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REVISIONS

| REV | DESCRIPTION | DATE | APPROVED |
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| A | INITIAL RELEASE | ----- | ----- |
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SCHEMATIC, CCA, MAIN, WTP4100, DVT2.0, SDM429W

NOTE:

1. All resistors are 5% tolerance & 0201 unless otherwise indicated.

2. All capacitors are 10% or 20% tolerance and 6.3V rated unless otherwise indicated.

3. All Test Points are 0.02" diameter unless otherwise indicated.

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|--------------------------|--------------------|-------------------------------------------------------------------|-----------------------------|----------|
| CONTRACT NO. | | QUALCOMM TECHNOLOGIES, INC. | | |
| DRAWN BY JHUO | DATE 04-17-2019 | TITLE SCHEMATIC, CCA,MAIN, WTP4100,DVT2.0, SDM429W,w/o battery | | |
| ENGINEER | | | | |
| PROJECT ENGINEER | | | | |
| QUALITY ASSURANCE | | | | |
| CONFIGURATION | | SIZE D | DRAWING NO LD20-PU825-13 | REV A |
| DESIGN ACTIVITY APPROVAL | | SCALE NONE | | |
| DESIGN APPROVAL | | | | |

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| LTR | DESCRIPTION | DATE | APPROVED |
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Revision History

| REV | DESCRIPTION |
|-----|------------------|
| A | Initial release. |
| | |

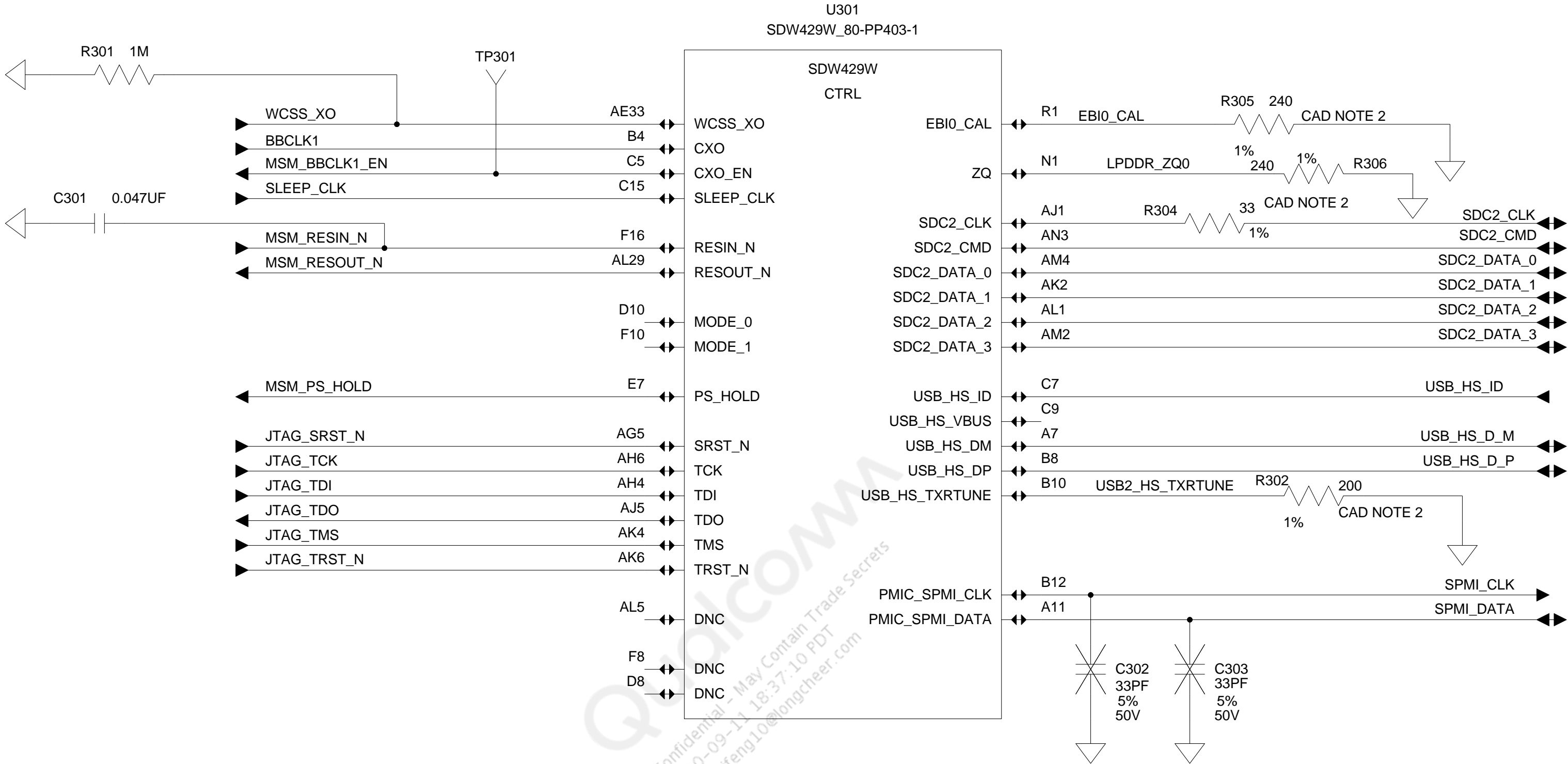
Revison History

| | | | | |
|------------|--|--|---------------|-------|
| SIZE | | | DRAWING NO | REV |
| D | | | LD20-PU825-13 | A |
| SCALE NONE | | | SHEET 2 | OF 59 |

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WCSS_XO trace should have a 1 MOhm resistor at Host (SDM/APQ) side to prevent corner case SDM/APQ leakage in dual-band wifi designs,For single-band designs not using WCSS_XO line,connect WCSS_XO SDM/APQ pin directly to ground



CAD NOTE 1: 90ohm Diff Impedance routing for USB
CAD NOTE 2: Place R302,R304,R305,R306 close to MSM pin & route away from noisy signals.

SDM429W_CONTROL

| SIZE | DRAWING NO | REV |
|------------|---------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 4 OF 59 | |

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| LTR | DESCRIPTION | DATE | APPROVED |
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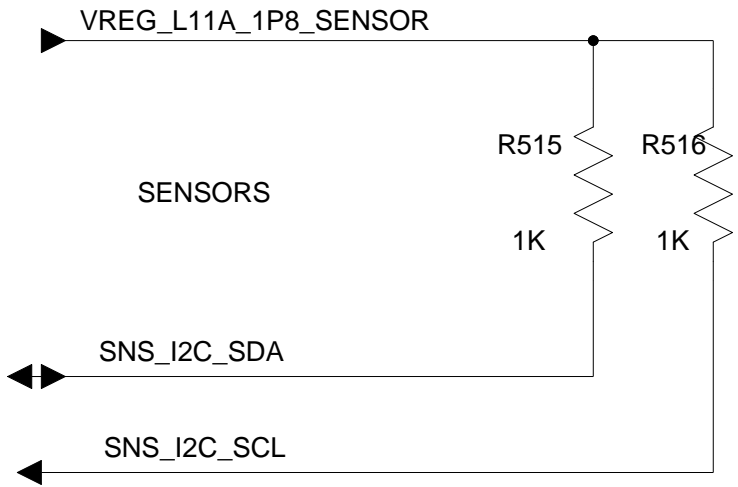
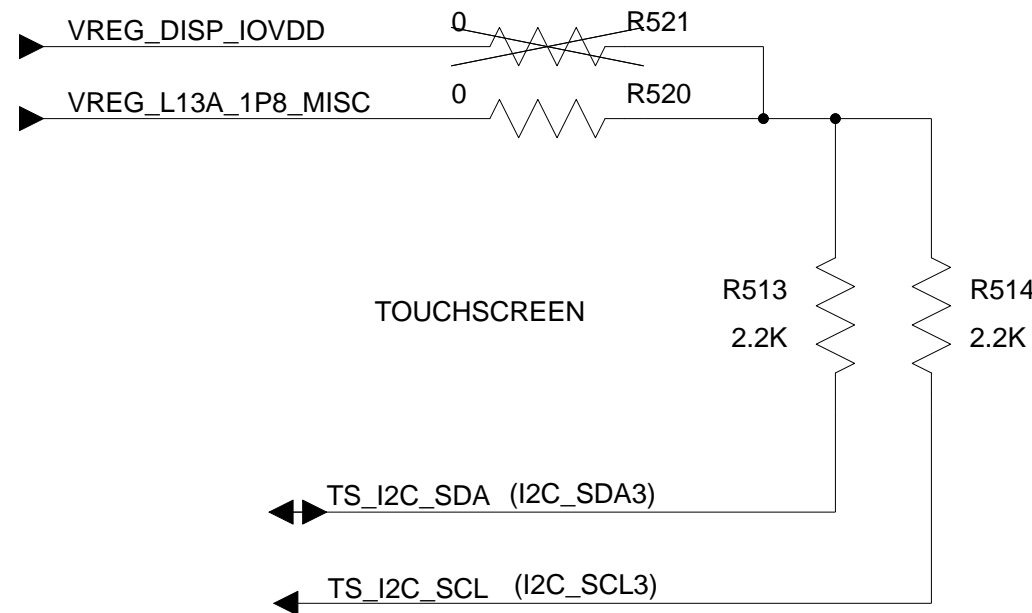
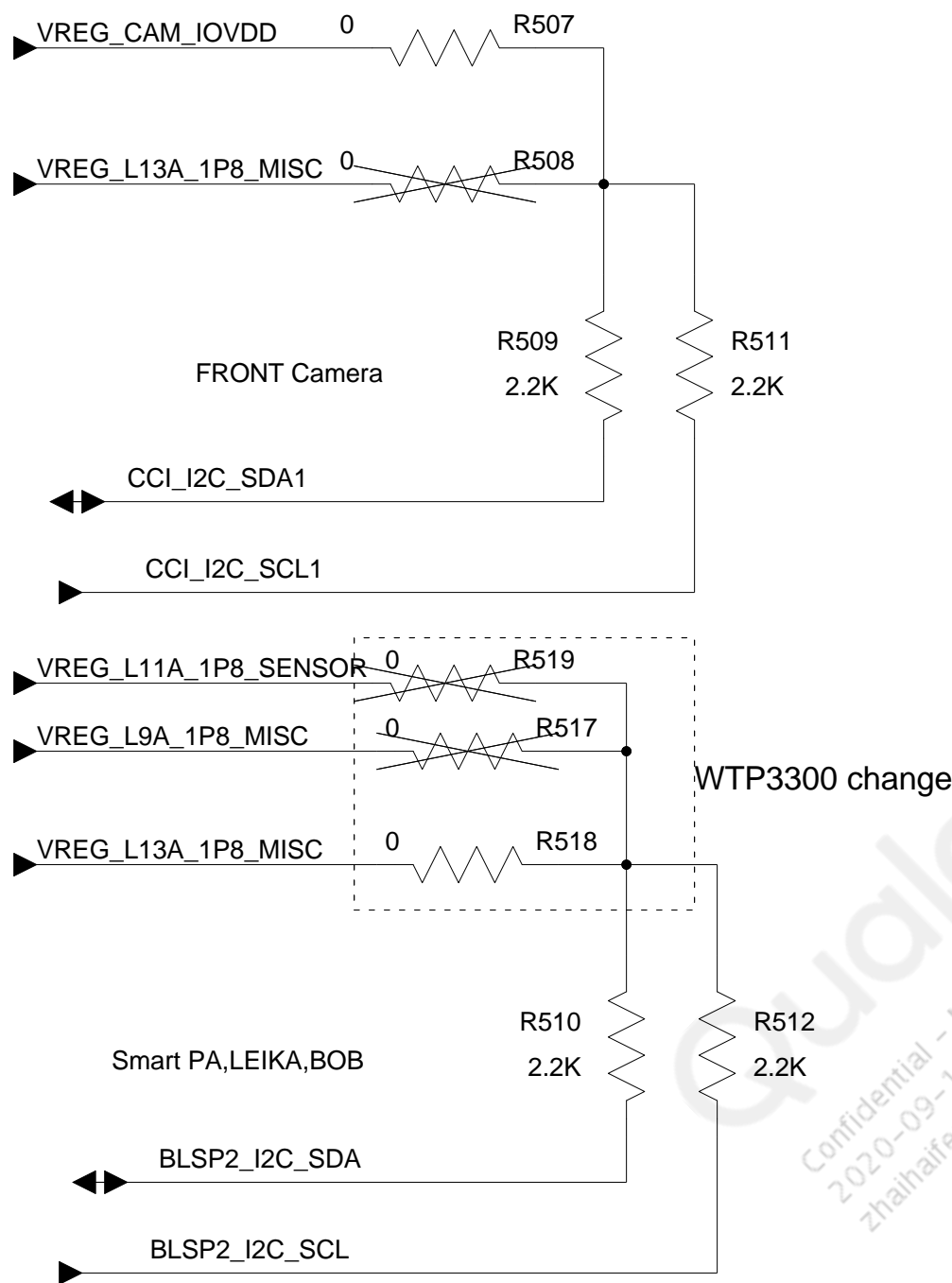
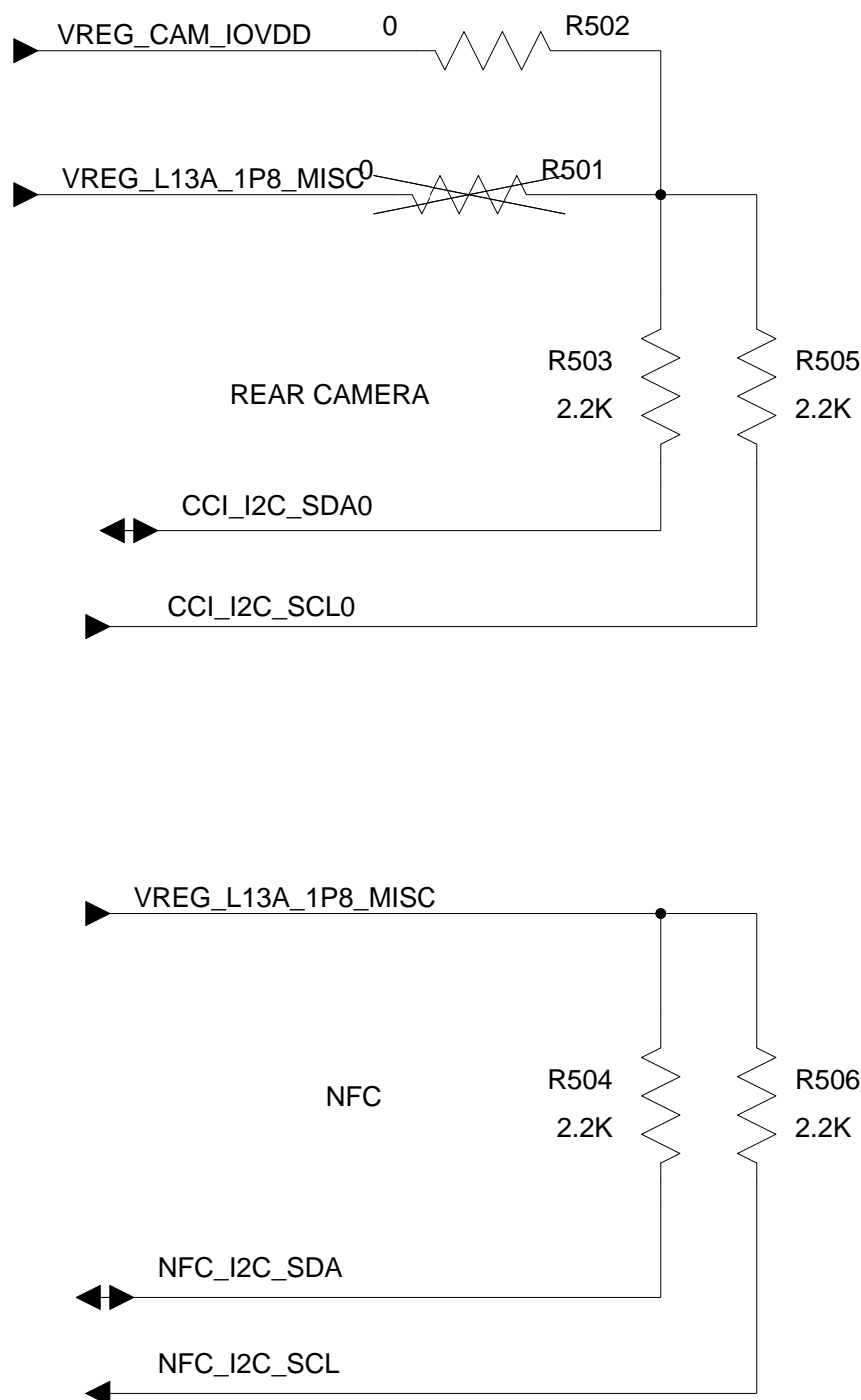
SDM429W_GPIO

| SIZE | DRAWING NO | REV |
|------------|---------------|-------|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 5 | OF 59 |

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I2C PULL-UP RESISTORS



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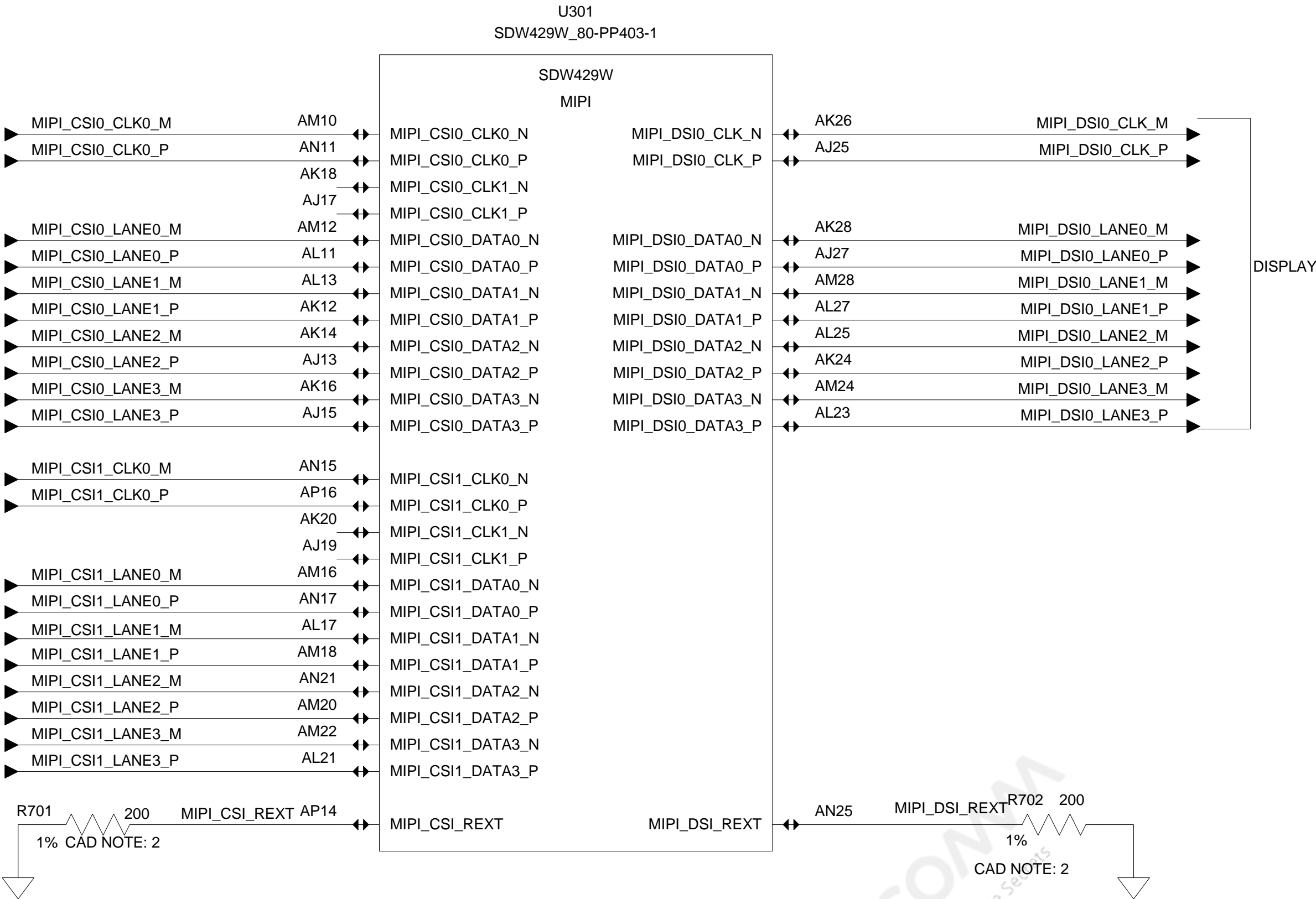
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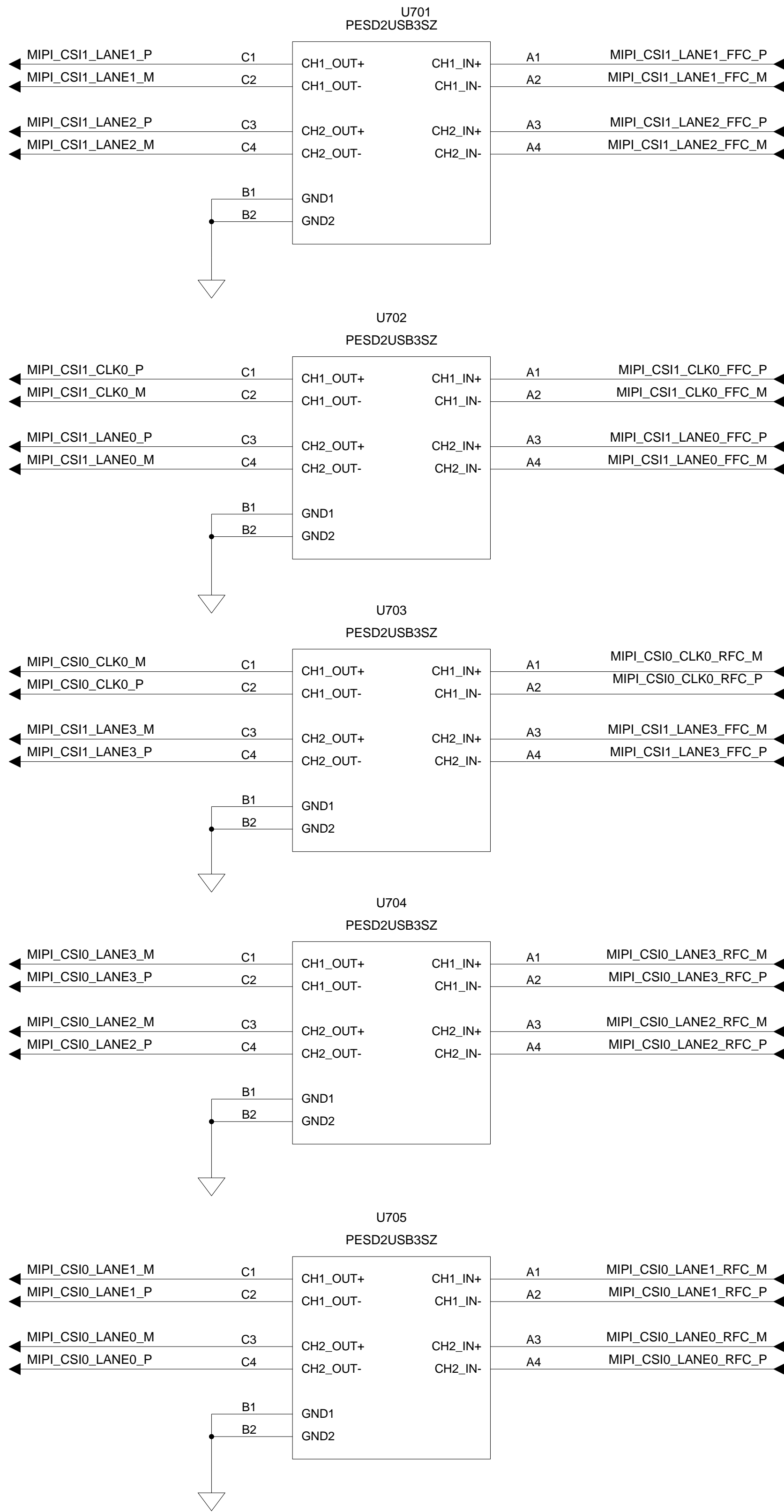
A

SDM429W_MIPi CSI DSI

CAD NOTE 2: Place R701, R702 close to MSM pins



CSI COMMON MODE FILTERS

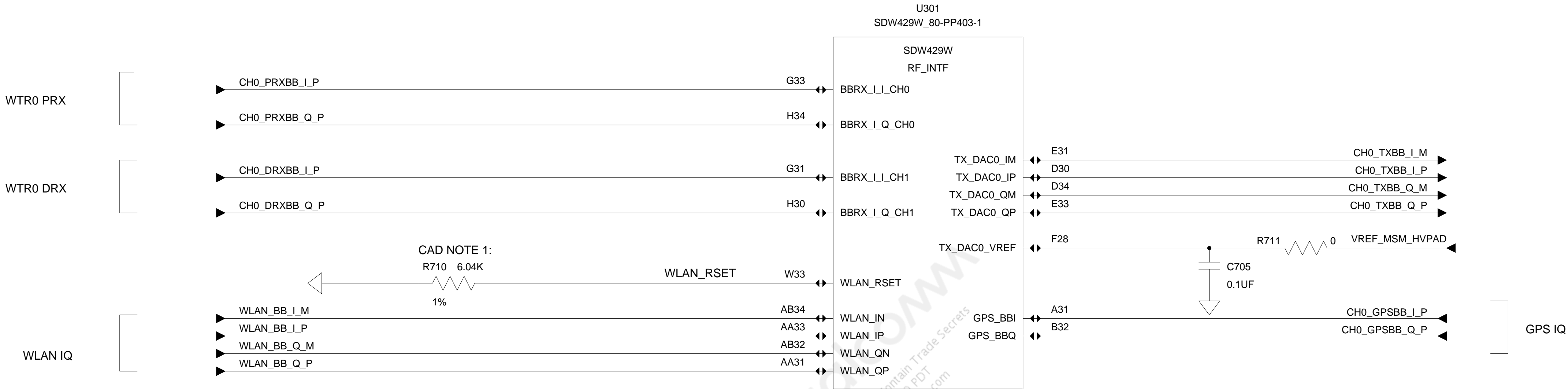


INSTALL 121-81010-0000 IF CMF IS NEEDED FOR CSI LINES

| SIZE | DRAWING NO | REV |
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| D | LD20-PU825-13 | A |
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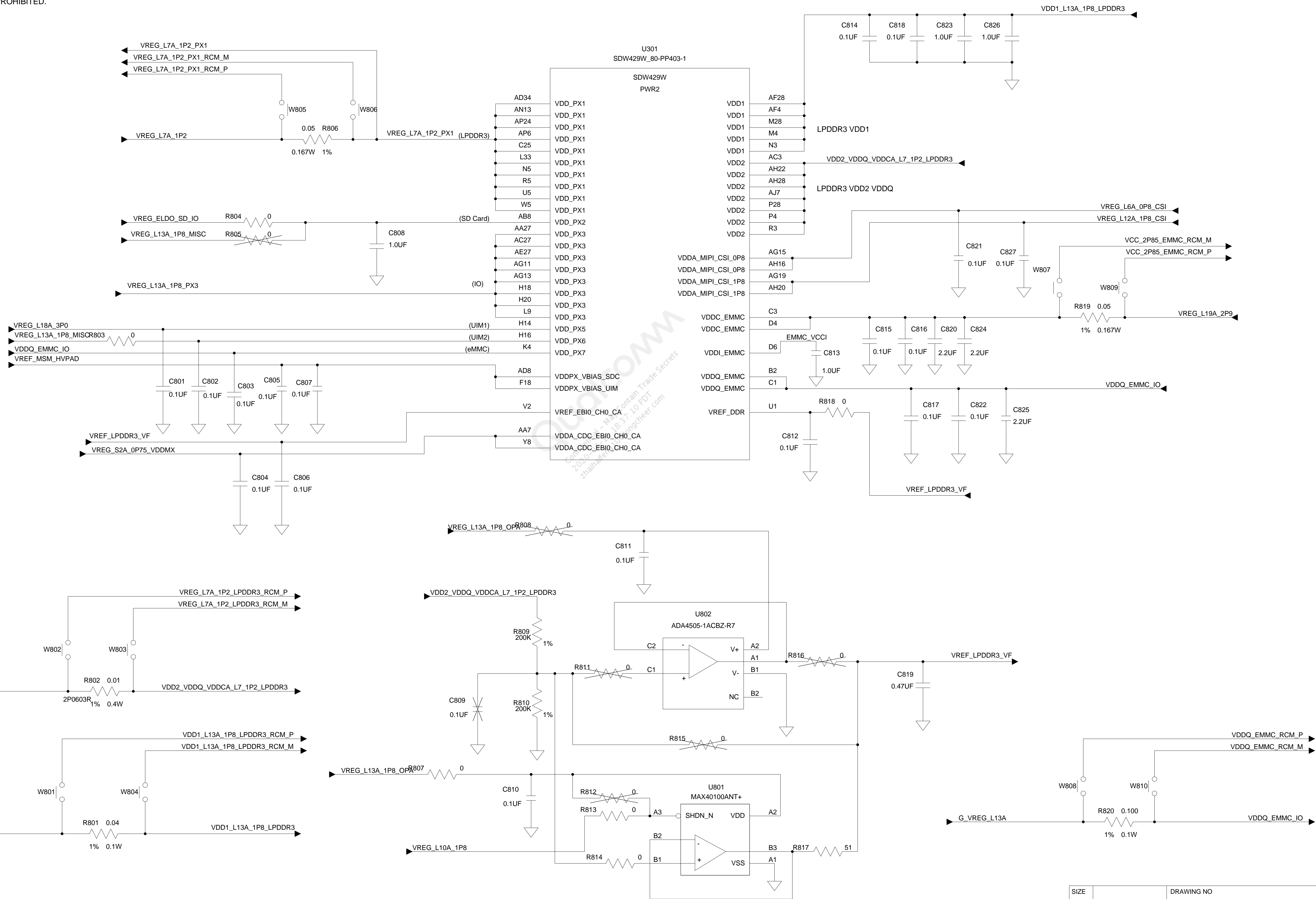
SDM429W_WCSS_RF

CAD NOTE 1: Place R710 close to MSM Pin

| SIZE | DRAWING NO | | REV |
|------------|---------------|---------|-------|
| D | LD20-PU825-13 | | A |
| SCALE NONE | | SHEET 8 | OF 59 |

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| SIZE D | | DRAWING NO LD20-PU825-13 | REV A |
| SCALE NONE | | SHEET 9 | OF 59 |



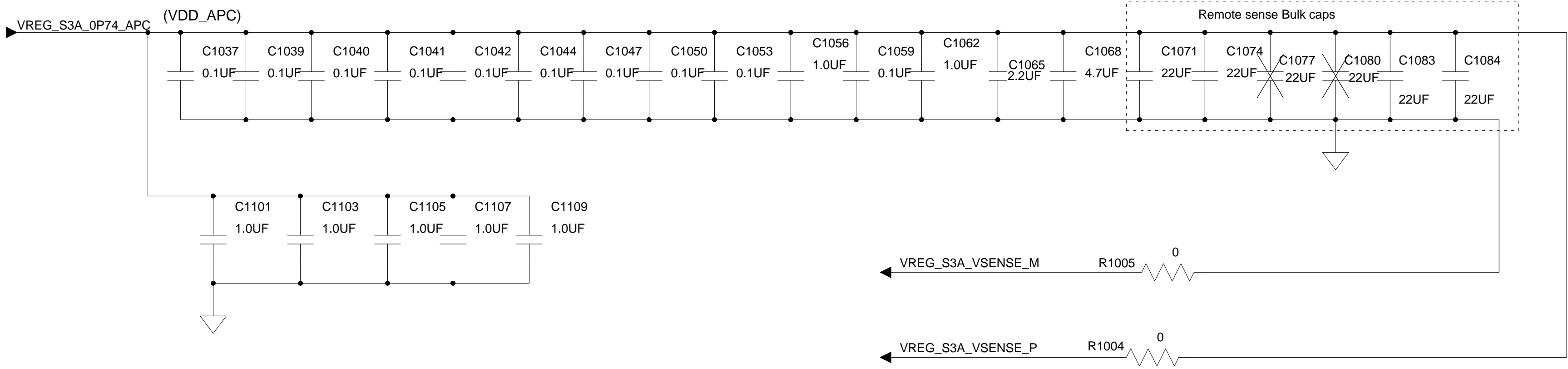
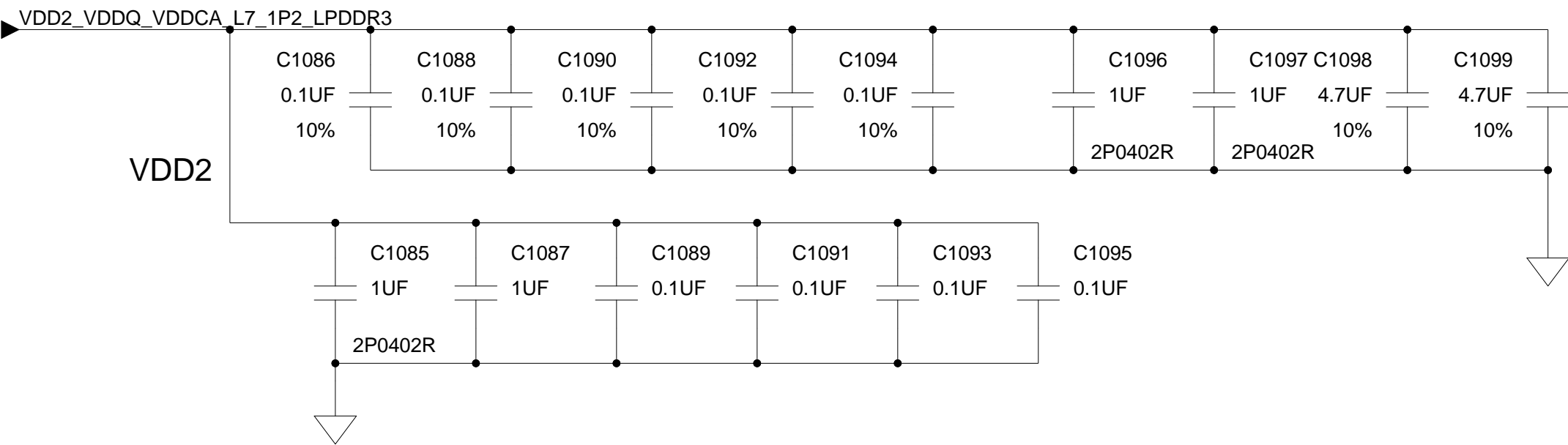
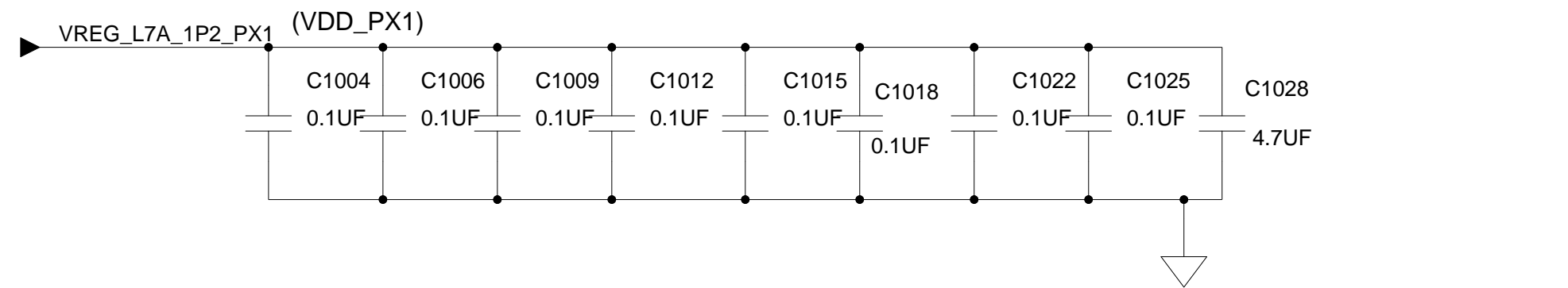
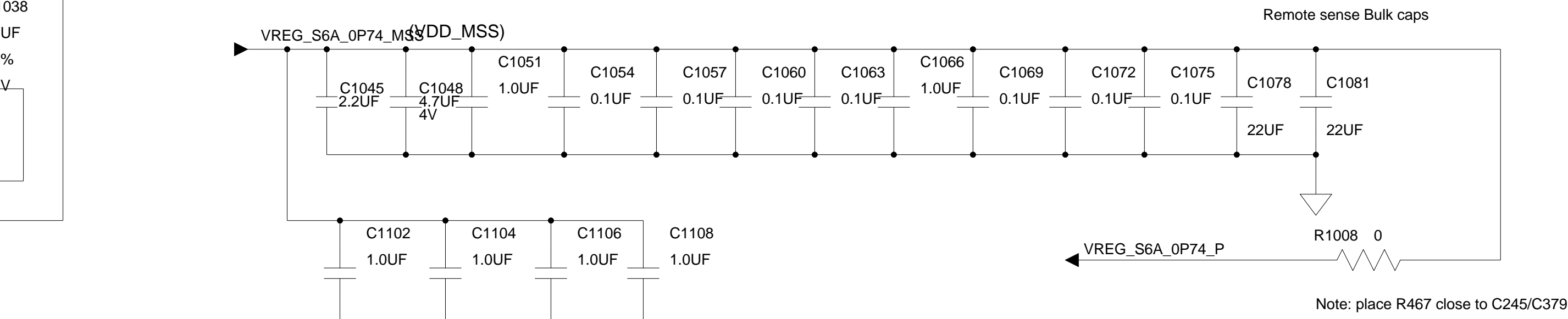
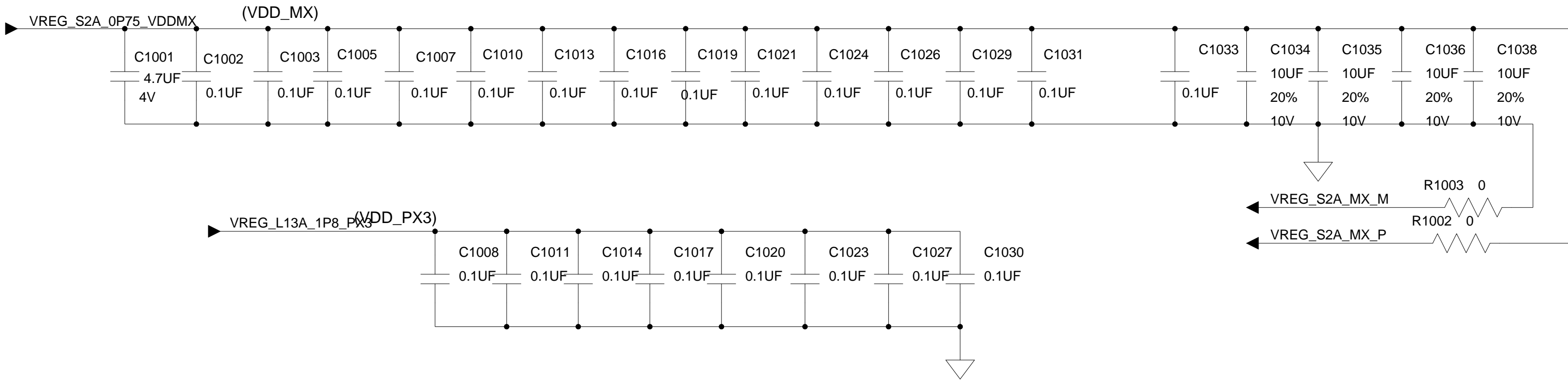
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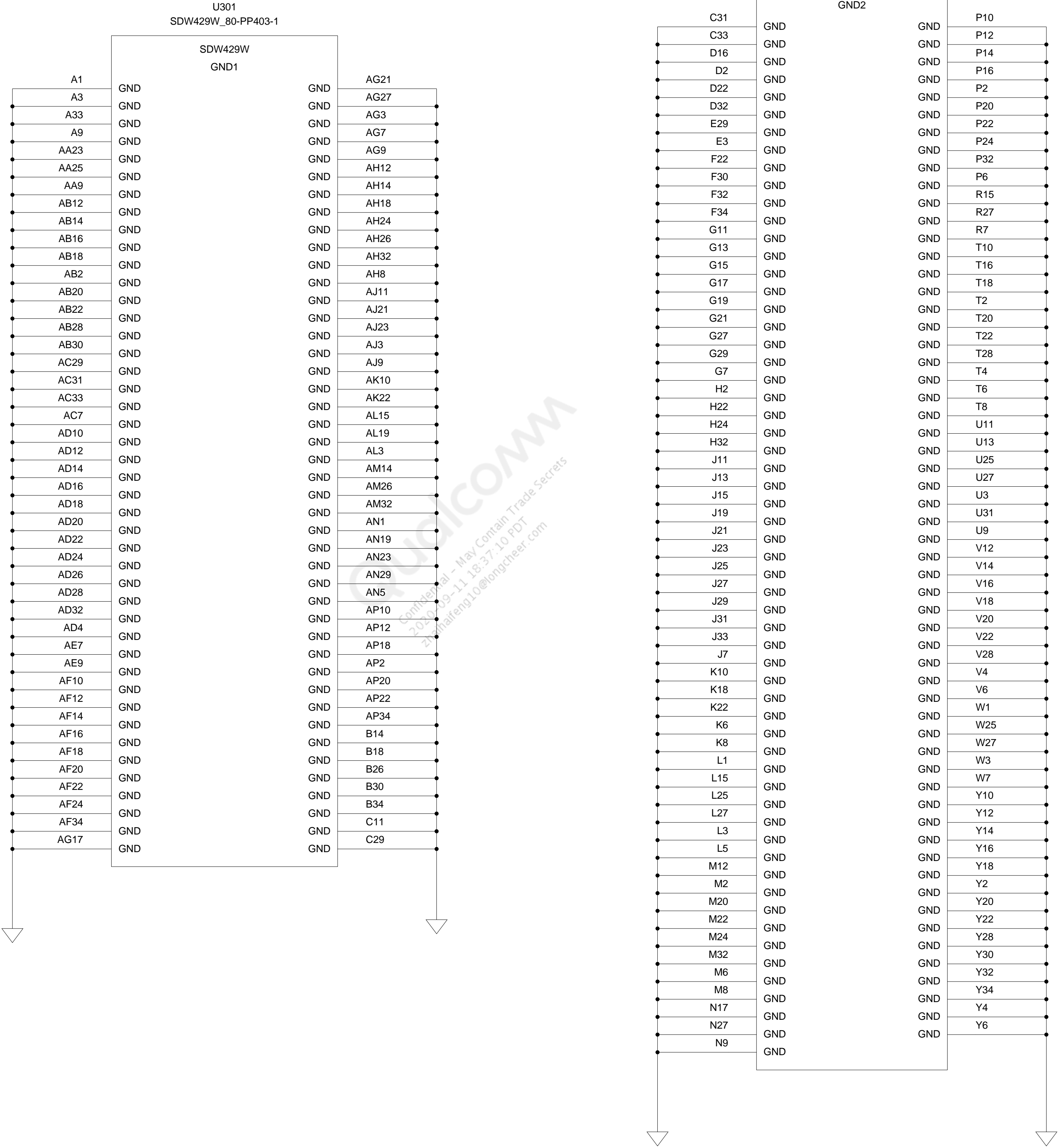


SDM4X9_DECOUPLING

| SIZE | DRAWING NO | REV |
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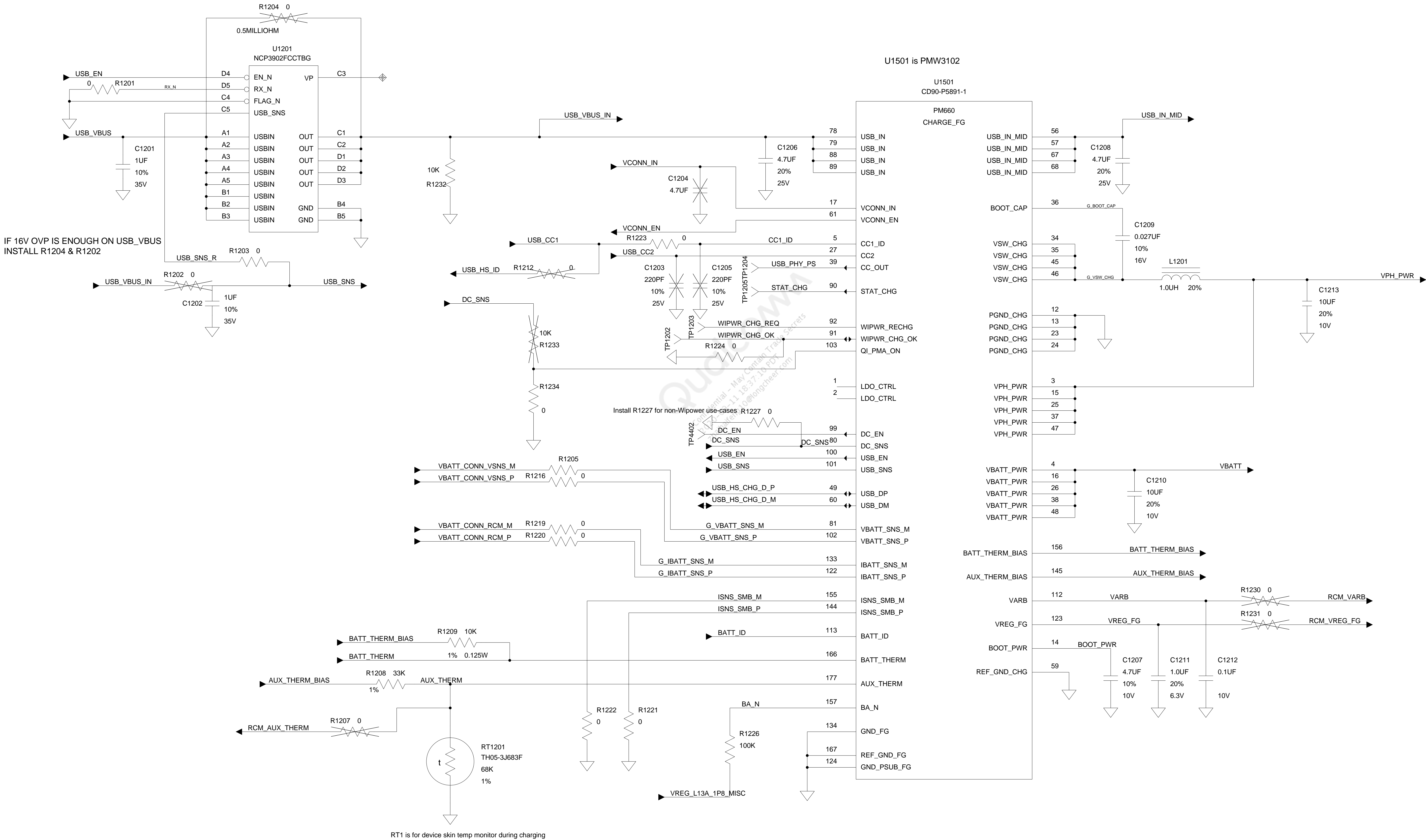
SDM4X9_GND

| SIZE | DRAWING NO | REV |
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USE U1201 FOR 28V OVP ON USB_VBUS & SURGE PROTECTION UPTO 100V

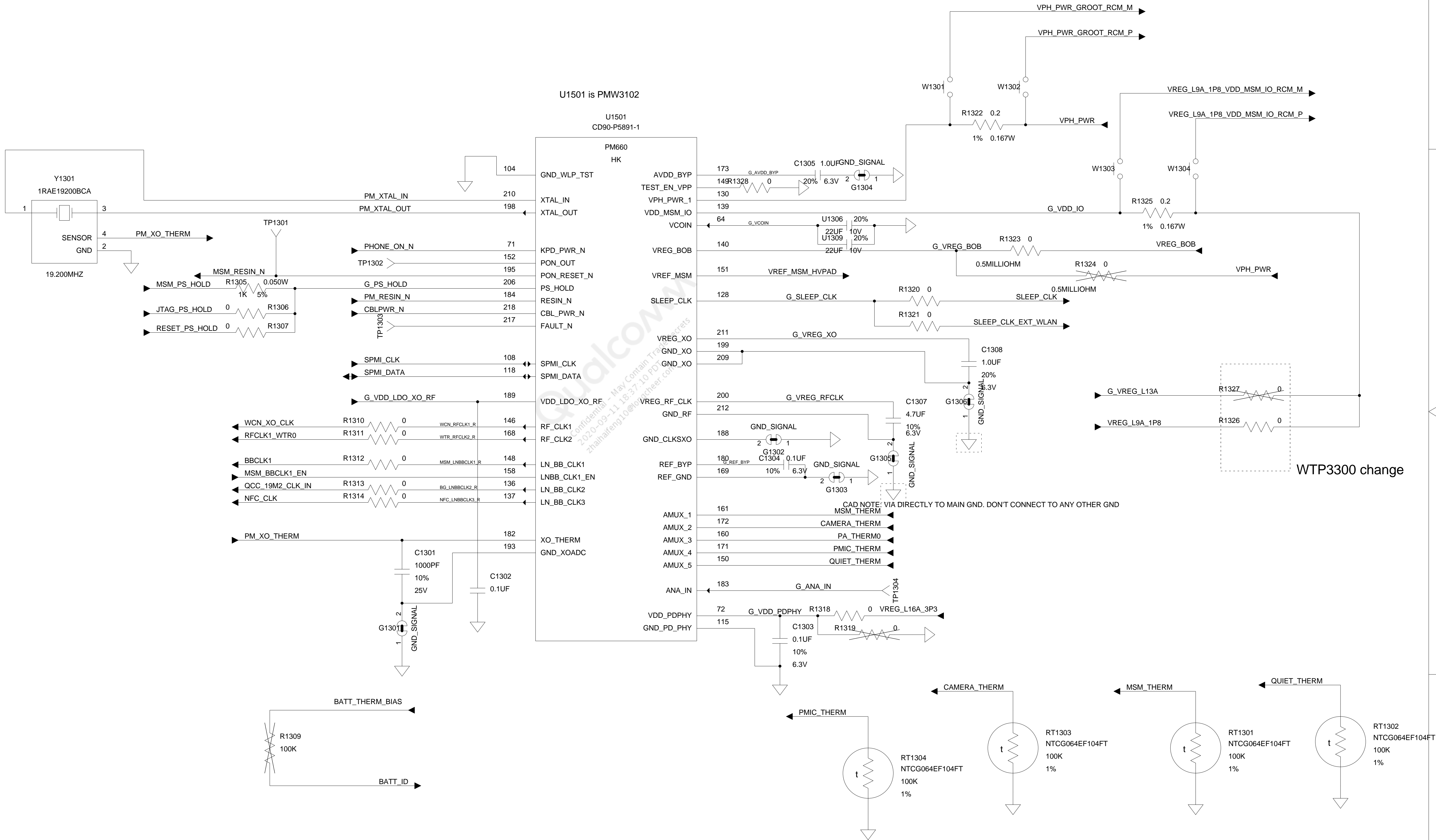


PMIC CHARGER

| SIZE | D | DRAWING NO | LD20-PU825-13 | REV | A |
|-------|------|------------|---------------|-----|----|
| SCALE | NONE | SHEET | 13 | OF | 59 |

