

# Information Resources about Electronic Components

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**Abstract** — *The components groups are classified under active, passive, mechanical and nomenclature relates its various components with the categories. In research nine of three resources are frequently use by respondent and aware of available resources of new technical information. Commercial information resources are mostly used for electronic components with the help of market dealer and commercial catalogues. The data books are useful for information resources to acquire knowledge of components. An information resource is available through internet. Information resources are useful for engineering student for using electronic components.*

**Keywords**— *Information Resources, Electronic Components, IREC, ECR*

## I. INTRODUCTION

The need for information is increasing day by day. Different types of readers approach the library for different types of information. Information is viewed differently by different users. For some it is knowledge, for others it is a commodity and power and for many it is just a document. Any transfer of knowledge is considered equivalent to transfer of information and vice-versa.

Information must be at the service of the whole community. In a library various types of reading materials are acquired, so that the libraries may serve as source of information with the acquired materials. The library can assist users to trace documents and information that exist beyond its wall.

Information generates new information, that is the existing knowledge or information is generating new information, new knowledge and new data.

Decision and policy makers need information for taking right decision.

Some users approach the staff of the library straight with the queries and get the required items of information. There are some other users who do not state exactly their specific information requirement. In some cases the user may not find relevant information in a particular document but the same information may be available elsewhere. This is the information scenario, in general in library.

Just as information, electronics also has universal presence. Today everything from a toy to tractor, health care to home entertainment and every walk of life are made possible because of electronics.

Electronics devices are made up of different components with variety specifications. It is curious to know,

how an electronic engineers or even a hobbyist chooses the components with required parameters. What are the information sources he or she consults? What is information seeking behavior of an electronic designer? This study tries to focus on this subject.

### A. Literature review

This study, as indicated is about information sources about electronic components. To understand background about electronic components and related information resources a formal literature review was carried out.

The entire literature about electronic components can be categorized into three groups.

- a) General hobbyist books and textbooks.
- b) Highly technical books and journal articles about semiconductors and components.
- c) Trade literature.

### B. Objectives

The literature review indicates that there is no study done about information sources about the electronic components and their utility from Librarian's point of view. Therefore, the following objectives are considered.

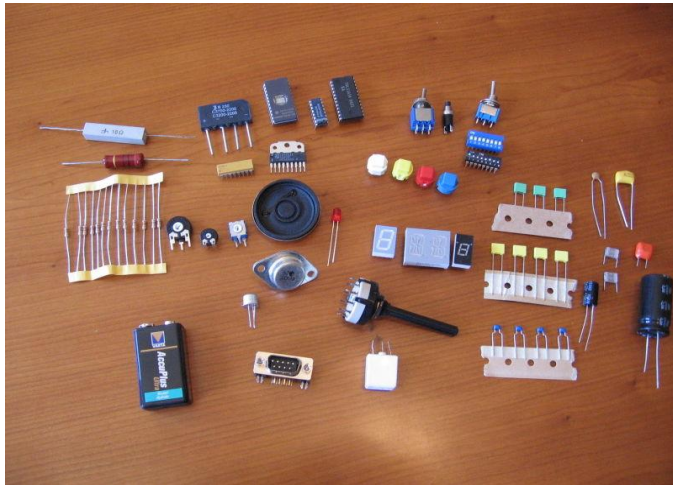
1. To understand the nomenclature related to Electronic Components in order to know the user's information need.
2. To identify various sources that provides information about the electronic components
3. To find different sources that give technical information about components on the net.
4. To know different commercial information sources about the electronic components.
5. To know the arrangement of information within sources identified above.

### C. Methodology

To meet the above stated objectives individuals were consulted. These individuals included teachers and students of electronics and telecommunications engineering. These respondents' persons were selected randomly. A questionnaire to find information resources preferred and other related data was designed. The questionnaire was constructed based on the set objectives. The questionnaire was given to the respondents and these responses were collected after ten days. The questions that required ranked responses were analyses by multiplying with proportionate

weightages, the analysis of this survey is presented in the research report.

