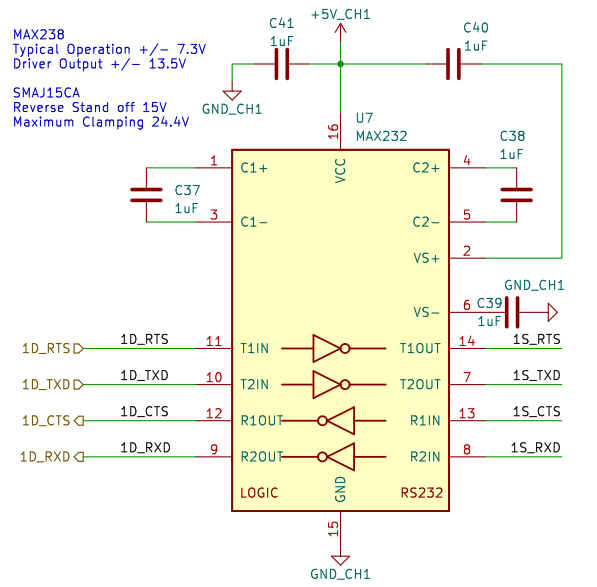
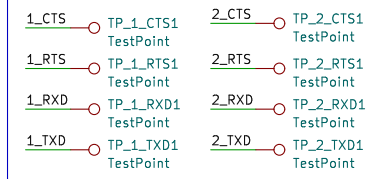


Devon Merner <dmerner>		
Sheet: /		
File: Dual HFC RS-232 Hat.kicad_sch		
Title: Engineer Hat EV2		
Size: A4	Date: 2023-09-04	Rev: EV2
KiCad E.D.A. kicad 7.0.6		Id: 1/6

