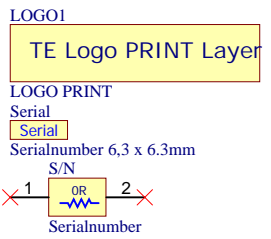
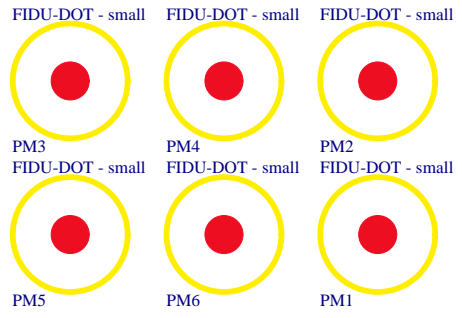
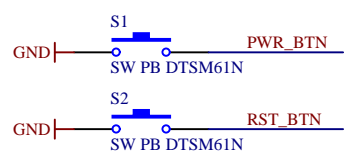
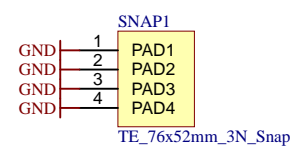
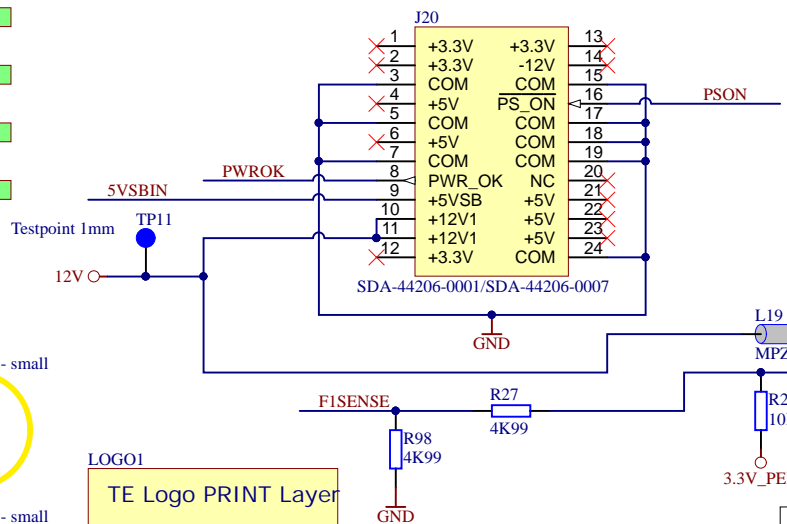
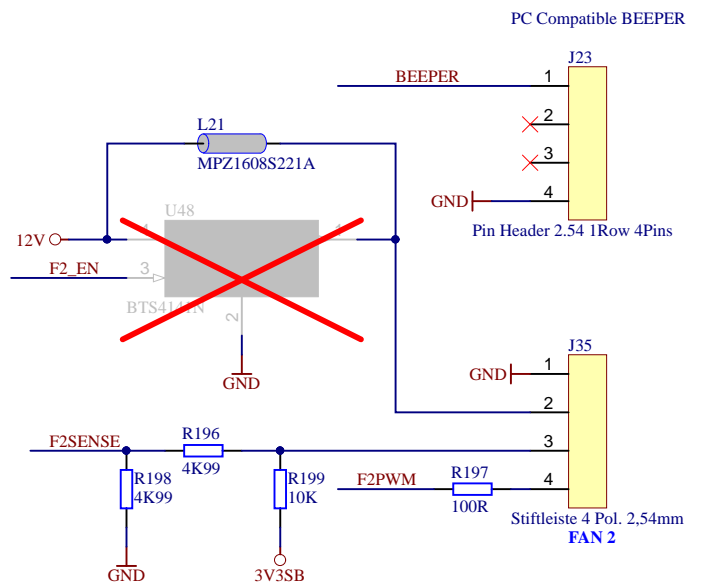
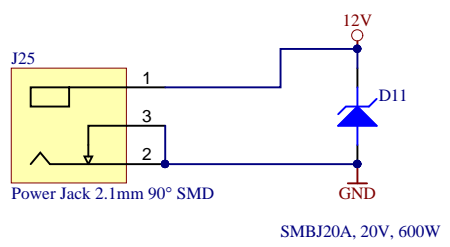
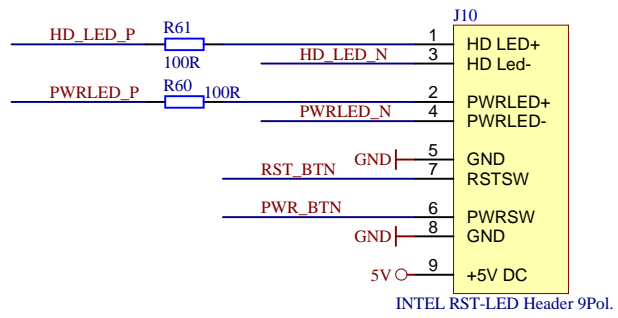


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- U_USB3-HUB
USB3-HUB.SchDoc
- U_PCIE
PCIe.schdoc
- U_SFP
SFP.schdoc
- U_SC
SC.schdoc
- U_SC2
SC2.schdoc
- U_PMOD
PMODE.schdoc
- U_XMOD
XMOD.schdoc
- U_Power_1
Power_1.schdoc
- U_Power_2
Power_2.schdoc
- U_Power_3
Power_3.schdoc
- U_Power_4
Power_4.schdoc
- U_FMC
FMC.SchDoc
- U_FMC PWR
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- U_DP_PS
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- U_I2C_system
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- U_CLK
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- U_CLK_MUX
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- U_EMMC
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- U_FIREFLY
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- U_MISC
MISC.schdoc
- U_Audio
Audio.SchDoc
- U_BD
BD.SchDoc

INTEL Reset/LED Pinout



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|---|--|----------------|
| Title: TEBF0808 - Mini-ITX Top Sheet | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
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A

A

B

B

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D

D

U_J1
 J1.schdoc
 U_J2
 J2.schdoc
 U_J3
 J3.schdoc
 U_J4
 J4.schdoc



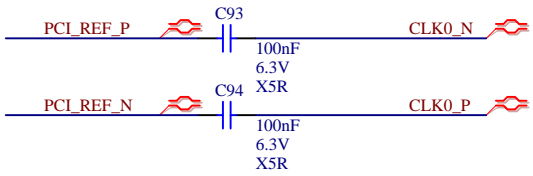
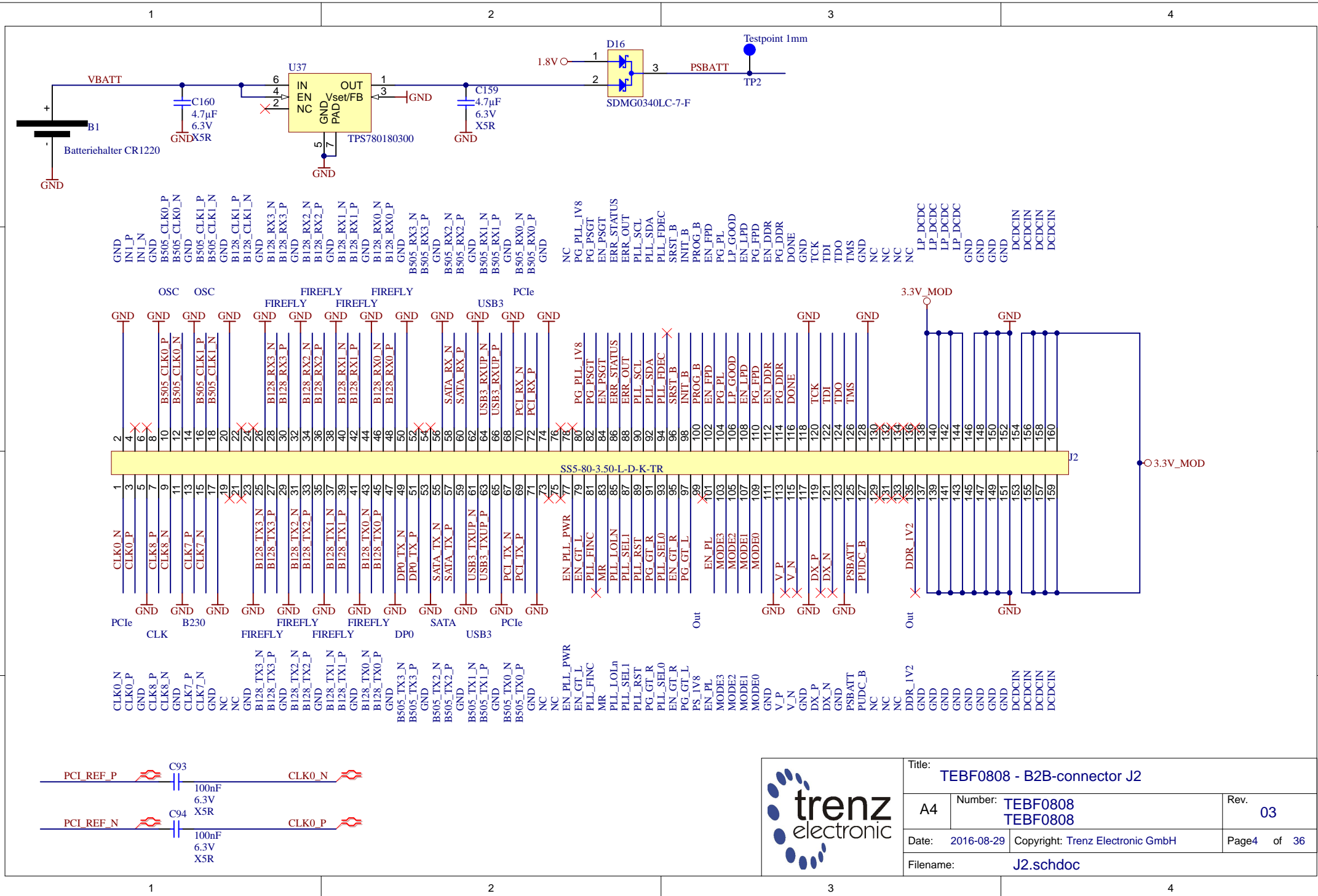
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| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 2 of 36 |
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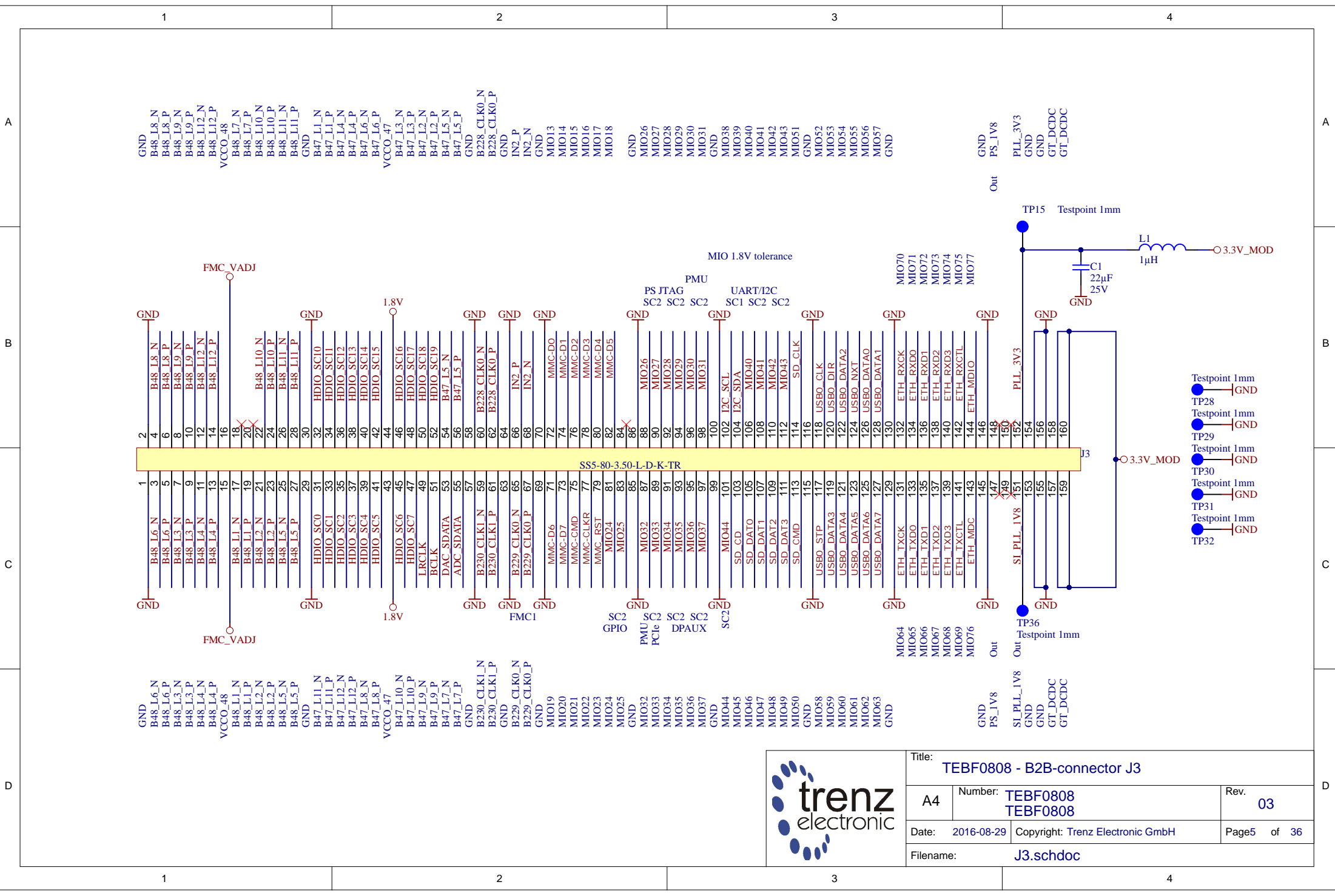
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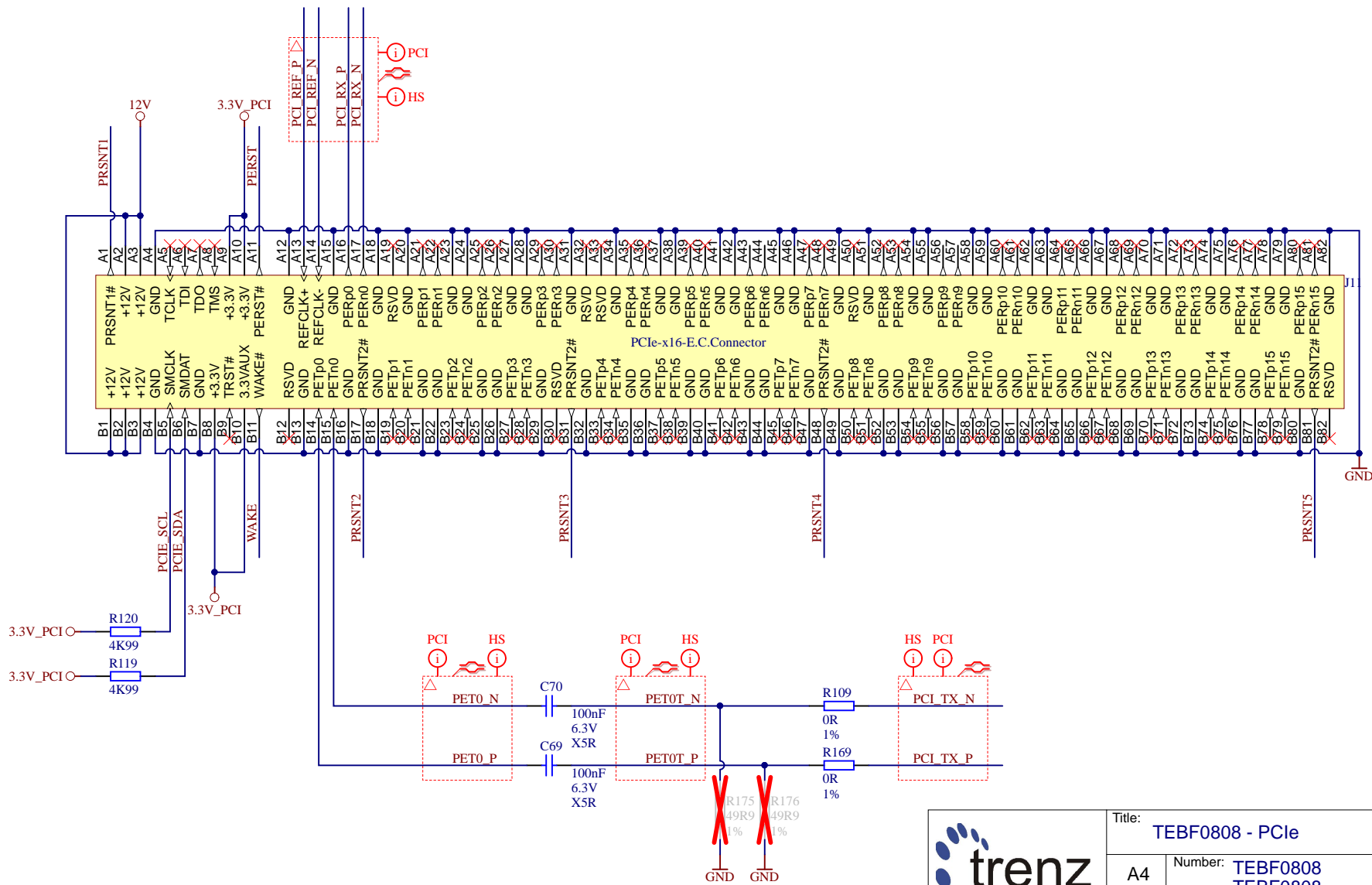
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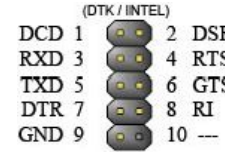
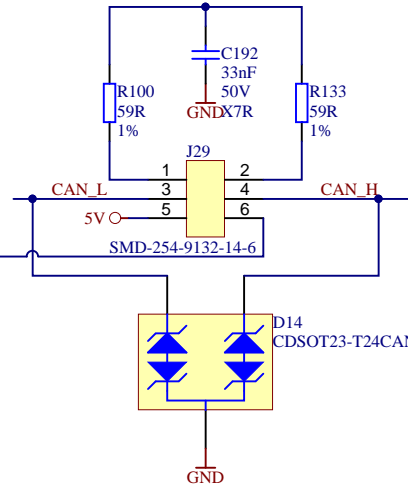
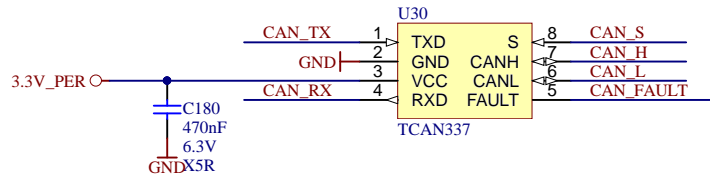
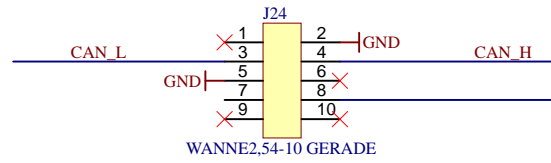
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| Filename: J2.schdoc | | |