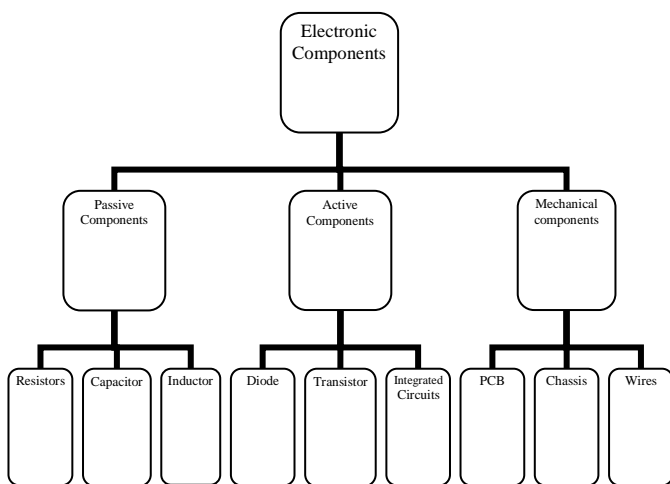
II. INFORMATION OF ELECTRONIC COMPONENTS :



(Different Electronic Components)

Design of an electronic device and its performance depends upon the choice of most effective and low-cost components. Selection of suitable components for a particular application depends on price, availability and standardization, in addition to technical requirement. Only a few components are expected to be special purpose components. The other components are of common type and are for general applications. Electronic circuits consist of the following three types of components.

Chart of Passive and Active Components



1) *Passive Components.*

Those components which do not in themselves provide gain are called Passive Components. e.g. Resistors, Capacitors and Inductors.

2) *Active Components*

Those components which are provide amplification or switching are called Active Components. e.g. Diodes, Transistors and Integrated circuits.

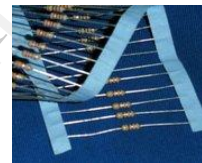
3) *Mechanical components*

Those are printed circuits boards, chassis, wires, plugs and sockets.

a) *Information of Passive components*

A **passive component**, depending on field, may either refer to a component that consumes (but does not produce) electrical energy, or to a component that is incapable of power gain. A component that is not passive is called an active component. A circuit consisting entirely of passive components is also considered passive and has the same properties as a passive component. In control systems and circuit network theory, a passive component is one that consumes energy, but does not produce energy. Under this methodology, voltage and current sources are considered active, while transistors, resistors, diodes, capacitors, and other dissipative and energy-neutral components are considered passive i.e. the components which do not in themselves provide gain are called passive components.

Resistors



Capacitors



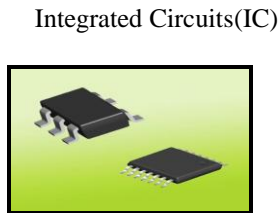
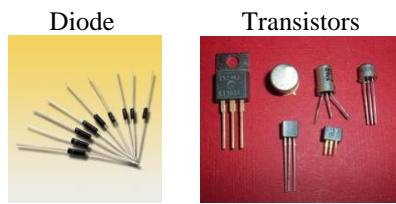
Inductor (Coils)



b) *Information of Active components*

In electronics, **active components** are components that can be used to provide power gain in an electronic circuit. This means that the power of their output signal may be more than that of their input signal. This added power is provided by another power source. The most common active components are transistors. One of the basic uses of transistors is in making amplifiers. In a simple transistor amplifier, there's an AC input signal (a current, a voltage or both i.e. a power) that needs to be amplified. Those which provide amplification or switching are called active components.

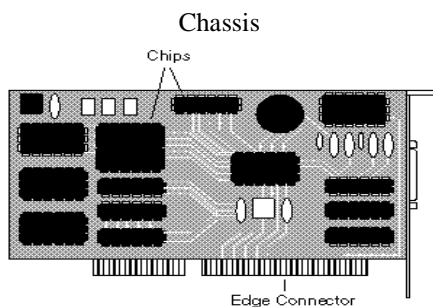
Semiconductor is conventionally defined as a material whose resistivity falls intermediate between those of metals and dielectrics insulators. Semiconductors have conductivity between conductors and insulators.



c) Information of Mechanical Components:

Mechanical components are a component which is mechanically developed. In these components required small components for passing current and signals. Circuits are prepared with the different small components. Mechanical components are differing than active and passive components. Mechanical components are not developed without active and passive components i.e. these components are interrelated with each other.

