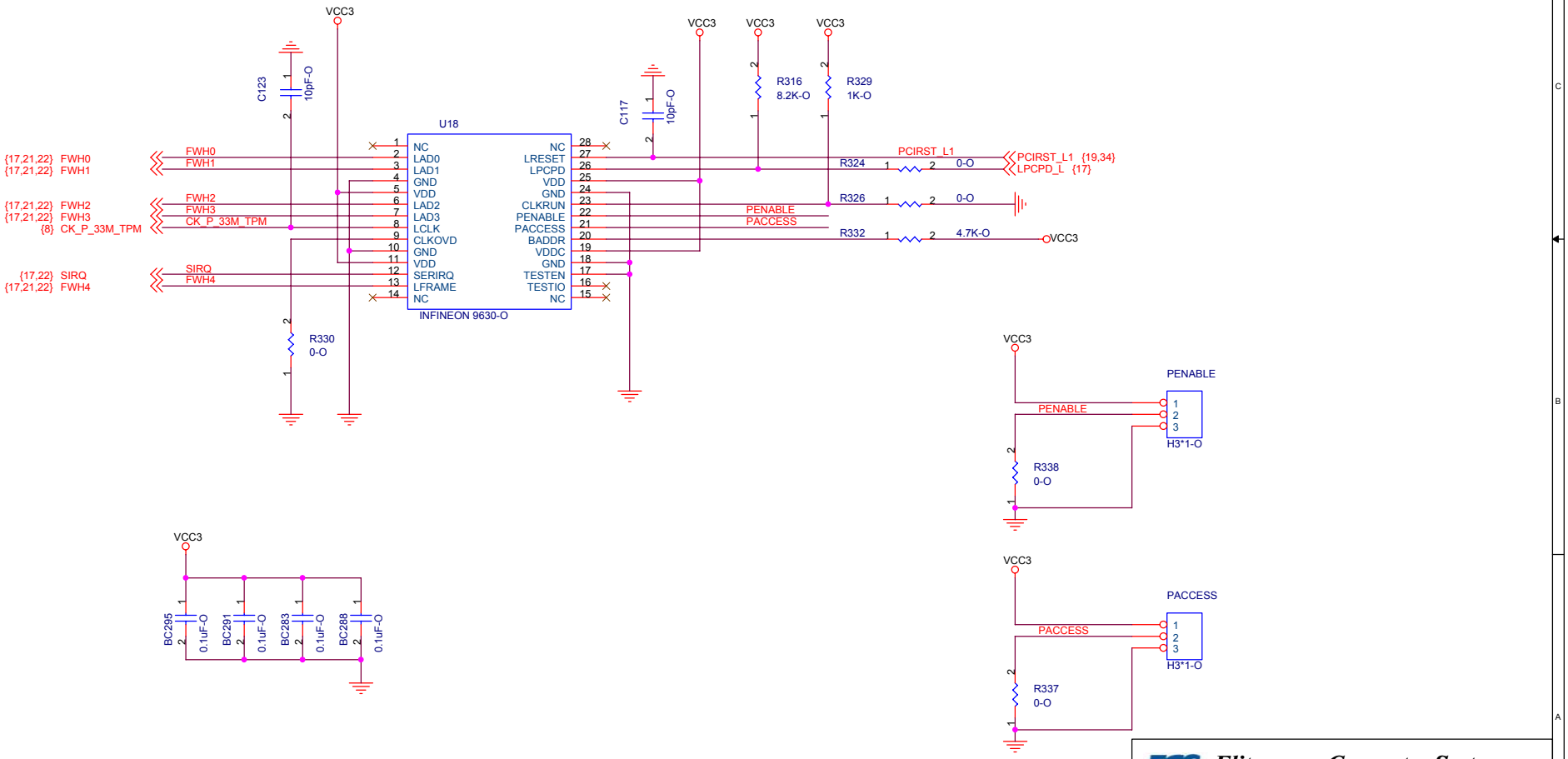
Elitegroup Computer Systems

Title: Schematic Change History

Size	Document Number	Rev
Custom	915GV-M5	1.1

Date: Tuesday, November 16, 2004 Sheet 1 of 36

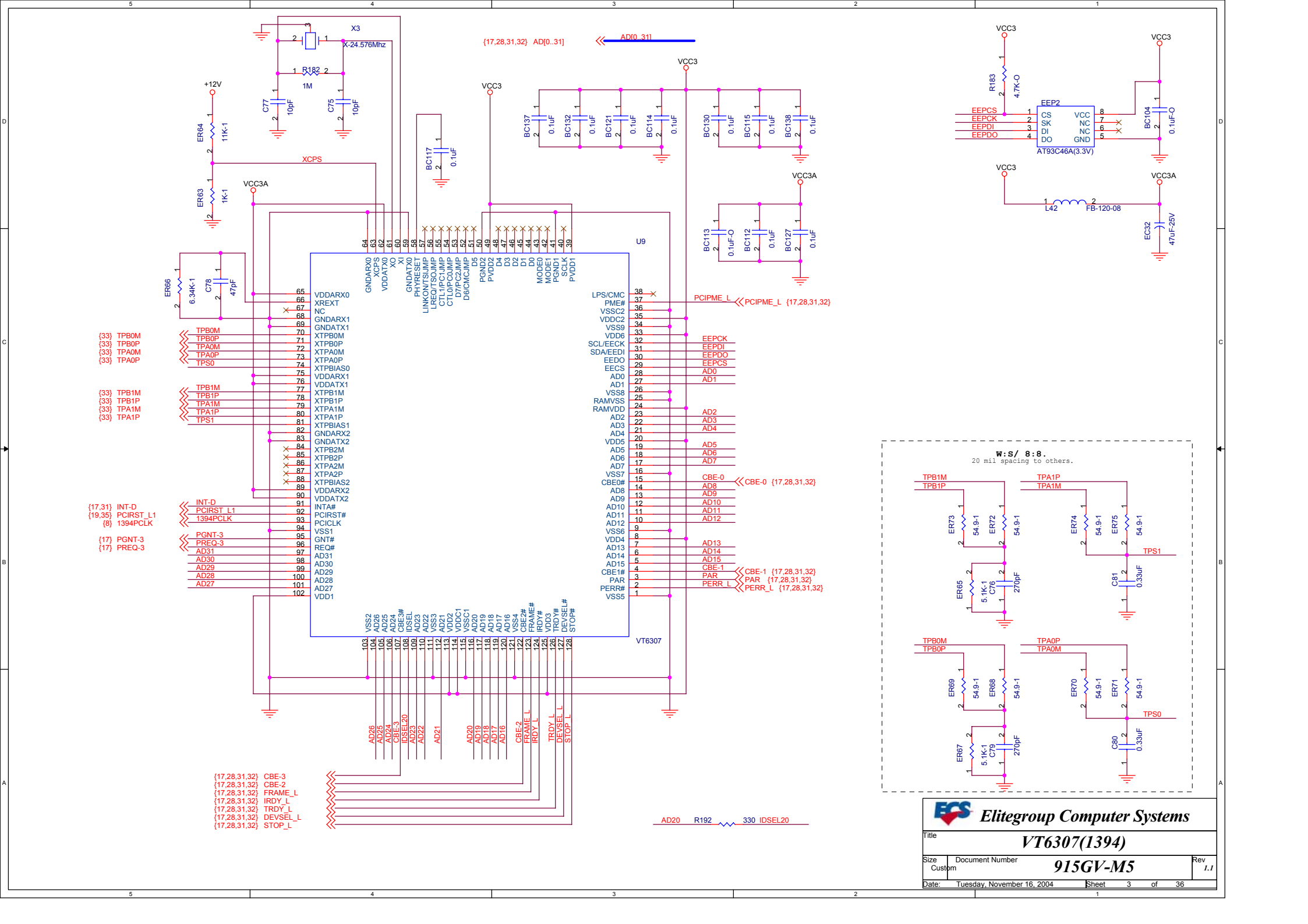


Elitegroup Computer Systems

Title: TPM (TRUSTED PL-MODULE)

Size: Custom | Document Number: 915GV-M5 | Rev: 1.1

Date: Tuesday, November 16, 2004 | Sheet 2 of 36

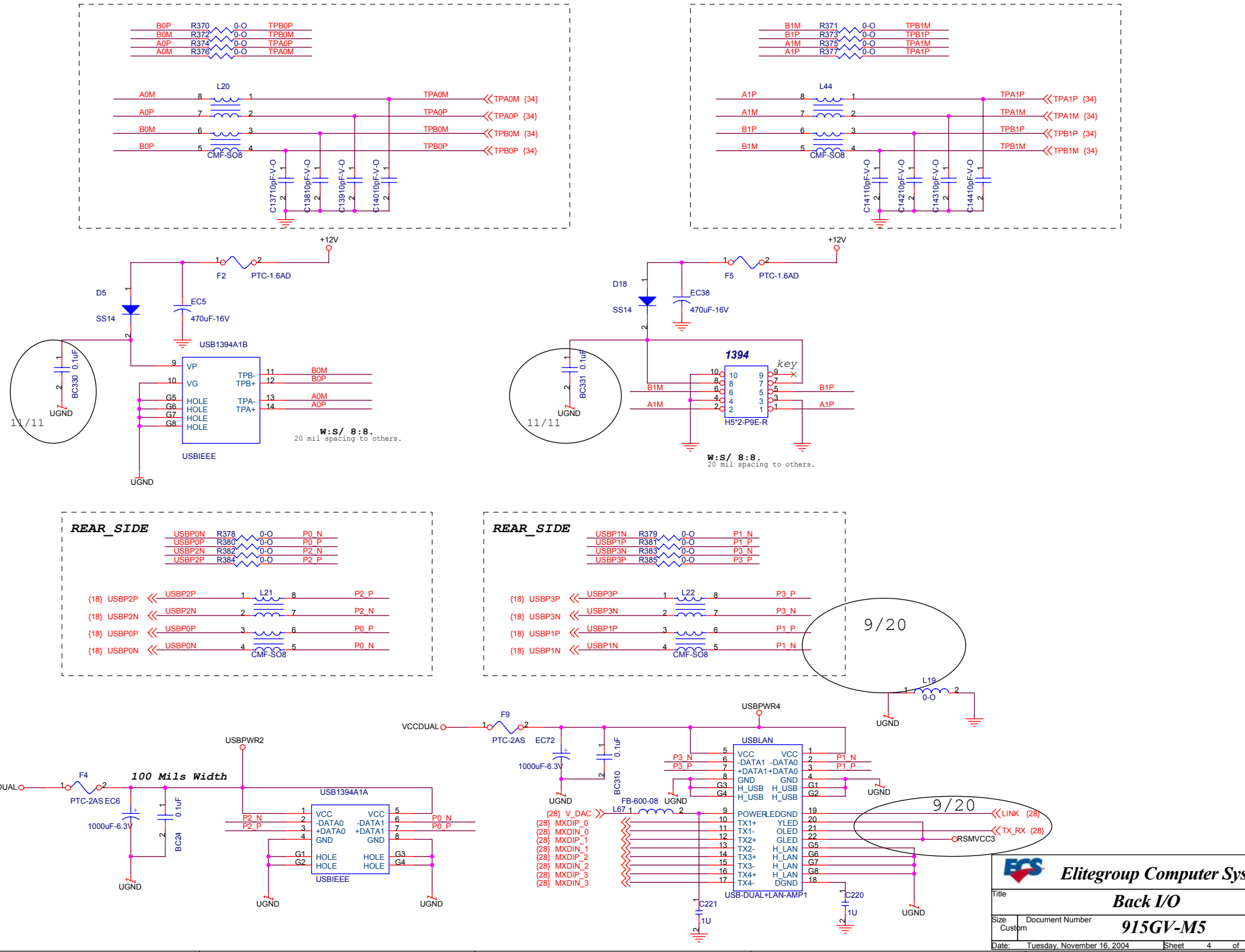


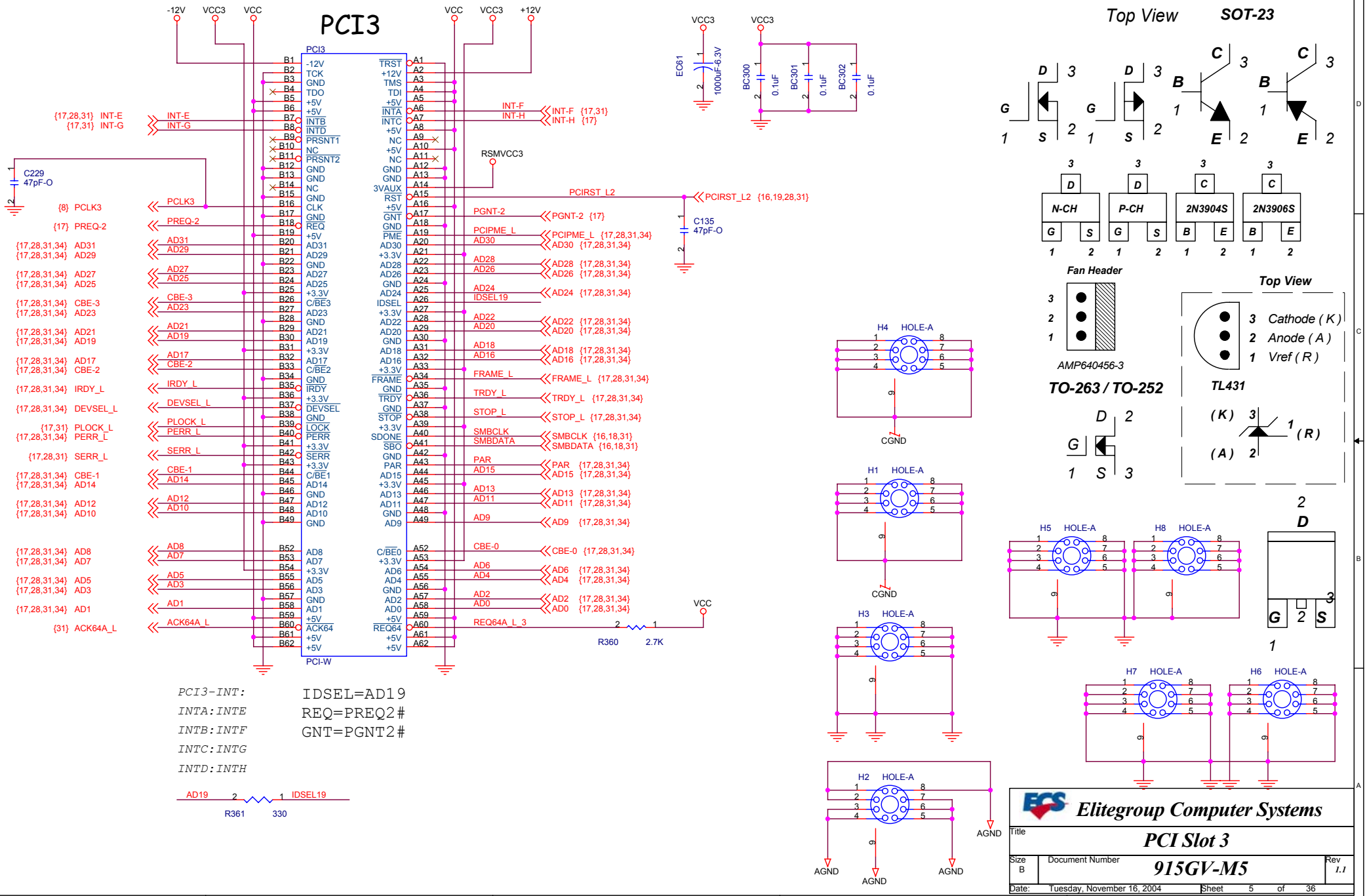
Elitegroup Computer Systems

Title: VT6307(1394)

Size: Custom | Document Number: 915GV-M5 | Rev: 1.1

Date: Tuesday, November 16, 2004 | Sheet 3 of 36


B0P R370 0-O TPB0P
B0M R372 0-O TPB0M
A0P R374 0-O TPA0P
A0M R376 0-O TPA0M
L20
A0M
A0P
B0M
B0P
CMF-SO8
TPA0M
TPA0P
TPB0M
TPB0P
TPA0M {34}
TPA0P {34}
TPB0M {34}
TPB0P {34}
C13710pF-V-O
C13810pF-V-O
C13910pF-V-O
C14010pF-V-O
B1M R371 0-O TPB1M
B1P R373 0-O TPB1P
A1M R375 0-O TPA1M
A1P R377 0-O TPA1P
L44
A1P
A1M
B1P
B1M
TPA1P
TPA1M
TPB1P
TPB1M
TPA1P {34}
TPA1M {34}
TPB1P {34}
TPB1M {34}
C14110pF-V-O
C14210pF-V-O
C14310pF-V-O
C14410pF-V-O
+12V
F2
PTC-1.6AD
D5
SS14
EC5
470uF-16V
USB1394A1B
BC330 0.1uF
UGND
11/11
VP
VG
HOLE
HOLE
HOLE
HOLE
TPB-
TPB+
TPA-
TPA+
B0M
B0P
A0M
A0P
USBIEEE
W:S/ 8:8.
20 mil spacing to others.
F5
D18
EC38
1394
key
BC331 0.1uF
H5*2-P9E-R
REAR_SIDE
USBP0N R378 0-O P0_N
USBP0P R380 0-O P0_P
USBP2N R382 0-O P2_N
USBP2P R384 0-O P2_P
{18} USBP2P
{18} USBP2N
{18} USBP0P
{18} USBP0N
L21
CMF-SO8
USBP1N R379 0-O P1_N
USBP1P R381 0-O P1_P
USBP3N R383 0-O P3_N
USBP3P R385 0-O P3_P
{18} USBP3P
{18} USBP3N
{18} USBP1P
{18} USBP1N
L22
9/20
L19
USBPWR4
USBPWR2
VCCDUAL
F4
PTC-2AS EC6
100 Mils Width
1000uF-6.3V
BC24 0.1uF
USB1394A1A
F9
PTC-2AS
EC72
1000uF-6.3V
BC310 0.1uF
FB-600-08
L67
USBLAN
{28} V_DAC
{28} MXDIP_0
{28} MXDIN_0
{28} MXDIP_1
{28} MXDIN_1
{28} MXDIP_2
{28} MXDIN_2
{28} MXDIP_3
{28} MXDIN_3
USB-DUAL+LAN-AMP1
LINK {28}
TX_RX {28}
RSMVCC3
C221 1U
C220 1U
Elitegroup Computer Systems
Back I/O
915GV-M5
Rev 1.1
Tuesday, November 16, 2004
Sheet 4 of 36


