abit M703 IX38 MAX Schematics

Version: 0.2

Model	SSID	PCB	Features
IX38 MAX	108A	**Black**	uGuru Tech., Silent OTES 2, Dual **DDR3 1333/1066** Dual SATA 3Gb/s RAID, eSATA, PATA, GbE IEEE-1394, 7.1 Channel HD Audio **Back LED**
IX38 QuadGT	108B	**Blue**	uGuru Tech., Silent OTES 2, Dual DDR2 800, Dual SATA 3Gb/s RAID, eSATA, PATA, GbE IEEE-1394, 7.1 Channel HD Audio

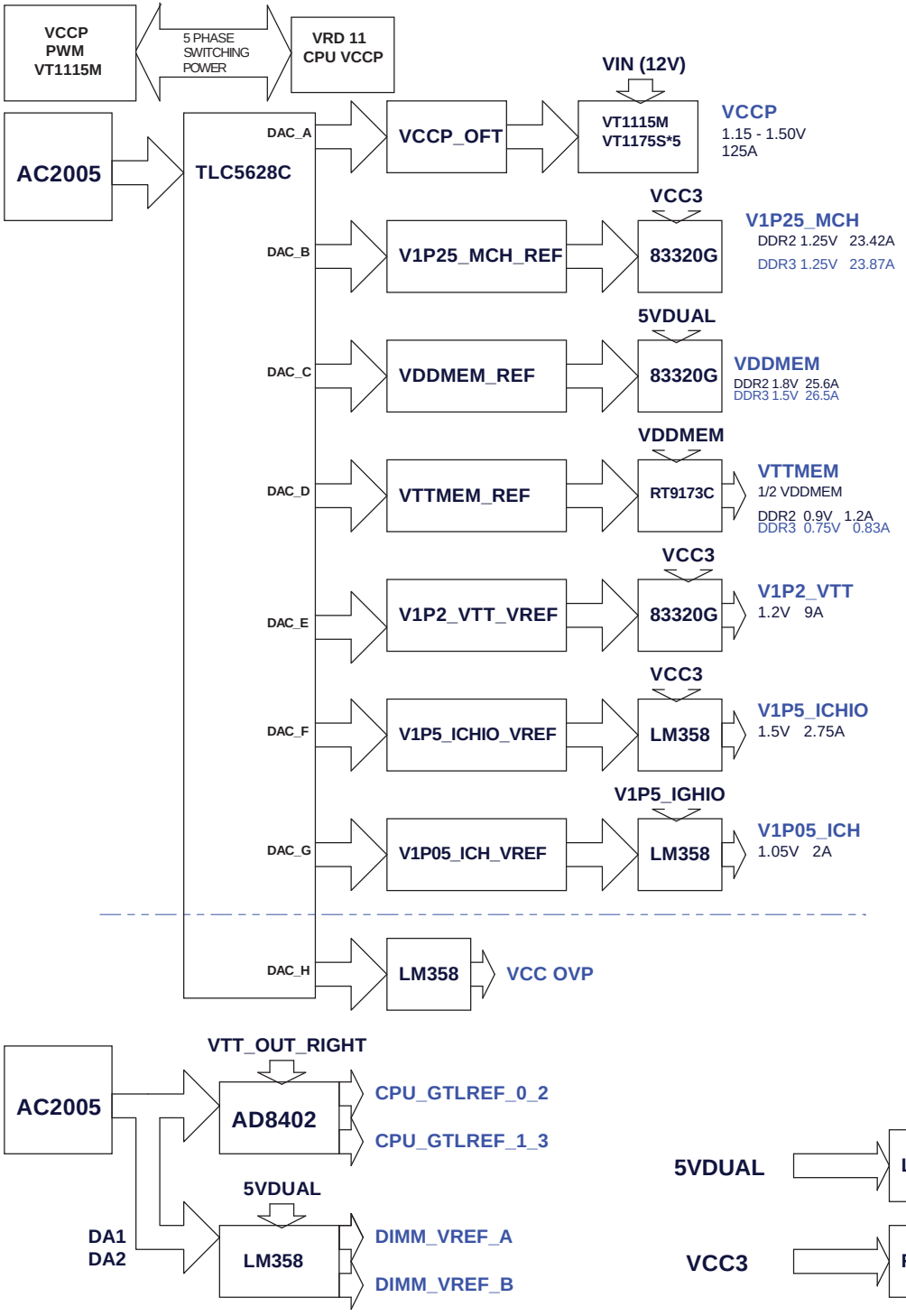
abit UNIVERSAL ABIT

Title: **COVER SHEET**

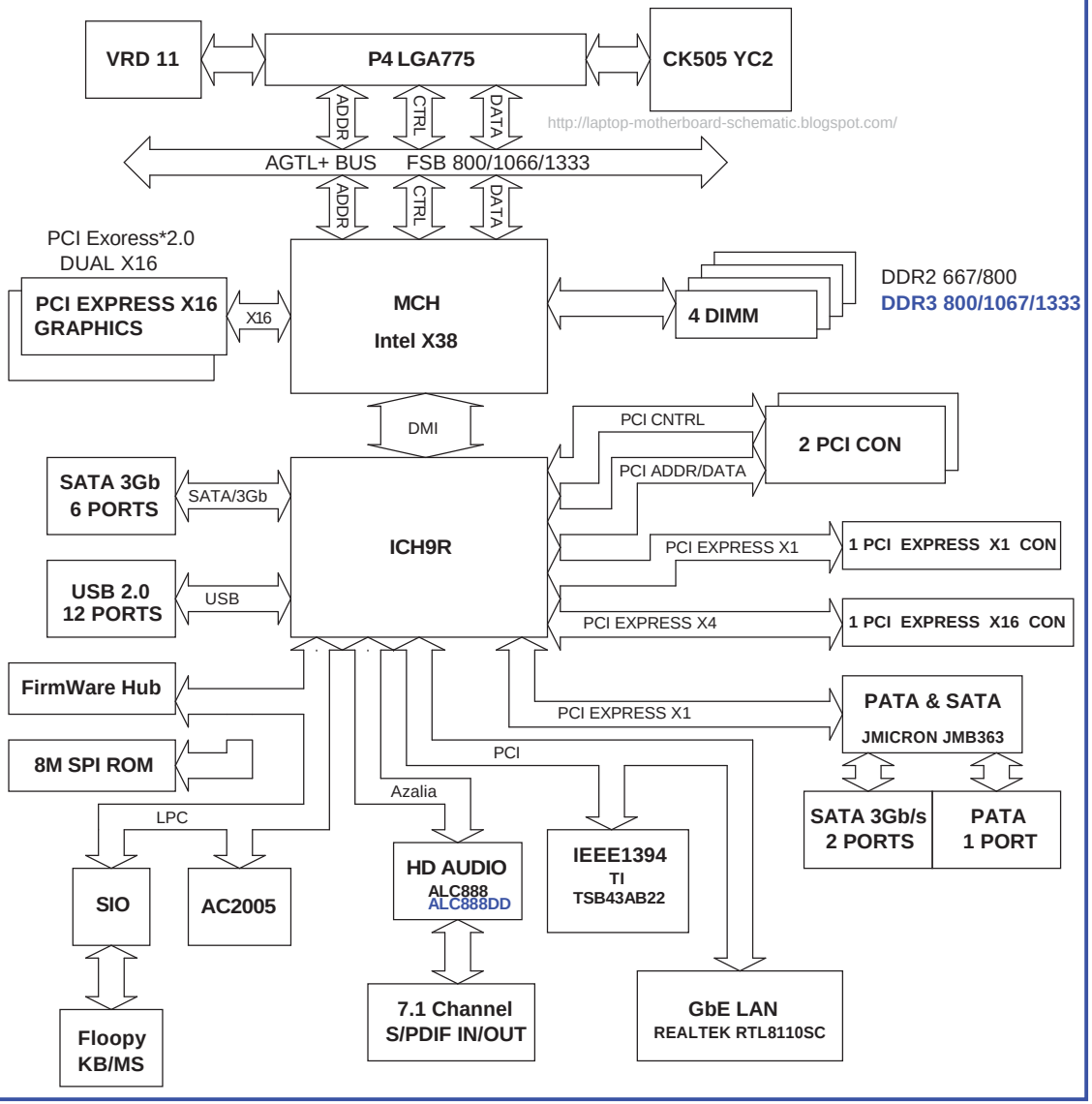
Size	Document Number	Rev
Custom	*M703 IX38 MAX*	V0.2

Date: Friday, June 22, 2007 Sheet 1 of 37

POWER DESIGN DIAGRAM



BLOCK DIAGRAM

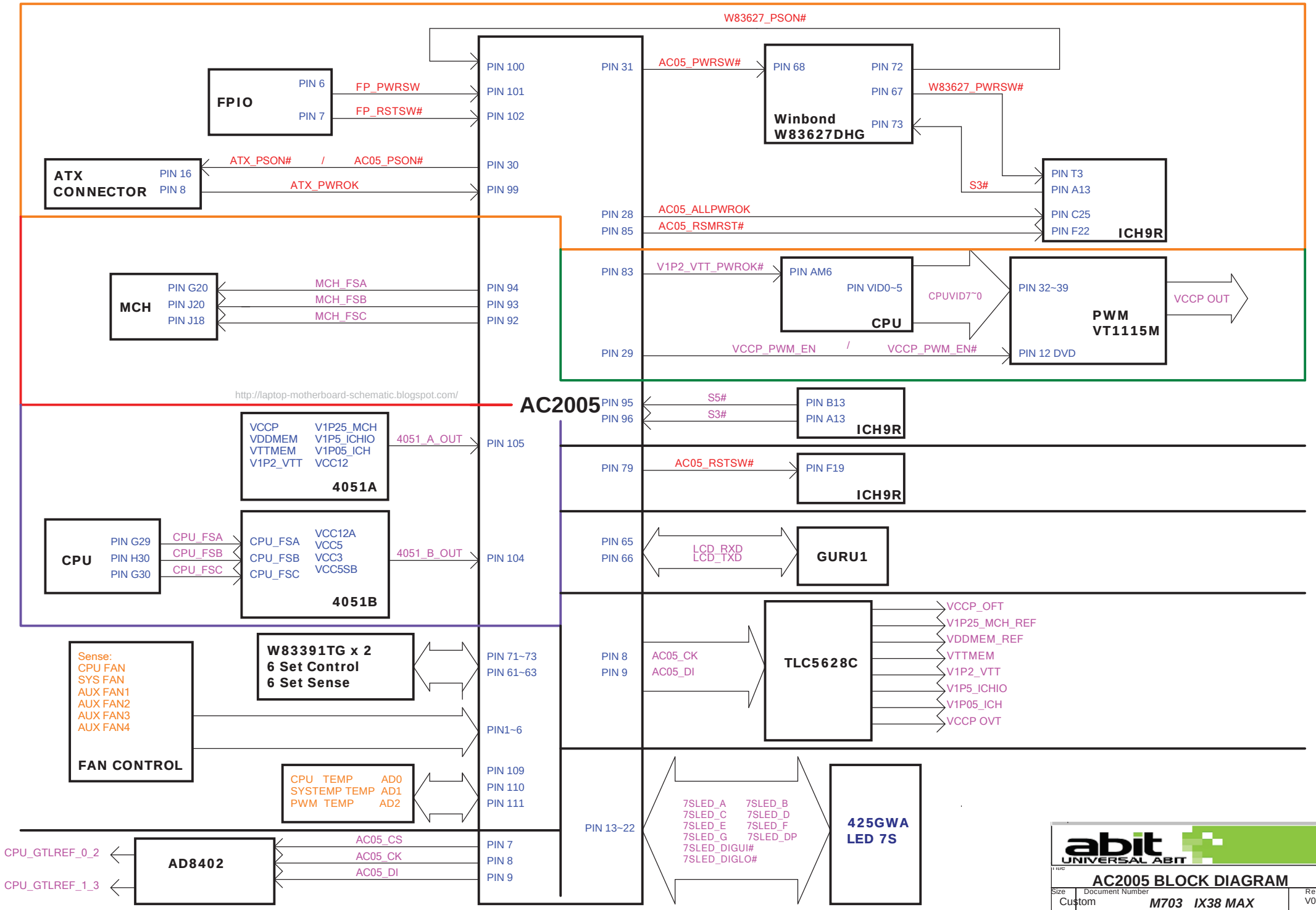


abit UNIVERSAL ABIT

SYSTEM & POWER BLOCK DIAGRAM

Size	Document Number	Rev
Custom	M703 IX38 MAX	V0.2

Date: Friday, June 22, 2007 Sheet 2 of 37



abit UNIVERSAL ABIT

Title: AC2005 BLOCK DIAGRAM

Size	Document Number	Rev
Custom	M703 IX38 MAX	V0.2

Date: Friday, June 22, 2007 Sheet 3 of 37

ICH9 GPIO SETTING

Pin Name	Power Well	Usage	Default
GPIO0	3.3V Core	ACZ_DET	GPI
GPIO1	3.3V Core	TACH1	GPI
GPIO2	5V Core	PIRQ#E	GPI
GPIO3	5V Core	PIRQ#F	GPI
GPIO4	5V Core	PIRQ#G	GPI
GPIO5	5V Core	PIRQ#H	GPI
GPIO6	3.3V Core	TACH2	GPI
GPIO7	3.3V Core	TACH3	GPI
GPIO8	3.3V Sus	LPC_PME#	GPI
GPIO9	3.3V Sus	WOL_EN	Native
GPIO10	3.3V Sus	GPIO10	GPI
GPIO11	3.3V Sus	SMBALERT#	Native
GPIO12	3.3V Sus	LAN_PME#	GPI
GPIO13	3.3V Sus	1394_PME#	GPI
GPIO14	3.3V Sus	LAN2_PME#	GPI
GPIO15	3.3V Sus	STP_PCI#	Native
GPIO16	3.3V Core	FWH_WP#	GPO
GPIO17	3.3V Core	TACH0	GPI
GPIO18	3.3V Core	GPIO18	GPO
GPIO19	3.3V Core	SATA1GP	GPI
GPIO20	3.3V Core	GPIO20	GPO
GPIO21	3.3V Core	SATA0GP	GPI
GPIO22	3.3V Core	SCLOCK	Native
GPIO23	3.3V Core	LDRQ1#	Native
GPIO24	3.3V Sus	CLGPIO0	GPO
GPIO25	3.3V Sus	STP_CPU#	Native
GPIO26	3.3V Sus	S4_SATE#	GPO
GPIO27	3.3V Sus	EL_STATE0	GPO
GPIO28	3.3V Sus	EL_STATE1	GPO
GPIO29	3.3V Sus	OC5#	Native
GPIO30	3.3V Sus	OC6#	Native
GPIO31	3.3V Sus	OC7#	Native
GPIO33	3.3V Core	BORAD ID	GPO
GPIO34	3.3V Core	BOARD ID	GPO
GPIO32	3.3V Core	BOARD ID	GPO
GPIO35	3.3V Core	SATACLKREQ#	GPO
GPIO36	3.3V Core	SATA2GP	GPI
GPIO37	3.3V Core	SATA3GP	GPI
GPIO38	3.3V Core	SLOAD	GPI
GPIO39	3.3V Core	SDATAOUT0	GPI
GPIO40	3.3V Sus	OC1#	Native
GPIO41	3.3V Sus	OC2#	Native
GPIO42	3.3V Sus	OC3#	Native
GPIO43	3.3V Sus	OC4#	Native
GPIO44	3.3V Sus	OC5#	Native
GPIO45	3.3V Sus	OC6#	Native
GPIO46	3.3V Sus	OC7#	Native
GPIO47	3.3V Sus	OC8#	Native
GPIO48	3.3V Core	SDATAOUT0	GPI
GPIO49	V_CPU_IO	CPUPWRGD	Native
GPIO50	5.5V Core	REQ1#	Native
GPIO51	3.3V Core	GNT1#	Native
GPIO52	5.5V Core	REQ2#	Native
GPIO53	3.3V Core	GNT2#	Native
GPIO54	5.5V Core	REQ3#	Native
GPIO55	3.3V Core	GNT3#	Native

ICH9 GPIO SETTING

Pin Name	Power Well	Usage	Default
GPIO56	3.3V Sus	EXP_PRSNT1	GPI
GPIO57	3.3V Sus	EXP_PRSNT2	GPI

PCI DEVICE SETTING

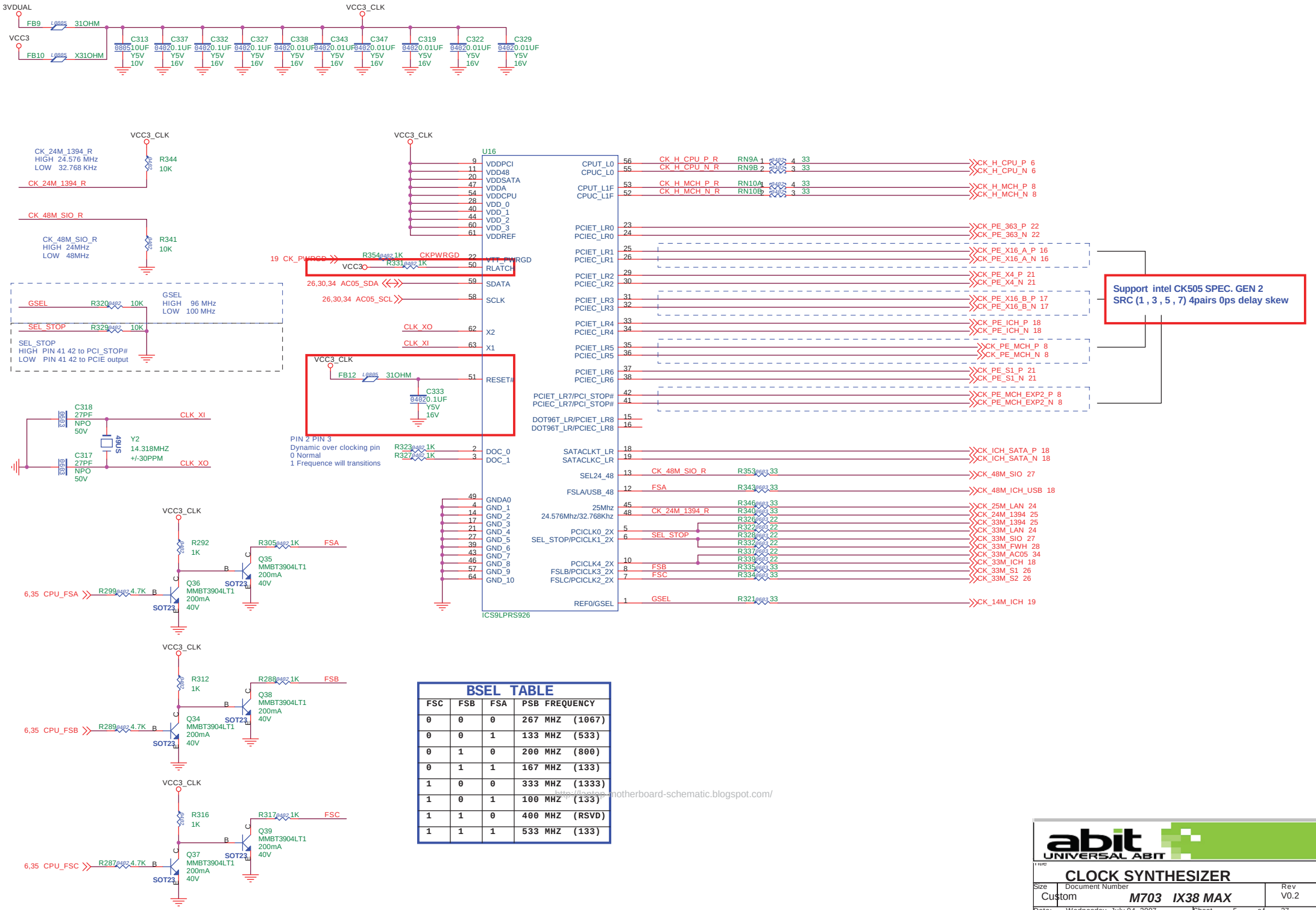
DEVICE	PCI1	PCI2	1394	GbE
INTA	G	E	F	H
INTB	H	F		
INTC	E	G		
INTD	F	H		
IDSEL	18	19	17	16
REQ/GNT	2	3	1	0

UNIVERSAL ABIT

Title: GPIO SETTING

Size: Custom | Document Number: M703 IX38 MAX | Rev: V0.2

Date: Friday, June 22, 2007 | Sheet 4 of 37



BSEL TABLE

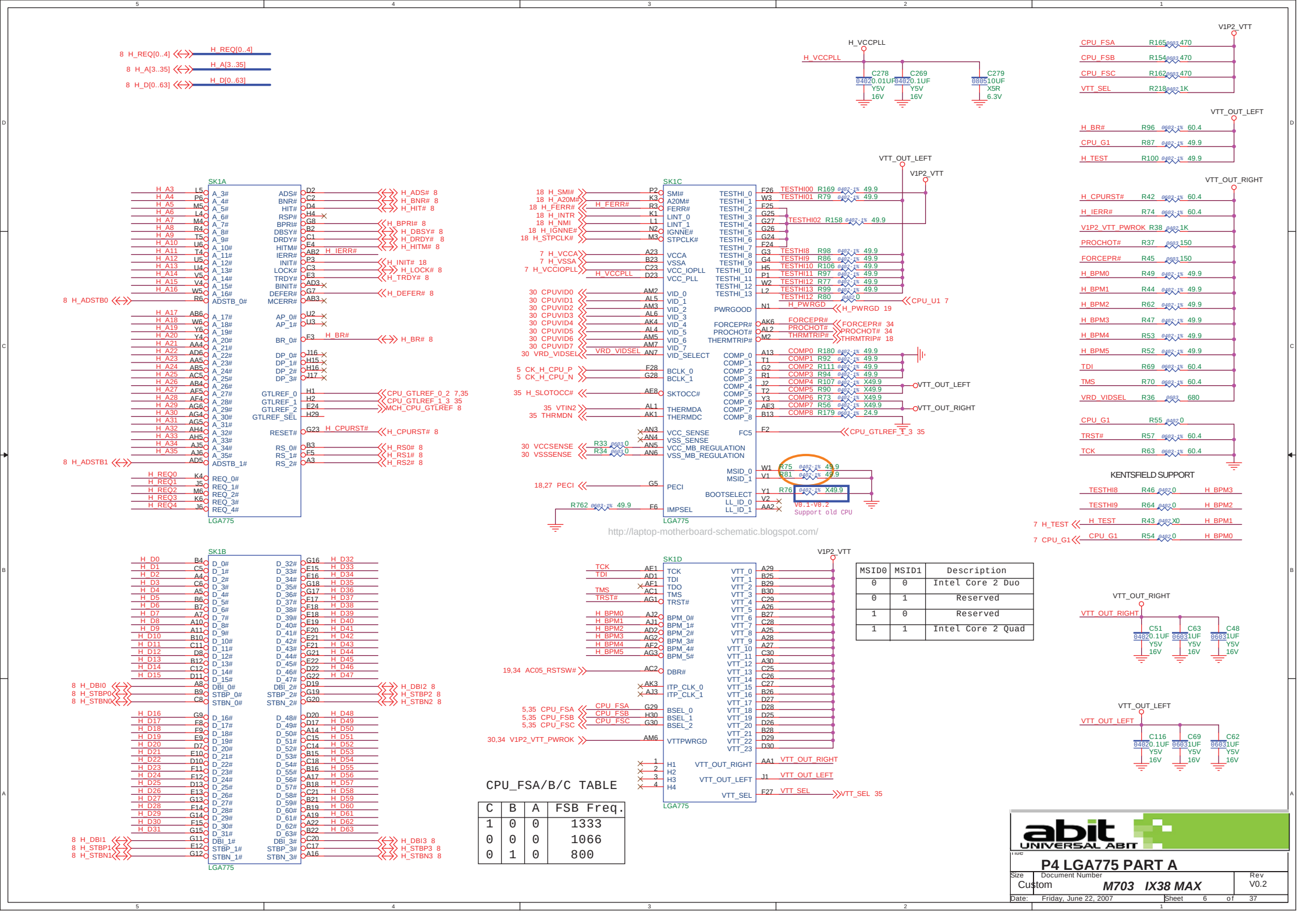
FSC	FSB	FSA	PSB FREQUENCY
0	0	0	267 MHZ (1067)
0	0	1	133 MHZ (533)
0	1	0	200 MHZ (800)
0	1	1	167 MHZ (133)
1	0	0	333 MHZ (1333)
1	0	1	100 MHZ (133)
1	1	0	400 MHZ (RSVD)
1	1	1	533 MHZ (133)

