µ**PD98421**

High-speed Address Search Engine

Features

- 64-bit × 8K entry memory size
- 64-bit read/write bus
- Supports 3 types of search modes
  - Full Match mode
  - Full Match with Mask mode
  - Longest Prefix Match mode
- High-speed synchronous operation, maximum operation frequency : 33/50 MHz
  - Full Match mode   Search time 30 ns at 33 MHz
  - Full Match with Mask mode   Search time 30 ns at 33 MHz
  - Longest Prefix Match mode   Search time 60 ns at 33 MHz
- Reads/writes data at high-speed synchronous operation (Memory operation)
- Entry expandable by connecting multiple devices
- 3.3 V single power supply, 240-pin plastic FBGA

Functional Description

The µPD98421 is CAM (Content Addressable Memory) which has 64-bit × 8K entry memory size and can realize high-speed search. High performance switches, routers and bridges can be realized by using the µPD98421.
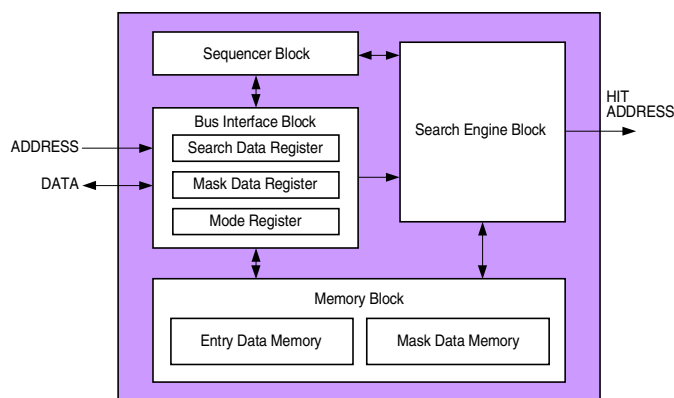
The µPD98421 can be operated at high-speed synchronous operation up to 33/50 MHz and has 3 types of search modes.

A longest Prefix match mode can output the longest matched address as searched data at only 2 clocks with masked entry data. This function is very useful to search an appropriate forwarding port for routers and Layer3 switches.
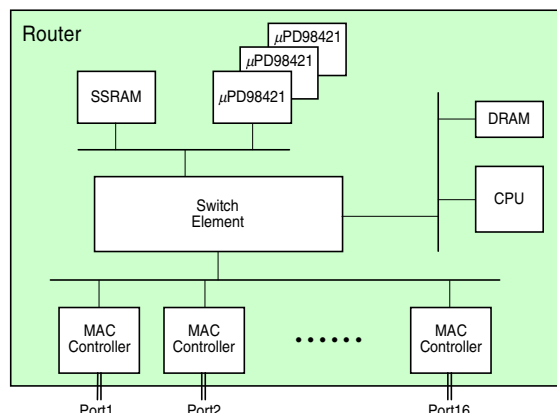
- Full Match mode
  High-speed search time 30 ns at 33 MHz
  1 mask register for search
  64-bit × 8K entry

- Full Match with Mask mode
  High-speed search time 30 ns at 33 MHz
  Each entry mask for search
  64-bit × 4K entry

- Longest Prefix Match mode
  High-speed search time 60 ns at 33 MHz
  Searches longest match address by each entry mask
  64-bit × 4K entry

Block Diagram

- Sequencer Block
- Bus Interface Block
  - Search Data Register
  - Mask Data Register
  - Mode Register
- Search Engine Block
- Memory Block
  - Entry Data Memory
  - Mask Data Memory

ADDRESS

DATA

HIT ADDRESS

Application Example

Router

- μPD98421
- μPD98421
- μPD98421
- SSRAM
- DRAM
- CPU
- Switch Element
- MAC Controller — Port1
- MAC Controller — Port2
- ······
- MAC Controller — Port16