

Basic Electricity and Electronics

Textbook: *Modern Automotive Technology*, James E. Duffy, The Goodheart-Willcox Company, Inc., Tinley Park, IL, 2000

Vocabulary (p. 106)


Component	Induction	Secondary Wire
Atom	Switch	Ground Wire
Electrons	Short Circuit	Ground Straps
Protons	Unlimited Current Flow	Crimp Connectors
Electricity	Fuse	Terminals
Conductors	Fuse Box	Harness Connectors
Free Electrons	Fusible Link	Soldering Gun
Insulators	Circuit Breaker	Jumper Wire
Current	Relay	Test Light
Voltage	Semiconductor	Voltmeter
Resistance	Diode	Ammeter
Power Source	Transistor	Ohmmeter
Load	Capacitors	Multi-Meter
Conductors	Integrated Circuit (IC)	Wiring Diagram
Series Circuit	Printed Circuits	Oscilloscope
Parallel Circuit	Amplifiers	Trace
Frame-Ground Circuit	Wire Size	Waveform
Ohm's Law	Gauge Size	Scanner
Magnetic Field	Wiring Harness	

Summary (p. 105)

1. Almost every system in a vehicle uses some type of electric or electronic component.
2. An atom consists of small particles called protons, neutrons, and electrons.
3. Negatively charged electrons circle around neutrons and protons.
4. Current (abbreviated I) is the flow of electrons through a conductor.
5. Voltage (abbreviated V or E) is the force that causes electron flow.
6. Resistance (abbreviated R) is the opposition to current flow.
7. Ohm's law is a simple formula for calculation volts, amps, or ohms when two of the three values are given.
8. If a magnetic field is passed over a wire, and electric current is generated in the wire.

9. When a switch is closed, a circuit is complete. When the switch is open, a circuit is broken and does not function.
10. A fuse protects a circuit against damage caused by a short circuit.
11. A relay is an electrically operated switch.
12. A semiconductor is made of a special substance capable of acting as both a conductor and an insulator.
13. A diode is an “electronic check valve” that only allows current to flow in one direction.
14. A transistor performs the same basic function as a relay. It acts as a remote control switch or current amplifier.
15. A condenser or capacitor is a device used to absorb unwanted electrical pulses in a circuit.
16. An integrated circuit (IC) is a wafer-like chip that contains almost microscopic diodes, transistors, resistors, and capacitors.
17. A jumper wire is handy for testing switches, relays, solenoid, wires, and other components.
18. A multi-meter, also called a VOM, is an ohmmeter, ammeter and voltmeter combined in one case.
19. A wiring diagram shows how electrical components are connected by wires.

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