

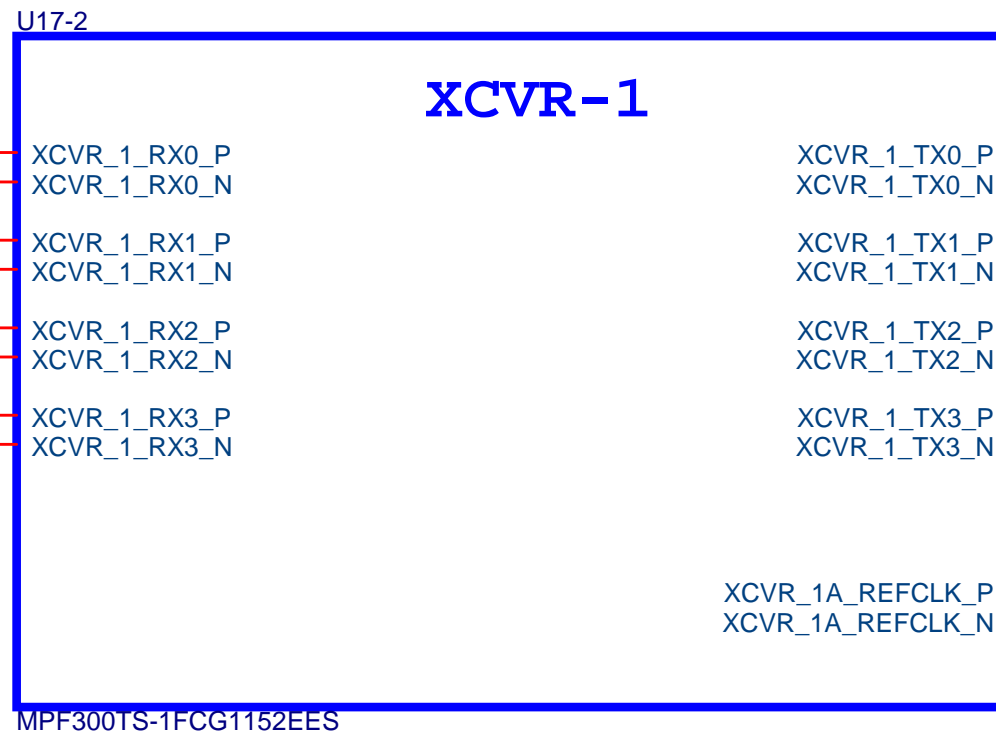
# ALOE KIT LOW COST VERSION

PAGE NO	TITLE	PAGE NO	TITLE
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02	TRANSCEIVER 1&3	26	POWER SUPPLIES:2.5V / 1.8V
03	BANK-7-HSIO 1.8V	27	POWER SUPPLIES:1.8V/1.05V
04	USB ULPI INTERFACE	28	POWER SUPPLIES:VDDAUX4
05	CAN INTERFACE	29	DDR & CHIPLINK CONNECTION
06	BANK-2-GPIO-3.3V	30	IO & POWER CONNECTION
07	USB-UART INTERFACE	31	DDR4x8 32 BITS CONNECTION
08	BANK-5-GPIO-3.3V	32	DDR4x8 32 BIT & ECC CONNECTION
09	BANK-0-HSIO 1.8V	33	ETHERNET CONNECTION
10	FMC_CONNECTOR	34	USB - UART & JTAG CONNECTION
11	BANK-4-1.8V_CHIPLINK	35	POWER SUPPLY
12	BANK-6-FMC CONNECTOIN	36	POWER MEASUREMENT
13	TRANSCEIVER REF CLOCK		
14	BANK-1-FMC CONNECTOIN		
15	TRANSCEIVER 0&2		
16	PROGRAMMING SCHEME		
17	LEDs & DEBUG CIRCUITRY		
18	POWER		
19	GROUND & NC		
20	DECOUPING CAPACITOR		
21	POWER BLOCK DIAGRAM		
22	POWER SUPPLY-12V		
23	POWER SUPPLIES:IR3895-5V		
24	POWER SUPPLIES:IR38063-1V		

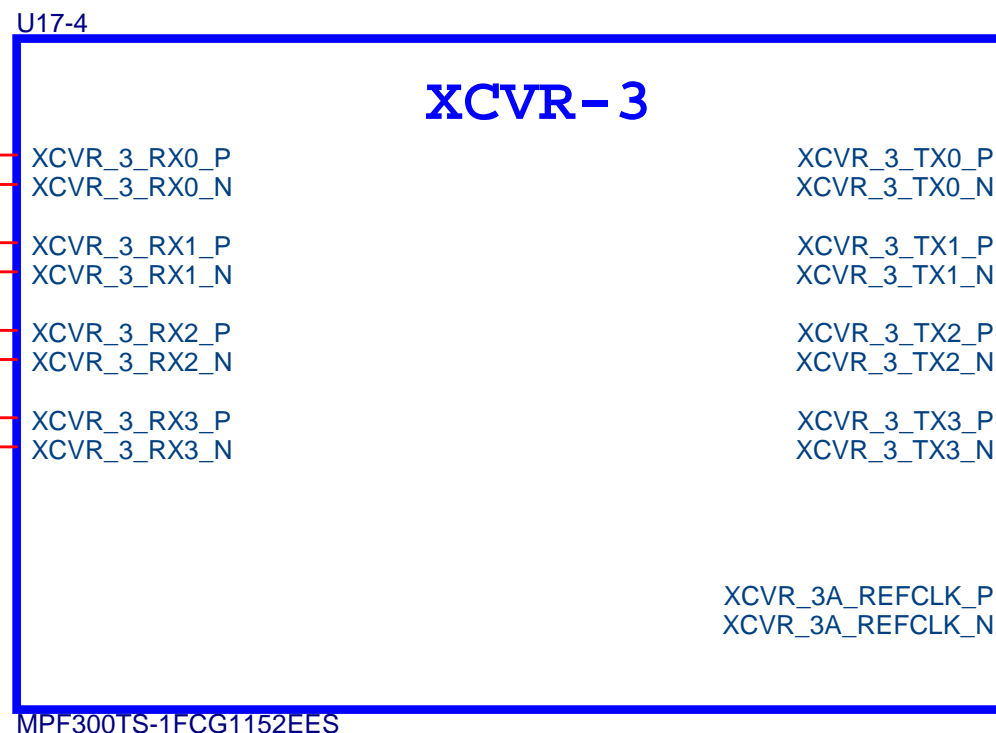


Project Name:		<b>ALOE KIT LOW COST VERSION</b>	
Rev	Part Number:		PACTRON:
<b>2</b>	MICROSEMI <b>DVP-100-000524-001</b>		
Originator:		<b>GHURU KUMARAVELU</b>	
Size	Date:		
Custom	<b>Friday, June 14, 2019</b>		
		Sheet	<b>1 of 37</b>

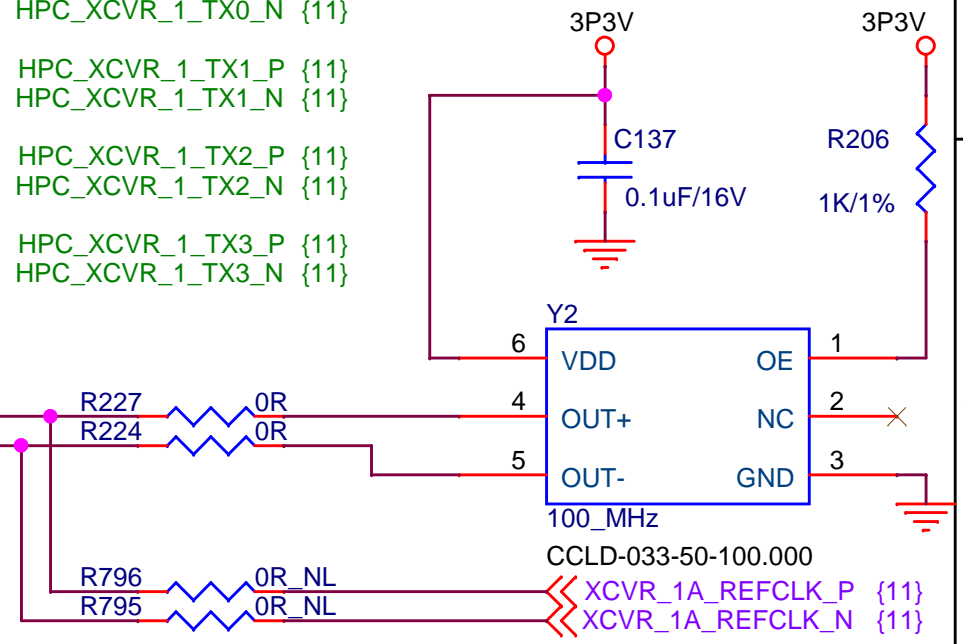
# TRANSCEIVER-1



# TRANSCEIVER 3



100MHz

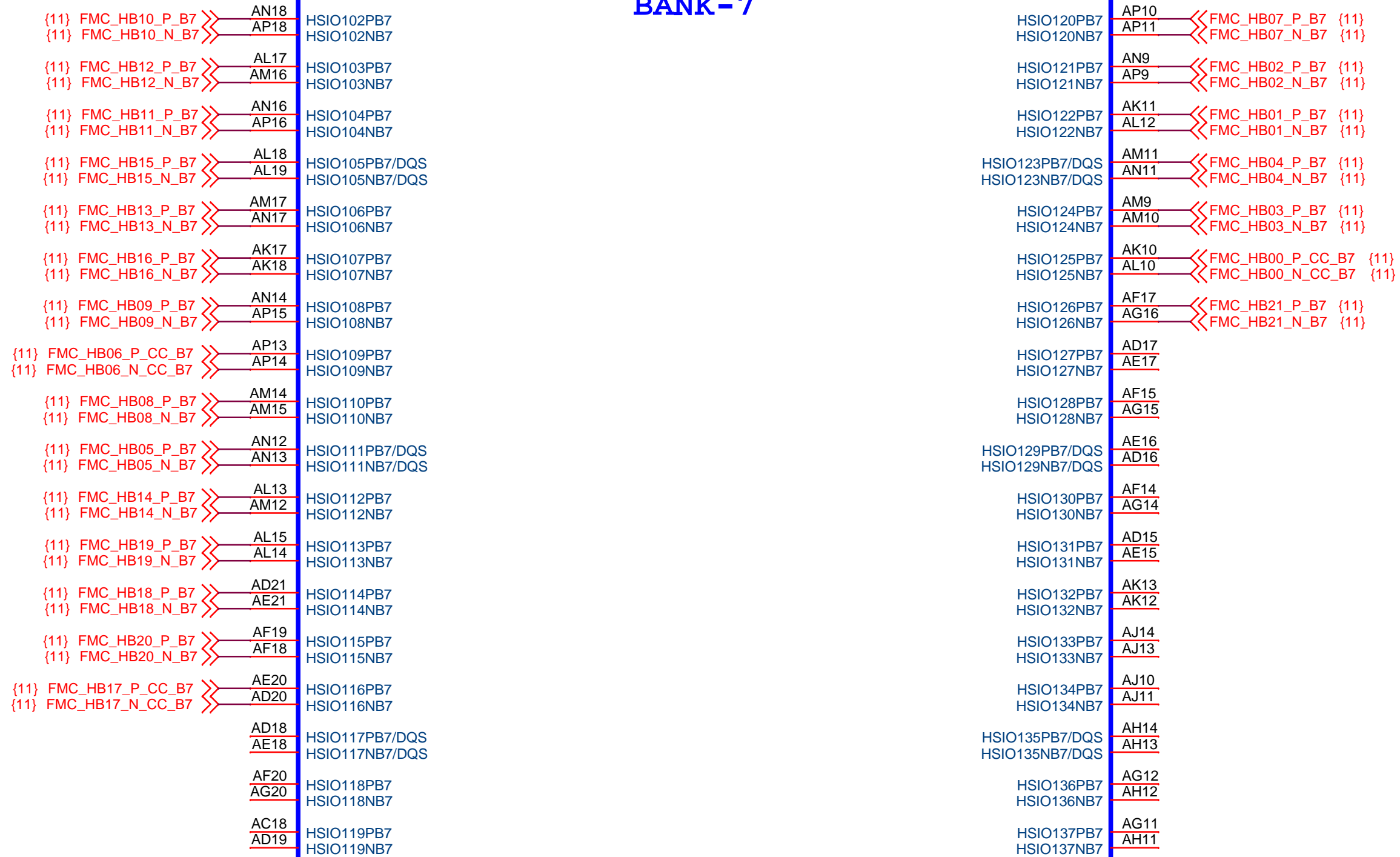


<b>TITLE</b>			
ALOE KIT LOW COST VERSION			
Microsemi			
<b>SIZE</b>	<b>DOCUMENT NO.</b>	<b>REV</b>	
A	DVP-100-000506-001	2	
<b>DATE:</b> Friday, May 31, 2019			<b>SH 3 OF 37</b>

BANK-7-HSIO 1.8V

U17-17

BANK - 7



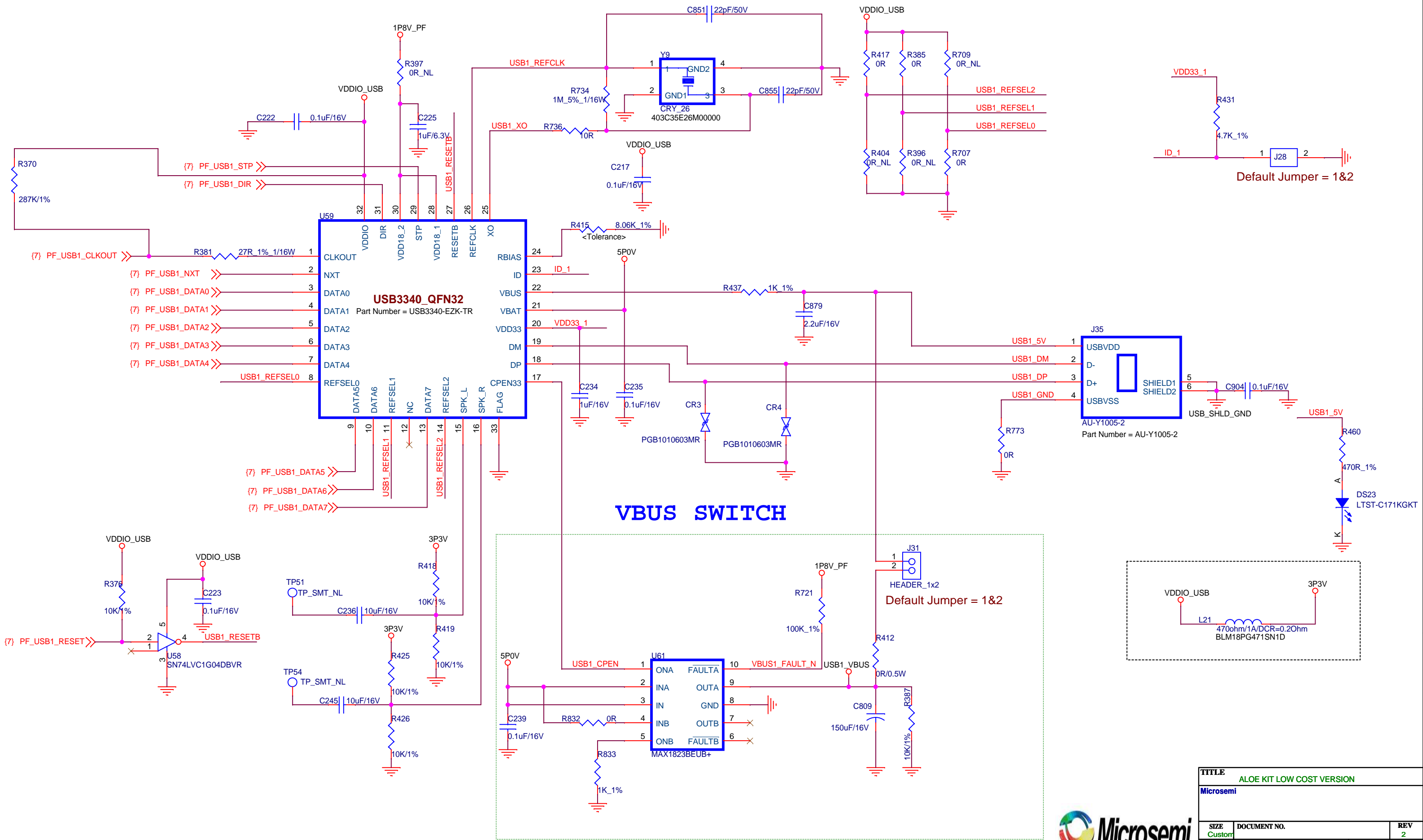
MPF300TS-1FCG1152EES



TITLE			
ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
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# USB-ULPI Interface

Schematic shows 26.0 MHz Configuration.  
REFCLK[2:0] = 110

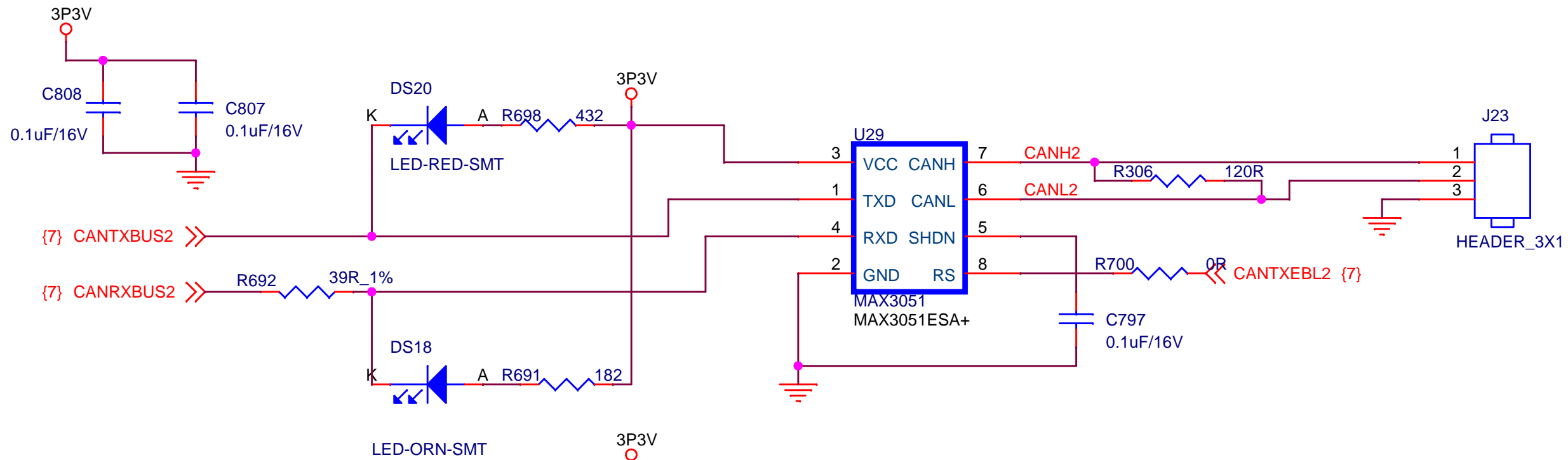
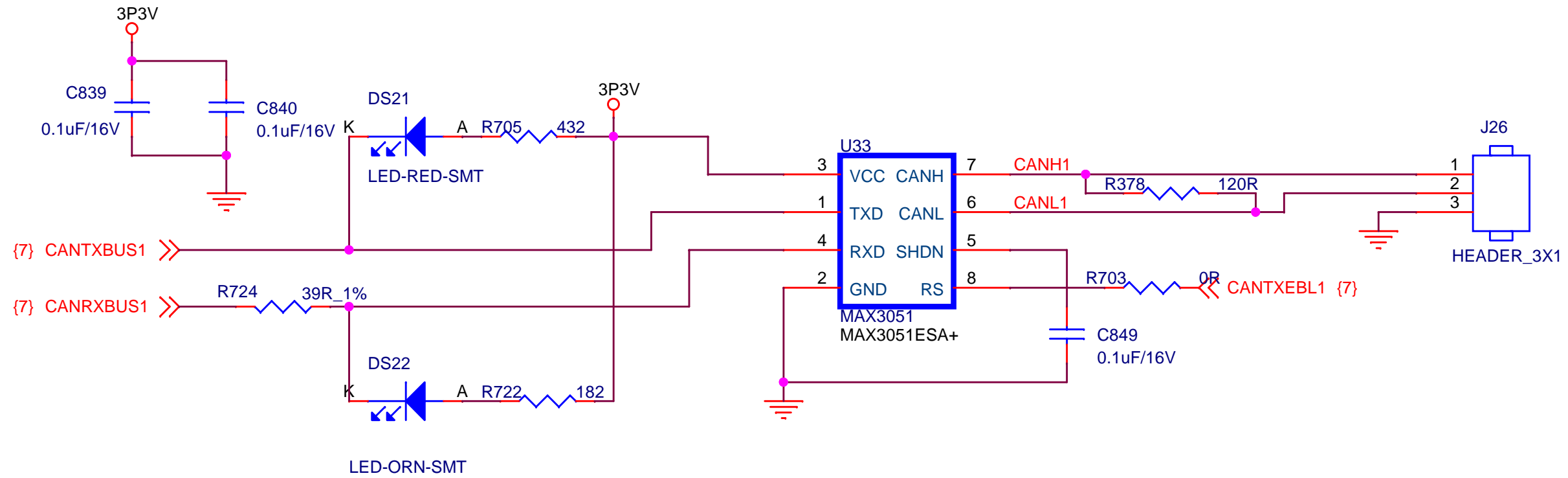


## VBUS SWITCH



TITLE		
ALOE KIT LOW COST VERSION		
Microsemi		
SIZE	DOCUMENT NO.	REV
Custom		2
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# CAN Interface



<b>TITLE</b>			
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Microsemi			
<b>SIZE</b>	<b>DOCUMENT NO.</b>	<b>REV</b>	
A	DVP-100-000506-001	2	
<b>DATE:</b> Friday, May 31, 2019			<b>SH 6 OF 37</b>

