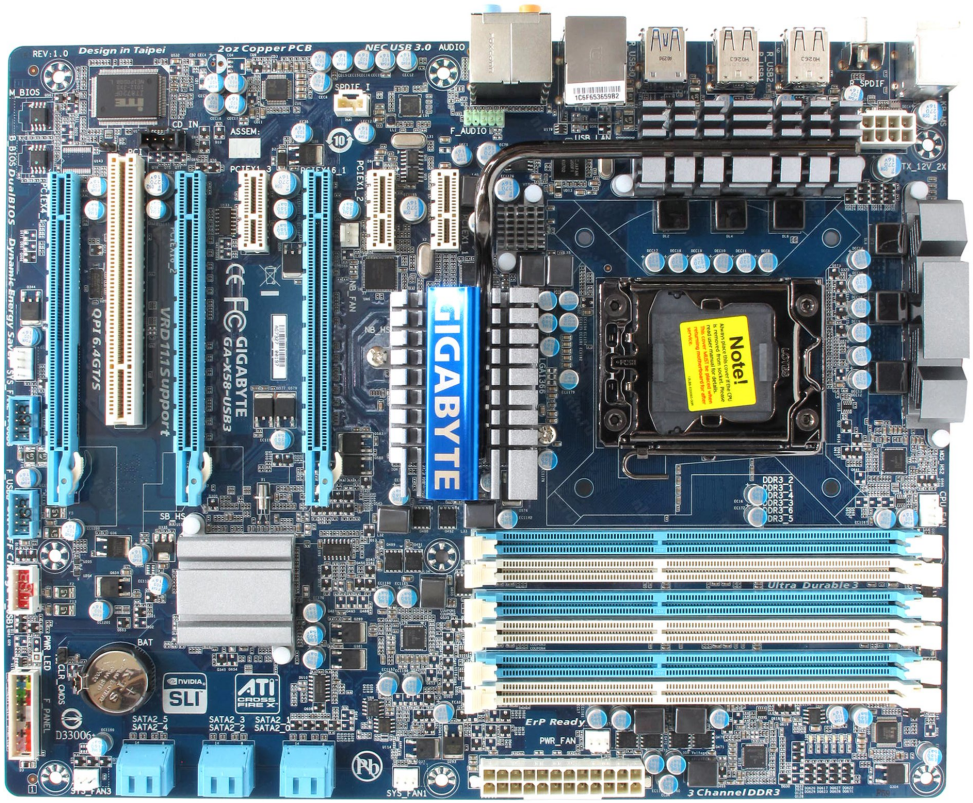
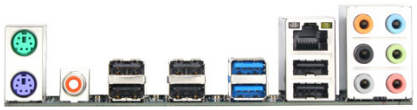
Model Name: GA-X58-USB3

SHEET	TITLE
01	COVER SHEET
02	BOM & PCB MODIFY HISTORY
03	BLOCK DIAGRAM
04-05	LGA1366-A CPU_DDRA_B_C
06	LGA1366-C CPU_CSI
07	LGA1366-D CPU_GND
08	LGA1366-E CPU_PWR
09	IOH_CSI
10	IOH_PCIEx16 / PCIEx4
11-12	IOH_MISC_SRRAP
13-14	IOH_PWR_GND
15-17	DDRIII CHANNEL A_B_C
18	DDRIII TERMINATION
19	PCI EXPRESS X16 PORT_1
20	PCI EXPRESS X16 PORT_2
21	ICH10 PCIE,DMI, PCI, USB
22	ICH10 GPIO, CTRL
23	ICH10 SATA, FAN PWM
24	ICH10 VCC, GND
25	ISL6312_VTTD
26	ICS9LPRS914
27	PCI EXPRESS x4 SLOT
28	PCI EXPRESS x1 SLOTs
29	PCI SLOT
30	ITE 8720 (GB)
31	-PROHOT, DYNAMIC OC +12V
32	Dual BIOS , TPM
33-34	CODEC 892 & AUDIO JACK
35-38	VCORE PWM_ISL6336A

SHEET	TITLE
39-40	DISCRETE POWER
41	ISL6322_DDRII
42	ISL6322_IOH_CORE
43	ATX
44	R_USB & UPI6262
45	FP,FUSB
46	HWM,KB/MS, FAN CTRL
47	REALTEK RTL8111E
48	NEC uP720200





Gigabyte Technology

Title	Cover Sheet	
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 1 of 48	

GA-X58-USB3

Component value change history

Data	Change Item	Reason
2010-06-23-10A	Build 10A BOM	
2010-07-05-10B	1. Codec change to 10HP5-368920-20R with internal regulator 2. R3474,R3425,R3510 change to 2.2/6 3. PCB change to 1.01 4. Enhance X1/X4 switch structure	
2010-07-15-10C	1. Fine tune X4/X1 configure for PVT	
2010-07-30-10D	1. R3483 , R4068 change to 0/6	To reduce CPU_VTT MOS temp

Circuit or PCB layout change for next version

DATE	Change Item	Reason
2010-06-23	1.0 PCB gerber out	
2010-07-05	1.01 PCB gerber out	

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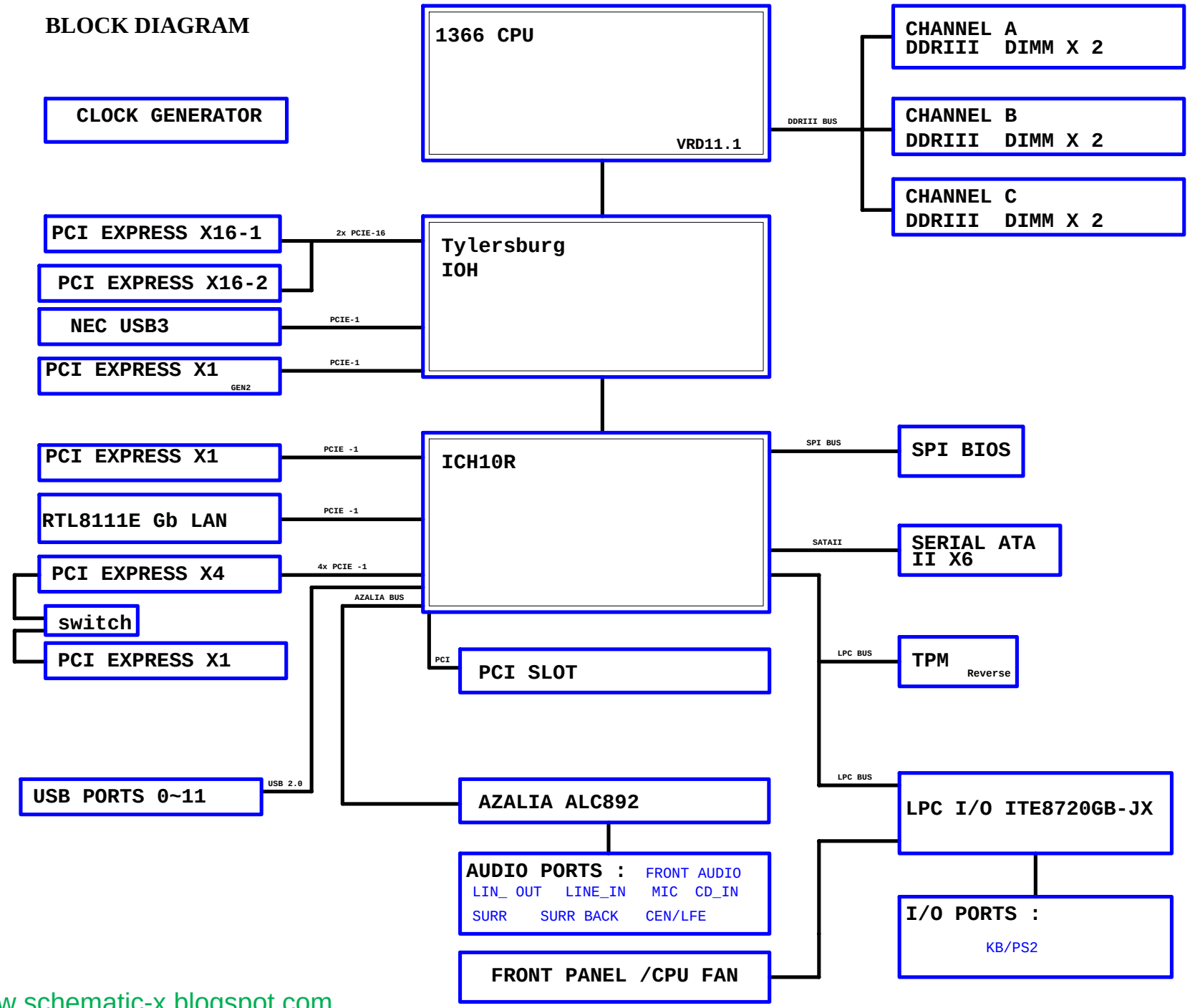
Title: BOM & PCB MODIFY HISTORY

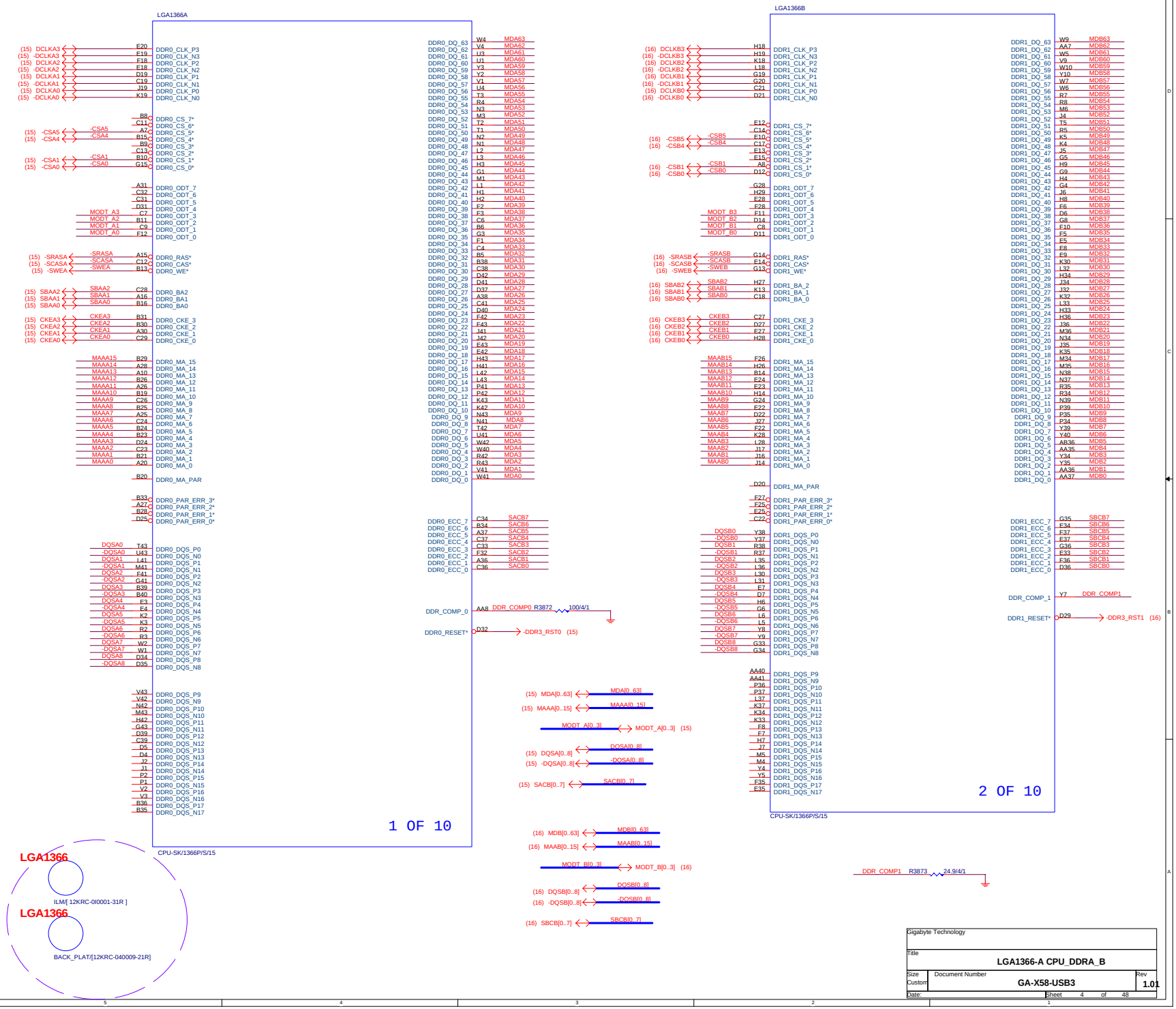
Size: Custom | Document Number: GA-X58-USB3 | Rev: 1.01

Date: Friday, August 06, 2010 | Sheet 2 of 48

BLOCK DIAGRAM



Gigabyte Technology		
Title: BLOCK DIAGRAM		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 3 of 48	


LGA1366A
LGA1366B
1 OF 10
2 OF 10
CPU-SK/1366P/S/15
CPU-SK/1366P/S/15
LGA1366
ILM[12KRC-0I0001-31R]
LGA1366
BACK_PLAT/[12KRC-040009-21R]
DDR_COMP_0
DDR_COMP_1
DDR_COMP1
DDR0_RESET*
DDR1_RESET*
-DDR3_RST0 (15)
-DDR3_RST1 (16)
MDA[0..63]
MAAA[0..15]
MODT_A[0..3]
MODT_A[0..3] (15)
DQSA[0..8]
-DQSA[0..8]
SACB[0..7]
MDB[0..63]
MAAB[0..15]
MODT_B[0..3]
MODT_B[0..3] (16)
DQSB[0..8]
-DQSB[0..8]
SBCB[0..7]
DDR_COMP1 R3873 24.9/4/1
Gigabyte Technology
Title
LGA1366-A CPU_DDRA_B
Size
Custom
Document Number
GA-X58-USB3
Rev
1.01
Date:
Sheet 4 of 48

LGA1366C

(17) DCLKC3 L22 DDR2_CLK_P3
(17) -DCLKC3 L21 DDR2_CLK_N3
(17) DCLKC2 H21 DDR2_CLK_P2
(17) -DCLKC2 G21 DDR2_CLK_N2
(17) DCLKC1 L20 DDR2_CLK_P1
(17) -DCLKC1 K20 DDR2_CLK_N1
(17) DCLKC0 J22 DDR2_CLK_P0
(17) -DCLKC0 J21 DDR2_CLK_N0

J15 DDR2_CS_7*
L17 DDR2_CS_6*
(17) -CSC5 -CSC5 D9 DDR2_CS_5*
(17) -CSC4 -CSC4 E17 DDR2_CS_4*
H16 DDR2_CS_3*
D16 DDR2_CS_2*
(17) -CSC1 -CSC1 K14 DDR2_CS_1*
(17) -CSC0 -CSC0 G16 DDR2_CS_0*

K27 DDR2_DOT_7
D30 DDR2_DOT_6
K29 DDR2_DOT_5
J29 DDR2_DOT_4
MODT_C3 D10 DDR2_DOT_3
MODT_C2 D15 DDR2_DOT_2
MODT_C1 F13 DDR2_DOT_1
MODT_C0 L16 DDR2_DOT_0

(17) -SRASC -SRASC D17 DDR2_RAS*
(17) -SCASC -SCASC F16 DDR2_CAS*
(17) -SWEC -SWEC C16 DDR2_WE*

(17) SBAC2 SBAC2 L26 DDR2_BA_2
(17) SBAC1 SBAC1 F17 DDR2_BA_1
(17) SBAC0 SBAC0 A17 DDR2_BA_0

(17) CKEC3 CKEC3 L27 DDR2_CKE_3
(17) CKEC2 CKEC2 D26 DDR2_CKE_2
(17) CKEC1 CKEC1 G26 DDR2_CKE_1
(17) CKEC0 CKEC0 J26 DDR2_CKE_0

MAAC15 G25 DDR2_MA_15
MAAC14 H24 DDR2_MA_14
MAAC13 F15 DDR2_MA_13
MAAC12 G23 DDR2_MA_12
MAAC11 H23 DDR2_MA_11
MAAC10 H17 DDR2_MA_10
MAAC9 H22 DDR2_MA_9
MAAC8 L25 DDR2_MA_8
MAAC7 J24 DDR2_MA_7
MAAC6 K22 DDR2_MA_6
MAAC5 K23 DDR2_MA_5
MAAC4 E20 DDR2_MA_4
MAAC3 J20 DDR2_MA_3
MAAC2 G18 DDR2_MA_2
MAAC1 K17 DDR2_MA_1
MAAC0 A18 DDR2_MA_0

B18 DDR2_MA_PAR

K25 DDR2_PAR_ERR_3*
F23 DDR2_PAR_ERR_2*
J25 DDR2_PAR_ERR_1*
F21 DDR2_PAR_ERR_0*

DQSC0 W37 DDR2_DQS_P0
-DQSC0 W36 DDR2_DQS_N0
DQSC1 T37 DDR2_DQS_P1
-DQSC1 T38 DDR2_DQS_N1
DQSC2 K40 DDR2_DQS_P2
-DQSC2 K39 DDR2_DQS_N2
DQSC3 E39 DDR2_DQS_P3
-DQSC3 E40 DDR2_DQS_N3
DQSC4 J10 DDR2_DQS_P4
-DQSC4 J9 DDR2_DQS_N4
DQSC5 L7 DDR2_DQS_P5
-DQSC5 K7 DDR2_DQS_N5
DQSC6 P6 DDR2_DQS_P6
-DQSC6 P5 DDR2_DQS_N6
DQSC7 U8 DDR2_DQS_P7
-DQSC7 T8 DDR2_DQS_N7
DQSC8 G29 DDR2_DQS_P8
-DQSC8 G30 DDR2_DQS_N8

U35 DDR2_DQS_P9
T35 DDR2_DQS_N9
U40 DDR2_DQS_P10
T40 DDR2_DQS_N10
M38 DDR2_DQS_P11
L38 DDR2_DQS_N11
H38 DDR2_DQS_P12
G38 DDR2_DQS_N12
H11 DDR2_DQS_P13
J11 DDR2_DQS_N13
K9 DDR2_DQS_P14
K8 DDR2_DQS_N14
N4 DDR2_DQS_P15
P4 DDR2_DQS_N15
V6 DDR2_DQS_P16
V7 DDR2_DQS_N16
H31 DDR2_DQS_P17
G31 DDR2_DQS_N17

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CPU-SK/1366P/S/15

DDR2_DQ_63 U9 MDC63
DDR2_DQ_62 V8 MDC62
DDR2_DQ_61 T7 MDC61
DDR2_DQ_60 T6 MDC60
DDR2_DQ_59 U10 MDC59
DDR2_DQ_58 T10 MDC58
DDR2_DQ_57 U6 MDC57
DDR2_DQ_56 U5 MDC56
DDR2_DQ_55 R9 MDC55
DDR2_DQ_54 R10 MDC54
DDR2_DQ_53 N7 MDC53
DDR2_DQ_52 N8 MDC52
DDR2_DQ_51 P10 MDC51
DDR2_DQ_50 P9 MDC50
DDR2_DQ_49 N6 MDC49
DDR2_DQ_48 P7 MDC48
DDR2_DQ_47 M8 MDC47
DDR2_DQ_46 L8 MDC46
DDR2_DQ_45 M10 MDC45
DDR2_DQ_44 L11 MDC44
DDR2_DQ_43 N9 MDC43
DDR2_DQ_42 M9 MDC42
DDR2_DQ_41 K10 MDC41
DDR2_DQ_40 L10 MDC40
DDR2_DQ_39 L12 MDC39
DDR2_DQ_38 H12 MDC38
DDR2_DQ_37 G10 MDC37
DDR2_DQ_36 G11 MDC36
DDR2_DQ_35 L13 MDC35
DDR2_DQ_34 H13 MDC34
DDR2_DQ_33 J12 MDC33
DDR2_DQ_32 K12 MDC32
DDR2_DQ_31 F38 MDC31
DDR2_DQ_30 G39 MDC30
DDR2_DQ_29 H39 MDC29
DDR2_DQ_28 H37 MDC28
DDR2_DQ_27 J37 MDC27
DDR2_DQ_26 F40 MDC26
DDR2_DQ_25 G40 MDC25
DDR2_DQ_24 K38 MDC24
DDR2_DQ_23 L40 MDC23
DDR2_DQ_22 N36 MDC22
DDR2_DQ_21 P40 MDC21
DDR2_DQ_20 J39 MDC20
DDR2_DQ_19 J40 MDC19
DDR2_DQ_18 M40 MDC18
DDR2_DQ_17 M39 MDC17
DDR2_DQ_16 R40 MDC16
DDR2_DQ_15 T41 MDC15
DDR2_DQ_14 V39 MDC14
DDR2_DQ_13 W39 MDC13
DDR2_DQ_12 T36 MDC12
DDR2_DQ_11 R39 MDC11
DDR2_DQ_10 U39 MDC10
DDR2_DQ_9 U38 MDC9
DDR2_DQ_8 V38 MDC8
DDR2_DQ_7 V37 MDC7
DDR2_DQ_6 V34 MDC6
DDR2_DQ_5 U34 MDC5
DDR2_DQ_4 U36 MDC4
DDR2_DQ_3 V36 MDC3
DDR2_DQ_2 W35 MDC2
DDR2_DQ_1 W34 MDC1
DDR2_DQ_0 MDC0

DDR2_ECC_7 F30 SCBC7
DDR2_ECC_6 F31 SCBC6
DDR2_ECC_5 J30 SCBC5
DDR2_ECC_4 J31 SCBC4
DDR2_ECC_3 E30 SCBC3
DDR2_ECC_2 E29 SCBC2
DDR2_ECC_1 F33 SCBC1
DDR2_ECC_0 H32 SCBC0

DDR_COMP_2 AC1 DDR_COMP2 R3874 130/4/1

DDR2_RESET* E32 -DDR3_RST2 (17)

(17) MDC[0..63] MDC[0..63]
(17) MAAC[0..15] MAAC[0..15]
(17) MDC[0..63] MDC[0..63]
(17) DQSC[0..8] DQSC[0..8]
(17) -DQSC[0..8] -DQSA[0..8]
(17) SCBC[0..7] SCBC[0..7]
MODT_C[0..3] MODT_C[0..3] (17)

LGA1366F

AM8 AL8 AM6 AM7 AN5 AN6 AM4 AN4 AP3 AP4 AM2 AM3 AN1 AM1 AP2 AN2 AR4 AR5 AT1 AR1 AT3 AT2 AU4 AU3 AW4 AW3 AU7 AU6 AV6 AV5 BA7 BA6 AV5 AW5 AY8 BA8 AV7 AW7 AU8 AV8 RSVD

AT6 AR6 AF6 AE6 RSVD

AC8 AD8 AD5 AE5 AD6 AD7 AB6 AC6 AC4 AD4 AE3 AE4 AC3 AB3 AD2 AD3 AE1 AD1 AF2 AE3 AH2 AG2 AH3 AH4 AK1 AJ1 AJ3 AJ2 AG7 AG6 AJ4 AK4 AK6 AK5 AH6 AJ6 AJ7 AJ8 AG8 AH8 RSVD

AL6 RSVD

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CPU-SK/1366P/S/15

TOP

CPU下電容 Vcore 24顆
DDR15V 3 顆
VTTD 5 顆
VCC18_PLL 1 顆
VTTA 1 顆

VTTD
BC44 BC45 BC48 BC50
BC49 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M

DDR15V
BC41 BC42
BC43 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M

VCORE
BC28 BC25 BC21 BC19 BC13 BC11 BC5 BC7 BC34 BC14 BC16
BC22 BC27 BC18 BC20 BC10 BC12 BC6 BC8 BC17 BC15
22u/8/X5R/6.3V/M

VTTD VCC18_PLL
BC39 BC40
22u/8/X5R/6.3V/M 22u/8/X5R/6.3V/M

VTTD
SBC2 SBC4 SBC3 SBC5
SBC1 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X

DDR15V
SBC7 SBC8
SBC6 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X

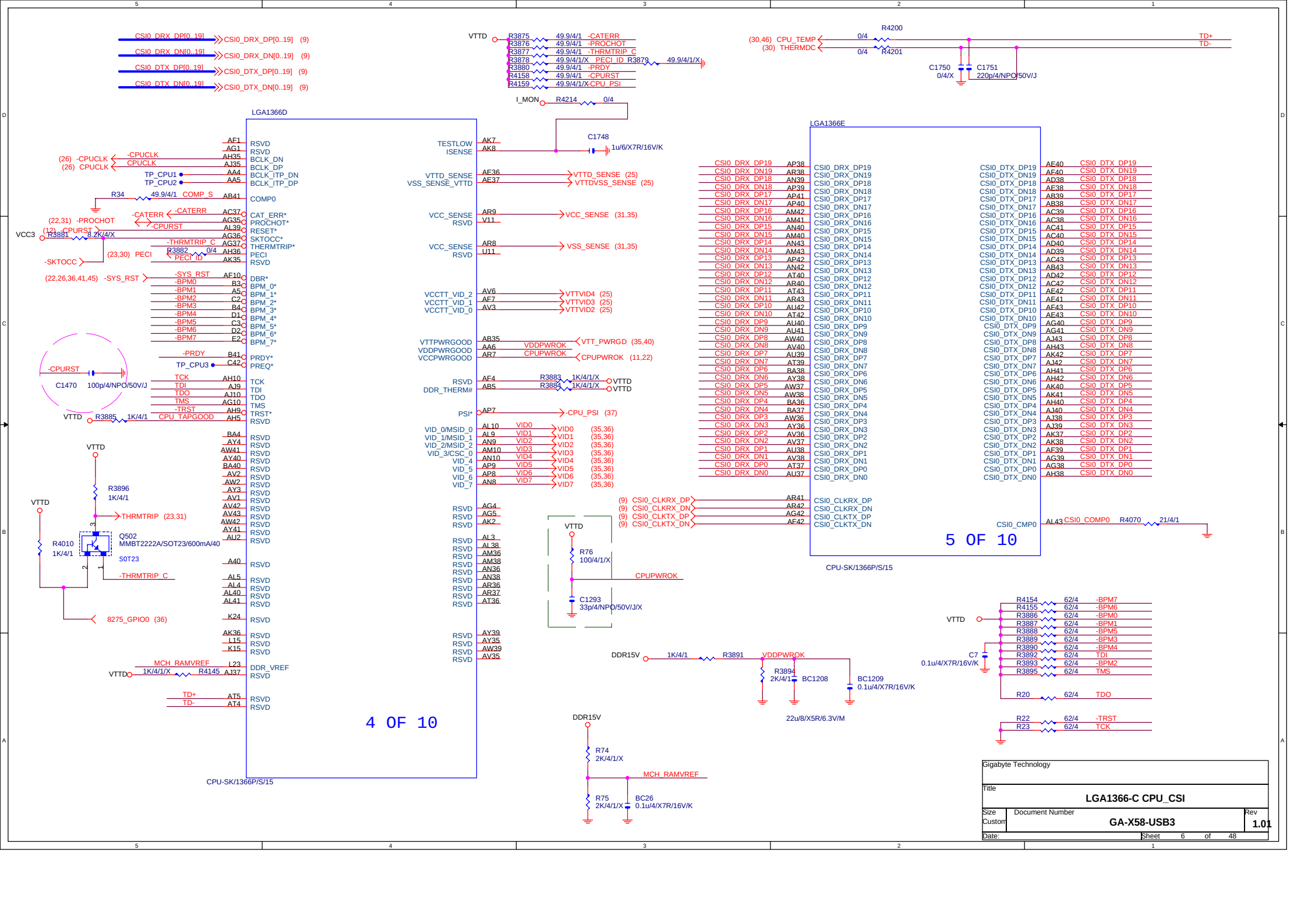
VCORE
SBC9 SBC11 SBC13 SBC15 SBC17 SBC19 SBC21 SBC23 SBC25 SBC27 SBC29
SBC10 SBC12 SBC14 SBC16 SBC18 SBC20 SBC22 SBC24 SBC26 SBC28
22u/8/X5R/6.3V/M

