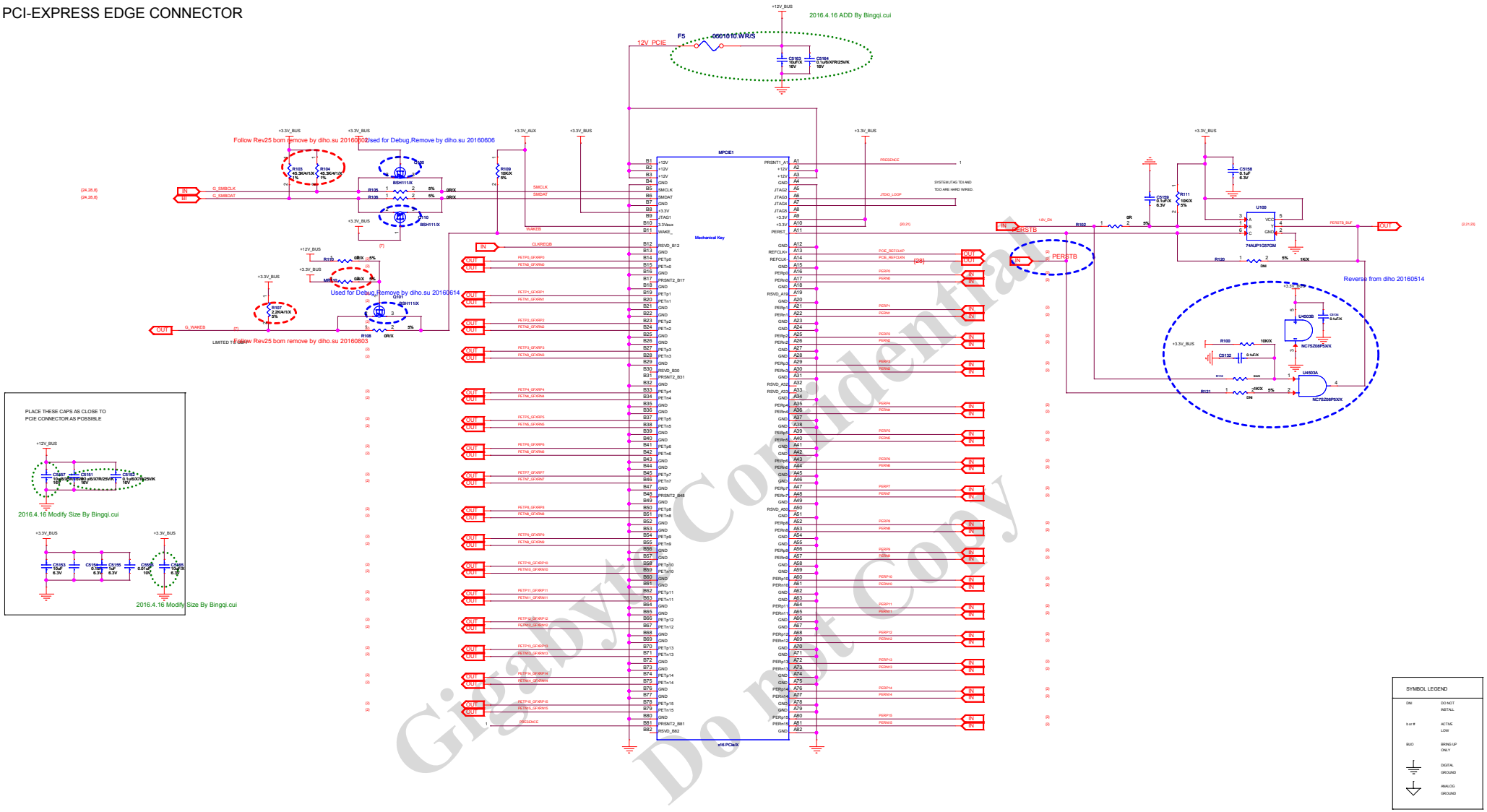
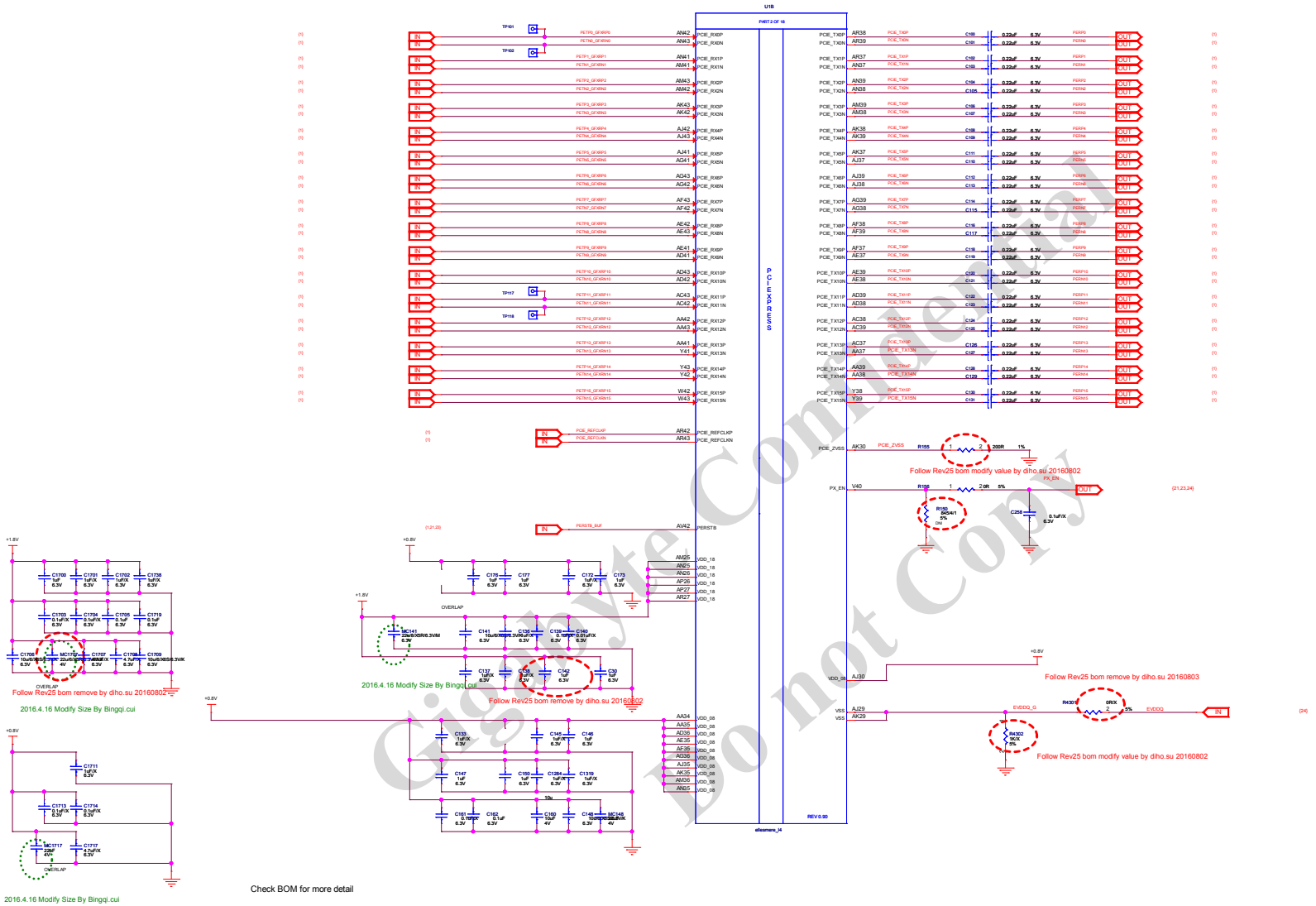
(1) PCI-EXPRESS EDGE CONNECTOR






| | | |
|---|---|---|
| GIGABYTE | | |
| Title: PCI Express | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 1 of 29 | |

(2) ELLESMERE PCIE INTERFACE



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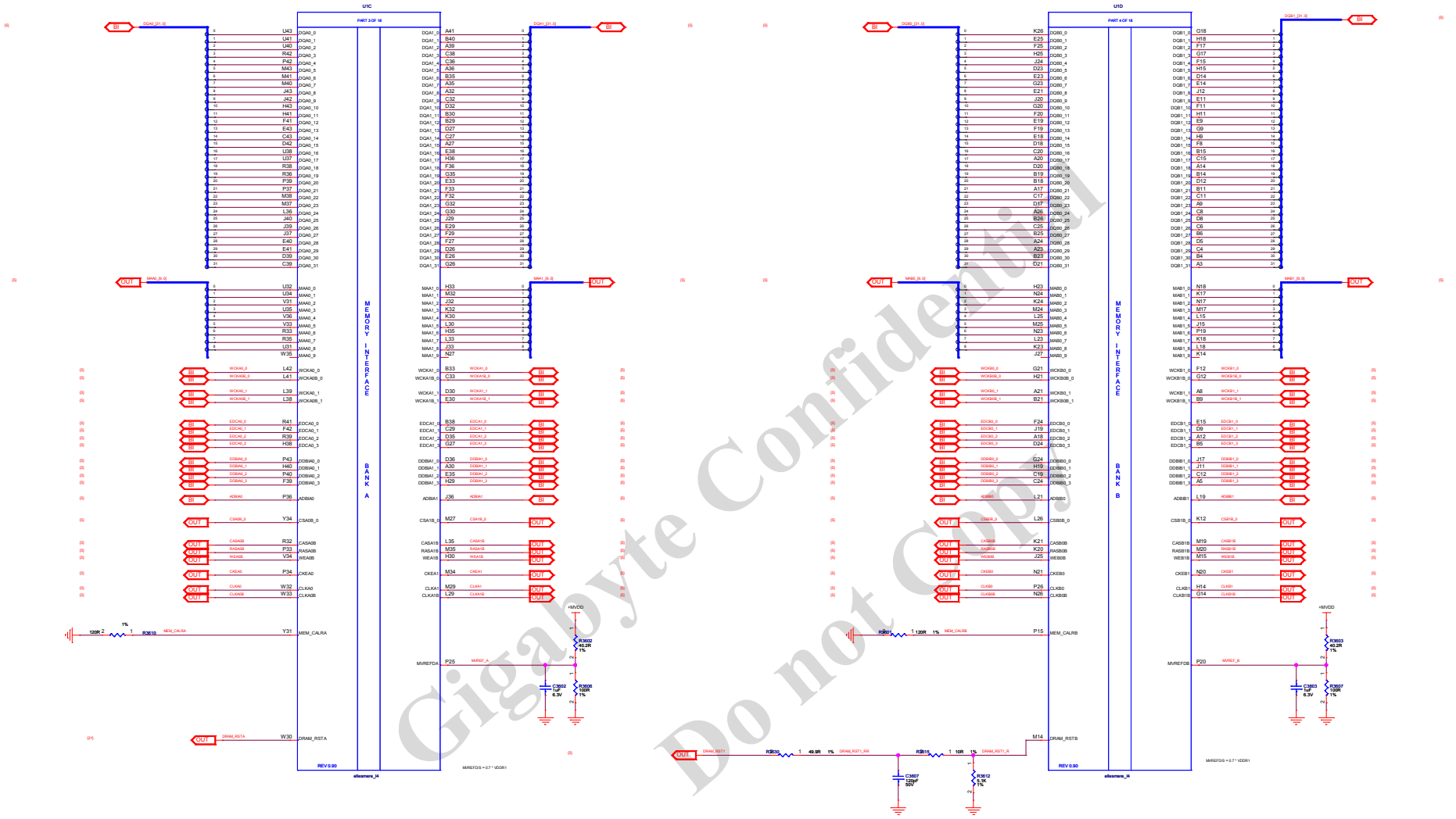
|---|---|---|
| GIGABYTE | | |
| Title | ELLESMERE PCIE INTERFACE | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 2 of 29 | |

