U_DDR3-RAM
DDR3-RAM.SchDoc

U_Ethernet
Ethernet.SchDoc

U_SOC
SOC.SchDoc

U_CPLD
CPLD.SchDoc

U_POWER2
POWER2.SchDoc

U_HyperFlash_RAM
HyperFlash_RAM.SchDoc

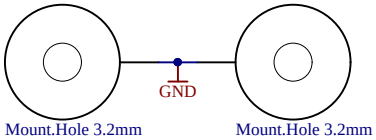
U_Clock
Clock.SchDoc

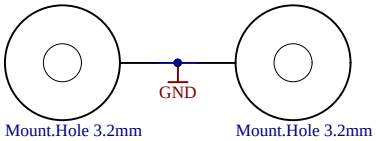
U_eMMC
eMMC.SchDoc

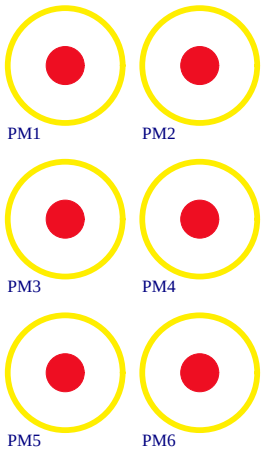
U_Connectors
Connectors.SchDoc

U_POWER
POWER.SchDoc

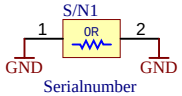
LOGO1
TE Logo PRINT Layer
LOGO PRINT







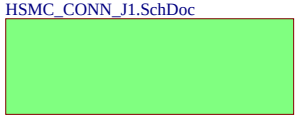
Serial
Serial
Serialnumber 6,3 x 6.3mm



trenz electronic

Title: TE0784 - Overview			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page1 of 30
Filename: TE0784.SchDoc			

U_HSMC_CONN_J1
HSMC_CONN_J1.SchDoc



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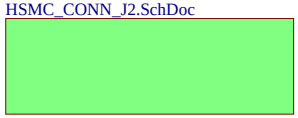
HSMC_CONN_J2.SchDoc



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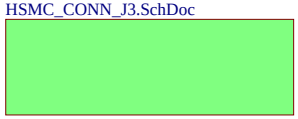
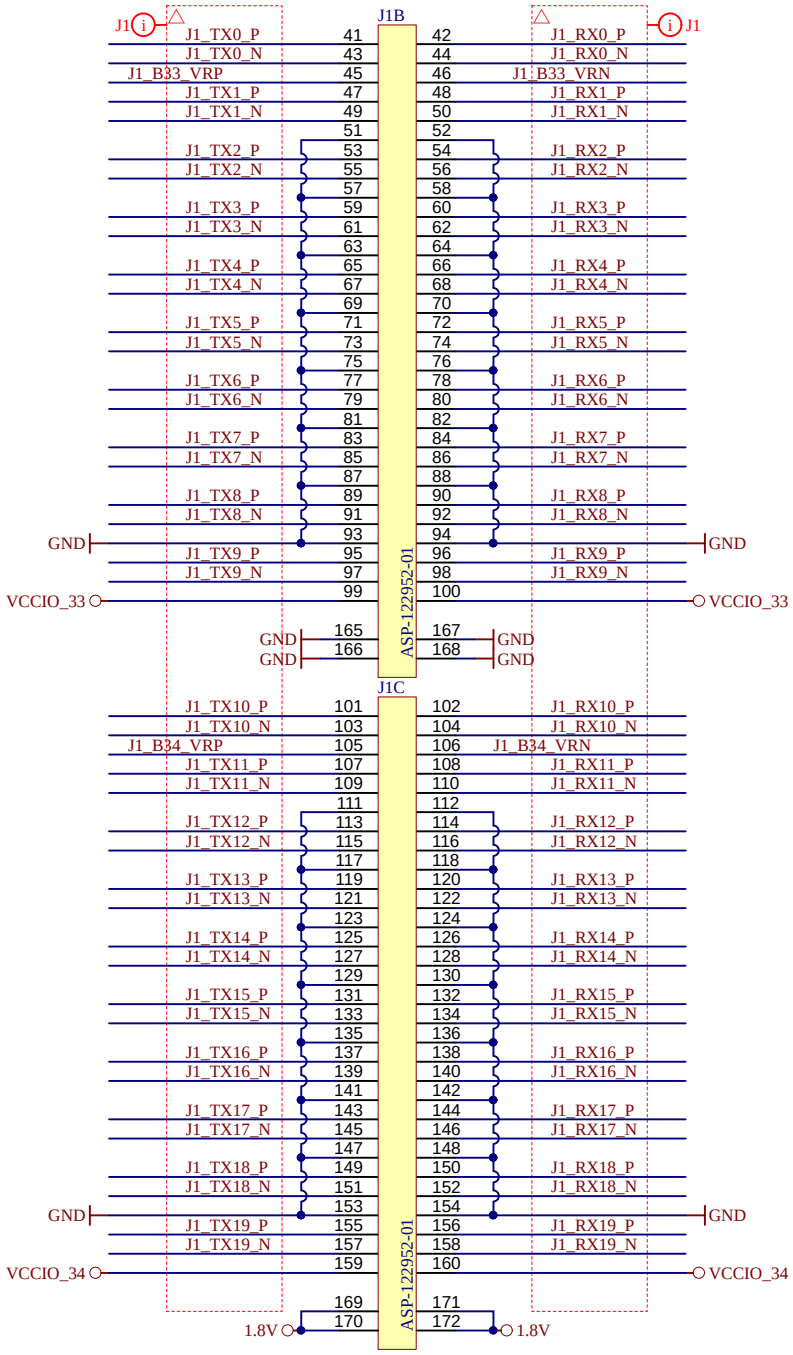
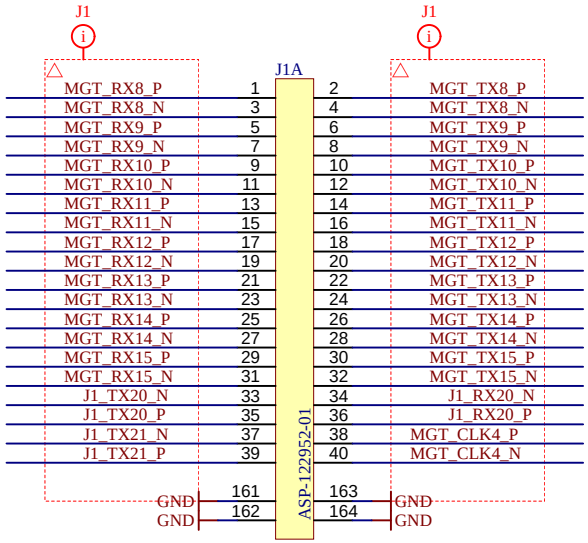
HSMC_CONN_J3.SchDoc



trenz electronic	Title: TE0784 - Connectors		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page2 of 30
Filename: Connectors.SchDoc			





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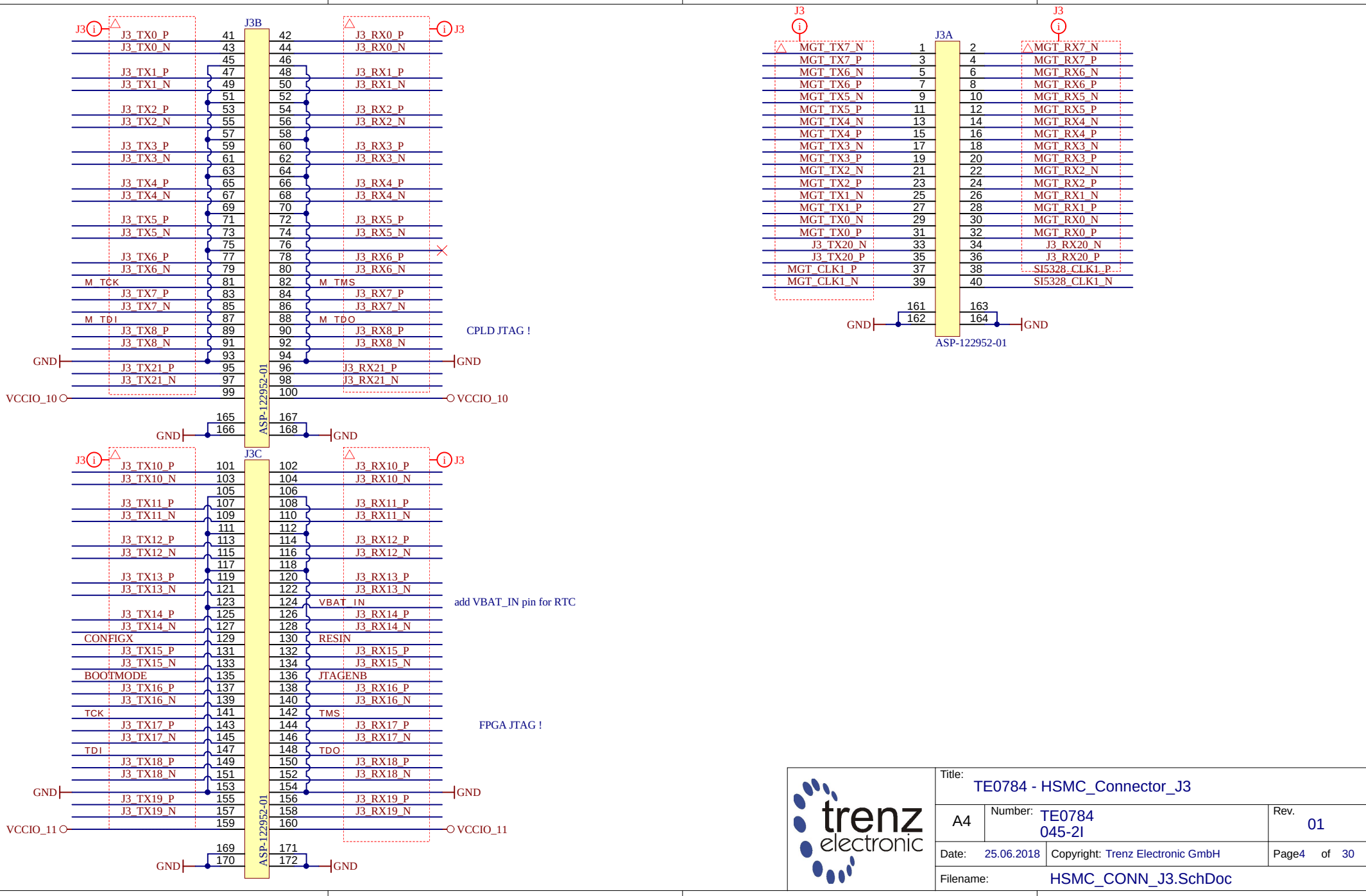
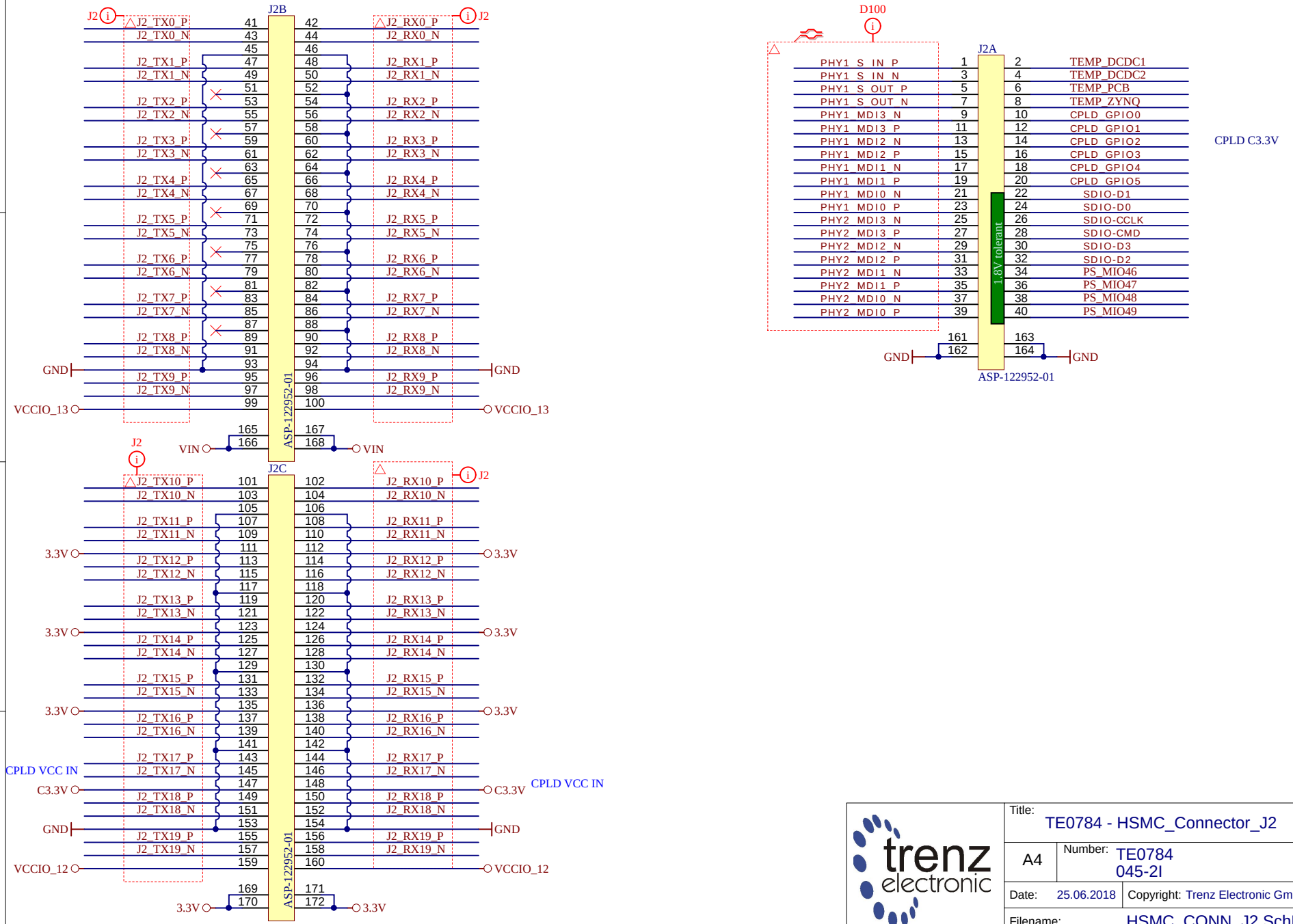
Title: TE0784 - HSMC_Connector_J1			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page3 of 30
Filename: HSMC_CONN_J1.SchDoc			


