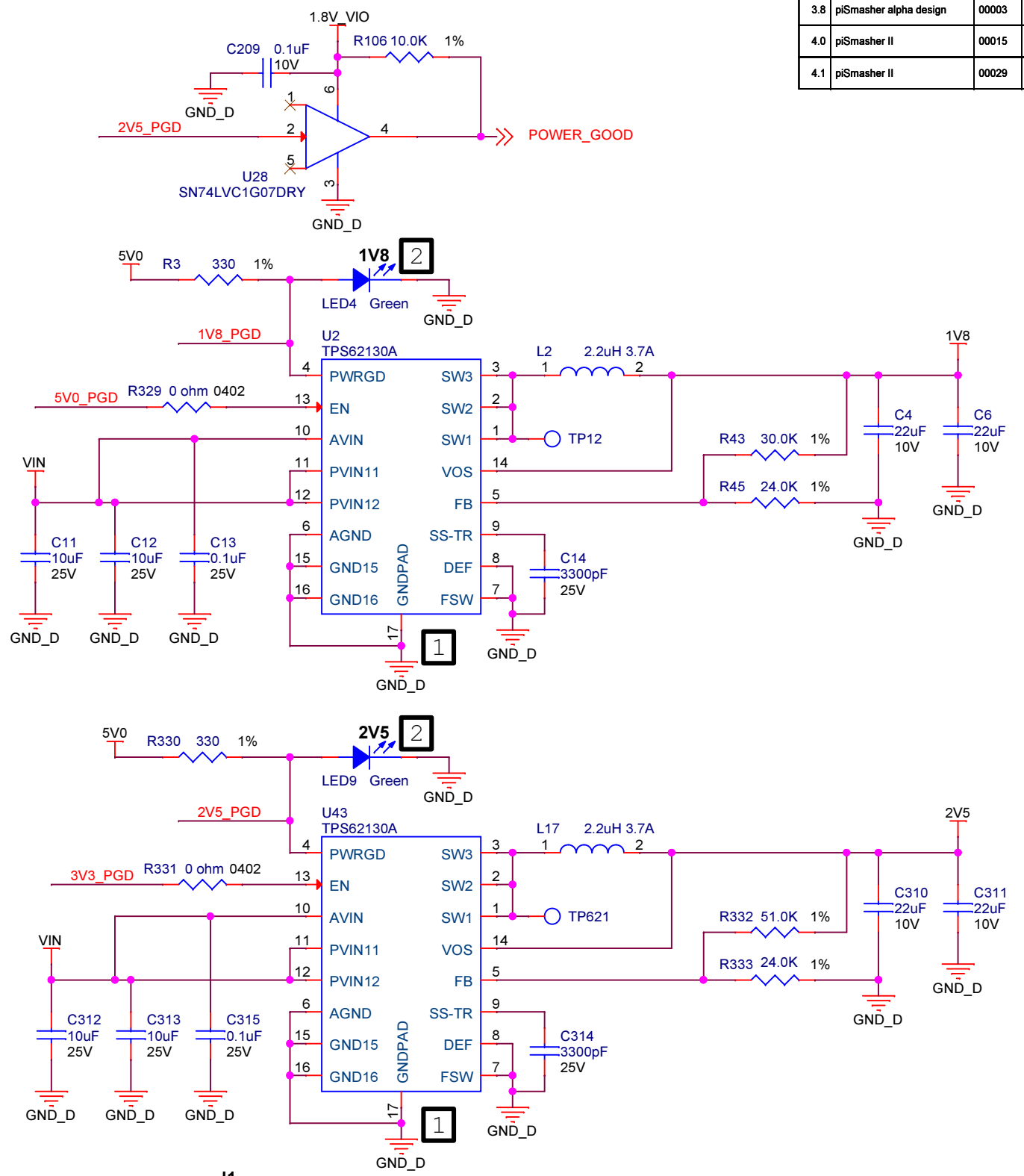
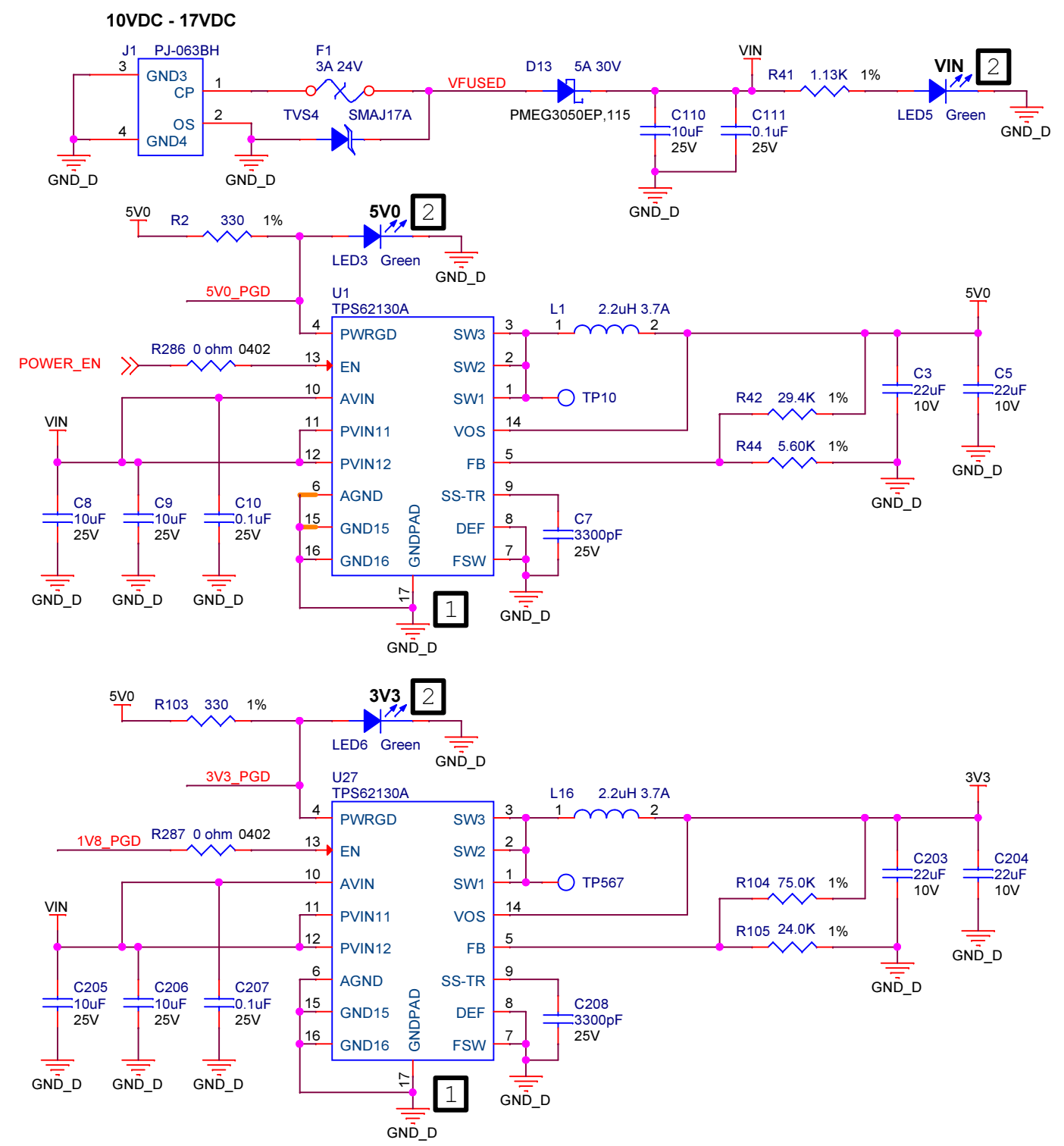


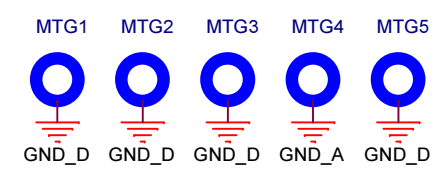
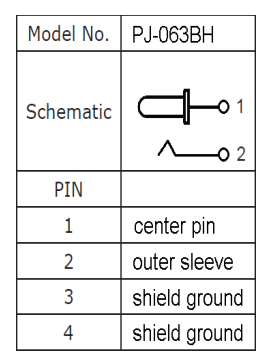
Rev.	Description	ECO #	Date	Approved By	Checked By
3.8	piSmasher alpha design	00003	03/30/2016	BEH	JJW
4.0	piSmasher II	00015	10/31/2016	BEH	JJW
4.1	piSmasher II	00029	6/27/2018	BEH	JJW



Power supply loading

		1.8V	3.3V	5.0V
U6	TDA19988BHN	115ma	-	-
U8	TDA19971BHN	347ma	272ma	-
U9	USB3315C	34ma	-	14ma
U29	USB2514B-AEZC	-	85ma	-
U30	AP2152AFGEG-7	-	-	1000mA
U31	AP2152AFGEG-7	-	-	1000mA
U11	88E1510P	94ma	145ma	-
U15	88E1510P	94ma	145ma	-
U25	TLV320AIC3104	6.7ma	2.45ma	-

- NOTES:
- 1 Add a minimum of 5 thermal vias in die attach pad GNDPAD for thermal considerations.
 - 2 LEDs to be on top side of board not in snickerdoodle keepout area with labels as indicated.

