ELITEGROUP 865GV-M8 Rev :3.1D FOR LENOVO

Schematics Version History Table :

Circuit Ver.	PCB Ver.	Total Page	Modificatory Page	Date
3.0	3.0	32	uATX 244mmx220mm	03/09/' 06
3.1	3.1	32		05/12/' 06
3.1A	3.1A	32		05/15/' 06
3.1B	3.1B	32		06/02/' 06
3.1C	3.1C	32		06/28/' 06
3.1D	3.1D	32		07/02/' 06

Page Title of Schematic :

Elitegroup Computer Systems

Title: Cover Sheet

Size: Custom | Document Number: 865GV-M8 | Rev: 3.1D

Date: Friday, July 07, 2006 | Sheet 1 of 33

PCB : 244 x 244 mm ; 4 layers

DEVICE	IDSEL	INT#	REQ#	GNT#
PCI1	16	C/D/E/F	PREQ-1	PGNT-1
PCI2	17	D/E/F/G	PREQ-2	PGNT-2
PCI3	18	E/F/G/H	PREQ-3	PGNT-3
LAN	25	F	PREQ-4	PGNT-4

VRM
ISL6566CR

ICS952647
48pin SSOP

intel
P4 Processor
775 pin

re.2.0 Prescoot, Cedar Mill & Smithfield

BW : 4.1GB/s @ FSB : 533MHz & Freq : 133MHz
BW : 6.4GB/s @ FSB : 800MHz & Freq : 200MHz

BW : 2.1GB/s @ DDR :200/266/333MHz & Freq : 133MHz
BW : 3.2GB/s @ DDR : 266/333/400MHz & Freq : 200MHz

BW : 1.066GB/s @ Freq : 66MHz

AGP1 Slot 132p
8X / 1.5V

VGA (G only)

intel
iSP/G
932pin FC-BGA

DDIMM1: DDR Socket 184P
DDIMM2 : DDR Socket 184P

BW : 266MB/s @ Freq : 66MHz

USB V2.0

USB1
2 ports
USB2
2 ports
USB3
2 ports
USB4
2 ports
USBLAN
8 ports

IDE2 40pin
IDE1 40pin

Up to Ultra ATA/100
Two IDE Channel

intel
ICH5
460pin EBGA

BW : 133MB/s @Freq : 33MHz

PCI1 Slot 120pin @ AD16
PCI2 Slot 120pin @ AD17
PCI3 Slot 120pin @ AD18

SATA1 7Pin
SATA2 7pin

AC' 97 & Lan I/F

Audio Codec
ALC655

Mic In
Line Out
Line In

intel
FWH
32pin PLCC

LPC bus

Super I/O
W83627EHF
128pin PQFP

Lan Chip
RTL8100C
100pin

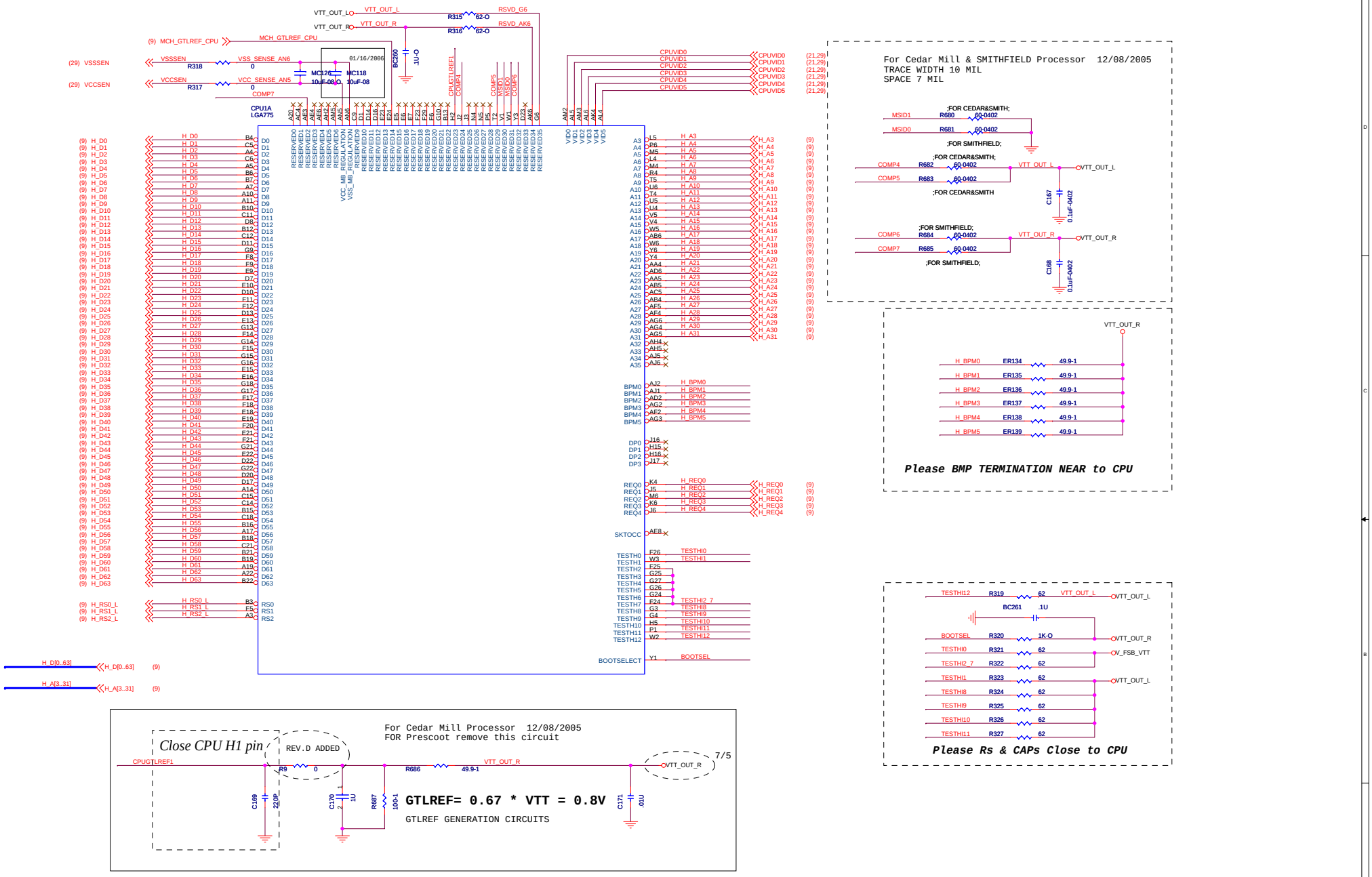
USBLAN
RJ45

Elitegroup Computer Systems

Title: System Block Diagram

Size: B | Document Number: 865GV-M8 | Rev: 3.1D

Date: Friday, July 07, 2006 | Sheet 2 of 33



Elitegroup Computer Systems	
Title	P4 LGA775P Part A
Size: C	Document Number: 865GV-M8
Rev	3.1D
Date: Friday, July 07, 2006	Sheet 3 of 33

Close CPU H1 pin

Place componets as close as possible to Processor socket
trace width to cap must be no smaller than 12 Mils

LL= LOAD LINE for load line select

GTLREF= 0.67 * VTT = 0.8V

GTLREF GENERATION CIRCUITS

CPU SIGNAL CLOSE TO TERMINATION CPU

BSEL resistors can be removed IF ONLY TEJAS AND CEDAR MILL ARE SUPPORTED

PLACE TCK/TDI/TMS TERMINATION NEAR CPU WITHIN 1.5" OF CPU, IDEALLY NEXT TO IT.

PLACE TRST_L TERMINATION ANYWHERE ON ROUTE

For Cedar Mill & SMITHFIELD Processor
12/08/2005

;FOR PRESCOOT

;FOR PRESCOOT

Place outside Socket Cavity Layout need closed CPU

For SMITHFIELD Processor
12/08/2005

;FOR CEDAR&SMITH;

(Internal pull-up)

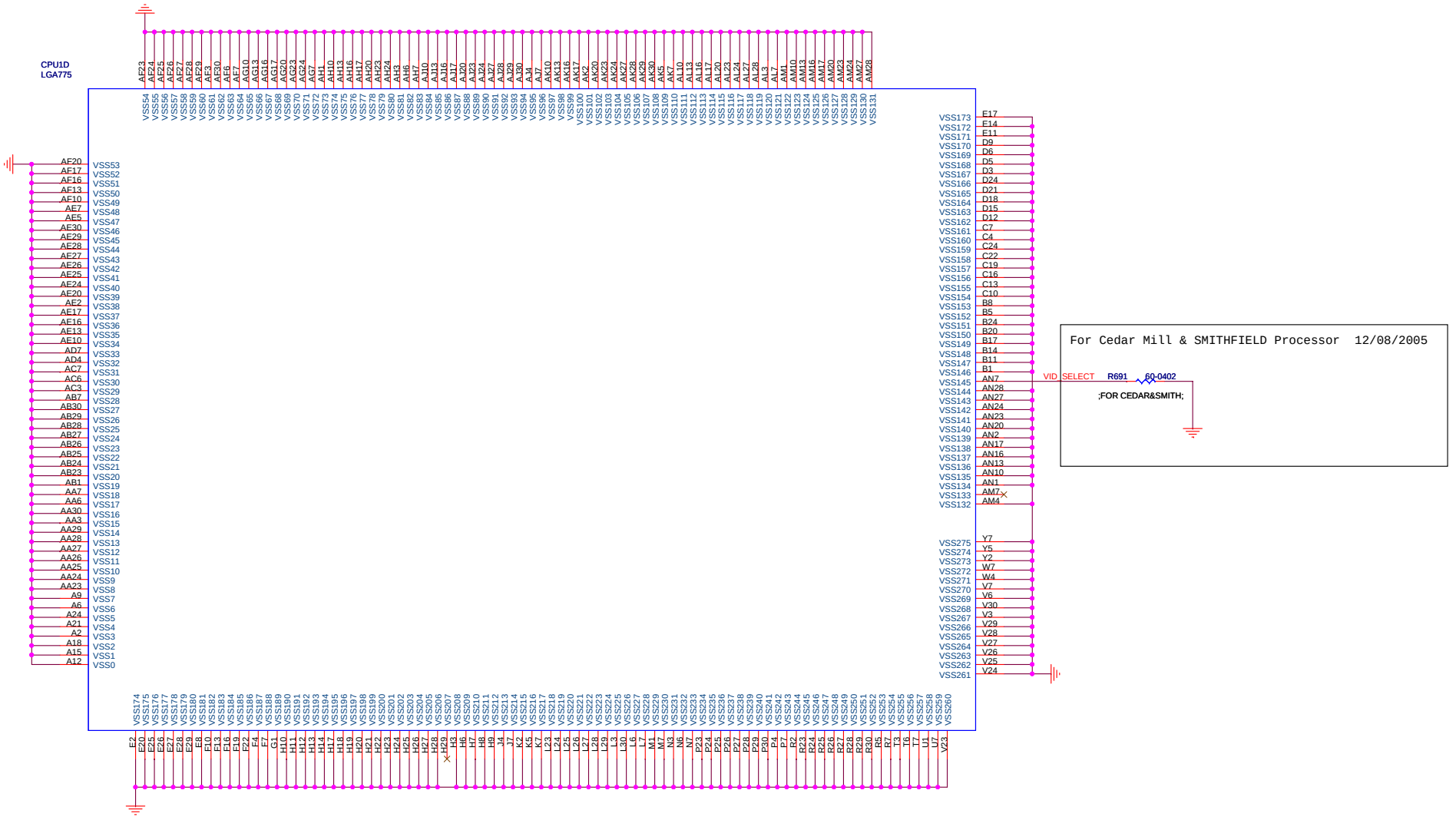
LGA775

2N3904S

ECS tegroup Computer Systems

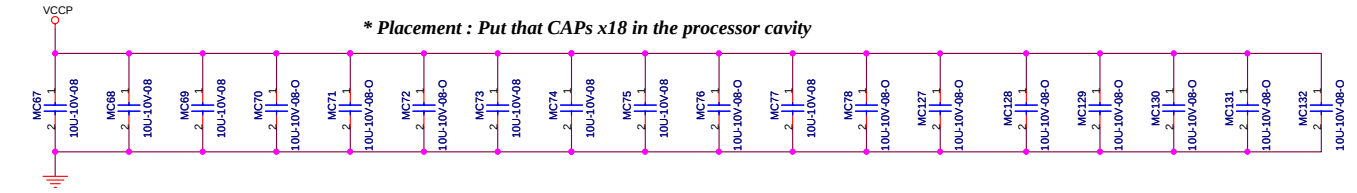
Title	P4 LGA775P Part B	
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 4 of 33	

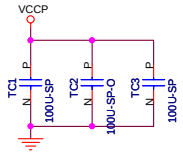
Elitegroup Computer Systems			
Title: P4 LGA775P Part C			
Size: Custom	Document Number: 865GV-M8		Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 5 of 33		



litegroup Computer Systems

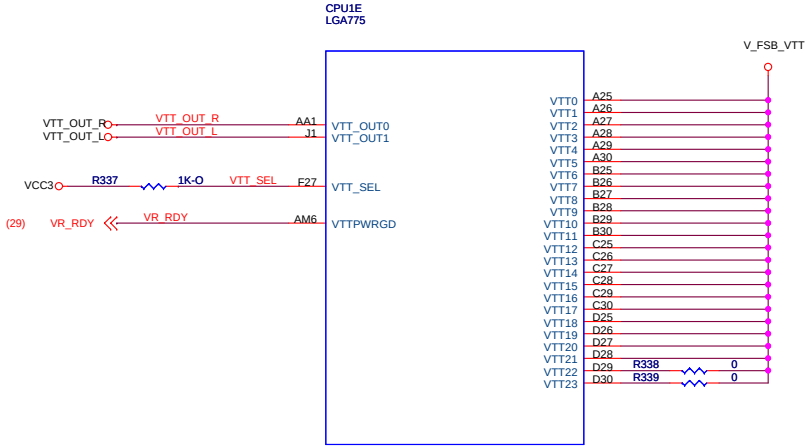
Title	P4 LGA775P Part D	
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 6 of 33	

