

Preface

This book presents simplified, rapid methods for obtaining a complete, practical filter design by inspection of a table. The book is intended for all filter designers, from the novice to the expert. The filter circuit elements used are integrated circuit (IC) operational amplifiers, resistances, and capacitances. All design tables are developed for standard, commonly available capacitor values.

From these tables the following types of filters may be constructed.

1. Low-pass (Butterworth or Chebyshev of second through eighth orders).
2. High-pass (Butterworth or Chebyshev of second through eighth orders).
3. Bandpass (Butterworth or Chebyshev of second through eighth orders).
4. Band-reject or notch (Butterworth or Chebyshev of second or fourth orders).
5. Phase-shift or all-pass (second order).
6. Constant-time-delay or Bessel (second, third, or fourth orders).
7. All-pass constant-time-delay (second order).

In the Chebyshev cases, ripple widths of 0.1, 0.5, 1, 2, and 3 dB are given for almost all filter designs.

Each filter type is discussed in a separate chapter. At the end of each chapter the design procedure is summarized and the appropriate tables are presented. Practical design suggestions are given for each circuit considered. The most popular filter designs, such as VCVS, infinite-gain multiple-feedback, and biquad, have been included in the chapter of each type. In addition, several multiple-feedback filters of our own design, which have superior performance

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