IM2972B-XLPB

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Interface Masters, Inc.
227 Devcon Dr.
San Jose, CA 95112
www.interfacemasters.com

Title: Table of Contents

Customer Name: **Interface Masters**

Size:

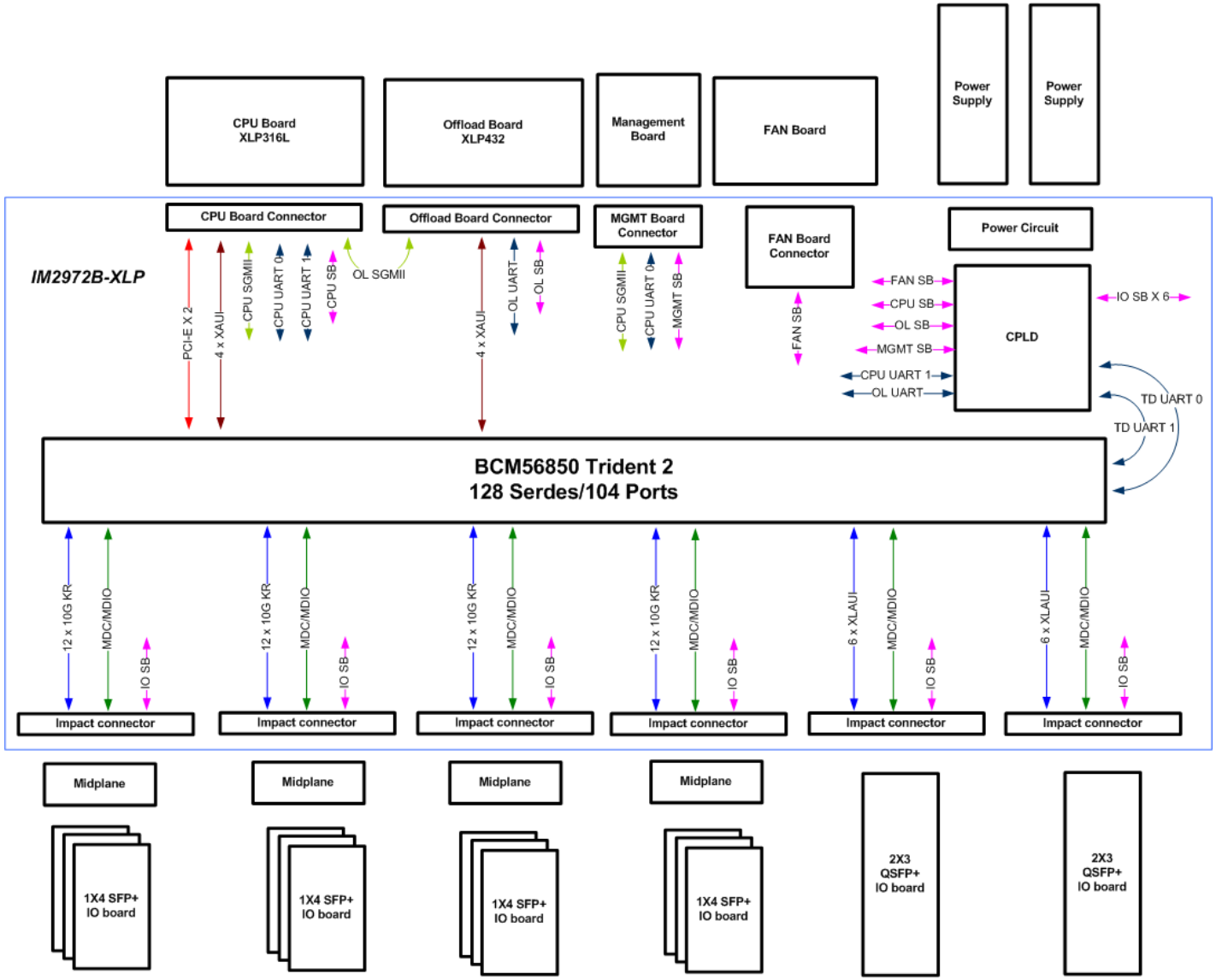
DWG NO: IM2972B-XLPB

Rev: 22

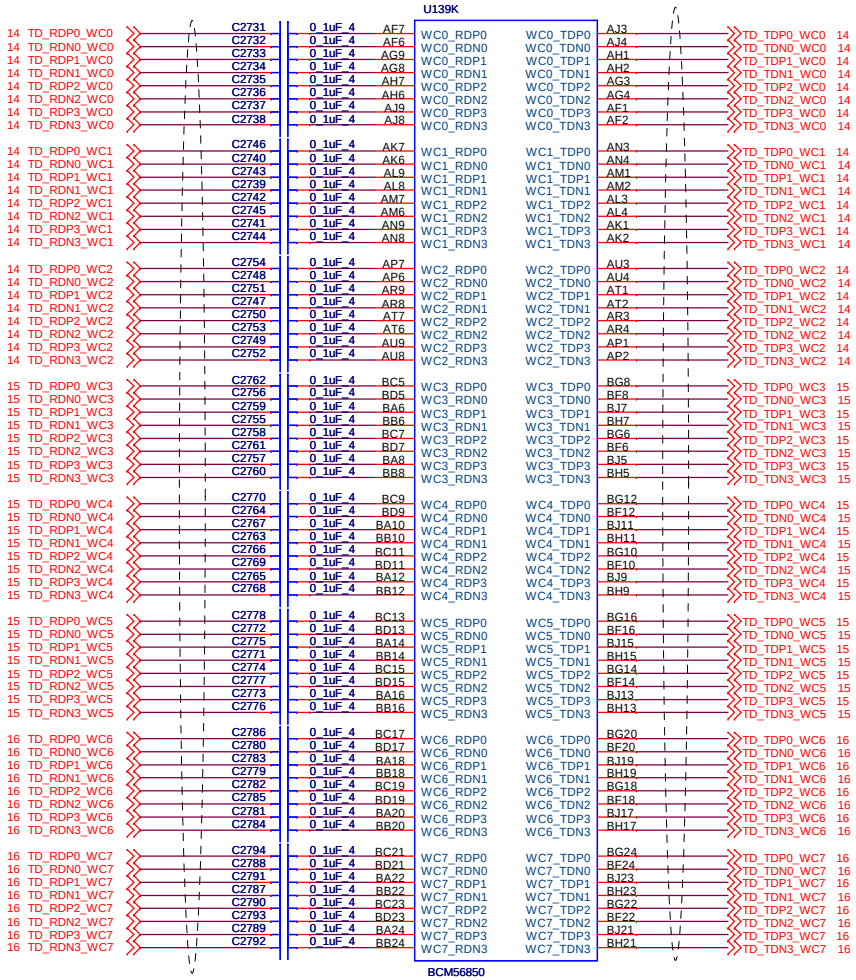
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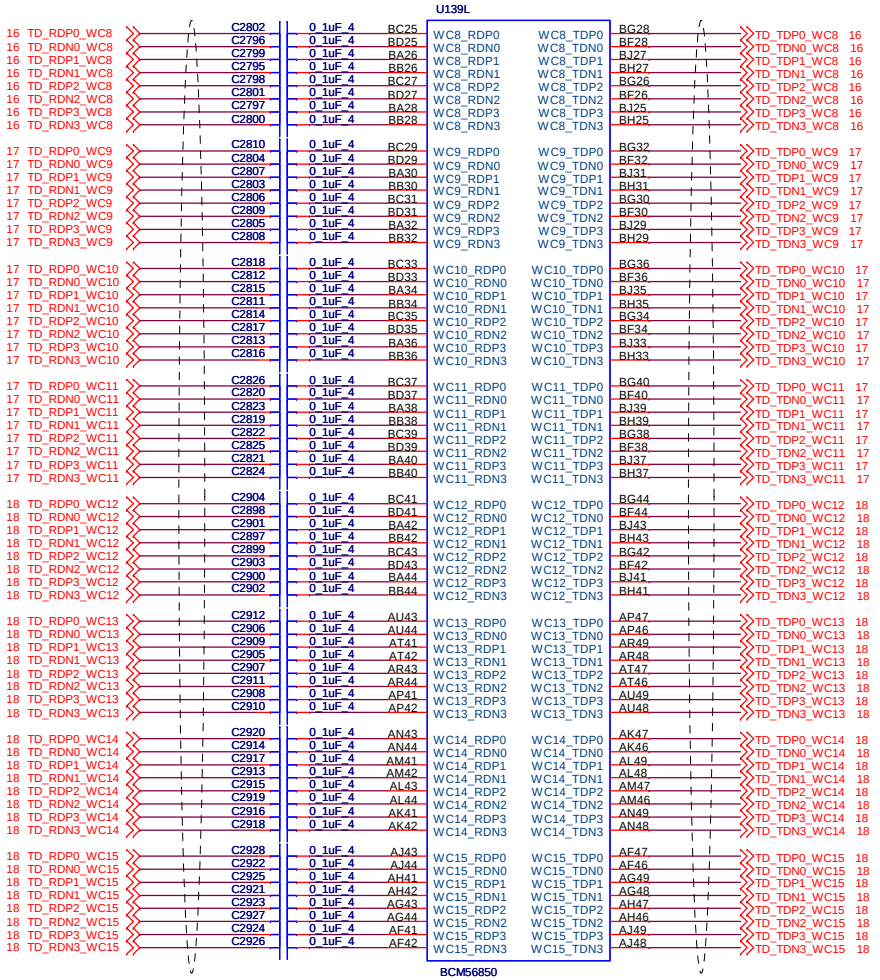
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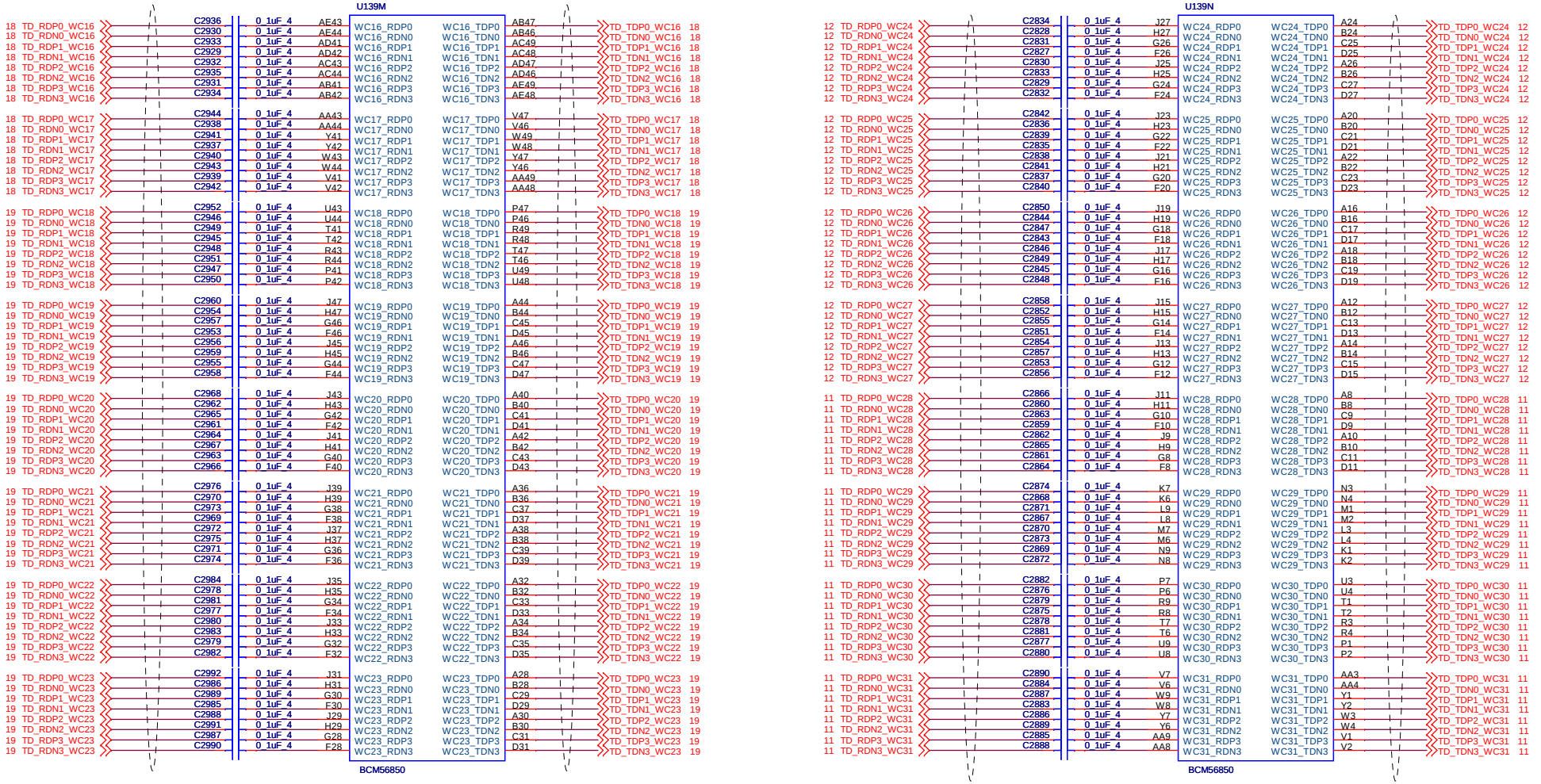
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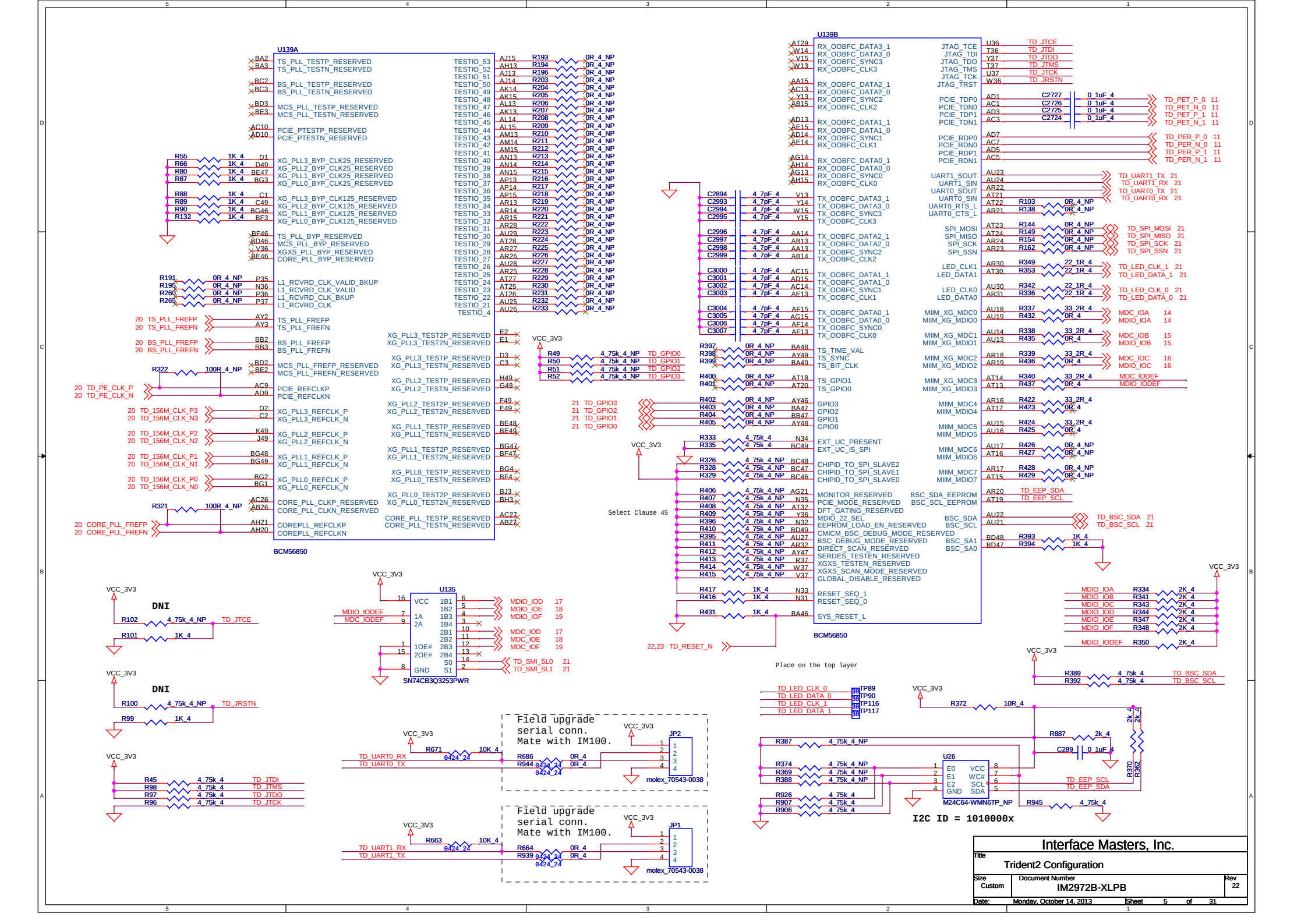
Route each p/n pair as a differential trace. Traces within a pair should match within 5 mils in length. Differential impedance should be 100 ohm.

