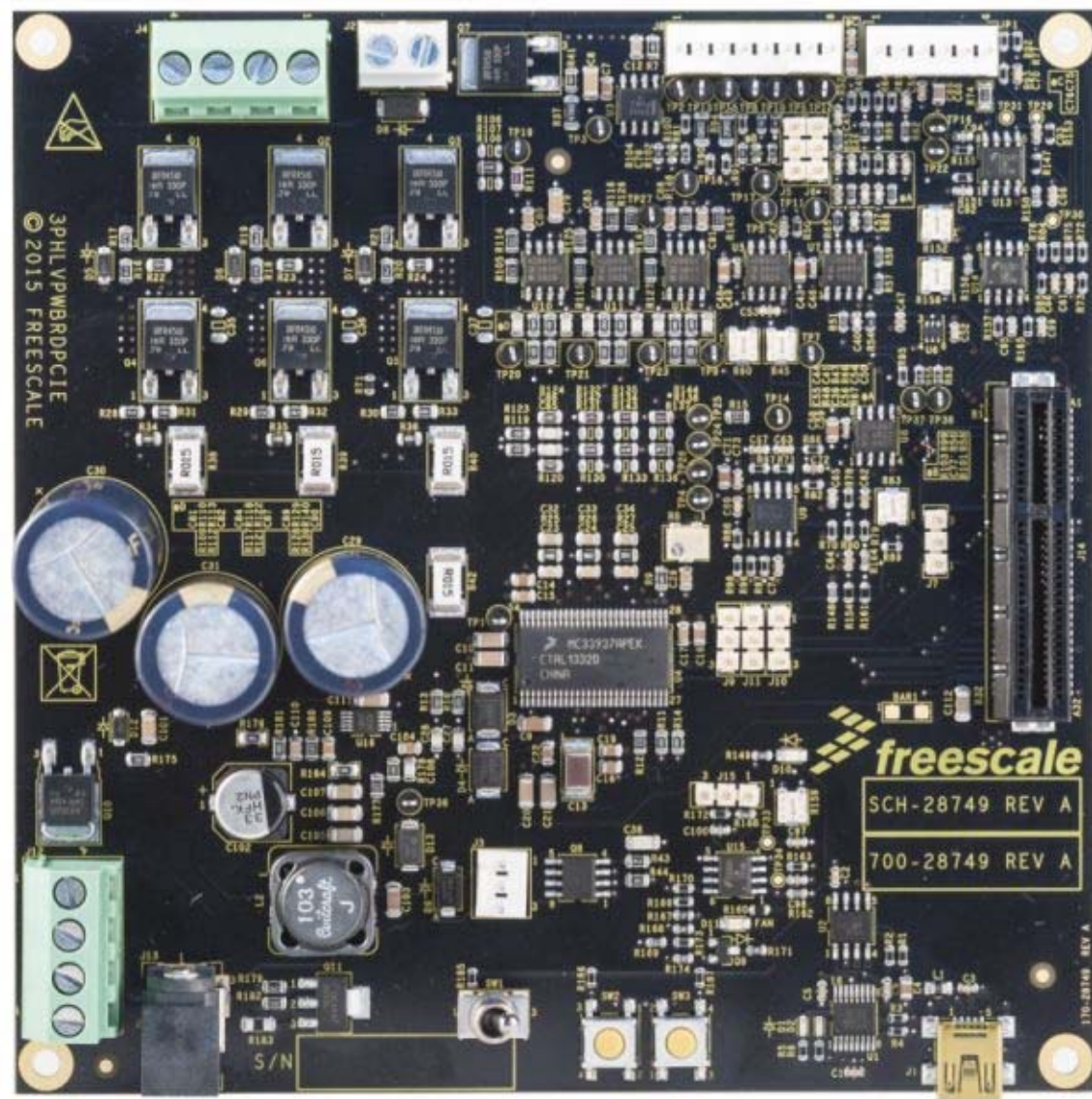



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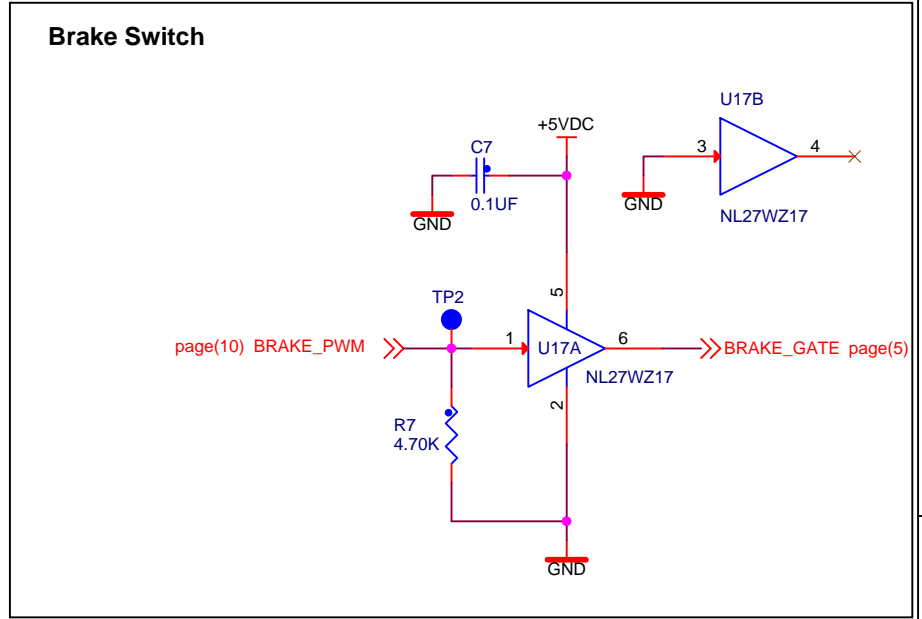
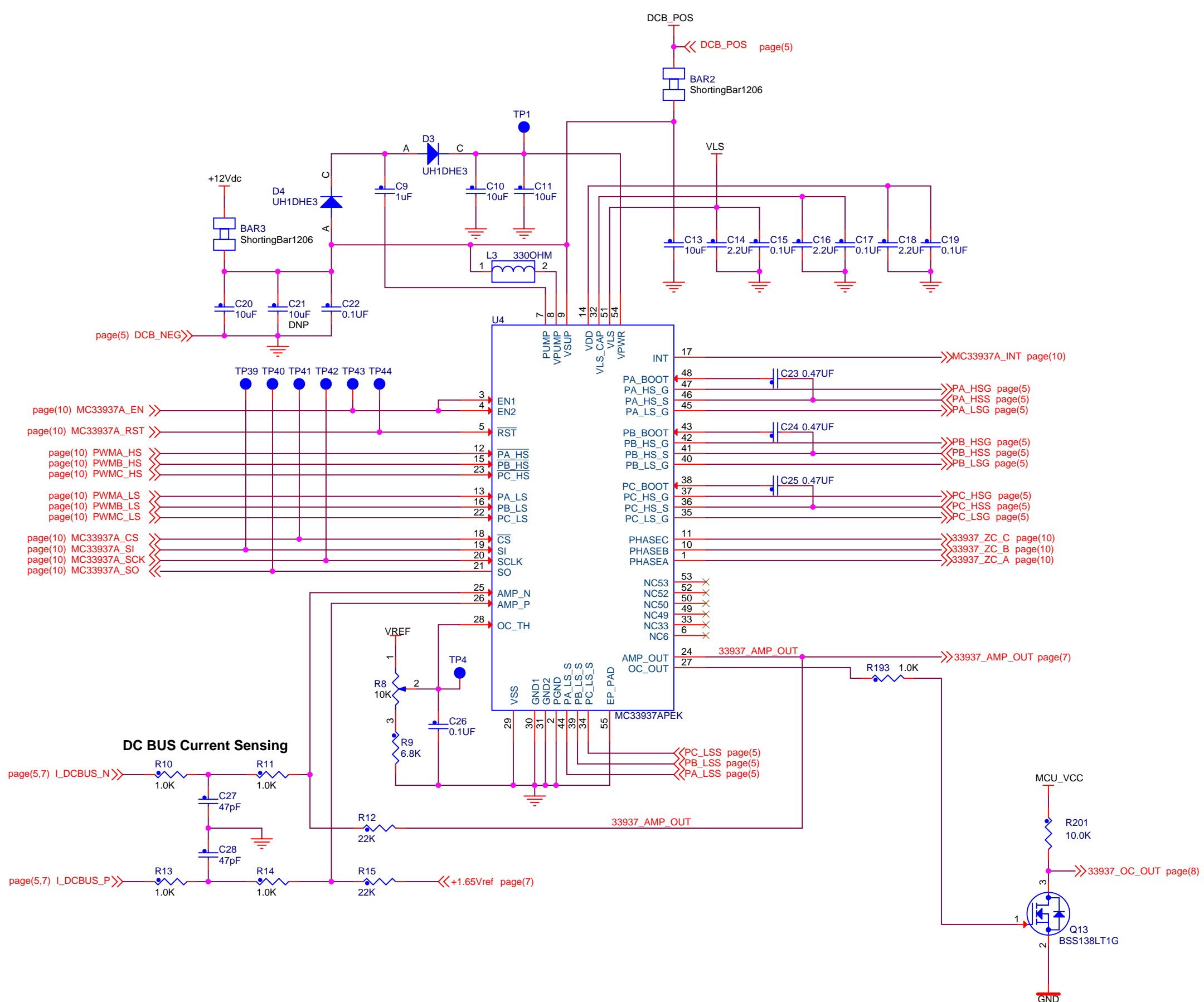
01	TITLE PAGE
02	MC33937_PREDRIVER
03	POWER BRIDGE
04	MOTOR POSITION INTERFACES
05	V/I_SENSING
06	FAULT LOGIC
07	POWER SUPPLY
08	CB INTERFACE
09	USB INTERFACE

