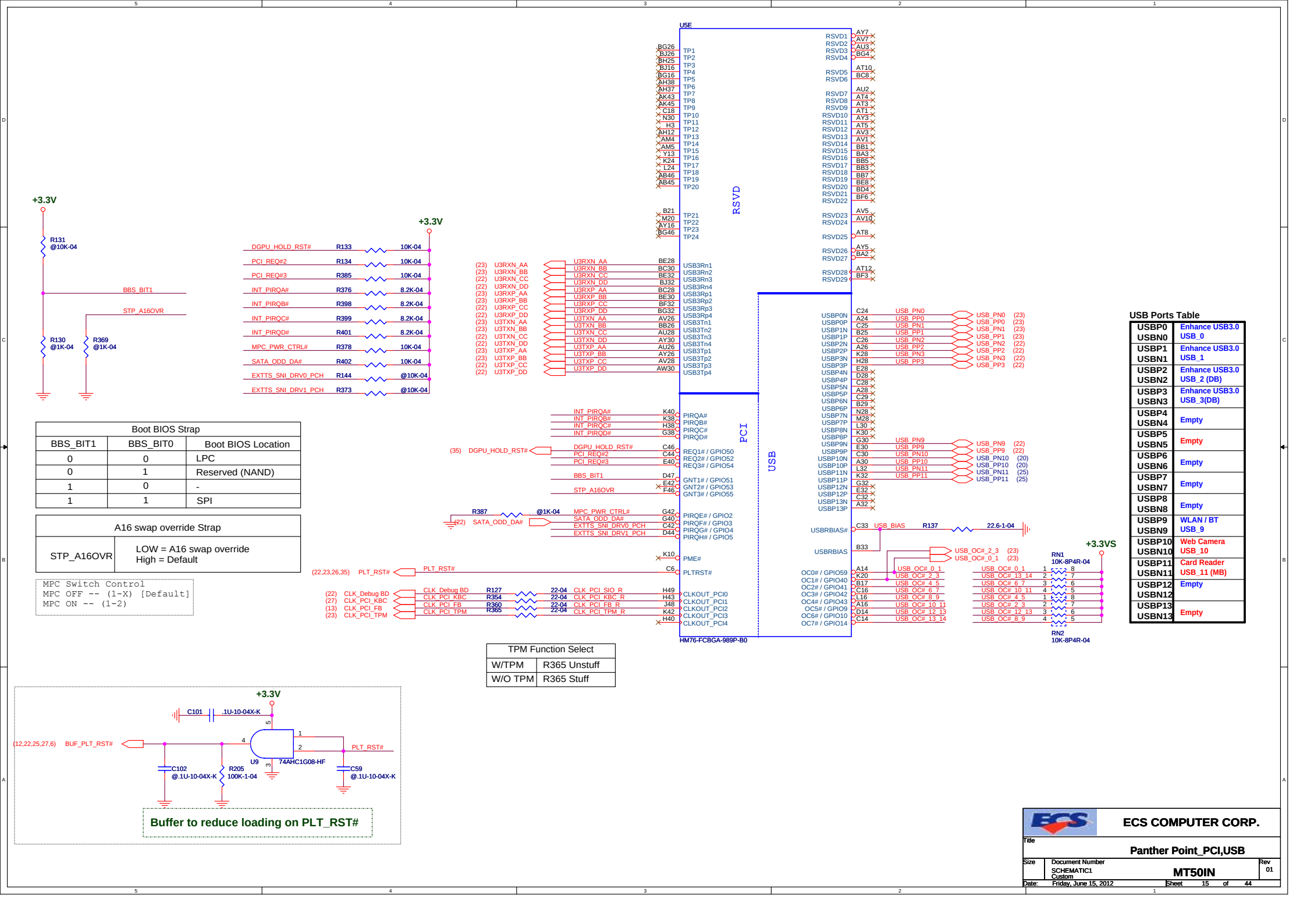
PCI-E* X1	Usage
Lane 1	WLAN
Lane 2	LAN
Lane 3	N/A
Lane 4	N/A
Lane 5	N/A
Lane 6	N/A
Lane 7	N/A
Lane 8	N/A

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.

Title	Panther Point_PCIE,CLK,SMBus
Size	Document Number: SCHEMATIC1, Custom; MT50IN; Rev: 01
Date:	Friday, June 15, 2012
Sheet	13 of 44

ECS COMPUTER CORP.


U5C
DMI
FDI
System Power Management
Digital Display Interface
LVDS
CRT
U5D
HM76-FCBGA-989P-B0
+3.3V
+3.3VS
+1.05VS_VCC_EXP
+3.3VA_RTC
DSWODVREN - On Die DSW VR Enable
High Enabled (DEFAULT)
Low Disabled
ECS COMPUTER CORP.
Panther Point_LVDS,CRT,Manage
MT50IN
Rev 01
Date: Friday, June 15, 2012
Sheet 14 of 44



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

TPM Function Select	
W/TPM	R365 Unstuff
W/O TPM	R365 Stuff

USB Ports Table

USBP0 USBN0	Enhance USB3.0 USB_0
USBP1 USBN1	Enhance USB3.0 USB_1
USBP2 USBN2	Enhance USB3.0 USB_2 (DB)
USBP3 USBN3	Enhance USB3.0 USB_3(DB)
USBP4 USBN4	Empty
USBP5 USBN5	Empty
USBP6 USBN6	Empty
USBP7 USBN7	Empty
USBP8 USBN8	Empty
USBP9 USBN9	WLAN / BT USB_9
USBP10 USBN10	Web Camera USB_10
USBP11 USBN11	Card Reader USB_11 (MB)
USBP12 USBN12	Empty
USBP13 USBN13	Empty

ECS COMPUTER CORP.

Title: Panther Point_PCI,USB

Size	Document Number	Rev
	SCHEMATIC1 Custom MT50IN	01

Date: Friday, June 15, 2012 Sheet 15 of 44

(12,22) SATA_ODD_PRSNT# — R329 0-04 — PCH_GPIO36

+3.3V — R344 10K-04 — S_GPIO — R342 @0-04

SGPIO
High - Default

+3.3V — R107 10K-04 — MFG_MODE

+3.3VS — R152 @10K-04 — TEST_DET — R145 100K-1-04

+3.3V — R333 10K-04 — TEST_SET_UP — R334 @0-04

+3.3V — R106 10K-04 — GFX_CRB_DET — R108 @100K-1-04

Internal GFX	External GFX
Pull Down	Pull Up

+3.3V — R322 10K-04 — BIOS_REC — R335 @0-04

BIOS Recovery

High - Disable
Low - Enable

+3.3VS — R413 10K-04 — COLOR_ENGINE_EN — R406 @10K-04

U5F

S_GPIO R343 100-1-04 — T7 BMBUSY# / GPIO0
(27) SMC_RUNTIME_SCI# — A42 TACH1 / GPIO1
PCH_TACH2 — H36 TACH2 / GPIO6
PCH_TACH3 — E38 TACH3 / GPIO7
(20) COLOR_ENGINE_EN — C10 GPIO8
PCH_GPIO12 — C4 LAN_PHY_PWR_CTRL / GPIO12
HOST_ALERT#1 — G2 GPIO15
SATA_DET#4 — U2 SATA4GP / GPIO16
PCH_TACH0 — D40 TACH0 / GPIO17
BIOS_REC — T5 SCLOCK / GPIO22
HOST_ALERT#2 — E8 GPIO24
PCH_GPIO27 — E16 GPIO27
PLL_ODVR_EN — P8 GPIO28
GPIO34 — K1 STP_PCI# / GPIO34
PLTRST#_PCH — K4 GPIO35
PCH_GPIO36 — V8 SATA2GP / GPIO36
FDI_OVRVLTG — M5 SATA3GP / GPIO37
MFG_MODE — N2 SLOAD / GPIO38
GFX_CRB_DET — M3 SDATAOUT0 / GPIO39
TEST_SET_UP — V13 SDATAOUT1 / GPIO48
PCH_GPIO49 — V3 SATA5GP / GPIO49 / TEMP_ALERT#
TEST_DET — D6 GPIO57

GPIO

C40 TACH4 / GPIO68 — R157 0-04 — SATA_ODD_PWRGT (22)
B41 TACH5 / GPIO69 — R155 10K-04 — +3.3V
C41 TACH6 / GPIO70 — R142 @1.5K-1-04
A40 TACH7 / GPIO71 — R143 100K-04 — +3.3V
R148 100K-04

CPU/MISC

P4 A20GATE — H_A20GATE — H_A20GATE (27)
AU16 PECI — H_PECI_R R293 @0-04 — H_PECI (27,6)
P5 RCIN# — H_RCIN# — H_RCIN# (27)
AY11 PROCPWRGD — H_CPUPWRGD — H_CPUPWRGD (6)
AY10 THRMTRIP# — PCH_THRMTRIP#_R R301 390-04 — H_THERMTRIP# (6)
R297 1K-1-04 — +1.05V
T14 INIT3_3V#
AY1 DF_TVS — NV_CLE

AH8 TS_VSS1
AK11 TS_VSS2
AH10 TS_VSS3
AK10 TS_VSS4
P37 NC_1

NCTF

A4 VSS_NCTF_1
A44 VSS_NCTF_2
A45 VSS_NCTF_3
A46 VSS_NCTF_4
A5 VSS_NCTF_5
A6 VSS_NCTF_6
B3 VSS_NCTF_7
B47 VSS_NCTF_8
BD1 VSS_NCTF_9
BD49 VSS_NCTF_10
BE1 VSS_NCTF_11
BE49 VSS_NCTF_12
BF1 VSS_NCTF_13
BF49 VSS_NCTF_14

BG2 VSS_NCTF_15
BG48 VSS_NCTF_16
BH3 VSS_NCTF_17
BH47 VSS_NCTF_18
BJ4 VSS_NCTF_19
BJ44 VSS_NCTF_20
BJ45 VSS_NCTF_21
BJ46 VSS_NCTF_22
BJ5 VSS_NCTF_23
BJ6 VSS_NCTF_24
C2 VSS_NCTF_25
C48 VSS_NCTF_26
D1 VSS_NCTF_27
D49 VSS_NCTF_28
E1 VSS_NCTF_29
E49 VSS_NCTF_30
F1 VSS_NCTF_31
F49 VSS_NCTF_32

HM76-FCBGA-989P-B0

+3.3V — FDI_OVRVLTG R357 @1K-1-04 — R358 100K-04

+3.3V
PCH_TACH2 R371 10K-04
PCH_TACH3 R400 10K-04
H_RCIN# R355 10K-04
H_A20GATE R347 10K-04
SATA_DET#4 R100 10K-04
PCH_GPIO49 R88 10K-04
HOST_ALERT#2 R388 100K-04
PCH_TACH0 R384 10K-04
PCH_GPIO27 R394 @10K-04
GPIO34 R117 10K-04
PLTRST#_PCH R115 10K-04
PCH_GPIO49 R89 @10K-04

+3.3VS
HOST_ALERT#2 R404 @10K-04
HOST_ALERT#1 R132 1K-1-04
PCH_GPIO12 R154 10K-04

Modify 3/13
+1.05V change to +1.8V

+1.8V — R291 2.2K-04 — NV_CLE R303 1K-04 — H_SNB_IVB# (6)

DMI & FDI Termination Voltage	
NV_CLE	Set to Vss when Low Set to Vcc when High

PLL ON DIE VR Enable
Enable - High [Default]
Disable - Low

PLL_ODVR_EN R351 @1K-1-04

+3.3V — PCH_GPIO36 R326 200K-1-04

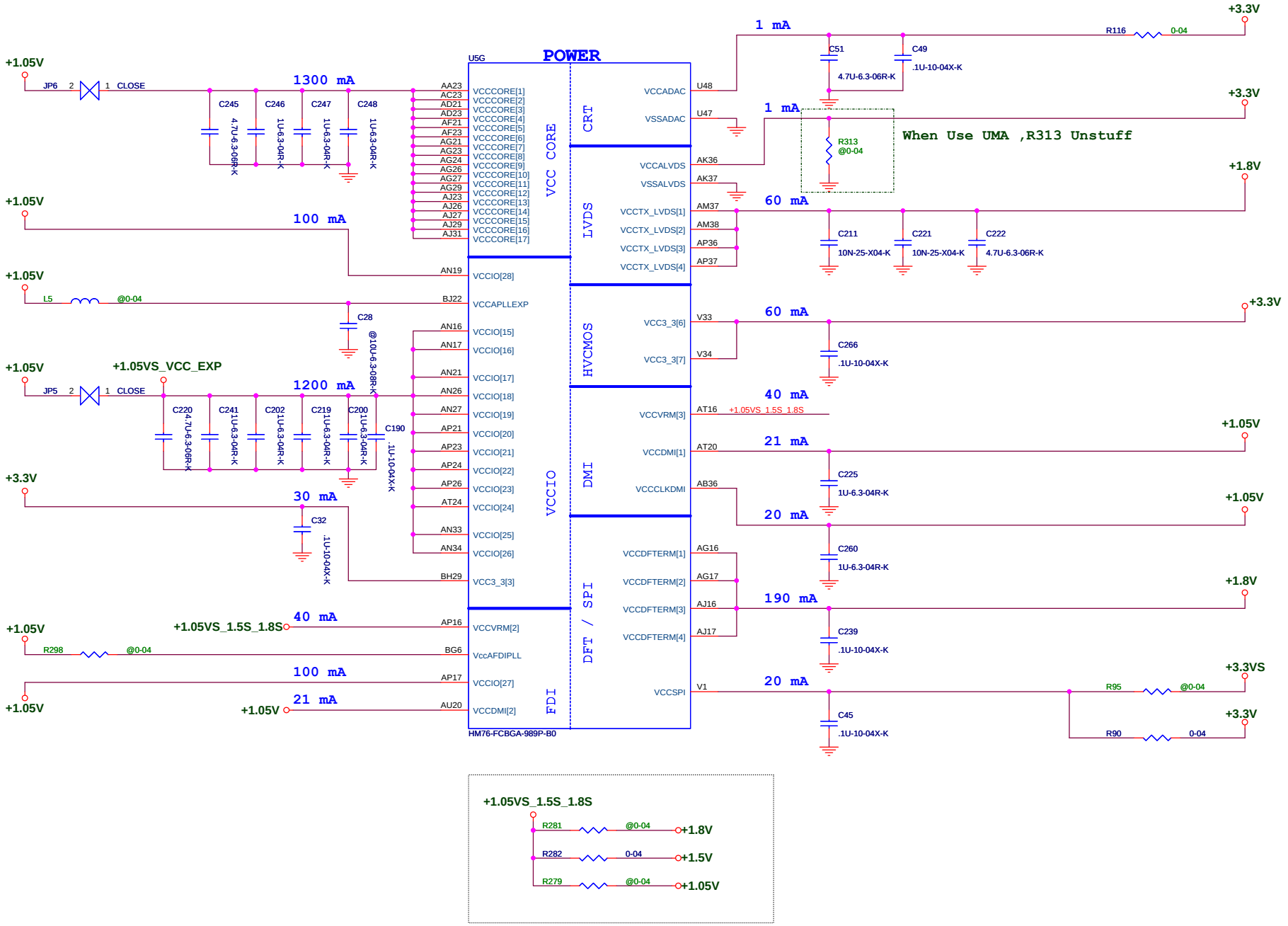
FDI TERMINATION VOLTAGE OVERRIDE		DMI TERMINATION VOLTAGE OVERRIDE	
GPIO37 (FDI_OVRVLTG)	LOW - Tx, Rx terminated to same voltage (DC Coupling Mode) DEFAULT	GPIO36 (SATA_ODD_PRSNT#)	LOW - Tx, Rx terminated to same voltage (DC Coupling Mode) DEFAULT

ECS COMPUTER CORP.

Title: Panther Point_GPIO,MISC

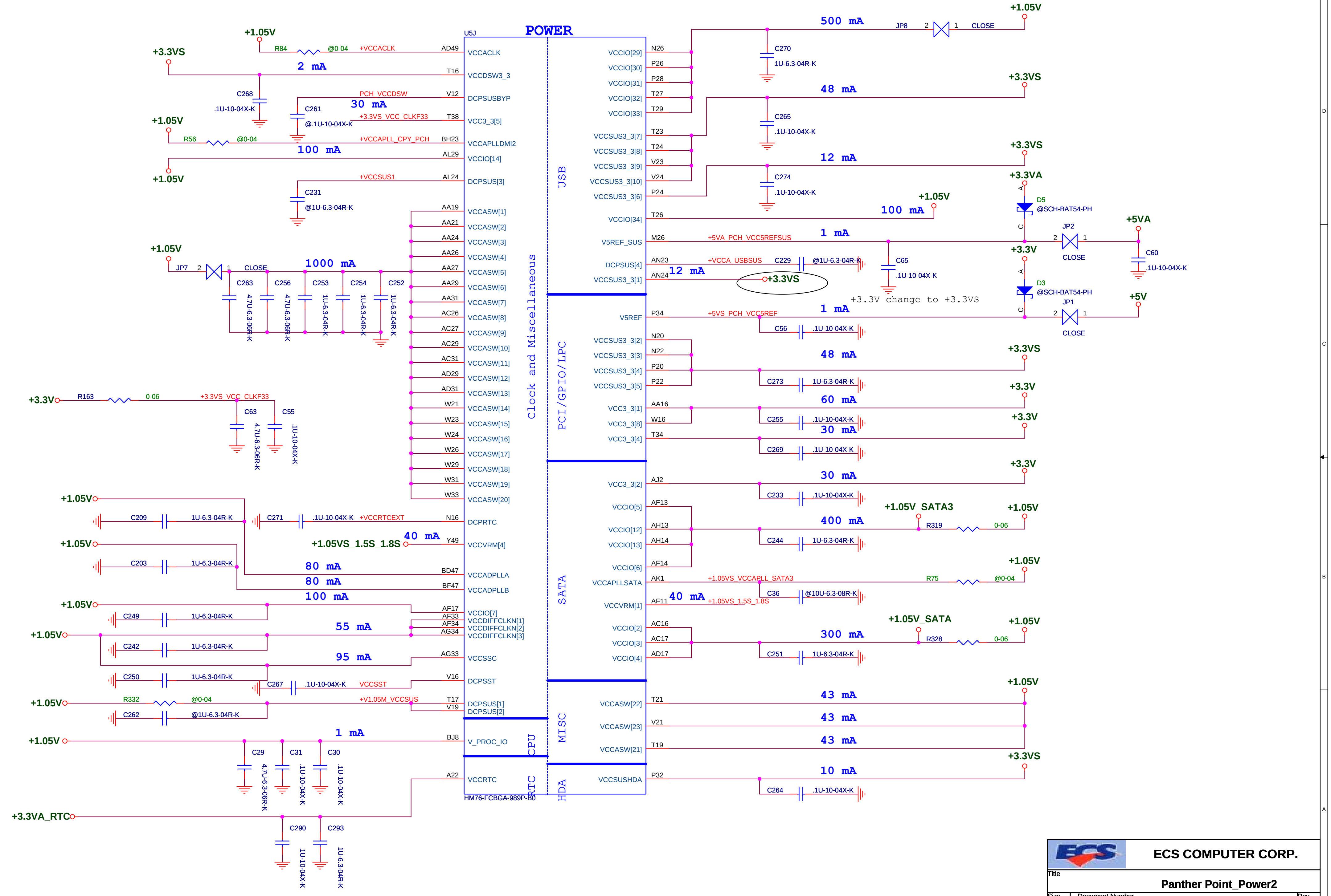
Size	Document Number	Rev
	SCHEMATIC1 Custom MT50IN	01

Date: Friday, June 15, 2012 Sheet 16 of 44



Title	Panther Point_Power1
Size	Document Number: SCHEMATIC1, Custom; MT50IN; Rev: 01
Date:	Friday, June 15, 2012
Sheet	17 of 44

ECS COMPUTER CORP.