(3) ELLESMERE MEM INTERFACE CH A/B



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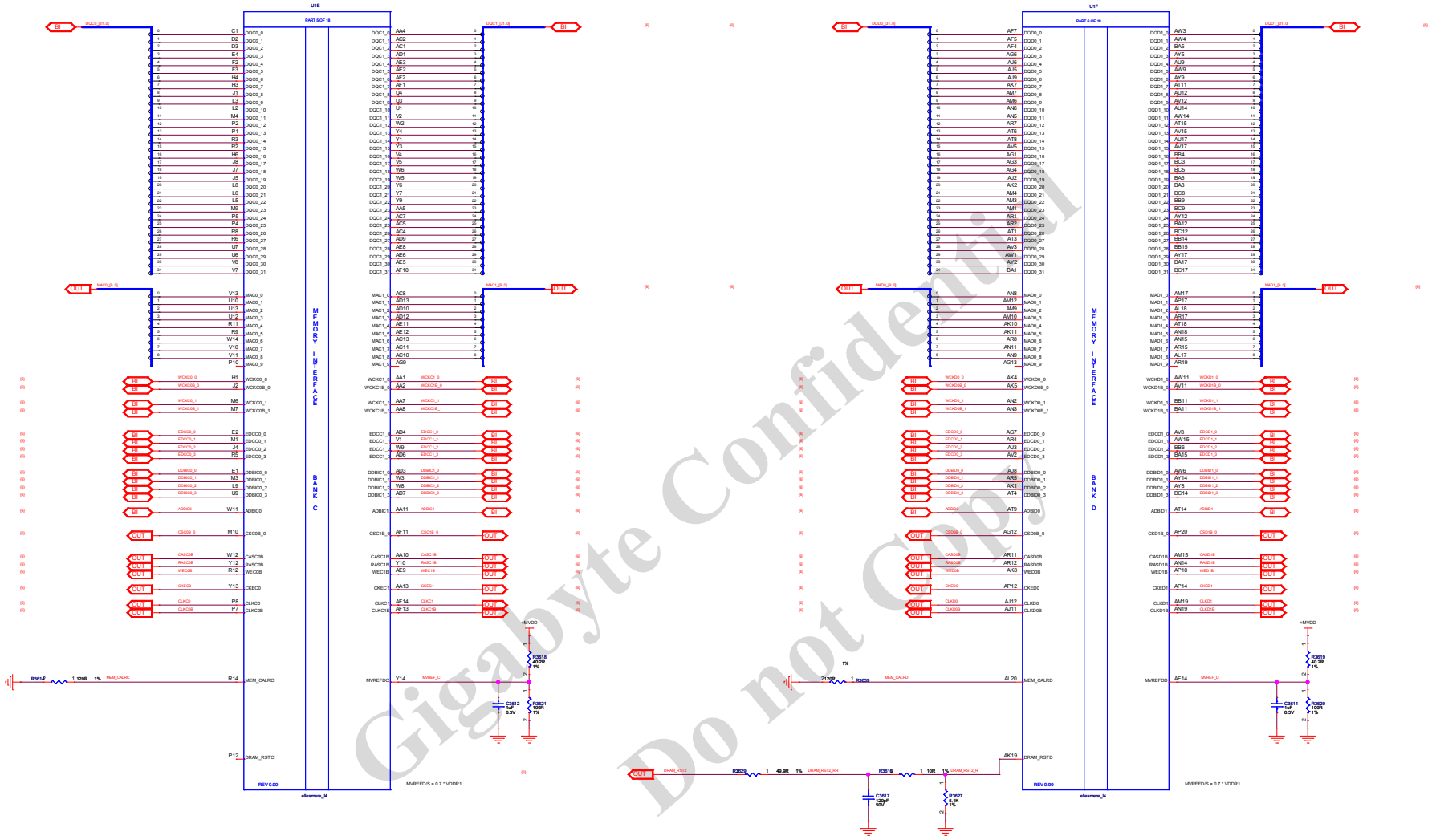
|---|---|---|---|
| GIGABYTE | | | |
| Title | ELLESMERE MEM INTERFACE CH A/B | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 3 of 29 | | |

(4) ELLESMERE MEM INTERFACE CH C/D





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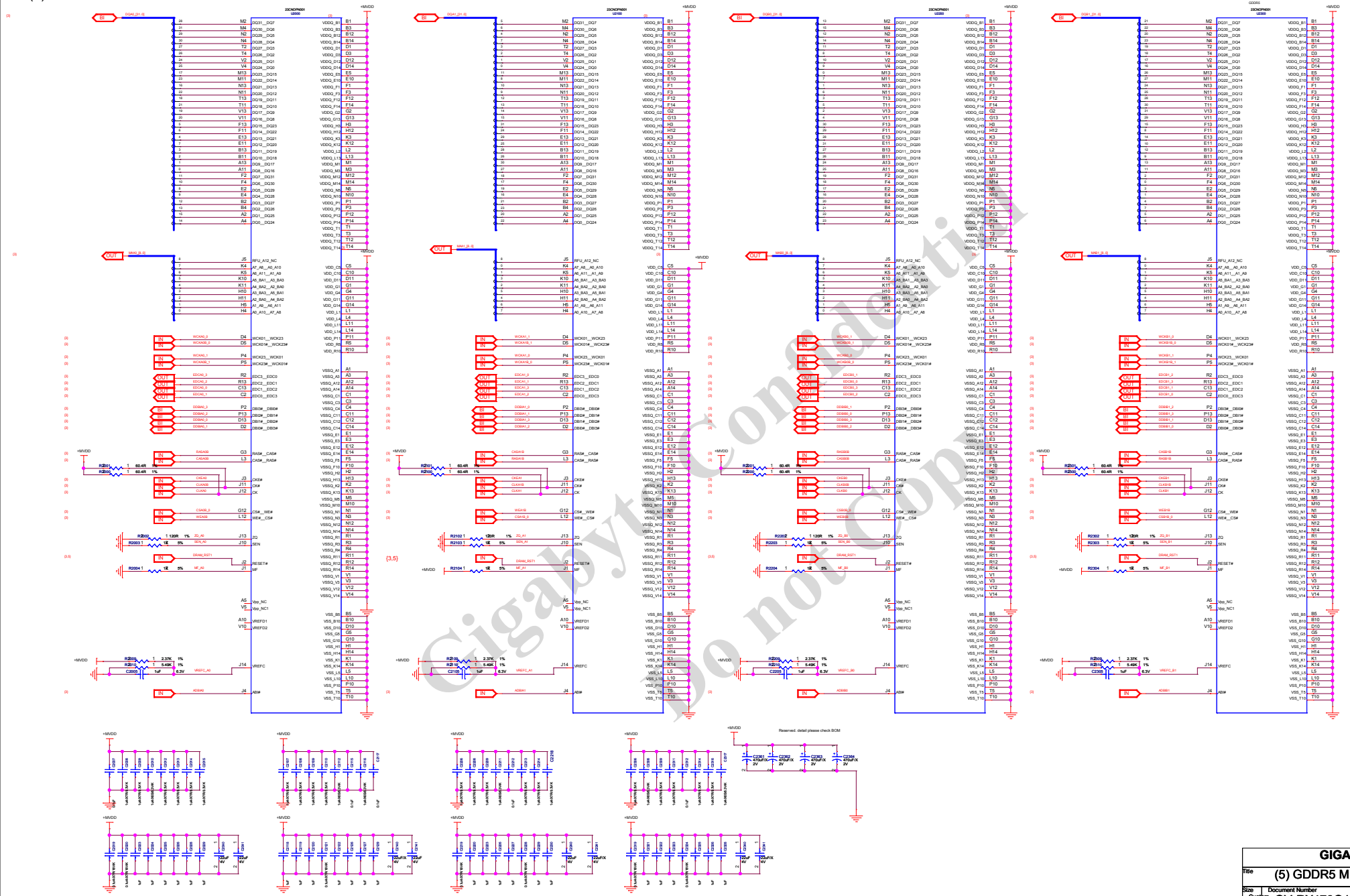
|---|---|---|---|
| GIGABYTE | | | |
| Title | ELLESMERE MEM INTERFACE CH C/D | | |
| Size | Document Number | | Rev |
| Custom | GV-RX470G1 GAMING-4GD | | 1.1 |
| Date: | Thursday, October 20, 2016 | Sheet 4 of 29 | |

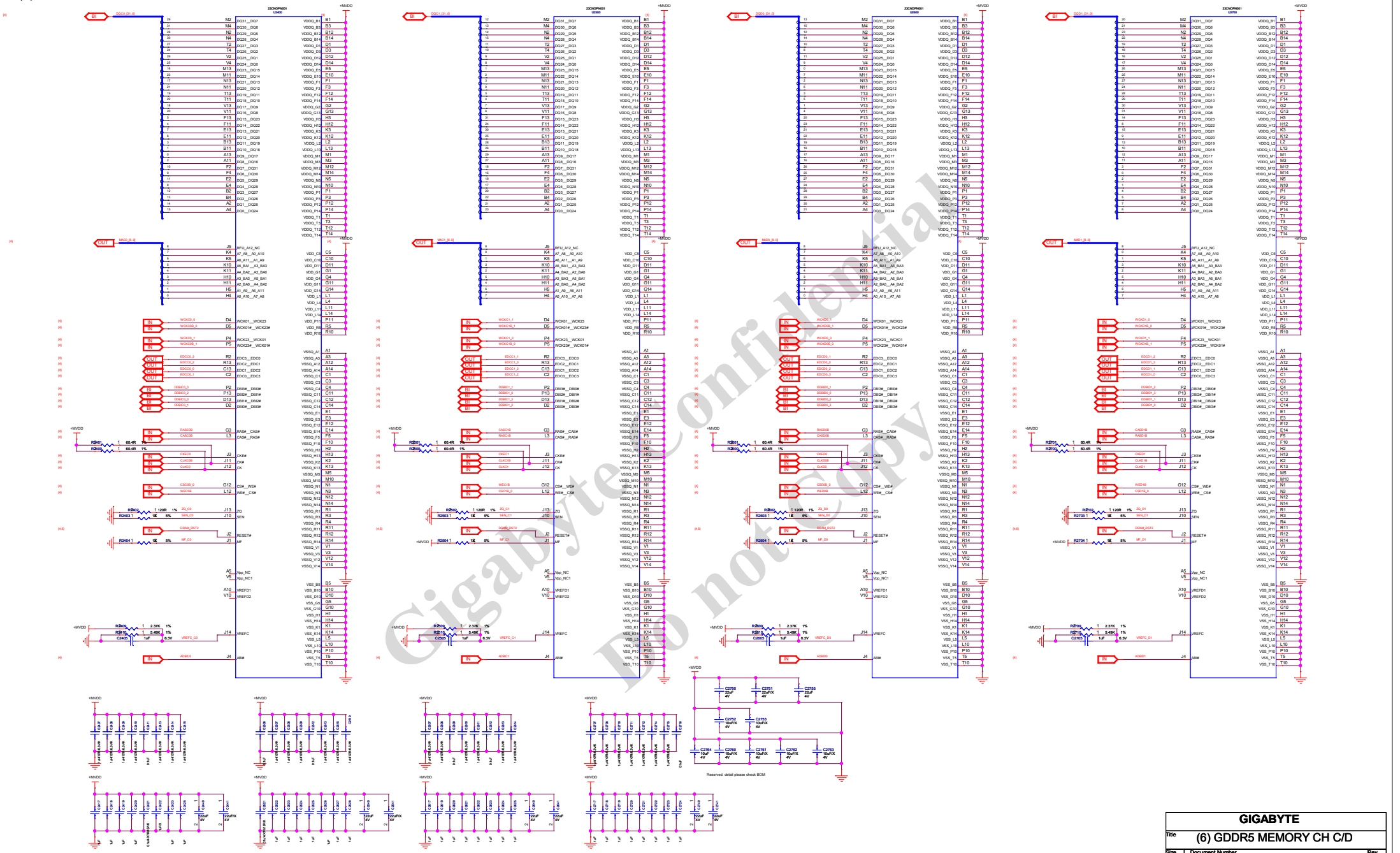
(5) GDDR5 MEMORY CH A/B





| | | |
|---|---|---|
| GIGABYTE | | |
| Title | (5) GDDR5 MEMORY CH A/B | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 5 of 29 | |

# (6) GDDR5 MEMORY CH C/D





| | | |
|---|---|---|
| GIGABYTE | | |
| Title | (6) GDDR5 MEMORY CH C/D | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 6 of 29 | |

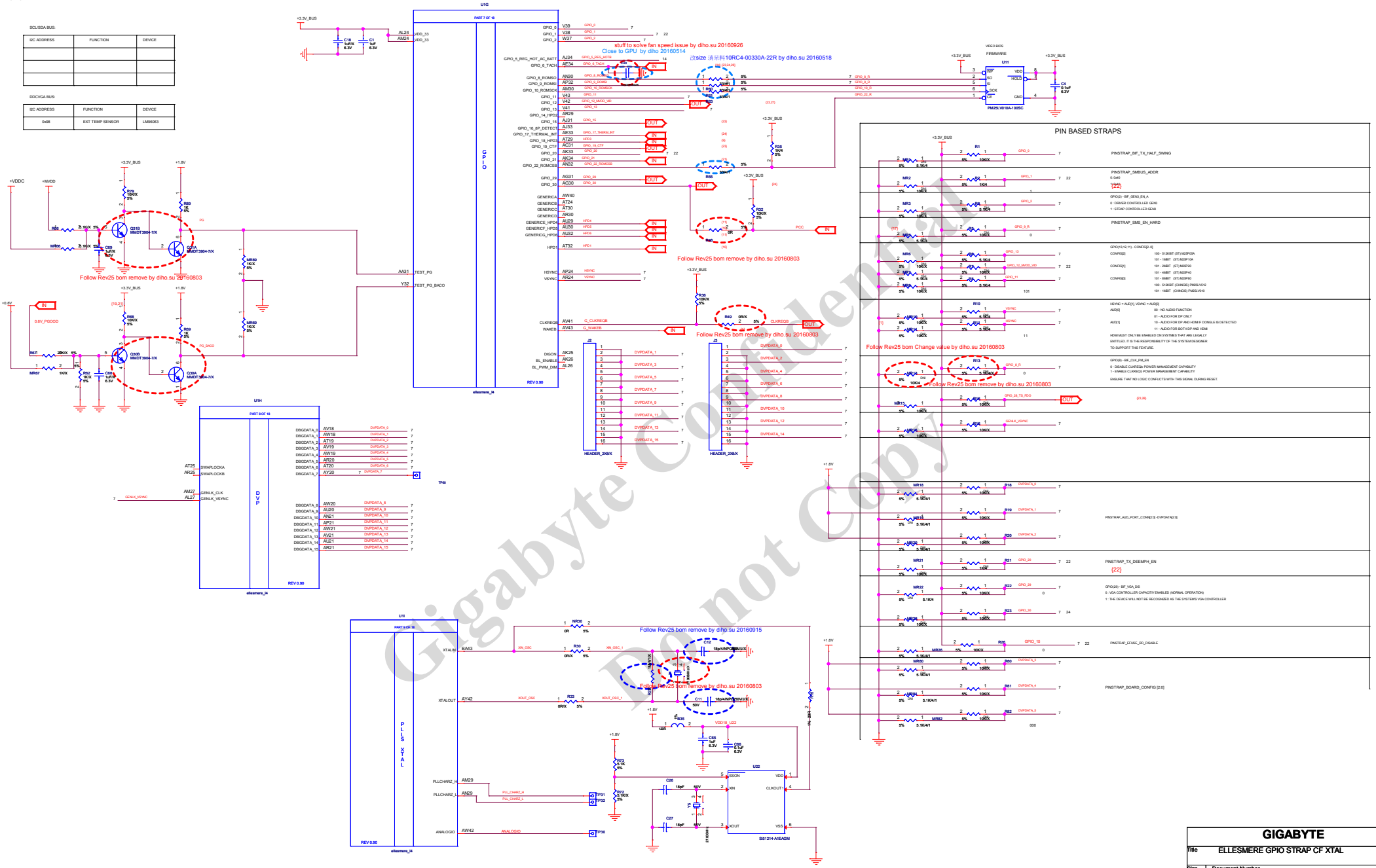
# (7) ELLESMERE GPIO STRAP CF XTAL

SCL/SDA BUS:

| I2C ADDRESS | FUNCTION | DEVICE |
|---|---|---|
| | | |
| | | |
| | | |

DDC/VGA BUS:

