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U n i t e d S t a t e s o f A m e r i c a

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## Chapter 1

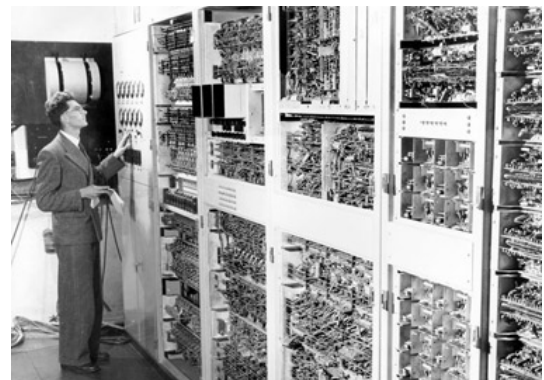
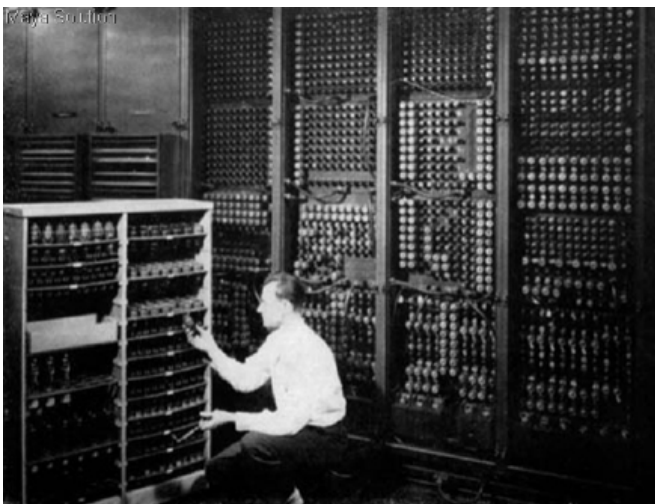
### Computer Systems and Navigations

A computer is a programmable machine that receives input, stores and automatically manipulates data, and provides output in a useful format.

Mechanical examples of computers have existed through much of recorded human history. The first electronic computers were developed in the mid-20th century (1940–1945). Originally, they were the size of a large room, consuming as much power as several hundred modern personal computers (PCs).

Modern computers based on integrated circuits are millions to billions of times more capable than the early machines, and occupy a fraction of the space. Simple computers are small enough to fit into mobile devices, and can be powered by a small battery. Personal computers in their various forms are icons of the Information Age and are what most people think of as “computers”. However, the embedded computers found in many devices from MP3 players to fighter aircraft and from toys to industrial robots are the most numerous.

Picture of world first computer



Picture of Vacuum Tube

The first digital computer in the modern sense of the word, built 1942-1945. Derived from Electronic Numerical Integrator and Calculator. ENIAC  
They are using vacuum tubes



World First Business Computer "Remington Rand's  
Mostly use by post office computer machine.  
Electro-Mechanical

"Who invented the computer?" is not a question with a simple answer. The real answer is that many inventors contributed to the history of computers and that a computer is a complex piece of machinery made up of many parts, each of which can be considered a separate invention.

This series covers many of the major milestones in computer history (but not all of them) with a concentration on the history of personal home computers.

## **Year/ Inventors/Inventions Computer History**

Description of Event

**1936** Konrad Zuse - Z1 Computer First freely programmable computer.

**1942** John Atanasoff & Clifford Berry

ABC Computer Who was first in the computing biz is not always as easy as ABC.

**1944** Howard Aiken & Grace Hopper

Harvard Mark I Computer The Harvard Mark 1 computer.

**1946** John Presper Eckert & John W. Mauchly

ENIAC 1 Computer 20,000 vacuum tubes later...

**1948** Frederic Williams & Tom Kilburn

Manchester Baby Computer & The Williams Tube Baby and the Williams Tube turn on the memories.

**1947/48** John Bardeen, Walter Brattain & Wiliam Shockley

The Transistor No, a transistor is not a computer, but this invention greatly affected the history of computers.

**1951** John Presper Eckert & John W. Mauchly

UNIVAC Computer First commercial computer & able to pick presidential winners.

**1953** International Business Machines

IBM 701 EDPM Computer IBM enters into 'The History of Computers'.

**1954** John Backus & IBM

FORTRAN Computer Programming Language The first successful high level programming language.

**1955**

(In Use **1959**)

Stanford Research Institute, Bank of America, and General Electric

ERMA and MICR The first bank industry computer - also MICR (magnetic ink character recognition) for reading checks.

**1958** Jack Kilby & Robert Noyce

The Integrated Circuit Otherwise known as 'The Chip'

**1962** Steve Russell & MIT

Spacewar Computer Game The first computer game invented.

**1964** Douglas Engelbart

Computer Mouse & Windows Nicknamed the mouse because the tail came out the end.

**1969** ARPAnet The original Internet.

**1970** Intel 1103 Computer Memory The world's first available dynamic RAM chip.

(to be continued next page)

## Continuation of world first and history

**1971** Faggin, Hoff & Mazor

Intel 4004 Computer Microprocessor The first microprocessor.

**1971** Alan Shugart & IBM

The "Floppy" Disk Nicknamed the "Floppy" for its flexibility.

**1973** Robert Metcalfe & Xerox

The Ethernet Computer Networking Networking.

**1974/75** Scelbi & Mark-8 Altair & IBM 5100 Computers The first consumer computers.

**1976/77** Apple I, II & TRS-80 & Commodore Pet Computers More first consumer computers.

**1978** Dan Bricklin & Bob Frankston

VisiCalc Spreadsheet Software Any product that pays for itself in two weeks is a surefire winner.

**1979** Seymour Rubenstein & Rob Barnaby

WordStar Software Word Processors.

**1981** IBM

The IBM PC - Home Computer From an "Acorn" grows a personal computer revolution

**1981** Microsoft

MS-DOS Computer Operating System From "Quick And Dirty" comes the operating system of the century.

**1983** Apple Lisa Computer The first home computer with a GUI, graphical user interface.

**1984** Apple Macintosh Computer The more affordable home computer with a GUI.

**1985** Microsoft Windows Microsoft begins the friendly war with Apple.

## Another interesting path of computer history

(This can give you an inspiration that you are still on the right time to get involved in computer world today, no matter how old you are or how young you are

1000: The abacus gained widespread acceptance in Europe.

1617: John Napier, discoverer of logarithms, invented a calculating device based on them called Napier's Bones.

1622: William Oughtred invented the slide rule, based on Napier's work with logarithms. The slide rule is an "analog" computer and served as the primary computing device for engineers until 1972. Oughtred's was circular, but here's a straight one by Robert Bissaker (1654).

1623: Wilhelm Schickard of Tuebingen, Wuerttemberg (now part of Germany), produced a 6-digit machine called the "Calculating Clock". It can add and subtract and indicates overflow by ringing a bell (allowing 7-digit calculations by counting the overflow). The device was reconstructed in 1960 and found to work.

1644: Blaise Pascal created a 5-digit calculator, the "Pascaline", but it cannot subtract and is more complex than Schickard's machine. Pascal sold somewhere between 10 and 15 of these machines, some capable of 8 digits.

1668: Sir Samuel Morland of England created a non-decimal adding machine designed to do calculations in English currency.

1674: Gottfried Wilhelm von Leibniz of Leipzig designed the "Stepped Reckoner" which could handle operands of 5 and 12 digits with products of up to 16 digits. Unfortunately the carry mechanism sometimes didn't work right.

1770: (or thereabouts) Mathieus Hahn, somewhere in Germany, produces a successful multiplying calculator.