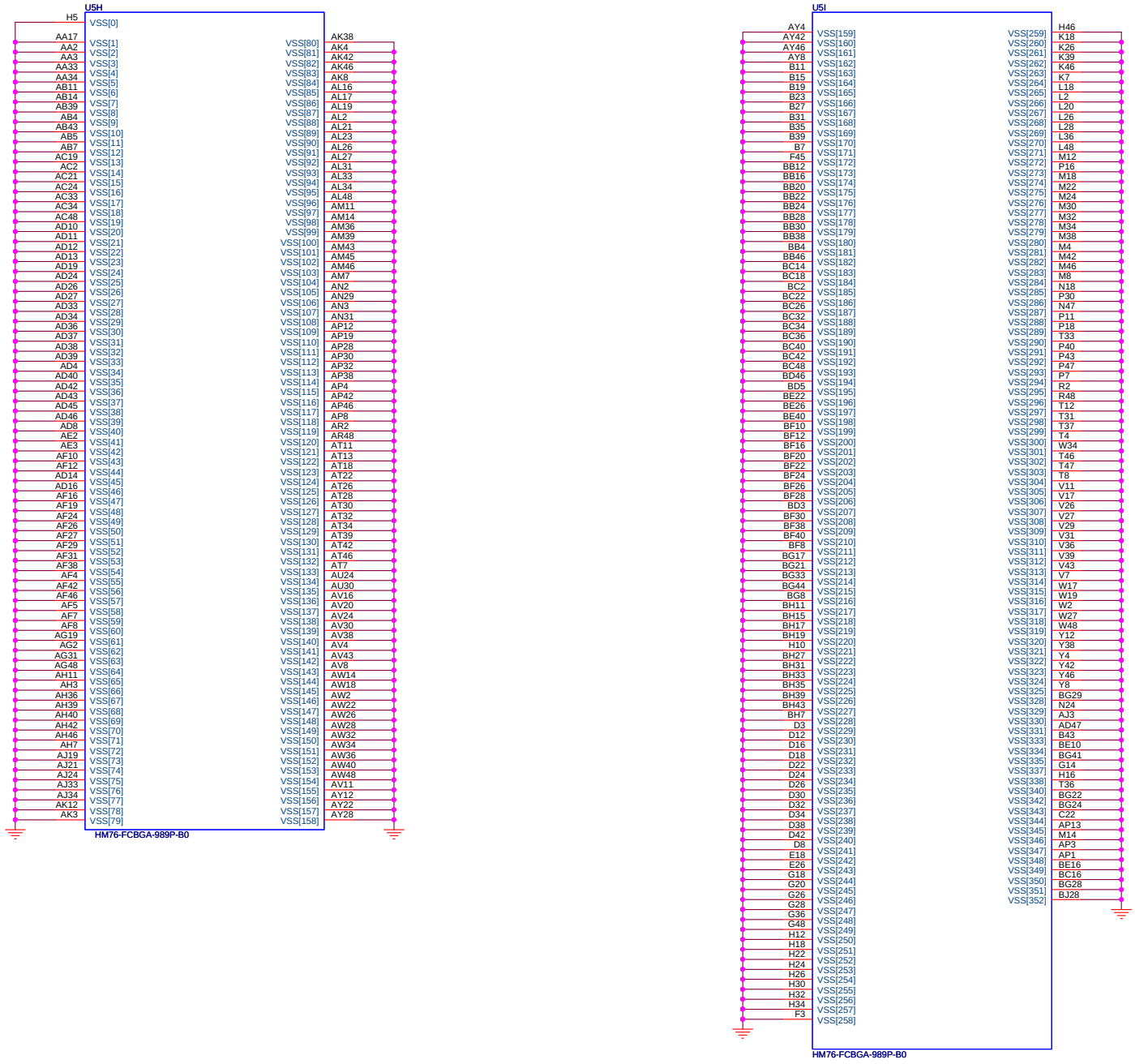


ECS COMPUTER CORP.

Title: Panther Point_Power2

Size	Document Number	Rev
Custom	SCHEMATIC1 MT50IN	01

Date: Friday, June 15, 2012 Sheet 18 of 44



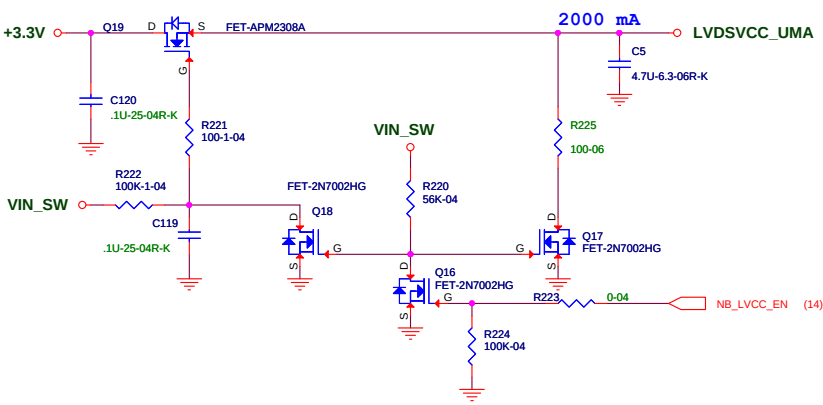
ECS COMPUTER CORP.

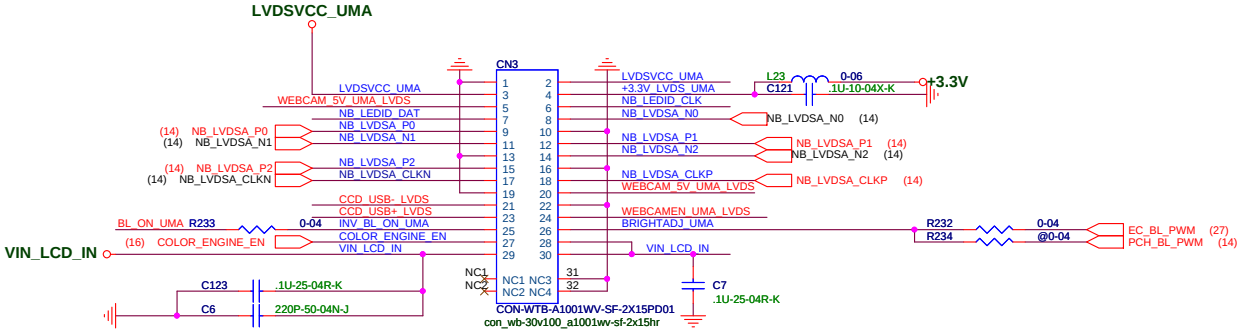
Title: Panther Point_GND

Size	Document Number	Rev
	SCHEMATIC1 Custom MT50IN	01

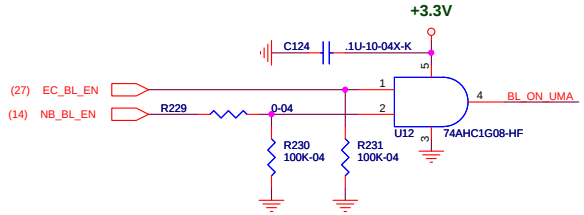
Date: Friday, June 15, 2012 Sheet 19 of 44

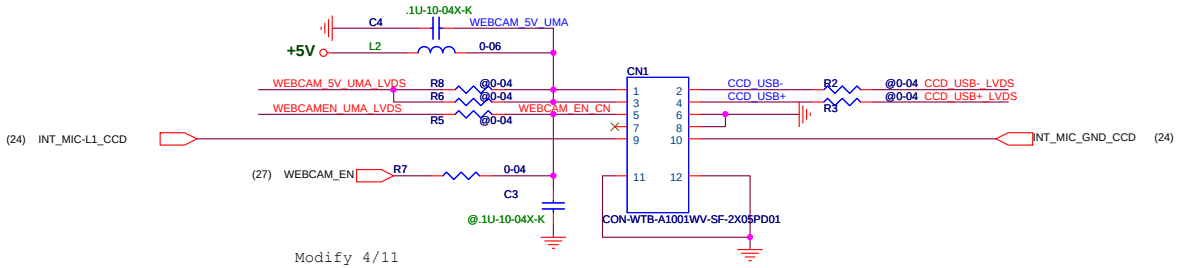
LVDS Connector(Optional Webcam)





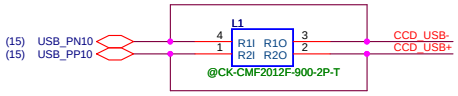
MIC + Webcam Connector



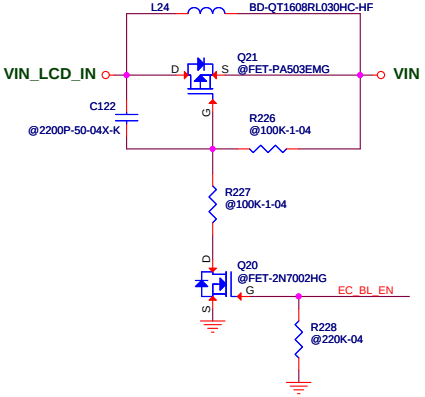


Modify 4/11

CN1 footprint is from con_wb-10v100_jh3-2232-103n_fcn to con_wb-10v100_a1001wv-sf-2x_hr for ME request



For LCD Timing Solution



ECS COMPUTER CORP.		
Title	LVDS/Webcam	
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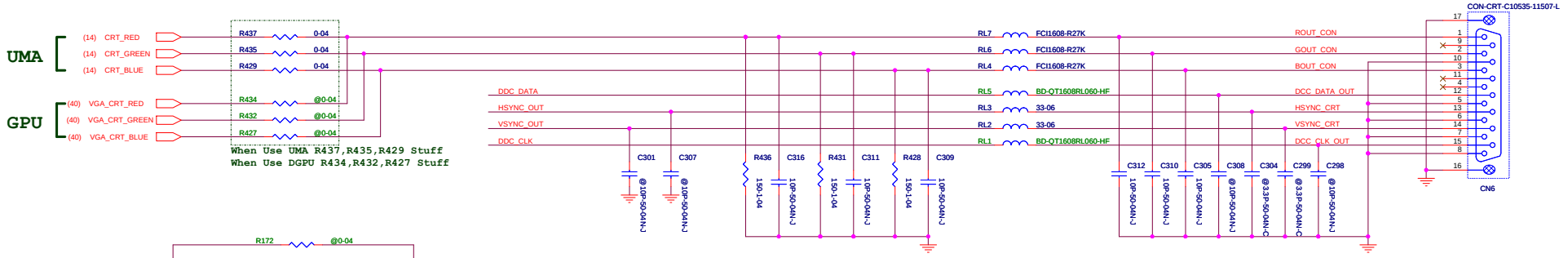
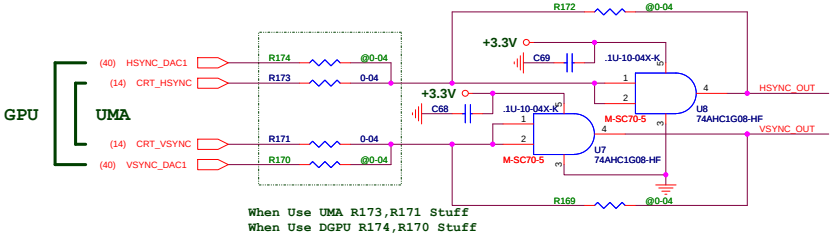
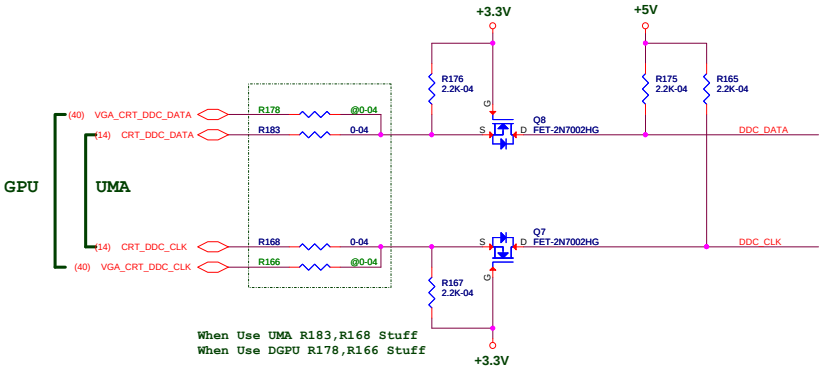
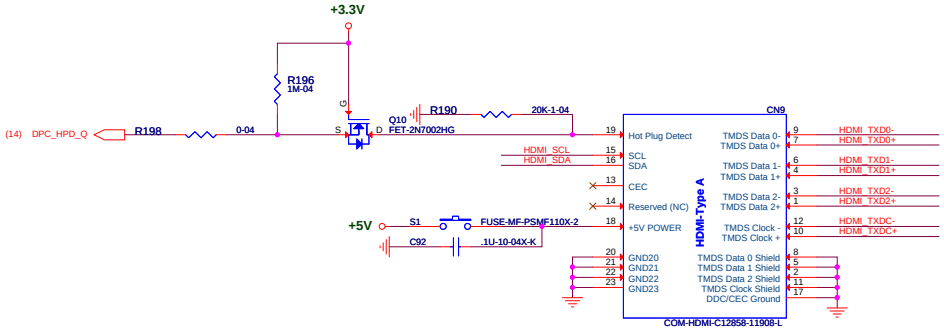
CRT Connector



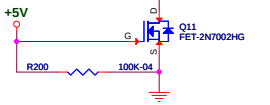




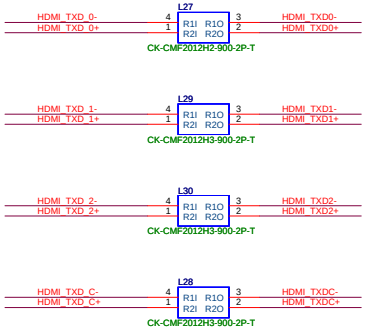
HDMI Connector



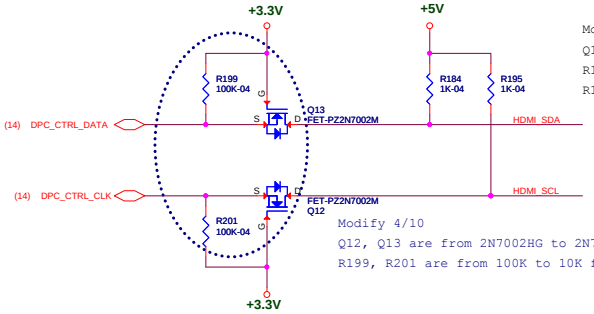
Modify 6/15
Q13, Q12 are from 2N7002K to PZ2N7002M
R184, R195 are from 2.2K to 1K
R199, R201 are from 10K to 100K



EMI Issue



Modify 4/11
L27,L29,L30,L28 footprint is from ATCM3216 to CHOKE-4P_2X1_2X1_2



Modify 4/10
Q12, Q13 are from 2N7002HG to 2N7002K for CEC issue.
R199, R201 are from 100K to 10K for DDC rising time issue

Modify 4/10
Cancel the connection with together, mount up L27, L29, L30, L28 for EMI request
L27, L29, L30, L28 are from NC to CMF2012H3-900-2P-T
Modify 4/10
L27,L29,L30,L28 are from CM2012H3-900-2P-T to CMF2012H2-900-2P-T

ECS COMPUTER CORP.		
Title	CRT/HDMI	
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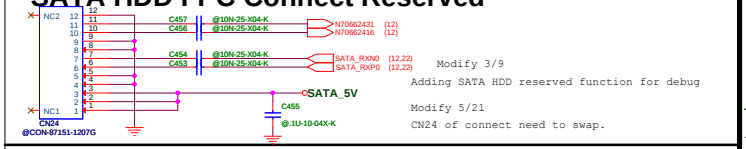
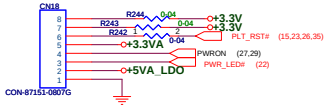
SATA HDD FPC Connect Reserved



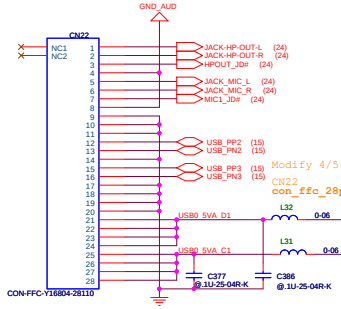
Modify 3/9
Adding SATA HDD reserved function for debug

Modify 5/21
CN24 of connect need to swap.

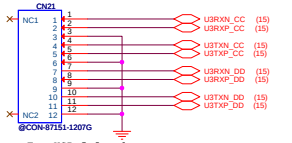
SW Board Connector



I/O Board Connector



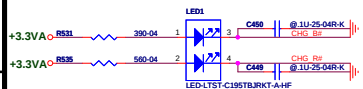
Modify 4/5
CN22
con_ffc_28p_ff1-01210-286n_fcn to con_ffc_28s05_y16804-28110_hr

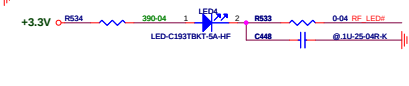


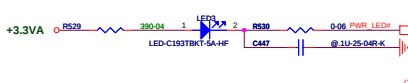
For USB 3.0 only

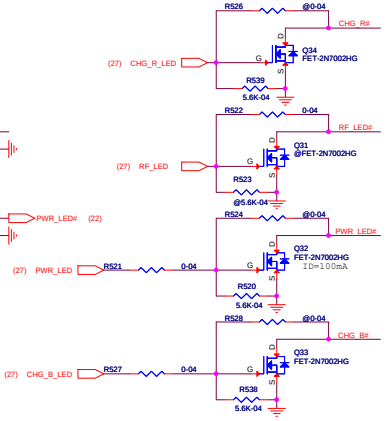
Modify 4/2
Disable CN21 for USB3.0 function

Main Board LED



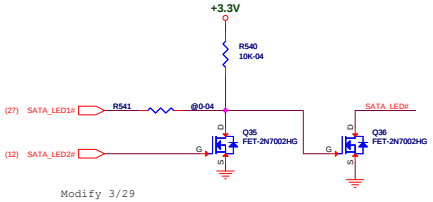






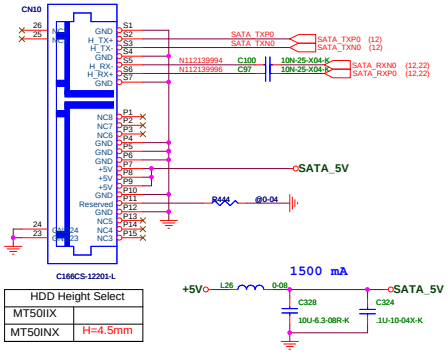
MT50IIX/ MT50INX	LED Select Table
CHG_LED	Blue & Red
LED503	03B105-195093
SATA_LED	Blue
LED501	03B105-193052
RF_LED	Blue
LED500	03B105-193052
PWR_LED	Blue
LED502	03B105-193052

Modify 4/12
Disable AOAC function, delete R541



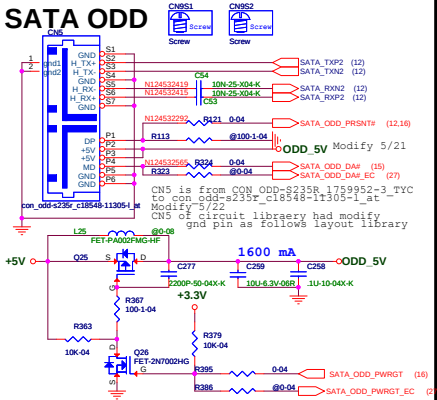
Modify 3/29
When system on AOAC mode the HDD LED will be turn on (Turn off by EC Pin 17 control).
Adding Q36, R540, R541

SATA HDD



HDD Height Select	
MT50IIX	
MT50INX	H=4.5mm

SATA ODD

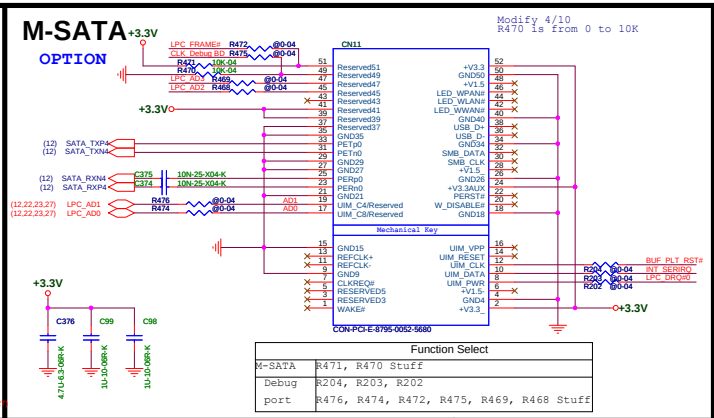


CN5 is from CON_ODD-S235R_1759952-3_TYC
to con_odd-s235r_c18548-11305-1_at
Modify 5/22
CN5 of circuit libraery had modify
gnd pin as follows layout library

Modify 5/21

M-SATA

OPTION

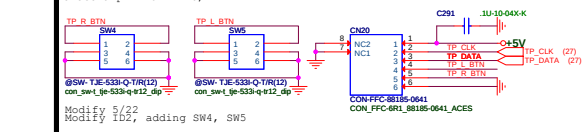


Modify 4/10
R470 is from 0 to 10K

Function Select	
M-SATA	R471, R470 Stuff
Debug port	R204, R203, R202 R476, R474, R472, R475, R469, R468 Stuff

Touch Pad Connector

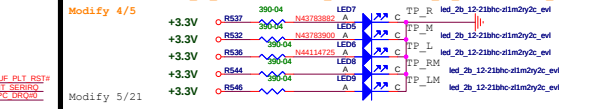
Modify 4/6
Adding a pin for LED6,LED7
Modify 4/11
Delete a pin for LED6,LED7



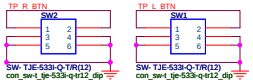
Modify 5/22
Modify ID2, adding SW4, SW5

LED6, LED7 are led_2b_ltst-c193tbkt-5a_lon from to led_2b_list-s320tbkt_lon

Modify 4/5

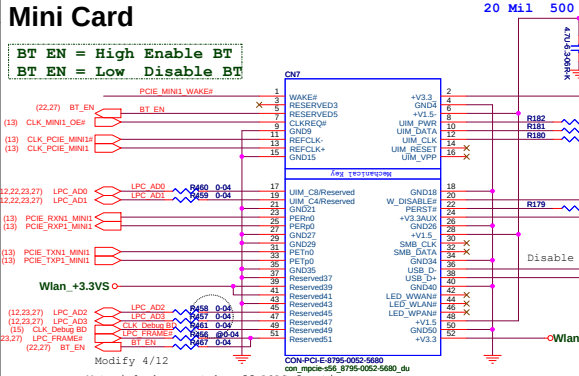


Modify 5/21
1. LED7, LED5, LED6 are footprint from led_2w_ltw-020zdcg-e2_lon
to led_2b_12-21bhc-zl1m2ry2c_ev1
2. Adding LED8, LED9, R544, R546

