

Automotive Electrical and Engine Performance - 9th edition

Ch10: Electronic Fundamentals

Lesson Plan



CHAPTER SUMMARY:

1. Semiconductors, Diodes, High-Voltage Spike Protection, Diode Rating, and Light-Emitting Diodes
2. Photodiodes, Photoresistors, Silicon-Controlled Rectifiers, Thermistors, and Rectifier Bridges
3. Transistors, Integrated Circuits, Transistor Gates, and Operational Amplifiers
4. Electronic Component Failure Causes and How to Test Diodes and Transistors
5. Converters and Inverters, Electrostatic Discharge, Capacitance, and Capacitors in Circuits



OBJECTIVES:

1. Discuss semiconductors including doping, P-type material, and N-type material.
2. Describe diodes, including zener diodes.
3. Discuss high-voltage spike protection.
4. Discuss diode ratings.
5. Discuss light-emitting diodes.
6. Describe photo diodes.
7. Describe photoresistors.
8. Describe silicon-controlled rectifiers.
9. Describe thermistors.
10. Describe rectifier bridges.
11. Describe transistors, including field-effect transistors and phototransistors.
12. Describe integrated circuits.
13. Describe transistor gates.
14. Describe operational amplifiers.
15. Discuss electronic component failure causes.
16. Describe how to test diodes and transistors.
17. Discuss converters and inverters and how they are used.
18. Explain electrostatic discharge damage and how to avoid it.
19. Explain capacitance and the construction and operation of capacitors.
20. Explain the uses of capacitors and discuss capacitors in series and parallel circuits.



RESOURCES: (All resources may be found at jameshalderman.com)

1. Task Sheet: Diagnose Electrical/Electronic Circuits
2. Crossword Puzzle and Word Search
3. Videos: (A6) Electrical/Electronic Systems Videos
4. Animations: (A6) Electrical/Electronic Systems Animations



ACTIVITIES:

1. Task Sheet: Diagnose Electrical/Electronic Circuits
2. Chapter PowerPoint
3. Crossword Puzzle and Word Search

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ASSIGNMENTS:

1. Chapter crossword and word search puzzles from the website.
 2. Complete end of chapter quiz from the textbook.
 3. Complete multiple choice and short answer quizzes downloaded from the website.
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CLASS DISCUSSION:

1. Review and group discussion chapter Frequently Asked Questions and Tech Tips sections.
 2. Ten (10) question end of Chapter Quiz.
 3. Five (5) end of chapter Review Question for class discussion.
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NOTES AND EVALUATION: