

U_USB-PHY
USB-PHY.SchDoc

U_ETH-PHY
ETH-PHY.SchDoc

U_B_HD
B_HD.SchDoc

U_B64
B64.SchDoc

U_B65
B65.SchDoc

U_B66
B66.SchDoc

U_CONFIG
CONFIG.SchDoc

U_B_MIO
B_MIO.SchDoc

U_B_PS_GT
B_PS_GT.SchDoc

U_CLK
CLK.SchDoc

U_B2B-Connectors
B2B-Connectors.SchDoc

U_eMMC
eMMC.SchDoc

U_PS_DDR
PS_DDR.SchDoc

U_ZU_POWER
ZU_POWER.SchDoc

U_ZU_PS_POWER
ZU_PS_POWER.SchDoc

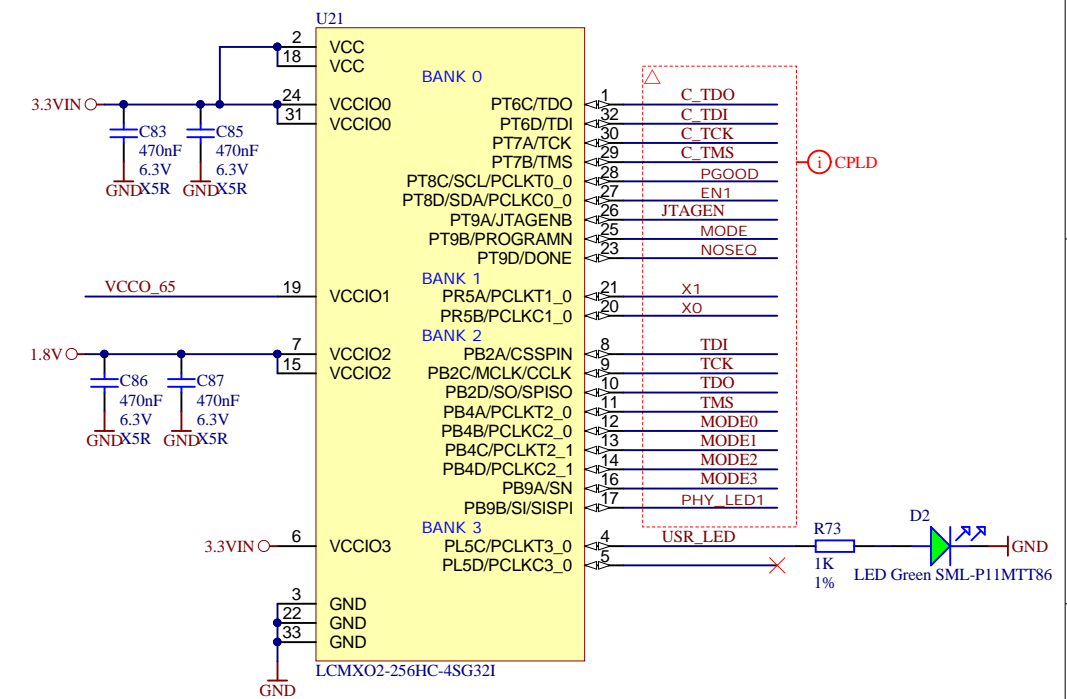
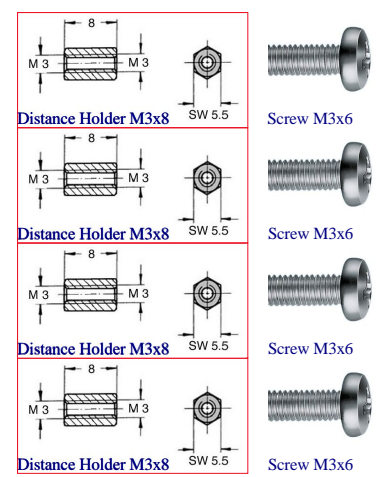
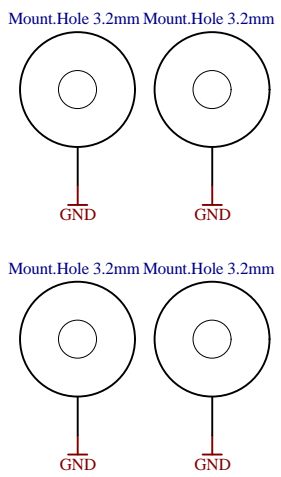
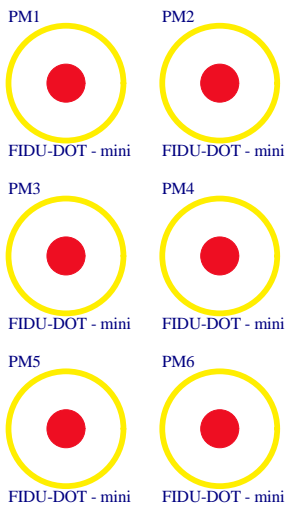
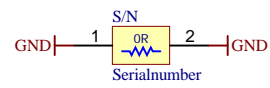
U_DDR4-RAM_2
DDR4-RAM_2.SchDoc

U_DDR4-RAM
DDR4-RAM.SchDoc

U_POWER
POWER.SchDoc

U_POWER_1
POWER_1.SchDoc

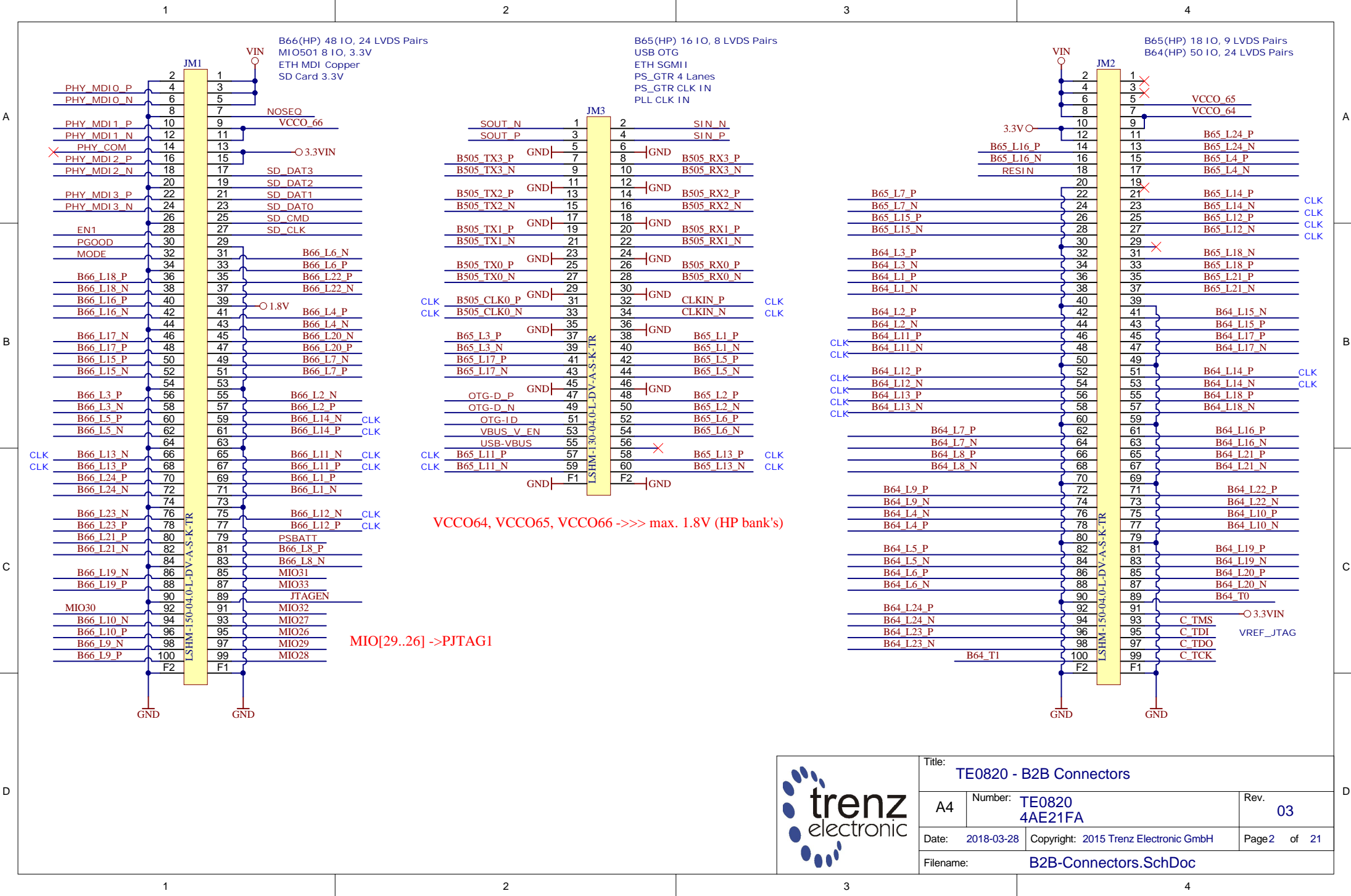
Serial
Serialnumber 6,3 x 6.3mm



Assembly variant	4AE21FA
Created by	VY
Modified by	VY
Modified at	2019-07-19
SVN Revision	8646



Title: TE0820		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: 2015 Trenz Electronic GmbH	Page 1 of 21
Filename: TE0820.SchDoc		