# BANK-2-GPIO-3.3V

## BANK - 2

U17-13

- K15 J15 GPIO0PB2  
GPIO0NB2
- H13 H12 GPIO1PB2  
GPIO1NB2
- J14 J13 GPIO2PB2/DQS  
GPIO2NB2/DQS
- H14 G14 GPIO3PB2  
GPIO3NB2
- J11 H11 GPIO4PB2  
GPIO4NB2
- G15 G16 GPIO5PB2  
GPIO5NB2
- G9 F9 GPIO6PB2/CLKIN\_S\_4  
GPIO6NB2
- H9 H8 GPIO7PB2/CLKIN\_S\_5  
GPIO7NB2
- H7 G7 GPIO8PB2/DQS  
GPIO8NB2/DQS
- F8 F7 GPIO9PB2/CLKIN\_S\_6  
GPIO9NB2
- H6 G6 GPIO10PB2/LPRB\_A  
GPIO10NB2/LPRB\_B
- G5 F5 GPIO11PB2/CLKIN\_S\_7  
GPIO11NB2
- C7 B7 GPIO12PB2  
GPIO12NB2
- E6 D6 GPIO13PB2  
GPIO13NB2
- D8 C8 GPIO14PB2/DQS  
GPIO14NB2/DQS
- E7 E8 GPIO15PB2  
GPIO15NB2
- A7 A8 GPIO16PB2  
GPIO16NB2
- C6 B6 GPIO17PB2  
GPIO17NB2
- G12 G11 GPIO18PB2  
GPIO18NB2
- F14 F15 GPIO19PB2  
GPIO19NB2
- E10 E11 GPIO20PB2/DQS  
GPIO20NB2/DQS
- G10 F10 GPIO21PB2  
GPIO21NB2
- F13 E13 GPIO22PB2  
GPIO22NB2
- F12 E12 GPIO23PB2  
GPIO23NB2

- GPIO24PB2 D9 GPIO24PB2  
GPIO24NB2 C9 GPIO24NB2
- GPIO25PB2 B9 GPIO25PB2  
GPIO25NB2 A9 GPIO25NB2
- GPIO26PB2/DQS D10 GPIO26PB2  
GPIO26NB2/DQS D11 GPIO26NB2
- GPIO27PB2/CLKIN\_S\_8/CCC\_SE\_CLKIN\_S\_8 D13 GPIO27PB2  
GPIO27NB2 C12 GPIO27NB2
- GPIO28PB2 B10 GPIO28PB2  
GPIO28NB2 A10 GPIO28NB2
- GPIO29PB2/CLKIN\_S\_9/CCC\_SE\_CLKIN\_S\_9 C11 GPIO29PB2  
GPIO29NB2 B11 GPIO29NB2
- GPIO30PB2 L17 GPIO30PB2  
GPIO30NB2 M17 GPIO30NB2
- GPIO31PB2 J16  
GPIO31NB2 K16
- GPIO32PB2/DQS H16  
GPIO32NB2/DQS H17
- GPIO33PB2/CCC\_SE\_CLKIN\_S\_10 J18  
GPIO33NB2 J19
- GPIO34PB2 L19  
GPIO34NB2 L18
- GPIO35PB2/CCC\_SE\_CLKIN\_S\_11 K18  
GPIO35NB2 K17
- GPIO244PB2/CCC\_SW\_CLKIN\_S\_0 G4  
GPIO244NB2 F4
- GPIO250PB2 C1  
GPIO250NB2 B1
- GPIO245PB2/CCC\_SW\_CLKIN\_S\_1 E1  
GPIO245NB2 D1
- GPIO251PB2 A2  
GPIO251NB2 A3
- GPIO246PB2/DQS/CCC\_SW\_PLL1\_OUT0 F2  
GPIO246NB2/DQS E2
- GPIO252PB2/DQS C2  
GPIO252NB2/DQS B2
- GPIO247PB2/CLKIN\_S\_2/CCC\_SW\_CLKIN\_S\_2/CCC\_SW\_PLL1\_OUT0 F3  
GPIO247NB2 E3
- GPIO253PB2 B4  
GPIO253NB2 A4
- GPIO248PB2/CCC\_SW\_PLL1\_OUT1 D3  
GPIO248NB2 D4
- GPIO254PB2 C3  
GPIO254NB2 C4
- GPIO249PB2/CLKIN\_S\_3/CCC\_SW\_CLKIN\_S\_3 D5  
GPIO249NB2 E5
- GPIO255PB2 B5  
GPIO255NB2 A5

{9} QSPI\_SS >>

{5} PF\_USB1\_CLKOUT >>

{5} PF\_USB1\_DATA4 >>

{5} PF\_USB1\_DATA3 >>

{5} PF\_USB1\_DATA5 >>

{5} PF\_USB1\_DATA6 >>

{5} PF\_USB1\_DATA2 >>

{5} PF\_USB1\_DATA1 >>

{5} PF\_USB1\_DIR >>

{5} PF\_USB1\_STP >>

{5} PF\_USB1\_DATA0 >>

{5} PF\_USB1\_NXT >>

{5} PF\_USB1\_RESET >>

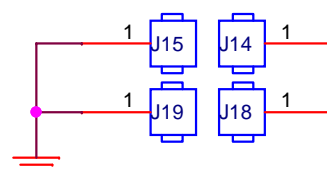
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{6} CANTXBUS1 >>

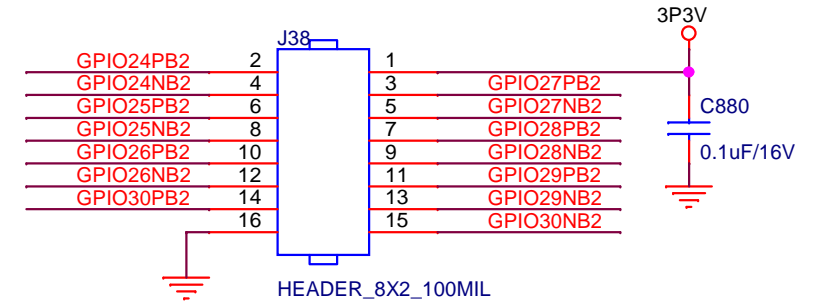
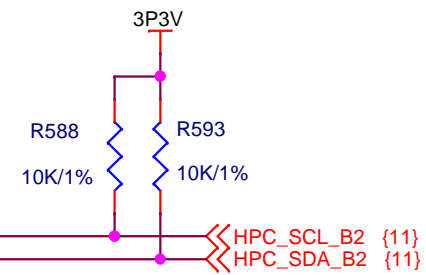
{6} CANRXBUS1 >>

{6} CANTXBUS2 >>

{6} CANRXBUS2 >>



**NOTE:**  
Nets PF\_H6 & PF\_G6 should be routed differentially. J14 & J18 should be placed next to each other.

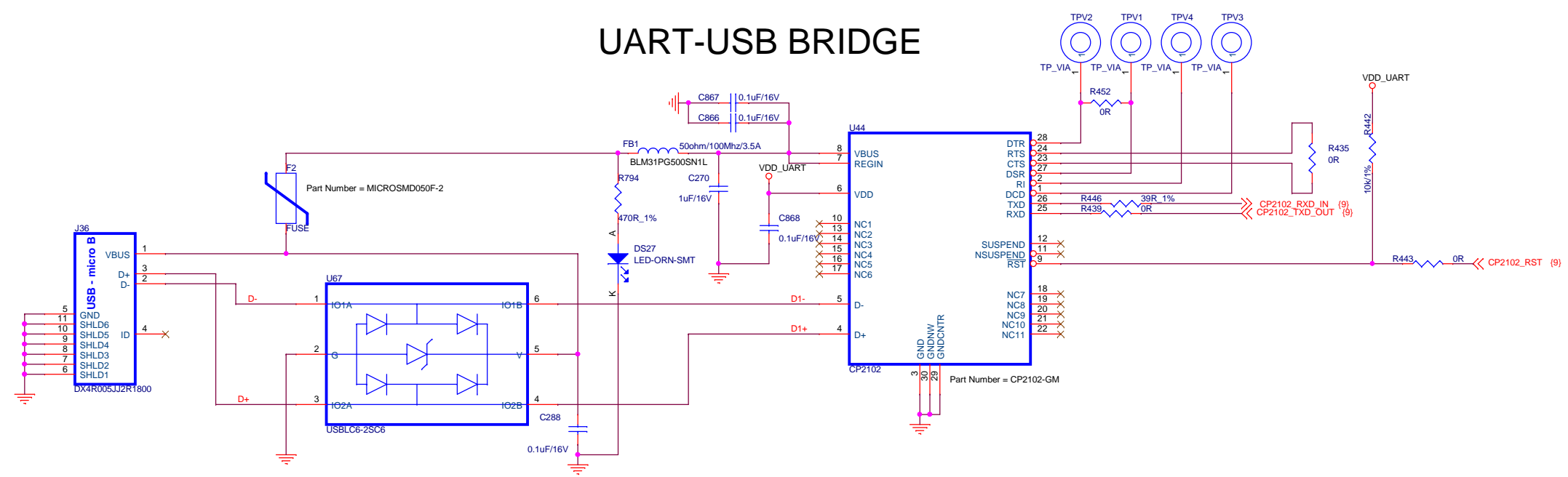


<b>TITLE</b> ALOE KIT LOW COST VERSION			
Microsemi			
SIZE Custom	DOCUMENT NO. DVP-100-000506-001	REV 2	
DATE: Friday, May 31, 2019	SH 7 OF 37		

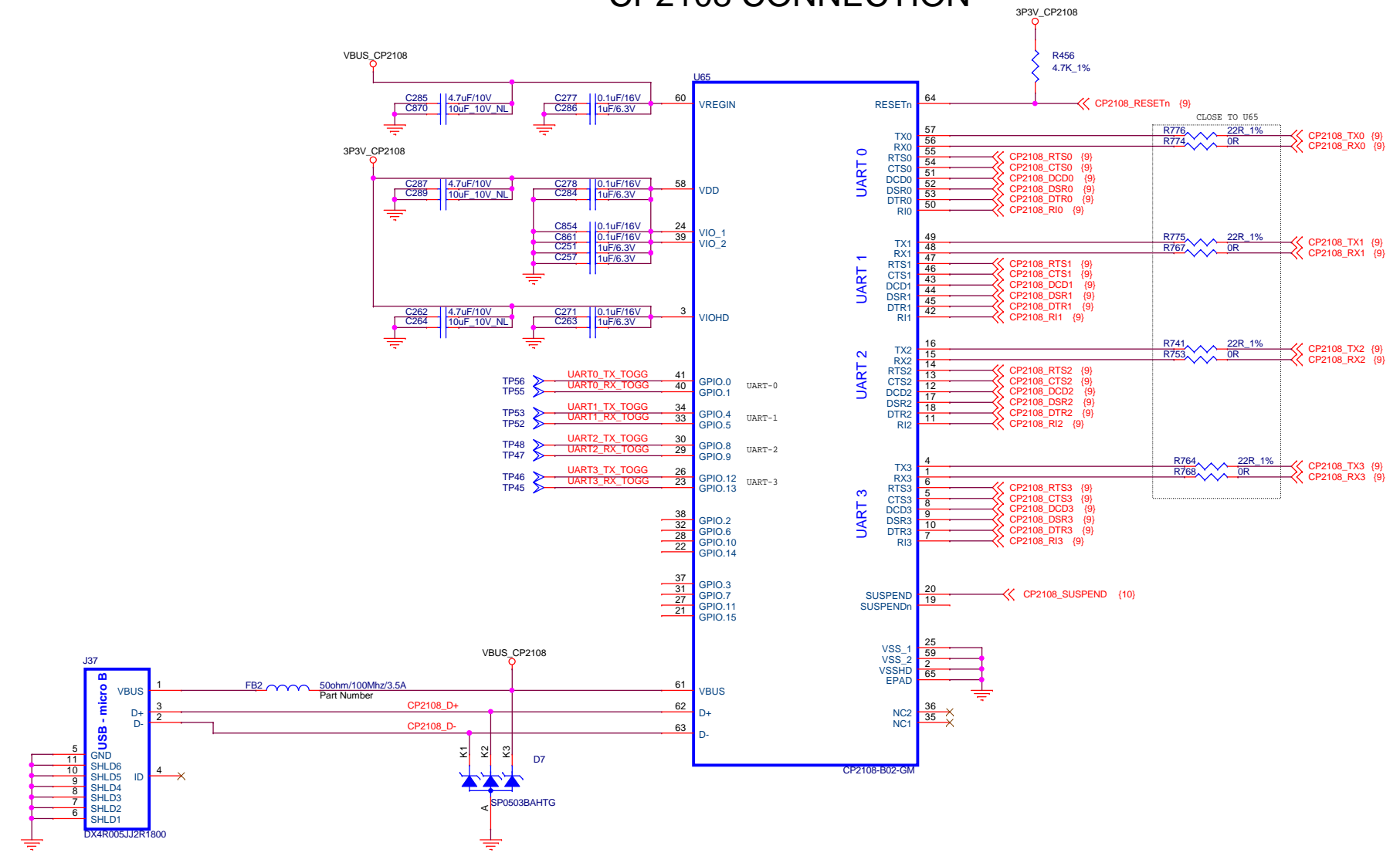




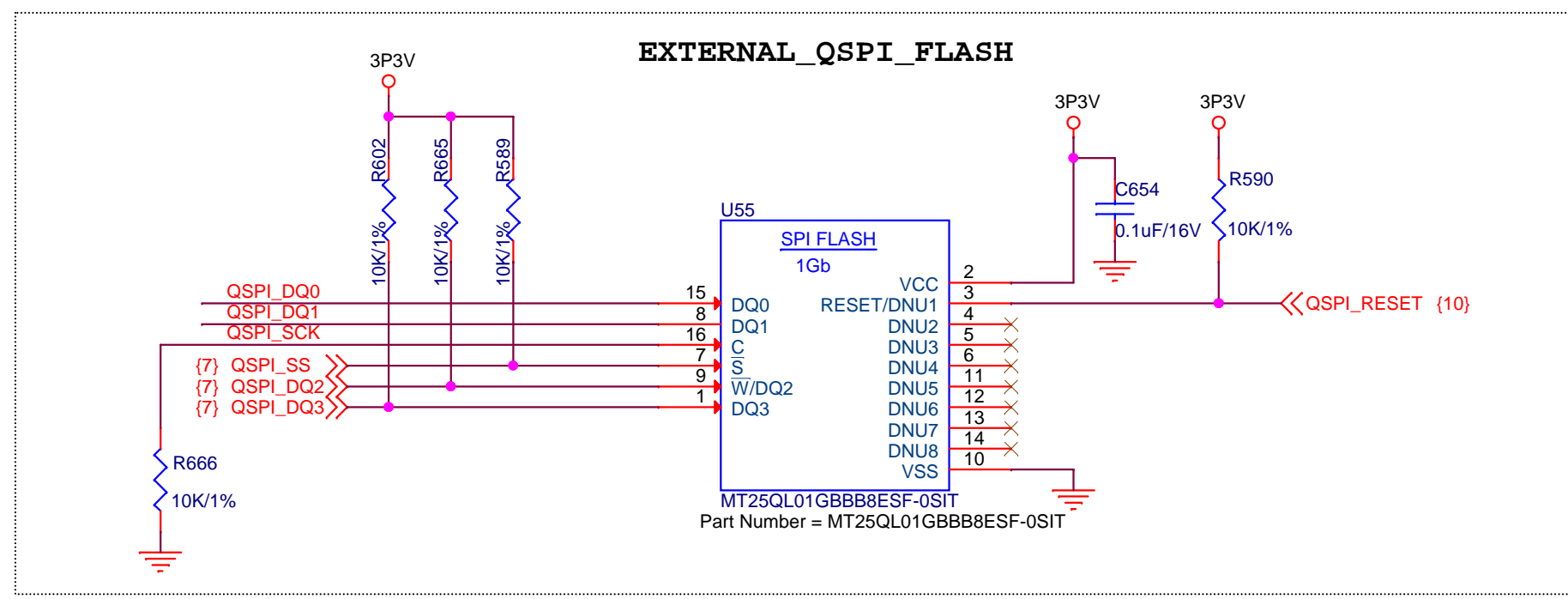
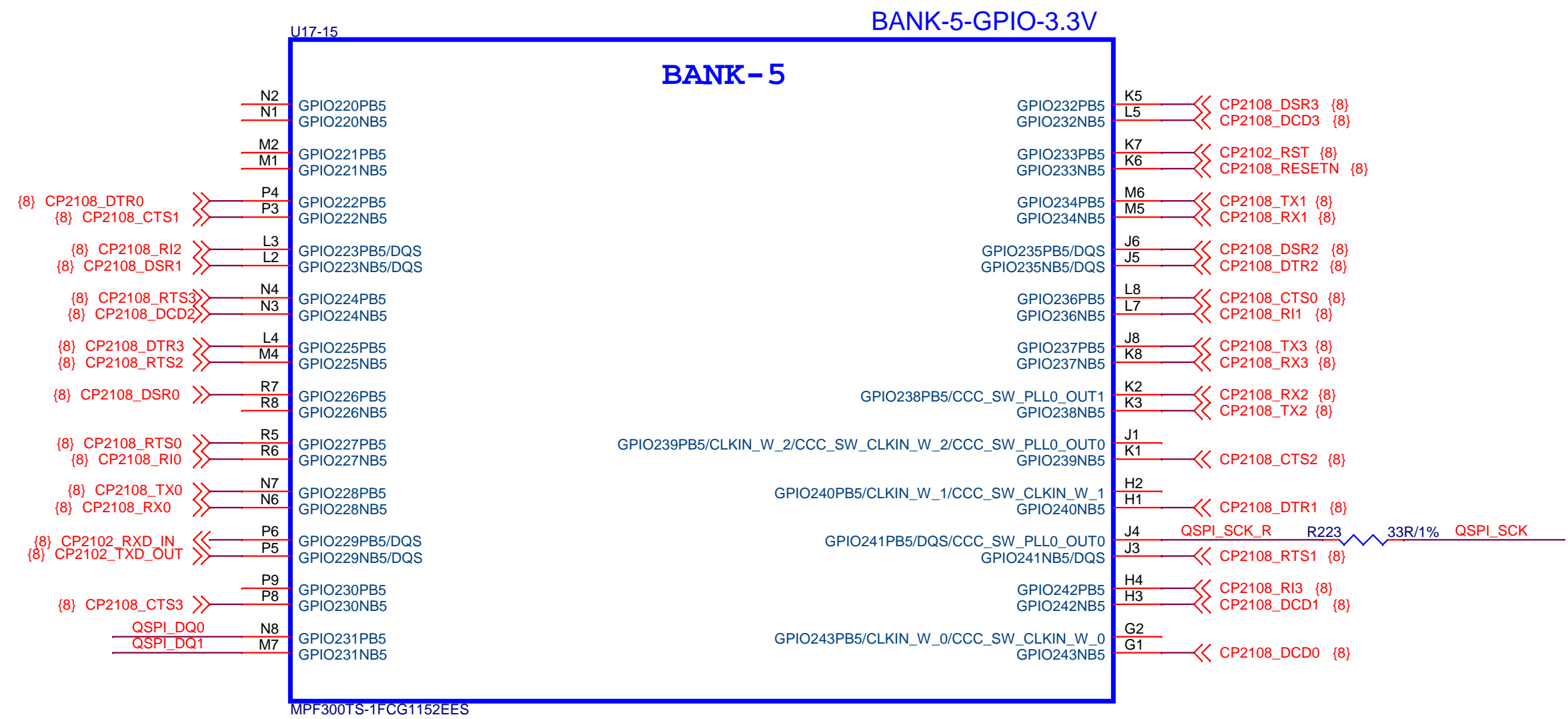
# UART-USB BRIDGE