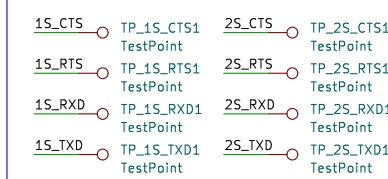
Channel 1 RS-232 Driving/Receiving



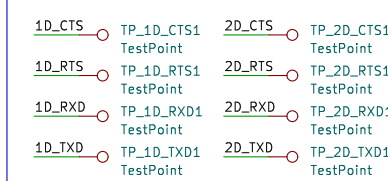
Channel 1/2 Direct Test Points



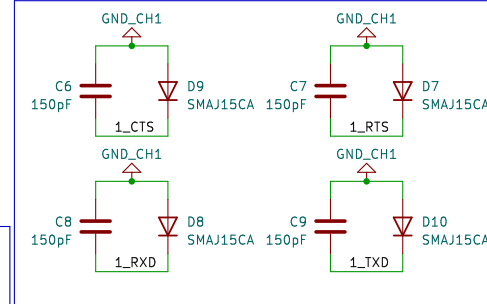
Channel 1/2 "Safe" Test Points



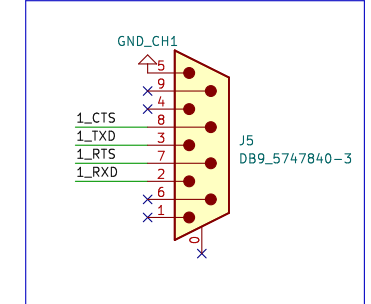
Channel 1/2 Decoupled Test Points



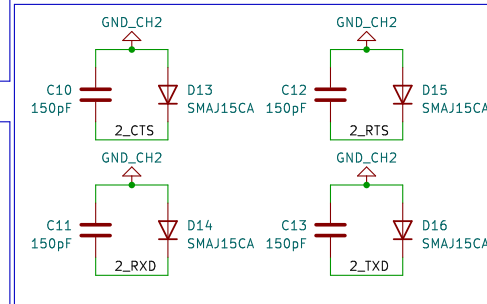
Channel 1 Surge Protection



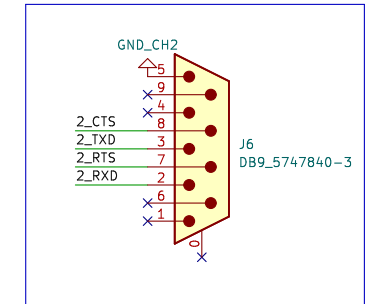
Channel 1



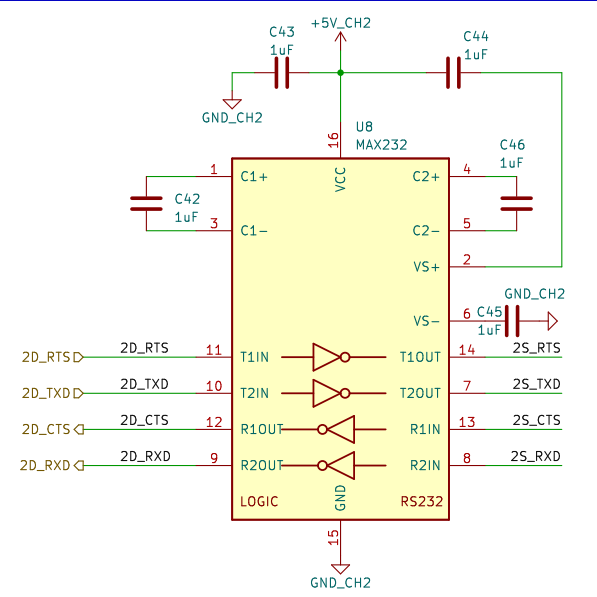
Channel 2 Surge Protection



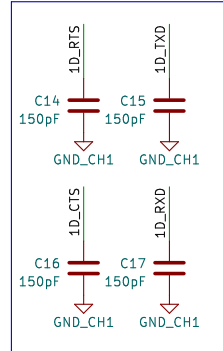
Channel 2



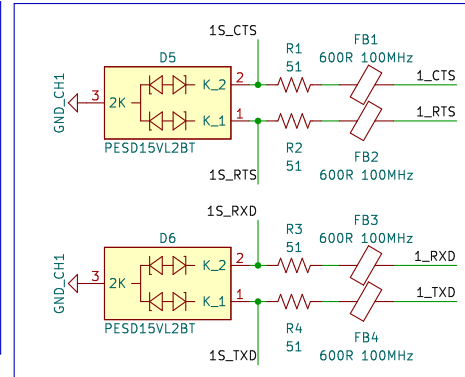
Channel 2 RS-232 Driving/Receiving



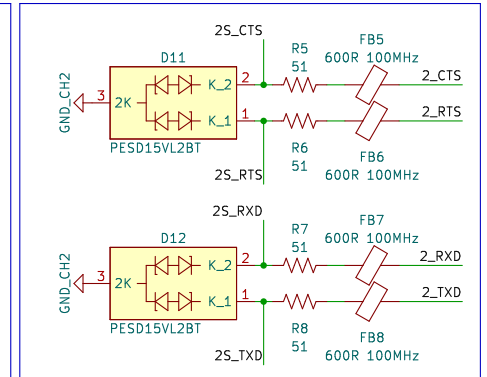
Channel 1 Decoupling



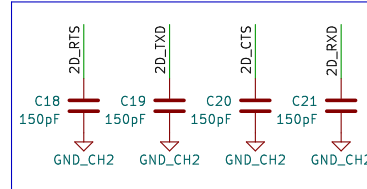
Channel 1 ESD Protection



Channel 2 ESD Protection



Channel 2 Decoupling



== Net Naming Legend ==
(Where N = Channel, X = Signal)

ND_X = Decoupled signals between ADUM Isolation and MAX238 Driver
NS_X = "Safe" signals that have been ESD protected
NX = Surge protected signals directly from the DB-9 connector

