Sheet: PDSP-I4-08-PSU

File: PDSP-I4-08-PSU.sch

Sheet: PDSP-I4-08-PREAMP-IN

File: PDSP-I4-08-PREAMP-IN.sch

Sheet: PDSP-I4-08-PREAMP-OUT

File: PDSP-I4-08-PREAMP-OUT.sch

Sheet: PDSP-I4-08-ESP32

File: PDSP-I4-08-ESP32.sch

Sheet: PDSP-I4-08-DSP

File: PDSP-I4-08-DSP.sch

Sheet: PDSP-I4-08-CONNECTOR_UI_CONFIG

File: PDSP-I4-08-CONNECTOR_UI_CONFIG.sch

1 1 H1
Trou_3.2mm_6mm_metal

1 1 H2
Trou_3.2mm_6mm_metal

1 1 H3
Trou_3.2mm_6mm_metal

1 1 H4
Trou_3.2mm_6mm_metal

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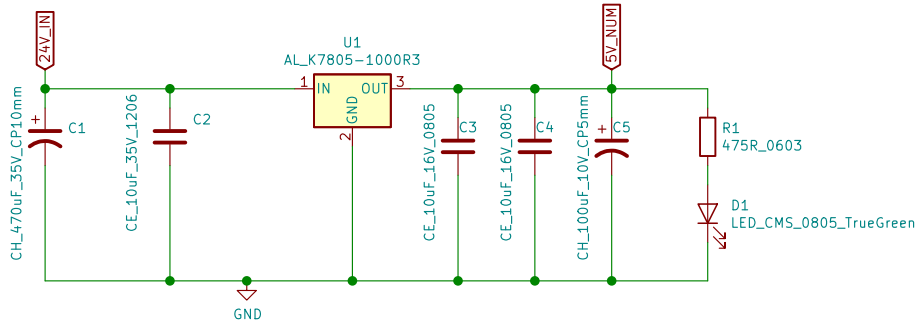
Sheet: /
File: PDSP-I4-08.sch