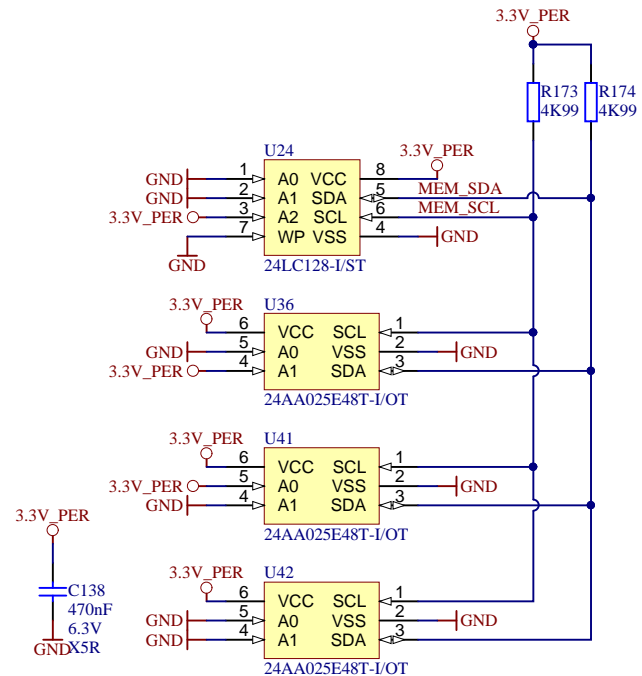
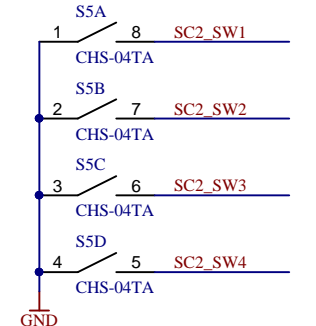
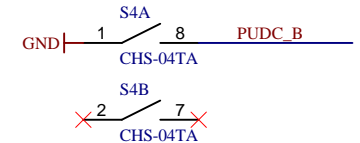
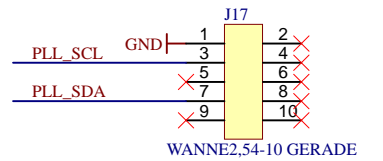
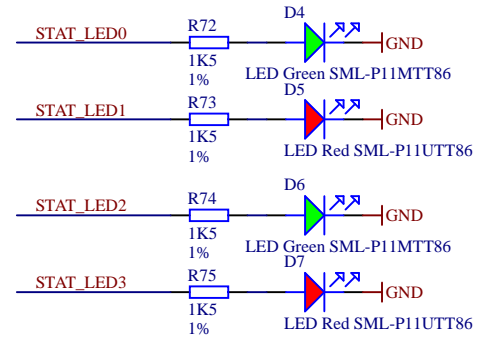
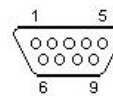
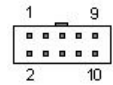
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| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page5 of 36 |
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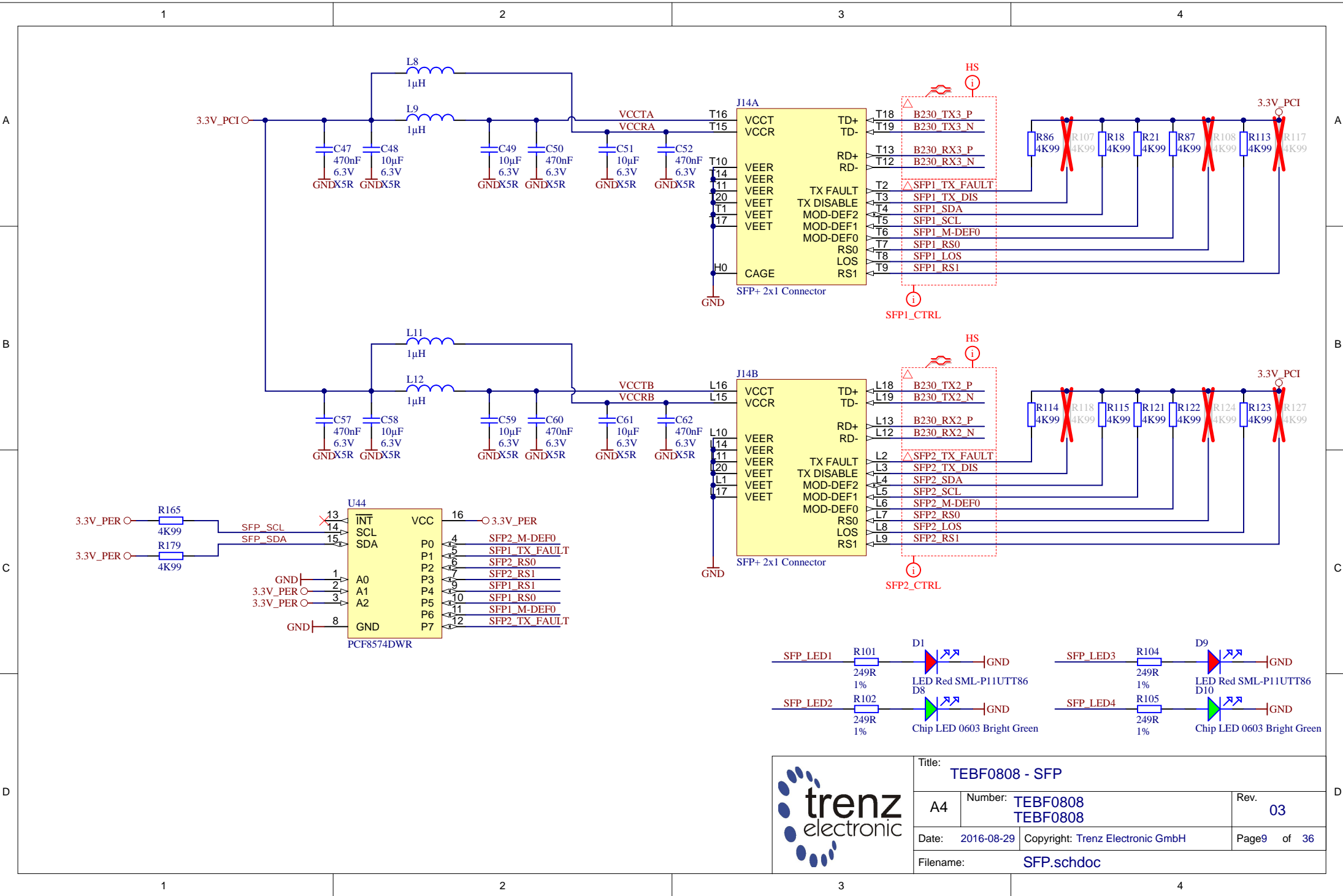
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| Filename: PCIe.schdoc | | |



- 1 - 1
- 2 - 3
- 3 - 5
- 4 - 7
- 5 - 9
- 6 - 2
- 7 - 4
- 8 - 6
- 9 - 8
- 10 --

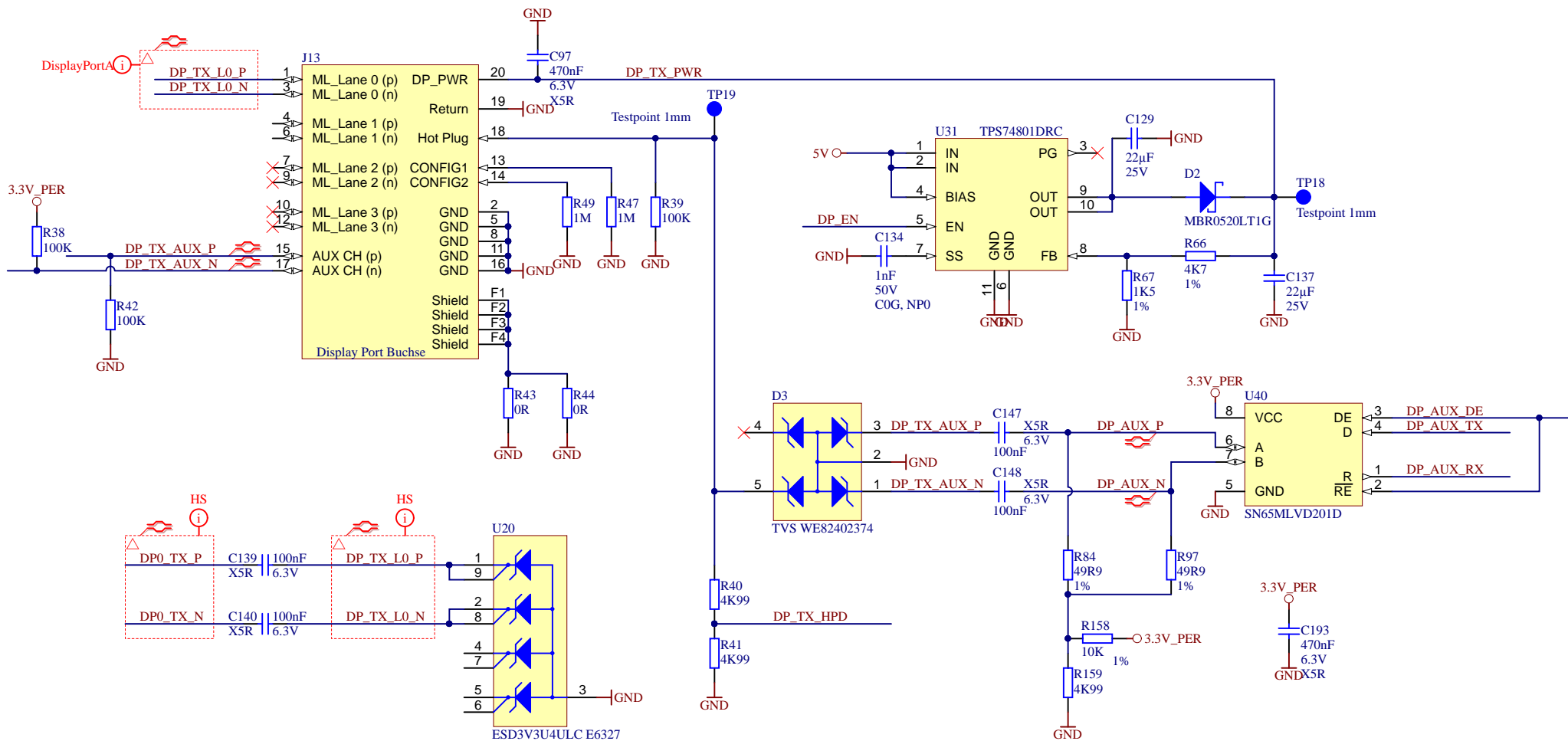


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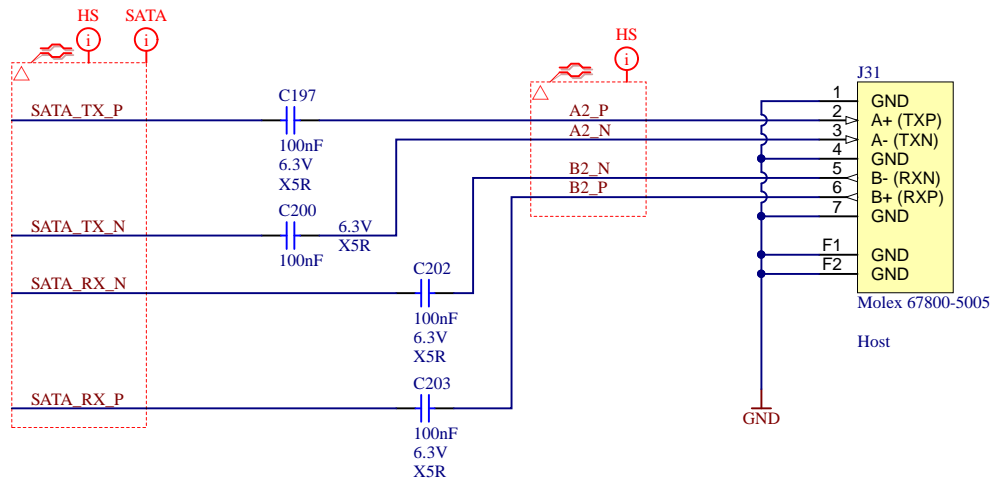



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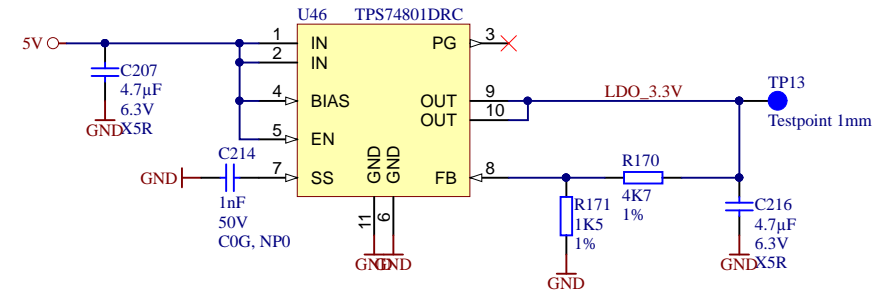
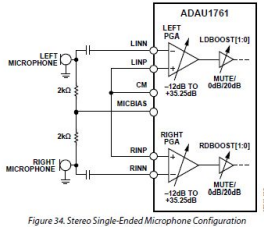
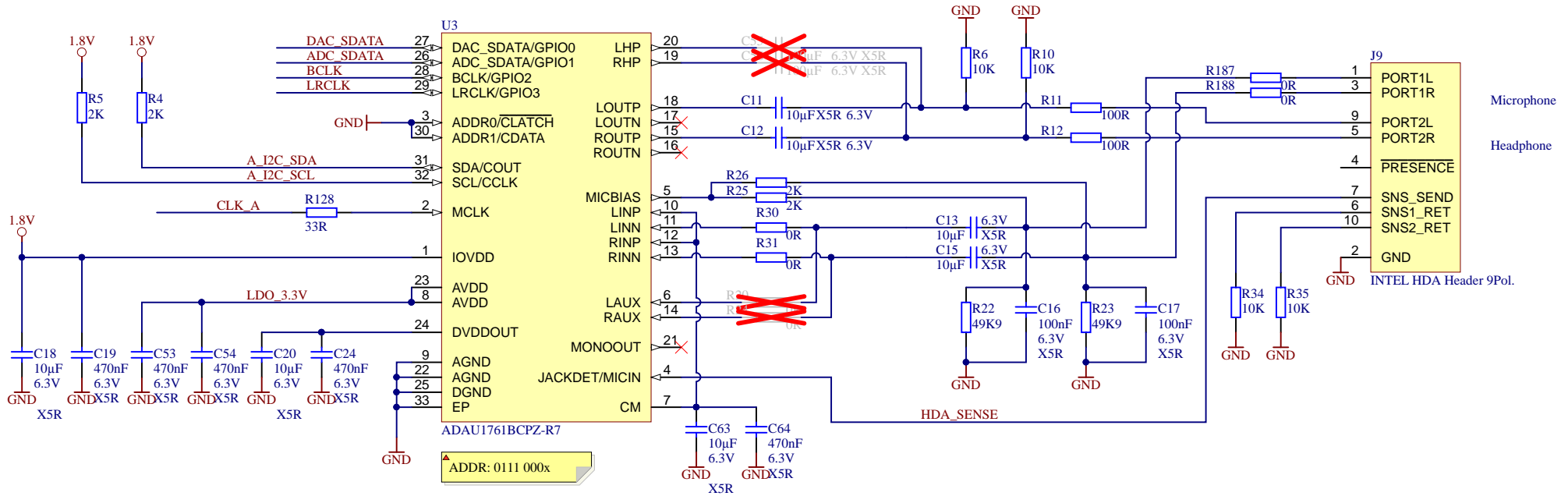
Rev. **03**