<Variant Name>

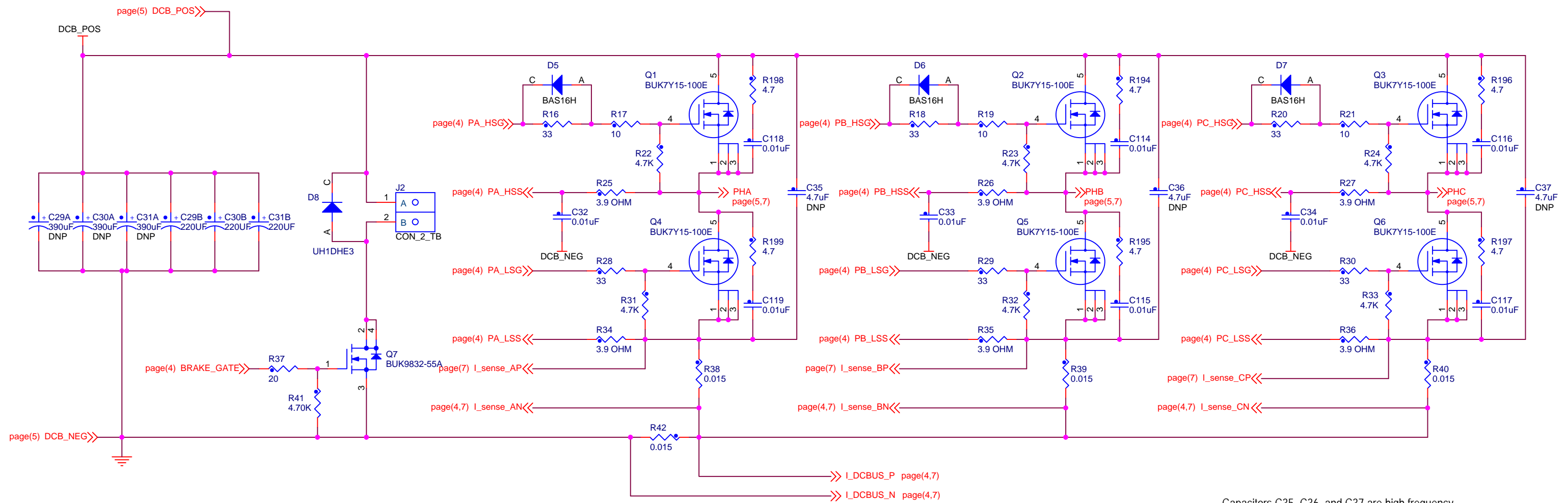
SCHEMATIC REVISIONS				
Zone	Rev	Description	Date	Revised
All	A	Initial production version	31.01.2015	BZu
All	B	Added new functionality	11.05.2015	BZu
All	B1	Schematic title page update	22.05.2015	BZu
All	C	EMC Improvement	18.04.2016	BZu



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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>			
Drawn by: B. ZUCZEK	Page Title: <b>Title page</b>			
Approved: M. STULRAJTER	Size A3	Document Number SCH-28749 PDF: SPF-28749	Rev C	
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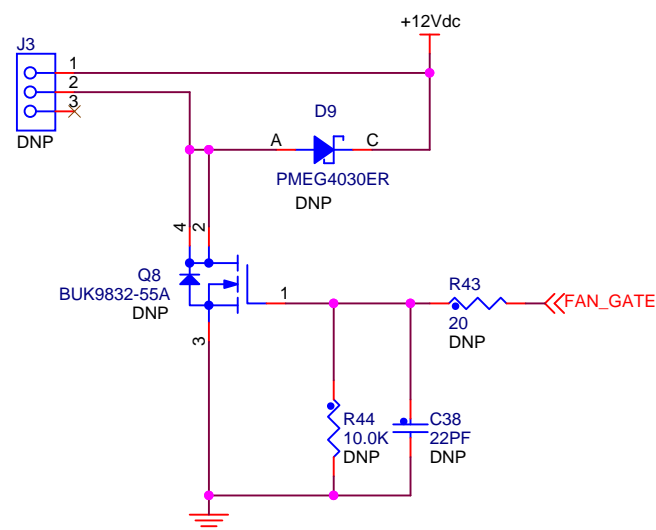


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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>		
Drawn by: B. ZUCZEK	Page Title: <b>MC33937 PREDRIVER</b>		
Approved: M. STULRAJTER	Size A3	Document Number SCH-28749 PDF: SPF-28749	Rev C
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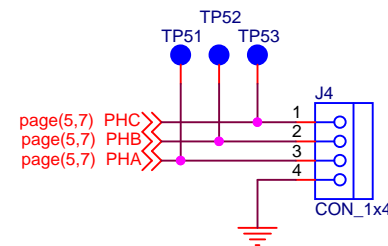


Capacitors C35, C36, and C37 are high frequency capacitors. To eliminate HF noise to minimum place capacitors as close as possible to inverter leg.