B66(HP) 48 IO, 24 LVDS Pairs
MIO501 8 IO, 3.3V
ETH MDI Copper
SD Card 3.3V

B505(HP) 16 IO, 8 LVDS Pairs
USB OTG
ETH SGMII
PS_GTR 4 Lanes
PS_GTR CLK IN
PLL CLK IN

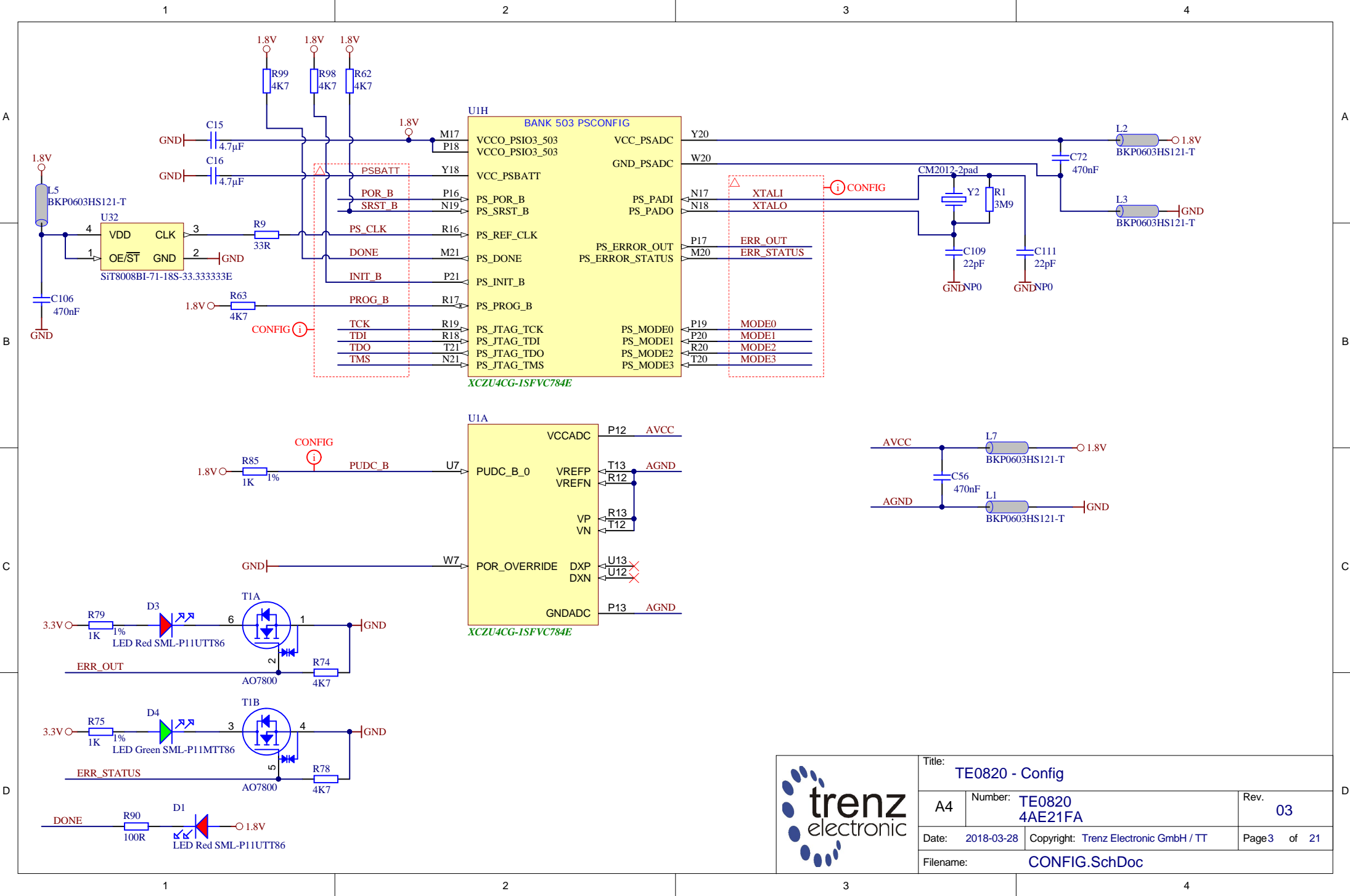
B65(HP) 18 IO, 9 LVDS Pairs
B64(HP) 50 IO, 24 LVDS Pairs

VCCO64, VCCO65, VCCO66 ->>> max. 1.8V (HP bank's)

MIO[29..26] ->PJTAG1



Title: TE0820 - B2B Connectors		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: 2015 Trenz Electronic GmbH	Page 2 of 21
Filename: B2B-Connectors.SchDoc		



Title: TE0820 - Config		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 3 of 21
Filename: CONFIG.SchDoc		

UIC

BANK 46 HD (ZU2/3 BANK 26 HD)

F14	VCCO_46	IO_L1P_AD11P_46	IO_L7P_HDGC_AD5P_46
C15	VCCO_46	IO_L1N_AD11N_46	IO_L7N_HDGC_AD5N_46
B15	IO_L1P_AD11P_46	IO_L2P_AD10P_46	IO_L8P_HDGC_AD4P_46
A15	IO_L1N_AD11N_46	IO_L2N_AD10N_46	IO_L8N_HDGC_AD4N_46
B14	IO_L2P_AD10P_46	IO_L3P_AD9P_46	IO_L9P_AD3P_46
A14	IO_L2N_AD10N_46	IO_L3N_AD9N_46	IO_L9N_AD3N_46
B13	IO_L3P_AD9P_46	IO_L4P_AD8P_46	IO_L10P_AD2P_46
A13	IO_L3N_AD9N_46	IO_L4N_AD8N_46	IO_L10N_AD2N_46
C14	IO_L4P_AD8P_46	IO_L5P_HDGC_AD7P_46	IO_L11P_AD1P_46
C13	IO_L4N_AD8N_46	IO_L5N_HDGC_AD7N_46	IO_L11N_AD1N_46
D15	IO_L5P_HDGC_AD7P_46	IO_L6P_HDGC_AD6P_46	IO_L12P_AD0P_46
D14	IO_L5N_HDGC_AD7N_46	IO_L6N_HDGC_AD6N_46	IO_L12N_AD0N_46
E14	IO_L6P_HDGC_AD6P_46		
E13	IO_L6N_HDGC_AD6N_46		

B26 (i)

B26 (i)

BANK 43 HD (ZU2/3 BANK 44 HD)

AC10	VCCO_43	IO_L1P_AD11P_43	IO_L7P_HDGC_AD5P_43
AG12	VCCO_43	IO_L1N_AD11N_43	IO_L7N_HDGC_AD5N_43
AG10	IO_L1P_AD11P_43	IO_L2P_AD10P_43	IO_L8P_HDGC_AD4P_43
AH10	IO_L1N_AD11N_43	IO_L2N_AD10N_43	IO_L8N_HDGC_AD4N_43
AF11	IO_L2P_AD10P_43	IO_L3P_AD9P_43	IO_L9P_AD3P_43
AG11	IO_L2N_AD10N_43	IO_L3N_AD9N_43	IO_L9N_AD3N_43
AH12	IO_L3P_AD9P_43	IO_L4P_AD8P_43	IO_L10P_AD2P_43
AH11	IO_L3N_AD9N_43	IO_L4N_AD8N_43	IO_L10N_AD2N_43
AE13	IO_L4P_AD8P_43	IO_L5P_HDGC_AD7P_43	IO_L11P_AD1P_43
AF10	IO_L4N_AD8N_43	IO_L5N_HDGC_AD7N_43	IO_L11N_AD1N_43
AE12	IO_L5P_HDGC_AD7P_43	IO_L6P_HDGC_AD6P_43	IO_L12P_AD0P_43
AF12	IO_L5N_HDGC_AD7N_43	IO_L6N_HDGC_AD6N_43	IO_L12N_AD0N_43
AC13	IO_L6P_HDGC_AD6P_43		
AD13	IO_L6N_HDGC_AD6N_43		

B44 (i)

B44 (i)

UIB

XCZU4CG-1SFVC784E

BANK 44 HD (ZU2/3 BANK 24 HD)

AA14	VCCO_44	IO_L1P_AD15P_44	IO_L7P_HDGC_44
AD13	VCCO_44	IO_L1N_AD15N_44	IO_L7N_HDGC_44
AE15	IO_L1P_AD15P_44	IO_L2P_AD14P_44	IO_L8P_HDGC_44
AE14	IO_L1N_AD15N_44	IO_L2N_AD14N_44	IO_L8N_HDGC_44
AG14	IO_L2P_AD14P_44	IO_L3P_AD13P_44	IO_L9P_AD11P_44
AH14	IO_L2N_AD14N_44	IO_L3N_AD13N_44	IO_L9N_AD11N_44
AG13	IO_L3P_AD13P_44	IO_L4P_AD12P_44	IO_L10P_AD10P_44
AH13	IO_L3N_AD13N_44	IO_L4N_AD12N_44	IO_L10N_AD10N_44
AF13	IO_L4P_AD12P_44	IO_L5P_HDGC_44	IO_L11P_AD9P_44
AE13	IO_L4N_AD12N_44	IO_L5N_HDGC_44	IO_L11N_AD9N_44
AD13	IO_L5P_HDGC_44	IO_L6P_HDGC_44	IO_L12P_AD8P_44
AC14	IO_L5N_HDGC_44	IO_L6N_HDGC_44	IO_L12N_AD8N_44
AC13	IO_L6P_HDGC_44		
AC13	IO_L6N_HDGC_44		

B24 (i)

B24 (i)

BANK 45 HD (ZU2/3 BANK 25 HD)

B12	VCCO_45	IO_L1P_AD15P_45	IO_L7P_HDGC_45
E11	VCCO_45	IO_L1N_AD15N_45	IO_L7N_HDGC_45
J11	IO_L1P_AD15P_45	IO_L2P_AD14P_45	IO_L8P_HDGC_45
J10	IO_L1N_AD15N_45	IO_L2N_AD14N_45	IO_L8N_HDGC_45
K13	IO_L2P_AD14P_45	IO_L3P_AD13P_45	IO_L9P_AD11P_45
K12	IO_L2N_AD14N_45	IO_L3N_AD13N_45	IO_L9N_AD11N_45
H13	IO_L3P_AD13P_45	IO_L4P_AD12P_45	IO_L10P_AD10P_45
G10	IO_L3N_AD13N_45	IO_L4N_AD12N_45	IO_L10N_AD10N_45
J12	IO_L4P_AD12P_45	IO_L5P_HDGC_45	IO_L11P_AD9P_45
H12	IO_L4N_AD12N_45	IO_L5N_HDGC_45	IO_L11N_AD9N_45
G11	IO_L5P_HDGC_45	IO_L6P_HDGC_45	IO_L12P_AD8P_45
F13	IO_L5N_HDGC_45	IO_L6N_HDGC_45	IO_L12N_AD8N_45
F12	IO_L6P_HDGC_45		
F11	IO_L6N_HDGC_45		

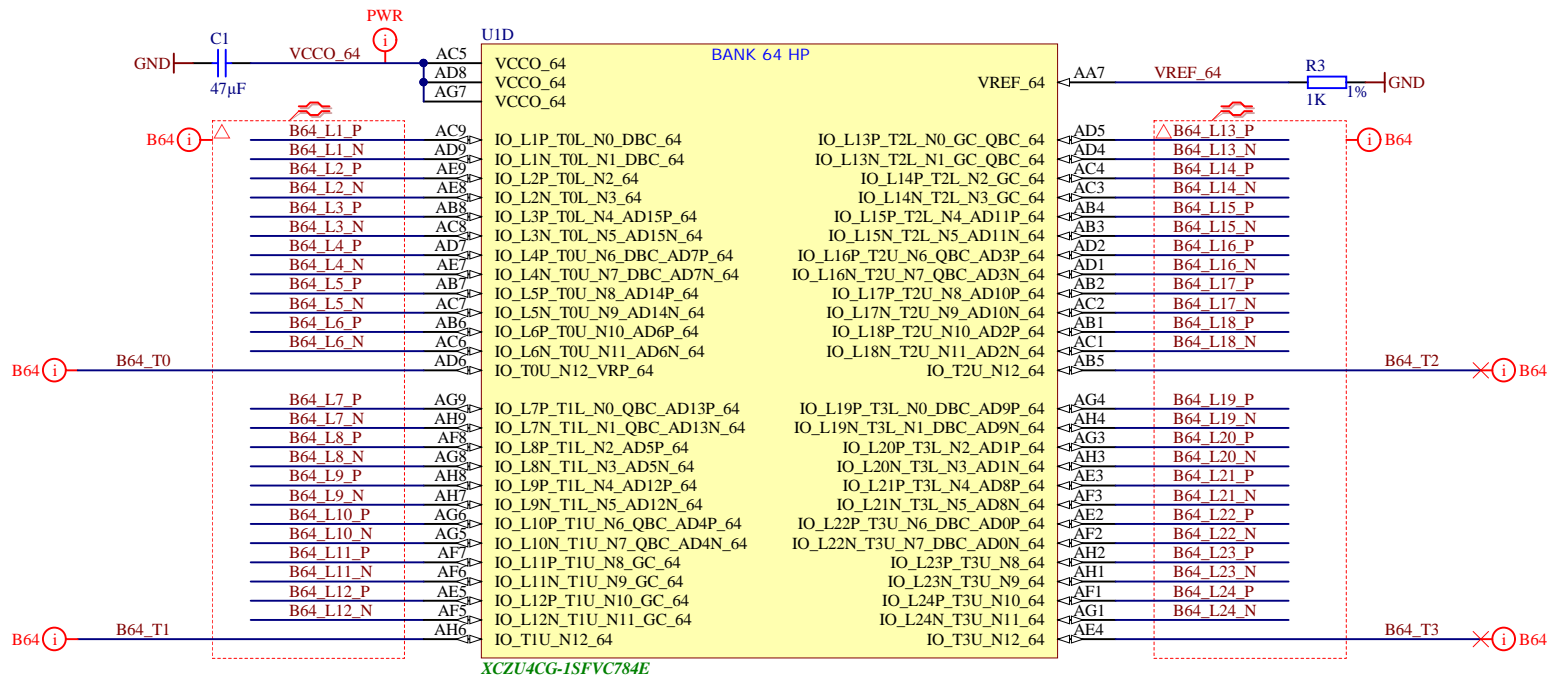
B25 (i)