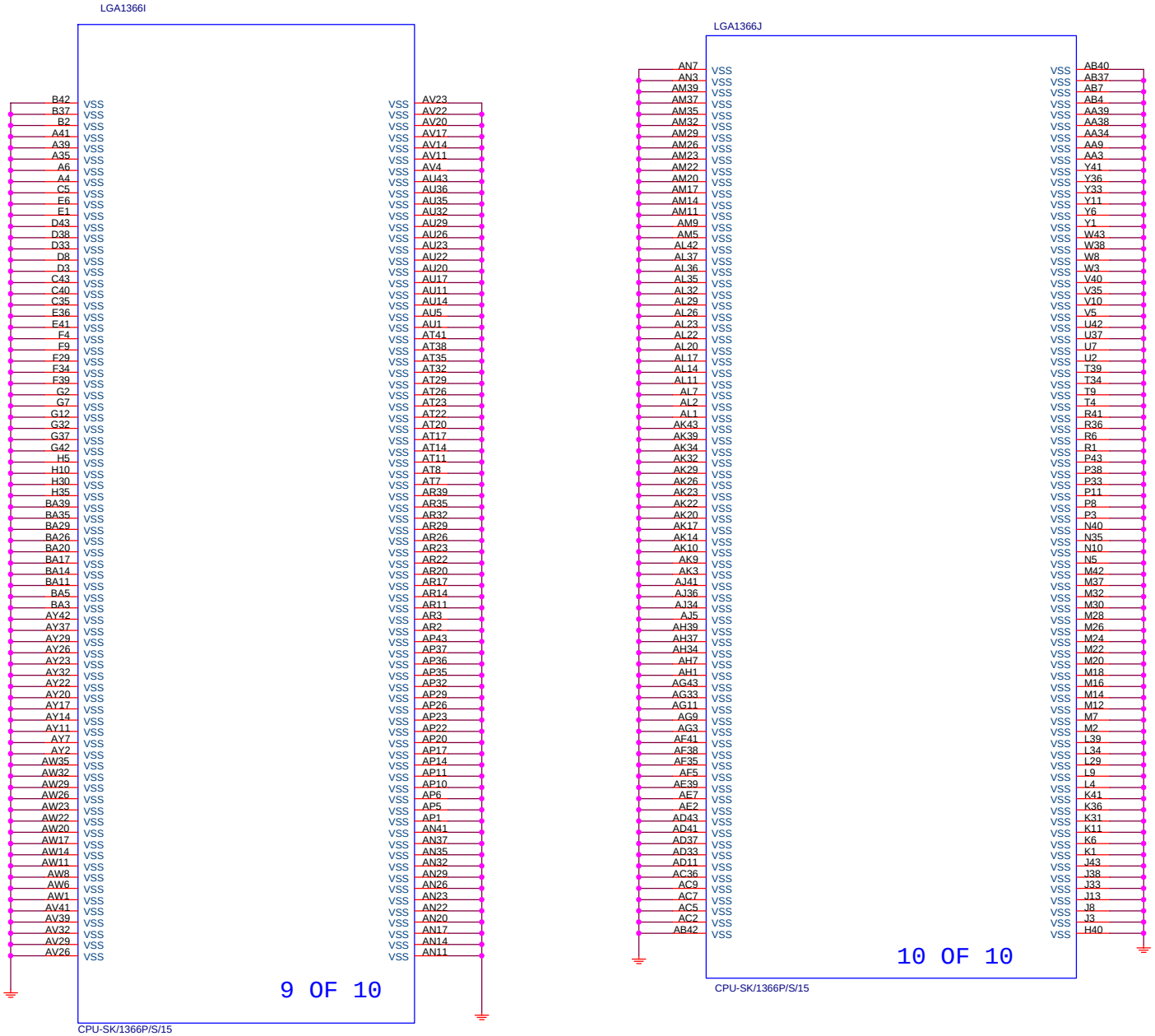
VTTD VCC18_PLL
SBC30 SBC31
22u/8/X5R/6.3V/M/X 22u/8/X5R/6.3V/M/X

BOTTOM 預留

CPU下電容 Vcore 24顆
DDR15V 3 顆
VTTD 5 顆
VCC18_PLL 1 顆
VTTA 1 顆

Gigabyte Technology		
Title	LGA1366-B CPU_DDRC	
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date:	Sheet 5 of 48	


CSI0_DRX_DP[0..19] CSI0_DRX_DP[0..19] (9)
CSI0_DRX_DN[0..19] CSI0_DRX_DN[0..19] (9)
CSI0_DTX_DP[0..19] CSI0_DTX_DP[0..19] (9)
CSI0_DTX_DN[0..19] CSI0_DTX_DN[0..19] (9)
VTTD
R3875 49.9/4/1 -CATERR
R3876 49.9/4/1 -PROCHOT
R3877 49.9/4/1 -THRMTRIP_C
R3878 49.9/4/1/X PECI_ID R3879 49.9/4/1/X
R3880 49.9/4/1 -PRDY
R4158 49.9/4/1 -CPURST
R4159 49.9/4/1/X CPU_PSI
I_MON R4214 0/4
R4200
(30,46) CPU_TEMP
(30) THERMDC
0/4 R4200
0/4 R4201
TD+
TD-
C1750 0/4/X
C1751 220p/4/NPO/50V/J
LGA1366D
(26) -CPUCLK
(26) CPUCLK
TP_CPU1
TP_CPU2
R34 49.9/4/1 COMP_S
(22,31) -PROCHOT
(12) CPURST
VCC3 R3881 8.2K/4/X
-SKTOCC
(23,30) PECI
R3882 0/4
(22,26,36,41,45) -SYS_RST
-BPM0
-BPM1
-BPM2
-BPM3
-BPM4
-BPM5
-BPM6
-BPM7
-PRDY
TP_CPU3
-CPURST
C1470 100p/4/NPO/50V/J
TCK
TDI
TDO
TMS
-TRST
VTTD R3885 1K/4/1 CPU_TAPGOOD
VTTD
R3896 1K/4/1
THRMTRIP (23,31)
R4010 1K/4/1
Q502 MMBT2222A/SOT23/600mA/40
S0T23
-THRMTRIP_C
8275_GPIO0 (36)
MCH_RAMVREF
VTTD R4145 1K/4/1/X
TD+
TD-
AF1 RSVD
AG1 RSVD
AH35 BCLK_DN
AJ35 BCLK_DP
AA4 BCLK_ITP_DN
AA5 BCLK_ITP_DP
AB41 COMP0
AC37 CAT_ERR*
AG35 PROCHOT*
AL39 RESET*
AG36 SKTOCC*
AG37 THERMTRIP*
AH36 PECI
AK35 RSVD
AE10 DBR*
B3 BPM_0*
A5 BPM_1*
C2 BPM_2*
B4 BPM_3*
D1 BPM_4*
C3 BPM_5*
D2 BPM_6*
E2 BPM_7*
B41 PRDY*
C42 PREQ*
AH10 TCK
AJ9 TDI
AJ10 TDO
AG10 TMS
AH9 TRST*
AH5 RSVD
BA4 RSVD
AY4 RSVD
AW41 RSVD
AY40 RSVD
BA40 RSVD
AV2 RSVD
AW2 RSVD
AY3 RSVD
AV1 RSVD
AV42 RSVD
AV43 RSVD
AW42 RSVD
AY41 RSVD
AU2 RSVD
A40 RSVD
AL5 RSVD
AL4 RSVD
AL40 RSVD
AL41 RSVD
K24 RSVD
AK36 RSVD
L15 RSVD
K15 RSVD
L23 DDR_VREF
AJ37 RSVD
AT5 RSVD
AT4 RSVD
TESTLOW AK7
ISENSE AK8
C1748 1u/6/X7R/16V/K
VTTD_SENSE AE36 VTTD_SENSE (25)
VSS_SENSE_VTTD AE37 VTTDVSS_SENSE (25)
VCC_SENSE AR9 VCC_SENSE (31,35)
RSVD V11
VCC_SENSE AR8 VSS_SENSE (31,35)
RSVD U11
VCCTT_VID_2 AV6 VTTVID4 (25)
VCCTT_VID_1 AF7 VTTVID3 (25)
VCCTT_VID_0 AV3 VTTVID2 (25)
VTTPWRGOOD AB35
VDDPWRGOOD AA6 VDDPWROK
VCCPWRGOOD AR7 CPUPWROK VTT_PWRGD (35,40) CPUPWROK (11,22)
RSVD AF4 R3883 1K/4/1/X VTTD
DDR_THERM# AB5 R3884 1K/4/1/X VTTD
PSI* AP7 -CPU_PSI (37)
VID_0/MSID_0 AL10 VID0 VID0 (35,36)
VID_1/MSID_1 AL9 VID1 VID1 (35,36)
VID_2/MSID_2 AN9 VID2 VID2 (35,36)
VID_3/CSC_0 AM10 VID3 VID3 (35,36)
VID_4 AN10 VID4 VID4 (35,36)
VID_5 AP9 VID5 VID5 (35,36)
VID_6 AP8 VID6 VID6 (35,36)
VID_7 AN8 VID7 VID7 (35,36)
RSVD AG4
RSVD AC5
RSVD AK2
RSVD AL3
RSVD AL38
RSVD AM36
RSVD AM38
RSVD AN36
RSVD AN38
RSVD AR36
RSVD AR37
RSVD AT36
RSVD AY39
RSVD AY35
RSVD AW39
RSVD AV35
4 OF 10
CPU-SK/1366P/S/15
VTTD
R76 100/4/1/X
CPUPWROK
C1293 33p/4/NPO/50V/J/X
DDR15V
R74 2K/4/1/X
MCH_RAMVREF
R75 2K/4/1/X
BC26 0.1u/4/X7R/16V/K
DDR15V 1K/4/1 R3891 VDDPWROK
R3894 2K/4/1
BC1208
BC1209 0.1u/4/X7R/16V/K
22u/8/X5R/6.3V/M
LGA1366E
CSI0_DRX_DP19 AP38
CSI0_DRX_DN19 AR38
CSI0_DRX_DP18 AN39
CSI0_DRX_DN18 AP39
CSI0_DRX_DP17 AP41
CSI0_DRX_DN17 AP40
CSI0_DRX_DP16 AM42
CSI0_DRX_DN16 AM41
CSI0_DRX_DP15 AN40
CSI0_DRX_DN15 AM40
CSI0_DRX_DP14 AN43
CSI0_DRX_DN14 AM43
CSI0_DRX_DP13 AP42
CSI0_DRX_DN13 AN42
CSI0_DRX_DP12 AT40
CSI0_DRX_DN12 AR40
CSI0_DRX_DP11 AT43
CSI0_DRX_DN11 AR43
CSI0_DRX_DP10 AU42
CSI0_DRX_DN10 AT42
CSI0_DRX_DP9 AU40
CSI0_DRX_DN9 AU41
CSI0_DRX_DP8 AW40
CSI0_DRX_DN8 AV40
CSI0_DRX_DP7 AU39
CSI0_DRX_DN7 AT39
CSI0_DRX_DP6 BA38
CSI0_DRX_DN6 AY38
CSI0_DRX_DP5 AW37
CSI0_DRX_DN5 AW38
CSI0_DRX_DP4 BA36
CSI0_DRX_DN4 BA37
CSI0_DRX_DP3 AW36
CSI0_DRX_DN3 AY36
CSI0_DRX_DP2 AV36
CSI0_DRX_DN2 AV37
CSI0_DRX_DP1 AU38
CSI0_DRX_DN1 AV38
CSI0_DRX_DP0 AT37
CSI0_DRX_DN0 AU37
(9) CSI0_CLKRX_DP AR41
(9) CSI0_CLKRX_DN AR42
(9) CSI0_CLKTX_DP AG42
(9) CSI0_CLKTX_DN AF42
CSI0_DTX_DP19 AE40
CSI0_DTX_DN19 AF40
CSI0_DTX_DP18 AD38
CSI0_DTX_DN18 AE38
CSI0_DTX_DP17 AB39
CSI0_DTX_DN17 AB38
CSI0_DTX_DP16 AC39
CSI0_DTX_DN16 AC38
CSI0_DTX_DP15 AC41
CSI0_DTX_DN15 AC40
CSI0_DTX_DP14 AD40
CSI0_DTX_DN14 AD39
CSI0_DTX_DP13 AC43
CSI0_DTX_DN13 AB43
CSI0_DTX_DP12 AD42
CSI0_DTX_DN12 AC42
CSI0_DTX_DP11 AE42
CSI0_DTX_DN11 AE41
CSI0_DTX_DP10 AE43
CSI0_DTX_DN10 AE43
CSI0_DTX_DP9 AG40
CSI0_DTX_DN9 AG41
CSI0_DTX_DP8 AJ43
CSI0_DTX_DN8 AH43
CSI0_DTX_DP7 AK42
CSI0_DTX_DN7 AJ42
CSI0_DTX_DP6 AH41
CSI0_DTX_DN6 AH42
CSI0_DTX_DP5 AK40
CSI0_DTX_DN5 AK41
CSI0_DTX_DP4 AH40
CSI0_DTX_DN4 AJ40
CSI0_DTX_DP3 AJ38
CSI0_DTX_DN3 AJ39
CSI0_DTX_DP2 AK37
CSI0_DTX_DN2 AK38
CSI0_DTX_DP1 AF39
CSI0_DTX_DN1 AG39
CSI0_DTX_DP0 AG38
CSI0_DTX_DN0 AH38
CSI0_CMP0 AL43 CSI0_COMP0 R4070 21/4/1
5 OF 10
CPU-SK/1366P/S/15
VTTD
C7 0.1u/4/X7R/16V/K
R4154 62/4 -BPM7
R4155 62/4 -BPM6
R3886 62/4 -BPM0
R3887 62/4 -BPM1
R3888 62/4 -BPM5
R3889 62/4 -BPM3
R3890 62/4 -BPM4
R3892 62/4 TDI
R3893 62/4 -BPM2
R3895 62/4 TMS
R20 62/4 TDO
R22 62/4 -TRST
R23 62/4 TCK
Gigabyte Technology
Title
LGA1366-C CPU_CSI
Size Custom
Document Number
GA-X58-USB3
Rev
1.01
Date:
Sheet 6 of 48



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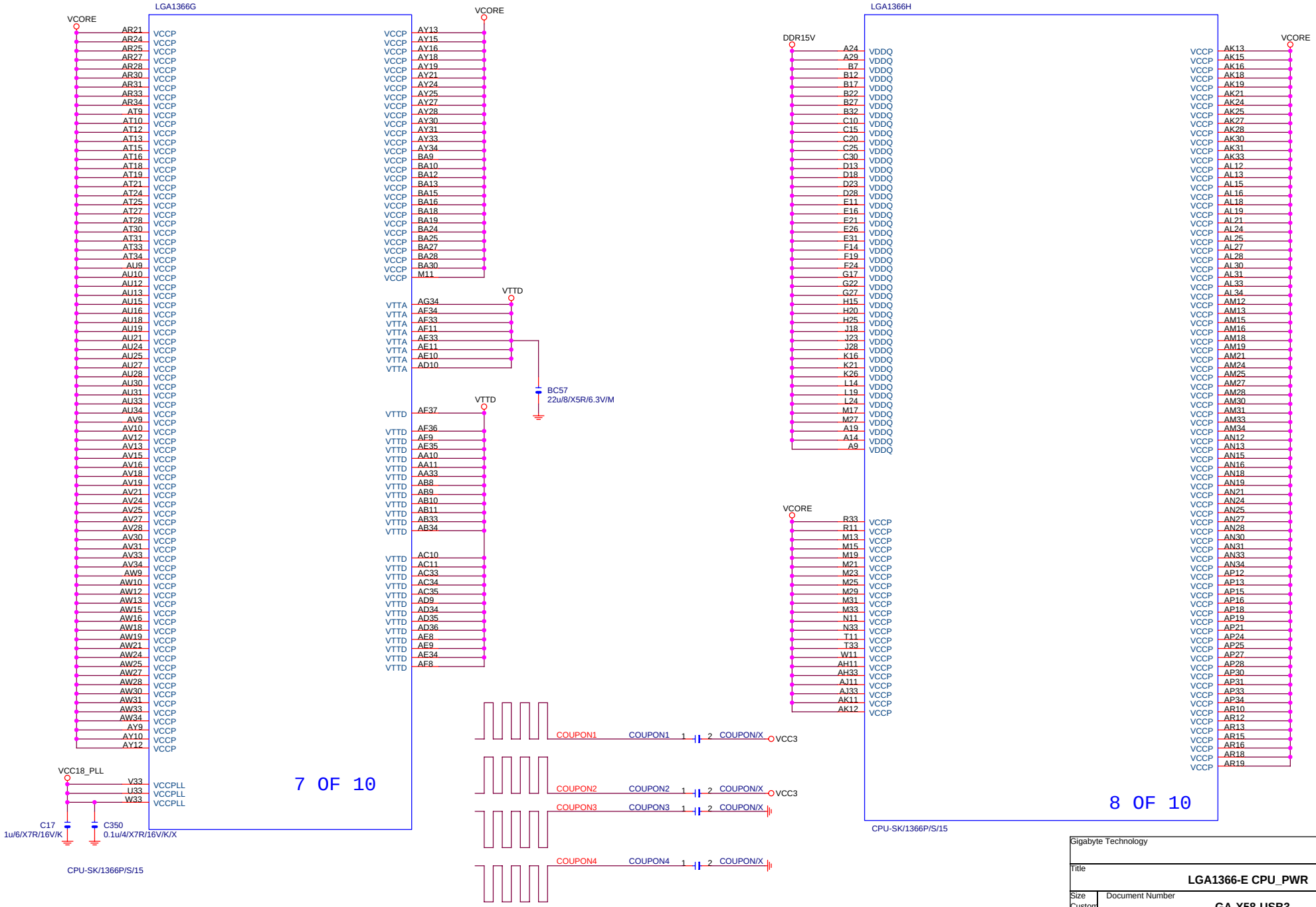
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date:	Sheet 7 of 48	



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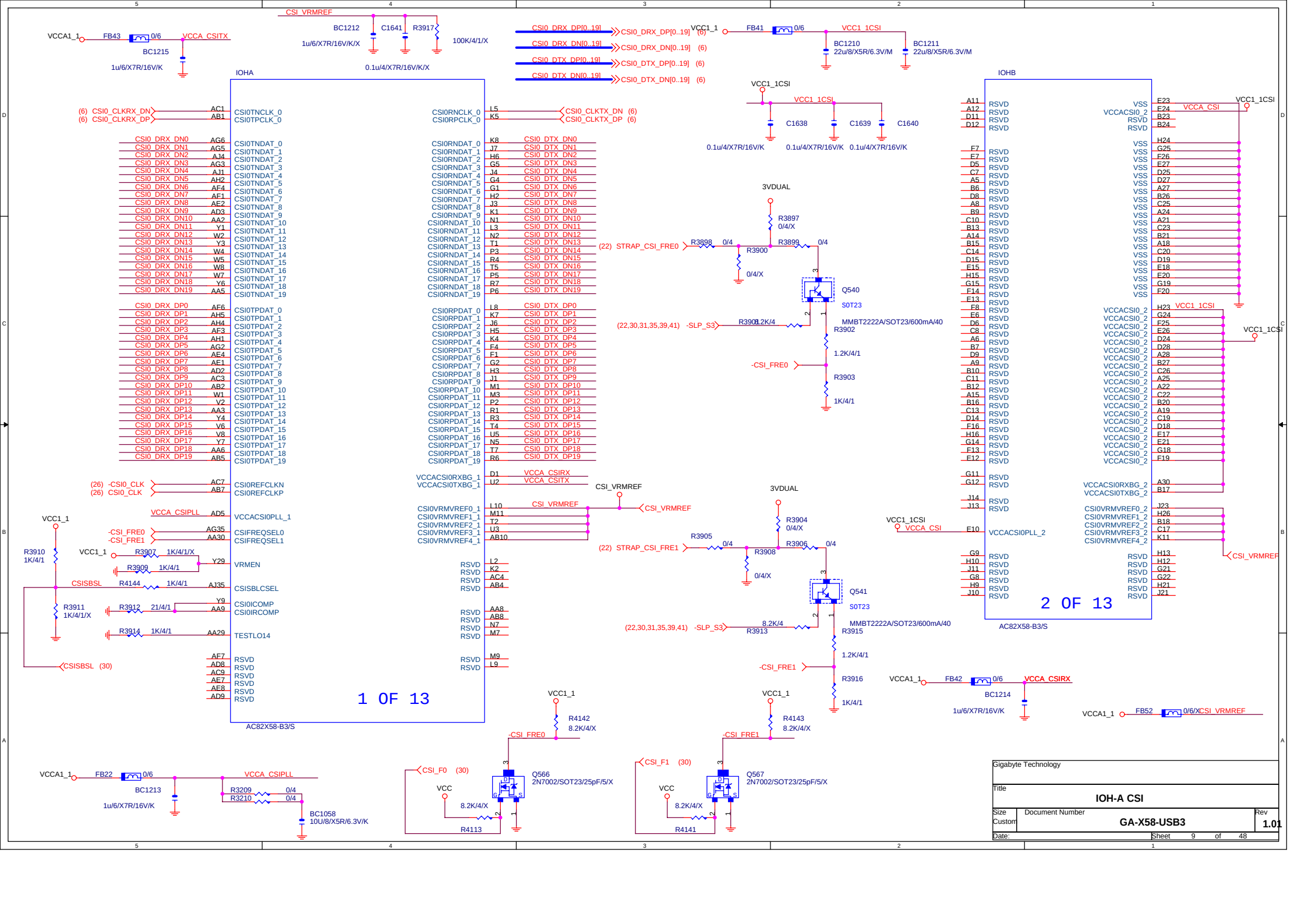
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date:	Sheet 8 of 48	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IOHB
1 OF 13
2 OF 13
AC82X58-B3/S
AC82X58-B3/S
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VCCA1_1
FB43
0/6
VCCA_CSITX
BC1215
1u/6/X7R/16V/K
BC1212
1u/6/X7R/16V/K/X
C1641
0.1u/4/X7R/16V/K/X
R3917
100K/4/1/X
CSI0_DRX_DP[0..19]
CSI0_DRX_DN[0..19]
CSI0_DTX_DP[0..19]
CSI0_DTX_DN[0..19]
VCC1_1
FB41
VCC1_1CSI
BC1210
22u/8/X5R/6.3V/M
BC1211
22u/8/X5R/6.3V/M
C1638
C1639
C1640
0.1u/4/X7R/16V/K
3VDUAL
R3897
0/4/X
R3898
R3899
R3900
Q540
S0T23
MMBT2222A/SOT23/600mA/40
R3902
1.2K/4/1
R3903
1K/4/1
STRAP_CSI_FRE0
SLP_S3
CSI_FRE0
R3904
R3905
R3906
R3908
Q541
R3913
R3915
R3916
STRAP_CSI_FRE1
CSI_FRE1
R4142
8.2K/4/X
R4143
Q566
2N7002/SOT23/25pF/5/X
Q567
R4113
R4141
CSI_F0
CSI_F1
VCC
FB42
VCCA_CSIRX
BC1214
FB52
VCCA_CSIPLL
FB22
BC1213
R3209
R3210
BC1058
10U/8/X5R/6.3V/K
R3907
R3909
R3910
R3911
R3912
R3914
R4144
CSISBSL
VRMEN
CSISBLCSEL
CSI0ICOMP
CSI0IRCOMP
TESTLO14
VCCA_CSI
VCCA_CSIRX
VCCA_CSIPLL
Gigabyte Technology
Title
IOH-A CSI
Size
Custom
Document Number
GA-X58-USB3
Rev
1.01
Date:
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EXP_A_TXP[0..7] >> EXP_A_TXP[0..7] (19)
EXP_A_TXN[0..7] >> EXP_A_TXN[0..7] (19)
EXP_A_RXP[0..7] >> EXP_A_RXP[0..7] (19)
EXP_A_RXN[0..7] >> EXP_A_RXN[0..7] (19)
EXP_A_TXP[8..15] >> EXP_A_TXP[8..15] (19)
EXP_A_TXN[8..15] >> EXP_A_TXN[8..15] (19)
EXP_A_RXP[8..15] >> EXP_A_RXP[8..15] (19)
EXP_A_RXN[8..15] >> EXP_A_RXN[8..15] (19)

EXP_C_TXP[0..7] >> EXP_C_TXP[0..7] (20)
EXP_C_TXN[0..7] >> EXP_C_TXN[0..7] (20)
EXP_C_RXP[0..7] >> EXP_C_RXP[0..7] (20)
EXP_C_RXN[0..7] >> EXP_C_RXN[0..7] (20)
EXP_C_TXP[8..15] >> EXP_C_TXP[8..15] (20)
EXP_C_TXN[8..15] >> EXP_C_TXN[8..15] (20)
EXP_C_RXP[8..15] >> EXP_C_RXP[8..15] (20)
EXP_C_RXN[8..15] >> EXP_C_RXN[8..15] (20)

IOHC

EXP_C_RXN15	AH24	PE7RN_0	PE7TN_0	AR28	EXP_C_TXN15
EXP_C_RXN14	AJ23	PE7RN_1	PE7TN_1	AN27	EXP_C_TXN14
EXP_C_RXN13	AL23	PE7RN_2	PE7TN_2	AP25	EXP_C_TXN13
EXP_C_RXN12	AK24	PE7RN_3	PE7TN_3	AP23	EXP_C_TXN12
EXP_C_RXP15	AH23	PE7RP_0	PE7TP_0	AP28	EXP_C_TXP15
EXP_C_RXP14	AK23	PE7RP_1	PE7TP_1	AP27	EXP_C_TXP14
EXP_C_RXP13	AL24	PE7RP_2	PE7TP_2	AN25	EXP_C_TXP13
EXP_C_RXP12	AK25	PE7RP_3	PE7TP_3	AR23	EXP_C_TXP12
EXP_C_RXN11	AM26	PE8RN_0	PE8TN_0	AN23	EXP_C_TXN11
EXP_C_RXN10	AJ26	PE8RN_1	PE8TN_1	AR25	EXP_C_TXN10
EXP_C_RXN9	AL27	PE8RN_2	PE8TN_2	AR26	EXP_C_TXN9
EXP_C_RXN8	AH25	PE8RN_3	PE8TN_3	AT27	EXP_C_TXN8
EXP_C_RXP11	AL26	PE8RP_0	PE8TP_0	AN24	EXP_C_TXP11
EXP_C_RXP10	AJ27	PE8RP_1	PE8TP_1	AR24	EXP_C_TXP10
EXP_C_RXP9	AL28	PE8RP_2	PE8TP_2	AP26	EXP_C_TXP9
EXP_C_RXP8	AJ25	PE8RP_3	PE8TP_3	AT26	EXP_C_TXP8
EXP_C_RXN7	AL29	PE9RN_0	PE9TN_0	AN29	EXP_C_TXN7
EXP_C_RXN6	AK30	PE9RN_1	PE9TN_1	AT29	EXP_C_TXN6
EXP_C_RXN5	AL31	PE9RN_2	PE9TN_2	AR30	EXP_C_TXN5
EXP_C_RXN4	AK28	PE9RN_3	PE9TN_3	AN30	EXP_C_TXN4
EXP_C_RXP7	AK29	PE9RP_0	PE9TP_0	AN28	EXP_C_TXP7
EXP_C_RXP6	AK31	PE9RP_1	PE9TP_1	AT28	EXP_C_TXP6
EXP_C_RXP5	AL32	PE9RP_2	PE9TP_2	AR29	EXP_C_TXP5
EXP_C_RXP4	AJ28	PE9RP_3	PE9TP_3	AP30	EXP_C_TXP4
EXP_C_RXN3	AK33	PE10RN_0	PE10TN_0	AT32	EXP_C_TXN3
EXP_C_RXN2	AL34	PE10RN_1	PE10TN_1	AR31	EXP_C_TXN2
EXP_C_RXN1	AK32	PE10RN_2	PE10TN_2	AP33	EXP_C_TXN1
EXP_C_RXN0	AH30	PE10RN_3	PE10TN_3	AN32	EXP_C_TXN0
EXP_C_RXP3	AL33	PE10RP_0	PE10TP_0	AT31	EXP_C_TXP3
EXP_C_RXP2	AM34	PE10RP_1	PE10TP_1	AP31	EXP_C_TXP2
EXP_C_RXP1	AJ32	PE10RP_2	PE10TP_2	AR33	EXP_C_TXP1
EXP_C_RXP0	AJ30	PE10RP_3	PE10TP_3	AP32	EXP_C_TXP0
(26) -SRCCLK_MCH	AG29	PE1CLKN	VCCDPE1PLL	AT22	VCC1_1PLLD
(26) SRCCLK_MCH1	AF29	PE1CLKP	VCCAPE1PLL	AT20	VCC1_1PLLA
			VCCAPE1BG	AT19	VCC1_5PEG1
VCC1_1PE	R3919 49.9/4/1	PE1COMP	AP35	PE1RCOMPO	
			AN35	PE1ICOMPI	
			AN36	PE1ICOMPO	
	R3921 750/4/1	PE1RBIAS	AN34	PE1RBIAS	