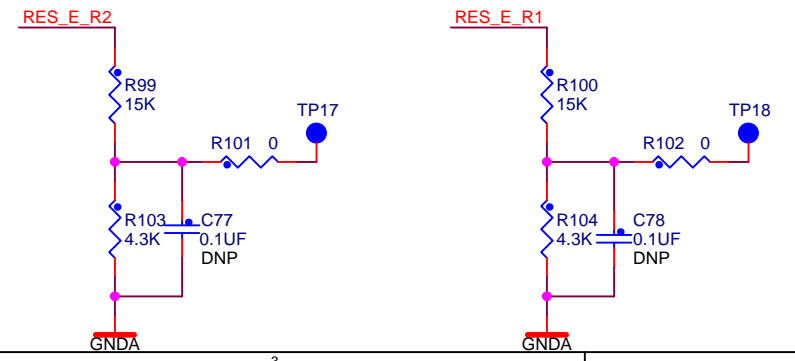
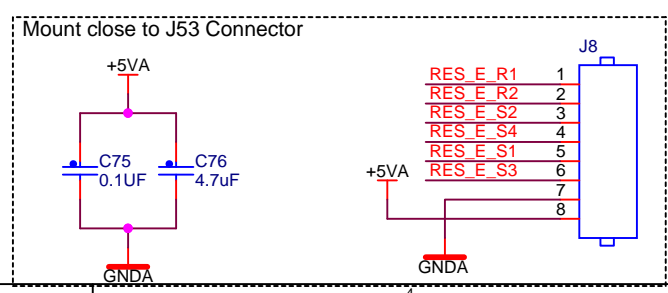
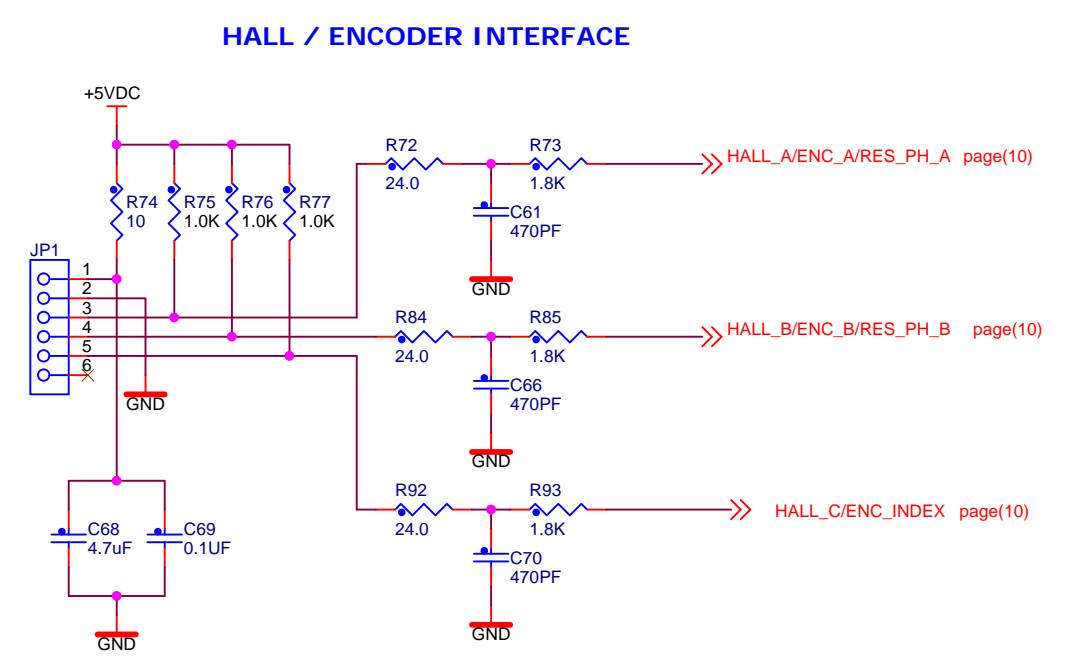
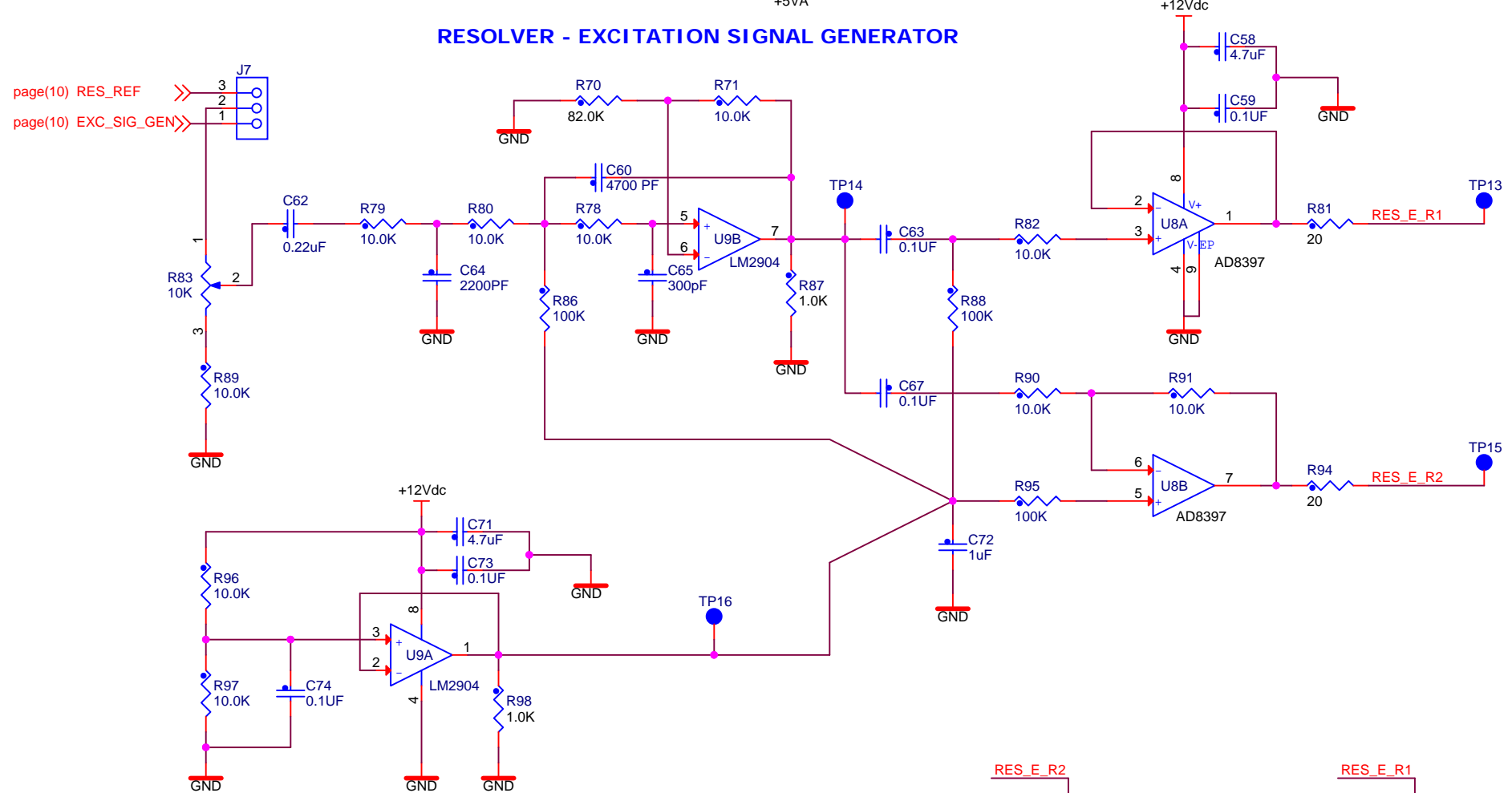
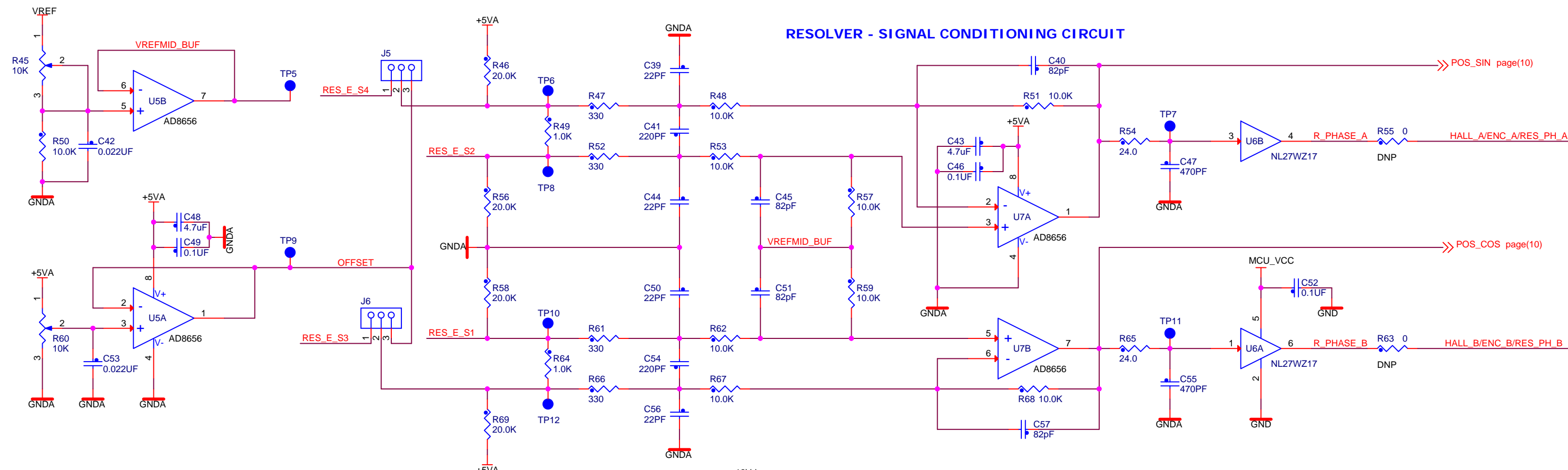
### FAN Control



