tb_cocotb_up.v

AUTHORS

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DATES

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INFORMATION

Brief

Test bench wrapper for cocotb

License MIT

tb_cocotb

```
module tb_cocotb #(
parameter
ADDRESS_WIDTH
 =
32,
parameter
BUS_WIDTH
 =
4,
parameter
WORD_WIDTH
 =
4,
parameter
```

```
 CLOCK_SPEED
  =
 100000000,
 parameter
 SELECT_WIDTH
  =
 16,
 parameter
 DEFAULT_RATE_DIV
  =
 0,
 parameter
 DEFAULT_CPOL
  =
 0,
 parameter
 DEFAULT_CPHA
  =
 0,
 parameter
 FIFO_ENABLE
  =
 0
)
                                                                    (
 input
 clk,
 input
 rstn,
 input
 up_rreq,
 output
 up_rack,
 input
  [ADDRESS_WIDTH-(BUS_WIDTH/2)-1:0]
 up_raddr,
 output
  [(BUS_WIDTH*8)-1:0]
 up_rdata,
 input
 up_wreq,
 output
 up_wack,
 input
  [ADDRESS_WIDTH-(BUS_WIDTH/2)-1:0]
 up_waddr,
 input
  [(BUS_WIDTH*8)-1:0]
 up_wdata,
 output
 irq,
 output
 sclk,
 output
 mosi,
 input
 miso,
 output
  [SELECT_WIDTH-1:0]
 ss_n
)
```

SPI Master core with axis input/output data. Read/Write is size of BUS_WIDTH bytes. Write activates core for read.

Parameters

ADDRESS_WIDTH parameter	Width of the uP address port, max 32 bit.
BUS_WIDTH parameter	Width of the uP bus data port(can not be less than 2 bytes, max tested is 4).
WORD_WIDTH parameter	Width of each SPI Master word. This will also set the bits used in the TX/RX data registers. Must be less than or equal to BUS_WIDTH 1 to 4.
CLOCK_SPEED parameter	This is the aclk frequency in Hz, this is the the frequency used for the bus and is divided by the rate.
SELECT_WIDTH parameter	Bit width of the slave select, defaults to 16 to match altera spi ip.
DEFAULT_RATE_DIV parameter	Default divider value of the main clock to use for the spi data output clock rate. 0 is 2 (2^(X+1) X is the DEFAULT_RATE_DIV)
DEFAULT_CPOL parameter	Default clock polarity for the core (0 or 1).
DEFAULT_CPHA parameter	Default clock phase for the core (0 or 1).

Ports

clk input	Clock for all devices in the core
rstn input	Negative reset
up_rreq input	uP bus read request
up_rack output	uP bus read ack
up_raddr input [ADDRESS_WIDTH-(BUS_WIDTH/ 2)- 1:0]	uP bus read address
up_rdata output [(BUS_WIDTH* 8)- 1:0]	uP bus read data
up_wreq input [(BUS_WIDTH* 8)- 1:0]	uP bus write request
up_wack output [(BUS_WIDTH* 8)- 1:0]	uP bus write ack
up_waddr input [ADDRESS_WIDTH-(BUS_WIDTH/ 2)- 1:0]	uP bus write address
up_wdata input [(BUS_WIDTH* 8)- 1:0]	uP bus write data
irq output [(BUS_WIDTH* 8)- 1:0]	Interrupt when data is received
sclk output [(BUS_WIDTH* 8)- 1:0]	spi clock, should only drive output pins to devices.
mosi output [(BUS_WIDTH* 8)- 1:0]	transmit for master output
miso input [(BUS_WIDTH* 8)- 1:0]	receive for master input
ss_n output [SELECT_WIDTH- 1:0]	slave select output

INSTANTIATED MODULES

dut

Device under test, up_spi_master