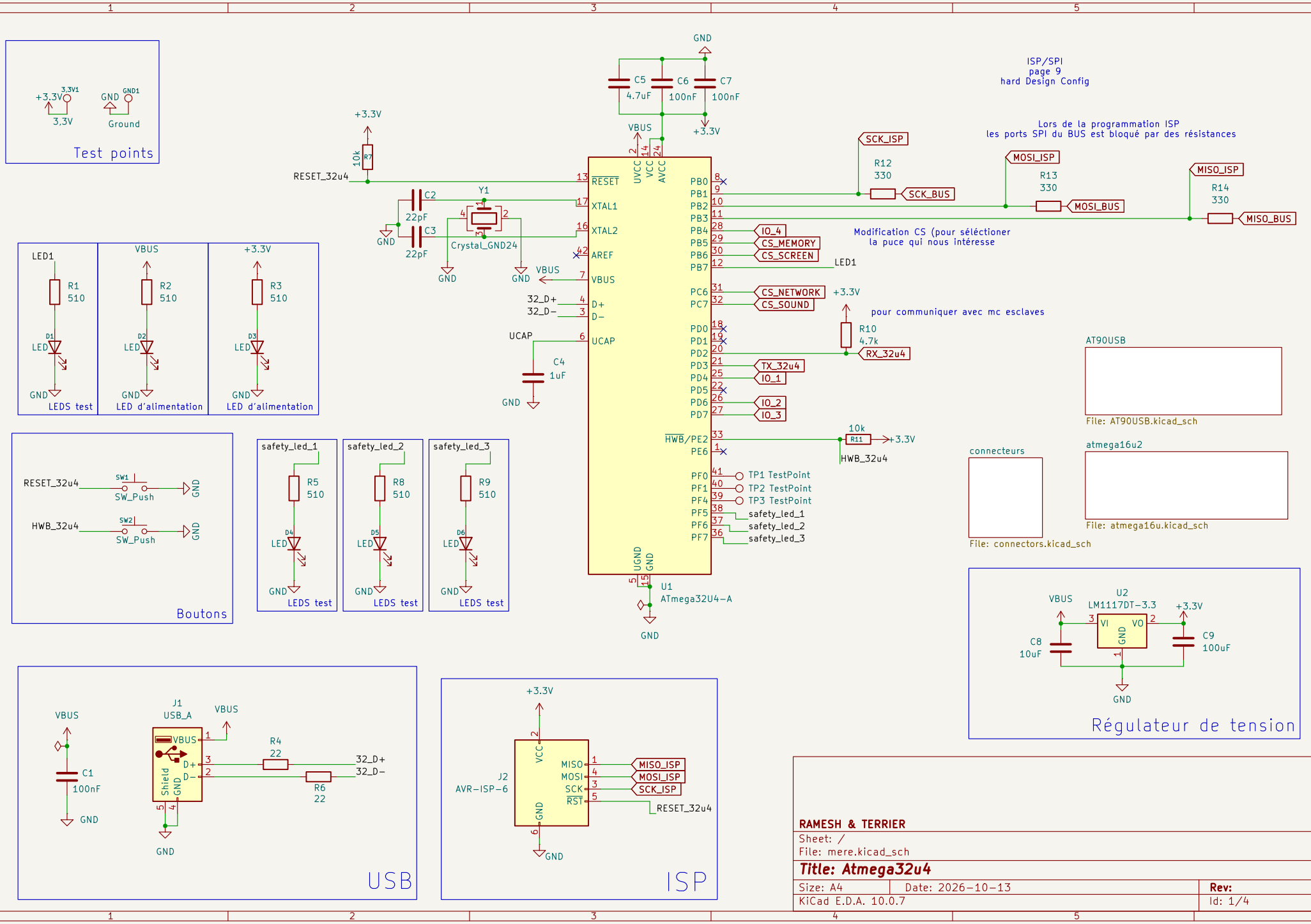
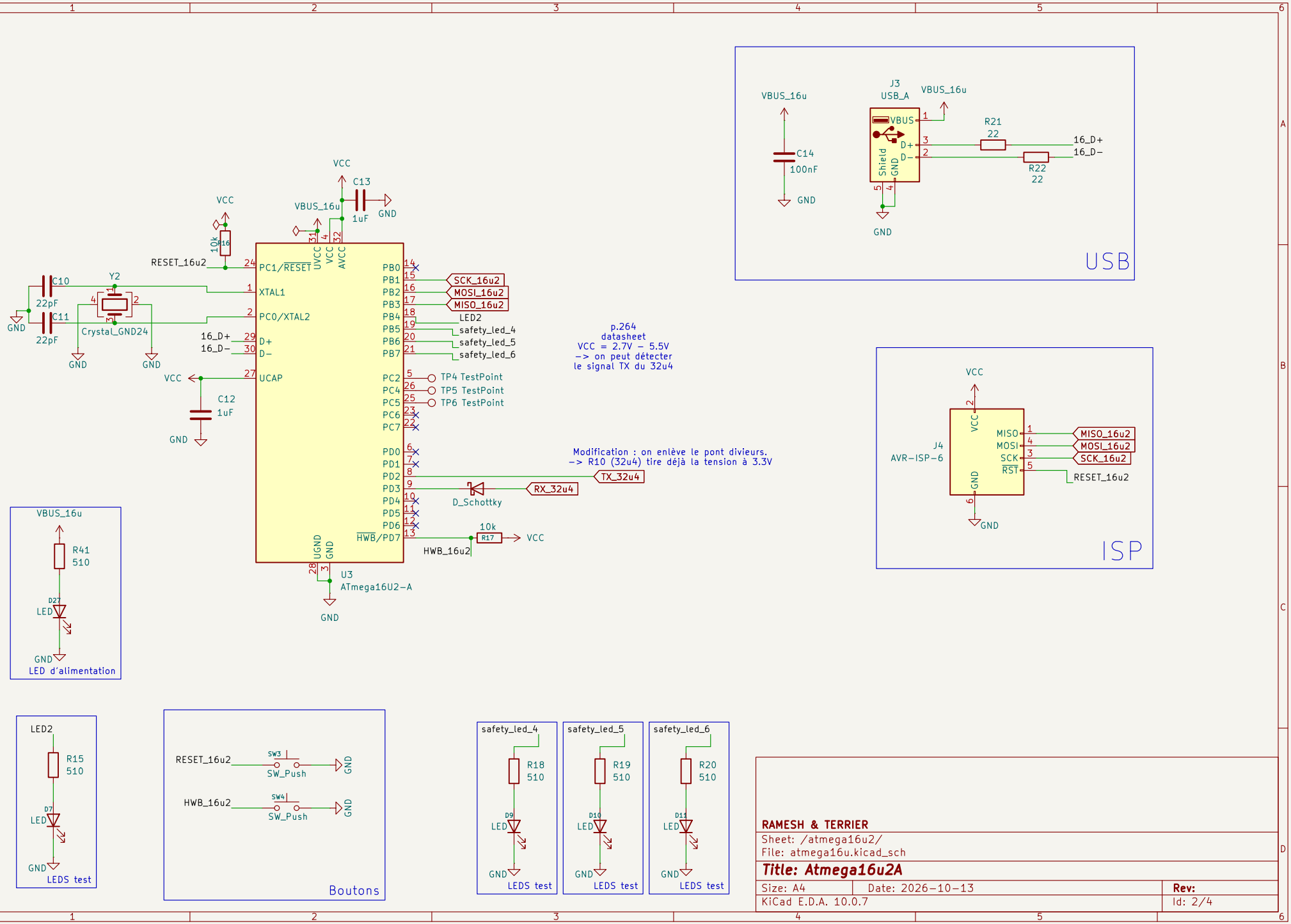
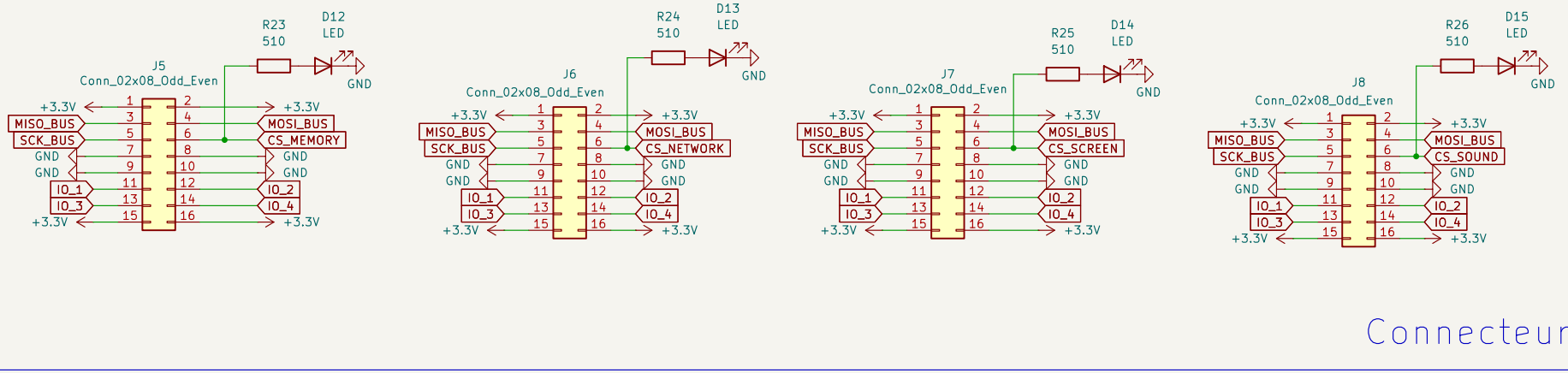