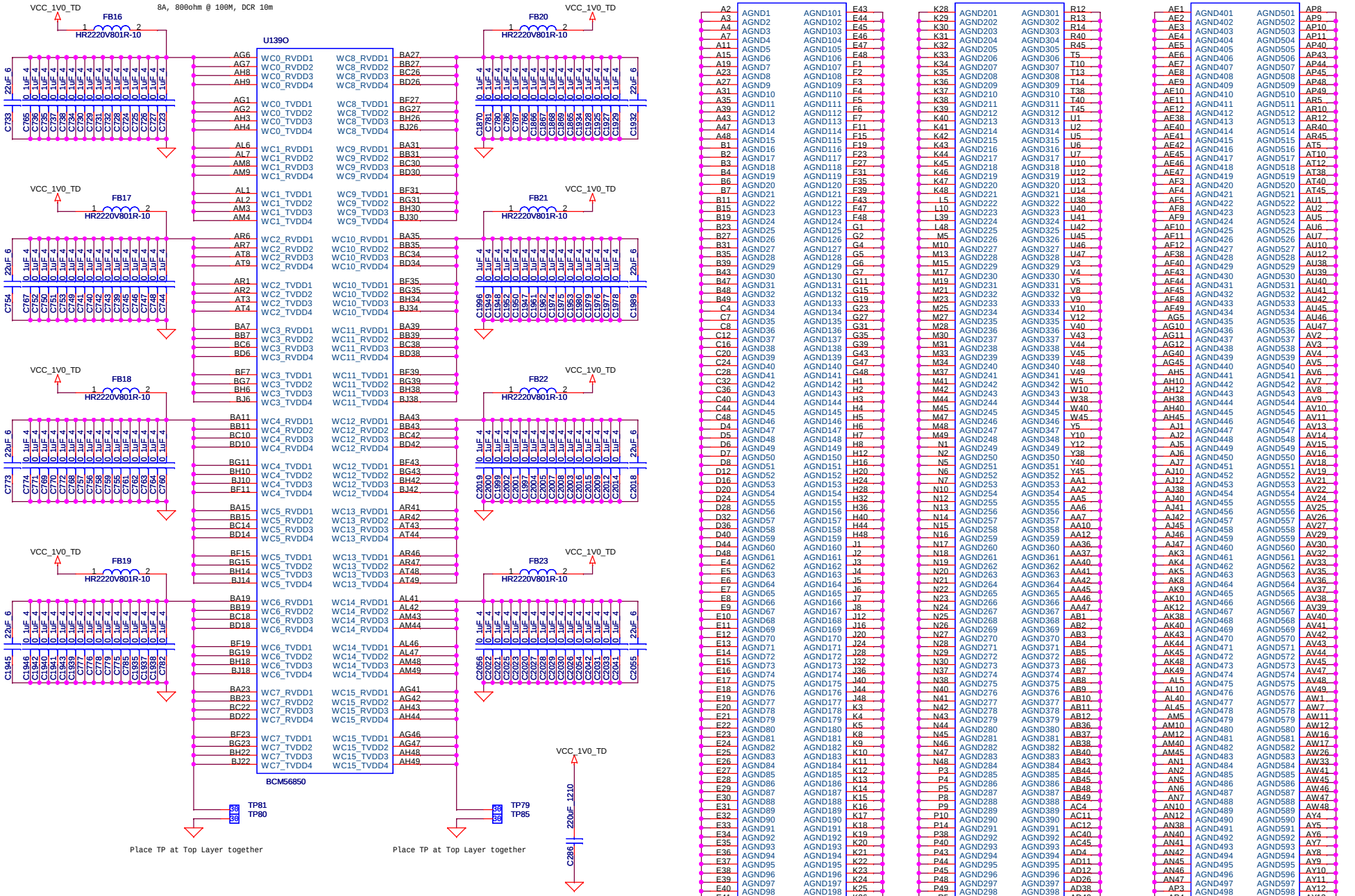
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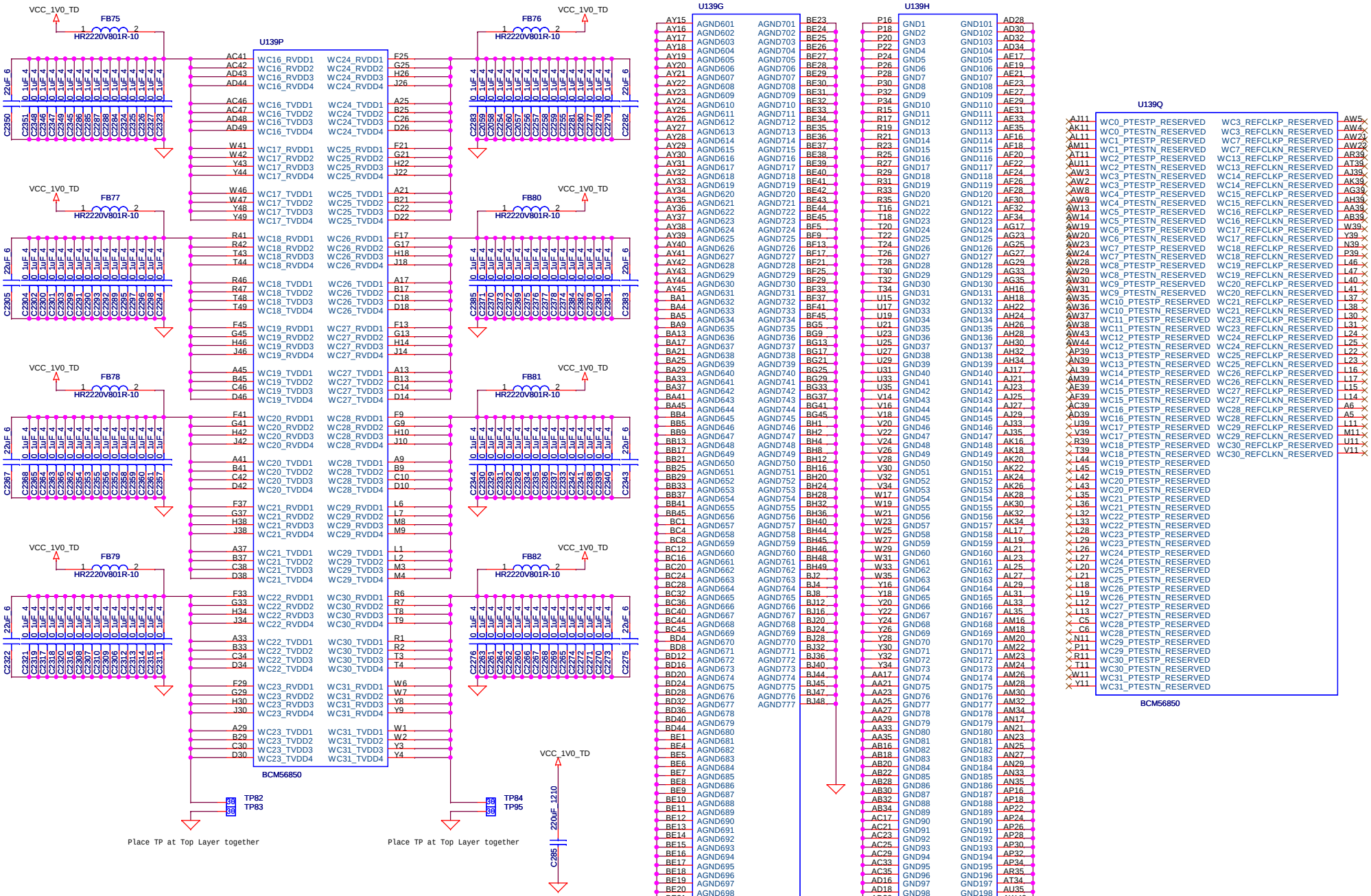
Route each p/n pair as a differential trace. Traces within a pair should match within 5 mils in length. Differential impedance should be 100 ohm.

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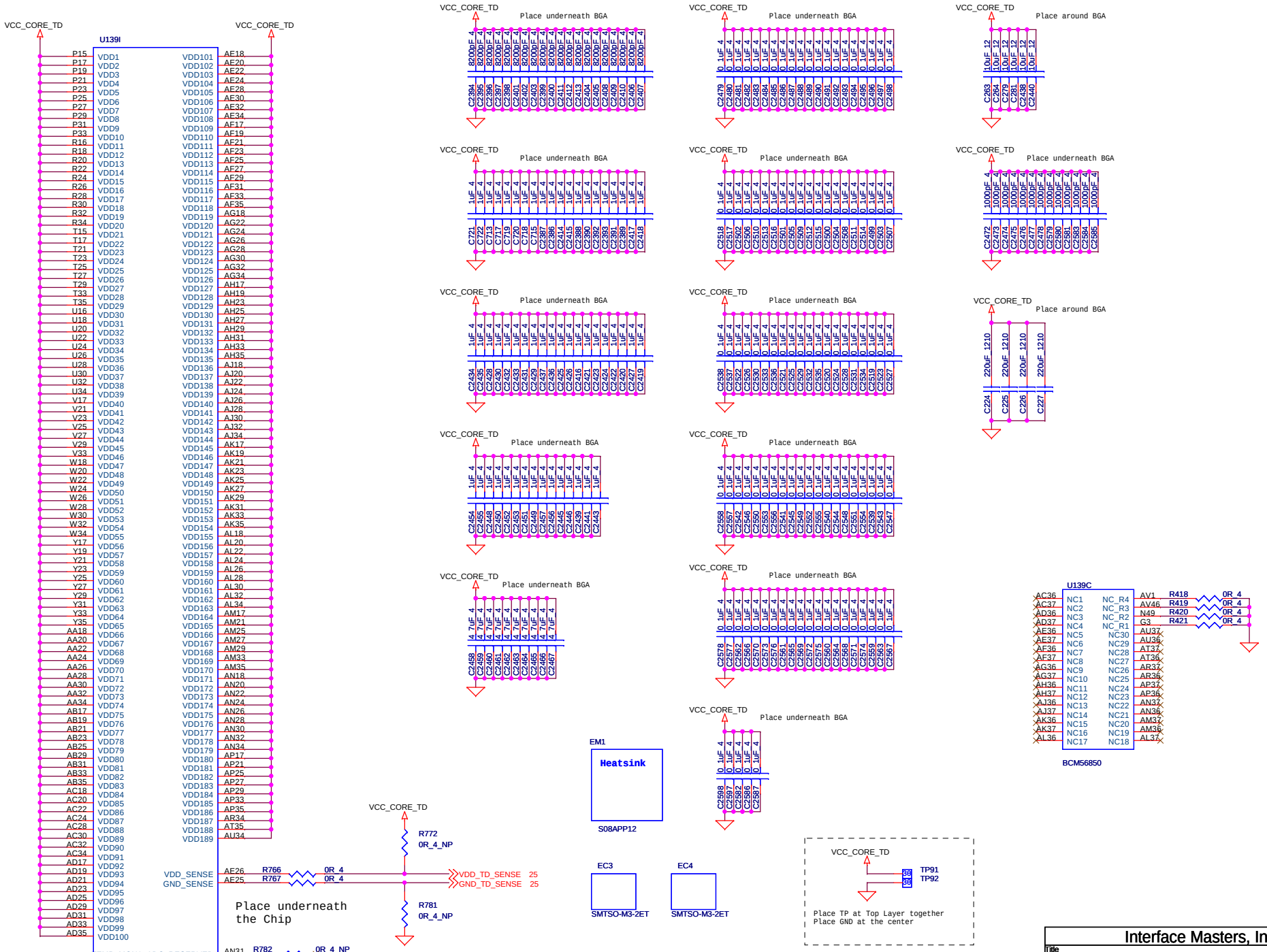

U139A
BCM56850
U139B
BCM56850
U135
SN74CB3Q3253PWR
U26
M24C64-WMN6TP_NP
DNI
DNI
Select Clause 45
Place on the top layer
Field upgrade serial conn. Mate with IM100.
Field upgrade serial conn. Mate with IM100.
molex_70543-0038
molex_70543-0038
I2C ID = 1010000x
Interface Masters, Inc.
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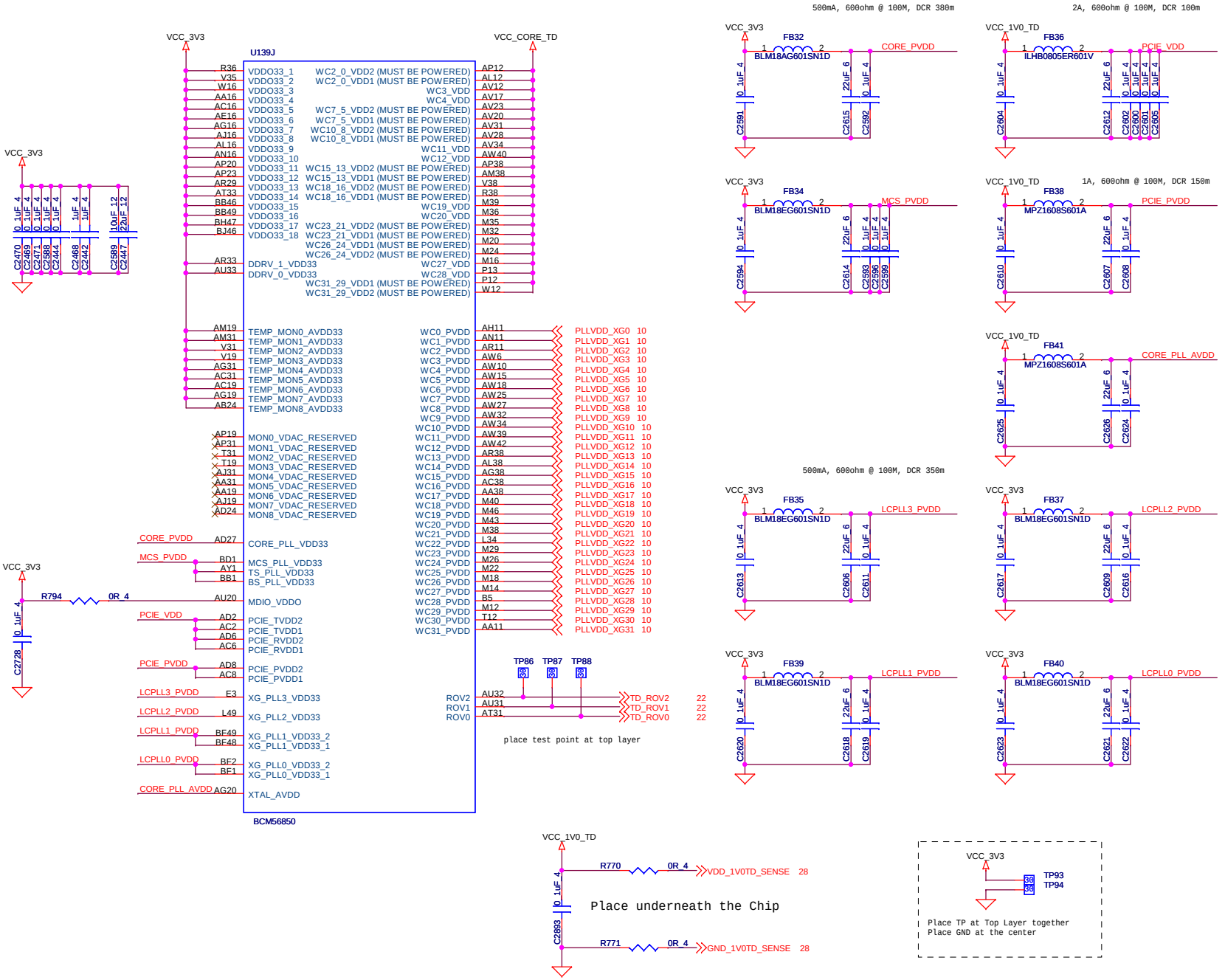


