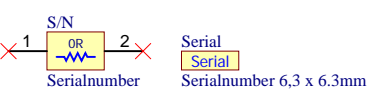
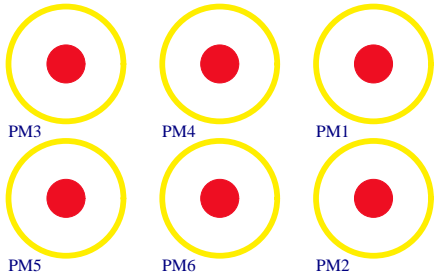
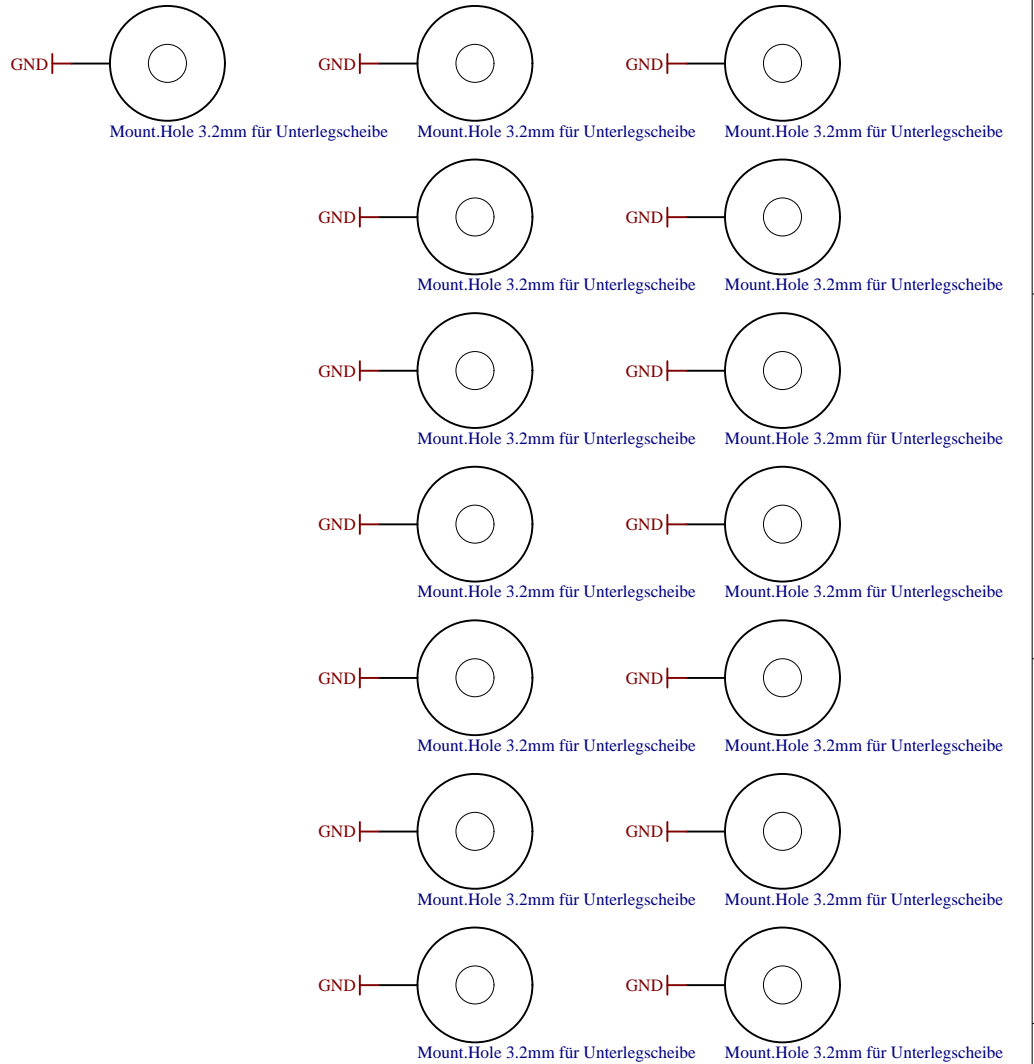


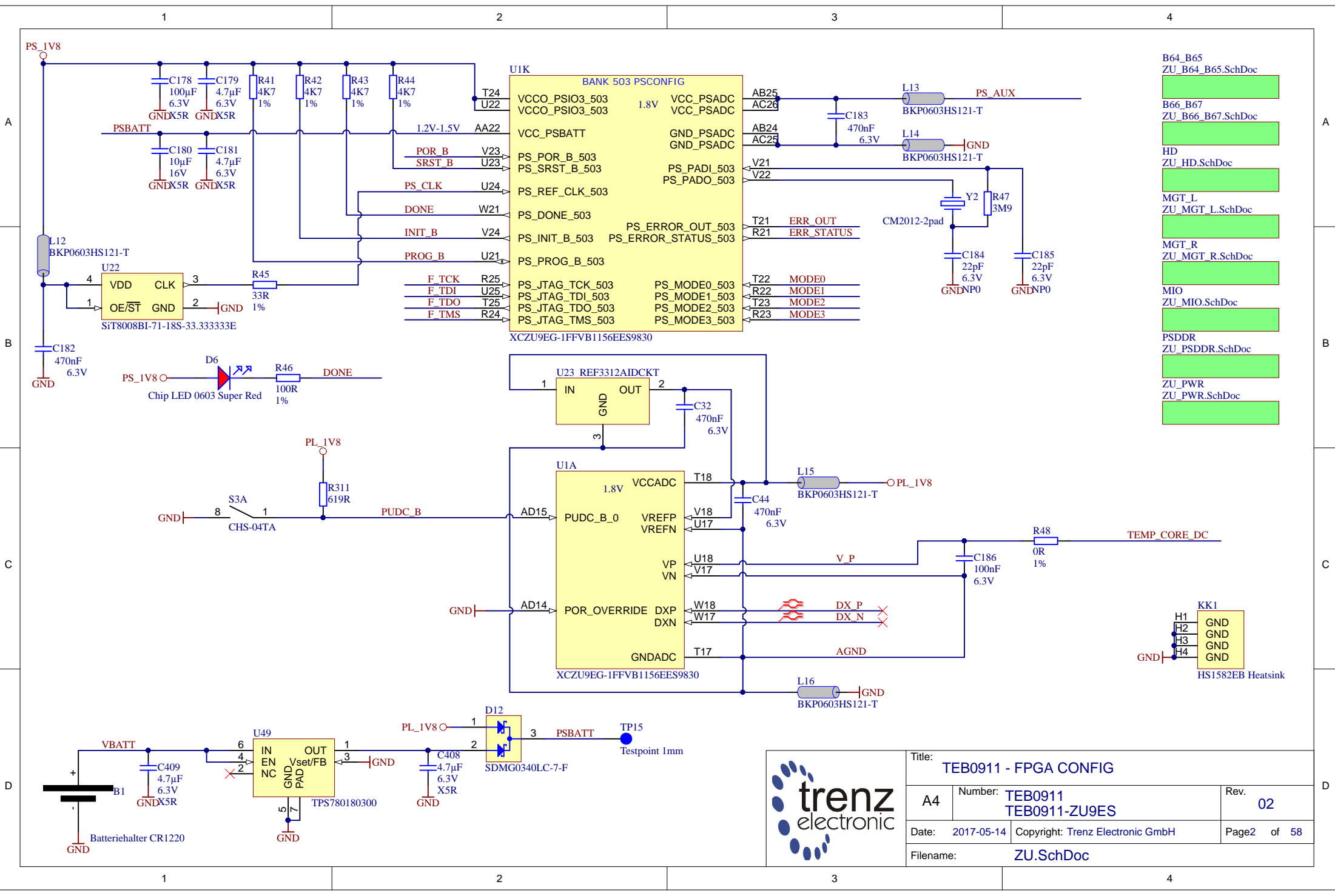
Ethernet Ethernet.SchDoc	U_USBP USB-PHY_SchDoc	U_SC_P SC_POWER.schdoc
U_SFP SFP.SchDoc	U_USBH USB3-HUB.SchDoc	U_POWER_OVERVIEW Power_overview.SchDoc
U_SSD SSD.SchDoc	U_CLK Clock.SchDoc	U_POWER_SEQ PowerUpSequence.SchDoc
U_FrontPanel FrontPanel.SchDoc	U_I2C I2C_system.schdoc	
U_USB USB.SchDoc	U_eMMC eMMC.SchDoc	
U_BackPanel BackPanel.SchDoc	U_DDRP DDR_PWR.SchDoc	
U_FMC PWR FMC PWR.SchDoc	U_DDR DDR_SODIMM.SchDoc	
U_ZU ZU.SchDoc	U_CLK2 Clock2.SchDoc	
U_SFP_CTRL SFP_CTRL.SchDoc	U_SC2 SC2.schdoc	
U_SC SC.schdoc	U_MISC MISC.schdoc	
U_UPWR USB3-HUB_PWR.SchDoc	U_PWR_IN PWR_IN.SchDoc	
U_FAN FAN_CON.schdoc	U_REVCH Revision_changes.SchDoc	



LOGO1
TE Logo PRINT Layer
LOGO PRINT



Title: TEB0911		
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Filename: TEB0911.SchDoc		



- B64_B65
ZU_B64_B65.SchDoc
- B66_B67
ZU_B66_B67.SchDoc
- HD
ZU_HD.SchDoc
- MGT_L
ZU_MGT_L.SchDoc
- MGT_R
ZU_MGT_R.SchDoc
- MIO
ZU_MIO.SchDoc
- PSDDR
ZU_PSDDR.SchDoc
- ZU_PWR
ZU_PWR.SchDoc



Title: TEB0911 - FPGA CONFIG		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page2 of 58
Filename: ZU.SchDoc		

A

B

C

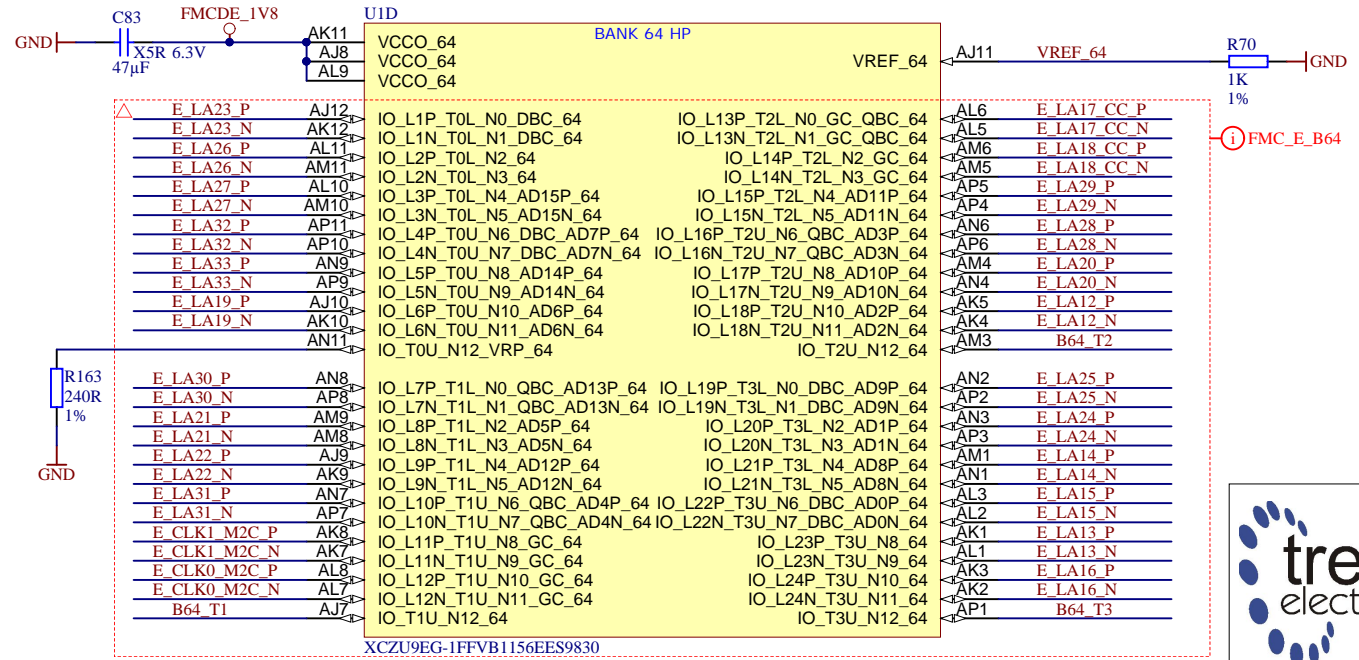
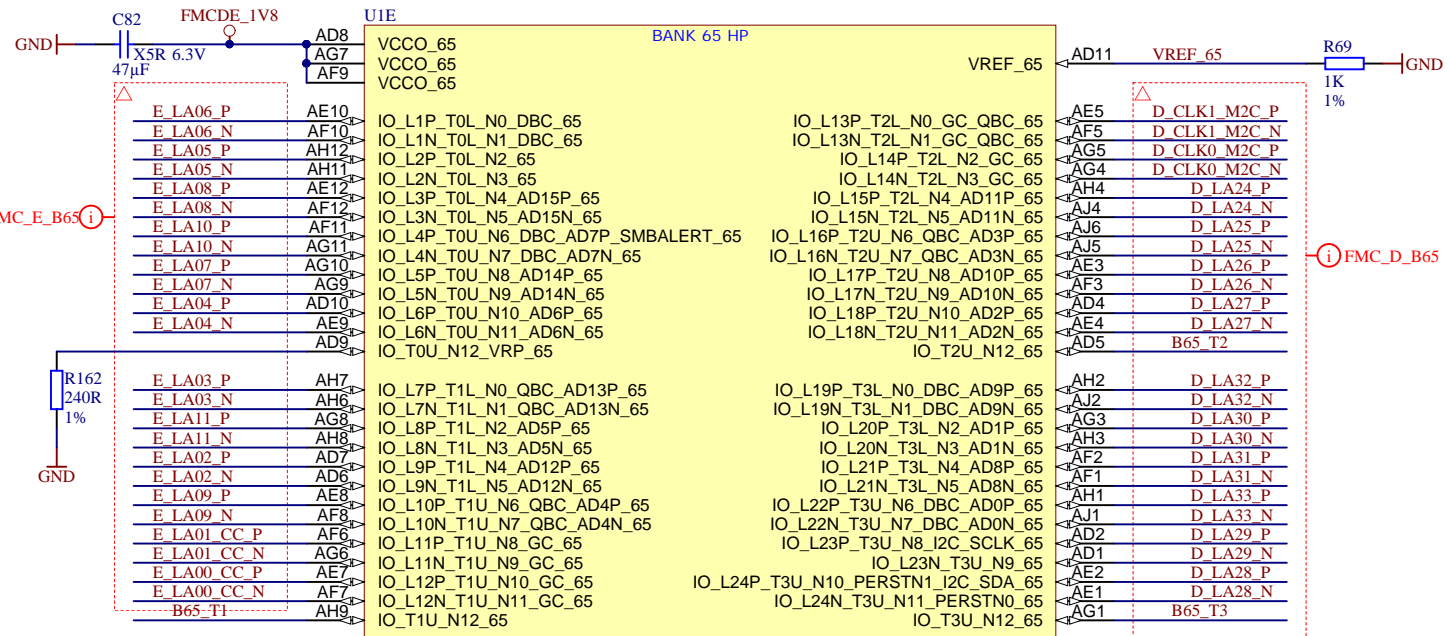
D

A

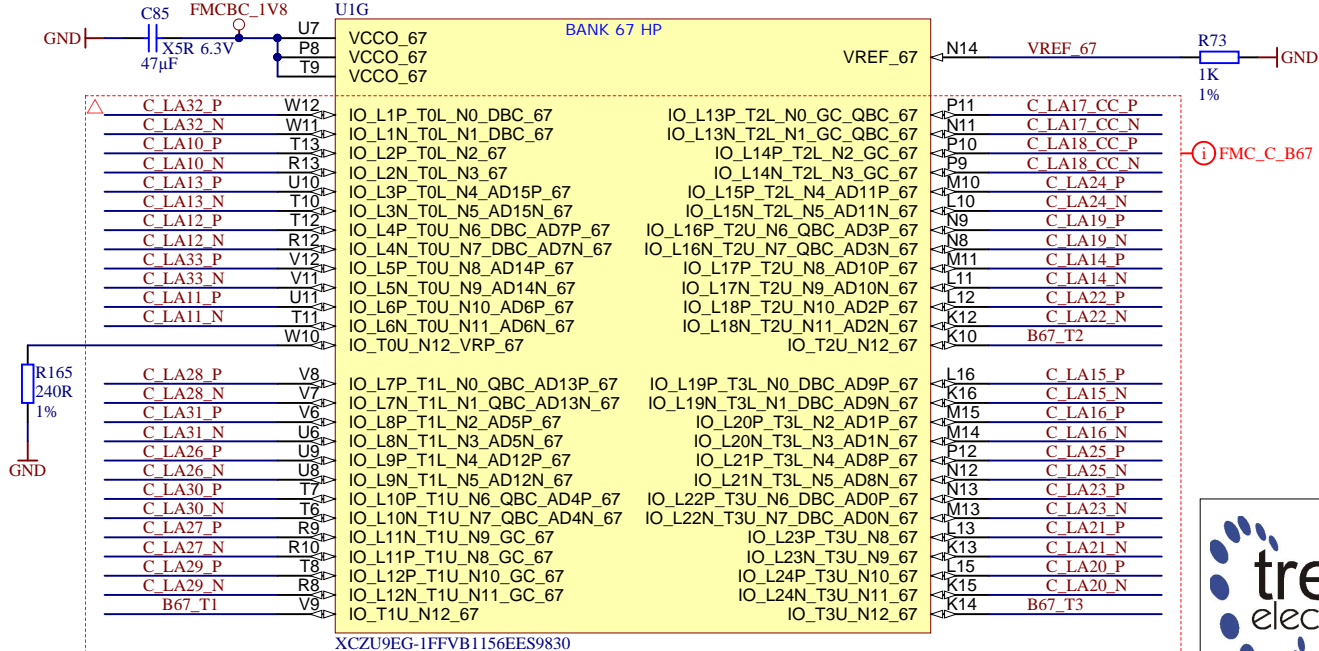
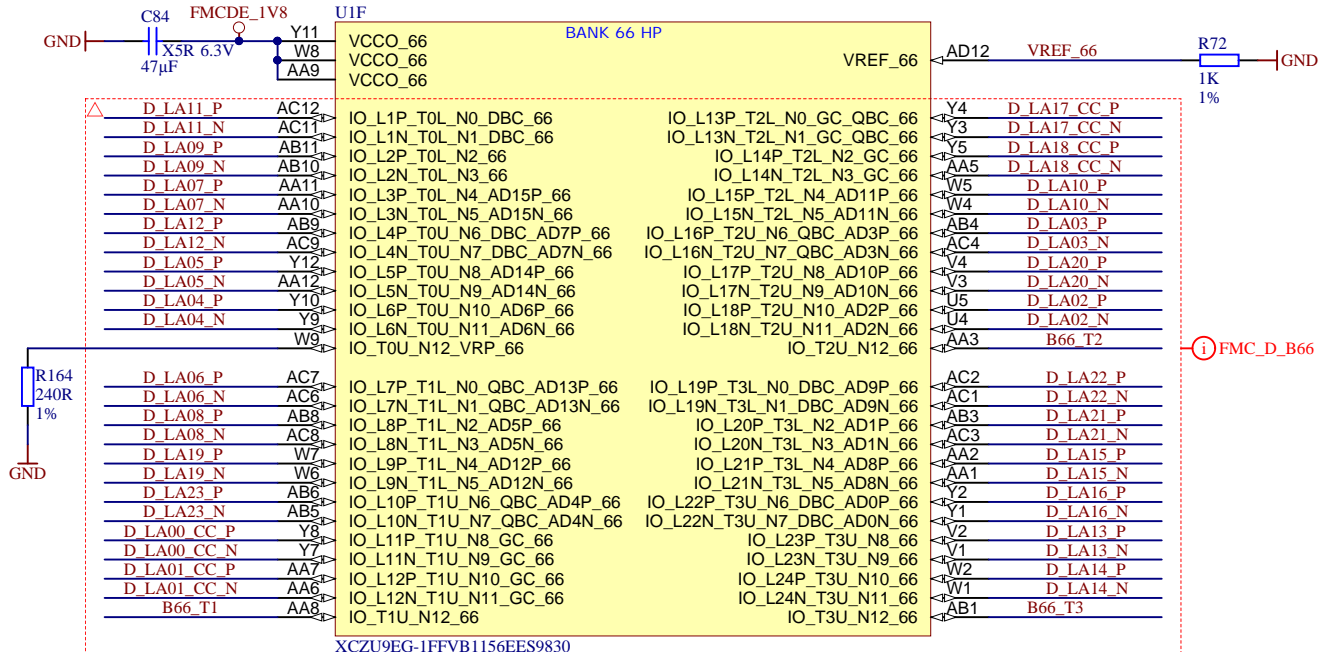
B

C

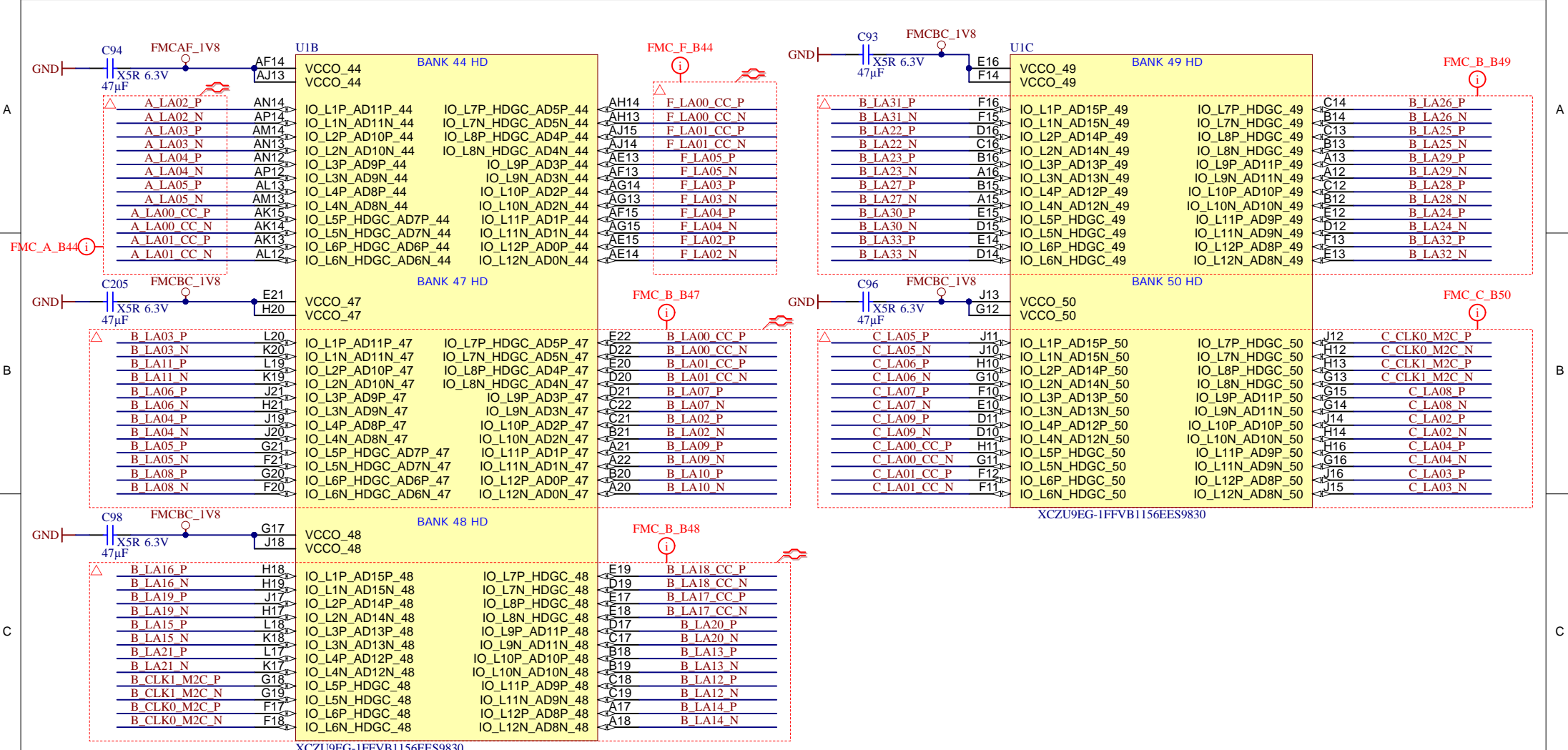
D



Title: TEB0911 - FPGA B64 B65		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 3 of 58
Filename: ZU_B64_B65.SchDoc		




Title: TEB0911 - FPGA B66 B67		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page4 of 58
Filename: ZU_B66_B67.SchDoc		