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PMIC CONTROL/CLOCKs

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U1501
CD90-P5891-1

PM660
HAPTICS

WTP3300 change

LINE_OUT3

R1403

R1405 100K

1%

C1401 0.022UF 10% 6.3V

R1407 1M 5% 0.050W

HAPT_PWM_IN 50

VDD_HAP 6

PGND_HAP 28

GND_HAP 84

VSW_HAP_P 18

G_HAP_P

R1414 0

HAP_OUT_P

VSW_HAP_M 40

G_HAP_M

R1415 0

HAP_OUT_M

0.5MILLIOHM

0.5MILLIOHM

VPH_PWR_VIBRATOR_RCM_M

VPH_PWR_VIBRATOR_RCM_P

W1601

W1602

R1406 0.100 1% 0.1W

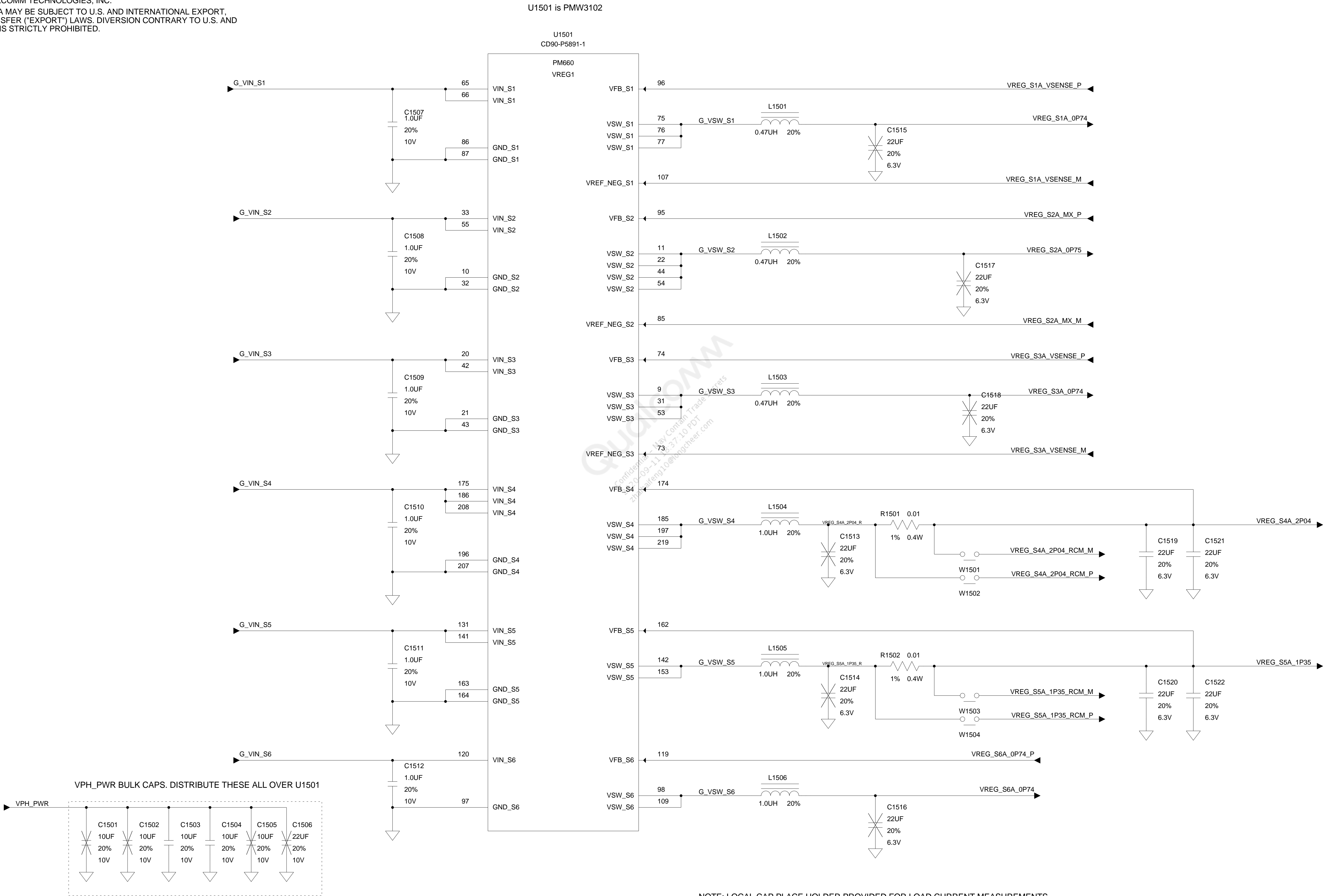
VPH_PWR

G_VIN_HAP

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| SIZE D | | DRAWING NO LD20-PU825-13 | REV A |
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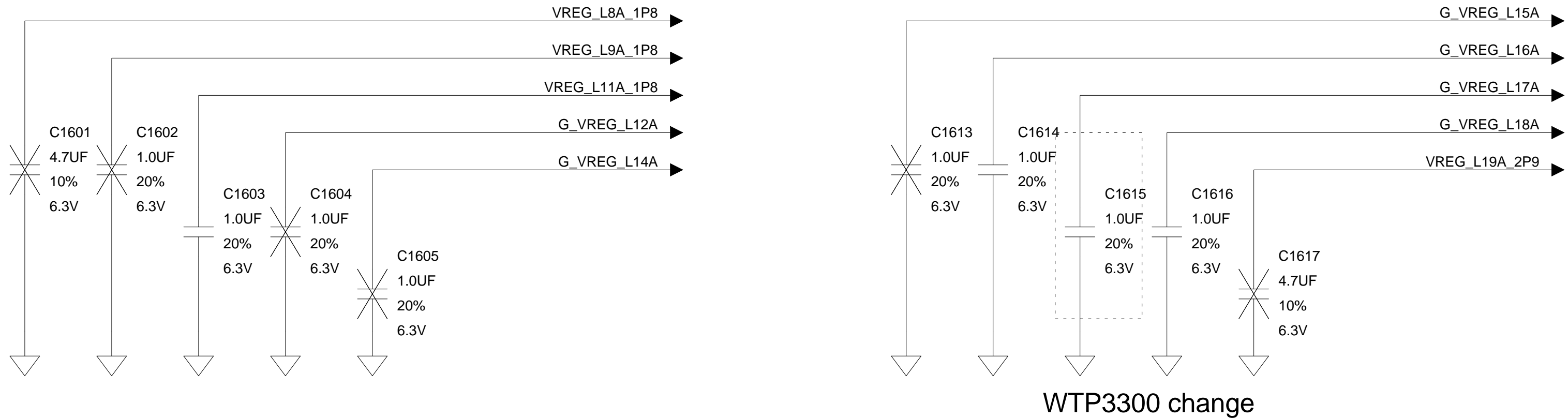
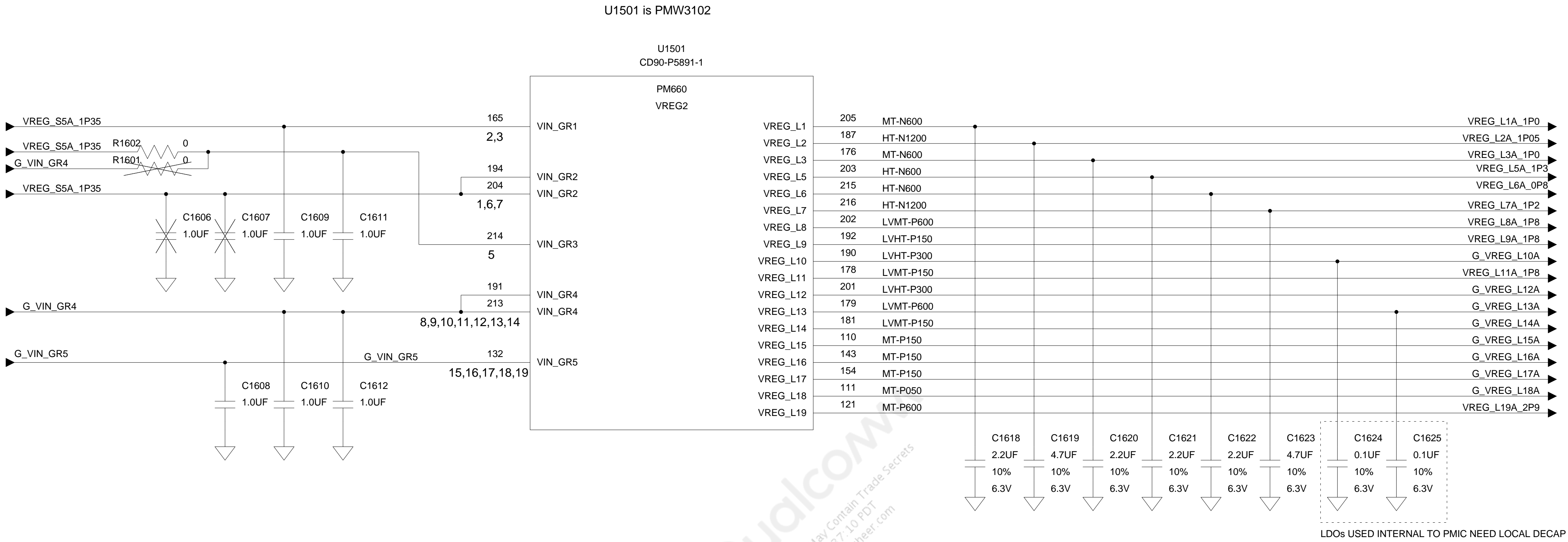


PMIC SMPS

| SIZE | DRAWING NO | REV |
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PSEUDO CAPLESS LDOs

For CAPLESS LDOs: If decaps on the load side do not add up to LDO spec, then install the cap close to the PMIC

P-Type are psuedo-capless, cap can be at load
Regulators used internal to PMIC need cap at PMIC
N-Type > N300 need cap at PMIC

| LDO | TYPE | VIN_GR | Source | V_Default |
|-----|-------|--------|--------|-----------|
| L1 | N600 | 2 | S5A | 1V |
| L2 | N1200 | 1 | S5A | 1.05V |
| L3 | N600 | 1 | S5A | 1.2V |
| L5 | N600 | 3 | S5A | 1.3V |
| L6 | N600 | 2 | S5A | 0.8V |
| L7 | N1200 | 2 | S5A | 1.2V |
| L8 | P600 | 4 | S4A | 1.8V |
| L9 | P150 | 4 | S4A | 1.8V |
| L10 | P300 | 4 | S4A | 1.8V |
| L11 | P150 | 4 | S4A | 1.8V |
| L12 | P300 | 4 | S4A | 1.8V |
| L13 | P600 | 4 | S4A | 1.8V |
| L14 | P150 | 4 | S4A | 1.8V |
| L15 | P150 | 5 | BoB | 3V |
| L16 | P150 | 5 | BoB | 3.1V |
| L17 | P150 | 5 | BoB | 2.7V |
| L18 | P50 | 5 | BoB | 3V |
| L19 | P600 | 5 | BoB | 2.9V |

| Input Number | Source | Input Voltage |
|--------------|--------|---------------|
| VIN_GR1 | S5A | 1.35V |
| VIN_GR2 | S5A | 1.35V |
| VIN_GR3 | S5A | 1.35V |
| VIN_GR4 | S4A | 2.04V |
| VIN_GR5 | BoB | 3.3V |

PMIC LDOs

| SIZE | DRAWING NO | REV |
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| D | LD20-PU825-13 | A |
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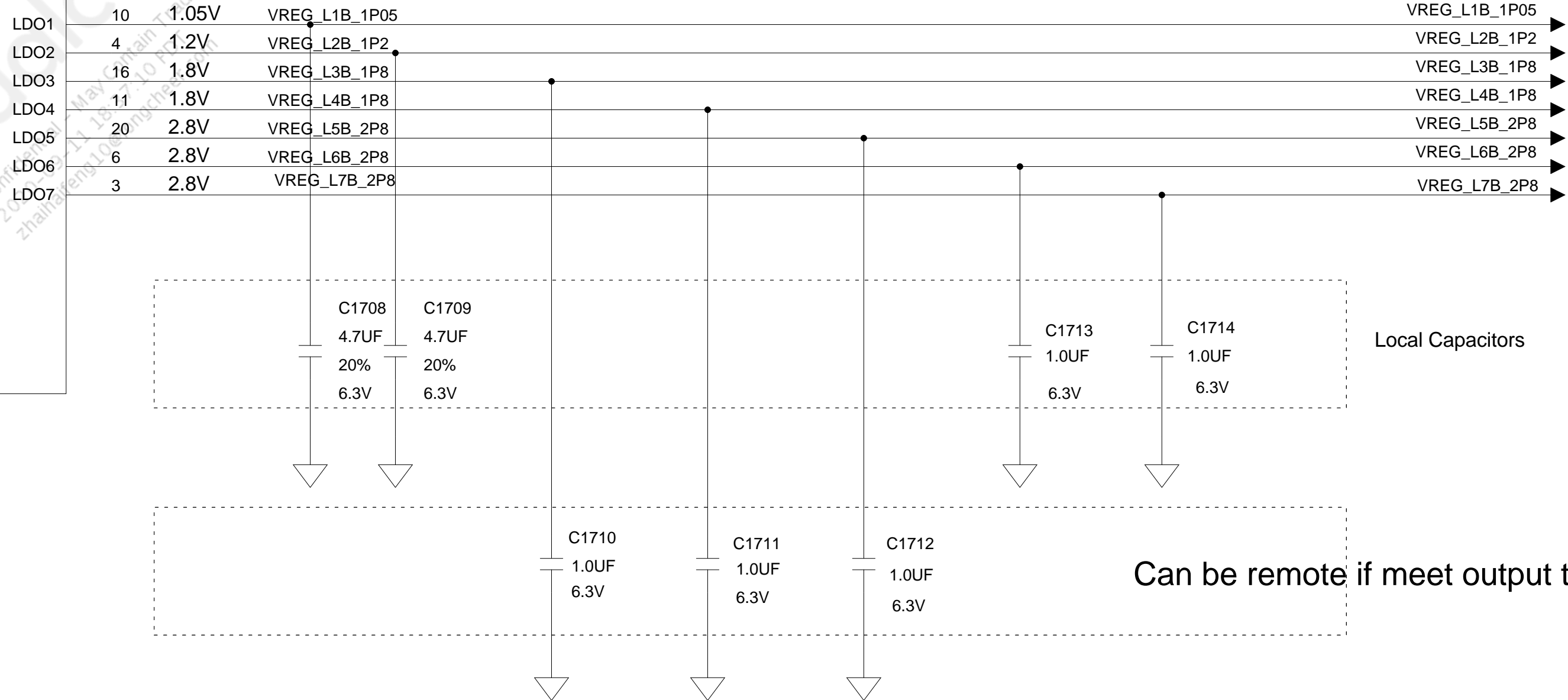
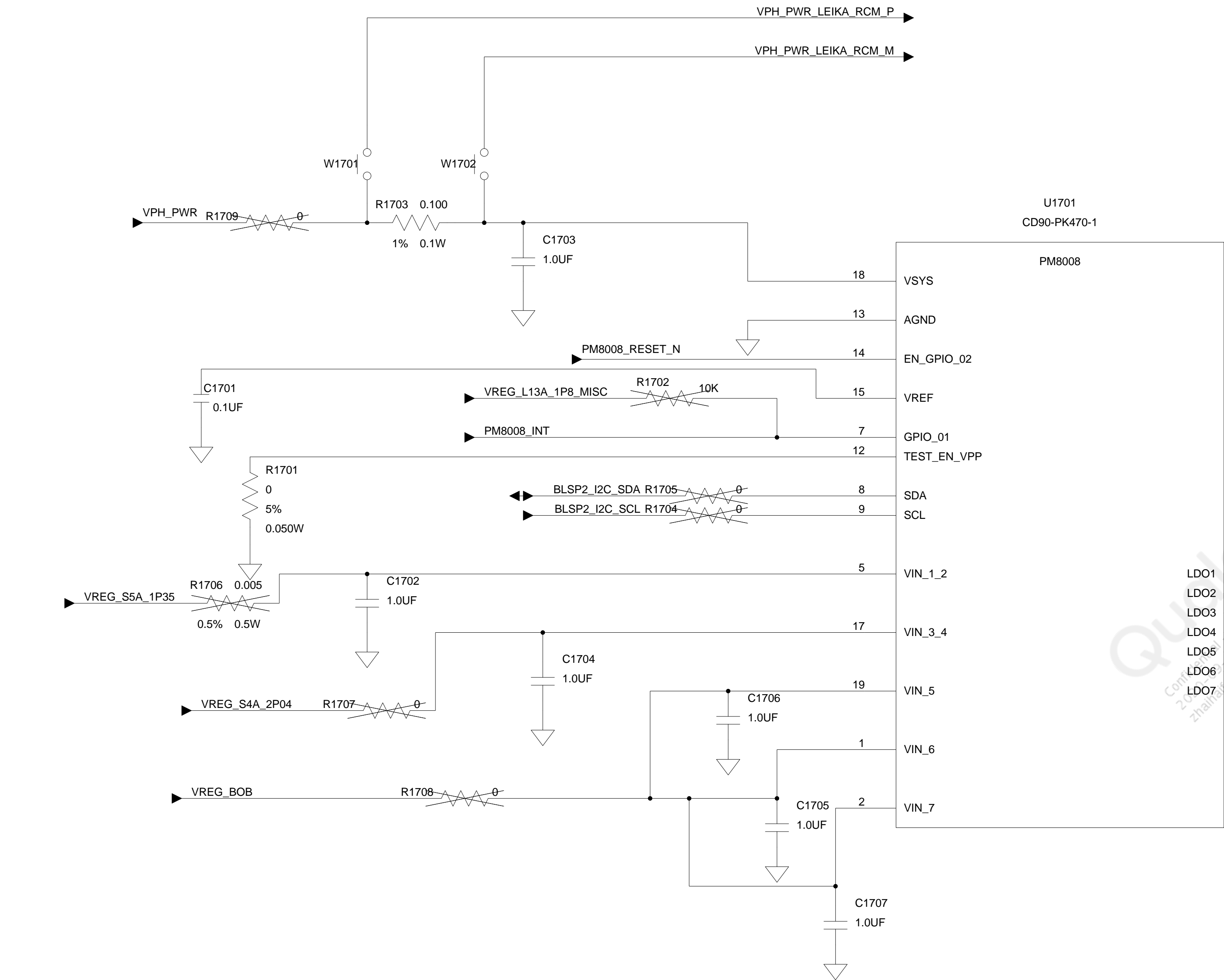
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PM8008

| SIZE | DRAWING NO | REV |
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zhaihaifeng.10@qcomcheet.com

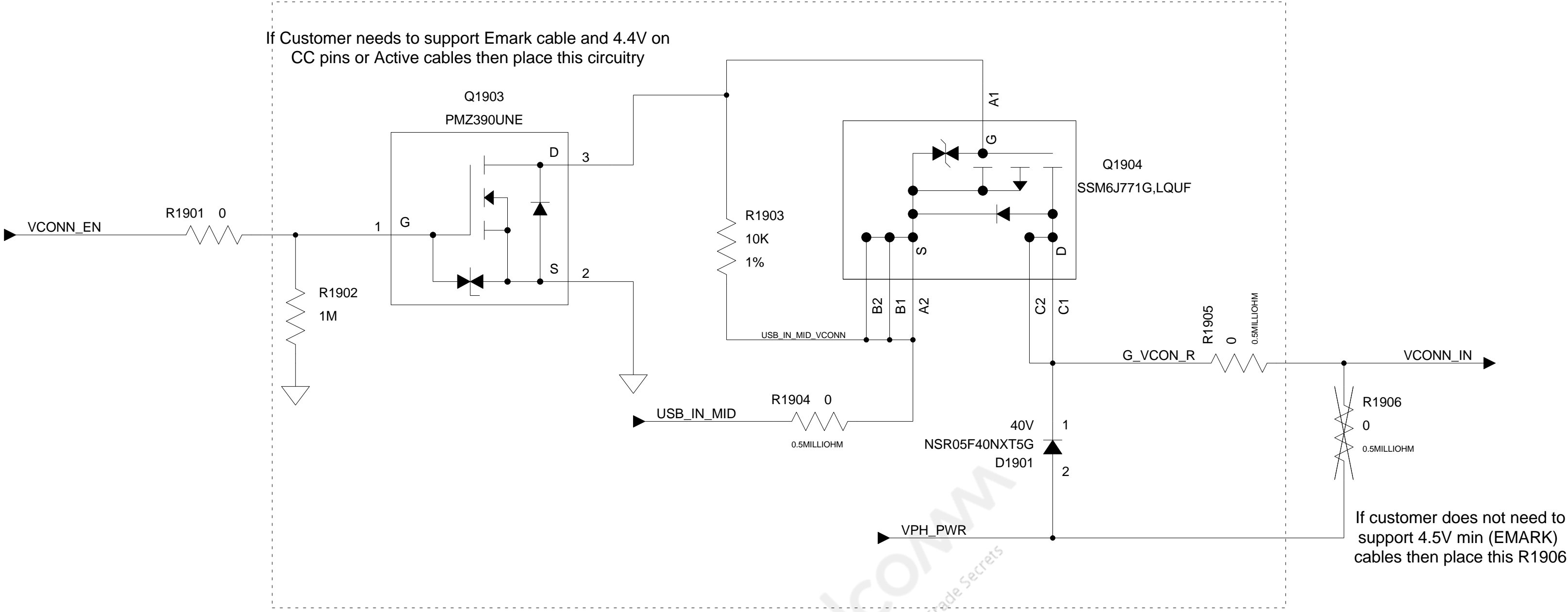
RESERVE_2

| | | | |
|-------|---------------|----------|-------|
| SIZE | DRAWING NO | | REV |
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VCONN

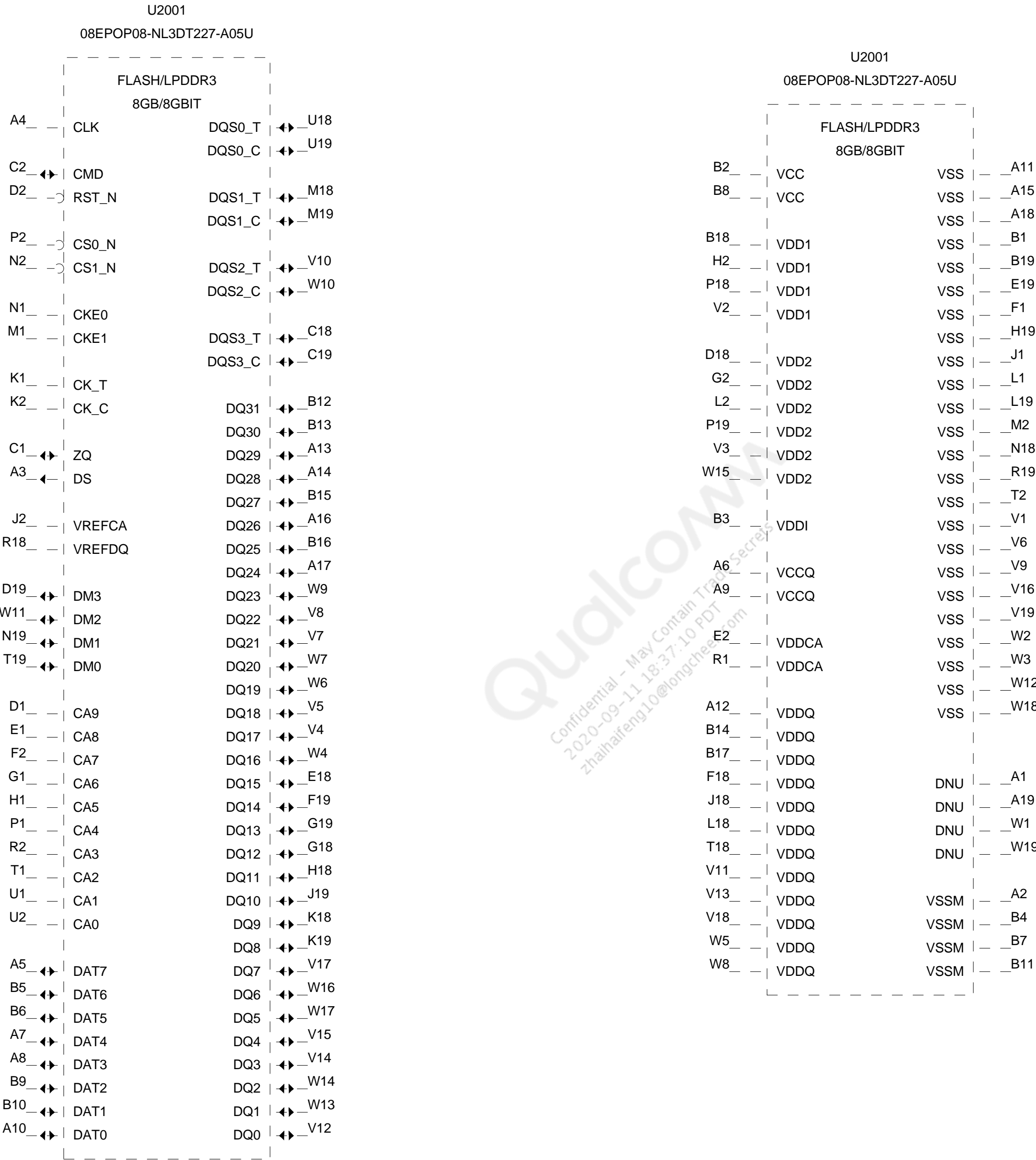


VCONN

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 20 OF 59 | |

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|-----------|-----------------|------|----------|
| LTR | DESCRIPTION | DATE | APPROVED |
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LPDDR3_EMMC

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 21 OF 59 | |

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| LTR | DESCRIPTION | DATE | APPROVED |
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2020-09-11 18:37:10 PDT
zhaihaifeng.10@qcomcheet.com

LPDDR3_POWER

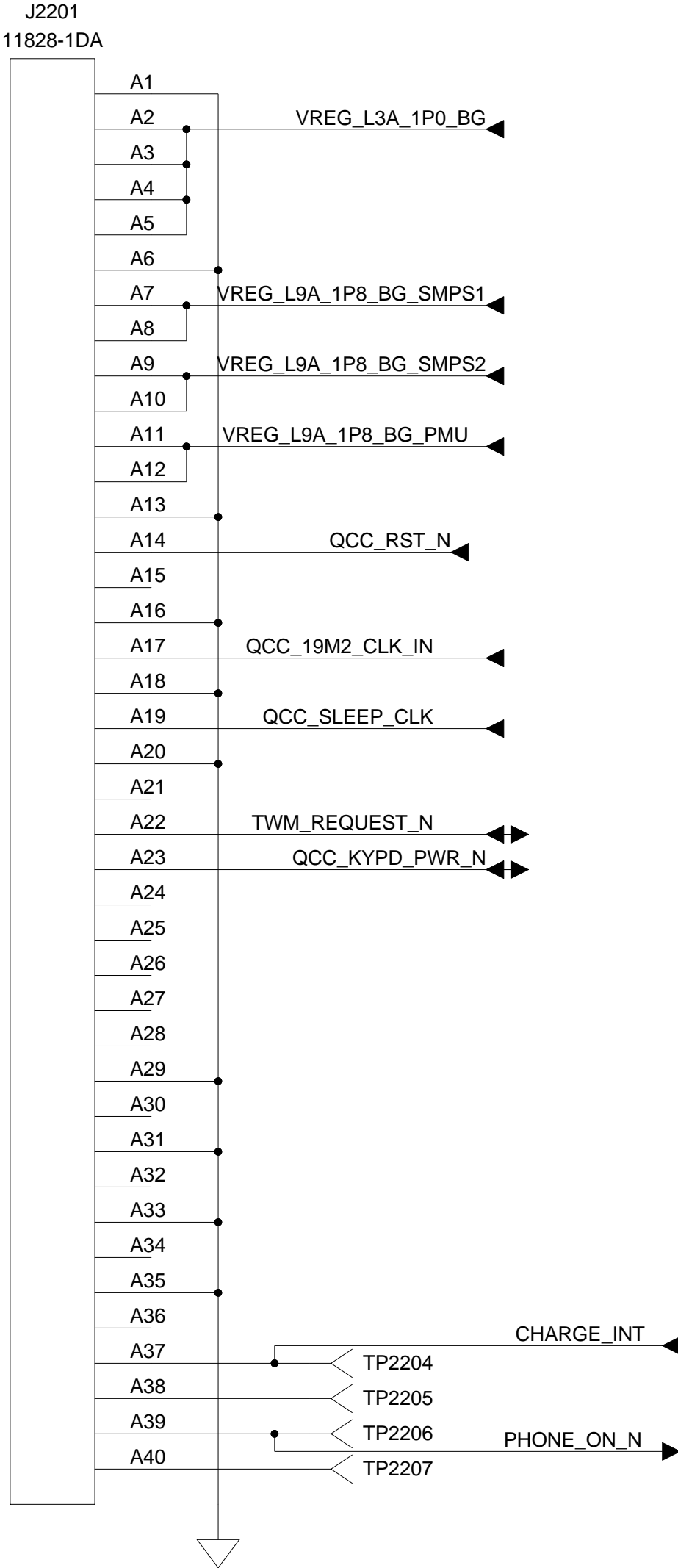
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|-------|---------------|----------|-------|
| SIZE | DRAWING NO | | REV |
| D | LD20-PU825-13 | | A |
| SCALE | NONE | SHEET 22 | OF 59 |

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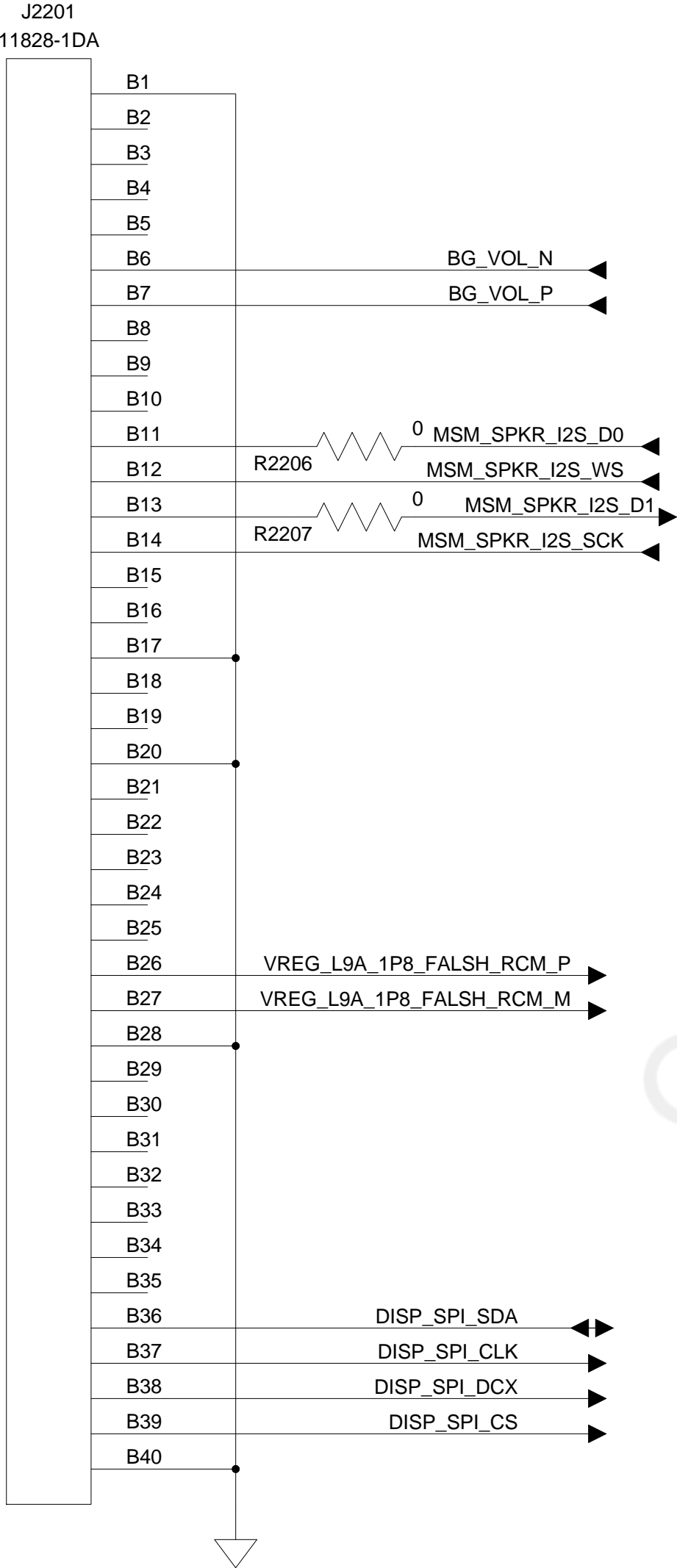
| REVISIONS | | | |
|-----------|-----------------|------|----------|
| LTR | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | | |

BG interface

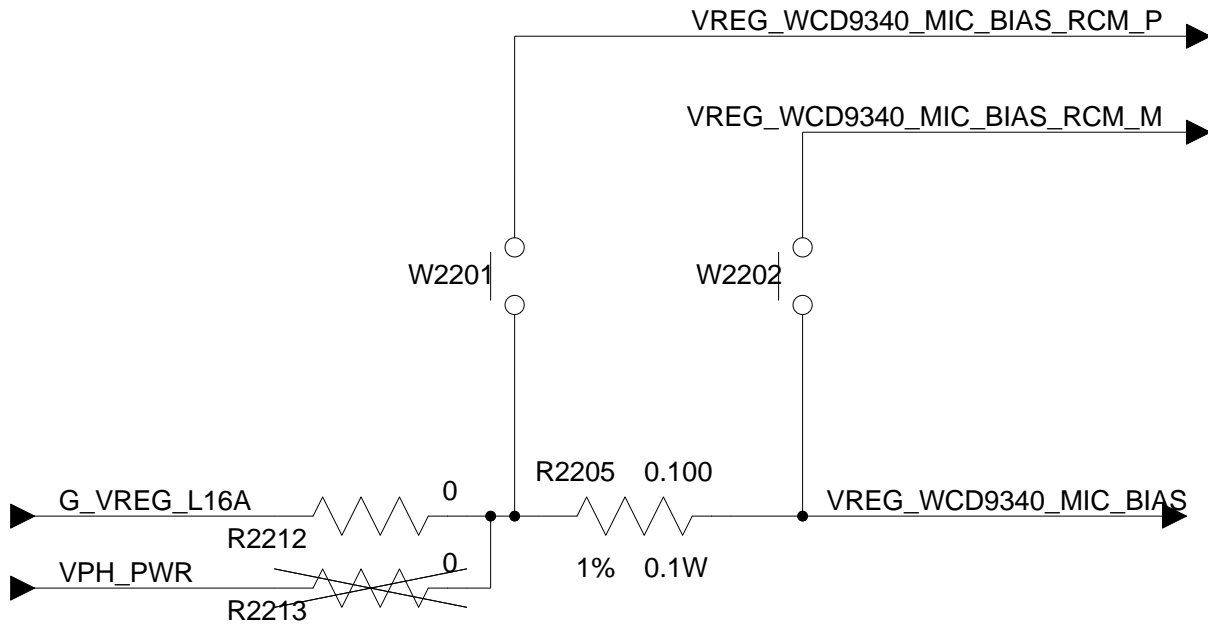
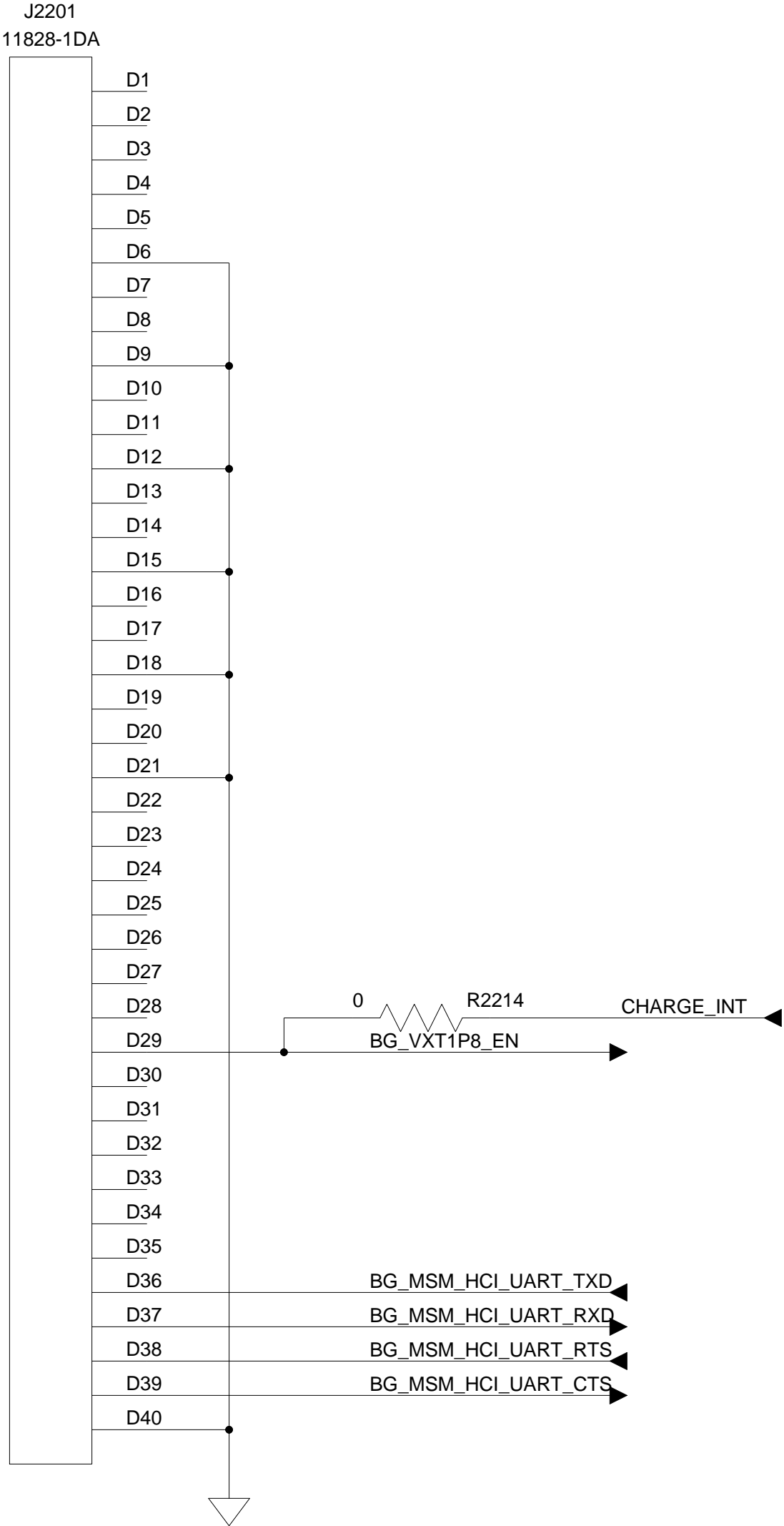
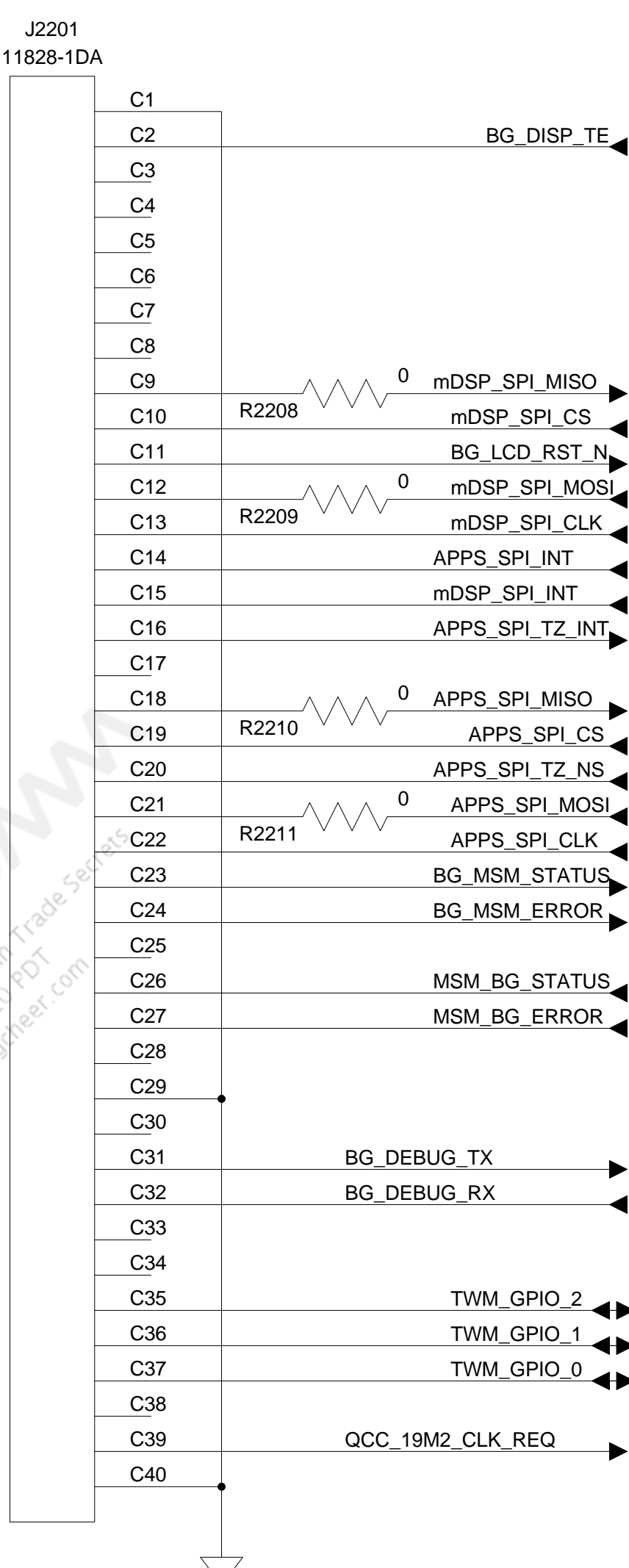
BG interface



BG interface & Smart PA



BG interface



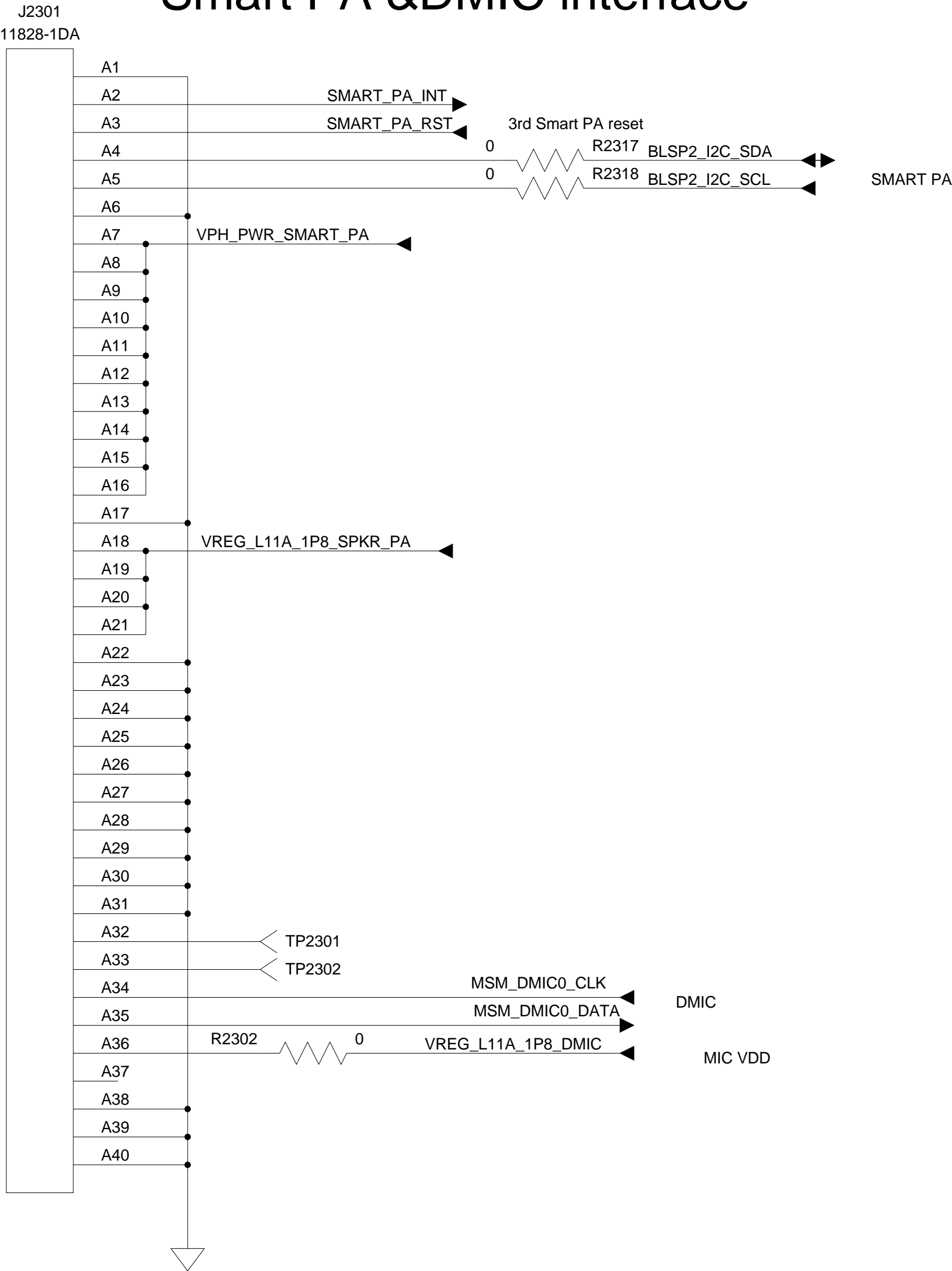
BG_WCD_PA_CARD_CONN1

| SIZE | DRAWING NO | REV |
|-------|---------------|----------------|
| D | LD20-PU825-13 | A |
| SCALE | NONE | SHEET 23 OF 59 |

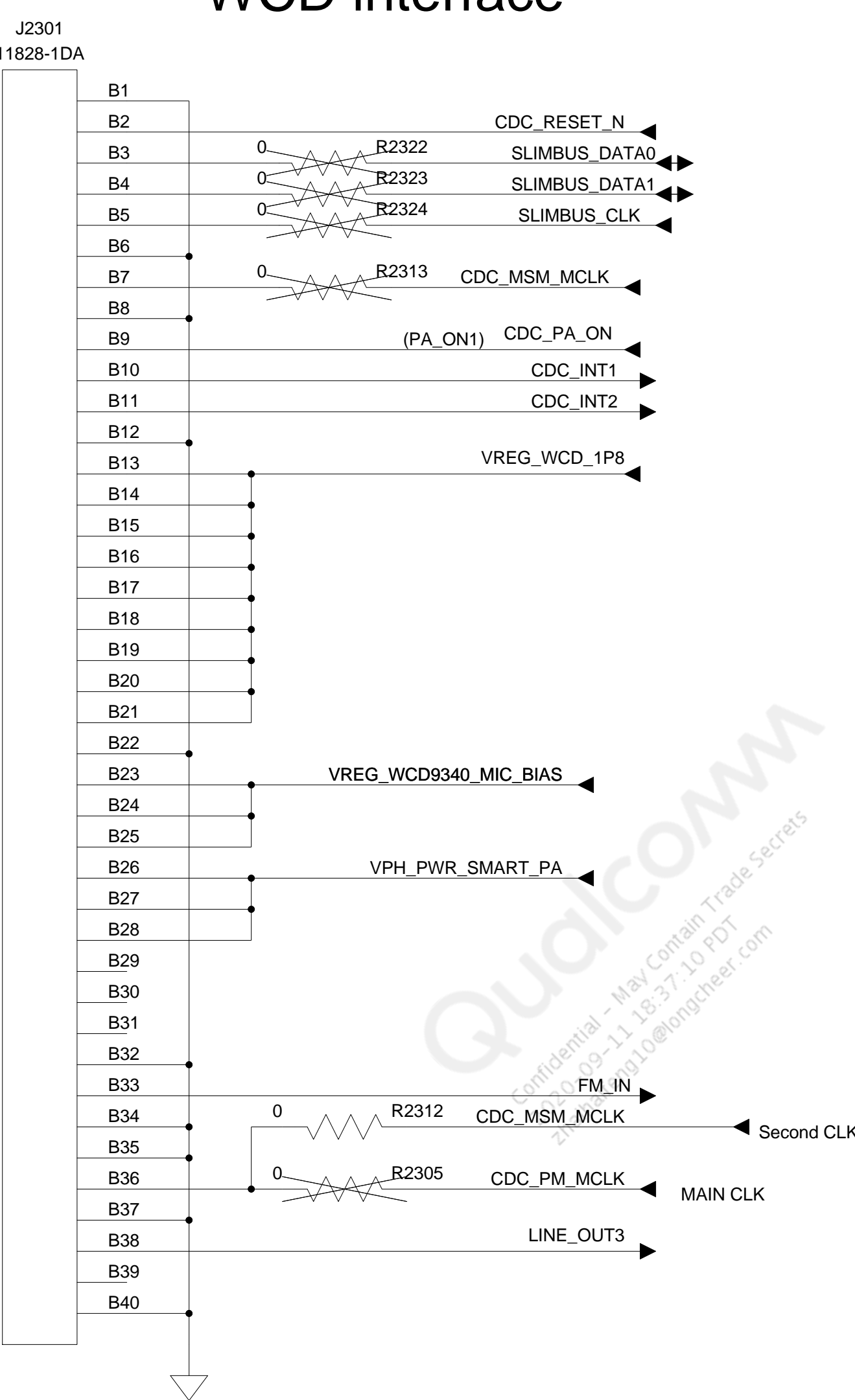
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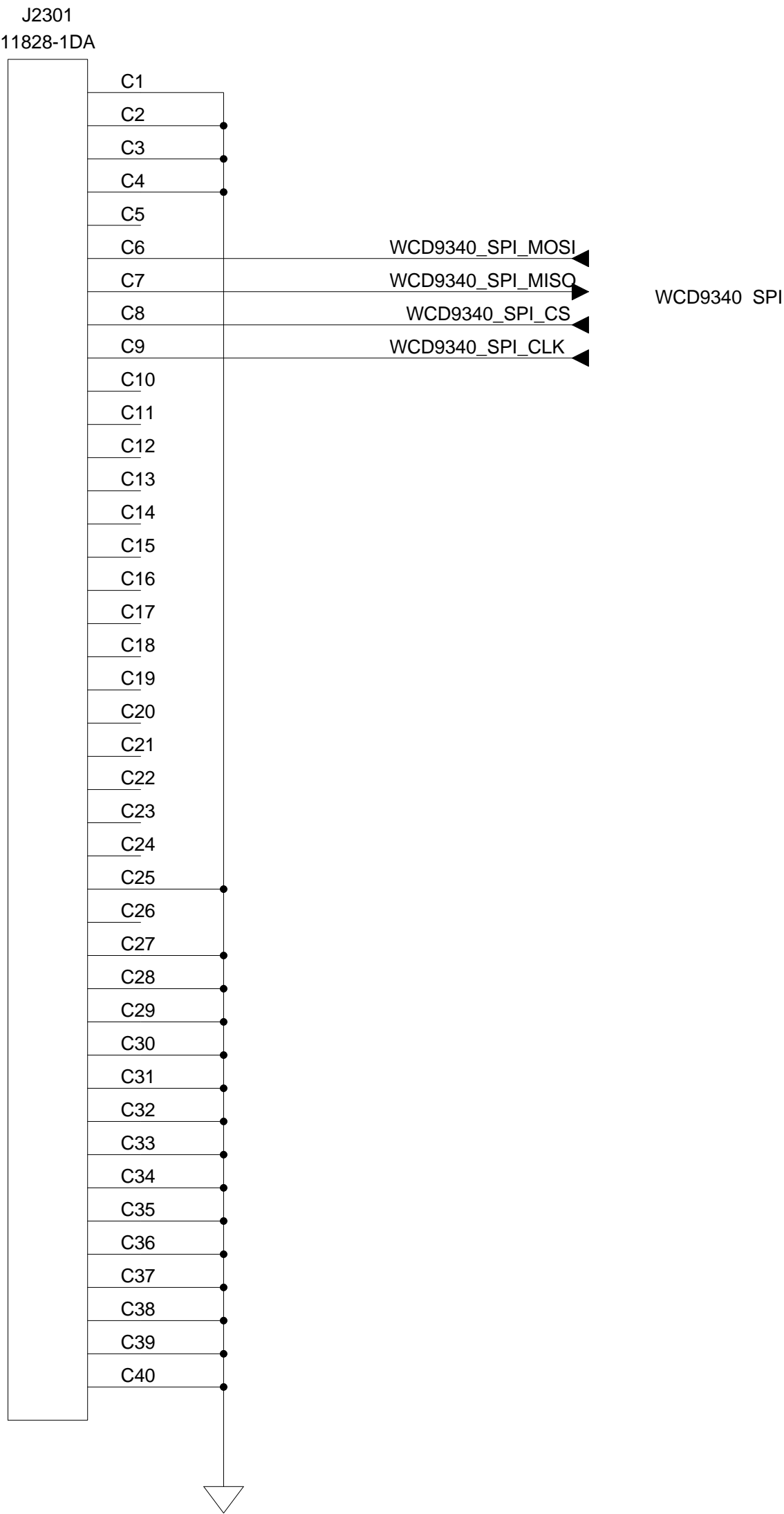
Smart PA &DMIC interface