1775: Charles, third Earl of Stanhope, in England, made a successful multiplying calculator similar to Leibniz's.

## Continuation of another very interesting computer history

1786: J. H. Mueller of the Hessian army creates a design for the type of machine later known as a "difference engine" (see 1842, Babbage and Ada) which calculates values of a polynomial. Mueller couldn't get it funded so it wasn't built.

1801: The Jacquard loom used an automatic punch card reader to "program" fabric patterns.

1820: The first commercially available calculator, the Arithmometer, was produced by Charles Xavier Thomas de Colmar of France. The user dialed numbers with a set of wheels, then pulled a crank to do the calculation. It could add, subtract, multiply and divide. Machines of this design were sold for nearly 90 years.

1832-1871: Charles Babbage and Ada, Countess of Lovelace had a lot of fun not quite getting around to completing the Difference Engine, the first (mechanical) programmable computer. Others did complete such machines based on their work.

1854: George Boole invented Boolean Algebra, the binary logic used by all digital computers.

1885: William Burroughs patented an adding machine and founded the American Arithmometer Company, which was renamed Burroughs Adding Machine Company in 1898. Burroughs entered the computer business in the 1950s.

1886: Dor E. Felt produces the "Comptometer" desk calculator. This calculator enters numbers by pressing keys rather than turning dials.

1889: Dor E. Felt adds a printer to his Comptometer desk calculator.

1890: To process information from the 1890 census, Herman Hollerith invented a system of punch cards (see 1801) sized to fit the currency handling equipment used in banks, thus setting the dimensions of the data processing punch card (the dollar was bigger then). This project evolved into the Tabulating Machine Company, which merged into the Computing-Tabulating-Recording company in 1911.

1903: Nutcase inventor Nikola Tesla patented electrical logic circuits called "gates" which implemented Boolean Algebra in physical form. Digital computers are built almost entirely from transistorized versions of these "logic gates". Other Tesla inventions include the entire AC power distribution system, fluorescent lights, high voltage transformers, induction motors, wireless communications (radio), telephone repeaters and other minor items, most of which someone else took credit for.

1911 June: Computing-Tabulating-Recording Company was formed by Computing Scale Company of America, Tabulating Machine Company and International Time Recording Company.

1914: Thomas J. Watson took over Computing-Tabulating-Recording Company and gave it a new mission: "Crush National Cash Register Co." (NCR had fired Watson).

1924: Computing Tabulating Recording Company was renamed International Business Machines (IBM) by Thomas J. Watson.

1935: Konrad Zuse built the relay based Z1 electrical computer in his parents living room. It was followed by the Z2 in 1938. Zuse invented the world's first programming language (Plankalkul) for the Z3 in 1946. He reconstructed the Z4 in Switzerland after the war. Because he was on the wrong side of the war his machines are not counted in the "official" history of computers (except in Germany). His computer company was absorbed by Siemens Corporation.

1935: The Manchester Differential Analyser, an analog computer, was completed to calculate differential equations.

1935: IBM produces the IBM 601 punch card based tabulator capable of doing 1 multiplication per second. 1500 of them were built.

relay contacts of the Mark II computer, causing a malfunction. This is not the origin of the term "bug" in technology. The term was mentioned by Thomas Edison in a way implying it had been long in use then. This may, however, be the first recorded case of a bug being caused by an actual bug.

## Continuation of computer history

1939: Hewlett-Packard Company founded by David Packard and William Hewlett, headquartered in Hewlett's Palo Alto garage.

1939: John Atanasoff and Clifford Berry of Iowa State University began work on the Atanasoff-Berry computer. Atanasoff was judged by the U.S. Supreme Court to be the true inventor of the electronic computer (see also Konrad Zuse, 1935).

1940: George Stibitz of Bell Labs developed a digital calculator from metal strips (from a tobacco can), batteries and flashlight bulbs. This machine, called the Model I Complex Calculator, was in service for 9 years.

1941: John Mauchly and Presper Eckert of the University of Pennsylvania began construction of an electronic digital computer.

1943: Colossus, an electronic digital computer, was built in England to break German codes.

1944: Mark I, the first general purpose digital computer (unless you count certain others) was built at Harvard under the direction of Howard Aiken. The Mark I was used by the Navy for ballistic calculations.

**1945: Navy Lieutenant JG Grace Hopper (later Admiral Grace Hopper) finds a bug (moth) caught in relay contacts of the Mark II computer, causing a malfunction. This is not the origin of the term "bug" in technology. The term was mentioned by Thomas Edison in a way implying it had been long in use then. This may, however, be the first recorded case of a bug being caused by an actual bug.**

1946: ENIAC, the first fully electronic digital computer used 18,000 vacuum tubes. J. Presper Eckert Jr and John Mauchly at the University of Pennsylvania.

1947: The Transistor was invented by Walter Brattain and William Shockley.

1948: An Wang invents core memory. This randomly accessible memory (RAM) is composed of a mesh of wires with little magnetic donuts at the intersections. This type of memory is "non volatile" (it doesn't go away when the power is off) and is, in 2001, making a comeback, but on a microscopic scale.

1948: John Mauchly and Presper Eckert found the Eckert-Mauchly Computer Company and start work on UNIVAC (Universal Automatic Computer).

1948: The first computer with memory, the Ferranti Mark I, is designed at Manchester University by Frederic Williams and Thomas Kilburn.

1948 Fall: IBM produces the "IBM 604", a plugboard programmed calculator using vacuum tubes.

1949-1951: Jay W Forester and an MIT team construct "Whirlwind" for the US Navy Research Office. Features are brought on line over a period of years.

1950: The Ace Pilot Model 1950 was built at the National Physics Laboratory of England, based on the work of Alan Turing, and was in operation for scientific calculations for 6 years.

1950: Western Electric developed growing large single crystals of silicon which could be sliced into wafers – the basic building material for integrated circuits.

1951: UNIVAC, the first commercial computer (unless it was Ferranti's) was shipped by Remington Rand. It used mercury delay lines for memory and reels of magnetic tape for storage. Its first use was to tabulate the 1950 census results.

1951: Ferranti Ltd. completes the first commercial computer (unless it was UNIVAC). It was based on the "Ferranti Mark I" but was also known as the "Manchester Mark II", "MUJDC", "MUEDC", and "MAD-AM". They sold 8 of these even though the leading expert, Douglas Hartree, had assured them 3 existing computers would handle all the calculations that would ever be needed in England.

**1952: Grace Murray Hopper (U.S. Navy Retired) developed the first operational compiler. A compiler converts a human written program into machine code.**

1952: IBM enters the computer business with the "701

1952: IBM introduces the first magnetic tape drive for on-line data storage, the 726. It used 8 diameter reels of tape holding about 1 Megabyte, or the contents of about 12,500 punch cards. IBM was producing 16 Billion punch cards per year in 1952.

1953: IBM introduced the 701, its first electronic computer.

1957: Control Data formed to produce supercomputers. Seymour Cray was the designer.

1957: Digital Equipment Corp. founded by Keneth Olsen with \$70,000. The leading producer "Minicomputers", DEC became the second largest computer company in the 1970s. Ken Olsen made the famous statement "There will never be a use for a computer in the home". Completely missing the PC revolution, DEC declined and was bought and disbanded by PC maker Compaq in 1998.

1957: Grace Hopper developed the Flowmatic computer language for the UNIVAC 1. Flowmatic was the foundation from which COBOL was developed (1959).

1957: John Backus at IBM developed the Fortran compiler for the IBM 704

1958: The integrated circuit is invented by Jack St. Clair Kilby of Texas Instruments, beating Robert Noyce of Fairchild Semiconductor who independently invented one in 1959. Noyce went on to cofound Intel.

