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Nota di contenuto	The electric field -- capacitors, magnetic fields, and transformers -- utility power and circuit concepts -- A few more tools -- analog design -- Digital design and mixed analog/digital design -- Facilities and sites -- Appendices. 1. The Electric Field -- 1.1. Introduction -- 1.2. Charge -- 1.3. Electrical Forces on Charged Bodies -- 1.4. Electric Field -- 1.5. Work -- 1.6. Voltage -- 1.7. Charges on Surfaces -- 1.8. Equipotential Surfaces -- 1.9. Field Units -- 1.10. Batteries -- A Voltage Source -- 1.11. Current -- 1.12. Resistors -- 1.13. Resistors in Series or Parallel -- 1.14. E Field and Current Flow -- 1.15. Problems -- 1.16. Energy Transfer -- 1.17. Resistor Dissipation -- 1.18. Problems -- 1.19. Electric Field Energy -- 1.20. Ground and Ground Planes -- 1.21. Induced Charges -- 1.22. Forces and Energy -- 1.23. Problems -- 1.24. Review -- 2. Capacitors, Magnetic Fields, and Transformers -- 2.1. Dielectrics -- 2.2. Displacement Field -- 2.3. Capacitance -- 2.4. Capacitance of Two Parallel Plates -- 2.5. Capacitance in Space -- 2.6. Current Flow in Capacitors -- 2.7. RC Time Constant -- 2.8. Problems -- 2.9. Shields -- 2.10. Magnetic Field -- 2.11. Solenoids -- 2.12.

