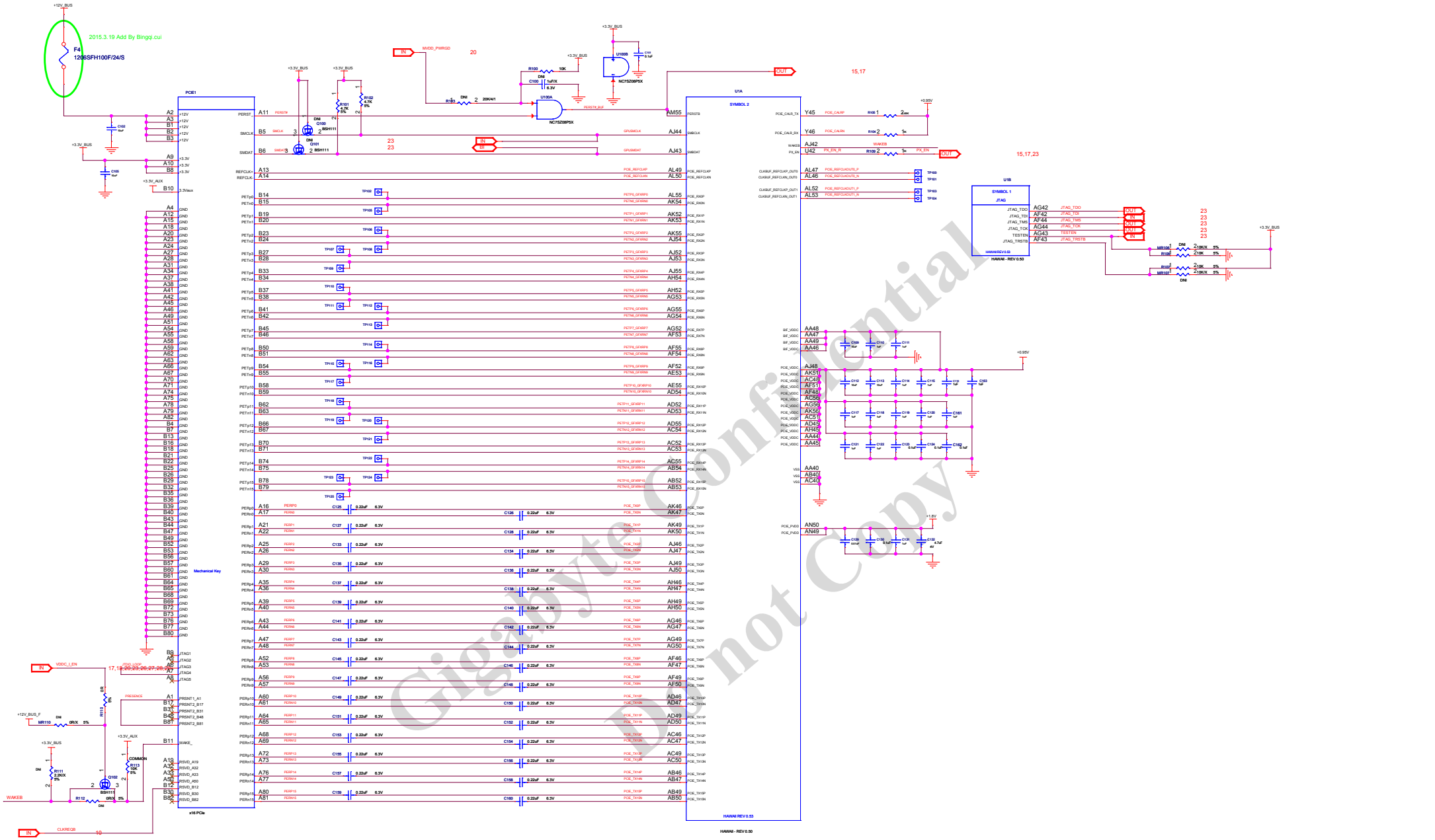
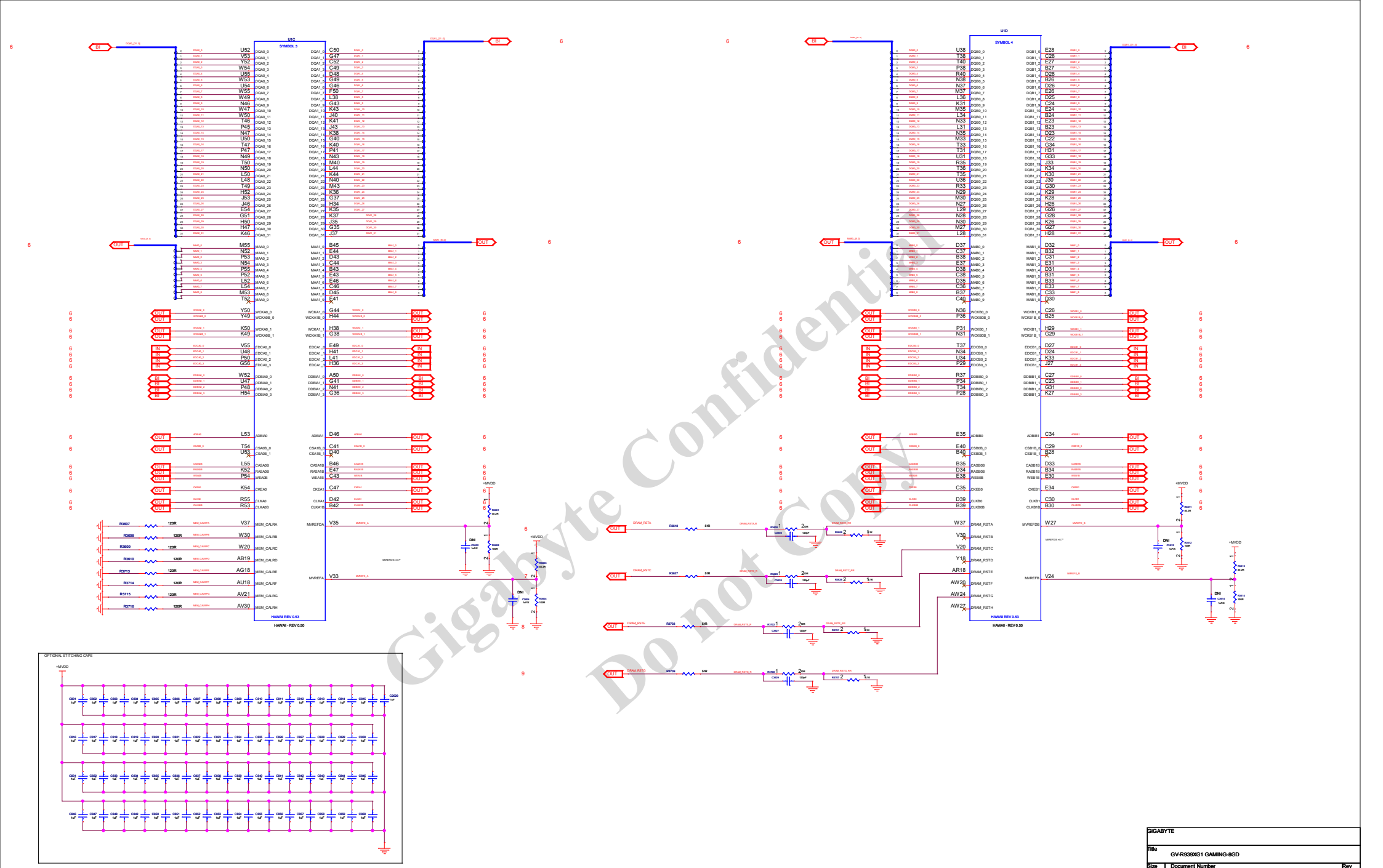
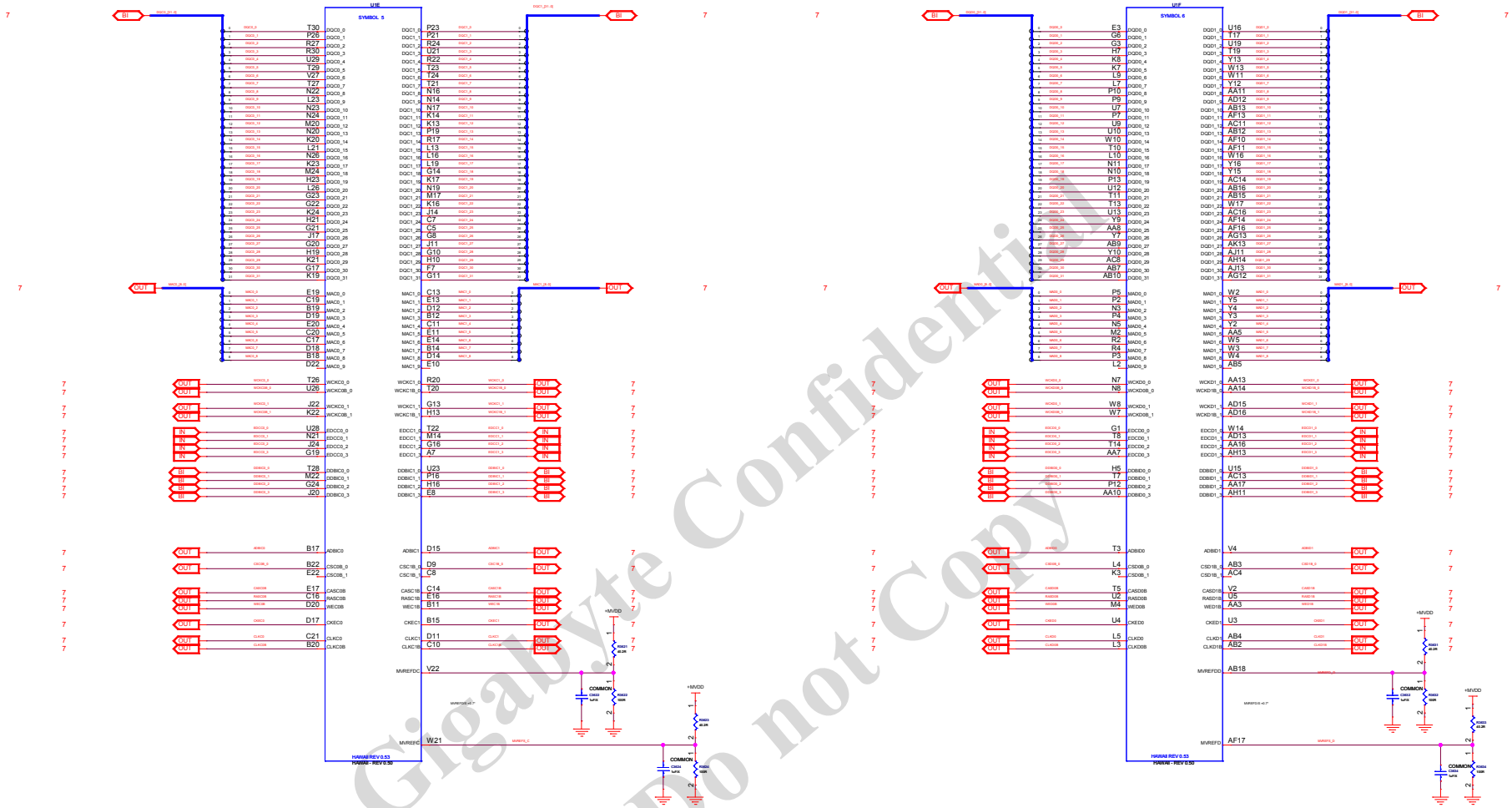


GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: PCIE
Rev	1.01
Date: Monday, May 25, 2015	Sheet 1 of 29