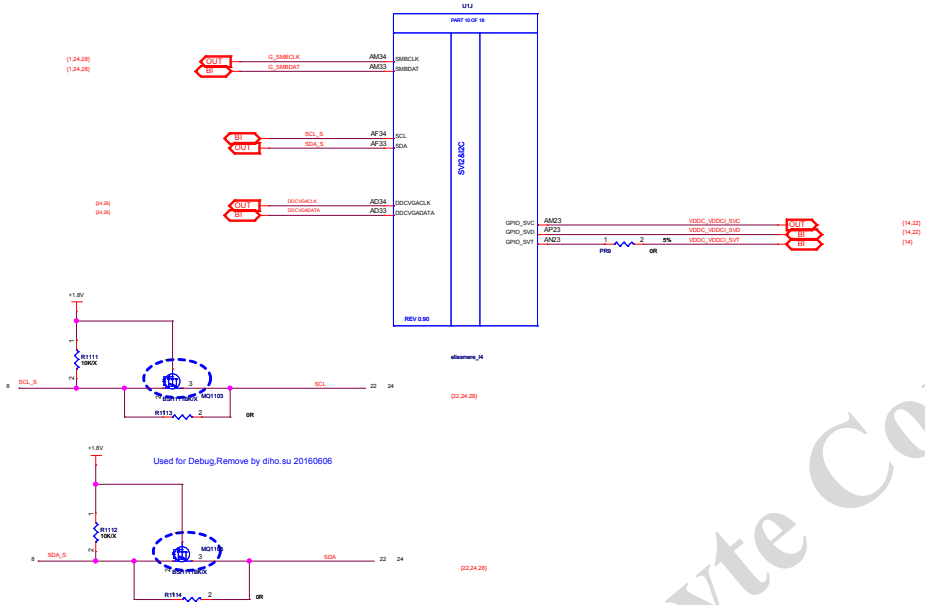
| I2C ADDRESS | FUNCTION | DEVICE |
|---|---|---|
| 0x98 | EXT TEMP SENSOR | LM96063 |






| | | |
|---|---|---|
| GIGABYTE | | |
| Title | ELLESMERE GPIO STRAP CF XTAL | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 7 of 29 | |

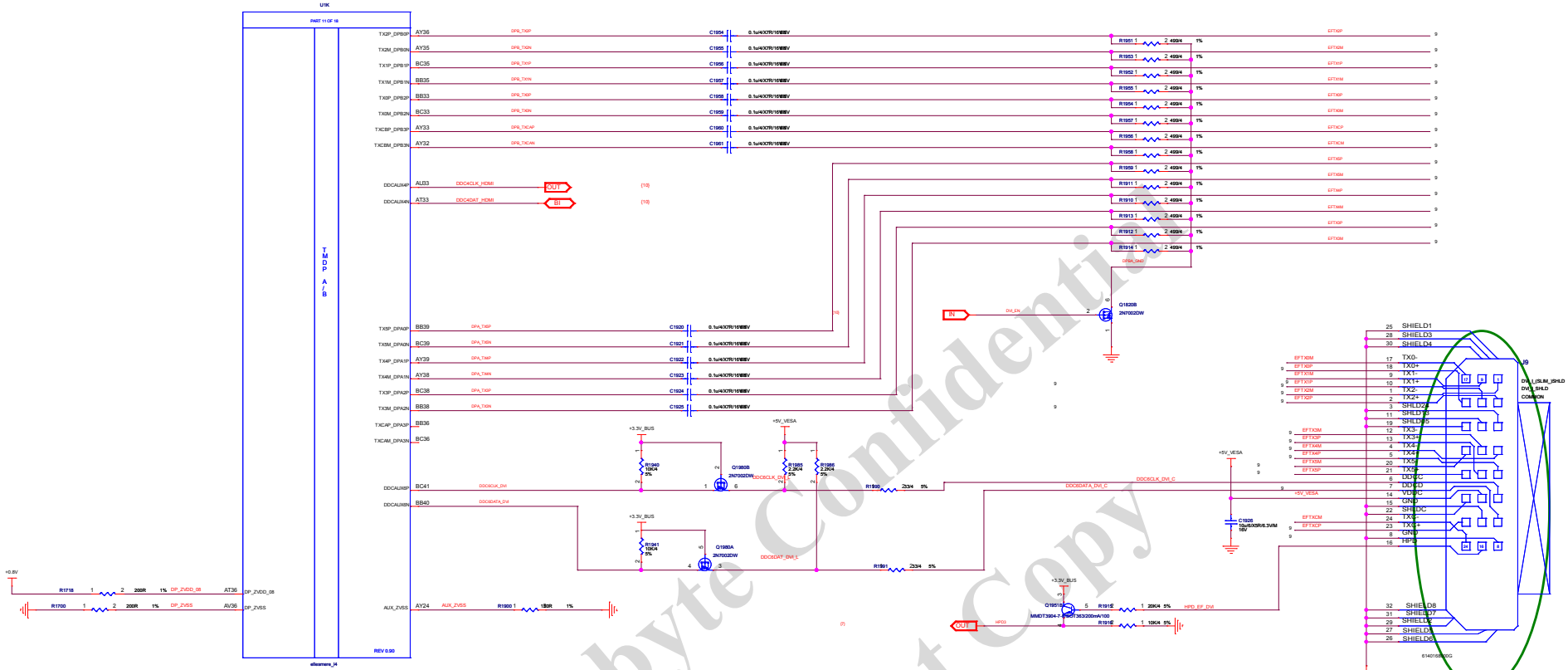
(8) ELLESMERE DAC1 LOCK





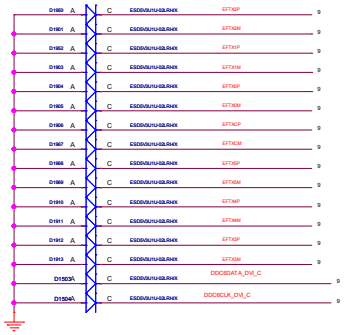

| GIGABYTE | | |
|---|---|---|
| Title: ELLESMERE DAC1 LOCK | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 8 of 29 | |

(9) ELLESMERE TMDP A/B





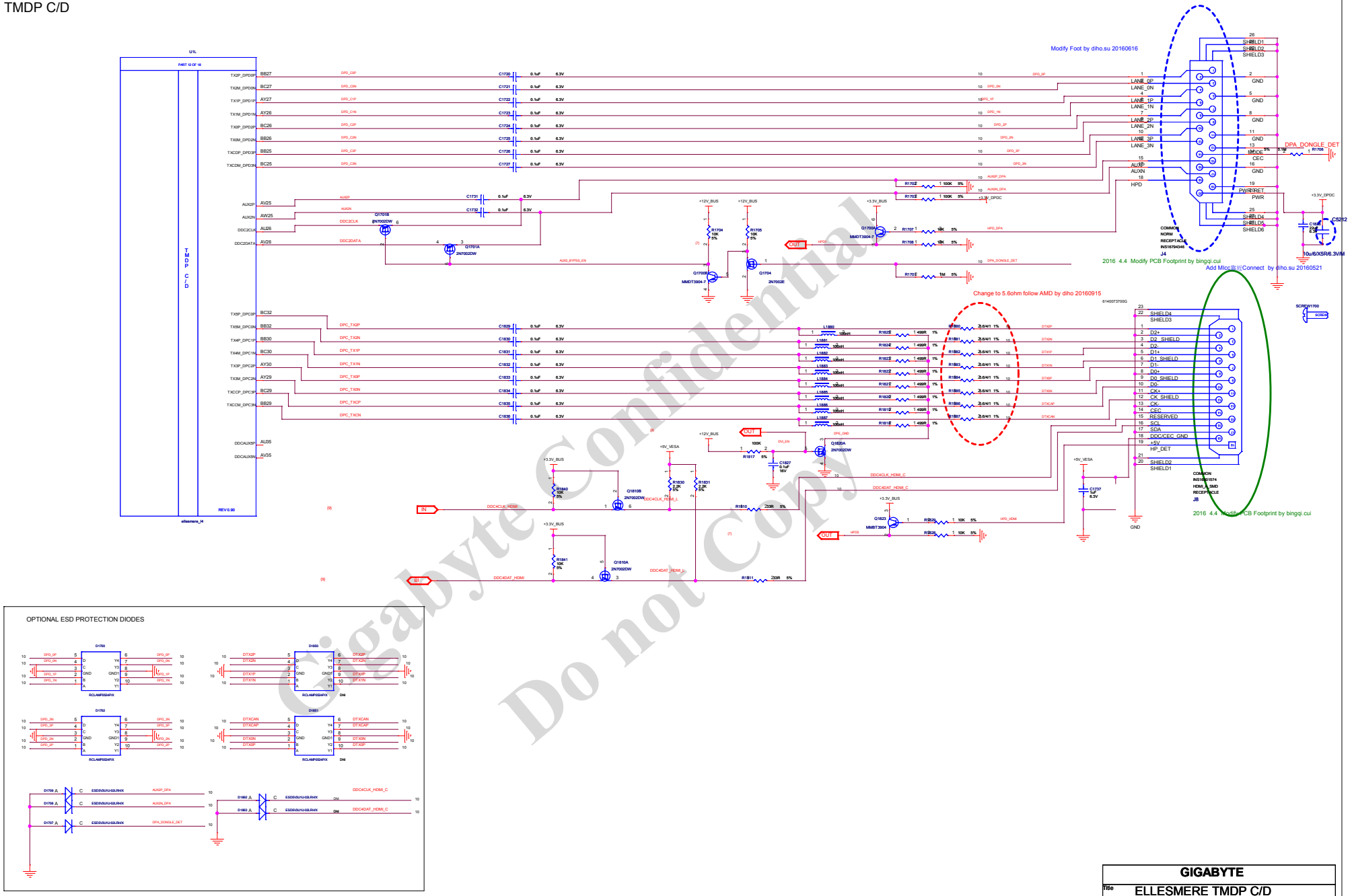

OPTIONAL ESD PROTECTION DIODES



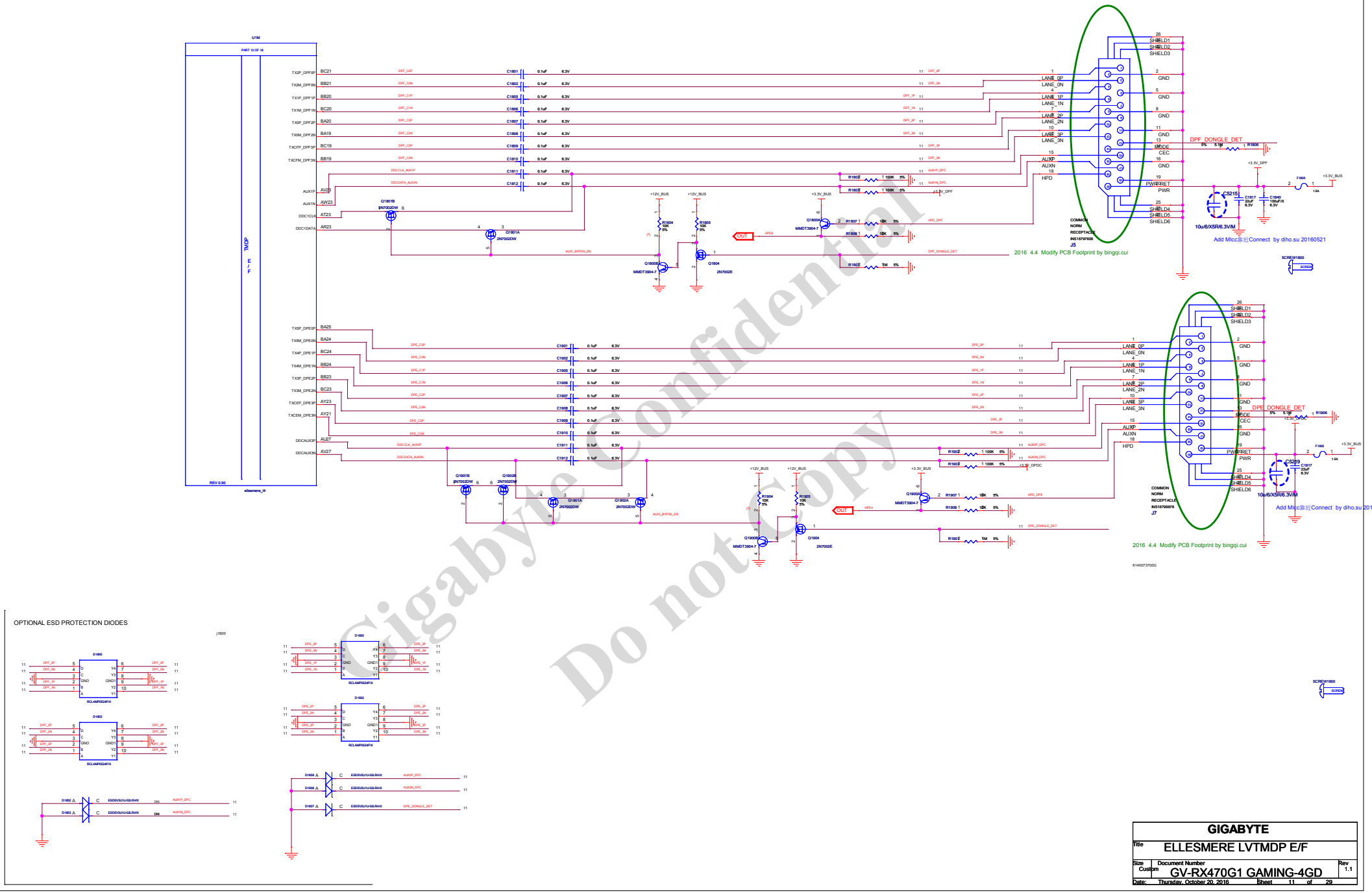
2016 5.20 Modify PCB Footprint by DIHO.SU

| | | | |
|---|---|---|---|
| GIGABYTE | | | |
| Title | ELLESMERE TMDP A/B | | |
| Size | Document Number | | Rev |
| Custom | GV-RX470G1 GAMING-4GD | | 1.1 |
| Date: | Thursday, October 20, 2016 | Sheet 9 of 29 | |