Ampere's Law -- 2.13. Problems -- 2.14. Magnetic Circuit -- 2.15.
Induction or B Field -- 2.16. Magnetic Circuit without a Gap -- 2.17.
Magnetic Circuit with a Gap -- 2.18. Transformer Action -- 2.19.
Magnetic Field Energy -- 2.20. Inductors -- 2.21. L/R Time Constant
-- 2.22. Mutual Inductance -- 2.23. Problems -- 2.24. Review -- 3.
Utility Power and Circuit Concepts -- 3.1. Sine Waves -- 3.2. Reactance
and Impedance -- 3.3. Problems -- 3.4. Resonance -- 3.5. Phase --
3.6. Parallel RL and RC Circuits -- 3.7. Problems -- 3.8. RMS Values --
3.9. Problems -- 3.10. Transmission Lines -- 3.11. Poynting's Vector
-- 3.12. Transmission Line over an Equipotential Surface -- 3.13.
Transmission Lines and Sine Waves -- 3.14. Coaxial Transmission --
3.15. Utility Power Distribution -- 3.16. Earth as a Conductor -- 3.17.
Power Transformers in Electronic Hardware -- 3.18. Electrostatic
Shields in Electronic Hardware -- 3.19. Where to Connect the Metal Box
-- 3.20. Problems -- 3.21. Review -- 4. A Few More Tools -- 4.1.
Introduction -- 4.2. Resistivity -- 4.3. Inductance of Isolated
Conductors -- 4.4. Ohms per Square -- 4.5. Problems -- 4.6.
Radiation -- 4.7. Half-Dipole Antennas -- 4.8. Current Loop Radiators
-- 4.9. Field Energy in Space -- 4.10. Problems -- 4.11. Reflection --
4.12. Skin Effect -- 4.13. Problems -- 4.14. Surface Currents -- 4.15.
Ground Planes and Fields -- 4.16. Apertures -- 4.17. Multiple
Apertures -- 4.18. Waveguides -- 4.19. Attenuation of Fields by a
Conductive Enclosure -- 4.20. Gaskets -- 4.21. Honeycombs -- 4.22.
Wave Coupling into Circuits -- 4.23. Problems -- 4.24. Square Waves
-- 4.25. Harmonic Content in Utility Power -- 4.26. Spikes and Pulses
-- 4.27. Transformers -- 4.28. Eddy Currents -- 4.29. Ferrite Materials
-- 4.30. Problems -- 4.31. Review -- 5. Analog Design -- 5.1.
Introduction -- 5.2. Analog Signals -- 5.3. Common-Mode Interference
-- 5.4. Common-Mode Rejection in Instrumentation -- 5.5. Problems
-- 5.6. Voltage Measurement: Oscilloscopes -- 5.7. Microphones --
5.8. Resistors -- 5.9. Guard Rings -- 5.10. Capacitors -- 5.11.
Problems -- 5.12. Feedback Processes -- 5.13. Problems -- 5.14.
Miller Effect -- 5.15. Inductors -- 5.16. Transformers -- 5.17.
Problems -- 5.18. Isolation Transformers -- 5.19. Solenoids and Relays
-- 5.20. Problems -- 5.21. Power Line Filters -- 5.22. Request for
Energy -- 5.23. Filter and Energy Requests -- 5.24. Power Line Filters
above 1 MHz -- 5.25. Mounting the Filter -- 5.26. Optical Isolators --
5.27. Hall Effect -- 5.28. Surface Effects -- 5.29. Review -- 6. Digital
Design and Mixed Analog/Digital Design -- 6.1. Introduction -- 6.2.
Logic and Transmission Lines -- 6.3. Decoupling Capacitors -- 6.4.
Ground Planes -- 6.5. Power Planes -- 6.6. Decoupling Power
Geometries -- 6.7. Ground Plane Islands -- 6.8. Radiation from Loops
-- 6.9. Problems -- 6.10. Leaving the Board -- 6.11. Ribbon Cable and
Common-Mode Coupling -- 6.12. Braided Cable Shields -- 6.13.
Transfer Impedance -- 6.14. Mechanical Cable Terminations -- 6.15.
Problems -- 6.16. Mounting Power Transistors -- 6.17. Electrostatic
Discharge -- 6.18. ESD Precautions -- 6.19. Zapping -- 6.20. Product
Testing: Radiation -- 6.21. Military Testing -- 6.22. Chattering Relay
Test -- 6.23. Euro Standards -- 6.24. LISN -- 6.25. Sniffers -- 6.26.
Simple Antenna -- 6.27. Peripherals -- 6.28. Problems -- 6.29.
Lightning -- 6.30. Problems -- 6.31. Mixing Analog and Digital Design
-- 6.32. Ground Bounce -- 6.33. Review -- 7. Facilities and Sites --
7.1. Introduction -- 7.2. Utility Power -- 7.3. Floating Utility Power --
7.4. Isolated Grounds -- 7.5. Single-Point Grounding -- 7.6. Ground
Planes -- 7.7. Alternative Ground Planes -- 7.8. Power Centers -- 7.9.
Lightning Protection -- 7.10. Surge Suppression -- 7.11. Racks --
7.12. Magnet Fields around Distribution Transformers -- 7.13. Monitor
Fields -- 7.14. Motor Controllers -- 7.15. Screen Rooms -- 7.16.

Review.

Sommario/riassunto

A practical new approach that brings together circuit theory and field theory for the practicing engineer To put it frankly, the traditional education of most engineers and scientists leaves them often unprepared to handle many of the practical problems they encounter. The Fields of Electronics: Understanding Electronics Using Basic Physics offers a highly original correction to this state of affairs. Most engineers learn circuit theory and field theory separately. Electromagnetic field theory is an important part of basic physics, but because it is a very mathematical subject, the connection to everyday problems is not emphasized. Circuit theory, on the other hand, is by its nature very practical. However, circuit theory cannot describe the nature of a facility, the interconnection of many pieces of hardware, or the power grid that interfaces each piece of hardware. The Fields of Electronics offers a unique approach that brings the physics and the circuit theory together into a seamless whole for today's practicing engineers.; With a clear focus on the real-world problems confronting the practitioner in the field, the book thoroughly details the principles that apply to: Capacitors, inductors, resistors, and transformers Utility power and circuit concepts Grounding and shielding Radiation Analog and digital signals Facilities and sites Written with very little mathematics, and requiring only some background in electronics, this book provides an eminently useful new way to understand the subject of electronics that will simplify the work of every novice, experienced engineer, and scientist.