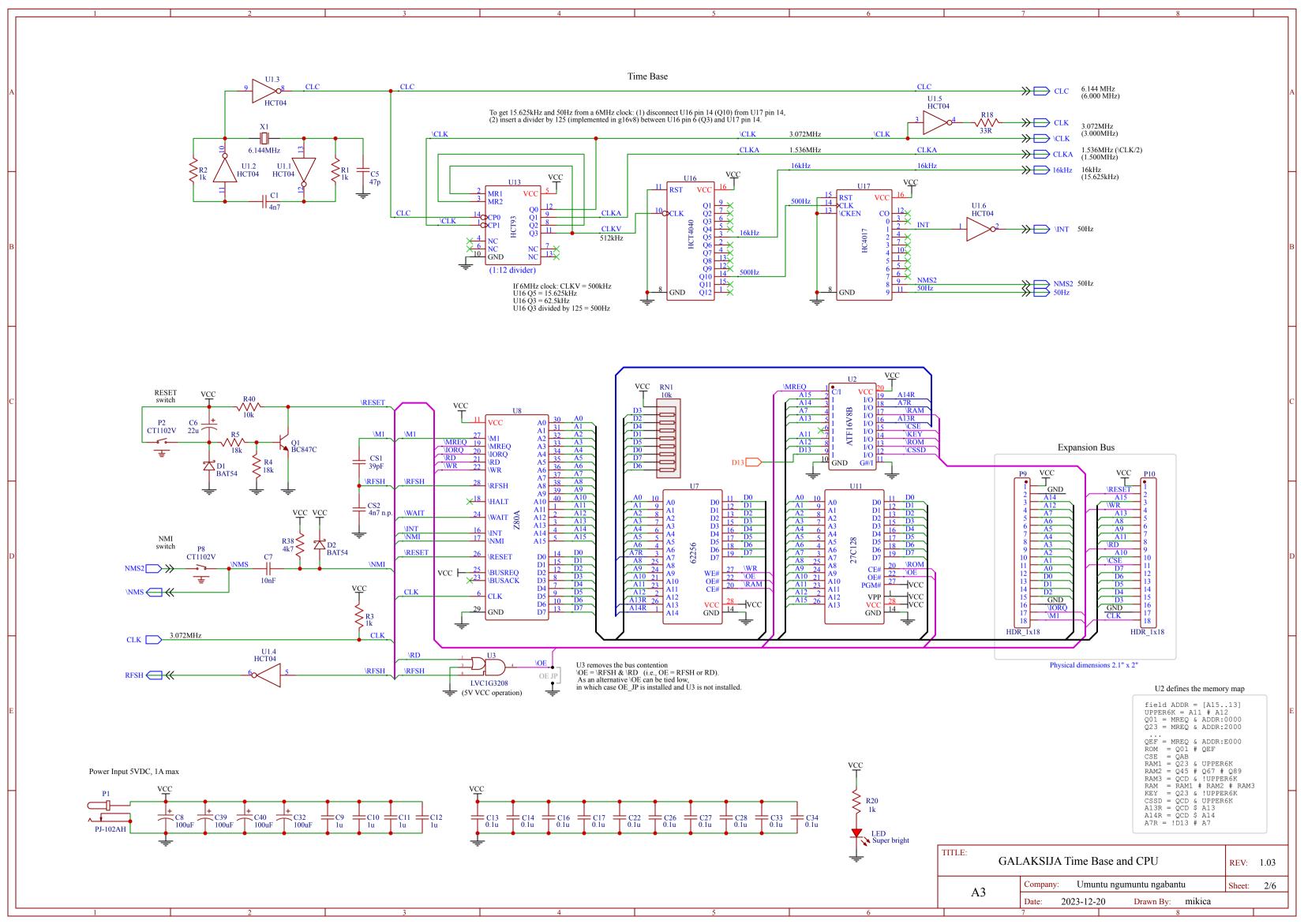
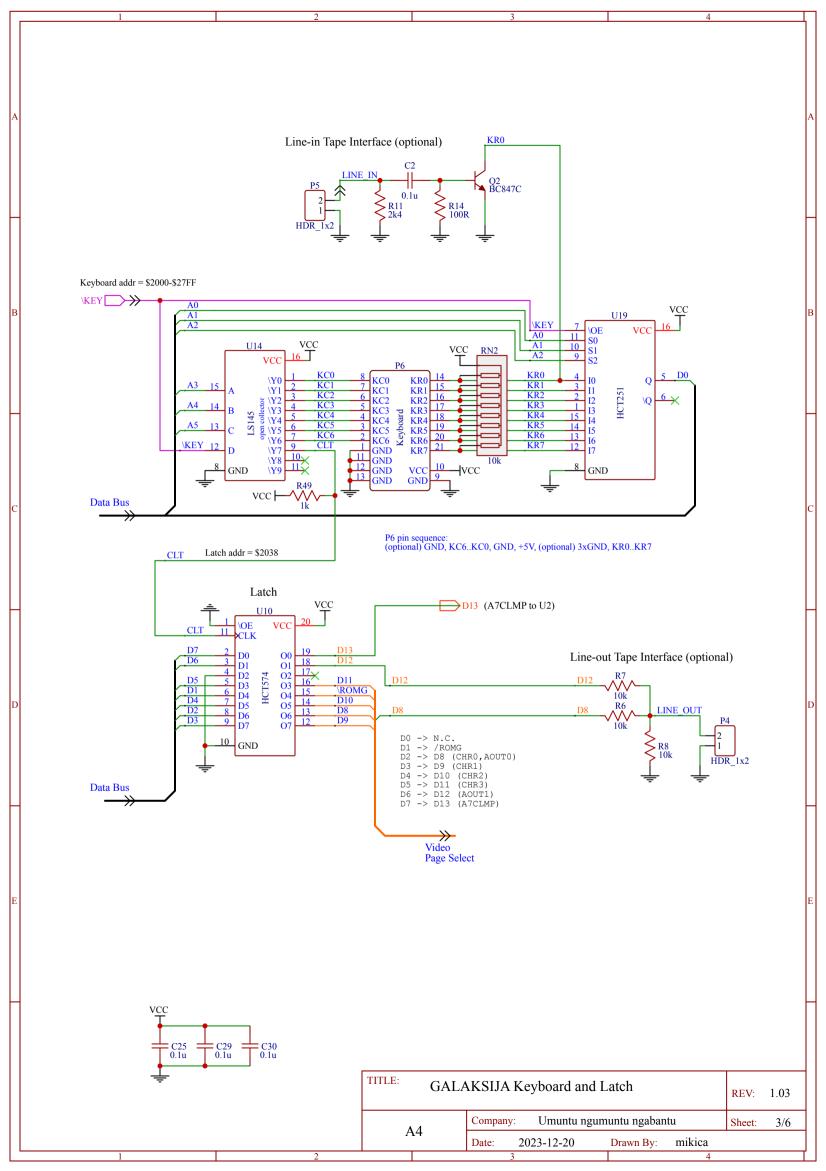
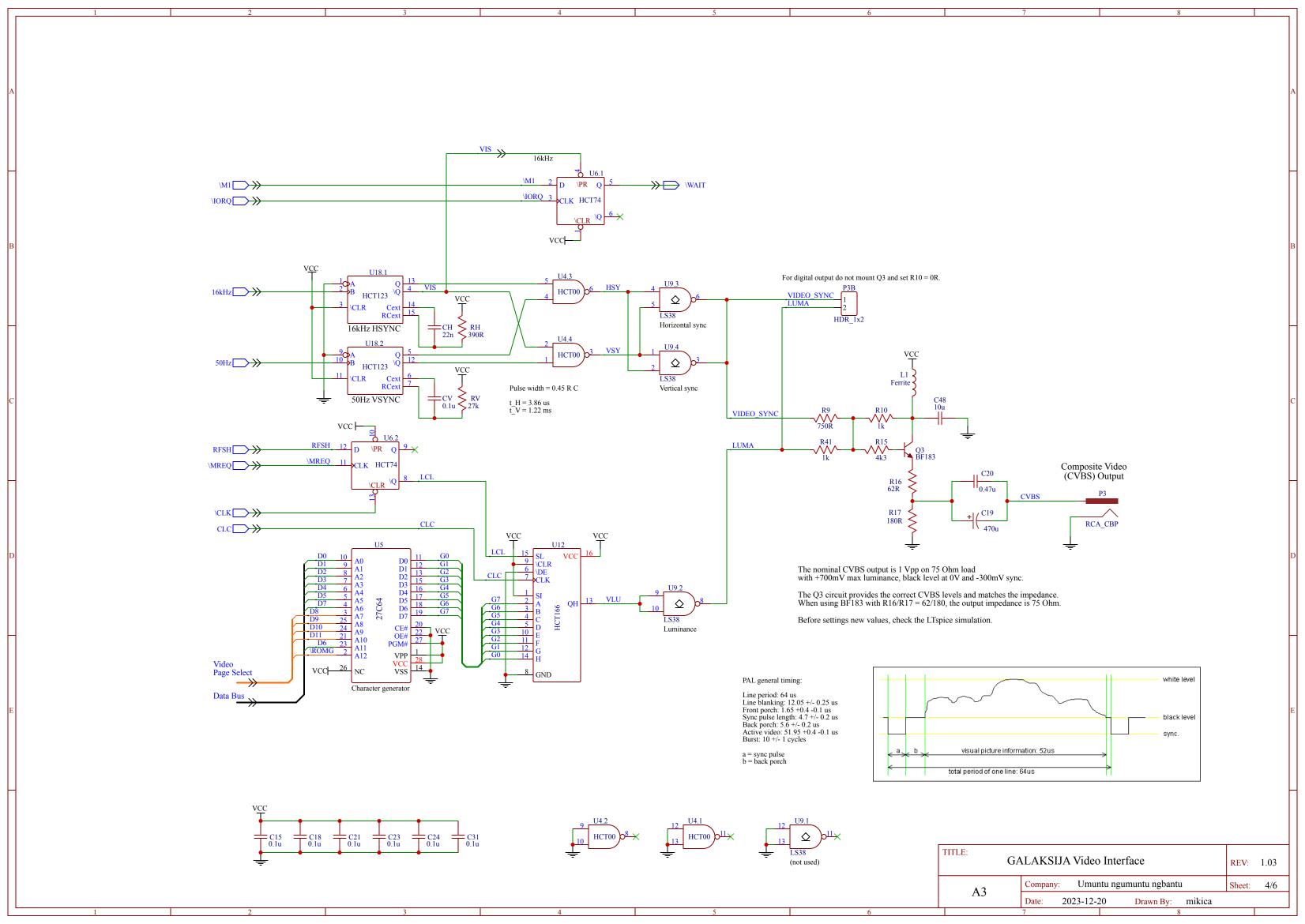
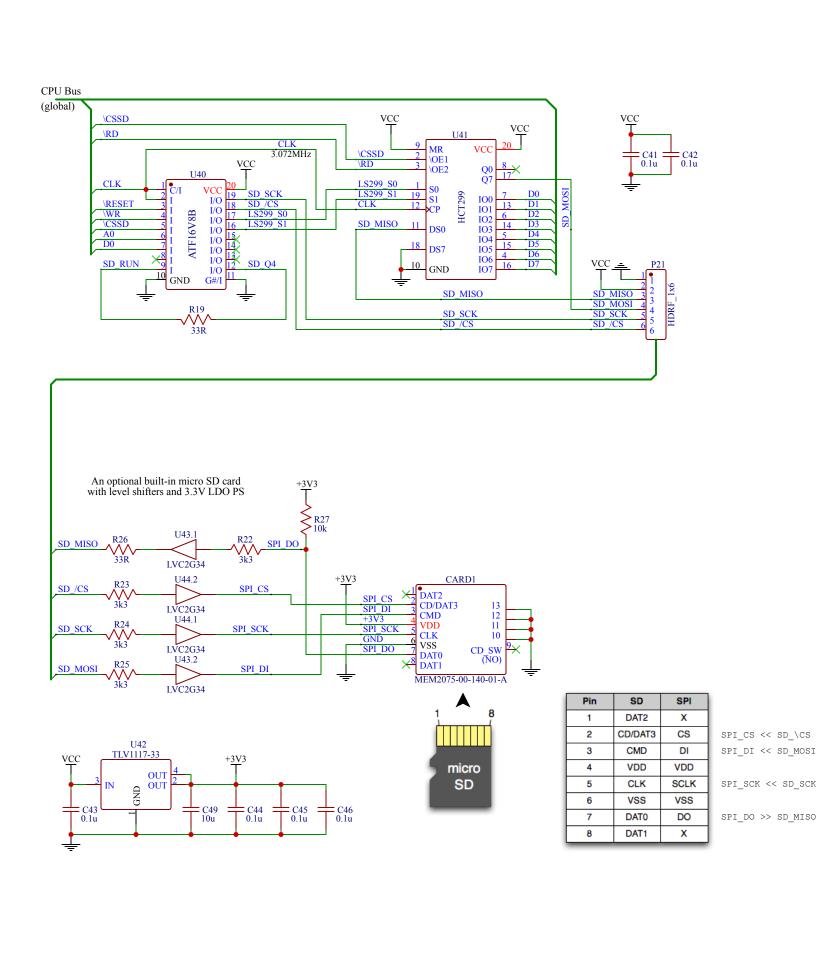
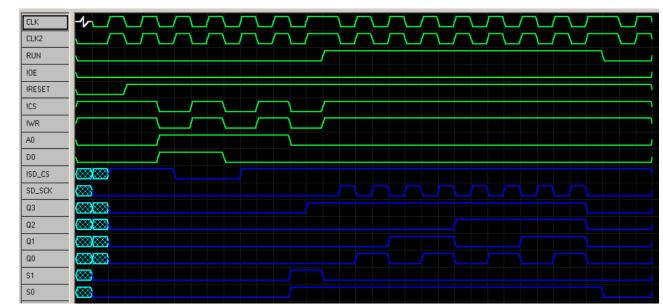
Sheet 2 Sheet 3 Sheet 4 Time Base. Keyboard, Latch Video ROM, shift-out CPU, ROM, RAM and and Tape Interface register and CVBS output **Expansion Bus** Sheet 6 Sheet 5 Audio Interface SD Card Interface and Parallel I/O SPECIFICATIONS - Z80A CPU at 3.072 MHz, 32 kB ROM (16k used), 32 kB static RAM - Storage: cassette tape (280 or 1200 bit/s) or SD card with SDOS - Text mode 32x16 characters, monochrome - Graphics mode: 256x208 pixels - Sound: 3 channels + white noise provided by AY-3-8910 or YM2149F - I/O ports: two 8-bit parallel ports This mod is based on PVV's Galaksija Plus clone from 2017 with the following modifications: improved PVV SD hardware (SD now runs on CPU clock) - integrated micro SD socket with level shifters - integrated audio interface - two I/O ports connected to the audio interface - address decoder with ATF16V8B (or some older GAL16V8 equivalent) - NMI reset circuit - hybrid TH/SMD PCB (SMD discrete components on the bottom side) - board dimensions 