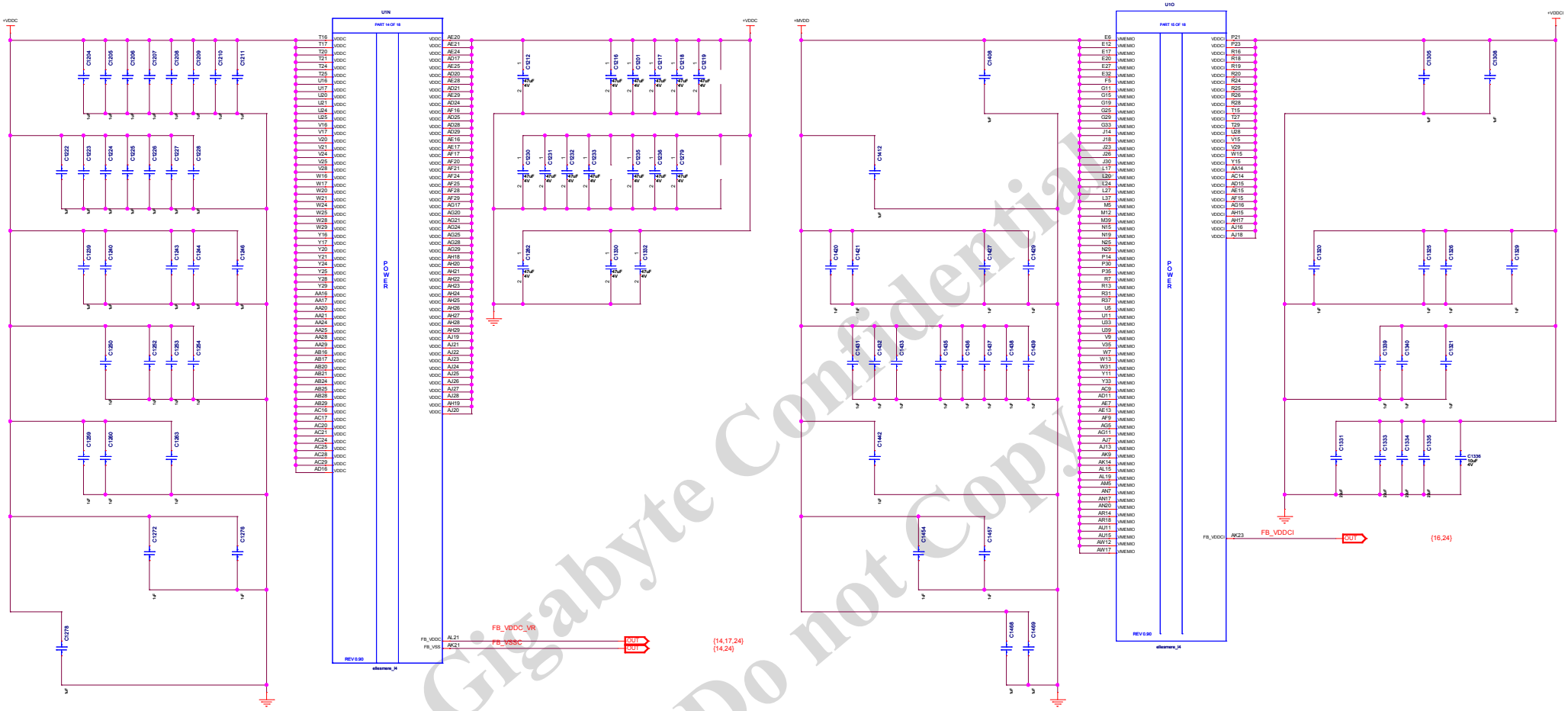
(10) ELLESMERE TMDP C/D



(11) ELLESMERE LVTMDP E/F



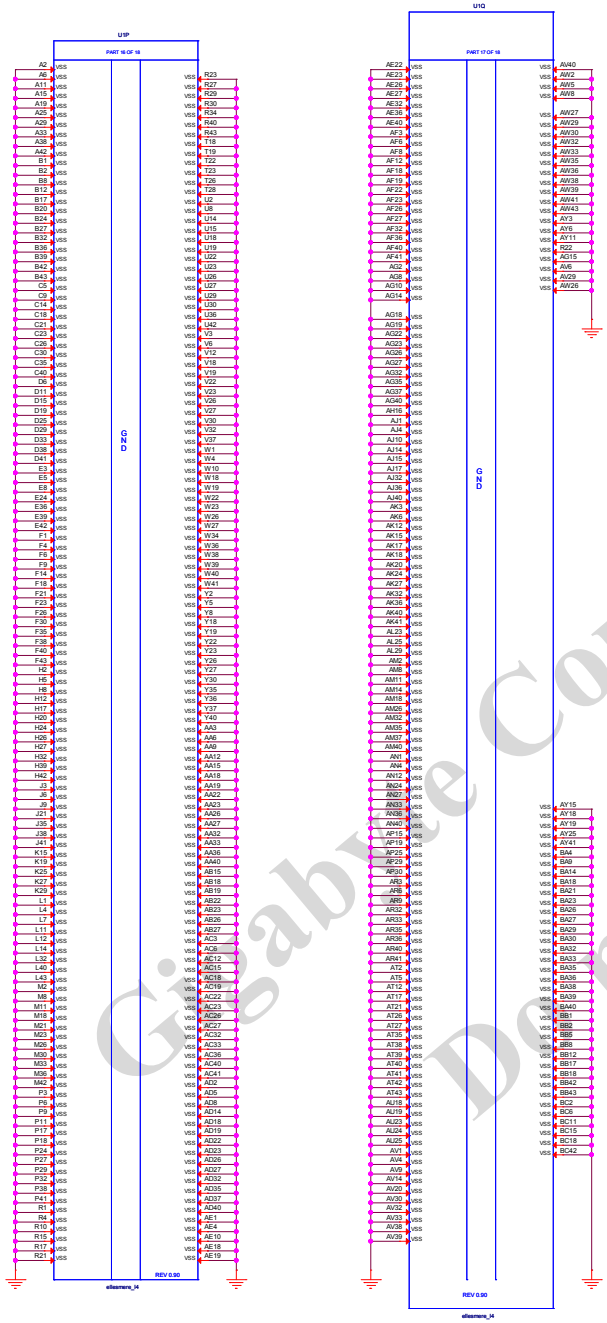
(12) ELLESMERE POWER





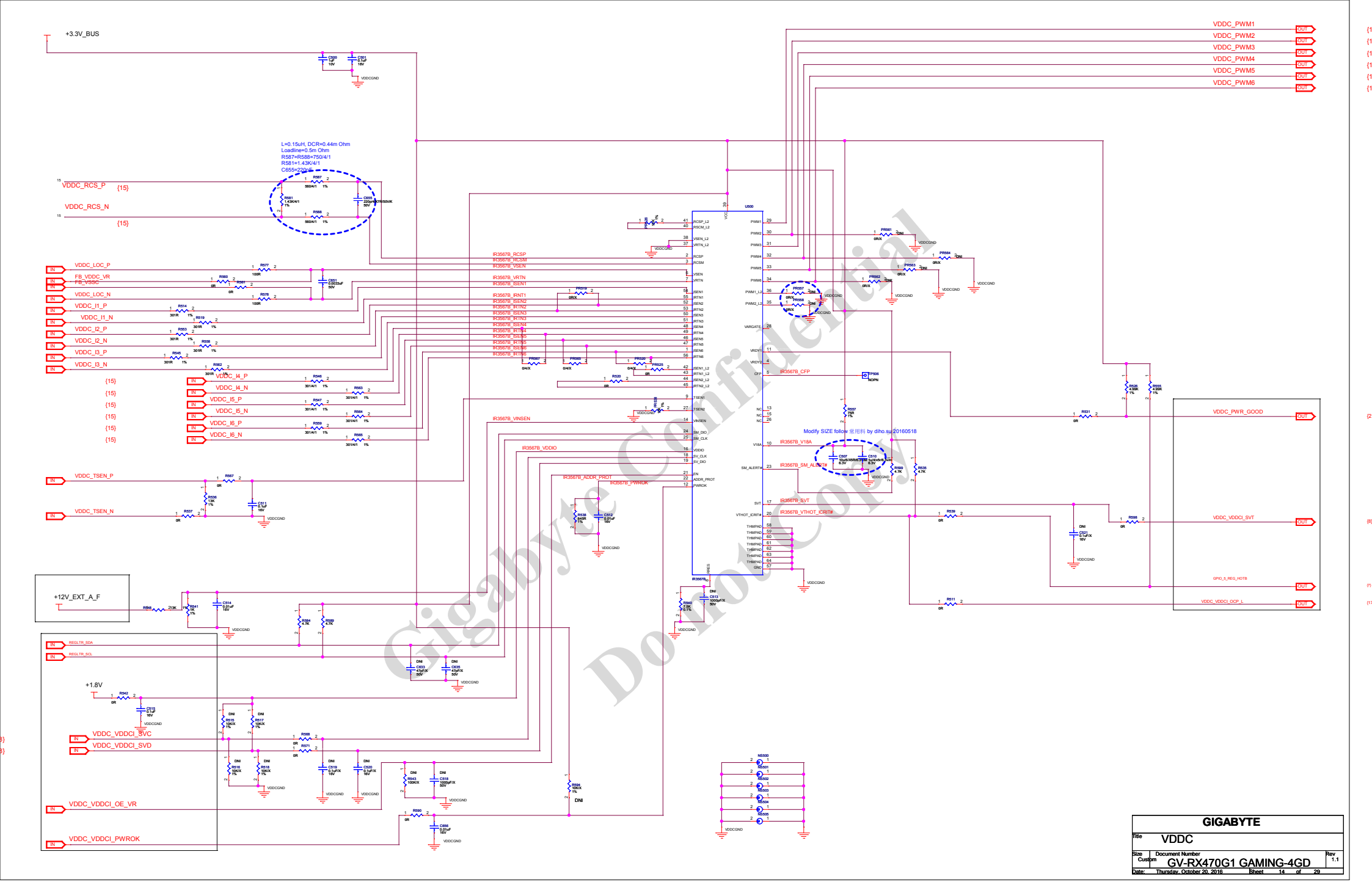

| | | |
|---|---|---|
| GIGABYTE | | |
| Title: PCI Express | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 12 of 29 | |

(13) ELLESMERE GROUND





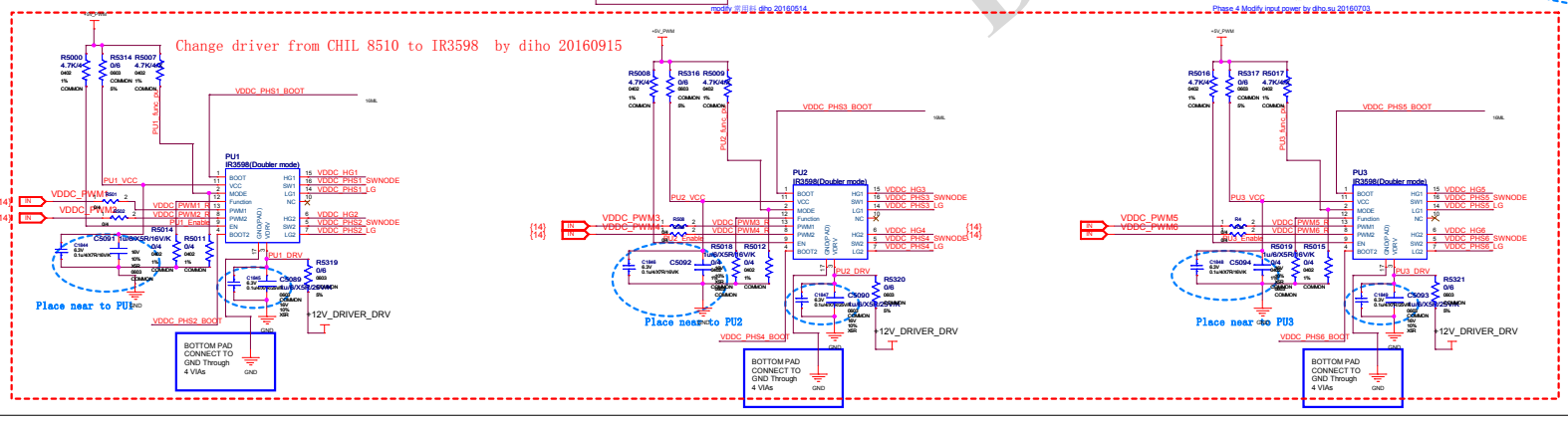

| | | |
|---|---|---|
| GIGABYTE | | |
| Title: ELLESMERE GND | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 13 of 29 | |