1959: Grace Hopper and her Codasyl co-workers issue the first COBOL compiler, a programming language for business use.

1960: IBM shipped the 1401, its first transistor based computer.

1963: Douglas Engelbart patents the mouse.

1964 : BASIC computer programming language was developed by John Kemeny and Thomas Kurtz (no, Bill Gates didn't invent BASIC, sorry).

1964: TTL integrated circuits were introduced by TRW.

1964: IBM started shipping the 360 line of mainframe computers.

1965: Digital Equipment produced the first PDP-8 minicomputer, the first production computer to use integrated circuits.

1965: Work begun at Honeywell on Multics, the operating system Unix was derived from.

1966: ARPAnet was proposed (the first stirrings of the Internet).

1967: IBM built the first floppy disk drives (8 SSSD, 256K).

1968: HAL 9000, the computer in the movie "2001: A Space Odyssey" uttered the famous words "I'm sorry, Dave, I'm afraid I can't do that."

1969: ARPAnet was launched (the birth of the Internet, and the IP network protocol).

1969: The first version of Unix was written by Ken Thompson and Dennis Ritchie to run at Bell Labs on a Digital Equipment PDP-11.

1971: Intel introduced the first microprocessor chip, the 4004, bringing to the world 4-bit power!

1972: Hewlett Packard released the HP-35 electronic calculator. The sliderule was rendered obsolete overnight, and "Reverse Polish Notation" became the standard for engineering calculators.

1973: Xerox demonstrated the Xerox Alto, the first computer to use a graphical display and mouse pointer.

1973: Ethernet was developed by Bob Metcalfe, Butler Lampson, David Boggs and Chuck Thacker.

1974: The TCP part of the TCP/IP protocol stack was proposed by Vint Cerf and Bob Kahn to bring reliable transmission to the Internet.

1974: Gary Kildall developed CP/M, the first standard operating system for microcomputers. CP/M was the operating system Bill Gates bought a rip-off of to create MS-DOS in 1981.

1974: The C programming language was developed by Brian Kerrighan and Dennis Ritchie.

1974 December: The MITS Altair launched the PC revolution.

**1975: Bill Gates and Paul Allen “borrowed” computer time to produce a rip-off of the BASIC computer language (see 1964) for the MITS Altair. The product was announced and advertisements placed before work began to keep others from entering the market. It was expensive, released late, incomplete and riddled with bugs. When copies were passed around by users trying to come up with bug fixes (and who were reluctant to spend a lot of money for something that didn’t work), Bill Gates accused them all of “Software Piracy”. Thus we find the tone of Microsoft’s ethics, business practices, product quality, and attitude toward users (they’re all thieves) already fully formed in the first weeks of the company’s existence.**

1975: The world’s first retail computer store, Arrow Head Computer Company, opened in Los Angeles.

**1976 April: Steve Wosniac and Steve Jobs finished the Apple I computer and formed the Apple Computer Company.**

1977: IBM developed the first relational database program.

**1977: Apple launched the Apple II computer.**

**1977: Commodore exhibited the PET computer.**

**1977: Radio Shack shipped the first TRS-80 Model I, launching a line of computers known (affectionately or otherwise) as the “Trash 80”.**

**1978: Digital Equipment put pressure on the mainframe with the VAX 11/780 minicomputer running the VMS operating system.**

1978: Dennis Hayes started shipping the first “Hayes compatible” modem. 300-baud. Alas, poor Dennis, he continued to sell “brand name” into what had become a commodity market, and went belly up in 1998.

1979: The WordStar word processor and VisiCalc spreadsheet were released, launching the desktop PC into the business world.

1980: Seagate ships the first Winchester (sealed) 5 hard disk – 5-Meg, \$600.

1980: Xerox’s Smalltalk-80 programming language ushered in the concepts of Object Oriented Programming in a graphic environment.

1980: Novell founded.

1981: Microsoft licensed MS-DOS to IBM. Microsoft purchased QDOS (Quick and Dirty Operating System) from Tim Patterson of Seattle Computers and repackaged it as MS-DOS. IBM had to do a lot of the finish work because Microsoft lacked operating system skills. [The stories say Bill Gates’ mother helped this deal because she knew someone at IBM]

1981: Adam Osborne ships the Osborne 1 portable (“sewing machine”, 24-pounds) computer running CP/M.

1981: Bill Gates saw a demonstration of Visi On, a windowing environment by Visi Corp, and it scared him silly. Microsoft immediately began work on “Interface Manager”, later renamed “Windows”.

1981 August: IBM shipped the IBM PC based on the Intel 8088 8-bit microprocessor chip, which IBM was pleased to advertise as a 16-bit chip. Intel’s president remarked that the first he knew the 8088 was a 16-bit chip was when he read an IBM ad in an airline magazine.

1981 November: Ashton-Tate repackaged Wayne Ratliff’s Vulcan database program as dBase II, bringing relational database technology to the PC. There was never a dBase I, nor an Ashton, nor a Tate, (though a parrot was later named Ashton) bringing deceptive product naming to the PC. Ed Esber brought real MBA style business management to the company, destroying it completely. The parrot died and Ashton-Tate was sold to Borland, where dBase died.

1982 February: Intel released the 286 CPU chip at 6-MHz

1982: The KayPro II portable computer ("sewing machine", 24-pounds) running CP/M was released by Non-Linear Systems.

1982: Digital Research sued Microsoft and IBM over copyright infringement. Gary Kildall sat down at a fresh IBM PC, typed a few keystrokes and popped up a Digital Research copyright notice. This impressed the Judge. DR won the case, monetary damages, and the right to clone MS-DOS. Microsoft won a gag order to make sure the public never heard about this case.

1982: The first clones of the IBM PC appeared. Because they copied the BIOS program, IBM hauled them into court and destroyed most of them.

1983: OK, I'm still looking for the details on this. Some big exec (was it Esber?) said "Ashton-Tate has the database, MicroPro (WordStar) has the Word Processor, Visi Corp has the spreadsheet. There is no room for any new software companies."

1983: Compaq brought out the first portable IBM PC compatible ("sewing machine" 30 pounds). In design, it "flattered" the CP/M based Osborne and Kaypro portables. IBM, certain that portable PCs had no market, licensed their PC ROM BIOS code to Compaq, making Compaqs the only truly "100% IBM PC Compatible" PC clones. Many early programs were written in "IBM ROM BASIC", available only on Compaqs and real IBMs.

1983: Phoenix Technologies did a "clean room" reverse engineering job on the IBM PC BIOS (except ROM BASIC), enabling the "PC Clone" industry. Many companies churned out PC compatibles that were a lot faster, a lot cheaper and just as reliable as the IBM PC. Thus was created the unfortunate myth that "only price matters" in selecting computers. 1983 February: The Lotus 1-2-3 spreadsheet program was released for the IBM PC, making it essential for every business to have PCs.

1983 March: IBM brings out the IBM PC XT. Basically it's the PC with a 10-Meg hard disk.

1983 April: Microsoft demonstrated "Interface Manager", later renamed "Windows". The demo was largely faked to make the computer appear to run programs simultaneously.

1983 November: Borland released Turbo Pascal, a low cost programming language that revolutionized the programming tools industry.

1983 November: Microsoft officially announced Windows. It didn't actually work yet, and wouldn't for a couple of years.

1983: Novell introduces NetWare X and NetWare S

1984 January: Apple introduced the Macintosh computer with their famous "1984 Super Bowl commercial". The Macintosh replaced their failed Lisa computer, bringing the graphic environment to the consumer desktop.