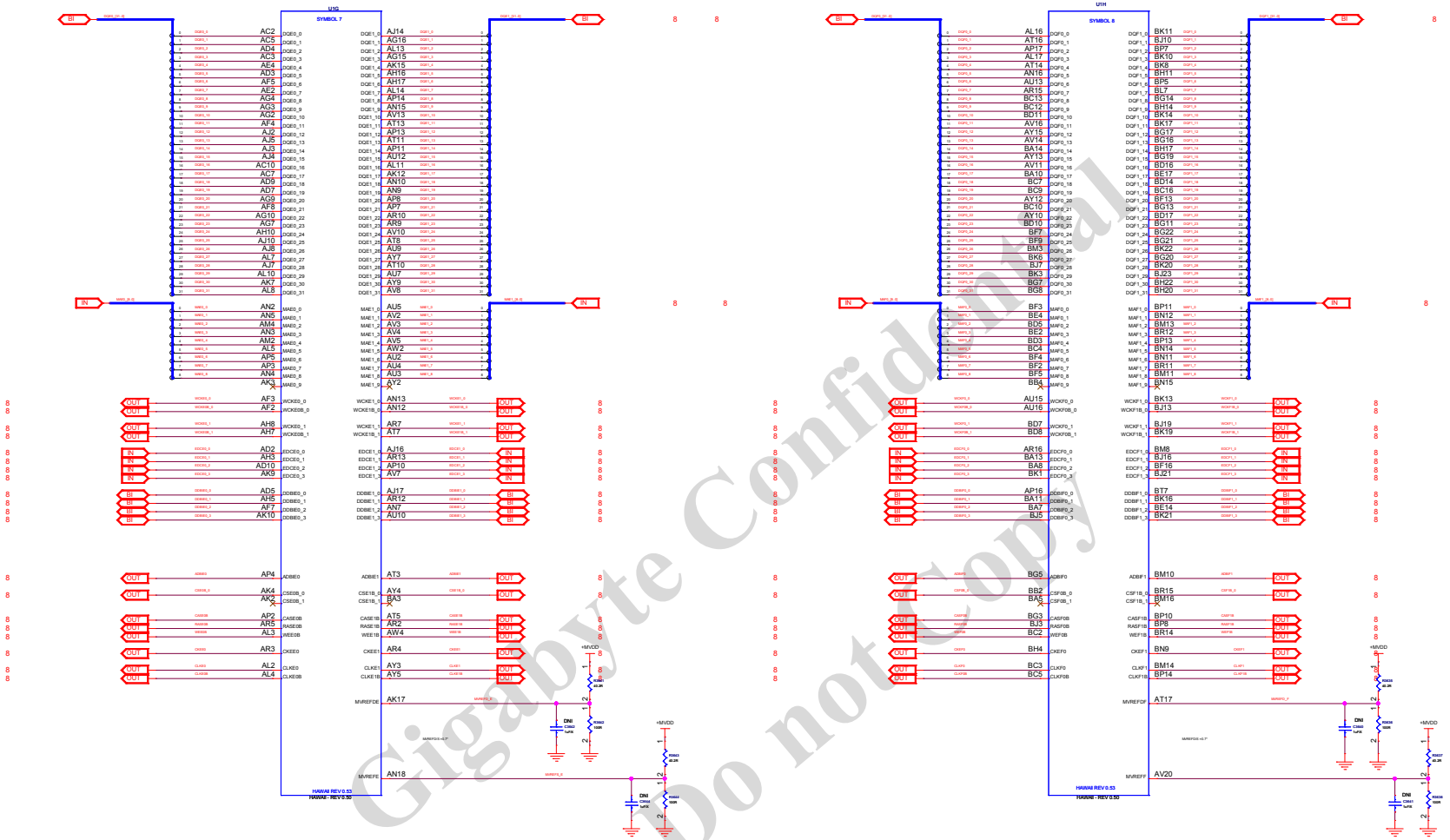
Gigabyte Confidential
Do not Copy

GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 2 of 29	



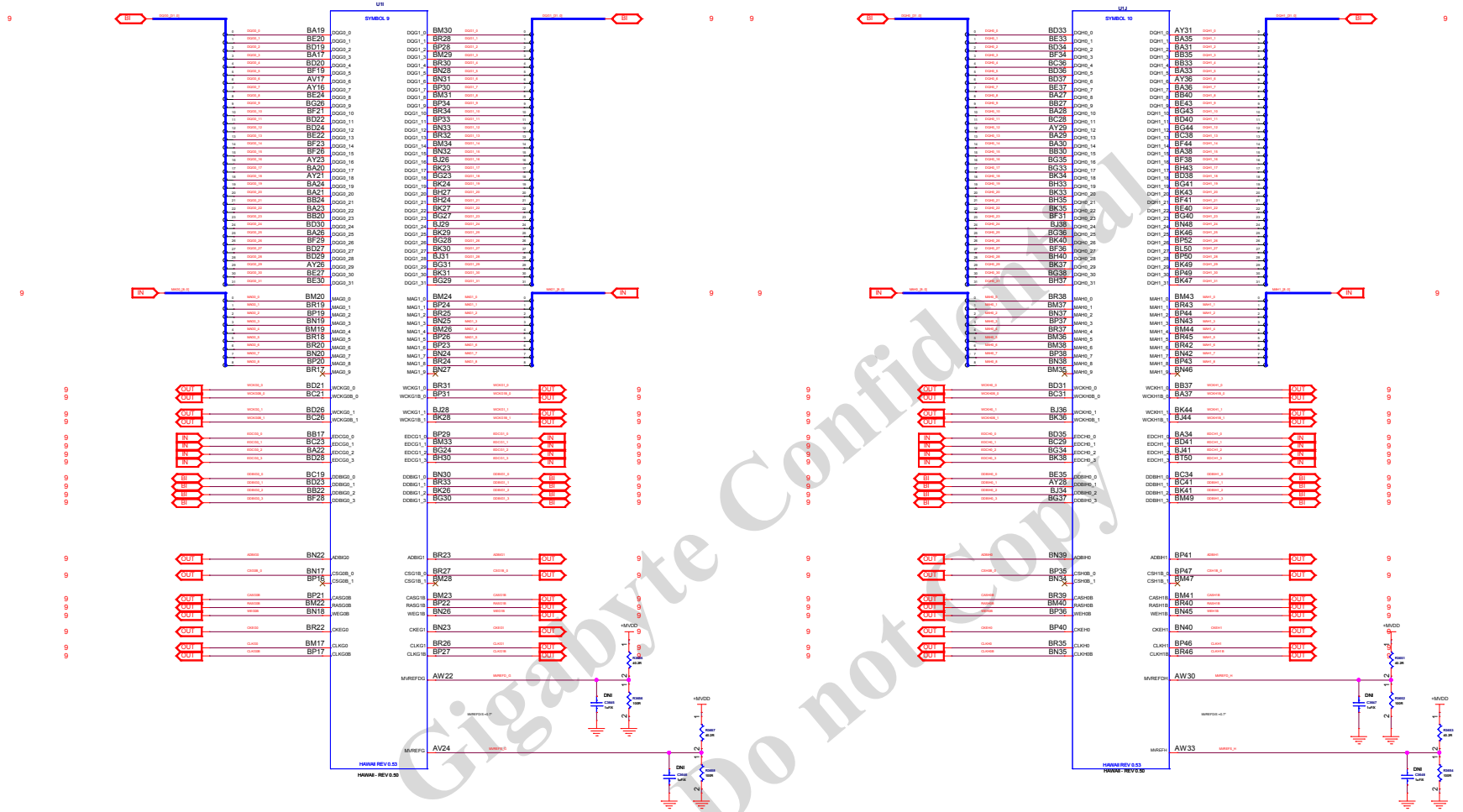
GigaByte Confidential
Do not Copy

GIGABYTE			
Title	GV-R939XG1 GAMING-8GD		
Size	Document Number Custom<Doc>		Rev 1.01
Date: Monday, May 25, 2015	Sheet 3 of 29		



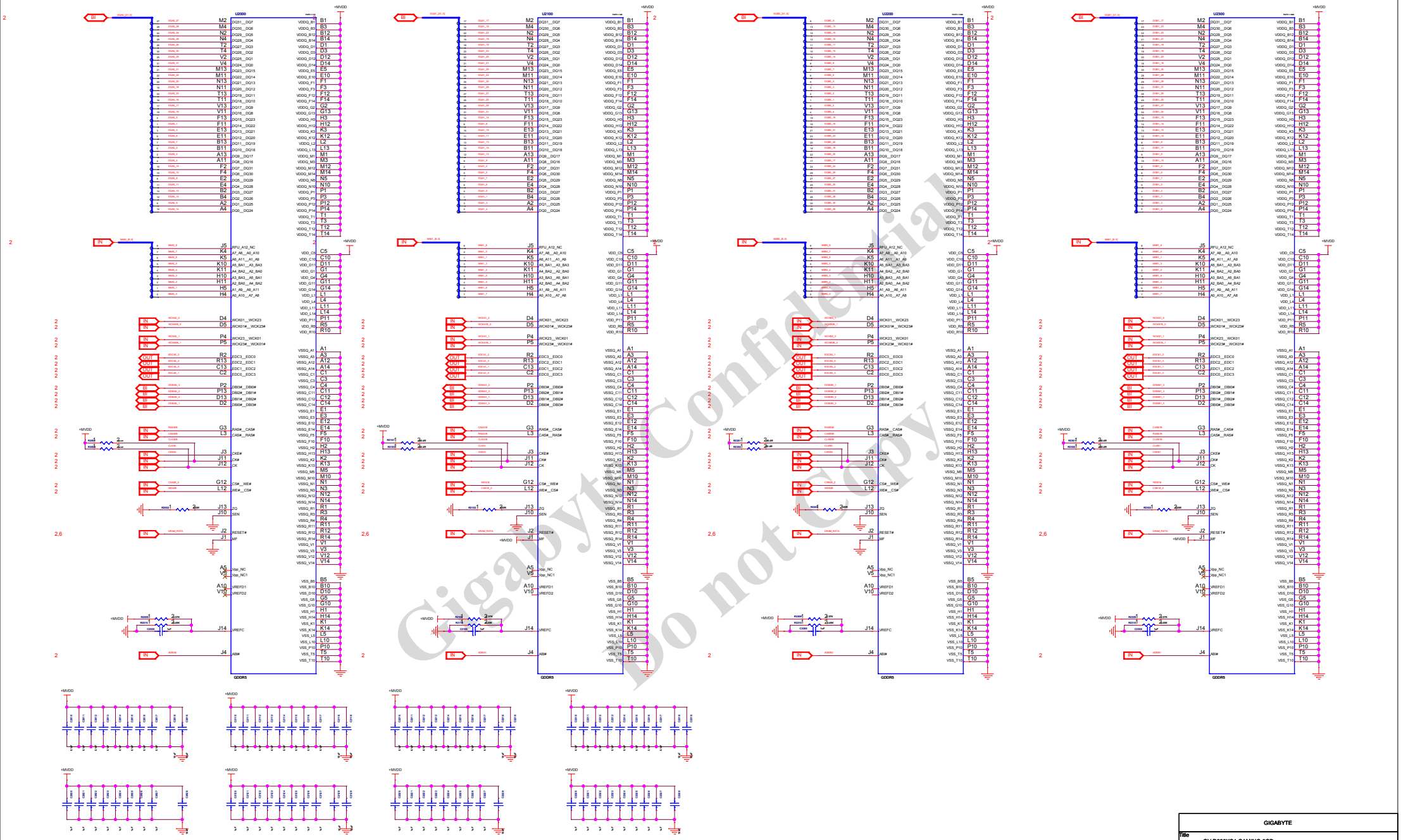
Gigabyte Confidential
Do not Copy

GIGABYTE			
Title	GV-R939XG1 GAMING-8GD		
Size	Document Number		Rev
Custom	<Doc>		1.01
Date:	Monday, May 25, 2015	Sheet 4 of 29	



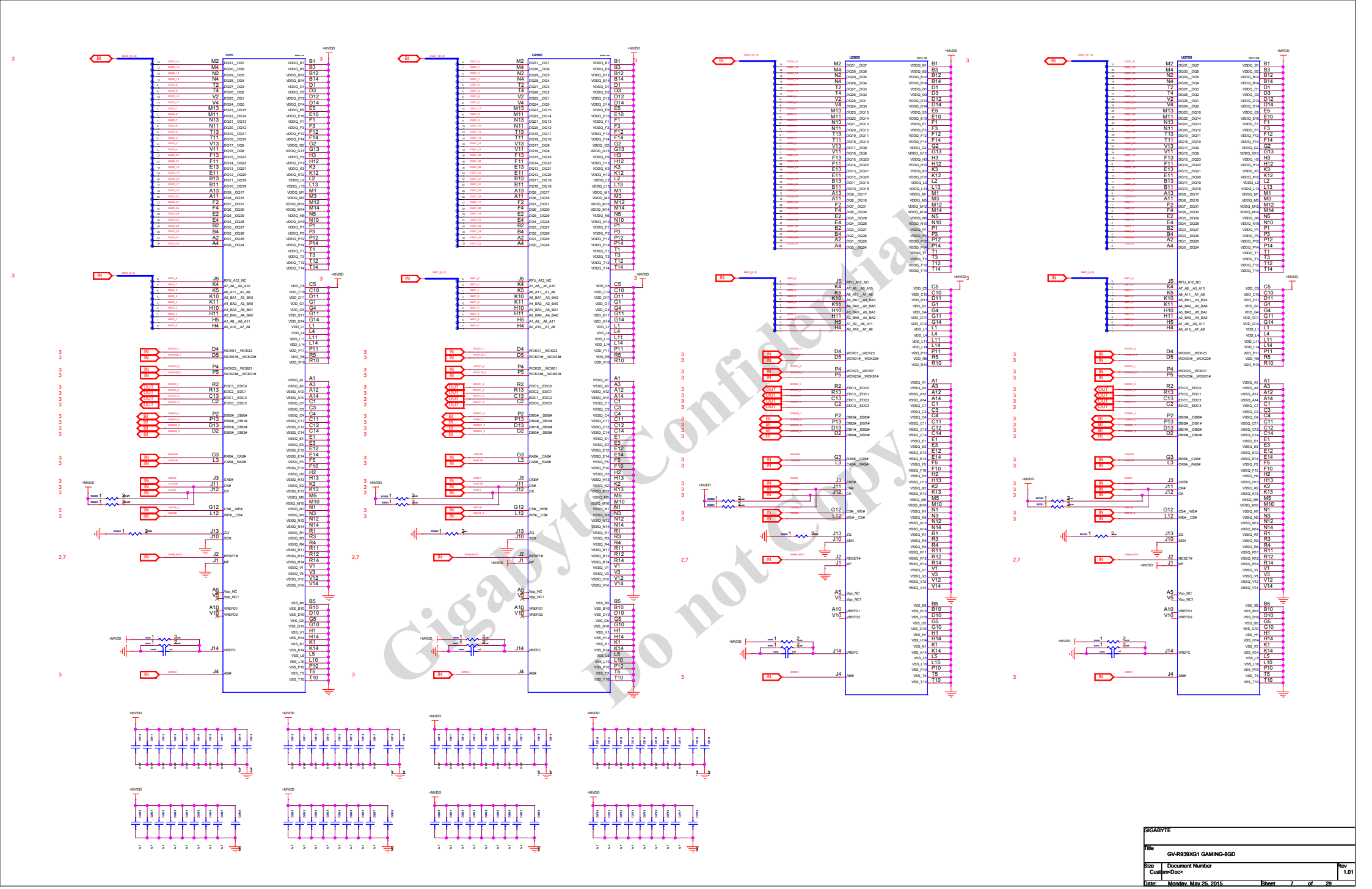
Gigabyte Confidential
Do not Copy

GIGABYTE			
Title	GV-R939XG1 GAMING-8GD		
Size	Document Number		Rev
Custom	<Doc>		1.01
Date:	Monday, May 25, 2015	Sheet 5 of 29	