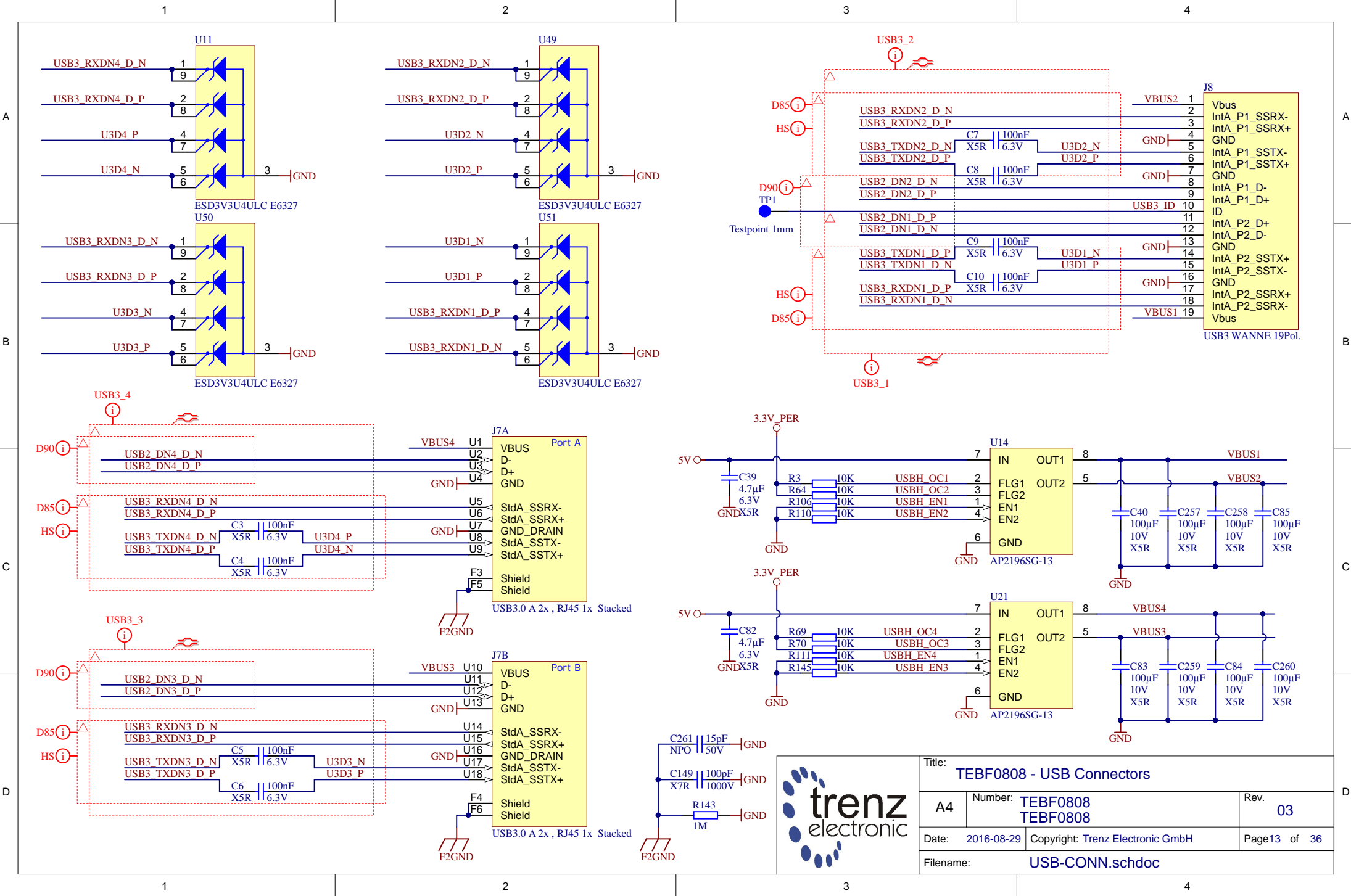
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| Filename: DP_PS.schdoc | | |



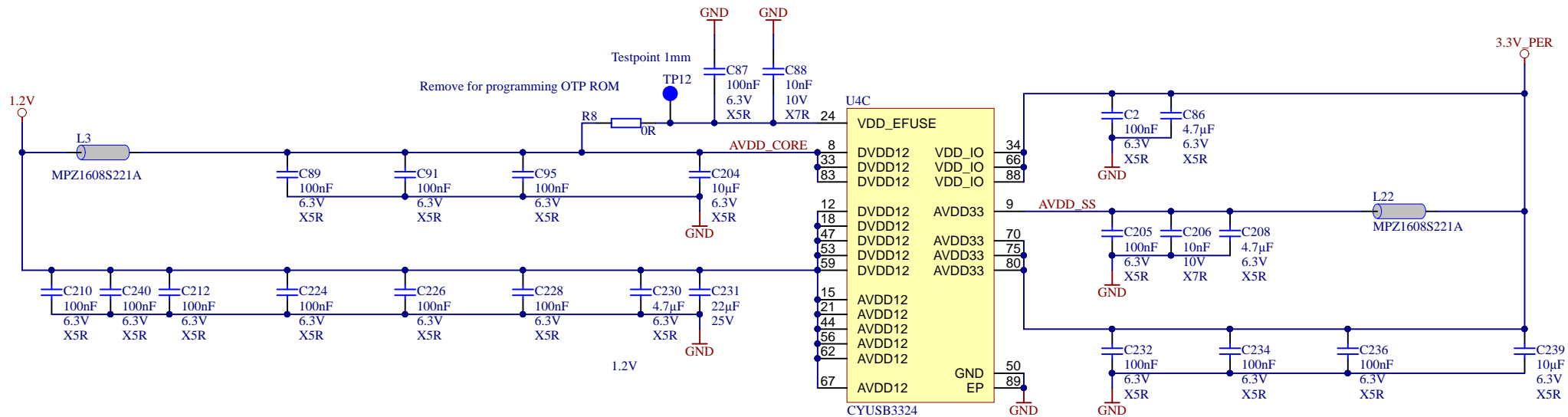
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| | Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 11 of 36 |
| | Filename: SATA.schdoc | | |




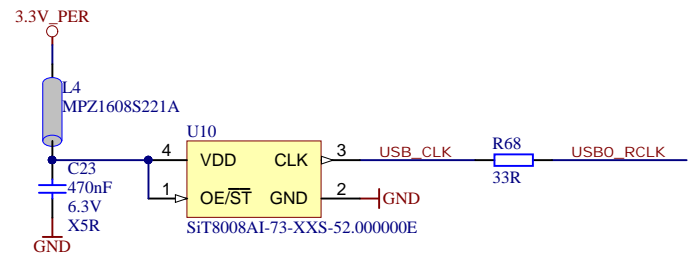
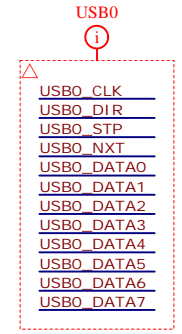
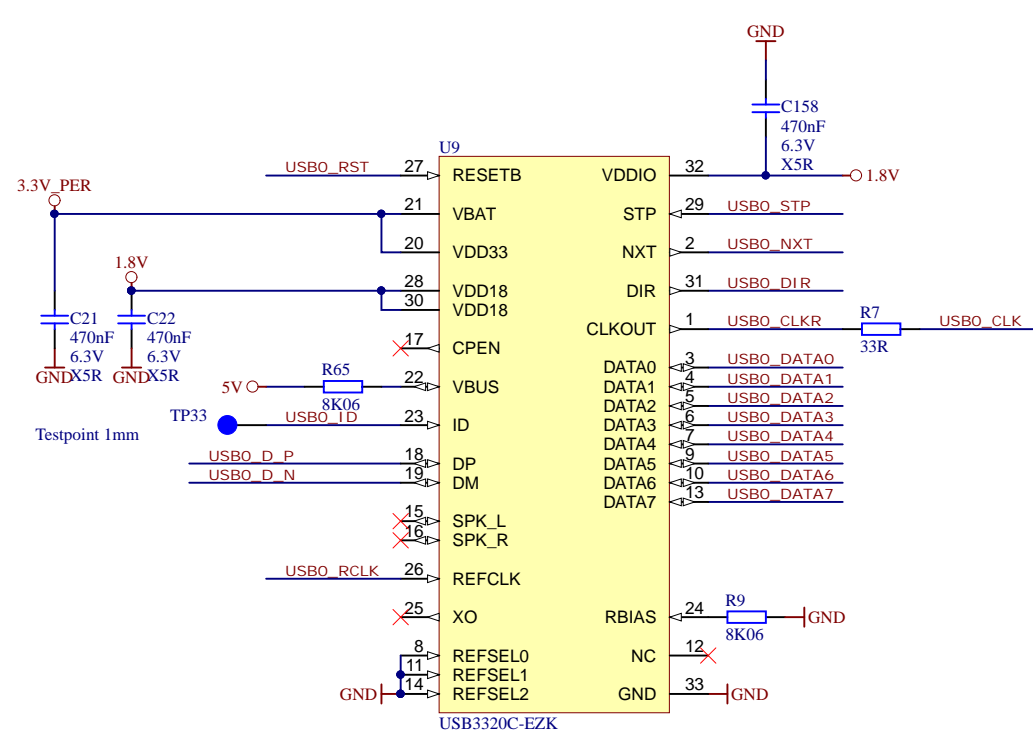
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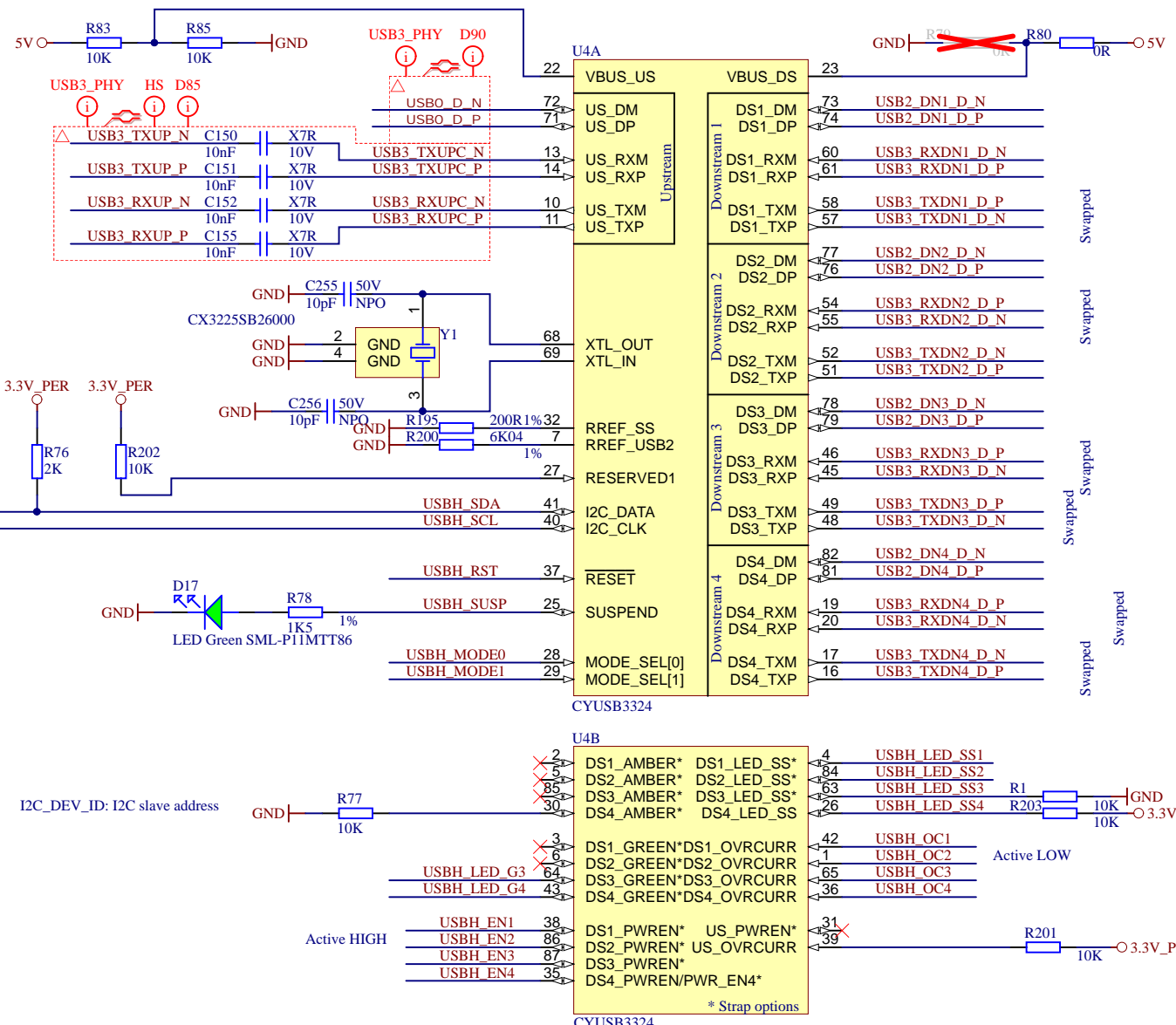
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| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
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| Title: TEBF0808 - USB | | |
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| Filename: USB-PHY.SchDoc | | |



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.