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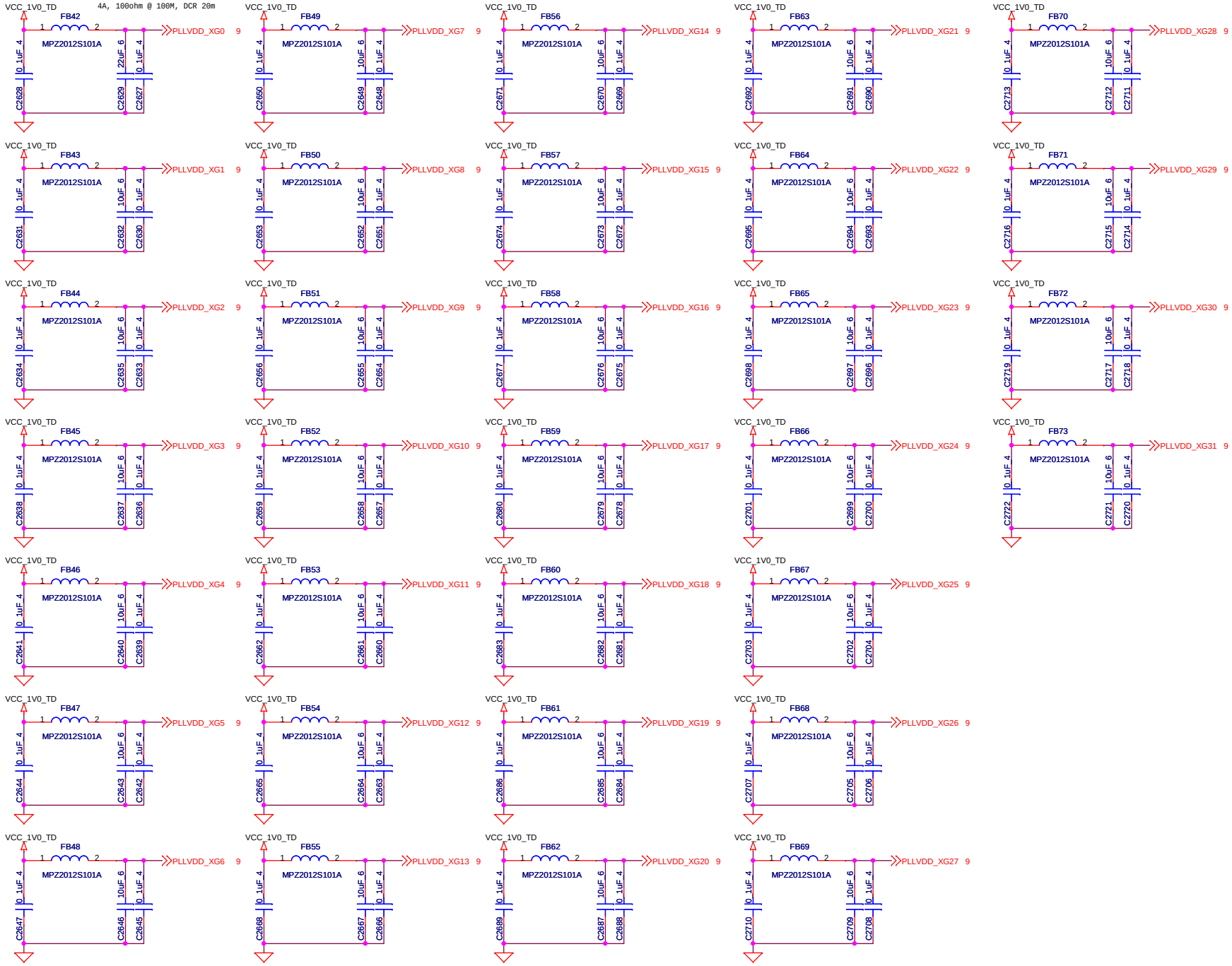


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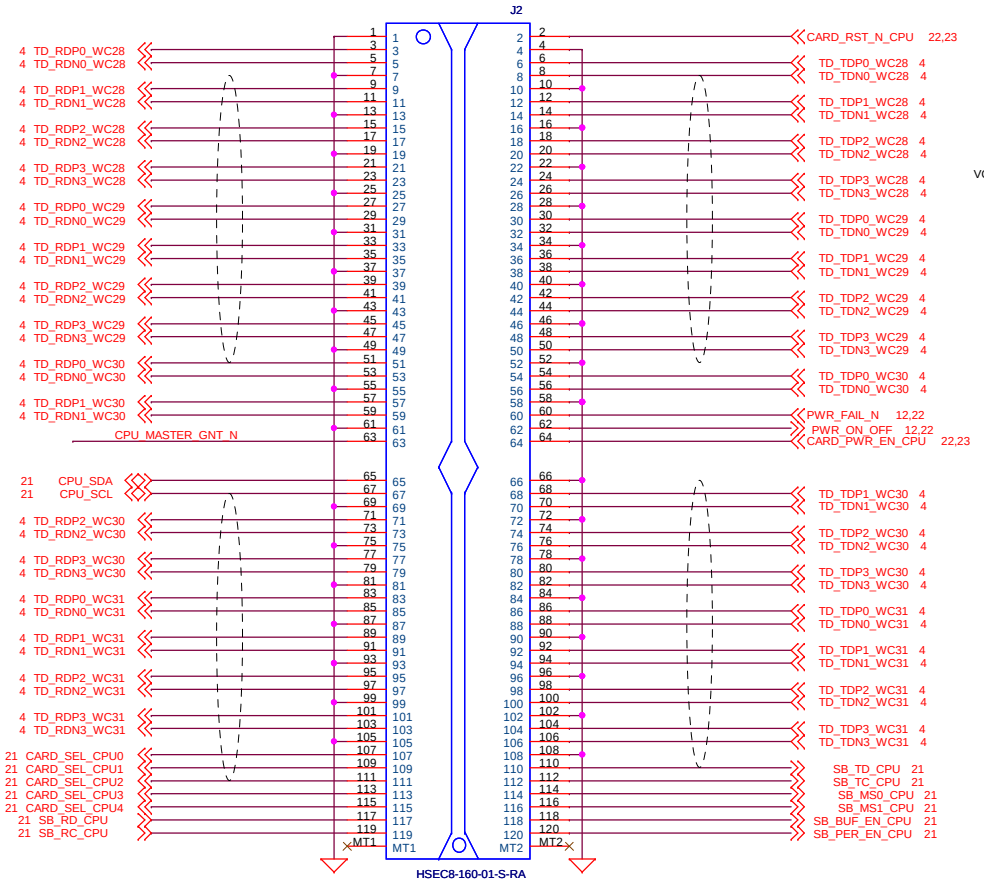

U139I
VCC_CORE_TD
BCM56850
Place underneath BGA
Place around BGA
U139C
Heatsink
S08APP12
SMTSO-M3-2ET
Place underneath the Chip
Place TP at Top Layer together
Place GND at the center
Interface Masters, Inc.
Trident2 PWR & GND3
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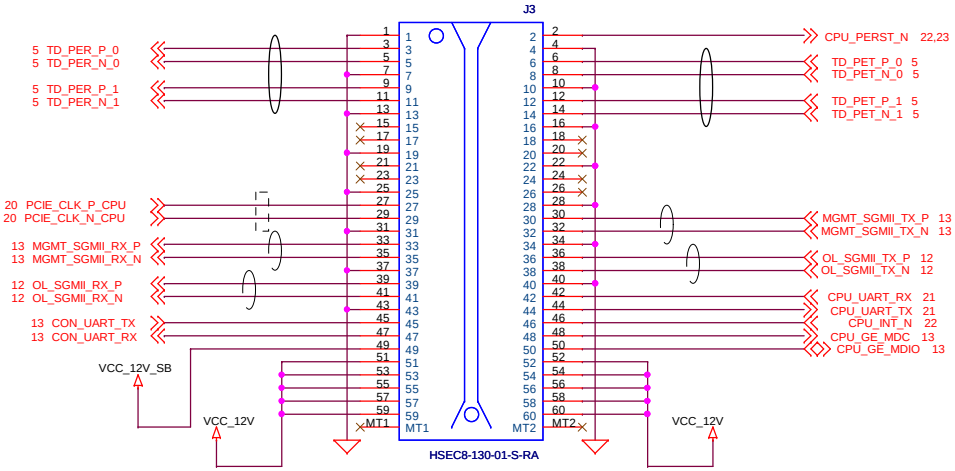


Interface Masters, Inc.		
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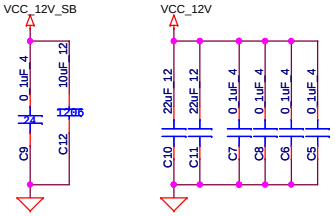


Interface Masters, Inc.		
Title: Trident2 PWR & GND5		
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Even pins are on the component side.
Odd pins are on the solder side.



- CARD_PWR_EN enables the card power-up sequencing when the card is a slave

High = Enabled, Low = Disabled

- PWR_ON_OFF can be used to control the main power supply. It is pulled low temporarily to either turn ON or turn OFF the power supply.

- MASTER_REQ_N is asserted low when the card is requesting to be master.

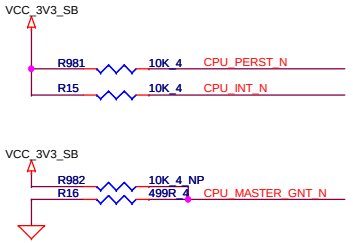
- MASTER_GNT_N indicates that the request to be master has been granted.

All XAUI pairs are 100 ohm differential pairs.

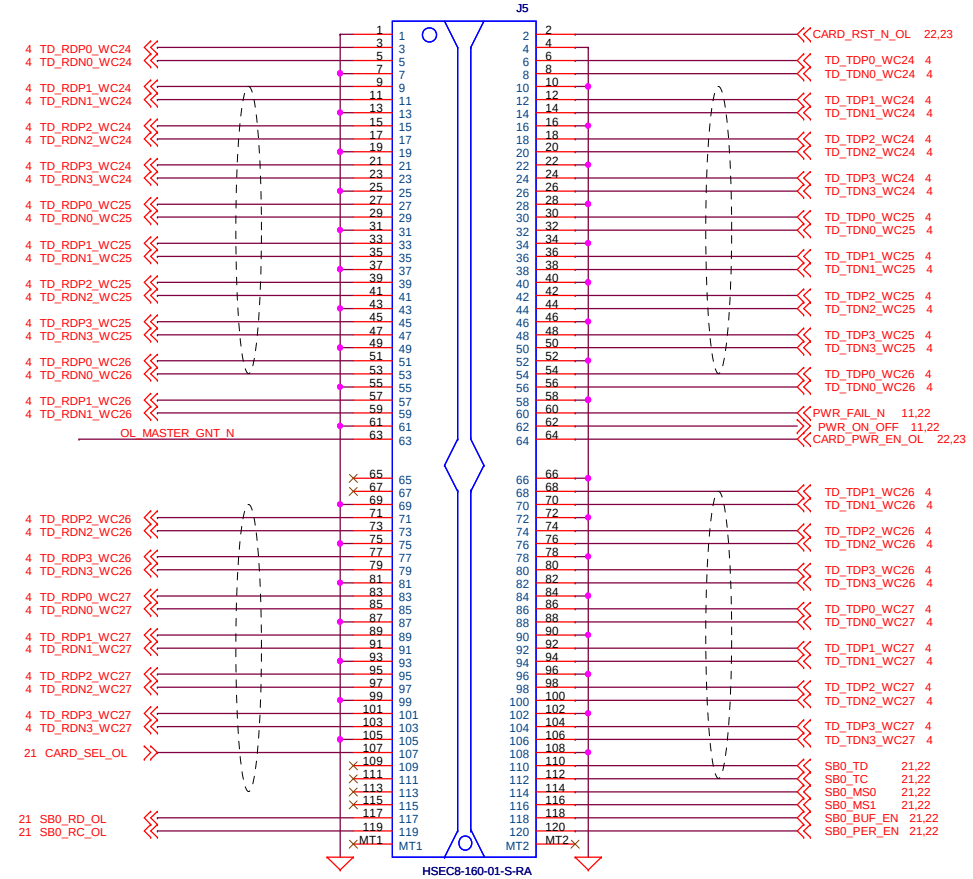
All SGMII pairs are 100 ohm differential pairs.

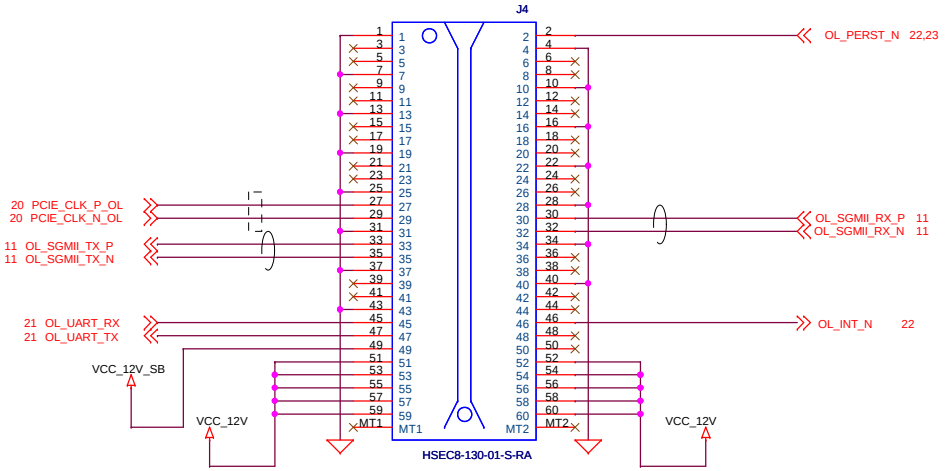
All PCIE pairs are 85 ohm differential pairs.

PCIE clock pairs are 100 ohm differential pairs.

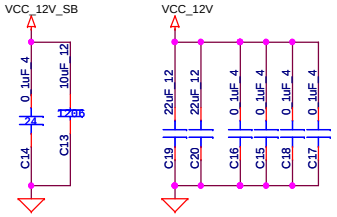


Interface Masters, Inc.		
Title: CPU Connector		
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Even pins are on the component side.
Odd pins are on the solder side.



- CARD_PWR_EN enables the card power-up sequencing when the card is a slave

High = Enabled, Low = Disabled

- PWR_ON_OFF can be used to control the main power supply. It is pulled low temporarily to either turn ON or turn OFF the power supply.

- MASTER_REQ_N is asserted low when the card is requesting to be master.

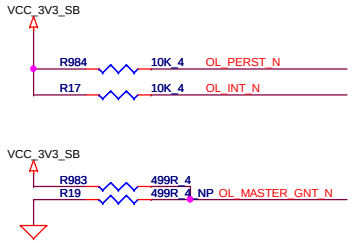
- MASTER_GNT_N indicates that the request to be master has been granted.

All XAUI pairs are 100 ohm differential pairs.

All SGMII pairs are 100 ohm differential pairs.

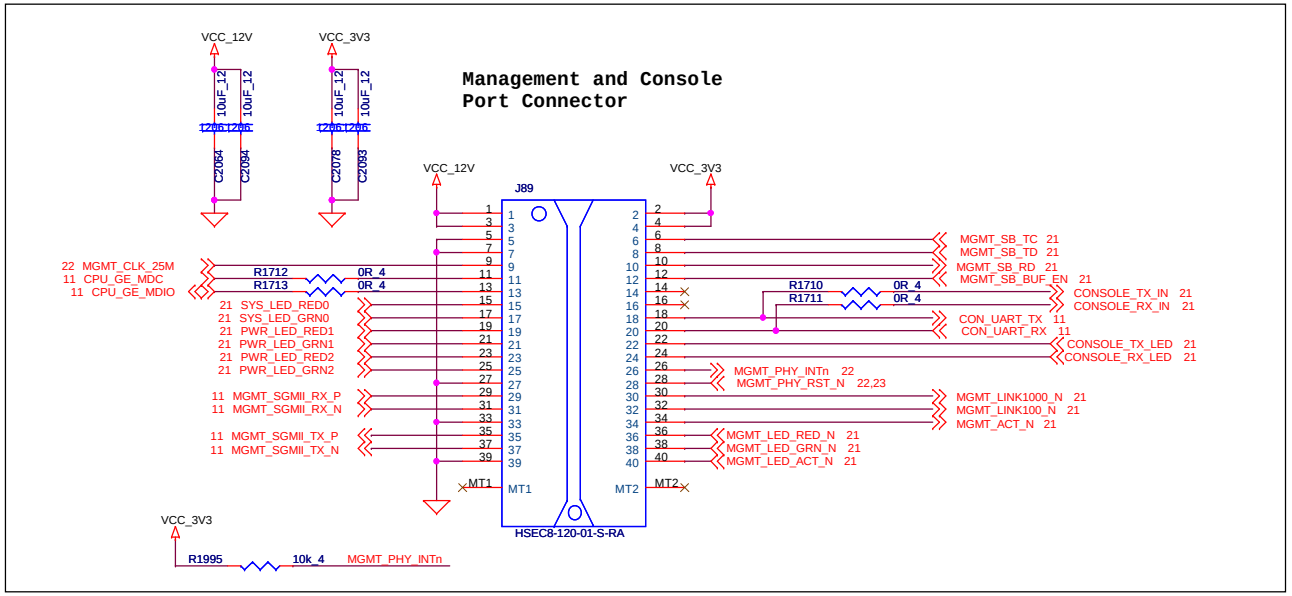
All PCIE pairs are 85 ohm differential pairs.