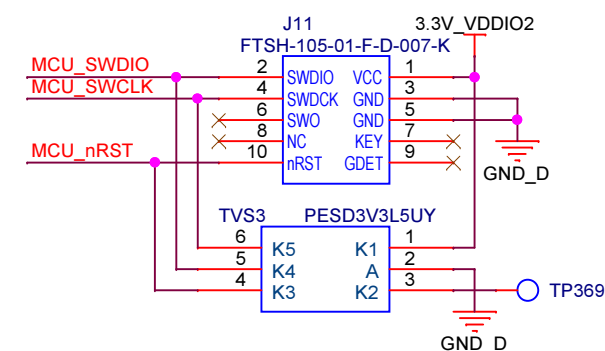
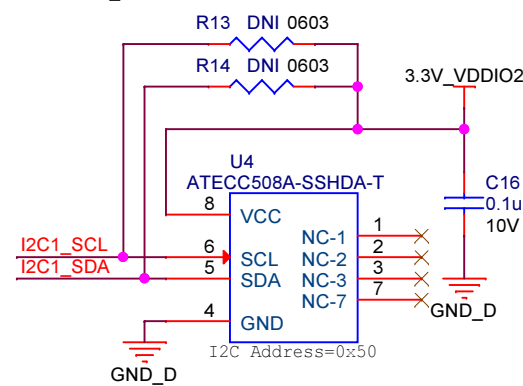
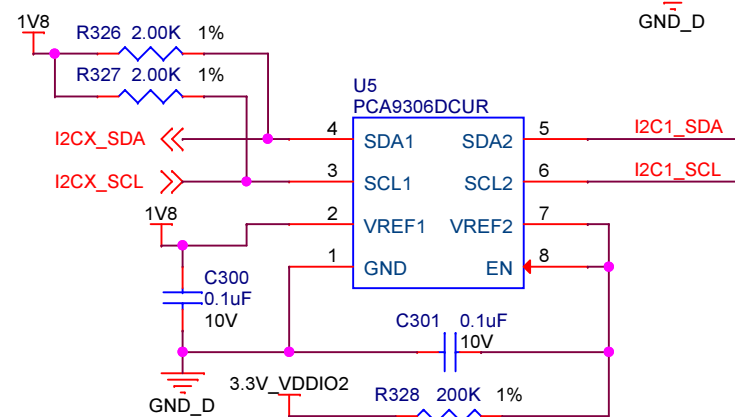
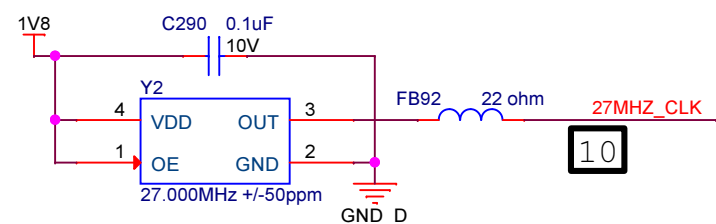
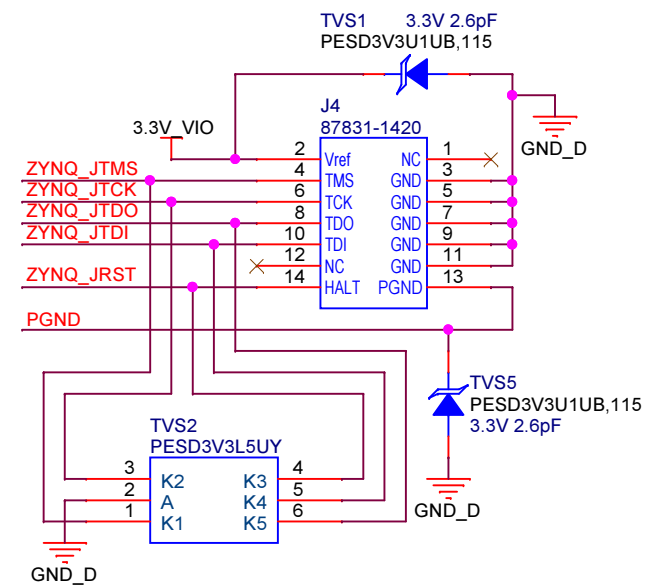
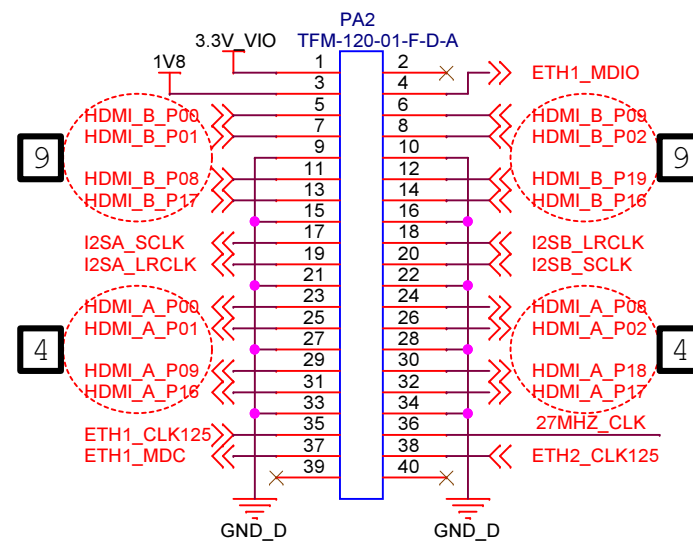
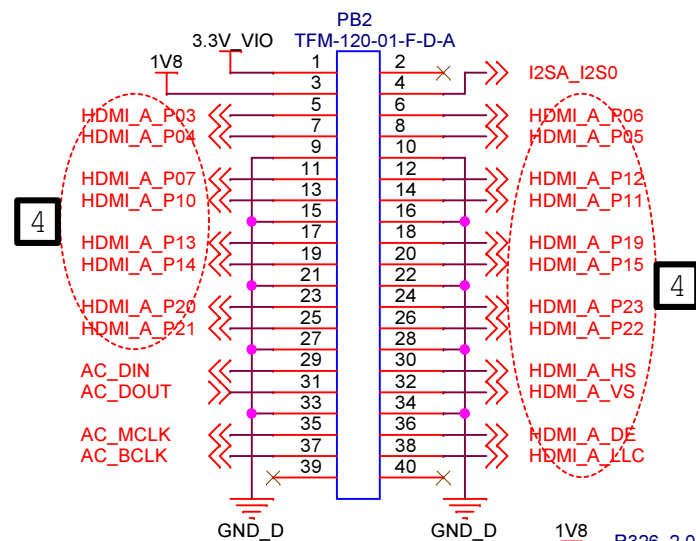
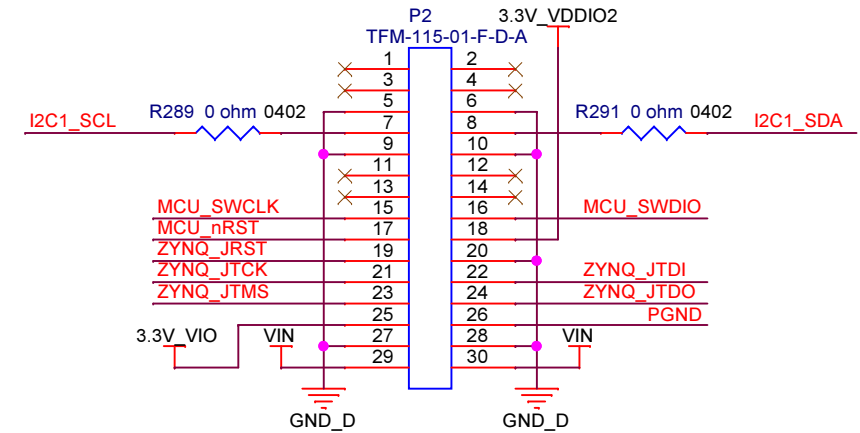
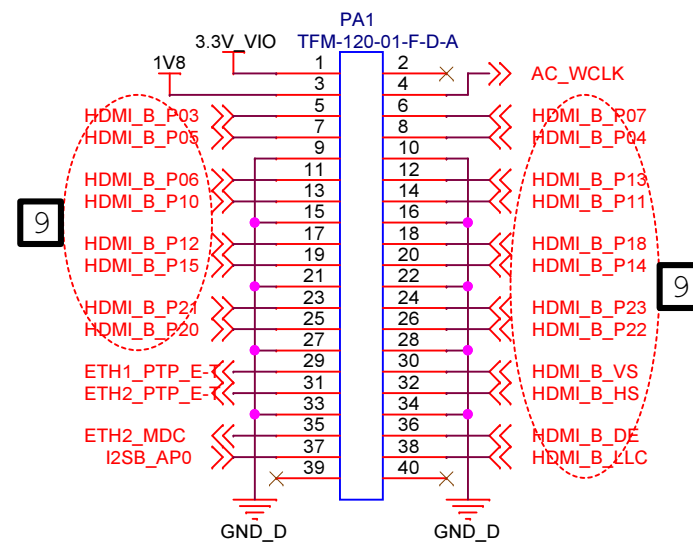
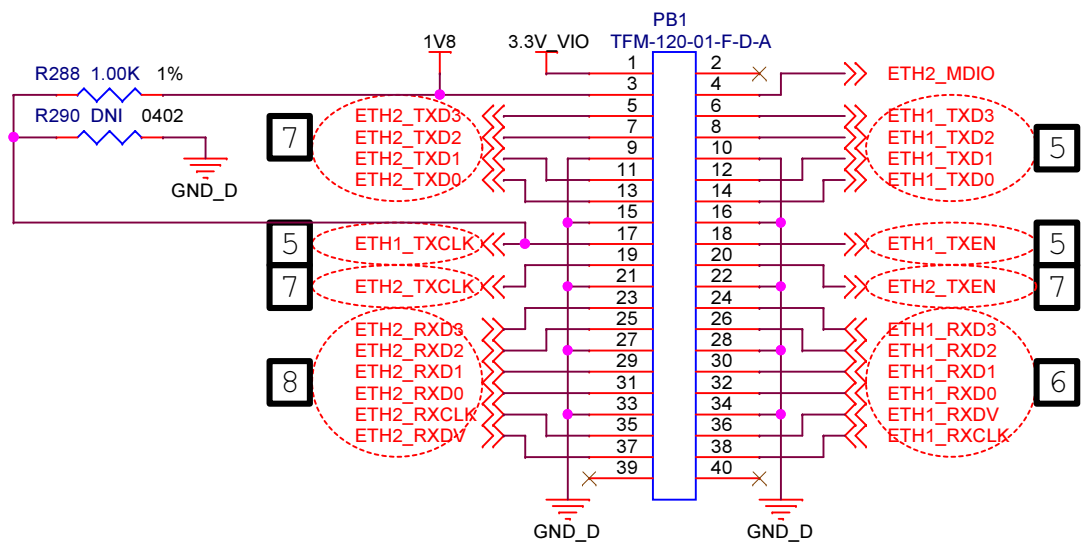