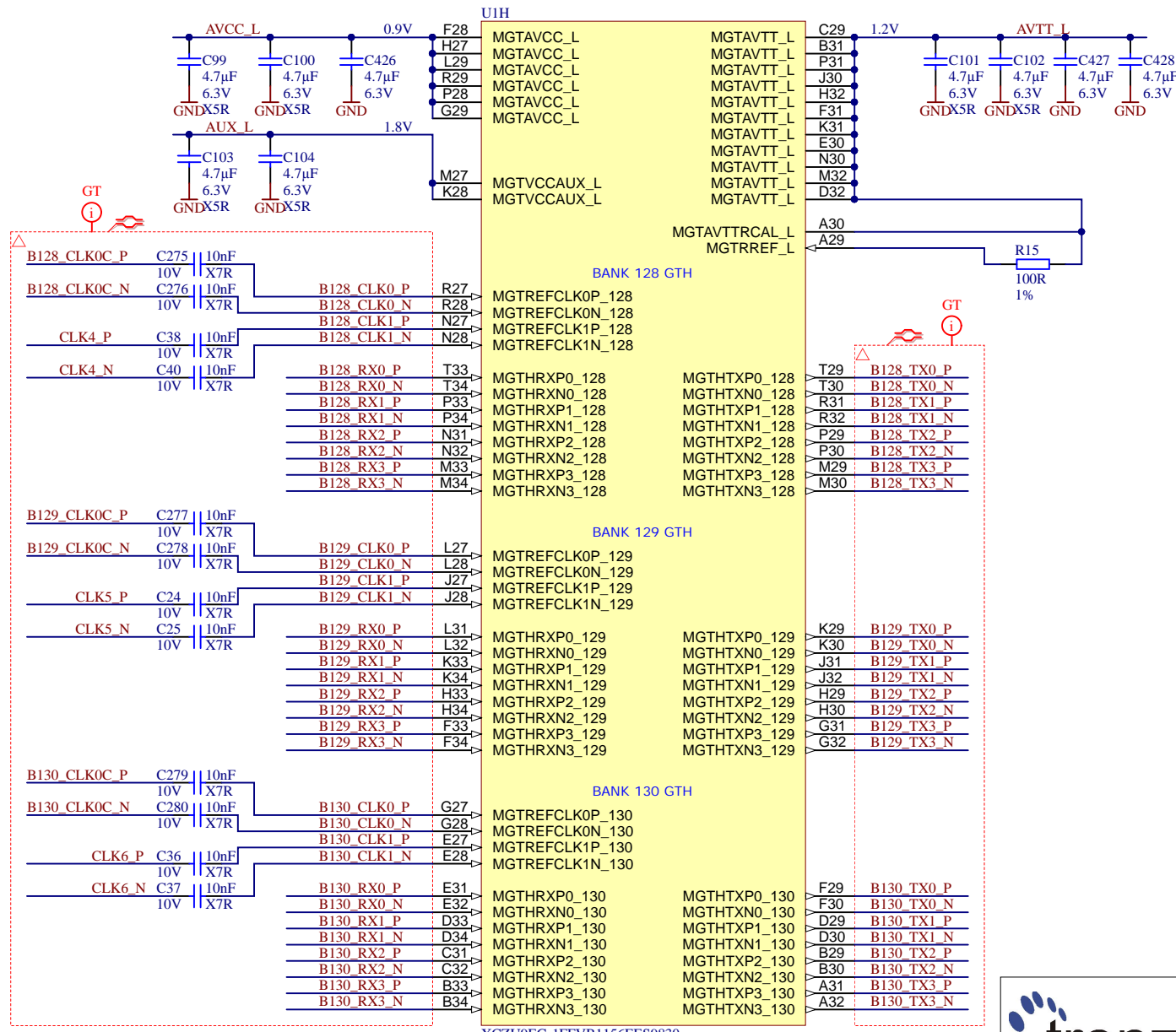


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XCZU9EG-1FFVB1156EES9830



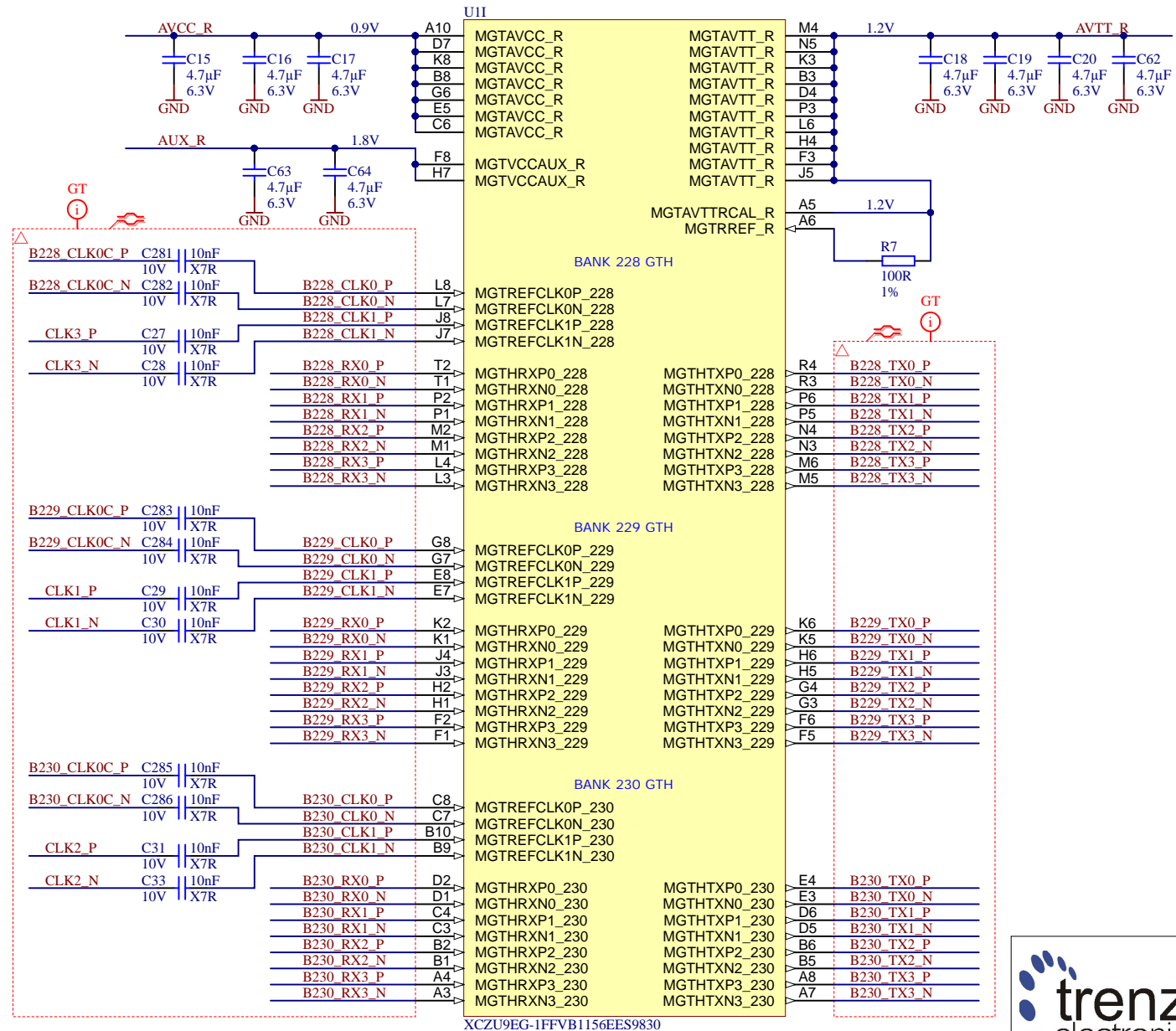
Title: TEB0911 - FPGA B44 B47-50		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page5 of 58
Filename: ZU_HD.SchDoc		



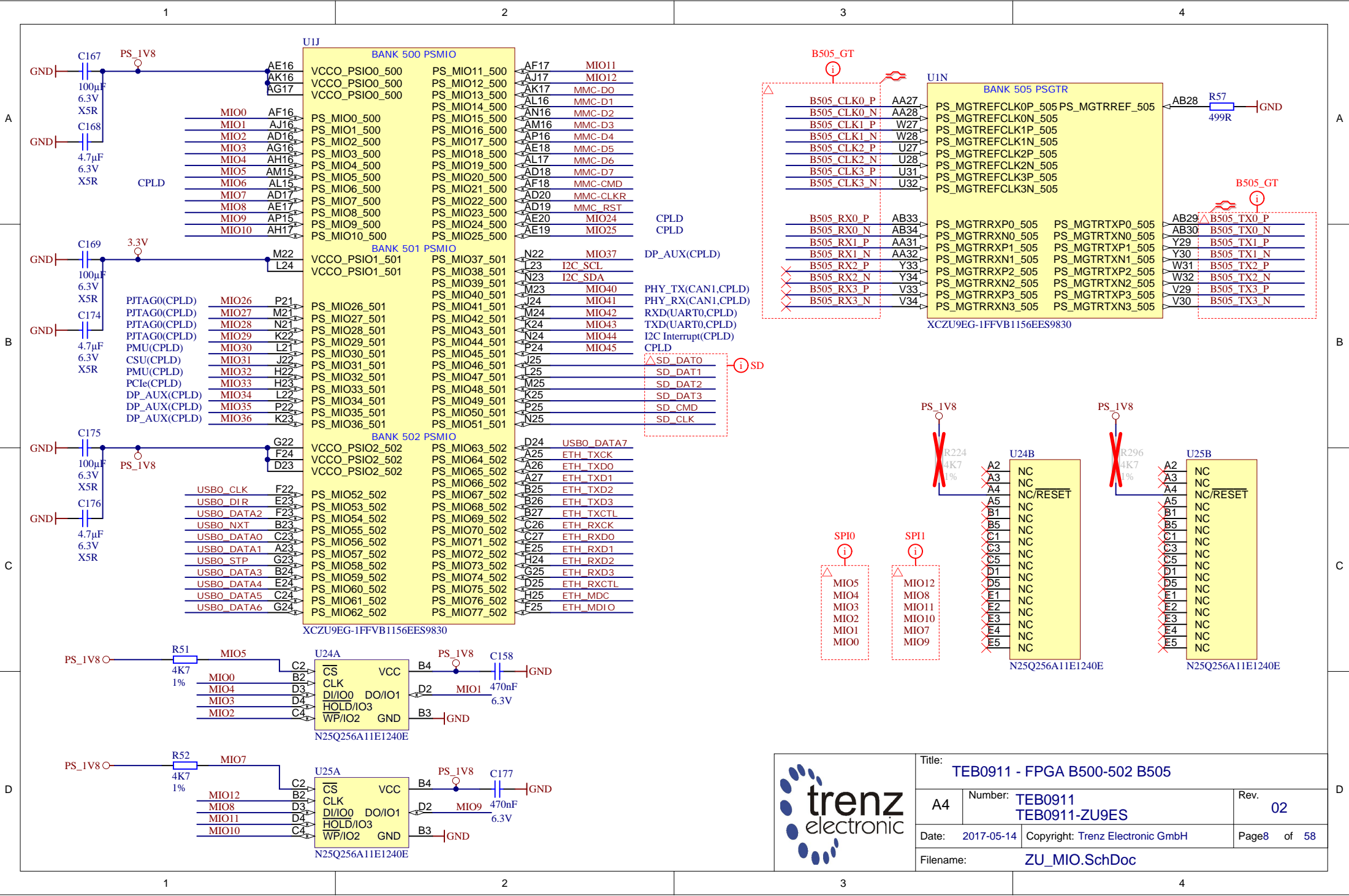
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Title: TEB0911 - FPGA B128-130		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page6 of 58
Filename: ZU_MGT_L.SchDoc		



Title: TEB0911 - FPGA B228-230		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 7 of 58
Filename: ZU_MGT_R.SchDoc		



Title: TEB0911 - FPGA B500-502 B505		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 8 of 58
Filename: ZU_MIO.SchDoc		

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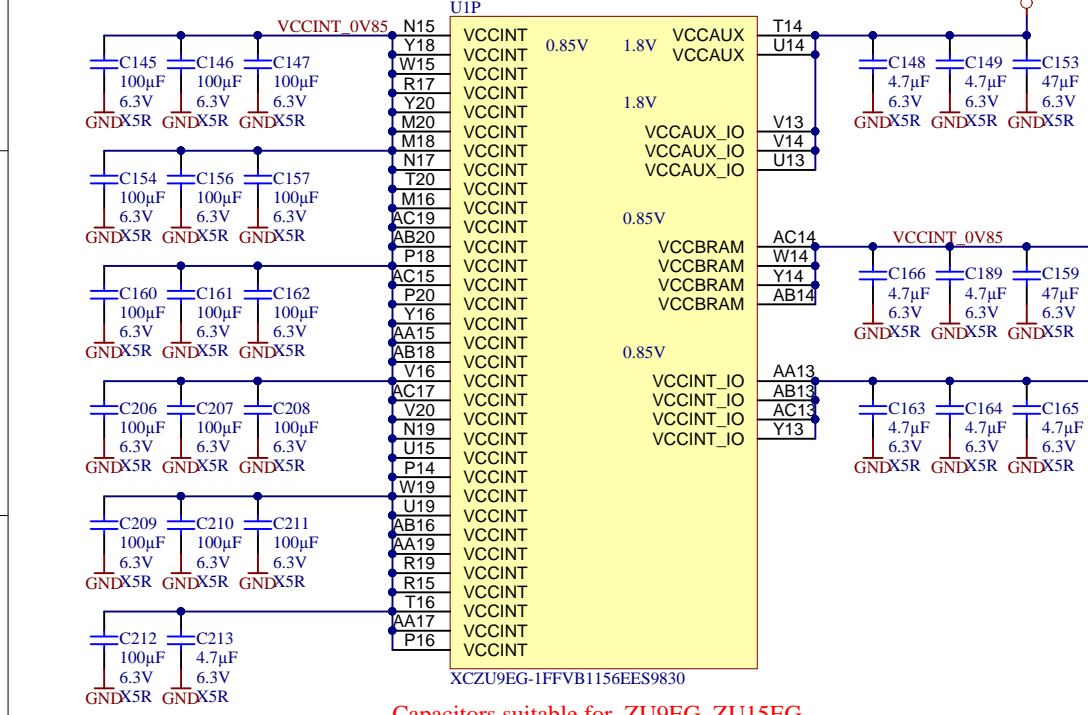
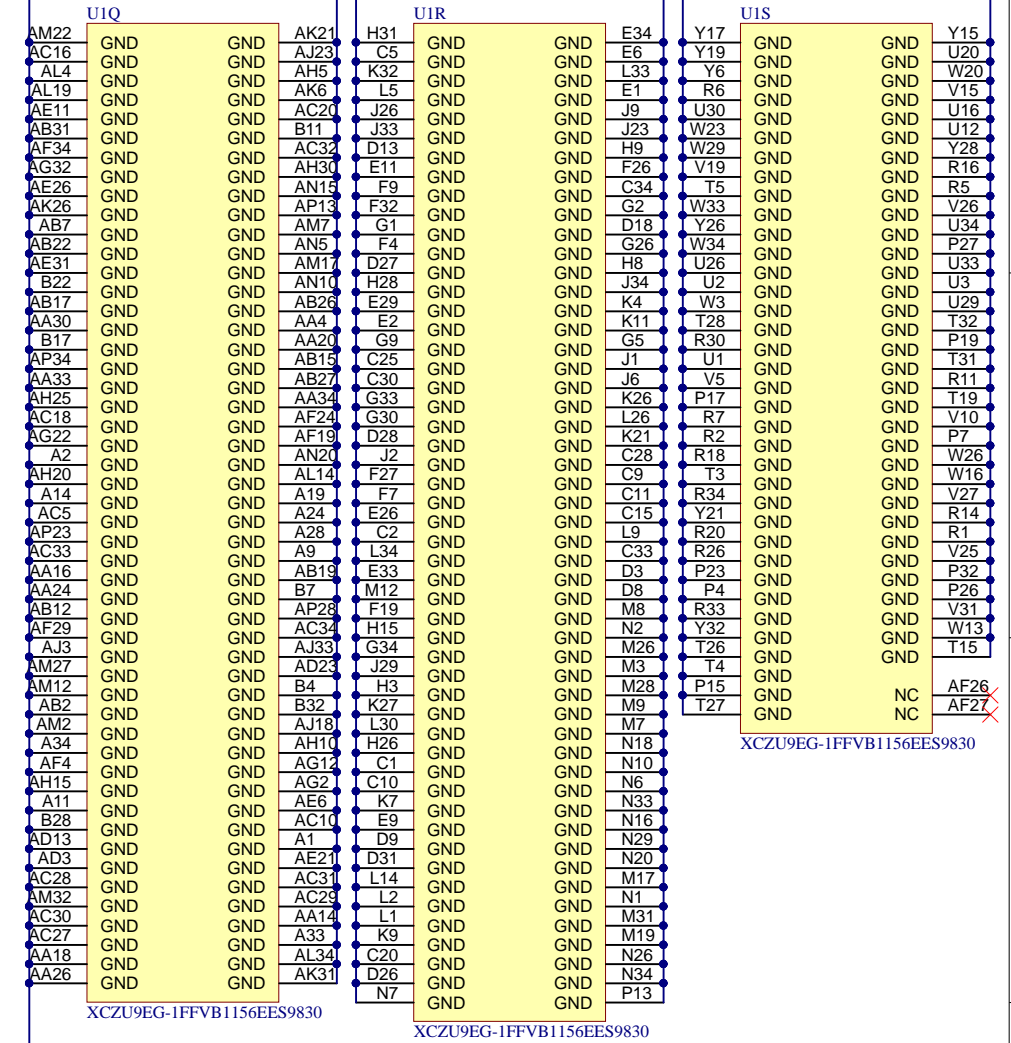
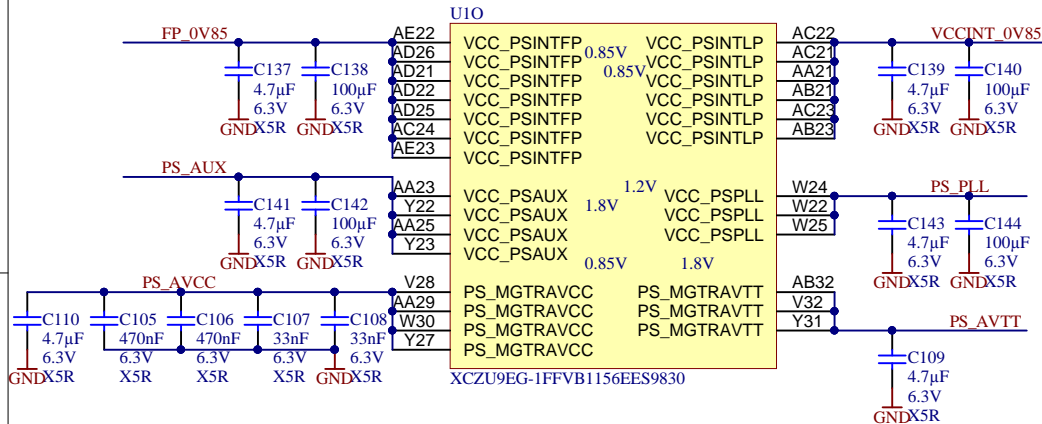
D

A

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C

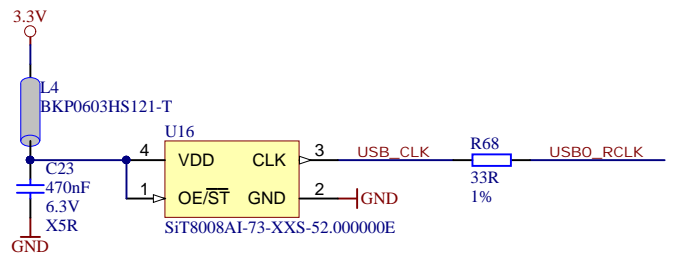
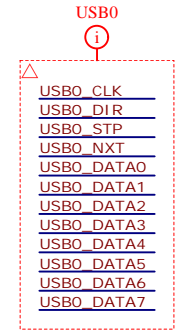
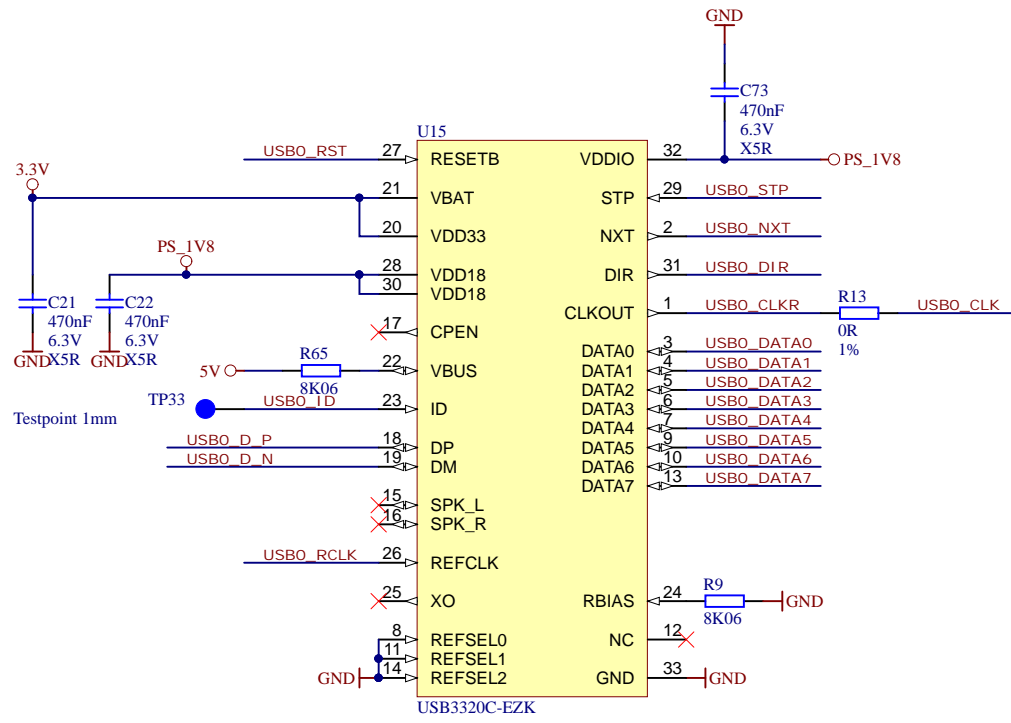
D



Capacitors suitable for ZU9EG, ZU15EG



Title: TEB0911 - FPGA POWER		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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Filename: ZU_PWR.SchDoc		



Title: TEB0911 - USB 2.0 PHY		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 11 of 58
Filename: USB-PHY.SchDoc		

1

2

3

4

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C

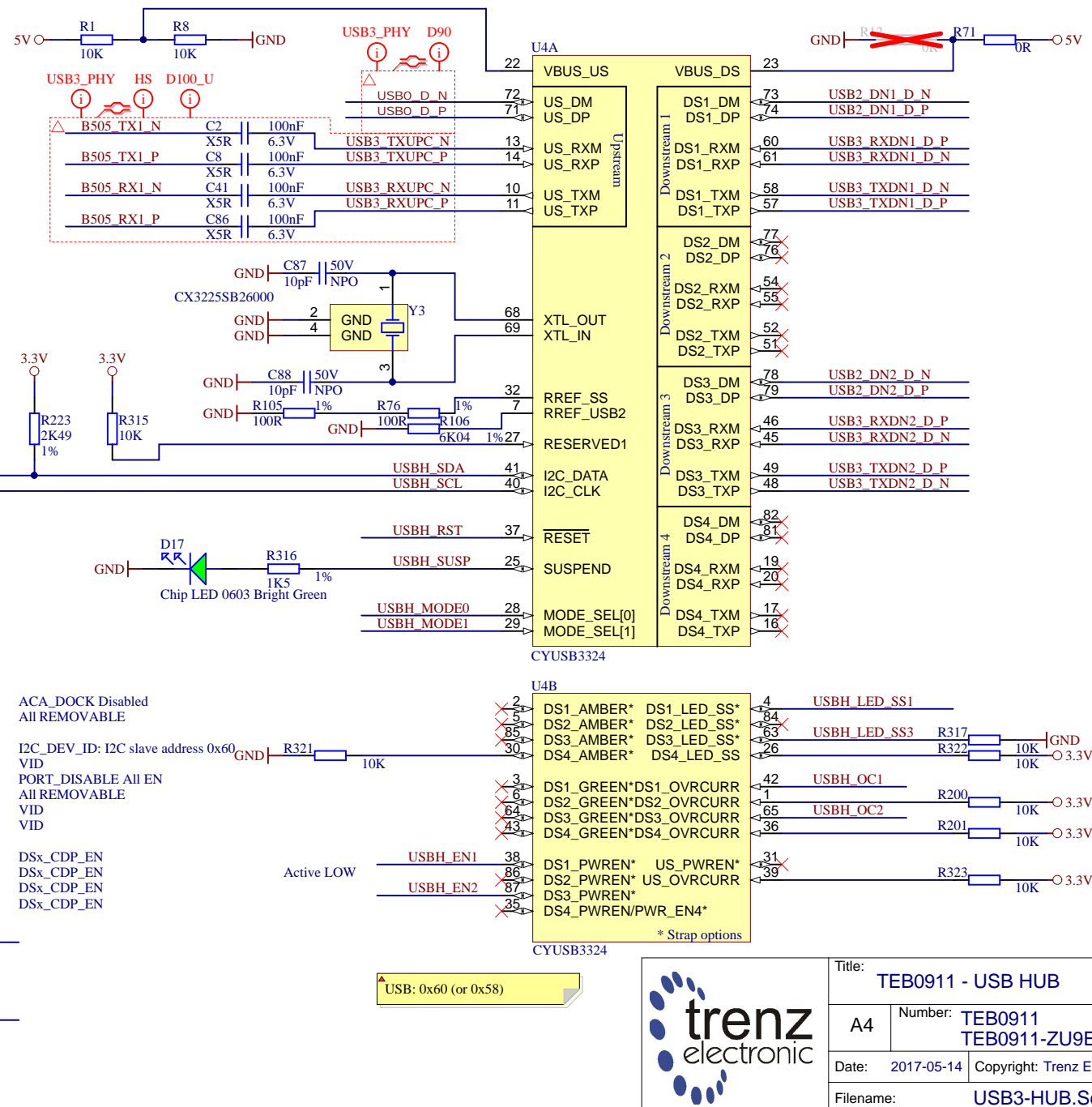
D

A

B

C

D



LAYOUT NOTES:
 Each member of a High-Speed differential pair should be no more than 1.25 mm
 Each member of a SuperSpeed differential pair should be no more than 0.13 mm

RESETN pin should be held LOW until both supplies become stable.

EEPROM: 0x51 (0b1010001x)

USB: 0x60 (or 0x58)

ACA_DOCK Disabled
 All REMOVABLE
 I2C_DEV_ID: I2C slave address 0x60
 VID
 PORT_DISABLE All EN
 All REMOVABLE
 VID
 VID
 DSx_CDP_EN
 DSx_CDP_EN
 DSx_CDP_EN
 DSx_CDP_EN

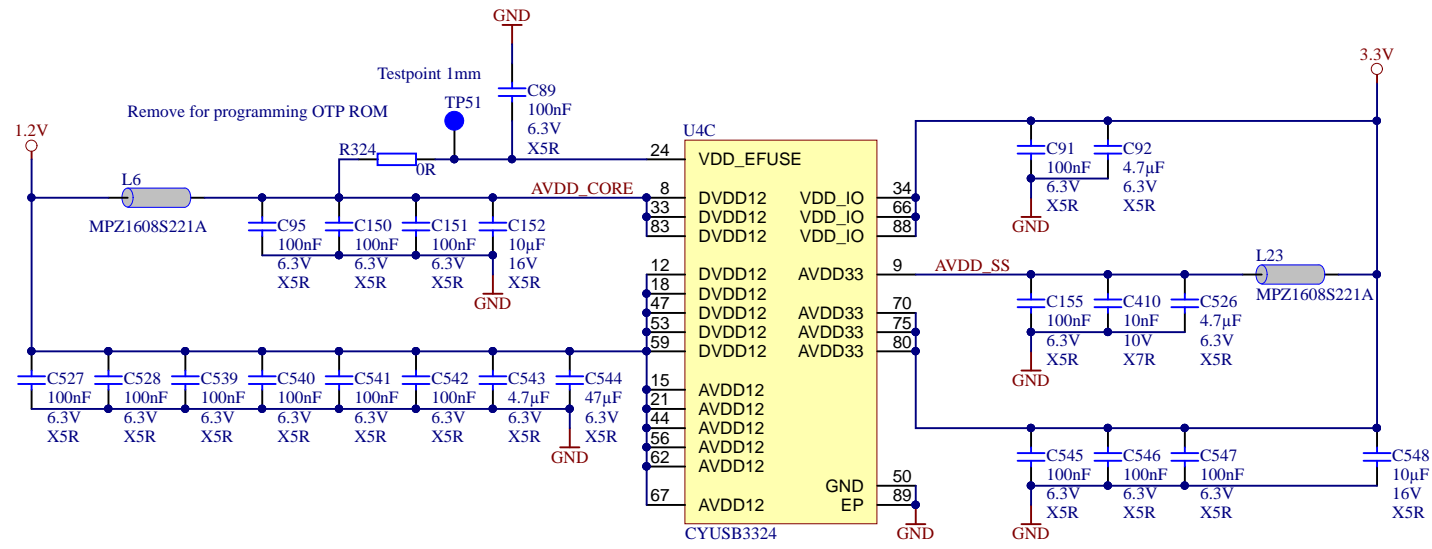
PORT_DISABLE All EN
 PWR_EN_SEL Individual
 PIN_STRAP config