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AC82X58-B3/S

IOHD

EXP_A_RXN15	AJ6	PE3RN_0	PE3TN_0	AN4	EXP_A_TXN15
EXP_A_RXN14	AL4	PE3RN_1	PE3TN_1	AR4	EXP_A_TXN14
EXP_A_RXN13	AL5	PE3RN_2	PE3TN_2	AP6	EXP_A_TXN13
EXP_A_RXN12	AK7	PE3RN_3	PE3TN_3	AT5	EXP_A_TXN12
EXP_A_RXP15	AK6	PE3RP_0	PE3TP_0	AN5	EXP_A_TXP15
EXP_A_RXP14	AL3	PE3RP_1	PE3TP_1	AP4	EXP_A_TXP14
EXP_A_RXP13	AK5	PE3RP_2	PE3TP_2	AN6	EXP_A_TXP13
EXP_A_RXP12	AL7	PE3RP_3	PE3TP_3	AT4	EXP_A_TXP12
EXP_A_RXN11	AJ7	PE4RN_0	PE4TN_0	AR5	EXP_A_TXN11
EXP_A_RXN10	AM7	PE4RN_1	PE4TN_1	AR7	EXP_A_TXN10
EXP_A_RXN9	AL8	PE4RN_2	PE4TN_2	AP7	EXP_A_TXN9
EXP_A_RXN8	AJ9	PE4RN_3	PE4TN_3	AT9	EXP_A_TXN8
EXP_A_RXP11	AJ8	PE4RP_0	PE4TP_0	AR6	EXP_A_TXP11
EXP_A_RXP10	AM8	PE4RP_1	PE4TP_1	AT7	EXP_A_TXP10
EXP_A_RXP9	AL9	PE4RP_2	PE4TP_2	AP8	EXP_A_TXP9
EXP_A_RXP8	AK9	PE4RP_3	PE4TP_3	AT8	EXP_A_TXP8
EXP_A_RXN7	AK10	PE5RN_0	PE5TN_0	AR9	EXP_A_TXN7
EXP_A_RXN6	AK11	PE5RN_1	PE5TN_1	AT10	EXP_A_TXN6
EXP_A_RXN5	AM13	PE5RN_2	PE5TN_2	AP11	EXP_A_TXN5
EXP_A_RXN4	AL13	PE5RN_3	PE5TN_3	AP13	EXP_A_TXN4
EXP_A_RXP7	AL10	PE5RP_0	PE5TP_0	AP9	EXP_A_TXP7
EXP_A_RXP6	AJ11	PE5RP_1	PE5TP_1	AR10	EXP_A_TXP6
EXP_A_RXP5	AM12	PE5RP_2	PE5TP_2	AR11	EXP_A_TXP5
EXP_A_RXP4	AL14	PE5RP_3	PE5TP_3	AP12	EXP_A_TXP4
EXP_A_RXN3	AK12	PE6RN_0	PE6TN_0	AN15	EXP_A_TXN3
EXP_A_RXN2	AL15	PE6RN_1	PE6TN_1	AT15	EXP_A_TXN2
EXP_A_RXN1	AJ14	PE6RN_2	PE6TN_2	AR14	EXP_A_TXN1
EXP_A_RXN0	AJ12	PE6RN_3	PE6TN_3	AM16	EXP_A_TXN0
EXP_A_RXP3	AL12	PE6RP_0	PE6TP_0	AN14	EXP_A_TXP3
EXP_A_RXP2	AK15	PE6RP_1	PE6TP_1	AT14	EXP_A_TXP2
EXP_A_RXP1	AK14	PE6RP_2	PE6TP_2	AP14	EXP_A_TXP1
EXP_A_RXP0	AJ13	PE6RP_3	PE6TP_3	AM15	EXP_A_TXP0
(26) -SRCCLK_MCH	AN10	PE0CLKN	VCCDPEPLL	AP2	VCC1_1PLLD
(26) SRCCLK_MCH	AN11	PE0CLKP	VCCAPEPLL	AN1	VCC1_1PLLA
			VCCAPEBG	AN2	VCC1_5PEG0
VCC1_1PE	R3918 49.9/4/1	PE0COMP	AM1	PE0RCOMPO	
			AP3	PE0ICOMPI	
			AL1	PE0ICOMPO	
	R3920 750/4/1	PE0RBIAS	AN13	PE0RBIAS	

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AC82X58-B3/S

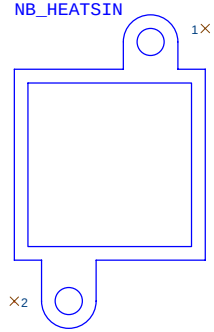
VCC1_1 — FB49 0/6/X — VCC1_1PLLD
BC1236 1u/6/X7R/16V/K
R4076 0/4, R4078 0/4
BC1238 10U/8/X5R/6.3V/K

VCC1_1 — FB51 0/6/X — VCC1_1PLLA
BC1240 1u/6/X7R/16V/K
R4080 0/4, R4082 0/4
BC1242 10U/8/X5R/6.3V/K

VCCA1_5 — FB48 0/6 — VCC1_5PEG1
BC1235 1u/6/X7R/16V/K
R4075 0/4, R4077 0/4
BC1237 10U/8/X5R/6.3V/K

VCCA1_5 — FB50 0/6 — VCC1_5PEG0
BC1239 1u/6/X7R/16V/K
R4079 0/4, R4081 0/4
BC1241 10U/8/X5R/6.3V/K

NB_HEATSIN



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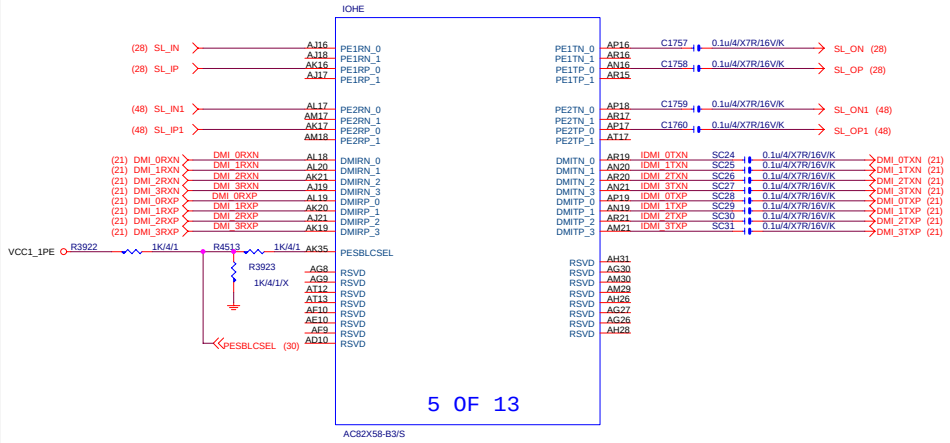
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date:	Sheet 10 of 48	



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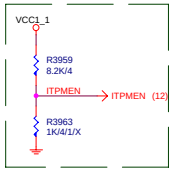

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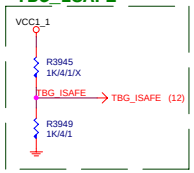

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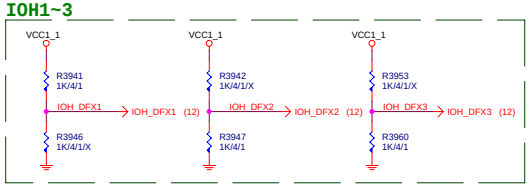
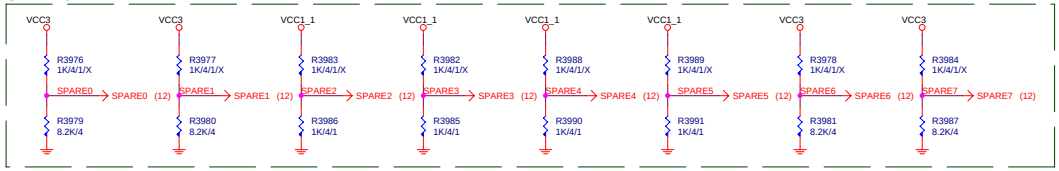


SPARE0~7



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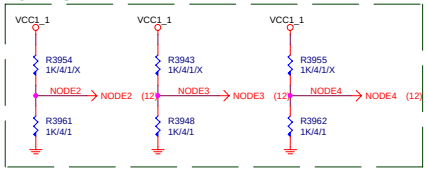

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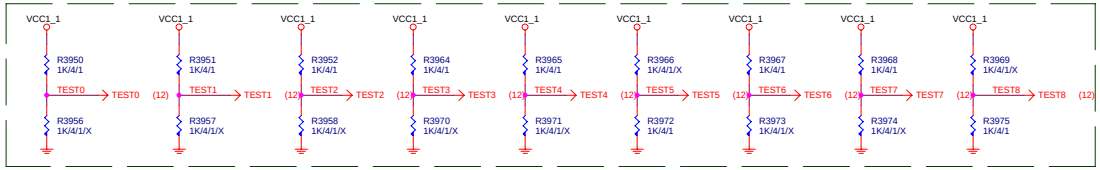

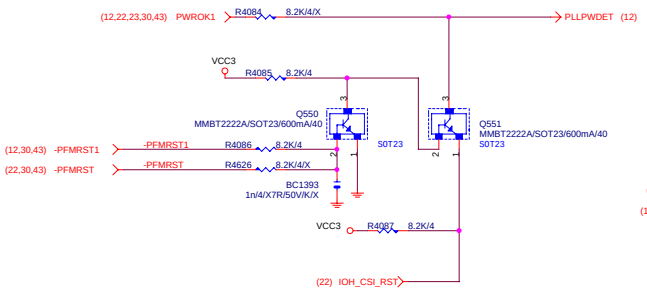

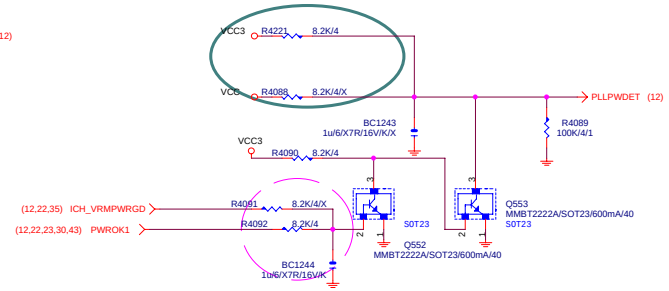

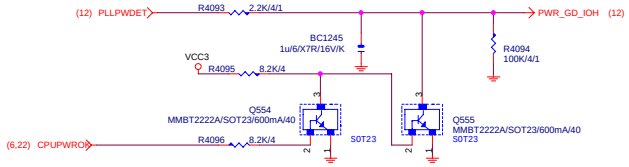

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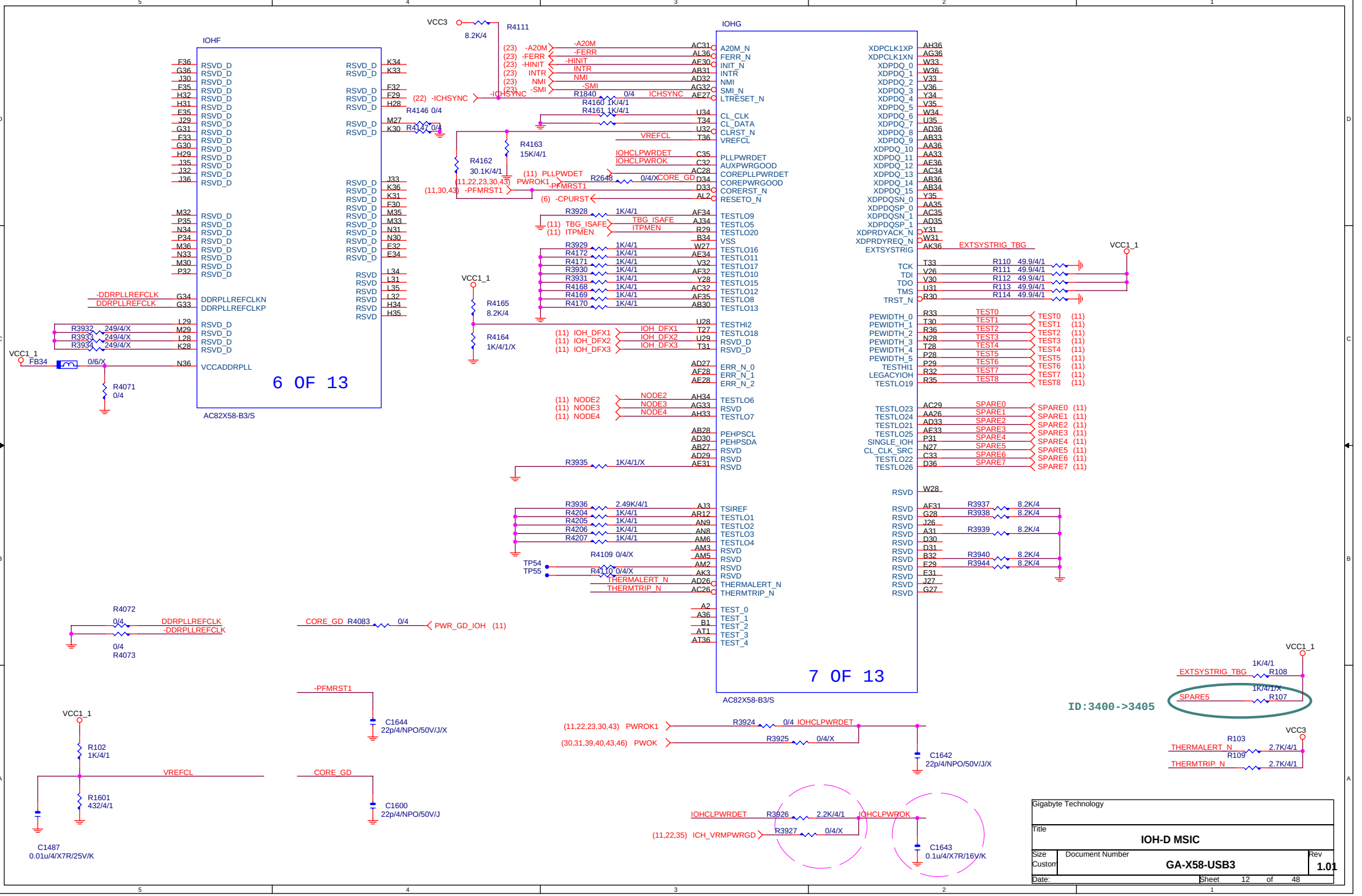
Date:	Sheet 11 of 48	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6 OF 13
AC82X58-B3/S
IOHG
7 OF 13
AC82X58-B3/S
VCC3
R4111
8.2K/4
VCC1_1
R4165
8.2K/4
R4164
1K/4/1/X
R4071
0/4
R4072
0/4
R4073
0/4
R4146 0/4
R4147 0/4
R4163
15K/4/1
R4162
30.1K/4/1
R4160 1K/4/1
R4161 1K/4/1
R1840 0/4
R2648 0/4/X
R4109 0/4/X
R4110 0/4/X
R3935 1K/4/1/X
R3936 2.49K/4/1
R4204 1K/4/1
R4205 1K/4/1
R4206 1K/4/1
R4207 1K/4/1
R3924 0/4
R3925 0/4/X
R3926 2.2K/4/1
R3927 0/4/X
R3928 1K/4/1
R3929 1K/4/1
R4172 1K/4/1
R4171 1K/4/1
R3930 1K/4/1
R3931 1K/4/1
R4168 1K/4/1
R4169 1K/4/1
R4170 1K/4/1
R3932 249/4/X
R3933 249/4/X
R3934 249/4/X
FB34 0/6/X
R102
1K/4/1
R1601
432/4/1
C1487
0.01u/4/X7R/25V/K
C1644
22p/4/NPO/50V/J/X
C1600
22p/4/NPO/50V/J
C1642
22p/4/NPO/50V/J/X
C1643
0.1u/4/X7R/16V/K
R110 49.9/4/1
R111 49.9/4/1
R112 49.9/4/1
R113 49.9/4/1
R114 49.9/4/1
R3937 8.2K/4
R3938 8.2K/4
R3939 8.2K/4
R3940 8.2K/4
R3944 8.2K/4
R108 1K/4/1
R107 1K/4/1/X
R103
R109 2.7K/4/1
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-A20M
-FERR
-HINIT
INTR
NMI
-SMI
-ICHSYNC
VREFCL
IOHCLPWRDET
IOHCLPWROK
PLLPWRDET
AUXPWRGOOD
COREPLLPWRDET
COREPWRGOOD
CORERST_N
RESETO_N
TBG_ISAFE
ITPMEN
IOH_DFX1
IOH_DFX2
IOH_DFX3
NODE2
NODE3
NODE4
THERMALERT_N
THERMTRIP_N
EXTSYSTRIG_TBG
SPARE5
PWR_GD_IOH (11)
CORE_GD
-PFMRST1
PWROK1
PWOK
ICH_VRMPWRGD
Gigabyte Technology
IOH-D MSIC
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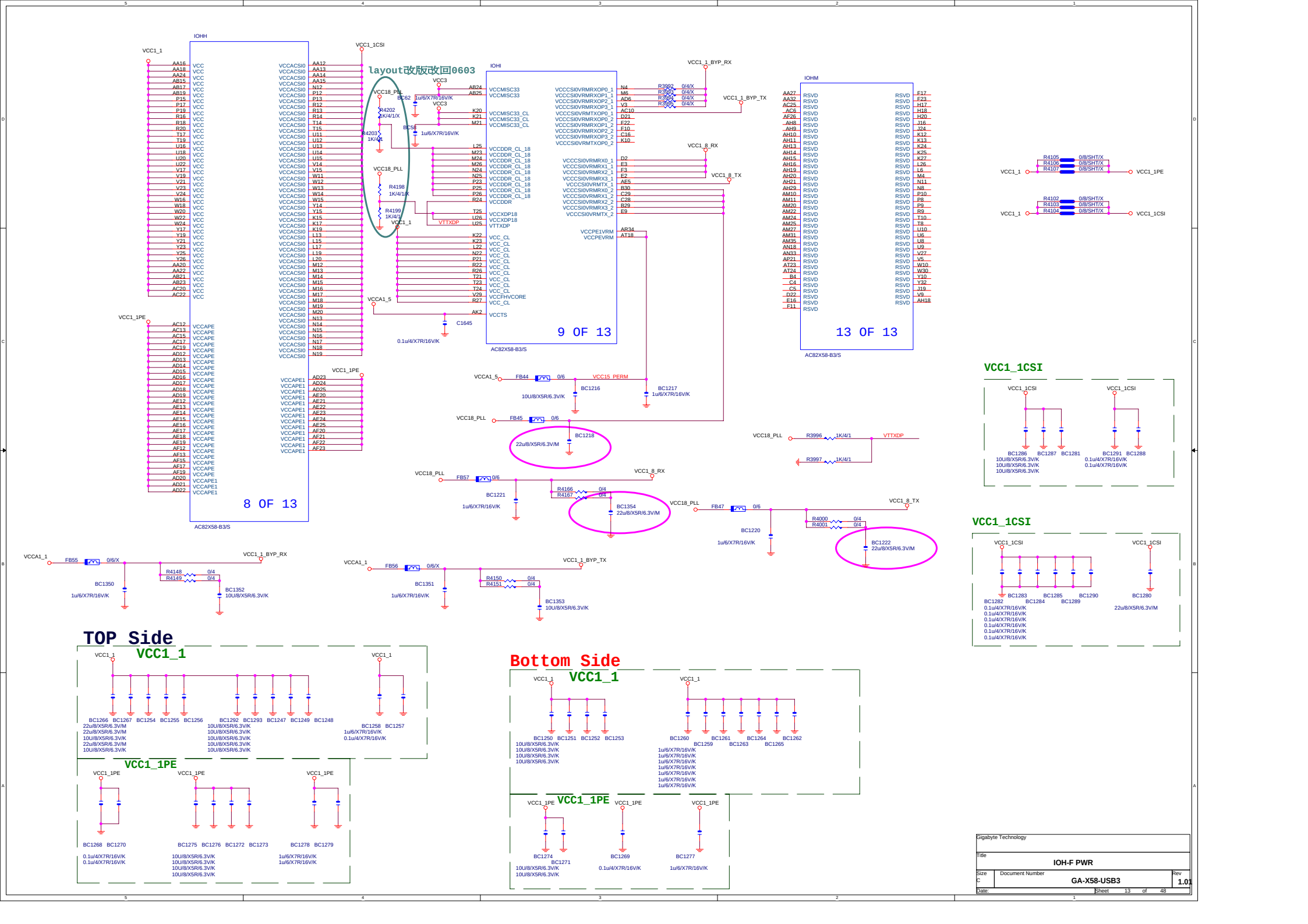
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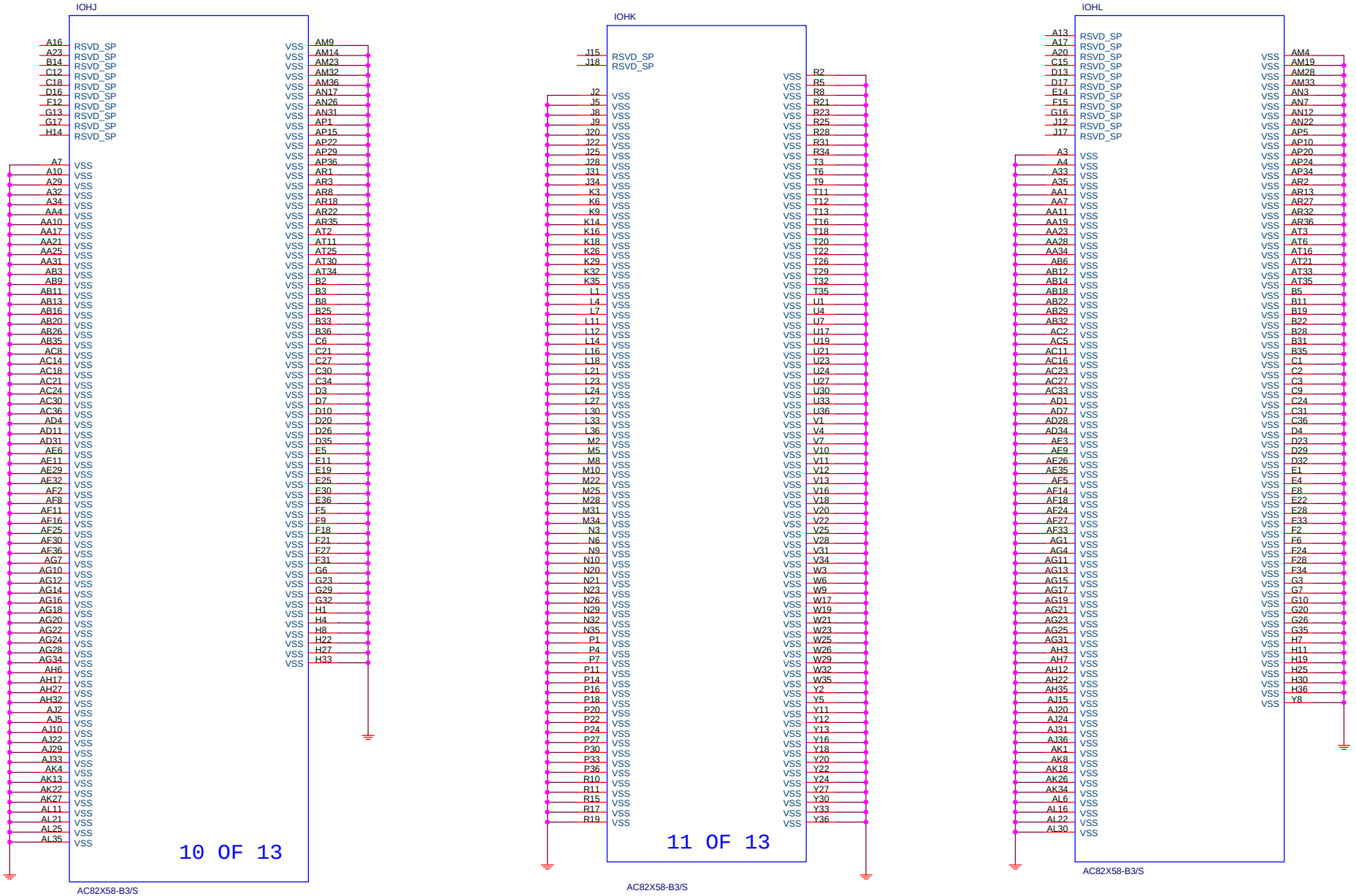
8 OF 13
AC82X58-B3/S
IOHI
9 OF 13
AC82X58-B3/S
IOHM
13 OF 13
AC82X58-B3/S
layout改版改回0603
VCC1_1
VCC1_1CSI
VCC1_1PE
VCC3
VCC18_PLL
VCCA1_5
VCC1_1_BYP_RX
VCC1_1_BYP_TX
VCC1_8_RX
VCC1_8_TX
VTTXDP
VCC15_PERM
C1645
0.1u/4/X7R/16V/K
VCC1_1CSI
VCC1_1CSI
VCC1_1CSI
TOP Side
VCC1_1
VCC1_1PE
Bottom Side
VCC1_1
VCC1_1PE
Gigabyte Technology
Title
IOH-F PWR
Size
C
Document Number
GA-X58-USB3
Rev
1.01
Date:
Sheet 13 of 48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A16 RSVD_SP
A23 RSVD_SP
B14 RSVD_SP
C12 RSVD_SP
C18 RSVD_SP
D16 RSVD_SP
F12 RSVD_SP
G13 RSVD_SP
G17 RSVD_SP
H14 RSVD_SP
A7 VSS
A10 VSS
A29 VSS
A32 VSS
A34 VSS
AA4 VSS
AA10 VSS
AA17 VSS
AA21 VSS
AA25 VSS
AA31 VSS
AB3 VSS
AB9 VSS
AB11 VSS
AB13 VSS
AB16 VSS
AB20 VSS
AB26 VSS
AB35 VSS
AC8 VSS
AC14 VSS
AC18 VSS
AC21 VSS
AC24 VSS
AC30 VSS
AC36 VSS
AD4 VSS
AD11 VSS
AD31 VSS
AE6 VSS
AE11 VSS
AE29 VSS
AE32 VSS
AF2 VSS
AF8 VSS
AF11 VSS
AF16 VSS
AF25 VSS
AF30 VSS
AF36 VSS
AG7 VSS
AG10 VSS
AG12 VSS
AG14 VSS
AG16 VSS
AG18 VSS
AG20 VSS
AG22 VSS
AG24 VSS
AG28 VSS
AG34 VSS
AH6 VSS
AH17 VSS
AH27 VSS
AH32 VSS
AJ2 VSS
AJ5 VSS
AJ10 VSS
AJ22 VSS
AJ29 VSS
AJ33 VSS
AK4 VSS
AK13 VSS
AK22 VSS
AK27 VSS
AL11 VSS
AL21 VSS
AL25 VSS
AL35 VSS
VSS AM9
VSS AM14
VSS AM23
VSS AM32
VSS AM36
VSS AN17
VSS AN26
VSS AN31
VSS AP1
VSS AP15
VSS AP22
VSS AP29
VSS AP36
VSS AR1
VSS AR3
VSS AR8
VSS AR18
VSS AR22
VSS AR35
VSS AT2
VSS AT11
VSS AT25
VSS AT30
VSS AT34
VSS B2
VSS B3
VSS B8
VSS B25
VSS B33
VSS B36
VSS C6
VSS C21
VSS C27
VSS C30
VSS C34
VSS D3
VSS D7
VSS D10
VSS D20
VSS D26
VSS D35
VSS E5
VSS E11
VSS E19
VSS E25
VSS E30
VSS E36
VSS F5
VSS F9
VSS F18
VSS F21
VSS F27
VSS F31
VSS G6
VSS G23
VSS G29
VSS G32
VSS H1
VSS H4
VSS H8
VSS H22
VSS H27
VSS H33
10 OF 13
AC82X58-B3/S
IOHK
J15 RSVD_SP
J18 RSVD_SP
J2 VSS
J5 VSS
J8 VSS
J9 VSS
J20 VSS
J22 VSS
J25 VSS
J28 VSS
J31 VSS
J34 VSS
K3 VSS
K6 VSS
K9 VSS
K14 VSS
K16 VSS
K18 VSS
K26 VSS
K29 VSS
K32 VSS
K35 VSS
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L4 VSS
L7 VSS
L11 VSS
L12 VSS
L14 VSS
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L18 VSS
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L23 VSS
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M10 VSS
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N32 VSS
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P7 VSS
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P18 VSS
P20 VSS
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P24 VSS
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P30 VSS
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R11 VSS
R15 VSS
R17 VSS
R19 VSS
VSS R2
VSS R5
VSS R8
VSS R21
VSS R23
VSS R25
VSS R28
VSS R31
VSS R34
VSS T3
VSS T6
VSS T9
VSS T11
VSS T12
VSS T13
VSS T16
VSS T18
VSS T20
VSS T22
VSS T26
VSS T29
VSS T32
VSS T35
VSS U1
VSS U4
VSS U7
VSS U17
VSS U19
VSS U21
VSS U23
VSS U24
VSS U27
VSS U30
VSS U33
VSS U36
VSS V1
VSS V4
VSS V7
VSS V10
VSS V11
VSS V12
VSS V13
VSS V16
VSS V18
VSS V20
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VSS V25
VSS V28
VSS V31
VSS V34
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VSS W6
VSS W9
VSS W17
VSS W19
VSS W21
VSS W23
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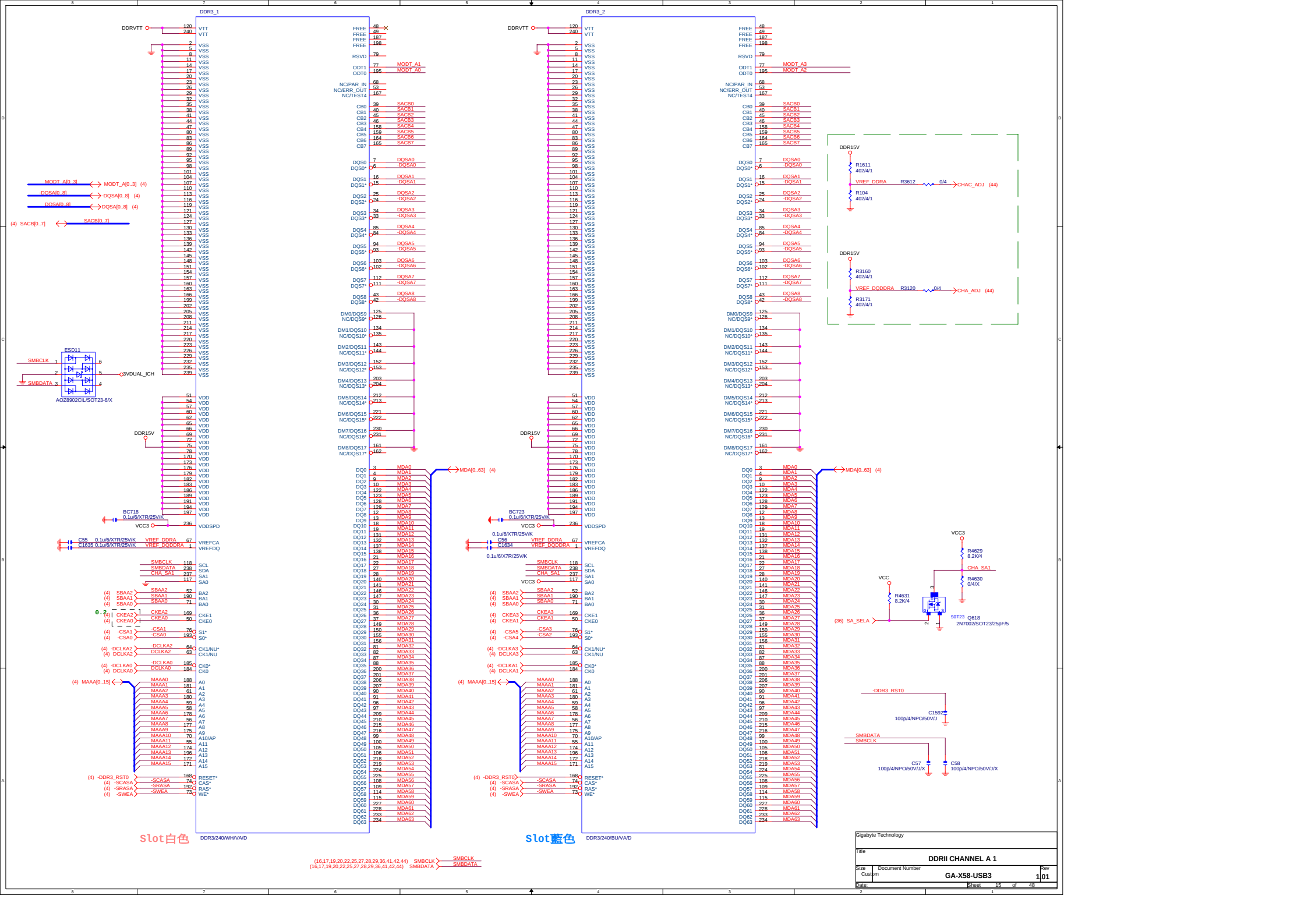
VSS W29
VSS W32
VSS W35
VSS Y2
VSS Y5
VSS Y11
VSS Y12
VSS Y13
VSS Y16
VSS Y18
VSS Y20
VSS Y22
VSS Y24
VSS Y27
VSS Y30
VSS Y33
VSS Y36
11 OF 13
AC82X58-B3/S
IOHL
A13 RSVD_SP
A17 RSVD_SP
A20 RSVD_SP
C15 RSVD_SP
D13 RSVD_SP
D17 RSVD_SP
E14 RSVD_SP
F15 RSVD_SP
G16 RSVD_SP
J12 RSVD_SP
J17 RSVD_SP
A3 VSS
A4 VSS
A33 VSS
A35 VSS
AA1 VSS
AA7 VSS
AA11 VSS
AA19 VSS
AA23 VSS
AA28 VSS
AA34 VSS
AB6 VSS
AB12 VSS
AB14 VSS
AB18 VSS
AB22 VSS
AB29 VSS
AB32 VSS
AC2 VSS
AC5 VSS
AC11 VSS
AC16 VSS
AC23 VSS
AC27 VSS
AC33 VSS
AD1 VSS
AD7 VSS
AD28 VSS
AD34 VSS
AE3 VSS
AE9 VSS
AE26 VSS
AE35 VSS
AF5 VSS
AF14 VSS
AF18 VSS
AF24 VSS
AF27 VSS
AF33 VSS
AG1 VSS
AG4 VSS
AG11 VSS
AG13 VSS
AG15 VSS
AG17 VSS
AG19 VSS
AG21 VSS
AG23 VSS
AG25 VSS
AG31 VSS
AH3 VSS
AH7 VSS
AH12 VSS
AH22 VSS
AH35 VSS
AJ15 VSS
AJ20 VSS
AJ24 VSS
AJ31 VSS
AJ36 VSS
AK1 VSS
AK8 VSS
AK18 VSS
AK26 VSS
AK34 VSS
AL6 VSS
AL16 VSS
AL22 VSS
AL30 VSS
VSS AM4
VSS AM19
VSS AM28
VSS AM33
VSS AN3
VSS AN7
VSS AN12
VSS AN22
VSS AP5
VSS AP10
VSS AP20
VSS AP24
VSS AP34
VSS AR2
VSS AR13
VSS AR27
VSS AR32
VSS AR36
VSS AT3
VSS AT6
VSS AT16
VSS AT21
VSS AT33
VSS AT35
VSS B5
VSS B11
VSS B19
VSS B22
VSS B28
VSS B31
VSS B35
VSS C1
VSS C2
VSS C3
VSS C9
VSS C24
VSS C31
VSS C36
VSS D4
VSS D23
VSS D29
VSS D32
VSS E1
VSS E4
VSS E8
VSS E22
VSS E28
VSS E33
VSS F2
VSS F6
VSS F24
VSS F28
VSS F34
VSS G3
VSS G7
VSS G10
VSS G20
VSS G26
VSS G35
VSS H7
VSS H11
VSS H19
VSS H25
VSS H30
VSS H36
VSS Y8
AC82X58-B3/S
Gigabyte Technology
Title
IOH-H GND
Size
Custom
Document Number
GA-X58-USB3
Rev
1.01
Date:
Sheet 14 of 48