1984 April: Automation Access founded.

1984: The GNU Project began with the objective of producing a free, Open Source version of Unix, including all its tools and subsidiary programs.

1984: Hewlett Packard brought out their first LaserJet Laser Printer. 180 dots-inch, based on a Canon printer engine. To get the engine business, Canon signed an agreement they would never produce an HP compatible printer – big mistake.

1985: IBM tried to fight off Ethernet by bringing out their Token Ring network. Technically superior to Ethernet, in practice it was just more expensive. Just about extinct by 1999.

1985: Aldus delivered PageMaker page layout software to the Apple Macintosh, and the Macintosh to business desktops (at least in the marketing department).

1985 October: Intel released the 386 CPU chip at 16-MHz.

1985 November: Microsoft actually shipped Windows 1.0 (two years after announcing it in typical Microsoft fashion). It still didn't work well enough to be useful for anything.

1985: Novell introduces Advanced NetWare 2.0.

1986: MCI and CompuServe bridged their proprietary e-mail systems, accelerating the use of e-mail in business.

1987: Copy protection died as Lotus removed it from 1-2-3. Microsoft had already removed copy protection from their products despite Bill Gates' earlier statements that Microsoft would never ship non-copy protected products. Gates' explanation: "The users won, what can I say? The users won." Copy protection did not return in a serious way until 1998. It now appears it will need a stake driven through its heart to settle it back down.

1987: Digital Research exercised its right to clone MS-DOS (see 1982) and released DR-DOS. Microsoft launched an all out "dirty tricks" war against what they knew to be a superior product (clearly stated in internal e-mails). MS-DOS 5.0, 6.0 and 6.22 were essentially just imitations of the DR packages, though some features (task switching) never worked in the Microsoft versions, and they got sued for others (Stac). Caldera, current publisher of DR-DOS, is suing Microsoft over everything else, and looks good to win big-time.

1987 Apr: IBM and Microsoft introduce OS/2.

1987 Apr: Microsoft introduces OS/2 Lan Manager, an network operating system to compete with Novell's NetWare. It's a patched up rehash of IBM's old PCNet.

1987: Apple introduces their own networking protocol, AppleShare. It supports two protocols, AppleTalk (210-kilobits/sec) and EtherTalk (10-Megabits/second). The EtherTalk card costs over \$900, so most opt for AppleTalk at about \$330 per card.

1987: IBM made VGA the video graphics standard for PC compatibles, sweeping all other products from the market. Unfortunately, it was inadequate, so "SuperVGA" and other non-standards were soon launched by the industry.

1987: Novell's NetWare v2.11 brought networks to small business offices in a big way. One **of the** main objectives – to share Hewlett Packard's expensive laser printers.

1987: IBM tried to regain control of the PC market, introducing the PS/2 family of computers with MCA (Microchannel Architecture). They wanted too much for the license. Even more important, they wanted back license fees for all the AT bus

computers a company had built before they'd license Microchannel. The industry responded with the EISA bus in 1988. Neither was widely accepted, and both were wiped from the PC market by PCI some years later.

1987 November: Microsoft releases Windows 2.0 and support for the Intel 80286 CPU chip. Still not good enough to use for anything.

1987 November: Microsoft releases Windows/386 which lets users run more than one DOS program at the same time. Still not good for much.

1988: Robert Morris Jr. launched the infamous "Internet Worm", ushering in the age of widespread worms, viruses and trojan horses.

1988: Novell introduces Advanced NetWare 2.15.

1988 Oct: 3Com introduces the 3+Open network, based on Microsoft's Lan Manager (based on IBM's old PCNet). In 1990 a famous "shoot out" was held between 3+ and Novell NetWare. 3Com dropped out of the network software business in Dec 1990.

1988 Apr: ISDN service is introduced.

1989 Apr: Intel released the 486 CPU chip at 25-MHz

1989: Novell introduces NetWare 3.0.

1990: Tim Berners-Lee created the World Wide Web service on the Internet.

1990 May: Windows 3.0, an almost but not quite usable version of Microsoft Windows was released.

1990 Sep: The famous breakup – Microsoft and IBM part ways and both have rights to OS/2. IBM tells Microsoft it'll sue their ass if they use the name OS/2, so Microsoft's version was renamed Windows NT.

1991: Novell introduces NetWare 3.11.

1991 Feb: AOL releases client software for IBM PC compatibles.

1991 Oct: Microsoft adds CD-ROM support and multimedia extensions to Windows 3.0.

1991 Oct: Linus Torvalds releases the first publicly available version of the Linux operating system, beating GNU's Hurd to market (see 1984).

1992: The number of hosts on the Internet exceeded 1 million.

1992 April: Microsoft released Windows 3.1, with enough bugs fixed to be actually usable, firming up the tradition that no Microsoft product works before version 3.1, which is why Microsoft called the very first version of Windows NT version 3.1 "to avoid confusion".

1992 November: The Geos desktop with GeoWorks suite was released. The press heralded it as "What Windows 3.1 should have been". Users and reviewers liked it, but no software developers dared write software for it for fear of certain revenge from Microsoft. Geos disappeared from the market.

1992: Novell purchases Unix from AT&T

1993 March: Intel released the Pentium CPU chip at 66-MHz and started a massive advertising campaign to wipe out the 486 chip (because AMD made cheaper 486s that were about as fast as Intel's Pentiums. The Pentium was not called the 586 because a judge told Intel they couldn't copyright a number.

1993: The Mosaic Web browser was launched by NCSA, awakening business interest in the Internet. Graphics could now be viewed as easily as text.

1993: Novell introduces NetWare 3.12 and NetWare 4.0. 4.0 introduces Novell Directory Services in place of the Bindery.

1993 Nov: Microsoft introduces Windows NT 1.0 and a compatible version of OS/2 Lan Manager 1.0. Calls NT 1.0 NT 3.1 "to avoid confusion".

1993: Commercial Linux distributions start to appear.

1994 February: Microsoft released Windows for Workgroups 3.11, adding networking to the product. The network, derived from IBM's primitive PCNet, is so totally piss poor people continue to buy Lantastic instead.

1994 Mar: Bill Gates and Craig McCaw announce a huge low orbit satellite communications system called Teledesic.

1994 Apr: Yahoo Web search service founded.

1994 Jun: ATM (Asynchronous Transfer Mode) data service introduced by Bell Atlantic.

1994 Jun: U.S. government cancels requirement for GOSIP (Government Open Systems Interconnect), relegating the ISO 7 layer protocol stack to textbook status. TCP/IP "the interrum protocol that stayed for dinner" won simply because it worked.

1994 Aug: AOL reaches 1 million subscribers.

1994 Sep: Microsoft releases Windows NT 3.5, a speed-up and bug fix version of NT 3.1.

1994 Sep: The Netscape Navigator Web browser is launched by Mosaic Communications, which changed its name to Netscape two months later.

1994 October: IBM released OS/2 version 3.0, an operating system far superior to anything Microsoft had, or would have for years. IBM launched a major campaign to get software developed for it. Many major software houses signed up to port their applications, but nearly all had to drop OS/2 development when they read the NDA (Non-Disclosure Agreement) for the Windows95 development kit. If you were developing anything for OS/2, you could not participate in the Windows95 program. The

NDA itself required total secrecy, so the reason everyone dropped OS/2 development was only rumored for years.

1994: Novell purchases WordPerfect and Quatro Pro.

1995 March: Microsoft releases "Microsoft Bob", featuring their new "social interface". Bill Gates' new wife Melinda got to announce this utter turkey. "Bob technology" finally found its way into Microsoft Office as the paper clip "assistant".