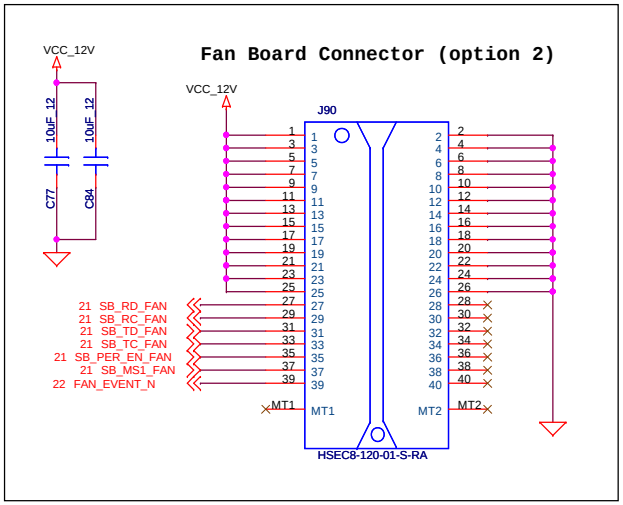
PCIE clock pairs are 100 ohm differential pairs.



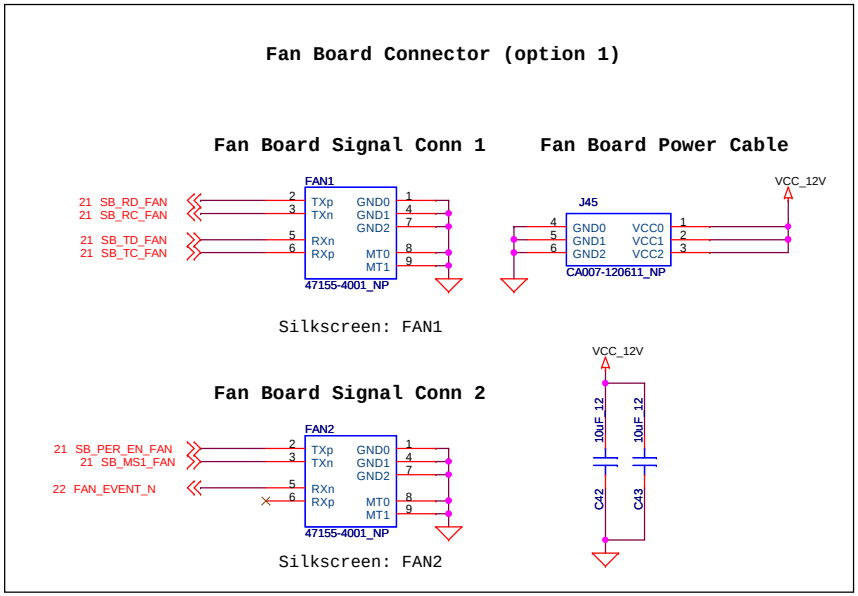
Interface Masters, Inc.

Title: Offload Connector		
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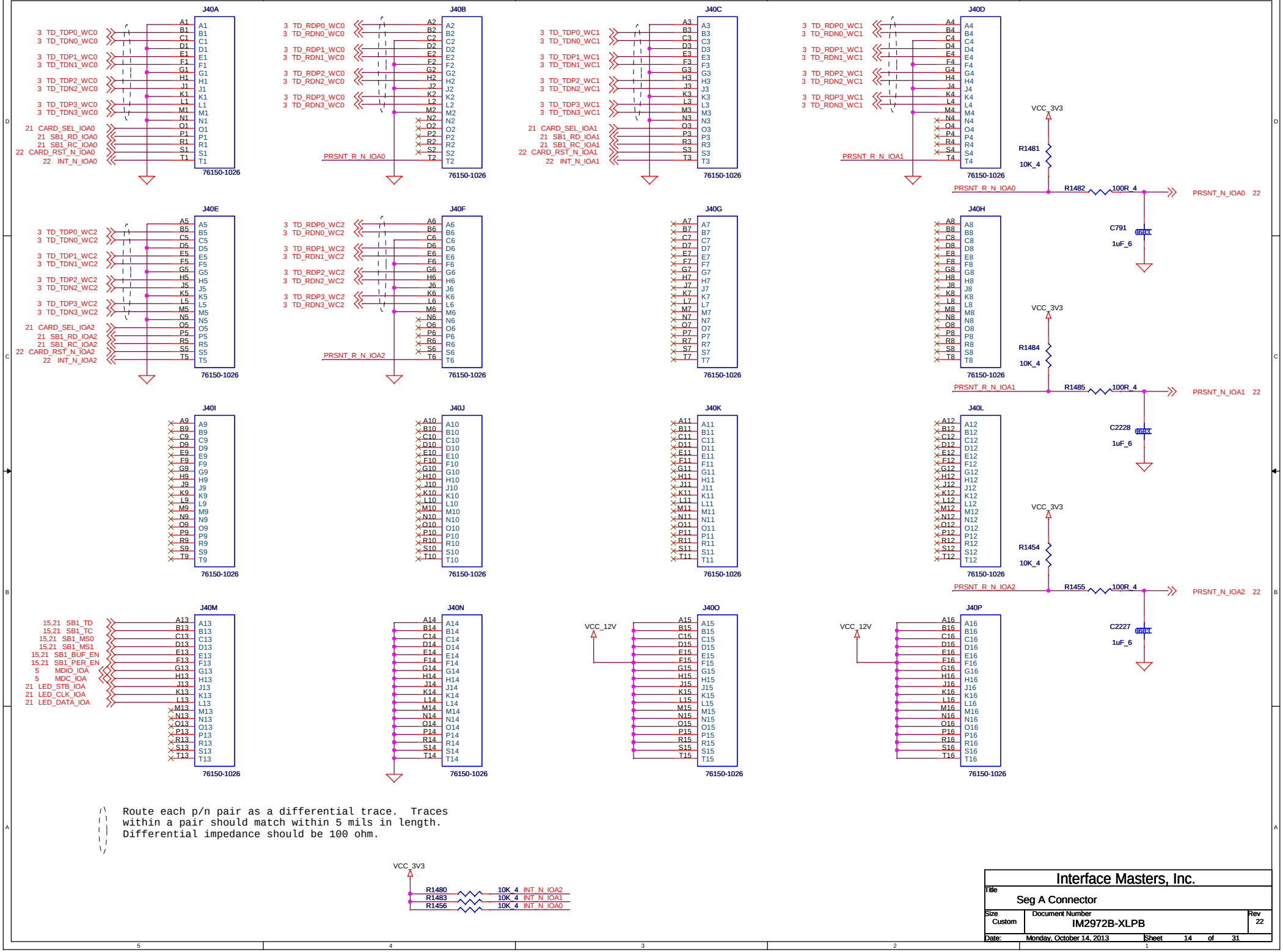