# CP2108 CONNECTION

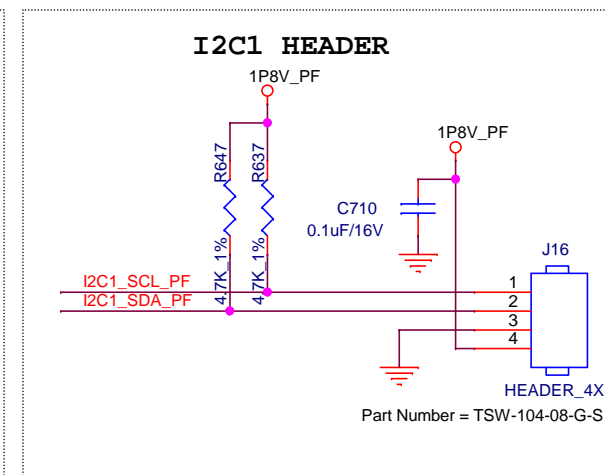
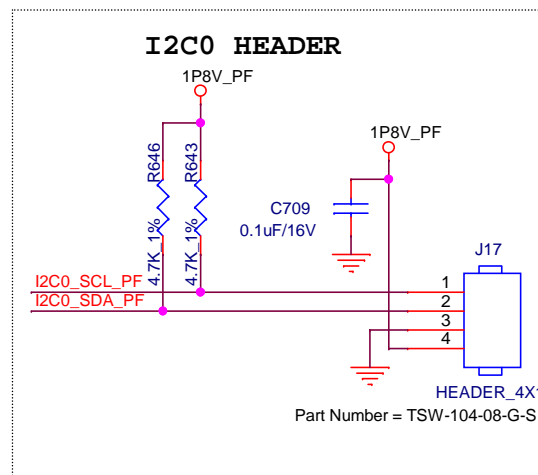
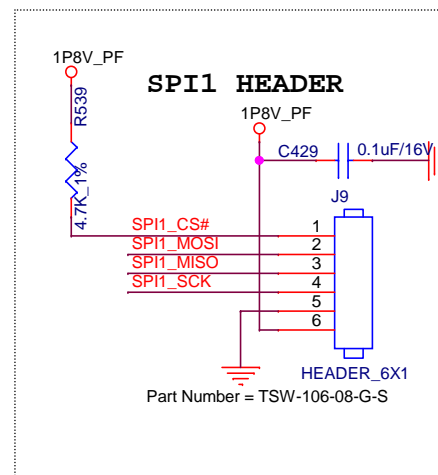
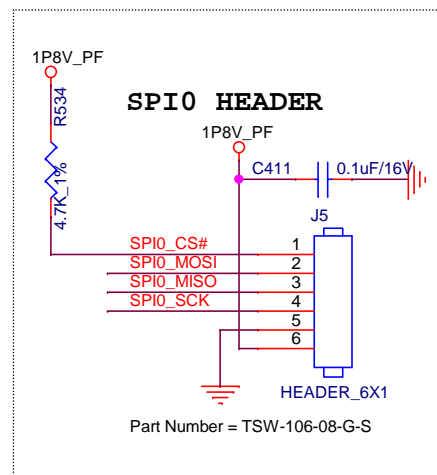
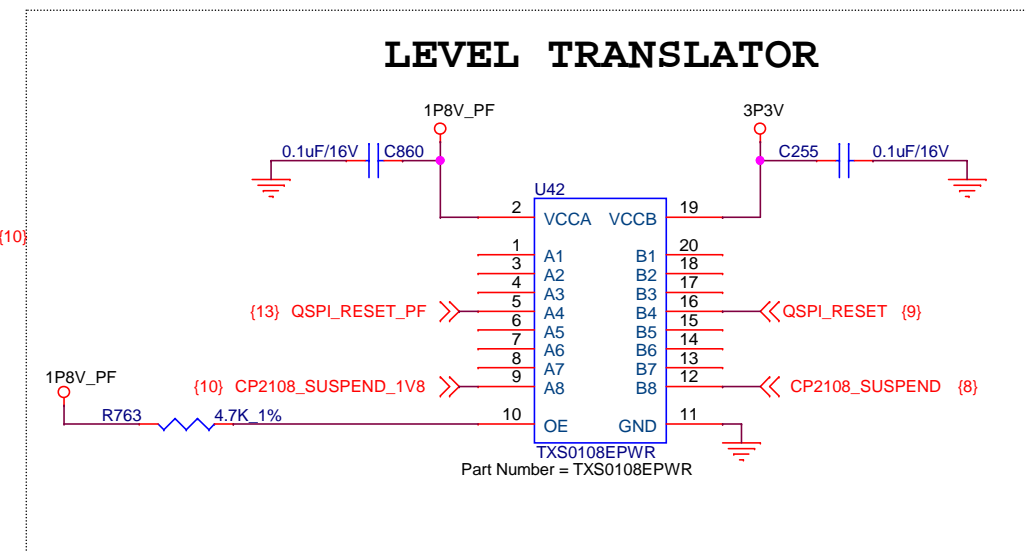
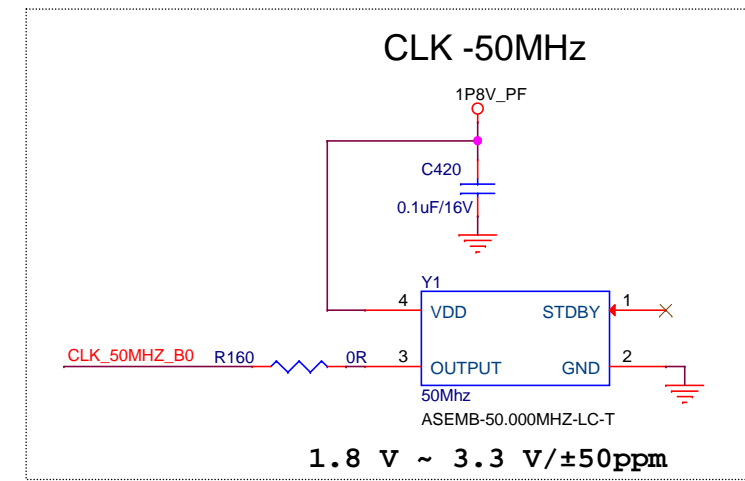
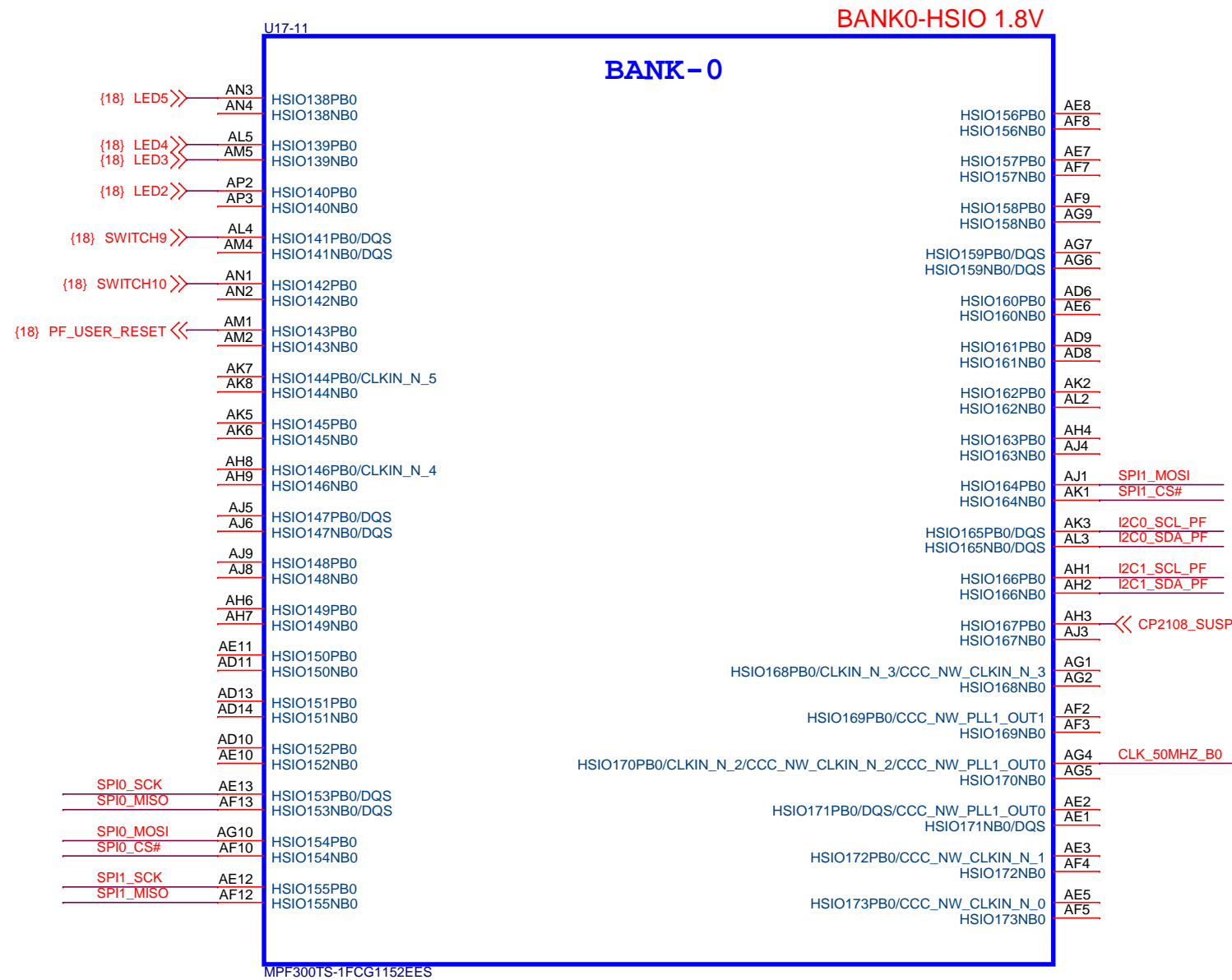


TITLE			
ALOE KIT LOW COST VERSION			
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SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
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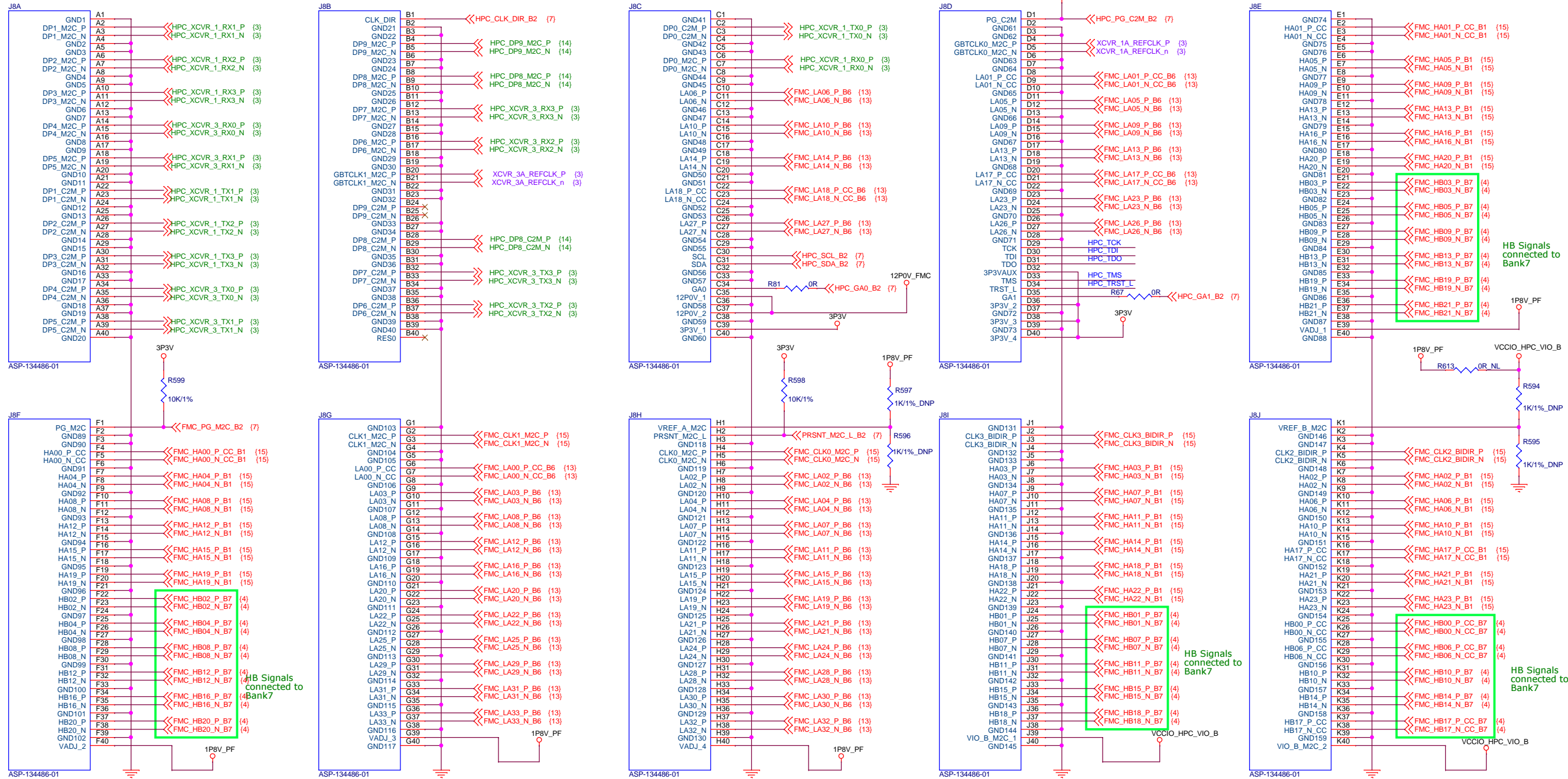
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SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
DATE:	Friday, May 31, 2019	SH 9 OF	37



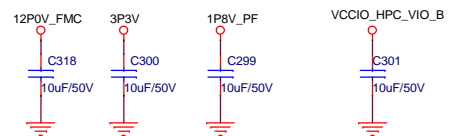


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Microsemi	
DATE: Friday, May 31, 2019	REV 2
SH 10 OF 37	

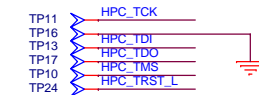
# FMC CONNECTOR(HPC)



## DECOUPLING CAPACITORS



- Bank 6 ( Assigned to LA pins)
- Bank 1 ( Assigned to 60 HA pins)
- Bank 7 ( Assigned to 44 HB pins)



TITLE ALOE KIT LOW COST VERSION

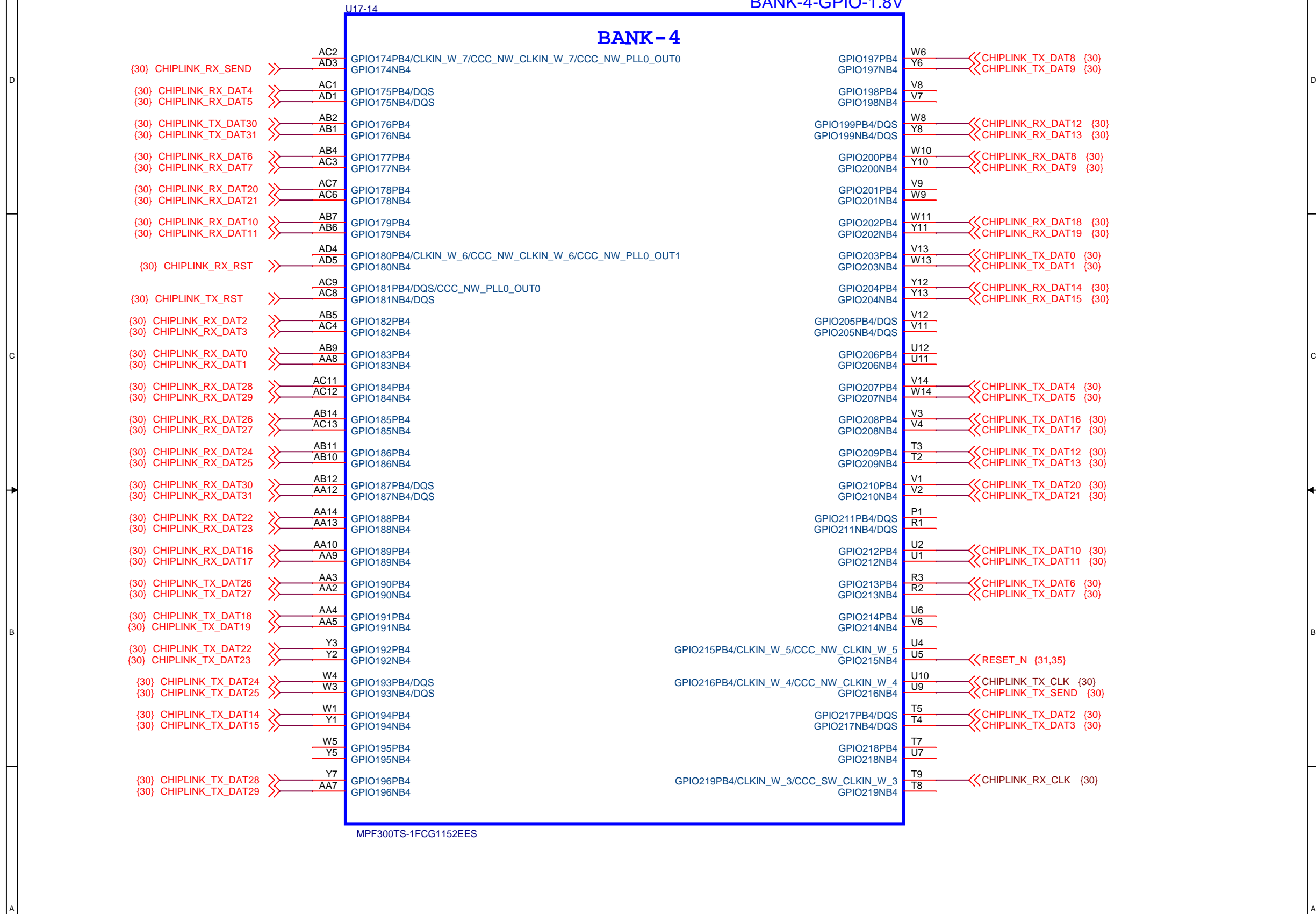
Microsemi

SIZE DOCUMENT NO. DVP-100-000506-001 REV 2

DATE: Friday, May 31, 2019 SH 11 OF 37



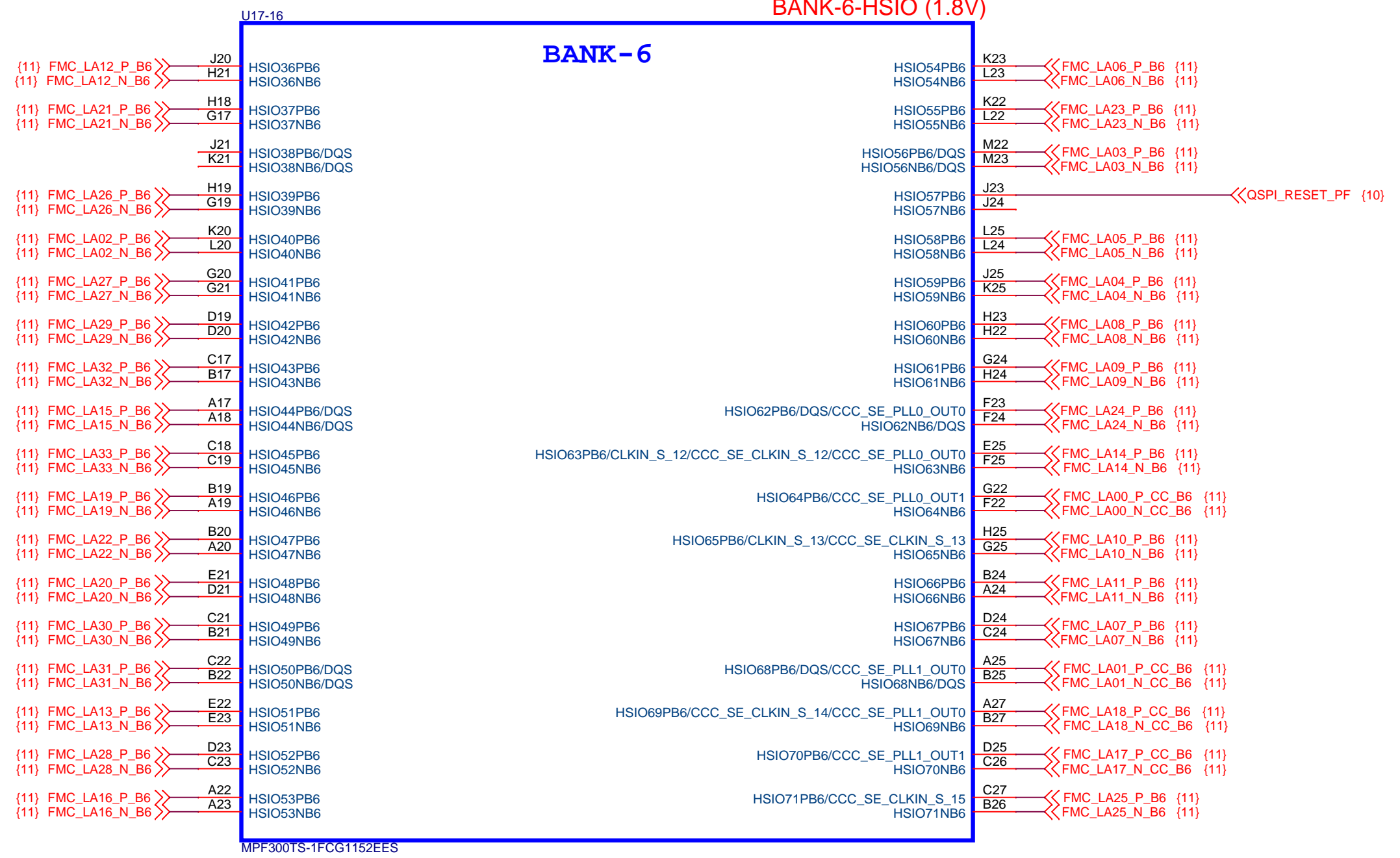
BANK-4-GPIO-1.8V



<b>TITLE</b> ALOE KIT LOW COST VERSION			
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SIZE Custom	DOCUMENT NO. DVP-100-000506-001	REV 2	
DATE: Friday, May 31, 2019		SH 12 OF 37	

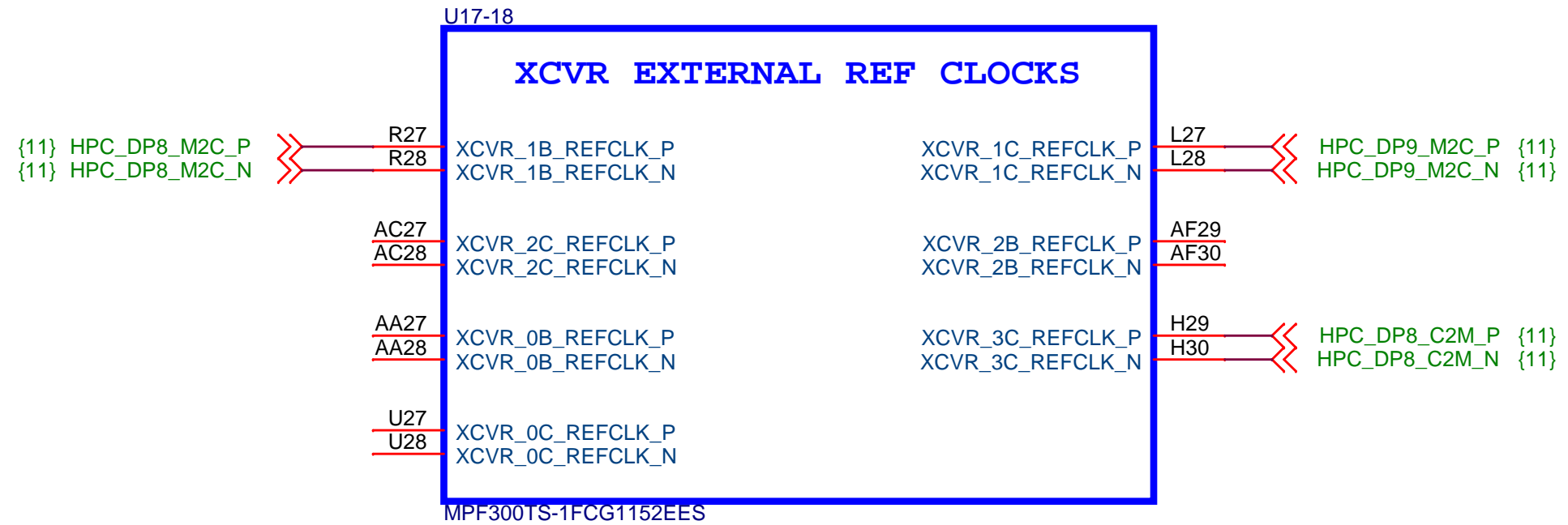
**BANK-6-HSIO (1.8V)**

**BANK - 6**



<b>TITLE</b>			
ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
DATE:	Friday, May 31, 2019	SH 13 OF	37