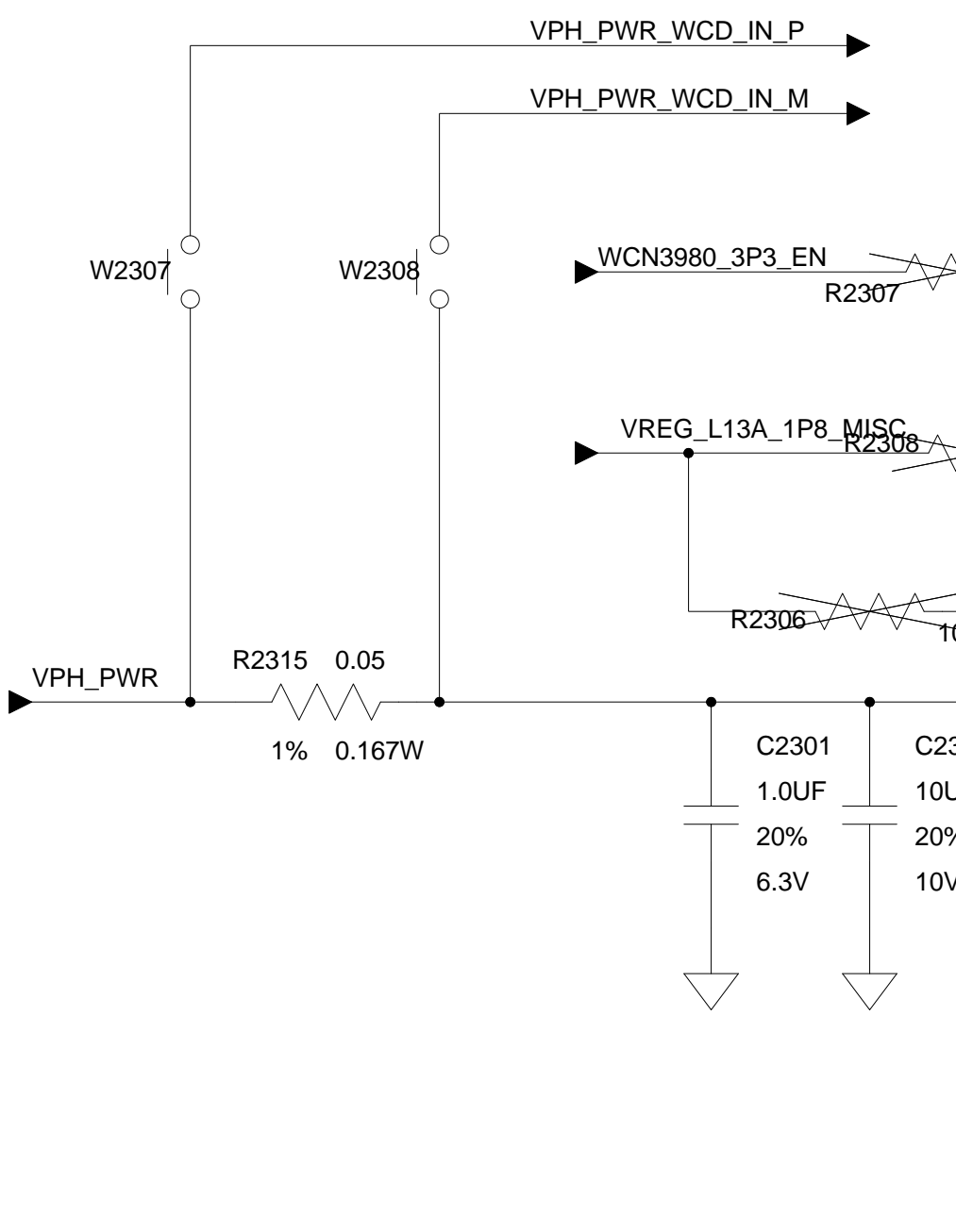
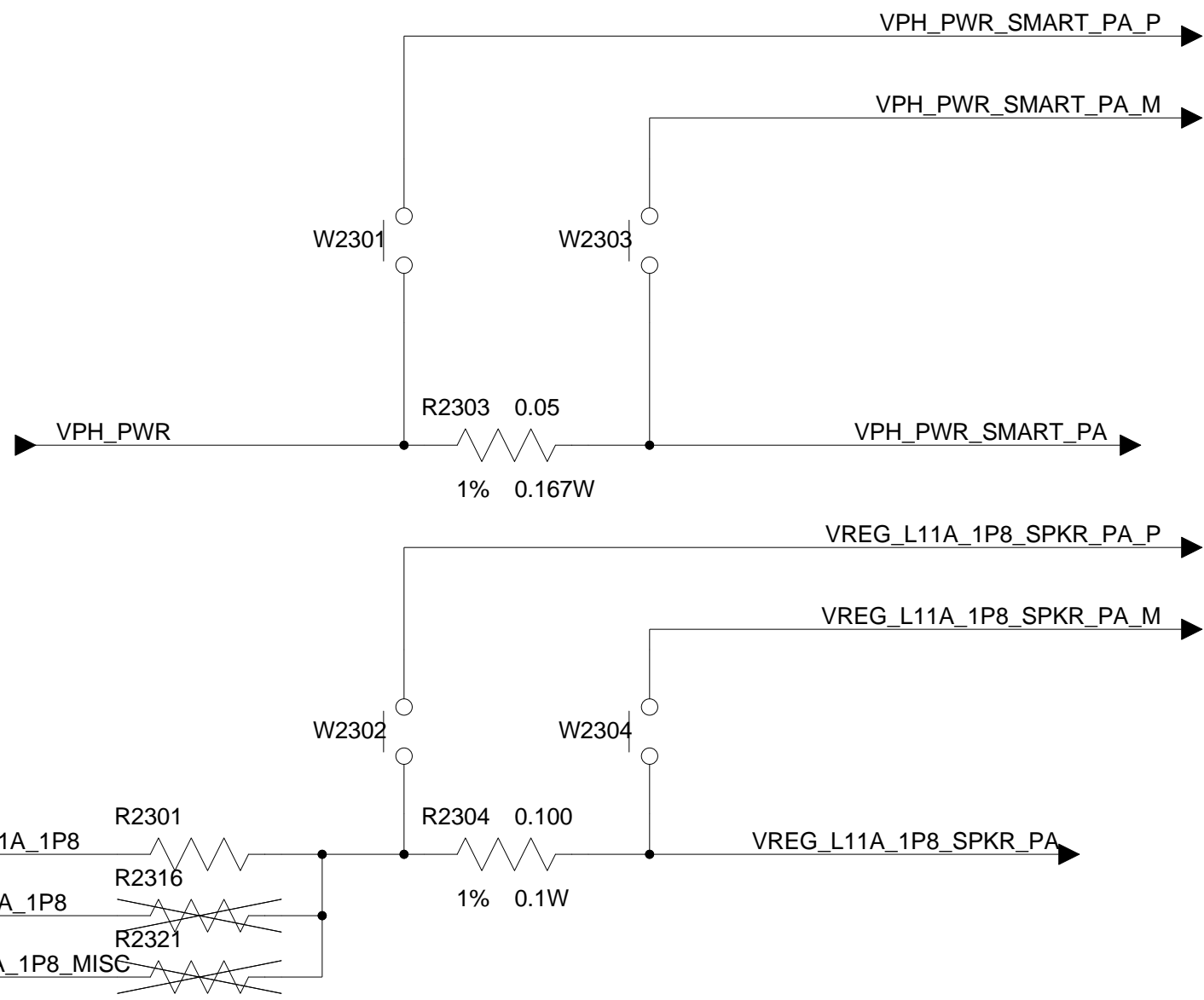
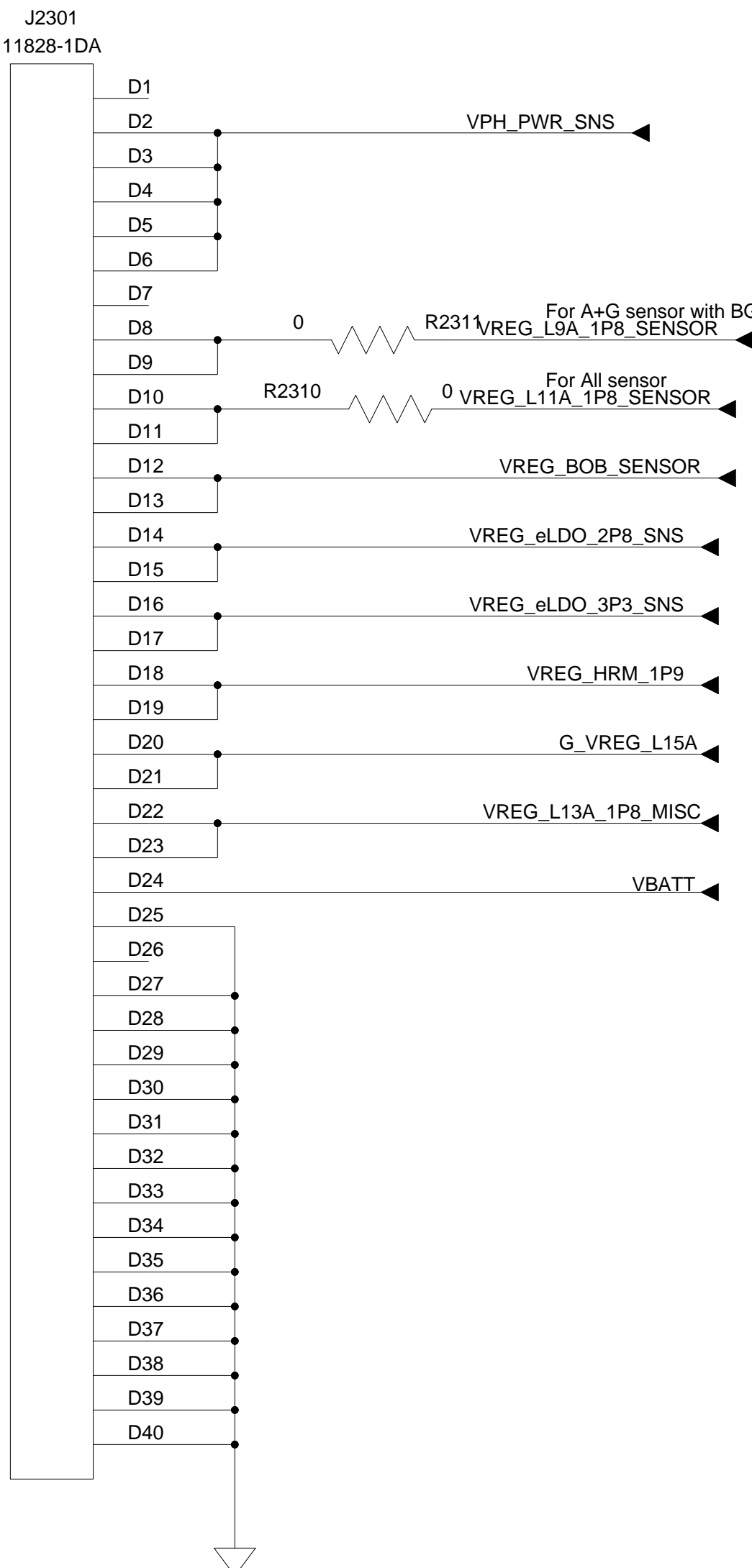
WCD interface



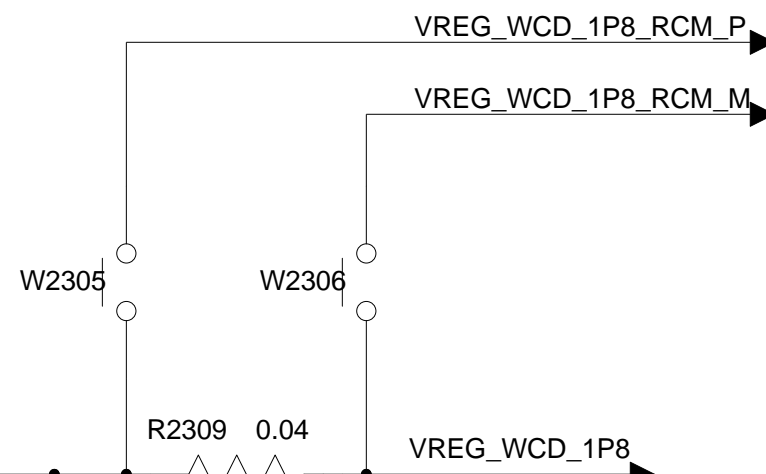
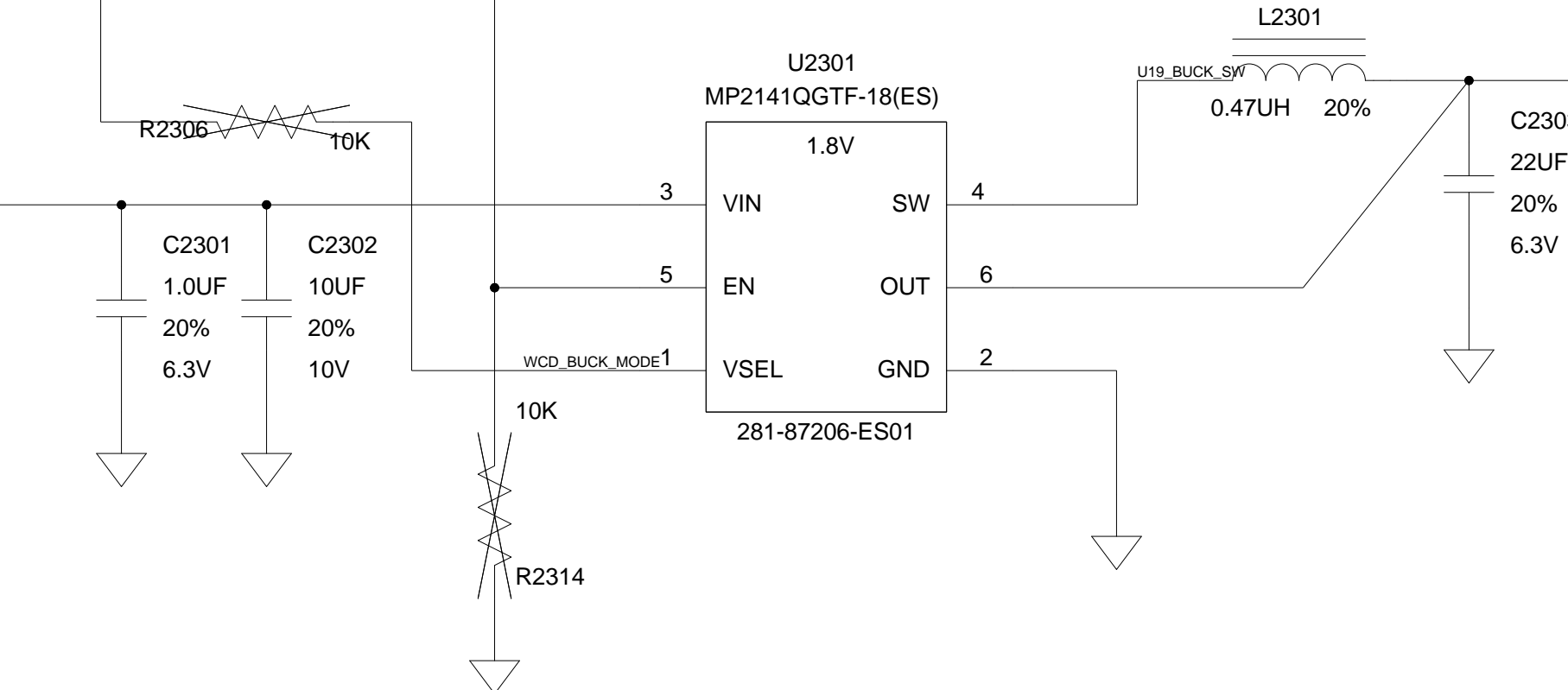
WCD interface



Sensor interface



WCD EXT 1P8



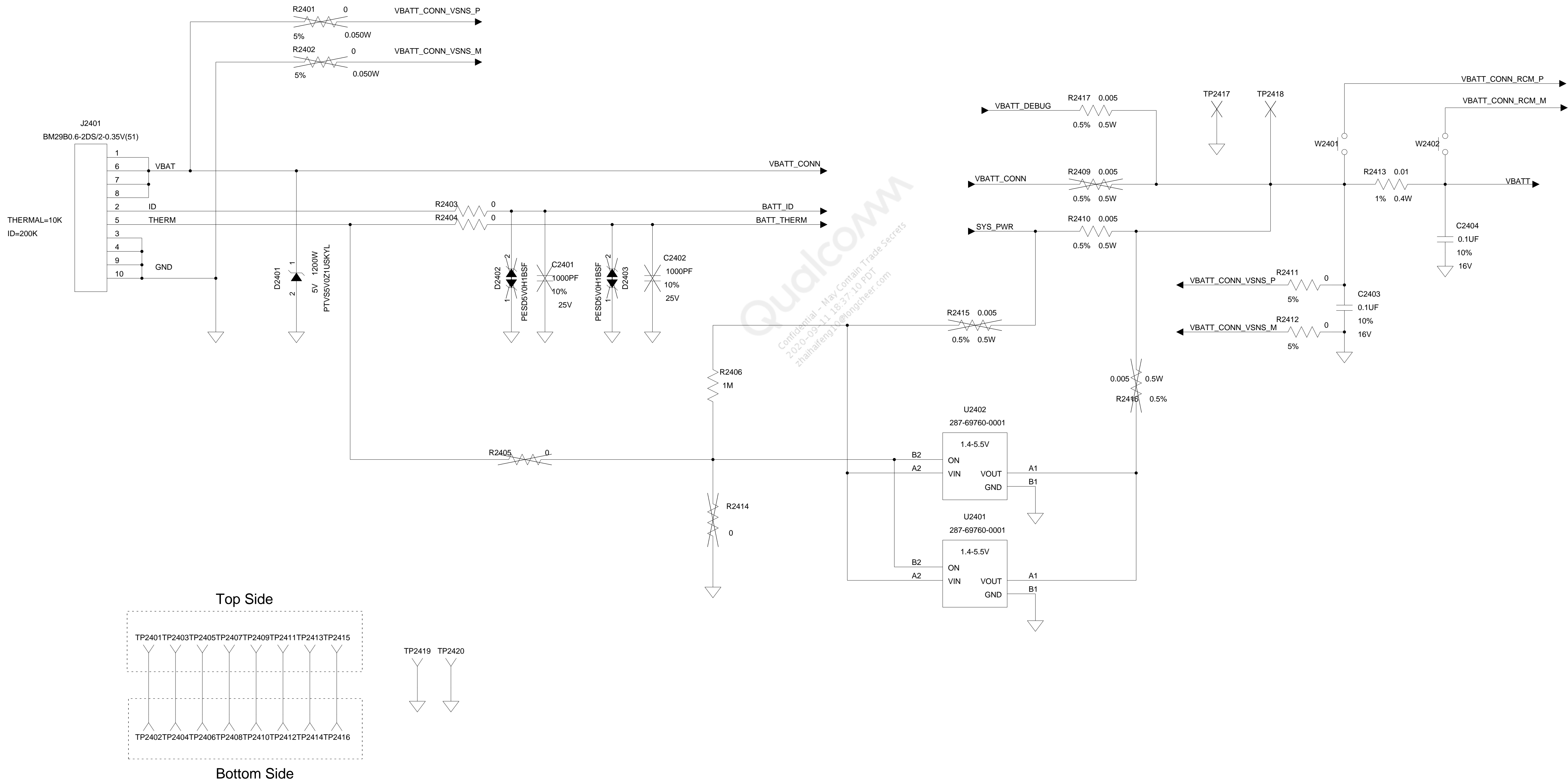
BG_WCD_PA_CARD_CONN2

| SIZE | DRAWING NO | REV |
|-------|---------------|----------------|
| D | LD20-PU825-13 | A |
| SCALE | NONE | SHEET 24 OF 59 |

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LI-ION Battery Connector

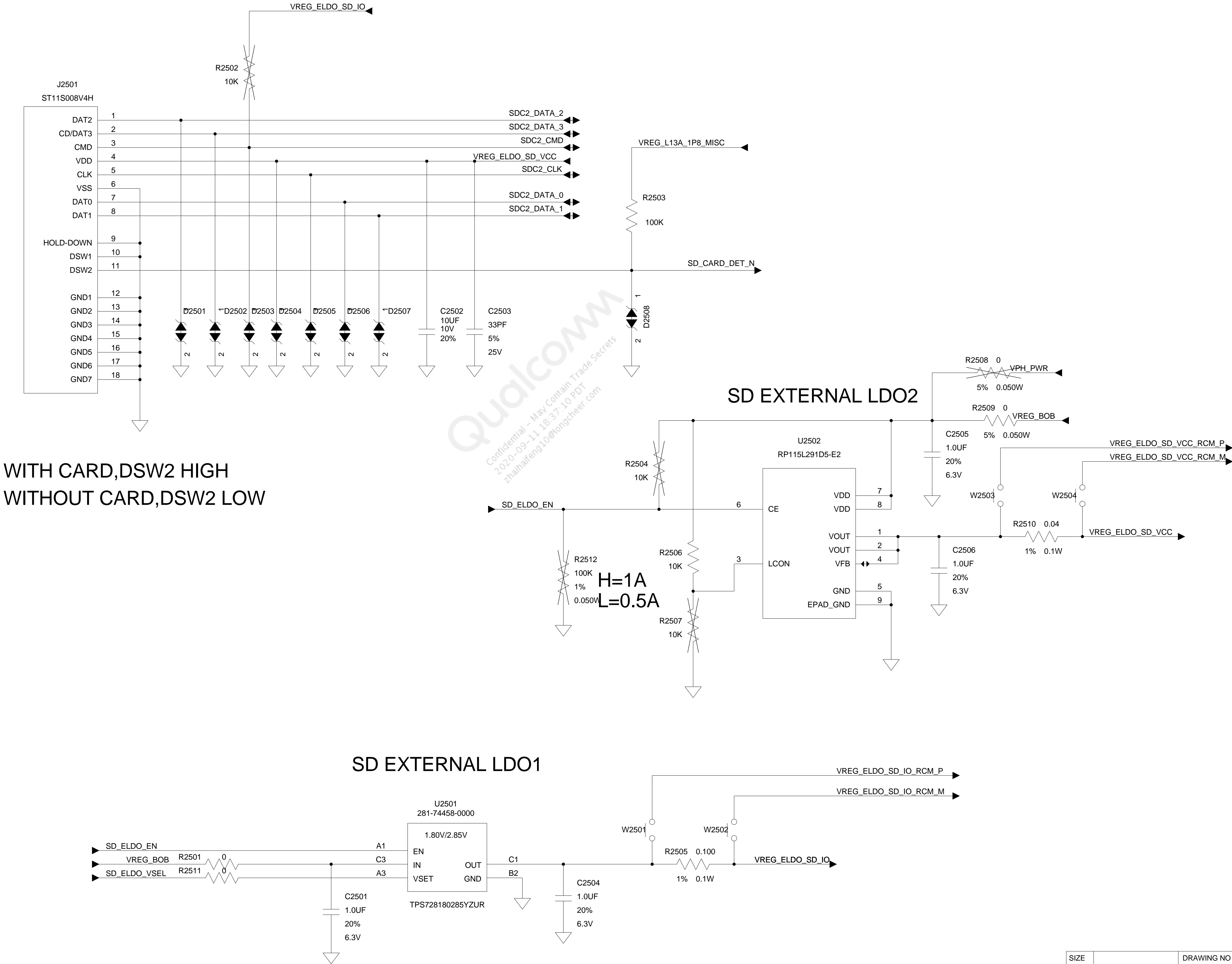


BATTERY CONN

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 25 OF 59 | |

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WITH CARD,DSW2 HIGH
WITHOUT CARD,DSW2 LOW

SD EXTERNAL LDO1

SD EXTERNAL LDO2

SD_CARD

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 26 OF 59 | |

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|-----------|------|-----------------------------|----------------|
| SIZE D | | DRAWING NO LD20-PU825-13 | REV A |
| SCALE | NONE | | SHEET 27 OF 59 |



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zhaihaifeng.10@qcomcheet.com

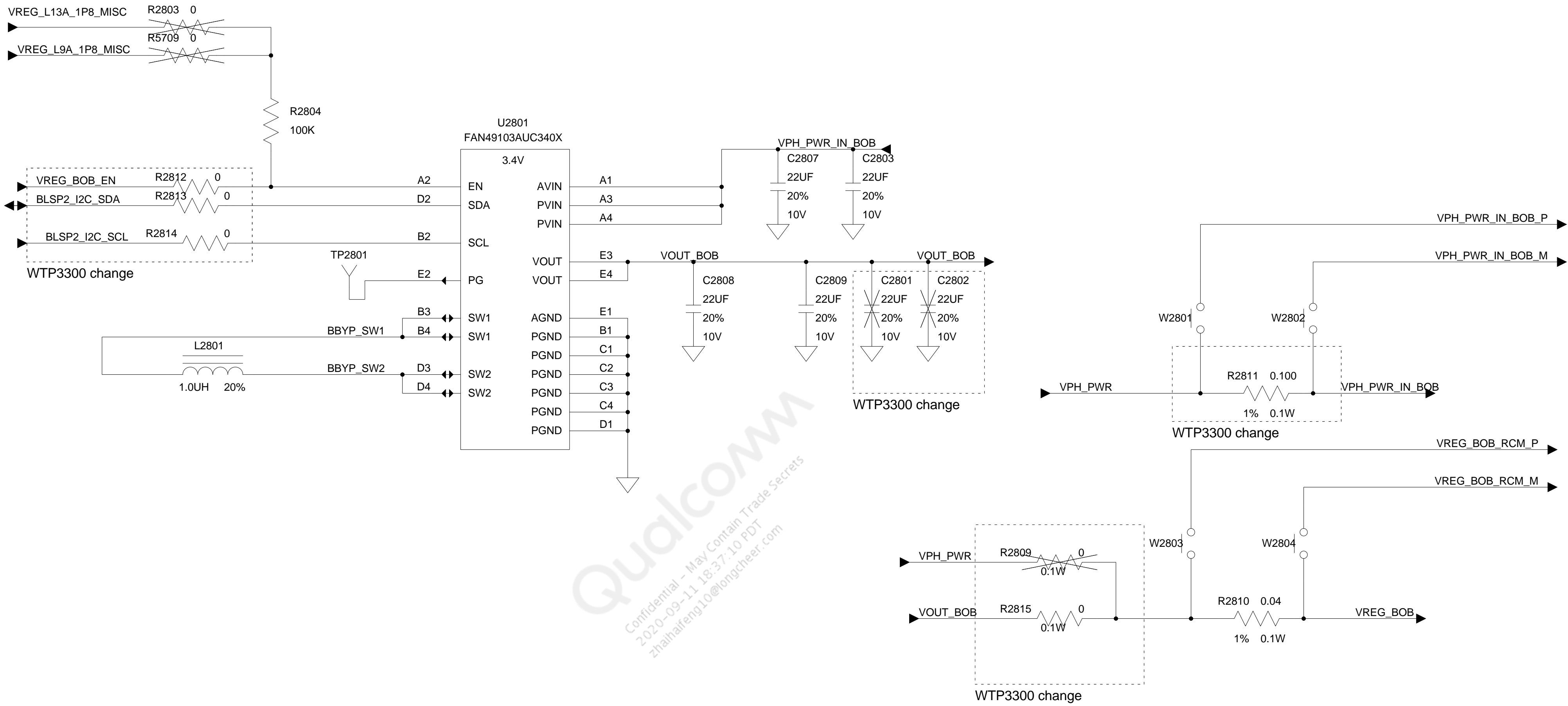
RESERVE

| | | | |
|-------|---------------|----------|-------|
| SIZE | DRAWING NO | | REV |
| D | LD20-PU825-13 | | A |
| SCALE | NONE | SHEET 28 | OF 59 |

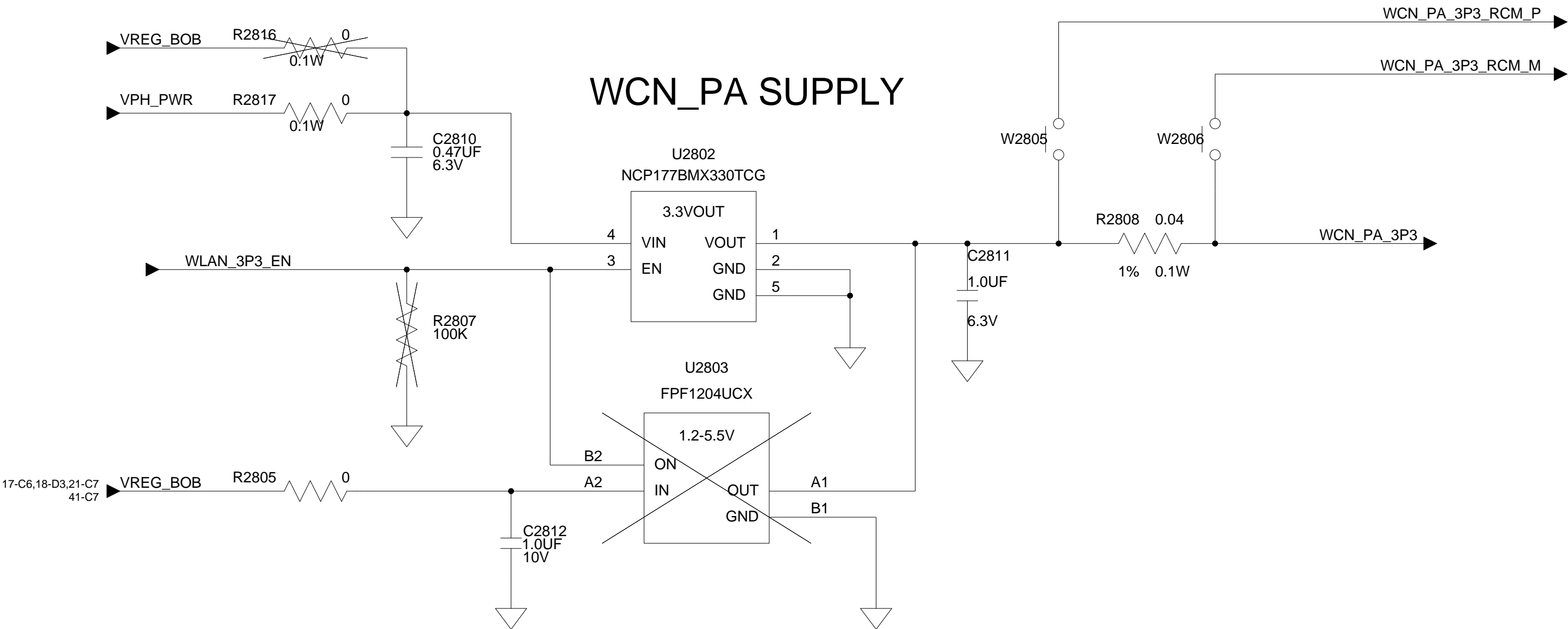
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EXTERNAL BOB



WCN_PA SUPPLY



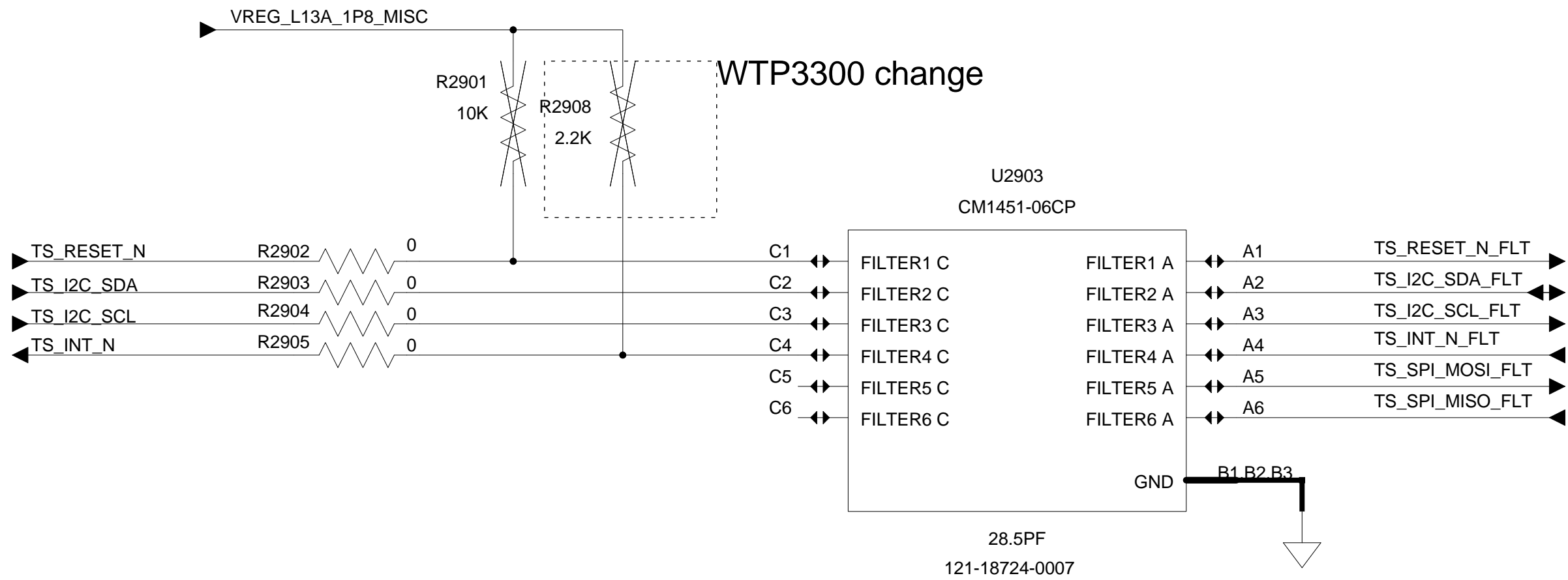
BOB AND WCN PA SUPPLY

| SIZE | DRAWING NO | REV |
|-------|---------------|-------|
| D | LD20-PU825-13 | A |
| SCALE | SHEET 29 | OF 59 |

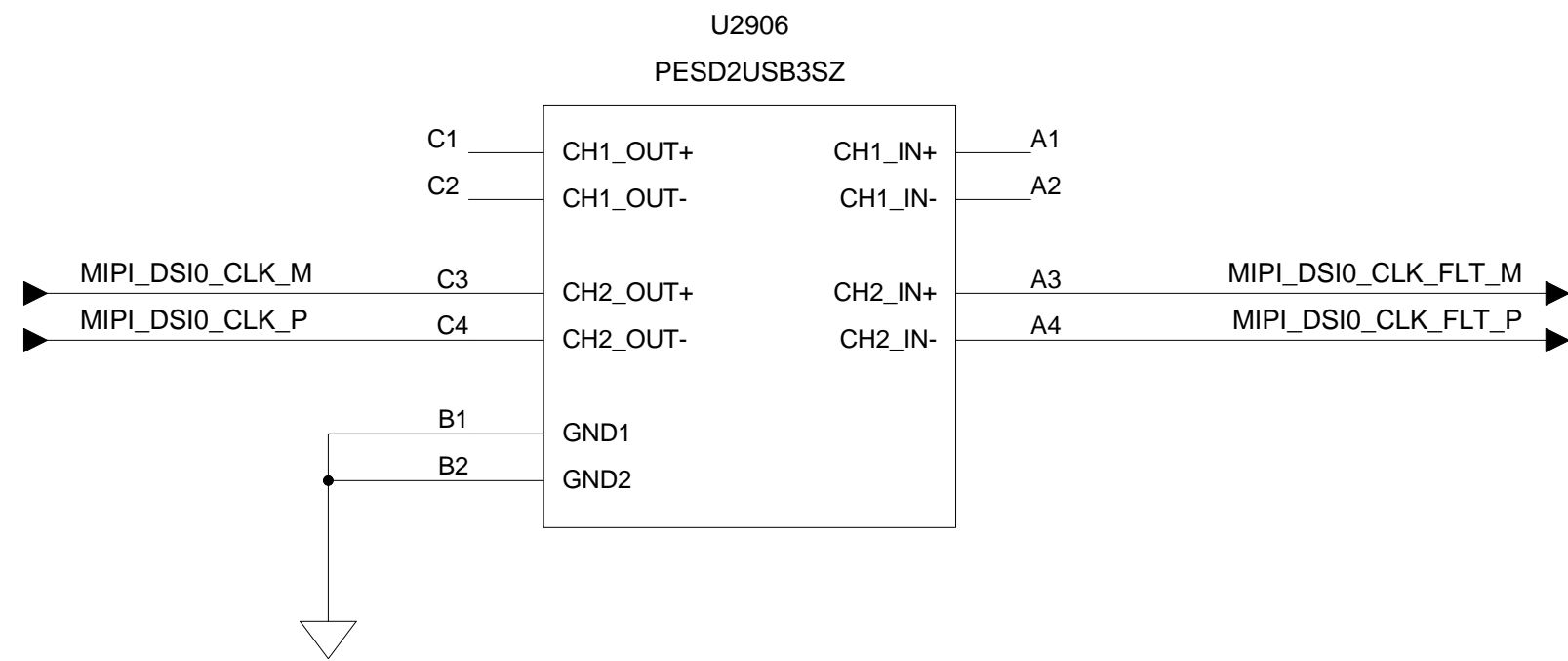
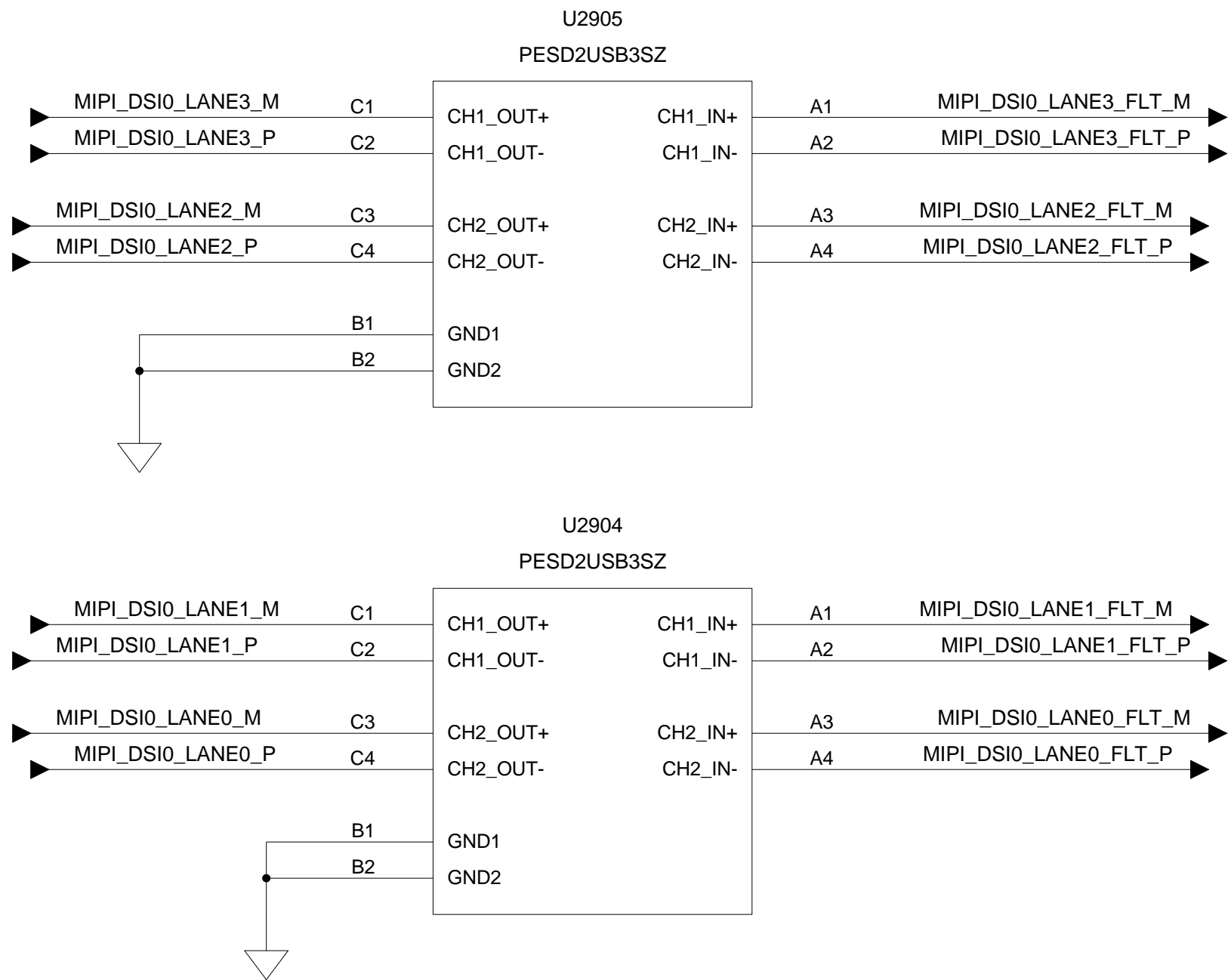
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TOUCH ESD & CM FILTERS



