

VSP945/VSP946

High Performance Pentium™
Processor Cache Controller with
i486-Compatible System Interface

VITESSE

FEATURES

- Optimizes 66 MHz Pentium™ Processor Performance
- Zero Wait States: 2-1-1-1 Read/Write Back
- Cache Sizes Supported: 128K, 256K, 512K, and 1MByte
- Asynchronous SRAMs for Tag & Data Storage
- A 33 MHz, 32-bit, i486™-Compatible System Bus Interface
- Supports up to 32K Tag Entries, 1GByte Cacheable Memory
- Concurrent CPU & System Operation
- 4-Deep Write Buffer to Eliminate Cache Miss Penalty
- Snoop Filtering to Reduce CPU Stalls
- Snoop Read Buffer to Optimize DMA/BUS Master Operation
- Read By-Pass to Streamline CPU Operation
- Software Transparent — No BIOS to Configure
- VSP945: 184 PQFP, VSP946: 208 PQFP

FUNCTIONAL DESCRIPTION

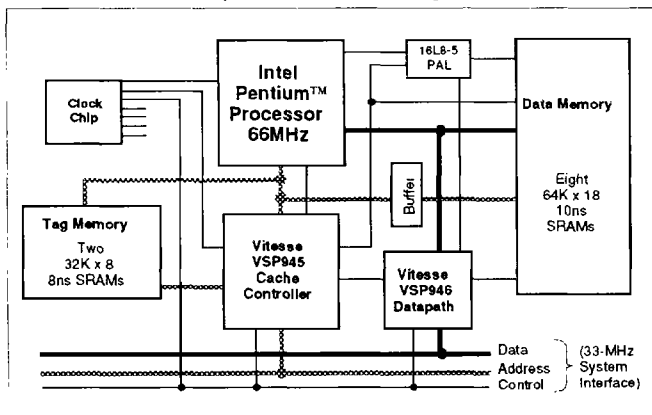
Vitesse's VSP945 and VSP946 make up a high performance serial cache controller chipset specifically designed for use in uniprocessor systems based on the Intel Pentium™ processor. The chipset implements a direct-mapped, copy-back cache subsystem between 128KB and 1MB in size.

The high speed VSP945 allows the system designer to use standard asynchronous SRAMs for Tag and Data storage while allowing the processor to run at full speed (2-1-1-1 bursts at 66 MHz). The VSP945 provides bursting reads and writes on both the CPU bus and system bus, as well as providing

an advanced bus snooping mechanism. A 4-deep write buffer supports zero-wait-state operation on write-miss cycles. It also eliminates any read miss penalty because the modified line is written to the buffer independently of the read linefill.

The VSP945 provides significant power and cost savings by allowing the designer to use commodity SRAMs, compared to other solutions that require special SRAMs. For high performance servers and PCs operating at 66-MHz, the VSP945 provides high system performance level at an affordable cost.

1MByte Cache Simplified System Diagram (66-MHz)



Cache Configuration

Size	Tag RAM	Data RAM
128 KB	2 8Kx8	16 8Kx8
256 KB	2 8Kx8	32 8Kx8
512 KB	2 32Kx8	16 32Kx8
1,024 KB	2 32Kx8	8 64Kx16

Pentium and i486 are registered trademarks of Intel Corporation