

INVENTRATM

THE INTELLIGENT APPROACH TO INTELLECTUAL PROPERTY

FIR Filter LINEAR PHASE

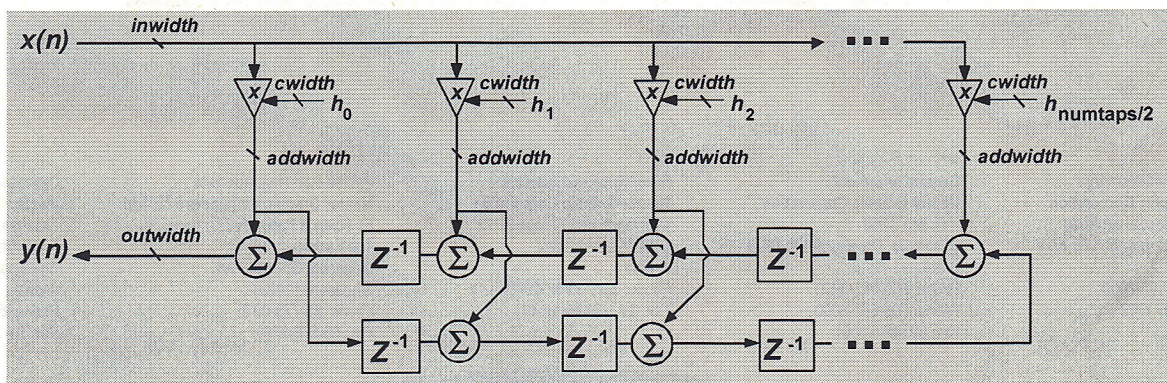
FUNCTION

Performs a direct form linear phase FIR filter operation. The filter can be implemented with fixed or programmable coefficients. The fixed coefficient filter uses a very efficient multiplication scheme based on a Canonic Signed-Digit number representation. General purpose multipliers are used for the programmable version of the filter and the coefficients are loaded one at a time, bit-parallel through the coefficient input bus. Area-efficient, resource-shared architectures of this function can be created by specifying the number of processing elements. High speed, bit-level pipelined architectures of this function can be created by specifying the pipeline subword parameter (*pipe_subword*).

PARAMETER DESCRIPTION

| | |
|--------------------------|---|
| ♦ addwidth: | Wordlength of addition |
| ♦ ascale: | Scaling method for adders (resource-shared) |
| ♦ cwidth: | Coefficient Wordlength |
| ♦ dly_line: | Memory configuration option if $\text{number_of_taps}/(2*\text{number_of_PEs}) \geq 16$; otherwise forced to shift registers (resource-shared) |
| ♦ inwidth: | Data Wordlength |
| ♦ mem_type: | Memory Implementation (resource-shared) |
| ♦ mscale: | Scaling method for multipliers |
| ♦ number_of_taps: | Number of taps |
| ♦ number_of_PEs: | Number of processing elements (resource-shared) |
| ♦ outwidth: | Output wordlength |
| ♦ pipe_subword: | Number of bits in pipeline wordlength (non-resource-shared) |
| ♦ round_type: | Rounding/truncation scheme |

FUNCTIONAL DESCRIPTION



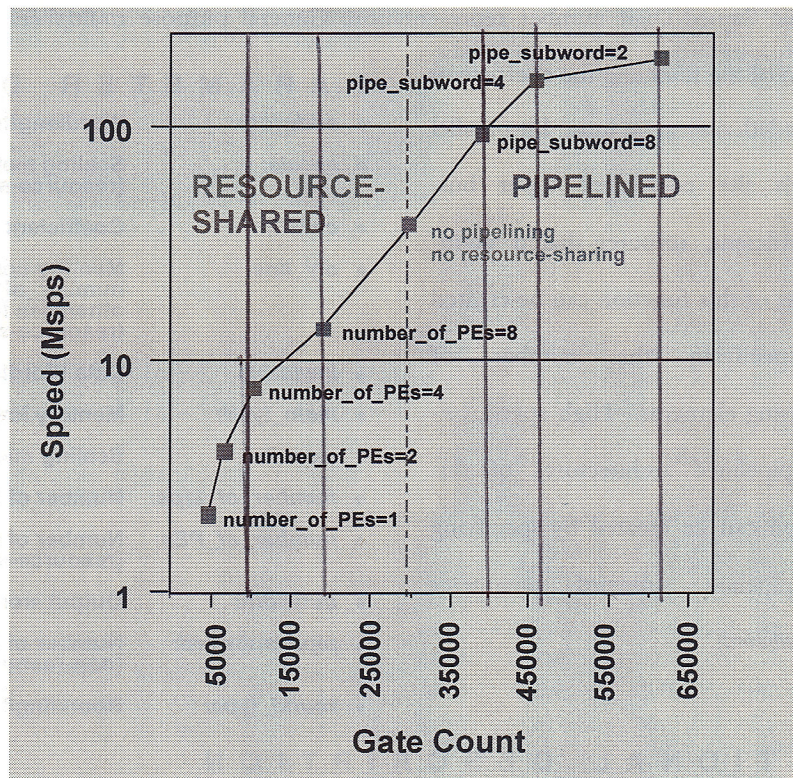
I/O PORTS

x: Data input signal
coef: Coefficient input signal
cload: Coefficient load signal
clk: Clock signal
y: Data output signal
sclk: Sample strobe (resource-shared)

SAMPLE PERFORMANCE SPECIFICATIONS

(Programmable Coefficient)

Linear Phase FIR Filter, 32 Tap, Synthesized to a 0.5 mm CMOS Process, *nominal conditions*



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