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TITLE: piSmasher SBC
PATH: /
DESCRIPTION: Power Supplies

DRAWN BY	B. Hammond	DATE	8/27/2018	<p>SIZE: B</p> <p>DRAWING NO.: 15081802-01</p> <p>REV: 4.1</p> <p>SHEET 1 of 10</p>
CHECKED BY	J. Weatherbee	DATE	8/27/2018	
APPROVED BY	R. Cousins	DATE	8/27/2018	

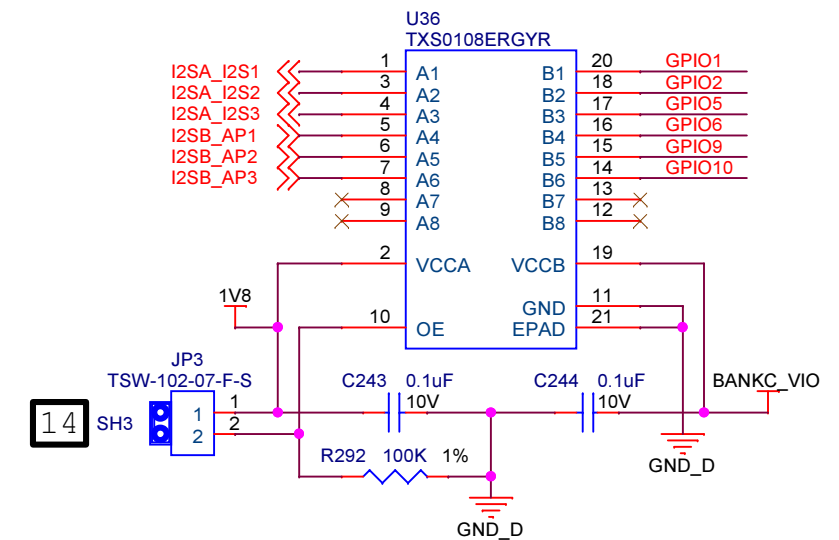
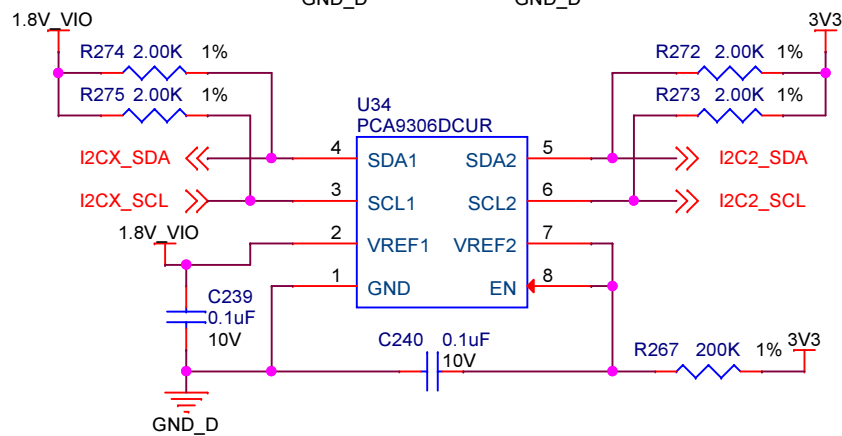
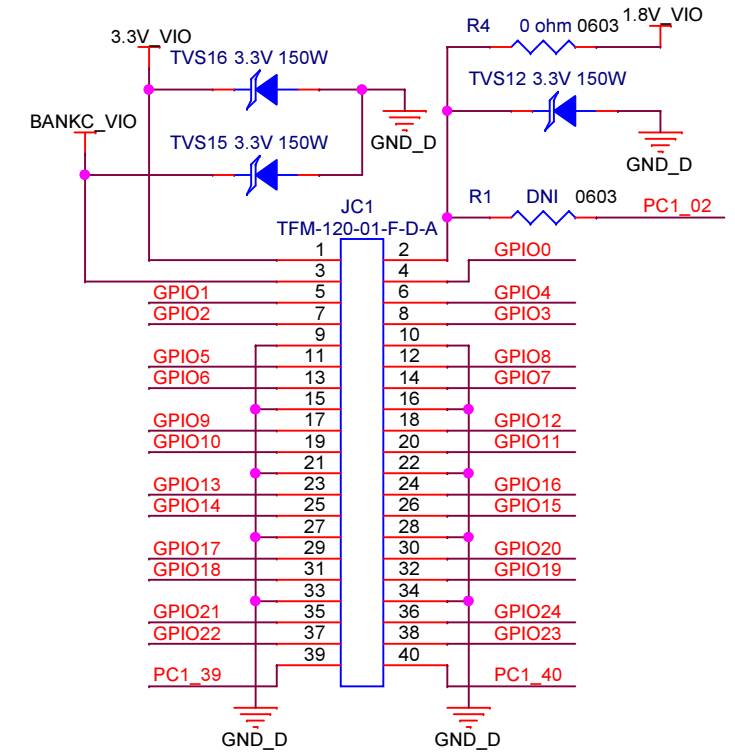
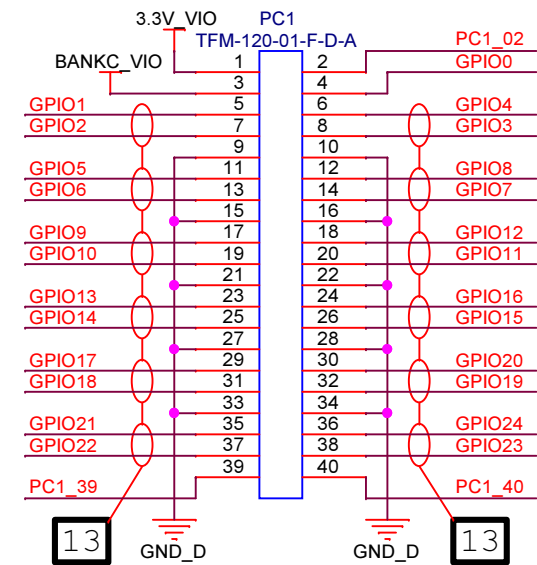
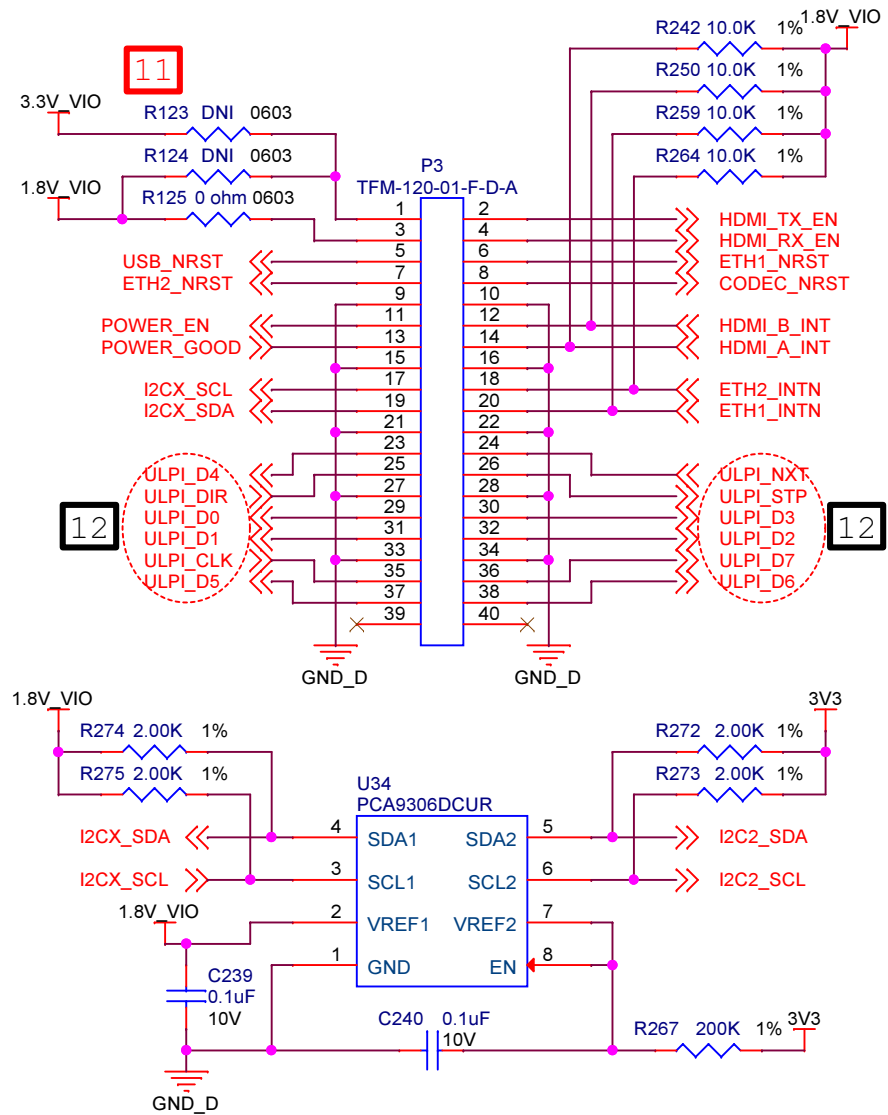




- NOTES:
- ③ All grouped signal traces to be length matched must include trace lengths on snickerdoodle per piSmasher Matched Trace Lengths spreadsheet 15081802-07.
 - ④ Grouped signal traces to be length matched to within 50mils from PA2 and PB2 to U6 with 50ohm single-ended impedance.
 - ⑤ Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
 - ⑥ Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.

- ⑦ Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- ⑧ Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- ⑨ Grouped signal traces to be length matched to within 50mils from PB2 and PB1 to U8 with 50ohm single-ended impedance.