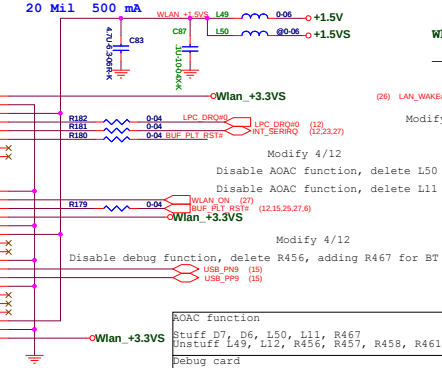


Mini Card

BT EN = High Enable BT
BT EN = Low Disable BT



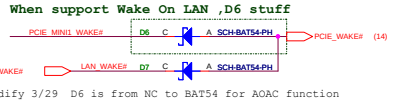
Modify 4/12
Material change, take off AOAC function
Disable AOAC function, Stuff L49, L12, R456, R457, R458, R461, Unstuff D6, L50, L11, R467



Modify 4/12
Disable AOAC function, delete L50 mount up L49
Disable AOAC function, delete L11 mount up L12

Modify 4/12
Disable debug function, delete R456, adding R467 for BT enable function

AOAC function	
Stuff D7, D6, L50, L11, R467 Unstuff L49, L12, R456, R457, R458, R461	
Debug card	
Stuff D7, L49, L12, R456, R457, R458, R461 Unstuff D6, L50, L11, R467	Default



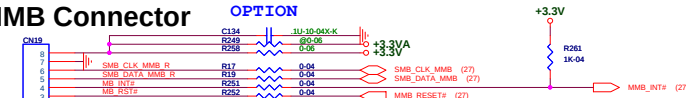
Modify 3/29 D6 is from NC to BAT54 for AOAC function

Close to Mini Card Connector

Modify 3/29 L11 is from NC to 0 for AOAC function
L12 is NC

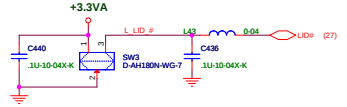
MMB Connector

OPTION



MMB Function Select	
MT50INX/MT50IIX	If used the MMB area part stuff

LID SW(Hall Sensor)



ECS COMPUTER CORP.
Title: Mini Card/LED/LID/MMB/TP/HDD/ODD/IO Conn
Size: Custom
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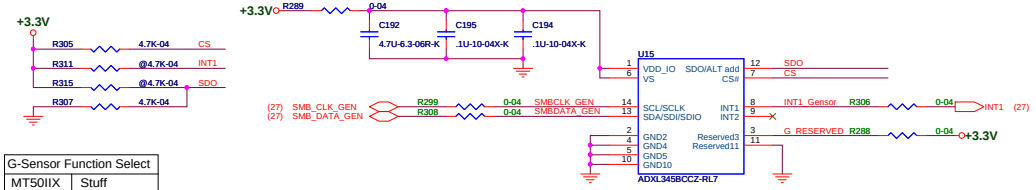
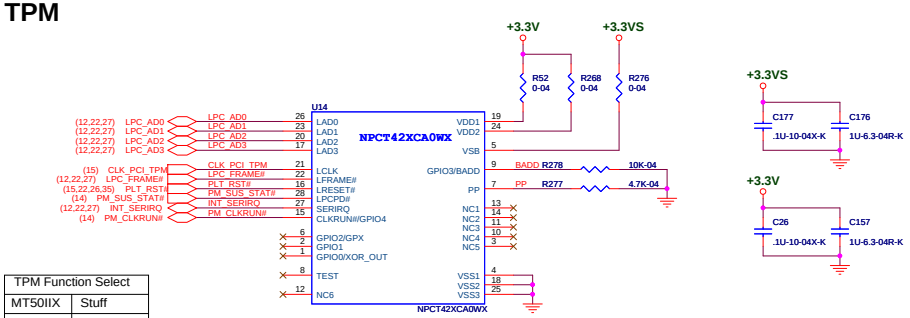
G-Sensor



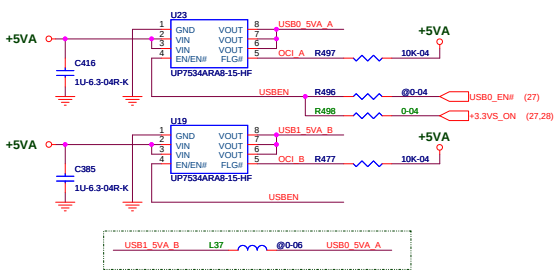
G-Sensor Function Select	
MT50IIX	Stuff
MT50INX	Stuff

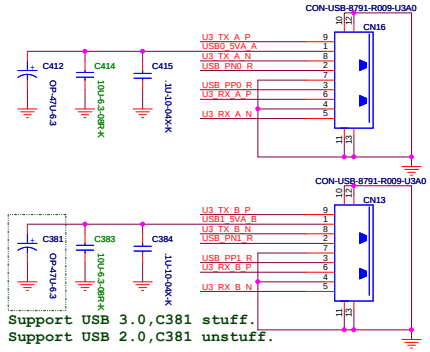
TPM



TPM Function Select	
MT50IIX	Stuff
MT50INX	Stuff

USB 3.0 (MB Side)

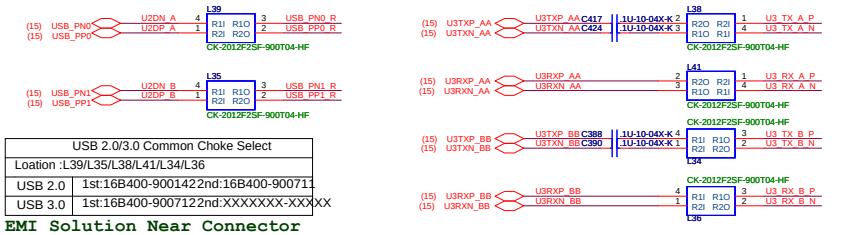




Support USB 3.0,C381 stuff.
Support USB 2.0,C381 unstuff.

EMI Issue

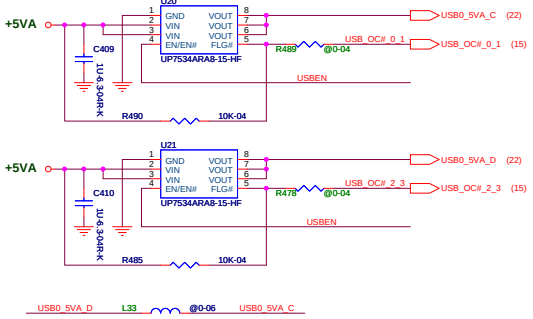
PCH USB 2.0 Port 0 & Port 1 PCH USB 3.0 Port A & Port B



USB 2.0/3.0 Common Choke Select	
Loation :L39/L35/L38/L41/L34/L36	
USB 2.0	1st:16B400-9001422nd:16B400-900711
USB 3.0	1st:16B400-9007122nd:XXXXXXX-XXXXX

EMI Solution Near Connector

USB 3.0 (DB Side)



ECS COMPUTER CORP.

Title	USB 3.0 /G-SENSOR/TPM	
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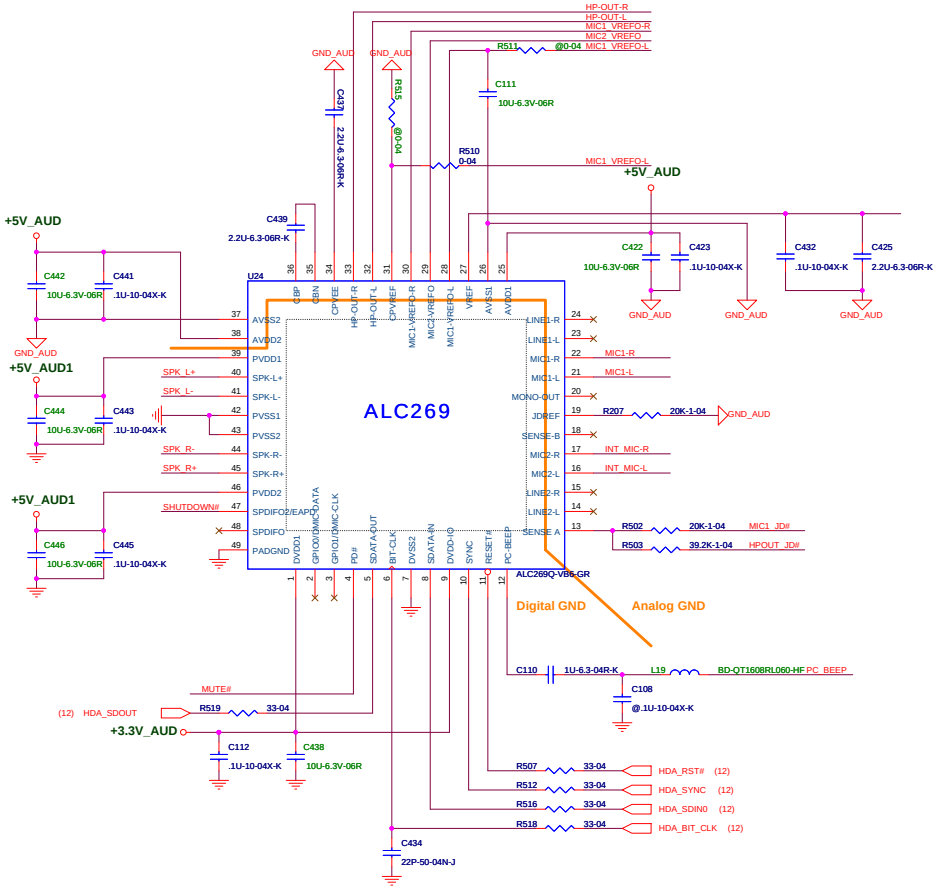
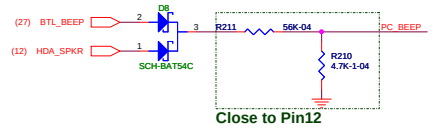
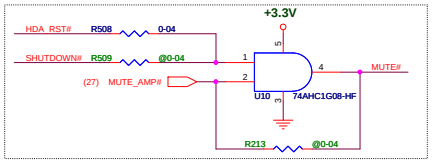
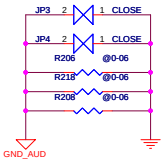
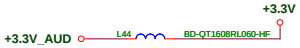


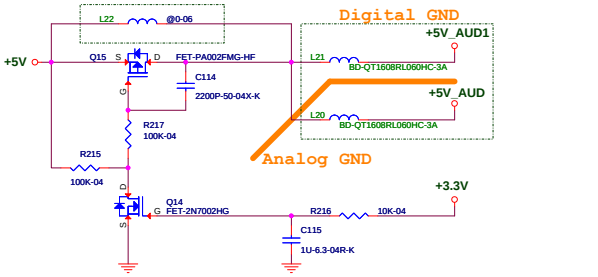






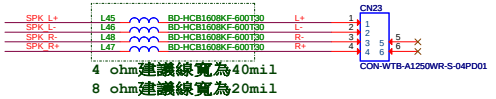


AMP VDD

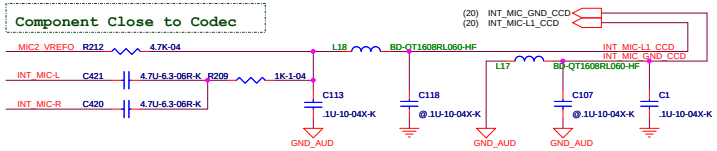


Subwoofer

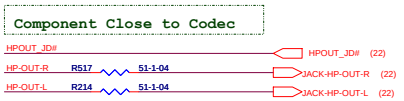
Speaker Connector



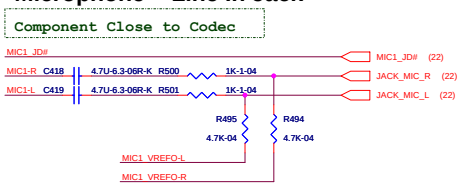
Internal MIC Connector



Headphone Jack



Microphone + Line In Jack



ECS COMPUTER CORP.		
Title: Audio Codec (ALC269)		
Size	Document Number: SCHEMATIC1 Custom — MT50IN	Rev: 01
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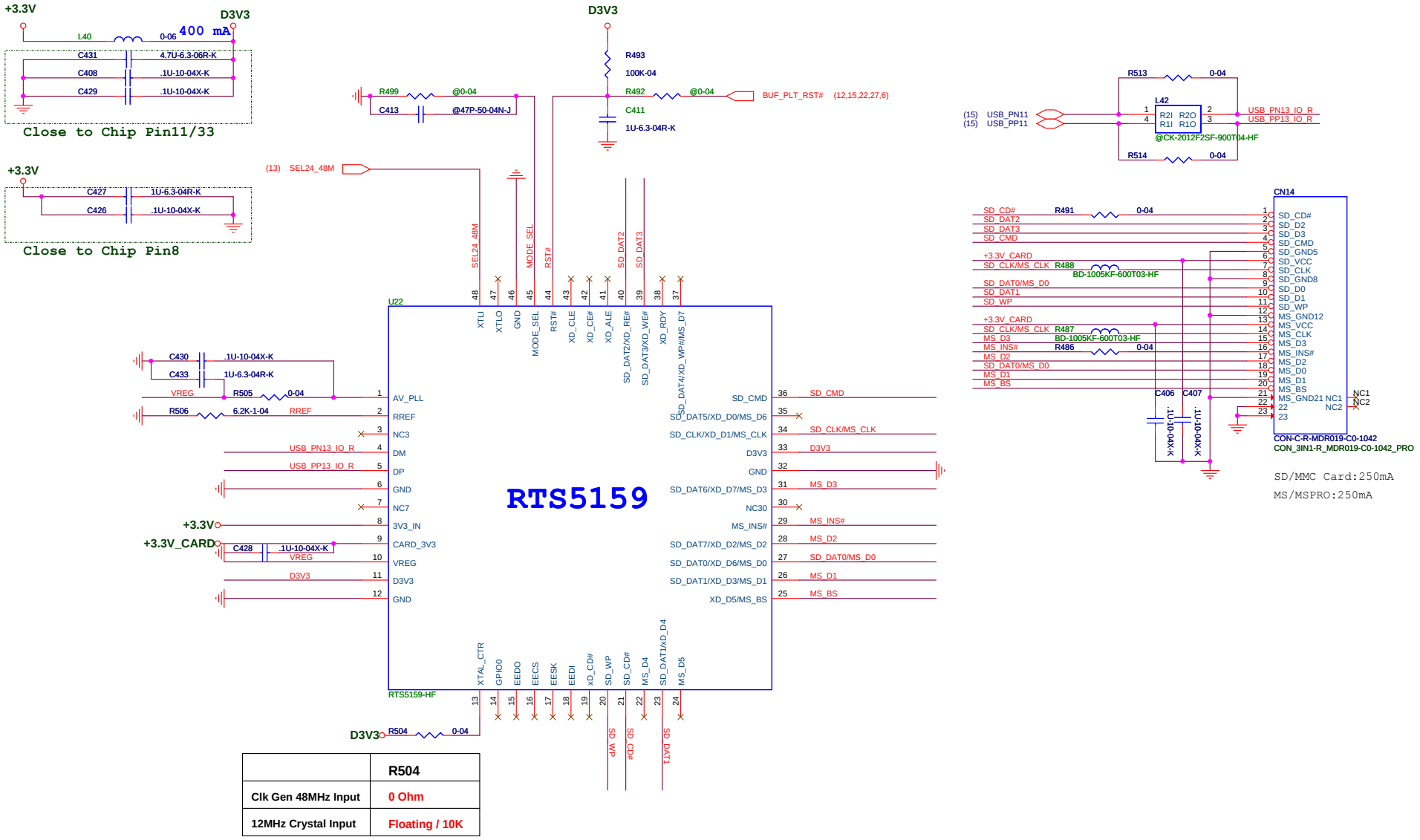
Card Reader



	R504
Clk Gen 48MHz Input	0 Ohm
12MHz Crystal Input	Floating / 10K

Card Reader Function Select	
MT50IIX	Stuff
MT50INX	Stuff

ECS COMPUTER CORP.

Title: Card Reader (RTS5159-GR)

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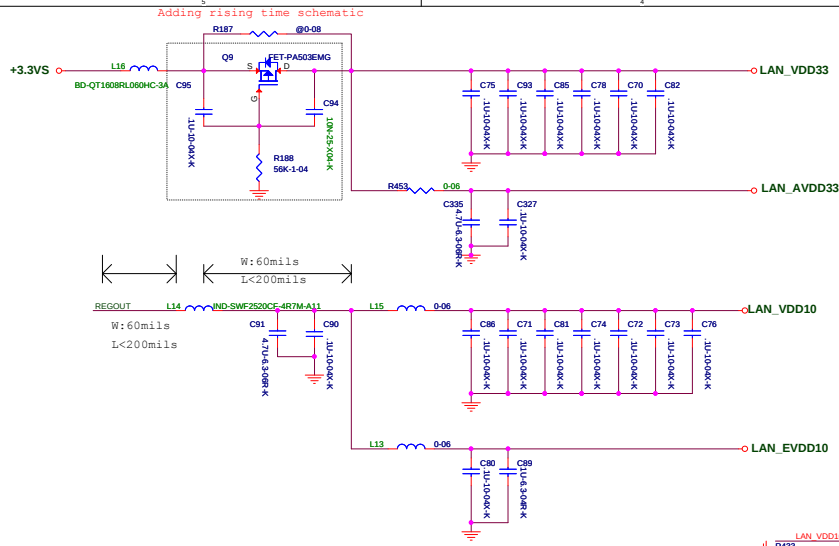
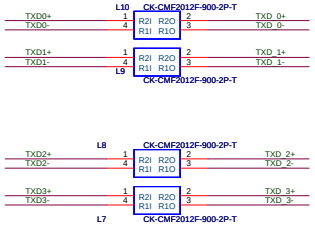
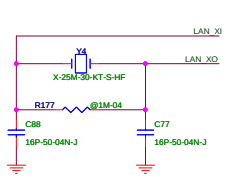
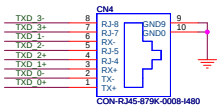


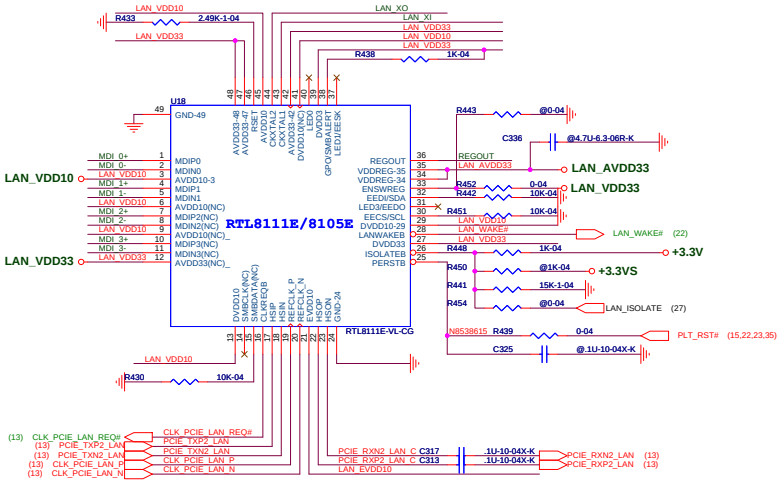
Modify 4/10

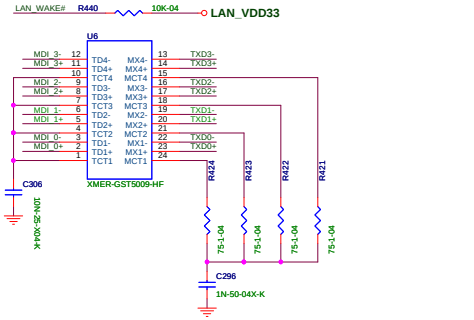
L10,L9,L8,L7 are from CK-MCM2012B900GBE to CK-CMF2012F-900-2P-T for EMI request

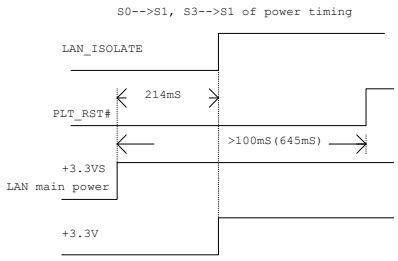












MS is maximum, total widths of space with 2 near to ground is 218mils

10/100M and Giga LAN of select table

LAN Type	ECS Part Number and Location		PHY Transceiver
	U18	U6	
10/100M	RTL8105E	27A001284-00	XMERTST1284A
Giga LAN	RTL8111E-VB-GR	27A005009-10	XMER-GST5009
Giga LAN	RTL8111E-VL-CGT		

Location / Chipset	L14	C91,C90	C335,C327	R453	R452,R430	R443	R441	R421,R422
RT8105	X	X	X	X	X	V	X	V
RTL8111E	V	V	V	V	V	X	V	V