B25 (i)

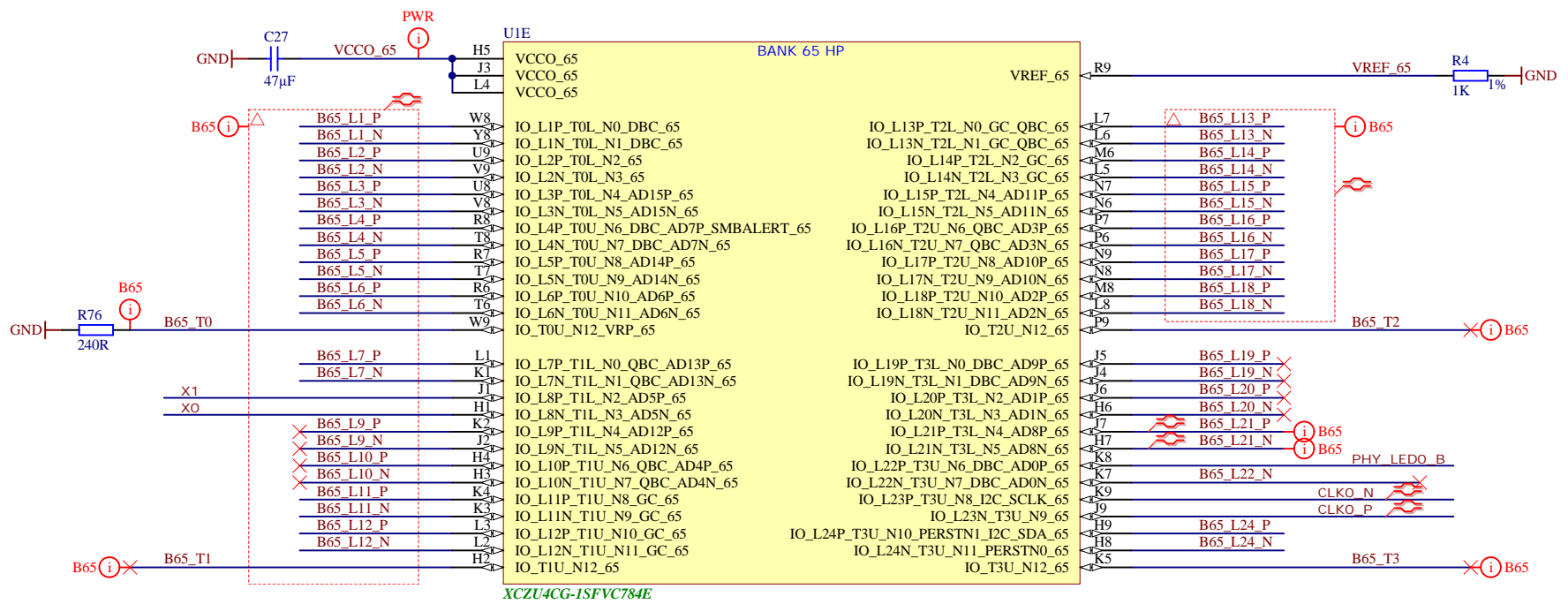
XCZU4CG-1SFVC784E



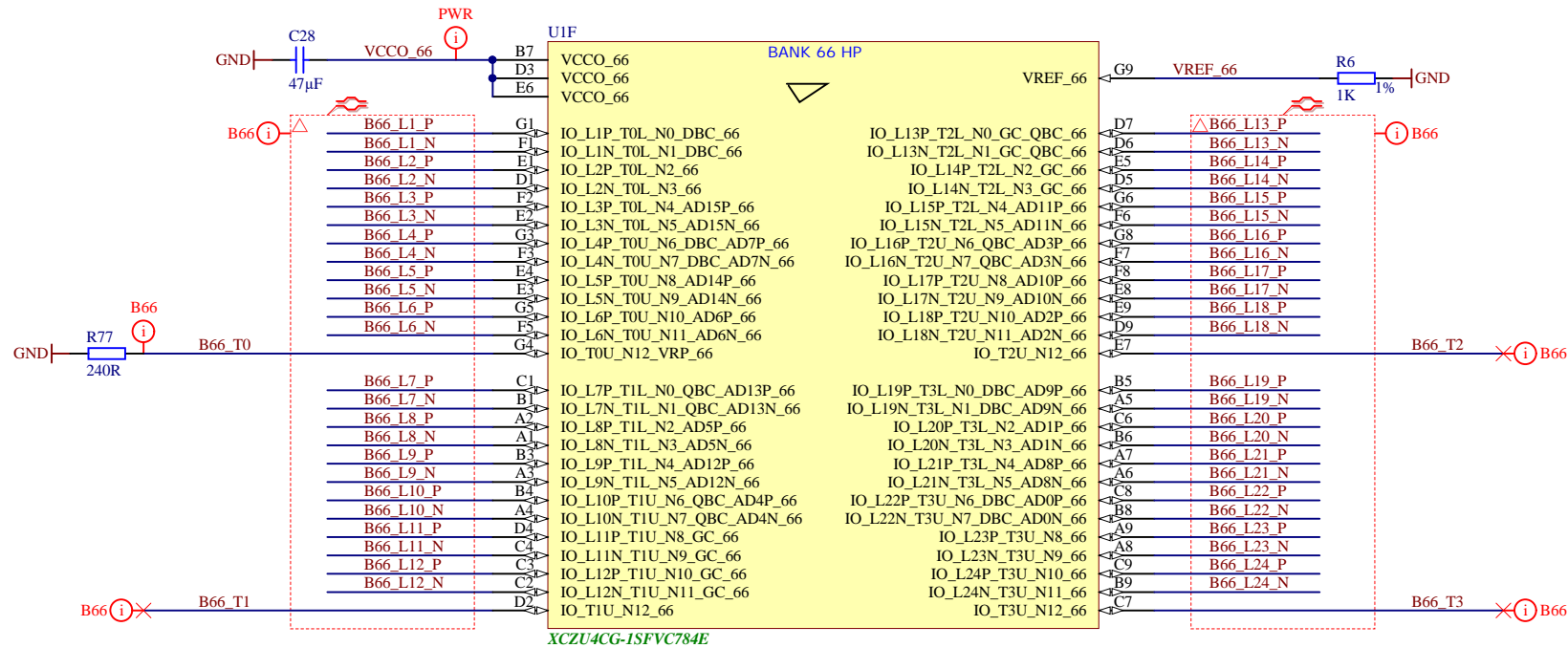
Title: TE0820 - HD Banks		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 4 of 21
Filename: B_HD.SchDoc		



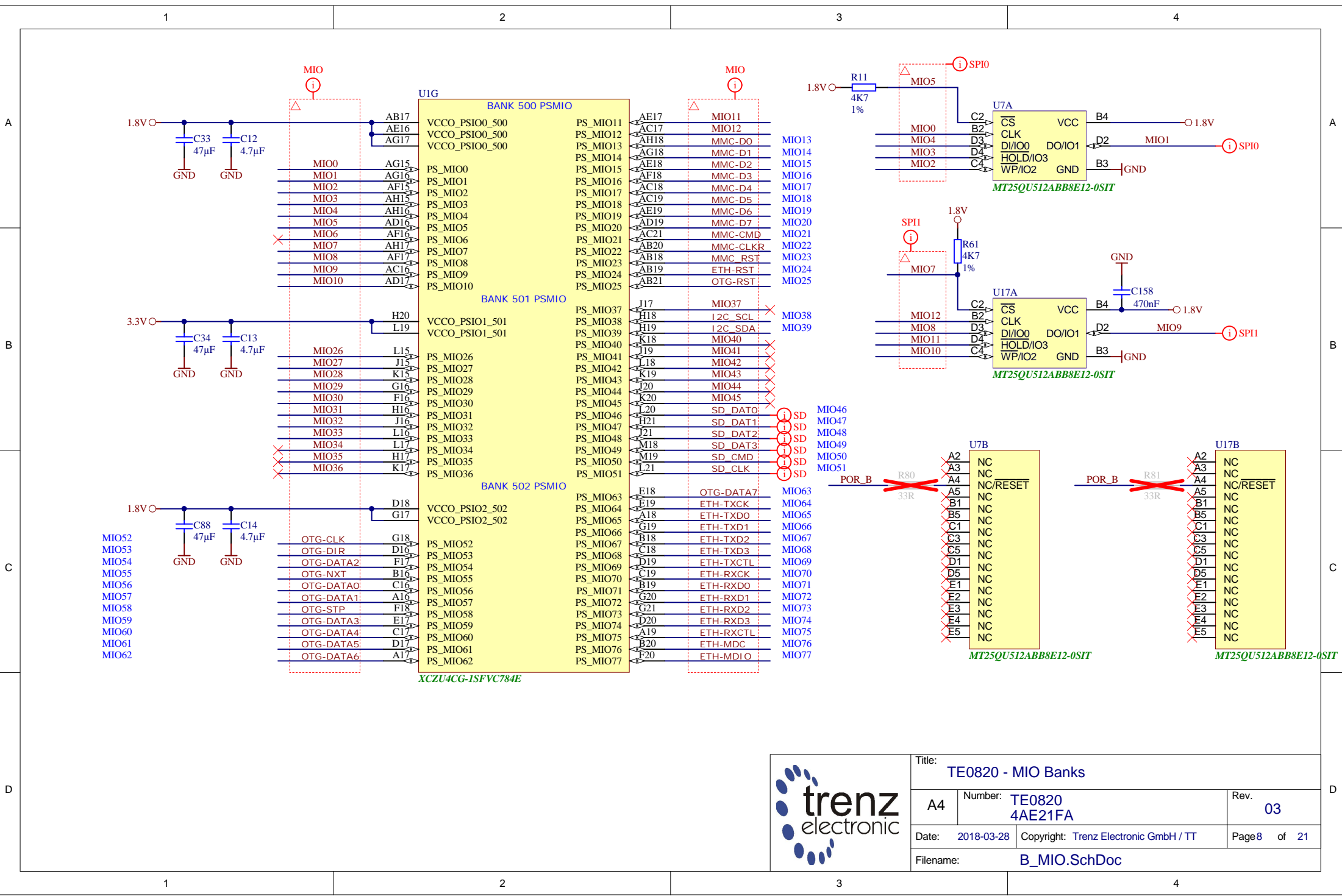
Title: TE0820 - B64		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 5 of 21
Filename: B64.SchDoc		




