ECB-mode DES Cryptographic Smart Processor Core

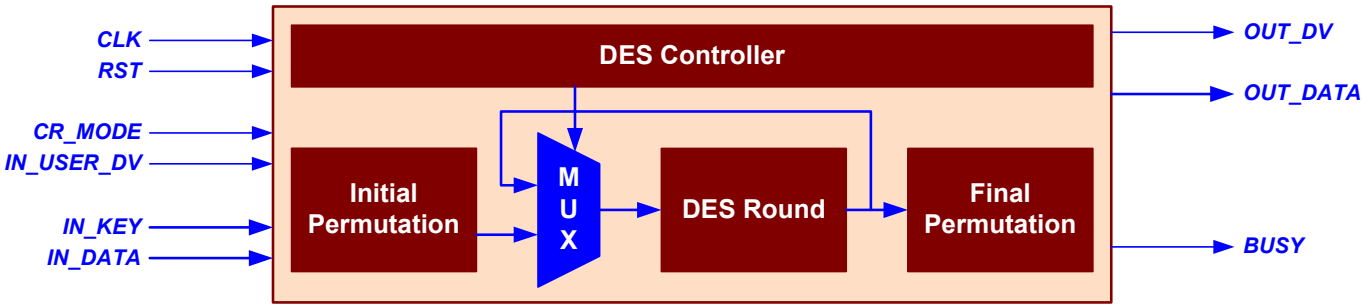
General information

The CORE is fully compatible with the Data Encryption Standard according to the Federal Information Processing Standards Publication 46-3 (FIPS 46-3) of the National Institute of Standards and Technology. Low equipment volume is achieved due to its fully iterative structure. Dynamic key changing is provided. The CORE is intended to be used in PC market, files encryption, electronic commerce, financial applications, computer and telecommunication networks, pay TV etc.

Features

- *Input data word size – 64 bits;*
- *Output data word size – 64 bits;*
- *Input key size – 56 bits;*
- *Encryption and decryption are supported;*
- *Simple interface and timing;*
- *Low gate count;*
- *Iterative structure, 17 clocks per encryption/decryption;*
- *Vendor independent VHDL model, netlist for target device.*

ECB-mode DES Cryptographic Smart Processor Core pinout



Interface description

Pin	Activity	Description
CLK	Positive clock edge	Clock
RST	HIGH	Asynchronous reset
CR_MODE	HIGH	Encipherment direction ('0' - encryption)
IN_USER_DV	HIGH	Input data validation flag
IN_DATA [63 - 0]	-	Input data bus
IN_KEY [55 - 0]	-	Input key
OUT_DV	HIGH	Output data validation flag
OUT_DATA [63 - 0]	-	Output data bus
BUSY	HIGH	Processor's business flag

Sample implementation

Device	Speed grade	Utilization	Clock rate	Performance	Synthesis and implementation tools	Availability
ALTERA						
EPF10K30ABC356	-01	720 LCs	40 MHz	150.5 Mbits/s	Synplify, Altera [1]	***Now***, ver_2_1_1
EP20K60EFC324	-01X	591 LEs	66 MHz	248.4 Mbits/s	Synplify, Altera [2]	***Now***, ver_2_1_2
EPF10K30ABC356	-01	698 LCs	67.56 MHz	254.3 Mbits/s	Synplify, Altera [1]	***Now***, ver_2_2_1
EP20K60EFC324	-01X	591 LEs	87 MHz	330.2 Mbits/s	Synplify, Altera [2]	***Now***, ver_2_2_2
EP2S15F484C3	3	377 ALUTs	362,58 MHz	1365.0 Mbits/s	Altera [3]	***Now***, ver_2_2_3 [4]
EP2S15F484C3	3	391 ALUTs	399,68 MHz	1504.67 Mbits/s	Altera [3]	***Now***, ver_2_2_4 [5]

1) Altera – Altera Max+Plus II version 10.1;
2) Altera – Altera Quartus II version 1.1 build 155;
3) Altera – Altera Quartus II, ver 5.1;
4) – Area optimized;
5) – Speed optimized.
Synplify – Synplicity Synplify VHDL Compiler, version 7.0.1.

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