# TRANSCEIVER EXTERNAL REF CLOCKS



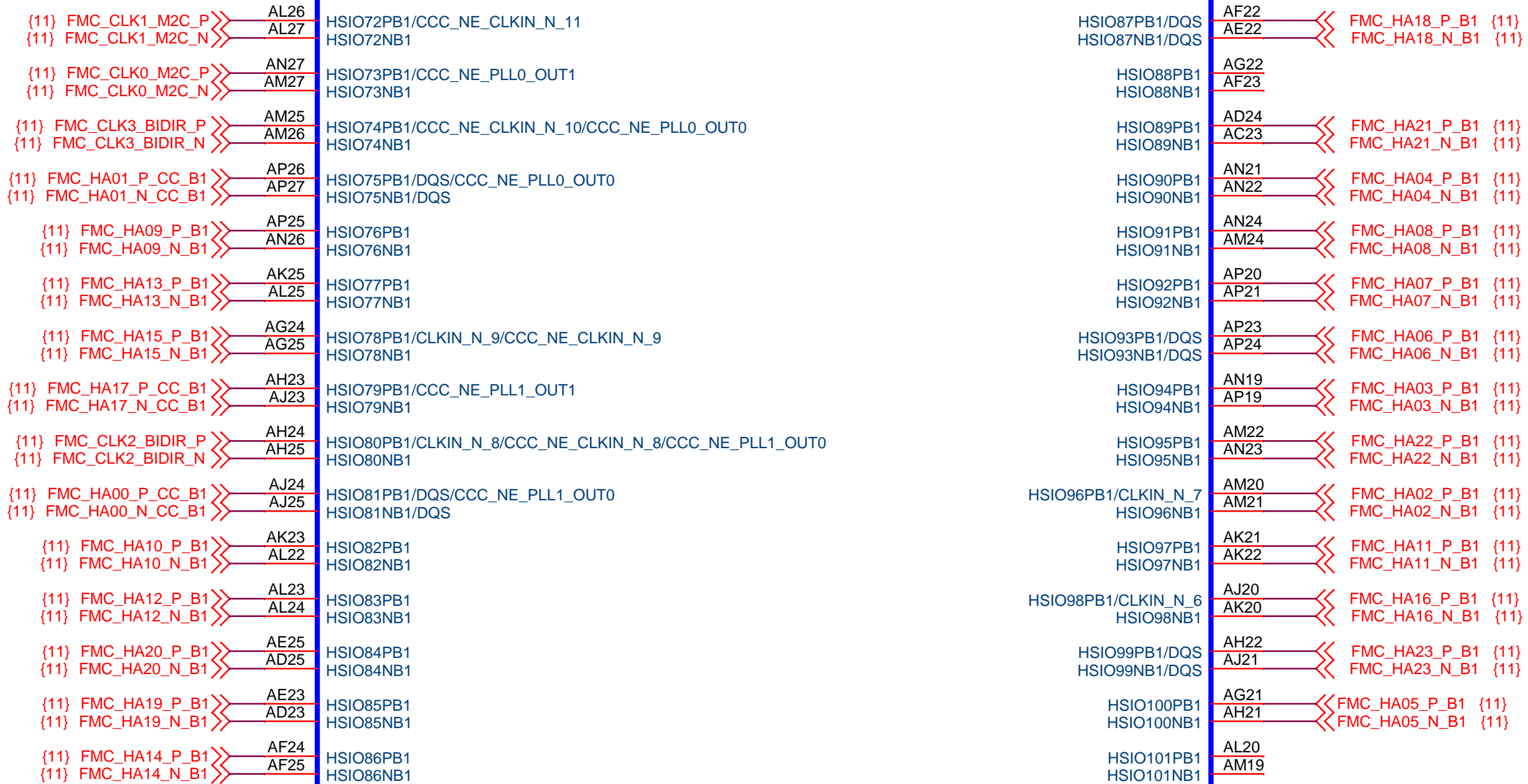
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A	DVP-100-000506-001	2	
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**BANK-1-HSIO (1.8V)**

U17-12

**BANK-1**



MPF300TS-1FCG1152EES



<b>TITLE</b> ALOE KIT LOW COST VERSION		
Microsemi		
SIZE Custom	DOCUMENT NO. DVP-100-000506-001	REV 2
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# TRANSCEIVER 2

U17-3

## XCVR-2

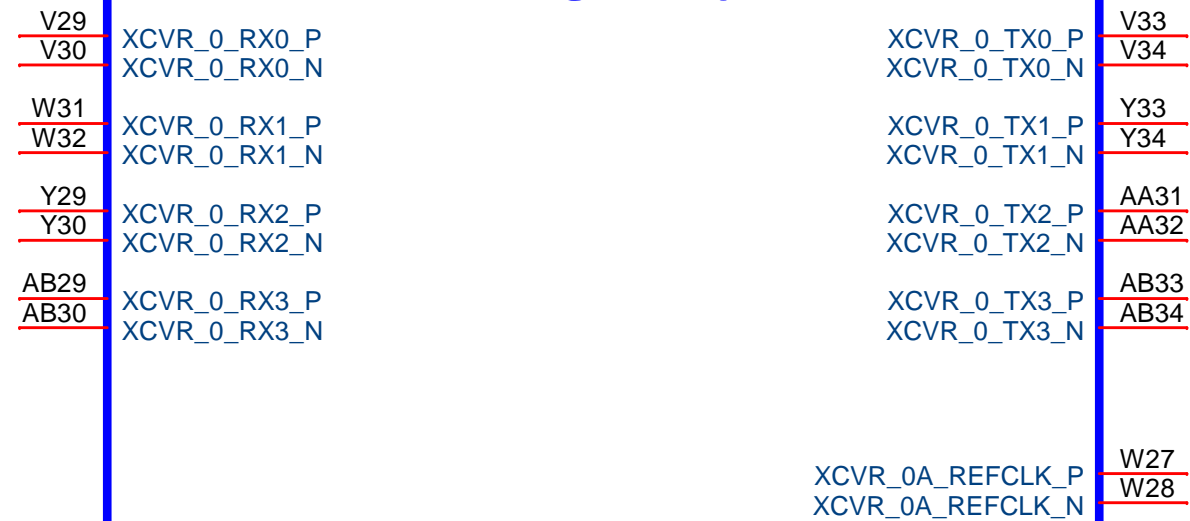


MPF300TS-1FCG1152EES

# TRANSCEIVER 0

U17-1

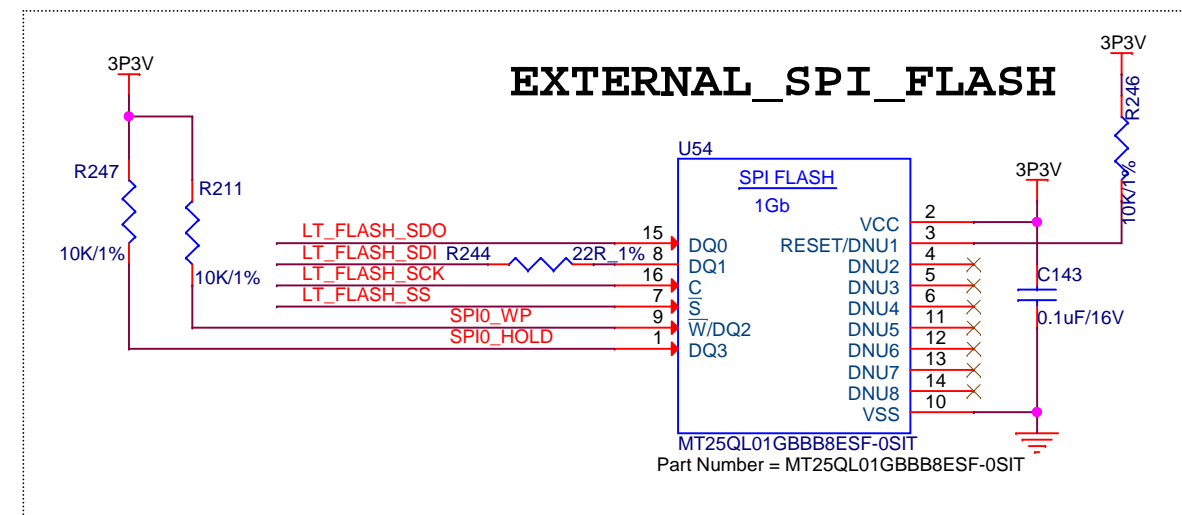
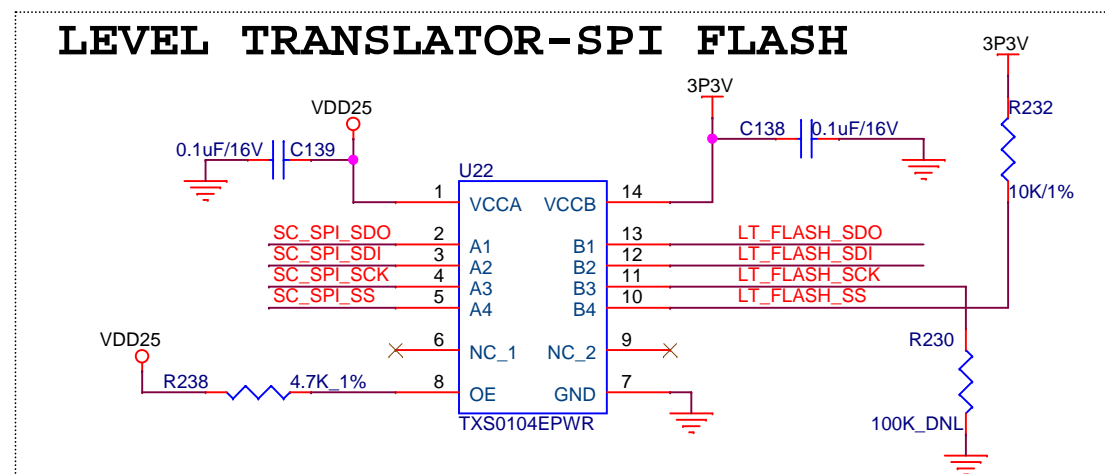
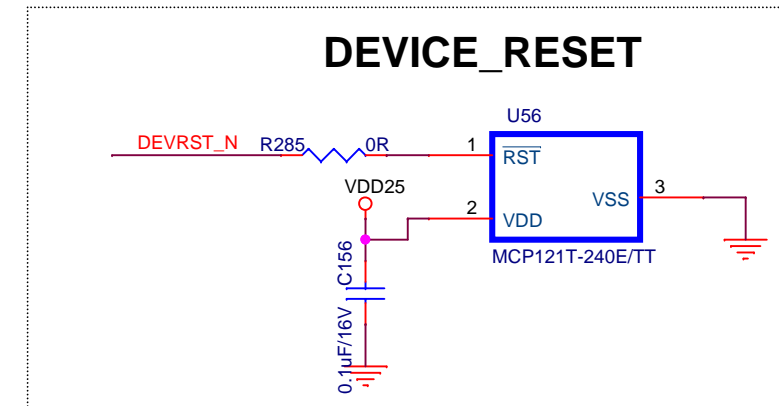
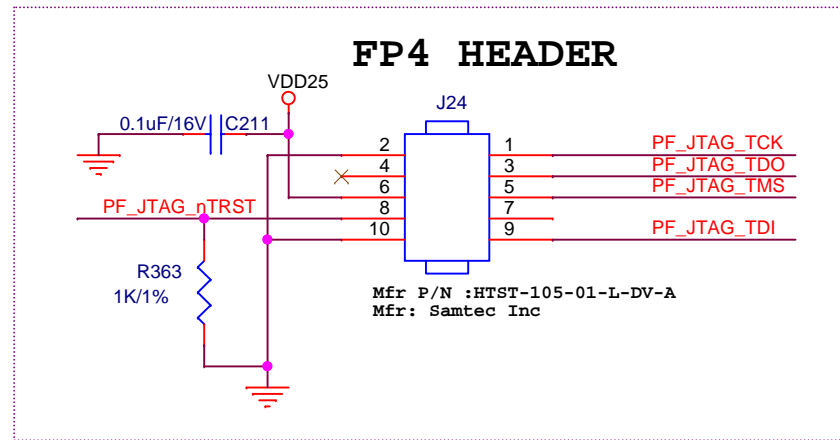
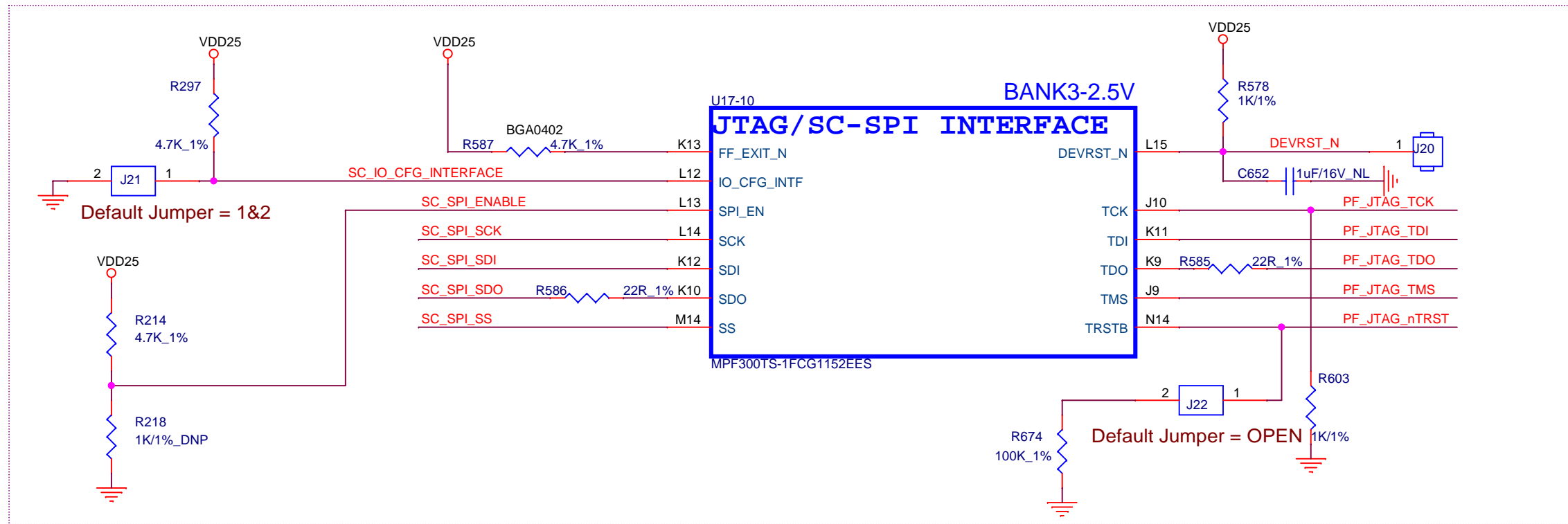
## XCVR-0



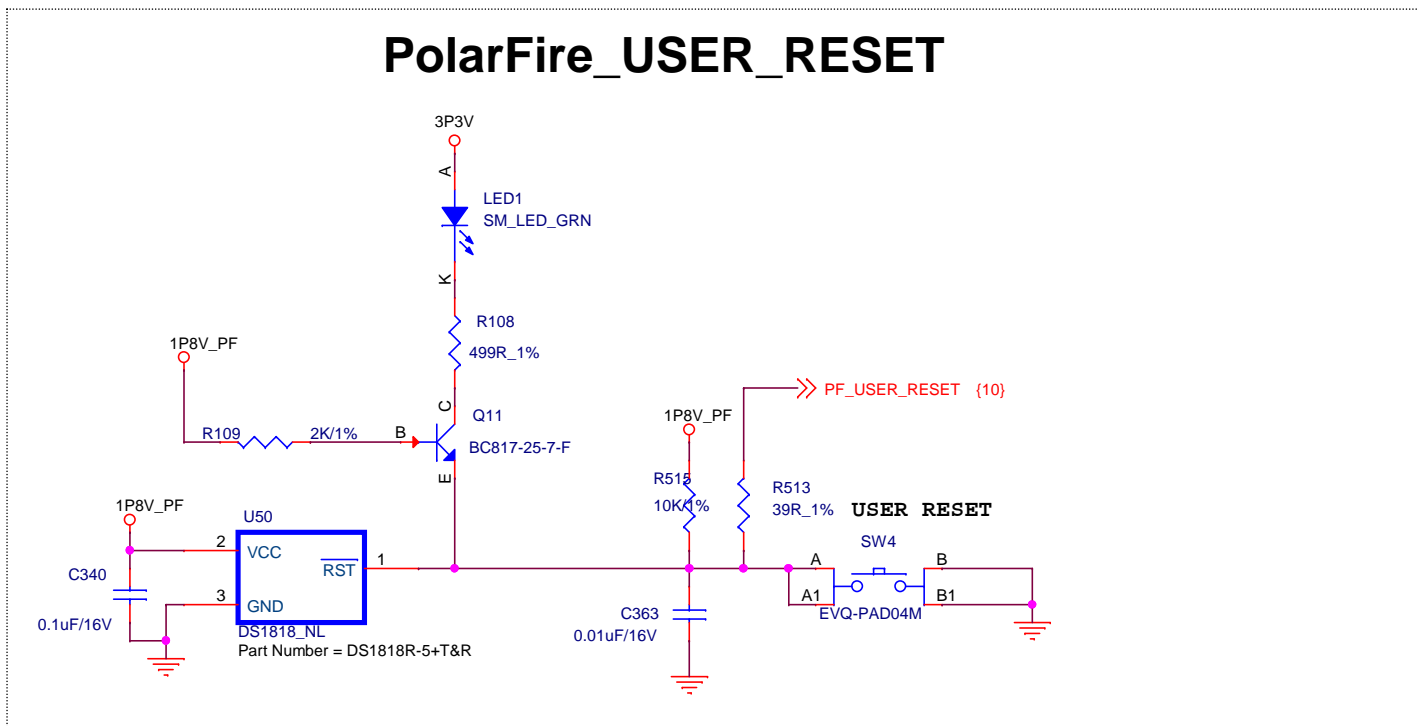
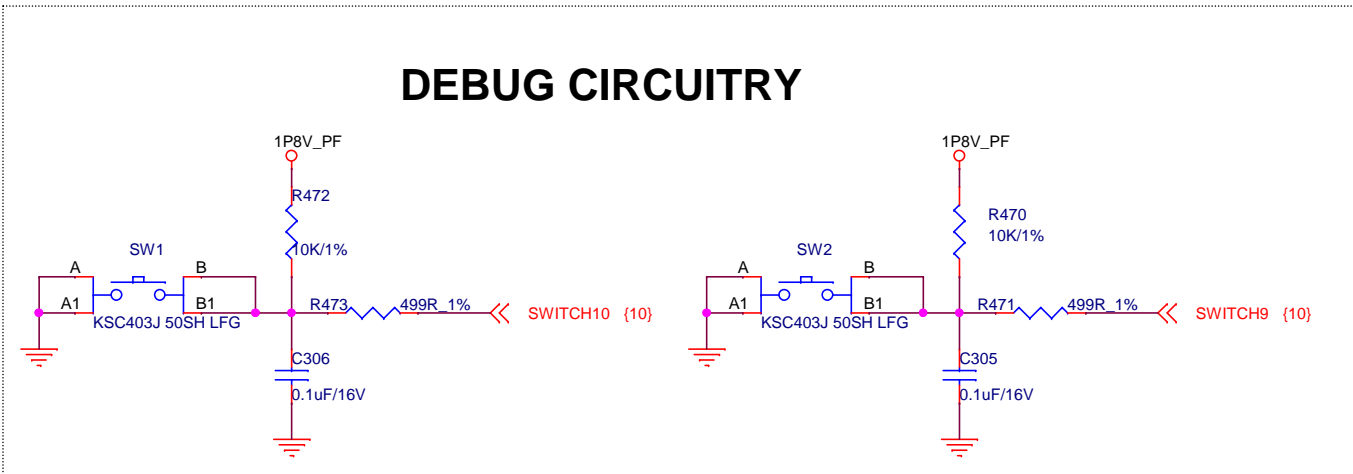
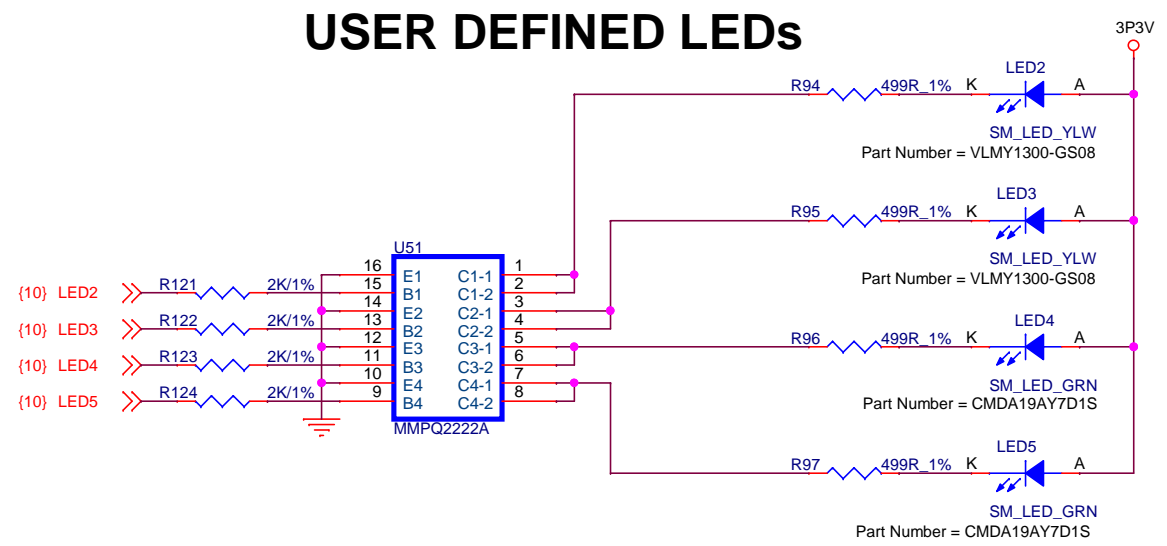
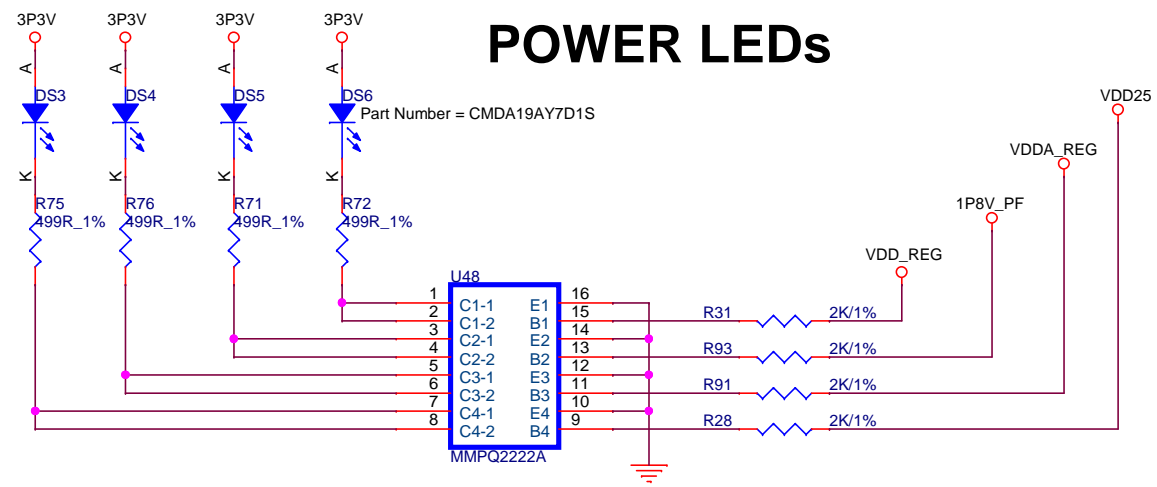
MPF300TS-1FCG1152EES