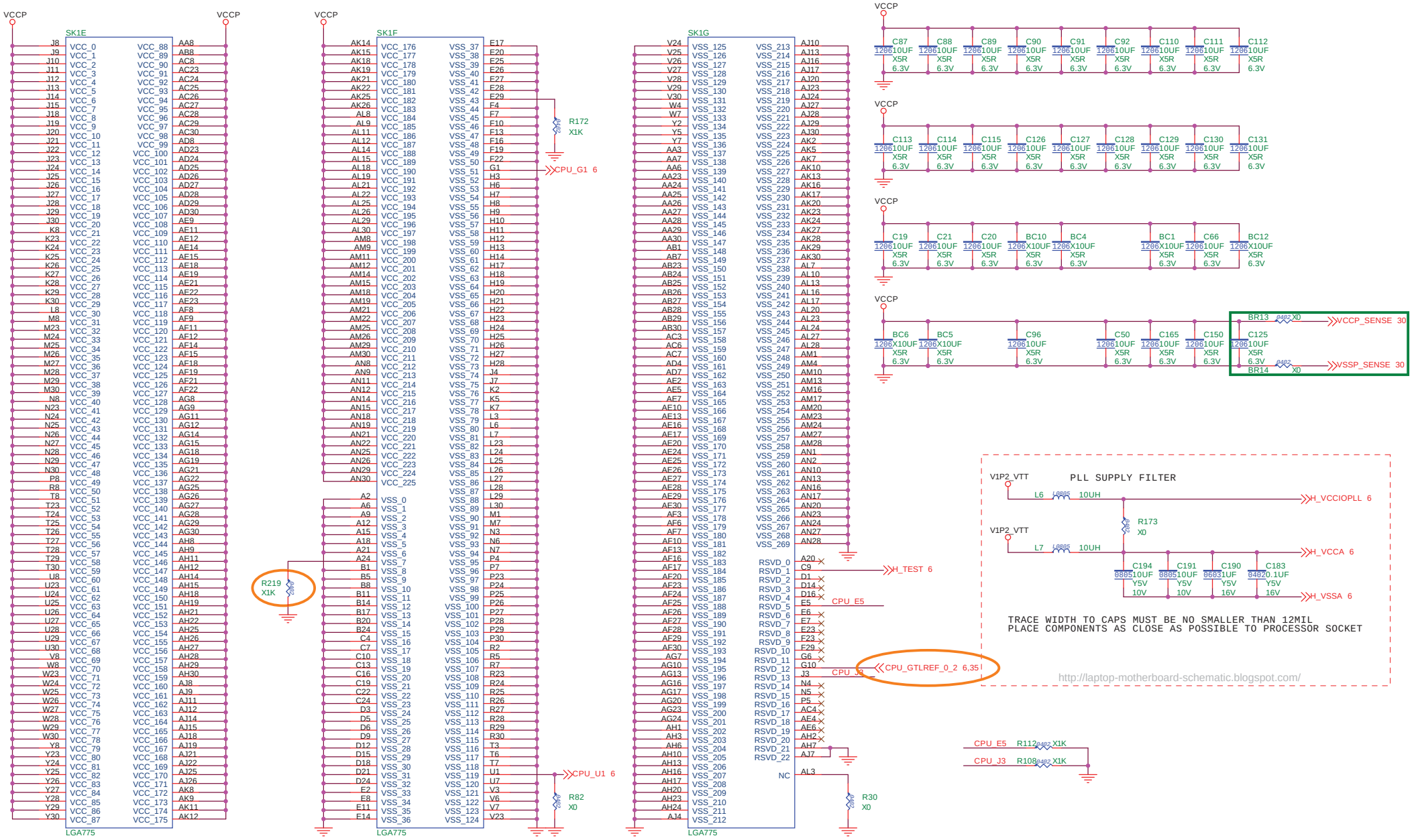
UNIVERSAL ABIT

Title: CLOCK SYNTHESIZER

Size	Document Number	Rev
Custom	M703 IX38 MAX	V0.2

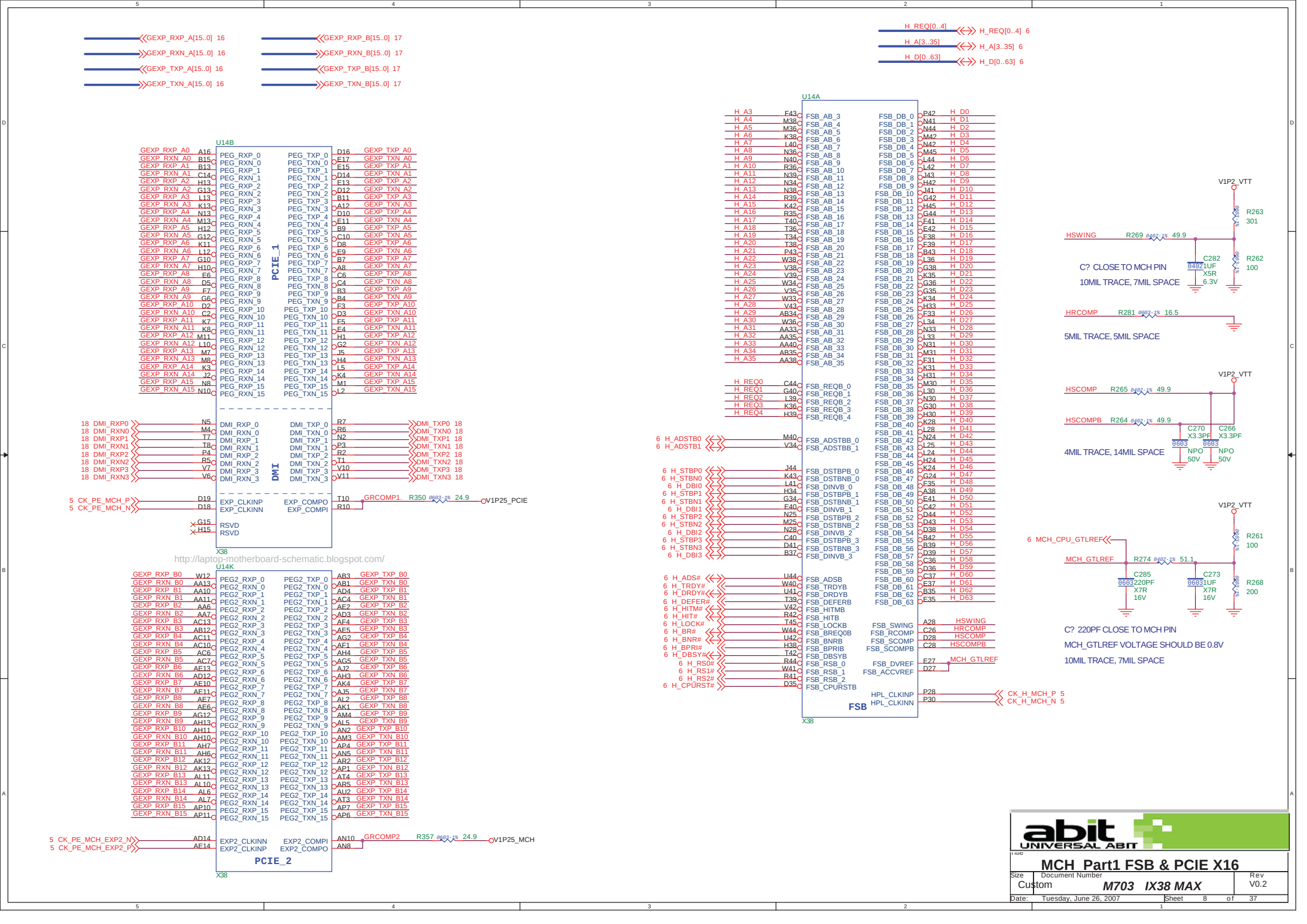
Date: Wednesday, July 04, 2007 Sheet 5 of 37

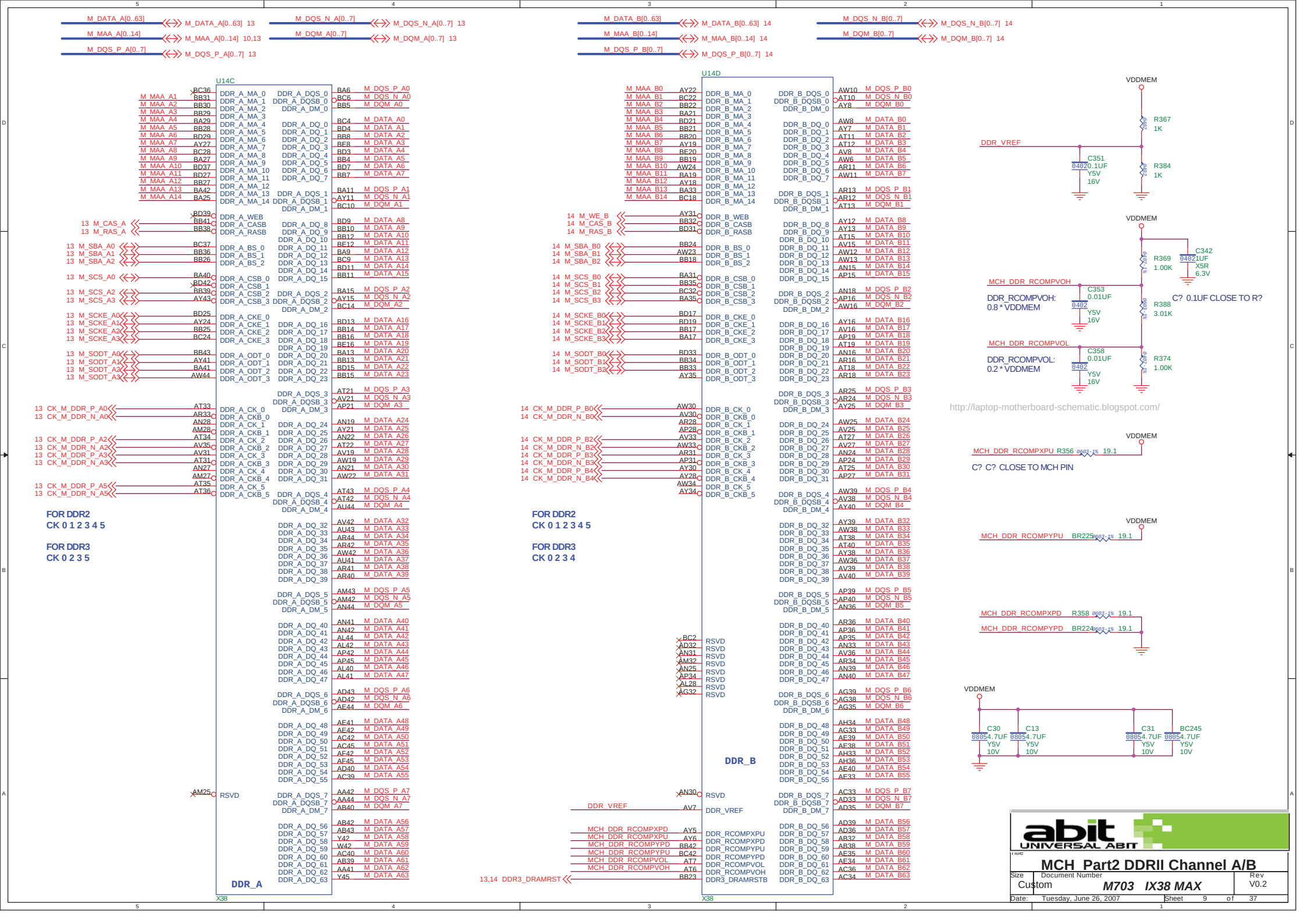

8 H_REQ[0..4]
H_REQ[0..4]
8 H_A[3..35]
H_A[3..35]
8 H_D[0..63]
H_D[0..63]
H_VCCPLL
C278 0402 0.01UF Y5V 16V
C269 0402 0.1UF Y5V 16V
C279 0805 10UF X5R 6.3V
V1P2_VTT
CPU_FSA R165 0603 470
CPU_FSB R154 0603 470
CPU_FSC R162 0603 470
VTT_SEL R218 0402 1K
VTT_OUT_LEFT
H_BR# R96 0603-1% 60.4
CPU_G1 R87 0402-1% 49.9
H_TEST R100 0402-1% 49.9
VTT_OUT_RIGHT
H_CPURST# R42 0603-1% 60.4
H_IERR# R74 0603-1% 60.4
V1P2_VTT_PWROK R38 0402 1K
PROCHOT# R37 0603 150
FORCEPR# R45 0603 150
H_BPM0 R49 0402-1% 49.9
H_BPM1 R44 0402-1% 49.9
H_BPM2 R62 0402-1% 49.9
H_BPM3 R47 0402-1% 49.9
H_BPM4 R53 0402-1% 49.9
H_BPM5 R52 0402-1% 49.9
TDI R69 0603-1% 60.4
TMS R70 0603-1% 60.4
VRD_VIDSEL R36 0603 680
CPU_G1 R55 0402 0
TRST# R57 0603-1% 60.4
TCK R63 0603-1% 60.4
KENTSFIELD SUPPORT
TESTHI8 R46 0402 0 H_BPM3
TESTHI9 R64 0402 0 H_BPM2
7 H_TEST H_TEST R43 0402 X0 H_BPM1
7 CPU_G1 CPU_G1 R54 0402 0 H_BPM0
SK1A
8 H_ADSTB0
8 H_ADSTB1
H_REQ0
H_REQ1
H_REQ2
H_REQ3
H_REQ4
H_IERR#
H_INIT# 18
H_LOCK# 8
H_TRDY# 8
H_DEFER# 8
H_BR# 8
H_CPURST# 8
H_RS0# 8
H_RS1# 8
H_RS2# 8
CPU_GTLREF_0_2 7,35
CPU_GTLREF_1_3 35
MCH_CPU_GTLREF 8
LGA775
SK1C
18 H_SMI#
18 H_A20M#
18 H_FERR#
18 H_INTR
18 H_NMI
18 H_IGNNE#
18 H_STPCLK#
7 H_VCCA
7 H_VSSA
7 H_VCCIOPLL
30 CPUVID0
30 CPUVID1
30 CPUVID2
30 CPUVID3
30 CPUVID4
30 CPUVID5
30 CPUVID6
30 CPUVID7
30 VRD_VIDSEL
5 CK_H_CPU_P
5 CK_H_CPU_N
35 H_SLOTOCC#
35 VTIN2
35 THRMDN
30 VCCSENSE
30 VSSSENSE
18,27 PECI
R762 0603-1% 49.9
TESTHI00 R169 0402-1% 49.9
TESTHI01 R79 0402-1% 49.9
TESTHI02 R158 0402-1% 49.9
TESTHI8 R98 0402-1% 49.9
TESTHI9 R86 0402-1% 49.9
TESTHI10 R106 0402-1% 49.9
TESTHI11 R97 0402-1% 49.9
TESTHI12 R77 0402-1% 49.9
TESTHI13 R99 0402-1% 49.9
TESTHI12 R80 0402 0
H_PWRGD
CPU_U1 7
H_PWRGD 19
FORCEPR# 34
PROCHOT# 34
THRMTRIP# 18
COMP0 R180 0402-1% 49.9
COMP1 R92 0402-1% 49.9
COMP2 R111 0402-1% 49.9
COMP3 R94 0402-1% 49.9
COMP4 R107 0402-1% X49.9
COMP5 R90 0402-1% X49.9
COMP6 R73 0402-1% X49.9
COMP7 R56 0402-1% X49.9
COMP8 R179 0603-1% 24.9
VTT_OUT_LEFT
VTT_OUT_RIGHT
CPU_GTLREF_1_3 35
R75 0402-1% 49.9
R81 0402-1% 49.9
R76 0402-1% X49.9
V0.1-V0.2 Support old CPU
LGA775
SK1B
8 H_DBI0
8 H_STBP0
8 H_STBN0
8 H_DBI1
8 H_STBP1
8 H_STBN1
H_DBI2 8
H_STBP2 8
H_STBN2 8
H_DBI3 8
H_STBP3 8
H_STBN3 8
LGA775
SK1D
TCK
TDI
TMS
TRST#
H_BPM0
H_BPM1
H_BPM2
H_BPM3
H_BPM4
H_BPM5
19,34 AC05_RSTSW#
5,35 CPU_FSA
5,35 CPU_FSB
5,35 CPU_FSC
30,34 V1P2_VTT_PWROK
VTT_OUT_RIGHT
VTT_OUT_LEFT
VTT_SEL
VTT_SEL 35
LGA775
MSID0 MSID1 Description
0 0 Intel Core 2 Duo
0 1 Reserved
1 0 Reserved
1 1 Intel Core 2 Quad
VTT_OUT_RIGHT
C51 0402 0.1UF Y5V 16V
C63 0603 1UF Y5V 16V
C48 0603 1UF Y5V 16V
VTT_OUT_LEFT
C116 0402 0.1UF Y5V 16V
C69 0603 1UF Y5V 16V
C62 0603 1UF Y5V 16V
CPU_FSA/B/C TABLE
C B A FSB Freq.
1 0 0 1333
0 0 0 1066
0 1 0 800
http://laptop-motherboard-schematic.blogspot.com/
abit UNIVERSAL ABIT
P4 LGA775 PART A
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Friday, June 22, 2007
Sheet 6 of 37



UNIVERSAL ABIT

Title	P4 LGA775 PART B	
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Friday, June 22, 2007	Sheet 7 of 37	


GEXP_RXP_A[15..0] 16
GEXP_RXN_A[15..0] 16
GEXP_TXP_A[15..0] 16
GEXP_TXN_A[15..0] 16
GEXP_RXP_B[15..0] 17
GEXP_RXN_B[15..0] 17
GEXP_TXP_B[15..0] 17
GEXP_TXN_B[15..0] 17
H_REQ[0..4] H_REQ[0..4] 6
H_A[3..35] H_A[3..35] 6
H_D[0..63] H_D[0..63] 6
U14B
PCIE_1
DMI
U14K
PCIE_2
U14A
FSB
X38
V1P2_VTT
HSWING R269 49.9
C? CLOSE TO MCH PIN
10MIL TRACE, 7MIL SPACE
HRCOMP R281 16.5
5MIL TRACE, 5MIL SPACE
HSCOMP R265 49.9
HSCOMPB R264 49.9
4MIL TRACE, 14MIL SPACE
6 MCH_CPU_GTLREF
MCH_GTLREF R274 51.1
C? 220PF CLOSE TO MCH PIN
MCH_GTLREF VOLTAGE SHOULD BE 0.8V
10MIL TRACE, 7MIL SPACE
GRCOMP1. R350 24.9 V1P25_PCIE
GRCOMP2 R357 24.9 V1P25_MCH
http://laptop-motherboard-schematic.blogspot.com/
UNIVERSAL ABIT
MCH_Part1 FSB & PCIE X16
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Tuesday, June 26, 2007
Sheet 8 of 37



UNIVERSAL ABIT

Title: MCH Part2 DDRII Channel A/B

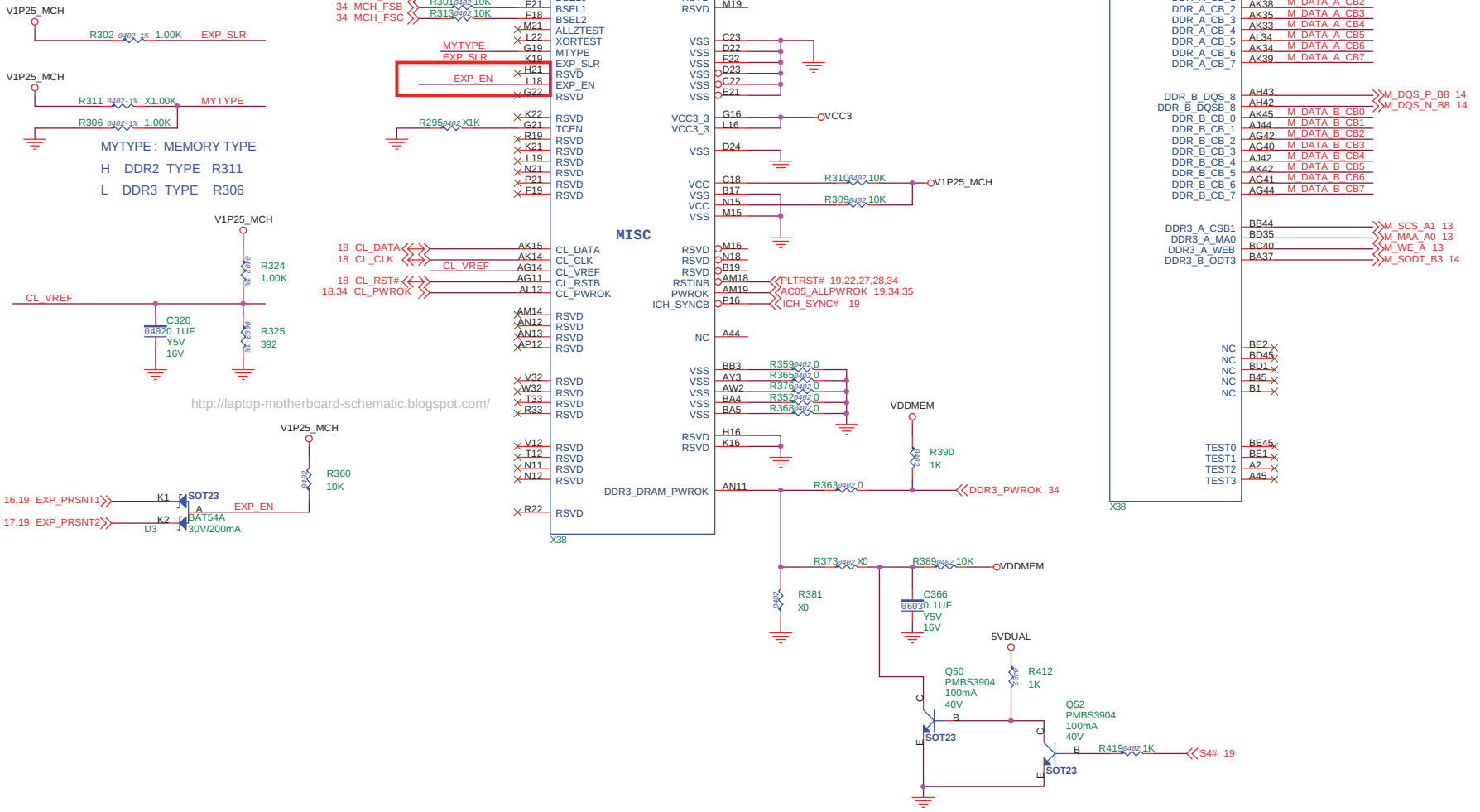
Size	Document Number	Rev
Custom	M703 IX38 MAX	V0.2

Date: Tuesday, June 26, 2007 Sheet 9 of 37

BSEL TABLE			
2	1	0	PSB FREQUENCY
0	0	1	133 MHZ (533)
0	1	0	200 MHZ (800)
0	0	0	267 MHZ (1067)

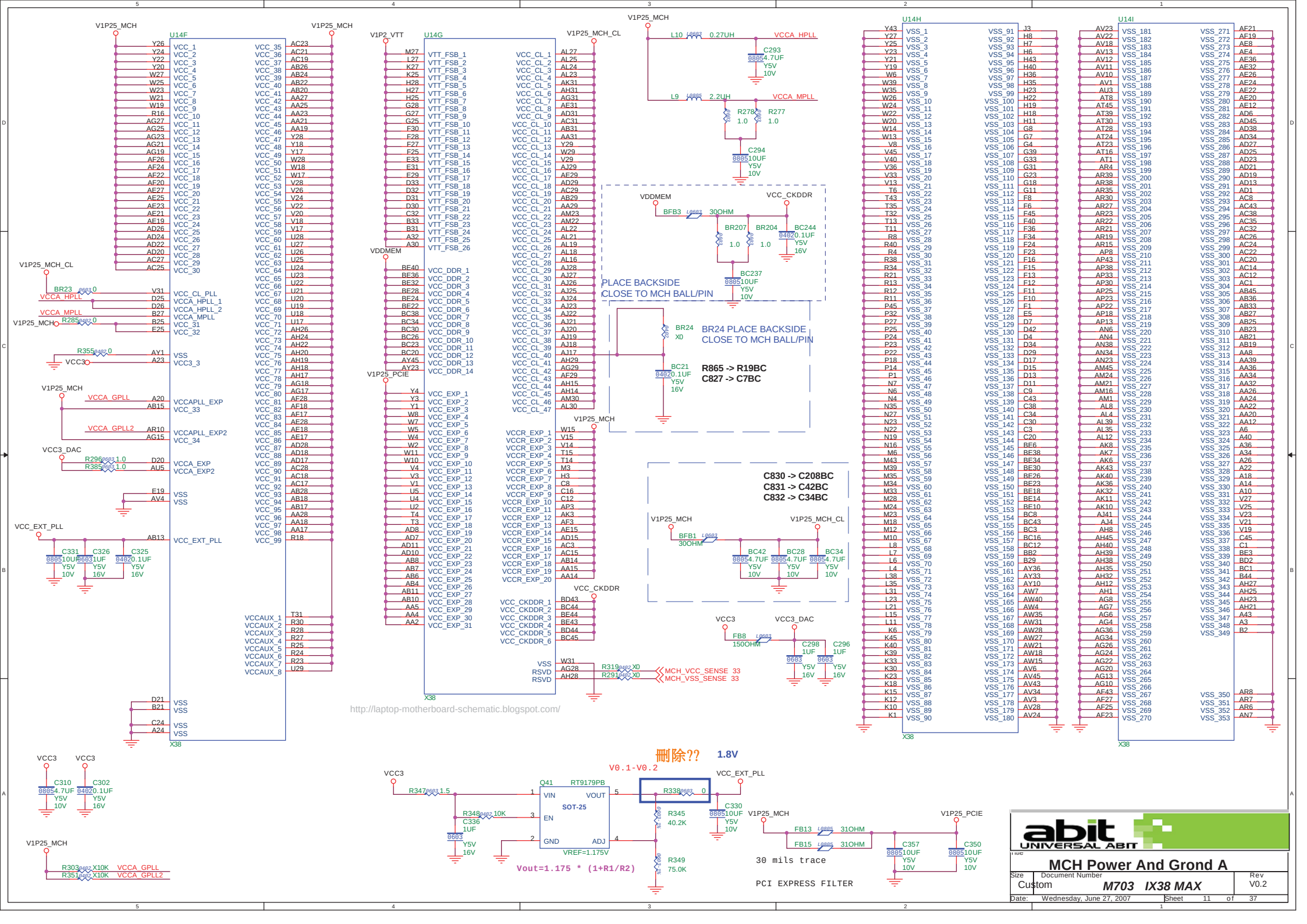
EXP_SLR : PCI-EXPRESS LANE REVERSAL
H NORM
L REVERSE

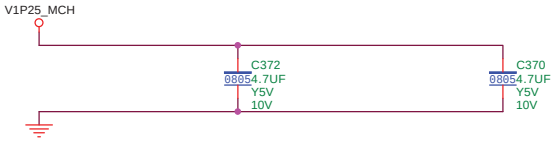
MYTYPE : MEMORY TYPE
H DDR2 TYPE R311
L DDR3 TYPE R306

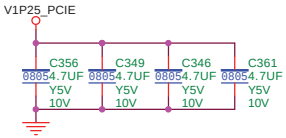


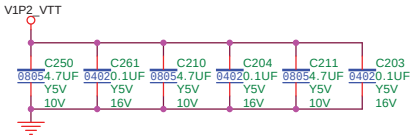
UNIVERSAL ABIT

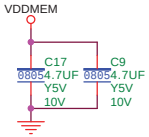
Title	MCH_PART3 MISC	
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Friday, June 29, 2007	Sheet 10 of 37	

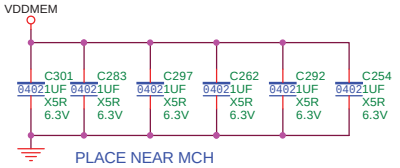

U14F
U14G
U14H
U14I
X38
PLACE BACKSIDE CLOSE TO MCH BALL/PIN
BR24 PLACE BACKSIDE CLOSE TO MCH BALL/PIN
R865 -> R19BC
C827 -> C7BC
C830 -> C208BC
C831 -> C42BC
C832 -> C34BC
刪除?? 1.8V
V0.1-V0.2
SOT-25
RT9179PB
Vout=1.175 * (1+R1/R2)
VREF=1.175V
30 mils trace
PCI EXPRESS FILTER
http://laptop-motherboard-schematic.blogspot.com/
MCH Power And Grond A
M703 IX38 MAX
Custom
V0.2
Wednesday, June 27, 2007

