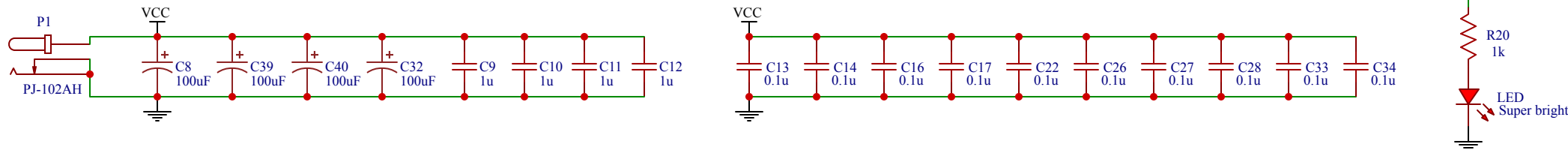


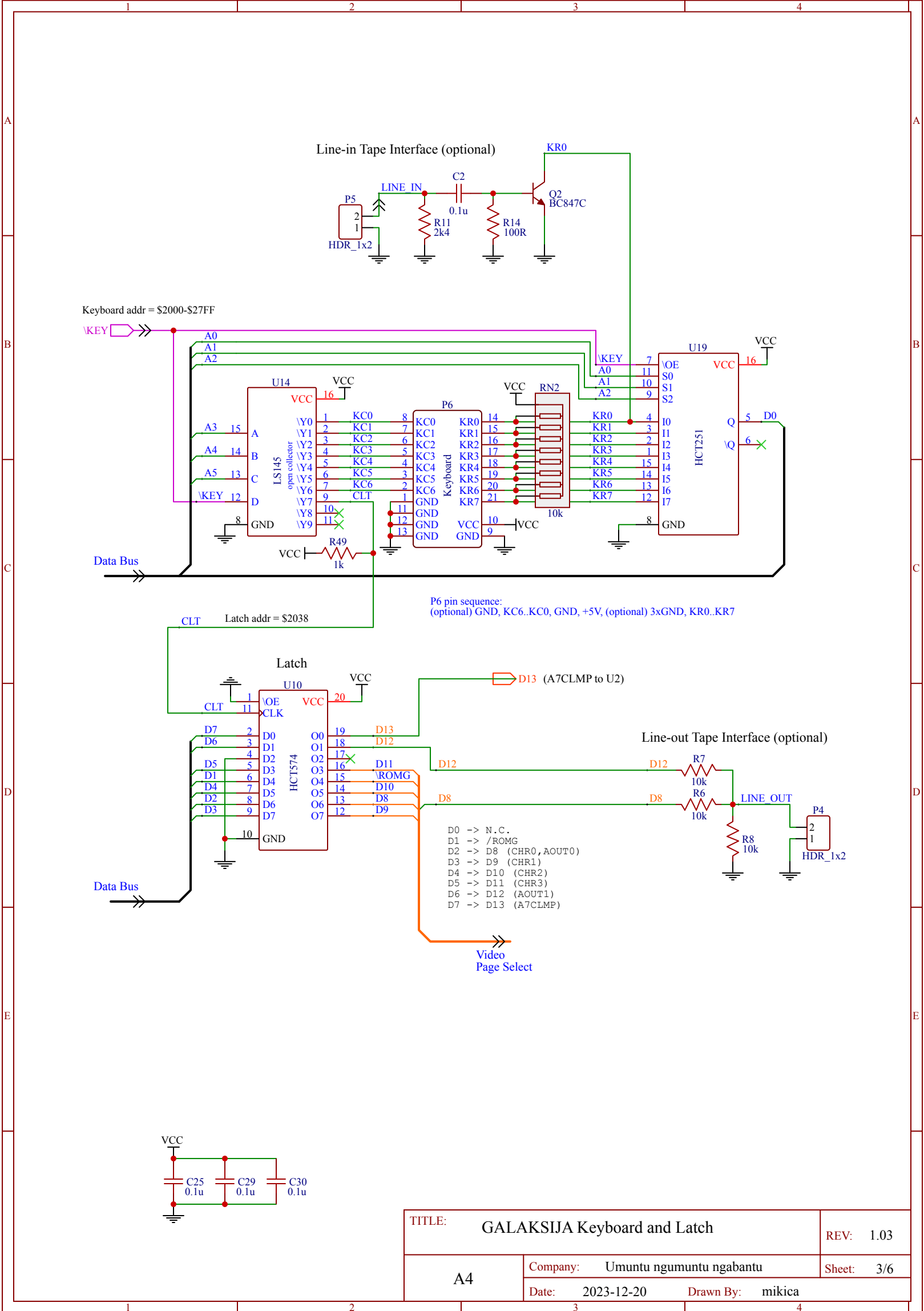
Power Input 5VDC, 1A max

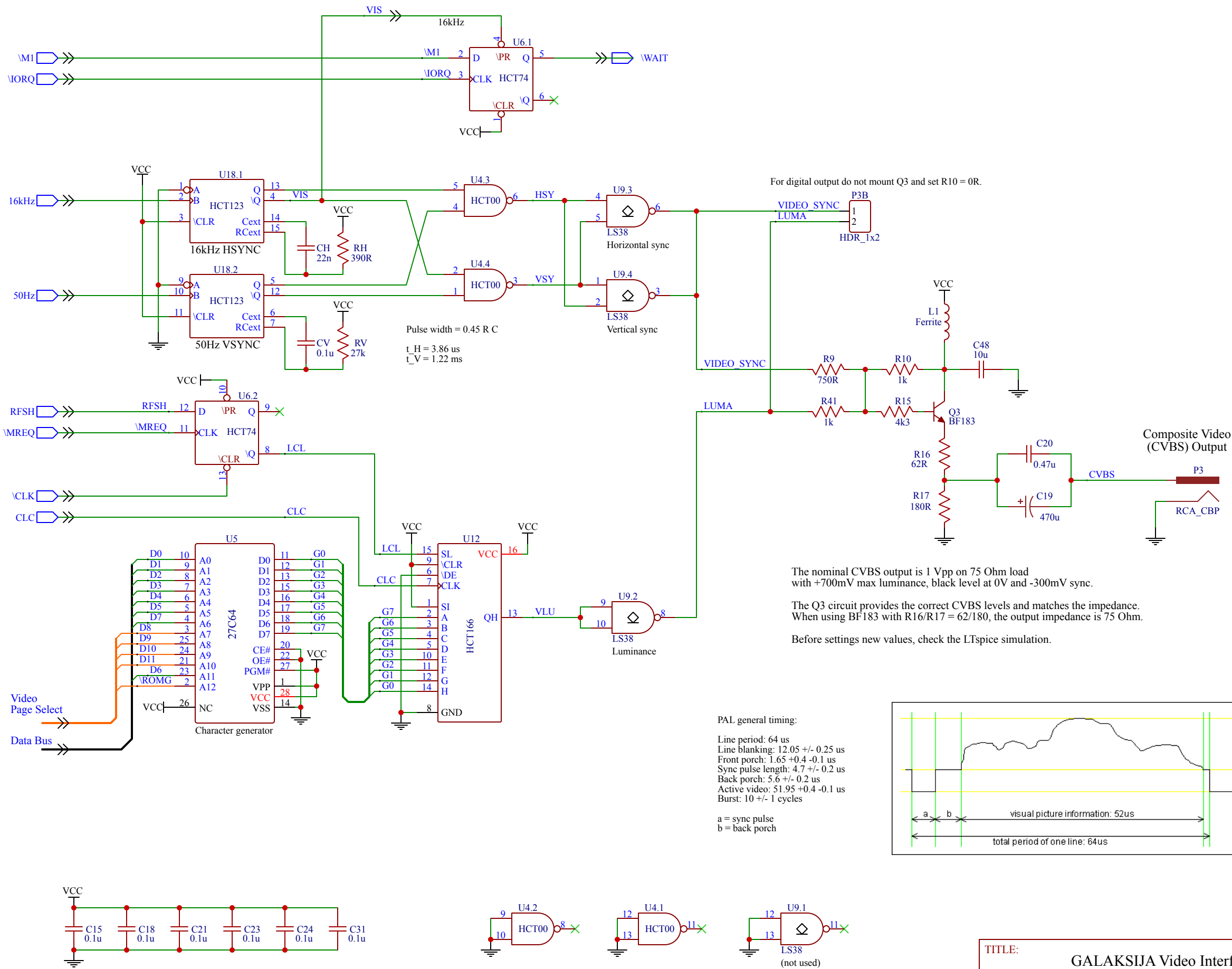


U2 defines the memory map

```
field ADDR = [A15..13]
UPPER6K = A11 # A12
Q01 = MREQ & ADDR:0000
Q23 = MREQ & ADDR:2000
...
QEF = MREQ & ADDR:E000
ROM = Q01 # QEF
CSE = QAB
RAM1 = Q23 & UPPER6K
RAM2 = Q45 # Q67 # Q89
RAM3 = QCD & !UPPER6K
RAM = RAM1 # RAM2 # RAM3
KEY = Q23 & !UPPER6K
CSSD = QCD & UPPER6K
A13R = QCD $ A13
A14R = QCD $ A14
A7R = !D13 # A7
```

TITLE: GALAKSIJA Time Base and CPU		REV: 1.03
A3	Company: Umuntu ngumuntu ngabantu	Sheet: 2/6
	Date: 2023-12-20 Drawn By: mikica	