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ALOE KIT LOW COST VERSION			
Microsemi			
<b>SIZE</b>	<b>DOCUMENT NO.</b>	<b>REV</b>	
A	DVP-100-000506-001	2	
<b>DATE:</b> Friday, May 31, 2019			<b>SH 16 OF 37</b>

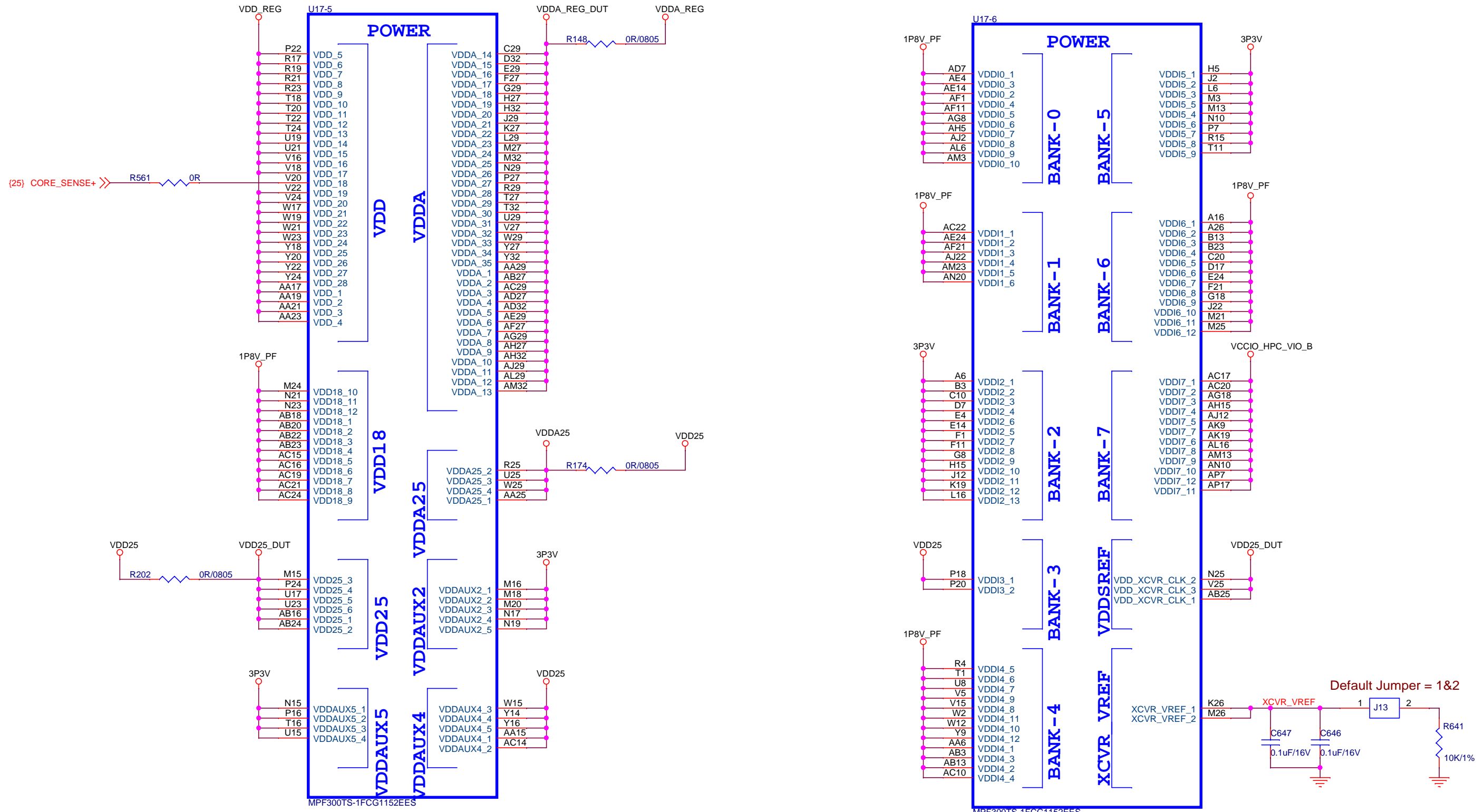


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SIZE Custom	DOCUMENT NO. DVP-100-000506-001	REV 2
DATE: Friday, May 31, 2019	SH 17 OF 37	



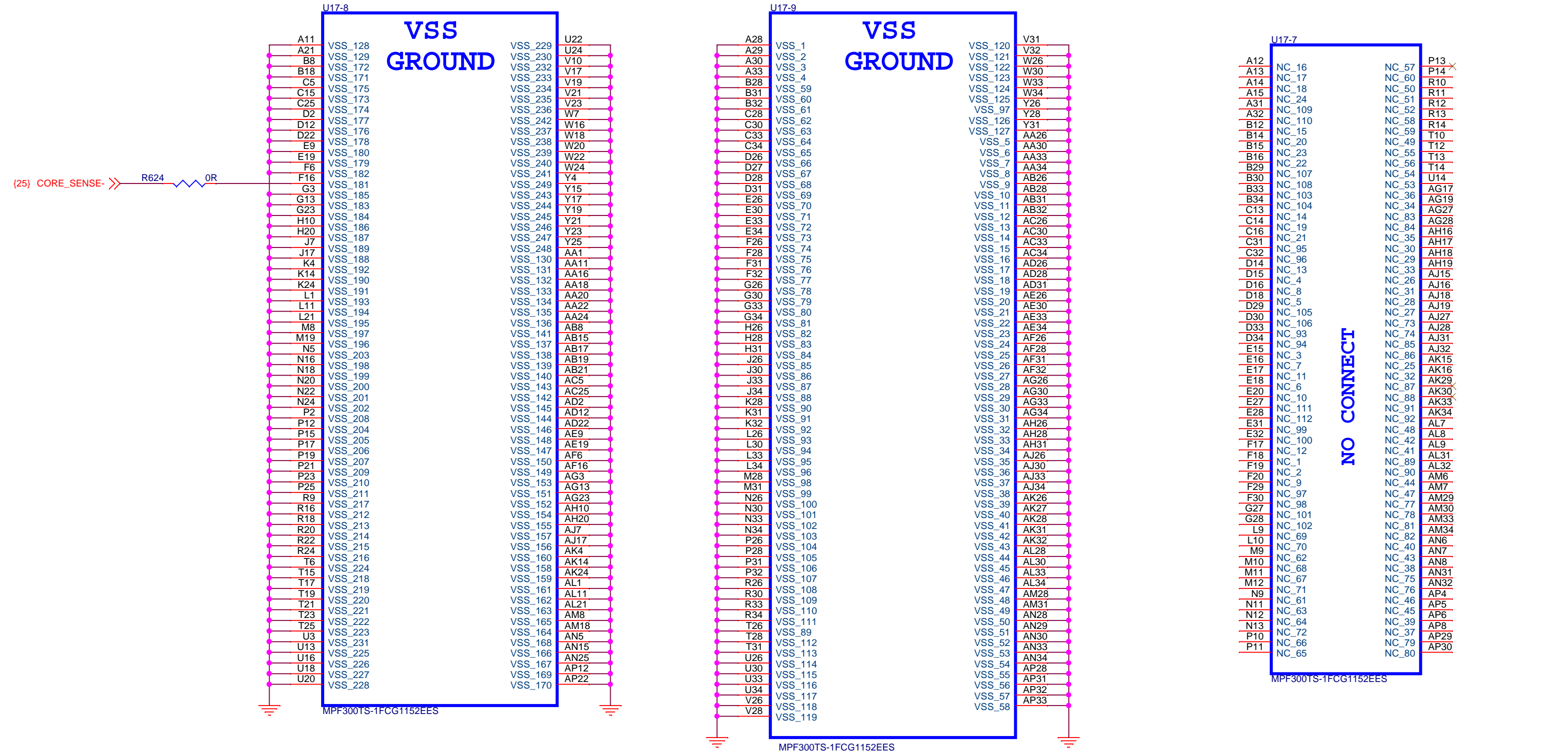
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ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
DATE:	Friday, May 31, 2019		SH 18 OF 37

# POWER CONNECTIONS



<b>TITLE</b>			
ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
DATE:	Friday, May 31, 2019		SH 19 OF 37

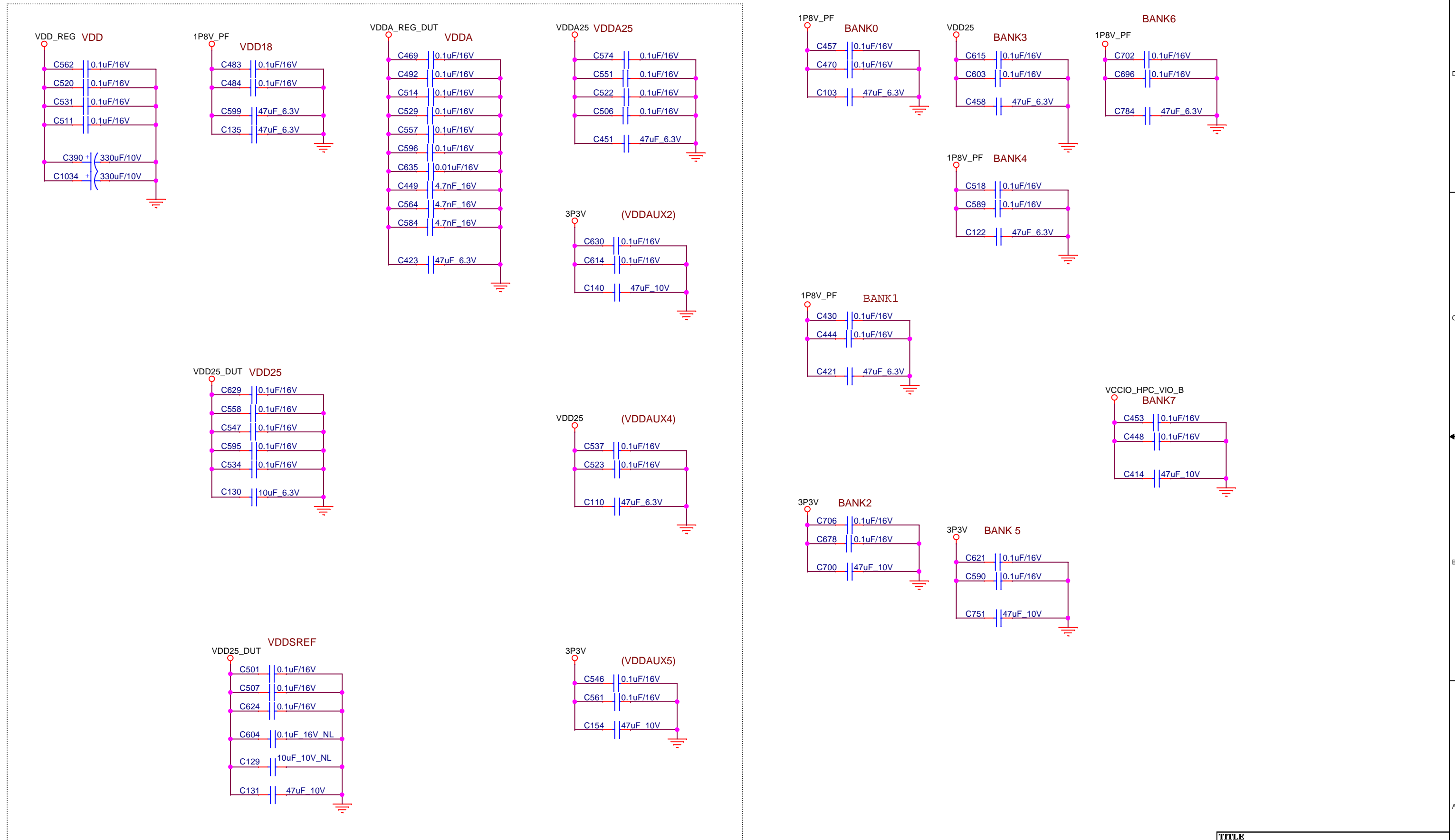
# GROUND & NC CONNECTION



TITLE		
ALOE KIT LOW COST VERSION		
Microsemi		
SIZE	DOCUMENT NO. DVP-100-000506-001	REV
B		2
DATE:	Friday, May 31, 2019	SH 20 OF 37



# DECOUPLING CAPACITORS



<b>TITLE</b> ALOE KIT LOW COST VERSION			
Microsemi			
SIZE Custom	DOCUMENT NO.	DVP-100-000506-001	REV 2
DATE:	Friday, May 31, 2019	SH	21 OF 37



# POWER SCHEME

D

C

B

A

D

C

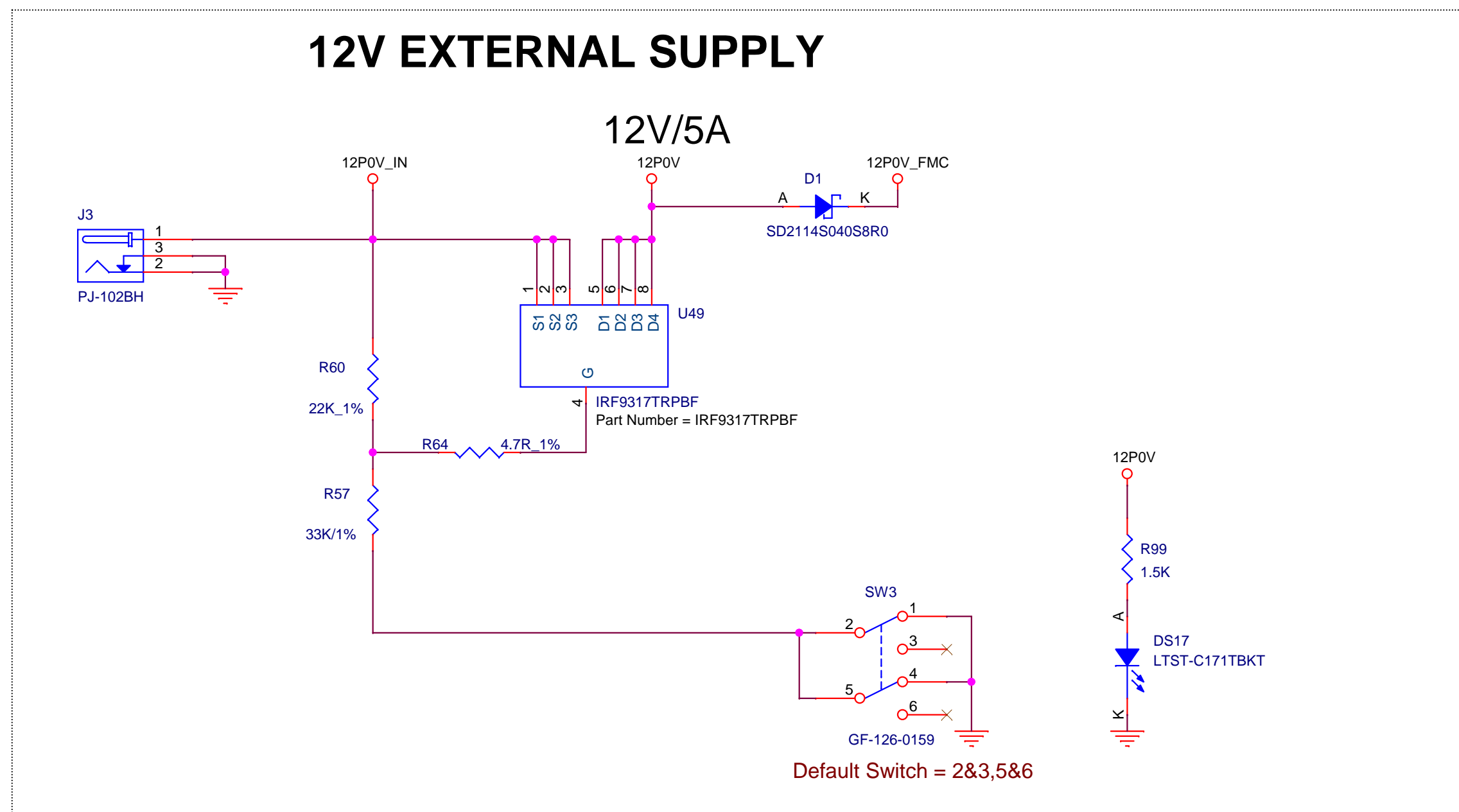
B

A



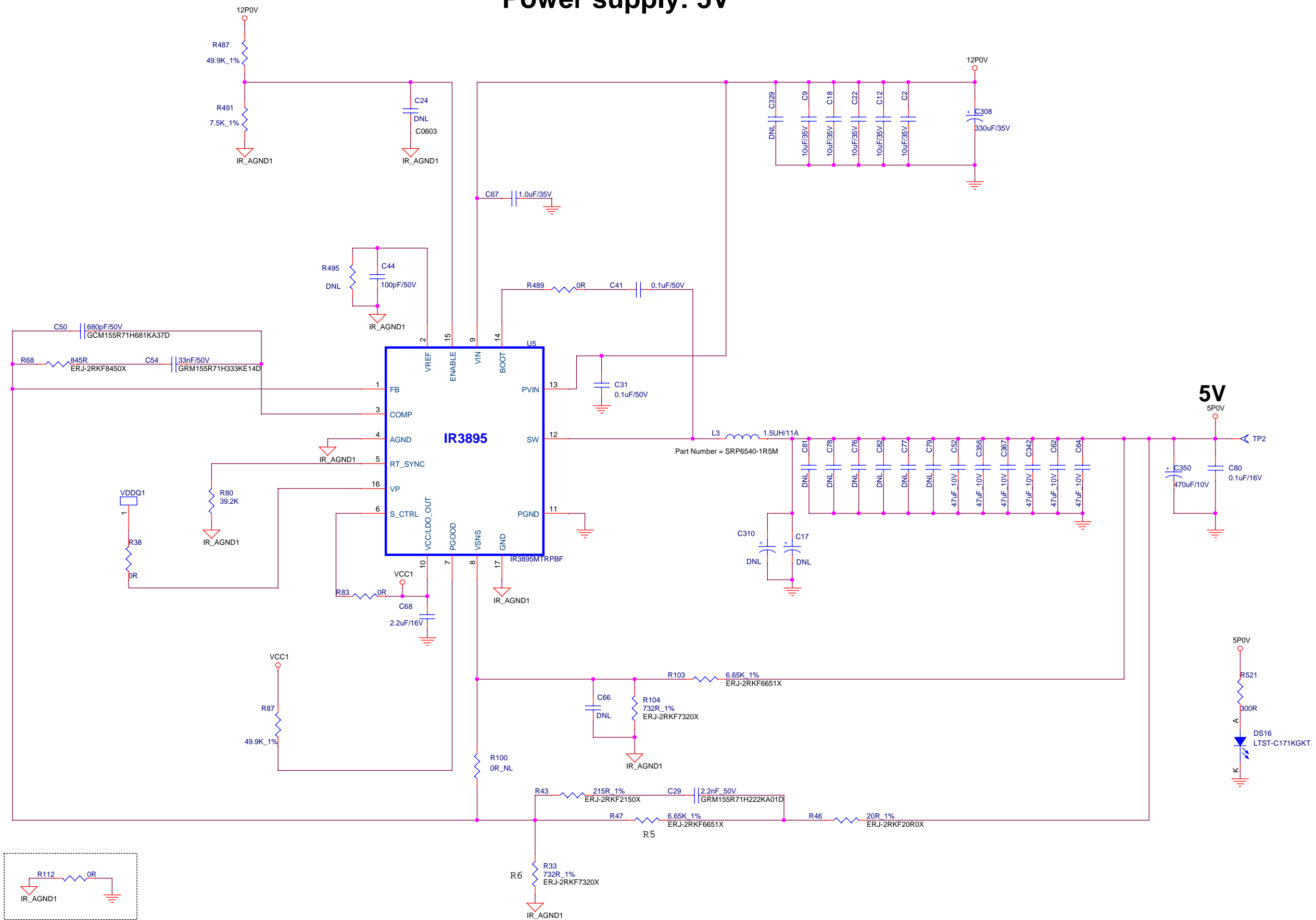
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ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
C			2
DATE: Friday, May 31, 2019			SH 22 OF 37

