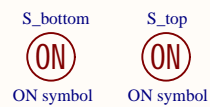
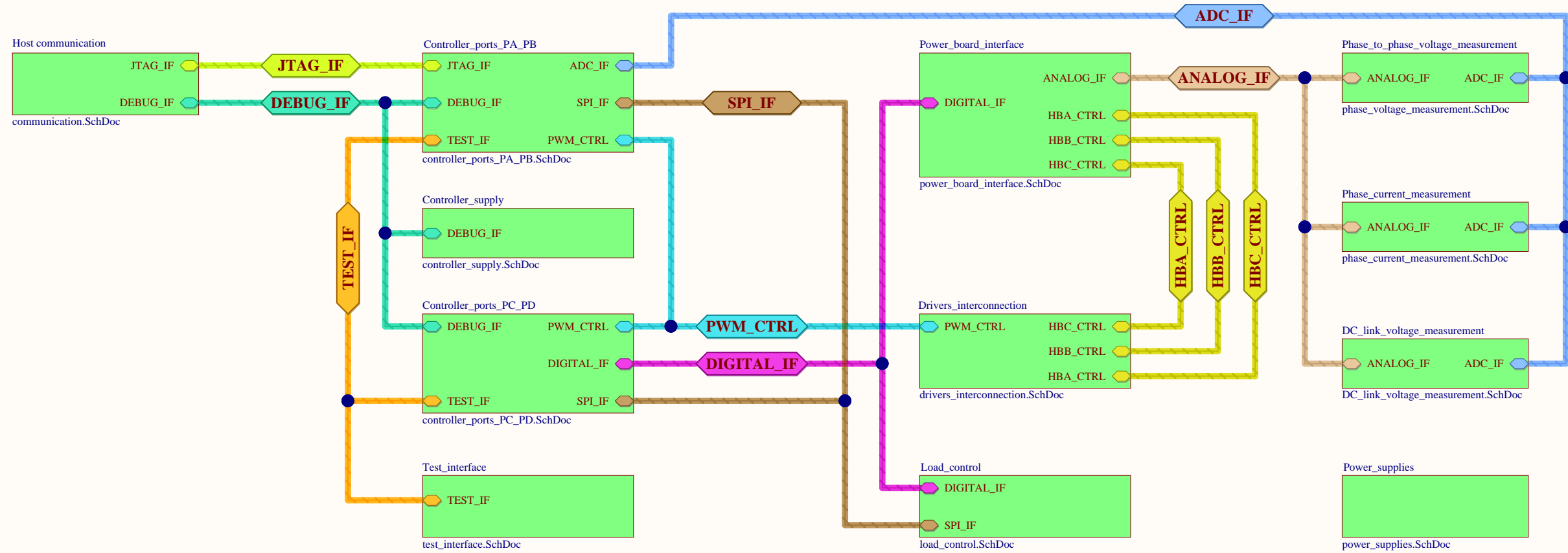


OBC PFC

10 kW



OBC PFC control board		Assembly variant:	State:
Top level		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piestany
Engineer: Stefan Kosterec	30.Nov 2017 19:00		
File: OBC_PFC_control_board.SchDoc	1/13		

