INTEGRATED CHIPS

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Abstract. *The thesis contains information about integrated circuits, their description, principles of operation.*

Keywords: *integrated circuits (IMS), hybrid (IMS), microelectronics, transistors, electronic amplifiers.*

Аннотация. *Диссертация содержит информацию об интегральных микросхемах, их описание, принципы работы.*

Ключевые слова: *интегральные схемы (ИСС), гибридные (ИСС), микроэлектроника, транзисторы, электронные усилители.*

Annotatsiya. *Dissertatsiyada integral mikrosxemalar, ularning tavsifi, ishlash tamoyillari haqida ma'lumotlar mavjud.*

Kalit so'zlar: *integral mikrosxemalar (IMS), gibrid (IMS), mikroelektronika, tranzistorlar, elektron kuchaytirgichlar*

The first integrated circuits (IMS) were created in 1958. IMSs are small in size, light in weight, low in energy consumption, high in reliability, and are currently being developed in design-technological variants: thick and thin film, semiconductor and hybrid.

Since 1965, the development of microelectronics has been in line with G. Moore's Law, which means that the number of elements in modern IMS doubles

every two years. Currently, there are 106-109 very high IMS (0 'UIS) and giga high (GYuIS) IMSs.

During a period of almost half a century of development of microelectronics, a wide range of IMSs has been developed. It is important for professionals who design and operate telecommunications and information and communication systems to have knowledge of the capabilities of a modern microelectronic element base.

Due to the small size of the geometric dimensions of the IMS resistors, it is not possible to obtain the measured resistance m. Therefore, by reducing its geometric dimensions by mechanical means or using a laser beam, the resistor resistance is brought to the required nominal value. All elements of semiconductor integrated circuits (transistors, diodes, resistors and capacitors) are created by epitaxy and diffusion on the basis of p-n teeth of silicon, arsenide and gallium. Resistors in semiconductor circuits are generated in the base field and their resistance is determined by the field resistance and ranges from 25 ohms to several kilometers.

Special-purpose thin-film chips are widely used in microelectronic technology. Currently, large-hybrid integrated circuits are being developed on their basis. This is because thin-film technology allows the nominal value limits of elements to be extended and higher accuracy, stability and reliability to be achieved.

Therefore, modern electronics is integrated microelectronics, in which digital integral electronic systems play a key role.

Signal modifications, such as amplification, comparison, and multiplication, are performed using a series of widely used, industrially produced analog integrated circuits (AIS).

Although there are many types of AIS products, all of them use a limited number of basic elements: simple amplifier cascade, differential amplifier, DC

generator, AC voltage switching device, output cascade, etc., in order to simplify the schematic generalization and design. Based on them, OKs of analog microcircuits and analog coke distributors have been created, which can be used to solve any analog functional problem in practice.

Since in integrated circuits all elements are formed in a single crystal, their value is determined by the price of kristaU, not by the price of the elements. Therefore, it is advisable to place as many elements as possible in the crystal. The active elements in the crystal - transistors, diodes - did not have a minimum surface area, and the passive elements did not have a maximum surface area. Therefore, in IS, the number of resistors is kept to a minimum, capacitors with a large surface area are not used, and cascades that coordinate the cascades are used instead.

A digital integrated circuit (RIS) is an integrated electronic device designed to modify information transmitted in the form of a digital signal as required. The variable signal level can only have two values. If we include its main function in the definition of RIS, then the definition is as follows: a digital integrated circuit consists of electroradio materials and components, which is a known polynomial x in a binary number system. converts to polynomial.

Functionally, RISs are subdivided into logic integrated circuits (elements), information storage circuits (memory elements), auxiliary and special integrated circuits. Logical integrated circuits or logic elements are designed to logically modify information in a binary number system. These are the basic building blocks of computers and other digital systems. They make up 70-80% of the elements in the device. Logical integrated circuits, in turn, can be divided into:

An example is the Roman system. For example, the role of X does not matter when writing the number XXVII. This number is 10 regardless of where it is located. In a positional number system, the exact value of a number depends on its position in the number. In digital technology, only positional number systems are used.

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