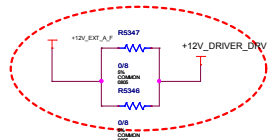


VDDC

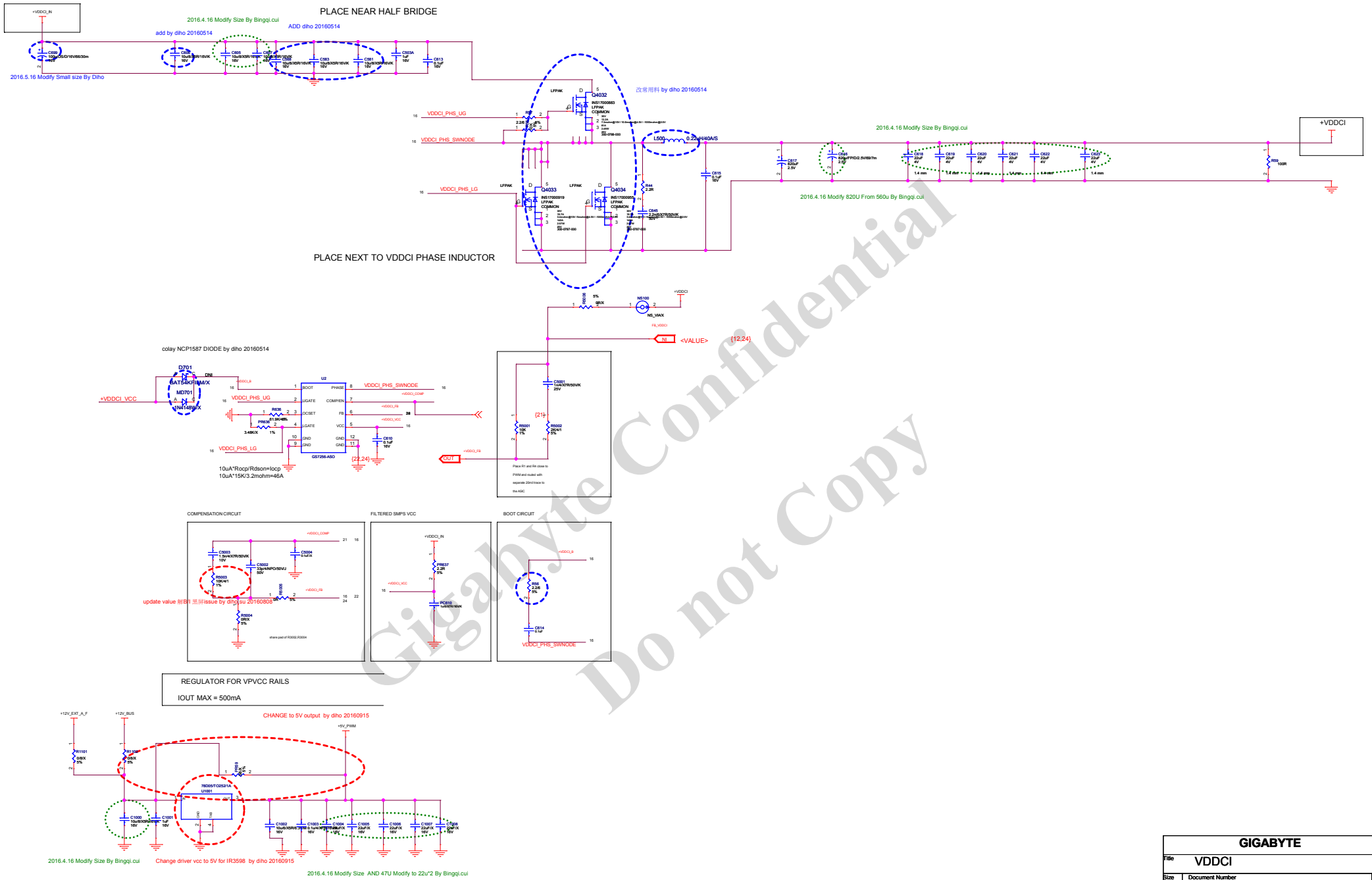
PLACE NEXT TO PHASE 3 HALF BRIDGE

PLACE BETWEEN PHASE 1 AND 2 INDUCTORS



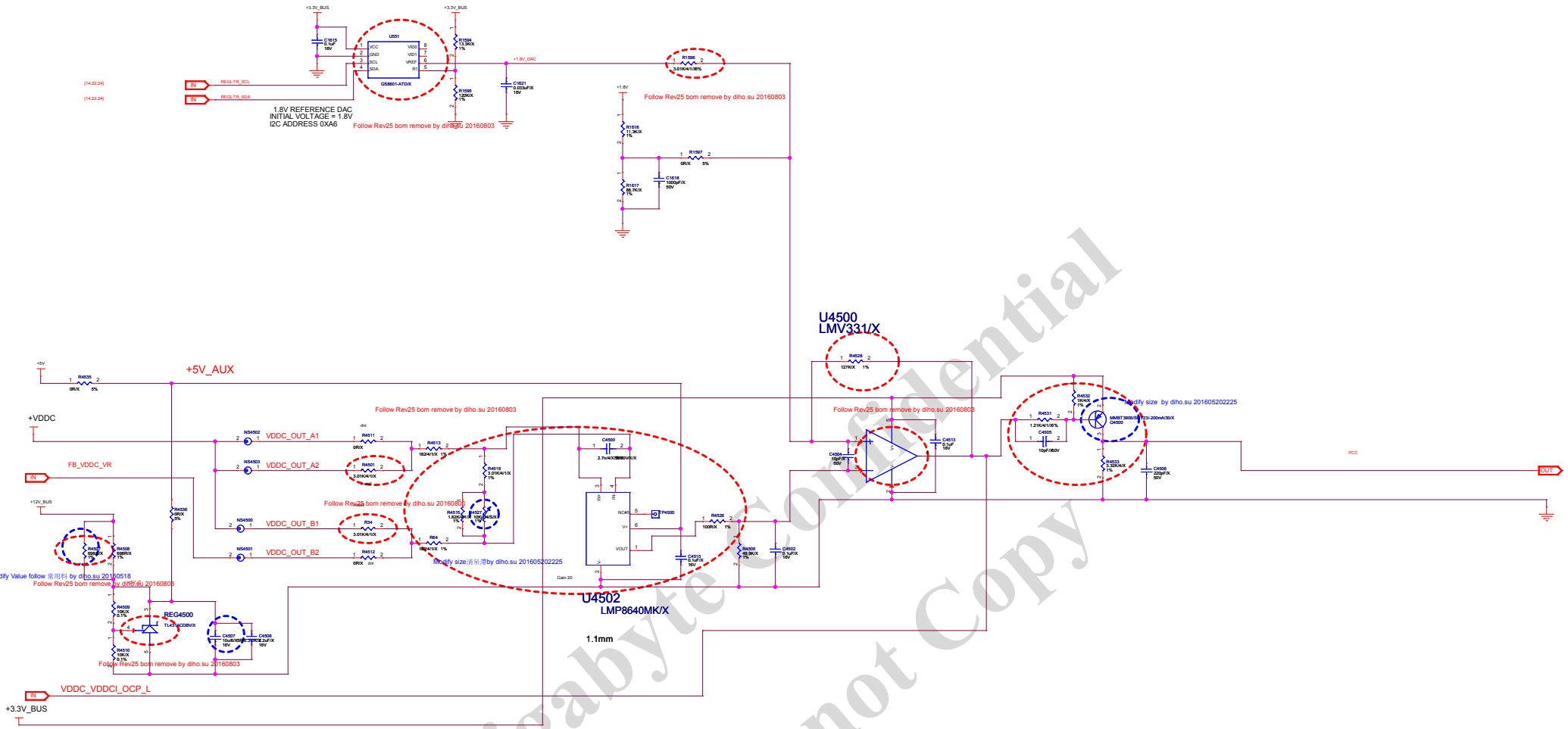




| GIGABYTE | | |
|---|---|---|
| Title: VDDC Driver | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 15 of 29 | |






| | | |
|---|---|---|
| GIGABYTE | | |
| Title: VDDCI | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 16 of 29 | |



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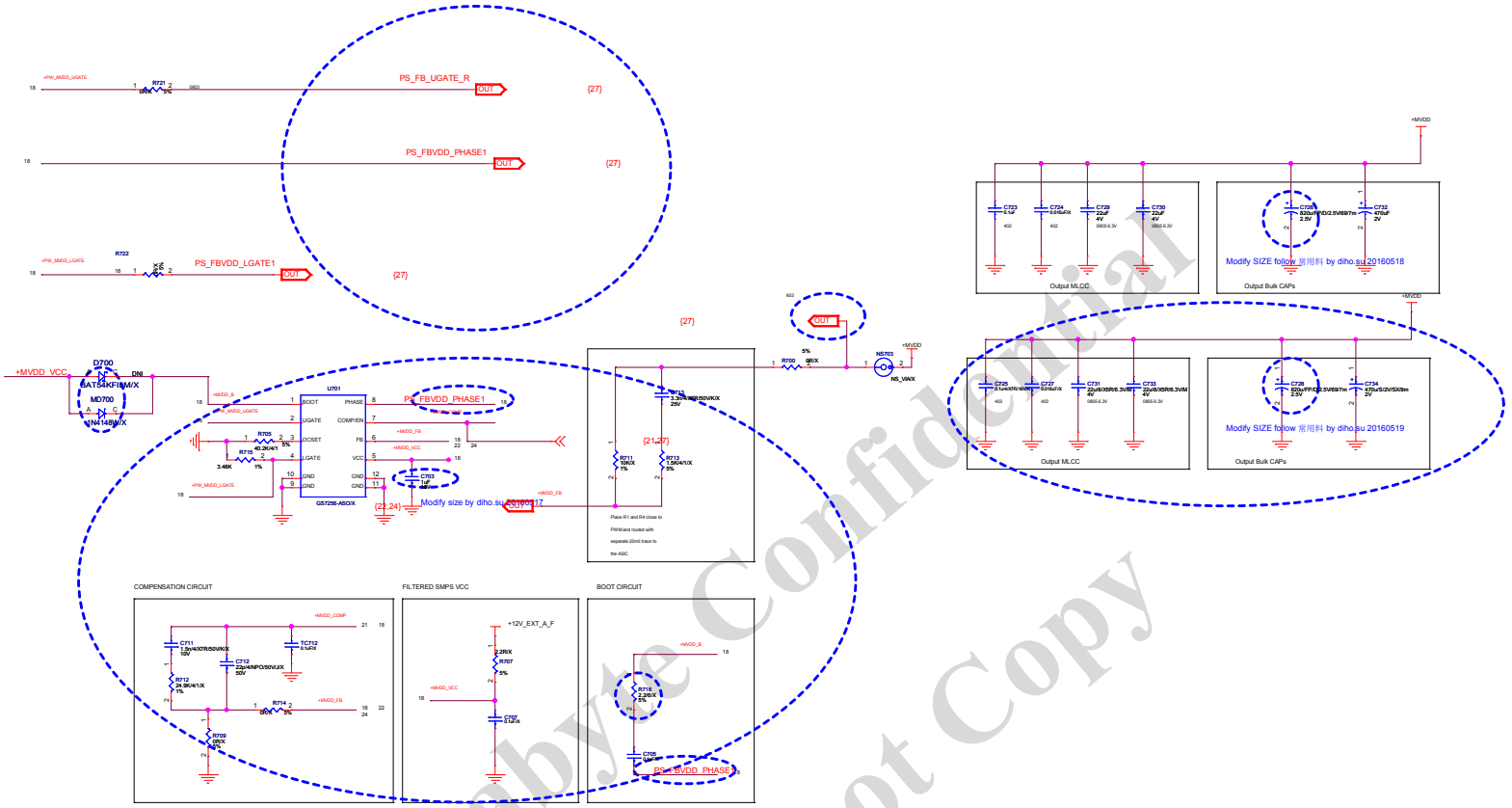
|---|---|---|
| GIGABYTE | | |
| Title: PCC VDDC | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 17 of 29 | |

(16) MVDD

CHANGE POWER PHASE TO PAGE26 by diho 20160514

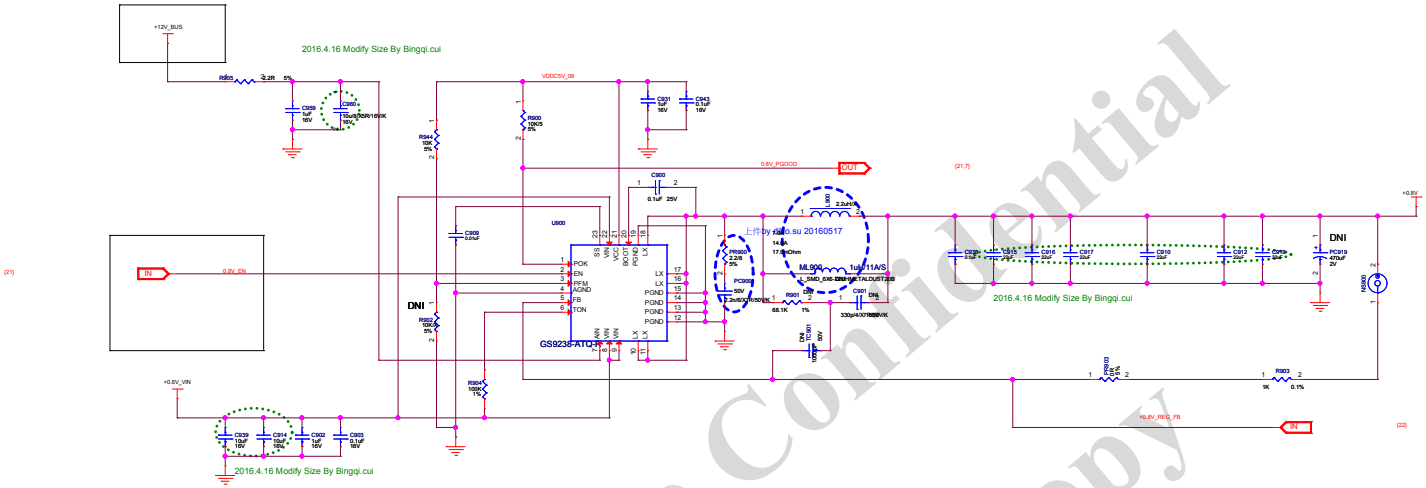



/X Single phase power by diho.su 20160517



| | | |
|---|---|---|
| GIGABYTE | | |
| Title: MVDD | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 18 of 29 | |