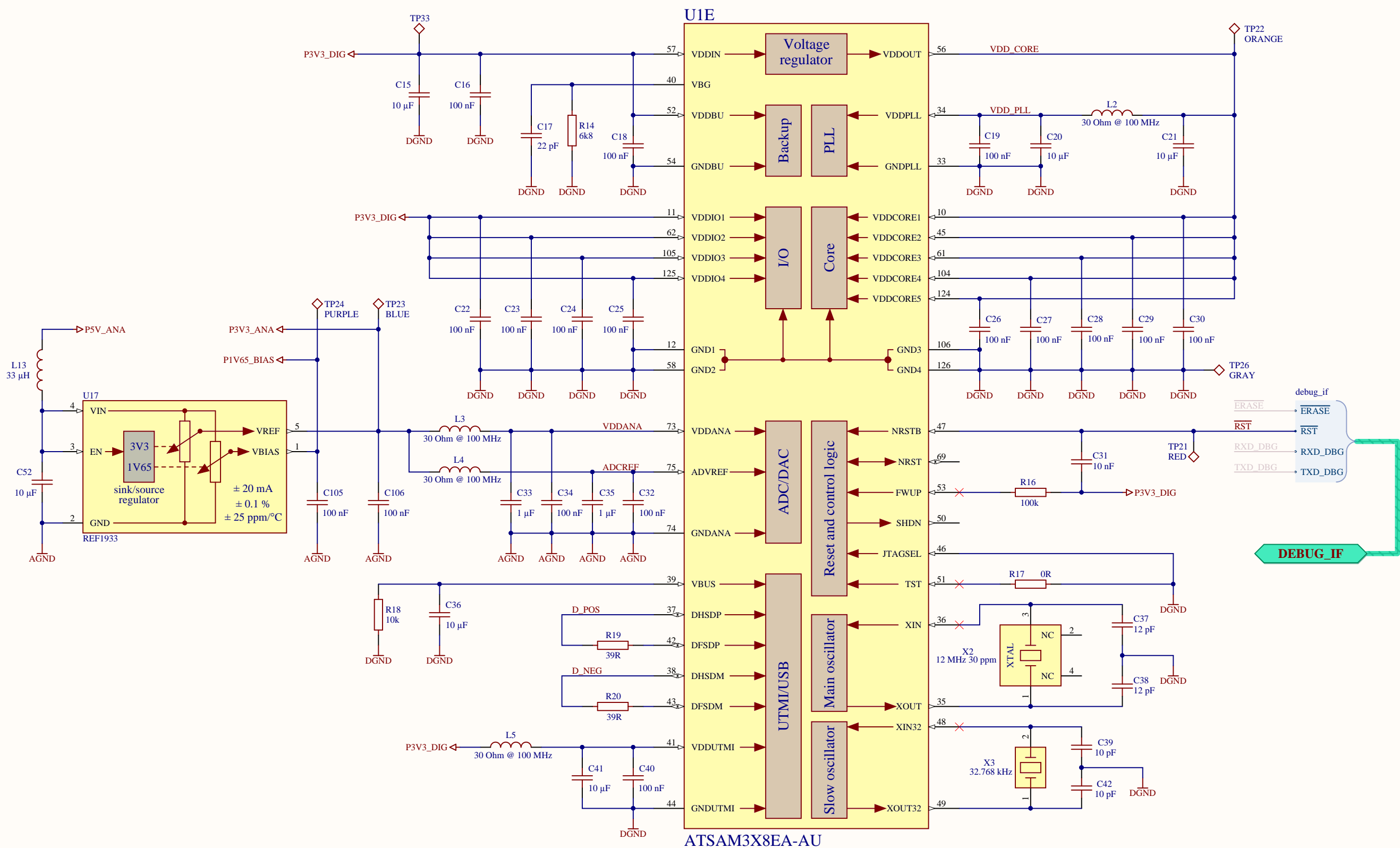


A

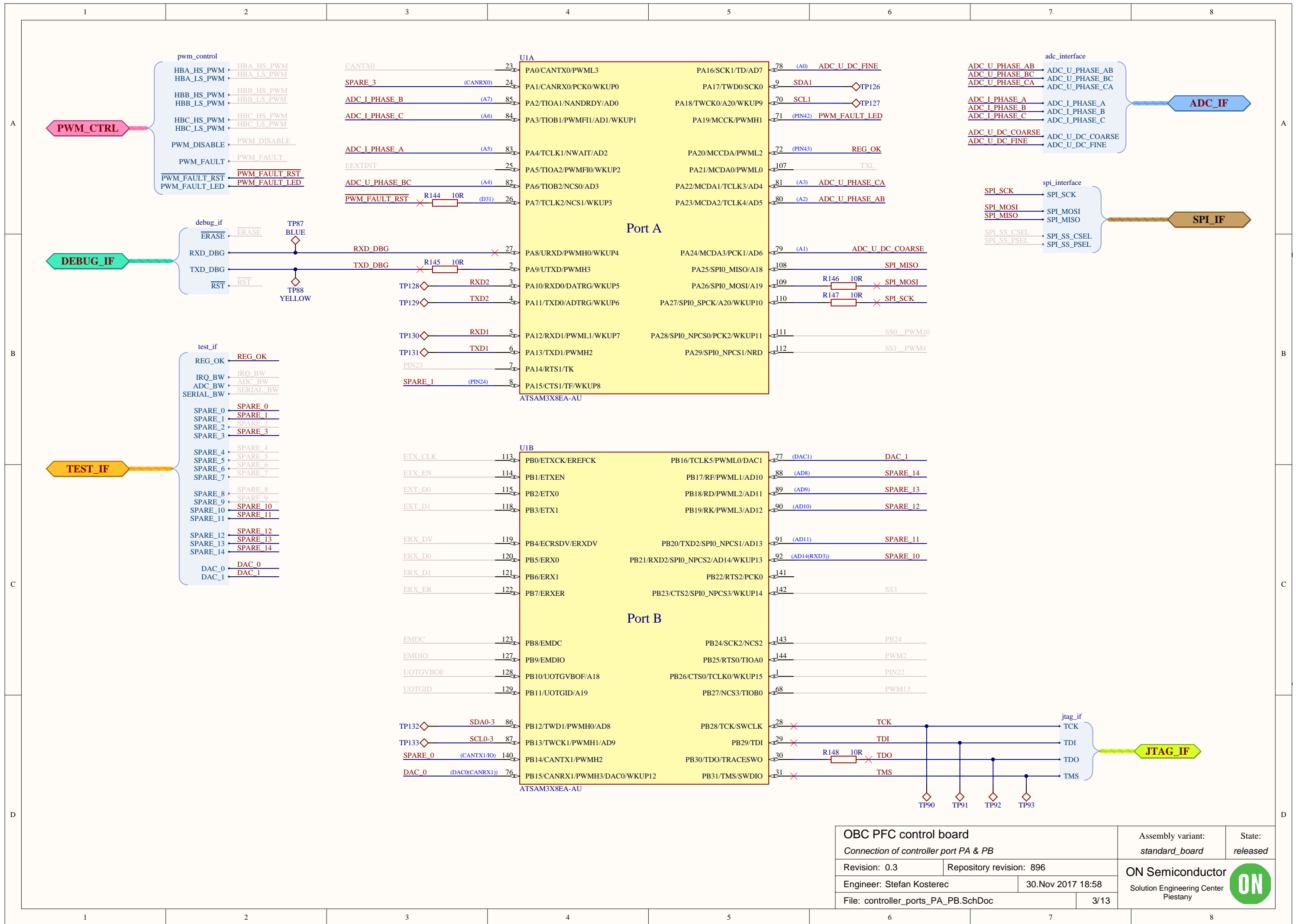
B

C

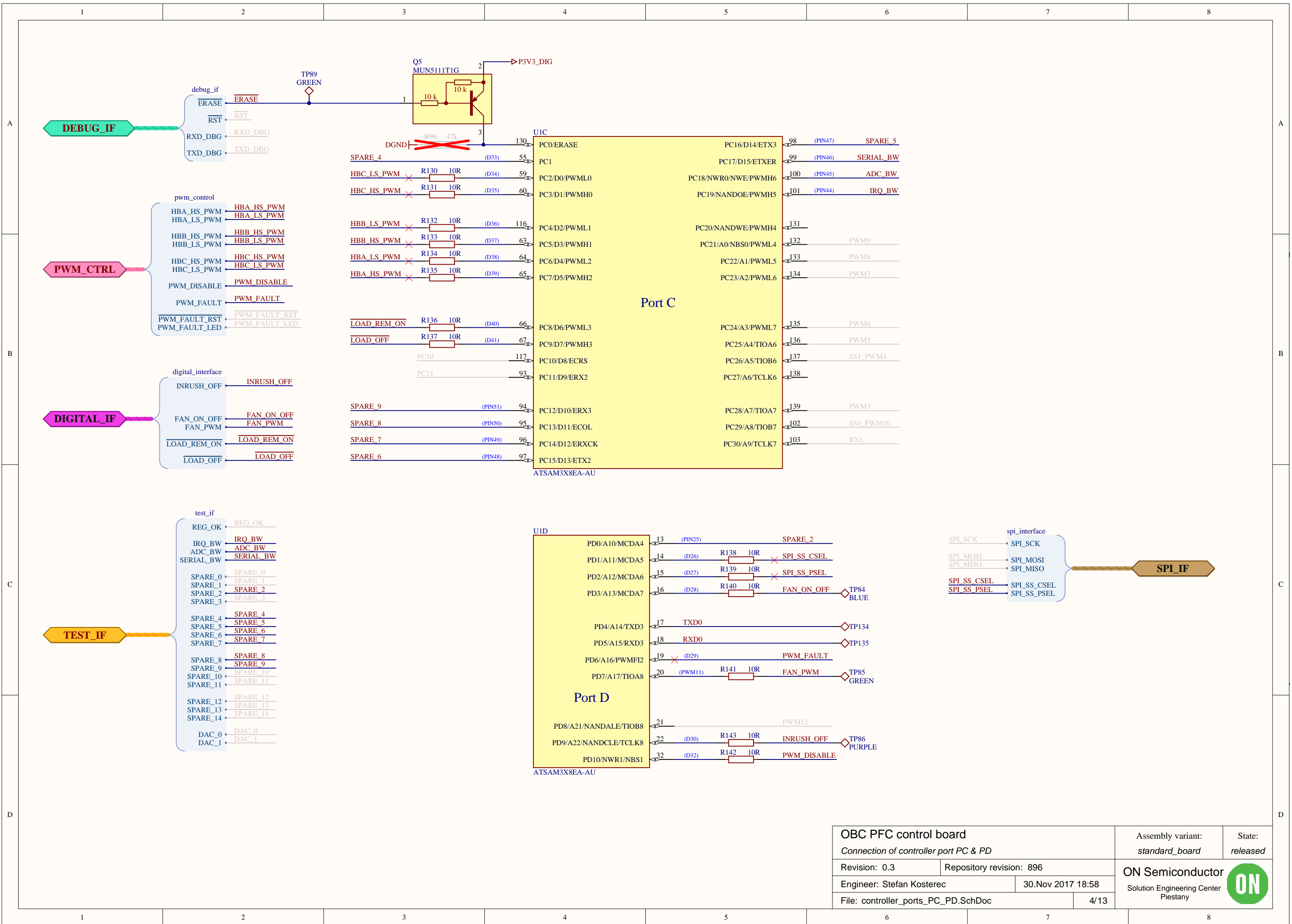
D



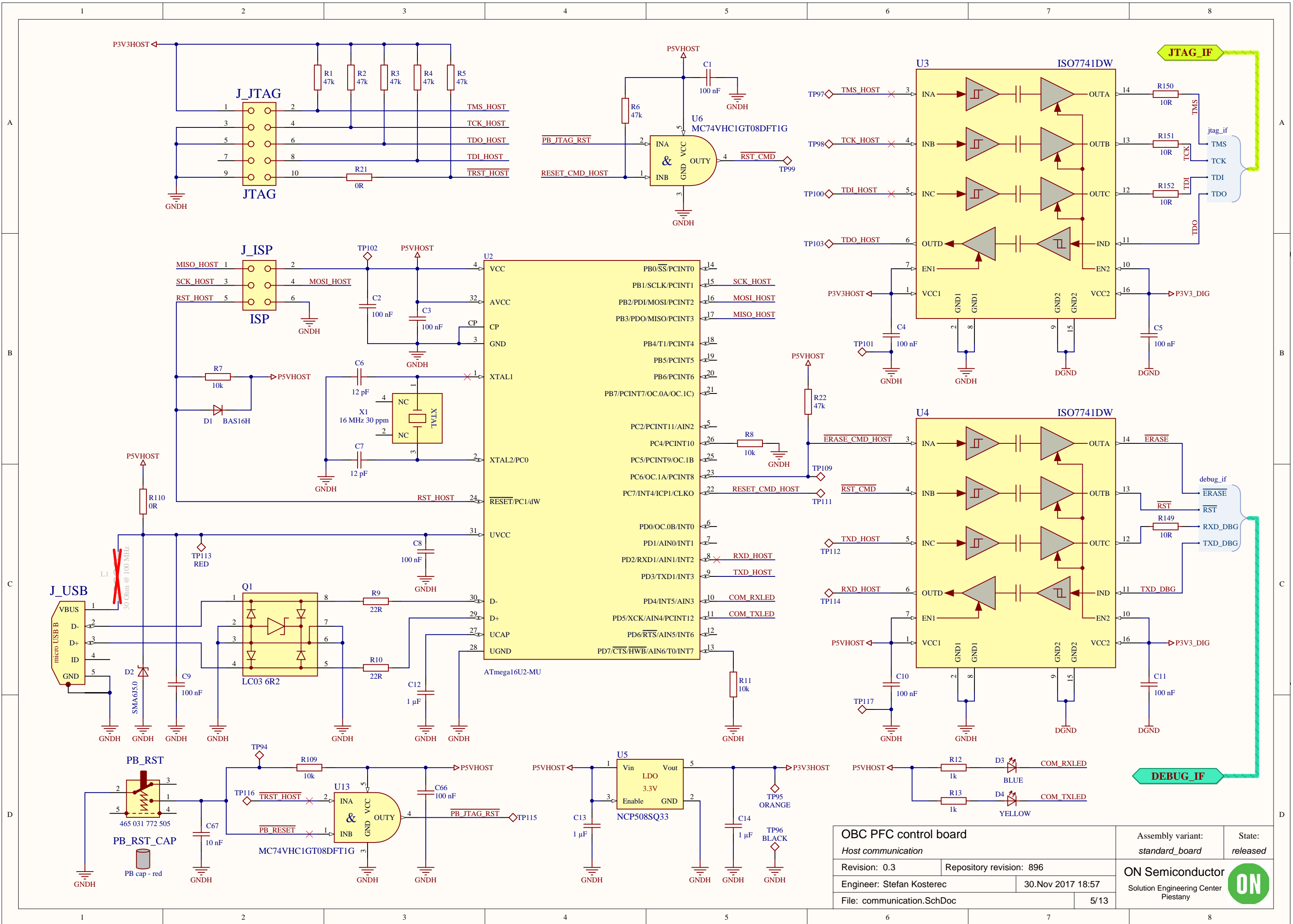
OBC PFC control board		Assembly variant:	State:
Controller power supply		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piestany
Engineer: Stefan Kosterec	30.Nov 2017 18:59		
File: controller_supply.SchDoc	2/13		



OBC PFC control board		Assembly variant:	State:
Connection of controller port PA & PB		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piestany
Engineer: Stefan Kosterec	30.Nov 2017 18:58		
File: controller_ports_PA_PB.SchDoc	3/13		



OBC PFC control board		Assembly variant:	State:
Connection of controller port PC & PD		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor Solution Engineering Center Piešťany	
Engineer: Stefan Kosterec	30.Nov 2017 18:58		
File: controller_ports_PC_PD.SchDoc	4/13		