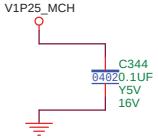




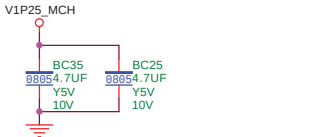


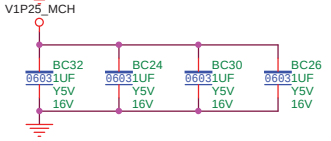




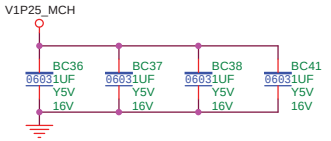


PLACE BACKSIDE

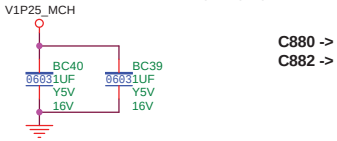




C858 -> C1BC
C860 -> C2BC
C862 -> C3BC
C864 -> C4BC



C872 -> C8BC
C874 -> C9BC
C876 -> C11BC
C878 -> C13BC



C880 -> C17BC
C882 -> C19BC

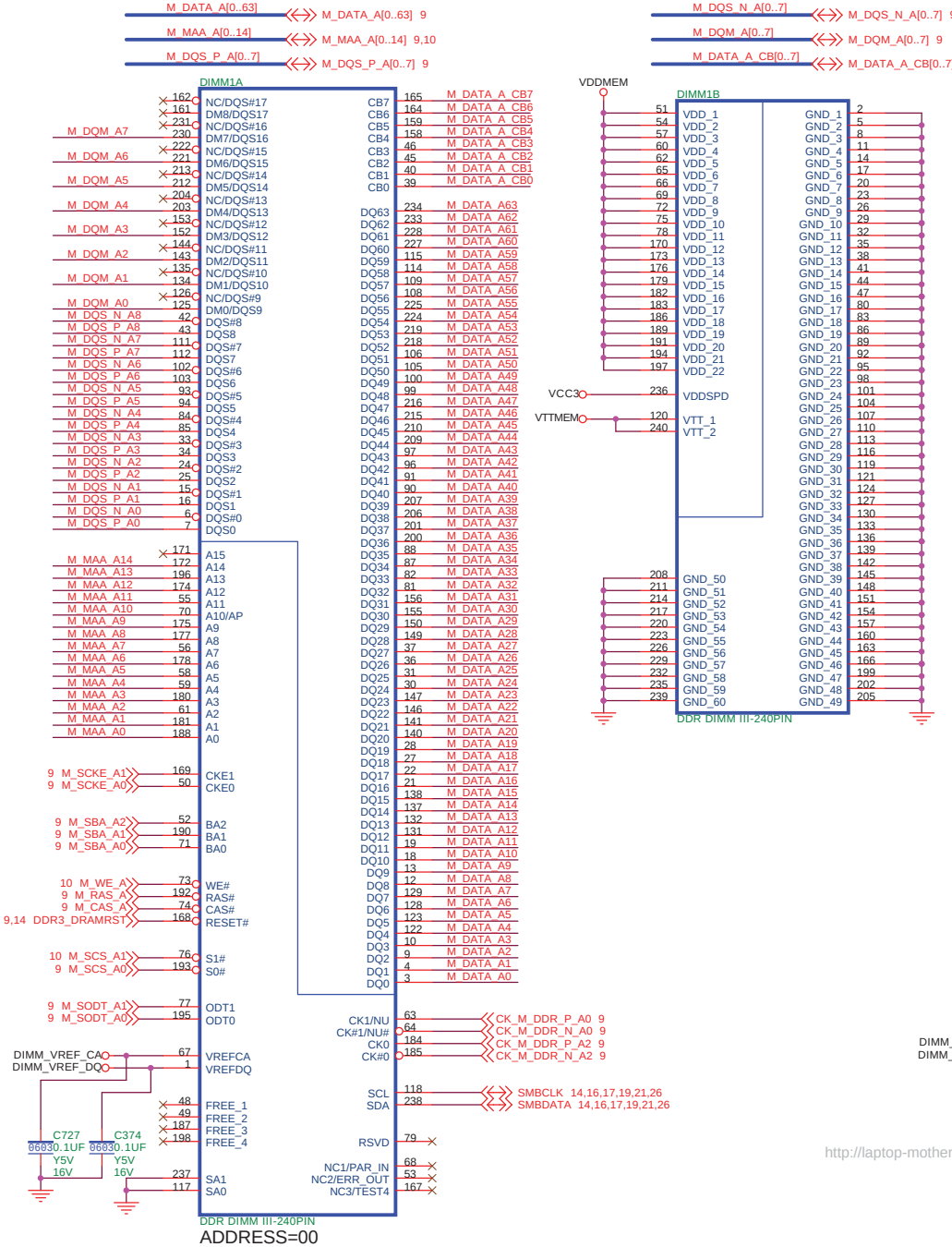
UNIVERSAL ABIT

Title: **MCH Power And Grond B**

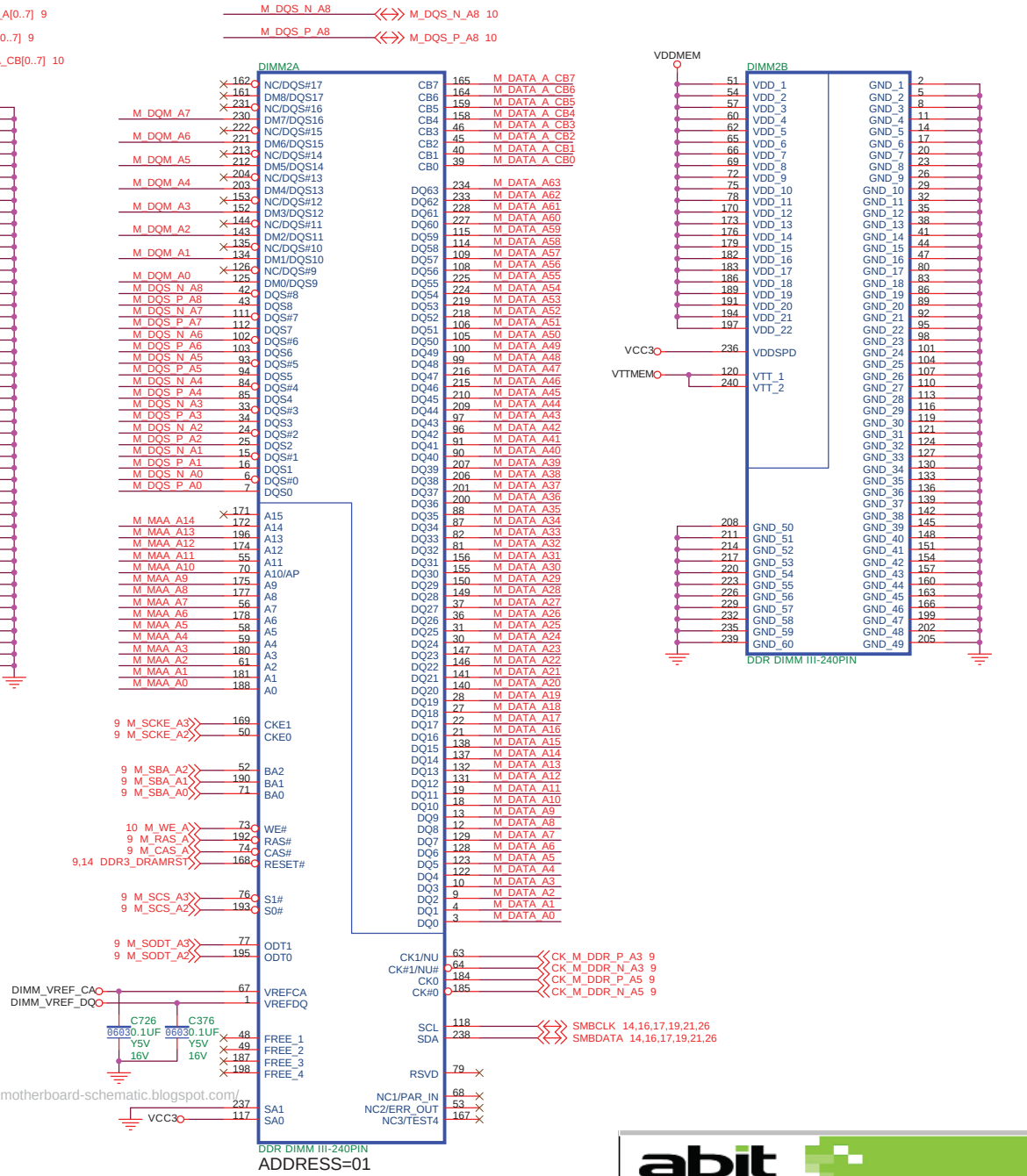
Size	Document Number	Rev
Custom	***M703 IX38 MAX***	V0.2

Date: Friday, June 29, 2007 Sheet 12 of 37

DDR III Channel A DIMM1



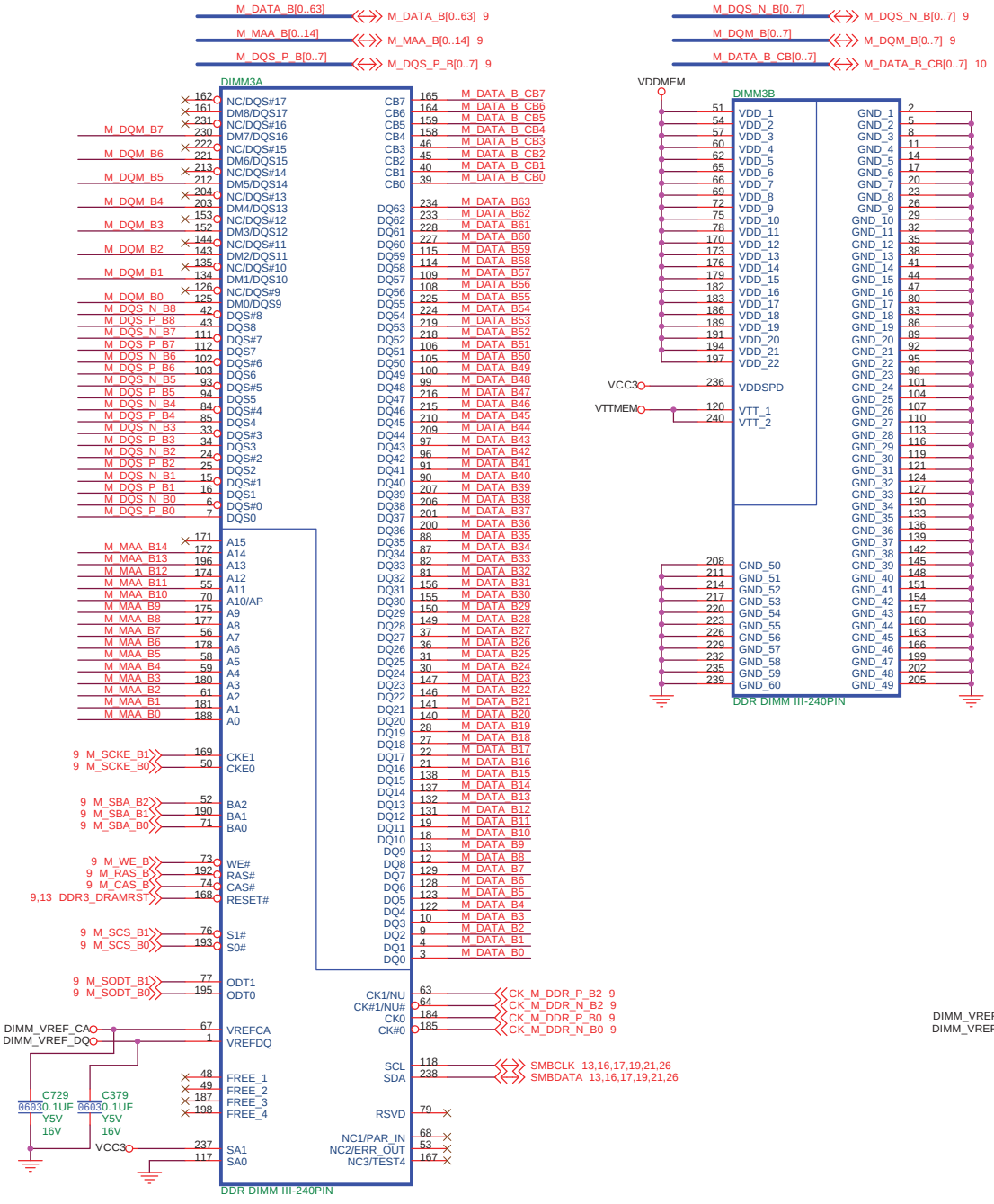
DDR III Channel A DIMM2



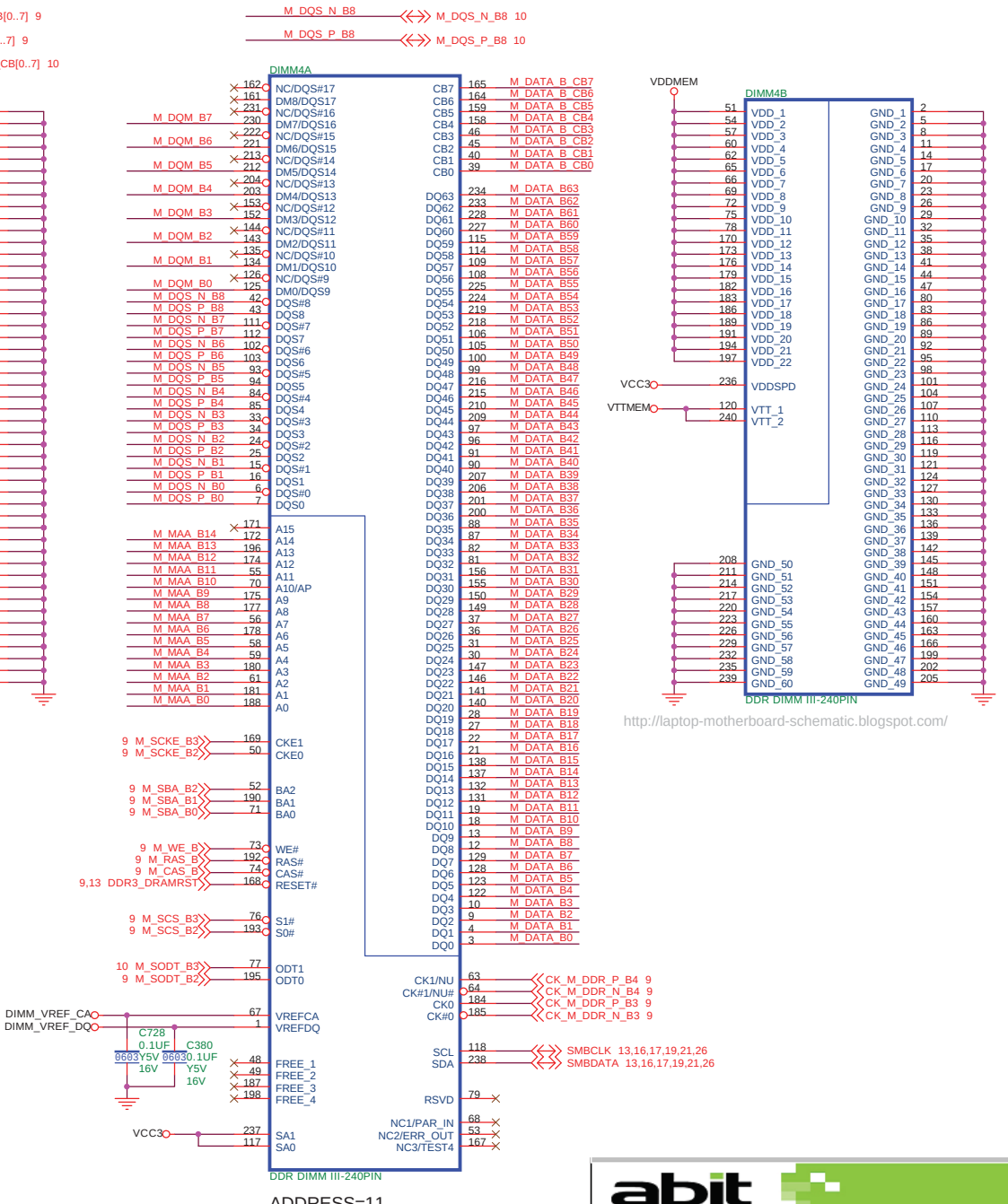
UNIVERSAL ABIT

Title: DDR2 CHANNEL A		
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Wednesday, June 27, 2007	Sheet 13 of 37	

DDR III Channel B DIMM1

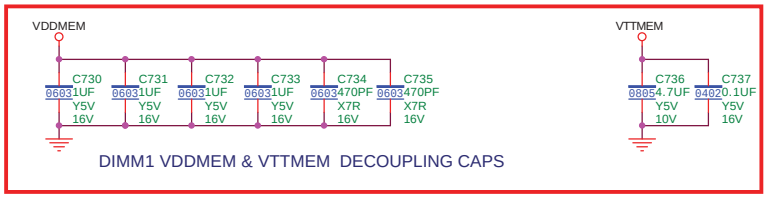


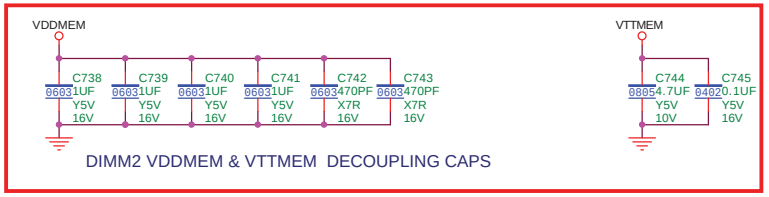
DDR III Channel B DIMM2

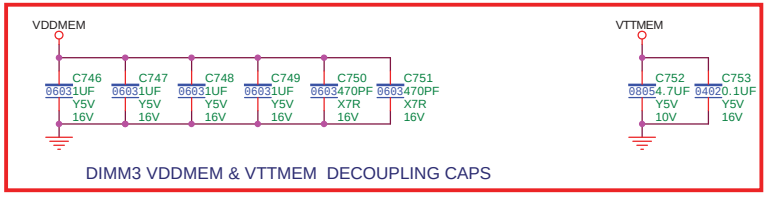


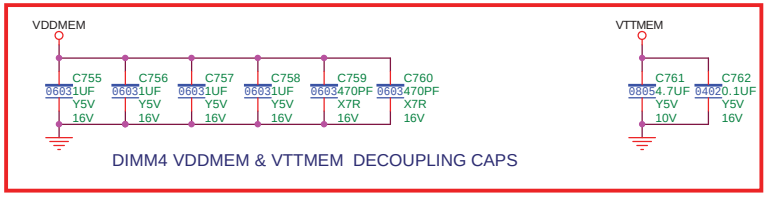
UNIVERSAL ABIT

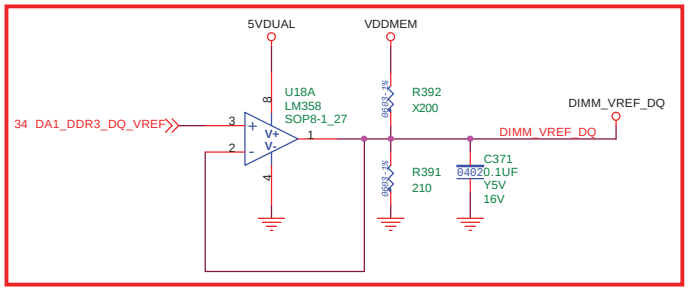
Title: DDR2 CHANNEL B		
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Tuesday, June 26, 2007	Sheet 14 of 37	

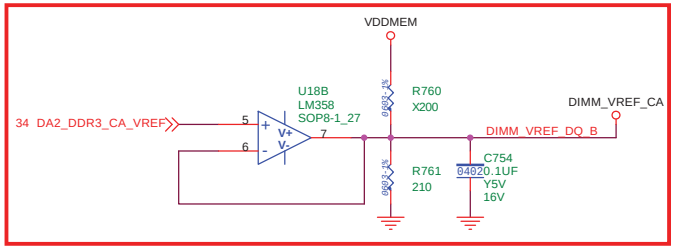




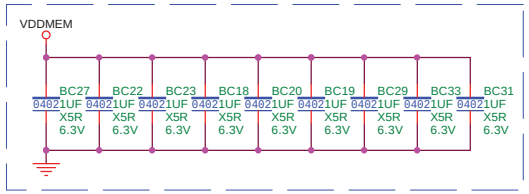








PLACE BACKSIDE

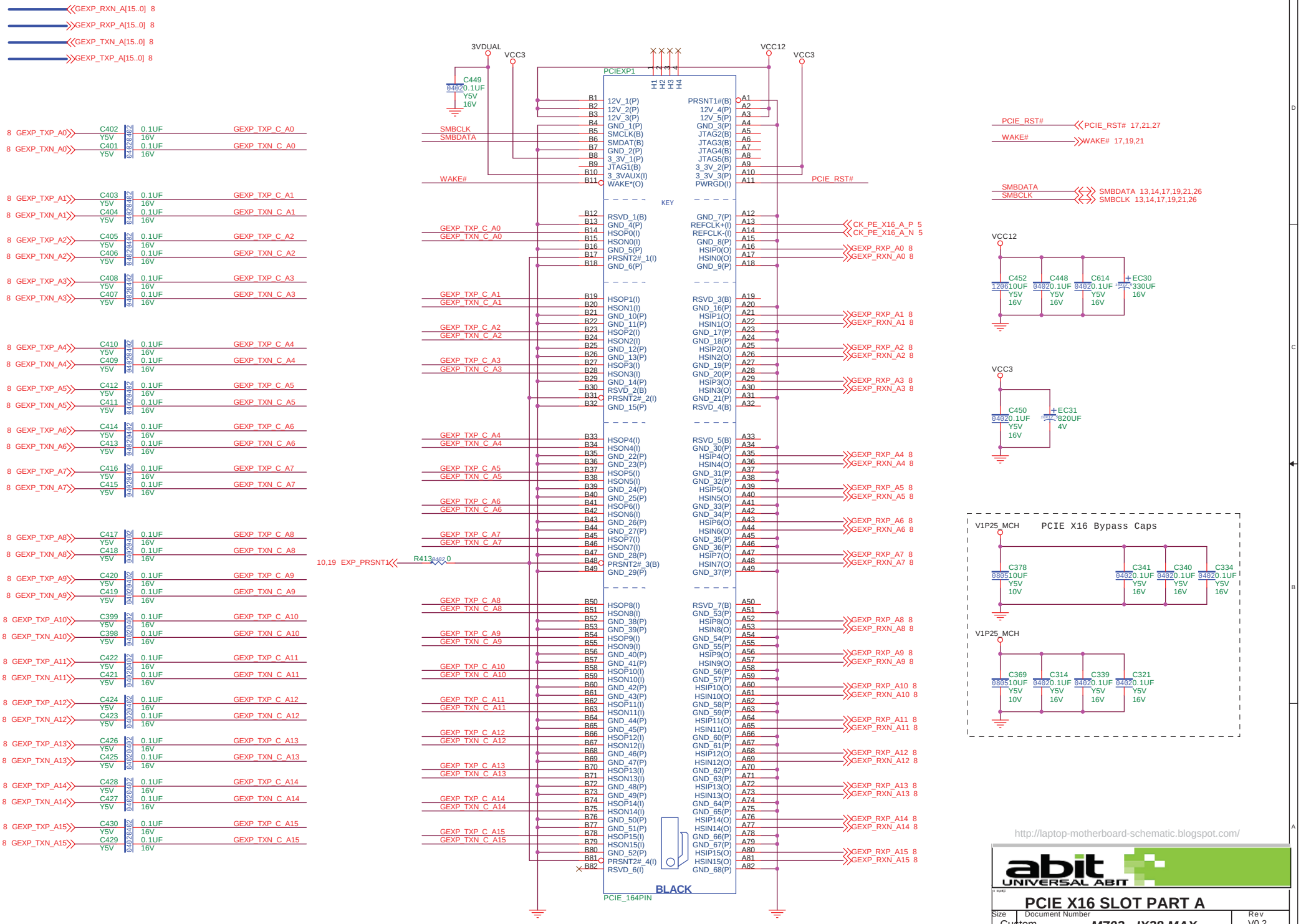


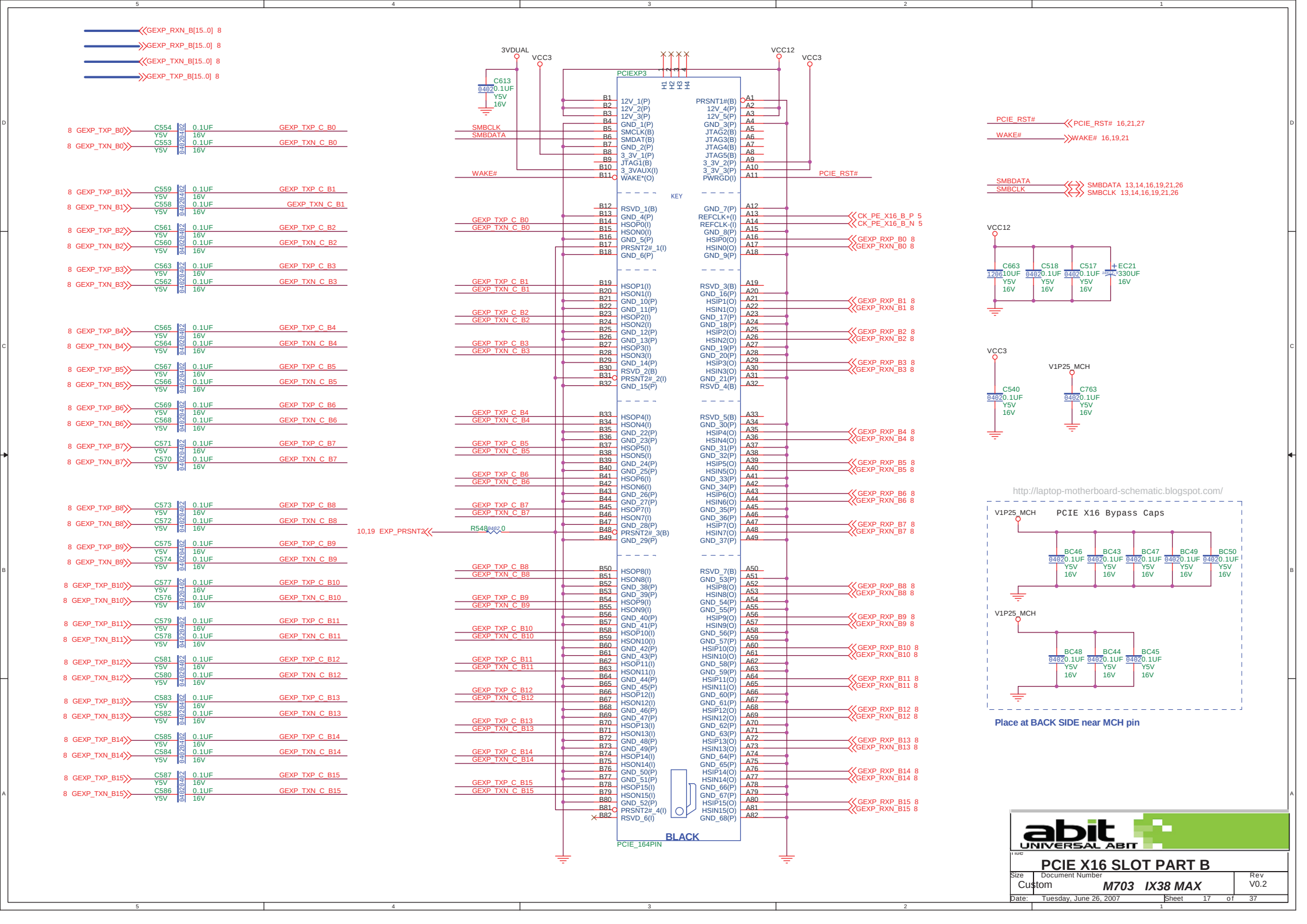
UNIVERSAL ABIT

Title: **DDR2 TERMINATION**

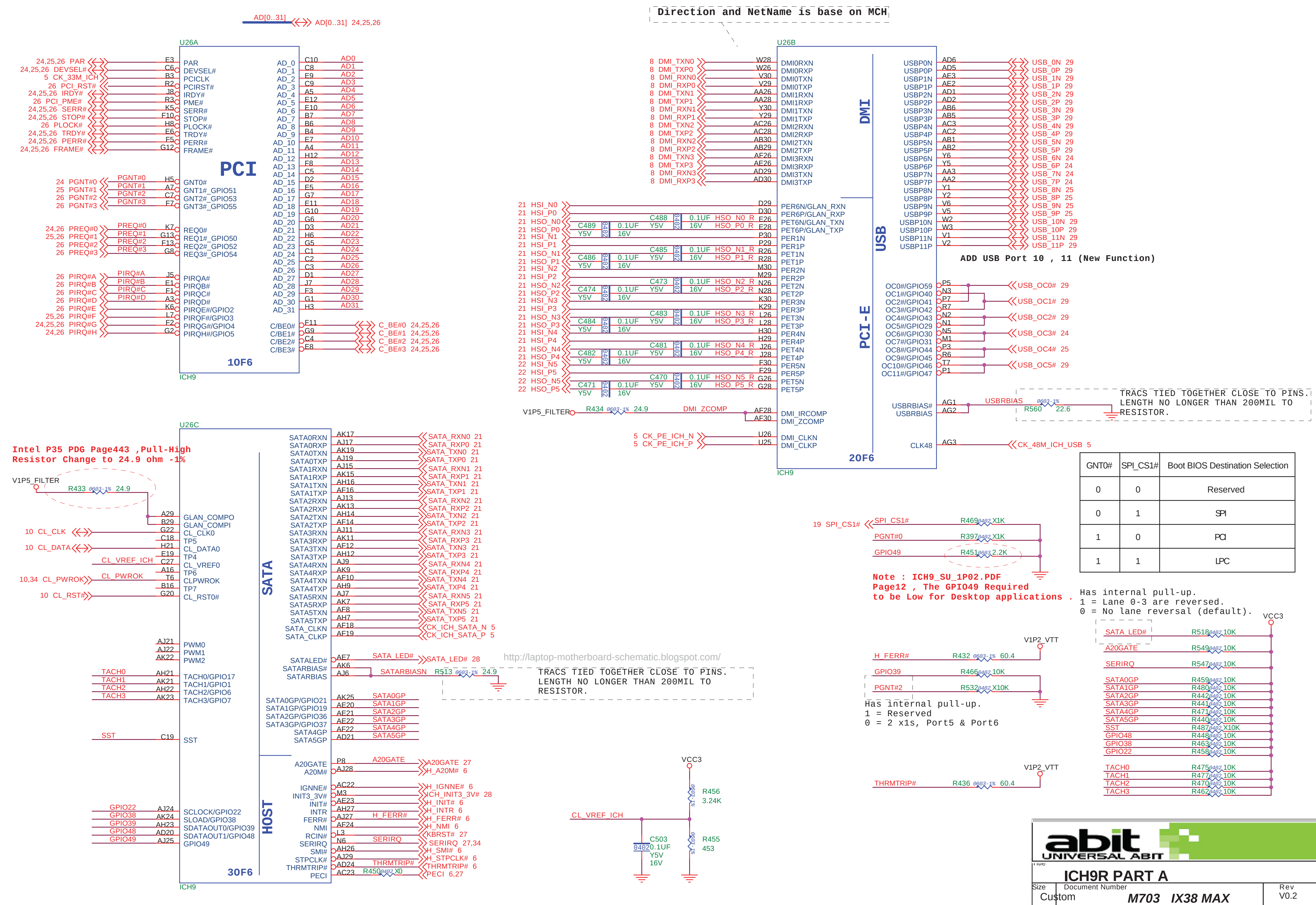
Size	Document Number	Rev
Custom	***M703 IX38 MAX***	V0.2