DISPLAY ESD & CM FILTERS



INSTALL 121-81010-0000 IF CMF IS NEEDED FOR DSI LINES

DISPLAY TOUCH FILTERS

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 30 OF 59 | |

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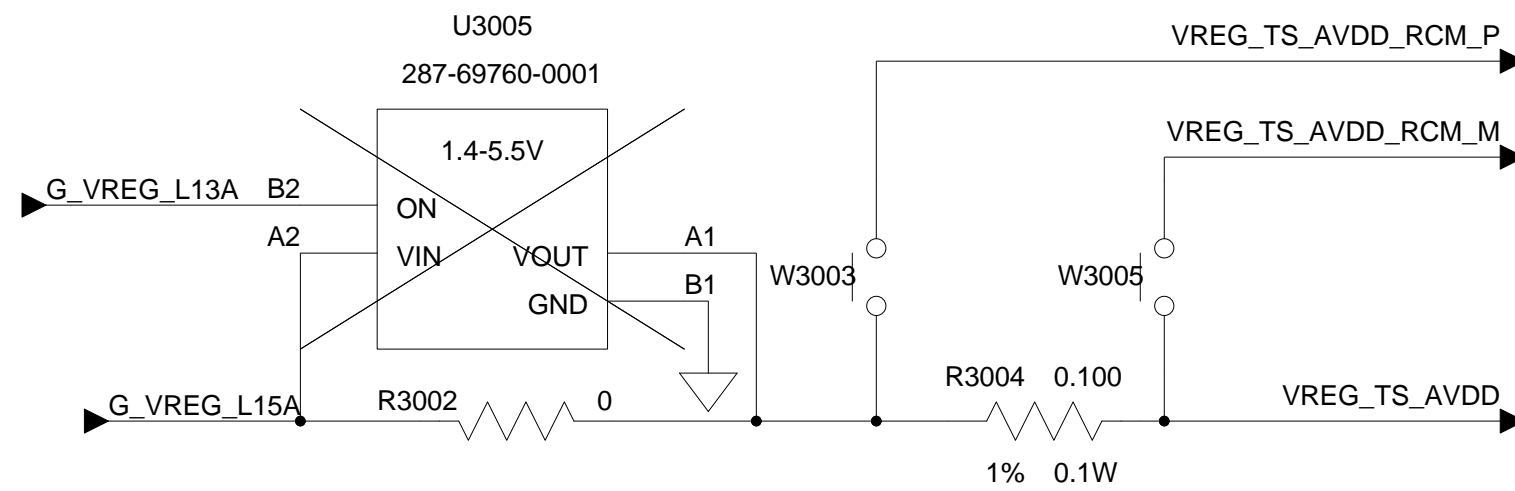
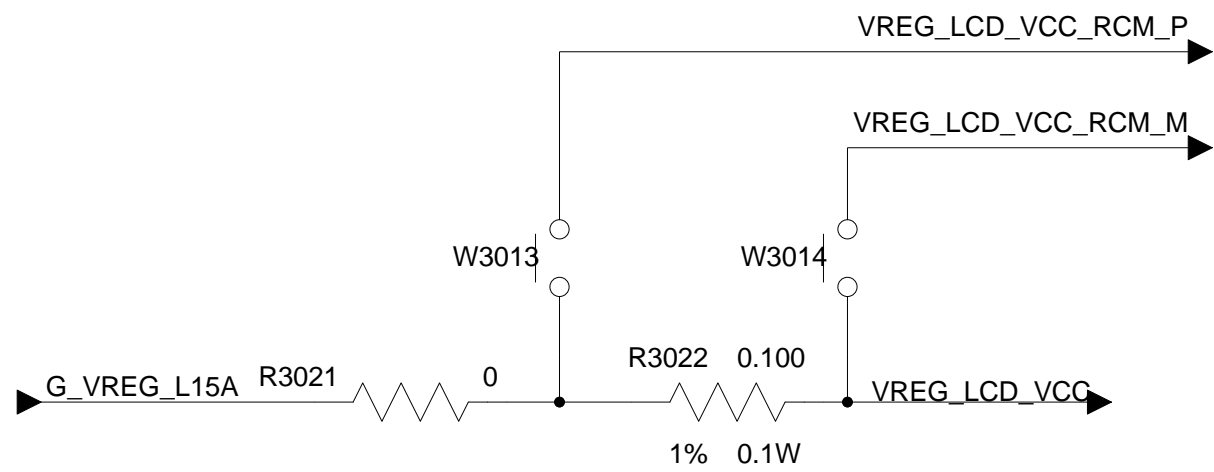
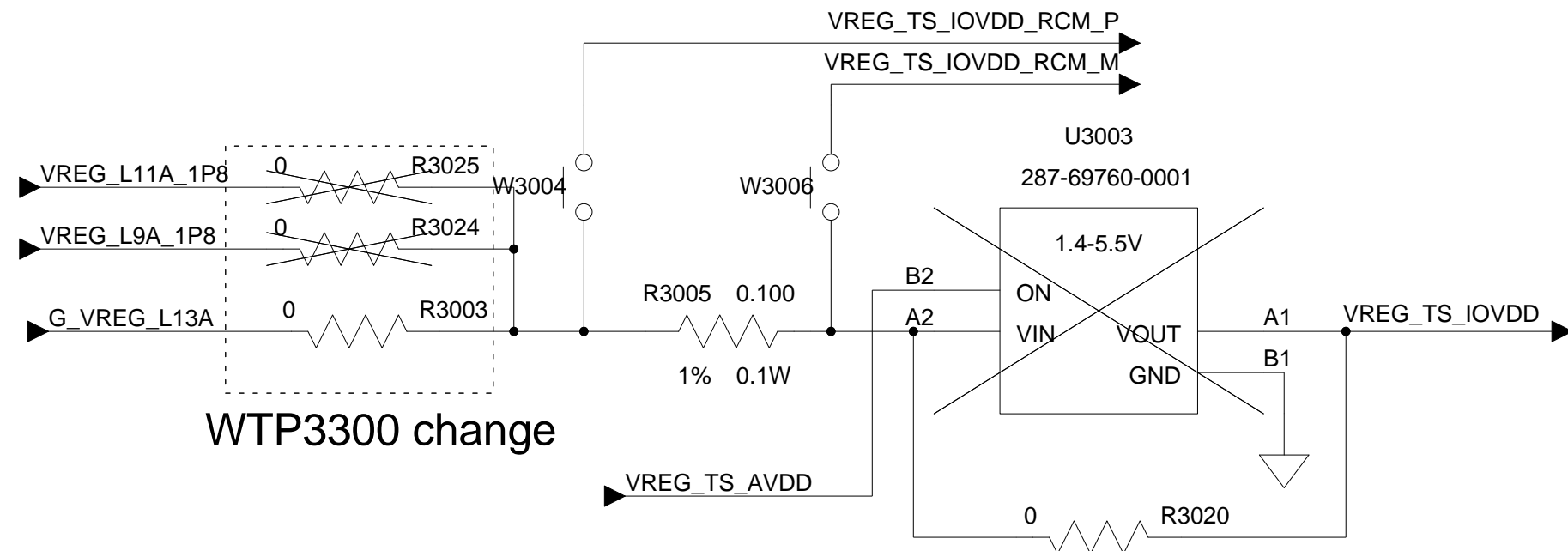
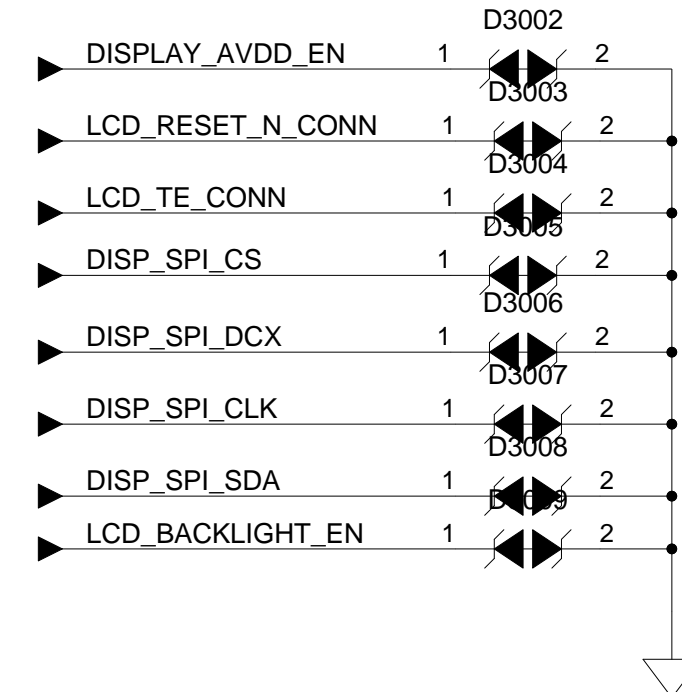
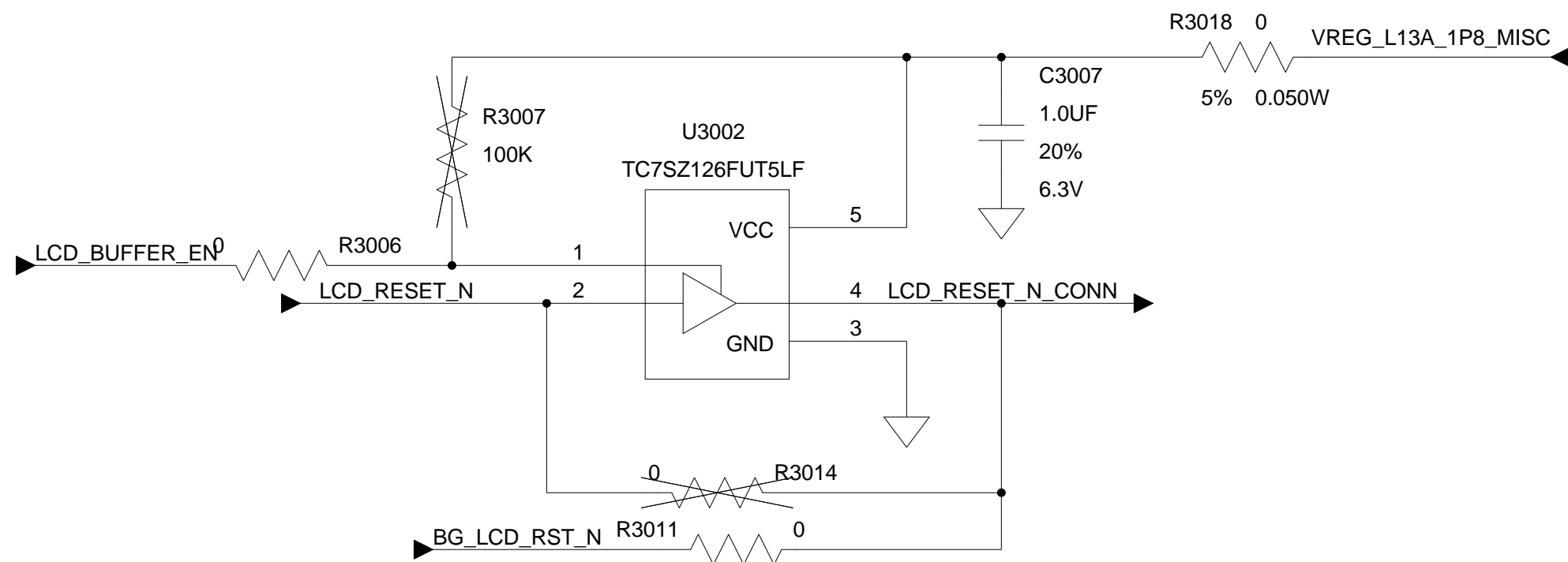
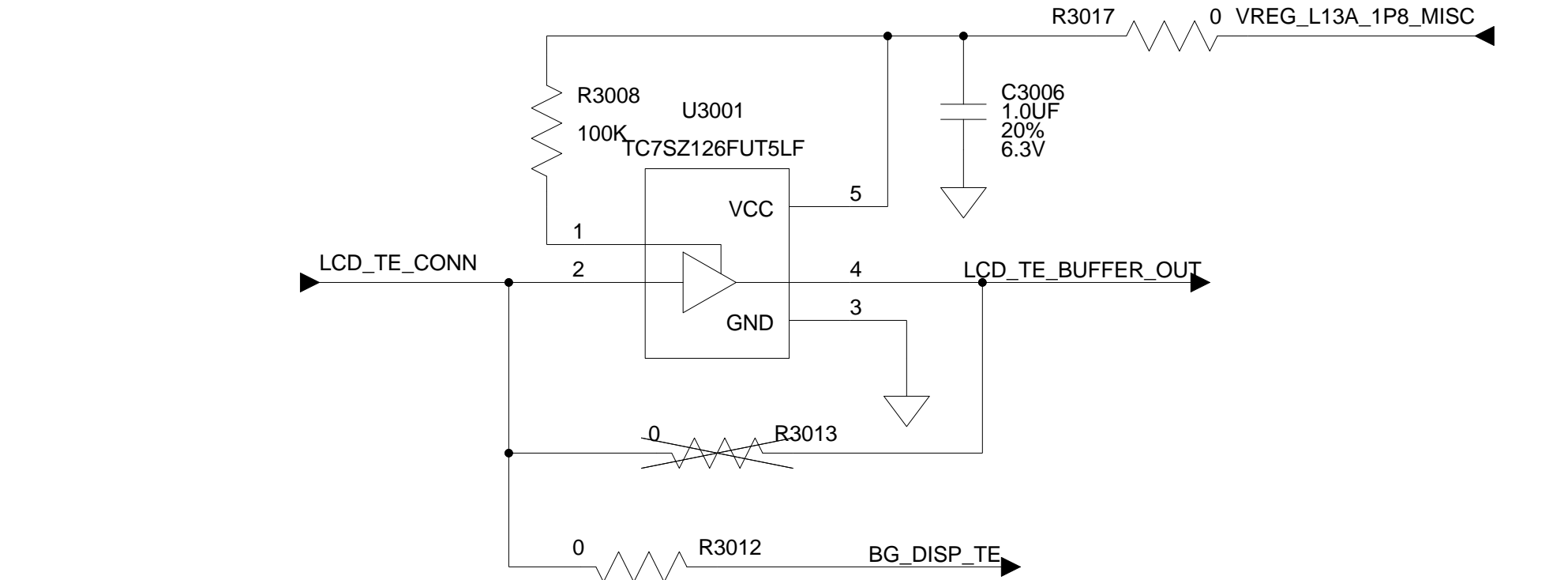
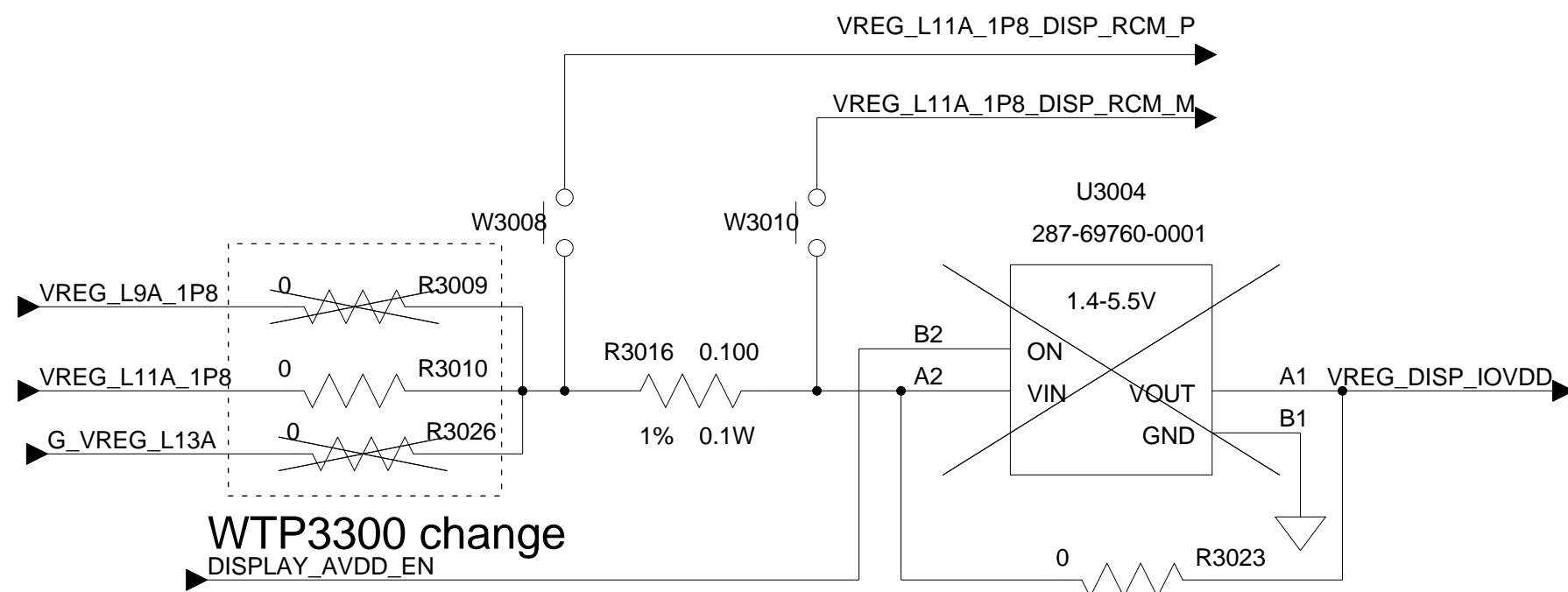
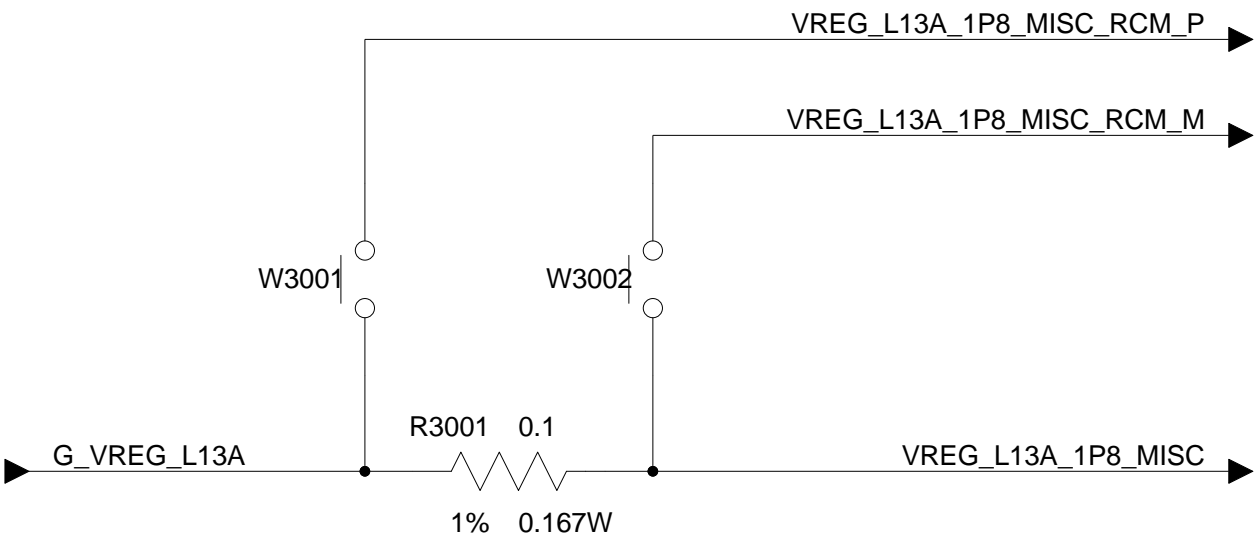
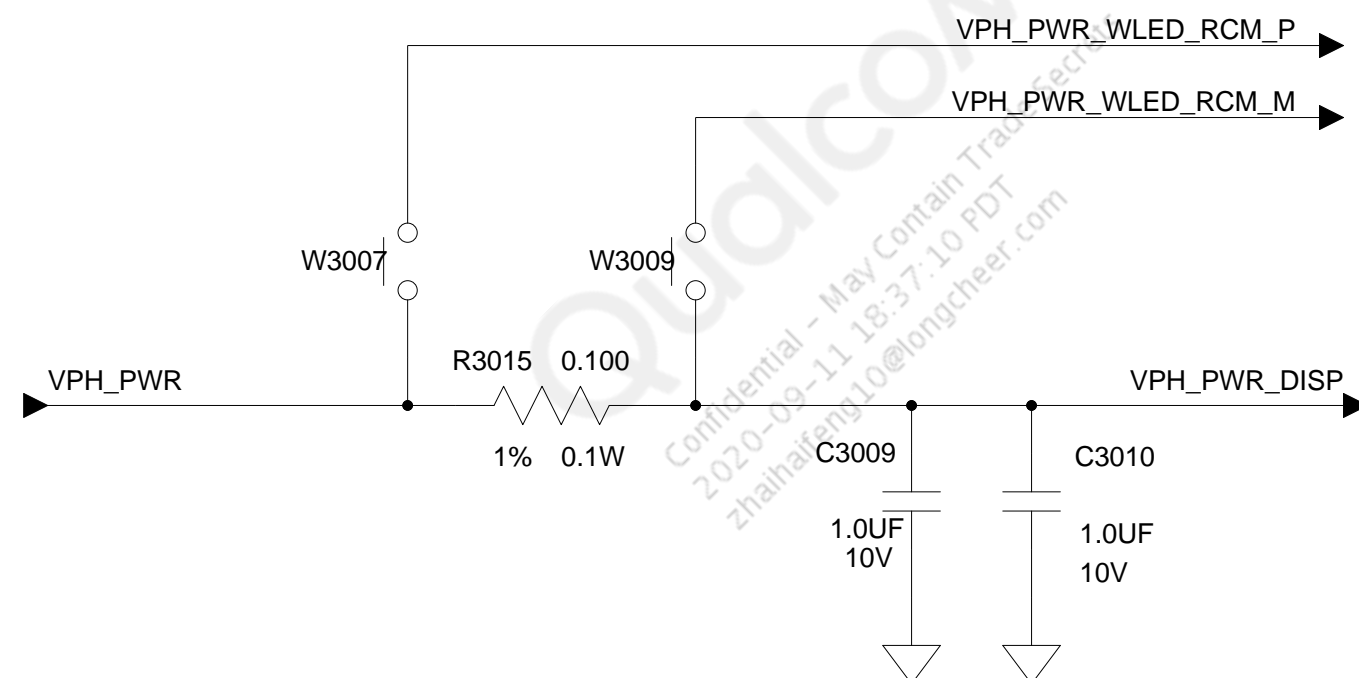
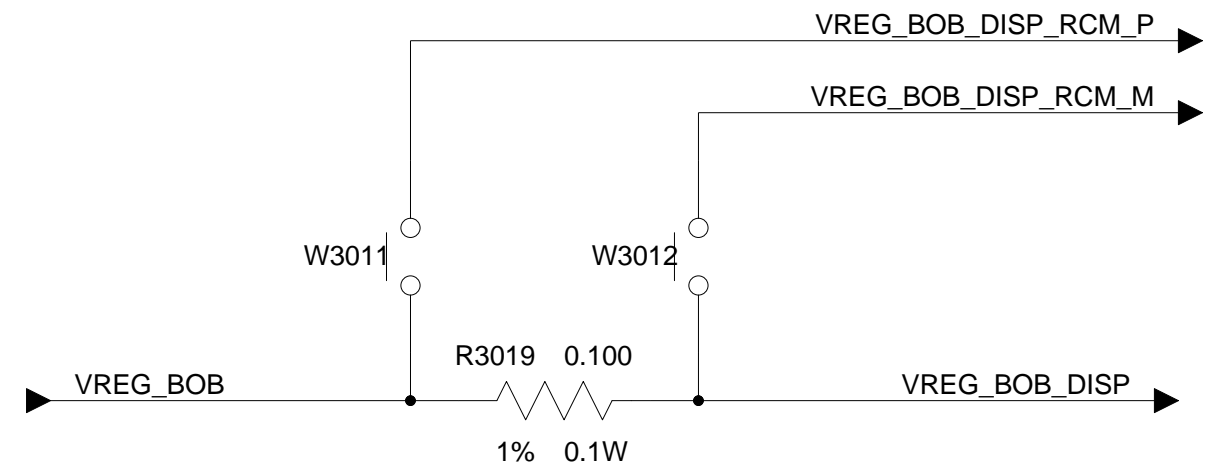
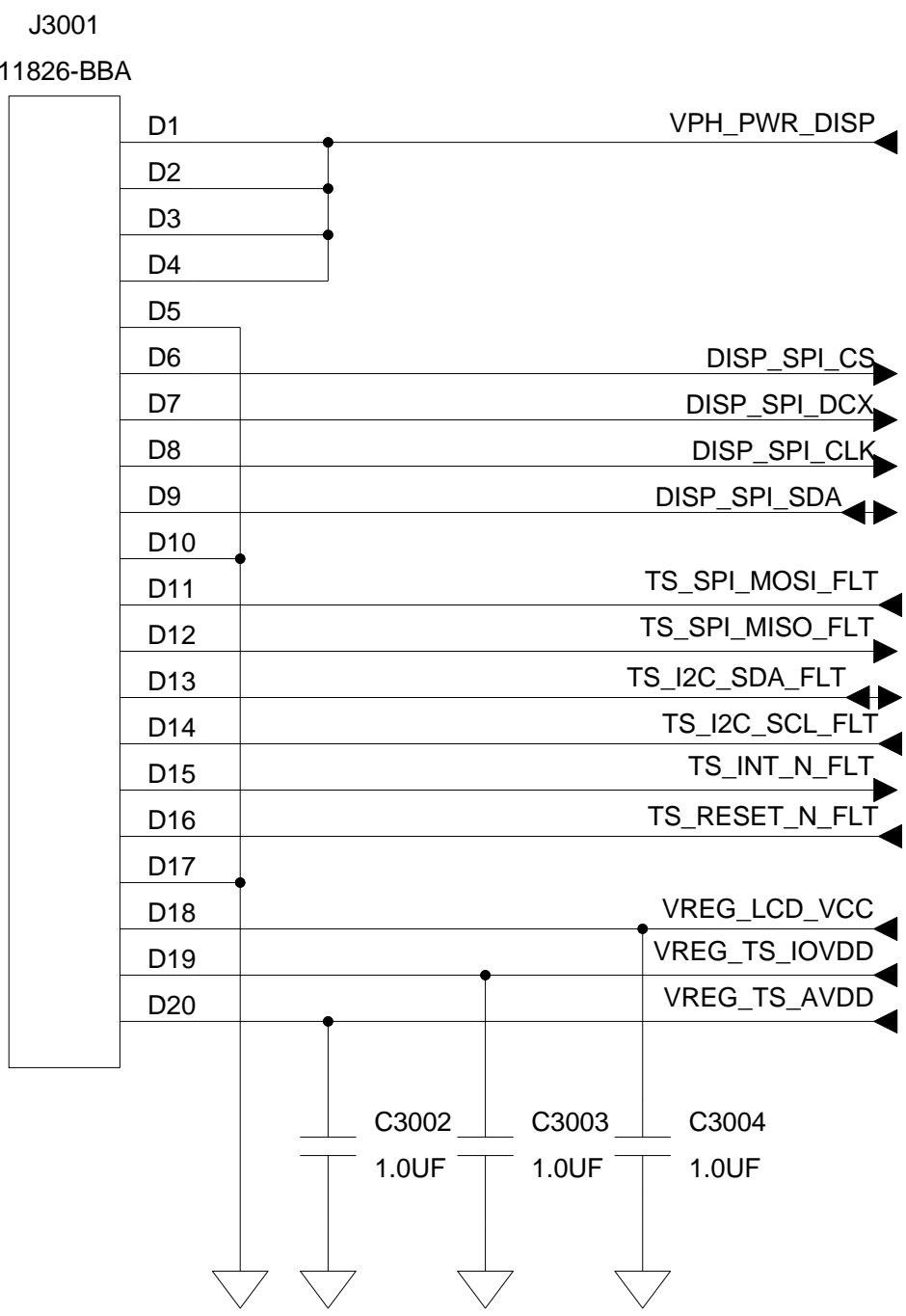
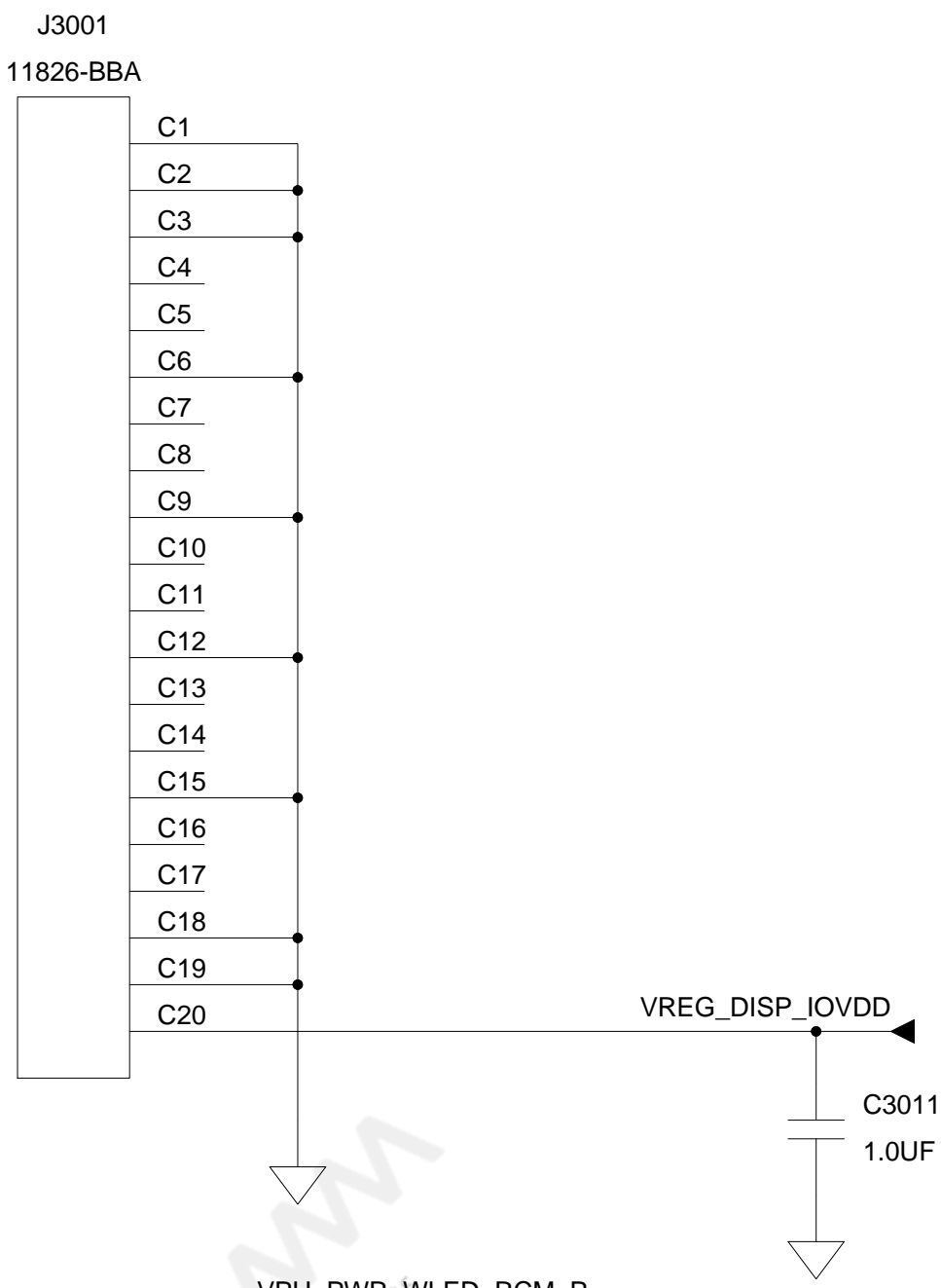
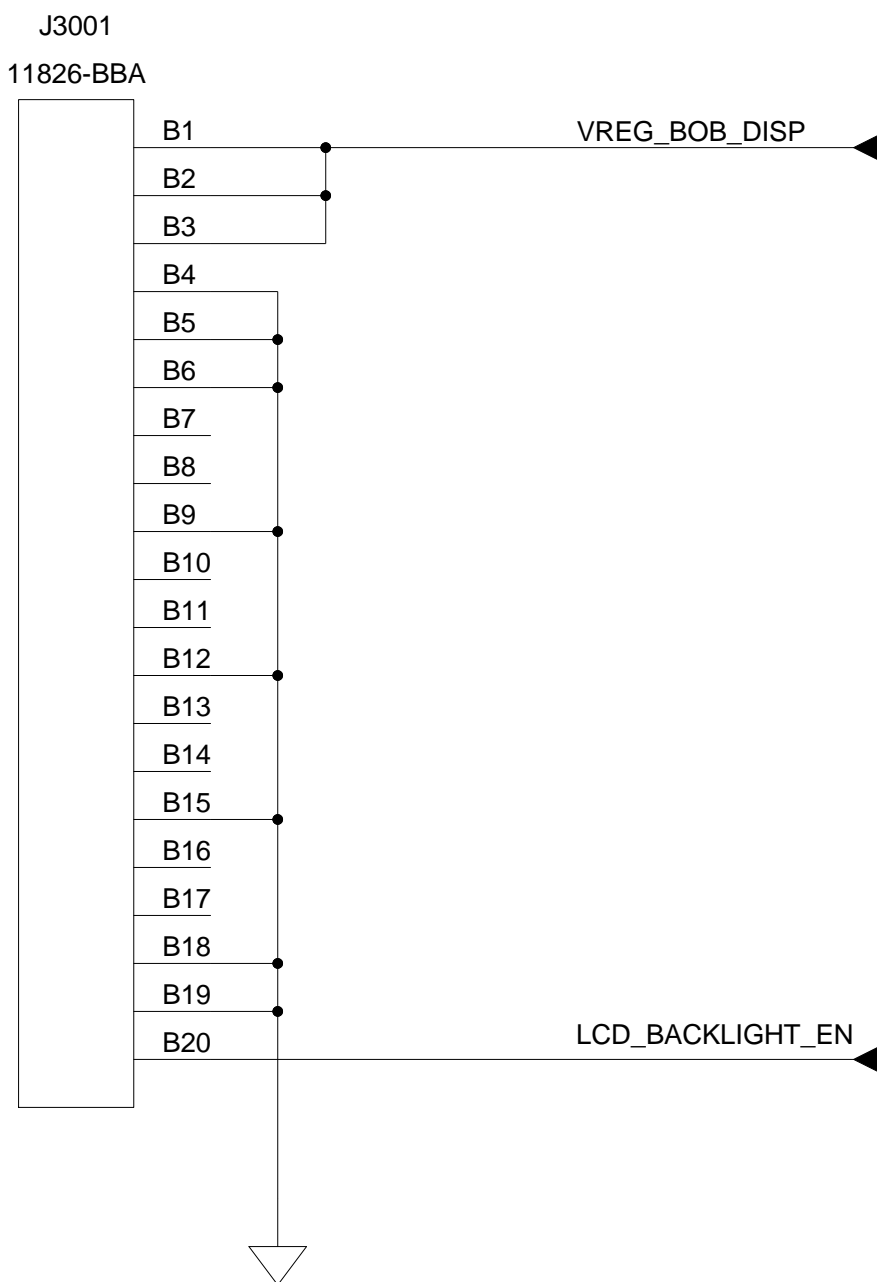
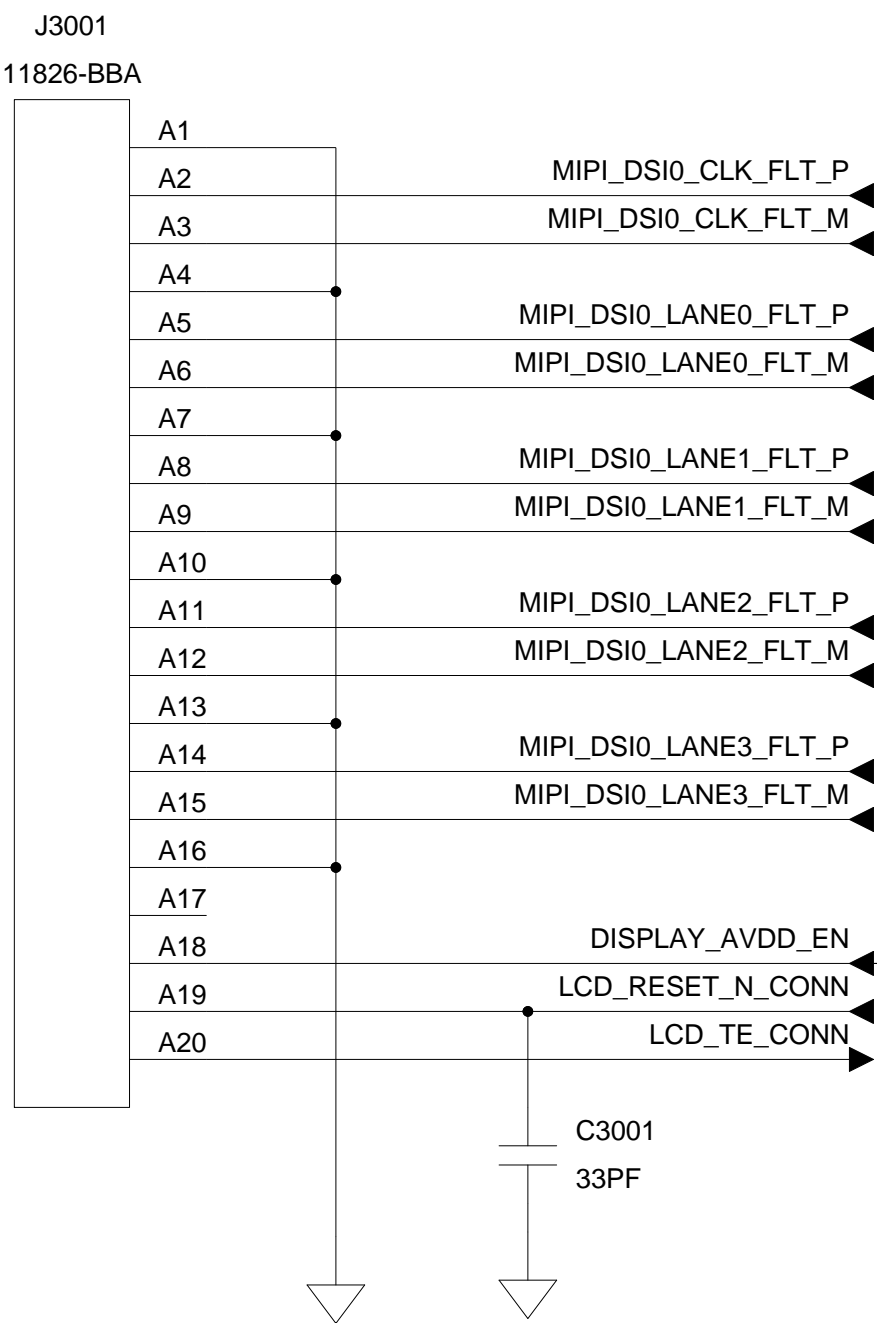
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| LTR | DESCRIPTION | DATE | APPROVED |
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D

C

B

A



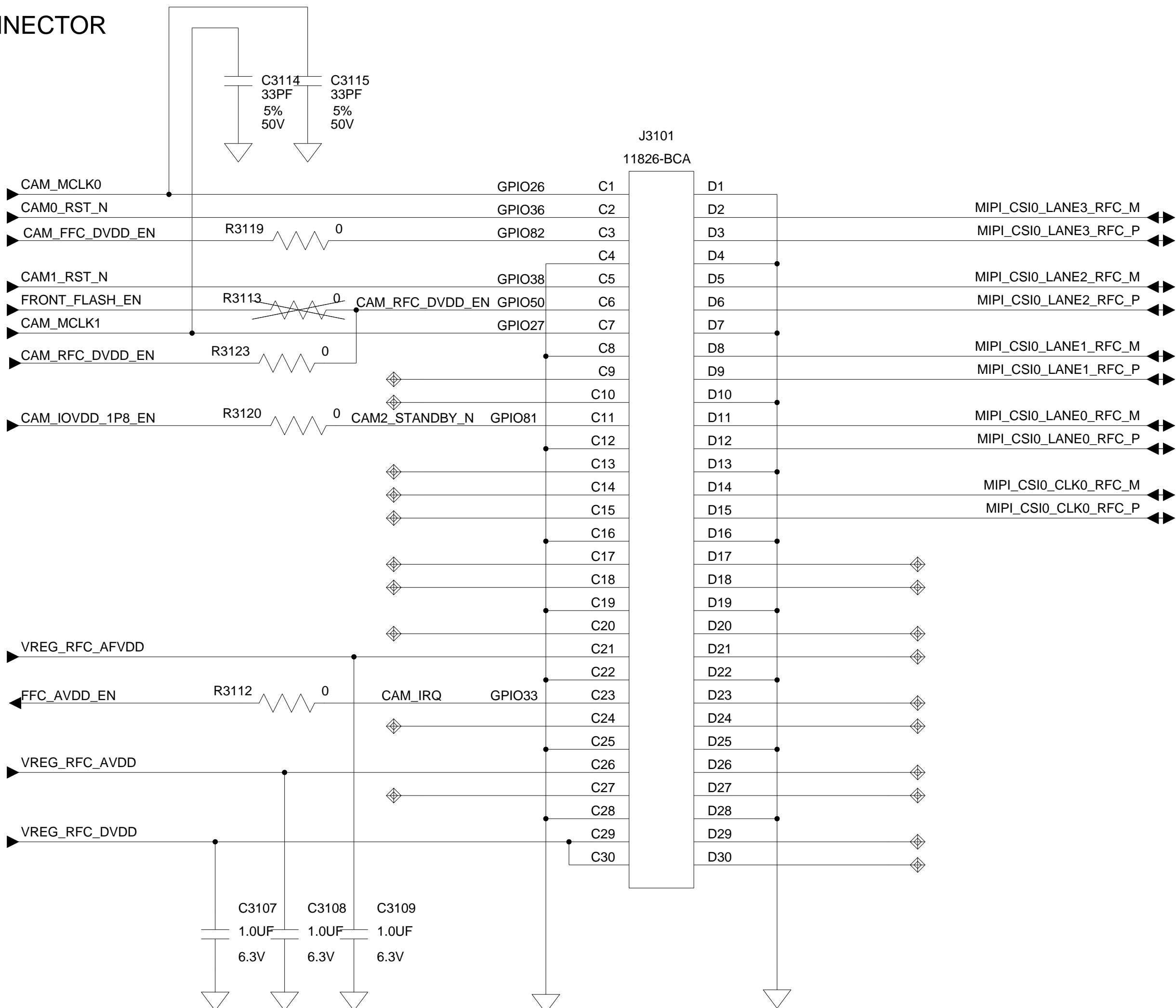
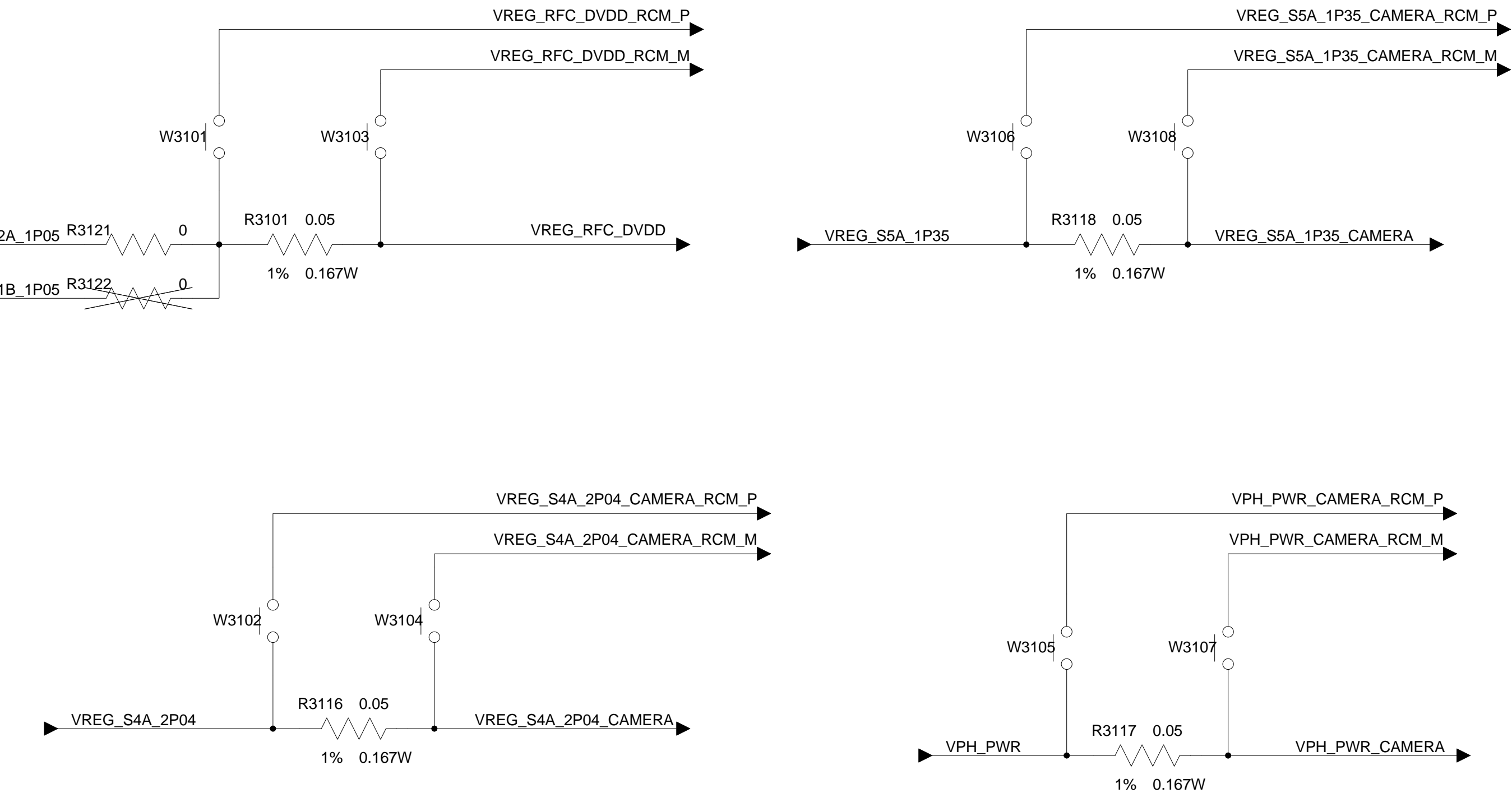
DISPLAY_CONNECTOR

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 31 OF 59 | |

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|-----------|------|-----------------------------|----------------|
| SIZE D | | DRAWING NO LD20-PU825-13 | REV A |
| SCALE | NONE | | SHEET 32 OF 59 |

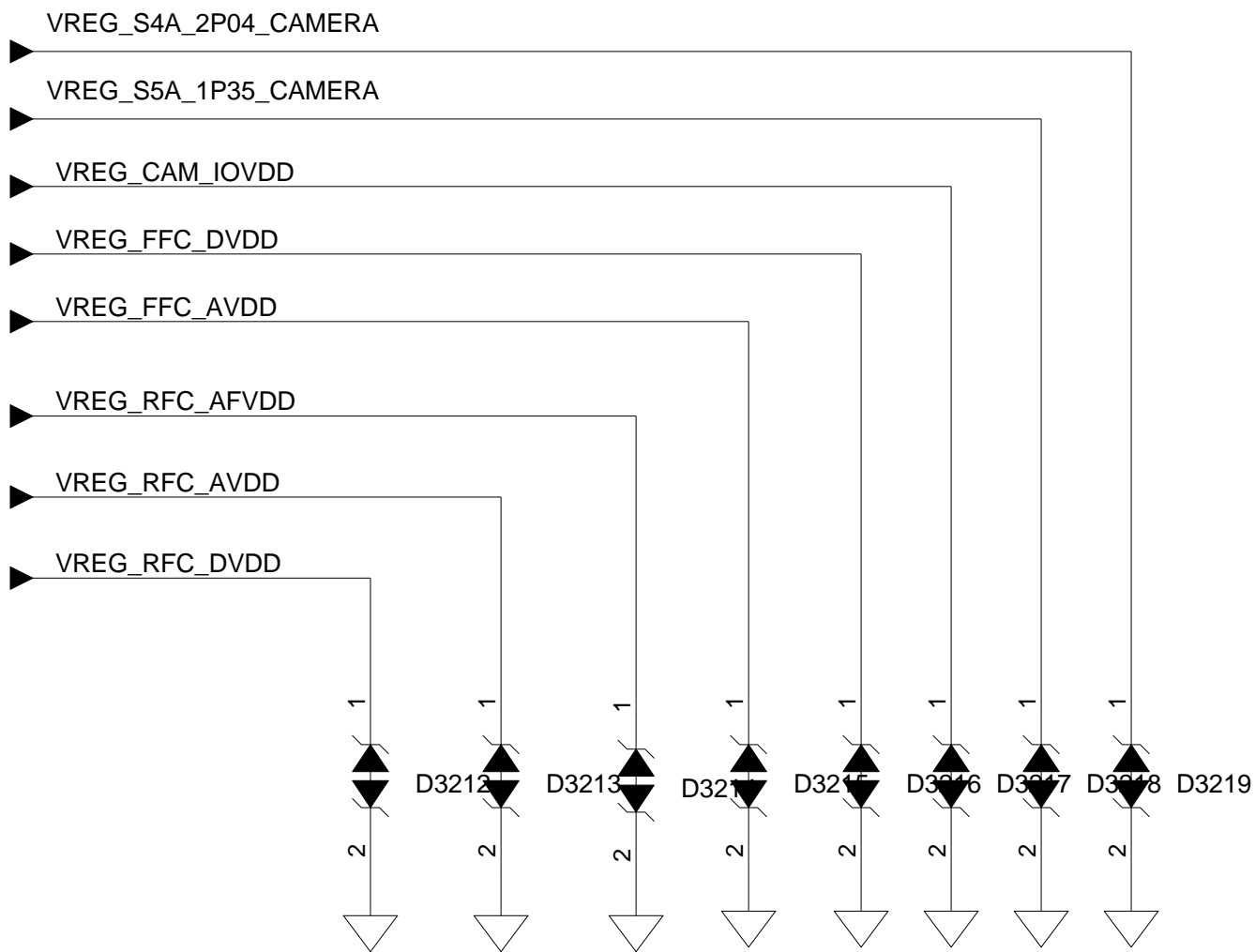
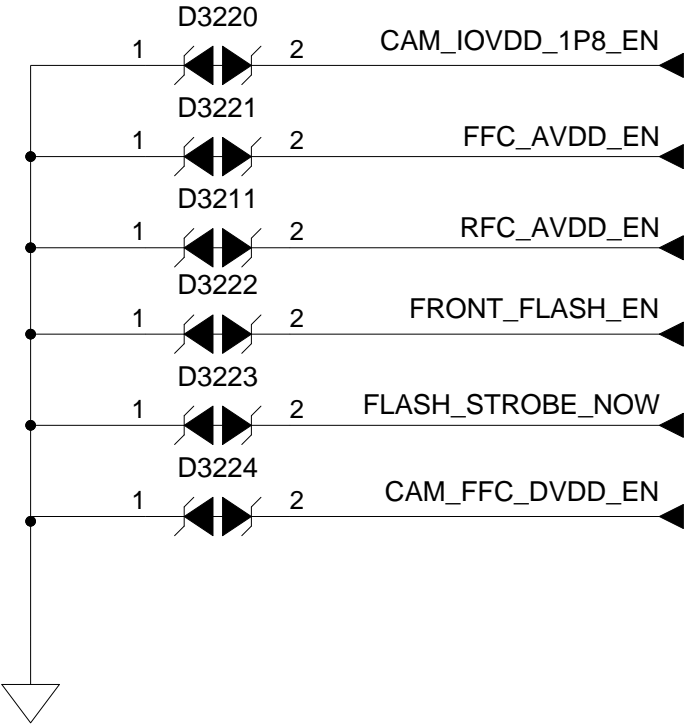
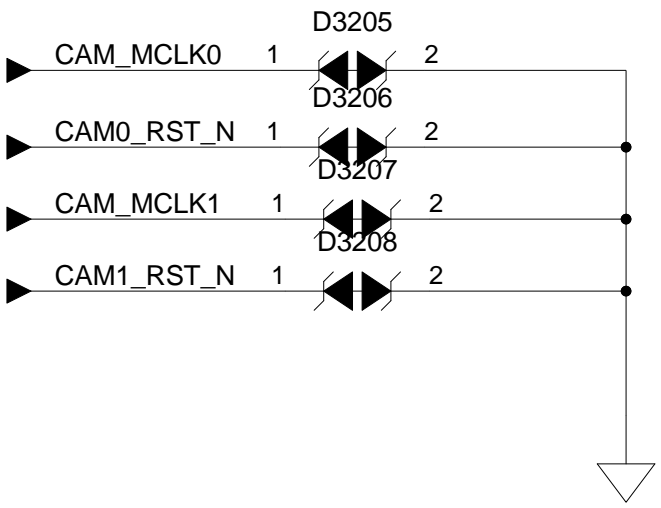
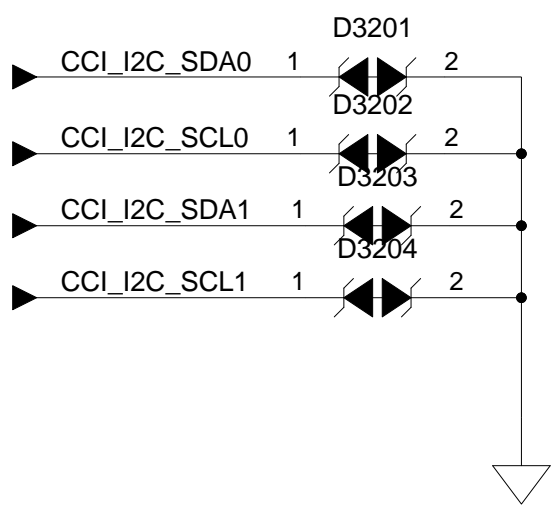
FLASH LED DRIVER



CAMERA_CARD

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CAMERA_ESD

| | | | |
|------------------------------------|-----------------------------|--|----------|
| NOTE: DS2 is Rear Camera Flash LED | | | |
| SIZE D | DRAWING NO LD20-PU825-13 | | REV A |
| SCALE NONE | SHEET 33 OF 59 | | |

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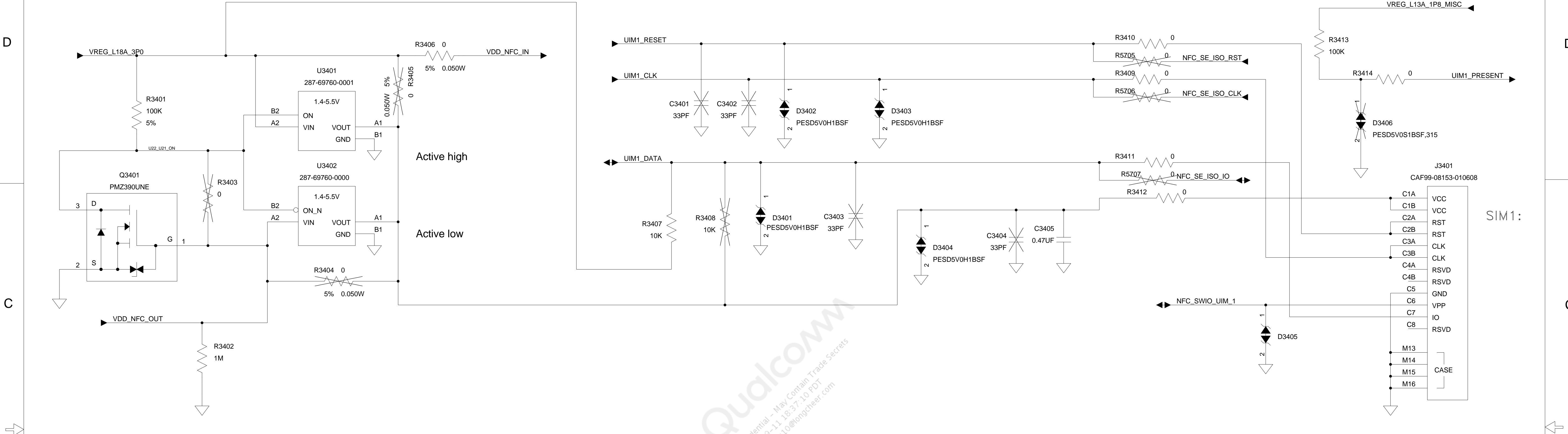
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|-----------|------|-----------------------------|----------------|
| SIZE D | | DRAWING NO LD20-PU825-13 | REV A |
| SCALE | NONE | | SHEET 34 OF 59 |

ELDOs

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UIM_PRESENT SIGNALS ARE ACTIVE HIGH



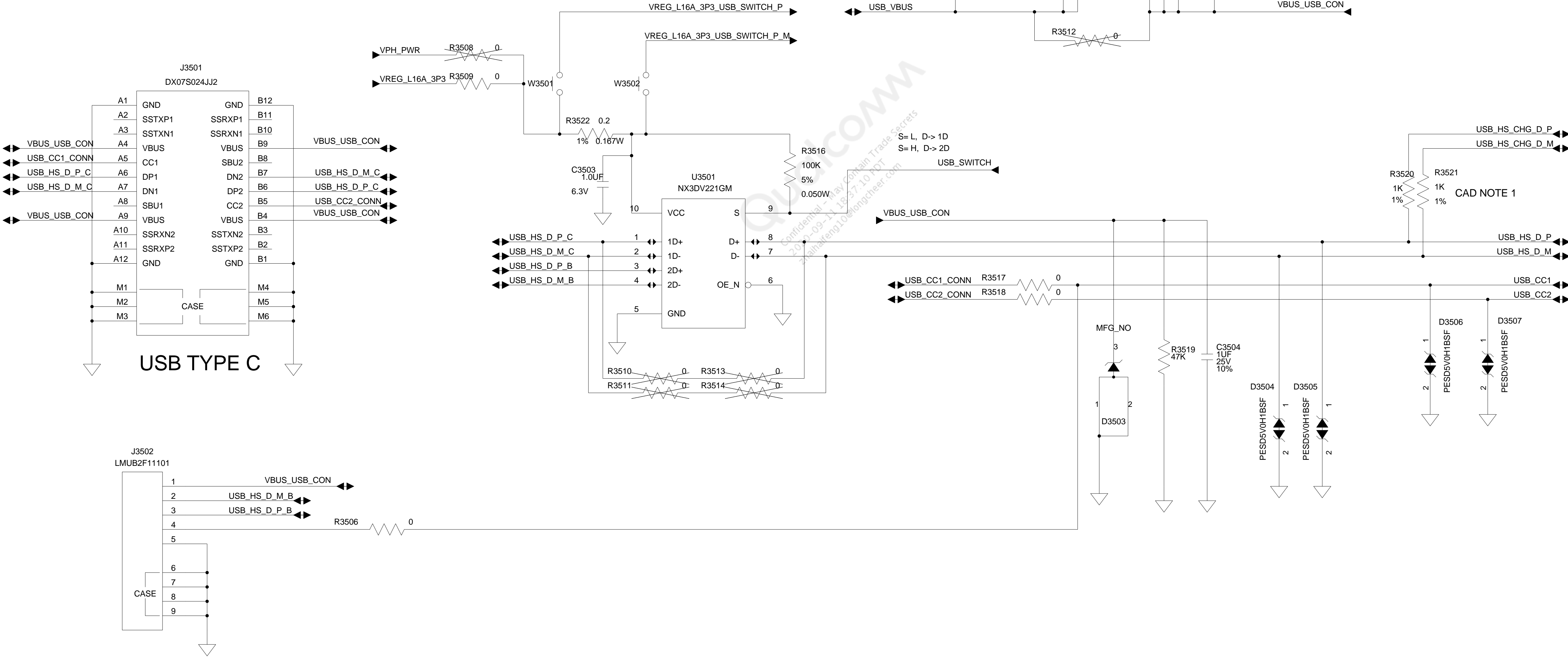
uSIM_1

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 35 OF 59 | |

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USB_VBUS_SWITCH



NOTE:
1. VBUS circuitry is to cut the power from PC side in RF call station testing which allows for a true hard reset.
Remove for customer reference schematic

CAD NOTE 1: PLACE 1Kohm near PMIC if routed in Daisy chain (CONN --> PMI -->MSM) or place near to the interconnect node if Star routing
or place near to the interconnect node for the star routing

CAD NOTE 2: PAD Sharing
or place near to the interconnect node for the star routing