J3
J3B
J3_TX0_P 41
J3_TX0_N 43
J3_TX1_P 47
J3_TX1_N 49
J3_TX2_P 53
J3_TX2_N 55
J3_TX3_P 59
J3_TX3_N 61
J3_TX4_P 65
J3_TX4_N 67
J3_TX5_P 71
J3_TX5_N 73
J3_TX6_P 77
J3_TX6_N 79
M_TCK 81
J3_TX7_P 83
J3_TX7_N 85
M_TDI 87
J3_TX8_P 89
J3_TX8_N 91
GND 93
J3_TX21_P 95
J3_TX21_N 97
VCCIO_10 99
GND 165 166
J3_RX0_P 42
J3_RX0_N 44
J3_RX1_P 48
J3_RX1_N 50
J3_RX2_P 54
J3_RX2_N 56
J3_RX3_P 60
J3_RX3_N 62
J3_RX4_P 66
J3_RX4_N 68
J3_RX5_P 72
J3_RX5_N 74
J3_RX6_P 78
J3_RX6_N 80
M_TMS 82
J3_RX7_P 84
J3_RX7_N 86
M_TDO 88
J3_RX8_P 90
J3_RX8_N 92
GND 94
J3_RX21_P 96
J3_RX21_N 98
VCCIO_10 100
GND 167 168
ASP-122952-01
CPLD JTAG !
J3
J3C
J3_TX10_P 101
J3_TX10_N 103
J3_TX11_P 107
J3_TX11_N 109
J3_TX12_P 113
J3_TX12_N 115
J3_TX13_P 119
J3_TX13_N 121
J3_TX14_P 125
J3_TX14_N 127
CONFIGX 129
J3_TX15_P 131
J3_TX15_N 133
BOOTMODE 135
J3_TX16_P 137
J3_TX16_N 139
TCK 141
J3_TX17_P 143
J3_TX17_N 145
TDI 147
J3_TX18_P 149
J3_TX18_N 151
GND 153
J3_TX19_P 155
J3_TX19_N 157
VCCIO_11 159
GND 169 170
J3_RX10_P 102
J3_RX10_N 104
J3_RX11_P 108
J3_RX11_N 110
J3_RX12_P 114
J3_RX12_N 116
J3_RX13_P 120
J3_RX13_N 122
VBAT_IN 124
J3_RX14_P 126
J3_RX14_N 128
RESIN 130
J3_RX15_P 132
J3_RX15_N 134
JTAGENB 136
J3_RX16_P 138
J3_RX16_N 140
TMS 142
J3_RX17_P 144
J3_RX17_N 146
TDO 148
J3_RX18_P 150
J3_RX18_N 152
GND 154
J3_RX19_P 156
J3_RX19_N 158
VCCIO_11 160
GND 171 172
ASP-122952-01
add VBAT_IN pin for RTC
FPGA JTAG !
J3
J3A
MGT_TX7_N 1
MGT_TX7_P 3
MGT_TX6_N 5
MGT_TX6_P 7
MGT_TX5_N 9
MGT_TX5_P 11
MGT_TX4_N 13
MGT_TX4_P 15
MGT_TX3_N 17
MGT_TX3_P 19
MGT_TX2_N 21
MGT_TX2_P 23
MGT_TX1_N 25
MGT_TX1_P 27
MGT_TX0_N 29
MGT_TX0_P 31
J3_TX20_N 33
J3_TX20_P 35
MGT_CLK1_P 37
MGT_CLK1_N 39
GND 161 162
MGT_RX7_N 2
MGT_RX7_P 4
MGT_RX6_N 6
MGT_RX6_P 8
MGT_RX5_N 10
MGT_RX5_P 12
MGT_RX4_N 14
MGT_RX4_P 16
MGT_RX3_N 18
MGT_RX3_P 20
MGT_RX2_N 22
MGT_RX2_P 24
MGT_RX1_N 26
MGT_RX1_P 28
MGT_RX0_N 30
MGT_RX0_P 32
J3_RX20_N 34
J3_RX20_P 36
SI5328_CLK1_P 38
SI5328_CLK1_N 40
GND 163 164
ASP-122952-01
trenz electronic
Title: TE0784 - HSMC_Connector_J3
A4
Number: TE0784 045-2I
Rev. 01
Date: 25.06.2018
Copyright: Trenz Electronic GmbH
Page4 of 30
Filename: HSMC_CONN_J3.SchDoc



Title: TE0784 - HSMC_Connector_J2			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page5 of 30
Filename: HSMC_CONN_J2.SchDoc			

U_PS-DDR
PS-DDR.SchDoc

U_MIO-BANKS
MIO-BANKS.SchDoc

U_HP-BANKS
HP-BANKS.SchDoc

U_FPGA-MGT
FPGA-MGT.SchDoc

U_FPGA-CFG
FPGA-CFG.SchDoc

U_FPGA-PWR
FPGA-PWR.SchDoc

U_B9
B9.SchDoc

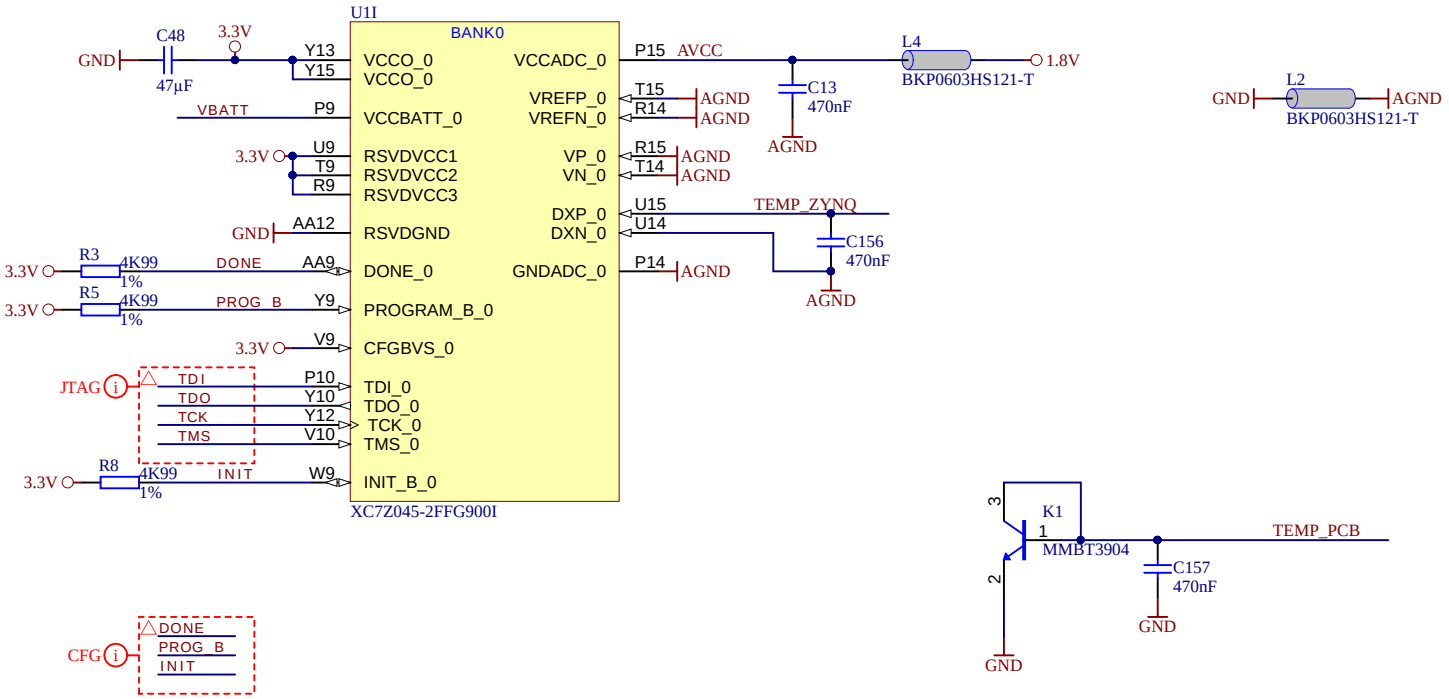
U_B10
B10.SchDoc

U_B11
B11.SchDoc

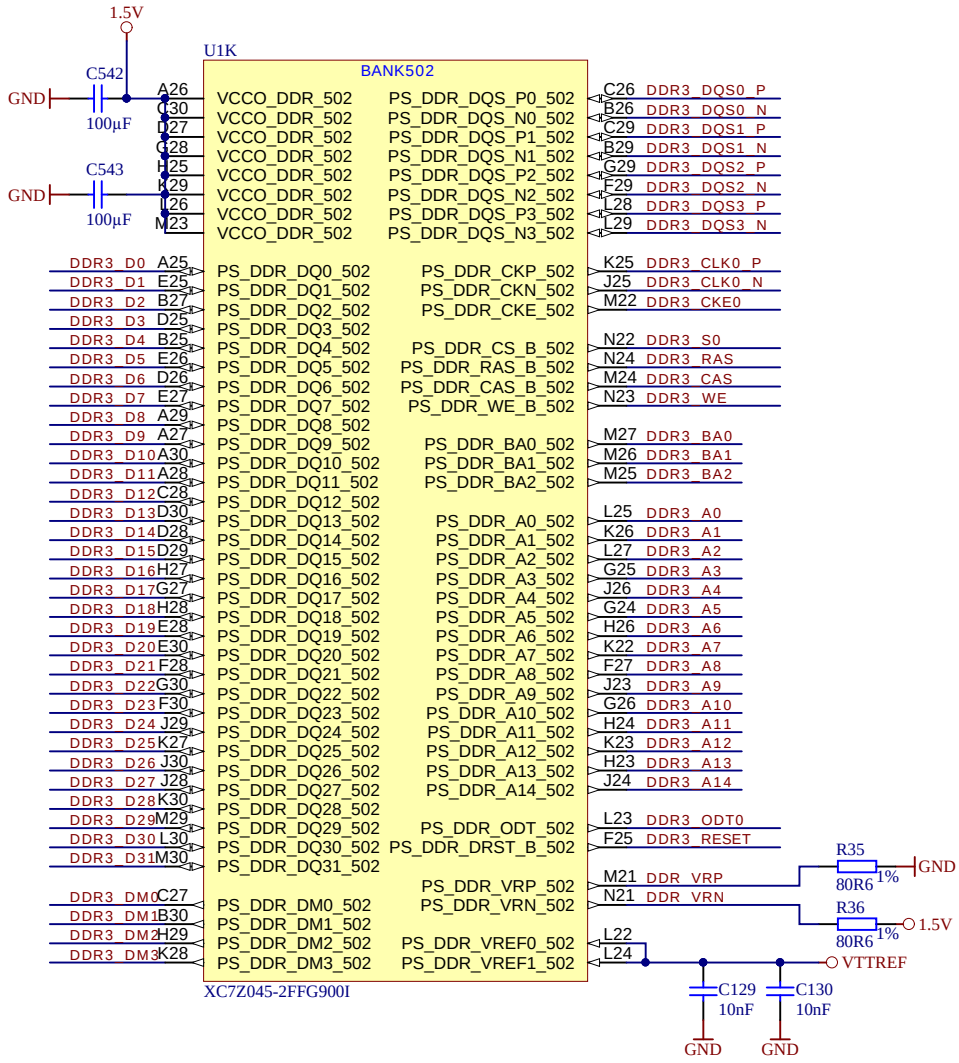
U_B12
B12.SchDoc

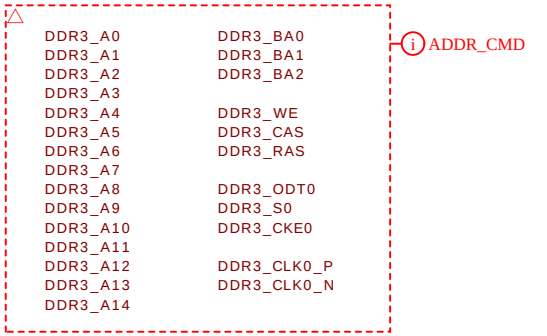
U_B13
B13.SchDoc

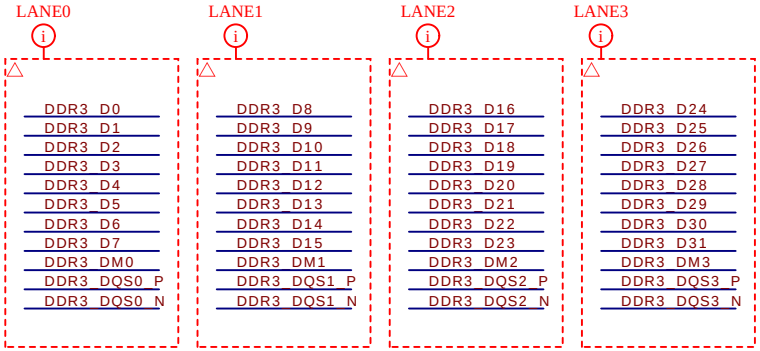
trenz electronic	Title: TE0784 - SOC		
	A4	Number: TE0784 045-2I	Rev. 01
	Date: 25.06.2018	Copyright: Trenz Electronic GmbH	Page6 of 30
	Filename: SOC.SchDoc		



Title: TE0784 - FPGA Configuration			
A4	Nummer: TE0784 045-2I		Rev. 01
Datum: 25.06.2018	Zeichner: Trenz Electronic GmbH		Blatt 7 von 30
Filename: FPGA-CFG.SchDoc			







