

DINT2FP

Integer to Floating Point Pipelined Converter ver 2.31

OVERVIEW

The DINT2FP is the **pipelined** integer to floating point converter. The input and output numbers format is according to IEEE-754 standard. DINT2FP supports double word integers (4 Bytes) and single precision real numbers. Convert operation is pipelined to 3 levels. Input data are fed every clock cycle. The first result appears after latency equal to 3 clock periods and next results are available **each clock** cycle. Full precision and accuracy are accomplished.

APPLICATION

- Math coprocessors
- DSP algorithms
- Embedded arithmetic coprocessor
- Data processing & control

KEY FEATURES

- Full IEEE-754 compliance
- Double word integer input numbers (4 Bytes)
- Single precision real output numbers
- Simple interface
- No programming required
- 3 levels pipelining
- Full accuracy and precision
- Results available at every clock
- Fully configurable
- Fully synthesizable, static synchronous design with no internal tri-states

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DELIVERABLES

- ◆ Source code:
 - ◇ VHDL Source Code or/and
 - ◇ VERILOG Source Code or/and
 - ◇ Encrypted, or plain text EDIF netlist
- ◆ VHDL & VERILOG test bench environment
 - ◇ Active-HDL automatic simulation macros
 - ◇ ModelSim automatic simulation macros
 - ◇ Tests with reference responses
- ◆ Technical documentation
 - ◇ Installation notes
 - ◇ HDL core specification
 - ◇ Datasheet
- ◆ Synthesis scripts
- ◆ Example application
- ◆ Technical support
 - ◇ IP Core implementation support
 - ◇ 3 months maintenance
 - Delivery the IP Core updates, minor and major versions changes
 - Delivery the documentation updates
 - Phone & email support

LICENSING

Comprehensible and clearly defined licensing methods without royalty per chip fees make using of IP Core easy and simply.

Single Site license option is dedicated for small and middle sized companies making its business in one place.

Multi Sites license option is dedicated for corporate customers making its business in several places. Licensed product can be used in selected branches of corporate.

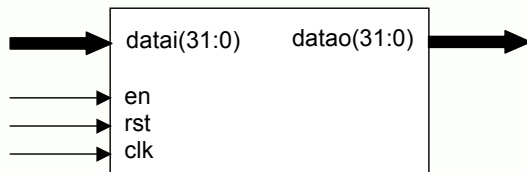
In all cases number of IP Core instantiations within a project, and number of manufactured chips are unlimited. The license is royalty per chip free. There is no time of use restrictions.

<http://www.DigitalCoreDesign.com>
<http://www.dcd.pl>

There are two formats of delivered IP Core

- VHDL, Verilog RTL synthesizable source code called HDL Source
- FPGA EDIF/NGO/NGD/QXP/VQM called Netlist

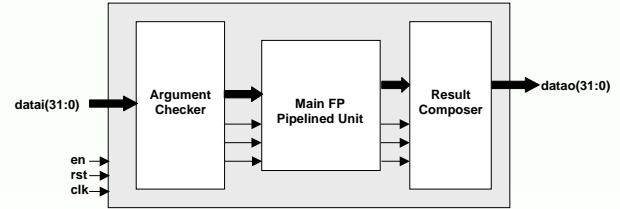
SYMBOL



PINS DESCRIPTION

PIN	TYPE	DESCRIPTION
clk	Input	Global system clock
rst	Input	Global system reset
en	Input	Enable computing
datai[31:0]	Input	Data bus input
datao[31:0]	Output	Data bus output

BLOCK DIAGRAM



Arguments Checker - performs input data analyze against IEEE-754 number standard compliance. The appropriate numbers and information about the input data classes are given as the results to Main FP Pipelined Unit.

Main FP Pipelined Unit - performs integer to floating point conversion. Gives the complex information about the results to Result Composer module.

Result Composer - performs result rounding function, and data alignment to IEEE-754 standard.

PERFORMANCE

The following table gives a survey about the Core area and performance in the ASIC devices (all key features have been included):

Device	Optimization	Gates	F _{max}
0.25u typical	area	1350	100 MHz
	speed	3300	290 MHz
0.18u typical	area	1300	160 MHz
	speed	2850	410 MHz

Core performance in ASIC devices

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