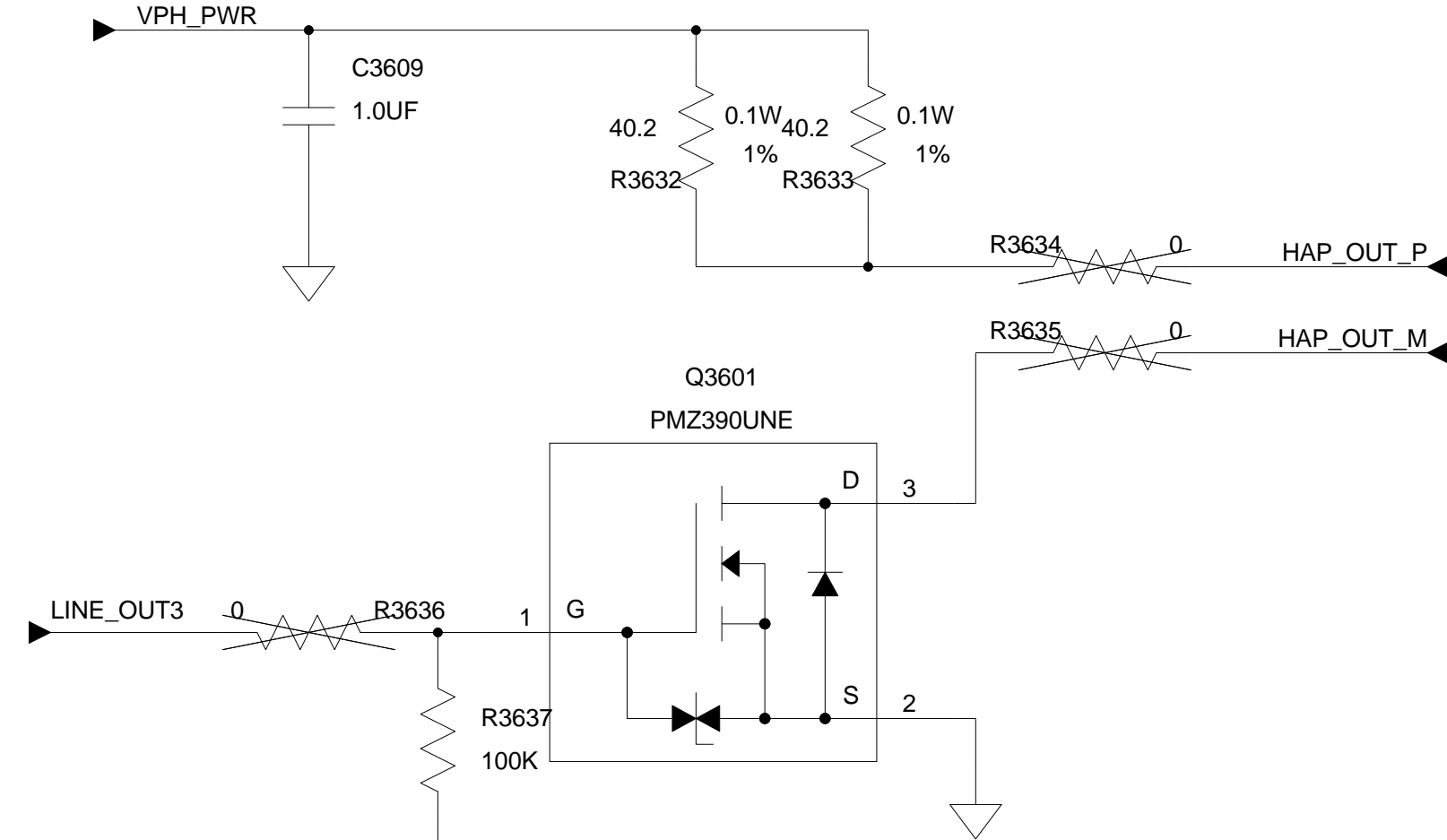
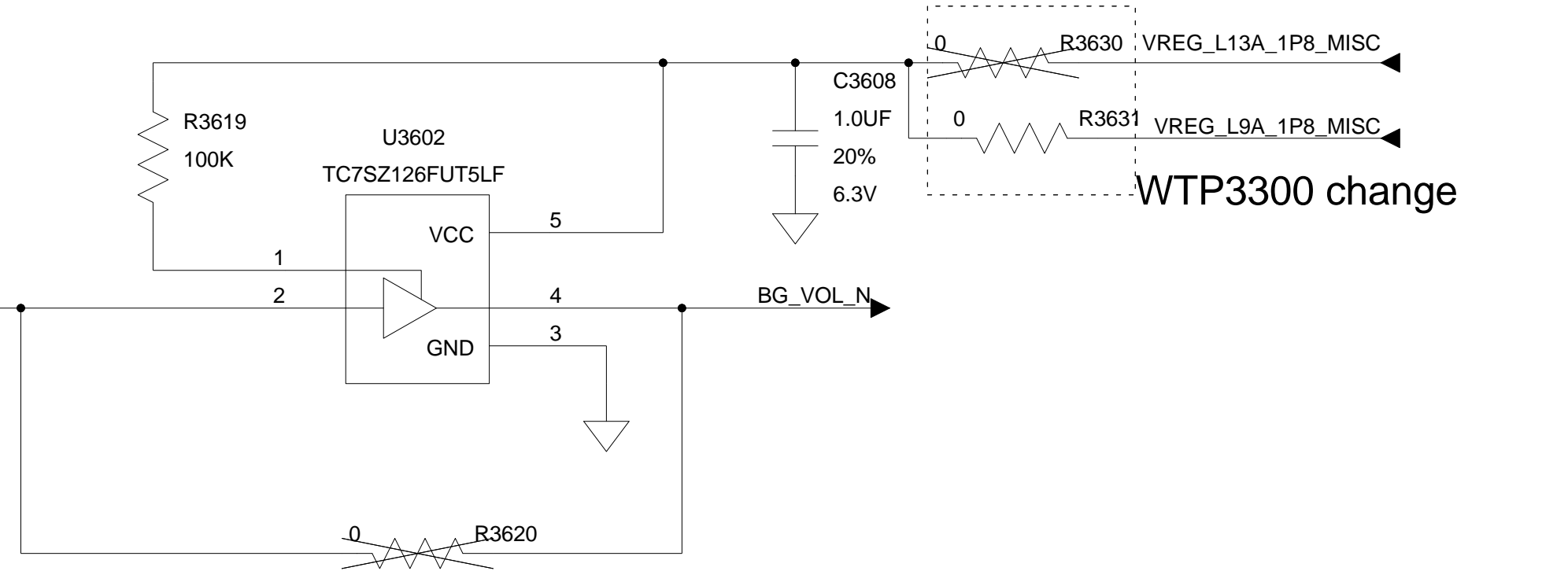
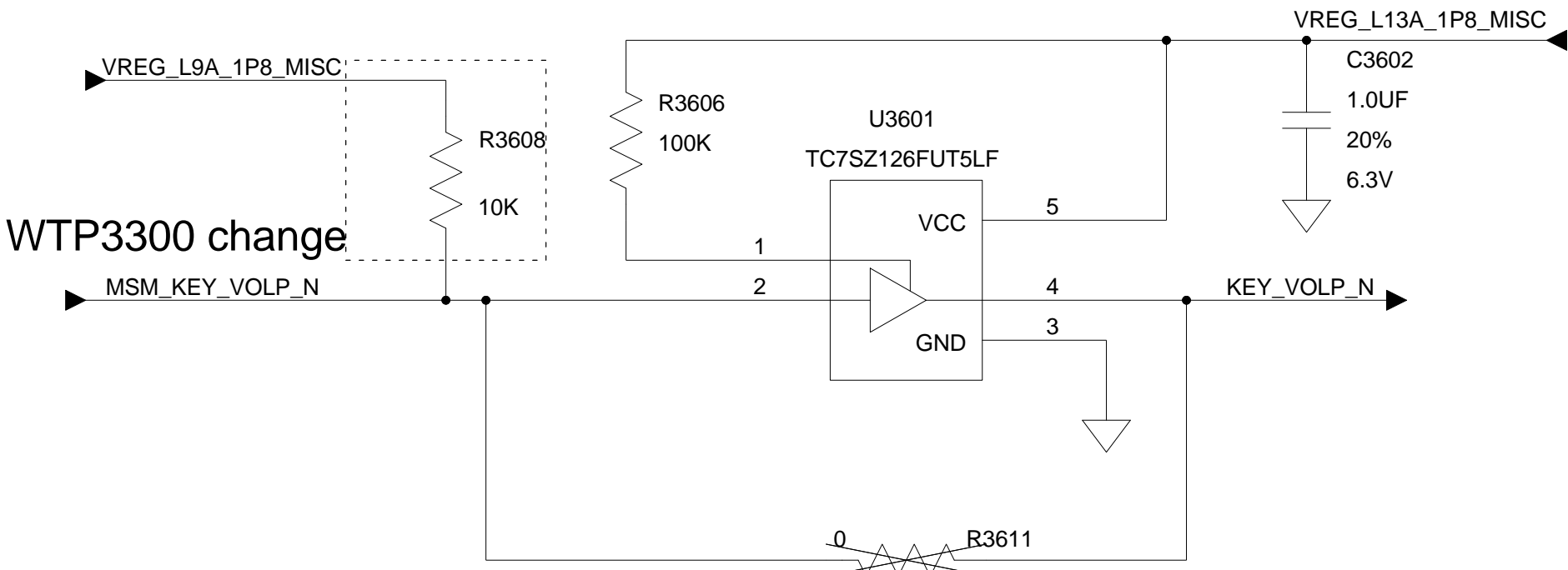
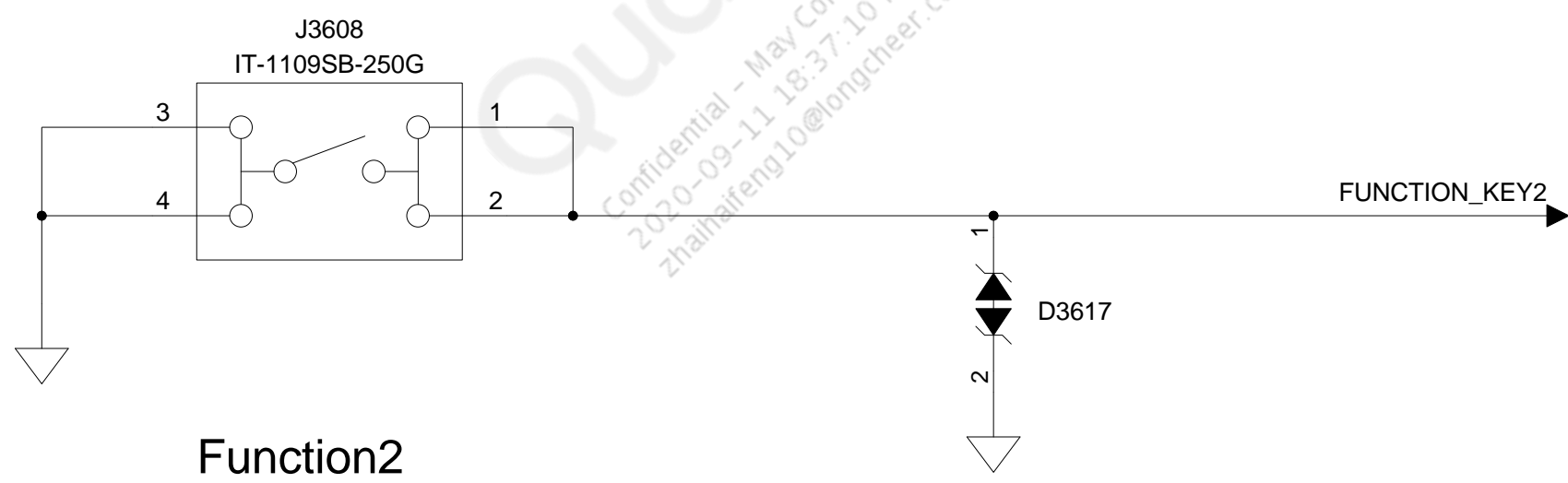
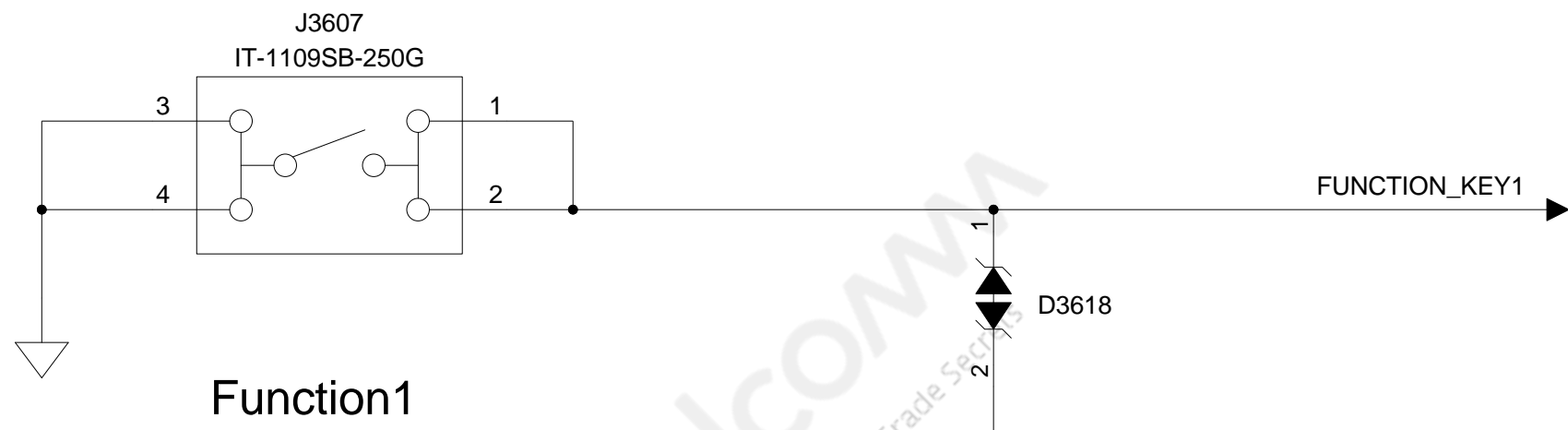
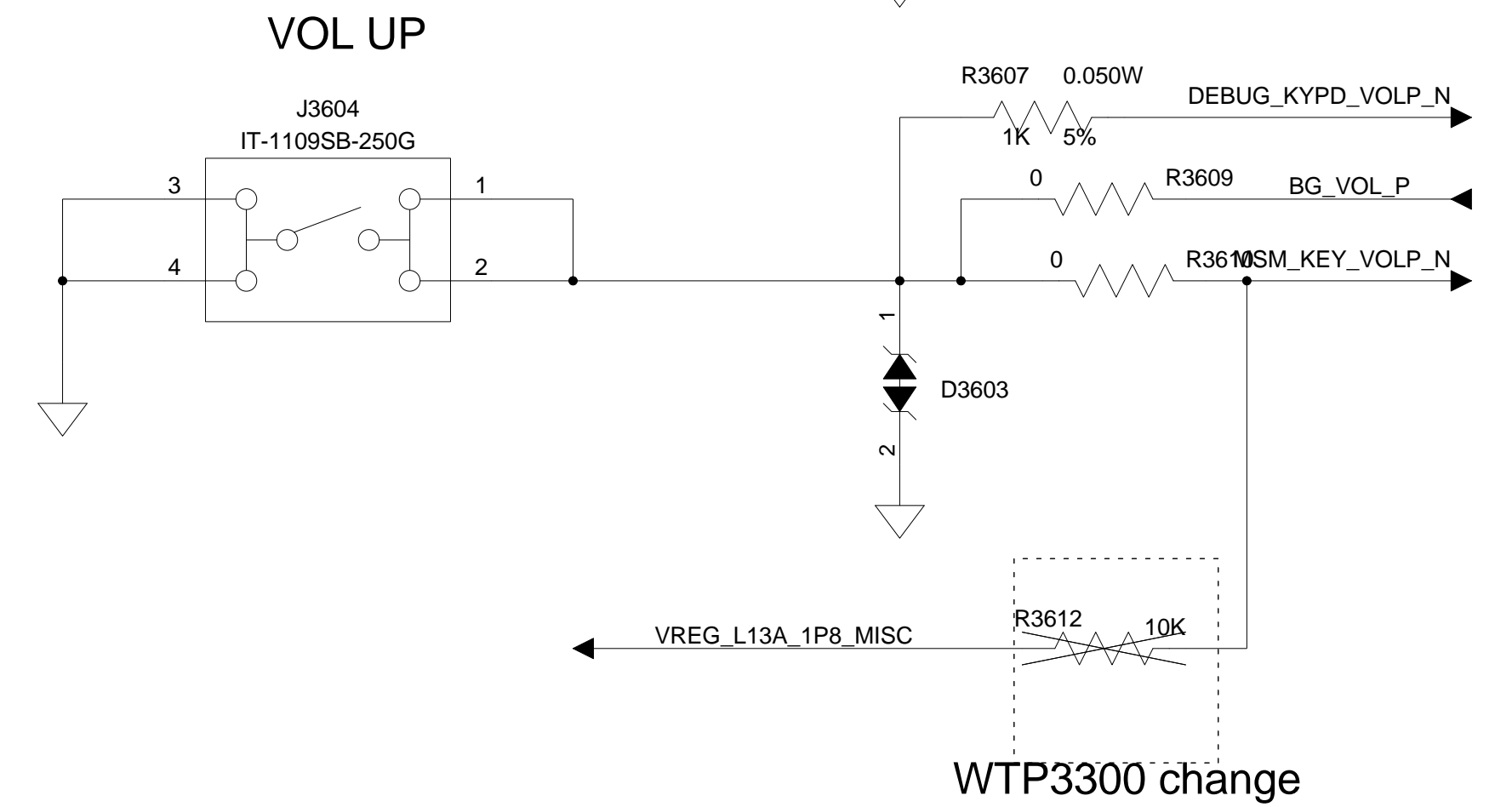
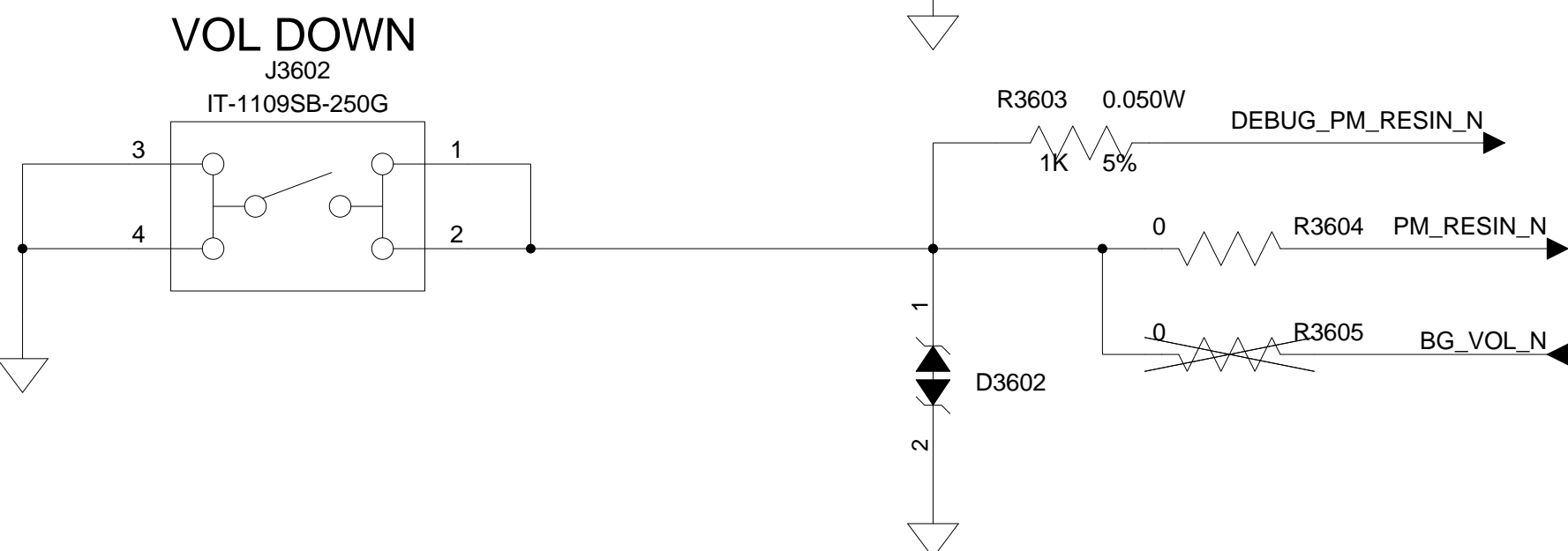
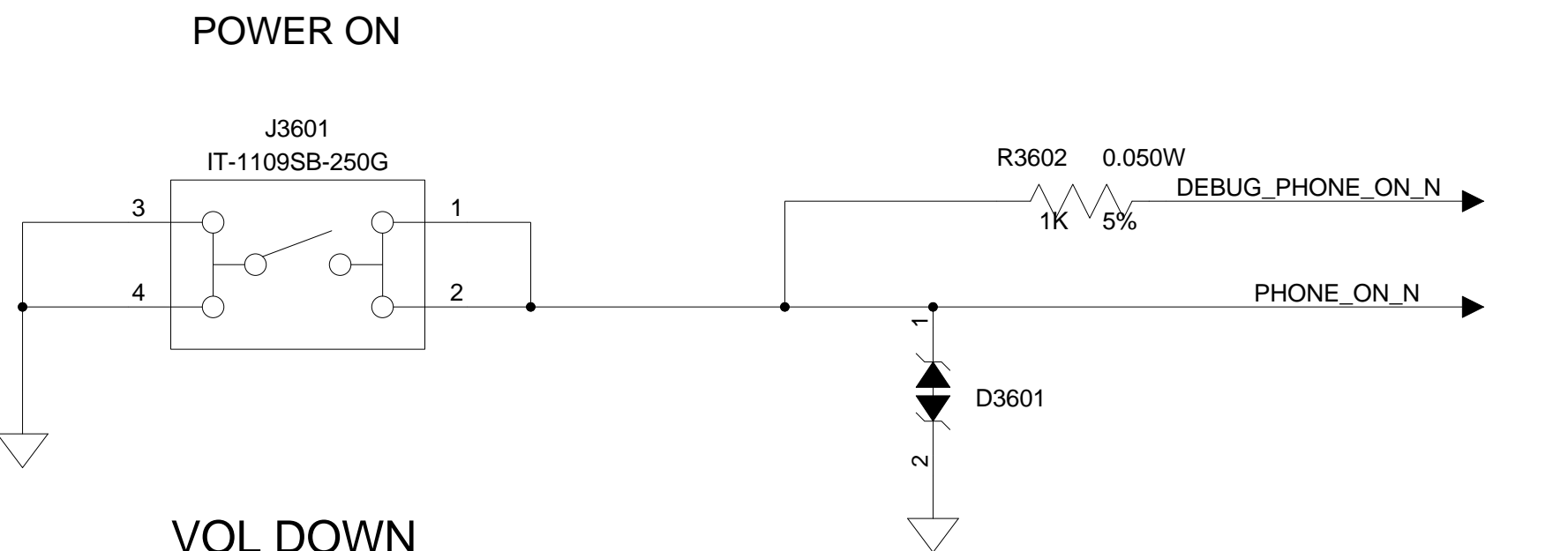
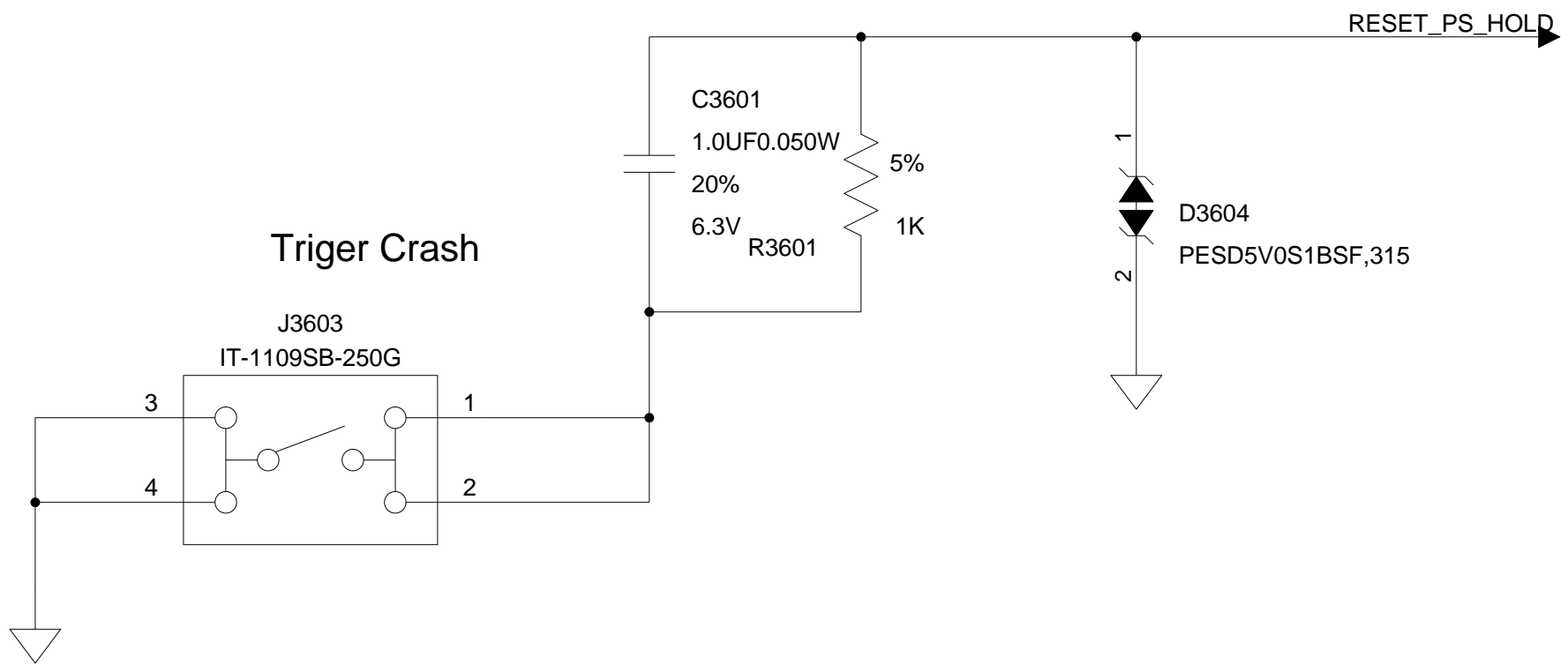
USB CONNECTORS

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 36 OF 59 | |

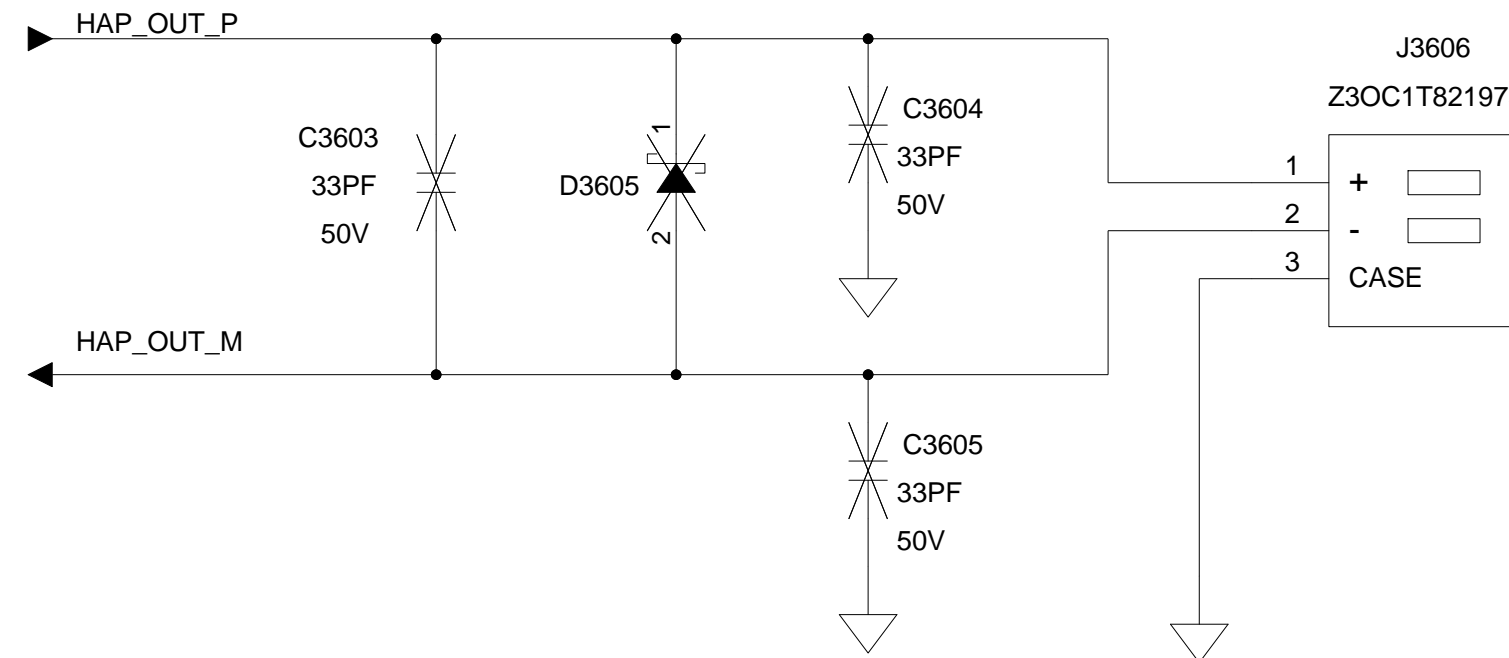
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BUTTONS



VIBRATOR MOTOR

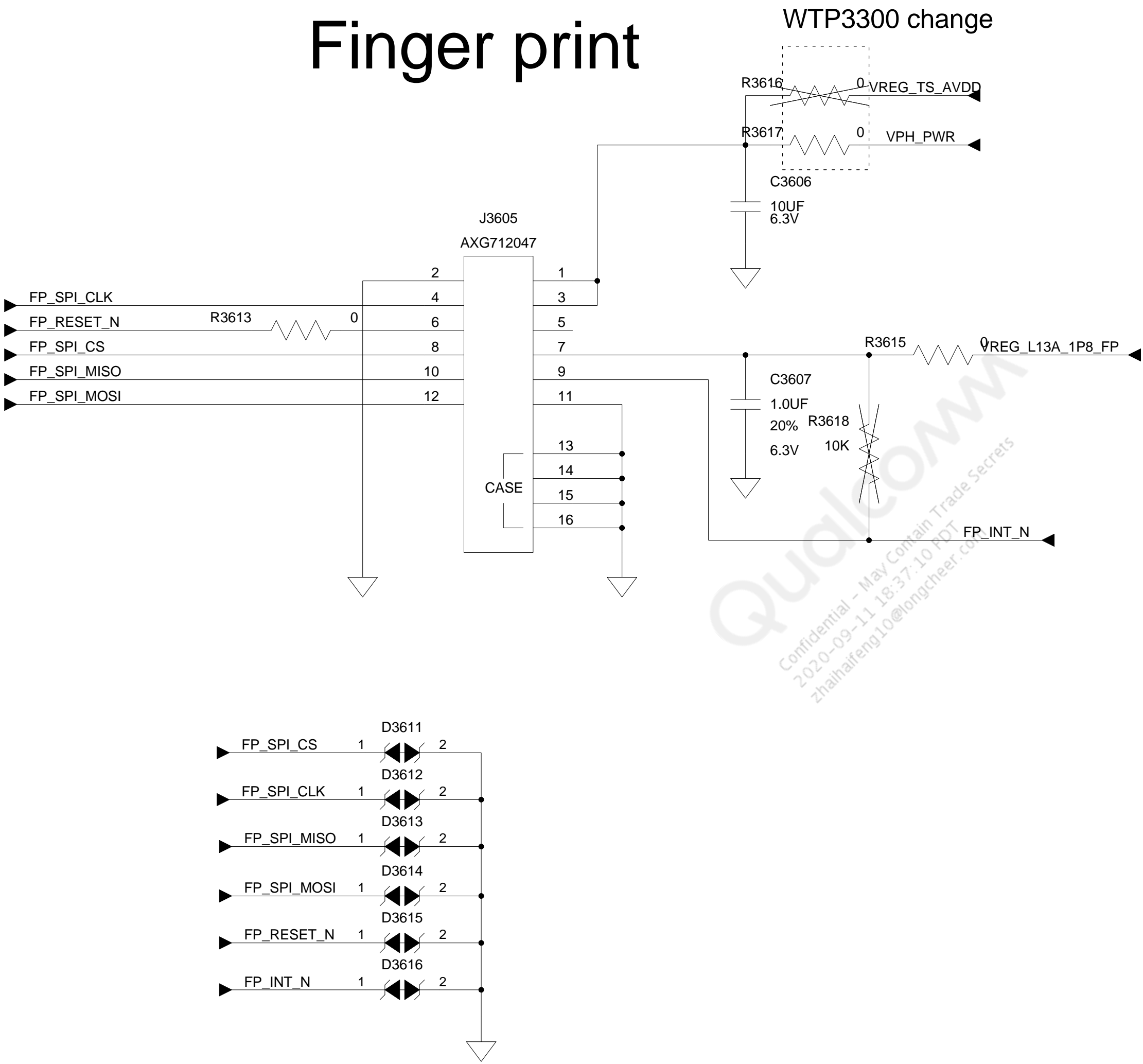


BUTTONS

| SIZE | DRAWING NO | REV |
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| D | LD20-PU825-13 | A |
| SCALE | SHEET 37 | OF 59 |

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FINGER_PRINT

| SIZE | DRAWING NO | REV |
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| D | LD20-PU825-13 | A |
| SCALE | SHEET | OF |
| NONE | 38 | 59 |

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| LTR | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | | |

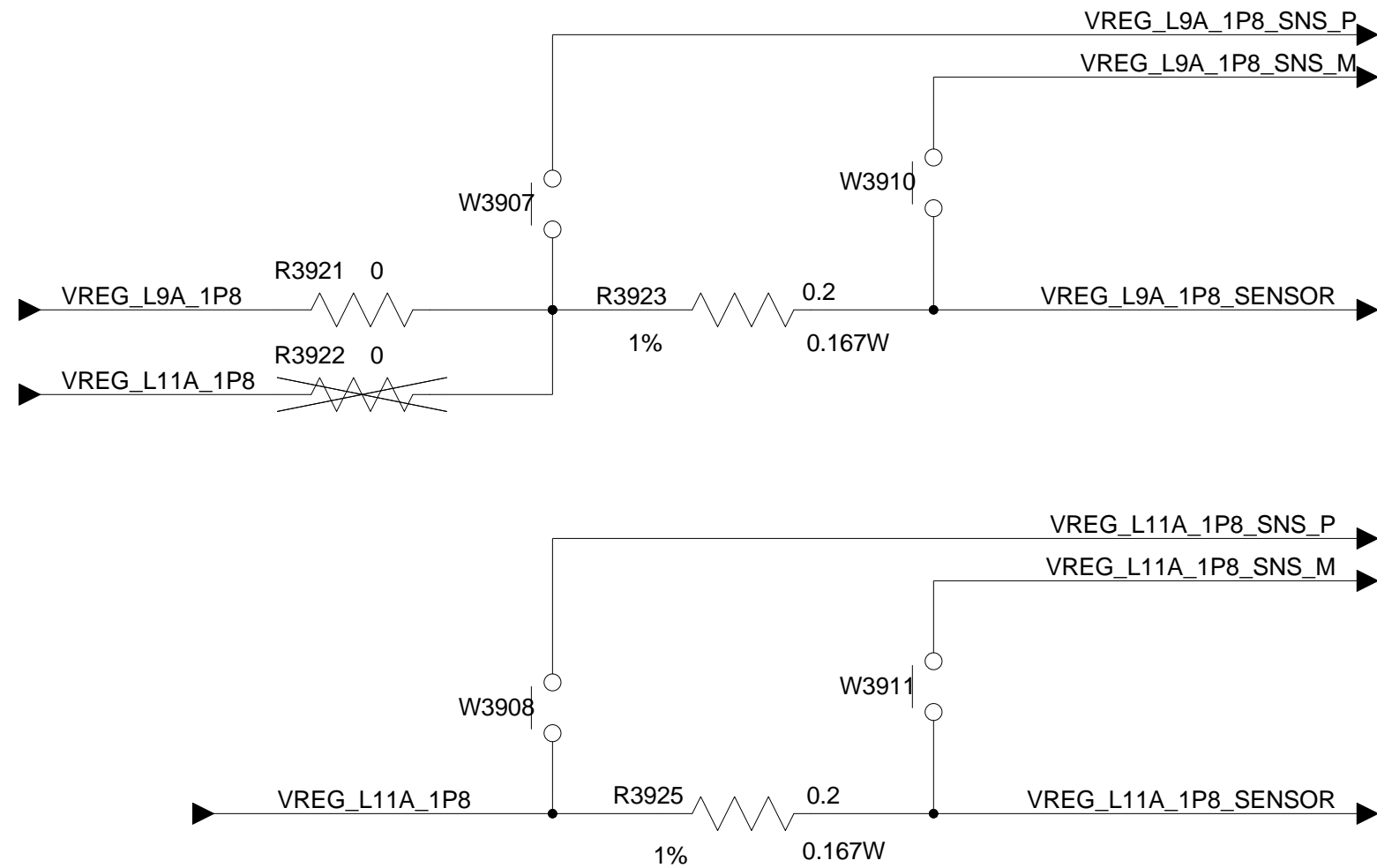
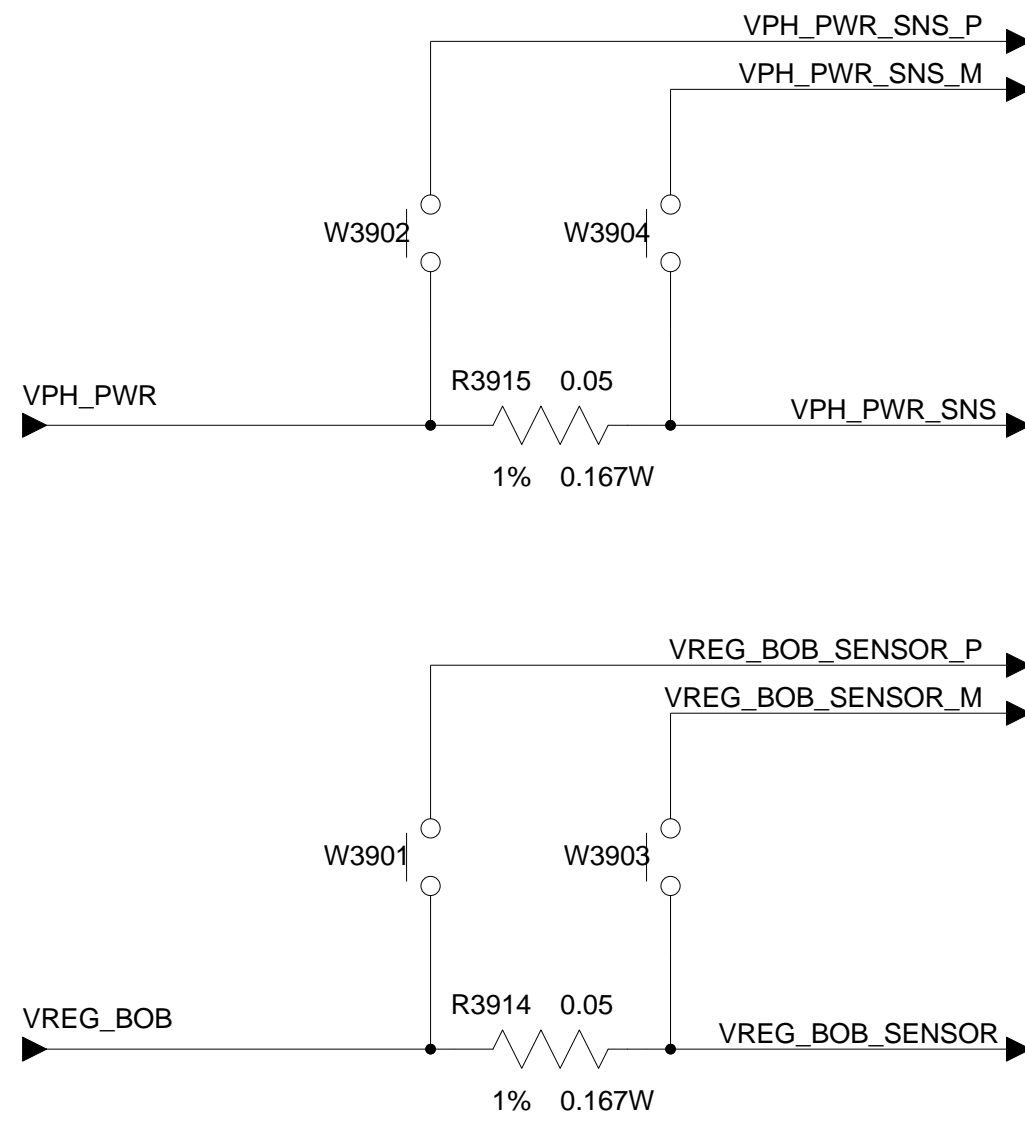
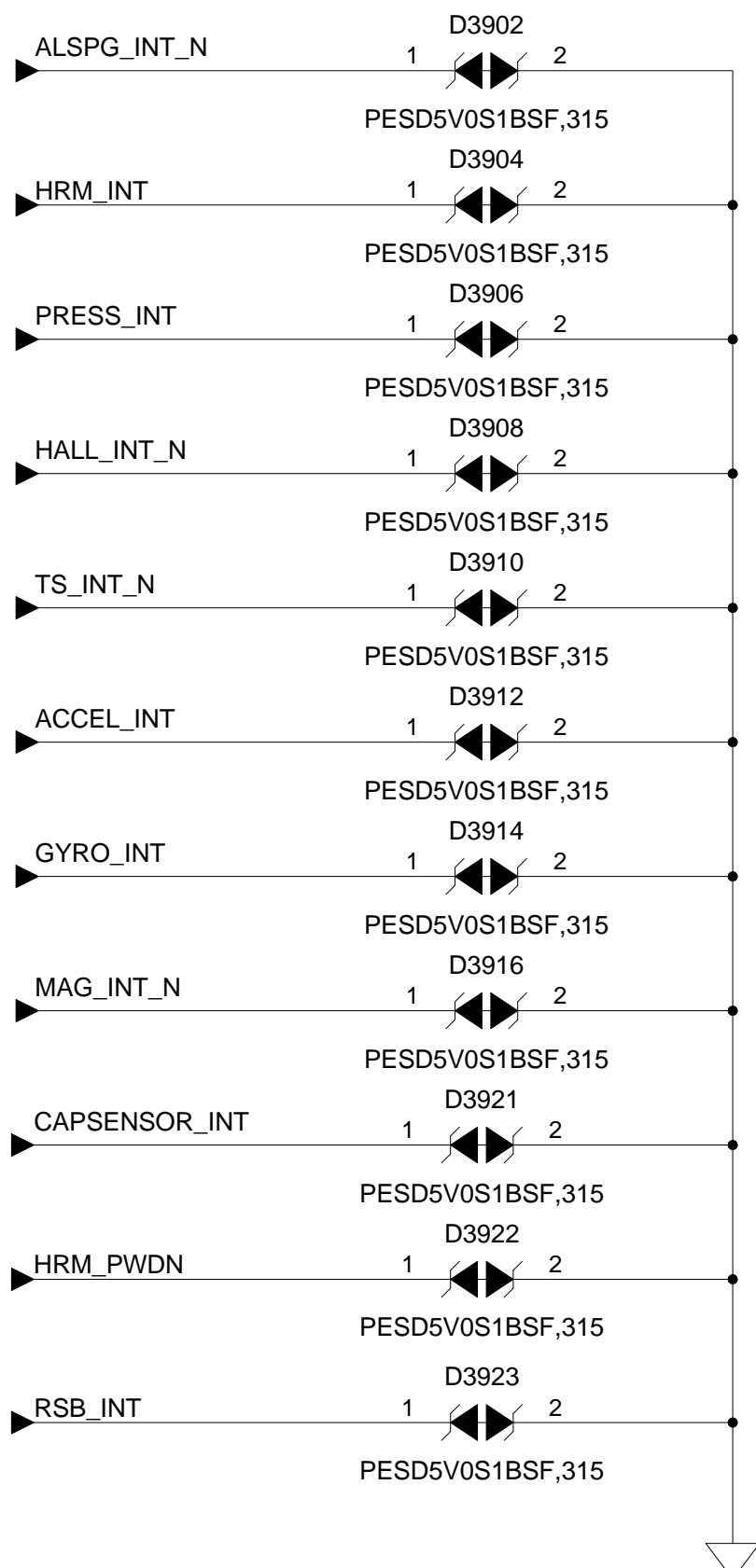
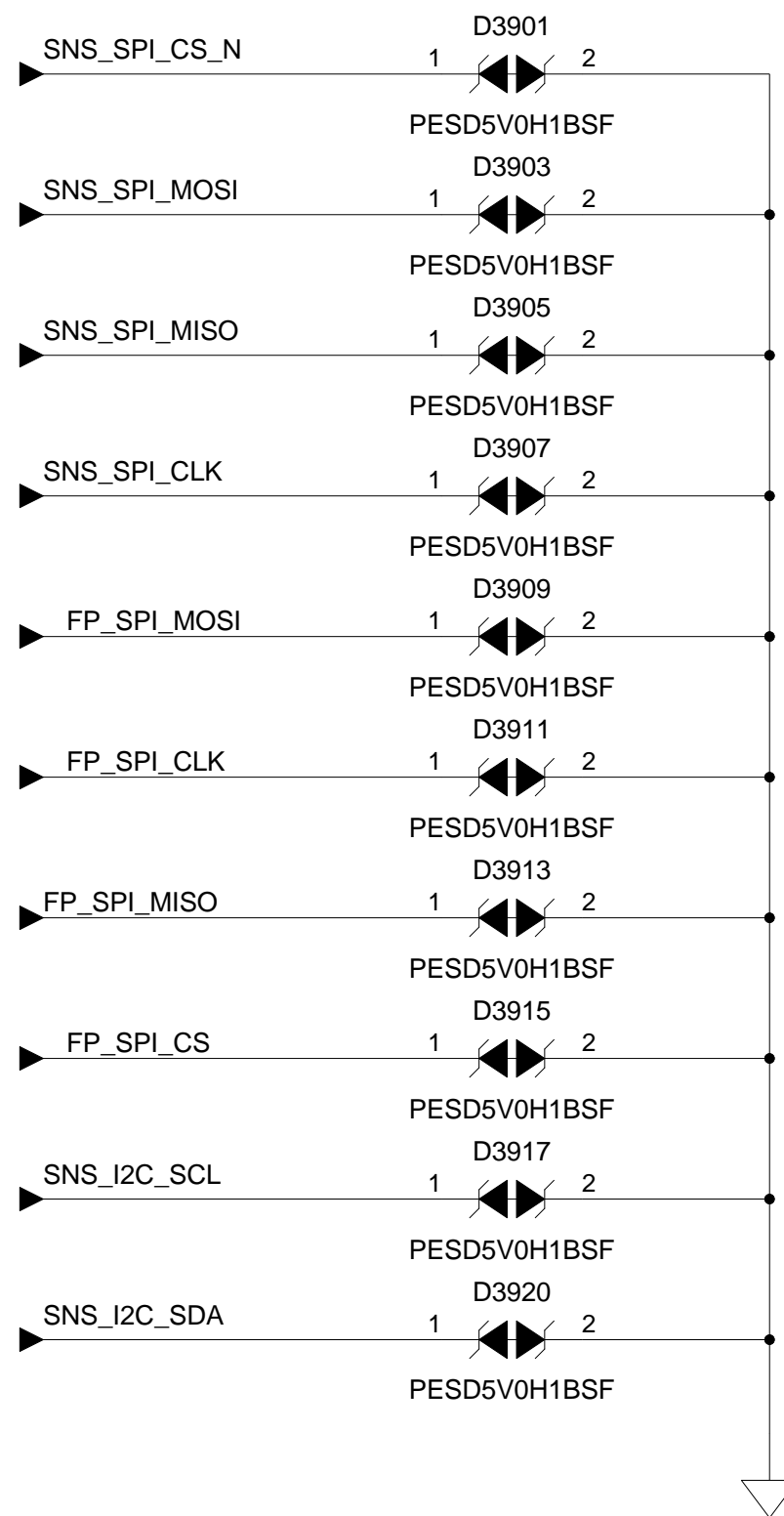
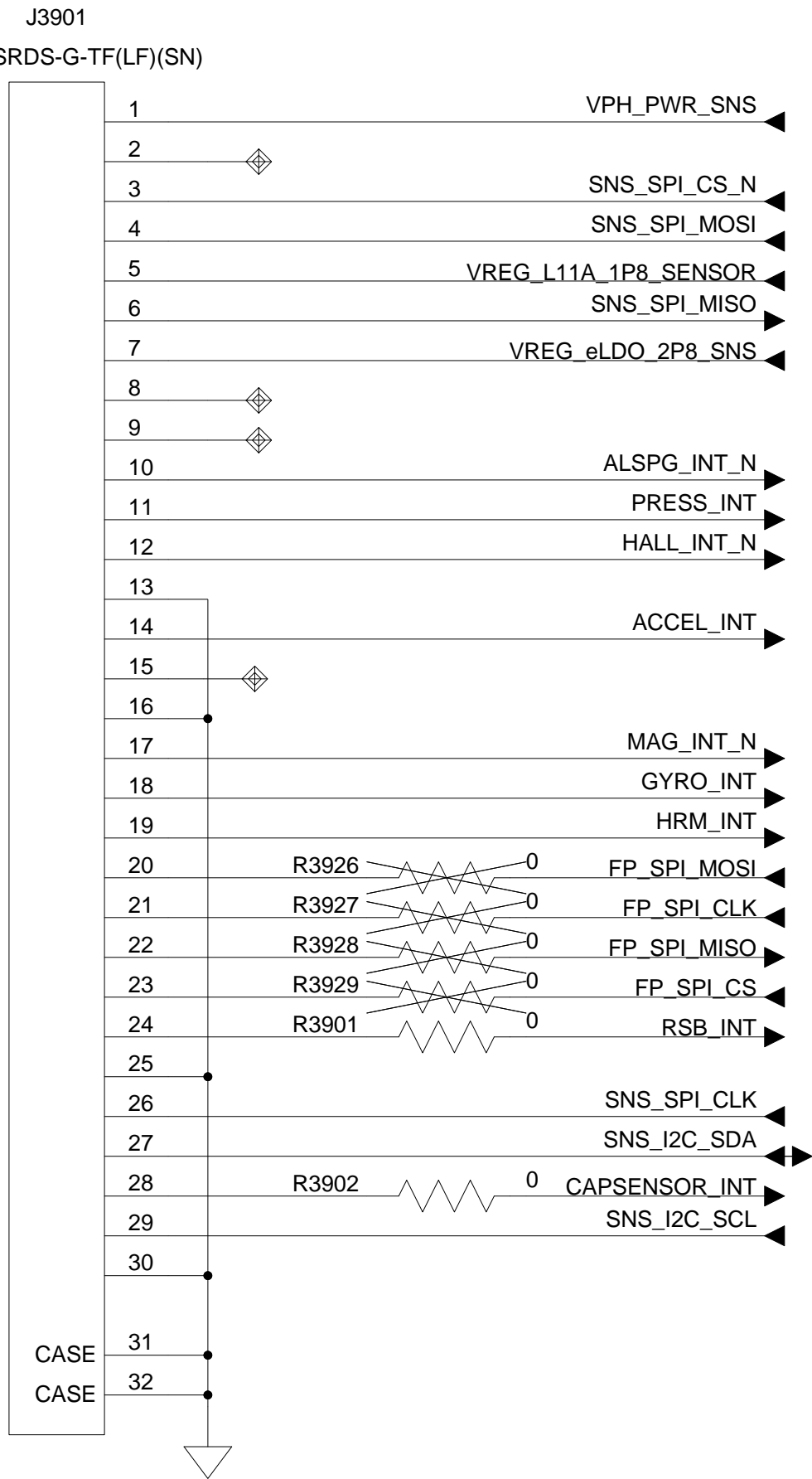
Qualcomm
Confidential - May Contain Trade Secrets
2020-09-11 18:37:10 PDT
zhaihaifeng.10@qcomcheet.com

RESERVE_4

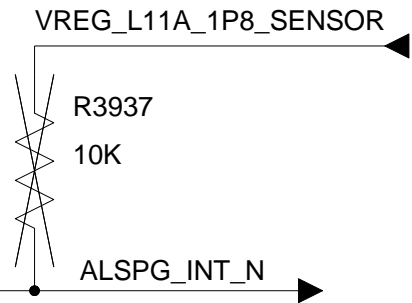
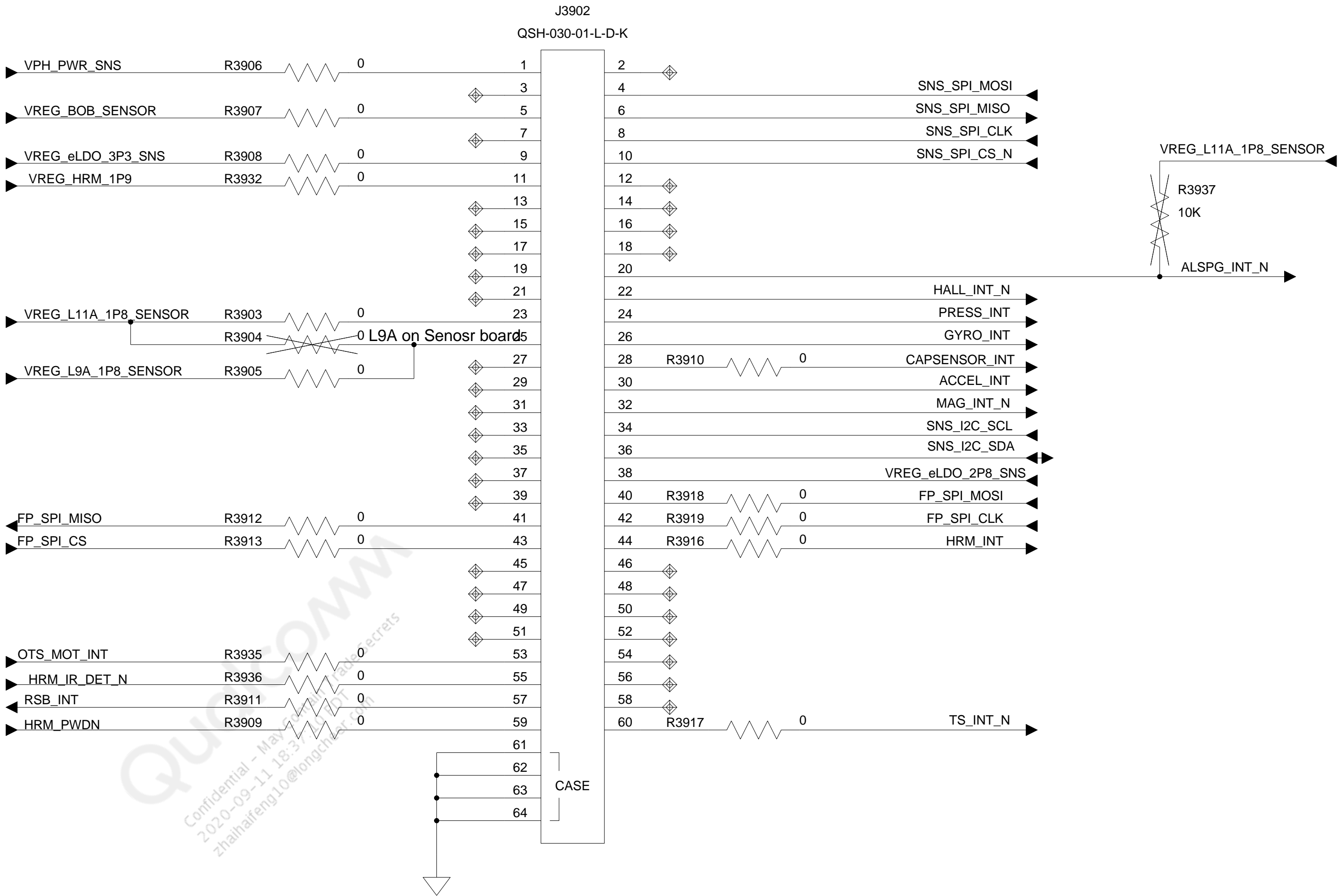
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| SIZE | DRAWING NO | | REV |
| D | LD20-PU825-13 | | A |
| SCALE | NONE | SHEET 39 OF 59 | |

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Vertigo



Gen



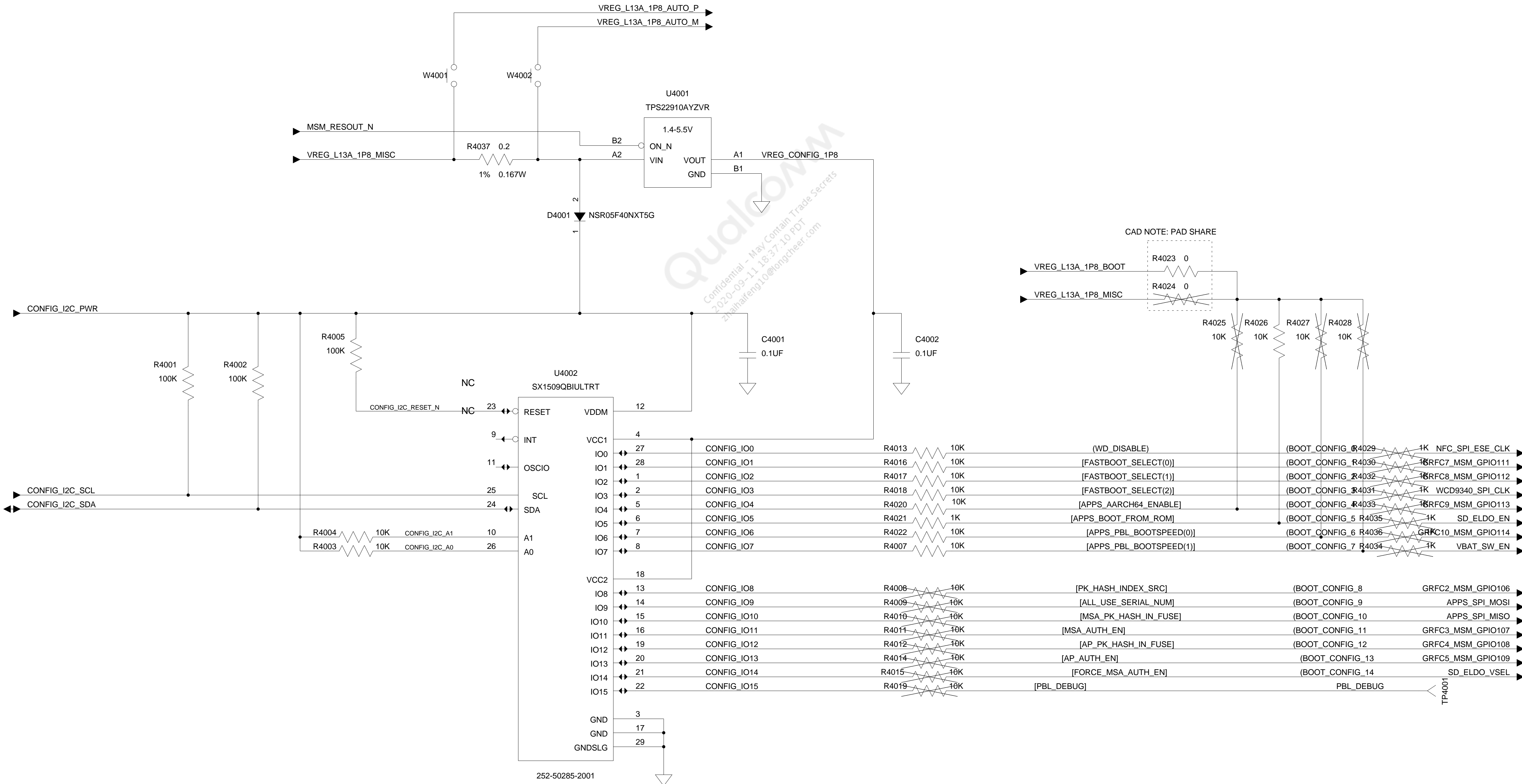
SENSORS

| REVISEMENTS | | | |
|-------------|-----------------|------|----------|
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|---------------|-----------------------------|----------|
| SIZE D | DRAWING NO LD20-PU825-13 | REV A |
| SCALE NONE | SHEET 40 | OF 59 |

