

# 基于滑窗流水的高性能可配置 viterbi 译码器

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**摘要:** 为了对无线通信卷积编码多标准支持, 同时为了适应未来高速率卷积编码需求, 基于滑窗流水的前向回溯基四算法, 实现了支持多标准的高性能可配置 viterbi 译码器, 该译码器峰值吞吐可达到 1.15Gbps@6144bit,600 MHz. 与主流商用 viterbi 译码器相比, 全球领先的半导体公司-TI 的 viterbi 译码器 VCP2 数据处理能力为 9.5 Mbps@40bit,333 MHz, 本文中译码器数据处理能力为 32.173 Mbps@40bit,333 MHz, 性能提升约 3.3 倍. 此外, 该译码器在面积与功耗方面也优于其它可配置型 viterbi 译码器, 在未来高速率卷积译码中有很大应用前景.

**关键词:** 可配置; viterbi 译码器; 高性能; 滑窗流水; 前向回溯

## Sliding Window Pipelined High Performance

## Reconfigurable Viterbi Decoder

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**Abstract:** In order to support multi-standard for convolutional coding in wireless communication, and to meet the requirement of high data rate in the future. A radix-4 multi-standard high performance reconfigurable viterbi decoder based on the sliding window pipeline technique with forward traceback algorithm was implemented. The peak throughput of the decoder can reach up to 1.15Gbps@6144bit,600MHz. Compared with the mainstream commercial viterbi decoder, the data processing speed of VCP2 which is proposed by Texas Instruments company is 9.5Mbps@40bit,333MHz, and the data processing speed of viterbi decoder in this paper is 32.173Mbps@40bit,333MHz, performance improved about 3.3 times. In addition, the decoder is superior to other reconfigurable viterbi decoders in area and power consumption. It has great application prospect in the future high data rate convolutional decoding.

**Key words:** reconfigurable; viterbi decoder; high performance; sliding window pipeline technique; forward traceback

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