100x190 mm with a keyboard stackable either on the upper or the bottom side Distributed with the following ROM images: - GALAKSIJA_v8C.BIN with SDOS v8.12 (fits an EPROM 16k-64k) - GALAKSIJA CHRGEN.BIN (fits an EPROM 8k-64k) Hardware memory map: ROM A or 1: 4 kB (Bootstrap) ROM B or 2: 4 kB (Math functions, monitor etc.) \$0000...\$0FFF \$1000...\$1FFF \$2000...\$27FF Keyboard and latch RAM: 30 kB (\$2800...\$2BFF Video RAM) RAM: 2 kB (used by SDOS) PVV SD interface \$2800...\$BFFF \$C000...\$C7FF \$C800...\$CFFF \$D000...\$DFFF \$D000...\$PFFF Unused (routed to CS on the expansion bus) \$E000...\$FFFF ROM 3: 4 KB (Galaksija Plus graphics) \$F000...\$FFFF ROM 3: 4 KB (SDOS) Credits: - Voja Antonic: Galaksija (1983) - Nenad Dunjic and Milan Tadic: Galaksija Plus mod (1985) - PVV and Fifan: Galaksija Plus clone with SD card (2016) http://www.nedopc.org/forum/viewtopic.php?p=87313
Goran Stankovic (YT2FSG): Retro Computers web page https://www.qsl.net/yt2fsg/galaksija/galaksija_clone.html
Retro Bertie (@MacBerti28): YouTube guide Soldering sequence: start with the SMD components on the bottom side (the SMD components are 0805+ and easy to solder)
 solder the SMD components on the top side