# 12V EXTERNAL SUPPLY



<b>TITLE</b> ALOE KIT LOW COST VERSION			
Microsemi			
<b>SIZE</b> Custom	<b>DOCUMENT NO.</b>	DVP-100-000506-001	<b>REV</b> 2
<b>DATE:</b> Friday, May 31, 2019		<b>SH 23 OF 37</b>	

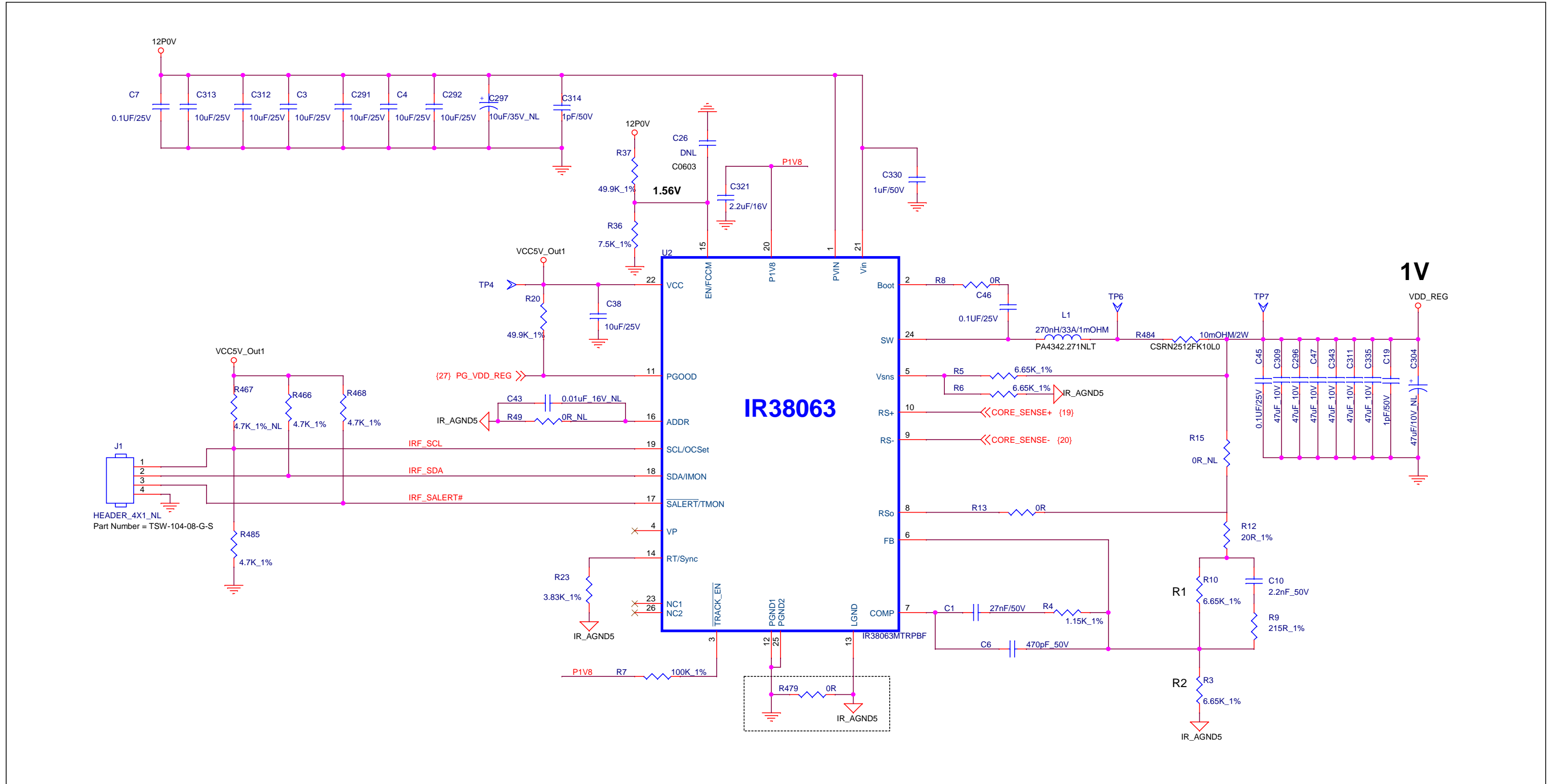
# Power supply: 5V



<b>TITLE</b> ALOE KIT LOW COST VERSION			
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SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
DATE:	Friday, May 31, 2019		SH 24 OF 37

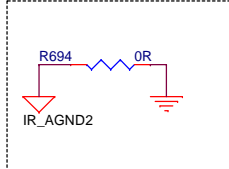
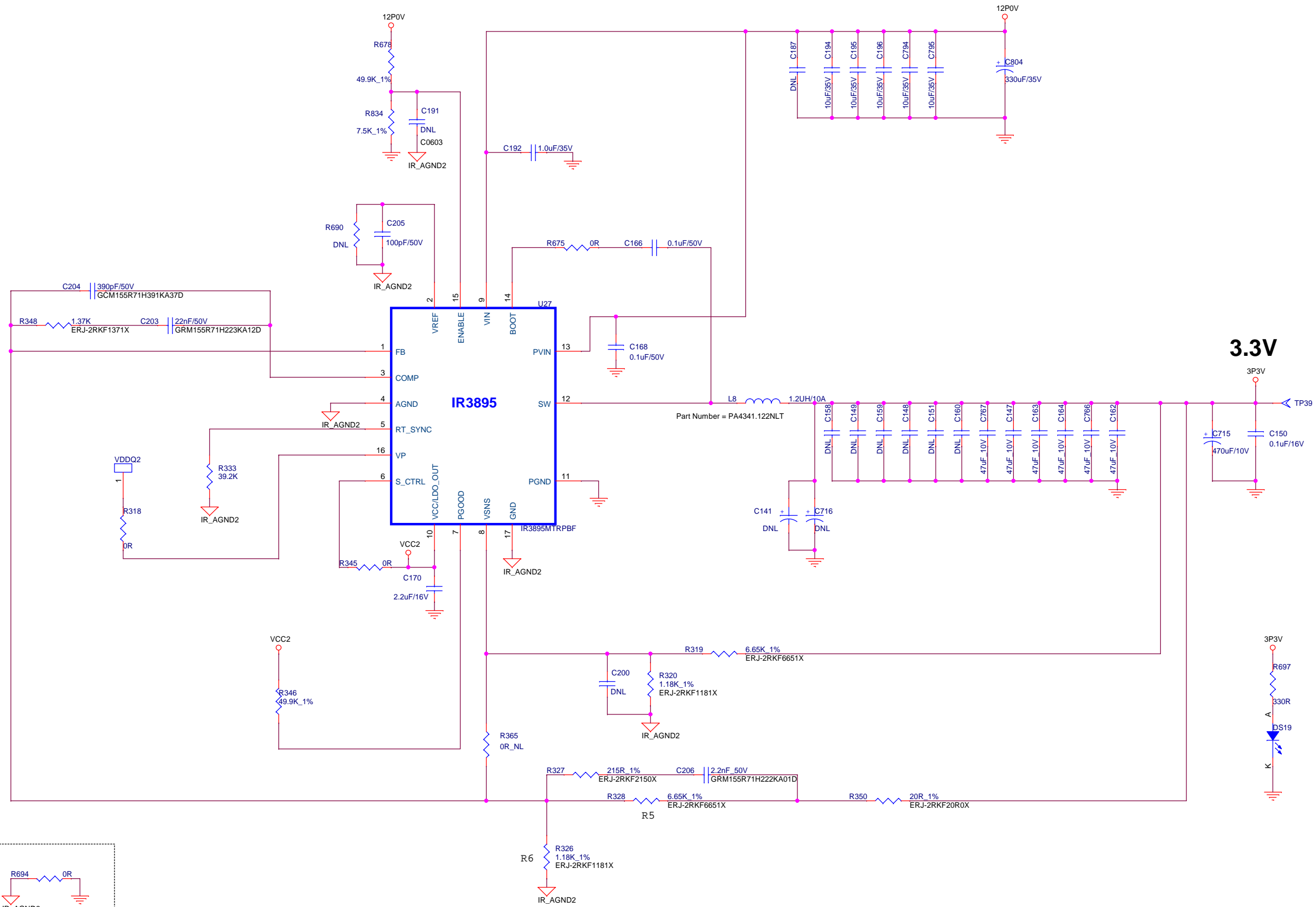


# Power supply: 1V



TITLE			
ALOE KIT LOW COST VERSION			
Microsemi			
SIZE	DOCUMENT NO.	DVP-100-000506-001	REV
Custom			2
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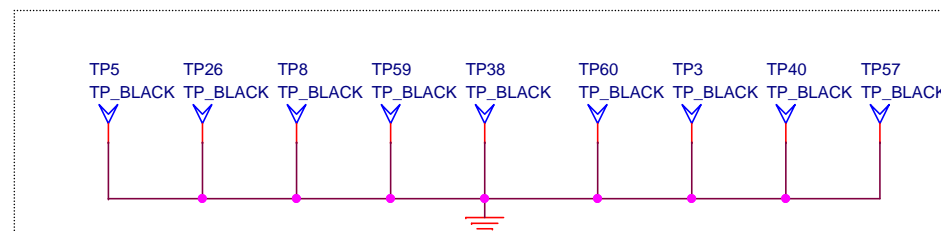
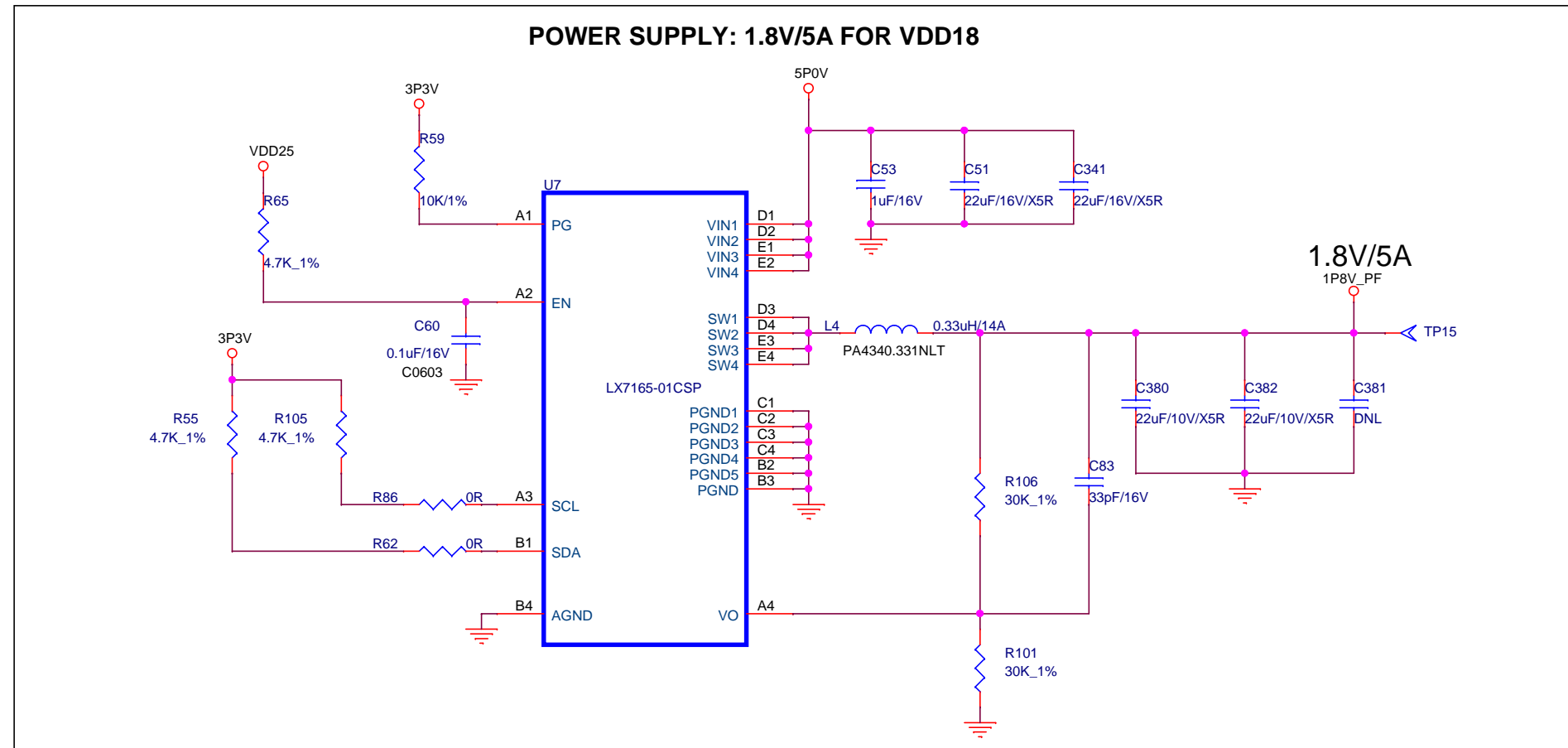
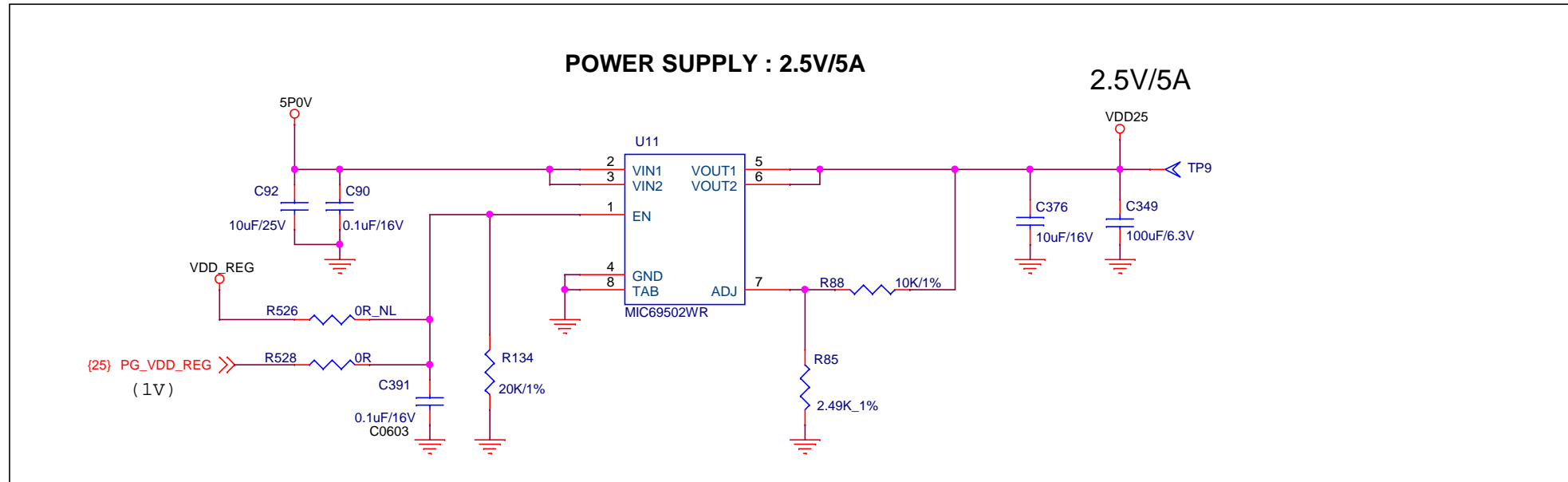
# Power supply: 3.3V



<b>TITLE</b>			
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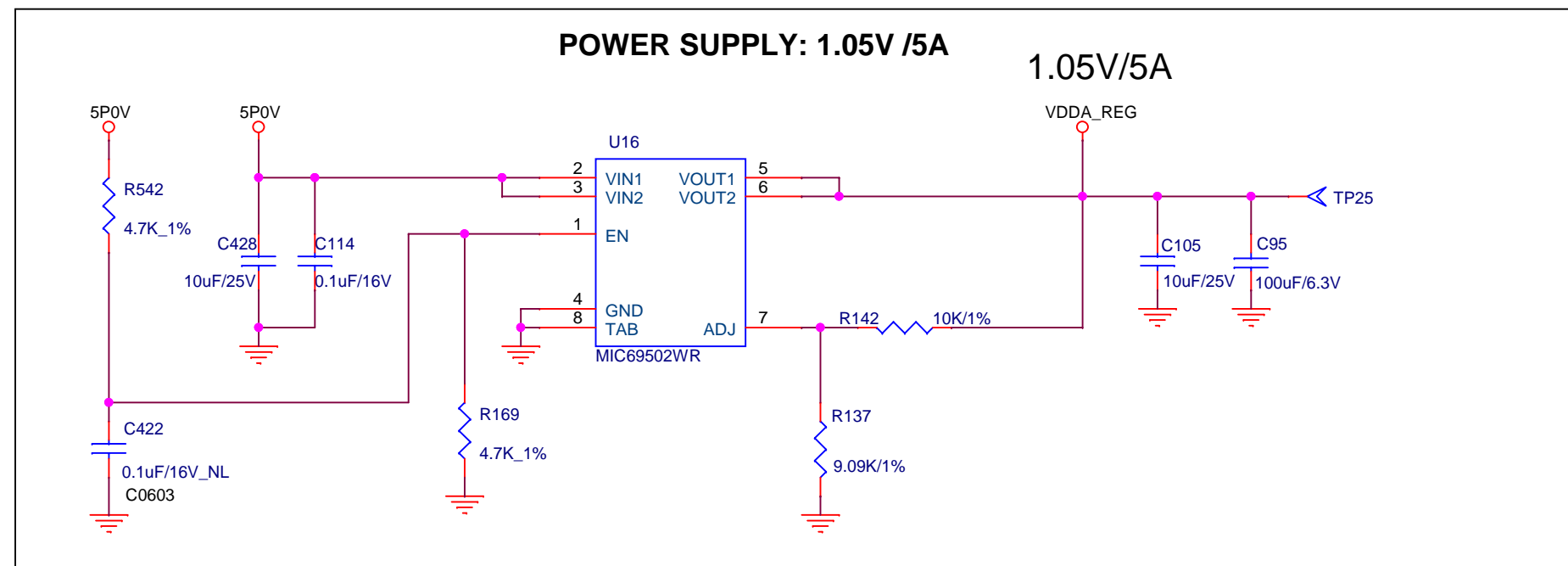
# POWER SUPPLIES: 2.5V (VDD25) / 1.8V (VDD18)



<b>TITLE</b> ALOE KIT LOW COST VERSION			
Microsemi			
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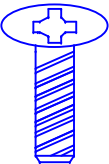
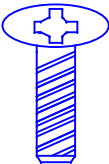
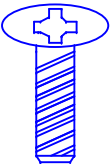
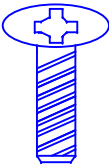
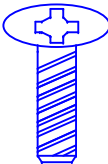
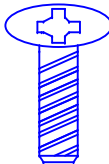
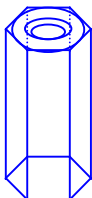
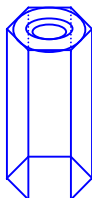
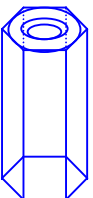
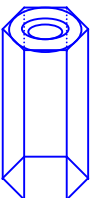
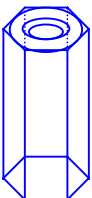
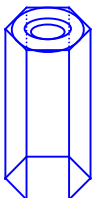
# POWER SUPPLIES:1.05V-VDDA