Active LOW

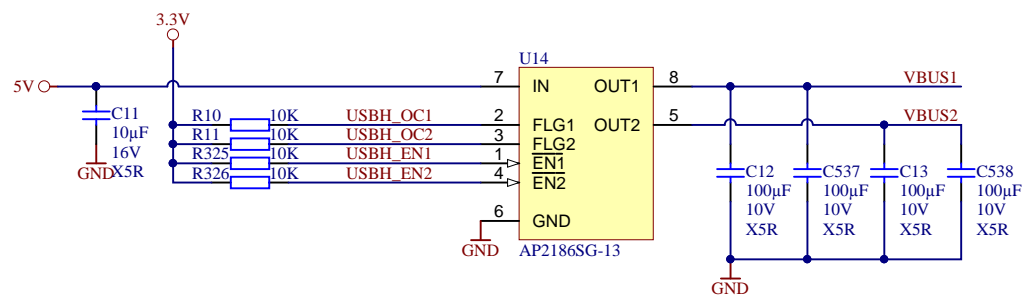
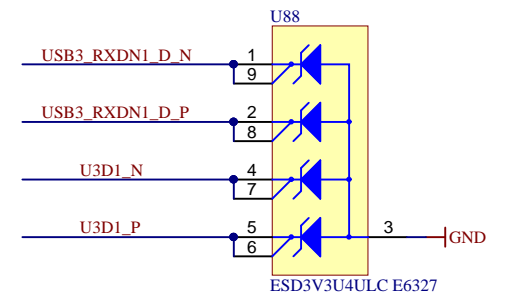
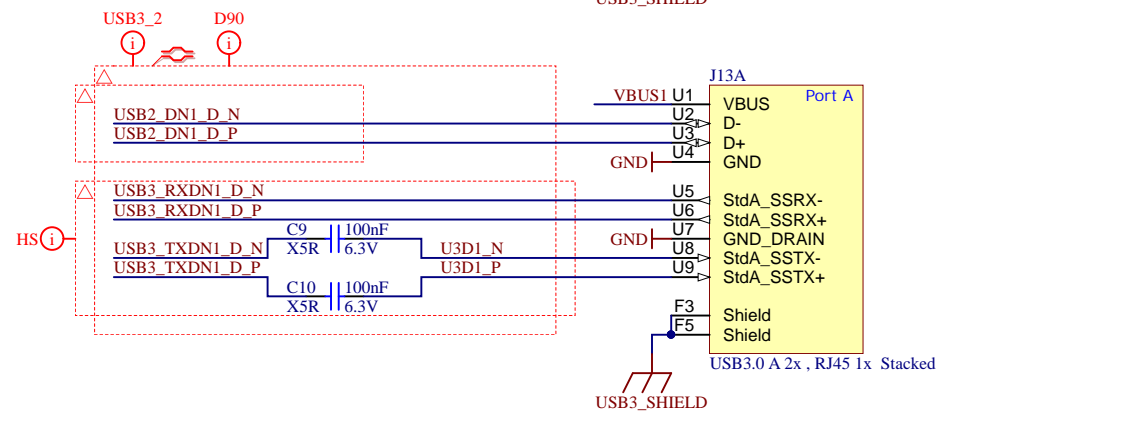
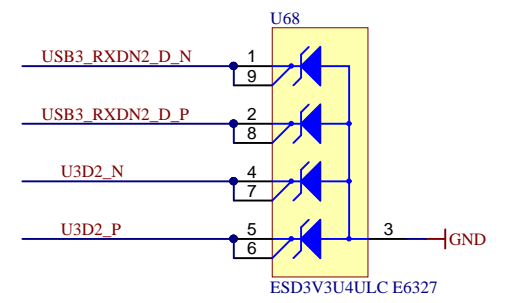
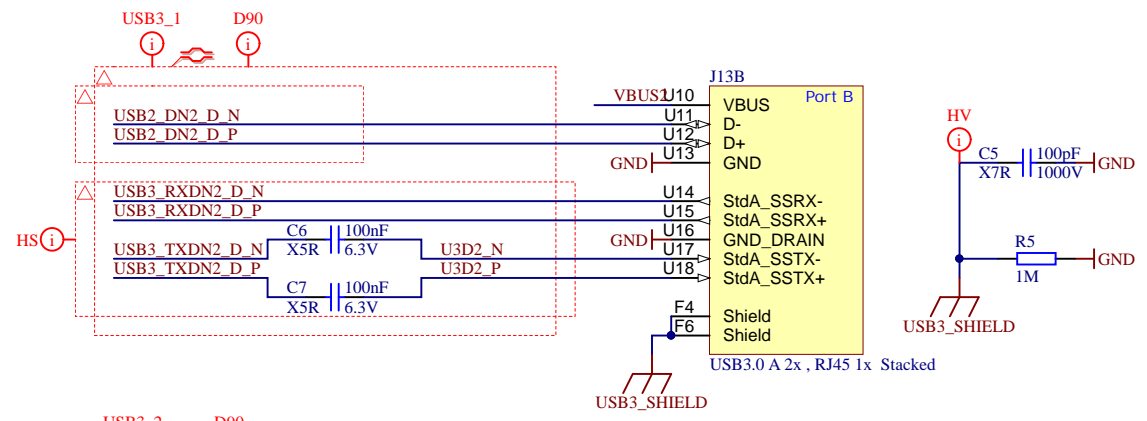
Power enable and overcurrent LOW



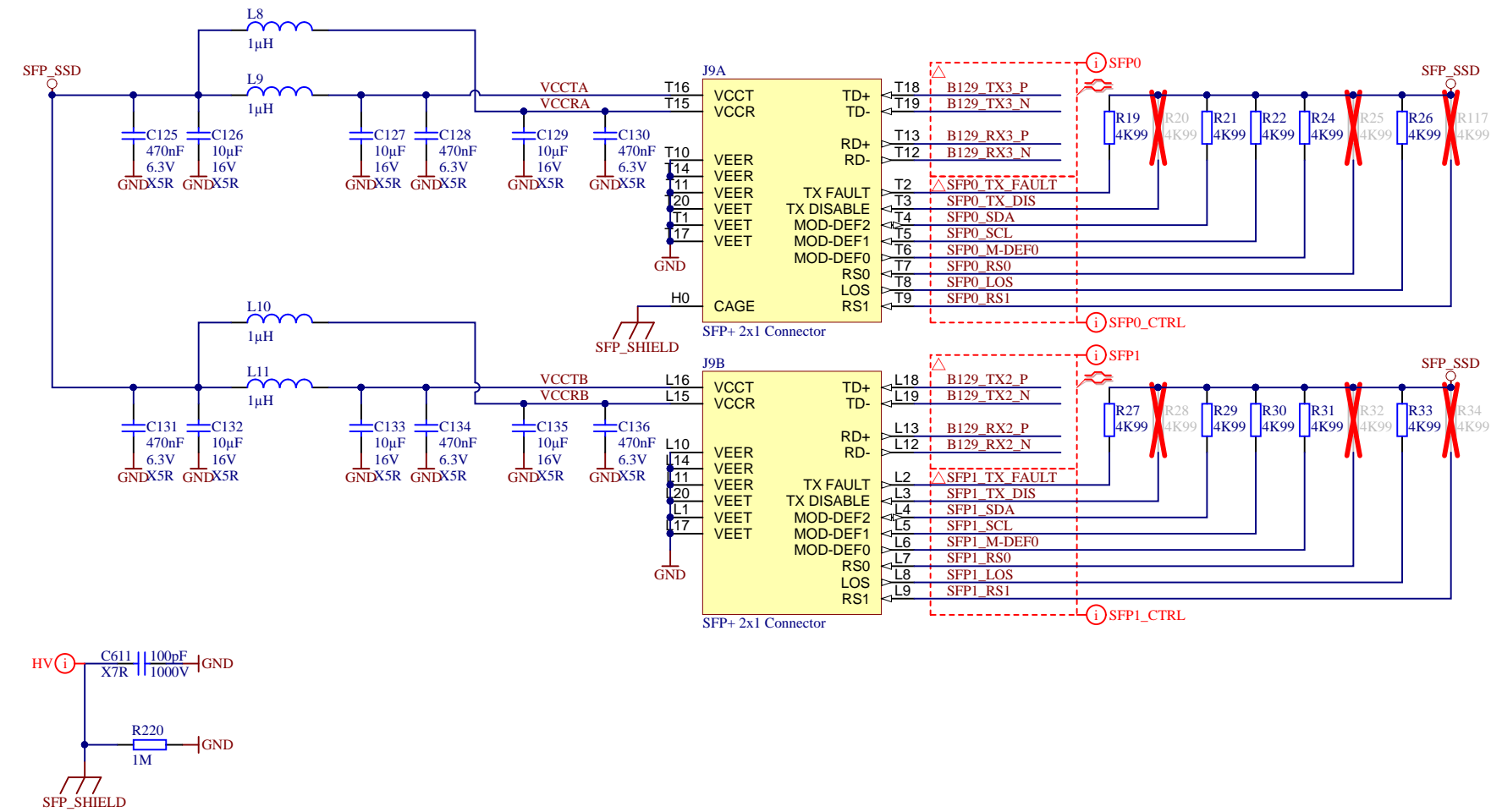
Title: TEB0911 - USB HUB		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 12 of 58
Filename: USB3-HUB.SchDoc		



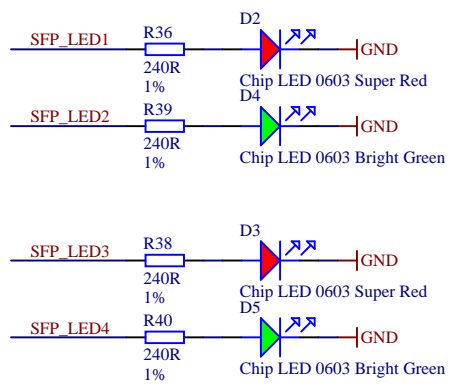
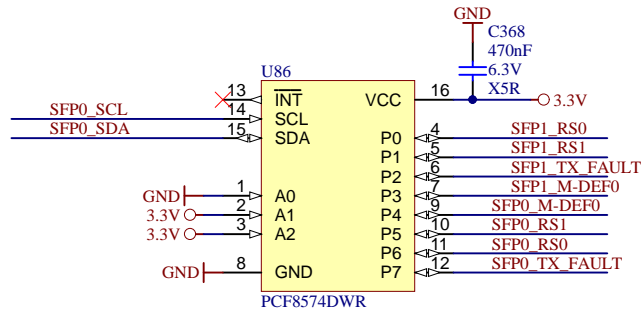
	Title: TEB0911 - USB HUB	
	A4	Number: TEB0911 TEB0911-ZU9ES
	Date: 2017-05-14	Copyright: Trenz Electronic GmbH
	Rev. 02	Page 13 of 58
Filename: USB3-HUB_PWR.SchDoc		



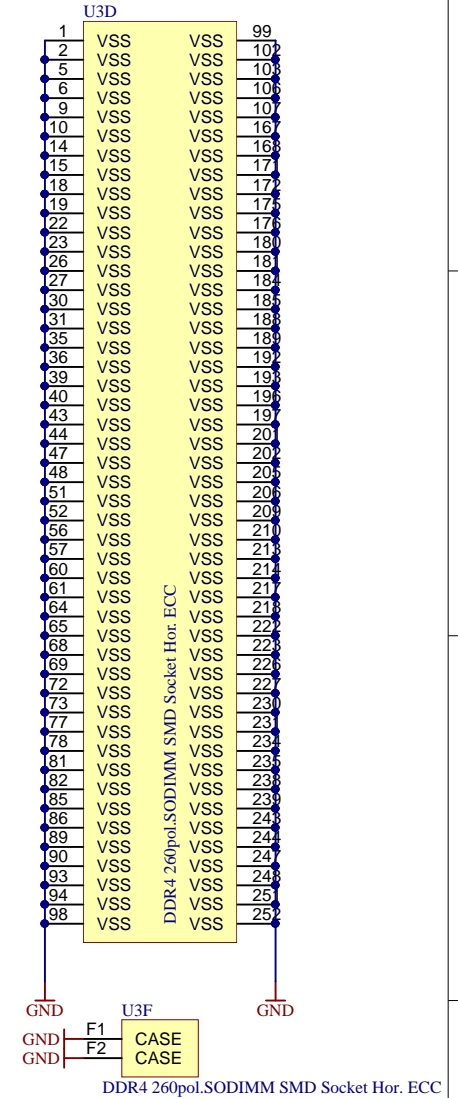
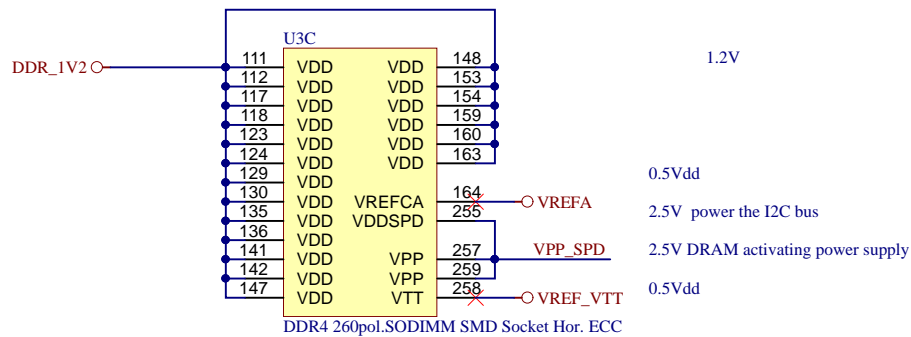
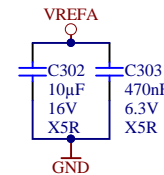
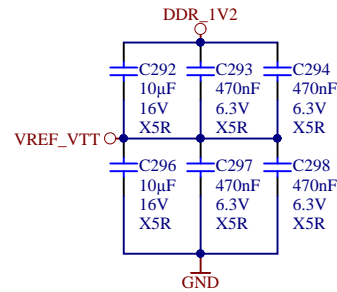
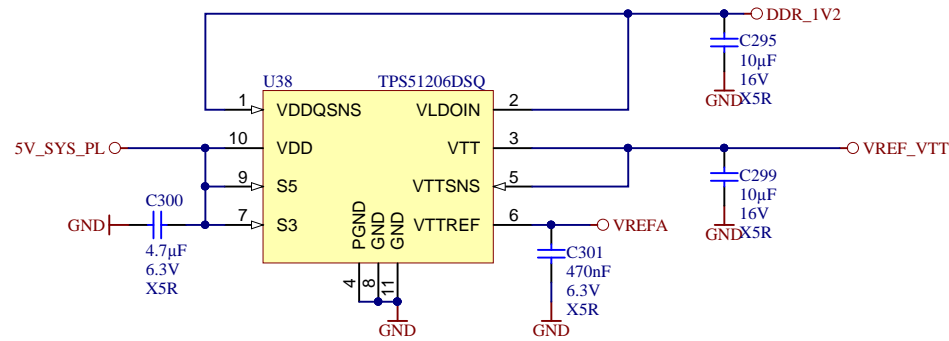
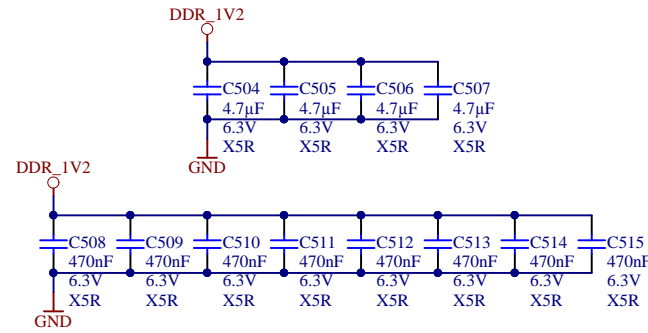
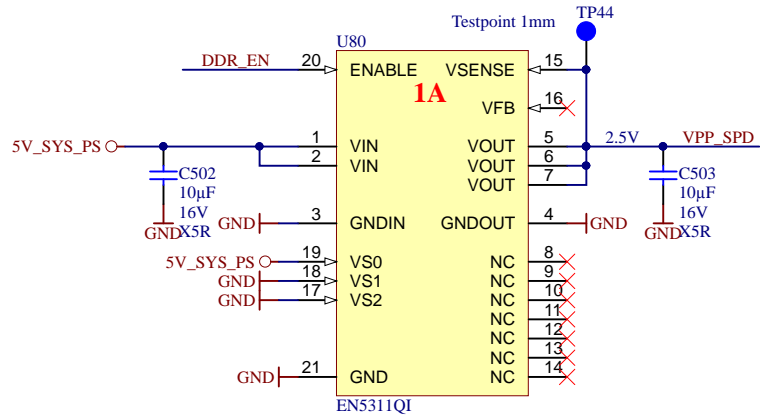
Title: TEB0911 - USB CONNECTORS		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 14 of 58
Filename: USB.SchDoc		



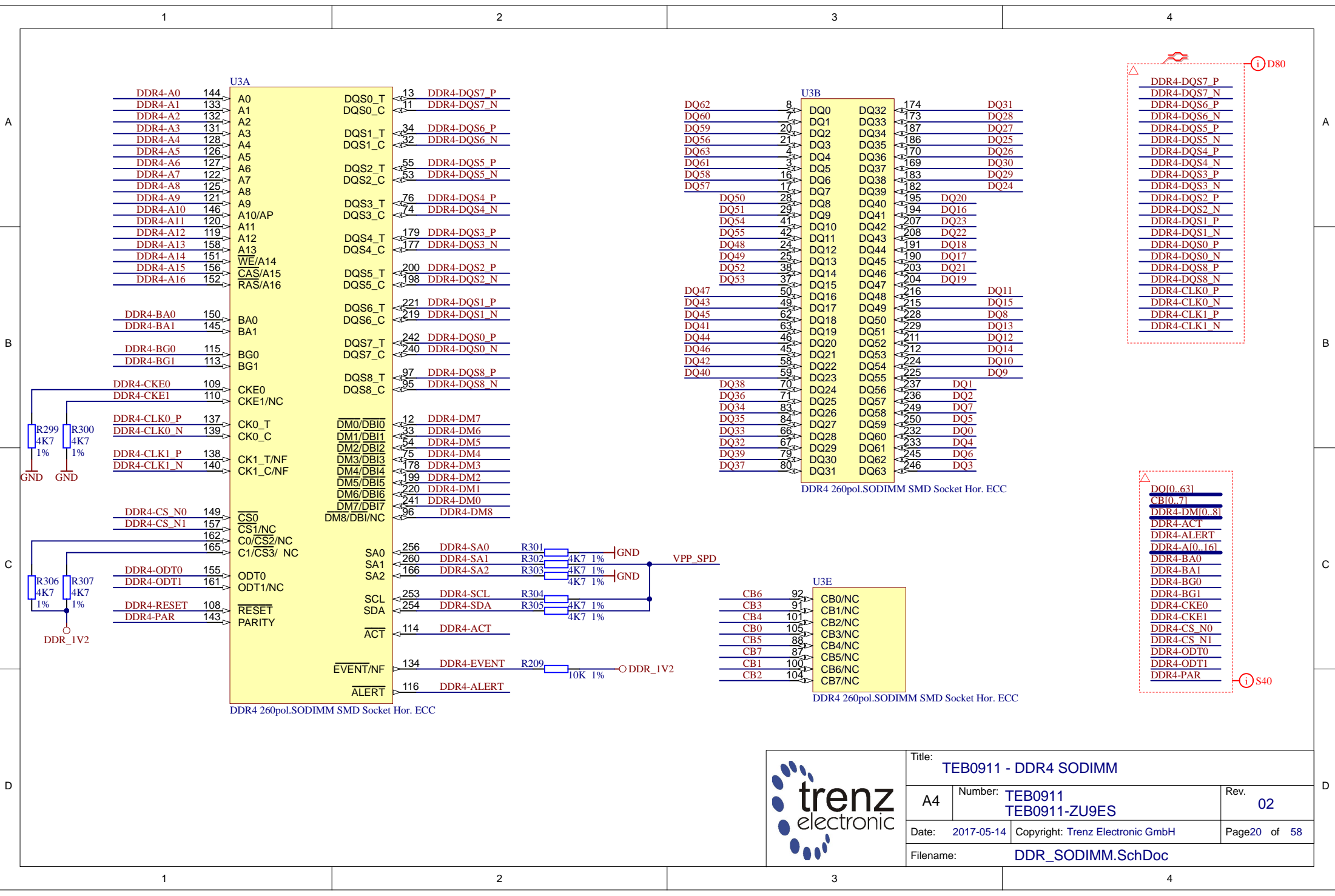
Title: TEB0911 - SFP		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	
Page 17 of 58		Filename: SFP.SchDoc



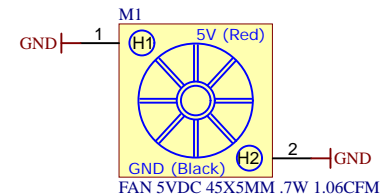
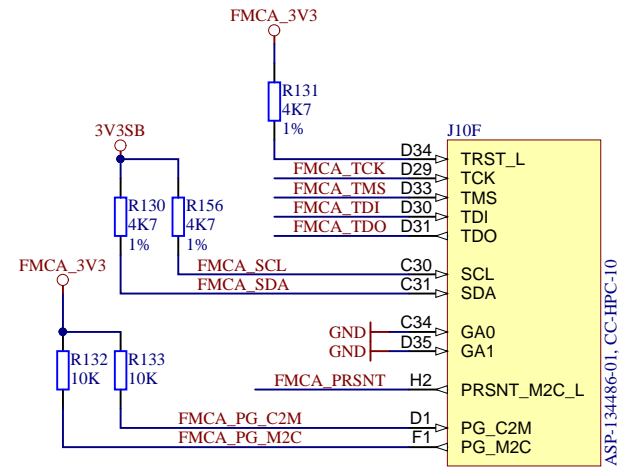
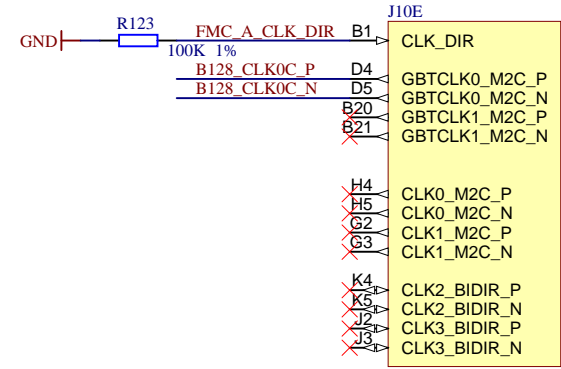
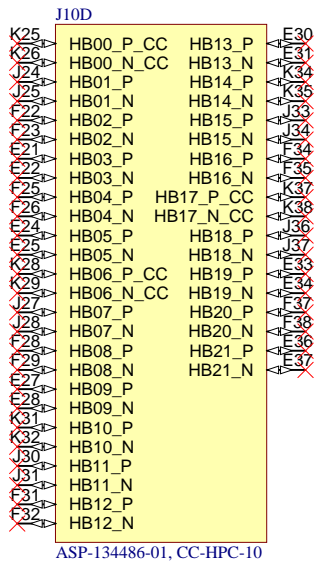
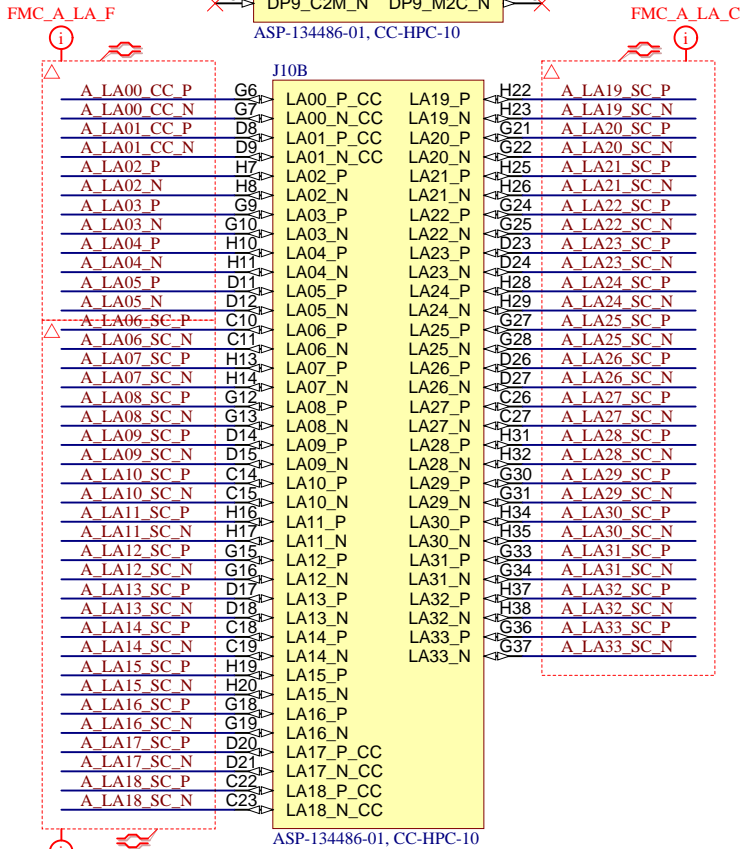
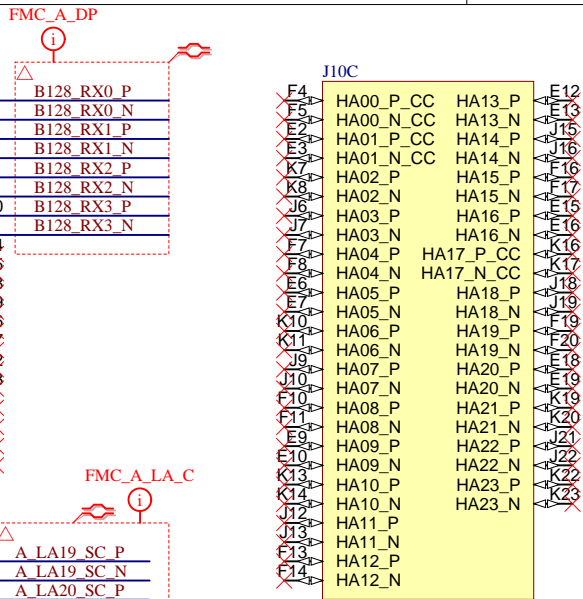
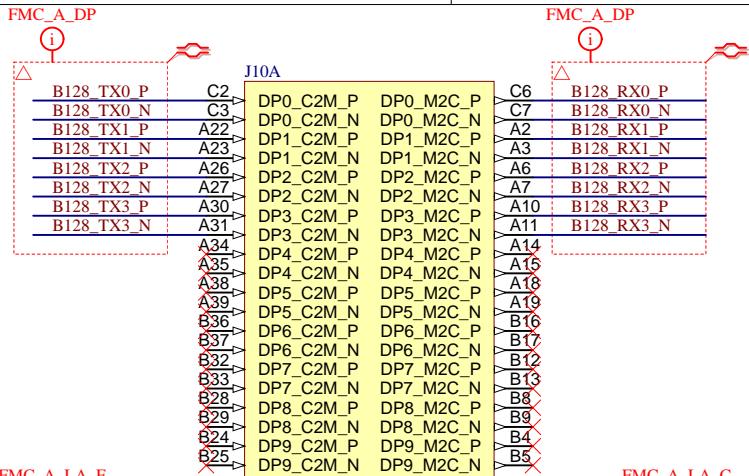
Title: TEB0911 - SFP		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 18 of 58
Filename: SFP_CTRL.SchDoc		



Title: TEB0911 - DDR POWER		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page19 of 58
Filename: DDR_PWR.SchDoc		

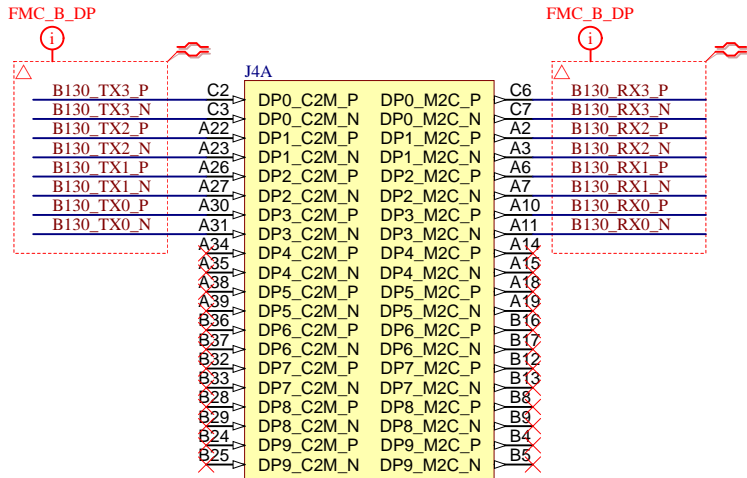


Title: TEB0911 - DDR4 SODIMM		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 20 of 58
Filename: DDR_SODIMM.SchDoc		

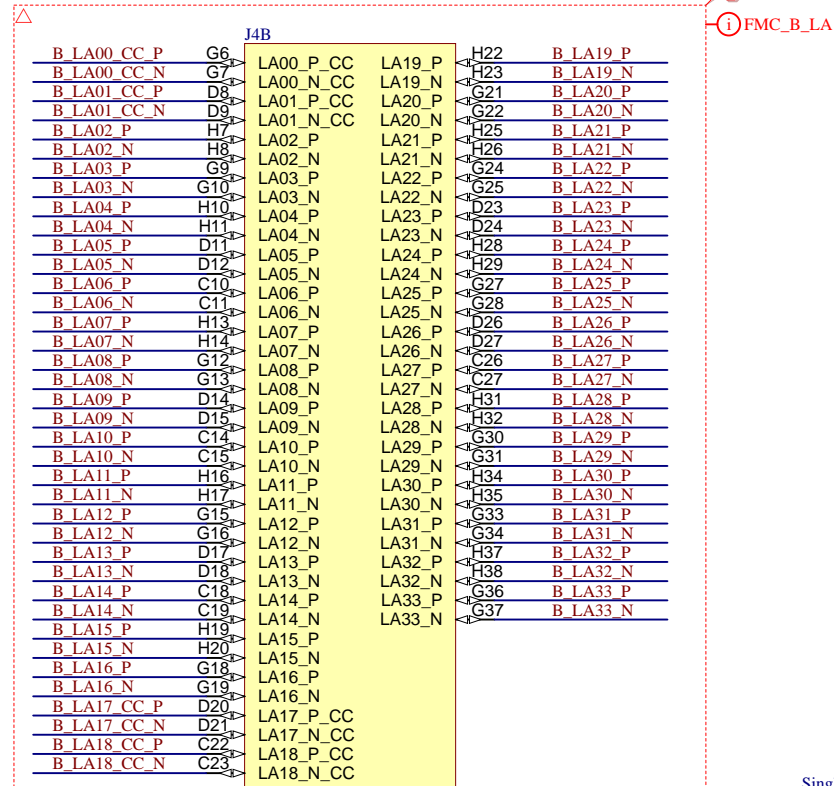


Title: TEB0911 - FMC A		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 21 of 58
Filename: FMC_A.SchDoc		