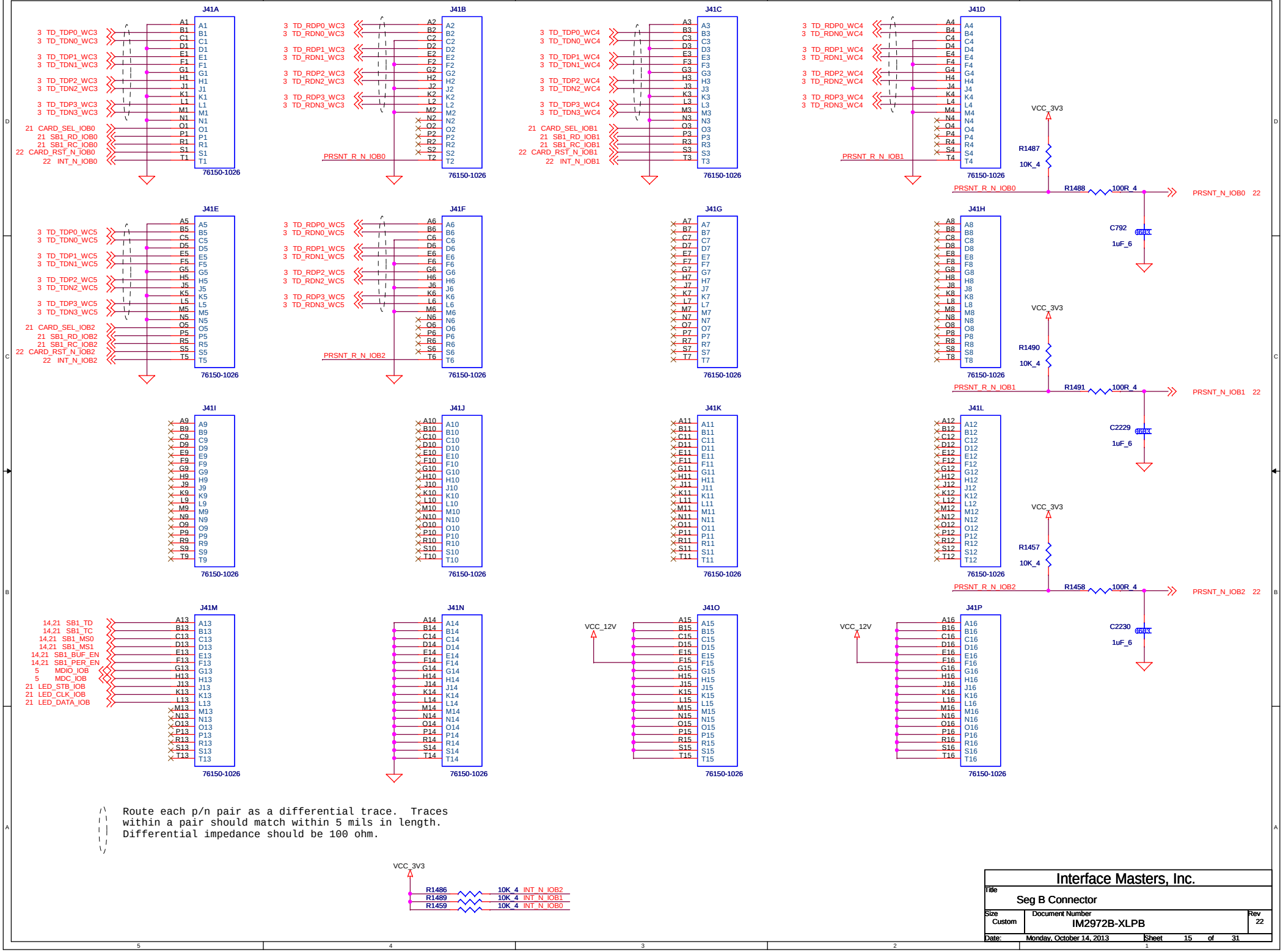


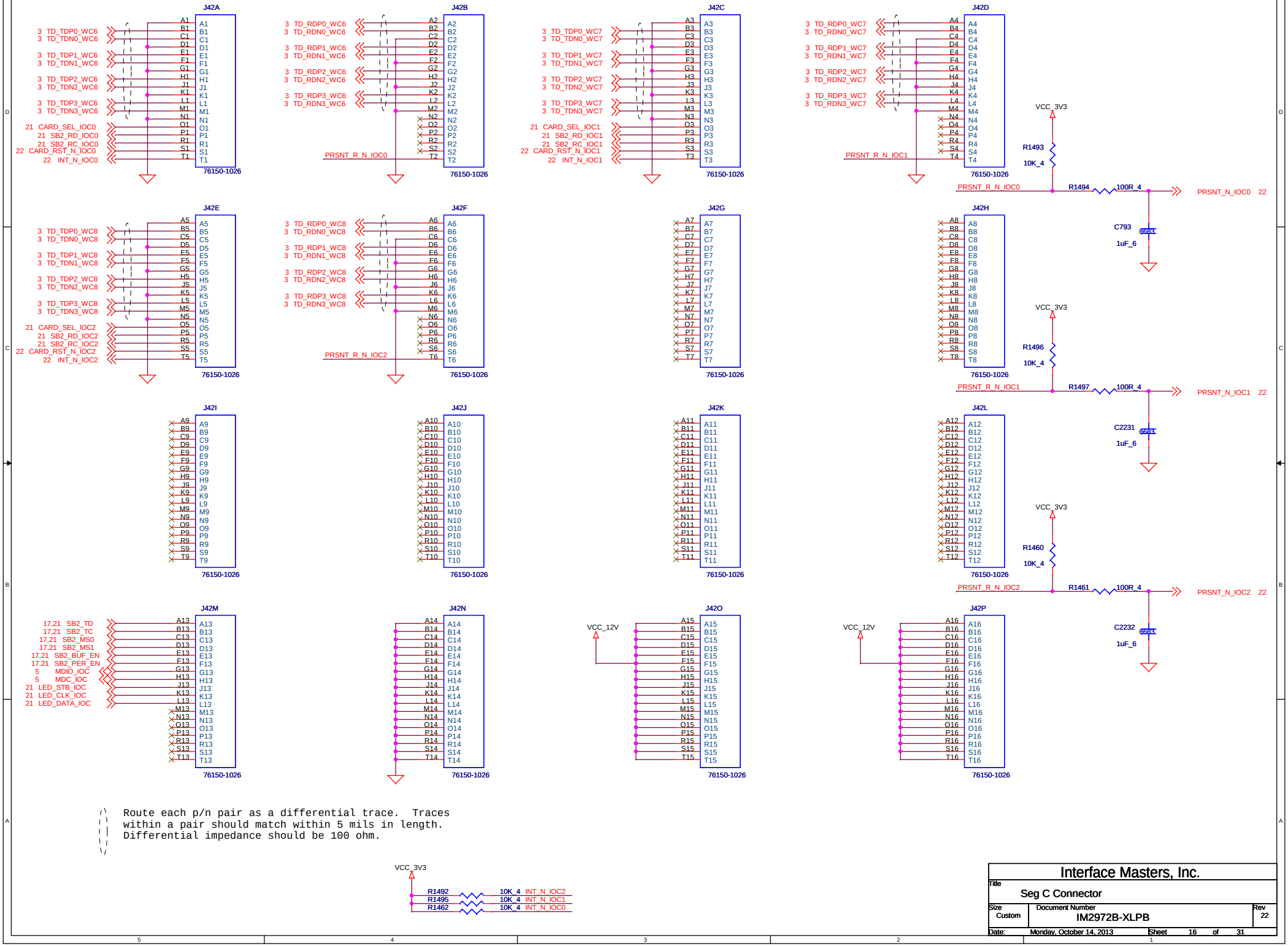


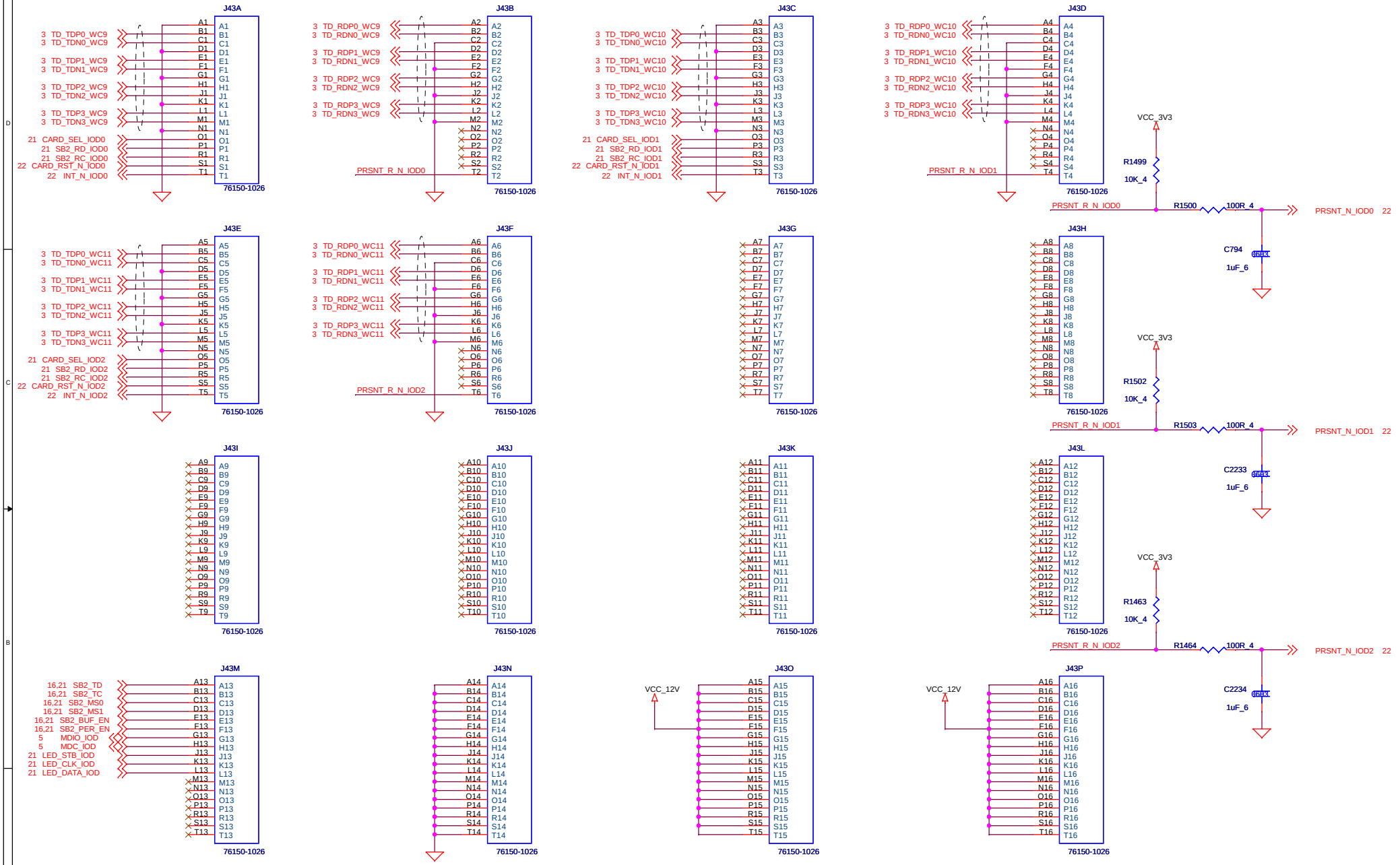


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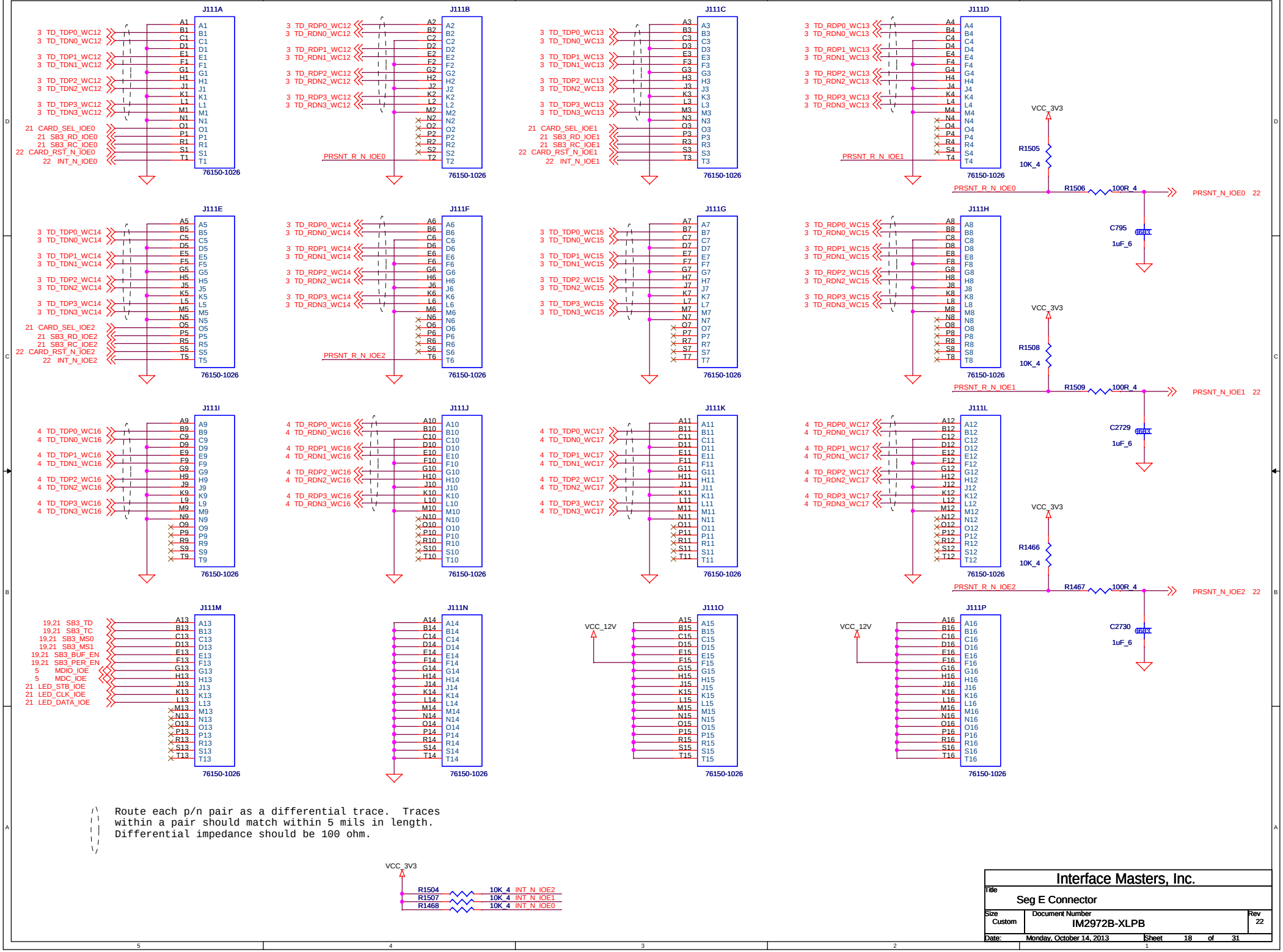

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3 TD_TDN0_WC0
3 TD_TDP1_WC0
3 TD_TDN1_WC0
3 TD_TDP2_WC0
3 TD_TDN2_WC0
3 TD_TDP3_WC0
3 TD_TDN3_WC0
21 CARD_SEL_IOA0
21 SB1_RD_IOA0
21 SB1_RC_IOA0
22 CARD_RST_N_IOA0
22 INT_N_IOA0
76150-1026
J40B
3 TD_RDP0_WC0
3 TD_RDN0_WC0
3 TD_RDP1_WC0
3 TD_RDN1_WC0
3 TD_RDP2_WC0
3 TD_RDN2_WC0
3 TD_RDP3_WC0
3 TD_RDN3_WC0
PRSNT_R_N_IOA0
76150-1026
J40C
3 TD_TDP0_WC1
3 TD_TDN0_WC1
3 TD_TDP1_WC1
3 TD_TDN1_WC1
3 TD_TDP2_WC1
3 TD_TDN2_WC1
3 TD_TDP3_WC1
3 TD_TDN3_WC1
21 CARD_SEL_IOA1
21 SB1_RD_IOA1
21 SB1_RC_IOA1
22 CARD_RST_N_IOA1
22 INT_N_IOA1
76150-1026
J40D
3 TD_RDP0_WC1
3 TD_RDN0_WC1
3 TD_RDP1_WC1
3 TD_RDN1_WC1
3 TD_RDP2_WC1
3 TD_RDN2_WC1
3 TD_RDP3_WC1
3 TD_RDN3_WC1
PRSNT_R_N_IOA1
76150-1026
VCC_3V3
R1481
10K_4
PRSNT_R_N_IOA0
R1482
100R_4
PRSNT_N_IOA0 22
C791
1uF_6
J40E
3 TD_TDP0_WC2
3 TD_TDN0_WC2
3 TD_TDP1_WC2
3 TD_TDN1_WC2
3 TD_TDP2_WC2
3 TD_TDN2_WC2
3 TD_TDP3_WC2
3 TD_TDN3_WC2
21 CARD_SEL_IOA2
21 SB1_RD_IOA2
21 SB1_RC_IOA2
22 CARD_RST_N_IOA2
22 INT_N_IOA2
76150-1026
J40F
3 TD_RDP0_WC2
3 TD_RDN0_WC2
3 TD_RDP1_WC2
3 TD_RDN1_WC2
3 TD_RDP2_WC2
3 TD_RDN2_WC2
3 TD_RDP3_WC2
3 TD_RDN3_WC2
PRSNT_R_N_IOA2
76150-1026
J40G
76150-1026
J40H
76150-1026
VCC_3V3
R1484
10K_4
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R1485
100R_4
PRSNT_N_IOA1 22
C2228
1uF_6
J40I
76150-1026
J40J
76150-1026
J40K
76150-1026
J40L
76150-1026
VCC_3V3
R1454
10K_4
PRSNT_R_N_IOA2
R1455
100R_4
PRSNT_N_IOA2 22
C2227
1uF_6
J40M
15,21 SB1_TD
15,21 SB1_TC
15,21 SB1_MS0
15,21 SB1_MS1
15,21 SB1_BUF_EN
15,21 SB1_PER_EN
5 MDIO_IOA
5 MDC_IOA
21 LED_STB_IOA
21 LED_CLK_IOA
21 LED_DATA_IOA
76150-1026
J40N
76150-1026
J40O
VCC_12V
76150-1026
J40P
VCC_12V
76150-1026
Route each p/n pair as a differential trace. Traces
within a pair should match within 5 mils in length.
Differential impedance should be 100 ohm.
VCC_3V3
R1480
10K_4
INT_N_IOA2
R1483
10K_4
INT_N_IOA1
R1456
10K_4
INT_N_IOA0
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J41A
3 TD_TDP0_WC3
3 TD_TDN0_WC3
3 TD_TDP1_WC3
3 TD_TDN1_WC3
3 TD_TDP2_WC3
3 TD_TDN2_WC3
3 TD_TDP3_WC3
3 TD_TDN3_WC3
21 CARD_SEL_IOB0
21 SB1_RD_IOB0
21 SB1_RC_IOB0
22 CARD_RST_N_IOB0
22 INT_N_IOB0
76150-1026
J41B
3 TD_RDP0_WC3
3 TD_RDN0_WC3
3 TD_RDP1_WC3
3 TD_RDN1_WC3
3 TD_RDP2_WC3
3 TD_RDN2_WC3
3 TD_RDP3_WC3
3 TD_RDN3_WC3
PRSNT_R_N_IOB0
76150-1026
J41C
3 TD_TDP0_WC4
3 TD_TDN0_WC4
3 TD_TDP1_WC4
3 TD_TDN1_WC4
3 TD_TDP2_WC4
3 TD_TDN2_WC4
3 TD_TDP3_WC4
3 TD_TDN3_WC4
21 CARD_SEL_IOB1
21 SB1_RD_IOB1
21 SB1_RC_IOB1
22 CARD_RST_N_IOB1
22 INT_N_IOB1
76150-1026
J41D
3 TD_RDP0_WC4
3 TD_RDN0_WC4
3 TD_RDP1_WC4
3 TD_RDN1_WC4
3 TD_RDP2_WC4
3 TD_RDN2_WC4
3 TD_RDP3_WC4
3 TD_RDN3_WC4
PRSNT_R_N_IOB1
76150-1026
VCC_3V3
R1487
10K_4
PRSNT_R_N_IOB0
R1488
100R_4
PRSNT_N_IOB0 22
C792
1uF_6
J41E
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3 TD_TDN0_WC5
3 TD_TDP1_WC5
3 TD_TDN1_WC5
3 TD_TDP2_WC5
3 TD_TDN2_WC5
3 TD_TDP3_WC5
3 TD_TDN3_WC5
21 CARD_SEL_IOB2
21 SB1_RD_IOB2
21 SB1_RC_IOB2
22 CARD_RST_N_IOB2
22 INT_N_IOB2
76150-1026
J41F
3 TD_RDP0_WC5
3 TD_RDN0_WC5
3 TD_RDP1_WC5
3 TD_RDN1_WC5
3 TD_RDP2_WC5
3 TD_RDN2_WC5
3 TD_RDP3_WC5
3 TD_RDN3_WC5
PRSNT_R_N_IOB2
76150-1026
J41G
76150-1026
J41H
76150-1026
VCC_3V3
R1490
10K_4
PRSNT_R_N_IOB1
R1491
100R_4
PRSNT_N_IOB1 22
C2229
1uF_6
J41I
76150-1026
J41J
76150-1026
J41K
76150-1026
J41L
76150-1026
VCC_3V3
R1457
10K_4
PRSNT_R_N_IOB2
R1458
100R_4
PRSNT_N_IOB2 22
C2230
1uF_6
J41M
14,21 SB1_TD
14,21 SB1_TC
14,21 SB1_MS0
14,21 SB1_MS1
14,21 SB1_BUF_EN
14,21 SB1_PER_EN
5 MDIO_IOB
5 MDC_IOB
21 LED_STB_IOB
21 LED_CLK_IOB
21 LED_DATA_IOB
76150-1026
J41N
76150-1026
J41O
VCC_12V
76150-1026
J41P
VCC_12V
76150-1026
Route each p/n pair as a differential trace. Traces within a pair should match within 5 mils in length. Differential impedance should be 100 ohm.
VCC_3V3
R1486 10K_4 INT_N_IOB2
R1489 10K_4 INT_N_IOB1
R1459 10K_4 INT_N_IOB0
Interface Masters, Inc.
Title
Seg B Connector
Size
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Document Number
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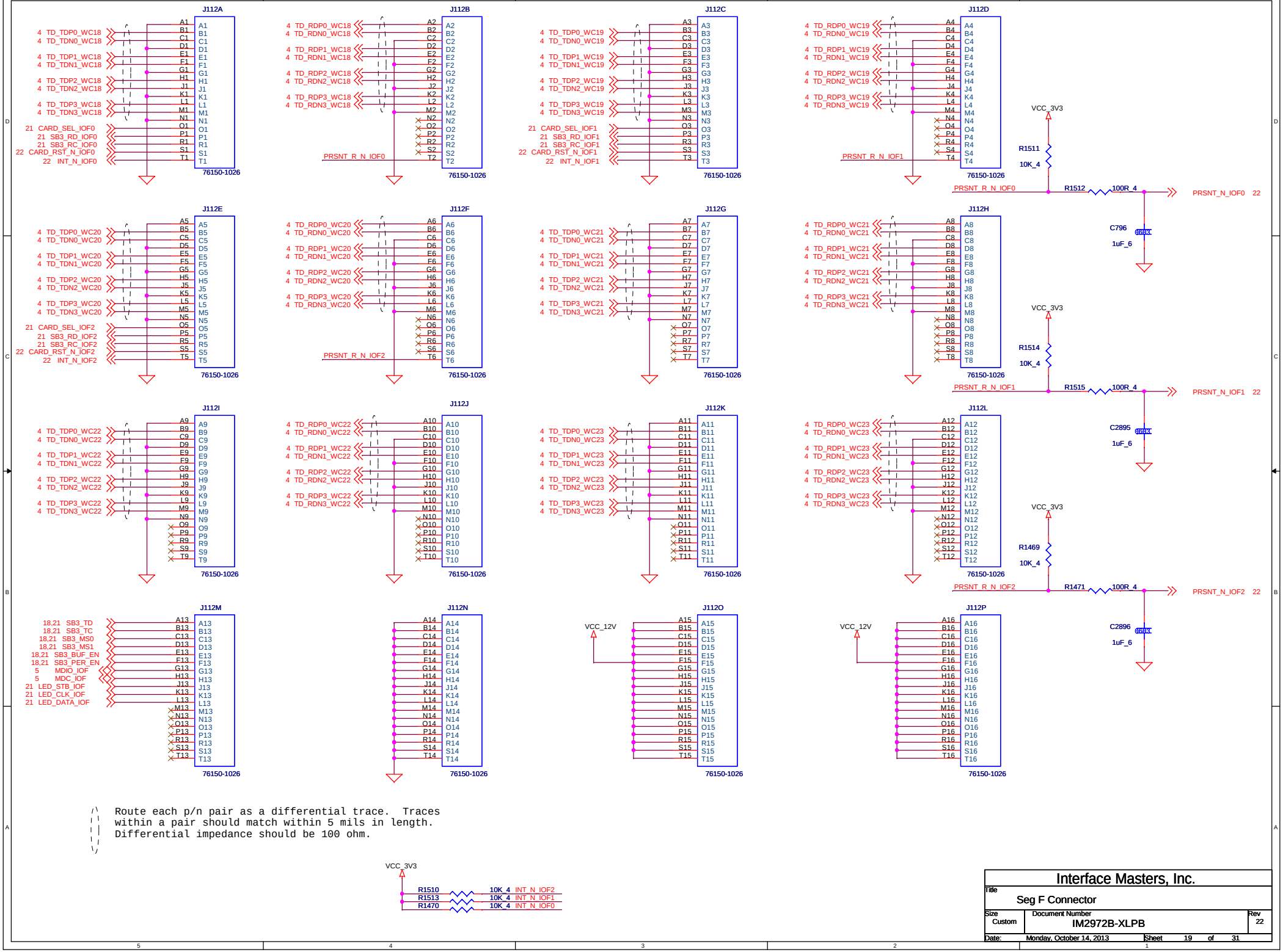