(17) 0.95V



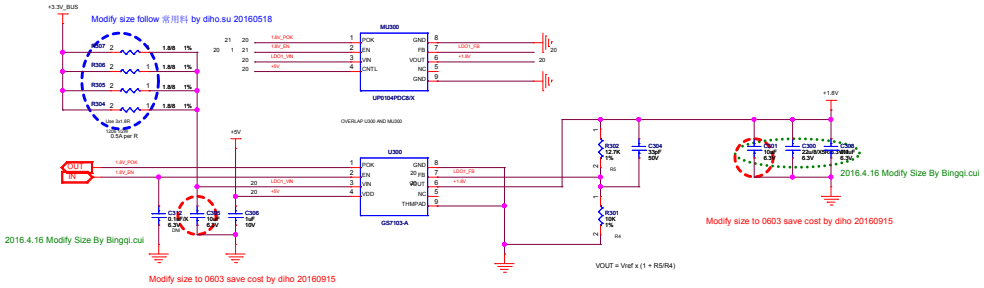



| GIGABYTE | | |
|---|---|---|
| Title: 0.95V | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 19 of 29 | |

(18) SMALL RAIL REGULATORS

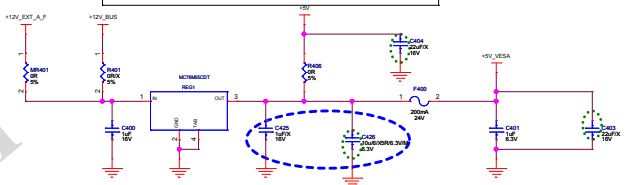
LDO #1: VIN = 3.0V TO 3.6V MAX VOUT = +1.8V +/- 2% IOUT = 1.3A RMS MAX

PCB: 50 TO 70mm SQ. COPPER AREA FOR COOLING




REGULATOR FOR +5V RAILS

IOUT MAX = 150mA



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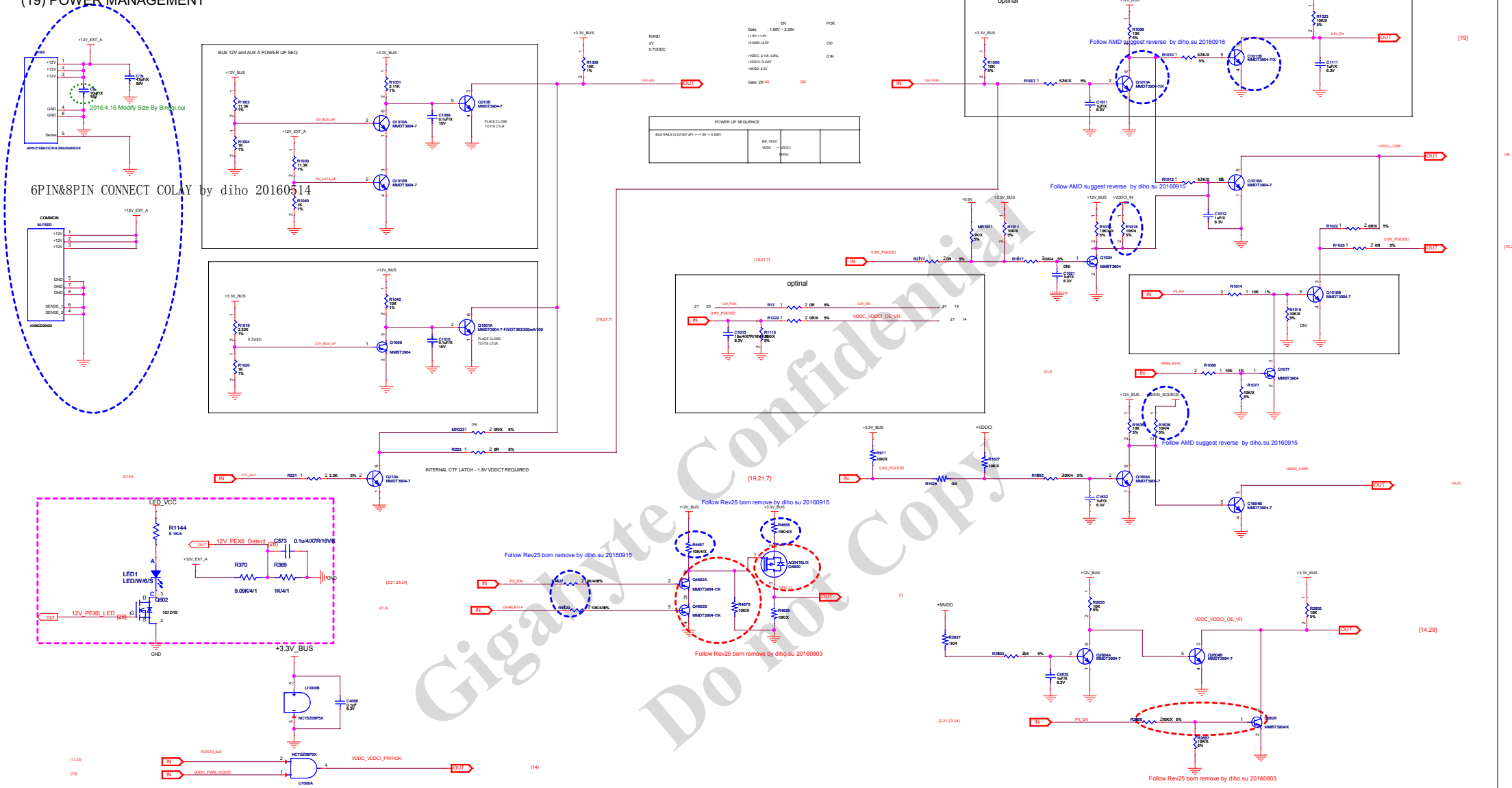
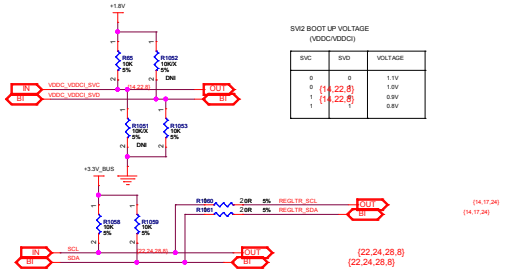
|---|---|---|
| GIGABYTE | | |
| Title: SMALL RAIL REGULATORS | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 20 of 29 | |

(19) POWER MANAGEMENT






| | |
|---|---|
| | **GIGABYTE** |
| Title | POWER MANAGEMENT1 |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD |
| Rev | 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 21 of 29 |




SVI2 BOOT UP VOLTAGE
(VDDC/VDDCI)

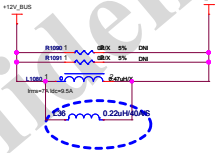
| SVC | SVD | VOLTAGE |
|---|---|---|
| 0 | 0 | 1.1V |
| 0 | 1 | 1.0V |
| 1 | 0 | 0.9V |
| 1 | 1 | 0.8V |

{14,22,8}

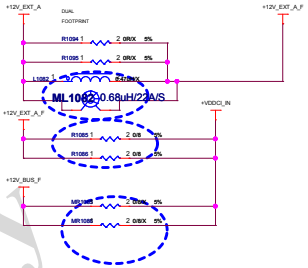
{22,24,28,8}

{14,17,24}

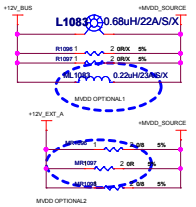
+12V_BUS INPUT



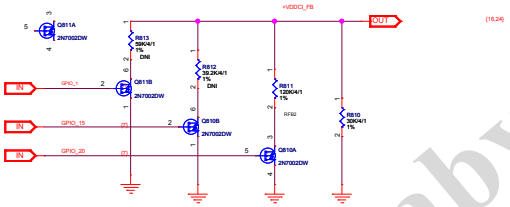

+12V_EXT_A INPUT



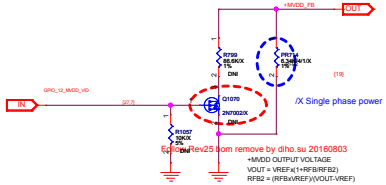

Modify size follow 常用料 by diho.su 20160519




Modify size follow 常用料 by diho.su 20160518




{16,24}

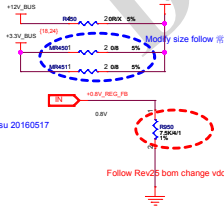



{19}

/X Single phase power by diho.su 20160517

Follow Rev25 bom remove by diho.su 20160803

+MVDD OUTPUT VOLTAGE
VOUT = VREF(1+RFB/RFB2)
RFB2 = (RFBxVREF)/(VOUT-VREF)




{18,24}

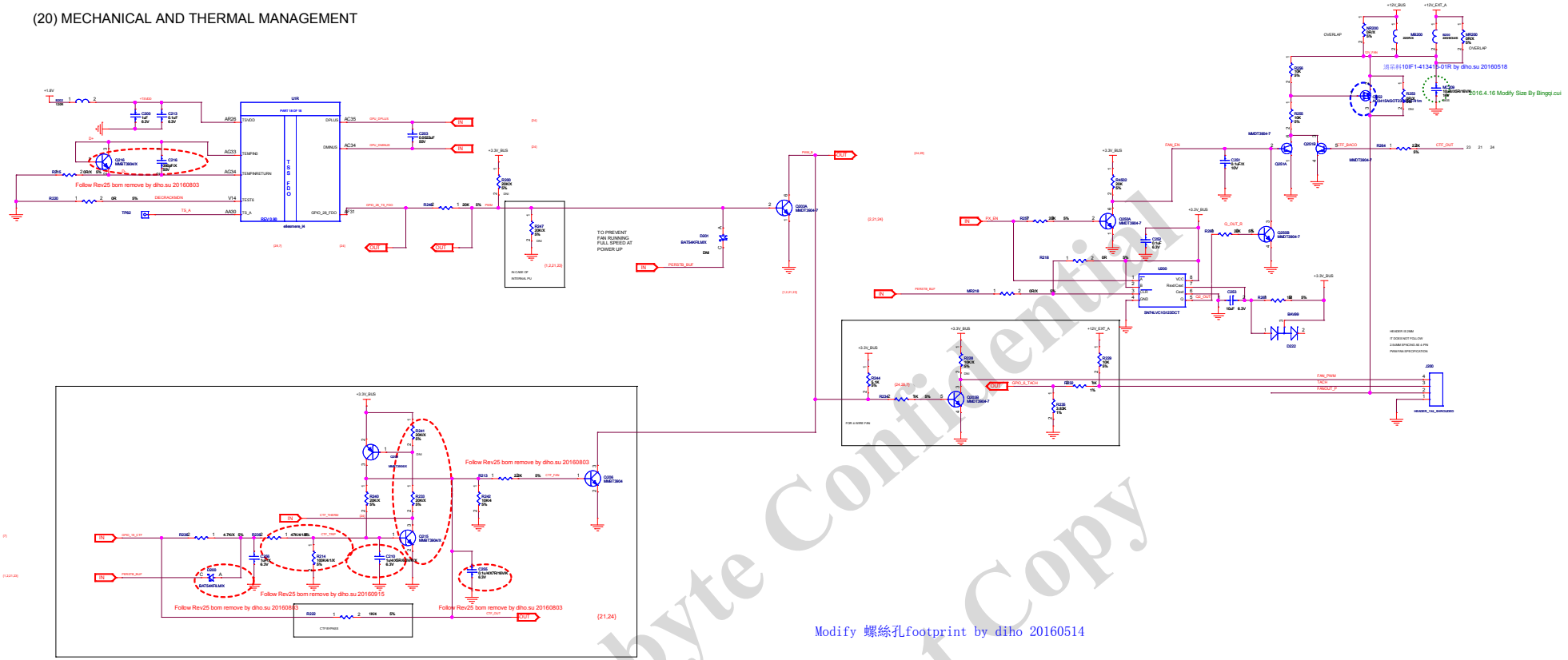
Modify size follow 常用料 by diho.su 20160520