CLK: 0x60 (or 0x58)



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|----------------------------------|--|-----------------------------|
| Title: TEBF0808 - USB | | |
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| Filename: USB3-HUB.SchDoc | | |

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A

A

B

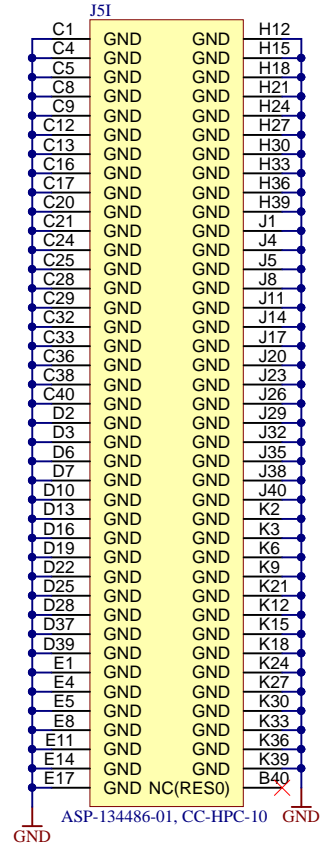
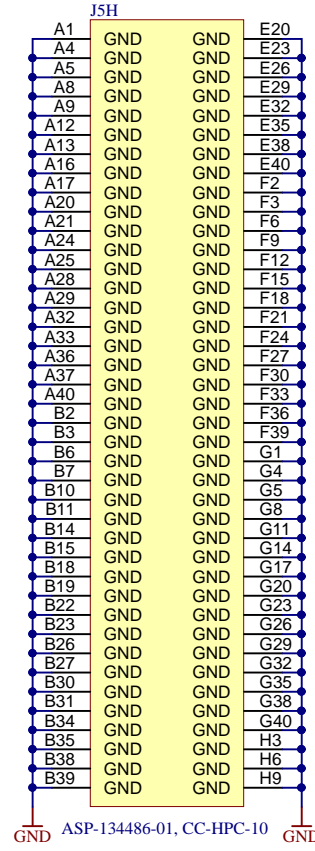
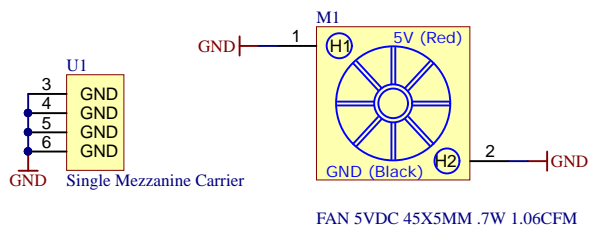
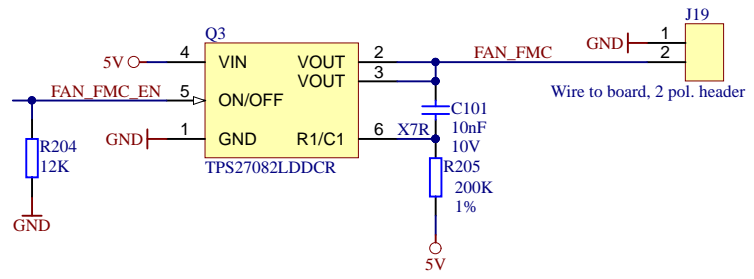
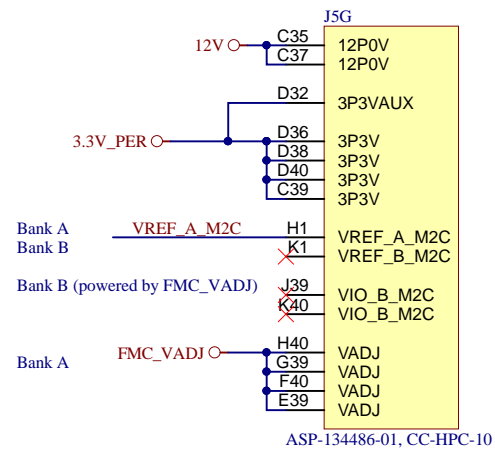
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C

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D

D



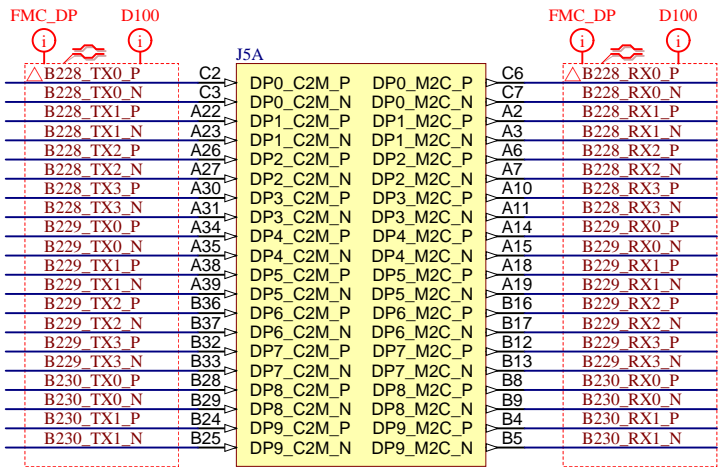
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| Title: TEBF0808 - FMC | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 17 of 36 |
| Filename: FMC PWR.SchDoc | | |

1

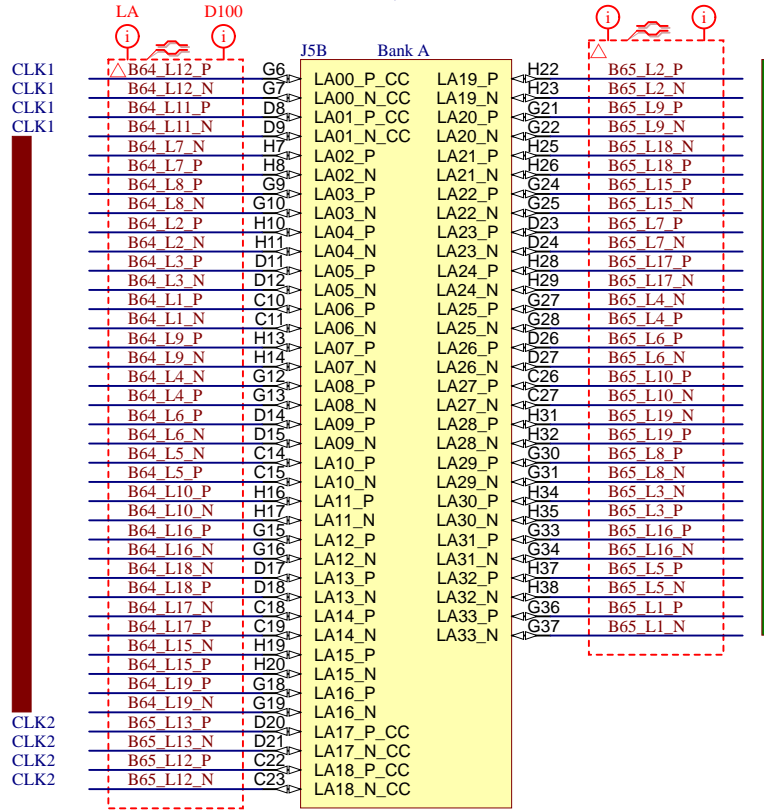
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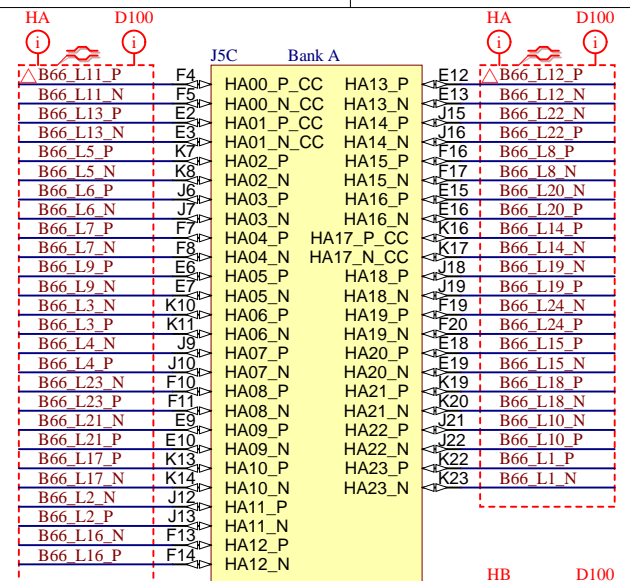
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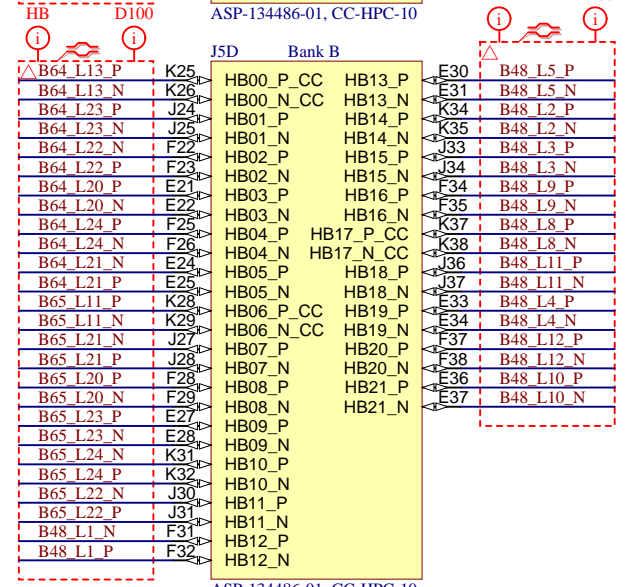
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CLK1
CLK1
CLK1

CLK2
CLK2
CLK2
CLK2



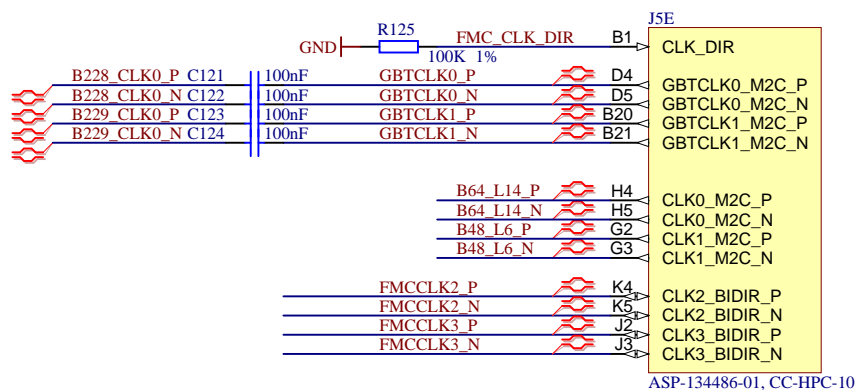
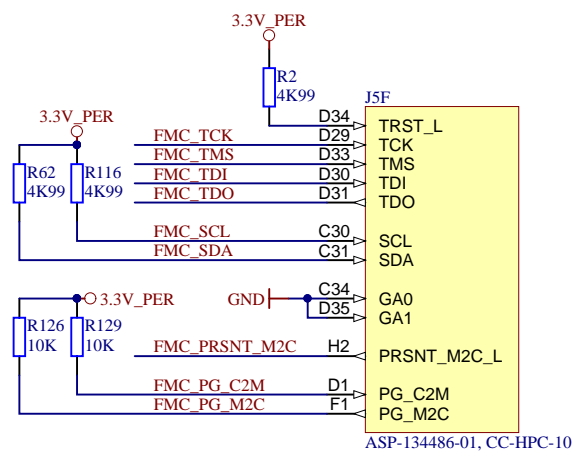
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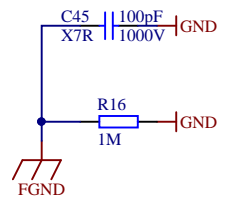
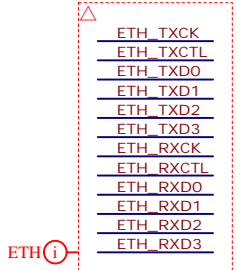
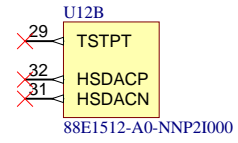
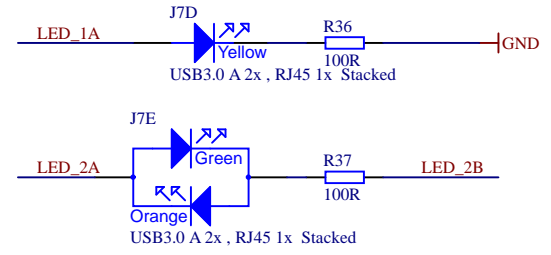
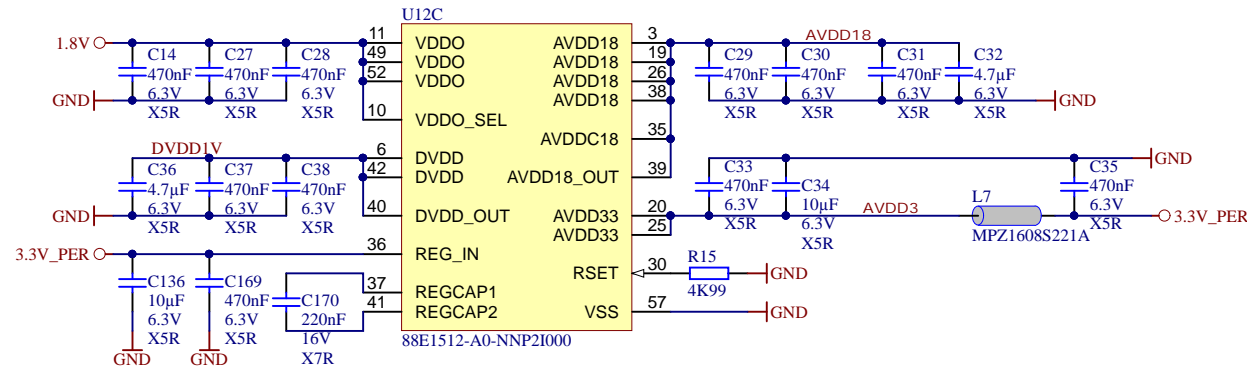
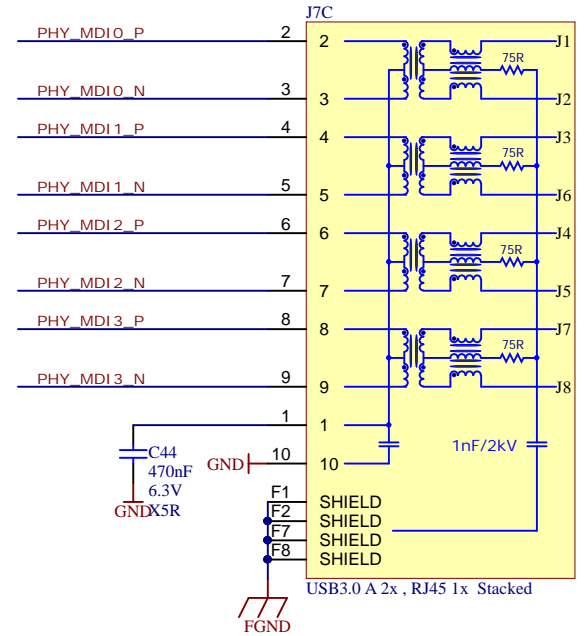
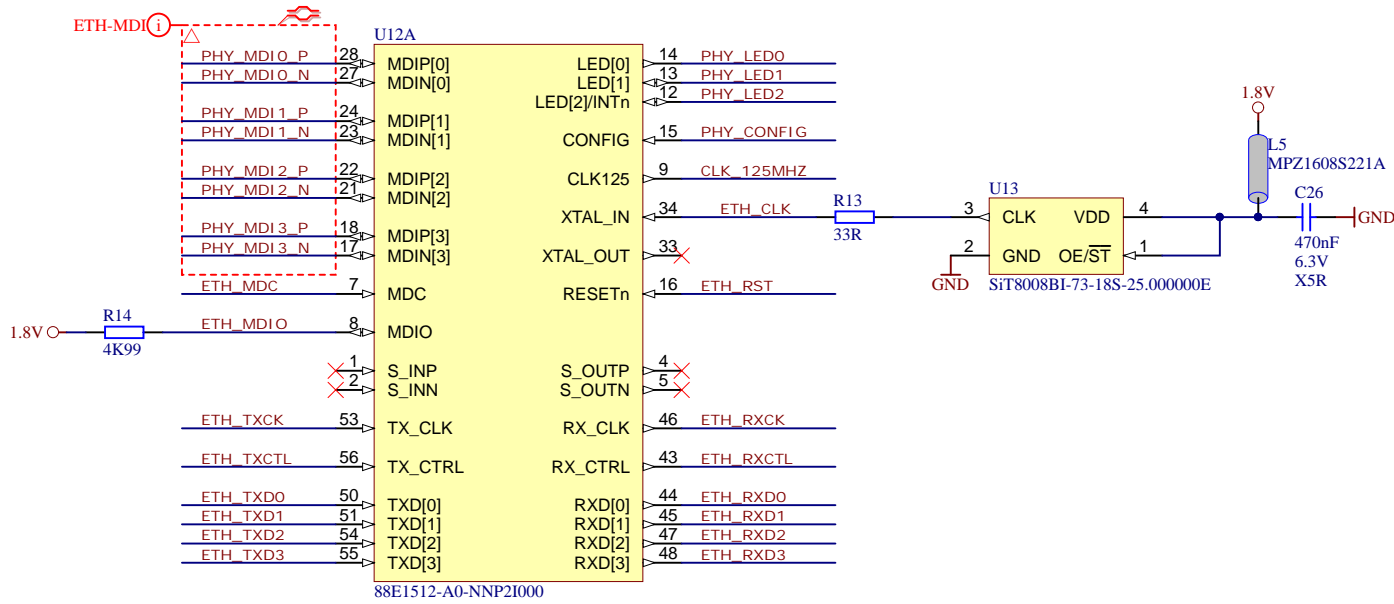
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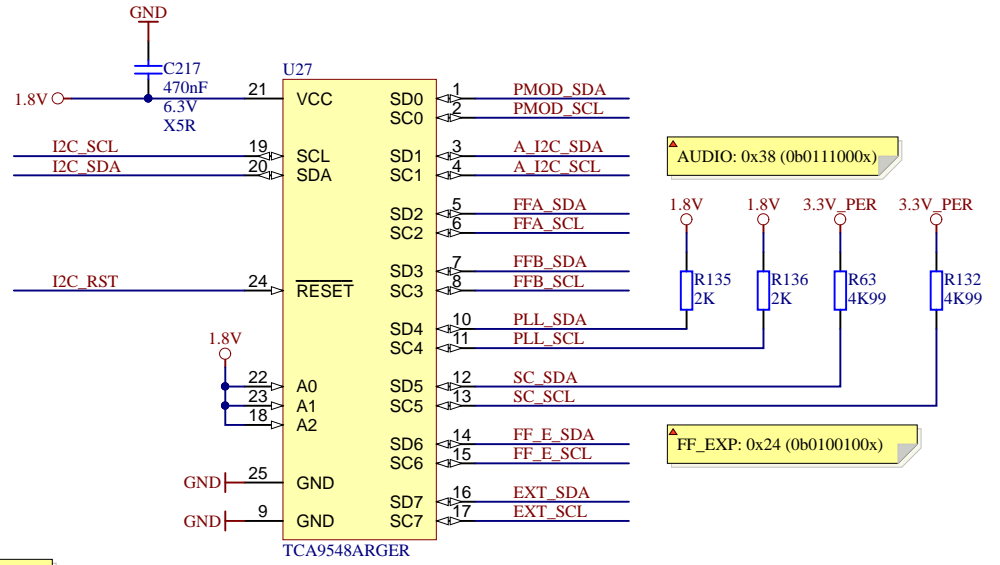
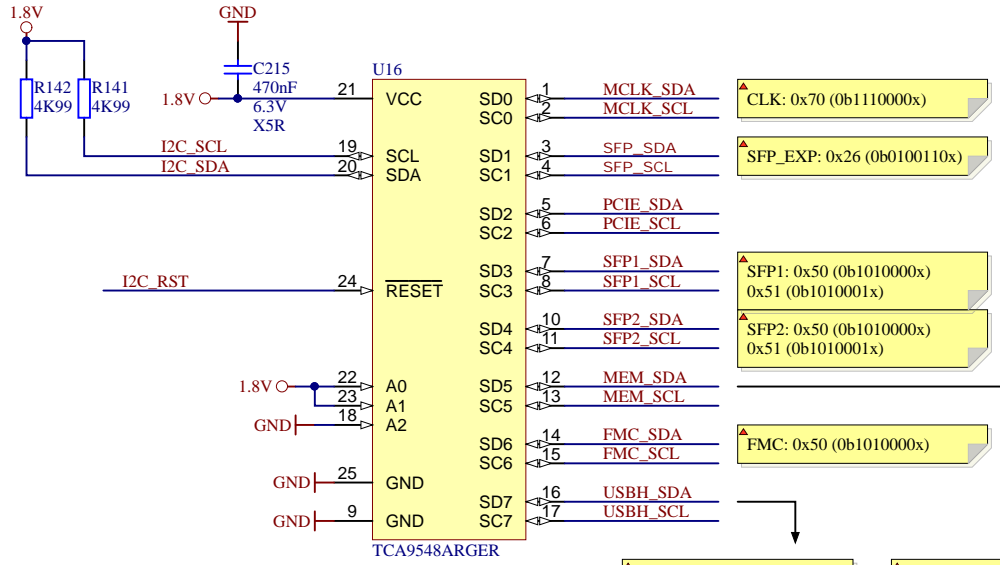
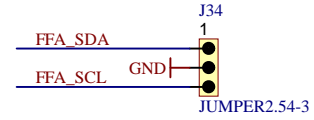
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| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
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| Filename: FMC.SchDoc | | |