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# MECHANICALS

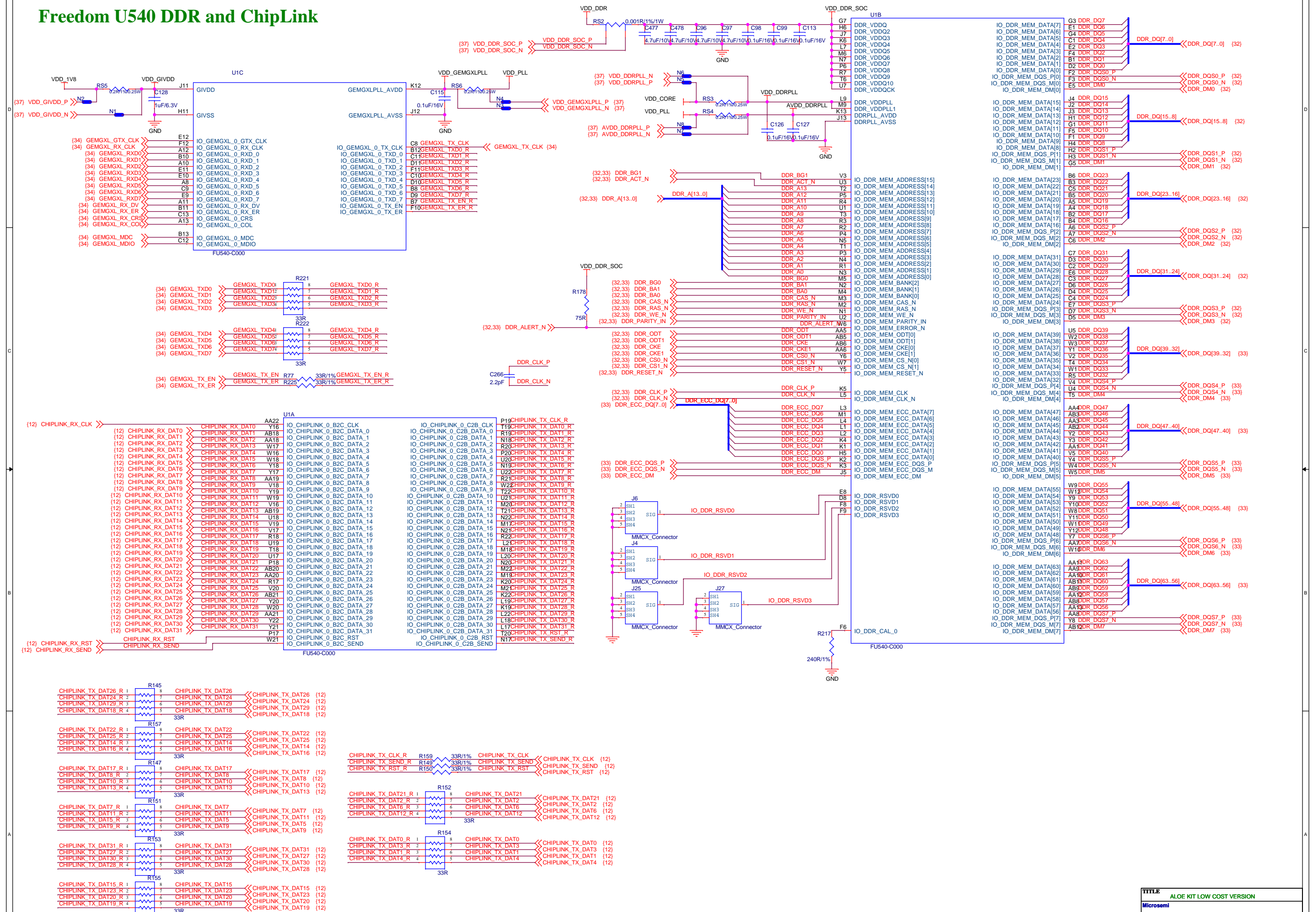
## M3-STANDOFF & SCREWS FOR BOARD

 ZS1 M3_SCREWS-BRD RM3X8MM 2701	 ZS2 M3_SCREWS-BRD RM3X8MM 2701	 ZS3 M3_SCREWS-BRD RM3X8MM 2701	 ZS4 M3_SCREWS-BRD RM3X8MM 2701	 ZS5 M3_SCREWS-BRD RM3X8MM 2701	 ZS6 M3_SCREWS-BRD RM3X8MM 2701
 ZS7 M3_STANDOFF-BRD 970180321	 ZS8 M3_STANDOFF-BRD 970180321	 ZS9 M3_STANDOFF-BRD 970180321	 ZS10 M3_STANDOFF-BRD 970180321	 ZS11 M3_STANDOFF-BRD 970180321	 ZS12 M3_STANDOFF-BRD 970180321

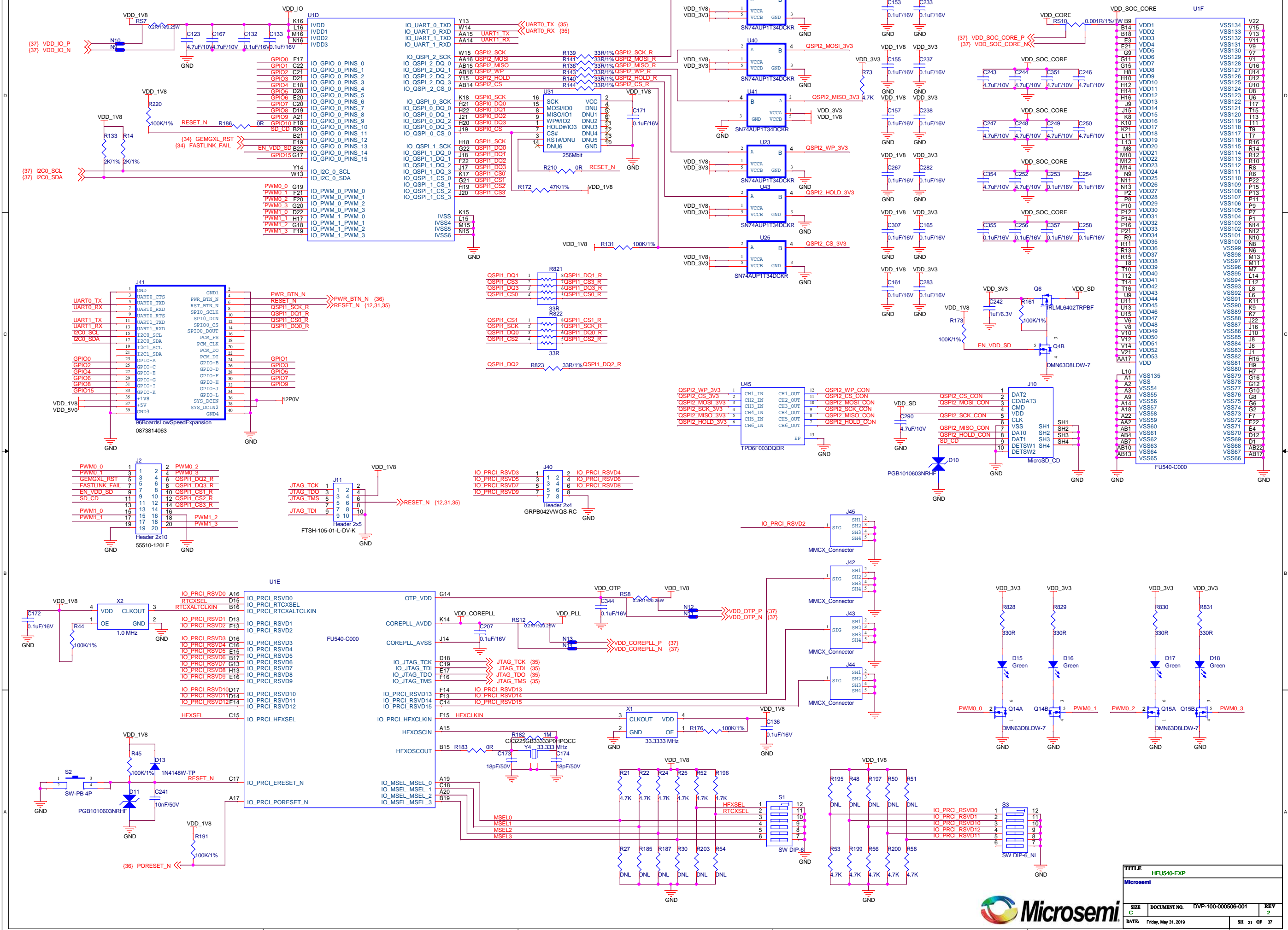


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# Freedom U540 DDR and ChipLink

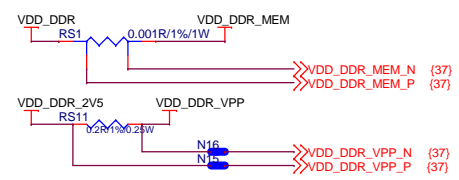
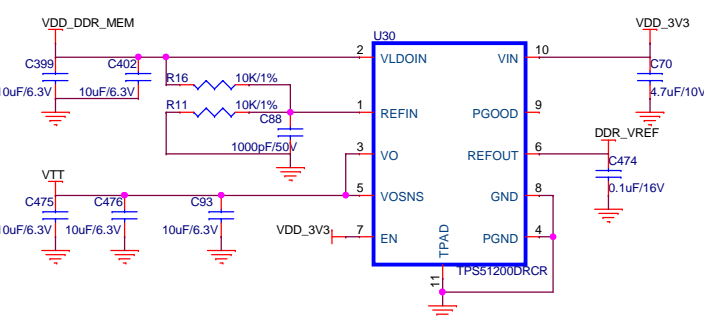
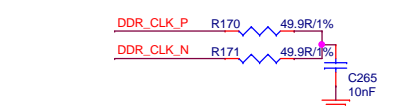
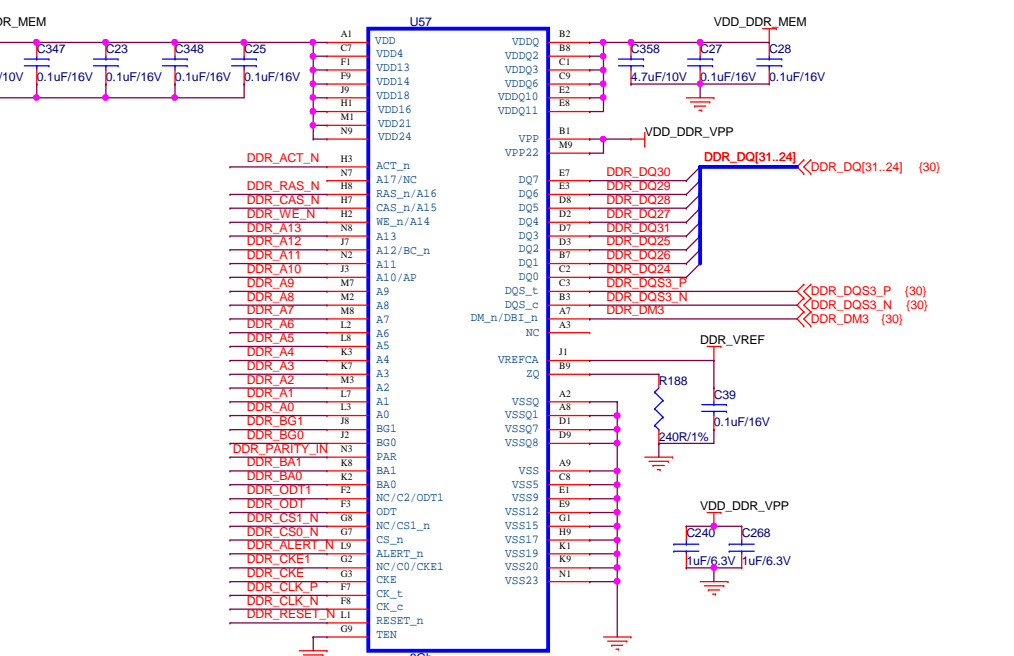
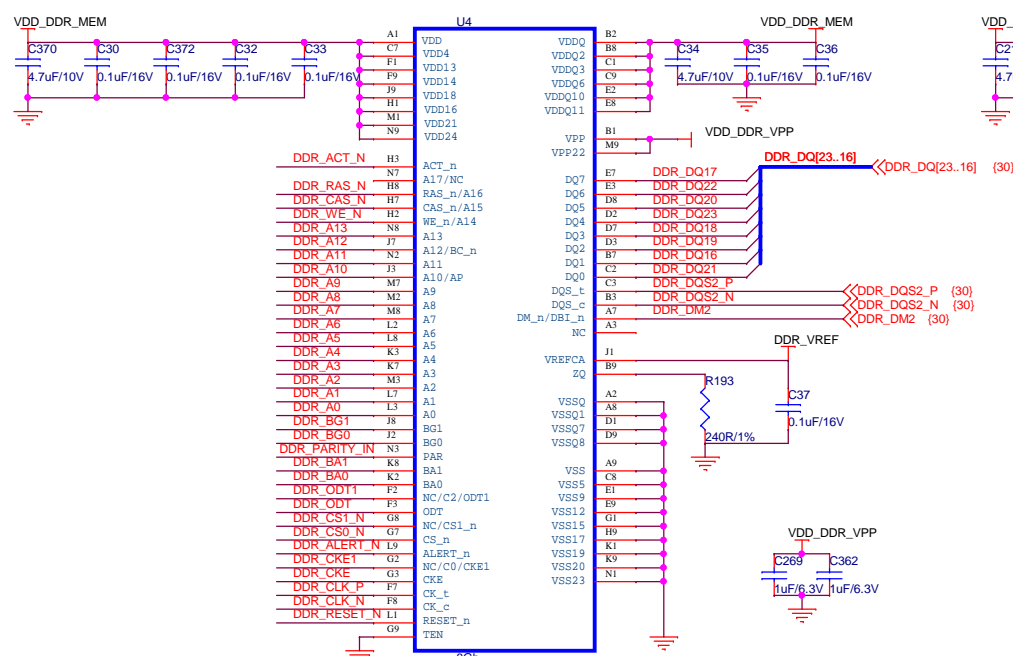
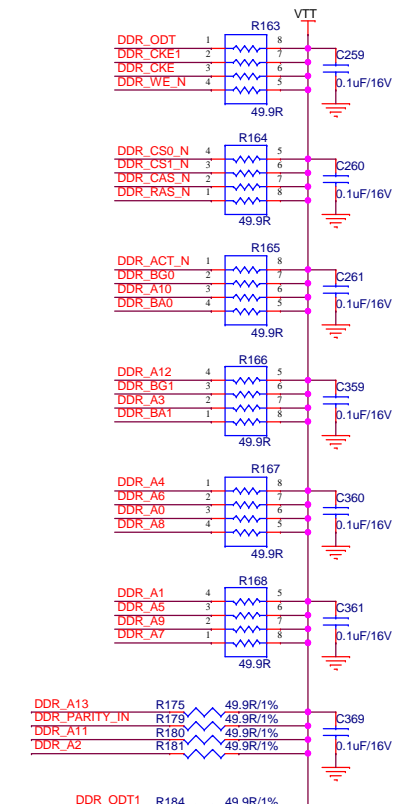
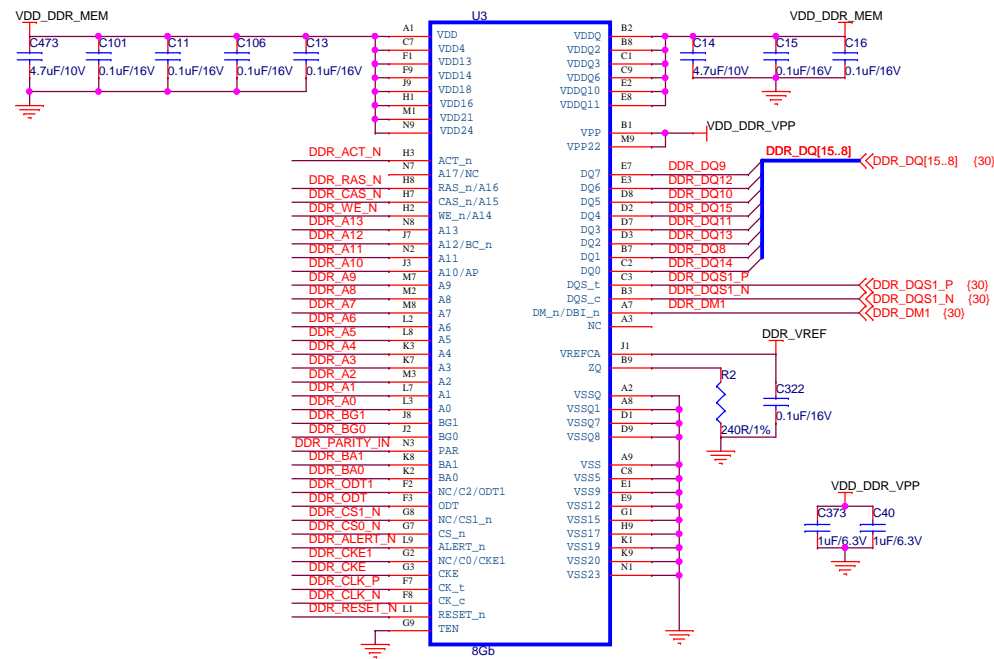
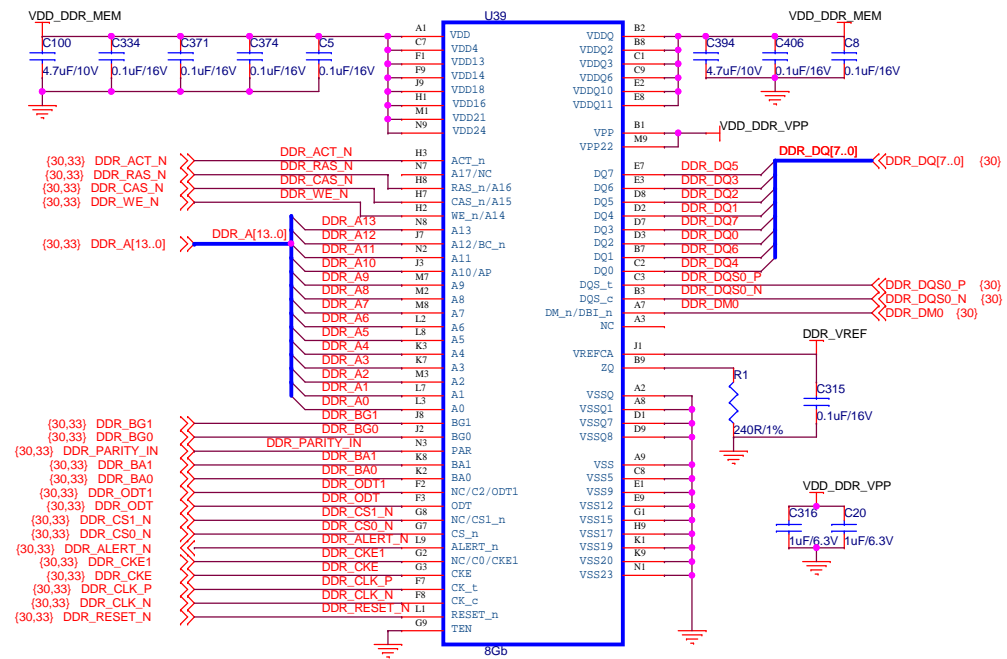