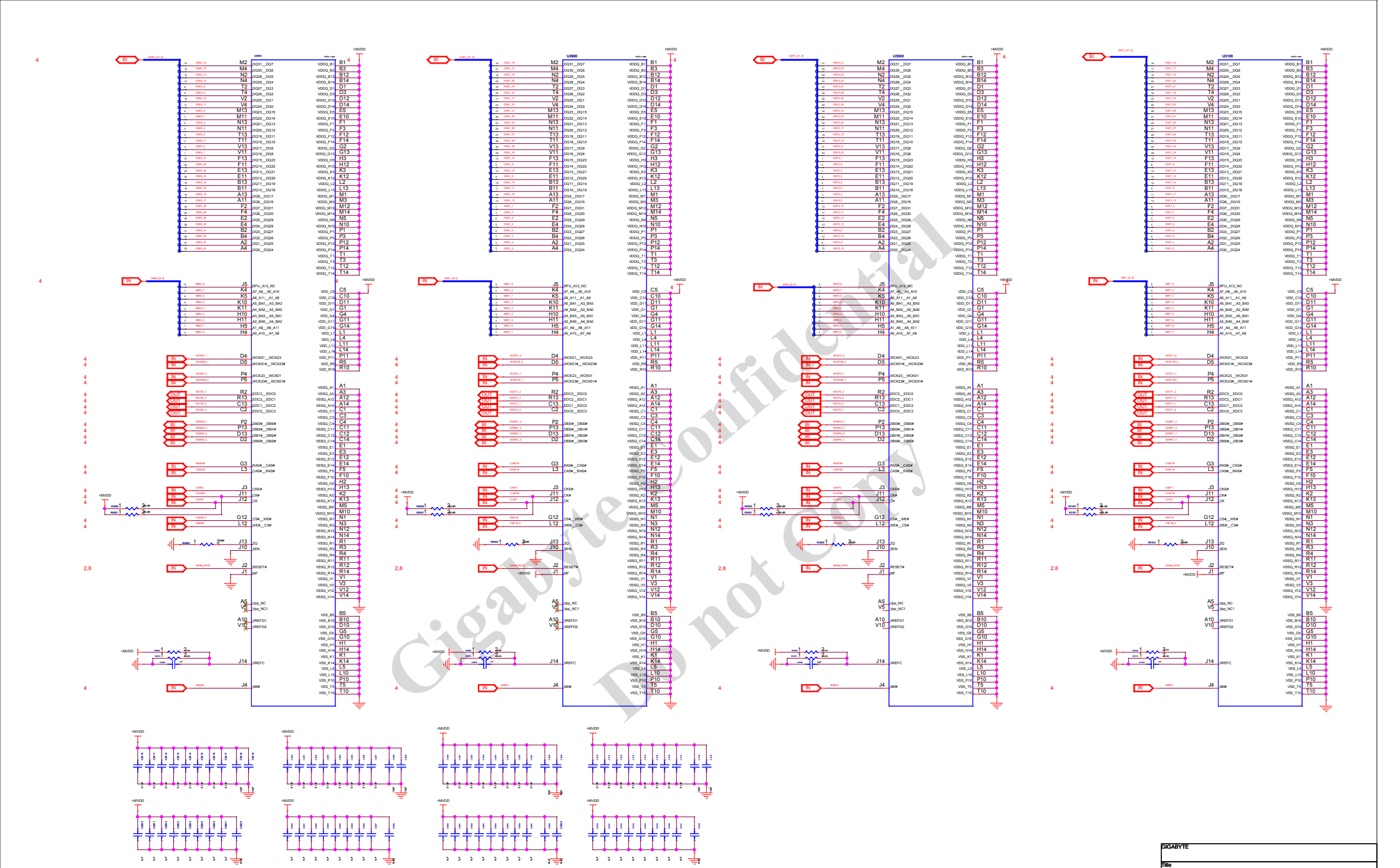
Gigabyte Confidential
Do not Copy

GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 6 of 29	



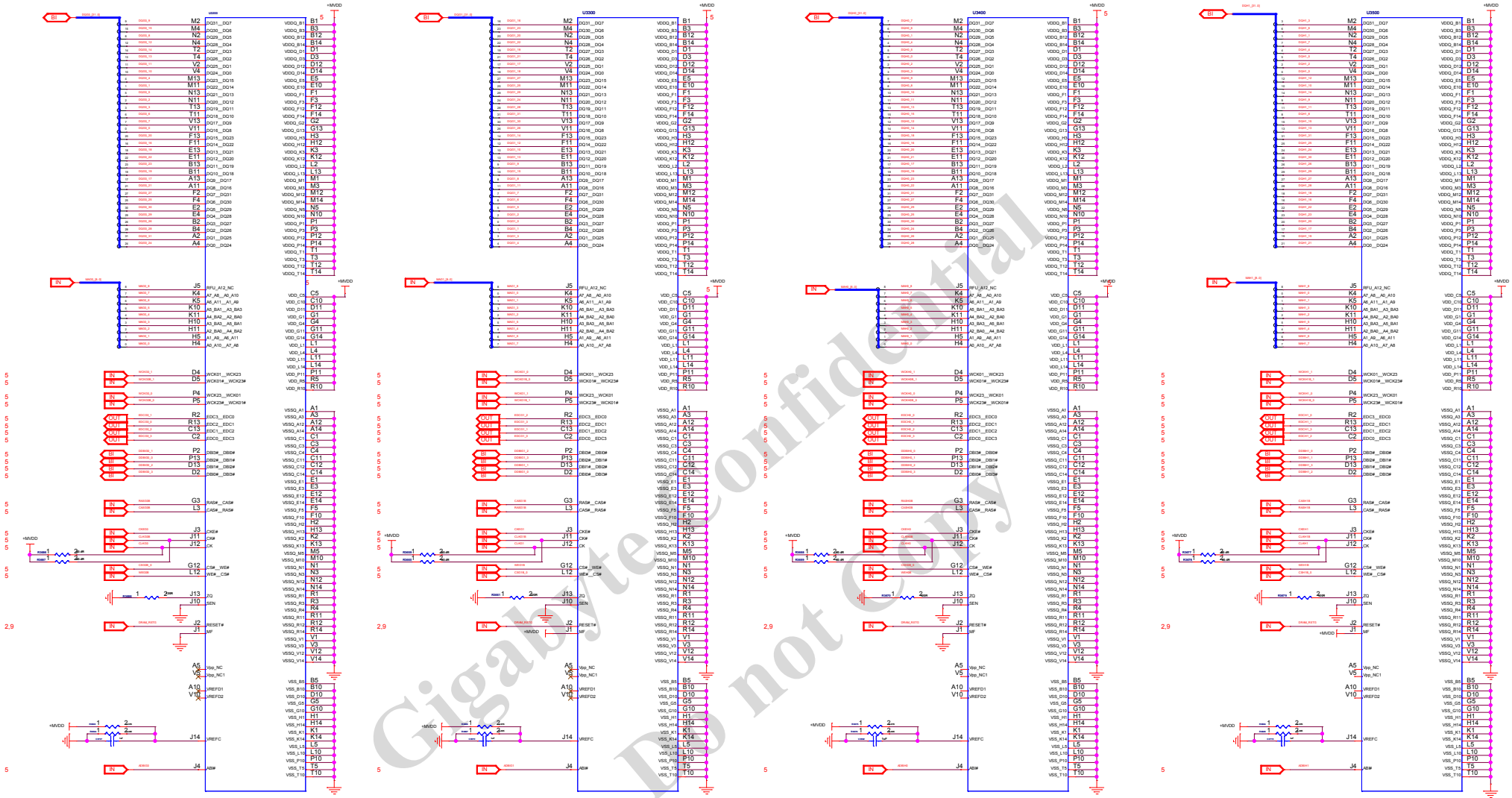
Gigabyte Confidential
Do not Copy

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: <Doc>
Rev	1.01
Date: Monday, May 25, 2015	Sheet 7 of 29



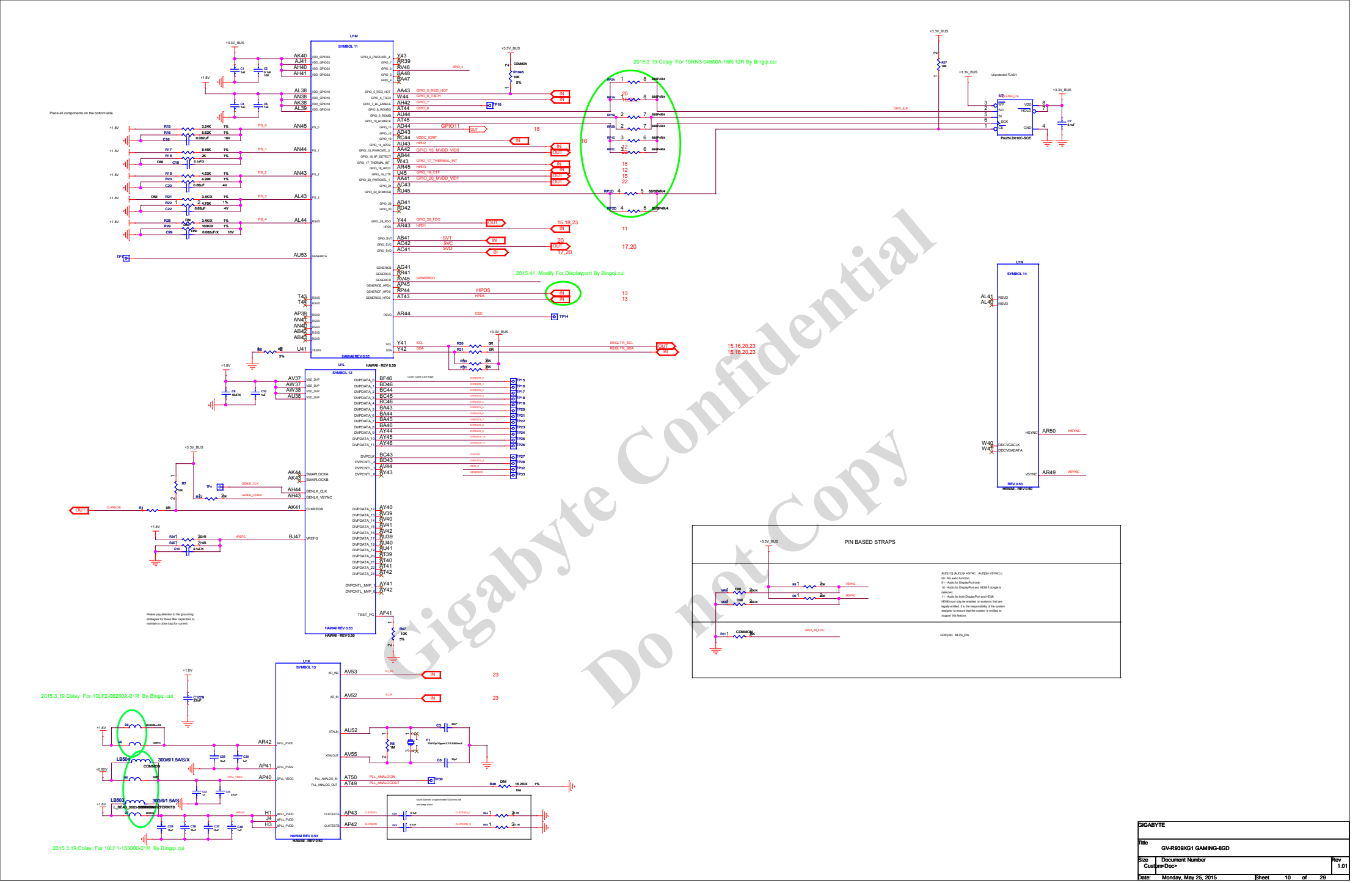
GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom<Doc>	Document Number	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 8 of 29	

Gigabyte Confidential
Do not Copy

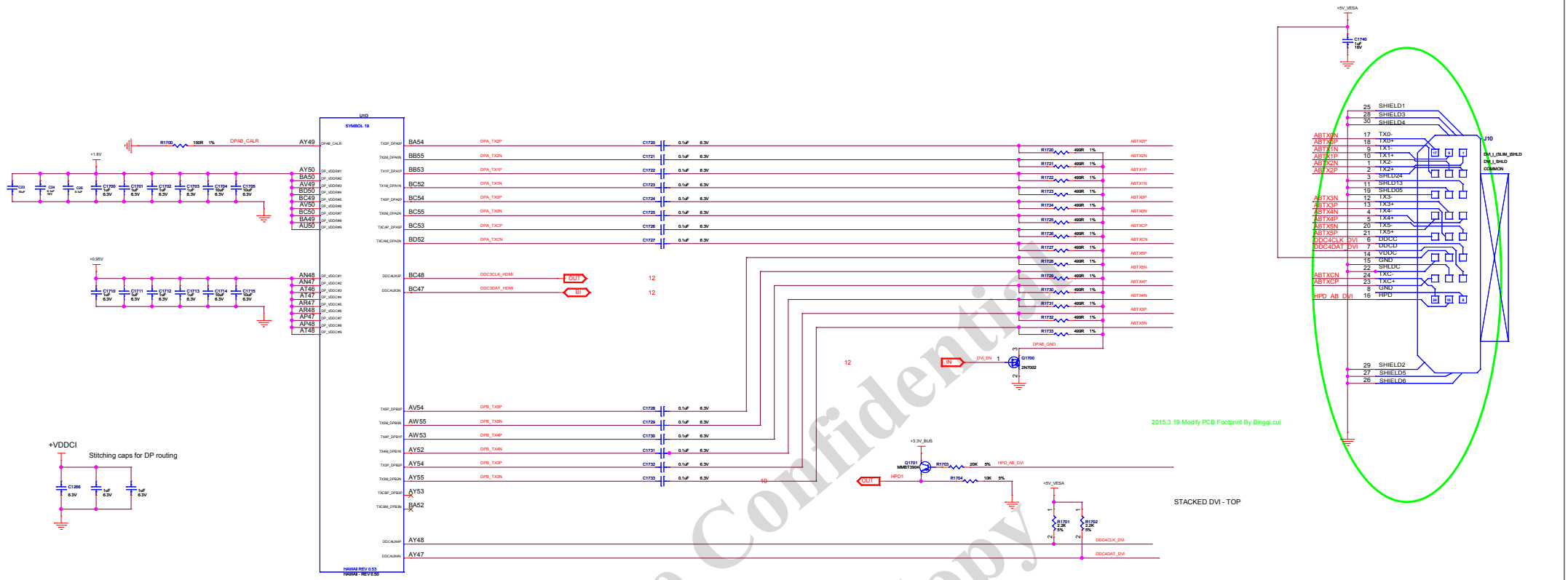


Gigabyte Confidential
Do not Copy

GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom<Doc>	Document Number	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 9 of 29	

