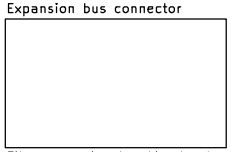
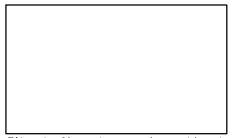
Expansion bus connector



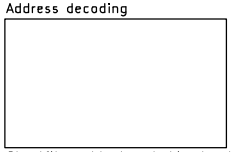
File: expansion_bus.kicad_sch

Buffers and transceivers



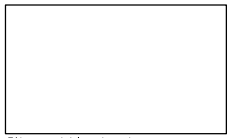
File: buffers_transceivers.kicad_sch

Address decoding



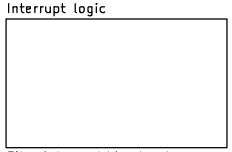
Sheetfile: addr_decode.kicad_sch

GAL



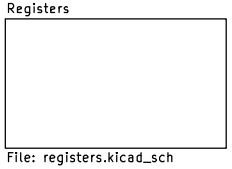
File: gal.kicad_sch

Interrupt logic



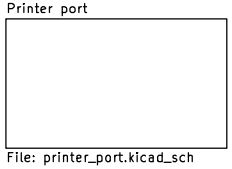
File: interrupt.kicad_sch

Registers



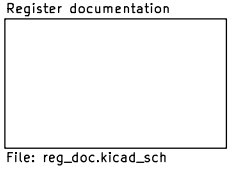
File: registers.kicad_sch

Printer port



File: printer_port.kicad_sch

Register documentation

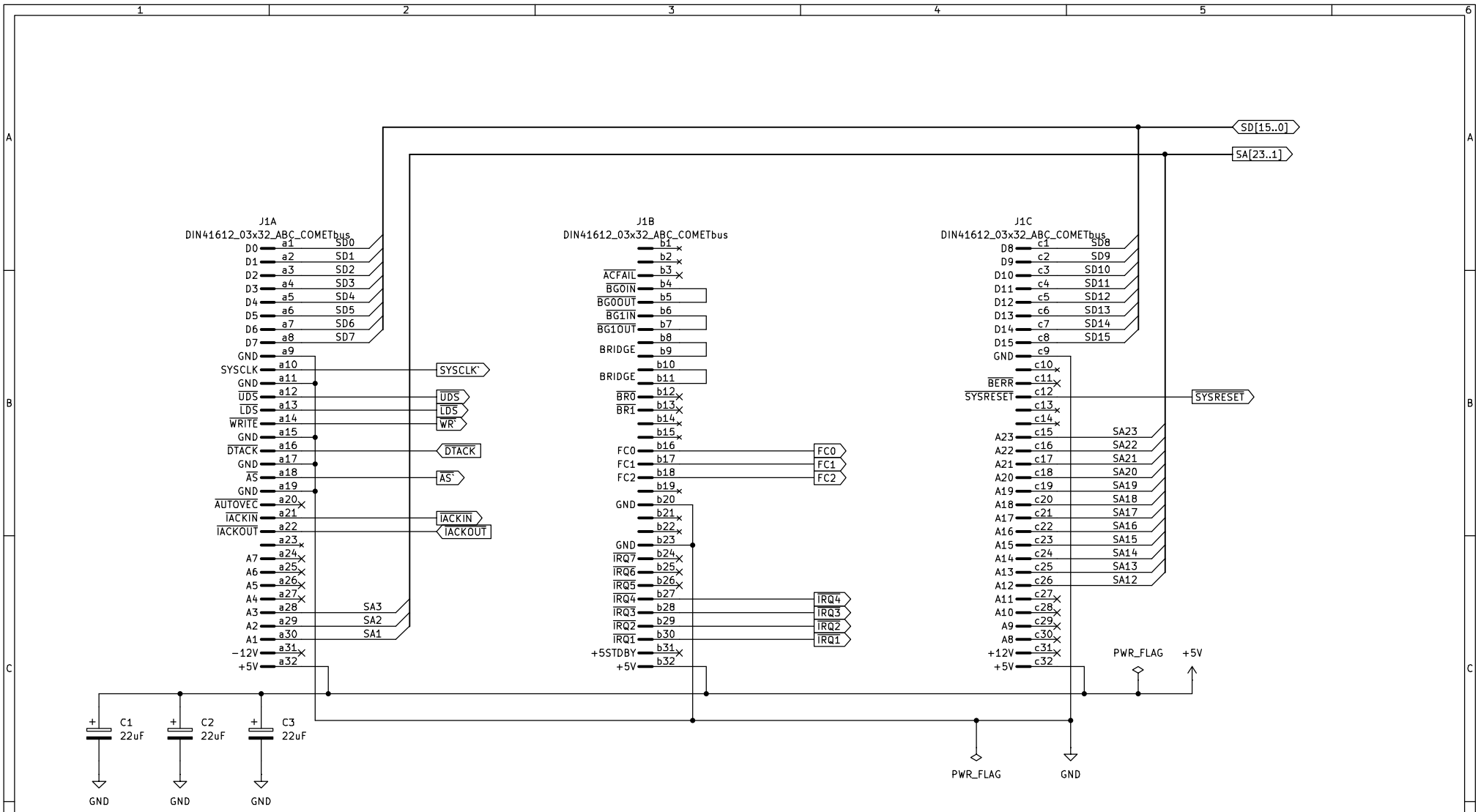


File: reg_doc.kicad_sch

Sheet: /
File: Printer_Interface.kicad_sch

Title: PARALLEL PRINTER INTERFACE

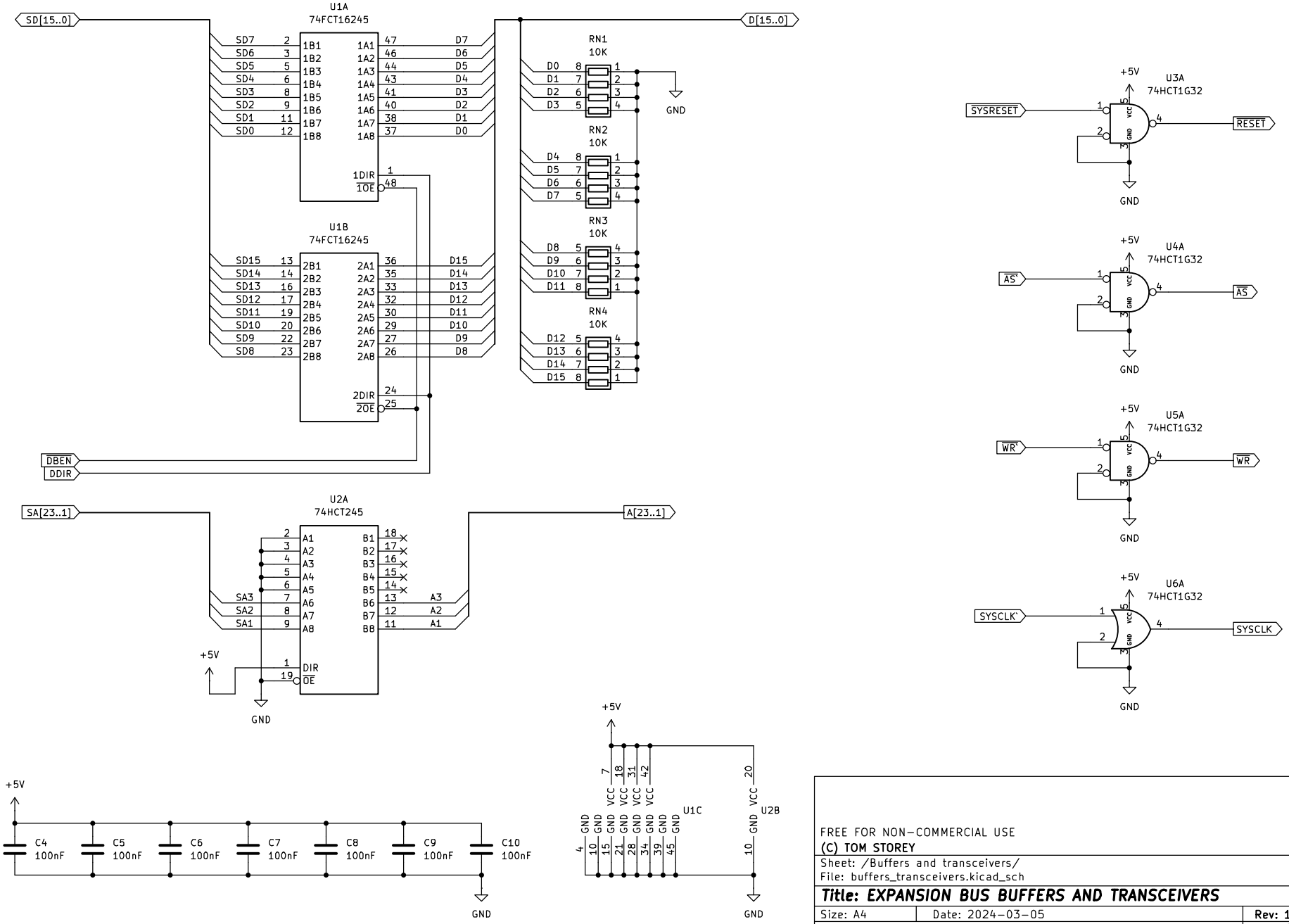
Size: A4	Date: 2024-03-05	**Rev: 1**
KiCad E.D.A. 8.0.0		Id: 1/9



