

Electronics And Its Role In Modern Science

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Abstract. This in the article of electronics today's importance, present time science and technique development as well of electronics development stages and higher military education in the institution of teaching importance seeing developed.

Key words: information, electronics, technology, integration, element, electronic tool, device.

INTRODUCTION

Electronics - electrons electricity area with effect and information transmission, re work and in storage applied electron instrument and devices Create methods learning with the science involved. Electronics, first of all a person of society to information was requirements to satisfy intended. Work release of forces and work release of relations development technique and of technology new types to create based on and information of means development with strong respectively depends People between information exchange of devices development history one how many from stages consists of: action and mime, sound, writing, book printing, electronics. Current in the day information transmission, re work and storage of devices all of them a person society by is being used.

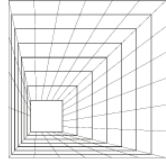
Information of transmission new method transition always in society work release forces sharp led to growth. Electronics long to distances being transmitted of information transmission speed and size sharp gained Electronics development during four stage pressing passed. The first stage in 1895 by AS Popov wireless telegraph - the invention of radio to be done with started In this period contact devices passive from elements: wires, inductance coils, magnets, resistors, capacitors, electromechanical devices (alternately connectors, relay and others) from consists of was Second stage in 1906 L. first asset by de Forest electron instrument - triode of the lamp creation with started



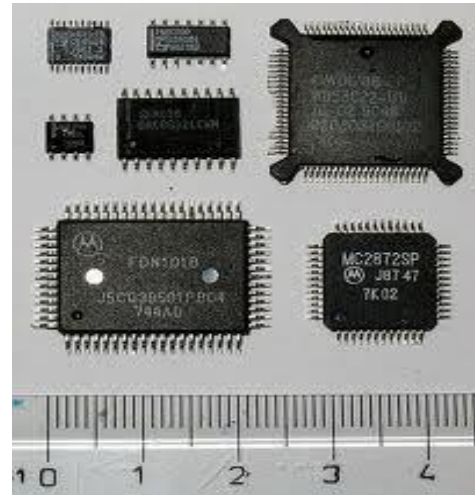
Triode - electricity signals different change methods have was, basically - power strengthen property have the first asset that is electron instrument it has been. Weak signals electron lamps using strengthen at the expense of telephone through conversations long to distances transmission opportunity surface came Electronic lamps by radio sound , music , later while television through to transfer images as well to the tooth possibility created Second stage electronics equipment elements - electron lamps , resistors, capacitors, transformers enters Third stage 1948 year Dj. Bardin, W. Brattein and

W. Shockley by hard body (half conductive) of electronics main active (amplifier) element was - bipolar of the transistor discover to be done with started Transistor electron of the lamp all functions to perform able

Transistor creation with, his alternately connector task do it get property, small dimensions and high reliability according to one how many a thousand electricity composed of radioelements. found complicated electron device and systems Create opportunity was born Such devices design very easy, but error free hard work and work provide while almost impossible was The point is that each ERE is different created was (discrete elements) and another elements requires individual connection (assembly). does was Even very sure interruption, short circuit during installation such as errors surface will come and the system immediately to work fall does not provide was For example, 50 years At the end of being created Exposures dozen resistor and capacitors account if not, for 100 thousand near diodes and up to 25 thousand from transistors consists of was As a result discrete of



the elements Created of exposure scatter power 3 kW, dimensions 0.2 m³, weight 200 kg , each on the hour from work get out was This is definitely an exposure job ability from its smallness proof will give. Such discrete transistorized technique using complicated electron devices Create opportunity there is it's not. So, violations probability, dimensions and weight, cost and others one how many to the degree small has been good quality new element base Create Demand will be done was Integrated circuits the same such an element is the base to students answer gave The fourth stage based on integrated circuits (IC). device and systems Create with started and microelectronics called period . The first products of microelectronics - integrated circuits of the 60s At the end of appear it has been . Current in the day IMSs three different constructive - technological in methods is created: bold veiled and thin veiled hybrid integrated circuits and half Conductor integrated microcircuits. Integrated circuits radio electronics in hardware interelemental connections provide with together, their small dimensions, energy supply, mass and material volume they provide. Many p numerous exits and of shells absence of radio electron of equipment volume and mass shrinks.



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Schemotechnika was coined in the 60s of the 20th century a lot functional electron of devices as it appears depends respectively appear was Schematic engineering theoretical base linear and non-linear electricity chains theory, electrodynamics, mathematics programming, automata theory and that's it etch organize does Circuit engineering is a scientific and technical field that includes problems of analysis and synthesis of electronic devices of radio engineering, communication, automation, computer technology, etc. Above counting passed of devices sure work provide and them to the composition entering of elements parameters used for calculation.