A

A

B

B

C

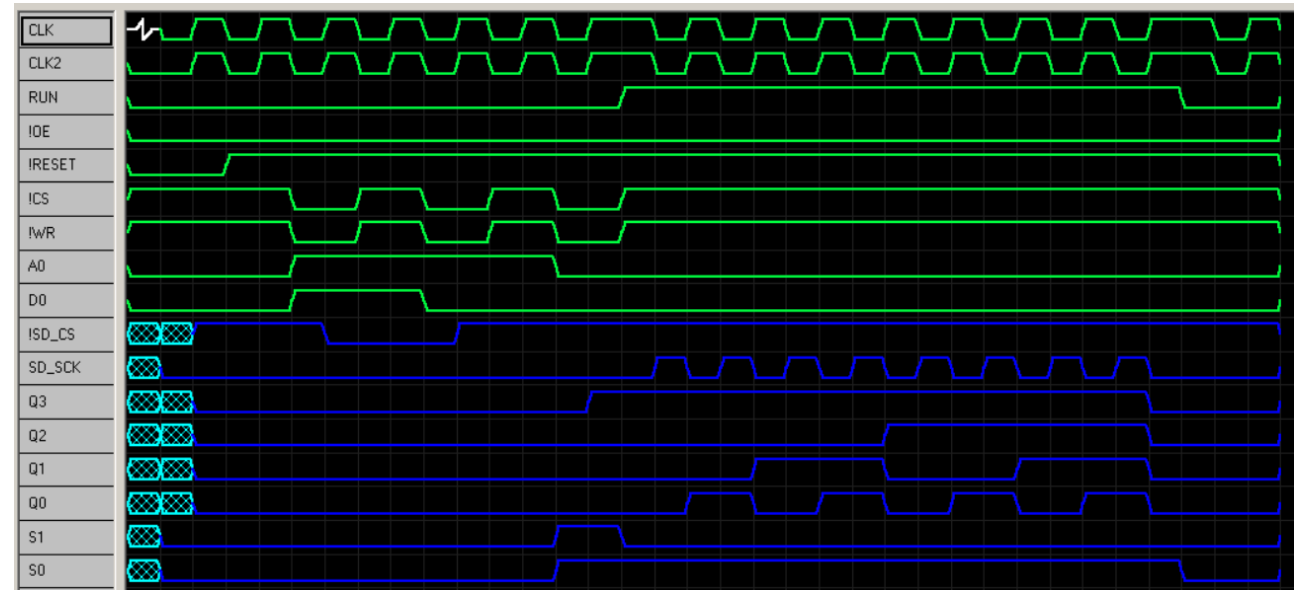
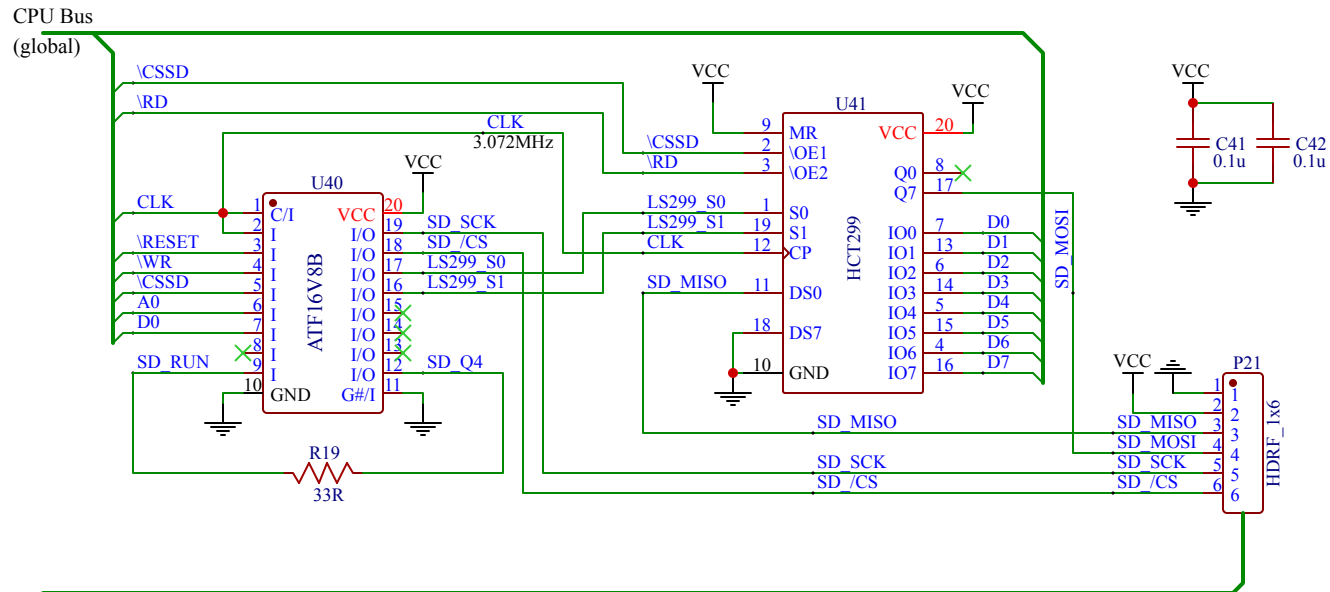
C