PCI3
-12V VCC3 VCC
VCC VCC3 +12V
PCI-W
C229 47pF-O
C135 47pF-O
EC61 1000uF-6.3V
BC300 0.1uF
BC301 0.1uF
BC302 0.1uF
RSMVCC3
PCIRST_L2 {16,19,28,31}
R360 2.7K
R361 330
PCI3-INT:
INTA:INTE
INTB:INTF
INTC:INTG
INTD:INTH
IDSEL=AD19
REQ=PREQ2#
GNT=PGNT2#
Top View
SOT-23
N-CH
P-CH
2N3904S
2N3906S
Fan Header
AMP640456-3
TO-263 / TO-252
TL431
3 Cathode (K)
2 Anode (A)
1 Vref (R)
H1 HOLE-A
H2 HOLE-A
H3 HOLE-A
H4 HOLE-A
H5 HOLE-A
H6 HOLE-A
H7 HOLE-A
H8 HOLE-A
CGND
AGND
Elitegroup Computer Systems
PCI Slot 3
915GV-M5
Size B
Document Number
Rev 1.1
Date: Tuesday, November 16, 2004
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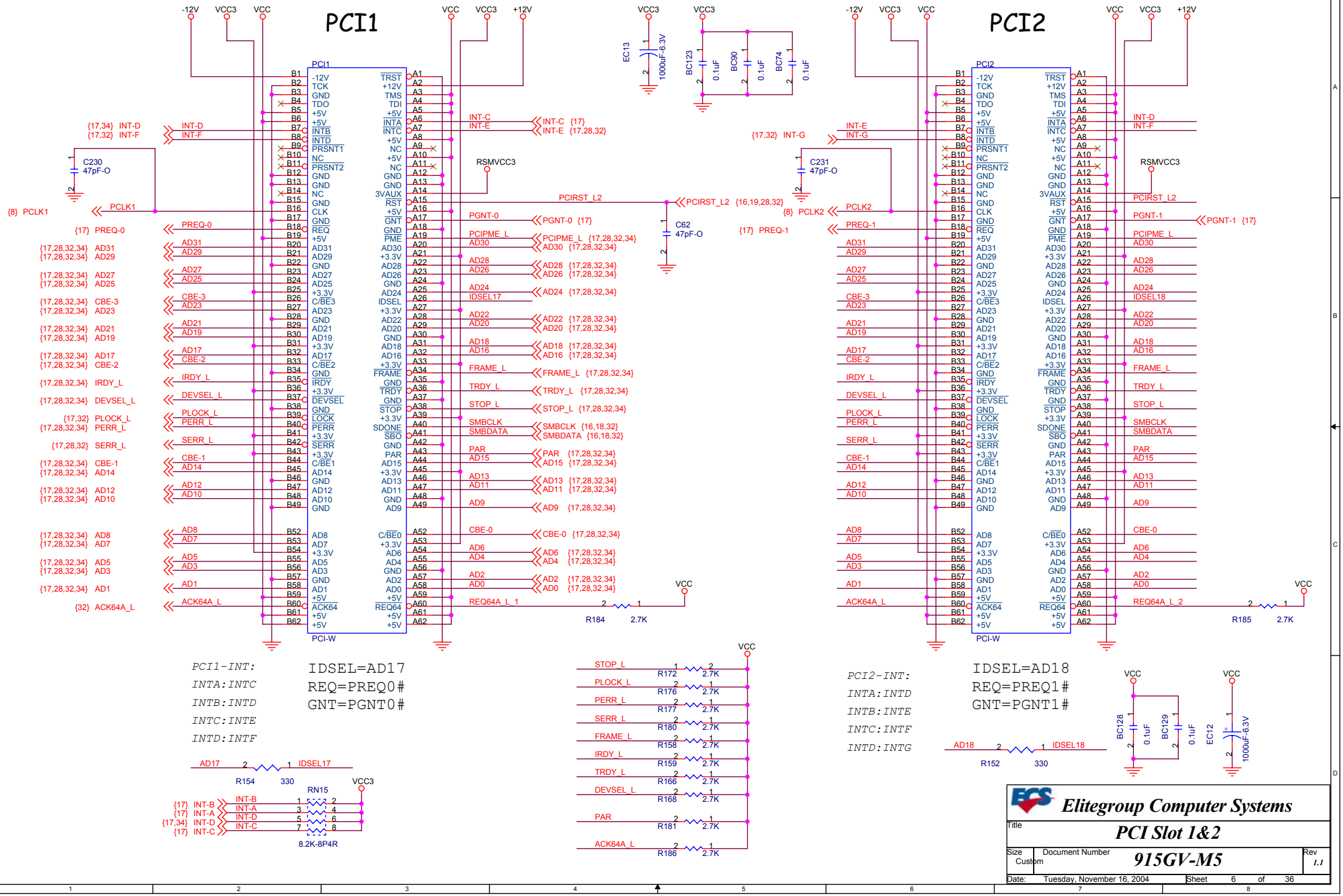
PCI1
PCI2
PCI1-W
PCI2-W
-12V
VCC3
VCC
+12V
RSMVCC3
C230 47pF-O
C231 47pF-O
C62 47pF-O
EC13 1000uF-6.3V
BC123 0.1uF
BC90 0.1uF
BC74 0.1uF
BC128 0.1uF
BC129 0.1uF
EC12 1000uF-6.3V
PCLK1
PCLK2
PREQ-0
PREQ-1
PGNT-0
PGNT-1
PCIRST_L2
INT-C
INT-D
INT-E
INT-F
INT-G
PCIPME_L
AD31
AD29
AD27
AD25
AD23
AD21
AD19
AD17
AD15
AD13
AD11
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
CBE-3
CBE-2
CBE-1
CBE-0
IRDY_L
DEVSEL_L
PLOCK_L
PERR_L
SERR_L
FRAME_L
TRDY_L
STOP_L
SMBCLK
SMBDATA
PAR
ACK64A_L
REQ64A_L_1
REQ64A_L_2
IDSEL17
IDSEL18
PCI1-INT:
INTA:INTC
INTB:INTD
INTC:INTE
INTD:INTF
IDSEL=AD17
REQ=PREQ0#
GNT=PGNT0#
PCI2-INT:
INTA:INTD
INTB:INTE
INTC:INTF
INTD:INTG
IDSEL=AD18
REQ=PREQ1#
GNT=PGNT1#
R154 330
R152 330
R184 2.7K
R185 2.7K
R172 2.7K
R176 2.7K
R177 2.7K
R180 2.7K
R158 2.7K
R159 2.7K
R166 2.7K
R168 2.7K
R181 2.7K
R186 2.7K
RN15
8.2K-8P4R
Elitegroup Computer Systems
PCI Slot 1&2
915GV-M5
Custom
1.1
Tuesday, November 16, 2004
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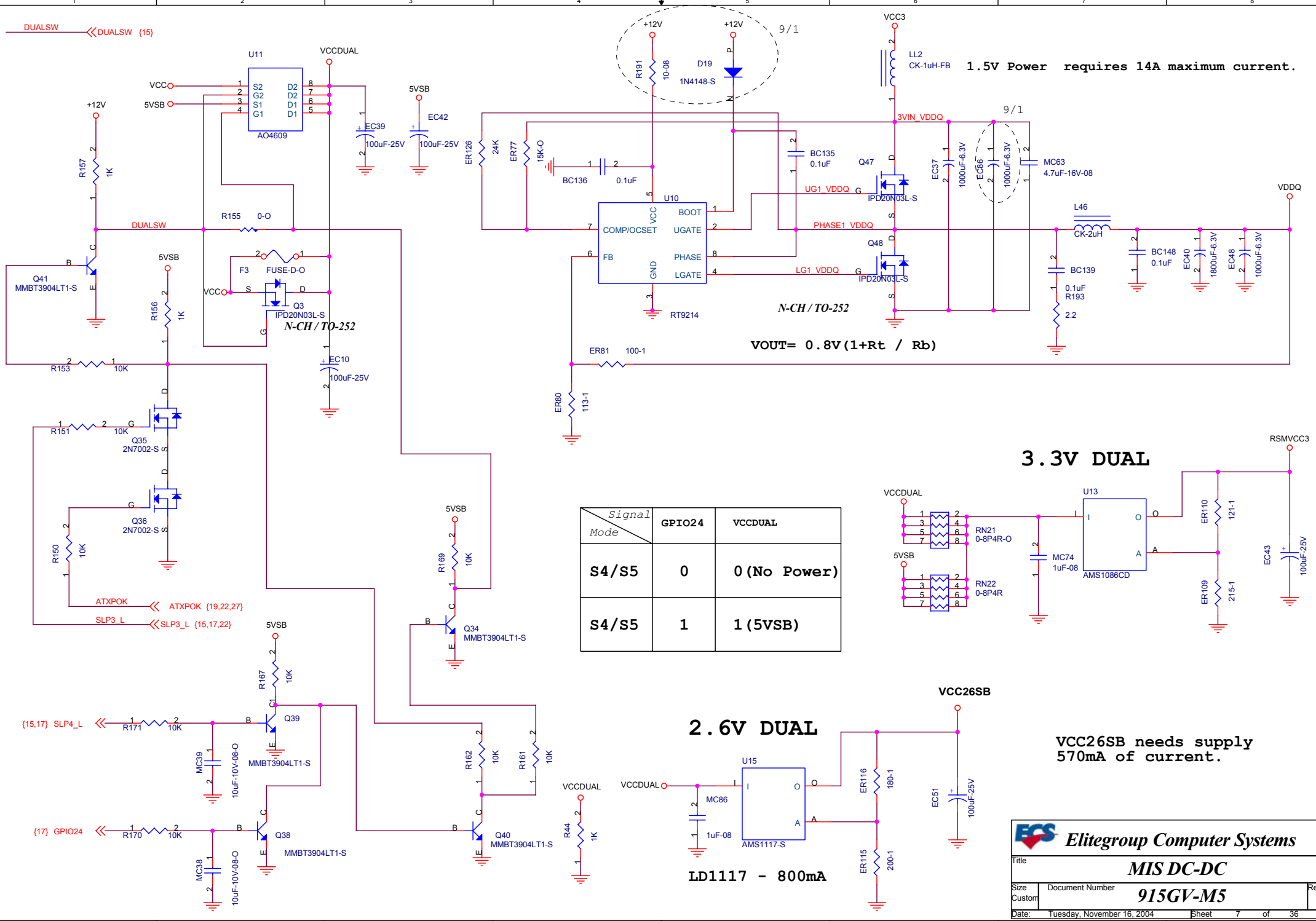
DUALSW
DUALSW {15}
U11
AO4609
VCCDUAL
VCC
5VSB
+12V
R157 1K
R155 0-O
F3 FUSE-D-O
Q3 IPD20N03L-S
N-CH / TO-252
Q41 MMBT3904LT1-S
R156 1K
R153 10K
EC39 100uF-25V
EC42 100uF-25V
EC10 100uF-25V
R151 10K
Q35 2N7002-S
Q36 2N7002-S
R150 10K
ATXPOK
ATXPOK {19,22,27}
SLP3_L
SLP3_L {15,17,22}
R191 10-08
D19 1N4148-S
9/1
VCC3
LL2 CK-1uH-FB
1.5V Power requires 14A maximum current.
3VIN_VDDQ
ER126 24K
ER77 15K-O
BC136 0.1uF
BC135 0.1uF
U10
VCC
BOOT
COMP/OCSET
UGATE
FB
PHASE
GND
LGATE
RT9214
UG1_VDDQ
PHASE1_VDDQ
LG1_VDDQ
Q47 IPD20N03L-S
Q48 IPD20N03L-S
N-CH / TO-252
EC37 1000uF-6.3V
EC86 1000uF-6.3V
MC63 4.7uF-16V-08
VDDQ
L46 CK-2uH
BC148 0.1uF
EC40 1800uF-6.3V
EC48 1000uF-6.3V
BC139 0.1uF
R193 2.2
ER81 100-1
ER80 113-1
VOUT= 0.8V(1+Rt / Rb)
3.3V DUAL
RSMVCC3
U13
AMS1086CD
RN21 0-8P4R-O
RN22 0-8P4R
MC74 1uF-08
ER110 121-1
ER109 215-1
EC43 100uF-25V
Signal / Mode
GPIO24
VCCDUAL
S4/S5 0 0(No Power)
S4/S5 1 1(5VSB)
R169 10K
Q34 MMBT3904LT1-S
{15,17} SLP4_L
R171 10K
Q39 MMBT3904LT1-S
MC39 10uF-10V-08-O
{17} GPIO24
R170 10K
Q38 MMBT3904LT1-S
MC38 10uF-10V-08-O
R167 10K
R162 10K
R161 10K
Q40 MMBT3904LT1-S
R44 1K
2.6V DUAL
VCC26SB
U15
AMS1117-S
MC86 1uF-08
ER116 180-1
ER115 200-1
EC51 100uF-25V
LD1117 - 800mA
VCC26SB needs supply 570mA of current.
Elitegroup Computer Systems
Title
MIS DC-DC
Size Custom
Document Number
915GV-M5
Rev 1.1
Date: Tuesday, November 16, 2004
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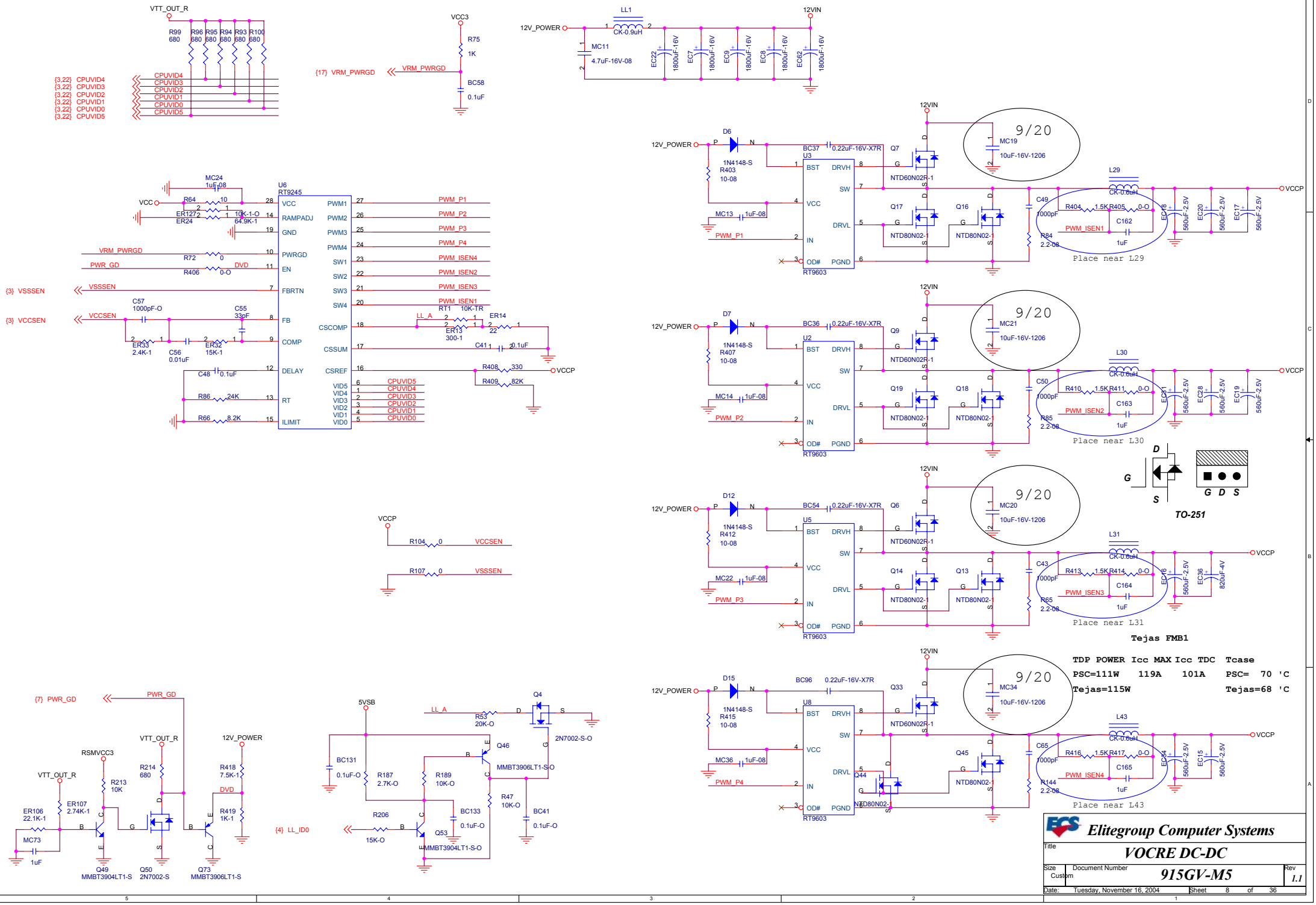
VTT_OUT_R
R99 680
R96 680
R95 680
R94 680
R93 680
R100 680
{3,22} CPUVID4
{3,22} CPUVID3
{3,22} CPUVID2
{3,22} CPUVID1
{3,22} CPUVID0
{3,22} CPUVID5
VCC3
R75 1K
{17} VRM_PWRGD
VRM_PWRGD
BC58 0.1uF
LL1
CK-0.9uH
12V_POWER
MC11 4.7uF-16V-08
EC22 1800uF-16V
EC7 1800uF-16V
EC9 1800uF-16V
EC8 1800uF-16V
EC62 1800uF-16V
12VIN
MC24 1uF-08
U6 RT9245
VCC
R64 10
ER1272
ER24 10K-1-O 64.9K-1
RAMPADJ
GND
VRM_PWRGD
R72 0
PWRGD
PWR_GD
R406 0-O
DVD
EN
{3} VSSSEN
VSSSEN
FBRTN
{3} VCCSEN
VCCSEN
C57 1000pF-O
C55 33pF
FB
ER33 2.4K-1
C56 0.01uF
ER32 15K-1
COMP
C48 0.1uF
DELAY
R86 24K
RT
R66 8.2K
ILIMIT
PWM_P1
PWM_P2
PWM_P3
PWM_P4
PWM_ISEN4
PWM_ISEN2
PWM_ISEN3
PWM_ISEN1
SW1
SW2
SW3
SW4
LL_A
RT1 10K-TR
ER13 300-1
ER14 22
CSCOMP
CSSUM
C41 0.1uF
CSREF
R408 330
R409 82K
VCCP
VID5 CPUVID5
VID4 CPUVID4
VID3 CPUVID3
VID2 CPUVID2
VID1 CPUVID1
VID0 CPUVID0
D6
1N4148-S
R403 10-08
BC37 0.22uF-16V-X7R
U3
BST
DRVH
SW
VCC
DRVL
IN
OD#
PGND
RT9603
Q7
Q17
Q16
NTD60N02R-1
NTD80N02-1
MC13 1uF-08
MC19 10uF-16V-1206
9/20
L29
CK-0.6uH
C49 1000pF
R404 1.5K
R405 0-O
C162 1uF
R84 2.2-08
EC16
EC20
EC17
560uF-2.5V
Place near L29
D7
1N4148-S
R407 10-08
BC36 0.22uF-16V-X7R
U2
Q9
Q19
Q18
MC14 1uF-08
MC21 10uF-16V-1206
L30
C50 1000pF
R410 1.5K
R411 0-O
C163 1uF
R85 2.2-08
EC21
EC28
EC19
Place near L30
D12
1N4148-S
R412 10-08
BC54 0.22uF-16V-X7R
U5
Q6
Q14
Q13
MC22 1uF-08
MC20 10uF-16V-1206
L31
C43 1000pF
R413 1.5K
R414 0-O
C164 1uF
R65 2.2-08
EC26
EC36
820uF-4V
Place near L31
D
G
S
G D S
TO-251
Tejas FMB1
TDP POWER Icc MAX Icc TDC Tcase
PSC=111W 119A 101A PSC= 70 'C
Tejas=115W Tejas=68 'C
D15
1N4148-S
R415 10-08
BC96 0.22uF-16V-X7R
U8
Q33
Q45
Q44
MC36 1uF-08
MC34 10uF-16V-1206
L43
C65 1000pF
R416 1.5K
R417 0-O
C165 1uF
R144 2.2-08
EC34
EC15
Place near L43
VCCSEN
R104 0
VSSSEN
R107 0
{7} PWR_GD
PWR_GD
VTT_OUT_R
12V_POWER
RSMVCC3
R213 10K
R214 680
R418 7.5K-1
DVD
R419 1K-1
ER106 22.1K-1
ER107 2.74K-1
MC73 1uF
Q49 MMBT3904LT1-S
Q50 2N7002-S
Q73 MMBT3906LT1-S
5VSB
LL_A
R53 20K-O
Q4
2N7002-S-O
Q46
MMBT3906LT1-S-O
BC131 0.1uF-O
R187 2.7K-O
R189 10K-O
R47 10K-O
BC41 0.1uF-O
BC133 0.1uF-O
Q53 MMBT3904LT1-S-O
R206 15K-O
{4} LL_ID0
Elitegroup Computer Systems
Title
VOCRE DC-DC
Size Custom
Document Number 915GV-M5
Rev 1.1
Date: Tuesday, November 16, 2004
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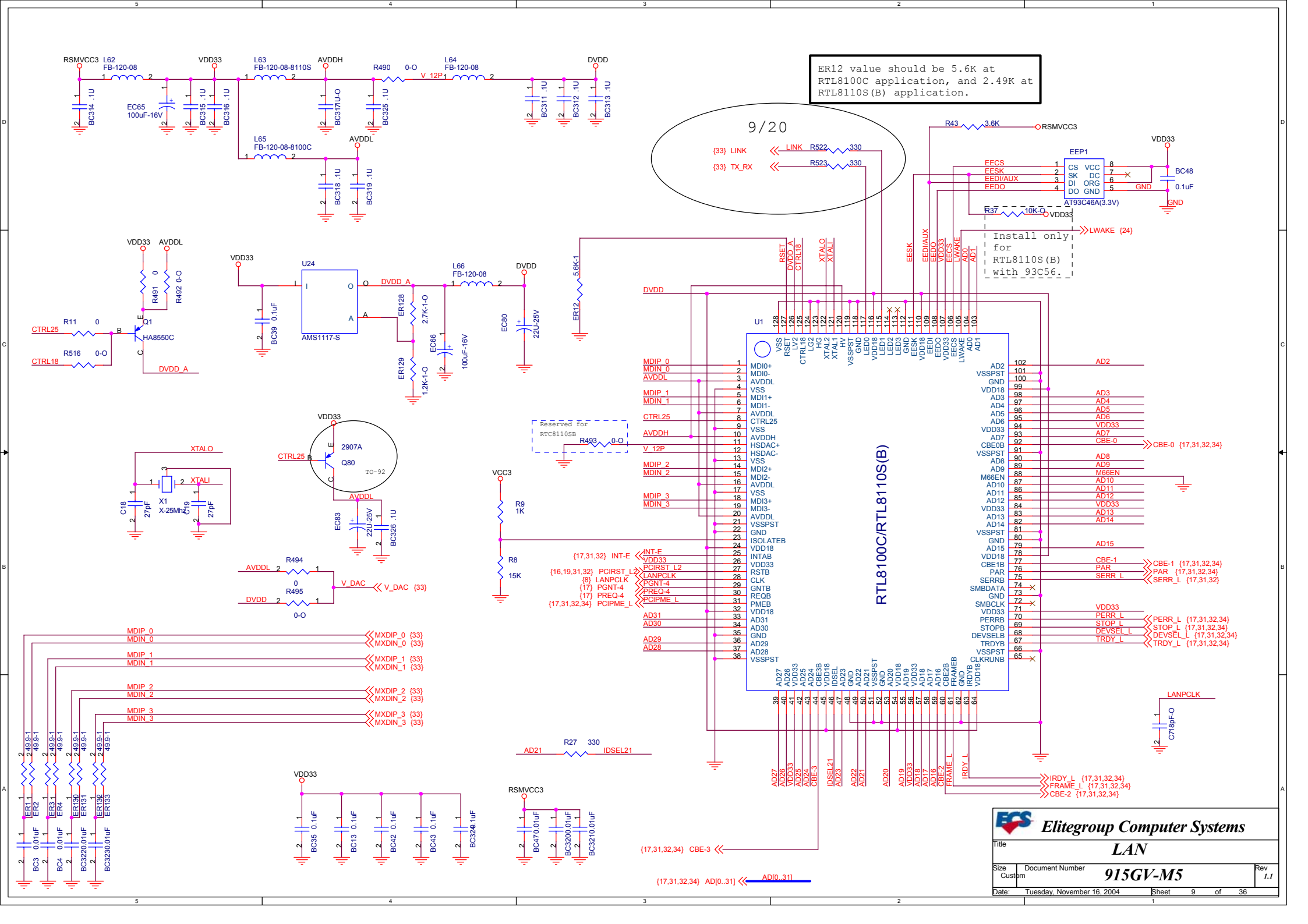
ER12 value should be 5.6K at RTL8100C application, and 2.49K at RTL8110S(B) application.
9/20
{33} LINK
{33} TX_RX
LINK R522 330
R523 330
Install only for RTL8110S(B) with 93C56.
RTL8100C/RTL8110S(B)
U1
EEP1
AT93C46A(3.3V)
U24
AMS1117-S
Q1
HA8550C
Q80
2907A
TO-92
X1
X-25MHz
Reserved for RTC8110SB
Elitegroup Computer Systems
Title
LAN
Size
Custom
Document Number
915GV-M5
Rev
1.1
Date: Tuesday, November 16, 2004
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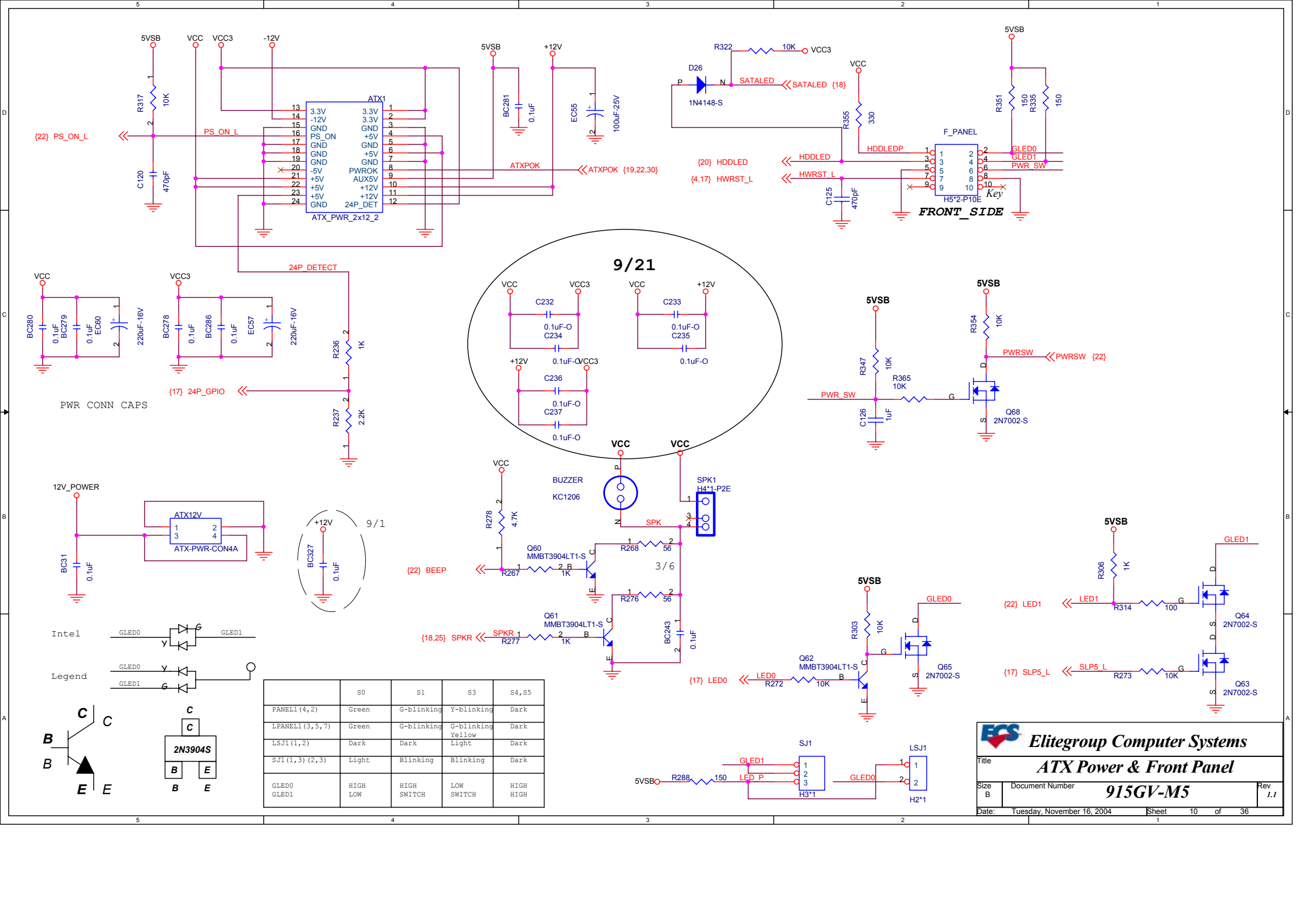
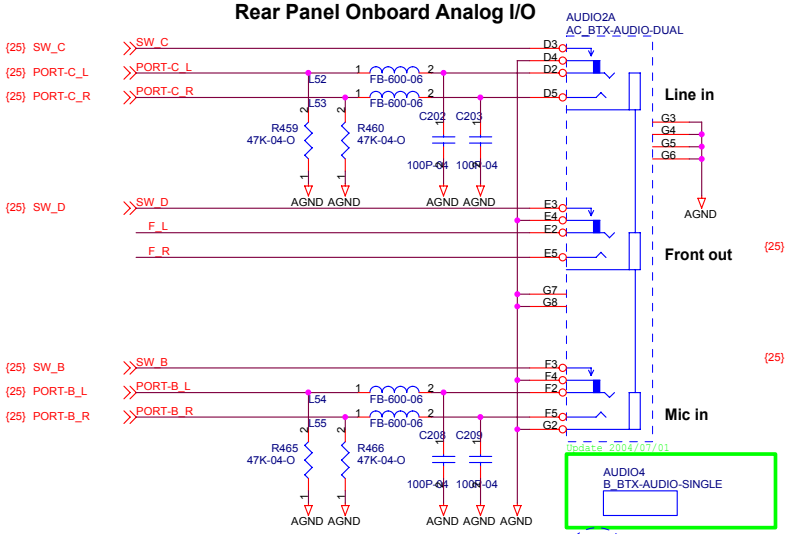