### Output terminal

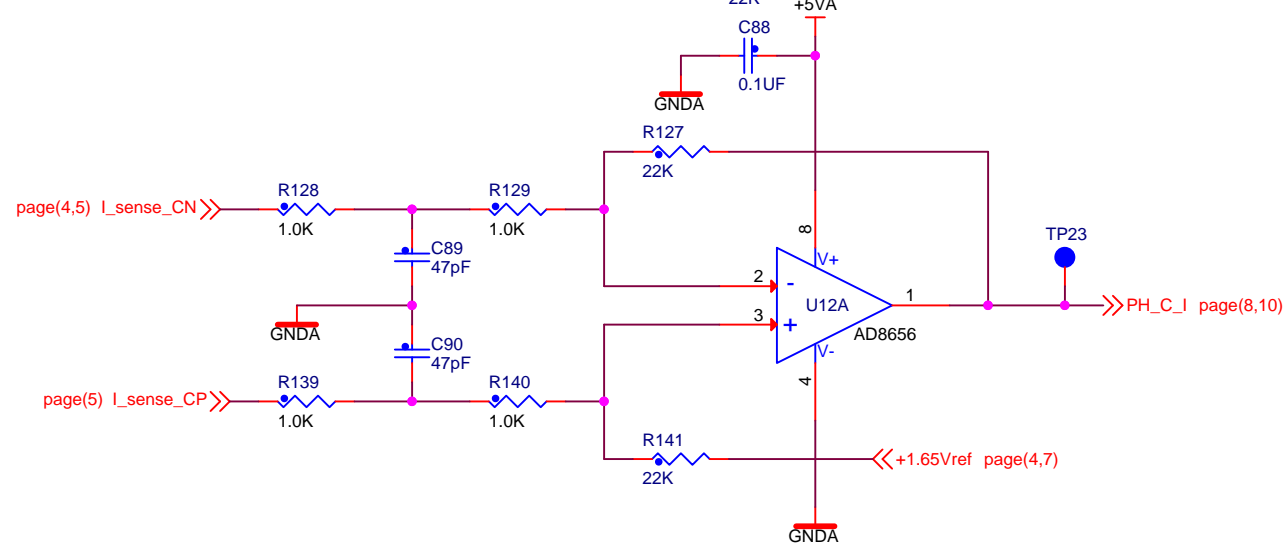
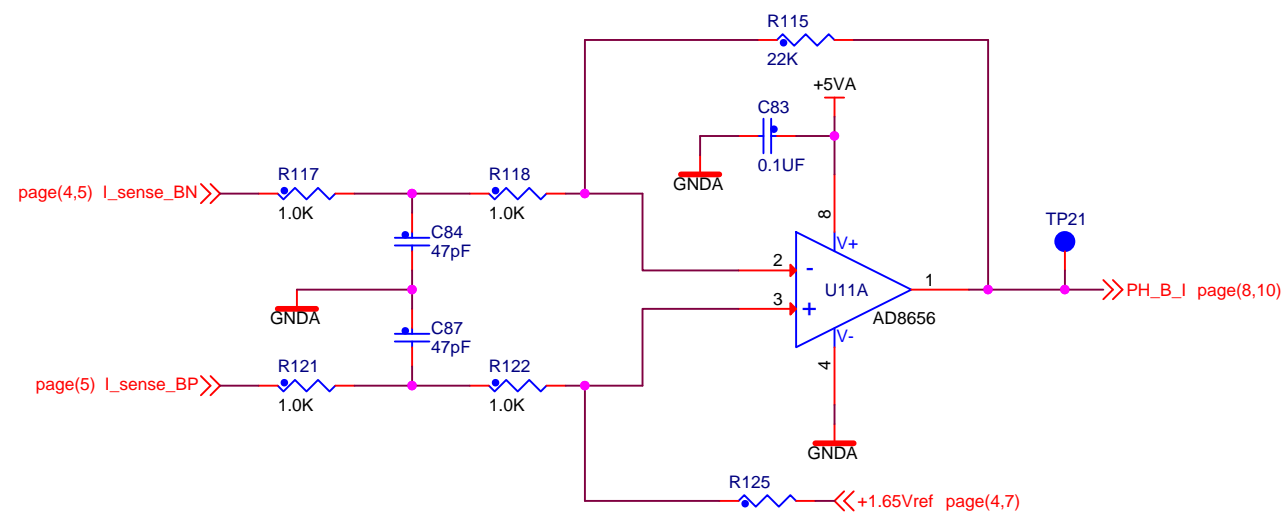
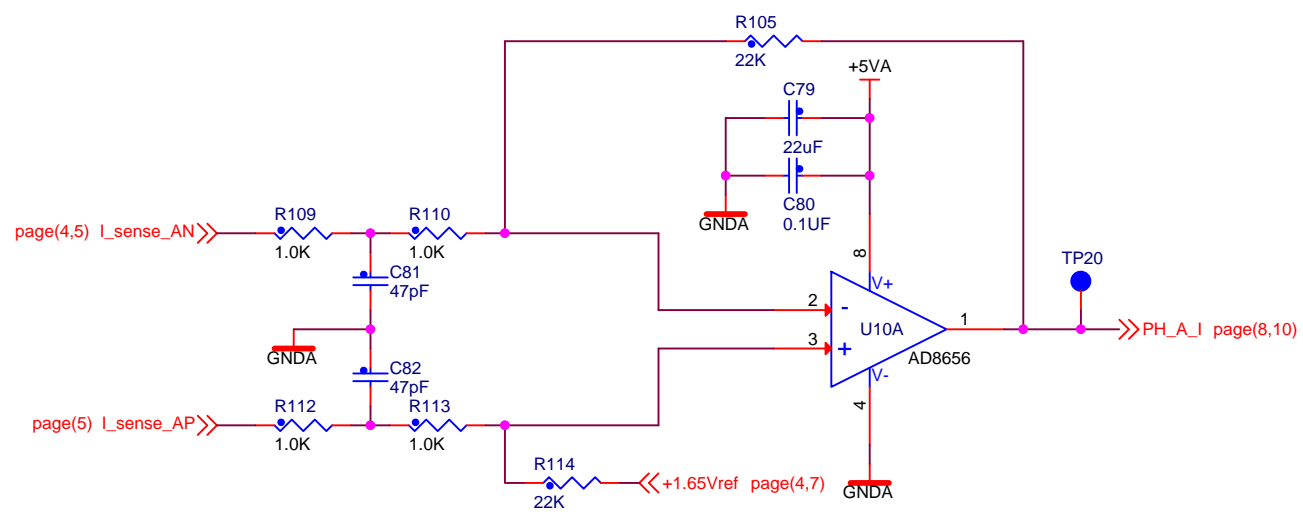


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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>		
Drawn by: B. ZUCZEK	Page Title: <b>POWER BRIDGE</b>		
Approved: M. STULRAJTER	Size A3	Document Number SCH-28749 PDF: SPF-28749	Rev C
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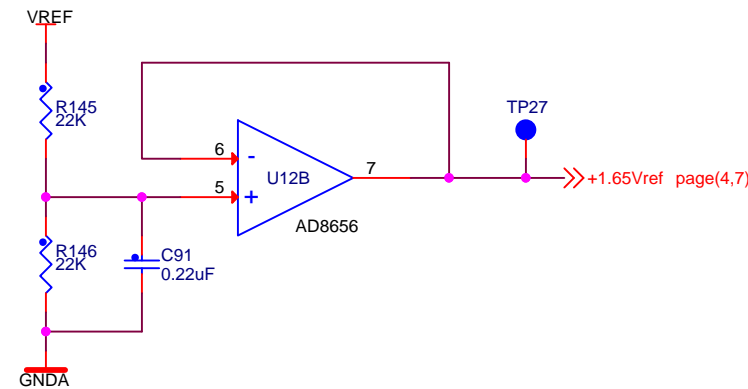