Sheet: /Expansion bus connector/
File: expansion_bus.kicad_sch

Title: EXPANSION BUS CONNECTOR

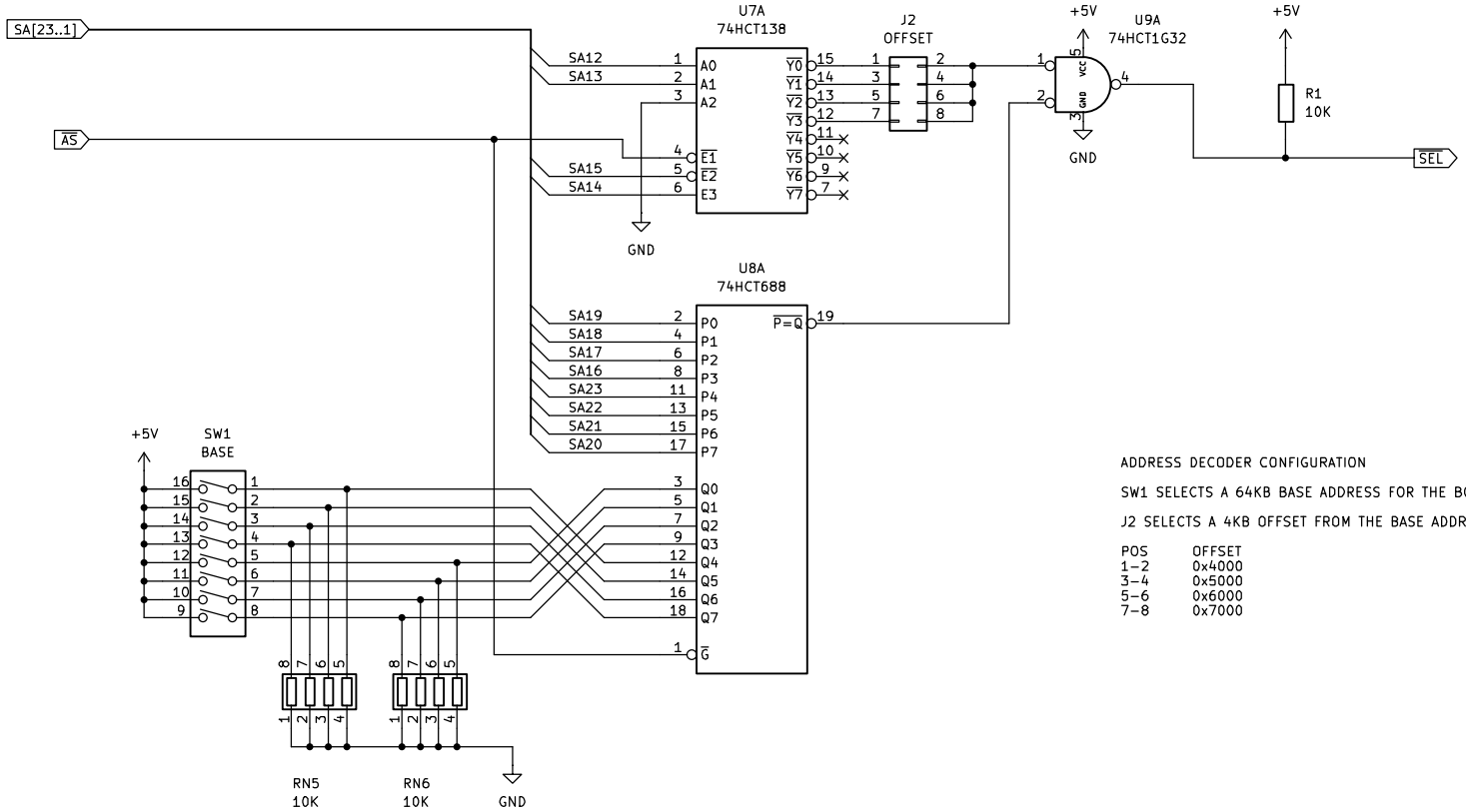
Size: A4	Date: 2024-03-05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 2/9