- ⑩ Signal trace to be routed with 50ohm single-ended impedance.

		krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		DESCRIPTION Interconnect 1		PATH /	
DRAWN BY B. Hammond		DATE 8/27/2018		SIZE B	
CHECKED BY J. Weatherbee		DATE 8/27/2018		DRAWING NO. 15081802-01	
APPROVED BY R. Cousins		DATE 8/27/2018		REV 4.1	
		Copyright 2018 krtkl inc. This schematic is made available under a Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license please visit http://creativecommons.org/licenses/by-sa/4.0/		SHEET 2 of 10	



NOTES:

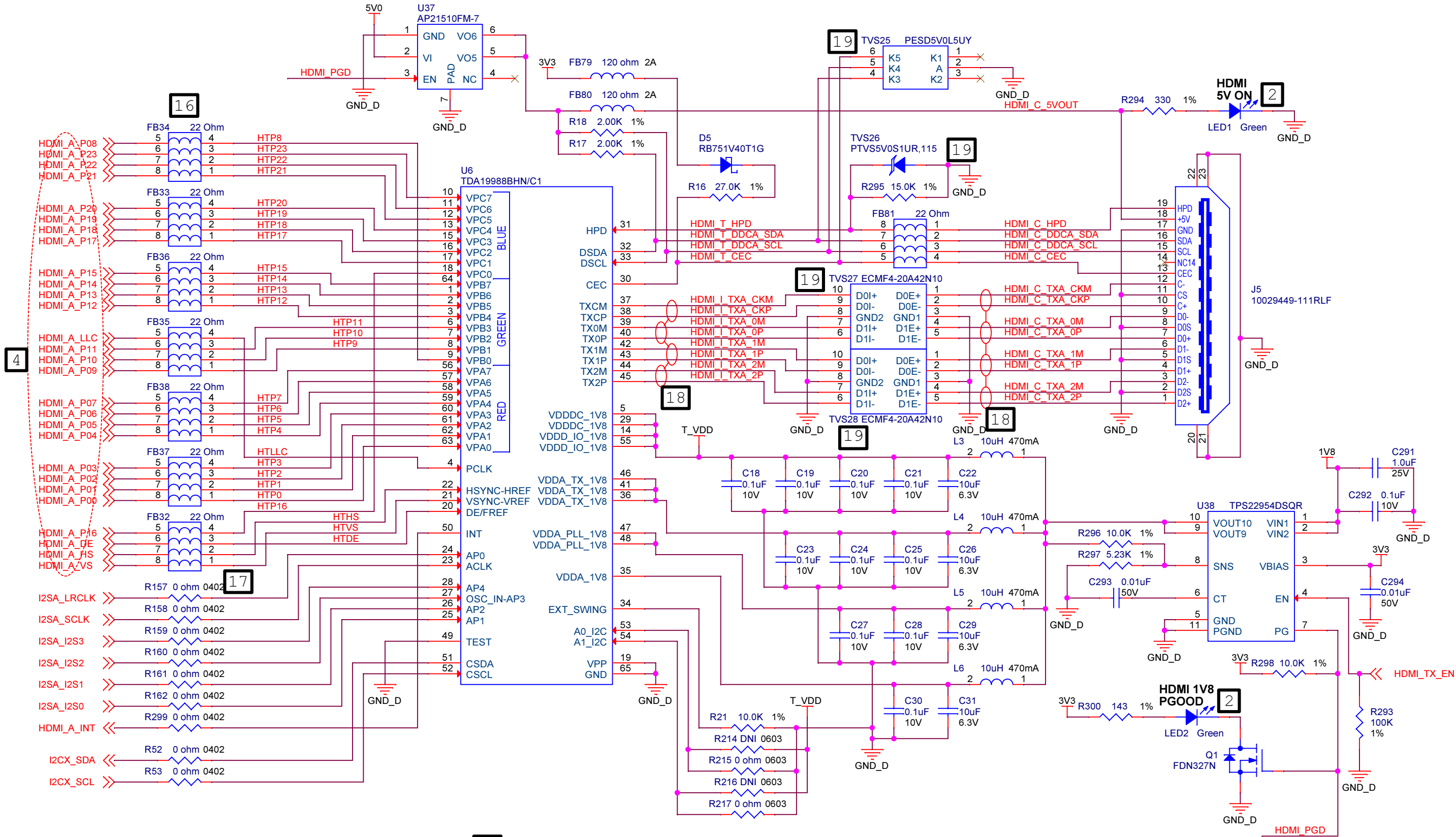
11 Warning: snickerdoodle rev 3 and earlier have +1.8V on J3 pin 1 and an unconnected J3 pin 3. Please confirm connections for J3 pin 1 and pin 3 prior to connection of external hardware. For use with snickerdoodle rev 3 and earlier, install a 0 ohm 0603 resistor at R124. For use with snickerdoodle rev 4 and later, a 0 ohm 0603 resistor can be installed at R123 if needed.

