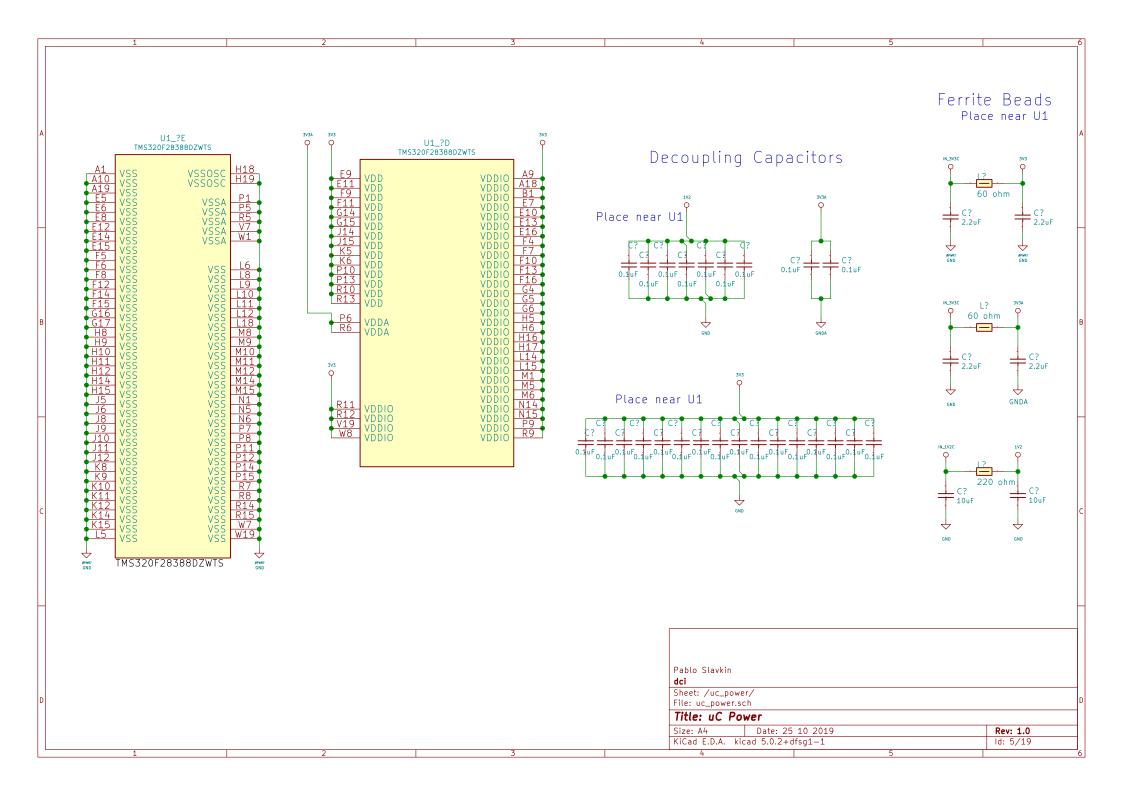
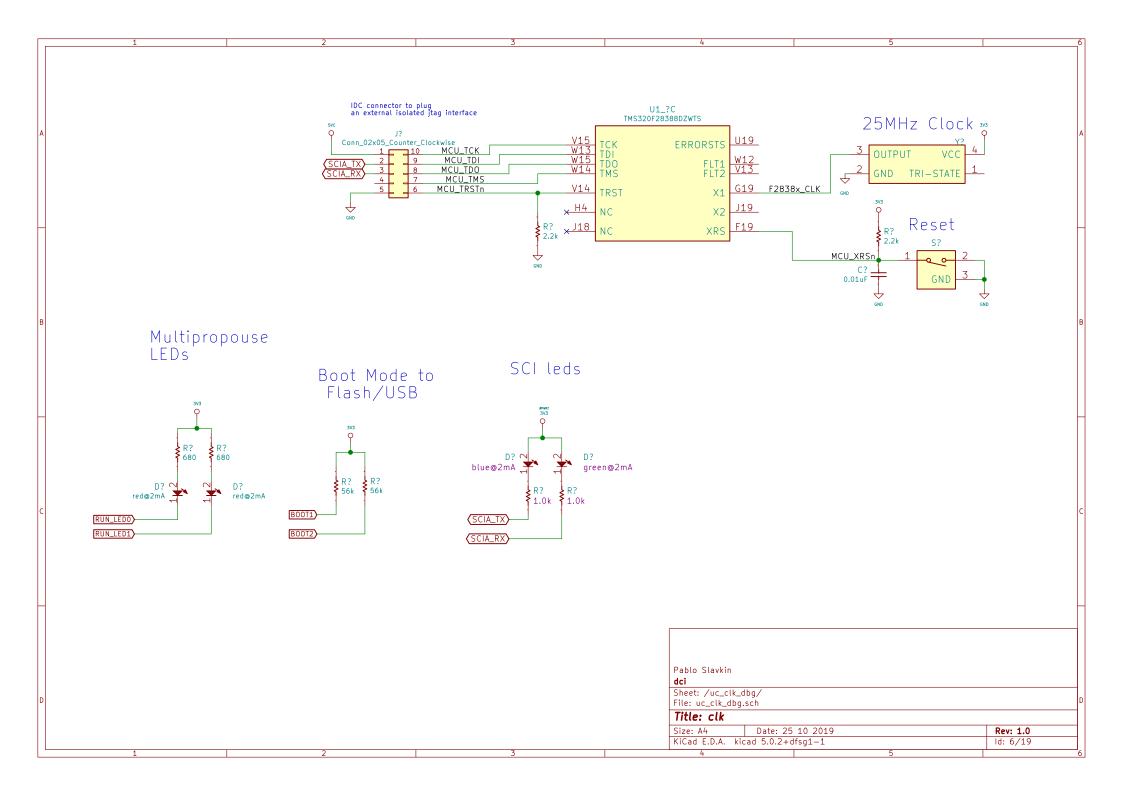