1995 June: Microsoft released Windows NT 3.51. More bug fixes.

1995 Jul: IBM bought Lotus.

1995 Jul: Amazon.com Web based bookstore was founded.

1995 August: Microsoft released "32-bit" Windows95, amid incredible hype. People who didn't even own computers lined up to buy it. Microsoft announced Windows95 meant "the end of DOS". See subsequent years for later "end of DOS, this time we really mean it" announcements. Also see 1995 November Intel release of the Pentium Pro, which gave the lie to Microsoft's "32-bit" claims. Win95 "integrated" DOS with the Windows interface to eliminate DR-DOS from the market once and for all.

1995 August: Microsoft and Department of Justice finalize Consent Decree. Judge Thomas Penfield Jackson is ordered to sign it, since Judge Stanley Sporkin refused, indicating it was too easy on Microsoft. Microsoft immediately starts publicly ridiculing the Department of Justice, changes the names of the practices forbidden by the Consent Decree, and continues business as usual.

1995 Sep: eBay Web based auction site was launched.

1995 Nov: Intel released the Pentium Pro chip. Microsoft was livid because Pentium Pro was optimized for 32-bit code. Windows95 runs like a dog on PPro, exposing Microsoft's "32-bit" claims to be lies. OS/2 and Unix run just fine.

1995: Novell sells Unix to SCO.

1995: Gigabit Ethernet introduced by 3Com, Sun and Compaq.

1996 Feb: AOL reaches 5 million subscribers.

1996 Feb: Congress passes the Telecommunications Act of 1996 which is supposed to foster competition within local and long distance communications markets. It doesn't work.

1996 Aug: Microsoft released Windows NT 4.0.

1996 Aug: Microsoft released Internet Explorer 3.0 and Netscape released Netscape Navigator 3.0, and the browser war becomes intense.

1996: Bill Gates "discovers" the Internet. It can't be long now before we start hearing that Bill Gates "invented" the Internet (oops, that was Al Gore, wasn't it?).

1996: Novell sells WordPerfect and Quattro Pro to Corel, but keeps rights to GroupWise collaboration and messaging software. Issues Groupwise 5.

1997 Oct: The Department of Justice filed anti-trust charges against Microsoft.

1997 Nov: AOL reaches 10 million subscribers.

1997 December: Editors of PC Week, (published by Ziff Davis, long known as a Microsoft ally) announce that "Microsoft has peaked".

1998 January: Intel released the Pentium II at 333-MHz, delivering on their promise to Microsoft to ship a Pentium Pro that ran 16-bit Windows95 code more efficiently.

1998 Feb: Compaq bought once mighty Digital Equipment, ending the age of the minicomputer. The mainframe is still standing.

1998 May: Napster music "sharing" software is introduced by Shawn Fanning at Northeastern University.

1998 June: Microsoft releases Windows 98. While it contained bug fixes for Windows95 the real reason for its release was to bury Internet Explorer in Windows so the Justice Department couldn't make them take it out.

1998 October: Novell introduces NetWare 5.0. NetWare gets great reviews, and Microsoft feels the heat, especially from comparisons between NetWare 5.0 (shipping, works great) and Windows NT 5.0 (very, very late; very, very buggy, not shipping yet), so renames Windows NT 5.0 to Windows 2000 to stop the 5.0 vs 5.0 comparisons.

1998 Nov: AOL purchases Netscape for \$4.2 billion. Netscape has been crushed by Microsoft's monopolist business practices, but Microsoft spin doctors say it proves the vitality of the market.

1999: Bob Metcalf (see 1973) has to (in public) eat one of his InfoWorld columns because the Internet did not collapse in 1998. He ground it up in a blender with a lot of other ingredients, the wimp! Note: The author has the right to call Bob a wimp – as proof of concept he ate an entire Metcalf column, dry, whole and uncut (but did chase it with some Cabernet).

1999 Apr: the Melissa virus is released bring down Windows based networks worldwide.

1999 May: Microsoft releases Windows 98 SE (Second Edition)

1999 November: Guilty! Judge Jackson's Finding Of Fact in Justice Department suit was released declaring Microsoft has a monopoly, and has knowingly abused its monopoly position.

1999 November: Comdex. All the excitement was in "Internet appliances" and Linux. It was clear that the PC, particularly the Windows PC, is in decline.

1999 Dec: AOL reaches 20 million subscribers.

2000 Jan: Novell introduces NetWare 5.1. Windows NT 5.0 still not shipping.

2000 February: Microsoft finally ships Windows 2000 (the operating system formerly known as Windows NT 5.0).

2000 February: Microsoft can't take the heat – buys off Caldera evil business practices lawsuit. Microsoft demands a gag order as always to keep the truth from getting out. Microsoft announces a charge of \$150 million and implies that was the total price (so Caldera position must have been weak). Experts estimate the actual buy-out was between \$350 million and \$500 million based on \$150 million added to pre-existing reserves. 2000 February: the first big DoD (Distributed Denial of Service) attack brings down Yahoo, eBay, Amazon, CNN.com and E\*Trade.

2000 April: Guilty! Judge Jackson's Finding of Law is released immediately after DOJ / Microsoft settlement negotiations break down. Microsoft guilty on nearly all counts, "not proven" on a couple, and innocent on none.

2000 August: Caldera announces upcoming purchase of UnixWare, Unix trademark, rights to market SCO Unix, and SCO tradename from SCO. SCO becomes Tarantella Inc.

2000 August: Microsoft sends Windows 2000 Datacenter to production. OEMs should be taking delivery in September.

2000 September: Microsoft releases Windows Me (Melenium Edition). This was basically Windows 98SE with some maintenance features and multimedia features "integrated" the same as they did with Internet Explorer with the intent of destroying Real Media and other multimedia vendors.

2000 October 30: The last Multics system is shut down (see 1965).

2000 November: George W. Bush is elected president of the U.S. under suspicious circumstances. The business world presumes this means Microsoft will be let off on anti-trust charges.

2001 January: Linux kernel version 2.4 released with new features aimed at enterprise level servers.

2001 February: Microsoft announces Windows XP (eXPerience) formerly known as Whistler. It is the Windows 2000 code base applied to a consumer operating system. Shipment later in the year.

2001 June: A pro-business, Libertarian leaning Court of Appeals unanimously upholds all 8 counts of Microsoft's conviction for abusing its monopoly. They set aside the penalty for retrial due to an "appearance" of bias on the part of judge Thomas Jackson.

2001 Aug: Microsoft appeals to the Supreme Court to overturn it's conviction for monopoly abuse.

2000 Microsoft Bill Gates relinquishes his title as CEO to Microsoft President Steve Ballmer on January 13, 2000

2002-Release of more Operating systems for computer PC's or IBM PC's compatible.

like: From Dos 6.0, Win 95, Win 98, Win 2000, Win Me, Win XP, Win Vista, Win7 and other in the future.

and the market of computer become more accessible by end consumers from children, youth , adult, senior or retired consumer.

Unlike before only for industrial, commercial, banking, supermarket, government, etc and very expensive and complicated.

It become part of daily human like for socializing, paying their bills on line, checking their bank account on real time, transferring money from one account to another account, paying their vendors, customer, viewing maps and driving direction, even to see the location of the house, building that you are looking for.

E-filing for income tax, chatting, e-mailing documents, picture, music, even the video. You can unlimited talk , text, web globally and wireless.

For medical they can operate remotely, for dental office they can submits the insurance claimed by on-line.

For shipping industry like Fedex, UPS, DHL, USPS the customer can browse and check their shipment.