J42A
3 TD_TDP0_WC6
3 TD_TDN0_WC6
3 TD_TDP1_WC6
3 TD_TDN1_WC6
3 TD_TDP2_WC6
3 TD_TDN2_WC6
3 TD_TDP3_WC6
3 TD_TDN3_WC6
21 CARD_SEL_IOC0
21 SB2_RD_IOC0
21 SB2_RC_IOC0
22 CARD_RST_N_IOC0
22 INT_N_IOC0
76150-1026
J42B
3 TD_RDP0_WC6
3 TD_RDN0_WC6
3 TD_RDP1_WC6
3 TD_RDN1_WC6
3 TD_RDP2_WC6
3 TD_RDN2_WC6
3 TD_RDP3_WC6
3 TD_RDN3_WC6
PRSNT_R_N_IOC0
76150-1026
J42C
3 TD_TDP0_WC7
3 TD_TDN0_WC7
3 TD_TDP1_WC7
3 TD_TDN1_WC7
3 TD_TDP2_WC7
3 TD_TDN2_WC7
3 TD_TDP3_WC7
3 TD_TDN3_WC7
21 CARD_SEL_IOC1
21 SB2_RD_IOC1
21 SB2_RC_IOC1
22 CARD_RST_N_IOC1
22 INT_N_IOC1
76150-1026
J42D
3 TD_RDP0_WC7
3 TD_RDN0_WC7
3 TD_RDP1_WC7
3 TD_RDN1_WC7
3 TD_RDP2_WC7
3 TD_RDN2_WC7
3 TD_RDP3_WC7
3 TD_RDN3_WC7
PRSNT_R_N_IOC1
76150-1026
VCC_3V3
R1493
10K_4
PRSNT_R_N_IOC0
R1494
100R_4
PRSNT_N_IOC0 22
C793
1uF_6
J42E
3 TD_TDP0_WC8
3 TD_TDN0_WC8
3 TD_TDP1_WC8
3 TD_TDN1_WC8
3 TD_TDP2_WC8
3 TD_TDN2_WC8
3 TD_TDP3_WC8
3 TD_TDN3_WC8
21 CARD_SEL_IOC2
21 SB2_RD_IOC2
21 SB2_RC_IOC2
22 CARD_RST_N_IOC2
22 INT_N_IOC2
76150-1026
J42F
3 TD_RDP0_WC8
3 TD_RDN0_WC8
3 TD_RDP1_WC8
3 TD_RDN1_WC8
3 TD_RDP2_WC8
3 TD_RDN2_WC8
3 TD_RDP3_WC8
3 TD_RDN3_WC8
PRSNT_R_N_IOC2
76150-1026
J42G
76150-1026
J42H
76150-1026
VCC_3V3
R1496
10K_4
PRSNT_R_N_IOC1
R1497
100R_4
PRSNT_N_IOC1 22
C2231
1uF_6
J42I
76150-1026
J42J
76150-1026
J42K
76150-1026
J42L
76150-1026
VCC_3V3
R1460
10K_4
PRSNT_R_N_IOC2
R1461
100R_4
PRSNT_N_IOC2 22
C2232
1uF_6
J42M
17,21 SB2_TD
17,21 SB2_TC
17,21 SB2_MS0
17,21 SB2_MS1
17,21 SB2_BUF_EN
17,21 SB2_PER_EN
5 MDIO_IOC
5 MDC_IOC
21 LED_STB_IOC
21 LED_CLK_IOC
21 LED_DATA_IOC
76150-1026
J42N
76150-1026
J42O
VCC_12V
76150-1026
J42P
VCC_12V
76150-1026
Route each p/n pair as a differential trace. Traces
within a pair should match within 5 mils in length.
Differential impedance should be 100 ohm.
VCC_3V3
R1492
10K_4
INT_N_IOC2
R1495
10K_4
INT_N_IOC1
R1462
10K_4
INT_N_IOC0
Interface Masters, Inc.
Title
Seg C Connector
Size
Custom
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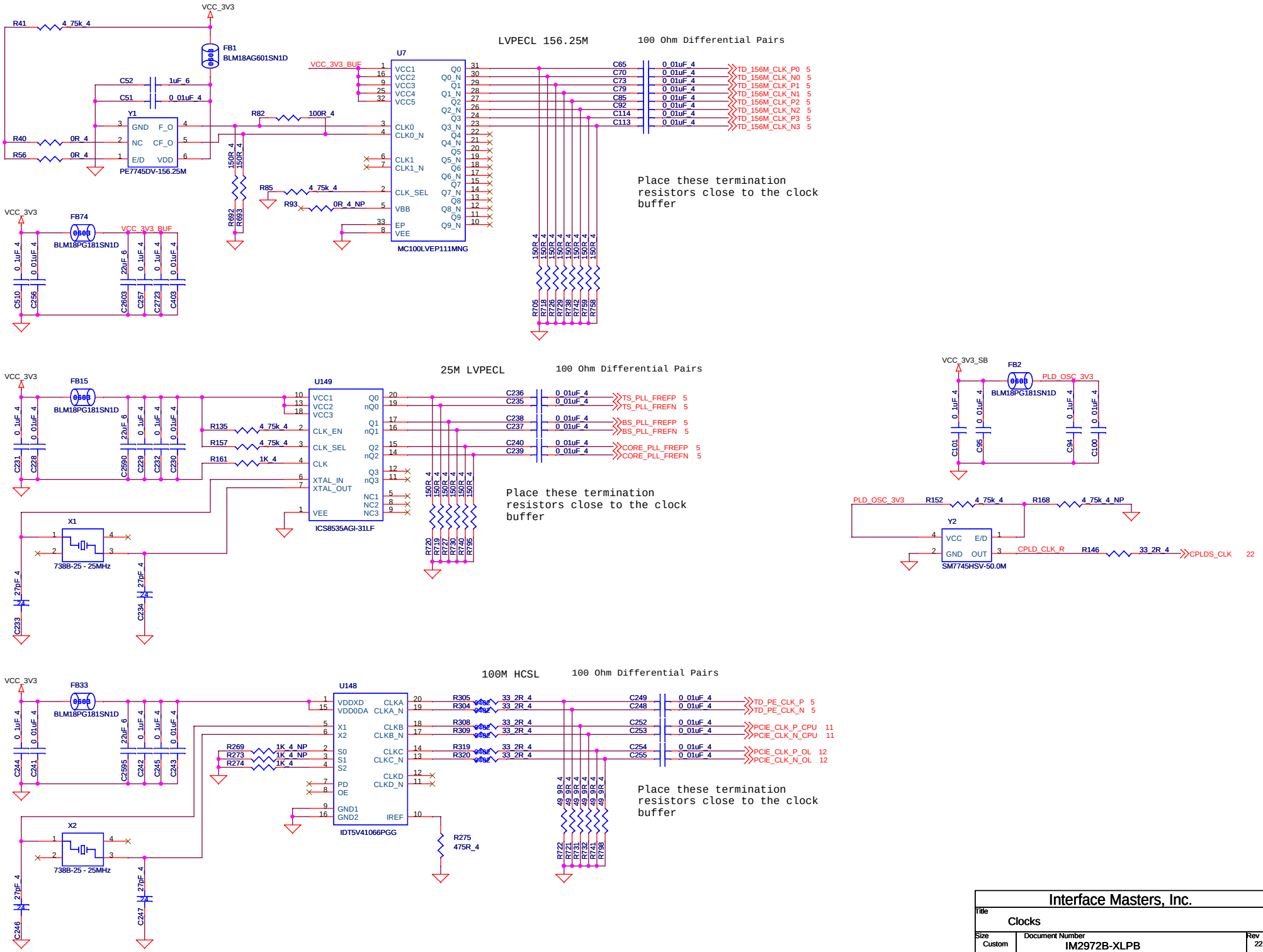
Interface Masters, Inc.		
Title: Seg D Connector		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 17 of 31	

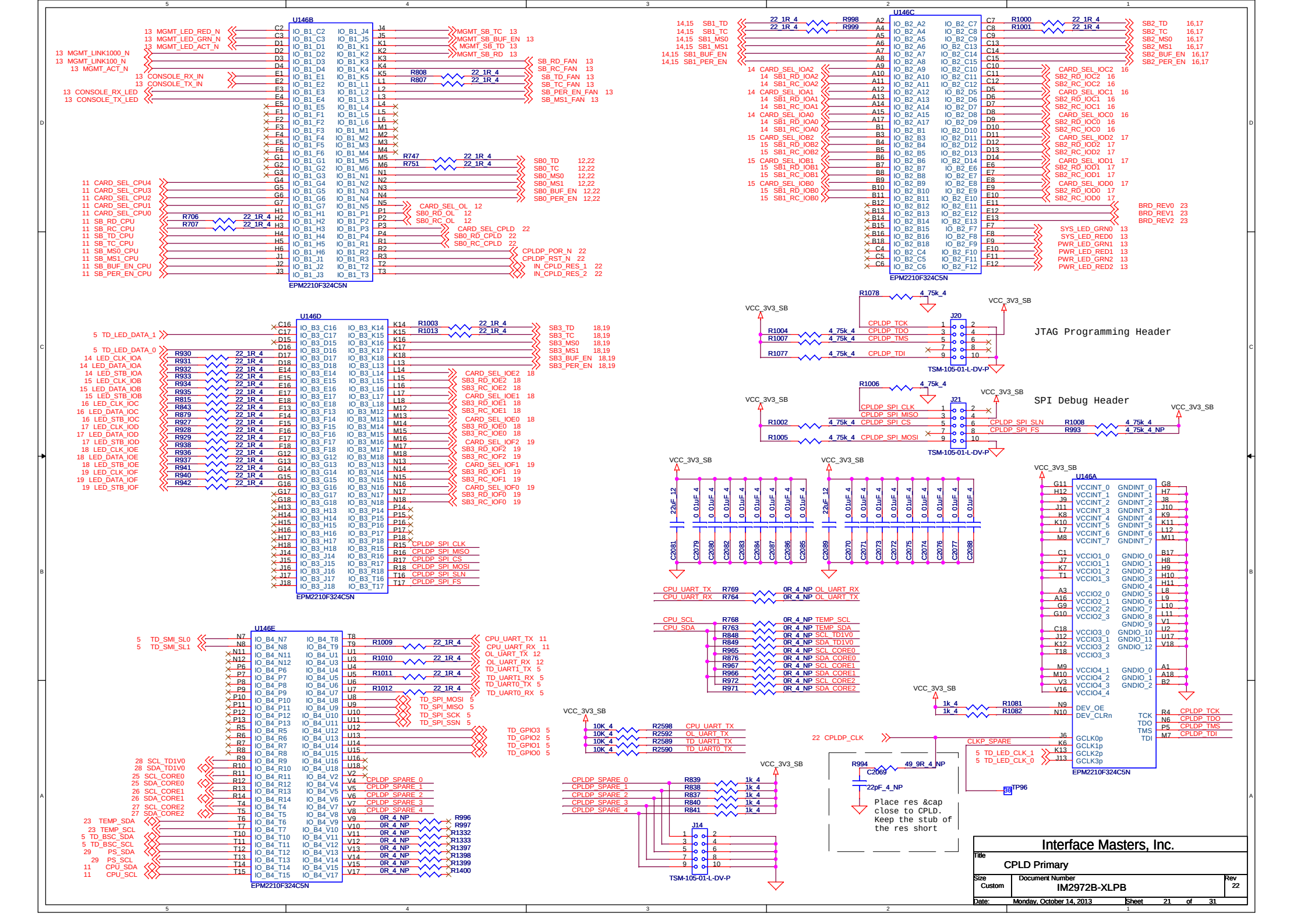


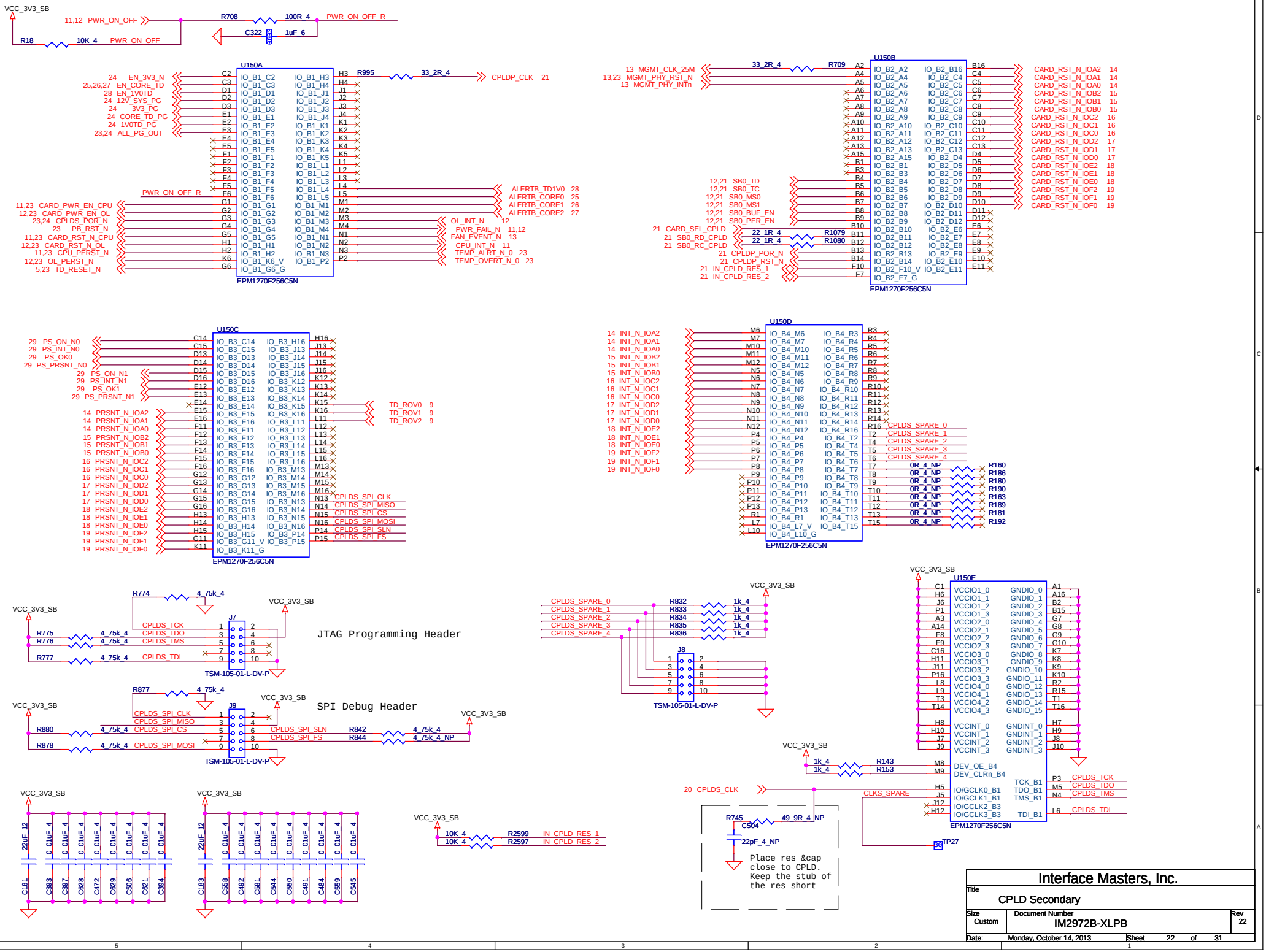
Interface Masters, Inc.		
Title: Seg E Connector		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 18 of 31	



Interface Masters, Inc.		
Title: Seg F Connector		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 19 of 31	