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| LTR | DESCRIPTION | DATE | APPROVED |
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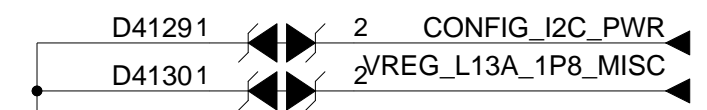
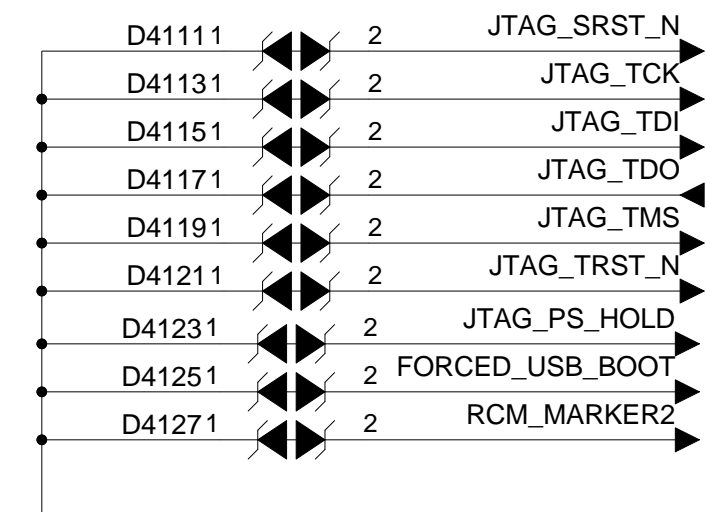
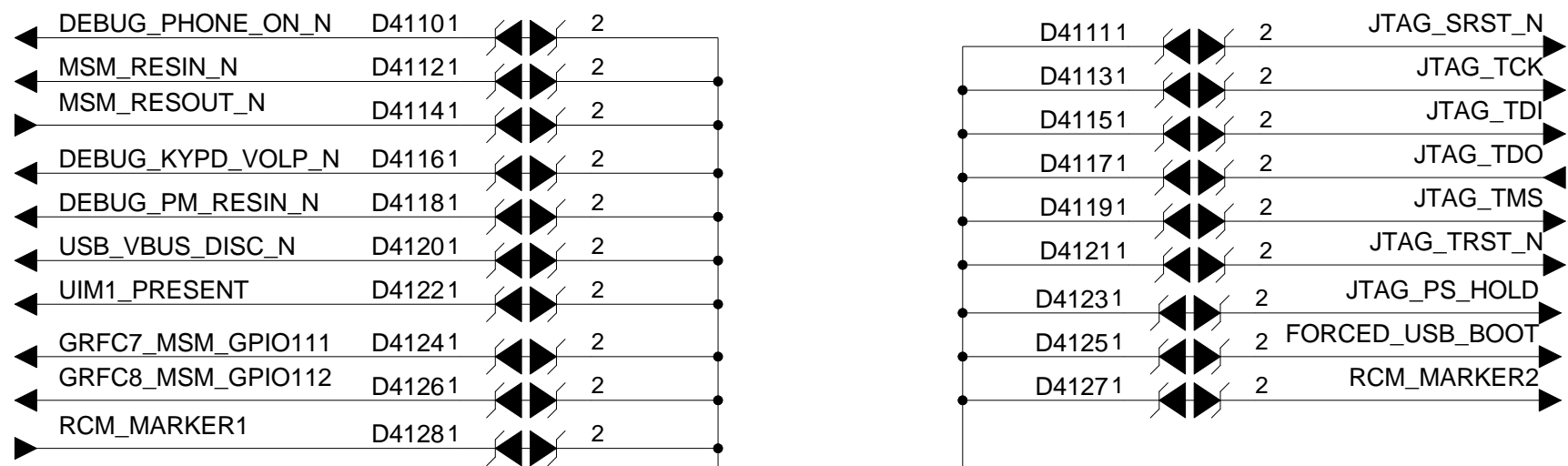
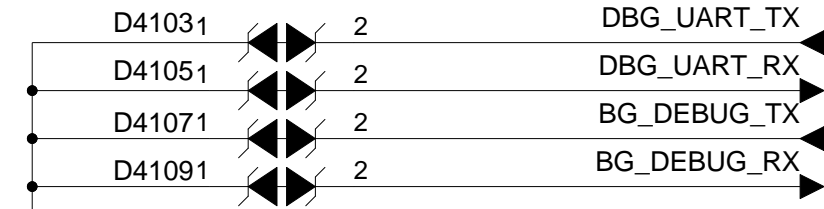
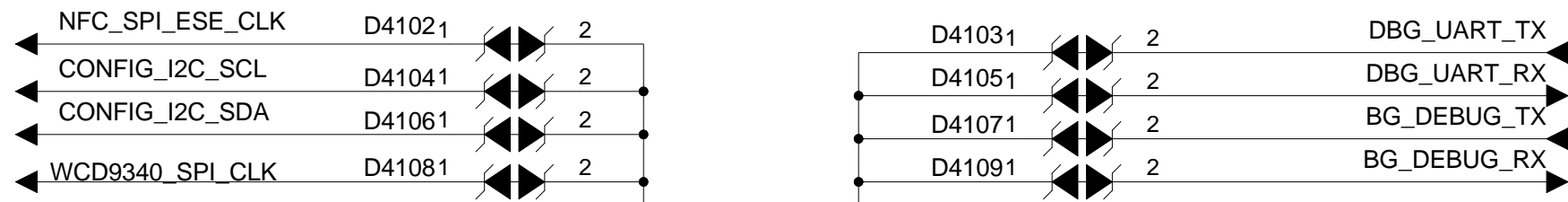
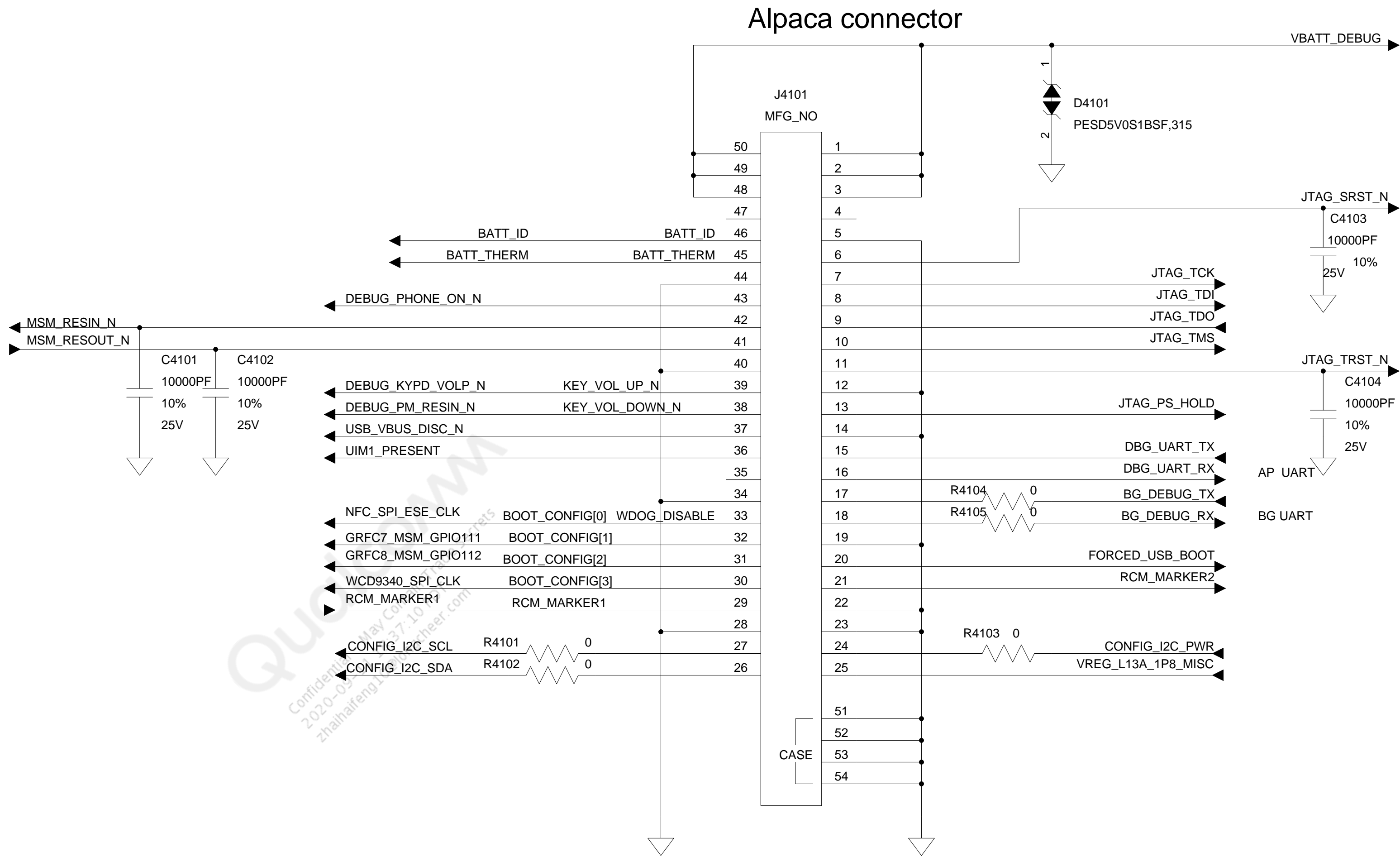
AUTOMATION

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 41 OF 59 | |

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DEBUG CONNECTOR



DEBUG CONN_1

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 42 OF 59 | |

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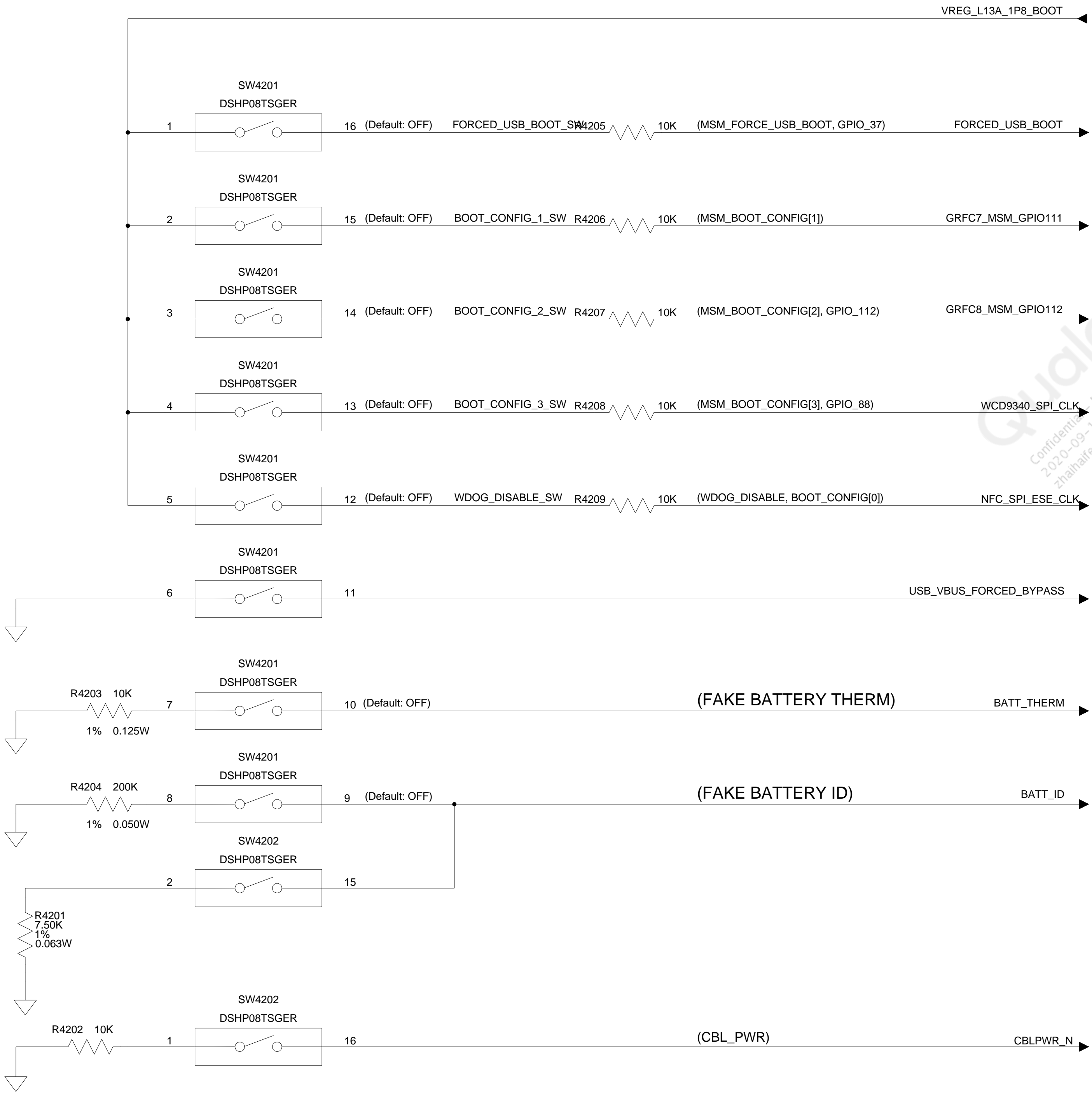
| REVISIONS | | | |
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| LTR | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | | |

D

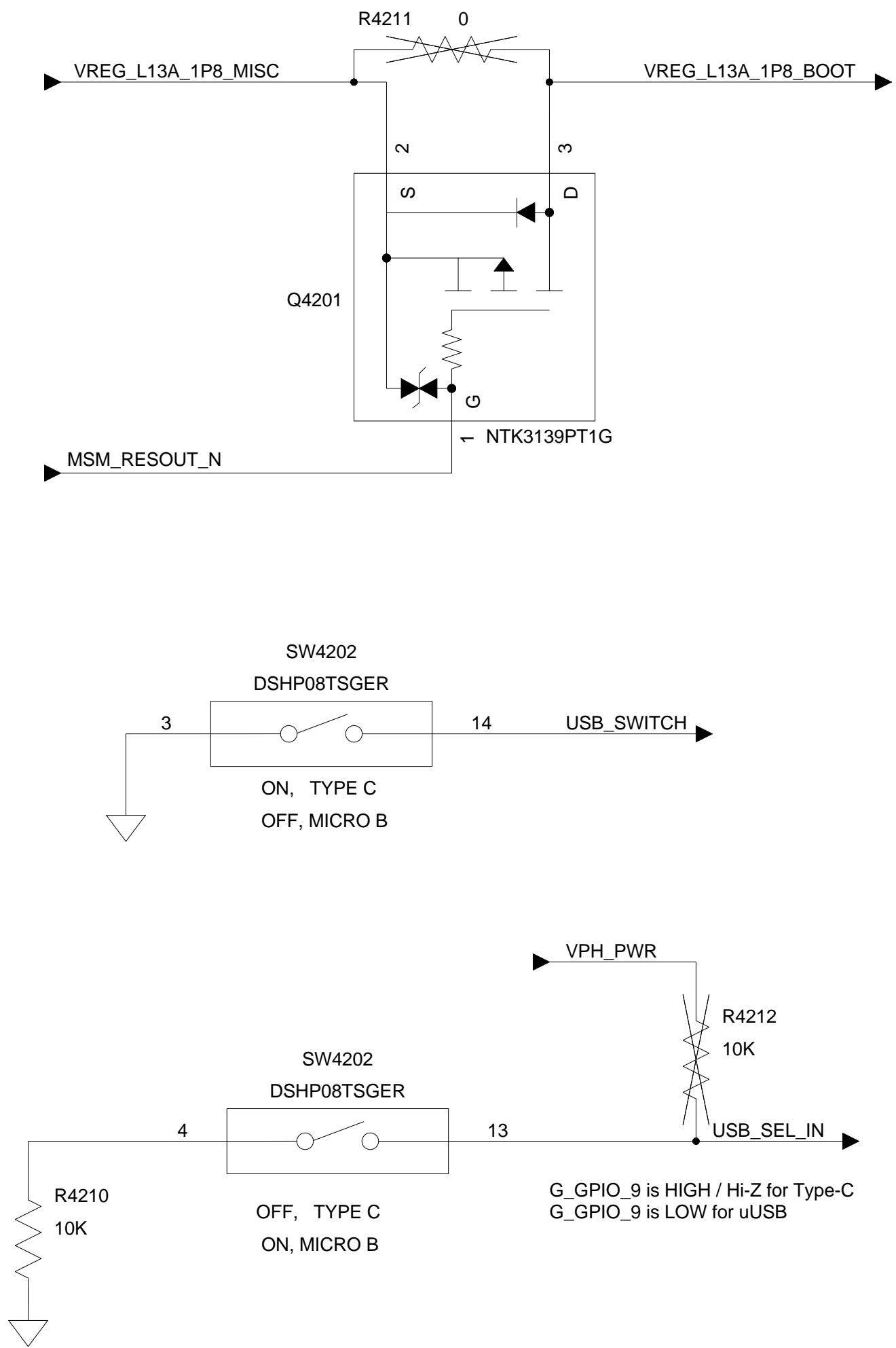
C

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A



DIP_CONFIG



| | | |
|----------------|-------------------------------|----------|
| BOOT CONFIG[0] | WDOG_DISABLE | GPIO_3 |
| BOOT CONFIG[1] | BOOT CONFIG[1] | GPIO_111 |
| BOOT CONFIG[2] | BOOT CONFIG[2] | GPIO_112 |
| BOOT CONFIG[3] | BOOT CONFIG[3] | GPIO_88 |
| FORCE_USB_BOOT | FORCE BOOT FROM USB INTERFACE | GPIO_37 |

| | |
|------------------|--------------------|
| BOOT CONFIG[3:1] | BOOT_CONFIG |
| 0b000 | SDC1->SDC2->USB2.0 |
| 0b001 | SDC2->SDC1->USB2.0 |
| 0b010 | SDC1->USB2.0 |
| 0b011 | USB2.0 |

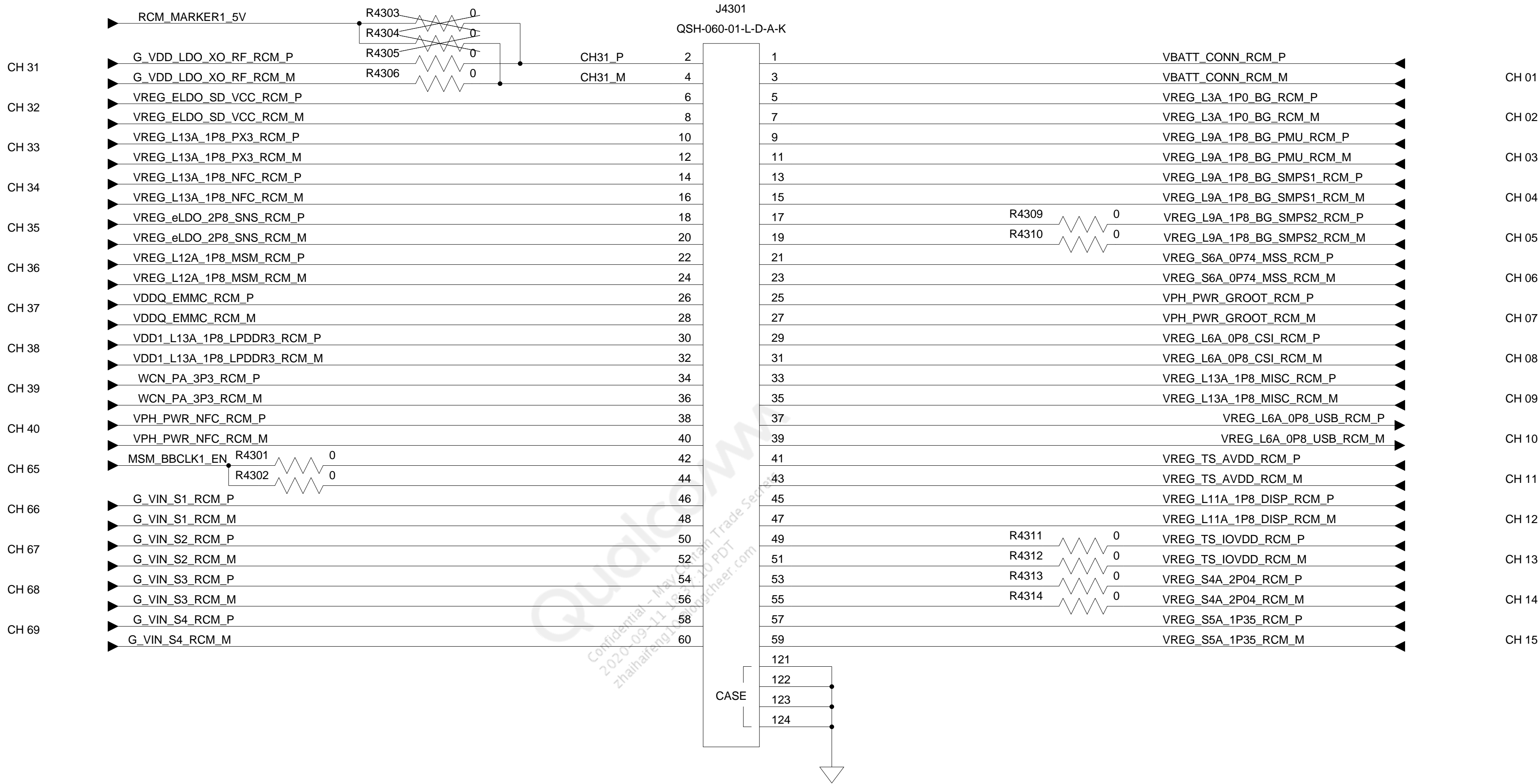
DEFAULT BOOT Config(0b000) is SDC1(eMMC)
Not Support SD CARD boot

| | | | |
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| SIZE D | DRAWING NO LD20-PU825-13 | | REV A |
| SCALE NONE | | SHEET 43 | OF 59 |

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RCM CONNECTOR1



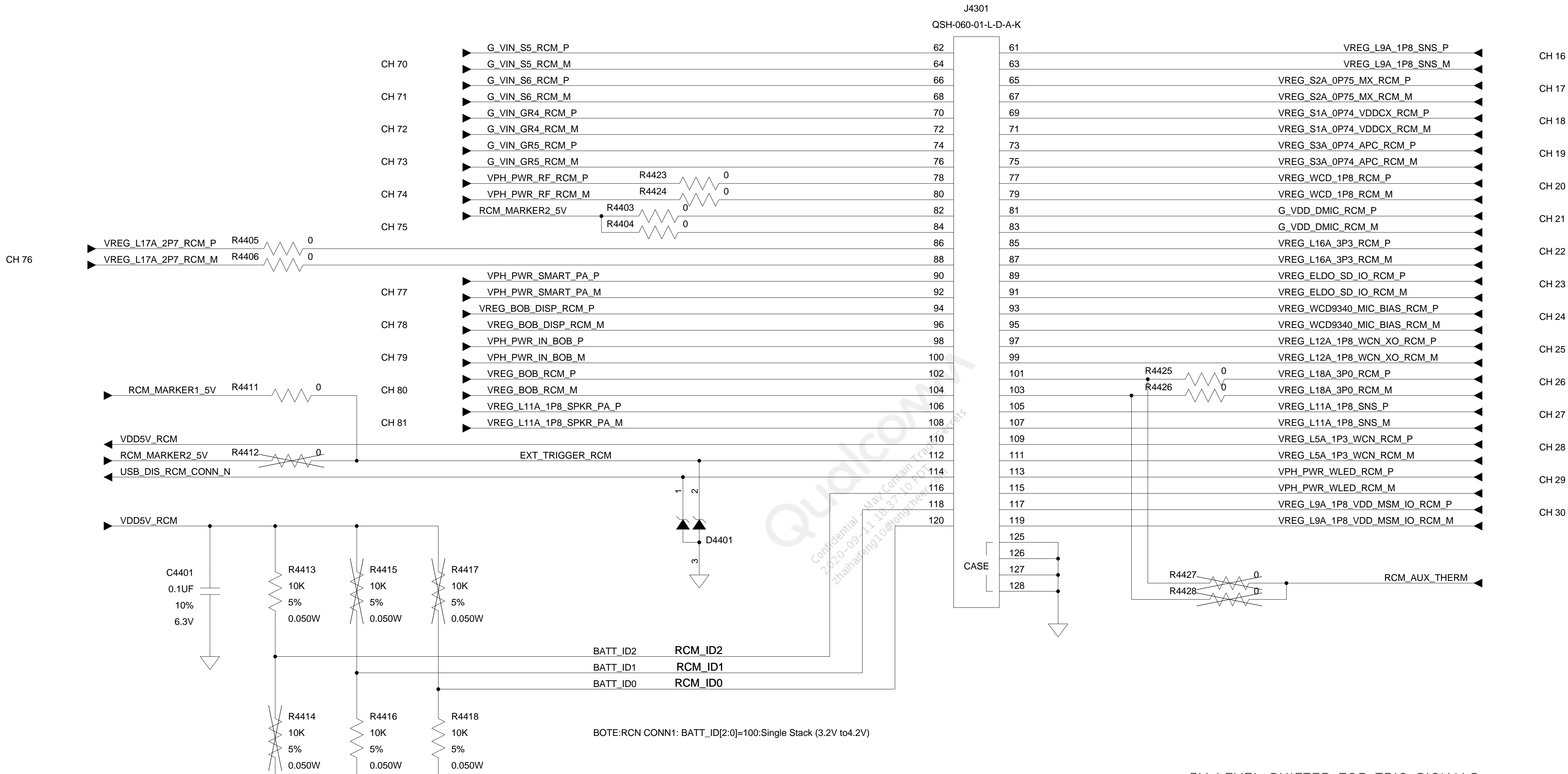
RCM/SPM CONN_1

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 44 OF 59 | |

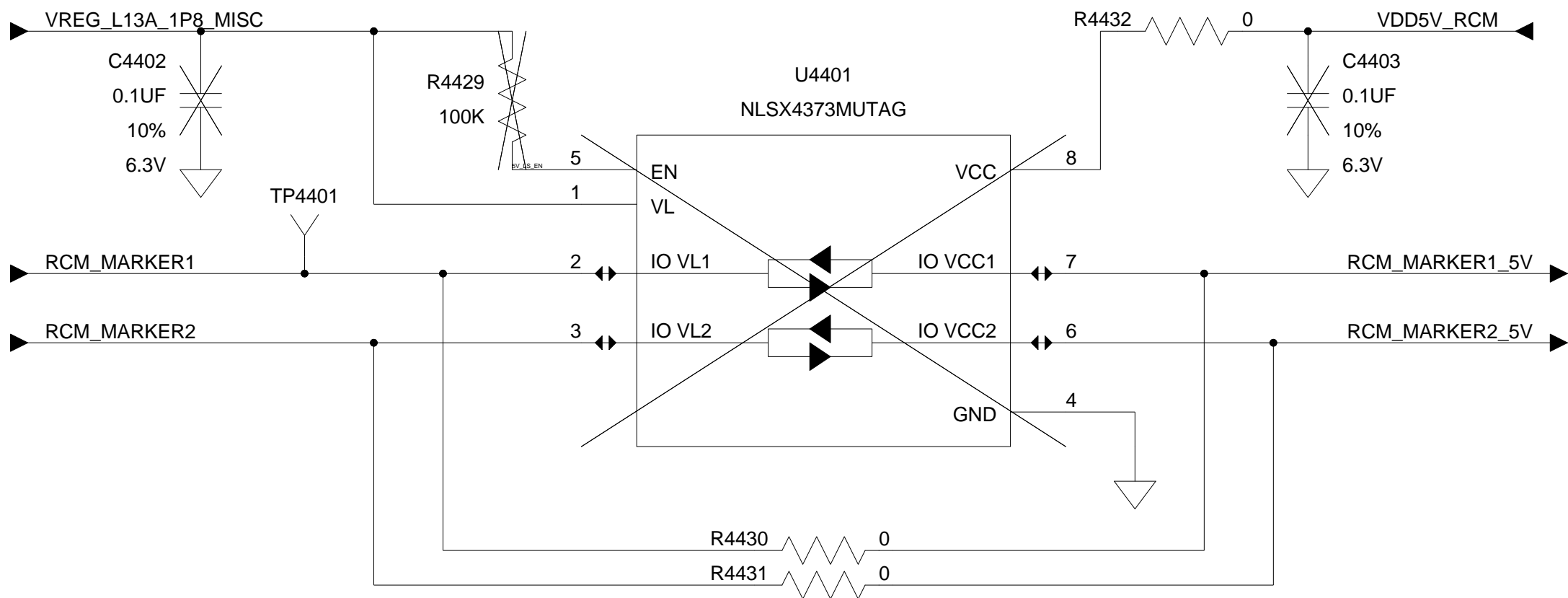
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| LTR | DESCRIPTION | DATE | APPROVED |
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RCM CONNECTOR1



5V LEVEL SHIFTER FOR TRIG SIGNALS



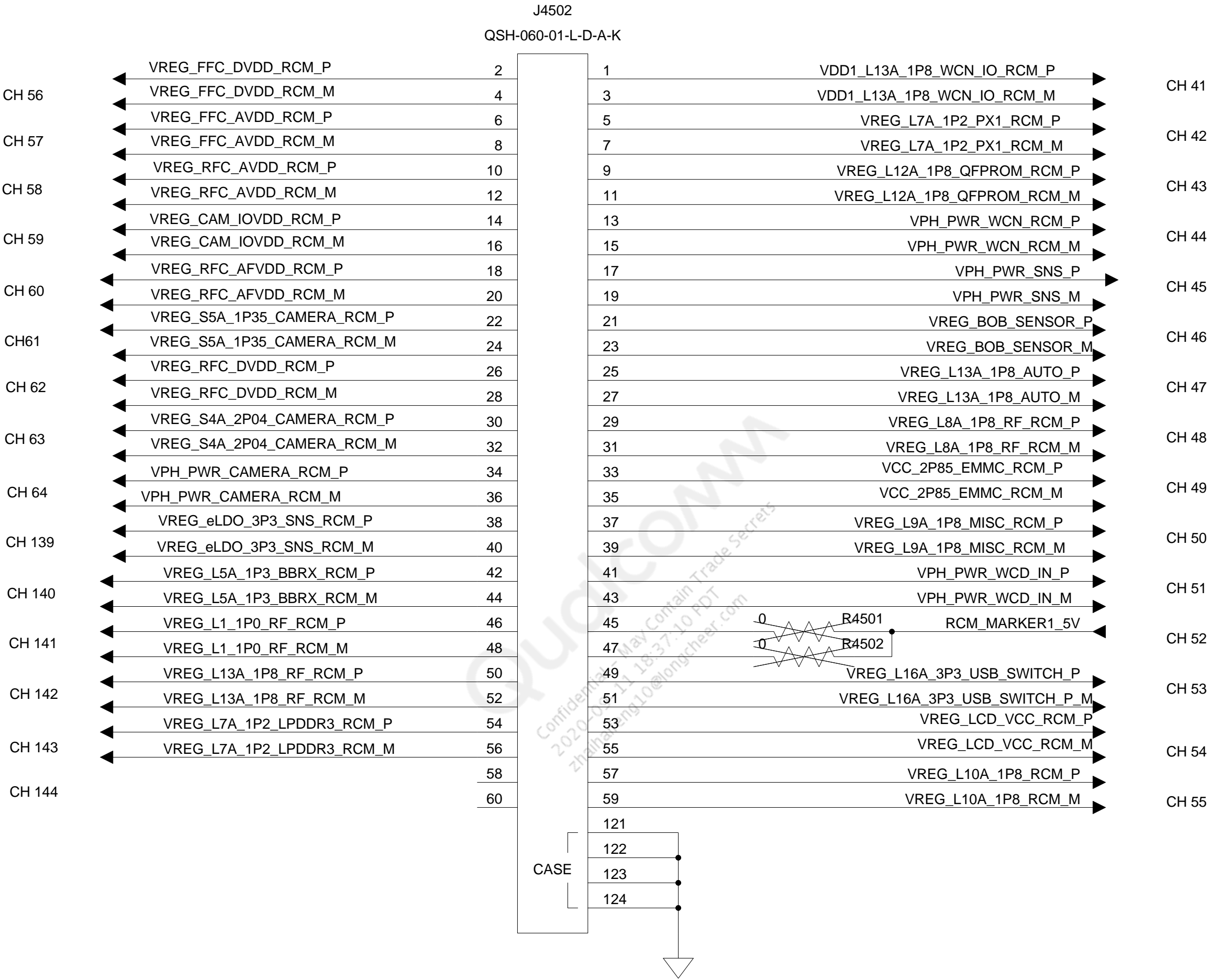
RCM/SPM CONN_2

| SIZE | DRAWING NO | REV |
|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 45 OF 59 | |

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| LTR | DESCRIPTION | DATE | APPROVED |
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RCM CONNECTOR3



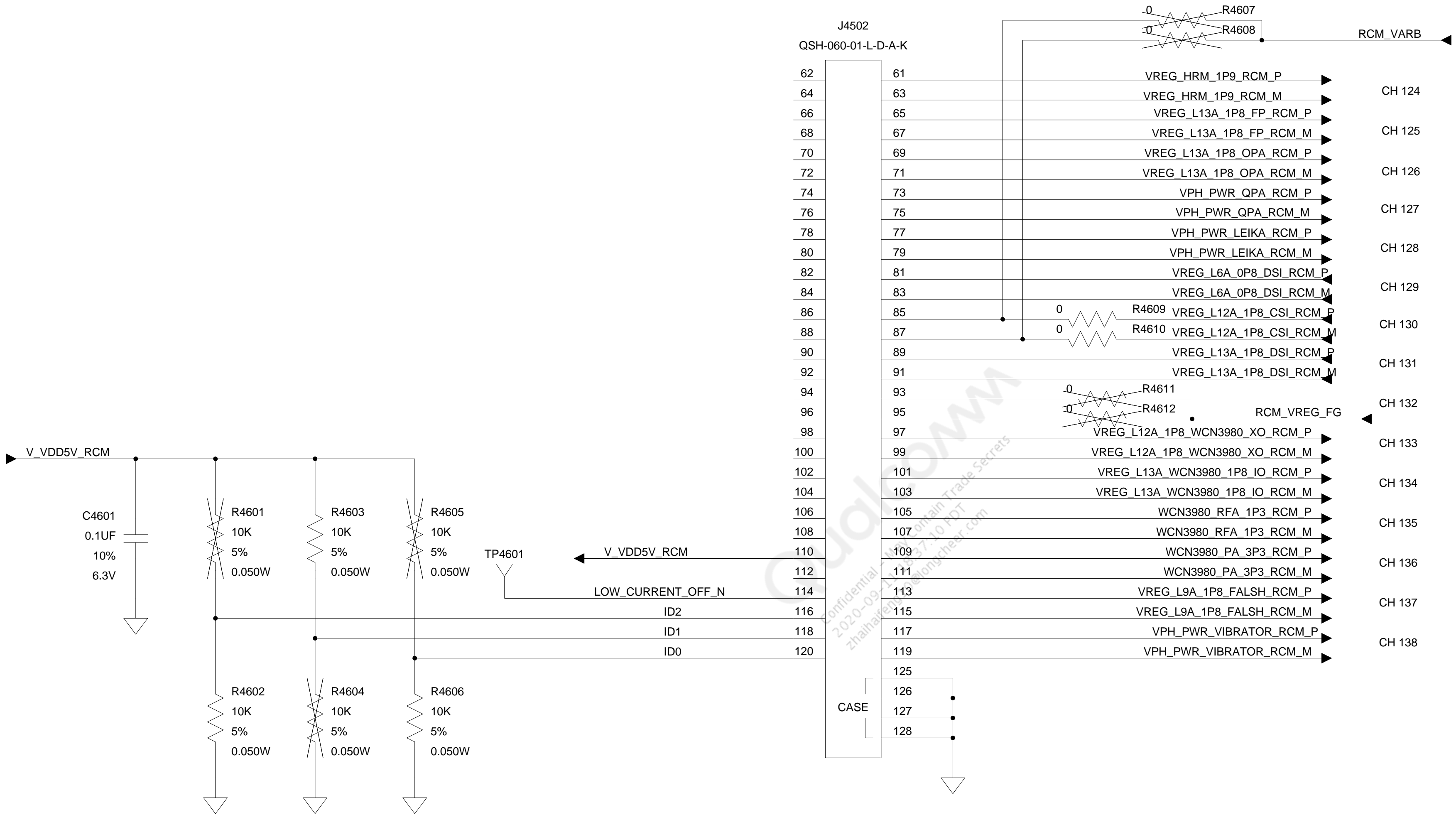
RCM/SPM CONN3

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| SIZE | DRAWING NO | | REV |
| D | LD20-PU825-13 | | A |
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RCM CONNECTOR3

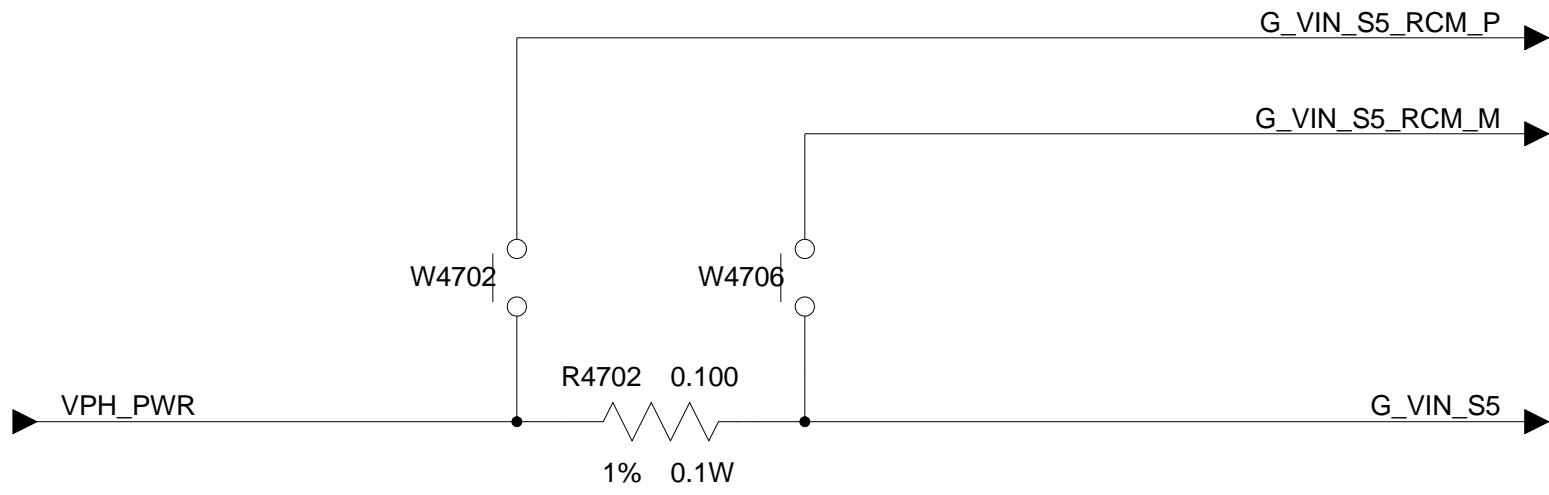


RCM/SPM CONN4

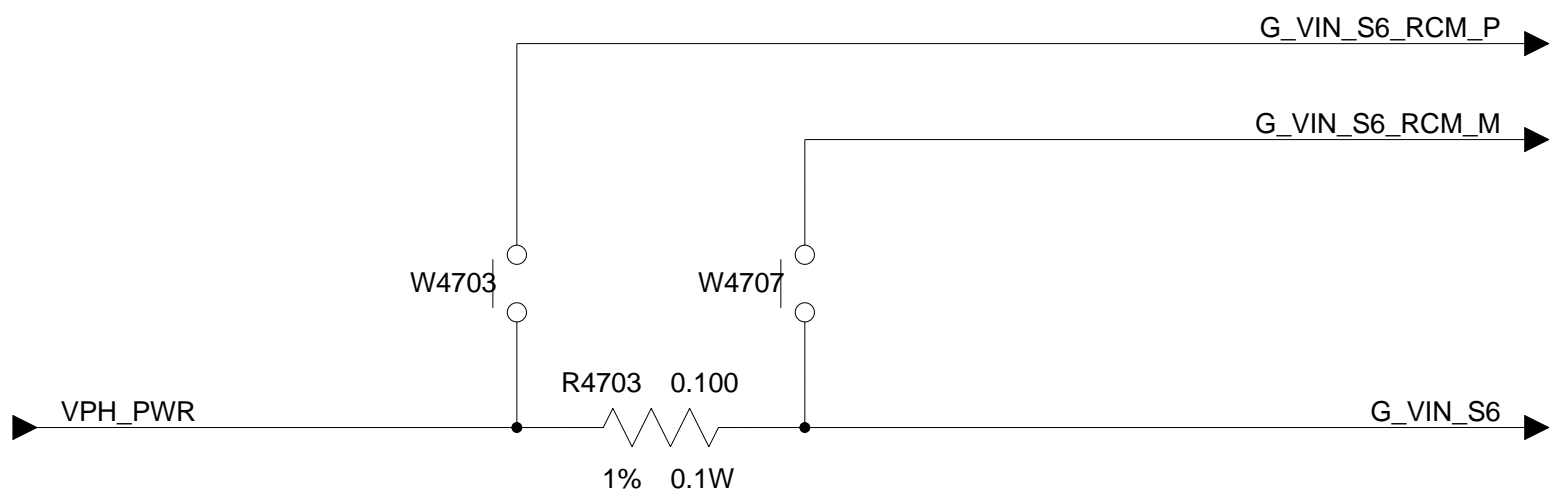
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|------------|----------------|-----|
| D | LD20-PU825-13 | A |
| SCALE NONE | SHEET 47 OF 59 | |

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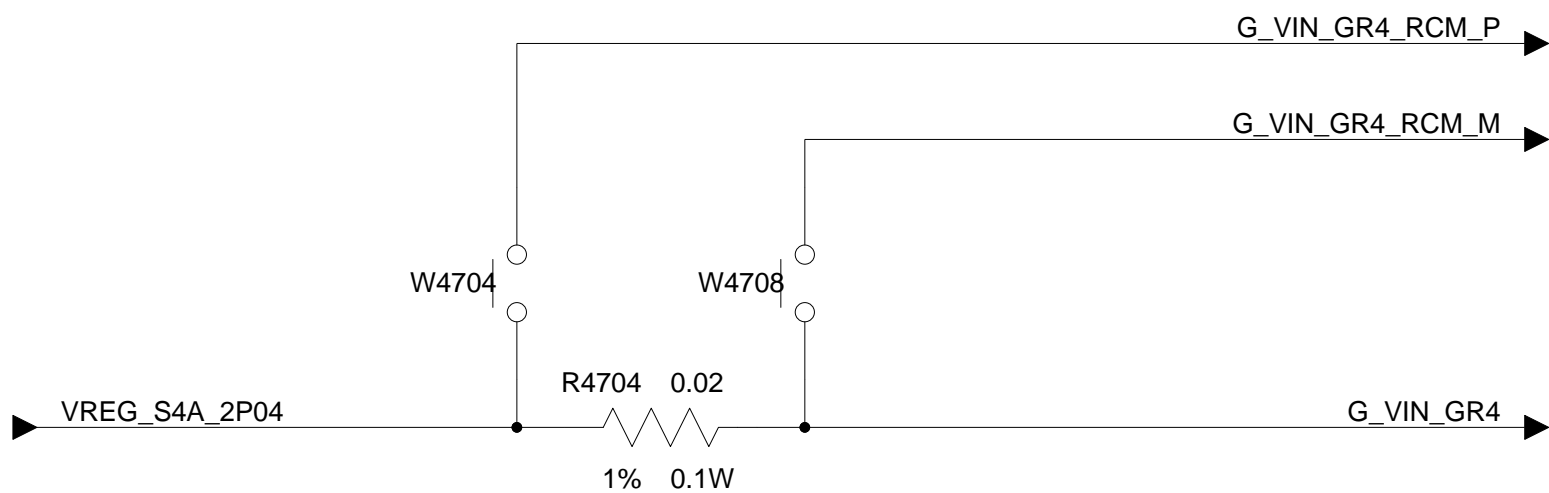
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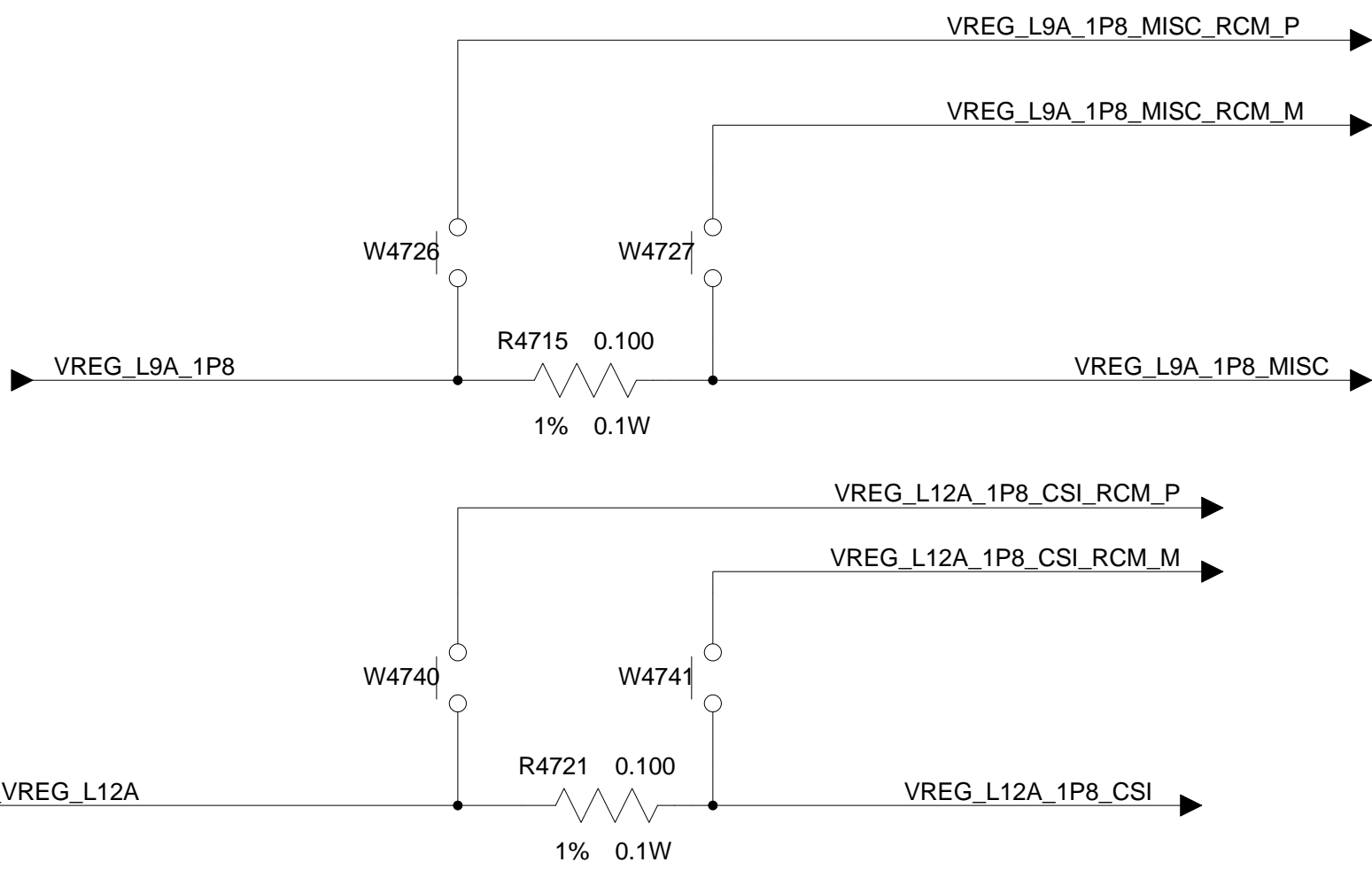
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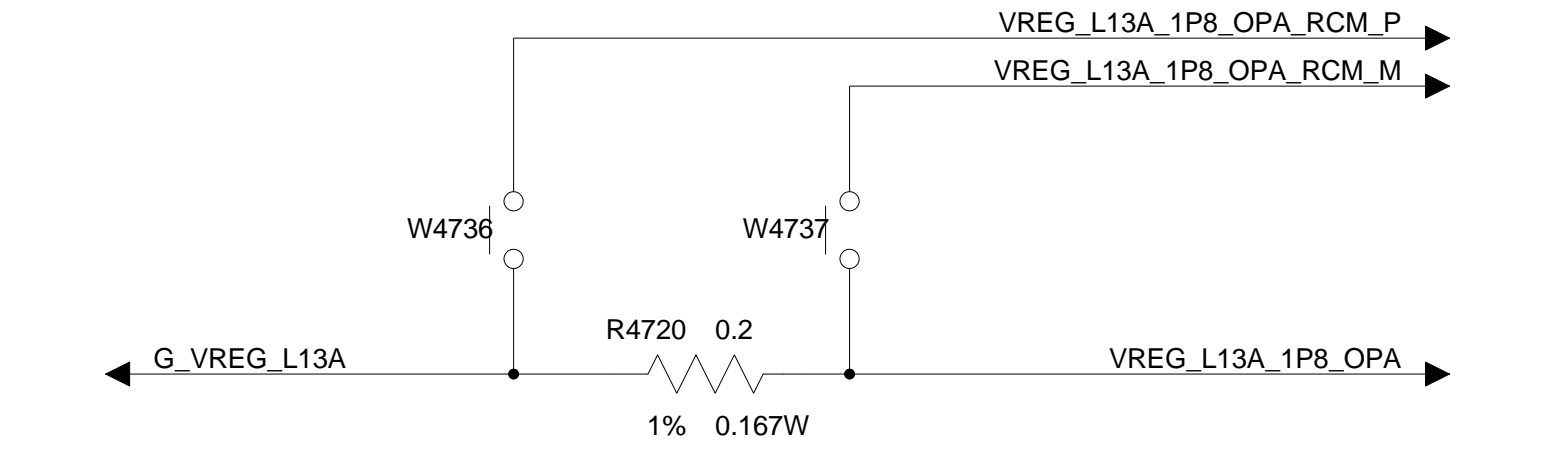
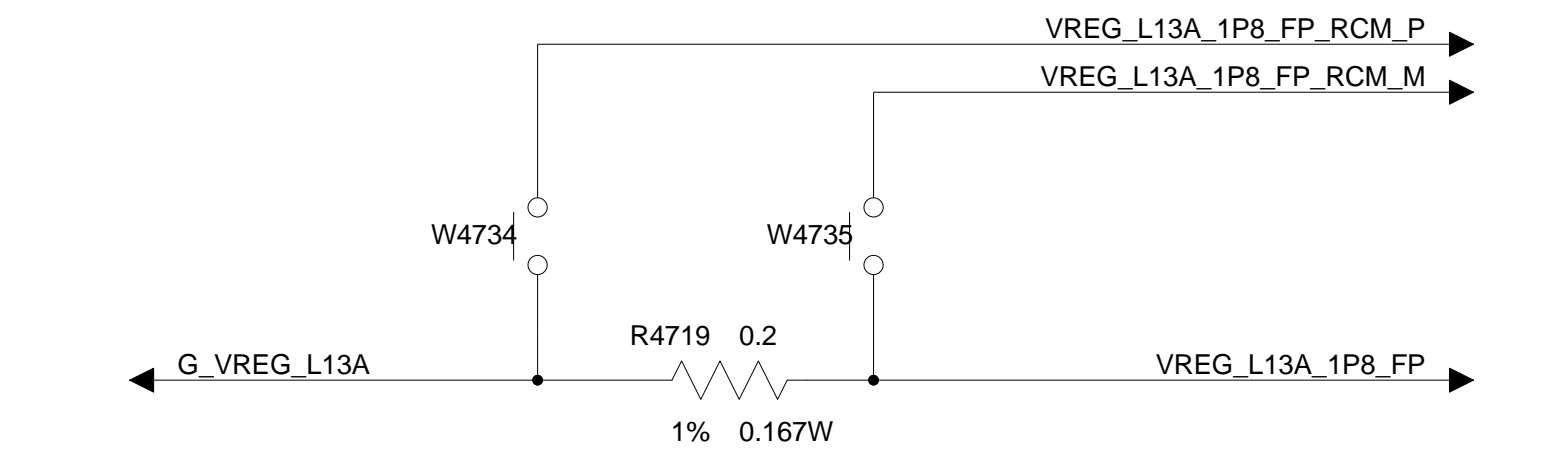
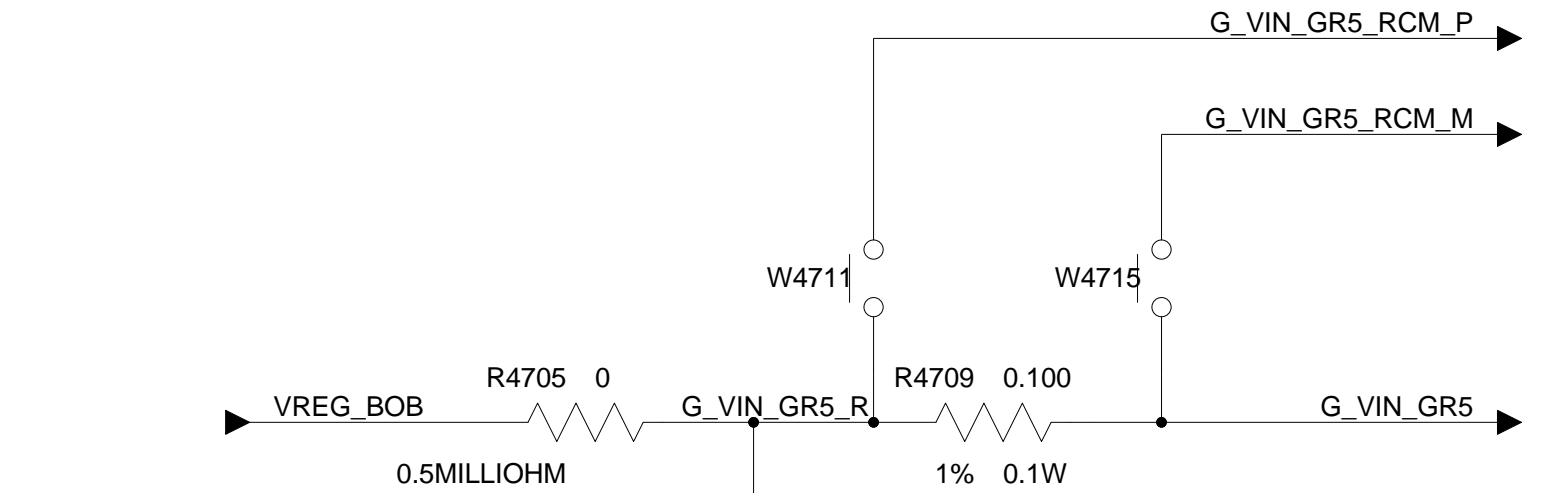
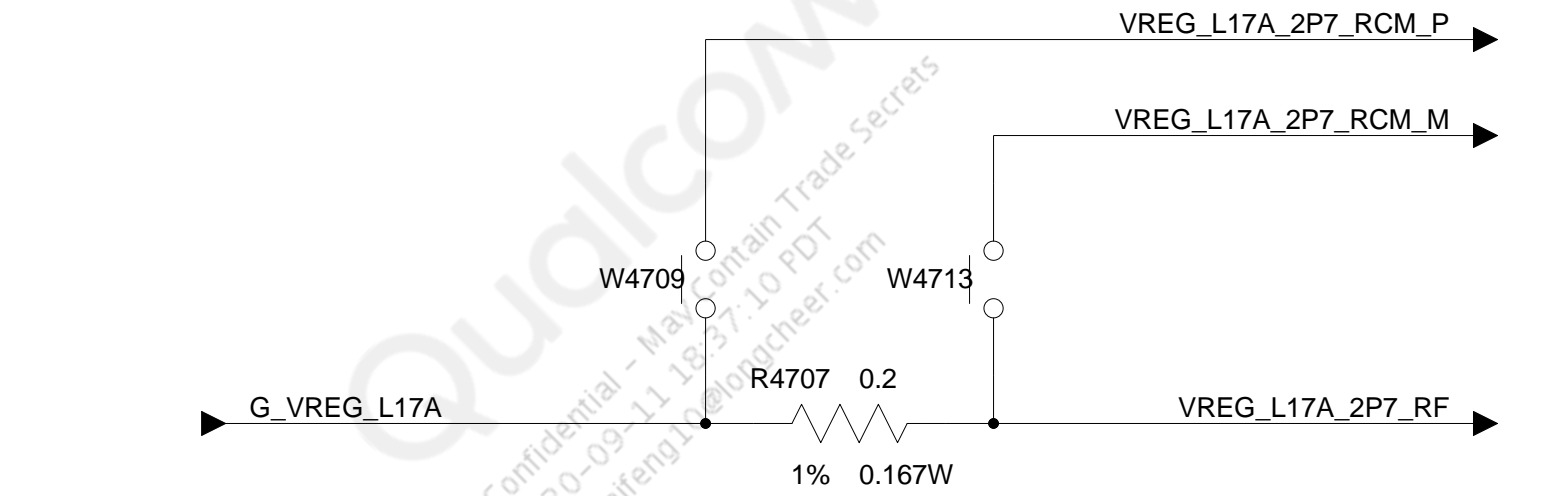
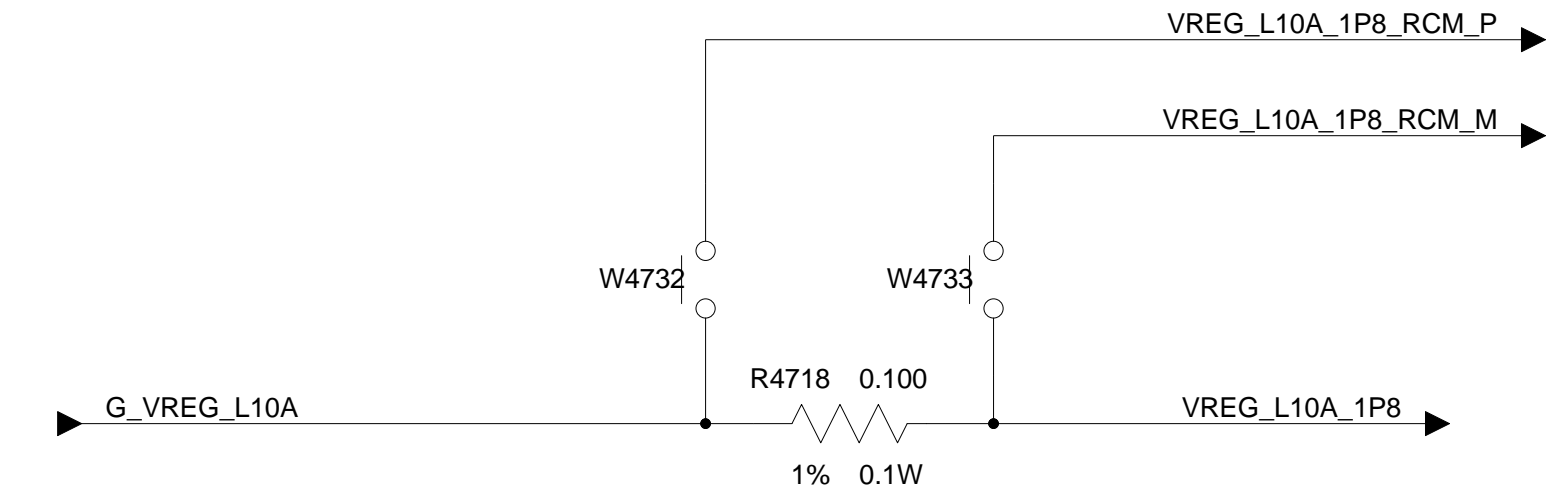
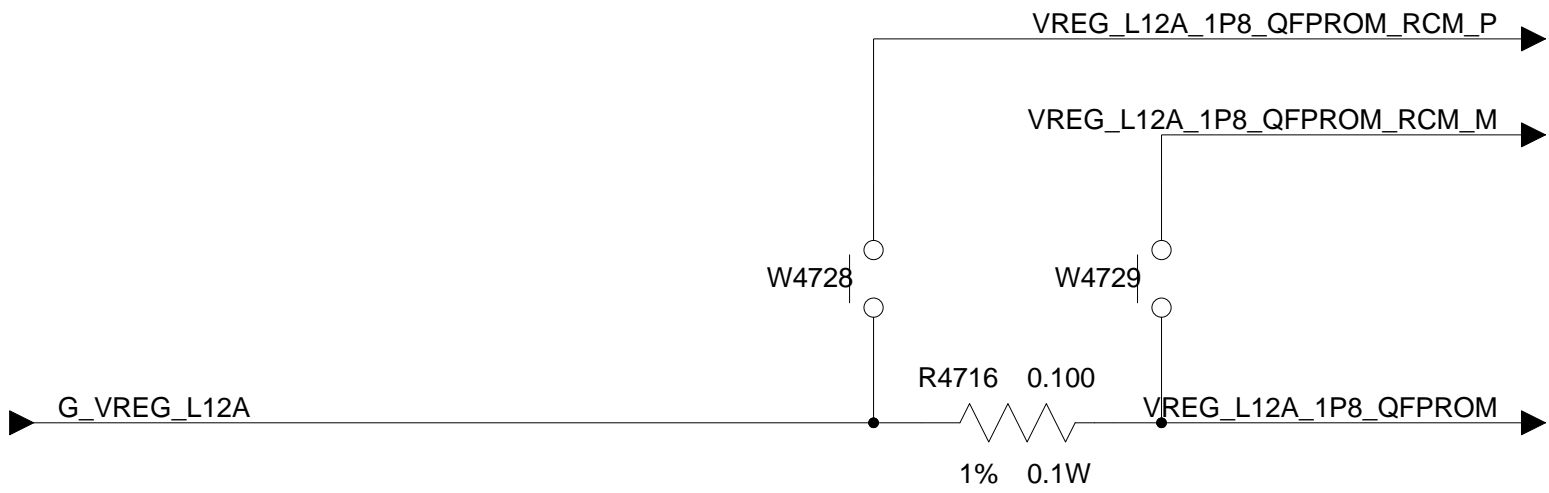


