Integrated Circuits

Introduction

Integrated circuits (ICs) are a keystone of modern electronics. They are the heart and brains of most circuits. They are the ubiquitous little black "chips" you find on just about every circuit board. Unless you're some kind of crazy, analog electronics wizard, you're likely to have at least one IC in every electronics project you build, so it's important to understand them, inside and out.

Integrated circuits are the little black "chips", found all over embedded electronics.

An IC is a collection of electronic components -- resistors, transistors, capacitors, etc. -- all stuffed into a tiny chip, and connected together to achieve a common goal. They come in all sorts of flavors: single-circuit logic gates, op amps, 555 timers, voltage regulators, motor **controllers, microcontrollers, microprocessors, FPGAs...the list just goes on-and-on.**

Advantages and disadvantages of integrated circuits

Integrated circuit (IC), sometimes called as a chip or microchip that can work as an amplifier, oscillator, timer, microprocessor, or even memory of a computer. An IC is a small wafer, usually made of silicon, can be a function as an amplifier, oscillator, timer, counter, computer memory, or microprocessor. This post gives information about the pros and cons of integrated circuits called ICs to better understand this topic.

Advantages of ICs:

- It is more reliable

- The entire physical size of IC is the extremely small size
- Low power consumption because of their small size
- It can easily replace but it can hardly remain in case of failure
- It has suitable for small signal operation
- Greater ability to operate at extreme temperature
- When the absence of parasitic and capacitance effect has an increased operating speed
- The wight of an IC is very less as compared entire discrete circuits
- Close matching of components and also a temperature coefficient because of bulk production in batches
- Improved functional performance as some complex circuits can be fabricated for achieving better characteristics
- The reduction in power consumption is achieved due to the extremely small size of IC

Disadvantages of ICs:

- If one component in an integrated circuits fails, it means the whole circuit has to be replaced
- It is difficult to be achieved low-temperature coefficient
- It can be handled an only a limited amount of power
- Coils or indicators cannot be fabricated
- Low noise and high voltage operation are not easily obtained
- The power dissipation is limited to 10 watts
- Inductors cannot be fabricated directly
- High-grade P-N-P assembly low-temperature coefficient
- Operation at low voltage as IC function at fairly low voltage
- Voltage dependence of resistor and capacitors

- A large value of saturation resistance of transistors
- Integrated circuits are not flexible
- It is impossible to fabricate transformers
- The IC will not work properly if wrongly handled or it must be exposed to excessive heat
- The power that integrated circuits can produce is limited and calls for extension
- Higher values of capacitance discrete components exterior to the IC chip are connected