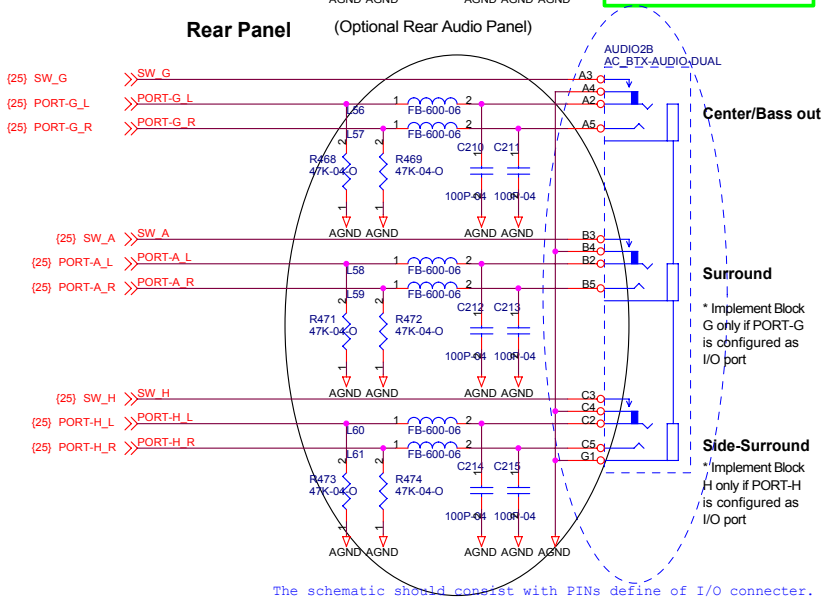
	S0	S1	S3	S4,S5
PANEL1(4,2)	Green	G-blinking	Y-blinking	Dark
LPANEL1(3,5,7)	Green	G-blinking	G-blinking Yellow	Dark
LSJ1(1,2)	Dark	Dark	Light	Dark
SJ1(1,3)(2,3)	Light	Blinking	Blinking	Dark
GLED0 GLED1	HIGH LOW	HIGH SWITCH	LOW SWITCH	HIGH HIGH

Rear Panel Onboard Analog I/O

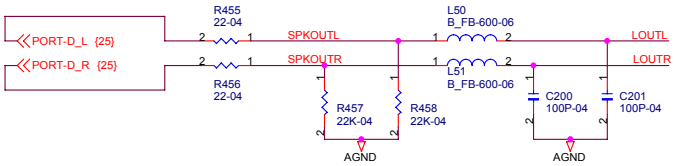


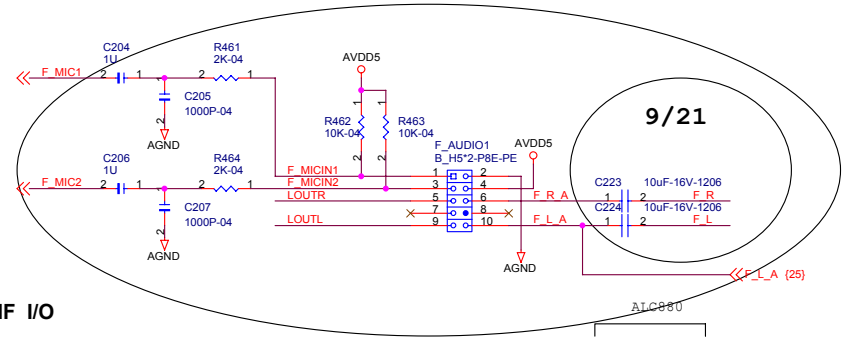
AUDIO4
B_BTX-AUDIO-SINGLE

Rear Panel (Optional Rear Audio Panel)

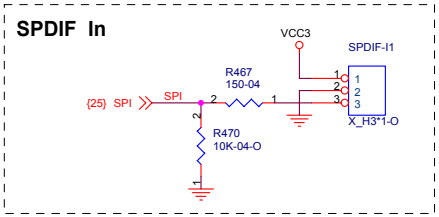


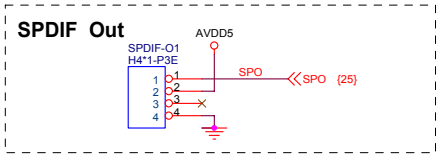
The schematic should consist with PINs define of I/O connecter.

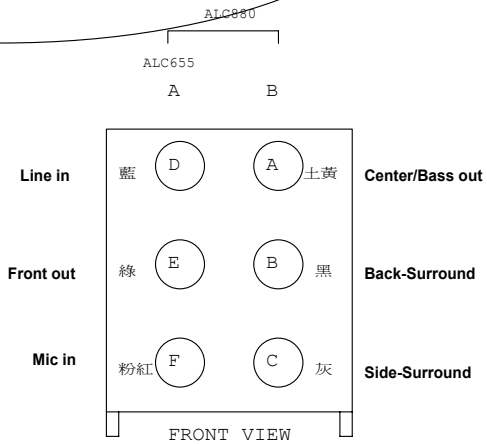


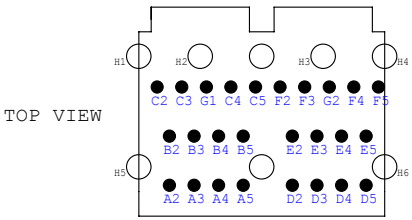


SPDIF I/O









Elitegroup Computer Systems

Title: Audio Interface

Size: Custom | Document Number: 915GV-M5 | Rev: 1.1

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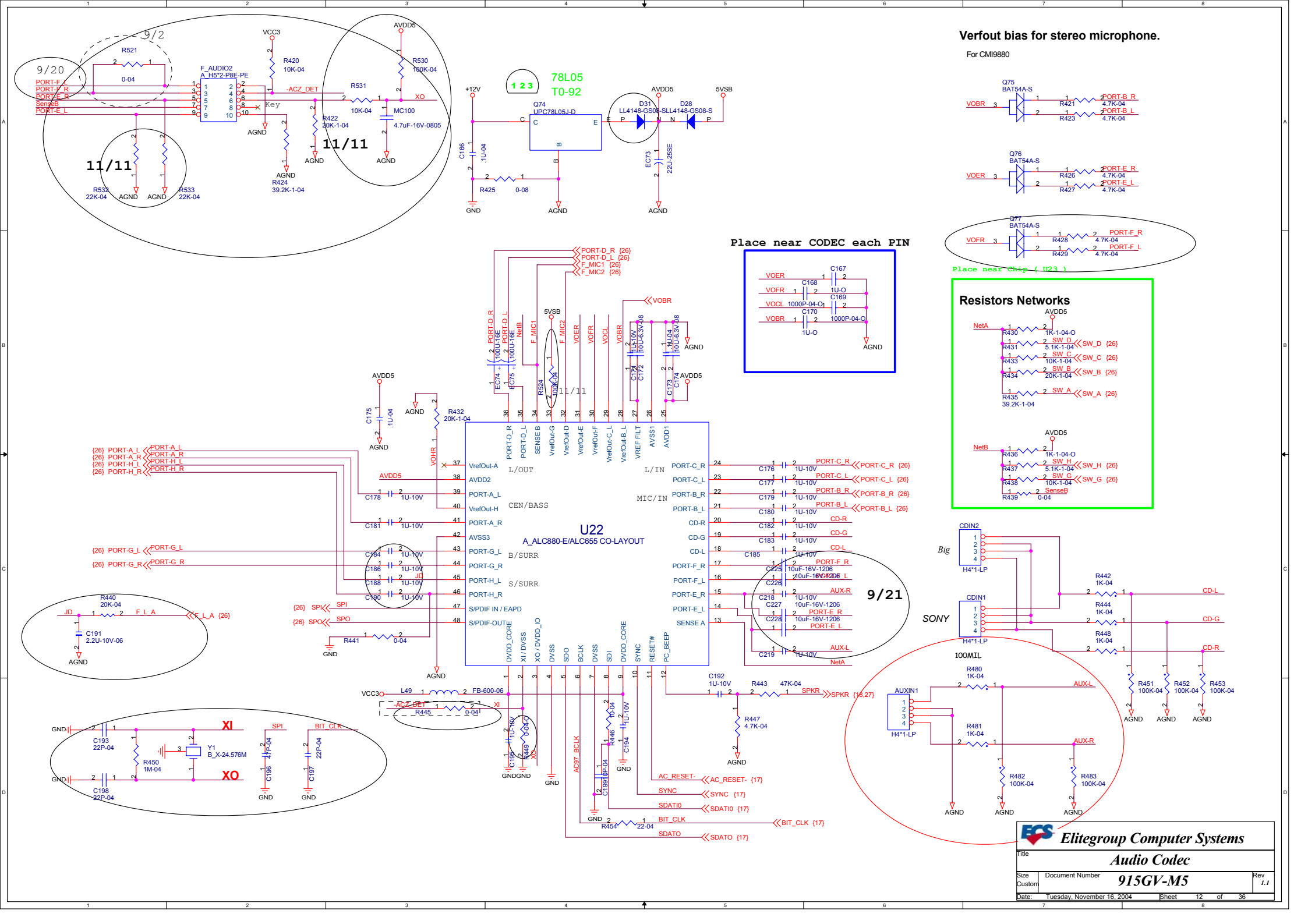
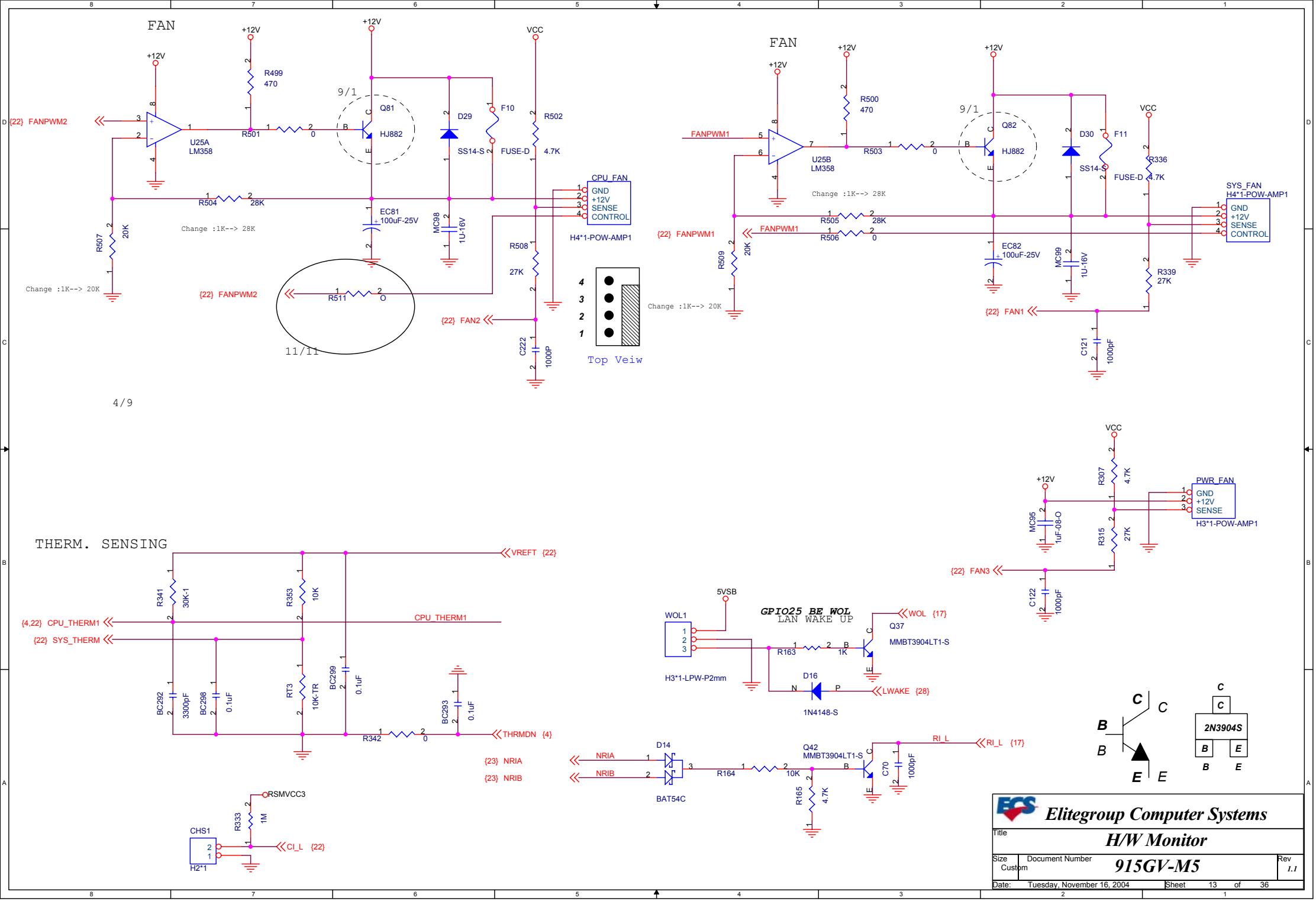

Verfout bias for stereo microphone.
For CMI9880
Place near CODEC each PIN
Place near Chip (U23)
Resistors Networks
U22
A_ALC880-E/ALC655 CO-LAYOUT
L/OUT
L/IN
MIC/IN
CEN/BASS
B/SURR
S/SURR
S/PDIF IN / EAPD
S/PDIF-OUT
9/20
9/2
9/21
11/11
11/11
78L05
T0-92
Big
SONY
100MIL
Elitegroup Computer Systems
Audio Codec
915GV-M5
Tuesday, November 16, 2004