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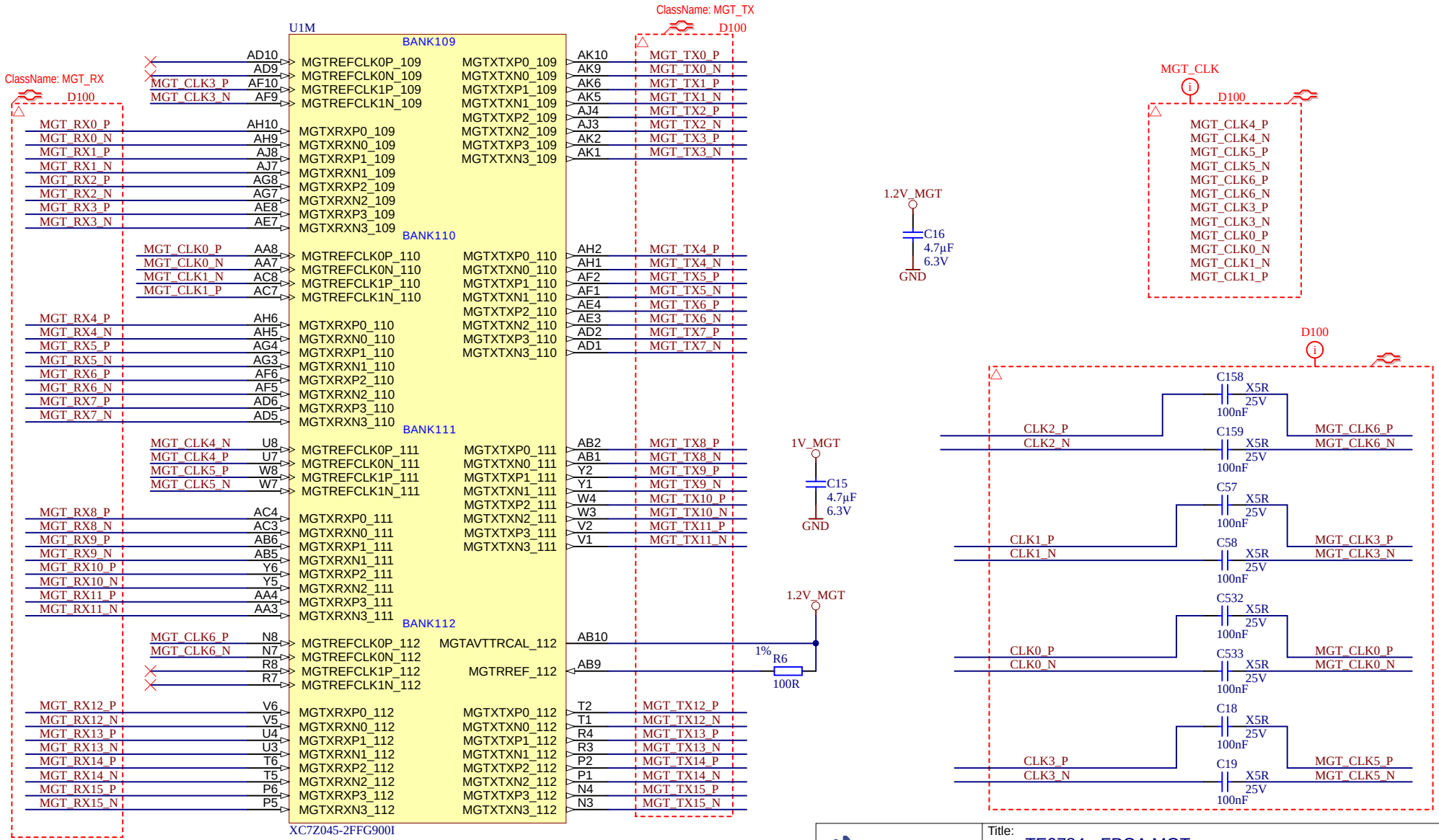
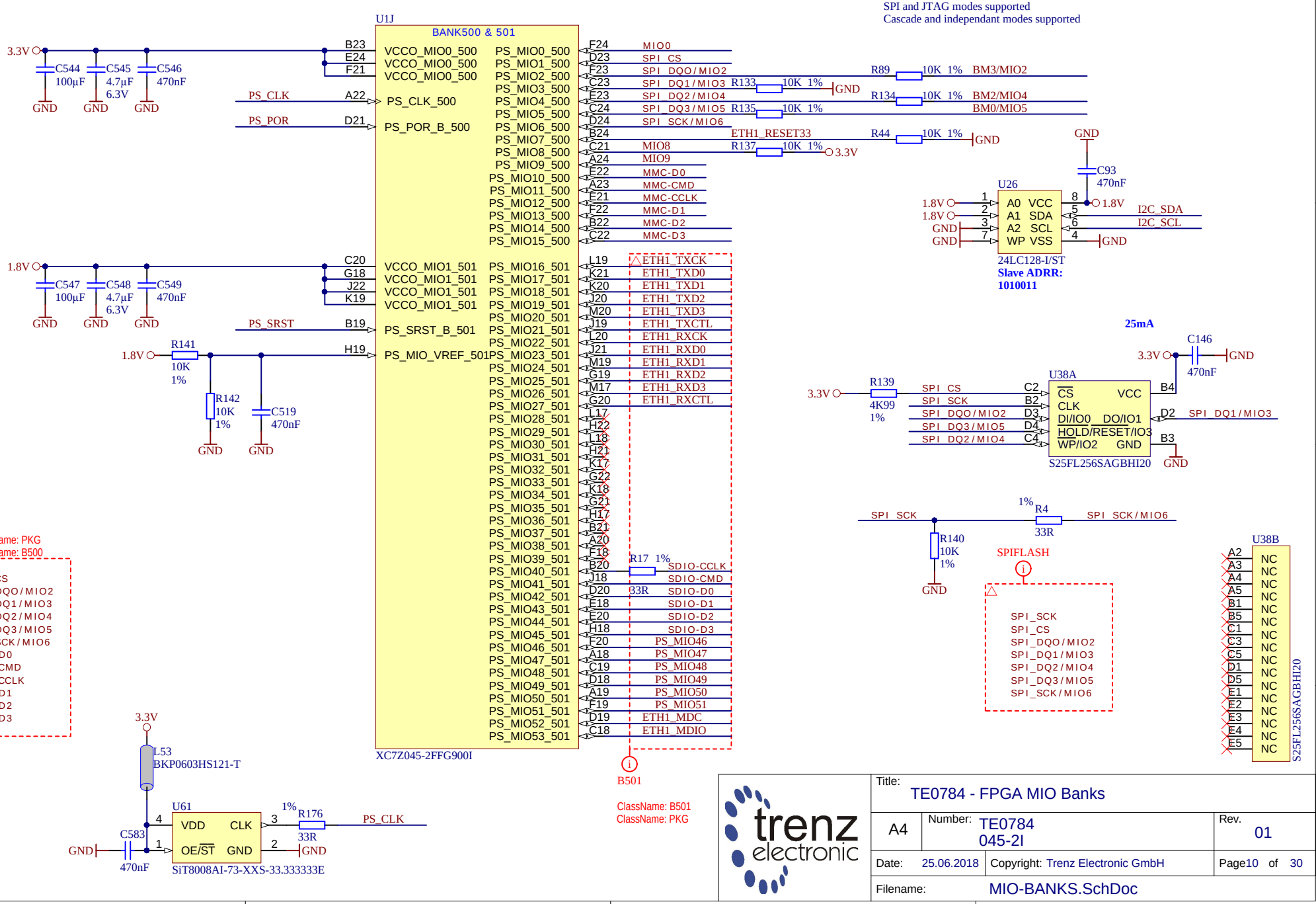
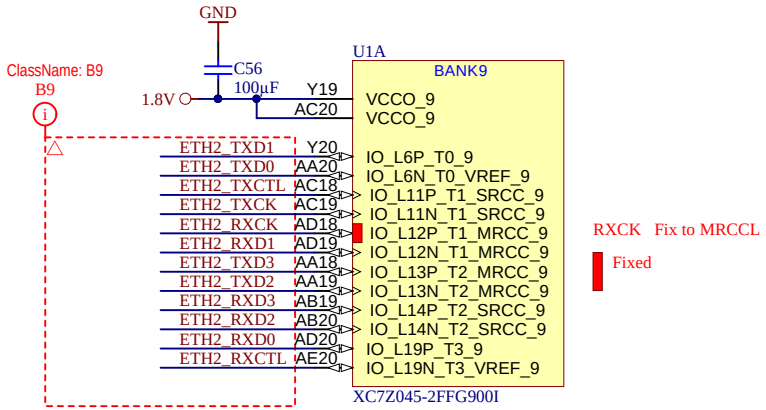
Title: TE0784 - FPGA DDR Banks			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page8 of 30
Filename: PS-DDR.SchDoc			



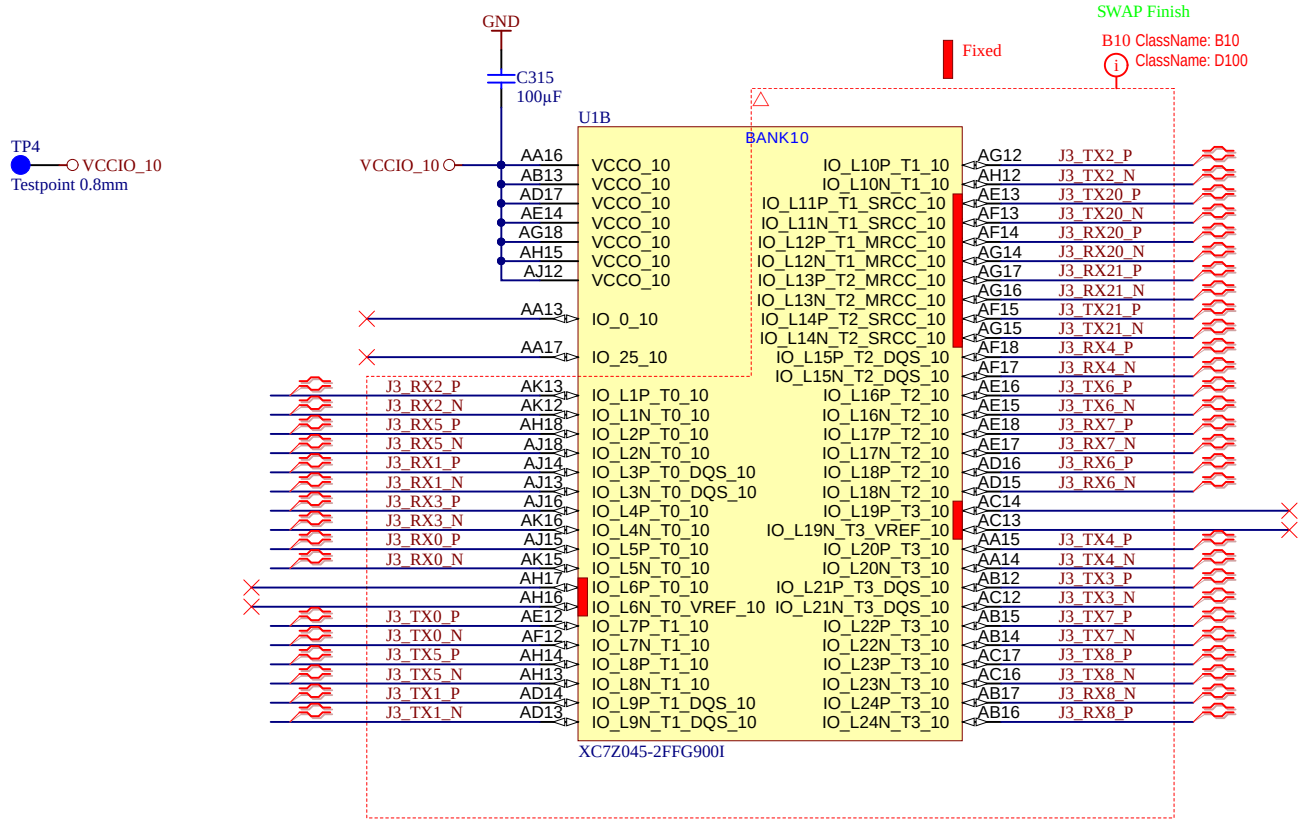
Title: TE0784 - FPGA MGT			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page9 of 30
Filename: FPGA-MGT.SchDoc			



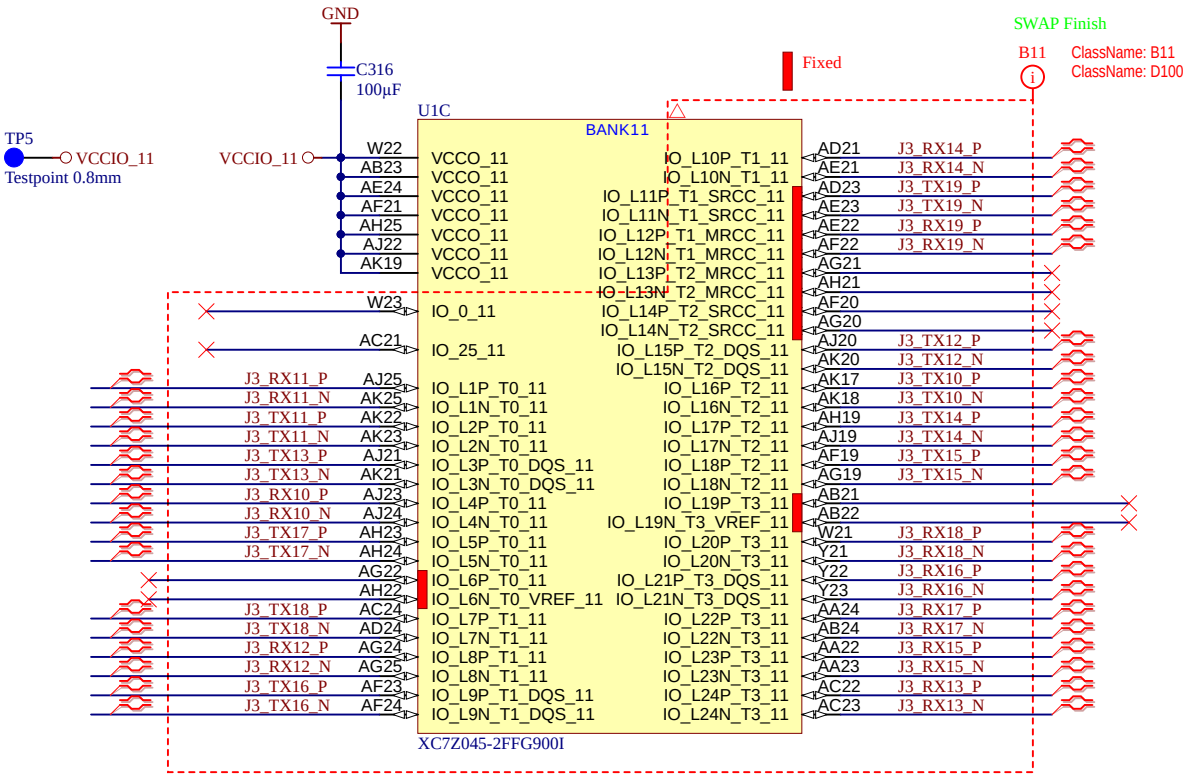
Title: TE784 - FPGA MIO Banks			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page10 of 30
Filename: MIO-BANKS.SchDoc			



trenz electronic	Title: TE0784 - FPGA B9		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page11 of 30
Filename: B9.SchDoc			



trenz electronic	Title: TE0784 - FPGA B10		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page12 of 30
Filename: B10.SchDoc			