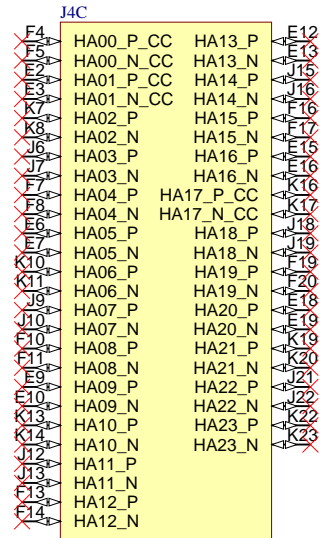




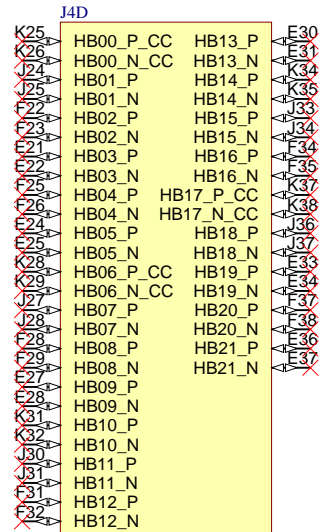
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



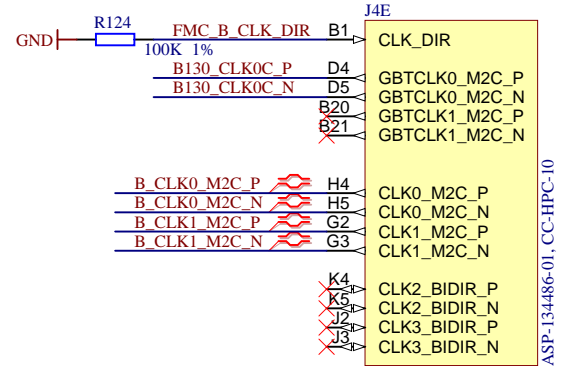
ASP-134486-01, CC-HPC-10



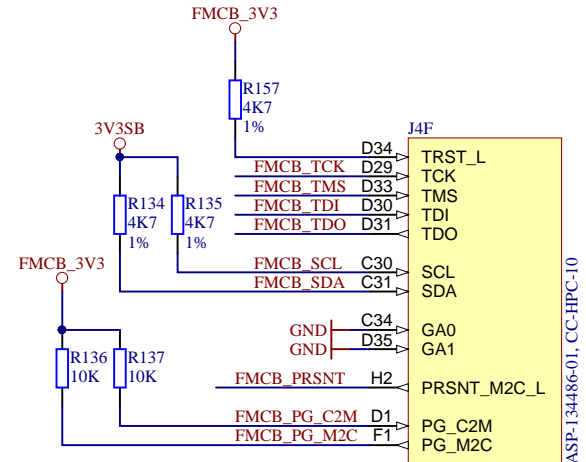
ASP-134486-01, CC-HPC-10



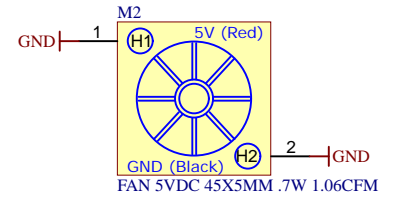
Single FMC Commercial Baseboard Snap



ASP-134486-01, CC-HPC-10



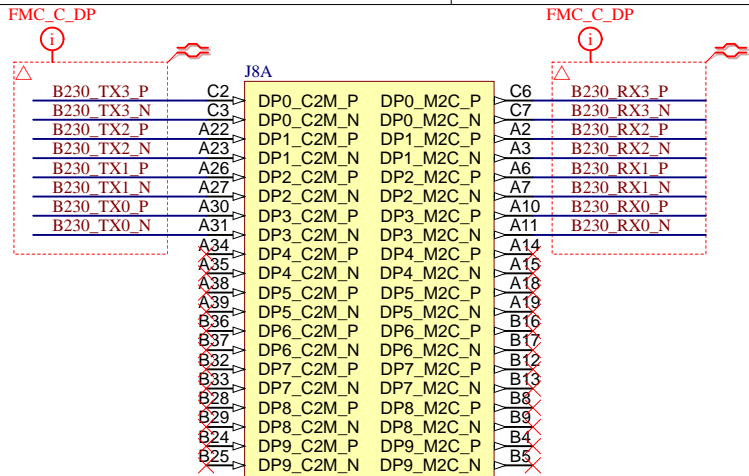
ASP-134486-01, CC-HPC-10



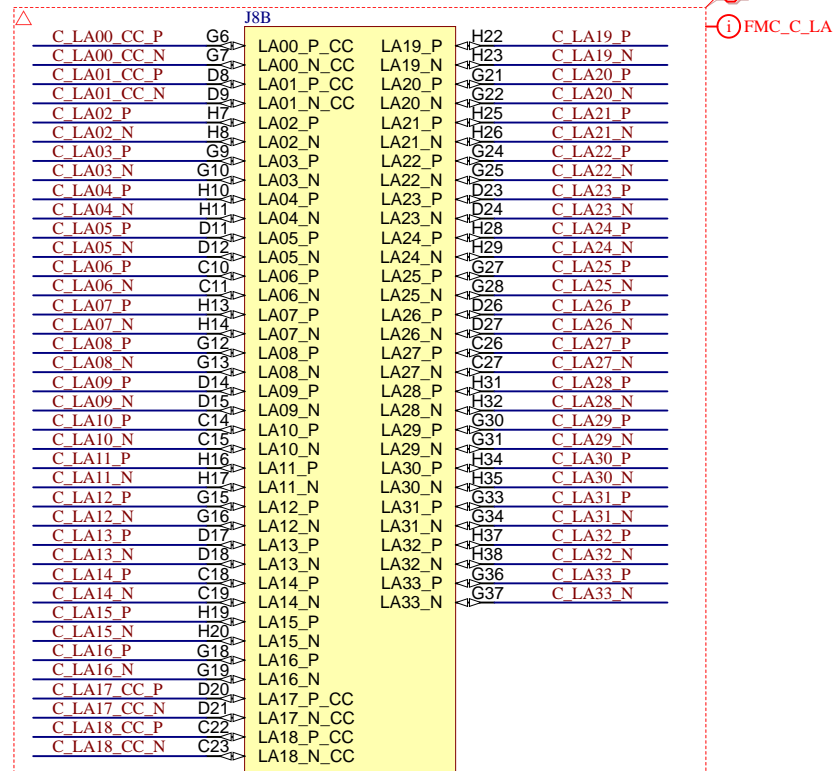
FAN 5VDC 45X5MM .7W 1.06CFM

Title: TEB0911 - FMC B		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 22 of 58
Filename: FMC_B.SchDoc		

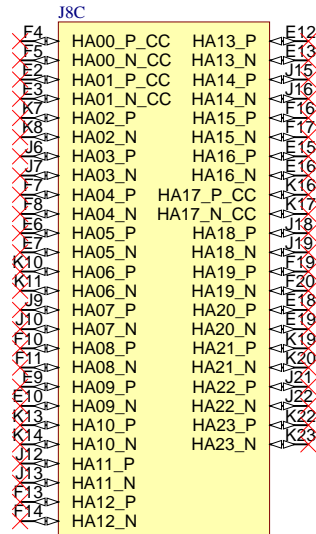




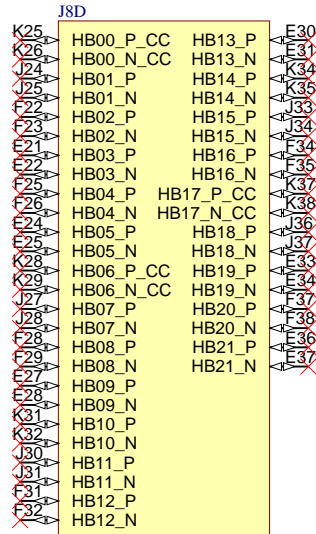
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



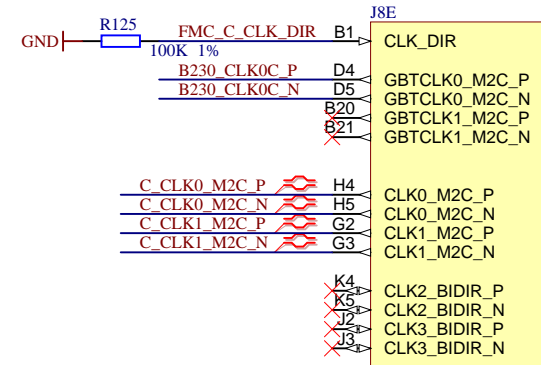
ASP-134486-01, CC-HPC-10



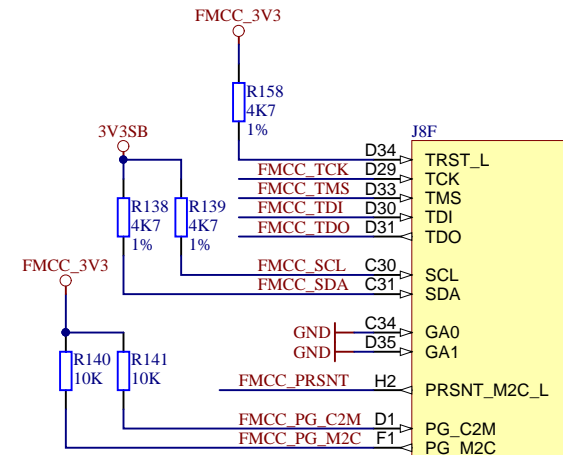
ASP-134486-01, CC-HPC-10



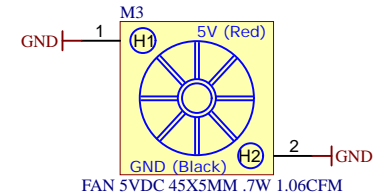
Single FMC Commercial Baseboard Snap



ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



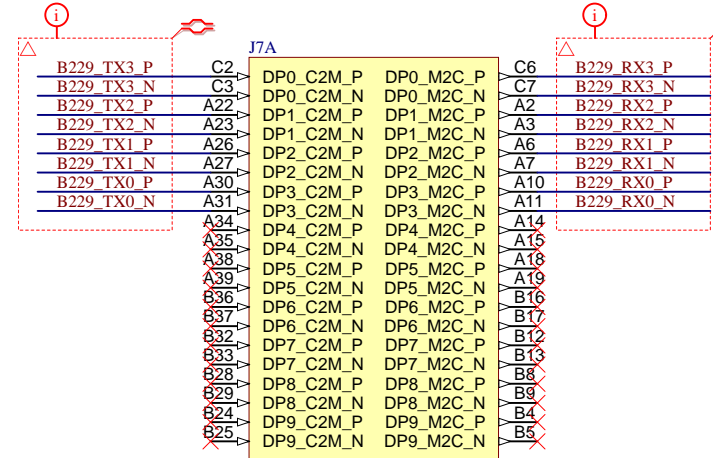
FAN 5VDC 45X5MM .7W 1.06CFM

Title: TEB0911 - FMC C		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 23 of 58
Filename: FMC_C.SchDoc		

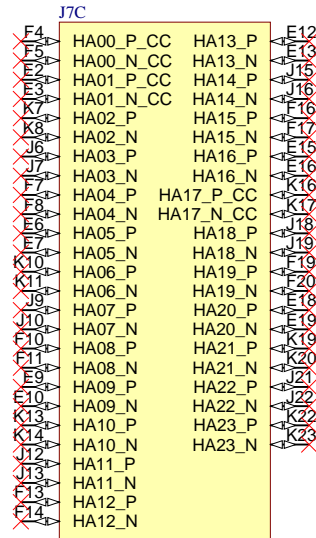


FMC_D_DP

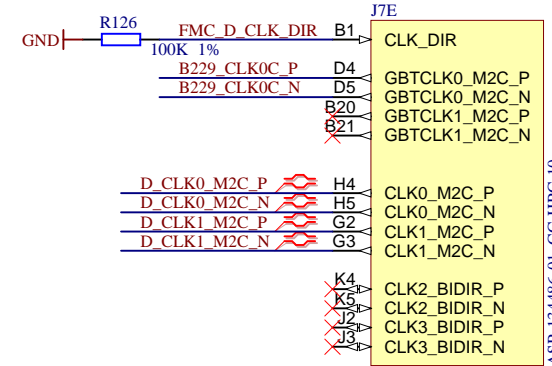
FMC_D_DP



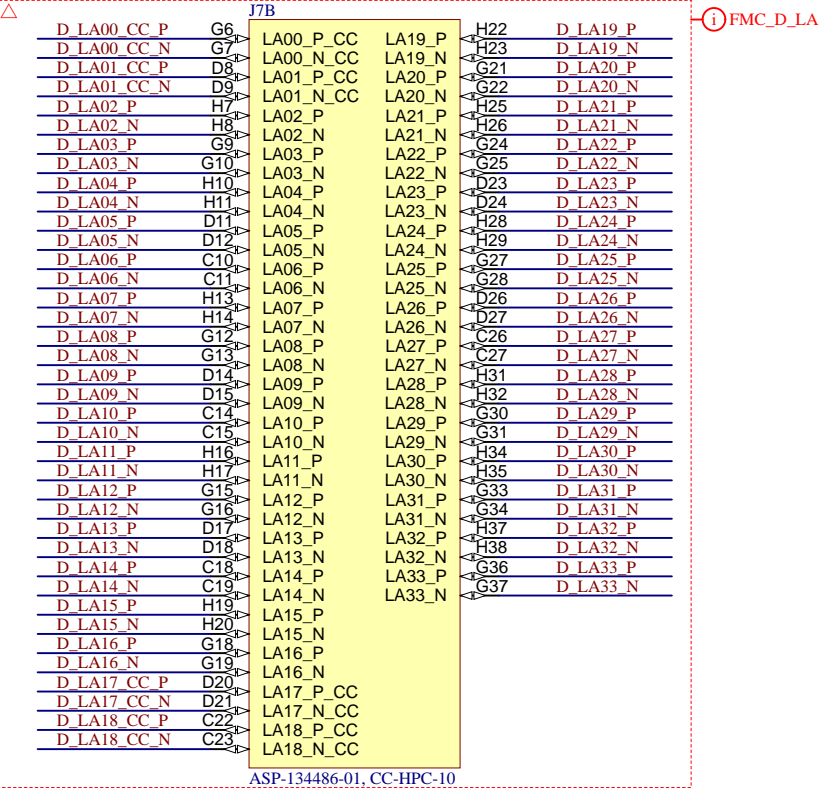
ASP-134486-01, CC-HPC-10



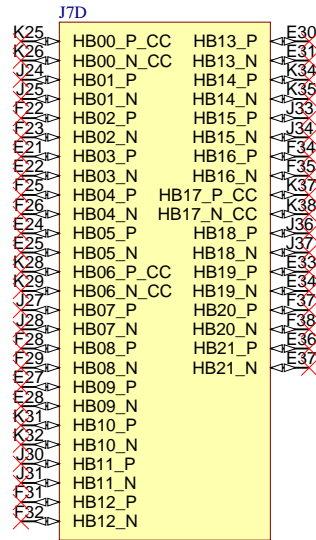
ASP-134486-01, CC-HPC-10



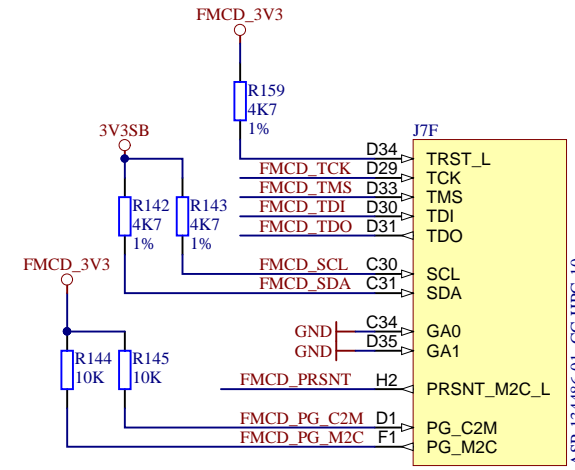
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



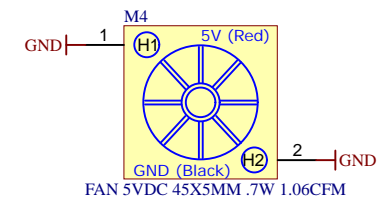
ASP-134486-01, CC-HPC-10



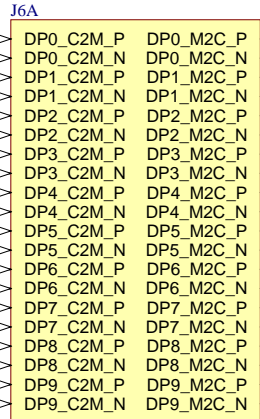
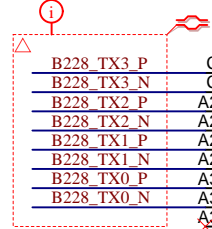
Single FMC Commercial Baseboard Snap



Title: TEB0911 - FMC D		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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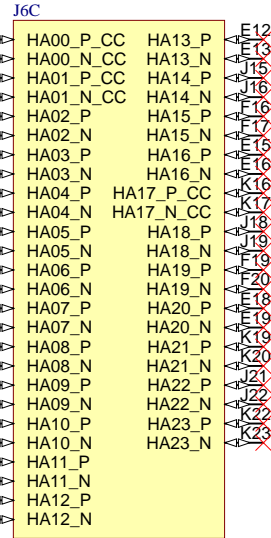
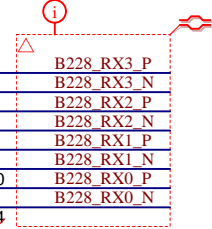


FMC_E_DP

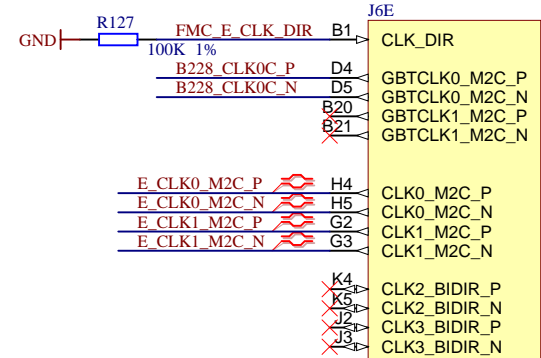


ASP-134486-01, CC-HPC-10

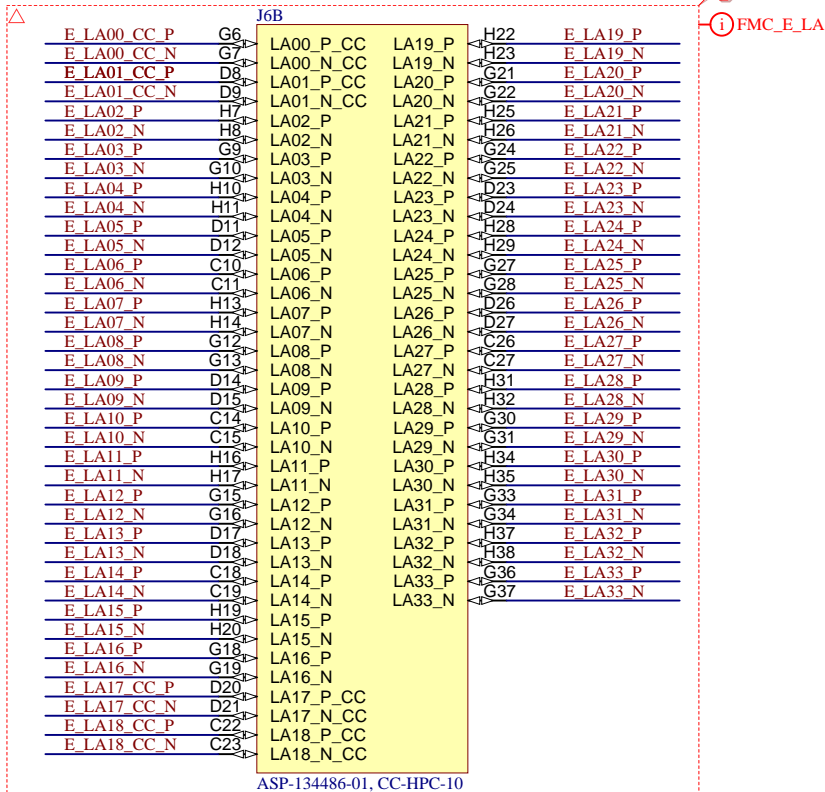
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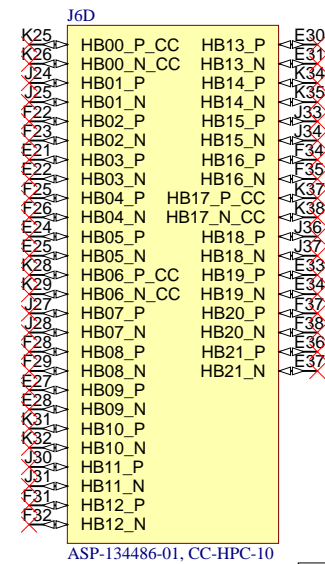
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



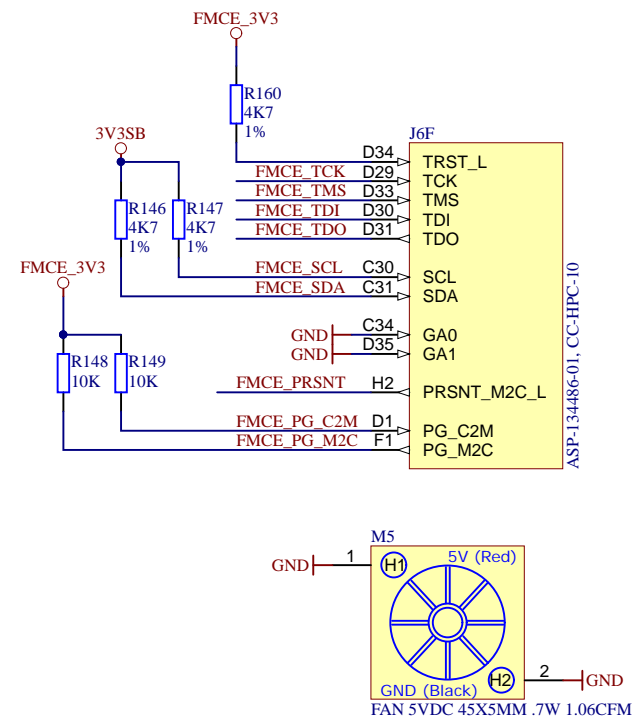
ASP-134486-01, CC-HPC-10



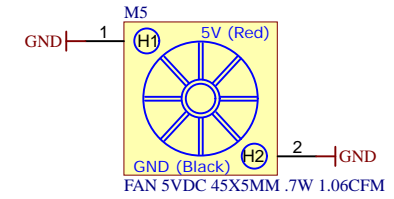
ASP-134486-01, CC-HPC-10



Single FMC Commercial Baseboard Snap



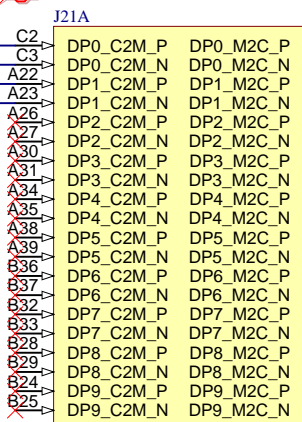
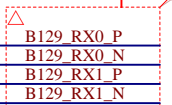
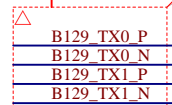
ASP-134486-01, CC-HPC-10



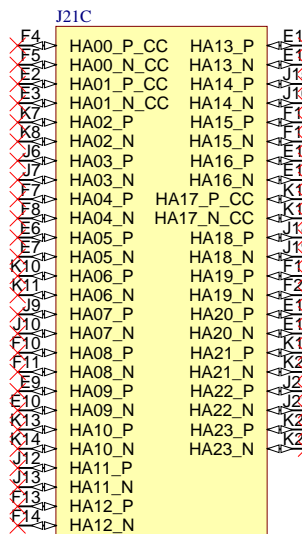
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A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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FMC_F_DP

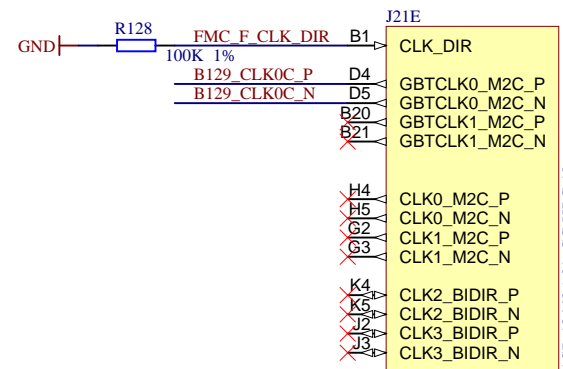
FMC_F_DP



ASP-134486-01, CC-HPC-10



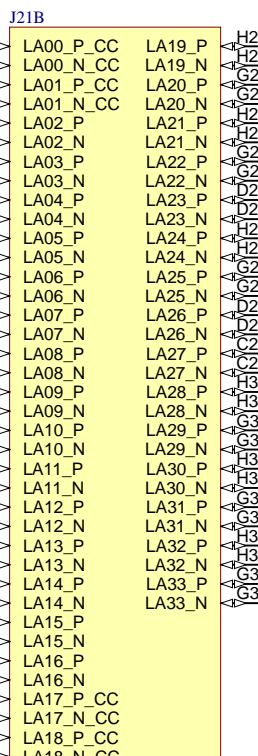
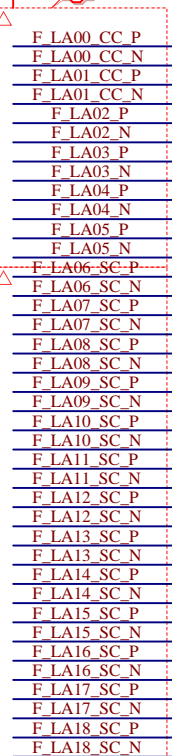
ASP-134486-01, CC-HPC-10



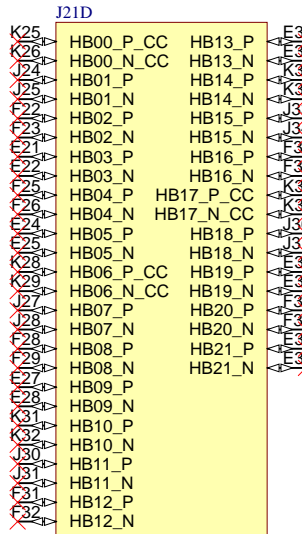
ASP-134486-01, CC-HPC-10

FMC_F_LA_F

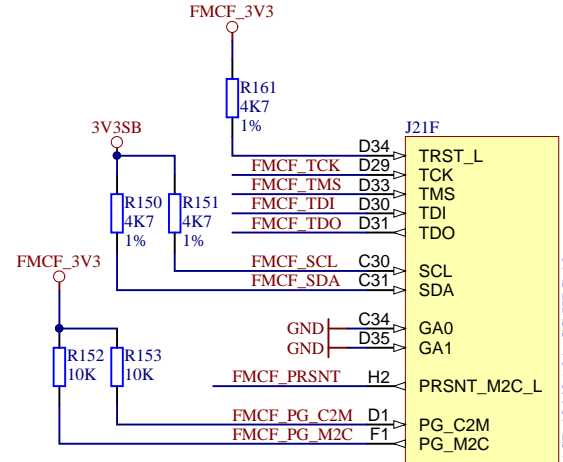
FMC_F_LA_C



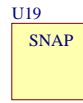
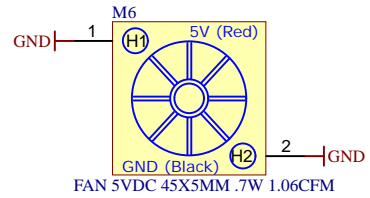
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