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Drawn by: B. ZUCZEK	Page Title: <b>MOTOR POSITION INTERFACES</b>		
Approved: M. STULRAJTER	Size A3	Document Number SCH-28749 PDF: SPF-28749	Rev C
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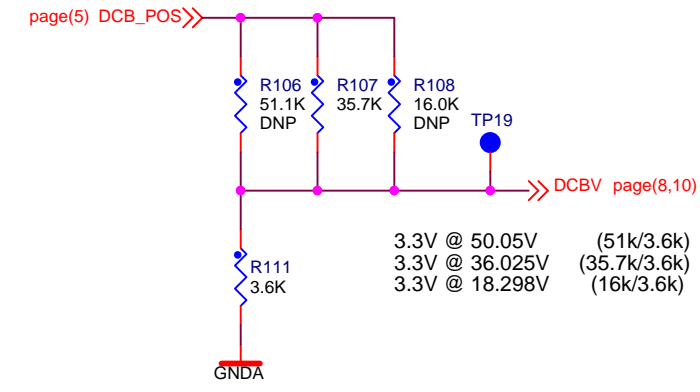
### 3 Phase Current Sensing



Reference divider:  
Analog supply voltage is divided by 2;  
Output voltage is +1.65Vdc or +2.5Vdc



### DC BUS Voltage Sensing

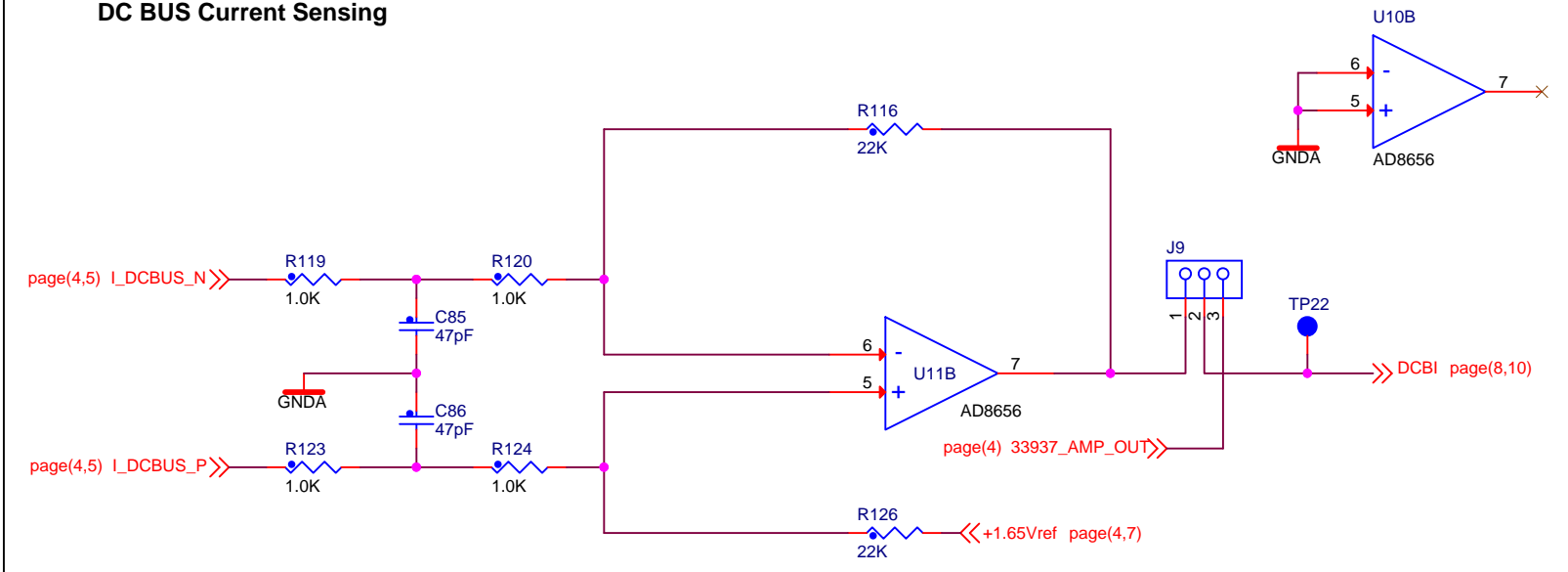


### Current sense gain and range:

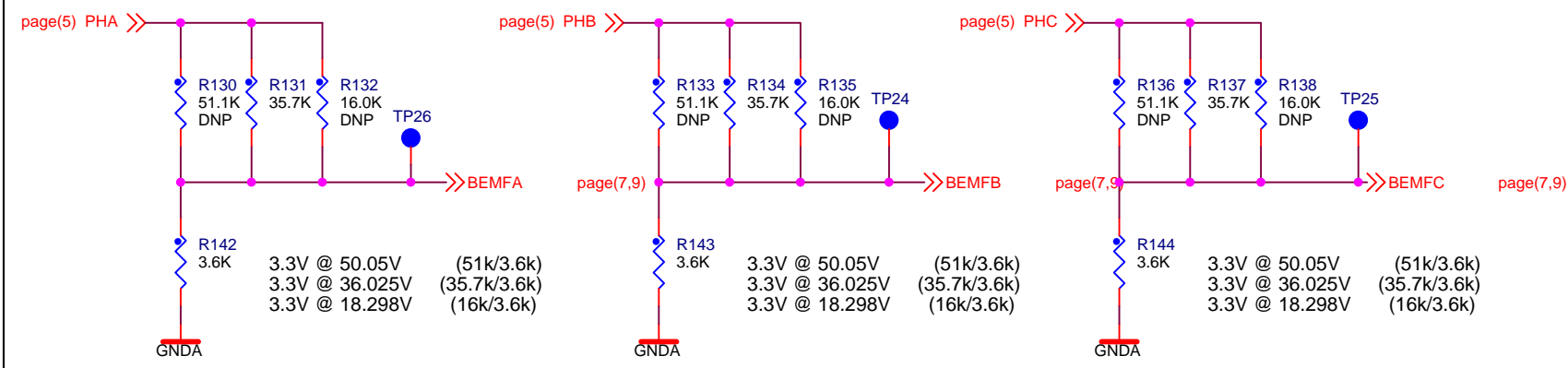
Rsense	Imax		Rfbck	Rinput
	Vref 5V	Vref 3V3		
0.005	22.72	15	22k	1k
<b>0.015</b>	<b>15.15</b>	<b>10</b>	<b>22k</b>	<b>2k</b>
0.015	30.30	20	11k	2k
0.005	45.45	30	33k	3k