Date: Wednesday, June 27, 2007 Sheet 15 of 37


GEXP_RXN_A[15..0] 8
GEXP_RXP_A[15..0] 8
GEXP_TXN_A[15..0] 8
GEXP_TXP_A[15..0] 8
PCIEXP1
PCIE_164PIN
BLACK
KEY
3VDUAL
VCC3
VCC12
SMBCLK
SMBDATA
WAKE#
PCIE_RST#
EXP_PRSNT1
R413 0
C449 0.1UF Y5V 16V
C452 120UF Y5V 16V
C448 0.1UF Y5V 16V
C614 0.1UF Y5V 16V
EC30 330UF 16V
C450 0.1UF Y5V 16V
EC31 820UF 4V
V1P25_MCH
PCIE X16 Bypass Caps
C378 10UF Y5V 10V
C341 0.1UF Y5V 16V
C340 0.1UF Y5V 16V
C334 0.1UF Y5V 16V
C369 10UF Y5V 10V
C314 0.1UF Y5V 16V
C339 0.1UF Y5V 16V
C321 0.1UF Y5V 16V
http://laptop-motherboard-schematic.blogspot.com/
UNIVERSAL ABIT
PCIE X16 SLOT PART A
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Tuesday, June 26, 2007
Sheet 16 of 37


GEXP_RXN_B[15..0] 8
GEXP_RXP_B[15..0] 8
GEXP_TXN_B[15..0] 8
GEXP_TXP_B[15..0] 8
3VDUAL
VCC3
VCC12
PCIEXP3
C613 0402 0.1UF Y5V 16V
SMBCLK
SMBDATA
WAKE#
PCIE_RST#
KEY
BLACK
PCIE_164PIN
10,19 EXP_PRSNT2
R548 0402 0
PCIE_RST# PCIE_RST# 16,21,27
WAKE# WAKE# 16,19,21
SMBDATA SMBDATA 13,14,16,19,21,26
SMBCLK SMBCLK 13,14,16,19,21,26
C663 1206 10UF Y5V 16V
C518 0402 0.1UF Y5V 16V
C517 0402 0.1UF Y5V 16V
EC21 330UF 16V
C540 0402 0.1UF Y5V 16V
C763 0402 0.1UF Y5V 16V
http://laptop-motherboard-schematic.blogspot.com/
PCIE X16 Bypass Caps
BC46 BC43 BC47 BC49 BC50 0402 0.1UF Y5V 16V
BC48 BC44 BC45 0402 0.1UF Y5V 16V
Place at BACK SIDE near MCH pin
UNIVERSAL ABIT
PCIE X16 SLOT PART B
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Tuesday, June 26, 2007
Sheet 17 of 37

Direction and NetName is base on MCH



U26A
PCI
1OF6
ICH9
AD[0..31]
AD[0..31] 24,25,26
24,25,26 PAR
24,25,26 DEVSEL#
5 CK_33M_ICH
26 PCI_RST#
24,25,26 IRDY#
26 PCI_PME#
24,25,26 SERR#
24,25,26 STOP#
26 PLOCK#
24,25,26 TRDY#
24,25,26 PERR#
24,25,26 FRAME#
PAR
DEVSEL#
PCICLK
PCIRST#
IRDY#
PME#
SERR#
STOP#
PLOCK#
TRDY#
PERR#
FRAME#
24 PGNT#0
25 PGNT#1
26 PGNT#2
26 PGNT#3
GNT0#
GNT1#_GPIO51
GNT2#_GPIO53
GNT3#_GPIO55
24,26 PREQ#0
25,26 PREQ#1
26 PREQ#2
26 PREQ#3
REQ0#
REQ1#_GPIO50
REQ2#_GPIO52
REQ3#_GPIO54
26 PIRQ#A
26 PIRQ#B
26 PIRQ#C
26 PIRQ#D
26 PIRQ#E
25,26 PIRQ#F
24,25,26 PIRQ#G
24,26 PIRQ#H
PIRQA#
PIRQB#
PIRQC#
PIRQD#
PIRQE#/GPIO2
PIRQF#/GPIO3
PIRQG#/GPIO4
PIRQH#/GPIO5
C/BE0#
C/BE1#
C/BE2#
C/BE3#
C_BE#0 24,25,26
C_BE#1 24,25,26
C_BE#2 24,25,26
C_BE#3 24,25,26
U26B
DMI
USB
PCI-E
2OF6
ICH9
8 DMI_TXN0
8 DMI_TXP0
8 DMI_RXN0
8 DMI_RXP0
8 DMI_TXN1
8 DMI_TXP1
8 DMI_RXN1
8 DMI_RXP1
8 DMI_TXN2
8 DMI_TXP2
8 DMI_RXN2
8 DMI_RXP2
8 DMI_TXN3
8 DMI_TXP3
8 DMI_RXN3
8 DMI_RXP3
DMI0RXN
DMI0RXP
DMI0TXN
DMI0TXP
DMI1RXN
DMI1RXP
DMI1TXN
DMI1TXP
DMI2RXN
DMI2RXP
DMI2TXN
DMI2TXP
DMI3RXN
DMI3RXP
DMI3TXN
DMI3TXP
PER6N/GLAN_RXN
PER6P/GLAN_RXP
PET6N/GLAN_TXN
PET6P/GLAN_TXP
21 HSI_N0
21 HSI_P0
21 HSO_N0
21 HSO_P0
21 HSI_N1
21 HSI_P1
21 HSO_N1
21 HSO_P1
21 HSI_N2
21 HSI_P2
21 HSO_N2
21 HSO_P2
21 HSI_N3
21 HSI_P3
21 HSO_N3
21 HSO_P3
21 HSI_N4
21 HSI_P4
21 HSO_N4
21 HSO_P4
22 HSI_N5
22 HSI_P5
22 HSO_N5
22 HSO_P5
V1P5_FILTER
R434 24.9
DMI_ZCOMP
DMI_IRCOMP
DMI_ZCOMP
5 CK_PE_ICH_N
5 CK_PE_ICH_P
DMI_CLKN
DMI_CLKP
USB_0N 29
USB_0P 29
USB_1N 29
USB_1P 29
USB_2N 29
USB_2P 29
USB_3N 29
USB_3P 29
USB_4N 29
USB_4P 29
USB_5N 29
USB_5P 29
USB_6N 24
USB_6P 24
USB_7N 24
USB_7P 24
USB_8N 25
USB_8P 25
USB_9N 25
USB_9P 25
USB_10N 29
USB_10P 29
USB_11N 29
USB_11P 29
ADD USB Port 10 , 11 (New Function)
USB_OC0# 29
USB_OC1# 29
USB_OC2# 29
USB_OC3# 24
USB_OC4# 25
USB_OC5# 29
USBRBIAS#
USBRBIAS
R560 22.6
TRACS TIED TOGETHER CLOSE TO PINS. LENGTH NO LONGER THAN 200MIL TO RESISTOR.
CLK48
CK_48M_ICH_USB 5
U26C
SATA
HOST
3OF6
ICH9
Intel P35 PDG Page443 ,Pull-High Resistor Change to 24.9 ohm -1%
V1P5_FILTER
R433 24.9
GLAN_COMPO
GLAN_COMPI
10 CL_CLK
10 CL_DATA
CL_VREF_ICH
10,34 CL_PWROK
10 CL_RST#
TACH0
TACH1
TACH2
TACH3
SST
GPIO22
GPIO38
GPIO39
GPIO48
GPIO49
SATA_RXN0 21
SATA_RXP0 21
SATA_TXN0 21
SATA_TXP0 21
SATA_RXN1 21
SATA_RXP1 21
SATA_TXN1 21
SATA_TXP1 21
SATA_RXN2 21
SATA_RXP2 21
SATA_TXN2 21
SATA_TXP2 21
SATA_RXN3 21
SATA_RXP3 21
SATA_TXN3 21
SATA_TXP3 21
SATA_RXN4 21
SATA_RXP4 21
SATA_TXN4 21
SATA_TXP4 21
SATA_RXN5 21
SATA_RXP5 21
SATA_TXN5 21
SATA_TXP5 21
CK_ICH_SATA_N 5
CK_ICH_SATA_P 5
SATA_LED# 28
SATARBIASN R513 24.9
TRACS TIED TOGETHER CLOSE TO PINS. LENGTH NO LONGER THAN 200MIL TO RESISTOR.
SATA0GP
SATA1GP
SATA2GP
SATA3GP
SATA4GP
SATA5GP
A20GATE 27
H_A20M# 6
H_IGNNE# 6
ICH_INIT3_3V# 28
H_INIT# 6
H_INTR 6
H_FERR# 6
H_NMI 6
KBRST# 27
SERIRQ 27,34
H_SMI# 6
H_STPCLK# 6
THRMTRIP# 6
PECI 6,27
VCC3
R456 3.24K
R455 453
CL_VREF_ICH
0.1UF Y5V 16V
19 SPI_CS1#
PGNT#0
GPIO49
R469 X1K
R397 X1K
R451 2.2K
H_FERR# R432 60.4
GPIO39 R466 10K
PGNT#2 R532 X10K
V1P2_VTT
THRMTRIP# R436 60.4
VCC3
SATA_LED# R518 10K
A20GATE R549 10K
SERIRQ R547 10K
SATA0GP R459 10K
SATA1GP R480 10K
SATA2GP R442 10K
SATA3GP R441 10K
SATA4GP R471 10K
SATA5GP R440 10K
SST R487 X10K
GPIO48 R448 10K
GPIO38 R463 10K
GPIO22 R458 10K
TACH0 R475 10K
TACH1 R477 10K
TACH2 R470 10K
TACH3 R462 10K

GNT0#	SPI_CS1#	Boot BIOS Destination Selection
0	0	Reserved
0	1	SPI
1	0	PCI
1	1	LPC

Note : ICH9_SU_1P02.PDF
Page12 , The GPIO49 Required
to be Low for Desktop applications .

Has internal pull-up.
1 = Lane 0-3 are reversed.
0 = No lane reversal (default).

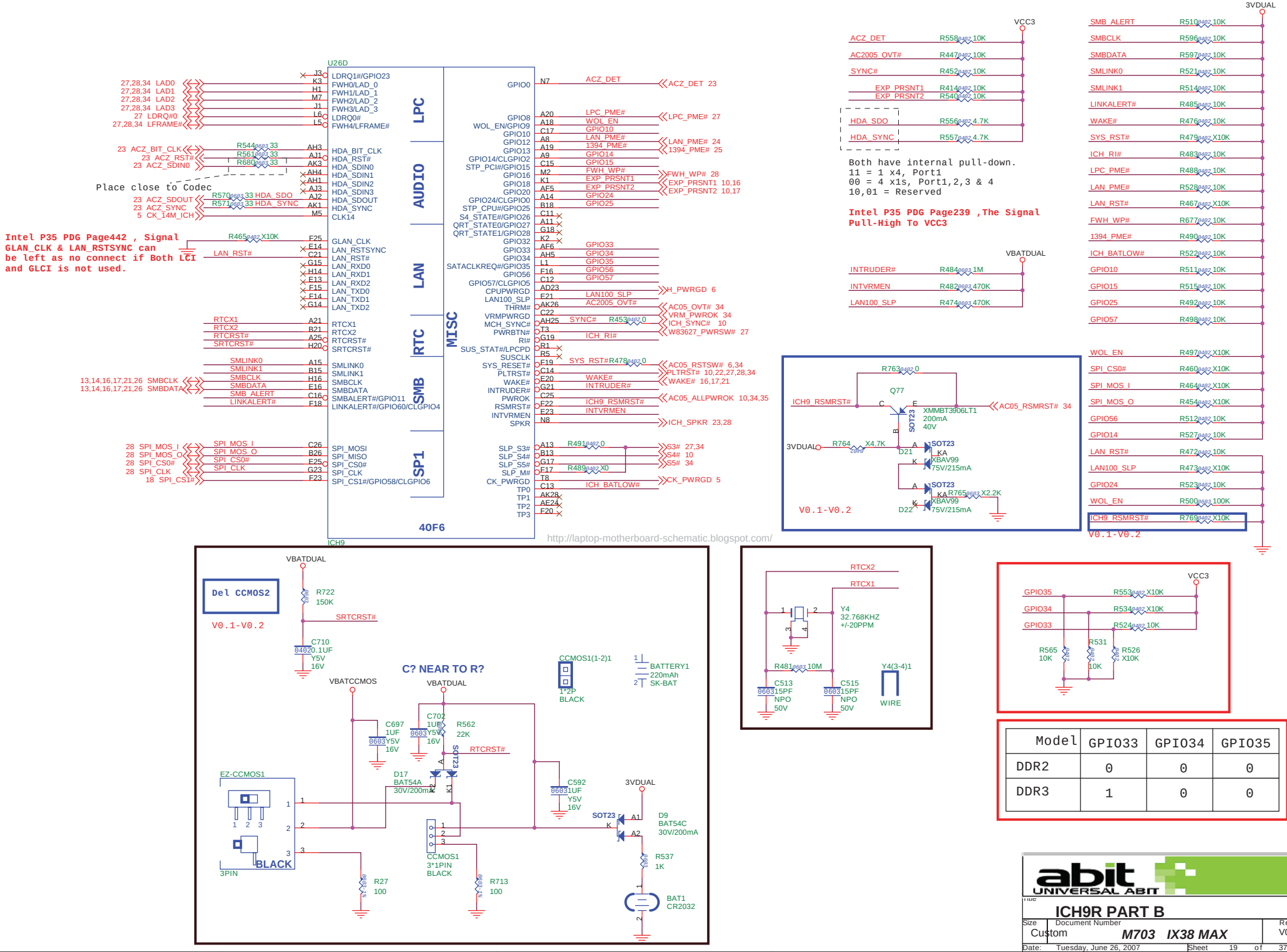
Has internal pull-up.
1 = Reserved
0 = 2 x1s, Port5 & Port6

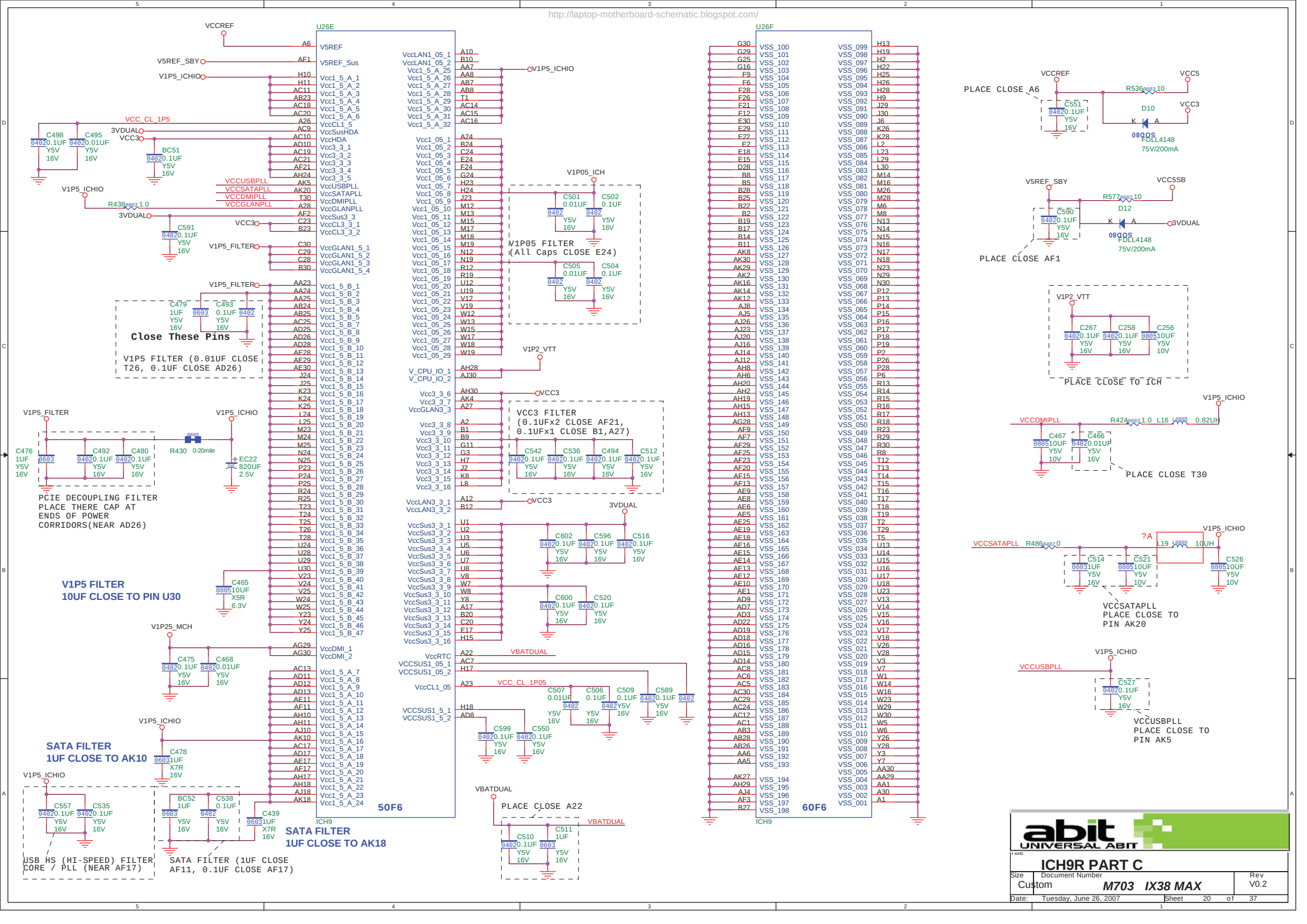
abit UNIVERSAL ABIT

Title: ICH9R PART A

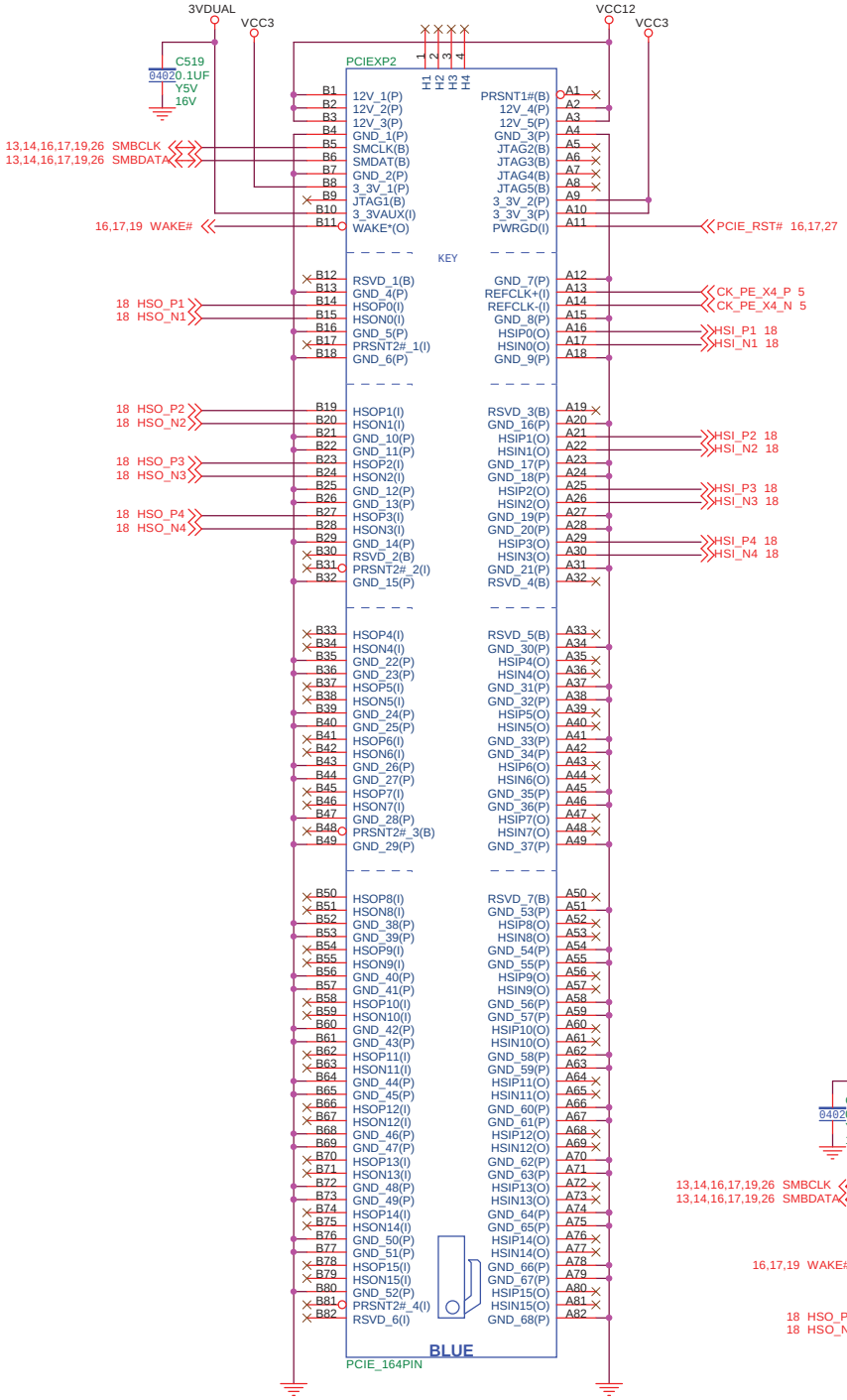
Size: Custom | Document Number: M703 IX38 MAX | Rev: V0.2

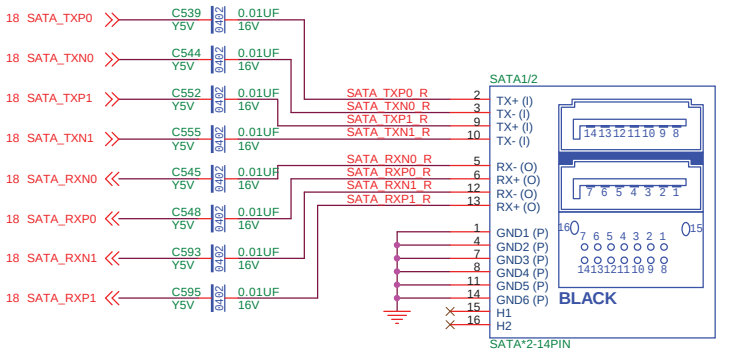
Date: Friday, June 22, 2007 | Sheet 18 of 37

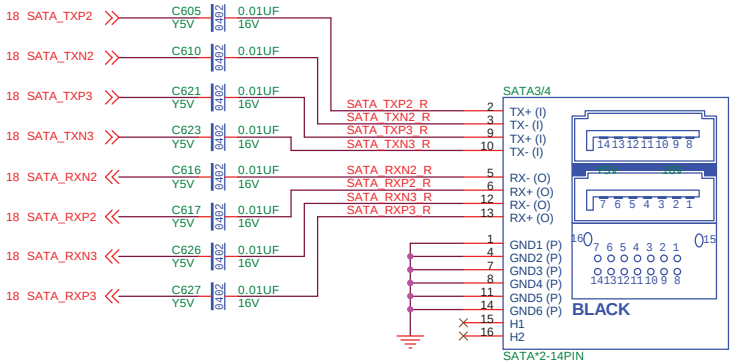

U26D
LPC
AUDIO
LAN
RTC
SMB
SP1
MISC
40F6
ICH9
Place close to Codec
Intel P35 PDG Page442 , Signal GLAN_CLK & LAN_RSTSYNC can be left as no connect if Both LCI and GLCI is not used.
Intel P35 PDG Page239 ,The Signal Pull-High To VCC3
Both have internal pull-down.
11 = 1 x4, Port1
00 = 4 x1s, Port1,2,3 & 4
10,01 = Reserved
http://laptop-motherboard-schematic.blogspot.com/
Del CCMOS2
V0.1-V0.2
C? NEAR TO R?
EZ-CCMOS1
3PIN
BLACK
CCMOS1
3*1PIN
BLACK
CCMOS1(1-2)1
1*2P
BLACK
BATTERY1
220mAh
SK-BAT
Y4
32.768KHZ
+/-20PPM
WIRE
Model
GPIO33
GPIO34
GPIO35
DDR2
0
0
0
DDR3
1
0
0
ICH9R PART B
Custom
M703 IX38 MAX
V0.2
Tuesday, June 26, 2007
Sheet 19 of 37