12 Grouped signal traces to be length matched to within 50mils with 50ohm single-ended characteristic impedance.

13 Grouped signal traces to be length matched to within 50mils with 100 ohm characteristic impedance for each differential pair.

14 Install jumper SH3 across JP3 pins 1 and 2 to enable the extended HDMI audio channels on PC1 and JC1.

	krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
	DRAWN BY B. Hammond		DATE 8/27/2018	
CHECKED BY J. Weatherbee		DATE 8/27/2018		SIZE B
APPROVED BY R. Cousins		DATE 8/27/2018		DRAWING NO. 15081802-01
		DESCRIPTION Interconnect 2		REV 4.1
		SHEET 3 OF 10		



NOTES:

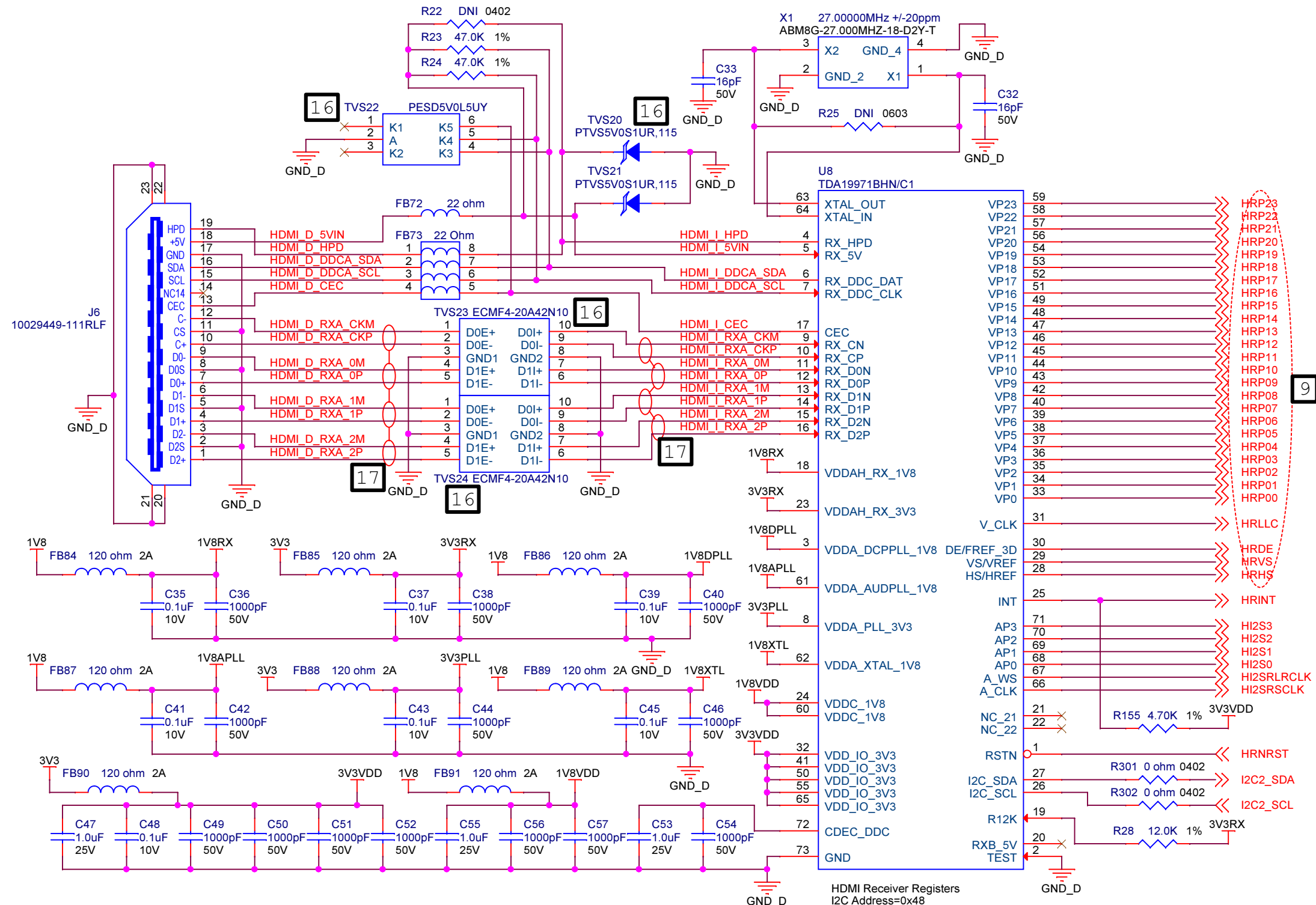
- 2 LEDs to be on top side of board not in snickerdoodle keepout area with labels as indicated.
- 4 Grouped signal trace lengths to be minimized from PB2 and PA2 to U6 with 50ohm single-ended impedance. Signal HDMI_A_LLC from PB2.38 to U6.31 to have the longest trace length of the group including the trace lengths to U14 on snickerdoodle Rev. 4.1.

- 16 Place ferrite beads FB32 through FB38 as close to U6 as possible.
- 17 Place resistors R157 through R162 as close to U6 as possible.
- 18 Grouped signal traces to be length matched to within 10mils with 100ohm characteristic impedance for each differential pair.
- 19 Place TVS diodes as close to J5 as possible in line with traces to U6.

		krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		DESCRIPTION HDMI Transmitter		PATH /	
DRAWN BY B. Hammond	DATE 8/27/2018	NAME B	SIZE 15081802-01	REV 4.1	SHEET 4 of 10
CHECKED BY J. Weatherbee	DATE 8/27/2018	APPROVED BY R. Cousins	DATE 8/27/2018		



