



Datapath Chaining Cheat Sheet

Summary:

When using the datapath configuration tool, it is important to set up the signal chaining properly in order to get the proper behavior. This memo provides a simple sheet that shows the datapath chaining configurations for datapaths of 16, 24 and 32 bit widths. It also shows the proper configurations for shift left, shift right and arithmetic shift right.

Details:

When a 16, 24 or 32 bit datapath is created in the datapath configuration tool, there are important fields that must be configured correctly to allow the datapaths to work together. The tool will generate an 'a' and 'b' datapath for 16 bit widths, an 'a', 'b' and 'c' datapath for 24 bit widths, and an 'a', 'b', 'c' and 'd' datapath for 32 bit widths. The cheat sheet below can be used for any of these options.

In the 16 bit case, use the two end configurations for the 'a' and 'b' chaining options, i.e. configure datapath 'a' with the cheat sheet 'a' setup, and configure datapath 'b' with cheat sheet 'c' setup.

In the 24 bit case, use the configurations for the 'a', 'b' and 'c' chaining options as they are shown in the cheat sheet.

In the 32 bit case, use the two end configurations for the 'a' and 'd' chaining options, i.e. configure datapath 'a' with the cheat sheet 'a' setup, and configure datapath 'd' with cheat sheet 'c' setup. For datapaths 'b' and 'c', use the cheat sheets 'b' setup for both.

SHIFT LEFT

MSB UDB_c

*CI SELx: CHAIN
SI SELx: CHAIN
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: NO CHAIN*

UDB_b

*CI SELx: CHAIN
SI SELx: CHAIN
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: CHAIN*

UDB_a LSB

*CI SELx: ARITH
SI SELx: DEFSI
CHAIN x: NO CHAIN

Chain FB: NO CHAIN
Chain CMSB: CHAIN*

SHIFT RIGHT

MSB UDB_c

*CI SELx: CHAIN
SI SELx: DEFSI
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: NO CHAIN*

UDB_b

*CI SELx: CHAIN
SI SELx: CHAIN
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: CHAIN*

UDB_a LSB

*CI SELx: ARITH
SI SELx: CHAIN
CHAIN x: NO CHAIN

Chain FB: NO CHAIN
Chain CMSB: CHAIN*

ARITHMETIC SHIFT RIGHT

MSB UDB_c

*CI SELx: CHAIN
SI SELx: DEFSI
MSB SI: MSB
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: NO CHAIN*

UDB_b

*CI SELx: CHAIN
SI SELx: CHAIN
CHAIN x: CHAIN

Chain FB: CHAIN
Chain CMSB: CHAIN*

UDB_a LSB

*CI SELx: ARITH
SI SELx: CHAIN
CHAIN x: NO CHAIN

Chain FB: NO CHAIN
Chain CMSB: CHAIN*