OBC PFC control board

Host communication

Revision: 0.3

Repository revision: 896

Engineer: Stefan Kosterec

30.Nov 2017 18:57

File: communication.SchDoc

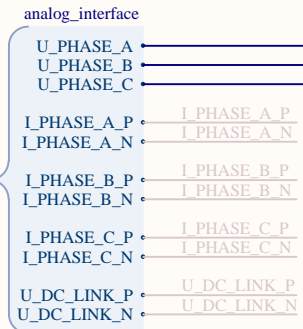
Assembly variant:
standard_board

State:
released

ON Semiconductor
Solution Engineering Center
Piestany



ANALOG_IF



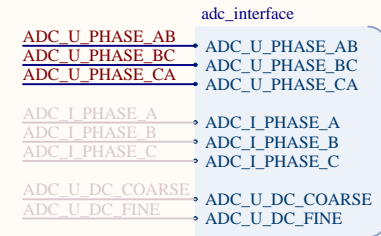
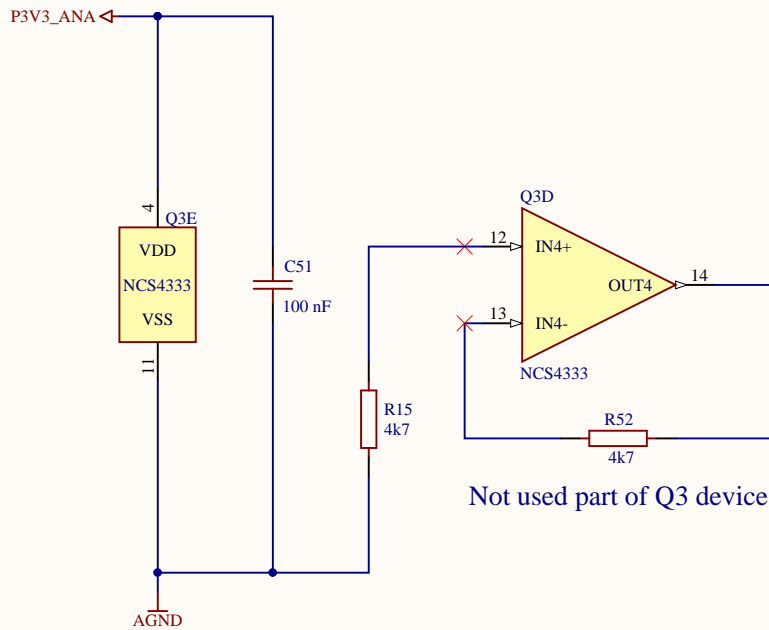
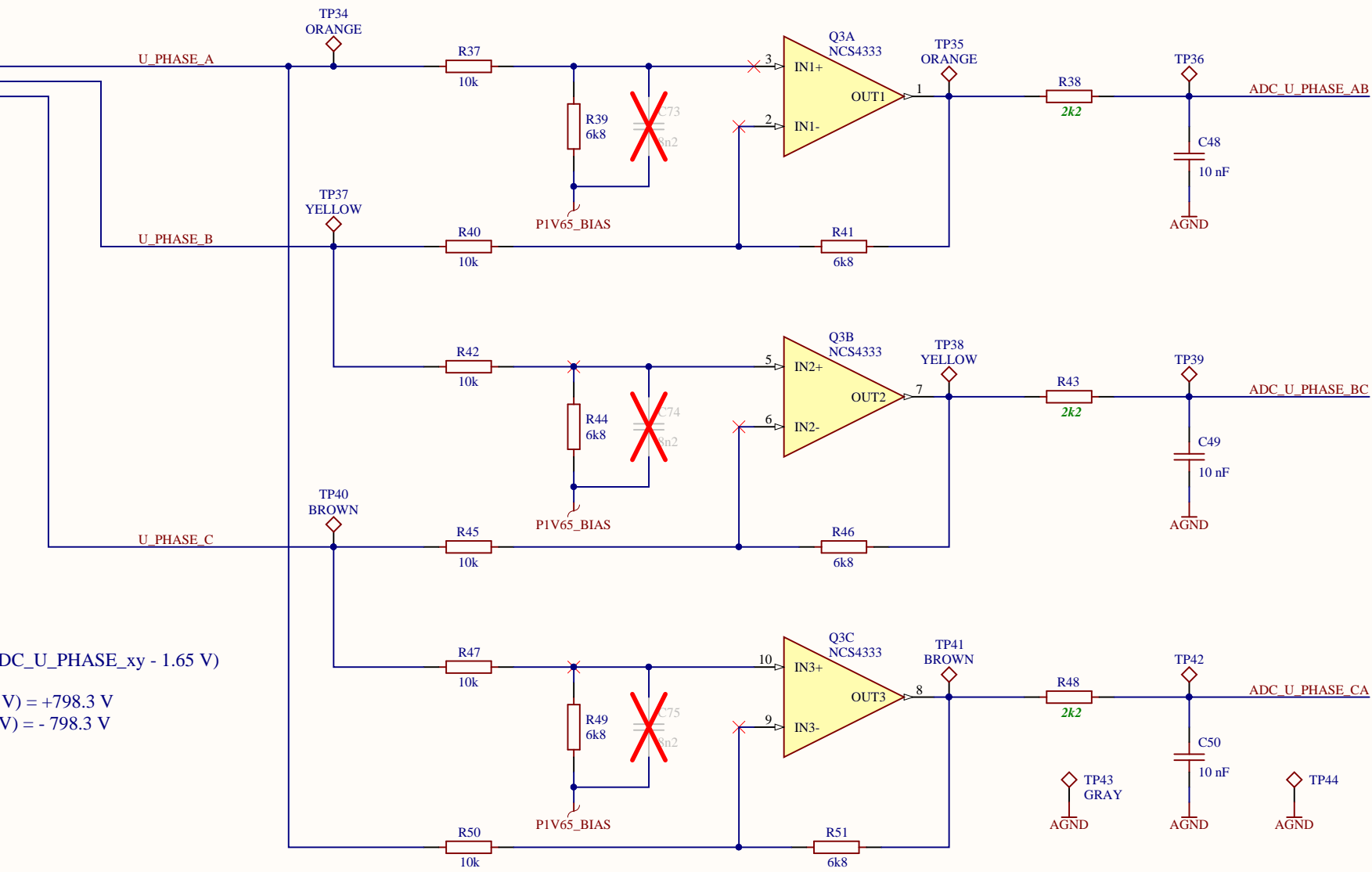
Phase to Phase voltage measurement:

$$(U_{mains_x} - U_{mains_y}) = 483.824 \times (ADC_U_PHASE_xy - 1.65 \text{ V})$$

$$U_{mains_xy \text{ max}} = 483.824 \times (3.3 \text{ V} - 1.65 \text{ V}) = +798.3 \text{ V}$$

$$U_{mains_xy \text{ min}} = 483.824 \times (0.0 \text{ V} - 1.65 \text{ V}) = -798.3 \text{ V}$$

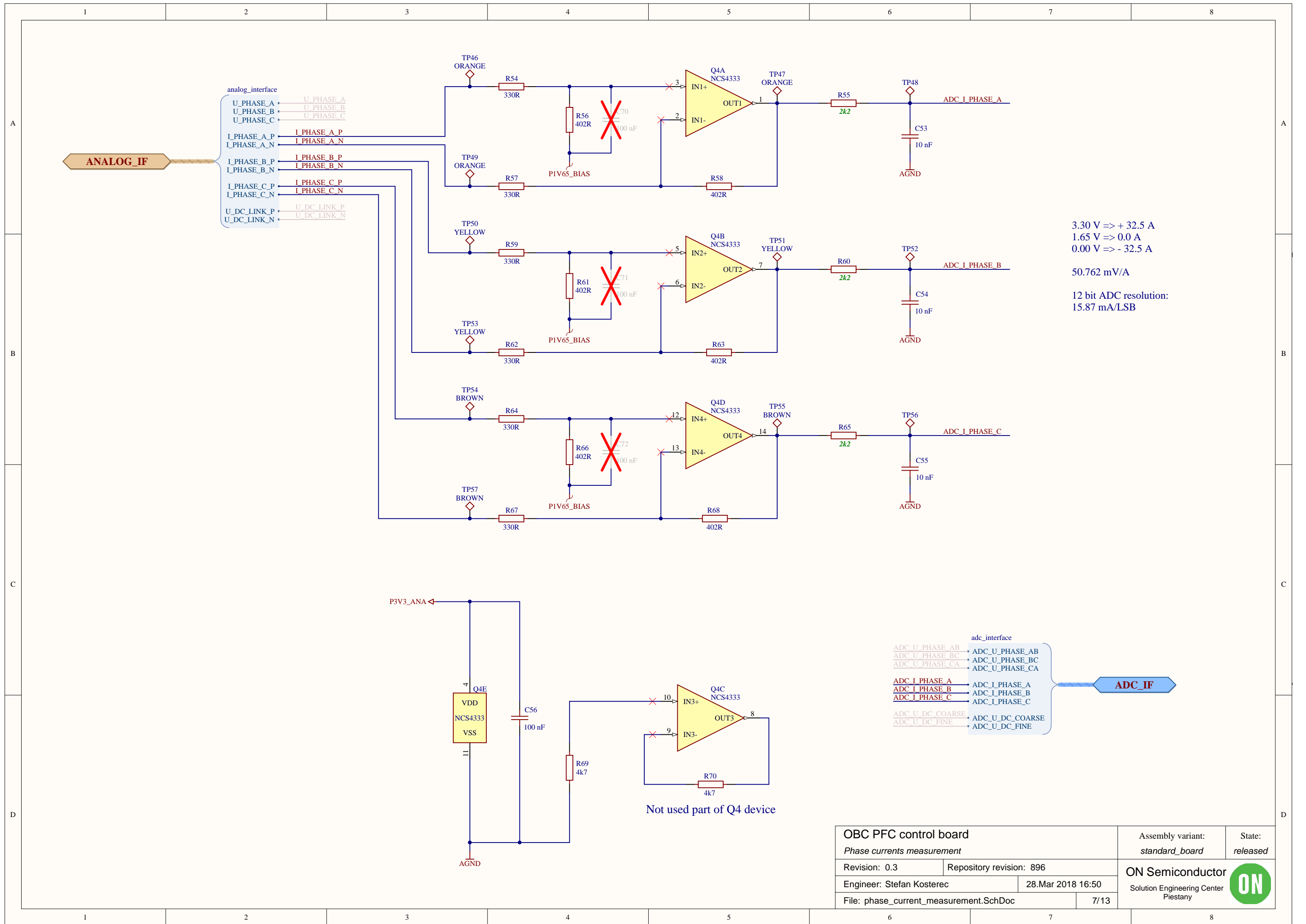
12 bit ADC resolution => 0.3898 V/LSB



ADC_IF

OBC PFC control board		Assembly variant:	State:
Phase to phase voltage measurement		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor Solution Engineering Center Piešťany	
Engineer: Stefan Kosterec	28.Mar 2018 16:43		
File: phase_voltage_measurement.SchDoc	6/13		

