

SELSYNCHRONOUS PROCESSORS

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The purpose of my work consisted in theoretical research of possibilities of modern selfsynchronous processors which do not require the central generator of clock rate and chains and outlay less energy as compared.

With passing to the project settings of norms of less than 90 nm in constructing IC there were appeared new principle problems. Except for the prob-

lems of technological property, connected with the traditional construction of MOE-TRANZISTOR stops to work from different parasite effects that appeared in little size constructions, there were problems connected with the feature of «traditional» selfsynchronousty. Presently the factor of power efficiency of calculations goes out on the first roles. And becomes clear, that it is not enough to improve project norms to easier one in an order to satisfy the contradictory requirements of high fast-acting at a small consumption.

Presently providing of power efficiency of calculations becomes one of major tasks at development of electronic devices. Therefore research-and-development in an area methods of achievement of high energy efficiency intensively will develop by complex optimization of the systems on all its design times, including creation of architecture, optimization of software.

Selfsynchronous (SS) charts from an area theoretical researches actively pass to the area of practical developments, finding the use in the wide nomenclature of computing devices. Such properties of SS-charts are instrumental in it, as independence of capacity from the delays of elements that component it, natural reliability, capacity in considerably more wide range of parameters of environment and tension feeds which change.

For present days generally accepted was the synchronous approach to planning of charts. At such approach for synchronization of elements of chart a global period structure is used. With passing to the technological norms of 45 nm and less than the developers of synchronous charts clashed with such problems, as distribution of time signal, further increase of clock rate, diminishing of sizes of elements, diminishing of energy consumption etc. Most problems in selfsynchronous charts are decided or quite absents. Such charts own a lower energy consumption, characterized the low level of own noises and electromagnetic radiation, own the best protecting from breaking (by the method of analysis of spectrum of consumption of power) and more simple for the repeated use blocks. Advantages of selfsynchronous charts before synchronous open the large prospects of their use, but unsupported by modern facilities the automated planning a development and widespreaded testing of such charts process becomes difficult.