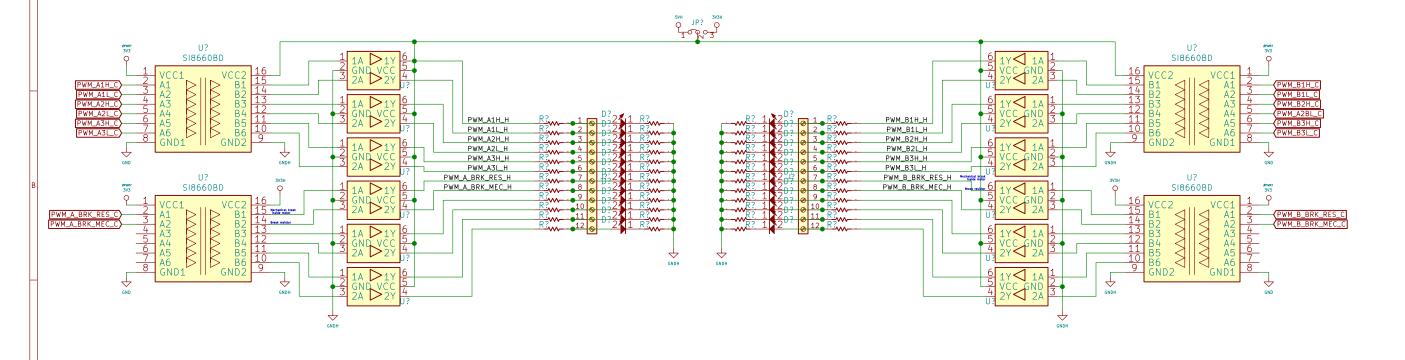
Pablo Slavkin	
dci	
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KiCad E.D.A. kicad 5.0.2+dfsg1-1	ld: 4/19

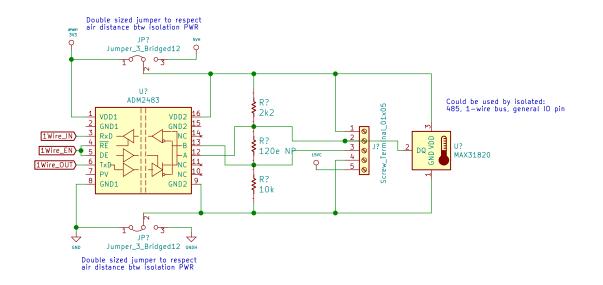


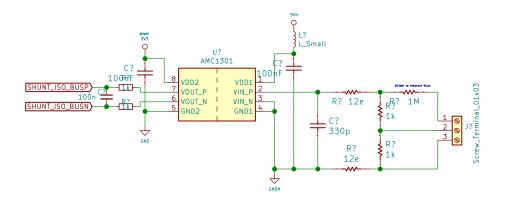


#### COLD HOT sip 3 package, easy to replace and many options U? 5v has switching noise, but don't care sip 3 package, easy to replace and many options to clear switching noise 5->3.3 3.3->1.2 Screw AP2114H-1.2TRG1 R-78E5.0-1.0 \_ C? 🔟 C? \_ C? 680 22uF 100nF C? \_\_\_\_ C? 22uF \_\_\_ 100nF \_\_\_ 220uF VOUT D? Screw 22uF 100nF ₹ R? R? 680 C? 220uF low noise LDO <30uV D? D? red green in case we need more current use another 5v dc/dc and open jumper U? AP2114H-1.2TRG1 R-78E5.0-1.0 VOUT 2 100nF| R? 680 \_\_\_\_ 100nF sip 3 package, easy to replace and many options low noise LDO <30uV D? green Main Power to clear switching noise 5->3.3 3.3->1.2 F? U? AP2114H-1.2TRG1 IN\_1V2C Screw IRM-20-12 Fuse R-78E3.3-1.0 Q +Vou OUT \_ C? \_\_\_\_ C? . C? 🔔 VOUT 100nF R? 680 22uF 100nF sip 3 package, easy to creplace and many options GNDH √low noise LDO <30uV PS? D? IRM-20-12 +Vou Pablo Slavkin dci Sheet: /ac\_in/ File: ac\_in.sch Title: AC input Size: A4 Date: 25 10 2019 Rev: 1.0 KiCad E.D.A. kicad 5.0.2+dfsq1-1 ld: 7/19