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| | Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 19 of 36 |
| | Filename: FMC_MISC.SchDoc | | |



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|-----------------------------------|--|----------------|
| Title: TEBF0808 - ETHERNET | | |
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| Filename: ETH-PHY.SchDoc | | |



▲ ADDR: 0x73 (0b1110011x)

▲ USB:

▲ EEPROM: 0x51 (0b1010001x)

▲ EEPROM: 0x50 (0b1010000x)

▲ EEPROM: 0x51 (0b1010001x)

▲ EEPROM: 0x52 (0b1010010x)

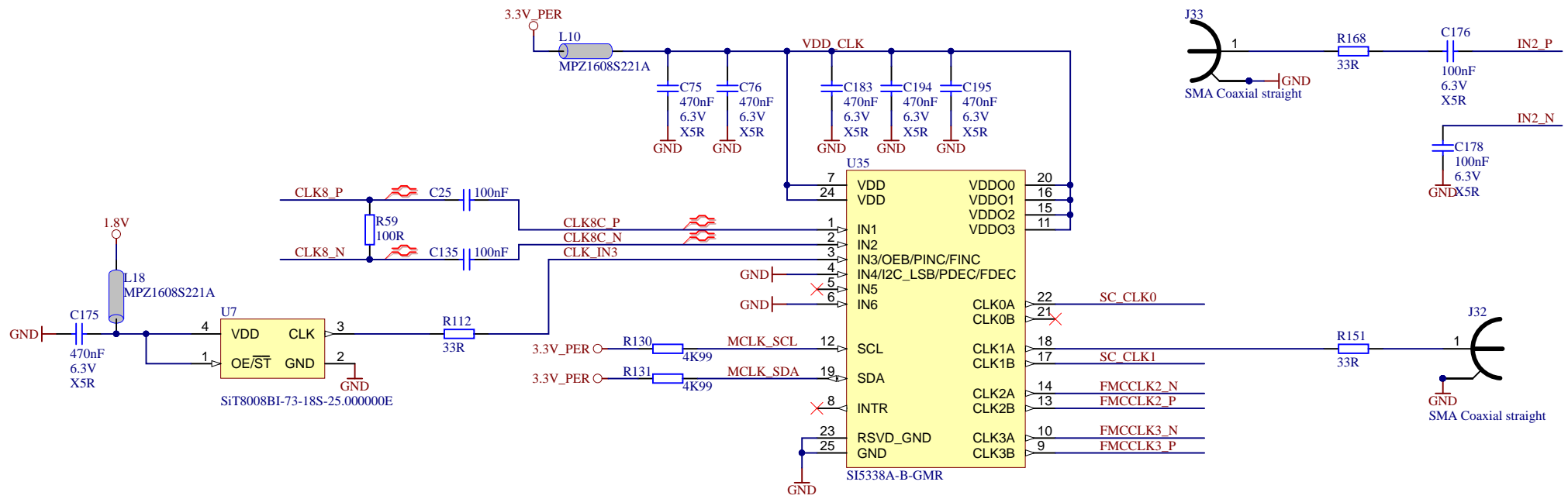
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▲ EXP: 0x27 (0b0100111x)

▲ ADDR: 0x77 (0b1110111x)



| | | |
|-------------------------------------|--|-----------------------------|
| Title: TEBF0808 - I2C System | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
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| Filename: I2C_system.schdoc | | |



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|  | | | Title: TEBF0808 - CLK | |
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| Date: 2016-08-29 | | Copyright: Trenz Electronic GmbH | | Page22 of 36 |
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3

4

A

A

B

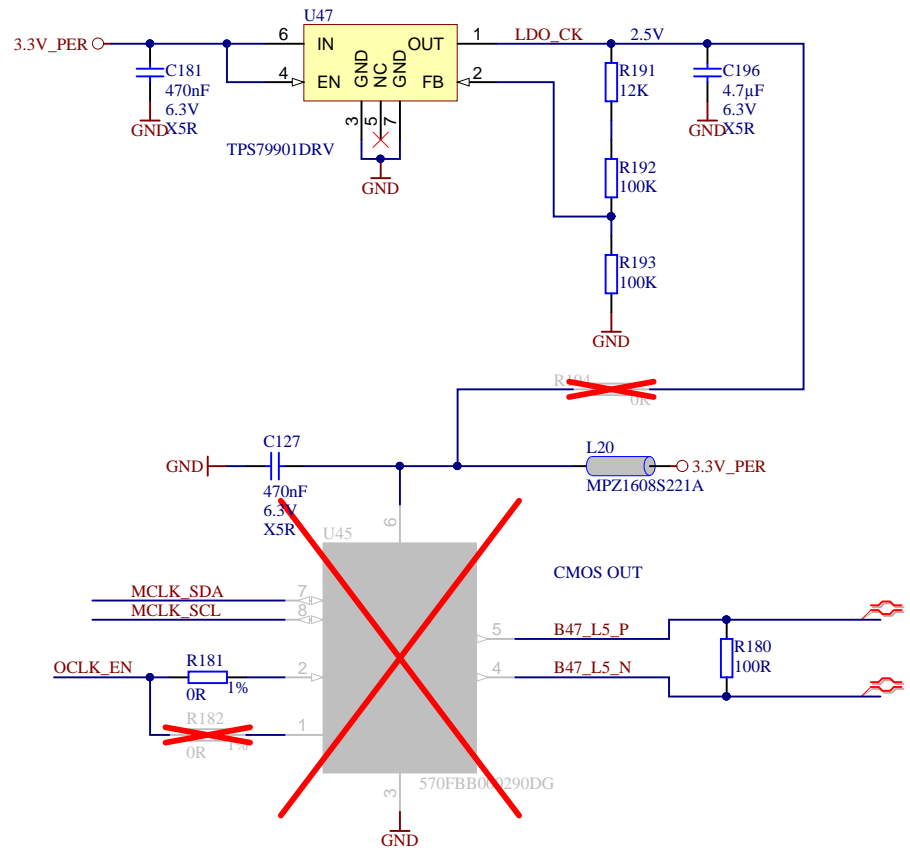
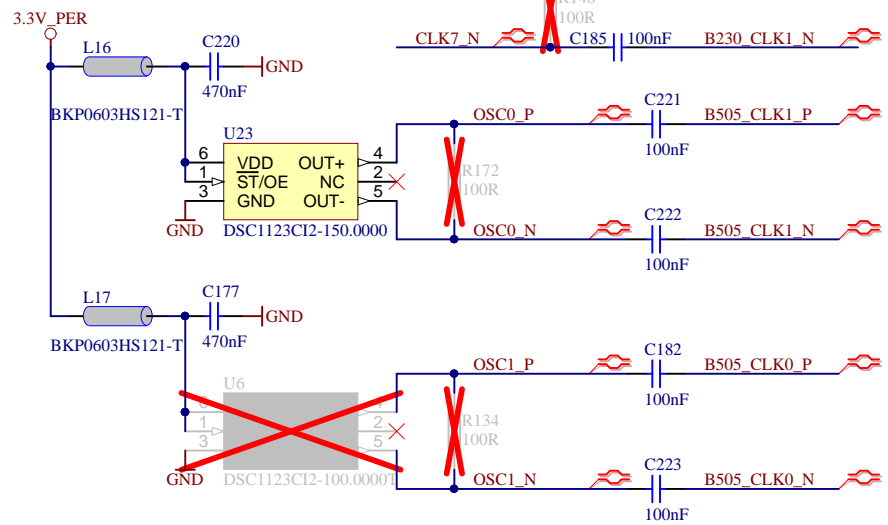
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C

C

D

D



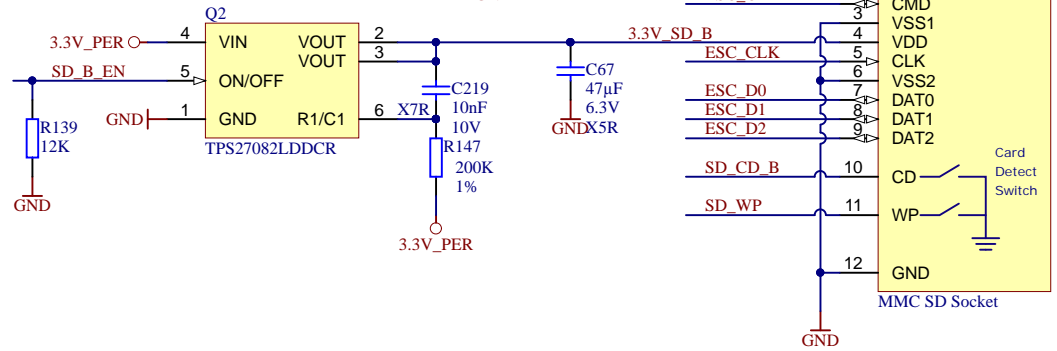
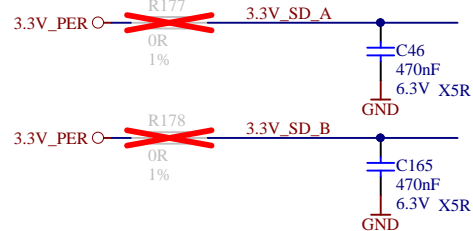
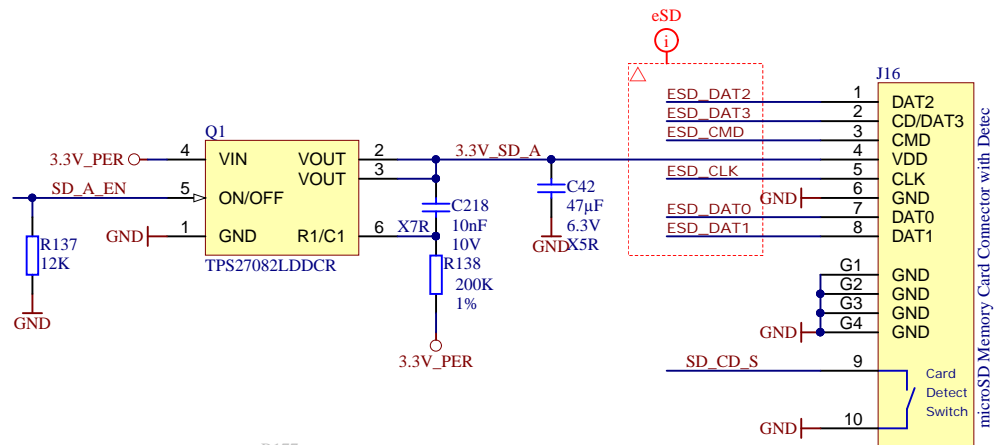
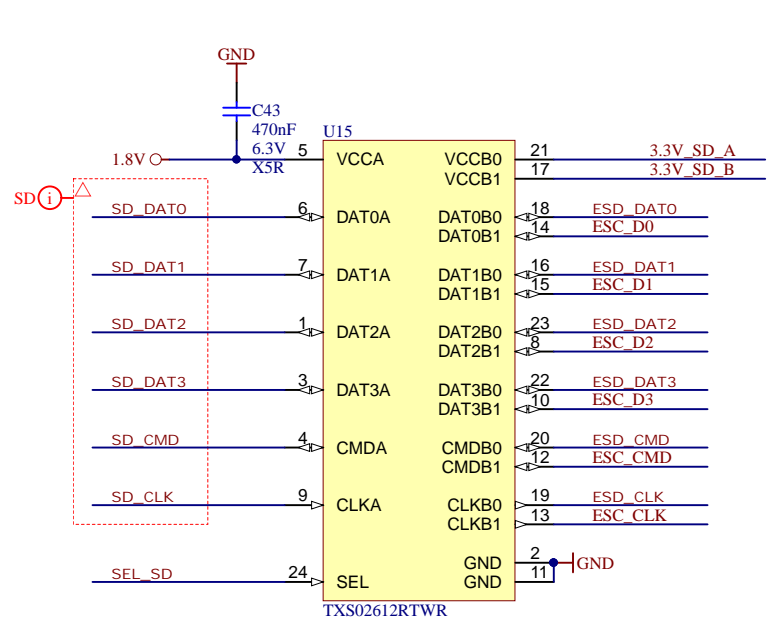
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|---|---------------------------------|--|----------------|
|  | Title: TEBF0808 - CLK | | |
| | A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| | Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page23 of 36 |
| | Filename: CLK_MUX.schdoc | | |