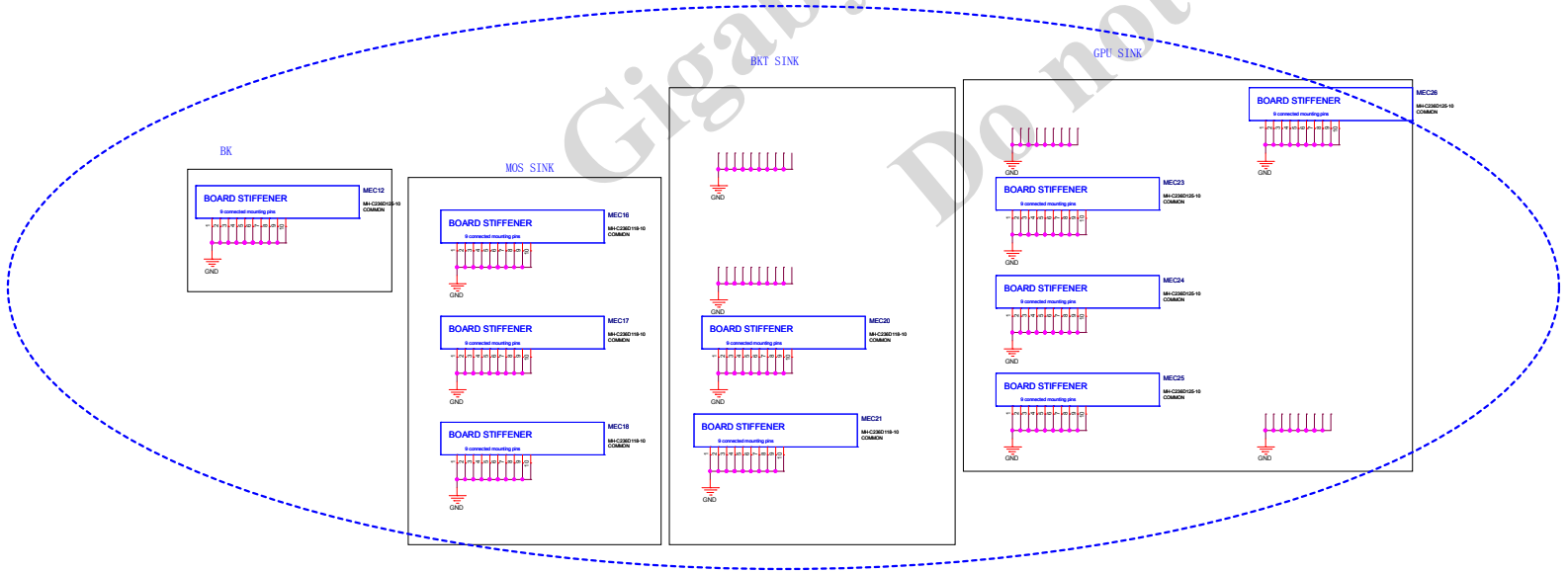
Follow Rev25 bom change vdd_08 to 0.9V by diho.su 20160803



| | | |
|---|---|---|
| GIGABYTE | | |
| Title | POWER MANAGEMENT2 | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 22 of 29 | |

(20) MECHANICAL AND THERMAL MANAGEMENT

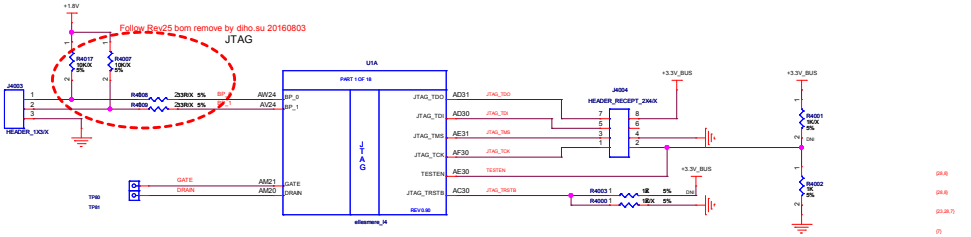


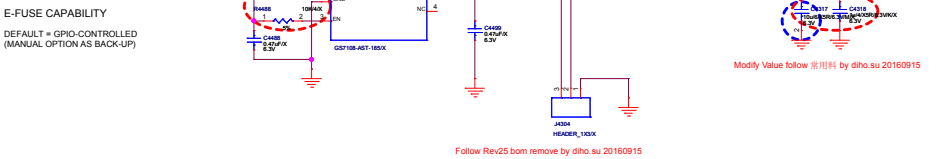



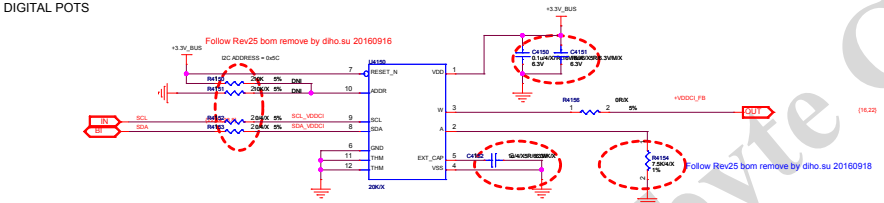


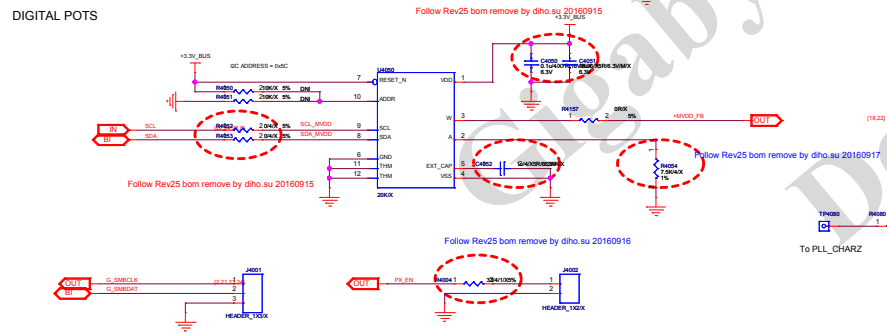

| | | |
|---|---|---|
| GIGABYTE | | |
| Title: MECHANICAL AND THERMAL MANAGEMENT | | |
| Size: Custom | Document Number: GV-RX470G1 GAMING-4GD | Rev: 1.1 |
| Date: Thursday, October 20, 2016 | Sheet 23 of 29 | |

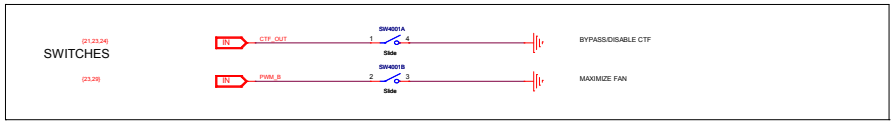
# (21) DEBUG CIRCUITS

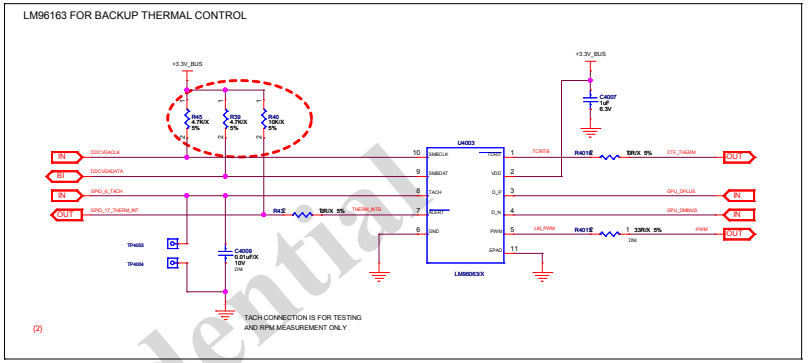


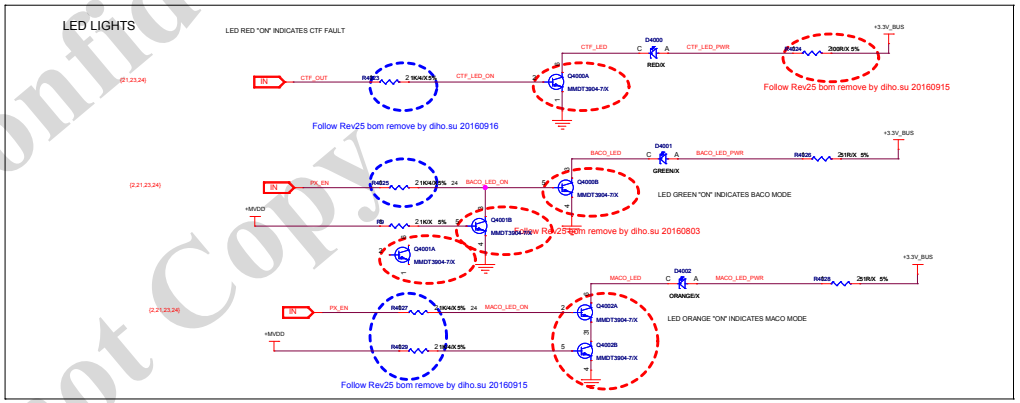



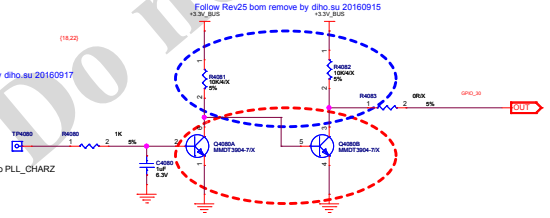



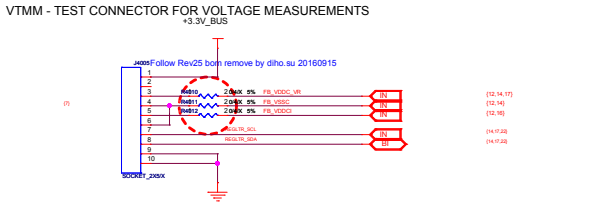



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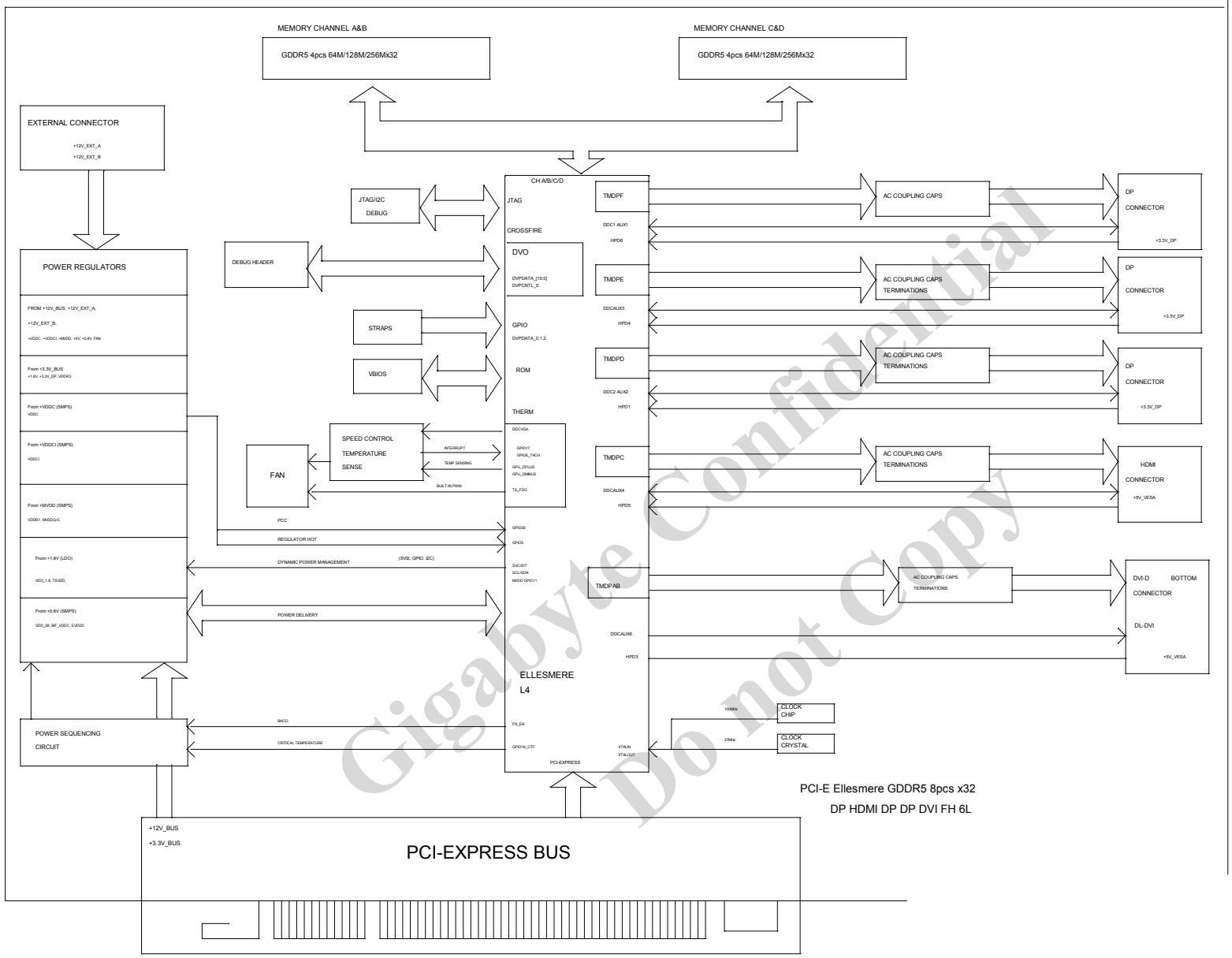