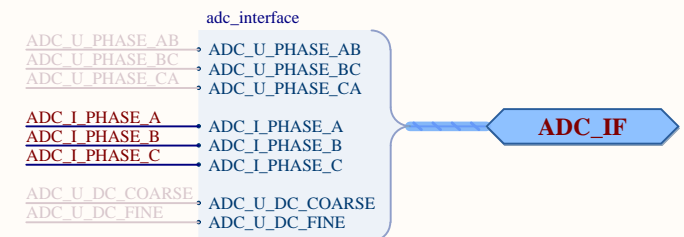




3.30 V => + 32.5 A
 1.65 V => 0.0 A
 0.00 V => - 32.5 A

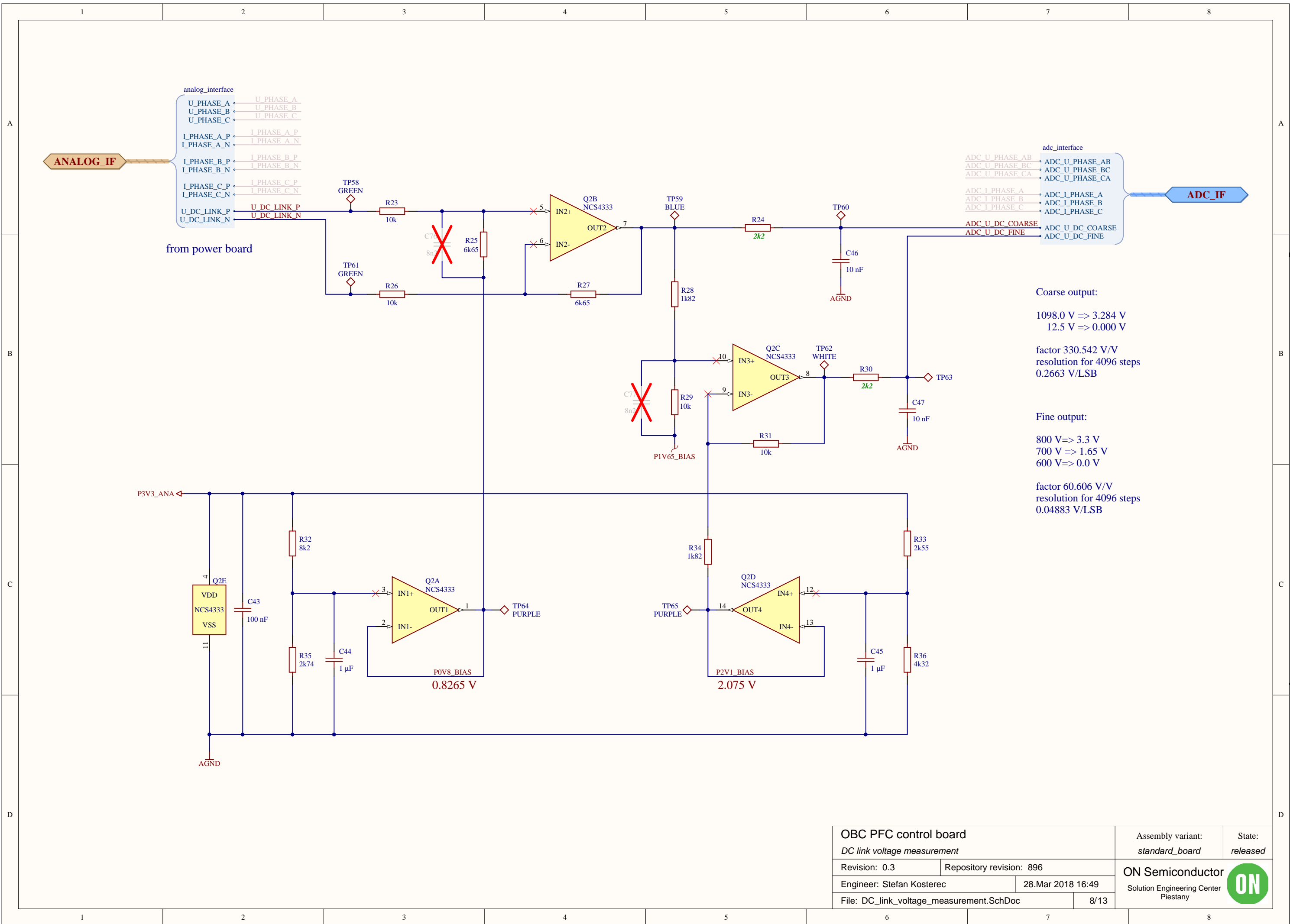
50.762 mV/A

12 bit ADC resolution:
 15.87 mA/LSB



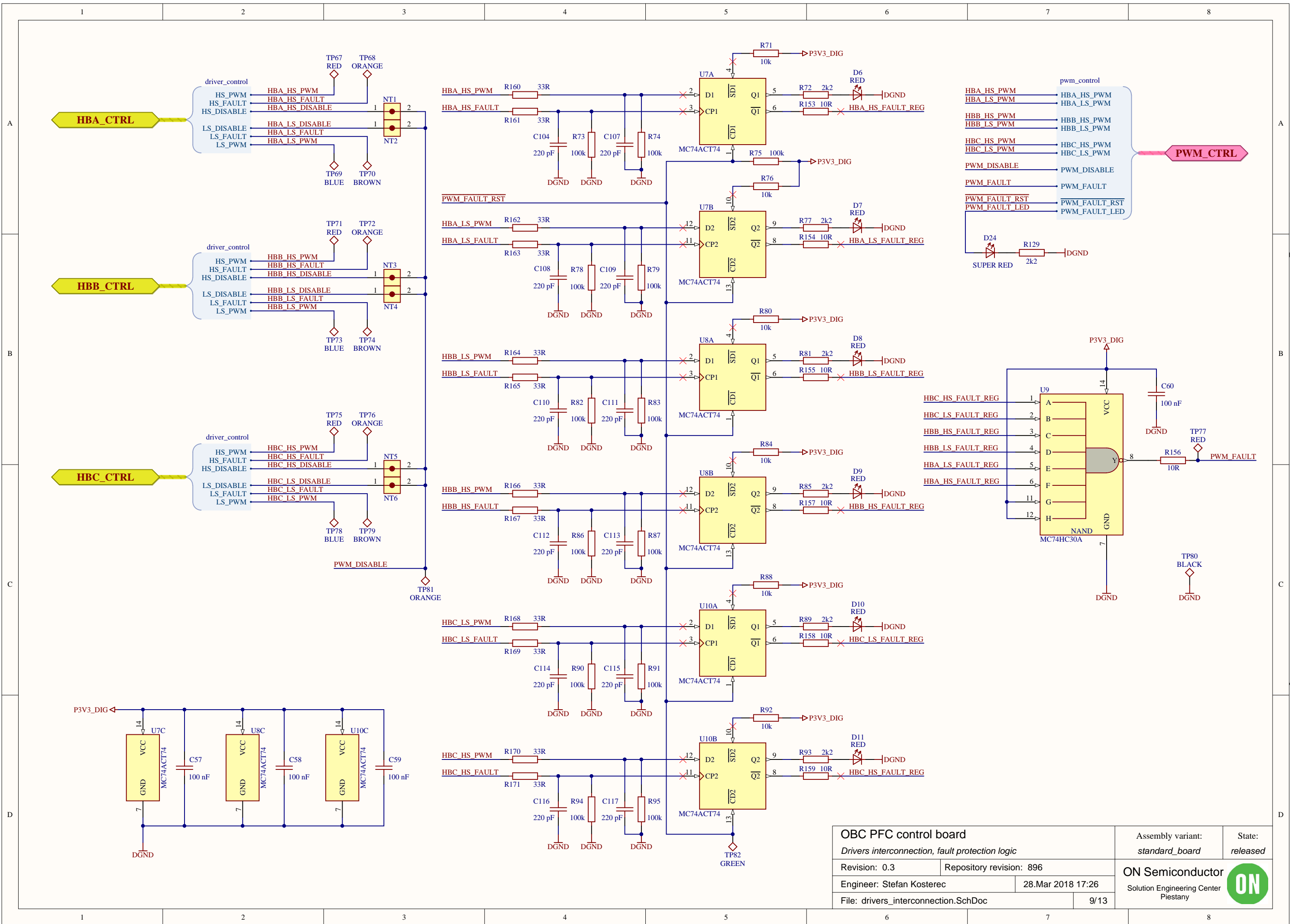
OBC PFC control board		Assembly variant:	State:
Phase currents measurement		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piešťany
Engineer: Stefan Kosterec	28.Mar 2018 16:50		
File: phase_current_measurement.SchDoc	7/13		