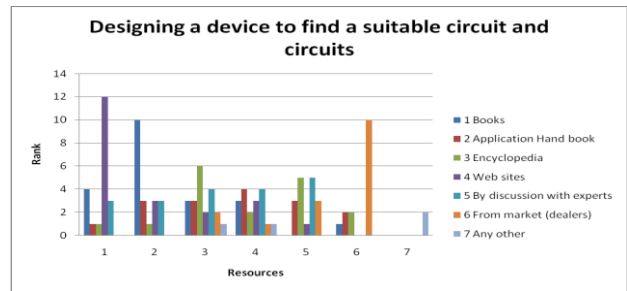
Printed Circuit Board (PCB) Wires



III. INFORMATION ANALYSIS:

Questionnaire and observation is analysed and presented here to understand the information scenario with respect to electronic components

RESOURCES OF INFORMATION TO FIND SUITABLE CIRCUITS:



In order to understand what resources were being referred by the respondents, they were asked “When you are designing a device, how do you find a suitable circuit or circuits?” The data gathered is presented in table and it is rationalized multiplying by corresponding weightages. The result is given in table it follows that, preference is given to books. Books are more suitable resources to find out the circuit. Then Application Handbooks are suitable resources to find circuits. Then give the important to encyclopedia, web sites by discussion with experts, market dealers etc.

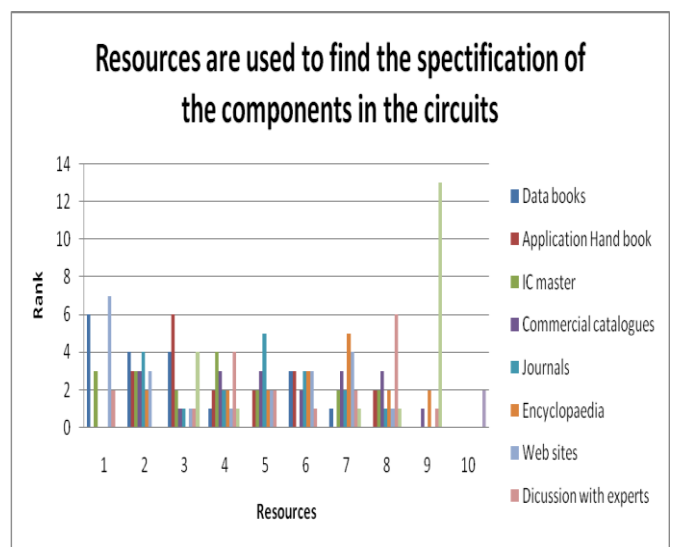
Journal, magazines, project reports are suitable resources to find out the circuits.

Practical work carried out in the lab because to find out the functions of electronic components.

Application handbooks, encyclopedia, web sites are nearly same resources for designing the devices.

Expert discussion, dealers is less important to compare with the books and application Handbooks resources.

RESOURCES FOR COMPONENTS SPECIFICATION:



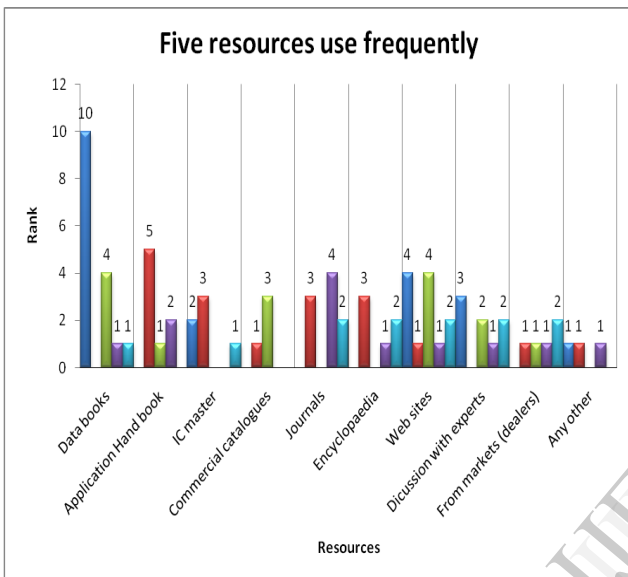
Going deeper, it is necessary to know what specialized sources are consulted, hence they were asked “What resources do you use to find the specification of the components in the circuits?”