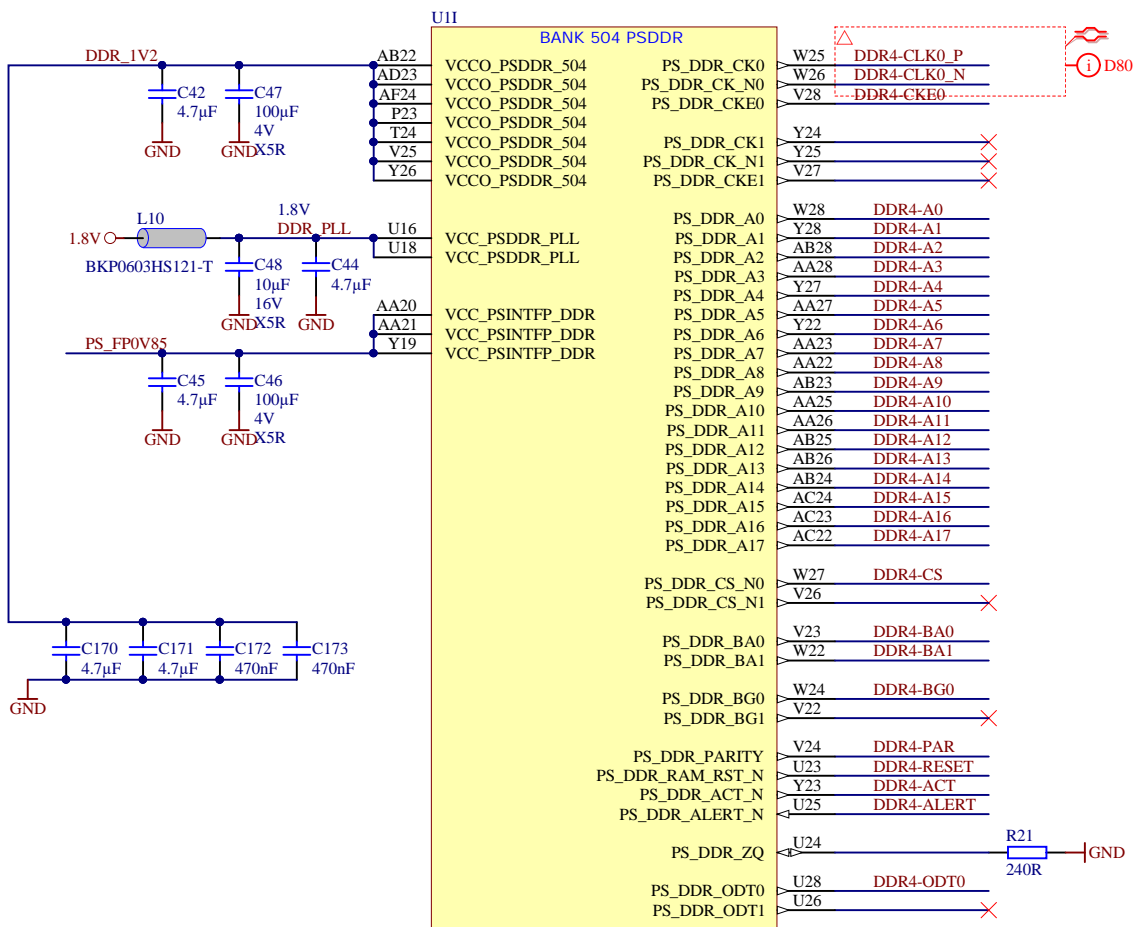
Title: TE0820 - B65		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 6 of 21
Filename: B65.SchDoc		



Title: TE0820 - B66		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 7 of 21
Filename: B66.SchDoc		

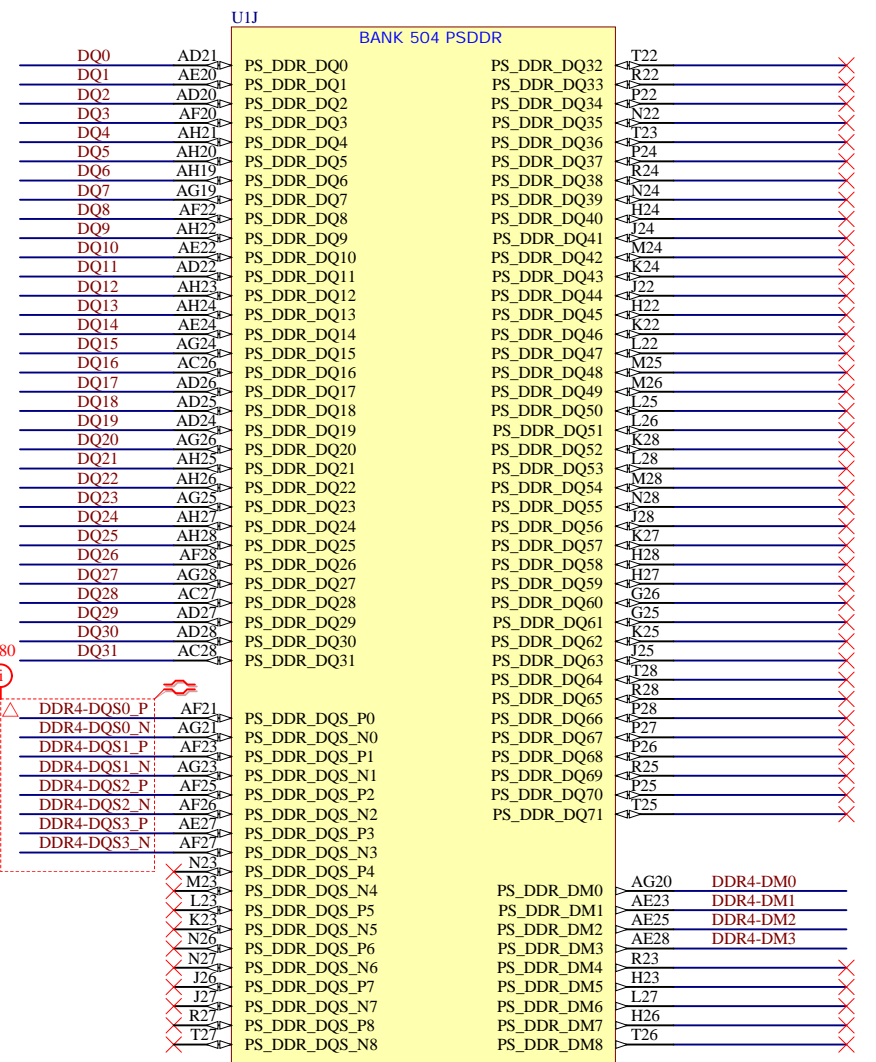


		Title: TE0820 - MIO Banks	
		A4	Number: TE0820 4AE21FA
Date: 2018-03-28		Copyright: Trenz Electronic GmbH / TT	
Filename: B_MIO.SchDoc		Page 8 of 21	



U11		BANK 504 PSDDR	
VCCO_PSDDR_504	PS_DDR_CK0	W25	DDR4-CLK0_P
VCCO_PSDDR_504	PS_DDR_CK_N0	W26	DDR4-CLK0_N
VCCO_PSDDR_504	PS_DDR_CKE0	V28	DDR4-CKE0
VCCO_PSDDR_504	PS_DDR_CK1	Y24	
VCCO_PSDDR_504	PS_DDR_CK_N1	Y25	
VCCO_PSDDR_504	PS_DDR_CKE1	V27	
VCC_PSDDR_PLL	PS_DDR_A0	W28	DDR4-A0
VCC_PSDDR_PLL	PS_DDR_A1	Y28	DDR4-A1
VCC_PSDDR_PLL	PS_DDR_A2	AB28	DDR4-A2
VCC_PSINTFP_DDR	PS_DDR_A3	AA28	DDR4-A3
VCC_PSINTFP_DDR	PS_DDR_A4	Y27	DDR4-A4
VCC_PSINTFP_DDR	PS_DDR_A5	AA27	DDR4-A5
VCC_PSINTFP_DDR	PS_DDR_A6	Y22	DDR4-A6
VCC_PSINTFP_DDR	PS_DDR_A7	AA23	DDR4-A7
VCC_PSINTFP_DDR	PS_DDR_A8	AA22	DDR4-A8
VCC_PSINTFP_DDR	PS_DDR_A9	AB23	DDR4-A9
VCC_PSINTFP_DDR	PS_DDR_A10	AA25	DDR4-A10
VCC_PSINTFP_DDR	PS_DDR_A11	AA26	DDR4-A11
VCC_PSINTFP_DDR	PS_DDR_A12	AB25	DDR4-A12
VCC_PSINTFP_DDR	PS_DDR_A13	AB26	DDR4-A13
VCC_PSINTFP_DDR	PS_DDR_A14	AB24	DDR4-A14
VCC_PSINTFP_DDR	PS_DDR_A15	AC24	DDR4-A15
VCC_PSINTFP_DDR	PS_DDR_A16	AC23	DDR4-A16
VCC_PSINTFP_DDR	PS_DDR_A17	AC22	DDR4-A17
	PS_DDR_CS_N0	W27	DDR4-CS
	PS_DDR_CS_N1	V26	
	PS_DDR_BA0	V23	DDR4-BA0
	PS_DDR_BA1	W22	DDR4-BA1
	PS_DDR_BG0	W24	DDR4-BG0
	PS_DDR_BG1	V22	
	PS_DDR_PARITY	V24	DDR4-PAR
	PS_DDR_RAM_RST_N	U23	DDR4-RESET
	PS_DDR_ACT_N	Y23	DDR4-ACT
	PS_DDR_ALERT_N	U25	DDR4-ALERT
	PS_DDR_ZQ	U24	
	PS_DDR_ODT0	U28	DDR4-ODT0
	PS_DDR_ODT1	U26	