X is show Unstuff
V is show Stuff

ECS COMPUTER CORP.			
Title: LAN(RTL8111E/8105E)			
Size: Custom	Document Number: MT50IN		Rev: 01
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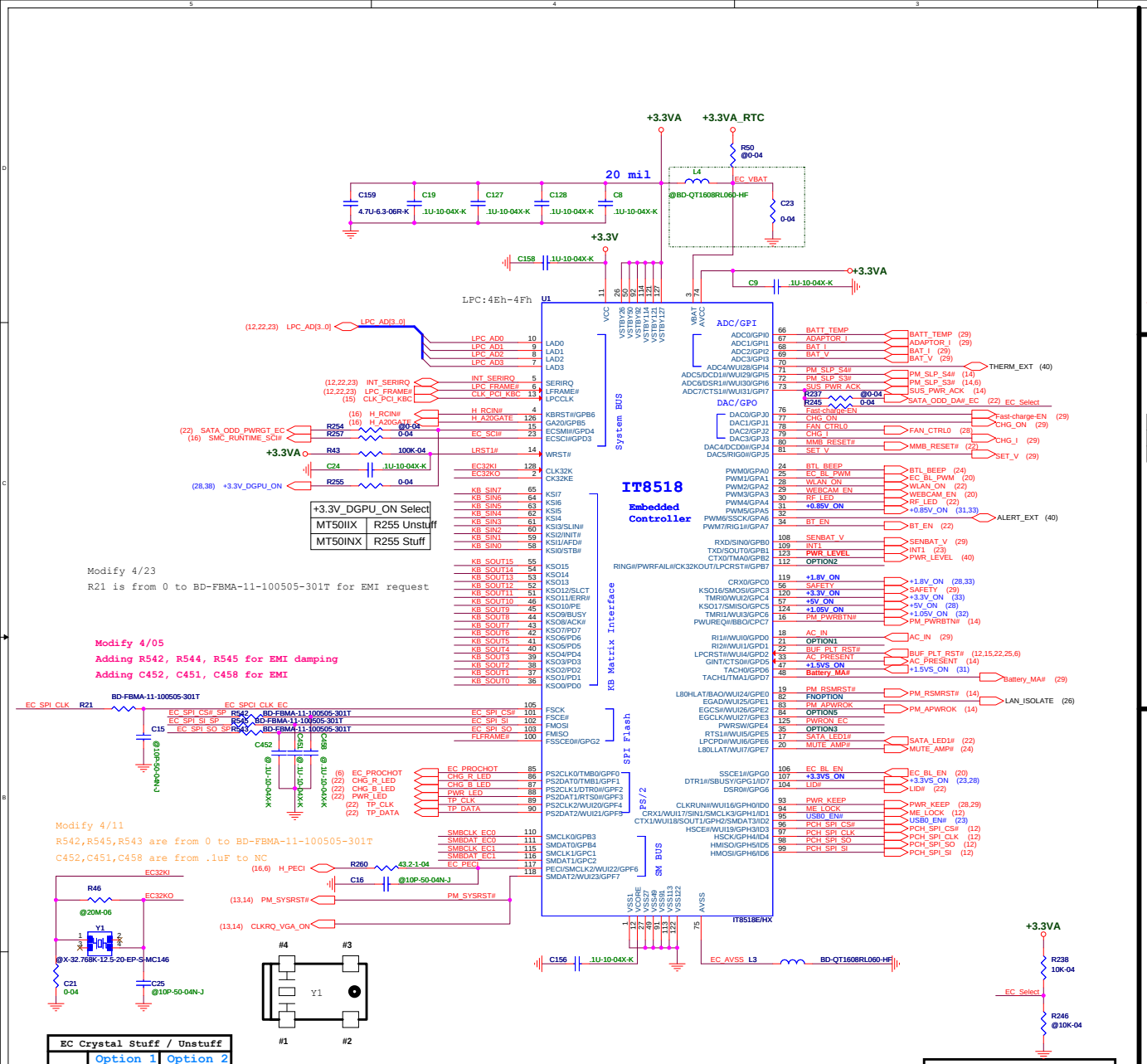
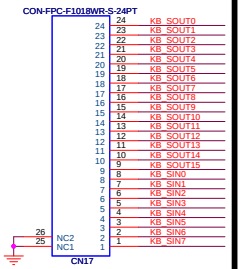


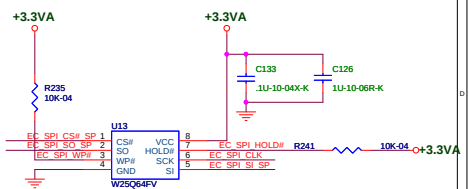
K/B Connector



Flash ROM (SPI)

Modify 3/12

U13 package change from M-SOP8B to sop8-5_3x5_3x2_2



+1.05V_DGPU_ON Select

+1.05V_DGPU_ON Select	
MT50IIX	R41 Unstuff
MT50INX	R41 Stuff

+VGA_ON Select

+VGA_ON/FNKEY2 Select	
MT50IIX	R9 Unstuff
MT50INX	R9 Stuff

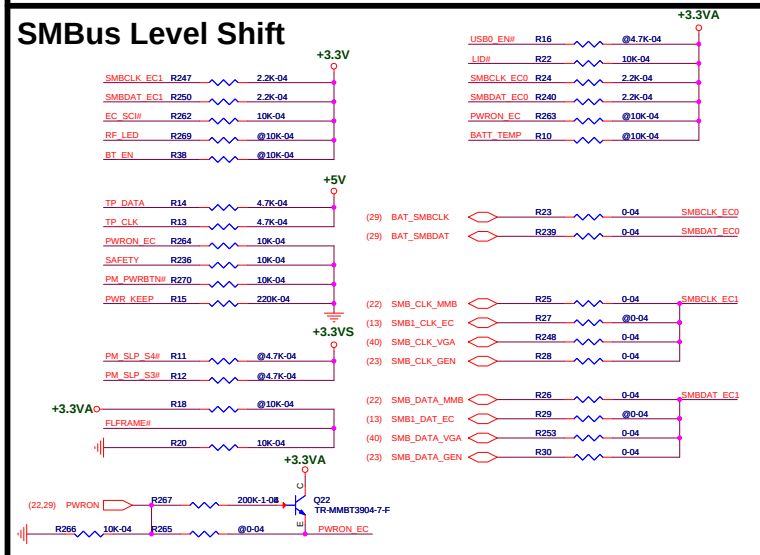
MMB Interrupt# Select

MMB Interrupt#/FNPLUS Select	
MT50IIX	If used MMB, R37 Stuff
MT50INX	

PM_SYS_PWRGD/+1.5V_VRAM_ON Select

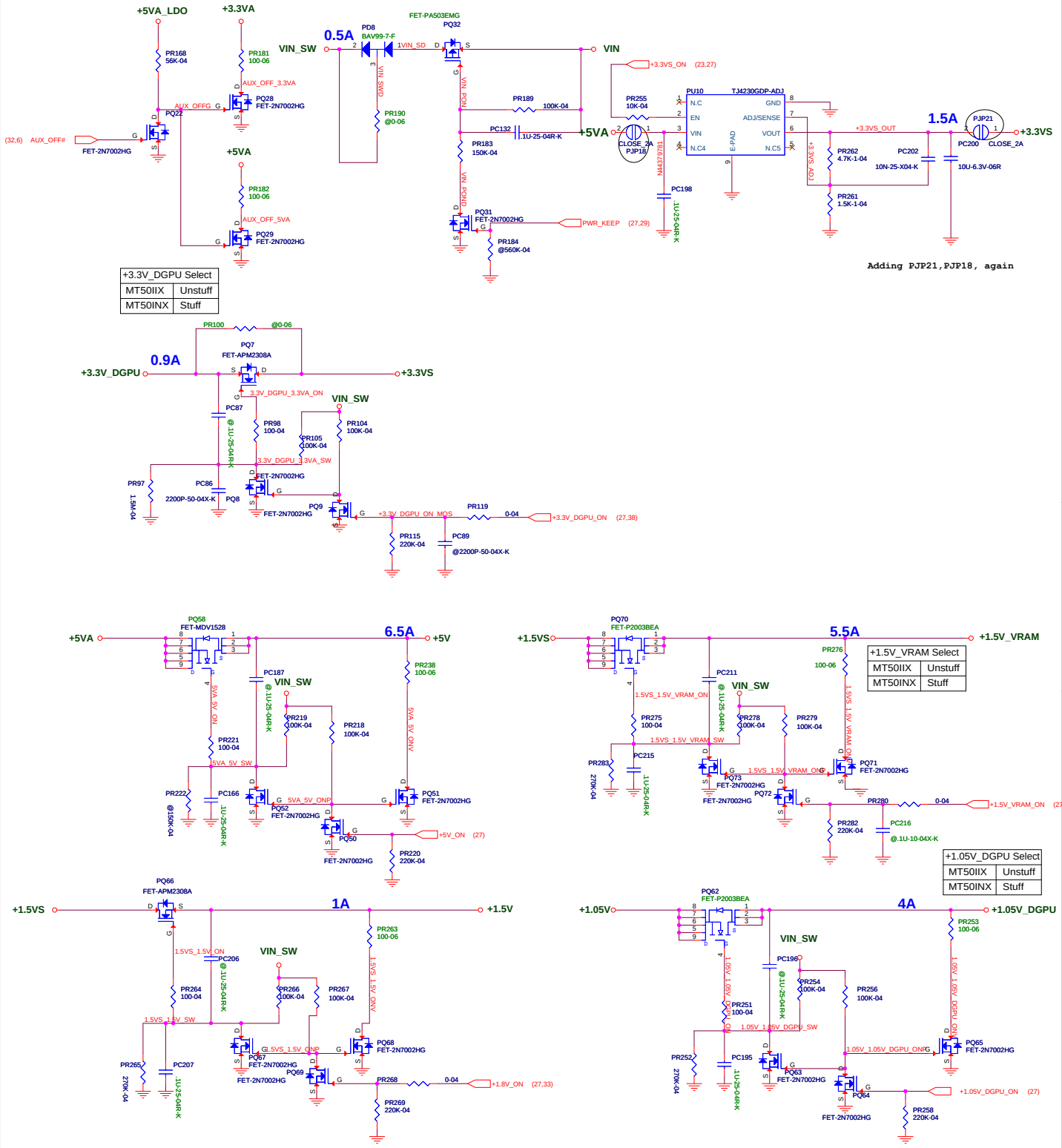
PM_SYS_PWRGD/+1.5V_VRAM_ON Select	
MT50IIX	R259 Unstuff
MT50INX	R259 Stuff

SMBus Level Shift

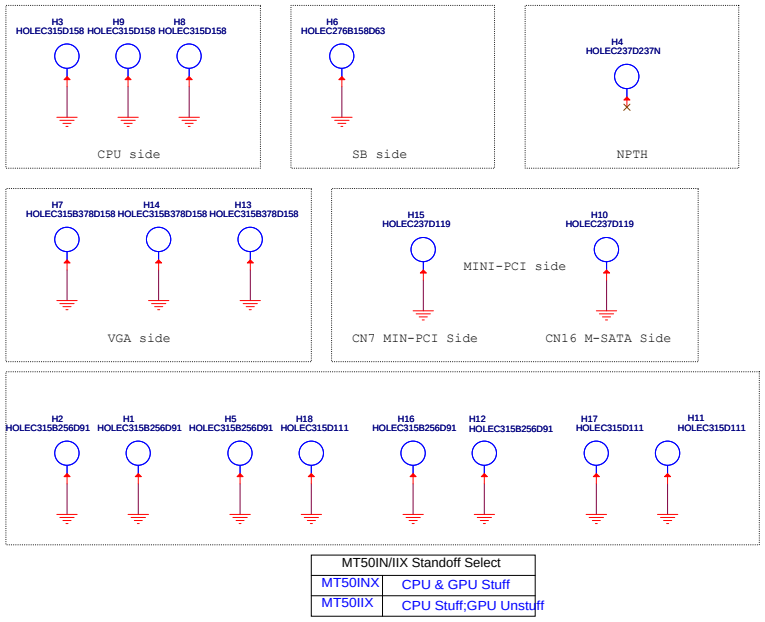


Title	EC-IT8518/BIOS/KBC
Size	Document Number: SCHEMATIC1 Custom — MT50IN — Rev 01
Date: Friday, June 15, 2012	Sheet 27 of 44

ECS COMPUTER CORP.

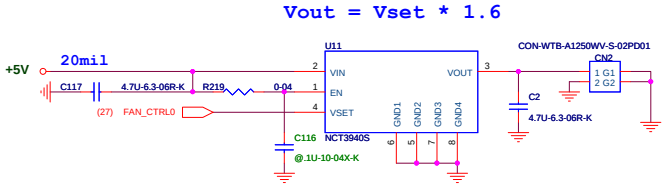


Hole/Screw

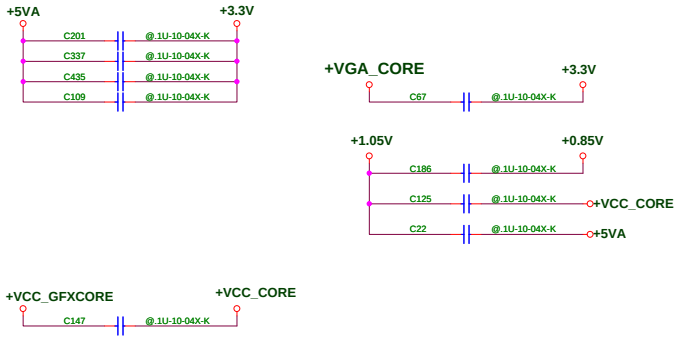


MT50IN/IIX Standoff Select	
MT50INX	CPU & GPU Stuff
MT50IIX	CPU Stuff;GPU Unstuff

Fan Control



EMI Request



ECS COMPUTER CORP.

Title: Power Switch/Hole/FAN

Size	Document Number	Rev
	SCHEMATIC1 Custom MT50IN	01

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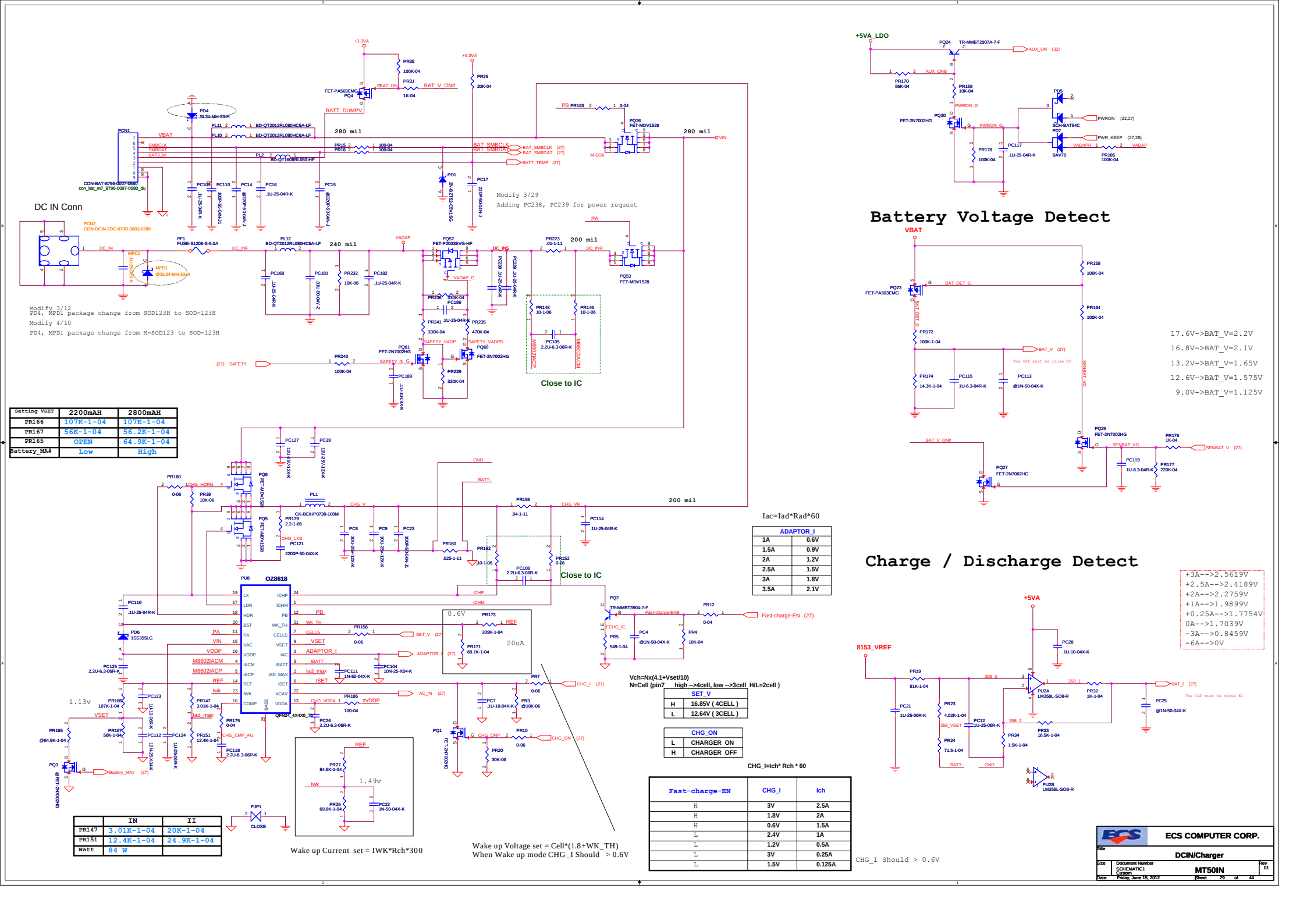

Setting VSET	2200mAH	2800mAH
PR166	107K-1-04	107K-1-04
PR167	56K-1-04	56.2K-1-04
PR165	OPEN	64.9K-1-04
Battery_MA#	Low	High

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

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

CHG_ON	
L	CHARGER ON
H	CHARGER OFF

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

	IN	II
PR147	3.01K-1-04	20K-1-04
PR151	12.4K-1-04	24.9K-1-04
Watt	84 W	

Size	Document Number	Rev
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	Custom	
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Modify 3/28	PR67 is from 1.8K(31A) to 680 for CPU's power unit setting OCP 48A PC139 is from NC to .1uF, and close PC139 is adding 33nF(PC225).
Modify 3/29	PC225 is from 33nF to NC PC139 is from NC to .1uF/25V
Modify 4/5	PR216, PR212, PR210 are from NC to 2.2 for snubber power request PC156, PC160, PC159 are from NC to 2200p for snubber power request
Modify 4/6	Adding PJP16,PJP15, again

PR72 is from 2.74K to 3.01K for setting GFX's LLS 3.9mΩ
PR73 is from 499 to 6.04K

Modify 4/17
PR73 is from 6.04K to 499 for power request

VCC_CORE	Configure Phase	Seting Mode
	2 Phase	PWM3 pin connect to +5V
	1 Phase	PWM3 and ISEN2 pin connect to +5V
GFX_CORE	1 Phase	ISUMNG pin connect to +5V

Processor Graphic VAXG
SV-QC-35W
Iout=21.5A
OCP=36.3A (MAX=33)
AI=3.167A
Ripple=+-18mV(PS0,PS1)
Ripple=+18.5 /-7.5mV(PS2)
Ripple=+27.5 /-7.5mV(PS3)
GT2 LLS=3.9m ohm
GT1 LLS=4.6m ohm

Setting Frequency
Adjust transient waveform for GFX
Modify 4/5
Adding PC240 for power request
Adding 6 of capacitor for power request
PC48 is from 33nF to 47nF
Modify 6/6
PR67 is from 680 to 576 for OCP adjust
没有用途，故移除Place Port
Adding PC70 for power request on material
PC70 is from NC to 330uF
Processor Core(VCC)
SV-QC-35W
Iout=32A
OCP=58.3A (MAX=53)
AI=3.318A
Ripple=+-15mV(PS0)
Ripple=+-13mV(PS1)
Ripple=+18.5 /-7.5mV(PS2)
Ripple=+27.5 /-7.5mV(PS3)
LLS=1.9m ohm
VR Step = 5mv
Adding 4 of capacitor for power request
Switch Frequency=300KHz
Modify 4/9
PC69, PC67 are from cap_smt_6_3X7_4X5_8 to SCAR250
Adjust transient waveform for VCC_CORE
PR51 is from 453 to 604 for GFX's power unit setting OCP 64.5A
PR42 is from 1.91K to 2.26K for LoadLine setting 1.9mΩ

+VCC_GFXCORE
+VCC_CORE
ISL95836HRTZ
LOADLINE 3.9mV/A
LOADLINE 1.9mV/A
PR71 is from 270K to 16K
Close CPU Side
Heat Reating=22A
Heat Reating=30A 1.2mΩ/1004/30A