### PWM OUT -> ISOLATOR -> BUFFER -> LED



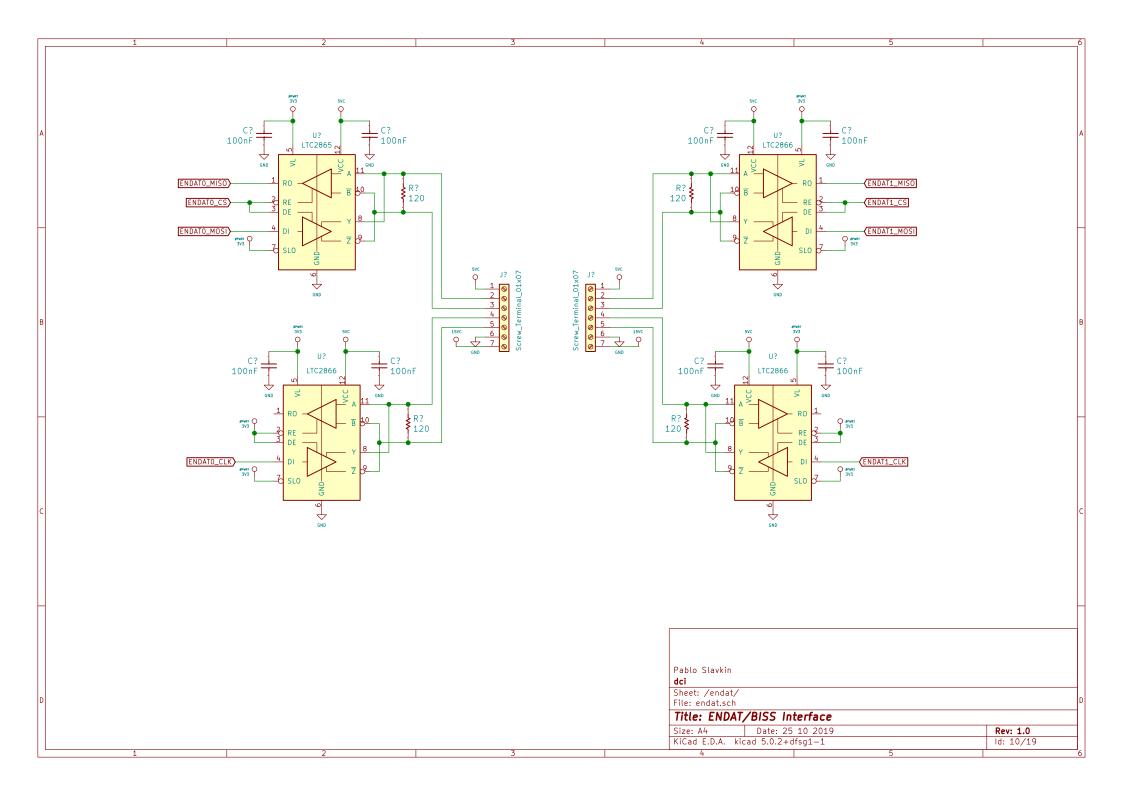


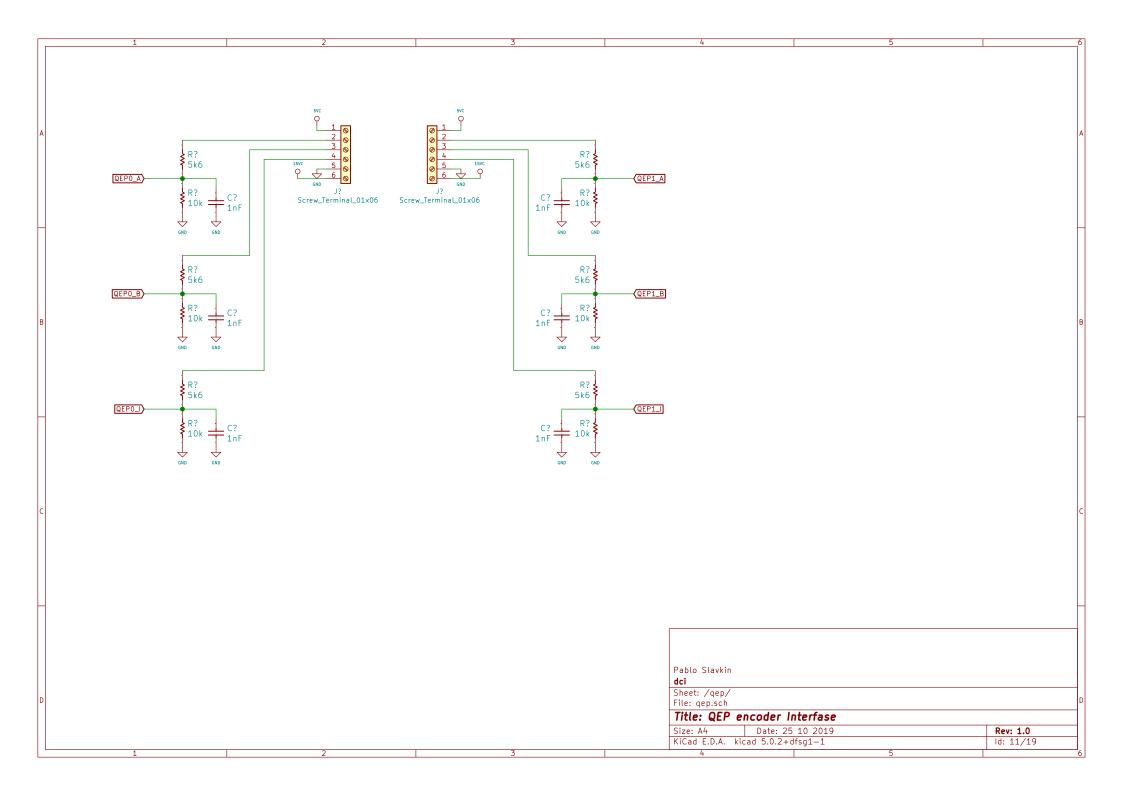


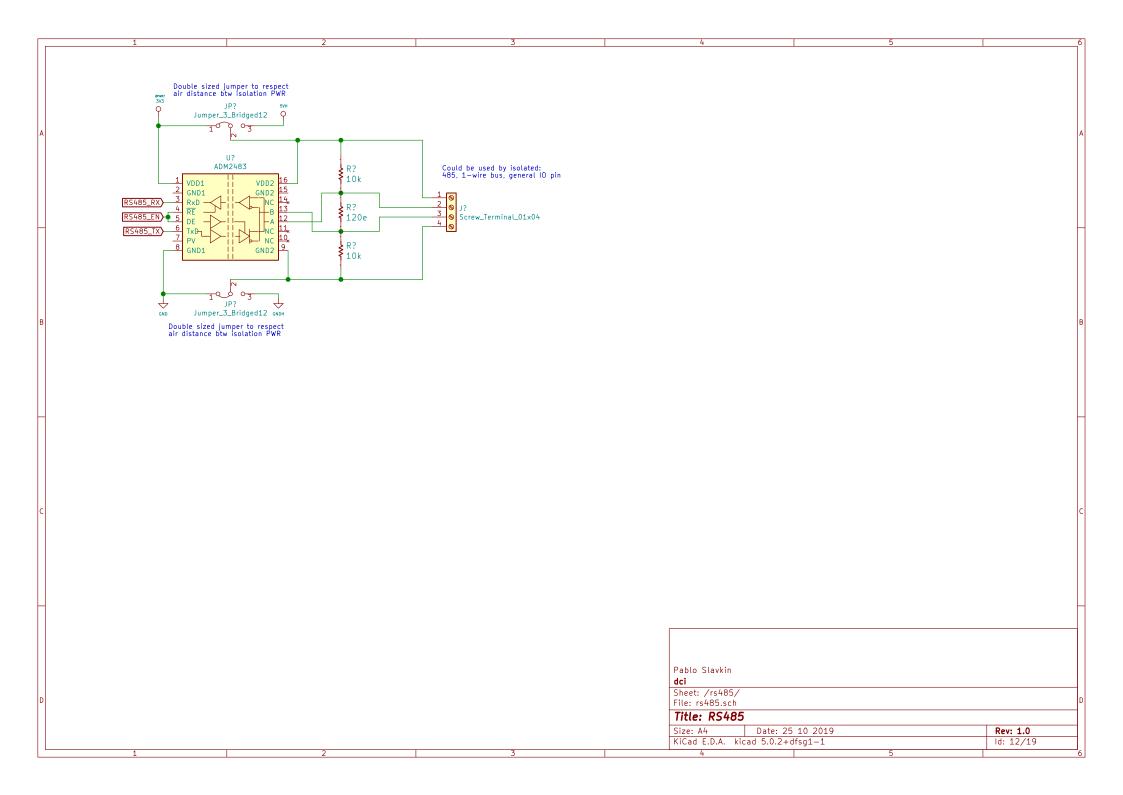
Pablo Slavkin dci
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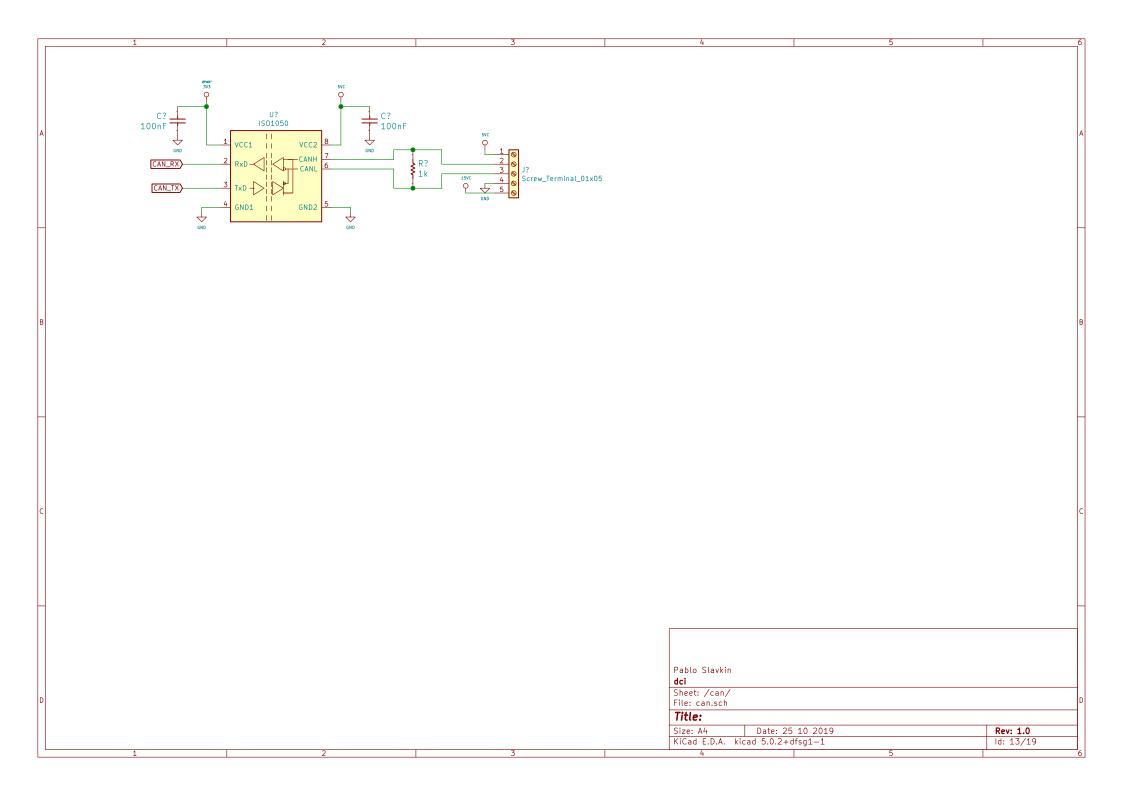
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 Date: 25 10 2019