Sheet: /Buffers and transceivers/
File: buffers_transceivers.kicad_sch

Title: EXPANSION BUS BUFFERS AND TRANSCEIVERS

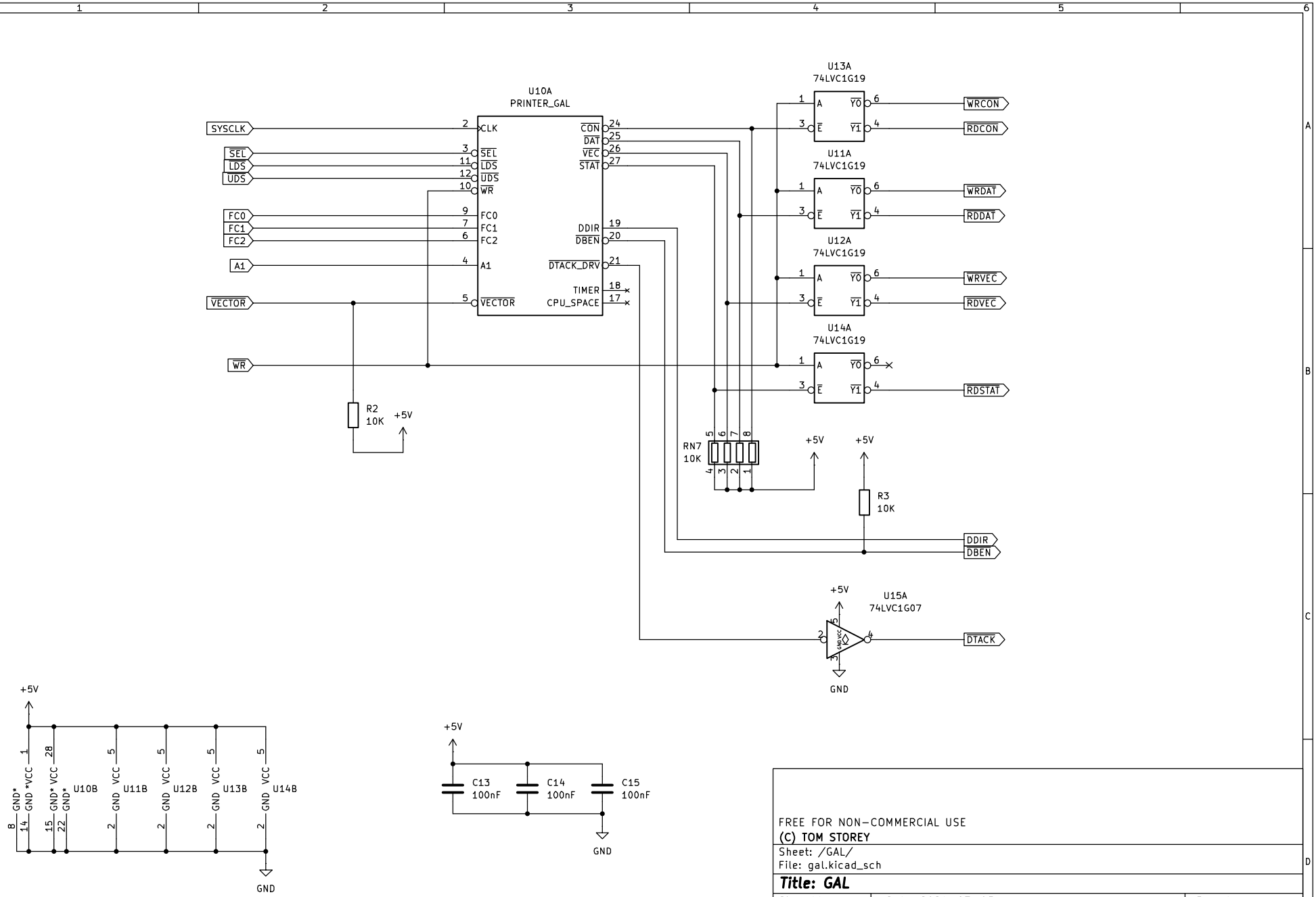
Size: A4	Date: 2024-03-05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 3/9



Sheet: /Address decoding/
File: addr_decode.kicad_sch

Title: ADDRESS DECODING

Size: A4	Date: 2024–03–05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 4/9