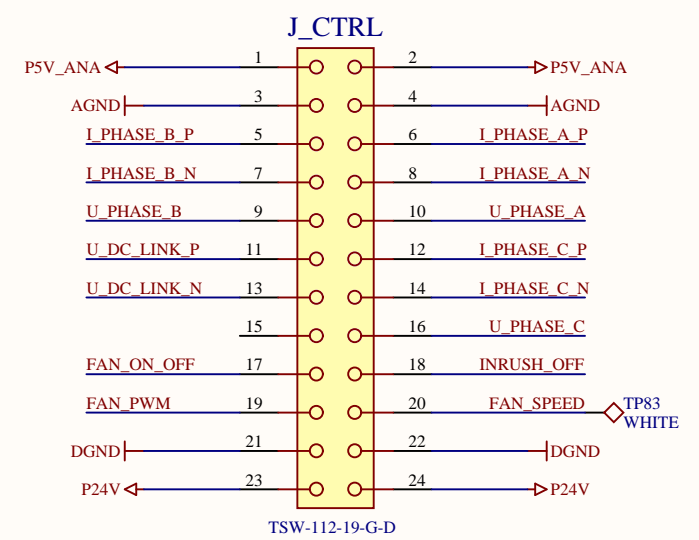
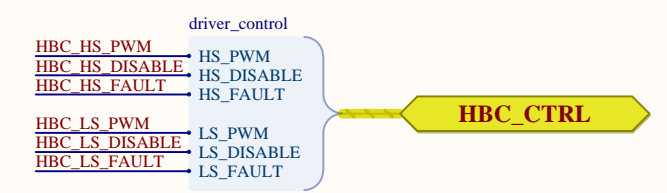
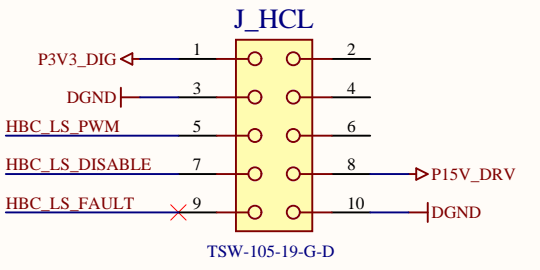
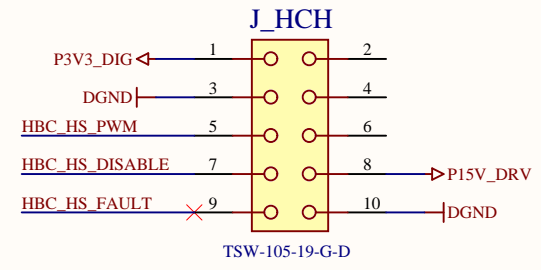
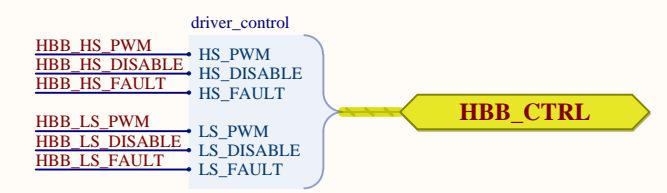
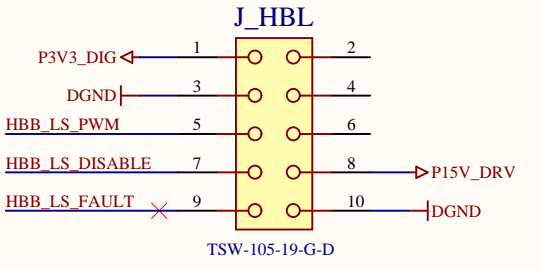
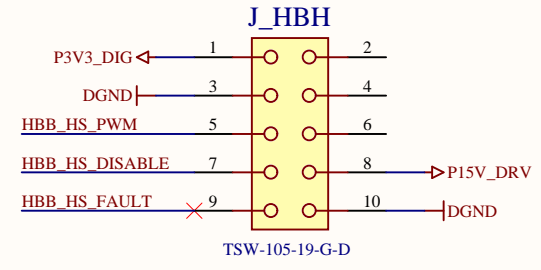
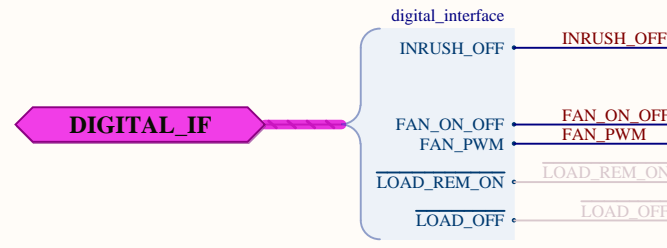
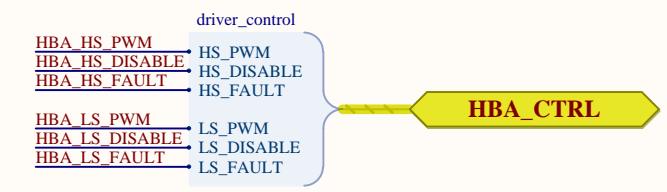
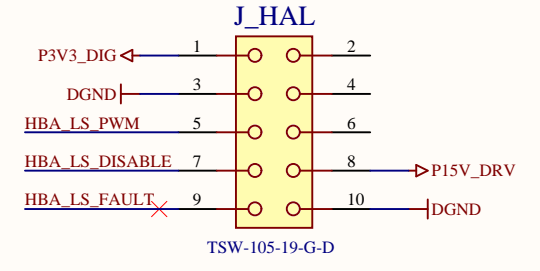
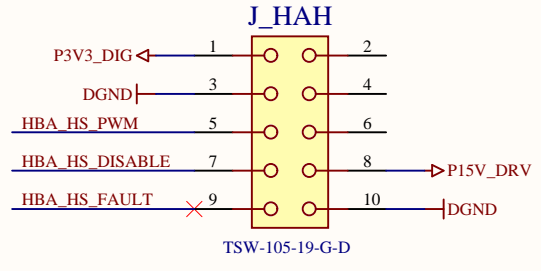
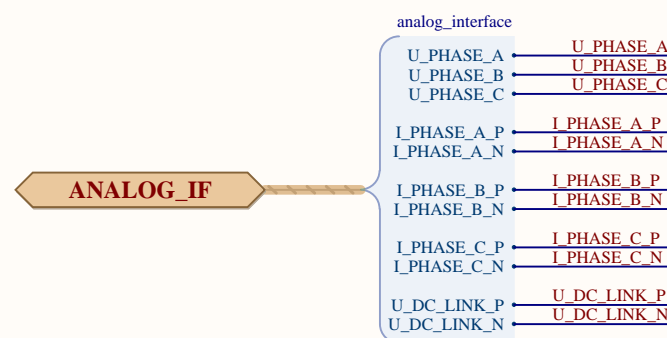