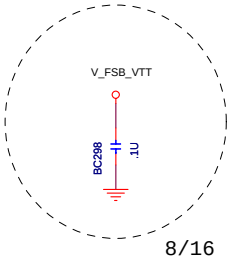




MC109,MC110 near to pin V26 & U27

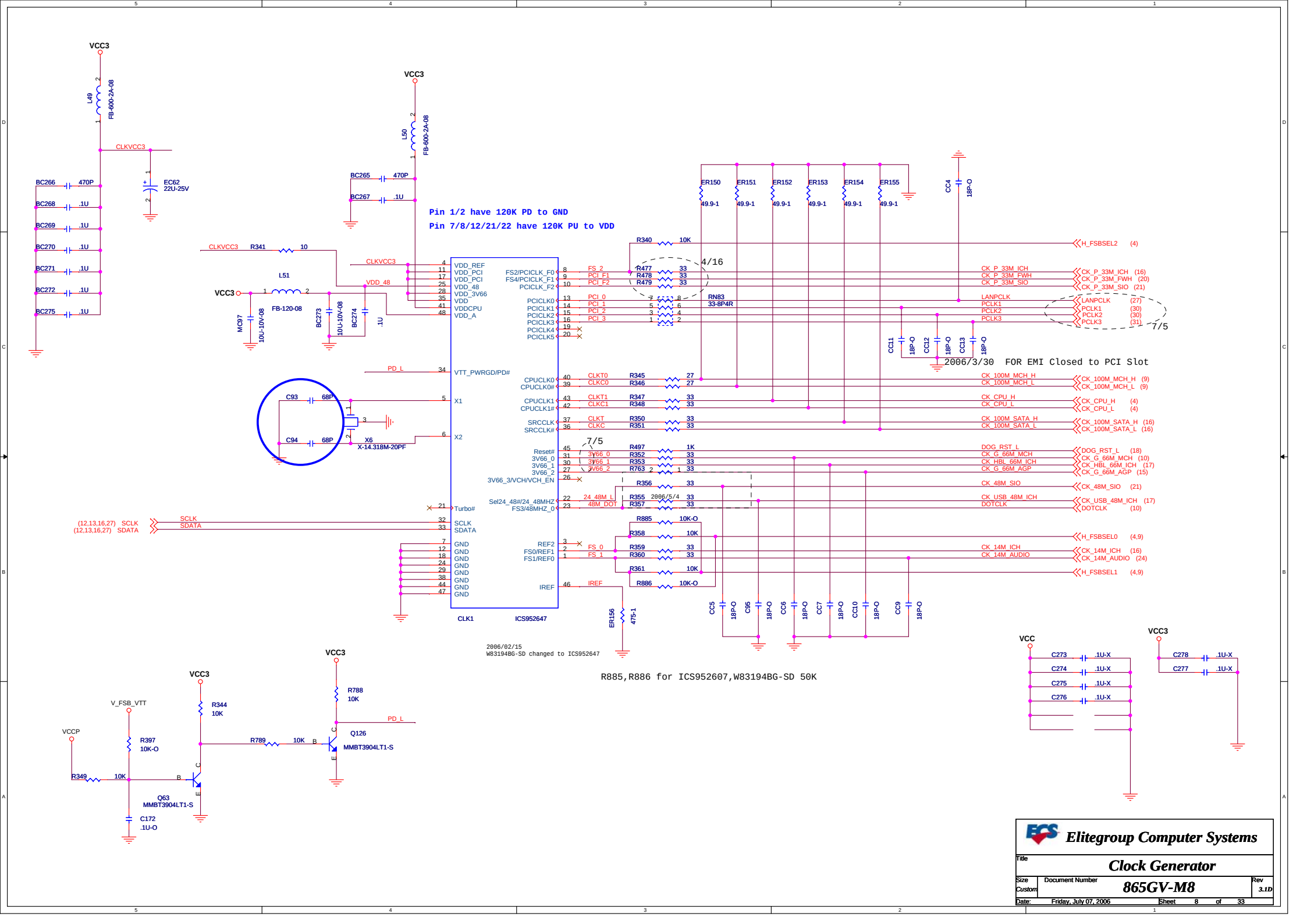
VTT_SEL=0 for the Tejas processor

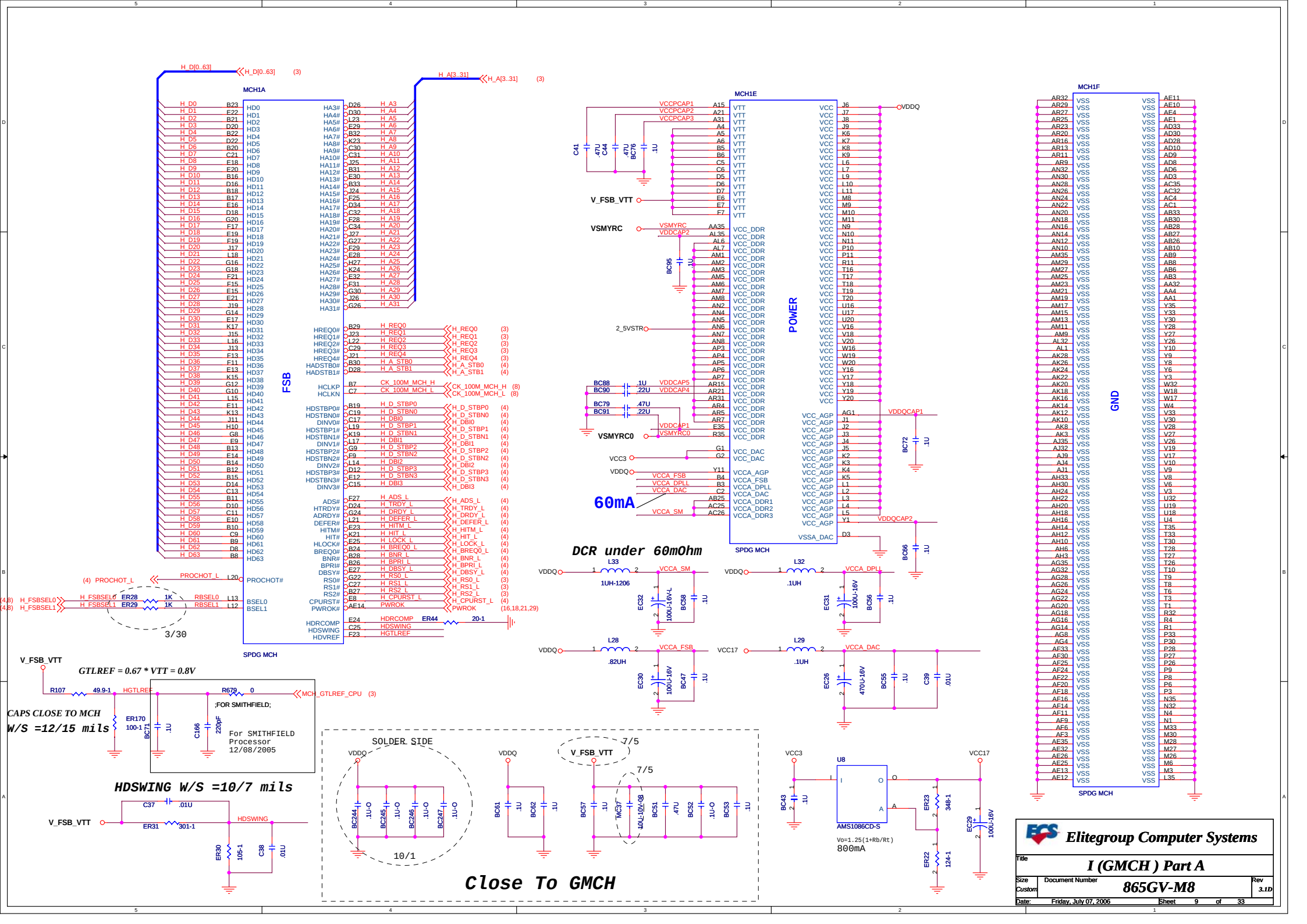


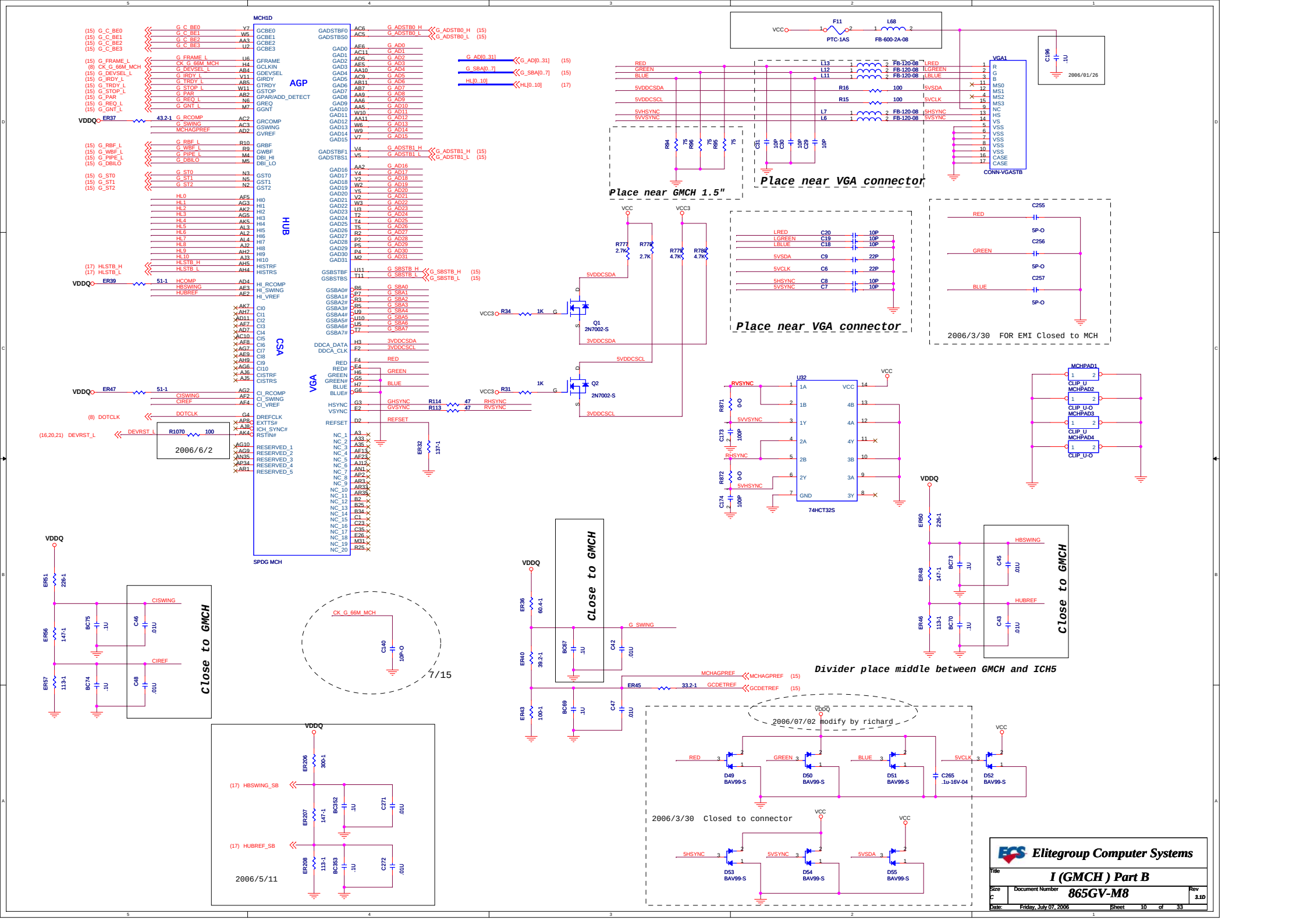


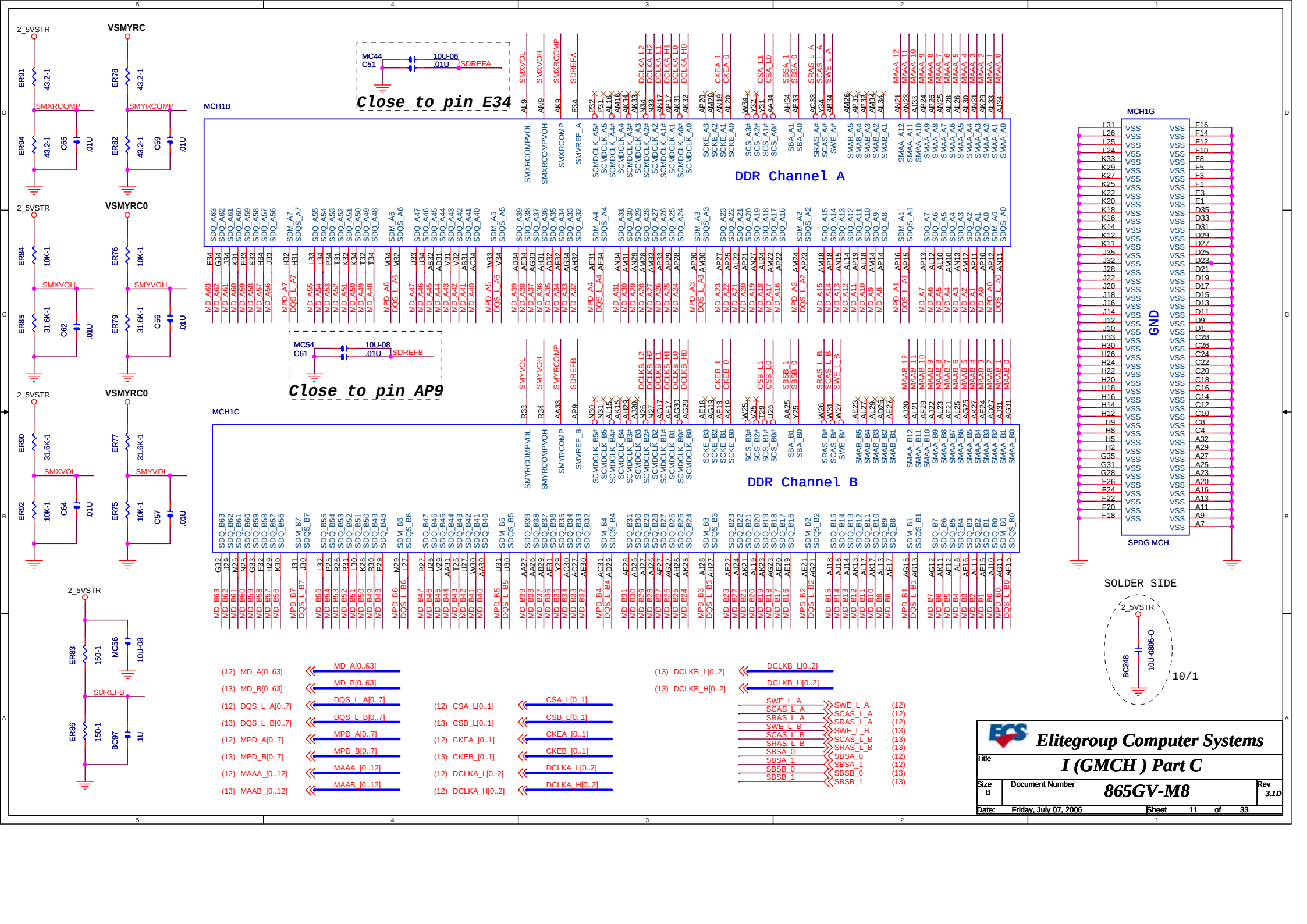
Elitegroup Computer Systems

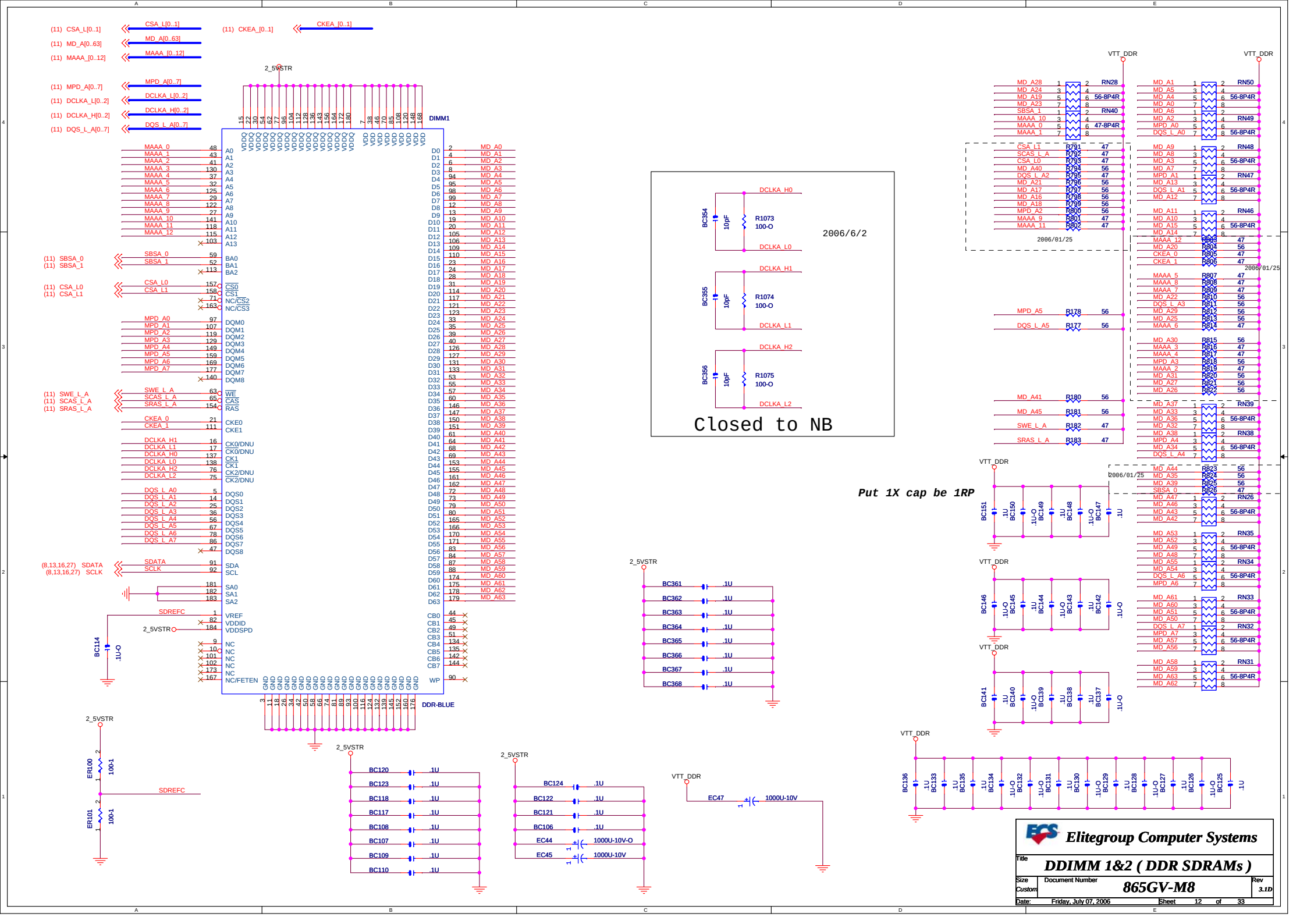
Title	P4 LGA775P Part E	
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 7 of 33	