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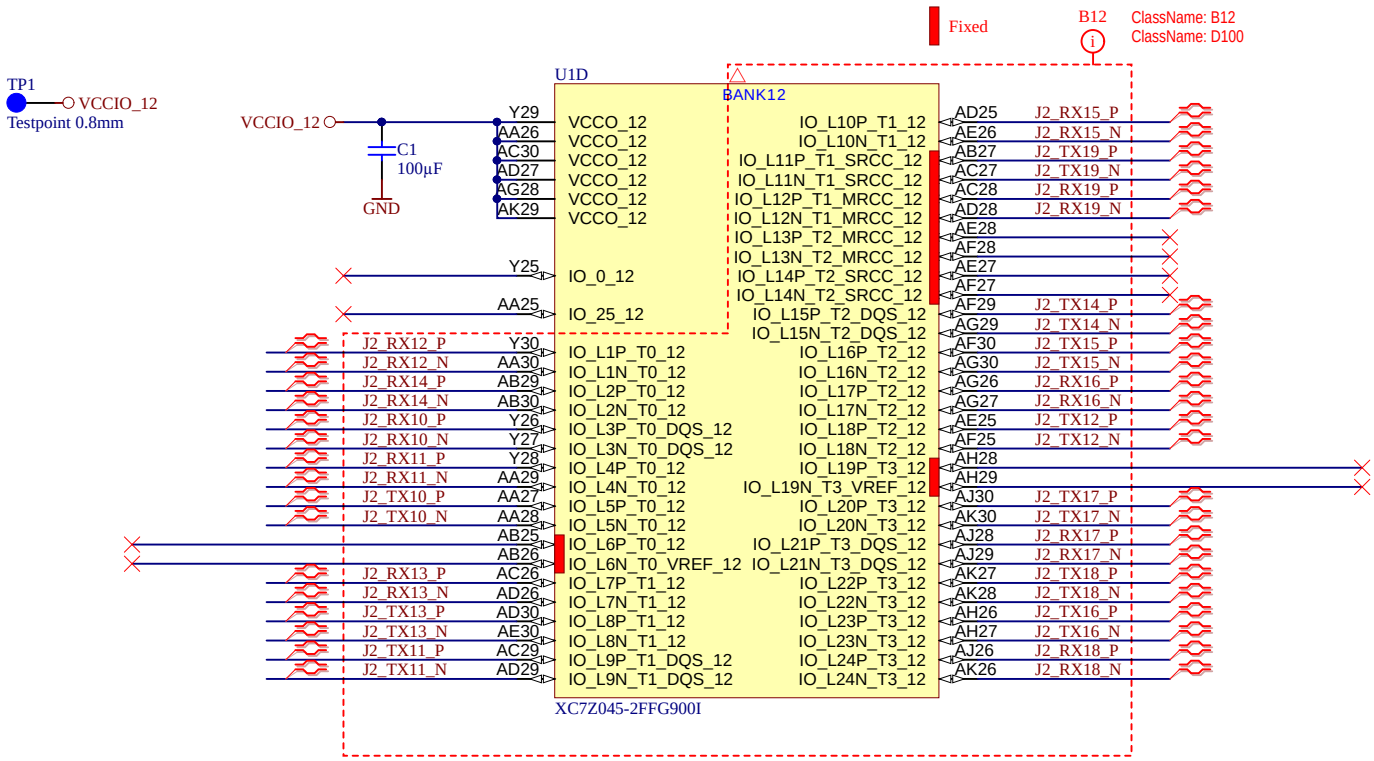
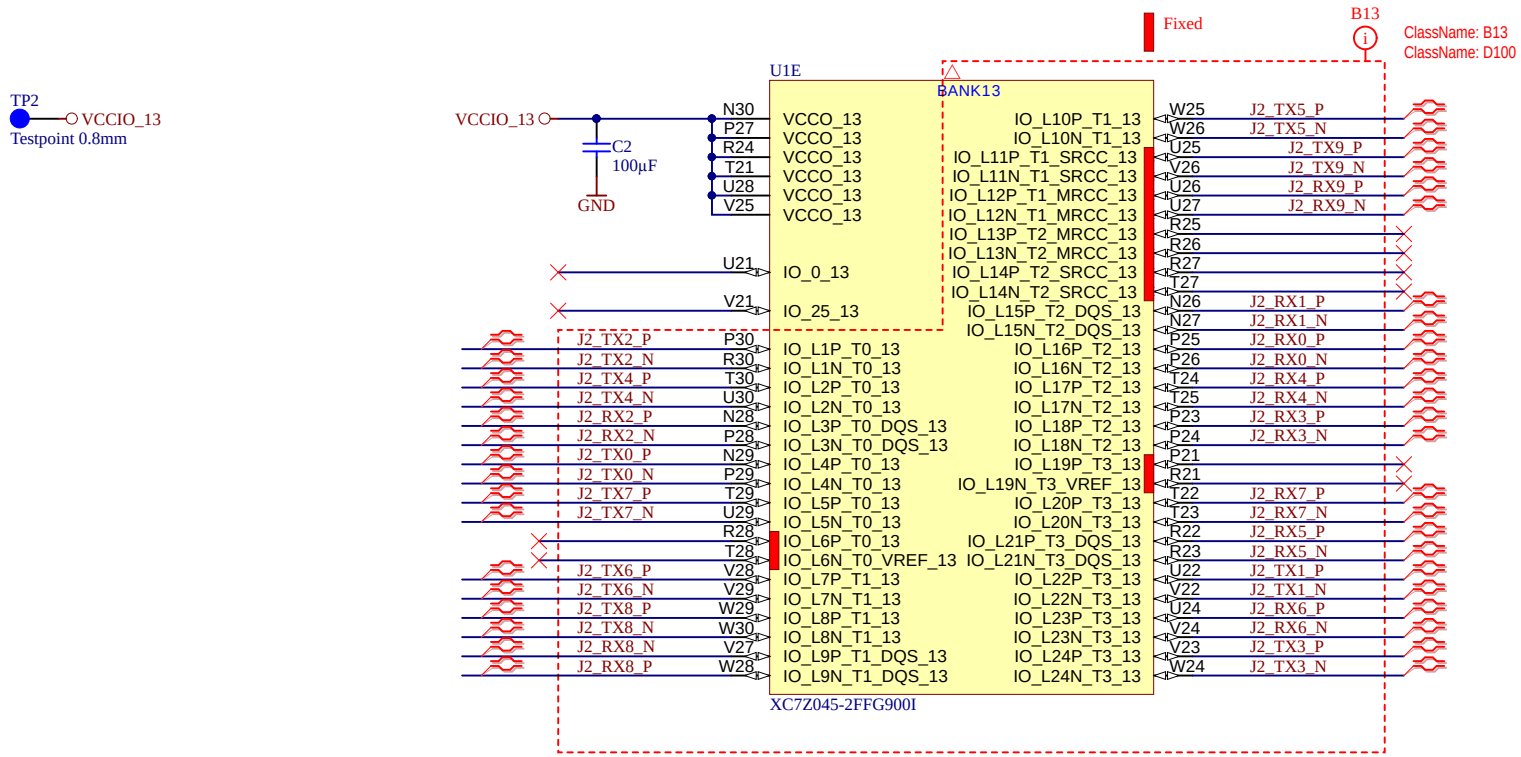
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page13 of 30
Filename: B11.SchDoc			



Title: TE0784 - FPGA B12			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page14 of 30
Filename: B12.SchDoc			



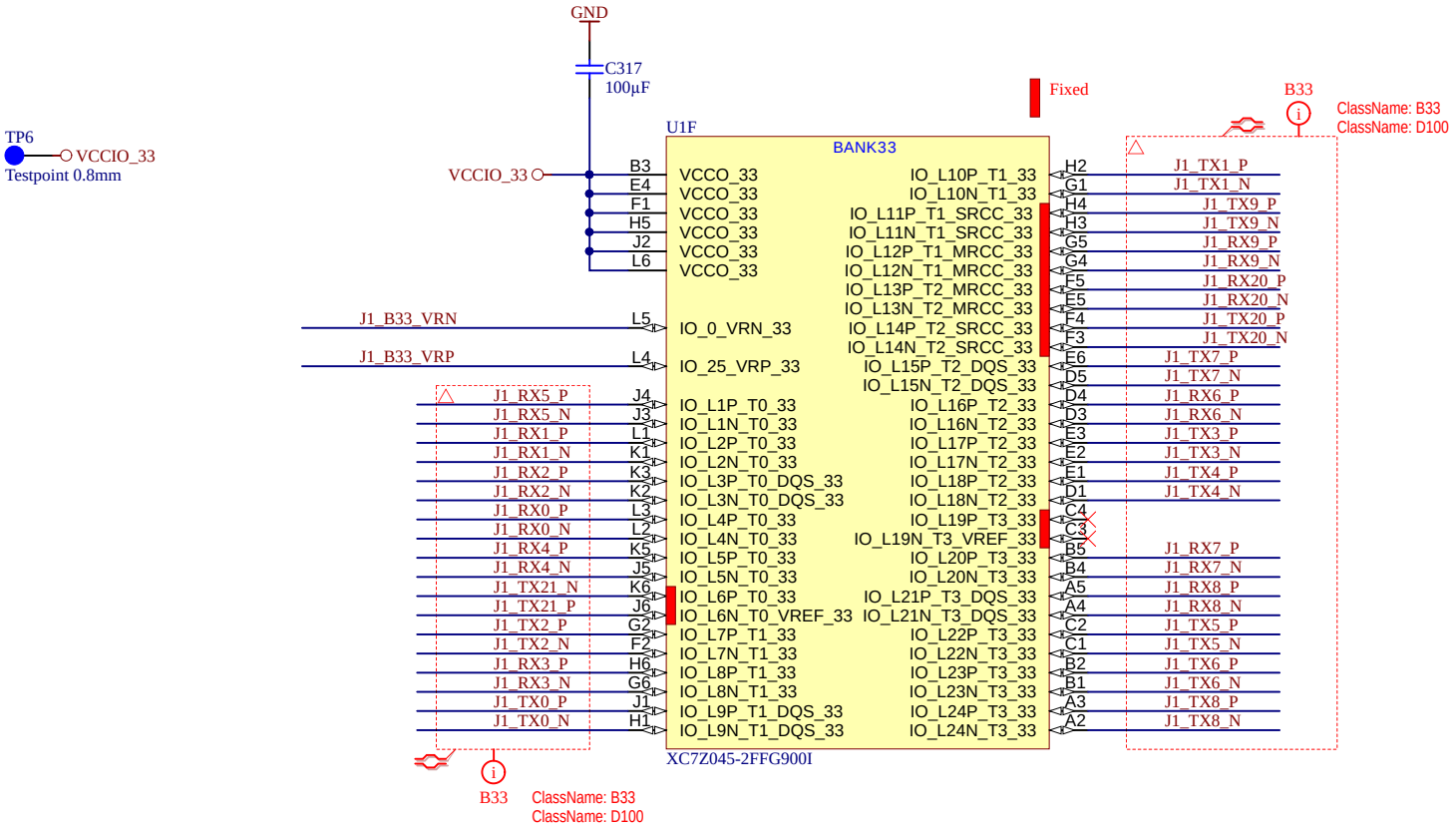
trenz electronic	Title: TE0784 - FPGA B13		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page15 of 30
Filename: B13.SchDoc			