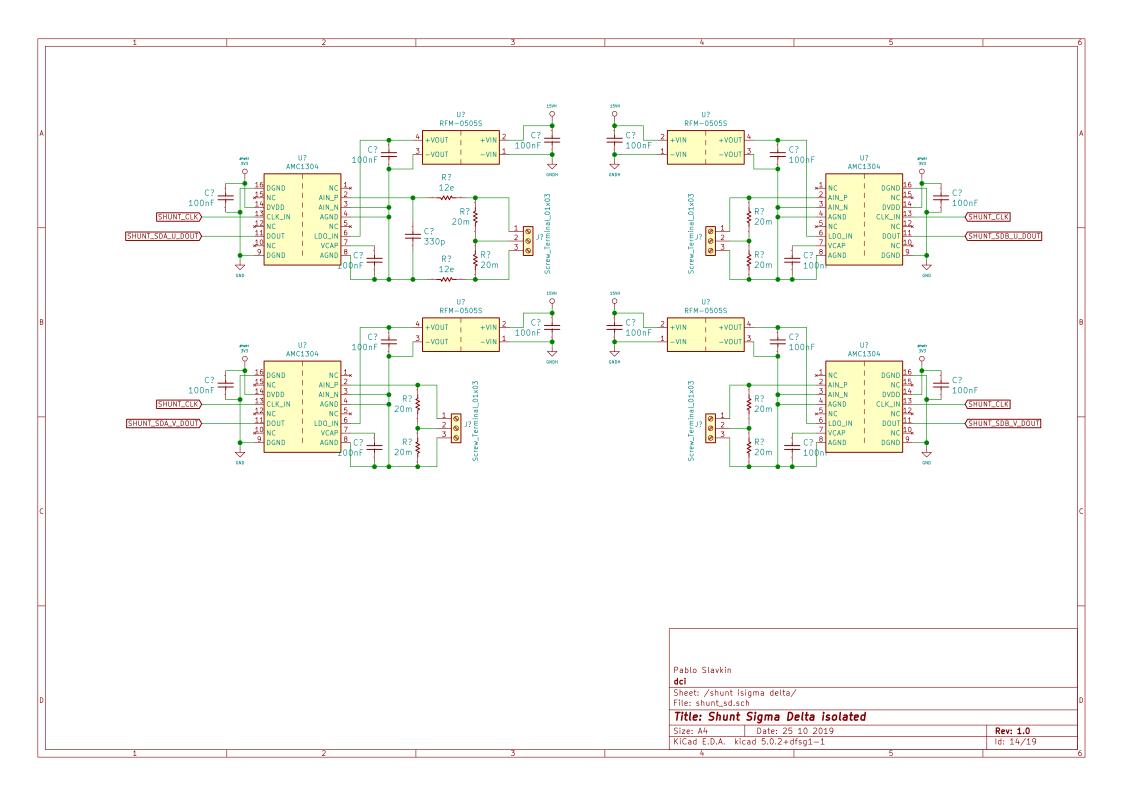
 KiCad E.D.A.
 kicad 5.0.2+dfsg1-1
 **Rev: 1.0** ld: 9/19