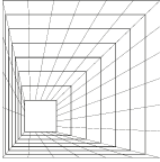
Information and communication technologies complicated systems to the class belongs to they are different in complexity from digital integrated circuits organize found Therefore, this systems formative digital devices study current from issues one is considered Digital circuit engineering science information and communication in technologies used digital devices types, their characteristics structure, performance mechanisms and they are using to be created complicated of devices technological and circuit technician features study issues own into takes.

In circuit engineering, circuits are used that have two states, represented by the words “zero” and “one” or “true” and “false”. When certain numbers are required to be processed or remembered, they are represented as certain combinations of ones and zeros. In that case, a special mathematical apparatus is needed to describe the operation of digital devices. Such a mathematical apparatus is called Boolean algebra or Boolean logic. It was developed by the Irish scientist George Bull (1815-1864). J. This introduced three basic logical operators: AND, OR, NOT. All electronic devices and computing machines in use today are designed based on these logical operators.

In recent years, important practical results have been achieved in non-electronics, i.e., high-efficiency lasers based on heterostructures, which are the main elements of modern telecommunications and information systems. and light-emitting diodes were created; photodetectors, ultra-high frequency transistors, transistors, various sensors and others were created.

Electric onics achievements are also important in the military field. The main features of modern warfare are the use of electronic computing techniques, the use of complex radio-technical tools in combat management, and the automation of the control of basic weapons.

Automation is easily, easily and reliably implemented with the help of electronic mechanisms, the development of military equipment is being carried out in connection with the development of electronics. Modern military equipment is equipped with more and more electrical devices and equipment. All this is related to the development of electronics.



Schemotechnics is a field of science and technology that deals with the study and development of methods of creating electronic devices and devices used for information transmission, reception, processing and storage. Electronics is based on physical knowledge such as electromagnetic field theory, quantum mechanics, solid state theory and the phenomena of electrical conductivity. The development of electronics is closely related to the improvement of the technology of electronic devices and has gone through four stages until now.

Currently, the level of development of the telecommunications and information system literally depends on the level of use of microelectronics and nanoelectronics products in them.

Since 1965, the development of microelectronics has been in accordance with G. Moore's law, that is, the number of elements in modern IMS has doubled every two years. Currently, the number of elements is $10^6 \div 10^9$ ultra high and giga high ICs are being produced.

Due to the existence of physical limits to the development of integrated microelectronics, a new direction of electronics - nanoelectronics - is developing rapidly along with traditional microelectronics.

Today, important practical results have been achieved in nanoelectronics, i.e., high-efficiency lasers and light-emitting diodes have been created based on heterostructures, which are the main elements of modern telecommunications and information systems; photo reception - generators, ultra-high-frequency transistors, single-electron transistors, various sensors and others were created.

Along with integrated microelectronics and nanoelectronics, functional electronics is developing. This direction of electronics is related to the abandonment of traditional elements (transistors, diodes, resistors and capacitors) and the use of various physical phenomena (optical, magnetic, acoustic, etc.) in a solid body.

Scientists who laid the foundations of modern information and communication technologies with the development of fast transistors, lasers, integrated microcircuits (chips) and others in the scientific works of the Royal Academy of Sciences of Sweden: JI Alferov, G. Kremer, Dj.S. Kilby was awarded the Nobel Prize.

CONCLUSION

At present, the automation of the production management system is mainly solved by the use of electronic devices. This requires our graduates with higher military education to have sufficient knowledge and training in electronics, regardless of their specialization, to successfully solve tasks in various military fields.

As our head of state emphasized, arming our army with modern types of weapons and military equipment is a very important task, and due to this, it is possible to ensure the speed and mobility of our army, as well as the necessary combat power. First of all, it is necessary to pay special attention to providing our army with modern combat equipment, electronic systems of intelligence and surveillance, high-speed weapons that hit the target with high precision, effective means of communication, as well as reliable means of protection that can be used individually and in groups.

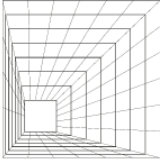
The achievements of electronic science are effectively used in the development of the military field, it certainly shows its effectiveness in achieving achievements in modern battles.

Mankind has always tried to use scientific and technical innovations first for military purposes. The same thing happened with electronic devices, that is, they began to be adapted for military use. It follows that in order for electronic devices to be used for military purposes, military equipment must be equipped with such equipment.

In the era of rapidly developing technical progress, the role of technical tools is incomparable. Necessary for continuous operation of technical means emphasizing the importance of electronic devices is permissible.

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