 solder the IC sockets 4. solder the rest of the components TITLE: GALAKSIJA 40th Anniversary Tribute REV: 1.03 Company: Umuntu ngumuntu ngabantu Sheet: 1/6 A4 Date: 2024-01-04 Drawn By: mikica











```
U40
                                                      GP40 SD
             CLK x---|1
                                                                                     20 ---x Vcc
                                                                                    19|---x SD_SCK
18|---x !SD_CS
17|---x S0
   CLK2 x---|2
!RESET x---|3
!WR x---|4
                                                                                                                                                                                        field shift_counter = [Q0..3];
             !CS x---|5
A0 x---|6
                                                                                   16|---x S1
15|---x Q0
14|---x Q1
13|---x Q2
12|---x Q3
11|---x !OE
                                                                                                                                                                                      $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
                D0 x---|7
            x---|8
RUN x---|9
             GND x---|10
         S1 = 0, S0 = 0 : Hold
S1 = 1, S0 = 1 : Load
S1 = 0, S0 = 1 : Shift
                                                                                                                                                                                          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;
      S1 = CS & WR & !A0;
S0 = RUN # S1;
SD_SCK = RUN & !CLK2;
                                                                                                                                                                                             default next CO; present C1 if RESET next CO; default next C2; present C2 if RESET next CO; default next C3; present C3 if RESET next CO; default next C4; present C4 if RESET next CO; default next C5; present C5 if RESET next CO; default next C6; present C6 if RESET next CO; default next C7; present C7 if RESET next CO; default next C8; present C8 if RESET next CO; default next C8;
      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;
}
```

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