DDR3_1
DDR3_2
DDRVTT
DDR15V
VCC3
3VDUAL_ICH
ESD11
AOZ8902CIL/SOT23-6/X
BC718
BC723
0.1u/6/X7R/25V/K
C55 0.1u/6/X7R/25V/K
C1635 0.1u/6/X7R/25V/K
C56
C1634
VREF_DDRA
VREF_DDQDDRA
MODT_A[0..3]
DQSA[0..8]
SACB[0..7]
MDA[0..63]
SMBCLK
SMBDATA
CHA_SA1
SA_SELA
-DDR3_RST0
R1611 402/4/1
R104 402/4/1
R3612 0/4
R3160 402/4/1
R3120 0/4
R3171 402/4/1
R4629 8.2K/4
R4630 0/4/X
R4631 8.2K/4
C1592 100p/4/NPO/50V/J
C57 100p/4/NPO/50V/J/X
C58 100p/4/NPO/50V/J/X
Q618 2N7002/SOT23/25pF/5
CHAC_ADJ (44)
CHA_ADJ (44)
Slot白色
Slot蓝色
DDR3/240/WH/VA/D
DDR3/240/BU/VA/D
Gigabyte Technology
DDRII CHANNEL A 1
GA-X58-USB3
Size Custom
Document Number
Rev 1.01
Date:
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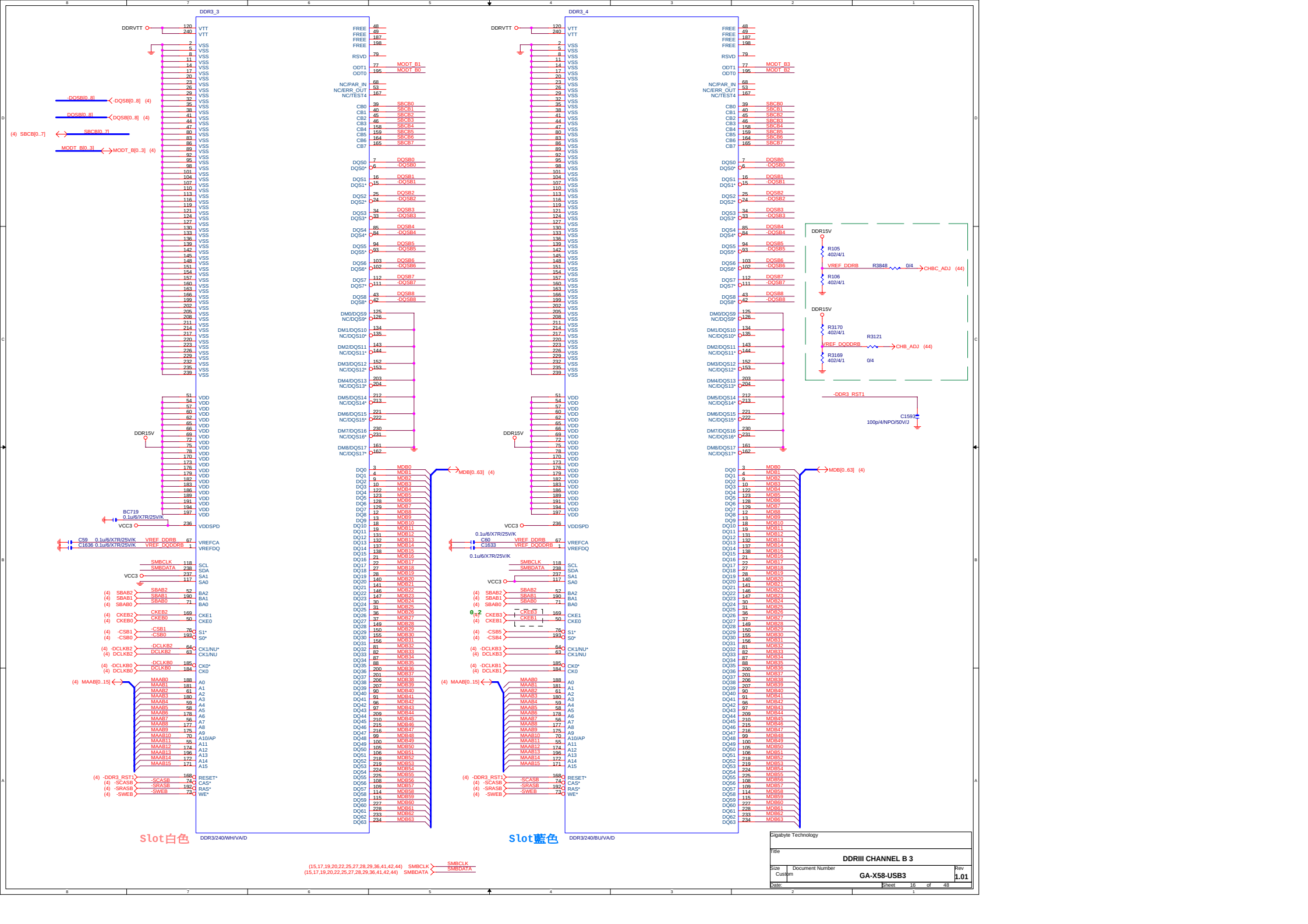
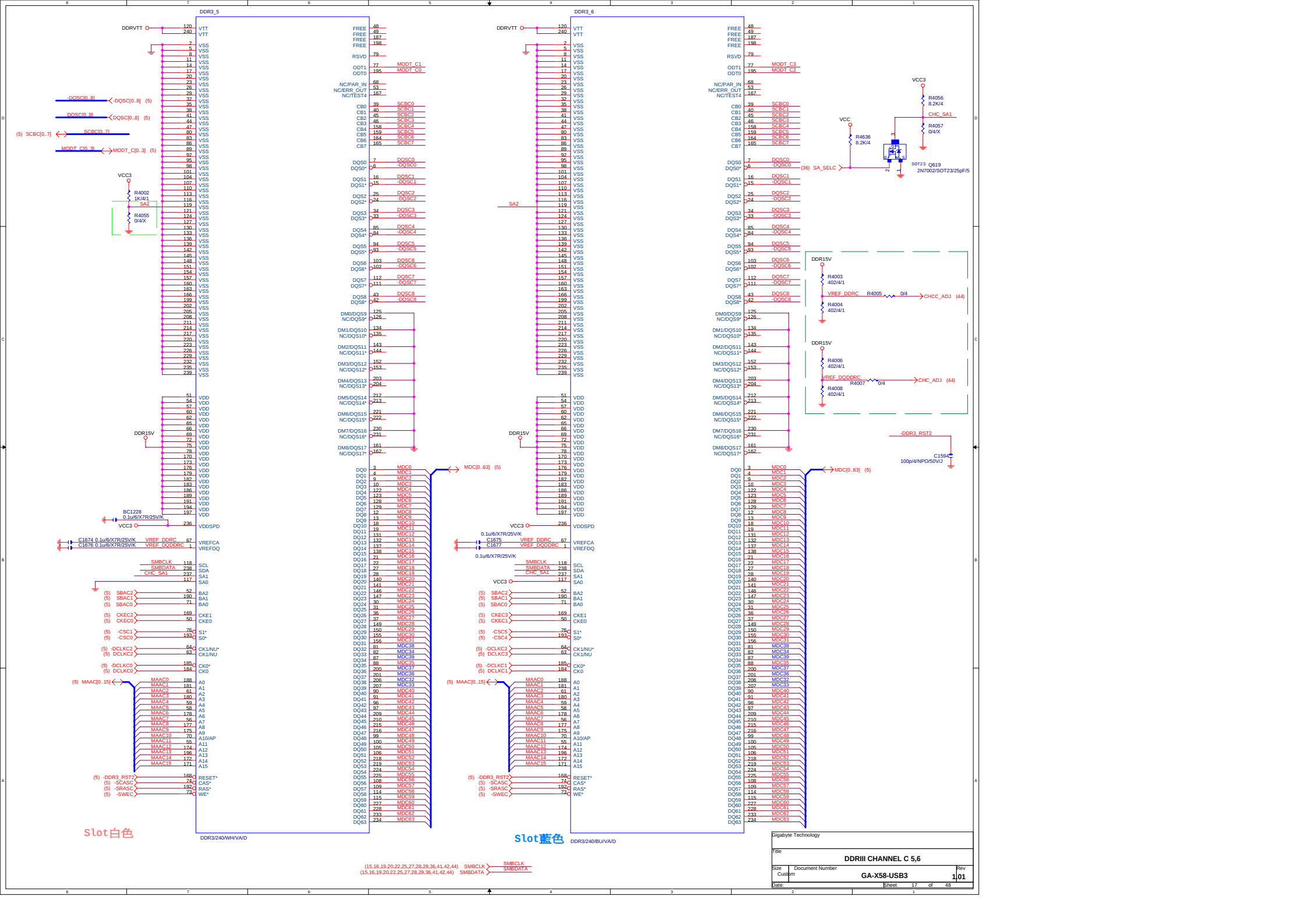
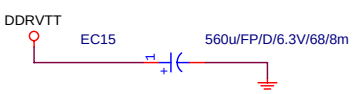
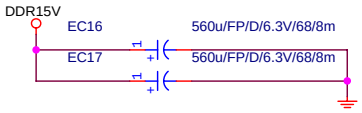

DDR3_3
DDR3_4
DDRVTT
DDR15V
-DQSB[0..8]
DQSB[0..8]
SBCB[0..7]
MODT_B[0..3]
MDB[0..63]
-DDR3_RST1
R105 402/4/1
R106 402/4/1
R3170 402/4/1
R3169 402/4/1
R3121
R3848 0/4
VREF_DDRB
VREF_DQDDRB
CHBC_ADJ (44)
CHB_ADJ (44)
C1592 100p/4/NPO/50V/J
BC719 0.1u/6/X7R/25V/K
C59 0.1u/6/X7R/25V/K
C1636 0.1u/6/X7R/25V/K
C60 0.1u/6/X7R/25V/K
C1633 0.1u/6/X7R/25V/K
Slot白色
Slot藍色
DDR3/240/WH/VA/D
DDR3/240/BU/VA/D
(15,17,19,20,22,25,27,28,29,36,41,42,44) SMBCLK
(15,17,19,20,22,25,27,28,29,36,41,42,44) SMBDATA
Gigabyte Technology
Title
DDRIII CHANNEL B 3
Size Custom
Document Number GA-X58-USB3
Rev 1.01
Date:
Sheet 16 of 48

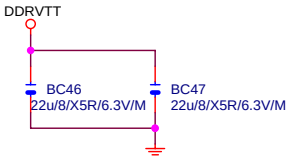

DDR3_5
DDR3_6
DDRVTT
VCC3
DDR15V
VCC
SA2
SA_SELC
CHCC_ADJ
CHC_ADJ
VREF_DDRC
VREF_DQDDRC
-DDR3_RST2
SMBCLK
SMBDATA
CHC_SA1
MDC[0..63]
SCBC[0..7]
DQSC[0..8]
MODT_C[0..3]
MAAC[0..15]
Slot白色
Slot蓝色
DDR3/240/WH/VA/D
DDR3/240/BU/VA/D
Gigabyte Technology
DDRIII CHANNEL C 5,6
GA-X58-USB3
Rev 1.01
Sheet 17 of 48

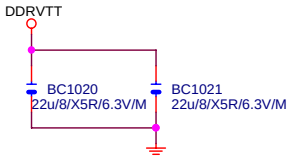
DDR TERMINATION CHANNEL A

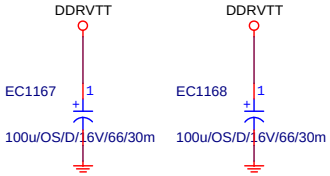
DDRVTT Decouple



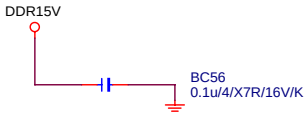


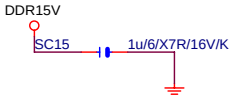






DDR18V Decouple





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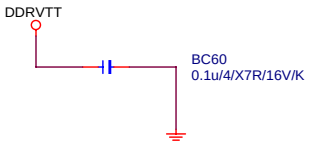
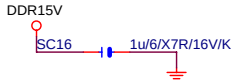
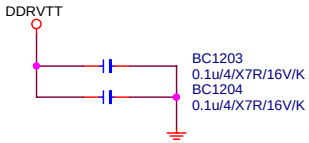
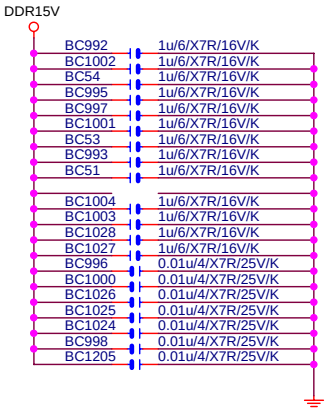


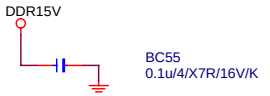




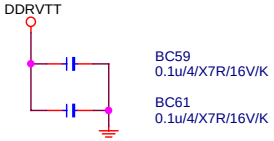


DDR TERMINATION CHANNEL B

DDR18V Decouple

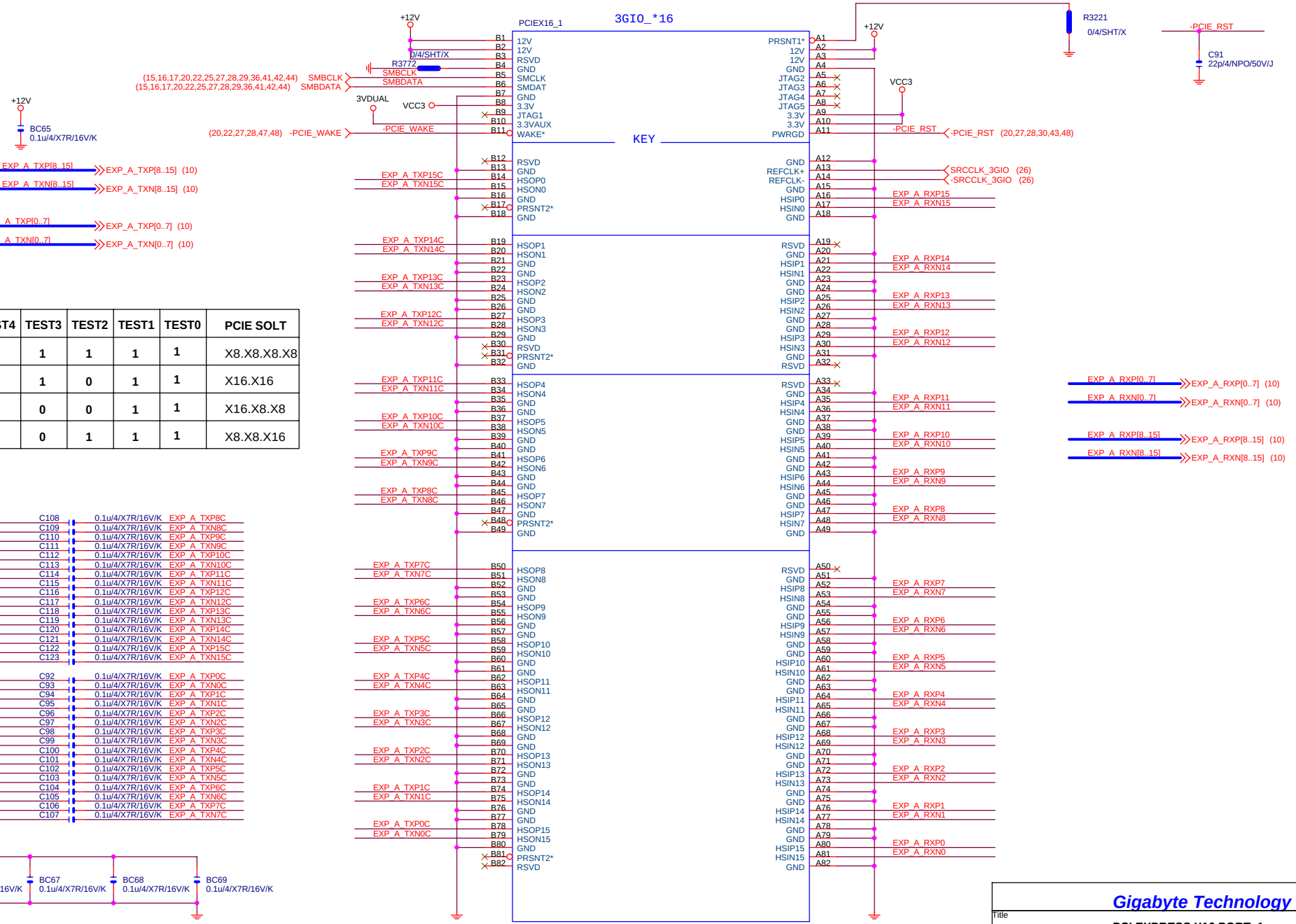


DDRVTT Decouple



Gigabyte Technology		
Title: DDRII TERMINATOR		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 18 of 48	

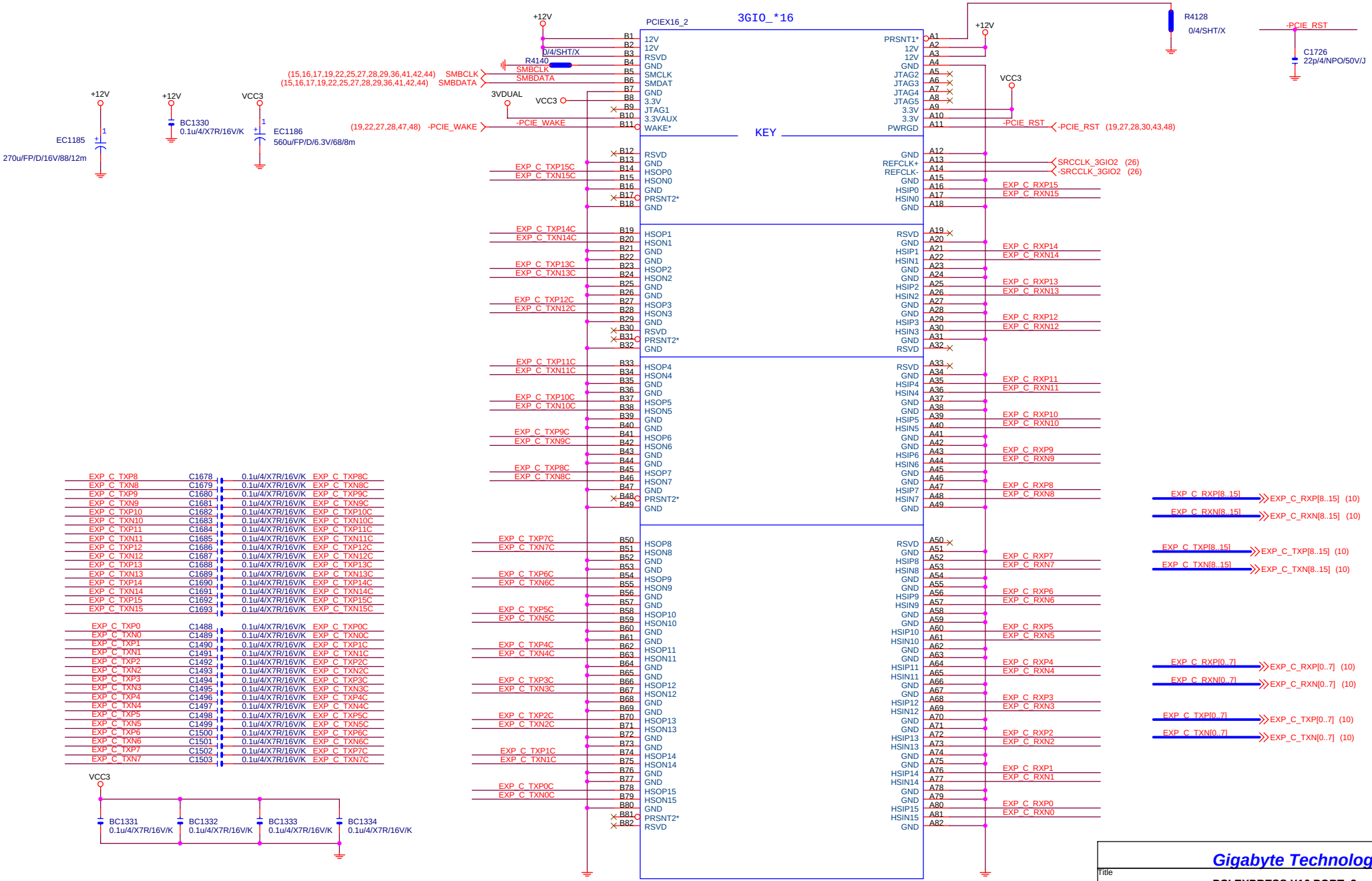
PCIESLOT-164DN-2



Prest A B	TEST5	TEST4	TEST3	TEST2	TEST1	TEST0	PCIE SOLT
00	1	0	1	1	1	1	X8.X8.X8.X8
11	1	1	1	0	1	1	X16.X16
10	1	1	0	0	1	1	X16.X8.X8
01	1	1	0	1	1	1	X8.X8.X16

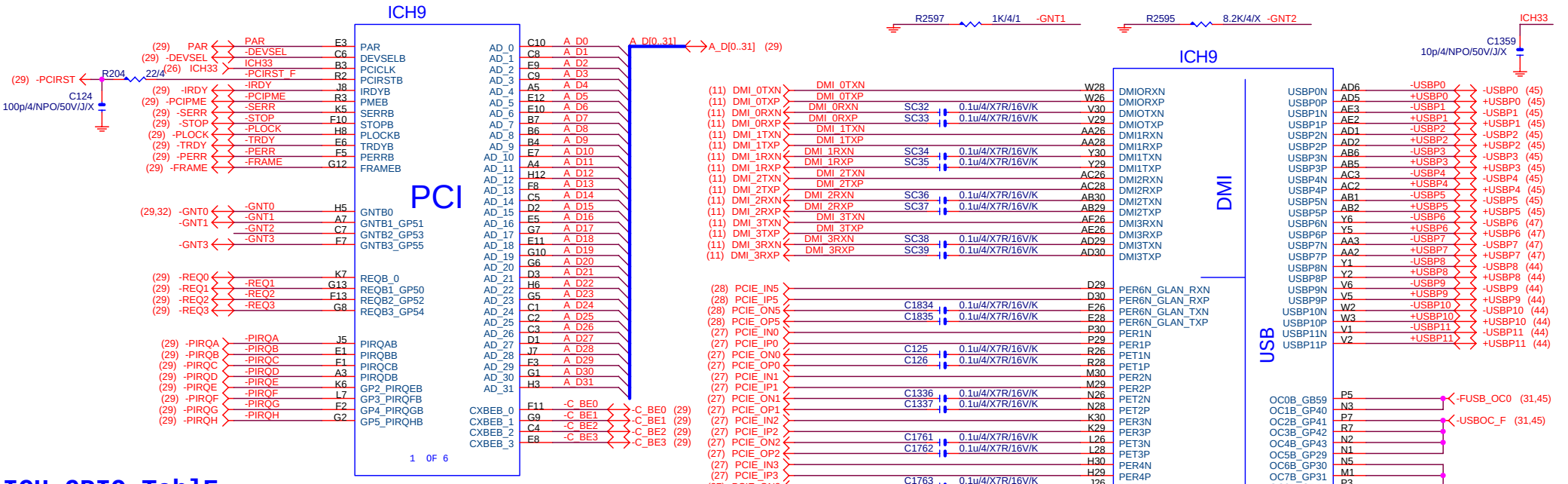
Gigabyte Technology			
Title: PCI EXPRESS X16 PORT_1			
Size: Custom	Document Number: GA-X58-USB3		Rev: 1.01
Date: Friday, August 06, 2010	Sheet 19 of 48		