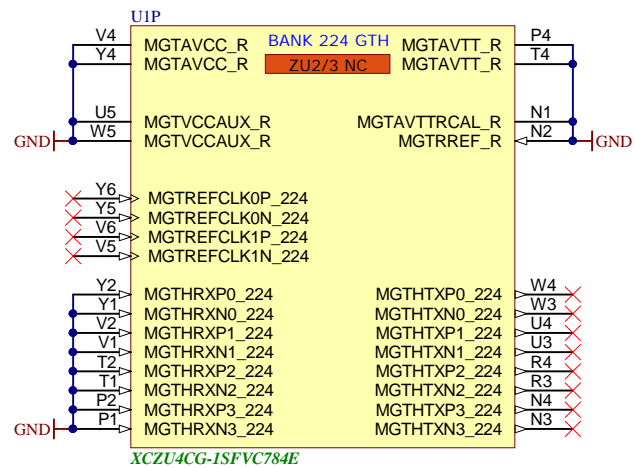
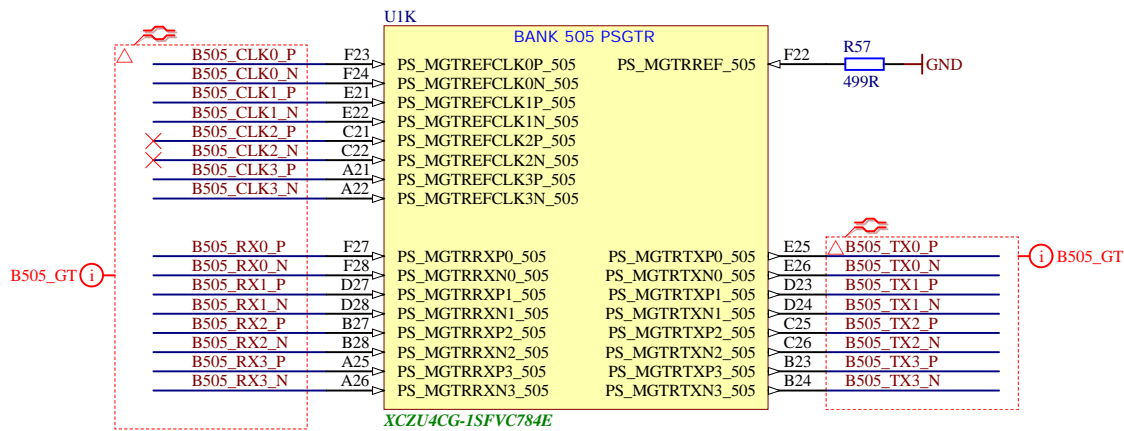
XCZU4CG-1SFVC784E



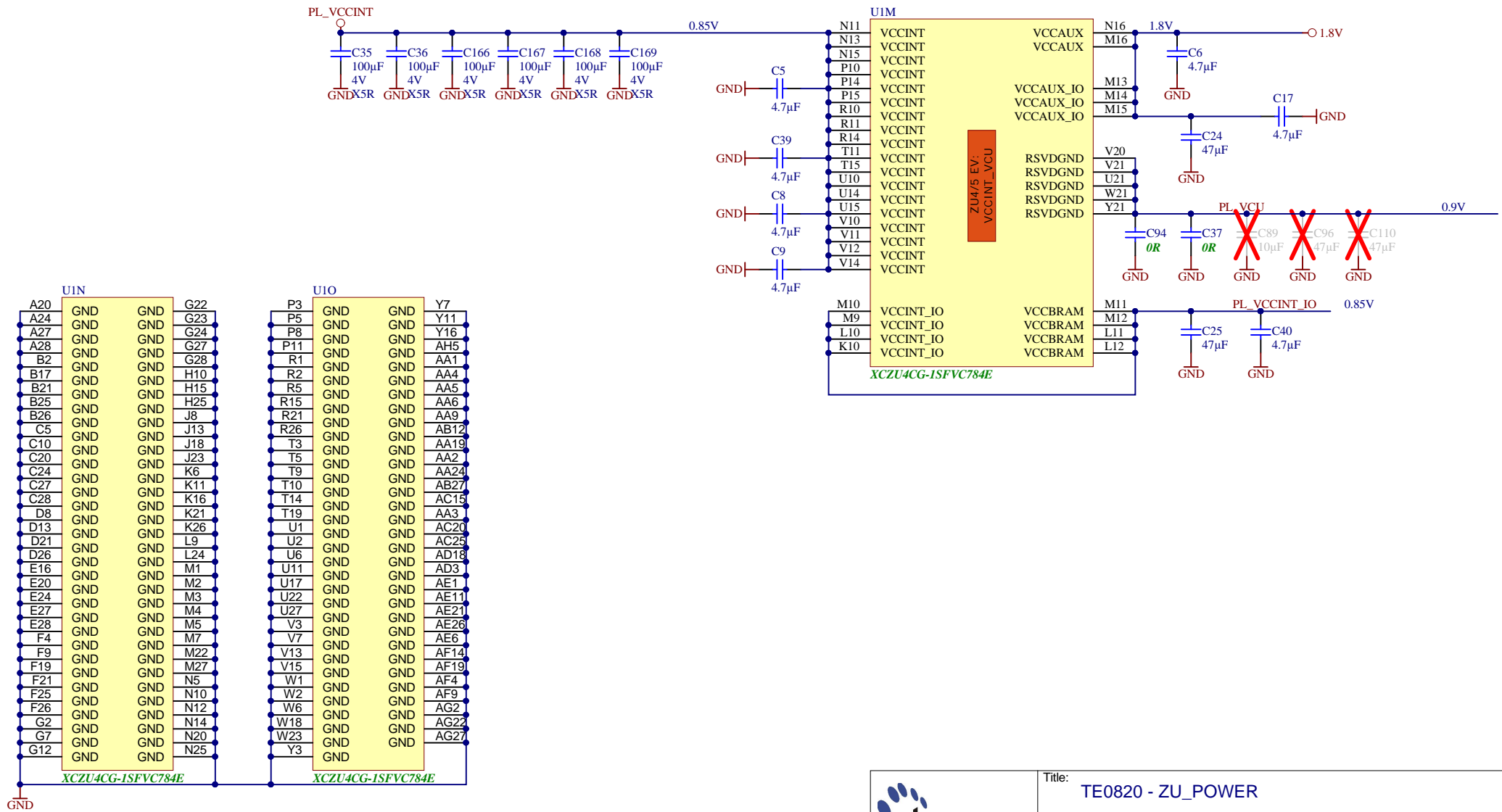
XCZU4CG-1SFVC784E



Title: TE0820 - PS_DDR		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 9 of 21
Filename: PS_DDR.SchDoc		

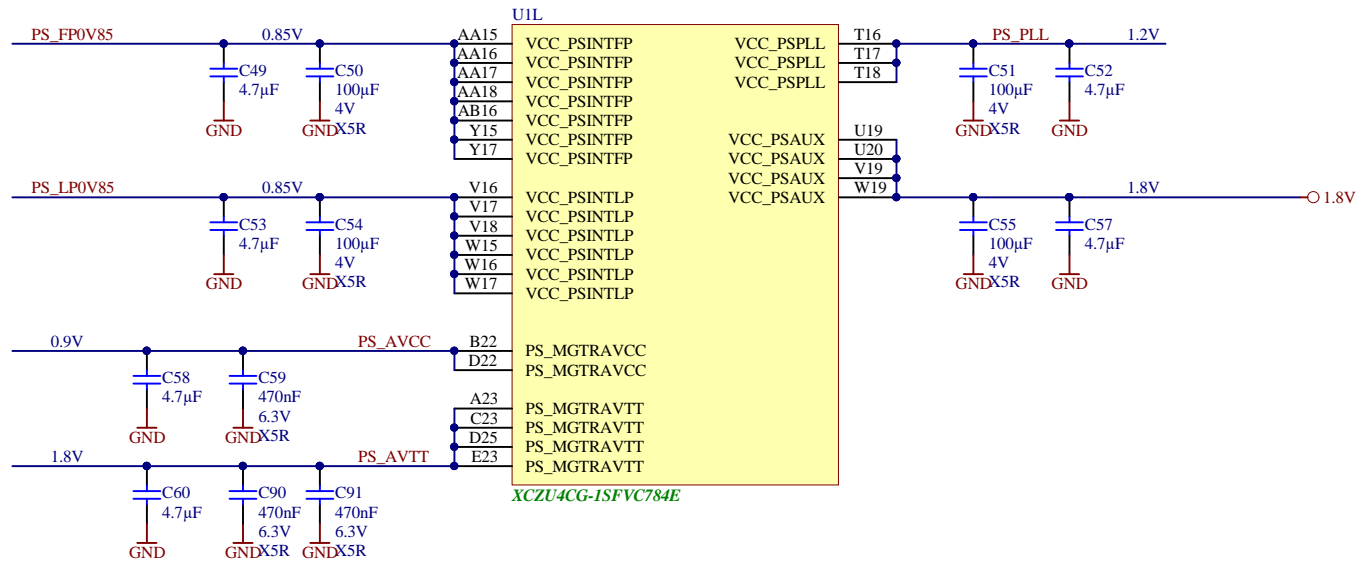


	Title: TE0820 - PS_GT		
	A4	Number: TE0820 4AE21FA	Rev. 03
	Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 10 of 21
	Filename: B_PS_GT.SchDoc		