Unbelievable, that's why Mancor Tech practical training will be the best solution to train people from scratch for BEGINNERS or update for an EXPERT.

They have e-commerce website at <http://store.mancor.org> and increasing everyday from the around the globe to get their " Be a Certified Computer Specialist Direct Training / Hiring"

Some training with the option of to built you own computer systems from scratch that all case, board, parts, nuts and bolts, testing tools will be ship to your door- international.

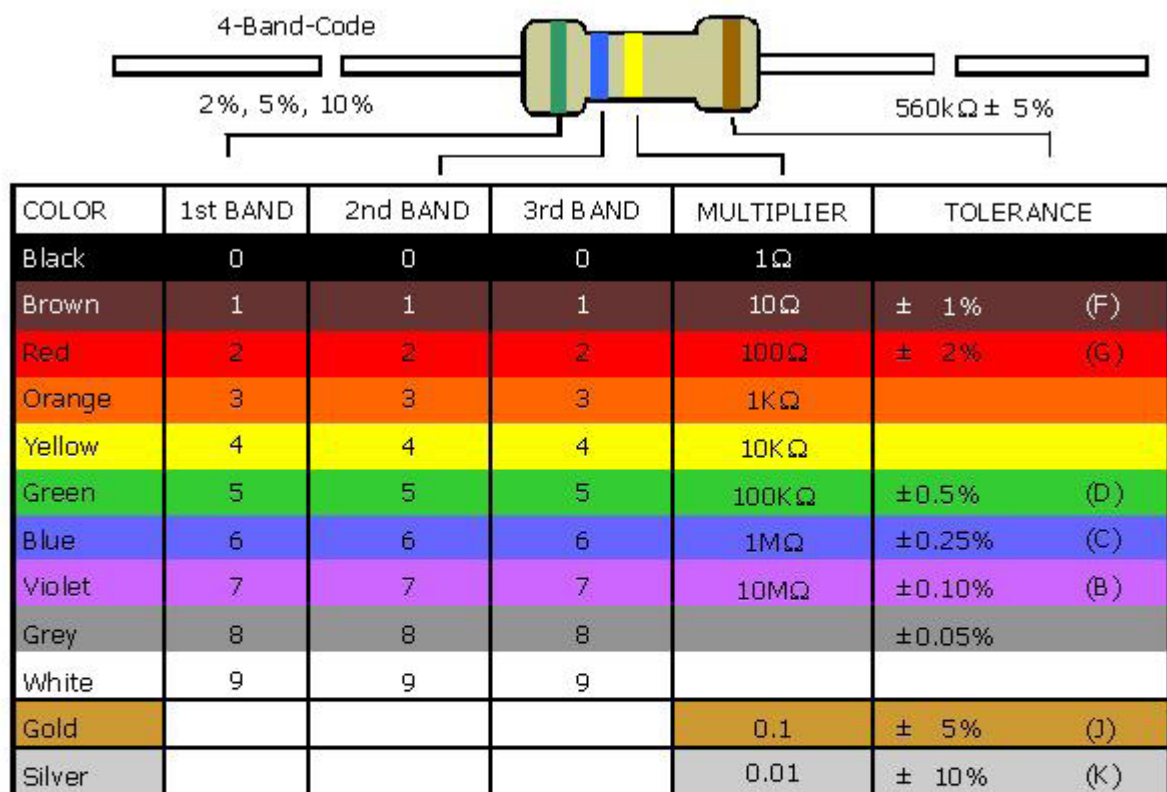
That will for you to keep the powerfull computer systems. Some trainee get more promotion in their jobs, some found a job because of practical training and certification from the California.

For entrepreneur minded these tools and kits that being assembled by themselves become their first investment for their computer shop (Some of them start from home based or small shop, some get a franchise from Mancor Tech for more support and easy to start a business overnight).

(Myriad Pro/ 10 (12pt) our ref: fonts)

## Five Computer components on boards, cards, etc

Resistor- as one of the electronic or computer component in order to resist or control the flow of electric current in amperes across the circuit. Below you can see the standard international color code.



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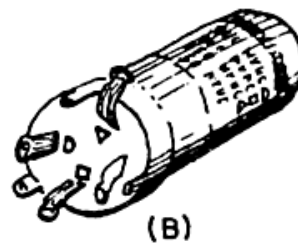
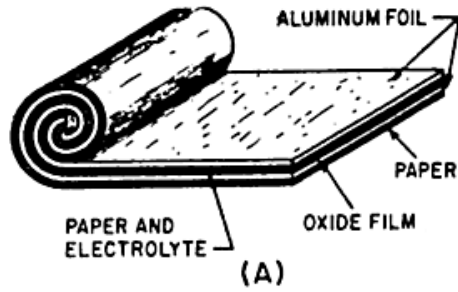
<http://store.mancor.org>  
(415) 318-0247  
Computer sales-service  
Certification Training/  
Hiring globally.

Several types of resistor components

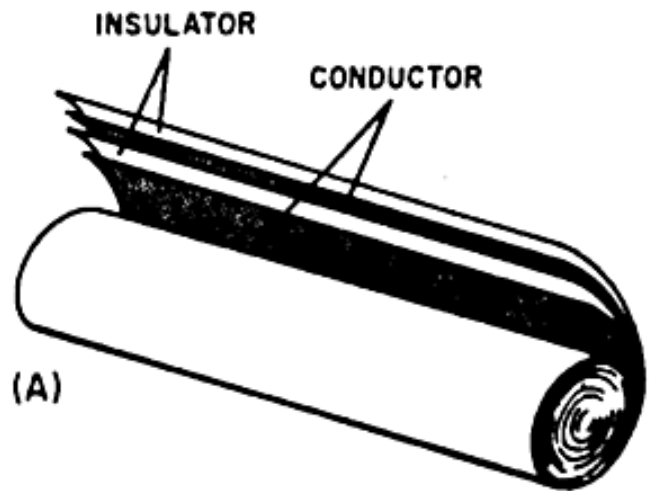
1. Fixed resistor -Fixed value and cannot be change.
2. Variable resistor- Value of resistance can be adjust according to requirements.
3. Bias resistor- Round shape with contact points that touching the surface of compressed granules in form of plate.
4. Potentiometer resistor- This is very common in radio volume control and video adjustment of brightness and contrast.

## Capacitor or condenser Computer or Electronics Components

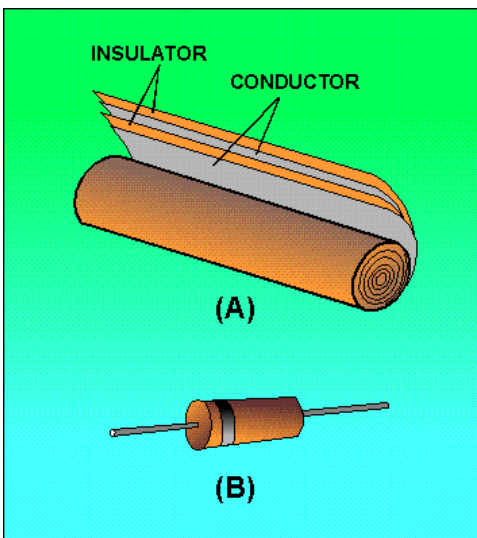
**Function:** One of the computer or electronic component in order to charge and discharge the flow of electric current in ampere from plate to another plate. It stores electric current in short period of time or longer depends on the capacitance of the capacitor.