Test points
+3.3V
3,3V
GND
Ground
ISP/SPI
page 9
hard Design Config
Lors de la programmation ISP
les ports SPI du BUS est bloqué par des résistances
Modification CS (pour séléctioner
la puce qui nous intéresse
pour communiquer avec mc esclaves
LED1
LEDS test
LED d'alimentation
Boutons
RESET_32u4
HWB_32u4
SW_Push
safety_led_1
safety_led_2
safety_led_3
AT90USB
File: AT90USB.kicad_sch
connecteurs
File: connectors.kicad_sch
atmega16u2
File: atmega16u.kicad_sch
ATmega32U4-A
LM1117DT-3.3
Régulateur de tension
USB
ISP
AVR-ISP-6
RAMESH & TERRIER
Sheet: /
File: mere.kicad_sch
Title: Atmega32u4
Size: A4
Date: 2026-10-13
Rev:
KiCad E.D.A. 10.0.7
Id: 1/4

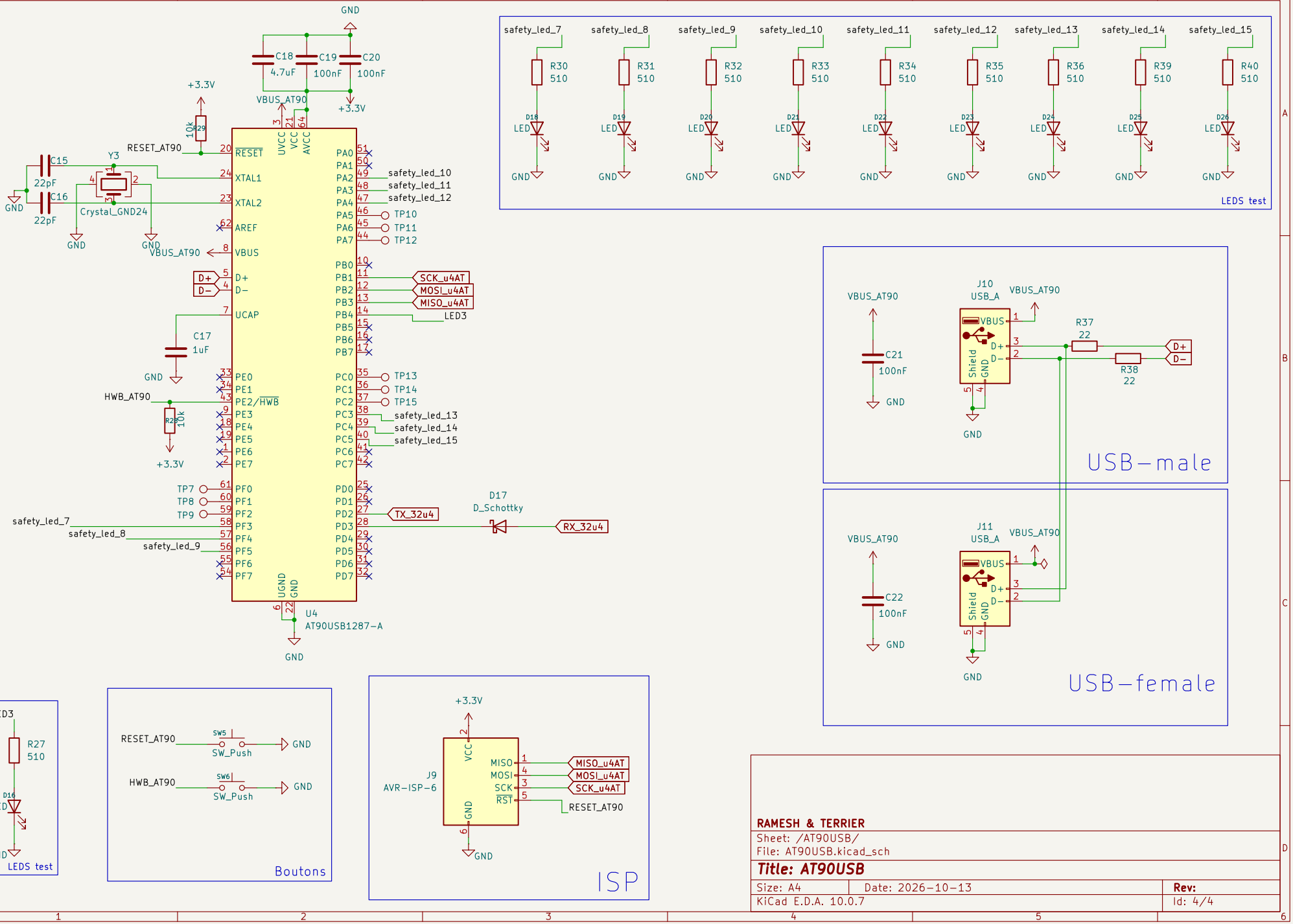

VBUS_16u
C14
100nF
GND
J3
USB_A
VBUS_16u
VBUS
D+
D−
Shield
GND
R21
22
R22
22
16_D+
16_D−
USB
VCC
C13
1uF
GND
VBUS_16u
R16
10k
RESET_16u2
PC1/RESET
UVCC
VCC
AVCC
C10
22pF
C11
22pF
Y2
Crystal_GND24
XTAL1
PC0/XTAL2
16_D+
16_D−
D+
D−
UCAP
C12
1uF
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
SCK_16u2
MOSI_16u2
MISO_16u2
LED2
safety_led_4
safety_led_5
safety_led_6
PC2
PC4
PC5
PC6
PC7
TP4 TestPoint
TP5 TestPoint
TP6 TestPoint
PD0
PD1
PD2
PD3
PD4
PD5
PD6
HWB/PD7
TX_32u4
RX_32u4
D_Schottky
10k
R17
HWB_16u2
UGND
GND
U3
ATmega16U2-A
p.264
datasheet
VCC = 2.7V – 5.5V
-> on peut détecter
le signal TX du 32u4
Modification : on enlève le pont divieurs.
-> R10 (32u4) tire déjà la tension à 3.3V
J4
AVR-ISP-6
MISO
MOSI
SCK
RST
MISO_16u2
MOSI_16u2
SCK_16u2
RESET_16u2
ISP
VBUS_16u
R41
510
D27
LED
GND
LED d'alimentation
LED2
R15
510
D7
LEDS test
RESET_16u2
HWB_16u2
SW3
SW4
SW_Push
Boutons
safety_led_4
safety_led_5