\*DEFAULT

### DC BUS Current Sensing



### Back EMF voltage sensing



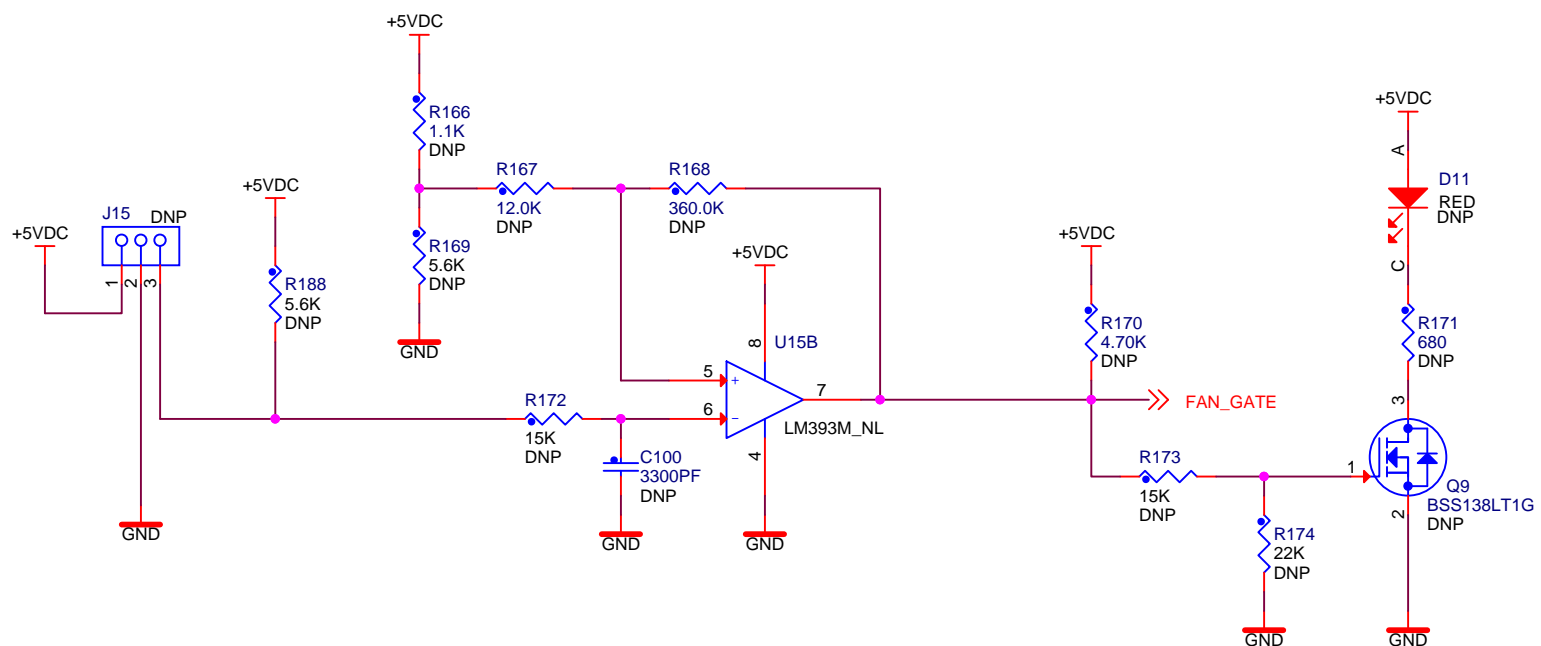
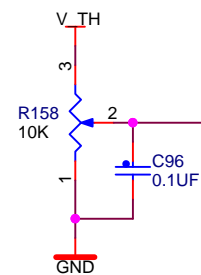
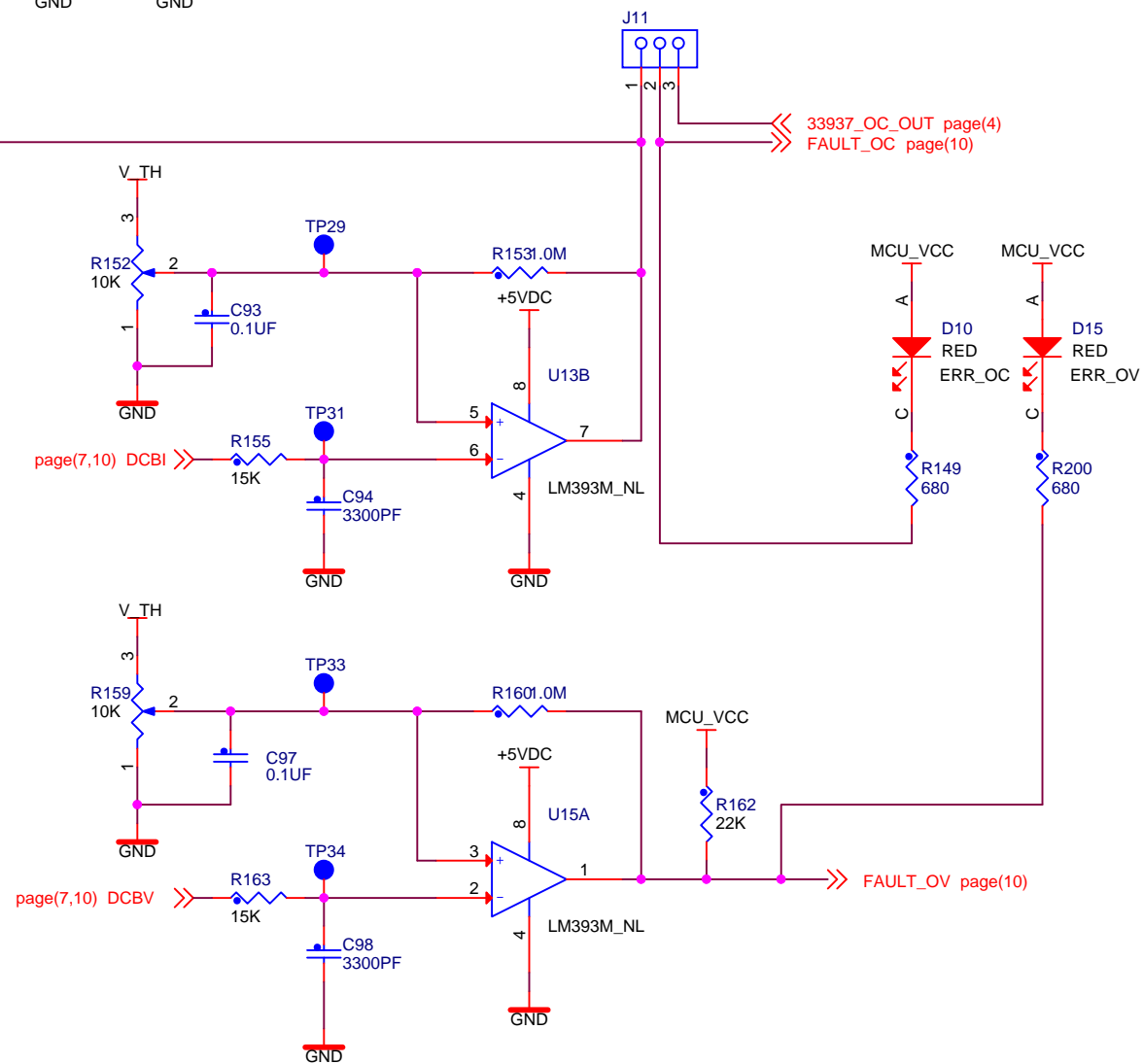
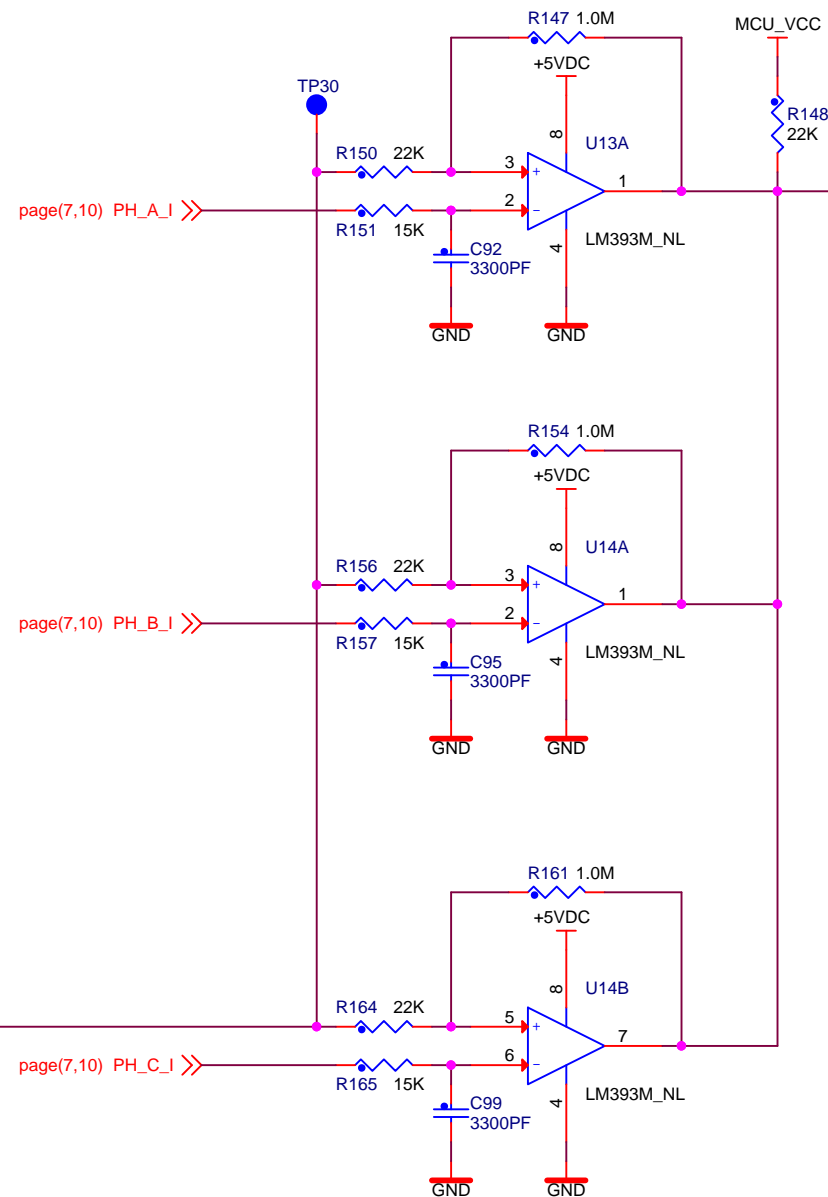
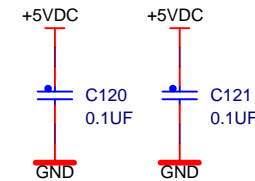
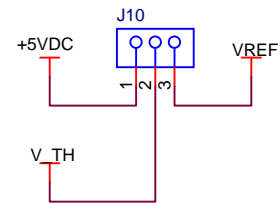