OBC PFC control board		Assembly variant:	State:
DC link voltage measurement		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor Solution Engineering Center Piešťany	
Engineer: Stefan Kosterec	28.Mar 2018 16:49		
File: DC_link_voltage_measurement.SchDoc	8/13		

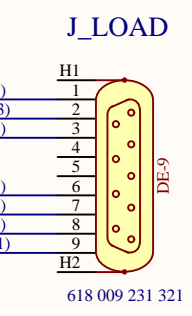
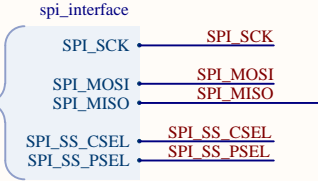
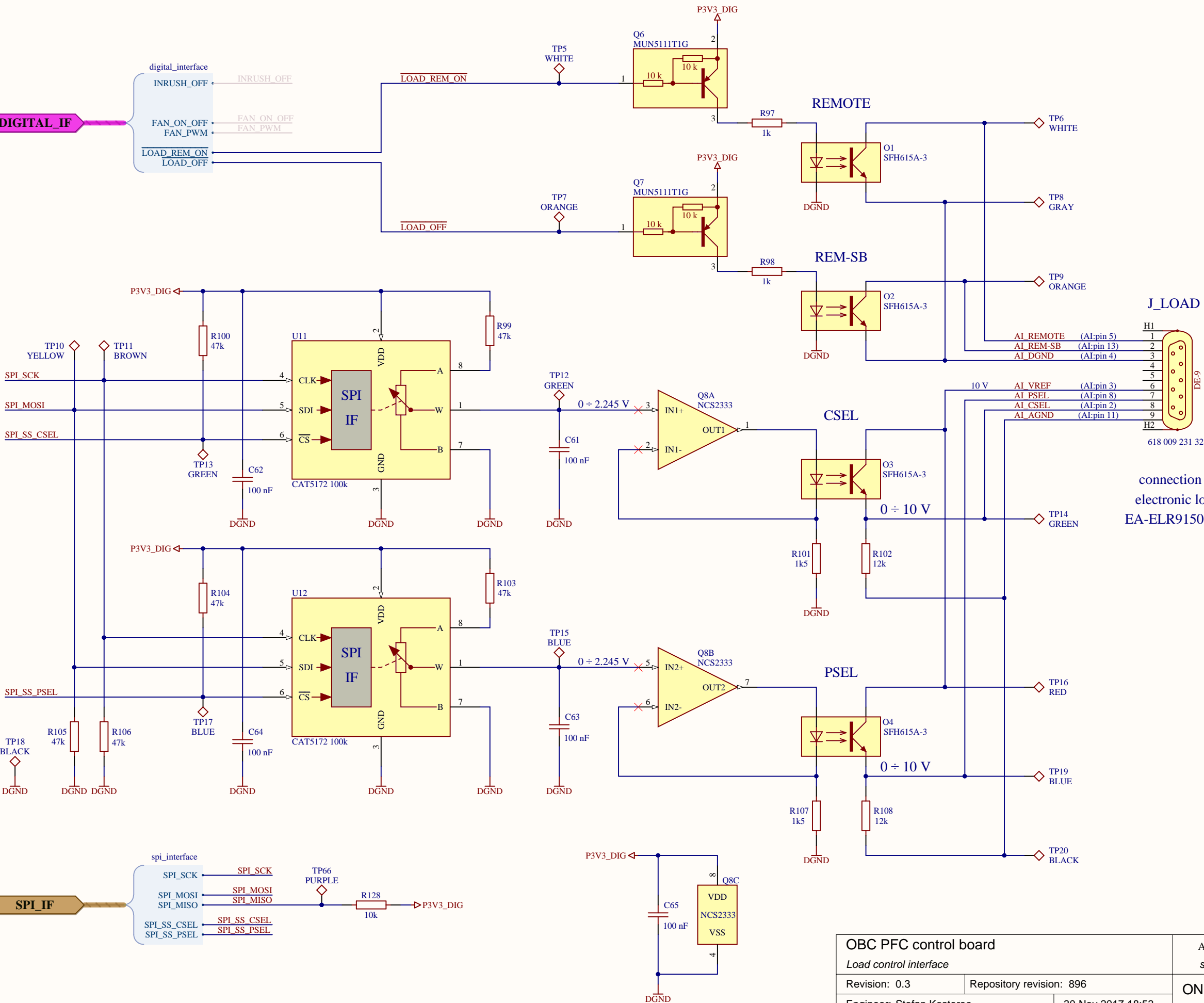
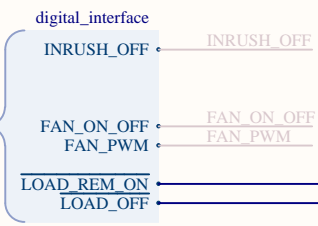




OBC PFC control board		Assembly variant:	State:
Drivers interconnection, fault protection logic		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor Solution Engineering Center Piestany	
Engineer: Stefan Kosterec	28.Mar 2018 17:26		
File: drivers_interconnection.SchDoc	9/13		