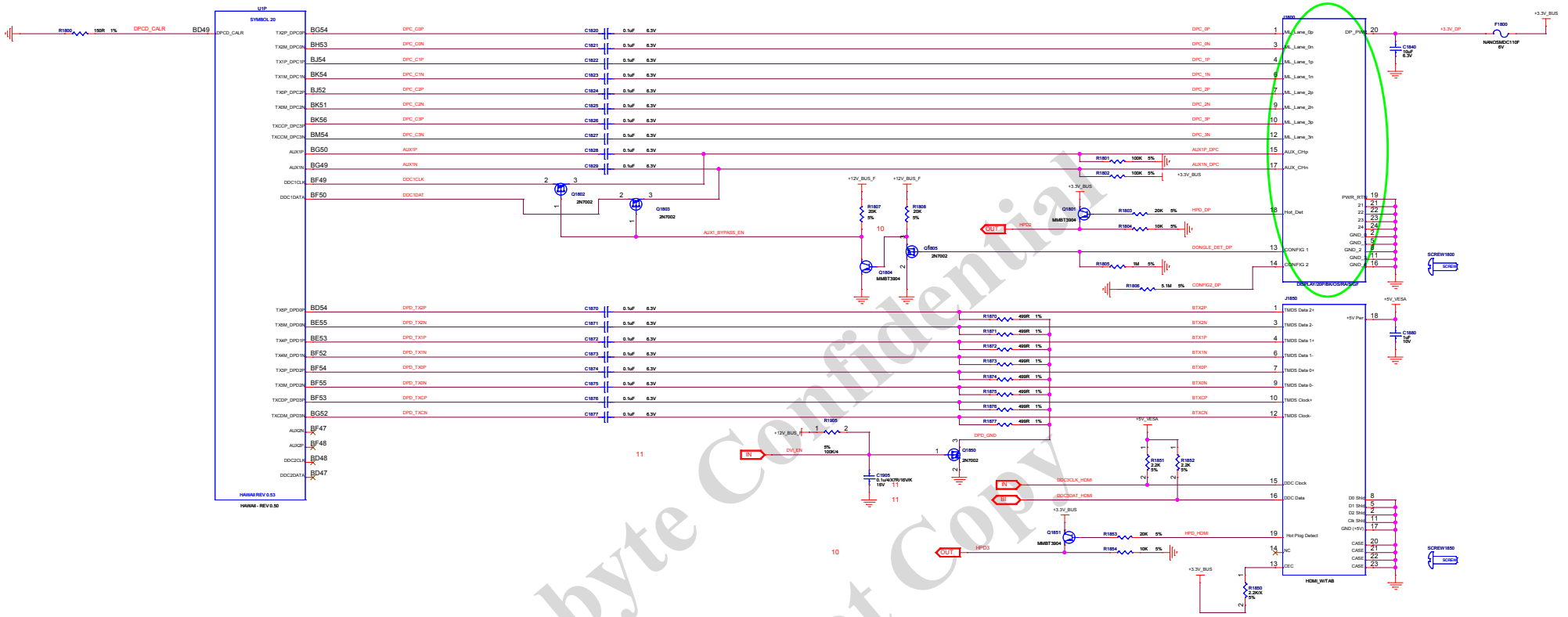


GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: <Doc>
Rev	1.01
Date: Monday, May 25, 2015	Sheet 10 of 29



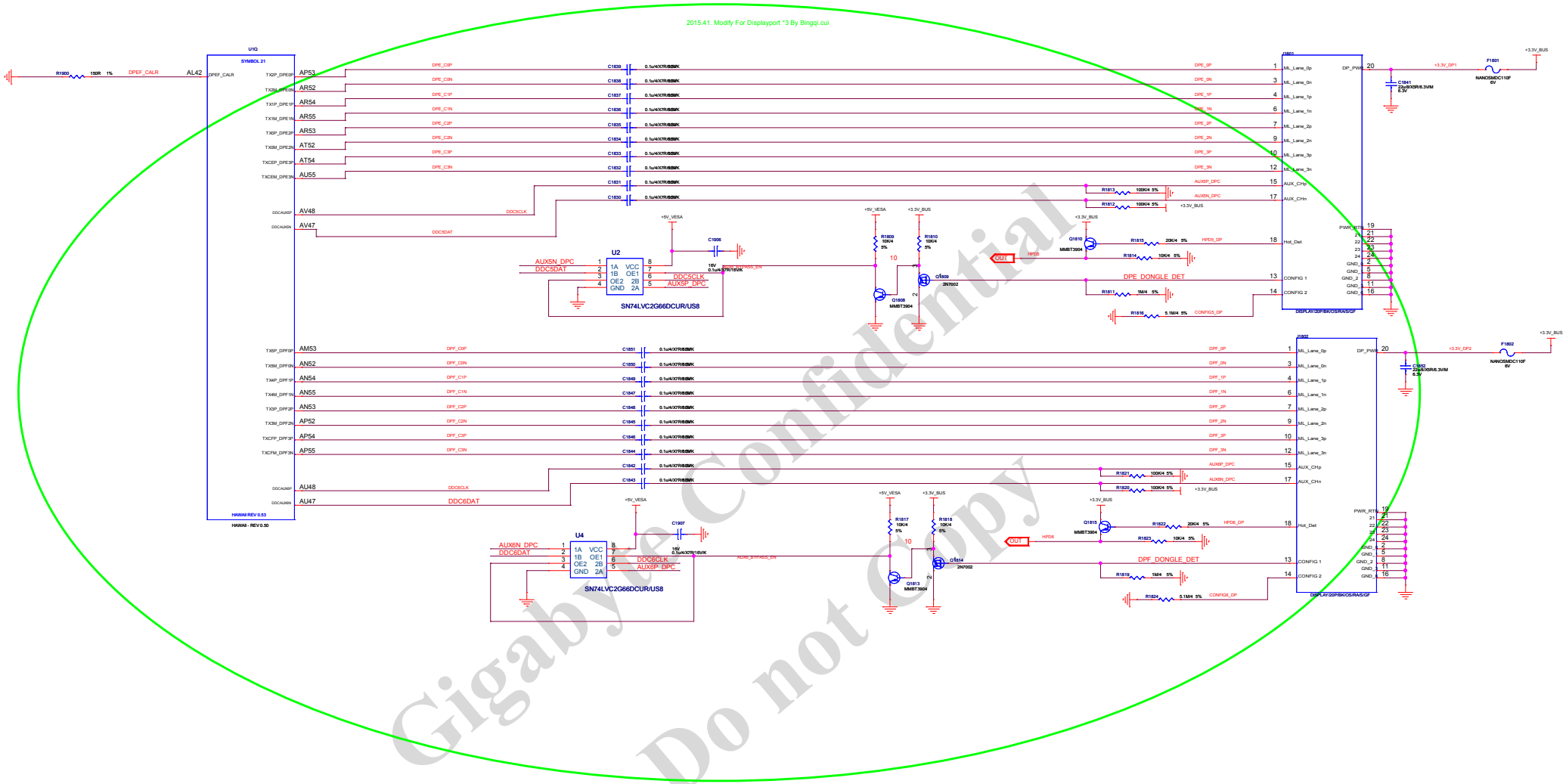
Gigabyte Confidential
Do not Copy

GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom<Doc>	Document Number	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 11 of 29	

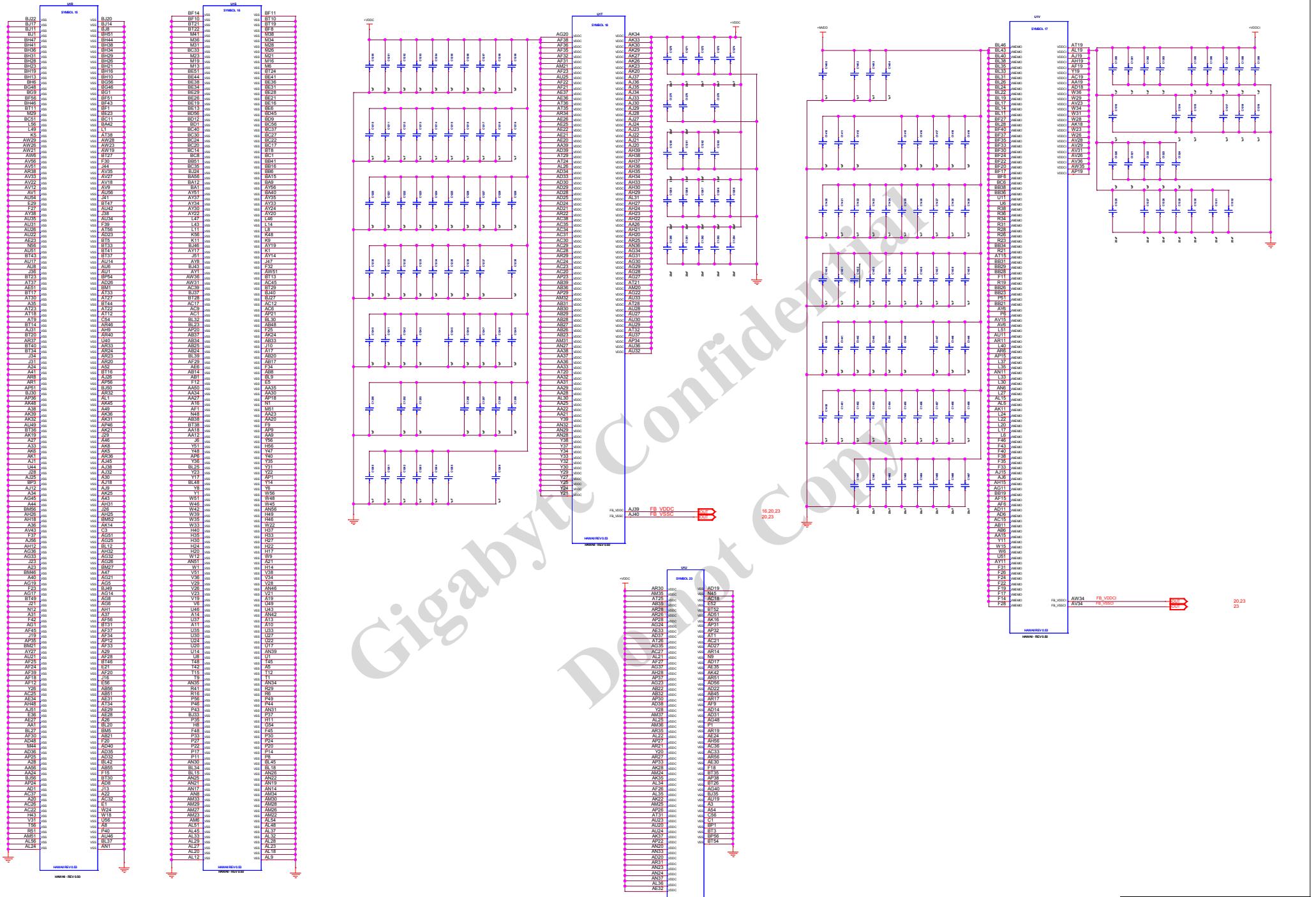


Gigabyte Confidential
Do not Copy

GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom<Doc>	Document Number	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 12 of 29	

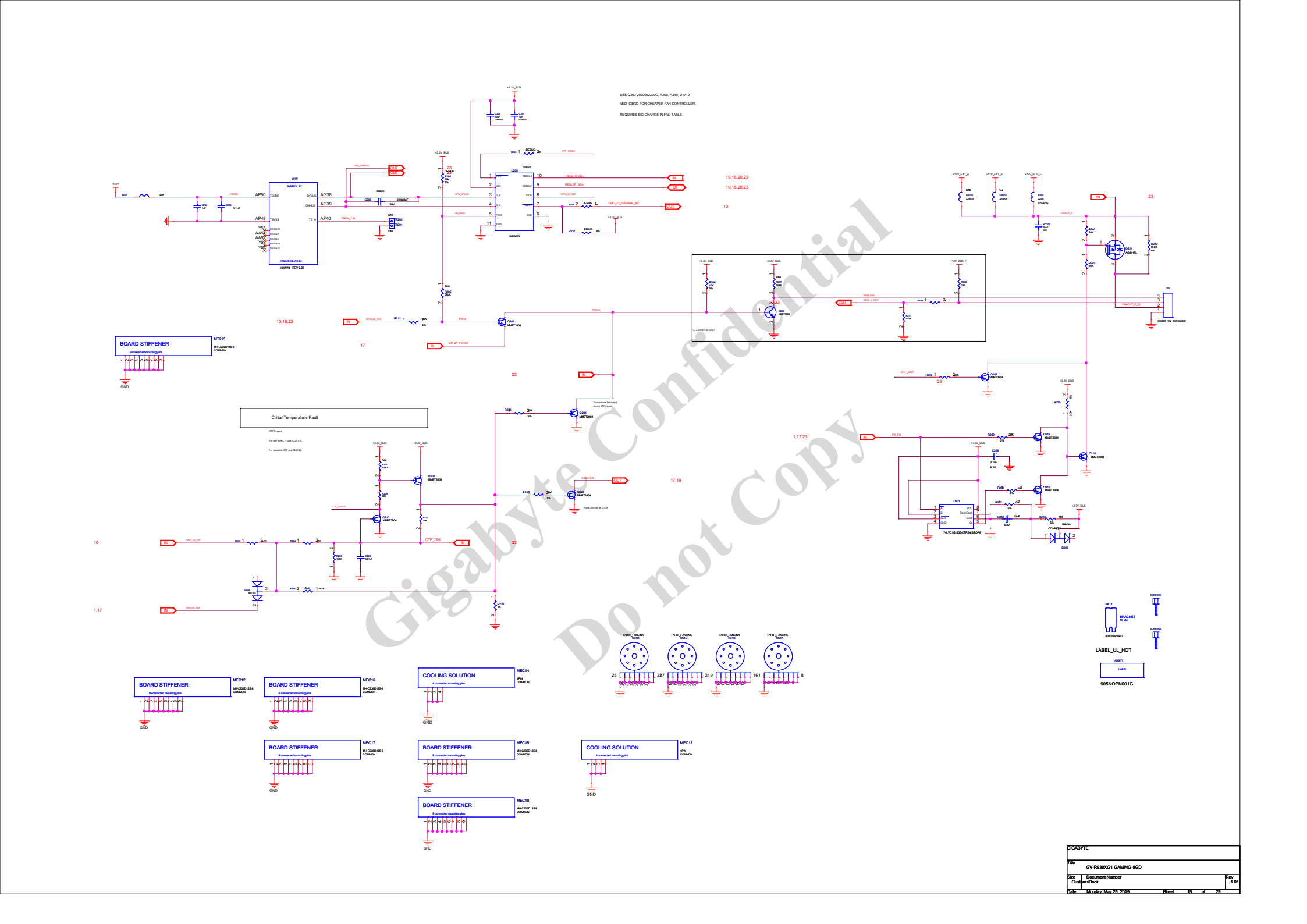


GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom<Doc>	Document Number	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 13 of 29	