Construction of an electrolytic capacitor



Internal parts of paper capacitor



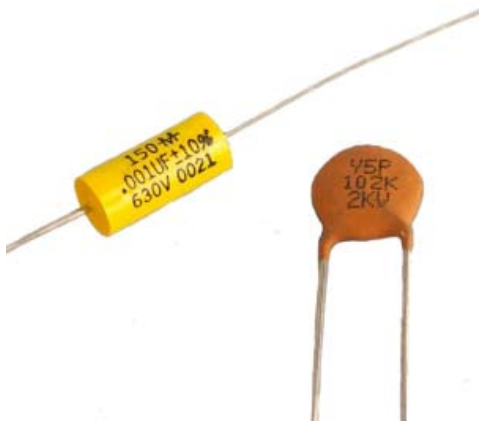
## Continuation of Capacitor components



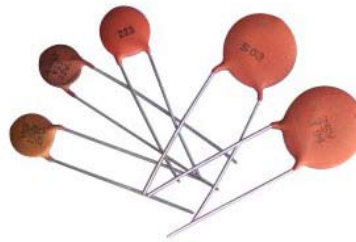
Mylar, capacitor known as non polarity and made up of Epoxy material, shiny with bright colors like : orange, red, green, brown.



Another Mylar capacitor with very small value of amount of capacitance measure in farad.



Film type body of capacitor and ceramic capacitor. (a clay material to create a capacitor)



Ceramic capacitor. Known as very small amount of capacitance in farad. No polarity at all and you can install it on the printed circuit board.



On the left side picture, you will see another type of paper or tubular or electrolytic capacitor. This is polarized capacitor or with polarity. (negative and positive or we called it as Plus or minus side or + or - symbol) If brand new one end on the negative side will be shorter and the positive side will be more little bit longer length. (This guide will be very important in time of testing your capacitor using a multi-tester or digital multimeter. or analog (with scale and pointer known as analog and digital with lcd display known as digital model)

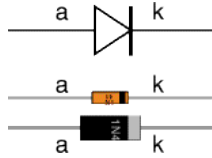
## Diode computer components

**Function:** In order to control the flow of electric current in only one direction. Totally block the current and not resisting. Totally stop it from a certain circuit.

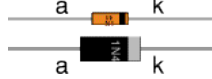
**Symbol or schematic diagram:**



Diode



Pictorial diagram



### Pictorial diagram



Zener or PIV-Peak inverse Voltage component



Crystal diode- made of crystal body



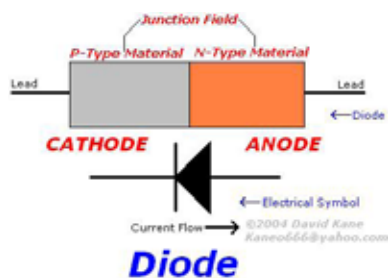
SCR-Silicon Controlled rectifier-hi-voltage-for industrial robotic computerized machine



SCR-Diode (Silicon Controlled Rectifier) Low voltage



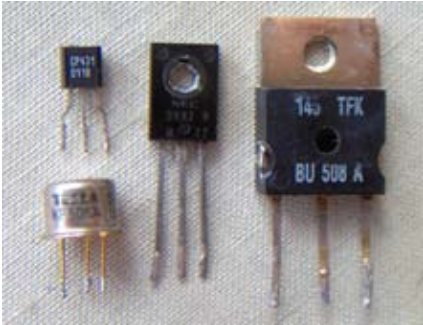
Diode diagram with direction of electric current flow



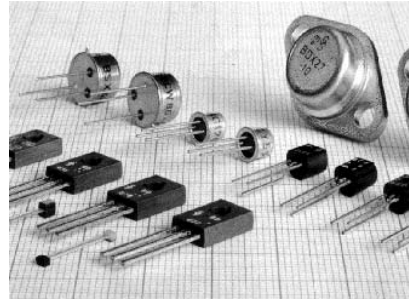
## Transistor Components

Function: This is another very special computer or electronics components in order to amplify or increase the signal of data, speed of frequency of the computer, speed of internet, make the sound more power, make the video image more clear and quality, make the wireless transmission more farther and power.

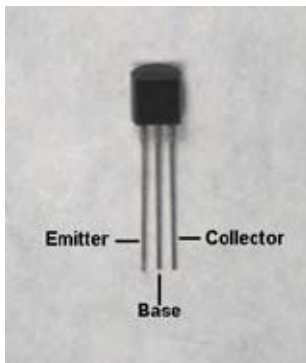
### Pictorial diagram of transistor or x'tor in abbreviation form



Power Transistor components



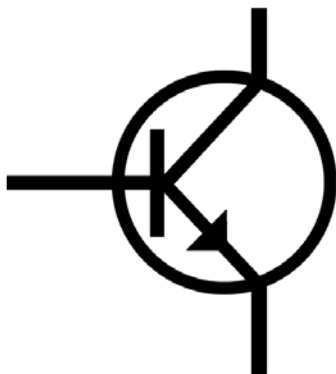
Another 3 types of power transistor



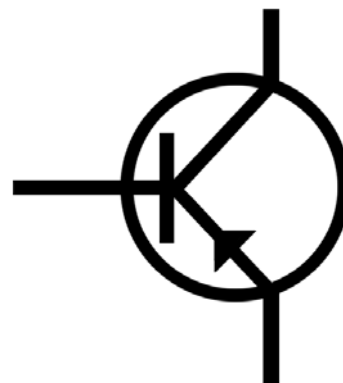
With reference to the emiiter, based, collector from a regular power transistor



Transistor component soldered on board

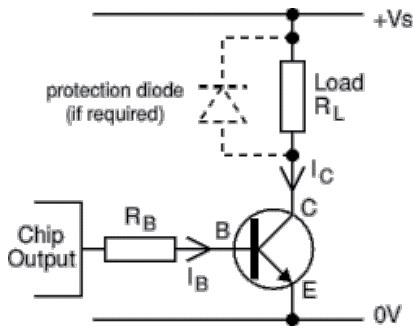


NPN Transistor schematic diagram

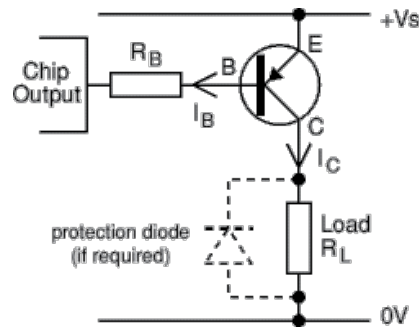


PNP Transistor schematic diagram

## Continuation of transistor components



NPN Circuit

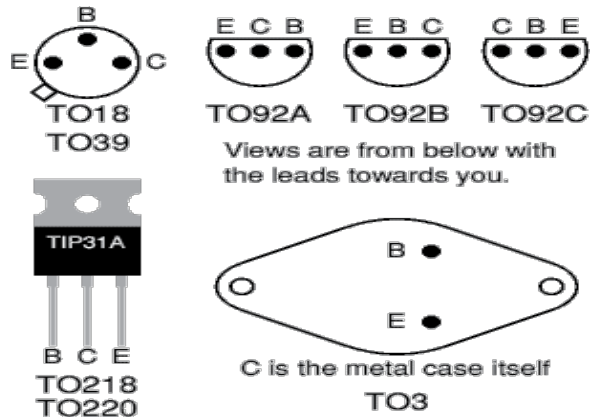


PNP Circuit

Note: In one chip or cpu of computer on board, they have from thousand to million transistor.



By using a multi tester, either digital or analog system. By check the transistor either good or bad. Two wires or electrodes of the transistor must be unsoldered on board.

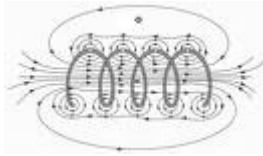


Additional way of testing any transistor components. From power transistor to regular power transistor. Transistor components also known as the best semi-conductor parts.