FREE FOR NON-COMMERCIAL USE

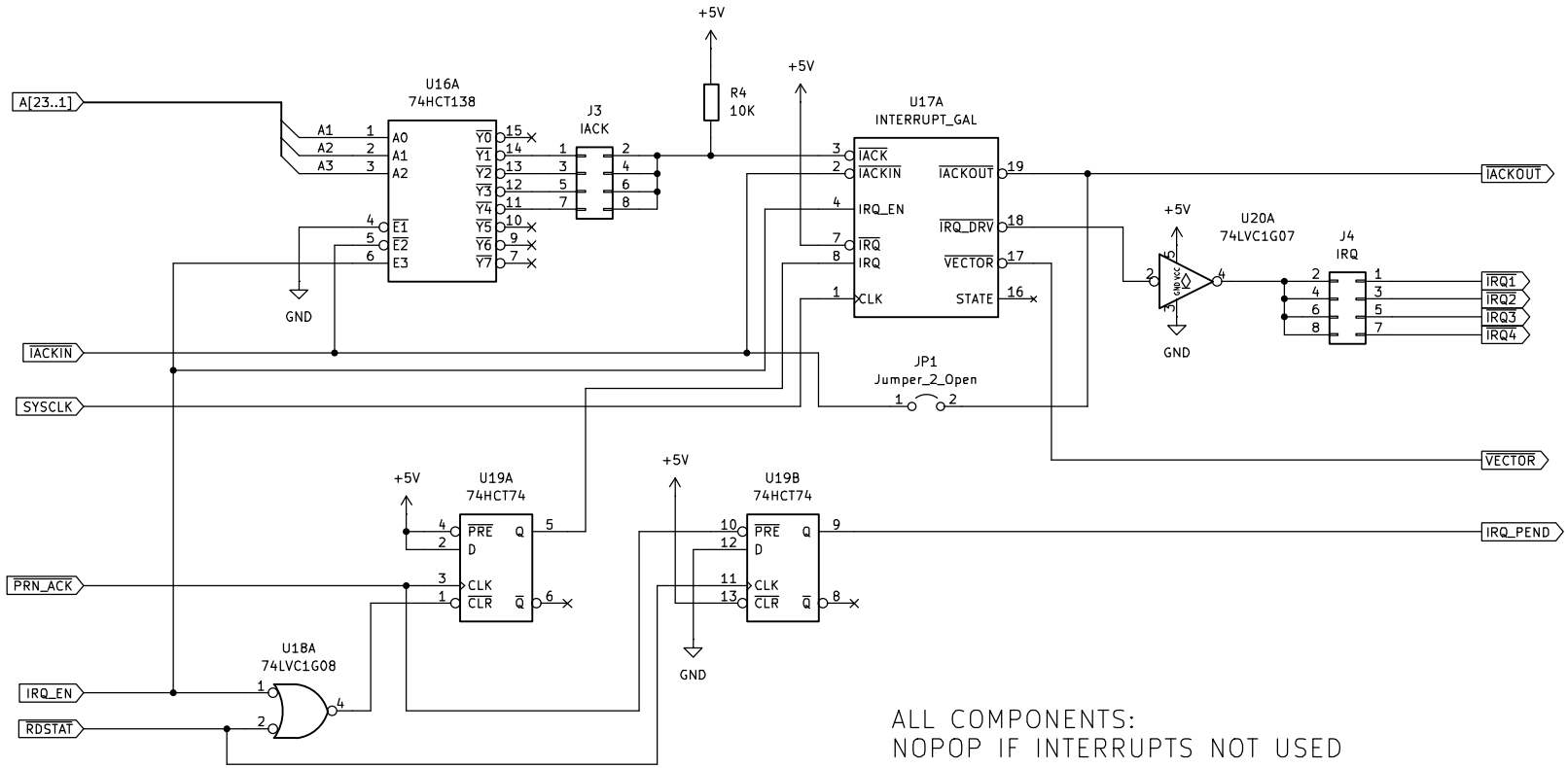
(C) TOM STOREY

Sheet: /GAL/

File: gal.kicad_sch