ECS COMPUTER CORP.
Title: +VCC_CORE/+VCC_GFXCORE (ISL95836HRTZ)
Size: SCHEMATIC1 Custom | Document Number: MT50IN | Rev: 01
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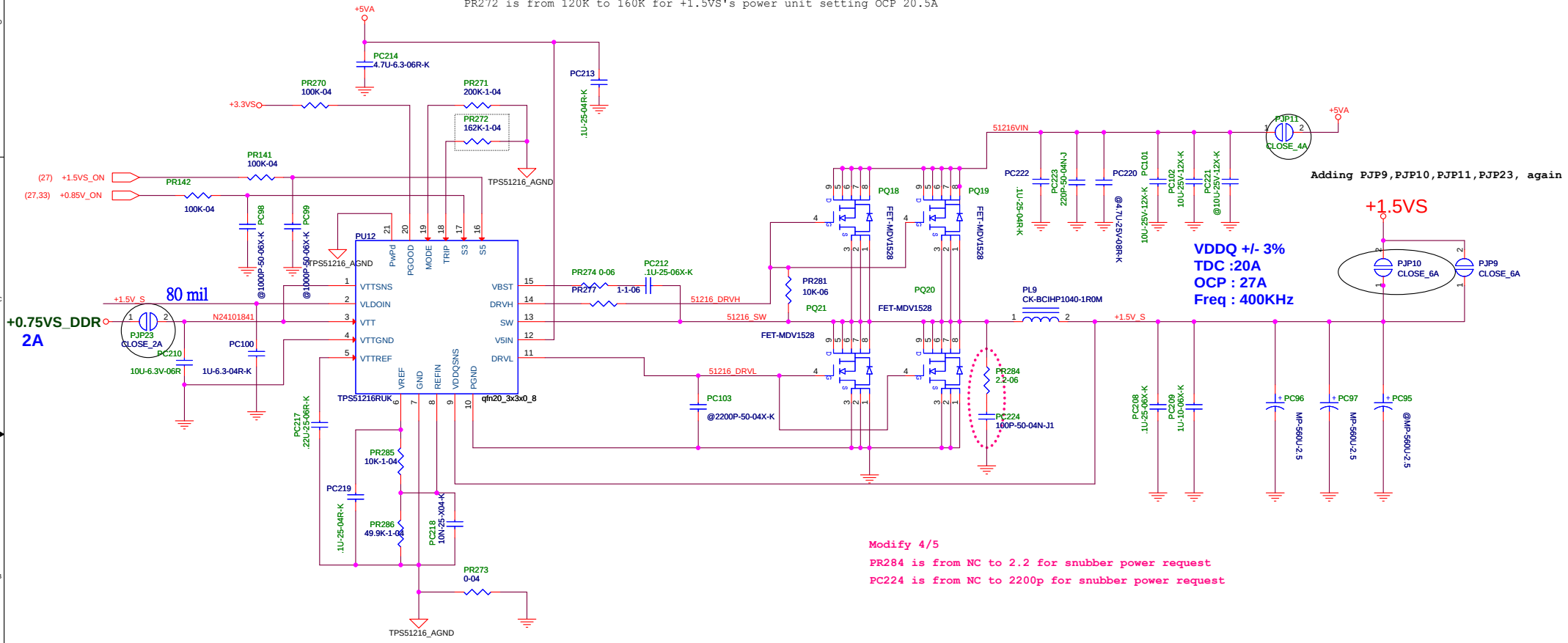
Modify 3/29

PR272 is from 120K to 160K for +1.5VS's power unit setting OCP 20.5A



Adding PJP9,PJP10,PJP11,PJP23, again

VDDQ +/- 3%
TDC :20A
OCP : 27A
Freq : 400KHz

Modify 4/5

PR284 is from NC to 2.2 for snubber power request

PC224 is from NC to 2200p for snubber power request

ECS COMPUTER CORP.		
Title: DDR+1.5VS&VTT0.75V		
Size	Document Number: SCHEMATIC1 Custom — MT50IN	Rev: 01
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Modify 4/9
PR18 is from 12.7K(OCP=24A) to 16.5K(OCP=25A)
PC18 is from 3.3n to 8.2n for transient response
PL3 material change is from BCIHP1040-4R7 to TMPC1004H-2R2M-Z01

Output Voltage =[Vref x R2/(R1+R2)] x 2

Modify 4/11
Adding PR289

Modify 3/29
PR8 is from 26.1K to 24K for enhance +1.05V
PR9 is from 137K to 124K for enhance +1.05V

Modify 4/9
Adding PR287
PR287 is close to OZ8153
Adding PC241, PC241

+1.05V

Iout=20A
OCP=25A
ΔI=5.223A
Ripple=41.78mV
F=81.82k~86.58kHz

PR28 is from 100 to NC

Modify 4/9
PR288 is close to OZ8153

PC59, PC60 is from 560u to NC
PR18 is from 71.5K(OCP=6A) to 12.7K(OCP=24A)

Modify 4/10
PC241, PC242 move to +1.05V

+5VA

Modify 4/5
PR201, PR195 are from NC to 2.2 for snubber power request
PR142, PR133 are NC to 2200p for snubber power request
Adding PJ1,PJ2,PJP13,PJP14, again

Output Voltage =[Vref x R2/(R1+R2)] x 2

Iout=15A
OCP=20A
ΔI=3.284A
Ripple=90.028mV
F=189K~284KHz

PR17 is from 162K(OCP=11A) to 56K(OCP=17.6A)

Modify 4/9
PR17 is from 56K(OCP=17.6A) to 33K(OCP=20A)
PC13 is from 3.3n to 8.2n for transient response
PR144 is from 0 to 30K for Tset
PR145 is from NC to 73.2K for Tset

F=Vset*(Vin/2-Vset)/(2us*Vtest*Vin/2)
Vset=Vout/2,Vtest=2.75V)

Modify 4/5
PR149 is from 93.1K to 100K for power request

ECS COMPUTER CORP.	
Title	+5VA/+3VA(OZ8153)
Size	Document Number: SCHEMATIC1, Custom — MT50IN — Rev: 01
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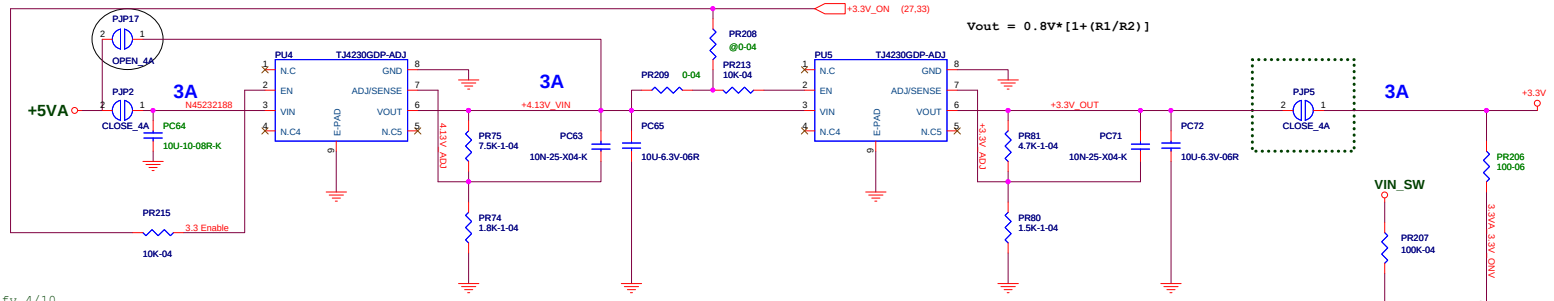
Modify 4/11

PJP17 is from TOPCLOSE-4MM to TOPOPEN-4MM



Modify 4/10

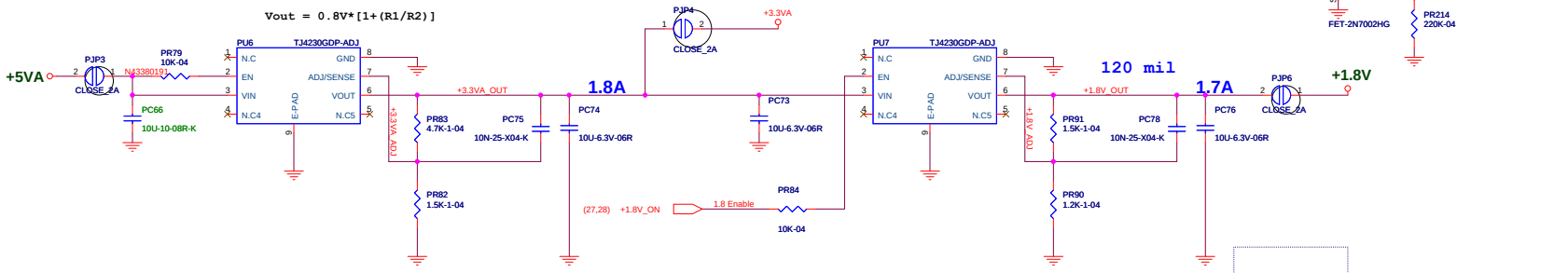
PJP2,PJP17 are from TOPCLOSE-3MM to TOPCLOSE-4MM for power request

Modify 4/6

Adding PJP17,PJP2,PJP5,PJP3,PJP4,PJP6,PJP22,PJP19, again

Modify 4/10

PJP5 is from TOPCLOSE-3MM to TOPCLOSE-4MM



Modify 3/12

Near to PJP22.2 of net +0.85V_VCNTL change to +1.5VS_VIN_PU11

Modify 3/29 PC92 is from 1nF to 2.2nF

Adding PR93

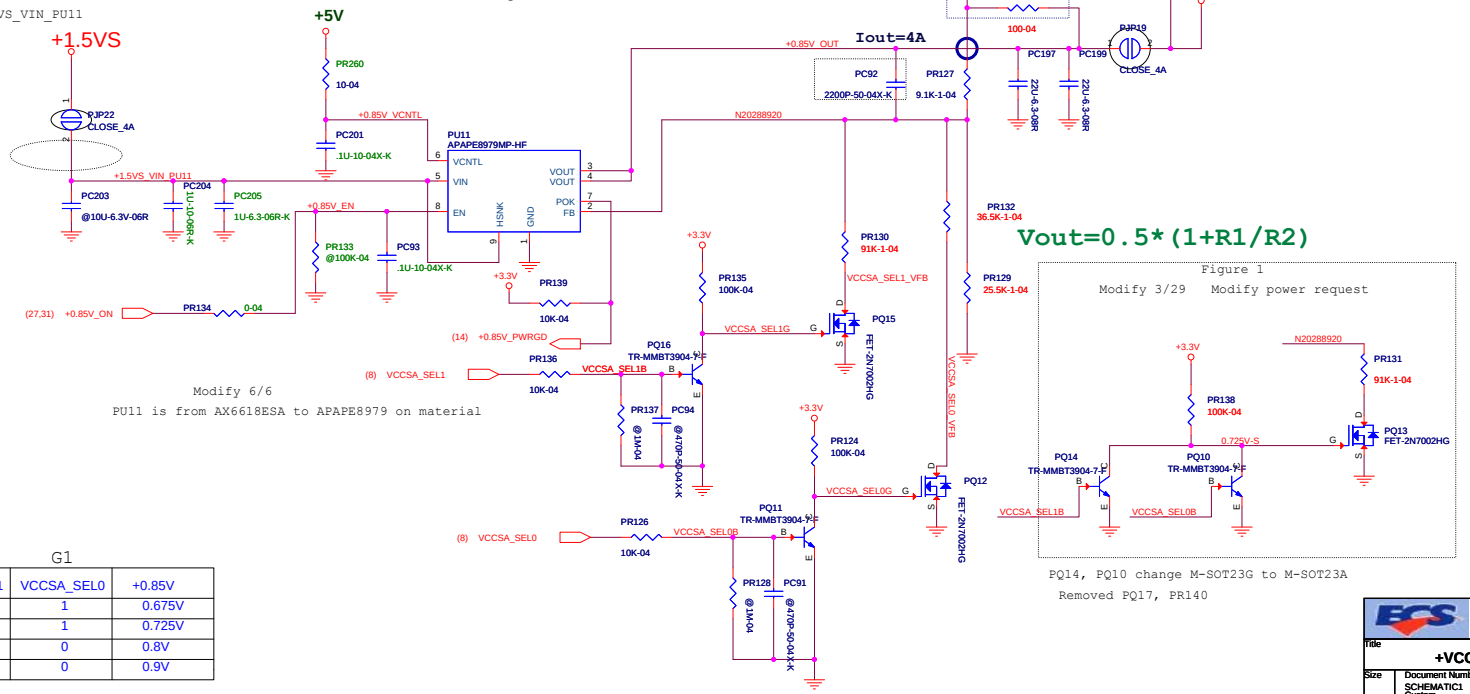


Figure 1

Modify 3/29 Modify power request

Modify 6/6

PU11 is from AX6618ESA to APAPE8979 on material

PQ14, PQ10 change M-SOT23G to M-SOT23A

Removed PQ17, PR140

G0	G1	
VCCSA_SEL1	VCCSA_SEL0	+0.85V
1	1	0.675V
0	1	0.725V
1	0	0.8V
0	0	0.9V

ECS COMPUTER CORP.

Title: +VCCSA/+VCCIO/+1.8V

Size	Document Number	Rev
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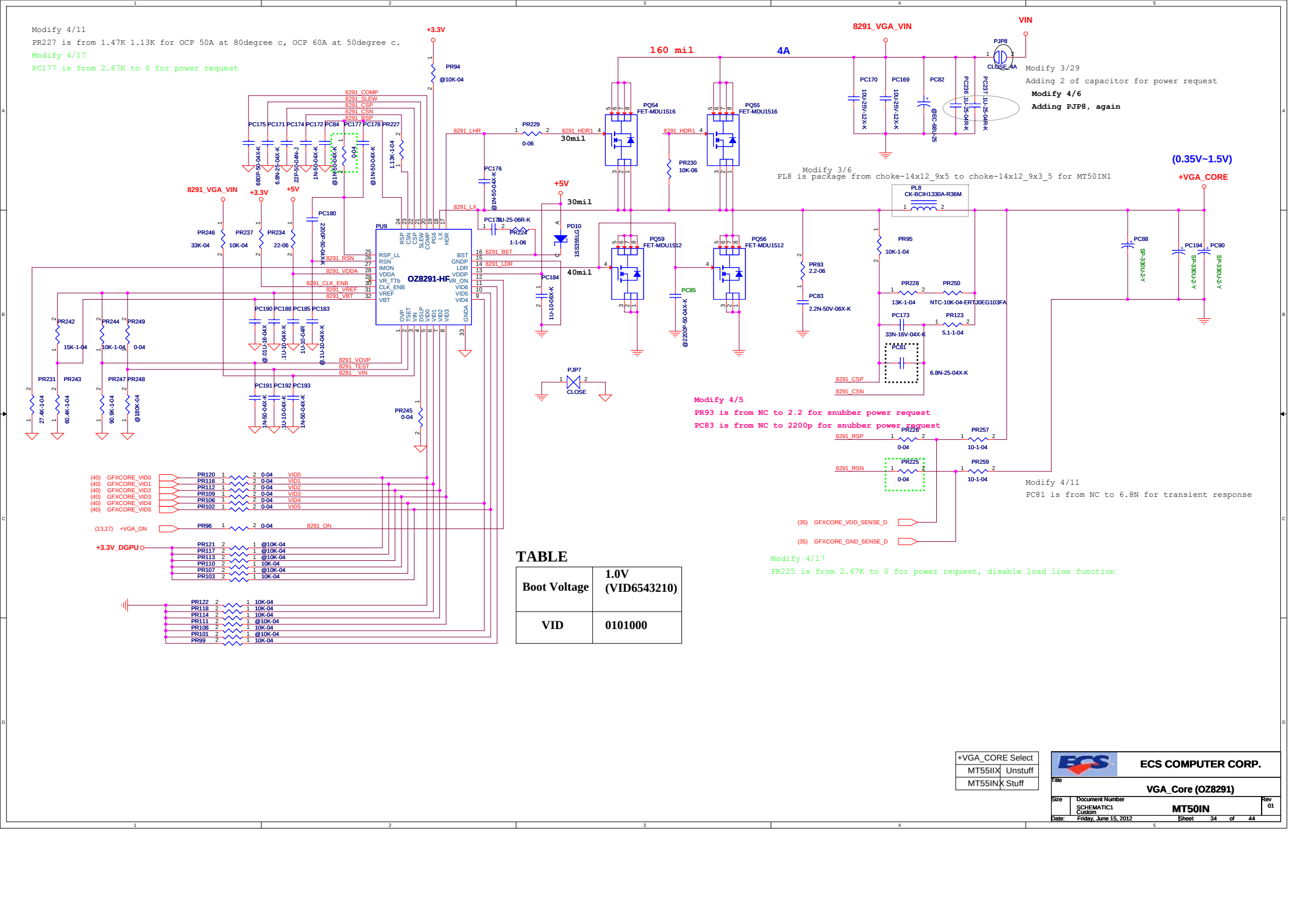

TABLE

Boot Voltage	**1.0V (VID6543210)**
VID	**0101000**

+VGA_CORE Select
MT55IIX Unstuff
MT55INX Stuff

ECS COMPUTER CORP.

Title: VGA_Core (OZ8291)

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	SCHEMATIC1 Custom MT50IN	01