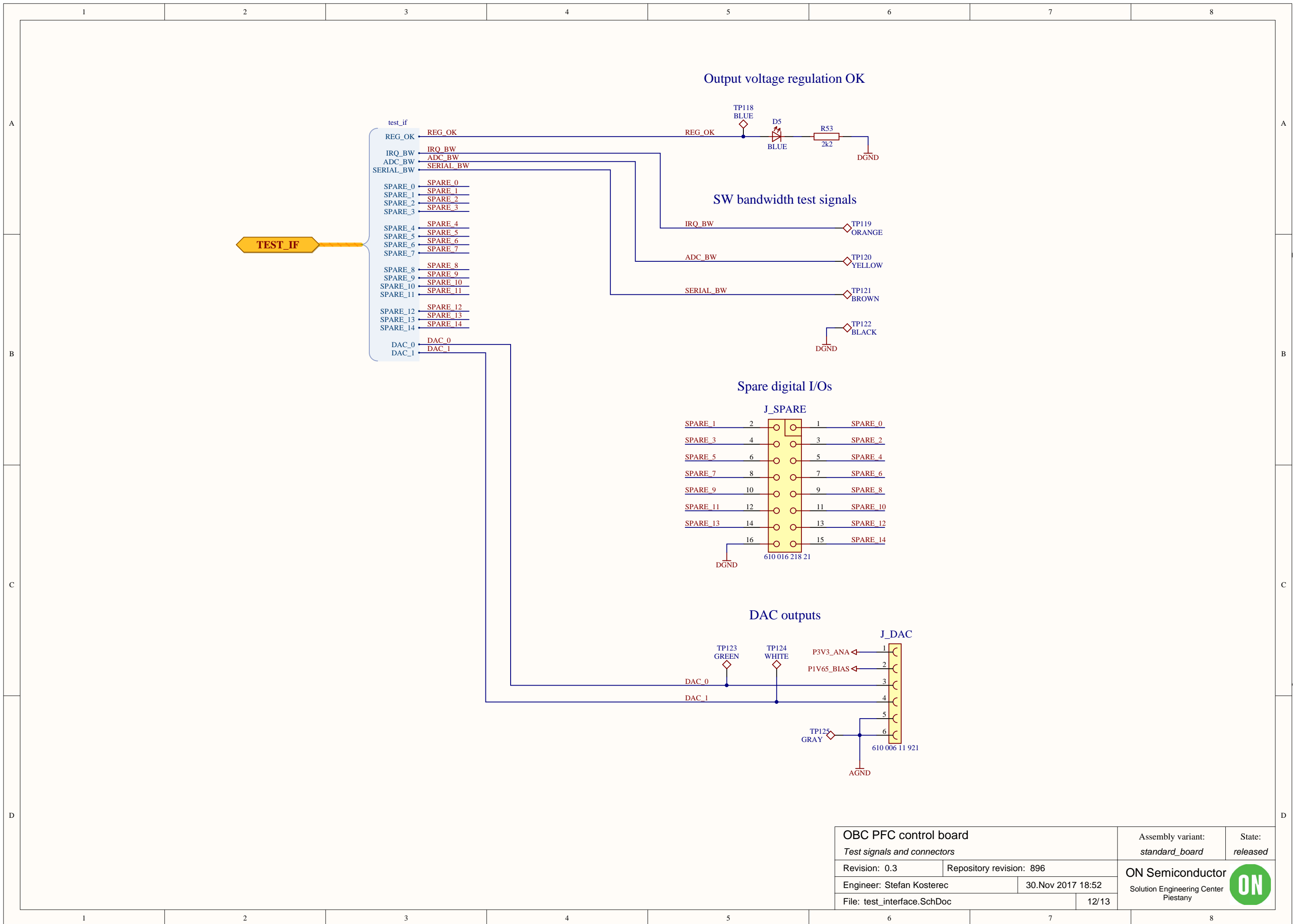
OBC PFC control board		Assembly variant:	State:
Interface to power board		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor Solution Engineering Center Piešťany	
Engineer: Stefan Kosterec	29.Mar 2018 16:05		
File: power_board_interface.SchDoc	10/13		



connection to electronic load EA-ELR91500-30

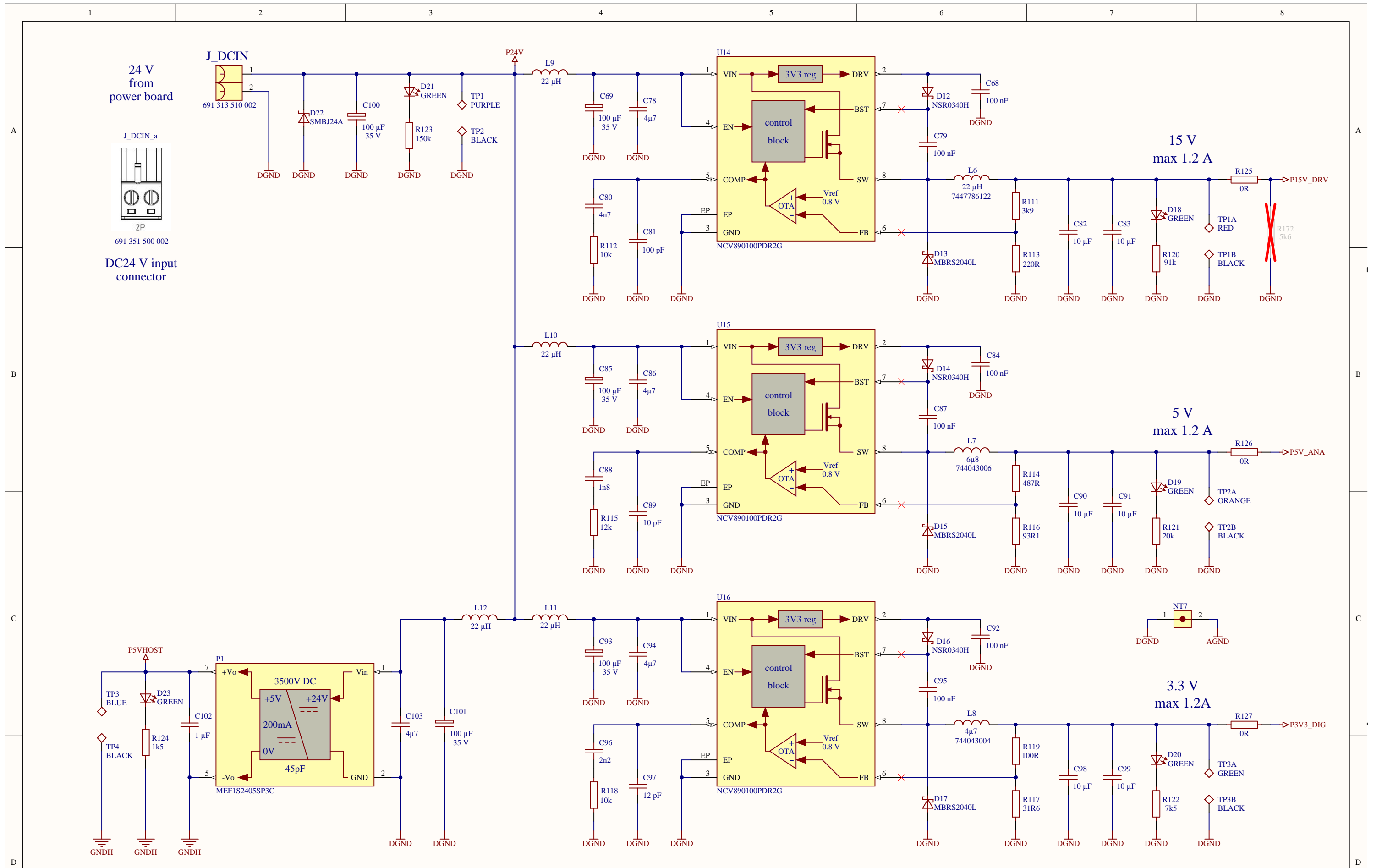
OBC PFC control board		Assembly variant:	State:
Load control interface		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piešťany
Engineer: Stefan Kosterec	30.Nov 2017 18:53		
File: load_control.SchDoc	11/13		





OBC PFC control board		Assembly variant:	State:
Test signals and connectors		standard_board	released
Revision: 0.3	Repository revision: 896		ON Semiconductor Solution Engineering Center Piešťany
Engineer: Stefan Kosterec	30.Nov 2017 18:52		
File: test_interface.SchDoc	12/13		





DC24 V input connector

15 V max 1.2 A

5 V max 1.2 A

3.3 V max 1.2 A

Note 1: P3V3_ANA generated by LDO - see controller_supply sheet

OBC PFC control board		Assembly variant:	State:
Power supplies		standard_board	released
Revision: 0.3	Repository revision: 896	ON Semiconductor	
Engineer: Stefan Kosterec	28.Mar 2018 22:03	Solution Engineering Center Piestany	
File: power_supplies.SchDoc	13/13	