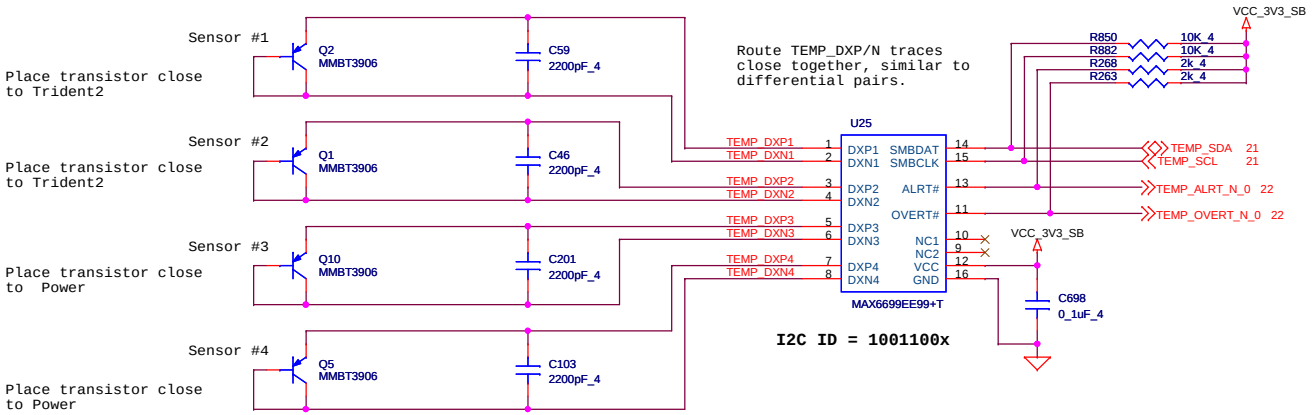

LVPECL 156.25M
100 Ohm Differential Pairs
VCC_3V3
R41 4_75k_4
FB1 BLM18AG601SN1D
C52 1uF_6
C51 0_01uF_4
Y1
GND F_O
NC CF_O
E/D VDD
PE7745DV-156.25M
R40 0R_4
R56 0R_4
R82 100R_4
150R_4
150R_4
R692
R693
R85 4_75k_4
R93 0R_4_NP
VCC_3V3_BUF
U7
VCC1 VCC2 VCC3 VCC4 VCC5
CLK0 CLK0_N
CLK1 CLK1_N
CLK_SEL
VBB
EP VEE
Q0 Q0_N Q1 Q1_N Q2 Q2_N Q3 Q3_N Q4 Q4_N Q5 Q5_N Q6 Q6_N Q7 Q7_N Q8 Q8_N Q9 Q9_N
MC100LVEP111MNG
C65 C70 C73 C79 C85 C92 C114 C113
0_01uF_4
TD_156M_CLK_P0 5
TD_156M_CLK_N0 5
TD_156M_CLK_P1 5
TD_156M_CLK_N1 5
TD_156M_CLK_P2 5
TD_156M_CLK_N2 5
TD_156M_CLK_P3 5
TD_156M_CLK_N3 5
R705 R718 R726 R729 R738 R742 R759 R758
Place these termination resistors close to the clock buffer
VCC_3V3
FB74 BLM18PG181SN1D
VCC_3V3_BUF
0_1uF_4 0_01uF_4 22uF_6 0_1uF_4 0_1uF_4 0_01uF_4
C510 C256 C2603 C257 C2723 C403
25M LVPECL
100 Ohm Differential Pairs
VCC_3V3
FB15 BLM18PG181SN1D
0_1uF_4 0_01uF_4 22uF_6 0_1uF_4 0_1uF_4 0_01uF_4
C231 C228 C2590 C229 C232 C230
U149
VCC1 VCC2 VCC3
CLK_EN
CLK_SEL
CLK
XTAL_IN XTAL_OUT
VEE
Q0 nQ0 Q1 nQ1 Q2 nQ2 Q3 nQ3 NC1 NC2 NC3
ICS8535AGI-31LF
R135 4_75k_4
R157 4_75k_4
R161 1K_4
X1
738B-25 - 25MHz
27pF_4
C233 C234
C236 C235 C238 C237 C240 C239
0_01uF_4
TS_PLL_FREFP 5
TS_PLL_FREFN 5
BS_PLL_FREFP 5
BS_PLL_FREFN 5
CORE_PLL_FREFP 5
CORE_PLL_FREFN 5
150R_4
R720 R719 R727 R730 R740 R795
Place these termination resistors close to the clock buffer
VCC_3V3_SB
FB2 BLM18PG181SN1D
PLD_OSC_3V3
0_1uF_4 0_01uF_4 0_1uF_4 0_01uF_4
C101 C95 C94 C100
PLD_OSC_3V3
R152 4_75k_4
R168 4_75k_4_NP
Y2
VCC E/D
GND OUT
SM7745HSV-50.0M
CPLD_CLK_R
R146 33_2R_4
CPLDS_CLK 22
100M HCSL
100 Ohm Differential Pairs
VCC_3V3
FB33 BLM18PG181SN1D
0_1uF_4 0_01uF_4 22uF_6 0_1uF_4 0_1uF_4 0_01uF_4
C244 C241 C2595 C242 C245 C243
U148
VDDXD VDDODA
X1 X2
S0 S1 S2
PD OE
GND1 GND2
CLKA CLKA_N CLKB CLKB_N CLKC CLKC_N CLKD CLKD_N IREF
IDT5V41066PGG
R269 1K_4_NP
R273 1K_4_NP
R274 1K_4
X2
738B-25 - 25MHz
27pF_4
C246 C247
R305 R304 R308 R309 R319 R320
33_2R_4
C249 C248 C252 C253 C254 C255
0_01uF_4
TD_PE_CLK_P 5
TD_PE_CLK_N 5
PCIE_CLK_P_CPU 11
PCIE_CLK_N_CPU 11
PCIE_CLK_P_OL 12
PCIE_CLK_N_OL 12
R275 475R_4
49_9R_4
R722 R721 R731 R732 R741 R798
Place these termination resistors close to the clock buffer
Interface Masters, Inc.
Title
Clocks
Size Custom
Document Number IM2972B-XLPB
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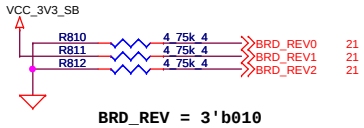

U146B
EPM2210F324C5N
U146C
EPM2210F324C5N
U146D
EPM2210F324C5N
U146E
EPM2210F324C5N
U146A
EPM2210F324C5N
JTAG Programming Header
TSM-105-01-L-DV-P
SPI Debug Header
TSM-105-01-L-DV-P
VCC_3V3_SB
Place res &cap close to CPLD. Keep the stub of the res short
Interface Masters, Inc.
Title
CPLD Primary
Size
Custom
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Interface Masters, Inc.

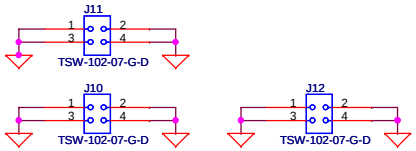
Title	CPLD Secondary	
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 22 of 31	

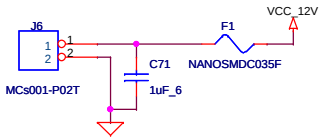




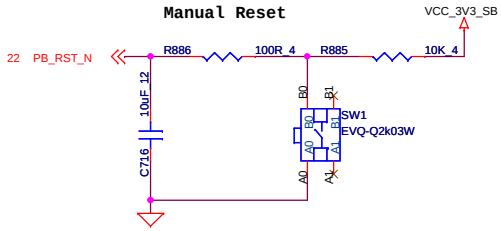
Oscilloscope Probe Ground Headers

Scatter the scope probe ground headers around the board.