FAN
+12V
VCC
{22} FANPWM2
U25A
LM358
R499
470
R501
R504
28K
Change :1K--> 28K
R507
20K
Change :1K--> 20K
9/1
Q81
HJ882
D29
SS14-S
F10
FUSE-D
R502
4.7K
CPU_FAN
GND
+12V
SENSE
CONTROL
H4*1-POW-AMP1
EC81
100uF-25V
MC98
1U-16V
R508
27K
{22} FANPWM2
R511
{22} FAN2
C222
1000P
11/11
Top Veiw
4/9
FANPWM1
U25B
LM358
R500
470
R503
Q82
HJ882
D30
SS14-S
F11
FUSE-D
R336
4.7K
SYS_FAN
H4*1-POW-AMP1
R505
28K
R506
R509
20K
EC82
100uF-25V
MC99
1U-16V
R339
27K
{22} FAN1
C121
1000pF
THERM. SENSING
VREFT {22}
R341
30K-1
R353
10K
{4,22} CPU_THERM1
{22} SYS_THERM
CPU_THERM1
BC292
3300pF
BC298
0.1uF
RT3
10K-TR
BC299
0.1uF
BC293
0.1uF
R342
THRMDN {4}
{23} NRIA
{23} NRIB
RSMVCC3
R333
1M
CHS1
H2*1
CI_L {22}
5VSB
WOL1
H3*1-LPW-P2mm
GPIO25 BE WOL
LAN WAKE UP
WOL {17}
Q37
MMBT3904LT1-S
R163
1K
D16
1N4148-S
LWAKE {28}
NRIA
NRIB
D14
BAT54C
R164
10K
Q42
MMBT3904LT1-S
RI_L
RI_L {17}
C70
1000pF
R165
4.7K
PWR_FAN
GND
+12V
SENSE
H3*1-POW-AMP1
R307
4.7K
MC95
1uF-08-O
R315
27K
{22} FAN3
C122
1000pF
2N3904S
Elitegroup Computer Systems
Title
H/W Monitor
Size
Custom
Document Number
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1.1
Date: Tuesday, November 16, 2004
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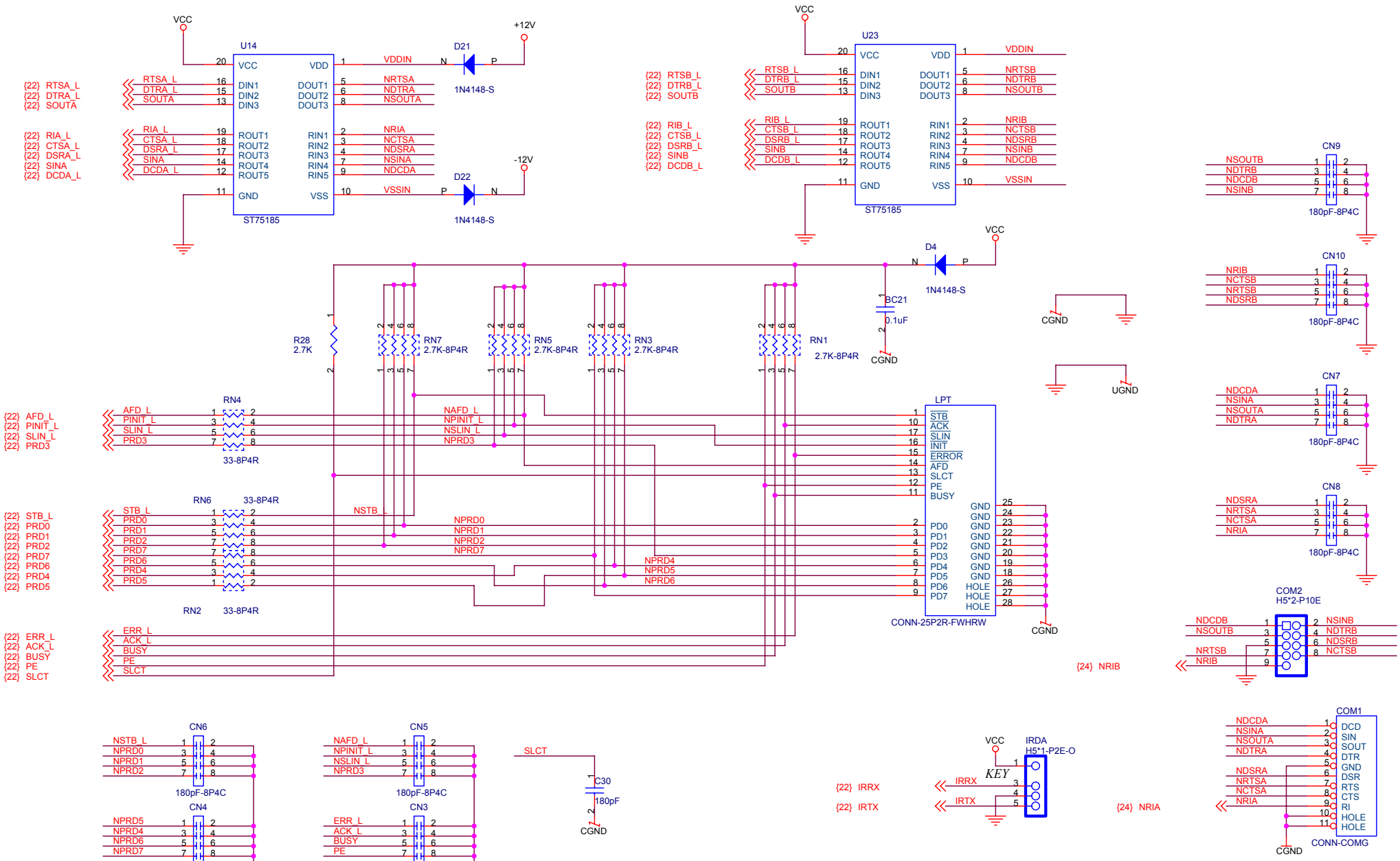
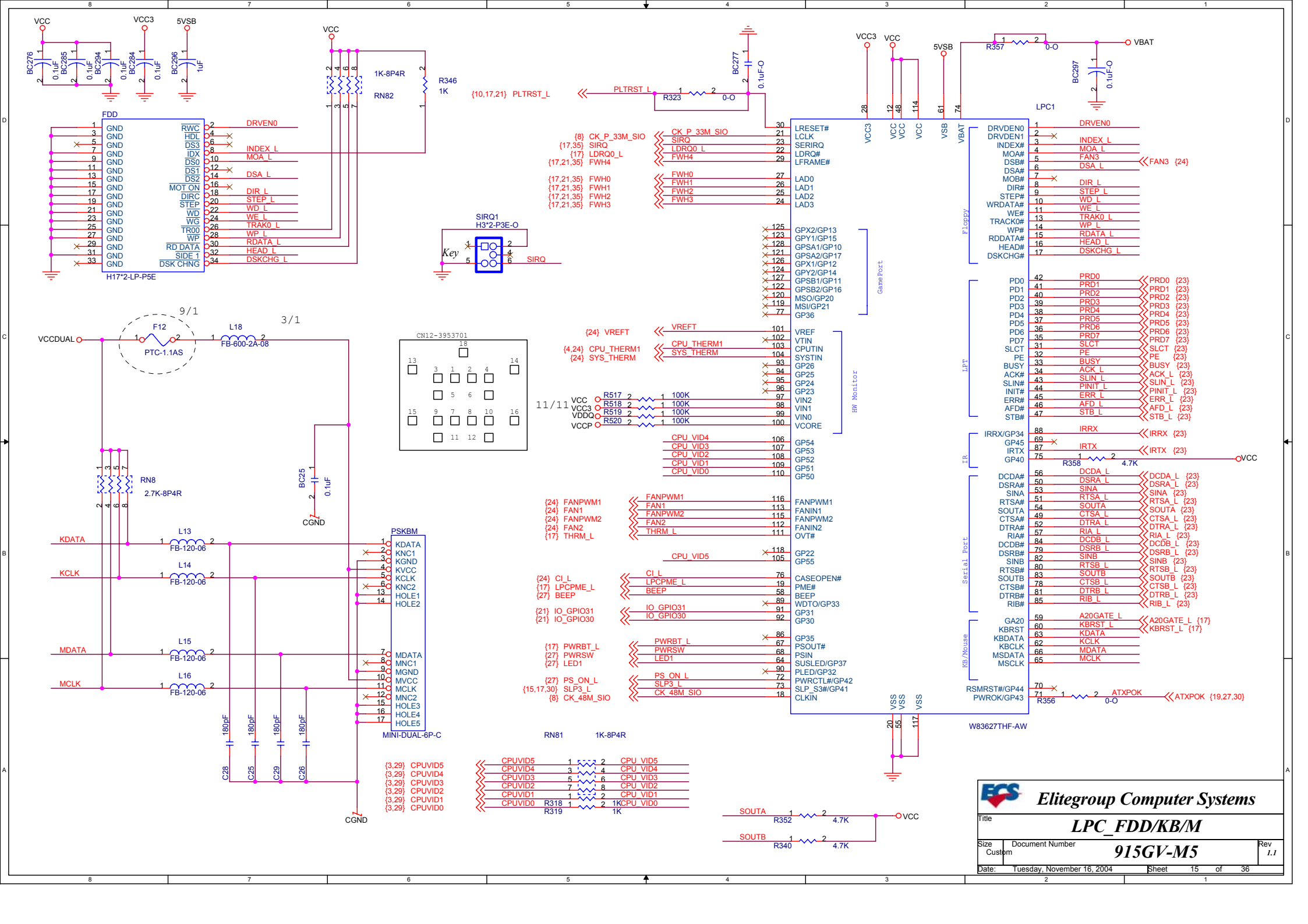


Elitegroup Computer Systems		
Title: I/O Ports		
Size: Custom	Document Number: 915GV-M5	Rev: 1.1
Date: Tuesday, November 16, 2004	Sheet 14 of 36	


VCC
VCC3
5VSB
BC276 0.1uF
BC285 0.1uF
BC294 0.1uF
BC284 0.1uF
BC284 0.1uF
BC296 1uF
1K-8P4R
RN82
R346 1K
FDD
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
SIRQ1
H3*2-P3E-O
Key
SIRQ
{10,17,21} PLTRST_L
PLTRST_L
R323 0-O
BC277 0.1uF-O
R357 0-O
VBAT
BC297 0.1uF-O
LPC1
W83627THF-AW
LRESET#
LCLK
SERIRQ
LDRQ#
LFRAME#
LAD0
LAD1
LAD2
LAD3
GPX2/GP13
GPY1/GP15
GPSA1/GP10
GPSA2/GP17
GPX1/GP12
GPY2/GP14
GPSB1/GP11
GPSB2/GP16
MSO/GP20
MSI/GP21
GP36
VREF
VTIN
CPUTIN
SYSTIN
GP26
GP25
GP24
GP23
VIN2
VIN1
VIN0
VCORE
GP54
GP53
GP52
GP51
GP50
FANPWM1
FANIN1
FANPWM2
FANIN2
OVT#
GP22
GP55
CASEOPEN#
PME#
BEEP
WDTO/GP33
GP31
GP30
GP35
PSOUT#
PSIN
SUSLED/GP37
PLED/GP32
PWRCTL#/GP42
SLP_S3#/GP41
CLKIN
RSMRST#/GP44
PWROK/GP43
Floppy
GamePort
HW Monitor
LPT
IR
Serial Port
PS/Mouse
R356 0-O
ATXPOK
ATXPOK {19,27,30}
9/1
3/1
F12
PTC-1.1AS
L18
FB-600-2A-08
VCCDUAL
CN12-3953701
R517 100K
R518 100K
R519 100K
R520 100K
11/11
VCC
VCC3
VDDQ
VCCP
RN8
2.7K-8P4R
BC25 0.1uF
CGND
PSKBM
MINI-DUAL-6P-C
KDATA
KCLK
MDATA
MCLK
L13 FB-120-06
L14 FB-120-06
L15 FB-120-06
L16 FB-120-06
180pF
C28
C25
C29
C26
{3,29} CPUVID5
{3,29} CPUVID4
{3,29} CPUVID3
{3,29} CPUVID2
{3,29} CPUVID1
{3,29} CPUVID0
RN81 1K-8P4R
R318 1K
R319 1K
SOUTA
SOUTB
R352 4.7K
R340 4.7K
R358 4.7K
Elitegroup Computer Systems
Title
LPC_FDD/KB/M
Size Custom
Document Number
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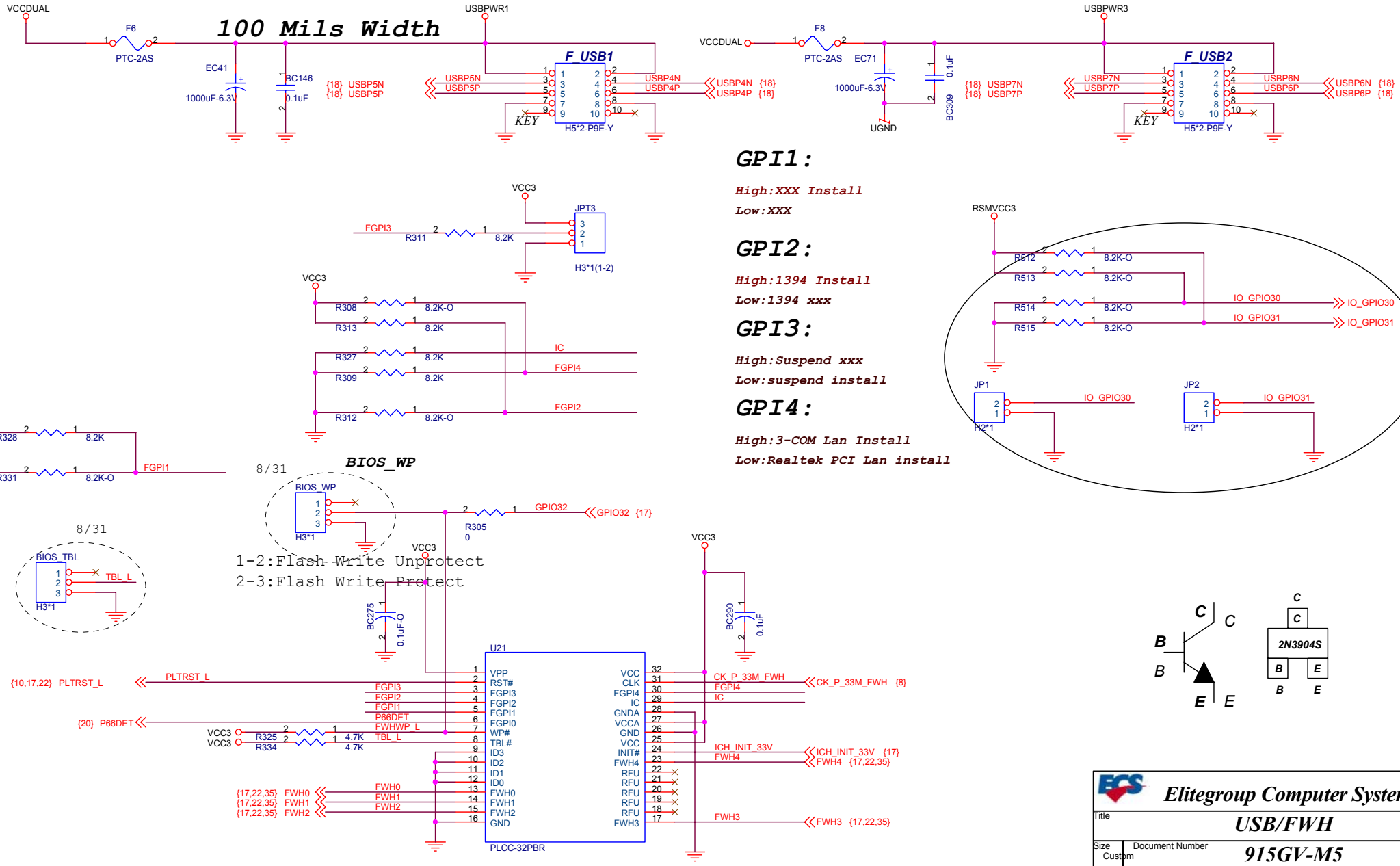
USB PORT INTERFACE



Elitegroup Computer Systems	
Title	USB/FWH
Size: Custom	Document Number: 915GV-M5
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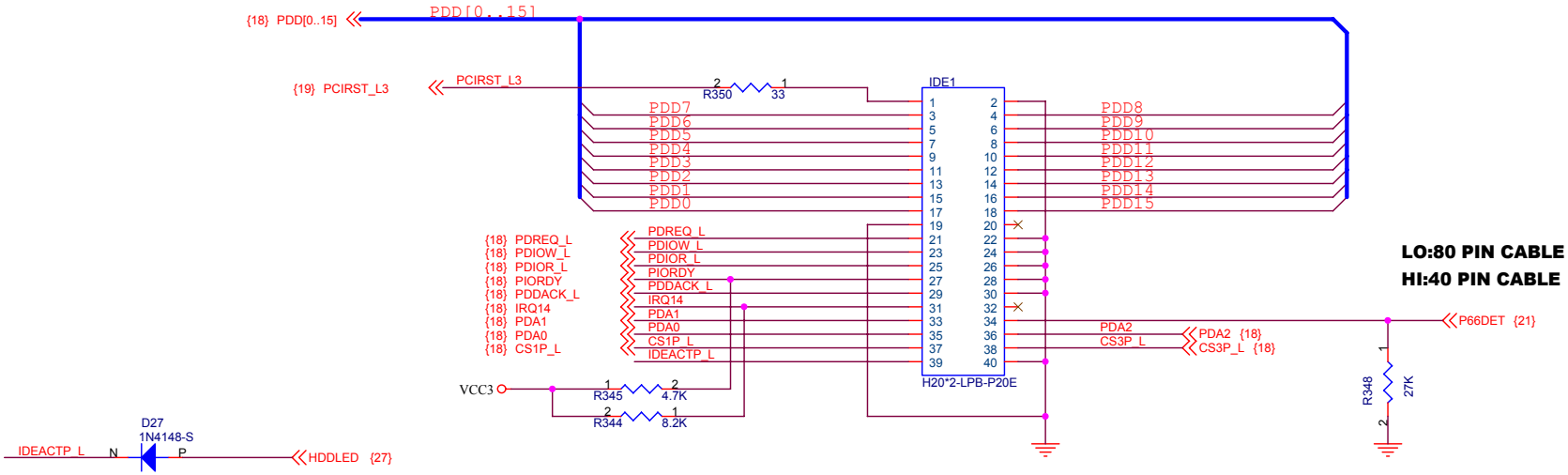
Date: Tuesday, November 16, 2004	Sheet 16 of 36



MAX TRACE LENGTH IS 8"

DATA LINES SHOULD BE MATCHED TO STROBES (XDIOR_L , XIORDY_L) WITHIN +/- 250 MIL, STROBES SHOULD BE MATCHED TO THEIR COMPLEMENT WITHIN +/- 10MIL.