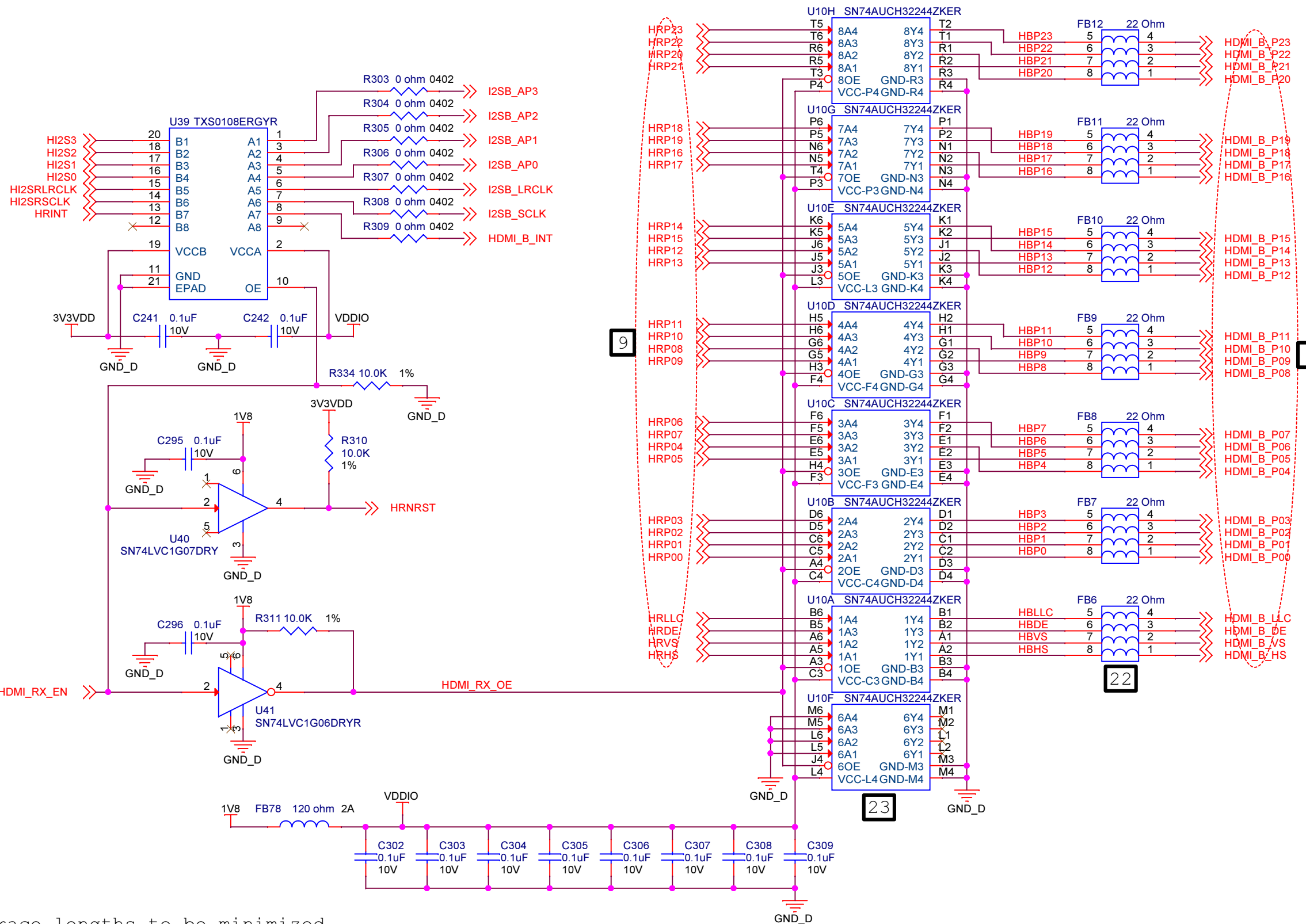
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- NOTES:**
- 9** Grouped signal trace lengths to be minimized from PA1 and PA2 to U8 with 50ohm single-ended impedance. Signal HDMI_R_LLC from PB1.38 to U8.31 to have the longest trace length of the group including the trace lengths to U14 on snickerdoodle Rev. 4.1.
 - 16** Place TVS parts as close to J6 as possible in line with traces to U8.
 - 17** Grouped signal traces to be length matched to within 10mils with 100ohm characteristic impedance for each differential pair.

HDMI Receiver Registers
 I2C Address=0x48
 Asynchronous Module Registers
 I2C Address=0x34

		krtki inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		PATH /		DESCRIPTION HDMI Receiver Part 1	
DRAWN BY B. Hammond		DATE 6/27/2018		SIZE B	
CHECKED BY J. Weatherbee		DATE 6/27/2018		DRAWING NO. 15081802-01	
APPROVED BY R. Cousins		DATE 6/27/2018		REV 4.1	
		SHEET 5 of 10			

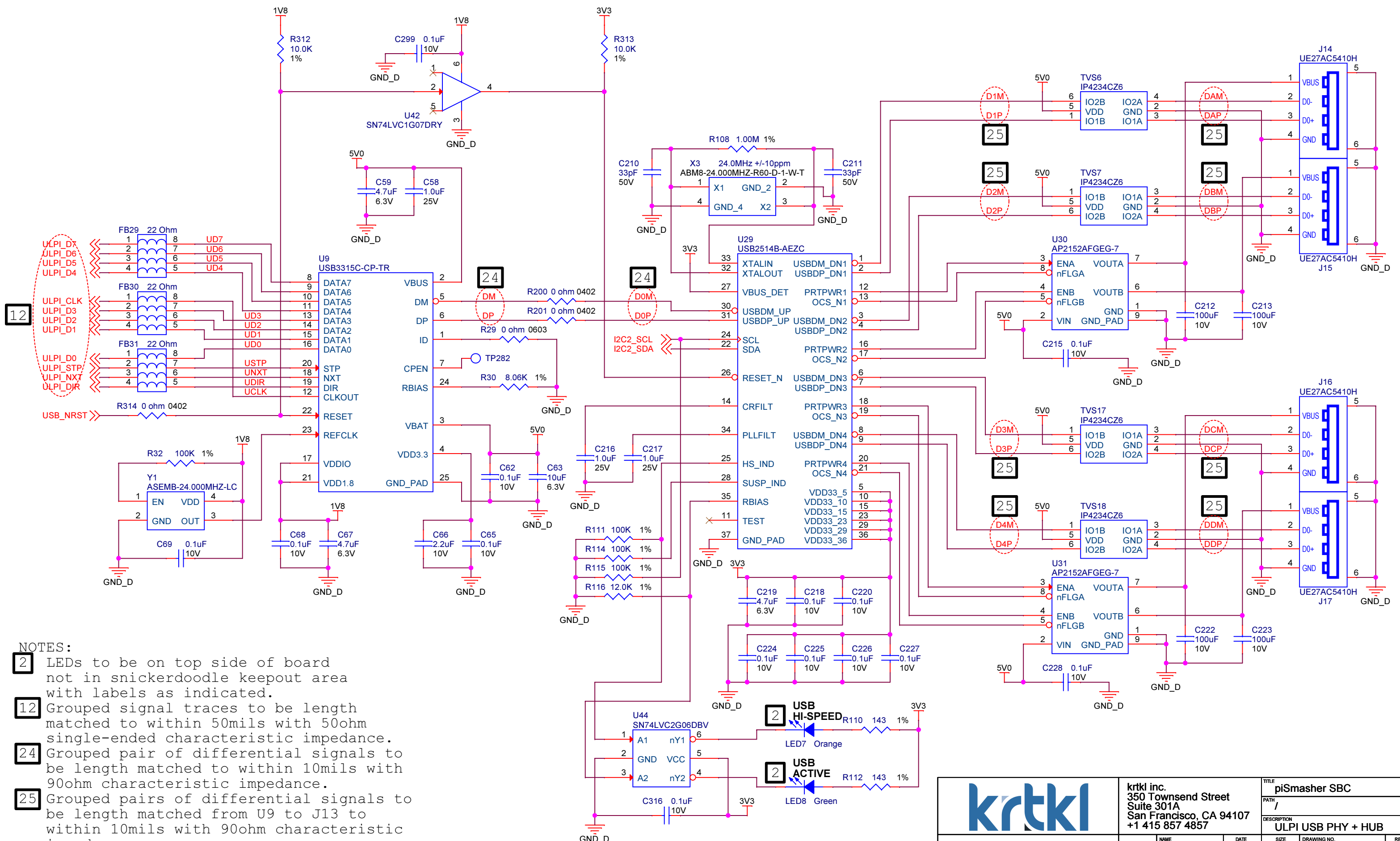


- NOTES:
- 9 Grouped signal trace lengths to be minimized from PA1 and PA2 to U8 with 50ohm single-ended impedance. Signal HDMI_B_LLC from PA1.38 to U8.31 to have the longest trace length of the group including the trace lengths to U14 on snickerdoodle Rev. 4.1.
 - 22 Place ferrite beads FB6 - FB12 as close to U10 as possible.
 - 23 Place U10 as close to U8 as possible.

		krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		DRAWN BY B. Hammond		DATE 8/27/2018	
CHECKED BY J. Weatherbee		DATE 8/27/2018		DESCRIPTION HDMI Receiver Part 2	
APPROVED BY R. Cousins		DATE 8/27/2018		SIZE B	
DRAWING NO. 15081802-01		REV 4.1		SHEET 6 OF 10	



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- NOTES:**
- 2** LEDs to be on top side of board not in snickerdoodle keepout area with labels as indicated.
 - 12** Grouped signal traces to be length matched to within 50mils with 50ohm single-ended characteristic impedance.
 - 24** Grouped pair of differential signals to be length matched to within 10mils with 90ohm characteristic impedance.
 - 25** Grouped pairs of differential signals to be length matched from U9 to J13 to within 10mils with 90ohm characteristic impedance.