U_B33
B33.SchDoc

U_B34
B34.SchDoc

U_B35
B35.SchDoc

Title: TE0784 - FPGA HP Banks			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page16 of 30
Filename: HP-BANKS.SchDoc			



trenz electronic	Title: TE0784 - FPGA B33		
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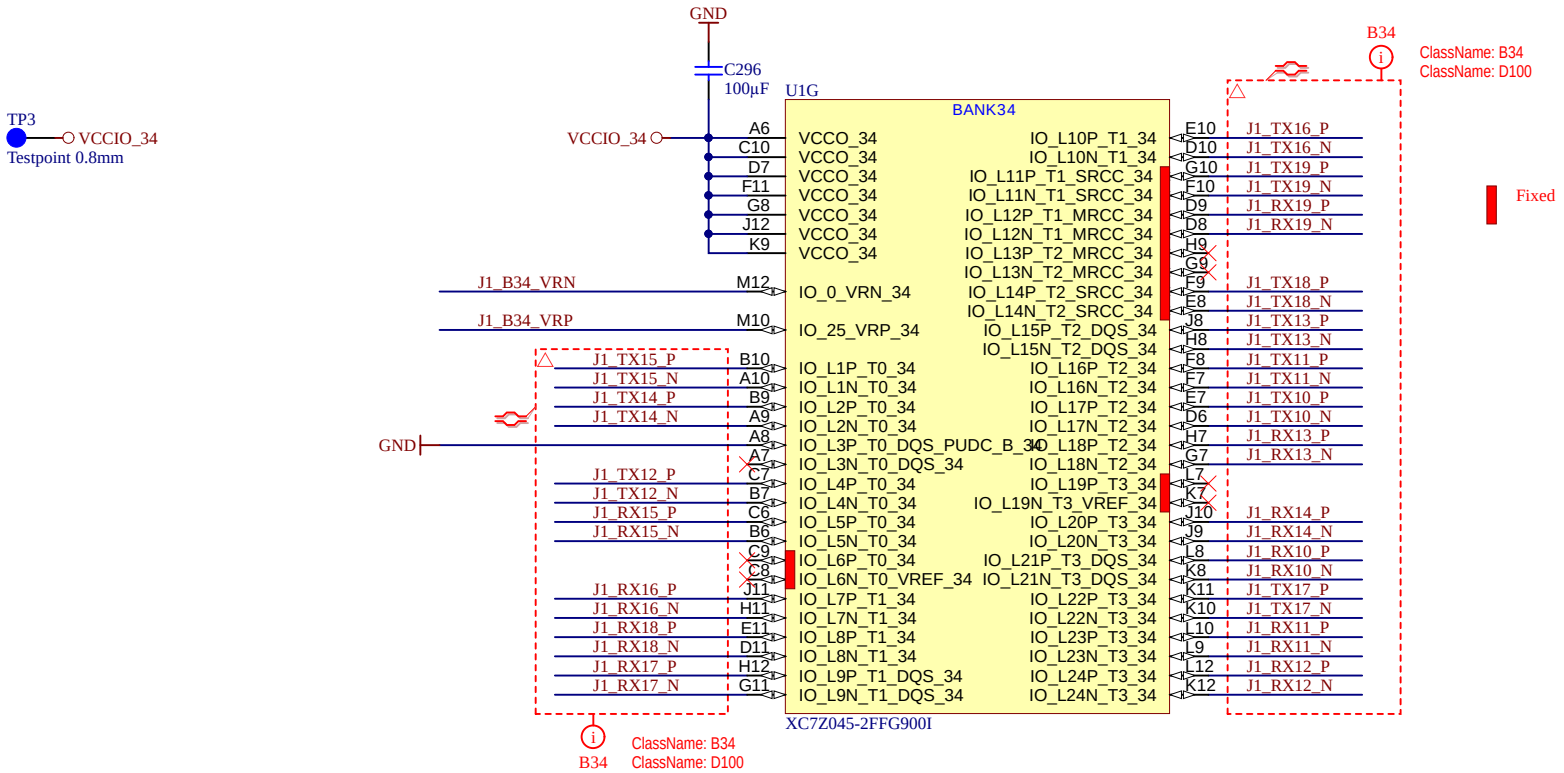
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page17 of 30
Filename: B33.SchDoc			



trenz electronic	Title: TE0784 - FPGA B34		
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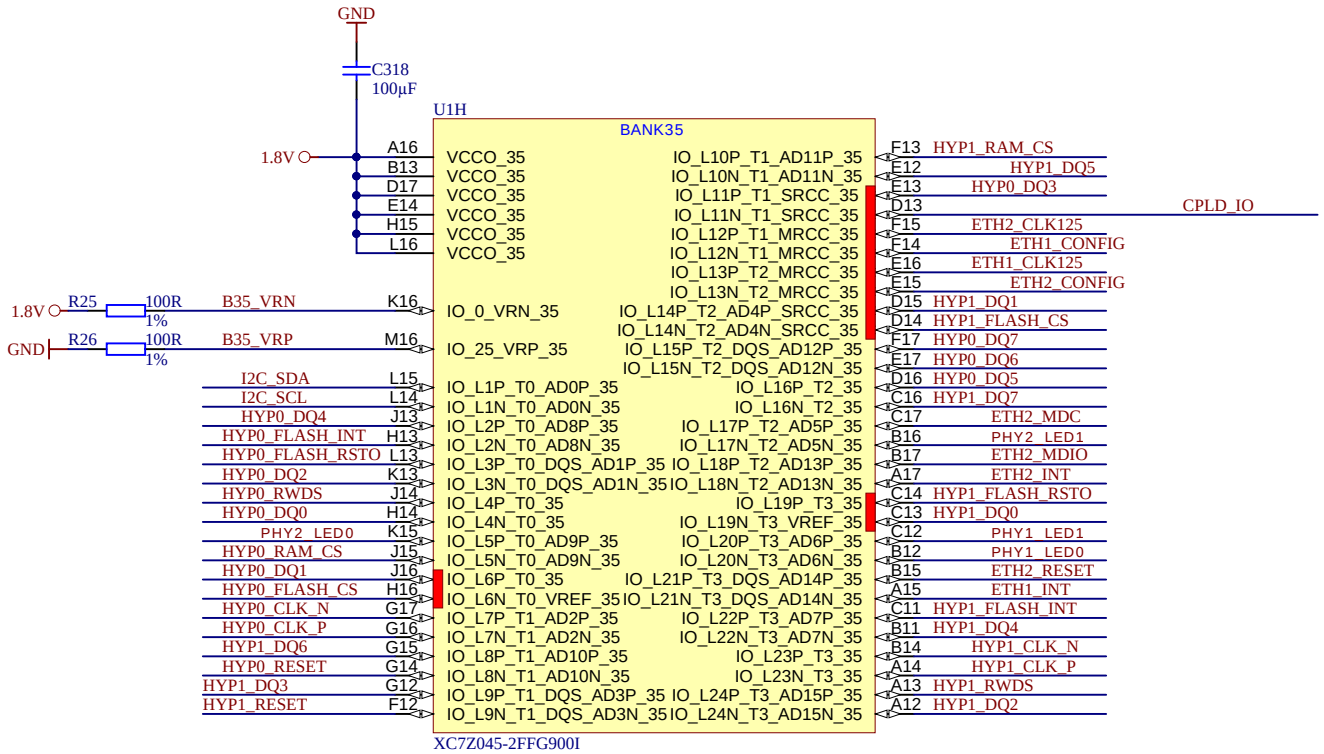
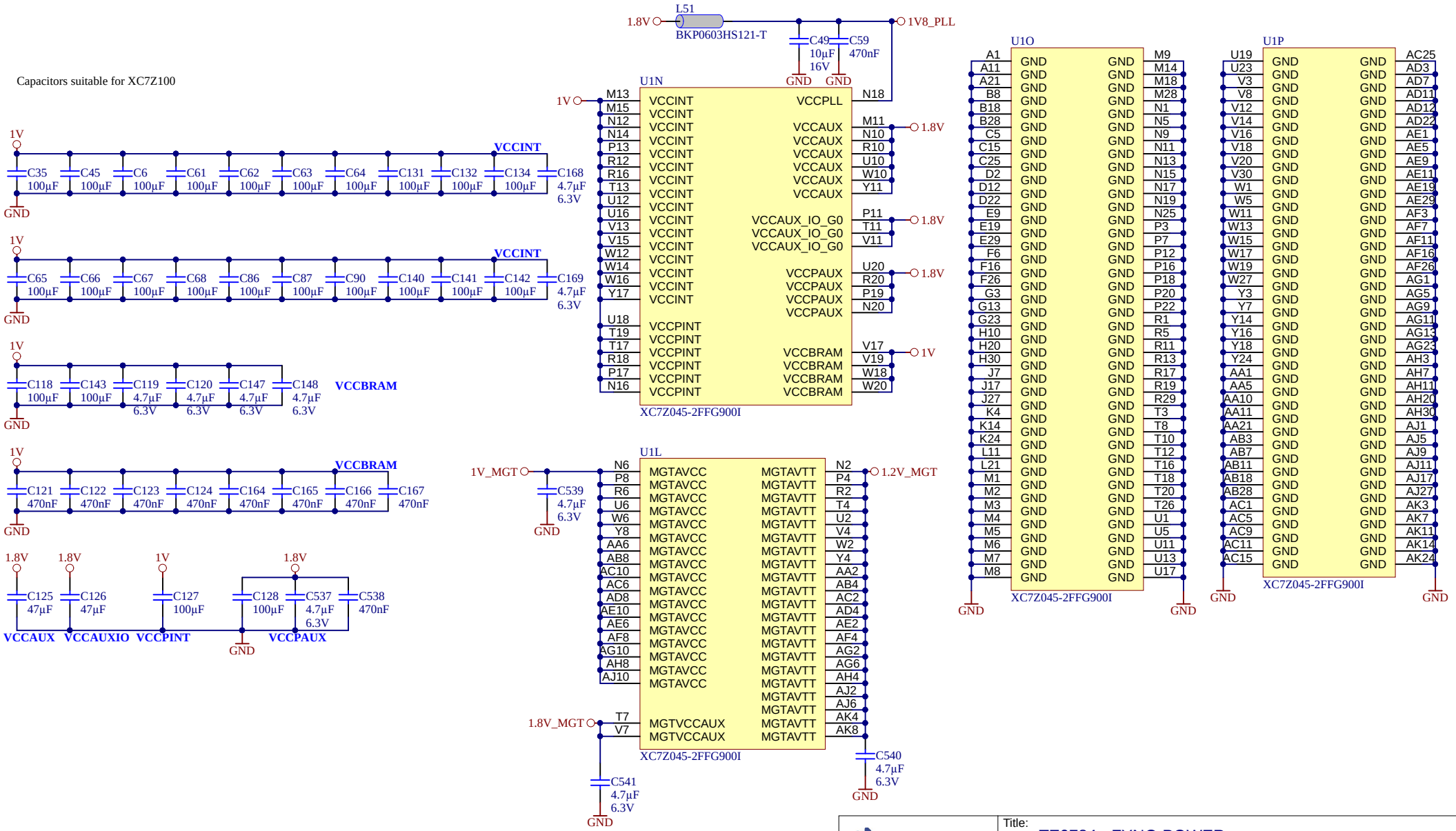
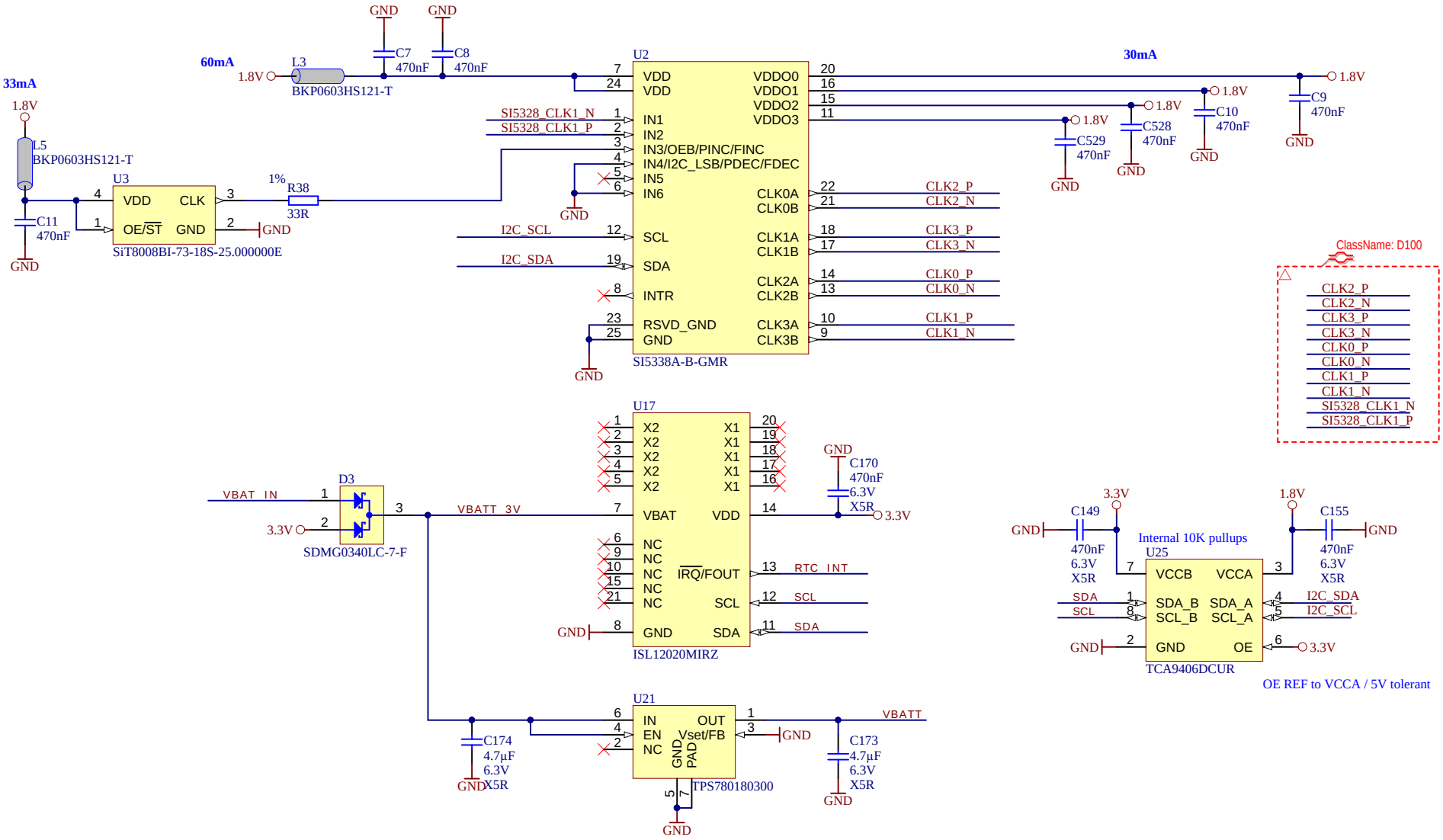
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page 18 of 30
Filename: B34.SchDoc			