1

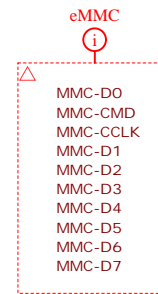
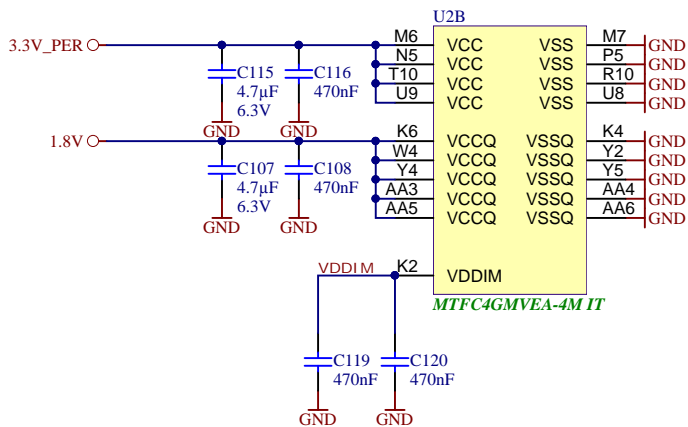
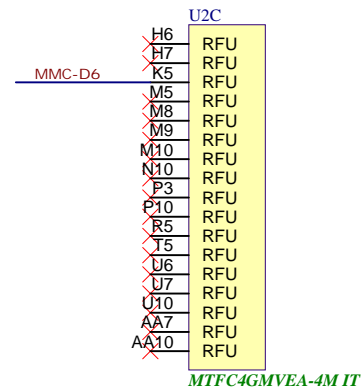
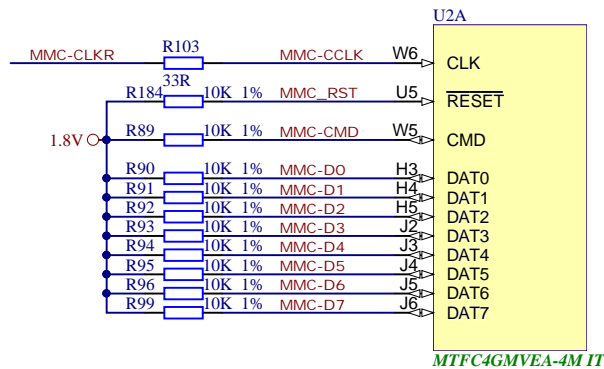
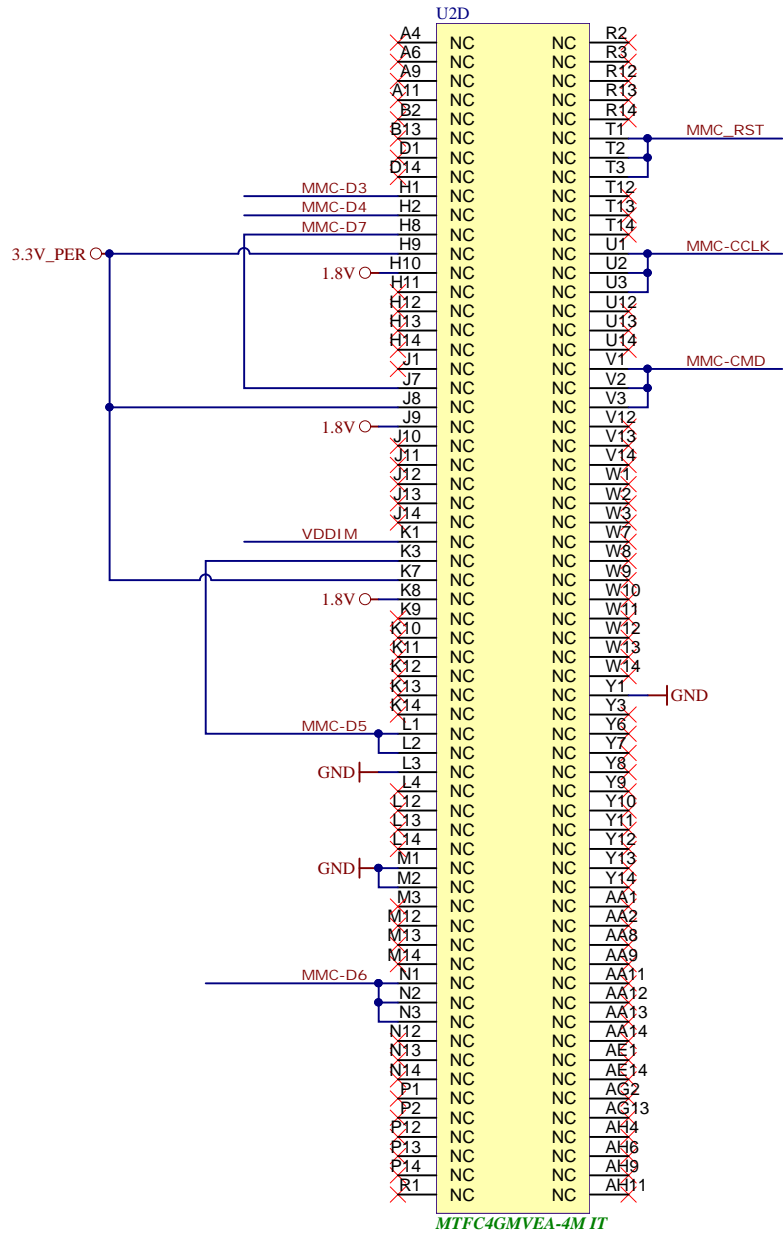
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|---|--|----------------------------------|------------------------------|
|  | | Title: TEBF0808 - SD | |
| | | A4 | Number: TEBF0808 TEBF0808 |
| Date: 2016-08-29 | | Copyright: Trenz Electronic GmbH | |
| Filename: SD.schdoc | | Page24 of 36 | |



LAYOUT NOTES:
 Signal trace length skew constraints
 - Mismatch within DAT0DAT7 < 250 mil
 - CLK to DAT0-7 mismatch < 250 mil
 - CLK to CMD mismatch < 250 mil
 - CLK to RST_N mismatch < 1000 mil



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|-------------------------------|--|-----------------------------|
| Title: TEBF0808 - eMMC | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 25 of 36 |
| Filename: eMMC.SchDoc | | |

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A

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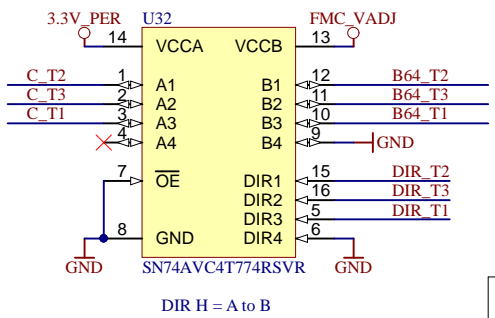
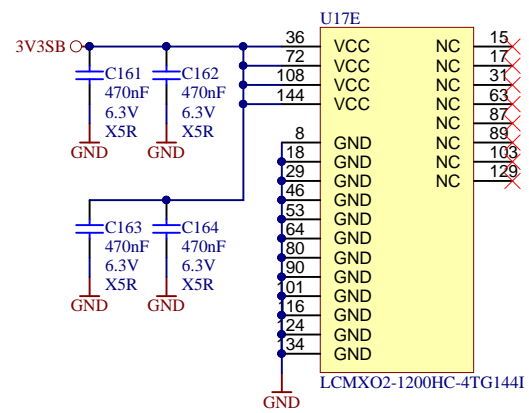
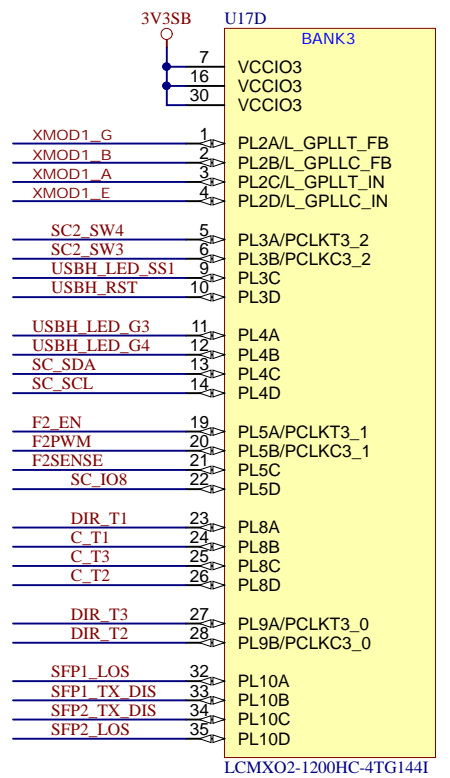
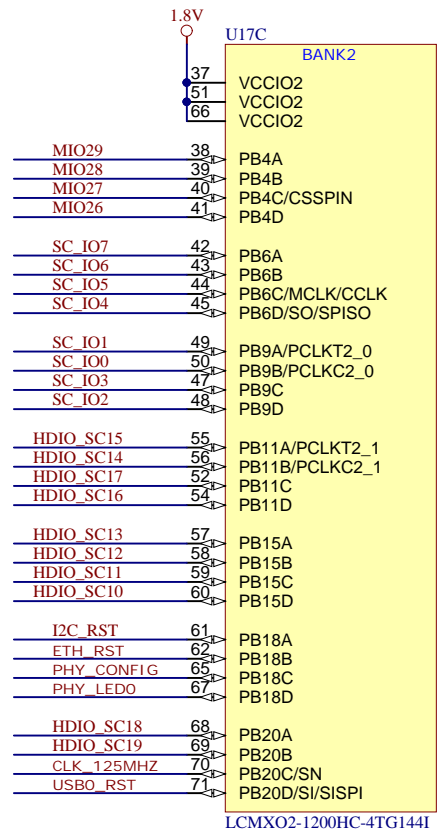
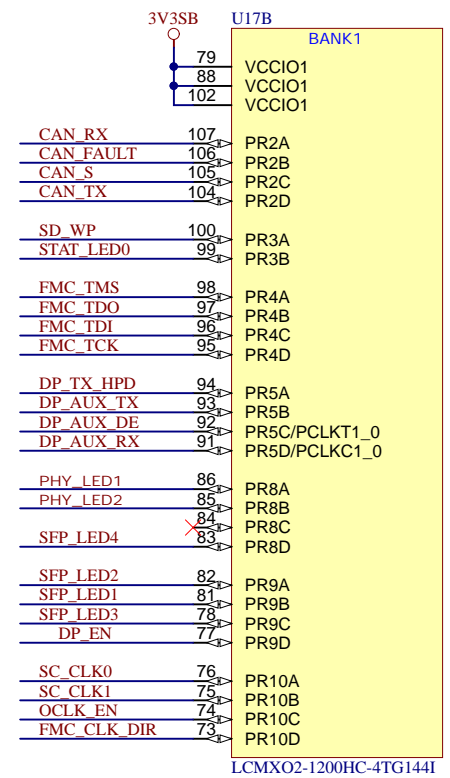
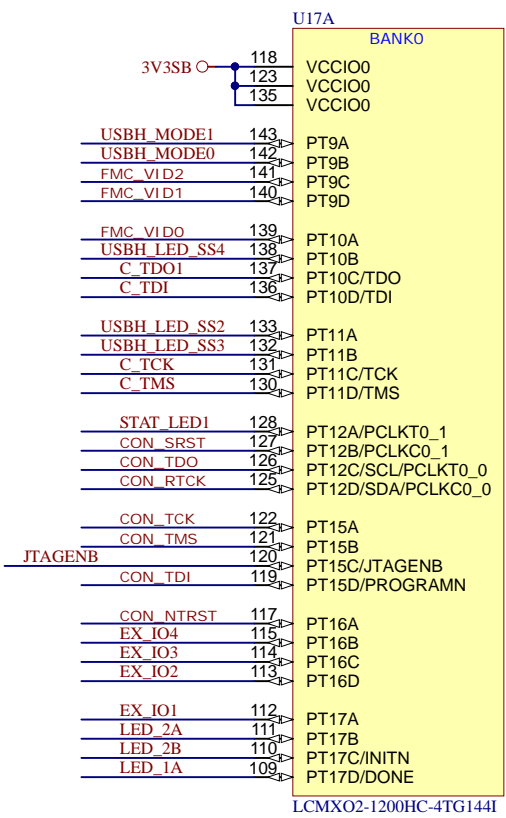
B

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|------------------------------|--|-----------------------------|
| Title: TEBF0808- CPLD | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 26 of 36 |
| Filename: SC.schdoc | | |

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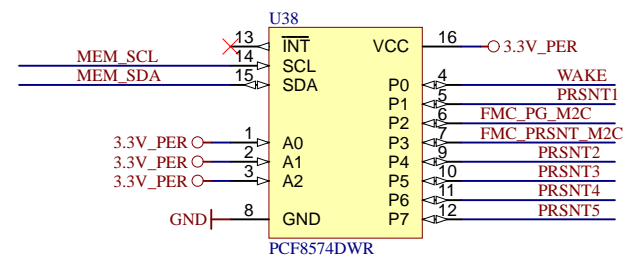
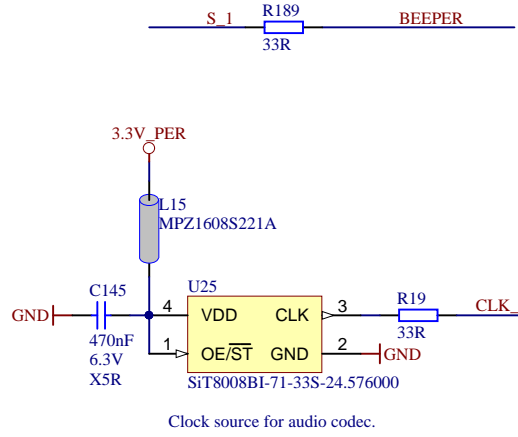
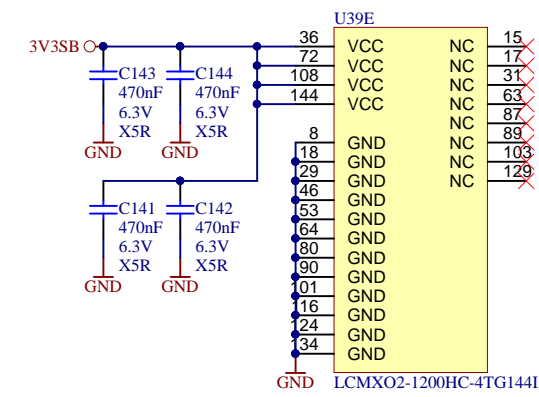
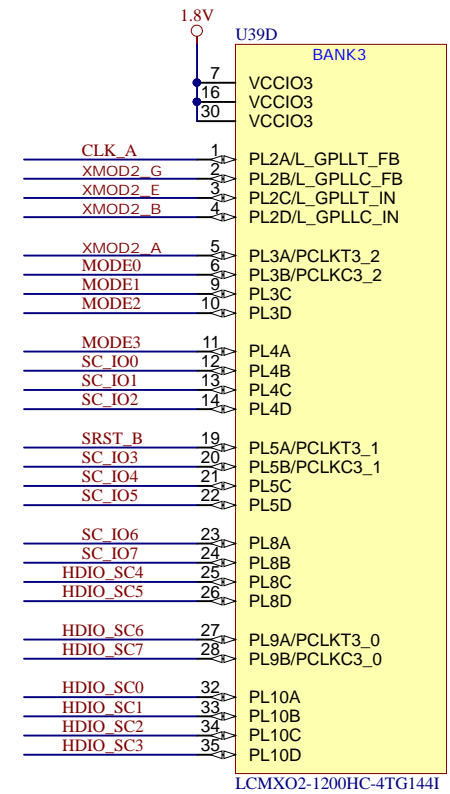
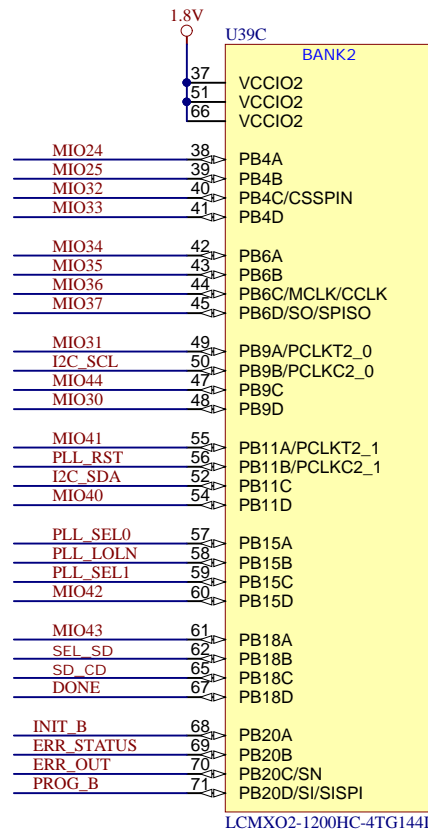
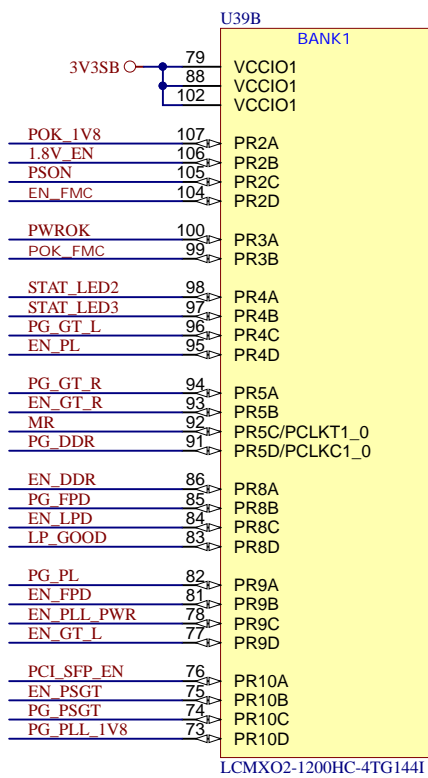
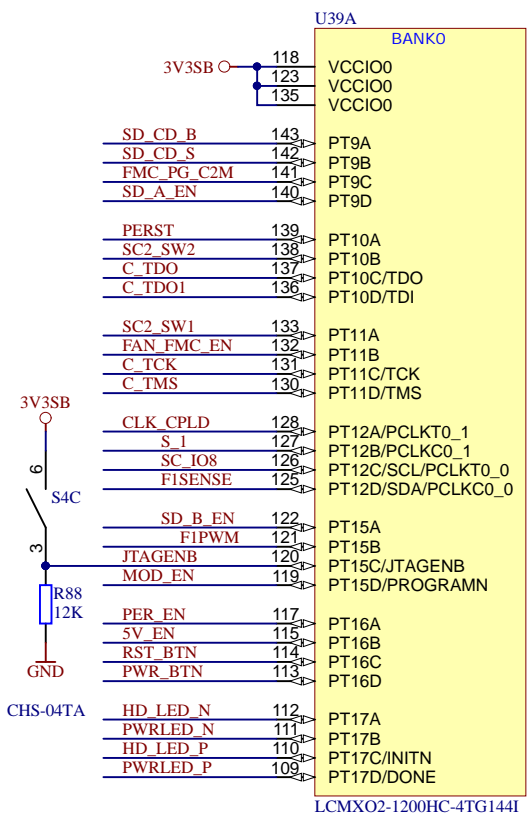
B