Elitegroup Computer Systems		
Title: IDE Connector		
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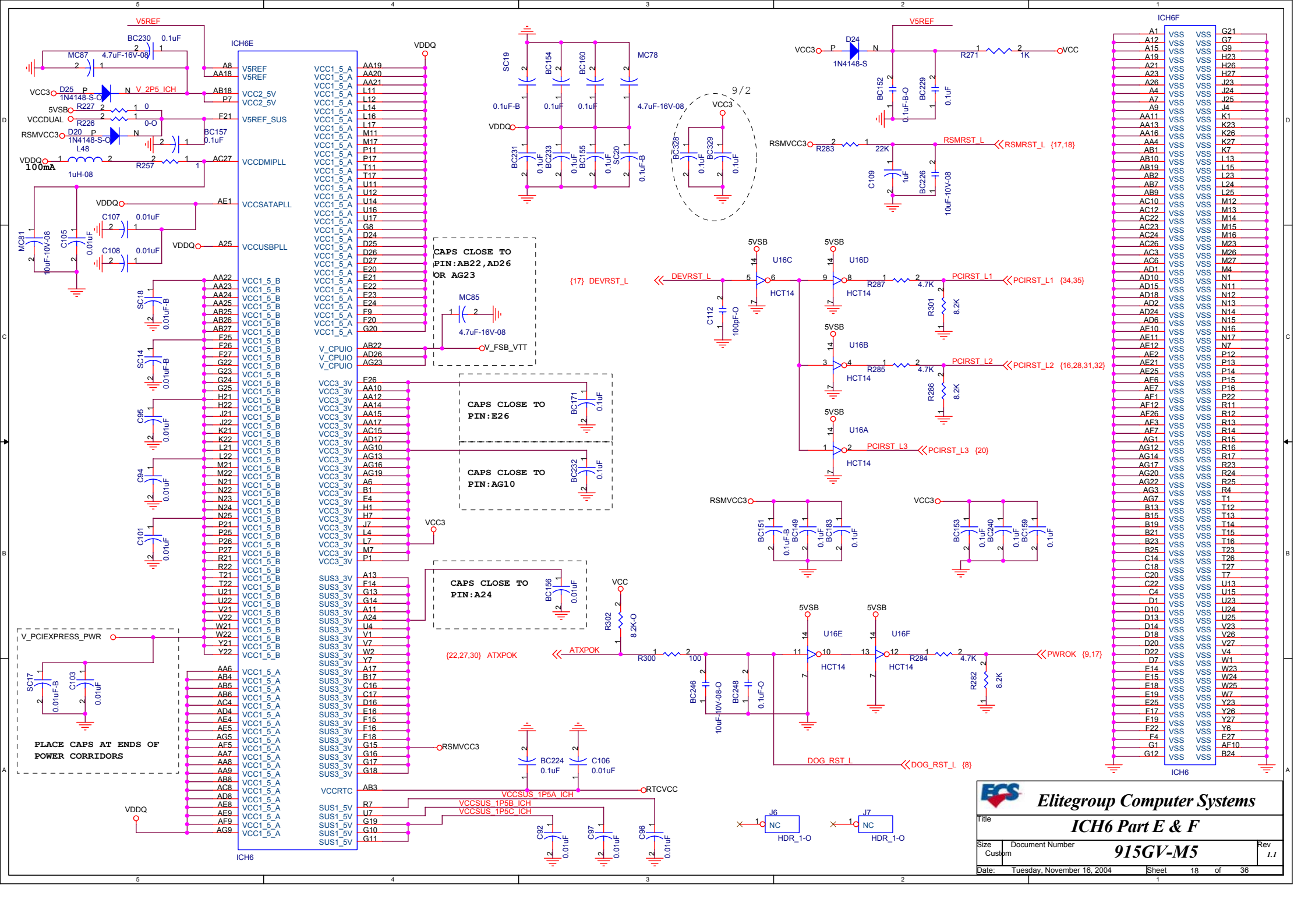
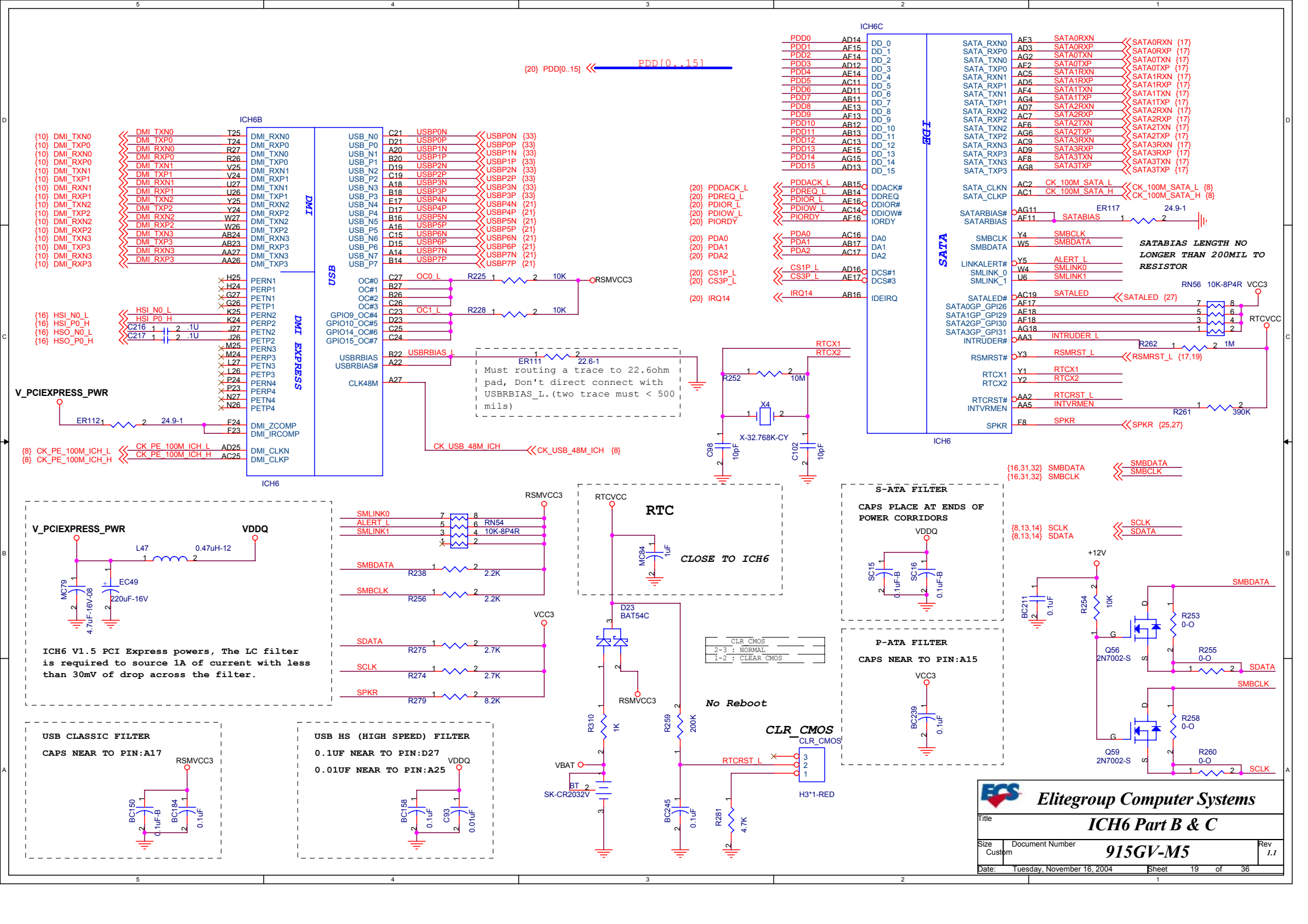
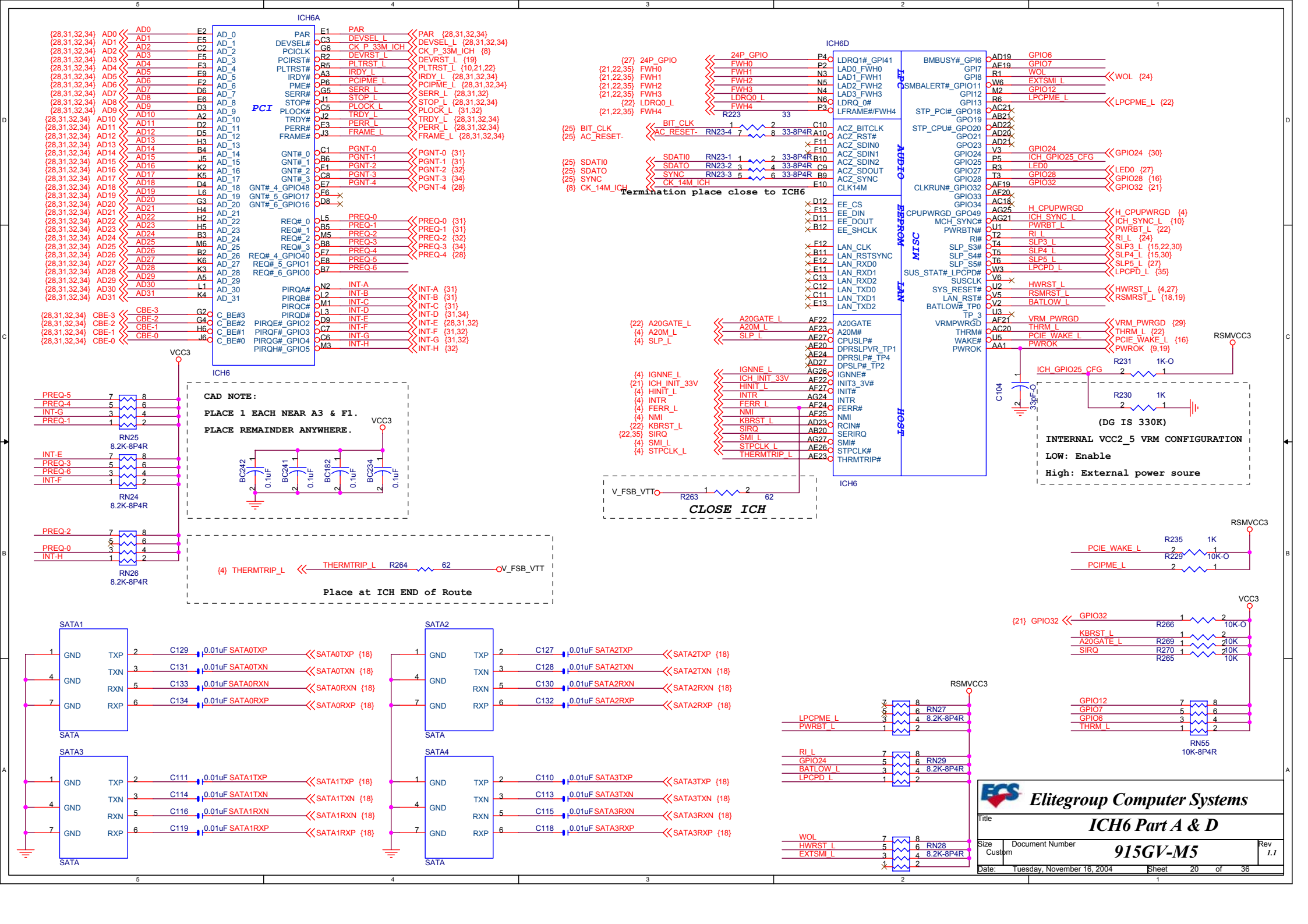

ICH6E
ICH6
ICH6F
V5REF
VDDQ
VCC3
VCC
5VSB
V_PCIEXPRESS_PWR
V_FSB_VTT
RSMVCC3
RTCVCC
VCCSUS_1P5A_ICH
VCCSUS_1P5B_ICH
VCCSUS_1P5C_ICH
CAPS CLOSE TO PIN:AB22,AD26 OR AG23
CAPS CLOSE TO PIN:E26
CAPS CLOSE TO PIN:AG10
CAPS CLOSE TO PIN:A24
PLACE CAPS AT ENDS OF POWER CORRIDORS
DEVRST_L
ATXPOK
PCIRST_L1
PCIRST_L2
PCIRST_L3
PWROK
DOG_RST_L
RSMRST_L
HCT14
Elitegroup Computer Systems
ICH6 Part E & F
915GV-M5
Tuesday, November 16, 2004


ICH6B
ICH6C
ICH6
DMI
DMI EXPRESS
USB
IDE
SATA
V_PCIEXPRESS_PWR
VDDQ
RSMVCC3
VCC3
RTCVCC
+12V
RTC
CLOSE TO ICH6
ICH6 V1.5 PCI Express powers, The LC filter is required to source 1A of current with less than 30mV of drop across the filter.
Must routing a trace to 22.6ohm pad, Don't direct connect with USBRBIAS_L.(two trace must < 500 mils)
SATABIAS LENGTH NO LONGER THAN 200MIL TO RESISTOR
S-ATA FILTER
CAPS PLACE AT ENDS OF POWER CORRIDORS
P-ATA FILTER
CAPS NEAR TO PIN:A15
USB CLASSIC FILTER
CAPS NEAR TO PIN:A17
USB HS (HIGH SPEED) FILTER
0.1UF NEAR TO PIN:D27
0.01UF NEAR TO PIN:A25
No Reboot
CLR_CMOS
2-3 : NORMAL
1-2 : CLEAR CMOS
Elitegroup Computer Systems
ICH6 Part B & C
915GV-M5
Tuesday, November 16, 2004



Elitegroup Computer Systems

Title: ICH6 Part A & D

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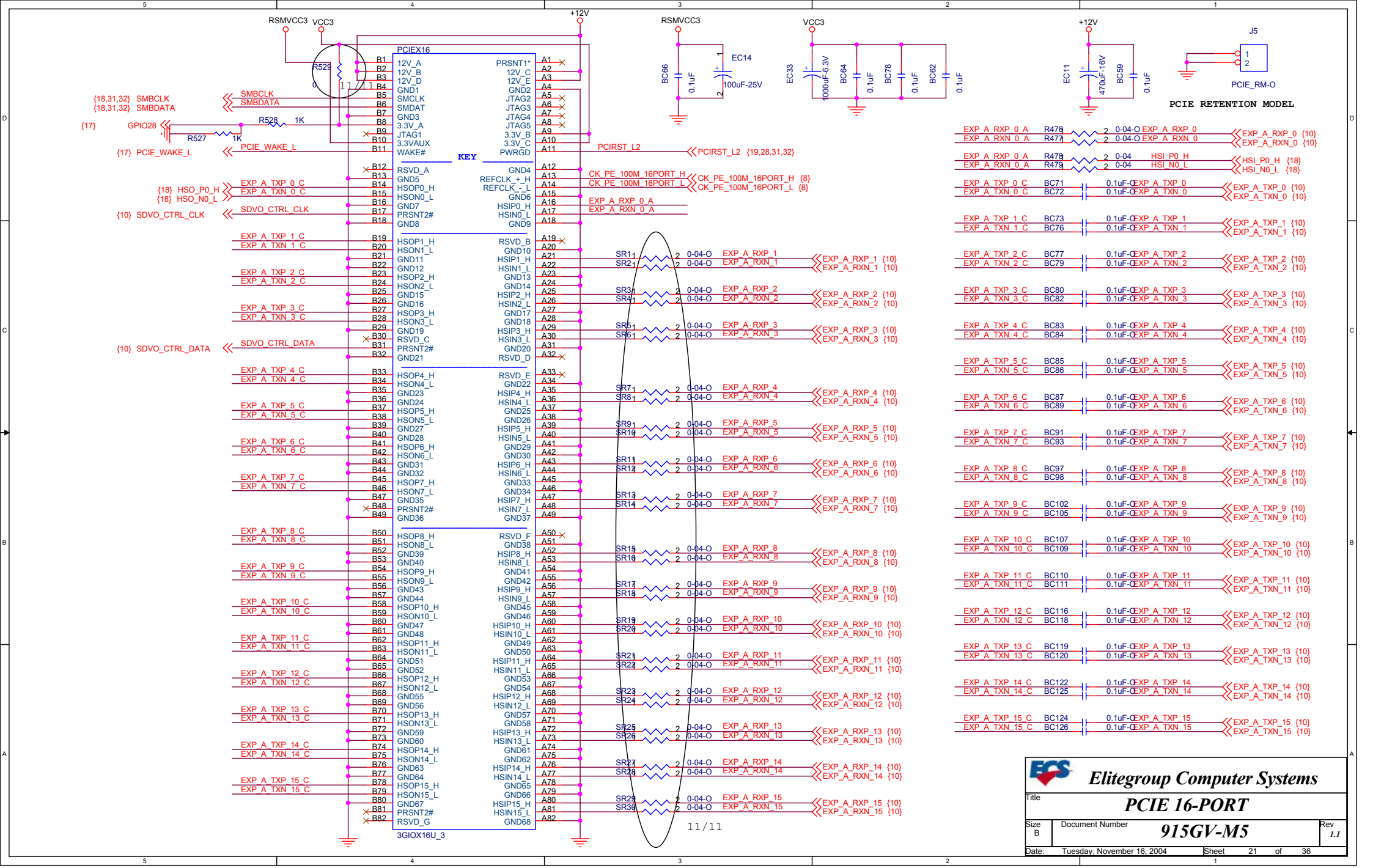