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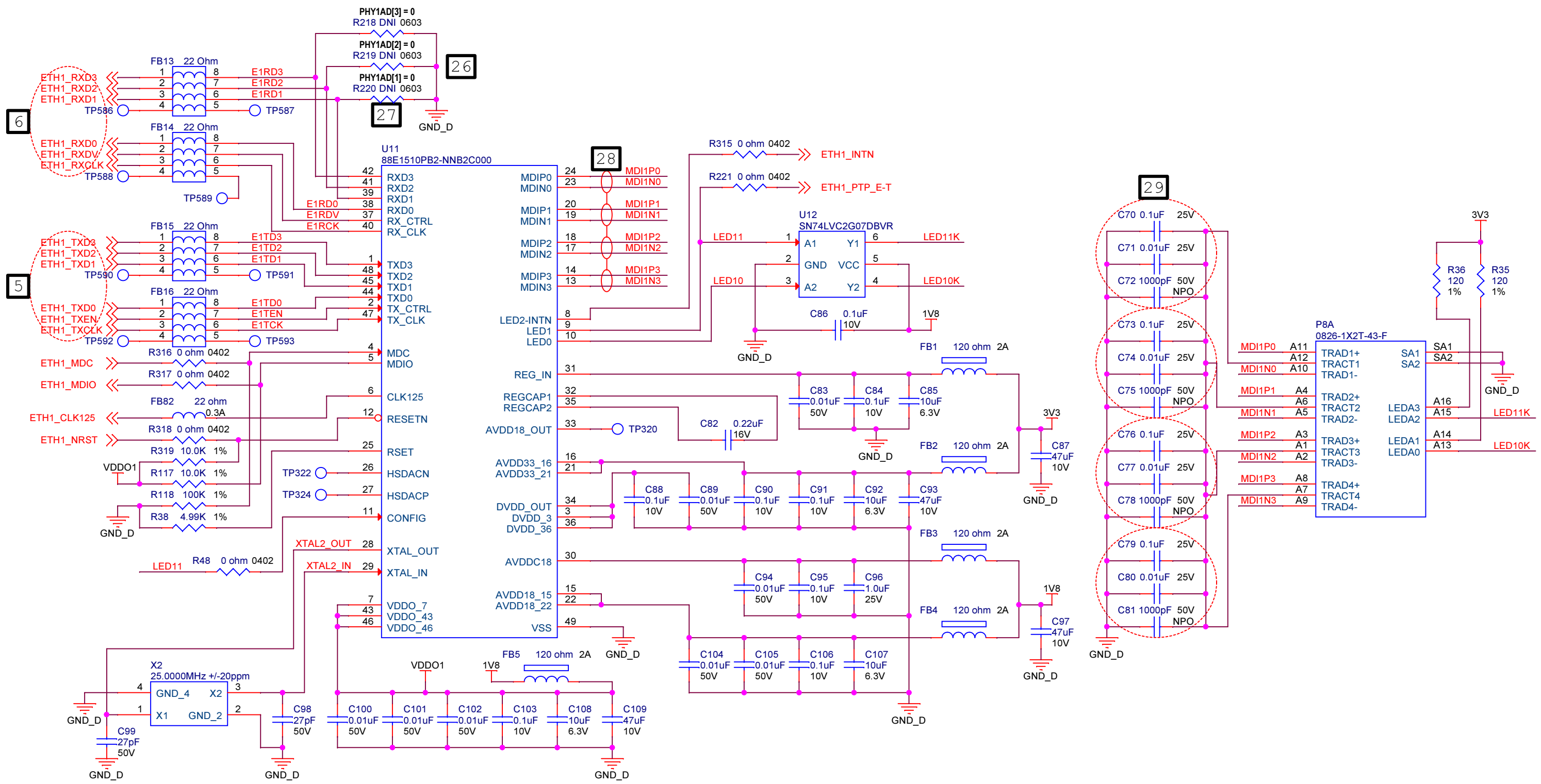
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piSmasher SBC

DESCRIPTION
ULPI USB PHY + HUB

NAME	DATE	SIZE	DRAWING NO.	REV
DRAWN BY B. Hammond	8/27/2018	B	15081802-01	4.1
CHECKED BY J. Weatherbee	8/27/2018			
APPROVED BY R. Cousins	8/27/2018			

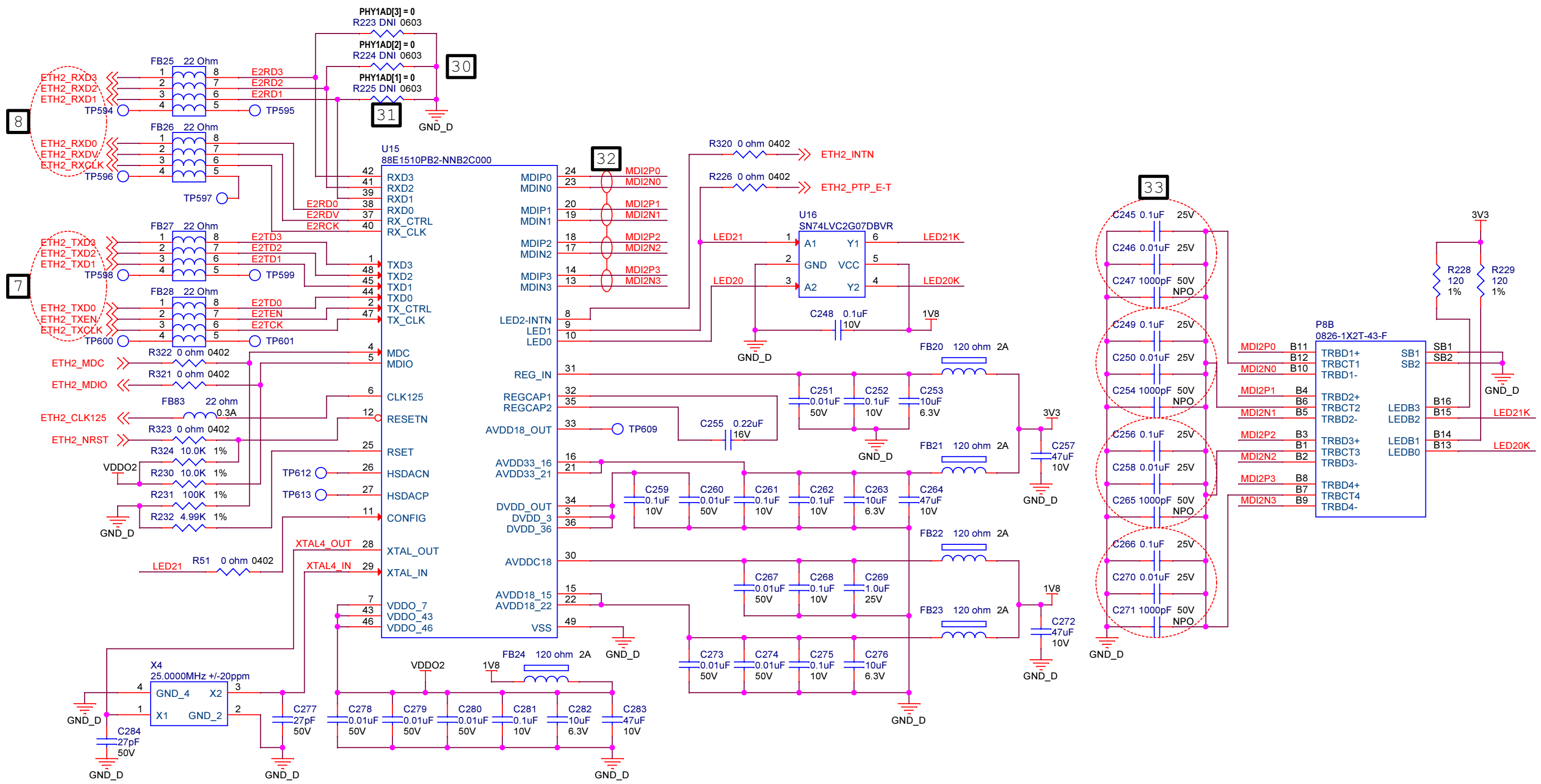
SHEET 7 of 10



NOTES:

- 5** Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- 6** Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- 26** Install a 0 ohm resistor to set the corresponding PHYAD bit to a logic '1'
- 27** Place resistors as close as possible to the corresponding traces from PB2.
- 28** Grouped signal traces to be length matched to within 10mils with 100 ohm characteristic impedance for each differential pair.
- 29** Place each group of capacitors as close to the associated pin on P8 as possible.