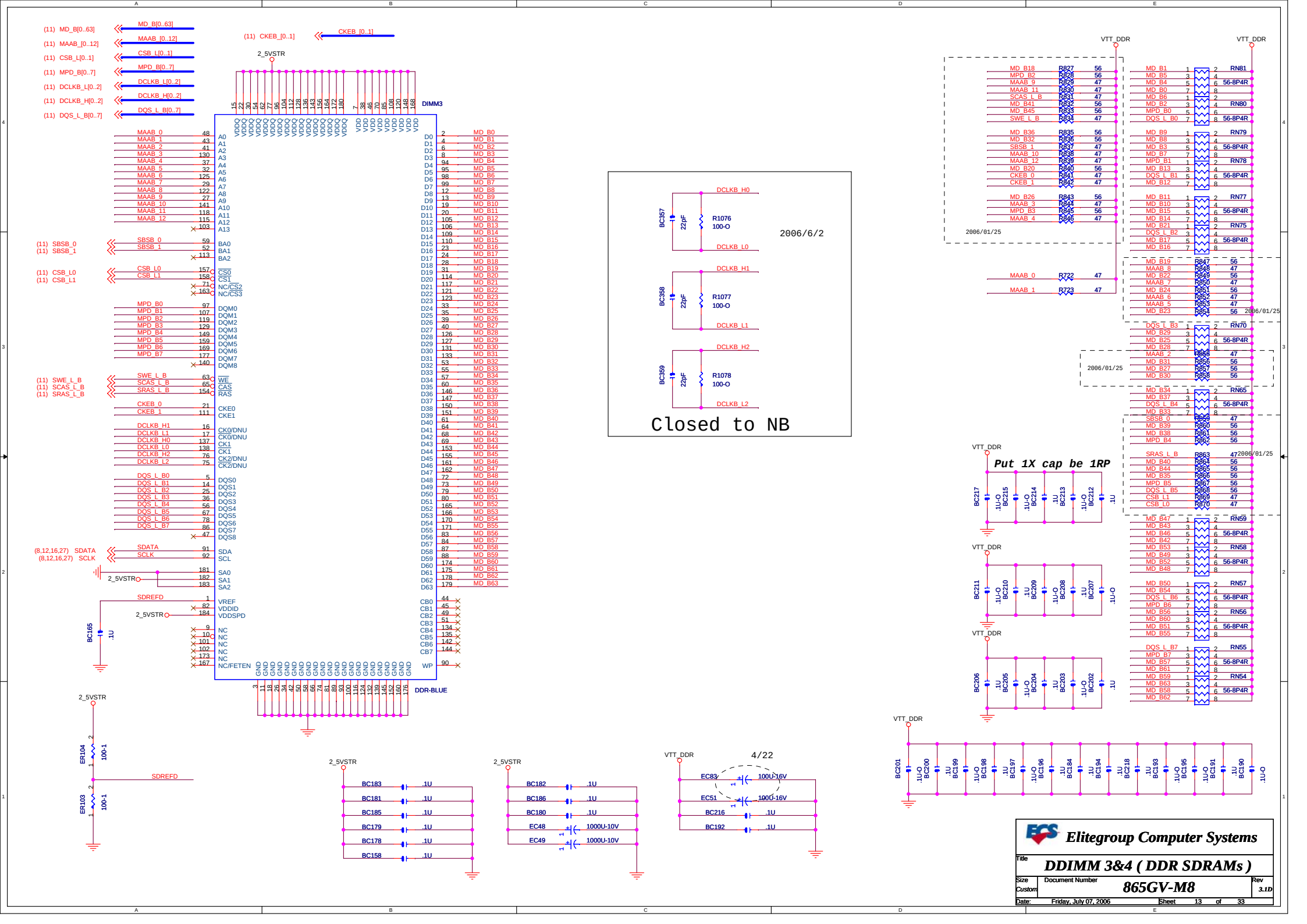

Pin 1/2 have 120K PD to GND
Pin 7/8/12/21/22 have 120K PU to VDD
2006/3/30 FOR EMI Closed to PCI Slot
2006/02/15
W83194BG-SD changed to ICS952647
R885,R886 for ICS952607,W83194BG-SD 50K
ICS952647
CLK1
Elitegroup Computer Systems
Clock Generator
865GV-M8
3.1D
Friday, July 07, 2006
Sheet 8 of 33

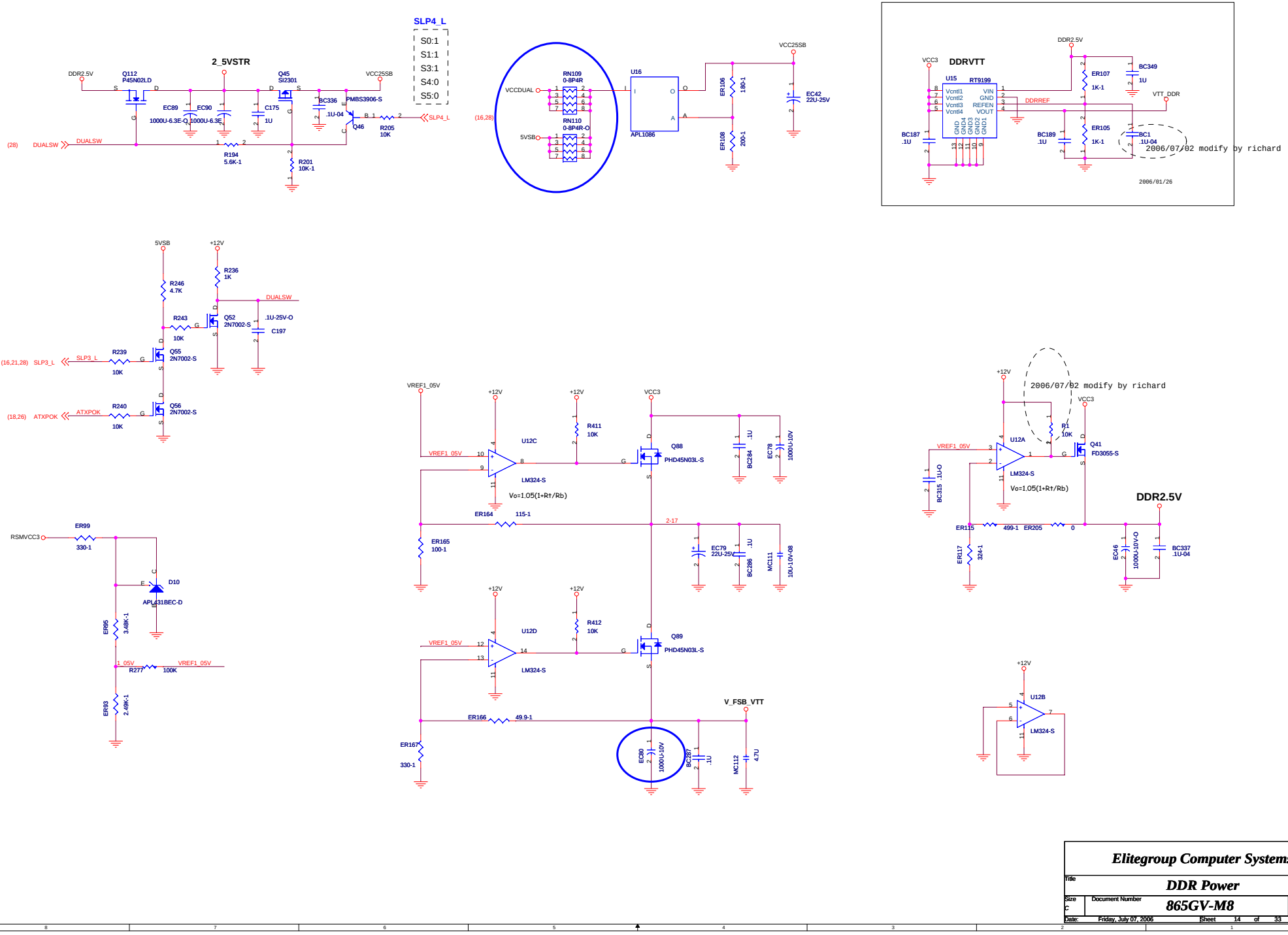

MCH1A
FSB
SPDG MCH
MCH1E
POWER
SPDG MCH
MCH1F
GND
SPDG MCH
60mA
DCR under 60mOhm
GTLREF = 0.67 * VTT = 0.8V
CAPS CLOSE TO MCH
W/S =12/15 mils
;FOR SMITHFIELD;
For SMITHFIELD
Processor
12/08/2005
HDSWING W/S =10/7 mils
SOLDER SIDE
Close To GMCH
AMS1086CD-S
Vo=1.25(1+Rb/Rt)
800mA
Elitegroup Computer Systems
I (GMCH) Part A
865GV-M8
Friday, July 07, 2006


MCH1D
AGP
HUB
CSA
VGA
SPDG MCH
Place near GMCH 1.5"
Place near VGA connector
Place near VGA connector
2006/3/30 FOR EMI Closed to MCH
2006/6/2
Close to GMCH
Close to GMCH
Close to GMCH
Close to GMCH
7/15
Divider place middle between GMCH and ICH5
2006/07/02 modify by richard
2006/3/30 Closed to connector
2006/5/11
CONN-VGASTB
74HCT32S
Elitegroup Computer Systems
I (GMCH) Part B
865GV-M8

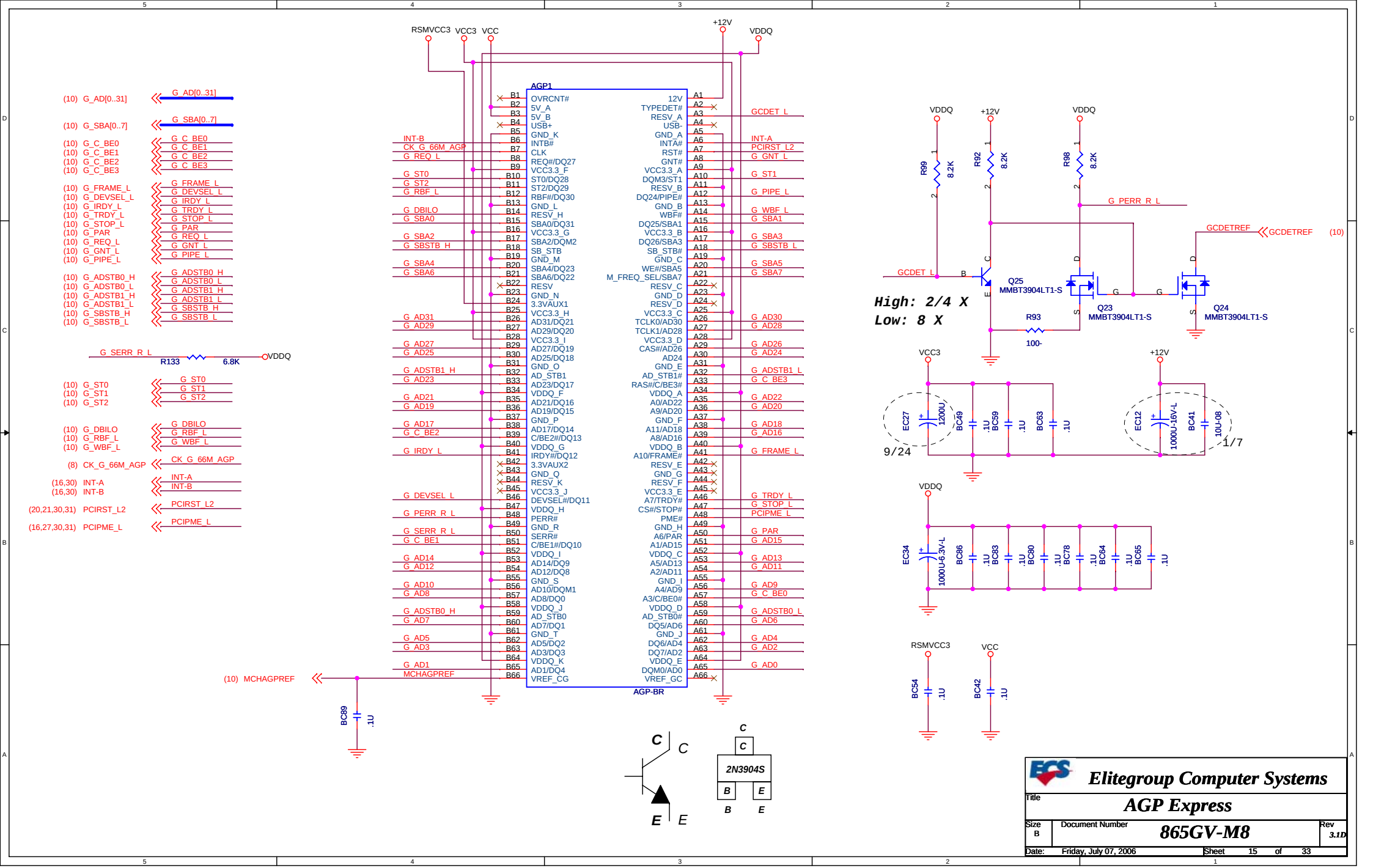

2_5VSTR
VSMYRC
ER91 43.2-1
ER78 43.2-1
SMXRCOMP
SMYRCOMP
ER94 43.2-1
C65 .01U
ER82 43.2-1
C59 .01U
VSMYRC0
ER84 10K-1
ER76 10K-1
SMXVOH
SMYVOH
ER85 31.6K-1
C62 .01U
ER79 31.6K-1
C56 .01U
ER90 31.6K-1
ER77 31.6K-1
SMXVOL
SMYVOL
ER92 10K-1
C64 .01U
ER75 10K-1
C57 .01U
ER83 150-1
MC56 10U-08
SDREFB
ER86 150-1
BC97 .1U
MC44
C51
10U-08
.01U
SDREFA
Close to pin E34
MCH1B
DDR Channel A
MC54
C61
10U-08
.01U
SDREFB
Close to pin AP9
MCH1C
DDR Channel B
MCH1G
GND
SPDG MCH
SOLDER SIDE
BC248
10U-0805-O
10/1
(12) MD_A[0..63]
(13) MD_B[0..63]
(12) DQS_L_A[0..7]
(13) DQS_L_B[0..7]
(12) MPD_A[0..7]
(13) MPD_B[0..7]
(12) MAAA_[0..12]
(13) MAAB_[0..12]
(12) CSA_L[0..1]
(13) CSB_L[0..1]
(12) CKEA_[0..1]
(13) CKEB_[0..1]
(12) DCLKA_L[0..2]
(12) DCLKA_H[0..2]
(13) DCLKB_L[0..2]
(13) DCLKB_H[0..2]
SWE_L_A
SCAS_L_A
SRAS_L_A
SWE_L_B
SCAS_L_B
SRAS_L_B
SBSA_0
SBSA_1
SBSB_0
SBSB_1
Elitegroup Computer Systems
Title
I (GMCH) Part C
Size B
Document Number
865GV-M8
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 11 of 33


(11) CSA_L[0..1]
CSA_L[0..1]
(11) CKEA_[0..1]
CKEA_[0..1]
(11) MD_A[0..63]
MD_A[0..63]
(11) MAAA_[0..12]
MAAA_[0..12]
(11) MPD_A[0..7]
MPD_A[0..7]
(11) DCLKA_L[0..2]
DCLKA_L[0..2]
(11) DCLKA_H[0..2]
DCLKA_H[0..2]
(11) DQS_L_A[0..7]
DQS_L_A[0..7]
2_5VSTR
DIMM1
DDR-BLUE
(11) SBSA_0
(11) SBSA_1
(11) CSA_L0
(11) CSA_L1
(11) SWE_L_A
(11) SCAS_L_A
(11) SRAS_L_A
(8,13,16,27) SDATA
(8,13,16,27) SCLK
SDREFC
VTT_DDR
DCLKA_H0
DCLKA_L0
DCLKA_H1
DCLKA_L1
DCLKA_H2
DCLKA_L2
BC354
BC355
BC356
10pF
R1073
R1074
R1075
100-O
2006/6/2
Closed to NB
Put 1X cap be 1RP
2006/01/25
RN28
RN50
RN48
RN46
RN47
RN49
RN39
RN38
RN26
RN35
RN34
RN33
RN32
RN31
56-8P4R
47-8P4R
ECS
Elitegroup Computer Systems
DDIMM 1&2 (DDR SDRAMs)
865GV-M8
Custom
3.1D
Friday, July 07, 2006
Sheet 12 of 33


(11) MD_B[0..63]
(11) MAAB_[0..12]
(11) CSB_L[0..1]
(11) MPD_B[0..7]
(11) DCLKB_L[0..2]
(11) DCLKB_H[0..2]
(11) DQS_L_B[0..7]
(11) CKEB_[0..1]
2_5VSTR
DIMM3
DDR-BLUE
SBSB_0
SBSB_1
CSB_L0
CSB_L1
SWE_L_B
SCAS_L_B
SRAS_L_B
CKEB_0
CKEB_1
SDATA
SCLK
SDREFD
BC165
.1U
ER104
ER103
100-1
SDREFD
DCLKB_H0
DCLKB_L0
DCLKB_H1
DCLKB_L1
DCLKB_H2
DCLKB_L2
BC357
BC358
BC359
22pF
R1076
R1077
R1078
100-O
2006/6/2
Closed to NB
VTT_DDR
Put 1X cap be 1RP
BC217
BC215
BC214
BC213
BC212
BC211
BC210
BC209
BC208
BC207
BC206
BC205
BC204
BC203
BC202
BC201
BC200
BC199
BC198
BC197
BC196
BC184
BC194
BC218
BC193
BC195
BC191
BC190
.1U-O
.1U
MD_B18 R827 56
MPD_B2 R828 56
MAAB_9 R829 47
MAAB_11 R830 47
SCAS_L_B R831 47
MD_B41 R832 56
MD_B45 R833 56
SWE_L_B R834 47
MD_B36 R835 56
MD_B32 R836 56
SBSB_1 R837 47
MAAB_10 R838 47
MAAB_12 R839 47
MD_B20 R840 56
CKEB_0 R841 47
CKEB_1 R842 47
MD_B26 R843 56
MAAB_3 R844 47
MPD_B3 R845 56
MAAB_4 R846 47
MAAB_0 R722 47
MAAB_1 R723 47
2006/01/25
RN81
RN80
RN79
RN78
RN77
RN75
RN70
RN65
RN59
RN58
RN57
RN56
RN55
RN54
56-8P4R
EC83 100U-16V
EC51 100U-16V
BC216 .1U
BC192 .1U
EC48 1000U-10V
EC49 1000U-10V
BC183 .1U
BC181 .1U
BC185 .1U
BC179 .1U
BC178 .1U
BC158 .1U
BC182 .1U
BC186 .1U
BC180 .1U
4/22
Elitegroup Computer Systems
DDIMM 3&4 (DDR SDRAMs)
865GV-M8
3.1D
Custom
Friday, July 07, 2006
Sheet 13 of 33