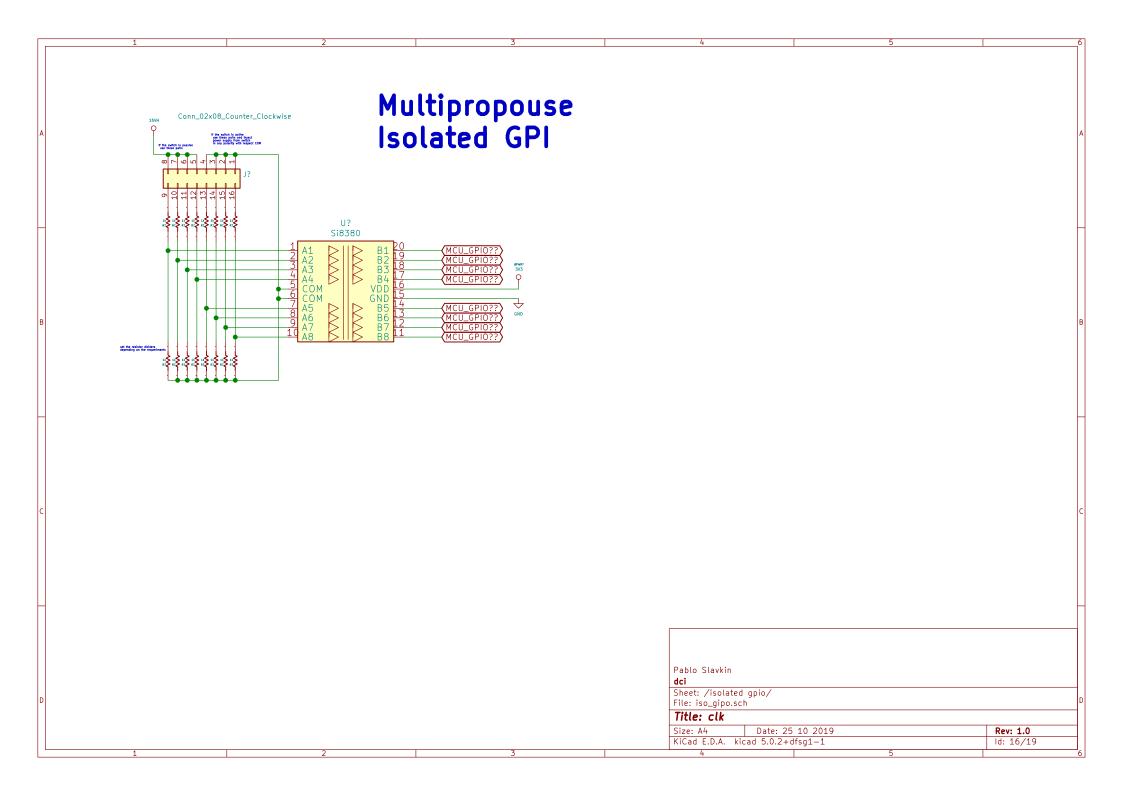


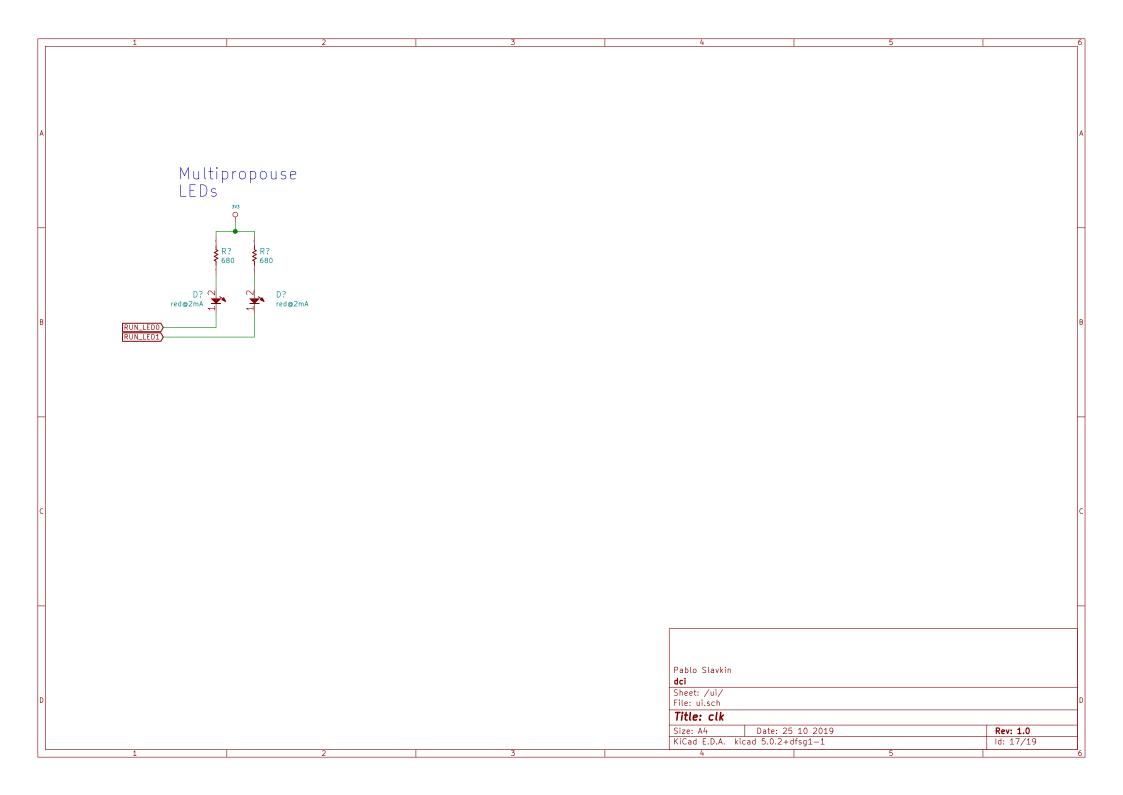




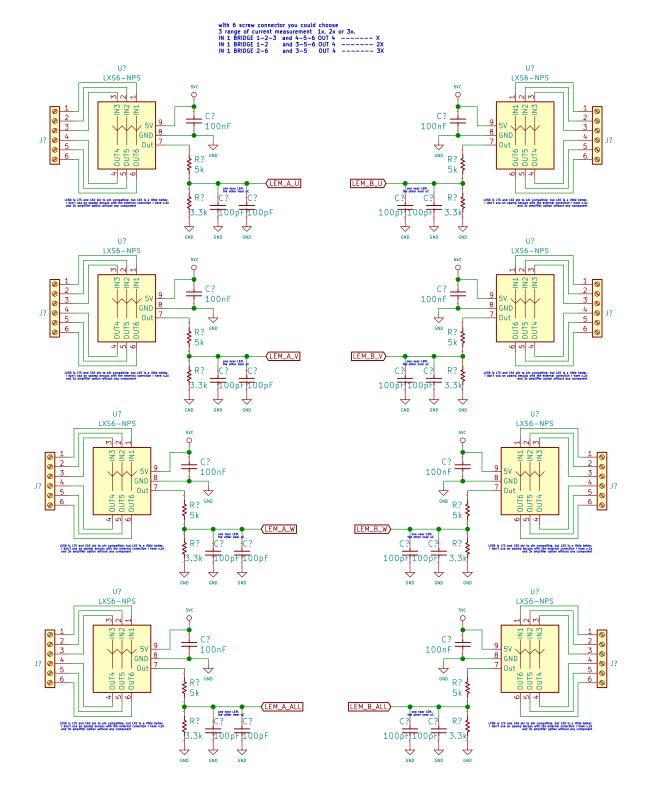


1 2	3 4 5	6 7 8
	U1_?B	
	MS320F28388DZWTS	
PWM_A_1H_C) (MCU_GPIOO) C8 GPIOO	GPI084 A11 (MCU_GPI084) (B00T2)	
PWM_A_1L_C (MCU_GPI01) GPI01	GPIO85 B11 (MCU_GPIO85)	
PWM_A_2H_C	GPI086 CI1 (MCU_GPI086) MCU_GPI087)	
A PWM_A_ZLC MCU_GPI04 C7 GPI04	GP1088 C6 (MCU_GP1088)	
PWM_A_3H_C	GPI089 A5 MCU_GPI090 ACU_GPI090	
PWM_B_1L_C	GPI091 B3 (MCU_GPI091)	
PWM_B_2H_C	GP1092 GP1093 B4 MCU_GP1093 MCU_GP1093	
PWM_B_3H_C) (MCU_GPI010)  B2 GPI010	GP1094 A3 (MCU_GP1094)	
PWM_B_3LC         MCU_GPI011         C1 GPI011           PWM_A_OFF_C         MCU_GPI012         GPI012	GPI095 C3 (MCU_GPI095) (MCU_GPI096)	
PWM_B_OFF_C) MCU_GPI013 D1 GPI013	GPIO97 AZ (MCU_GPIO97)	
MCU_GPI014 D2 GPI014 MCU_GPI015 D3 GPI015	GPI098 GPI099 GT (MCU_GPI099)	
MCU_GPI016 E1 GPI016	GPI0100 MCU_GPI0100	
MCU_GPI017	GPI0101 HZ MCU_GPI0101 MCU_GPI0102 MCU_GPI0102	
CAN_TX)	GPI0103 12 MCU_GPI0103	
MCU_GPI020 F2 GPI020 MCU_GPI021 GPI021	GPI0104 J3 (MCU_GPI0104) GPI0105 (ENET_MDC)	
RS485_TX	GPI0106	
B RS485_RX MCU_GP1023 K4 GP1023 K3 GP1024 K3 GP1024 K2 GP1024 K2 GP1025 K1 G	GPI0107 L4 (MCU_GPI0107) CPI0108 (ENET_PWDN)	
MCU_GPI025 K1 GPI025	GPI0108 N2 MCU_GPI0109 ENET_PWDN ENET_CRS MCU_GPI0109	
(MCU GPI027) GPI027	GPIO111 CT (MCU GPIO111) (ENET_RX_CLK)	
SCIA_RX	GPI0112 M3 (MCU_GPI0112) ENET_RX_DV	
\( \frac{\scia_Rx}{\scia_Flo28} \rightarrow \frac{\varphi11}{\scia_Flo29} \rightarrow \frac{\varphi11}{\tau}{\scia_Flo29} \rightarrow \frac{\varphi11}{\tau}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau} \rightarrow \frac{\varphi029}{\varphi11} \rightarrow \frac{\varphi11}{\tau} \ri	GPI0113 N4 (MCU_GPI0113) ENET_RX_ER N3 (MCU_GPI0114) ENET_RX_D0	