PCIESLOT-164DN-2



Title	PCI EXPRESS X16 PORT_2	
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 20 of 48	

Gigabyte Technology



ICH GPIO TablE

PIN NAME	USAGE	NOTE
GP9_WOL_EN(GPIO9)	8268_P18	
GP20(GPIO20)	8268_P18	
GP0	-PECI_REQ	
GP8	STRAP_CSI_FRE1	
GP12	STRAP_CSI_FRE0	
GP27_QRT_STATE0	3VDUAL_ICH	原ISOLATEB_1
GP26_S4_STATEB	3VDUAL_ICH	原ISOLATEB_2
CLGPIO5_GP57	F_LED1_C	
GP1_TACH1	F_LED2_C	
GP22_SCLOCK	F_LED3_C	
GP28_SLOAD	F_LED4_C	
GP21_SATA0GP	F_LED5_C	
GP6_TACH2	NBT_LED2_C	
GP39_SDATAOUT0	-CPU_PSI_DIS	
GP34(GPIO34)	-SPI_WP0	
GP48_SDATAOUT1	-EN_PWM	
GP19_SATA1GP	-ACZ_DET	
GP25	-CPU_STOP	
GP36_SATA2GP	GPIO36(FS)	
GP37_SATA3GP	SATA3GP	
SMBALERTB_GP11	-SMBALRT	
GP10_ALERTB	ICH_GP10(-CATERR)	原-LAN1_DSM
GP13	-LPCPME	

Gigabyte Technology	
Title	ICH10 PCIE,DMI, PCI, USB
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ICH9

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for page35 CSICBSL線路

FOR PCIEX4 才需PULL-UP

DEFAULT ENABLE (TLS)

GPIO0~15

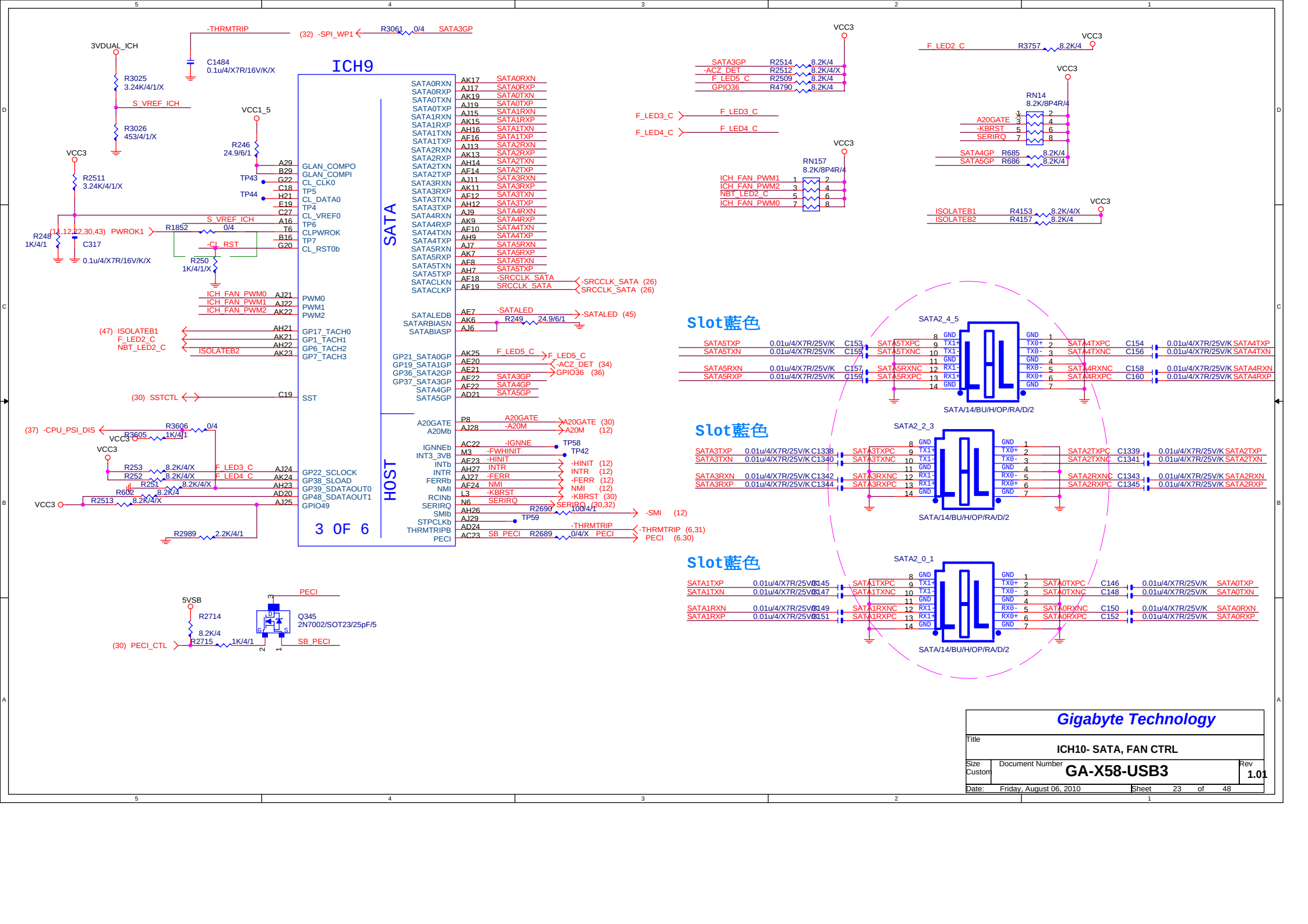
MB_ID1 for Media (媒體 P-H)

BATTERY-DUAL-4

RB 必須放在BAT外

H: REV1.0
L: REV2.0

Gigabyte Technology			
Title: ICH10 GPIO, CTRL			
Size: B	Document Number: GA-X58-USB3		Rev: 1.01
Date: Friday, August 06, 2010	Sheet 22 of 48		


ICH9
SATA
HOST
3 OF 6
Slot藍色
Slot藍色
Slot藍色
SATA2_4_5
SATA2_2_3
SATA2_0_1
SATA/14/BU/H/OP/RA/D/2
Gigabyte Technology
ICH10- SATA, FAN CTRL
GA-X58-USB3
Rev 1.01
Date: Friday, August 06, 2010
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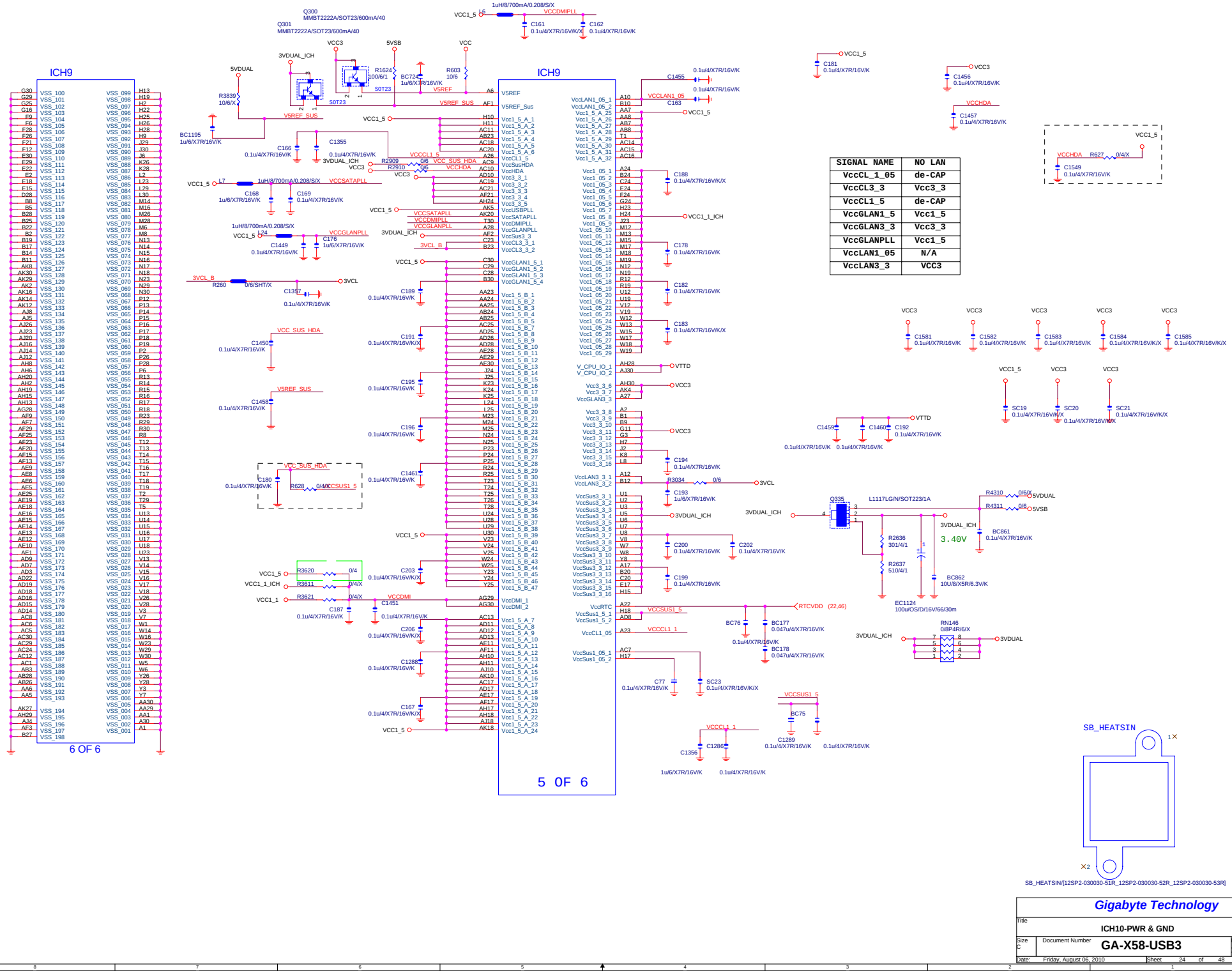

SIGNAL NAME	NO LAN
VccCL_1_05	de-CAP
VccCL3_3	Vcc3_3
VccCL1_5	de-CAP
VccGLAN1_5	Vcc1_5
VccGLAN3_3	Vcc3_3
VccGLANPLL	Vcc1_5
VccLAN1_05	N/A
VccLAN3_3	VCC3

Gigabyte Technology		
Title: ICH10-PWR & GND		
Size: C	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 24 of 48	

5V : AMD mode
0.6V~3V : VRD11 mode
0V : VRD10 mode

U1 ISL6312CRZ/QFN48

5V: 1phase
Below 5V-0.6V : 2phase

BOTTOM PAD CONNECT TO GND THROUGH 10 VIA

Pu for 6322 type2 SMBus address
address 1000_111x

For ISL 6312

For ISL 6322

I ocp=(300+200)*125uA*2/2.44m=51A
RC current sens=(1.2uH/2.44m)=0.1uF*R
R=6.8kohm (1.4倍)
F=170K Hz(158k ohm)

Close Choke

Close MOS

INTEL VRD11 mode
SET 1.v [00100010]

1.1875V

16A@1.1V

UPA2724/N/3.3m/PPAKSO8[10IF9-042724-01R]

MMBT2222A/SOT23/600mA/40

SATA HS/X

VTTMOS_HS

0	1	X	X	X	0	1	0
VTTD_VID0	VTTD_VID1	VTTD_VID2	VTTD_VID3	VTTD_VID4	VTTD_VID5	VTTD_VID6	VTTD_VID7
R4032 0/4	R4033 1K/4/1X, R4034 1K/4/1X	R4035 1K/4/1, R4037 1K/4/1X	R4038 1K/4/1X, R4039 1K/4/1X	R4040 1K/4/1X, R4041 1K/4/1X	R4042 1K/4/1X, R4044 0/4	R4045 1K/4/1X, R4046 1K/4/1X	R4047 1K/4/1, R4051 0/4, R4053 1K/4/1X

Gigabyte Technology

Title: ISL6314_VTTD
Size: C
Document Number: GA-X58-USB3
Rev: 1.01
Date: Friday, August 06, 2010
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CLK GEN CK505

For EMI

U49

9LPRS914HKLF/MLF72

GSEL=1 , DOTCLK 96Mhz from 12/13
GSEL=0 , PCIECLK11 from 12/13

SEL_48= 1 , 24Mhz from pin10
SEL_48= 0 , 48Mhz from pin10

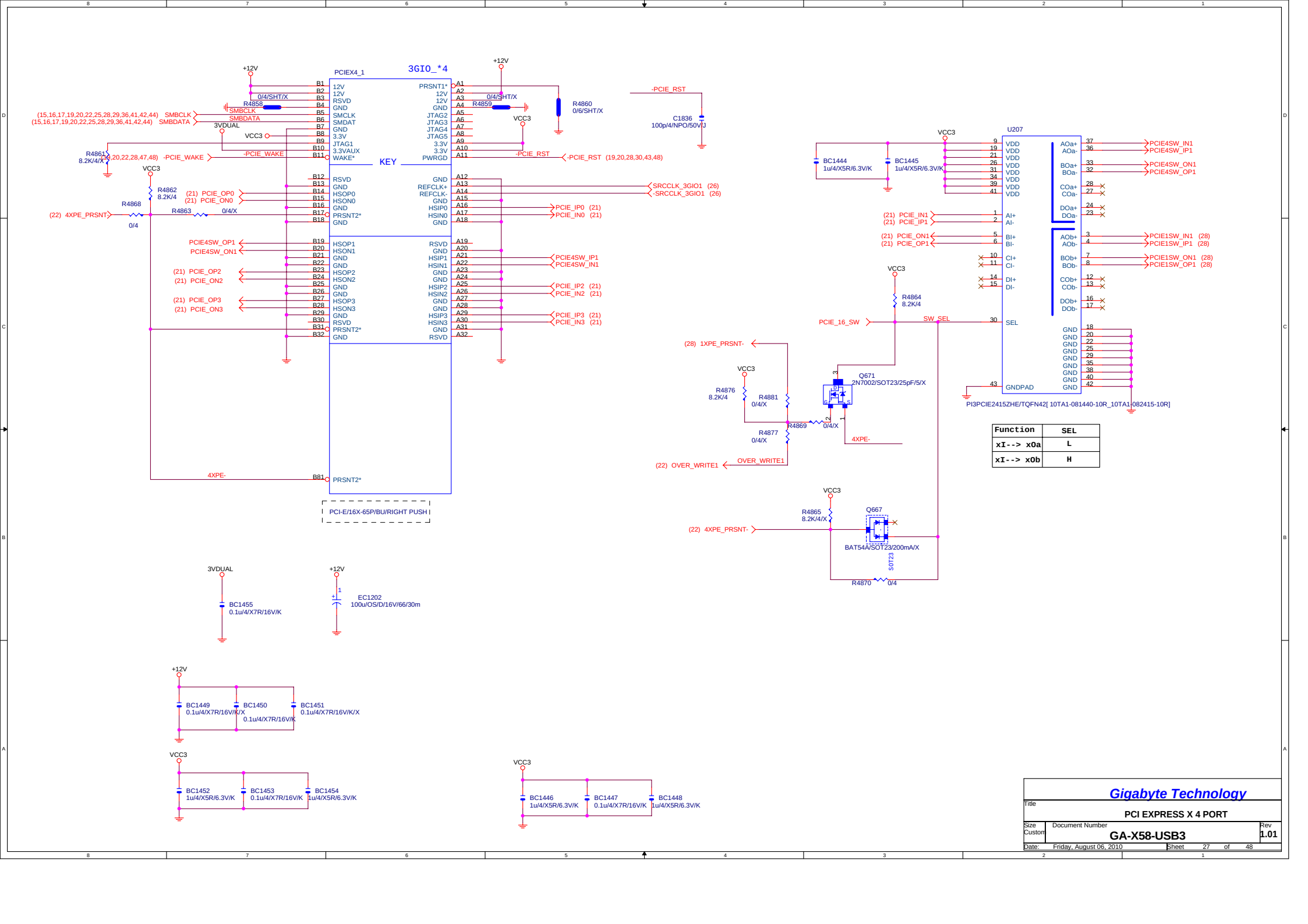
check leak current

SEL_STOP: latched input to select pin functionality
1 = Selects pin 44/45 to be PCI_STOP#/CPU_STOP#
0 = Selects pin 44/45 to be PCIEX outputs ;
3.3V PCICLK output

MMBT2907A/SOT23/-600mA/50/X

Title	ICS9LPRS914
Size: Custom	Document Number: GA-X58-USB3
Rev	1.01
Date:	Friday, August 06, 2010
Sheet	26 of 48

Gigabyte Technology



Function	SEL
xI--> xOa	L
xI--> xOb	H

Gigabyte Technology

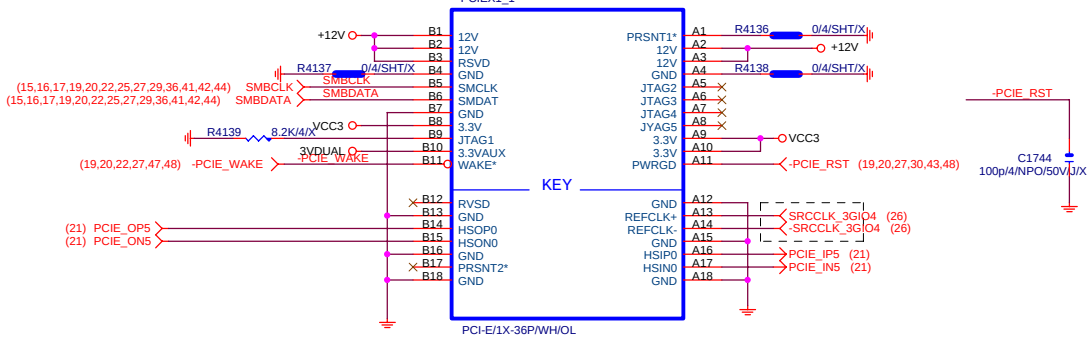
Title: PCI EXPRESS X 4 PORT

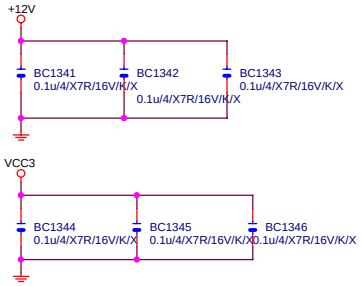
Size: Custom | Document Number: GA-X58-USB3 | Rev: 1.01

Date: Friday, August 06, 2010 | Sheet 27 of 48

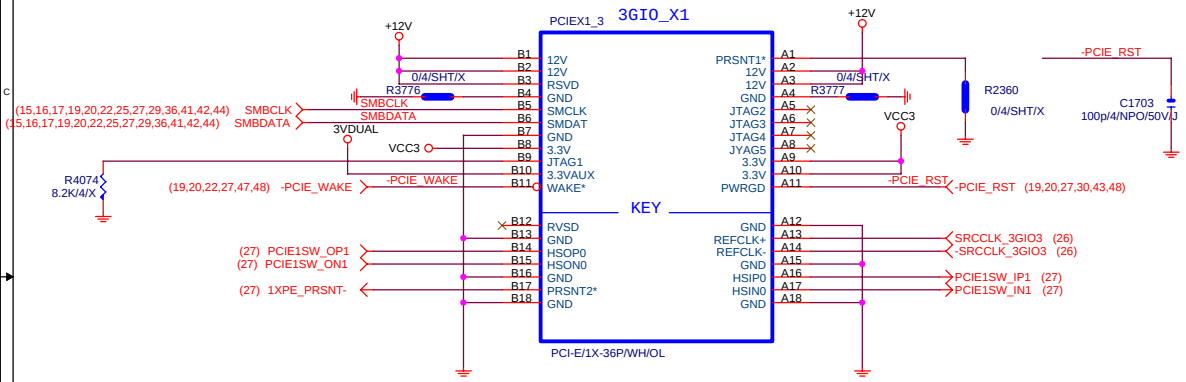
PCIE*1

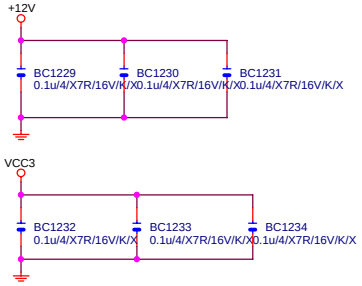
PCIEX1_1 3GIO_X1

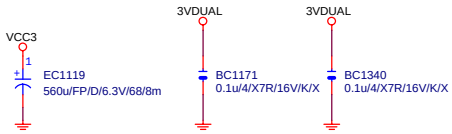




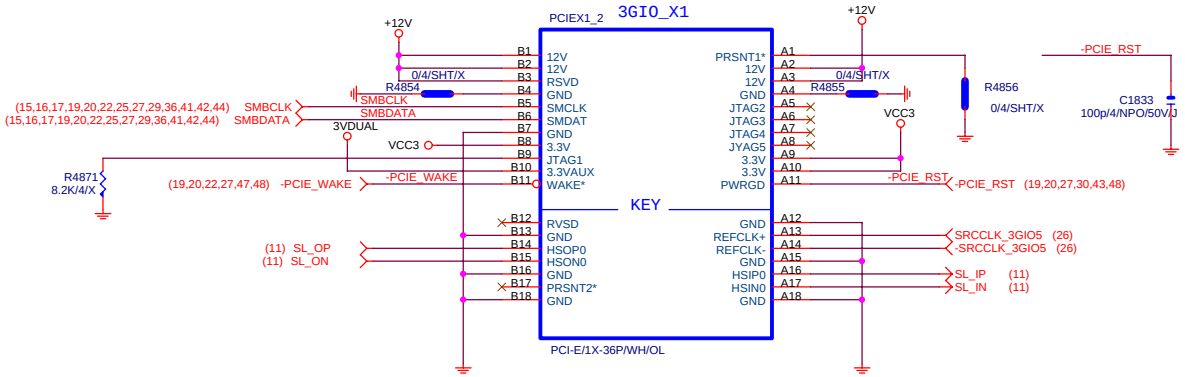
PCIEX1_3 3GIO_X1

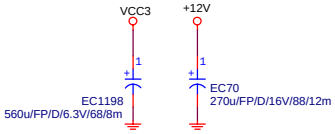






PCIEX1_2 3GIO_X1

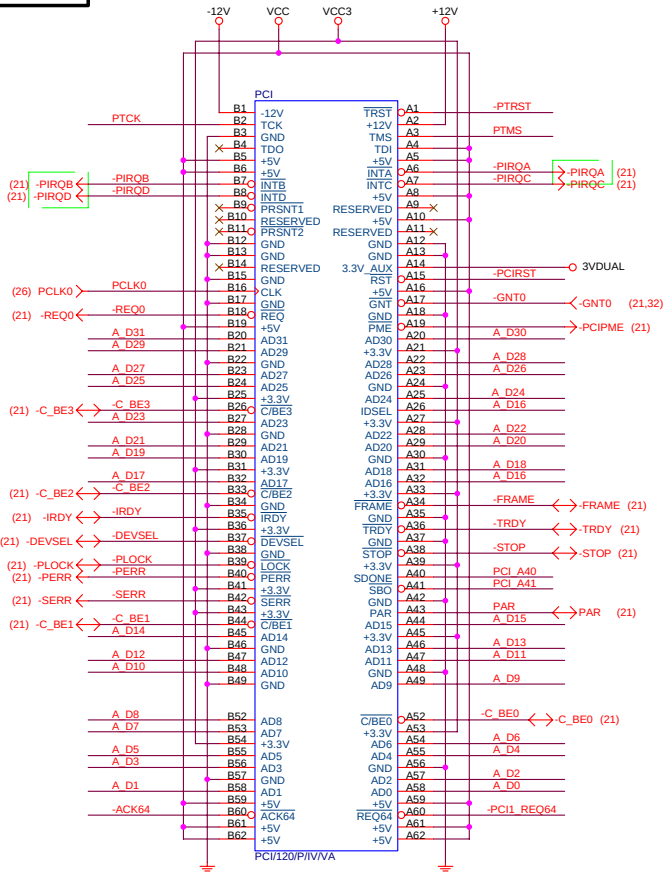




From IOH PCIE gen2

Gigabyte Technology		
Title: PCI EXPRESS X1		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 28 of 48	

PCI SLOT



-REQ0/-GNT0/AD16

(21) A_D[0..31] — A_D[0..31]

-PCIRST — -PCIRST (21)

C1292
33p/4/NPO/50V/J

Place close to PCI1

RN134
8.2K/8P4R/4
PTCK
-PTRST
PTMS
VCC

RN19
2.2K/8P4R/4
VCC
-REQ3
-REQ1
-REQ0
-REQ2
PAR
R1673
2.2K/4/1

RN20
2.2K/8P4R/4
VCC
-FRAME
-IRDY
-TRDY
-DEVSEL

RN22
2.2K/8P4R/4
-PERR
-STOP
-SERR
-PLOCK

RN23
8.2K/8P4R/4
VCC3
-PIRQC
-PIRQE
-PIRQB
-PIRQA

RN24
8.2K/8P4R/4
-PIRQD
-PIRQG
-PIRQH
-PIRQF

(15,16,17,19,20,22,25,27,28,36,41,42,44) SMBCLK
(15,16,17,19,20,22,25,27,28,36,41,42,44) SMBDATA
R1639 0/6/SHT/X PCI_A40
R267 0/6/SHT/X PCI_A41

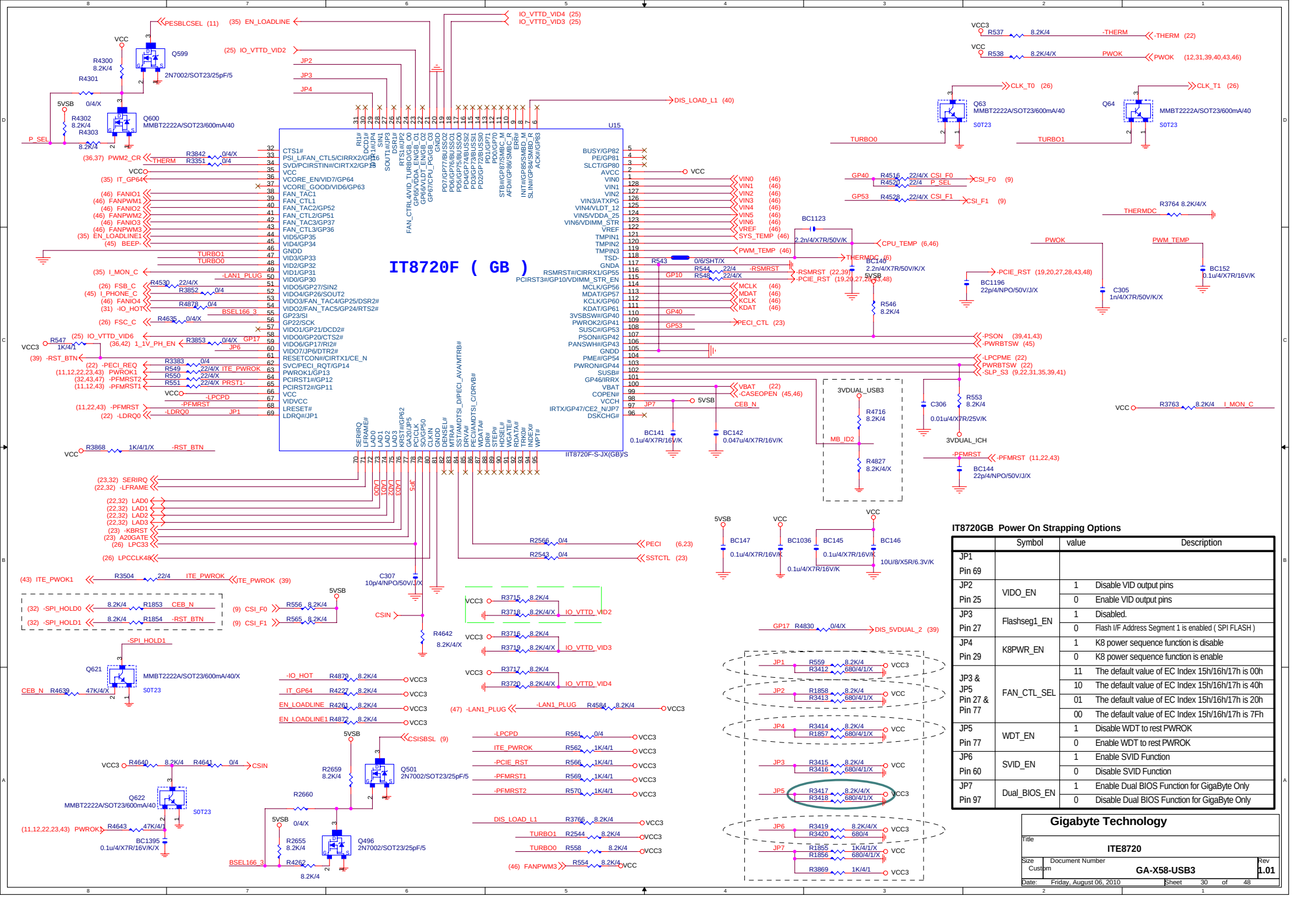
VCC
R1674 2.2K/4/1 -PCI1_REQ64
R1677 2.2K/4/1 -ACK64