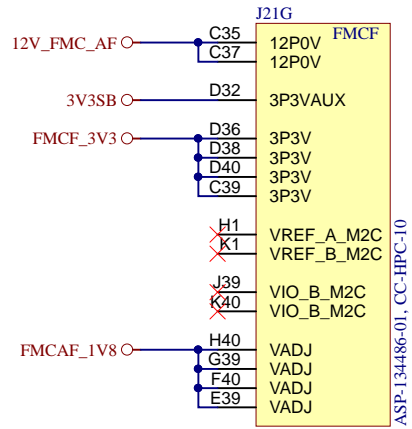
ASP-134486-01, CC-HPC-10



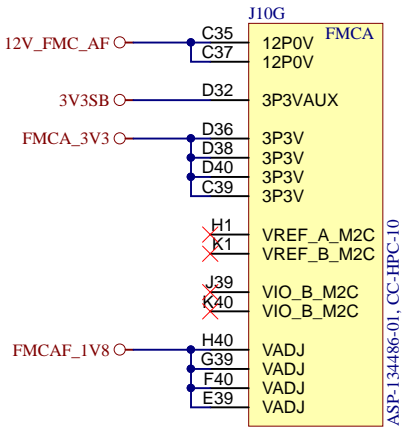
Single FMC Commercial Baseboard Snap



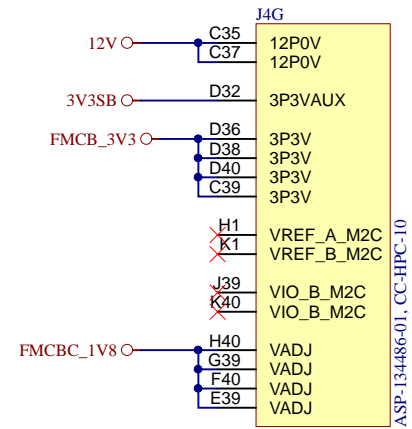
Title: TEB0911 - FMC F		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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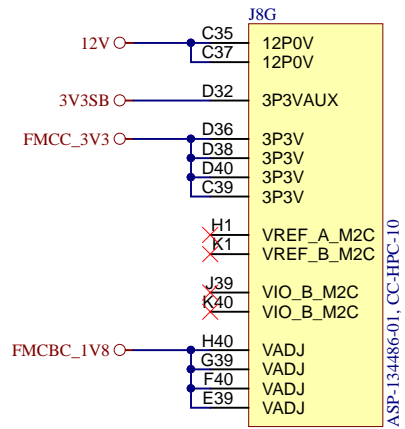
ASP-134486-01, CC-HPC-10



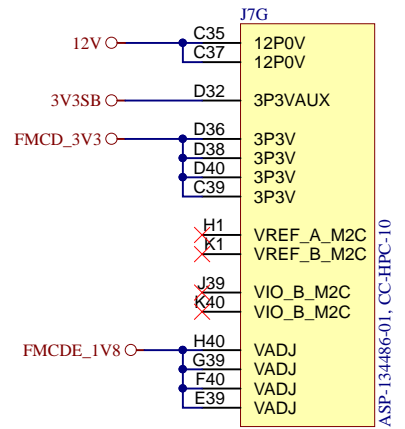
ASP-134486-01, CC-HPC-10



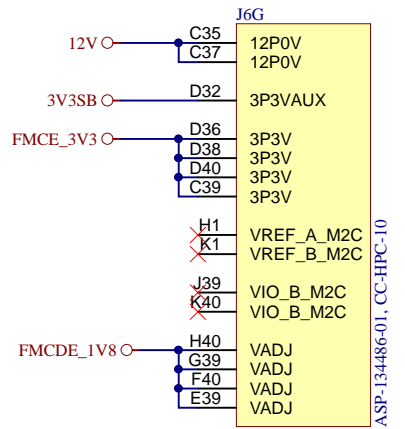
ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10



ASP-134486-01, CC-HPC-10

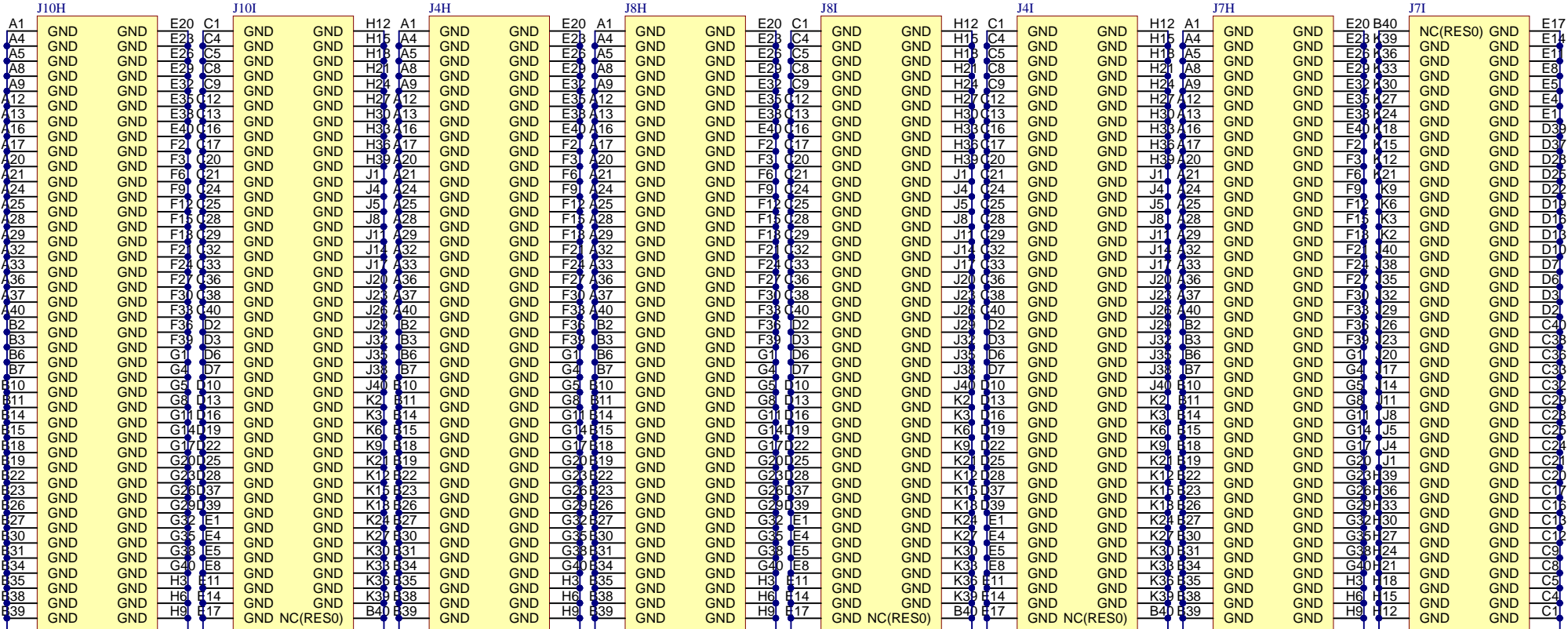


ASP-134486-01, CC-HPC-10

- FMC_A
- FMC_A.SchDoc
- FMC_B
- FMC_B.SchDoc
- FMC_C
- FMC_C.SchDoc
- FMC_D
- FMC_D.SchDoc
- FMC_E
- FMC_E.SchDoc
- FMC_F
- FMC_F.SchDoc
- FMC_GND
- FMC_GND.SchDoc
- FMC_GND2
- FMC_GND2.SchDoc
- FMC_MECH
- FMC_MECH.SchDoc



Title: TEB0911 - FMC POWER		
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GND



Title: TEB0911 - FMC GND		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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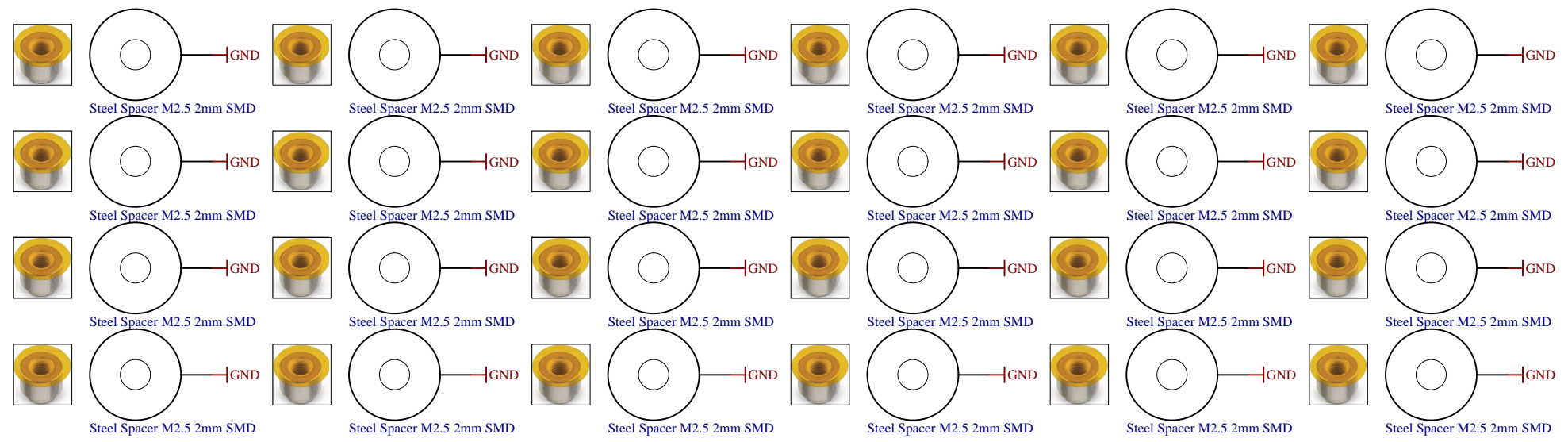
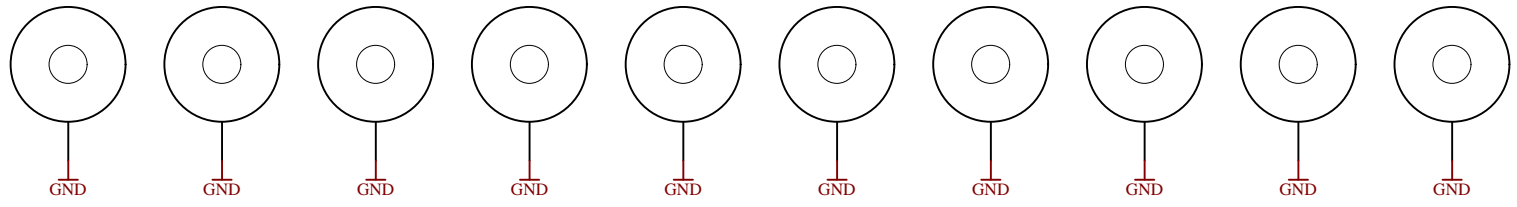
1


2

3

4

Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm Mount.Hole 3.2mm



			Title: TEB0911 - FMC MECH	
			A4	Number: TEB0911 TEB0911-ZU9ES
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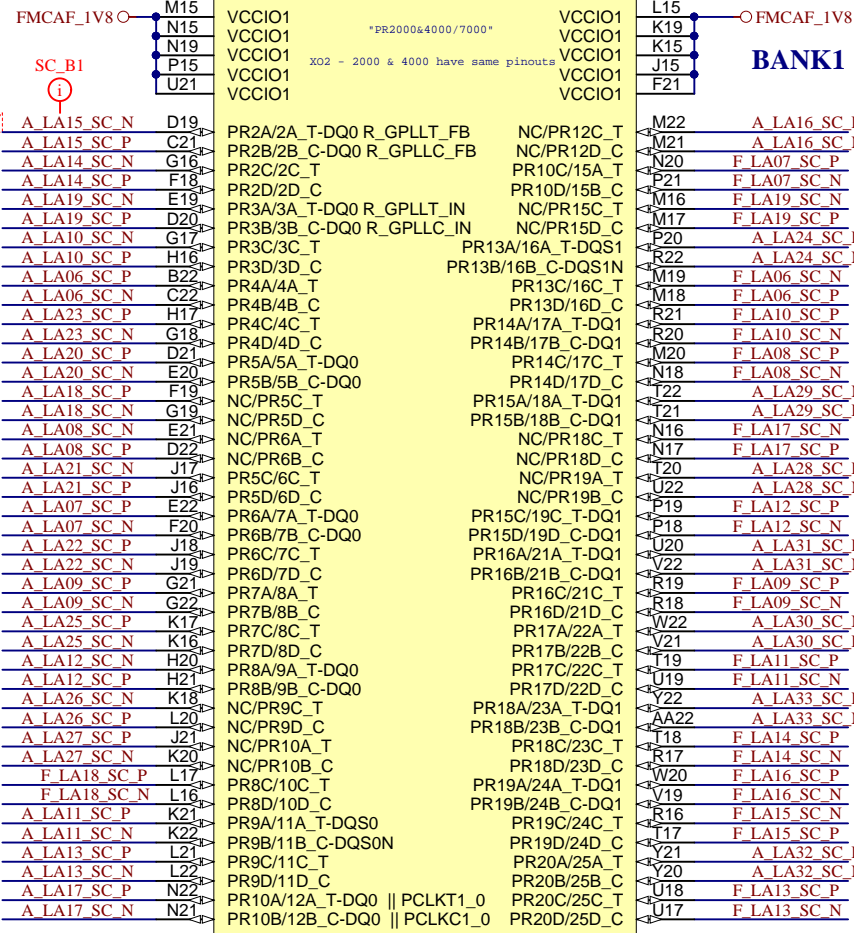
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2

3

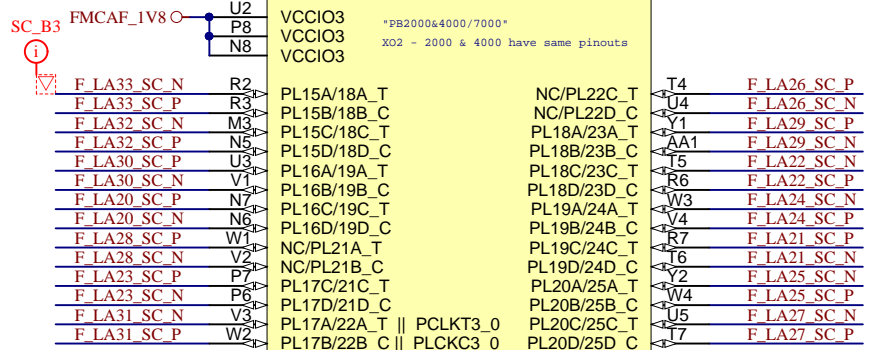
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U27B



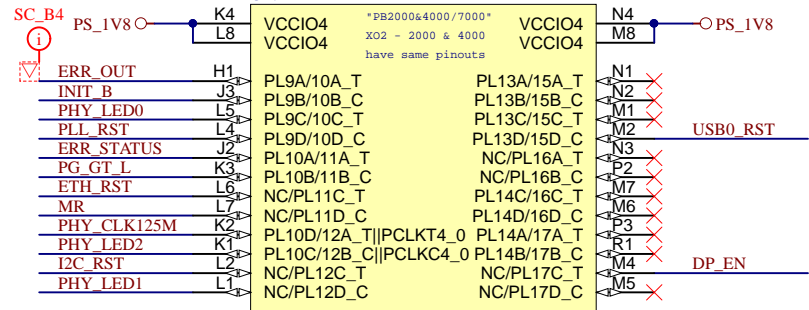
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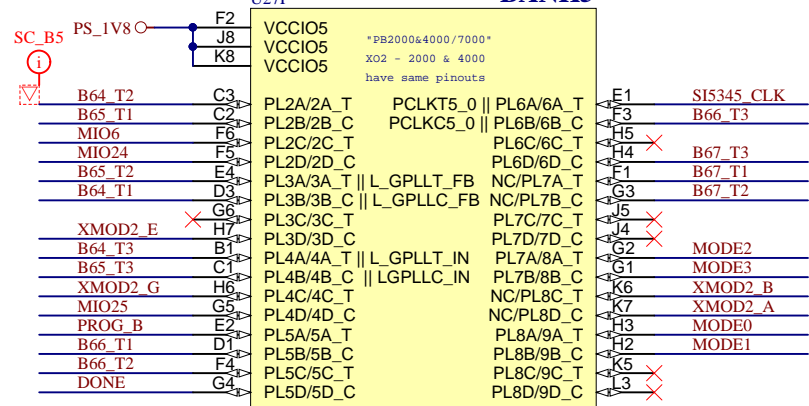
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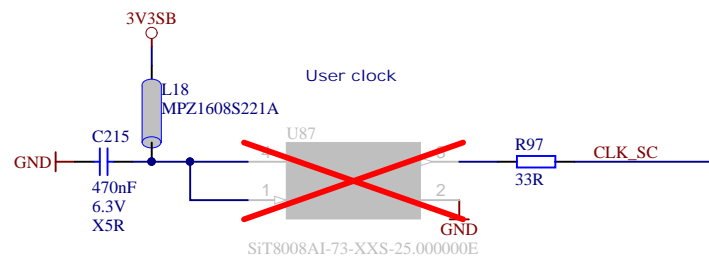


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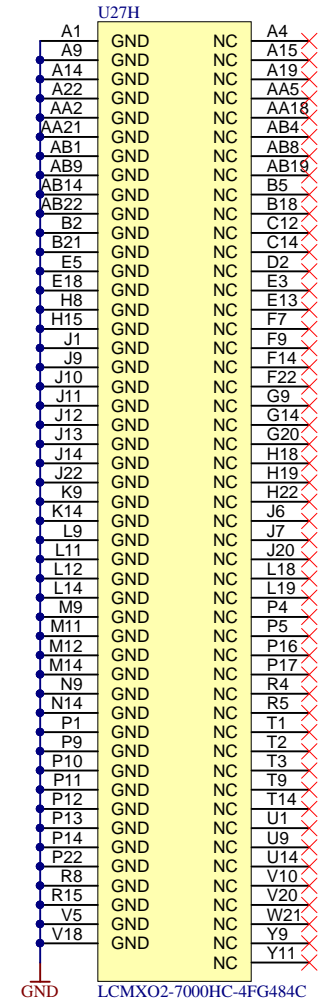
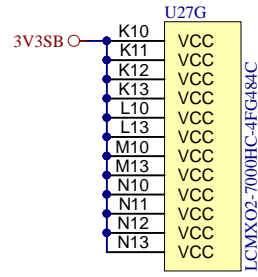
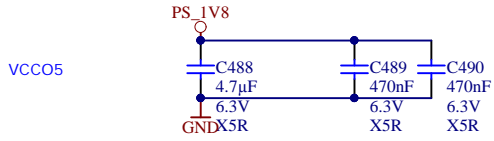
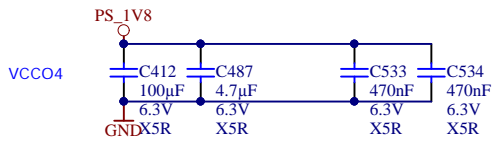
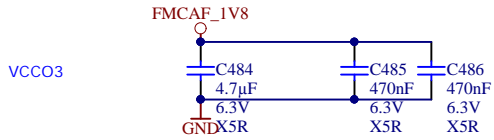
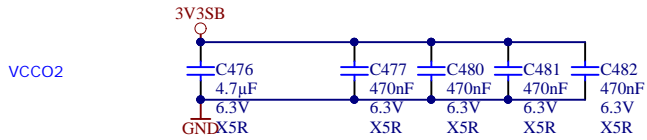
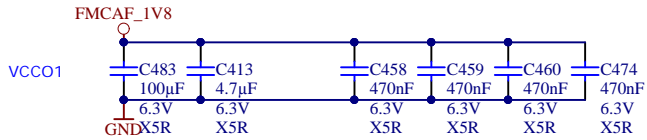
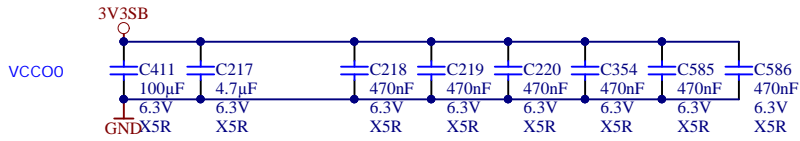
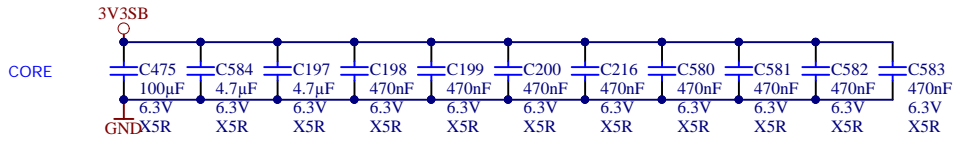
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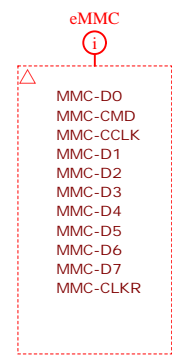
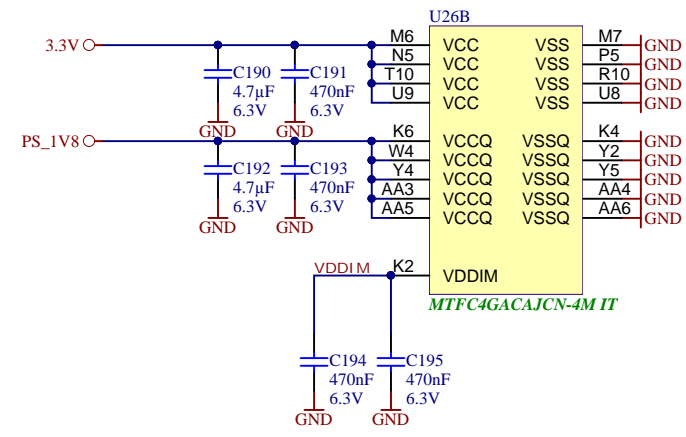
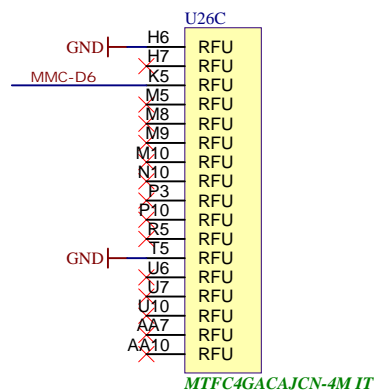
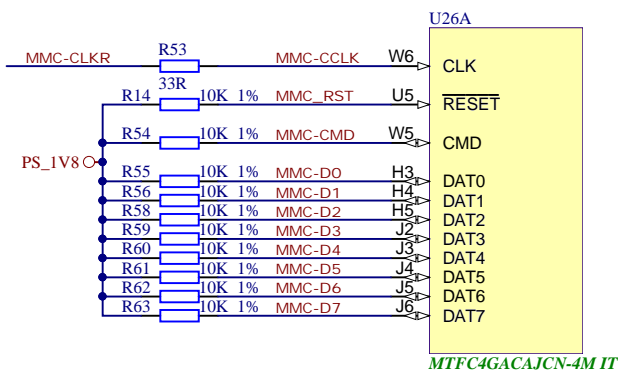
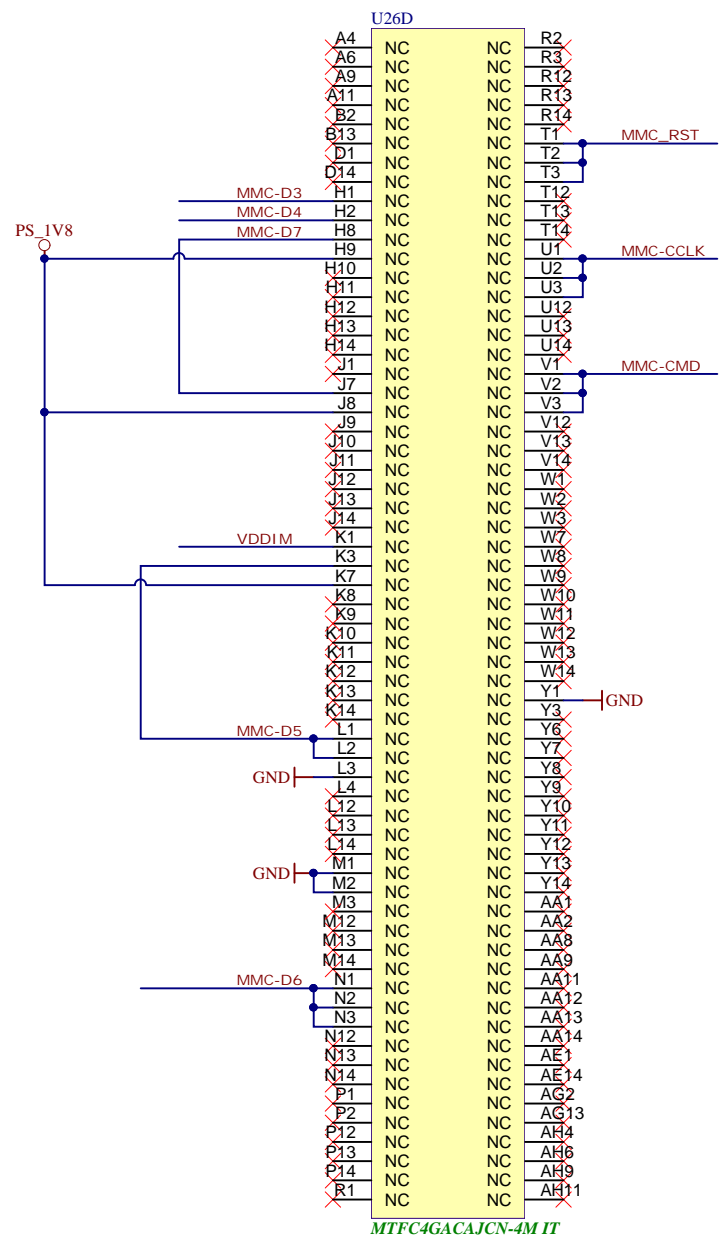
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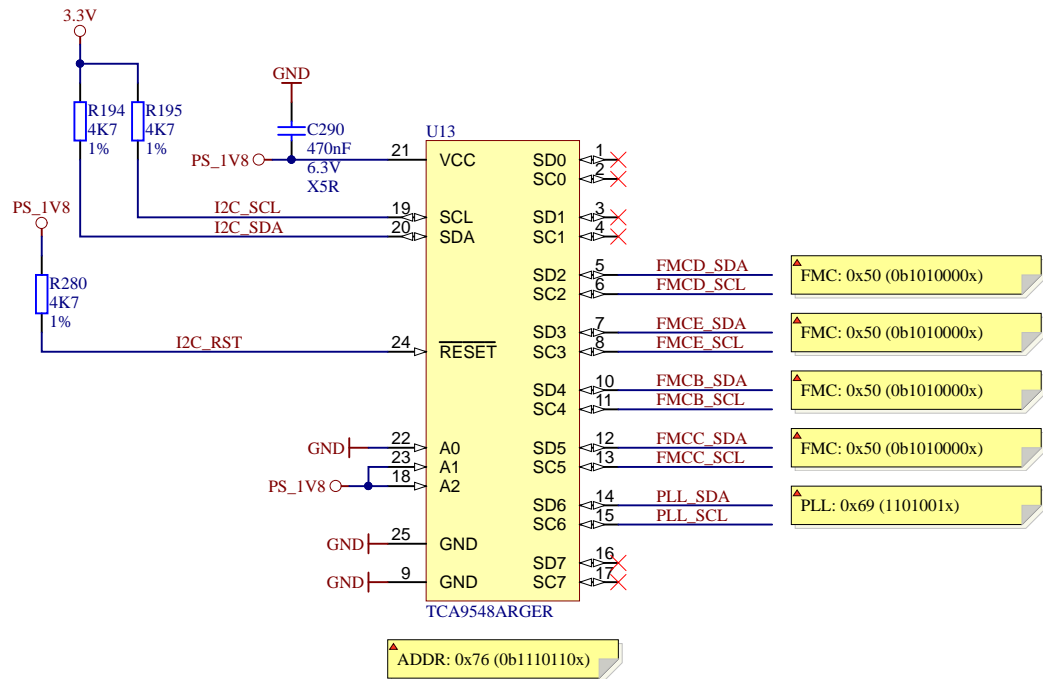
Title: TEB0911 - CPLD			
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02	
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A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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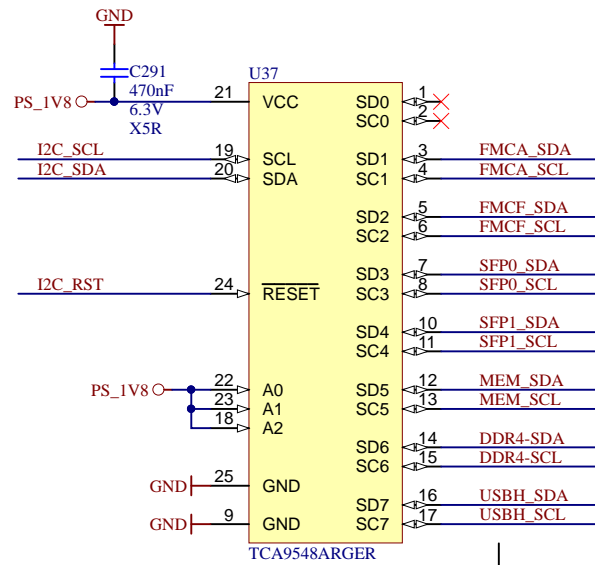