Elitegroup Computer Systems	
Title	PCIE 16-PORT
Size B	Document Number 915GV-M5
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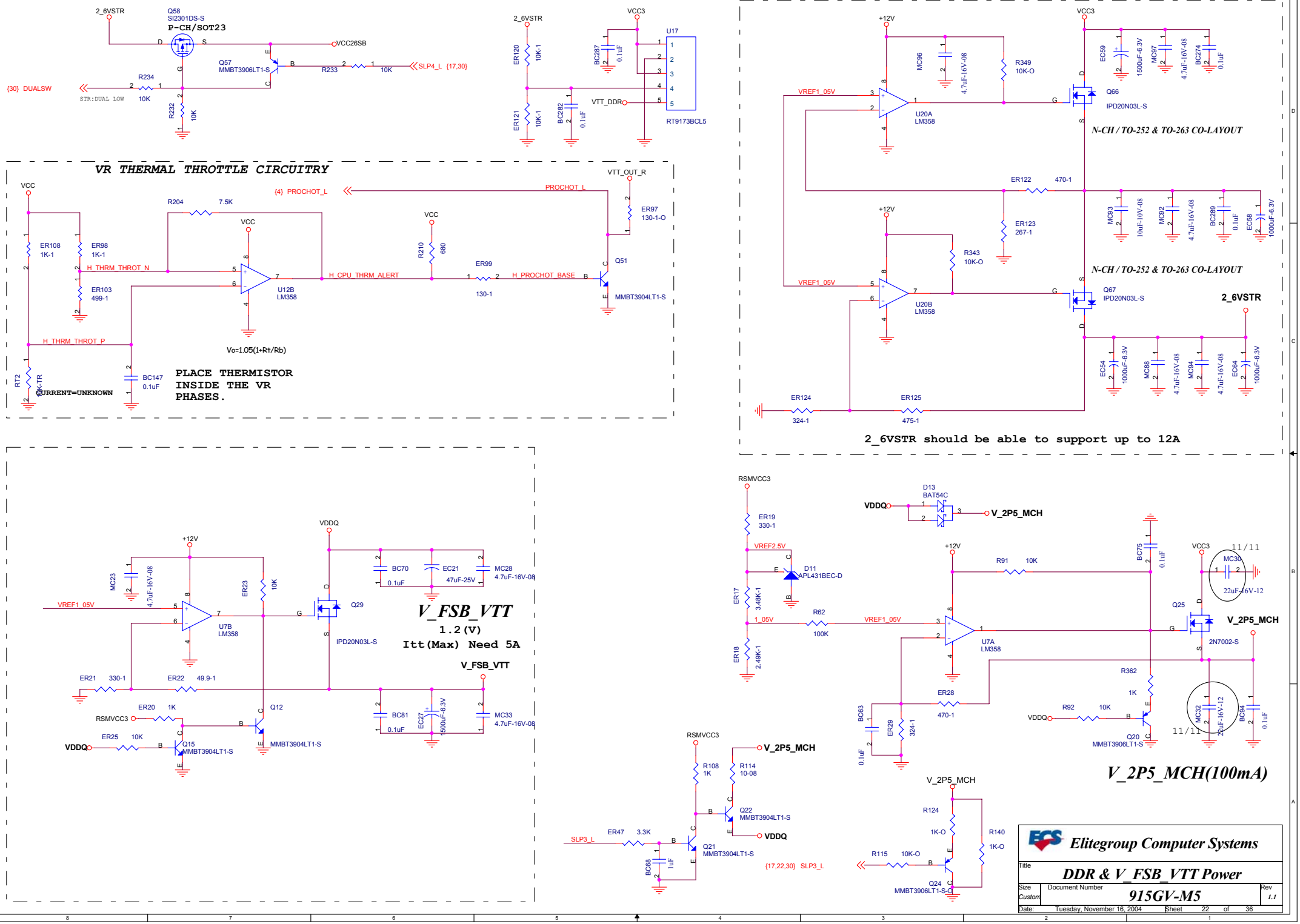
2_6VSTR
Q58
SI2301DS-S
P-CH/SOT23
VCC26SB
Q57
MMBT3906LT1-S
R234
10K
R233
10K
SLP4_L {17,30}
{30} DUALSW
STR:DUAL LOW
R232
10K
ER120
10K-1
ER121
10K-1
BC287
0.1uF
BC282
0.1uF
VTT_DDR
U17
RT9173BCL5
VR THERMAL THROTTLE CIRCUITRY
VCC
ER108
1K-1
ER98
1K-1
H_THRM_THROT_N
ER103
499-1
R204
7.5K
U12B
LM358
{4} PROCHOT_L
PROCHOT_L
VTT_OUT_R
ER97
130-1-O
R210
680
ER99
130-1
H_CPU_THRM_ALERT
H_PROCHOT_BASE
Q51
MMBT3904LT1-S
H_THRM_THROT_P
RT2
10K-TR
CURRENT=UNKNOWN
BC147
0.1uF
Vo=1.05(1+Rt/Rb)
PLACE THERMISTOR
INSIDE THE VR
PHASES.
+12V
MC96
4.7uF-16V-08
R349
10K-O
U20A
LM358
Q66
IPD20N03L-S
N-CH / TO-252 & TO-263 CO-LAYOUT
ER122
470-1
ER123
267-1
R343
10K-O
U20B
LM358
Q67
IPD20N03L-S
2_6VSTR
ER124
324-1
ER125
475-1
2_6VSTR should be able to support up to 12A
EC59
1500uF-6.3V
MC97
4.7uF-16V-08
BC274
0.1uF
MC93
10uF-10V-08
MC92
4.7uF-16V-08
BC289
0.1uF
EC58
1000uF-6.3V
EC54
1000uF-6.3V
MC88
4.7uF-16V-08
MC94
4.7uF-16V-08
EC64
1000uF-6.3V
VDDQ
MC23
4.7uF-16V-08
ER23
10K
U7B
LM358
Q29
IPD20N03L-S
BC70
0.1uF
EC21
47uF-25V
MC28
4.7uF-16V-08
V_FSB_VTT
1.2(V)
Itt(Max) Need 5A
ER21
330-1
ER22
49.9-1
ER20
1K
Q12
MMBT3904LT1-S
ER25
10K
Q15
MMBT3904LT1-S
BC81
0.1uF
EC27
1500uF-6.3V
MC33
4.7uF-16V-08
RSMVCC3
D13
BAT54C
V_2P5_MCH
ER19
330-1
VREF2.5V
D11
APL431BEC-D
ER17
3.48K-1
ER18
2.49K-1
1_05V
R62
100K
R91
10K
U7A
LM358
BC75
0.1uF
MC30
22uF-16V-12
Q25
2N7002-S
R362
1K
ER28
470-1
BC63
0.1uF
ER29
324-1
R92
10K
Q20
MMBT3906LT1-S
MC32
22uF-16V-12
BC34
0.1uF
V_2P5_MCH(100mA)
R108
1K
R114
10-08
Q22
MMBT3904LT1-S
ER47
3.3K
Q21
MMBT3904LT1-S
BC68
1uF
{17,22,30} SLP3_L
R124
1K-O
R140
1K-O
R115
10K-O
Q24
MMBT3906LT1-S-O
Elitegroup Computer Systems
DDR & V_FSB_VTT Power
915GV-M5
Size
Custom
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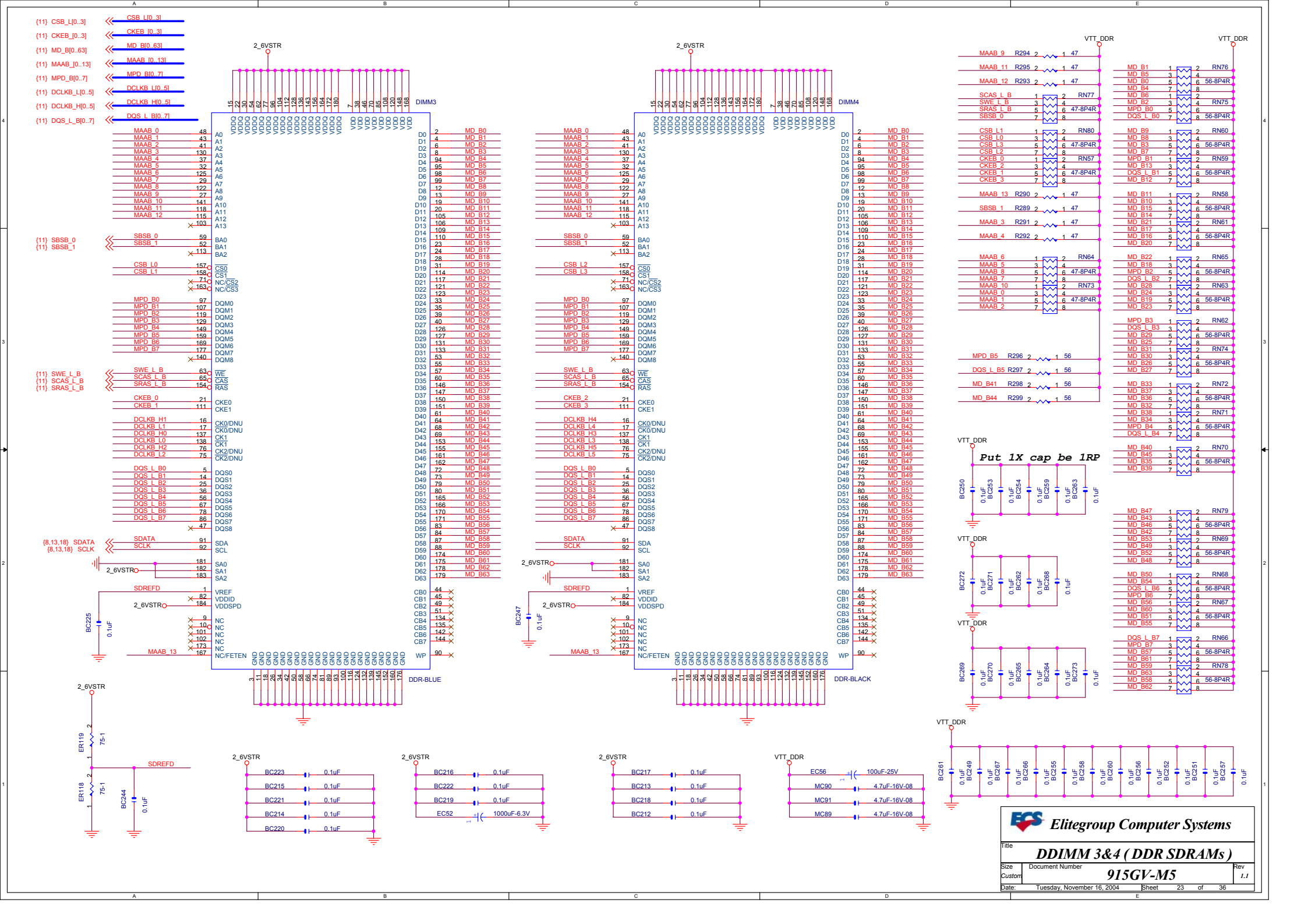
{11} CSB_L[0..3]
CSB_L[0..3]
{11} CKEB_[0..3]
CKEB_[0..3]
{11} MD_B[0..63]
MD_B[0..63]
{11} MAAB_[0..13]
MAAB_[0..13]
{11} MPD_B[0..7]
MPD_B[0..7]
{11} DCLKB_L[0..5]
DCLKB_L[0..5]
{11} DCLKB_H[0..5]
DCLKB_H[0..5]
{11} DQS_L_B[0..7]
DQS_L_B[0..7]
2_6VSTR
DIMM3
DIMM4
DDR-BLUE
DDR-BLACK
VTT_DDR
Put 1X cap be 1RP
Elitegroup Computer Systems
DDIMM 3&4 (DDR SDRAMs)
915GV-M5
Tuesday, November 16, 2004
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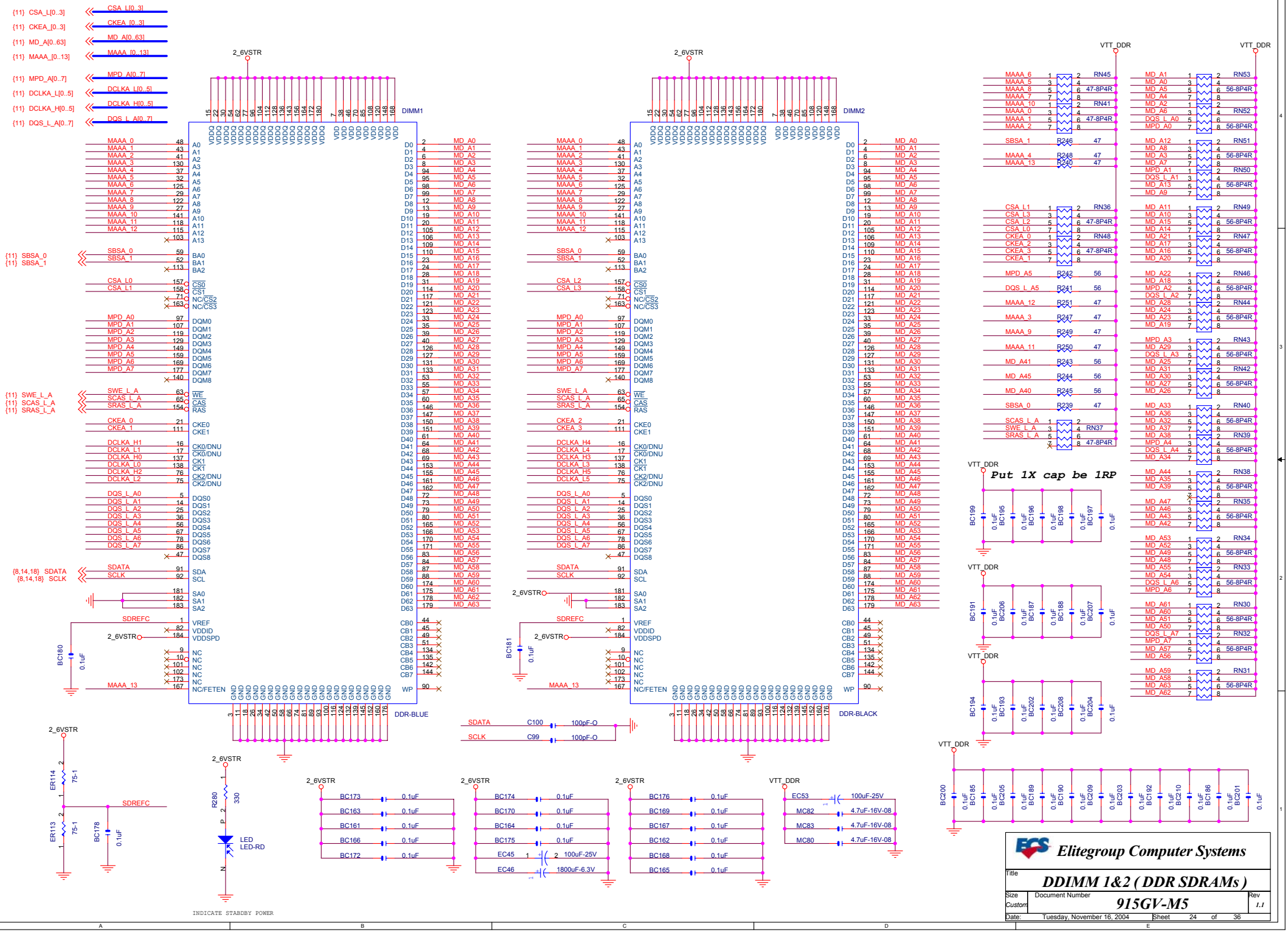

Elitegroup Computer Systems

Title: DDIMM 1&2 (DDR SDRAMs)

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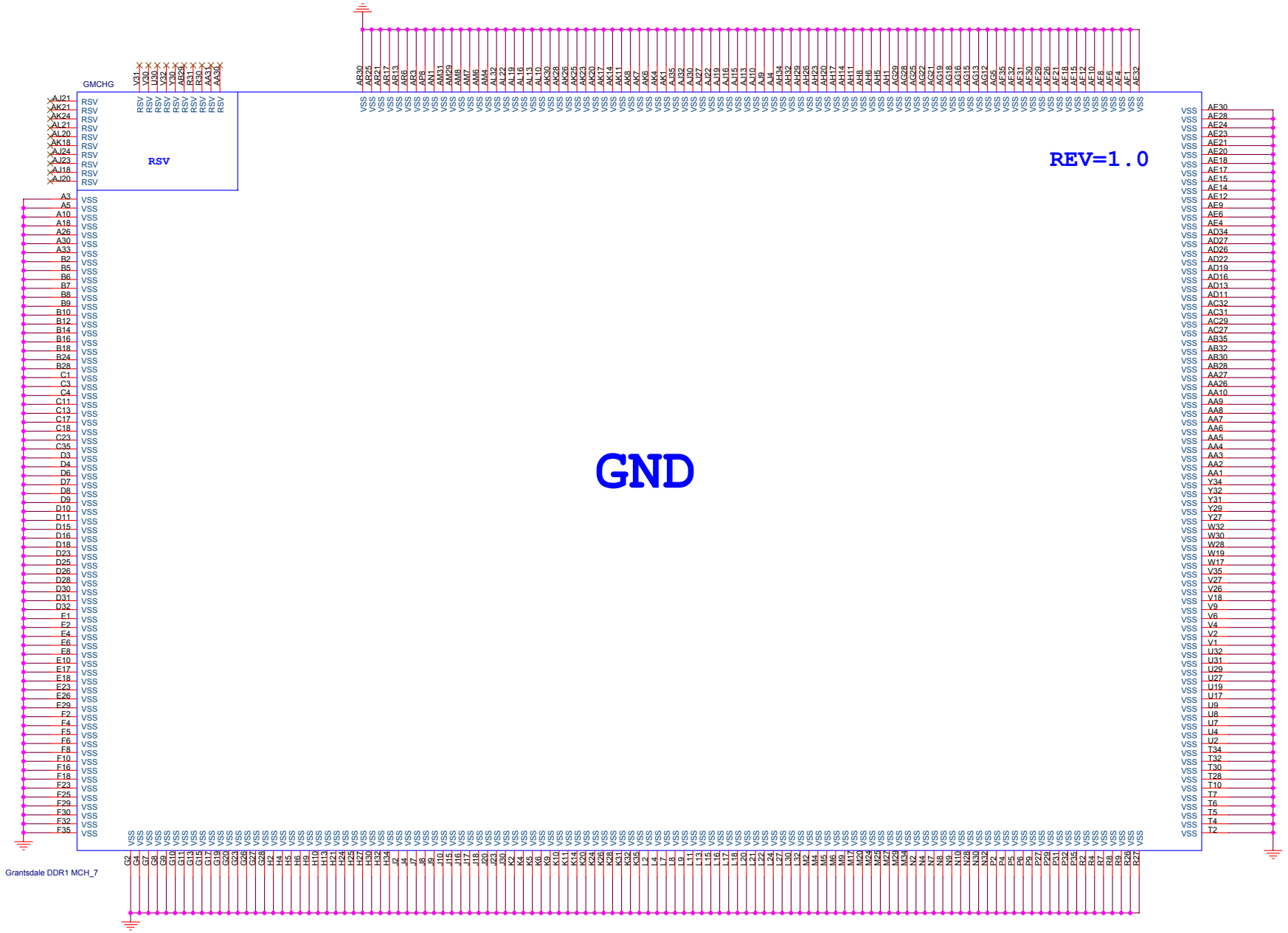

Elitegroup Computer Systems

Title: Schematic Change History

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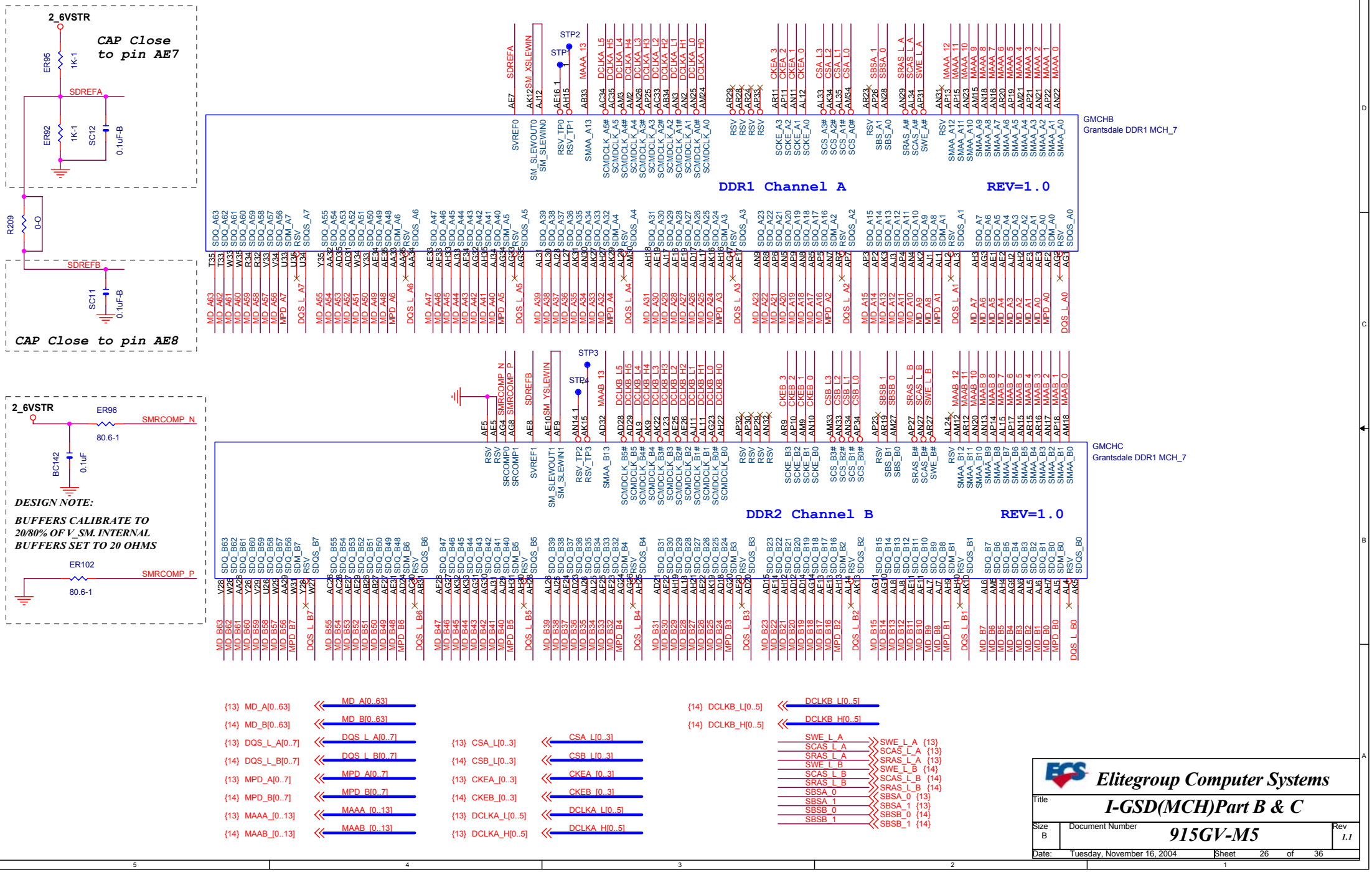
2_6VSTR
CAP Close to pin AE7
ER95
1K-1
SDREFA
ER92
1K-1
SC12
0.1uF-B
R209
0-O
SDREFB
SC11
0.1uF-B
CAP Close to pin AE8
2_6VSTR
ER96
SMRCOMP_N
80.6-1
BC142
0.1uF
DESIGN NOTE:
BUFFERS CALIBRATE TO 20/80% OF V_SM. INTERNAL
BUFFERS SET TO 20 OHMS
ER102
SMRCOMP_P
80.6-1
STP1
STP2
STP3
STP4
GMCHB
Grantsdale DDR1 MCH_7
DDR1 Channel A
REV=1.0
GMCHC
Grantsdale DDR1 MCH_7
DDR2 Channel B
REV=1.0
{13} MD_A[0..63]
{14} MD_B[0..63]
{13} DQS_L_A[0..7]
{14} DQS_L_B[0..7]
{13} MPD_A[0..7]
{14} MPD_B[0..7]
{13} MAAA_[0..13]
{14} MAAB_[0..13]
{13} CSA_L[0..3]
{14} CSB_L[0..3]
{13} CKEA_[0..3]
{13} CKEB_[0..3]
{14} DCLKA_L[0..5]
{13} DCLKA_H[0..5]
{14} DCLKB_L[0..5]
{14} DCLKB_H[0..5]
SWE_L_A {13}
SCAS_L_A {13}
SRAS_L_A {13}
SWE_L_B {14}
SCAS_L_B {14}
SRAS_L_B {14}
SBSA_0 {13}
SBSA_1 {13}
SBSB_0 {14}
SBSB_1 {14}
Elitegroup Computer Systems
Title
I-GSD(MCH)Part B & C
Size B
Document Number
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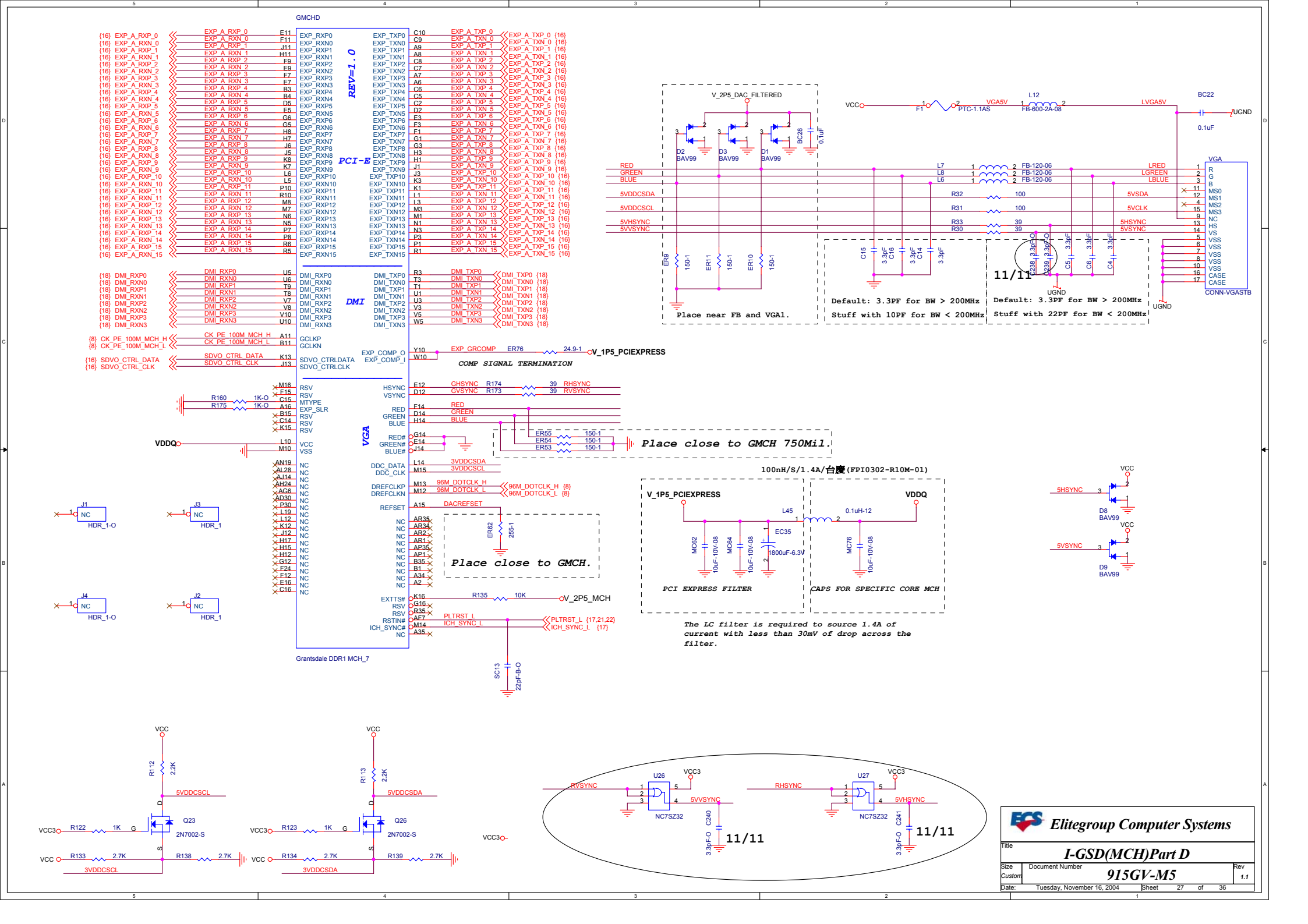