# Freedom U540 IO and Power

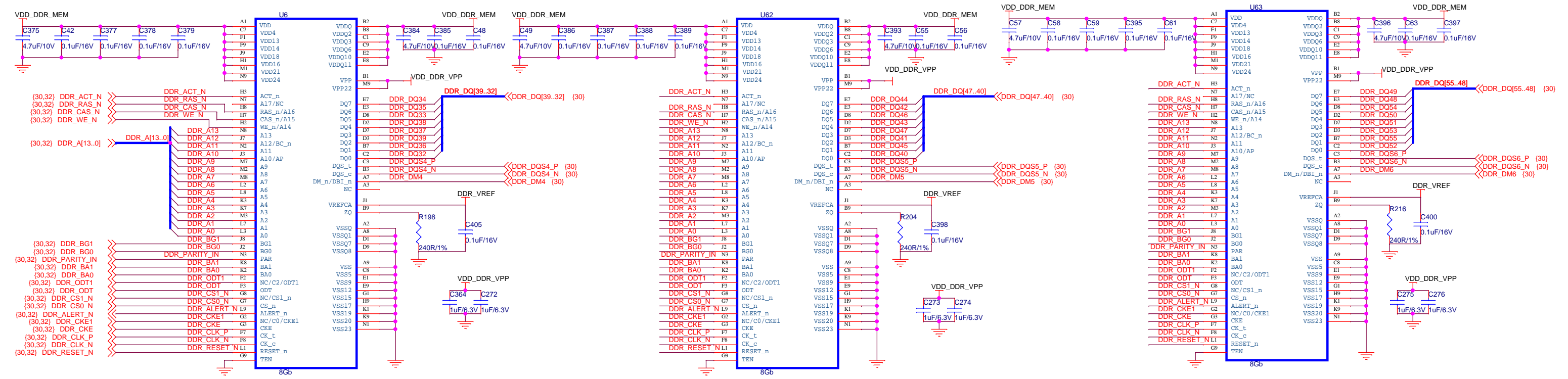




# Freedom U540 DDR and ChipLink



# DDR4x8 32 Bits

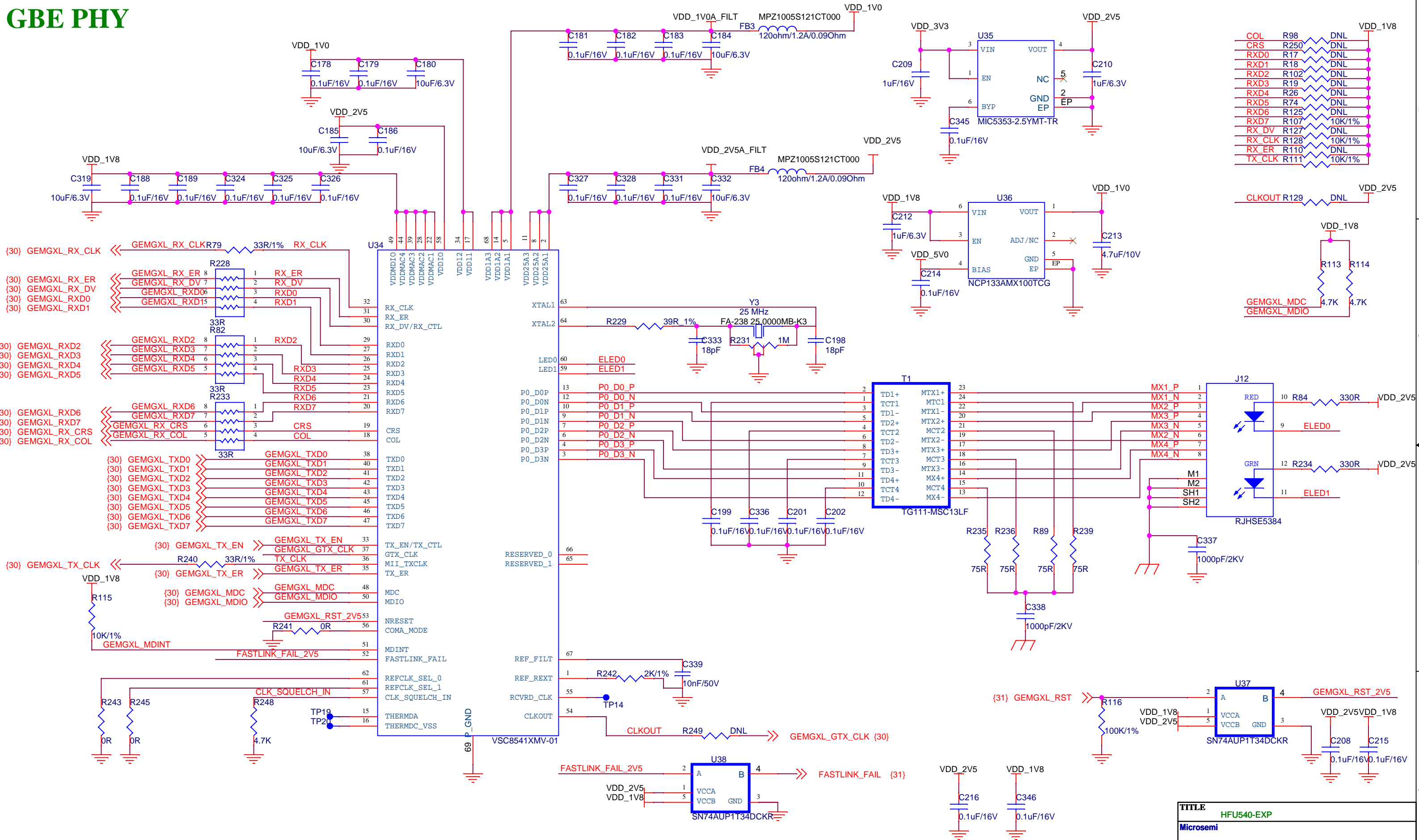


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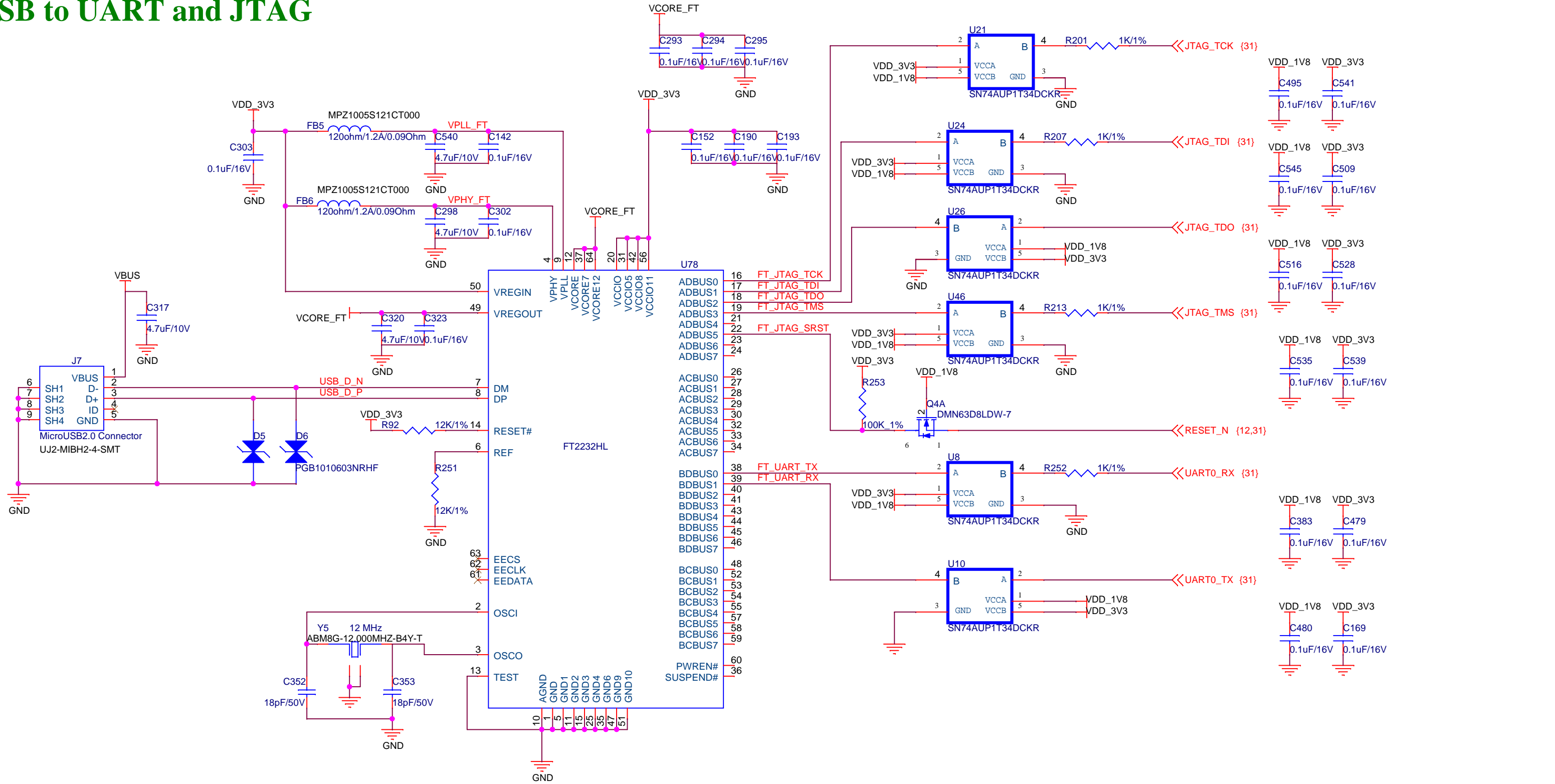
# GBE PHY



TITLE			
HFU540-EXP			
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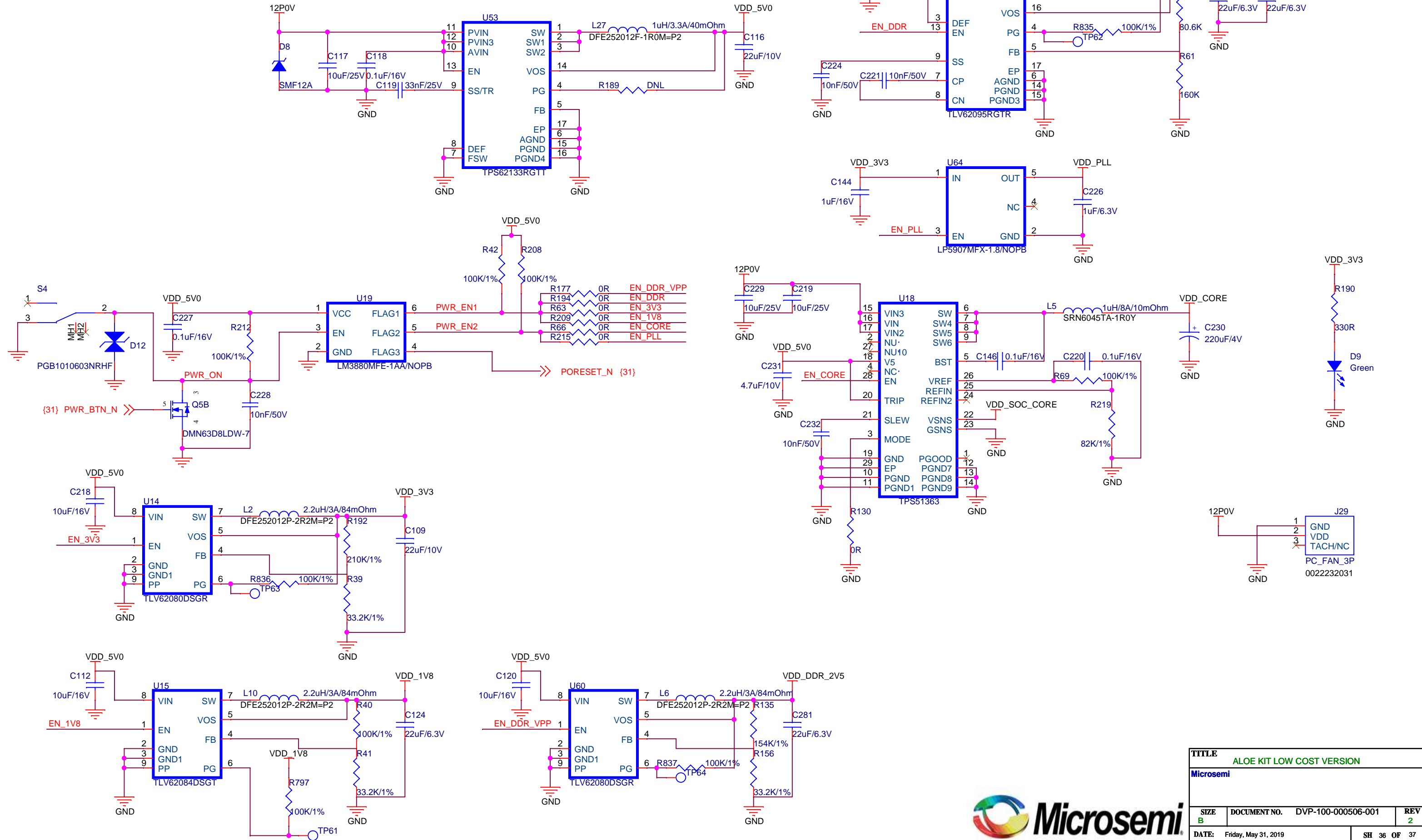
# USB to UART and JTAG



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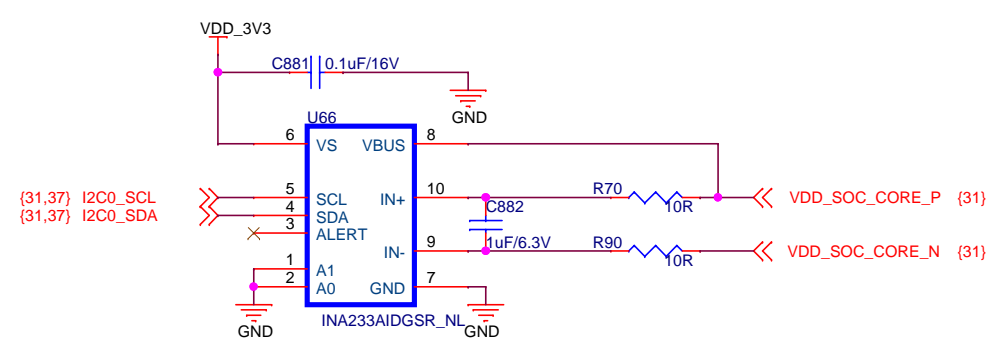


# Power Supply

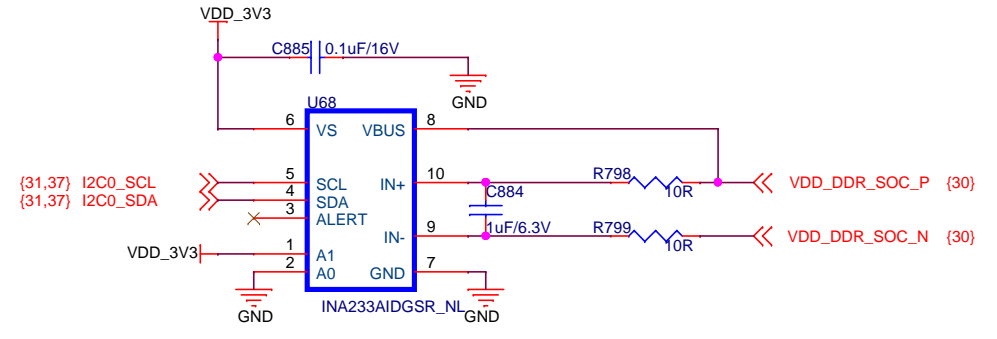


<b>TITLE</b> ALOE KIT LOW COST VERSION			
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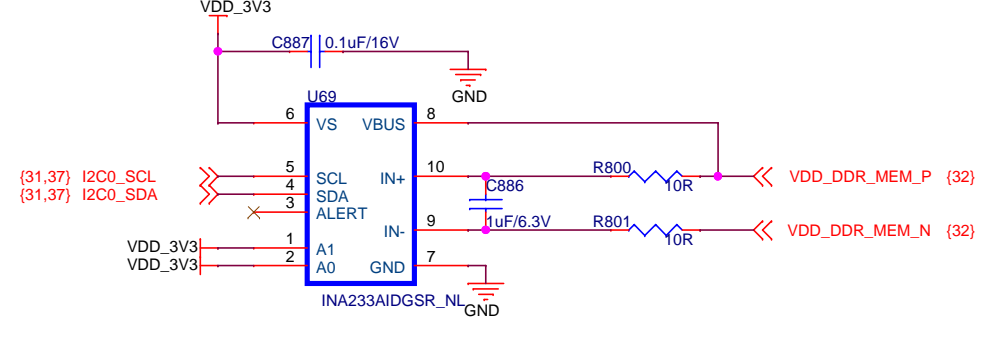




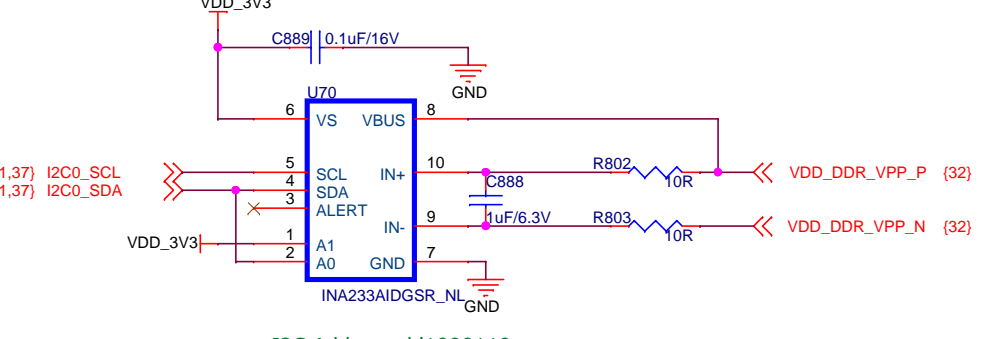
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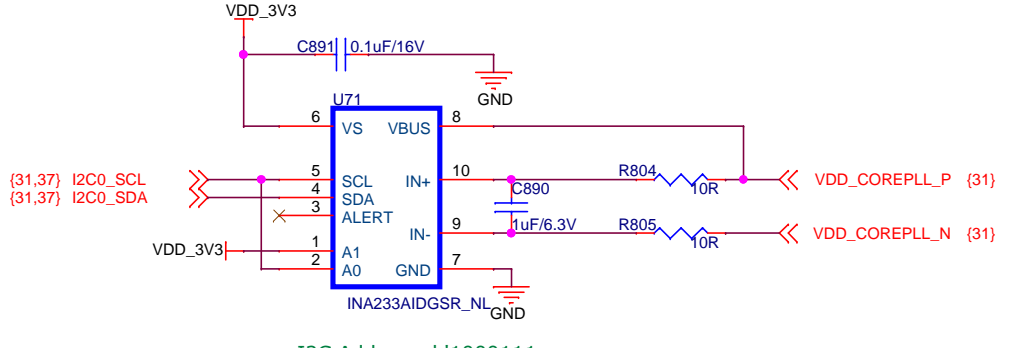
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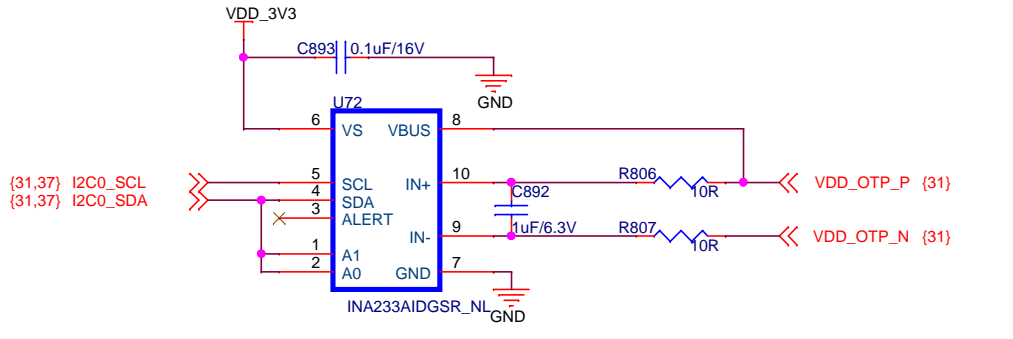
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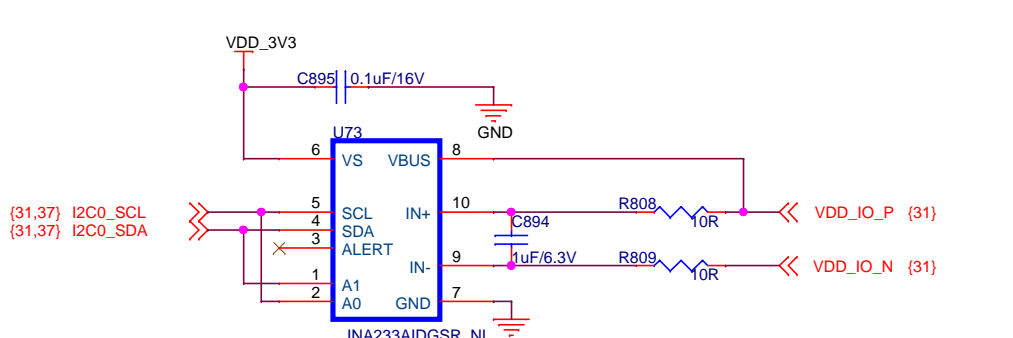
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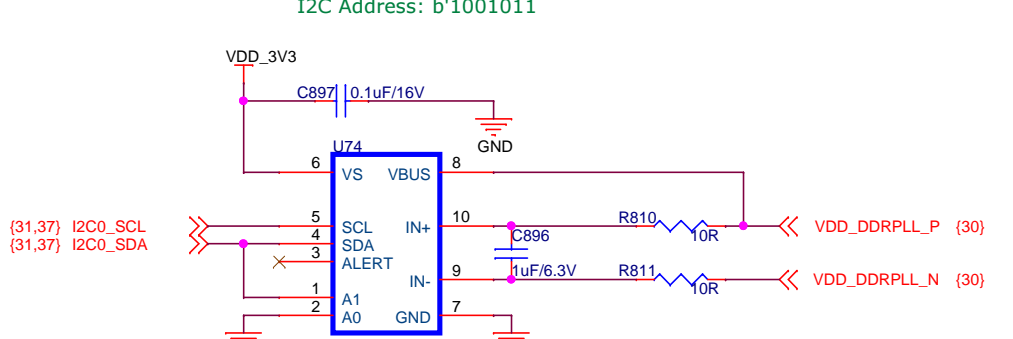
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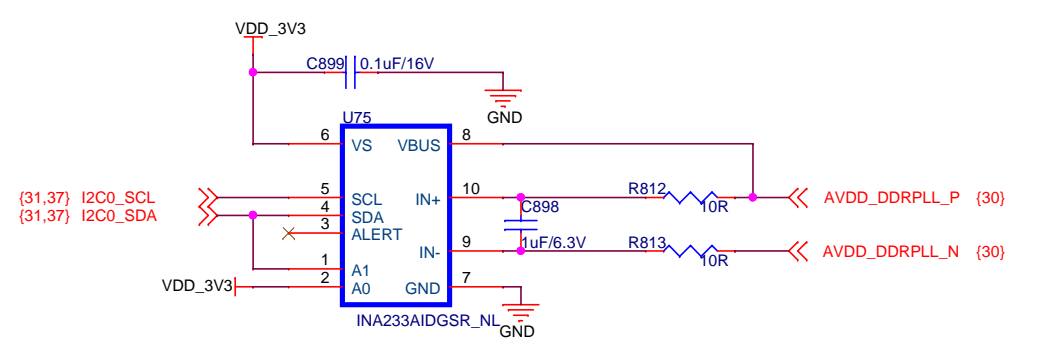
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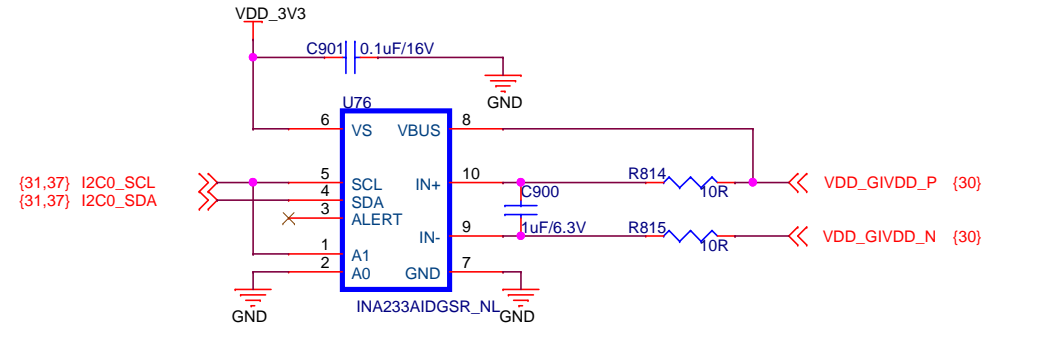
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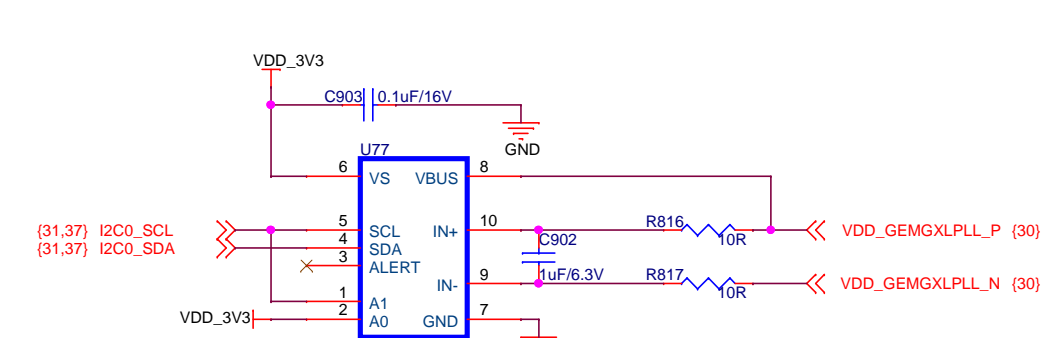
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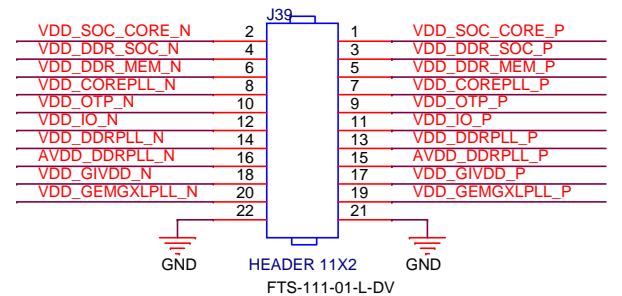
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I2C Address: b'1001100



I2C Address: b'1001101



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