Title: TEB0911 - eMMC		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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▲ ADDR: 0x76 (0b1110110x)

- ▲ FMC: 0x50 (0b1010000x)
- ▲ FMC: 0x50 (0b1010000x)
- ▲ FMC: 0x50 (0b1010000x)
- ▲ FMC: 0x50 (0b1010000x)
- ▲ FMC: 0x50 (0b1010000x)



▲ ADDR: 0x77 (0b1110111x)

- ▲ FMC: 0x50 (0b1010000x)
- ▲ FMC: 0x50 (0b1010000x)
- ▲ SFP0: 0x50 (0b1010000x) 0x51 (0b1010001x)
- ▲ SFP1: 0x50 (0b1010000x) 0x51 (0b1010001x)
- ▲ DDR: 0x52 (0b1010010x) ?
- ▲ SMB ADDR: 0x58

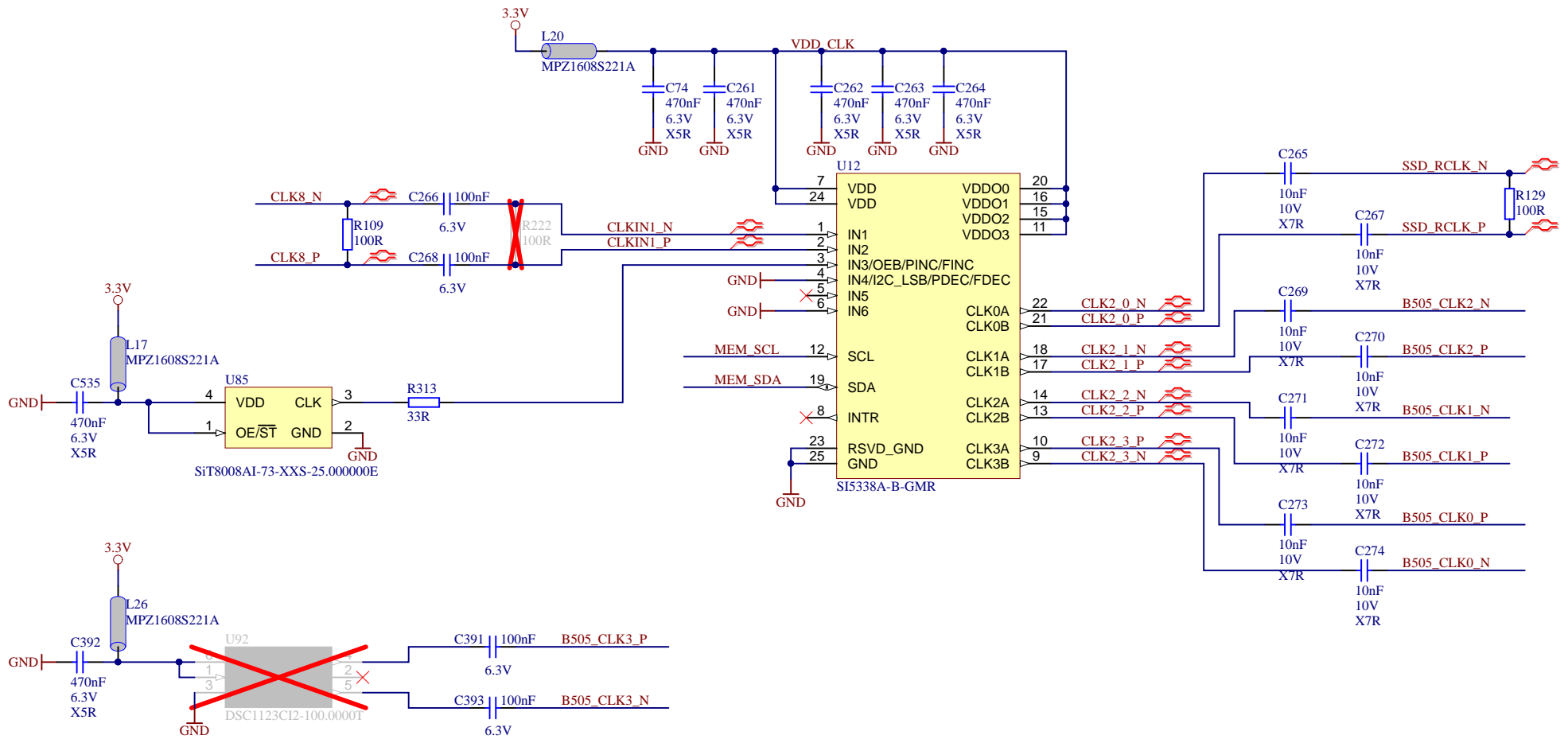
▲ SFP0: 0x50 (0b1010000x) 0x51 (0b1010001x)


▲ SFP2_CTRL: 0x27 (0b0100111x)

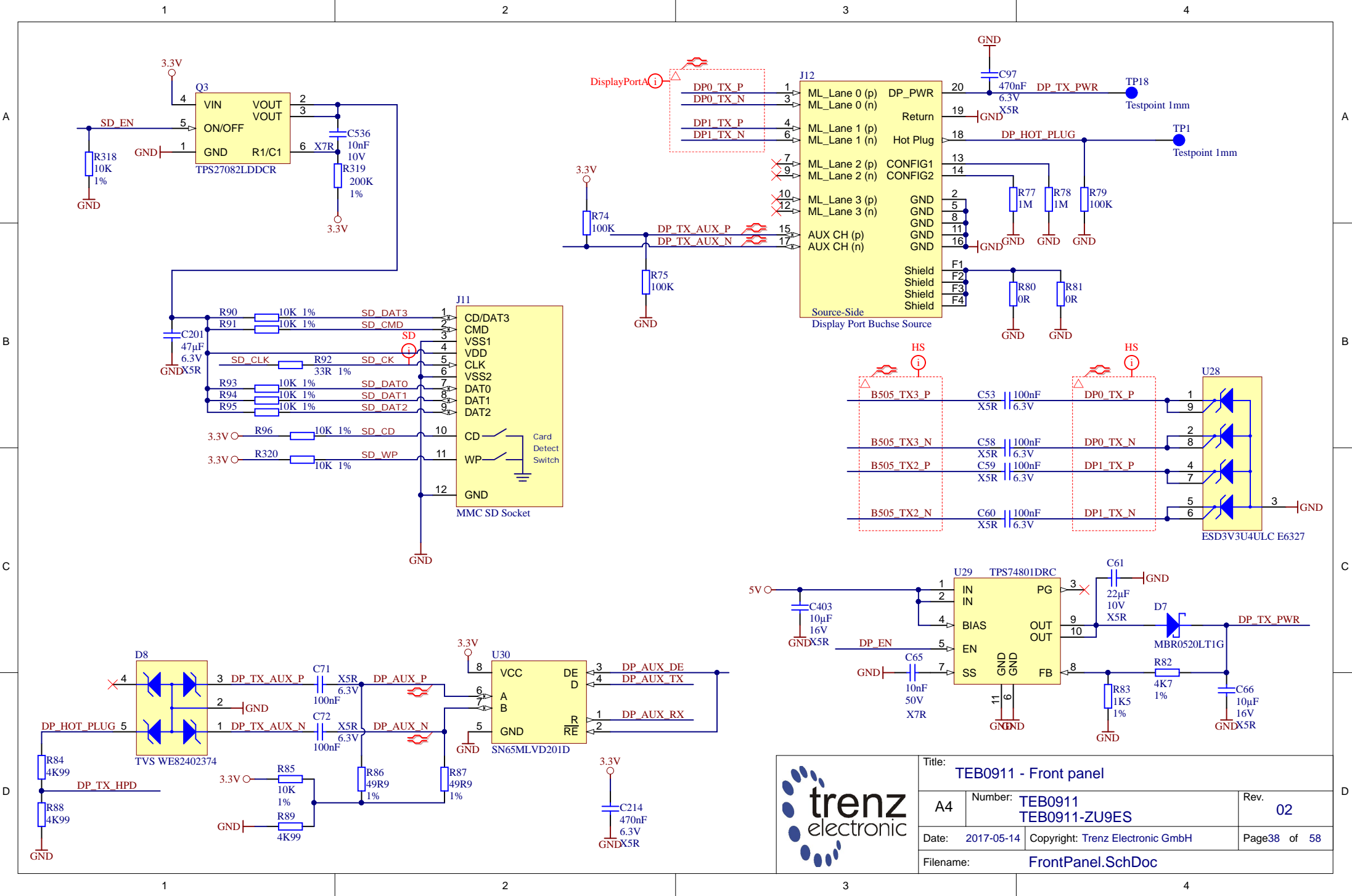
- ▲ CLK: 0x70 (0b1110000x)
- ▲ EEPROM: 0x51 (0b1010001x)
- ▲ EEPROM: 0x52 (0b1010010x)
- ▲ EEPROM: 0x53 (0b1010011x)
- ▲ EEPROM: 0x57 (0b1010111x)
- ▲ CPLD:



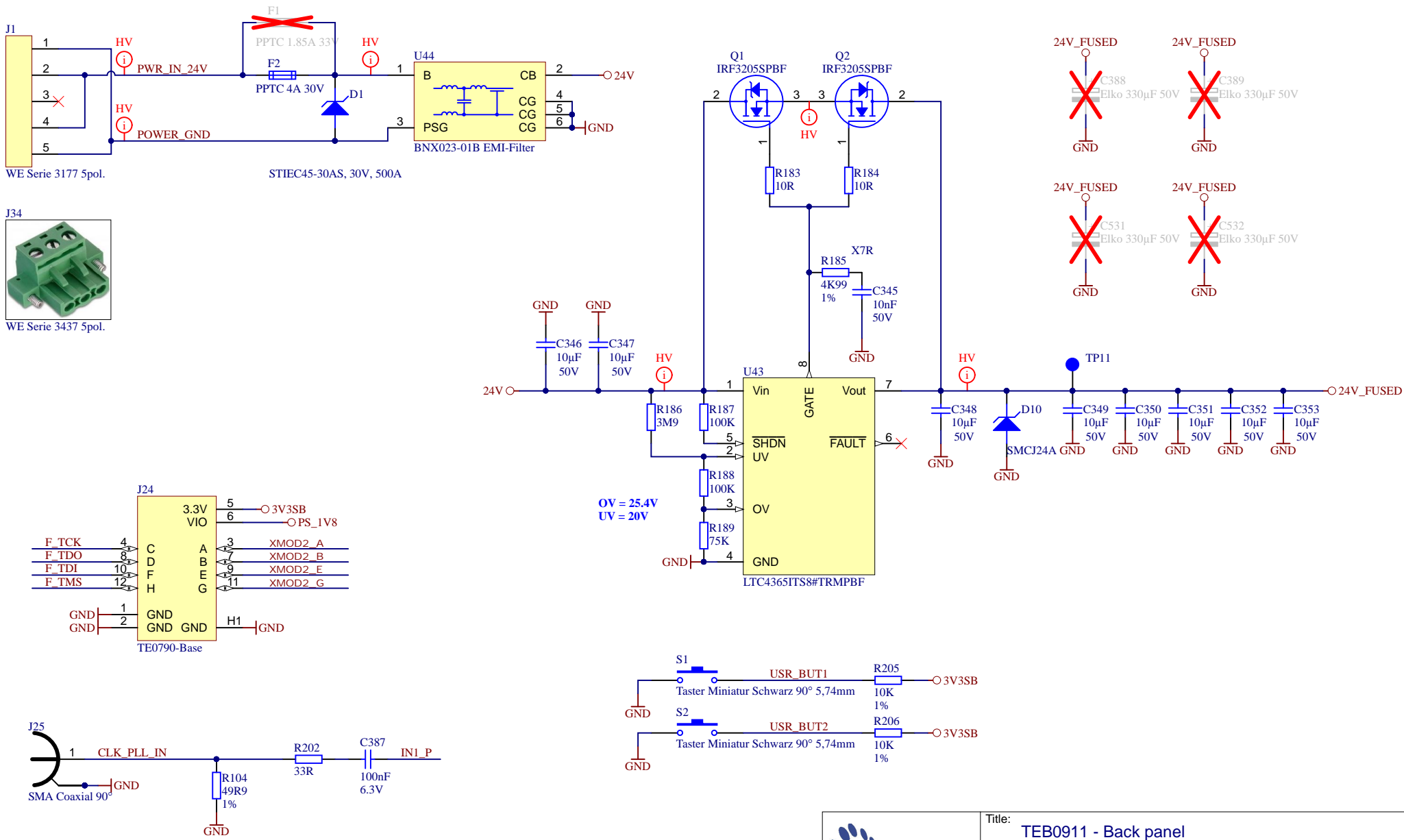
Title: TEB0911 - I2C System		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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Filename: I2C_system.schdoc		



		Title: TEB0911 - CLK SI5338	
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Filename: Clock2.SchDoc		Page 37 of 58	



Title: TEB0911 - Front panel		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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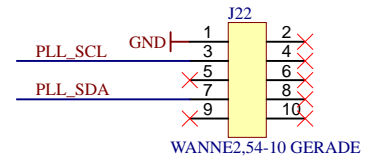
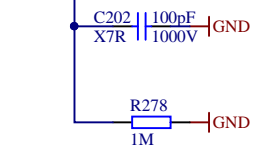
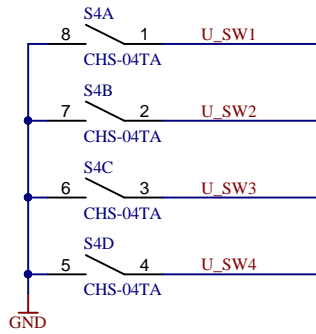
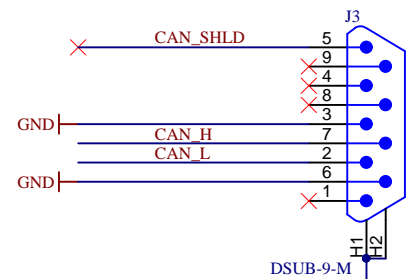
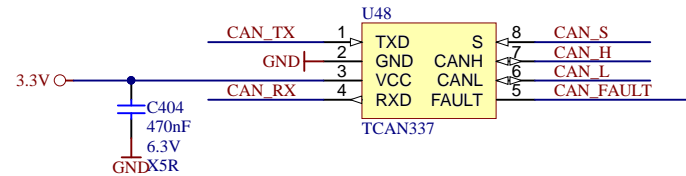
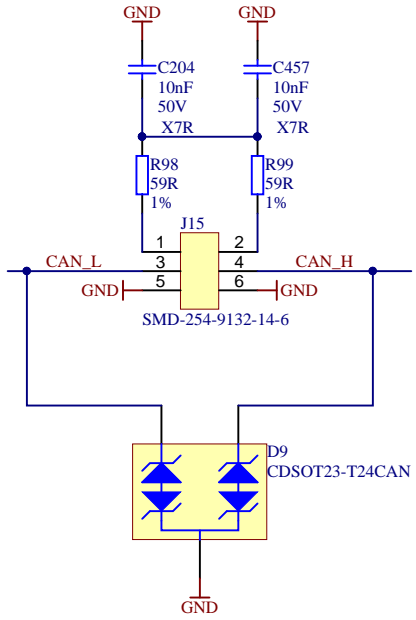
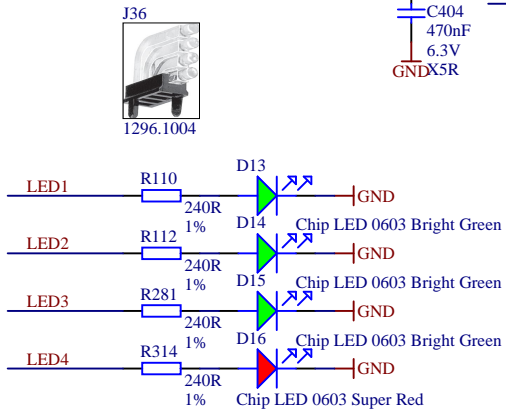
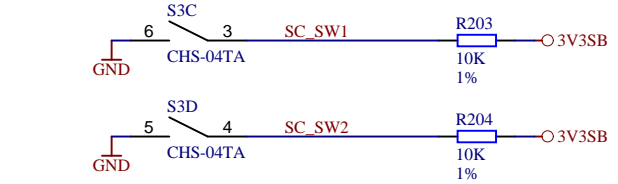
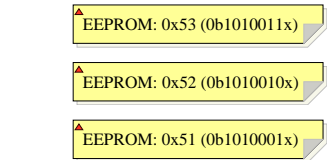
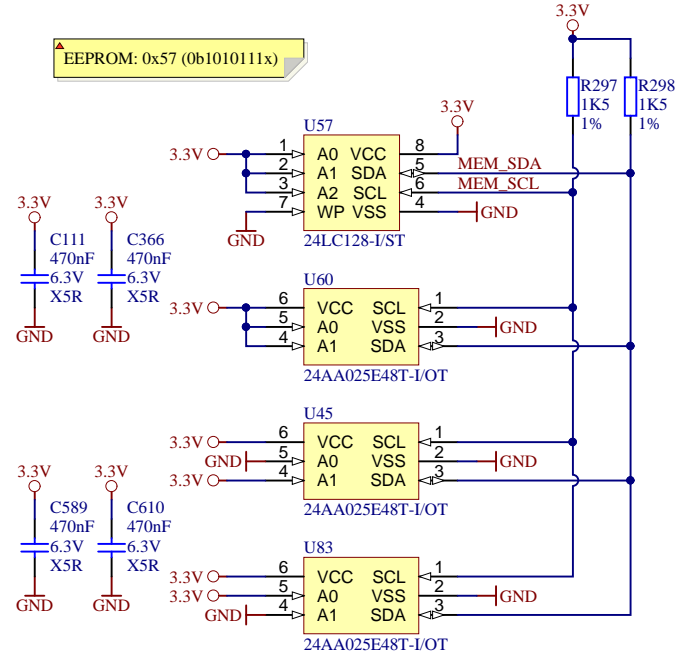
Title: TEB0911 - Back panel		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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A

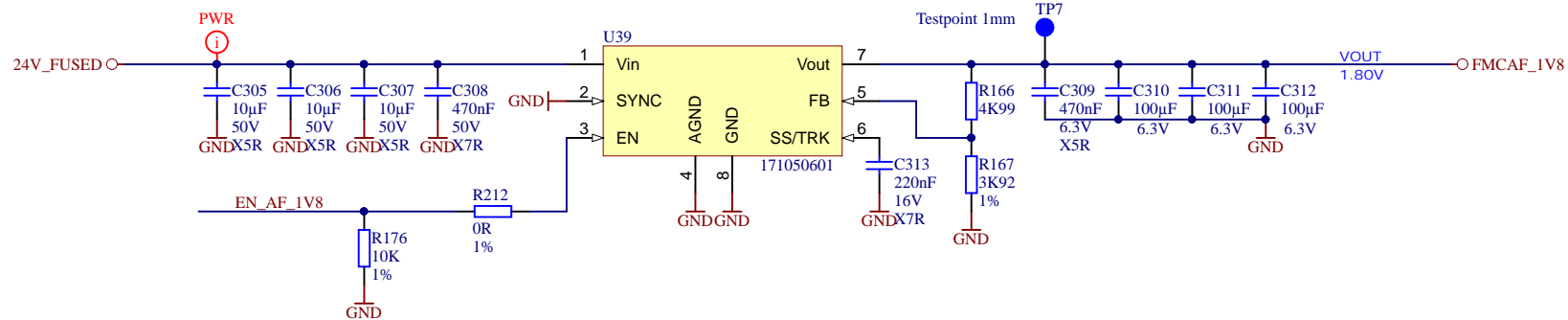
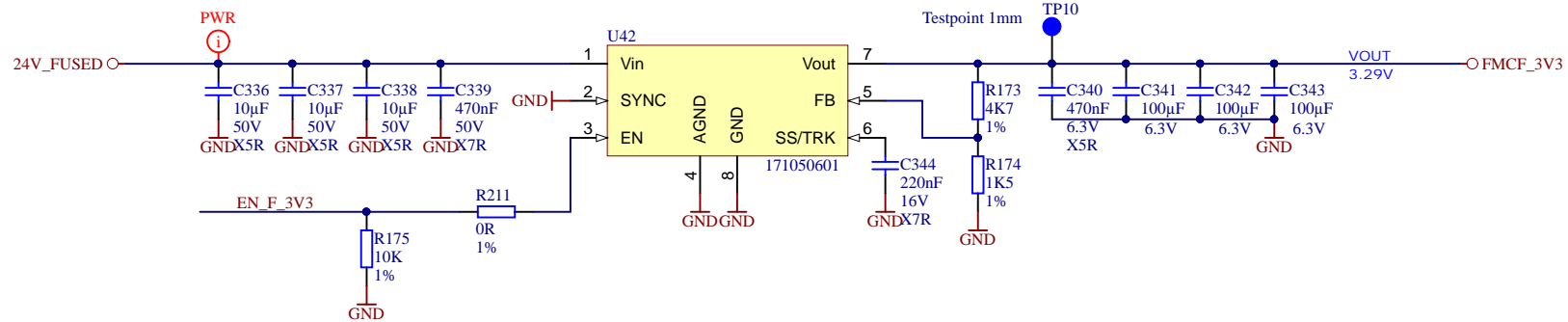
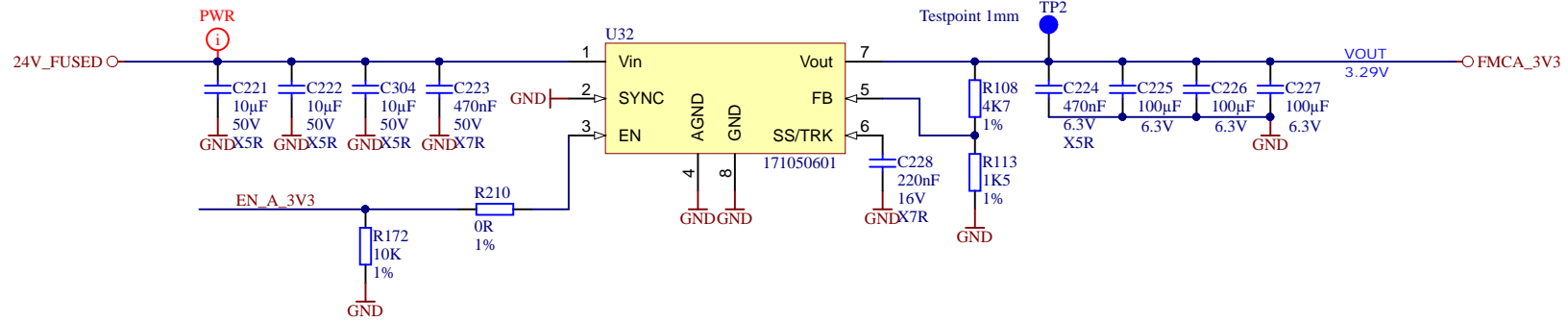
B


C

D



Title: TEB0911 - MISC		
A4	Number: TEB0911 TEB0911-ZU9ES	Rev. 02
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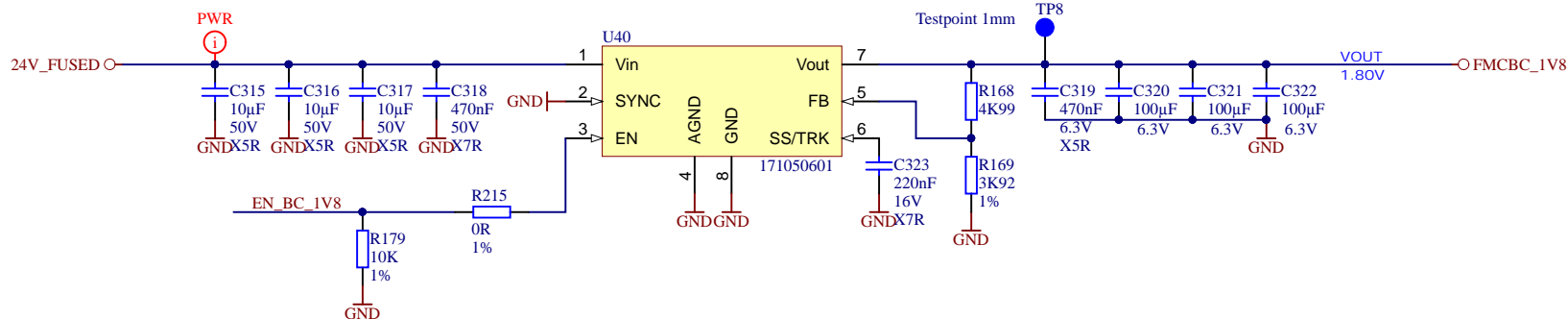
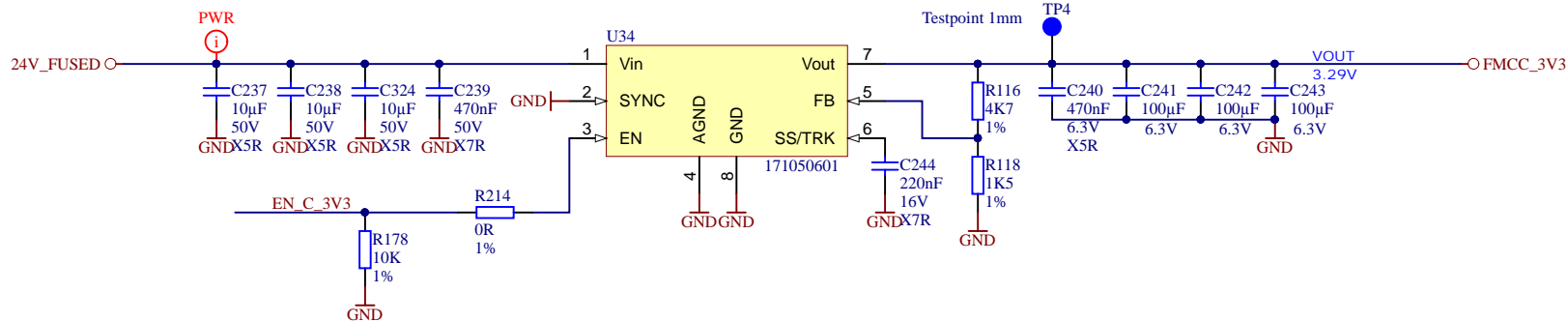
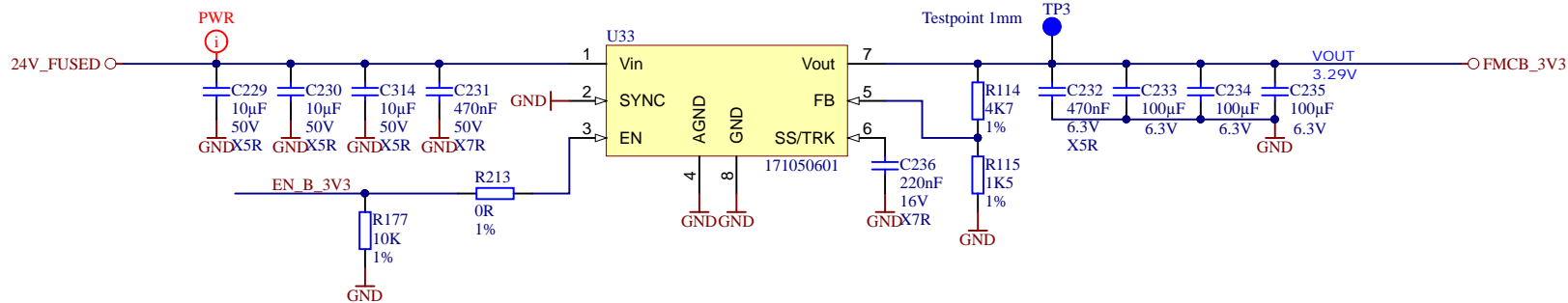
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Filename: POWER_1.schdoc				