Elitegroup Computer Systems

Title: I-GSD(MCH)Part D

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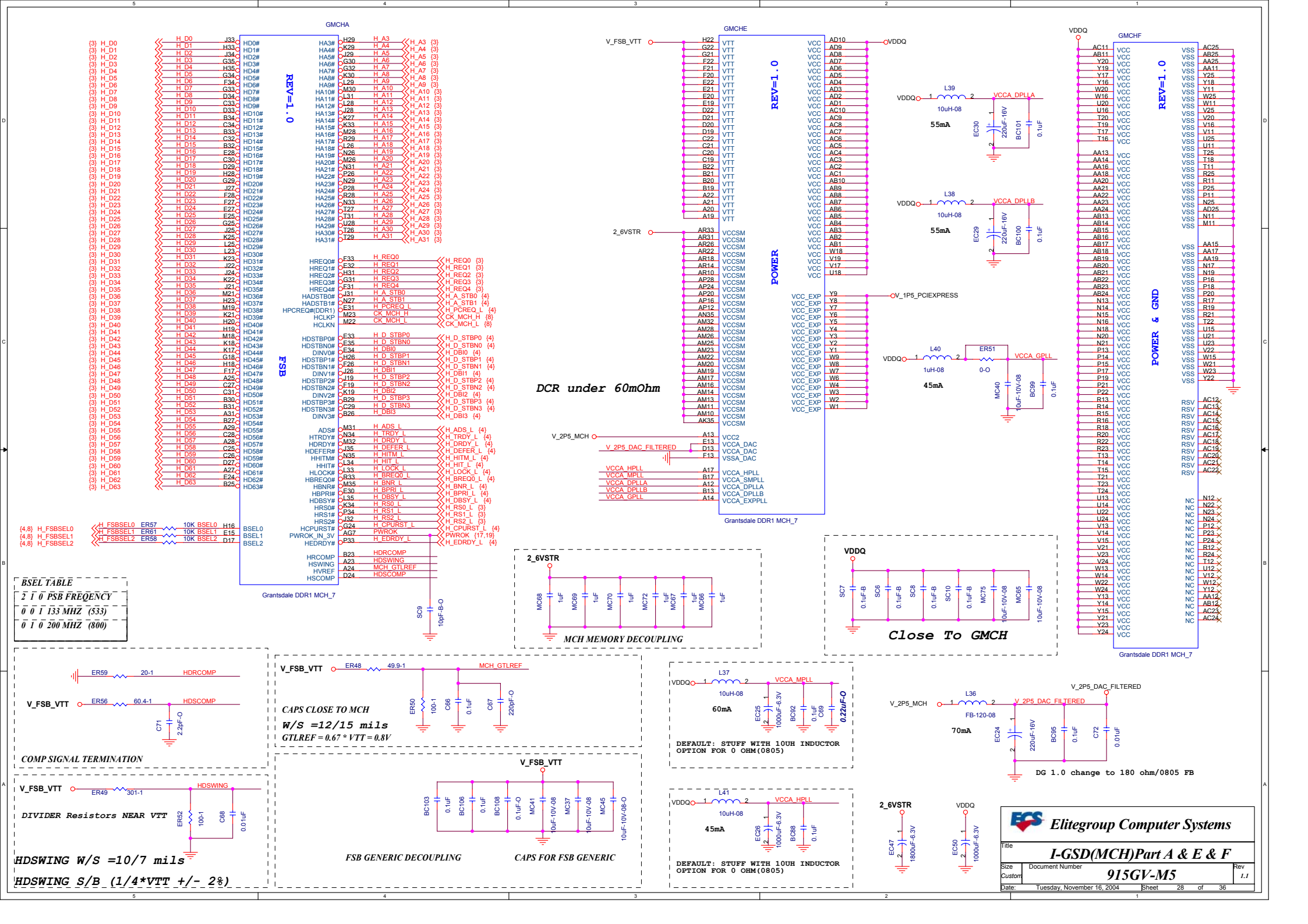
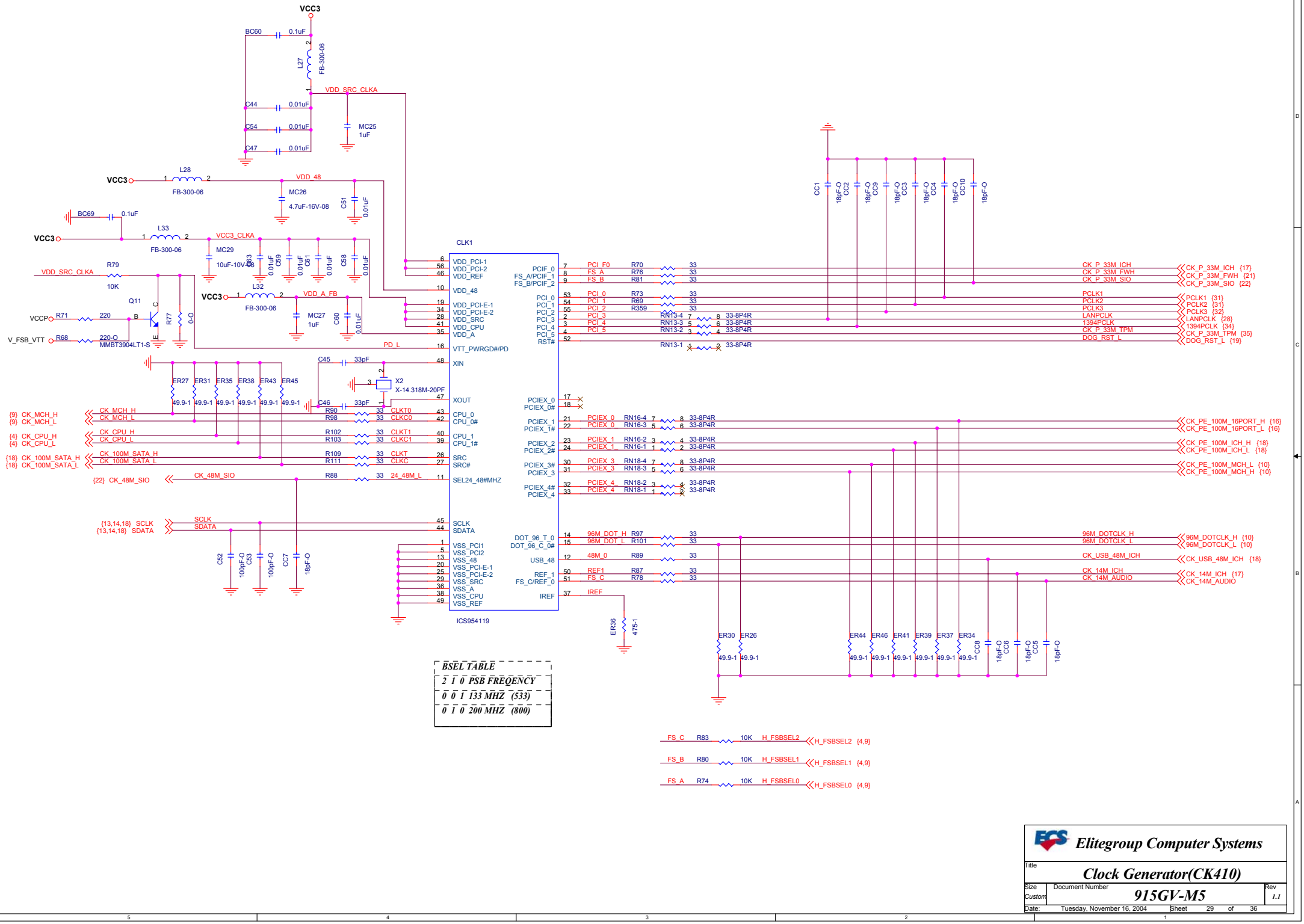

GMCHA
REV=1.0
FSB
H_D0 J33
H_D1 H33
H_D2 J34
H_D3 G35
H_D4 H35
H_D5 G34
H_D6 F34
H_D7 G33
H_D8 D34
H_D9 C33
H_D10 D33
H_D11 B34
H_D12 C34
H_D13 B33
H_D14 C32
H_D15 B32
H_D16 E28
H_D17 C30
H_D18 D29
H_D19 H28
H_D20 G29
H_D21 J27
H_D22 F28
H_D23 E27
H_D24 E27
H_D25 E25
H_D26 G25
H_D27 J25
H_D28 K25
H_D29 L25
H_D30 L23
H_D31 K23
H_D32 J22
H_D33 J24
H_D34 K22
H_D35 J21
H_D36 M21
H_D37 H23
H_D38 M19
H_D39 K21
H_D40 H20
H_D41 H19
H_D42 M18
H_D43 K18
H_D44 K17
H_D45 G18
H_D46 H18
H_D47 F17
H_D48 A25
H_D49 C27
H_D50 C31
H_D51 B30
H_D52 B31
H_D53 A31
H_D54 B27
H_D55 A29
H_D56 C28
H_D57 A28
H_D58 C25
H_D59 C26
H_D60 D27
H_D61 A27
H_D62 E24
H_D63 B25
HA3# H29 H_A3
HA4# K29 H_A4
HA5# J29 H_A5
HA6# G30 H_A6
HA7# G32 H_A7
HA8# K30 H_A8
HA9# L29 H_A9
HA10# M30 H_A10
HA11# L31 H_A11
HA12# L28 H_A12
HA13# J28 H_A13
HA14# K27 H_A14
HA15# K33 H_A15
HA16# M28 H_A16
HA17# R29 H_A17
HA18# L26 H_A18
HA19# N26 H_A19
HA20# M26 H_A20
HA21# N31 H_A21
HA22# P26 H_A22
HA23# N29 H_A23
HA24# P28 H_A24
HA25# R28 H_A25
HA26# N33 H_A26
HA27# T27 H_A27
HA28# T31 H_A28
HA29# U28 H_A29
HA30# T26 H_A30
HA31# T29 H_A31
HREQ0# F33 H_REQ0
HREQ1# E32 H_REQ1
HREQ2# H31 H_REQ2
HREQ3# G31 H_REQ3
HREQ4# F31 H_REQ4
HADSTB0# J31 H_A_STB0
HADSTB1# N27 H_A_STB1
HPCREQ#(DDR1) E31 H_PCREQ_L
HCLKP M23 CK_MCH_H
HCLKN M22 CK_MCH_L
HDSTBP0# E33 H_D_STBP0
HDSTBN0# E35 H_D_STBN0
DINV0# E34 H_DBI0
HDSTBP1# H26 H_D_STBP1
HDSTBN1# F26 H_D_STBN1
DINV1# J26 H_DBI1
HDSTBP2# J19 H_D_STBP2
HDSTBN2# F19 H_D_STBN2
DINV2# K19 H_DBI2
HDSTBP3# B29 H_D_STBP3
HDSTBN3# C29 H_D_STBN3
DINV3# B26 H_DBI3
ADS# M31 H_ADS_L
HTRDY# N34 H_TRDY_L
HDRDY# M32 H_DRDY_L
HDEFER# J35 H_DEFER_L
HHITM# N35 H_HITM_L
HHIT# L34 H_HIT_L
HLOCK# L33 H_LOCK_L
HBREQ0# R33 H_BREQ0_L
HBNR# M35 H_BNR_L
HBPRI# E30 H_BPRI_L
HDBSY# L35 H_DBSY_L
HRS0# K34 H_RS0_L
HRS1# P34 H_RS1_L
HRS2# J32 H_RS2_L
HCPURST# G24 H_CPURST_L
PWROK_IN_3V AG7 PWROK
HEDRDY# P33 H_EDRDY_L
HRCOMP B23 HDRCOMP
HSWING A23 HDSWING
HVREF A24 MCH_GTLREF
HSCOMP D24 HDSCOMP
{4,8} H_FSBSEL0 H_FSBSEL0 ER57 10K BSEL0 H16 BSEL0
{4,8} H_FSBSEL1 H_FSBSEL1 ER61 10K BSEL1 E15 BSEL1
{4,8} H_FSBSEL2 H_FSBSEL2 ER58 10K BSEL2 D17 BSEL2
SC9 10pF-B-O
Grantsdale DDR1 MCH_7
BSEL TABLE
2 1 0 PSB FREQENCY
0 0 1 133 MHZ (533)
0 1 0 200 MHZ (800)
GMCHE
REV=1.0
POWER
V_FSB_VTT
VTT H22 G22 G21 F22 F21 F20 E22 E21 E20 E19 D22 D21 D20 D19 C22 C21 C20 C19 B22 B21 B20 B19 A22 A21 A20 A19
2_6VSTR
VCCSM AR33 AR31 AR26 AR22 AR18 AR14 AR10 AP28 AP24 AP20 AP16 AP12 AN35 AM32 AM28 AM26 AM25 AM23 AM22 AM20 AM19 AM17 AM16 AM14 AM13 AM11 AM10 AK35
V_2P5_MCH
VCC2 A13
V_2P5_DAC_FILTERED
VCCA_DAC E13 D13
VSSA_DAC F13
VCCA_HPLL A17
VCCA_MPLL B17
VCCA_DPLLA A12
VCCA_DPLLB B13
VCCA_GPLL A14
VCCA_SMPLL
VCCA_DPLLA
VCCA_DPLLB
VCCA_EXPPLL
VCC AD10 AD9 AD8 AD7 AD6 AD5 AD4 AD3 AD2 AD1 AC10 AC9 AC8 AC7 AC6 AC5 AC4 AC3 AC2 AC1 AB10 AB9 AB8 AB7 AB6 AB5 AB4 AB3 AB2 AB1 W18 V19 V17 U18
VCC_EXP Y9 Y8 Y7 Y6 Y5 Y4 Y3 Y2 Y1 W9 W8 W7 W6 W4 W3 W2 W1
V_1P5_PCIEXPRESS
DCR under 60mOhm
Grantsdale DDR1 MCH_7
VDDQ
L39 10uH-08 55mA VCCA_DPLLA EC30 220uF-16V BC101 0.1uF
L38 10uH-08 55mA VCCA_DPLLB EC29 220uF-16V BC100 0.1uF
L40 1uH-08 45mA ER51 0-O VCCA_GPLL MC40 10uF-10V-08 BC99 0.1uF
GMCHF
POWER & GND
REV=1.0
VSS AC25 AB25 AA25 AA11 Y25 Y18 Y11 W25 W11 V25 V20 V16 V11 U25 U11 T25 T18 T11 R25 R11 P25 P11 N25 AD25 N11 M11 AA15 AA17 AA19 N17 N19 P16 P18 P20 R17 R19 R21 T22 U15 U21 U23 V22 W15 W21 W23 Y22
RSV AC12 AC13 AC14 AC15 AC16 AC17 AC18 AC19 AC20 AC21 AC22
NC N12 N22 N23 N24 P12 P23 P24 R12 R24 T12 U12 V12 W12 Y12 AA12 AB12 AC23 AC24
Grantsdale DDR1 MCH_7
2_6VSTR
MC68 1uF MC69 1uF MC70 1uF MC72 1uF MC67 1uF MC66 1uF
MCH MEMORY DECOUPLING
VDDQ
SC7 0.1uF-B SC6 0.1uF-B SC8 0.1uF-B SC10 0.1uF-B MC75 10uF-10V-08 MC65 10uF-10V-08
Close To GMCH
ER59 20-1 HDRCOMP
V_FSB_VTT ER56 60.4-1 HDSCOMP
C71 2.2pF-O
COMP SIGNAL TERMINATION
V_FSB_VTT ER48 49.9-1 MCH_GTLREF
ER50 100-1 C66 0.1uF C67 220pF-O
CAPS CLOSE TO MCH
W/S =12/15 mils
GTLREF = 0.67 * VTT = 0.8V
V_FSB_VTT ER49 301-1 HDSWING
ER52 100-1 C68 0.01uF
DIVIDER Resistors NEAR VTT
HDSWING W/S =10/7 mils
HDSWING S/B (1/4*VTT +/- 2%)
V_FSB_VTT
BC103 0.1uF BC106 0.1uF BC108 0.1uF MC41 0.1uF-O MC37 10uF-10V-08 MC45 10uF-10V-08 10uF-10V-08-O
FSB GENERIC DECOUPLING
CAPS FOR FSB GENERIC
L37 10uH-08 60mA VCCA_MPLL EC25 1000uF-6.3V BC92 0.1uF C69 0.22uF-O
DEFAULT: STUFF WITH 10UH INDUCTOR OPTION FOR 0 OHM(0805)
L41 10uH-08 45mA VCCA_HPLL EC26 1000uF-6.3V BC88 0.1uF
DEFAULT: STUFF WITH 10UH INDUCTOR OPTION FOR 0 OHM(0805)
V_2P5_DAC_FILTERED
V_2P5_MCH L36 FB-120-08 70mA V_2P5_DAC_FILTERED EC24 220uF-16V BC95 0.1uF C72 0.01uF
DG 1.0 change to 180 ohm/0805 FB
2_6VSTR EC47 1800uF-6.3V
VDDQ EC50 1000uF-6.3V
Elitegroup Computer Systems
Title I-GSD(MCH)Part A & E & F
Size Custom Document Number 915GV-M5 Rev 1.1
Date: Tuesday, November 16, 2004 Sheet 28 of 36


