1. Record Nr. UNINA9910144378903321

Autore	Caniggia Spartaco
Titolo	Signal integrity and radiated emission of high-speed digital systems [[electronic resource] /] / Spartaco Caniggia, Francescaromana Maradei
Pubbl/distr/stampa	Chichester, U.K., : Wiley, 2008
ISBN	1-282-01071-9 9786612010712 0-470-77287-5 0-470-77288-3
Edizione	[1st edition]
Descrizione fisica	1 online resource (554 p.)
Classificazione	05.42
Altri autori (Persone)	MaradeiFrancescaromana
Disciplina	621.382/24
Soggetti	Electromagnetic interference Digital electronics Very high speed integrated circuits Crosstalk Signal processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	SIGNAL INTEGRITY ANDRADIATED EMISSIONOF HIGH-SPEED DIGITAL SYSTEMS; Contents; List of Examples; Foreword; Preface; 1 Introduction to Signal Integrity and Radiated Emission in a Digital System; 1.1 Power and Signal Integrity; 1.1.1 Power Distribution Network; 1.1.2 Signal Distribution Network; 1.1.3 Noise Limitations and Design for Characteristic Impedance; 1.2 Radiated Emission; 1.2.1 Definition of Radiated Emission Sources; 1.2.2 Radiated Emission Standards; 1.2.3 Radiated Emission from a Real System; 1.3 Signaling and Logic Devices; 1.3.1 Overshoot, Undershoot and Plateau 1.3.2 Noise Immunity1.3.3 Timing Parameters; 1.3.4 Eye Diagram; 1.4 Modeling Digital Systems; 1.4.1 Mathematical Tools; 1.4.2 Spice-Like Circuit Simulators; 1.4.3 Full-Wave Numerical Tools; 1.4.4 Professional Simulators; References; 2 High-Speed Digital Devices; 2.1 Input/Output Static Characteristic; 2.1.1 Current and Voltage Specifications; 2.1.2 Transistor-Transistor Logic (TTL) Devices; 2.1.3 Complementary Metal Oxide Semiconductor (CMOS) Devices; 2.1.4 Emitter-Coupled Logic

(ECL) Devices; 2.1.5 Low-Voltage Differential Signal (LVDS) Devices
2.1.6 Logic Devices Powered and the Logic Level2.2 Dynamic Characteristics: Gate Delay and Rise and Fall Times; 2.3 Driver and Receiver Modeling; 2.3.1 Types of Driver Model; 2.3.2 Driver Switching Currents Path; 2.3.3 Driver Non-Linear Behavioral Model; 2.3.4 Receiver Non-Linear Behavioral Modeling; 2.4 I/O Buffer Information Specification (IBIS) Models; 2.4.1 Structure of an IBIS Model; 2.4.2 IBIS Models and Spice; References; 3 Inductance; 3.1 Loop Inductance; 3.1.1 Inductances of Coupled Loops; 3.1.2 Inductances of Thin Filamentary Circuits; 3.1.3 Equivalent Circuit of Two Coupled Loops
3.1.4 L Matrix of Two Coupled Conductors Having a Reference Return Conductor3.1.5 L Calculation of a Three-Conductor Wire-Type Line; 3.1.6 Frequency-Dependent Internal Inductance; 3.2 Partial Inductance; 3.2.1 Partial Inductances of Coupled Loops; 3.2.2 Flux Area of Partial Inductance of Thin Filamentary Segments; 3.2.3 Loop Inductance Decomposed into Partial Inductances; 3.2.4 Self and Mutual Partial Inductance; 3.2.5 Inductance Between Two Parallel Conductors; 3.2.6 Loop Inductance Matrix Calculation by Partial Inductances; 3.2.7 Partial Inductance Associated with a Finite Ground Plane
3.2.8 Solving Inductance Problems in PCBs3.3 Differential Mode and Common Mode Inductance; 3.3.1 Differential Mode Inductance; 3.3.2 Common Mode Inductance; References; 4 Capacitance; 4.1 Capacitance Between Conductors; 4.1.1 Definition of Capacitance; 4.1.2 Partial Capacitance and Capacitance Matrix of Two Coupled Conductors Having a Reference Return Conductor; 4.1.3 Capacitance Matrix of n Coupled Conductors Having a Reference Return Conductor; 4.2 Differential Mode and Common Mode Capacitance; 4.2.1 Differential Mode Capacitance; 4.2.2 Common Mode Capacitance; References
5 Reflection on Signal Lines

Sommario/riassunto

Before putting digital systems for information technology or telecommunication applications on the market, an essential requirement is to perform tests in order to comply with the limits of radiated emission imposed by the standards. This book provides an investigation into signal integrity (SI) and electromagnetic interference (EMI) problems. Topics such as reflections, crosstalk, switching noise and radiated emission (RE) in high-speed digital systems are covered, which are essential for IT and telecoms applications. The highly important topic of modelling is covered which can reduce costs