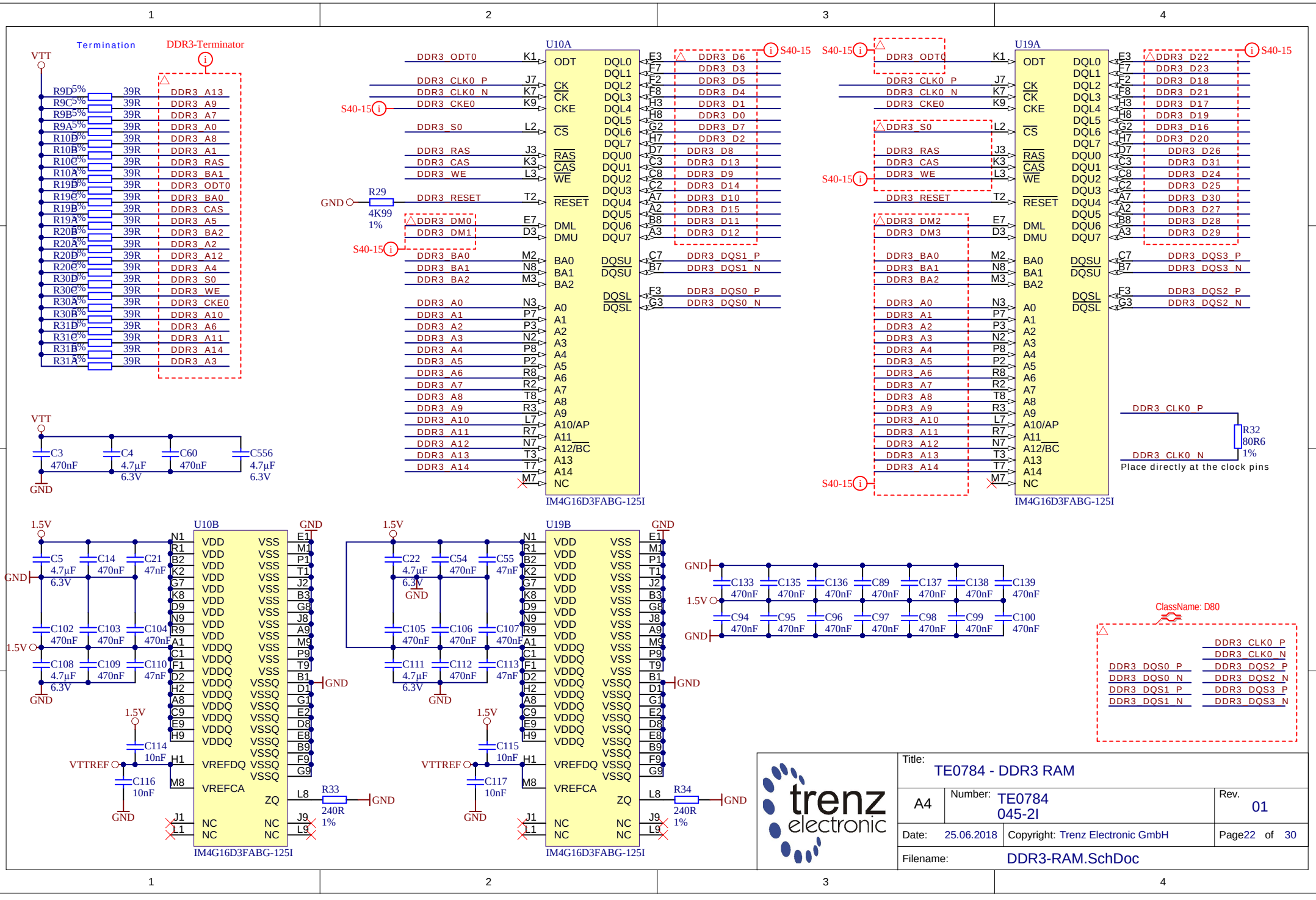


trenz electronic	Title: TE0784 - FPGA B35		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page19 of 30
Filename: B35.SchDoc			


Capacitors suitable for XC7Z100
L51
1.8V
BKP0603HS121-T
1V8_PLL
C49 10µF 16V
C59 470nF
GND
U1N
XC7Z045-2FFG900I
VCCINT
VCCPLL
VCCAUX
VCCAUX_IO_G0
VCCPAUX
VCCPINT
VCCBRAM
1V
1.8V
C35 C45 C6 C61 C62 C63 C64 C131 C132 C134 100µF
C168 4.7µF 6.3V
C65 C66 C67 C68 C86 C87 C90 C140 C141 C142 100µF
C169 4.7µF 6.3V
C118 C143 100µF
C119 C120 C147 4.7µF 6.3V
C148 4.7µF 6.3V
C121 C122 C123 C124 C164 C165 C166 C167 470nF
C125 C126 47µF
C127 100µF
C128 100µF
C537 4.7µF 6.3V
C538 470nF
VCCAUX VCCAUXIO VCCPINT VCCPAUX
U1L
1V_MGT
C539 4.7µF 6.3V
1.2V_MGT
MGTAVCC
MGTAVTT
1.8V_MGT
MGTVCCAUX
C541 4.7µF 6.3V
C540 4.7µF 6.3V
U1O
U1P
XC7Z045-2FFG900I
Title: TE0784 - ZYNQ POWER
A4
Number: TE0784 045-2I
Rev. 01
Date: 25.06.2018
Copyright: Trenz Electronic GmbH
Page20 of 30
Filename: FPGA-PWR.SchDoc
trenz electronic



Title: TE0784 - Clock			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page21 of 30
Filename: Clock.SchDoc			


Termination
DDR3-Terminator
VTT
R9D 5% 39R DDR3_A13
R9C 5% 39R DDR3_A9
R9B 5% 39R DDR3_A7
R9A 5% 39R DDR3_A0
R10D 5% 39R DDR3_A8
R10B 5% 39R DDR3_A1
R10C 5% 39R DDR3_RAS
R10A 5% 39R DDR3_BA1
R19D 5% 39R DDR3_ODT0
R19C 5% 39R DDR3_BA0
R19B 5% 39R DDR3_CAS
R19A 5% 39R DDR3_A5
R20D 5% 39R DDR3_BA2
R20A 5% 39R DDR3_A2
R20B 5% 39R DDR3_A12
R20C 5% 39R DDR3_A4
R30D 5% 39R DDR3_S0
R30C 5% 39R DDR3_WE
R30A 5% 39R DDR3_CKE0
R30B 5% 39R DDR3_A10
R31D 5% 39R DDR3_A6
R31C 5% 39R DDR3_A11
R31B 5% 39R DDR3_A14
R31A 5% 39R DDR3_A3
VTT
C3 470nF
C4 4.7µF 6.3V
C60 470nF
C556 4.7µF 6.3V
GND
U10A
DDR3_ODT0 K1 ODT
DDR3_CLK0_P J7 CK
DDR3_CLK0_N K7 CK
DDR3_CKE0 K9 CKE
S40-15
DDR3_S0 L2 CS
DDR3_RAS J3 RAS
DDR3_CAS K3 CAS
DDR3_WE L3 WE
R29 4K99 1%
GND
DDR3_RESET T2 RESET
DDR3_DM0 E7 DML
DDR3_DM1 D3 DMU
S40-15
DDR3_BA0 M2 BA0
DDR3_BA1 N8 BA1
DDR3_BA2 M3 BA2
DDR3_A0 N3 A0
DDR3_A1 P7 A1
DDR3_A2 P3 A2
DDR3_A3 N2 A3
DDR3_A4 P8 A4
DDR3_A5 P2 A5
DDR3_A6 R8 A6
DDR3_A7 R2 A7
DDR3_A8 T8 A8
DDR3_A9 R3 A9
DDR3_A10 L7 A10/AP
DDR3_A11 R7 A11
DDR3_A12 N7 A12/BC
DDR3_A13 T3 A13
DDR3_A14 T7 A14
M7 NC
DQL0 DQL1 DQL2 DQL3 DQL4 DQL5 DQL6 DQL7 DQU0 DQU1 DQU2 DQU3 DQU4 DQU5 DQU6 DQU7 DQSU DQSU DQSL DQSL
E3 F7 F2 F8 H3 H8 G2 H7 D7 C3 C8 C2 A7 A2 B8 A3 C7 B7 E3 G3
DDR3_D6 DDR3_D3 DDR3_D5 DDR3_D4 DDR3_D1 DDR3_D0 DDR3_D7 DDR3_D2 DDR3_D8 DDR3_D13 DDR3_D9 DDR3_D14 DDR3_D10 DDR3_D15 DDR3_D11 DDR3_D12 DDR3_DQS1_P DDR3_DQS1_N DDR3_DQS0_P DDR3_DQS0_N
S40-15
IM4G16D3FABG-125I
U19A
S40-15
DDR3_ODT0 K1 ODT
DDR3_CLK0_P J7 CK
DDR3_CLK0_N K7 CK
DDR3_CKE0 K9 CKE
DDR3_S0 L2 CS
DDR3_RAS J3 RAS
DDR3_CAS K3 CAS
DDR3_WE L3 WE
S40-15
DDR3_RESET T2 RESET
DDR3_DM2 E7 DML
DDR3_DM3 D3 DMU
DDR3_BA0 M2 BA0
DDR3_BA1 N8 BA1
DDR3_BA2 M3 BA2
DDR3_A0 N3 A0
DDR3_A1 P7 A1
DDR3_A2 P3 A2
DDR3_A3 N2 A3
DDR3_A4 P8 A4
DDR3_A5 P2 A5
DDR3_A6 R8 A6
DDR3_A7 R2 A7
DDR3_A8 T8 A8
DDR3_A9 R3 A9
DDR3_A10 L7 A10/AP
DDR3_A11 R7 A11
DDR3_A12 N7 A12/BC
DDR3_A13 T3 A13
DDR3_A14 T7 A14
M7 NC
S40-15
DQL0 DQL1 DQL2 DQL3 DQL4 DQL5 DQL6 DQL7 DQU0 DQU1 DQU2 DQU3 DQU4 DQU5 DQU6 DQU7 DQSU DQSU DQSL DQSL
E3 F7 F2 F8 H3 H8 G2 H7 D7 C3 C8 C2 A7 A2 B8 A3 C7 B7 E3 G3
DDR3_D22 DDR3_D23 DDR3_D18 DDR3_D21 DDR3_D17 DDR3_D19 DDR3_D16 DDR3_D20 DDR3_D26 DDR3_D31 DDR3_D24 DDR3_D25 DDR3_D30 DDR3_D27 DDR3_D28 DDR3_D29 DDR3_DQS3_P DDR3_DQS3_N DDR3_DQS2_P DDR3_DQS2_N
S40-15
IM4G16D3FABG-125I
DDR3_CLK0_P
R32 80R6 1%
DDR3_CLK0_N
Place directly at the clock pins
1.5V
C5 4.7µF 6.3V
C14 470nF
C21 47nF
GND
C102 470nF
C103 470nF
C104 470nF
1.5V
C108 4.7µF 6.3V
C109 470nF
C110 47nF
GND
U10B
VDD N1 R1 B2 K2 G7 K8 D9 N9 R9 A1 C1 F1 D2 H2 A8 C9 E9 H9
VDDQ C1 F1 D2 H2 A8 C9 E9 H9
VSS E1 M1 P1 T1 J2 B3 G8 J8 A9 M9 P9 T9
VSSQ B1 D1 G1 E2 D8 E8 B9 F9 G9
GND
1.5V
C114 10nF
VTTREF
C116 10nF
GND
VREFDQ H1
VREFCA M8
ZQ L8
R33 240R 1%
GND
NC J1 L1
NC J9 L9
IM4G16D3FABG-125I
1.5V
C22 4.7µF 6.3V
C54 470nF
C55 47nF
GND
C105 470nF
C106 470nF
C107 470nF
C111 4.7µF 6.3V
C112 470nF
C113 47nF
GND
U19B
VDD N1 R1 B2 K2 G7 K8 D9 N9 R9 A1 C1 F1 D2 H2 A8 C9 E9 H9
VDDQ C1 F1 D2 H2 A8 C9 E9 H9
VSS E1 M1 P1 T1 J2 B3 G8 J8 A9 M9 P9 T9
VSSQ B1 D1 G1 E2 D8 E8 B9 F9 G9
GND
1.5V
C115 10nF
VTTREF
C117 10nF
GND
VREFDQ H1
VREFCA M8
ZQ L8
R34 240R 1%
GND
NC J1 L1
NC J9 L9
IM4G16D3FABG-125I
GND
1.5V
GND
C133 470nF
C135 470nF
C136 470nF
C89 470nF
C137 470nF
C138 470nF
C139 470nF
C94 470nF
C95 470nF
C96 470nF
C97 470nF
C98 470nF
C99 470nF
C100 470nF
ClassName: D80
DDR3_DQS0_P
DDR3_DQS0_N
DDR3_DQS1_P
DDR3_DQS1_N
DDR3_CLK0_P
DDR3_CLK0_N
DDR3_DQS2_P
DDR3_DQS2_N
DDR3_DQS3_P
DDR3_DQS3_N
trenz electronic
Title: TE0784 - DDR3 RAM
A4
Number: TE0784 045-2I
Rev. 01
Date: 25.06.2018
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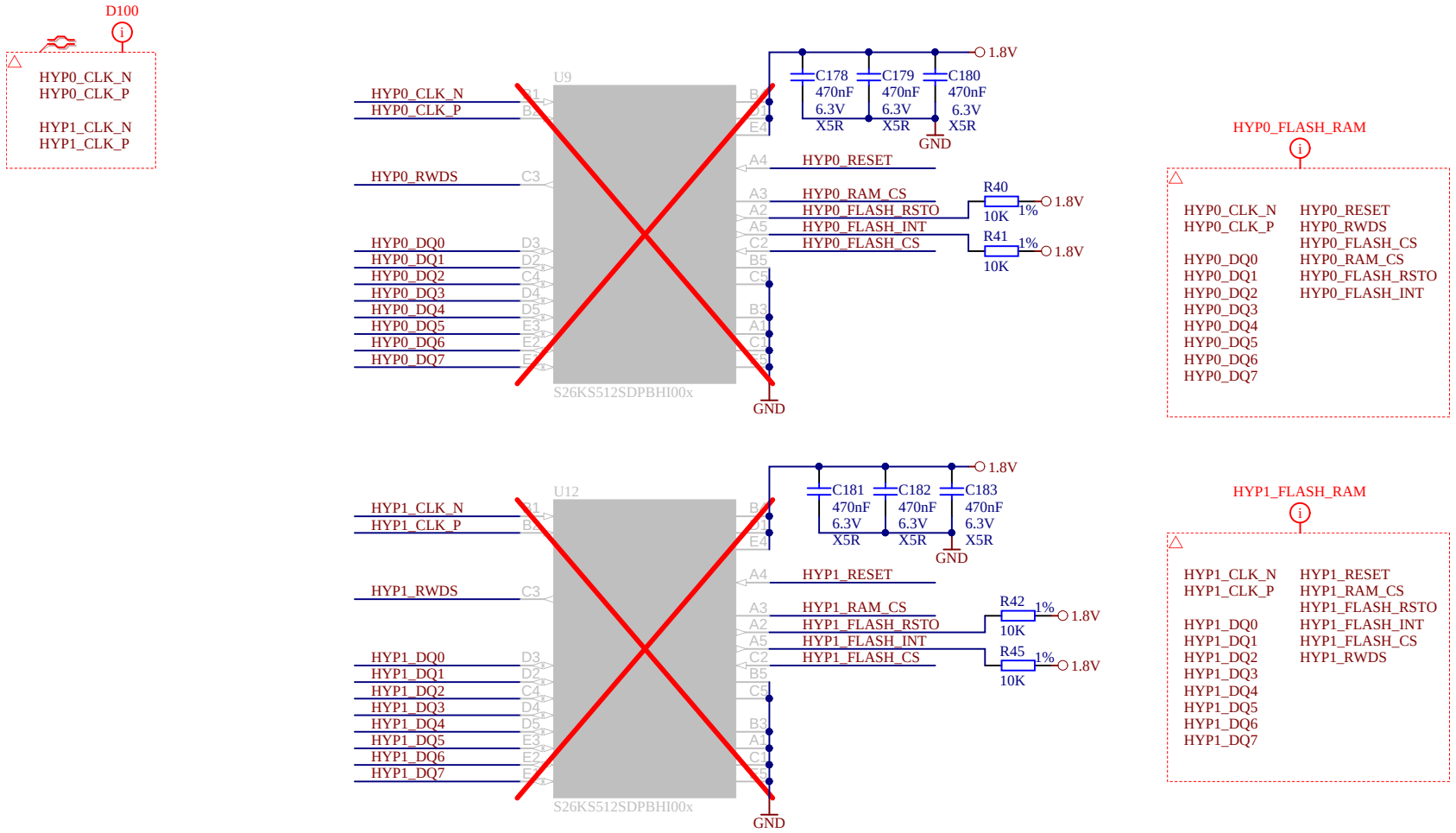
Page22 of 30
Filename: DDR3-RAM.SchDoc