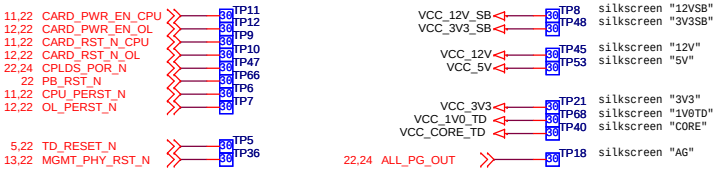




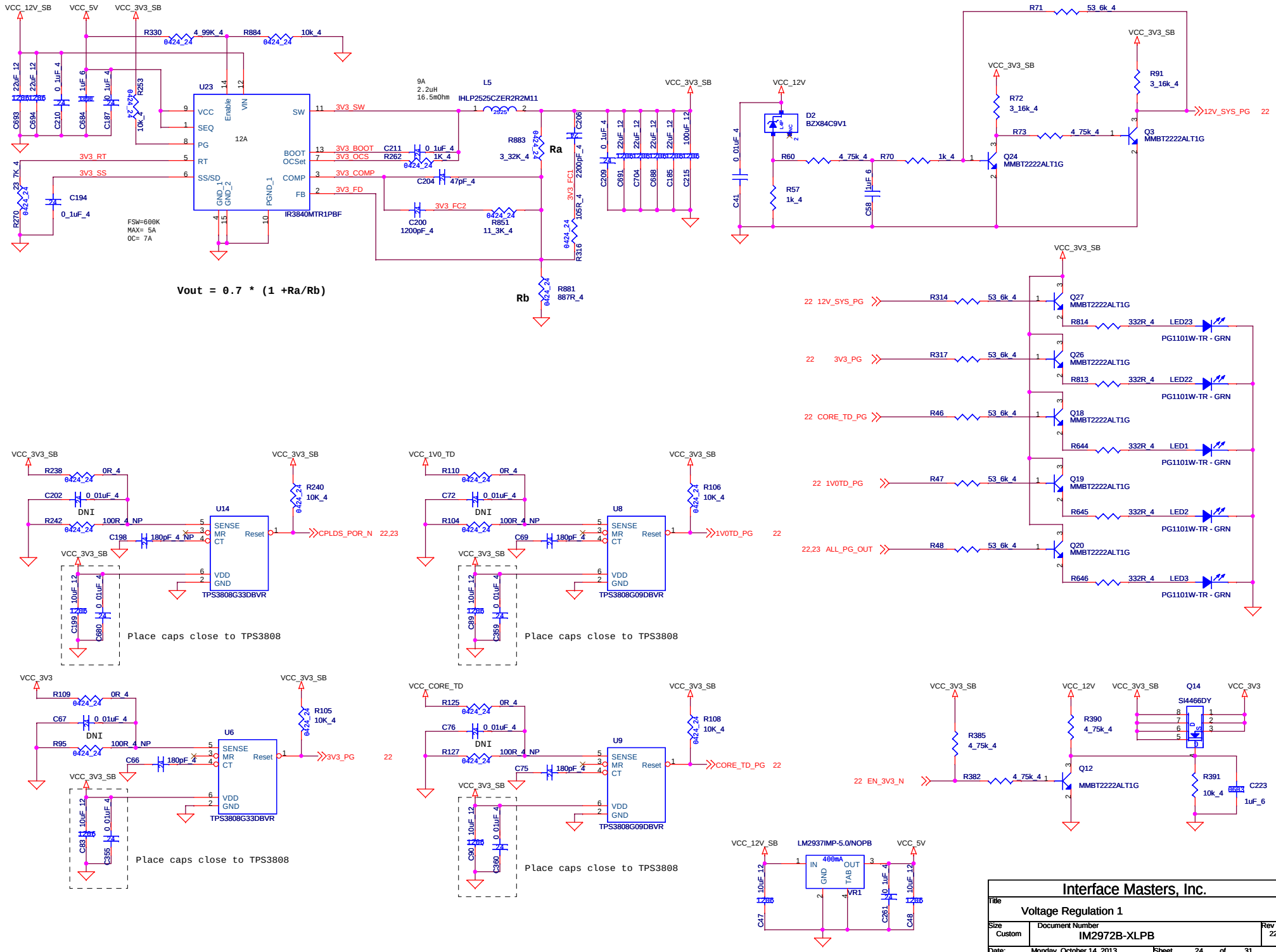
Manual Reset



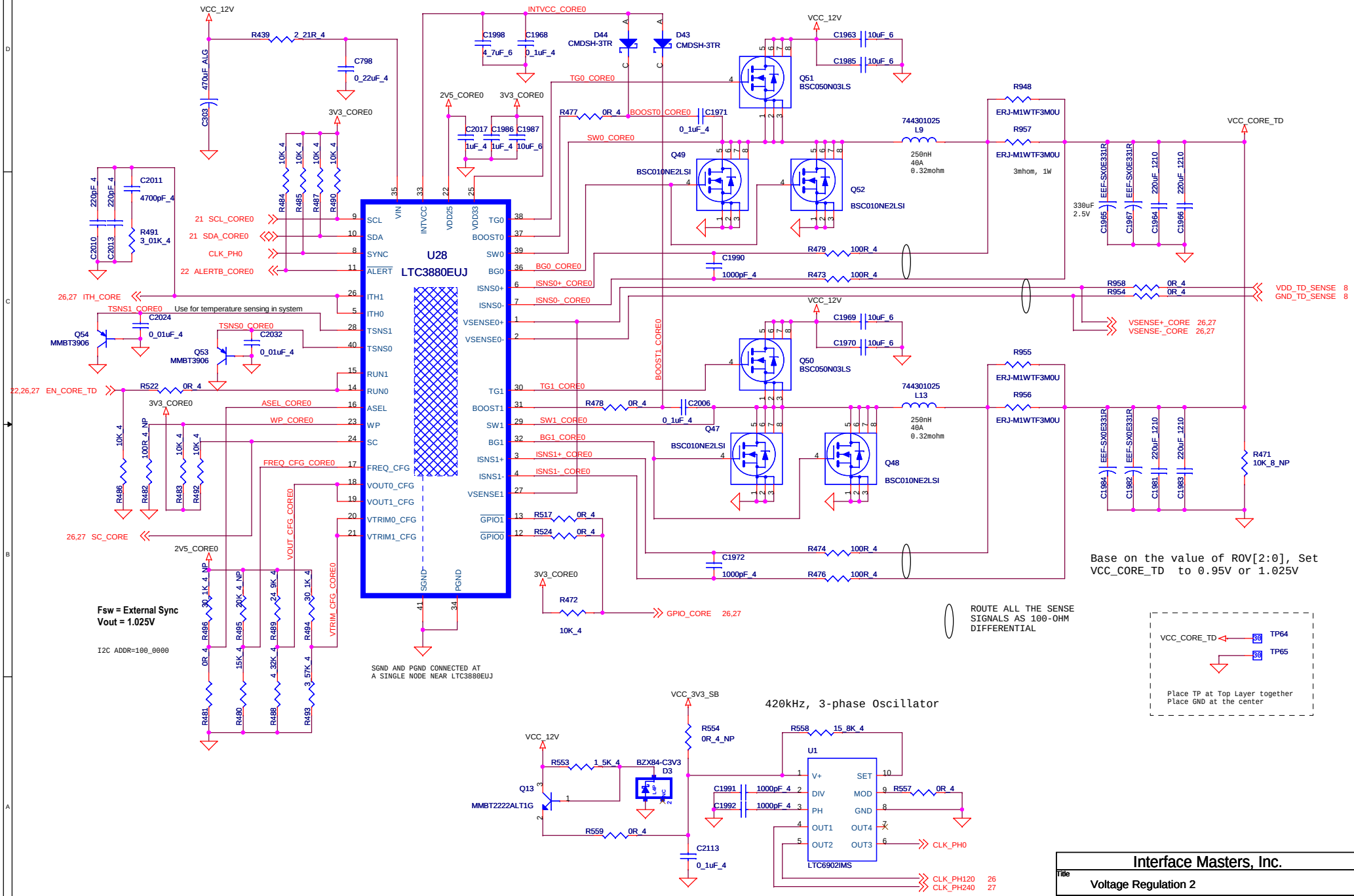
Place All Test Point on Top Layer



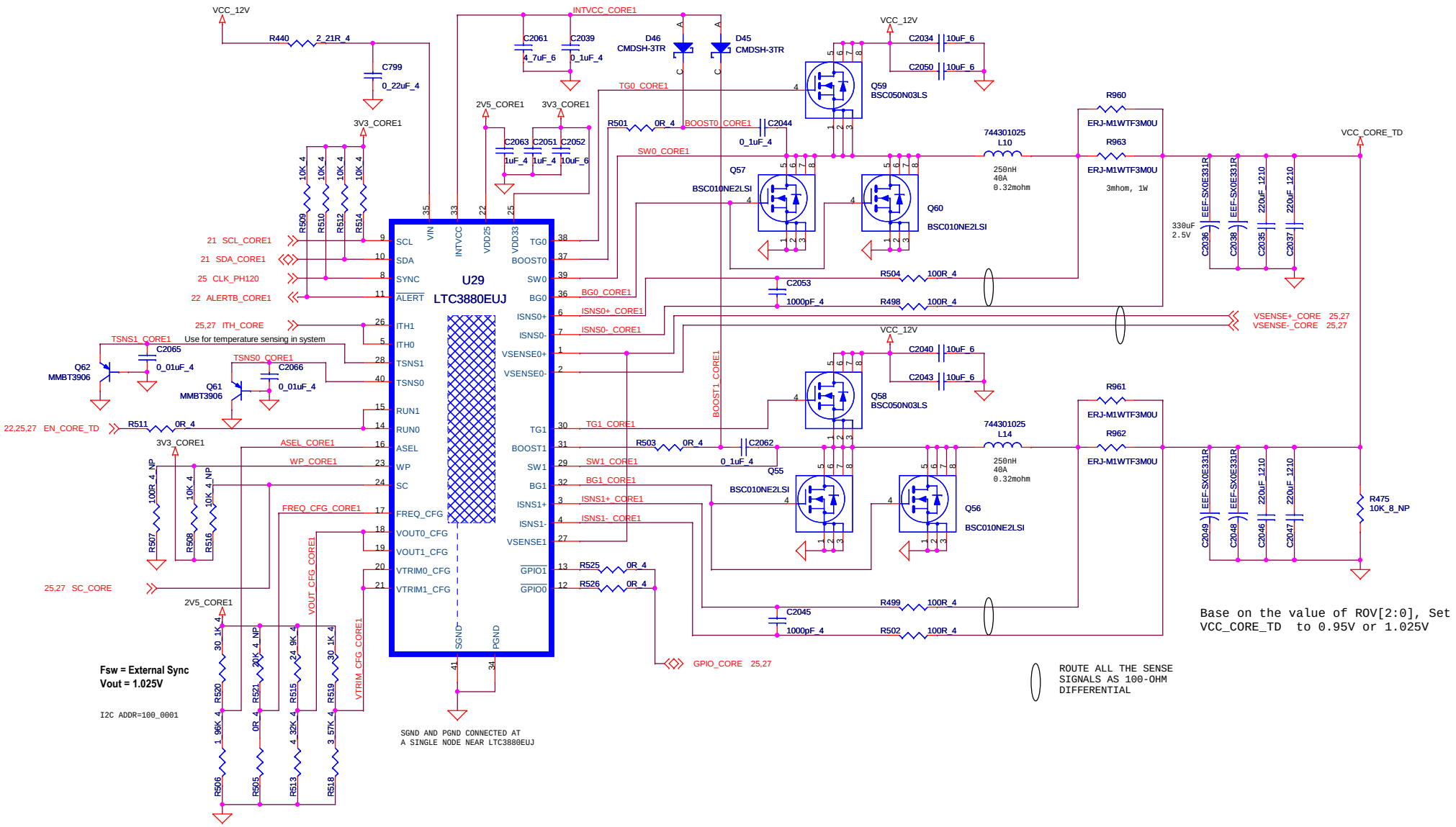
Interface Masters, Inc.		
Title: Temperature Sensor & Misc		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 23 of 31	



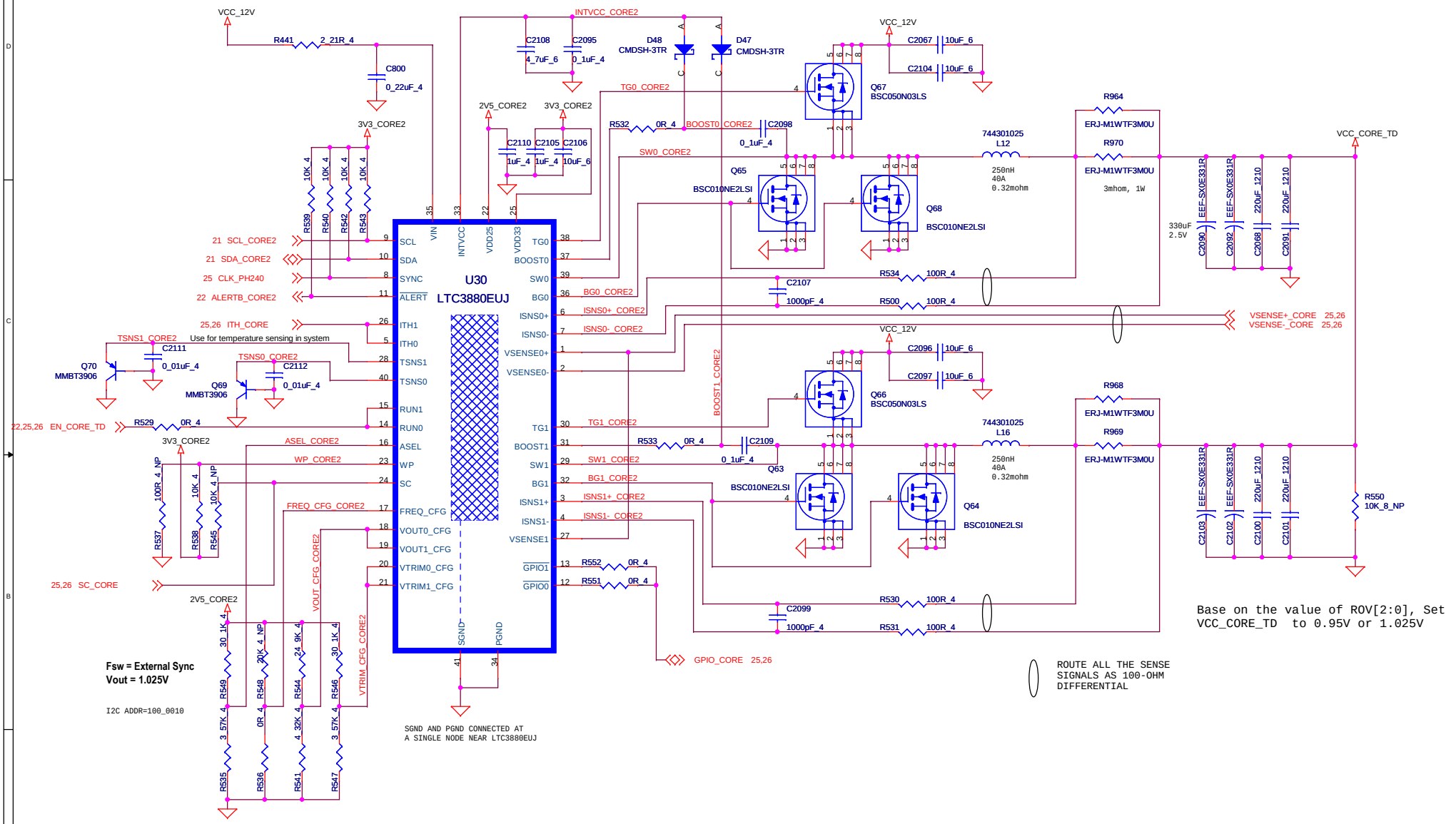
Interface Masters, Inc.		
Title: Voltage Regulation 1		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
Date: Monday, October 14, 2013	Sheet 24 of 31	



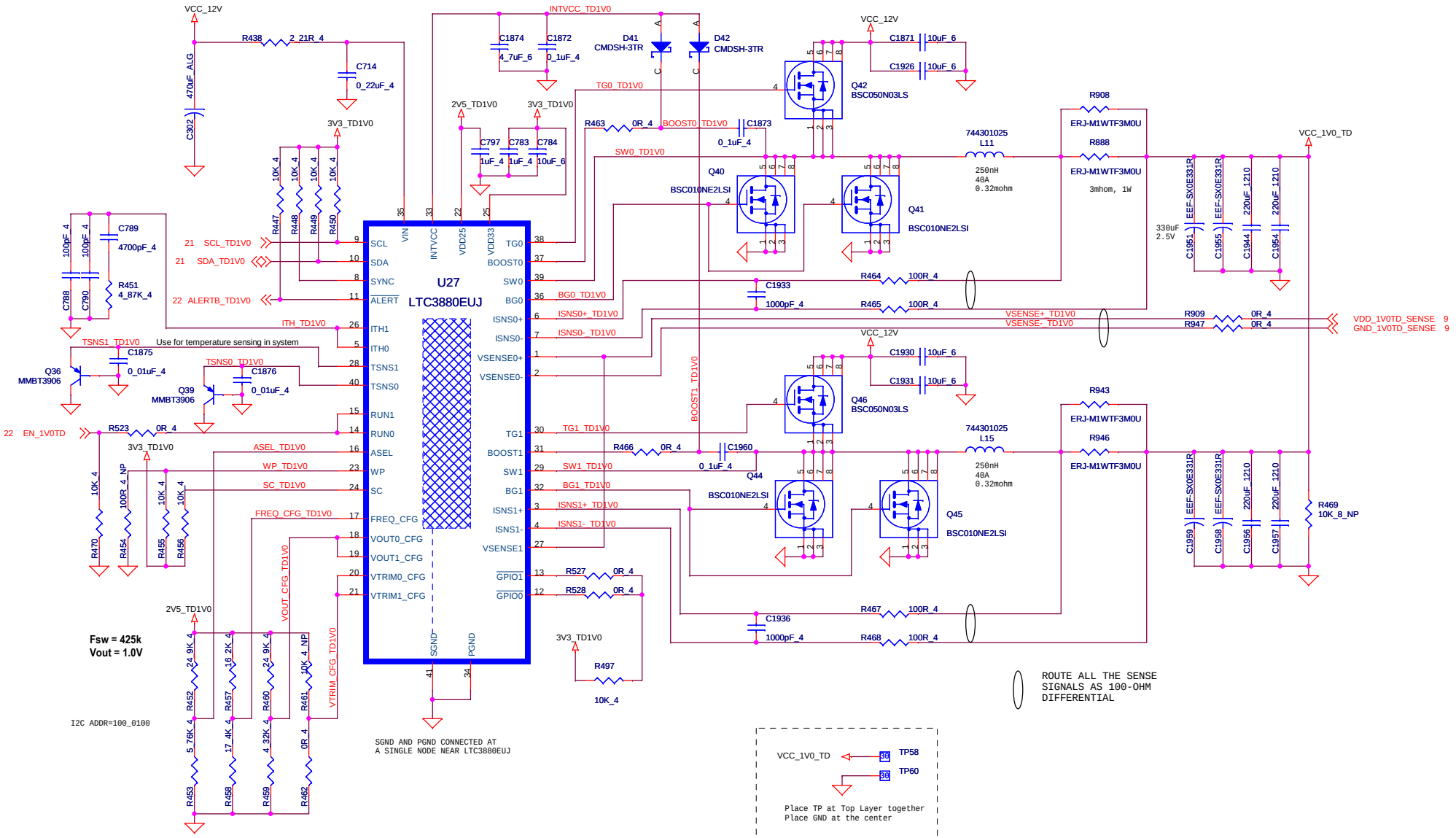
Interface Masters, Inc.	
Title	Voltage Regulation 2
Size: Custom	Document Number: IM2972B-XLPB
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Date:	Monday, October 14, 2013
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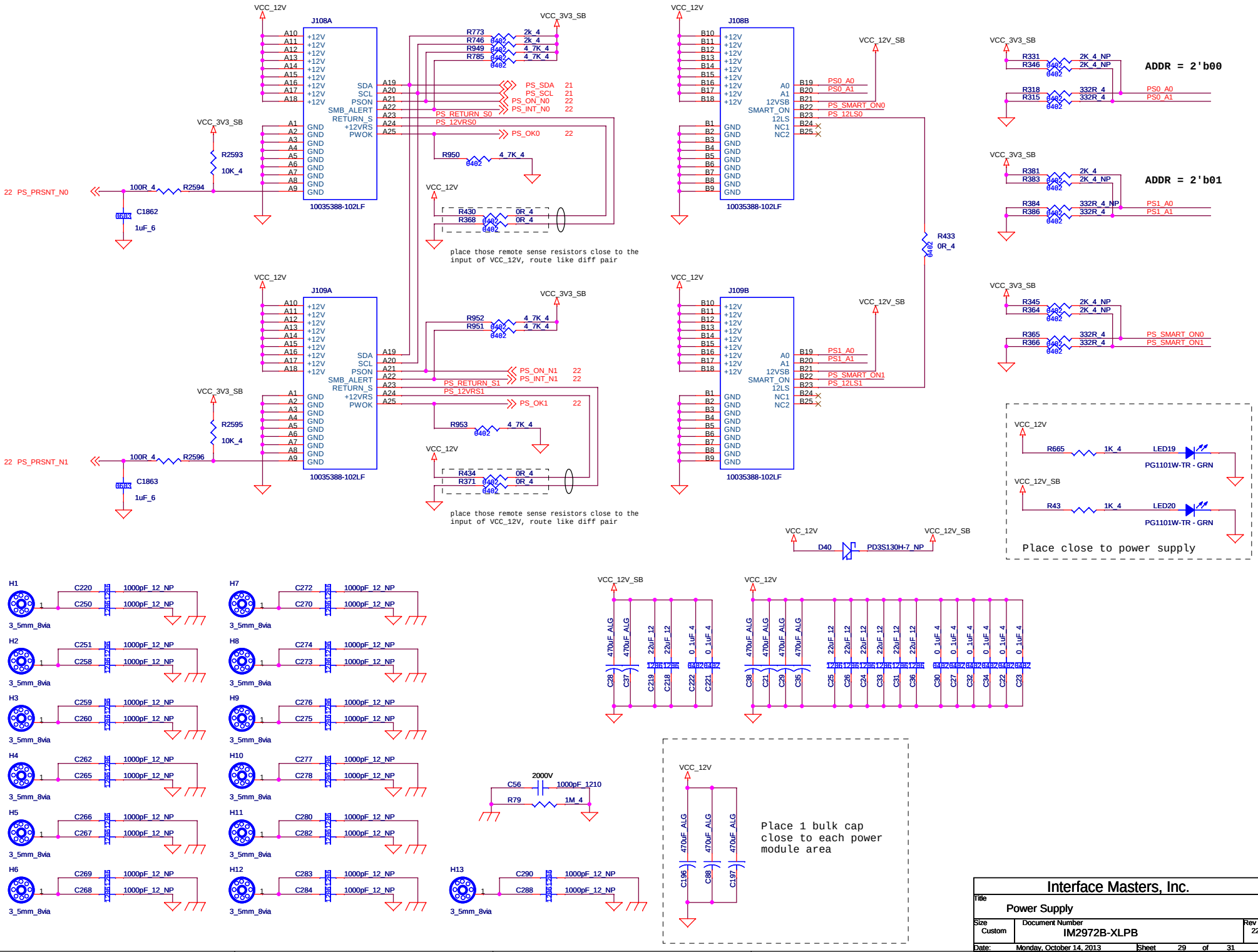
Interface Masters, Inc.		
Title: Voltage Regulation 3		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
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Interface Masters, Inc.		
Title: Voltage Regulation 4		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
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Interface Masters, Inc.		
Title: Voltage Regulation 5		
Size: Custom	Document Number: IM2972B-XLPB	Rev: 22
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Interface Masters, Inc.	
Title: Power Supply	
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Date: Monday, October 14, 2013	Sheet 29 of 31

Overall Power Sequencing:

VCC_12V_SB
VCC_3V3_SB --> VCC_12V --> VCC_3V3 --> VCC_CORE_TD --> VCC_1V0_TD --> ALL PWR GD <- Min 16ms-> Release Resets
VCC_5V0

BCM56850 (Trident2):
VCC_3V3 <--> VCC_CORE_TD <--> VCC_1V0_TD <-Min 16ms-> Reset

MGMT/FAN board
VCC_3V3

CPLD
VCC_3V3_SB

	Voltage Rails			
	3.3	3.3	1	1.025
BCM56850 Trident2 (mA)		866	19418	109465
MGMT/FAN board		1500		
CPLD (mA)	400			
Total Current (mA)	400	2366	19418	109465
Power (W)	1.32	7.8078	19.418	112.2016
Total Power (W)	140.747425			
Total Raw Power (W) Assume 80% Efficiency	175.9342813			

Set VCC_CORE_TD to worst case 1.025V

Interface Masters, Inc.			
Title: Power Sequence & Consumption Table			
Size: Custom	Document Number: IM2972B-XLPB		Rev: 22
Date: Monday, October 14, 2013	Sheet 30 of 31		

REVISIONS

REV	PCB Rev	DESCRIPTIONS	ENGINEER	DATE
01		Genesis	Kevin Yan	3/11/2013
17	A	release	Kevin Yan	3/11/2013
18	A	update the netname for segment A,B, C, D, E, F, swap x0 with x2.	Kevin Yan	8/1/2013
19	B	Update the power circuit and some minor changes	Kevin Yan	8/1/2013
22	B	no stuff R763 and R768	Kevin Yan	10/14/2013

Interface Masters, Inc.

Title: History

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