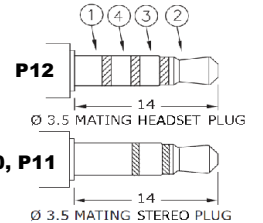
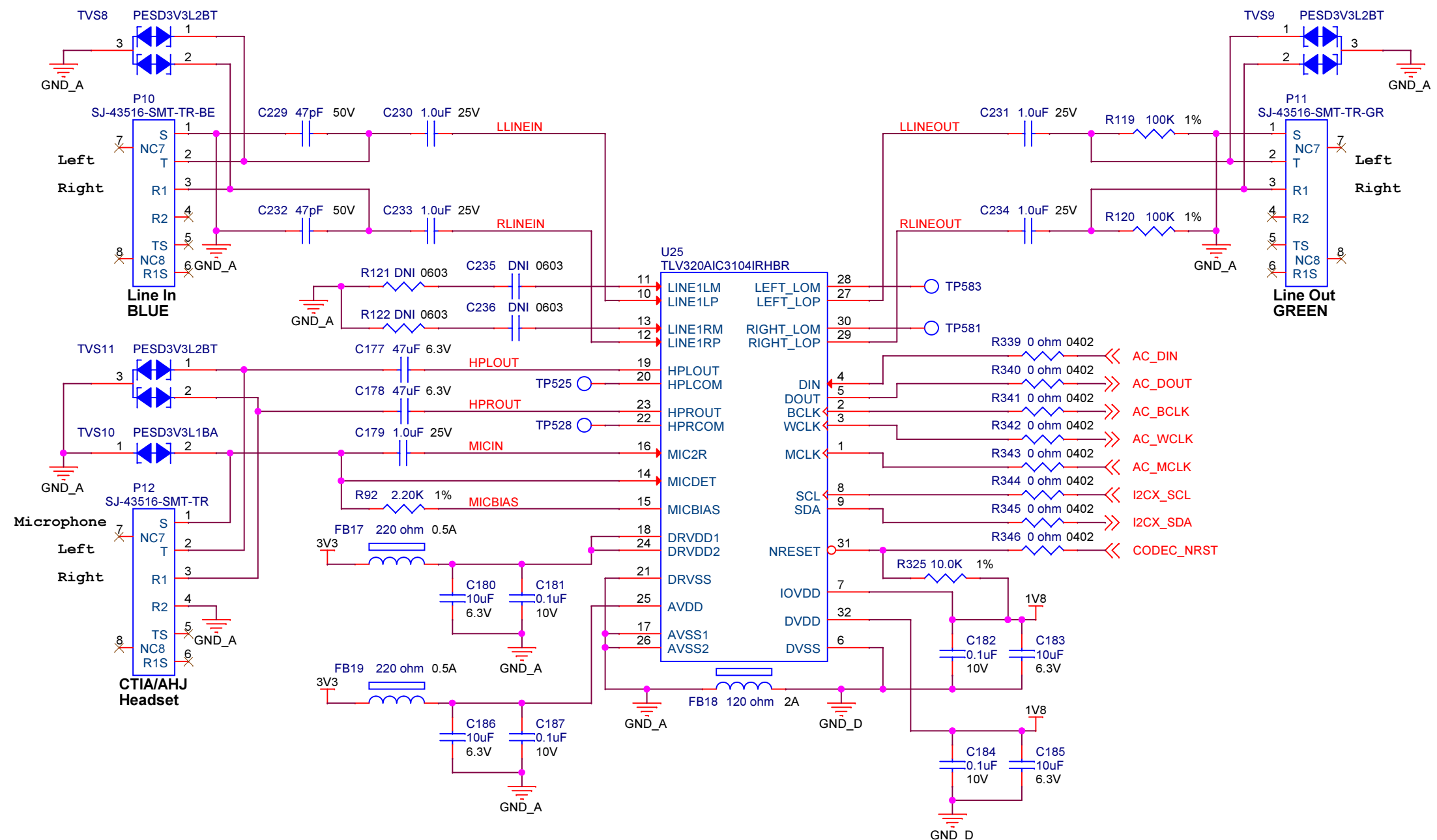
		krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		DRAWN BY B. Hammond		DATE 8/27/2018	
CHECKED BY J. Weatherbee		DATE 8/27/2018		DESCRIPTION Ethernet Transceiver 1	
APPROVED BY R. Cousins		DATE 8/27/2018		SIZE B	
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		SHEET 8 OF 10			



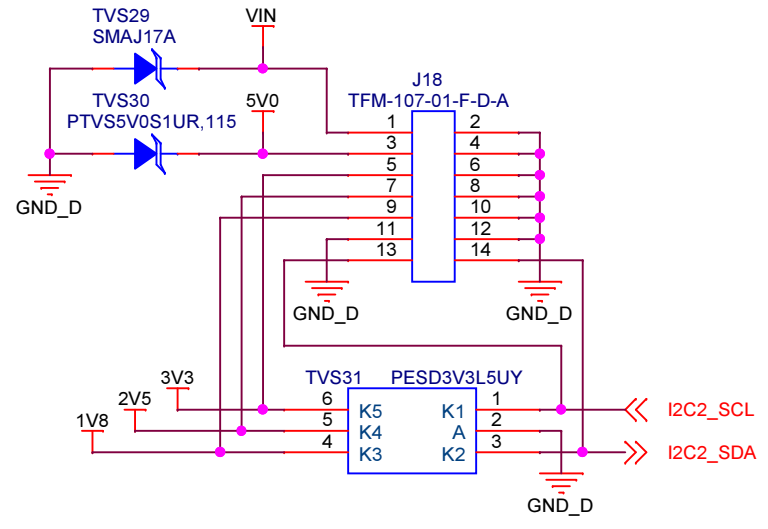
NOTES:

- 7** Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- 8** Grouped signal traces to be length matched to within 5mils with 50ohm single-ended characteristic impedance.
- 30** Install a 0 ohm resistor to set the corresponding PHYAD bit to a logic '1'
- 31** Place resistors as close as possible to the corresponding traces from PB2.
- 32** Grouped signal traces to be length matched to within 10mils with 100 ohm characteristic impedance for each differential pair.
- 33** Place each group of capacitors as close to the associated pin on P8 as possible.

		krtkl inc. 350 Townsend Street Suite 301A San Francisco, CA 94107 +1 415 857 4857		TITLE piSmasher SBC	
		DRAWN BY B. Hammond		DATE 8/27/2018	
CHECKED BY J. Weatherbee		DATE 8/27/2018		DESCRIPTION Ethernet Transceiver 2	
APPROVED BY R. Cousins		DATE 8/27/2018		SIZE B	
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		SHEET 9 OF 10			



Model No.	SJ-43516-SMT
Schematic	
PIN	
1	sleeve
2	tip
3	ring 1
4	ring 2
5	tip switch
6	ring switch



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TITLE		piSmasher SBC	
PATH		/	
DESCRIPTION		Audio Codec	
NAME	DATE	SIZE	DRAWING NO.
DRAWN BY	B. Hammond	6/27/2018	15081802-01
CHECKED BY	J. Weatherbee	6/27/2018	
APPROVED BY	R. Cousins	6/27/2018	
		B	REV 4.1
		SHEET 10 of 10	