Title: GAL

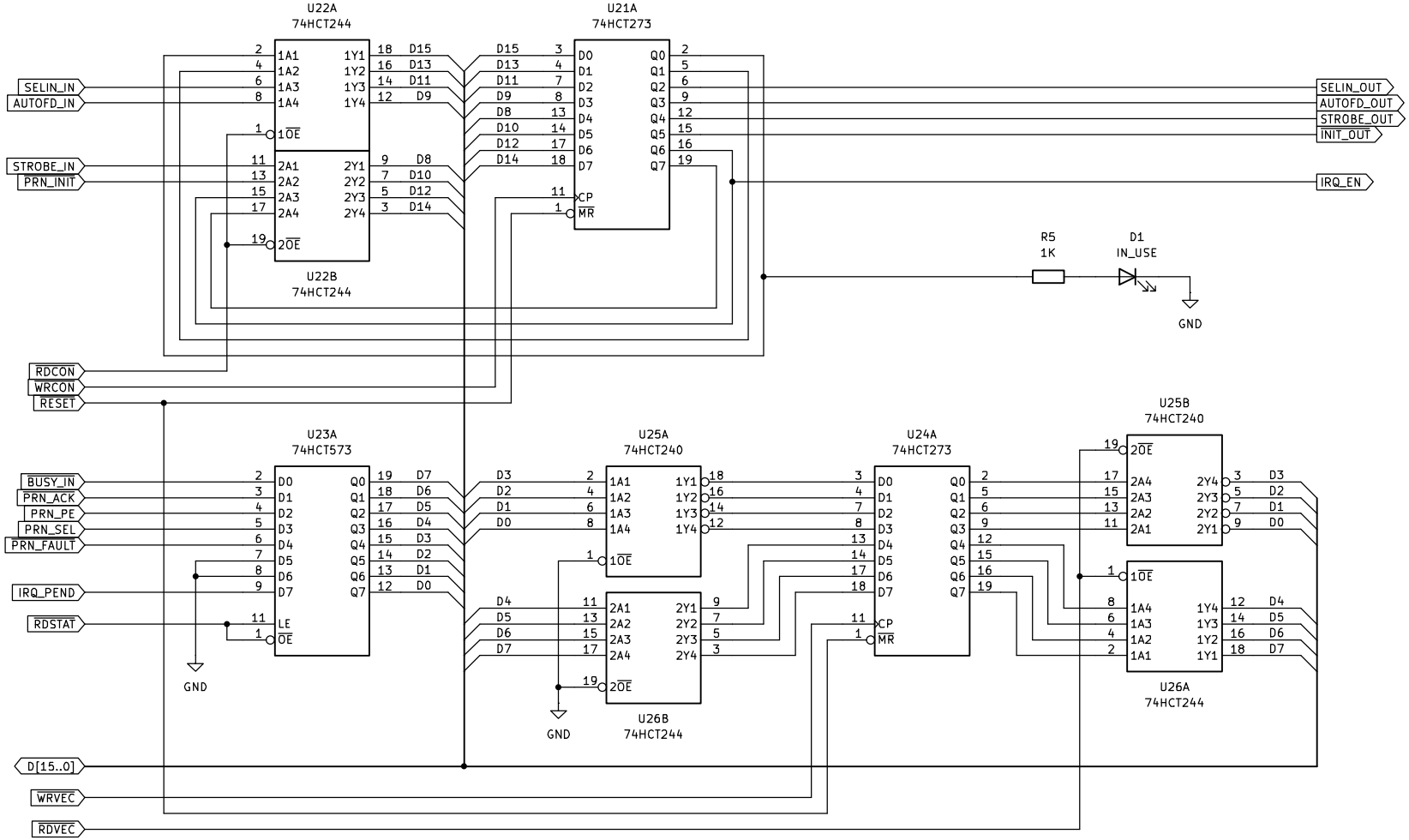
Size: A4	Date: 2024-03-05	**Rev: 1**
KiCad E.D.A. 8.0.0		Id: 5/9

