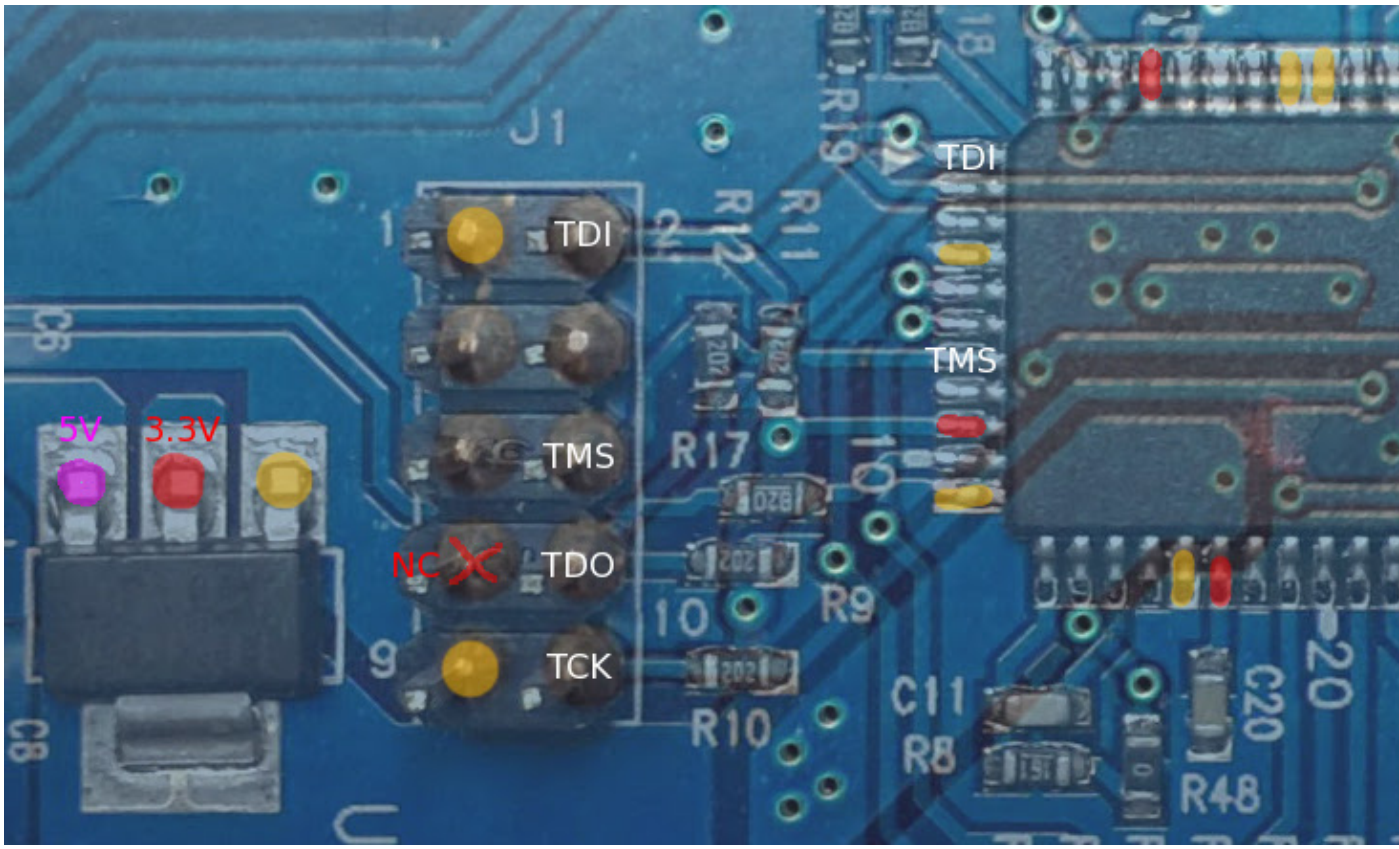
t=0x8634c00 [0,0]
Contents: [Dobrica PavlinuÅ¡iÄ 's random unstructured stuff]

X300 dongle

- Altera EPM3064A TC44-10N ftp://ftp.altera.com/outgoing/download/bsdl/3064at44.bsd
- LD1117A L33AUD

JTAG

I took picture of both sides of board, corrected it using perspective tool in gimp and added layers with VCC (5V and 3.3V) and GND (checked with unimer continuity test).



JTAG pinout doesn't match silkscreen designation of pin 1 (it's rotated). It also doesn't have VCC pin connected, so you need to supply 5V power via other means (I used PS/2 connector).