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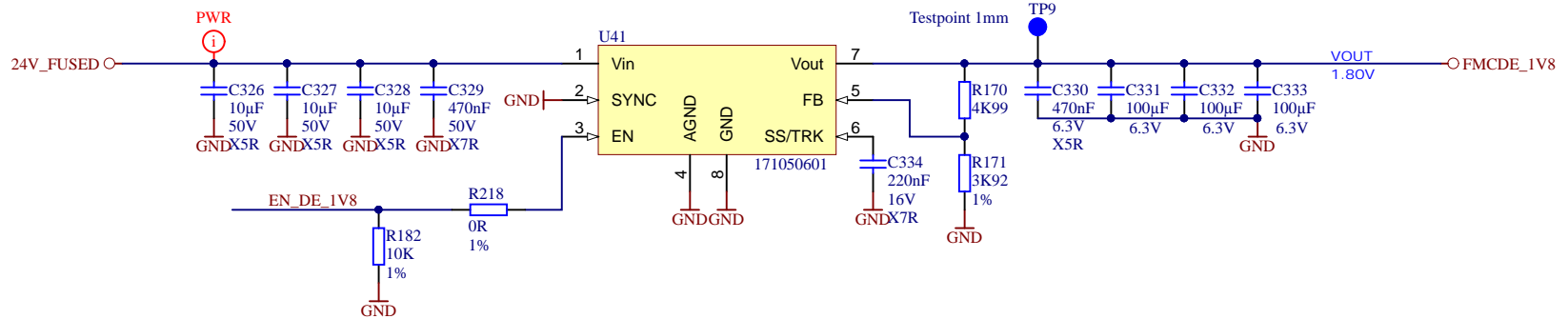
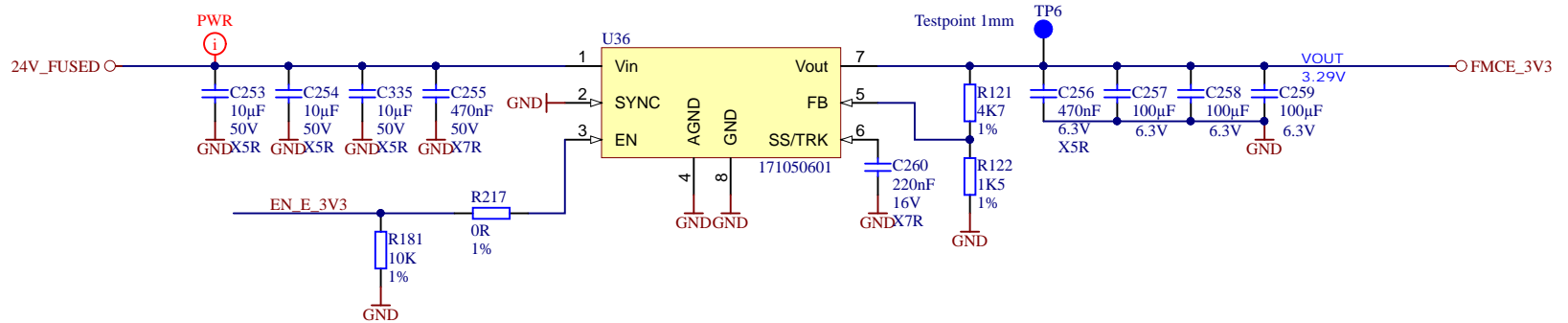
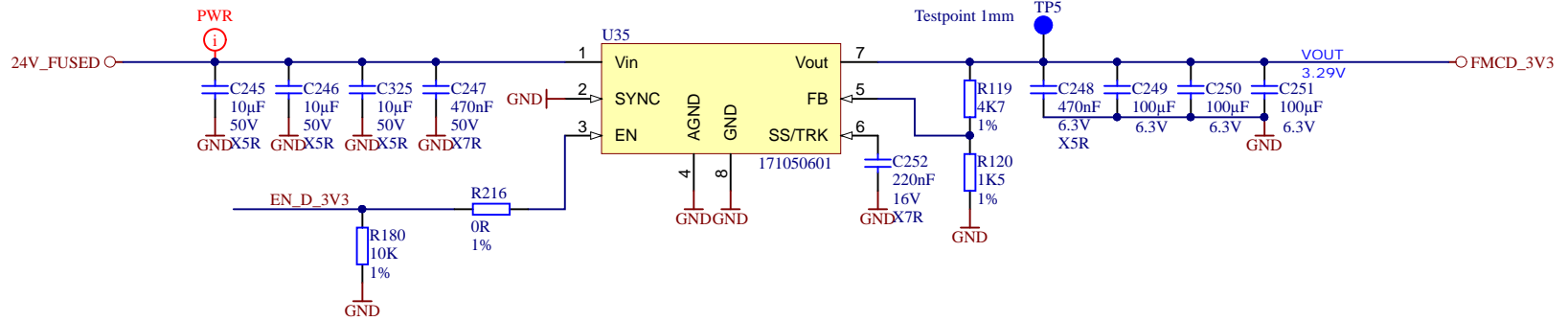
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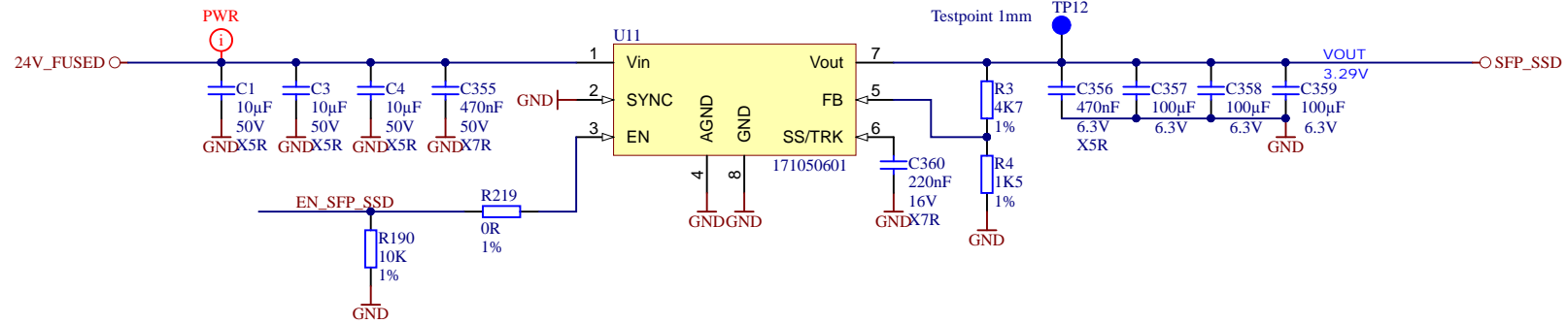
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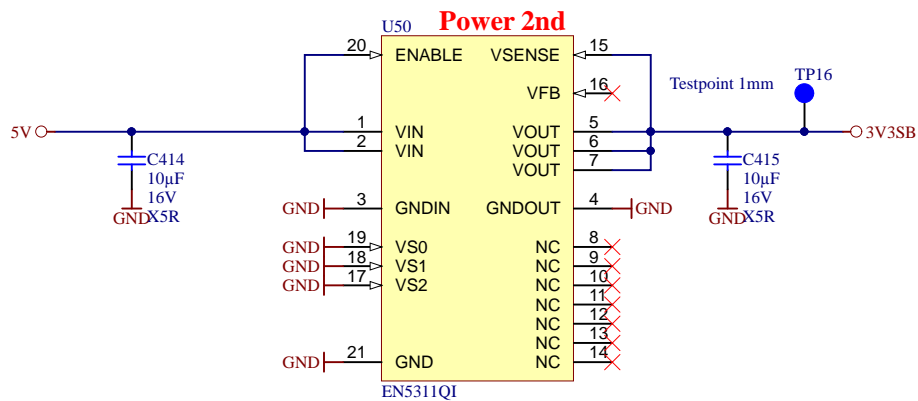
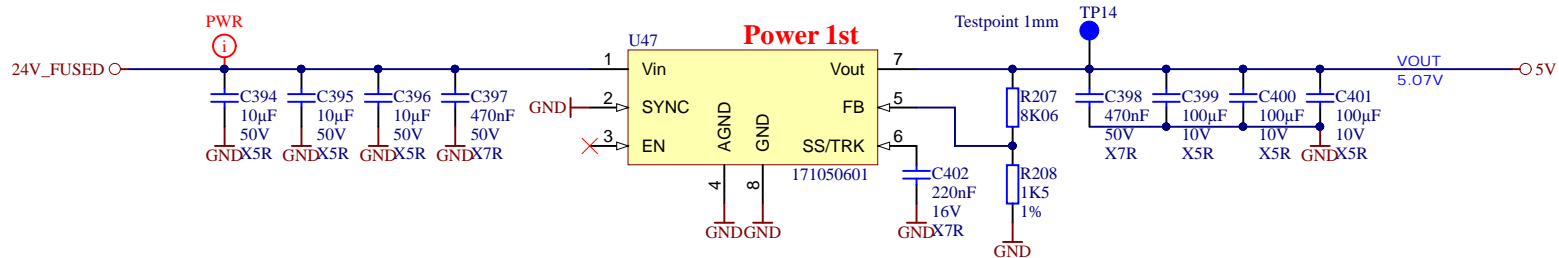
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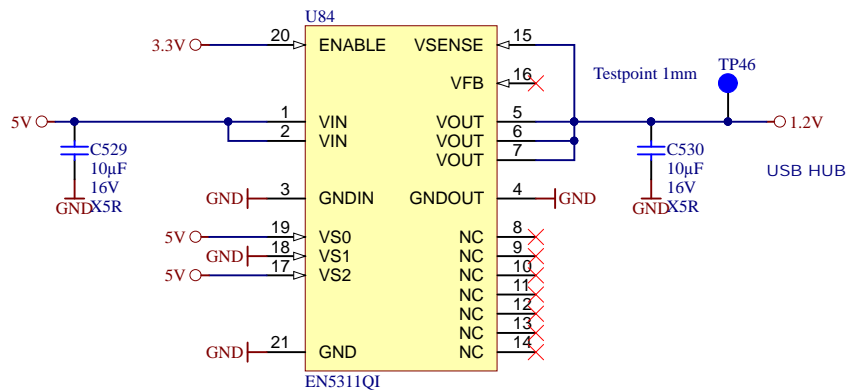
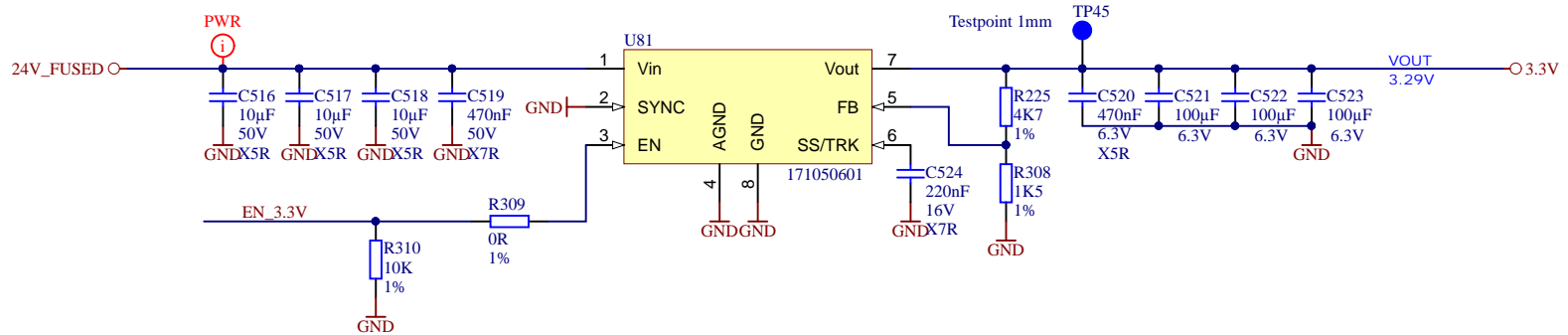
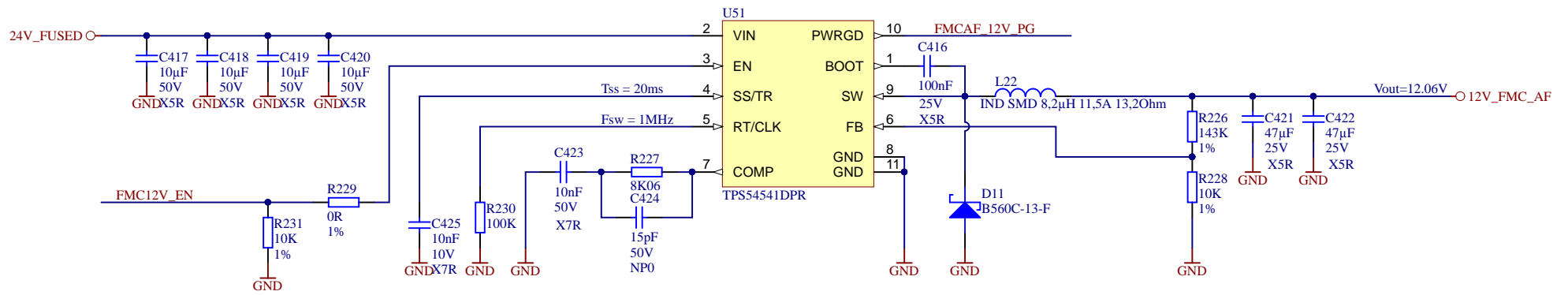
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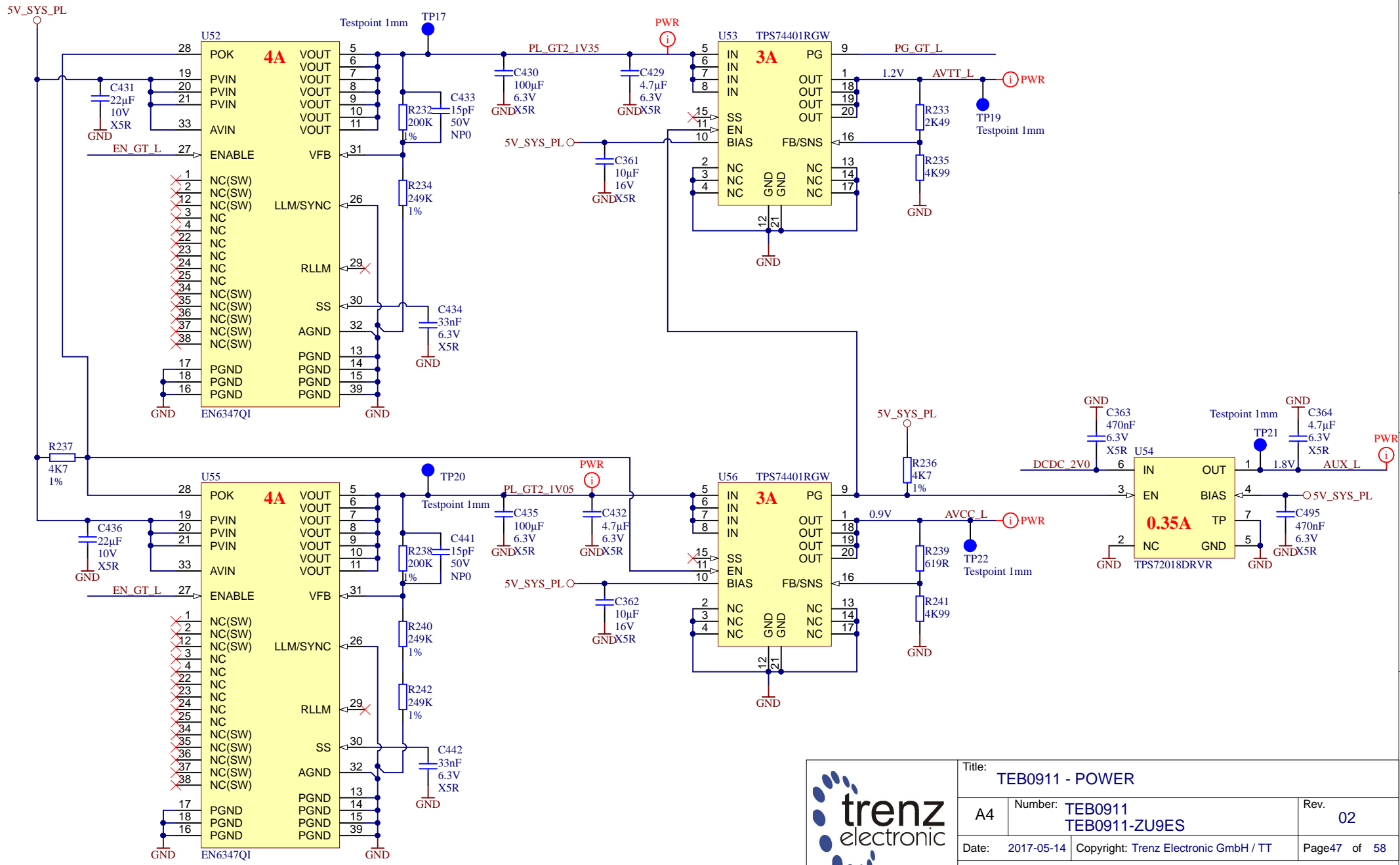
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Filename: POWER_4.schdoc				



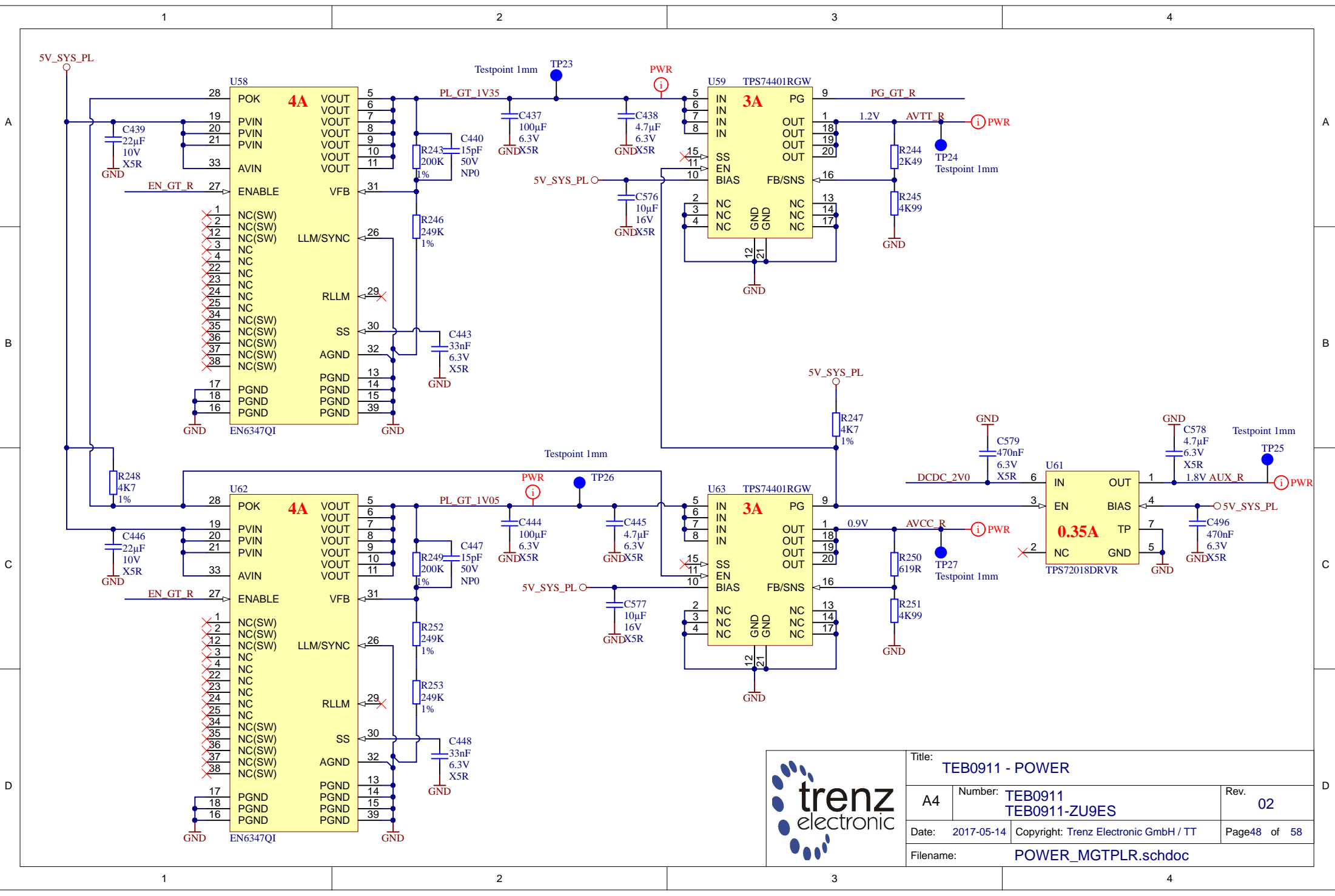
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	Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page 45 of 58
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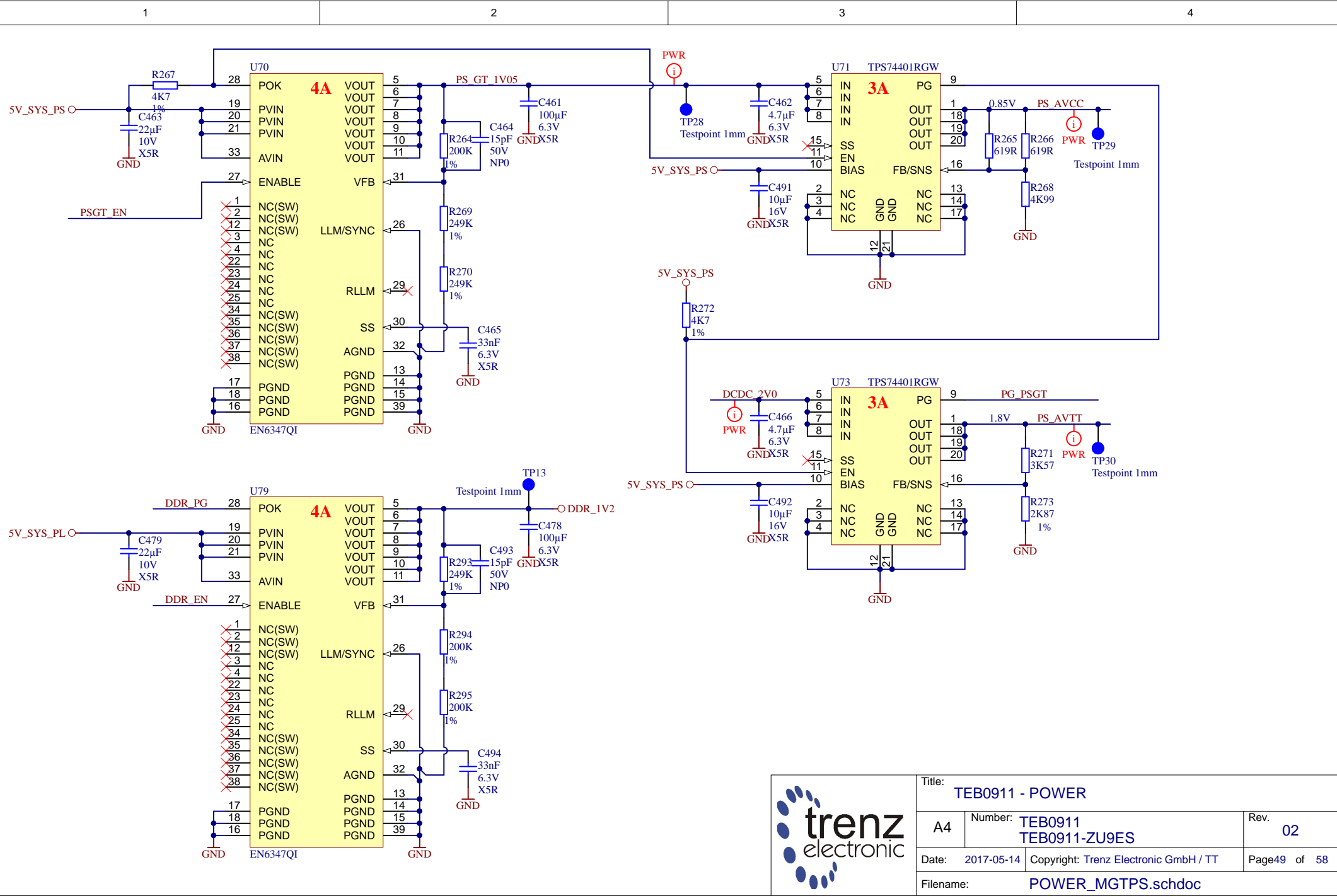
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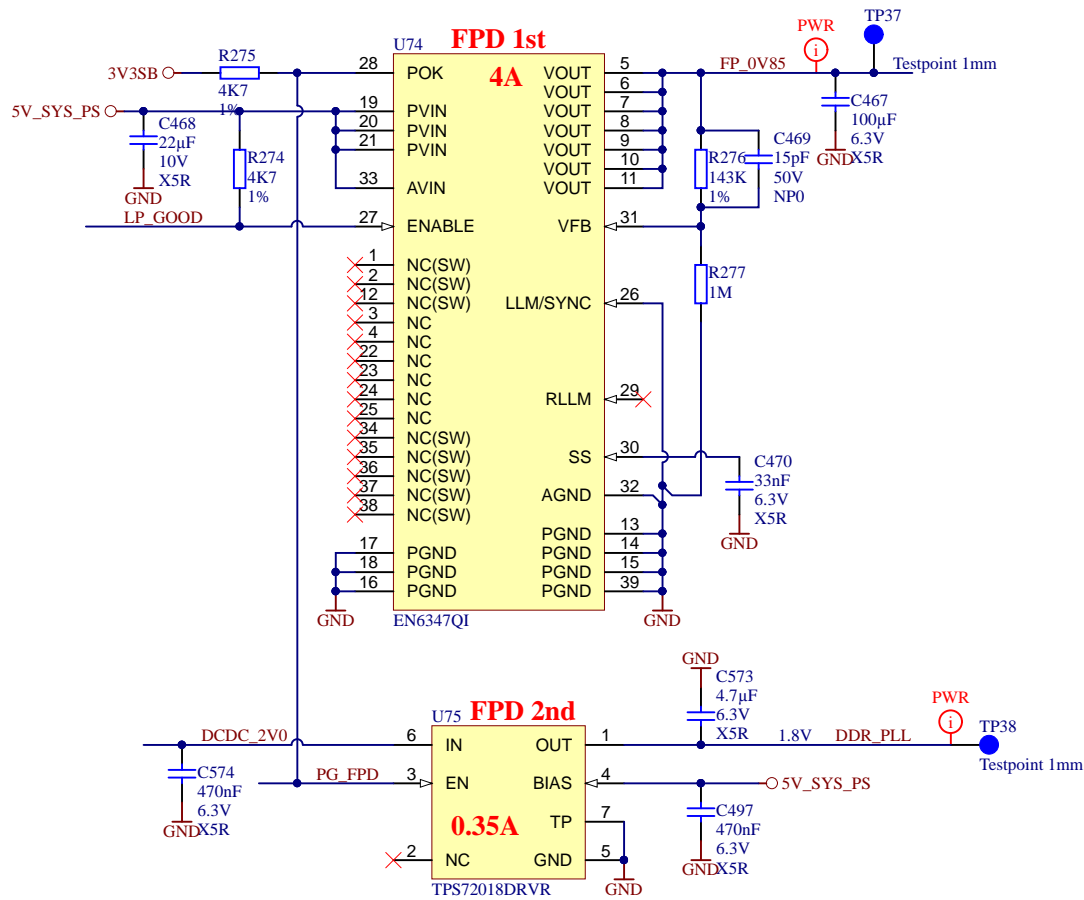
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Filename: POWER_MGTPLL.schdoc		