C

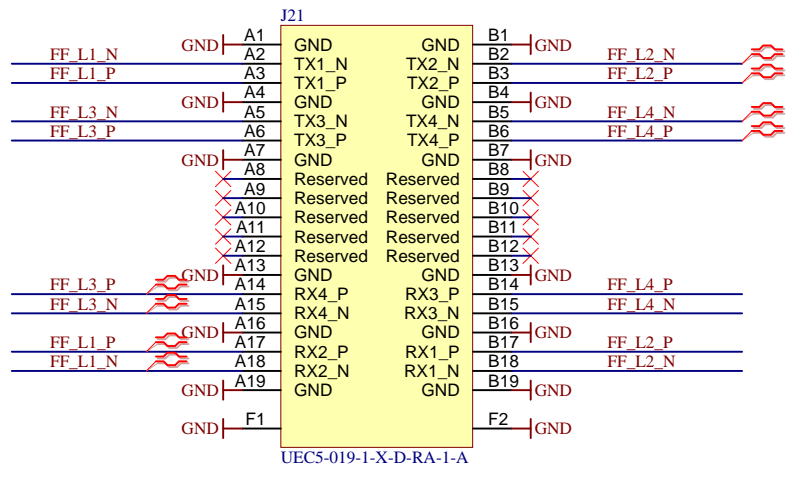
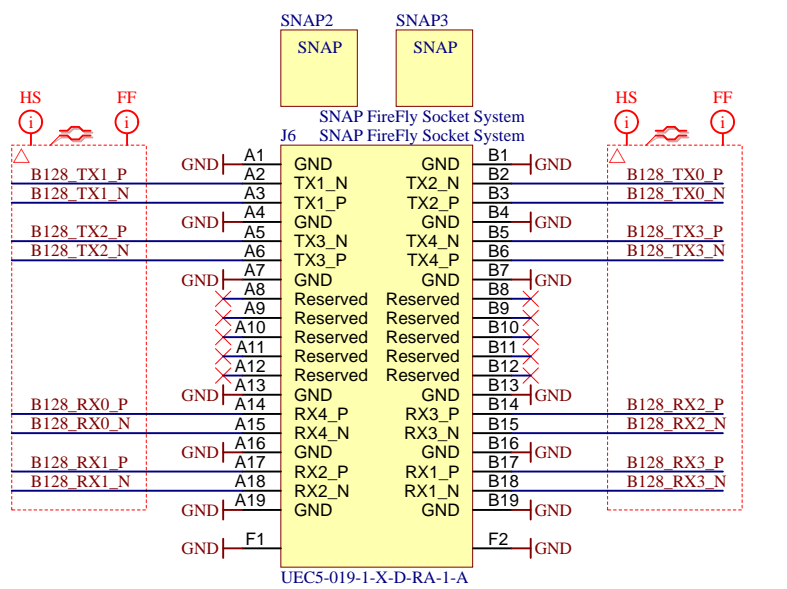
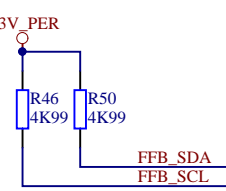
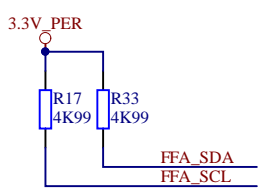
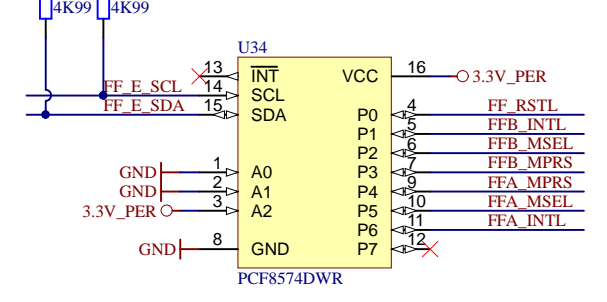
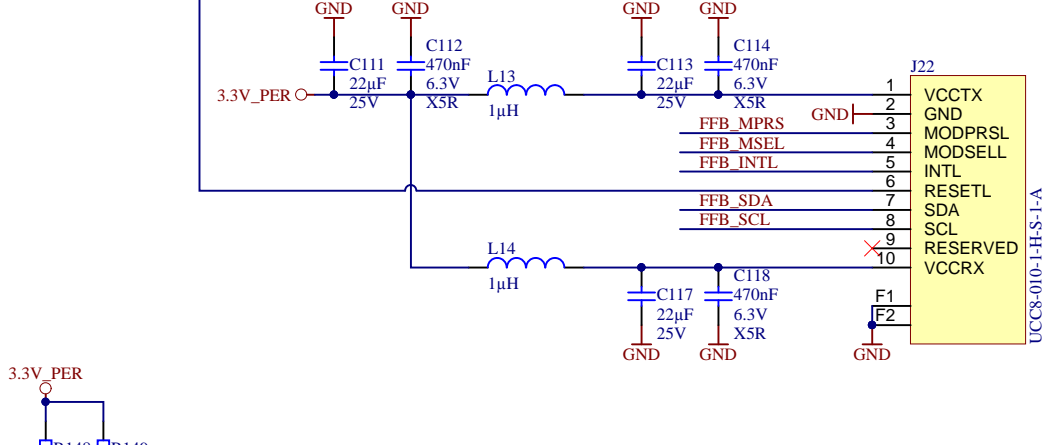
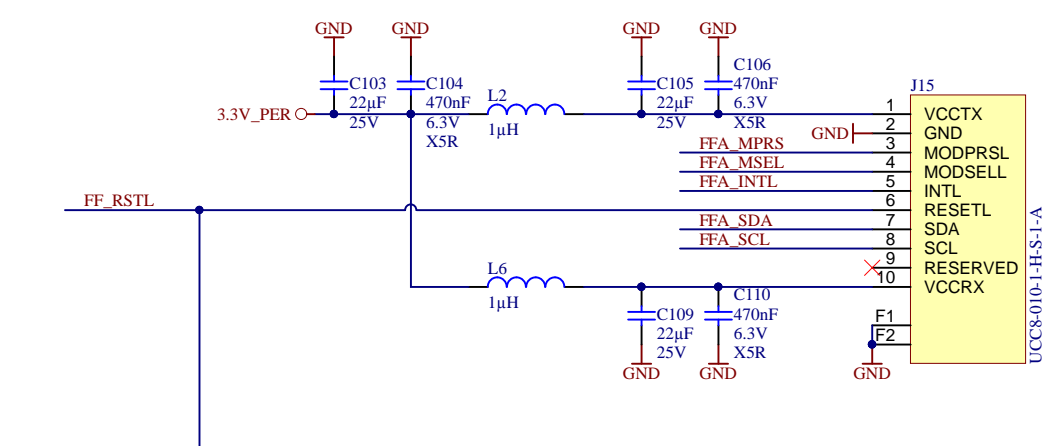
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D

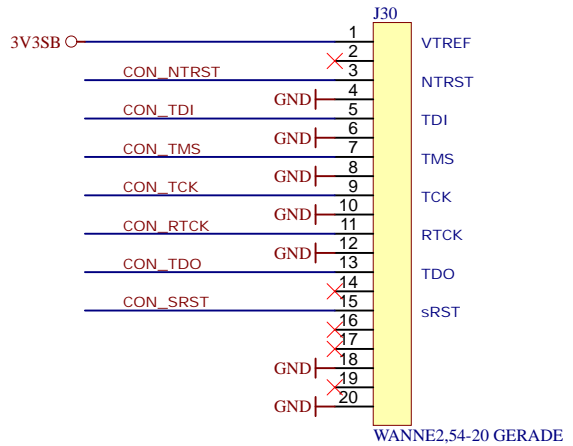
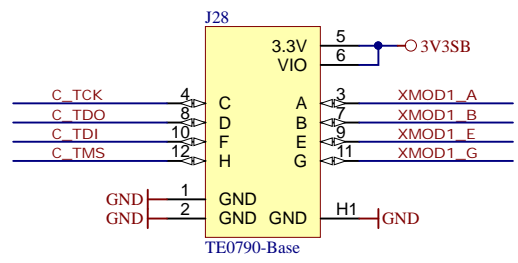
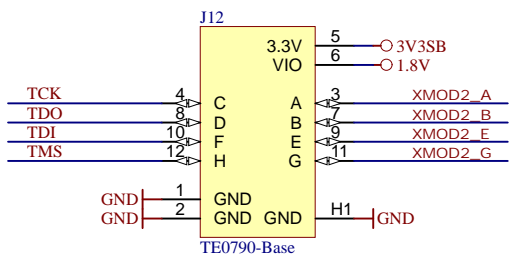
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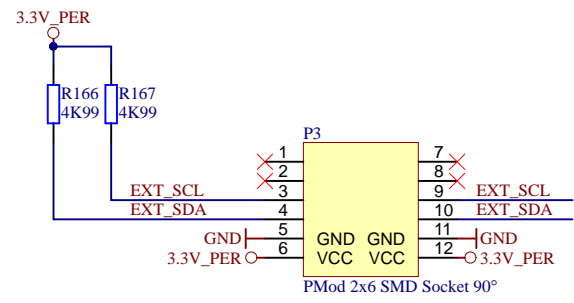
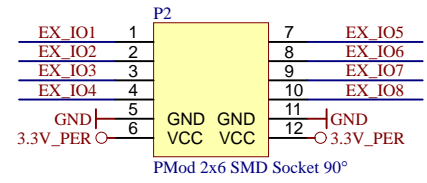
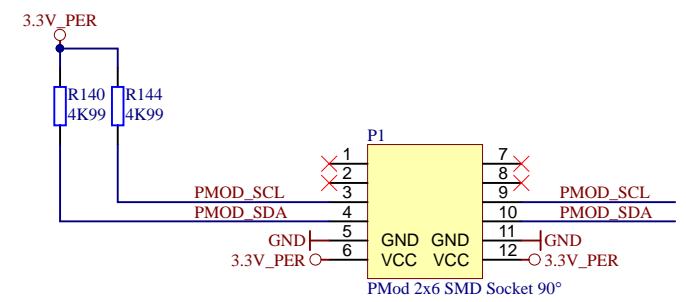
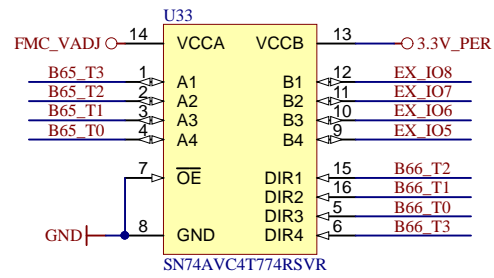
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|---------------------------------|--|-----------------------------|
| Title: TEBF0808 - CPLD_2 | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 27 of 36 |
| Filename: SC2.schdoc | | |



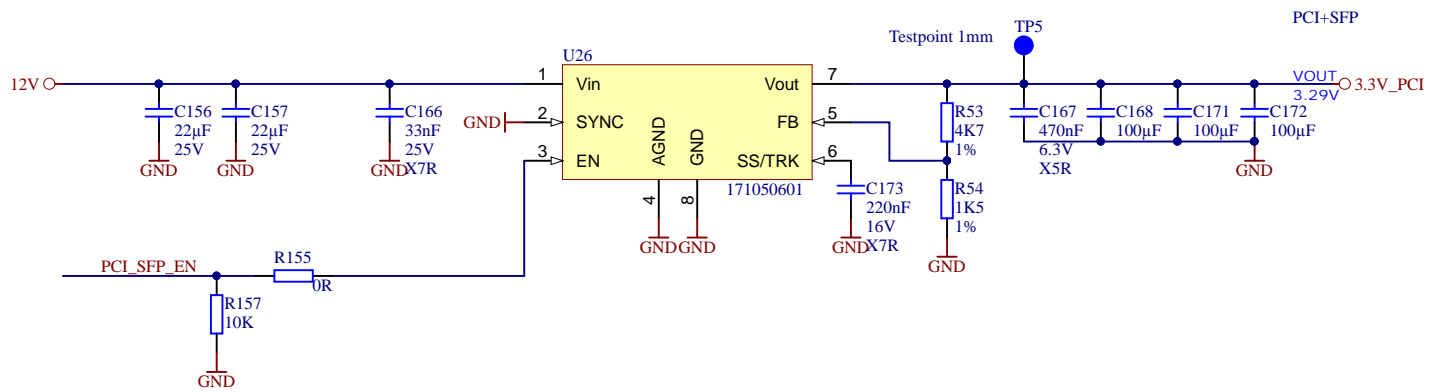
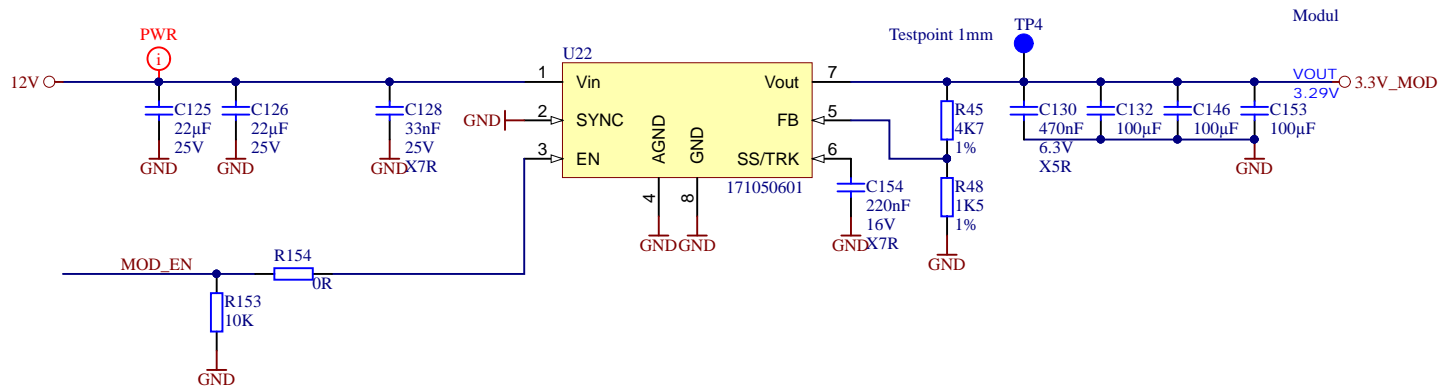
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|---------------------------------|--|-----------------------------|
| Title: TEBF0808 - Analog | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 28 of 36 |
| Filename: FireFly.SchDoc | | |