VCC3
BC60 0.1uF
L27 FB-300-06
VDD_SRC_CLKA
C44 0.01uF
C54 0.01uF
C47 0.01uF
MC25 1uF
L28
FB-300-06
VDD_48
MC26 4.7uF-16V-08
C51 0.01uF
BC69 0.1uF
L33
FB-300-06
VCC3_CLKA
MC29 10uF-10V-08
C63 0.01uF
C59 0.01uF
C61 0.01uF
C58 0.01uF
R79 10K
L32
FB-300-06
VDD_A_FB
MC27 1uF
C60 0.01uF
Q11
MMBT3904LT1-S
R71 220
R77 0-O
R68 220-O
VCCP
V_FSB_VTT
PD_L
C45 33pF
X2 X-14.318M-20PF
C46 33pF
ER27 ER31 ER35 ER38 ER43 ER45 49.9-1
CLK1
ICS954119
VDD_PCI-1
VDD_PCI-2
VDD_REF
VDD_48
VDD_PCI-E-1
VDD_PCI-E-2
VDD_SRC
VDD_CPU
VDD_A
VTT_PWRGD#/PD
XIN
XOUT
CPU_0
CPU_0#
CPU_1
CPU_1#
SRC
SRC#
SEL24_48#MHZ
SCLK
SDATA
VSS_PCI1
VSS_PCI2
VSS_48
VSS_PCI-E-1
VSS_PCI-E-2
VSS_SRC
VSS_A
VSS_CPU
VSS_REF
PCIF_0
FS_A/PCIF_1
FS_B/PCIF_2
PCI_0
PCI_1
PCI_2
PCI_3
PCI_4
PCI_5
RST#
PCIEX_0
PCIEX_0#
PCIEX_1
PCIEX_1#
PCIEX_2
PCIEX_2#
PCIEX_3
PCIEX_3#
PCIEX_4
PCIEX_4#
DOT_96_T_0
DOT_96_C_0#
USB_48
REF_1
FS_C/REF_0
IREF
PCI_F0 R70 33
FS_A R76 33
FS_B R81 33
PCI_0 R73 33
PCI_1 R69 33
PCI_2 R359 33
PCI_3 RN13-4 33-8P4R
PCI_4 RN13-3 33-8P4R
PCI_5 RN13-2 33-8P4R
RN13-1 33-8P4R
CK_P_33M_ICH
CK_P_33M_FWH
CK_P_33M_SIO
PCLK1
PCLK2
PCLK3
LANPCLK
1394PCLK
CK_P_33M_TPM
DOG_RST_L
CK_P_33M_ICH {17}
CK_P_33M_FWH {21}
CK_P_33M_SIO {22}
PCLK1 {31}
PCLK2 {31}
PCLK3 {32}
LANPCLK {28}
1394PCLK {34}
CK_P_33M_TPM {35}
DOG_RST_L {19}
CC1 18pF-O
CC2 18pF-O
CC9 18pF-O
CC3 18pF-O
CC4 18pF-O
CC10 18pF-O
PCIEX_0 RN16-4 33-8P4R
PCIEX_0 RN16-3 33-8P4R
PCIEX_1 RN16-2 33-8P4R
PCIEX_1 RN16-1 33-8P4R
PCIEX_3 RN18-4 33-8P4R
PCIEX_3 RN18-3 33-8P4R
PCIEX_4 RN18-2 33-8P4R
PCIEX_4 RN18-1 33-8P4R
CK_PE_100M_16PORT_H {16}
CK_PE_100M_16PORT_L {16}
CK_PE_100M_ICH_H {18}
CK_PE_100M_ICH_L {18}
CK_PE_100M_MCH_L {10}
CK_PE_100M_MCH_H {10}
{9} CK_MCH_H
{9} CK_MCH_L
{4} CK_CPU_H
{4} CK_CPU_L
{18} CK_100M_SATA_H
{18} CK_100M_SATA_L
{22} CK_48M_SIO
{13,14,18} SCLK
{13,14,18} SDATA
CLKT0 R90 33
CLKC0 R98 33
CLKT1 R102 33
CLKC1 R103 33
CLKT R109 33
CLKC R111 33
24_48M_L R88 33
96M_DOT_H R97 33
96M_DOT_L R101 33
48M_0 R89 33
REF1 R87 33
FS_C R78 33
IREF ER36 475-1
96M_DOTCLK_H
96M_DOTCLK_L
CK_USB_48M_ICH
CK_14M_ICH
CK_14M_AUDIO
96M_DOTCLK_H {10}
96M_DOTCLK_L {10}
CK_USB_48M_ICH {18}
CK_14M_ICH {17}
CK_14M_AUDIO
ER30 ER26 49.9-1
ER44 ER46 ER41 ER39 ER37 ER34 49.9-1
CC8 18pF-O
CC6 18pF-O
CC5 18pF-O
18pF-O
C52 100pF-O
C53 100pF-O
CC7 18pF-O
FS_C R83 10K H_FSBSEL2
FS_B R80 10K H_FSBSEL1
FS_A R74 10K H_FSBSEL0
H_FSBSEL2 {4,9}
H_FSBSEL1 {4,9}
H_FSBSEL0 {4,9}
BSEL TABLE
2 1 0 PSB FREQENCY
0 0 1 133 MHZ (533)
0 1 0 200 MHZ (800)
Elitegroup Computer Systems
Title
Clock Generator(CK410)
Size Custom
Document Number 915GV-M5
Rev 1.1
Date: Tuesday, November 16, 2004
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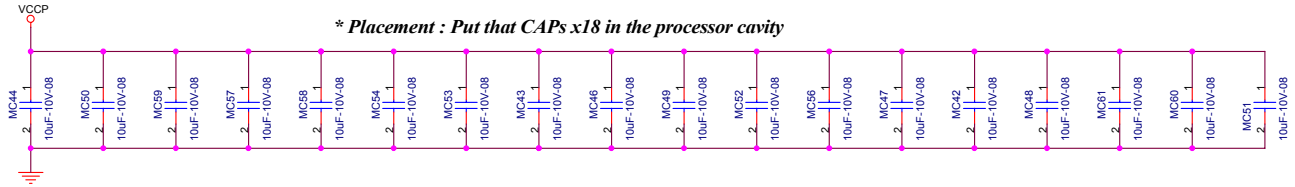
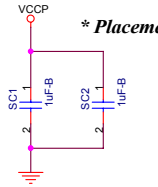
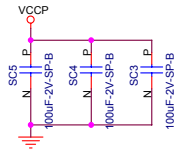
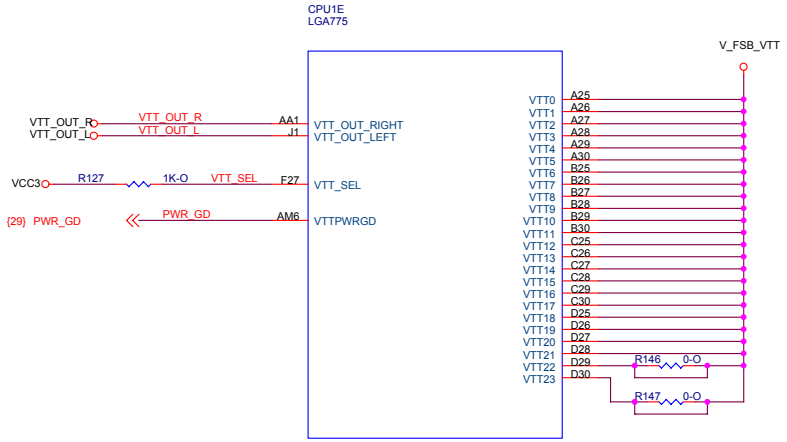


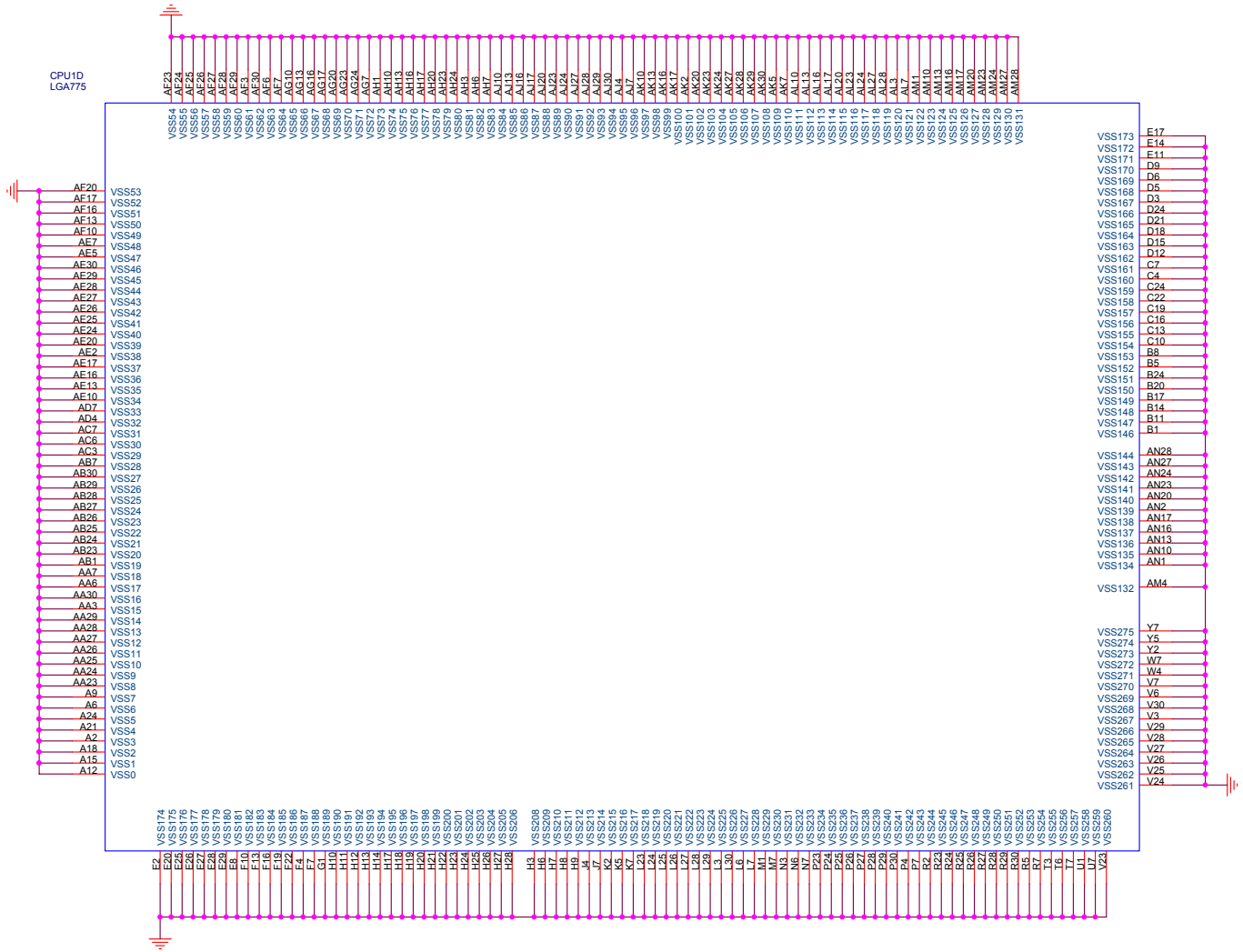




VTT_SEL=0 for the Tejas processor



Elitegroup Computer Systems		
Title: P4 LGA775P Part E		
Size: Custom	Document Number: 915GV-M5	Rev: 1.1
Date: Tuesday, November 16, 2004	Sheet 30 of 36	



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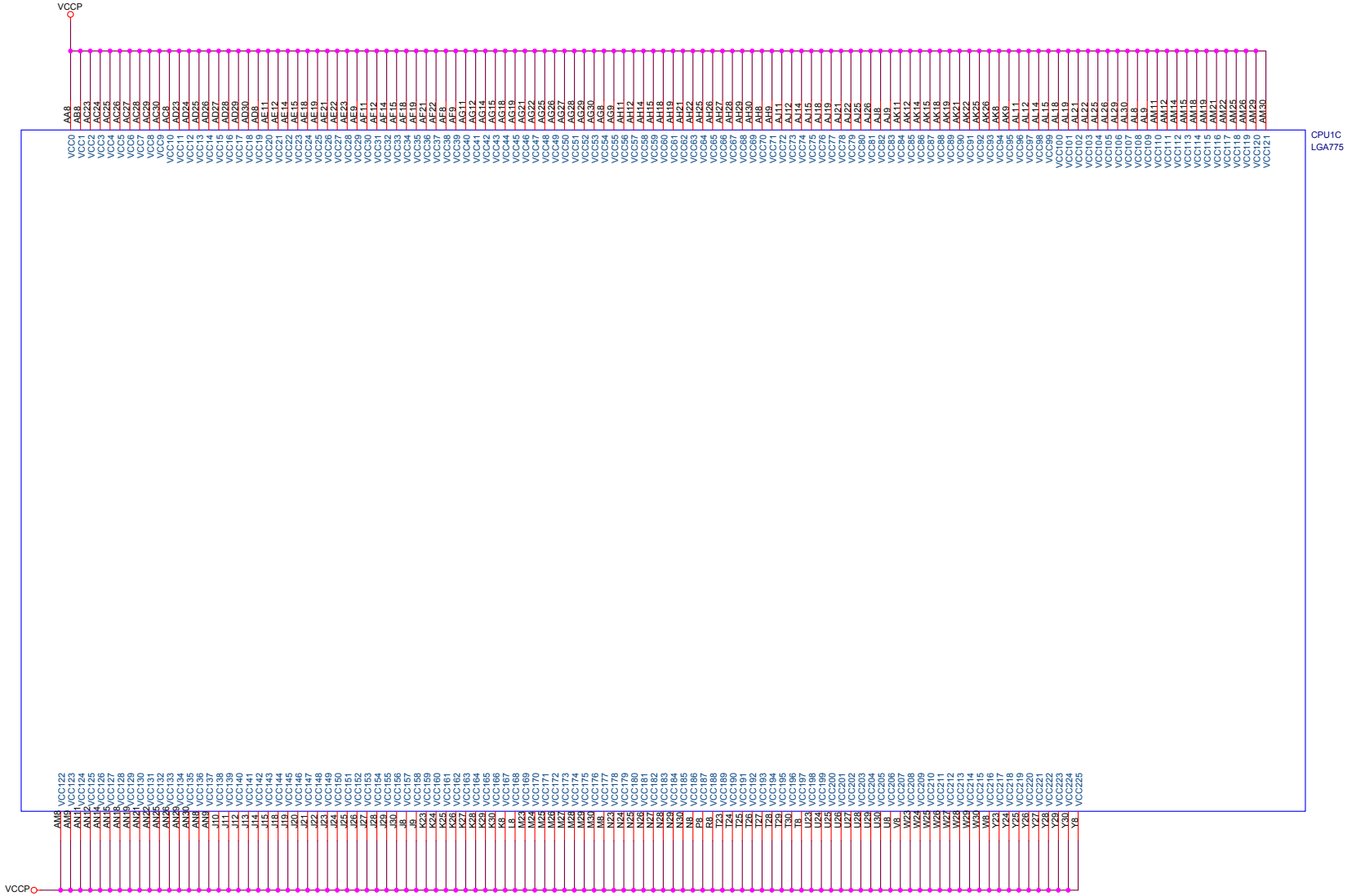
Title: P4 LGA775P Part D

Size: Custom | Document Number: 915GV-M5 | Rev: 1.1

Date: Tuesday, November 16, 2004 | Sheet 31 of 36



Elitegroup Computer Systems	
Title	P4 LGA775P Part C
Size: Custom	Document Number: 915GV-M5
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Place componets as close as possible to Processor socket

trace width to cap must be no smaller than 12 Mils

Close CPU H1 pin

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 TDO TERMINATION NEAR CONNECTOR

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

PLACE TRST_L TERMINATION ANYWHERE ON ROUTE

LL= LOAD LINE for load line select

Layout need closed CPU

Place outside Socket Cavity

LGA775

2N3904S

Elitegroup Computer Systems

Title	P4 LGA775P Part B		
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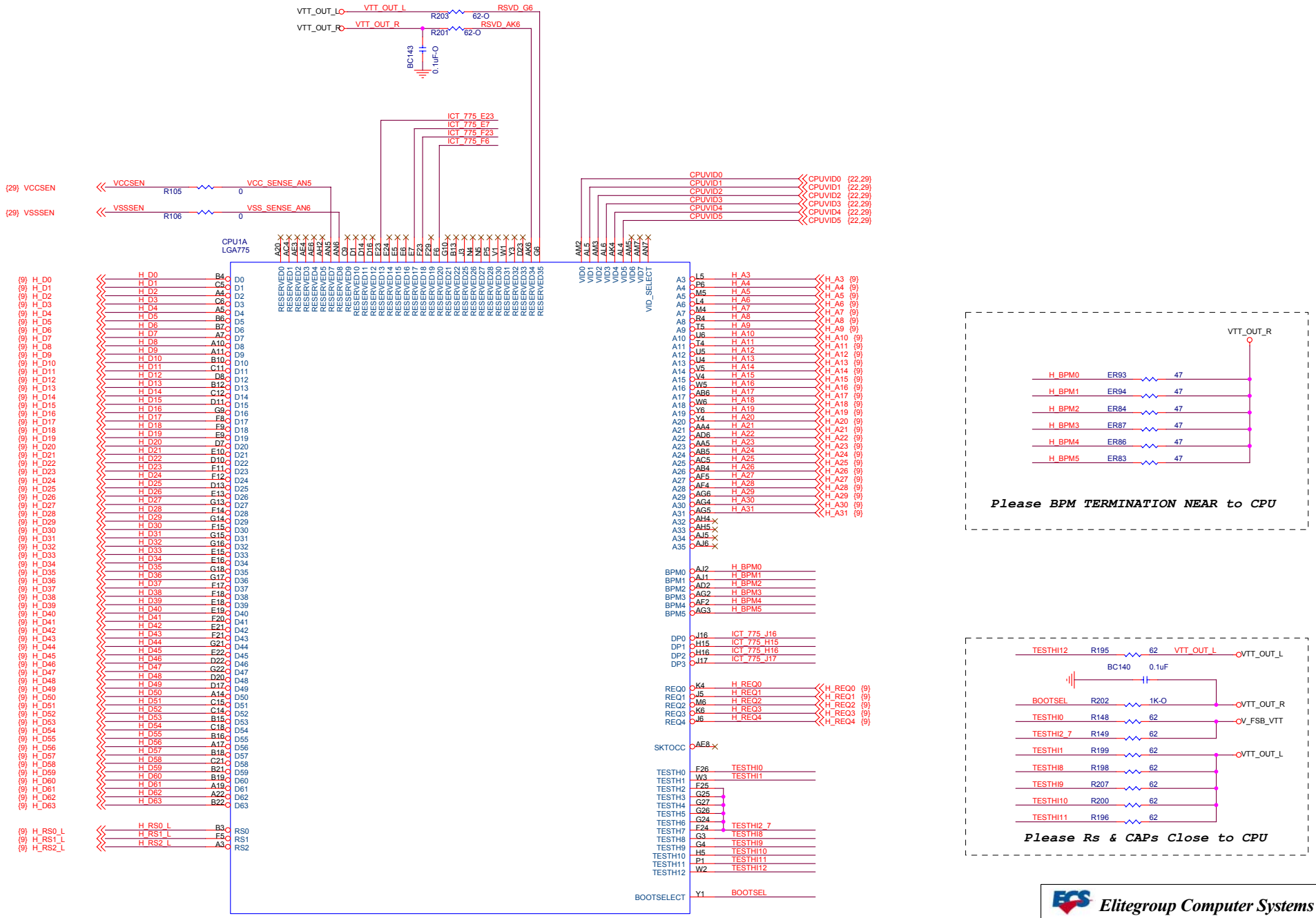
Date: Tuesday, November 16, 2004	Sheet 33 of 36		



Elitegroup Computer Systems

Title: P4 LGA775P Part A

Size: Custom | Document Number: 915GV-M5 | Rev: 1.1

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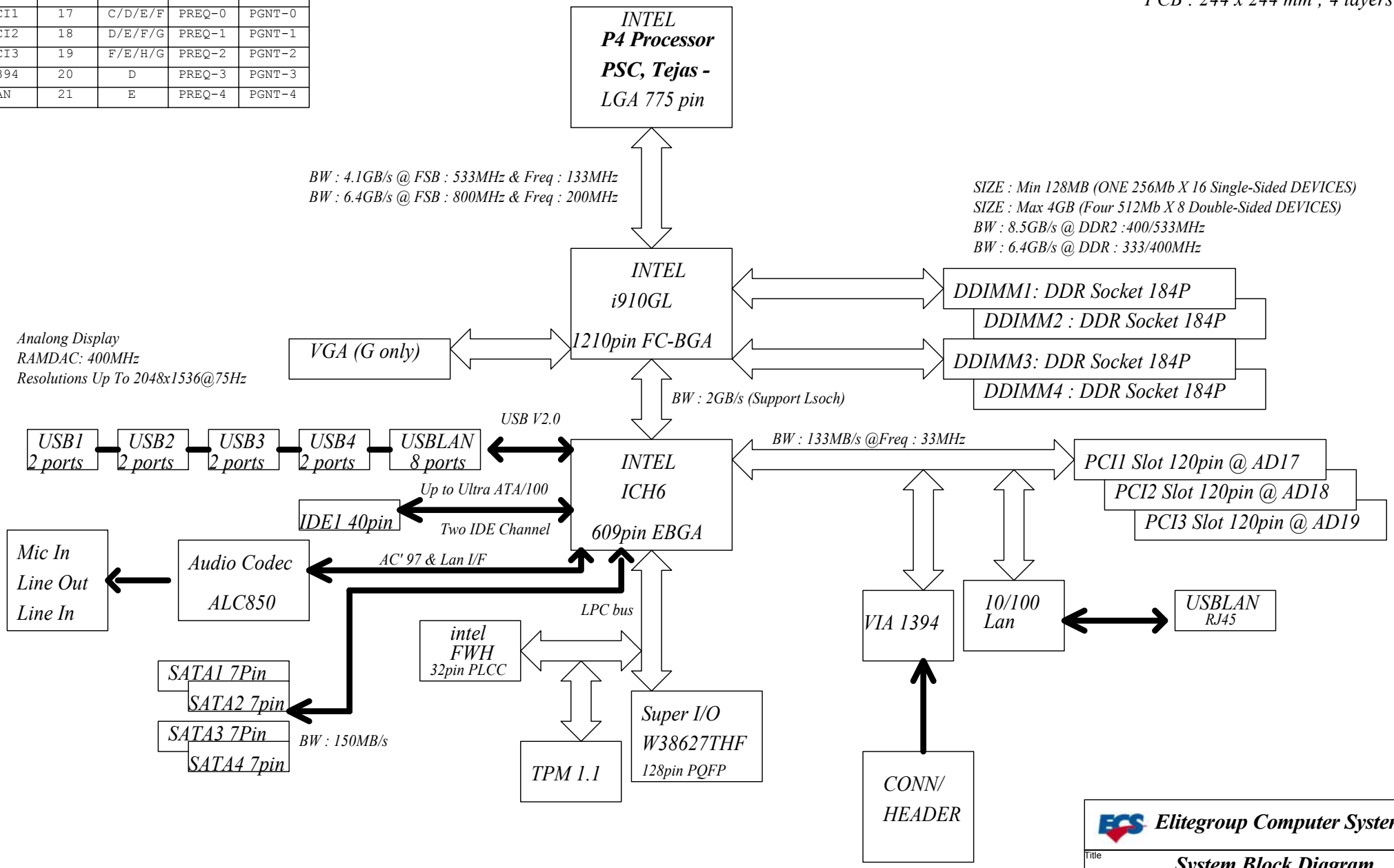
DEVICE	IDSEL	INT#	REQ#	GNT#
PCI1	17	C/D/E/F	PREQ-0	PGNT-0
PCI2	18	D/E/F/G	PREQ-1	PGNT-1
PCI3	19	F/E/H/G	PREQ-2	PGNT-2
1394	20	D	PREQ-3	PGNT-3
LAN	21	E	PREQ-4	PGNT-4

PCB : 244 x 244 mm ; 4 layers



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Title: System Block Diagram

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ELITEGROUP

(P4 LGA775P Processor with DDR1 SDRAM Mainboard)

915GV-M5 Rev: D

Schematics Version History Table :

Circuit Ver.	PCB Ver.	Total Page	Modified Page(s)	Date
A	A	36		08/03/" 04
B	B	36		09/01/" 04
C	C	36	28,29,33	09/20/" 04
D(1.0)	D(1.0)	36	25,26,27	09/21/" 04
1.1	1.1	36	1726,27	11/11/" 04

Page Title of Schematic :

Elitegroup Computer Systems

Title: Cover Sheet

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