D

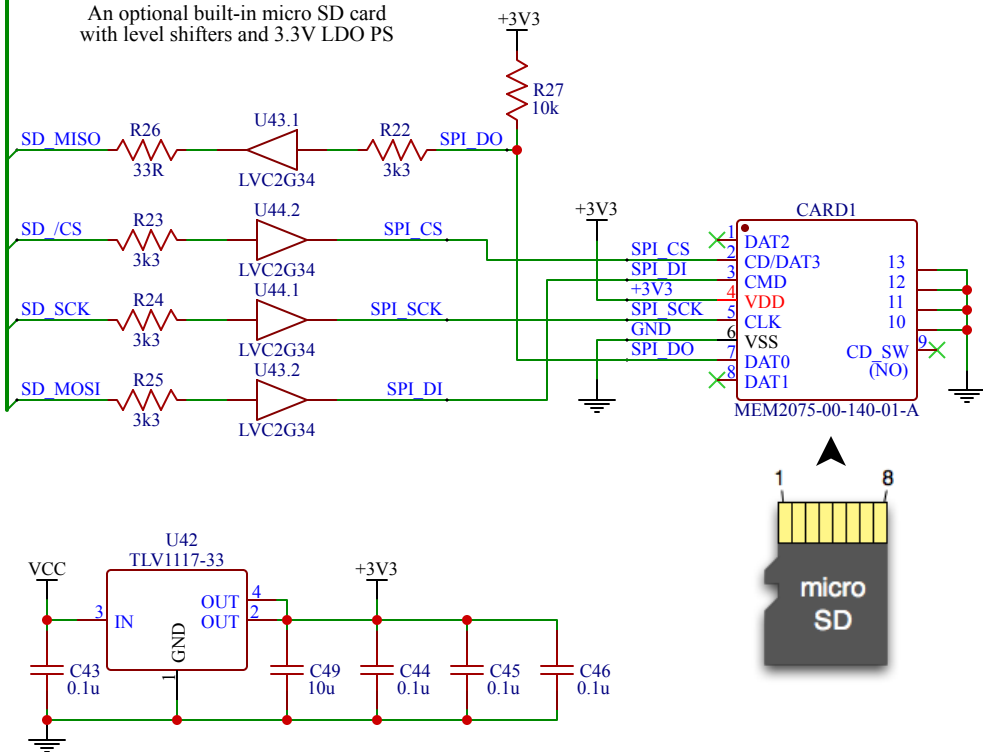
D

E

E



An optional built-in micro SD card with level shifters and 3.3V LDO PS



Pin	SD	SPI
1	DAT2	X
2	CD/DAT3	CS
3	CMD	DI
4	VDD	VDD
5	CLK	SCLK
6	VSS	VSS
7	DAT0	DO
8	DAT1	X

SPI_CS << SD_CS

SPI_DI << SD_MOSI

SPI_SCK << SD_SCK

SPI_DO >> SD_MISO

U40

```
GP40_SD
CLK x---|1      20|---x Vcc
CLK2 x---|2     19|---x SD_SCK