safety_led_6
R18
R19
R20
510
D9
D10
D11
LEDS test
RAMESH & TERRIER
Sheet: /atmega16u2/
File: atmega16u.kicad_sch
Title: Atmega16u2A
Size: A4
Date: 2026-10-13
Rev:
KiCad E.D.A. 10.0.7
Id: 2/4

Modification des CS

Brancher leds sur CS pour voir transfert ?



RAMESH & TERRIER		
Sheet: /connecteurs/ File: connectors.kicad_sch		
Title: Connectors		
Size: A4	Date: 2026-10-17	**Rev:**
KiCad E.D.A. 10.0.7		Id: 3/4


GND
C18
4.7uF
C19
100nF
C20
100nF
+3.3V
VBUS_AT90
+3.3V
10k
R29
RESET_AT90
C15
22pF
Y3
C16
22pF
Crystal_GND24
GND
GND
VBUS_AT90
D+
D−
C17
1uF
GND
HWB_AT90
R28
10k
+3.3V
TP7
TP8
TP9
safety_led_7
safety_led_8
safety_led_9
U4
AT90USB1287−A
GND
RESET
XTAL1
XTAL2
AREF
VBUS
D+
D−
UCAP
PE0
PE1
PE2/HWB
PE3
PE4
PE5
PE6
PE7
PF0
PF1
PF2
PF3
PF4
PF5
PF6
PF7
UVCC
VCC
AVCC
UGND
GND
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
PC0
PC1
PC2
PC3
PC4
PC5
PC6
PC7
PD0
PD1
PD2
PD3
PD4
PD5
PD6
PD7
safety_led_10
safety_led_11
safety_led_12
TP10
TP11
TP12
SCK_u4AT
MOSI_u4AT
MISO_u4AT
LED3
TP13
TP14
TP15
safety_led_13
safety_led_14
safety_led_15
TX_32u4
RX_32u4
D17
D_Schottky
safety_led_7
safety_led_8
safety_led_9
R30 510
R31 510
R32 510
R33 510
R34 510
R35 510
R36 510
R39 510
R40 510
D18 LED
D19 LED
D20 LED
D21 LED
D22 LED
D23 LED
D24 LED
D25 LED
D26 LED
LEDS test
C21
100nF
J10
USB_A
R37
22
R38
22
USB−male
C22
100nF
J11
USB_A
USB−female
LED3
R27
510
D16
LED
LEDS test
RESET_AT90
SW5
SW_Push
HWB_AT90
SW6
SW_Push
Boutons
J9
AVR−ISP−6
MISO
MOSI
SCK
RST
ISP
RAMESH & TERRIER
Sheet: /AT90USB/
File: AT90USB.kicad_sch
Title: AT90USB
Size: A4
Date: 2026−10−13
KiCad E.D.A. 10.0.7
Rev:
Id: 4/4