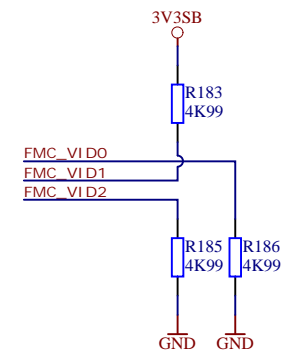
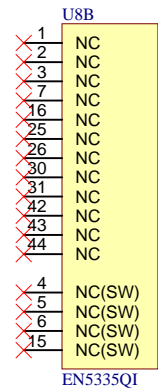
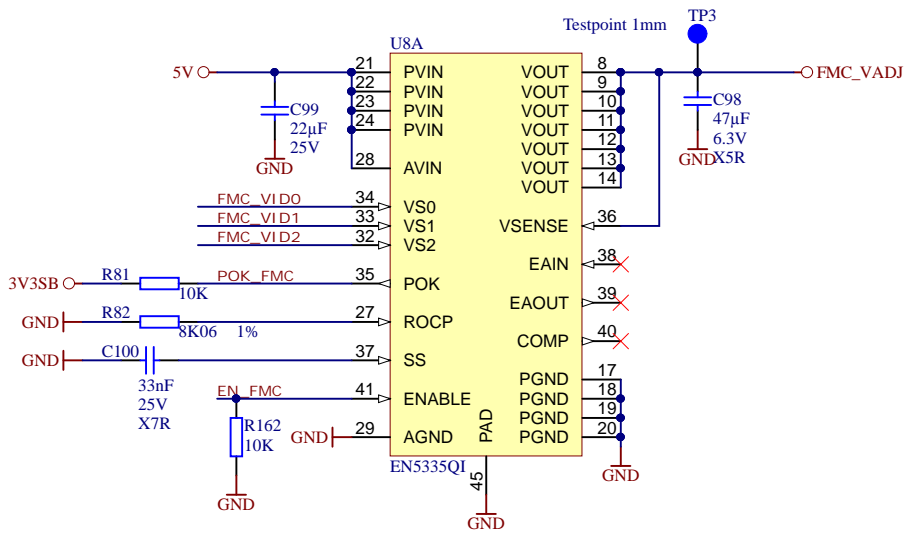
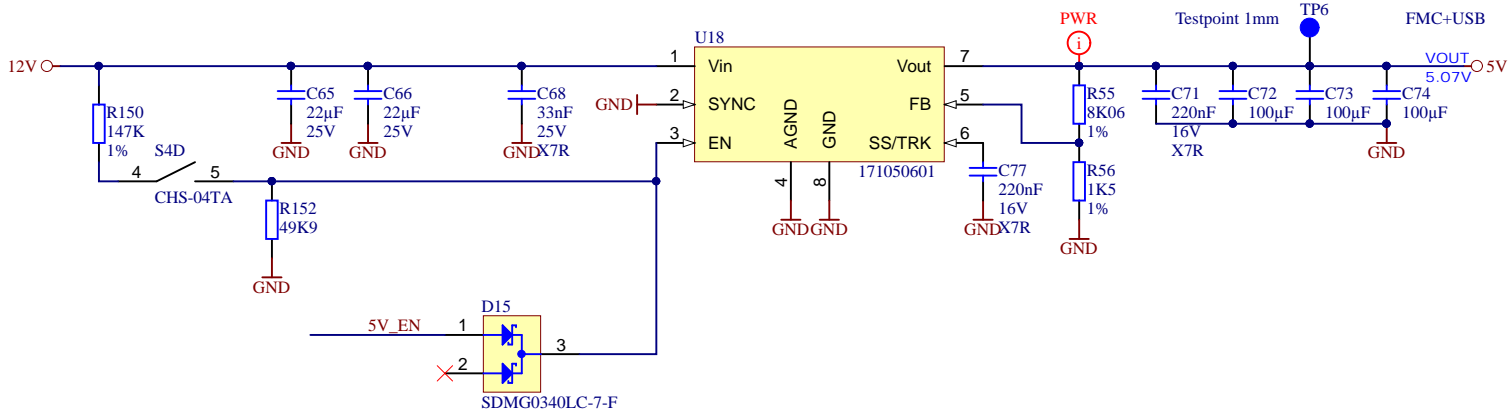
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|-------------------------------|---|-----------------------------|
| Title: TEBF0808 - XMOD | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 29 of 36 |
| Filename: XMOD.schdoc | | |



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|--|-------------------------------|--|
| | Title: TEBF0808 - MISC | |
| | A4 | Number: TEBF0808 TEBF0808 |
| | Date: 2016-08-29 | Copyright: Trenz Electronic GmbH |
| | Filename: PMODE.schdoc | |
| | Rev. 03 | Page 30 of 36 |



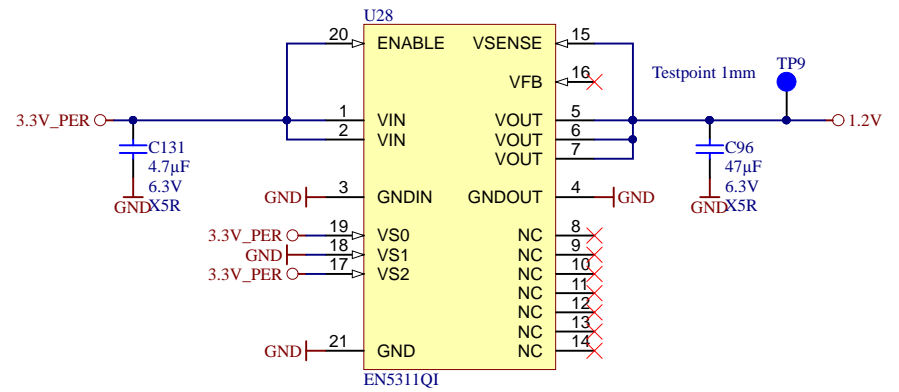
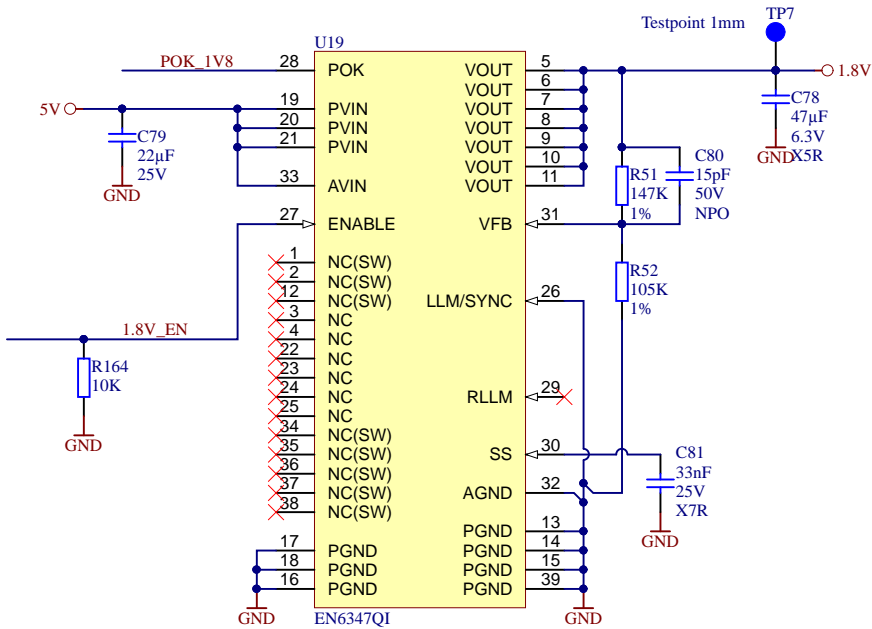
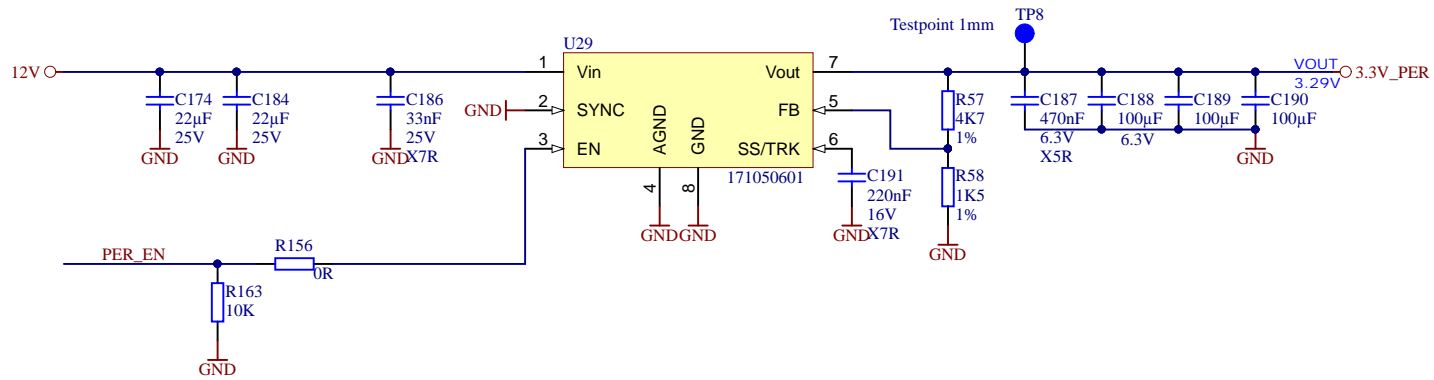
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|---------------------------------|--|-----------------------------|
| Title: TEBF0808 - Power | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 31 of 36 |
| Filename: Power_1.schdoc | | |




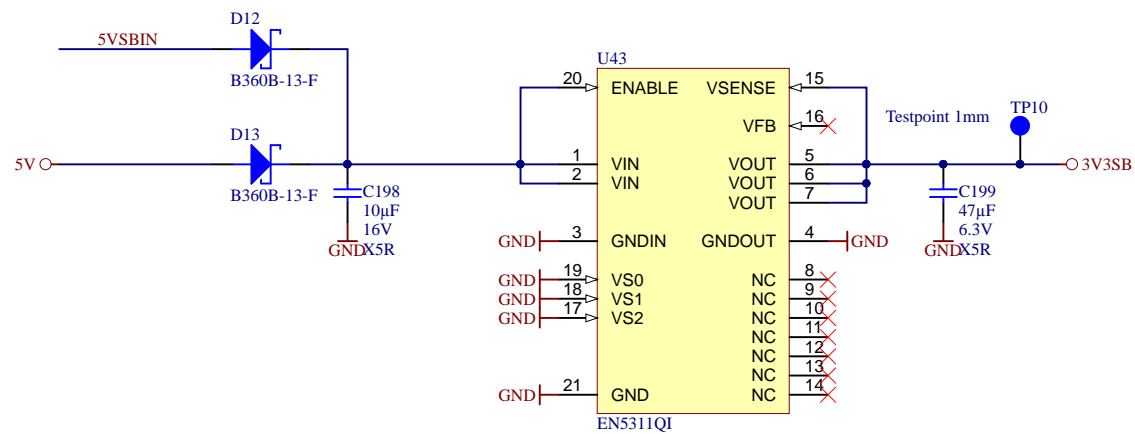
VS2 | VS1 | VS0 | Output Voltage


| | | | |
|---|---|---|-------|
| 0 | 1 | 0 | 1.8V |
| 0 | 1 | 1 | 1.5V |
| 1 | 0 | 0 | 1.25V |
| 1 | 0 | 1 | 1.2V |

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|---------------------------------|--|----------------|
| Title: TEBF0808 - Power | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 32 of 36 |
| Filename: Power_2.schdoc | | |



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|---|--|----------------------------------|--|
|  | | Title: TEBF0808 - Power | |
| | | A4 | Number: TEBF0808 TEBF0808 |
| Date: 2016-08-29 | | Copyright: Trenz Electronic GmbH | |
| Page 33 of 36 | | Filename: Power_3.schdoc | |



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|---|--|----------------------------------|--|
|  | | Title: TEBF0808 - Power | |
| | | A4 | Number: TEBF0808 TEBF0808 |
| Date: 2016-08-29 | | Copyright: Trenz Electronic GmbH | |
| Date: 2016-08-29 | | Page 34 of 36 | |
| Filename: Power_4.schdoc | | | |

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A

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B

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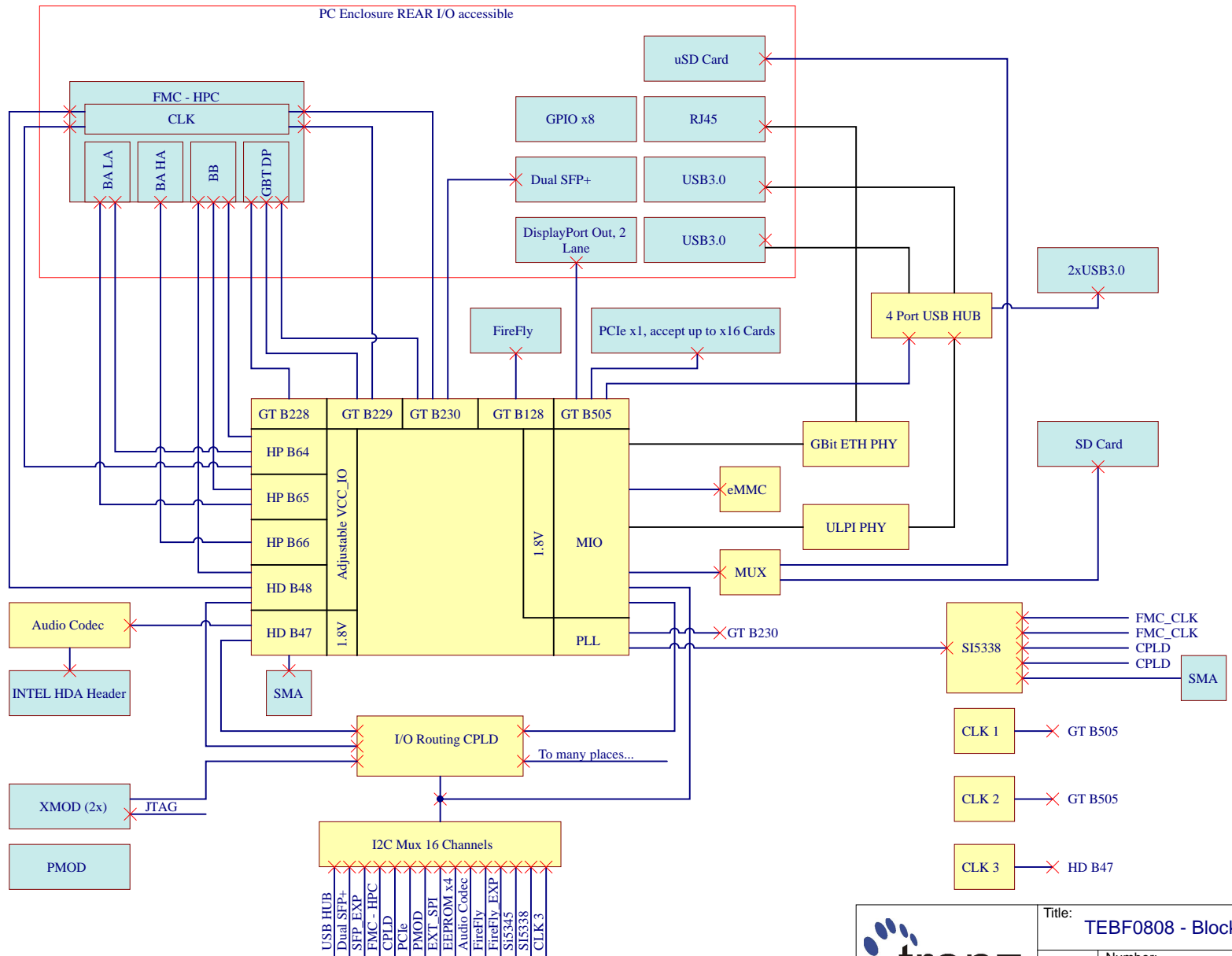
C

C

D

D

PC Enclosure REAR I/O accessible



- USB HUB
- Dual SFP+
- SFP_EXP
- FMC - HPC
- CPLD
- PMOD
- EXT_SPI
- EEPROM x4
- Audio Codec
- FireFly
- FireFly_EXP
- SI5338
- SI5338
- CLK 3



| | | |
|--|--|-----------------------------|
| Title: TEBF0808 - Block Diagram | | |
| A4 | Number: TEBF0808 TEBF0808 | Rev. 03 |
| Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 35 of 36 |
| Filename: BD.SchDoc | | |

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REV03

- 1) Added 2.5V option for clock source U45
- 2) Net B64_T0 terminated via 240 Ohm resistor to GND.
- 3) Nets B64_T1..T3 connected to CPLD
- 4) Nets SFP#_LOS and SFP#TX_DIS connected to CPLD (# = 1..2)
- 5) Added 4-pin connector for FAN2 (12V). Added high side switch like option for FAN without control signals.
- 6) Added net SC_IO8 between CPLD1 and CPLD2 (Bank 3V3_SB)
- 7) Deleted USB3.0 port (J18)
- 8) Port USB2.0 replaced to USB3.0 (J8, front panel)
- 9) Replaced USB HUB USB5537B to CYUSB3324 (U4)

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|---|---|--|-----------------------------|
|  | Title: TEBF0808 - Revision history | | |
| | A4 | Number: TE0701 TEBF0808 | Rev. 03 |
| | Date: 2016-08-29 | Copyright: Trenz Electronic GmbH | Page 36 of 36 |
| | Filename: Revision_Changes.SchDoc | | |

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