SHUNT_CLK	GPI0115 VIZ (MCU_GPI0115) (ENET_RX_D1) (MCU_GPI0116) (ENET_RX_D2)	
	GPI0117 MCU_GPI0117 (ENET_RX_D3)	
RUN_LEDD (MCU_GPI035) U14 GPI034 RUN_LED1 (MCU_GPI035) V14 GPI035	GPI0118 T15 (MCU_GPI0118) ENET_TX_EN (GPI0119) (ENET_RST)	
SHUNT_A_U_DOUT) (MCU_GPI036) VIO GPI036	GPI0120 MCU_GPI0120 (ENET_TX_CLK)	
	GPI0121 WID WCU_GPI0121 ENET_IX_DO MCU_GPI0122 ENET_IX_DI	
	GPI0123 GPI0124 V8 (MCU_GPI0123) (ENET_TX_D2) TO (MCU_GPI0124) (ENET_TX_D3)	
MCU_GPI040 V17 GPI040 GPI041 GPI041	GPI0125 (MCU_GPI0125)	
MCU_GPI042	GPI0126 MCII GPI0126	
MCU_GPI044 K18 GPI044	GPI0127 GPI0128 T10 MCU_GPI0128	
MCU_GPI045	GPI0129	
MCU_GPI047 E18 GPI047 GPI047	GPI0131 V10 (MCU_GPI0131) (EXA1_TX_CEN) W18 (MCU_GPI0131) (EXA1_TX_CEN)	
MCU_GPI048 R17 GPI048 R17 GPI049 R18 GPI050 GPI050	GPI0132 WLS (MCU_GPI0132) (ECAT1_TX_D1) (G18) (MCU_GPI0133)	
QEPO_A\ \( \text{MCU_GPI050} \\ \text{R18} \\ \text{GPI050} \\	GPI0134 V18 (MCU_GPI0134) (ECAT1_TX_D2)	
QEPO_B	GPI0135 (MCU_GPI0135) (ECAT1_TX_D3) (FCAT1_RX_DV)	
$OFPO_1$ $MCH_{GPIO53}$ $\Gamma^{\pm/}_{GPIO53}$	GPI0137 (MCU_GPI0137) (ECAT1_RX_CLK) T19 (MCU_GPI0138) (ECAT1_RX_ER)	
QEP1_B   MCU_GP1055   P19   GP1055	GPI0139 N19 (MCU GPI0139) (ECAT1 RX DO	
MCU_GPI055   N16   GPI056   N18   GPI056   N18   GPI057   N17   GPI057   N17   GPI058   N17	GP10140 H12 (MCU_SP10140) (ECAT_RX_D) (MCU_SP10140) (ECAT_RX_D)	
ENDATO_MISO	GPI0143 F18 (MCU_GPI0143) (ECATO_R)_LEDO (F17) (MCU_GPI0144) (ECAT1_R)_LEDO (F17) (MCU_GPI0144) (ECAT1_R)_LEDO	
ENDATO_CS	GPIO145 5 6 6 CMCU GPIO145 (ECAT_LEDO)	