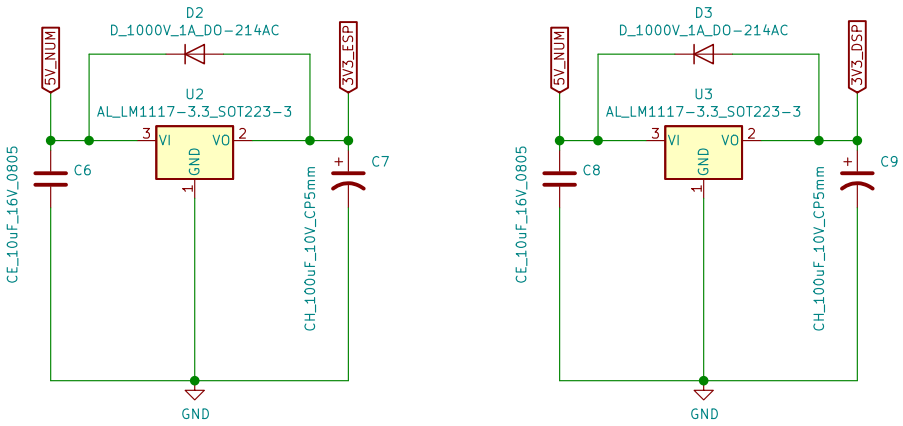
Title: PDSP-I4-08

Size: A4	Date: 2021-11-02	**Rev: V01.00**
KiCad E.D.A. kicad (5.1.5)-3		Id: 1/7

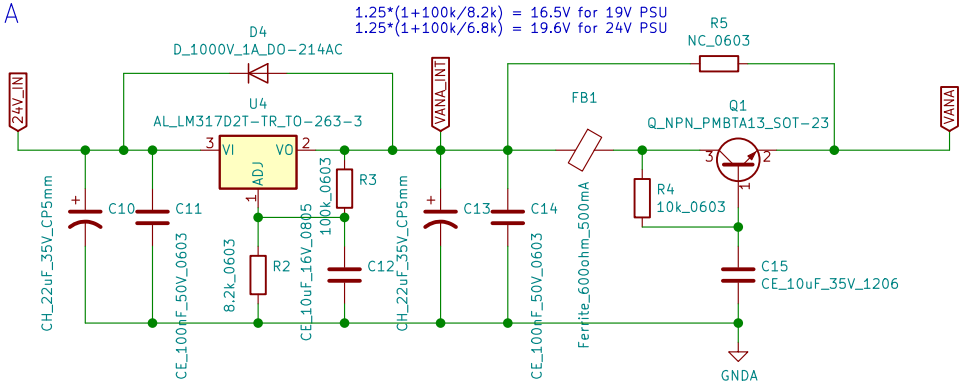
From 24V num to 5V num

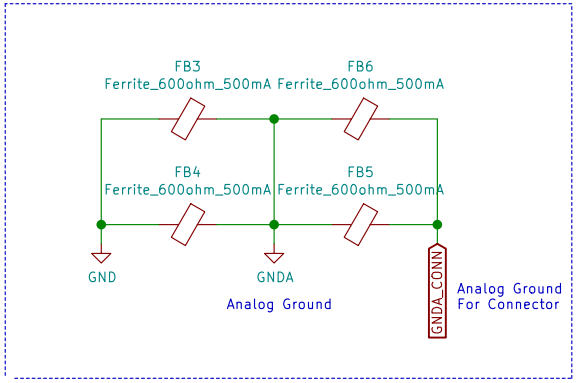


From 5V Num to 3.3V DSP & ESP32

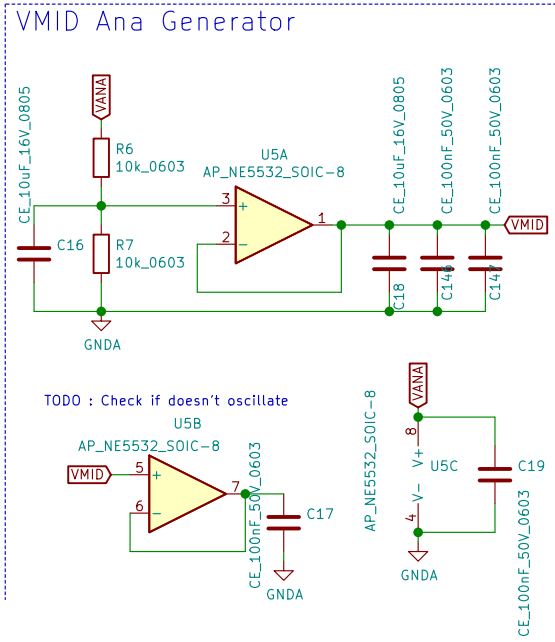


VANA





VMID Ana Generator



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Sheet: /PDSP-14-08-PSU/
File: PDSP-14-08-PSU.sch

Title: PDSP-14-08

Size: A4	Date: 2021-11-02	**Rev: V01.00**
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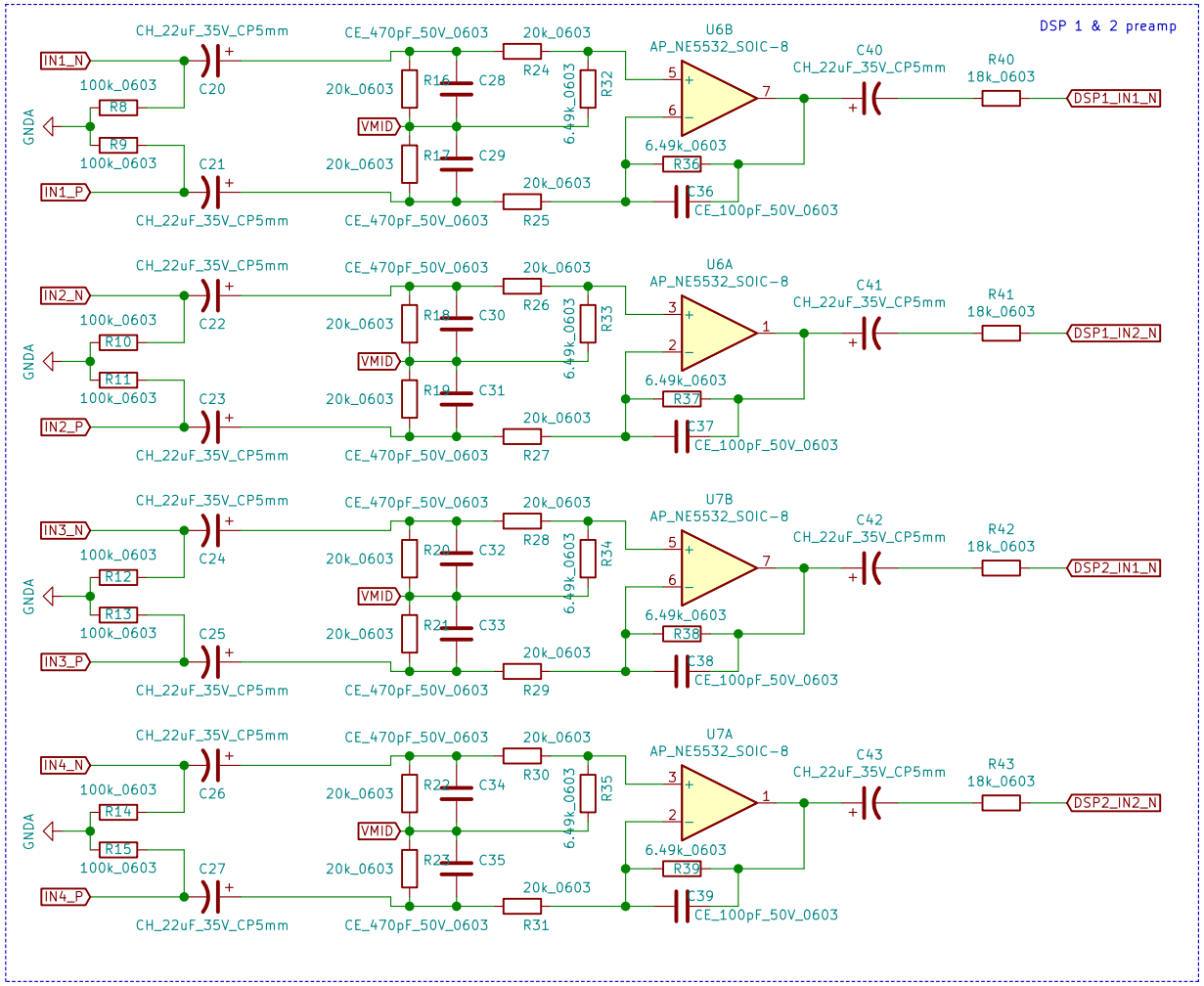