In research, ten resources were listed to find the specification of the components in the circuits.

Data books are most demanded resources to find the specification of the components, and then Application Handbooks has given the importance. IC master, commercial catalogues; journals are giving the rank to one by one.

Encyclopedia and web sites are given the different importance. The resources are different with each other i.e. hard copy and soft copy. Discussion with expert and market dealers' resources is less important with respect to IC master, commercial catalogue resources. In other resources importance is given to the project report and technical paper.

FREQUENTLY USED RESOURCES:



It is necessary at this stage to know what specific sources among the respondents preferred type is most frequently used. Therefore they were asked "Name five resources of the above type which you use frequently?"

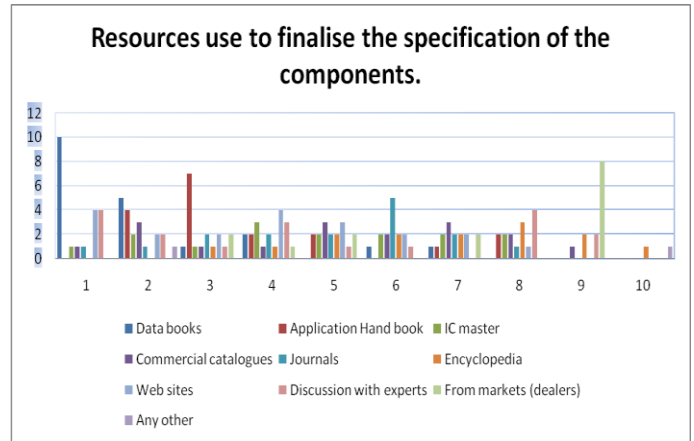
In the study, data books are first resources which are used frequently. A second is application handbook.

IC master is third resources for designing the devices. Journal is fourth resources and encyclopedia is fifth which are used.

In this research, IC masters and journal are given nearly more importance than commercial catalogues, discussion with experts and websites. Some experts recommended for using books and manuals as a resources. In the research, data books resources are frequently used in respect of application handbooks, IC master, journals, encyclopedia.

In the study, all the profession give information about information resources which is used by frequently, The five resources are data book, application handbooks, IC master, journals, and encyclopedia.

COMPONENT SPECIFICATION :

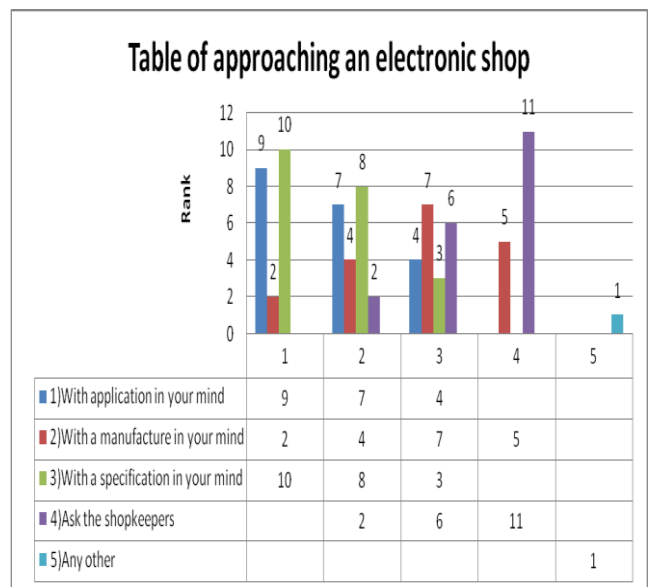


It is necessary to know the responses used by the respondents to identify the components with the required specification. To find it, they were asked "What resources do you use to finalize the specification of the components?"

