

1. Record Nr.	UNINA9910466499703321
Autore	Olivier J. C (Jan Corne)
Titolo	Electric circuits : a primer // JC Olivier
Pubbl/distr/stampa	Boston : , : Artech House, , [2018] [Piscataqay, New Jersey] : , : IEEE Xplore, , [2018]
ISBN	1-63081-551-9
Descrizione fisica	1 online resource : illustrations
Disciplina	621.319/2
Soggetti	Electric circuits Electric circuit analysis Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Static Fields, Energy, and Power -- Electrical Circuits and Circuit Elements -- Kirchhoff's Loop and Current Laws -- The Nodal Method of Circuit Analysis -- Combining Independent and Dependent Sources -- Fixed Potential Between Nodes: Supernode -- The Mesh Method for Circuit Analysis -- Linearity, Superposition and Equivalence -- Thevenin and Norton Equivalent Circuits -- Maximum Power Transfer -- The Capacitor and the Inductor -- The Source-Free RC Circuit -- The Source-Free RL Circuit -- Step Response of a RC Circuit -- Step Response of a RC Circuit -- Step Response of RL Circuit -- Examples: Step Response of RL Circuits -- Series RLC Source-Free Circuits -- Examples: Series RLC Source-Free Circuits -- Source-Free Parallel RLC Circuits -- Examples for a Parallel RLC Circuit -- Simusoidal Sources, The Phasor and Impedance -- Circuit Analysis Based On Phasor Domain Representation -- Dependant and Independent Sources: Phasor Domain -- Superposition; Phasors -- The Maximum Power Transfer Theorem and Resonance -- AC Power Concepts -- Power Factor and Power Factor Correction -- Magnetically Coupled Circuits -- Frequency Response and System Transfer Function -- Three Phase Systems: An Introduction.
Sommario/riassunto	This new resource provides a comprehensive and concise introduction of the underpinnings and fundamentals of electrical circuits. Models,

the limitations of models, and examples are clearly explained. The book examines circuits with static sources and explains how to reduce any circuit to a system of linear equations. Moreover, the book presents dynamic sources that exhibit transient phenomena that require the solution of linear differential equations. MATLAB code is used throughout the book to help solve key problems and assist engineers in the field. Additionally, this hands-on volume explores circuits with sinusoidal sources also known as the AC paradigm. The book provides another key mathematical tool known as a phasor which are mathematical objects based on complex number theory. The book emphasizes solutions for computing power, interpreting power and energy, and compensating electrical systems if the power factor is too low. Professionals are offered design guidance throughout the book with many real-world examples.
