Troubleshooting Electronic Circuits

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1. Introduction

- Troubleshooting is the systematic identification and repair of faults in electronic circuits.
- It combines knowledge of circuit theory with logical problem-solving.

2. Common Faults

- **Open circuit:** a break that stops current flow, often from a broken track or cold joint.
- **Short circuit:** an unintended low-resistance path that can cause overheating.
- Component failure such as burnt resistors or leaking capacitors.

3. Diagnostic Tools

- **Multimeter:** measures voltage, current, resistance, and continuity.
- **Oscilloscope:** displays signal waveforms over time.
- Logic probes and signal generators aid in testing.

4. Systematic Approach

- Observe symptoms and gather information before opening the circuit.
- Use the half-split method to narrow the fault to a section.
- Compare measured values against expected values from the schematic.

5. Safety Precautions

- Disconnect power before handling components and discharge capacitors.
- Be cautious of high voltages and hot parts.

6. Summary

- A logical, step-by-step method finds faults efficiently.
- Good tools and reference to the schematic are essential.