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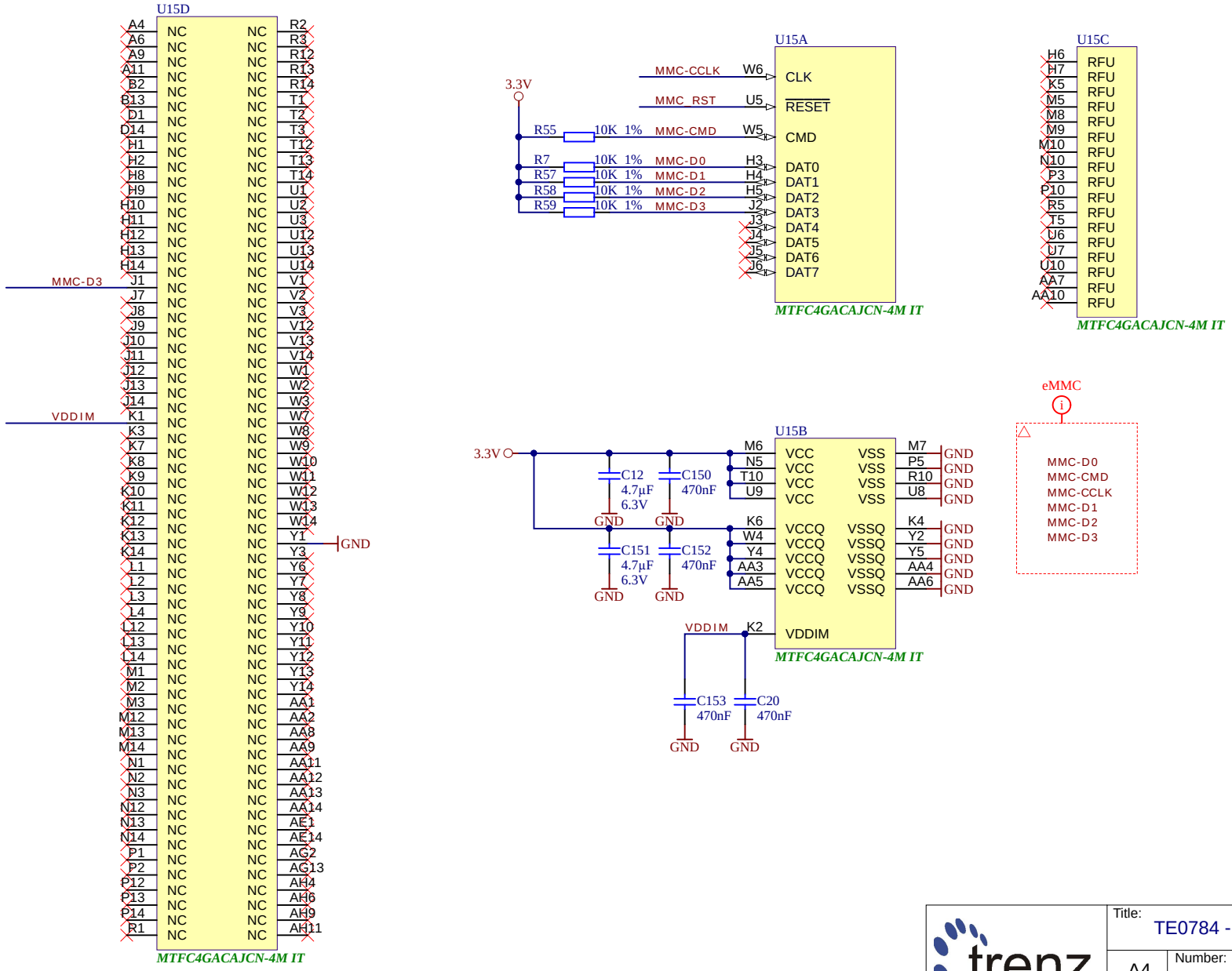
A4	Number: TE0784 045-2I	Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH	Page 23 of 30
Filename: HyperFlash_RAM.SchDoc		



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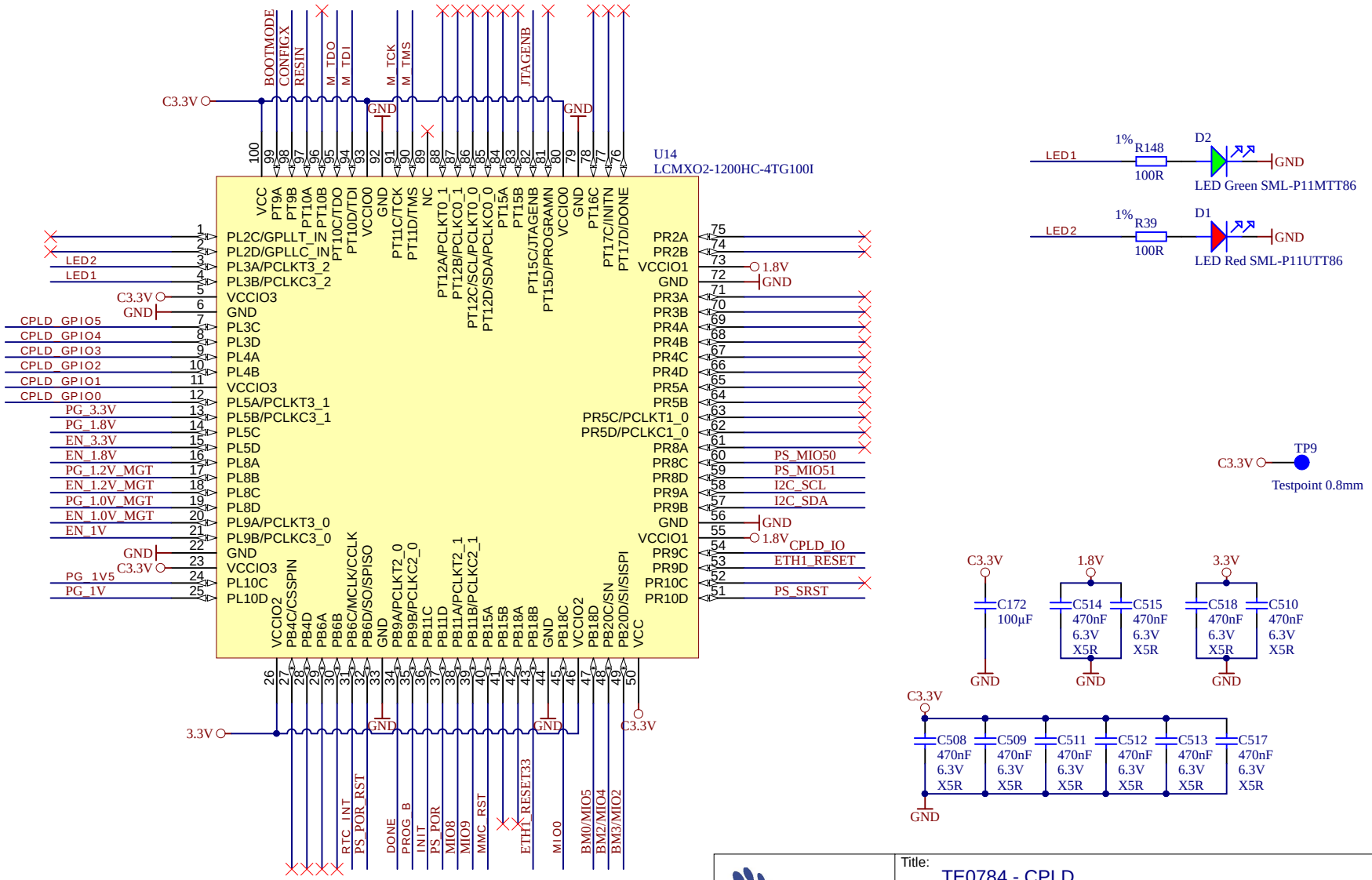
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page24 of 30
Filename: eMMC.SchDoc			



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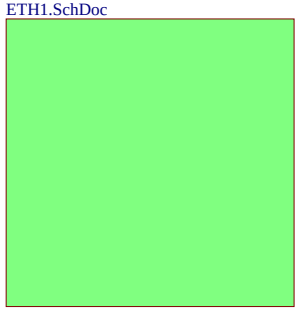
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page25 of 30
Filename: CPLD.SchDoc			

U_ETH1
ETH1.SchDoc



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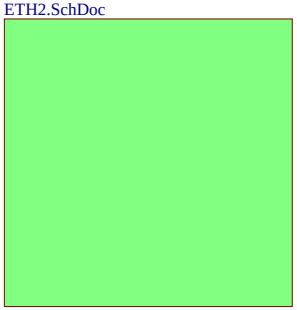