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| | | | |
|---|---|---|---|
| 0 | 00A | 08/26/2016 | |
| 1 | 00B | 10/19/2016 | 1. Add GPIO1 for dynamic VDDCI<br>2. update VDDC driver sequence |
| 2 | 00C | 02/23/2016 | HDMI:<br>- add series resistor R1880 ~R1887<br>- add pull down inductor L1880 ~L1887<br><br>remove C405, C403, VR400,C410,C414,R405 |
| 3 | 00D | 04/18/2016 | Modify GST Design |



| | | | |
|---|---|---|---|
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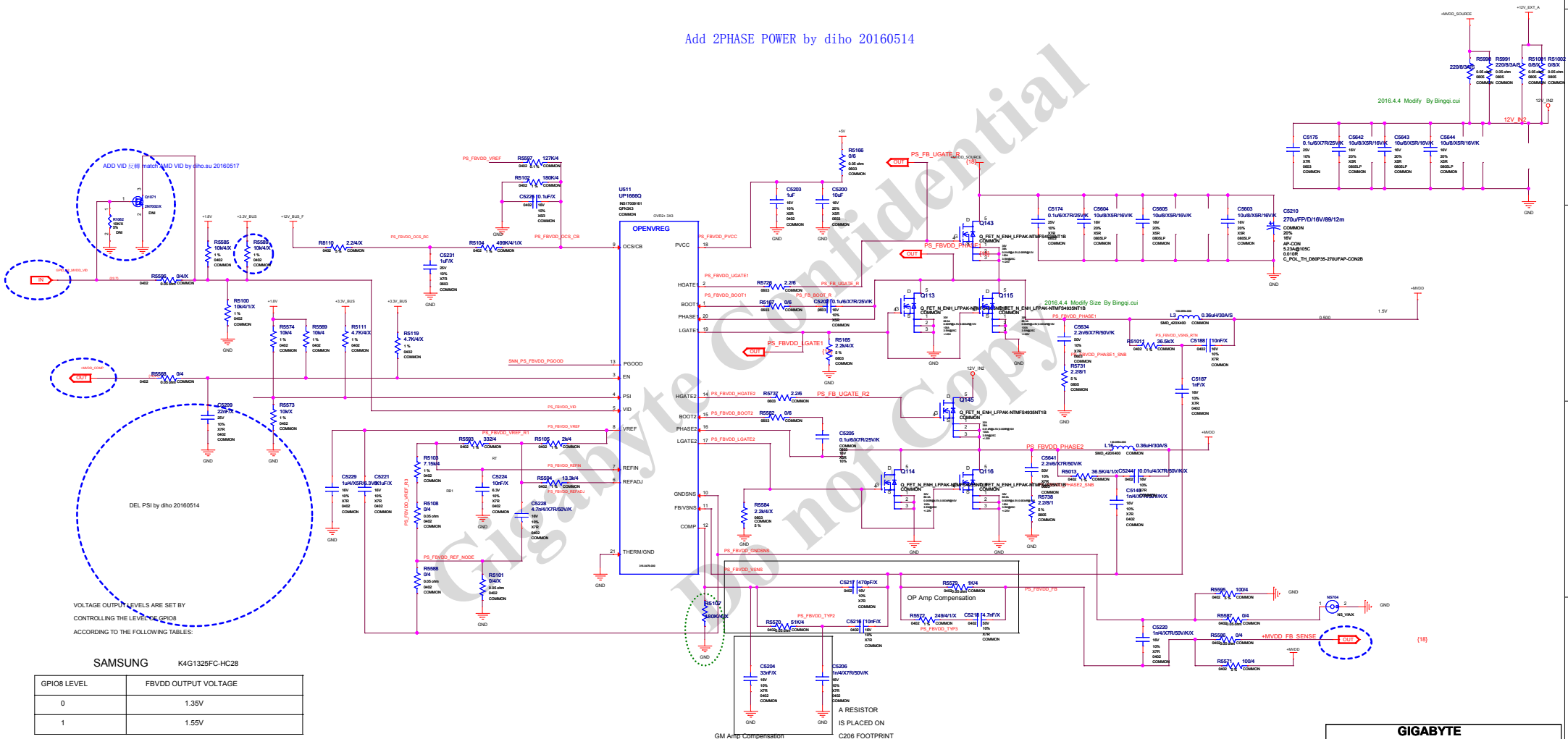
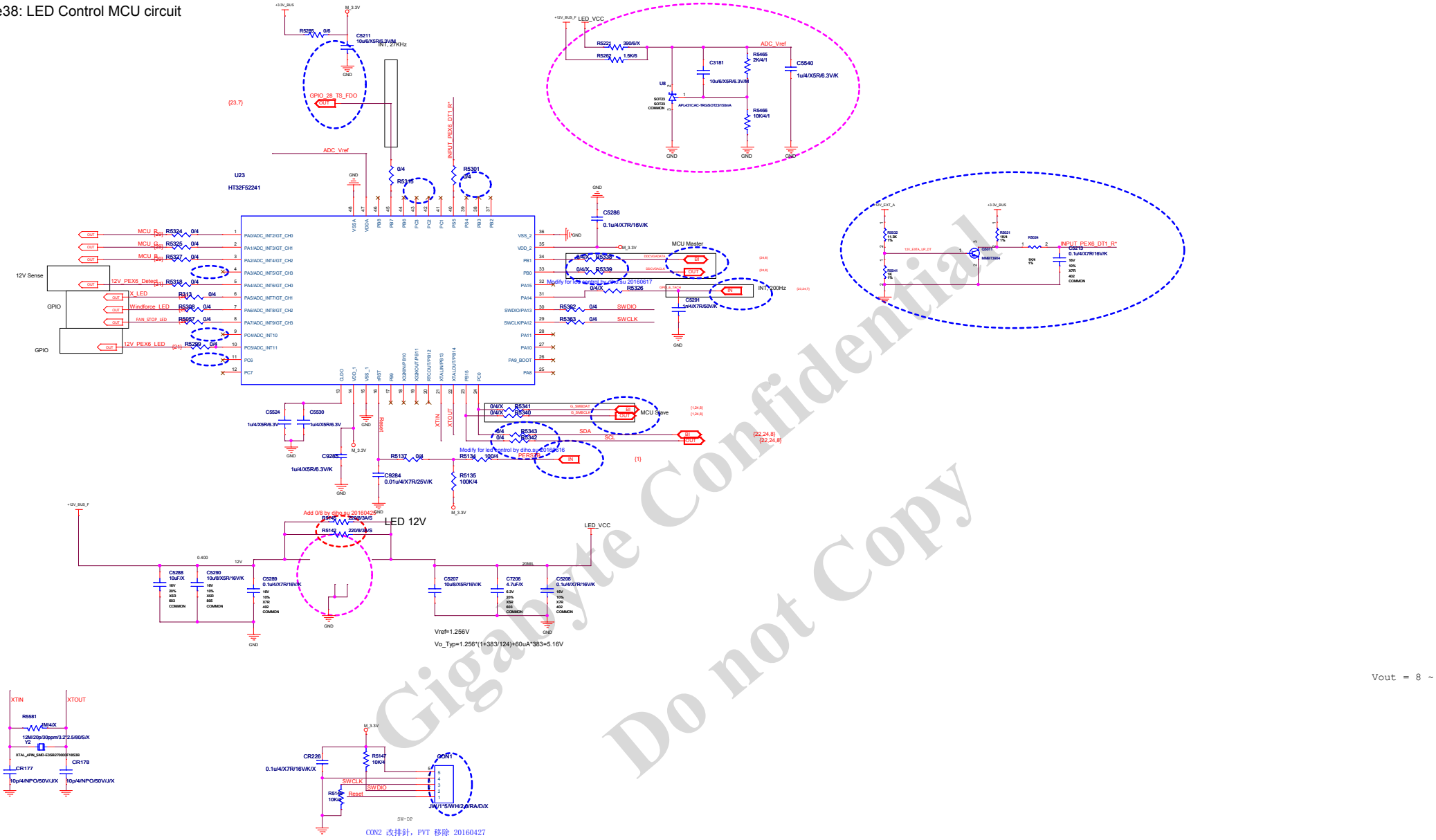


# Page38: LED Control MCU circuit








ASSEMBLY
PAGE DETAIL

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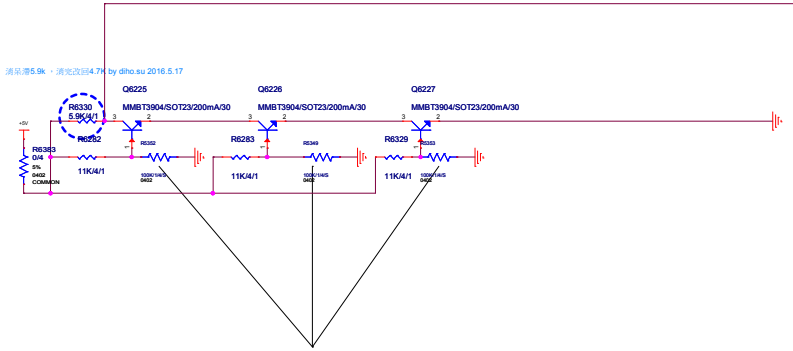
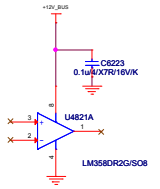
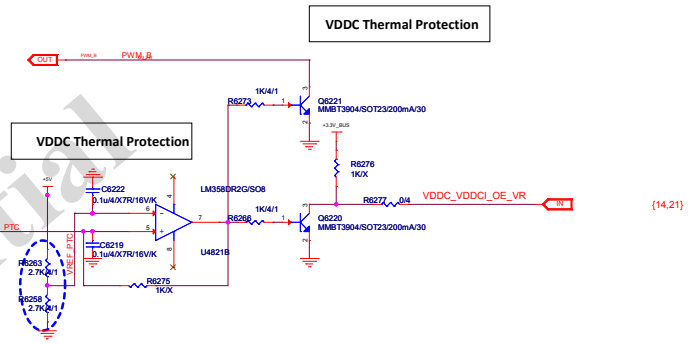
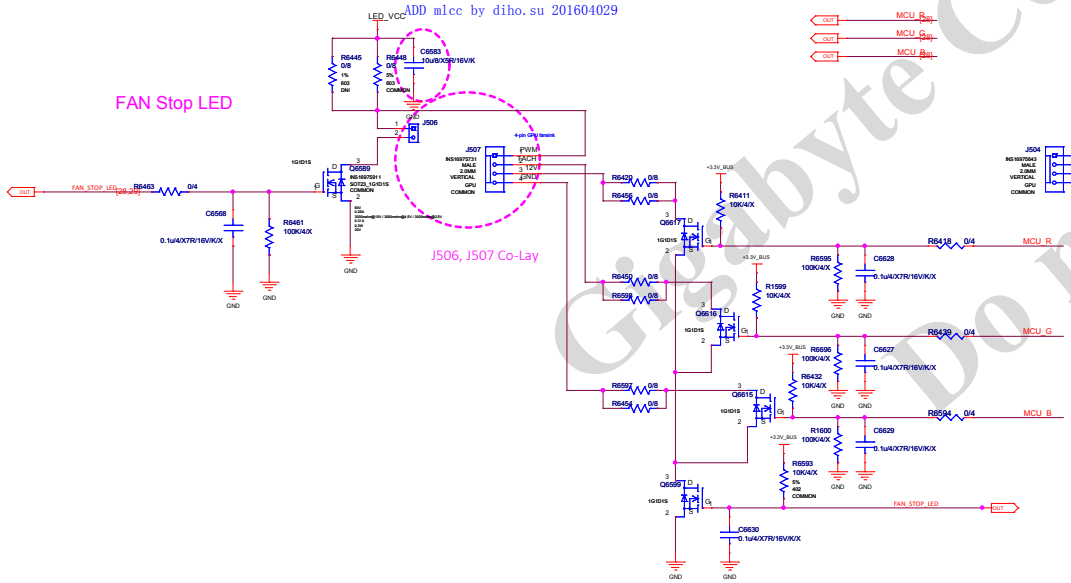
Add MOS VRHOT CIRCUIT

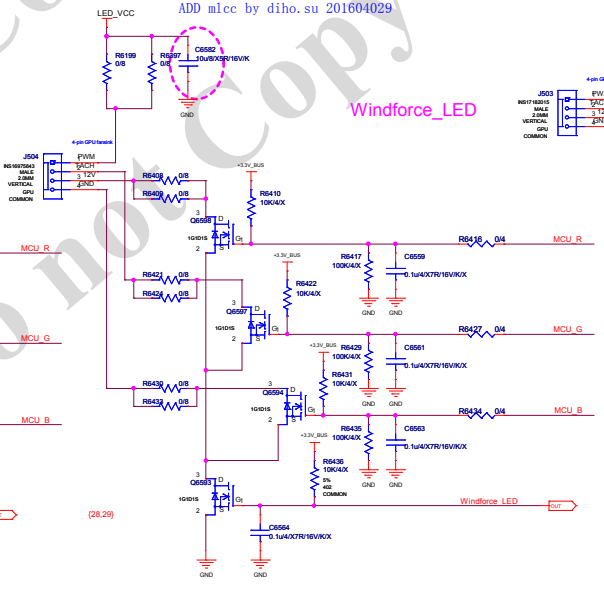


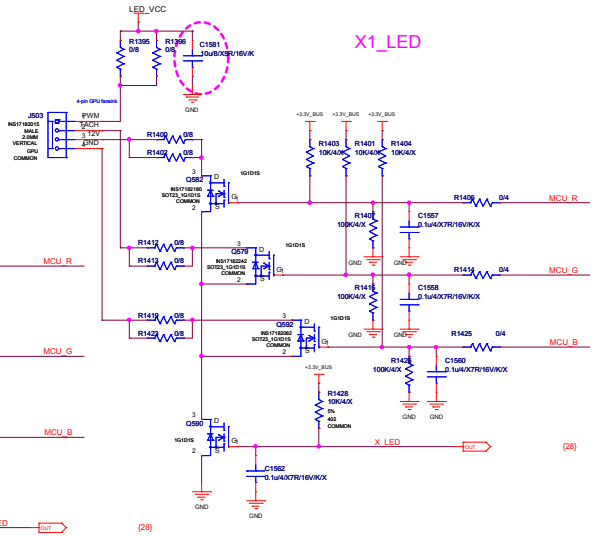

Near VDDC each high side MOS






PAGE DETAIL

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