Bus Blaster jtag try:

```
jtag> cable jtagkey vid=0x0403 pid=0x6010 interface=0
Connected to libftd2xx driver.
jtag> detect
IR length: 10
Chain length: 1
Device Id: 00010111000001100100000011011101 (0x170640DD)
  Manufacturer: Altera (0x0DD)
  Part(0):      EPM3064A (0x7064)
  Stepping:     1
  Filename:     /usr/local/share/urjtag/altera/epm3064a/epm3064a

jtag> print chain
 No. Manufacturer              Part                 Stepping Instruction          Register
------------------------------------------------------------------------------------------
*  0 Altera                   EPM3064A             1        BYPASS               BYPASS

# IMPORTANT: load signal aliases for this package
jtag> include /usr/local/share/urjtag/altera/epm3064a/t44

# get values of all pins

jtag> instruction SAMPLE/PRELOAD
jtag> shift ir
jtag> shift dr
jtag> dr
01001011101011101001011101001001001011111111010111010
11101001001001011101001001001001001001001001001010010
```

```
0100100100100100100100100100100100100100100100100100100100100100
0100100100100101111010111010010
 (0x0000000000000000000000000000000024924924924975D2)

jtag> print chain
 No. Manufacturer              Part                 Stepping Instruction          Register
------------------------------------------------------------------------------------------
*  0 Altera                    EPM3064A             1        SAMPLE/PRELOAD       BSR

jtag> get signal IO2
IO2 = 1
jtag> get signal IO3
IO3 = 1
jtag> get signal IO43
IO43 = 1
jtag> get signal IO44
IO44 = 1

# toggle single pin

jtag> instruction EXTEST
jtag> shift ir

jtag> print chain
 No. Manufacturer              Part                 Stepping Instruction          Register
------------------------------------------------------------------------------------------
*  0 Altera                    EPM3064A             1        EXTEST               BSR

jtag> set signal IO10 out 0
jtag> shift dr

# re-read values of all pins

jtag> instruction SAMPLE/PRELOAD
jtag> shift ir
jtag> shift dr
jtag> get signal IO10
IO10 = 0
```

SVF programming

```
jtag> svf /blue-zfs/FPGA/Altera-x300/x300_dongle/output_files/dongle1.svf stop progress
detail: Parsing     20/520 (  3%)warning: unimplemented mode 'ABSENT' for TRST
detail: Parsing    520/520 (100%)detail:
detail: Scanned device output matched expected TDO values.
```

VHDL to toggle pins

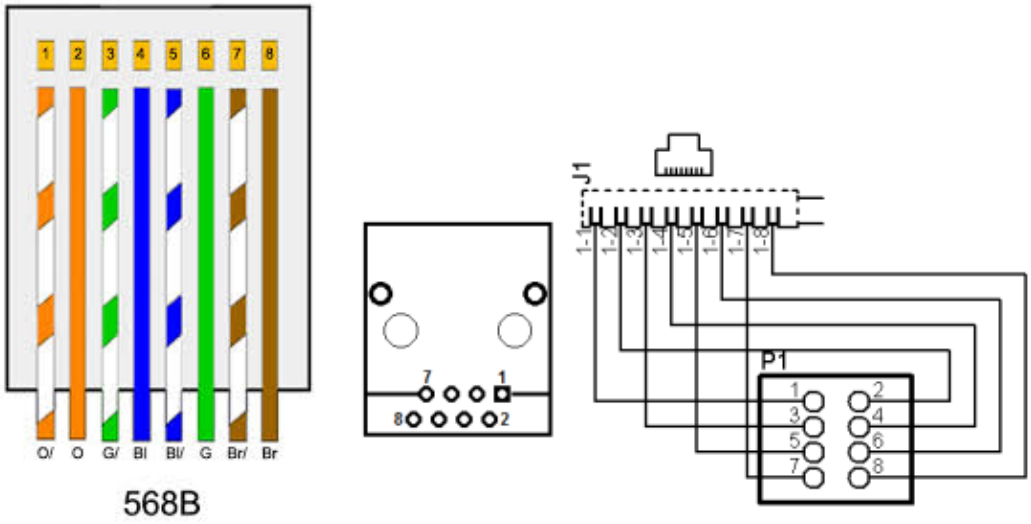
Toggle pins on all four sides of CPLD and create additional two images with all one and all zero for easy test where pin is

dongle1.vhd

Then I connected logic analyzer on pins and tried different svf files (all-0, all-1, left, bottom, right, top) to locate which pin change depending on image loaded. To isolate pins I used EXTEST and

toggled pins.

RJ45



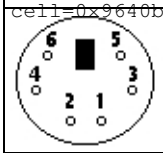
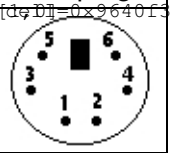
t=0x963e268

pin	pull	cable
1		GND
2	1	VGA?
3	0	IO?
4	1	VGA?
5	0	IO?
6	1	VGA?
7		IO10
8		5V

PS2

PS2
http://www.computer-engineering.org/ps2protocol/

t=0x96407c8

female socket	male plug
	

6-pin Mini-DIN (PS/2):
1 - Data
2 - Not Implemented
3 - Ground

4 - Vcc (+5V)
5 - Clock
6 - Not Implemented

Keyboard (left, purple)

pin	IO
1 (data)	IO43
5 (clock)	IO44

Mouse (right, green)

pin	IO
1 (data)	IO34
5 (clock)	IO35

Audio jack

R2R D2A

all measurements are done on Hantek 2090 with 500mV/div setting which may account for some accuracy errors

channel 1

state	min	max
off	64.17 mV	95.54 mV
IO23	1.664 V	1.696 V
IO22	864 mv	895 mV
IO21	472 mV	503 mV
IO20	283 mV	299 mV
IO19	189 mv	221 mV

channel 2

state	min	max
off	3.3	50 mV
IO33	113 mV	144 mV
IO31	207 mV	254 mV

cell=0x[illegible] [4,2]

IO28	395 mV	442 mV

cell=0x[illegible] [5,2]

IO27	803 mV	850 mV

cell=0x[illegible] [6,2]

IO25	1.603 V	1.635 V