Elitegroup Computer Systems			
Title	DDR Power		
Size: C	Document Number: 865GV-M8		Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 14 of 33		

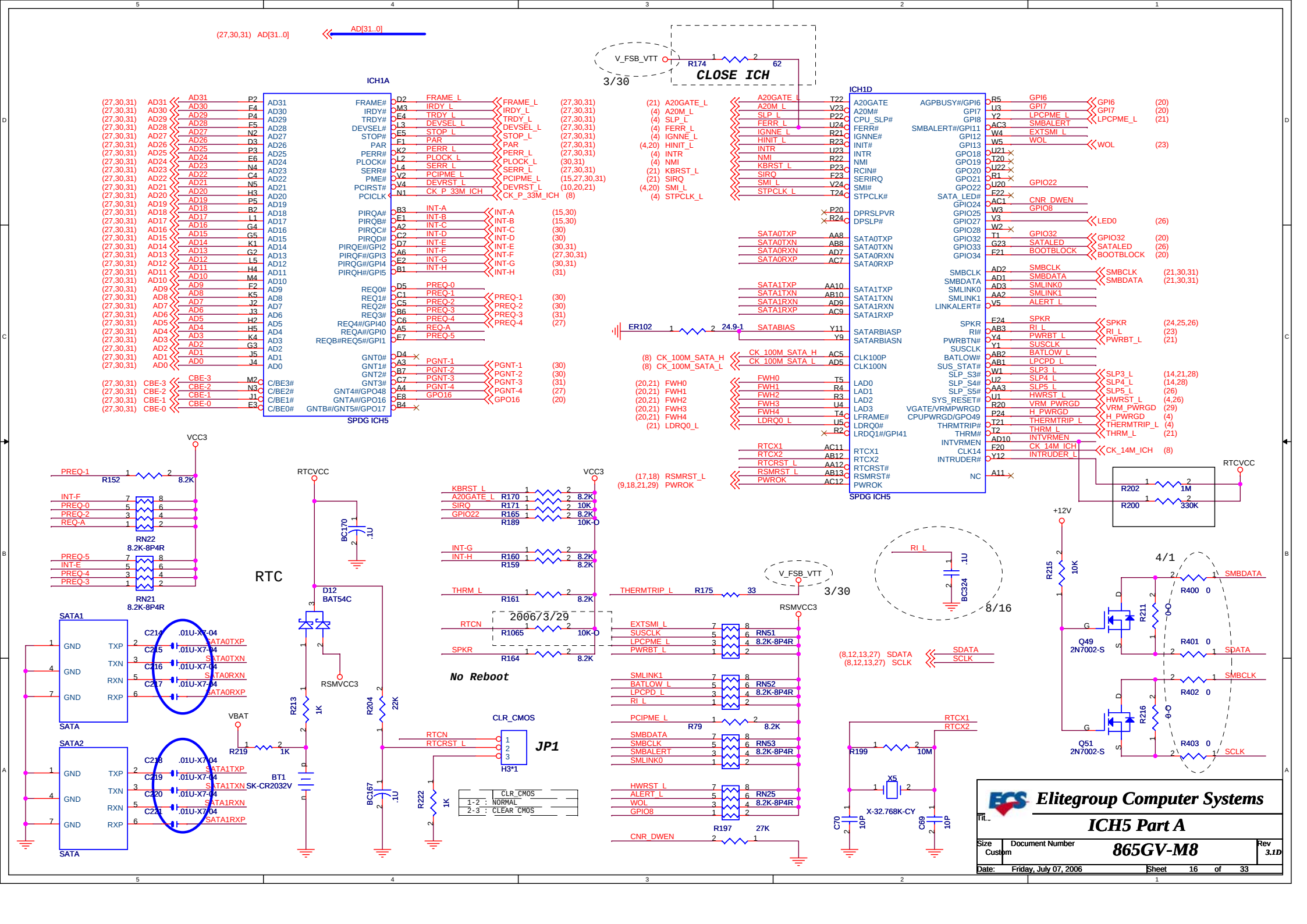


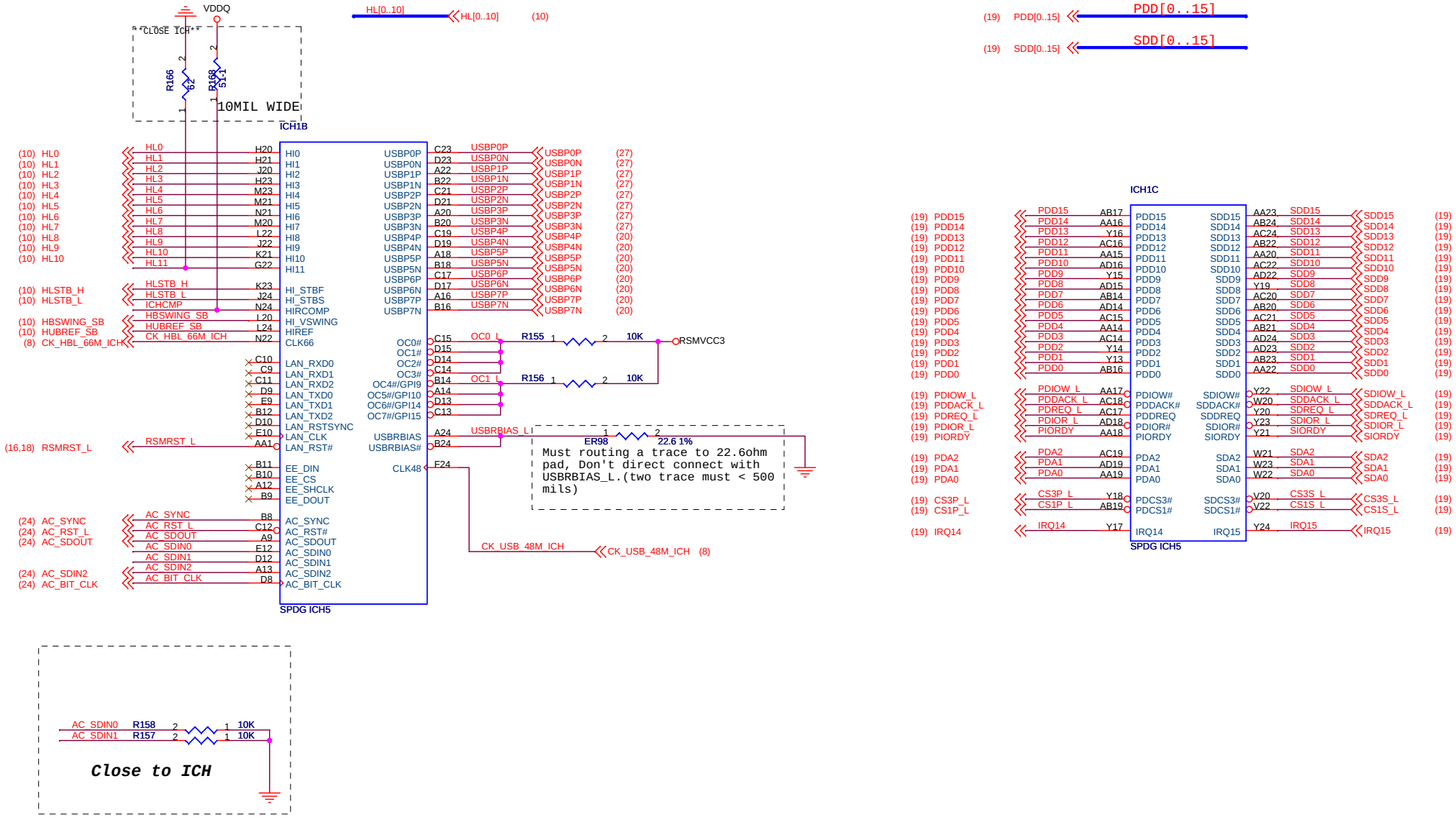
Elitegroup Computer Systems

Title: AGP Express

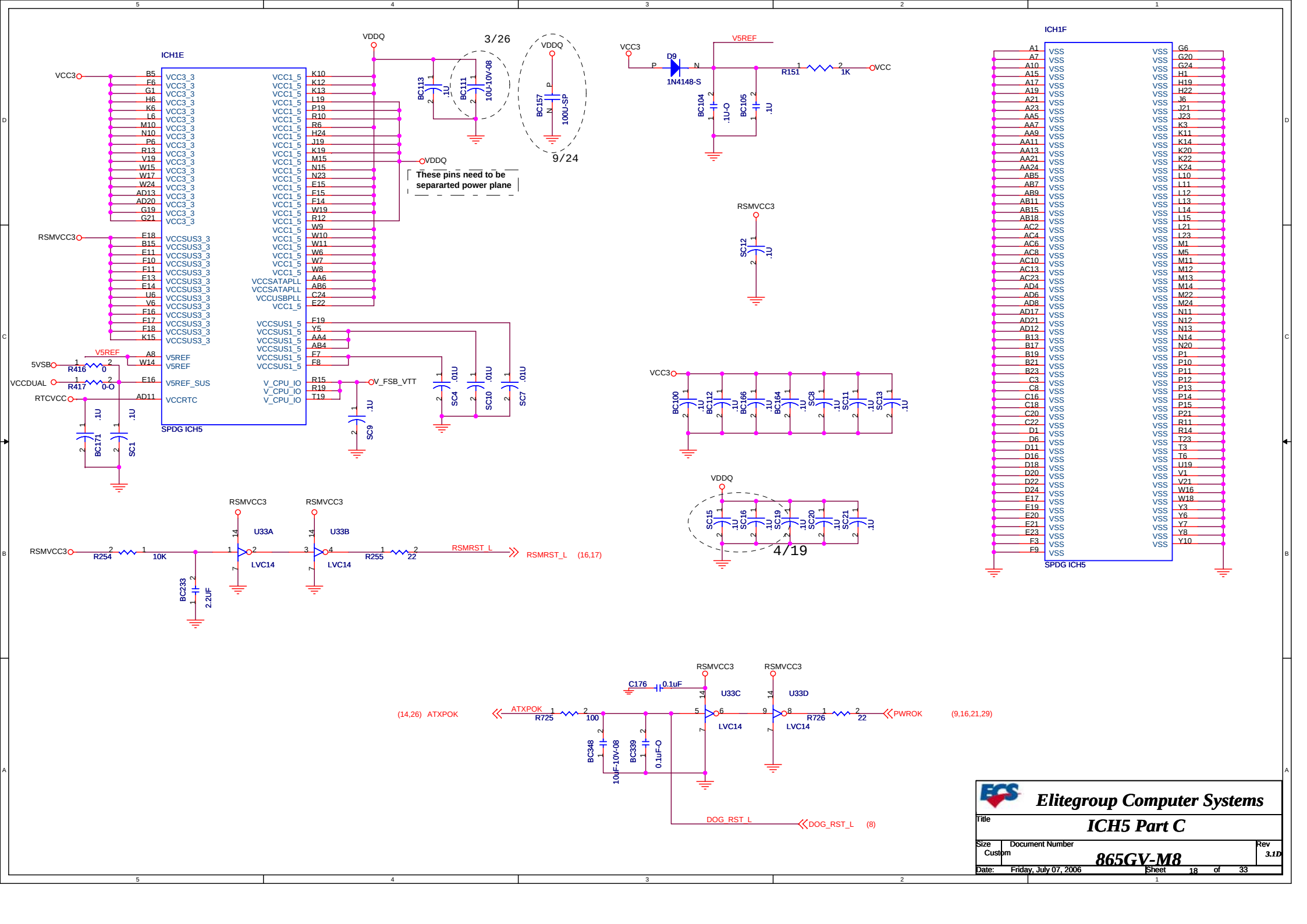
Size: B | Document Number: 865GV-M8 | Rev: 3.1D

Date: Friday, July 07, 2006 | Sheet 15 of 33


ICH1A
ICH1D
SPDG ICH5
SPDG ICH5
CLOSE ICH
3/30
RTC
No Reboot
2006/3/29
JP1
CLR_CMOS
1-2 : NORMAL
2-3 : CLEAR CMOS
SATA
SATA
SATA1
SATA2
RN22
8.2K-8P4R
RN21
8.2K-8P4R
RN51
8.2K-8P4R
RN52
8.2K-8P4R
RN53
8.2K-8P4R
RN25
8.2K-8P4R
BT1
SK-CR2032V
X-32.768K-CY
Q49
2N7002-S
Q51
2N7002-S
D12
BAT54C
H3*1
4/1
8/16
Elitegroup Computer Systems
ICH5 Part A
865GV-M8
Custom
3.1D
Friday, July 07, 2006
16
33



Tit	Elitegroup Computer Systems
	ICH5 Part B
Size: Custom	Document Number: 865GV-M8
Rev: 3.1D	
Date: Friday, July 07, 2006	Sheet 17 of 33

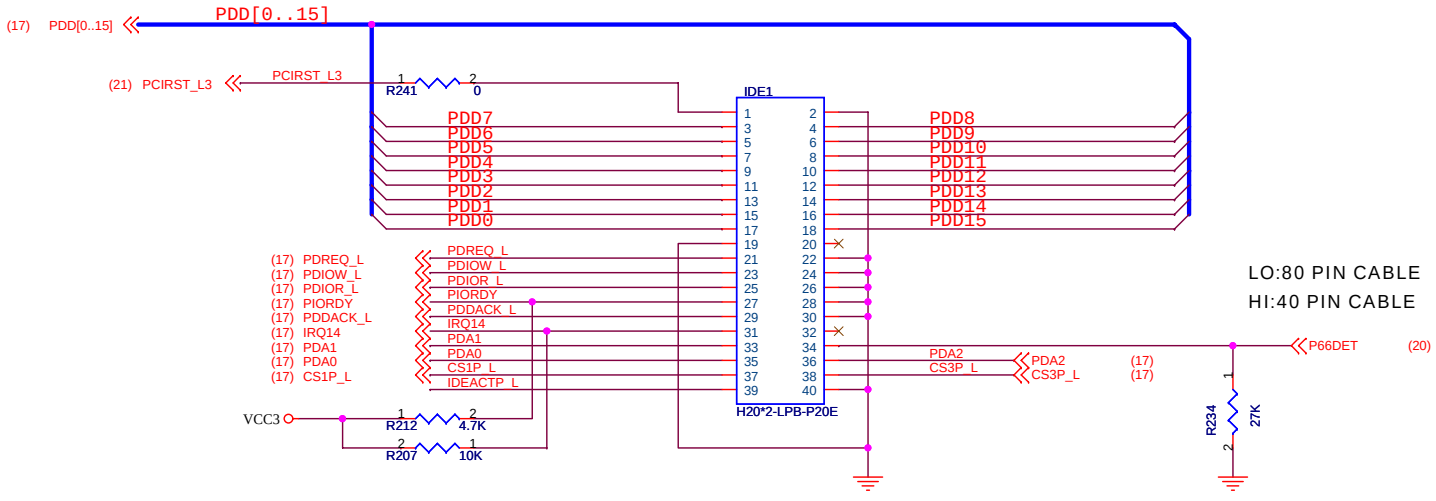


Elitegroup Computer Systems

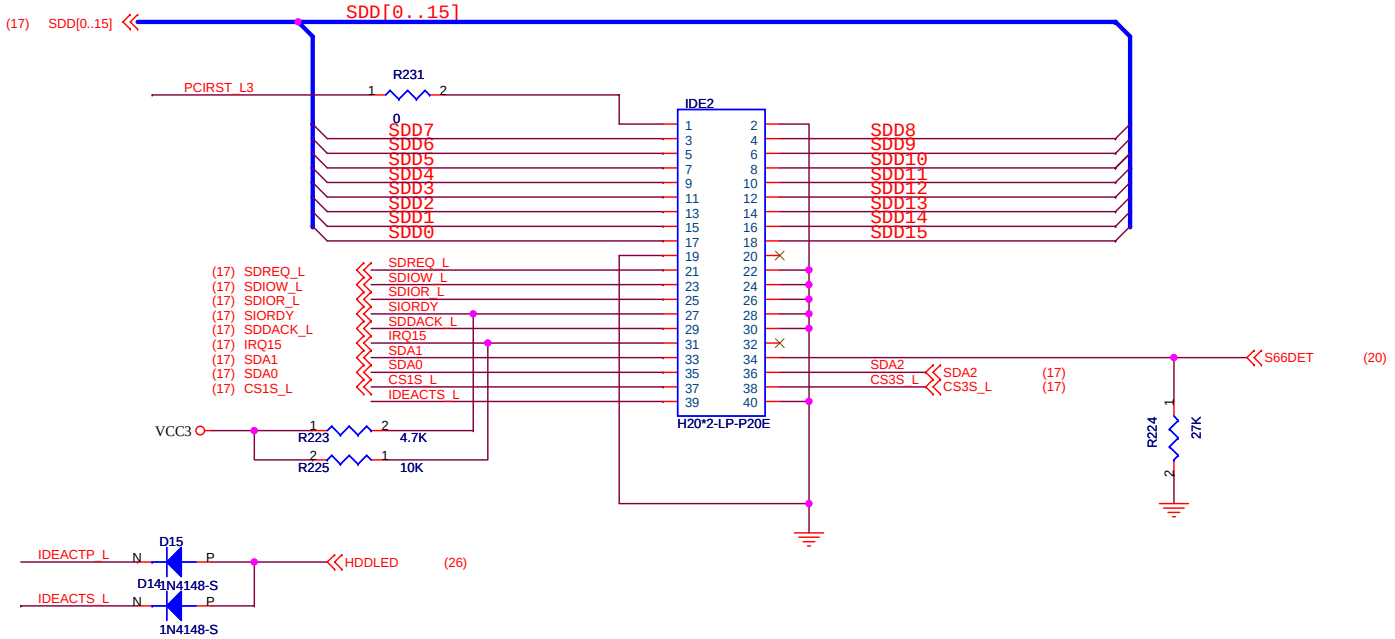
Title: ICH5 Part C

Size: Custom | Document Number: 865GV-M8 | Rev: 3.1D

Date: Friday, July 07, 2006 | Sheet 18 of 33



LO:80 PIN CABLE
HI:40 PIN CABLE



MAX TRACE LENGTH IS 8"