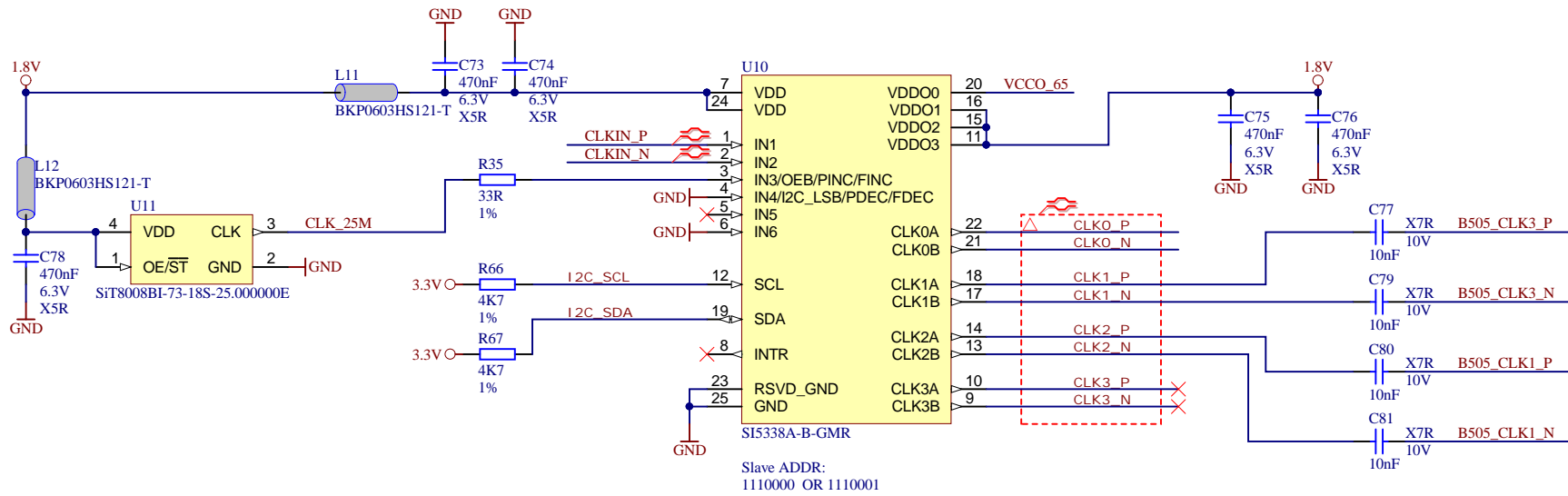



U1N				U1O				Y7			
A20	GND	GND	G22	P3	GND	GND	Y11				
A24	GND	GND	G24	P5	GND	GND	Y16				
A27	GND	GND	G27	P8	GND	GND					
A28	GND	GND	G28	P11	GND	GND	AH5				
B2	GND	GND	H10	R1	GND	GND	AA1				
B17	GND	GND	H15	R2	GND	GND	AA4				
B21	GND	GND	H25	R5	GND	GND	AA5				
B25	GND	GND	J8	R15	GND	GND	AA6				
B26	GND	GND	J13	R21	GND	GND	AA9				
C5	GND	GND	J18	R26	GND	GND	AB12				
C10	GND	GND	K6	T3	GND	GND	AA19				
C20	GND	GND	K11	T5	GND	GND	AA2				
C24	GND	GND	K16	T9	GND	GND	AA24				
C27	GND	GND	K21	T10	GND	GND	AB27				
C28	GND	GND	K26	T14	GND	GND	AC15				
D8	GND	GND	L9	T19	GND	GND	AA3				
D13	GND	GND	L24	U1	GND	GND	AC20				
D21	GND	GND	M1	U2	GND	GND	AC25				
D26	GND	GND	M2	U6	GND	GND	AD18				
E16	GND	GND	M3	U11	GND	GND	AD3				
E20	GND	GND	M4	U17	GND	GND	AE1				
E24	GND	GND	M5	U22	GND	GND	AE11				
E27	GND	GND	M7	U27	GND	GND	AE21				
E28	GND	GND	M22	V3	GND	GND	AE26				
F4	GND	GND	M27	V7	GND	GND	AE6				
F9	GND	GND	N5	V13	GND	GND	AF14				
F19	GND	GND	N10	V15	GND	GND	AF19				
F21	GND	GND	N12	W1	GND	GND	AF4				
F25	GND	GND	N14	W2	GND	GND	AF9				
F26	GND	GND	N20	W6	GND	GND	AG2				
G2	GND	GND	N25	W18	GND	GND	AG22				
G7	GND	GND		W23	GND	GND	AG27				
G12	GND	GND		Y3	GND	GND					

	Title: TE0820 - ZU_POWER		
	A4	Number: TE0820 4AE21FA	Rev. 03
	Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 11 of 21
	Filename: ZU_POWER.SchDoc		



Title: TE0820 - ZU_PS_POWER		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 12 of 21
Filename: ZU_PS_POWER.SchDoc		



	Title: TE0820 - CLK		
	A4	Number: TE0820 4AE21FA	Rev. 03
	Date: 2018-03-28	Copyright: 2015 Trenz Electronic GmbH	Page 13 of 21
	Filename: CLK.SchDoc		