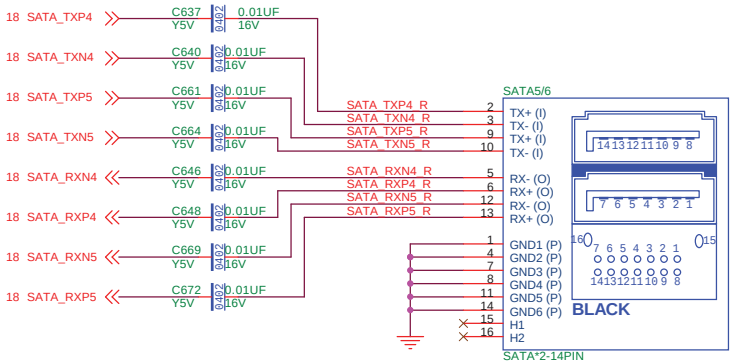


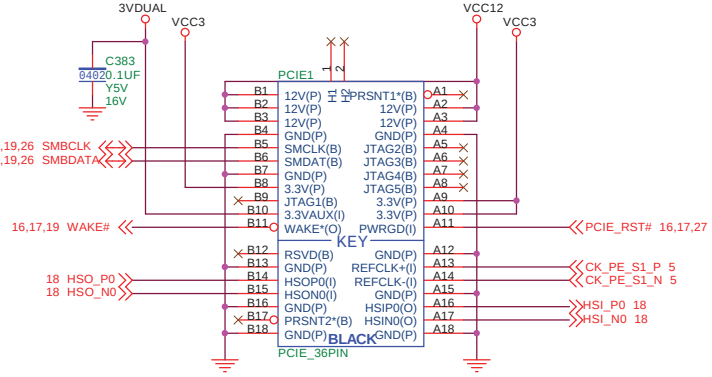
Title	ICH9R PART C		
Size	Document Number		Rev
Custom	M703 IX38 MAX		V0.2
Date:	Tuesday, June 26, 2007	Sheet 20 of 37	

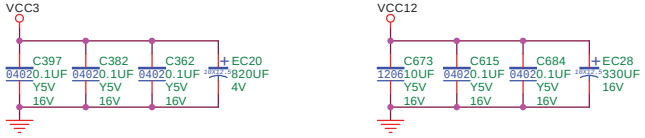








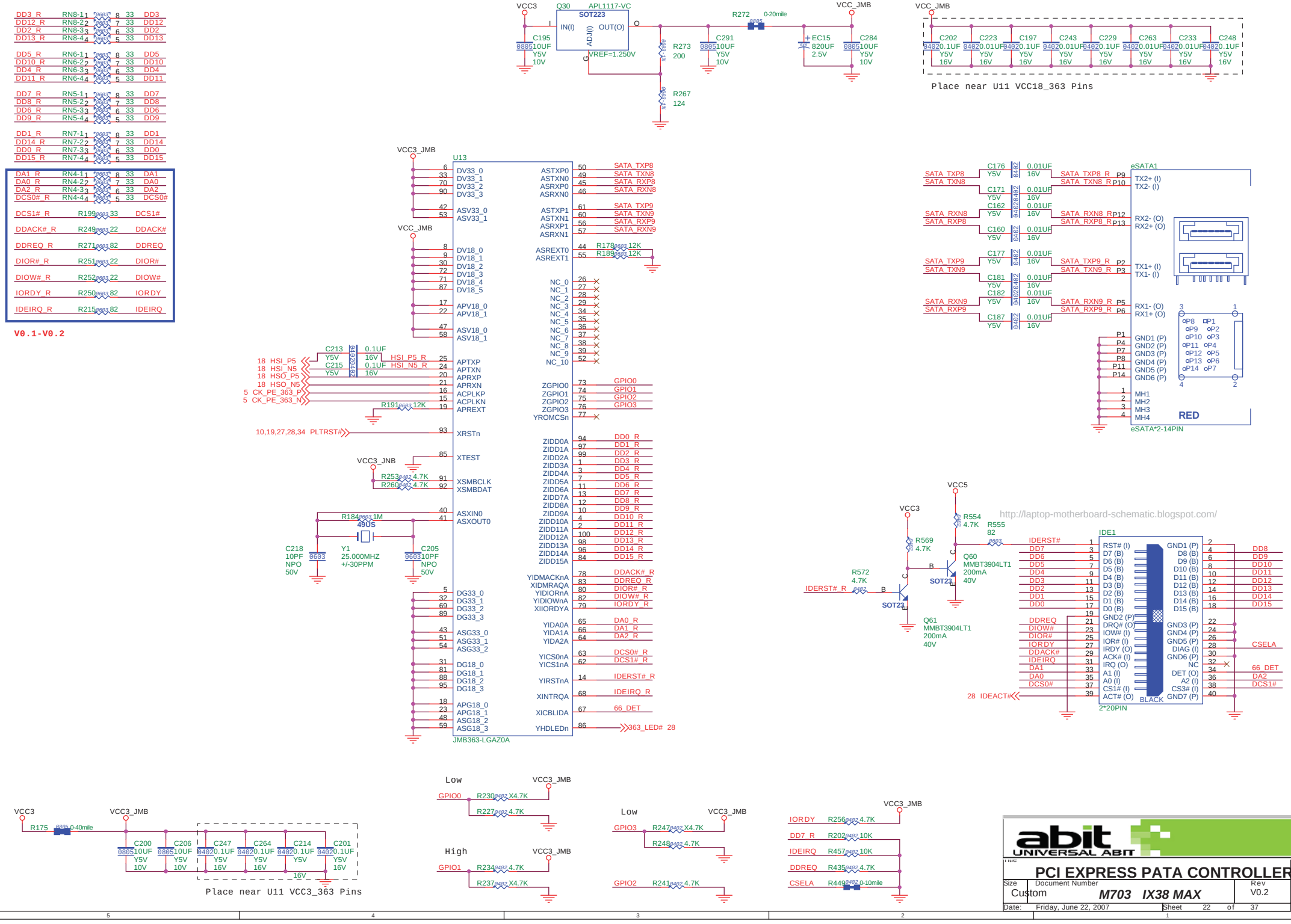


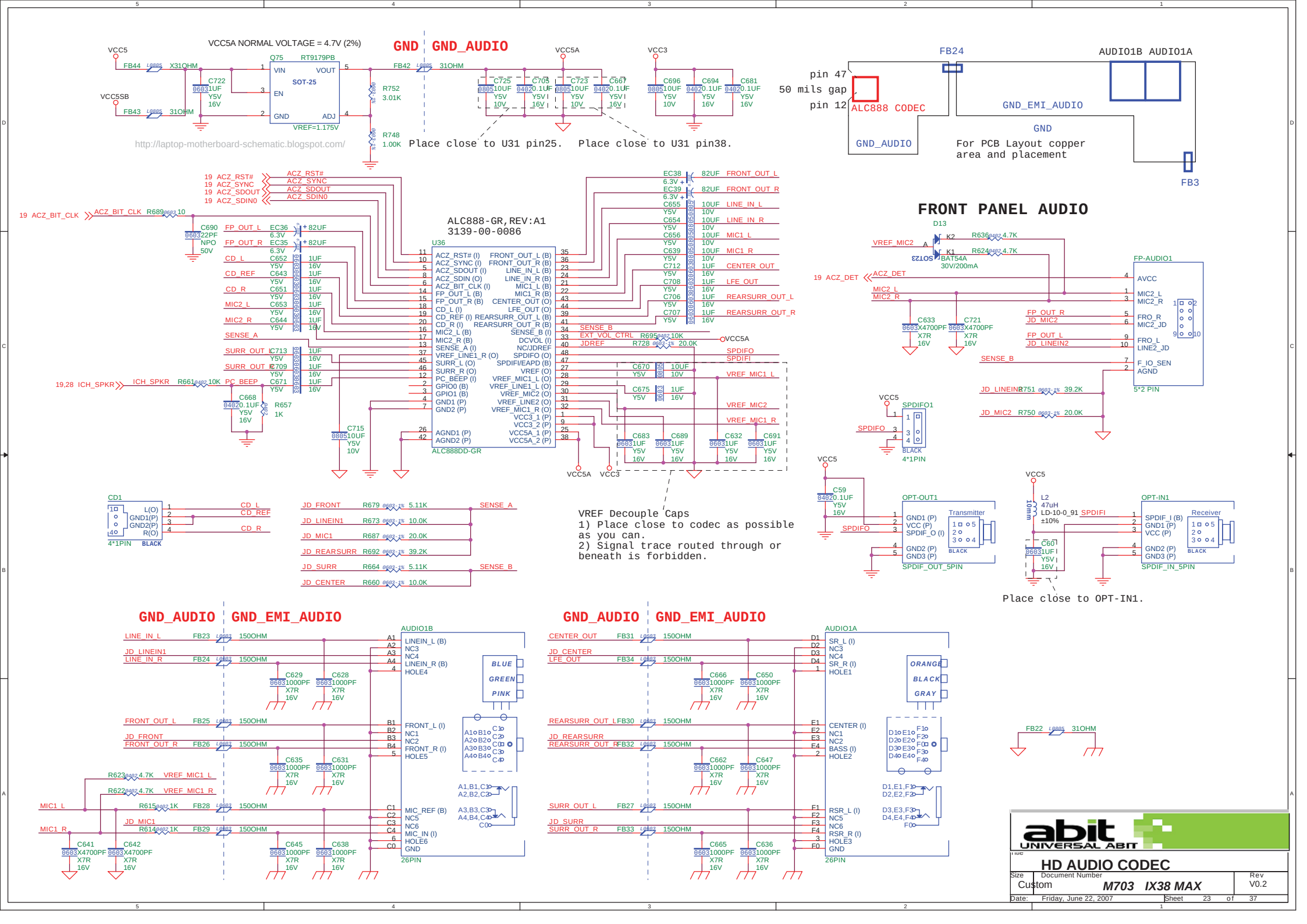


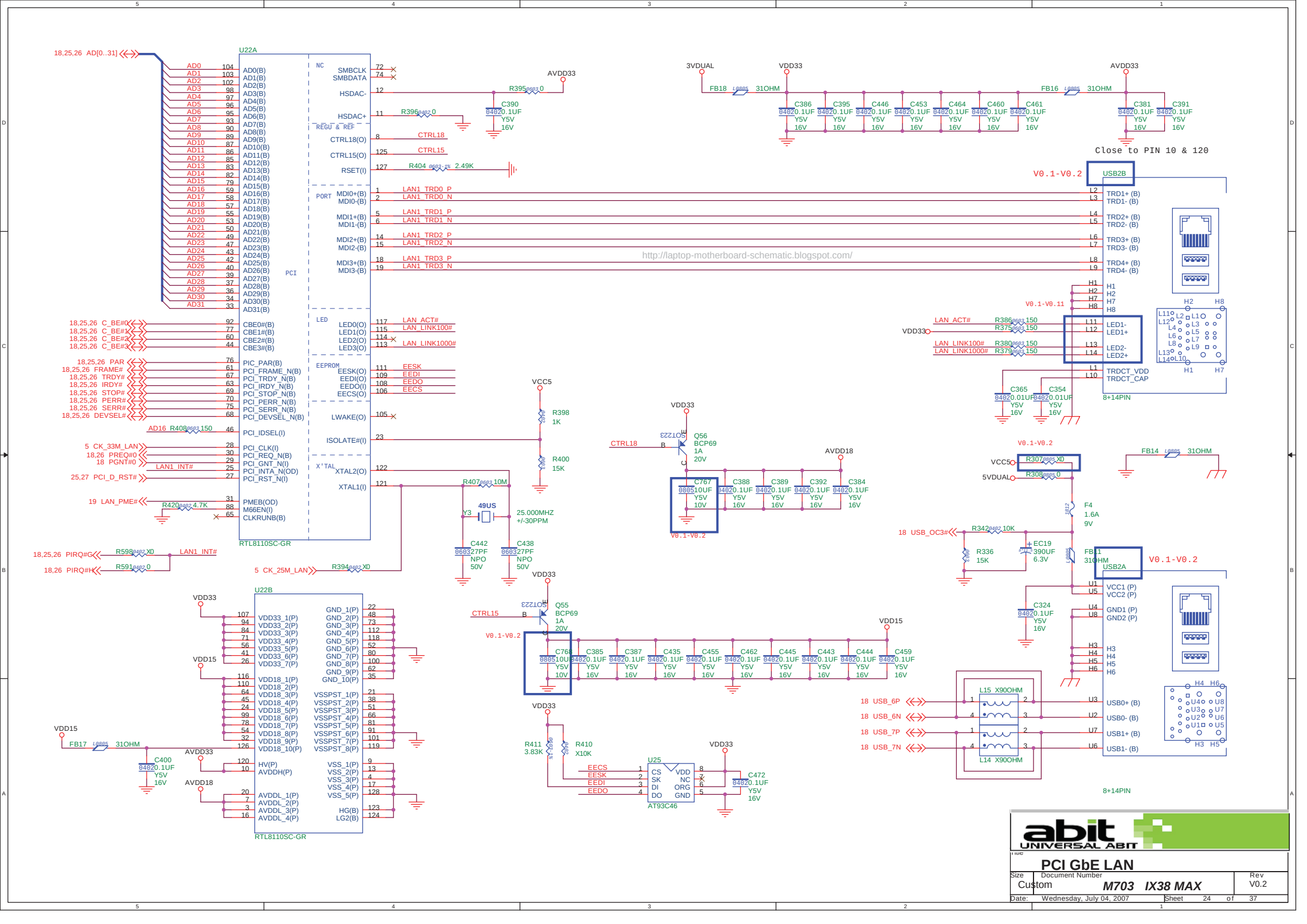
FOR PCI EXPRESS X1 SLOT 1

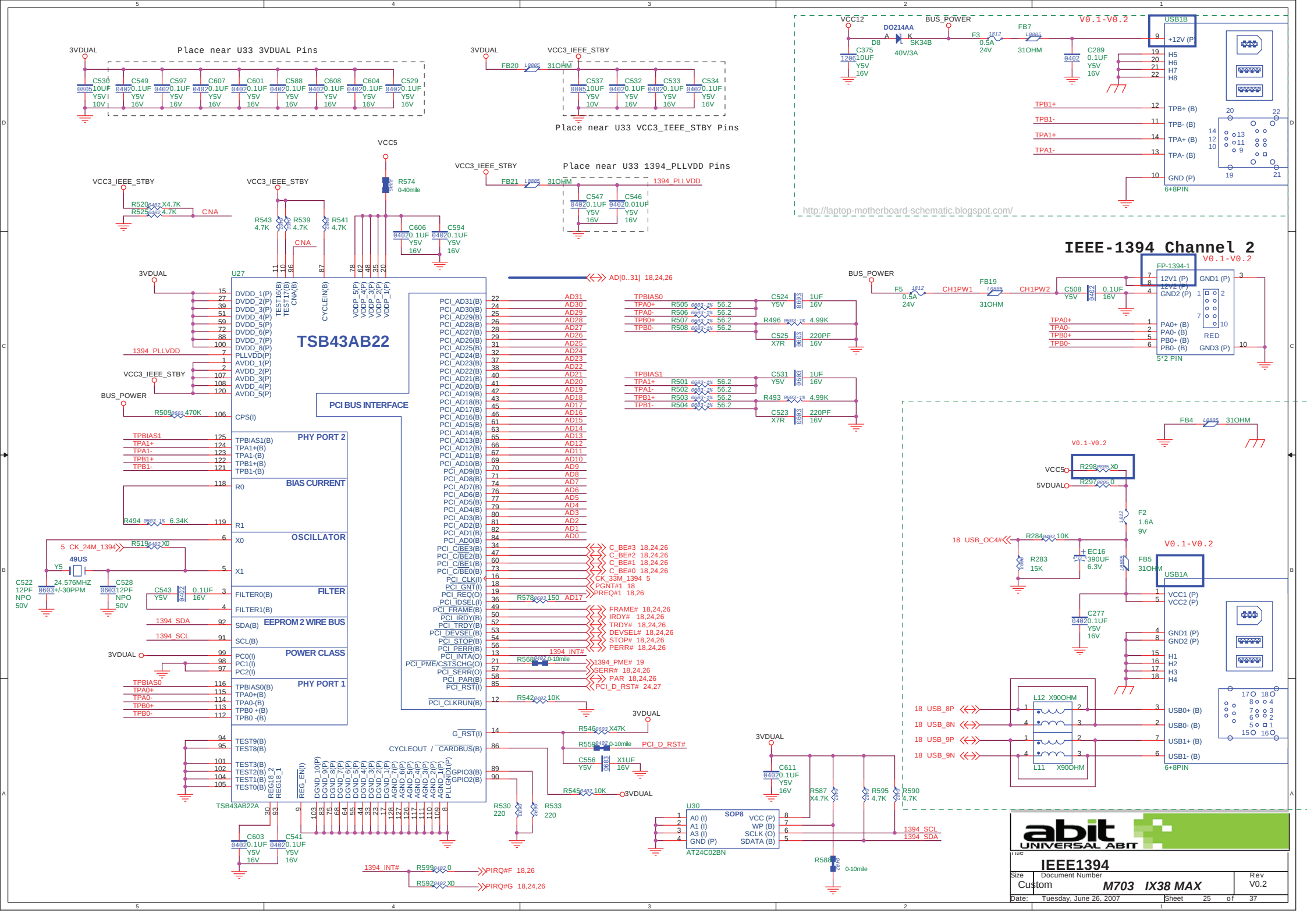
UNIVERSAL ABIT

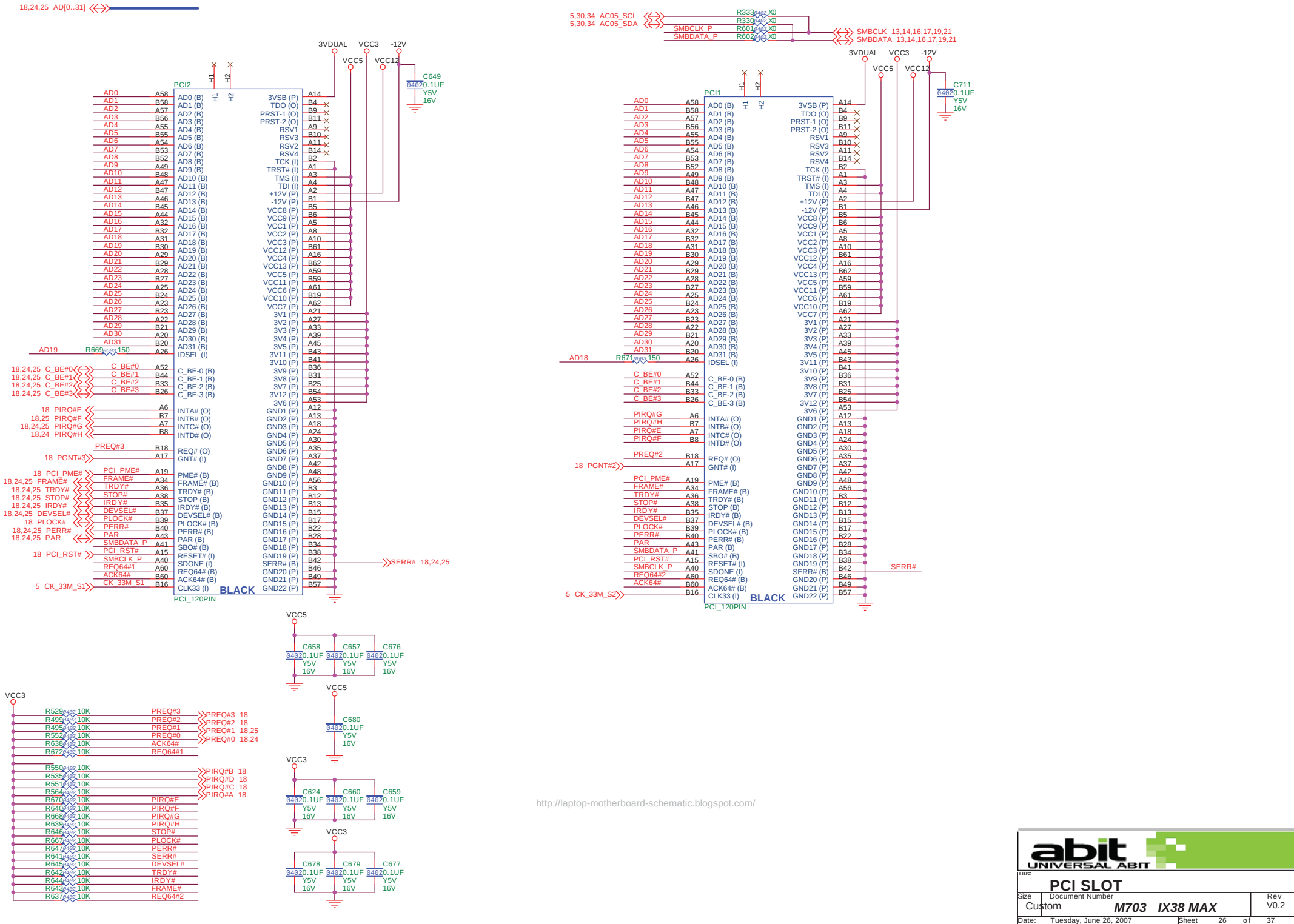
Title: PCIE X4/X1 SLOT & SATA		
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Friday, June 22, 2007	Sheet 21 of 37	