Elitegroup Computer Systems		
Title: IDE Connector		
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 19 of 33	

USB PORT INTERFACE

100 Mils Width

VCCDUAL — F5 PTC-2.6AS — F9 PTC-2.6AS — 2006/5/4 — EC39 1000U-10V — BC96 1U — USBPWR1

USB3 (H6*2-P11E, KEY): (16) GPI6 — USBP5N — USBP5P — USBP4N — USBP4P

USB4 (H6*2-P11E, KEY): (16) GPI7 — USBP6N — USBP6P — USBP7N — USBP7P

VCC3 — R929 8.2K-04 — R932 8.2K-04 — SW1 H2*2 — GPI7 — GPI6 — R930 1K-04 — R931 1K-04

(4,16) SMI_L — Q137 MMBT3904LT1-S-O — R218 4.7K-O

(16) GPIO32 — R278 1K — R230 4.7K

(16) BOOTBLOCK — R481 1K — Q138 2N7002-S — Q139 2N7002-S

R781 8.2K-O — R782 8.2K — FGPI3

R226 8.2K — R244 8.2K — R242 8.2K — R220 8.2K-O — IC — FGPI4 — FGPI2

GPI2:

High:1394 Install
Low:1394 xxx

GPI3:

High:Suspend xxx
Low:suspend install

GPI4:

High:3-COM Lan Install
Low:Realtek PCI Lan install

USBP5N — USBP5P — USBPWR1 — USBP4P — USBP4N — SRVO5-4 U42 — C269 .1U

USBP7N — USBP7P — USBPWR1 — USBP6N — USBP6P — SRVO5-4 U43 — C270 .1U

JP3 BIOS_WP — H2*1

OPEN:Flash Write Enabled
SHORT:Flash Write Disabled

R873 0-O — BC225 .1U-O — (15,21,30,31) PCIRST_L2

R874 0 — (10,16,21) DEVRST_L

U18 PLCC-32PBR

1	VPP	VCC	32
2	RST#	CLK	31
3	FGPI3	FGPI4	30
4	FGPI2	IC	29
5	FGPI1	GNDA	28
6	FGPI0	VCCA	27
7	WP#	GND	26
8	TBL#	VCC	25
9	ID3	INIT#	24
10	ID2	FWH4	23
11	ID1	RFU	22
12	ID0	RFU	21
13	FWH0	RFU	20
14	FWH1	RFU	19
15	FWH2	RFU	18
16	GND	FWH3	17

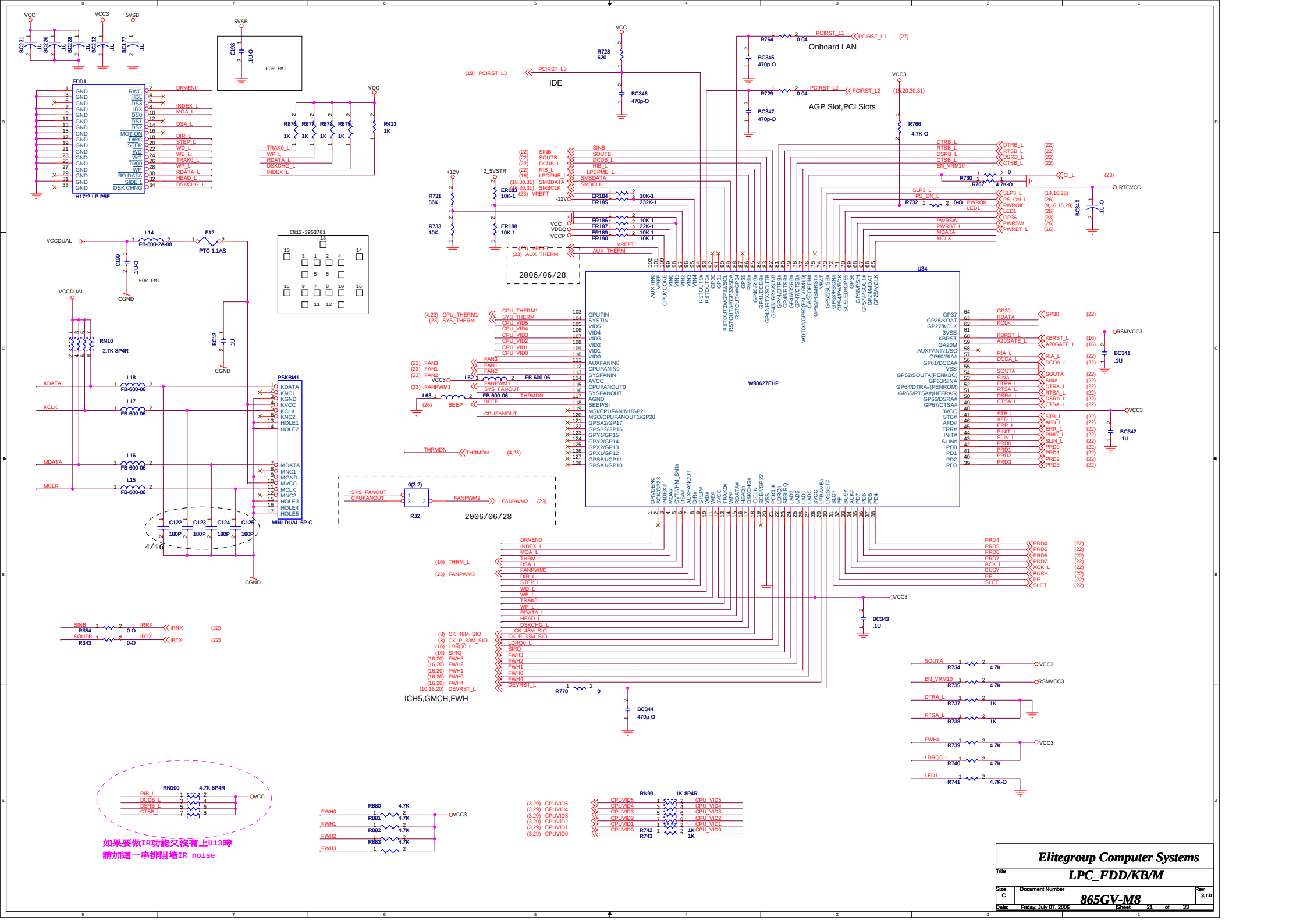
(19) S66DET — (19) P66DET — (16) GPO16 — ER209 ER210 ER211 ER212 0-04 — (16,21) FWH0 FWH1 FWH2

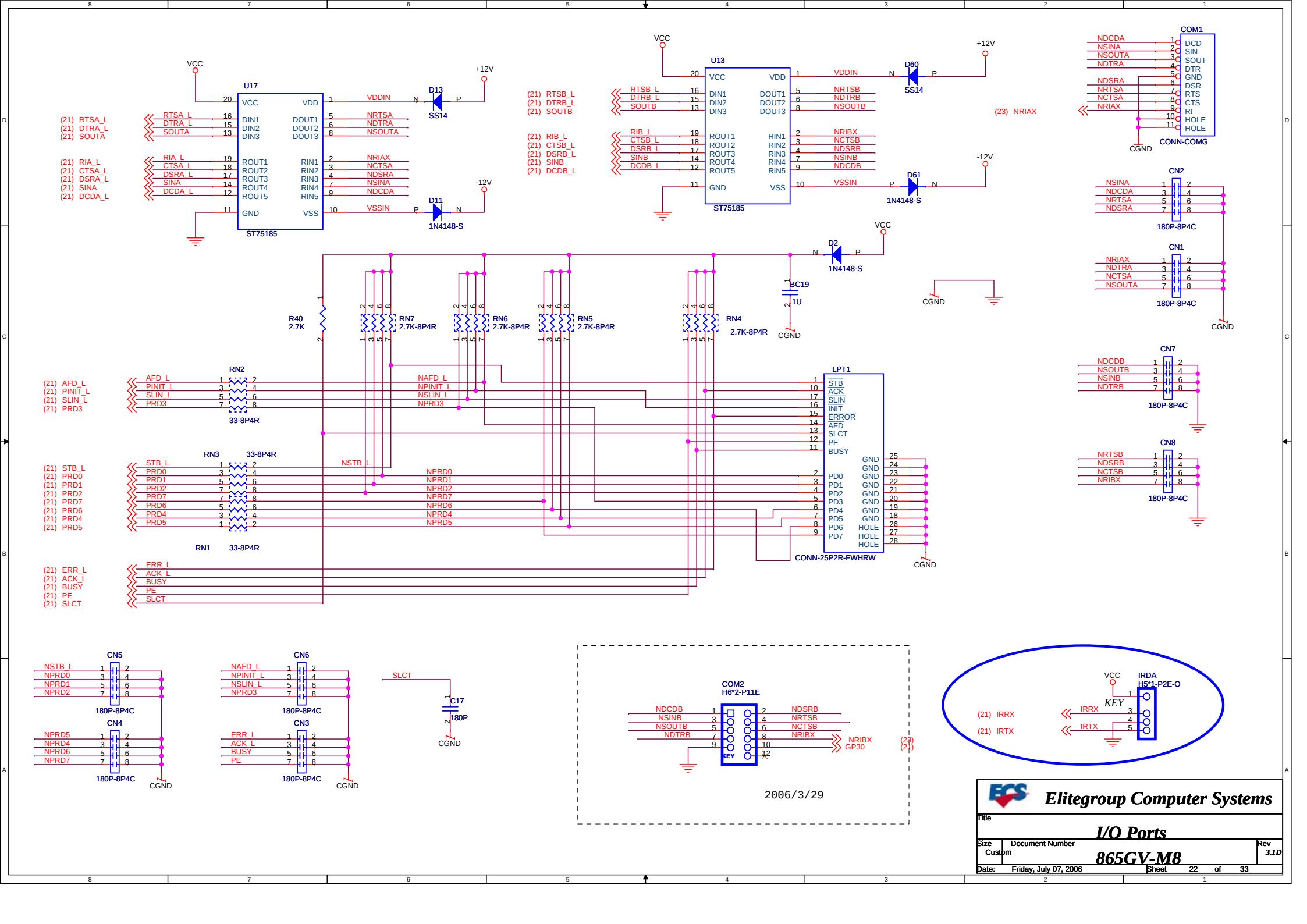
BC230 .1U — CK_P_33M_FWH — CK_P_33M_FWH (8) — FGPI4 — IC — FWH4 — FWH4 (16,21) — FWH3 — FWH3 (16,21)

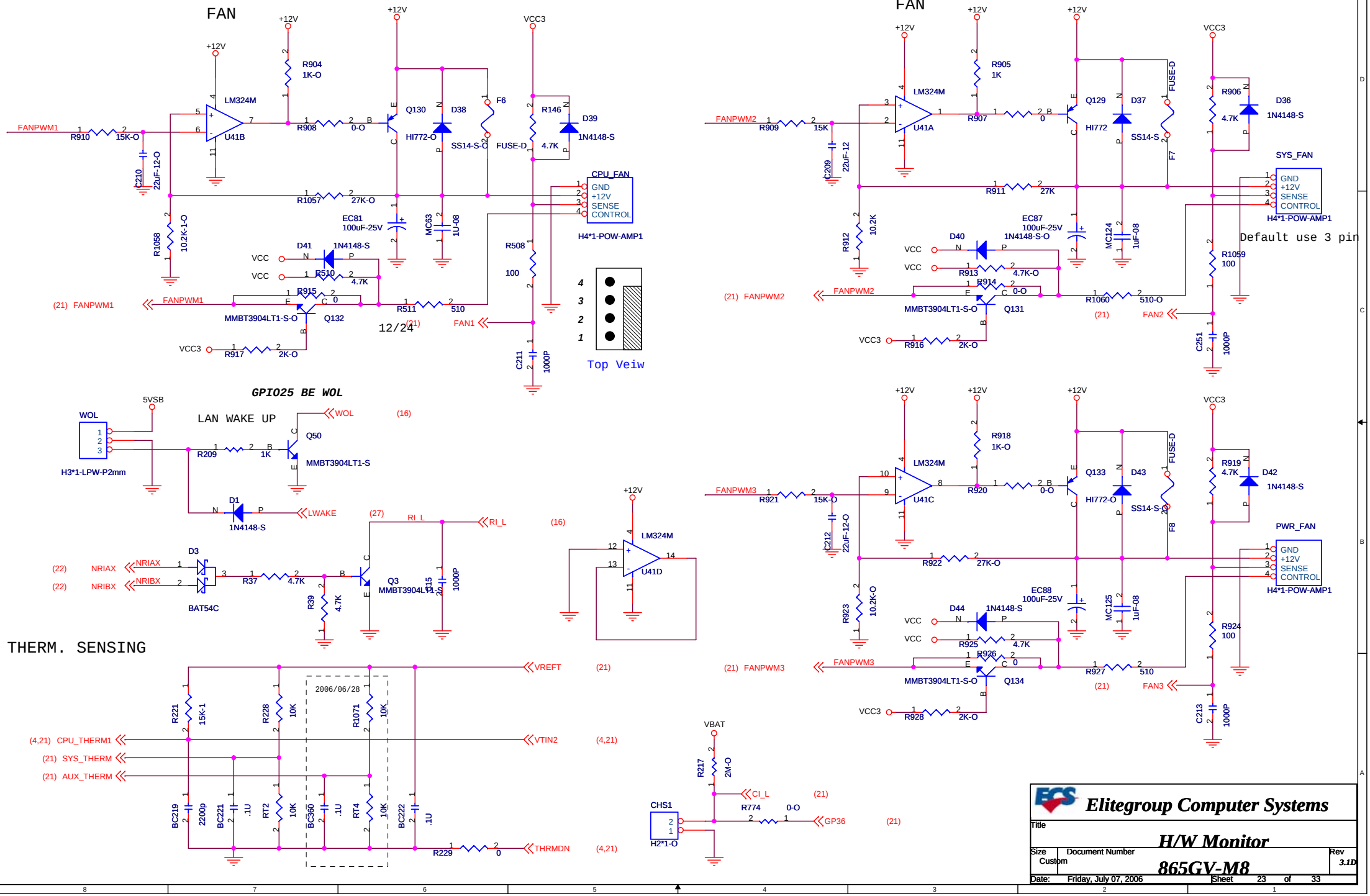
R245 1K — R238 4.7K — Q54 MMBT3904LT1-S — Q53 MMBT3904LT1-S — R247 4.7K — HINIT_L (4,16)

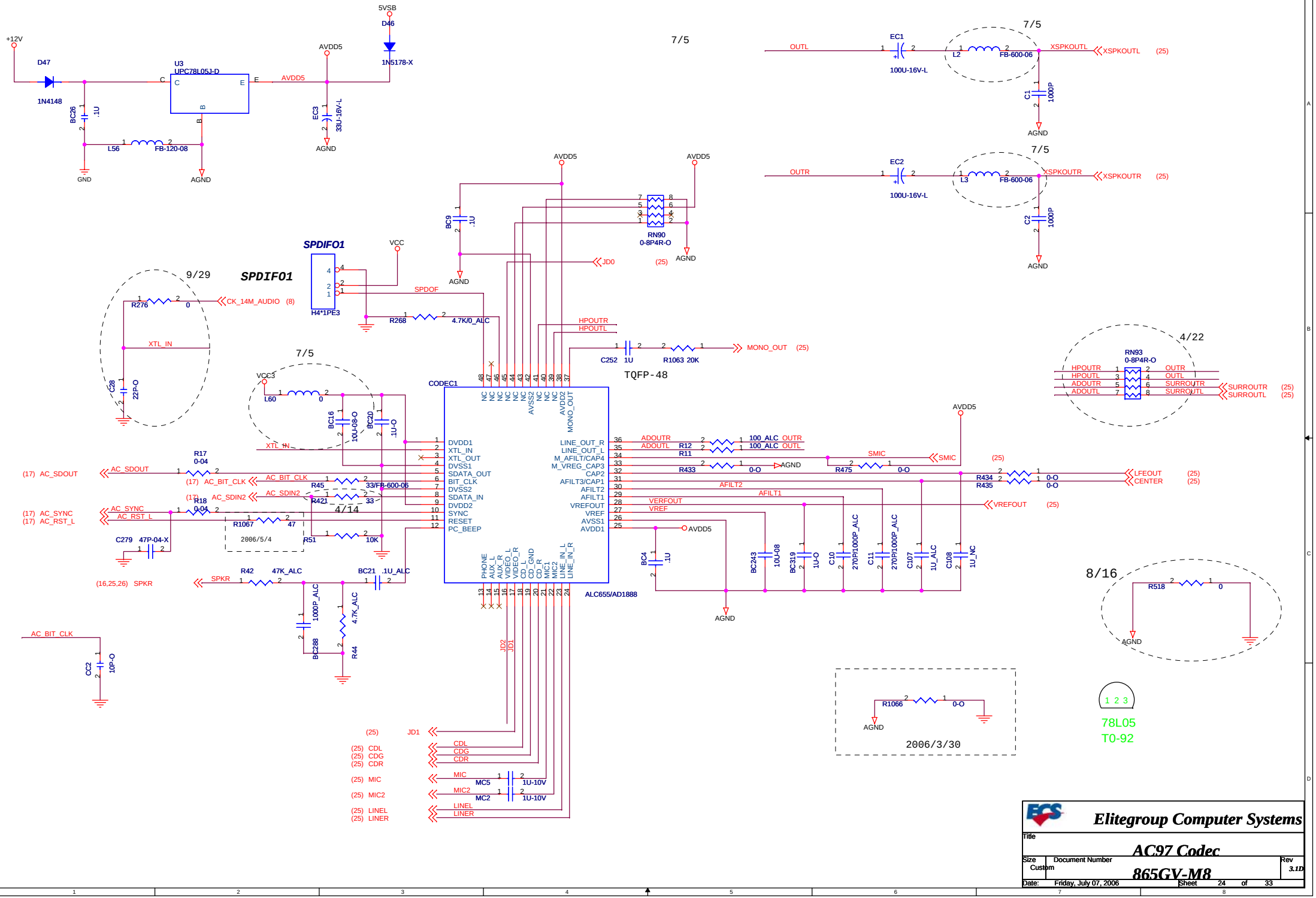
2N3904S

Elitegroup Computer Systems		
Title: USB/FWH		
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 20 of 33	