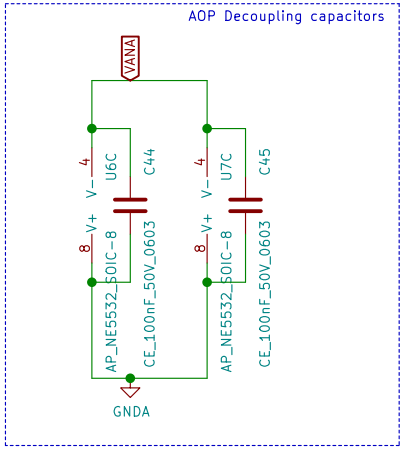

For 18dBu input :
DSP : 2VRMS IN with 18k ((18+2)/100µA = 2Vrms) = 8.239dBu
Need 18dBu = 6.1528V input for 2V, so /3.0764 (-9.761dB)
=> 20k/6.49k = 3.08166 = 9.776dB : OK, 0.015dB higher

For 12dBu input :
DSP : 2VRMS IN with 18k ((18+2)/100µA = 2Vrms)
Need 3.08V input for 2V, so /1.54
=> 10k/6.49k = 1.54, perfect

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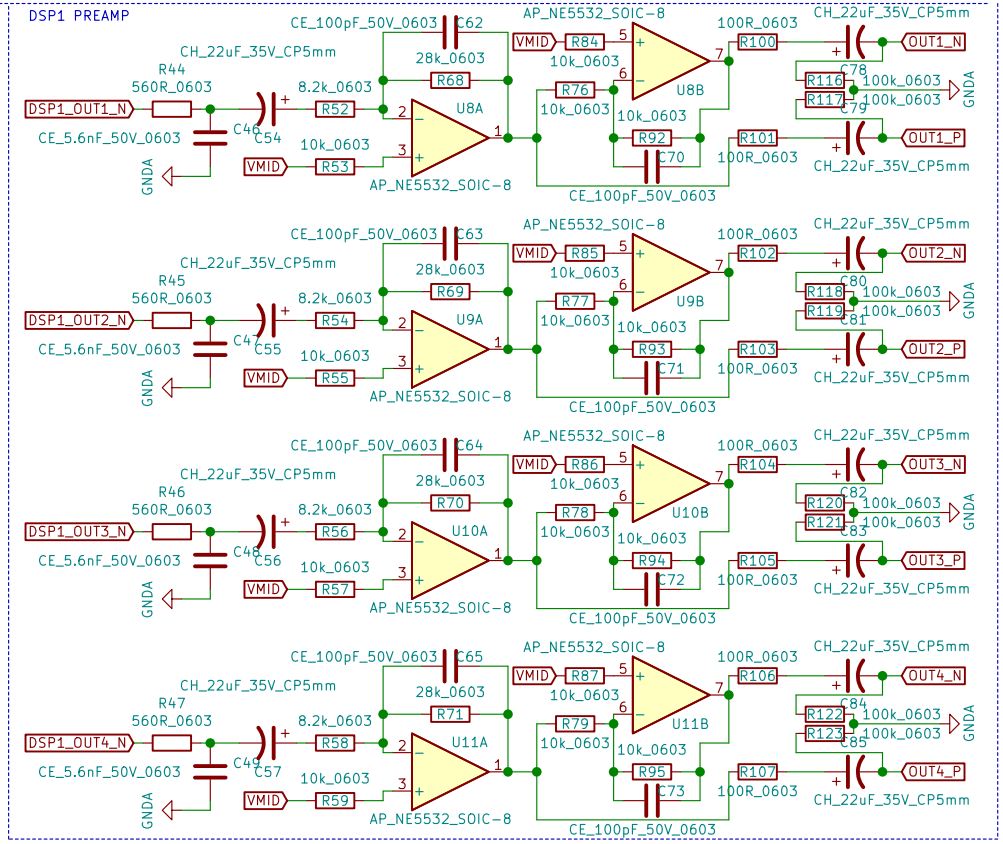
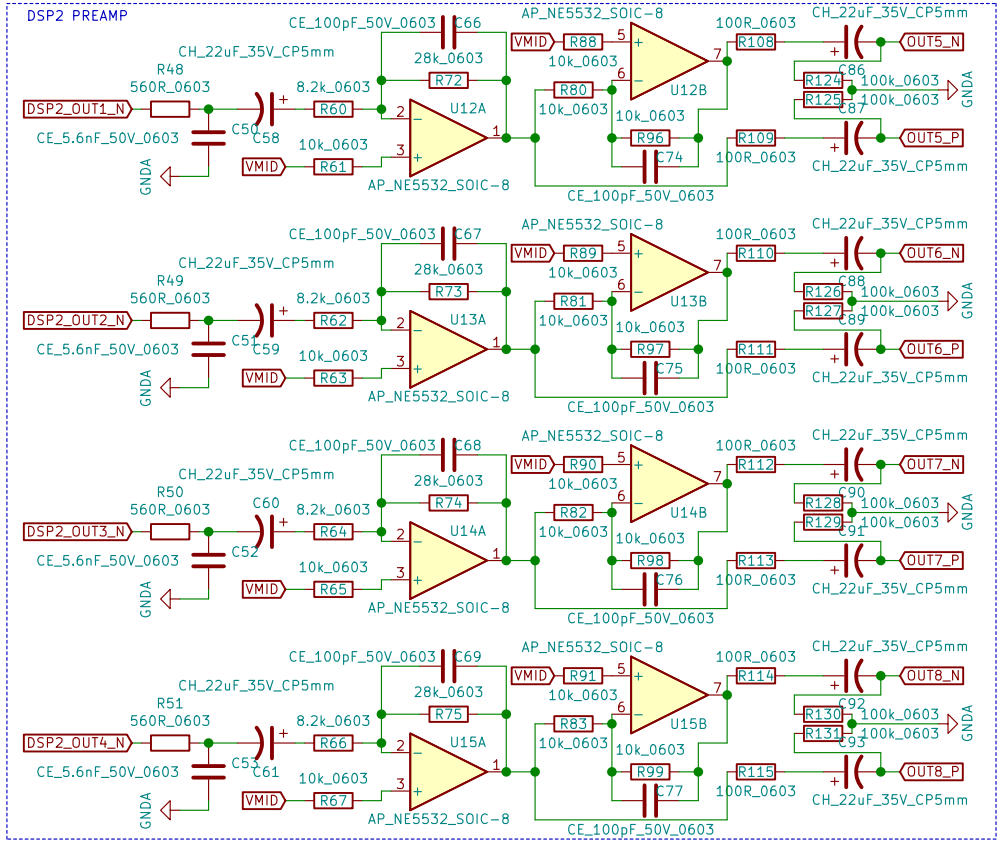
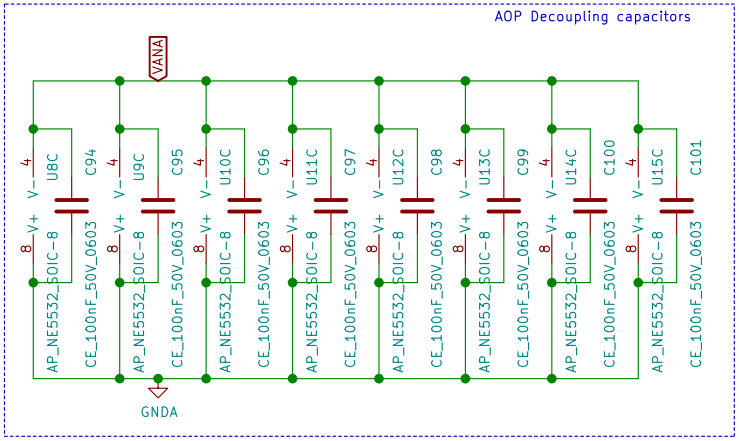
Sheet: /PDSP-I4-08-PREAMP-IN/
File: PDSP-I4-08-PREAMP-IN.sch

Title: PDSP-I4-08

Size: A4	Date: 2021-11-02	**Rev: V01.00**
KiCad E.D.A. kicad (5.1.5)-3		Id: 3/7







18dBu OUTPUT :
DAC OUT = 0.9Vrms = 1.3dBu
=> Requires +10.7dB to reach 18dBu (with 6dB sym) = *3.4277
=> 28k/8.2k gives *3.4146 = 10.667dB. OK, 0.03dB lower

(12dBu OUTPUT :
DAC OUT = 0.9Vrms = 1.3dBu
=> Requires 4.7dB to reach 12dBu (with 6dB sym) = *1.717
=> 8.2k / 4.7k gives *1.745 = 4.83dB. OK, 0.15dB higher, to be removed in DSP)

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Sheet: /PDSP-I4-08-PREAMP-OUT/
File: PDSP-I4-08-PREAMP-OUT.sch