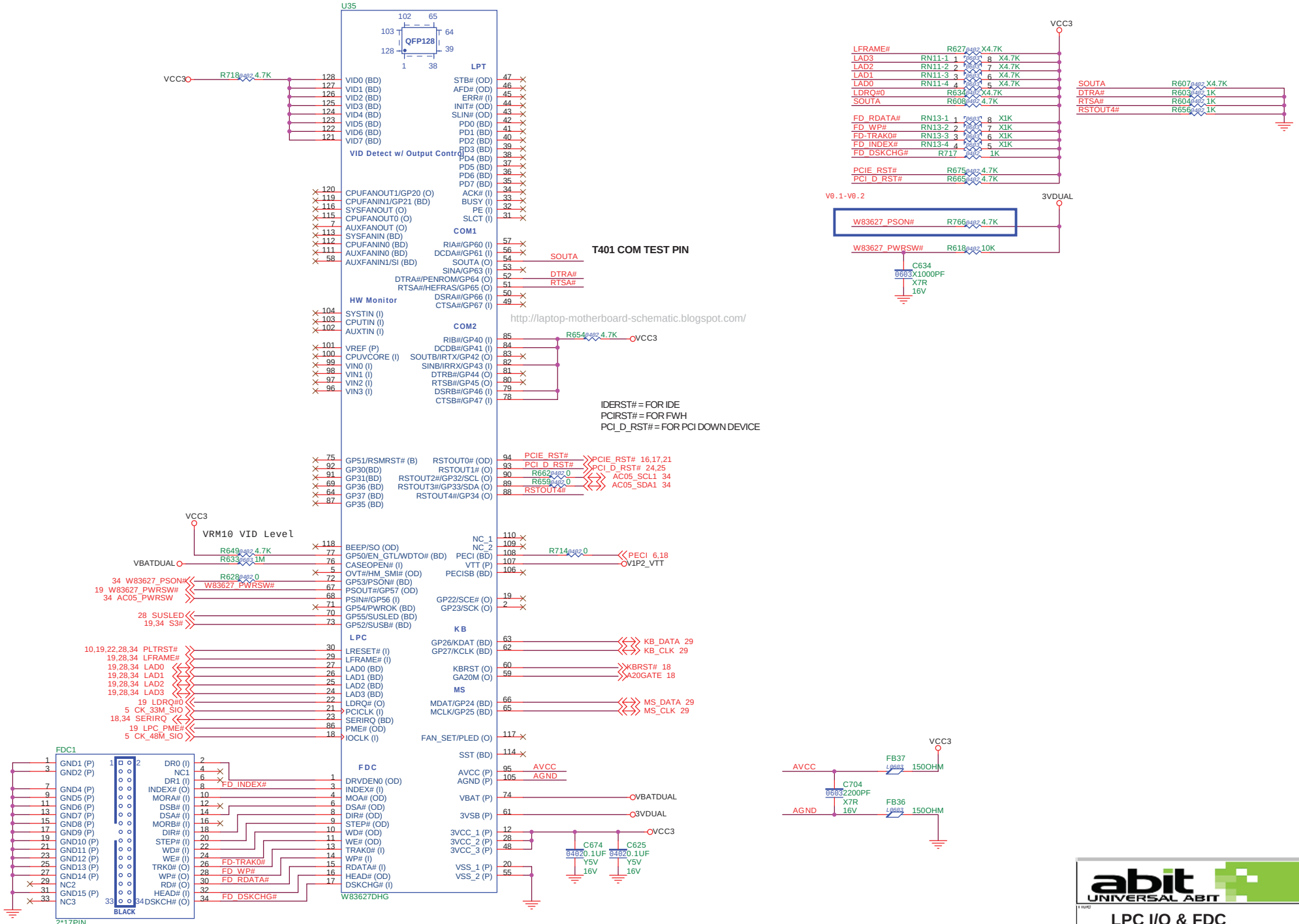

DD3_R RN8-1 33 DD3
DD12_R RN8-2 33 DD12
DD2_R RN8-3 33 DD2
DD13_R RN8-4 33 DD13
DD5_R RN6-1 33 DD5
DD10_R RN6-2 33 DD10
DD4_R RN6-3 33 DD4
DD11_R RN6-4 33 DD11
DD7_R RN5-1 33 DD7
DD8_R RN5-2 33 DD8
DD6_R RN5-3 33 DD6
DD9_R RN5-4 33 DD9
DD1_R RN7-1 33 DD1
DD14_R RN7-2 33 DD14
DD0_R RN7-3 33 DD0
DD15_R RN7-4 33 DD15
DA1_R RN4-1 33 DA1
DA0_R RN4-2 33 DA0
DA2_R RN4-3 33 DA2
DCS0#_R RN4-4 33 DCS0#
DCS1#_R R199 33 DCS1#
DDACK#_R R249 22 DDACK#
DDREQ_R R271 82 DDREQ
DIOR#_R R251 22 DIOR#
DIOW#_R R252 22 DIOW#
IORDY_R R250 82 IORDY
IDEIRQ_R R215 82 IDEIRQ
V0.1-V0.2
VCC3
Q30 APL1117-VC SOT223
IN(I) ADJ(I) OUT(O)
VREF=1.250V
C195 10UF Y5V 10V
R273 200
R267 124
R272 0-20mile
VCC_JMB
EC15 820UF 2.5V
C284 10UF Y5V 10V
C291 10UF Y5V 10V
VCC_JMB
C202 C223 C197 C243 C229 C263 C233 C248 0.1UF Y5V 16V
Place near U11 VCC18_363 Pins
VCC3_JMB
U13
DV33_0 DV33_1 DV33_2 DV33_3
ASV33_0 ASV33_1
VCC_JMB
DV18_0 DV18_1 DV18_2 DV18_3 DV18_4 DV18_5
APV18_0 APV18_1
ASV18_0 ASV18_1
APTXP APTXN APRXP APRXN ACPLKP ACPLKN APREXT
ASTXP0 ASTXN0 ASRXP0 ASRXN0
ASTXP1 ASTXN1 ASRXP1 ASRXN1
ASREXT0 ASREXT1
R178 12K
R189 12K
NC_0 NC_1 NC_2 NC_3 NC_4 NC_5 NC_6 NC_7 NC_8 NC_9 NC_10
ZGPIO0 ZGPIO1 ZGPIO2 ZGPIO3 YROMCSn
ZIDD0A ZIDD1A ZIDD2A ZIDD3A ZIDD4A ZIDD5A ZIDD6A ZIDD7A ZIDD8A ZIDD9A ZIDD10A ZIDD11A ZIDD12A ZIDD13A ZIDD14A ZIDD15A
YIDMACKnA YIDMRAQA YIDIORnA YIDIOWnA YIIORDYA
YIDA0A YIDA1A YIDA2A
YICS0nA YICS1nA
YIRSTnA
XINTRQA
XICBLIDA
YHDLEDn
DG33_0 DG33_1 DG33_2 DG33_3
ASG33_0 ASG33_1 ASG33_2
DG18_0 DG18_1 DG18_2 DG18_3
APG18_0 APG18_1 ASG18_2 ASG18_3
JMB363-LGAZ0A
SATA_TXP8 SATA_TXN8 SATA_RXP8 SATA_RXN8
SATA_TXP9 SATA_TXN9 SATA_RXP9 SATA_RXN9
GPIO0 GPIO1 GPIO2 GPIO3
DD0_R DD1_R DD2_R DD3_R DD4_R DD5_R DD6_R DD7_R DD8_R DD9_R DD10_R DD11_R DD12_R DD13_R DD14_R DD15_R
DDACK#_R DDREQ_R DIOR#_R DIOW#_R IORDY_R
DA0_R DA1_R DA2_R
DCS0#_R DCS1#_R
IDERST#_R
IDEIRQ_R
66_DET
363_LED# 28
C213 C215 0.1UF Y5V 16V
HSI_P5_R HSI_N5_R
18 HSI_P5 18 HSI_N5 18 HSO_P5 18 HSO_N5
5 CK_PE_363_P 5 CK_PE_363_N
R191 12K
10,19,27,28,34 PLTRST#
XRSTn
XTEST
VCC3_JNB
R253 4.7K R260 4.7K
XSMBCLK XSMBDAT
R184 1M 40US
C218 10PF NPO 50V
Y1 25.000MHZ +/-30PPM
C205 10PF NPO 50V
ASXIN0 ASXOUT0
C176 C171 C162 C160 C177 C181 C182 C187 0.01UF Y5V 16V
SATA_TXP8 SATA_TXN8 SATA_RXN8 SATA_RXP8 SATA_TXP9 SATA_TXN9 SATA_RXN9 SATA_RXP9
SATA_TXP8_R SATA_TXN8_R SATA_RXN8_R SATA_RXP8_R SATA_TXP9_R SATA_TXN9_R SATA_RXN9_R SATA_RXP9_R
eSATA1
TX2+ (I) TX2- (I)
RX2- (O) RX2+ (O)
TX1+ (I) TX1- (I)
RX1- (O) RX1+ (O)
GND1 (P) GND2 (P) GND3 (P) GND4 (P) GND5 (P) GND6 (P)
MH1 MH2 MH3 MH4
RED
eSATA*2-14PIN
VCC5
VCC3
R554 4.7K
R555 82
R569 4.7K
R572 4.7K
IDERST# R
Q60 MMBT3904LT1 200mA 40V
Q61 MMBT3904LT1 200mA 40V
SOT23
http://laptop-motherboard-schematic.blogspot.com/
IDE1
IDERST#
RST# (I) D7 (B) D6 (B) D5 (B) D4 (B) D3 (B) D2 (B) D1 (B) D0 (B) GND2 (P) DRQ# (O) IOW# (I) IOR# (I) IRDY (O) ACK# (I) IRQ (O) A1 (I) A0 (I) CS1# (I) ACT# (O)
GND1 (P) D8 (B) D9 (B) D10 (B) D11 (B) D12 (B) D13 (B) D14 (B) D15 (B) GND3 (P) GND4 (P) GND5 (P) DIAG (I) GND6 (P) NC DET (O) A2 (I) CS3# (I) GND7 (P)
DD7 DD6 DD5 DD4 DD3 DD2 DD1 DD0
DDREQ DIOW# DIOR# IORDY DDACK# IDEIRQ DA1 DA0 DCS0#
DD8 DD9 DD10 DD11 DD12 DD13 DD14 DD15
CSELA
66_DET
DA2
DCS1#
28 IDEACT#
BLACK
2*20PIN
VCC3
VCC3_JMB
R175 0-40mile
C200 C206 C247 C264 C214 C201 10UF Y5V 10V
C247 C264 C214 0.1UF Y5V 16V
16V
Place near U11 VCC3_363 Pins
Low
High
GPIO0 R230 X4.7K R227 4.7K
GPIO1 R234 4.7K R237 X4.7K
GPIO3 R247 X4.7K R248 4.7K
GPIO2 R241 4.7K
IORDY R256 4.7K
DD7_R R202 10K
IDEIRQ R457 10K
DDREQ R435 4.7K
CSELA R449 0-10mile
abit UNIVERSAL ABIT
PCI EXPRESS PATA CONTROLLER
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Friday, June 22, 2007
Sheet 22 of 37


VCC5A NORMAL VOLTAGE = 4.7V (2%)
GND
GND_AUDIO
Q75 RT9179PB
SOT-25
VREF=1.175V
R752 3.01K
R748 1.00K
http://laptop-motherboard-schematic.blogspot.com/
Place close to U31 pin25.
Place close to U31 pin38.
FB24
AUDIO1B AUDIO1A
pin 47
50 mils gap
pin 12
ALC888 CODEC
GND_EMI_AUDIO
GND
GND_AUDIO
For PCB Layout copper area and placement
FB3
ALC888-GR,REV:A1
3139-00-0086
U36
ALC888DD-GR
FRONT PANEL AUDIO
D13
BAT54A 30V/200mA
FP-AUDIO1
5*2 PIN
SPDIFO1
4*1PIN
OPT-OUT1
SPDIF_OUT_5PIN
OPT-IN1
SPDIF_IN_5PIN
Transmitter
Receiver
Place close to OPT-IN1.
CD1
4*1PIN
JD_FRONT R679 5.11K
JD_LINEIN1 R673 10.0K
JD_MIC1 R687 20.0K
JD_REARSURR R692 39.2K
JD_SURR R664 5.11K
JD_CENTER R660 10.0K
VREF Decouple Caps
1) Place close to codec as possible as you can.
2) Signal trace routed through or beneath is forbidden.
AUDIO1B
26PIN
BLUE
GREEN
PINK
AUDIO1A
ORANGE
BLACK
GRAY
FB22 31OHM
HD AUDIO CODEC
Custom
M703 IX38 MAX
V0.2
Friday, June 22, 2007
Sheet 23 of 37

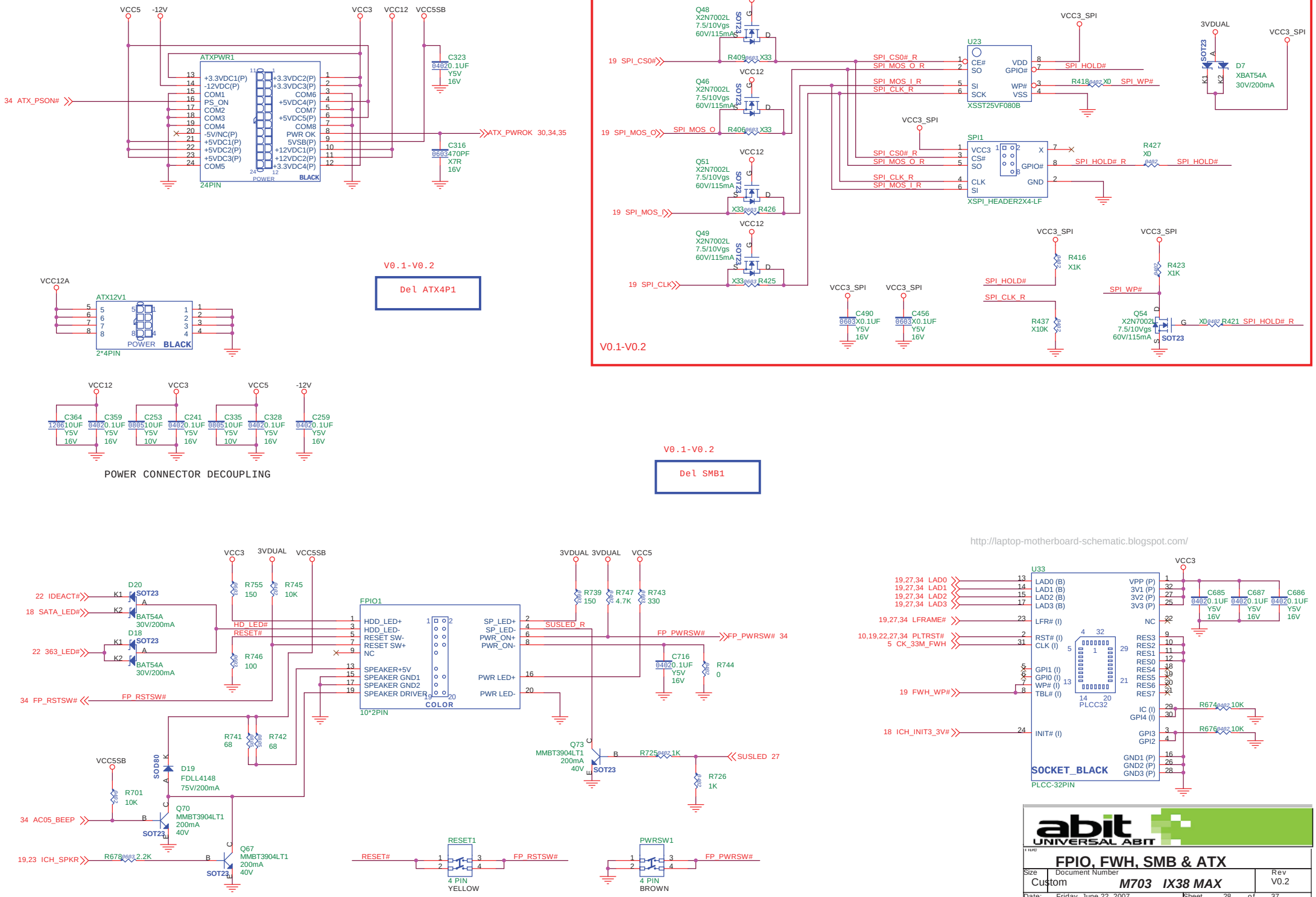

U22A
RTL8110SC-GR
PCI
LED
EEPROM
XTAL
NC
REGU & REF
PORT
AD0(B)
AD1(B)
AD2(B)
AD3(B)
AD4(B)
AD5(B)
AD6(B)
AD7(B)
AD8(B)
AD9(B)
AD10(B)
AD11(B)
AD12(B)
AD13(B)
AD14(B)
AD15(B)
AD16(B)
AD17(B)
AD18(B)
AD19(B)
AD20(B)
AD21(B)
AD22(B)
AD23(B)
AD24(B)
AD25(B)
AD26(B)
AD27(B)
AD28(B)
AD29(B)
AD30(B)
AD31(B)
CBE0#(B)
CBE1#(B)
CBE2#(B)
CBE3#(B)
PIC_PAR(B)
PCI_FRAME_N(B)
PCI_TRDY_N(B)
PCI_IRDY_N(B)
PCI_STOP_N(B)
PCI_PERR_N(B)
PCI_SERR_N(B)
PCI_DEVSEL_N(B)
PCI_IDSEL(I)
PCI_CLK(I)
PCI_REQ_N(B)
PCI_GNT_N(I)
PCI_INTA_N(OD)
PCI_RST_N(I)
PMEB(OD)
M66EN(I)
CLKRUNB(B)
SMBCLK
SMBDATA
HSDAC-
HSDAC+
CTRL18(O)
CTRL15(O)
RSET(I)
MDI0+(B)
MDI0-(B)
MDI1+(B)
MDI1-(B)
MDI2+(B)
MDI2-(B)
MDI3+(B)
MDI3-(B)
LED0(O)
LED1(O)
LED2(O)
LED3(O)
EESK(O)
EEDI(O)
EEDO(I)
EECS(O)
LWAKE(O)
ISOLATE#(I)
XTAL2(O)
XTAL1(I)
GND_1(P)
GND_2(P)
GND_3(P)
GND_4(P)
GND_5(P)
GND_6(P)
GND_7(P)
GND_8(P)
GND_9(P)
GND_10(P)
VSSPST_1(P)
VSSPST_2(P)
VSSPST_3(P)
VSSPST_4(P)
VSSPST_5(P)
VSSPST_6(P)
VSSPST_7(P)
VSSPST_8(P)
VSS_1(P)
VSS_2(P)
VSS_3(P)
VSS_4(P)
VSS_5(P)
HG(B)
LG2(B)
VDD33_1(P)
VDD33_2(P)
VDD33_3(P)
VDD33_4(P)
VDD33_5(P)
VDD33_6(P)
VDD33_7(P)
VDD18_1(P)
VDD18_2(P)
VDD18_3(P)
VDD18_4(P)
VDD18_5(P)
VDD18_6(P)
VDD18_7(P)
VDD18_8(P)
VDD18_9(P)
VDD18_10(P)
HV(P)
AVDDH(P)
AVDDL_1(P)
AVDDL_2(P)
AVDDL_3(P)
AVDDL_4(P)
18,25,26 AD[0..31]
18,25,26 C_BE#0
18,25,26 C_BE#1
18,25,26 C_BE#2
18,25,26 C_BE#3
18,25,26 PAR
18,25,26 FRAME#
18,25,26 TRDY#
18,25,26 IRDY#
18,25,26 STOP#
18,25,26 PERR#
18,25,26 SERR#
18,25,26 DEVSEL#
5 CK_33M_LAN
18,26 PREQ#0
18 PGNT#0
LAN1_INT#
25,27 PCI_D_RST#
19 LAN_PME#
18,25,26 PIRQ#G
18,26 PIRQ#H
5 CK_25M_LAN
LAN_ACT#
LAN_LINK100#
LAN_LINK1000#
EESK
EEDI
EEDO
EECS
CTRL18
CTRL15
AD16
R408 150
R420 4.7K
R598 X0
R591 0
R396 0
R395 0
R404 2.49K
R398 1K
R400 15K
R407 10M
R394 X0
Y3
49US
25.000MHZ +/-30PPM
C442 27PF NPO 50V
C438 27PF NPO 50V
C390 0.1UF Y5V 16V
C400 0.1UF Y5V 16V
FB17 31OHM
VDD15
AVDD33
AVDD18
3VDUAL
VDD33
FB18 31OHM
FB16 31OHM
AVDD33
C386 0.1UF Y5V 16V
C395 0.1UF Y5V 16V
C446 0.1UF Y5V 16V
C453 0.1UF Y5V 16V
C464 0.1UF Y5V 16V
C460 0.1UF Y5V 16V
C461 0.1UF Y5V 16V
C381 0.1UF Y5V 16V
C391 0.1UF Y5V 16V
Close to PIN 10 & 120
V0.1-V0.2
USB2B
TRD1+ (B)
TRD1- (B)
TRD2+ (B)
TRD2- (B)
TRD3+ (B)
TRD3- (B)
TRD4+ (B)
TRD4- (B)
V0.1-V0.11
LED1-
LED1+
LED2-
LED2+
TRDCT_VDD
TRDCT_CAP
C365 0.01UF Y5V 16V
C354 0.01UF Y5V 16V
8+14PIN
http://laptop-motherboard-schematic.blogspot.com/
VCC5
5VDUAL
R307 X0
R308 0
F4 1.6A 9V
18 USB_OC3#
R342 10K
R336 15K
EC19 390UF 6.3V
FB11 31OHM
USB2A
VCC1 (P)
VCC2 (P)
GND1 (P)
GND2 (P)
USB0+ (B)
USB0- (B)
USB1+ (B)
USB1- (B)
18 USB_6P
18 USB_6N
18 USB_7P
18 USB_7N
L15 X90OHM
L14 X90OHM
C324 0.1UF Y5V 16V
CTRL18
Q56 BCP69 1A 20V
C767 10UF Y5V 10V
C388 0.1UF Y5V 16V
C389 0.1UF Y5V 16V
C392 0.1UF Y5V 16V
C384 0.1UF Y5V 16V
AVDD18
CTRL15
Q55 BCP69 1A 20V
C766 10UF Y5V 10V
C385 0.1UF Y5V 16V
C387 0.1UF Y5V 16V
C435 0.1UF Y5V 16V
C455 0.1UF Y5V 16V
C462 0.1UF Y5V 16V
C445 0.1UF Y5V 16V
C443 0.1UF Y5V 16V
C444 0.1UF Y5V 16V
C459 0.1UF Y5V 16V
VDD15
R411 3.83K
R410 X10K
U25
AT93C46
CS
SK
DI
DO
VDD
NC
ORG
GND
C472 0.1UF Y5V 16V
8+14PIN
abit
UNIVERSAL ABIT
PCI GbE LAN
Size
Custom
Document Number
M703 IX38 MAX
Rev
V0.2
Date: Wednesday, July 04, 2007
Sheet 24 of 37

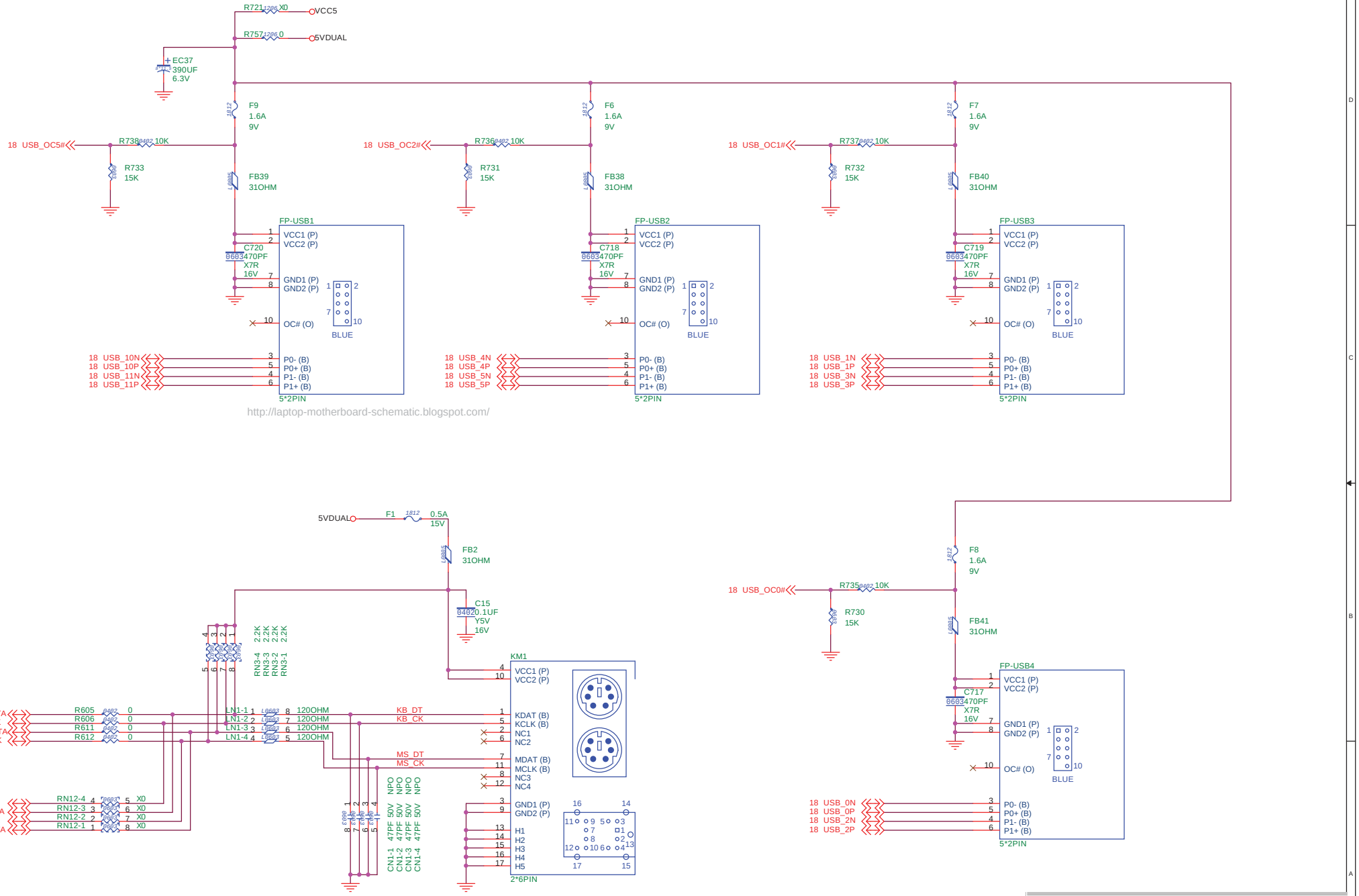

Place near U33 3VDUAL Pins
Place near U33 VCC3_IEEE_STBY Pins
Place near U33 1394_PLLVDD Pins
http://laptop-motherboard-schematic.blogspot.com/
IEEE-1394 Channel 2
V0.1-V0.2
TSB43AB22
PCI BUS INTERFACE
PHY PORT 2
BIAS CURRENT
OSCILLATOR
FILTER
EEPROM 2 WIRE BUS
POWER CLASS
PHY PORT 1
AT24C02BN
IEEE1394
M703 IX38 MAX
UNIVERSAL ABIT
Size Custom
Document Number
Rev V0.2
Date: Tuesday, June 26, 2007
Sheet 25 of 37


18,24,25 AD[0..31]
PCI2
PCI_120PIN
BLACK
3VDUAL VCC3 -12V
VCC5 VCC12
C649 0402 0.1UF Y5V 16V
AD0 A58
AD1 B58
AD2 A57
AD3 B56
AD4 A55
AD5 B55
AD6 A54
AD7 B53
AD8 B52
AD9 A49
AD10 B48
AD11 A47
AD12 B47
AD13 A46
AD14 B45
AD15 A44
AD16 A32
AD17 B32
AD18 A31
AD19 B30
AD20 A29
AD21 B29
AD22 A28
AD23 B27
AD24 A25
AD25 B24
AD26 A23
AD27 B23
AD28 A22
AD29 B21
AD30 A20
AD31 B20
AD19 R669 0603 150 A26
IDSEL (I)
C_BE#0 A52
C_BE#1 B44
C_BE#2 B33
C_BE#3 B26
18,24,25 C_BE#0
18,24,25 C_BE#1
18,24,25 C_BE#2
18,24,25 C_BE#3
C_BE-0 (B)
C_BE-1 (B)
C_BE-2 (B)
C_BE-3 (B)
18 PIRQ#E A6
18,25 PIRQ#F B7
18,24,25 PIRQ#G A7
18,24 PIRQ#H B8
INTA# (O)
INTB# (O)
INTC# (O)
INTD# (O)
PREQ#3 B18
18 PGNT#3 A17
REQ# (O)
GNT# (I)
18 PCI_PME# A19
18,24,25 FRAME# A34
18,24,25 TRDY# A36
18,24,25 STOP# A38
18,24,25 IRDY# A35
18,24,25 DEVSEL# B37
18 PLOCK# B39
18,24,25 PERR# B40
18,24,25 PAR A43
SMBDATA_P A41
18 PCI_RST# A15
SMBCLK_P A40
REQ64#1 A60
ACK64# B60
5 CK_33M_S1 CK_33M_S1 B16
PME# (B)
FRAME# (B)
TRDY# (B)
STOP (B)
IRDY# (B)
DEVSEL# (B)
PLOCK# (B)
PERR# (B)
PAR (B)
SBO# (B)
RESET# (I)
SDONE (I)
REQ64# (B)
ACK64# (B)
CLK33 (I)
3VSB (P) A14
TDO (O) B4
PRST-1 (O) B9
PRST-2 (O) B11
RSV1 A9
RSV3 B10
RSV2 A11
RSV4 B14
TCK (I) B2
TRST# (I) A1
TMS (I) A3
TDI (I) A4
+12V (P) A2
-12V (P) B1
VCC8 (P) B5
VCC9 (P) B6
VCC1 (P) A5
VCC2 (P) A8
VCC3 (P) A10
VCC12 (P) B61
VCC4 (P) A16
VCC13 (P) B62
VCC5 (P) A59
VCC11 (P) B59
VCC6 (P) A61
VCC10 (P) B19
VCC7 (P) A62
3V1 (P) A21
3V2 (P) A27
3V3 (P) A33
3V4 (P) A39
3V5 (P) A45
3V11 (P) B43
3V10 (P) B41
3V9 (P) B36
3V8 (P) B31
3V7 (P) B25
3V12 (P) B54
3V6 (P) A53
GND1 (P) A12
GND2 (P) A13
GND3 (P) A18
GND4 (P) A24
GND5 (P) A30
GND6 (P) A35
GND7 (P) A37
GND8 (P) A42
GND9 (P) A48
GND10 (P) A56
GND11 (P) B3
GND12 (P) B12
GND13 (P) B13
GND14 (P) B15
GND15 (P) B17
GND16 (P) B22
GND17 (P) B28
GND18 (P) B34
GND19 (P) B38
SERR# (B) B42
GND20 (P) B46
GND21 (P) B49
GND22 (P) B57
SERR# 18,24,25
5,30,34 AC05_SCL
5,30,34 AC05_SDA
SMBCLK_P
SMBDATA_P
R333 0402 X0
R330 0402 X0
R601 0402 X0
R602 0402 X0
SMBCLK 13,14,16,17,19,21
SMBDATA 13,14,16,17,19,21
PCI1
C711 0402 0.1UF Y5V 16V
AD18 R671 0603 150
5 CK_33M_S2
SERR#
VCC5
C658 0402 0.1UF Y5V 16V
C657 0402 0.1UF Y5V 16V
C676 0402 0.1UF Y5V 16V
C680 0402 0.1UF Y5V 16V
C624 0402 0.1UF Y5V 16V
C660 0402 0.1UF Y5V 16V
C659 0402 0.1UF Y5V 16V
C678 0402 0.1UF Y5V 16V
C679 0402 0.1UF Y5V 16V
C677 0402 0.1UF Y5V 16V
R529 0402 10K PREQ#3
R499 0402 10K PREQ#2
R495 0402 10K PREQ#1
R552 0402 10K PREQ#0
R638 0402 10K ACK64#
R672 0402 10K REQ64#1
PREQ#3 18
PREQ#2 18
PREQ#1 18,25
PREQ#0 18,24
R550 0402 10K PIRQ#B
R535 0402 10K PIRQ#D
R551 0402 10K PIRQ#C
R564 0402 10K PIRQ#A
PIRQ#B 18
PIRQ#D 18
PIRQ#C 18
PIRQ#A 18
R670 0402 10K PIRQ#E
R640 0402 10K PIRQ#F
R668 0402 10K PIRQ#G
R639 0402 10K PIRQ#H
R646 0402 10K STOP#
R667 0402 10K PLOCK#
R647 0402 10K PERR#
R641 0402 10K SERR#
R645 0402 10K DEVSEL#
R642 0402 10K TRDY#
R644 0402 10K IRDY#
R643 0402 10K FRAME#
R637 0402 10K REQ64#2
http://laptop-motherboard-schematic.blogspot.com/
abit UNIVERSAL ABIT
Title
PCI SLOT
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Tuesday, June 26, 2007
Sheet 26 of 37