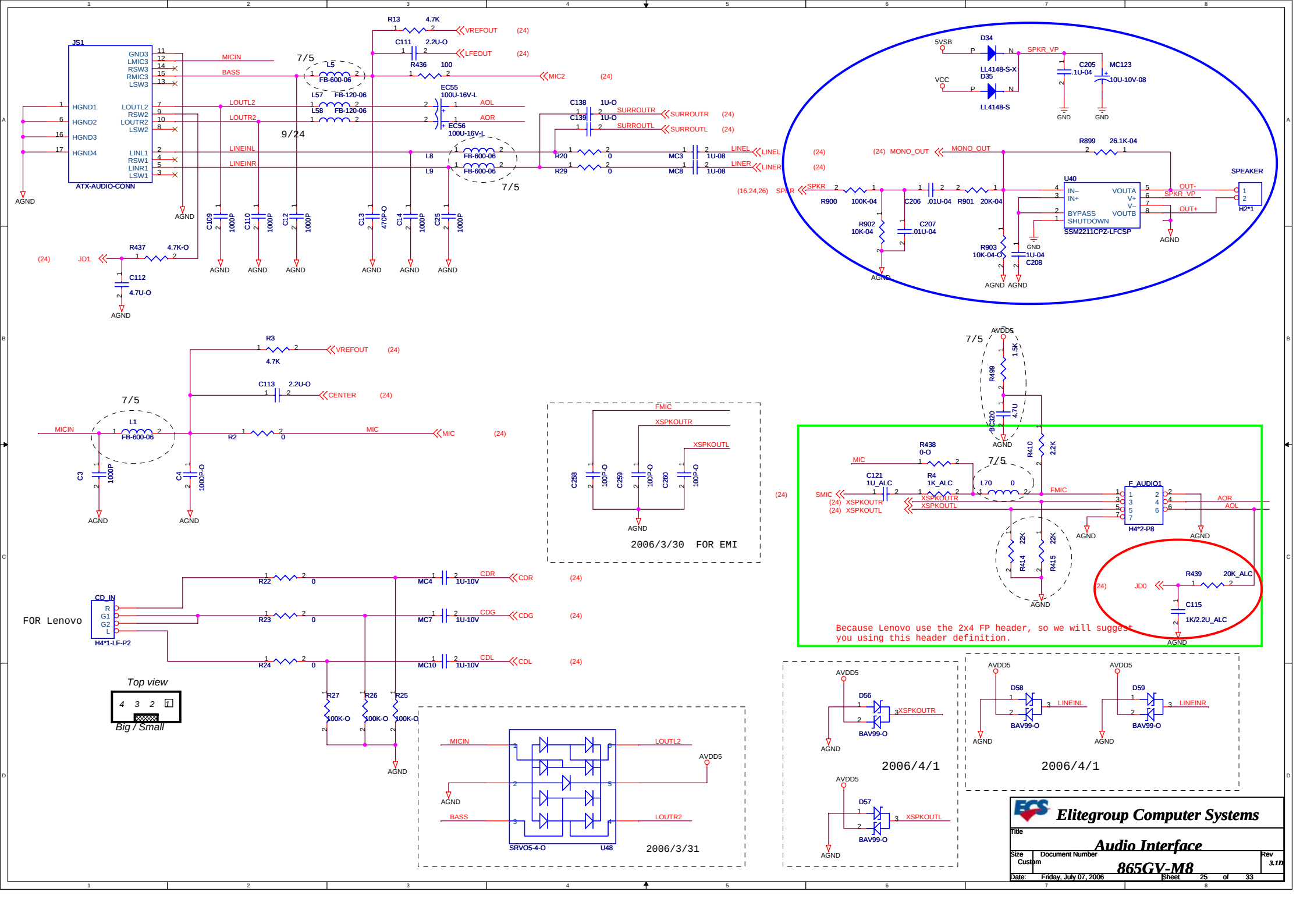

VCC
VCC3
5VSB
BC231 .1U
BC226 .1U
BC228 .1U
BC232 .1U
BC177 .1U
C198 .1U-O
FOR EMI
FDD1
H17*2-LP-P5E
DRVEN0
INDEX_L
MOA_L
DSA_L
DIR_L
STEP_L
WD_L
WE_L
TRAK0_L
WP_L
RDATA_L
HEAD_L
DSKCHG_L
R876 1K
R877 1K
R875 1K
R879 1K
R413 1K
R728 620
BC346 470p-O
PCIRST_L3
IDE
R764 0-04
PCIRST_L1
Onboard LAN
BC345 470p-O
R729 0-04
PCIRST_L2
AGP Slot,PCI Slots
BC347 470p-O
R766 4.7K-O
R731 56K
R733 10K
ER183 10K-1
ER188 10K-1
ER184 10K-1
ER185 232K-1
ER186 10K-1
ER187 22K-1
ER189 10K-1
ER190 10K-1
2006/06/28
U34
W83627EHF
R730 0
R767 4.7K-O
BC340 .1U-O
R732 0-O
BC341 .1U
BC342 .1U
BC343 .1U
BC344 470p-O
R770 0
VCCDUAL
L14 FB-600-2A-08
F12 PTC-1.1AS
C199 .1U-O
FOR EMI
CN12-3953701
RN10 2.7K-8P4R
BC12 .1U
PSKBM1
MINI-DUAL-6P-C
L18 FB-600-06
L17 FB-600-06
L16 FB-600-06
L15 FB-600-06
C122 180P
C123 180P
C124 180P
C125 180P
4/16
RJ2
2006/06/28
R354 0-O
R343 0-O
RN100 4.7K-8P4R
R880 4.7K
R881 4.7K
R882 4.7K
R883 4.7K
RN99 1K-8P4R
R734 4.7K
R735 4.7K
R737 1K
R738 1K
R739 4.7K
R740 4.7K
R741 4.7K-O
如果要做IR功能又沒有上U13時
請加這一串排阻堵IR noise
Elitegroup Computer Systems
LPC_FDD/KB/M
865GV-M8
Size C
Document Number
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 21 of 33

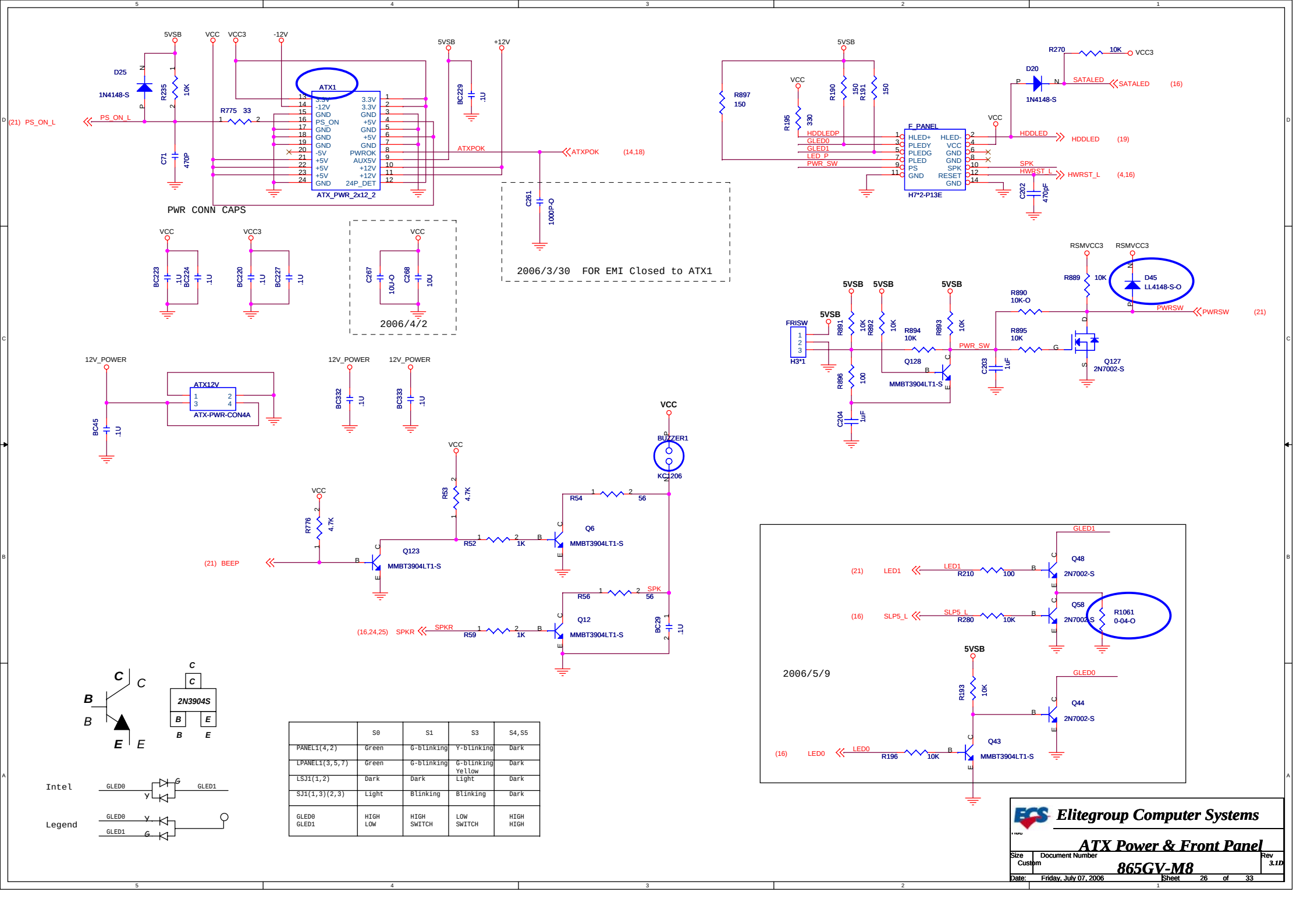

U17
ST75185
U13
ST75185
D13
SS14
D11
1N4148-S
D60
SS14
D61
1N4148-S
D2
1N4148-S
VCC
+12V
-12V
CGND
R40
2.7K
RN7
2.7K-8P4R
RN6
2.7K-8P4R
RN5
2.7K-8P4R
RN4
2.7K-8P4R
BC19
1U
RN2
33-8P4R
RN3
33-8P4R
RN1
33-8P4R
LPT1
CONN-25P2R-FWHRW
COM1
CONN-COMG
CN2
180P-8P4C
CN1
180P-8P4C
CN7
180P-8P4C
CN8
180P-8P4C
CN5
180P-8P4C
CN4
180P-8P4C
CN6
180P-8P4C
CN3
180P-8P4C
C17
180P
COM2
H6*2-P11E
IRDA
H5*1-P2E-O
KEY
2006/3/29
Elitegroup Computer Systems
I/O Ports
865GV-M8
Custom
3.1D
Friday, July 07, 2006
Sheet 22 of 33


FAN
+12V
LM324M
U41B
R904
1K-O
R910
15K-O
FANPWM1
C210
22uF-12-O
Q130
HI772-O
D38
SS14-S-O
F6
FUSE-D
R146
4.7K
D39
1N4148-S
CPU_FAN
GND
+12V
SENSE
CONTROL
H4*1-POW-AMP1
R908
0-O
R1057
27K-O
R1058
10.2K-1-O
EC81
100uF-25V
MC63
1U-08
D41
1N4148-S
R510
4.7K
R915
MMBT3904LT1-S-O
Q132
R511
510
R508
100
(21) FANPWM1
(21)
FAN1
R917
2K-O
C211
1000P
12/24
Top Veiw
FAN
+12V
LM324M
U41A
R905
1K
FANPWM2
R909
15K
C209
22uF-12
Q129
HI772
D37
SS14-S
FUSE-D
F7
R906
4.7K
D36
1N4148-S
SYS_FAN
GND
+12V
SENSE
CONTROL
H4*1-POW-AMP1
R911
27K
R912
10.2K
EC87
100uF-25V
1N4148-S-O
MC124
1uF-08
D40
R913
4.7K-O
R914
0-O
MMBT3904LT1-S-O
Q131
R1060
510-O
R1059
100
(21) FANPWM2
(21)
FAN2
C251
1000P
VCC3
R916
2K-O
Default use 3 pin
GPIO25 BE WOL
5VSB
WOL
H3*1-LPW-P2mm
LAN WAKE UP
R209
1K
Q50
MMBT3904LT1-S
D1
1N4148-S
LWAKE
(27)
RI_L
(16)
D3
BAT54C
NRIAX
NRIBX
(22)
R37
4.7K
Q3
MMBT3904LT1-S
R39
4.7K
C215
1000P
LM324M
U41D
THERM. SENSING
2006/06/28
R221
15K-1
R228
10K
R1071
10K
(4,21) CPU_THERM1
(21) SYS_THERM
(21) AUX_THERM
VREFT
VTIN2
THRMDN
(4,21)
BC219
2200p
BC221
.1U
RT2
10K
BC360
.1U
RT4
10K
BC222
.1U
R229
0
VBAT
R217
2M-O
CI_L
R774
0-O
GP36
CHS1
H2*1-O
+12V
LM324M
U41C
R918
1K-O
FANPWM3
R921
15K-O
C212
22uF-12-O
Q133
HI772-O
D43
SS14-S-O
FUSE-D
F8
R919
4.7K
D42
1N4148-S
PWR_FAN
GND
+12V
SENSE
CONTROL
H4*1-POW-AMP1
R922
27K-O
R923
10.2K-O
EC88
100uF-25V
MC125
1uF-08
D44
1N4148-S
R925
4.7K
R926
0
MMBT3904LT1-S-O
Q134
R927
510
R924
100
(21) FANPWM3
(21)
FAN3
C213
1000P
VCC3
R928
2K-O
Elitegroup Computer Systems
Title
H/W Monitor
Size
Custom
Document Number
865GV-M8
Rev
3.1D
Date:
Friday, July 07, 2006
Sheet
23
of
33



Elitegroup Computer Systems		
Title: AC97 Codec		
Size: Custom	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 24 of 33	


JS1
ATX-AUDIO-CONN
MICIN
BASS
LOUTL2
LOUTR2
LINEINL
LINEINR
R13 4.7K
C111 2.2U-O
R436 100
EC55 100U-16V-L
EC56 100U-16V-L
L5 FB-600-06
L57 FB-120-06
L58 FB-120-06
L8 FB-600-06
L9 FB-600-06
7/5
9/24
C138 1U-O
C139 1U-O
R20 0
R29 0
MC3 1U-08
MC8 1U-08
SURROUTR
SURROUTL
AOL
AOR
LINEL
LINER
MIC2
VREFOUT
LFEOUT
C109 1000P
C110 1000P
C12 1000P
C13 470P-O
C14 1000P
C25 1000P
R437 4.7K-O
C112 4.7U-O
JD1
AGND
D34
LL4148-S-X
D35
LL4148-S
5VSB
VCC
SPKR_VP
C205 .1U-04
MC123 10U-10V-08
R899 26.1K-04
MONO_OUT
SPKR
R900 100K-04
C206 .01U-04
R901 20K-04
R902 10K-04
C207 .01U-04
R903 10K-04-O
C208 1U-04
U40
SSM2211CPZ-LFCSP
IN–
IN+
BYPASS
SHUTDOWN
VOUTA
V+
V–
VOUTB
OUT-
OUT+
SPEAKER
H2*1
R3 4.7K
C113 2.2U-O
L1 FB-600-06
R2 0
C3 1000P
C4 1000P-O
FMIC
XSPKOUTR
XSPKOUTL
C258 100P-O
C259 100P-O
C260 100P-O
2006/3/30 FOR EMI
AVDD5
R499 1.5K
R320 4.7U
R438 0-O
R410 2.2K
C121 1U_ALC
R4 1K_ALC
L70 0
R414 22K
R415 22K
F_AUDIO1
H4*2-P8
R439 20K_ALC
C115 1K/2.2U_ALC
JD0
Because Lenovo use the 2x4 FP header, so we will suggest you using this header definition.
FOR Lenovo
CD_IN
H4*1-LF-P2
R22 0
R23 0
R24 0
MC4 1U-10V
MC7 1U-10V
MC10 1U-10V
CDR
CDG
CDL
R27 100K-O
R26 100K-O
R25 100K-O
Top view
Big / Small
SRVO5-4-O
U48
2006/3/31
D56
D57
D58
D59
BAV99-O
2006/4/1
2006/4/1
Elitegroup Computer Systems
Audio Interface
865GV-M8
Size Custom
Document Number
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 25 of 33