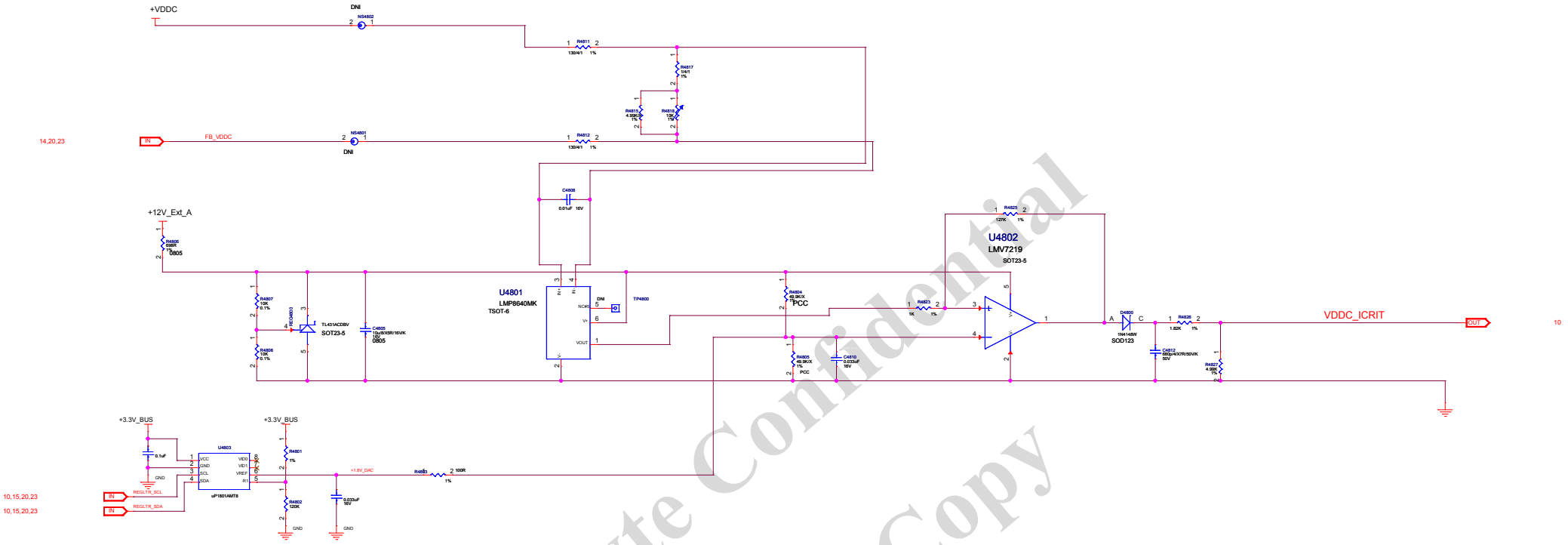


Gigabyte Confidential
Do not Copy

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size	Document Number: Custom<Doc>
Rev	1.01
Date:	Monday, May 25, 2015
Sheet	14 of 29

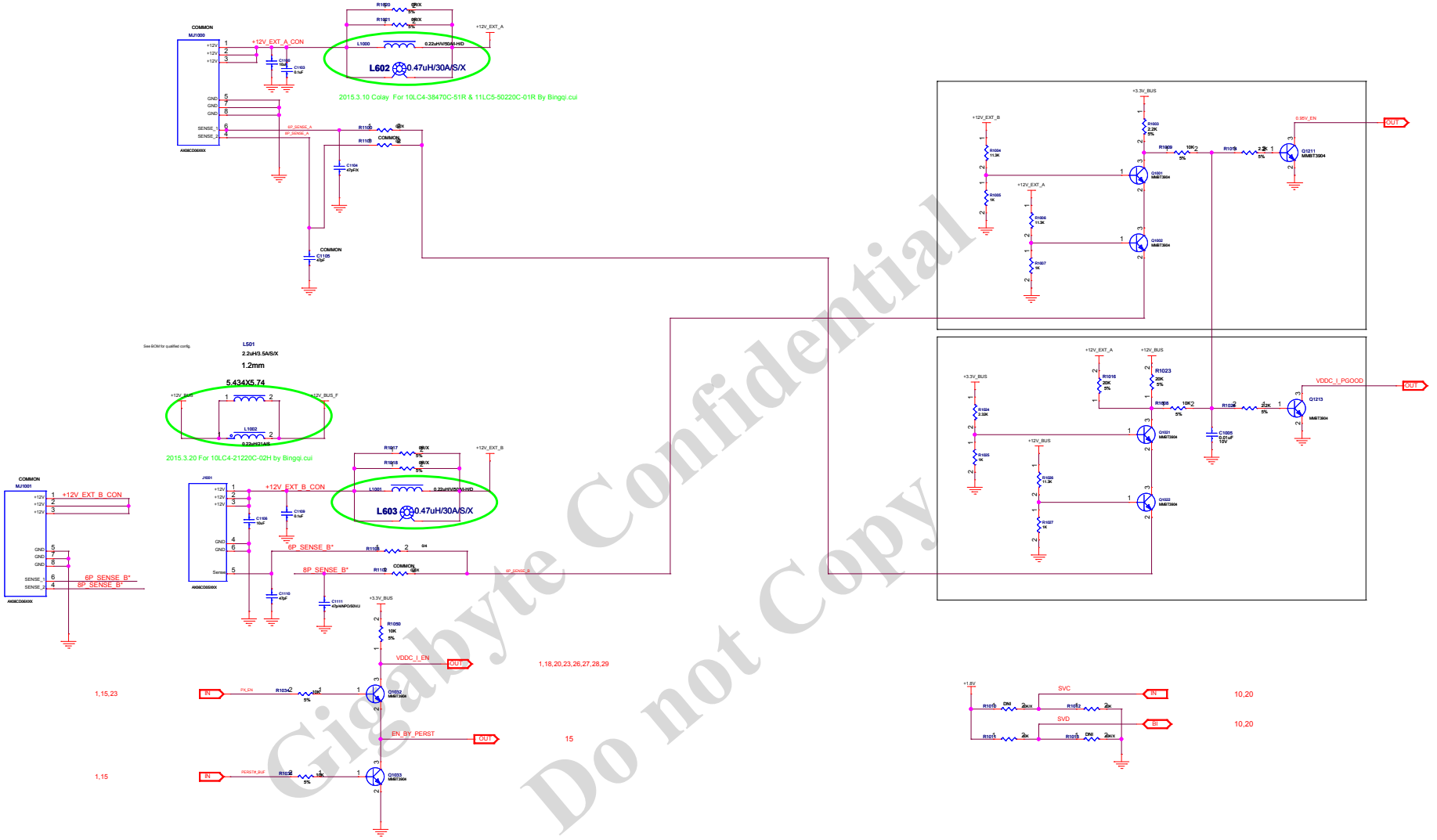


Gigabyte Confidential
Do not Copy



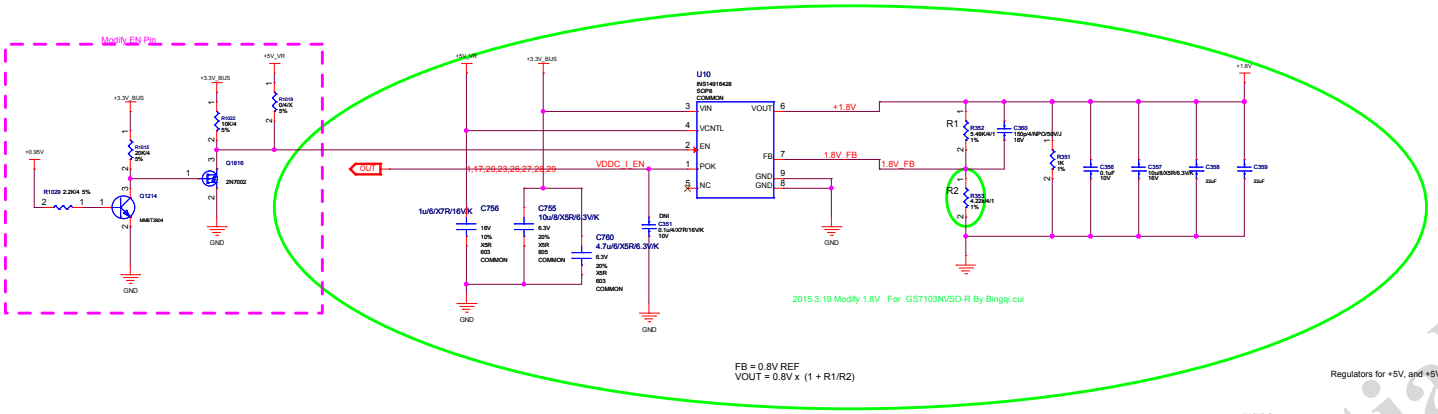
Gigabyte Confidential
Do not Copy

GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 16 of 29	



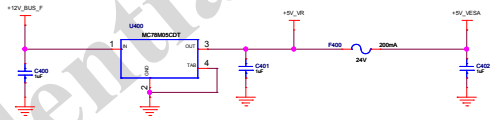
Gigabyte Confidential
Do not Copy

GIGABYTE			
Title	GV-R939XG1 GAMING-8GD		
Size	Document Number		Rev
Custom<Doc>			1.01
Date:	Monday, May 25, 2015	Sheet 17 of 29	

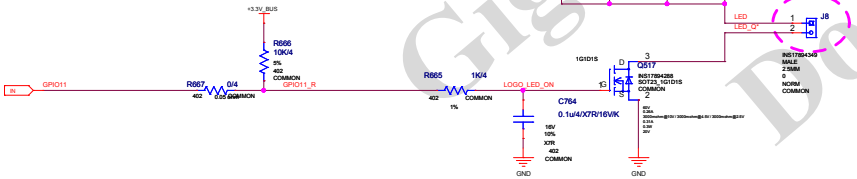


FB = 0.8V REF
VOUT = 0.8V x (1 + R1/R2)

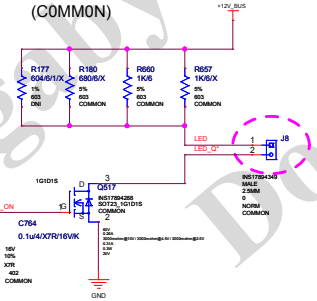
Regulators for +5V, and +5V_VESA



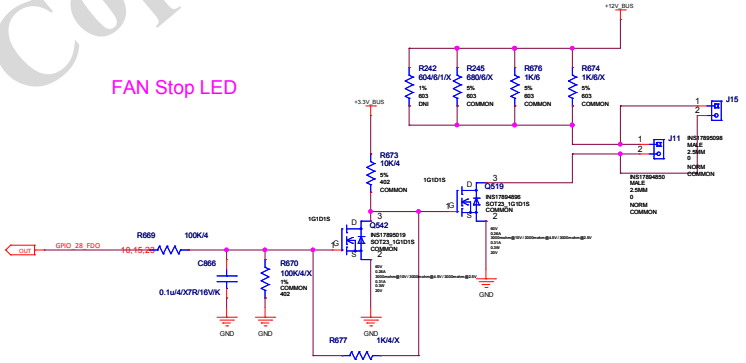
GeForce Logo LED



LED HEADER
(C0MM0N)