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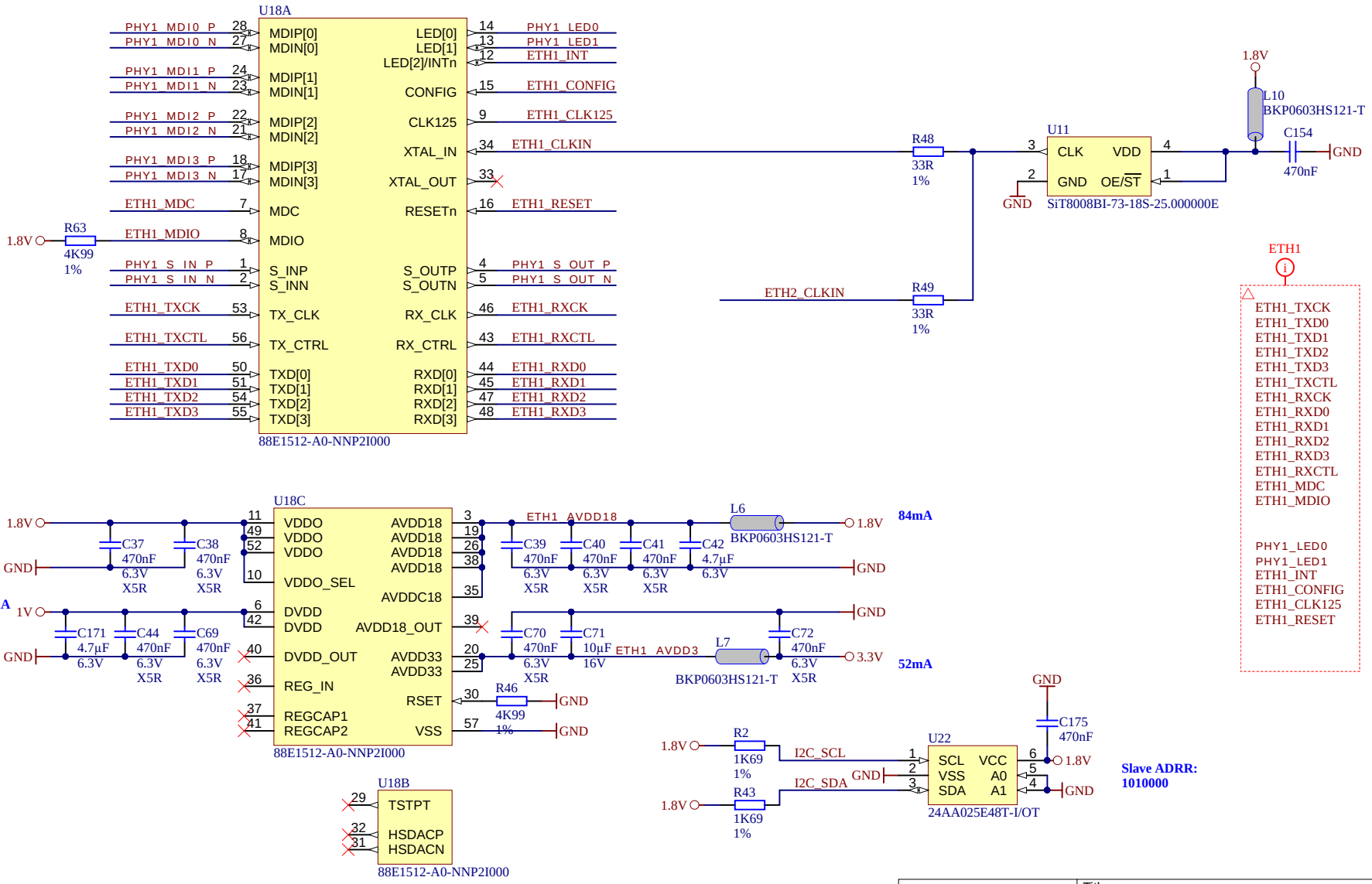
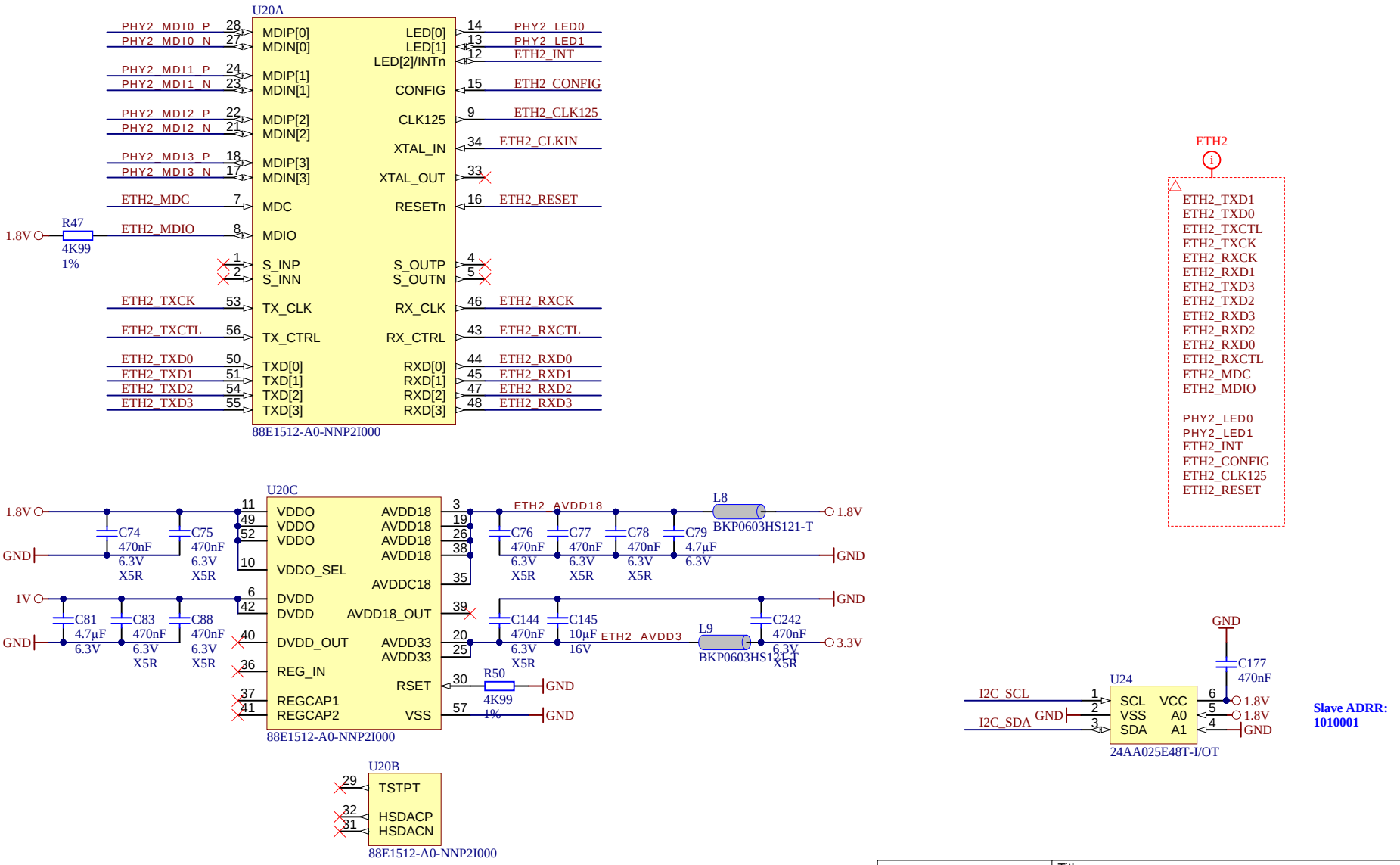
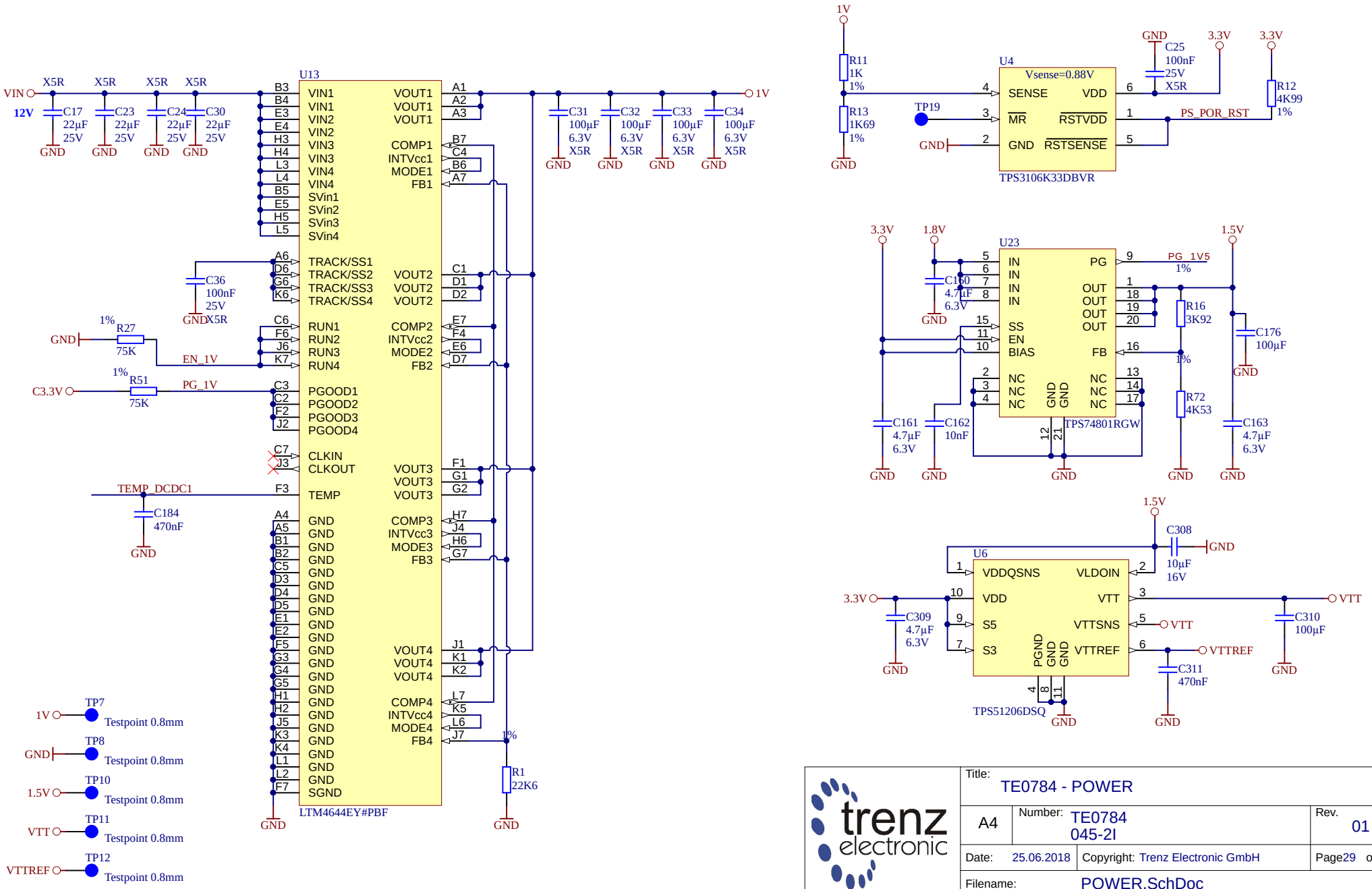
	A4	Number: TE0784 045-2I	Rev. 01
	Date: 25.06.2018	Copyright: Trenz Electronic GmbH	Page 26 of 30
	Filename: Ethernet.SchDoc		



trenz electronic	Title: TE0784 - ETH_PHY1		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page27 of 30
Filename: ETH1.SchDoc			



trenz electronic	Title: TE0784 - ETH_PHY2		
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page28 of 30
Filename: ETH2.SchDoc			


U13
LTM4644EY#PBF
VIN
12V
C17 22µF 25V
C23 22µF 25V
C24 22µF 25V
C30 22µF 25V
C31 100µF 6.3V X5R
C32 100µF 6.3V X5R
C33 100µF 6.3V X5R
C34 100µF 6.3V X5R
1V
C36 100nF 25V X5R
R27 75K 1%
EN_1V
C3.3V
R51 75K 1%
PG_1V
TEMP_DCDC1
C184 470nF
R1 22K6 1%
TP7 1V Testpoint 0.8mm
TP8 GND Testpoint 0.8mm
TP10 1.5V Testpoint 0.8mm
TP11 VTT Testpoint 0.8mm
TP12 VTTREF Testpoint 0.8mm
U4
TPS3106K33DBVR
Vsense=0.88V
R11 1K 1%
R13 1K69 1%
TP19
C25 100nF 25V X5R
R12 4K99 1%
PS_POR_RST
U23
TPS74801RGW
C160 4.7µF 6.3V
R16 3K92 1%
R72 4K53 1%
PG_1V5
C176 100µF
C161 4.7µF 6.3V
C162 10nF
C163 4.7µF 6.3V
U6
TPS51206DSQ
C308 10µF 16V
C309 4.7µF 6.3V
C310 100µF
C311 470nF
VTT
VTTREF
Title: TE0784 - POWER
A4
Number: TE0784 045-2I
Rev. 01
Date: 25.06.2018
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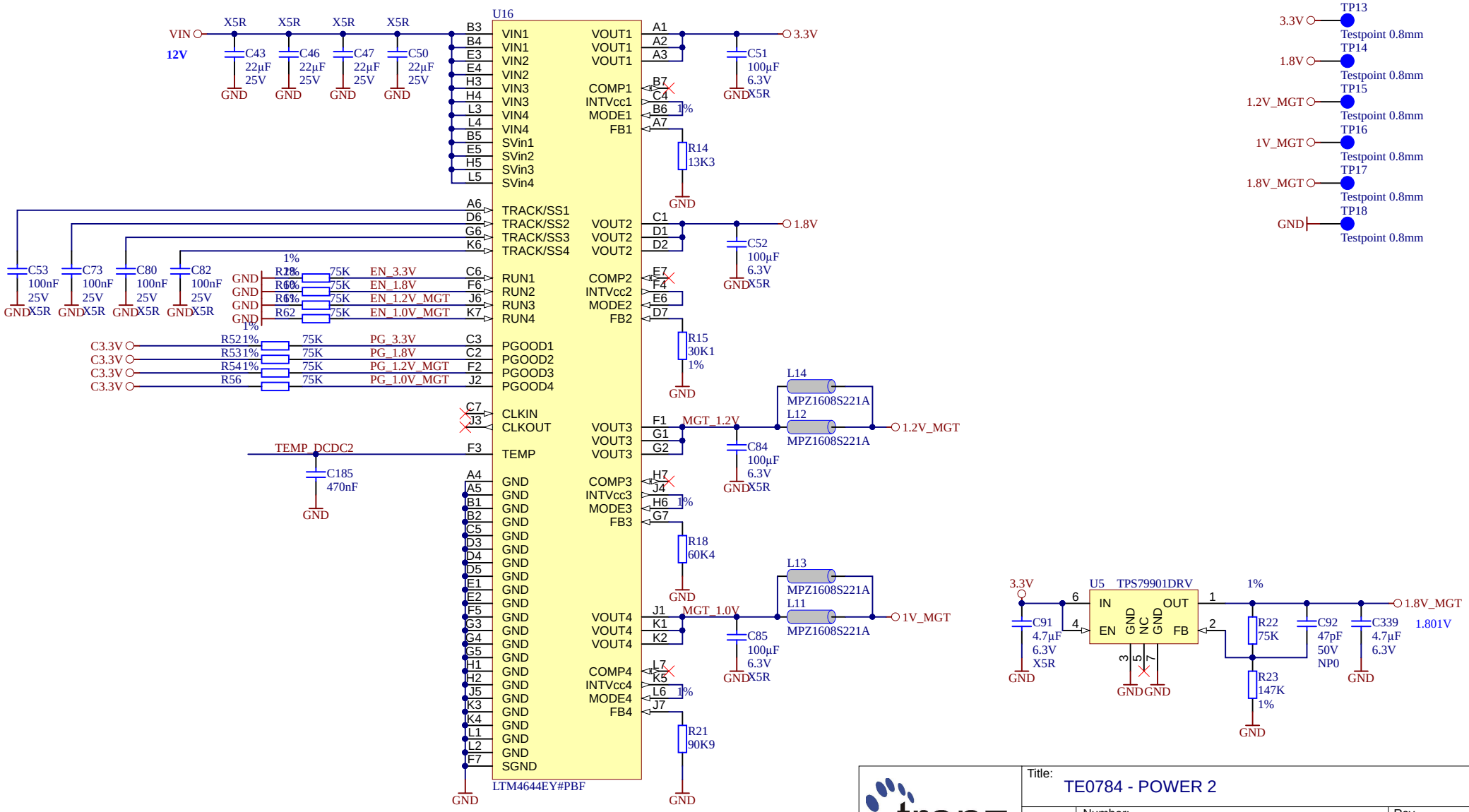
Filename: POWER.SchDoc



Title: TE0784 - POWER 2			
A4	Number: TE0784 045-2I		Rev. 01
Date: 25.06.2018	Copyright: Trenz Electronic GmbH		Page30 of 30
Filename: POWER2.SchDoc			