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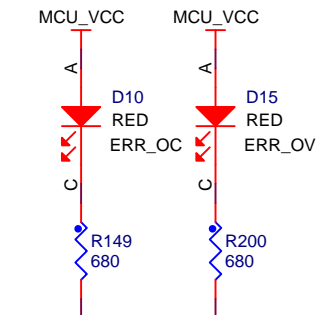
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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>		
Drawn by: B. ZUCZEK	Page Title: <b>V/I SENSING CIRCUIT</b>		
Approved: M. STULRAJTER	Size A3	Document Number SCH-28749 PDF: SPF-28749	Rev C
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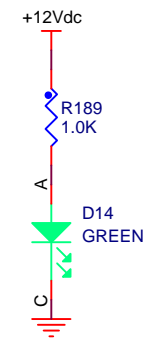
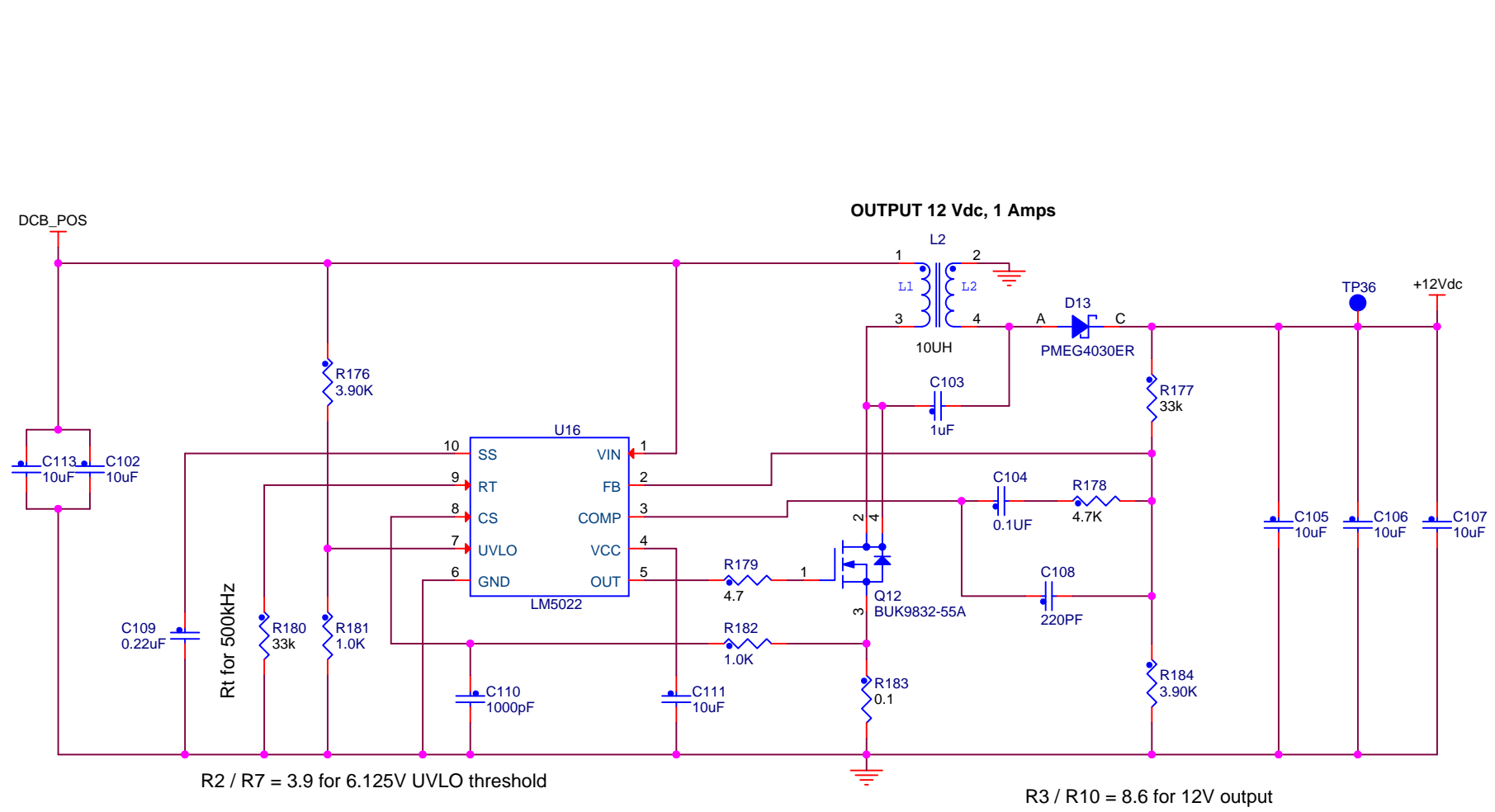
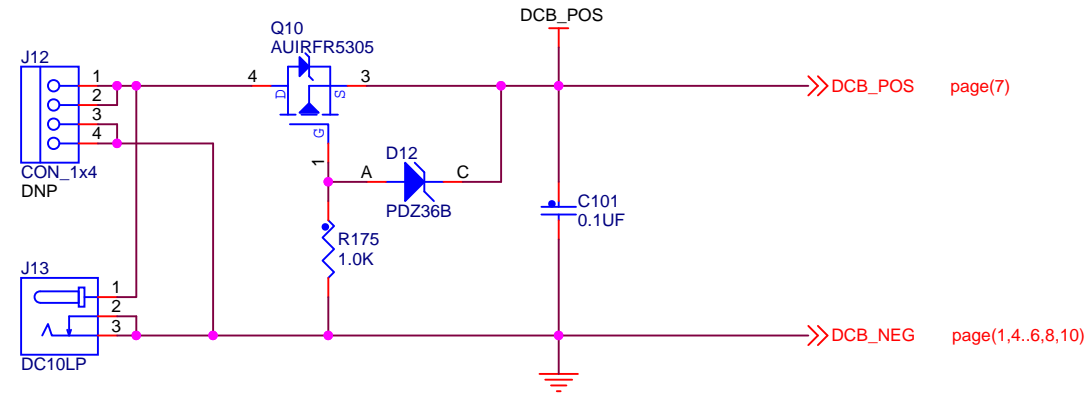