!RESET x---|3    18|---x !SD_CS
!WR x---|4     17|---x S0
!CS x---|5     16|---x S1
A0 x---|6     15|---x Q0
D0 x---|7     14|---x Q1
x---|8     13|---x Q2
RUN x---|9     12|---x Q3
GND x---|10    11|---x IOE
```

```
/*
S1 = 0, S0 = 0 : Hold
S1 = 1, S0 = 1 : Load
S1 = 0, S0 = 1 : Shift
*/

S1      = CS & WR & !A0 ;
S0      = RUN # S1 ;
SD_SCK  = RUN & !CLK2 ;

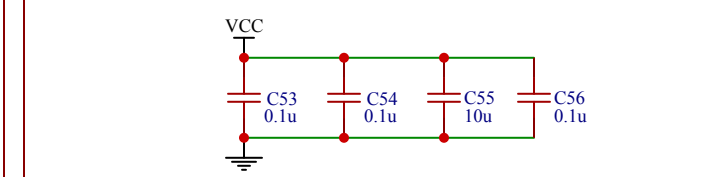
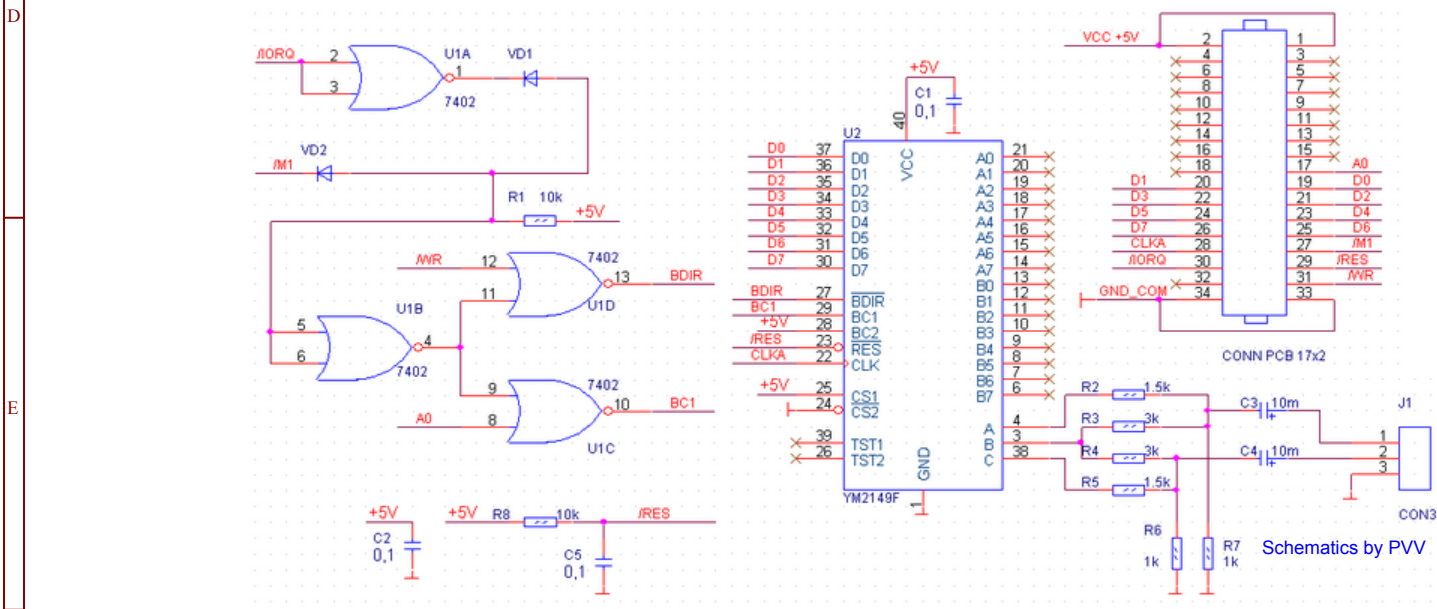
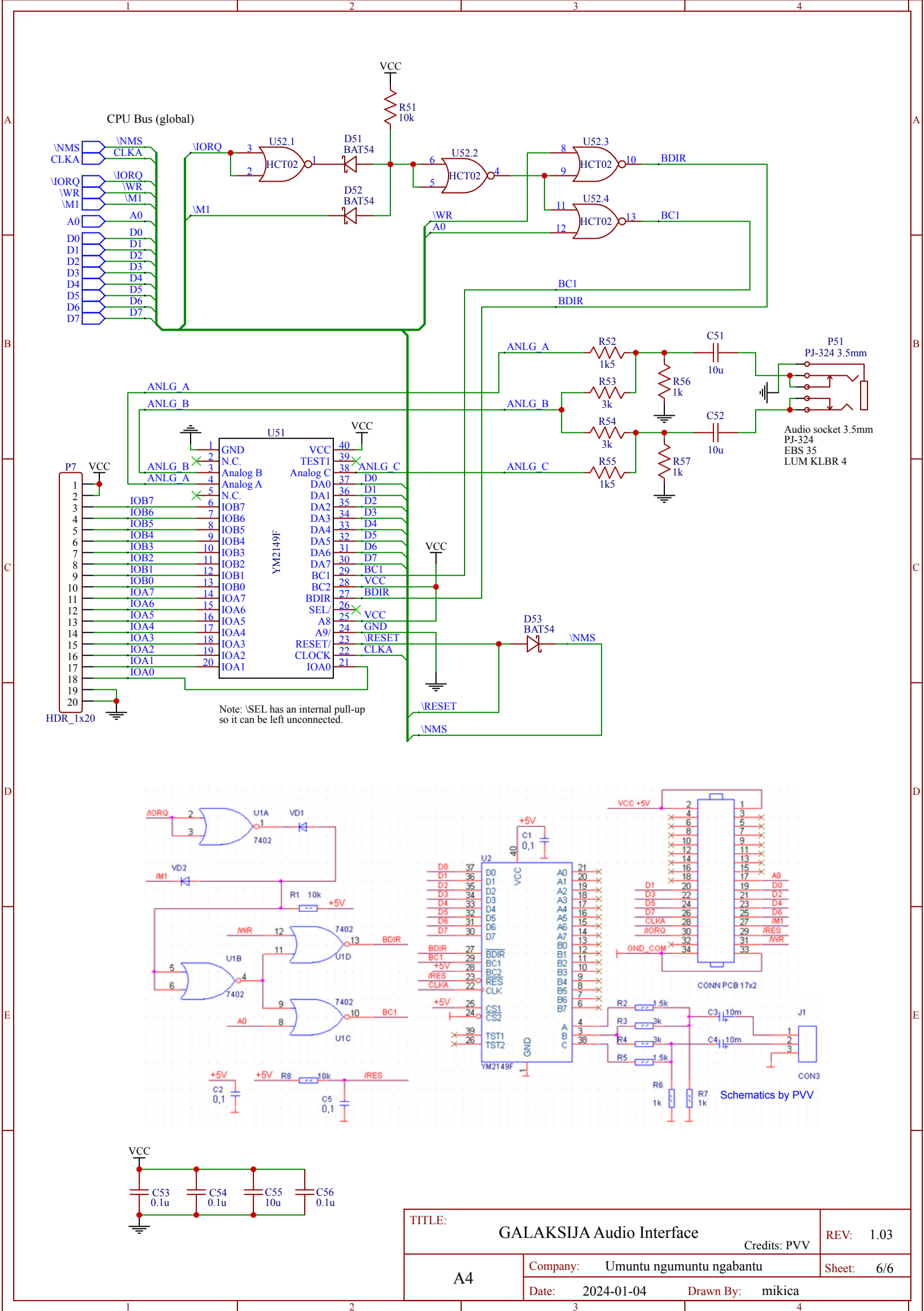
sequence SD_CS
{
  present 'b'0
  if RESET next 'b'0 ;
  /* writing D0 = 1 sets SD_CS = 1 */
  if CS & WR & A0:1 & D0:1 next 'b'1 ;
  default next 'b'0 ;
  present 'b'1
  if RESET next 'b'0 ;
  /* writing D0 = 0 sets SD_CS = 0 */
  if CS & WR & A0:1 & D0:0 next 'b'0 ;
  default next 'b'1 ;
}
```