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Sheet: /RS-232/

File: RS-232.kicad_sch

Title: Engineer Hat EV2

Size: A4

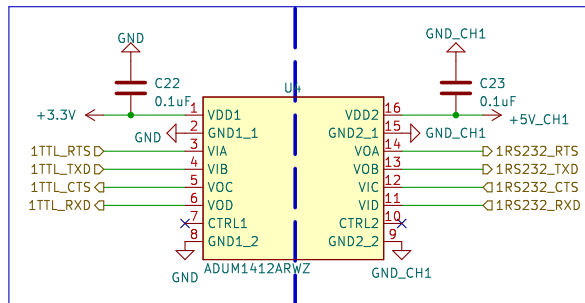
Date: 2023-09-04

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Rev: EV2

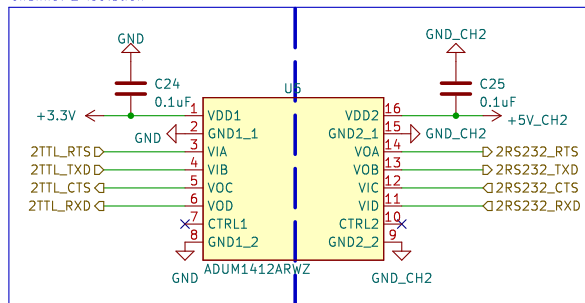
Id: 2/6

Channel 1 Isolation

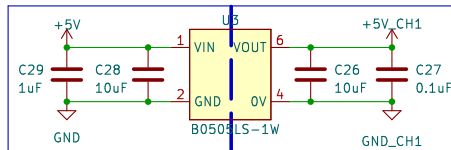


Optoisolators running in 3V/5V mixed operation

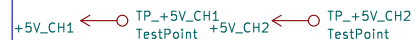
Channel 2 Isolation



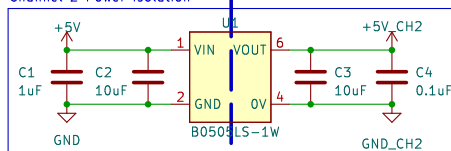
Channel 1 Power Isolation



RS-232 +5V Test Points



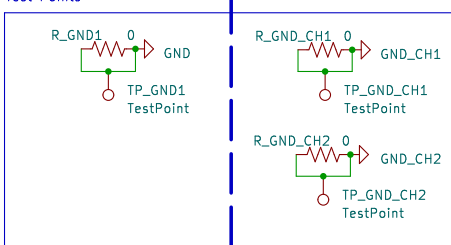
Channel 2 Power Isolation



RS-232 +5V LEDs



Test Points



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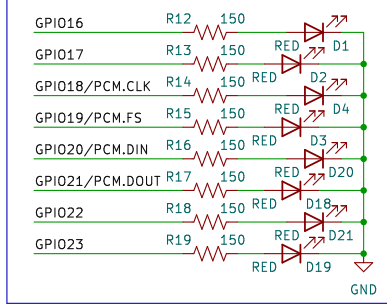
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File: Isolation.kicad_sch

Title: Engineer Hat EV2

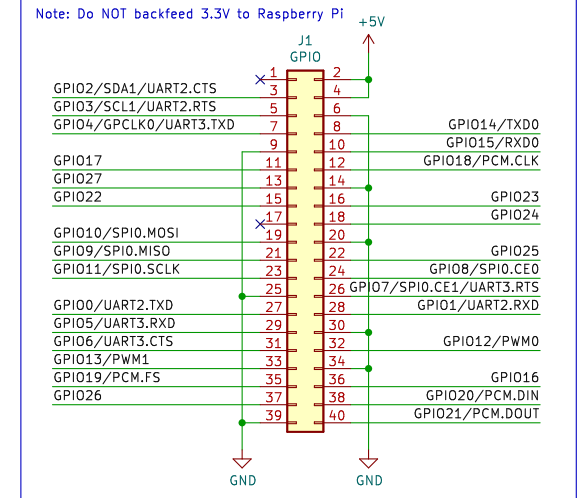
Size: A4 Date: 2023-09-04
KiCad E.D.A. kicad 7.0.6