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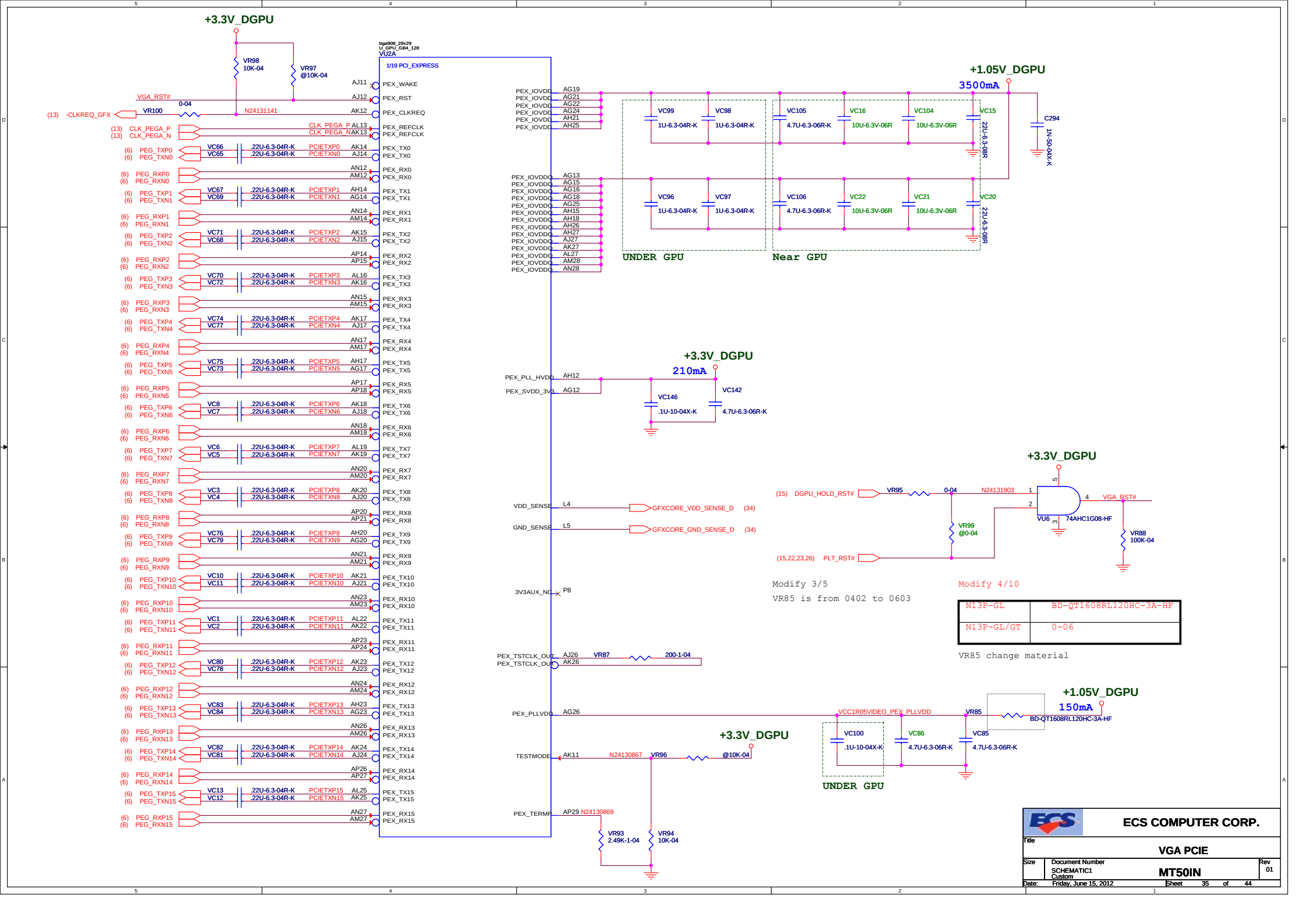
+3.3V_DGPU
VR98
10K-04
VR97
@10K-04
VGA_RST#
VR100
0-04
N24131141
(13) -CLKREQ_GFX
bga908_29x29
U_GPU_GB4_128
VU2A
1/19 PCI_EXPRESS
PEX_WAKE
PEX_RST
PEX_CLKREQ
PEX_REFCLK
PEX_REFCLK
PEX_TX0
PEX_TX0
PEX_RX0
PEX_RX0
PEX_TX1
PEX_TX1
PEX_RX1
PEX_RX1
PEX_TX2
PEX_TX2
PEX_RX2
PEX_RX2
PEX_TX3
PEX_TX3
PEX_RX3
PEX_RX3
PEX_TX4
PEX_TX4
PEX_RX4
PEX_RX4
PEX_TX5
PEX_TX5
PEX_RX5
PEX_RX5
PEX_TX6
PEX_TX6
PEX_RX6
PEX_RX6
PEX_TX7
PEX_TX7
PEX_RX7
PEX_RX7
PEX_TX8
PEX_TX8
PEX_RX8
PEX_RX8
PEX_TX9
PEX_TX9
PEX_RX9
PEX_RX9
PEX_TX10
PEX_TX10
PEX_RX10
PEX_RX10
PEX_TX11
PEX_TX11
PEX_RX11
PEX_RX11
PEX_TX12
PEX_TX12
PEX_RX12
PEX_RX12
PEX_TX13
PEX_TX13
PEX_RX13
PEX_RX13
PEX_TX14
PEX_TX14
PEX_RX14
PEX_RX14
PEX_TX15
PEX_TX15
PEX_RX15
PEX_RX15
+1.05V_DGPU
3500mA
PEX_IOVDD
VC99
1U-6.3-04R-K
VC98
1U-6.3-04R-K
VC105
4.7U-6.3-06R-K
VC16
10U-6.3V-06R
VC104
10U-6.3V-06R
VC15
22U-6.3-06R
C294
1N-50-04X-K
VC96
1U-6.3-04R-K
VC97
1U-6.3-04R-K
VC106
4.7U-6.3-06R-K
VC22
10U-6.3V-06R
VC21
10U-6.3V-06R
VC20
22U-6.3-06R
UNDER GPU
Near GPU
+3.3V_DGPU
210mA
PEX_PLL_HVDD
PEX_SVDD_3V3
VC146
.1U-10-04X-K
VC142
4.7U-6.3-06R-K
VDD_SENSE
GND_SENSE
GFXCORE_VDD_SENSE_D (34)
GFXCORE_GND_SENSE_D (34)
3V3AUX_NC
PEX_TSTCLK_OUT
VR87
200-1-04
PEX_PLLVDD
TESTMODE
VR96
@10K-04
PEX_TERMP
VR93
2.49K-1-04
VR94
10K-04
+3.3V_DGPU
(15) DGPU_HOLD_RST#
VR95
0-04
N24131903
VR99
@0-04
VU6
74AHC1G08-HF
VGA_RST#
VR88
100K-04
(15,22,23,26) PLT_RST#
Modify 3/5
VR85 is from 0402 to 0603
Modify 4/10
N13P-GL
BD-QT1608RL120HC-3A-HF
N13P-GL/GT
0-06
VR85 change material
+1.05V_DGPU
150mA
VCC1R05VIDEO_PEX_PLLVDD
VR85
BD-QT1608RL120HC-3A-HF
VC100
.1U-10-04X-K
VC86
4.7U-6.3-06R-K
VC85
4.7U-6.3-06R-K
UNDER GPU
ECS COMPUTER CORP.
Title
VGA PCIE
Size
Document Number
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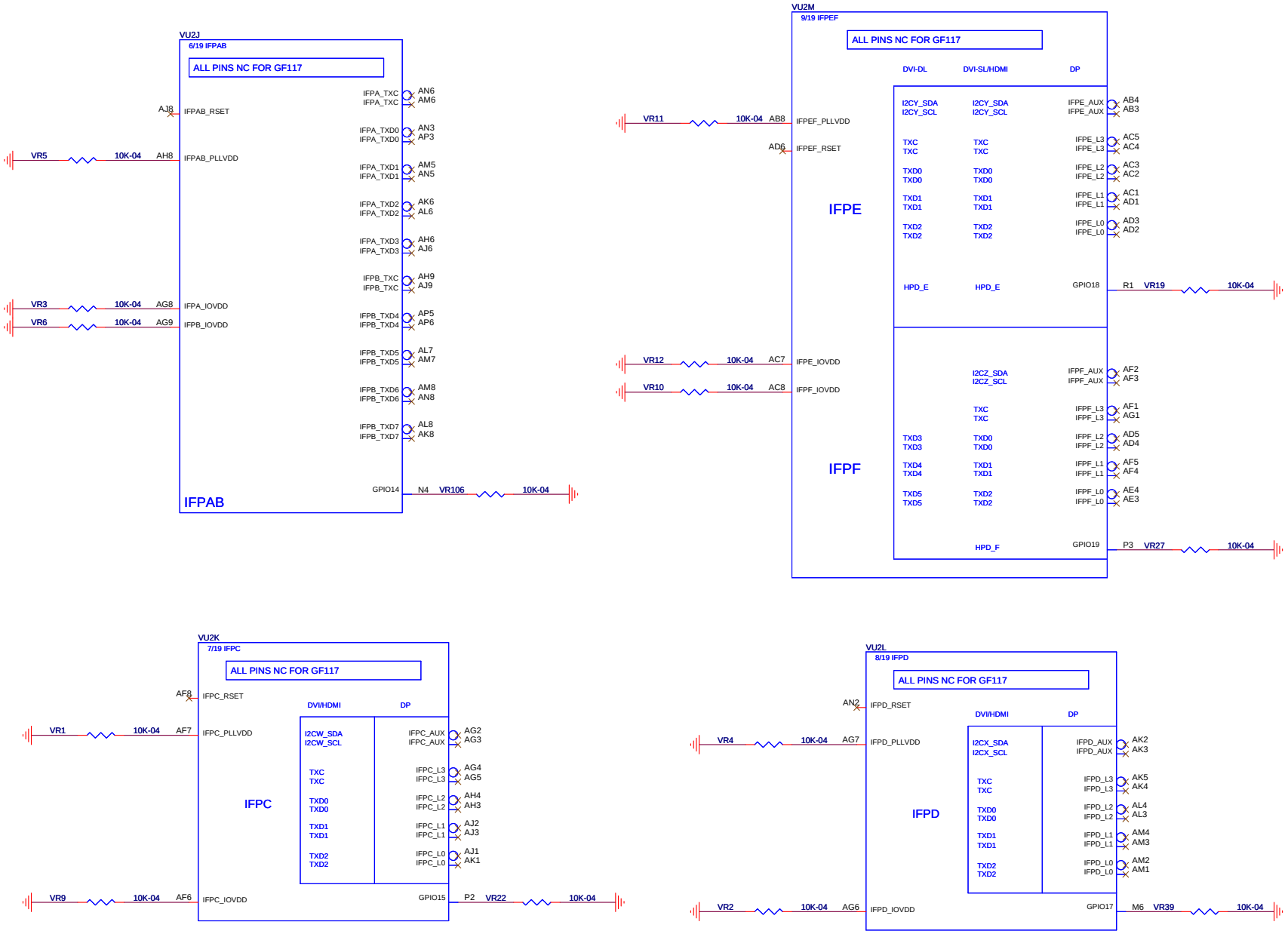

ECS COMPUTER CORP.		
Title	VGA HDMI/LVDS//DVI	
Size	Document Number: SCHEMATIC1, Custom — MT50IN	Rev: 01
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N13P-GL/GLP	NC
N13P-GS/GT/LP	VR63 Pull Low 10K-04

VU2B
2/19 FBA

VU2C
3/19 FBB

+1.05V_DGPU

+1.5V_VRAM

+1.05V_FB_PLLVDD

+1.05V_DGPU

30ohm@100MHz ESR=0.01

PLACE MVREF DIVIDERS
AND CAPS CLOSE TO ASIC

NEAR BALL

Title	VGA MEM_Interface
Size	Document Number: SCHEMATIC1 Custom — MT50IN — Rev: 01
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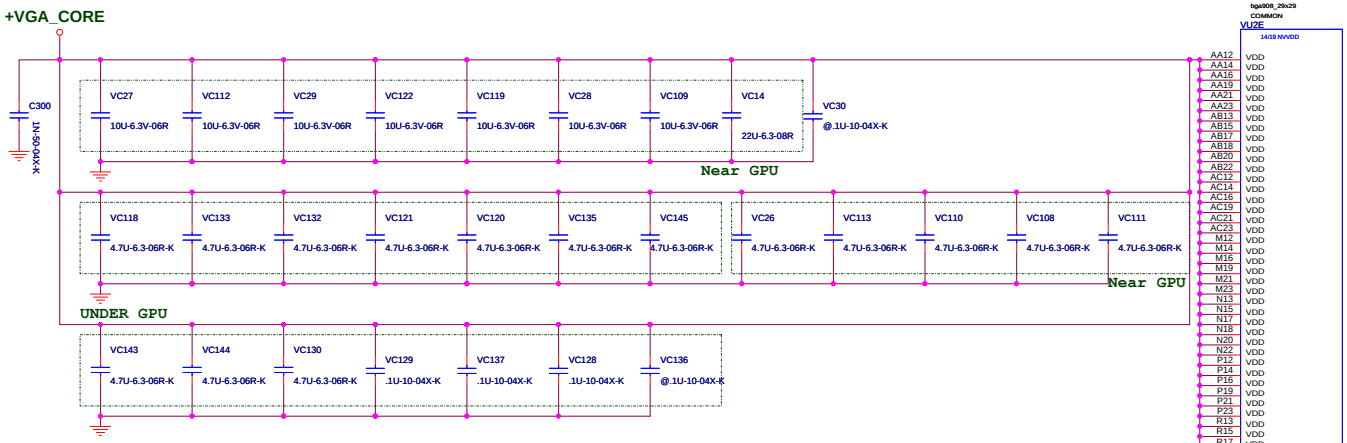
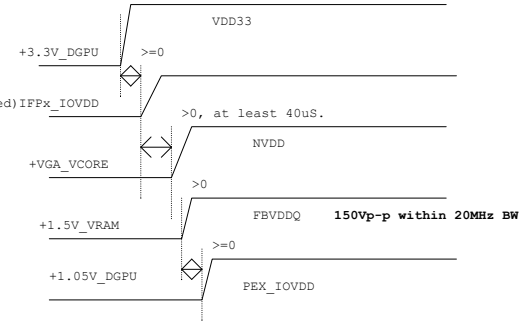
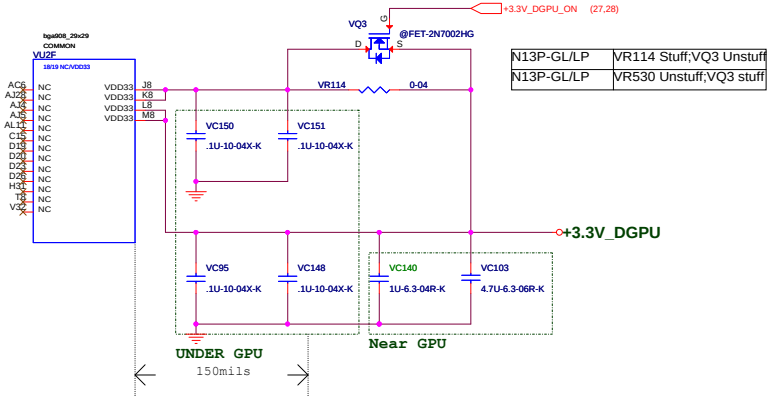
ECS COMPUTER CORP.



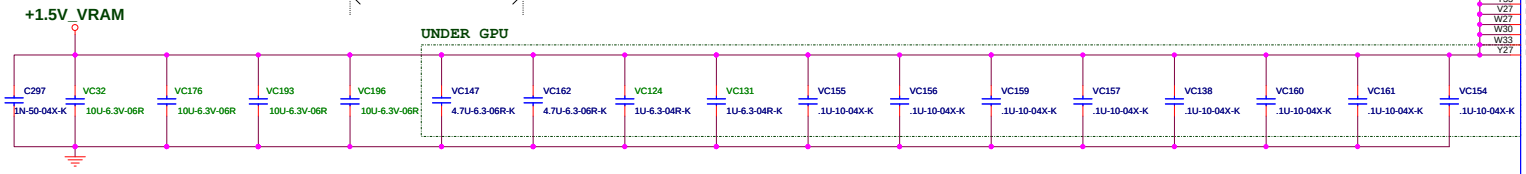


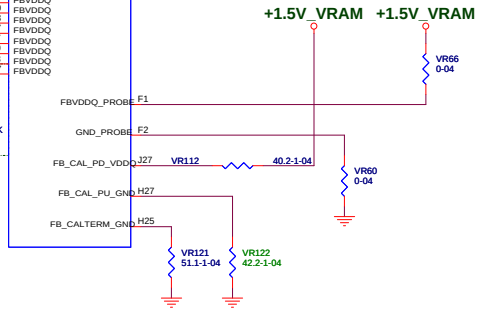
Vendor ID:10DE

Device ID:0DE9h

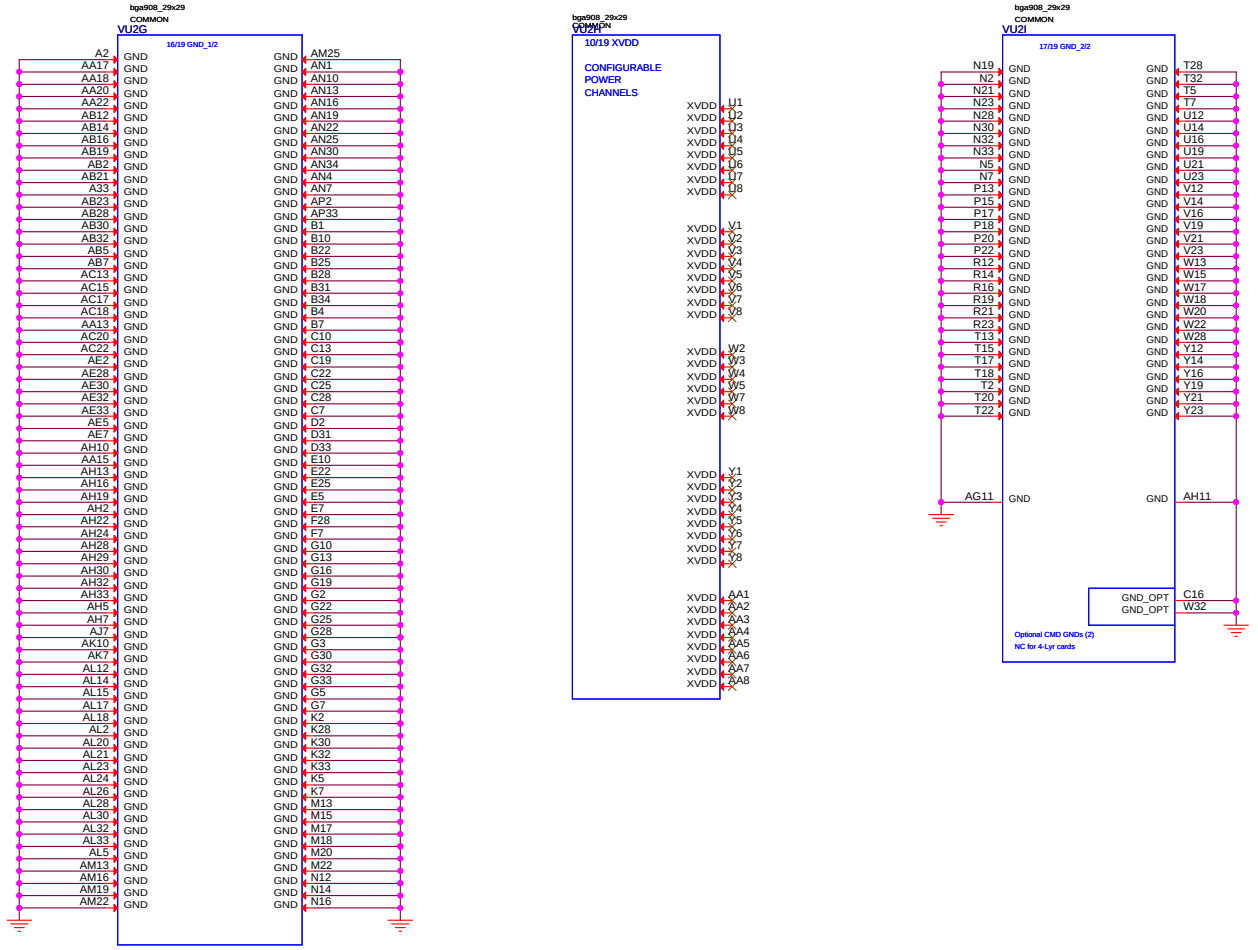


N13P-GL/LP	VR114 Stuff;VQ3 Unstuff
N13P-GL/LP	VR530 Unstuff;VQ3 stuff

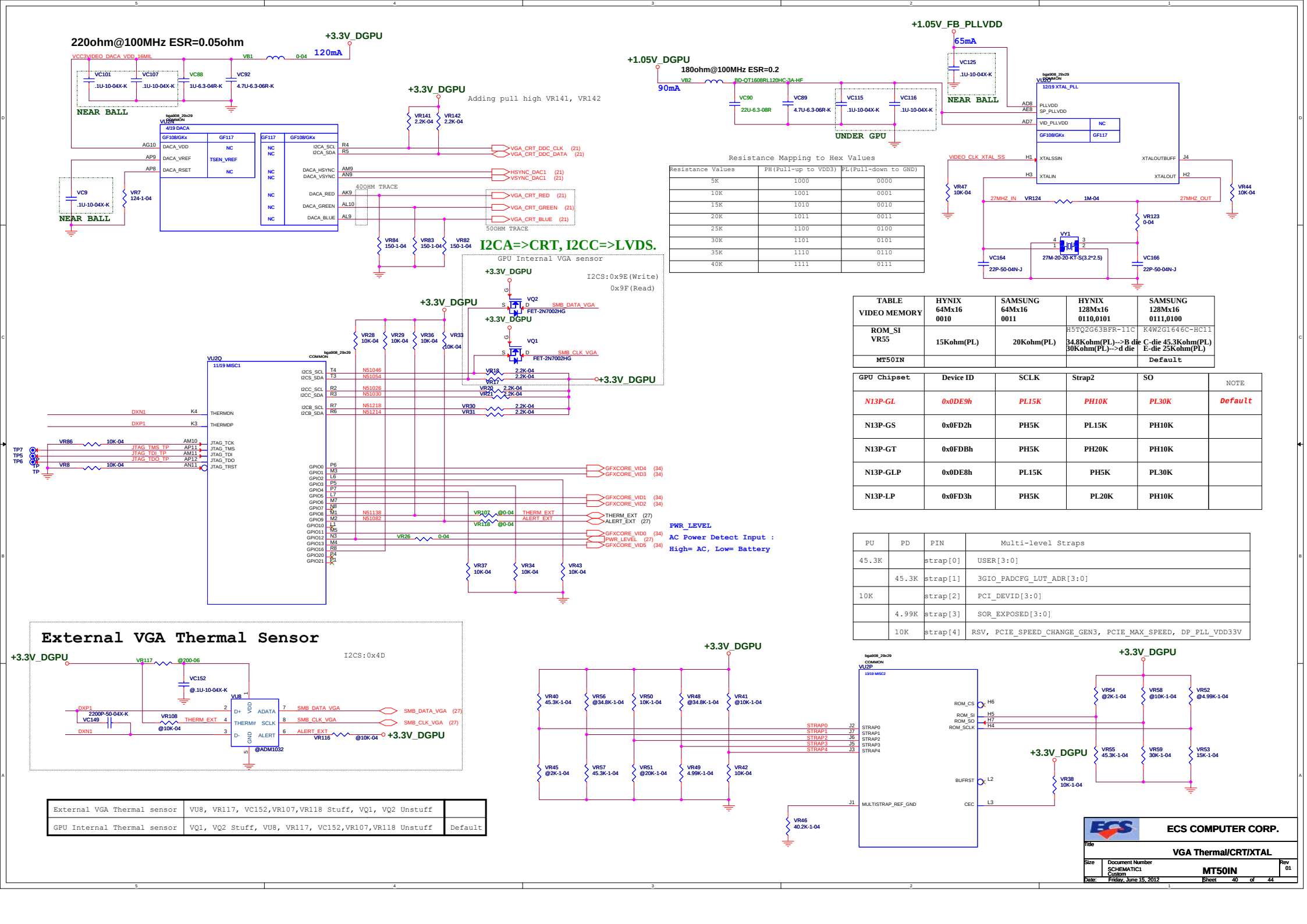




ECS COMPUTER CORP.			
Title: VGA Power 1			
Size	Document Number: SCHEMATIC1 Custom	MT50IN	Rev: 01
Date: Friday, June 15, 2012	Sheet 38 of 44		



ECS COMPUTER CORP.		
Title	VGA Power 2	
Size	Document Number: SCHEMATIC1, Custom — MT50IN	Rev: 01
Date: Friday, June 15, 2012	Sheet 39 of 44	