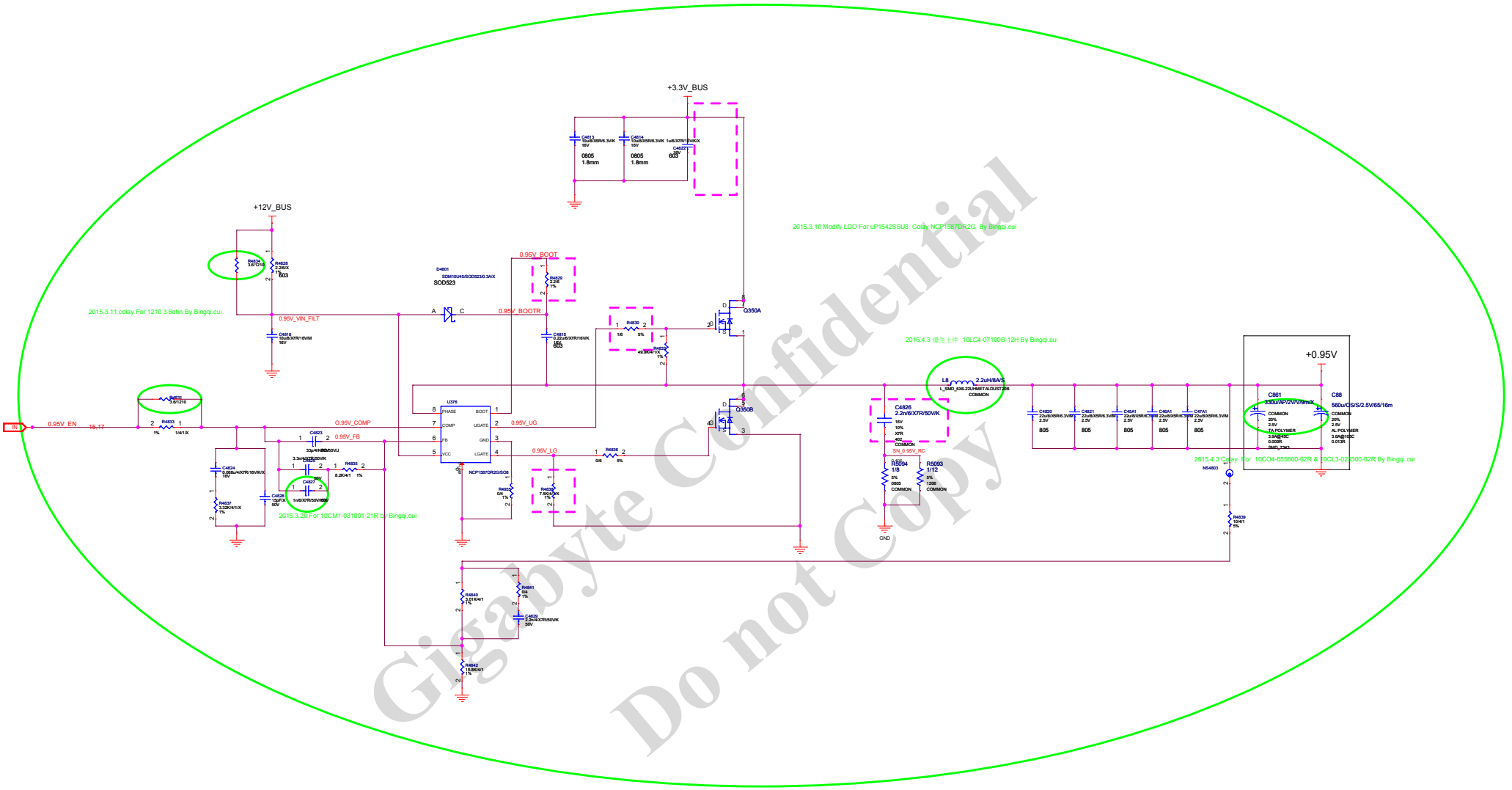


FAN Stop LED

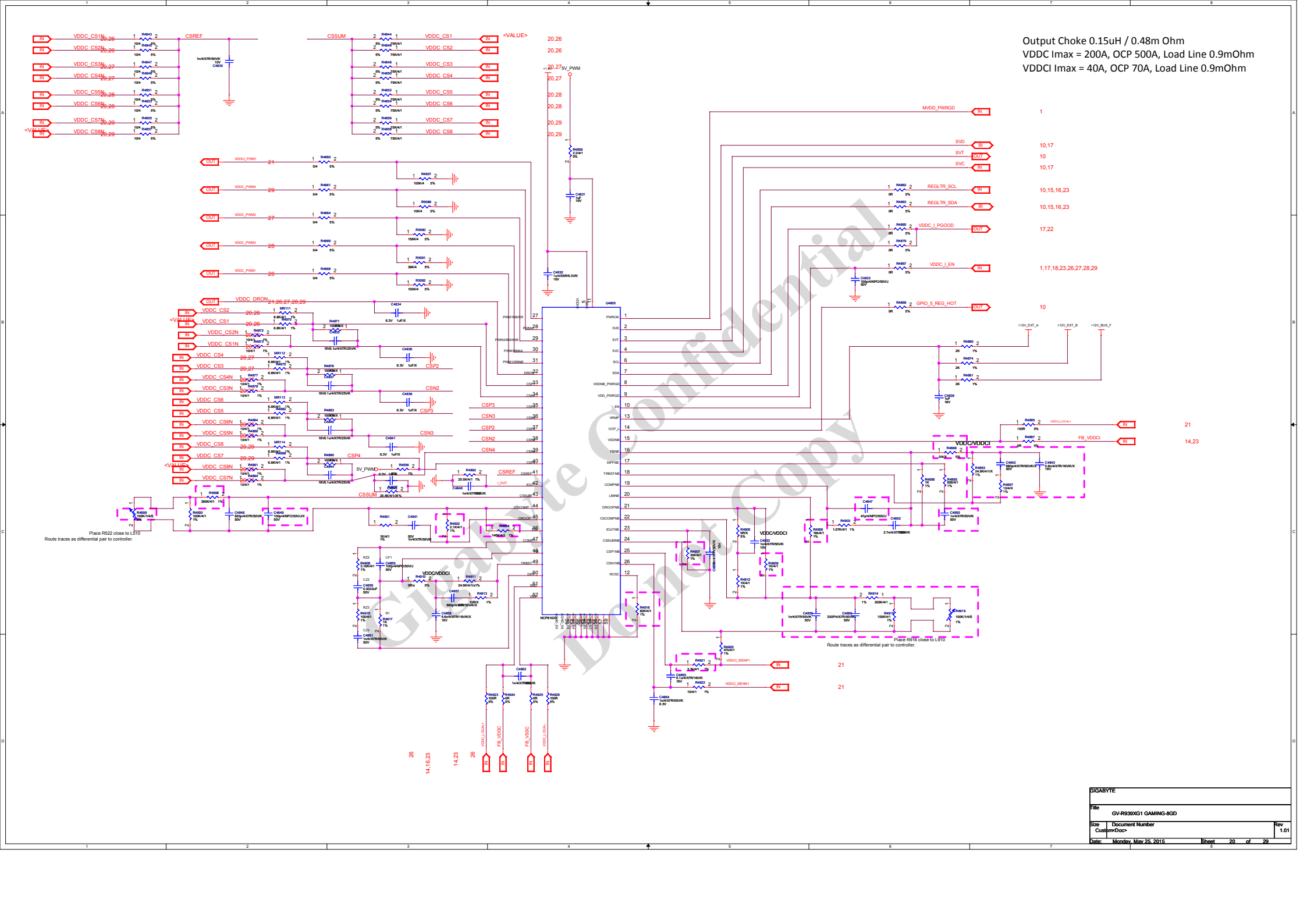


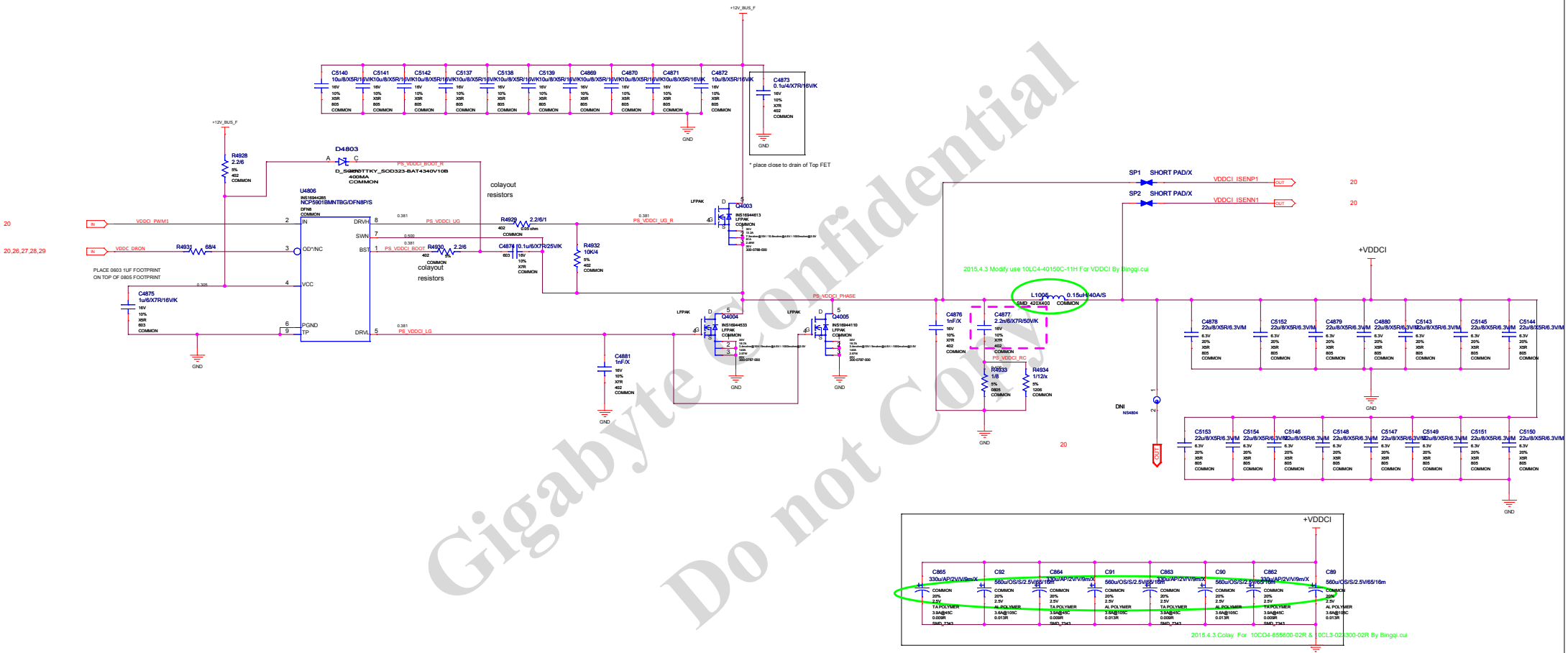
Gigabyte Confidential
Do not Copy

GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 18 of 29	



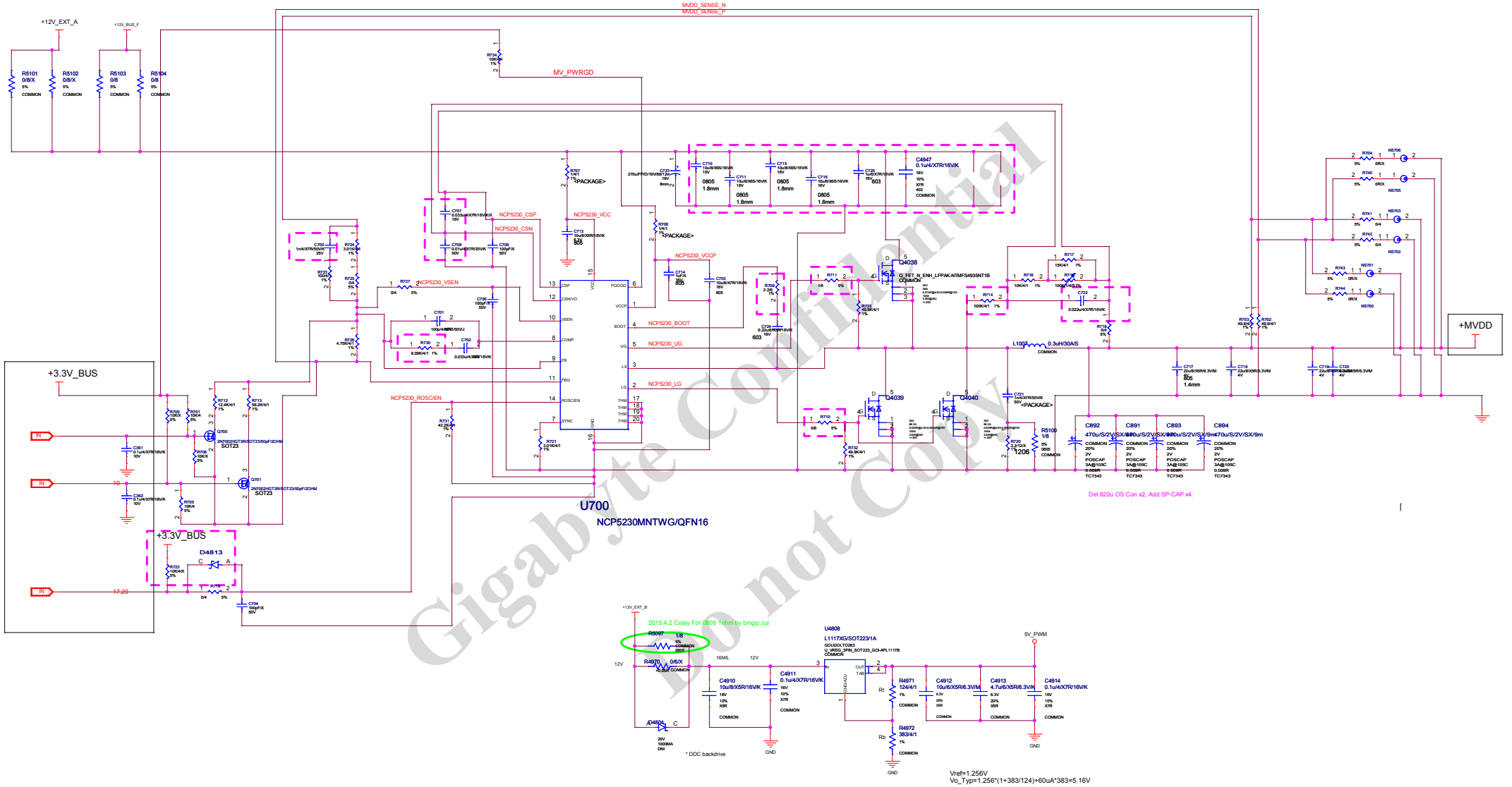
GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom<Doc>	Document Number	Rev 1.01
Date: Monday, May 25, 2015	Sheet 19 of 29	