Rev: EV2
Id: 3/6

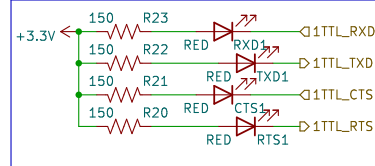
GPIO LEDs



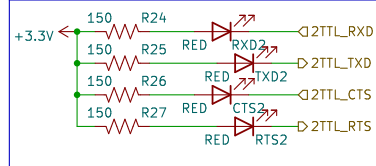
Raspberry Pi Connector



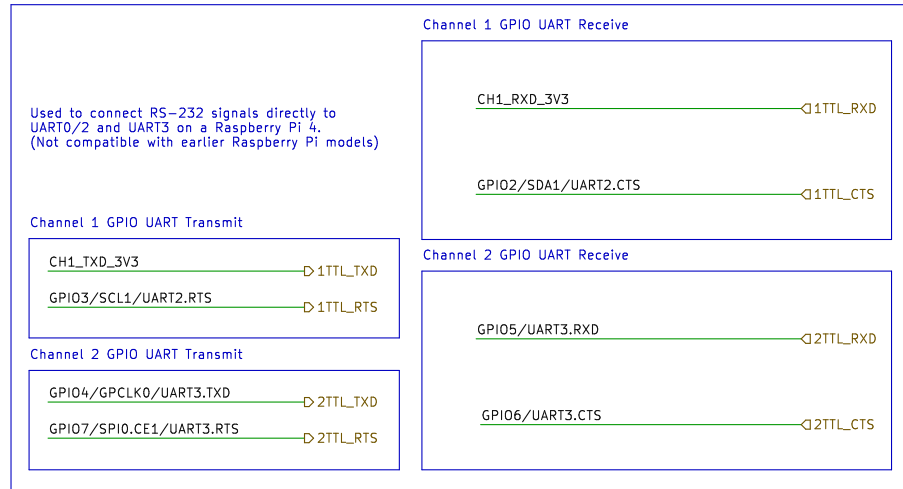
Channel 1 LEDs



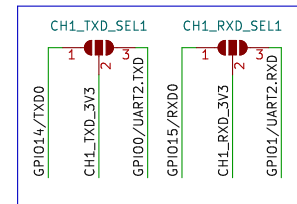
Channel 2 LEDs



RS-232 Direct to Raspberry Pi UART0/2 and UART3



Channel 1 UART0/2 Selectors

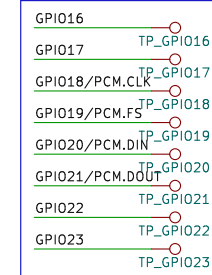


Channel 1 UART Selectors are used to switch Channel 1 between UART0 and UART2

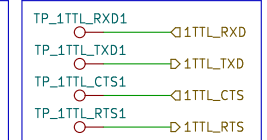
By default, Channel 1 is set to UART0 for u-boot compatibility and serial console during boot.

Channel 1 RTS/CTS is always connected to UART2 (UART0 lacks hardware flow control).

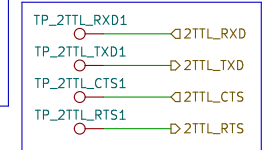
GPIO Test Points



Channel 1 TTL Test Points



Channel 2 TTL Test Points



	TXD	RXD	CTS	RTS	Board Pins
uart0	14	15			8 10
uart1	14	15			8 10
uart2	0	1	2	3	27 28 (I2C)
uart3	4	5	6	7	7 29
uart4	8	9	10	11	24 21 (SPI0)
uart5	12	13	14	15	32 33 (gpio-fan)

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Sheet: /GPIO/
File: GPIO.kicad_sch