220ohm@100MHz ESR=0.05ohm
+3.3V_DGPU
120mA
VCC3VIDEO_DACA_VDD_16MIL
VB1
0-04
VC101 .1U-10-04X-K
VC107 .1U-10-04X-K
VC88 1U-6.3-04R-K
VC92 4.7U-6.3-06R-K
NEAR BALL
VU2M
bga908_29x29
COMMON
4/19 DACA
GF108/GKx
GF117
DACA_VDD
DACA_VREF
DACA_RSET
TSEN_VREF
AG10
AP9
AP8
VC9 .1U-10-04X-K
VR7 124-1-04
NEAR BALL
+3.3V_DGPU
Adding pull high VR141, VR142
VR141 2.2K-04
VR142 2.2K-04
I2CA_SCL
I2CA_SDA
R4
R5
VGA_CRT_DDC_CLK (21)
VGA_CRT_DDC_DATA (21)
DACA_HSYNC
DACA_VSYNC
AM9
AN9
HSYNC_DAC1 (21)
VSYNC_DAC1 (21)
DACA_RED
DACA_GREEN
DACA_BLUE
AK9
AL10
AL9
VGA_CRT_RED (21)
VGA_CRT_GREEN (21)
VGA_CRT_BLUE (21)
40OHM TRACE
50OHM TRACE
VR84 150-1-04
VR83 150-1-04
VR82 150-1-04
I2CA=>CRT, I2CC=>LVDS.
GPU Internal VGA sensor
I2CS:0x9E(Write)
0x9F(Read)
+3.3V_DGPU
VQ2
FET-2N7002HG
SMB_DATA_VGA
VQ1
FET-2N7002HG
SMB_CLK_VGA
VR28 10K-04
VR29 10K-04
VR36 10K-04
VR33 10K-04
VU2Q
11/19 MISC1
I2CS_SCL
I2CS_SDA
I2CC_SCL
I2CC_SDA
I2CB_SCL
I2CB_SDA
N51046
N51054
N51026
N51030
N51218
N51214
VR18 2.2K-04
VR17 2.2K-04
VR20 2.2K-04
VR21 2.2K-04
VR30 2.2K-04
VR31 2.2K-04
THERMDN
THERMDP
DXN1
DXP1
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_TRST
JTAG_TMS_TP
JTAG_TDI_TP
JTAG_TDO_TP
VR86 10K-04
VR8 10K-04
TP7
TP5
TP6
GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GPIO13
GPIO16
GPIO20
GPIO21
GFXCORE_VID4 (34)
GFXCORE_VID3 (34)
GFXCORE_VID1 (34)
GFXCORE_VID2 (34)
GFXCORE_VID0 (34)
GFXCORE_VID5 (34)
N51138
N51082
VR107 @0-04
VR110 @0-04
THERM_EXT
ALERT_EXT
THERM_EXT (27)
ALERT_EXT (27)
PWR_LEVEL (27)
VR26 0-04
VR37 10K-04
VR34 10K-04
VR43 10K-04
+3.3V_DGPU
PWR_LEVEL
AC Power Detect Input :
High= AC, Low= Battery
+1.05V_DGPU
180ohm@100MHz ESR=0.2
90mA
VB2
BD-QT1608RL120HC-3A-HF
VC90 22U-6.3-08R
VC89 4.7U-6.3-06R-K
VC115 .1U-10-04X-K
VC116 .1U-10-04X-K
UNDER GPU
+1.05V_FB_PLLVDD
65mA
VC125 .1U-10-04X-K
NEAR BALL
VU2P
12/19 XTAL_PLL
PLLVDD
SP_PLLVDD
VID_PLLVDD
GF108/GKx
NC
GF117
XTALSSIN
XTALIN
XTALOUTBUFF
XTALOUT
VIDEO_CLK_XTAL_SS
27MHZ_IN
27MHZ_OUT
VR47 10K-04
VR124 1M-04
VR44 10K-04
VR123 0-04
VY1
27M-20-20-KT-S(3.2*2.5)
VC164 22P-50-04N-J
VC166 22P-50-04N-J
Resistance Mapping to Hex Values
Resistance Values | PH(Pull-up to VDD3) | PL(Pull-down to GND)
5K | 1000 | 0000
10K | 1001 | 0001
15K | 1010 | 0010
20K | 1011 | 0011
25K | 1100 | 0100
30K | 1101 | 0101
35K | 1110 | 0110
40K | 1111 | 0111
TABLE VIDEO MEMORY | HYNIX 64Mx16 0010 | SAMSUNG 64Mx16 0011 | HYNIX 128Mx16 0110,0101 | SAMSUNG 128Mx16 0111,0100
ROM_SI VR55 | 15Kohm(PL) | 20Kohm(PL) | H5TQ2G63BFR-11C 34.8Kohm(PL)-->B die 30Kohm(PL)-->d die | K4W2G1646C-HC11 C-die 45.3Kohm(PL) E-die 25Kohm(PL)
MT50IN | | | | Default
GPU Chipset | Device ID | SCLK | Strap2 | SO | NOTE
N13P-GL | 0x0DE9h | PL15K | PH10K | PL30K | Default
N13P-GS | 0x0FD2h | PH5K | PL15K | PH10K |
N13P-GT | 0x0FDBh | PH5K | PH20K | PH10K |
N13P-GLP | 0x0DE8h | PL15K | PH5K | PL30K |
N13P-LP | 0x0FD3h | PH5K | PL20K | PH10K |
PU | PD | PIN | Multi-level Straps
45.3K | | strap[0] | USER[3:0]
| 45.3K | strap[1] | 3GIO_PADCFG_LUT_ADR[3:0]
10K | | strap[2] | PCI_DEVID[3:0]
| 4.99K | strap[3] | SOR_EXPOSED[3:0]
| 10K | strap[4] | RSV, PCIE_SPEED_CHANGE_GEN3, PCIE_MAX_SPEED, DP_PLL_VDD33V
External VGA Thermal Sensor
+3.3V_DGPU
I2CS:0x4D
VR117 @200-06
VC152 @.1U-10-04X-K
VU8
ADM1032
DXP1
DXN1
2200P-50-04X-K
VC149
VR108 @10K-04
THERM_EXT
SMB_DATA_VGA
SMB_CLK_VGA
ALERT_EXT
VR116 @10K-04
SMB_DATA_VGA (27)
SMB_CLK_VGA (27)
+3.3V_DGPU
+3.3V_DGPU
VR40 45.3K-1-04
VR56 @34.8K-1-04
VR50 10K-1-04
VR48 @34.8K-1-04
VR41 @10K-1-04
VR45 @2K-1-04
VR57 45.3K-1-04
VR51 @20K-1-04
VR49 4.99K-1-04
VR42 10K-04
STRAP0
STRAP1
STRAP2
STRAP3
STRAP4
VR46 40.2K-1-04
MULTISTRAP_REF_GND
VU2P
13/19 MISC2
ROM_CS
ROM_SI
ROM_SO
ROM_SCLK
BUFRST
CEC
+3.3V_DGPU
VR54 @2K-1-04
VR58 @10K-1-04
VR52 @4.99K-1-04
VR55 45.3K-1-04
VR59 30K-1-04
VR53 15K-1-04
VR38 10K-1-04
External VGA Thermal sensor | VU8, VR117, VC152,VR107,VR118 Stuff, VQ1, VQ2 Unstuff |
GPU Internal Thermal sensor | VQ1, VQ2 Stuff, VU8, VR117, VC152,VR107,VR118 Unstuff | Default
ECS COMPUTER CORP.
Title
VGA Thermal/CRT/XTAL
Size
Document Number
SCHEMATIC1
Custom
MT50IN
Rev
01
Date: Friday, June 15, 2012
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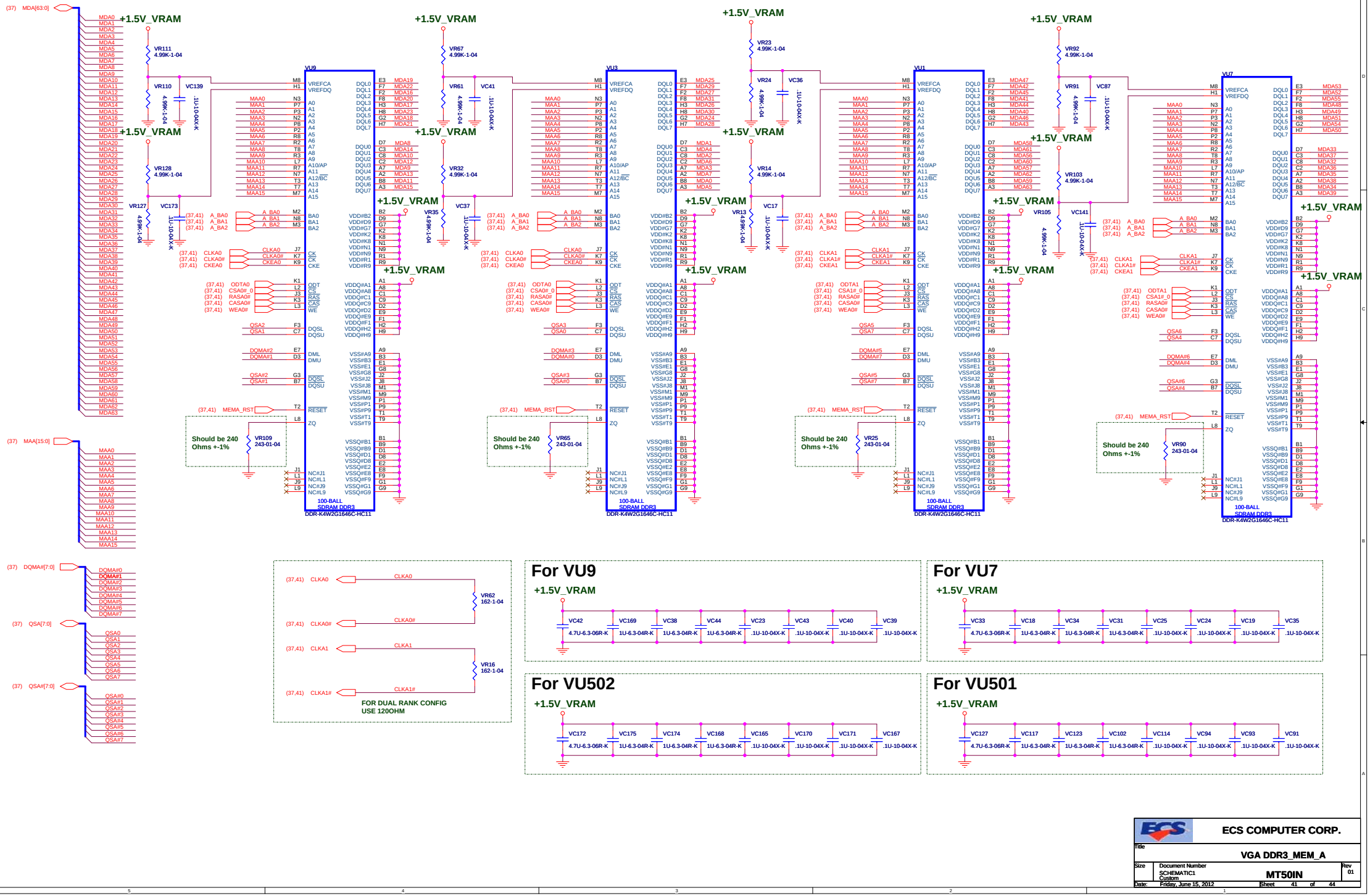
CHANNEL A: 256MB/512MB DDR3 (RANK0)



ECS COMPUTER CORP.

Title	VGA DDR3_MEM_A		
Size	Document Number: SCHEMATIC1 Custom — MT50IN		Rev: 01
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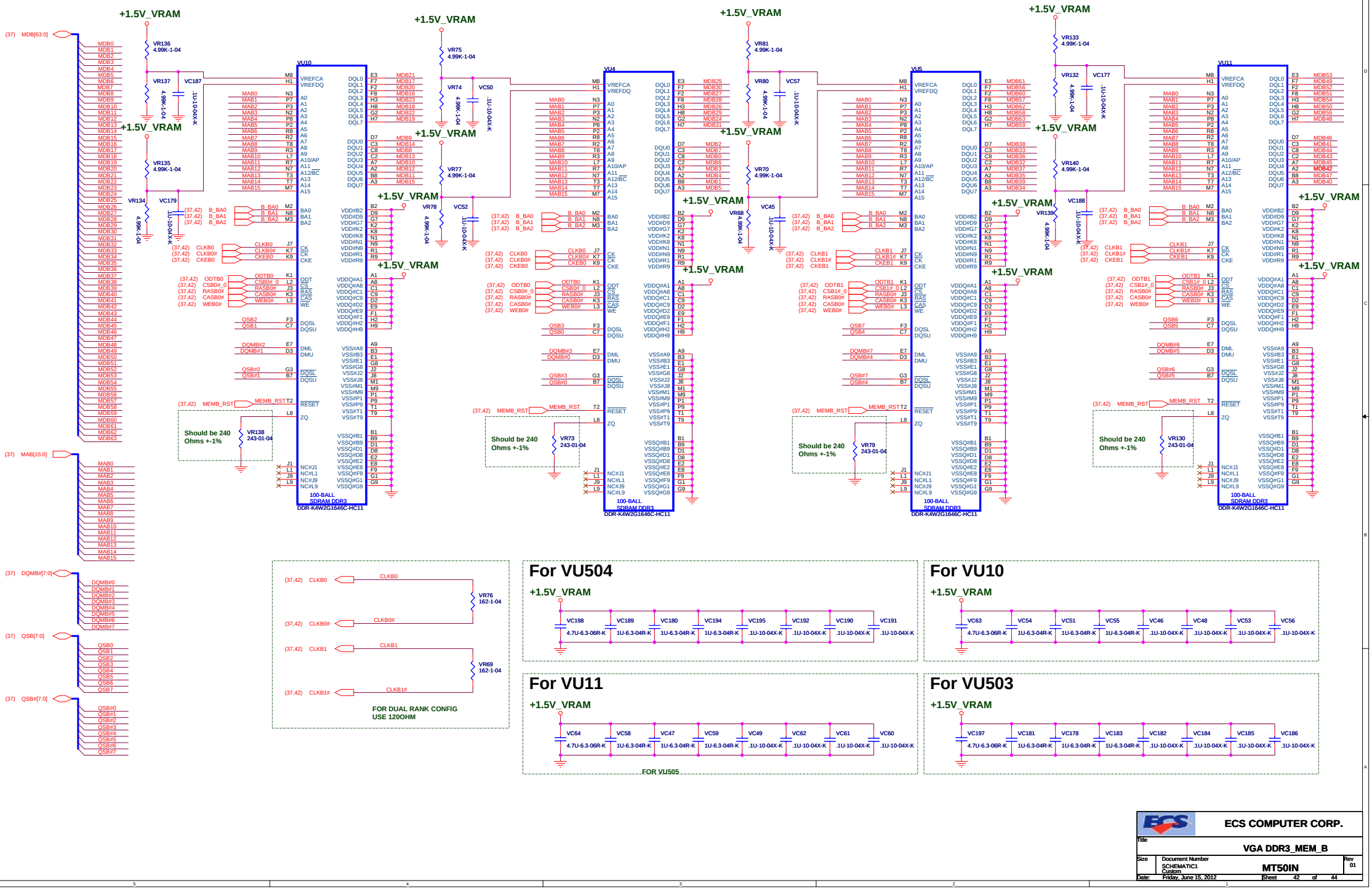
CHANNEL B: 256MB/512MB DDR3 (RANK1)



ECS COMPUTER CORP.

Title: VGA DDR3_MEM_B

Size: | Document Number: SCHEMATIC1 | Custom | MT50IN | Rev: 01

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MT50IIX / INX Connector List (A-Phase)

Page	Function	Location	MT50IIX 1st	2nd	3rd	Current	MT50INX 1st	2nd	3rd	Current
06	CPU Sokect	U4	11B106-989010	11B106-989030	11B106-989020	11B106-989021	11B106-989010	11B106-989030	11B106-989020	11B106-989021
11	DDR3	CN12	11B025-204441	11B025-204454		11B025-204441	11B025-204441	11B025-204454	11B025-204850	11B025-204441
11	DDR3	CN8	11B025-204450	11B025-204355		11B025-204450	11B025-204450	11B025-204355	11B025-204851	11B025-204450
12	RTC Battery	CN15	11B100-002090	11B100-002550		11B100-002090	11B100-002090	11B100-002550		11B100-002090
12	Battery	BT	13B111-203160	13B111-203003		13B111-203160	13B111-203160	13B111-203003		13B111-203160
20	LVDS	CN3	10B262-030331	10B262-030392		10B262-030801	10B262-030331	10B262-030392		10B262-030801
21	CRT	CN6	10B707-015013	10B707-015803		10B707-015803	10B707-015013	10B707-015803		10B707-015803
21	HDMI	CN9	10B083-019451	10B093-019440		10B093-019440	10B083-019451	10B093-019440		10B093-019440
22	PWR	PCN2	10B027-024332			10B027-024801	10B027-024332			10B027-024801
22	Audio+USB I/O	CN22	10B026-028331			10B027-028800	10B026-028331			10B027-028800
22	USB	CN22	10B230-004392			10B230-004392	10B230-004392			10B230-004392
22	IN HDD H=3.5 I I HDD H=3.5/4.5	CN10	10B090-022066			10B090-022441	10B090-022065	10B090-022800		10B090-022065
22	ODD	CN5	10B790-013421	10B789-013800		10B789-013800	10B790-013421	10B789-013800		10B789-013800
22	ODD Screw	CN5	22B232-200500			22B232-200500	22B232-200500			22B232-200500
22	Micro SATA	CN11	10B027-016331			10B027-016331	10B027-016331			10B027-016331
22	Touch Pad	CN20	10B027-006399			10B027-006399	10B027-006399			10B027-006399
22	Touch Pad SW R	SW2	11B251-004580			11B251-004580	11B251-004580			11B251-004580
22	Touch Pad SW L	SW1	11B251-004580			11B251-004580	11B251-004580			11B251-004580
22	MMB	CN19	10B027-008330			10B027-008330	10B027-008330			10B027-008330
22	Mini PCI-E	CN7	10B458-052440	10B456-052800		10B458-052440	10B458-052440	10B456-052800		10B458-052440
23	USB 3.0	CN13 CN16	10B084-009610	10B084-009010		10B084-009440	10B084-009610	10B084-009010		10B084-009440
24	Int. Speaker	CN23	10B230-002801	10B230-002333		10B230-002801	10B230-002801	10B230-002333		10B230-002801
24	Card Reader	CN14	10B230-004331	10B230-004391	10B230-004801	10B230-004801	10B230-004331	10B230-004391	10B230-004801	10B230-004801
24	Int. MIC	CN1	10B230-002800	10B261-002330		10B230-002800	10B230-002800	10B261-002330		10B230-002800
24	K/B	CN17	11B024-019212	11B024-023020		11B024-019212	11B024-019212	11B024-023020		11B024-019212
25	FAN	CN2	10B027-024330	10B230-002333		10B027-024330	10B027-024330			10B027-024330
26	Li-Lon Battery	PCN1	10B230-002801			10B230-002801	10B230-002801	10B230-002333		10B230-002801
27			10B018-007059	10B262-010800	10B262-010390	10B018-007442	10B018-007059	10B018-007442		10B018-007442
28										

MT50IIX / INX SKU Select (A1-Phase)

Page	Function	MT50IIX	MT50INX	Remark
22	FNPLUSLED	X	O	
22	M-SATA	O	X	
22	LED	Ses Table	Ses Table	
22	MMB	O	X	
23	TPM	O	O	A1-Phase Only
23	G-Sensor	O	O	A1-Phase Only
24	Subwoofer	X	O	A1-Phase Only
25	Card Reader	O	O	A1-Phase Only
27	+3.3V_DGPU +1.5V_VRAM +1.05V_DGPU	X	O	
34	+VGA_Core	X	O	
35~42	GPU	X	O	

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Title: Connector List

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EE Schematics Modify

REV.	REVISION DESCRIPTION
00	MT50IN VER:A0 Initialization
01	MT50IN VER:B0 VR85 is from M-R0402 to M-R0603 PL8 is package from choke-14x12_9x5 to choke-14x12_9x3_5 for MT50IN1 PD4, MPD1 Package change from SOD123H to SOD-123H CN24 Adding U13 Package change from M-SOP8B to sop8-5_3x5_3x2_2 U16 Package change from M-SO8 to sop8-5_3x5_3x2_2 Near to PJP22.2 of net +0.85V_VCNTL change to +1.5VS_VIN_PU11 Adding C454, C453, C452, C451 for reserved SATA function U5.AN24 change from +3.3V to +3.3VS R291.1 change from +1.05V to +1.8V Adding PC225, PC225 is from 33nF to NC PC139 is from NC to .1uF/25V PR71 is from 270K to 16K PR42 is from 1.91K to 2.26K for LoadLine setting 1.9mΩ PR51 is from 453 to 604 for GFX's power unit setting OCP 64.5A Adding PC226, PC227, PC228, PC229, PC230, PC231 Adding PC70 for power request on material Adding PC232, PC233, PC234, PC235 PR272 is from 120K to 160K for +1.5VS's power unit setting OCP 20.5A PR28 is from 0 to NC PR8 is from 26.1K to 24K for enhance +1.05V PR9 is from 137K to 124K for enhance +1.05V PR18 is from 71.5K(OCP=6A) to 12.7K(OCP=24A) PR17 is from 162K(OCP=11A) to 56K(OCP=17.6A) Removed PQ17, PR140 Modify circuit as show in figure 1 block, PQ14, PQ10 change M-SOT23G to M-SOT23A PC92 is from 1nF to 2.2nF Adding PC236, PC237 Adding pull high VR141, VR142 R336.1 of net name "SATA_LED#" change to "SATA_LED2# Adding Q36, R540, R541 **Adding R542, R544, R545 for EMI damping** **Adding C452, C451, C458 for EMI** **R128 is from 22 to 220 for EMI request** **C52 is from 22p to 27p for EMI request** **CN22 is from con_ffc_28p_ff1-01210-286n_fcn to con_ffc_28s05_y16804-28110_hr** **LED6, LED7 are led_2b_ltst-c193tbkt-5a_lon from to led_2b_list-s320tbkt_lon** **GFXCORE&VCCCORE adding snubber solution for power request** **PR216, PR212, PR210 are from NC to 2.2 for snubber power request** **PC156, PC160, PC159 are from NC to 2200p for snubber power request** **+1.5VS adding snubber solution for power request** **PR284 is from NC to 2.2 for snubber power request** **PC224 is from NC to 2200p for snubber power request** **+1.05V&+5VA adding snubber solution for power request** **PR201, PR195 are from NC to 2.2 for snubber power request** **PC142, PC133 are NC to 2200p for snubber power request** **VGA Core adding snubber solution for power request** **PR93 is from NC to 2.2 for snubber power request** **PC83 is from NC to 2200p for snubber power request** **Modify power jumper need to close** **Removed PJP16,PJP15,PJP11,PJP10,PJP9,PJP23,PJP13,PJ1, PJP14,PJ2,PJP17,PJP2,PJP5,PJP3,PJP4,PJP6,PJP22,PJP19,PJP8,PJP21,PJP18** **Adding PC240 for power request** Adding a pin for LED6,LED7 **Recovery power jumper and modify close** **Recovery PJP16,PJP15,PJP11,PJP10,PJP9,PJP23,PJP13,PJ1, PJP14,PJ2,PJP17,PJP2,PJP5,PJP3,PJP4,PJP6,PJP22,PJP19,PJP8,PJP21,PJP18** VR85 change material PD4, MPD1 package change from M-SOD123 to SOD-123H Cancel the connection with together, mount up L27, L29, L30, L28 for EMI request PC241, PC242 move to +1.05V Q12, Q13 are from 2N7002HG to 2N7002K for CEC issue. R199, R201 are from 100K to 10K for DDC rising time issue R470 is from 0 to 10K L27, L29, L30, L28 are from NC to CMF2012H3-900-2P-T L10,L9,L8,L7 are from CK-MCM2012B900GBE to CK-CMF2012F-900-2P-T for EMI request L27,L29,L30,L28 are from CM2012H3-900-2P-T to CMF2012H2-900-2P-T

