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Cirincione, Maurizio. Power converters and AC electrical drives with linear neutral networks
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Lorenzo, Romarie Urgel. Characterization of a hardware implementation of a Parallel Sequence Spread Spectrum (PSSS) modulation scheme. 2009
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Rojo, Marlon Gan Optimizing reactive power compensation for unbalanced distribution feeders with fixed and switched capacitors LG 995 2000 E64 R65

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Disclaimer:

This pathfinder contains suggested materials on electronic circuits that are available at the College of Engineering Library II. However, some references were not included.

We welcome suggestions for new pathfinder topics.

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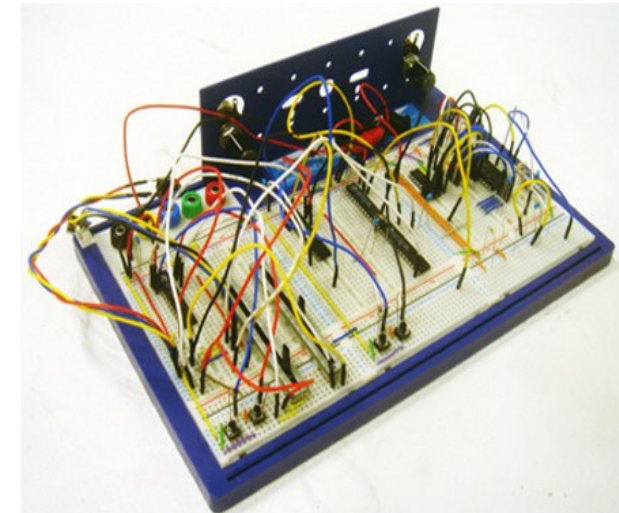


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ELECTRONIC CIRCUITS

PATHFINDER

Electronic circuits

- An electrical network is an interconnection of electrical elements such as resistors, inductors, capacitors, transmission lines, voltage sources, current sources and switches.
- An electrical circuit is a network that has a closed loop, giving a return path for the current. A network is a connection of two or more components, and may not necessarily be a circuit.
- Electrical networks that consist only of sources (voltage or current), linear lumped elements (resistors, capacitors, inductors) and linear distributed elements (transmission lines) can be analyzed by algebraic and transform methods to determine DC response, AC response and transient response.

Design methods

- To design any electrical circuit, either analog or digital, electrical engineers need to be able to predict the voltages and currents at all places within the circuit. Linear circuits, that is, circuits with the same input and output frequency, can be analyzed by hand using complex number theory. Other circuits can only be analyzed with specialized software programs or estimation techniques.
- Circuit software such as, VHDL and HSPICE, allows engineers to design circuits without the time, cost and risk of error involved in building circuit prototypes.

Electrical laws

A number of electrical laws apply to all electrical networks. These include

1. Kirchhoff's current law
2. Kirchhoff's voltage law
3. Ohm's law
4. Norton's theorem
5. Thevenin's theorem

Other more complex laws may be needed if the network contains nonlinear or reactive components. Non-linear self-regenerative heterodyning systems can be approximated. Applying these laws results in a set of simultaneous equations that can be solved either by hand or by a computer.

Source: http://en.wikipedia.org/wiki/Electronic_circuits

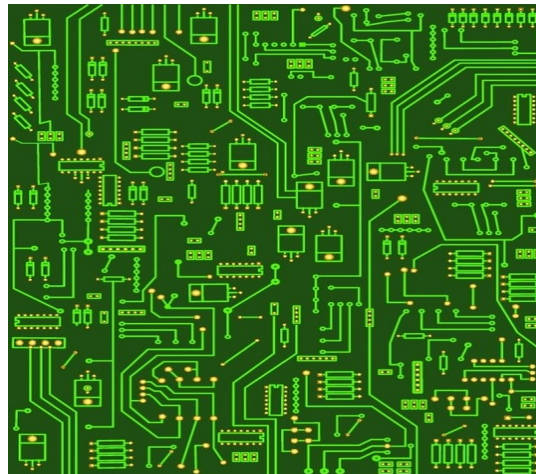


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