A

B

C

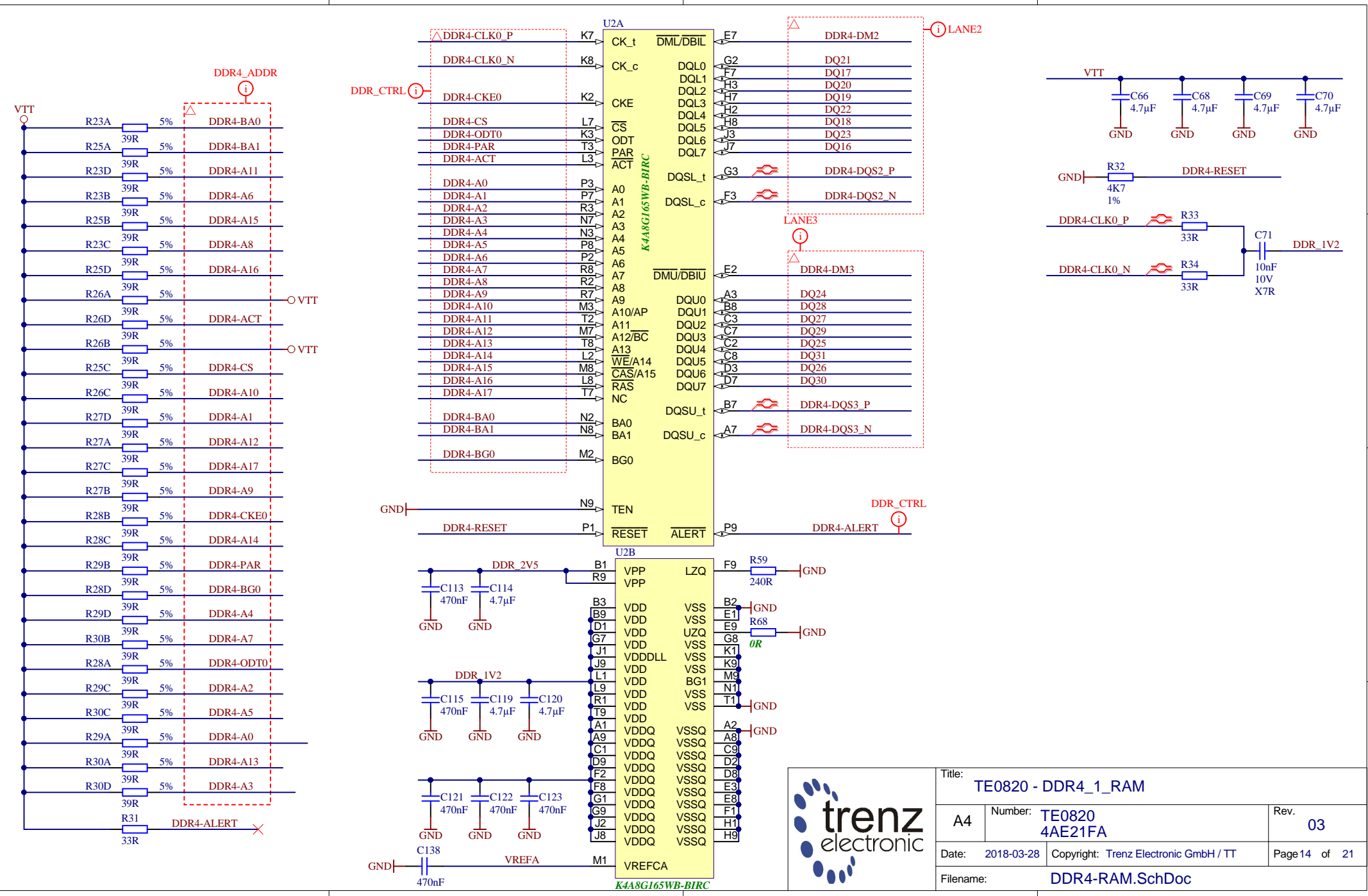
D

A

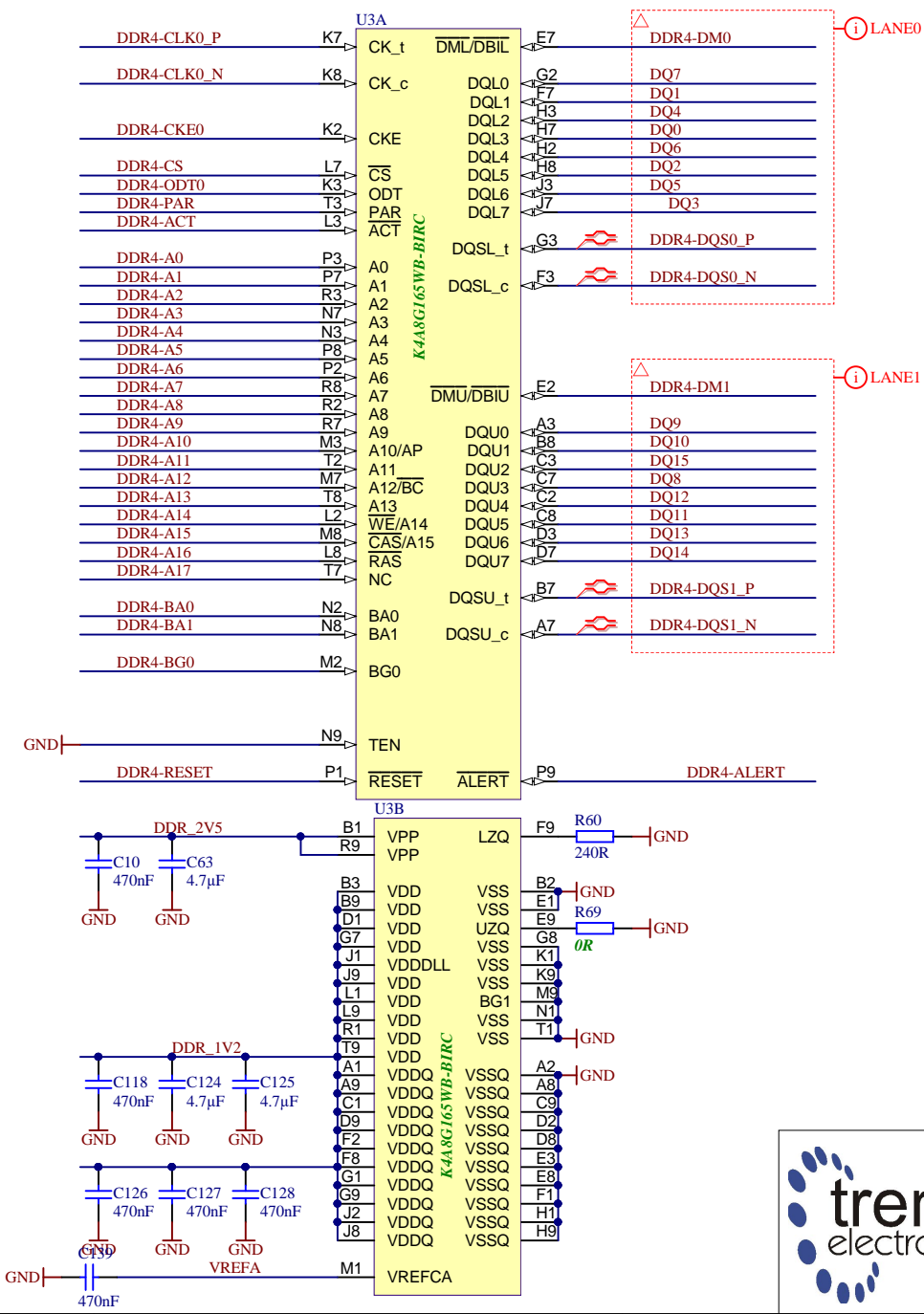
B

C

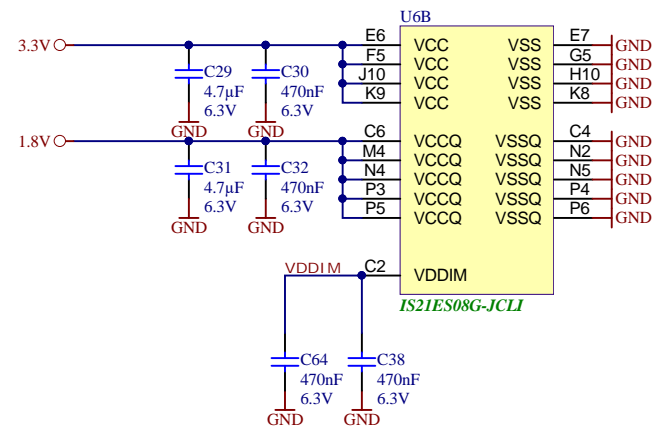
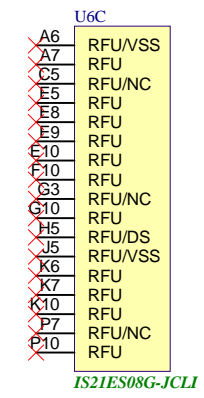
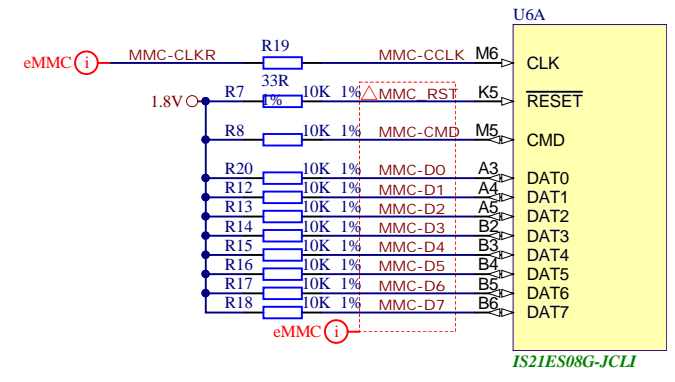
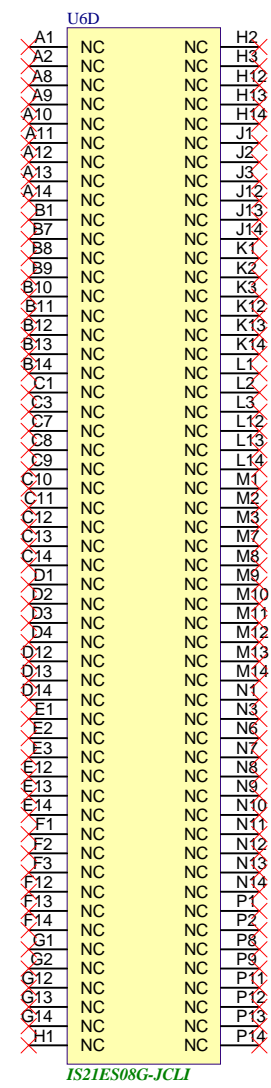
D



Title: TE0820 - DDR4_1_RAM		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 14 of 21
Filename: DDR4-RAM.SchDoc		



Title: TE0820 - DDR4_2_RAM		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 15 of 21
Filename: DDR4-RAM_2.SchDoc		



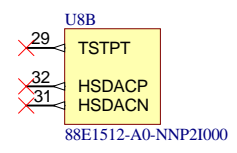
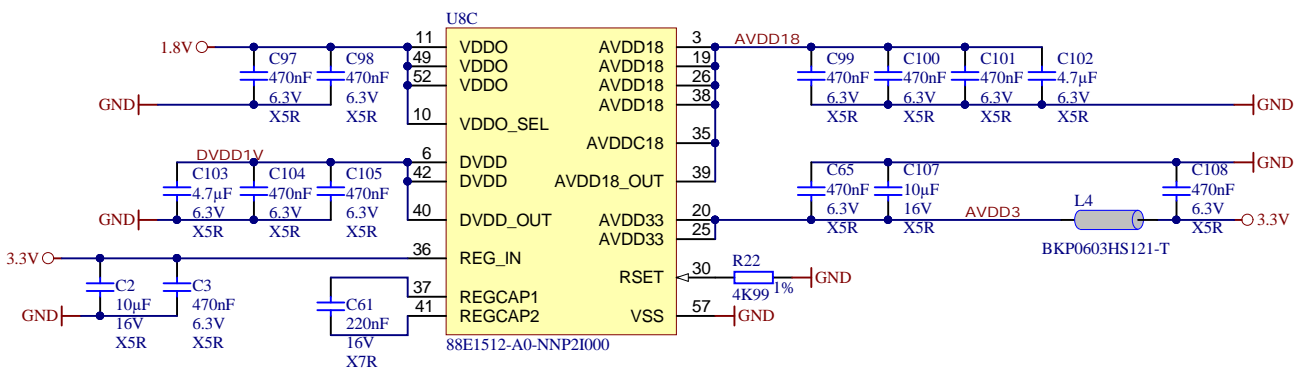
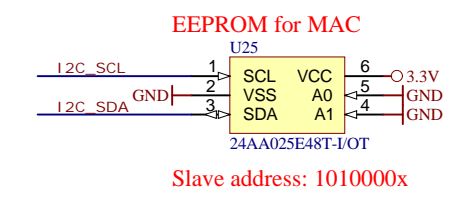
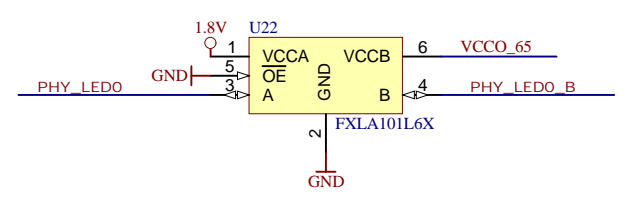
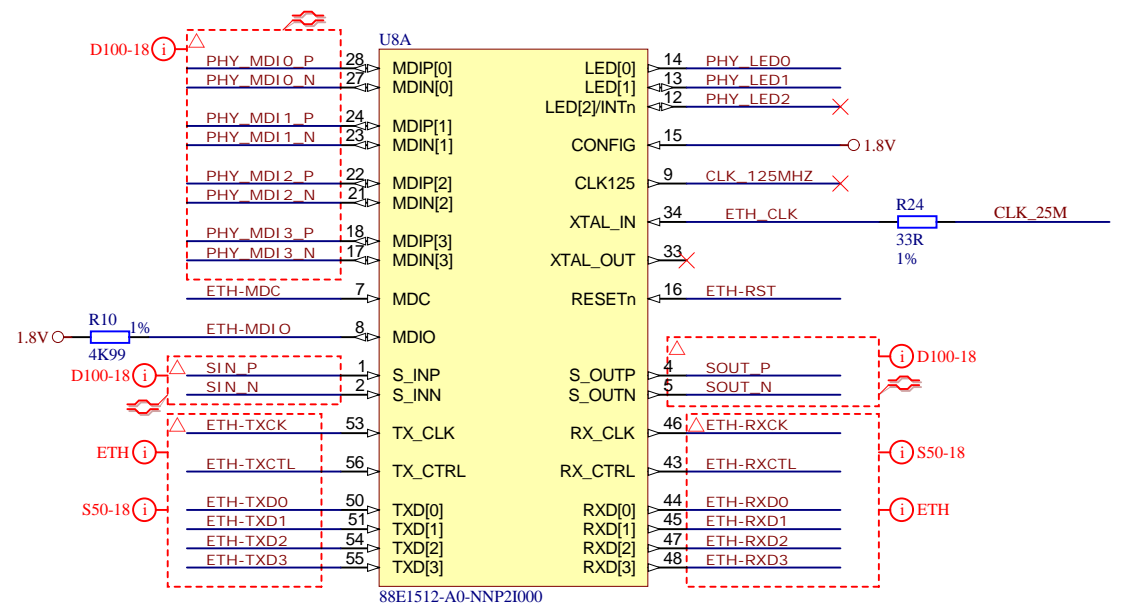
	Title: TE0820 - eMMC		
	A4	Number: TE0820 4AE21FA	Rev. 03
	Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 16 of 21
	Filename: eMMC.SchDoc		