REV.	REVISION DESCRIPTION
	PJP2,PJP17,PJP5 are from TOPCLOSE-3MM to TOPCLOSE-4MM for power request R542,R545,R543 are from 0 to BD-FBMA-11-100505-301T C452,C451,C458 are from .1uF to NC L27,L29,L30,L28 footprint is from ATCM3216 to CHOKE-4P_2X1_2X1_2 Adding PR289, connect PR8. with 8153_AGND. CN2 package change for ME request CN23 package change for ME request Delete a pin for LED6,LED7 PR227 is from 1.47K to 1.13K for OCP 50A at 80degree c, OCP 60A at 50degree c. PC81 is from NC to 6.8N for transient response PJP17 is from TOPCLOSE-4MM to TOPOPEN-4MM U4 footprint is con_cpu-pz98921-3622-01h_fox from to MPGA989_MCP_SKT_37-5MM_SQ Material change after gerber out to modify 4/12 Disable AOAC function, delete R541 Disable AOAC function, delete L50 mount up L49 Disable AOAC function, delete L11 mount up L12 Disable AOAC function, Stuff L49, L12, R456, R457, R458, R461, Unstuff D6, L50, L11, R467 Disable debug function, delete R456, adding R467 for BT enable function PR73 is from 6.04K to 499 for power request PR225 is from 2.67K to 0 for power request, disable load line function PC177 is from 2.67K to 0 for power request, disable load line function R21 is from 0 to BD-FBMA-11-100505-301T for EMI request
02	MT50IN VER:01 Modify 5/21 1. LED7, LED5, LED6 are footprint from led_2w_ltw-020zdcg-e2_lon to led_2b_12-21bhc-zl1m2ry2c_evl 2. Adding LED8, LED9, R544, R546 3. CN24 of connect need to swap. 4. CN5 is from CON_ODD-S235R_1759952-3_TYC to con_odd-s235r_c18548-11305-l_at Modify 5/22 1. CN5 of circuit libraery had modify gnd pin as follows layout library 2. Modify ID2, adding SW4, SW5 ***Modify 6/6*** **GFX side** ***PR67 is from 680 to 576 for adjusting GFX OCP*** **AX6618ESA material change for failrate** ***PU11 is from AX6618ESA to APAPE8979 on material*** ***Modify 6/15*** ***Q13, Q12 are from 2N7002K to PZ2N7002M*** ***R184, R195 are from 2.2K to 1K*** ***R199, R201 are from 10K to 100K***

ECS COMPUTER CORP.

Title: Change Notes

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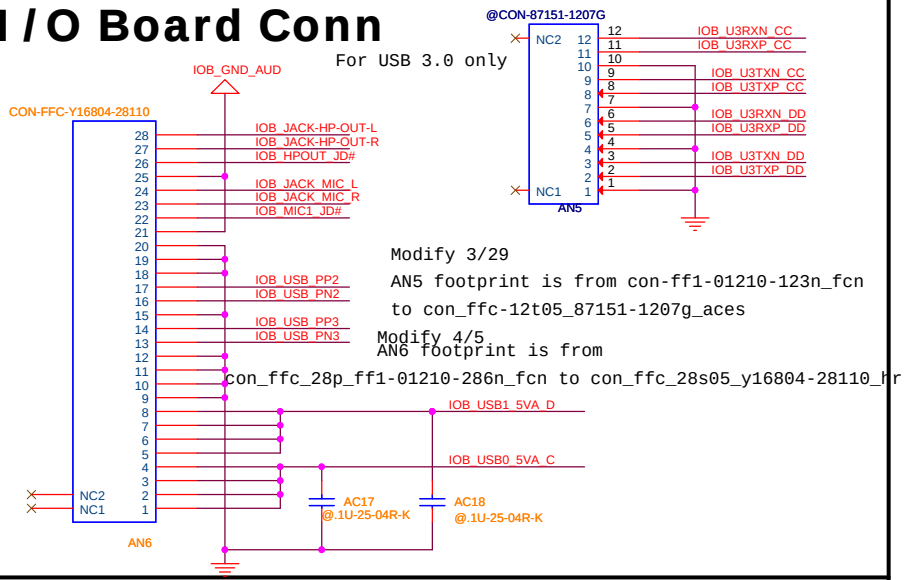
I/O Board Conn

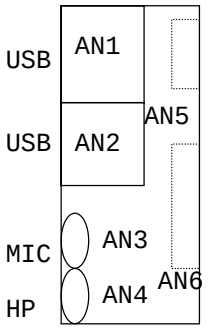
For USB 3.0 only

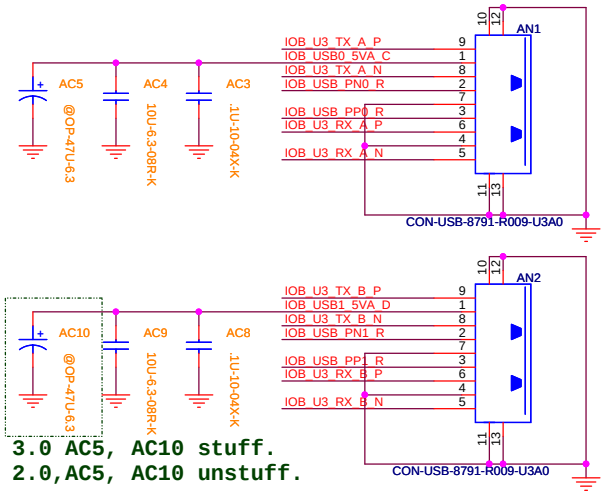


Modify 3/29
AN5 footprint is from con-ff1-01210-123n_fcn
to con_ffc-12t05_87151-1207g_aces

Modify 4/5
AN6 footprint is from
con_ffc_28p_ff1-01210-286n_fcn to con_ffc_28s05_y16804-28110_hr

USB CONN

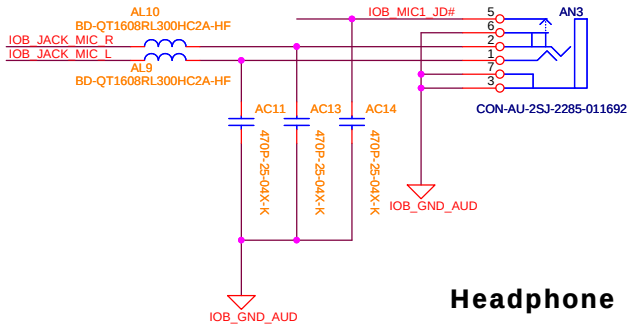




Support USB 3.0 AC5, AC10 stuff.
Support USB 2.0,AC5, AC10 unstuff.

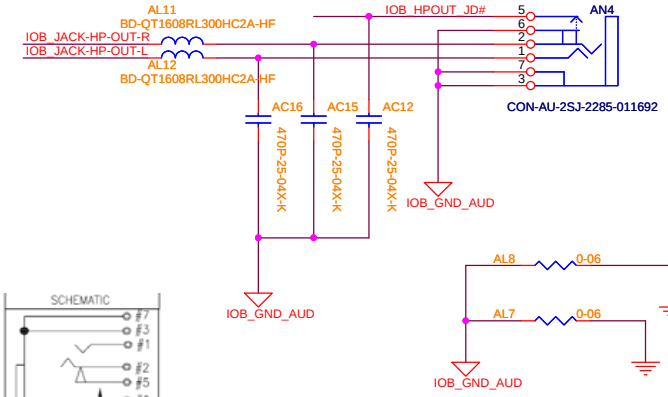
AUDIO

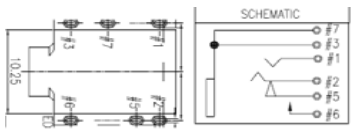
Microphone + Line in



Headphone

Modify 4/10
AL10, AL9,AL11,AL12 are from BD-1608CF-600T06-HF to BD-QT1608RL300HC2A-HF

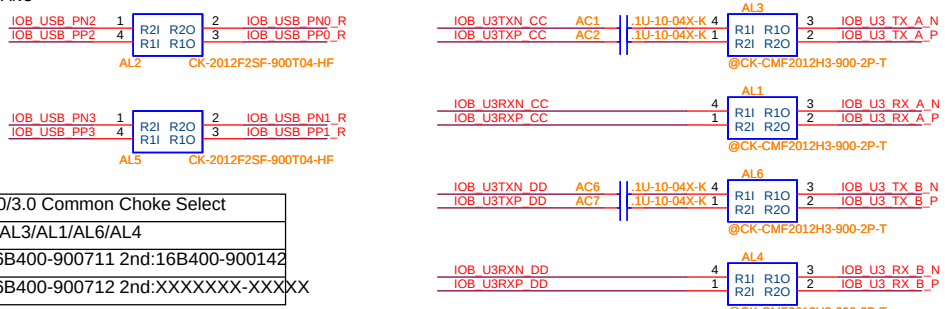




EMI Issue

PCH USB 2.0 Port 0 & Port 1 PCH USB 3.0 Port A & Port B

Modify 4/10, Disable USB3.0 function
AL2,AL5 are from CK-2012F2SF-900T04-HF to CMF2012F-900-2P-T for disable USB3.0 function
Delete AL3,AL1,AL6,AL4, AC5, AC10
Delete AN5



USB 2.0/3.0 Common Choke Select	
Loation :AL2/AL5/AL3/AL1/AL6/AL4	
USB 2.0	1st:16B400-900711 2nd:16B400-900142
USB 3.0	1st:16B400-900712 2nd:XXXXXXX-XXXXX

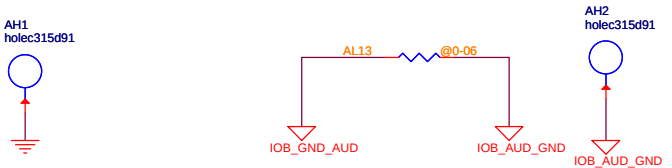
EMI Solution Near Connector

Modify 5/31
Update P/N

PCB2
PCB
15BFR7-051001

Modify 4/30
Modify P/N

MT50IN USB BD Ver:01
P/N:15BFR7-051001
PCB USB BD.MT50IN1.V.01....62.35*25*1.2mm.4L..LEAD-FREE.GREEN.....



TOP	
GND(IN1)	
VCC(IN2)	
BOT	

ECS COMPUTER CORP.

Title: USB/ MIC / Headphone

Size	Document Number	Rev
Custom	MT50IN USB BD	01

Date: Tuesday, July 24, 2012 Sheet 1 of 6

Modify 3/29
1. AN5 footprint is from con-ff1-01210-123n_fcn to con_ffc-12t05_87151-1207g_aces
2. AN6 footprint is from con_ffc_28s05-ff1-01210-fcn to con_ffc_28p_ff1-01210-286n_fcn

Modify 4/5
AN6 footprint is from con_ffc_28p_ff1-01210-286n_fcn to con_ffc_28s05_y16804-28110_hr
Modify 4/10
AL10, AL9,AL11,AL12 are from BD-1608CF-600T06-HF to BD-QT1608RL300HC2A-HF
Modify 4/10, Disable USB3.0 function
1. Delete AL3,AL1,AL6,AL4, AC5, AC10
2. AL2,AL5 are from CK-2012F2SF-900T04-HF to CMF2012F-900-2P-T for disable USB3.0 function
3. Delete AN5
Modify 4/30
Modify P/N

Modify 5/31
Update P/N

ECS COMPUTER CORP.		
Title: Change Notes		
Size: C	Document Number: MT50IN USB BD	Rev: 01
Date: Tuesday, July 24, 2012	Sheet 2 of 6	

Modify 4/30
Modify P/N

PCB3
PCB
15BFR7-051000

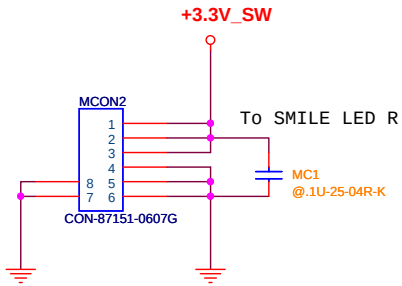
Modify 5/31
Update P/N

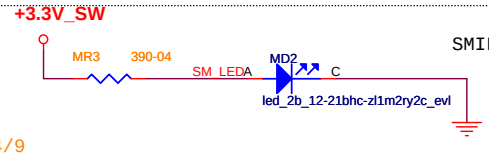
MT50IN SW BD Ver:01
P/N:15BFR7-051000
PCB SWITCH BD.MT50IN1.V.01....30*15.3*1.2mm.4L..LEAD-FREE.GREEN.....

Modify 5/2

Removed MR2, MD1 for ME request "spacing"

Place near to MSW1





Modify 4/9

MD2 is from led_2b_ltst-c193tbkt-5a_lon to led_2b_list-s320tbkt_lon, and adding a pin

Modify 4/10

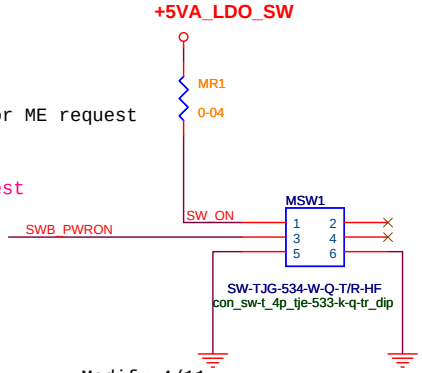
MD2 footprint is from led_2b_list-s320tbkt_lon to led_2w_ltw-020zdcg-e2_lon for ME request

Modify 4/27

MD2 is from led_2w_ltw-020zdcg-e2_lon to led_2b_list-s320tbkt_lon for ME request

Modify 5/2

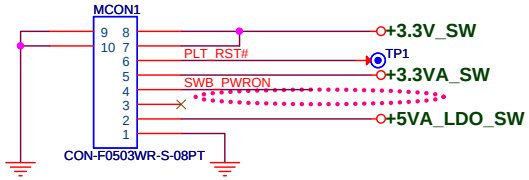
MD2 is footprint from led_2b_list-s320tbkt_lon to led_2b_12-21bhc-zl1m2ry2c_evl

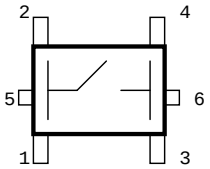


Modify 4/11

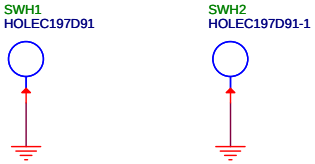
MSW1 material change for ME request

SW Board Connector





Top View



Modify 5/31
SWH1 is from holec217d91 to HOLEC197D91
SWH2 is from holec237d91 to HOLEC197D91-1

ECS COMPUTER CORP.		
Title: Power SW/LED		
Size: B	Document Number: SCHEMATIC1 — MT50IN SW BD	Rev: 01
Date: Tuesday, July 24, 2012	Sheet 3 of 6	

Modify 4/10
MD2 footprint is from led_2b_list-s320tbkt_lon to led_2w_ltw-020zdcg-e2_lon for ME request
Modify 4/11
MSW1 footprint is from con_sw-t_4p_tje-533-k-q-tr_dip to con_sw-t_tje-533i-q-tr12_dip for ME request
MSW1 material change for ME request
Modify 4/27
MD2 is from led_2w_ltw-020zdcg-e2_lon to led_2b_list-s320tbkt_lon for ME request

Modify 4/30
Modify P/N
Modify 5/2
Removed MR2, MD1 for ME request "spacing"

Modify 5/2
MD2 is footprint from led_2b_list-s320tbkt_lon to led_2b_12-21bhc-zl1m2ry2c_evl

Modify 5/31
Update P/N
SWH1 is from holec217d91 to HOLEC197D91
SWH2 is from holec237d91 to HOLEC197D91-1

ECS COMPUTER CORP.		
Title: Change Notes		
Size: C	Document Number: MT50IN SW BD	Rev: 01
Date: Tuesday, July 24, 2012	Sheet 4 of 6	

LED BD Left Side

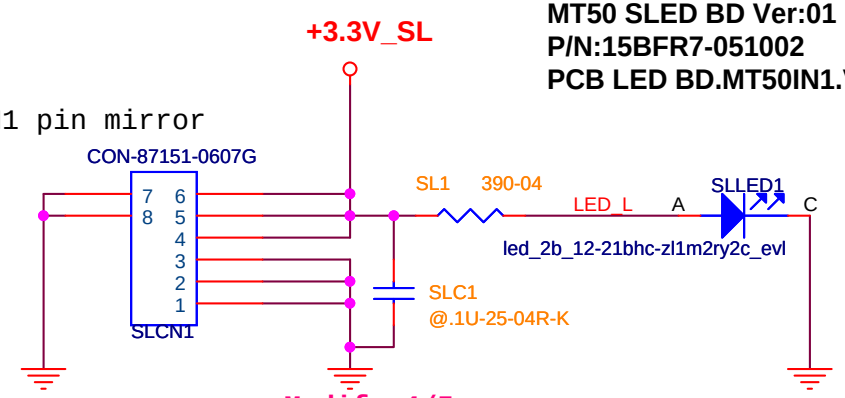
Modify 4/30
Modify P/N

PCB4
PCB
15BFR7-051002

Modify 5/31
Update P/N

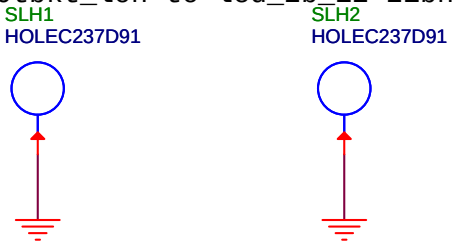
MT50 SLED BD Ver:01
P/N:15BFR7-051002
PCB LED BD.MT50IN1.V.01....36*13*1.2mm.4L..LEAD-FREE.GREEN.....

SLCN1 pin mirror



Modify 4/5
SLED1 is from led_2b_ltst-c193tbkt-5a_lon to led_2b_list-s320tbkt_lon
Modify 4/6
Adding a pin for SLLED1

Modify 5/2
SLLED1 is footprint from led_2b_list-s320tbkt_lon to led_2b_12-21bhc-zl1m2ry2c_evl



Modify 4/10
SLLED1 footprint is from led_2b_list-s320tbkt_lon to led_2w_ltw-020zdcg-e2_lon for ME request
Modify 4/27
SLLED1 is from LED_2W_LTW-020ZDCG-E2_LON to led_2b_list-s320tbkt_lon for ME request

ECS COMPUTER CORP.		
Title: LED		
Size: A	Document Number: SCHEMATIC1 — MT50IN LED BD	Rev: 01
Date: Tuesday, July 24, 2012	Sheet 5 of 6	

EE Schematics Modify

Modify B phase

SLED1 is from led_2b_ltst-c193tbkt-5a_lon to led_2b_list-s320tbkt_lon for ME request

Adding a pin for SLLED1

SLLED1 footprint is from led_2b_list-s320tbkt_lon to led_2w_ltw-020zdcg-e2_lon for ME request

Modify 4/27

SLLED1 is from LED_2W_LTW-020ZDCG-E2_LON to led_2b_list-s320tbkt_lon for ME request

Modify 4/30

Modify P/N

Modify 5/2

SLLED1 is footprint from led_2b_list-s320tbkt_lon to led_2b_12-21bhc-zl1m2ry2c_evl

Modify 5/31

Update P/N

ECS COMPUTER CORP.			
Title: Change Notes			
Size:	Document Number: SCHEMATIC1 A	MT50IN LED BD	Rev: 01
Date: Tuesday, July 24, 2012		Sheet 6 of 6	