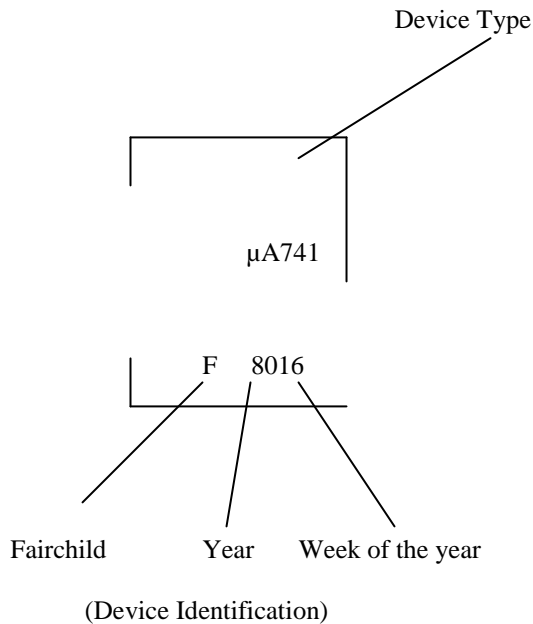
In this research teachers and students give the importance to data books. Data book are use to finalise the specification of the components. Secondly application handbooks are used, then IC master and commercial catalogue, journal, encyclopedia, web sites, expert discussion, markets dealer etc.

In respect of Data book is compare with more important than application handbooks, IC master, commercial catalogues.

PURCHASE OF COMPONENT :



IC is identified by marking the device type number on the face of the IC. This number is usually accompanied by the date code, indicating the year and week the device was manufactures.



Ultimately, a component is to be obtained or purchased from an electronic shop. How do subject experts approach the market? In view of this they were asked, "How do you approach an electronic shop?"

Here different types of approaches an electronic shop. For the requirement of electronic part, we are approach to electronic shop. Different types approaching, application in mind, manufactures in your mind, specification in your mind and ask the shopkeepers.

SEARCH FOR CIRCUITS

In response to a question, "Explain how do you search circuits components related information?"

Respondents prefer Google as the specific search engine to search circuit components. The other responses indicated Wikipedia, IEEE websites, IT Texas instrument etc., which are specific resources and not search engines.

RATIONAL FOR APPROACH

To understand the logic behind the choice of approach indicated above, they were asked "Why do you prefer the above methods?"

In the study different types of methods with a manufacture in your mind may easy to collect information, with the specification components devices can be approach the shopkeeper is helpful because he gives the required information.

Keeping an application in mind of decision a circuit we need to keep specification in mind, and then ask to shopkeeper for other components with same specification.

Applicants know about circuit or device. If you decide the application then has to fixed manufacturer and demand to manufacturer for specification requirement.

Easy to identify specification and think about manufacturer and shopkeeper. Manufacturer is important; it should be from well developed industry and to check that you find need of that project.

First know about specification. So we can keep them in mind and demand to shopkeeper.

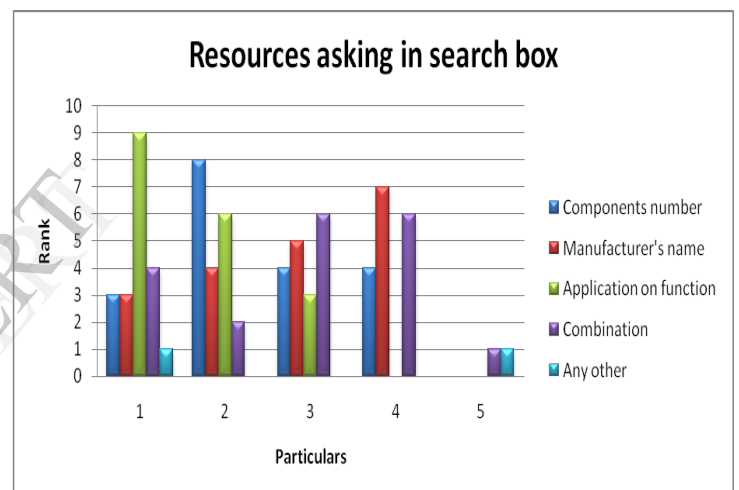
Application in mind then find specification for know the manufacturer name. An application is more important because making circuit that has market value and specification range of operating cost.