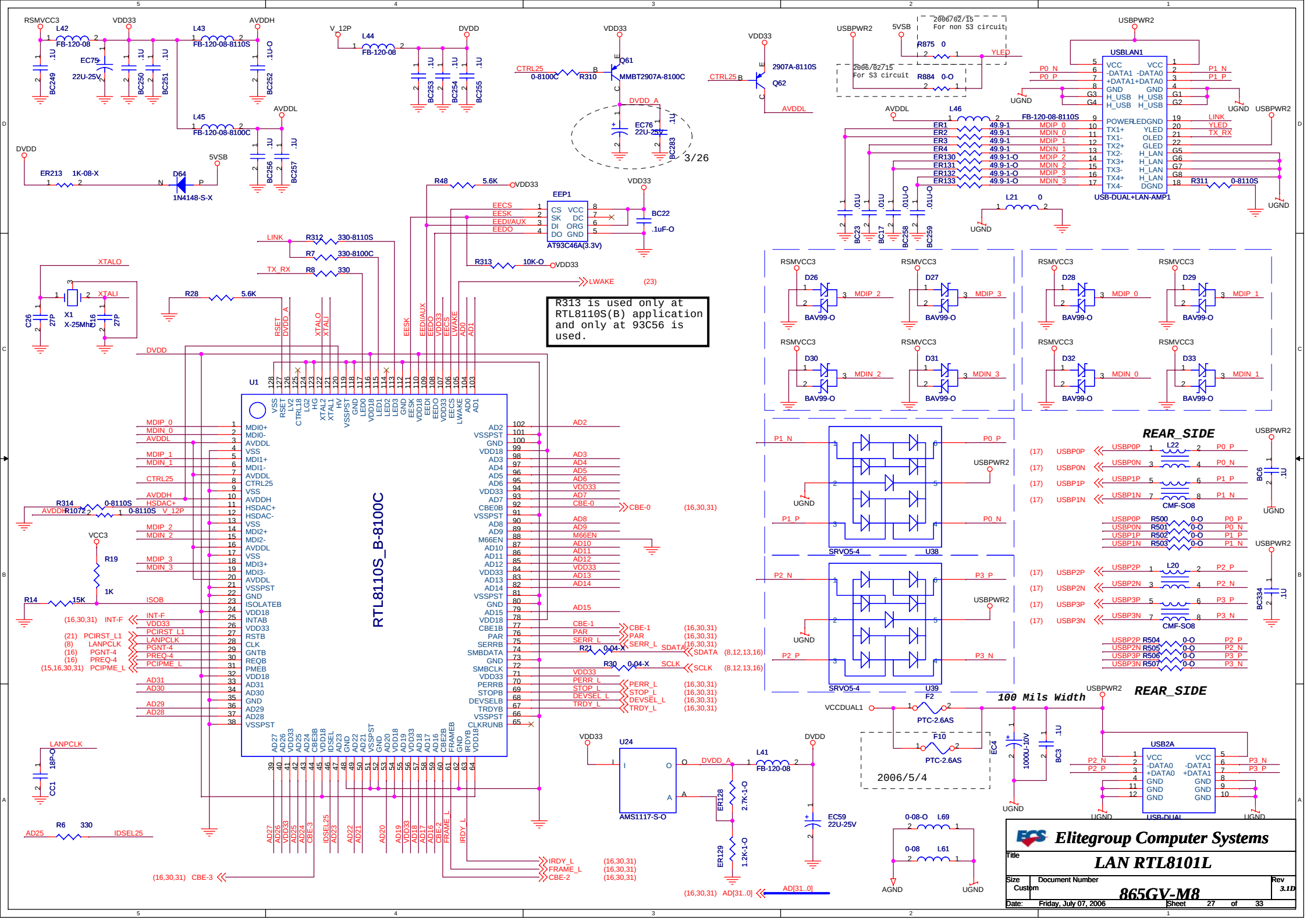
	S0	S1	S3	S4,S5
PANEL1(4,2)	Green	G-blinking	Y-blinking	Dark
LPANEL1(3,5,7)	Green	G-blinking	G-blinking Yellow	Dark
LSJ1(1,2)	Dark	Dark	Light	Dark
SJ1(1,3)(2,3)	Light	Blinking	Blinking	Dark
GLED0 GLED1	HIGH LOW	HIGH SWITCH	LOW SWITCH	HIGH HIGH

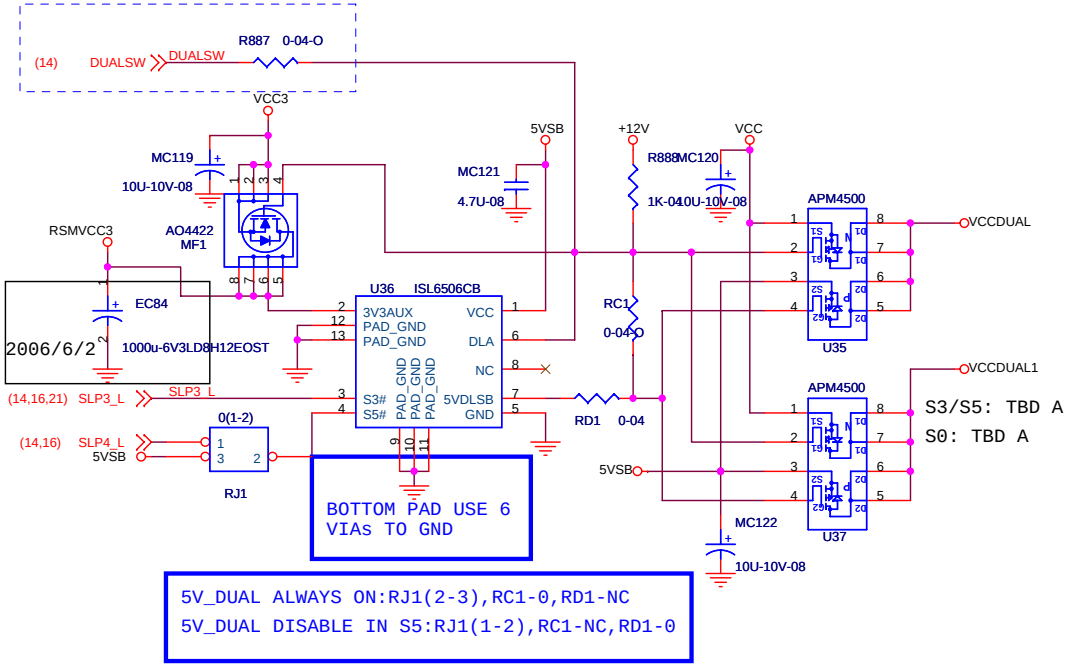
Elitegroup Computer Systems

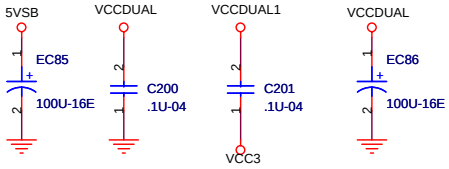
ATX Power & Front Panel

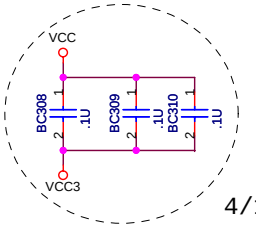
Size	Document Number	Rev
Custom	865GV-M8	3.1D

Date: Friday, July 07, 2006 Sheet 26 of 33

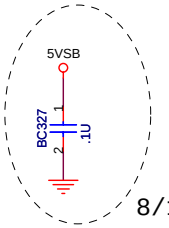

RTL8110S_B-8100C
U1
R313 is used only at RTL8110S(B) application and only at 93C56 is used.
REAR_SIDE
REAR_SIDE
100 Mils Width
2006/5/4
Elitegroup Computer Systems
LAN RTL8101L
865GV-M8
Size Custom
Document Number
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 27 of 33



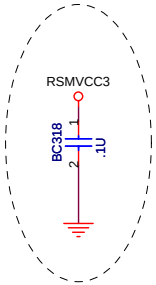




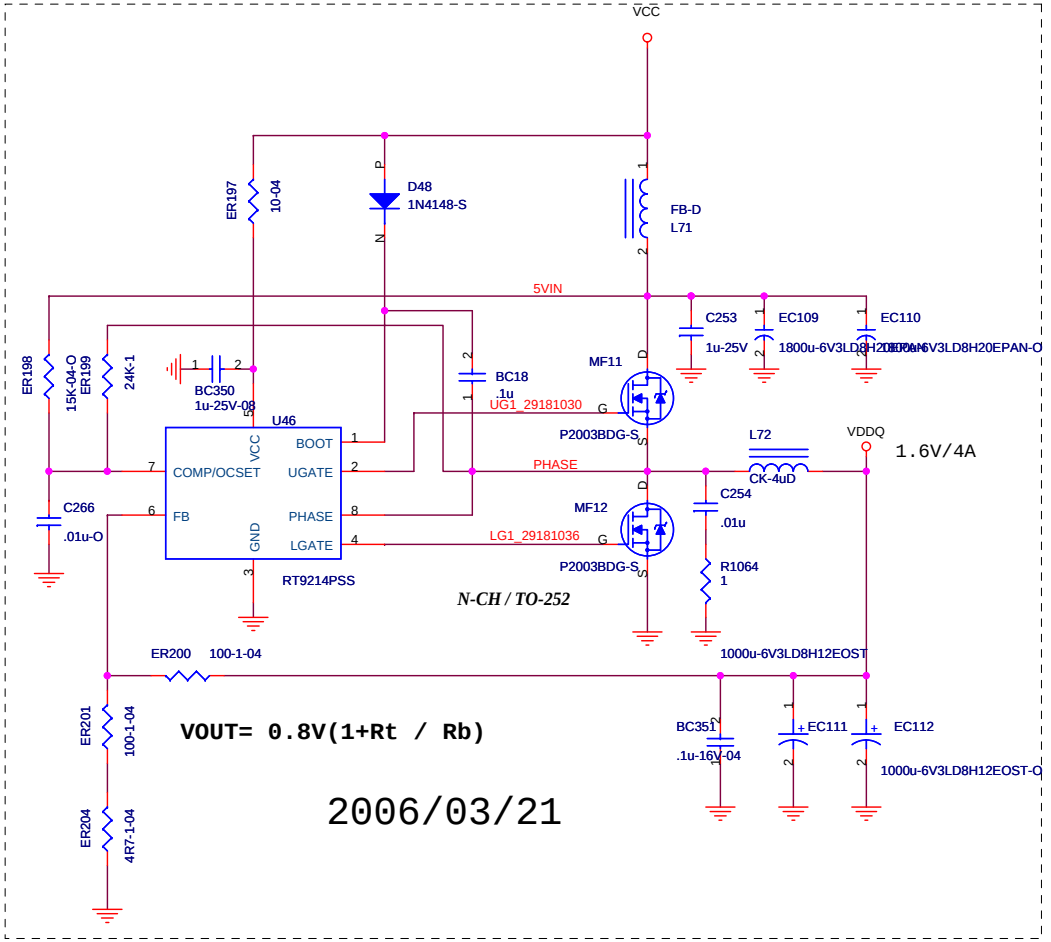
4/19



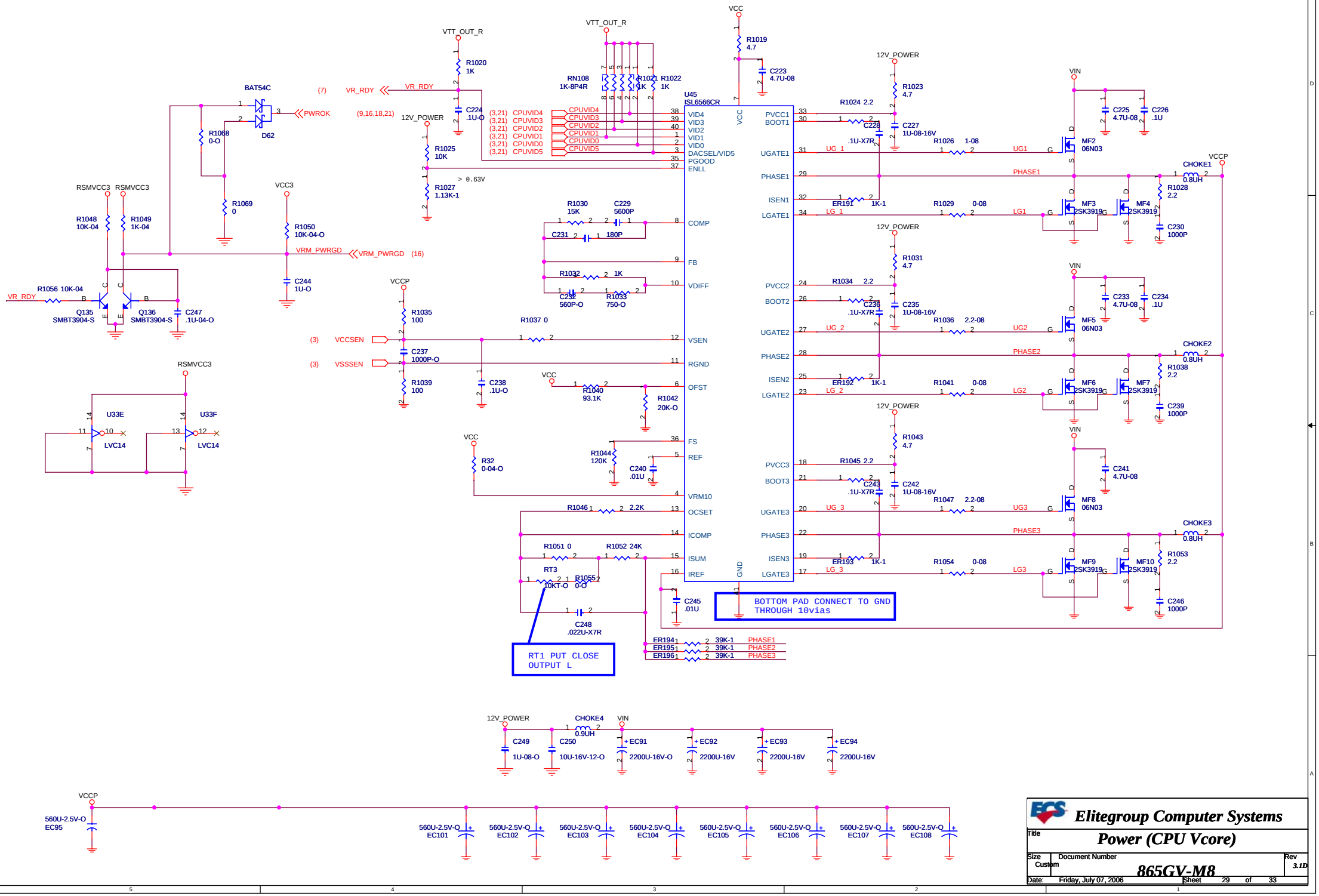
8/16

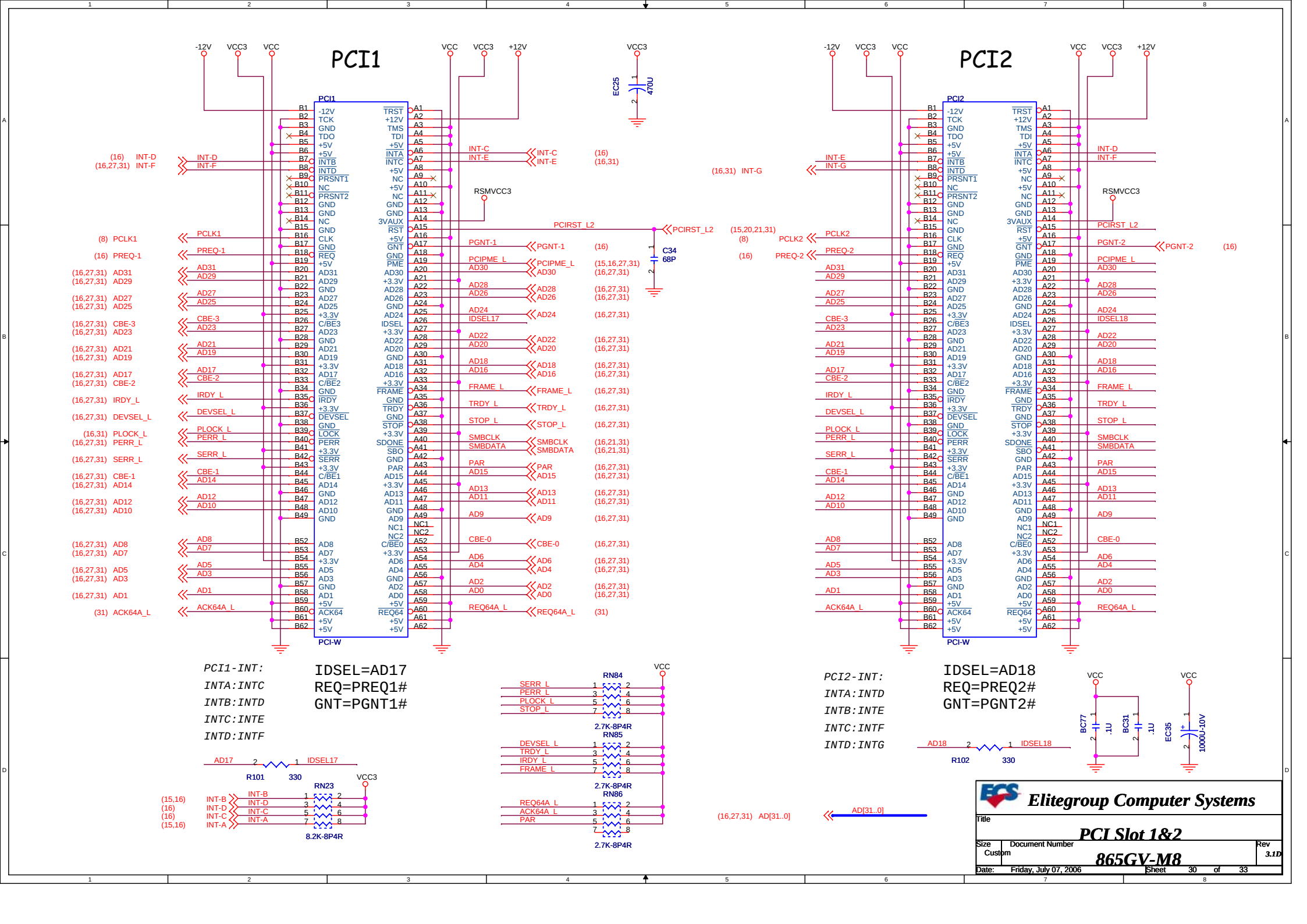


4/21



Elitegroup Computer Systems			
Tit: MIS DC-DC			
Size: Custom	Document Number: 865GV-M8		Rev: 3.1D
Date: Friday, July 07, 2006		Sheet 28 of 33	