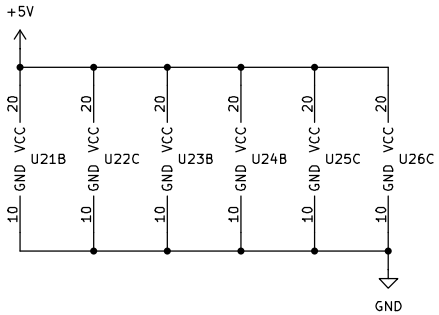


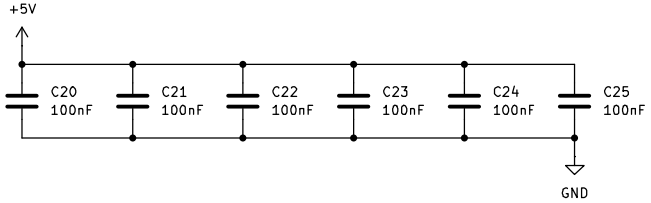
Sheet: /Interrupt logic/
File: interrupt.kicad_sch

Title: INTERRUPT LOGIC

Size: A4	Date: 2024-03-05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 6/9





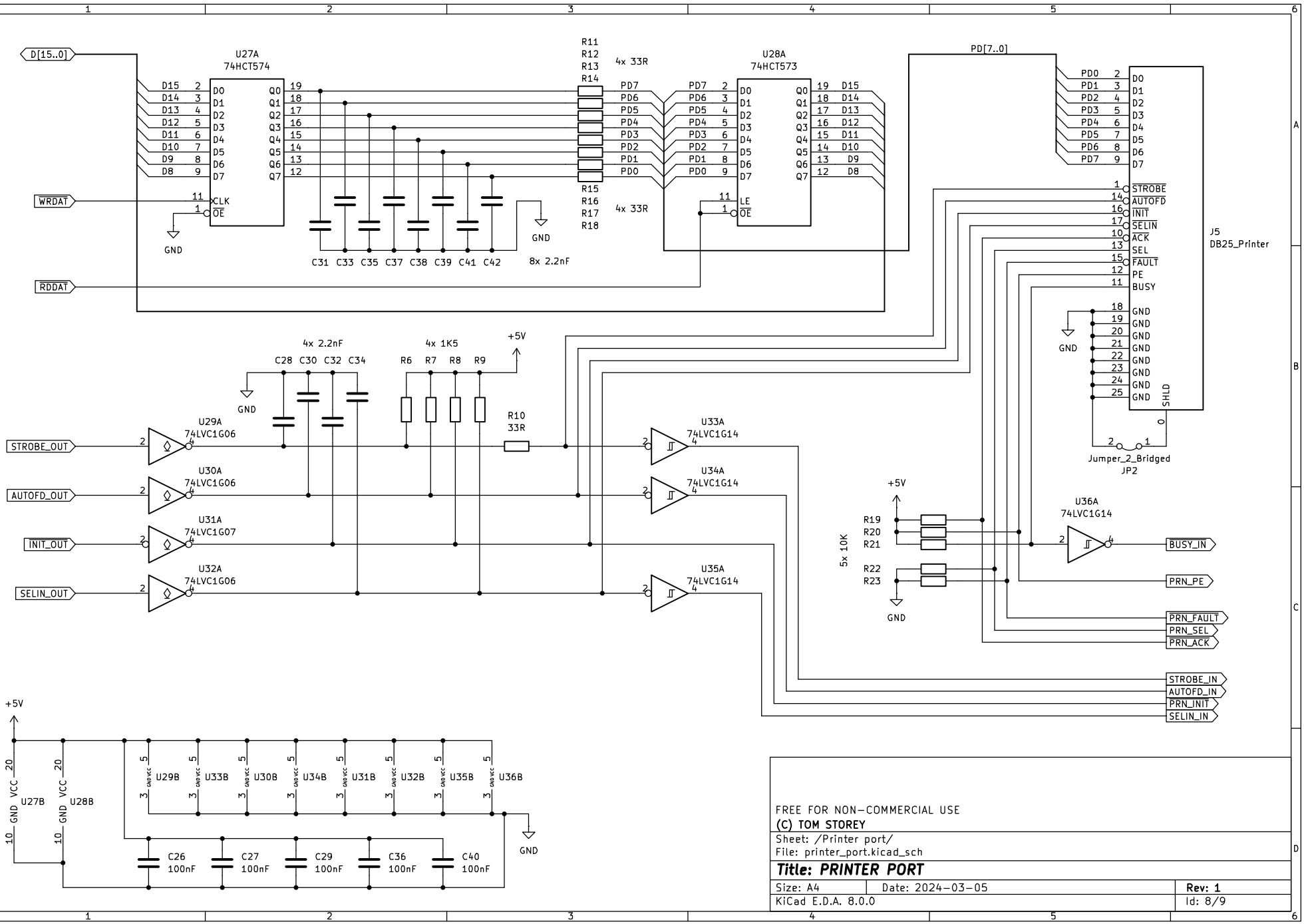


U24, U25, U26, AND ASSOCIATED CAPS:
NOPOP IF INTERRUPTS NOT USED

Sheet: /Registers/
File: registers.kicad_sch

Title: REGISTERS

Size: A4	Date: 2024-03-05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 7/9


D[15..0]
U27A
74HCT574
WRDAT
RDDAT
GND
R11
R12
R13
R14
4x 33R
R15
R16
R17
R18
C31 C33 C35 C37 C38 C39 C41 C42
8x 2.2nF
U28A
74HCT573
PD[7..0]
J5
DB25_Printer
STROBE
AUTOFD
INIT
SELIN
ACK
SEL
FAULT
PE
BUSY
SHLD
Jumper_2_Bridged
JP2
4x 2.2nF
C28 C30 C32 C34
4x 1K5
R6 R7 R8 R9
+5V
R10
33R
STROBE_OUT
AUTOFD_OUT
INIT_OUT
SELIN_OUT
U29A
U30A
U31A
U32A
74LVC1G06
74LVC1G07
U33A
U34A
U35A
74LVC1G14
5x 10K
R19
R20
R21
R22
R23
U36A
BUSY_IN
PRN_PE
PRN_FAULT
PRN_SEL
PRN_ACK
STROBE_IN
AUTOFD_IN
PRN_INIT
SELIN_IN
U27B
U28B
U29B
U33B
U30B
U34B
U31B
U32B
U35B
U36B
C26
100nF
C27
100nF
C29
100nF
C36
100nF
C40
100nF
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(C) TOM STOREY
Sheet: /Printer port/
File: printer_port.kicad_sch
Title: PRINTER PORT
Size: A4
Date: 2024-03-05
Rev: 1
KiCad E.D.A. 8.0.0
Id: 8/9

0x0 – DATA PORT

RW-x	RW-x	RW-x	RW-x	RW-x	RW-x	RW-x	RW-x
D<7:0>							
BIT 7							BIT 0

BIT 7–0 D<7:0>: INPUT/OUTPUT DATA
THE DATA PORT IS ALWAYS DRIVING AN OUTPUT VALUE, BUT AN EXTERNAL DEVICE MAY OVERRIDE THE OUTPUT DATA BY DRIVING THE DATA LINES TO AN ALTERNATE STATE.

THE OUTPUT VALUE AT RESET IS INDETERMINATE.

0x1 – INTERRUPT VECTOR

RW-0	RW-0	RW-0	RW-0	RW-1	RW-1	RW-1	RW-1
VEC<7:0>							
BIT 7							BIT 0

BIT 7–0 VEC<7:0>: INTERRUPT VECTOR
THIS IS THE VECTOR NUMBER THAT IS SUPPLIED TO THE CPU DURING THE INTERRUPT ACKNOWLEDGE CYCLE.