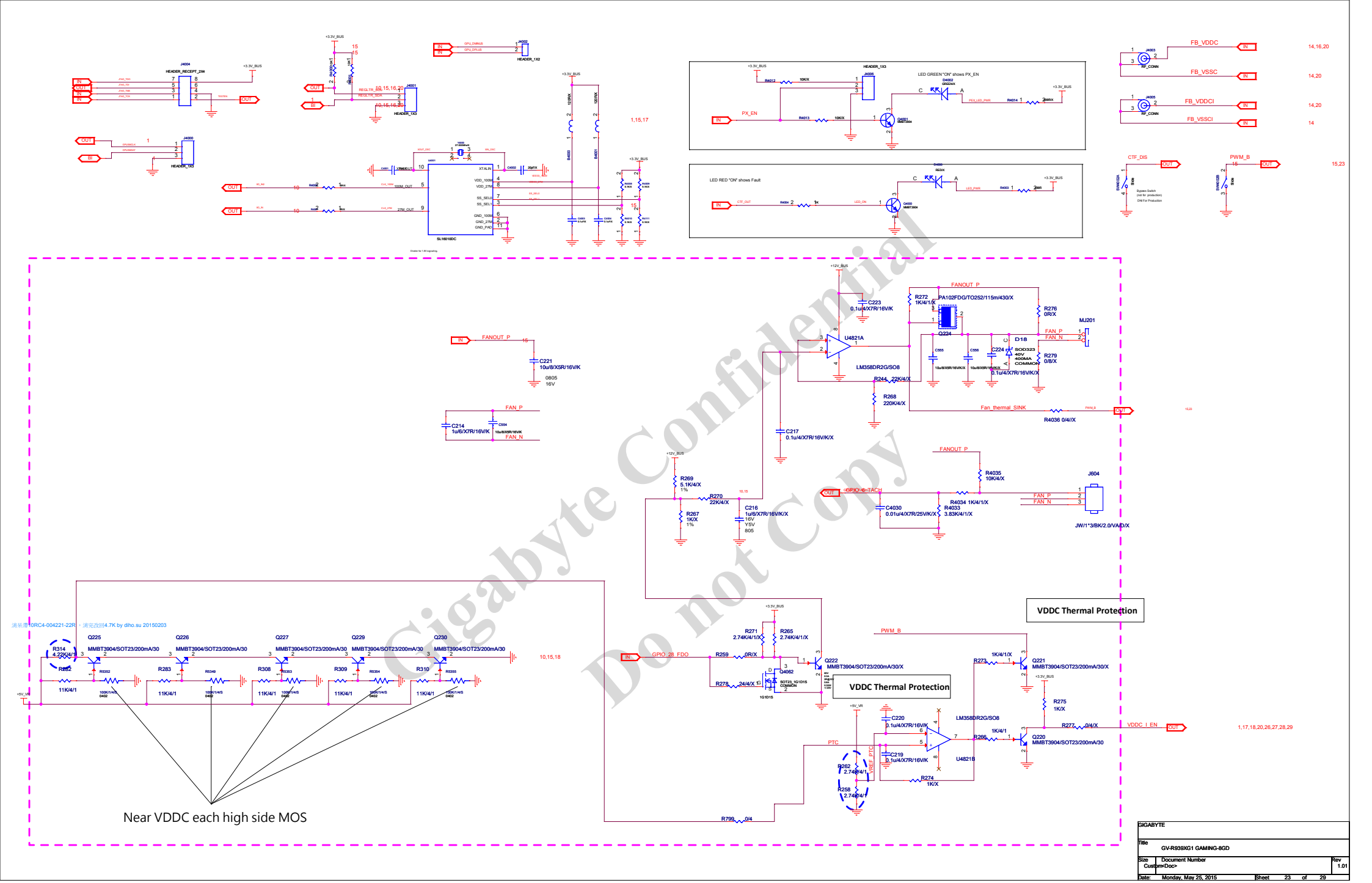

Output Choke 0.15uH / 0.48m Ohm
VDDC Imax = 200A, OCP 500A, Load Line 0.9mOhm
VDDCI Imax = 40A, OCP 70A, Load Line 0.9mOhm
Place R522 close to L510
Route traces as differential pair to controller.
Place R916 close to L910
Route traces as differential pair to controller.
VDDC/VDDCI
GIGABYTE
GV-R939XG1 GAMING-8GD
Size
Document Number
Custom<Doc>
Rev
1.01
Date: Monday, May 25, 2015
Sheet 20 of 29
Gigabyte Confidential
Don't Copy

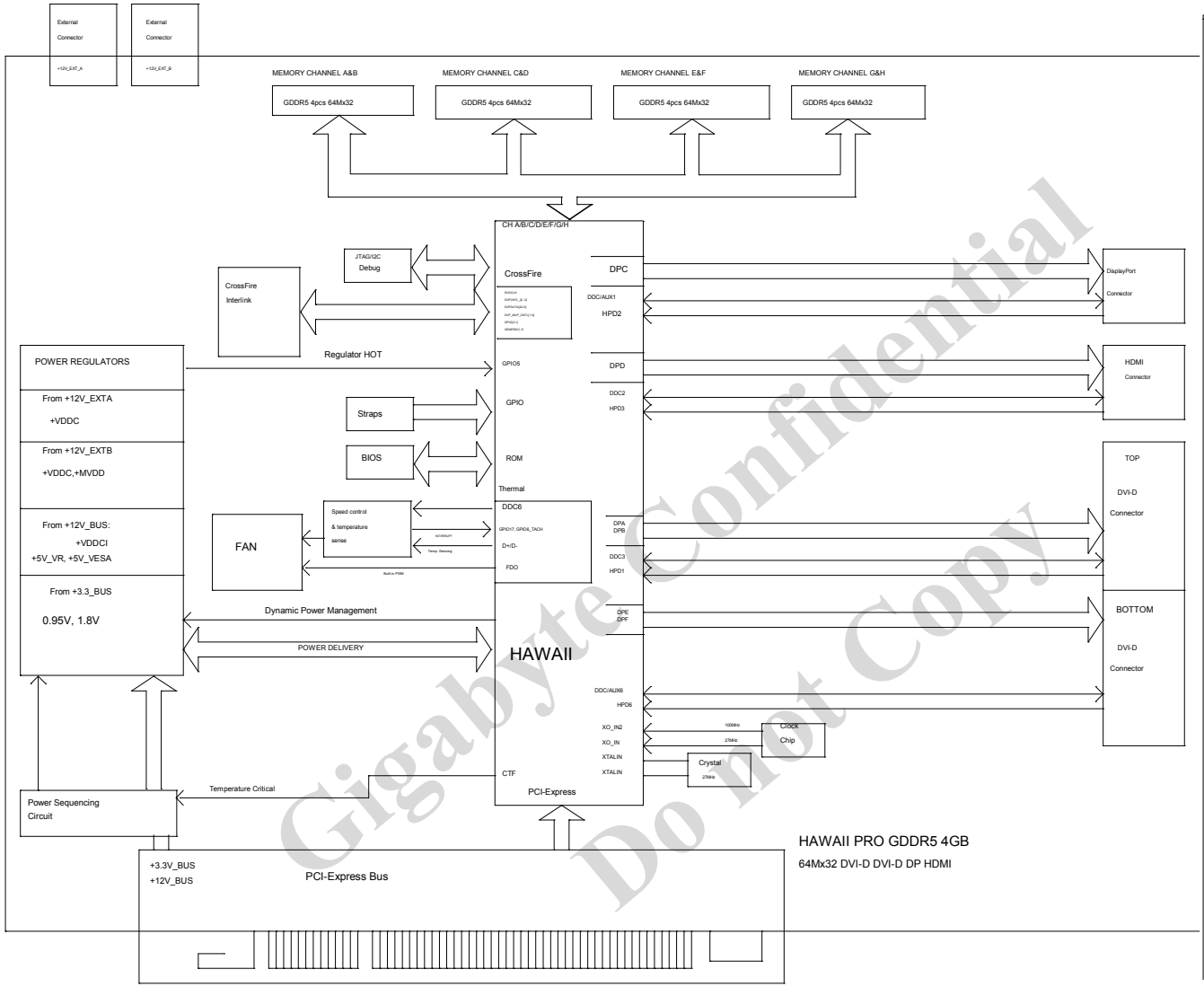


Gigabyte Confidential
Do not Copy

GIGABYTE		
Title	GV-R939XG1 GAMING-8GD	
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 21 of 29	


Output Choke 0.3uH / 1.2m Ohm
MVDD Imax = 30A, OCP 90A
MVDD_SENSE_N
MVDD_SENSE_P
MV_PWRGD
+12V_EXT_A
+12V_BUS_F
R5101 0/8/X 5% COMMON
R5102 0/8/X 5% COMMON
R5103 0/8 5% COMMON
R5104 0/8 5% COMMON
NCP5230_CSP
NCP5230_CSN
NCP5230_VCC
NCP5230_VCCP
NCP5230_VSEN
NCP5230_BOOT
NCP5230_UG
NCP5230_LG
NCP5230_ROSC/EN
U700
NCP5230MNTWG/QFN16
+3.3V_BUS
D4813
Q4038
Q4039
Q4040
L1002 0.3uH/30A/S
+MVDD
Del 820u OS Con x2, Add SP-CAP x4.
2015.4.2 Colay For 0805 1ohm by bingqi.cui
U4808
L1117XG/SOT223/1A
5V_PWM
* DDC backdrive
Vref=1.256V
Vo_Typ=1.256*(1+383/124)+60uA*383=5.16V
Gigabyte Confidential
Do not Copy
GIGABYTE
GV-R939XG1 GAMING-8GD
Size Custom
Document Number <Doc>
Rev 1.01
Date: Monday, May 25, 2015
Sheet 22 of 29


HEADER_RECEPT_2X4
HEADER_1X2
HEADER_1X3
LED GREEN "ON" shows PX_EN
LED RED "ON" shows Fault
SL1601VDDC
FB_VDDC
FB_VSSC
FB_VDDCI
FB_VSSCI
CTF_DIS
PWM_B
FANOUT_P
FAN_P
FAN_N
Fan_thermal_SINK
LM358DR2G/SO8
U4821A
PA102FDG/TO252/115m/430/X
MJ201
D18
J604
JW/1*3/BK/2.0/VA/D/X
VDDC Thermal Protection
VDDC Thermal Protection
PWM_B
GPIO_28_FDO
PTC
VDDC_I_EN
Near VDDC each high side MOS
Cigabyte Confidential
Do not Copy
GIGABYTE
GV-R939XG1 GAMING-8GD
Size
Document Number
Custom<Doc>
Rev
1.01
Date: Monday, May 25, 2015
Sheet 23 of 29



Gigabyte Confidential
Do not Copy

GIGABYTE		
Title: GV-R939XG1 GAMING-8GD		
Size: Custom	Document Number: <Doc>	Rev: 1.01
Date: Monday, May 25, 2015	Sheet 24 of 29	

AMD

TITLE: Hawaii XT CR

DOCUMENT NUMBER: 105-C67900-00B

DATE: Mon Jan 13 03:07:00 2014

SHEET NUMBER: 26 OF 26

REV: 1.0

REVISION HISTORY

ENGINEER: Anatoly FRidman

NOTES: NOTE

CONFIDENTIAL AND PROPRIETARY TO ADVANCED MICRO DEVICES INC. C 2013 Advanced Micro Devices
This AMD Board schematic and design is the exclusive property of AMD, and is provided only to entities under a non-disclosure agreement with AMD for evaluation purposes. Further distribution or disclosure is strictly prohibited. Use of this schematic and design for any purpose other than evaluation requires a Board Technology License Agreement with AMD. AMD makes no representations or warranties of any kind regarding this schematic and design, including, not limited to, any implied warranty of merchantability or fitness for a particular purpose, and disclaims responsibility for any consequences resulting from use of the information included herein.

AMD - GRAPHICS
1 COMMERCE VALLEY
MARKHAM, ONTARIO, L3T 7X6

SCH Rev	PCB Rev	Date	REVISION DESCRIPTON
1	00A	Oct 03 2013	1) Based on C672. 2) VDDC/VDDCI regulator changed to C671 solution. 3) VR_HOT circuitry deleted and used C671 solution.