VTT_OUT_R
VCC
12V_POWER
VIN
VCCP
RSMVCC3
VCC3
U45
ISL6566CR
VID4
VID3
VID2
VID1
VID0
DACSEL/VID5
PGOOD
ENLL
COMP
FB
VDIFF
VSEN
RGND
OFST
FS
REF
VRM10
OCSET
ICOMP
ISUM
IREF
GND
PVCC1
BOOT1
UGATE1
PHASE1
ISEN1
LGATE1
PVCC2
BOOT2
UGATE2
PHASE2
ISEN2
LGATE2
PVCC3
BOOT3
UGATE3
PHASE3
ISEN3
LGATE3
VR_RDY
PWROK
VRM_PWRGD
VCCSEN
VSSSEN
CPUVID0
CPUVID1
CPUVID2
CPUVID3
CPUVID4
CPUVID5
BAT54C
D62
Q135 SMBT3904-S
Q136 SMBT3904-S
U33E
U33F
LVC14
RT3
10KT-O
RT1 PUT CLOSE OUTPUT L
BOTTOM PAD CONNECT TO GND THROUGH 10vias
MF2 06N03
MF3 2SK3919
MF4 2SK3919
MF5 06N03
MF6 2SK3919
MF7 2SK3919
MF8 06N03
MF9 2SK3919
MF10 2SK3919
CHOKE1 0.8UH
CHOKE2 0.8UH
CHOKE3 0.8UH
CHOKE4 0.9UH
Elitegroup Computer Systems
Power (CPU Vcore)
865GV-M8
Size Custom
Document Number
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 29 of 33


PCI1
PCI2
PCI1-INT:
INTA:INTC
INTB:INTD
INTC:INTE
INTD:INTF
IDSEL=AD17
REQ=PREQ1#
GNT=PGNT1#
PCI2-INT:
INTA:INTD
INTB:INTE
INTC:INTF
INTD:INTG
IDSEL=AD18
REQ=PREQ2#
GNT=PGNT2#
Elitegroup Computer Systems
PCI Slot 1&2
865GV-M8
Size Custom
Document Number
Rev 3.1D
Date: Friday, July 07, 2006
Sheet 30 of 33

PCI3

2006/3/30 FOR EMI Closed to PCI3

VCC VCC3 +12V

C263 1000P-O C264 1000P-O C262 1000P-O

(16,27,30) AD[31..0] AD[31..0]

PCI3

PCI-W

	B1	-12V	TRST	A1			
	B2	TCK	+12V	A2			
	B3	GND	TMS	A3			
	B4	TDO	TDI	A4			
	B5	+5V	+5V	A5			
	B6	+5V	INTA	A6	INT-E	INT-E	(16,30)
INT-F (16,27,30)	B7	INTB	INTC	A7	INT-G	INT-G	(16,30)
INT-H (16)	B8	INTD	+5V	A8			
	B9	PRSNT1	NC	A9			
	B10	NC	+5V	A10			
	B11	PRSNT2	NC	A11			
	B12	GND	GND	A12			
	B13	GND	GND	A13			
	B14	NC	3VAUX	A14			
PCLK3 (8)	B15	GND	RST	A15	PCIRST_L2	PCIRST_L2	(15,20,21,30)
PREQ-3 (16)	B16	CLK	+5V	A16			
	B17	GND	GNT	A17	PGNT-3	PGNT-3	(16)
	B18	REQ	GND	A18			
	B19	+5V	PME	A19	PCIPME_L	PCIPME_L	(15,16,27,30)
AD31 (16,27,30)	B20	AD31	AD30	A20	AD30	AD30	(16,27,30)
AD29 (16,27,30)	B21	AD29	+3.3V	A21			
	B22	GND	AD28	A22	AD28	AD28	(16,27,30)
AD27 (16,27,30)	B23	AD27	AD26	A23	AD26	AD26	(16,27,30)
AD25 (16,27,30)	B24	AD25	GND	A24			
	B25	+3.3V	AD24	A25	AD24	AD24	(16,27,30)
CBE-3 (16,27,30)	B26	C/BE3	IDSEL	A26	IDSEL19		
AD23 (16,27,30)	B27	AD23	+3.3V	A27			
	B28	GND	AD22	A28	AD22	AD22	(16,27,30)
AD21 (16,27,30)	B29	AD21	AD20	A29	AD20	AD20	(16,27,30)
AD19 (16,27,30)	B30	AD19	GND	A30			
	B31	+3.3V	AD18	A31	AD18	AD18	(16,27,30)
AD17 (16,27,30)	B32	AD17	AD16	A32	AD16	AD16	(16,27,30)
CBE-2 (16,27,30)	B33	C/BE2	+3.3V	A33			
	B34	GND	FRAME	A34	FRAME_L	FRAME_L	(16,27,30)
IRDY_L (16,27,30)	B35	IRDY	GND	A35			
	B36	+3.3V	TRDY	A36	TRDY_L	TRDY_L	(16,27,30)
DEVSEL_L (16,27,30)	B37	DEVSEL	GND	A37			
	B38	GND	STOP	A38	STOP_L	STOP_L	(16,27,30)
PLOCK_L (16,30)	B39	LOCK	+3.3V	A39			
PERR_L (16,27,30)	B40	PERR	SDONE	A40	SMBCLK	SMBCLK	(16,21,30)
	B41	+3.3V	SBO	A41	SMBDATA	SMBDATA	(16,21,30)
SERR_L (16,27,30)	B42	SERR	GND	A42			
	B43	+3.3V	PAR	A43	PAR	PAR	(16,27,30)
CBE-1 (16,27,30)	B44	C/BE1	AD15	A44	AD15	AD15	(16,27,30)
AD14 (16,27,30)	B45	AD14	+3.3V	A45			
	B46	GND	AD13	A46	AD13	AD13	(16,27,30)
AD12 (16,27,30)	B47	AD12	AD11	A47	AD11	AD11	(16,27,30)
AD10 (16,27,30)	B48	AD10	GND	A48			
	B49	GND	AD9	A49	AD9	AD9	(16,27,30)
			NC1	NC1			
			NC2	NC2			
AD8 (16,27,30)	B52	AD8	C/BE0	A52	CBE-0	CBE-0	(16,27,30)
AD7 (16,27,30)	B53	AD7	+3.3V	A53			
	B54	+3.3V	AD6	A54	AD6	AD6	(16,27,30)
AD5 (16,27,30)	B55	AD5	AD4	A55	AD4	AD4	(16,27,30)
AD3 (16,27,30)	B56	AD3	GND	A56			
	B57	GND	AD2	A57	AD2	AD2	(16,27,30)
AD1 (16,27,30)	B58	AD1	AD0	A58	AD0	AD0	(16,27,30)
	B59	+5V	+5V	A59			
ACK64A_L (30)	B60	ACK64	REQ64	A60	REQ64A_L	REQ64A_L	(30)
	B61	+5V	+5V	A61			
	B62	+5V	+5V	A62			

RSMVCC3

PCI3-INT:
INTA:INTE
INTB:INTF
INTC:INTG
INTD:INTH

IDSEL=AD19
REQ=PREQ2#
GNT=PGNT2#

AD19 — R100 330 — IDSEL19

H3 HOLE-A H6 HOLE-A — CGND

H7 HOLE-A H8 HOLE-A

H2 HOLE-A — AGND AGND AGND

H4 HOLE-A H5 HOLE-A

H1 HOLE-A

Top View

SOT-23

Fan Header

AMP640456-3

N-CH P-CH 2N3904S 2N3906S

TO-263 / TO-252

Top View

3 Cathode (K)
2 Anode (A)
1 Vref (R)

TL431

7/15

Elitegroup Computer Systems		
Tit. PCI Slot 3		
Size B	Document Number 865GV-M8	Rev 3.1D
Date: Friday, July 07, 2006	Sheet 31 of 33	

Rev.C to Rev.D change for lenovo ASD overall design review issue.

A.Layout

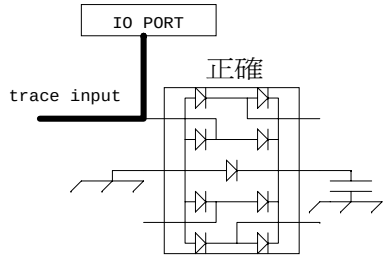
1.SATA1 & SATA2 differential pin pitch 太近 :try to change or modify library
2.R1067 移到正面靠近CODEC1 pin
3.加大 vcc power plane 於 usb3/usb4 瓶頸處
4. CK_CPU_H / CK_CPU_L 再加長 50 mils
5.CK_G_66_MCH=Y
  CK_HBL_66M_ICH=Y+/- 0~0.5"
  CK_G_66M_AGP=Y-(4.5~5.5")
  CK_P_33M_ICH=Y+/- 0.5"
  CK_P_33M_ICH 與其他CLOCK 關西錯誤需修正
6.(-7705,-2095) CK_P_33M_ICH 換層處加一旁路電容C273
7.(-6975,-2020) PCLK1 換層處加一旁路電容 C274
8.(-6970,-1870) & (-6670,-1390) 換層處各加一旁路電容 C275,C276
9.(-6950,-1785) CK_14M_AUDIO 換層處加一旁路電容C277 ,且此線太靠近島邊(至少3H)
10.(-6450,-2410) USB_48M_ICH 背面放一顆旁路電容C278
11.USBP4N/USBP4P 在 (-9365,-5120)打到solder side 再走到USB3 PIN(可解決靠近島邊及vcc power plane不足問題)
12.USBP7N/USBP7P 在 (-9375,-6045)打到solder side 再走到USB4 PIN(可解決靠近島邊及vcc power plane不足問題)
13.5vsb 接至 u35.3 要60 mils
14.移動MF1至適當位置
15.Q41往下移且多打6個VIA到VCC3
16.DEL RN102 ,加強Q112至 DDR2.5V電源及銅箔
17.EC109,EC110 調至適當位置,CHECK PLACEMENT
18.MF2.G 與 VIN 銅箔太近(有短路問題)
19.(-3500,-860) LAYER2 RGB 走線 VCC 層改爲GND
20.ALL HUBLINK 信號 WITHIN 100 mils ,PLEASE CHECK
21.PAGE 3,4 ADDED R9,R10
22.PAGE 24: ADDED R17,R18,C279
23.PAGE27: ADDED R21,R30
24.PAGE28: DEL RN106,RN107
   DEL EC40,ER81,ER80,U11,RN91,RN92
25.PAGE29: ADDED R32
26.PAGE 24:U34.74 改接 RTCVCC
27. NET 'H_PWRGD' 走線間距改爲 13/7/13
28.NET THRMDN,CPU_THERM1 要平行走 線寬 10 mils 間距 10 mils (10/10/10/10/10)
29.net AVDDL & XTALO 間距太近(拉大到20 mils)
30.ER102 移到南橋背面
31.N27881084,N27881347 加寬至 10~15 mil
32.MC121 要靠近 U36 PIN 1
33.Q41.D PIN VCC3 VIA 再加4個
34.到MCH1的2_5VSTR的COPPER 加大到200 mils以上(5.7A)
35.U15的第1pin DDR2_5V trace只有20mil 請增至50 mils
36.VDDQ 在 BC61處多打3個VIA
37.U45 下面增加 THERMAL (GROUND) PAD
38.RHSYNV,YVSYC 在U32處出現直角要修正
39.C61,C26;C93,C94的GROUND VIA共用一個，要分開打
40.D49,D50,D51 供電壓改爲 VDDQ
41.PAGE14: ADDED R1 擴流電阻
42.PAGE14:ADDED BC1
43.U32 PIN 14 改接VCC
44.MODIFY SATA1,SATA2 PART LIBRARY TO AVOID DIFFERENTIAL PIN SHORT
45.PAGE 12 and 13 ADD termination R1073,R1074,R1075,R1076,R1077,R1078
46.ADD R1072 for Giaga Lan 3.3V

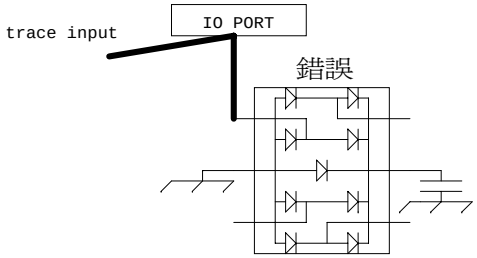
B.BOM Modify

1.R1067 47-04 改至component side SMD BOM
2.ADDED R9,R10, 0 ohm 0603
3.ADDED R17,R18, 0 ohm 0402
4.ER102 改至 component side smd bom
5.ADDED R1, 10K ohm 0603
6.ADDED BC1, 0.1uF 0402
7.U32 CHANGE TO 74HCT32 (02-119-032132)
8.DEL RN91,RN92,U11,ER80,ER81,EC40
9.R37 CHANGE TO 4.7K ohm R0402
10.DEL D46,D34
11.DELETE EC97,EC99
12.ADDED RT3 10K 0603 THERMISTER
13.ADDED ER209,ER210,ER211,ER212
14.DELETE EC98,EC96
15.F11 零件改回原來的FUSE
16.ADDED BC361~BC368 0.1uF 0402 CAP
17. ADDED ER209,ER210,ER211,ER212 0 ohm 0402
18.ADDED R1073~R1078 100 ohm 0402

2006/07/04 MEETING

1.DELETE EC97,EC99 ,將VIN PLANE 拉齊
2.CHANGE F11 LIBRARY MOVE EC93,CHOKE4 到適當位置,MF2下面之VIN ISLAND往左上移,使VIN ISLAND 加大
3.修改R.G.B 走線,使其不跨太多電源層走線
4.CHECK ESD PROTECT LAYOUT COMPONENT
PLEASE CHECK U42,U43,U48,U38,U39,
D56,D58,D59,D57,D26,D27,D30,D31
D28,D29,D32,D33





5.PLEASE CHECK RGB 走線及 SPACING ,走線SPACING 要保持 20 MILS 以上
6.VGA PORT 第三層(gnd) 缺口改向左下方
44.CHANGE GPI6,GPI7 PULL HIGH FROM RSMVCC3 TO VCC3(INTEL ICH5 DATASHEET ISSUE)

2006/07/06 modify

1. added R1072~R1078
R1073~R1078 擺放的位置請參考PAUL 之前做的圖,如附件.
2.R1067 移到靠近南橋,要放在 CONPONENT SIDE
3.U1底下 (LAYER2) LAN 走線處改爲GND,使LAN走線參考GND
4. 2_5VSTR 多打 4個VIA (-6390,-5415) AGP 下方
5.Q45.D 多打兩個VIA 到 2_5VSTR
6.USB 走線間距不對 20/7.5/7.5/7.5/20
8.加測試點
9.PAGE 28:ADDED ER209~ER212 FOR TEST POINT

ECS Elitegroup Computer Systems		
Title: History-1		
Size: C	Document Number: 865GV-M8	Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 32 of 33	

2006/07/04 Final solutions

Elitegroup Computer Systems			
Title: History-2			
Size: B	Document Number: 865GV-M8		Rev: 3.1D
Date: Friday, July 07, 2006	Sheet 33 of 33		