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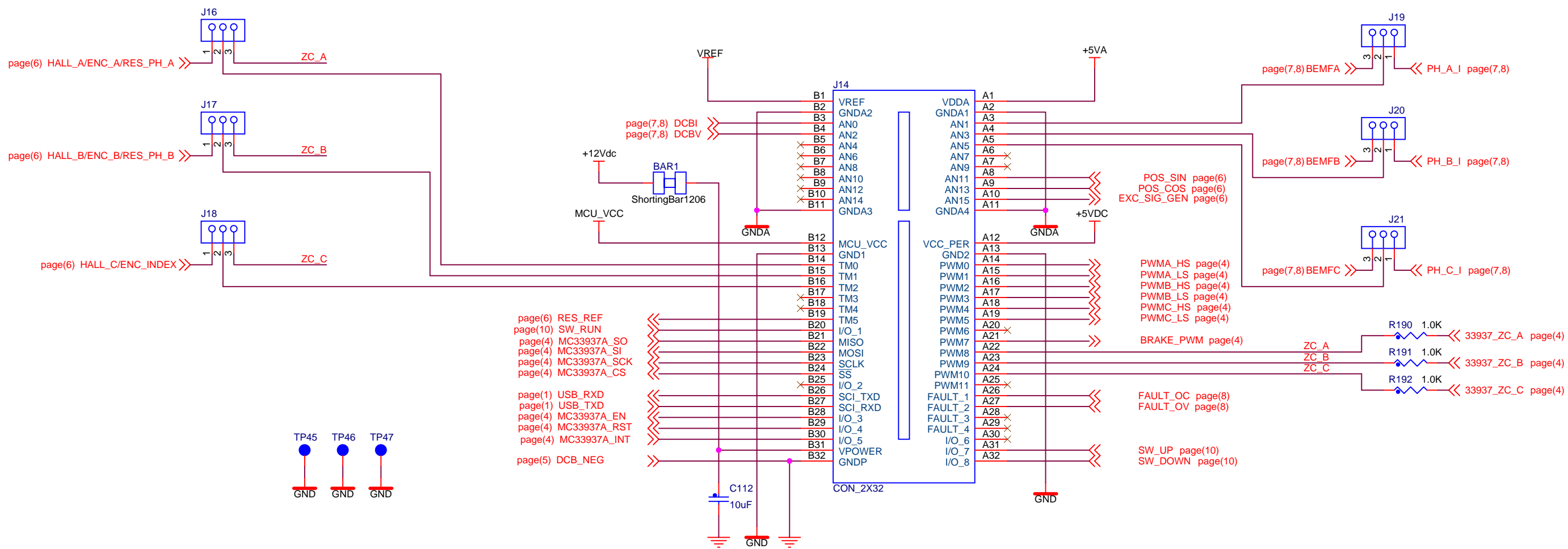


FAULT\_OV page(10)

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Drawn by: B. ZUCZEK		Page Title: <b>FAULT LOGIC</b>	
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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>		
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- page(4) MC33937A\_SI
- page(4) MC33937A\_SCK
- page(4) MC33937A\_CS
- page(1) USB\_RXD
- page(1) USB\_TXD
- page(4) MC33937A\_EN
- page(4) MC33937A\_RST
- page(4) MC33937A\_INT
- page(5) DCB\_NEG

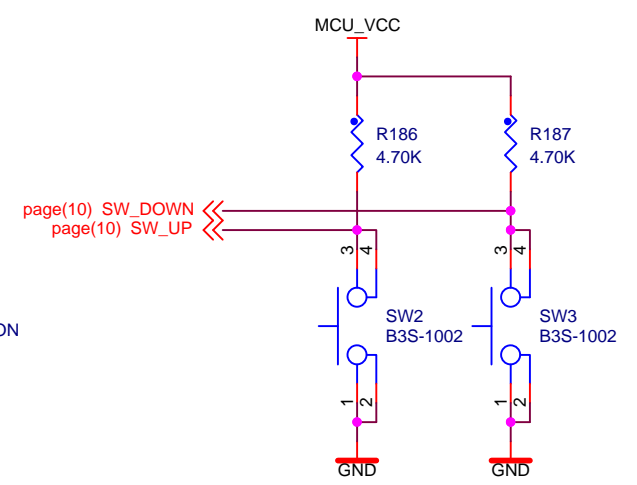
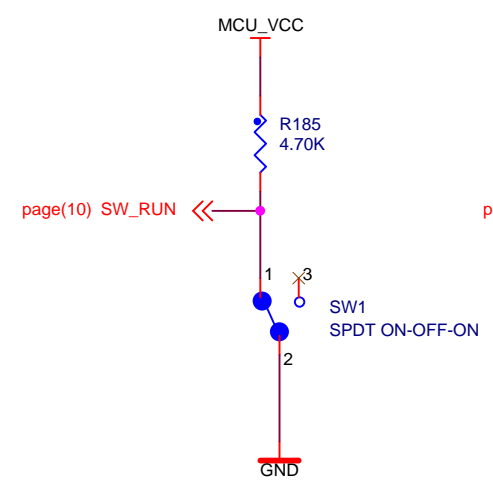
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- POS\_COS page(6)
- EXC\_SIG\_GEN page(6)
- PWMA\_HS page(4)
- PWMA\_LS page(4)
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- PWMB\_LS page(4)
- PWMC\_HS page(4)
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BRAKE\_PWM page(4)

FAULT\_OC page(8)  
FAULT\_OV page(8)

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SW\_DOWN page(10)

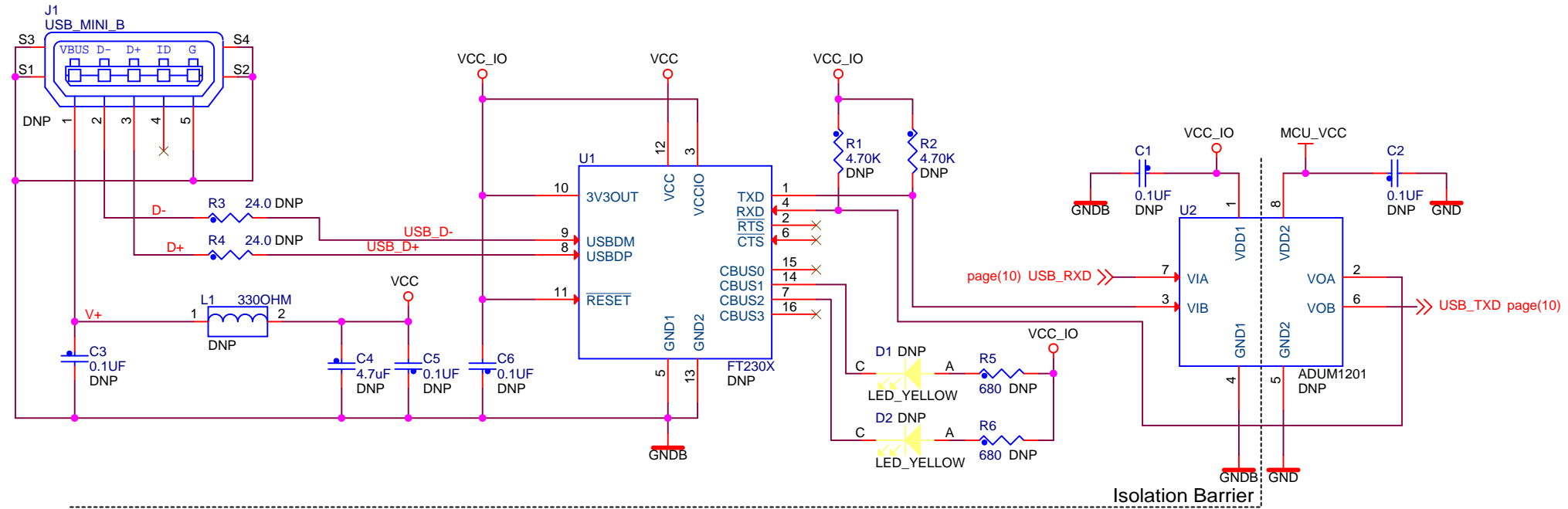
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- R191 1.0K 33937\_ZC\_B page(4)
- R192 1.0K 33937\_ZC\_C page(4)




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Designer: B. ZUCZEK	Drawing Title: <b>3-PHASE LV PWR BOARD - NEW CONCEPT</b>		
Drawn by: B. ZUCZEK	Page Title: <b>CONTROLLER BOARD INTERFACE</b>		
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FREEMASTER OPTICAL ISOLATED INTERFACE



Isolation Barrier

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Drawn by: B. ZUCZEK		Page Title: <b>USB INTERFACE</b>	
Approved: M. STULRAJTER		Size A3	Document Number SCH-28749 PDF: SPF-28749
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