Title: PDSP-I4-08

Size: A4	Date: 2021-11-02	**Rev: V01.00**
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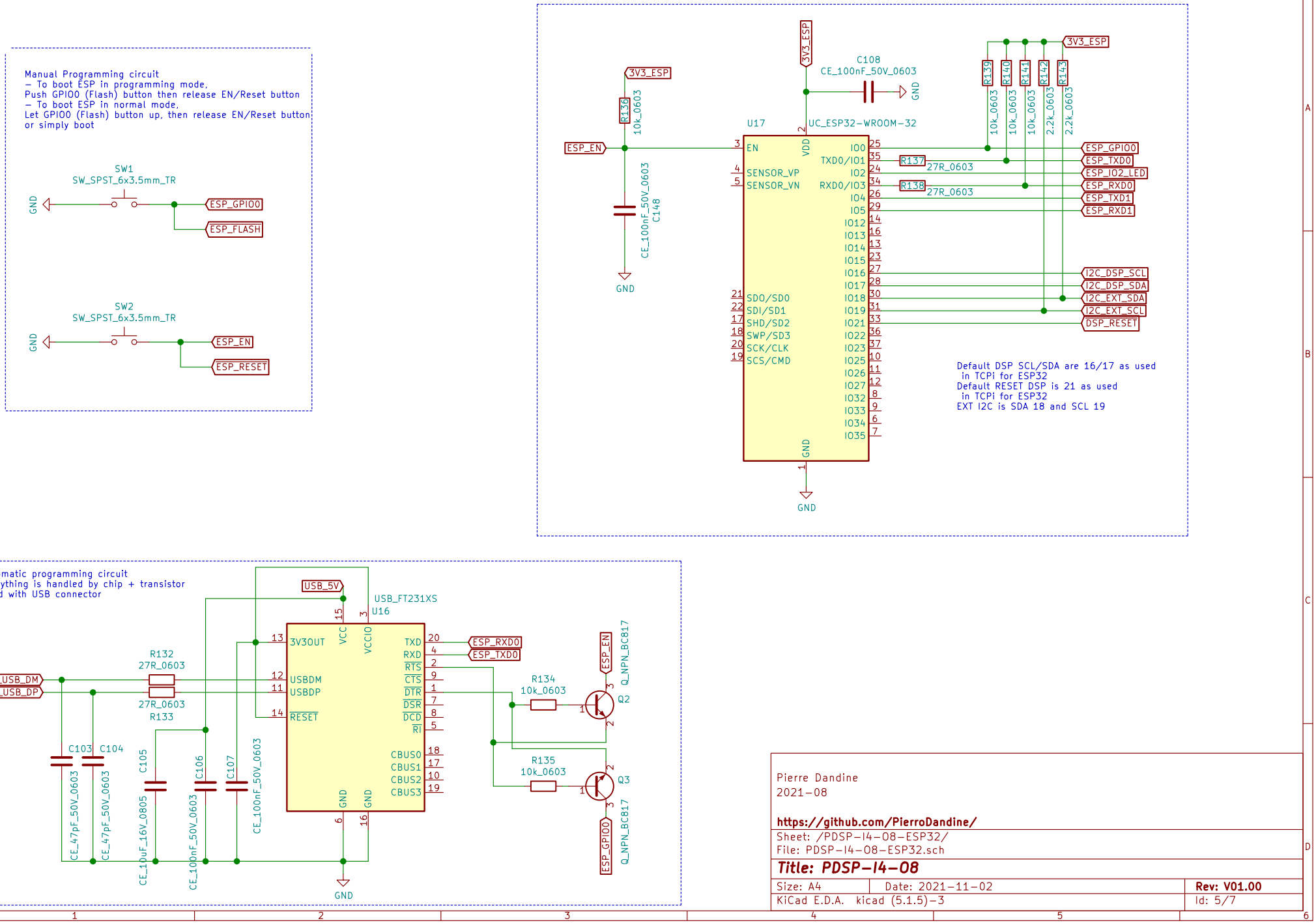
Manual Programming circuit
– To boot ESP in programming mode,
Push GPIO0 (Flash) button then release EN/Reset button
– To boot ESP in normal mode,
Let GPIO0 (Flash) button up, then release EN/Reset button
or simply boot
SW1
SW_SPST_6x3.5mm_TR
GND
ESP_GPIO0
ESP_FLASH
SW2
SW_SPST_6x3.5mm_TR
GND
ESP_EN
ESP_RESET
3V3_ESP
R136
10k_0603
ESP_EN
C148
CE_100nF_50V_0603
GND
C108
CE_100nF_50V_0603
GND
U17
UC_ESP32-WROOM-32
EN
VDD
SENSOR_VP
SENSOR_VN
SDO/SD0
SDI/SD1
SHD/SD2
SWP/SD3
SCK/CLK
SCS/CMD
GND
IO0
TXD0/IO1
IO2
RXD0/IO3
IO4
IO5
IO12
IO13
IO14
IO15
IO16
IO17
IO18
IO19
IO21
IO22
IO23
IO25
IO26
IO27
IO32
IO33
IO34
IO35
R137
27R_0603
R138
27R_0603
R139
R140
R141
R142
R143
10k_0603
2.2k_0603
ESP_GPIO0
ESP_TXD0
ESP_IO2_LED
ESP_RXD0
ESP_TXD1
ESP_RXD1
I2C_DSP_SCL
I2C_DSP_SDA
I2C_EXT_SDA
I2C_EXT_SCL