A

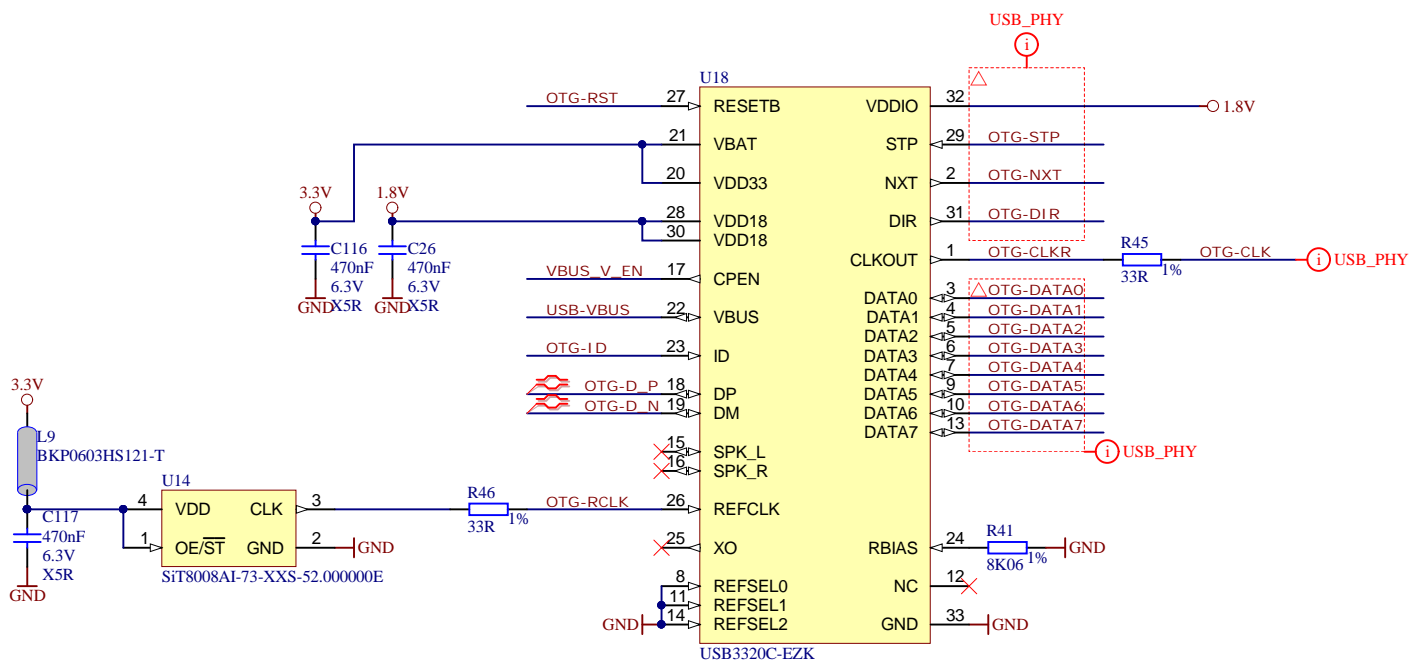
B


C

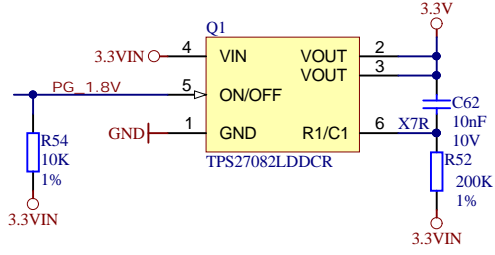
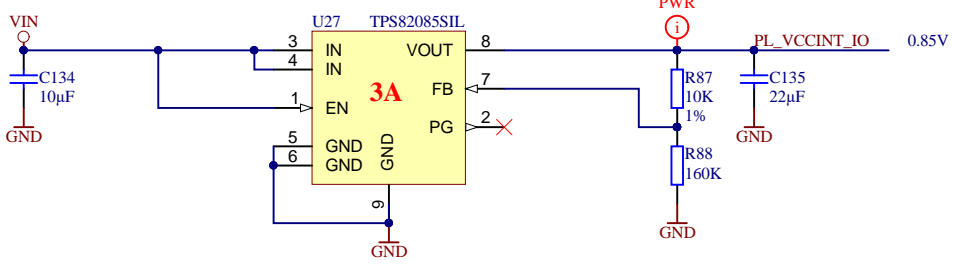
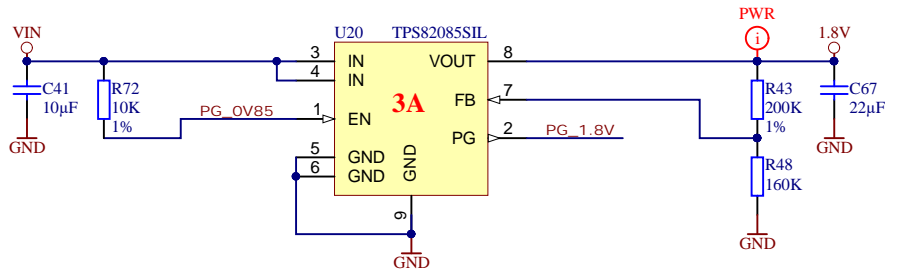
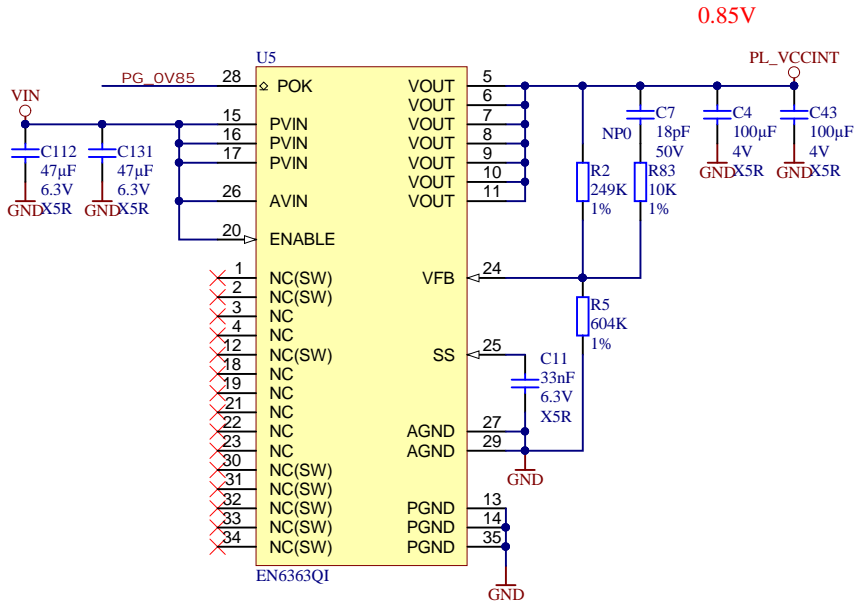
D



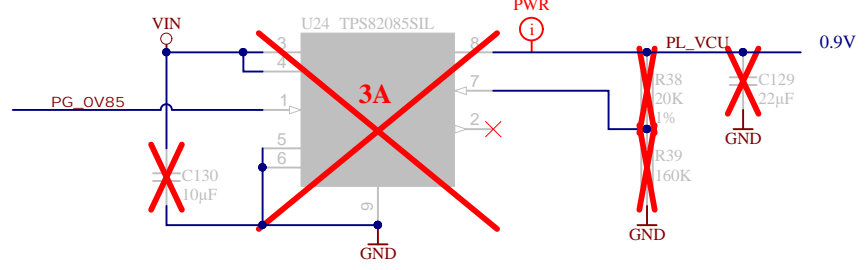
Title: TE0820 - Eth_PHY		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: 2015 Trenz Electronic GmbH	Page 17 of 21
Filename: ETH-PHY.SchDoc		



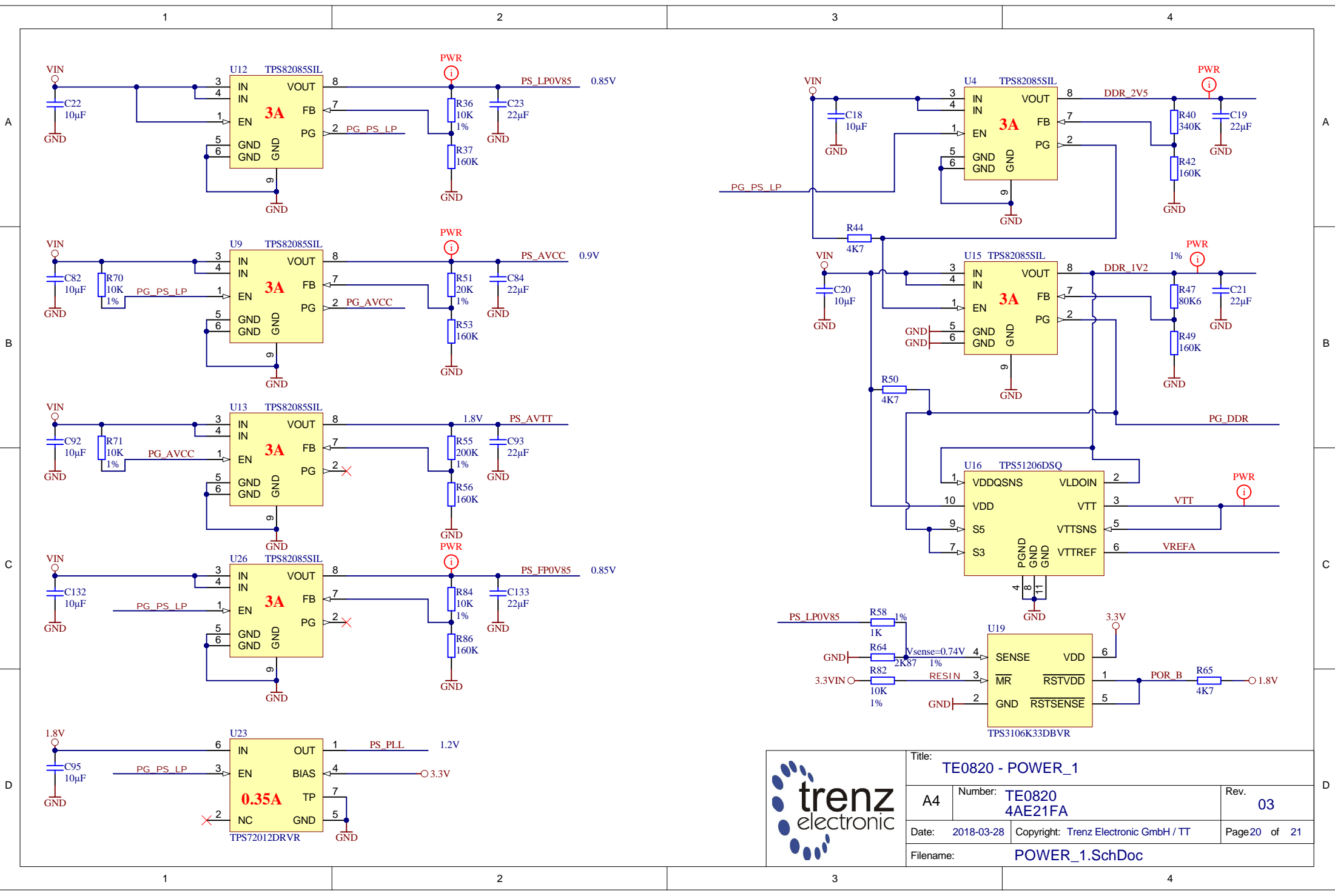
			Title: TE0820 - USB_PHY	
			A4	Number: TE0820 4AE21FA
Date: 2018-03-28		Copyright: 2015 Trenz Electronic GmbH		Page 18 of 21
Filename: USB-PHY.SchDoc				




NOTE: in variants with VCU R38 was 40.2K, this has been corrected to 20K (Xilinx documentation DS925) for further details just see Design Note Number: DN-20200904
<https://wiki.trenz-electronic.de/display/PD/Design+Note+TE0820-03+with+Video+Codec+++EV>



Title: TE0820 - POWER		
A4	Number: TE0820 4AE21FA	Rev. 03
Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 19 of 21
Filename: POWER.SchDoc		



			Title: TE0820 - POWER_1	
			A4	Number: TE0820 4AE21FA
Date: 2018-03-28		Copyright: Trenz Electronic GmbH / TT		Page 20 of 21
Filename: POWER_1.SchDoc				


CHANGES REV01 to REV02

- 1) Added MAC EEPROM (slave address:)
- 2) LIB components update
- 3) Fixed SD Card connection
- 4) Fixed sense connection from DCDC
- 5) Made correct power connection for VCU (removed DCDC, added resistors and caps like as Xilinx recommended)
- 6) Added resistors for variants (ZU+ with/without VCU)
- 7) Added termination resistors (240R) to VRP pins fro all HP-banks

CHANGES REV02 to REV03

- 1) Fixed VCU connection: add additional DCDC (0.9V)
- 2) LIB components update
- 3) Change package 1K resistors (0402 -> 0201)
- 4) Added LEDs (1x user LED, 1x LED for ERR_STATUS, 1xLED for ERR_OUT)
- 5) Change obsolete 2xSPI Flash (256MBit) -> 2xSPI Flash (512MBit)
- 6) Added additional DCDCs (PL_VCCINT_IO, PS_FP0V85)
- 7) Changed DCDC (U5) 6A (optional 4A)

Design Note Number: DN-20200904 (<https://wiki.trenz-electronic.de/display/PD/Design+Note+TE0820-03+with+Video+Codec+++EV>)
 The internal supply voltage for the video codec unit (VCU) is set via Resistors R38 and R39. For the above mentioned affected SoMs R38 is set to 40.2 kOhm resulting in a PL_VCU voltage of 1.0V. This is above the recommended operation specification.
 Up to the issue date of this design note no adverse effects have been reported. For all serial numbers not mentioned under affected products R38 is 20 kOhm resulting in xilinx recommended 0.9V internal VCU voltage.
 If your product is affected and revision is required please contact sales@trenz-electronic.de (subject = DN-20200904) for further instructions.

	Title: TE0820 - Revision Changes		
	A4	Number: TE0820 4AE21FA	Rev. 03
	Date: 2018-03-28	Copyright: Trenz Electronic GmbH / TT	Page 21 of 21
	Filename: Revision Changes.SchDoc		