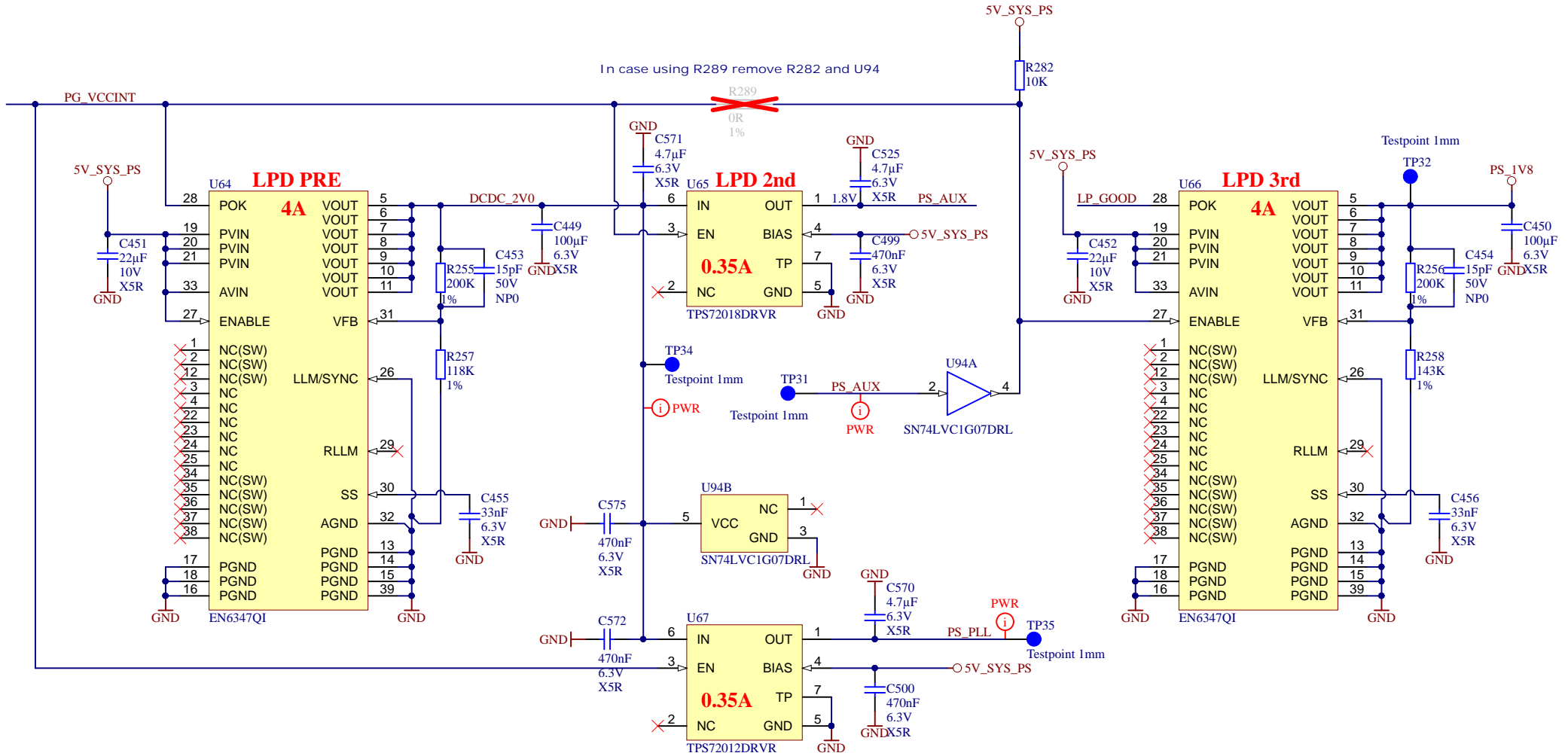
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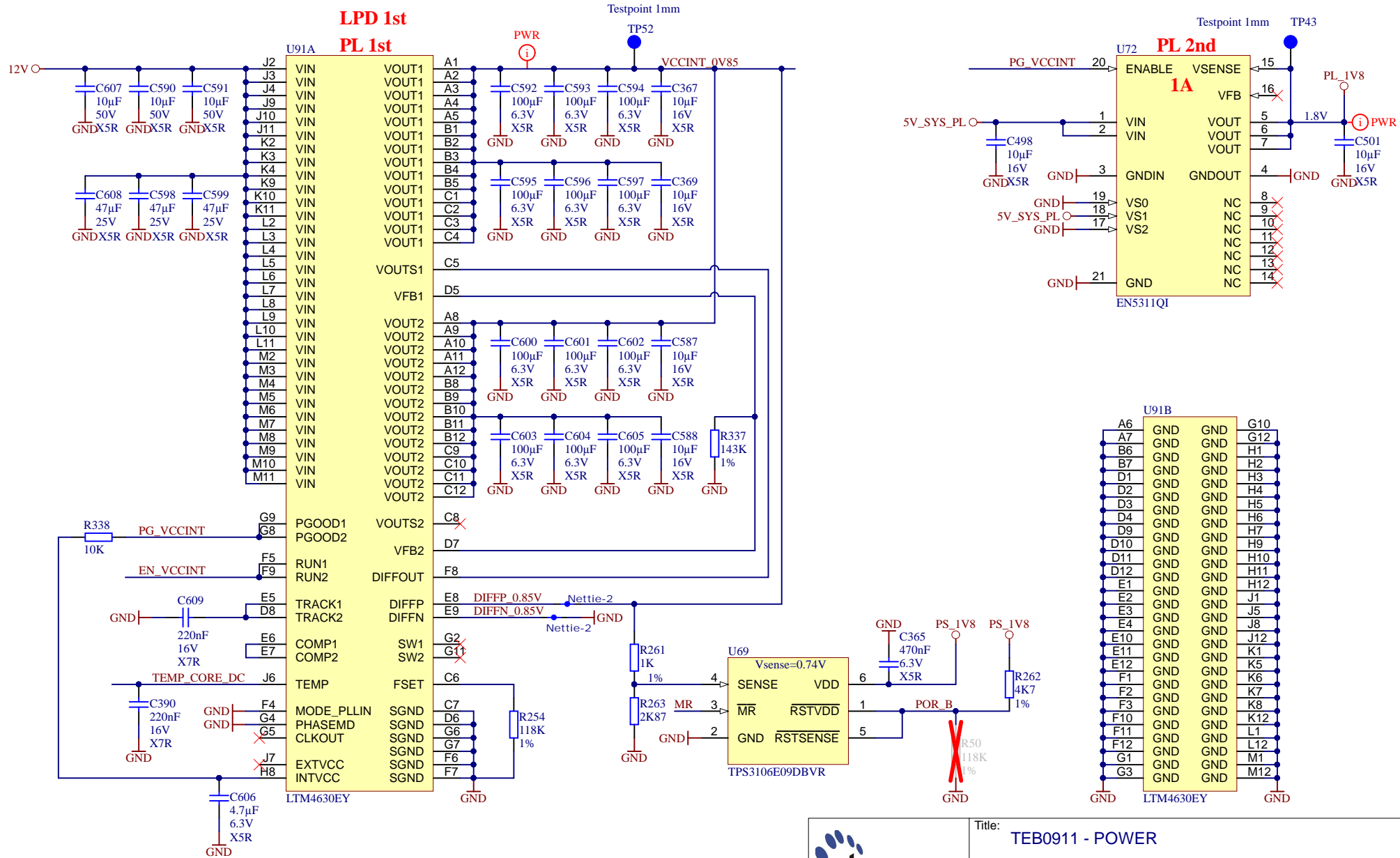
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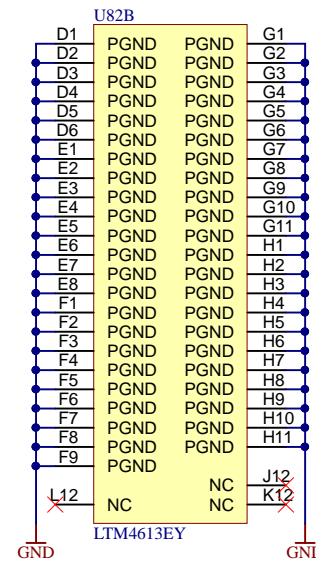
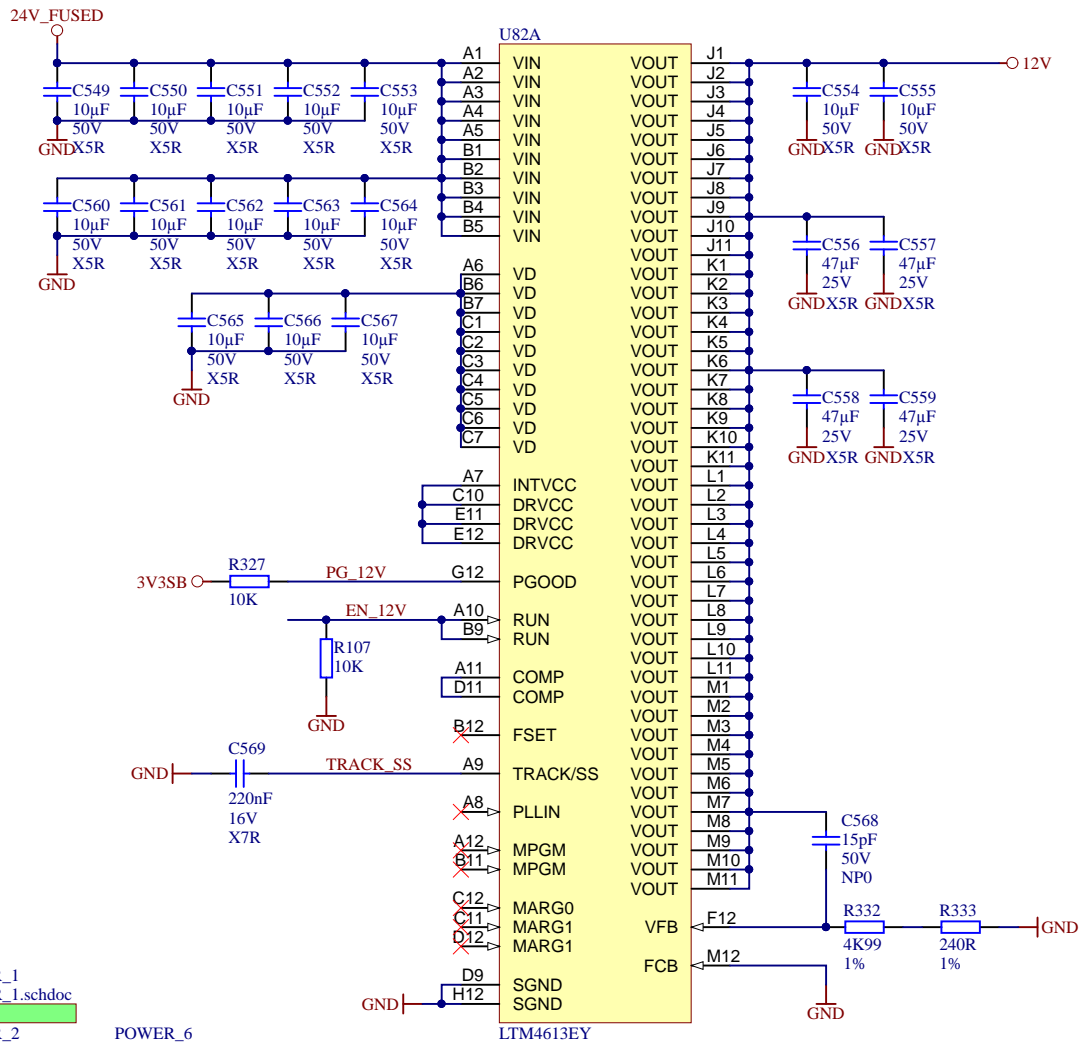
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	Filename: PWR_CORE.SchDoc		



- POWER_1
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- POWER_2
POWER_2.schdoc
- POWER_3
POWER_3.schdoc
- POWER_4
POWER_4.schdoc
- POWER_5
POWER_5.schdoc
- POWER_6
POWER_6.schdoc
- PWR_SYS
PWR_SYS.SchDoc
- PWR_CORE
PWR_CORE.SchDoc



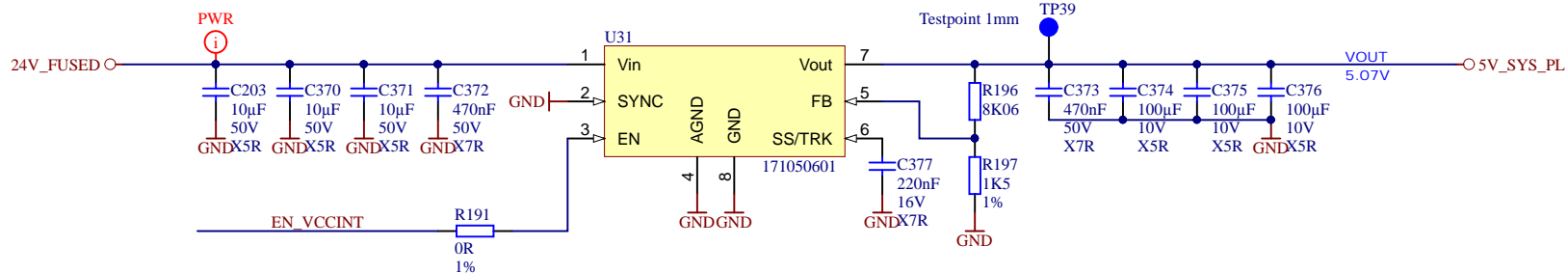
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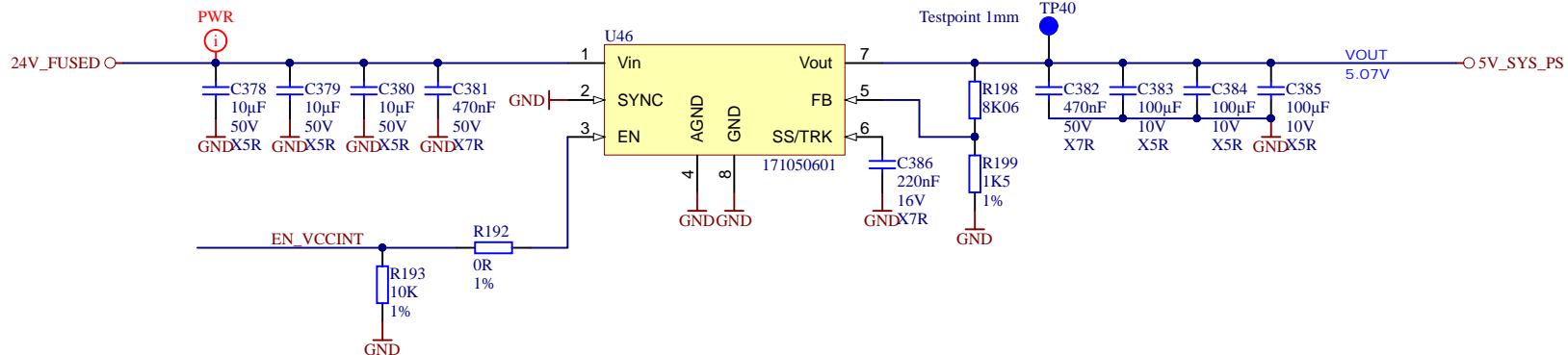
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- POWER_MGTPS
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- POWER_MGTPLR
POWER_MGTPLR.schdoc
- POWER_MGTPLL
POWER_MGTPLL.schdoc
- POWER_PSF
POWER_PSF.schdoc
- POWER_PSLP
POWER_PSLP.schdoc



Title: TEB0911 - POWER		
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Filename: PWR_SYS.SchDoc		

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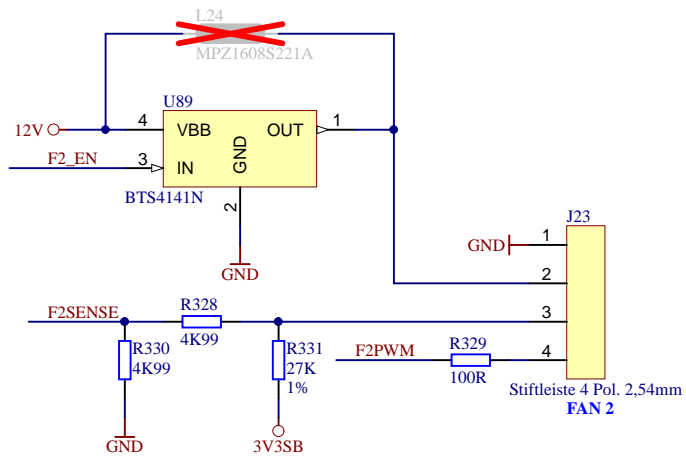
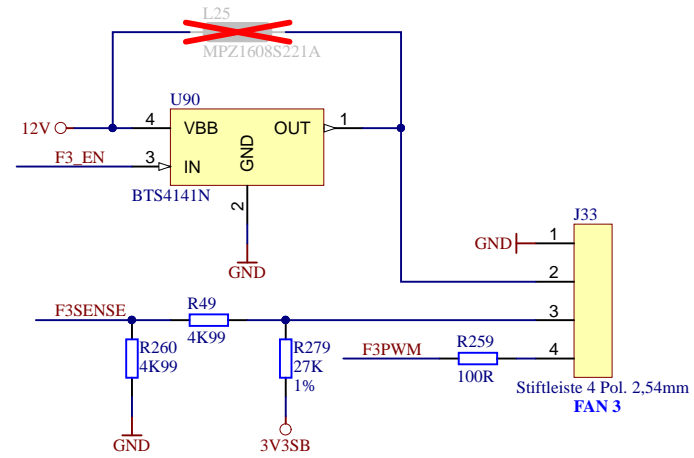
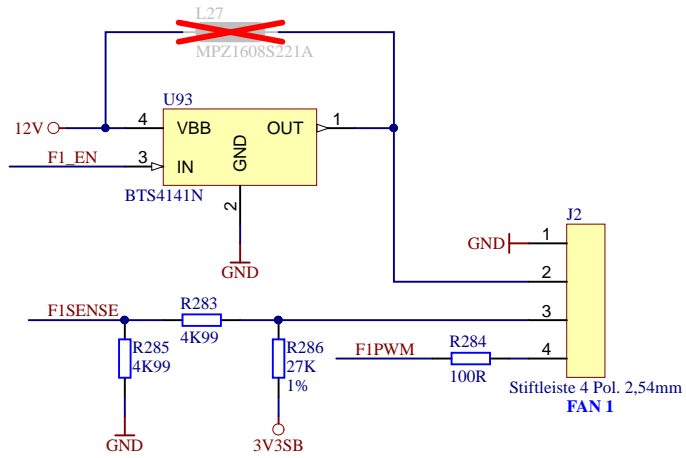
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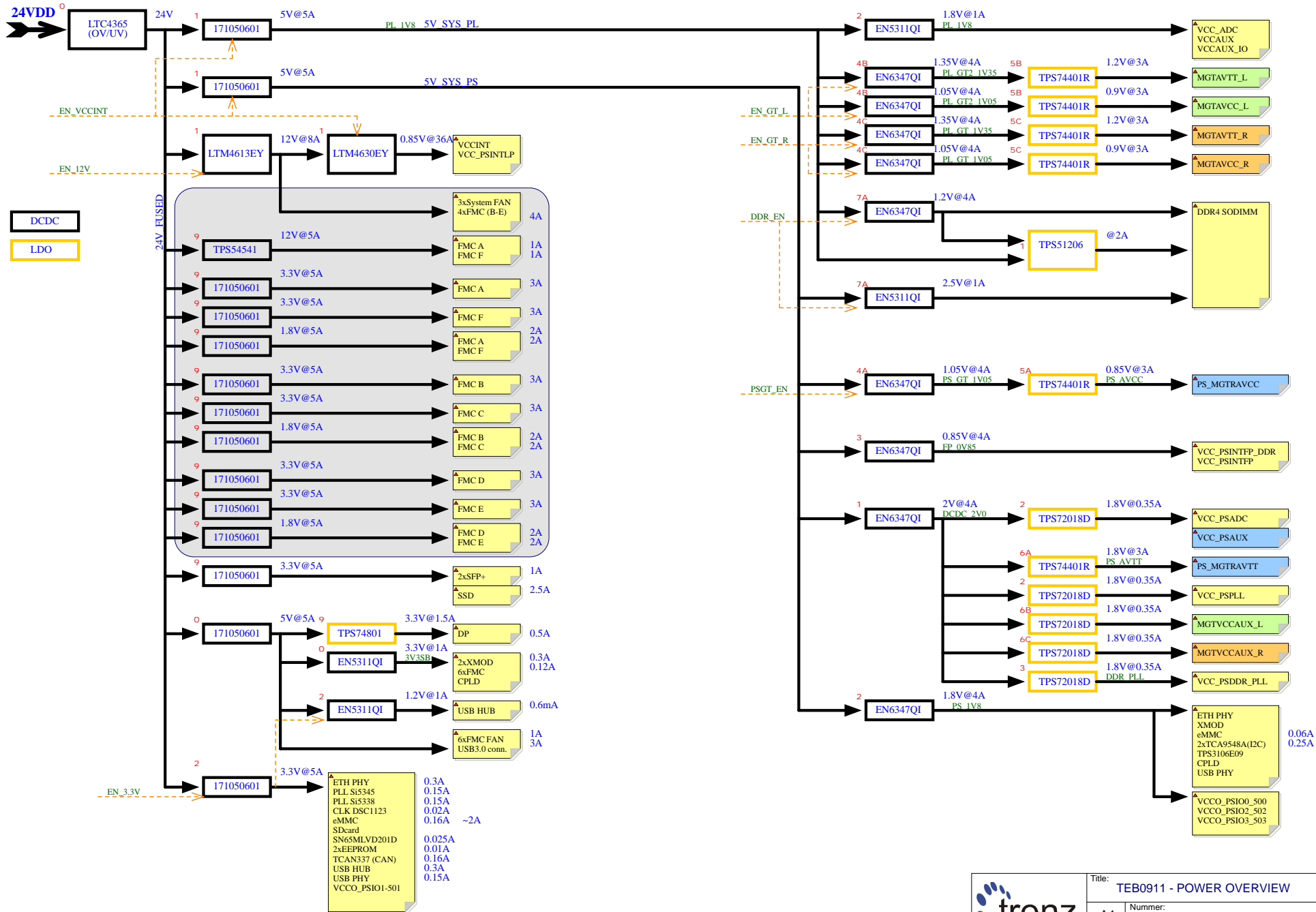
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Date: 2017-05-14	Copyright: Trenz Electronic GmbH	Page55 of 58
Filename: FAN_CON.schdoc		

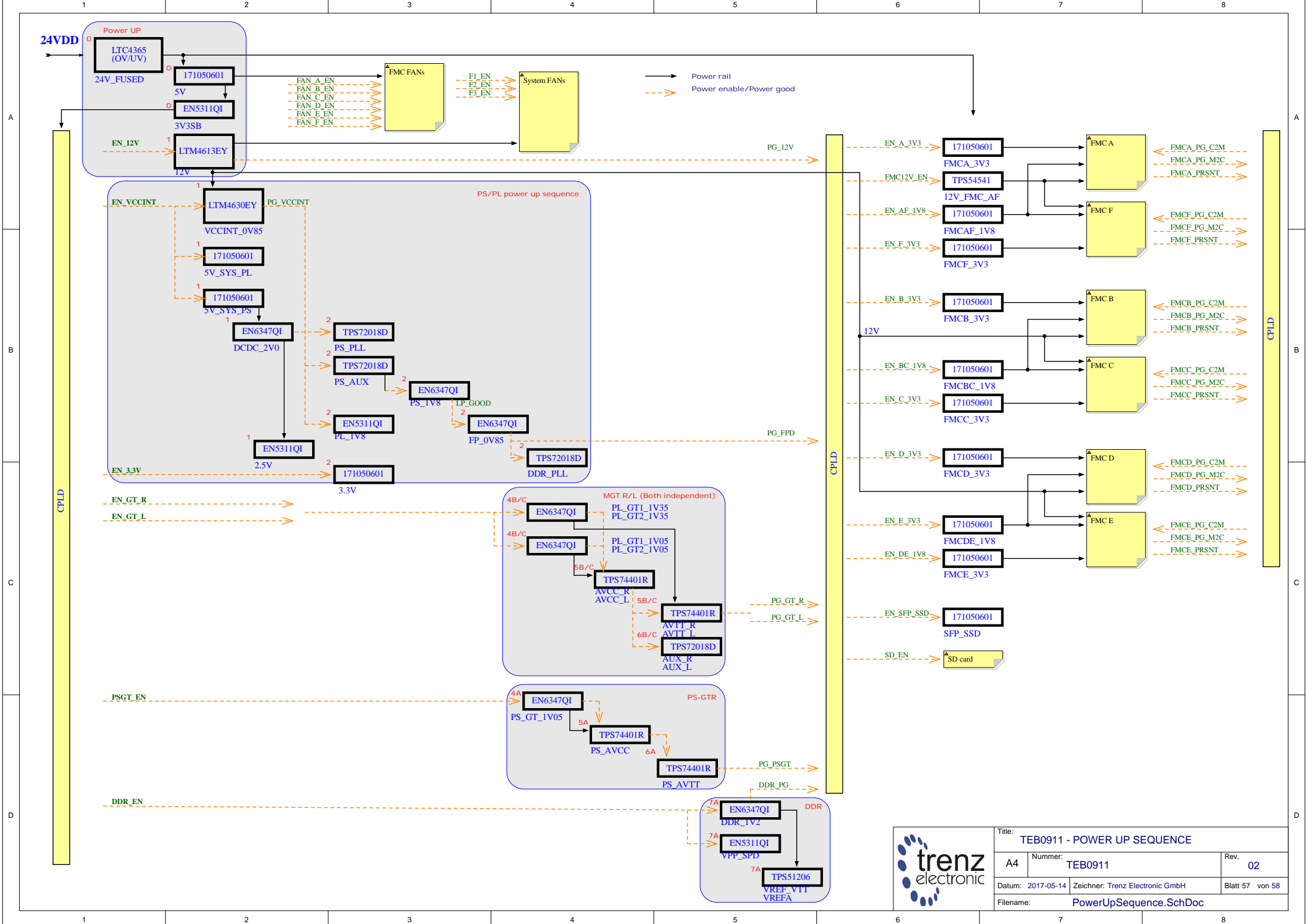
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Title: TEB0911 - POWER UP SEQUENCE		
A4	Number: TEB0911	Rev. 02
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Filename: PowerUpSequence.SchDoc		

REV02:

- 1. 2 CPLDs replaced with LCMXO2-7000HC-4FG484C (U27)
- 2. Single SFP connector removed. MGT lanes B129_TX/RX_1 connected to FMC F
- 3. DCDC U45 (power supply of 2xSFP and 1xSFP connectors) removed. 2xSFP powered by U11.
- 4. HDMI: lane B505_TX2 connected to DP1_TX and lane B505_TX3 to DP0_TX.
- 5. Supervisor U69 TPS3106E33 replaced with TPS3106E09
- 6. U17 (SI5345): IN_SEL0/1 disconnected from CPLD and connected to GND
- 7. Added new clock source U87 (SiT8008AI-73-XXS-25.000000E). Connected to CPLD. Not fitted
- 8. I2C pull-ups R154/R155: changed from 4.7k to 1.5kOhm
- 9. FAN: R285, R330, R260 changed to 27K (F*SENSE)
- 10. Added fuse F2 (4A). Fuse F1 (1.85A) "not fitted"
- 11. C354 (PWR_IN_24V/GND) deleted
- 12. Removed clock loop-back OUT9P/N - IN2P/N (U17, SI5345)
- 13. OUT7 (P) of U17 (clock source SI5345) connected to CPLD U27 Bank 5.
- 14. Signal SD Card detect SD_CD connected to CPLD, MIO45 connected to CPLD
- 15. Signals FMC*_PG_C2M(M2C) pulled-up to 3V3SB (was FMC*_3V3)
- 16. CLK_OUT U15 (USB PHY), serial resistor value R13 changed from 33 to 0 Ohm
- 17. EN5311QI: Cout value changed from 22uF to 10uF
- 18. BOM optimization
- 19. Added connections from CPLD to FMC A and F (x_LA06_SC - x_LA33_SC)
- 20. Net EN_VCCINT connected also to DCDC U31 (5V_SYS_PL) and U46 (5V_SYS_PS)
- 21. Added 2 2kb EEPROM (U45/U43)
- 22. Added power-up sequencing
- 23. MIO6 connected to CPLD
- 24. Signals EN_SFP was renamed to EN_SFP_SSD, 12V_FMC was renamed to 12V_FMC_AF, FMC12V_PG to FMCAF_12V_PG
- 25. Nets names F_LA02/03/04 was swapped.

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		Title: TEB0911 - REVISION CHANGES	
		A4	Number: TEB0911 TEB0911-ZU9ES
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