DSP_RESET
Default DSP SCL/SDA are 16/17 as used
in TCPi for ESP32
Default RESET DSP is 21 as used
in TCPi for ESP32
EXT I2C is SDA 18 and SCL 19
Automatic programming circuit
Everything is handled by chip + transistor
Used with USB connector
USB_5V
USB_FT231XS
U16
3V3OUT
VCC
VCCIO
USBDM
USBDP
RESET
TXD
RXD
RTS
CTS
DTR
DSR
DCD
RI
CBUS0
CBUS1
CBUS2
CBUS3
GND
FT_USB_DM
FT_USB_DP
R132
27R_0603
R133
27R_0603
C103
C104
C105
C106
C107
CE_47pF_50V_0603
CE_47pF_50V_0603
CE_10uF_16V_0805
CE_100nF_50V_0603
CE_100nF_50V_0603
ESP_RXD0
ESP_TXD0
R134
10k_0603
R135
10k_0603
ESP_EN
Q_NPN_BC817
Q2
Q3
ESP_GPIO0
Q_NPN_BC817
GND
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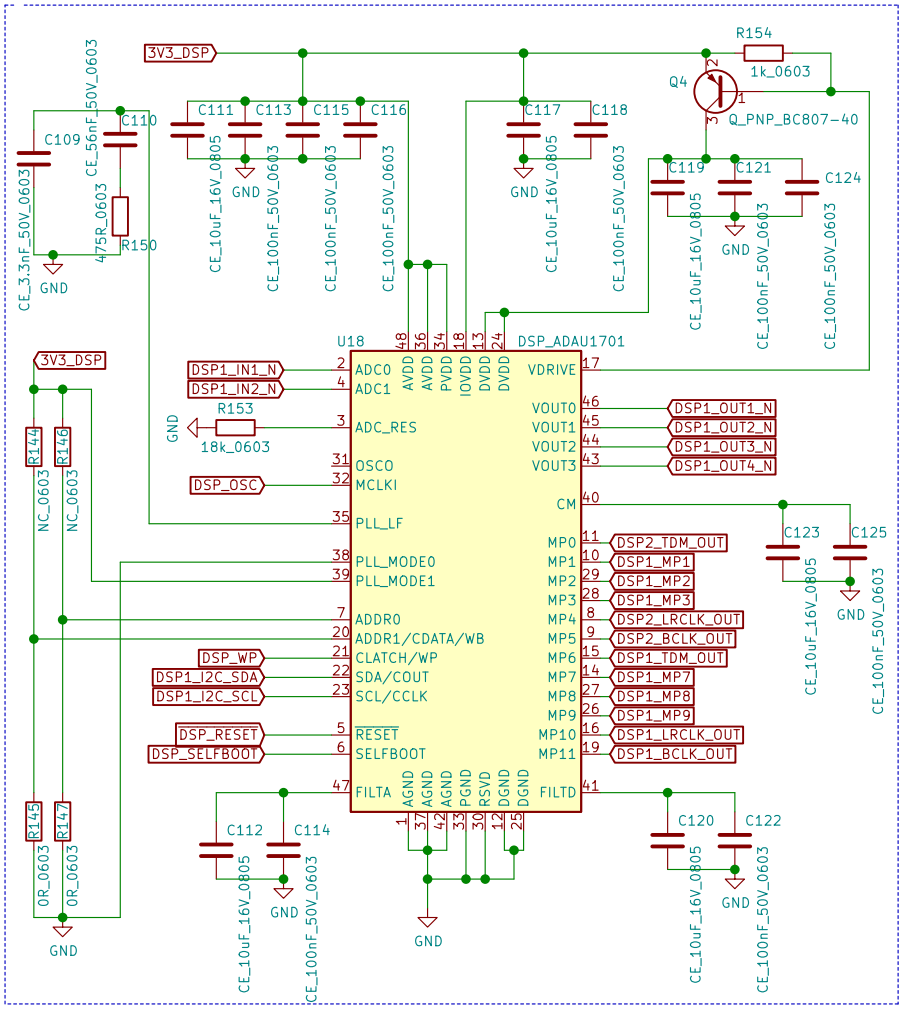
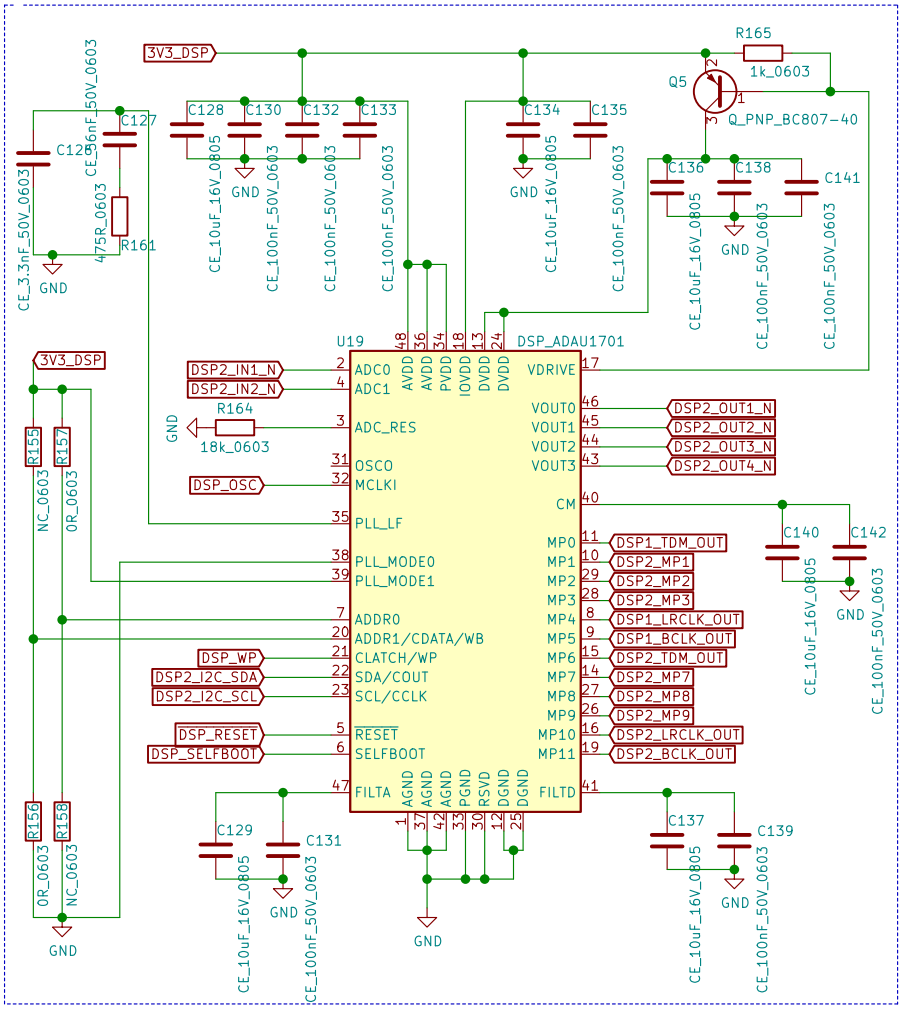
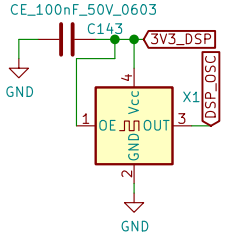
Sheet: /PDSP-I4-08-ESP32/
File: PDSP-I4-08-ESP32.sch
Title: PDSP-I4-08
Size: A4
Date: 2021-11-02
Rev: V01.00
KiCad E.D.A. kicad (5.1.5)-3
Id: 5/7