MCU_GPI062 J1/ GPI062  P [ENDAT1_MOSI] (MCU_GPI063) J16 GPI063	GPI0146 D17 (MCU_CPI0146) (ECAT_LEDI)	
D   ENDAT1_MOSI)   MCU_GPI063   J10   GPI063   L17   GPI064   L17   GPI064   K16   GPI065   K16   GPI065   K16   GPI065   K16   GPI065	GPI0148	
ENDATI_CS) (MCU_GPI066) DIA GPI066	GPI0150 トラナラ・・・・・ (MCU_GPI0150)	
MCU_GPI067 B19 GPI067 MCU_GPI068 C18 GPI068	CDIO152 VIJ MCII CDIO152 FEAT MDC	
MCU_GPI059 B18 GPI059 A17 GPI070	GPI0152 GPI0153 GPI0154  GPI0154  GPI0154  GPI0154  GPI0154  GPI0155  GPI0154  GPI0155  GPI0154  GPI0155  GPI0154  GPI0155  GPI01	
MCU_GPI070 B17 GPI070 GPI071 GPI071	GPI0154 B12 MCU_GPI0154 ENET_CAT_XII GPI0155 D12 MCU_GPI0155 ECAT_RST	
B00T1) (MCU_GPI072) B16 GPI072 A16 GPI072	GPI0156 D12 (MCH GPI0156) ECATO IX FNI	
MCU_GPI073 A10 GPI073 MCU_GPI074 GPI074	GPI0157 C10 (MCU_GPI0157) (ECATO_TX_CLK) GPI0158 D10 (MCU_GPI0158) (ECATO_TX_DI) GPI0159 D10 (MCU_GPI0159) (ECATO_TX_DI)	
MCU_GPI074 C1/ MCU_GPI075 D16 MCU_GPI075 C16	(1PI()159 (MCU GPIO159) (ECATO_TX_D1)	
MCU_GPI076 C16 GPI076 MCU_GPI077 A15 GPI077	GPI0161 COMMUNICATION (MCU_GPI0161) (ECATO_TX_D3)	
MCU_GPI078 B15 GPI078 C15 GPI079	GPI0162 (MCU_GPI0162) (ECATO_RX_DV)	
MCU_GPI079 C15 GPI079 MCU_GPI080 D15 GPI080	GP10164 B8 (MCU_GP10164) (ECATO_RX_ER)	
MCU_GPI081 A14 GPI081 B14 GPI082 C14 GPI082	GPI0165 C5 (MCU_GPI0165) (ECATO_RX_DO) GPI0166 D5 (MCU_GPI0166) (ECATO_RX_DI)	
E MCU_GPI083 C14 GPI083	GPI0167 ST (MCU GPI0167) (ECATO_RX_D2)	
	GPI0168 D4 (MCU_GPI0168) (ECATO_RX_D3	
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		Pablo Slavkin <b>dci</b>
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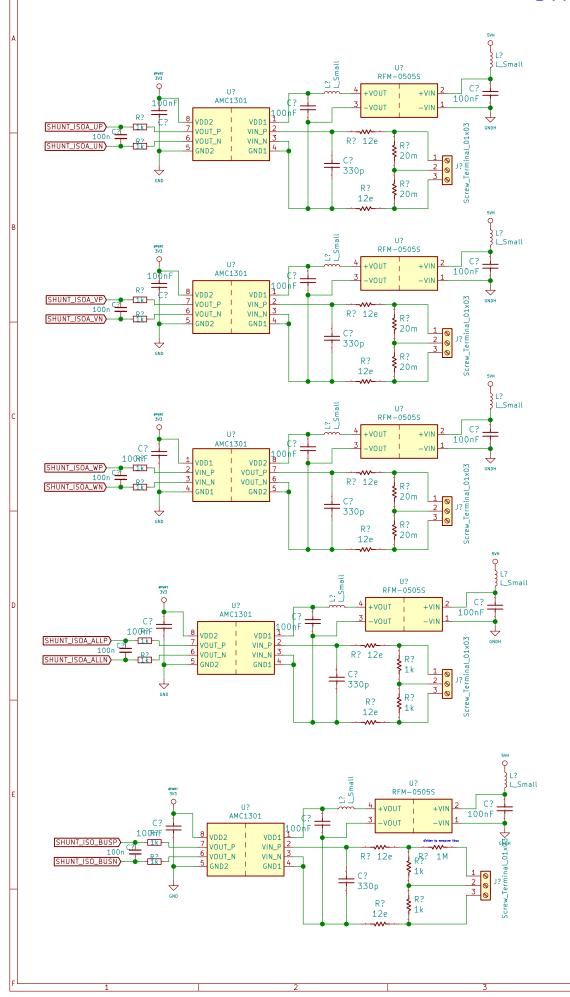