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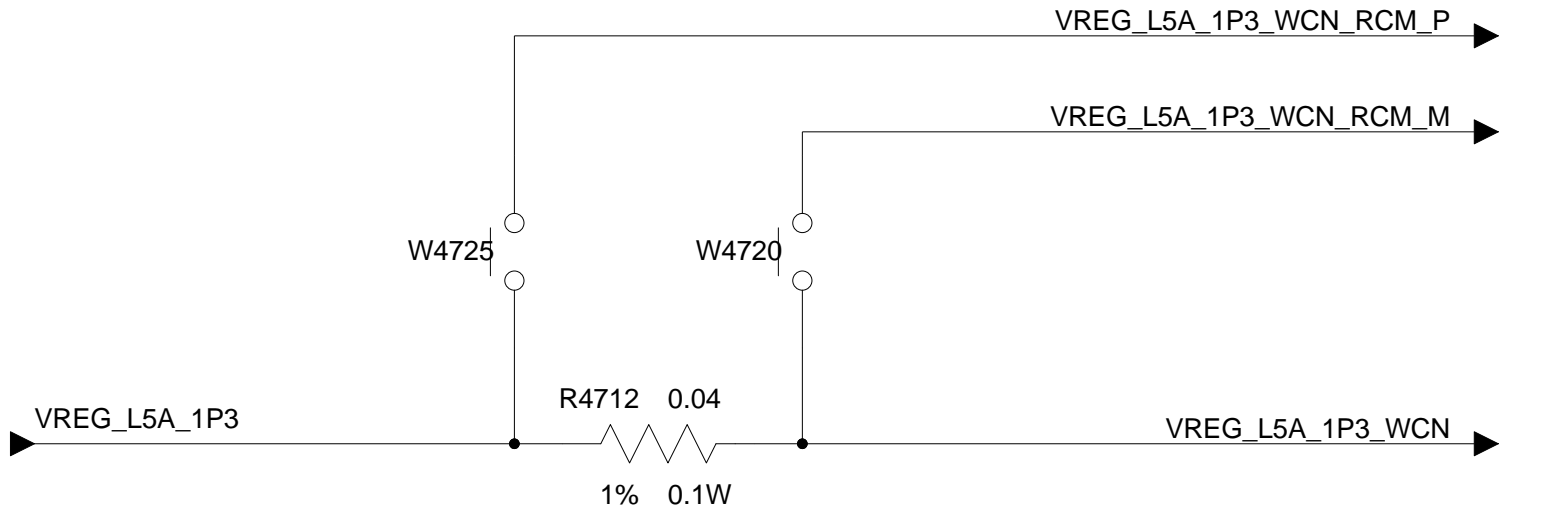


RCM CHANNELS1

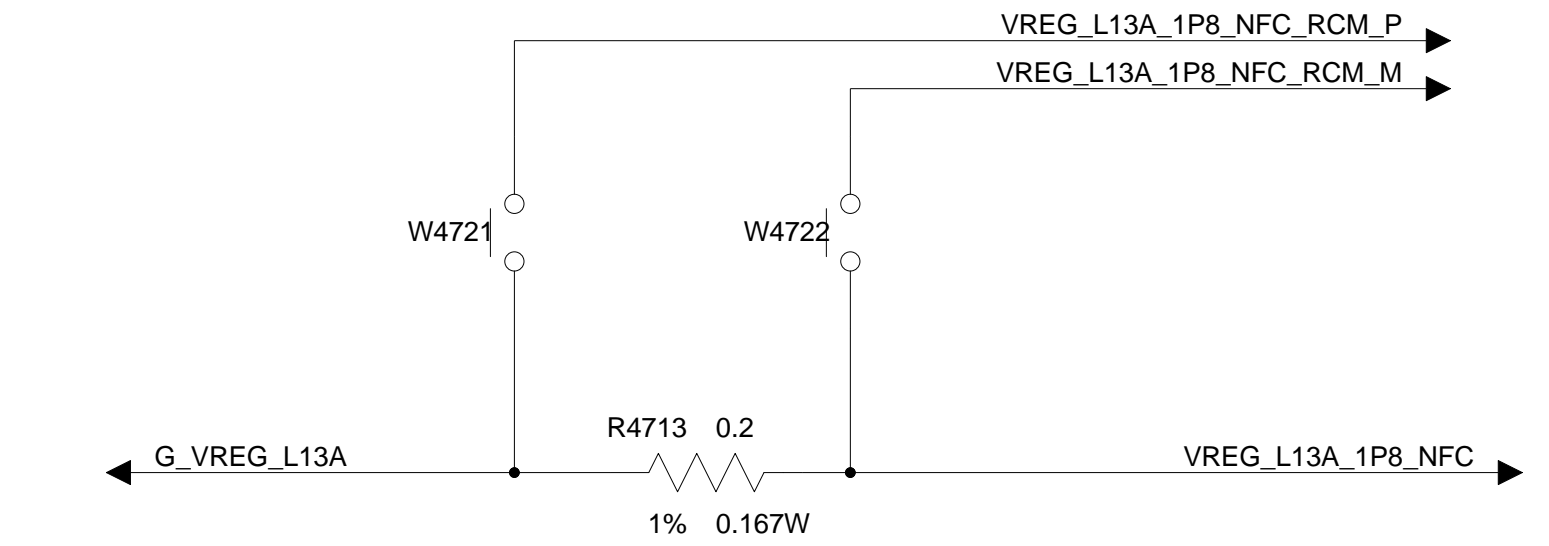
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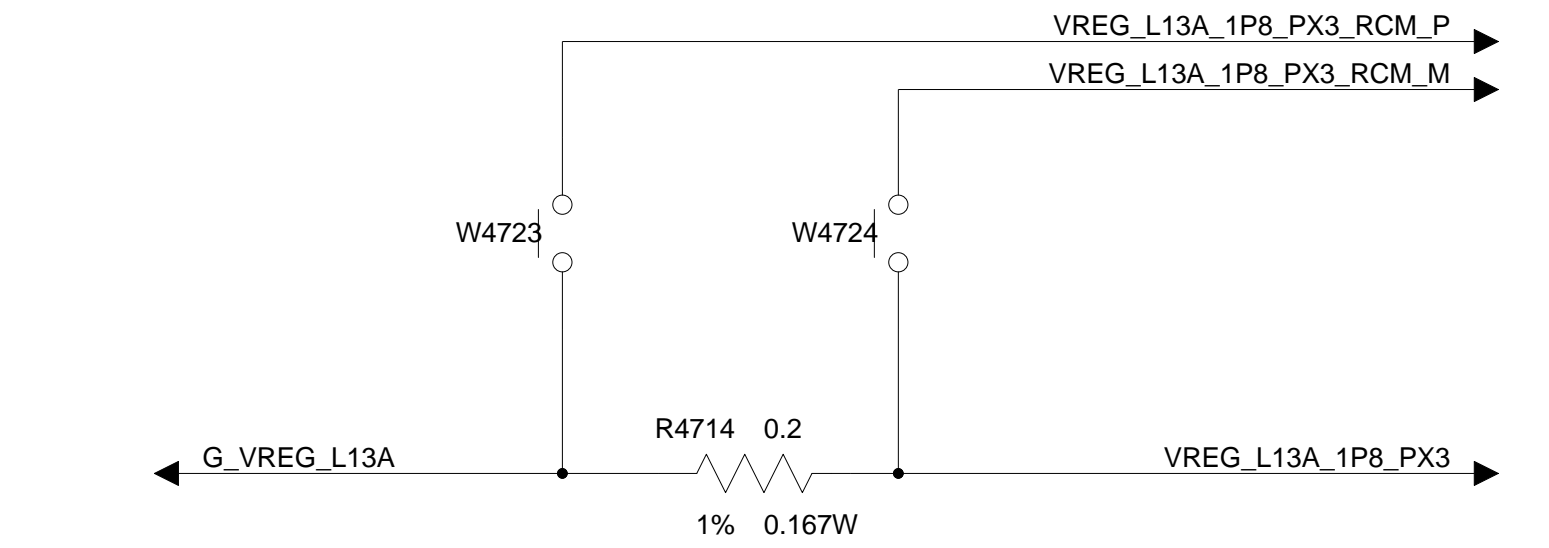
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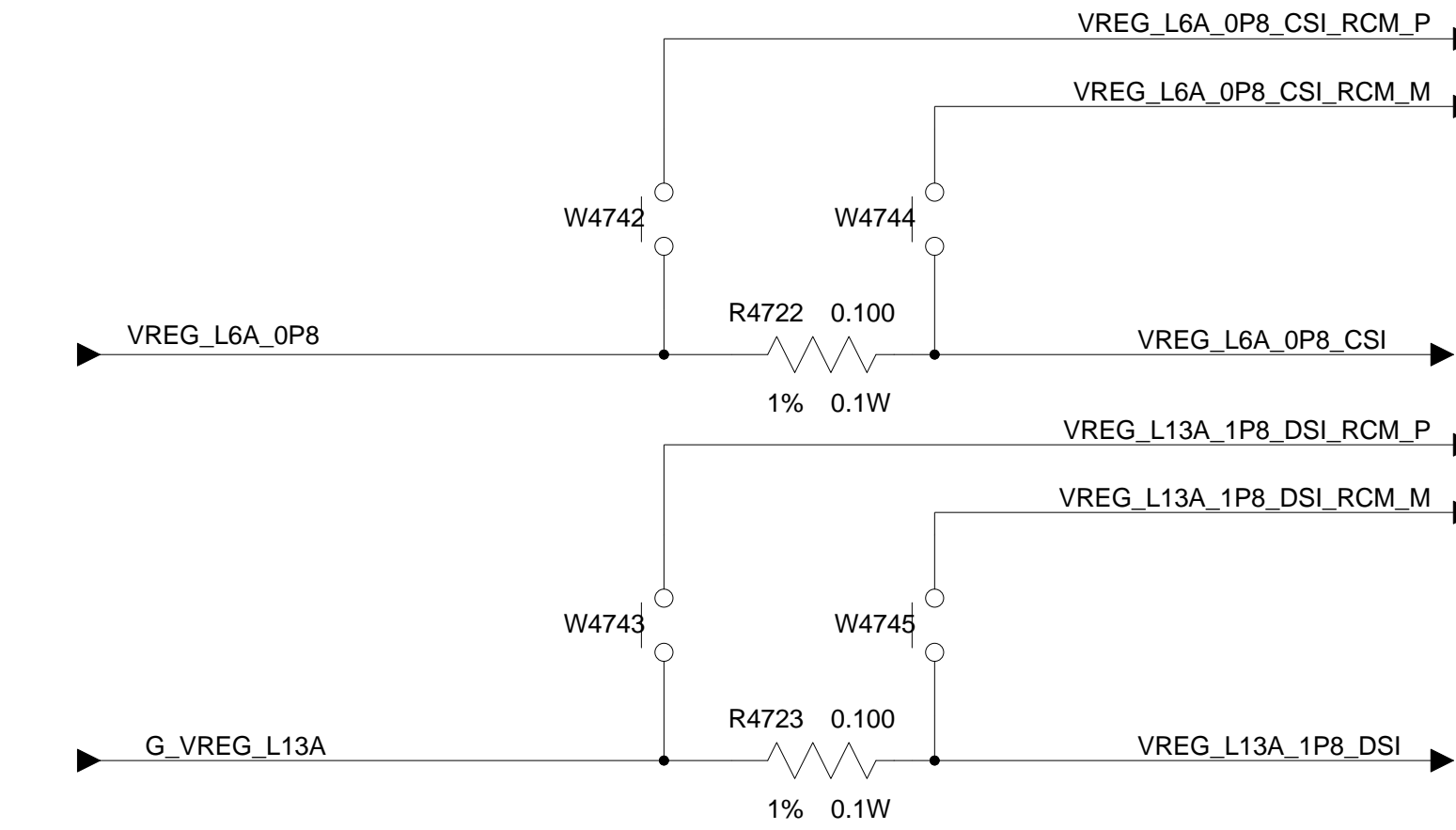
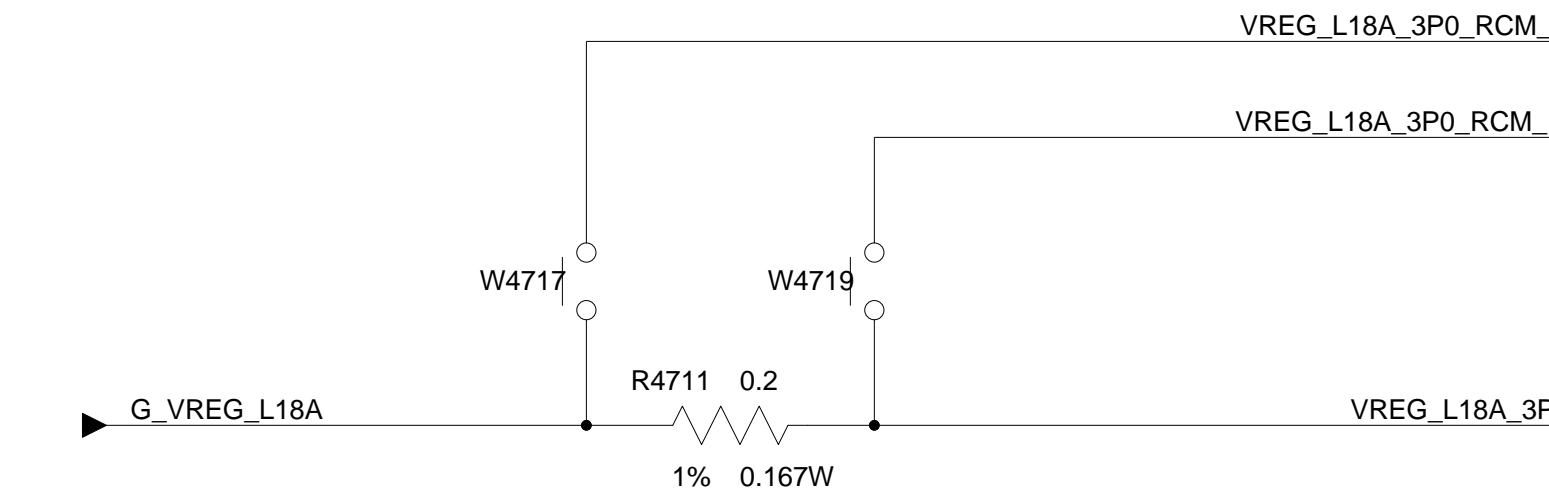
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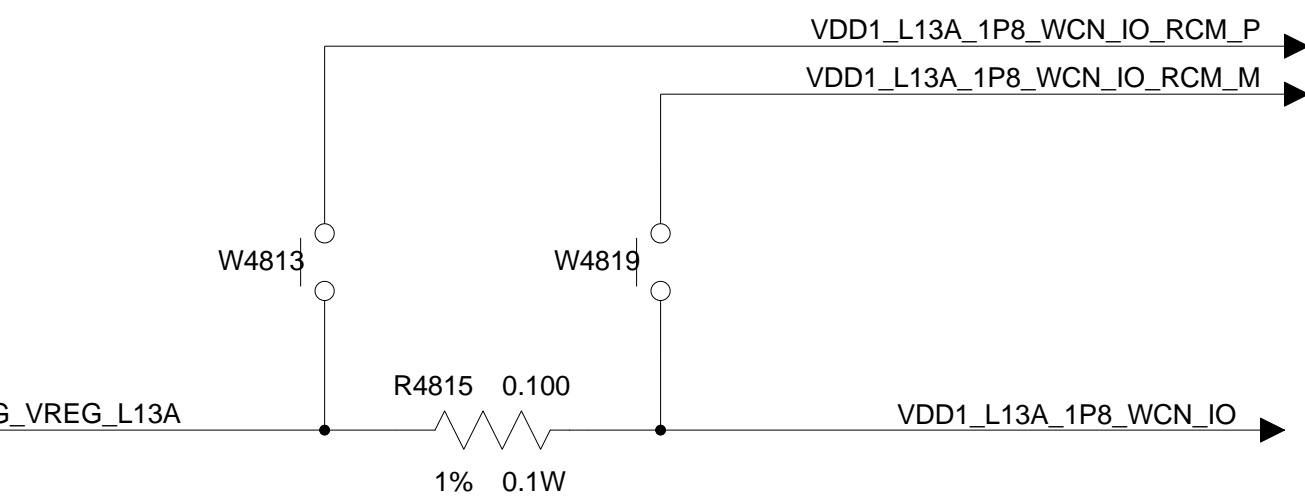
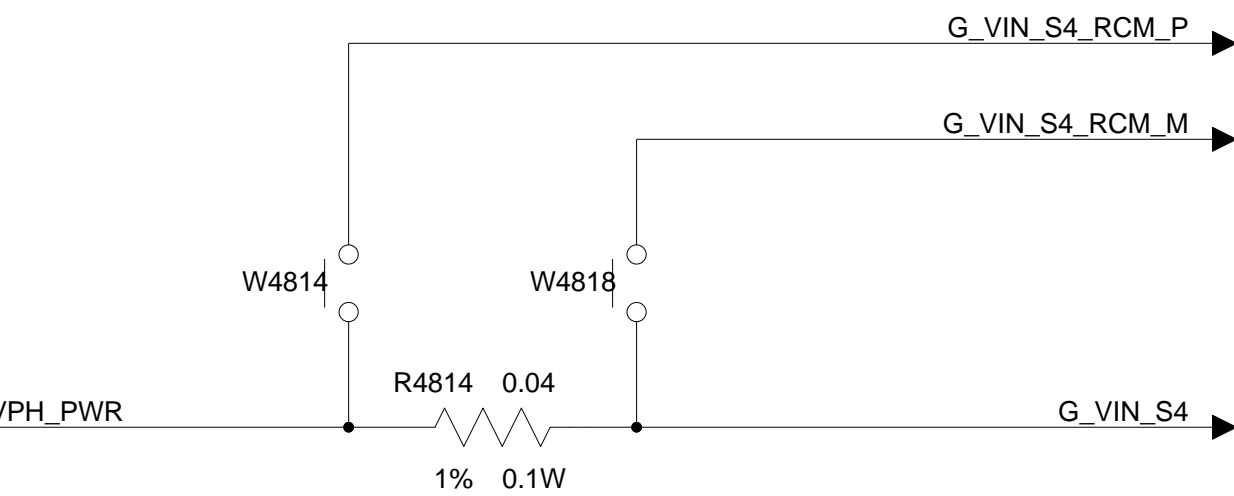
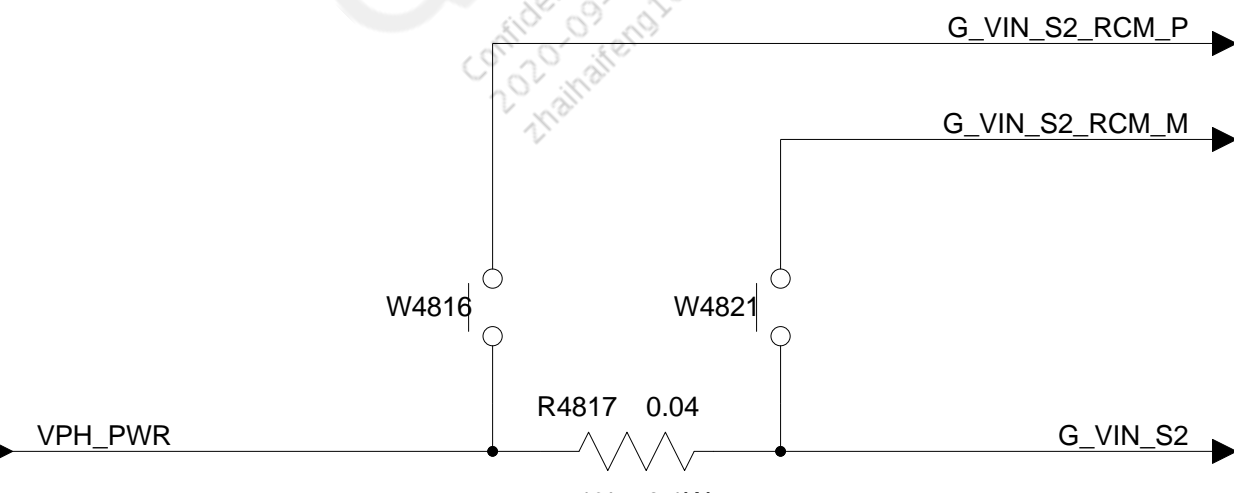
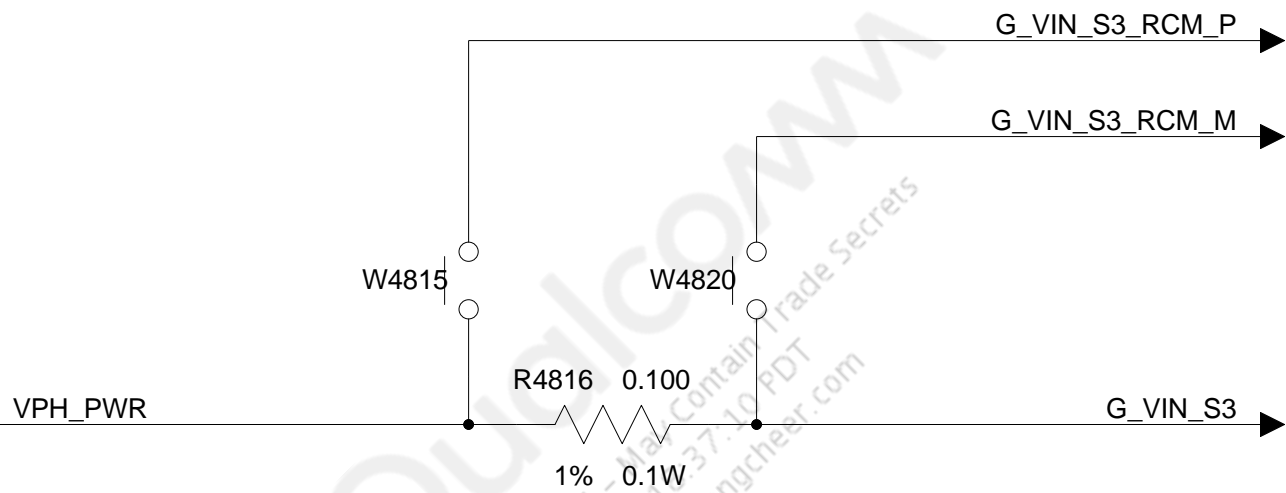
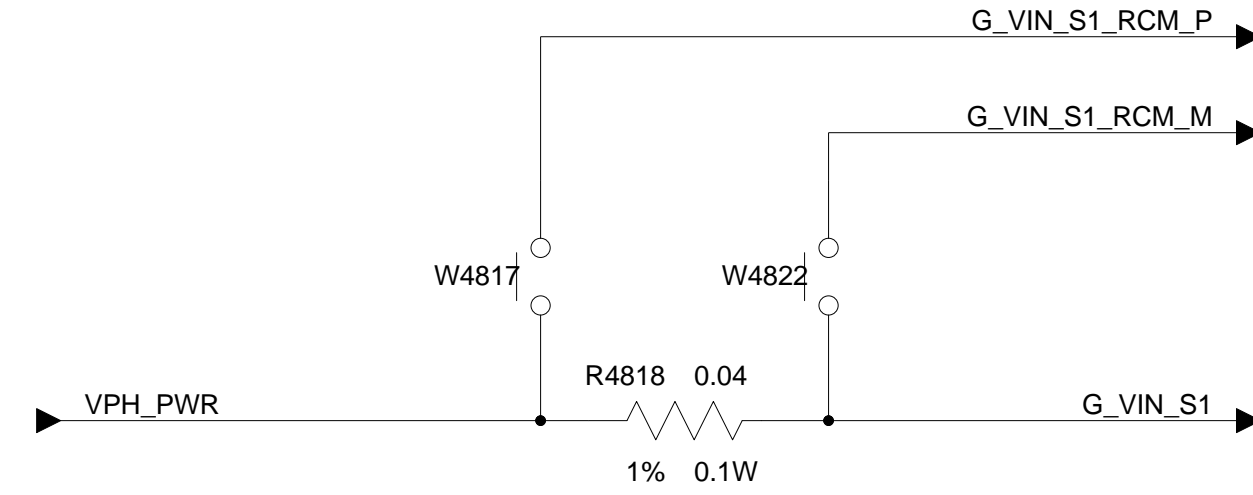
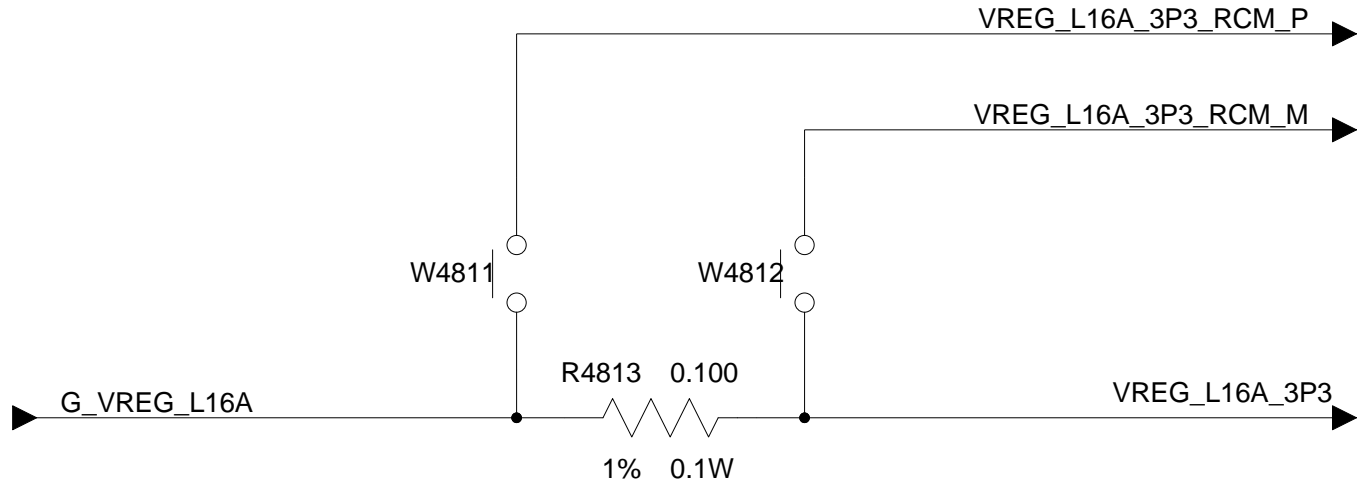
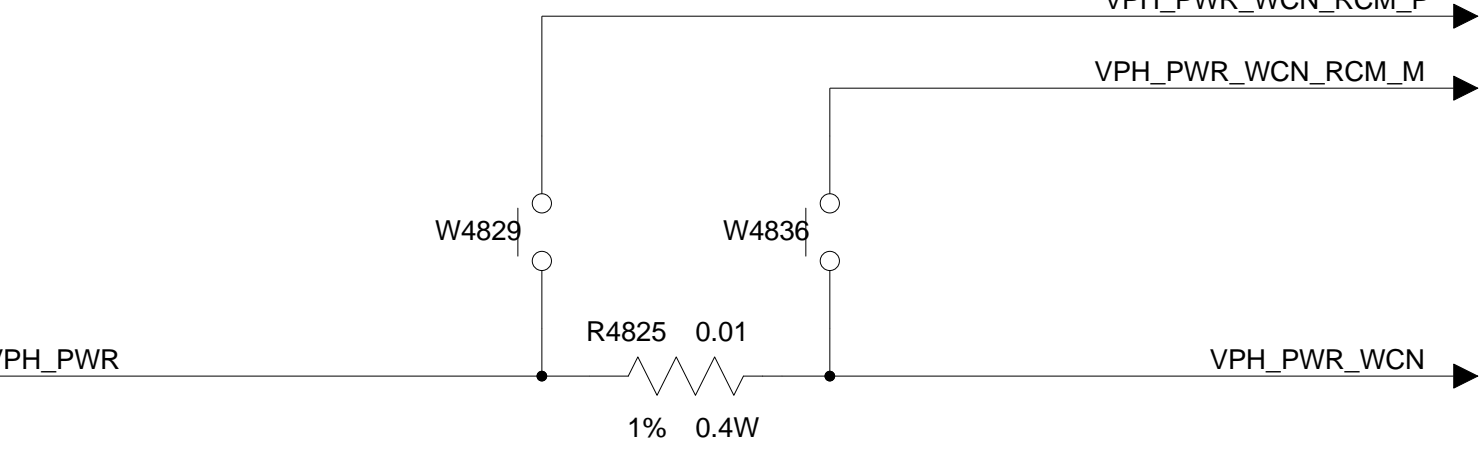
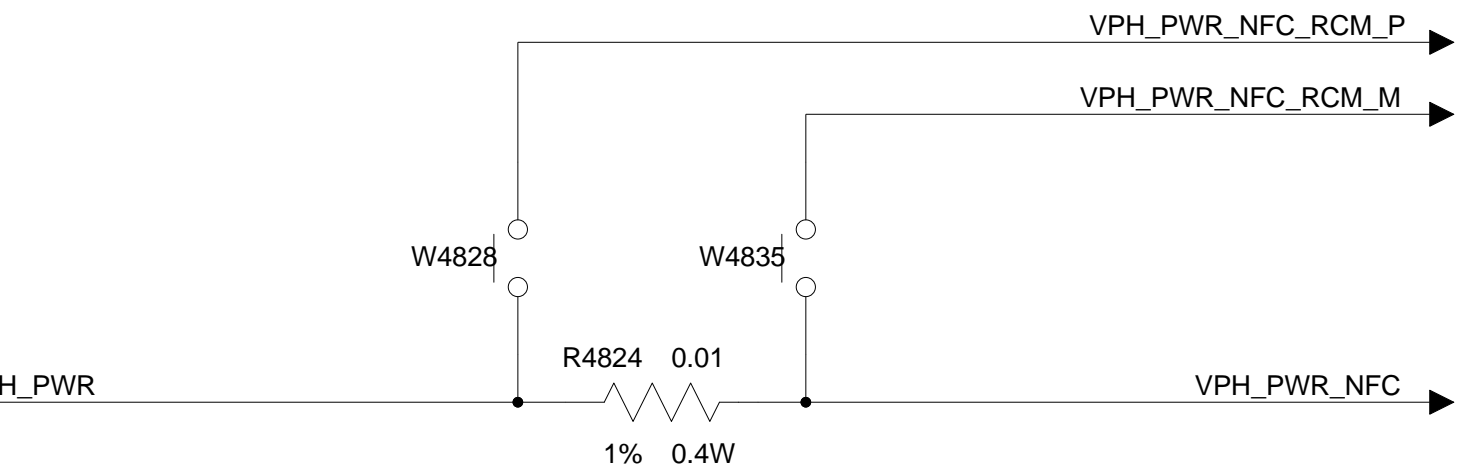
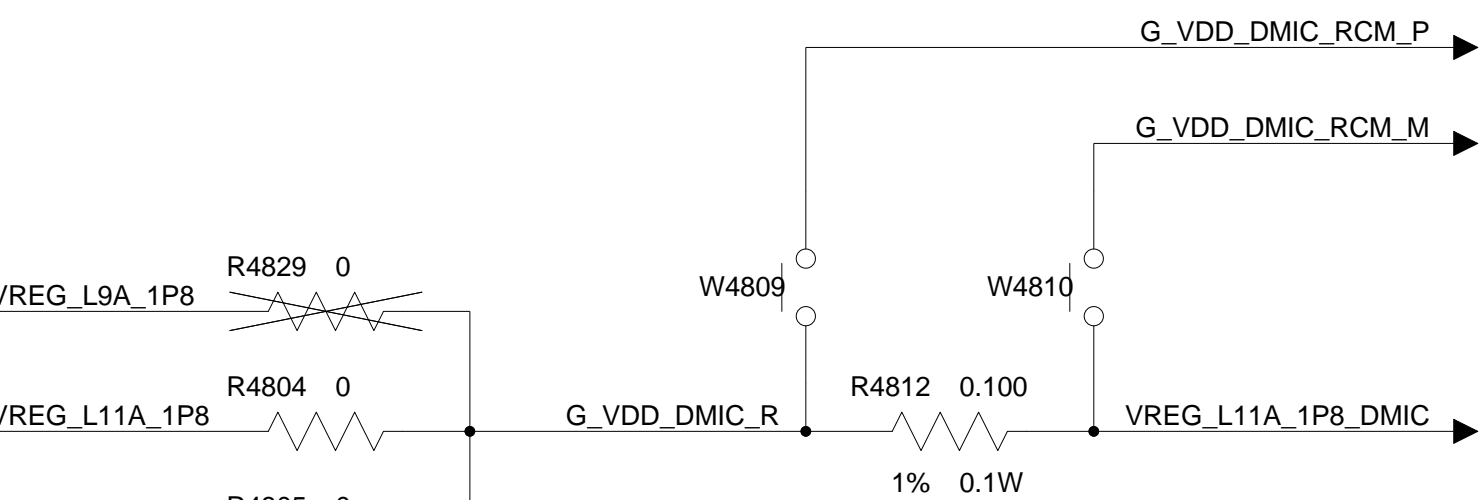
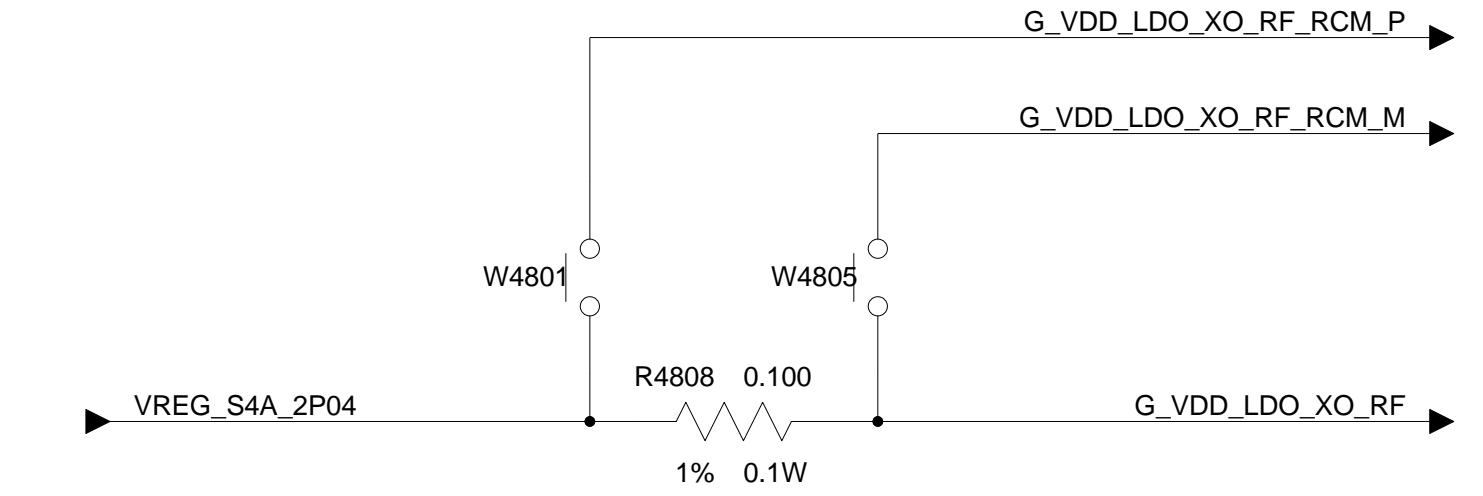
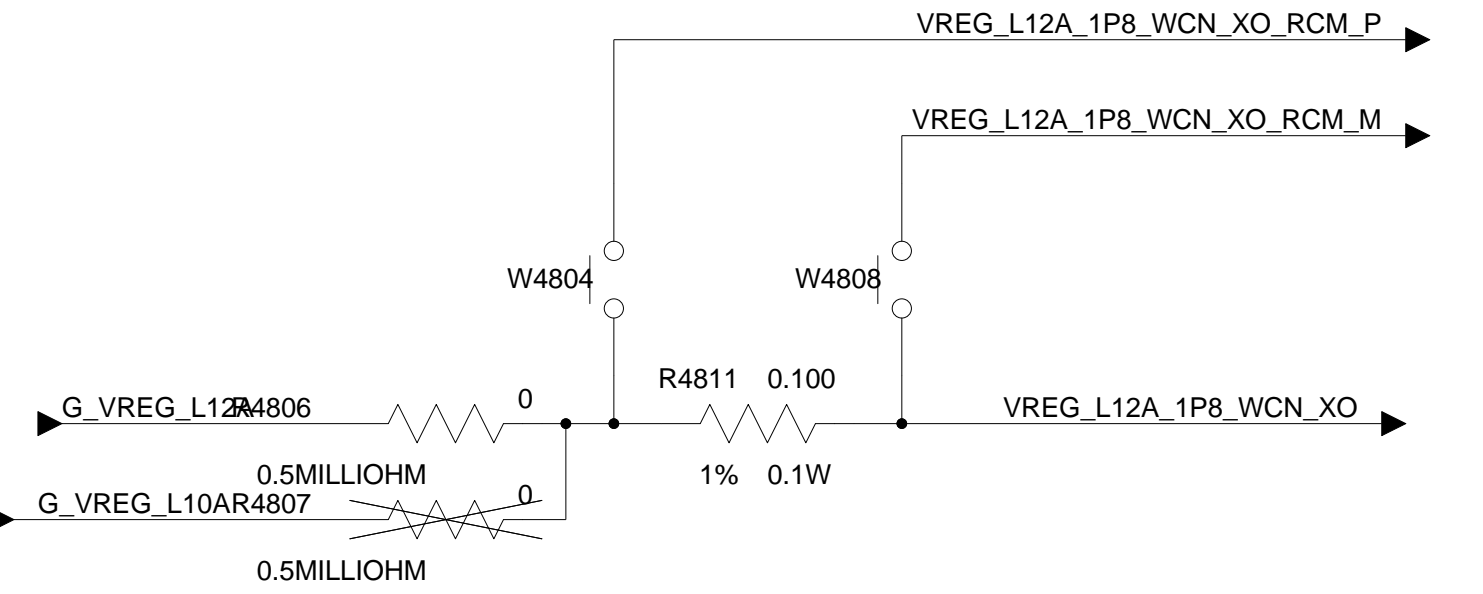
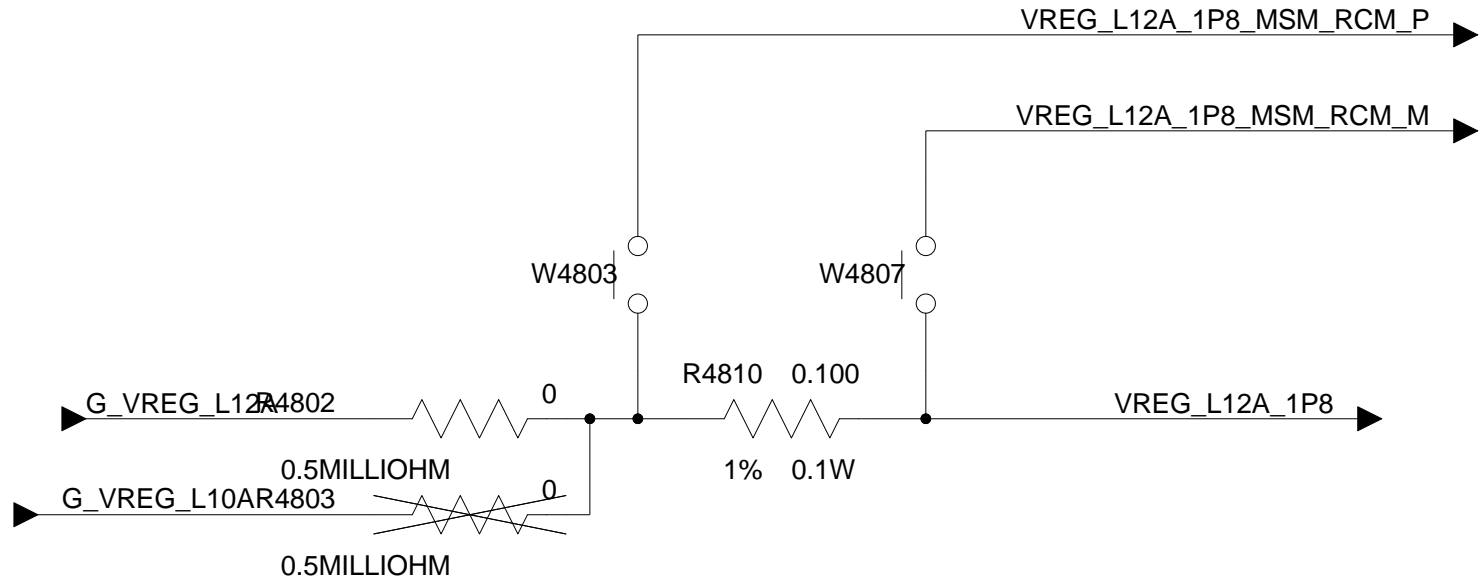
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| SCALE | SHEET 49 | OF 59 |

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zhaihaifeng.10@qcomcheet.com

RESERVE_5

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| SCALE | NONE | | SHEET 50 | OF 59 |

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DISPLAY: INTERFACE

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zhaihaifeng.10@qcomcheet.com

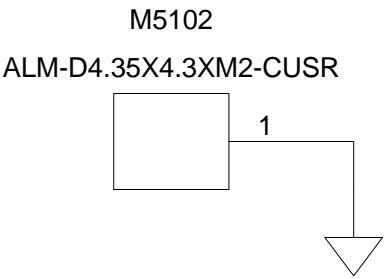
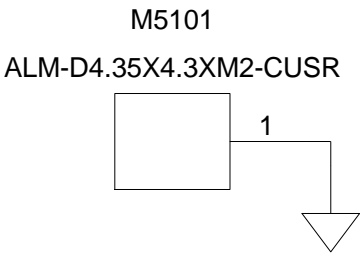
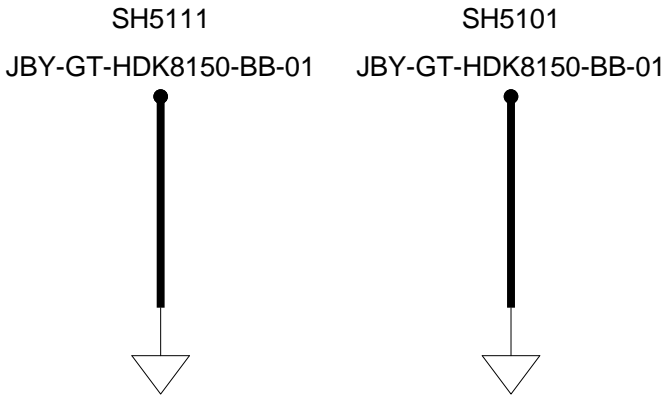
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| SCALE NONE | | SHEET 51 | OF 59 |