VCC3
EC1155
560u/FP/D/6.3V/68/8m

+12V
EC1154
270u/FP/D/16V/88/12m

VCC
EC1197
560u/FP/D/6.3V/68/8m

Gigabyte Technology		
Title: PCI SLOT 1,		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 29 of 48	



IT8720GB Power On Strapping Options

	Symbol	value	Description
JP1 Pin 69			
JP2 Pin 25	VIDO_EN	1	Disable VID output pins
		0	Enable VID output pins
JP3 Pin 27	Flashseg1_EN	1	Disabled.
		0	Flash I/F Address Segment 1 is enabled (SPI FLASH)
JP4 Pin 29	K8PWR_EN	1	K8 power sequence function is disable
		0	K8 power sequence function is enable
JP3 & JP5 Pin 27 & Pin 77	FAN_CTL_SEL	11	The default value of EC Index 15h/16h/17h is 00h
		10	The default value of EC Index 15h/16h/17h is 40h
		01	The default value of EC Index 15h/16h/17h is 20h
		00	The default value of EC Index 15h/16h/17h is 7Fh
JP5 Pin 77	WDT_EN	1	Disable WDT to rest PWROK
		0	Enable WDT to rest PWROK
JP6 Pin 60	SVID_EN	1	Enable SVID Function
		0	Disable SVID Function
JP7 Pin 97	Dual_BIOS_EN	1	Enable Dual BIOS Function for GigaByte Only
		0	Disable Dual BIOS Function for GigaByte Only

Gigabyte Technology

Title: **ITE8720**

Size: Custom | Document Number: **GA-X58-USB3** | Rev: **1.01**

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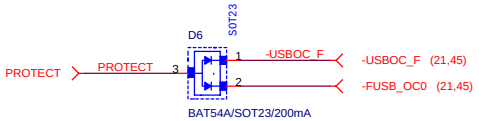
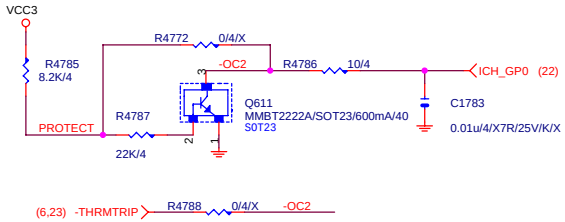
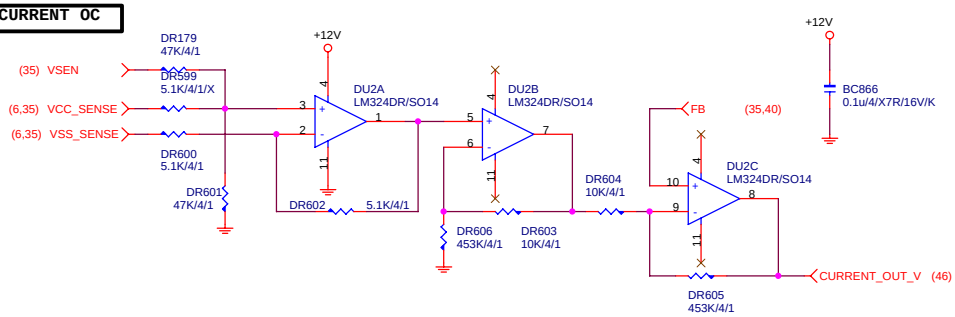
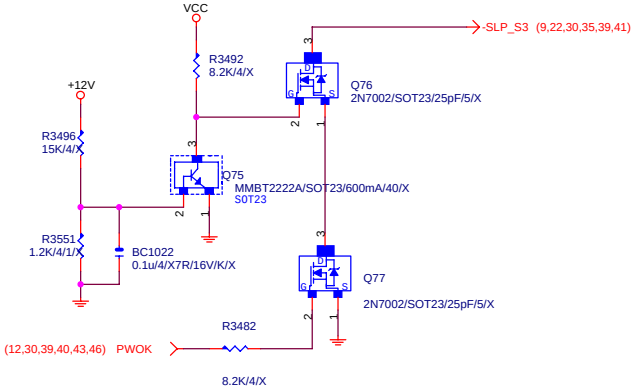




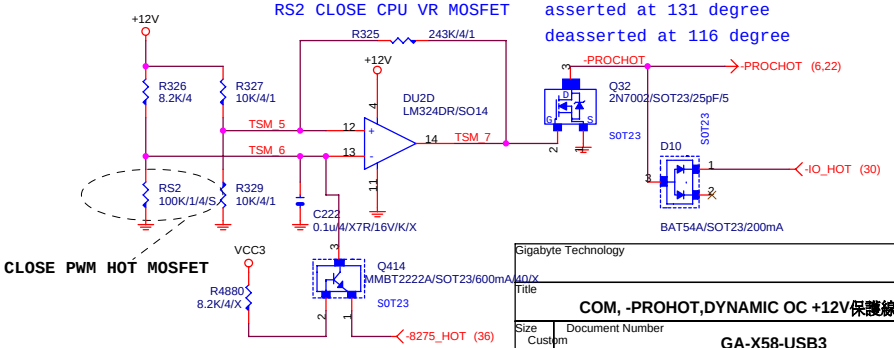
DYNAMIC CURRENT OC





-PROHOT

RS2 CLOSE CPU VR MOSFET asserted at 131 degree
deasserted at 116 degree



Gigabyte Technology		
Title: COM, -PROHOT,DYNAMIC OC +12V保護線路		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
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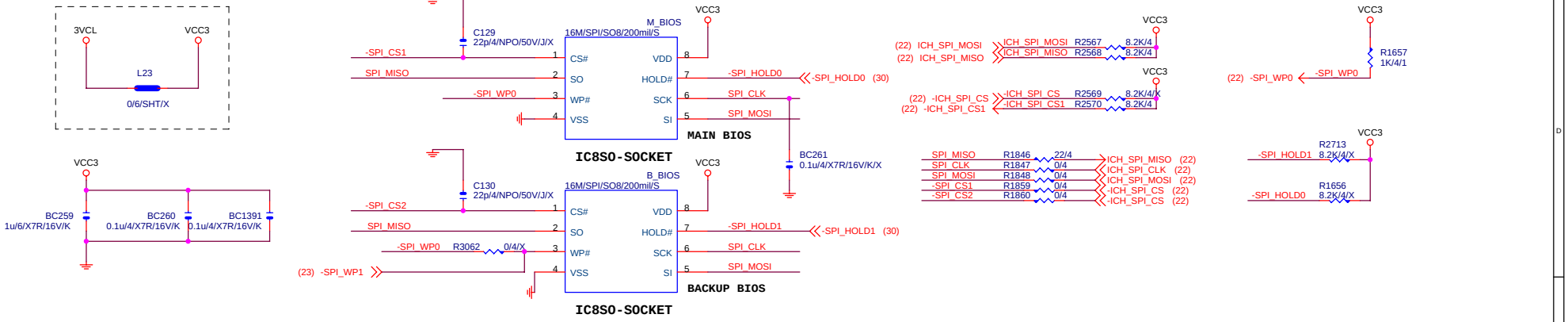
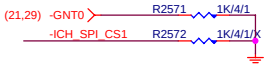


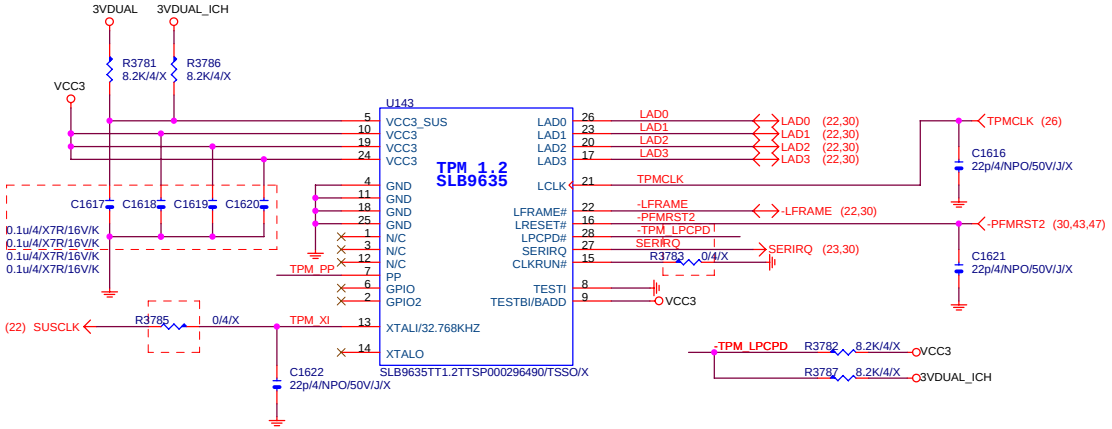
距離LR29 在0.5cm以內

REMOVE PCI_BT1.PCI_BT2

BOOT DEVICE	GNT0	CS1
SPI	0	X
PCI	1	0
FWH	1	1



TPM



TPM Function

1. C1617.C16118.C1619.C1620
2. U143
3. R3782.R3783.R3784.R3785
4. R3584=15 ohm(TPM)不上(no TPM)
5. R295=15 ohm(TPM)22 ohm(no TPM)

Gigabyte Technology		
Title: DUAL BIOS TPM		
Size: Custom	Document Number: GA-X58-USB3	Rev: 1.01
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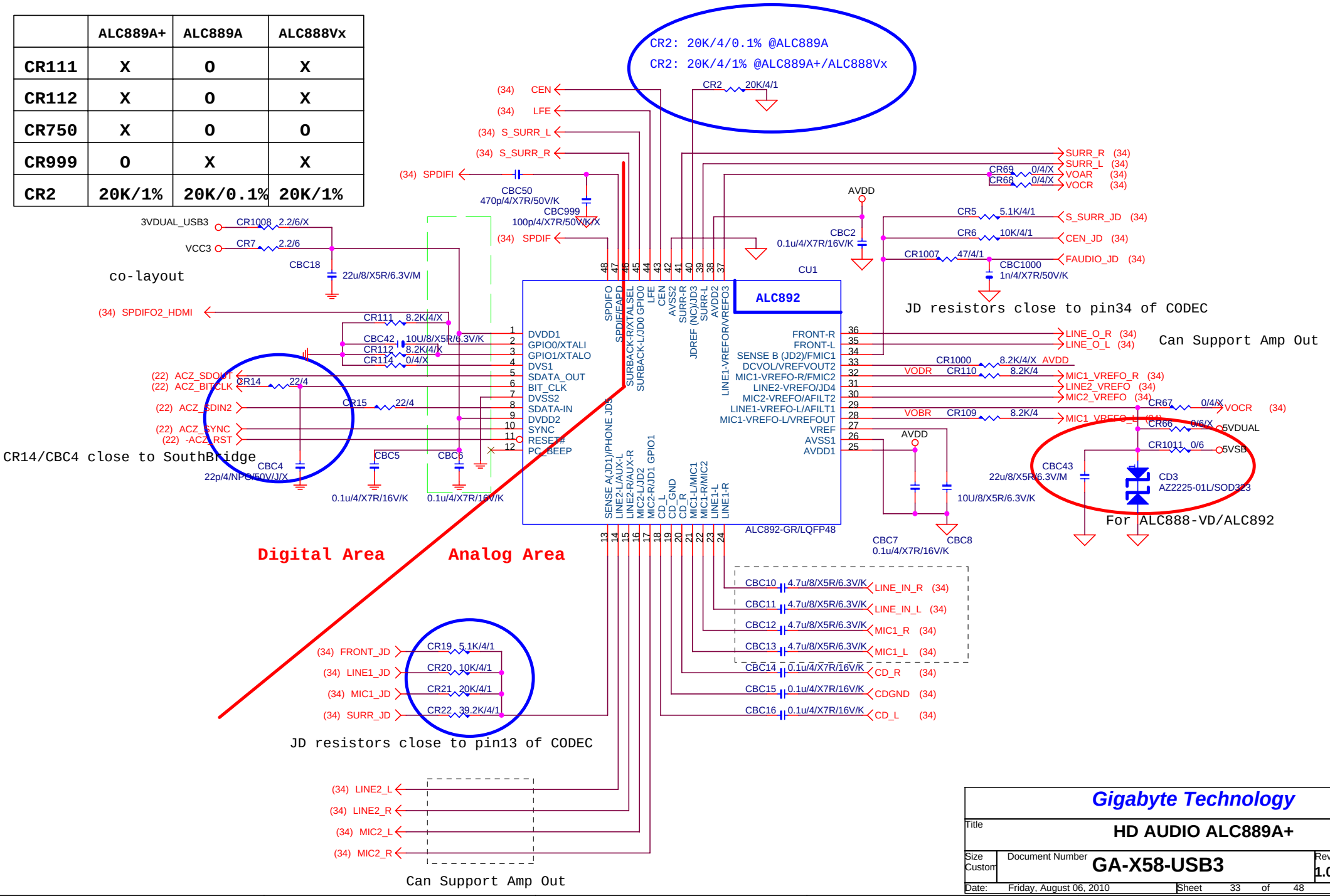
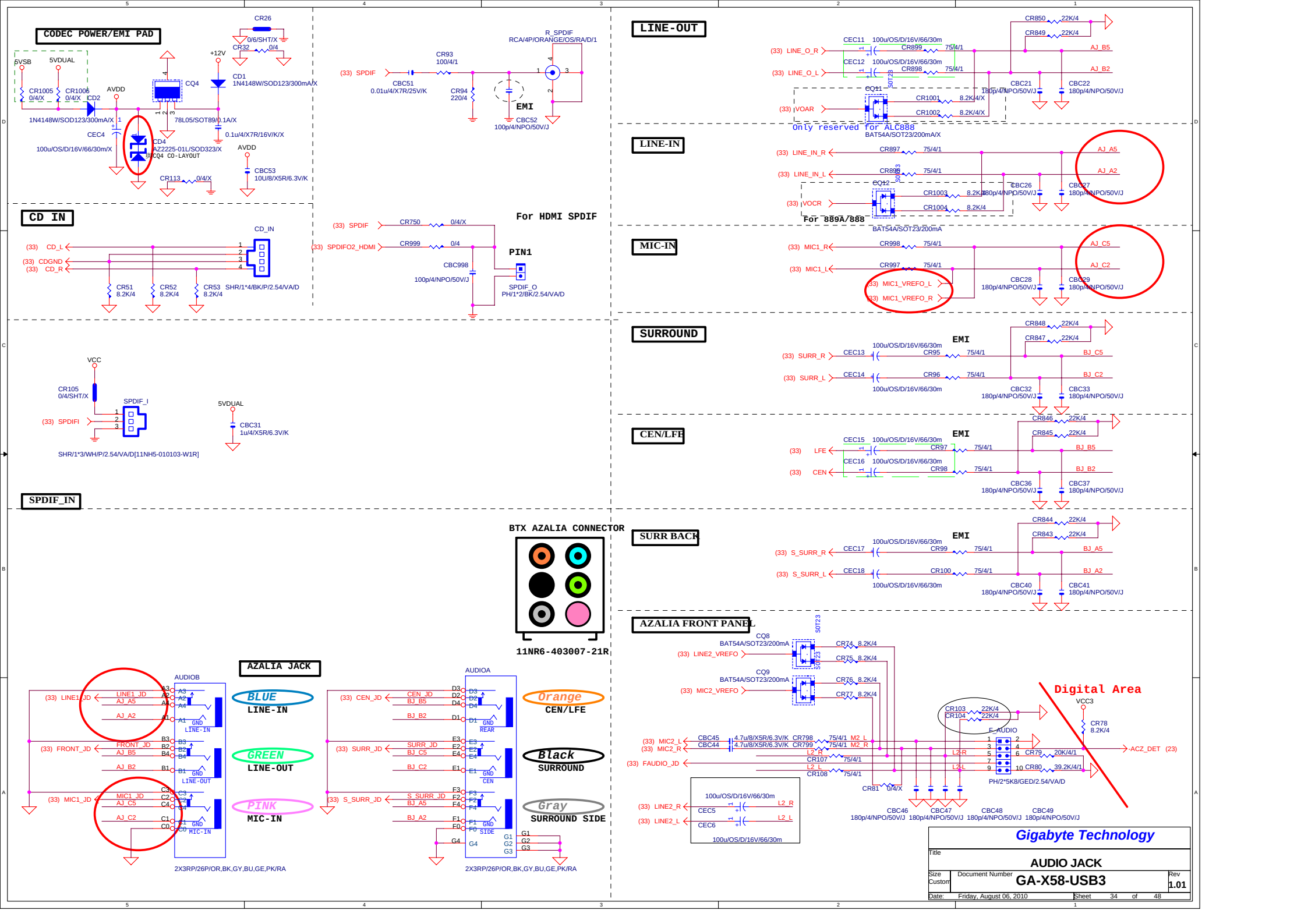
AZALIA CODEC *ALC889A+/ALC889A/ALC888Vx Colay*

	ALC889A+	ALC889A	ALC888Vx
CR111	X	O	X
CR112	X	O	X
CR750	X	O	O
CR999	O	X	X
CR2	20K/1%	20K/0.1%	20K/1%




CODEC POWER/EMI PAD
5VSB
5VDUAL
CR1005 0/4/X
CR1006 0/4/X
CD2
1N4148W/SOD123/300mA/X
AVDD
CEC4
100u/OS/D/16V/66/30m/X
CQ4
CD4
AZ2225-01L/SOD323/X
CQ4 CO-LAYOUT
CR26
0/6/SHT/X
CR32 0/4
+12V
CD1
1N4148W/SOD123/300mA/X
78L05/SOT89/0.1A/X
0.1u/4/X7R/16V/K/X
CR113 0/4/X
CBC53
10U/8/X5R/6.3V/K
R_SPDIF
RCA/4P/ORANGE/OS/RA/D/1
(33) SPDIF
CR93
100/4/1
CBC51
0.01u/4/X7R/25V/K
CR94
220/4
EMI
CBC52
100p/4/NPO/50V/J
CD IN
CD_IN
(33) CD_L
(33) CDGND
(33) CD_R
CR51
8.2K/4
CR52
8.2K/4
CR53
8.2K/4
SHR/1*4/BK/P/2.54/VA/D
For HDMI SPDIF
(33) SPDIF
CR750
0/4/X
(33) SPDIFO2_HDMI
CR999
0/4
CBC998
100p/4/NPO/50V/J
PIN1
SPDIF_O
PH/1*2/BK/2.54/VA/D
VCC
CR105
0/4/SHT/X
SPDIF_I
(33) SPDIFI
SHR/1*3/WH/P/2.54/VA/D[11NH5-010103-W1R]
5VDUAL
CBC31
1u/4/X5R/6.3V/K
SPDIF_IN
BTX AZALIA CONNECTOR
11NR6-403007-21R
AZALIA JACK
AUDIOB
(33) LINE1_JD
LINE1_JD
AJ_A5
AJ_A2
LINE-IN
(33) FRONT_JD
FRONT_JD
AJ_B5
AJ_B2
LINE-OUT
(33) MIC1_JD
MIC1_JD
AJ_C5
AJ_C2
MIC-IN
BLUE
LINE-IN
GREEN
LINE-OUT
PINK
MIC-IN
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA
AUDIOA
(33) CEN_JD
CEN_JD
BJ_B5
BJ_B2
REAR
(33) SURR_JD
SURR_JD
BJ_C5
BJ_C2
CEN
(33) S_SURR_JD
S_SURR_JD
BJ_A5
BJ_A2
SIDE
Orange
CEN/LFE
Black
SURROUND
Gray
SURROUND SIDE
2X3RP/26P/OR,BK,GY,BU,GE,PK/RA
LINE-OUT
(33) LINE_O_R
(33) LINE_O_L
(33) VOAR
CEC11 100u/OS/D/16V/66/30m
CEC12 100u/OS/D/16V/66/30m
CR899 75/4/1
CR898 75/4/1
CQ11
CR1001 8.2K/4/X
CR1002 8.2K/4/X
Only reserved for ALC888
BAT54A/SOT23/200mA/X
CR850 22K/4
CR849 22K/4
AJ_B5
AJ_B2
CBC21 180p/4/NPO/50V/J
CBC22 180p/4/NPO/50V/J
LINE-IN
(33) LINE_IN_R
(33) LINE_IN_L
(33) VOCR
CR897 75/4/1
CR896 75/4/1
CQ12
CR1003 8.2K/4
CR1004 8.2K/4
For 889A/888
BAT54A/SOT23/200mA
AJ_A5
AJ_A2
CBC26 180p/4/NPO/50V/J
CBC27 180p/4/NPO/50V/J
MIC-IN
(33) MIC1_R
(33) MIC1_L
(33) MIC1_VREFO_L
(33) MIC1_VREFO_R
CR998 75/4/1
CR997 75/4/1
AJ_C5
AJ_C2
CBC28 180p/4/NPO/50V/J
CBC29 180p/4/NPO/50V/J
SURROUND
(33) SURR_R
(33) SURR_L
CEC13 100u/OS/D/16V/66/30m
CEC14 100u/OS/D/16V/66/30m
CR95 75/4/1
CR96 75/4/1
EMI
CR848 22K/4
CR847 22K/4
BJ_C5
BJ_C2
CBC32 180p/4/NPO/50V/J
CBC33 180p/4/NPO/50V/J
CEN/LFE
(33) LFE
(33) CEN
CEC15 100u/OS/D/16V/66/30m
CEC16 100u/OS/D/16V/66/30m
CR97 75/4/1
CR98 75/4/1
EMI
CR846 22K/4
CR845 22K/4
BJ_B5
BJ_B2
CBC36 180p/4/NPO/50V/J
CBC37 180p/4/NPO/50V/J
SURR BACK
(33) S_SURR_R
(33) S_SURR_L
CEC17 100u/OS/D/16V/66/30m
CEC18 100u/OS/D/16V/66/30m
CR99 75/4/1
CR100 75/4/1
EMI
CR844 22K/4
CR843 22K/4
BJ_A5
BJ_A2
CBC40 180p/4/NPO/50V/J
CBC41 180p/4/NPO/50V/J
AZALIA FRONT PANEL
CQ8
BAT54A/SOT23/200mA
(33) LINE2_VREFO
CQ9
BAT54A/SOT23/200mA
(33) MIC2_VREFO
CR74 8.2K/4
CR75 8.2K/4
CR76 8.2K/4
CR77 8.2K/4
(33) MIC2_L
(33) MIC2_R
(33) FAUDIO_JD
CBC45 4.7u/8/X5R/6.3V/K
CBC44 4.7u/8/X5R/6.3V/K
CR798 75/4/1 M2_L
CR799 75/4/1 M2_R
CR107 75/4/1
CR108 75/4/1
L2_R
L2_L
CR81 0/4/X
F_AUDIO
PH/2*5K8/GED/2.54/VA/D
CR103 22K/4
CR104 22K/4
Digital Area
VCC3
CR78 8.2K/4
CR79 20K/4/1
CR80 39.2K/4/1
ACZ_DET (23)
CBC46 180p/4/NPO/50V/J
CBC47 180p/4/NPO/50V/J
CBC48 180p/4/NPO/50V/J
CBC49 180p/4/NPO/50V/J
(33) LINE2_R
(33) LINE2_L
CEC5 100u/OS/D/16V/66/30m
CEC6 100u/OS/D/16V/66/30m
Gigabyte Technology
Title
AUDIO JACK
Size Custom
Document Number GA-X58-USB3
Rev 1.01
Date: Friday, August 06, 2010
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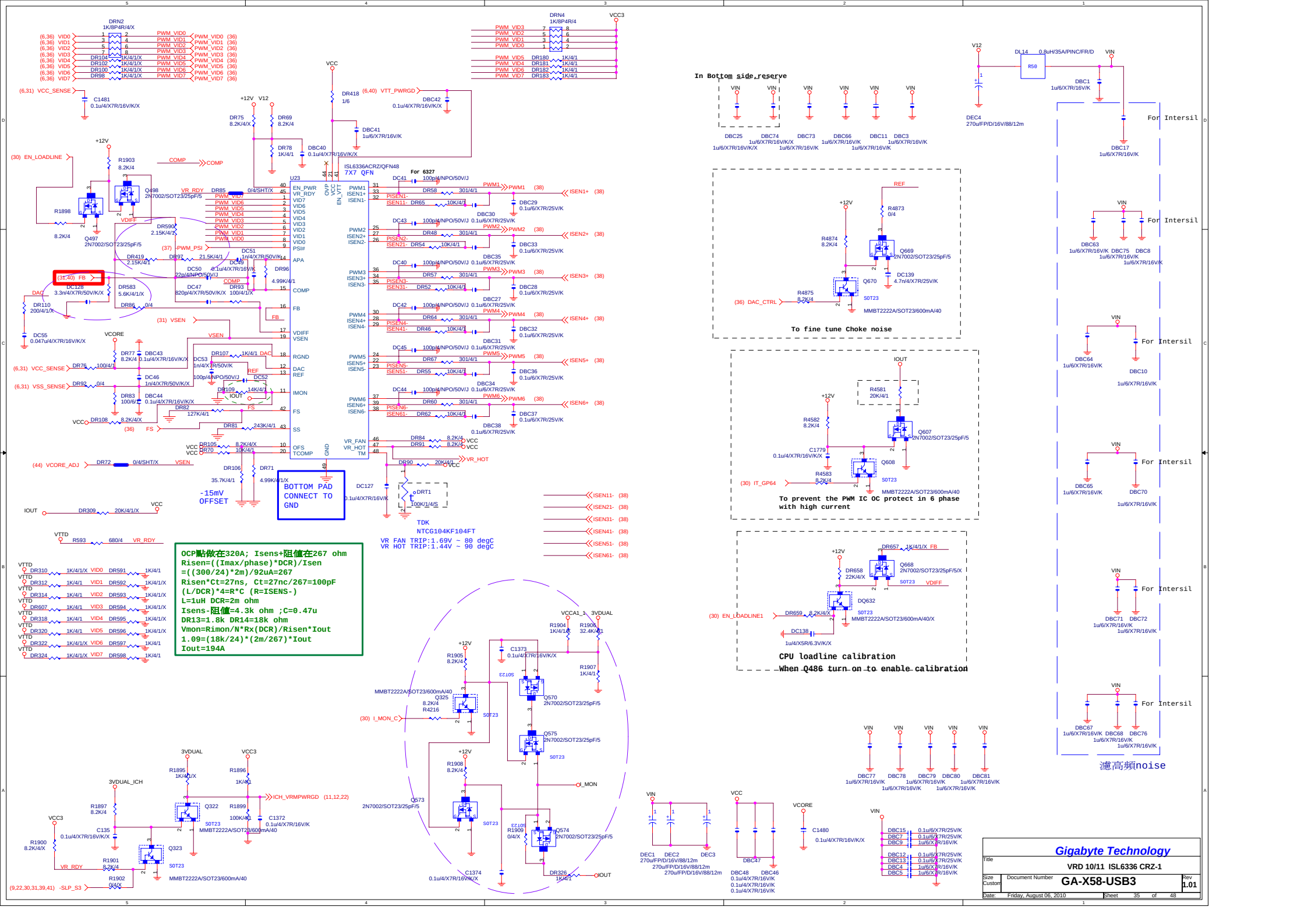
U23
ISL6336ACRZ/QFN48
7X7 QFN
For 6327
EN_PWR
VR_RDY
VID7
VID6
VID5
VID4
VID3
VID2
VID1
VID0
PSI#
APA
COMP
FB
VDIFF
VSEN
RGND
DAC
REF
IMON
FS
SS
OFS
TCOMP
GND
OVP
VCC
EN_VTT
PWM1
ISEN1+
ISEN1-
PWM2
ISEN2+
ISEN2-
PWM3
ISEN3+
ISEN3-
PWM4
ISEN4+
ISEN4-
PWM5
ISEN5+
ISEN5-
PWM6
ISEN6+
ISEN6-
VR_FAN
VR_HOT
TM
DRN2
1K/8P4R/4/X
DRN4
1K/8P4R/4
In Bottom side reserve
BOTTOM PAD
CONNECT TO
GND
-15mV
OFFSET
TDK
NTCG104KF104FT
VR FAN TRIP:1.69V ~ 80 degC
VR HOT TRIP:1.44V ~ 90 degC
To fine tune Choke noise
To prevent the PWM IC OC protect in 6 phase
with high current
CPU loadline calibration
When Q486 turn on to enable calibration
濾高頻noise
For Intersil
OCP點做在320A; Isens+阻值在267 ohm
Risen=((Imax/phase)*DCR)/Isen
=((300/24)*2m)/92uA=267
Risen*Ct=27ns, Ct=27nc/267=100pF
(L/DCR)*4=R*C (R=ISENS-)
L=1uH DCR=2m ohm
Isens-阻值=4.3k ohm ;C=0.47u
DR13=1.8k DR14=18k ohm
Vmon=Rimon/N*Rx(DCR)/Risen*Iout
1.09=(18k/24)*(2m/267)*Iout
Iout=194A
Gigabyte Technology
VRD 10/11 ISL6336 CRZ-1
GA-X58-USB3
1.01
Friday, August 06, 2010
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MOS HEATSINK