ON RESET, THE VECTOR NUMBER INITIALISES TO 0x0F TO SUPPLY THE "UNINITIALISED INTERRUPT" VECTOR. USER SOFTWARE MUST CONFIGURE AN APPROPRIATE VECTOR NUMBER FOR THE APPLICATION.

0x2 – STATUS REGISTER

R-x	R-x	R-x	R-x	R-x	U-0	U-0	R-x
$\overline{\text{BUSY}}$	$\overline{\text{ACK}}$	ERROR	SELECT	$\overline{\text{FAULT}}$	–	–	IRQ_PEND
BIT 7							BIT 0

BIT 7 $\overline{\text{BUSY}}$: PRINTER BUSY
1 = PRINTER IS READY TO RECEIVE NEW DATA
0 = PRINTER IS NOT READY TO RECEIVE NEW DATA

BIT 6 $\overline{\text{ACK}}$: TRANSFER ACKNOWLEDGE
1 = SIGNAL IS NEGATED
0 = PRINTER IS ACKNOWLEDGING TRANSFER

THE FALLING EDGE OF $\overline{\text{ACK}}$ CAUSES THE IRQ_PEND BIT TO BE SET. THE RISING EDGE OF $\overline{\text{ACK}}$ CAUSES AN INTERRUPT REQUEST TO BE GENERATED AS LONG AS THE IRQ_EN BIT OF THE CONTROL REGISTER IS SET.

BIT 5 ERROR: PAPER ERROR
1 = PRINTER IS EXPERIENCING AN ERROR IN THE PAPER PATH
0 = NO ERROR CONDITION EXISTS

BIT 4 SELECT: PRINTER ONLINE INDICATOR
1 = PRINTER IS ONLINE
0 = PRINTER IS NOT ONLINE

BIT 3 $\overline{\text{FAULT}}$: PRINTER FAULT INDICATOR
1 = NO FAULT CONDITION EXISTS
0 = PRINTER IS EXPERIENCING A FAULT

BIT 2–1 UNIMPLEMENTED

BIT 0 IRQ_PEND: INTERRUPT PENDING
1 = AN INTERRUPT IS CURRENTLY PENDING FOR THIS INTERFACE
0 = NO INTERRUPT PENDING

IRQ_PEND REMAINS SET AS LONG AS THE $\overline{\text{ACK}}$ SIGNAL IS ASSERTED, AND IS CLEARED BY READING THE STATUS REGISTER ONCE $\overline{\text{ACK}}$ IS NEGATED.

0x3 – CONTROL REGISTER

RW-0	U-0	U-0	RW-0	RW-0	RW-0	RW-0	RW-0
IN_USE	–	–	IRQ_EN	SELIN	$\overline{\text{INIT}}$	AUTOFD	STROBE
BIT 7							BIT 0

BIT 7 IN_USE: IN USE LED CONTROL
1 = LED ON
0 = LED OFF

BIT 6–5 UNIMPLEMENTED

BIT 4 IRQ_EN: INTERRUPT REQUEST ENABLE
1 = INTERRUPT WILL BE GENERATED ON THE RISING EDGE OF $\overline{\text{ACK}}$
0 = INTERRUPTS ARE DISABLED

WHEN IRQ_EN IS CLEARED, INTERRUPT REQUESTS ARE INHIBITED BUT THE IRQ_PEND BIT OF THE STATUS REGISTER WILL STILL REFLECT PENDING INTERRUPT CONDITIONS. CLEARING IRQ_EN WHILE AN INTERRUPT REQUEST IS PENDING WILL CANCEL THE INTERRUPT REQUEST BUT DOES NOT CLEAR THE IRQ_PEND BIT OF THE STATUS REGISTER.

BIT 3 SELIN: PRINTER SELECT
1 = PRINTER IS SELECTED
0 = PRINTER IS NOT SELECTED

BIT 2 $\overline{\text{INIT}}$: PRINTER RESET
1 = PRINTER IS IN NORMAL OPERATION
0 = PRINTER IS IN RESET STATE

BIT 1 AUTOFD: AUTOMATIC LINE-FEED MODE
1 = ENABLE AUTOMATIC LINE-FEED MODE
0 = DISABLE AUTOMATIC LINE-FEED MODE

BIT 0 STROBE: DATA TRANSFER STROBE
1 = ASSERT STROBE TOWARDS PRINTER TO LATCH DATA
0 = SIGNAL IS NEGATED

LEGEND:			
R = READABLE	W = WRITABLE	U = UNIMPLEMENTED	
-n = VALUE AT RESET	1 = SET	0 = CLEARED	x = UNKNOWN

Sheet: /Register documentation/
File: reg_doc.kicad_sch

Title: REGISTER DOCUMENTATION

Size: A4	Date: 2024-03-05	Rev: 1
KiCad E.D.A. 8.0.0		Id: 9/9