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SHIELDS



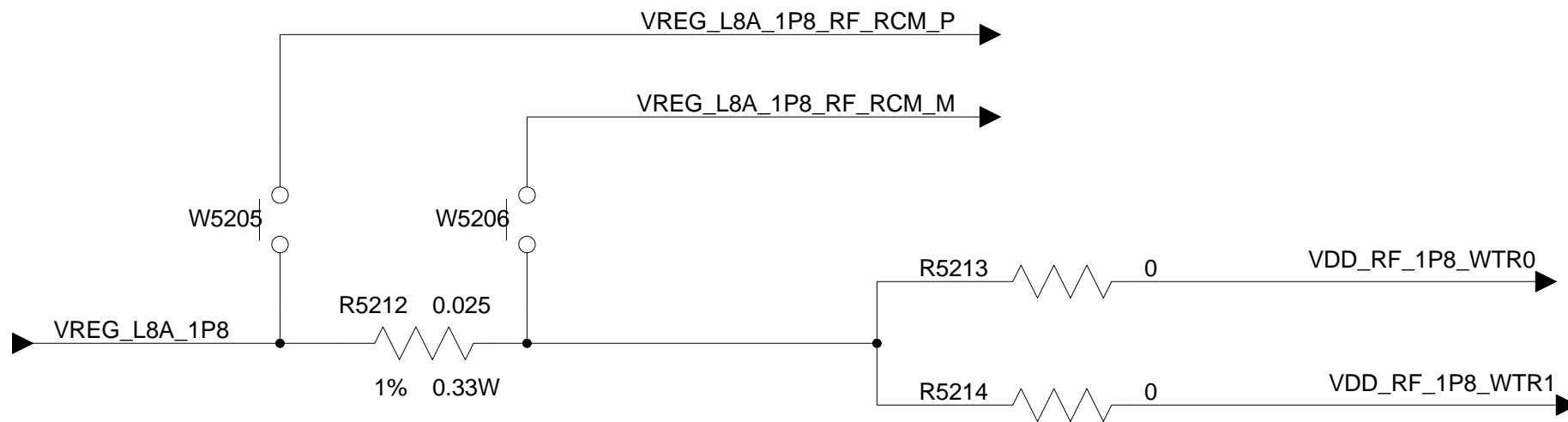
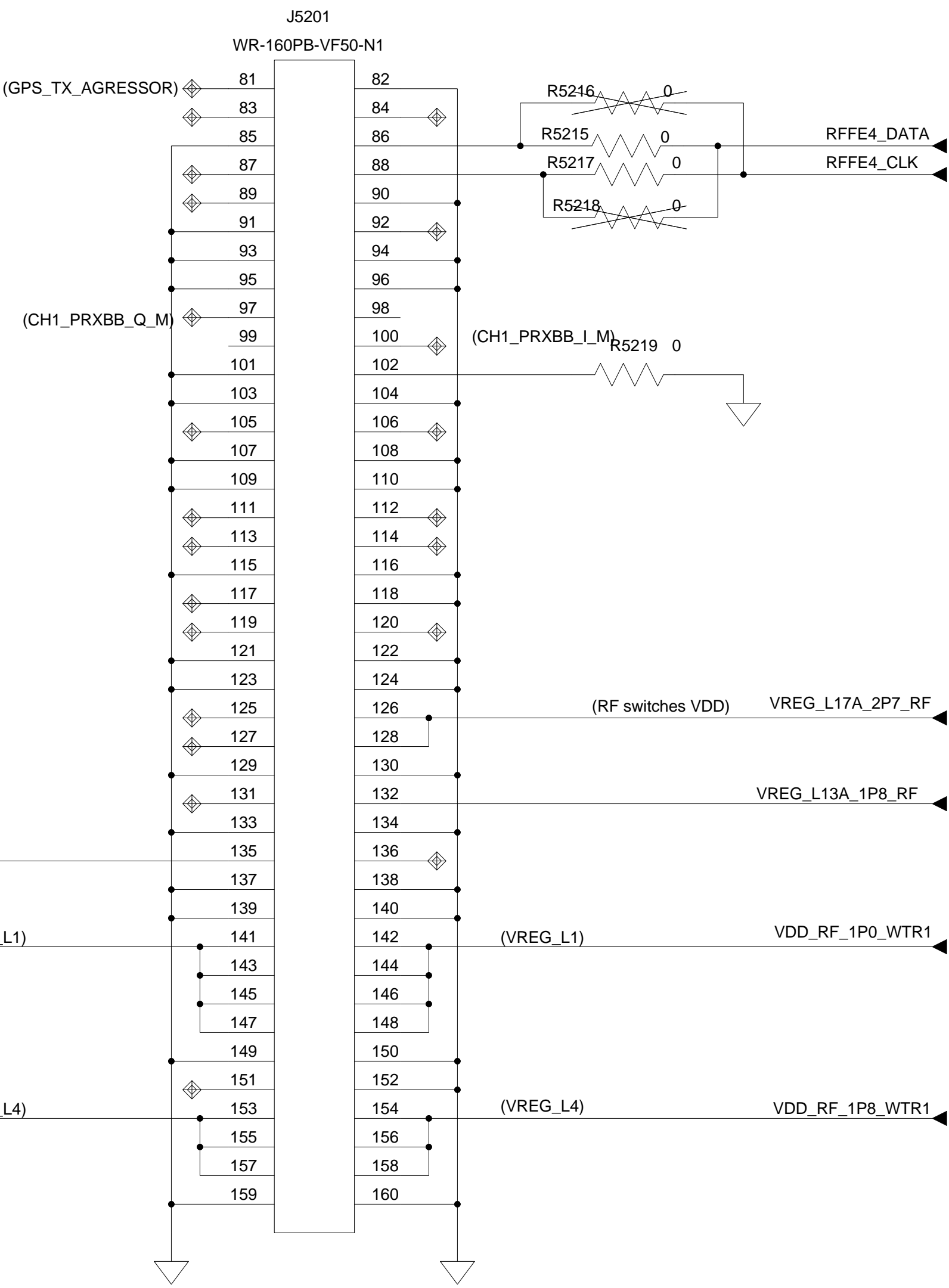
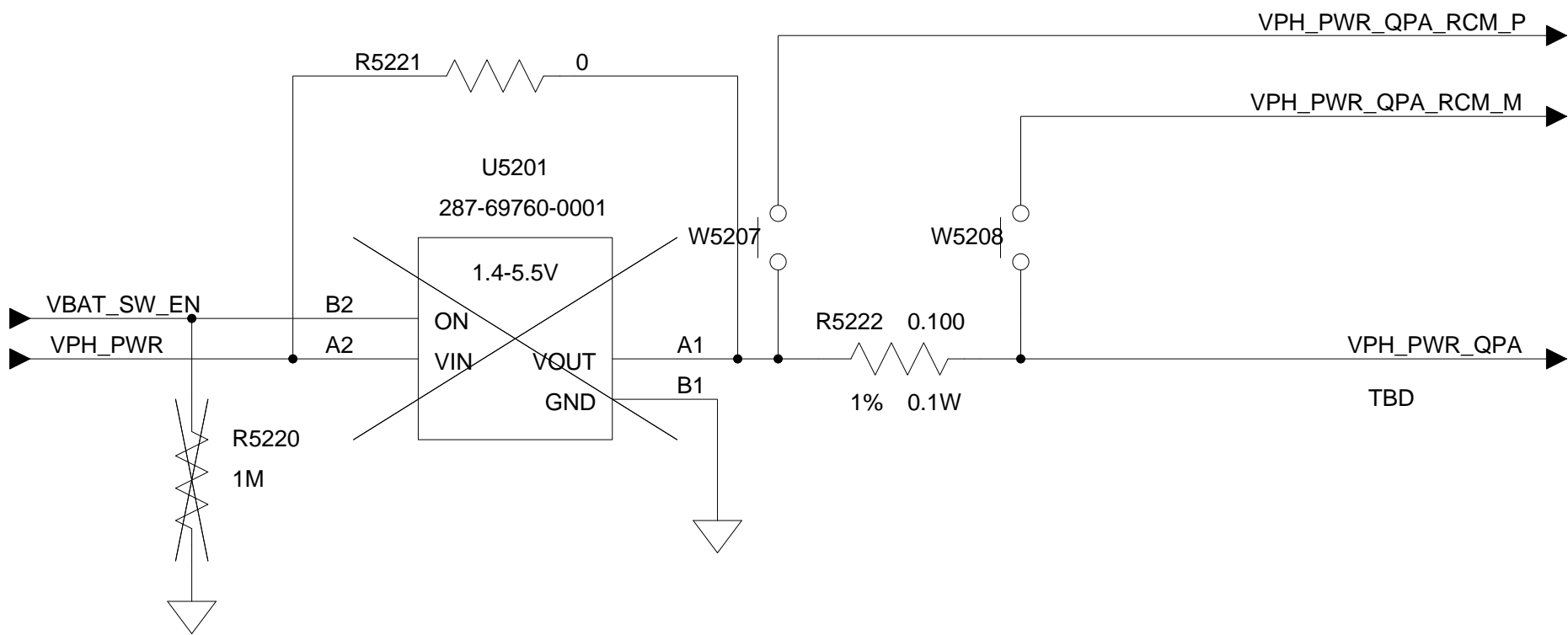
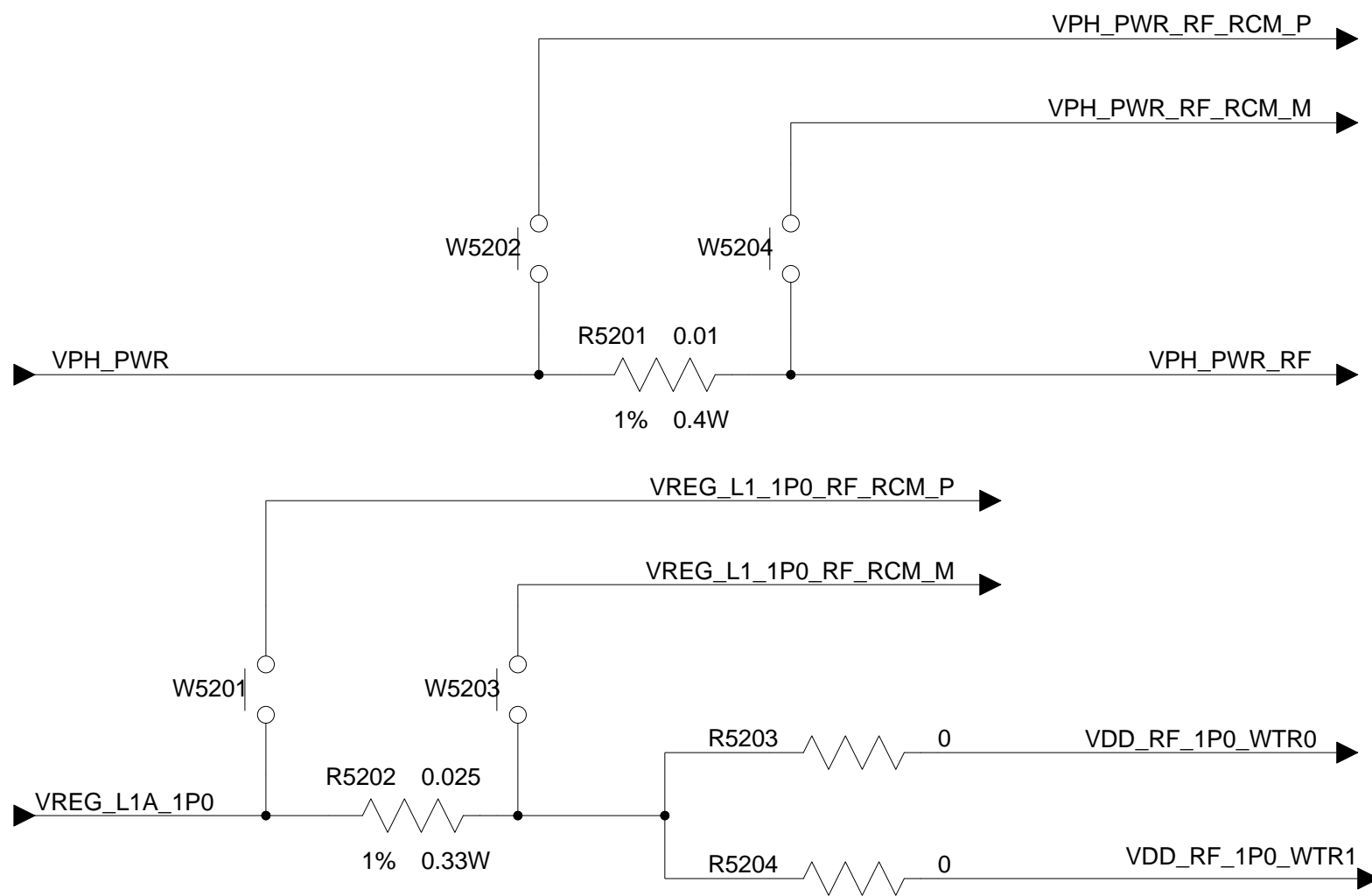
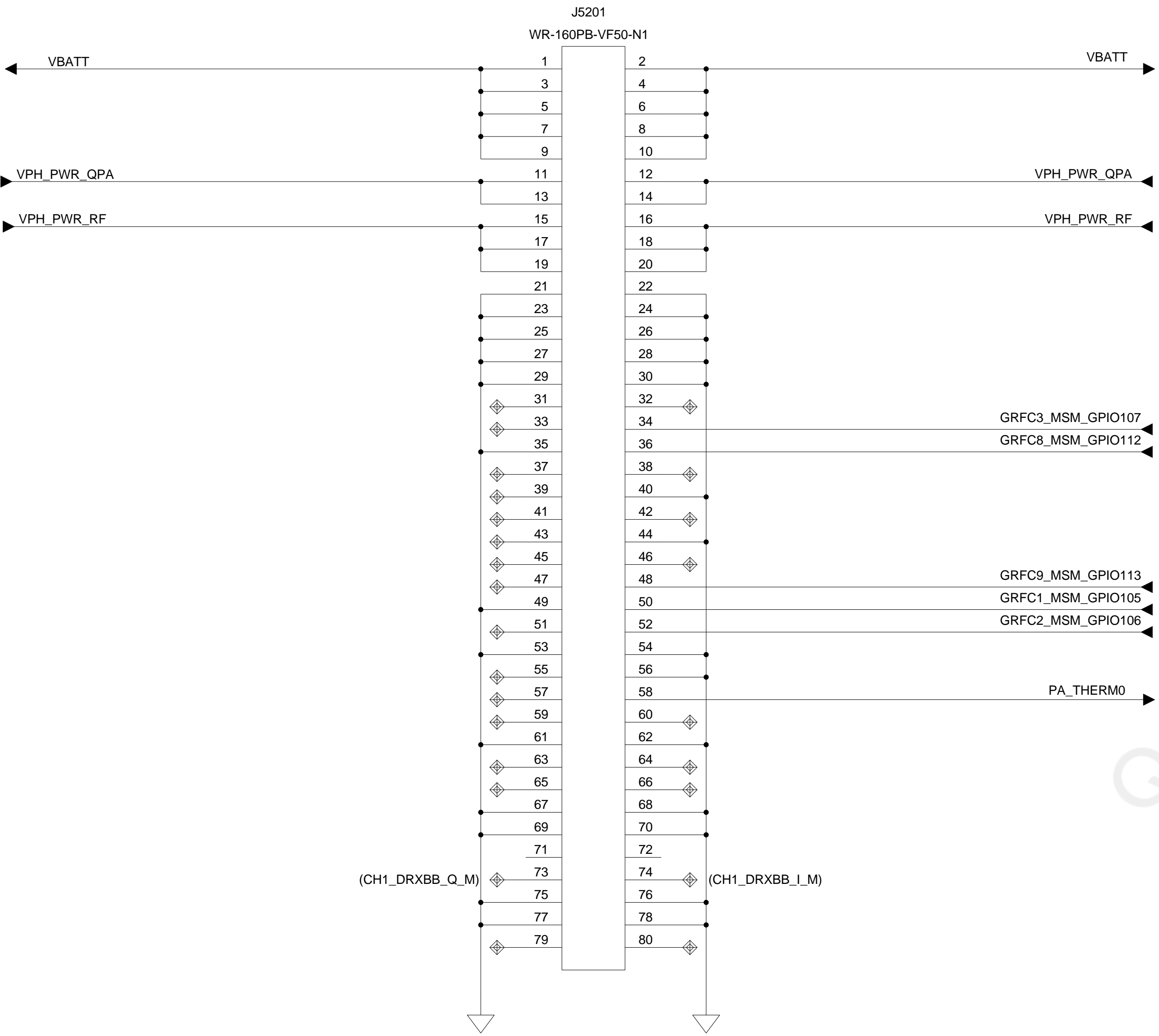
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| SCALE NONE | | SHEET 52 OF 59 | |

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CONNECTOR 1

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CONNECTOR 2

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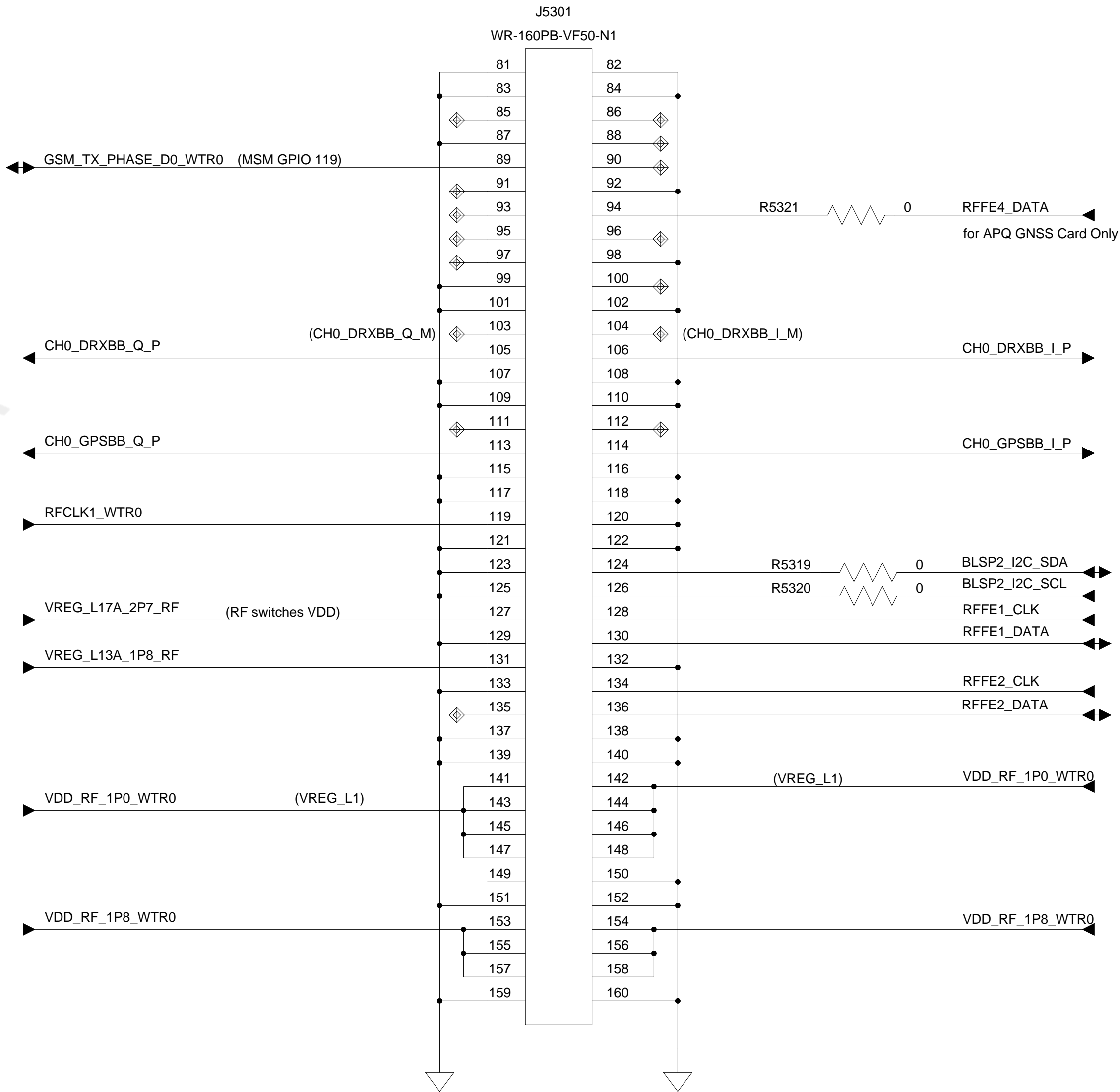
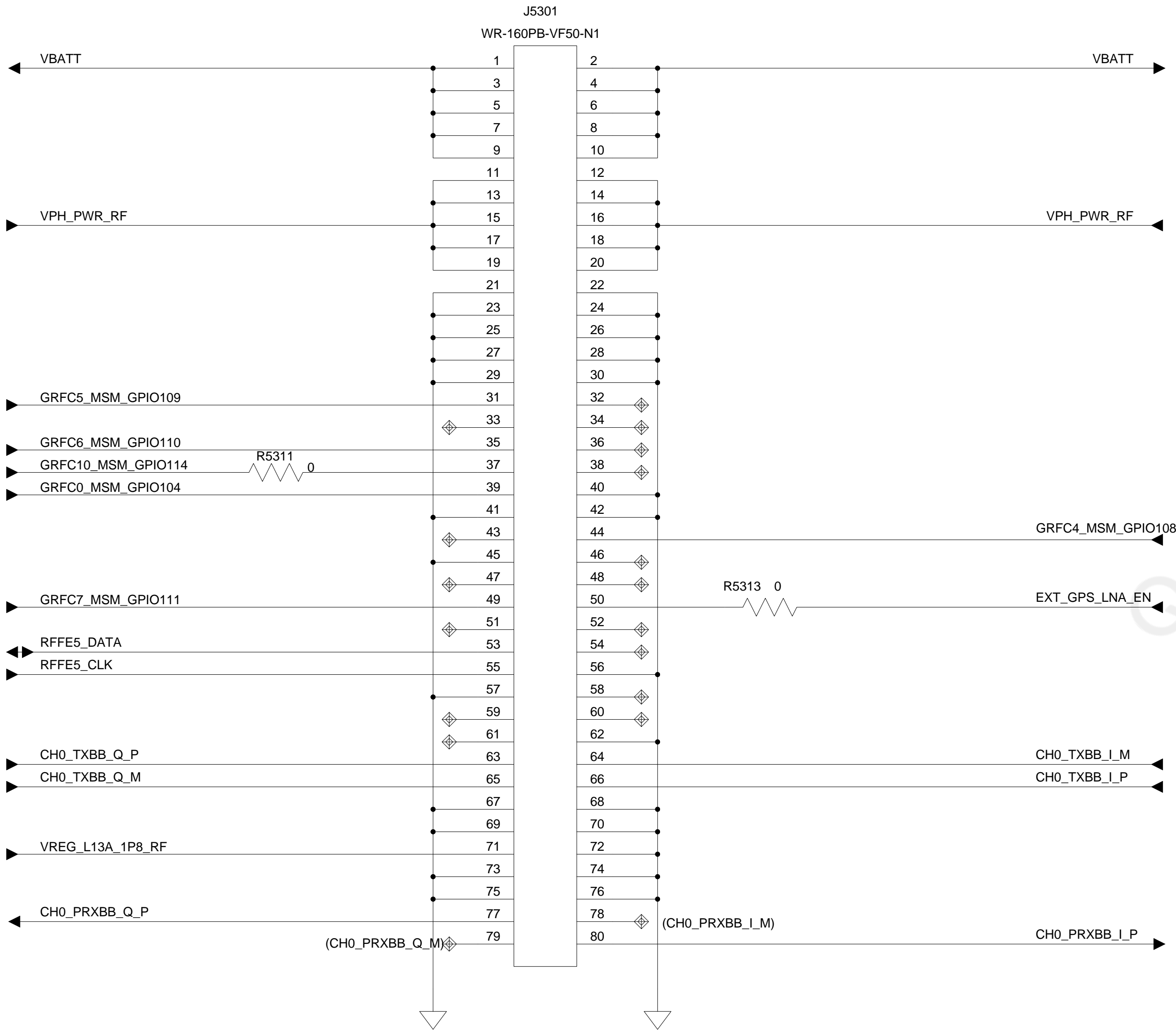
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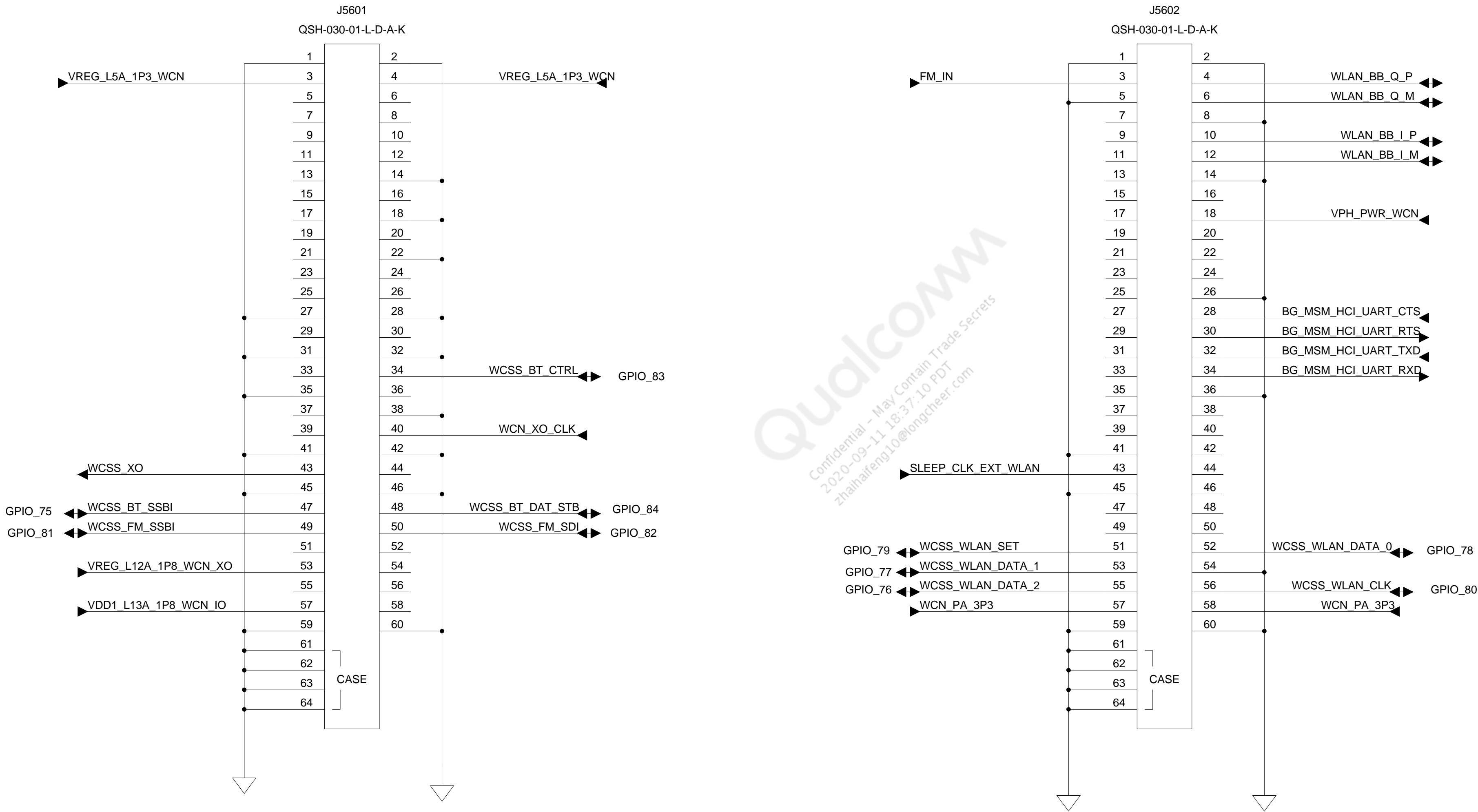
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| D | LD20-PU825-13 | A |
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connect to WCN3610

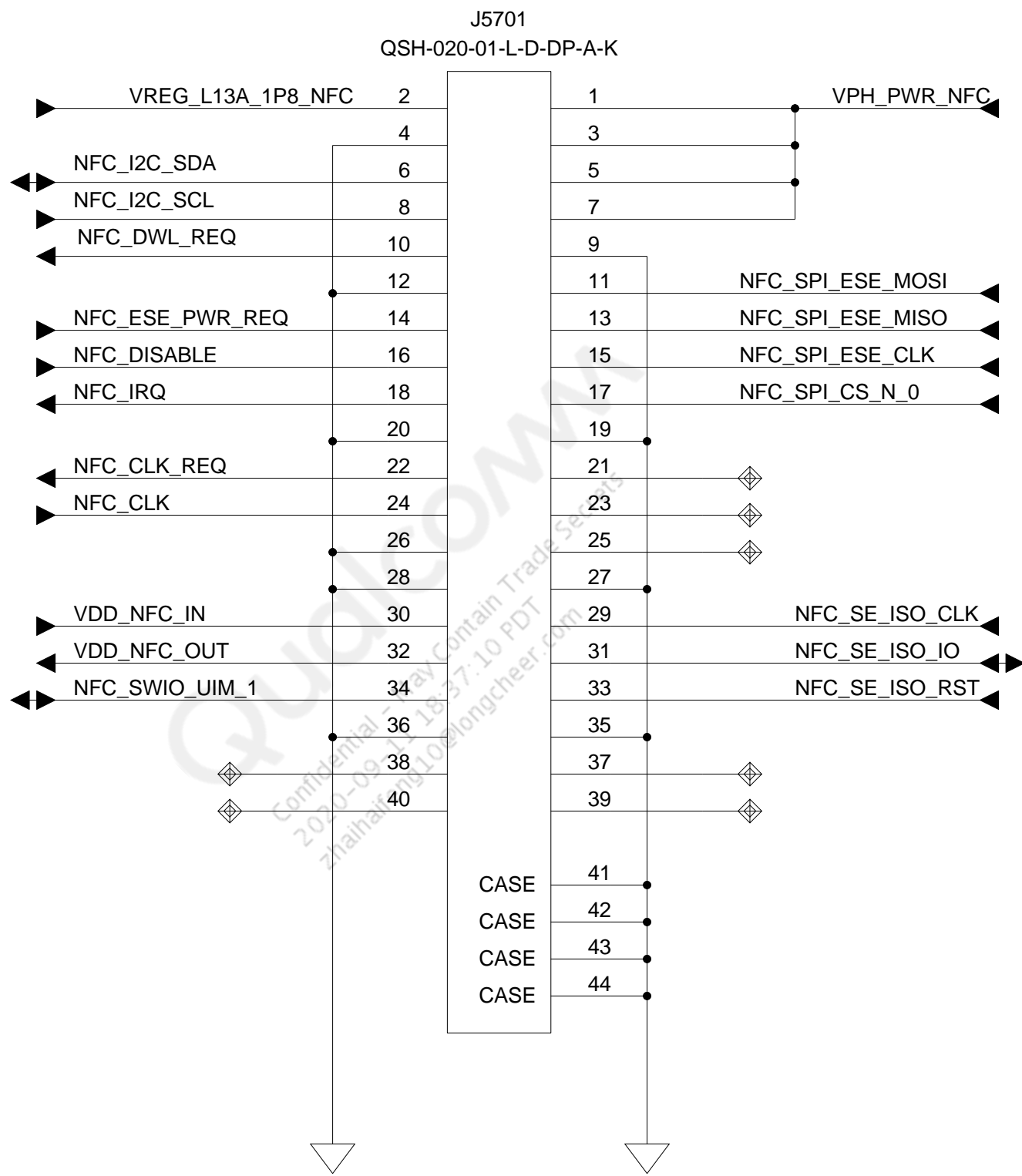


WLAN_CONN

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| D | LD20-PU825-13 | | A |
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NFC_8_CONN

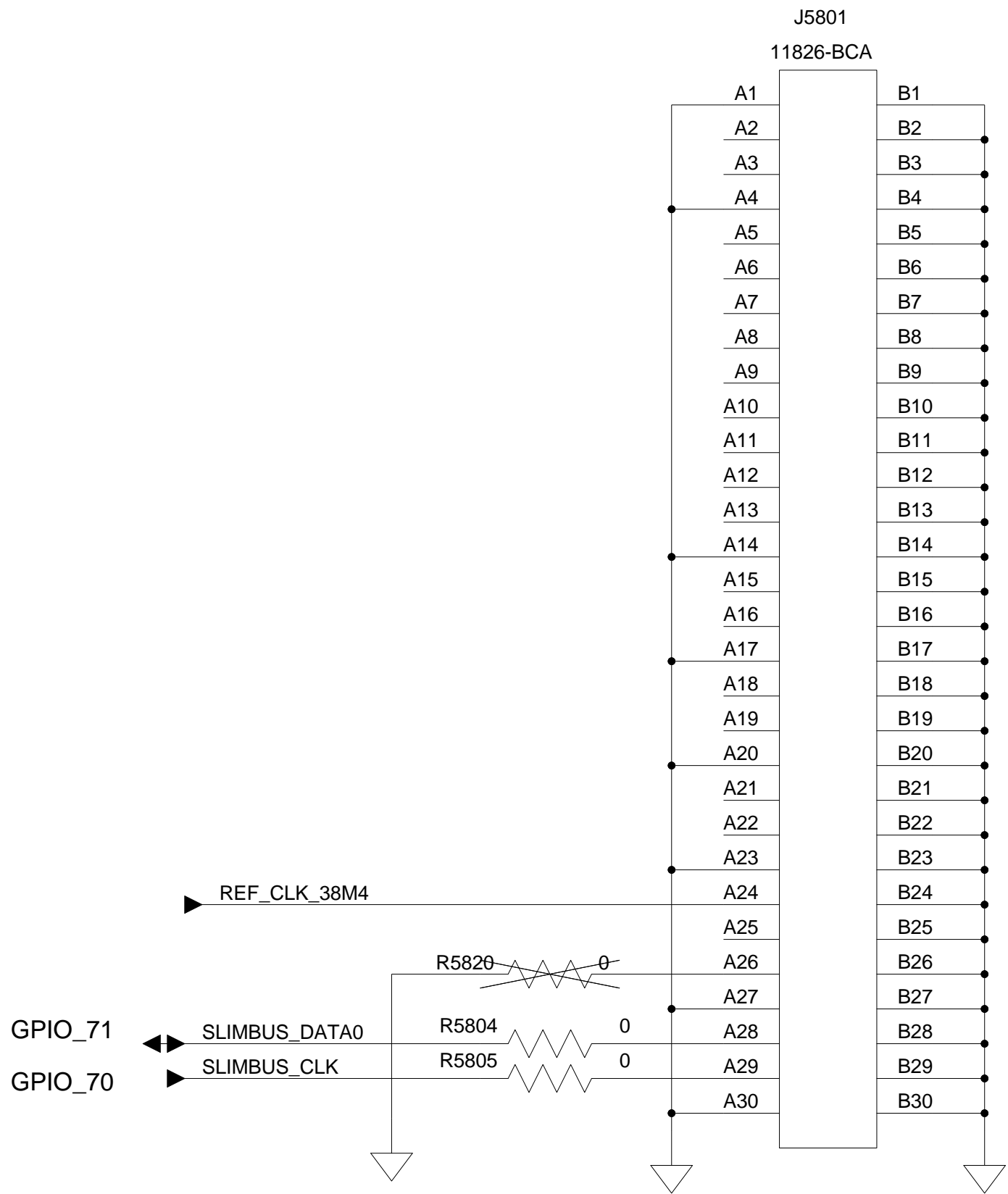
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| SCALE NONE | | SHEET 56 OF 59 | |

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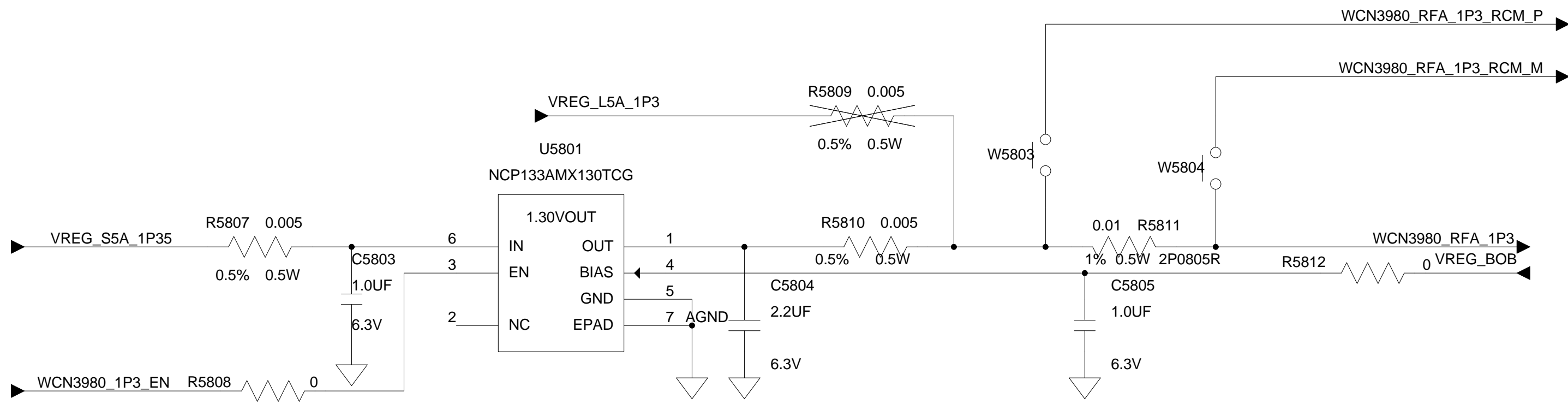
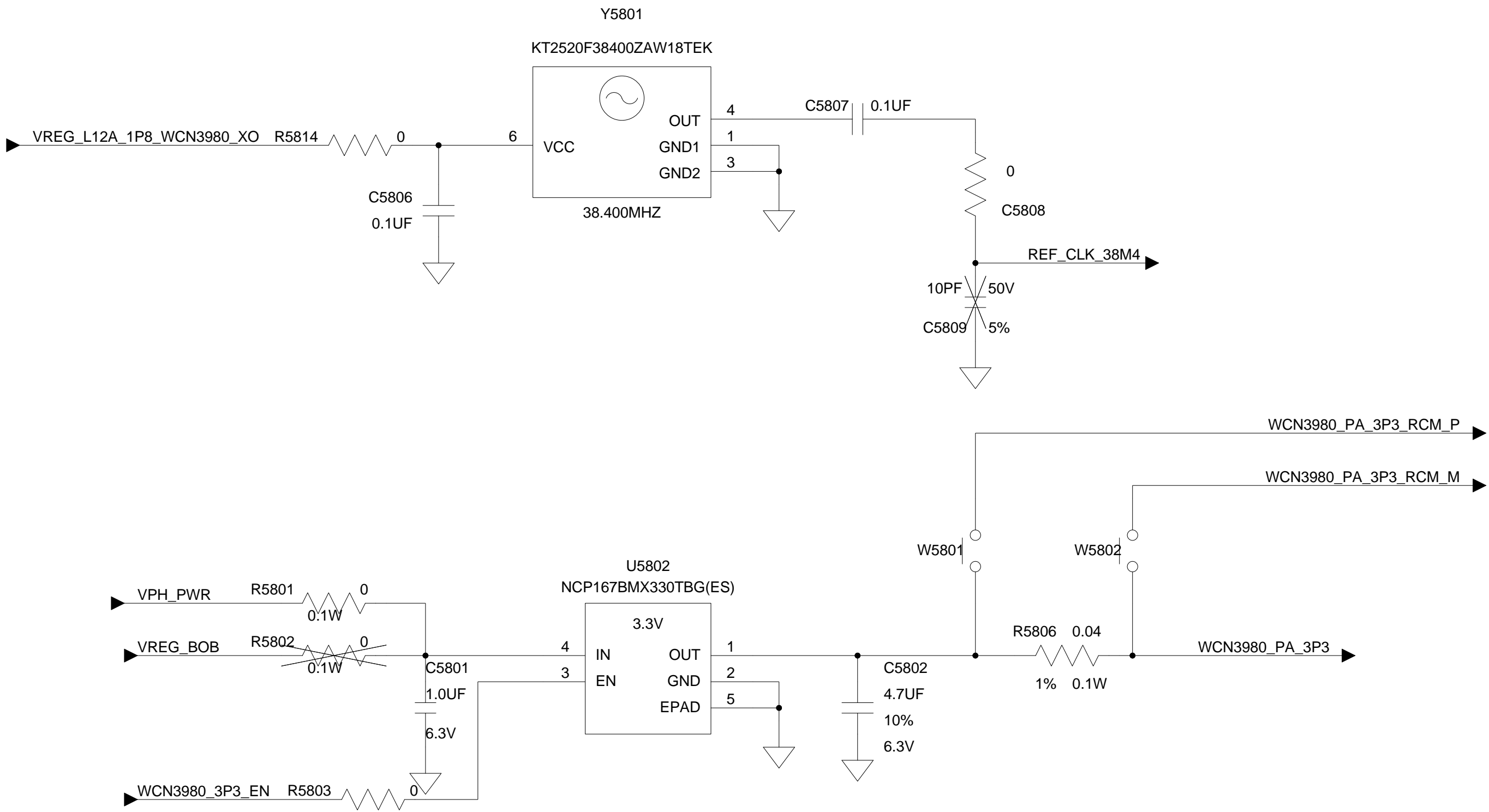
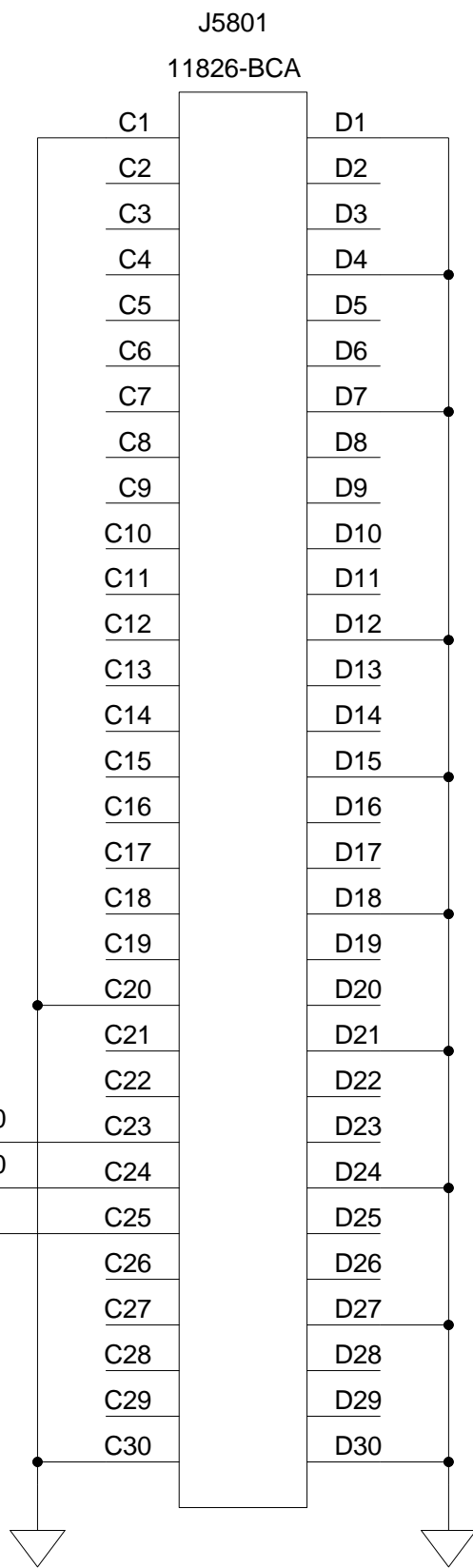
B2B(1)



Backup
GPIO_56

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COEX_UART_RX
WCSS_COEX_PTA_DENY

R5821
R5822
R5815



BT_CONN1

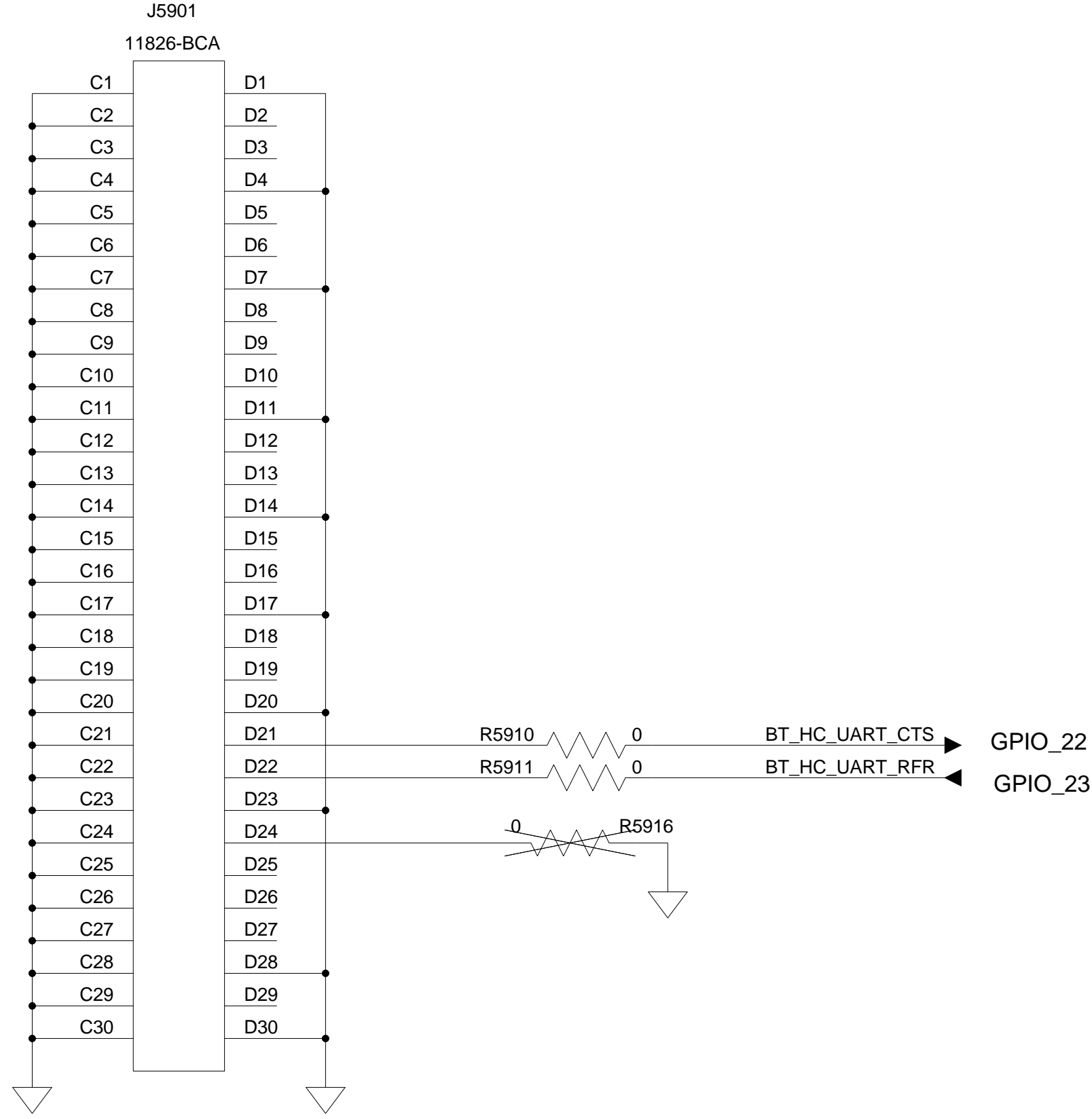
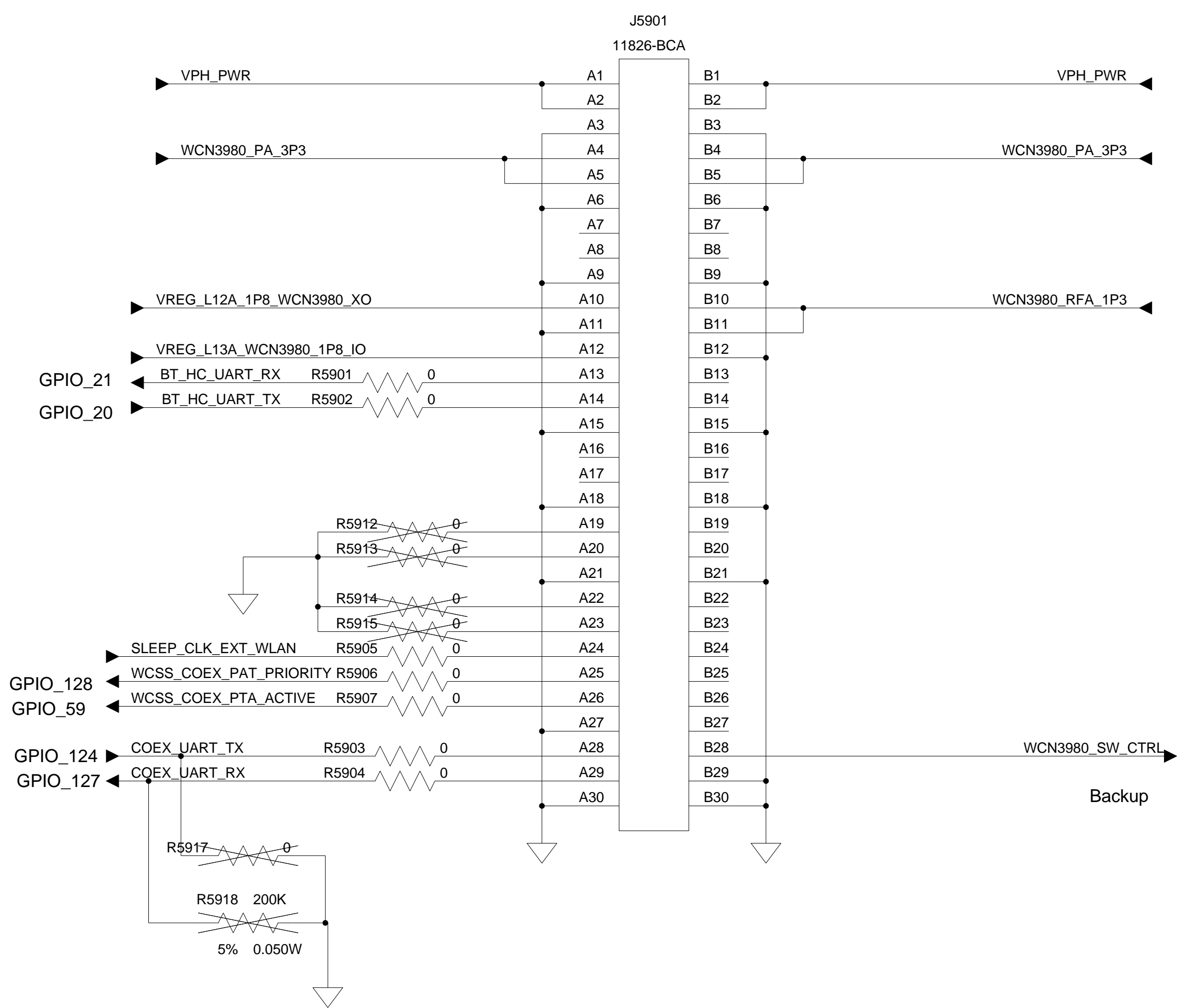
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| NONE | 57 | 59 |

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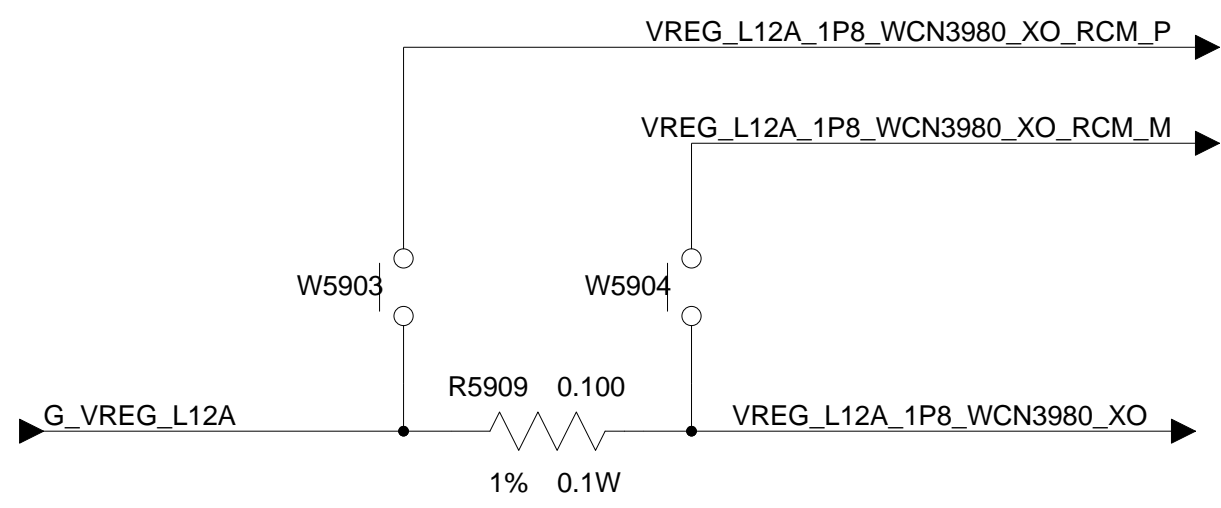
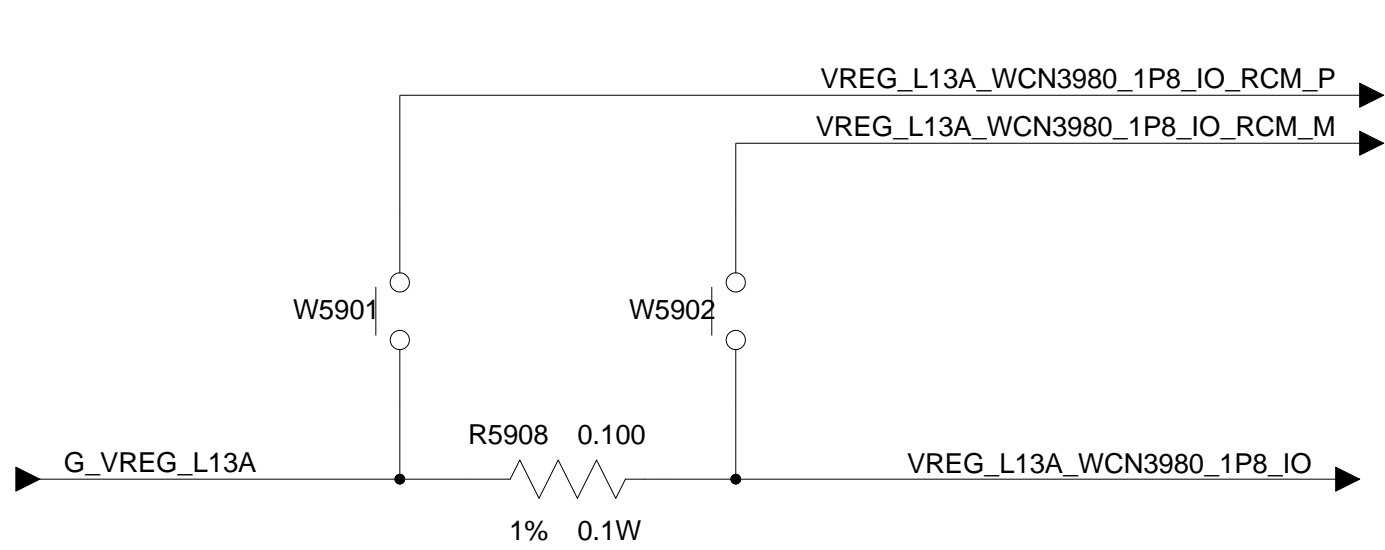
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WCN RCM



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| SCALE | NONE | SHEET 58 OF 59 |