MOS_HS
MOS HS/X
MOS_HS2
MOS_HS/X

PWM FREQUENCY (200K~500KHz)

	IT8275 GP17	IT8275 GP16	PCH GP36
200K	L	X	X
250K	L	L	X
Default — 300K	X	X	X
350K	X	L	X
500K	X	L	L

For old 8275

	RT10
Lo	VR10 -->VR11
Hi	Bypass

For new 8275

	RT10
Lo	PWM0 0-4 crontrol by FW
Hi	PWM0-4 bypass to PWM00-4

Title	VRD 10/11 ISL6327CRZ-2
Size: Custom	Document Number: GA-X58-USB3
Rev	1.01
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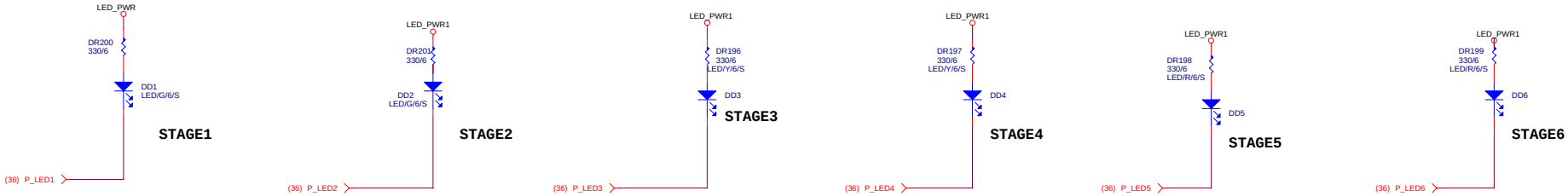
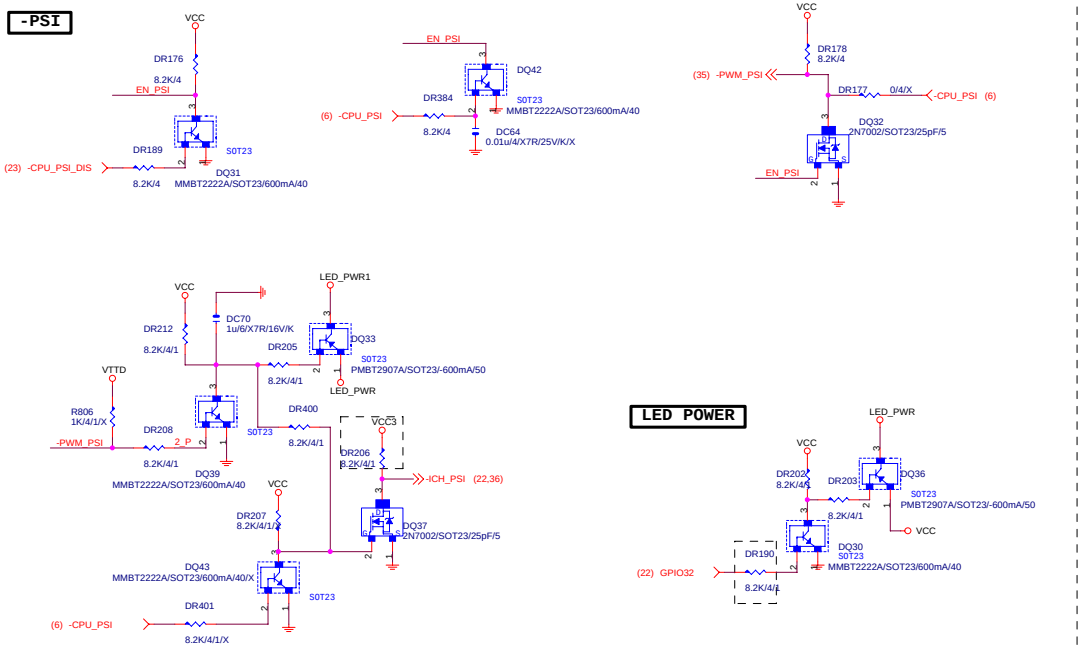
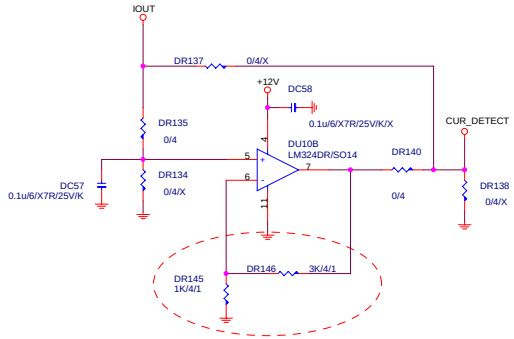
Gigabyte Technology

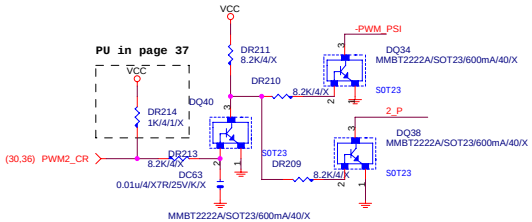
PHASE LED

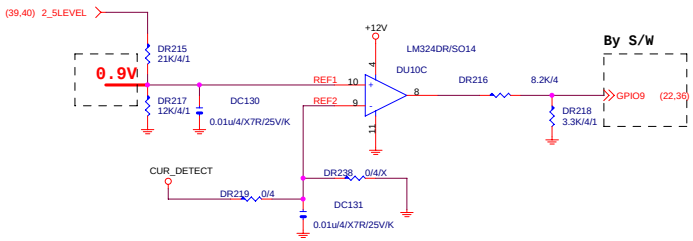


-PSI

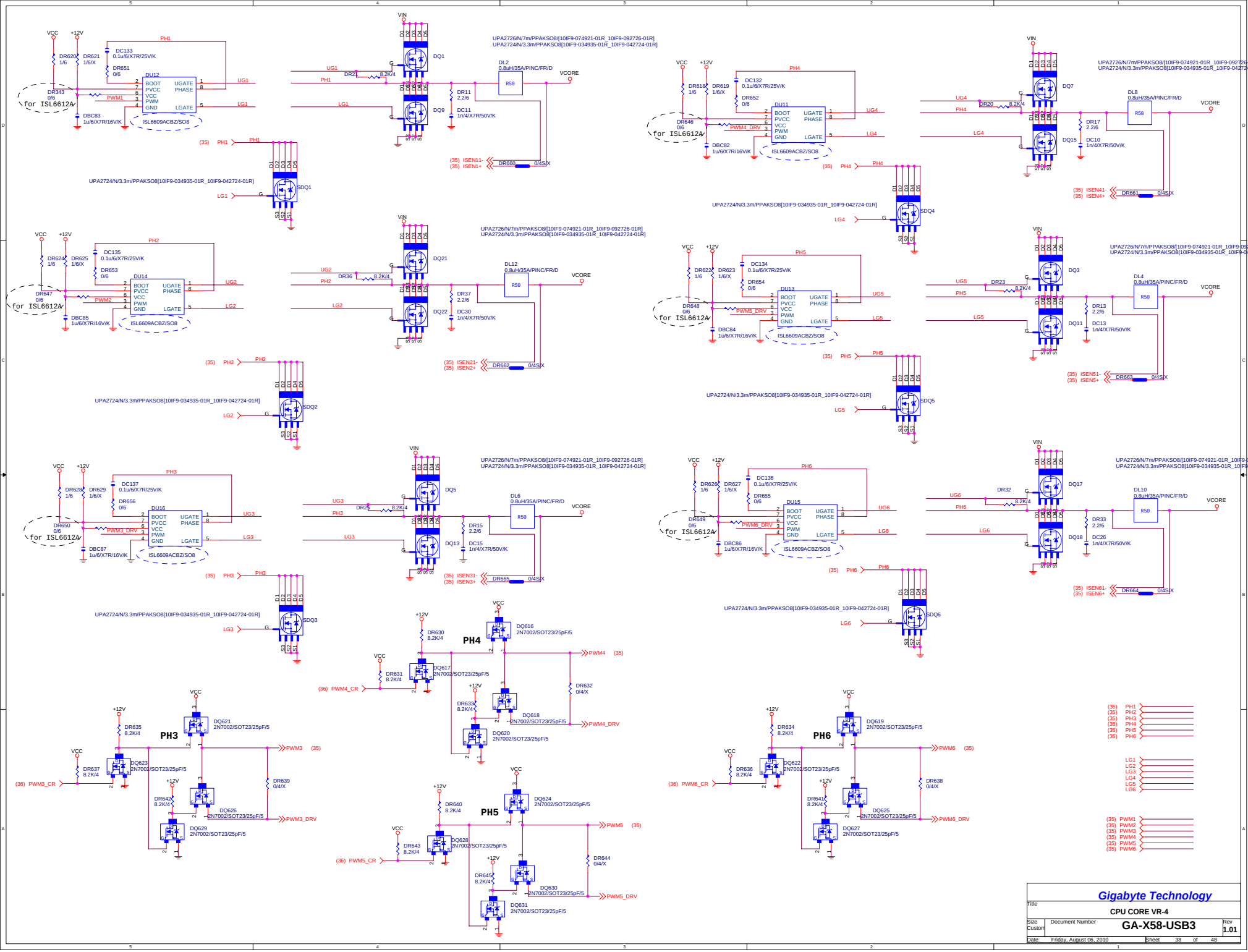








Gigabyte Technology			
Title: CPU CORE VR-3			
Size: Custom	Document Number: GA-X58-USB3		Rev: 1.01
Date: Friday, August 06, 2010	Sheet 37 of 48		


VCC
+12V
PH1
DC133
0.1u/6/X7R/25V/K
DR620
1/6
DR621
1/6/X
DR651
0/6
DU12
BOOT
PVCC
VCC
PWM
GND
UGATE
PHASE
LGATE
ISL6609ACBZ/SO8
DR343
0/6
for ISL6612A
PWM1
DBC83
1u/6/X7R/16V/K
UG1
LG1
VIN
DQ1
DQ9
DR21
8.2K/4
DR11
2.2/6
DC11
1n/4/X7R/50V/K
DL2
0.8uH/35A/PINC/FR/D
R50
VCORE
UPA2726/N/7m/PPAKSO8[10IF9-074921-01R_10IF9-092726-01R]
UPA2724/N/3.3m/PPAKSO8[10IF9-034935-01R_10IF9-042724-01R]
(35) PH1
(35) ISEN11-
(35) ISEN1+
DR660
0/4S/X
SDQ1
PH2
DC135
DR624
DR625
DR653
DU14
DR647
DBC85
PWM2
UG2
LG2
DQ21
DQ22
DR36
DR37
DC30
1n/4/X7R/50V/K
DL12
DR662
(35) ISEN21-
(35) ISEN2+
SDQ2
PH3
DC137
DR628
DR629
DR656
DU16
DR650
DBC87
PWM3_DRV
UG3
LG3
DQ5
DQ13
DR25
DR15
2.2/6
DC15
DL6
DR665
(35) ISEN31-
(35) ISEN3+
SDQ3
PH4
DC132
DR618
DR619
DR652
DU11
DR646
DBC82
PWM4_DRV
DQ7
DQ15
DR20
DR17
DC10
DL8
DR661
(35) ISEN41-
(35) ISEN4+
SDQ4
PH5
DC134
DR622
DR623
DR654
DU13
DR648
DBC84
PWM5_DRV
DQ3
DQ11
DR23
DR13
DC13
DL4
DR663
(35) ISEN51-
(35) ISEN5+
SDQ5
PH6
DC136
DR626
DR627
DR655
DU15
DR649
DBC86
PWM6_DRV
DQ17
DQ18
DR32
DR33
DC26
DL10
DR664
(35) ISEN61-
(35) ISEN6+
SDQ6
PH4
DQ616
2N7002/SOT23/25pF/5
DR630
8.2K/4
DQ617
DR631
(36) PWM4_CR
DR633
DQ618
DQ620
DR632
0/4/X
PWM4
PWM4_DRV
PH3
DQ621
DR635
DQ623
DR637
(36) PWM3_CR
DR642
DQ626
DQ629
DR639
PWM3
PWM3_DRV
PH5
DQ624
DR640
DQ628
DR643
(36) PWM5_CR
DR645
DQ630
DQ631
DR644
PWM5
PWM5_DRV
PH6
DQ619
DR634
DQ622
DR636
(36) PWM6_CR
DR641
DQ625
DQ627
DR638
PWM6
PWM6_DRV
(35) PH1
(35) PH2
(35) PH3
(35) PH4
(35) PH5
(35) PH6
LG1
LG2
LG3
LG4
LG5
LG6
(35) PWM1
(35) PWM2
(35) PWM3
(35) PWM4
(35) PWM5
(35) PWM6
Gigabyte Technology
Title
CPU CORE VR-4
Size
Custom
Document Number
GA-X58-USB3
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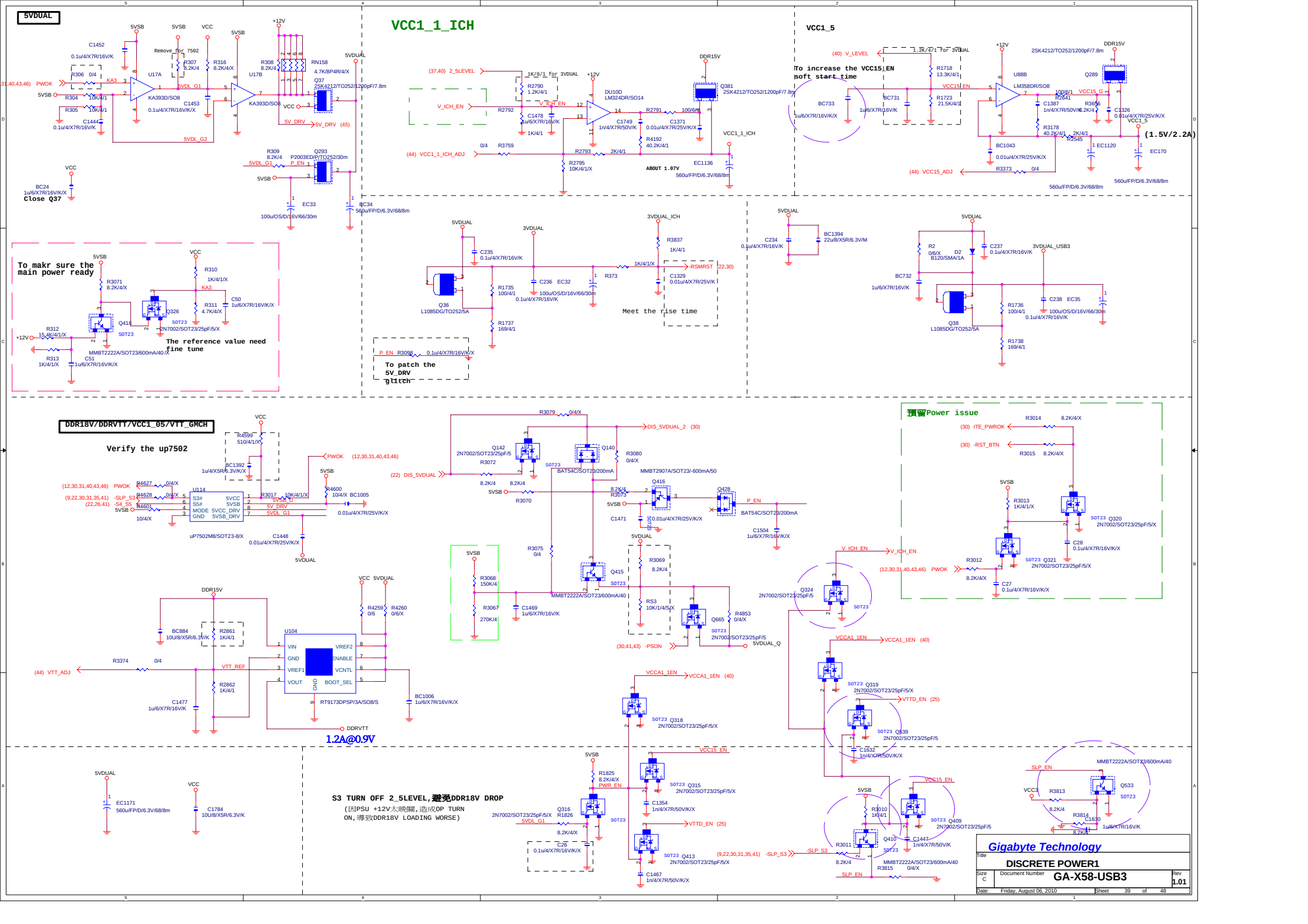
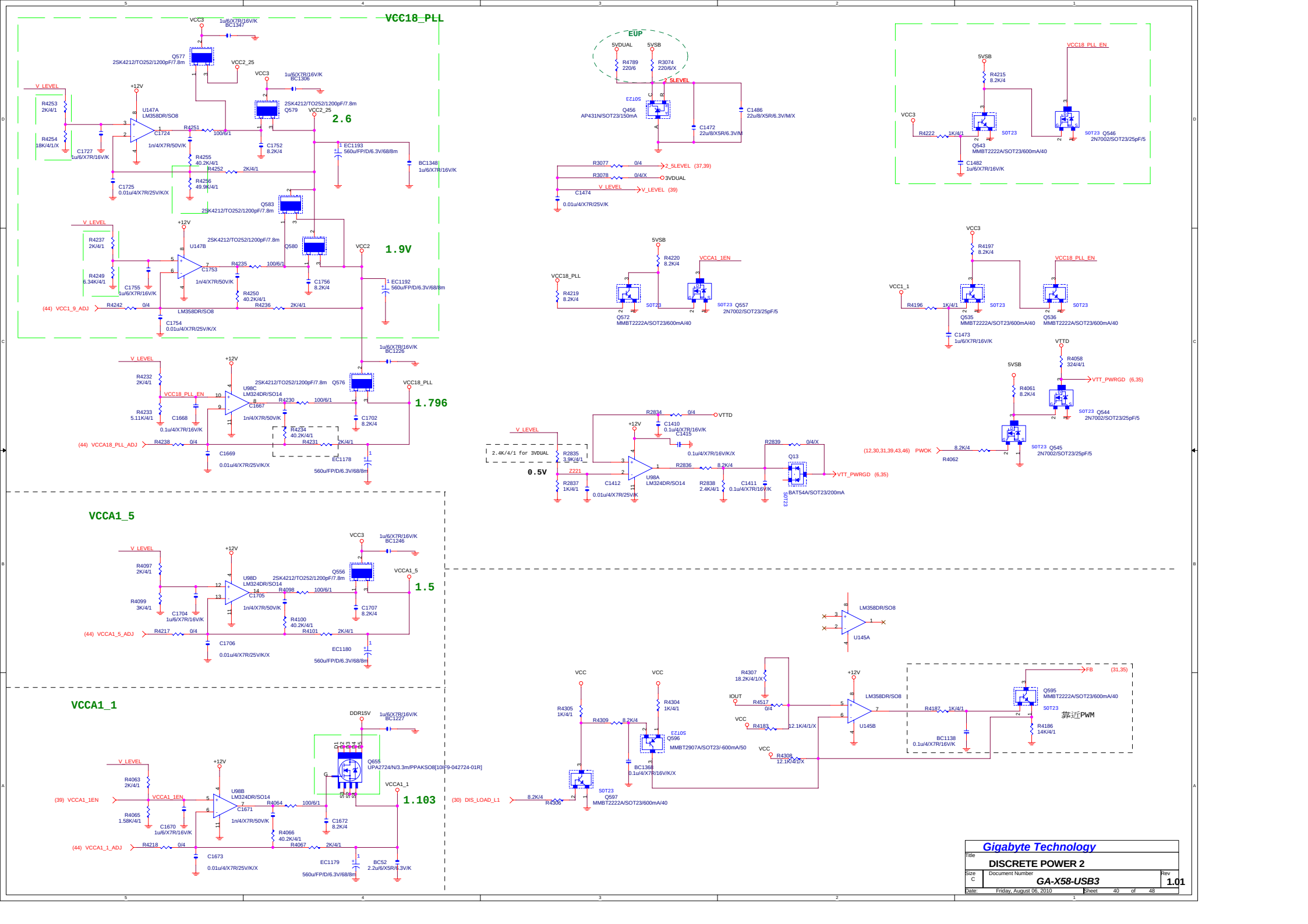

5VDUAL
VCC1_1_ICH
VCC1_5
To increase the VCC15 EN soft start time
(1.5V/2.2A)
To makr sure the main power ready
The reference value need fine tune
To patch the 5V_DRV glitch
Meet the rise time
Close Q37
DDR18V/DDRVTT/VCC1_05/VTT_GMCH
Verify the up7502
預留Power issue
1.2A@0.9V
S3 TURN OFF 2_5LEVEL,避免DDR18V DROP
(因PSU +12V太晚關,造成OP TURN ON,導致DDR18V LOADING WORSE)
Gigabyte Technology
DISCRETE POWER1
GA-X58-USB3
1.01
Friday, August 06, 2010
Sheet 39 of 48



Title	DISCRETE POWER 2
Size	C
Document Number	GA-X58-USB3
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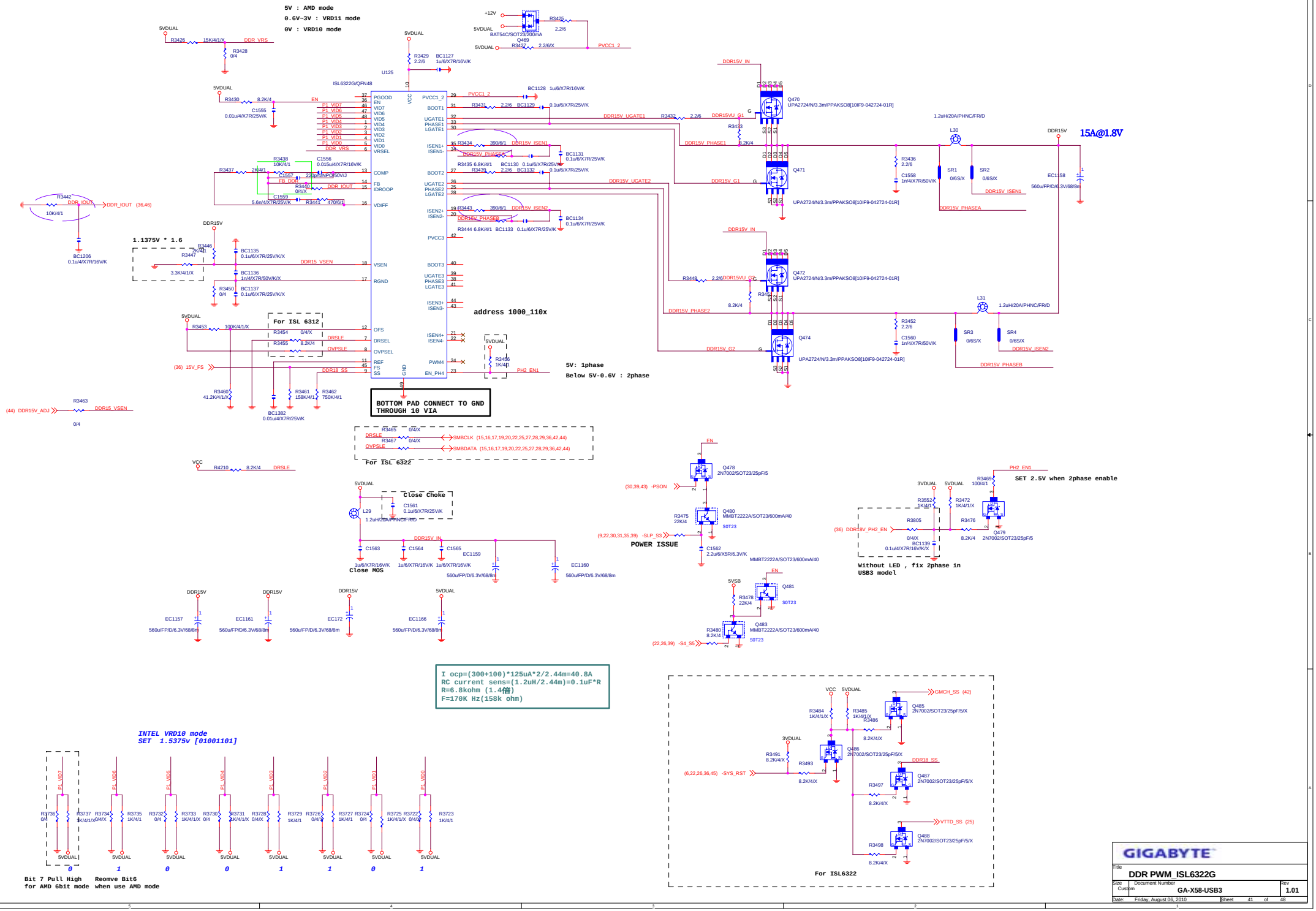
Gigabyte Technology


5V : AMD mode
0.6V~3V : VRD11 mode
0V : VRD10 mode
ISL6322G/QFN48
U125
address 1000_110x
1.1375V * 1.6
For ISL 6312
For ISL 6322
BOTTOM PAD CONNECT TO GND THROUGH 10 VIA
5V: 1phase
Below 5V-0.6V : 2phase
Close Choke
Close MOS
POWER ISSUE
SET 2.5V when 2phase enable
Without LED , fix 2phase in USB3 model
I ocp=(300+100)*125uA*2/2.44m=40.8A
RC current sens=(1.2uH/2.44m)=0.1uF*R
R=6.8kohm (1.4倍)
F=170K Hz(158k ohm)
INTEL VRD10 mode
SET 1.5375v [01001101]
Bit 7 Pull High for AMD 6bit mode
Reomve Bit6 when use AMD mode
For ISL6322
15A@1.8V
GIGABYTE
DDR PWM_ISL6322G
GA-X58-USB3
1.01
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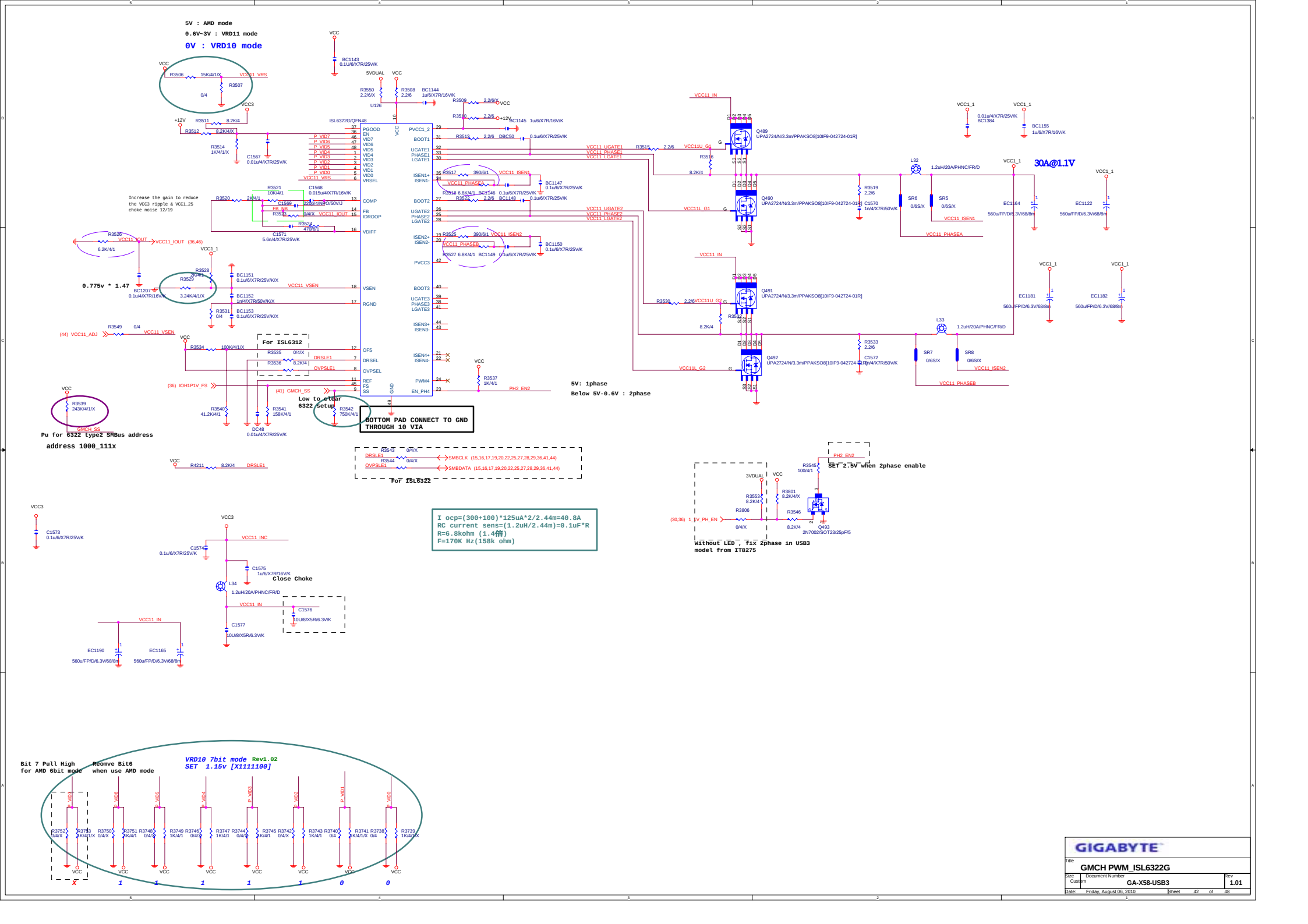
5V : AMD mode
0.6V~3V : VRD11 mode
0V : VRD10 mode
ISL6322G/QFN48
For ISL6312
For ISL6322
Low to clear 6322 setup
BOTTOM PAD CONNECT TO GND THROUGH 10 VIA
5V: 1phase
Below 5V-0.6V : 2phase
0.775v * 1.47
Pu for 6322 type2 SMBus address
address 1000_111x
Increase the gain to reduce the VCC3 ripple & VCC1_25 choke noise 12/19
Close Choke
30A@1.1V
SET 2.5V when 2phase enable
without LED , fix 2phase in USB3 model from IT8275
I ocp=(300+100)*125uA*2/2.44m=40.8A
RC current sens=(1.2uH/2.44m)=0.1uF*R
R=6.8kohm (1.4倍)
F=170K Hz(158k ohm)
VRD10 7bit mode Rev1.02
SET 1.15v [X1111100]
Bit 7 Pull High for AMD 6bit mode
Reomve Bit6 when use AMD mode
GIGABYTE
GMCH PWM_ISL6322G
GA-X58-USB3
1.01
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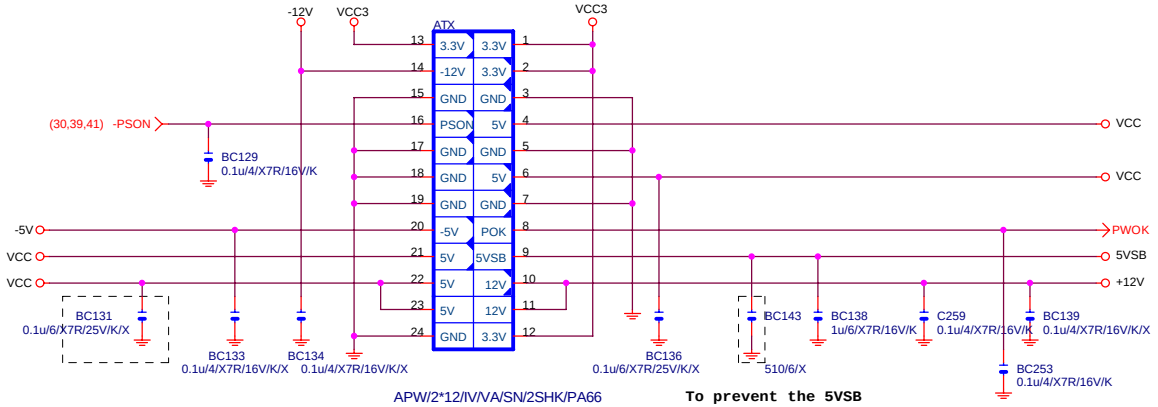
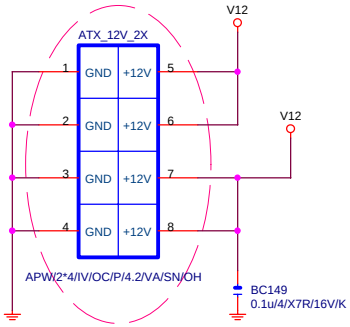
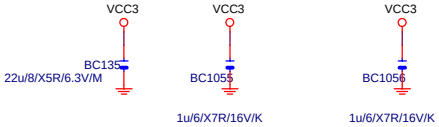
ATX POWER CONNECTOR