field shift_counter = [Q0..3];

```
$define C0 'b'0000
$define C1 'b'1000
$define C2 'b'1001
$define C3 'b'1010
$define C4 'b'1011
$define C5 'b'1100
$define C6 'b'1101
$define C7 'b'1110
$define C8 'b'1111

sequence shift_counter
{
  present C0
  if RESET next C0 ;
  /* writing D0-D7 to LS299 starts serial IO */
  if CS & WR & A0:0 next C1;
  default next C0 ;
  present C1 if RESET next C0 ; default next C2 ;
  present C2 if RESET next C0 ; default next C3 ;
  present C3 if RESET next C0 ; default next C4 ;
  present C4 if RESET next C0 ; default next C5 ;
  present C5 if RESET next C0 ; default next C6 ;
  present C6 if RESET next C0 ; default next C7 ;
  present C7 if RESET next C0 ; default next C8 ;
  present C8 if RESET next C0 ; default next C0 ;
}
```

TITLE: GALAKSIJA SD Card Interface		Credits: PVV	REV: 1.03
A3	Company:	Umuntu ngumuntu ngabantu	Sheet: 5/6
	Date:	2024-01-22	Drawn By: mikica



TITLE: GALAKSIJA Audio Interface			Credits: PVV	REV: 1.03
A4	Company: Umuntu ngumuntu ngabantu			Sheet: 6/6
	Date: 2024-01-04	Drawn By: mikica		

GALAKSIJA ©

40th anniversary tribute
January 2024

PCB by Mikica