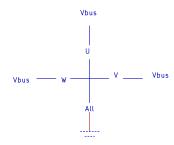
## 8 LEM's current measurement U+V+W+ALL x 2



### SHUT -> ADC -> SD -> DAC



# Current of 3 phases + sum current + Vbus voltage

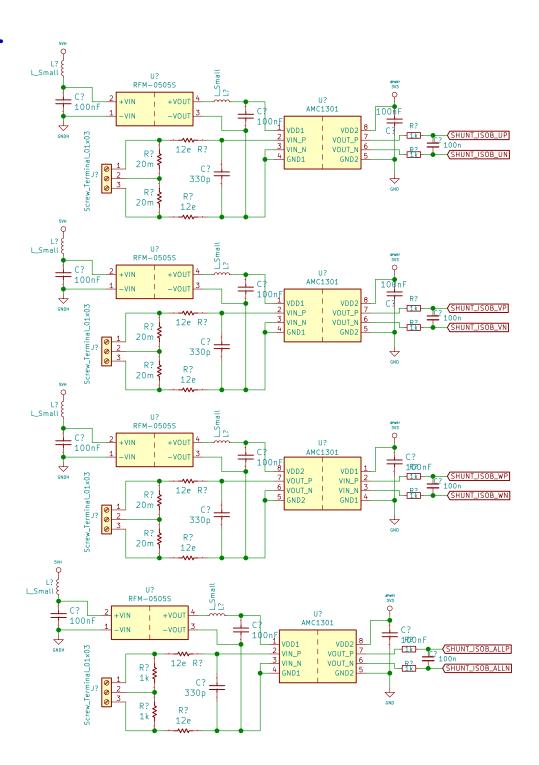


with 3 screw connector you could choose 3 range of current measurement to be at 0.25v scale 1x, 2x or 4x.

1-3 ----- X

1-2 or 2-3 ----- 2X

1-2 and 1-3 ----- 4X



Pablo Slavkin

dci

Sheet: /shunt isolated/
File: shunt\_iso.sch

Title: Shunt isolated

Size: A3 Date: 25 10 2019 Rev: 1.0

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