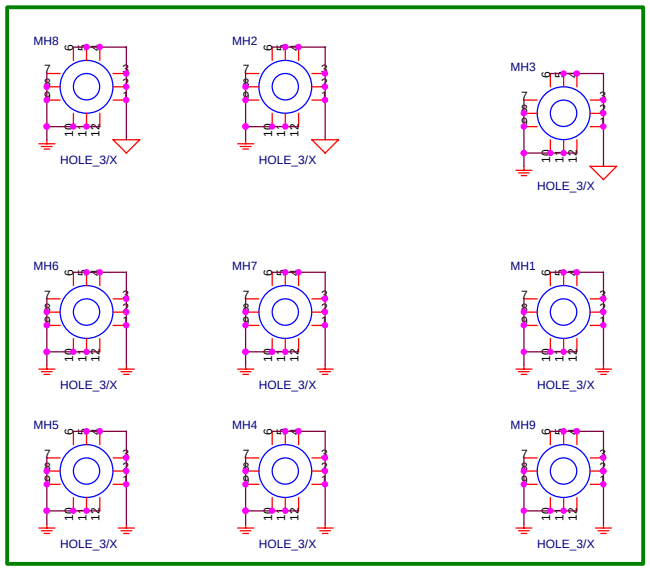
APW/2*12/IV/VA/SN/2SHK/PA66

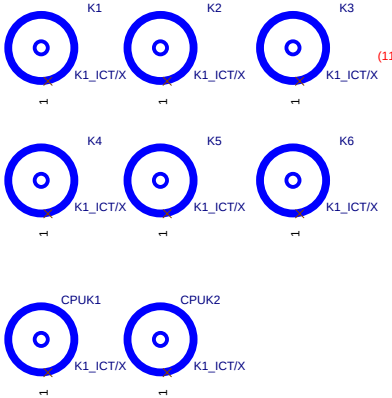
To prevent the 5VSB under loading when boot

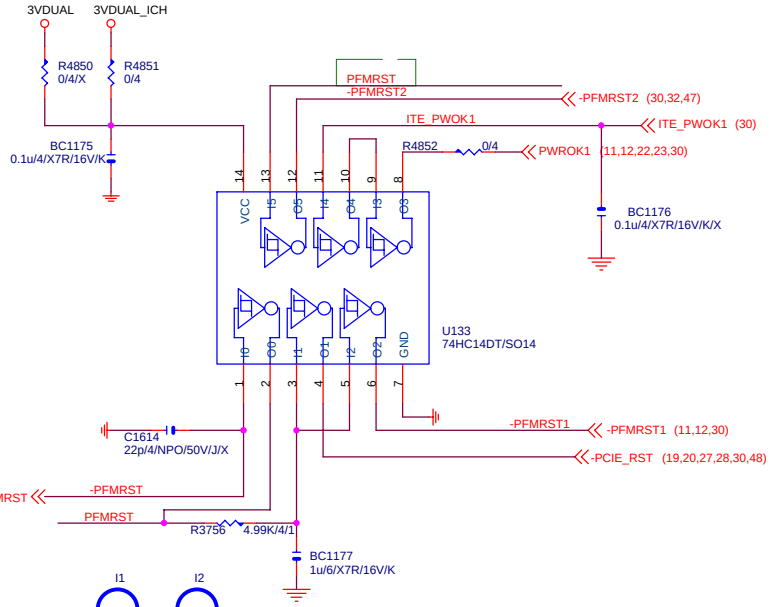




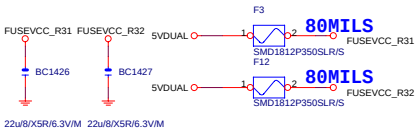
PCB 螺絲孔位置(Footprint不同)

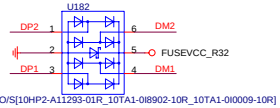


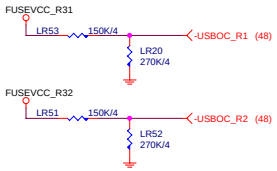


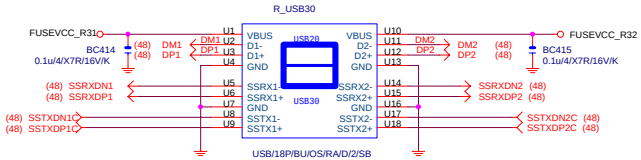


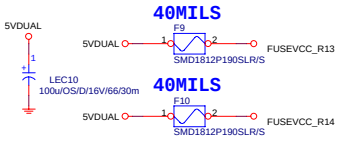
Gigabyte Technology		
Title: ATX POWER CONNECTOR		
Size: B	Document Number: GA-X58-USB3	Rev: 1.01
Date: Friday, August 06, 2010	Sheet 43 of 48	

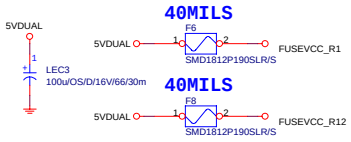


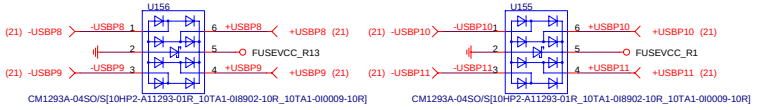


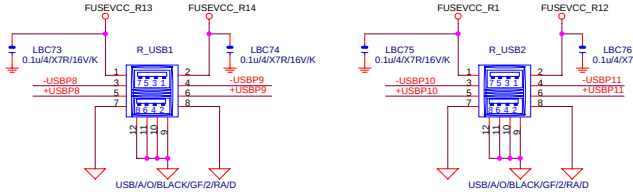


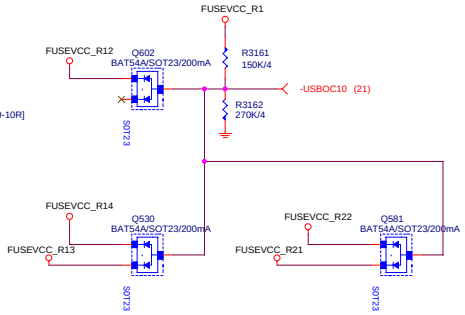


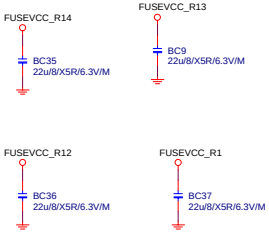


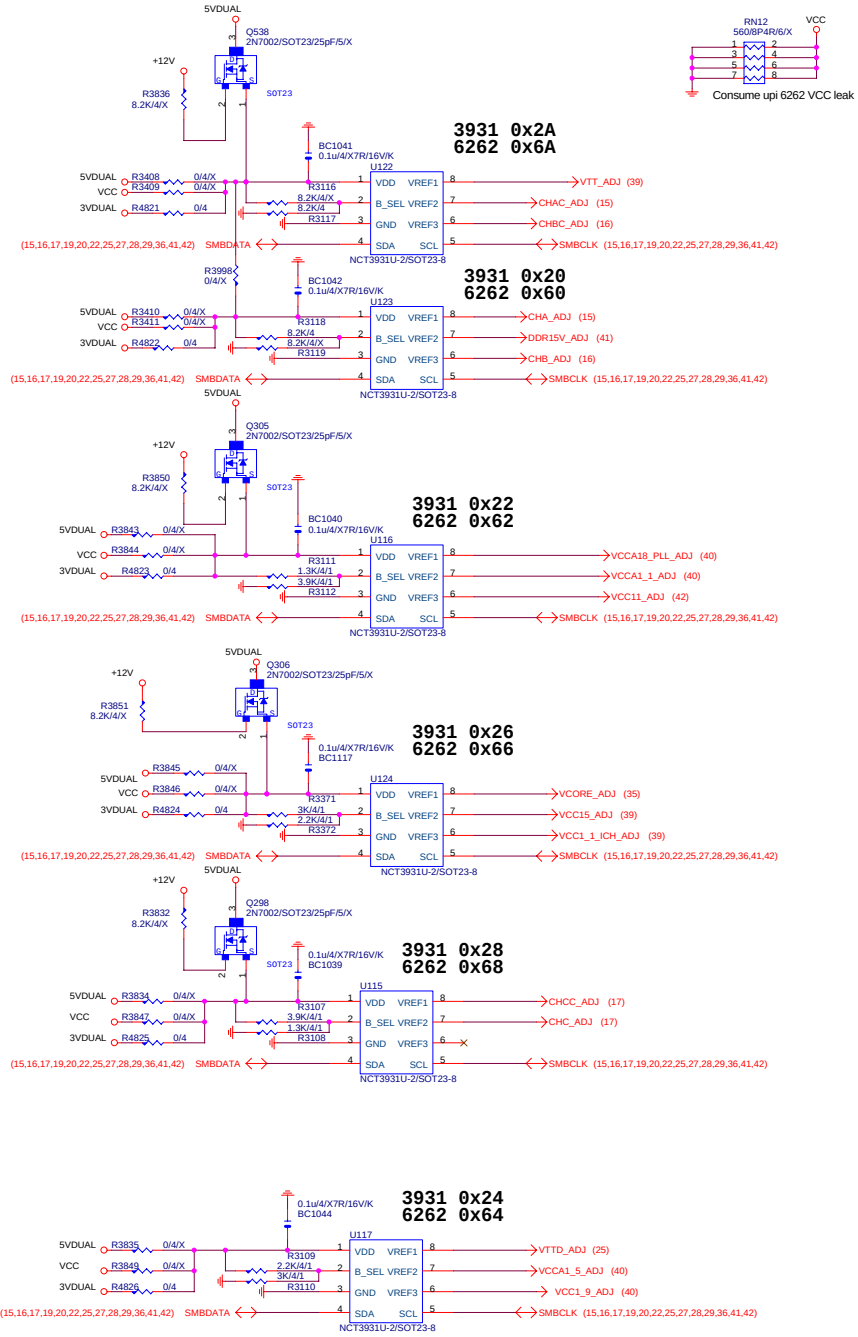












UPI6262 Table

up6262	0X60-U123(5VDUAL)	0X62-U116(5VDUAL)	0X6A-U122(5VDUAL)	0X66-U124(5VDUAL)	0X68-U115(5VDUAL)	0X64-U117(5VDUAL)
VREF1	CHA_ADJ	VCCA18_PLL_ADJ	VTT_ADJ	VCORE_ADJ	CHCC_ADJ	VTTD_ADJ
VREF2	DDR18V_ADJ	VCCA1_1_ADJ	CHAC_ADJ	VCC15_ADJ	CHC_ADJ	VCC1_1_ICH_ADJ
VREF3	CHB_ADJ	VCC11_ADJ	CHBC_ADJ	VCCA1_5_ADJ	MCH_RAMVREF_ADJ	VCC1_9_ADJ

Gigabyte Technology

Title: R_USB & UPI6262

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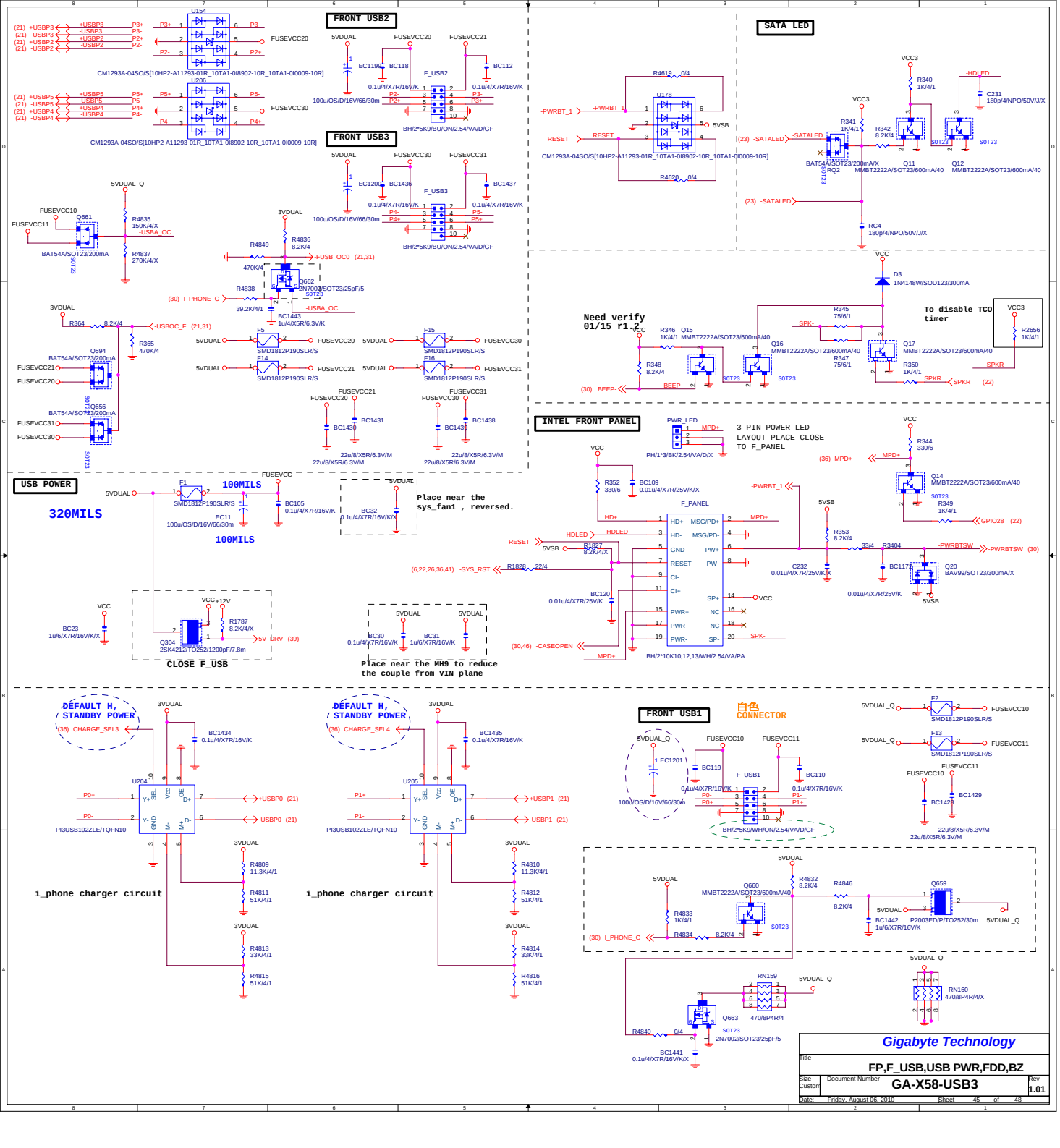
FRONT USB2
FRONT USB3
SATA LED
INTEL FRONT PANEL
USB POWER
FRONT USB1
白色
CONNECTOR
Need verify
01/15 r1.2
To disable TCO
timer
3 PIN POWER LED
LAYOUT PLACE CLOSE
TO F_PANEL
320MILS
100MILS
100MILS
Place near the
sys_fan1 , reversed.
CLOSE F_USB
Place near the MH9 to reduce
the couple from VIN plane
DEFAULT H,
/ STANDBY POWER
DEFAULT H,
/ STANDBY POWER
i_phone charger circuit
i_phone charger circuit
CM1293A-04SO/S[10HP2-A11293-01R_10TA1-0I8902-10R_10TA1-0I0009-10R]
CM1293A-04SO/S[10HP2-A11293-01R_10TA1-0I8902-10R_10TA1-0I0009-10R]
BH/2*5K9/BU/ON/2.54/VA/D/GF
BH/2*5K9/BU/ON/2.54/VA/D/GF
BH/2*10K10,12,13/WH/2.54/VA/PA
BH/2*5K8/WH/ON/2.54/VA/D/GF
PI3USB102ZLE/TQFN10
PI3USB102ZLE/TQFN10
Gigabyte Technology
FP,F_USB,USB PWR,FDD,BZ
GA-X58-USB3
1.01
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TEMP H/W MONITOR

(30) VREF
(30) SYS_TEMP
(30) PWM_TEMP
(6,30) CPU_TEMP
R1651 10K/4/1
R269 10K/4/1
R270 30K/4/1/X
C1294 1u/6/X7R/16V/K
C1295 1u/6/X7R/16V/K
RS1 10K/1/4/S
RS5 10K/1/4/S
C1296 1n/4/X7R/50V/K/X

CPU SMART FAN

+12V
C1468 1n/4/X7R/50V/K
FOR EMI ONLY

+12V
BC1114 0.1u/4/X7R/16V/K/X
SYS_FAN3
FAN/1*3/WH/A3/PA66

+12V
R4638 0/6/SHT/X
BC1115 0.1u/4/X7R/16V/K/X
NB_FAN
FAN/1*3/WH/A3/PA66

Q62 BAV99/SOT23/300mA/X
Anti Spike
VCC

CASE OPEN

(22,24) RTCVDD
R279 1M/4
-CASEOPEN
-CASEOPEN (30,45)
C1297 0.01u/4/X7R/25V/K

Case Open Circuits

+12V
VCC3 VCC
CPUFAN_VCC
R2601 1K/4/1
R1744 1K/4/1/X
R385 22K/4
R1746 22K/4
R2604 0/4S/X
(30) FANPWM1
BC115 1u/6/X7R/16V/K
R391 8.2K/4
U89B LM358DR/SO8
BC114 0.1u/4/X7R/16V/K
R1743 8.2K/4
P2003ED/P/TO252/30m
Q21
CE2 100u/OS/D/16V/66/30m
(30) FANPWM3
R381 100/6/1
R1592 0/8/X
CPUFAN_VCC
CPU_FAN FAN/1*4/WH/A3/PA66
R378 3.3K/4/1
R379 15K/4/1
R390 0/4S/X
R1745 6.2K/4/1
C1331 0.047u/4/X7R/16V/K
FANIO1 (30)

VOLTAGE-- H/W MONITOR

VCC11_IOUT (36,42)
DDR_IOUT (36,41)
CURRENT_OUT_V (31)
VCORE
DDR15V
VCC3
+12V
R366 8.2K/4
R367 8.2K/4
R3797 8.2K/4
R368 8.2K/4
R3798 8.2K/4/1/X
R369 24K/4/1
R370 10K/4/1
CUR_DETECT
R2922 10K/4/1
(30) VIN0
(30) VIN1
(30) VIN2
(30) VIN5
(30) VIN4
(30) VIN6
C1623 1u/6/X7R/16V/K
C1624 1u/6/X7R/16V/K
R2576 8.2K/4
C1637
C1476 1u/6/X7R/16V/K
1u/6/X7R/16V/K

+12V
R1814 3.3K/4/1
R1815 0/4S/X
FANIO3 (30)
R2639
15K/4/1
R2624 6.2K/4/1
C1351 0.047u/4/X7R/16V/K
PWR_FAN FAN/1*3/WH/A3/PA66

SYS FAN

+12V
R3039 3.3K/4/1
R3041
R3040 0/4S/X
FANIO4 (30)
SYS_FAN1
R3043 6.2K/4/1
C1454 0.047u/4/X7R/16V/K
FAN/1*3/WH/A3/PA66

KB/MS

(30) MCLK
(30) MDAT
(30) KCLK
(30) KDAT
RN138
82/8P4R/6
MSCLK
MSDATA
KBCLK
KBDATA
CN1
180P/8P4C/6/NPO/50V/K
FUSEVCC
RN29
8.2K/8P4R/4
KB_MS
MSDATA
MSCLK
KBDATA
KBCLK
MS
KB
KB/MS/6P/PC99/OS/RA/D/2
BC108 0.1u/4/X7R/16V/K
BC258 0.1u/4/X7R/16V/K

Linear SYS_FAN

SYSFAN_VCC
VCC VCC3
+12V
R2494 1K/4/1/X
R2599 1K/4/1
R2491 22K/4
R2498 8.2K/4
SFAN_OP+
R2600 22K/4
R2603 0/4S/X
(30) FANPWM2
BC726 1u/6/X7R/16V/K
U89A LM358DR/SO8
R2670 8.2K/4
Q344 P2003ED/P/TO252/30m
SYSFAN_VCC
EC173 100u/OS/D/16V/66/30m
VCC
R2625 8.2K/4
R2489 0/8/X
R2488 3.3K/4/1
R2626 0/4S/X
R2490 15K/4/1
R2493 6.2K/4/1
C1364 0.047u/4/X7R/16V/K
FANIO2 (30)
SYS_FAN2 FAN/1*4/WH/A3/PA66

R3799 0/4
PWOK (12,30,31,39,40,43)
VCC3
R3800 8.2K/4/X
SOT23
(30) VIN3
VIN3
PWOK (12,30,31,39,40,43)
Q532 BAT54A/SOT23/200mA/X

R4257 0/4S/X
For EMI

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PCIE-1G LAN

XTAL2:外部CLK IN

RSET需LAYOUT GND GUARD

FOR DSM MODE
(DEEP SLUMBER MODE)

ENABLE SW

RTL8111E-VB-GR/QFN48

CLOSE LAN CHIP

Dual Color LED
Green
Orange

Single Color LED
Yellow

P35-152-19W9
YELLOW ORANGE GREEN

(CLOSE LU1)

(PIN3,6,9,13,29,41,45)

CLOSE LL1

(PIN21)

Close to connector

90歐姆:[15/4.5/7.5/4.5/15]

No detect pin

Title	REALTEK RTL8111E
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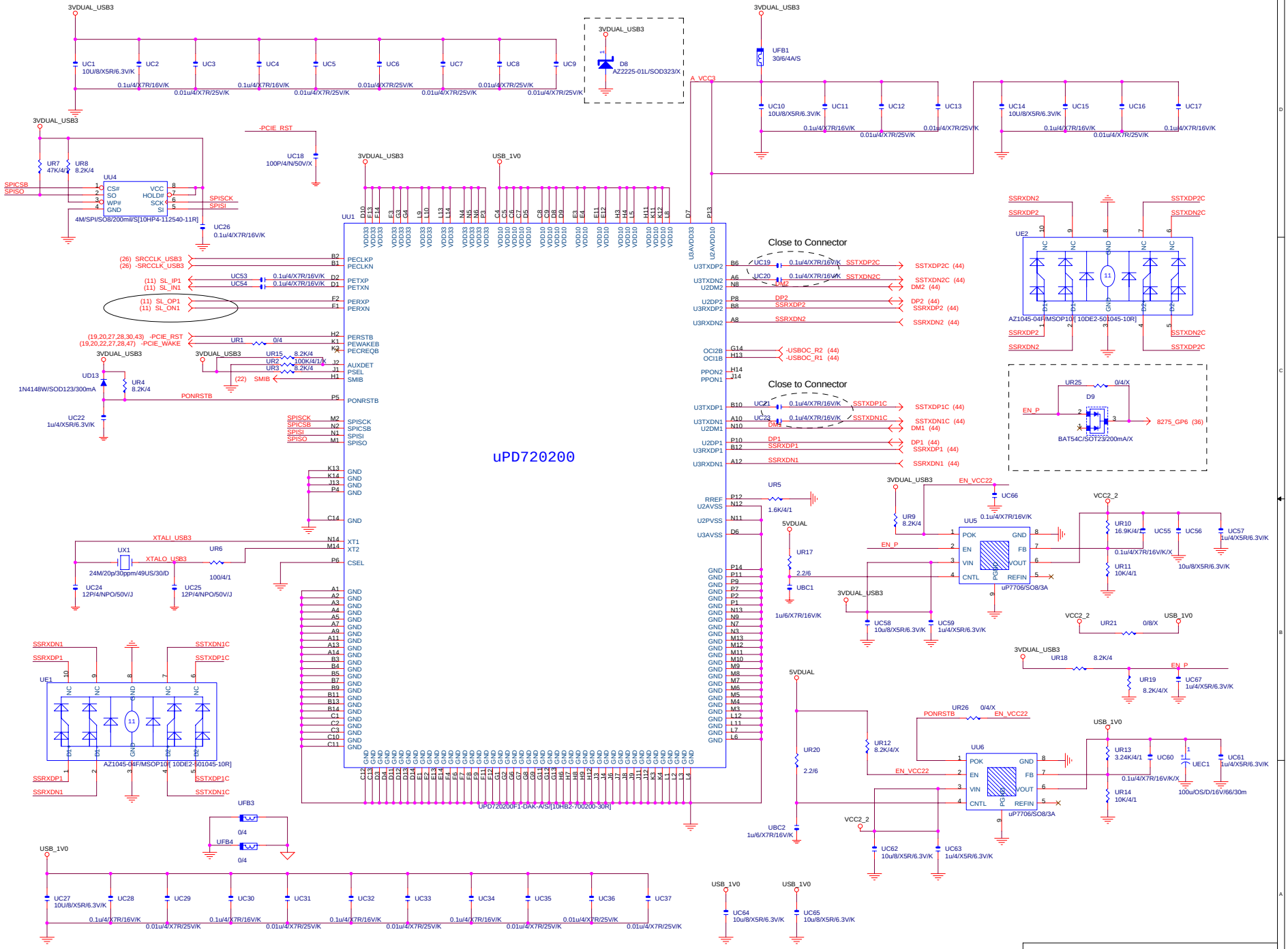
Gigabyte Technology


uPD720200
Close to Connector
Close to Connector
3VDUAL_USB3
USB_1V0
5VDUAL
-PCIE_RST
UFB1
30/6/4A/S
D8
AZ2225-01L/SOD323/X
UU4
4M/SPI/SO8/200mil/S[10HP4-112540-11R]
UU1
UPD720200F1-BAK-A/S[10HB2-700200-30R]
UE1
UE2
AZ1045-04F/MSOP10[10DE2-501045-10R]
BAT54C/SOT23/200mA/X
UU5
UU6
uP7706/SO8/3A
UFB3
UFB4
UX1
24M/20p/30ppm/49US/30/D
UD13
1N4148W/SOD123/300mA
UEC1
100u/OS/D/16V/66/30m
GIGABYTE
Title
uP720200
Size
Custom
Document Number
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1.01
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