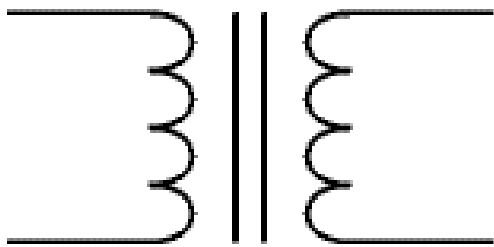
## Coil components

Function: One of the unique electronics components that can be built from regular magnet wire. A magnet wire can be any size from awg (american wire gage no. 14, 22 in solid form). This magnet wire always isolated by a special plastic varnish in order to isolate this wire to create a coil.

A coil is a series of loops. A coiled coil is a structure where the coil itself is in turn also looping, these objects are used commonly and are very important, some of their functions may be in bikes, cars, trains and planes. Often used in conjunction with a thread.

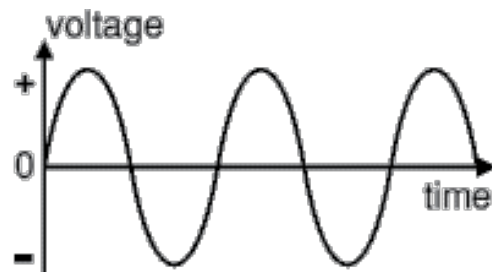


## Schematic diagram of coil components



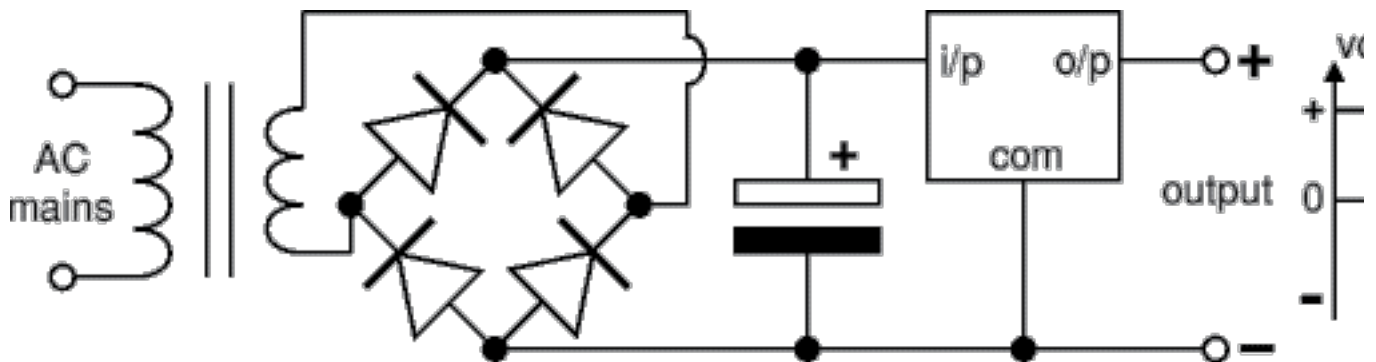
Transformer

Step down transformer using coils



Output: low voltage AC

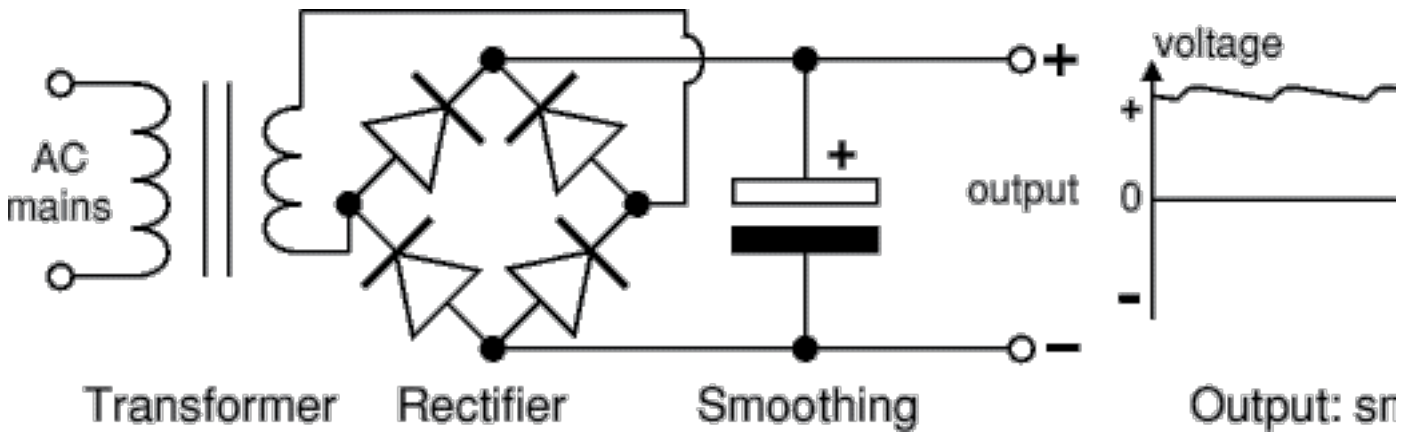
Sine wave form signal with the help of coil



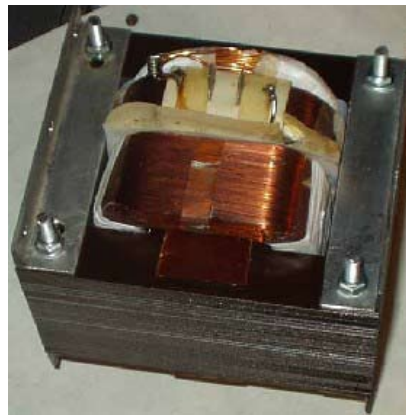
Transformer Rectifier Smoothing Regulator

This is a bridge type circuit using coil, 4 diodes, one capacitor. with step down transformer by using coils.

## Continuation of Coil components



From primary winding or windings of coils the electric current produce manetic field and will transfer to the iron core and transfer to the secondary winding. Then will flow going down the first diode and to the second below another diode during half cycle. This process will to the two diode on the upper for the second cyle.



Magnet wire is copper wire which has been coated (or enamelled) with a very thin layer of insulating material - e.g. varnish. This means that when it is wound into coils, the individual coils do not short-circuit one another where they touch. In order to make an electrical contact with magnet wire it is necessary to either scrape or burn off the coating to expose the copper wire inside.



See more coils in different form and size and shape.

## Ohms law

Formula:  $E=IR$   $R=E/I$   $I=E/R$

Use process of derivation to create another Ohm's law formula from the standard ohm's law formula.

The law stating that the direct current flowing in a conductor is directly proportional to the potential difference between its ends. It is usually formulated as  $V = IR$ , where  $V$  is the potential difference, or volt-

### Simple Circuit

Use three ohm's law formula

### Series Circuit

$R_t=R_1+R_2+R_3.....$  etc

### Parallel Circuit

$R_t=R_1 \times R_2 / R_1 + R_2$  or  $R_t = \text{product over sum}$

### Series/ Parallel Circuit

For the first level use series circuit formula and for the second level use parallel circuit formula and then the third level use any of the three Ohm's law formula.

### Power Formula

$P=EI$  ( Power equal to the product of voltage and current and measured in watts. )

$P=(E)^2/R$  ( P is equal to the voltage to the second power divided by the total amount of resistance. )

$P=(I)^2R$  ( The amount of power equal to the current to the second power times the total resistance )

Use process of derivation to create another power formula from the standard formula.

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