

axis_moving_average.v

AUTHORS

JAY CONVERTINO

DATES

2023/02/01

INFORMATION

Brief

AXIS moving average for unsigned numbers.

License MIT

Copyright 2023 Jay Convertino

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

axis_moving_average

```
module axis_moving_average #(
    parameter
    BUS_WIDTH
    =
    1,
    parameter
    WEIGHT
    =
    1
) ( input aclk, input arstn, output [8*BUS_WIDTH-1:0] m_axis_tdata, output r
```

AXIS moving average for unsigned numbers.

Parameters

BUS_WIDTH parameter	Width of the BUS in bytes.
WEIGHT parameter	How many elements, rounded to a power of two, to accumulate.

Ports

ack	Clock for AXIS
arstn	Negative reset for AXIS
s_axis_tdata	Input data
s_axis_tvalid	When set active high the input data is valid
s_axis_tready	When active high the device is ready for input data.
m_axis_tdata	Output data
m_axis_tvalid	When active high the output data is valid
m_axis_tready	When set active high the output device is ready for data.

VARIABLES

m_axis_tdata

```
assign m_axis_tdata = r_accumulator[(  
c_WEIGHT_POWER  
1  
):c_WEIGHT_POWER] 8*BUS_WIDTH+
```

Trim and shift data to get amount, this is the divide out.

m_axis_tvalid

```
assign m_axis_tvalid = r_always_valid
```

Single clock edge valid

s_axis_tready

```
assign s_axis_tready = m_axis_tready
```

We are ready if the destination is ready