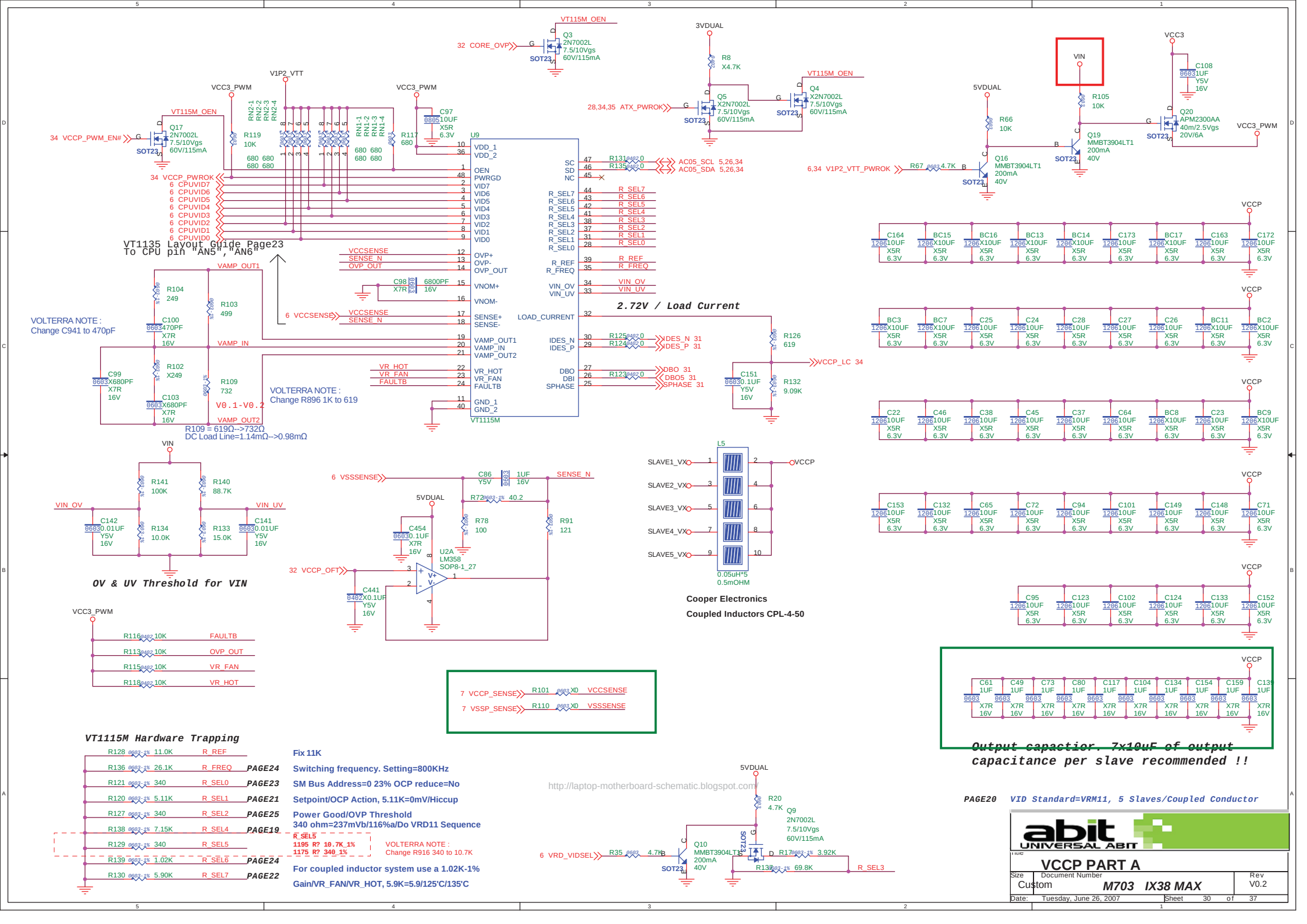


Title	LPC I/O & FDC
Size	Custom
Document Number	M703 IX38 MAX
Rev	V0.2
Date:	Tuesday, June 26, 2007
Sheet	27 of 37

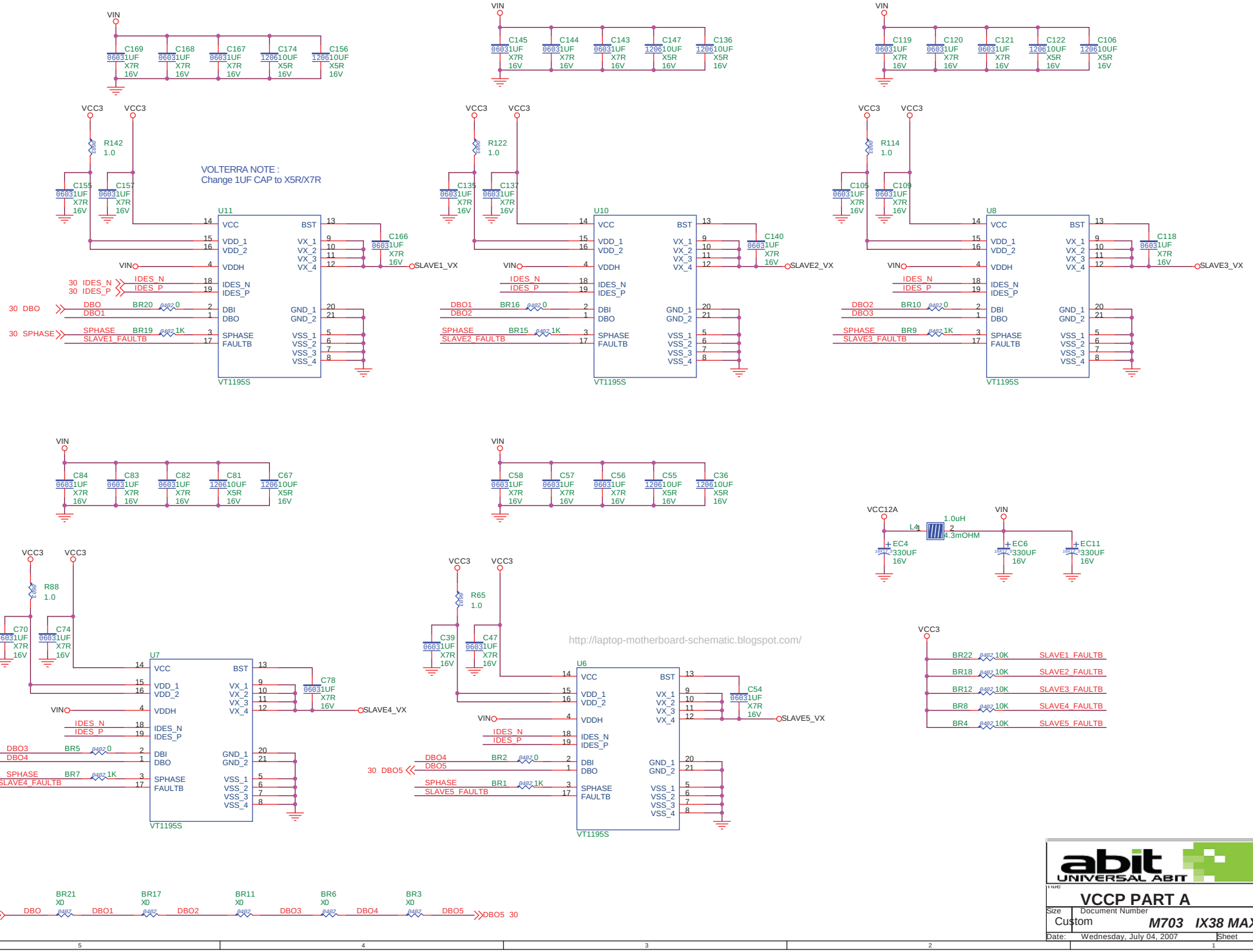

ATXPWR1
24PIN
ATX_PSON#
ATX_PWROK 30,34,35
C323 0402 0.1UF Y5V 16V
C316 0603 470PF X7R 16V
ATX12V1
2*4PIN
V0.1-V0.2
Del ATX4P1
C364 120 10UF Y5V 16V
C359 0402 0.1UF Y5V 16V
C253 080 10UF Y5V 10V
C241 0402 0.1UF Y5V 16V
C335 080 10UF Y5V 10V
C328 0402 0.1UF Y5V 16V
C259 0402 0.1UF Y5V 16V
POWER CONNECTOR DECOUPLING
Q48 X2N7002L 7.5/10Vgs 60V/115mA
Q46 X2N7002L 7.5/10Vgs 60V/115mA
Q51 X2N7002L 7.5/10Vgs 60V/115mA
Q49 X2N7002L 7.5/10Vgs 60V/115mA
SPI_CS0#
SPI_MOS_O
SPI_MOS_I
SPI_CLK
U23
XSST25VF080B
SPI1
XSPI_HEADER2X4-LF
SPI_HOLD#
SPI_WP#
D7 XBAT54A 30V/200mA
C490 0603 X0.1UF Y5V 16V
C456 0603 X0.1UF Y5V 16V
R416 X1K
R423 X1K
R437 X10K
Q54 X2N7002L 7.5/10Vgs 60V/115mA
V0.1-V0.2
Del SMB1
FPIO1
10*2PIN
COLOR
HDD_LED+
HDD_LED-
RESET SW-
RESET SW+
SPEAKER+5V
SPEAKER GND1
SPEAKER GND2
SPEAKER DRIVER
SP_LED+
SP_LED-
PWR_ON+
PWR_ON-
PWR LED+
PWR LED-
HD_LED#
RESET#
SUSLED_R
FP_PWRSW#
FP_RSTSW#
D20 BAT54A 30V/200mA
D18 BAT54A 30V/200mA
D19 FDLL4148 75V/200mA
Q70 MMBT3904LT1 200mA 40V
Q67 MMBT3904LT1 200mA 40V
Q73 MMBT3904LT1 200mA 40V
RESET1
4 PIN YELLOW
PWRSW1
4 PIN BROWN
http://laptop-motherboard-schematic.blogspot.com/
U33
PLCC-32PIN
SOCKET_BLACK
LAD0 (B)
LAD1 (B)
LAD2 (B)
LAD3 (B)
LFR# (I)
RST# (I)
CLK (I)
GPI1 (I)
GPI0 (I)
WP# (I)
TBL# (I)
INIT# (I)
VPP (P)
3V1 (P)
3V2 (P)
3V3 (P)
NC
RES3
RES2
RES1
RES0
RES4
RES5
RES6
RES7
IC (I)
GPI4 (I)
GPI3
GPI2
GND1 (P)
GND2 (P)
GND3 (P)
C685 0402 0.1UF Y5V 16V
C687 0402 0.1UF Y5V 16V
C686 0402 0.1UF Y5V 16V
R674 10K
R676 10K
FPIO, FWH, SMB & ATX
M703 IX38 MAX
Custom
V0.2
Friday, June 22, 2007
Sheet 28 of 37



Title	KB, MS, FP-USB	
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Tuesday, June 26, 2007	Sheet 29 of 37	

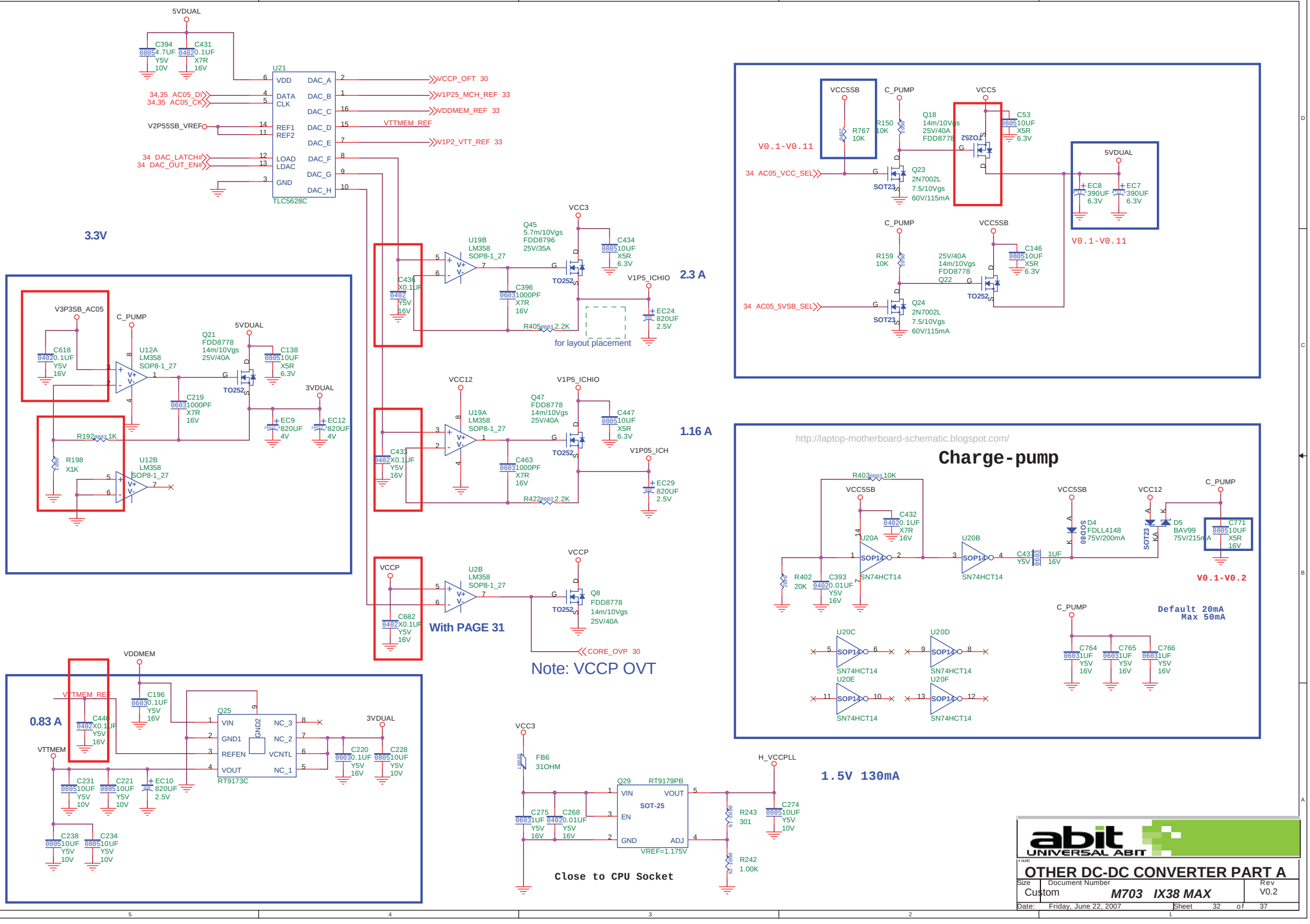

VT1135 Layout Guide Page23
To CPU pin "AN5","AN6"
VOLTERRA NOTE :
Change C941 to 470pF
VOLTERRA NOTE :
Change R896 1K to 619
V0.1-V0.2
R109 = 619Ω-->732Ω
DC Load Line=1.14mΩ-->0.98mΩ
2.72V / Load Current
OV & UV Threshold for VIN
VT1135 Hardware Trapping
Fix 11K
Switching frequency. Setting=800KHz
SM Bus Address=0 23% OCP reduce=No
Setpoint/OCP Action, 5.11K=0mV/Hiccup
Power Good/OVP Threshold
340 ohm=237mVb/116%a/Do VRD11 Sequence
For coupled inductor system use a 1.02K-1%
Gain/VR_FAN/VR_HOT, 5.9K=5.9/125'C/135'C
VOLTERRA NOTE :
Change R916 340 to 10.7K
Cooper Electronics
Coupled Inductors CPL-4-50
Output capactior, 7x10uF of output capacitance per slave recommended !!
PAGE20 VID Standard=VRM11, 5 Slaves/Coupled Conductor
http://laptop-motherboard-schematic.blogspot.com/
VCCP PART A
Custom
M703 IX38 MAX
Rev V0.2
Tuesday, June 26, 2007
Sheet 30 of 37

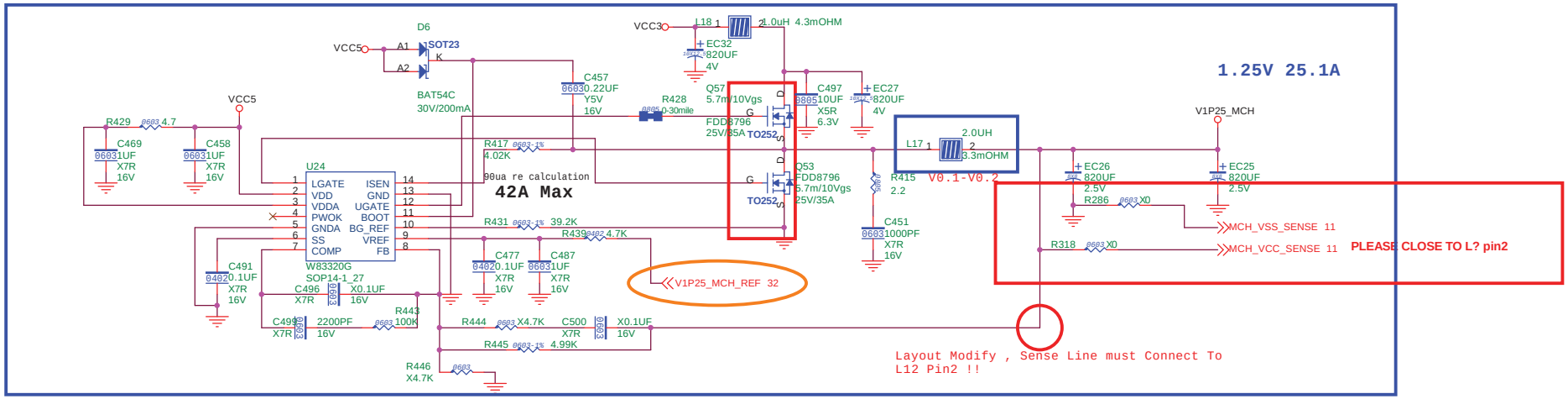
intput capactior. 3x1uF and 2x10uF
of input capacitance per slave recommended !!

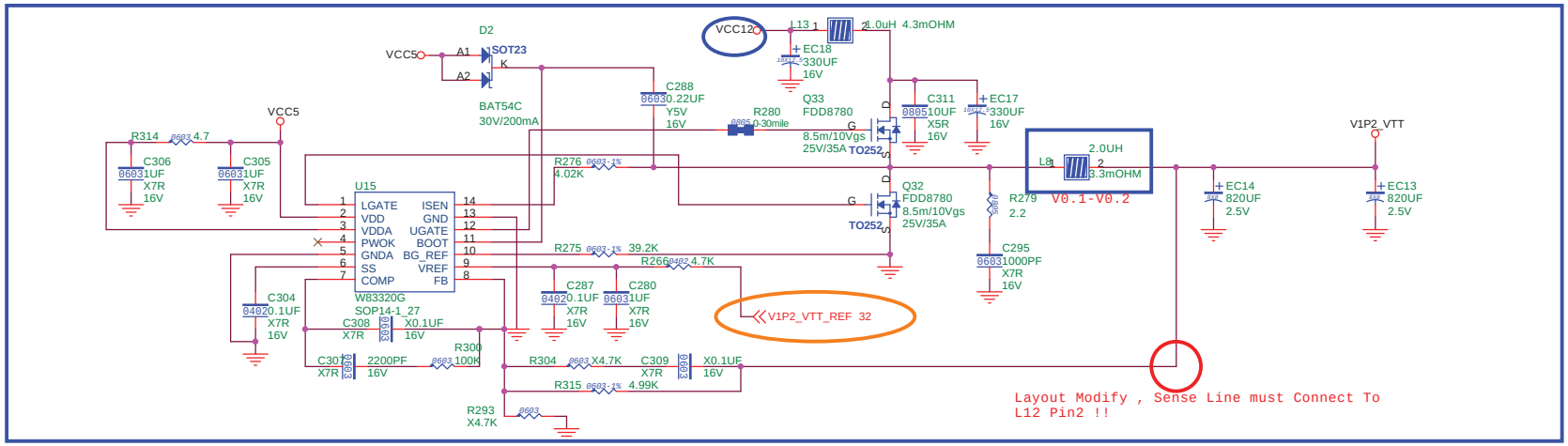


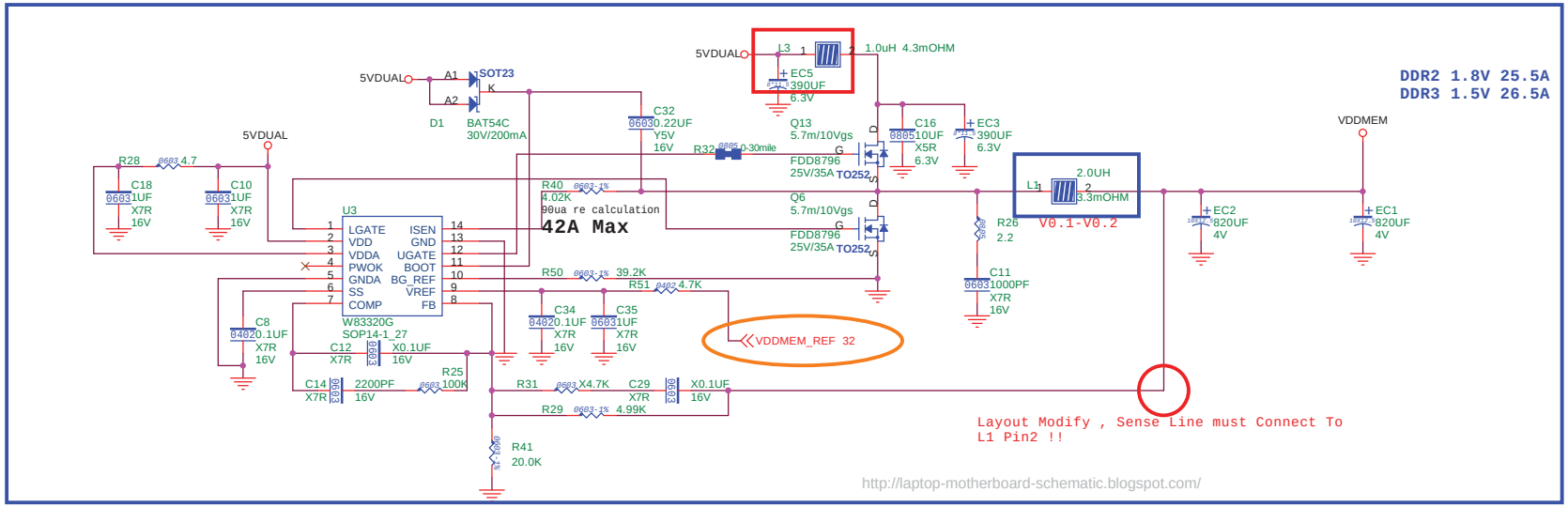
UNIVERSAL ABIT

Title: **VCCP PART A**		
Size: Custom	Document Number: ***M703 IX38 MAX***	Rev: V0.2
Date: Wednesday, July 04, 2007	Sheet 31 of 37	


5VDUAL
C394 0805 4.7UF Y5V 10V
C431 0402 0.1UF X7R 16V
U21
VDD
DATA
CLK
REF1
REF2
LOAD
LDAC
GND
DAC_A
DAC_B
DAC_C
DAC_D
DAC_E
DAC_F
DAC_G
DAC_H
TLC5628C
34,35 AC05_DI
34,35 AC05_CK
V2P55SB_VREF
34 DAC_LATCH#
34 DAC_OUT_EN#
VCCP_OFT 30
V1P25_MCH_REF 33
VDDMEM_REF 33
VTTMEM_REF
V1P2_VTT_REF 33
3.3V
V3P3SB_AC05
C_PUMP
C618 0402 0.1UF Y5V 16V
U12A LM358 SOP8-1_27
Q21 FDD8778 14m/10Vgs 25V/40A
5VDUAL
C138 0805 10UF X5R 6.3V
3VDUAL
C219 0603 1000PF X7R 16V
EC9 820UF 4V
EC12 820UF 4V
R192 0603 1K
R198 0402 X1K
U12B LM358 SOP8-1_27
VCC3
Q45 5.7m/10Vgs FDD8796 25V/35A
U19B LM358 SOP8-1_27
C434 0805 10UF X5R 6.3V
C436 0402 X0.1UF Y5V 16V
C396 0603 1000PF X7R 16V
TO252
V1P5_ICHIO
2.3 A
R405 0603 2.2K
EC24 820UF 2.5V
for layout placement
VCC12
V1P5_ICHIO
Q47 FDD8778 14m/10Vgs 25V/40A
U19A LM358 SOP8-1_27
C447 0805 10UF X5R 6.3V
C433 0402 X0.1UF Y5V 16V
C463 0603 1000PF X7R 16V
V1P05_ICH
1.16 A
R422 0603 2.2K
EC29 820UF 2.5V
VCCP
Q8 FDD8778 14m/10Vgs 25V/40A
U2B LM358 SOP8-1_27
C682 0402 X0.1UF Y5V 16V
With PAGE 31
CORE_OVP 30
Note: VCCP OVT
VDDMEM
VTTMEM_REF
0.83 A
C440 0402 X0.1UF Y5V 16V
C196 0603 0.1UF Y5V 16V
Q25
VIN
GND1
REFEN
VOUT
GND2
NC_3
NC_2
VCNTL
NC_1
RT9173C
3VDUAL
C220 0603 0.1UF Y5V 16V
C228 0805 10UF Y5V 10V
VTTMEM
C231 0805 10UF Y5V 10V
C221 0805 10UF Y5V 10V
EC10 820UF 2.5V
C238 0805 10UF Y5V 10V
C234 0805 10UF Y5V 10V
VCC3
FB6 31OHM
Q29 RT9179PB
VIN
VOUT
EN
GND
ADJ
SOT-25
VREF=1.175V
C275 0603 1UF Y5V 16V
C268 0402 0.01UF Y5V 16V
R243 301
R242 1.00K
H_VCCPLL
C274 0805 10UF Y5V 10V
1.5V 130mA
Close to CPU Socket
VCC5SB
C_PUMP
VCC5
R767 0402 10K
R150 0805 10K
Q18 14m/10Vgs 25V/40A FDD8778
TO252
C53 0805 10UF X5R 6.3V
V0.1-V0.11
34 AC05_VCC_SEL
Q23 2N7002L 7.5/10Vgs 60V/115mA
SOT23
5VDUAL
EC8 390UF 6.3V
EC7 390UF 6.3V
V0.1-V0.11
R159 0805 10K
25V/40A 14m/10Vgs FDD8778
Q22
C146 0805 10UF X5R 6.3V
34 AC05_5VSB_SEL
Q24 2N7002L 7.5/10Vgs 60V/115mA
http://laptop-motherboard-schematic.blogspot.com/
Charge-pump
R403 0603 10K
C432 0402 0.1UF X7R 16V
U20A
U20B
SOP14
SN74HCT14
R402 0805 20K
C393 0402 0.01UF Y5V 16V
VCC12
D4 FDLL4148 75V/200mA
SOD80
D5 BAV99 75V/215mA
SOT23
C771 0805 10UF X5R 16V
C431 0603 1UF Y5V 16V
V0.1-V0.2
Default 20mA
Max 50mA
U20C
U20D
U20E
U20F
C764 0603 1UF Y5V 16V
C765 0603 1UF Y5V 16V
C766 0603 1UF Y5V 16V
UNIVERSAL ABIT
OTHER DC-DC CONVERTER PART A
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Friday, June 22, 2007
Sheet 32 of 37