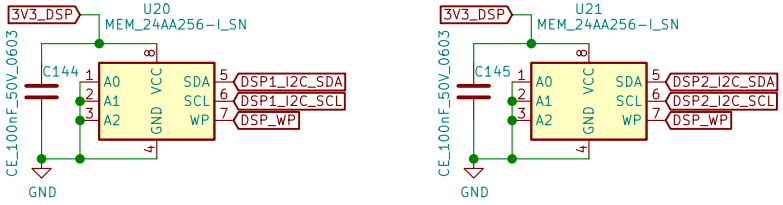


Oscillator for both DSP



OSC_CMS_12.288MHz_3.3V_5x3.2mm

EEPROM for both DSP (Optionnal, without ESP32)



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Sheet: /PDSP-I4-08-DSP/
File: PDSP-I4-08-DSP.sch

Title: PDSP-I4-08

Size: A4	Date: 2021-11-02	**Rev: V01.00**
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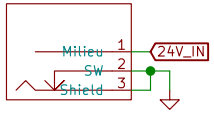
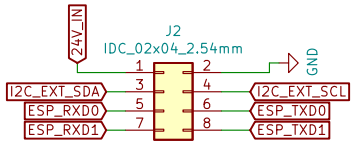
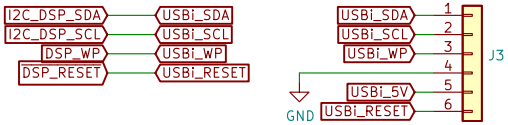
PSU IN
Can be removed for direct wier soldering

J1
Embase_DC_5.5x2.1-2.5mm_TR_CD



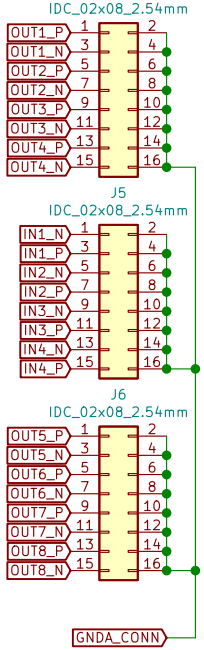


Extension connector for front I/O
For now, just another i2c, 24V and UART to flash ESP32
2 extra pins for future use (other UART ??)