Gigabyte Confidential
Do not Copy

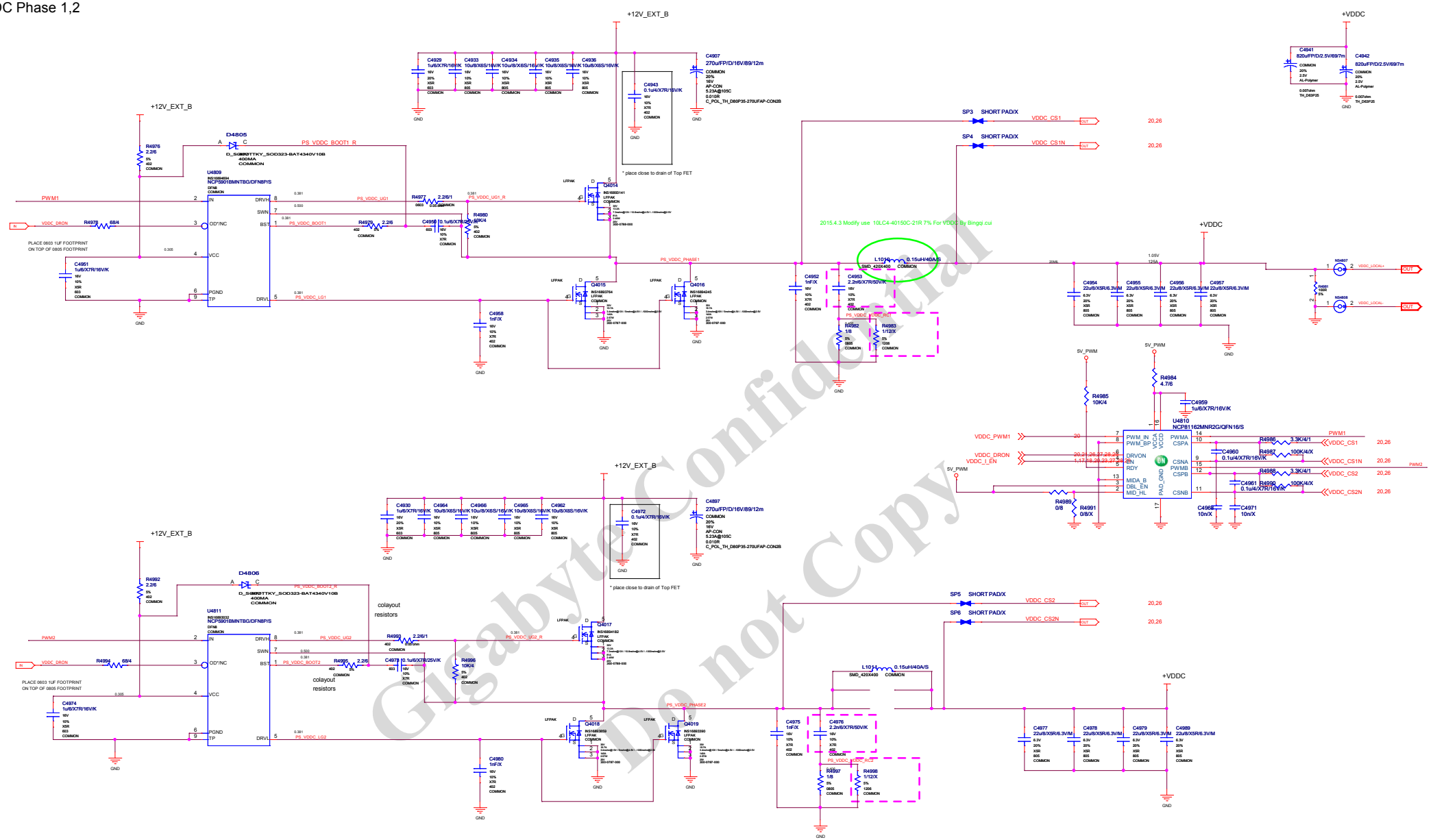
GIGABYTE

Title: GV-R939XG1 GAMING-8GD

Size: Custom | Document Number: <Doc> | Rev: 1.01

Date: Monday, May 25, 2015 | Sheet 25 of 29

VDDC Phase 1,2



Gigabyte Confidential
Do not Copy

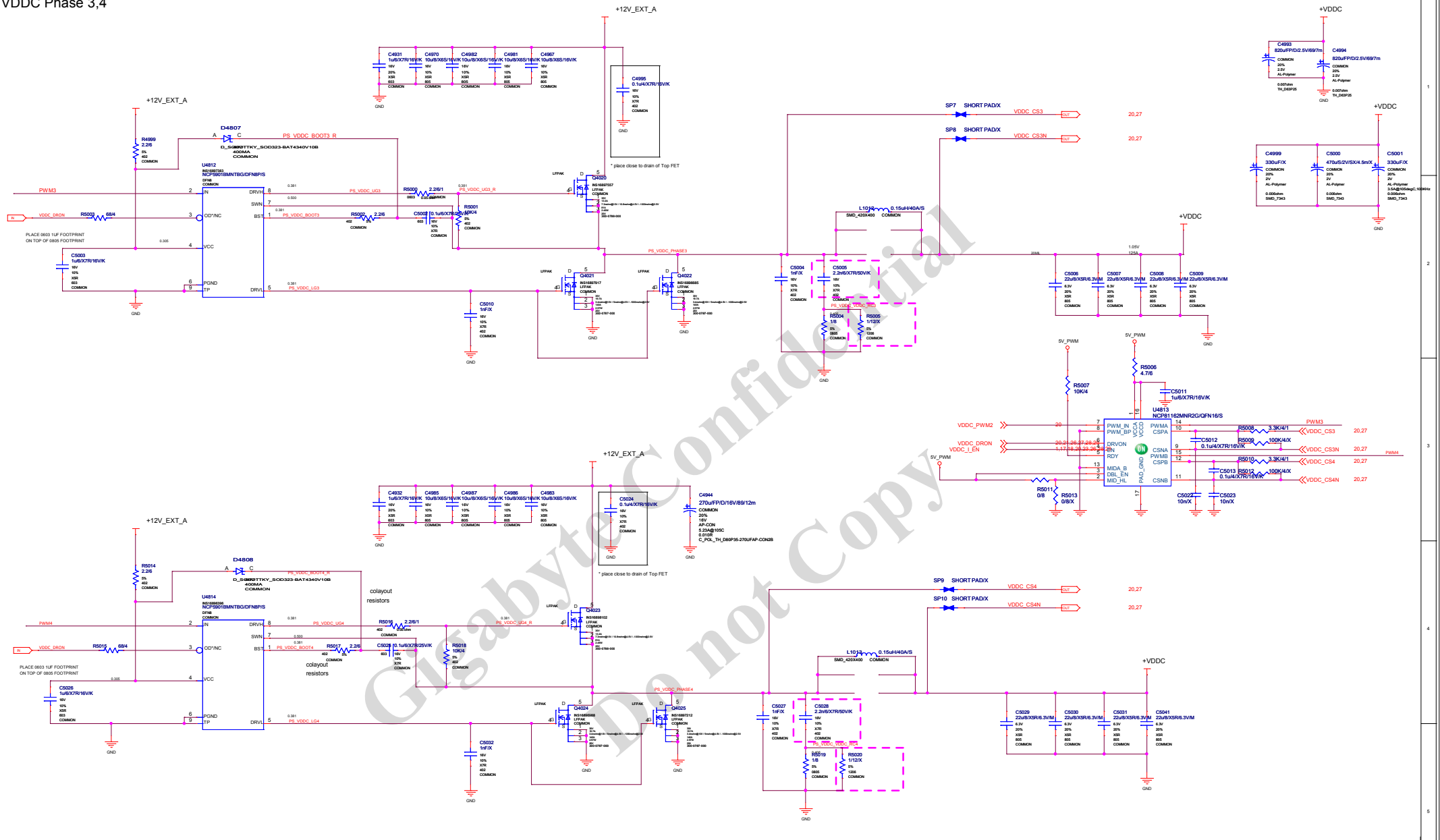
ASSEMBLY
PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY
PS: NVVDD Phase 1,2

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: VDDC Phase 1,2
Rev	1.01
Date: Monday, May 25, 2015	Sheet 26 of 29

PS_ VDDC Phase 3,4



Gigabyte Confidential
Do not Copy

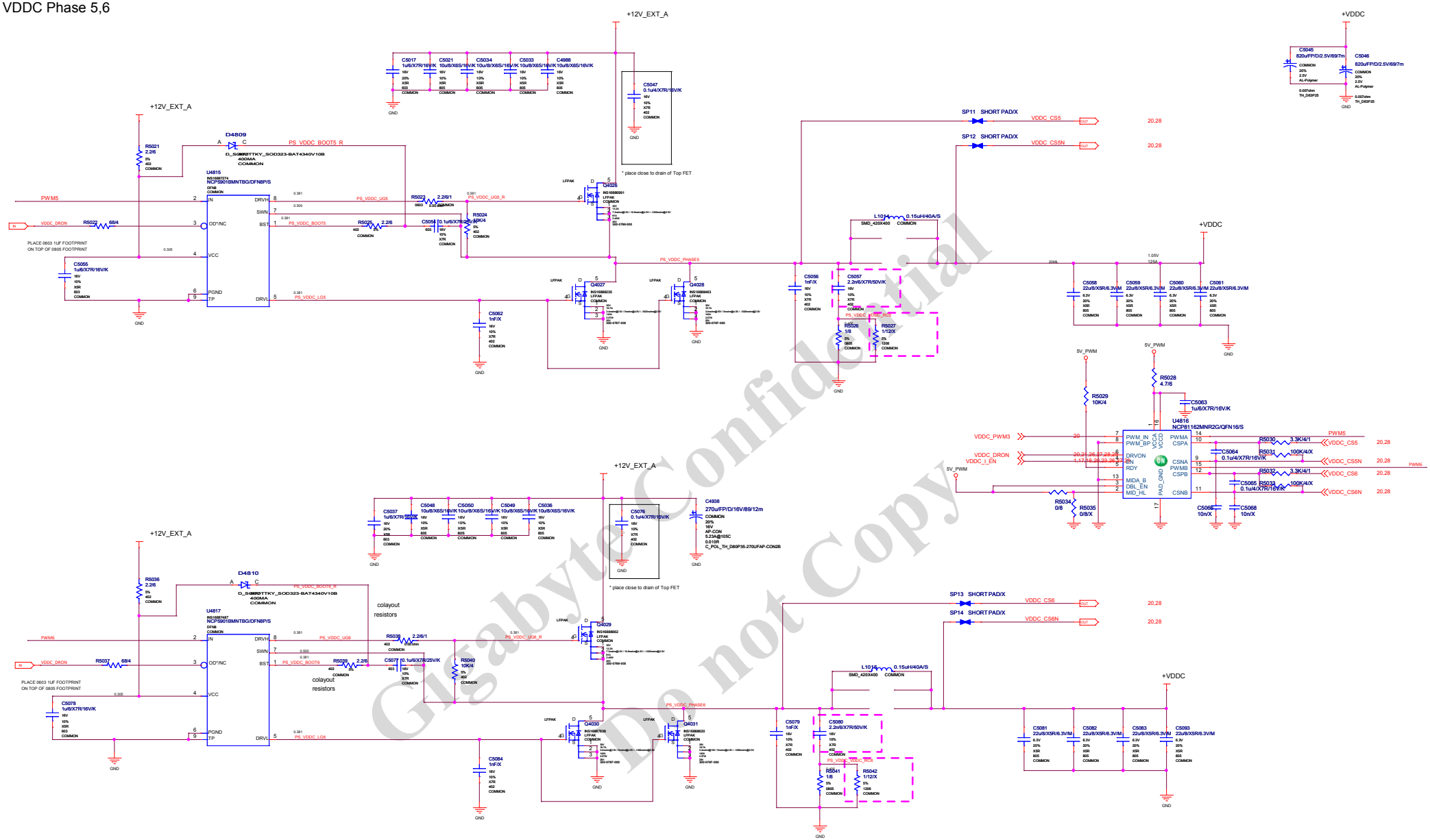
ASSEMBLY
PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY
PS: NVVDD Phase 1,2

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: PS_ VDDC Phase 3,4
Rev	1.01
Date: Monday, May 25, 2015	Sheet 27 of 29

PS_ VDDC Phase 5,6



Gigabyte Confidential
Do not Copy

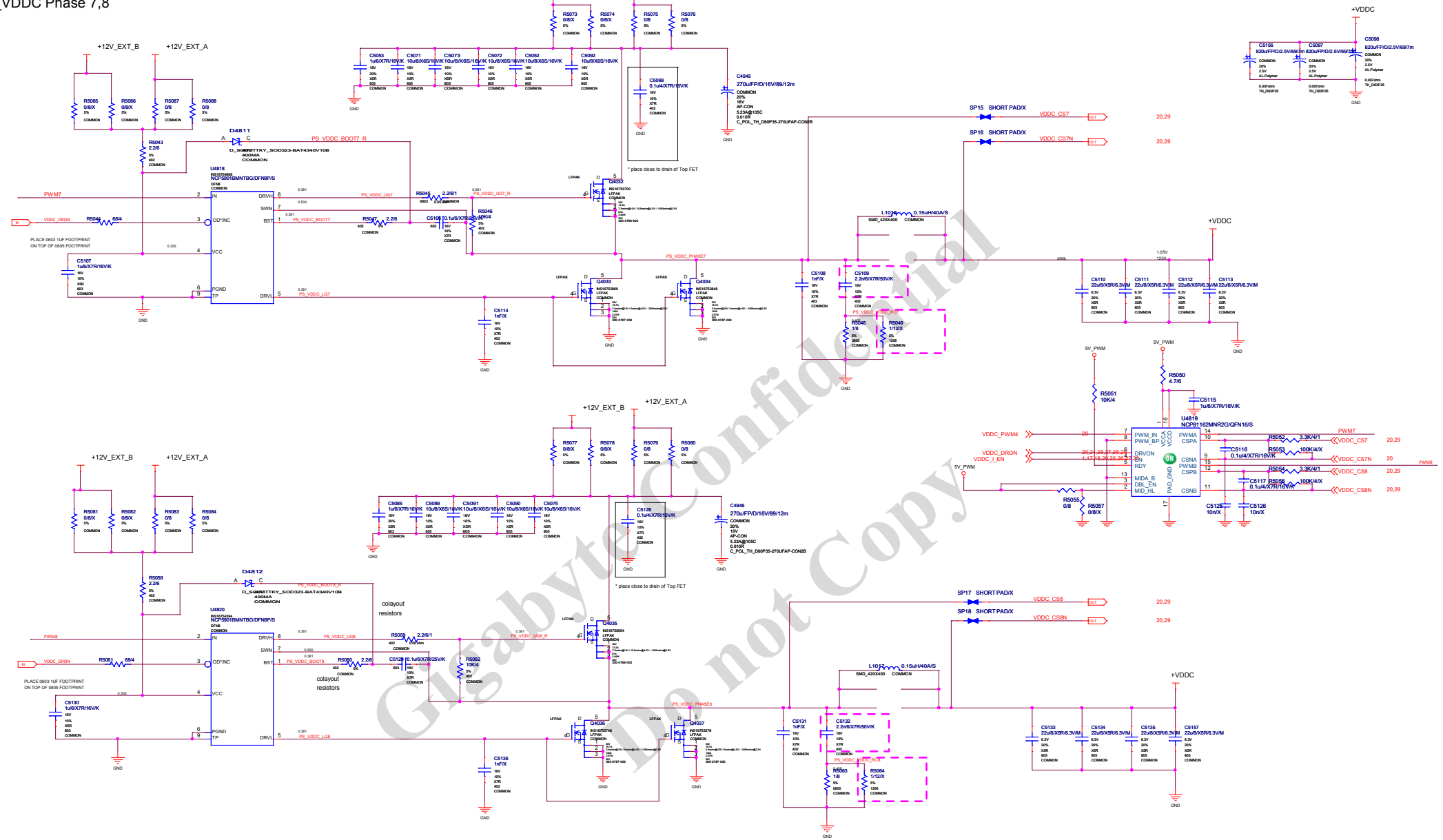
ASSEMBLY
PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY
PS: NVVDD Phase 1,2

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: PS_ VDDC Phase 5,6
Rev	1.01
Date: Monday, May 25, 2015	Sheet 28 of 29

PS_VDDC Phase 7,8



Gigabyte Confidential
Do not Copy

ASSEMBLY
PAGE DETAIL

BASE LEVEL GENERIC SCHEMATIC ONLY
PS: NVVDD Phase 1,2

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE	
Title	GV-R939XG1 GAMING-8GD
Size: Custom	Document Number: PS_VDDC Phase 7,8
Rev	1.01
Date: Monday, May 25, 2015	Sheet 29 of 29