Title: Engineer Hat EV2

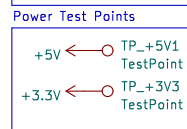
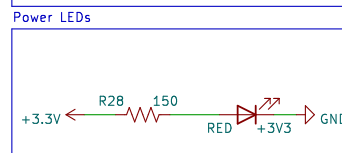
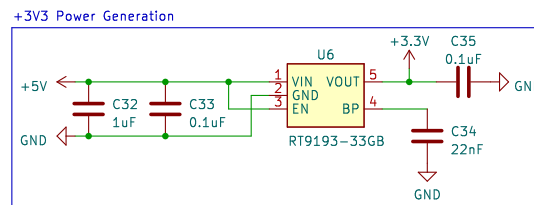
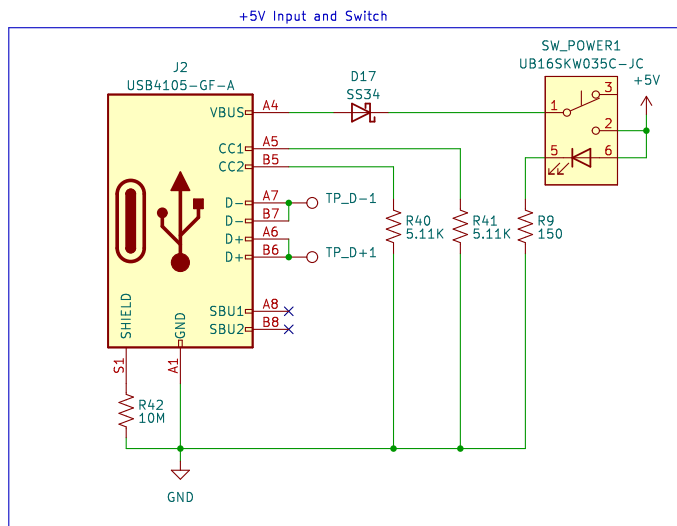
Size: A4 Date: 2023-09-04

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Rev: EV2

Id: 4/6

Blue 2000mcd \$0.36 (6 ohm) - <https://www.digikey.ca/en/products/detail/w%C3%BCrth-elektronik/151053BS04500/4490021>
Green 200mcd \$0.73 (65 ohm) - <https://www.digikey.ca/en/products/detail/everlight-electronics-co-ltd/EALP05RDHGA1/5142168>
Red 50mcd \$0.52 (320 ohm at 5V, 150 ohm at 3.3V) - <https://www.digikey.ca/en/products/detail/liteon/LTL2R3KRD-EM/2675133>



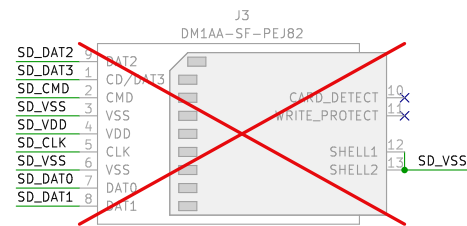
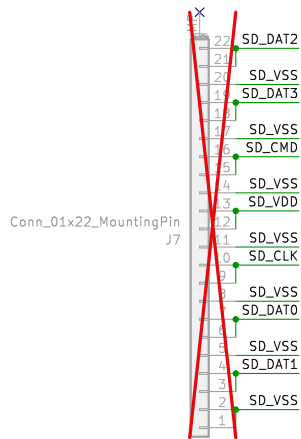
Devon Merner <dmerner>

Sheet: /Power/
File: Power.kicad_sch

Title: Engineer Hat EV2

Size: A4 | Date: 2023-09-04
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Rev: EV2
Id: 5/6



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Sheet: /Misc/
File: Misc.kicad_sch

Title: Engineer Hat EV2

Size: A4 Date: 2023-09-04
KiCad E.D.A. kicad 7.0.6

Rev: EV2
Id: 6/6