1. Record Nr. UNINA9910876992603321

Autore	Kroupa Venceslav F. <1923->
Titolo	Phase lock loops and frequency synthesis / / Venceslav F. Kroupa
Pubbl/distr/stampa	New York, : J. Wiley, 2003
ISBN	1-280-27201-5 9786610272013 0-470-29946-0 0-470-86512-1 0-470-01410-5
Descrizione fisica	1 online resource (336 p.)
Disciplina	621.3815/364
Soggetti	Phase-locked loops Frequency synthesizers
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	Phase Lock Loops and Frequency Synthesis; Contents; Preface; 1 Basic Equations of the PLLs; 1.1 Introduction; 1.2 Basic Equations of the PLLs; 1.3 Solution of the Basic PLL Equation in the Time Domain; 1.3.1 Solution in the Closed Form; 1.3.2 Linearized Solution; 1.4 Solution of Basic PLL Equations in the Frequency Domain; 1.5 Order and Type of PLLs; 1.5.1 Order of PLLs; 1.5.2 Type of PLLs; 1.5.3 Steady State Errors; 1.6 Block Diagram Algebra; References; 2 PLLs of the First and Second Order; 2.1 PLLs of the First Order; 2.2 PLLs of the Second Order; 2.2.1 A Simple RC Filter 2.2.2 Phase Lag-lead RRC or RCC Filter2.3 PLLs of the Second Order of Type 2; 2.3.1 PLLs of the Second Order of Type 2 with Voltage Output PD; 2.3.2 PLLs of the Second Order of Type 2 with Current Output Phase Detector; 2.4 Second-order PLLs with Frequency Dividers in the Feedback Path; References; 3 PLLs of the Third and Higher Orders; 3.1 General Open-loop Transfer Function G(s); 3.1.1 Additional RC Section; 3.1.2 Two RC Sections; 3.1.3 Active Second-order Low-pass Filter; 3.1.4 Twin-T RC Filter; 3.1.5 PLLs with a Selective Filter in the Feedback Path; 3.1.6 Time Delays in PLLs 3.2 Higher-order Type 2 PLLs3.2.1 Third-order Loops: Lag-lead Filter

with Additional RC Section; 3.2.2 Third-order Loop: Second-order Lag Filter Plus RC Section; 3.2.3 Fourth-order Loops; 3.2.4 Fifth-order Loops; 3.3 PLLs with Transmission Blocks in the Feedback Path; 3.3.1 Divider in the Feedback Path; 3.3.2 IF Filter in the Feedback Path; 3.3.3 IF Filter and Divider in the Feedback Path; 3.4 Sampled Higher-order Loops; 3.4.1 Third-order Loops with the Current Output Phase Detector; 3.5 Higher-order Loops of Type 3; 3.6 Computer Design of a Higher-order PLL; References
4 Stability of the PLL Systems4.1 Hurwitz Criterion of Stability; 4.2 Computation of the Roots of the Polynomial P(s); 4.3 Expansion of the Function 1/[1 + G(s)] into a Sum of Simple Fractions; 4.3.1 Polynomial S (s) Contains Simple Roots Only; 4.3.2 Polynomial S(s) Contains a Pair of Complex Roots; 4.3.3 Polynomial S(s) Contains Multiple-order Roots; 4.4 The Root-locus Method; 4.5 Frequency Analysis of the Transfer Functions - Bode Plots; 4.5.1 Bode Plots; 4.5.2 Polar Diagrams; 4.6 Nyquist Criterion of Stability; 4.7 The Effective Damping Factor; 4.8 Appendix; References; 5 Tracking
5.1 Transients in PLLs5.1.1 Transients in First-order PLLs; 5.1.2 Transients in Second-order PLLs; 5.1.3 Transients in Higher-order Loops; 5.2 Periodic Changes; 5.2.1 Phase Modulation of the Input Signal; 5.2.2 Frequency Modulation of the Input Signal; 5.3 Discrete Spurious Signals; 5.3.1 Small Discrete Spurious Signals at the Input; 5.3.2 Small Spurious Signals at the Output of the Phase Detector; 5.3.3 Small Spurious Signals at the Output of the PLLs; References; 6 Working Ranges of PLLs; 6.1 Hold-in Range; 6.1.1 Phase Detector with the Sine Wave Output; 6.1.2 The PD with Triangular Output
6.1.3 The PD with a Sawtooth Wave Output

Sommario/riassunto

Phase lock loop frequency synthesis finds uses in a myriad of wireless applications - from local oscillators for receivers and transmitters to high performance RF test equipment. As the security and reliability of mobile communication transmissions have gained importance, PLL and frequency synthesisers have become increasingly topical subjects.Phase Lock Loops & Frequency Synthesis examines the various components that make up the phase lock loop design, including oscillators (crystal, voltage controlled), dividers and phase detectors. Interaction amongst the various components are also dis