Specifications satisfy need of user and demand circuit to manufacturer. Complete specification of electronic circuit to develop and for approaching discuss with experts manufacturers clearly about component for necessary to develop the circuit.

Specification in mind gets it desired requirement. In application in mind, is easy to approach. In manufacturer in mind, get it desired quality. Ask the shopkeeper for helping the choice of components.

Specification and manufacturer mind gave the better idea for selecting components. Application and shopkeeper help to select good quality components.

SEARCH STRATEGY



In order to understand the search strategy adopted by the respondents, they were asked, "What do you ask in search box?"

In this research, components number is the first rank for ask in search book, next is manufacture's name, Application function and combination.

In combination it means 'component No', 'manufacture name' both are combined. If gave the combination in search box, information display with combination e.g. National Semiconductor LM741

Motorola MC1741

RCA CA3741

Texas instruments SN52741

Signetics N5741

'Circuit name' is also important point, to ask for in search box. If circuit name is perfectly known then you can receive information about components, manufacturer's name and function.

## INTERNET FOR CIRCUITS:

Internet provides substational information about circuits in both text and image format. Therefore, respondents were asked, "Do you use net for identifying required circuits?"

They used search engine is the best sources of information on the net, and identify about Wikipedia is important sources to collect information about circuits and components.

Identifying required circuit on the net, write name of components on Google search engine and click search for site Wikipedia. Write details of the requirements of components on search engine. Application kept in mind and find out the necessary components on search engine.

An open ended question, "Any other details you would like to share regarding information sources about electronic circuits and components?"

Bibliographies of reference books are also useful for components.

Journals and magazines give the information about circuits and components. For the electronic components and circuits discuss with expert of electronic industry, consulting with manufacture, senior engineers.

Authentic manufacture is also important role for reliability of circuits. Online journals and magazines are also used to share information resources about electronic circuits and components.

## IV. CONCLUSION

In the field of electronic, particularly related to components there are special technical terms. This component can be group under three categories a) Passive b) Active c) Mechanical. The nomenclature relates to various components that come under these categories.

All though some nine resources were listed. The top three ranking documents consulted by respondent were data book, application handbooks, IC master.

The respondent does not seem to be aware of resources available on the new for technical information. In response to a question most of them have stated that Google information resources. They don't see to know the other specific web sites giving technical information about resources.

The most frequently used commercial information sources for the information related to the components happens to be market dealer and commercial catalogues.

The data books are published by the components manufacture. Within that, there is a function index and the various components with variety of specification are listed under the component no., identification from the index. There is cross references to the application notes.

Some experts approach the application notes directly.

This information is also available directly from internet. There are three types of internet resources about the components

- a) Compilation of application notes and components
- b) Individual manufacturer's websites
- c) Information can be obtained directly writing the components in the search box of search engine.

e.g. [www.datasheetarchive.com](http://www.datasheetarchive.com)  
[www.alldatasheet.com](http://www.alldatasheet.com)  
[www.chipdocs.com](http://www.chipdocs.com)

## V. RECOMMENDATION

1. The engineering college library should makes special efforts to instruct the users about sources for electronic components.
2. There should be more awareness web base information resources, their evaluation and the search strategies.

Electronics being the heart of the entire manufacturing and service industry can function faster and more efficiently, if awareness about web-based information resources is spread. This study is an attempt to assess information awareness experts in electronics. However, it is only the first step for looking to information proliferation related to electronic components; it appears we have miles to go.

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