USBi connection using clone WONDOM DB-DP11219 pinout

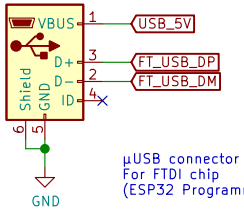
AUDIO EXT CONN



IN polarity
is inverted to
have same XLR
interface board
in mirror

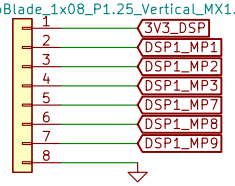
Specific GND to avoid noise

J8
USB_B_Micro_Vertical_TR

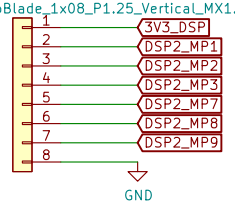


µUSB connector
For FTDI chip
(ESP32 Programming)

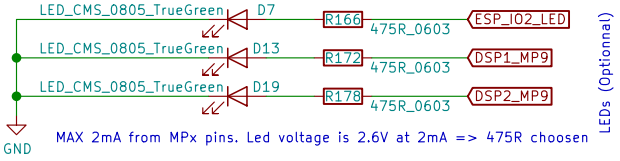
J9
Molex_PicoBlade_1x08_P1.25_Vertical_MX1.25



J10
Molex_PicoBlade_1x08_P1.25_Vertical_MX1.25



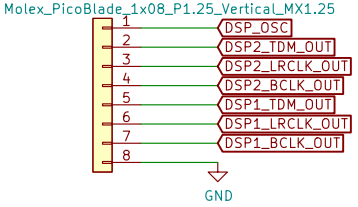
Header for MP pins (Optionnal)
To be used if required external LED, IO, POT etc...
(Remove internal LED then)



MAX 2mA from MPx pins. Led voltage is 2.6V at 2mA => 475R choosen

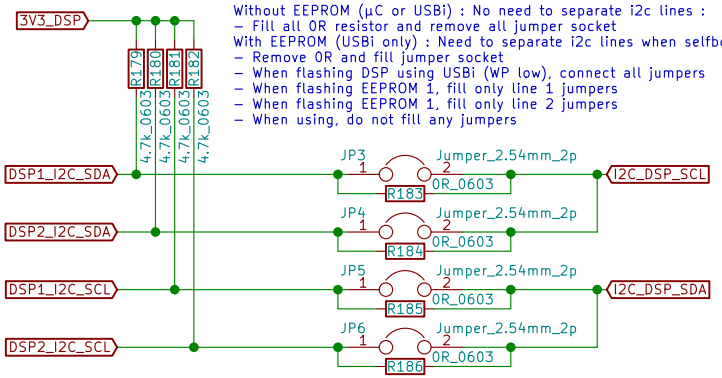
I2S on MP in case of require 2 boards = 4 DSP on same I2S bus

J7
Molex_PicoBlade_1x08_P1.25_Vertical_MX1.25

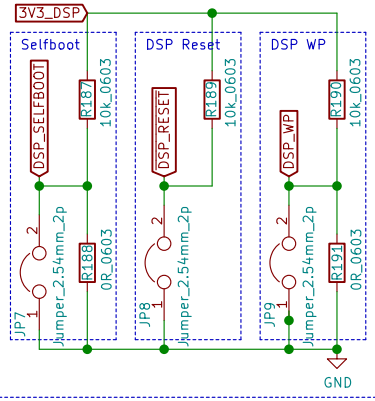


1 = DSP OSC (not required)
2 = DSP1 MP0 / DSP2 MP6
3 = DSP1 MP4 / DSP2 MP10
4 = DSP1 MP5 / DSP2 MP11
5 = DSP1 MP6 / DSP2 MP0
6 = DSP1 MP10 / DSP2 MP4
7 = DSP1 MP11 / DSP2 MP5

Pull-Up supposed to be 2.2k, but sometimes 2 in //, sometimes not



Without EEPROM (µC or USBi) : No need to separate i2c lines :
- Fill all 0R resistor and remove all jumper socket
With EEPROM (USBi only) : Need to separate i2c lines when selfboot
- Remove 0R and fill jumper socket
- When flashing DSP using USBi (WP low), connect all jumpers
- When flashing EEPROM 1, fill only line 1 jumpers
- When flashing EEPROM 1, fill only line 2 jumpers
- When using, do not fill any jumpers



If selfboot with EEPROM :
- On WP, connect 10k pull-up, and jumper down (used to flash DSP & EEPROM)
- On SELFBOOT, connect 10k pull-up (no jumper required)
If µC control :
- Connect 0R down on WP and SELFBOOT (no jumper required)
Note :
- WP of both DSP are connected together to have only one jumper
- On RESET, connect jumper down and 10k pull-up to be able to reset both DSP

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Title: PDSP-I4-08

Size: A4	Date: 2021-11-02	Rev: V01.00
KiCad E.D.A. kicad (5.1.5)-3		Id: 7/7