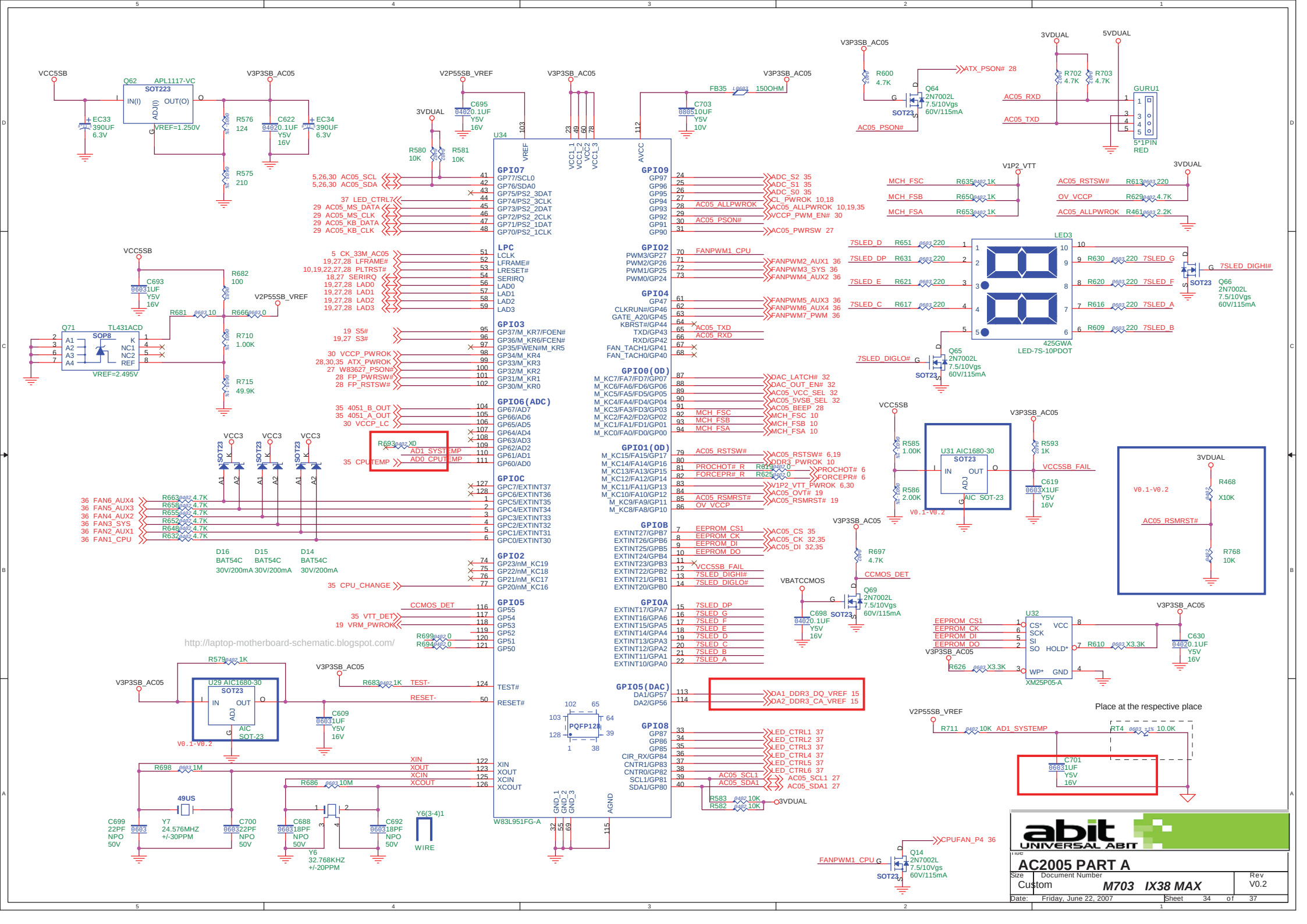


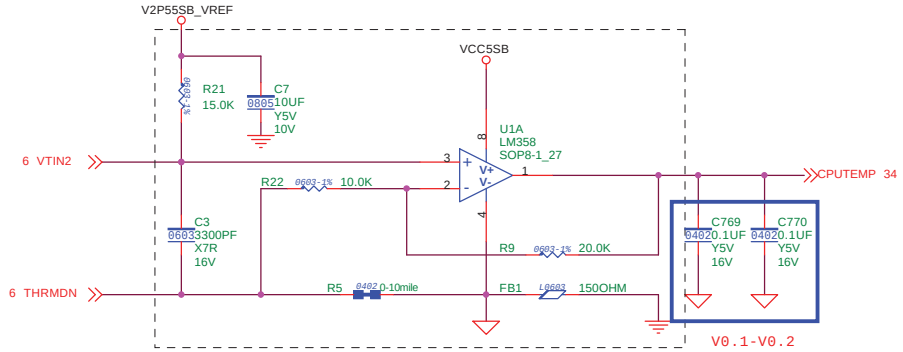
UNIVERSAL ABIT

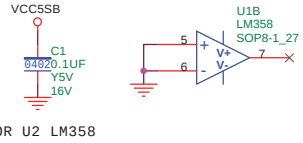
Title: OTHER DC-DC CONVERTER PART B

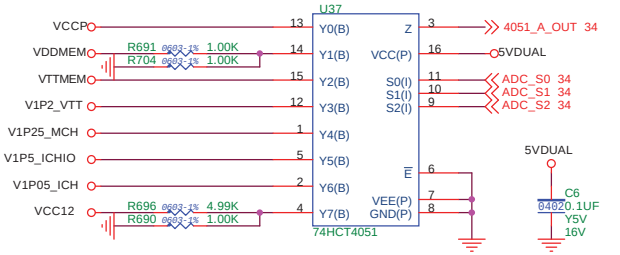
Size	Document Number	Rev
Custom	M703 IX38 MAX	V0.2

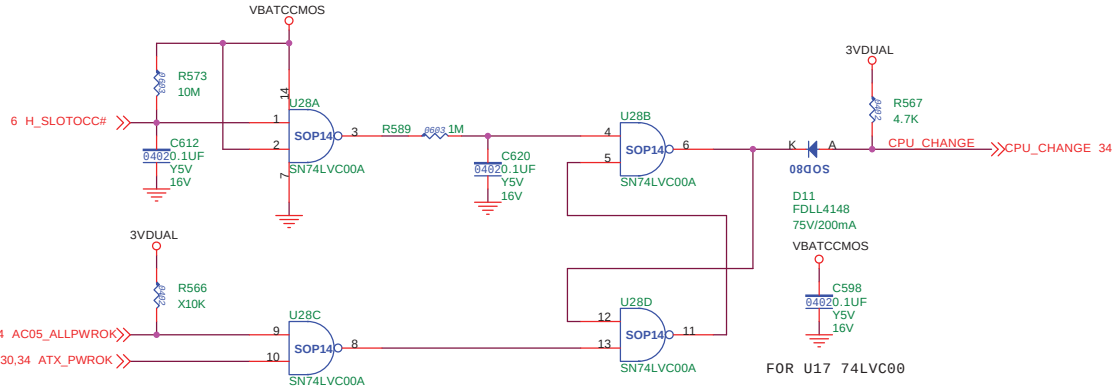
Date: Friday, June 22, 2007 Sheet 33 of 37

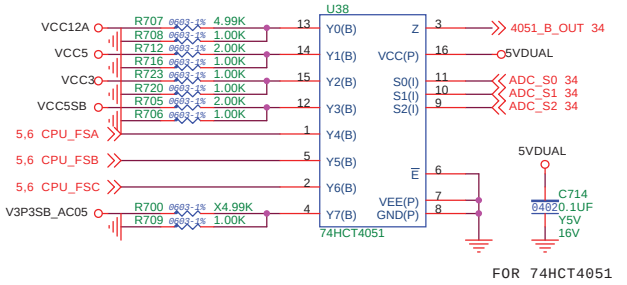

VCC5SB
Q62 APL1117-VC SOT223
IN(I) ADJ(I) OUT(O)
VREF=1.250V
EC33 390UF 6.3V
EC34 390UF 6.3V
R576 124
R575 210
C622 0402 0.1UF Y5V 16V
V3P3SB_AC05
V2P55SB_VREF
C695 0402 0.1UF Y5V 16V
3VDUAL
R580 10K
R581 10K
U34
W83L951FG-A
PQFP128
VREF
VCC1_1
VCC1_2
VCC2
VCC1_3
AVCC
AGND
GND_1
GND_2
GND_3
FB35 1608 150OHM
C703 0805 10UF Y5V 10V
GPIO7
GP77/SCL0
GP76/SDA0
GP75/PS2_3DAT
GP74/PS2_3CLK
GP73/PS2_2DAT
GP72/PS2_2CLK
GP71/PS2_1DAT
GP70/PS2_1CLK
5,26,30 AC05_SCL
5,26,30 AC05_SDA
37 LED_CTRL7
29 AC05_MS_DATA
29 AC05_MS_CLK
29 AC05_KB_DATA
29 AC05_KB_CLK
LPC
LCLK
LFRAME#
LRESET#
SERIRQ
LAD0
LAD1
LAD2
LAD3
5 CK_33M_AC05
19,27,28 LFRAME#
10,19,22,27,28 PLTRST#
18,27 SERIRQ
19,27,28 LAD0
19,27,28 LAD1
19,27,28 LAD2
19,27,28 LAD3
GPIO3
GP37/M_KR7/FOEN#
GP36/M_KR6/FCEN#
GP35/FWEN#M_KR5
GP34/M_KR4
GP33/M_KR3
GP32/M_KR2
GP31/M_KR1
GP30/M_KR0
19 S5#
19,27 S3#
30 VCCP_PWROK
28,30,35 ATX_PWROK
27 W83627_PSON#
28 FP_PWRSW#
28 FP_RSTSW#
GPIO6(ADC)
GP67/AD7
GP66/AD6
GP65/AD5
GP64/AD4
GP63/AD3
GP62/AD2
GP61/AD1
GP60/AD0
35 4051_B_OUT
35 4051_A_OUT
30 VCCP_LC
R693 0402 X0
AD1_SYSTEMP
AD0_CPUTEMP
35 CPUTEMP
GPIOC
GPC7/EXTINT37
GPC6/EXTINT36
GPC5/EXTINT35
GPC4/EXTINT34
GPC3/EXTINT33
GPC2/EXTINT32
GPC1/EXTINT31
GPC0/EXTINT30
GPIO2
GP23/nM_KC19
GP22/nM_KC18
GP21/nM_KC17
GP20/nM_KC16
35 CPU_CHANGE
GPIO5
GP55
GP54
GP53
GP52
GP51
GP50
CCMOS_DET
35 VTT_DET
19 VRM_PWROK
R699 0402 0
R694 0402 0
TEST#
RESET#
XIN
XOUT
XCIN
XCOUT
GPIO9
GP97
GP96
GP95
GP94
GP93
GP92
GP91
GP90
ADC_S2 35
ADC_S1 35
ADC_S0 35
CL_PWROK 10,18
AC05_ALLPWROK
AC05_PSON#
VCCP_PWM_EN# 30
AC05_PWRSW 27
GPIO2
PWM3/GP27
PWM2/GP26
PWM1/GP25
PWM0/GP24
FANPWM1_CPU
FANPWM2_AUX1 36
FANPWM3_SYS 36
FANPWM4_AUX2 36
GPIO4
GP47
CLKRUN#/GP46
GATE_A20/GP45
KBRST#/GP44
TXD/GP43
RXD/GP42
FAN_TACH1/GP41
FAN_TACH0/GP40
FANPWM5_AUX3 36
FANPWM6_AUX4 36
FANPWM7_PWM 36
AC05_TXD
AC05_RXD
GPIO0(OD)
M_KC7/FA7/FD7/GP07
M_KC6/FA6/FD6/GP06
M_KC5/FA5/FD5/GP05
M_KC4/FA4/FD4/GP04
M_KC3/FA3/FD3/GP03
M_KC2/FA2/FD2/GP02
M_KC1/FA1/FD1/GP01
M_KC0/FA0/FD0/GP00
DAC_LATCH# 32
DAC_OUT_EN# 32
AC05_VCC_SEL 32
AC05_5VSB_SEL 32
AC05_BEEP 28
MCH_FSC
MCH_FSB
MCH_FSA
MCH_FSC 10
MCH_FSB 10
MCH_FSA 10
GPIO1(OD)
M_KC15/FA15/GP17
M_KC14/FA14/GP16
M_KC13/FA13/GP15
M_KC12/FA12/GP14
M_KC11/FA11/GP13
M_KC10/FA10/GP12
M_KC9/FA9/GP11
M_KC8/FA8/GP10
AC05_RSTSW#
PROCHOT# R
FORCEPR# R
AC05_RSTSW# 6,19
DDR3_PWROK 10
PROCHOT# 6
FORCEPR# 6
V1P2_VTT_PWROK 6,30
AC05_OVT# 19
AC05_RSMRST# 19
OV_VCCP
GPIOB
EXTINT27/GPB7
EXTINT26/GPB6
EXTINT25/GPB5
EXTINT24/GPB4
EXTINT23/GPB3
EXTINT22/GPB2
EXTINT21/GPB1
EXTINT20/GPB0
EEPROM_CS1
EEPROM_CK
EEPROM_DI
EEPROM_DO
VCC5SB_FAIL
7SLED_DIGHI#
7SLED_DIGLO#
AC05_CS 35
AC05_CK 32,35
AC05_DI 32,35
GPIOA
EXTINT17/GPA7
EXTINT16/GPA6
EXTINT15/GPA5
EXTINT14/GPA4
EXTINT13/GPA3
EXTINT12/GPA2
EXTINT11/GPA1
EXTINT10/GPA0
7SLED_DP
7SLED_G
7SLED_F
7SLED_E
7SLED_D
7SLED_C
7SLED_B
7SLED_A
GPIO5(DAC)
DA1/GP57
DA2/GP56
DA1_DDR3_DQ_VREF 15
DA2_DDR3_CA_VREF 15
GPIO8
GP87
GP86
GP85
GP84
GP83
GP82
GP81
GP80
CIR_RX/GP84
CNTR1/GP83
CNTR0/GP82
SCL1/GP81
SDA1/GP80
LED_CTRL1 37
LED_CTRL2 37
LED_CTRL3 37
LED_CTRL4 37
LED_CTRL5 37
LED_CTRL6 37
AC05_SCL1
AC05_SDA1
AC05_SCL1 27
AC05_SDA1 27
R583 0402 10K
R582 0402 10K
3VDUAL
V3P3SB_AC05
R600 4.7K
Q64 2N7002L 7.5/10Vgs 60V/115mA SOT23
ATX_PSON# 28
AC05_PSON#
R702 4.7K
R703 4.7K
AC05_RXD
AC05_TXD
GURU1
5*1PIN RED
V1P2_VTT
MCH_FSC R635 0402 1K
MCH_FSB R650 0402 1K
MCH_FSA R653 0402 1K
AC05_RSTSW# R613 0603 220
OV_VCCP R629 0402 4.7K
AC05_ALLPWROK R461 0603 2.2K
LED3
7SLED_D R651 0603 220
7SLED_DP R631 0603 220
7SLED_E R621 0603 220
7SLED_C R617 0603 220
R630 0603 220 7SLED_G
R620 0603 220 7SLED_F
R616 0603 220 7SLED_A
R609 0603 220 7SLED_B
425GWA LED-7S-10PDOT
Q65 2N7002L 7.5/10Vgs 60V/115mA
Q66 2N7002L 7.5/10Vgs 60V/115mA
R682 100
R681 0603 10
R666 0603 0
R710 1.00K
R715 49.9K
C693 0603 1UF Y5V 16V
Q71 TL431ACD SOP8
VREF=2.495V
R585 1.00K
R586 2.00K
U31 AIC1680-30 SOT23
AIC SOT-23
V0.1-V0.2
R593 1K
VCC5SB_FAIL
C619 0603 X1UF Y5V 16V
R697 4.7K
CCMOS_DET
VBATCCMOS
Q69 2N7002L 7.5/10Vgs 60V/115mA
C698 0402 0.1UF Y5V 16V
R468
X10K
R768 10K
AC05_RSMRST#
U32
XM25P05-A
CS* SCK SI SO WP* HOLD* VCC GND
R610 0603 X3.3K
R626 0603 X3.3K
C630 0402 0.1UF Y5V 16V
D16 BAT54C 30V/200mA
D15 BAT54C 30V/200mA
D14 BAT54C 30V/200mA
SOT23
R663 0402 4.7K
R658 0402 4.7K
R655 0402 4.7K
R652 0402 4.7K
R648 0402 4.7K
R632 0402 4.7K
36 FAN6_AUX4
36 FAN5_AUX3
36 FAN4_AUX2
36 FAN3_SYS
36 FAN2_AUX1
36 FAN1_CPU
U29 AIC1680-30 SOT23
AIC SOT-23
V0.1-V0.2
R579 0402 1K
R683 0402 1K TEST-
RESET-
C609 0603 1UF Y5V 16V
R698 0603 1M
R686 0603 10M
49US
Y7 24.576MHZ +/-30PPM
Y6 32.768KHZ +/-20PPM
C699 22PF 0603 NPO 50V
C700 22PF 0603 NPO 50V
C688 18PF 0603 NPO 50V
C692 18PF 0603 NPO 50V
Y6(3-4)1
WIRE
R711 0402 10K AD1_SYSTEMP
RT4 0603 ±1% 10.0K
C701 0603 1UF Y5V 16V
Place at the respective place
CPUFAN_P4 36
FANPWM1_CPU
Q14 2N7002L 7.5/10Vgs 60V/115mA
http://laptop-motherboard-schematic.blogspot.com/
abit UNIVERSAL ABIT
AC2005 PART A
Size Custom
Document Number M703 IX38 MAX
Rev V0.2
Date: Friday, June 22, 2007
Sheet 34 of 37

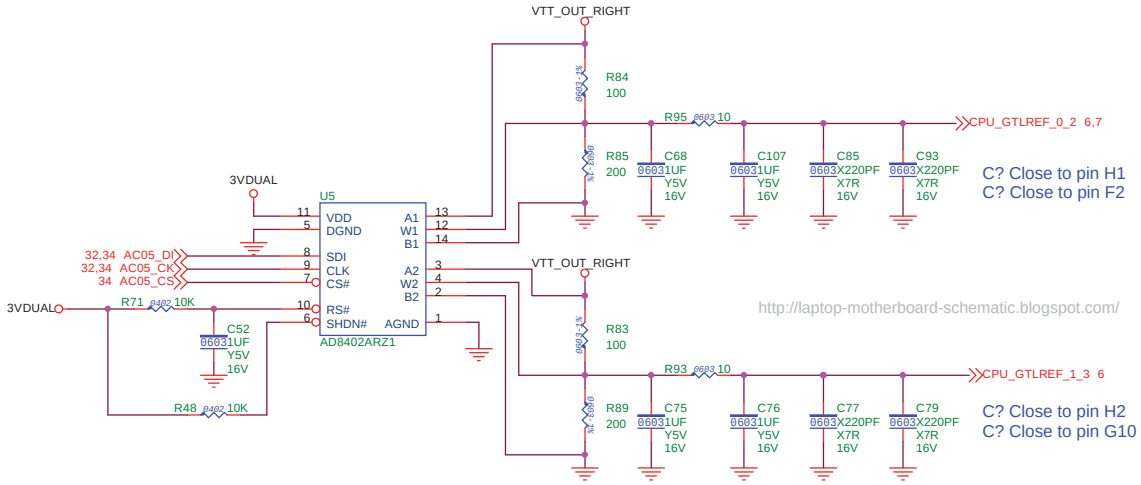


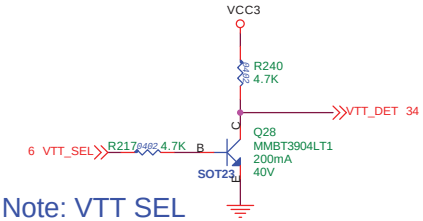












Note: VTT SEL

KENTSFIELD SUPPORT

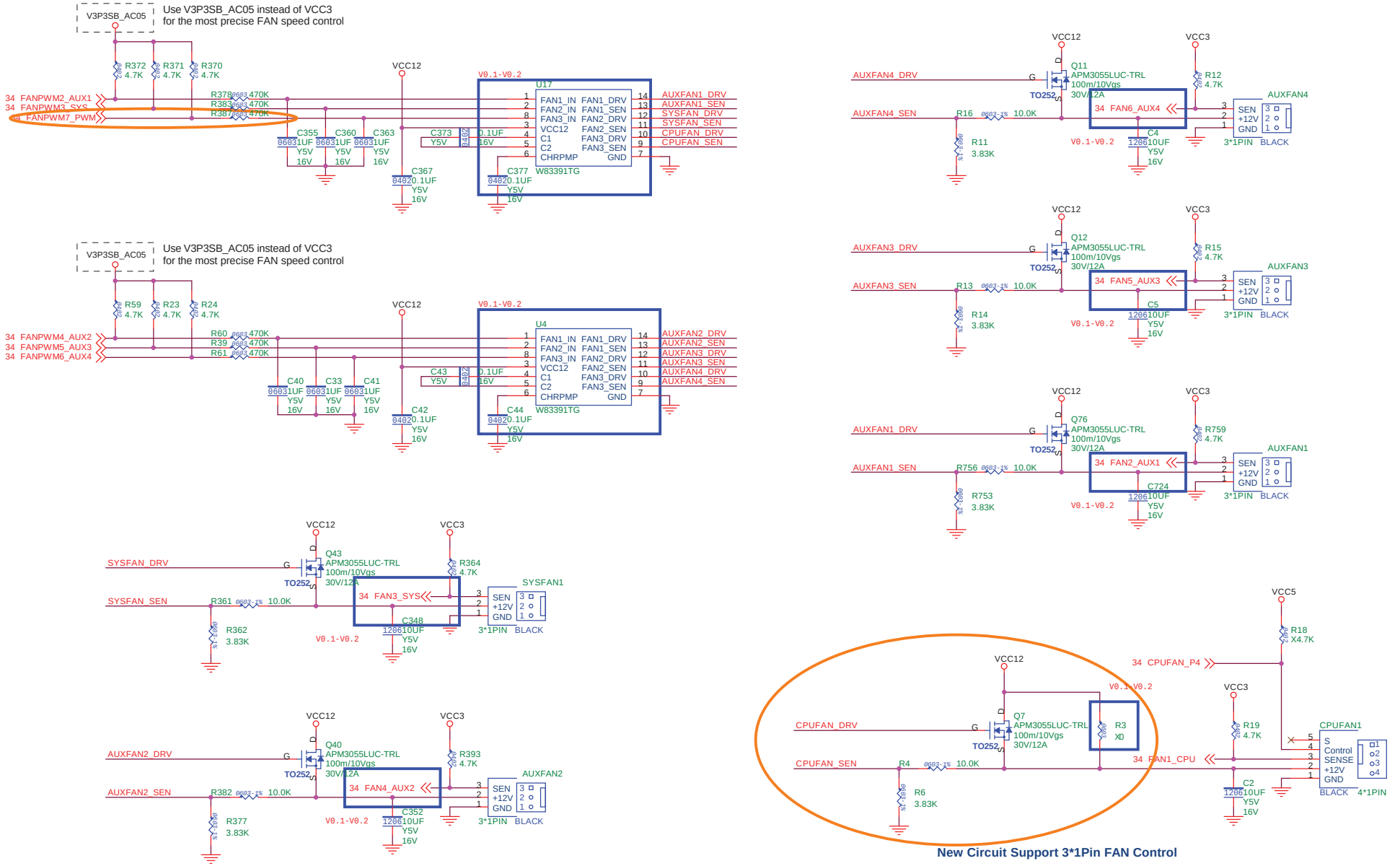
If CPU_VTT_SEL used,
- VTT_SEL= 1, VTT= 1.2V
- VTT_SEL= 0, VTT= 1.1V

UNIVERSAL ABIT

Title: **AC2005 PART B**

Size	Document Number	Rev
Custom	***M703 IX38 MAX***	V0.2

Date: Monday, June 25, 2007 Sheet 35 of 37



New Circuit Support 3*1Pin FAN Control

UNIVERSAL ABIT

Title: AC2005 PART C		
Size: Custom	Document Number: M703 IX38 MAX	Rev: V0.2
Date: Friday, June 22, 2007	Sheet 36 of 37	

CUPON1
M_50_4MIL
TP1 TP
2*1PIN
4 Mils Impedance 50 Ohm +- 15%

CUPON4
S_50_5MIL
TP4 TP
2*1PIN
5 Mils Impedance 50 Ohm +- 10%

CUPON2
SATA_444_P
SATA_444_N
TP2 TP
TP3 TP
2*2PIN
444 SATA Impedance 95 Ohm +- 17.5%

CUPON3
PCIE_555_P
PCIE_555_N
TP6 TP
TP5 TP
2*2PIN
555 PCIE Impedance 85 Ohm +- 17.5%

V0.1-V0.2

M3 M6 M9 M12 M17 M22
M8 M10 M13 M18 M23
M7 M14 M19 M24
M4 M30 M15 M20 M25
M5 M28 M11 M16 M21 M29
H1 H2 H3

MH1 MH2 MH3
MH4 MH5 MH6
MH7 MH8 MH9

Place close to FPIO1

3VDUAL R749 150 LED5 XGREEN
3VDUAL R740 150 LED4 XGREEN
3VDUAL R758 150 LED6 XGREEN
3VDUAL R754 150 LED7 XGREEN

VCC3 R212 150 LED2 GREEN
3VDUAL R194 150 LED1 RED

MCH1
HSINK-SOUTH
BLACK

HSINK-OTES1
HSINK-64_23X15
HSINK-64_23X15

ICH1
HSINK-SOUTH
BLACK

VCC12 R7 680 BLED1 BLUE Q2 MMBT3904LT1 200mA 40V R10 4.7K LED_CTRL1 34
VCC12 R734 680 BLED14 BLUE Q74 MMBT3904LT1 200mA 40V R727 4.7K
VCC12 R719 680 BLED13 BLUE Q72 MMBT3904LT1 200mA 40V R729 4.7K LED_CTRL2 34
VCC12 R2 680 BLED2 BLUE Q1 MMBT3904LT1 200mA 40V R1 4.7K
VCC12 R58 680 BLED3 BLUE Q15 MMBT3904LT1 200mA 40V R68 4.7K LED_CTRL3 34
VCC12 R584 680 BLED11 BLUE Q63 MMBT3904LT1 200mA 40V R594 4.7K

VCC12 R197 680 BLED4 BLUE Q42 MMBT3904LT1 200mA 40V R366 4.7K LED_CTRL4 34
VCC12 R399 680 BLED8 BLUE Q44 MMBT3904LT1 200mA 40V R401 4.7K
VCC12 R282 680 BLED7 BLUE Q31 MMBT3904LT1 200mA 40V R270 4.7K LED_CTRL5 34
VCC12 R516 680 BLED9 BLUE Q58 MMBT3904LT1 200mA 40V R538 4.7K
VCC12 R517 680 BLED10 BLUE Q59 MMBT3904LT1 200mA 40V R563 4.7K LED_CTRL6 34
VCC12 R245 680 BLED6 BLUE Q27 MMBT3904LT1 200mA 40V R231 4.7K
VCC12 R685 680 BLED12 BLUE Q68 MMBT3904LT1 200mA 40V R684 4.7K LED_CTRL7 34
VCC12 R209 680 BLED5 BLUE Q26 MMBT3904LT1 200mA 40V R221 4.7K

UNIVERSAL ABIT

Title: MECHANICAL
Size: Custom
Document Number: M703 IX38 MAX
Rev: V0.2
Date: Friday, June 22, 2007
Sheet 37 of 37